NO. 24

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

BIDDERS PROPOSAL FORM

STATE AID PROJECT NO. SOIA-CPU-7-804(049)247 (PCN-20325)

1.297 Miles

PCC RECON, WIDENING, SIDEWALK, STORM DRAIN, LIGHTING, TRAFFIC SIGNAL, FLASHING BEACON, & INCIDENTALS

ND 1804 FROM JCT ND 23 NORTH APPROXIMATELY 1 MI & INTERSECTION WORK AT THE JCT ND 23 & ND 1804

MOUNTRAIL COUNTY

BID OPENING: The bidder's proposal form will be received via the Bid Express on-line bidding exchange at www.bidx.com until **09:30AM Central Time on February 07, 2014.**

Prior to submitting a Proposal Form, the Bidder shall complete all applicable sections and properly execute the Proposal in accordance with the specifications.

Proposal Form of:

_____
(Firm Name)

_____
(Address, City, State, Zipcode)

(For official use only)

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Project: SOIA-CPU-7-804(049)247 (PCN-20325)

The company, firm, corporation, or individual hereby acknowledges that it has designated a responsible person or persons as having the authority to obligate the company, firm, or individual, through electronic or paper submittal, to the terms and conditions described herein and in the contract documents. The designated responsible person submitting this proposal shall be hereafter known as the bidder. By submitting this proposal, the bidder fully accepts and agrees to all the provisions of the proposal. The bidder also certifies that the information given in this proposal is true and the certifications made in this proposal are correct.

The bidder acknowledges that they have thoroughly examined the plans, proposal form, specifications, supplemental specifications, special provisions and agrees that they constitute essential parts of this proposal.

The bidder acknowledges that all line items which contain a quantity shall have a unit price bid. Any line item which is bid lump sum shall contain a lump sum bid price.

The bidder acknowledges that they understand that the quantities of work required by the plans and specifications are approximate only and are subject to increases and decreases; the bidder understands that all quantities of work actually required must be performed and that payment therefore shall be at the prices stipulated herein; that the bidder proposes to timely furnish the specified materials in the quantities required and to furnish the machinery, equipment, labor and expertise necessary to competently complete the proposed work in the time specified.

NON-COLLUSION AND DEBARMENT CERTIFICATION

The bidder certifies that neither he/she, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid.

By submitting this bid, the bidder certifies to the best of his/her knowledge and belief that he/she and his/her principles:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency;
b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or perform a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph b. of the certification; and
d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or Local) terminated for cause or default

Where the prospective bidder is unable to certify to any of the statements in this certification, the bidder shall submit an explanation in the blanks provided herein. The explanation will not necessarily result in denial of participation in a contract:

Explanation:_____
_____
_____
_____

If the prequalified bidder's status changes, he/she shall immediately submit a new fully executed non-collusion affidavit and debarment certification with an explanation of the change to the Contract Office prior to submitting the bid.

Failure to furnish a certification or an explanation will be grounds for rejection of a bid.

BID LIMITATION (Optional)

The bidder who desires to bid on more than one project on which bids are to be opened on the same date, and who also desires to avoid receiving an award of more projects than the bidder is equipped to handle, may bid on multiple projects and limit the total amount of work awarded to the bidder on selected projects by completing the "Bid Limitation".

The Bid Limitation must be filled in on each bid proposal for which the Bidder desires protection. Each such bid proposal must be covered by a proposal guarantee.

The bid limitation can be made by declaring the total dollar value of work OR total number of projects a bidder is willing to perform.

The Bidder desires to disqualify all of his/her bids on this bid opening that exceed a total dollar value of

$_____

OR

that exceed a total number of _____ projects.

The Bidder hereby authorizes the Department to determine which bids shall be disqualified.

Project: SOIA-CPU-7-804(049)247 (PCN-20325)

PERMISSIBLE DISCOUNT (optional)

Only when invited to do so in the bidders proposal by Special Provision, Bidders are permitted to offer a discount on a specific project (discount project) if they are awarded the contract on one or more additional projects bid at the same bid opening time and date. The bidder must present the proposal so that it can be considered with or without the discount. The bid or discount offered on the "discount project" will not affect the determination of the low bid of any other project.

When discounts are offered, they must be presented as a reduction in the unit price for one or more items of work in the specified proposal (discount project).

Space for Offering Discounts:

_____
_____
_____

Item No:_____

Description:_____

Unit:_____

Proposal Quantity:_____ Unit Price Reduction: $_____ Discount: $_____

Item No:_____

Description:_____

Unit:_____

Proposal Quantity:_____ Unit Price Reduction: $_____ Discount: $_____

Item No:_____

Description:_____

Unit:_____

Proposal Quantity:_____ Unit Price Reduction: $_____ Discount: $_____

Item No:_____

Description:_____

Unit:_____

Proposal Quantity:_____ Unit Price Reduction: $_____ Discount: $_____

TOTAL DISCOUNT_____

It is understood that the discount will only apply if awarded under the conditions as listed above and signed by the bidder.

Project: SOIA-CPU-7-804(049)247 (PCN-20325)

RECEIPT OF ADDENDA ACKNOWLEDGEMENT

We hereby acknowledge receipt of the following addenda:

Addendum #_____ Dated_____

Addendum #_____ Dated_____

Addendum #_____ Dated_____

Addendum #_____ Dated_____

Addendum #_____ Dated_____

Addendum #_____ Dated_____

BID GUARANTEE

A bid guarantee is required by Section 24-02-20, NDCC. The bid guarantee may be a bid bond equal to 10 percent of the full amount of the bid or a cashier's check of the bidder on a solvent bank equal to 5 percent of the bid. Bid bond shall be on the department form SFN 14196. Prior arrangements may be made with the department to file bid guarantees in advance.

*Contractors must have an annual bid bond on file with the department in order to submit bids electronically on the internet.

TYPE OF BID GUARANTEE APPLIED TO THIS PROJECT:

Check One: ___ Certified check or Cashier's check equal to 5% of the bid

___ Bid Bond equal to 10% of the bid

___ * Annual Bid Bond

BID ITEMS

Project: SOIA-CPU-7-804(049)247 (PCN-20325)

Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
001	103	0100	CONTRACT BOND	L SUM	1.				
002	103	0200	ESCROW OF BID DOCUMENTATION	L SUM	1.				
003	108	0001	CRITICAL PATH METHOD SCHEDULE	L SUM	1.				
004	201	0330	CLEARING & GRUBBING	L SUM	1.				
005	201	0370	REMOVAL OF TREES 10IN	EA	64.				
006	202	0136	REMOVAL OF PAVEMENT	TON	20,433.				
007	202	0153	SAW BITUMINOUS SURFACING-FULL DEPTH	LF	946.				
008	202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	1,090.				
009	202	0210	REMOVAL OF MANHOLES	EA	4.				
010	202	0230	REMOVAL OF INLETS	EA	2.				
011	203	0101	COMMON EXCAVATION-TYPE A	CY	17,418.				
012	203	0109	TOPSOIL	CY	7,537.				
013	203	0113	COMMON EXCAVATION-WASTE	CY	10,950.				
014	203	0140	BORROW-EXCAVATION	CY	20,152.				
015	216	0100	WATER	M GAL	935.				
016	230	0301	SUBGRADE PREPARATION-TYPE A	MILE	1.300				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
017	302	0100	SALVAGED BASE COURSE	TON	26,131.				
018	302	9970	TYPE II PIPE BEDDING	CY	50.				
019	401	0150	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	680.				
020	405	0100	PREPARE STOCKPILE SITE	L SUM	1.				
021	408	0445	PG 58-28 ASPHALT CEMENT	TON	163.100				
022	408	0802	SUPERPAVE FAA 42	TON	2,811.				
023	550	0317	11.5IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	37,459.				
024	702	0100	MOBILIZATION	L SUM	1.				
025	704	0100	FLAGGING	MHR	1,800.				
026	704	1000	TRAFFIC CONTROL SIGNS	UNIT	2,336.				
027	704	1035	ATTENUATION DEVICE-TYPE B-25	EA	4.				
028	704	1052	TYPE III BARRICADE	EA	64.				
029	704	1060	DELINEATOR DRUMS	EA	286.				
030	704	1067	TUBULAR MARKERS	EA	77.				
031	704	1080	STACKABLE VERTICAL PANELS	EA	297.				
032	704	1081	VERTICAL PANELS-BACK TO BACK	EA	260.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
033	704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	257.				
034	704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	3.				
035	706	0200	FIELD LABORATORY-TYPE B	EA	1.				
036	706	0400	FIELD OFFICE	EA	1.				
037	708	1355	TEMPORARY SEDIMENT TRAP	EA	2.				
038	708	1356	REMOVAL OF TEMPORARY SEDIMENT TRAP	EA	2.				
039	708	1430	FIBER ROLLS 12IN	LF	19,494.				
040	708	1431	REMOVAL FIBER ROLLS 12IN	LF	9,499.				
041	708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	1.				
042	708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	1.				
043	708	1540	INLET PROTECTION-SPECIAL	EA	18.				
044	708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	18.				
045	708	2240	SEEDING-TYPE B-CL II	ACRE	4.500				
046	708	2260	SEEDING-TYPE B-CL IV	ACRE	4.500				
047	708	2950	SEEDING-HYDRO MULCH	ACRE	2.				
048	708	5500	MULCHING	ACRE	4.500				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
049	708	5651	ECB TYPE 2	SY	893.				
050	709	0701	GEOTEXTILE FABRIC-TYPE R1	SY	676.				
051	710	0200	TEMPORARY BYPASS	L SUM	1.				
052	714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	258.				
053	714	4099	PIPE CONDUIT 18IN-APPROACH	LF	378.				
054	714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	464.				
055	714	4106	PIPE CONDUIT 24IN-APPROACH	LF	132.				
056	714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	134.				
057	714	4110	PIPE CONDUIT 30IN	LF	50.				
058	714	4115	PIPE CONDUIT 36IN	LF	540.				
059	714	4131	PIPE CONDUIT 54IN-STORM DRAIN	LF	98.				
060	714	4136	PIPE CONDUIT 60IN-STORM DRAIN	LF	66.				
061	714	4166	PIPE CONDUIT 30IN-JACKED OR BORED	LF	92.				
062	714	7040	SANITARY SEWER SERVICE CONNECTION	EA	10.				
063	714	8498	CASING PIPE 18IN	LF	204.				
064	714	8504	CASING PIPE 24IN	LF	56.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
065	714	9680	PLUG PIPE-ALL TYPES & SIZES	EA	1.				
066	720	0100	MONUMENTS	EA	65.				
067	720	0110	RIGHT OF WAY MARKERS	EA	3.				
068	722	0100	MANHOLE 48IN	EA	3.				
069	722	0110	MANHOLE 60IN	EA	1.				
070	722	0120	MANHOLE 72IN	EA	1.				
071	722	0130	MANHOLE 84IN	EA	1.				
072	722	0200	MANHOLE 108IN	EA	1.				
073	722	0300	MANHOLE SANITARY	EA	4.				
074	722	1100	MANHOLE RISER 48IN	LF	13.610				
075	722	1110	MANHOLE RISER 60IN	LF	4.				
076	722	1120	MANHOLE RISER 72IN	LF	7.520				
077	722	1130	MANHOLE RISER 84IN	LF	8.670				
078	722	1200	MANHOLE RISER 108IN	LF	8.400				
079	722	3510	INLET-TYPE 2	EA	8.				
080	722	3520	INLET-TYPE 2 DOUBLE	EA	2.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
081	722	3701	INLET SPECIAL-TYPE 2 48IN	EA	1.				
082	722	3910	INLET SLOTTED DRAIN 15IN	LF	20.				
083	722	3920	INLET SLOTTED DRAIN 18IN	LF	20.				
084	722	6160	ADJUST INLET	EA	8.				
085	722	6200	ADJUST MANHOLE	EA	1.				
086	722	6201	ADJUST MANHOLE SPECIAL	EA	3.				
087	722	6240	ADJUST UTILITY APPURTENANCE	EA	10.				
088	724	0101	BUTTERFLY VALVE & BOX 10IN	EA	7.				
089	724	0300	GATE VALVE & BOX 6IN	EA	2.				
090	724	0310	GATE VALVE & BOX 8IN	EA	1.				
091	724	0411	6IN HYDRANT	EA	3.				
092	724	0809	PLUG 10IN WATERMAIN	EA	1.				
093	724	0810	WATERMAIN 6IN PVC	LF	66.				
094	724	0830	WATERMAIN 8IN PVC	LF	8.				
095	724	0840	WATERMAIN 10IN PVC	LF	1,404.				
096	724	0850	WATERMAIN 12IN PVC	LF	60.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
097	724	0942	10IN FUSIBLE OR RESTRAINED JOINT PVC WATER MAIN	LF	156.				
098	724	0944	CONNECTION TO EXISTING MAIN	EA	3.				
099	724	0975	WATER LINE CONNECTION 6IN	EA	2.				
100	724	0980	WATER LINE CONNECTION 8IN	EA	1.				
101	724	0982	WATER LINE CONNECTION 10IN	EA	1.				
102	724	1110	8IN SANITARY SEWER PIPE	LF	83.				
103	724	1117	12IN SANITARY SEWER PIPE	LF	786.				
104	724	1118	15IN SANITARY SEWER PIPE	LF	78.				
105	724	1120	6IN SEWER SERVICE PIPE	LF	380.				
106	724	1136	12IN X 6IN SEWER WYE BRANCH	EA	10.				
107	724	6031	ABANDON WATER MAIN/SERVICE LINE	LF	1,816.				
108	724	6832	10IN 22.5DEG BEND	EA	4.				
109	724	6835	10IN 45DEG BEND	EA	10.				
110	724	6860	10IN X 6IN REDUCING BEND	EA	2.				
111	724	6982	10IN X 10IN X 6IN TEE	EA	3.				
112	724	6983	10IN X 10IN X 8IN TEE	EA	1.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
113	724	6984	10IN X 10IN X 10IN TEE	EA	2.				
114	724	7007	6IN 45DEG BEND	EA	2.				
115	744	0100	POLYSTYRENE INSULATION BOARD	BD FT	1,792.				
116	748	0140	CURB & GUTTER-TYPE I	LF	4,147.				
117	748	1000	VALLEY GUTTER 36IN	LF	240.				
118	750	0115	SIDEWALK CONCRETE 4IN	SY	4,454.				
119	750	1000	DRIVEWAY CONCRETE	SY	463.				
120	750	2115	DETECTABLE WARNING PANELS	SF	212.				
121	752	0911	TEMPORARY SAFETY FENCE	LF	500.				
122	754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	151.				
123	754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	162.				
124	754	0151	RESET DELINEATOR POST-TYPE A	EA	3.				
125	754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	435.				
126	754	0563	REFERENCE MARKER-TYPE C	EA	1.				
127	754	0592	RESET SIGN PANEL	EA	8.				
128	754	0593	RESET SIGN SUPPORT	EA	7.				

BID ITEMS

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Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
129	754	0805	OBJECT MARKERS - CULVERTS	EA	35.				
130	762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	480.				
131	762	0420	SHORT TERM 4IN LINE-TYPE R	LF	16,984.				
132	762	0426	SHORT TERM 24IN LINE-TYPE R	LF	102.				
133	762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	7,576.				
134	762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	24,681.				
135	762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	742.				
136	762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	977.				
137	762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	127.				
138	762	1500	OBLITERATION OF PVMT MK	SF	3,225.				
139	766	0100	MAILBOX-ALL TYPES	EA	2.				
140	770	0001	LIGHTING SYSTEM	EA	1.				
141	772	0001	TRAFFIC SIGNALS SYSTEM	EA	1.				
142	772	2110	FLASHING BEACON-POST MOUNTED	EA	1.				
143	772	2910	REVISE INTERIM TRAFFIC SIGNAL SYSTEM	EA	1.				
			TOTAL SUM BID						

Project: SOIA-CPU-7-804(049)247 (PCN-20325)

Type of Work: PCC RECON, WIDENING, SIDEWALK, STORM DRAIN, LIGHTING, TRAFFIC SIGNAL, FLASHING BEACON, & INCIDENTALS

County: MOUNTRAIL

Length: 1.2968 Miles

TIME FOR COMPLETION:

The undersigned Bidder agrees, if awarded the contract, to prosecute the work with sufficient forces and equipment to complete the contract work within the allowable time specified as follows:

WORKING DAY CONTRACT: **NA** working days, counted as provided in Standard Specification No. 108.04. Working Days will be counted from **NA** or from the actual date on which on-site work is started, whichever is earlier.

CALENDAR DAY CONTRACT: **NA** calendar days. Calendar Days will be counted from **NA** or from the actual date on which on-site work is started, whichever is earlier.

COMPLETION DATE CONTRACT: **10/11/2014** provided however, that a minimum of **NA** working days, counted as provided by Standard Specification No. 108.04, are guaranteed for the performance of the work. Working days will be counted from **NA** or from the actual date on which onsite work is started, whichever is earlier.

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Type of Work: PCC RECON, WIDENING, SIDEWALK, STORM DRAIN, LIGHTING, TRAFFIC SIGNAL, FLASHING BEACON, & INCIDENTALS

County: MOUNTRAIL

Length: 1.2968 Miles

CONTRACT EXECUTION:

The undersigned Bidder agrees, if awarded the contract, to execute the contract form and furnish a contract bond within ten days, as determined by NDCC Section 1-02-15, after date of notice of tentative award, in accordance with the provisions of Sections 103.05 and 103.06 of the Standard Specifications.

AFFIDAVIT:

STATE OF _____)
) ss.
COUNTY OF _____)

The undersigned bidder, being duly sworn, does depose and say that they are an authorized representative of _____
CONTRACTOR NAME
of _____ , a
MAILING ADDRESS

☐ Individual ☐ Partnership ☐ Joint Venture ☐ Corporation

and that they have read, understand, acknowledge, and accept the entire proposal form; and that all statements made by said bidder are true and correct.

_____ , TITLE _____
BIDDER MUST SIGN ON THIS LINE

_____
TYPE OR PRINT SIGNATURE ON THIS LINE

Subscribed and sworn to before me this day.

_____
COUNTY

(Seal) _____ _____
STATE DATE

_____
NOTARY PUBLIC

My commission expires _____

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

Job #24, Project No. SOIA-CPU-7-804(049)247

PCC Reconstruction, Widening, Sidewalk, Storm Drain, Lighting, Traffic Signal, Pushbutton Activated Flashing Beacon, & Incidentals

INDEX OF PROVISIONS

NOTICE

TO: All prospective bidders on all North Dakota Department of Transportation Highway Construction Projects.

Contractors moving construction equipment to NDDOT highway construction projects are subject to the Road Restriction Policy with the following modifications:

A. The contractor may purchase up to 10 single trip permits for each NDDOT highway construction project at a cost ranging from $20 to $70 each. These permits must be purchased from the Motor Carrier Division of the Highway Patrol at the central office of the NDDOT in Bismarck, North Dakota.

B. The $1 per mile fee will not be charged for Gross Vehicle Weights (GVW) exceeding 105,500 pounds, 105,500 pounds, and 105,000 pounds for highways Restricted by Legal Weights, 8 Ton, and 7 Ton highways respectively.

C. The $5 per ton per mile fee will be charged only for loads exceeding a GVW of 130,000 pounds, 120,000 pounds, 110,000 pounds and 80,000 pounds for highways Restricted by Legal Weights, 8 Ton, 7 Ton, and 6 Ton highways respectively.

D. The maximum weights per axle for each of the class restrictions still apply. If it is shown that more axles cannot be added, movement may be authorized; however, a $1 per ton per mile fee will be charged for all weight in excess of the restricted axle limits.

E. These construction equipment single trip permits apply to State and US Highways only.

F. The District Engineers and Highway Patrol will select the route of travel.

G. Contractors moving equipment to other than NDDOT highway construction projects are subject to all fees as shown in the Road Restriction Permit Policy.

H. Contractors must call the Highway Patrol prior to movement of all overweight loads on all State and US Highways.

NDDOT ROAD AND VEHICLE RESTRICTIONS Date Revised 05-22-10

ROAD RESTRICTION PERMITS

Permits shall be issued for the movement of non-divisible vehicles and loads on state highways which exceed the weight limits during spring road restrictions. The issuance of permits may be stopped or posted weights changed at any time based on the varying conditions of the roadways. Permits can be obtained from the Highway Patrol.

RESTRUCTION CLASSIFICATIONS WITH ALLOWABLE AXLE WEIGHTS AND GROSS VEHICLE WEIGHTS	PERMIT AND TON/MILE FEES
Highways Restricted by Legal Weight Single Axle -- 20,000 lbs. Tandem Axle -- 34,000 lbs. Triple Axle -- 48,000 lbs. 4 Axles or more -- 15,000 lbs. per axle Gross Vehicle Weight -- 105,500 lbs. Note: The above weights apply to state highways restricted by legal weights, other than interstate highways, in areas where road restrictions are in force. When the gross weight of an axle grouping exceeds 48,000 pounds, the $1 per ton per mile shall apply to all weight in excess of 15,000 pounds per axle.	Permit Fee: $20-$70 per trip Ton Mile Fee: 105,501 lbs. to 130,000 lbs. GVW -- $1 per mile Over 130,000 lbs. GVW – $1 per mile **plus** $5 per ton per mile for that weight exceeding 130,000 lbs. GVW Exceeding axle limits -- $1 per ton per mile
8-Ton: Single Axle -- 16,000 lbs. Tandem Axle -- 32,000 lbs. 3 Axles or more -- 14,000 lbs. per axle Gross Vehicle Weight -- 105,500 lbs.	Permit Fee: $20-$70 per trip Ton Mile Fee: 105,501 lbs. to 120,000 lbs. GVW -- $1 per mile Over 120,000 lbs. GVW – $1 per mile **plus** $5 per ton per mile for that weight exceeding 120,000 lbs. GVW Exceeding restricted axle limits -- $1 per ton per mile
7-Ton: Single Axle -- 14,000 lbs. Tandem Axle -- 28,000 lbs. 3 Axles or more -- 12,000 lbs. per axle Gross Vehicle Weight -- 105,500 lbs.	Permit Fee: $20-$70 per trip Ton Mile Fee: 105,500 lbs. to 110,000 lbs. GVW -- $1 per mile Over 110,000 lbs. GVW – $1 per mile **plus** $5 per ton per mile for that weight exceeding 110,000 lbs. GVW Exceeding restricted axle limits -- $1 per ton per mile
6-Ton: Single Axle -- 12,000 lbs. Tandem Axle -- 24,000 lbs. 3 Axles or more -- 10,000 lbs. per axle Gross Vehicle Weight -- 80,000 lbs.	Permit Fee: $20-$70 per trip Ton Mile Fee: $5 per ton per mile for all weight exceeding 80,000 lbs. GVW Exceeding restricted axle limits -- $1 per ton per mile
5-Ton: Single Axle -- 10,000 lbs. Tandem Axle -- 20,000 lbs. 3 Axles or more -- 10,000 lbs. per axle Gross Vehicle Weight -- 80,000 lbs.	No overweight movement allowed

SINGLE UNIT FIXED LOAD VEHICLES SUCH AS TRUCK CRANES AND WORKOVER RIGS

A. Permit Fee and Ton Mile Fee for Self-Propelled Fixed Load Vehicles.

1. Permit Fee: $25 per trip

2. $1 per ton per mile for all weight in excess of restricted axle limits or in excess of legal limits on state highways in areas where road restrictions are in force. When the gross weight of an axle grouping exceeds 48,000 pounds, the $1 per ton per mile shall apply to all weight in excess of 15,000 pounds per axle (see weight classification chart in section C.)

3. $5 **per ton per mile** for all movements exceeding the following gross vehicle weight limits:

    a. 105,500 lbs. GVW on unrestricted state highways, other than interstate highways, in areas where road restrictions are in force.
    b. 105,500 lbs. GVW on 8-ton highways.
    c. 105,500 lbs. GVW on 7-ton highways.
    d. 80,000 lbs. GVW on 6-ton highways.
    e. No overweight movement allowed on 5-ton highways

B. Permit Fees for Work-Over Rigs and Special Mobile Equipment Exceeding 650 but not 670 Pounds Per Inch Width of Tire.

1. Permit Fee:
    a. $50 per trip on work-over rigs up to 650 pounds per inch width.
    b. $75 per trip on work-over rigs that exceed 650 but not 670 pounds per inch width of tire.
2. The work-over rig shall be stripped to the most minimum weights.
3. A minimal number of state highway miles shall be used.
4. District engineer approval shall be obtained prior to movement when vehicle exceeds restricted axle weights by more than 5,000 pounds.
5. A validation number ending in TM must be obtained from the Highway Patrol prior to using a self-issue single trip movement approval form.
6. The ton mile shall be waived.

CERTIFICATION

I hereby certify the attached supplemental specifications effective on October 1, 2013.

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/S/

Bob Fode, P.E., Director
Office of Project Development

18 July 2013

Date:

North Dakota
Department of Transportation

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATIONS

Effective Date: 10/01/2013

The following specifications are supplementary to the 2008 Edition of the *Standard Specifications for Road and Bridge Construction* as they apply to this Contract.

CERTIFICATION **PAGE I, VOL 1** **5/20/11**

Delete page I in its entirety and insert the following page:

COPIES OF THIS BOOK MAY BE OBTAINED FROM:
North Dakota Department of Transportation
Environmental and Transportation Services
608 East Boulevard Avenue
Bismarck, ND 58505-0700
Phone: (701) 328-2590
Fax: (701) 328-0310
Email: dotspecbook@nd.gov
www.dot.nd.gov

All orders must be prepaid by Check, Money Order, Discover, VISA, or MasterCard. Orders may be requested via fax, phone, or internet.

The electronic versions of:

Standard Specifications for Road and Bridge Construction, Volume I
Standard Specifications for Road and Bridge Construction, Volume II
Current Supplemental Specifications

are available at: www.dot.nd.gov

I hereby certify that this Standard Specifications Book was prepared under the Office of Project Development, compiled from specifications prepared, examined, adopted and implemented by the North Dakota Department of Transportation in accordance with established procedures, and as approved by the Federal Highway Administration.

Ronald J. Henke, P.E.
Office of Project Development

2/9/11
Date

These North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, 2008, are hereby approved for application on highway and related constructions contracts as referenced in the contract plans or specifications, and they shall apply as noted and amended by those documents.

Approved,

Grant Levi, P.E.
Deputy Director for Engineering

2/9/11
Date

100 TABLE OF CONTENTS **PAGE 3** **3/26/10**

Delete the title of Section 106.09 “Buy American Products” in its entirety and insert “Buy America Products”.

102.00 BIDDING REQUIREMENTS AND CONDITIONS **PAGE 18** **7/1/12**

Delete Section 102 in its entirety and insert the following:

SECTION 102
BIDDING REQUIREMENTS AND CONDITIONS

102.01 PREQUALIFICATION OF BIDDERS.

Only prequalified Bidders will be allowed to bid on any Project. Evidence consists of detailed information regarding the Bidder’s finances, organization, equipment, and previous experience, provided on standard forms furnished by the Department. The prequalification forms shall be submitted not less than 7 days before the bid opening in which the Bidder desires to bid, and at such additional times as the Director may request or the Bidder elect. The prequalification shall be in force for the time period specified in the Department’s written authorization.

The Director reserves the right to check any or all statements submitted by the Bidder, and to obtain additional pertinent information from other sources. The Department reserves the right to disqualify a prospective Bidder for any reasons stated in Section 102.13.

102.02 CONTRACTOR’S LICENSE.

A Bidder is not required to have a Contractor’s license from the State of North Dakota to bid on a Project, however, a Contract will not be executed until the Contractor obtains an appropriate North Dakota Contractor’s license.

102.03 CONTENTS OF PROPOSAL FORMS.

The Proposal Form will show the location and description of the contemplated construction, the estimate of the various quantities, the types of work to be performed or materials to be furnished, and the schedule of items for which Unit Bid Prices are invited. The Proposal Form will state the time in which the work must be completed; and the date, time, and place for opening of Proposals. The Proposal form will also include any Special Provisions or requirements which vary from or are not contained in the Standard Specifications.

The Plans, Specifications, other documents designated in the Proposal Form will be considered a part of the Proposal whether attached or not.

102.04 ISSUANCE OF PROPOSAL FORMS.

Proposal Forms will be issued in accordance with the Advertisement for Bids.

102.05 INTERPRETATION OF QUANTITIES IN BID SCHEDULE.

The quantities appearing in the bid schedule are estimates prepared for comparison of bids. Payment will be made for actual quantities of work performed and accepted or materials furnished according to the Contract. The estimated quantities of work and materials may be increased, decreased, or pay items may be eliminated in their entirety.

102.06 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK.

The Bidder is to examine the site of the proposed work, the Proposal, Plans, Specifications, Supplemental Specifications, Special Provisions, and all other Contract forms before submitting a Proposal. The Bidder is responsible for all site conditions that should have been discovered with a Bidder

site investigation. The submission of a proposal will be considered conclusive evidence that the Bidder is satisfied with the conditions to be encountered in performing the work and as to the requirements of the proposed Contract.

Boring logs and other records of subsurface investigations are available for inspection by Bidders. It is made available so all Bidders have access to identical subsurface information available to the Department, and is not intended as a substitute for personal investigation, interpretations, and judgment of the Bidders. This availability shall not relieve the Bidder of the responsibility stated in the preceding paragraph. The Department will not be bound by any statement or representation concerning conditions made by any of its employees or agents before the execution of the Contract, unless included in the Proposal Form, Plans, Specifications, Supplemental Specifications, Special Provisions, or related Contract forms.

Any explanation desired by a Bidder regarding the meaning or interpretation of the Proposal Form, Plans, Specifications, etc., must be requested from the Central Construction Office in adequate time to allow a reply to reach all Bidders before submission of their Bids. Interpretations will be made by addendum. Oral explanations or instructions given before the bid opening will not be binding.

102.07 PREPARATION OF PROPOSALS.

A. **General.** The Bidder shall prepare the Proposal Form furnished by the Department utilizing the Expedite Files, unless the Department indicates that paper bids will be accepted.

The Department will provide bidding information, Plans, proposal forms, addenda and other documents on the Department's Web site. Bidders shall check the Department's Web site for addenda prior to submitting a bidder's proposal. The Department will post all addenda no later than 4:00 p.m. Central Time two days before the bid opening. An exception to this timeframe is the withdrawal of a project from the bid opening. Bidders shall acknowledge the receipt of all addendums as designated in the proposal form. Electronic bid files (Expedite files) are provided through the Bid Express on-line bidding exchange at www.bidx.com/ and the Department's Web site at www.dot.nd.gov/ . Bidders shall ensure they have downloaded any addenda files prior to submitting their final bid. Bidders shall check either the Bid Express Web site or the Department's Web site after 5:00 p.m. Central Time two days before the bid opening, to ensure that all addenda files for the Expedite files have been downloaded before submitting the final bid.

Interested parties can subscribe to the Bid Express on-line bidding exchange by following the instructions provided at the www.bidx.com Web site or by contacting:

Info Tech Inc.
5700 SW 34th Street, Suite 1235
Gainesville, FL 32608-5371
email: mailto:customer.support@bidx.com

When an item on the Bid Schedule allows a choice of alternates, the Bidder shall indicate the choice for that particular item.

Proposals submitted by (1) an individual must be signed by that individual, (2) a partnership, must be signed by a partner, or (3) a corporation must be signed by an officer of the corporation with the officer's title. Proposals submitted by a joint venture must be signed by a legally qualified representative of each of the parties to the joint venture. A Proposal may be executed for an individual, a legal entity, or a joint venture by anyone having a power of attorney, provided a copy of the power of attorney is attached to the proposal or is previously filed with the Department.

A Bidder may submit bids on more Projects than they desire to accept. Each such bid proposal must be covered by a Proposal Guaranty. The Bidder may indicate the total work desired and the Director will determine which of the low bids will be accepted within the Bidder's indicated bid limitations. This limitation will apply only to Projects on which the Bid Limitation Section in the Proposal Form has been completed by the Bidder.

B. **Combination (Tied) Proposals.** Proposal Forms may be issued for Projects in combination or separately, so bids may be submitted either on the combination or on separate units of the combination. The Department reserves the right to make awards on combination bids or separate

bids to the advantage of the Department. Combination bids, other than those specified, will not be considered. Separate Contracts will be written for each Project included in the combination.

C. **Electronic Bidding**. Prior to submitting bids via Bid Express, the Bidder shall obtain a bidder identification number from the Department. The Bidder shall create a digital ID by following the directions on the Bid Express website. The digital ID shall be on file and enabled with Bid Express. Using this digital ID shall constitute the Bidder's signature for proper execution of the Proposal. The Department will not be responsible if Bidder cannot submit bid to Bid Express. Claims will not be accepted based on such failure.

1. Download the EBS files, DBE bin files and any addendums from the Bid Express or Department's Web site.

2. Use Expedite software to generate and prepare the Bidder's Proposal. Provide a unit price for each bid item, except as not required in the case of alternate bid items. Follow the software instructions and review the help screens provided on the Bid Express Web site to assure that the schedule of items is prepared properly.

3. Submit the bid according to the requirements of the Expedite software and the Bid Express Web site.

The Department will consider bids submitted over the Internet as accepted, at the time and date specified in the Notice to Bidders and not before such time and date.

E. **Paper Bids.** Paper bids under this section will only be accepted when the Department indicates that this method is allowed for a specific project. Proposals submitted on paper shall be signed and notarized in ink in the spaces provided on the Proposal Form.

The Bidder shall enter a unit price in numerals on the Bid Schedule for each bid item, except as not required in the case of alternate bid items. The Bidder shall enter the product of each unit price and respective quantity. The sum of the products (Total Sum Bid) shall be entered where indicated.

The paper bid schedule can be a printout generated by the current version of Expedite, used by the Department.

102.08 PROPOSAL GUARANTY.

An annual bid bond, single project bid bond, or certified or cashier's check shall accompany all proposals. Arrangements may be made with the Department to file Proposal Guaranties in advance of the bid opening.

A. Annual Bid Bond. The Bidder shall have a properly executed annual bid bond on file with the Department. An annual bid bond is filed on the Department's form titled Annual Bid Bond (SFN 50231) and applies to all proposals submitted by a Bidder in a calendar year.

Bid Bonds must be a sum equal to 10 percent of the full amount of the bid and must be executed on the Department's form titled Annual Bid Bond (SFN 50231).

B. Single Project Bid Bond. The Department may, upon request, allow for single project bid bond to be filed in advance of the bid opening.

Bid bonds under this section shall be a sum equal to 10 percent of the full amount of the bid executed by the Bidder as principal and by Surety company authorized to do business in North Dakota using the Department's form titled Bid Bond – Single Project (SFN 14196).

C. Certified Check or Cashier's Check. The Department may, upon request, allow a Bidder to file a certified check or cashier's check in advance of the bid opening on a solvent bank in a sum equal to 5 percent of the full amount of the bid.

If the successful bidder fails to sign a Contract with the Department within 10 days after the notice of an award, the Bidder's bid bond or the certified or cashier's check will be forfeited to the Department.

102.09 DELIVERY OF PROPOSALS.

The Bidder shall submit the Proposal Form furnished by the Department before the time and date designated in the Notice to Bidders.

A. Electronic bid on the internet using Bid Express. Bidders utilizing this bid submission method shall not sign, notarize, nor return the Proposal Form as described in other sections of the Specifications.

B. Paper bid on the Proposal Form furnished by the Department. Proposals shall be placed in a sealed envelope bearing the Bidder's name, and plainly marked to indicate its contents.

Proposals received after the time established for opening of Proposals will be returned unopened.

Mailed bids will be accepted, if all other bidding requirements have been met and the bids are received prior to the date and time designated on the Notice to Bidders. If a Proposal Guaranty check is required, as specified in Section 102.08 B, such check must accompany any mailed bid.

102.10 WITHDRAWAL OR REVISION OF PROPOSALS.

A Bidder may withdraw or revise a Proposal after delivery to the Department, provided the request for withdrawal or revision is received in writing before the time established for opening Proposals.

102.11 PUBLIC OPENING OF PROPOSALS.

Proposals will be publicly opened and announced at the time and place indicated in the Notice to Bidders.

102.12 IRREGULAR PROPOSALS.

A. Proposals will be considered irregular and will be rejected if:

1. The Proposal is not electronically signed by use of the digital ID; or in the case of a paper bid, it is not properly signed and notarized.

2. The Proposal is not submitted in accordance with Section 102.07 or Section 102.09.

3. The Bidder fails to provide a properly executed Proposal Guaranty.

4. The Bidder adds any provisions reserving the right to accept or reject an award, or to enter into a Contract pursuant to an award.

This does not exclude a bid limiting the maximum gross amount of awards acceptable to any one Bidder at any one bid opening. Selection of awards will be made by the Department.

B. Proposals may be considered irregular and may be rejected if:

1. The submitted Proposal fails to comply with any other requirements of the "Notice to Bidders" or the issued Proposal itself.

2. There are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may make the Proposal's meaning incomplete, indefinite, or ambiguous.

3. A price per unit cannot be determined from the bid proposal, except in the case of authorized alternate pay items.

4. The Proposal does not include a unit price for every bid item, except in the case of authorized alternate pay items.

5. It is determined that any of the unit prices are materially unbalanced to the potential detriment of the Department.

6. The Unit Prices on paper bids are not typed or entered in ink.

7. The check code printed on the bottom of the printout of the Expedite-generated schedule of items is not the same on each page.

8. There is non-compliance with the Disadvantage Business Enterprise (DBE) requirements.

102.13 DISQUALIFICATION OF BIDDERS.

The Department has the right to disqualify a Bidder after a proposal has been submitted.

A. The following reasons will be considered sufficient for disqualifying a Bidder and rejecting a Proposal or Proposals.

1. Not prequalified in accordance with Section 102.01.
2. Evidence of collusion among Bidders. Participants in collusion will not receive recognition as Bidders for future work with the Department until they are reinstated as a qualified Bidder.
3. More than one Proposal for the same work from an individual, firm, or corporation under the same or different name.
4. Any other reason deemed proper by the Department.

B. The following reasons may be considered sufficient for disqualifying a Bidder and rejecting a Proposal or Proposals.

1. Uncompleted work which the Department determines might hinder or prevent prompt completion of additional work.
2. 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.
3. Default under previous Contracts.
4. Failure to repay monies due the Department resulting from overpayments.
5. Unsatisfactory performance on previous work or current Contract(s), consisting of, but not limited to, repeated:
   - **a.** Noncompliance with Contract requirements, or Engineer's directives.
   - **b.** Failure to complete work on time.
   - **c**. Instances of substantial corrective work prior to acceptance.
   - **d**. Instances of completed work that requires acceptance at reduced pay.
   - **e.** Production of non-specification work or materials.
6. Questionable moral integrity, as determined by the Attorney General of the State, or the Department.
7. Disbarment from performing work on Federal Contracts.

103.02 AWARD OF CONTRACT **PAGE 26** **5/20/11**

In Section 103.02 delete the second paragraph in its entirety and insert the following:

The successful Bidder shall submit an initial schedule of proposed progress on Department form SFN 7721 within 10 days after the bid opening. The time schedule submitted on the proposed progress chart shall not change the Contract requirements listed in the Proposal Form.

104.06 B SUBMISSION OF THE CLAIM **PAGE 34** **10/15/10**

Delete the first paragraph in Section 104.06 B.2.d.1 in its entirety and insert the following:

(1) Owned Equipment. Payment for the actual hours of Contractor-owned equipment will be 70 percent of the Ownership costs as determined using the procedures outlined in Section 109.04.

Delete the first paragraph in Section 104.06 B.2.d.3 in its entirety and insert the following**:**

Operating Costs. Equipment operating costs will be the equipment operating costs as determined using the procedures outlined in Section 109.04

104.06 B SUBMISSION OF THE CLAIM PAGE 35 4/17/09

In the first sentence of the first paragraph of Section 104.06 B.2.d.1 delete the word “base” in its entirety and insert the word “bare”.

104.06 B SUBMISSION OF THE CLAIM PAGE 36 4/17/09

In Section 104.06 B.3 delete the following phrase in its entirety “that the claim for extra compensation and time, if any, made herein for work on this Contract is a true statement of the actual costs incurred and time sought and is fully documented and supported under the Contract be” and insert the following:

that the claim for extra compensation and time, if any, made herein for work on this Contract is a true statement of the actual costs incurred and time sought and is fully documented and supported under the Contract between the parties.

105.02 CONTRACTOR REQUIREMENTS PAGE 39 2/20/09

In Section 105.02 delete the first paragraph in its entirety and insert the following:

The Contractor shall have one set of approved Plans and Proposal Forms including Special Provisions at the work site at all times.

105.02 CONTRACTOR REQUIREMENTS PAGE 39 2/18/11

In Section 105.02 delete the third paragraph in its entirety and insert the following:

The Contractor shall designate in writing before starting work, a competent Superintendent who shall have the authority to represent and act for the Contractor. The Superintendent shall be a responsible employee of the Prime Contractor. When work is underway, including work by a Subcontractor, the Contractor shall ensure the Superintendent is present at the worksite unless otherwise agreed to by the Engineer.

The Superintendent shall be capable of reading and understanding the Contract Documents and fully authorized to:

A. Conduct all business with the Subcontractors.
B. Execute the orders and directions of the Engineer without delay.
C. Promptly supply the materials, equipment, tools, labor, and incidentals necessary for prosecution of the work.
D. Represent the Contractor at weekly meetings when required in the Contract Documents.

The Contractor shall notify the Engineer promptly in writing when replacing the Superintendent.

105.08 B WORK DRAWINGS SUBMITTED BY THE CONTRACTOR PAGE 44 2/20/09

Delete Section 105.08 B in its entirety and insert the following:

B. **Work Drawings Submitted by the Contractor.** Work drawings, necessary to complete the work, which are supplied by the Contractor shall be submitted to the Engineer prior to the performance of the work. The drawings shall be submitted on sheets no larger than 11 inches by 17 inches unless otherwise allowed by a work item specification.

Each sheet of the work drawings submitted shall be stamped as approved by the Contractor performing the work. At a minimum, the stamp will include the signature and title of the person approving the work drawing and the date of the approval.

The Engineer will review the work drawings as indicated in the plans, proposal, specifications, or other Contract documents. Any submittal and review of work drawings by the Engineer shall not constitute approval of nor acceptance of items represented by such drawings and shall not relieve the Contractor of any responsibility under the Contract. Such responsibility includes, but is not limited to:

1. Successful completion of the work.
2. Errors, omissions, or deviations from the Contract requirements.
3. Accuracy of dimensions and details.
4. Agreement and conformity with the Contract.
5. Proper and safe design done by the Contractor.
6. Proper and safe construction of the work.

In addition to any time requirements which may be specified for a work item, the Contractor shall allow sufficient time for the Engineer to review and comment on the submittal, and the Contractor to respond to the comments, prior to performance of the work. The Contractor shall not change any requirements as shown in the Contract documents without the Engineer's written authorization. A cover letter to be included with each work drawing submittal shall include, at a minimum:

1. The Project Number.
2. Structure Number, if applicable
3. The Prime Contractor name.
4. The Subcontractor name, if applicable.
5. Verification that the work drawings have been reviewed and approved by the Contractor performing the work.
6. The items of work covered in the work drawing. Each item shall be identified by the Specification, code, and description.
7. An itemized list of any deviations from the Contract documents.
8. Any other information as required by the Engineer.

The Contract price will include the cost of furnishing all required work drawings.

The Contractor may submit work drawings by either of the following methods:

a. Paper Submission. Submit cover letter and two copies of work drawings to the Engineer.

b. Electronic Submission. Submit cover letter and one electronic copy of work drawing to the Engineer. All submissions shall follow the requirements of NDAC Title 28. The documents shall be posted to the NDDOT File Transfer Protocol (FTP) website.

- Work drawings shall be submitted in a PDF file format.
- Work drawings shall be submitted on sheets no larger than 11 inches by 17 inches unless otherwise allowed by specification.
- Work drawings shall use the naming convention of: Project Number_Name of Work Drawing.pdf.

Contractor instructions for posting and retrieving files on the FTP Site are as follows:

Step 1: Go to the following website; ftp://ftp.state.nd.us/public/work%20drawings/

Step 2: Contact the Engineer for user name and password.

Step 3: When the “Log On As” box appears, enter user name and password.

Step 4: Click the “Log On” button.

Step 5: Place the work drawing file(s) in the appropriate folder. There is a folder for each month. Work drawings shall be placed in the folder month that corresponds with the date the work drawing is submitted.

Step 6: After uploading work drawings to the FTP Site, notify the Engineer by email that work drawings are on the FTP site.

After the work drawings have been reviewed, the reviewed work drawings will be placed on the FTP Site and an email notification will be sent to the Contractor.

The Contractor shall retrieve the returned work drawings from the FTP Site within 30 days. Files will be deleted from the FTP site after 30 days.

106.02 E AGGREGATE SOURCE LIMITATIONS **PAGE 51** **3/26/10**

In the second sentence of the fourth paragraph in Section 106.02 E delete the webpage address in its entirety and insert the following: **“**http://www.ndhealth.gov/EHS/Erionite/InformationForContractors.htm”

107.02 PERMITS, LICENSES, AND TAXES **PAGE 55** **11/20/09**
3/01/13

Delete Section 107.02 in its entirety and insert the following:

A. **General.** The Contractor shall obtain and submit to the Engineer 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.

These charges, fees, or taxes may include, but are not limited to, State sales taxes, City sales taxes, and TERO or Indian Reservation taxes or requirements.

No claim shall be made to the Department for reimbursement of these taxes, charges, fees, or for any costs related in meeting TERO or Indian Reservation requirements. All these costs shall be included in the bid prices for the Contract items.

B. State Water Commission. It is the Contractor’s responsibility to obtain the necessary permit from the State Water Commission after the Contract has been awarded and prior to obtaining surface or ground water from the water source.

The Application for a Temporary Water Permit (SFN 60158) must be completed and submitted to the State Water Commission by the Contractor to obtain the permit.

The Contractor shall obtain permission for access to the waterway from all affected landowners prior to obtaining surface or ground water from the water source. The Contractor shall submit written permission for access to the waterway from all affected landowners and the Temporary Water Permit to the Engineer prior to obtaining surface or ground water from the water source.

For additional information from the State Water Commission, contact:

State Engineer
North Dakota State Water Commission
State Office Building

900 East Boulevard Ave
Bismarck, ND 58505-0850
(701) 328-2754
swc@nd.gov

C. **United States Army Corps of Engineers Water Permit.** All waterways listed below will require a United States Army Corps of Engineers Water permit in addition to the North Dakota State Water Commission permit. It is the Contractor's responsibility to obtain the necessary permit from the Corps of Engineers after the Contract has been awarded. Corps of Engineers Form 4345 must be completed and submitted to the Corps by the Contractor to obtain the permit prior to obtaining water from the waterways listed:

MISSOURI RIVER - from the Montana-North Dakota state line to the North Dakota-South Dakota state line

YELLOWSTONE RIVER - from the Montana-North Dakota state line to its mouth

UPPER DES LACS LAKE

RED RIVER OF THE NORTH - from Wahpeton, ND, to the Canadian border

BOIS DE SIOUX RIVER - from the South Dakota-North Dakota state line to Wahpeton, ND

JAMES RIVER - from Jamestown, ND, to the North Dakota-South Dakota state line

For additional information from the Corps of Engineers, contact:

Bismarck Regulatory Office
1513 S. 12th St.
Bismarck, ND 58504
Telephone 701-255-0015

D. Storm Water Permits

1. **Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination System (NDPDES).** A Project that requires the Contractor to obtain an NDPDES Permit from the North Dakota Department of Health (NDDOH) as defined in Section 110.04. An application package detailing the steps necessary to obtain the permit, all necessary forms, and the requirements which need to be met to satisfy the permit may be acquired by contacting the NDDOH at:

   North Dakota Department of Health
   Division of Water Quality
   918 East Divide Avenue
   Bismarck, ND 58501-1947

   Telephone: 701-328-5210

   The general permit, forms, and requirements contained in the package are also available on the worldwide web at:

   www.ndhealth.gov/WQ/Storm/StormWaterHome.htm

   It is mandatory that the Contractor fulfill all requirements as directed by the NDDOH. The Contractor will furnish a copy of the completed application package and, once obtained, the notice of permit coverage to the Engineer.

   If, upon written final acceptance of the Project by the Department, the Project area has not met the requirements necessary to file a Notice of Termination in accordance with Notice of

Termination Section of the Permit, the Contractor will fulfill the requirements outlined in the Transfer of Ownership or Control Section of the Permit.

2. **General Permit for Storm Water Discharges from Construction Activities (CGP).** A Project that requires the Contractor to obtain a permit from the Environmental Protection Agency (EPA), Region 8 as defined in Section 110.04. An application package detailing the steps necessary to obtain the permit, all necessary forms, and the requirements which need to be met to satisfy the permit may be acquired by contacting the EPA, Region 8 at:

   Region 8 Storm Water Coordinator
   U.S. Environmental Protection Agency, (80C-EISC)
   1595 Wynkoop Street
   Denver, CO 80202-21129

   Telephone: 1-800-227-8917 ext. 6082

   The forms and requirements outlined in the package are also available on the worldwide web at:

   www.epa.gov/region8/water/stormwater/construction.html#applying

   It is mandatory that the Contractor fulfill all requirements as directed by the EPA, Region 8. The Contractor will furnish a copy of the completed application package and, once obtained, the notice of permit coverage to the Engineer.

If, upon written final acceptance of the project by the Department, the Project area has not met the requirements necessary to file a NOT in accordance with Section V.5, “Termination of Coverage” of the Permit, the contractor will fulfill the requirements outlined in Section VI.3, “Reporting Requirements – Permit Transfers” of the Permit.

107.04 ENVIRONMENTAL PROTECTION AND CULTURAL RESOURCE PRESERVATION RESPONSIBILITIES **PAGE 56** **10/16/09**

Delete Section 107.04 in its entirety and insert the following:

A. General

Department-Owned/Optioned Areas, or Contractor-Optioned Areas includes but is not limited to material source locations (aggregate, borrow, rip-rap), haul roads/cartways, stockpile locations, plant sites, processing and staging areas, and waste sites. Cultural and Environmental reviews will be conducted and upon satisfactory completion a Certificate of Approval (COA) will be issued and posted to the website. All conditions listed on the COA for an area must be followed.

1. **Department-Owned or Optioned Areas.** Department-Owned or Optioned Areas are defined as any location, identified in the plans, which may be utilized by the Contractor. All COA’s will be posted to the website and included in the bidder’s proposal unless otherwise stated in the plans. COA’s do not need to be reprinted at the time of construction for an area that is included in the plans or bidders proposal.

2. **Contractor-Optioned Areas.** Contractor-Optioned Areas are defined as any location, not identified in the plans, which may be utilized by the Contractor. Prior to utilizing a Contractor-Optioned Area, the Contractor shall provide the Engineer with a COA for each Contractor-Optioned Area.

a. COA for all approved locations can be found at http://www.dot.nd.gov/. A COA will state the current year of approval.

b. If a site has not been previously approved the Contractor shall submit, at least 30 days prior to utilizing a site, a completed SFN 58466 and map that clearly identifies all proposed Contractor-Optioned Areas. Requests shall be submitted electronically at materialsource@nd.gov or mailed to the Department's Environmental and Transportation Services Division for review. Upon completion of the review process the Contractor will be notified of the findings from the Department. If any additional information is required, the Contractor-Optioned Areas may not be utilized until a COA has been issued by the Department. The completion of the review process may take longer than 30 days; surveys cannot be completed during adverse weather conditions or poor visibility and may require consultation with resource agencies.

B. Material Source Approval Process. The Contractor is responsible for all costs associated with Section 106 (NHPA) compliance, including Class III cultural resource inventory, testing, and data recovery for Contractor Optioned Areas. The Contractor will not receive payments or compensation for delays resulting from the Department review. Discoveries will be handled in accordance to Section 107.04.D.

If cultural resource work is recommended for a proposed Department-Owned/Optioned and/or Contractor-Optioned Area that is located on Indian Trust (allotted) lands, an Archaeological Resources Protection Act (ARPA) permit must be obtained from the Bureau of Indian Affairs (BIA) prior to this work beginning. The Contractor shall obtain written permission from the property owners and the tribe before the BIA will issue the ARPA permit. The Department will not be responsible for, nor participate in, costs that are incurred or claimed by the Contractor resulting from delays or other inconvenience encountered in obtaining the permit.

The Department's review and subsequent independent completion of the Section 106 (NHPA) process will not relieve the Contractor of the responsibility of complying with all Federal and State laws and regulations which govern the discovery of human remains and the salvage and preservation of cultural resources that are discovered during material source operations.

C. Out of State Sources. If the Contractor-Optioned Area is located out of state, the Contractor must provide the Department documentation showing the Contractor-Optioned Area is available for use according to each state's review process when submitting the Contractor-Optioned Area for approval. The Contractor-Optioned Area may not be utilized until a COA has been issued by the Department.

D. Discoveries. When the Contractor is operating within the Right of Way, easement areas, or within Department-Owned/Optioned and/or Contractor-Optioned Area and encounters a threatened or endangered species at the project site, work at that location shall be temporarily discontinued. The Contractor shall report the sighting immediately to the Engineer and shall not resume work until the Department obtains clearance from the U.S. Fish and Wildlife Service and approval to proceed is provided in writing from the Department.

If the Contractor encounters prehistoric dwelling sites, human remains, or concentrated historic or prehistoric artifacts, work at that location shall be temporarily discontinued. The Contractor shall inform the Engineer immediately of the discovery and shall protect the discovery area from further disturbance until directed otherwise by the Engineer. The Contractor shall not resume work in the vicinity of the discovery until approval to proceed is provided in writing from the Department.

If cultural resources are discovered, procedures identified in 36 CFR 800.13 will be followed. If the discovery includes human remains, the procedures in North Dakota Administrative Rule 40-02

in accordance with State Law 23-06-27, or 43 CFR Part 10 in accordance with Public Law 101601 will be followed, as applicable and defined in each.

In both instances, should the contractor fail to notify the Engineer within 24 hours of the sighting or discovery, the Contractor shall be liable for all standby costs, all damage incurred, and all costs associated with the preservation and protection of the species pursuant to the resource and regulatory agencies guidance or with salvage and preservation activities that may result from the discovery. In addition, the Contractor is liable to the Department for any violation penalties because of the failure to comply with Federal and State laws.

E. **Reporting.** The Contractor is responsible for complying with all reporting requirements contained in the regulatory permit(s). Documentation of all reporting pursuant to the conditions of the permit(s) shall be submitted to the Engineer.

107.05 B HAUL ROADS **PAGE 61** **4/17/09**

In last sentence of the third paragraph in Section 107.05 B.1 delete the first repeated word “the” in its entirety.

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107 LEGAL RELATIONS AND RESPONSIBILITIES **PAGE 69** **2/20/09**

Insert the following Section after Section 107.10:

107.11 HIGH VISIBILITY CLOTHING

When not enclosed in a truck or equipment cab all workers within the Right of Way must wear retro reflective clothing that meets the most current ANSI/ISEA 107 Performance Class 2 or Class 3 requirements.

Retro reflective clothing shall the outermost garment worn, in a clean condition, and closed in both front and rear. Open vests will not be allowed. Retro reflective clothing shall be replaced as necessary to maintain visibility and reflectivity.

108.01 B PROGRESS SCHEDULE **PAGE 70** **5/20/11**

Delete Section 108.01 B in its entirety and insert the following:

B. **Progress Schedule.** The Contractor shall provide sufficient materials, equipment, and labor to guarantee completion within the time established in the Contract. The Contractor shall submit a detailed progress schedule to the Engineer at least ten calendar days prior to the preconstruction conference. The progress schedule shall be used to establish the critical construction operations and to monitor progress of the work.

Unless the Contract requires a CPM Schedule, the Contractor shall provide a progress schedule in the form of a time-scaled bar chart and narrative meeting the following minimum requirements:

1. Define activities that describe the essential features of the work, activities that might delay Contract completion, activities related to procurement of significant materials and equipment, and other critical activities.

2. The planned start and completion dates for each activity, the duration of each activity, and the sequencing of all activities.

3. Dates related to the submission of shop drawings, plans and other data specified for review or approval by the Department.

4. Dates related to utility adjustments and other third party activities.

5. Number of work days planned per week, the number of hours planned per work day, major equipment planned, and planned activity production rates per work day.

The Contractor shall submit an updated progress schedule once every month. At a minimum, updates will include the actual start and finish of each activity, percentage complete, and remaining durations of activities started but not yet completed. Additional updates may be required when critical activities fall behind schedule more than 14 calendar days or when requested by the Engineer.

No work shall be started until the progress schedule is acceptable to the Engineer. The Engineer will accept or reject the progress schedule based solely on completeness. Acceptance of the progress schedule does not modify the Contract or constitute endorsement or validation by the Engineer of the Contractor's logic, activity durations, or assumptions in creating the schedule. Failure to provide a progress chart may result in withholding Contract payments until a progress chart or required updates to the progress have been submitted.

108.01 C CRITICAL PATH METHOD (CPM) SCHEDULE **PAGE 70** **10/16/09 2/19/10 3/26/10 10/01/13**

Delete Section 108.01 C in its entirety and insert the following:

C. **Critical Path Method (CPM) Schedule.** When specified, and within the required time frames, a Critical Path Method (CPM) schedule in the specified form shall be submitted. The schedule will be used for coordination, monitoring, and payment of all work under the Contract including all activity of Subcontractors, vendors, and suppliers.

1. The construction of this Project will be planned and recorded with a conventional (CPM) schedule in the form of an activity on arrow diagram or an activity on node diagram. The Contractor shall use CPM scheduling software that is compatible with Microsoft Project. This schedule shall be prepared by the Contractor to develop a sequential order of work activities and to determine how rapidly these activities should be prosecuted in order for the Contractor to complete the Project on time. The owner's review and acceptance of the Contractor's Project Schedule is for conformance to the requirements of the Contract documents only. Review and acceptance by the owner of the Contractor's Project Schedule does not relieve the Contractor of any of its responsibility whatsoever for the accuracy or feasibility of the Project Schedule, or of the Contractor's ability to meet the interim project milestone dates and the Contract completion date, nor does such review and acceptance expressly or impliedly warrant, acknowledge or admit the reasonableness of the logic, durations, manpower, or equipment loading of the Contractor's schedule.

2. Within 15 calendar days after start of work, the Contractor shall submit a CPM schedule for the entire project that meets all requirements set forth in paragraph 3 below. The construction time for the entire Project or any milestone, shall not exceed the specified Contract time.

   Milestone date or Contract completion date shall not be exceeded in the initial CPM schedule, logic, and/or time estimates.

   If a CPM schedule is required to be resubmitted, the Contractor shall resubmit the CPM schedule within 5 calendar days.

3. **CPM Schedule Requirements:** The CPM schedule shall be in the form of an activity on arrow diagram, an activity on node diagram, or approved equal. All diagrams shall include; activity nodes, activity descriptions, activity durations, activity start and finish dates, and float. The diagram shall show the sequence and interdependence of all activities required for complete performance of all items of work under this Contract, including work drawing submittal and approvals and fabrication and delivery activities. All relationships shall be finish to start, finish to finish, start to finish, or start to start. All network “dummies” are to be shown on the diagram. Only one critical path shall be shown on the diagram.

   No activity duration shall be longer than 15 working days without the Engineer’s approval. The Engineer reserves the right to limit the number of activities on the CPM schedule.

   The activities are to be described so that the work is readily identifiable and the progress of each activity can be readily measured. For each activity, the Contractor shall identify the entity performing the work, the duration of the activity in working days, the manpower involved, the equipment involved, and the location of the work.

   Any diagram submitted by the Contractor shall be electronically created. The network must be legible and self explanatory. Network diagrams will be on appropriate sized sheets of paper clearly showing all diagram details.

   The initial CPM schedule, resubmittals, and all updates, the Contractor shall provide the following:

   a. Sorts by:

      (1) I-J (Beginning & Ending node no.) or Activity ID

      (2) Total Float

      (3) Early Start

   b. A narrative including the following:

      (1) The progress to date on the Project.

      (2) A description of each active critical path activity which includes the following:

         (a) Time expired of the activity duration.

         (b) An estimate of percent complete.

         (c) The method by which an activity that is behind schedule will be returned to the original schedule. The method shall be in terms of construction method, equipment, manpower, or hours.

      (3) A description of the work required up to the next update.

      (4) Any inputs that differ from the original CPM schedule such as: the work days per week, holidays, number of shifts per day, number of hours per shift, and major equipment used.

      (5) Detail explanation of all changes to the CPM schedule.

   c. Three copies of each of the above.

d. An electronic copy of the schedule file on a standard compact disc.

4. **Schedule Updates:** An updated CPM schedule shall be submitted every 14 calendar days from the date the initial CPM is due or from the date any work activity begins on the project, whichever is later. Job site progress meetings will be held every week by the Contractor and the Engineer for the purpose of reviewing the CPM schedule. Progress will be reviewed to verify the dates activities were completed, remaining duration of uncompleted activities, and any proposed logic and/or time estimate revisions.

   The Contractor shall revise CPM diagrams for any one of the following:

   a. Delay in completion of any critical activity.

   b. Actual prosecution of the work which is different than that represented on the schedule.

   c. The addition, deletion, or revision of activities.

   The CPM revision shall be due within two weeks of any of the above such occurrences.

   A Contract modification or delay may result in absorbing a part of the available total float that may exist within an activity chain on the network, thereby not causing any effect on any interim milestone date or the Contract Completion Time.

   It is understood by the Engineer and the Contractor that float is a shared commodity. Total float is defined as the amount of time between the early start date and the late start date, or the early finish date and the late finish date, for each and every activity in the schedule. Float is not for the exclusive use or benefit of either the owner or the Contractor. Extensions of time to interim milestone dates or the Contract Completion Time under the Contract will be granted only to the extent that the equitable time adjustments to the activity or activities affected by the Contract modification or delay exceeds the total float of the affected activity or subsequent paths and extends any interim milestone date of the Contract Completion Time.

   Activity delays shall not automatically mean that an extension of the Contract Completion Time is warranted or due the Contractor. A Contract modification or delay may not affect existing critical activities or cause non-critical activities to become critical.

   The principles involved and terms used in this Section are as set forth in the Associated General Contractors of America publications, “The Use of CPM in Construction, A Manual for General Contractors and the Construction Industry,” latest edition, and “Construction Planning and Scheduling,” latest edition.

5. **Method of Measurement:** The unit of measure for the CPM schedule, including all required revisions, shall be “Lump Sum.”

6. **Basis of Payment:** Payment will be made at the Contract Unit Price for the following:

Pay Item	**Pay Unit**
Critical Path Method Schedule	Lump Sum

   The Contractor will receive 20 percent of the Lump Sum price bid when the initial CPM schedule is accepted as meeting the requirements of this specification, and will receive prorated payments for the remainder of the bid price, based on the number of bimonthly payments anticipated during the Contract. The prorated payments may be adjusted to compensate for any approved adjustments to the completion date.

Failure to submit a CPM schedule that meets the Contract requirements within 60 days after the Contract execution will result in withholding all or any part of the Contract payments until the CPM schedule is finalized.

Failure to submit a CPM schedule update to the Engineer within two calendar days of its due date, will result in a Contract Unit Price Adjustment. The adjustment will be a 10 percent deduct of the CPM Schedule bid item for each update that is late. Failure to submit a revised CPM schedule as specified may also result in withholding all future Contract payments until the revised schedule is submitted. The revisions shall include all activities.

Payment will be full compensation for the CPM schedule, diagrams, updates, and progress meetings as necessary to complete the work.

108.04 G REQUEST FOR ADDITIONAL TIME **PAGE 75** **7/17/09**

In Section 108.04 G in the fifth sentence delete the duplicate word “the” in its entirety.

108.04 J FAILURE TO COMPLETE ON TIME **PAGE 76** **10/16/09**
10/19/12

In Section 108.04 J delete the Schedule of Liquidated Damages Table following the first paragraph in its entirety and insert the following:

Original Contract			**Amount Liquidated Damages**	
Over - To & Including			Calendar Day	Working Day
$0	-	$100,000	$350	$400
$100,000	-	$250,000	$700	$800
$250,000	-	$500,000	$900	$1,100
$500,000	-	$1,000,000	$1,100	$1,400
$1,000,000	-	$3,000,000	$1,500	$1,900
$3,000,000	-	$5,000,000	$1,900	$2,300
$5,000,000	-	$8,000,000	$2,200	$2,800
$8,000,000	-	$12,000,000	$2,500	$3,300
$12,000,000	-	$18,000,000	$3,000	$3,800
$18,000,000	-	Up	$3,500	$4,400

109.01 MEASUREMENT OF QUANTITIES **PAGE 79** **10/15/10**

Delete Section 109.01 M in its entirety and insert the following**:**

M. Payment for equipment rental will be made according to rates and instructions listed in Section 109.04.

109.04 C EQUIPMENT **PAGE 83** **10/15/10**

Delete Section 109.04 C in its entirety and insert the following**:**

C. **Equipment.** Payment for use of authorized equipment and additional traffic control devices required by the Force Account work will be based on rental rates determined according to the "Rental Rate Blue Book" published by the Equipment Watch section of Penton Media, Inc. Rates will be determined using this method for both rented equipment and owner operated equipment. Rates determined shall be agreed to the in writing on the standard agreement form furnished by the Department. No percentage will be added to these rates. The equipment rental rates will be calculated as follows:

$$\text{Hourly Equipment Rental Rate} = \frac{\text{Monthly Ownership Costs} \times \text{Regional Adjustment Factors}}{176} + \text{Operating Costs}$$

1. Attachments and Accessories. Except as otherwise noted in the "Rental Rate Blue Book", no additional payment (over the rate established for the basic machine) will be allowed for power control units, accessories required to comply with OSHA regulations, and other attachments or accessories required for normal operation of the equipment.

2. Equipment may be ordered to stand-by for the convenience of the State. Payment for approved stand-by time will be made at the rate of 50 percent of the ownership costs, not to exceed 8 hours per day nor 40 hours per week.

3. When equipment is required for Force Account work is not available at the site, "move-in" and "move-out" charges will be allowed for the cost of delivering the equipment to the site if the work and returning it to its original location, subject to the following provisions:

    a. The original location of the equipment shall be agreed to by the Engineer in advance of "move-in". If the Contractor elects to keep the equipment on the project for use other than the Force Account work, no "move-out" charges will be allowed. If the Contractor elects to return the equipment to a site other than the original location, actual "move-out" charges are allowed, but not to exceed "move-in" costs.

    b. Transportation charges for equipment hauled by the Contractor will generally be based on the established hourly rates for the transporting equipment and labor, but not to exceed the cost for which the equipment can be transported by established haulers. If an established hauler is used to mobilize equipment, payment will be made on invoice. During transport, a rental rate not exceeding 50 percent of the Ownership costs as determined from the Blue Book, will be allowed on the equipment being transported. Transportation charges will include loading and unloading.

    c. If the operator of the equipment is moved onto the project with the equipment and is on the project only for the duration of the Force Account work, the operator's salary for mobilization will be included in the Force Account payment upon proof of payment by the Contractor.

109.05 PARTIAL PAYMENT. **PAGE 84** **2/20/09**

In Section 109.05 A delete the third paragraph in its entirety and insert the following:

109.05 A PARTIAL PAYMENT.

From the total amounts payable, 2 percent of the whole will be deducted and retained by the Department. The balance of 98 percent, less all previous payments, will be certified for payment. Once 2 percent of the total Contract price is retained, the balance of total amounts payable less all previous payments and retainage will be certified for payment.

110.04 STORM WATER PERMITS. **PAGE 89** **11/20/09**

Delete Section 110.04 in its entirety and insert the following:

Any project with a contiguous area of disturbance of one acre or more requires a NDPDES construction permit or a CGP on Tribal Land. Projects that have multiple individual sites of activity will require a permit, if the sum of the combined individual sites has an area of disturbance of one acre or more.

The Contractor of each new project, meeting the criteria above, shall be required to obtain the appropriate stormwater general permit coverage from either the NDDOH, EPA, or both by completing the permit coverage application process. The NDDOH and the Department have developed a Memorandum of Agreement outlining procedures for NDPDES construction permits as they relate to Department projects. A copy of the MOA can be found at http://www.ndhealth.gov/WQ/Storm/Construction/ConstructionHome.htm.

All procedures outlined in the EPA's CGP must be followed as defined by the EPA CGP.

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151 GENERAL EQUIPMENT **PAGE 99** **10/21/11**

Insert the following in Section 151:

151.09 MICRO SURFACING AND SLURRY SEAL EQUIPMENT.

A. Mixing Equipment. The equipment shall be self-propelled and specifically designed and manufactured to lay Micro Surfacing or Slurry Seal Coat. The mixing machine shall be a continuous flow unit able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral and field control additives, and water to a revolving multi-blade twin shafted mixer and discharge the mixed product on a continuous flow basis. The machine shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral and field control additives, and water to maintain an adequate supply to the proportioning controls. The machine may be equipped with self-loading devices which provide for the loading of materials while continuing to lay Micro Surfacing or Slurry Seal Coat.

B. Proportioning Devices. Individual volume or weight controls for proportioning each material to be added to the mix shall be provided and properly marked.

C. Emulsion Pumps. The emulsion pump shall be a heated positive displacement type.

D. Spreading Equipment. A mechanical type spreader box shall be attached to the mixer. The spreader box shall be equipped with paddles to agitate and spread the materials throughout the box. The surfacing mixture shall be spread uniformly by the spreader box. A front seal shall be provided to ensure no loss of the mixture at the road contact point. The rear seal shall act as final strike off and shall be adjustable. The spreader box and rear seal shall be designed and operated to achieve a uniform consistency and to produce a free flow of material to the rear seal. The spreader box shall have suitable means provided to side shift the box to compensate for variations in pavement width and longitudinal alignment. The spreader box shall also be hinged near the center to compensate for a quarter crown.

E. Rut box. A Rut Box shall be used only for Micro Surfacing. A Rut Box shall be available to pre-fill wheel ruts, when necessary, prior to overlay. The box shall be commercially designed and manufactured with hydraulically adjusted strike off screeds to attain maximum grade and profile. The Rut Box shall be five feet in width and capable of an inverted or regular crown.

151.07 SCALES **PAGE 104** **10/19/12**
11/01/12

Delete Section 151.07 in its entirety and insert the following:

151.07 Scales

A. General.

Materials measured and paid for by weight shall be weighed on a certified scale. The Contractor shall provide a person to operate the scale, issue weigh tickets, perform scale verifications, and prepare tare weight reports and daily haul summaries.

The Contractor is responsible for meeting legal load limits. Scales shall:

1. Be certified by a scale service company registered with the North Dakota Public Service Commission. The certification must have been performed within 9 months prior to use on the project.
2. Be accurate to within 1.0 percent of the true weight of the applied load throughout the range of use.

B. Scale Applications.

1. **Computerized Scales**.
   - **a.** Shall be equipped with a digital readout and computer capable of producing weigh tickets and daily haul summaries.
   - **b.** Shall be used to determine the weight of a material when the estimated quantity of the pay item is more than 2,000 tons.

2. **Computerized Loader Bucket Scales.**
   - **a.** Shall be equipped with an onboard computer capable of producing weigh tickets.
   - **b.** May be used to weigh materials with estimated quantities in excess of 2,000 tons, but shall not be used to weigh materials when the estimated quantity of a pay item is over 10,000 tons.
   - **c.** May be used to weigh aggregates specified under Sections 420, 421, and 422 regardless of quantity.

Computerized or non-computerized scales may be used to weigh materials when the estimated quantity is less than 2,000 tons.

C. Types of Scales.

1. **Platform Scales.**

   Platform Scales shall be equipped with a platform of sufficient length to allow all axles of the longest truck or truck-trailer combination used on the project to be weighed simultaneously.

   The Contractor shall determine the daily tare weight of each truck before it hauls its first load. Trucks shall be fully fueled when determining the tare weight.
   Platform Scales shall be verified before first use and any time the scale is recertified by performing the Zero Load Test, the Comparison Test, the Sensitivity Test, and the Shift Test.

2. **Hopper or Batch Scale.**

   Hopper or Batch scales shall use a load cell or cells.

   Hopper or Batch scales shall be verified before first use and any time the scale is recertified by performing the Zero Load Test, the Comparison Test, and the Sensitivity Test.

3. **Computerized Loader Bucket Scale.**

   Loader Bucket Scales shall be verified by performing the Comparison Test before first use and any time the scale is recertified.

D. Verification Tests.

The Engineer shall verify the scale's accuracy by observing the Contractor check the scale using the applicable verification tests before its first use and as necessary. If the scale is not within the required tolerance the scale shall be recertified by a registered scale service company and must be verified before it will be allowed to be used on the project.

Scale verification may be waived by the Engineer if the proposal quantity of a material multiplied by the unit bid price has a value less than $10,000.00.

1. Zero Load Test.

When no load is on the scale the scale shall be adjusted to balance or to read zero.

2. Comparison Test.

a. Platform Scales.

The comparison test can be performed by one of the following methods:

i. The Engineer will randomly select a loaded truck weighed on the project scale. The Contractor shall weigh the randomly selected truck on an independent certified scale operated by another contractor or business.

ii. A piece of equipment that has been certified as to weight shall be weighed on the project scale. The piece of equipment shall weigh at least 60 percent of the maximum weight which will be applied to the scale during the Project. The certification shall consist of an affidavit affirming the true weight of the piece of equipment. The piece of equipment shall be clean of mud and dirt and shall be fully refueled each time it is used for the weight comparison. Recertification shall be required when any changes, such as wheel weights and ballast are made that will affect the certified weight.

When a certified weight is used to make comparison tests, loaded truck weight comparisons shall be made on an independent certified scale for the first two days and once a month thereafter.

b. Hopper or Batch Scales

Perform the test by comparing the weight of the material in the hopper and the weight of the material after it has been weighed on an independent certified scale operated by another contractor or business.

c. Computerized Loader Bucket Scales.

At the beginning of the first day of production, the Contractor shall perform a comparison test by one of the following methods:

i. The Contractor shall weigh the load placed in a truck and compare the weight of the same load on an independent certified scale. Load the trucks using the loader scale in dynamic mode. The loading area shall be level. Operation of the loader scale shall be as recommended by the manufacturer.

ii. A certified weighted object. The Contractor shall weigh the certified weighted object and compare its weight to the loader bucket scale readout. The weighted object shall weigh at least 60 percent of the capacity of the loader bucket. The Contractor shall have the weighted object certified by a certified scale service. The weighted object shall have a plate showing the certified weight welded to it. The weighted object shall be clean of mud and dirt. Recertification of the object will be required when any changes are made that will affect the certified weight or at the Engineers request.

The difference between the weight determined by the scale and the independent scale or certified weight shall be 1.0 percent or less.

3. Sensitivity Test.
A sensitivity test shall be made by weighing a representative load, then adding 100 pounds of test weights. If the scale is not sensitive to the added weight, the scale shall not be used on the project until it has been repaired.

4. Shift Test (Platform Scales only).
The performance of the scale with off-center loading shall be checked by comparing the results obtained by weighing a loaded truck with the:

a. Rear wheels at the extreme end of the scale platform;
b. Position of the truck is then reversed with the rear wheels at the extreme opposite end of the platform; and
c. Truck is centered on the scale platform.

Recertify the scale if the results of any two positions differ by more than 0.2 percent from one another.

E. Random Comparison Tests
Once production begins Random Comparison Tests shall be conducted at the frequency specified to demonstrate the continued accuracy of the scale. If a comparison test reveals a scale is out of tolerance, use of the scale shall be discontinued until the scale is repaired and has been recertified by a registered scale service.

The Engineer may require the scale to be checked for accuracy at any time by the method he chooses.

1. Platform Scales
The truck and material weight shall be checked by performing a comparison test according to Section D.2.a of this provision.

One test shall be conducted for each 5,000 tons weighed except when more than 5,000 tons are weighed in a day. When more than 5,000 tons is weighed in a day one test will be required for that day's production.

2. Batch and Hopper Scales
The truck and material weight shall be checked by performing a comparison test according to Section D.2.b of this provision.

One test shall be conducted for each 5,000 tons weighed except when more than 5,000 tons are weighed in a day. When more than 5,000 tons is weighed in a day one test will be required for that day's production.

3. Computerized Loader Bucket Scales
The truck and material weight shall be checked by performing a comparison test according to Section D.2.c of this provision.

A daily comparison test of the loader bucket scale shall be conducted by the Contractor. The Contractor shall record the results of the test and provide a signed copy to the Engineer for each scale used. The Engineer may prohibit use of loader bucket scales if two consecutive tests fail.

F. Documentation

1. **General.**
   a. **Computerized Scales.**
      Computer generated weigh tickets shall be produced. Computer generated daily haul summaries shall be produced using the same computer, software, and data that produced the individual weigh tickets. Haul summaries shall be submitted to the Engineer.

      Notify the Engineer if the computer or printer malfunctions. If this occurs non- computerized weighing and recording will be permitted, but will not be allowed for more than 2 consecutive work days.

   b. **Computerized Loader Bucket Scales.**
      Weigh tickets shall be generated by the onboard computer and printer of the loader bucket scale. Daily haul summaries may be produced by hand or computer generated spreadsheet.

   c. **Non-Computerized Scales.**
      When non-computerized scales are used, a scale person shall generate the weigh tickets. Daily haul summaries may be produced by hand or computer generated spreadsheet.

2. **Trucks and Weigh Tickets**
   The Contractor shall produce a minimum of two copies of each ticket with a maximum size of 5½ × 8½ inches. All copies of the tickets produced shall be legible.

   The weight of each load shall be documented on a separate, sequentially numbered weigh ticket. One copy of the ticket shall be provided to the truck driver. The truck driver shall deliver the weigh ticket in legible condition to the Engineer at the location where the material is incorporated into the work. Loads without a legible ticket will be rejected.

   Each truck to be weighed must have a unique identification number. This number must be legible and in plain view of the scale operator. Each truck driver must obtain a weigh ticket from the scale operator. At a minimum, all tickets must contain the following information:

   a. Ticket Number
   b. NDDOT project number or NDDOT Project Control Number (PCN)
   c. Delivery date
   d. Contractor and Subcontractor if applicable
   e. Time of weighing
   f. Identification number of truck
   g. Material type identified by pay item name
   h. Unit of measure
   i. Weight delivered:
      1. Net weight for batch, hopper, and loader bucket scales
      2. Gross weight, tare weight and net weight for platform scales
   j. Scale person's signature for manually produced tickets

3. **Daily Haul Summaries.**
   Each material shall have a haul summary which includes the following:

   a. NDDOT project number or NDDOT PCN (whichever is used on the weigh tickets)
   b. Delivery date
   c. Contractor and Subcontractor if applicable
   d. Pit location and owner
   e. Identification number of truck

f. Each load's net weight and ticket number, with justification for out of sequence numbers
g. Material type identified by pay item name
h. Total weight of material delivered to the project
i. Weight of material voided for the day
j. Weight of the day's production
k. A signed statement from the Contractor attesting to the accuracy and completeness of the facts represented. A signed statement from a subcontractor or supplier attesting to the accuracy and completeness of the facts represented is required if they operate the scales. The following language shall be included: "I certify the Daily Haul Summary is true, accurate, and complete."
l. Blank for the Engineer's signature. The following language shall be included: "I certify the Daily Haul Summary has been reviewed, corrected as necessary, and approved."
m. Place for remarks

G. Basis of Payment

If a comparison test reveals a scale is overweighing, the payment for all material weighed since the last accepted test under Section E of this provision shall be adjusted. The Engineer will calculate the weight of all materials weighed after the last test showing accurate results. This weight will be reduced for payment by the percentage of scale error that exceeds 1.0 percent. The Contractor shall not be compensated for any loss from underweighing.

The Department will pay for materials on the basis of daily haul summaries produced by the Contractor and approved by the Engineer. Payment will be based on individual weigh tickets when daily haul summaries are not generated using the same computer, software, and data.

All costs to perform the work will be included in the bid price for the item being weighed.

153.06 ROADBED PLANERS **PAGE 120** **10/01/13**

Delete the last sentence in the second paragraph in Section 153.06 beginning with "The Equipment shall…" in its entirety.

153.07 CONCRETE SPREADERS **PAGE 120** **10/01/13**

Insert the following sentence at the end of Section 153.07**:**

The spreader shall be independent of the paver.

202.02 E REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ECT. **PAGE 134** **2/18/11 3/18/11**

After the second paragraph in Section 202.02 E insert the following paragraph:

The reinforcing steel removed from the existing concrete pavement shall become the property of the Contractor. The Contractor shall not be permitted to stockpile the reinforcing steel on the highway Right of Way.

After the last sentence of fourth paragraph in Section 202.02 E insert the following sentence, “When no bid items are included, the removal of manholes and inlets shall not be paid for separately but shall be included in the price bid for installation of manholes and inlets.”

202.03 METHOD OF MEASUREMENT **PAGE 135** **3/18/11**

After the second paragraph in Section 202.03 insert the following paragraph:

The reinforcing steel will be included in the total weight when concrete pavement is paid for by the ton.

202.03 METHOD OF MEASUREMENT **PAGE 135** **1/1/12**

In Section 202.03, insert the following paragraph after the first paragraph:

> Removal of pipes will be measured by the Linear Foot along the top of the pipe. Flared end sections will not be measured separately but will be considered as part of the pipe. Each conduit will be measured to the nearest foot.

202.04 BASIS OF PAYMENT **PAGE 135** **1/1/12**

In Section 202.04 following the pay item “Removal & Salvage of _____Surfacing” insert the following pay item and pay unit:

Pay Item	**Pay Unit**
Removal of Culvert, All Types and Sizes	Linear Foot
Removal of Pipe, All Types and Sizes	Linear Foot

Insert the following at the end of Section 202.04:

> Flared end sections will not be paid for separately but will be considered as part of the pipe or culvert.

203.02 CONSTRUCTION REQUIREMENTS **PAGE 137** **2/19/10**

Insert the following Sections following Section 203.02 I:

J. **Guardrail Embankment, Type C.** Topsoil for excavation and embankment areas shall be in accordance to Section 203.02 B. Embankment material shall be in accordance with Section 203.02 I. Seed mixture shall be Class II and Class VI. Seeding and mulching shall be in accordance with Section 708.02. Existing drainage shall be maintained.

K. Slope Reconstruction. Topsoil for excavation and embankment areas shall be in accordance to Section 203.02 B. Embankment material shall be in accordance with Section 203.02 I. Seed mixture shall be Class II and Class VI. Seeding and mulching shall be in accordance with Section 708.02.

1. **Approach Inslope Reconstruction**. Approach inslope reconstruction with a slope steeper than 6:1 shall be flattened to an 8:1 slope.
2. **Ditch Block Slopes.** Ditch Block slopes with a slope steeper than 8:1 shall be flattened to an 10:1 slope.

Delete the title of the following Section 203.02 J in its entirety and insert the following:

L. Haul.

Delete the title of the following Section 203.02 K in its entirety and insert the following:

M. Finishing.

Delete the title of the following Section 203.02 L in its entirety and insert the following:

N. Provision for Traffic Maintenance.

203.02 C SUBCUT **PAGE 138** **2/18/11**

In the second paragraph in Section 203.02 C after the first sentence insert the following sentence, “The bottom of the subcut shall not be scarified”.

203.02 E.1 GENERAL **PAGE 139** **7/1/12**

After the second paragraph in Section 203.02 E.1 insert the following paragraph:

The Contractor shall place the borrow material in the embankment locations as specified in Section 203.02 F. The Contractor shall compact the borrow material in the embankment locations as specified in Section 203.02 G.

203.02 E.3 CONTRACTOR-FURNISHED BORROW **PAGE 141** **1/1/12**

Delete the third paragraph in Section 203.02 E.3 in its entirety and insert the following:

> After the borrow area has been restored to satisfactory condition, the Contractor shall obtain a release and receipt of payment from the landowner and furnish copies to the Department.
>
> All costs for borrow furnished by the Contractor shall include but not restricted to, royalty payments, removal and replacement of topsoil, erosion control, reshaping and scarifying, obliterating cartways, crop damage, seeding, and any overhaul shall be included in the price bid for “Borrow Excavation”.

203.02 G CONSTRUCTION OF EMBANKMENT AND TREATMENT OF CUT AREAS WITH COMPACTION CONTROL, TYPE A. **PAGE 142** **10/17/08 2/20/09**

In Section 203.02 G delete the second paragraph in its entirety and insert the following:

AASHTO T 180 shall be used for all density testing, unless specified in the plans.

In the first sentence of the third paragraph, after the phrase “determined using AASHTO T 99,” insert the following “as specified on the plans,”

203.03 METHOD OF MEASUREMENT **PAGE 144** **2/19/10**

Insert the following Section:

J. Slope Reconstruction. Approach inslopes and ditch block slopes will be measured as a unit for each inslope that is flattened.

Delete the title of the following Section 203.03 J in its entirety and insert the following:

K. Urban Project Provision.

Delete the title of the following Section 203.03 K in its entirety and insert the following:

L. Seeding.

203.02 L PROVISION FOR TRAFFIC MAINTENANCE **PAGE 144** **10/15/10**

In Section 203.02 L insert the paragraph “The Contractor shall salvage and reuse traffic service gravel.” after the first paragraph.

203.03 I GUARDRAIL EMBANKMENT, TYPE C. **PAGE 146** **3/26/10**

Delete Section 203.03 I in its entirety and insert the following:

I. **Guardrail Embankment, Type C.** Guardrail Embankment, Type C will be measured as a unit at each location, complete and in place. The cost for benching the embankment, and stripping, stockpiling, replacing, and seeding the topsoil shall be included in the price bid for "Guardrail embankment - Type C.

203.04 BASIS OF PAYMENT **PAGE 147** **2/19/10**

Insert the following after “Guardrail Embankment, Type C” in the Payment table:

Pay Item	**Pay Unit**
Approach Inslope Reconstruction	Each
Ditch Block Slopes	Each

203.04 BASIS OF PAYMENT **PAGE 147** **10/17/08**

Delete the phrase “(1,000 Gallons)” after M Gal in the “Pay Unit” Column

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216.05 METHOD OF MEASUREMENT **PAGE 151** **10/17/08**

In the first sentence delete the phrase “(1,000 Gallons)” after M Gal.

234.06 BASIS OF PAYMENT **PAGE 158** **10/17/08**

Delete the phrase M Gallons in the “Pay Unit” Column and insert M Gal.

302.02 B ACCEPTANCE **PAGE 163** **10/16/09**

In Section 302.02 B.1 delete the title in its entirety and insert the following title “Aggregate Base and Salvage Base”.

302.04 C DEPOSITING AND LAYDOWN **PAGE 163** **03/01/13**

Insert the following at the end of Section 302.04 C:

The Contractor shall uniformly mix the aggregate placed in windrows before spreading.

302.04 D COMPACTION **PAGE 164** **5/20/11**

In Section 302.04 D delete the sentence “If geotextile fabric is specified, Section 709 will govern compaction requirements.” and insert the following, “If geotextile fabric is specified, Section 709 will govern compaction requirements for the first lift above the fabric.”

302.06 BASIS OF PAYMENT **PAGE 165** **10/17/08**

Delete the parenthesis around M Gal.

304.06 BASIS OF PAYMENT **PAGE 169** **2/20/09**

In Section 304.06 delete the phrase under Pay Unit “Ton or Cubic Yard” and insert “Square Yard”.

306.06 BASIS OF PAYMENT **PAGE 173** **10/17/08**

Delete the parenthesis around M Gal.

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400 BITUMINOUS PAVEMENT **PAGE 175** **10/21/11**
1/1/12
10/01/13

Insert the following in Section 421:

SECTION 421
MICRO SURFACING

421.01 DESCRIPTION.

Micro Surfacing is a thin overlay material which has properties based on a mixture of modified emulsified asphalt, mineral aggregate, water and additives which are proportioned, mixed and uniformly spread over a properly prepared surface.

421.02 MATERIALS.

The material shall meet the following:

Item	Section
Aggregates	816.04
Bitumen	818.03
Tack Coat	401.00

A. Modifier. Special quick-setting emulsifier agents shall be mixed into the asphalt emulsion. The emulsified asphalt shall be formulated so that a paving mixture is applied at a thickness of one inch with the relative humidity at 59% or less and the ambient air temperature at 75° F or higher,

the material shall cure sufficiently to carry rolling traffic in one hour with no damage to the surface, as verified by the Engineer.

B. Water. The water shall be potable and shall be free of harmful soluble salts.

C. Additives. A liquid field control additive is introduced and blended with water to provide effective control of the required quick-set properties. This additive shall be made available by the chemical supplier or emulsion manufacturer and certified as being compatible with the mixture.

421.03 EQUIPMENT.

The equipment shall meet the following:

Item	Section
Truck Scales	151.07
Mixing Equipment	151.09 A
Proportioning Devices	151.09 B
Emulsion Pump	151.09 C
Spreading Equipment	151.09 D
Rut Box	151.09 E

Machine Calibration. Each mixing unit to be used in performance of the work shall be calibrated in the presence of the Engineer prior to construction, or previous calibration documentation covering the exact materials to be used may be acceptable provided they were made during that calendar year. The documentation shall include the individual calibration of each material at various settings, which can be related to the machine metering devices.

421.04 CONSTRUCTION REQUIREMENTS.

A. Mix Design. Before start of work, the Contractor shall submit a mix design covering the specific material to be used on the project. This design shall be performed by a qualified laboratory. Once the materials are approved, no substitution will be permitted unless first tested and approved by the laboratory preparing the mix design.

The qualified laboratory shall develop the job mix design and present certified test results for the Contractors approval. Compatibility of the aggregate and emulsion shall be certified by the emulsion manufacturer. All component material used in the mix design shall be representative of the material proposed by the Contractor for use on the project. The mix design will meet the following:

TEST	*ISSA TEST NO.	SPECIFICATION
Mix Time @ 77°F (25°C)	TB-113	Controllable to 120 Seconds Minimum
Wet Cohesion @ 30 Minutes Minimum (Set) @ 60 Minutes Minimum (Traffic)	TB-139	 12 kg-cm Minimum 20 kg-cm or Near Spin Minimum
Wet Stripping	TB-114	Pass (90% Minimum)
Wet-Track Abrasion Loss One-hour Soak Six-day Soak	TB-100	 50 g/ft2 (538 g/m^2) Maximum 75 g/ft2 (807 g/m^2) Maximum

Lateral Displacement Specific Gravity after 1,000 Cycles of 125 lb (56.71 kg)	TB-147	5% Maximum 2.10 Maximum
Excess Asphalt by LWT Sand Adhesion	TB-109	50 g/ft^2 (538 g/m^2) Maximum
Classification Compatibility	TB-144	11 Grade Points Minimum (AAA, BAA)

* International Slurry Surfacing Association (ISSA)

The percentage of each individual material required shall be shown in the laboratory report.

The Engineer will review the design mix, all Micro Surfacing materials and methods prior to use. The component materials shall be within the following limits.

Residual Asphalt -	5% to 9% by dry weight of aggregate
Mineral Additive -	0.5% to 3% by dry weight of aggregate
Modifier -	As required to provide specified properties
Field Control Additive -	As required to provide the specified properties
Water -	As required to produce consistency

B. Stockpile. The mineral aggregate shall be stockpiled according to Section 106.06. The mineral aggregate shall be screened prior to being weighed for job site delivery.

C. Test Strip. A 1000-foot long, one lane wide test strip shall be constructed for each machine used on the project. A test section shall be done at sunrise. The machines shall be compared for variances in surface texture and appearance. The Engineer may direct any such variations to be corrected prior to production application beginning.

The emulsion shall not exceed 122° F. Construction of the test strip shall be postponed until the emulsion temperature is less than 122° F.

A new test strip shall be constructed whenever the system used in the job mix changes or there is field evidence that the system is out of control. The system includes the following: emulsion, aggregate supplier, type of mineral filler, and the lay-down machine.

In place of construction of a test strip, the Contractor may submit evidence of successful construction of a test strip on another Department project using the same mix designs. The project must have been constructed in the same construction season. The system used for the test strip must be identical to all parts of the proposed system.

Normal traffic shall be carried on the test strip within one and one-half hours after application, without any damage occurring. The Engineer will inspect the completed test strip after 12 hours of traffic to determine if the mix design is acceptable. Full production may begin after the Engineer accepts a test strip. The Engineer shall approve the location of the test strip.

D. Weather Limitations. The material shall be spread only when the road surface and atmospheric temperatures are at least 45° F and rising and the weather is not rainy and there is no forecast of temperatures below 32° F within 48 hours from the time of placement of the mixture.

E. Traffic Control. Suitable methods shall be used by the Contractor to protect the microsurface from traffic until the new surface will support traffic without damage.

The Contractor shall furnish flag persons, pilot cars, signs, and lights according to Section 704.

On two-lane, two-way traffic highways, the Contractor shall provide additional flaggers and signs at each end of the operation and at all major intersections within the operation area. These flaggers and signs will be in addition to the flaggers used with the pilot car. The flaggers will be on

the project during the application operation when a pilot car is being used. Flaggers and pilot car(s) shall not be bid separately, but shall be included in the price bid for other items.

On four-lane highways the additional flaggers will not be required.

F. Surface Preparation.

1. **General.** The area to be surfaced shall be thoroughly cleaned of vegetation, loose aggregate and soil, particularly soil that is bound to the surface. Manholes, valve boxes and other service entrances will be protected from the surfacing material.

2. **Tack Coat.** If required by the plans, the Contractor shall apply a tack coat. The tack coat shall be allowed to cure before the application of the micro surfacing.

G. Application.

1. **General**. The surface shall be pre-wetted by fogging with water ahead of the spreader box when required by local conditions. The rate of application of the fog spray shall be adjusted during the day to suit temperatures, surface texture, humidity and dryness of the pavement surface.

   The Micro Surfacing mixture shall be of the desired consistency upon leaving the mixer and no additional materials should be added. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained. Overloading of the spreader is not permitted. No lumping, balling, or unmixed aggregate shall be permitted.

   No streaks may be left in the finished surface. If excessive streaking develops, the job will be stopped until the contractor proves to the Engineer that the situation has been corrected.

   The spreader box shall be cleaned to be free of material buildup at the start of each work day. If material buildup begins to affect performance during operations, the Contractor shall stop operations and clean the spreader box.

2. **Joints.** No excessive buildup, uncovered areas or unsightly appearances shall be permitted on longitudinal or transverse joints. The Contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane lines. Half passes and odd width passes will be used only in minimum amounts. If half passes are used, they shall not be the last pass of any paved areas.

3. **Mix Stability.** The Micro Surfacing mixture shall possess sufficient stability so that premature breaking of the material in the spreader box does not occur. The mixture shall be homogeneous during and following mixing and spreading. It shall be free of excess water or emulsion, free of segregation of the emulsion and free of segregation of aggregate fines from coarse aggregate.

4. **Hand Work.** Areas which cannot be reached with the mixing machine shall be surfaced using hand squeegees to provide complete and uniform coverage. The area to be hand worked shall be lightly dampened prior to mix placement. Care shall be exercised to leave no unsightly appearance from handwork.

   Handwork shall be smoothed with a burlap drag to remove all ridges and valleys and to match the surface of the machine placed material unless another method of finishing is approved by the Engineer. Handwork shall be completed at the time of the machine-applied application.

5. **Lines.** Care shall be taken to insure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide a neat appearance.

421.05 METHOD OF MEASUREMENT.

Aggregate for Micro Surfacing. The dry aggregate weight will be measured by the ton. Weight of any moisture determined from moisture tests conducted will be subtracted from the weight of the aggregate for the purpose of obtaining a dry aggregate weight. The aggregate will be accepted at the job location stockpile or when loading into the support units for delivery to the lay-down machine.

Asphalt Emulsion for Micro Surfacing. Asphalt emulsion measured by the gallon.

421.06 BASIS OF PAYMENT.

Pay Item	Pay Unit
Aggregate for Micro-Surfacing Type __	Ton
Asphalt Emulsion for Microsurfacing	Gal

This payment shall be full compensation for all labor, equipment, additives, modifiers, and material necessary to complete work.

Insert the following in Section 422:

SECTION 422
SLURRY SEAL

422.01 DESCRIPTION.

The slurry seal shall consist of a mixture of an approved emulsified asphalt, mineral aggregate, water, mineral filler, and specified additives which are proportioned, mixed and uniformly spread over a properly prepared surface. The completed slurry seal shall leave a homogeneous mat, adhere firmly to the prepared surface, and have a skid-resistant surface texture.

422.02 MATERIALS.

The material shall meet the following:

Item	Section
Aggregates	816.05
Bitumen	818.04
Tack Coat	401.00

A. **Water.** The water shall be potable and shall be free of harmful soluble salts.

B. **Additives** The liquid field control additive is introduced and blended with water to provide effective control of the required set properties. This additive shall be made available by the chemical supplier or emulsion manufacturer and certified as being compatible with the mixture.

The mix design shall include the minimum and maximum allowances for the liquid field control additive in the mix. The mix design shall include the Wet Cohesion test results of the mix at the maximum allowable liquid field control additive. The test results shall meet the following requirements:

*ISSA TEST NO.	DESCRIPTION	SPECIFICATION
ISSA TB-139 @ 80° F	Wet Cohesion at 30 Minutes	12 kg-cm Minimum
	Wet cohesion at 60 Minutes	20kg-cm Minimum

*International Slurry Surfacing Association (ISSA)

422.03 EQUIPMENT.

The equipment shall meet the following:

Item	Section
Truck Scales	151.07
Mixing Equipment	151.09 A
Proportioning Devices	151.09 B
Emulsion Pump	151.09 C
Spreading Equipment	151.09 D

Machine Calibration.

Each mixing unit to be used in performance of the work shall be calibrated in the presence of the Engineer prior to construction. The documentation shall include the individual calibration of each material at various settings, which can be related to the machine metering devices. No machine will be allowed to work on the project until the calibration has been completed and accepted.

To aid in the calibration of slurry machines, the laboratory shall also report the quantitative effects of moisture content on the unit weight of the aggregate (bulking effect) per AASHTO T 19, Rodding Procedure.

422.04 CONSTRUCTION REQUIREMENTS.

A. **Mix Design**. Before work begins, the Contractor shall submit a signed mix design covering the specific material to be used on the project. This mix design shall be performed by a laboratory qualified in designing emulsified asphalt slurry seal surfacing.

The qualified laboratory shall present certified test results for the Contractors approval. Once the materials are approved, no substitution will be permitted unless first tested and approved by the laboratory preparing the mix design.

Compatibility of the aggregate, emulsion, mineral filler, and other additives shall be verified by the mix design. All component material used in the mix design shall be representative of the material proposed by the Contractor for use on the project.

The mix design report must clearly show the minimum and maximum proportions of mineral fill, water, usage additive(s) and asphalt emulsion based on the dry weight of the aggregate.

The following table lists the required tests and mix specifications:

ISSA TEST NO.	DESCRIPTION	SPECIFICATION
ISSA TB-106	Slurry Seal Consistency	3 cm Maximum
ISSA TB-139 @ 77° F	Wet Cohesion at 30 Minutes (Set)	12 kg-cm Minimum

	Wet cohesion at 60 Minutes	20kg-cm Minimum
ISSA TB-109	Excess Asphalt by LWT Sand Adhesion	50 g/sq.ft. Maximum
ISSA TB-114	Wet Stripping	Pass (90% Minimum)
ISSA TB-100	Wet-Track Abrasion Loss, One-hour Soak	75 g/sq. ft.
ISSA TB-113	Mix Time*	Controllable to 180 Seconds Minimum

*The mixing test and set-time test should be performed at the highest temperatures expected during construction.

The Engineer will approve the mix design and all slurry sealing materials and methods prior to use. The component materials shall be within the following limits:

COMPONENT MATERIALS	LIMITS
Residual Asphalt	Type II: 8.0% to 13.5% Type III: 6.5% to 12% (By dry weight of aggregate)
Mineral Filler	0.5% to 2.0% (By dry weight of aggregate
Additives	As required to provide the specified properties and meet the wet cohesion requirements
Water	As required to produce consistency

B. Weather Limitations. The slurry seal shall not be applied if either the pavement or air temperature is below 50° F. and falling, but may be applied when both pavement and air temperatures are above 45° F. and rising. No slurry seal shall be applied when there is danger that the finished product will freeze before 24 hours. No slurry seal shall be applied when there is a weather forecast of rainfall or humidity greater than 75% within 48 hours of scheduled placement. The mixture shall not be applied when weather conditions prolong opening to traffic beyond a reasonable time.

C. Preparation of Surface.

1. **General.** The area to be surfaced shall be thoroughly cleaned of vegetation, loose aggregate and soil, particularly soil that is bound to the surface.

2. **Tack Coat.** If required by the plans, the Contractor shall apply a tack coat. The tack coat shall be allowed to cure before the application of the slurry seal.

D. Application

1. **General.** The surface shall be pre-wetted by fogging with water ahead of the spreader box when required by local conditions. The rate of application of the fog spray shall be adjusted during the day to suit temperatures, surface texture, humidity and dryness of the pavement surface.

The slurry seal coat mixture shall be of the desired consistency upon leaving the mixer and no additional materials should be added. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained. Overloading of the spreader shall be avoided. No lumping, balling, or unmixed aggregate shall be permitted.

No streaks may be left in the finished surface. If excessive streaking develops, the job will be stopped until the Contractor proves to the Engineer that the situation has been corrected.

All excess material shall be removed from the job site prior to opening the road.

The spreader box shall be cleaned to be free of material buildup at the start of each work day. If material buildup begins to affect performance during operations, the Contractor shall stop operations and clean the spreader box.

2. **Joints.** No excessive buildup, uncovered areas or unsightly appearances shall be permitted on longitudinal or transverse joints. The Contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane. The longitudinal joint where two passes join shall be neat appearing, uniform and lapped. Half passes and odd width passes will be used only in minimum amounts. If half passes are used, they shall not be the last pass of any paved areas.

E. Mix Stability. The slurry seal coat mixture shall possess sufficient stability so that premature breaking of the material in the spreader box does not occur. The mixture shall be homogeneous during and following mixing and spreading. It shall be free of excess water or emulsion, free of segregation of the emulsion and free of segregation of aggregate fines from coarse aggregate.

F. Hand Work. Areas which cannot be reached with the mixing machine shall be surfaced using hand squeegees to provide complete and uniform coverage. The area to be hand worked shall be lightly dampened prior to mix placement.

Handwork shall be smoothed with a burlap drag to remove all ridges and valleys and to match the surface of the machine placed material unless another method of finishing is approved by the Engineer. Handwork shall be completed at the time of the machine-applied application.

G. Lines. Care shall be taken to insure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide a neat appearance.

H. Traffic Control. The Contractor shall furnish flag persons, pilot cars, signs, and lights according to Section 704.

On two-lane, two-way traffic highways, the Contractor shall provide additional flaggers and signs at each end of the operation and at all major intersections within the operation area. These flaggers and signs will be in addition to the flaggers used with the pilot car. The flaggers will be on the project during the application operation when a pilot car is being used. Flaggers and pilot car(s) shall not be bid separately, but shall be included in the price bid for other items.

On four-lane highways the additional flaggers will not be required.

422.05 METHOD OF MEASUREMENT.

Aggregate for Slurry Seal. The dry aggregate weight will be measured by the ton. Weight of any moisture determined from moisture tests conducted will be subtracted from the weight of the aggregate for the purpose of obtaining a dry aggregate weight. The aggregate will be accepted at the job location stockpile or when loading into the support units for delivery to the lay-down machine.

Asphalt Emulsion for Slurry Seal. Asphalt emulsion measured by the gallon.

422.06 BASIS OF PAYMENT.

Pay Item	Pay Unit
Aggregate for Slurry Seal - Type __	Ton
Asphalt Emulsion for Slurry Seal	Gal

This payment shall be full compensation for all labor, equipment, additives, modifiers, and material necessary to complete work.

407.04 J MIX TEMPERATURES **PAGE 196** **10/17/08**

In Section 407.04 J insert the following phase ", or manufacturers' recommendation" in three locations after the following temperatures: 230°F., 250°F., and 300°F.

407.04 M.2 ORDINARY COMPACTION **PAGE 197** **10/17/08**
6/19/09

In the first sentence of the third paragraph delete the following in its entirety "Sections 151.02 B, 151.02 C.2, or 151.02 D." and insert the following" Sections 151.02 B, 151.02 C.2, 151.02 D, or 151.02 E."

In the first sentence of the seventh paragraph, starting with "When compacting leveling courses…" insert the following phrase "or combination rollers" after the following "pneumatic-tired rollers"

In the second sentence of the seventh paragraph, with the paragraph starting: "When compacting leveling courses…" insert the following phrase "or combination rollers" after the following "pneumatic-tired rollers"

In the second sentence of the seventh paragraph, with the paragraph starting: "When compacting leveling courses…" insert the following phrase "or 151.02 E" after the following "Section 151.02 B"

407.07 BASIS OF PAYMENT **PAGE 202** **4/17/09**
3/01/13

Delete Section 407.07 B.2 in its entirety and insert the following:

2. When the patching requires excavation, the method and site of disposal of the waste materials shall be subject to the approval of the Engineer, and:

    a. The excavated material shall be loaded and hauled to a disposal area not adjacent to the work site; payment for the bituminous mixture used in the repair will be made under Section 104.03. Payment will include disposal of excavated material, and the furnishing, placing, and compacting of the aggregate.

    b. If aggregate is required to replace excavated material in the existing base or subgrade, payment for the class of aggregate used will be made under Section 104.03. Payment will include disposal of excavated material, and the furnishing, placing, and compacting of the aggregate.

    c. Payment for prime, tack, and the bitumen in the mix used in the repair will be made at the Contract Unit Prices for those items.

408.04 E MIXING **PAGE 207** **5/20/11**

In Section 408.04 E insert the following sentence “The Contractor shall inform the Engineer in writing prior to any changes of the blend percentages during production.” to the end of the last paragraph.

408.04 F MIX TEMPERATURES **PAGE 207** **10/17/08**

In Section 408.04 F insert the following phase “, or manufacturers’ recommendation” in three locations after the following temperatures: 300°F., 230°F., and 250°F.

408.04 H SPREADING AND FINISHING **PAGE 208** **10/21/11**

In section 408.04 H delete the last paragraph in its entirety, beginning with “Rumble strips…”

408.04 I.2 ORDINARY COMPACTION **PAGE 209** **10/17/08**

In the fifth paragraph delete the following in its entirety “Sections 151.02 B, 151.02 C.2, or 151.02 D.” and insert the following” Sections 151.02 B, 151.02 C.2, 151.02 D, or 151.02 E.”

In the first sentence of the sixth paragraph insert the following phrase “or 151.02 E” after the following “Section 151.02 B”

In the third sentence of the sixth paragraph insert the following phrase “or combination rollers” after the following “pneumatic-tired rollers”

In the first sentence of the ninth paragraph insert the following phrase “or combination rollers” after the following “pneumatic-tired rollers”

In the second sentence of the ninth paragraph insert the following phrase “or combination rollers” after the following “pneumatic-tired rollers”

In the second sentence of the ninth paragraph insert the following phrase “or 151.02 E” after the following “Section 151.02 B”

408.05 A AGGREGATE **PAGE 211** **10/16/09**

In Section 408.05 A.1 in the table titled “Aggregate Tolerances” delete the first row “5/8 sieve[1] +2%” in its entirety and insert “5/8 sieve[1] -2%”

408.05 A.1 GRADATION **PAGE 211** **10/17/08**
2/20/09

In the Section 408.05 A.1 in the first paragraph delete the first two sentences in their entirety and insert the following:

Aggregate samples will be tested for each 1,500 ton of mix produced with a minimum of one sample per day.

In the third paragraph delete the first sentence in its entirety and insert the following:

If any two or more consecutive tests result in the variance of any one or more sieves from the JMF gradation target value by more than the tolerances listed below, a deduction will be applied on the tonnage represented by the failing tests.

408.05 C.2 CONTRACTOR CORING **PAGE 215** **10/17/08**

In the first sentence of the second paragraph starting with “The Contractor shall” delete the phrase “with one location in each lane,” in its entirety.

408.05 C.3 COMPACTION PAYMENT SCHEDULE **PAGE 215** **2/20/09**
3/26/10

Delete Section 408.05 C.3 in its entirety and insert the following:

3. Compaction Payment Schedule.

Acceptance of mainline pavement placed on any production day will be based on the average density of the pavement compared to the daily average maximum theoretical density (MTD) determined for each lot of pavement placed. The average density of the field cores shall be at least 91.0% or 92.0% of the daily average MTD depending on the class of mix. If the average density of the field cores is less than specified for the daily average MTD, the unit price of the hot bituminous pavement will be adjusted according to the following tables:

PAVEMENT DENSITY ADJUSTMENT OF UNIT BID PRICE PER LOT

Table1:

Superpave FAA 40-43 Class 27, 29	
Percent Payment	**Avg. Pavement Density**
1.00	≥ 91.0%
0.98	90.0% - 90.9%
0.95	89.5% - 89.9%
0.91	89.0% - 89.4%
0.85	88.5% - 88.9%
0.70	88.0% - 88.4%
**	< 88.0%

Table 2:

Superpave FAA 44-45 Class 31, 33	
Percent Payment	**Avg. Pavement Density**
1.00	≥ 92.0%***
0.98	91.0% - 91.9%
0.95	90.5% - 90.9%
0.91	90.0% - 90.4%
0.85	89.5% - 89.9%
0.70	89.0% - 89.4%
**	< 89.0%

**The Engineer will determine whether the material may remain in place. The Pay Factor for the material allowed to remain in place shall be 0.70.

The density of the field cores will be determined according to the Department’s Field Sampling and Testing Manual.

***The minimum required density will be reduced by 1% for the bottom lift constructed on aggregate base and reclaimed or cold in place (CIP) recycled base courses. If the average density of the field cores is less than 91% of the daily average MTD the unit price of the hot bituminous pavement will be adjusted according to Table 1.

408.06 D RUMBLE STRIPS **PAGE 217** **10/21/11**

Delete section 408.06 D in its entirety.

408.07 BASIS OF PAYMENT **PAGE 217** **10/21/11**

In the “Pay Item” Column delete the pay item “Rumble Strips”.

408.07 BASIS OF PAYMENT **PAGE 218** **4/17/09**

Delete Section 408.07 C.2 in its entirety and insert the following:

2. When the patching requires excavation, the method and site of disposal of the waste materials shall be subject to the approval of the Engineer, and:

    a. The excavated material shall be loaded and hauled to a disposal area not adjacent to the work site; payment for the bituminous mixture used in the repair will be made per Ton according to the “Price Schedule PS-1.” Payment will include disposal of excavated material, and the furnishing, placing, and compacting of the aggregate.

    b. If aggregate is required to replace excavated material in the existing base or subgrade, payment for the class of aggregate used will be made under Section 104.03. Payment will include disposal of excavated material, and the furnishing, placing, and compacting of the aggregate.

    c. Payment for prime, tack, and the bitumen in the mix used in the repair will be made at the Contract Unit Prices for those items.

409.04 B.2 CONTRACTOR DEVELOPED MIX DESIGN **PAGE 223** **10/17/08**

In the fourth paragraph, starting with “If the Department” in the second sentence delete the phrase “± 0.30” and insert the following “± 0.030”.

409.05 C.2 CONTRACTOR CORING **PAGE 231** **2/20/09**

In Section 409.05 C.2 in the first sentence of the first paragraph delete the word “one” and insert the word “two”.

409.05 C.3 COMPACTION PAYMENT SCHEDULE **PAGE 232** **2/20/09**
3/26/10

Delete Section 409.05 C.3 in its entirety and insert the following:

3. Compaction Payment Schedule.

Acceptance of mainline pavement placed on any production day will be based on the average density of the pavement compared to the daily average maximum theoretical density (MTD) determined for each lot of pavement placed. The average density of the field cores shall be at least 91.0% or 92.0% of the daily average MTD depending on the class of mix. If the average density of the field cores is less than specified for the daily average MTD, the unit price of the hot bituminous pavement will be adjusted according to the following tables:

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0.70	88.0% - 88.4%
**	< 88.0%

Table 2:

Superpave FAA 44-45 Class 31, 33	
Percent Payment	**Avg. Pavement Density**
1.00	≥ 92.0%***
0.98	91.0% - 91.9%
0.95	90.5% - 90.9%
0.91	90.0% - 90.4%
0.85	89.5% - 89.9%
0.70	89.0% - 89.4%
**	< 89.0%

**The Engineer will determine whether the material may remain in place. The Pay Factor for the material allowed to remain in place shall be 0.70.

The density of the field cores will be determined according to the Department's Field Sampling and Testing Manual.

***The minimum required density will be reduced by 1% for the bottom lift constructed on aggregate base and reclaimed or cold in place (CIP) recycled base courses. If the average density of the field cores is less than 91% of the daily average MTD the unit price of the hot bituminous pavement will be adjusted according to Table 1.

410.04 QUALITY CONTROL PLAN **PAGE 237** **10/17/08**

In Section 410.04 delete the phrase "Special Provision" in its entirety and insert the following "specification".

410.04 ENGINEER'S LABORATORY **PAGE 237** **3/01/13**

Delete the first and second sentences in Section 410.04 "Engineer's Laboratory" in its entirety and insert the following:

The Contractor shall provide an additional Type C laboratory and the testing equipment to be used during actual mix production by the Department's aggregate lab and asphalt mix tester.

410.04 A PIT OPERATIONS AND STOCKPILING OF AGGREGATE **PAGE 238** **2/20/09**

In Section 410.04 A delete the third paragraph starting with "The mix design will not" in its entirety and insert the following:

- The mix design will not be approved and mix production will not begin.

410.04 A.1 DEPARTMENT-DEVELOPED MIX DESIGN **PAGE 238** **1/1/12**

Delete the first sentence in Section 410.04 A.1 in its entirety and insert the following:

The Plans will specify when the Department will develop the mix design.

410.04 A.2 CONTRACTOR-DEVELOPED MIX DESIGN **PAGE 238** **1/1/12**

Delete the first sentence in Section 410.04 A.2 in its entirety and insert the following:

The Contractor shall develop the mix design.

Insert the following Subsection after Section 410.04 A.2.b and change the existing Subsection c to Subsection d:

c. The mix design shall be submitted for approval a minimum seven days before the material is used.

410.05 C.2 CONTRACTOR CORING **PAGE 250** **2/20/09 10/15/10**

In Section 410.05 C.2 in the first sentence of the first paragraph delete the phrase “one core” and insert the phrase “two cores”.

410.05 C.3 COMPACTION PAYMENT SCHEDULE **PAGE 251** **2/20/09 3/26/10**

Delete Section 410.05 C.3 in its entirety and insert the following:

3. Compaction Payment Schedule.

Acceptance of mainline pavement placed on any production day will be based on the average density of the pavement compared to the daily average maximum theoretical density (MTD) determined for each lot of pavement placed. The average density of the field cores shall be at least 91.0% or 92.0% of the daily average MTD depending on the class of mix. If the average density of the field cores is less than specified for the daily average MTD, the unit price of the hot bituminous pavement will be adjusted according to the following tables:

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0.70	88.0% - 88.4%
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Table 2:

Superpave FAA 44-45 Class 31, 33	
Percent Payment	**Avg. Pavement Density**
1.00	≥ 92.0%***
0.98	91.0% - 91.9%
0.95	90.5% - 90.9%
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**The Engineer will determine whether the material may remain in place. The Pay Factor for the material allowed to remain in place shall be 0.70.

The density of the field cores will be determined according to the Department's Field Sampling and Testing Manual.

***The minimum required density will be reduced by 1% for the bottom lift constructed on aggregate base and reclaimed or cold in place (CIP) recycled base courses. If the average density of the field cores is less than 91% of the daily average MTD the unit price of the hot bituminous pavement will be adjusted according to Table 1.

411.03 A MILLING PAVEMENT SURFACE **PAGE 254** **2/20/09**

In Section 411.03 A after the eighth paragraph add the following paragraph:

When the milled material is used in Recycled Asphalt Pavement (RAP), a maximum of 500 feet per area may be milled for the mix design. The Contractor shall place the pavement overlay within twenty one calendar days after the mix design is approved.

420.04 E PROTECTION OF TRAFFIC AND PRESERVATION OF THE SEAL COAT
PAGE 258 **4/17/09**
5/15/09

In the last sentence of the second paragraph in Section 420.04 E delete the word "bud" in its entirety and insert the following: "bid".

In Section 420.04 E after the fourth paragraph add the following paragraph:

When pavement marking according to section 762.04 is not specified; before sealing operations the Contractor shall install and remove spotting tabs according to section 762.04 D.1.e. The cost of the spotting tabs and their installation and removal shall be included in the price bid for other items.

550.04 G.1 GENERAL **PAGE 269** **10/21/11**

In section 550.04 G.1 delete the sixth paragraph in its entirety, beginning with "Continuous rumble strips…"

550.04 I.2 TRANSVERSE CONTRACTION JOINTS **PAGE 272** **10/21/11**

Delete the sixth paragraph of Section 550.04 I.2 starting with "Dowel baskets shall…" in its entirety and insert the following:

Dowel baskets shall be placed a minimum of 2000 feet ahead of the paving operation to allow adequate time to be properly inspected.

550.04 I.2 TRANSVERSABLE CONTRACTION JOINTS **PAGE 273** **10/17/08**

Add the word "or" after "lithium grease," in the first sentence of the last paragraph starting with "A uniform coat".

550.04 I.5 TIE BARS AND LONGITUDINAL JOINT **PAGE 275** **2/18/11**

In the first sentence of the first paragraph in Section 550.04 I.5 delete the word “baskes” in its entirety and insert the following word “baskets”.

550.04 J.2 USE OF WATER **PAGE 276** **5/20/11**

In Section 550.04 J.2 delete the first sentence in its entirety.

550.04 J.3.c BRIDGE APPROACH SLABS **PAGE 276** **10/17/08**

After the last paragraph insert the following paragraph: “Metal Tine Finish shall be in accordance with Section 602.03 B.2.”

550.04 J.6 FINAL SURFACE FINISH **PAGE 277** **1/1/12**

Delete Section 550.04 J.6 in its entirety and insert the following:

6. **Final Surface Finish.** After surface irregularities have been removed and before the concrete attains an initial set, a seamless strip of stiff-fiber artificial grass carpet shall be dragged longitudinally along the full width of the pavement. The surface texture shall be uniformly roughened leaving corrugations in the surface that are uniform in appearance. The width of material in the drag shall be in contact with the full width of the pavement. The drag shall be operated off of a string-line with its leading edge attached to a bridge riding on the forms or adjacent slabs. The drag shall be maintained clean and free from encrusted mortar. A drag that cannot be cleaned shall be replaced with new fabric.

    a. **Carpet Drag.** The texture achieved by the carpet drag shall be tested by the Engineer in accordance with ASTM E 965 and the Department’s *Field Sampling and Testing Manual*. The tests shall be performed at a location to be determined by the Engineer.

    The test results determined by ASTM E 965 shall have a minimum texture depth of 0.031 inches. The Contractor shall take corrective action to achieve the required 0.031 inches minimum depth for any lot having a result less than 0.031 inches. If three or more lots have texture depths less than 0.031 inches but greater than or equal to 0.025 inches, diamond grinding shall be required of those lots. Any one lot having a texture depth of less than 0.025 inches shall require diamond grinding. All diamond grinding shall be in accordance with Section 550.04 P.3 at the Contractor's expense. Limits of any failing test shall be determined by running additional tests at 100 foot intervals before and after the failing test. The location of the additional tests shall be determined by the Engineer.

    b. **Metal Tining.** When speeds are greater than 40 mph metal tining will be required. Immediately following the carpet drag, the surface of the concrete pavement shall be given a longitudinal metal-tine finish over the entire driving surface, as specified below. However, the slab shall not be tined within 3 inches of the edge of the slab or centerline.

Tining devices shall be maintained clean and free from encrusted mortar and debris to ensure uniform groove dimensions. The longitudinal metal-tine finish shall provide a groove width of 1/8 inch ± 1/64 inch, a groove depth of 3/16 inch ± 1/16 inch, and a uniform spacing of 3/4 inch between individual grooves.

550.04 K.1 GENERAL **PAGE 278** **5/20/11**

At the beginning of the paragraph insert the following sentence: “When weather conditions cause rapid drying of the pavement surface, a fine mist or fog spray shall be applied to the concrete surface for interim curing.”

550.04 J.8 RUMBLE STRIPS **PAGE 278** **10/21/11**

Delete section 550.04 J.8 in its entirety.

550.04 N PROTECTION OF PAVEMENT **PAGE 280** **3/18/11**

In Section 550.04 N delete the second paragraph in its entirety and insert the following:

The Contractor shall maintain a temperature of 40° F. or above for five full days, for all newly-placed concrete. If the air temperature is expected to be 40° F. or below, the Contractor shall submit a detailed plan that states the procedure of maintaining the concrete temperature at 40° F. or above, prior to any placement of concrete. If the plan is approved, the removal and replacement of concrete that is damaged or not cured within the specified temperature control shall be at the Contractor’s expense. Admixtures for curing or temperature control shall be used only as permitted or directed. The admixtures shall not be considered as a substitute for any specified curing requirement.

550.04 R OPERATIONAL LIMITS **PAGE 285** **3/18/11**

Delete Section 550.04 R in its entirety and insert the following:

R. **Operational Limits.**

1. **General.** No concrete shall be mixed, placed, or finished without adequate natural or artificial lighting.

2. **Mixing.** Concrete mixing operations shall be suspended whenever rain, wind, blowing dirt, extreme temperatures, or other adverse conditions occur which damage the work. The previously placed plastic concrete shall be immediately protected from damage. After mixing, the concrete temperature shall be maintained at not less than 50°F. nor more than 90°F. until placed in the work. If the specified temperature range cannot be maintained, the aggregates, mixing water, or both shall be heated or cooled as required. Aggregates shall not be heated by a direct flame or 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. When heated by live steam, aggregates shall be drained as provided in Section 802.04 A.2 before being measured into the batches. Heating equipment or methods which do not heat the materials uniformly, or alter or prevent the entrainment of the specified concrete air content shall not be used. Materials containing frost or lumps of frozen material shall not be used.

3. **Placing.** Concrete shall not be placed on or against frozen ground.

   If enclosures are used, the enclosures shall be heated with electric heaters or if combustible heaters are used, be properly vented to prevent the buildup of carbon monoxide.

4. **Curing.** When the temperature falls below 40°F., the concrete surface temperature shall be maintained between 40°F. and 90°F. for the duration of the curing period.

   If high early strength Portland Cement is used, the temperature shall be maintained at between 50°F. and 90°F. during the first 72-hour curing period.

Heating operations shall be discontinued so that sudden temperature changes in the concrete are avoided. Before removing any enclosures, the concrete's surface temperature shall be decreased to the air temperature at a rate not to exceed 15°F. per hour.

The concrete shall be protected against damage from construction operations or traffic. No work shall be conducted on the concrete during the curing process. Vehicles or equipment not required in the curing process shall not be placed on the concrete until the curing period is completed.

Damaged concrete shall be repaired or removed and replaced at the Contractor's expense.

550.06 B MISCELLANEOUS ITEMS **PAGE 288** **10/21/11**

In the "Pay Item" Column delete the pay item "Continuous Rumble Strip".

570.02 B PORTLAND CEMENT CONCRETE FOR REPAIRS **PAGE 292** **5/20/11**

In Section 570.02 B delete the second sentence, "Use AASHTO M-85 high early cement for spall repairs." in its entirety and replace it with the sentence, "The cement content for spall repairs shall have a minimum cement content of six sacks per cubic yard.

570.04 A.6 REPAIR SIZE AND LONGITUDINAL JOINT TREATMENT **PAGE 294** **7/17/09**

In Section 570.04 A.6.b delete the first sentence in its entirety and insert the following:

b. Treat centerline and shoulder joint steel on repairs exceeding 15 feet in length as follows:

570.05 METHOD OF MEASUREMENT **PAGE 301** **2/19/10**

Delete Sections 570.05 M and 570.05 L in their entirety.

Delete the title of the following Section 570.05 N in its entirety and insert the following:

L. Full-Depth Repair -- End Preparation.

Delete the title of the following Section 570.05 O in its entirety and insert the following:

M. Full-Depth Repair -- End Prep-Mech Splice.

Delete the title of the following Section 570.05 P in its entirety and insert the following:

N. Full-Depth Continuous Concrete Repair.

Insert the following as Section 570.05 O:

O. Random PCC Crack Cleaning & Sealing. Include all costs for material and labor for cleaning and sealing random joints in the unit price bid for "Random PCC Crack Cleaning & Sealing."

570.05 G SAWCUTS **PAGE 302** **3/18/11**

In the second sentence delete the word "te" in its entirety and insert the word "the".

602.03 F CURING CONCRETE **PAGE 322** **2/20/09**
PAGE 323 **4/17/09**

In Section 602.03 F.1 delete the second sentence in the first paragraph in its entirety and insert the following:

The curing period shall be ten days when pozzolans in excess of 10 percent, by weight, of the Portland cement are used in the mix.

In Section 602.03 F.2.b delete the phrase “ten-day” and insert the following phrase “seven-day”.

Delete Section 602.03 F.3.b in its entirety.

602.03 F.3 DECK SLAB CONCRETE **PAGE 323** **1/1/12**

In Section 602.03 F.3.a delete the third sentence in its entirety and insert the following:

> The wet cure material shall be placed and the wet cure started no later than 30 minutes after placement of concrete.

604.04 A CONSTRUCTION REQUIREMENTS **PAGE 331** **2/20/09**

In Section 604.04 A delete the fifth paragraph in its entirety and insert the following:

Shop drawings shall show all beam dimensions; the size and location of all reinforcing and prestressing steel; the details of end anchorages if used, and any necessary revisions to bridge seats. Shop drawings shall be submitted in accordance with Section 105.08.If shop drawings are returned for revision, revisions shall be made and resubmitted to the Engineer. The time required for the review of each submittal will not exceed 14 days after the shop drawings are received by the Engineer. Two paper copies or one electronic version of the reviewed and final drawings shall be furnished to the Engineer before fabrication.

606.03 DESIGN AND MANUFACTURE **PAGE 334** **5/20/11**
7/1/12

Delete Section 606.03 in its entirety and insert the following:

The design and manufacture of the precast RCB shall satisfy the applicable portions of AASHTO LRFD Bridge Design Specifications, Section 12, and “AASHTO Materials Specification M 259.” The design shall also meet the following criteria:

A. **Live Load.** HL93

B. **Load Factors.**
   1. Dead Load
      a. Components and Attachments**,** γ_{DC} = 1.25
      b. Vertical Earth Pressure, $\gamma_{EV(max)}$ = 1.3, $\gamma_{EV(min)}$ = 0.9
   2. Live Load, γ_{LL} = 1.75
   3. Horizontal Earth Pressure, $\gamma_{EH(max)}$ = 1.5, $\gamma_{EH(min)}$ = 0.9

C. **Strength Reduction Factors.**

1. Shear = 0.9

2. Flexure = 0.9

D. **Loads.**

1. Concrete = 150 lbs./cu. ft.

2. Earth = 120 lbs./cu. ft.

3. Horizontal Earth = 40 lbs./sq. ft./ft. of depth

E. **Application of Loads.** The RCB shall be designed for the greater moments and shears resulting from the following two load conditions:

1. Dead Load + Live Load + Balanced Horizontal Earth Load

2. 0.8 X (Dead Load + Live Load + Unbalanced Horizontal Earth Load). The unbalanced horizontal earth load occurs when one side of the culvert has 40 lbs./sq. ft./ft. of depth while the other side has 20 lbs./sq. ft./ft. of depth.

The precast RCB shall be comprised of barrel sections and end sections. The concrete used to make the sections shall have a minimum compressive strength of 3,000 psi and shall have a minimum cement content of six sacks per cubic yard.

The barrel sections shall not be any shorter than 4 feet long. The minimum thickness of the barrel parts are 8 inches for the roof, floor and walls. Any haunch or fillet at the inside corners of the barrel shall not exceed a triangular shape with 12-inch horizontal and 12-inch vertical legs. The barrel section joints shall be tongue and groove, a minimum of 4 inches long and a width of 3 ½ inches at the end of the tongue.

606.04 CONSTRUCTION REQUIREMENTS **PAGE 335** **2/20/09**

In Section 606.04 delete the first sentence in the first paragraph in its entirety and insert the following:

The Contractor shall submit shop drawings in accordance with Section 105.08. If shop drawings are returned for revision, revisions shall be made and resubmitted to the Engineer. The time required for the review of each submittal will not exceed 14 days after the shop drawings are received by the Engineer. Two paper copies or one electronic version of the reviewed and final drawings shall be furnished to the Engineer before the manufacture of the RCB sections.

606.04 CONSTRUCTION REQUIREMENTS **PAGE 335** **3/26/10**

In third paragraph in Section 606.04 starting with “The installation of the” delete the second sentence in its entirety and insert the following:

The backfill shall be compacted to 90 percent standard density per AASHTO T 180. Maximum thickness of any one lift shall not exceed 6 inches.

616.03 A SHOP DETAIL DRAWINGS **PAGE 339** **2/20/09**
3/26/10

In Section 616.03 A in the third sentence in the third paragraph delete the phrase “the fabricator’s contract number,” in its entirety.

In Section 616.03 A delete the fourth paragraph in its entirety and insert the following:

The Contractor shall submit shop drawings in accordance with Section 105.08. If shop drawings are returned for revision, revisions shall be made and resubmitted to the Engineer. The time required for the review of each submittal will not exceed 14 days after the shop drawings are received by the Engineer. Two paper copies or one electronic version of the reviewed and final drawings shall be furnished to the Engineer before fabrication. Additional time required to make adjustments to shop drawings due to the Contractor’s errors or omissions is the responsibility of the Contractor. Additional work or file copies of final drawings shall be provided as requested.

In Section 616.03 A in the second sentence in the fifth paragraph delete the phrase “approved” and insert the word “reviewed”.

In Section 616.03 A in the first sentence in the sixth paragraph delete the phrase “and approval”.

638.03 D BACKFILL **PAGE 374** **2/20/09**

Delete Section 638.03 D in its entirety and insert the following:

D. **Backfill.** After assembling the pipe, the backfill shall be placed uniformly and equally on each side of the pipe in layers not to exceed six inches before compaction. Compaction requirements for all materials associated with the trench installation shall be installed as specified in Section 203.02 G. Adequate earth cover shall be placed over the structure before heavy construction equipment is driven over it.

650.03 B PROPORTIONING AND MIXING EQUIPMENT **PAGE 376** **3/01/13**

Delete Section 650.03 B in its entirety and insert the following:

B. **Proportioning and Mixing Equipment.** Proportioning and mixing equipment shall be of a self-contained mobile type (not conventional ready-mix truck), meeting Section 153.02 C and set up at the bridge site.

650.03 C PLACING AND FINISHING EQUIPMENT **PAGE 376** **3/01/13**

Delete Section 650.03 C in its entirety and insert the following:

C. Placing and Finishing Equipment.

1. Placing and finishing equipment shall include hand tools for placing and brushing-in freshly mixed mortar, and for distributing material to the depth that can be struck off with the screed. Hand operated vibrators and screeds shall be used to place and finish small areas of work.

2. Finishing equipment shall meet Section 153.09 C.

3. A drag and a metal tining device meeting Section 602.03 B.2 shall be used for the final finish.

650.04 REMOVAL AND OVERLAY WITH THE USE OF MECHANICAL EQUIPMENT. **PAGE 376** **10/16/09 3/01/13**

Delete Section 650.04 in its entirety and insert the following:

A. Classification of Removals and Overlays.

1. **Class 1 Removal.** Class 1 removal consists of removing deck concrete to a depth of 1/2 inch below the existing finished surface, except at drains and elsewhere as specified; disposing of the removed concrete. Concrete removed below a depth of 1/2 inch below the existing finished surface coincidental with Class 1 removal is part of the Class 1 removal area.

2. **Class 2 Removal.** Class 2 removal areas will be determined by the Engineer after Class 1 removal has been accomplished. Class 2 removal consists of removal, disposal, and replacement of concrete below the bottom of the Class 1 removal. The lower limit of the Class 2 removal shall be the top of the bars in the top layer of reinforcing steel. Concrete removed below the top of the top bar coincidental with Class 2 removal is part of the Class 2 removal area. The removed volume shall be replaced with concrete to a level bounding the Class 1 removal.

3. **Class 2-A Removal.** Class 2-A removal areas will be determined by the Engineer after Class 1 and Class 2 removal have been accomplished. Class 2-A removal consists of removal, disposal, and replacement of concrete around the periphery of reinforcing bars in the top mat. Class 2-A removal will be ordered when an isolated bar has lost bond on more than 1/2 of its circumference. The removed volume shall be replaced with concrete bounding the Class 2 removal. Class 3 removal may be ordered in lieu of Class 2-A removal if damage to sound concrete between bars is suspected.

4. **Class 3 Removal.** Class 3 removal areas will be determined by the Engineer after Class 1 and Class 2 removal have been accomplished. Class 3 removal consists of removal, disposal, and replacement of concrete below the bottom of the Class 2 removal to sound concrete or to a maximum depth bound by the top of the top bar of the bottom mat of reinforcing steel. The removed volume shall be replaced with concrete to a level bounding the Class 2 removal.

5. **Class 4 Removal.** Class 4 removal will be determined by the Engineer after Class 1, Class 2, and Class 3 removal have been accomplished. Class 4 removal consists of removal and disposal of concrete below the level described for Class 3 removal and for the full remaining depth of the deck and replacement of the removed volume with AAE-3 Portland Cement Concrete or low slump concrete to a level bounding the Class 1 removal. Edges of the full depth hole in the deck shall be nearly vertical or tapered inward from top to bottom. A reverse taper will not be permitted. The underside of the completed deck replacement shall have a neat, smooth appearance.

6. **Overlays.** Thickness of the concrete overlay shall be measured from a level 1/2 inch below the original surface to the final raised surface as specified for Class 1 removal. Thickness of concrete overlay shall be measured as specified for Class 2, 2-A, 3, and 4 removals.

B. Construction Requirements.

1. General.

All concrete aggregate shall be available for sampling and testing, for a minimum of five days before lane closure. The Department is not responsible for delays or additional costs caused by failing aggregate.

Asphalt overlays shall be removed before any concrete removal. Asphalt removal equipment shall not damage the surface of the concrete deck.

To ensure proper overlay thickness, measurements shall be made from the finisher screed to the prepared deck surface.

The deck surface shall be sandblasted and cleaned with compressed air after grinding and concrete removal operations are completed. Wet sandblasting shall not be used.

All exposed reinforcing steel shall be thoroughly sandblast cleaned of all deleterious material and concrete. Reinforcing bars which have lost 1/4 or more of their original dimensions shall be removed and replaced with a new lap-spliced bar. Reinforcing bars damaged due to removal operations shall be replaced at the Contractor's expense.

2. Removal Requirements.

a. **Class 1 Removal.** The existing concrete deck area shall be uniformly ground to a depth of 1/2 inch. Removal to a greater depth shall be required at drains and other noted locations.

b. **Class 2 Removal.** Concrete shall be removed by chipping or by a combination of grinding and chipping. Removal shall be considered to start ½ inch below the existing surface.

c. **Class 2-A Removal.** Concrete shall be removed from around the periphery of the reinforcing steel using power hammers and hand tools without cutting, stretching, or damaging any exposed reinforcing steel. A minimum clearance of 3/4 inch around the bar shall be attained.

d. **Class 3 Removal.** Concrete shall be removed by chipping with power hammers and hand tools without cutting, stretching, or damaging any exposed reinforcing steel.

e. **Class 4 Removal.** This work consists of complete removal of that portion of the bridge deck which the Engineer designated for full depth removal. Forms shall be provided to enable placement of new concrete.

3. Mixing of Materials.

a. **Class AAE-3 Concrete.** Concrete shall be mixed according to Section 802.

b. **Low-Slump Concrete.** Concrete shall be mixed at the site. The mixing rate shall allow finishing operations to proceed at a steady rate.

4. Placing, Finishing, and Curing.

a. General.

At longitudinal construction joints, the surface course previously placed shall be sawn to a straight and vertical edge before the adjacent course is placed.

After the machine finishing has been completed, hand finishing with a wood float may be required to produce a tight, uniform surface.

Immediately after finishing, all vertical joints with adjacent concrete shall be sealed by painting with a thinned grout before the curing operation begins.

A drag shall be pulled over the surface in a longitudinal direction while the concrete is plastic. It shall be immediately followed with a transverse metal tine finish as

specified in Section 602.03 B.2.a. The tining shall be stopped 18 inches from the face of the curb. The tining device shall be drawn transversely across the full width of the pavement without overlapping passes. The tining shall be neat and uniform, and shall produce grooves without tearing the surface or bringing course aggregate to the surface. The finished surface shall be free from rough or porous areas and irregularities resulting from improper handling of the device. Concrete surfaces which do not meet the above requirements shall be corrected at the Contractor's expense by cutting transverse grooves in the hardened concrete with diamond bladed equipment.

The surface tolerance of the finished concrete overlay shall be less than or equal to 3/16 inch in 10 feet. Measurements for smoothness will be taken on approximately 2-foot spacing over the entire deck. Any portion of the deck not meeting the tolerance shall be corrected by grinding or reoverlaying the deck. The tined surface texture shall be restored with diamond bit cutting equipment. Grinding or grooving that decreases the cover to less than 1-1/2 inches over the top of the reinforcing steel shall not be used.

b. Special Requirements for Low-Slump Concrete.

Concrete for Class 1, 2, 2-A, and 3 removal areas may be placed in one operation.

Where full depth concrete is required, Class AAE-3 or low-slump concrete may be used. Concrete for the Class 4 removal areas shall be struck off at the bottom level of Class 1 unless the Class 4 falls entirely with a Class 2 or 3 removal area. In that case, the concrete shall match the prepared surface of either the Class 2 or 3 removal area. The concrete shall receive the wet cure meeting Section 602.03 F.3 for at least 72 hours, and shall be sandblasted and cleaned before overlaying.

The prepared deck surface shall be dry to permit absorption of the bonding grout. All vertical and horizontal surfaces shall receive a thorough, even coating of bonding grout at a controlled rate so that grout does not dry before covering with new concrete.

The concrete shall be screeded to final grade and consolidated to 98 percent of the unit weight using AASHTO T 121. The surface shall receive a wet cure meeting Section 602.03 F.3 except that the curing period shall be five days. Concrete that is not wet cured within 30 minutes after placement shall be removed to the original prepared surface and replaced at the Contractor's expense.

5. Limitations of Operations.

No preparation work will be allowed until the lane or strip is closed for traffic. This lane shall remain closed until the overlay has been completed.

No loads other than equipment needed to remove and replace concrete shall be allowed on the deck that has undergone preparation before placement and curing of concrete. Mixers shall not be operated on the structure. Equipment used for transporting concrete shall not damage the prepared deck surface and shall be designed for transporting concrete. Equipment shall not leak oil, hydraulic fluid, or any other contaminant onto the prepared deck surface. Equipment used to transport mortar or concrete shall be of sufficient size and adequate design to handle the volume of material without spilling or dripping.

No vehicular traffic shall be permitted on the new overlay until the specified curing period is completed. If daily mean temperatures fall below 55°F. during the five days following concrete placement, additional curing days will be required.

When temperatures are above 80°F. placement shall be made at night or early morning hours by installing and operating necessary lighting. Rescheduling an overlay placement may be required if weather conditions adversely effect the quality of the overlay.

Overlays shall not be placed unless the temperature is 45°F. and rising.

Bridge deck overlays shall not be placed after September 15 unless authorized by the Engineer.

C. Method of Measurement.

1. **Class 1, 2, 3, and 4 Removal.** The quantities of Class 1, 2, 3, and 4 Removal will be measured by the square yard.

2. **Class 2-A Removal.** The quantity of Class 2-A Removal will be measured in linear feet. Class 2-A Removal shall not be paid for in areas which require Class 3 Removal.

3. **Overlay Concrete.** The quantity of Overlay Concrete will be in cubic yards as determined by the mobile mixer counter and the yield box. One yield box test will be required at the start of each pour. This will determine if the mobile mixer is still in proper calibration as per the requirements of the manufacture.

   Each yield test will follow these general guidelines.

   a. Use a pre determined volume yield box, ¼ Cu Yd typical
   b. Set cement meter to Zero
   c. Discharge Concrete until the yield box is full, but not over flowing
   d. Determine the cement meter count for ¼ Cu Yd

The determined meter count should be ± 1% of the calibrated meter count as determined earlier. If it is within the tolerance, then it becomes the new calibrated meter count. If the tolerance is not met, then the calibration process must be redone as per the manufactures requirements.

The cubic yards placed on the bridge deck will be determined by taking the counter readings before and after each placement times the meter count as determined by the yield test.

The amount of waste will be determined and agreed upon by the Contractor and the Engineer at the end of each day. The material used in the yield tests shall be considered waste and shall not be used in the deck.

D. Basis of Payment.

Quantities measured will be paid for at the Contract Unit Price for the pay items shown. Payment will be full compensation for all labor, equipment, and materials necessary to complete the work.

When there is no bid item for Class 4 removal, payment will be made in accordance with Section 104.03. Class 1, 2, 2-A, or 3 removal authorized prior to Class 4 removal shall be paid at the bid price.

No adjustment to bid prices will be made for Class 1, 2, 2-A, or 3 removal.

650.05 B.4 PLACING, FINISHING, AND CURING OVERLAY

PAGE 383 **5/15/09**

Delete Section 650.05 B.4.a in its entirety and insert the following:

a. General

Placing, Finishing, and Curing Overlay shall be as specified in Section 650.04 B.4.a.

650.05 D BASIS OF PAYMENT **PAGE 384** **10/16/09**
3/01/13

Delete Section 650.05 D in its entirety and insert the following:

D. Basis of Payment.

Quantities measured will be paid for at the Contract Unit Price for the pay items shown. Payment will be full compensation for all labor, equipment, and materials necessary to complete the work.

When there is no bid item for Class 3-H removal, payment will be made in accordance with Section 104.03. Class 1-H or 2-H removal authorized prior to Class 3-H removal shall be paid at the bid price.

No adjustment to bid prices will be made for Class 1-H or 2-H removal.

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700 MISCELLANEOUS CONSTRUCTION **PAGE 385** **10/21/11**
7/1/12

Insert the following in Section 760:

SECTION 760
RUMBLE STRIPS

760.01 DESCRIPTION

This work consists of milling centerline, shoulder, and intersection rumble strips on concrete or bituminous surfaces, sweeping of driving lanes, paved shoulders, and all milled areas. If milled into new or existing bituminous pavements, work shall consist of fog sealing across the full width of the milled area.

760.02 CONSTRUCTION REQUIREMENTS

A. **Shoulder and Centerline Rumble Strips.** Shoulder and centerline rumble strips shall be discontinued across bridge decks and approach slabs. Shoulder rumble strips shall be discontinued when adjacent to guardrail. Shoulder and centerline rumble strips shall be discontinued one half mile on either side of highway segments with posted speeds of 45 mph or less, all urban areas, and areas with curb and gutter, or as directed by the engineer.

Shoulder and centerline rumble strips shall be discontinued 10 feet before and after any Automated Traffic Recorders or Roadway Weather Information Systems system. Shoulder rumble strips shall be discontinued 300 feet before and 100 feet after in the direction of travel for any Weigh in Motion equipment. Centerline rumble strips shall be discontinued 300 feet before and after any Weigh in Motion equipment.

B. **Intersection Rumble Strips.** Intersection rumble strips shall be installed at all T-intersections of two state highways and at all STOP conditions of state highways.

Intersection rumble strips shall be saw cut. The Contractor shall dispose of all waste material outside of the right of way.

Intersection rumble strips shall not be installed on highways with posted speeds 45 mph or less, in urban areas, or areas with curb and gutter.

Intersection rumble strips shall be discontinued across bridge decks and approach slabs.

C. Sweeping. The sweeper shall immediately follow the milling machine. The sweeper shall remove all milled and sawed materials. Driving lanes and paved shoulders shall be swept within 48 hours prior to fog coat. All costs for sweeping shall be included in the price bid for "Rumble Strips - _____".

D. Fog Coat. The Contractor shall apply a fog coat across the full width of the milling and sawing with an application of SS-1h or CSS-1h emulsified asphalt at a rate of 0.10 Gal/SY on bituminous surfaces. Fog coats shall be in accordance with Section 401. All costs for fog sealing shall be included in the price bid for "Rumble Strips –_____".

E. Traffic Control. A TMA shall be used as specified in Section 762.04 C.2

760.03 METHOD OF MEASUREMENT

Shoulder rumble strips shall be measured by segment length for each shoulder per mile. Centerline rumble strips shall be measured by segment length per mile. No deduction in length will be made for discontinued rumble strips with the exception of areas one half mile on either side of highway with posted speeds of 45 mph or less, all urban areas, and areas with curb and gutter.

Intersection rumble strips shall be measured as "Each". One "Each" Intersection rumble strip shall consist of installing four 15 foot and two 25 foot saw slotted rumble strip sections.

760.04 BASIS OF PAYMENT

Pay Item	**Pay Unit**
Rumble Strips – Concrete Shoulder	Mile
Rumble Strips – Concrete Centerline	Mile
Rumble Strips – Asphalt Shoulder	Mile
Rumble Strips – Asphalt Centerline	Mile
Rumble Strips – Intersection	Each

This payment shall be full compensation for all labor, equipment, TMA, and material necessary to complete work.

704.02 J DELINEATORS **PAGE 401** **10/19/12**

Insert the following as the last sentence in Section 704.02 J:

Delineators shall meet the requirements as specified in Section 894.06.

704.03 CONSTRUCTION REQUIREMENTS **PAGE 403** **3/01/13**

Insert the following at the end of Section 704.03:

AA. Attenuation Device. The Contractor shall provide the required modules for layouts as required in the plans. The Contractor shall provide and have available on the project site additional replacement modules for each layout location up to a maximum of 20 modules per project.

The Contractor shall be responsible for maintaining the modules in each layout. The Contractor shall replace any damaged modules. The Department will reimburse the Contractor for damaged

modules based on module invoice price plus 10 percent. All other costs associated with installing and maintaining replacement modules will be at no additional cost to the Department.

704.03 A GENERAL **PAGE 403** **10/01/13**

In seventh paragraph in Section 704.03 A starting with “Traffic control devices…” delete the last sentence in its entirety and insert the following:

The Contractor shall remove sign anchors at the same time the sign face is removed.

704.03 U.1.c TRAFFIC CONTROL COURSE **PAGE 410** **3/18/11**

Delete Section 704.03 U.1.c in its entirety and insert the following:

c. **Traffic Control Course**. The course prescribed in Section 704.03 U.1.a (1) above shall be the American Traffic Safety Service Association (ATSSA) Traffic Control Supervisor Course, American General Contractor (AGC) Traffic Control Supervisor Course, or the National Highway Institute (NHI) Course 380003, Design and Operation of Work Zone Traffic Control, or equal. All courses shall have a minimum of 16 hours of instruction. A valid Minnesota Department of Transportation Traffic Control Supervisor Certification will be accepted in lieu of traffic control courses listed above.

An equal course shall include the following subjects: Manual and Standard Signs used in Work Areas; Channelizing Devices and Temporary Barriers, Pavement Markings, Lighting Devices, Arrow Displays and Special Devices, and Devices Location and Placement; Layout for Traffic Control Devices, Motorist Characteristics, and Options and Alternatives; Installation and Removal of the Traffic Control Zone, and Operation and Maintenance of the Traffic Control Zone; Flagging Operations, Legal Liability and Record Keeping, and Emergency Situations. All courses shall have a minimum of 3 hours of instruction per subject.

Workshops shall be included in the above time frames covering (a) design problems, (b) installation and removal, and (c) operations and maintenance. Each session shall also include a question and answer.

704.03 X FLAGGING **PAGE 412** **2/20/09**

In Section 704.03 X delete the first paragraph in its entirety, and replace with the following:

Flaggers shall be clean, neat, and fully dressed at all times while on duty either day or night. All flagger’s vests shall meet Section 107.11.

704.04 METHOD OF MEASUREMENT **PAGE 412** **3/01/13**

Insert the following at the end of Section 704.04:

F. Attenuation Device. The Engineer will measure "Attenuation Devices Type B" by the number of arrays installed. The Contractor shall include in the price bid all costs for materials, labor, equipment, relocation if required, and removal.

704.05 BASIS OF PAYMENT **PAGE 413** **10/15/10**

Delete the fourth paragraph in Section 704.05 A in its entirety and insert the following:

> If the Contractor is required to furnish special non-standard signs not shown on the Plans, a unit value agreeable to the Contractor and the Department will be established for such signs, and payment will be made according to the Contract Bid Price per sign unit. If a unit value cannot be agreed upon, payment will be made at invoice price plus 15 percent, and the sign will become the Department's property after it has been removed from service. Payment for sign supports and installation of special signs will be made according to Section 104.03.

Delete the second paragraph in Section 704.05 B in its entirety and insert the following:

> When additional traffic control devices requested by the Engineer qualify for payment according to Section 704.04 B, payment for furnishing and installing such devices will be made according to Section 104.03.

Delete the fifth paragraph in Section 704.05 B in its entirety and insert the following:

> If the Contractor is required to furnish special non-standard signs not shown on the Plans, payment will be made at invoice price plus 15 percent, and the sign will become the Department's property after it has been removed from service. Payment for sign supports and installation of special signs will be made according Section 104.03.

706.02 B.3 TYPE B, FIELD LABORATORY **PAGE 418** **10/17/08**

Delete 706.02 B.3 in its entirety and insert the following phrase:

3. Capable of an exact setting of 900 Watts of cooking power.

708.02 C.4 GRASS, HAY OR STRAW MULCH **PAGE 429** **5/15/09**

In Section 708.02 C.4.a delete the second paragraph in its entirety and insert the following:

Mulching operations shall not be performed when the wind velocity exceeds 25 miles per hour

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708.03 D METHOD OF MEASUREMENT. **PAGE 432** **2/20/09**

In Section 708.03 D in the first sentence delete the first repeated word "actual".

708.03 E BASIS OF PAYMENT **PAGE 433** **10/17/08**

In the "Pay Item" Column delete the second "ECB Type 3" Pay Item and insert "ECB Type 4".

708.04 B.3.a GRADATION . **PAGE 433** **10/01/13**

Delete the table in Section 708.04 B.3.a and insert the following table:

Size (Inches)	Percent Smaller
28*	80-100

22*	30-80
16	20-50
10	1-5
< 6	0-1

*The maximum size of stone permitted for riprap installation shall not exceed the specified thickness of the riprap blanket by more than 6 inches. Stone of this excess size may be placed providing it does not exceed 10 percent of the total stone and can be blended satisfactorily into the riprap.

708.07 B.2 WOVEN WIRE **PAGE 438** **10/21/11**

In Section 708.07 B.2 delete the second sentence in its entirety.

708.07 E BASIS OF PAYMENT **PAGE 440** **4/17/09**

In Section 708.07 E after the third paragraph add the following paragraph:

Removal of silt fence shall be paid at the price listed in the “Price Schedule PS-1” if there is no separate bid item for silt fence.

708.08 C.1 INSTALLATION **PAGE 441** **10/19/12**

In Section 708.08 C.1 delete the third sentence beginning with “Trenching is not required…” in its entirety.

708.08 E BASIS OF PAYMENT **PAGE 442** **4/17/09**

In Section 708.08 E after the third paragraph add the following paragraph:

Removal of fiber roll shall be paid at the price listed in the “Price Schedule PS-1” if there is no separate bid item for fiber roll.

708.10 B MATERIALS **PAGE 444** **4/17/09**

Delete Section 708.10 B.1 in its entirety and insert the following:

1. **Aggregate**. Aggregate material for the Stabilized Construction Access will meet the following requirements:

Sieve Size	Percent Passing
4 inch	100
2 inch	0

The aggregate shall have 90 percent fractured faces.

709.03 E GEOTEXTILE REINFORCEMENT FABRIC **PAGE 447** **4/17/09 6/19/09 5/20/11**

Delete the third paragraph in Section 709.03 E in its entirety and insert the following:

The first lift above the reinforcement fabric shall be 6 inches before compaction.

714.02 A CULVERTS AND STORM DRAINS **PAGE 450** **2/20/09**

In Section 714.02 A delete the fourth paragraph starting with “When show as conduit” in its entirety.

714.03 A.1 EXCAVATION **PAGE 451** **2/20/09**

In Section 714.03 A.1 in the fifth paragraph delete the phrase “off the Right of Way,” in its entirety.

714.03 A.2 BEDDING **PAGE 451** **2/20/09**
10/19/12

In Section 714.03 A.2 delete the second and third paragraphs in its entirety and insert the following:

Bedding for approach pipe shall meet the conduit manufacturers’ recommendations.

Insert the following paragraph as the last paragraph in Section 714.03 A.2:

Bedding material shall be tamped in place under both haunches of the pipe up to 15 percent of the total height by hand-held air-operated, mechanical tampers.

714.03 A CULVERTS AND STORM DRAINS **PAGE 452** **2/20/09**
1/1/12
10/19/12
10/01/13

Delete Section 714.03 A.7 in its entirety and insert the following:

7. **Placement and Compaction Control of Aggregate.** Maximum compacted lift thickness of any one lift shall not exceed 6 inches.

   AASHTO T 180 shall be used to determine the maximum dry density and optimum water content.

   The moisture content of the aggregate at the time of compaction shall be not less than 2 percentage points below, nor more than 3 percentage points above the optimum moisture content.

   The aggregate shall be compacted to 90 percent of the maximum dry density.

Delete Section 714.03 A.8 in its entirety and insert the following:

8. **Construction Cover.** Cover requirements during construction operations shall meet or exceed the pipe manufacturer’s recommendations.

   Any damage to the pipe conduit due to construction traffic shall be the repaired or removed and replaced at no cost to the Department.

Delete Section 714.03 A.9 in its entirety and insert the following:

9. **Deflection Testing.** All metal and thermoplastic pipe used for mainline and paved intersecting roadways shall be deflection tested a minimum of thirty days after the pipe is installed. The

Contractor shall pass a nine point mandrel or other approved object through the pipe to check for deformation. The deformation test shall take place under the observation of the Engineer. The mandrel diameter shall not be less than 95% of the inside diameter of the pipe. If the pipe has deformed more than 5%, it shall be replaced. All cost associated with replacing the pipe shall be at the Contractor's expense. Another thirty day waiting period will commence upon installation of the replacement pipe prior to retesting.

Metal and thermoplastic pipe used for approaches shall be visually inspected, and at the Engineer's discretion, may require deflection testing.

Insert the following at the end of Section 714.03 A:

11. **Common Excavation** If Common Excavation Type A is specified, the Contractor shall follow the compaction requirements in Section 203.02 G. If Common Excavation Type B is specified, the Contractor shall follow the compaction requirements in 203.02 H.

714.03 D BRIDGE APPROACH DRAINS **PAGE 454** **2/20/09**

Delete the first paragraph in its entirety starting with "Construction of bridge".

714.03 E EDGE DRAINS **PAGE 454** **2/18/11**

In the first paragraph of Section 714.03 E after the second sentence insert the following sentence, "Double drains shall be outletted at approximate intervals of 500 feet and at low points in the flow line of the edge drain."

714.04 A CULVERTS AND STORM DRAINS **PAGE 455** **2/20/09**

Delete Section 714.04 A in its entirety and insert the following:

A. Culverts and Storm Drains. Where new pipe is specified, it will be measured by the Linear Foot along the top of the pipe. Flared end sections will not be measured separately but will be considered as part of the conduit. Each conduit will be measured to the nearest foot.

Pipe extensions of different types and sizes will be measured by the Linear Foot in place. End sections will be measured by the number of units installed.

Relaid pipe of different types and sizes will be measured by the Linear Foot in place. Relaid end sections will be measured by the number of units installed.

Branch connections and elbows will be included in the length measured for pipe.

Excavation, disposal of excess excavation, bedding and backfill for pipe will not be measured for payment.

Grates will be measured by the number of units installed.

714.04 A CULVERTS AND STORM DRAINS **PAGE 455** **1/1/12**

Insert the following paragraph at the end of Section 714.04 A:

Removal of all pipes will be measured and paid for in accordance with Section 202.

714.05 BASIS OF PAYMENT **PAGE 456** **2/20/09**
7/1/12

In Section 714.05 insert the following Pay Items and Pay Units:

PAY ITEM	PAY UNIT
Pipe Conduit__inch	Linear Foot
Pipe Conduit__inch Storm Drain	Linear Foot
Pipe Conduit__inch Approach	Linear Foot

722.03 J BACKFILL **PAGE 459** **3/26/10**
10/15/10
10/19/12

Delete Section 722.03 J in its entirety and insert the following:

J. Backfill. The Contractor shall deposit and compact the backfill in lifts not to exceed 6 inches. The Contractor shall meet the requirements for compaction control as specified in Section 714.03 A.7.

724.03 B EXCAVATION AND TRENCHING **PAGE 462** **3/26/10**
10/19/12

In Section 724.03 B.3 delete the last sentence in its entirety and insert the following:

The Contractor shall place this material in lifts not to exceed 6 inches. The Contractor shall meet the requirements for compaction control as specified in Section 714.03 A.7.

748.03 A.5 USE OF WATER **PAGE 470** **2/18/11**
5/20/11

In Section 748.03 A.5 delete the first sentence in its entirety.

748.03 A.7 CURING **PAGE 470** **2/18/11**
5/20/11

In Section 748.03 A.7 insert the following sentence at the beginning of the paragraph: “When weather conditions cause rapid drying of the pavement surface, a fine mist or fog surface shall be applied to the concrete surface for interim curing.”

750.02 MATERIALS. **PAGE 472** **10/21/11**

In Section 750.02 insert the following Item and Section:

Item	Section
Detectable Warning Panels	885

750.03 CONSTRUCTION REQUIREMENTS **PAGE 472** **10/21/11**

Delete Section 750.03 K. in its entirety and insert the following:

K. Detectable Warning Panels. The panels shall be installed according to the manufacturer's recommendations.

1. **Construction.** The Detectable Warning Panels shall have a minimum size of 1 foot by 1 foot. The panels shall consist of a surface of truncated domes aligned in a square grid pattern.

2. **Dome Size.** Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch minimum to 1.4 inches maximum, a top diameter of 50 percent of the base diameter minimum to 65 percent of the base diameter maximum, and a height of 0.2 inch.

3. **Dome Spacing.** Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches minimum and 2.4 inches maximum and a base-to-base spacing of 0.65 inches minimum measured between the most adjacent domes on the square grid.

4. **Dome Alignment.** The rows of truncated domes in a detectable warning surface shall be aligned to be perpendicular to the grade break of the curb ramp.

5. **Size.** Detectable warning surfaces shall extend 24 inches in the direction of travel and the full width of the curb ramp landing.

6. **Friction.** Panels shall have a minimum coefficient of friction of 0.80.

7. **Rail Crossings.** The detectable warning surface shall be located so that the edge nearest the rail crossing is 6 feet minimum and 15 feet maximum from the centerline of the nearest rail. The rows of the truncated domes in the detectable warning surface shall be aligned with the direction of wheelchair travel.

750.03 F USE OF WATER **PAGE 473** **2/18/11**
5/20/11

In Section 750.03 F delete the first sentence in its entirety.

750.03 H CURING **PAGE 473** **2/18/11**
5/20/11

In Section 750.03 H insert the following sentence at the beginning of the paragraph: "When weather conditions cause rapid drying of the pavement surface, a fine mist or fog surface shall be applied to the concrete surface for interim curing."

752.03 B INSTALLING LINE POSTS **PAGE 475** **10/15/10**

In Section 752.03 B delete the sixth paragraph in its entirety and insert the following:

When fence line posts are driven, the post top shall be protected against damage. Posts damaged during handling or driving shall be removed and replaced at the Contractor's expense.

752.05 BASIS OF PAYMENT **PAGE 477** **10/15/10**

In Section 752.05 insert the paragraph “Each fence terminal will be counted and paid for as a double brace assembly.” after the first paragraph.

754.03 E.1 GENERAL **PAGE 481** **1/1/12**

Insert the following paragraph at the end of Section 754.03 E.1:

The Contractor shall use the same Breakaway Coupler System throughout the project.

754.04 METHOD OF MEASUREMENT **PAGE 487** **2/18/11**

In Section 754.04 insert the following:

O. **Mile Posts.** Mile posts will be measured by the number of mile posts as shown in plans, completed in place, and accepted by the Engineer.

P. **Reference Markers.** Reference markers will be measured by the number of reference markers as shown in plans, completed in place, and accepted by the Engineer.

754.04 C BREAKAWAY BASES **PAGE 488** **1/1/12**

In Section 754.04 C delete the bid item “Galvanized Steel Post” in its entirety and insert the following bid items:

"Steel Galv Posts - Telescoping Perforated Tube", "Galv Steel Post - Standard Pipe", and "Galv Steel Posts - W-Shape Posts (Two or More)"

754.05 BASIS OF PAYMENT **PAGE 489** **2/18/11**

In Section 754.05 delete the first pay item and pay unit and insert the following:

Flat Sheet for Signs, Type II, III A, III B, or IX Reflective Sheeting	Square Foot

In Section 754.05 delete the second pay item and pay unit and insert the following:

Panel for Signs - Type II, III A, III B, or IX Reflective Sheeting	Square Foot

In Section 754.05 insert the following pay item and pay unit following “Overlay Panel” pay item and pay unit:

Overlay Panel, Type IX Reflective Sheeting	Square Foot

In Section 754.05 insert the following as the last two pay items and pay units:

Interstate Mile Posts – Type__	Each
Reference Markers – Type__	Each

754.04 N RESET MILE POST **PAGE 489** **10/21/11**

Delete Section 754.04 N in its entirety and insert the following:

N. **Reset Mile Post and Reference Marker.** The items “Reset Mile Post” and “Reset Reference Marker” will be measured by the number of locations at which a mile post and reference marker has been reset. The quantities measured will be paid for at the contract price and shall be full compensation for all labor, equipment, and material necessary to complete the work.

762.04 D.1.b APPLICATION DATES AND TEMPERATURES PAGE 494 10/21/11

In Section 762.04 D.1.b delete the title “Application Dates and Temperatures” in its entirety and insert “Application”.

At the end of Section 762.04 D.1.b insert the paragraph:

The fog coat on rumble strips shall be given a minimum curing period of 48 hours prior to applying permanent striping.

762.04 D.1.c RATE OF APPLICATION PAGE 494 10/21/11

In the Second sentence in Section 762.04 D.1.c delete the number “8” in its entirety and insert “10”.

762.04 D PAVEMENT MARKING APPLICATION PAGE 494 3/26/10

In Section 762.04 D.1.c delete the first sentence in its entirety and insert the following:

One gallon of paint shall cover a 4-inch wide stripe for a length of 260 to 300 feet, depending upon pavement surface texture.

762.04 D.2 PLASTIC PAVEMENT MARKING FILM PAGE 496 2/20/09

In Section 762.04 D.2.a delete the first sentence in its entirety.

In Section 762.04 D.2.a delete the second sentence in its entirety and insert the following:

The permanent marking film shall be installed in accordance to the manufacturers’ temperature recommendations. The permanent marking film shall not be placed over painted markings.

In Section 762.04 D.2.c delete the fourth sentence in its entirety.

In Section 762.04 D.2.d delete the third sentence in its entirety and insert the following:

Short Term Type R and Short Term Type R-WR shall be installed in accordance to the manufacturers’ temperature recommendations.

In Section 762.04 D.2.d delete the fourth sentence in its entirety and insert the following:

If the temperature falls below the manufacturers’ temperature recommendations, short-term paint shall be substituted and paid for as “Short Term IN Line -- Type NR.”

In Section 762.04 D.2.d delete the sixth sentence in its entirety and insert the following:

The short-term paint substitution shall cease and installation of “Short Term IN Line -- Type NR” shall proceed as soon as the temperature reaches the manufacturers’ temperature recommendations.

762.04 D.3 PREFORMED PATTERNED PAVEMENT MARKING FILM **PAGE 497** **2/20/09**

In Section 762.04 D.3.a delete the first sentence in its entirety.

In Section 762.04 D.3.a delete the second sentence in its entirety and insert the following:

The permanent marking film shall be installed in accordance to the manufacturers’ temperature recommendations. The permanent marking film shall not be placed over painted markings.

In Section 762.04 D.3.c delete the fifth sentence in its entirety.

762.04 D.6.b GENERAL **PAGE 498** **10/21/11**

Delete the sixth paragraph in Section 762.04 D.6.b starting with “When permanent pavement…” in its entirety and insert the following:

When permanent pavement markings are to be epoxy paint, and short-term pavement marking paint is used, the paint and beads shall be applied as required and at the rate specified in Section 762.04 D.1.c. Removal of the short-term pavement markings shall not be required prior to placing the epoxy paint.

762.04 D.6.c EPOXY PAINT AND GLASS BEADS **PAGE 498** **5/15/09 10/21/11**

After the first paragraph of 762.04 D.6.c add the following paragraph in its entirety:

Before placement of epoxy material, any bituminous surface material shall be in place for a minimum of 14 days.

764.03 CONSTRUCTION REQUIREMENTS **PAGE 507** **3/26/10**

Delete the first five paragraphs in Section 764.03 A in its entirety and insert the following:

A. General. The guardrail shall be installed to produce a smooth continuous line with uniform height.

Guardrail posts shall be installed where staked and to the depth specified. Posts shall be set plumb with the front faces uniformly aligned.

All backfill shall be an approved material placed and compacted in 8-inch layers, using a mechanical tamper with an appropriate sized tamping head.

When guardrail posts are removed and not replaced in the same hole, the hole shall be backfilled with approved material. When the existing surround surface is bituminous, a maximum of 2 inches of cold mix or hot mix bituminous material shall be placed at the top of the hole to match existing surrounding surface as approved by the Engineer.

Hot bituminous pavement with a maximum thickness of 2 inches shall be placed prior to guardrail post installation, where applicable. All post holes for the new or reset guardrail shall be drilled through the hot bituminous pavement. The post may then be installed in the remaining material by augured holes or driving.

When posts are installed in augured holes, the holes shall be backfilled with approved material without displacing the post alignment. The surplus excavated material shall be disposed of at locations acceptable to the Engineer.

When posts are driven the diameter of the drilled hole in the hot bituminous pavement shall be sufficient so when the soil around a post heaves up while the post is driven, the remaining asphalt will not move. A suitable head shall be used to prevent damage to the post while being driven. Damaged posts shall be replaced at the Contractor's expense. The post being replaced shall be installed by drilling. A post cap must be used when minor vertical adjustments are made using a sledgehammer or maul.

When the posts are in place the contractor shall then place a 2 inch maximum thickness of cold mix or hot mix bituminous material around each post, in the area where the asphalt was drilled through, to match the surrounding surface as approved by the Engineer.

764.03 I ATTENUATING CRASH CUSHIONS **PAGE 511** **2/20/09**

In Section 764.03 I in the sixth sentence in the third paragraph delete the phrase "eight sets of".

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800 MATERIALS **PAGE 515** **10/21/11**
1/1/12
10/01/13

Insert the following in Section 885:

SECTION 885
DETECTABLE WARNING PANELS

885.01 GENERAL. The Detectable Warning Panels shall be cast iron, concrete pavers, stainless steel, or of a composite material.

A. Cast Iron. Cast iron panels shall have a minimum thickness of 0.3 inches. Grey cast iron shall be in accordance with AASHTO M 105, Class 35 B. Ductile cast iron shall be in accordance with ASTM A 536, Grade 65-45-12. The panels shall have no surface coating, and shall be allowed to transition to their natural patina.

B. Concrete Pavers. Panels shall have a minimum thickness of 0.75 inches and shall be yellow or brick red in color throughout the panel. The panels shall have a minimum compressive strength of 8000 PSI according to ASTM C 936. The panels shall have a maximum absorption of 5%, and freeze thaw testing according to ASTM C 67.

C. Stainless Steel. Panels shall have a minimum thickness of 0.5 inches and shall be yellow or brick red in color. Any surface applied coating must be on the panel at the time of manufacture. Surface coatings shall be powder-type and baked on the surface of the panel per manufacturer's recommendations. Field-applied surface coatings and/or paint will not be accepted. The panels shall show no signs of deterioration or other defects from salt spray after 1,000 hours of exposure according to ASTM B 117.

D. Composite. Panels shall have a minimum thickness of 0.16 inches and shall be yellow or brick red in color throughout the panel. Panels shall have a minimum compressive strength of 25,000 PSI according to ASTM D 695. Panels shall have a minimum flexural strength of 25,000 PSI according to ASTM D 790. Panels shall have a minimum tensile strength of 11,500 according to ASTM D 638. The panels shall show no signs of deterioration or other defects from salt spray after 1,000 hours of exposure according to ASTM B 117. Panels shall have a maximum water absorption of 0.07% according to ASTM D 570.

802.01 F TESTS ON CONCRETE **PAGE 532** **10/15/10**

In Section 802.01 F.6 insert the following sentence "A correction factor of 0.92 for compressive strength shall be applied to 4x8 inch concrete cylinders." following the second sentence in the first paragraph.

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816 AGGREGATES **PAGE 539** **10/21/11**
7/1/12

Insert the following in Section 816:

816.04 AGGREGATE FOR MICRO SURFACING.

A. General. The mineral aggregate used shall be of the type and grade specified below for Micro Surfacing. The aggregate shall be manufactured crushed stone such as granite, slag, limestone, or other high quality aggregate or combination thereof.

B. Sampling and Testing.

Sampling	AASHTO T 2
Reducing Sample to Test Size	AASHTO T 248
Sieve Analysis	AASHTO T 27

C. Gradation. The aggregate, including natural fines, shall meet the referenced gradation requirements when tested by AASHTO methods T 11.

SIEVE SIZE	TYPE II %PASSING	TYPE III %PASSING	STOCKPILE TOLERANCE
3/8"	100	100	-
#4	90 -100	70-90	± 5%
#8	65 – 90	45-70	±5%
#16	45 – 70	28-50	±5%
#30	30 – 50	19-34	±5%

#50	18 – 30	12-25	±4%
#100	10 – 21	7-18	±3%
#200	5 – 15	5-15	±2%

After the target gradation has been submitted (which is the gradation that the mix design is based on), then the percent passing each sieve shall not vary by more than the stockpile tolerance for each individual sieve and still remain within the gradation band.

The stockpile shall be approved for use based on five gradation tests according to AASHTO T 27. If the average of the five tests are within the gradation tolerances, then the materials will be approved for use. If the average of the five tests is not within the gradation tolerances, the contractor will be given the choice to either remove the material or blend other aggregate with the stockpiled material to bring it into specification. Materials used in blending must meet the quality tests before blending and must be blended in a manner to produce a consistent gradation. If blending is used, it will require that a new mix design be performed.

Screening shall be required at the stockpile prior to delivery to the paving machine to prevent having oversize material in the mix.

The Contractor shall perform a gradation test every 500 tons of material produced. The gradation tests shall include the sand equivalency test.

D. Deleterious Substances - To limit the permissible amount of clay-like fines in an aggregate, a sand equivalency of 60 or higher is required when tested by AASHTO T 176. The sand equivalency test shall be performed during the gradation tests during the production of the stockpile.

E. Soundness - The aggregate shall have a weighted loss of not more than 15% when the sodium sulfate test is used or not more than 20% when the magnesium sulfate test is used. Soundness shall be tested in accordance with AASHTO T 104. The soundness test shall be preformed and accepted before the production of the stockpile.

F. Hardness - The aggregate wear, from abrasion resistance, shall be a maximum of 35%, when using AASHTO T 96 test methods. The hardness test shall be preformed and accepted before the production of the stockpile.

G. Additives. A mineral additive shall be introduced to the mineral aggregate and may be any recognized brand of non air-entrained portland cement, fly ash or hydrated lime all free of lumps, or other approved mineral additive. It may be accepted upon visual inspection. The amount of mineral additive needed shall be determined by the laboratory mix design and will be considered as part of the material gradation Requirement. The mineral additive will not be paid for directly, but shall be incidental to the bid unit price of “Aggregate for Micro Surfacing”.

Insert the following in Section 816:

816.05 AGGREGATE FOR SLURRY SEAL.

A. General. The mineral aggregate used shall be of the type and grade specified below for slurry seal coats. The aggregate shall be manufactured crushed stone such as granite, slag, limestone, or other high quality aggregate or combination thereof. To assure the material is totally crushed, 100 percent of the parent aggregate will be larger than the largest stone in the gradation to be used.

B. Sampling and Testing.

Sampling	AASHTO T 2
Reducing Sample to Test Size	AASHTO T 248
Sieve Analysis	AASHTO T 27

C. Gradation Requirements. The aggregate shall meet the referenced gradation requirements when tested by AASHTO methods T 11 and T 27. The job mix (target) gradation shall be within the band shown in the following table:

SIEVE SIZE	TYPE II %PASSING	TYPE III %PASSING	STOCKPILE TOLERANCE
3/8”	100	100	-
#4	90 -100	70-90	± 5%
#8	65 – 90	45-70	±5%
#16	45 – 70	28-50	±5%
#30	30 – 50	19-34	±5%
#50	18 – 30	12-25	±4%
#100	10 – 21	7-18	±3%
#200	5 – 15	5-15	±2%

After the target gradation has been submitted (which is the mix design’s gradation basis) the percent passing each sieve shall not vary by more than the stockpile tolerance and still remain within the gradation band.

The stockpile shall be approved for use based on five gradation tests according to AASHTO T 27. If the average of the five tests is within the gradation tolerances then the material will be approved for use. If the average of the five tests is not within the gradation tolerances, the contractor will be given the choice to either remove the material or blend other aggregates with the stockpile material to bring it into specifications. Materials used in blending must meet the quality tests before blending and must be blended in a manner to produce a consistent gradation. This may require a new mix design. Screening shall be required at the stockpile to prevent having oversize materials in the mix.

The Contractor shall perform a gradation test every 500 tons of material produced. The gradation tests shall include the sand equivalency test.

D. Deleterious Substances. To limit the permissible amount of clay-like fines in an aggregate, a sand equivalency of 60 or higher is required when tested by AASHTO T 176. The sand

equivalency test shall be performed during the gradation tests during the production of the stockpile.

E. Soundness. The aggregate shall have a weighted loss of not more than 15% when the sodium sulfate test is used or not more than 25% when the magnesium sulfate test is used. Soundness shall be tested once during production of stockpile, in accordance with AASHTO T 104. The soundness test shall be performed and accepted before the production of the stockpile.

F. Hardness. The aggregate wear, from abrasion resistance, shall be a maximum of 35%, when using AASHTO T 96. The abrasion test is to be run on the aggregate before it is crushed. The aggregate should meet approved polishing valves. The hardness test shall be performed and accepted before the production of the stockpile.

816.03 B SPECIFIC REQUIREMENTS **PAGE 543** **2/19/10**
10/15/10

In Table II: Aggregates for Asphalt Mixes, Blotter, and Seal Coats in Section 816.03 B insert the following column between Class 41 and Class 42:

Sieve Size Percent Passing	Chip Seal
	41M
3”	
1-1/2”	
1-1/4”	
1”	
3/4”	
5/8”	
1/2”	
3/8”	100
No. 4	20-70
No. 8	0-17
No. 16	
No. 30	
No. 50	
No. 200	0-1.5
Shale[1]	8.0%
L. A. Abrasion[1]	40%
Plasticity Index[2]	
Fractured Faces[3]	50%
Crushed Fines[4]	

817.02 C PROCESSED VIRGIN AGGREGATE FOR BLEND **PAGE 546** **3/01/13**

Insert the following sentence at the end of the first paragraph:

Virgin aggregate shall be Class 5 Aggregate and meet the requirements in Section 816.

817.02 D PROCESSED VIRGIN AGGREGATE IN LIEU OF SALVAGED BASE

PAGE 547 **5/15/09**

In Section 817.02 D after the first sentence insert the following sentence:

The Contractor shall not substitute Class 5 Aggregate Base in lieu of Salvage Base without approval from the Engineer.

817.02 F BITUMINOUS COMBINED MATERIAL **PAGE 547** **2/18/11**

In Section 817.02 F.2 delete the first sentence in its entirety and insert the following:

The Contractor may, at his option, combine stockpiled material containing bitumen with aggregate or salvaged concrete. Stockpiled material containing bitumen shall be incorporated at a rate of 30 percent minimum to 50 percent maximum by total weight with aggregate or recycled concrete, without the required extraction sampling and testing (either initial or routine as specified in Section 302.02 B).Total weight is the combined weight of the stockpiled material containing bitumen and aggregate or salvaged concrete.

In Section 817.02 F.3 delete the first sentence in its entirety and insert the following:

If existing bituminous material from the project is incorporated into the Salvaged Base, the bituminous material shall be incorporated at a rate of 30 percent minimum to 50 percent maximum by total weight, with aggregate or recycled concrete. Total weight is the combined weight of the bituminous material and aggregate or salvaged concrete.

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818 BITUMINOUS MATERIALS **PAGE 548** **10/21/11**

Insert the following in Section 818:

818.03 BITUMINOUS MATERIALS FOR MICRO SURFACING.

A. Emulsified Asphalt. The emulsified asphalt shall be polymer or latex modified. The polymer material shall be milled or blended into the asphalt or emulsifier solution prior to the emulsification process. The latex shall be milled into the emulsion.

The emulsified asphalt and emulsified asphalt residue shall meet the requirements specified in AASHTO M 208 for CQS-1h. It shall pass all applicable storage and settlement tests and have a minimum residue after distillation of 62%. The cement mixing test will be waived for this emulsion.

B. Modifier. Special quick-setting emulsifier agents shall be milled into the asphalt emulsion.

C. Special Residue Properties. Distillation of residue will be at a temperature of 350° F for 20 minutes. Softening point of the residue shall be 135° F minimum, absolute viscosity shall be 8,000 poise minimum using the average of two bulbs with the methods of ASTM D 2171 and #13 Canon-Manning viscosity tubes.

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818 BITUMINOUS MATERIALS **PAGE 548** **10/21/11**

Insert the following in Section 818:

818.04 BITUMINOUS MATERIALS FOR SLURRY SEAL.

Emulsified Asphalt. The emulsified asphalt shall conform to Grade CQS-1h as specified in AASHTO M 140 and AASHTO M 208. The cement mixing test is waived. The CQS-1h emulsified asphalt shall also meet the following:

Material	Test	Requirement
Emulsion	AASHTO T 59	60% Minimum Residue After Distillation
Emulsion Residue	AASHTO T 49	40-100 Penetration at 77 degrees F

818.02 E ANIONIC EMULSIFIED ASPHALT **PAGE 549** **2/20/09**

In Section 818.02 E in the second table with the first column heading “Property” delete the fourth column labeled “HFRS 2P” in its entirety.

822.02 TESTING **PAGE 555** **2/19/10**

Delete Section 822.02 C in its entirety.

Delete Section 822.02 D in its entirety.

830.02 D SMOOTH WALL STEEL PIPE CULVERT **PAGE 560** **2/18/11**

Delete Section 830.02 B in its entirety and insert the following:

Smooth Wall Steel Pipe Culvert. Smooth wall steel pipe culvert shall be welded steel pipe of new material, meeting ASTM Specifications A 139, Grade B with a minimum yield strength of 35,000 psi. No hydrostatic testing will be performed. The following minimum wall thickness shall be used:

Diameter of Pipe	Minimum Wall Thickness Through Roadway Embankment
24 inches	0.312 inch
30 inches	0.406 inch
36 inches	0.469 inch
42 inches	0.500 inch
48 inches	0.563 inch
54 inches	0.656 inch
60 inches	0.719 inch
66 inches	0.813 inch
72 inches	0.875 inch

856.01 EROSION CONTROL FABRIC **PAGE 573** **2/20/09**

In Section 856.01 in second sentence in the paragraph after Table 856-1 Erosion Control blanket delete the word “with” and insert the following word “within”.

860.01 CHAIN LINK FENCE **PAGE 576** **10/15/10**

Delete Section 860.01 in its entirety and insert the following:

A. Chain link fence shall meet AASHTO M 181.

B. Chain link fabric shall be 9 gauge wire 2" mesh. Knuckled finished top and bottom. Wire shall have a minimum tensile strength of 80,000 P.S.I.

C. Top and bottom tensioning wires shall be 7 gauge steel wire with a minimum tensile strength of 80,000 P.S.I.

D. Roll-formed sections shall be in accordance with ASTM F 1043.

860.02 A BARBED WIRE **PAGE 576** **2/19/10**

In Section 860.02 A insert the following after the second sentence:

Barbed wire shall be 12-½ gauge wire with two point barbs.

860.03 STEEL POSTS **PAGE 576** **2/19/10**

In Section 860.03 A delete the second paragraph in its entirety and insert the following:

Posts shall meet ASTM A 702, Type B Steel

Posts shall be galvanized in accordance with AASHTO M 111, or painted in accordance with Section 852.

In Section 860.03 B insert the following after the first paragraph:

Angle-type end, corner, pull posts, and braces shall be galvanized in accordance with AASHTO M 111, or painted in accordance with Section 852.

880.01 C SPECIFIC REQUIREMENTS FOR WATER-BASED TRAFFIC MARKING PAINT **PAGE 584** **2/19/10**

Delete Section 880.01 C.16 in its entirety and insert the following:

16. **Acceptance.**

a. Pavement marking paint shall be preapproved. The Contractor shall obtain two, 1-pint samples of paint from each lot after the paint has been shipped to some point acceptable to the Engineer. Epoxy lined cans shall be used for sampling water based paint. Department personnel are to be notified and shall be present when each sample is obtained. The Department personnel will submit the samples to the Department's Materials and Research Division. The samples shall be submitted 30 days before the scheduled use of the marking paint. If the paint sample meets Specifications, the lot being represented by the sample will be accepted. If a paint sample fails to meet Specifications, the lot being represented by the sample will be rejected and replaced with paint that meets Specifications. All costs incurred in replacing nonspecification paint shall be at the Contractor's expense.

b. No paint shall be used that is more than 15 months old.

c. In addition to the requirements of this section, the certification supplied by the manufacturer shall include reference to the specific NTPEP test deck to which the paint formulation was applied, including NTPEP identification numbers and report numbers.

880.09 D SAMPLING RATE AND PROCEDURES PAGE 596 2/19/10

In the first sentence in Section 880.09 D delete the number “15” in its entirety and insert “30”.

894.01 B SHOP SURFACE PREPARATION AND PROCESSING PAGE 597 10/16/09

In Section 894.01 B.3 delete the last sentence in its entirety and insert the following:

The coating shall meet ASTM B 921 or ASTM B 449, Class 2, 10-35 milligrams/square foot with a median of 25 milligrams/square foot as an optimum coating weight.

894.02 RETROREFLECTIVE SHEETING MATERIALS PAGE 598 2/18/11

In Section 894.02 insert the following:

H. Type IX Retroreflective Sheeting. Type IX Retroreflective Sheeting shall meet or exceed ASTM D 4956, Type IX.

894.05 B.3 STEEL (GALVANIZED) POSTS AND ACCESSORIES PAGE 609 10/21/11

In Section 894.05 B.3 add ASTM A53 to the Specification list for Standard Steel Pipe.

Material	**Specification**
Standard Steel Pipe	AASHTO M 111, ASTM A53, 270 Grade 36, and M 232

894.05 B.5 ACCESSORIES PAGE 611 7/17/09

Delete Section 894.05 B.5.a in its entirety and insert the following:

a. **Anchor Plates.** The anchor plates shall conform to ASTM A 36, 10 gauge with ASTM G-90 galvanized coating.

894.06 B.1 REFLECTIVE SHEETING PAGE 612 1/1/12

In the first paragraph of Section 894.06 B.1 delete the phrase “Type III” in its entirety and insert the following “Type IX”.

Delete the second sentence of the second paragraph of Section 894.06 B.1 in its entirety and insert the following:

Backing material shall meet Section 894.01 A.1 with the following thicknesses:

Delineator Type	Steel Plates (gage)	Aluminum Plates (inches)
A	18	0.040
B	18	0.040
C	18	0.040
D	-	0.063
E	-	0.063

894.06 C FASTENERS **PAGE 614** **1/1/12**

Delete Section 894.06 C in its entirety and insert the following:

C. **Fasteners.**

Fasteners shall be either tension pin fasteners or a round un-slotted head aluminum machine screws and vandal resistant nuts.

Aluminum tension pin fasteners shall be an aluminum alloy meeting ASTM B 211, Alloy 2024 T4 or 6061 T6.

Steel tension pin fasteners shall be a medium carbon steel with a minimum shear strength of 70,000 psi and a minimum tensile strength of 67,500 psi. They shall be galvanized according to AASHTO M 232.

Aluminum machine screws shall be an aluminum alloy meeting ASTM B 211, Alloy 2024 T4. The vandal resistant nuts shall be an aluminum alloy meeting ASTM B 211, Alloy 2011 T3.

894.08 B.2 ROUND-TAPERED OR OCTAGONAL-TAPERED TUBES
PAGE 616 **2/20/09**

In Section 894.08 B.2 delete the sixth sentence in the first paragraph in its entirety and insert the following:

Shop drawings shall be submitted in accordance with Section 105.08 after the above design has been submitted and reviewed.

894.09 DETECTABLE WARNING PANELS **PAGE 618** **7/17/09**
10/21/11

Delete Section 894.09 in its entirety.

CERTIFICATION **PAGE I, VOL 2** **5/20/11**

Delete page I in its entirety and insert the following:

COPIES OF THIS BOOK MAY BE OBTAINED FROM:
North Dakota Department of Transportation
Environmental and Transportation Services
608 East Boulevard Avenue
Bismarck, ND 58505-0700
Phone: (701) 328-2590
Fax: (701) 328-0310
Email: dotspecbook@nd.gov
www.dot.nd.gov

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The electronic versions of:

Standard Specifications for Road and Bridge Construction, Volume I
Standard Specifications for Road and Bridge Construction, Volume II
Current Supplemental Specifications

are available at: www.dot.nd.gov

I hereby certify that this Standard Specifications Book was prepared under the Office of Project Development, compiled from specifications prepared, examined, adopted and implemented by the North Dakota Department of Transportation in accordance with established procedures, and as approved by the Federal Highway Administration.

Ronald J. Henke, P.E.
Office of Project Development

2/9/11
Date

These North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, 2008, are hereby approved for application on highway and related constructions contracts as referenced in the contract plans or specifications, and they shall apply as noted and amended by those documents.

Approved,

Grant Levi, P.E.
Deputy Director for Engineering

2/9/11
Date

770.02 B SHOP DRAWINGS **PAGE 7, VOL. 2** **2/20/09**

In Section 770.02 B in the first sentence in the third paragraph delete the phrase “The Contractor shall submit eight sets of shop drawings on the following listed items for approval:” in its entirety and insert the following:

“The Contractor shall submit shop drawings in accordance with Section 105.08 for the following listed items for review:”

770.03 D.1 RIGID CONDUIT **PAGE 10, VOL. 2** **2/20/09**

In Section 770.03 D.1 delete the fourth paragraph in its entirety, starting with “Conduit shall be laid on”.

772.02 B SHOP DRAWINGS **PAGE 18, VOL. 2** **2/20/09**

In Section 772.02 B in the third sentence in the second paragraph delete the phrase "The Contractor shall submit eight sets of shop drawings on the following listed items for approval:" in its entirety and insert the following:

"The Contractor shall submit shop drawings in accordance with Section 105.08 for the following listed items for review:"

772.03 T TESTS AND ACCEPTANCE **PAGE 30, VOL. 2** **10/15/10**

Delete Section 772.03 T in its entirety and insert the following:

T. **Tests and Acceptance.** The Engineer will provide an inspection checklist at the preconstruction conference. When the installation is complete and at the time designated by the Engineer, an operating test shall be conducted for approval. The Contractor shall furnish instruments and personnel required for all tests, record all test results, and be present during all tests and inspections. Nighttime tests and inspections will be held when directed by the Engineer.

1. **Initial Inspection.** An initial functional inspection shall be made approximately 15 days after a written statement from the Contractor certifying that all signals or flashing beacons under the Contract are operational and the inspection checklist work is completed. When snow or ice conditions are present preventing observation of installed equipment, or when extreme cold conditions prevent proper observation of equipment operations and adjustments, the initial inspection will be delayed. The Engineer will determine when conditions have improved so the inspection can be scheduled. During the time of delayed inspection, all signals or flashing beacons in operation shall be maintained by the Contractor.

2. **Final Inspection.** A final functional inspection will be made between 30 and 60 days after the initial inspection. The Contractor will request the Engineer to schedule the final inspection. The Engineer shall notify the Traffic Operations Engineer to coordinate a time for the final inspection. The final inspection shall not be made until all items noted on the initial inspection have been corrected. Minor finish work items, such as dirt leveling, will not prevent the final inspection. The traffic signals or flashing beacons shall be in operation during this time. When snow, ice or extreme cold conditions are present preventing the proper observation of the installed equipment, the final inspection will be delayed. The Engineer will determine when the conditions have improved so the inspection can be scheduled. The Contractor shall maintain the signals or flashing beacons during the period between the initial inspection and final functional inspection.

Final Acceptance. Final acceptance will not be made until the system has been operating for 14 consecutive days after the final inspection without interruption due to malfunctions attributable to defective equipment or improper workmanship. The Contractor shall be responsible for the electrical and communications costs for the system until the traffic signals and/or flashing beacons are accepted by the Department.

895.03 A.2 MULTIPLE CONDUCTOR **PAGE 44, VOL. 2** **1/1/12**

In the first paragraph in Section 895.03 A.2 delete the phrase "NEMA Standards Publications WC-3, WC-5, WC-7," in its entirety and insert "NEMA Standards Publication WC-70".

In the third paragraph in Section 895.03 A.2 delete the phrase "WC-3" in its entirety and insert "WC-70".

895.11 E SYMMETRICAL LUMINAIRES **PAGE 50, VOL.2** **2/19/10**

Delete the first sentence in Section 895.11 E in its entirety and insert the following:

> The symmetrical luminaires shall be Holophane Symmetrical Luminaire, Catalog No. HMAO C10HP 24R9; General Electric Asymmetrical Type X209 High Mast, Catalog No. X209Cl. OL360; Quality Symmetrical Luminaire, Catalog No. VA25V-1H or equal.

896.03 C TRAFFIC SIGNAL AND FLASHING BEACON CONTROL CIRCUITS **PAGE 63, VOL. 2** **1/1/12**

In the last sentence of the first paragraph in Section 896.03 C delete the phrase “WC-5” in its entirety and insert “WC-70”.

In the first sentence of the third paragraph in Section 896.03 C delete the phrase “WC-5” in its entirety and insert “WC-70”.

In the second sentence of the third paragraph in Section 896.03 C delete the phrase “Appendix K, Method I, Table K-1 of NEMA WC-5” in its entirety and insert “Appendix E, Method 1, Table E-1 of NEMA WC-57.”

In the fourth paragraph in Section 896.03 C delete the phrase “Table 7.4.2, NEMA WC5” in its entirety and insert “Table 4-4 NEMA WC-5”.

896.07 A TRAFFIC SIGNAL STANDARDS **PAGE 64, VOL. 2** **6/19/09**

In Section 896.07 A delete the sixth sentence in the first paragraph in its entirety and insert the following:

> Fatigue Category III shall be used for Traffic Signal Standards less than a mast arm length of 40 feet, Fatigue Category II shall be used for Traffic Signal Standards equal to or greater than a mast arm length of 40 feet.

3/1/2013

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PRICE SCHEDULE FOR MISCELLANEOUS ITEMS

The Contractor agrees to accept the following unit prices for each listed item of work and or material when no project Contract Unit Price exists for that item. Each price listed will be full compensation for the cost of labor, material and equipment necessary to provide the item of work and/or material, complete in place, including (but not limited to) royalty, disposal of unsuitable material, equipment rental, sales tax, use tax, overhead, profit, and incidentals.

Payment for items of work under this schedule performed by a Subcontractor shall include an additional allowance for the Prime Contractor as specified in Section 104.03 of Standard Specifications.

Each listed price is referenced to the Standard Specifications by Section number and Section name.

SECTION NO.	SECTION NAME	ITEM NAME	PRICE PER ITEM
107.05 A.1	Maintaining Traffic	Flagging	$32 per MHR
107.05 B.1	Haul Roads	Water	$27 per M Gal
107.05 B.7	Haul Roads	Bituminous Mix	$42 per Ton**
107.05 B.7	Haul Roads	Bitumen for Mix	Invoice Price* + 10%
107.05 B.7	Haul Roads	Aggregate Base	$17 per Ton**
203.01 B	Rock Excavation	Rock Excavation	$11 per CY
203.01 C	Shale Excavation	Shale Excavation	Common Excavation Price + $1.00 per CY
203.01 D	Muck Excavation	Muck Excavation	$9 per CY
203.02 F	Embankment Construction	Overhaul	$1.40 per CY - Mile
408.07 C.2.a	Hot Bit. Pavement (Exc. Matl Hauled to Disposal Area)	Bituminous Mixture	Machine Placed: Bid or Invoice Price + $31 per ton Hand Placed: Bid or Invoice Price + $48 per Ton
420.06	Bituminous Seal Coat	Blotter Sand	$27 per Ton**
708	Erosion Control	Mucking Silt Fence	$3.90 per L.F.
708	Erosion Control	Mucking of Fiber Rolls	$3.90 per L.F.
708	Erosion Control	Removal of Silt Fence***	$4.25 per L.F.
708	Erosion Control	Removal of Fiber Rolls***	$4.25 per L.F.

*Price paid for bituminous material will be Invoice Price plus Freight Costs.

**Price Includes haul up to 10 miles. Payment for haul exceeding 10 miles will be according to Section 109.04 of the Standard Specifications. The haul distance for Aggregate Base and Bituminous Mix will be based on the average haul. The haul distance for Blotter Sand will be from the point where the haul begins to the point where it enters the project.

***This is only for pre-existing items that were not installed under the Contract.

2014 NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

ON-THE-JOB TRAINING SPECIAL PROVISION

I. PURPOSE

The purpose of the On-the-Job Training (OJT) Program is to provide training **in the highway construction industry** for minority, female, and economically disadvantaged individuals, hereafter known as the targeted group. **Pursuant to 23 Code of Federal Regulations Part 230, Subpart A, Appendix B - Training Special Provisions, this program provides for on-the-job training aimed at developing full** journeyworkers **in the type of trade or job** classification **involved.**

II. INTRODUCTION

A. The OJT Program **was originally** prepared through the cooperative efforts of the Associated General Contractors of North Dakota (AGC); the Federal Highway Administration (FHWA); and the North Dakota Department of Transportation (Department).

B. Successful operation of the OJT Program requires that contractors follow uniform and basic procedures in training, keeping records of trainee progress toward journeyworker status, and reporting each trainee's successful completion or termination from the OJT Program.

C. The bidder's signature on the proposal sheet indicates the bidder agrees to take part in the OJT Program and to **follow** this On-the-Job Training (OJT) Program Special Provision. **Contractors that do not follow this special provision will be subject to sanctions up to and including revocation of bidding privileges.**

D. Projects funded solely with county funds and emergency relief projects that are not included **in the Department's bid openings will not contain this OJT Program Special Provision (i.e., no training program hours will count toward completion of an approved training program or be eligible for reimbursement).**

III. DEFINITIONS

Carryover Position: Unfulfilled trainee position carried forward from a prior program year.

Carryover Trainee: Trainee scheduled to continue required training hours under an approved training program from a prior program year.

Journeyworker: A worker employed in a trade or craft who has attained a level of skill, abilities, and competencies recognized within the industry.

OJT Supportive Services (OJTSS) Consultant: A consultant under contract with the Department to provide in-person oversight, support, and guidance to contractors and trainees in an effort to increase the effectiveness of approved training programs.

Targeted Group: Individuals eligible to receive training under the OJT Program. For trainee

positions assigned by the Department, trainees must be minority, female, or economically disadvantaged as defined by Job Service North Dakota (JSND).

Trainee: A person who receives on-the-job training, whether through an apprenticeship program or other program approved or accepted by FHWA.

Trainer/Supervisor: Prime contractor employee assigned to mentor, train, supervise, and support an assigned OJT Program trainee.

IV. FUNDING

The Department will establish an OJT fund annually from which contractors may bill the Department directly for eligible trainee hours. **The funds for payment of trainee hours on federal-aid projects will be made available based on 23 USC 504(e)** to a maximum of $100,000. The funds for payment of trainee hours on state-aided projects will be allocated to a maximum of $10,000.

V. ASSIGNED TRAINEE POSITIONS

A. Trainee positions will be assigned to contractors and will not be project specific. The number of trainee positions assigned will be determined by applying a formula based on calculations involving specific project specification numbers on applicable projects funded with federal highway dollars awarded by the Department to a contractor from October 1 to September 30.

B. The dollar value of projects subject to Tribal Employment Rights Ordinances (TERO), concrete pavement repair (CPR) projects, electrical projects, rest area projects, signing projects, striping projects, and state-aid highway projects will be excluded when determining the number of trainee positions assigned.

C. In early March, a summary of the trainee positions required and links to the OJT Program package will be sent to prime contractors with assigned positions. The links to the OJT Program package are also provided to prime contractors and subcontractors upon request. In addition, the summary and links are sent to prime contractors as they become eligible for trainee positions throughout the remainder of the year.

The number of trainee positions assigned to each contractor will increase proportionately, as shown in the following table, for any applicable federally funded projects awarded to them. Projects awarded after September 30 will be included in the following year's OJT Program.

D. The number of trainee **positions** will be assigned and will increase as follows:

For all federal highway dollars awarded from October 1 to September 30,

$ 4,500,000	- 8,000,000	=	1 trainee
$ 8,000,001	- 15,000,000	=	2 trainees
$15,000,001	- 23,000,000	=	3 trainees
$23,000,001	- and above	=	4 trainees

A maximum of four (4) trainee positions in a federal fiscal year will be assigned to any prime contractor regardless of dollar amount. Carryover positions from a prior

program year are not included in the four trainee maximum, e.g., a contractor with one carryover and four assigned positions will have a total five trainees.

E. Contractors not qualifying for the OJT Program, or contractors desiring to train more than the allotted number of trainees, may apply to the Department for additional trainee positions. Approval of additional positions will be at the sole discretion of the Department. The Department will take into consideration whether there is enough work for the trainee to successfully complete the curriculum and whether the contractor will be exceeding the allowable ratio of trainees to journeyworkers (generally considered to be one trainee or apprentice to every three to five journeyworkers).

F. The additional positions may be filled by individuals outside of the targeted groups. The contractor may pay the reduced training rates to additional trainees outside of the targeted groups and receive hourly reimbursement for those individuals.

VI. APPROVALS REQUIRED

A. Training Programs: Contractors must have training programs approved by the Civil Rights Division in order to pay the trainees less than the appropriate Davis-Bacon wage established for the job classification concerned and to be eligible for reimbursement under the OJT Program. No training program hours will count toward the fulfillment of an assigned trainee position or be eligible for reimbursement without prior approval. **No retroactive approval will be granted.**

1. The contractor will notify the Civil Rights Division using the *Request for On-the-Job Training Program Approval SFN 9762.* This form is available on the Department's website at:

   http://www.dot.nd.gov/forms/sfn09762.pdf

2. A completed request form and the training curriculum must be submitted for each trainee in the OJT Program. Requests must be submitted by April 1 or within fifteen (15) calendar days of notification of additional trainee assignments.

B. Trainees: Contractors must have trainees approved by the Civil Rights Division in order to pay the trainees less than the appropriate Davis-Bacon wage established for the job classification concerned and to be eligible for reimbursement under the OJT Program. No training program hours will count toward completion of an approved training program or be eligible for reimbursement without prior trainee approval. **No retroactive approval will be granted.**

1. The contractor will notify the Civil Rights Division using the *Request for On-the-Job Trainee Approval SFN 60226*. This form is available on the Department's website at:

   http://www.dot.nd.gov/forms/sfn60226.pdf

2. A completed request form and the trainee's employment application must be submitted for each trainee employed under the OJT Program.

3. Written JSND certification of an individual as economically disadvantaged

must also be provided to the Civil Rights Division as part of the approval process for trainees.

C. The contractor may request to train an individual in a classification not included in this OJT Program package. The request must be submitted, in its entirety, for approval by the Department and FHWA before the trainee begins work under the OJT Program. **No retroactive approval will be granted.**

Training programs for classifications not covered by the Davis-Bacon and Related Acts (DBRA) will be considered on a limited basis. **Customized training curricula will not necessarily be added to the OJT Program; however, previously approved programs are available to contractors upon request; for example, in 2013 the Department approved programs for GPS Survey Technician and Project Management.**

If approved, each new classification must comply with the provisions specified in this OJT Program package. The request must include:

1. A training curriculum, including the classification requested, minimum number of hours required, and type of training the individual will receive to achieve journeyworker status.

2. A minimum wage scale.

D. Union apprenticeship and on-the-job training programs registered with the Bureau of Apprenticeship and Training (BAT), U.S. Department of Labor, are recognized by the Department. These programs may be used for trainee positions assigned under the OJT Program, provided the trainees or apprentices are minority, female, or economically disadvantaged. Nonminority males not certified as economically disadvantaged may be used when the contractor has requested and received approval, from the Department, for additional trainee positions. However, contractors must produce indenture papers to be eligible for reimbursement, to pay the trainees or apprentices less than the appropriate Davis-Bacon wage established for the job classification concerned, and to receive credit for fulfilling assigned trainee positions.

E. The contractor may train an individual on a combination of equipment if each piece of equipment falls within the same groups of power equipment operators identified in the training curricula (groups 1-3 and groups 4-6). These power equipment operator groups are referenced to the federal Davis-Bacon wage rates contained in the contract proposal. As an example, a "utility operator" may receive training on a broom, a front-end loader less than 1½ cubic yards, or other piece of equipment that is used around a paver if each piece falls within either groups 1-3 or groups 4-6. When multiple wage rates apply, the trainee's wage will be based on the equipment being operated at the time or on the highest of the applicable wage rates.

F. Use of the classification "pickup machine operator (asphalt dump-person)" as a group 4 power equipment operator is considered standard industry practice. The classification is defined as: "Operates the controls on the pickup machine that runs in front of the paver, trips the levers on the dump trucks, and balances the loads for the paver. The pickup machine operates on similar principles as a shouldering machine."

VII. DEPARTMENT'S RESPONSIBILITIES

A. Once the trainees have been approved, the Department's OJT supportive services (OJTSS) consultant will monitor the excerpts from the weekly certified payrolls submitted with the monthly vouchers for reimbursement. This includes weekly payrolls from contractors working on state funded only projects. The OJTSS consultant will assure that when the trainees have completed the specified number of hours, their wages are increased accordingly. The OJTSS consultant will also assure that applicable fringe benefits are paid either directly to the trainees or into approved plans, funds, or programs on their behalf.

B. **The OJTSS consultant will also be visiting the** targeted group trainees **and monitoring their progress under the OJT Program. To facilitate the on-site visits, the OJTSS consultant will contact contractors** for the location of the trainees.

VIII. CONTRACTOR'S RESPONSIBILITIES

The contractor:

A. Will appoint an individual within their company who will be available to respond to weekly contacts by the OJTSS consultant in order to monitor the status of assigned trainee positions (e.g., program and trainee approvals, trainees' progress, etc.). Upon assignment of a trainee position, the OJTSS consultant will immediately send a Request for On-the-Job Trainee Approval (SFN 60226) to the contractor to obtain the name, direct phone number, and email address of the individual. The individual must reply to communications from the Department and the OJTSS consultant in a timely manner.

B. **Will ensure trainees are aware they are in a training program and what that means to the contractor and the trainee.**

C. **Will make trainees available to the OJTSS consultant for on-site visits at least twice each construction season.**

D. Will identify all approved trainees on the payrolls, for example: "grp. 4 roller operator trainee." This includes trainees in job classifications not covered by DBRA.

E. Will assign each trainee to a particular person–either a supervisor or an employee proficient in the skill–who shall see that timely, instructional experience is received by the trainee. This person will **be familiar with the OJT Program,** ensure proper records are kept, and **ensure** the required training hours are completed **in** accord**ance with** the training curriculum.

F. **Will make the trainer and project superintendent available to the OJTSS consultant for on-site visits at least twice each construction season.**

G. May terminate the training period of a trainee who has completed 90% or more of their hours and advance the trainee to journeyworker status after providing notice to the Department.

H. Will notify the Department when a trainee completes the OJT Program. The Department will issue a certificate of completion to the trainee.

I. May upgrade trainees from one power equipment operator group or truck driver group to another, with the approval of the Civil Rights Division. Trainees upgraded will not be required to complete the entire number of hours assigned to the new training curriculum. The minimum number of hours required will be:

Power Equipment Operator Groups 4-6 to Groups 1-3 = 400 hrs.
Class C Truck Driver to Class B = 200 hrs.
Class B Truck Driver to Class A = 200 hrs.

Depending on the variety of experience the trainee has gained under the previous curriculum, the difference in the hours may be deducted from the actual operation of the piece of equipment or truck. The contractor will need to review the trainee's past performance in order to make this determination.

J. Commercial driver's license (CDL) holders having over-the-road driving experience, with little or no highway construction experience, may be considered to have completed the Class C truck driver training curriculum and, therefore, are eligible to be upgraded to a Class B truck driver trainee, with the approval the Civil Rights Division.

K. May transfer trainees from one project to another in order to complete the OJT Program. If transfers are made, the Civil Rights Division must be notified and provided with the name of the trainer. The training hours will count toward overall OJT Program completion.

L. May use trainees on municipal, private, or other non-highway work and work performed out of state. The training hours will count toward overall OJT Program completion; however, no program reimbursement will be made for those hours. In addition, the hours will be limited to no more than 25% of the total hours required under the training curriculum.

M. Contractors may delegate or reassign trainee positions to subcontractors, with the acceptance of the subcontractors and the approval of the Civil Rights Division. The prime contractor must verify that the trainee will be able to accumulate enough hours to complete his or her training program. If approved, the subcontractor must obtain training program and trainee approval from the Civil Rights Division before the trainee begins work under the OJT program. Program reimbursement will be made directly to the prime contractor. The trainee position will remain the responsibility of the prime contractor.

N. May use trainees on projects subject to TERO requirements as part of the core crew or as part of the skilled labor supplied by the contractor.

O. Contractors may not use one trainee to fill multiple trainee positions. For instance, a subcontractor may not use the same trainee in the same training program to simultaneously fill two or more trainee positions reassigned to them by prime contractors.

P. May use a trainee on a piece of equipment in groups 1-3 or groups 4-6 for one assigned trainee position, then once that trainee has completed the program, the trainee may be trained on a different piece of equipment in groups 1-3 or groups 4-6 to fulfill a second assigned trainee position. When a trainee is used for a second time within a group, the contractor must pay that trainee at the higher wage rate as described in paragraph B under Wage Rates (page 8).

IX. CLASSROOM TRAINING

A. Classroom training may be used to train employees. The contractor will submit a proposed classroom training curriculum to the Civil Rights Division for approval. The classroom training curriculum must define the type of training the individual will receive and the minimum number of hours required. The Department will determine the number of hours of credit each trainee will receive toward their training. Each classroom training curriculum must be pre-approved by the Civil Rights Division if the contractor wishes to count the classroom hours as training hours. **No retroactive approval will be granted.**

B. Contractors will be reimbursed for classroom training hours after the trainee has completed 80 hours of work on highway construction projects.

C. Reimbursement for classroom training will be limited to 60 hours per trainee per construction season. **Qualified testing technicians and concrete testing technicians/inspectors will not be included in the 60-hour limit.** Reimbursement for classroom training required under the Department's Transportation Technician Qualification Program will be at the Department's discretion.

D. The minimum wage scale to be used for classroom training will be that of the first federal-aid highway construction project on which the trainee will be employed. If the trainee is already employed on a federal-aid highway construction project, the trainee will be paid in accordance with the minimum wage scale applicable to that project. However, if the first project on which the trainee will be employed is a state funded only contract, the minimum wage scale to be used for the classroom training will be that of the appropriate Davis-Bacon wage in effect at the time of award of the state funded contract.

X. WAGE RATES

A. The minimum wage rates shall not be less than 80% of the journeyworker rate for the first two quarters of training, 85% of the journeyworker rate for the third quarter, and 90% of the journeyworker rate for the fourth quarter. In no case shall the minimum wage be less than that of the group 1 laborer classification in the federal Davis-Bacon wage rates contained in the contract proposal. Trainees shall be paid full fringe benefit amounts, where applicable. The contractor has the option of paying the fringe benefits into approved plans, funds, or programs or directly to their employees. A trainee working on a state funded only project, must be paid the Davis-Bacon wage rate in effect at the time of award of the state funded project for the type of work the trainee is performing.

B. Under the power equipment operator training curricula only, once a trainee has completed a training curriculum in either groups 1-3 or groups 4-6, the contractor may enroll the trainee in another training curriculum on a different piece of equipment in either groups 1-3 or groups 4-6. The minimum wage rate under the second program shall not be less than 85% of the journeyworker rate for the first two quarters of training, 90% of the journeyworker rate for the third quarter, and 95% of the journeyworker rate for the fourth quarter.

C. At the completion of the OJT Program, the trainee shall receive the wages of a skilled journeyworker.

D. For the purpose of the OJT Program, a quarter is 25% of the hours worked by each trainee and does not represent three months of the year. The first two quarters of a 550-hour training curriculum would end after 275 hours, the third quarter after 138 hours, and the fourth after 137 hours.

XI. RECRUITMENT AND SELECTION PROCEDURES

A. Prerequisite for Trainees:

To be qualified for enrollment in the OJT Program, trainees must possess basic physical fitness for the work to be performed, dependability, willingness to learn, ability to follow instructions, and an aptitude to maintain a safe work environment.

B. Licenses:

Truck driver trainees must possess appropriate driver permits or licenses for the operation of Class A, B, and C trucks. When an instructional permit is used in lieu of a license, the trainee must be accompanied by an operator who:

1. Holds a license corresponding to the vehicle being operated;

2. Has had at least one year of driving experience; and

3. Is occupying the seat next to the driver.

C. Recruitment:

1. Notices and posters setting forth the contractor's Equal Employment Opportunity Policy and the availability of the OJT Program will be placed in areas readily accessible to employees, applicants for employment, and potential employees.

2. The contractor must employ **members of the targeted group (minority, female, or economically disadvantaged individuals)** for all trainee positions assigned **in** accord**ance with** the OJT Program. Additional positions requested by the contractor may be filled by individuals outside of the targeted groups.

3. The contractor will conduct systematic and direct recruitment through public and private employee referral sources.

4. Present employees will be screened for upgrading. A present employee may qualify as a trainee; however, no work hours will be reimbursed or counted toward program completion prior to training program and trainee approval by the Civil Rights Division.

D. Selection:

1. The selection and employment of a person, meeting the aforementioned criteria, by a participating contractor shall qualify the person for the OJT Program.

2. Employment of trainees will be in accordance with the workforce requirements of the contractor. Each contractor will hire and train the trainees for use in their own organization.

3. A contractor may not employ an individual as a trainee in a job classification in which that individual has successfully completed a training course leading to journeyworker status or in which the individual has been previously employed as a journeyworker.

4. Contractors must submit the *Request for On-the-Job Trainee Approval (SFN 60226)* and the trainee's employment application to the Civil Rights Division for review and approval. Approval must be obtained before the trainee may begin work under the OJT Program. **No retroactive approval will be granted.**

5. The economically disadvantaged certification can only be obtained from **JSND**. Written certification of individuals under this category can be provided to the contractor at the time of the interview if the applicant is referred by **JSND**. Any person wishing to obtain this certification must apply to **JSND** and complete the Application for Eligibility (SFN 7857). This certification must be provided to the Civil Rights Division with the other required information as part of the approval process for trainees. A contractor that has an individual who may qualify must contact the Workforce Investment Act Program Manager at **JSND. JSND** contacts **are also** available on the Department's website at:

   http://www.dot.nd.gov/divisions/civilrights/docs/jobservice-workforce-invest-contacts.pdf

6. Nonminority males used to fill additional trainee positions approved by the Department do not have to be certified as economically disadvantaged.

XII. BASIS OF PAYMENT

A. Contractors will be paid $4.00 for each hour of training provided in accordance with the OJT Program.

B. Program reimbursement will be made directly to the prime contractor. To request reimbursement, prime contractors must complete the *Voucher for On-the-Job Training Program Hourly Reimbursement (SFN 51023)* for each trainee employed under the OJT Program. Attached to each voucher must be excerpts from the weekly certified payrolls showing the trainee's hours, rate of pay, and how applicable fringe benefits are paid. This includes excerpts from weekly payrolls for state funded only projects. Vouchers without excerpts from payrolls will not be paid until the excerpts are provided. If the excerpts from the payrolls are not provided within one week, the voucher will not be approved. The voucher is available on the Department's website at:

   http://www.dot.nd.gov/forms/sfn51023.pdf

C. The completed vouchers must be submitted to the Civil Rights Division for approval and processing by the fifteenth (15^{th}) calendar day of every following month the trainee is employed under the OJT Program.

Regardless, all vouchers for trainee hours worked on state funded only projects from July 1 to June 30 must be received by the Civil Rights Division no later than July 15 in order to be reimbursed. All vouchers for trainee hours worked on federally funded projects from October 1 to September 30 must be received by the Civil Rights Division no later than October 15 in order to be reimbursed. This is due to state and federal end-of-the-year budget fiduciary requirements.

XIII. FAILURE TO PROVIDE THE REQUIRED TRAINING OR HIRE THE TRAINEE AS A JOURNEYWORKER

A. No payment shall be made to a contractor for failure to provide the required training or failure to hire the trainee as a journeyworker when such failure is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this OJT Program Special Provision.

B. If payments have been made, the Department will withhold the amount paid from the contractor's progress payment.

C. It is normally expected that a trainee will begin his or her training as soon as feasible after start of work utilizing the skill involved and remain employed as long as training opportunities exist in his or her work classification or until he or she has completed his or her training program.

D. It is not required that all trainees be employed for the entire length of the construction season. A contractor will have fulfilled its responsibilities under this OJT Program Special Provision if it has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled for a significant period.

XIV. UNFULFILLED TRAINEE POSITIONS

A. For a variety of reasons, a contractor may be unable to fulfill the assigned number of trainee positions during a construction season. Any contractor that has not completed the assigned number of trainee positions must contact the Civil Rights Division by October 1 of the current construction season and provide documentation as to why the assigned trainee positions were not fulfilled. The Civil Rights Division will decide, on a case-by-case basis, whether to carry the trainee positions over to the next construction season.

B. Carryover trainee positions should be among the first positions filled at season startup. Contractors must notify the Department of the trainee's rehiring and submit *Request for On-the-Job Trainee Approval (SFN 60226)*, marking 'Check if Carryover Trainee' in the Approved Training Program section of the form, See Attachment 2.

C. Sanctions, up to and including revocation of bidding privileges, may be imposed by the Department for failure on the part of the contractor to provide sufficient documentation as to why assigned trainee positions were not fulfilled.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

TEMPORARY EROSION AND SEDIMENT BEST MANAGEMENT PRACTICES

1. GENERAL

Install, maintain and remove appropriate Temporary Best Management Practices (BMPs).

Definitions:

A. Temporary Erosion and Sediment BMPs are to be installed and maintained before and during the term of the land disturbance activity. These items are removed when permanent erosion and sediment BMPs are installed.

B. Permanent Erosion and Sediment BMPs are to be installed and maintained once the project is completed so that the applicable permits can be terminated.

In some instances, individual temporary and permanent erosion and sediment BMPs for a site may consist of identical BMPs. In these cases, the temporary erosion and sediment BMPs may be used as the permanent erosion and sediment BMPs if they meet the following criteria:

1. The BMP was installed correctly,
2. Is in a functional condition,
3. Has had all accumulated sediment removed.

C. The **Stormwater Pollution Prevention Plan (SWPPP)** is the document that identifies potential sources of sediment or other pollution from construction activity and ensures practices are used to reduce the contribution of pollutants from construction site runoff.

D. Contractor Controlled Areas are areas not included in the contract, but are obtained and solely controlled by the Contractor (e.g., concrete or asphalt batch plants, concrete washout areas, equipment staging yards, material storage areas, excavated material disposal areas, Contractor furnished borrow areas, etc.).

E. Maintenance is any action taken to keep a BMP in working condition. These actions may consist of repairing failures of the BMP itself.

F. Noncompliance is any action or inaction that violates the regulations imposed by the applicable permits or the requirements of this special provision and other contract documents. Failure of a BMP does not necessarily constitute

noncompliance as long as the BMP is repaired, replaced or supplemented within the timelines established in the applicable permits and no sediment is discharged from the site or into a water of the state.

2. CONSTRUCTION REQUIREMENTS

Develop a SWPPP specific to the project. The creation of the SWPPP is a cooperative effort between the NDDOT who creates the project plan sheets and the Contractor who creates a complete SWPPP which incorporates the plan sheets and the Contractor's means and methods. The project plan sheets by themselves do not meet the requirements of a complete SWPPP and should not be considered as such. The Contractor has the flexibility to modify the design and implementation of the temporary erosion and sediment controls to match the Contractor's means and methods and/or field conditions. These changes must be documented in the SWPPP and meet all regulatory requirements.

Obtain appropriate permit coverage for the activities conducted in Contractor Controlled Areas. A permit will be required for these areas regardless of their size. The NDDOT will have no responsibility for these areas.

Install perimeter erosion and sediment BMPs according to the plans/SWPPP prior to site disturbance.

Change the location of temporary erosion and sediment BMPs to fit the field conditions.

Update the SWPPP as work progresses, or as directed by the Engineer. Update the SWPPP to show changes due to revisions in work schedules or sequence of construction. Update the site map to reflect erosion and sediment BMPs that have been installed, changed, or removed.

Do not rely on perimeter BMPs as the sole method of controlling erosion. As the project progresses, install temporary erosion and sediment BMPs within the perimeter BMPs to control erosion resulting from the construction of the project.

Use temporary erosion and sediment BMPs to prevent contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment.

Coordinate temporary erosion and sediment BMPs with the construction of permanent erosion and sediment BMPs to provide continuous erosion control. Do not install temporary erosion and sediment BMPs when permanent erosion and sediment BMPs are able to be installed. Once the permit is terminated or transferred to the Department, the maintenance of the permanent erosion and sediment BMPs becomes the responsibility of the NDDOT.

Install stabilization BMPs (mulch, seeding and mulch, etc.) in areas that have been disturbed where work has temporarily or permanently ceased following the timelines

established in the applicable permits. If implementation of stabilization is precluded by snow cover, undertake such measures as soon as conditions allow.

Maintain the effectiveness of the temporary erosion and sediment BMPs as long as required to contain sediment runoff. Inspect the temporary erosion and sediment BMPs and complete the inspection and maintenance reports every 14 days and within 24 hours of a rainfall event of 0.25 inch or more. During prolonged rainfall (more than 1 day), conduct an inspection within 24 hours of the first day of the event and within 24 hours after the end of the event. Inspections are required only during normal business hours. Install a rain gauge to monitor rainfall amounts as required by the appropriate permit.

Correct any deficiencies in the BMPs within the timelines established in the applicable permits. If conditions do not permit access to the BMP, corrective actions can be taken by installing additional BMPs. Correct the original deficiencies as soon as conditions allow access to their location without causing additional damage to the slopes. In the inspection logs, document the conditions that prohibit access.

Provide copies of all inspections, documentation, record keeping, maintenance, remedial actions, and repairs required by the applicable permits to the Engineer. Provide inspection and maintenance reports within 3 working days after an inspection has been conducted.

Provide immediate written notification to the Engineer of proposed changes to the erosion control plan or SWPPP. The Engineer will review the proposed changes and determine if they are adequate. Documentation of maintenance and inspections that does not affect the erosion control plan or SWPPP does not require approval by the Engineer.

Remove the temporary devices when directed by the Engineer or when permanent erosion and sediment controls are installed.

3. PERSONNEL

A. **Erosion and Sediment Control Supervisor.** Designate an erosion and sediment control supervisor. Provide the name and contact information for the supervisor at the preconstruction meeting. If this erosion and sediment control supervisor becomes unavailable on the project, designate a replacement supervisor. Notify the Engineer if this supervisor changes and provide the contact information for the new supervisor.

1. **Qualifications.** Name a supervisor that:

    a. Is an employee of the Prime Contractor.

    b. Is familiar with installation, maintenance and removal of BMPs and the requirements of the erosion and sediment control plans, applicable permit requirements, specifications, plans and this provision.

    c. Is competent to supervise personnel in erosion and sediment control operations.

2. **Duties.** Have the supervisor:

    a. Provide erosion and sediment control as required by the SWPPP, Plans, and Specifications.

    b. Be on the site to supervise the installation, operation, inspection, maintenance, and removal of the erosion and sediment BMPs.

    c. Update the SWPPP as work progresses to show changes due to revisions in work schedules or sequence of construction, or as directed by the Engineer. Update the site map to reflect erosion and sediment BMPs that have been installed, changed, or removed.

    d. Propose changes to improve erosion and sediment control.

    e. Be accessible to the job site within 24-hours.

    f. Provide the Engineer with documentation of all erosion and sediment control activities and inspections as required above.

4. PERFORMANCE

Correct all areas of noncompliance within 24 hours after notification of noncompliance. If corrective actions are not taken within 24 hours, the Engineer may:

1. Apply a contract price reduction of $500 per day per instance.

2. Have deficiencies corrected by another Contractor and deduct the cost of the work from the monies due or to become due to the Contractor.

3. Suspend all work.

4. Withhold payment on other contract items/pay estimates.

These actions will be applied until deficiencies have been corrected.

5. BASIS OF PAYMENT

BMP installation will be paid for at the contract unit price for erosion and sediment control items (Section 708). The plans will detail the required BMPs for temporary and permanent installations. The same bid items may be used for temporary and permanent BMPs.

BMP removal will be paid for at the contract unit price for "Removal _____".

Include the costs for labor, materials, maintenance, equipment, disposal, adherence to the permit, and SWPPP modifications in the respective pay items.

When temporary erosion and sediment BMPs are installed according to the Contract Documents, or as approved by the Engineer and such BMPs are no longer effective because of deterioration or functional incapacity, payment will be made for replacement of these devices, if the Engineer directs replacement. No payment will be made for replacing temporary erosion and sediment BMPs that the Engineer determines are ineffective because of improper installation, lack of maintenance or the Contractor's failure to pursue timely installation of permanent erosion and sediment BMPs according to the Contract Documents. No payment will be made for replacing temporary erosion and sediment BMPs due to contractor operations. Include the cost to move Flotation Silt Curtain as work progresses in the price bid for "Flotation Silt Curtain".

Erosion and sediment controls for Contractor Controlled Areas are the responsibility of the Contractor and will not be paid for by the Department.

Removal of sediment will be paid for at the price listed in the "Price Schedule PS-1."

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

SPLIT SAMPLING AND TESTING REQUIREMENTS FOR AGGREGATE BASE

GENERAL

This provision defines a method to provide a split sample of aggregate base material for the contractor to compare test results. Only NDDOT test results will be used for material acceptance.

The Contractor may request, in writing, to discontinue his receipt of a portion of the sample. If a request is received, the Engineer will discontinue providing the material and this Special Provision will no longer be enforced.

The sampling and testing frequency will remain the same as required by Section 302 of the Field Sampling and Testing Manual.

PERSONNEL AND TESTING REQUIREMENTS

All Engineer and Contractor testing personnel must be certified by the Departments Testing Certification Program.

The Engineer will collect samples and perform tests as specified in the NDDOT Field Sampling and Testing Manual

The Contractor shall perform tests as specified in the NDDOT Field Sampling and Testing Manual and shall provide all test results on the proper NDDOT forms.

SAMPLE COLLECTION

The Engineer will select the location and will coordinate with the Contractor regarding the time to obtain the sample. The Contractor may request, in writing that he wishes to be present when the samples are collected. If the Contractor requests to be present and fails to meet the Engineer at the required time, the Engineer will collect the sample without the Contractor. Sampling will follow the AASHTO T 2 procedures outlined in the Field Sampling and Testing Manual.

FREQUENCY AND SPLITTING OF SAMPLES

The Engineer will split the sample into three parts. The Engineer will test one part and provide the contractor with one part. The Engineer will retain one portion of the sample for use as a check sample if the Engineer and Contractor test results are not within tolerances shown in Table 1. The third portion of the sample will be retained by the Engineer and discarded when test results are within Table 1 tolerances.

The Engineer will provide the Contractor with a portion of the sample for the first and second 1,000 tons of material placed.

Thereafter, the Engineer will provide the Contractor with a portion of the sample for every 10,000 tons, or fraction thereof, of material placed.

The Engineer will provide material from the samples obtained to perform tests per NDDOT Specifications and the NDDOT Field Sampling and Testing Manual.

COMPARISON OF TEST RESULTS

The Contractor shall provide test results to the Engineer within 2 working days. Test results shall include copies of all worksheets and final summary sheets. If the Contractor does not provide the results in the required timeframe, the split sample testing will discontinue.

The Engineer will provide his results to the Contractor upon receipt of the Contractor's results.

The following table will be used as a guide to determine correlation ranges between Contractor and acceptance sample results. If the difference in the two test results exceed the acceptable limits, the third sample may be tested by the NDDOT central lab.

Table 1

Material Requirement	Variance between Engineer and Contractor results
Percent passing on No. 4 sieve	6 percentage points
Percent passing on No. 30 sieve	4 percentage points
Percent passing on No. 200 sieve	2 percentage points
Plasticity Index	4
Lightweight pieces	3 percentage points
Fractured faces	5 percentage points

BASIS OF PAYMENT

The Contractor shall include all costs associated with performing the tests required under this Special Provision in the price bid for aggregate base course bid items.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

MONUMENTS AND RIGHT OF WAY MARKERS

DESCRIPTION
Section 720 of the Standard Specifications shall not apply.

This work consists of furnishing and installing Alignment Monuments, Iron Pin R/W Monuments, Iron Pin Reference Monuments, and Right of Way Markers.

MATERIALS
Iron pin monuments shall be constructed of reinforcing steel that meets the requirements of Section 836.02 A, “Deformed and Plain Steel Bars for Concrete Reinforcement”.

Precast concrete monuments shall be constructed of Class AE concrete that meets the requirements of Section 802, “Portland Cement Concrete”.

Right of Way Markers shall be constructed of recycled plastic.

CONSTRUCTION REQUIREMENTS
When placing the iron pin monument in concrete pavement, the Contractor shall secure the aluminum cap and the iron pin with epoxy that meets the requirements of Section 806.02, “Epoxy Resin Adhesives”.

The Contractor shall provide a licensed Professional Land Surveyor (PLS) to oversee the placement of monuments. The PLS shall record all section corners and quarter corner monuments placed on the project in accordance with the North Dakota Century Code. The Contractor shall submit a copy of the recordation to the Engineer.

A PLS is not required for the installation of Right of Way Markers.

METHOD OF MEASUREMENT
The Engineer will measure, completed and in place, as specified in Section 109.01, “Measurement of Quantities”.

BASIS OF PAYMENT

Pay Item	Pay Unit
Monuments	Each
Right of Way Markers	Each

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

CONCRETE MIX DESIGN

GENERAL

This project will utilize a well graded aggregate to produce the portland cement concrete pavement. Achieving a well graded aggregate combination may require the use of three or more different aggregate sizes. The Contractor is responsible for stockpiling aggregate in as many different sizes as necessary to provide a uniform aggregate that meets the specified gradation. The Contractor shall have sufficient material stockpiled to produce at least 25% of the estimated required quantity before start of production of the concrete. During production of the concrete the aggregate stockpiles shall be maintained so they are uniform and they contain sufficient material to produce at least 25% of the estimated required quantity to finish production.

MATERIALS

Materials shall be as specified in Sections 550, 802 and 816, with the following modifications:

A. **Mix Design.** After the Contractor has sufficient aggregate stockpiled to assure uniform production of each aggregate component, the Contractor shall develop a trial mix design meeting the requirements of this Special Provision. The mix used for design purposes must have at least 6 percent air. The Contractor shall submit the completed trial mix design including all test data to the Engineer. The Engineer will submit the information to the Central Office Laboratory for verification.

The Contractor shall provide representative samples of all materials in the concrete mixture that were used for the trial mix design 14 days before beginning paving operations. The materials used in the mix design shall be the same as those used on the project. A sample tag identifying the project number and material shall be attached to the samples. The minimum size samples for verification of the mix design are as follows:

Material	Sample
Cement	100 lb.
Fly Ash	35 lb.
Well Graded Aggregate	1000 lb.
Air Entraining Admixture	½ pint
Water Reducing Admixture	½ pint

More material may be requested during verification of the trial mix design.

1. **Change in Materials Source.** If aggregates, cement, fly ash, water or other admixtures are utilized from sources other than those initially submitted, the Contractor shall develop a trial mix design meeting the requirements of this special provision. The Contractor shall submit the completed trial mix design, including all test data, to the Central Office Materials Laboratory for verification along with

representative samples of all materials in the concrete mixture that were used for the trial mix design a minimum of 14 days prior to incorporating the material into the work. The minimum size samples are as indicated previously for the verification mix design.

During production of the mix, the Contractor may make adjustments to aggregate and water content to produce a mix with the required composition, workability, durability, and consistency. The Engineer shall be advised of any such adjustments. Adjustments to the water content must be limited to maintain the water-cement ratio (w/c). No adjustment in Unit Price will be made because of any increase or decrease in costs which may result from adjustments in admixture dosage, water content, cementitous material, or aggregate proportions.

1. **Strength.** The target value for compressive strength of the concrete mix will be a minimum of 3000 psi at 7 days. The target value for the flexural strength will be a minimum of 450 psi at 7 days.

2. **Cementitous Materials.** The minimum cement content shall be 564 pounds. Fly Ash will be allowed as a cement replacement on a 1:1 ratio, up to a maximum of 29% by weight. Fly Ash will be included in the cement content by actual weight, for the determination of w/c ratio.

3. **Water Content.** The concrete mix should be designed and placed with a maximum w/c ratio of 0.40 when placing with a slipform paving machine. When concrete is placed without the use of a slipform paving machine the concrete should be designed and placed with a maximum w/c ratio of 0.45. The water content includes mixing water and free water on the surface of the aggregates, but does not include water absorbed by the aggregates.

4. **Air Content.** The concrete mix shall be placed, behind the paver, with an air content of 6.0 ±1.0 percent by volume. Samples for acceptance testing will be taken by the Contractor from behind the concrete paver, when requested by and under the direction of the Engineer. The Engineer will also take a sample of concrete at the point of discharge to develop a correlation between samples. Once the Engineer determines a correlation value is established, acceptance samples will be taken at the point of discharge. The Engineer will have the right to request a sample from behind the paver at any time to verify the correlation value.

5. **Water Reducing Admixture.** A water reducing concrete admixture shall be used in the concrete mix. The admixture shall not contain calcium chloride or interfere with the proper control of the air content of the concrete. Adjustments shall be as recommended by the admixture manufacturer.

6. **Well-Graded Aggregates.** The Contractor shall provide a well-graded composite aggregate. The composite gradation shall be based on the combined gradation of the virgin fine and virgin coarse. The fractional gradations and blend proportions necessary to produce the well-graded aggregate will be determined by the Contractor, and submitted to the Engineer to verify the mix design. The composite aggregate gradations shall meet the following gradation limits:

Composite Gradation Limits	
Sieve Size	**Percent Passing**
1 1/4 “	100
1"	95-100
3/4"	90 - 100
3/8"	55 - 70
No. 8	31 - 42
No. 16	18 - 35
No. 50	0 - 10
No. 200	0.0 – 3.0

All aggregates shall be blended at the batch plant. The combined gradation may be determined by mathematical computations.

To perform testing of the aggregate properties other than the gradation requirements, the composite aggregate sample will be split on the #4 sieve. The remaining properties will be as specified in Section 816.01 A.2. and 816.02 A.2 of the Standard Specifications.

B. Submittals. A minimum of 14 days prior to the beginning of paving operations, the Contractor shall submit the source, gradations and proportions of the aggregate to be used to the Engineer. The Contractor shall also submit certifications for all materials and admixtures that will be used to the Engineer for review and acceptance.

C. Maturity Curve. During the mix design development, the Contractor shall develop a maturity curve using the materials for the project. The development of the curve shall follow ASTM C 1074 using 6 X 12 cylinders or flexural beams for strength determination.

CONSTRUCTION REQUIREMENTS

The Project will be constructed according to Section 550 and the following requirements:

A. Water-Cement (W/C) Ratio. The determination of the w/c ratio will be based on the following procedures:

1. Water Content. The water content in the concrete mix used for the determination of the w/c ratio shall consist of the water added to the mixer plus the free water carried by the aggregate.

All water added to the mix shall be recorded by an electronic meter. The moisture contents of the aggregate (fine, virgin coarse, recycled coarse) shall be determined by the Contractor. The batch ticket shall indicate the values for water added, free water, and the total water (water added plus free water).

For informational purposes, the water content in the mix shall also be determined from samples of the plastic concrete taken at the plant site. The water content will be determined by test procedure: AASHTO T-318 "Water Content of Freshly Mixed Concrete Using Microwave Oven Drying." A minimum of once per day the Engineer will perform a water content determination at the same time that a cylinder and beam are cast. A summary of the comparison of the water content from the batch tickets to the

water content using the microwave test will be provided to the NDDOT, Materials and Research Division.

2. **Cement Content.** The cement content shall be determined from the batch ticket weight.

3. **Cement Tolerance.** The cement content shall be maintained within a tolerance of ± 1%.

4. **Water-Cement (W/C) Ratio.** The w/c ratio will be determined by dividing the batch ticket weight of the total water by the combined batch ticket weights of cement and fly ash.

BASIS OF PAYMENT

The Basis of Payment will be according to Section 550.06 and the following:

Water Reducing Admixture, Air-Entraining Admixture, Fly Ash, Maturity Curve Development, and Well Graded Aggregate will not be measured for payment but will be included in the price bid for Concrete Pavement.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

PCC PAVEMENT – UNCONTROLLED CRACKING

1. DESCRIPTION

This special provision modifies requirements as outlined in the North Dakota Department of Transportation 2008 *Standard Specifications for Road and Bridge Construction*, sections 550.04 I.2, 550.04 I.5, and 550.04 M.1 in regards to uncontrolled cracking in new PCC pavement.

2. GENERAL

Concrete pavement in which uncontrolled cracks occur shall be repaired or removed and replaced at the Contractors expense, unless the Contractor can provide proof that the uncontrolled cracks were not at the fault of the Contractors operations to the satisfaction of the Engineer. The Contractor shall submit to the Engineer a corrective action plan that details how the uncontrolled cracked area will be repair or removed and replaced within 7 days after the uncontrolled cracking occurs. Once the corrective action plan is approved the Contractor shall have 30 days to complete the work detailed in the corrective action plan. The work shall include the complete removal and replacement of a quantity of pavement, to include dowel bar assemblies when applicable, as is determined necessary for acceptance of the pavement by the Engineer. Any base or subgrade which is damaged during the removal and replacement process shall be restored at the Contractor's expense. Drainable base will be restored by the use of Class 7 aggregate or other drainable material as approved by the Engineer.

Removal and replacement work shall be performed in accordance with section 570 of the North Dakota Department of Transportation 2008 *Standard Specifications for Road and Bridge Construction*, and as directed by the Engineer.

3. CONSTRUCTION MEANS AND METHODS

The Contractor will be allowed to use means and methods of their choosing to saw the joints in the concrete pavement. These means and methods may include, but are not limited to; skip sawing and green sawing. The Contractor shall be responsible for sawing to a depth that will prevent uncontrolled cracking.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

RIGID PAVEMENT SURFACE TOLERANCE - URBAN

7-804(049)247 – PCN 20325

DESCRIPTION
This provision details the surface tolerance requirements and corrective actions for the rigid pavement on the above referenced project.

APPLICABLE AREAS AND EXCEPTIONS
In addition to specification 550.04 P.1 and P.3 the following applies:

The pavement smoothness will be determined by profiling the paved surface of the mainline pavement. All paved concrete surface will be profiled with the following exceptions:

1) Bridge decks.

2) Side roads and approaches.

3) Shoulders, ramps and gore areas.

4) At-grade railroad crossings.

5) Beginning and end of the project.

6) Where utility apertures are placed in the wheel paths of the lanes.

7) Finished surfaces within 20 feet before and after the excluded areas shown in 1, 4, 5 and 6.

8) Where safety and the roadway geometrics do not allow the proper operating speed for the profiler to collect data. These areas will be determined by the Engineer.

EQUIPMENT
A Department profiler will be used to collect initial profile and the final acceptance profile. The profile of the roadway will be measured with one Roline laser for each wheel path, meeting ASTM E950.

The Department profiler with Roline lasers will be certified by MnDOT.

OPERATION
The Department will be responsible for the collection of the final acceptance profile. The Department will collect the profile when the entire mainline paving is complete.

The Contractor shall schedule a time to have the profile collected by the department.

This document was originally issued and sealed by Nathan Arne Haaland, Registration number PE-7116 on 10/6/13 and the original document is stored at the North Dakota Department of Transportation.

Five working days will be provided for the Department to collect the profile, after the Contractor has notified the Engineer that the pavement is ready for final acceptance profile collection.

If previously ground areas are identified by the Engineer as needing additional correction after final acceptance profile the sum of $1,500 will be deducted from money due to the Contractor for the cost of engineering and supervision, and other items which cause an expenditure of public funds for an additional profile collection.

When the Department collects an acceptance profile, both wheel paths will be collected at the same time. One profile will be collected for each lane. The lasers will collect the profile in each wheel path per lane (one trace approximately 31" from centerline of the roadway and the other trace approximately 97" from centerline). An additional 500' of continuous roadway will be needed beyond the beginning and end of project to facilitate the collection of the profiles.

The Department will not test the roadway between November 15 and May 15. The Department will not collect a profile when the ambient temperature is below 40°F, or while it is raining and/or under inclement weather conditions determined by the Engineer. The Department will test the roadway when the pavement is dry and at an agreed upon time between the Engineer and Contractor. It shall be the Contractor's responsibility to prepare the surface for profile collection. All work required to prepare the roadway for profile collection, such as but not limited to sweeping, will not be measured and shall be incidental to the concrete pavement.

EVALUATION

The surface smoothness of the profile of the roadway will be measured by the International Roughness Index (IRI) to the nearest 0.1 inch. ProVal will be used to calculate the IRI from the Engineering Research Division (ERD) files. The Contractor will be supplied with a copy of the ERD file upon completion of the data collection. The current version of ProVal can be downloaded at www.roadprofile.com. When the IRI is generated in ProVal the 250 mm filter will be applied to the profile. The IRI of the two wheel paths will be averaged and is also known as Mean Ride Index (MRI). The MRI option will be used in ProVal for evaluation.

Surface Tolerance Requirements

Project MRI

- Project MRI is defined as the average MRI of all driving lanes from the beginning of project to the end of project. The project MRI threshold is 100 in/mi or less. The profile will be evaluated using the Ride Quality module within the current version of ProVal. If these requirements are not met, corrective actions to meet the requirements will be required by contractor. The Ride Quality module settings will be as follows:
    - "Full" analysis chosen.
    - Ride Quality Index set to MRI.
    - The 250 mm filter will be applied to the file being analyzed.

Localized Roughness

- Localized roughness is defined as locations of the roadway with an MRI threshold value of 140 in/mi or greater in a 25 foot continuous segment. The profile will be evaluated using the Smoothness Assurance Module (SAM) within the current version of ProVal. The SAM module settings will be as follows:
    - Ride Quality Index set to MRI.
    - Ride Quality Threshold set to 140 in/mile.
    - The baselength for the short continuous, long continuous, and fixed interval will be 25 feet, 528 feet, and 528 feet, respectively.
    - The 250 mm filter will be applied to the file being analyzed.
- The Contractor shall be allowed of have 10% (by project length) of MRI above 140 in/mile. Of the 10% above 140 in/mi, 5% (by project length) of MRI may be above 155 in/mile using a 25 foot continuous MRI. If these requirements are not meet, corrective actions to meet the 10% above 140 in/mi and 5% above 155 in/mile requirements will be required by contractor.
- If MRI is above 180 in/mile, corrective action will be required by contractor.
- The Contractor shall submit to the Engineer; a detailed corrective action plan in writing and data three working days in advance of grinding to be reviewed by the Engineer for possible areas of acceptance that do not meet the localized roughness threshold. The corrective action plan shall include grinding simulations in ProVal with multiple grinding depths, varying equipment and multiple pass patterns.
- If any corrective action is performed after the final acceptance profile is completed, a new final acceptance profile will be required.

GRINDING

Grinding shall be in accordance with Section 550.04 P.3 of the Departments specifications (excluding the 3rd sentence of the 2nd paragraph, beginning “The pavement shall…”). The equipment shall be a self propelled mechanical grinder equipped with diamond blades and capable of uniformly grinding or removing the surface to depths required without damaging the underlying pavement. Areas that have been ground shall not be left smooth or polished. Grinding shall be day lighted to the outside edge of the pavement. Grinding shall have a minimum length of 30 feet. If the distance between grind sections is less than 100 feet, then grinding shall be continuous through both sections.

Lots that required grinding shall be ground to maximum MRI of 100.0 in/mile.

Localized roughness areas that required grinding shall be ground to maximum MRI of 140.0 in/mile.

PROJECT COMPLETION

Twenty one days are allowed to complete corrections after the acceptance profile. If all contract work is complete with the exception of pavement corrections time charges will be suspended up to 21 days from the date the final acceptance profile is collected. If all other work items are completed between the acceptance profile and the end of the 21 day period for corrections, time charges will be suspended for the balance of the correction period. After 21 days if corrections have not been completed the project time charges will be applied in accordance with Section 108.04 J.

MISCELLANOUS

If flagging, pilot car and traffic control are used they will be paid for at the contract unit price.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

VIDEO VEHICLE DETECTION SYSTEM

7-804(049)247 – PCN 20325

1. DESCRIPTION

This provision sets forth the minimum requirements for work, which will consist of furnishing, installing, and placing into operation a vehicle detection system, which detects vehicles by processing video images and providing detection outputs to a traffic signal controller. This equipment shall meet the NEMA environmental, power, and surge ratings as set forth in NEMA TS1 and TS2 specifications.

2. ITEMS COVERED & SYSTEM COMPONENTS

The video detection and monitoring system shall consist of the following components:

1. The machine vision sensors shall be an integrated imaging CCD arrays with optics, high-speed, color image processing hardware and a dual-core CPU bundled into a sealed enclosure. A 3-wire cable shall be used between the machine vision sensors and the traffic cabinet for providing power and communications.

2. A detector interface card for traffic signal control applications to allow direct communications between video detection and traffic signal controller.

3. Additional equipment and supplies required to have a ready-to-operate system.

3. SYSTEM REQUIREMENTS

3.1 Machine Vision Sensor

All system components shall meet FCC Part 15, Class A for electromagnetic interference (EMI) requirements and be certified to meet CE EN 55022 and safety requirements.

1. The machine vision sensor shall be equipped with the following:
   A. An integrated imaging CCD array with optics, high-speed, color, image processing hardware and a dual-core CPU bundled into a sealed, weather proof enclosure, a sunshield to reflect solar heat and to shield the CCD array from direct exposure to the sun, a faceplate heater to melt accumulated ice, snow, or fog from the view of the camera.
2. The CCD array shall be controlled by the dual-core CPU.
3. The optics and camera electronics shall be directly controlled by the on-board dual-core CPU for optimal illumination for traffic detection.

4. The lens shall be pre-focused at the factory, as required for operation. The machine vision sensor shall operate at a maximum rate of 30 frames per second when configured for the NTSC video standard.
5. The machine vision sensor shall process a minimum of 99 detector zones placed anywhere in the field of view of the sensor. The video output shall have the ability to show overlaid graphics indicating the current real-time detection state of each detector zone in the output video.
6. The sensor output NTSC color video shall be viewable with any compatible video display device.

3.2 Detector Types

The machine vision sensor shall be capable to use a variety of detector types that perform specific functions. The general functions performed by the detectors shall include:

1. Presence/passage detection of moving and stopped vehicles
2. Enable detection based on the direction of travel
3. Measure speed
4. Generate a variety of alarms based on measured traffic conditions
5. Combine the output of several detectors with logical operators and modify the resulting state based on delay or extend timers, which can be referenced to the state of any associated signal phase state
6. Each of the detector types shall have the option to be shown in the live video output of the sensor at the user's request. The allocation of these functional detection capabilities to programmable detector types is described below. Different detector types shall be selectable via software.

   Detector types shall include:
   a) Count detectors output traffic volume statistics. Generate traffic counts and occupancy.
   b) Presence detectors indicate presence of a vehicle, stopped vehicle, or vehicles traveling in the wrong direction.
   c) Speed detectors provide vehicle counts, speed, length, and classification.
   d) Detector functions combine outputs of multiple detectors via Boolean logic functions.
   e) Labels display information on the machine vision sensor video output an optionally pass input information to other detectors.
   f) Detector stations accumulate traffic data over specified time intervals.
   g) Incident detectors monitor free flowing traffic speed, occupancy, and flow for conditions that suggest a shock wave from an incident has occurred.
   h) Schedulers define plans that can be used by other detectors to specify different parameters for each time of the day plan.
   i) Contrast loss detectors monitor the quality of the video image that the machine vision sensor is processing.
   j) Speed alarms generate tri-state alarm outputs on user defined algorithms.

3.3 Differential Video

1. The machine vision sensor shall output full-motion MPEG-4 video via a standard digital video player using IP-based communications..

2. NTSC full-motion video shall be provided to an analog video monitor in traffic cabinet.

3.4 Power

The machine vision sensor shall operate on 110 VAC at 60 Hz. Power consumption shall be a maximum of 20 watts with the faceplate heater on. With the faceplate heater off, power consumption shall be 15 watts maximum.

4. DETECTION OPERATION & PERFORMANCE

4.1 Detection Zone Placement

The video detection system shall provide flexible detection zone placement anywhere and at any orientation with in the field of view of the machine vision sensor. A single detection zone shall be able to replace one or more conventional detector loops connected in series.

Detection zones shall be able to be overlapped for optimal road coverage. Groups of detector zones shall be able to be logically combined into a single output.

4.2 Detection Zone Programming

Placement of detection zones shall be by means of a portable or desktop computer using the Windows XP/Vista/7, 32 or 64 bit operating systems, a keyboard, and a mouse. The VGA monitor shall be able to show the detection zones superimposed on images of traffic scenes.

The mouse and keyboard shall be used to:

1. Place size, and orient detection zones to provide optimal road coverage for vehicle detection.
2. Modify detector parameters to optimize performance.
3. Edit previously defined detector configurations.
4. Adjust the detection zone size and placement.
5. Add detectors for additional traffic applications.
6. Re-program the sensor for different traffic applications, changes in installation site geometry, or traffic rerouting.

It shall be possible to download detector configurations from the computer to the machine vision sensor, upload the current detector configuration that is running in the sensor, back up detector configurations by saving them to the computer's storage media, and perform the above upload, store, and retrieve functions for video snapshots of the sensors' view.

4.3 Detection Zone Operation

The machine vision sensor real-time detection operation shall be verifiable through the following means:

1. View the video output of the sensor with any standard video display device (monitor).
2. The video output of the machine vision sensor (3-wire cable) shall be capable of selectively transmitting:
   a) Camera video only

   b) Analog video overlaid with the current real-time detection state of each detector.
3. Vehicle detection shall occur by a detector port master using a variety of end user applications either as a simple contact closure outputs that reflect the current real time detector or alarm state (on/off), or as b NEMA TS-2 compliant SDLC serial bus I/O. The contact closure outputs or SDLC I/O shall be provided to a traffic signal controller and comply with NEMA standards.
4. View the associated output LED state on the detector port master:
   a) An LED shall be ON when its assigned detector output or signal controller phase input is on.
   b) An LED shall be OFF when its assigned detector or signal controller input is off.

4.4 Optimal Detection

The machine vision sensor, when placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road, shall be able to monitor a maximum of 6 traffic lanes simultaneously.

4.5 Count Detection Performance

Using a machine vision sensor installed within the optimal viewing specifications described above or count station traffic applications; the system shall be able to accurately count vehicles with at least 96% accuracy under normal operating conditions (day and night), and at least 93% accuracy under adverse conditions. Adverse conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc.

4.6 Demand Presence Detection Performance

Using a machine vision sensor installed within the optimal viewing specifications described above for intersection control traffic applications; the system shall be able to accurately provide demand presence detection.

The demand presence accuracy shall be based on the ability to enable a protected turning movement on an intersection stop line, when a demand exists.

The probability of not detecting a vehicle for demand presence shall be less than 1 percent error under all operating conditions. In the presence of adverse conditions, the machine vision sensor shall minimize extraneous (false) protected movement calls to less than 7%.

4.7 Speed Detection Performance

The machine vision sensor shall accurately measure average (arithmetic mean) speed of multiple vehicles with more than 98% accuracy under all operating conditions for approaching and receding traffic.

The machine vision sensor shall accurately measure individual vehicle speeds with more than 95% accuracy under all operating conditions for vehicles approaching the sensor, and 90% accuracy for vehicles receding from the sensor. These specifications shall apply to vehicles that travel through both the count and speed detector pair and shall not include partial detection situations created by lane changing maneuvers.

5. MACHINE VISION SENSOR HARDWARE

The machine vision sensor shall use medium resolution, color ¼ inch CCD as the video source for real-time vehicle detection using NTSC format. As a minimum, each image sensor shall produce images with a CCD sensing element with horizontal resolution of greater than 470 TVL horizontal at center.

The machine vision sensor shall provide the following:

1. Sensitivity at the lens with full video, AGC off, -2.0 lux (color)
2. Video signal-to-noise ratio of greater than 48 dB, and provide direct real-time iris and shutter speed control to the MVP sensor on-board dual-core processor,

5.2 Machine Vision Sensor lens

The sensor shall be equipped with an integrated zoom lens that can be adjusted using either configuration computer software or hand-held controller.

The Zoom lens shall have a 10X optical zoom and the field of view shall be adjustable over the range of 2.3 to 48 degrees horizontal and 1.8 to 37 degrees vertical.

5.3 Machine Vision Sensor Enclosure

The sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

1. The enclosure shall be waterproof and dust tight to NEMA-4 specifications, and shall have the option to be pressurized with dry nitrogen to 5 ∀ 1 psi.
2. The enclosure shall allow the machine vision sensor to operate satisfactorily over an ambient temperature range from -29 to +140 degrees F.
3. The enclosure shall allow the machine vision sensor to operate satisfactorily while exposed to precipitation, up to 100% relative humidity non-condensing.
4. The enclosure shall allow the image sensor horizon to be rotated during field installation.
5. A heater shall be located on the faceplate at the front of the enclosure to prevent the formation of ice and condensation in cold weather. The heater shall not interfere with the operation of the image sensor electronics, and it shall not cause interference with the video signal.
6. The enclosure shall be light-colored and shall include a sunshield to minimize solar heating and glare. The front edge of the sunshield shall protrude beyond the front edge of the environmental enclosure and shall include provision to divert water flow to the sides of the sunshield. The amount of overhang of the sunshield shall be adjustable to prevent direct sunlight from entering the lens or hitting the faceplate.
7. The total weight of the image sensor in the environmental enclosure with sunshield shall be less than 7 pounds.
8. When operating in the environmental enclosure with the power, communication, and video signal cable connected, the image sensor shall meet FCC Part 15, Class A and CE requirements for electromagnetic interference emissions.

6. COMMUNICATION INTERFACE PANEL REQUIREMENTS

A communications panel shall be provided with each machine vision sensor installation. The communications panel shall provide:

1. A 3-wire terminal block for providing sensor power of 110 VAC 60 Hz.
2. Terminate 3-wire cable to each image sensor.

7. ADDITIONAL EQUIPMENT

An extra camera / processor, interface panel and detector port master shall be provided for each Video Detection System.

8. TRAINING

The supplier of the system shall provide on-site training to representatives of the NDDOT, the Owner or City, and anyone on invitation by either. The training shall include one 8-hour session, covering all aspects of the detector system reasonable for full operation of the system by Owner.

9. WARRANTY, MAINTENANCE, AND SUPPORT

The video detection system shall be warranted by its supplier for a minimum of two years after final inspection and acceptance.

Ongoing software support by the supplier shall include updates of the MVP sensor and application software. These updates shall be provided free of charge for one year after final inspection and acceptance.

10. METHOD OF MEASUREMENT

Video-vehicle detection system components shall not be measured separately, but shall all be included in the item Video Detection System.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

STRINGLESS GRADE CONTROL

7-804(049)247 – PCN 20325

GENERAL

The North Dakota Department of Transportation Standard Specifications require the use of automatic grade controls guided by a stringline. For this project, the Contractor will be allowed to use methods other than the stringline as the guide for the automatic grade controls.

If methods other than a stringline are used for the automatic grade control, the Contractor shall provide a plan to the Engineer at the preconstruction meeting.

Stringless grade control equipment shall consist of Robotic Total Station (RTS) controls.

The Contractor may need to convert the electronic data provided by the Department into the format required by the RTS. The Department will provide electronic files via Supplemental Bid Information. The folder containing these files also contains an additional file that details the contents of the folder and includes a description of the contents of each file.

CONSTRUCTION REQUIREMENTS

The following construction requirements will apply whether the Contractor chooses a stringline or stringless method of construction.

A. Department Responsibilities

The Engineer will set primary control points shown in the plans.

B. Contractor's Responsibilities

1. Set additional survey points as necessary for the operations. Provide copies of the data for the Contractor set survey points to the Engineer before construction begins. The Contractor is responsible for any errors resulting from the establishment of Contractor set points.

2. The finished surfaces shall meet the vertical and horizontal requirements shown in the contract.

BASIS OF PAYMENT

Include all costs for labor, survey, equipment, and materials needed to comply with this Special Provision in the price bid for the applicable item.

NOTRH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

CITY OF NEW TOWN
SUPPLEMENTAL SPECIFICATIONS AND STANDARD DRAWINGS

SOIA-CPU-7-804(049)247 – PCN 20325

This Special Provision incorporates the City of New Town Supplemental Specifications.

Bidders shall become familiar with all the provisions of the supplemental specifications and submit their bid for the construction of this project based on a plan for construction, which will meet all conditions of the supplemental specifications.

The contractor on this project shall be responsible for fulfilling all the applicable requirements and complying with all the terms and conditions as contained in the City of New Town Supplemental Specifications attached hereto.

City of New Town Supplemental Specifications

SOIA-CPU-7-804(049)247

Jct. of ND 1804 & ND 23 North Approximately One Mile

Intersection Work at the Jct. ND 23 and ND 1804

The following specifications are intended to be a supplement to the North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction 2008 and only apply to the bid items specified in this document. Discrepancies between the specifications shall reference the city of New Town Supplemental Specifications.

These Supplemental Specifications were prepared under the direct supervision of Steven P. Ike, PE who is a duly Registered Professional Engineer under the laws of the State of North Dakota.

Steven P. Ike, PE

STEVEN P. IKE REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA Reg. No. 2326

Date: 01/03/2014

This document was originally issued and sealed by Steven P. Ike, Registration number PE-2326 on 1/3/14 and the original document is stored at the North Dakota Department of Transportation.

DETAILED DESCRIPTION OF BID ITEMS

All work performed under this project shall be completed in strict compliance with all current applicable local, state and federal statutes governing the work. Specific requirements regarding this work are included in the construction specifications contained herein.

REMOVAL OF MANHOLES

The work to be done under this item shall include the furnishing of all labor, tools, equipment and materials required to cut, remove, and properly dispose of existing asphalt pavement, and provide gravel patching, as specified herein and as shown on the Drawings.

The work to be done under this item shall be in accordance with the Standard Specification for **Removal of Existing Asphalt Pavement, Concrete and/or Structures, (Section 02212)**, contained herein.

The asphalt identified by the Engineer for removal, shall be cut using a colter wheel, jack hammer, saw or other approval methods, along a straight even line forming a joint for the full depth of the existing bituminous pavement. All cost for cutting, removing, and proper disposal of existing asphalt designated for removal, shall be included in this item and no additional compensation shall be awarded for such. Disposal shall be at an approved site selected by the Contractor, and no additional compensation shall be awarded for such.

This item shall include preparation of subgrade and furnishing and placing the Class 5 Aggregate temporary patch. Class 5 aggregate materials shall meet the requirements of the **North Dakota Department of Transportation**, Standard Specifications for Road and Bridge Construction. The gravel patch shall be a minimum of ten (10") inches of compacted thickness.

The Contractor shall be responsible for any damage to haul roads and existing road surfaces resulting from any activity under this project and shall restore damaged areas to the condition existing prior to construction, at the Contractor's expense.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per each for **Removal of Manholes**, complete including cutting, loading, hauling proper disposal, and gravel patching, as specified herein.

TYPE II PIPE BEDDING

The work to be done under this item shall include the furnishing of all labor, tools, material and equipment required to remove unsuitable material encountered in the trench bottom and place **Type II Pipe Bedding Material** as directed by the Engineer, as specified herein and in accordance with the Standard Specifications.

Gradation of material shall be in accordance with paragraph 2.1.4. of Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section**

02221), contained herein. Only amounts of Type 2 Pipe Bedding Material approved for use by the Engineer will be included in the pay quantities.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Cubic Yard for **Type 2 Pipe Bedding Material** approved for use by the Engineer, complete in place and ready for use, including excavation and disposal of unsuitable material. Measurement shall be by truck box capacity.

SANITARY SEWER SERVICE CONNECTION

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to make the **Sanitary Sewer Service Connection**, as shown on the Drawings and as specified herein.

Pipe material furnished shall be Polyvinyl Chloride (PVC) sewer main pipe, shall have an SDR 35, shall meet the requirements of **ASTM D-3034**, shall have gasketed "push-on" joints, and shall meet the full requirements of paragraph 2.1. of the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)**, contained herein. All required fittings shall have "push-on" type joints.

This item shall include all work and material required to make connection of the new sewer service lines with the sewer service wyes at the sewer mains and at the existing sewer service at the r-o-w with no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Where the sewer service line is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the sewer service line trench excavation and shall replace a minimum of four (4”) inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the sewer service line is installed in gravel alleys/roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

Sanitary sewer service lines shall be installed in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein, and the Standard Specifications for **Sanitary Sewer Services (Section 02724)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the sewer service lines. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per each **Sanitary Sewer Service Connection** installed complete in place and ready for use, including Type 1 Pipe Bedding material.

CASING PIPE 18IN

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to furnish and install **Eighteen (18") Inch Casing Pipe** as shown on the Drawings, as directed by the Engineer and as specified herein.

The intent of this item is to install the new ten (10") inch water main pipe and to install the new eight (8") inch sanitary sewer pipe in new eighteen (18") inch casing pipe bored under existing roads or highways as shown on the Drawings or may be excavated into the road bed if arrangements can be made with the **North Dakota Department of Transportation** and any restrictions they may put on traffic control. The casing pipe and all work and materials associated with the boring operation, including pipe skids and bands, and end seals, shall be included under this item. All bolts and fasteners shall be stainless steel. All cost for furnishing and installing the carrier pipe, the casing pipe, skids, and seals shall be included in this item and no additional compensation shall be awarded for such. The carrier pipe shall be furnished and installed under the item entitled **Ten Inch Fusible PVC Water Main**, and no additional compensation shall be awarded for such.

Where the water main pipe crosses **ND 1804** the ten (10") inch water main pipe shall be installed in an eighteen (18") inch diameter heavy wall steel casing pipe which shall be installed under the highway without disturbing the overlying structures. Any settlement or other damage to the existing overlying structures shall be repaired as directed by the Engineer, at the Contractor's expense, and no additional compensation shall be awarded for such. All work within the highway right-of-way shall be completed in strict accordance with all applicable **North Dakota Department of Transportation** requirements.

This item shall include all work and materials to furnish and install the carrier pipe which shall be ten (10") inch diameter fusible PVC water main pipe, or restrained joint PVC pressure pipe, such as Certa-Lok restrained joint municipal water pipe manufactured by CertainTeed Corporation, or approved equal. The carrier pipe shall be furnished and installed under the item entitled **Ten Inch Fusible or Restrained Joint PVC Water Main**, and no additional compensation shall be awarded for such. All work and material shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All cost for furnishing and installing the water main carrier pipe shall be included under the item entitled **Ten Inch Fusible or Restrained Joint PVC Water Main**, and no additional compensation shall be awarded for such.

This item shall include all work and materials to furnish and install the carrier pipe which shall be eight (8") inch diameter sanitary sewer pipe crossing ND Hwy 23. The carrier pipe shall be furnished and installed under the item entitled **8IN SANITARY SEWER PIPE**, and no additional compensation shall be awarded for such. All work and material shall be in accordance with the Standard Specifications for **Sanitary Sewer Mains (2722)**, contained herein. All cost for furnishing and installing the water main carrier pipe shall be included under the item entitled **8IN SANITARY SEWER PIPE**, and no additional compensation shall be awarded for such.

The boring machine shall be operated to prevent either surface heave or loss during installation. Each pipe casing shall be jacked forward as the excavation progresses in a manner to provide complete ground support at all times. The casing shall be installed to the lines and grades required to maintain a minimum of seven and one-half (7½') feet of cover, as

shown on the Drawings. The casing shall be installed with no more than six (6") inch deviation from the horizontal or vertical alignment as shown on the Drawings. The Contractor shall correct any line and grade defects incidental to this item, and no additional compensation shall be awarded for such.

The steel casing pipe shall be new pipe material having an outside diameter of 18.000 inches, inside diameter of 17.250 inches and a minimum wall thickness of 0.375 inches. The casing pipe shall be continuous with ends beveled for field welding. Joints shall be welded with a continuous circumferential weld in accordance with **AWS D1.1**. Field welds shall be by a certified welder.

Immediately after installation of the casing pipe, the Contractor shall inject bentonite slurry grout to completely fill all voids outside the casing pipe. Grout pressure shall be controlled to fill all voids, avoid deformation of the casing pipe, and avoid movement of the surrounding soils.

The carrier pipe shall be installed with skid type casing spacers in a centered restrained position within the casing pipe. Skids shall be RACI brand, or approved equal. Casing spacers shall provide full length support for the carrier pipe. Skids shall be securely fastened with stainless steel bands spaced per manufacturer's specifications.

Ends of the casing pipe shall be securely sealed with a modular, mechanical type, link seal consisting of inter-locking synthetic rubber links shaped to continuously fill the annular space between the carrier pipe and casing pipe. The ends of the casing pipe shall be sealed with 1/8 inch thick synthetic rubber end seals.

Trench excavation and backfill of boring pits shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill (Section 02221)**, contained herein. Compaction shall be in accordance with paragraph 3.7.3.1., Type A Trench Backfill of the Standard Specifications for **Trench Excavation and Backfill (Section 02221)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill of the boring pits. Disposal of any excess earth material shall be to a location designated by the Owner, incidental to this item, and no additional compensation shall be awarded for such. Haul distance shall not exceed three (3) miles.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot for **CASING PIPE 18IN** installed complete in place and ready for use, as specified herein. Measurement shall be **CASING PIPE 18IN** the length of the installed casing pipe.

CASING PIPE 24IN

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to furnish and install **Twenty-four (24") Inch Casing Pipe** as shown on the Drawings, as directed by the Engineer and as specified herein.

The intent of this item is to install the new twelve (12") inch sanitary sewer pipe in new twenty-four (24") inch casing pipe bored under existing roads or highways as shown on the Drawings or may be excavated into the road bed if arrangements can be made with the **North Dakota Department of Transportation** and any restrictions they may put on traffic control. The

casing pipe and all work and materials associated with the boring operation, including pipe skids and bands, and end seals, shall be included under this item. All bolts and fasteners shall be stainless steel. All cost for furnishing and installing the carrier pipe, the casing pipe, skids, and seals shall be included in this item and no additional compensation shall be awarded for such. The carrier pipe shall be furnished and installed under the item entitled **12IN SANITARY SEWER PIPE**, and no additional compensation shall be awarded for such.

Where the sanitary sewer main pipe crosses **ND HWY 23** the twelve (12") inch sanitary sewer pipe shall be installed in an twenty-four (24") inch diameter heavy wall steel casing pipe which shall be installed under the highway without disturbing the overlying structures. Any settlement or other damage to the existing overlying structures shall be repaired as directed by the Engineer, at the Contractor's expense, and no additional compensation shall be awarded for such. All work within the highway right-of-way shall be completed in strict accordance with all applicable **North Dakota Department of Transportation** requirements.

This item shall include all work and materials to furnish and install the carrier pipe which shall be twelve (12") inch diameter sanitary sewer pipe. The carrier pipe shall be furnished and installed under the item entitled **12IN SANITARY SEWER PIPE**, and no additional compensation shall be awarded for such. All work and material shall be in accordance with the Standard Specifications for **Sanitary Sewer Mains (2722)**, contained herein. All cost for furnishing and installing the water main carrier pipe shall be included under the item entitled **12IN SANITARY SEWER PIPE**, and no additional compensation shall be awarded for such.

The boring machine shall be operated to prevent either surface heave or loss during installation. Each pipe casing shall be jacked forward as the excavation progresses in a manner to provide complete ground support at all times. The casing shall be installed to the lines and grades required to maintain a minimum of seven and one-half (7½') feet of cover, as shown on the Drawings. The casing shall be installed with no more than six (6") inch deviation from the horizontal or vertical alignment as shown on the Drawings. The Contractor shall correct any line and grade defects incidental to this item, and no additional compensation shall be awarded for such.

The steel casing pipe shall be new pipe material having an outside diameter of 24.000 inches, inside diameter of 23.250 inches and a minimum wall thickness of 0.375 inches. The casing pipe shall be continuous with ends beveled for field welding. Joints shall be welded with a continuous circumferential weld in accordance with **AWS D1.1**. Field welds shall be by a certified welder.

Immediately after installation of the casing pipe, the Contractor shall inject bentonite slurry grout to completely fill all voids outside the casing pipe. Grout pressure shall be controlled to fill all voids, avoid deformation of the casing pipe, and avoid movement of the surrounding soils.

The carrier pipe shall be installed with skid type casing spacers in a centered restrained position within the casing pipe. Skids shall be RACI brand, or approved equal. Casing spacers shall provide full length support for the carrier pipe. Skids shall be securely fastened with stainless steel bands spaced per manufacturer's specifications.

Ends of the casing pipe shall be securely sealed with a modular, mechanical type, link seal consisting of inter-locking synthetic rubber links shaped to continuously fill the annular space between the carrier pipe and casing pipe. The ends of the casing pipe shall be sealed with 1/8 inch thick synthetic rubber end seals.

Trench excavation and backfill of boring pits shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill (Section 02221)**, contained herein. Compaction shall be in accordance with paragraph 3.7.3.1., Type A Trench Backfill of the Standard Specifications for **Trench Excavation and Backfill (Section 02221)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill of the boring pits. Disposal of any excess earth material shall be to a location designated by the Owner, incidental to this item, and no additional compensation shall be awarded for such. Haul distance shall not exceed three (3) miles.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot for **CASING PIPE 24IN** installed complete in place and ready for use, as specified herein. Measurement shall be **CASING PIPE 24IN** the length of the installed casing pipe.

MANHOLE SANITARY

The work to be done under this item shall include the furnishing of all labor, tools, equipment and materials required to construct **Standard Manholes** at locations and depths as shown on the Drawings and as specified herein.

The intent for this item is to include **Standard Manholes** at the locations and depths, as shown on the Drawings, and as directed by the Engineer. All materials and installation shall be in accordance with the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)** and the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein. Provide rubber boots cast into concrete wall to seal proposed and future sewer main pipes passing through manhole wall, and to provide a flexible joint at the wall. Provide a short stub pipe with secure fitting PVC cap on all proposed future sewer main extensions, to facilitate future connections to the manhole, as shown on the Drawings. Provide channels in the manhole floors to accommodate the proposed and the future sewer main extensions, as shown on the Drawings. Provide steps and ring and cover castings in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein. Provide a minimum of four (4) pre-cast concrete adjusting rings on each manhole.

All joints in the manhole shall be water tight and shall be sealed with "Ram-Nek" sealant, or approved equal.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction shall be in accordance with Type A Trench Backfill of Section 02221.

This item shall include disposal of any earth materials remaining after proper compaction and backfill at manholes. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Manhole Sanitary** installed complete in place and ready for use, as specified herein.

BUTTERFLY VALVE AND BOX 10IN

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Ten (10") Inch Butterfly Valve and Box** as specified herein, and as shown on the Drawings.

All materials and installation shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, and the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein.

Valves shall be butterfly valves in accordance with paragraph 2.1.2. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein. Valves shall have internal and external factory applied epoxy coating. Valves are subject to approval by the Engineer. All bonnet bolts shall be stainless steel.

All valve boxes shall be installed on the valve with the use of a Valve Box Adaptor in accordance with paragraph 2.2.2. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Each **Ten (10") Inch Butterfly Valve and Box** installed complete in place and ready for use.

GATE VALVE AND BOX 6 INCH

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Six (6") Inch Gate Valve and Box** as specified herein, and as shown on the Drawings.

All materials and installation shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, and the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein.

Valves shall be resilient seat gate valves in accordance with paragraph 2.1.1. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein. Valves shall have internal and external factory applied epoxy coating. Valves are subject to approval by the Engineer. All bonnet bolts shall be stainless steel.

All valve boxes shall be installed on the valve with the use of a Gate Valve Adaptor in accordance with paragraph 2.2.2. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Six (6") Inch Gate Valve and Box** installed complete in place and ready for use.

GATE VALVE AND BOX 8 INCH

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Eight (8") Inch Gate Valve and Box** as specified herein, and as shown on the Drawings.

All materials and installation shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, and the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein.

Valves shall be resilient seat gate valves in accordance with paragraph 2.1.1. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein. Valves shall have internal and external factory applied epoxy coating. Valves are subject to approval by the Engineer. All bonnet bolts shall be stainless steel.

All valve boxes shall be installed on the valve with the use of a Gate Valve Adaptor in accordance with paragraph 2.2.2. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Eight (8") Inch Gate Valve and Box** installed complete in place and ready for use.

SIX INCH HYDRANT

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Six (6") Inch Fire Hydrant** as specified herein, and as shown on the Drawings.

Fire Hydrants shall be furnished and installed in accordance with paragraph 2.3. of the Standard Specifications for **Water Valves and Fire Hydrants (Section 02718)**, contained herein. Hydrants are subject to approval by the **City of New Town**. The Fire Hydrant shall be furnished complete with all required fittings for connection to the hydrant lead. Hydrants shall be twenty-four (24") inches from nozzle to flange. Break-off traffic flange and flanged joint shall be installed no more than two (2") inches above finished grade.

Hydrants shall be fitted with a location flag. The flag shall be a sixty (60") inch Hydra-finder as manufactured by Rodon Corporation, or approved equal.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Six (6") Inch Hydrant** installed complete in place and ready for use.

10IN WATERMAIN

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") Inch Plug** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") Inch Plug** installed complete in place and ready for use as specified herein.

WATERMAIN 6IN PVC

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Six (6") Inch PVC Water Main** as specified herein, as shown on the Drawings and in accordance with the Standard Specifications.

Pipe material furnished and installed under this item shall be eight (8") inch diameter Polyvinyl Chloride (PVC), **AWWA C900**, DR18, 150 PSI, water main pipe with gasketed "push-on" joints for water mains in accordance with paragraph 2.2.1. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. Pipe gaskets shall be a factory installed "locked-in" flexible elastomeric seal such as the Reiber Gasket System, or approved equal. Installation shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein.

Provide a stranded copper 12 wire gauge direct bury tracer wire with all water main pipe. Install the tracer wire with the water main pipe. Provide a minimum twelve (12") inch exposed loop for access at all hydrant and valve locations.

All labor, materials, exploratory excavation, and special fittings required to confirm existing materials and pipe size, and for connection of new water mains to new or existing water mains shall be incidental to this item and no additional compensation shall be awarded for such. This item shall include the furnishing and installing of all fittings not specifically called out and paid for under separate bid items included herein, and as needed for a complete installation, and no additional compensation shall be awarded for such. Fittings shall be pressure rated to meet or exceed the pressure rating of the pipe.

All fittings shall be in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. The Contractor shall measure all fitting locations from the nearest valve, hydrant, and/or nearest surface feature and provide all field ties to the Engineer prior to requesting final payment.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Water main shall be installed to a minimum depth of seven and one-half (7½') feet measured from the top of the pipe to the adjacent ground surface level.

This item shall include all exploratory excavation required to locate existing underground facilities and to verify existing pipe materials and size for connection, and no additional compensation shall be awarded for such.

Where the water main is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the water main trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the water main is installed in gravel roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the water main. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Following installation and backfill, the pipe shall be hydrostatic and leakage tested in accordance with **AWWA C605-94** and in accordance with paragraph 3.4.1. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The test shall be conducted at 150 PSI for a minimum two (2) hour duration.

The Contractor shall disinfect the water main in accordance with paragraph 3.4.3. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The Contractor shall have a certified laboratory provide copies of all results for bacteriological and turbidity tests, directly to the Engineer.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Six (6") Inch PVC Water Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material and all special fittings, backfill and hydrostatic testing, as specified herein.

WATERMAIN 8IN PVC

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Eight (8") Inch PVC Water Main** as specified herein, as shown on the Drawings and in accordance with the Standard Specifications.

Pipe material furnished and installed under this item shall be eight (8") inch diameter Polyvinyl Chloride (PVC), **AWWA C900**, DR18, 150 PSI, water main pipe with gasketed "push-on" joints for water mains in accordance with paragraph 2.2.1. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. Pipe gaskets shall be a factory installed "locked-in" flexible elastomeric seal such as the Reiber Gasket System, or approved equal. Installation shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein.

Provide a stranded copper 12 wire gauge direct bury tracer wire with all water main pipe. Install the tracer wire with the water main pipe. Provide a minimum twelve (12") inch exposed loop for access at all hydrant and valve locations.

All labor, materials, exploratory excavation, and special fittings required to confirm existing materials and pipe size, and for connection of new water mains to new or existing water mains shall be incidental to this item and no additional compensation shall be awarded for such. This item shall include the furnishing and installing of all fittings not specifically called out and paid for under separate bid items included herein, and as needed for a complete installation, and no additional compensation shall be awarded for such. Fittings shall be pressure rated to meet or exceed the pressure rating of the pipe.

All fittings shall be in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. The Contractor shall measure all fitting locations from the nearest valve, hydrant, and/or nearest surface feature and provide all field ties to the Engineer prior to requesting final payment.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Water main shall be installed to a minimum depth of seven and one-half (7½') feet measured from the top of the pipe to the adjacent ground surface level.

This item shall include all exploratory excavation required to locate existing underground facilities and to verify existing pipe materials and size for connection, and no additional compensation shall be awarded for such.

Where the water main is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the water main trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the water main is installed in gravel roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the water main. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Following installation and backfill, the pipe shall be hydrostatic and leakage tested in accordance with **AWWA C605-94** and in accordance with paragraph 3.4.1. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The test shall be conducted at 150 PSI for a minimum two (2) hour duration.

The Contractor shall disinfect the water main in accordance with paragraph 3.4.3. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The Contractor shall have a certified laboratory provide copies of all results for bacteriological and turbidity tests, directly to the Engineer.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Eight (8") Inch PVC Water Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material and all special fittings, backfill and hydrostatic testing, as specified herein

WATERMAIN 10IN PVC

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **TEN (10") Inch PVC Water Main** as specified herein, as shown on the Drawings and in accordance with the Standard Specifications.

Pipe material furnished and installed under this item shall be eight (8") inch diameter Polyvinyl Chloride (PVC), **AWWA C900**, DR18, 150 PSI, water main pipe with gasketed "push-on" joints for water mains in accordance with paragraph 2.2.1. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. Pipe gaskets shall be a factory installed "locked-in" flexible elastomeric seal such as the Reiber Gasket System, or approved equal. Installation shall be in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein.

Provide a stranded copper 12 wire gauge direct bury tracer wire with all water main pipe. Install the tracer wire with the water main pipe. Provide a minimum twelve (12") inch exposed loop for access at all hydrant and valve locations.

All labor, materials, exploratory excavation, and special fittings required to confirm existing materials and pipe size, and for connection of new water mains to new or existing water mains shall be incidental to this item and no additional compensation shall be awarded for such. This item shall include the furnishing and installing of all fittings not specifically called out and paid for under separate bid items included herein, and as needed for a complete installation, and no additional compensation shall be awarded for such. Fittings shall be pressure rated to meet or exceed the pressure rating of the pipe.

All fittings shall be in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. The Contractor shall measure all fitting locations from the nearest valve, hydrant, and/or nearest surface feature and provide all field ties to the Engineer prior to requesting final payment.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Water main shall be installed to a minimum depth of seven and one-half (7½') feet measured from the top of the pipe to the adjacent ground surface level.

This item shall include all exploratory excavation required to locate existing underground facilities and to verify existing pipe materials and size for connection, and no additional compensation shall be awarded for such.

Where the water main is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the water main trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the water main is installed in gravel roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the water main. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Following installation and backfill, the pipe shall be hydrostatic and leakage tested in accordance with **AWWA C605-94** and in accordance with paragraph 3.4.1. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The test shall be conducted at 150 PSI for a minimum two (2) hour duration.

The Contractor shall disinfect the water main in accordance with paragraph 3.4.3. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The Contractor shall have a certified laboratory provide copies of all results for bacteriological and turbidity tests, directly to the Engineer.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Ten (10") Inch PVC Water Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material and all special fittings, backfill and hydrostatic testing, as specified herein.

TEN INCH FUSIBLE OR RESTRAINED JOINT PVC WATER MAIN

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Ten (10") Inch Fusible or Restrained Joint PVC Water Main** as specified herein, as shown on the Drawings and in accordance with the Standard Specifications.

The intent of this item is to furnish and install fusible PVC water main pipe or restrained joint water main pipe with trenchless construction methods to cross under the existing designated wet land areas and at highway crossings, as shown on the Drawings. The intent is to install the new water main pipe without disturbing the existing surface features.

This item shall include all work and materials to furnish and install ten (10") inch diameter fusible PVC C900, 150 PSI water main pipe, or restrained-joint PVC pressure pipe, 150 PSI, such as Certa-Lok restrained-joint municipal water main pipe manufactured by CertainTeed Corporation, or approved equal. The water pipe shall meet the performance requirements of **AWWA C-900**, shall comply with **NSF Standard No. 61** for potable water service, and shall have ductile-iron outside diameter (DR 18, Class 150) pipe and couplings. All work and material shall be in accordance with the Standard Specifications for **Water Main Materials (Section 02610A)**, and the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All cost for furnishing and installing the water main pipe and any special

fittings shall be included in this item and no additional compensation shall be awarded for such.

Provide a stranded copper 12 wire gauge direct bury tracer wire with all water main pipe. Install the tracer wire with the water main pipe. Provide a minimum twelve (12") inch exposed loop for access at all hydrant and valve locations.

All labor, materials and special fittings required for connection of new water mains to new or existing water mains shall be incidental to this item and no additional compensation shall be awarded for such. This item shall include the furnishing and installing of all fittings not specifically called out and paid for under separate bid items included herein, and as needed for a complete installation, and no additional compensation shall be awarded for such. Fittings shall be pressure rated to meet or exceed the pressure rating of the pipe.

All fittings shall be in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein. The Contractor shall measure all fitting locations from the nearest surface feature and provide all field ties to the Engineer prior to requesting final payment.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Water main shall be installed to a minimum depth of seven and one-half (7½') feet measured from the top of the pipe to the adjacent finished surface grade.

This item shall include all exploratory excavation required to locate existing underground facilities and to verify existing pipe materials and size for connection, and no additional compensation shall be awarded for such.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the water main. Disposal of any excess earth material shall be to a location designated by the Owner, incidental to this item, and no additional compensation shall be awarded for such.

Following installation and backfill, the pipe shall be hydrostatic and leakage tested in accordance with **AWWA C605-94** and in accordance with paragraph 3.4.1. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The test shall be conducted at 150 PSI for a minimum two (2) hour duration.

The Contractor shall disinfect the water main in accordance with paragraph 3.4.3. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. The Contractor shall have a certified laboratory provide copies of all results for bacteriological and turbidity tests, directly to the Engineer.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Ten (10") Inch Fusible or Restrained PVC Water Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material, all special fittings, backfill, disinfecting, and hydrostatic testing.

CONNECT TO EXISTING MAIN

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to make the **Connect to existing main**, as shown on the Drawings and as specified herein.

Pipe material furnished shall be Polyvinyl Chloride (PVC) sewer main pipe, shall have an SDR 35, shall meet the requirements of **ASTM D-3034**, shall have gasketed "push-on" joints, and shall meet the full requirements of paragraph 2.1. of the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)**, contained herein. All required fittings shall have "push-on" type joints.

This item shall include all work and material required to make connection of the new sewer service lines with the sewer service wyes at the sewer mains and at the existing sewer service at the r-o-w with no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Where the sewer line is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the sewer service line trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the sewer service line is installed in gravel alleys/roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

Sanitary sewer lines shall be installed in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein, and the Standard Specifications for **Sanitary Sewer Services (Section 02724)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the sewer service lines. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per each **Connection to existing main** installed complete in place and ready for use, including Type 1 Pipe Bedding material.

WATER LINE CONNECTION 6IN

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and make connection to the existing **6"** water main.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per each **6" water main connection** complete in place as specified herein including all labor and materials and fittings with no additional compensation.

WATER LINE CONNECTION 8IN

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and make connection to the existing **8"** water main.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per each **8" water main connection** complete in place as specified herein including all labor and materials and fittings with no additional compensation.

WATER LINE CONNECTION 10IN

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and make connection to the existing **10"** water main.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per each **10" water main connection** complete in place as specified herein including all labor and materials and fittings with no additional compensation.

EIGHT INCH SANITARY SEWER PIPE

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Eight (8") Inch Sanitary Sewer Pipe**, as shown on the Drawings and as specified herein. The intent of this item is to include installation of the sewer main at the locations and depths as shown on the Drawings and as directed by the Engineer.

Pipe material furnished shall be eight (8") inch diameter Polyvinyl Chloride (PVC) sewer main pipe, shall have an SDR 35, shall meet the requirements of **ASTM D-3034**, shall have gasketed "push-on" joints, and shall meet the full requirements of the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)**, contained herein. All required fittings shall have "push-on" type joints.

This item shall include all work and material required to make connection of new sewer mains with existing manholes or sewer mains, and no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Where the sewer main is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the sewer main trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the sewer main is installed in gravel alleys/roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

Sanitary sewer mains shall be installed in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the sewer main. Disposal of any excess earth material shall be to a location designated by the Owner, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Eight (8") Inch Sanitary Sewer Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material. Measurement shall be from the centerline station of the manholes and cleanouts.

TWELVE INCH SANITARY SEWER PIPE

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Twelve (12") Inch Sanitary Sewer Pipe**, as shown on the Drawings and as specified herein. The intent of this item is to include installation of the sewer main at the locations and depths as shown on the Drawings and as directed by the Engineer.

Pipe material furnished shall be eight (8") inch diameter Polyvinyl Chloride (PVC) sewer main pipe, shall have an SDR 35, shall meet the requirements of **ASTM D-3034**, shall have gasketed "push-on" joints, and shall meet the full requirements of the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)**, contained herein. All required fittings shall have "push-on" type joints.

This item shall include all work and material required to make connection of new sewer mains with existing manholes or sewer mains, and no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Where the sewer main is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the sewer main trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the sewer main is installed in gravel alleys/roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

Sanitary sewer mains shall be installed in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the sewer main. Disposal of any excess earth material shall be to a location designated by the Owner, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Twelve (12") Inch Sanitary Sewer Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material. Measurement shall be from the centerline station of the manholes and cleanouts.

FIFTEEN INCH SANITARY SEWER PIPE

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Fifteen (15") Inch Sanitary Sewer Pipe**, as shown on the Drawings and as specified herein. The intent of this item is to include installation of the sewer main at the locations and depths as shown on the Drawings and as directed by the Engineer.

Pipe material furnished shall be eight (8") inch diameter Polyvinyl Chloride (PVC) sewer main pipe, shall have an SDR 35, shall meet the requirements of **ASTM D-3034**, shall have gasketed "push-on" joints, and shall meet the full requirements of the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)**, contained herein. All required fittings shall have "push-on" type joints.

This item shall include all work and material required to make connection of new sewer mains with existing manholes or sewer mains, and no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Where the sewer main is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the sewer main trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the sewer main is installed in gravel alleys/roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

Sanitary sewer mains shall be installed in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the sewer main. Disposal of any excess earth material shall be to a location designated by the Owner, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Fifteen (15") Inch Sanitary Sewer Main** installed complete in place and ready for use, including Type 1 Pipe Bedding material. Measurement shall be from the centerline station of the manholes and cleanouts

SIX INCH SEWER SERVICE PIPE

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Six (6") Inch Sewer Service Line**, as shown on the Drawings and as specified herein.

Pipe material furnished shall be Polyvinyl Chloride (PVC) sewer main pipe, shall have an SDR 35, shall meet the requirements of **ASTM D-3034**, shall have gasketed "push-on" joints, and shall meet the full requirements of paragraph 2.1. of the Standard Specifications for **Sanitary**

Sewer Main Materials (Section 02610B), contained herein. All required fittings shall have "push-on" type joints.

This item shall include all work and material required to make connection of the new sewer service lines with the sewer service wyes at the sewer mains, and no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Where the sewer service line is installed in grass areas, the Contractor shall remove and stockpile or separate topsoil from over the sewer service line trench excavation and shall replace a minimum of four (4") inches of topsoil spread evenly and prepared for seeding over all disturbed areas. Where the sewer service line is installed in gravel alleys/roadways, existing gravel surfacing material shall be removed and replaced following backfill of the trenches.

Sanitary sewer service lines shall be installed in accordance with the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein, and the Standard Specifications for **Sanitary Sewer Services (Section 02724)**, contained herein.

This item shall include disposal of any earth materials remaining after proper compaction and backfill over the sewer service lines. Disposal of any excess earth material shall be to an approved location designated by the Contractor, incidental to this item, and no additional compensation shall be awarded for such.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per Linear Foot of **Six (6") Inch Sewer Service Line** installed complete in place and ready for use, including Type 1 Pipe Bedding material.

TWELVE INCH BY SIX INCH SEWER WYE BRANCH

The work to be done under this item shall include the furnishing of all labor, tools, equipment and material required to install **Twelve (12") Inch by Six (6") Inch Sewer Service Wye**, as shown on the Drawings and as specified herein.

All required fittings shall have "push-on" type joints and shall be of the same material and rating as the sewer main pipe, as specified herein. Fittings shall be furnished and installed in accordance the Standard Specifications for **Sanitary Sewer Main Materials (Section 02610B)**, and the Standard Specifications for **Sanitary Sewer Mains (Section 02722)**, contained herein.

This item shall include all work and material required to make connection of the service wye with the new sewer main and with the sewer service lines, and no additional compensation shall be awarded for such.

Trench excavation and backfill shall be in accordance with the Standard Specifications for **Trench Excavation and Backfill for Pipelines and Appurtenant Structures (Section 02221)**, contained herein. Compaction of trenches in improved areas (including roads) shall be in accordance with Type A Trench Backfill of Section 02221. Compaction of trenches in unimproved areas shall be in accordance with Type B Trench Backfill of Section 02221.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Twelve (12") Inch by Six (6") Inch Sewer Wye Branch** installed complete in place and ready for use, including Type 1 Pipe Bedding material.

ABANDON WATER MAIN/SERVICE LINE

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install plugs in appropriate locations to abandon the 6" water main in place located in the r-o-w of ND 1804 after installation of the new 10" water main as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid per lineal foot of **Abandoned Water Main** complete in place as specified herein including all labor and materials and fittings with no additional compensation.

10IN 22.5 DEG BEND

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") 22.5 Degree Bend** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") 22.5 Degree Bend** installed complete in place and ready for use as specified herein.

10IN 45 DEG BEND

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") 45 Degree Bend** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") 45 Degree Bend** installed complete in place and ready for use as specified herein.

10IN BY 6IN REDUCING BEND

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") Inch by Six (6") Inch Reducing Bend** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") Inch by Six (6") Inch Reducing Bend** installed complete in place and ready for use as specified herein.

TEN INCH BY TEN INCH BY SIX INCH TEE

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") Inch by Ten (10") Inch by Six (6") Tee** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") Inch by Ten (10") Inch by Six (6") Tee** installed complete in place and ready for use as specified herein.

TEN INCH BY TEN INCH BY EIGHT INCH TEE

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") Inch by Ten (10") Inch by Eight (8") Tee** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") Inch by Ten (10") Inch by Eight (8") Tee** installed complete in place and ready for use as specified herein.

TEN INCH BY TEN INCH BY TEN INCH TEE

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Ten (10") Inch by Ten (10") Inch by Ten (10") Tee** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Ten (10") Inch by Ten (10") Inch by Ten (10") Tee** installed complete in place and ready for use as specified herein.

6IN 45 DEG BEND

The work to be done under this item shall include the furnishing of all labor, tools, equipment, and material required to furnish and install a **Six (6") 45 Degree Bend** as shown on the Drawings, and as specified herein.

Cast Iron fittings shall have mechanical joint or push-on type joints, and shall be furnished in accordance with paragraph 2.3. of the Standard Specifications for **Water Main Materials (Section 02610A)**, contained herein.

All fittings shall be installed in accordance with the Standard Specifications for **Water Mains (Section 02713)**, contained herein, including Standard Drawing No. 02713-1, Thrust Blocking for Water Main Fittings.

All fittings shall be wrapped in polyethylene in accordance with paragraph 3.2.6. of the Standard Specifications for **Water Mains (Section 02713)**, contained herein. All bolts, washers, and nuts shall be stainless steel.

Backfill shall be with select material and compaction shall be to a density of 95 percent of maximum dry density as determined by **AASHTO T-180**.

Basis of Payment: The basis of payment for this item shall be the Unit Price bid Each per **Six (6") 45 Degree Bend** installed complete in place and ready for use as specified herein.

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REMOVAL OF EXISTING ASPHALT PAVEMENT, CONCRETE PAVEMENT AND/OR STRUCTURES
SECTION 02212

PART 1 - GENERAL

1.1. DESCRIPTION

1.1.1. The work involved in this category shall consist of removing and properly disposing of existing asphalt pavement, concrete pavement, curb and gutter, valley gutter, driveways, sidewalk, and any structures designated for removal, as shown on the Drawings, or as indicated in the contract documents.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1. GENERAL

3.1.1. All existing asphalt pavement and/or concrete (such as pavement, curb and gutter, valley gutter, driveways, sidewalk and structures) which is shown on the Drawings for removal, or indicated in the Contract Documents for removal, or as directed by the Engineer, shall be removed and properly disposed of by the Contractor. Disposal of all construction debris shall be to an off-site location, and shall comply with all local, state, and federal laws and regulations.

3.1.2. Care shall be exercised in such removal to assure that adjacent facilities or structures, which are to remain, shall not be disturbed. Any damage to such existing facilities or structures resulting from carelessness or negligence on the Contractor's part shall be satisfactorily restored to its original condition at the Contractor's expense.

3.1.3. Existing pavement shall be cut and removed to the lines indicated on the Drawings, or as directed by the Engineer. Edges against which new pavement is to be placed shall be straight and approximately vertical.

3.1.4. Existing private and public concrete driveways or sidewalks which interfere with construction of street improvements or which do not match the new construction grade shall be removed as shown on the Drawings or as directed by the Engineer. Such removal shall be to a distance of eight (8”) inches back of curb or to a greater distance as directed by the Engineer to properly fit the new curb and gutter grade. Removal shall be on a neat line produced by a concrete saw cut. Depth of cut shall be to a depth of at least 25 percent of the concrete thickness and care shall be taken in removing the concrete to insure that the slab breaks on the neat line produced by the concrete saw.

3.1.5. Existing asphalt pavement and/or concrete removal and disposal shall be considered incidental to the contract and no additional compensation shall be awarded for such, unless a specific bid item is included in the Contract Documents.

END OF SECTION

TRENCH EXCAVATION AND BACKFILL
FOR PIPELINES & APPURTENANT STRUCTURES
SECTION 02221

PART 1 - GENERAL

1.1. DESCRIPTION

This section covers excavation, trenching and backfilling for pipelines and appurtenances, complete. This item shall consist of all necessary clearing, grubbing and site preparation; removal of all material of whatever description that may be encountered; removal and disposal of debris; handling and storage of materials to be used for fill and backfill; all necessary bracing, shoring and protection; pumping and dewatering as necessary; all backfill, preparation of subgrades; and final grading, dressing and cleanup of the site.

1.2. STANDARD DRAWINGS

Standard Drawings which are applicable to this section are as follows:

Standard Drawing No. 02221-1 - Typical Utility Trench Detail

1.3. TESTING

1.3.1. Field Density Testing

The Contractor shall meet the quality control and quality assurance testing requirements for the Project.

In-place field density tests for quality assurance are at the Owner's expense meeting **AASHTO T191** (**ASTM D1556**), Sand Cone Method; or by **AASHTO T238** and **T239** (**ASTM D2922** and **D3017**), Nuclear Densometer Methods. Quality assurance field density testing frequency is at the Engineer's discretion.

Re-testing failing areas is at the expense of the Contractor.

At the direction of the Engineer, the Contractor shall provide necessary equipment and labor to excavate and replace materials for test holes up to five (5') deep into compacted backfill to allow testing below the surface.

1.3.2. Laboratory Maximum Density and Optimum Moisture

Quality assurance tests will be coordinated by the Engineer with an independent testing laboratory for on-site soils and borrow area soils, to determine the laboratory maximum density values and optimum compaction moisture content according to **AASHTO T-99** or **ASTM D698**.

1.3.3. Materials Submittals

The Contractor shall submit to the Engineer material quality test results including Type 1 Pipe Bedding gradation and plasticity index, and Type 2 Pipe Bedding gradation.

PART 2 - PRODUCTS

2.1. PIPE BEDDING MATERIAL

2.1.1. TYPE 1 PIPE BEDDING

Type 1 pipe bedding shall consist of the four (4") inches of bedding material under the pipe and the bedding material around and over the pipe to a point six (6") inches above the top of the pipe. The four (4") inches of bedding material under the pipe and up to the spring line of the pipe shall generally be described as consisting of sand, sandy gravel, or fine gravel having a maximum size of three-fourths (¾") inches and having a maximum plasticity index of six (6) as determined by **AASHTO Methods T89** and **T90** or by **ASTM D4318**. Where trench excavation encounters wet or unstable material, Type 1 Pipe Bedding must be free draining and non-plastic.

Refer to Standard Drawing 02221-2 and Special Provisions for other requirements.

2.1.2. SELECT TYPE 1 BEDDING

Select Type 1 Bedding material from the springline to six (6") inches over the pipe shall consist of select earth, sand or fine gravel, free from clods, lumps of frozen material, or stones larger than one and one-half (1½") inches in their maximum dimensions. Where wet or otherwise unstable conditions exist, the materials in this zone shall be free draining and non-plastic. Where suitable material is available in the material excavated from the trench, the Contractor may procure the select material by screening, sifting or manually sorting the material removed from the trench, as approved by the Engineer.

2.1.3. PIPE BEDDING ALTERNATE

Pipe Bedding Alternate material is described on Standard Drawing 02221-2, and is applicable only if specified in the contract documents.

2.1.4. TYPE 2 PIPE BEDDING

Type 2 bedding shall be used as directed by the Engineer to replace soft, spongy or other unsuitable material encountered in the trench bottom, and shall extend from the bottom of the Type 1 bedding material to the depth necessary to support the pipe. The Type 2 bedding material shall consist of suitable granular material meeting the following gradation, and shall have a maximum plasticity index of six (6).

Sieve Opening	% Passing
3 inch	100
Number 4	0 - 25
Number 8	0 - 10

2.2. TRENCH BACKFILL MATERIALS

2.2.1. MATERIALS FROM TRENCH EXCAVATIONS

Backfill material obtained from trench excavations must be free of cinders, ash, refuse, organic or frozen material, boulders, or other deleterious materials. Backfill materials and placement are further described in the EXECUTION Section of this specification.

2.2.2. IMPORTED BACKFILL MATERIAL

Imported backfill material is from borrow source(s) outside the project limits and is used when, in the opinion of the Engineer, an adequate volume of suitable backfill material is not available within the project limits. Imported Backfill Materials must comply with the requirements of Section 2.2.1.

2.3. FLOWABLE FILL

If used, Flowable Fill is to meet the requirements of the specifications for Flowable Fill.

2.4. DETECTABLE BURIED WARNING TAPE

Warning tape shall have a minimum width of six (6") inches and a minimum thickness of five (5) mils and a solid aluminum core running the full length and width of the tape encased in a color coded inert plastic jacket which is impervious to all known alkalis, chemical reagents, and solvents found in the soil. Color coding shall be in conformance with the **APWA/ULCC** Color Code. Warning tape shall have a minimum tensile strength of 5000 Pounds Per Square Inch (PSI) and a maximum imprint length of 36 inches. Bury warning tape a maximum 18 inches below finish surface grades, unless specified otherwise in the contract documents.

PART 3 - EXECUTION

3.1. PROTECTION OF EXISTING PROPERTIES

3.1.1. GENERAL

The Contractor shall take precautions to protect all adjoining private and public property and facilities, including underground and overhead utilities, curbs, sidewalks, driveways, structures, and fences. The Contractor shall restore or replace all disturbed or damaged facilities to its original condition at Contractor's expense.

Prior to beginning construction, the Contractor must contact the One Call System, or all utility companies and/or public utilities having underground installations: sewer, telephone, water, fuel, gas, electric, etc., that may be encountered during the excavation. The Contractor must locate any underground installations and shall preserve intact any underground pipes or other utilities encountered during construction (except as hereinafter permitted) provided their location is such that they do not interfere with new pipelines or structures being installed. In case such utilities or other structures are accidentally broken, they shall be immediately replaced in a condition conforming to the standard repair practice of the utility, all at the Contractor's expense.

Existing water mains, sanitary sewers and storm drains shown on the Drawings, which will intersect the new pipelines or structures, will be relocated by the Contractor in accordance with the Drawings and specifications. No separate payment will be made for this unless specifically included as a bid item in the contract documents. In the event the Contractor is authorized to relocate the mains or sewers, and the work is determined by the Engineer to be a change in the original work, payment will be made under applicable portions of the General Conditions covering such changes.

Existing water, sanitary sewer and storm drain services, which will intersect new pipelines or new structures, shall be replaced by the Contractor, and if determined by the Engineer to be a change in the original work, payment will be made under applicable portions of the General Conditions covering such changes.

Existing water services from the mains to private property which interfere with trenching operations shall be cut and replaced only with permission of the Engineer, and if allowed, shall be done at the Contractor's expense. The use of such water services shall in no case be interrupted for more than four (4) hours, unless specifically permitted in writing by the user.

Existing water mains and water services shall be protected from freezing at all times during construction operations.

3.1.2. PRIVATELY OWNED UTILITIES

Gas mains, underground electrical and telephone cables, telephone poles, light poles, etc., required to be moved to make way for new construction will be moved by others unless designated otherwise on the Drawings.

3.1.3. EXISTING STRUCTURES

The Contractor shall prevent damage to existing buildings or structures in the work area. The Contractor shall repair all construction related damage to the satisfaction of the Owner.

3.1.4. EXISTING OVERHEAD UTILITIES

The Contractor shall use extreme caution to avoid conflict, contact, or damage to overhead utilities during the work.

3.1.5. EXPLORATORY EXCAVATION

Location of existing buried utilities that might interfere with alignment or grade shall be verified by exploratory excavation prior to construction. If any existing utility interferes with work in either alignment or grade and has to be moved, such work shall be done by the Contractor, and if not a bid item and if determined by the Engineer the work is a change in the original work, payment will be made under applicable portions of the General Conditions covering such changes.

When authorized by the Engineer, the Contractor shall provide a backhoe to excavate and backfill for determination of grade and/or the exact location of buried utilities, and such work shall be done by the Contractor, and if not a bid item and if determined by the Engineer the work is a change in the original work, payment will be made under applicable portions of the General Conditions covering such changes.

3.2. PAVEMENT REMOVAL AND STRIPPING

Where trench excavation or appurtenant structure excavation requires removing curb and gutter, concrete sidewalks, asphalt concrete pavement, or Portland cement concrete pavement, cut the concrete or pavement in a straight line parallel with the excavations edge using a spadebitted air hammer, or concrete saw, or other suitable equipment to produce a straight, square and clean break. Re-cut edges broken during construction, before concrete or pavement operations. For trenches passing through existing pavement, cut the pavement along a neat vertical line at least twelve (12”) inches from the edge of the trench. Where the neat line cut is less than three (3’) feet from the edge of the existing pavement, remove and replace the entire pavement section between trench and edge of pavement. Dispose of the asphaltic concrete and/or Portland cement concrete debris off-site according to applicable local and state regulations.

When crossing existing or prospective cultivated areas, gravel streets or other developed surfaces, the Contractor shall strip the cover material to full depth at the existing surfacing. This surfacing shall be stockpiled and placed back over the trench after backfilling to the extent that it is acceptable and usable for the purpose. Topsoil shall be removed to full depth of the topsoil, or to a maximum depth of twelve (12”) inches, whichever is less.

All established lawn areas cut by the trench or damaged during the course of the work shall be re-sodded or seeded, as specified, to the satisfaction of the Engineer.

3.3. MAINTENANCE OF FLOWS

Adequate provisions shall be made for maintaining the flow of sewers, drains and water courses encountered during construction. Culverts, ditches, fences, crosswalks and structures which are disturbed by this construction shall be satisfactorily restored to their original condition upon completion of the work, incidental to the contract.

3.4. TRENCH EXCAVATION

3.4.1. GENERAL

All excavation, trenching and shoring, and related work, under this contract shall be performed in a manner that meets with the **OSHA Department of Labor, Safety and Health Regulations for Construction**.

The Contractor shall take precautions and protect all adjoining private and public property and facilities, including underground and overhead utilities, curbs, sidewalks, driveways, structures, and fences. Any disturbed or damaged facilities will be suitably restored or replaced at the expense of the Contractor.

The Contractor shall excavate as necessary at the locations shown on the Drawings, staked in the field and as specified.

Crossings under sidewalks or curbs may be made by tunneling only if approved by the Engineer. If the Contractor elects to remove a portion of the sidewalk or curb, he must use a concrete saw for making neat joints, compact the backfill as specified, and pour a new concrete sidewalk or curb section.

During excavation, materials suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. Excavated material shall be piled on one side of the trench only, to permit ready access to existing fire hydrants, valves, manholes and other appurtenances. Surface drainage of adjoining areas shall be unobstructed.

All excavated materials not required or suitable for backfill shall be removed from the site and properly disposed off-site in accordance with local and state regulations.

Grading shall be done as may be necessary to prevent surface water from flowing onto excavations, and any other water accumulating therein shall be promptly removed. Under no circumstances shall water be permitted to rise in unbackfilled trenches until after the pipe has been placed, tested and covered with backfill. Any pipe having its alignment or grade changed as a result of a flooded trench shall be re-laid at the Contractor's expense.

The bottom of the trenches shall be accurately graded to the line and grade shown on the Drawings. Bedding material shall provide uniform bearing and support for each section of the pipe at every point along its entire length. Bell holes and depressions for joints shall be dug after the trench bedding has been graded, and shall be only of such length, depth and width as required for properly making the particular type joint. Unauthorized overdepths shall be backfilled with Type 2 Pipe Bedding Material at the Contractor's expense.

There will be no differentiation between common and rock trench excavation, except when listed as separate items on the Bid Form. Excavation shall include the removal and subsequent handling of all earth, gravel rock or other material encountered regardless of the type, character, composition or condition of the material.

The use of trench digging machinery will be permitted except in places where its operation will cause damage to existing structures or features, in which case hand methods shall be employed.

3.4.2. TRENCH DIMENSIONS

Trench dimensions shall be as specified below.

3.4.2.1. Width

Excavate to provide room to install and join the pipe, as specified. The minimum trench width is 3'- 6" for outside pipe diameters of 18 inches or less. The minimum trench width is 2'- 0" plus the outside pipe diameter, for pipe sizes exceeding 18 inches. Maximum trench width may be specified in the contract documents.

3.4.2.2. Depth

Excavate the trench as required for the invert grade or pipe bury as specified in the contract documents, plus four (4") inches for Type 1 Pipe Bedding. Care shall be taken not to excavate below the required depth. If bedrock, boulders, or large stones are encountered at the bottom of the trench, excavate a minimum of six (6") inches below the bottom of the pipe for backfilling with Type 1 Pipe Bedding.

3.4.3. SOFT OR UNSTABLE TRENCH SUBGRADE

When soft or unstable material is encountered at the trench subgrade which will not uniformly support the pipe, such material shall be excavated to an additional depth as directed by the Engineer and backfilled with Type 2 Pipe Bedding.

3.4.4. BLASTING

The Contractor shall submit a written plan for blasting for Engineer review. Written approval is required from the Engineer prior to any blast for excavation. The Contractor shall use utmost care to protect life and property during blasting. The Contractor shall have a licensed blaster with adequate experience in personal supervision of any blasting activity. The Contractor shall comply with all local, state, and federal rules and regulations in the handling, storage, and use of all explosives.

3.4.5. PAVEMENT DAMAGE CAUSED BY EQUIPMENT

Any equipment operating on tracks, which is to be used on pavement, shall be equipped with suitable pads to prevent damage to the pavement. All pavement damaged during construction by the Contractor's equipment shall be restored to its original condition by the Contractor, at his expense.

3.4.6. SHORING, SHEETING AND BRACING

The Contractor shall provide all shoring, bracing and tight sheeting required to prevent caving and to protect his workmen, in accordance with **Occupational Safety and Health Regulation Requirements**, and to protect adjacent property and structures. No extra payment shall be made for these items.

3.4.7. EXCAVATION FOR APPURTENANCES

Excavations for manholes, hydrants, structures and other appurtenances shall be to the size and depth required to permit compaction and backfill on all sides to the specified density. The depth, provisions for removing water, and other applicable portions of these specifications shall apply to excavation for appurtenances.

3.5. DEWATERING

Where ground water is encountered in excavation, it shall be removed to prevent unstable trench conditions, laying of pipe in water, water entering the installed pipe, or any other interference with pipe laying and other construction operations. The cost of dewatering operations will not be paid for as a separate item, but shall be considered a part of the excavation cost.

3.6. EXCAVATION STABILITY AND SAFETY

The stability of construction excavations and associated worker safety, including slope geometry and shoring/bracing considerations are the responsibility of the Contractor. The Contractor shall meet all **OSHA** regulations. This may require design of temporary slopes and/or shoring by a licensed professional engineer.

3.7. TRENCH FILLING AND BACKFILLING

3.7.1. GENERAL

All trenches shall be backfilled immediately after grade, alignment and jointing of the pipe has been inspected and approved by the Engineer. Leakage test, pressure tests or tests for alignment and grade shall be performed after backfill. If any test fails, the Contractor shall be responsible for work required to correct the defects at no additional cost to the Owner.

Do not water jet or pond any bedding or backfill materials. Limit water in the backfill material to that required to provide adequate moisture for compaction.

3.7.2. PIPE BEDDING PLACEMENT

3.7.2.1. TYPE 1 PIPE BEDDING MATERIAL

The Contractor shall place Type 1 Pipe Bedding Material four (4") inches under the pipe, around the pipe, and up to the springline of the pipe. Place in maximum six (6") inch lifts using hand or other compaction methods without damaging or disturbing the pipe. Thoroughly compact each layer. Use special care to assure compaction under the haunches of the pipe. Place backfill material in equal lifts on both sides of the pipe for the full trench width. Take care to prevent migration of Type 1 Pipe Bedding Material into surrounding soils during placement and compaction.

3.7.2.2. SELECT TYPE 1 BEDDING

Place Select Type 1 Bedding material from the springline to six (6") inches over the pipe. Where wet or unstable material exists, assure the material is free draining and non-plastic. Place in maximum lifts of six (6") inches using hand or other compaction methods without damaging or disturbing the pipe. Thoroughly compact each layer. Use special care to assure compaction under the haunches of the pipe. Place backfill material in equal lifts on both sides of the pipe for the full trench width. Take care to prevent migration of Select Type 1 Bedding Material into surrounding soils during placement and compaction.

3.7.2.3. TYPE 2 PIPE BEDDING MATERIAL

Use Type 2 Pipe Bedding Material described in the PRODUCTS Section as specified or as directed by the Engineer to replace unsuitable material encountered in the trench bottom, placing it from the bottom of the Type 1 Pipe Bedding Material to the depth required to adequately support the pipe.

3.7.2.4. PIPE BEDDING ALTERNATE

Place and compact the pipe bedding alternate material on Standard Drawing 02221-2, where specified in the contract documents and/or where directed by the Engineer.

3.7.3. TRENCH BACKFILL

After the pipe bedding material has been placed and compacted as specified above, the remainder of the trench shall be backfilled. All backfill material shall be free from cinders, ashes, refuse, organic and frozen material, boulders, or other materials that are unsuitable. From the top of the Select Type 1 Bedding to six (6") inches below the ground surface, or to the subgrade elevation for streets or paved surfaces, material containing stones of eight (8") inches in the greatest dimension may be used. A minimum of 18 inches of compacted cover is to be in place, over the pipe, before any heavy pieces of compaction equipment are allowed to be placed in the trench.

Trench backfill from the top of the pipe bedding material to ground surface or to the subgrade of street surfacing is separated into three classifications. Type A Trench Backfill refers to compacted backfill in streets or paved areas. Type B Trench Backfill is designated for alleys, fields, borrow pits, unimproved streets or other unsurfaced areas where a lesser

degree of compaction of the trench backfill is required. Type C Trench Backfill may be designated for open and unimproved areas outside of the public right-of-way where special compaction of the backfill is not required. Locations of the types of backfill required shall be as shown on the Drawings or as designated in the contract documents.

Remove, replace, and re-compact backfill in trenches where settlement has occurred as directed by the Engineer at the Contractor's expense.

3.7.3.1 TYPE A TRENCH BACKFILL

Place trench backfill in maximum eight (8") inches compacted lifts within three (3%) of optimum moisture content, and compacted to at least 95 percent of maximum dry density, as determined by **AASHTO T-99** or by **ASTM D698**.

3.7.3.2 TYPE B TRENCH BACKFILL

Place trench backfill in maximum eight (8") inches compacted lifts within three (3%) of optimum moisture content, and compacted to at least 90 percent of maximum dry density, as determined by **AASHTO T-99** or by **ASTM D698**. Cultivated areas are to be backfilled with Type B trench Backfill.

In cultivated areas, place stripped topsoil uniformly over the backfilled trench to the original depth. Do not compact the topsoil, but grade to provide a smooth surface conforming to the adjoining ground surfaces. Remediate any settlement of the trench surface below final surface grade throughout the contract warranty period.

3.7.3.3 TYPE C TRENCH BACKFILL

Place trench backfill in maximum twelve (12") inches compacted lifts at densities equal to or greater than the densities of adjoining undisturbed soils. Mound earth over the trench top, if so directed by the Engineer.

3.7.3.4. FLOWABLE FILL

Place flowable fill as trench backfill as shown on the Drawings, as specified in the contract documents, or as directed by the Engineer. Flowable fill may also be used as a construction expedient, substituting for any type of trench backfill, subject to the approval of the Engineer, and at the expense of the Contractor.

3.74. REPLACEMENT OF UNSUITABLE BACKFILL MATERIALS

Wherever in excavating the trench the native trench material consists of peat, soft clay, quicksand, or other material which, in the opinion of the Engineer, is unsuitable for use as backfill material or which cannot be readily conditioned or dried to be made suitable, such material shall be removed and disposed of by the Contractor. The material thus removed shall be replaced with suitable surplus material obtained from trench excavation materials from other areas within the limits of the project at no additional cost. If surplus material is not available within the limits of the project, the Contractor shall furnish suitable material from an approved borrow source which shall be paid for as Imported Backfill Material. All such material shall be placed and compacted in accordance with the requirements of the classification of backfill specified for the trench section.

3.7.5. BACKFILLING FOR APPURTENANCES

Backfill around appurtenances shall be deposited in such a manner as not to disturb the appurtenance from its proper alignment, and then compacted to the finished grade. Backfill material, placement, compaction, and backfill procedures shall conform to the requirements specified for the adjoining trench.

3.7.6. BACKFILL ABOVE ORIGINAL GROUND FOR MINIMUM COVER REQUIREMENTS

Where shown on the Drawings, the Contractor shall provide embankment over the pipe, above the original ground surface, to a height which will satisfy the minimum depth of cover requirements. Such embankment shall be constructed to the cross section shown on the Drawings. No additional compensation will be paid for embankment unless shown as a specific item on the Bid Form.

3.7.7. DETECTABLE BURIED WARNING TAPE

The use of warning tape is optional unless specifically required in the contract documents, and if used shall not be relied upon as a primary locating device. Provide warning tape as described in the PRODUCTS Section. Bury warning tape a maximum 18 inches below finish surface grades.

3.7.8. BACKFILL FOR APPURTENANCES

The Contractor is cautioned regarding the need for careful attention to compaction in areas around existing facilities and obstructions and in areas where larger, trench-type compaction equipment is not suitable for use. Such areas include, but are not limited to, service line trenches, manholes, valve boxes, existing utilities and drainage and miscellaneous structures and pipes.

3.8. SURVEY MARKERS AND MONUMENTS

The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection shall include marking with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Owner and Engineer. Any survey marker or monument that is disturbed or destroyed by the Contractor, without approval during the construction of this project, shall be replaced by a licensed land surveyor at the Contractor's expense.

3.9. CLEANUP

As work progresses, that portion of the work completed shall be cleared of debris and brought to the finished grade. Upon completion of the work, the entire site shall be cleared of all debris and ground surfaces shall be finished to smooth, uniform slopes and shall present a neat and workmanlike appearance. All rocks brought to the ground surface by excavation or backfilling operations shall be removed.

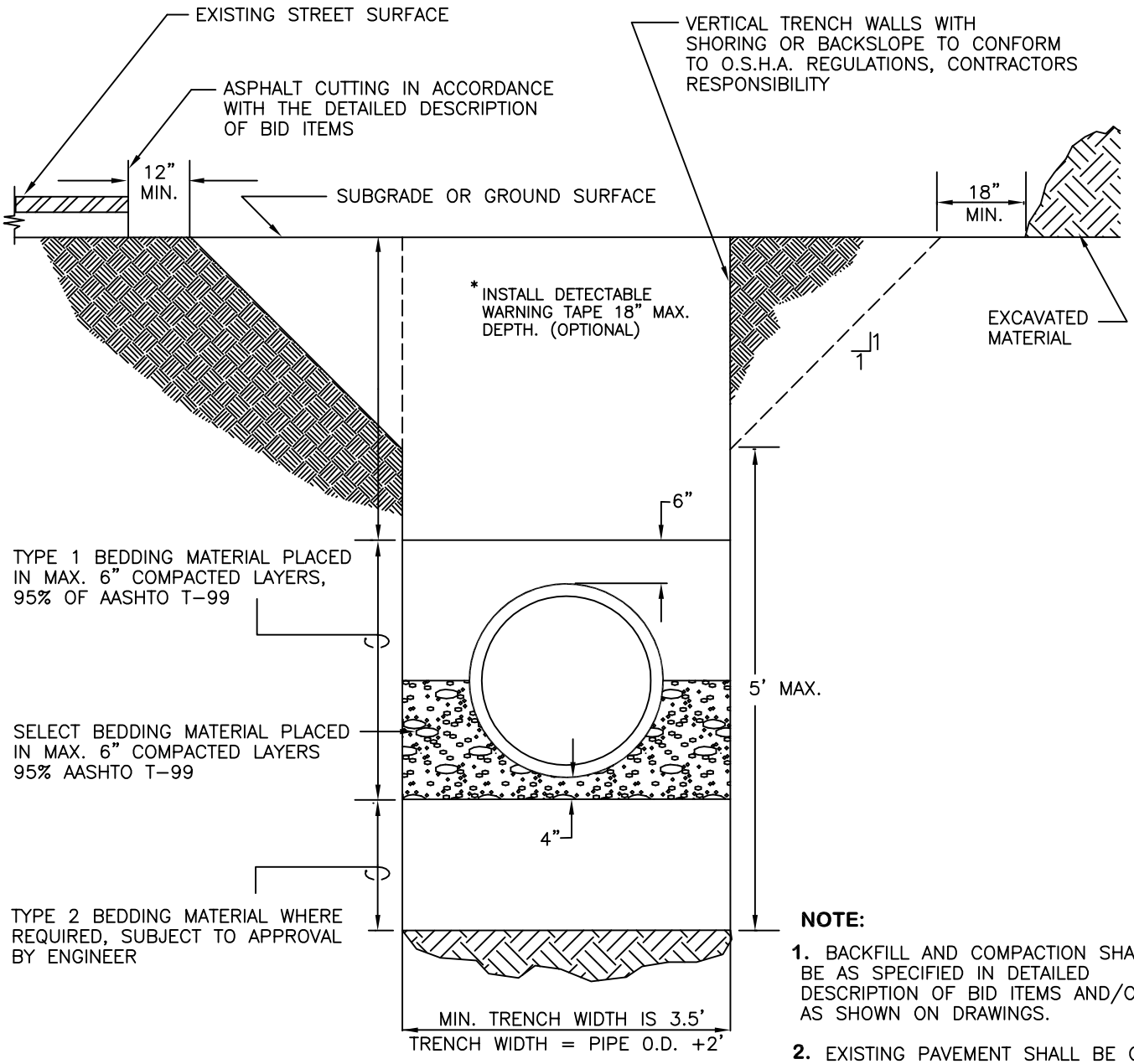
3.10. TIME AND DISTANCE OF OPEN TRENCHES

The Contractor will be required to conduct his work so that trenches will remain open a minimum possible time.

No trench excavating shall begin until approved compaction equipment is at the site where the excavating is to take place. The maximum distance between backfilling and compaction operations and the end of newly installed pipe shall be 200 feet in existing streets and 500 feet in all other areas, and the maximum distance between the newly installed pipe and the excavator shall be 100 feet in existing streets and 200 feet in all other areas. For each work group consisting of a trench excavator, a pipe laying crew, and a backfilling and compacting crew, the maximum allowable open ditch at any time will be 300 feet in existing streets and 700 feet in all other areas. The maximum distance behind the end of the new pipe shall be 1,500 feet for gravel replacement, base placement or pavement replacement.

Certain conditions, as provided in the Special Provisions or Detailed Description of Bid Items, of these specifications, may necessitate the closing of certain sections of trench prior to daily, weekend or holiday shutdown.

END OF SECTION



NOTE:

1. BACKFILL AND COMPACTION SHALL BE AS SPECIFIED IN DETAILED DESCRIPTION OF BID ITEMS AND/OR AS SHOWN ON DRAWINGS.

2. EXISTING PAVEMENT SHALL BE CUT IN NEAT VERTICAL LINES, A MINIMUM OF 12" FROM THE EDGE OF THE TRENCH OPENING, WHERE NEAT LINE IS LESS THAN 3 FEET FROM EDGE OF EXISTING PAVEMENT OR CURB AND GUTTER, REMOVED AND REPLACE ENTIRE PAVEMENT SECTION BETWEEN TRENCH AND EDGE OF PAVEMENT.

2013

AMERITECH ENGINEERING CORPORATION	SCALE: NONE	TYPICAL UTILITY TRENCH DETAILS	STANDARD DRAWINGS 02221-1

WATER MAIN MATERIALS
SECTION 02610A

PART 1 - GENERAL

1.1 DESCRIPTION

Furnish all water main pipe and fittings meeting the contract documents and as follows. Pipe strength classifications shall be as shown on the Drawings or as specified in the contract documents.

1.2. CERTIFICATION BY MANUFACTURER

The Contractor shall furnish a certification by the manufacturer covering all pipe and fittings to be furnished, certifying that the pipe and fittings comply with applicable specifications.

All products that may come into contact with water intended for use in a public water system shall meet American National Standards Institute (ANSI) / National Sanitation Foundation (NSF) Standards 60 and 61. A product will be considered as meeting these standards if so certified by NSF, Underwriters Laboratories, or other organization accredited by ANSI to test and certify such products.

PART 2 - PRODUCTS

2.1. DUCTILE IRON PIPE

Ductile Iron Pipe (D.I.P.) shall conform to the provisions of **AWWA C151**, American National Standard for Ductile Iron Pipe. Wall thickness shall be Class 51 unless specified otherwise.

Underground pipe and fitting joints shall be mechanical joint or push-on joints conforming to **AWWA C111** unless designated otherwise.

The interior of the pipe shall have a cement mortar lining conforming to the requirements of **AWWA C104**. The outside surface of pipe designed for underground service shall receive a bituminous coal tar base coating approximately 1 mil thick.

2.1.1. POLYETHYLENE ENCASEMENT
Furnish polyethylene encasement in accordance with **AWWA C105** “Polyethylene Encasement for Fray and Ductile Cast-Iron Piping for Water and other Liquids”.

2.2. POLYVINYL CHLORIDE (PVC) PRESSURE PIPE

2.2.1. Polyvinyl Chloride (PVC) pipe for water mains shall meet the requirements of **AWWA C900**, Polyvinyl Chloride Pressure Pipe made to Ductile Iron Pipe outside diameters (O.D.'s) for "Push-On" joints. Pipe joints shall be bell and spigot with an elastomeric gasket. Pipe shall be Class 150 and shall have a DR of 18 unless specified otherwise.

2.2.2. Polyvinyl Chloride (PVC) Iron Pipe Size (IPS) pressure-rated pipe for water mains shall meet the requirements of **ASTM D-2241**, **ASTM D-1784**, and the **National Sanitation Foundation (NSF) Standard No. 14** for potable water piping. All PVC IPS pressure-rated pipe shall have an integral bell coupler which meets the requirements of **ASTM D-3139** and shall have a gasket sealing system in accordance with **ASTM F-477**.

2.3. CAST IRON AND DUCTILE IRON FITTINGS

Fittings shall be: 1) Class 250 fittings conforming to **AWWA C110**, latest edition, Gray-Iron and Ductile Iron Fittings For Water And Other Liquids, or 2) compact fittings conforming to **AWWA C153**, latest edition, Ductile Iron Compact Fittings For Water And Other Liquids. Joints shall be mechanical joint or push-on joints conforming to **AWWA C111**. The interior of the fitting shall have a cement mortar lining conforming to **AWWA C104**. The exterior of the fitting shall have a bituminous tar coating approximately 1 mil thick. All compact fittings shall have a rated working pressure of 350 pounds per square inch (PSI) with laying lengths as recommended by the manufacturer. All bolts, washers, and nuts shall be Cor-Ten, Dura-Bolt, or stainless steel.

2.4. COUPLINGS

Pipe couplings shall be either: 1) the cast type with cast iron or ductile iron sleeves and malleable or ductile iron flanges, as manufactured by Rockwell, Dresser, Ford, Romac, or an approved equal, or; 2) gray iron of ductile iron, mechanical joint solid sleeves, with a minimum length of 12 inches, conforming to Section 02610A.2.3. herein. Use of the first type shall be limited to a maximum pipe diameter of 16 inches. Gaskets shall be manufacturers' standard suitable for use in potable water systems. Bolts and nuts shall be Cor-Ten, Dura-Bolt, or stainless steel. Coating shall be the manufacturers' standard unless specified otherwise.

2.5. TAPPING SLEEVES AND VALVES

Tapping sleeves shall be either: 1) gray iron or ductile iron, split-sleeve, mechanical joint type with end and side gaskets, as manufactured by Mueller Company, Model H-615, Tyler tapping sleeve, or approved equal, or; 2) split-body type with circular gasket forming a seal around the circumference of the outlet, as manufactured by Rockwell International, Model 622, Fort FTS, or approved equal. Both types shall have a Class 125, **ANSI B16.1** outlet flange. Both types shall be rated for a minimum of 150 PSI working pressure and shall contain a threaded plug for testing purposes on the neck or body of the tapping sleeve. Gaskets shall be manufacturers' standard suitable for use in potable water systems. Bolts and nuts shall be Cor-Ten, Dura-Bolt, or stainless steel. The second type shall have fusion-bonded, 12 mil thickness, epoxy coating. The use of the second type of sleeve is limited to metal pipe. Any sleeves used on PVC pipe shall be of the first type above.

Tapping valves shall meet the applicable requirements for gate valves as specified in **SECTION 02718, WATER VALVES AND FIRE HYDRANTS**, with flanged inlets compatible with the flange of tapping sleeve and mechanical joint outlet.

2.6. SPECIAL FITTINGS

Special fittings shall be in accordance with the Contract Documents. The Engineer will specify gasket materials for contaminated soil or special groundwater situations.

PART 3 – NOT USED

END OF SECTION

SANITARY SEWER MAIN MATERIALS
SECTION 02610B

PART 1 - GENERAL:

1.1. DESCRIPTION

Furnish all sewer pipe and fittings meeting the requirements of the contract documents. Pipe strength classifications shall be as shown on the Drawings or as specified in the contract documents.

1.2. CERTIFICATION BY MANUFACTURER

The Contractor shall furnish a certification by the manufacturer covering all pipe and fittings to be furnished, certifying that the pipe and fittings comply with applicable specifications.

PART 2 - PRODUCTS

2.1. POLYVINYL CHLORIDE (PVC) PIPE

2.1.1. GENERAL
Polyvinyl Chloride (PVC) pipe shall be produced by a continuous extrusion process, employing a prime grade of unplasticized polyvinyl chloride. The grade used shall be highly resistant to hydrogen sulfide, sulfuric acid, gasoline, oil, detergents and other chemicals commonly found in sewage and industrial wastes. The material shall conform to the requirements of the specifications for "Rigid Polyvinyl Chloride Compounds", **ASTM D-1784**. The pipe shall have self-extinguishing flammability characteristics.

2.1.2. GRAVITY SEWER PIPE
Gravity sewer pipe shall meet one of the following requirements:

2.1.2.1. **ASTM D-3034**, "Standard Specifications for Polyvinyl Chloride Sewer Pipe and Fittings", with an SDR of 35 (4"-15").

2.1.2.2. **ASTM F-679**, T-1 wall thickness (SDR 35), "Standard Specifications for PVC Large Diameter Plastic Gravity Sewer Pipe and Fittings" (18"-27").

Nominal laying lengths shall be not less than 12.5 feet, except shorter lengths may be used adjacent to manholes, lampholes or other appurtenances. Each length of pipe shall be marked, as a minimum, with size, SDR, "Sewer Pipe" and Code Number.

2.1.3. PRESSURE SEWER PIPE
Pressure sewer pipe shall meet the requirements of **ASTM D2241**, "Standard Specification for Polyvinyl Chloride Plastic Pipe (SDR-PR), with a minimum SDR-26 and a minimum pressure rating of 160 pounds per square inch (PSI).

Nominal laying lengths shall be not less than 20 feet, except shorter lengths may be used adjacent to bends or other appurtenances. Each length of pipe shall be marked, as a minimum, with size, SDR or pressure rating or both, **ASTM** designation and manufacturer's name and code.

2.1.4. PIPE JOINTING
Each length of pipe shall be provided with a bell designed so that a watertight joint will be obtained when jointing the bell and spigot with a rubber ring.

The rubber gasket joint for PVC pipe and fittings shall consist of a rubber gasket which is compressed between the outer surface of the spigot and the inner surface of the bell. The joint shall be completely sealed by the gasket so that the assembly will remain watertight under all conditions of service, including movements resulting from expansion, contraction, settlement and deformation of the pipe. The rubber ring joint assembly shall be assembled in strict accordance with the manufacturer's recommendations.

2.1.5. FITTINGS

Wye or tee fittings for connecting service lines shall be of the same material, construction and joint design as the main sewer pipe, unless specified otherwise.

2.2. CONCRETE PIPE:

2.2.1. PIPE

Concrete sewer pipe may only be used in diameters larger than 12 inches. Concrete sewer pipe shall conform to **ASTM C14**, **C76** or **C655**, latest revision, except as noted herein. Cement for use in manufacturing of concrete pipe shall be Type IIA Modified, Type V, or any other approved cement which contains less than five (5%) percent Tricalcium Aluminate. Pipe strength classifications for **C14**, **C76** or **C655** specification pipe shall be as listed in the contract documents.

The maximum absorption allowed shall be seven (7%) percent. For pipe sizes smaller than 12 inches in diameter, the proportions of cement in the concrete mixture shall not be less than 6-1/2, U.S. standard (94 pounds) bags per cubic yard of concrete.

The referenced **ASTM** specifications list permissible variations in pipe dimensions. They shall be strictly adhered to, and the uniformity of barrel thickness shall be such that a constant flow area without projections exists across joints.

2.2.2.. FITTINGS

Wye or tee fittings for connecting service lines shall be of the same material, construction and joint design as the main sewer pipe unless designated otherwise.

2.2.3. JOINTING MATERIALS

Joints for concrete pipe shall be made using flexible, watertight, rubber-type gaskets conforming to **ASTM C443**, with O-ring gasket confined in groove of pipe tongue.

2.2.4. PIPE JOINTING

The spigot and bell ends of the pipe shall be thoroughly cleaned before joint assembly. Jointing of the pipe shall be in strict accordance with the recommendations of the manufacturer of the pipe and joints. The correct position of the rubber gaskets and proper assembly of the pipe shall be checked by means of a feeler gauge prior to backfilling of the trench. On larger diameter pipe which will provide room for workmen inside, all joints shall be visually inspected and gauged inside for proper position of the gasket and joint gap tolerances.

2.2.5. MATERIALS TESTING

The pipe supplier shall furnish the Engineer with certified test results from an independent testing laboratory on the following: (a) crushing strength (3-edge bearing method), (b) absorption, and (c) hydrostatic test. Test results shall be furnished for each pipe in accordance with **ASTM C14**, **C76** or **C655**, or a minimum of two (2%) percent of the number of pipe supplied, whichever is greater. Cost of these tests shall be borne by the pipe supplier.

2.3. HIGH DENSITY POLYETHYLENE (HDPE) PIPE

High Density Polyethylene (HDPE) Pipe furnished shall meet the requirements of **ASTM D3350** having a cell classification of **PE 34-5434C**. Dimensions and workmanship shall be in accordance with **ASTM F714**. All field joints shall be heat fusion welded in accordance with pipe manufacturer's recommendations. All fittings and connections for service lines shall be of the same material, construction, and joint design as the main sewer pipe.

2.4. OTHER PIPE MATERIALS

Other pipe materials may be specified at the discretion of the Engineer and the Owner.

PART 3 – NOT USED

END OF SECTION

WATER MAINS
SECTION 02713

PART 1 - GENERAL

1.1. DESCRIPTION

1.1.1. This section covers construction of water mains, including fittings, and other appurtenances normally used for water supply and distribution systems. This item shall consist of furnishing and installing pipe and fittings, construction of thrust blocking, testing, cleaning and disinfection of mains and other related work.

1.2. STANDARD DRAWINGS

1.2.1. Standard Drawings which are applicable to this section are as follows:

Standard Drawings No. 02713-1 - Thrust Blocking for Water Main Fittings
Standard Drawings No. 02713-2 - Water and Sewer Main Separation

PART 2 - PRODUCTS

2.1. GENERAL

2.1. Pipe used in water main construction shall be as shown on the Drawings or as specified in the contract documents and shall be in accordance with materials and testing as specified in **SECTION 02610A, WATER MAIN MATERIALS**. Where reference is made to an **ASTM**, **USASI** or **AWWA** designation, it shall be the latest revision at the time of call for bids, except as noted on the Drawings or in the Detailed Description of Bid Items.

2.2. All pipe shall be clearly marked with type, class and/or thickness as applicable. Lettering shall be legible and permanent under normal conditions of handling and storage. Type of joint, class, thickness designation, castings, lining, marking, testing, etc. shall be as specified in the contract documents.

2.2. FITTINGS

2.2.1. Fittings used for water mains shall be cast iron or ductile iron. Fittings shall be in accordance with materials specified in **SECTION 02610A, WATER MAIN MATERIALS**.

PART 3 - EXECUTION

3.1. TRENCH EXCAVATION AND BACKFILL FOR WATER MAINS

3.1.1. Trench excavation and backfill shall include all excavation, backfilling, disposal of surplus and unsuitable material, and all other work incidental to the construction of trenches, including any excavation which may be required for valves, fittings, hydrants, thrust blocks or other structures forming a part of the pipeline and not otherwise classified as "Structural Excavation".

3.2. PIPE INSTALLATION FOR WATER MAINS

3.2.1. GENERAL. Pipe shall be installed in accordance with the manufacturer's specifications and instructions for installing the type of pipe specified unless modified or changed in the Contract Documents. The Contractor shall provide all tools and equipment including any special tools designated for installing each particular type of pipe specified.

3.2.2. DEWATERING OF TRENCH. Where water is encountered in the trench, it shall be removed during pipelaying operations and the trench so maintained until the ends of the pipe are sealed and provisions are made to prevent floating of the pipe. Trench water shall not be allowed to enter the pipe at any time. All cost for dewatering shall be incidental to the Contract and no additional compensation shall be awarded for dewatering.

3.2.3. RESPONSIBILITY FOR MATERIAL

3.2.3.1. The Contractor shall be responsible for all material furnished by him and shall replace at his own expense all such material found defective in manufacture or damaged in handling after delivery by the manufacturer. This shall include the furnishing of all materials and labor required for the replacement of installed material discovered damaged or defective prior to the final acceptance of the Work, or during the guarantee period.

3.2.3.2. The Contractor shall be responsible for the safe and proper storage of material furnished by him or to him and accepted by him and intended for the Work. The interior of all pipe and other accessories shall be kept free from dirt and foreign matter at all times.

3.2.4. HANDLING OF PIPE

3.2.4.1. All pipe furnished by the Contractor shall be delivered and distributed at the site by the Contractor. Pipe, fittings, specials, valves, and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.

3.2.4.2. In distributing the material at the site of the Work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

3.2.4.3. Pipe shall be so handled that the coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, the repair shall be made by the Contractor at his expense in a manner satisfactory to the Engineer.

3.2.5. LAYING OF PIPE

3.2.5.1. Before installation, the pipe and pipe coating shall be inspected for defects. Bare cables, chains, hooks or metal bars shall not be permitted to come in contact with the pipe coating. Any damage to pipe coatings shall be repaired with the same materials used for the original coating before laying the pipe. If belt slings are used for lowering the pipe into the trench, care shall be taken so that, when the slings are removed, the coating will not be damaged.

3.2.5.2. All pipe shall be laid and maintained to the required lines and grades with fittings and valves at the required locations. All valve stems shall be plumb.

3.2.5.3. Grade and alignment on ungraded streets will be given from hubs set parallel to the line of the pipe, and on graded streets the grade and alignment shall be taken from established points on the existing curbs or sidewalks, when directed by the Engineer. Trenches for the pipe shall be opened in accordance with the lines and grades given or to the standard depth of cover specified. The Contractor shall transfer lines and grades to the pipe from the hubs or from existing concrete curbs or sidewalks as an incidental part of his Work.

3.2.5.4. Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the Work. All pipe, fittings and valves shall be carefully lowered into the trench piece by piece by means of a derrick, ropes or other suitable tools or equipment, in such a manner as to prevent damage to pipe materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped into the trench.

3.2.5.5. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or

other means approved by the Engineer to ensure absolute cleanliness inside the pipe.

3.2.5.6. Pipe bedding shall be placed in the bottom of the trench in accordance with **SECTION 02221 TRENCH EXCAVATION AND BACKFILL FOR PIPELINES & APPURTENANT STRUCTURES**. Minimal holes may be left in the bedding material for removal of pipe slings and for pipe bells to allow support along the full length of the pipe barrel.

3.2.5.7. Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflections at the joints where approved by the Engineer. If the pipe is shown curved on the Drawings and no special fittings are shown, the Contractor can assume that the curves can be made by deflection of the joints with standard lengths of pipe. If shorter lengths are required, the Drawings will indicate maximum lengths that can be used.

3.2.5.8. Where field conditions require deflection or curves not anticipated by the Drawings, the Engineer will determine the methods to be used. No additional payment will be made for laying pipe on curves as shown on the Drawings, nor for field changes involving standard lengths of pipe deflected at the joints.

3.2.5.9. Maximum deflections at pipe joints for various types of pipe shall not exceed the applicable material and joint specifications of **AWWA** nor shall they exceed the recommendations of the pipe manufacturer. When rubber gasketed pipe is laid on a curve, the pipe shall be jointed in a straight alignment and then deflected to the curved alignment. Trenches shall be made wide on curves for this purpose.

3.2.5.10. Reaction or thrust blocking shall be applied at all tees, plugs, valves, reducers, caps and at bends deflecting 22½ degrees or more. Thrust blocking shall also be applied at tapping sleeves where the diameter of the outlet is greater than one-half (½) the diameter of the main being tapped. The use of metal rods or straps for thrust restraint shall be limited to those situations specifically identified on the Drawings, or where the use of concrete thrust blocking would not be feasible. In any event, metal rods or straps shall not be used without approval of the Engineer. Reaction blocking shall be concrete having a compressive strength of not less than 2,000 pounds per square inch at 28 days. Blocking shall be placed between solid ground and the fitting to be anchored, with the area of bearing on the pipe and on the ground as shown on Standard Drawing No. 02713-1. The blocking shall be so placed that the pipe and fitting joints will be accessible for repair.

3.2.5.11. The cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or coating and so as to leave a smooth end at right angles to the axis of the pipe. The flame cutting of pipe by means of an oxyacetylene torch shall not be allowed.

3.2.6. POLYETHYLENE ENCASEMENT

3.2.6.1. All cast iron or ductile iron pipe and fittings shall be wrapped in polyethylene in accordance with **AWWA C105**, "Polyethylene Encasement for Gray and Ductile Cast Iron Piping for Water and other Liquids".

3.2.7. TRACER WIRE

3.2.7.1. Tracer wire shall be stranded copper No. 12 AWG gauge plastic coated direct bury tracer wire. A tracer wire shall be furnished and installed with all non-metalic water main pipe. The tracer wire shall be placed immediately below the water main pipe and shall run continuously between hydrants and gate valve boxes. The tracer wire shall be wrapped twice around all hydrants, gate valve boxes, and curb stop boxes at a location four (4”) inches below finish grade. The tracer wire shall be attached to a traffic flange bolt on hydrants. The Contractor shall perform a continuity test on all tracer wire after construction is completed. Tracer wire shall be furnished and

installed incidental to the water main pipe and no additional compensation shall be awarded for such.

3.3. PIPE JOINTING

3.3.1. RUBBER GASKET, "PUSH-ON" JOINTS. Jointing of pipe and fittings with a rubber gasket, "push-on" joint shall be as recommended by the manufacturer. The rubber gasket and gasket seat inside the bell shall be wiped clean with a cloth. The plain end of the adjoining pipe shall be wiped clean, lubricated and inserted into the bell a sufficient distance to make contact with the gasket. The plain end shall then be forced "home" by the use of a crow bar, fork tool, or jack assembly.

3.3.2. MECHANICAL JOINTS. The inside of the bell and the outside of the spigot of the mechanical joint fittings shall be brushed thoroughly with a wire brush to remove all loose rust or other foreign material just prior to assembly. The cleaned surfaces shall be brushed with soapy water just prior to slipping the gasket over the spigot end and into the bell.

3.3.2.1. The spigot end of the pipe or fitting shall be accurately centered in the bell before jointing is begun. After the gasket is in place, the gland shall be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. Bolts shall be partially tightened, alternately around the socket, maintaining approximately equal tension until the final tension is reached.

3.3.2.2. The normal range of bolt torque to be applied to the bolts in the joints shall be as follows:

Bolt Size (Inch)	Range of Torque (Ft. - Lb.)
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1¼	90 - 120

3.3.2.3. The above torque loads may be applied with torque measuring or indicating wrenches, or they may be applied using regular socket wrenches and checked with torque wrenches.

3.3.2.4. If effective sealing is not attained at the maximum torque indicated above, the joint shall be disassembled and reassembled after thorough cleaning. Overstressing of bolts to compensate for poor installation practice will not be permitted. All bolts installed on all mechanical joint fittings shall be Cor-Ten, Dura-Bolt, or stainless steel.

3.3.3. CONNECTIONS TO EXISTING MAINS

3.3.3.1. All connections to water mains in use shall be made by the Contractor unless otherwise specified. The Contractor shall furnish the special fittings, as shown on the Drawings, and all other material required. He shall make all necessary excavations to assure gradual transition between the new and existing water main, and he shall perform all necessary backfilling.

3.3.3.2. Where the connection of new work to old requires interruption of service and notification of customers affected, the Engineer and the Contractor shall mutually agree upon a date for connections which allow ample time to assemble labor and materials, and to notify all customers affected. All notifications are the Contractor's responsibility.

3.4. TESTING, CLEANING AND DISINFECTING WATER MAINS, VALVES AND FITTINGS

3.4.1. HYDROSTATIC AND LEAKAGE TESTING

3.4.1.1. Hydrostatic and leakage testing shall conform to **AWWA C600**. After the pipe has been laid and adequately backfilled, all newly laid pipe, or any valved section

thereof, shall be subjected to a hydrostatic pressure at the test point of at least one and one-half (1½) times the normal operating pressure at the test point or one and one-fourth (1¼) times the normal operating pressure at the highest point along the test section, for a minimum duration of two (2) hours. The pipe shall be slowly filled with water, purged of all air, and the test pressure applied by means of a pump hooked up in such a manner that pressures and the amount of leakage can be measured. To purge the pipe of air during the test, it will be necessary to tap the pipe at its highest points if permanent air vents, water services, hydrants, etc. are not located at the high points. Corporation stops shall be used for this purpose. The pump connections, gauges, stops, and all necessary apparatus for testing shall be furnished by the Contractor.

3.4.1.2. Any joints which show leakage shall be disassembled and reassembled after thorough cleaning. Any cracked or defective pipes or fittings discovered in consequence of this pressure test shall be removed and replaced by the Contractor with sound material and the test shall be repeated.

3.4.1.3. The leakage test shall be conducted concurrently with the pressure test for a duration of two (2) hours. Leakage is defined as the quantity of water supplied into the pipe, or any valved section thereof, necessary to maintain pressure within five (5) PSI (pounds per square inch) of the pressure test after the pipe has been filled with water and purged of air.

3.4.1.4. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = SD(P)^{½} /133,200$$

3.4.1.5. In which **L** equals the allowable leakage in gallons per hour; **S** is the length of pipe tested in feet; **D** is the nominal diameter of the pipe in inches; and **P** is the average test pressure during the leakage test in pounds per square inch gauge.

3.4.1.6. Should any test of pipe laid disclose leakage greater than that specified above, the Contractor shall, at his own expense, locate and repair the defective joints until the leakage is within the specified allowance.

3.4.1.7. The Contractor shall conduct the appropriate pressure and leakage tests in the presence of the Engineer.

3.4.1.8. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size shall be allowed. All visible leaks are to be repaired regardless of the amount of leakage.

3.4.1.9. Pressure test tapping sleeves after installation and before tapping.

3.4.2. CLEANING WATER MAINS

3.4.2.1. Prior to chlorination, except when hypochlorite tablets are used, the mains shall be flushed thoroughly after the pressure test and leakage test are completed.

3.4.2.2. It must be understood that such flushing removes only the lighter solids and cannot be relied upon to remove heavy material allowed to get into the main during laying. The flushing velocity in the main shall be not less than two and one-half (2½) FPS (feet per second). If no hydrant is installed at the end of the main, a tap should be provided large enough to effect a velocity in the main of at least two and one-half (2½) FPS.

3.4.2.3. Unless extreme care and thorough inspection is practiced during the laying of water mains, small stones, pieces of concrete, particles of material, or other foreign material may gain access to the interior of the mains. In an attempt to remove such material which may be in the main, all hydrants on the lines shall be thoroughly

flushed and carefully inspected after flushing to see that the entire valve operating mechanism of each hydrant is in good condition.

3.4.2.4. In mains of 24-inch or larger diameter, in addition to flushing, broom-sweep the main, carefully removing all sweepings prior to chlorinating the main.

3.4.3. DISINFECTING WATER MAINS

3.4.3.1. GENERAL. Disinfecting of water mains shall be done subject to the approval of the Engineer and in accordance with **AWWA C651**, "Disinfecting Water Mains", and these specifications, prior to being placed in service. The interior of all pipe, fittings and appurtenances shall be kept as free as possible from dirt, heavy and foreign particles.

3.4.3.2. FORMS OF CHLORINE. The forms of chlorine that may be used, subject to the approval of the Engineer, are:

(a) Sodium hypochlorite in liquid form containing approximately 5 to 15 percent available chlorine. Shall conform to **AWWA B300**.

(b) Liquid chlorine containing 100 percent available chlorine under pressure in steel containers. Shall conform to **AWWA B301** and shall be used only in combination with appropriate gas-flow chorinators and ejectors.

(c) Calcium hypochlorite in granular form or in 5-g tablets containing approximately 65 percent available chlorine by weight. Shall conform to **AWWA B300**.

3.4.3.3. METHODS OF CHLORINATION. Three (3) methods of chlorination may be used. The tablet method gives and average chlorine dose of approximately 25 ppm (parts per million); the continuous feed method gives a 24 hour chlorine residual of not less than 10 ppm; and the slug method gives a three (3) hour exposure of not less than 50 ppm free chlorine.

(a) Tablet Method

Note: This method may be used if the pipes and appurtenances are kept clean and dry during construction.

Warning: This procedure must not be used on solvent welded plastic or on screwed joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

During construction, calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-foot intervals. The quantity of granules shall be as shown in the following Table.

OUNCES OF CALCIUM HYPOCHLORITE GRANULES

TO BE PLACED AT BEGINNING OF MAIN

AND AT EACH 500-FOOT (150 METER) INTERVAL

Pipe Diameter		Calcium Hypochlorite Granules
in.	cm	oz.
4	(10)	0.5
6	(15)	1.0
8	(20)	2.0
12	(30)	4.0
16 and larger	(41)	8.0

During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe and also one such tablet shall be placed in each hydrant, hydrant branch and other appurtenance. The number of 5-g tablets for each pipe section shall be as

required to provide a minimum chlorine concentration of 25 ppm. Tablets shall be attached to the inside of the pipe by an adhesive such as Permatex No. 1 or equal. There shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all the tablets at the inside top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity no greater than one (1) FPS. Precautions shall be taken to assure that air pockets are eliminated. This water shall remain in the pipe for at least 24 hours. If the water temperature is less than 5°C (41°F), the water shall remain in the pipe for at least 48 hours. Valves shall be positioned so that the strong chlorine solution in the main being treated will not flow into water mains in active service.

(b) Continuous Feed Method

Prior to being chlorinated, the main shall be filled to eliminate air pockets and flushed as heretofore specified.

Water from the existing distribution system or other approved source of supply shall be made to flow at a constant, measured rate into the newly laid water main. At a point not more than ten (10) feet downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 25 ppm free chlorine. To assure that this concentration is provided, measure the chlorine concentration at regular intervals.

During the application of chlorine, valves shall be positioned so that the strong chlorine solution in the main being treated will not flow into water mains in active service. Chlorine application shall not cease until the entire main is filled with heavily chlorinated water. The chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this 24-hour period, the treated water in all portions of the main shall have a residual of not less than 10 ppm free chlorine.

The preferred equipment for applying liquid chlorine is a solution feed vacuum-operated chlorinator to mix the chlorine gas in solution water, in combination with a booster pump for injecting the chlorine gas solution water into the main to be disinfected. It is recommended that direct feed chlorinators not be used. Hypochlorite solutions may be applied to the water main with a chemical feed pump designed for feeding chlorine solutions.

With the approval of the Engineer, an optional continuous feed method utilizing calcium hypochlorite granules may be used. Granules shall be placed in the pipe sections as specified under the Tablet Method.

(c) Slug Method

Prior to being chlorinated, preliminary flushing of the main shall be performed as specified herein.

Water from the existing distribution system or other approved source of supply shall be made to flow at a constant measured rate into the newly laid water main.

At a point not more than ten (10) feet downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 100 ppm free chlorine. To assure that this concentration is provided, the chlorine concentration shall be applied

continuously and for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 100 ppm for at least three (3) hours.

The free chlorine residual shall be measured in the slug as it moves through the main. If at any time it drops below 50 ppm the flow shall be stopped, chlorination equipment shall be relocated at the head of the slug, and as the flow is resumed, chlorine shall be applied to restore the free chlorine in the slug to not less than 100 ppm.

As the chlorinated water flows past fittings and valves, related valves and hydrants shall be operated so as to disinfect appurtenances and pipe branches.

3.4.3.4. FINAL FLUSHING. After the applicable retention period, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the system, or is acceptable for domestic use.

3.4.3.5. BACTERIOLOGICAL TESTS. After final flushing and before the water main is placed in service, a sample, or samples, collected from the main(s) shall be tested for turbidity and bacteriological quality and shall show the absence of coliform organisms. At least one sample shall be collected from the new main and one from each branch. Two consecutive sets of acceptable bacteriological tests shall be taken before the new main is connected to the distribution system. The samples shall be taken at least 24 hours apart and shall be one sample shall be collected for every 1200 feet of new water main.

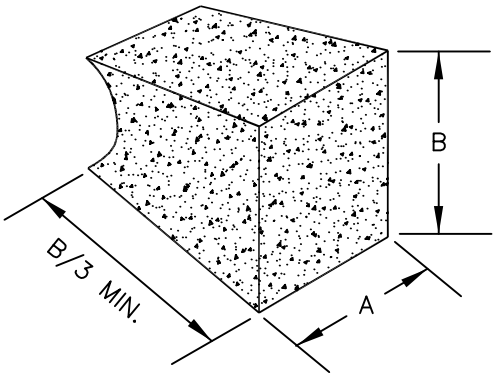
3.4.3.6. REDISINFECTION. If the initial disinfection fails to produce satisfactory bacteriological or turbidity samples, the main may be re-flushed and then re-sampled. If check samples show the presence of bacterial contamination, the main shall be re-chlorinated until satisfactory results are obtained.

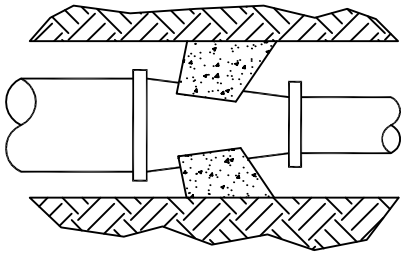
3.4.3.7. SWABBING. In situations where connections are made to existing piping and the connections are not disinfected along with the newly installed main, the interior of all pipe and fittings used in making the connections shall be swabbed or sprayed with a one (1%) percent hypochlorite solution prior to being installed.

3.5. WATER AND SEWER MAIN SEPARATION

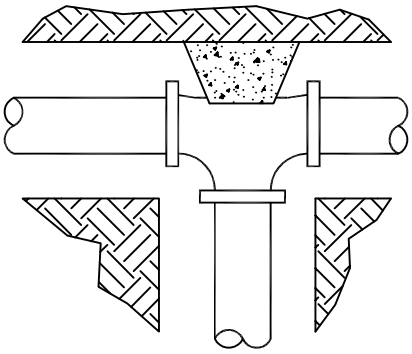
3.5.1. Horizontal and vertical separation between water mains and sewer mains shall be maintained in accordance with the details shown on Standard Drawing No. 02713-2.

END OF SECTION

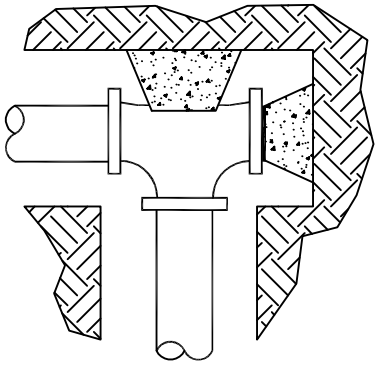




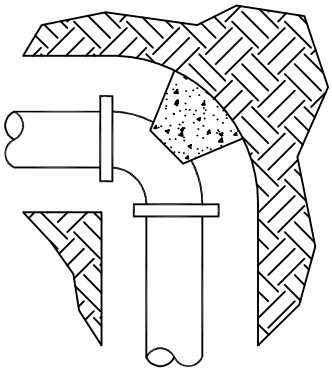
REDUCER



TEE



TEE (PLUGGED)



BEND

MINIMUM DIMENSIONS FOR THRUST BLOCKING								
FITTING SIZES	TEES & PLUGS		90° BEND		45° BEND & WYES		REDUCERS & 22 1/2° BEND	
	A	B	A	B	A	B	A	B
4"	1'–7"	1'–2"	1'–9"	1'–6"	1'–8"	0'–10"	1'–7"	0'–6"
6"	2'–0"	1'–11'	2'–5"	2'–2"	1'–10"	1'–7"	1'–9"	0'–10"
8"	2'–8"	2'–6"	3'–2"	3'–0"	2'–5"	2'–1"	1'–9"	1'–6"
10"	3'–4"	3'–3"	4'–0"	3'–10"	3'–0"	2'–9"	2'–2"	1'–11"
12"	4'–0"	3'–10"	4'–8"	4'–8"	3'–8"	3'–3"	2'–7"	2'–3"
14"	5'–5"	3'–10"	6'–6"	4'–11"	4'–9"	3'–5"	3'–5"	2'–5"

WRAP ALL FITTINGS WITH POLYETHYLENE

NOTE:

THIS TABLE IS BASED UPON 150 PSI WATER MAIN PRESSURE AND 2000 PSF SOIL BEARING PRESSURE

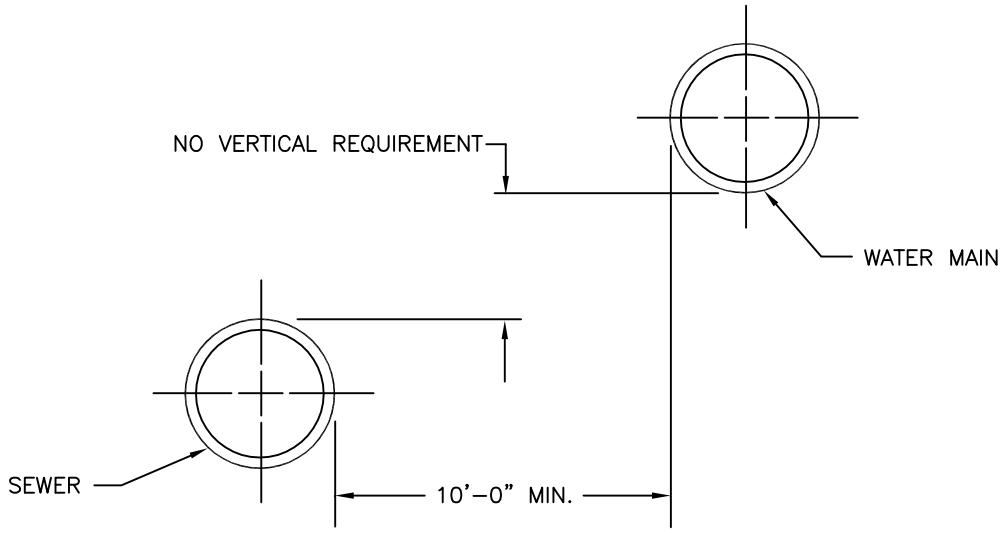
2013

ATEC AMERITECH ENGINEERING CORPORATION

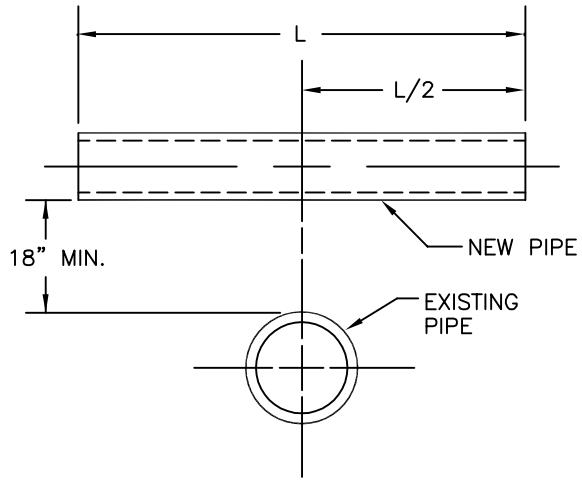
SCALE: NONE

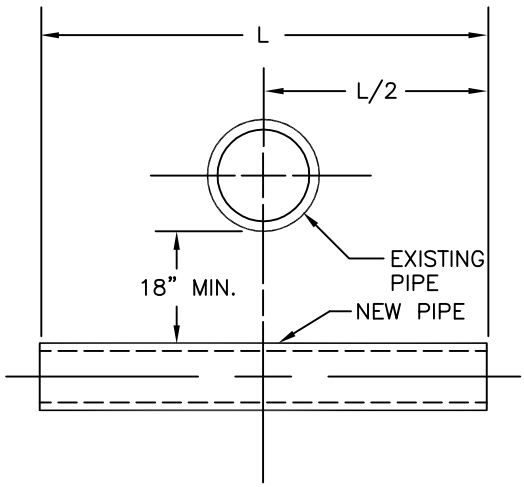
THRUST BLOCKING FOR WATER MAIN FITTINGS

STANDARD DRAWINGS
02713-1



PARALLEL ARRANGEMENT





CROSSINGS

NOTES:

1. SPECIFIC APPROVAL FOR A DISTANCE LESS THAN TEN (10') FEET SEPARATION BETWEEN WATER MAIN AND SEWER MAIN FOR PARALLEL INSTALLATION. TEN (10') FOOT MINIMUM SEPARATION BETWEEN WATER MAIN AND SEWAGE FORCE MAIN.
2. SPECIFIC APPROVAL REQUIRED FOR A VERTICAL SEPARATION OF LESS THAN 18 INCHES AT CROSSINGS.
3. "L" IS A STANDARD LENGTH OF PIPE AS SUPPLIED BY A PIPE MANUFACTURER.
4. PROVIDE ADEQUATE STRUCTURAL SUPPORT FOR ALL PIPES AT CROSSINGS.

ATEC AMERITECH ENGINEERING CORPORATION	SCALE: NONE	WATER AND SEWER MAIN SEPARATION	STANDARD DRAWINGS 02713-2

WATER VALVES AND FIRE HYDRANTS
SECTION 02718

PART 1 - GENERAL

1.1. DESCRIPTION. This section covers valves and fire hydrants for water mains, together with related appurtenances, complete.

1.2. STANDARD DRAWINGS. Standard Drawings which are applicable to this section are as follows:

Standard Drawing No. 02713-1: Thrust Blocking for Water Main Fittings

Standard Drawing No. 02718-1: Fire Hydrant Setting

Standard Drawing No. 02718-2: Hydrant Location Detail

PART 2 - PRODUCTS

2.1. VALVES

2.1.1. GATE VALVES

2.1.1.1. Gate valves shall be iron body, resilient seat or double disc gate valves with non-rising stems with design, construction and pressure rating conforming to **AWWA C500** or **AWWA C509** with modifications specified herein.

2.1.1.2. Stem seals shall be double "O" ring seals designed so that the seal above the stem collar can be replaced with the valve under pressure in full open position.

2.1.1.3. Gate valves shall have internal and exterior factory applied epoxy coating. All bonnet bolts shall be stainless steel.

2.1.1.4. Gate valves for underground installation shall have a two (2") inch square operating nut for key operation. All valves shall open counter clockwise unless indicated otherwise in the Specifications or on the Drawings. Valves shall be furnished with push-on joints or mechanical joints for connecting to the pipe.

2.1.1.5. Gate valves shall be Mueller Company, Kennedy, or an approved equal.

2.1.2. BUTTERFLY VALVES

2.1.2.1. Butterfly valves for use in the water distribution system shall be Class 150, rubber seated, tight closing butterfly valves conforming to **AWWA C504**. Butterfly valves shall be furnished with mechanical joint ends and lubricated screw type operators designed for underground service.

2.1.2.2. Rubber valve seats shall be replaceable without disassembling the valve and shall not be interrupted by the shafting. Rubber seats may be retained on the disc edge by stainless steel clamping in lieu of bonding to the valve body. Shaft packing shall be of the self-adjusting, permanent type.

2.1.2.3. Butterfly valves shall have internal and exterior factory applied epoxy coating. All bonnet bolts shall be stainless steel.

2.1.2.4. Operators for underground service shall be permanently lubricated, screw type operators, totally enclosed and of watertight construction. Overload protection shall be incorporated into the operator allowing the application of 450 foot-pounds input torque at full-open and full-closed positions without damage to the operator or valve. A two (2") inch square operating nut and valve box shall be provided for operating the valve. Valves shall open counter clockwise unless indicated otherwise in the Specifications or on the Drawings.

2.1.2.5. Certification of performance, leakage and hydrostatic tests as described in **AWWA C504** shall be furnished. Valves shall be the product of a manufacturer having a minimum of five years experience in the manufacture of waterworks and distribution valves. Butterfly valves shall be M & H, Mueller, Pratt, Kennedy, or an approved equal.

2.2. VALVE BOXES

2.2.1. Valve boxes shall be cast iron, five and one-fourth (5¼") inch diameter, adjustable valve boxes with base as required for the valve size used. Valve boxes shall be of the screw type and of sufficient length for the pipe bury as specified. The cast iron cover of the valve box shall have an arrow indicating the direction of opening and the word "Water" stamped thereon. Valve boxes shall be Tyler or an approved equal.

2.2.2. All gate valve boxes shall be installed on the valve with the use of a Gate Valve Adaptor, as manufactured by Adaptor, Inc., or approved equal. All butterfly valves boxes shall be equipped with a similar adaptor designed specifically for butterfly valves and as specified herein. The valve adaptor shall hold the valve box centered over the valve operator. The valve adaptor shall be epoxy coated one-quarter (¼) inch steel and shall have a three-quarter (¾) inch rubber gasket to protect the epoxy coated valve body.

2.3. FIRE HYDRANTS

2.3.1. Fire hydrants shall conform to **AWWA C502**; "Standard Specifications for Fire Hydrants for Ordinary Water Works Service", and modifications herein specified.

2.3.2. Hydrants shall be furnished with five and one-fourth (5¼") inch valve openings, six (6") inch mechanical joint, flanged or push-on inlet, one pumper connection and two (2), two and one-half (2½") inch hose connections. Hose nozzle threads shall be in conformity with **ASA Specification B26** for **National Standard Fire Hose Coupling Screw Threads**, seven and one-half (7½) threads per inch. Pumper nozzle size and threads shall match the Owner's existing pattern. Operating nut shall be **National Standard** unless otherwise specified. Hydrants shall open counter clockwise and shall have an arrow on the top of the hydrant to designate the direction of opening.

2.3.3. Hydrants shall be of the "Compression" type with safety flange and safety stem coupling above the ground line so that they can be repaired without shutting off the water. Hydrants shall be of the dry top design with two or more "O" rings sealing the water from the operating mechanism. The operating mechanism shall be automatically lubricated from a sealed, self-contained lubricating reservoir. The portion of the hydrant above the ground line shall be painted in accordance with the Owner's standards. Hydrants shall be furnished for seven and one-half (7½') foot bury unless specified otherwise in the Specifications. Hydrants shall be Waterous (Pacer), Mueller, or an approved equal.

2.3.4. Hydrants shall be twenty-four (24”) inches from nozzle to flange. Break-off traffic flange and flanged joint shall be set at no more than two (2”) inches above finished grade.

2.3.5. All hydrants shall be fitted with a location flag. The flag shall be a sixty (60”) inch Hydra-finder as manufactured by Rodon corporation, or approved equal.

PART 3 - EXECUTION

3.1. VALVES

3.1.1. Gate valves shall be set and jointed to the pipe in the manner specified for pipe laying and jointing. Valves shall be set with operating nut vertical. Valves boxes shall be centered and plumb over the operating nut and shall be set so that no shock or stress will be transmitted to the valve.

3.2. VALVES BOXES

3.2.1. Valve boxes shall be centered and plumb over the operating nut of the valve. Tops of valve boxes shall be set flush with the ground surface or street surfacing unless otherwise directed by the Engineer.

3.3. VALVE THRUST BLOCKS:

3.3.1. When specified on the Drawings or Specifications, valves shall be installed with thrust blocks and anchor rods as detailed on Standard Drawing 02718-1.

3.4. FIRE HYDRANTS

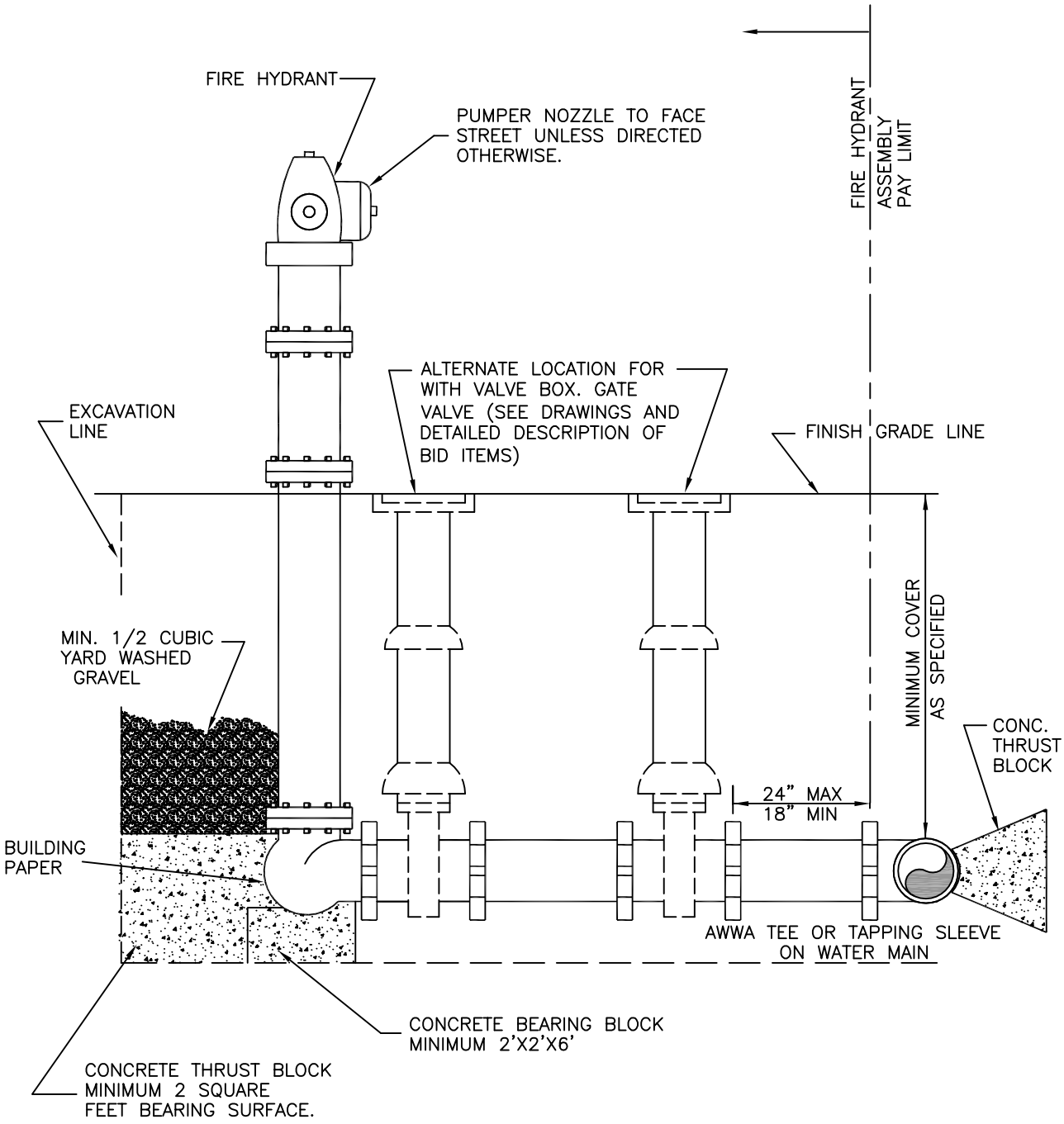
3.4.1. All hydrants shall stand plumb with the pumper nozzle facing the street. Hydrant shall be set with the ground line at the location indicated by the hydrant manufacturer.

3.4.2. Drainage shall be provided at the base of the hydrant by placing clean gravel under and around the base of the hydrant. Sufficient gravel shall be used to provide a minimum of one (1') foot on all sides from the base of the hydrant to the point at least six (6") inches above the drain opening. Hydrant shall be braced against unexcavated earth at the end of the trench with concrete backing as detailed on the Drawings. Hydrants shall be furnished with gate valves as specified above.

3.5. POLYETHYLENE ENCASEMENT

3.5.1. Wrap all direct bury cast iron or ductile iron pipe and fittings including hydrants, valve boxes, and all other metal parts and surfaces, in polyethylene encasement in accordance with **AWWA C105**, “Polyethylene Encasement for Fray and Ductile Cast-Iron Piping for Water and other Liquids”.

END OF SECTION

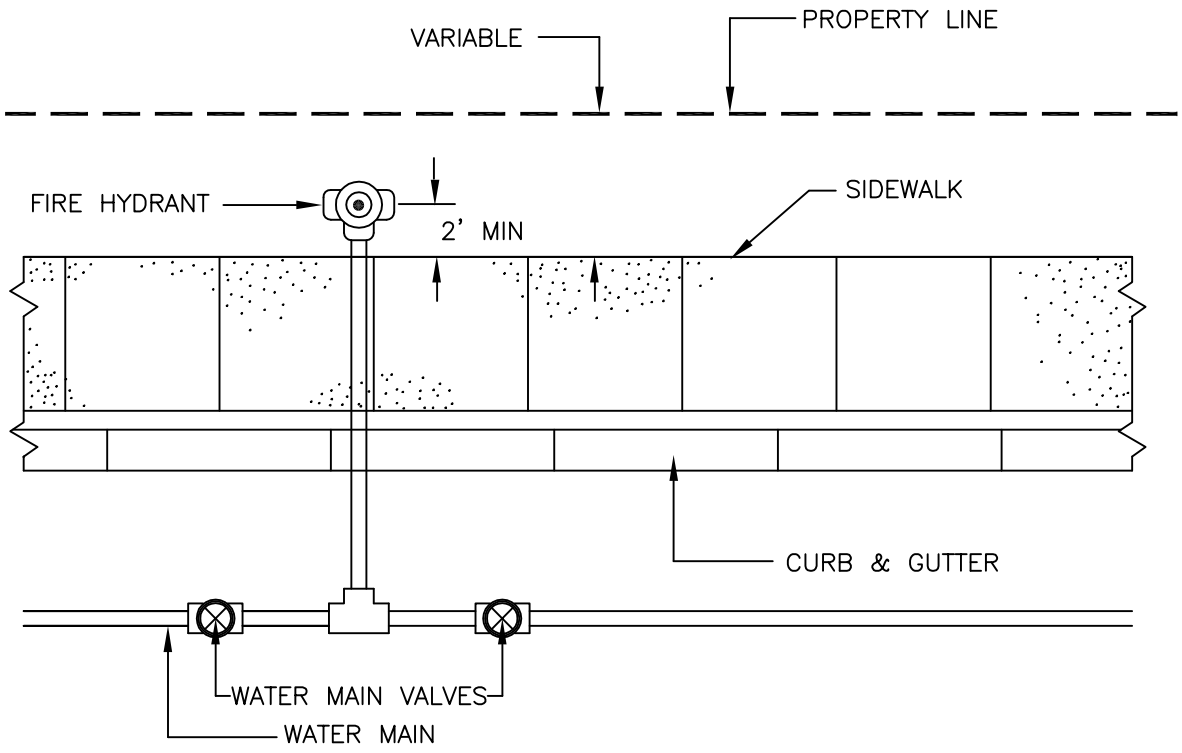


NOTES:

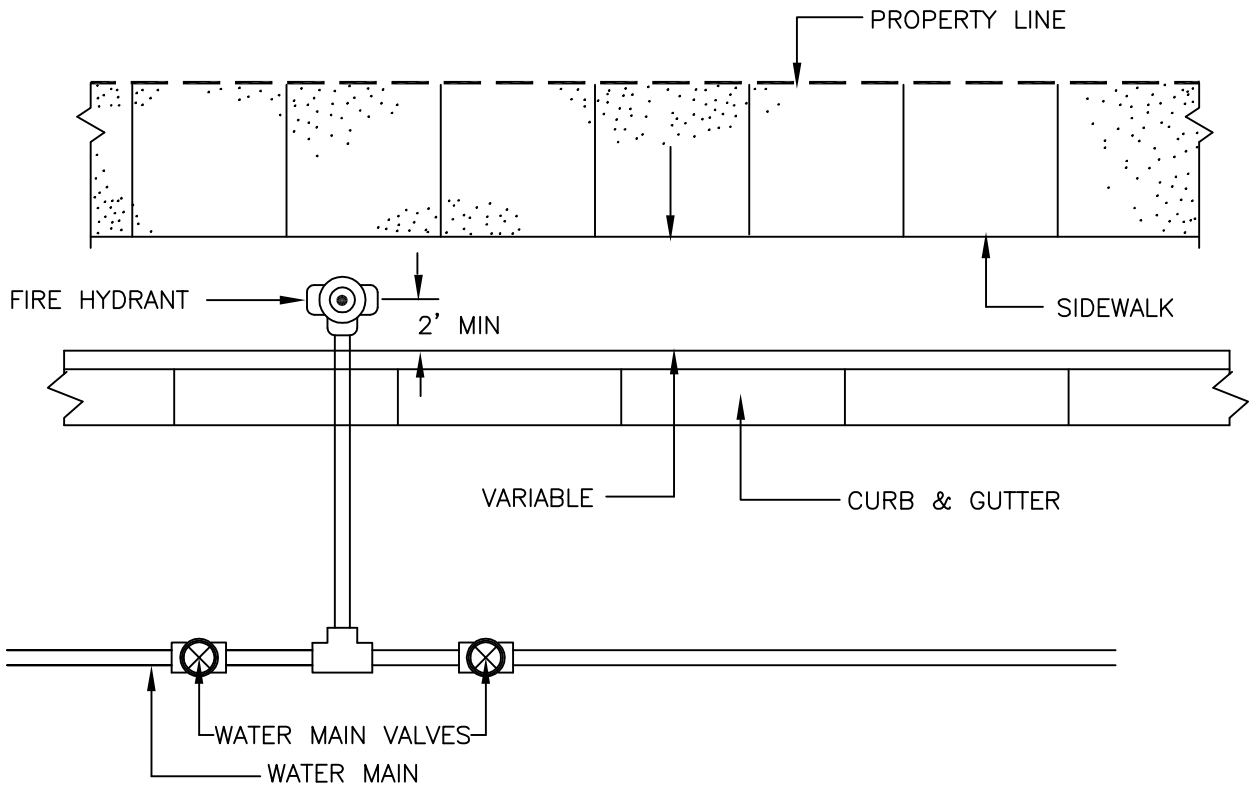
1. THRUST BLOCKING TO CONFORM WITH STANDARD DRAWING 02713–1
2. FOR BOLTED FITTINGS BLOCKING SHALL NOT OBSTRUCT BOLTS.
3. HYDRANT WEEP HOLES TO REMAIN UNOBSTRUCTED.
4. REFER TO ENGINEER FOR HYDRANT SETTING NEAR GROUNDWATER

2013

AMERITECH ENGINEERING CORPORATION	SCALE: NONE	FIRE HYDRANT SETTING	STANDARD DRAWINGS 02718-1



FIRE HYDRANT BEHIND SIDEWALK



FIRE HYDRANT IN BOULEVARD / AT CURB

2013

ATEC AMERITECH ENGINEERING CORPORATION

SCALE: NONE

HYDRANT LOCATION DETAIL

STANDARD DRAWINGS
02718-2

SANITARY SEWER MAINS
SECTION 02722

PART 1 - GENERAL

1.1. DESCRIPTION. This section covers construction of sanitary sewer mains, including manholes, and other appurtenant structures, complete.

1.2. STANDARD DRAWINGS. Standard Drawings which are applicable to this section are as follows:

Standard Drawing No. 02713-2 - Water and Sewer Main Separation

Standard Drawing No. 02722-1 - Sanitary Sewer and Storm Drain Manhole

1.3.1 BYPASS PUMPING.

1.3.1.1. Intake manhole
1.3.1.2. Service over pumping.
1.3.1.3. Receiving Manhole.
1.3.1.4. Expected Flows.
1.3.1.5. Pump size.
1.3.1.6. Pipe layout.
1.3.1.7. Backup equipment.
1.3.1.8. Procedures for monitoring upstream sewer mains for backup impacts.
1.3.1.9. Procedures for setup and breakdown of pumping operations.

1.3.2. EMERGENCY PLAN. Detail procedures to be followed in the event of pump failure, sewer overflows, service backups, and sewage spillage. Maintain a copy of the Emergency Plan on-site for the duration of the project.

1.3.3. All work, labor, materials for Bypass Pumping including Emergency Plan will be considered incidental to the bid items for sanitary sewer piping with no additional compensation.

PART 2 - PRODUCTS

2.1. GENERAL

2.1.1. Sewer pipe and fittings furnished under this contract shall be as indicated in the Specifications and/or as shown on the Drawings and shall be in accordance with materials and testing requirements of SECTION 02610B. Wye or tee branches shall be of the same material and design as the sewer pipe used unless specified otherwise. Pipe strength classification shall be as shown on the Drawings and/or as listed in the Specifications.

2.1.2. The Contractor shall furnish certification by the manufacturer of the pipe and fittings to be furnished on this project that the pipe and fittings comply with the applicable specifications.

2.1.3. Where reference is made to as **ASTM**, **ANSI** or **AASHTO** designation, it shall be the latest revision at the time of call for bids. All pipe shall be clearly marked with type, class and/or thickness as applicable. Lettering shall be legible and permanent under normal conditions of handling and storage.

2.1.4. Type of joint, class, thickness designation, castings, lining, marking, testing, etc. shall be as specified.

2.2. MANHOLES

2.2.1. GENERAL. Manholes shall be constructed of precast concrete sections with frames and covers and steps in accordance with details shown on the Drawings and Standard Drawings.

2.2.2. PRECAST CONCRETE SECTIONS

2.2.2.1. Manholes shall conform to specifications for **ASTM C478**; "Precast Reinforced Concrete Manhole Sections", latest revision, specifically including mandatory rejection requirements.

2.2.2.2. Adjusting rings shall be installed on each manhole to adjust the manhole top elevation to coincide with existing or specified ground elevation, with the total height of the rings being two (2") inch minimum and twelve (12") inch maximum. Adjusting rings shall be reinforced with the same percentage of steel as the riser and top.

2.2.3. STEPS. Steps shall be non-corrosive steps, 12-inches in width, consisting of one-half (1/2) inch steel rod encased with polypropylene. Steps shall withstand vertical loads of 400 pounds and pull-out resistance of 1,000 pounds. Steps shall be as manufactured by M.A. Industries, Inc., Delta Products, or an approved equal.

2.2.4. RINGS AND COVERS. Rings and covers shall be in accordance with Standard Drawings and shall be Model R-1733, as manufactured by Neenah Foundry Company, or an approved equal. Covers shall be the 2-hole type unless noted or specified otherwise.

2.2.5. CONCRETE BASE. Concrete bases shall be precast.

PART 3 - EXECUTION

3.1. PIPE INSTALLATION

3.1.1. EXCAVATION AND BACKFILL. Excavation and backfill for pipelines shall conform to the applicable portions of SECTION 02221, TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES of these specifications.

3.1.2. RESPONSIBILITY FOR MATERIAL. The Contractor shall be responsible for all material furnished by him and shall replace at his own expense all such material found defective in manufacture or damaged in handling after delivery. This shall include furnishing all material and labor required for the replacement of installed material discovered defective prior to final acceptance of the work or during the guarantee period.

3.1.3. STORAGE. The Contractor shall be responsible for the safe storage of material intended for the Work until it has been incorporated in the completed project.

3.1.4. HANDLING OF PIPE

3.1.4.1. All pipe furnished by the Contractor shall be delivered and distributed at the site by the Contractor. Pipe, fittings and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.

3.1.4.2. In distributing the material at the site of the Work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench. The interior of all pipe and other accessories shall be kept free from dirt and foreign matter at all times.

3.1.4.3. Pipe shall be handled so that no coating or lining will be damaged. If, however, any part of the coating or lining is damaged, the repair shall be made by the Contractor at his expense in a manner satisfactory to the Engineer.

3.1.4. LAYING PIPE

3.1.4.1. All pipe shall be laid to and maintained at required lines and grades with fittings, tees and manholes at the required locations. Line and grade shall be established by use of batter boards and string line, laser equipment or other approved methods. When batter boards and string line are used, a minimum of three (3) batter boards shall be strung at all times.

3.1.4.2. Proper tools and equipment, satisfactory to the Engineer, shall be used by the Contractor for the safe and convenient prosecution of the Work. All pipe and fittings shall be carefully lowered into the trench in such a manner as to prevent damage to pipe materials and protective coatings and linings. Under no circumstance shall materials be dropped or dumped into the trench.

3.1.4.3. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a plug or other means approved by the Engineer. The Contractor shall clean and remove all sand, gravel, concrete and cement grout that has entered the lines in the process of construction.

3.1.5. TOLERANCES

3.1.5.1. The pipe shall be installed within one-half (½") inch of the specified alignment and within one-fourth (¼") inch of the specified grade.

3.2. MANHOLES

3.2.1. CONSTRUCTION

3.2.1.1. Manholes shall be constructed to the dimensions shown. Invert channels shall be smooth and semi-circular in shape conforming to the inside of the adjacent sewer section. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be made gradually and evenly. The invert channels may be grouted and formed directly on the concrete of the manhole base or may be half-pipe grouted and laid on the precast concrete base. The floor of the manhole outside the channel shall be smooth and shall slope toward the channel at a rate of one (1") inch per foot.

3.2.1.2. All connections between manhole walls and base and between wall sections adjusting rings, and frame shall be jointed with "Ram-Nek", manufactured by K.T. Snyder Company, or an approved equal, in such a manner as to make the manhole watertight. For all horizontal joints which are located below the established high groundwater elevation, a preformed, resilient, O-ring type, neoprene gasket shall be installed in the joint. The established high groundwater level is as shown in the Drawings or noted in the Special Provisions, or as determined in the field. All sewer pipe to manhole joints shall have gasketed, flexible, watertight connections that will allow differential settlement to take place. Acceptable options for these connections to the manhole are as follows:

(a) Adjacent Joints: bell and spigot pipe joints with rubber sealing rings located within 12 inches of the manhole wall.

(b) Compression-Type Flexible Connector: a resilient, flexible connection, cast into manhole wall, providing 10 degrees deflection, as manufactured by A-Lok Products, Inc., or approved equal.

(c) Boot-Type Flexible Connector: a flexible, watertight connection consisting of a rubber gasket or boot, metal expansion ring and a metal take-up clamp. The expansion ring shall hold the gasket in the manhole wall, with the take-up clamp holding the gasket to the pipe. The connector shall be as manufactured by Press Seal Gasket Corporation, or an approved equal.

(d) Options (b) and (c) are limited to precast manhole base inverts and other installations where the flexibility of the connection is not compromised.

3.2.1.3. Manhole construction shall conform to **ASTM C478**, latest revision, and the rejection criteria stated therein.

3.2.1.4. Manhole construction shall be not greater than one manhole distant behind sewer pipeline construction.

3.3. TESTS

3.3.1. All tests shall be made after backfill is completed, but prior to any surface restoration or street surfacing. The Contractor shall be responsible for finding and repairing all breaks and leaks revealed by the tests. Additionally, all tests shall be performed in the presence of the Engineer, resident inspector, or the Owners' other designated representative.

3.3.2. LIGHT TEST. After the trench has been backfilled and compacted as specified in SECTION 02221, a light test shall be made between manholes to check alignment and grade for displacement of pipe. Except for curved alignments shown on the Drawings, the completed pipeline shall be such that a true circle of light can be seen from one manhole to the next. If alignment or grade is other than specified and displacement of pipe is found, the Contractor shall remedy such deflects at his own expense.

3.3.3. LEAKAGE TEST. New sewer line will not be finally accepted until leakage tests have been made to assure the Engineer that pipe laying and jointing are satisfactory.

3.3.3.1. Water Test. Where groundwater is at least two (2') feet above the sewer line, tests shall be made by sealing off the section of lines between manholes and measuring the actual flow by collecting or pumping the discharge into barrels or other approved methods. Tests shall be continued over a period of at least four (4) hours for each section tested. Sufficient time shall be allowed to soak lines and manholes in advance of performing tests.

(a) When groundwater is not two (2') feet above the pipe, testing shall be as follows: On flat slopes where the depth over the centerline of the pipe in the lower manhole of the section being tested will be not more than ten (10') feet, the upper manhole shall be filled to a depth of two (2') feet over the top of the pipe or two (2') feet above the groundwater elevation (whichever is higher), and the lower manhole blocked. When the above conditions cannot be met, the Engineer may order the Contractor to test the line in sections between manholes. The leakage shall be measured by checking the drop in water level in the manhole over a period of four (4) hours.

(b) The allowable infiltration or exfiltration, including manholes, shall not exceed 200 gallons per day per mile of sewer per inch of pipe diameter. This does not preclude the fact that obvious and concentrated leaks and physical defects, such as open joints, pinched gaskets, cracked barrels or bells, etc., will not be allowed. The Contractor shall make repairs on concentrated leaks, and as necessary to reduce infiltration or exfiltration leakage below the specified rate, at his own expense.

(c) Manholes shall be inspected individually for leakage prior to placing the sewer system in service.

3.3.3.2. Air Test (Alternate). As an alternate method to water testing, the Contractor may utilize low pressure air as a means of testing the sewer mains. The test procedure shall be as described below:

(a) Plug both ends of the pipe under test with airtight plugs and brace adequately to prevent slippage and blowout. One plug shall have an inlet tap or other provision for connecting an air hose.

(b) The air supply hose, connected between the air compressor and the plug, shall have a throttling valve, an air bleed valve, and a high pressure shutoff valve for control. The low pressure side of the throttling valve shall have a tee for a monitoring

pressure gauge, protected by a gauge cock. This cock is kept closed except when the pressure loss is being timed.

(c) If the pipeline is submerged under groundwater, the back pressure, caused by the water head, is measured and added to the standard test pressures to compensate for the groundwater effect on the air test.

(d) Air shall be applied slowly to the pipeline until the pressure reaches 4.0 PSIG. The air supply shall then be throttled so that the internal pressure is maintained between 4.0 and 3.5 PSIG for at least two (2) minutes. During this time the plugs shall be checked with soap solution to detect any plug leakage.

(e) When the pressure reaches exactly 3.5 PSIG, the air supply is disconnected, a stop watch is started and the time recorded for the pressure to drop to 2.5 PSIG. The minimum time allowed for this pressure drop shall be computed based in an air loss rate of 3.5 cubic feet per minute (CFM) or an air loss rate of 0.0030 CFM per square foot of inner pipe surface area under test, whichever rate gives the least time for the pressure drop. Should the time of the pressure drop between 3.5 and 2.5 PSIG be less than the allowable specified time, the Contractor shall make the necessary leakage repairs and repeat the air test.

(f) For single pipe size test sections, the length limits for minimum test times obtained from "Nomograph for Air Testing Gravity Sewer Mains" are contained in the following table.

Pipe Diameter, Inches (CM)	Test Length, Feet (M)	
	Minimum	Maximum
4 (10)	642 (196)	1124 (343)
6 (15)	429 (131)	751 (229)
8 (20)	322 (98)	564 (172)
10 (25)	257 (78)	450 (137)
12 (30)	215 (66)	376 (115)
15 (38)	172 (52)	300 (91)
18 (46)	143 (44)	250 (76)
21 (53)	123 (37)	215 (66)
24 (61)	107 (33)	188 (57)

(g) For test sections that are shorter than the minimum lengths, new test times must be calculated. This can be done by multiplying the test time from the nomograph by the actual length of the test section (in feet) and then dividing the resultant product by the minimum test section length from the preceding table.

(h) For test sections that are longer than maximum lengths it is necessary to either shorten the test section to an allowable length or use the water test.

(i) Manhole joints shall be checked for leakage by means of water testing as specified above.

3.3.4. NUMBER OF TESTS. A sufficient number of leakage tests shall be performed to assure the Engineer that materials and workmanship are acceptable. Defective joints shall be repaired only by use of approved methods. Pipe having cracked or broken barrels shall be replaced. The length of sewer line tested per test shall not exceed 800 feet or as approved by the Engineer.

3.3.5. CCTV INSPECTION

3.3.5.1. The Owner may, at his option and cost, may require any or all sewers to be inspected by the use of a closed circuit television camera in accordance with Section 02952 " Closed Circuit Television Inspection", before final acceptance. A sewer line will be considered deficient and unacceptable if 1) the alignment is outside the specified limits, 2) water ponds in any section to a depth equal to or greater than a

value two (2) times the grade tolerance specified in paragraph 3.1.5., or 3) the pipe has visible defects such as open joints, pinched gaskets, cracked barrels or bell, or similar defects. Noted deficiencies shall be corrected by the Contractor, at his expense and no additional compensation shall be awarded for such..

3.3.5.2. The Contractor shall bear all costs incurred in correcting any deficiencies found during closed circuit television inspection including the cost of the additional closed circuit television inspection required to verify the correction of said deficiency. The Contractor shall be responsible for all costs incurred in any closed circuit television inspection performed solely for the benefit of the Contractor.

3.3.5.3. All closed circuit television inspections shall be recorded on video tape in VHS format. The camera shall be pulled through the sewer at a maximum rate of 30 feet per minute. If the camera is pulled by attaching to the hose of a hydraulic sewer cleaner, the hose shall not be active during the pulling process.

3.3.6. DEFLECTION TEST

3.3.6.1. The Engineer shall have the option of requiring deflection testing of a portion of or all of flexible pipe installations to assure the quality of construction. Flexible pipe is considered a conduit that will deflect at least two (2%) percent without any sign of structural distress.

3.3.6.2. Deflection tests, when performed on PVC pipe, shall be conducted in accordance with **ASTM D3034** and must satisfy either of the following deflection limitations:

Minimum Period Between Trench Backfilling & Testing	Minimum Mandrel Diameter as a Percent of Inside Pipe Diameter
7 Days	95.0
30 Days	92.5

3.3.6.3. Mandrels shall have a minimum of nine arms. The mandrel test shall be performed without mechanical pulling devices.

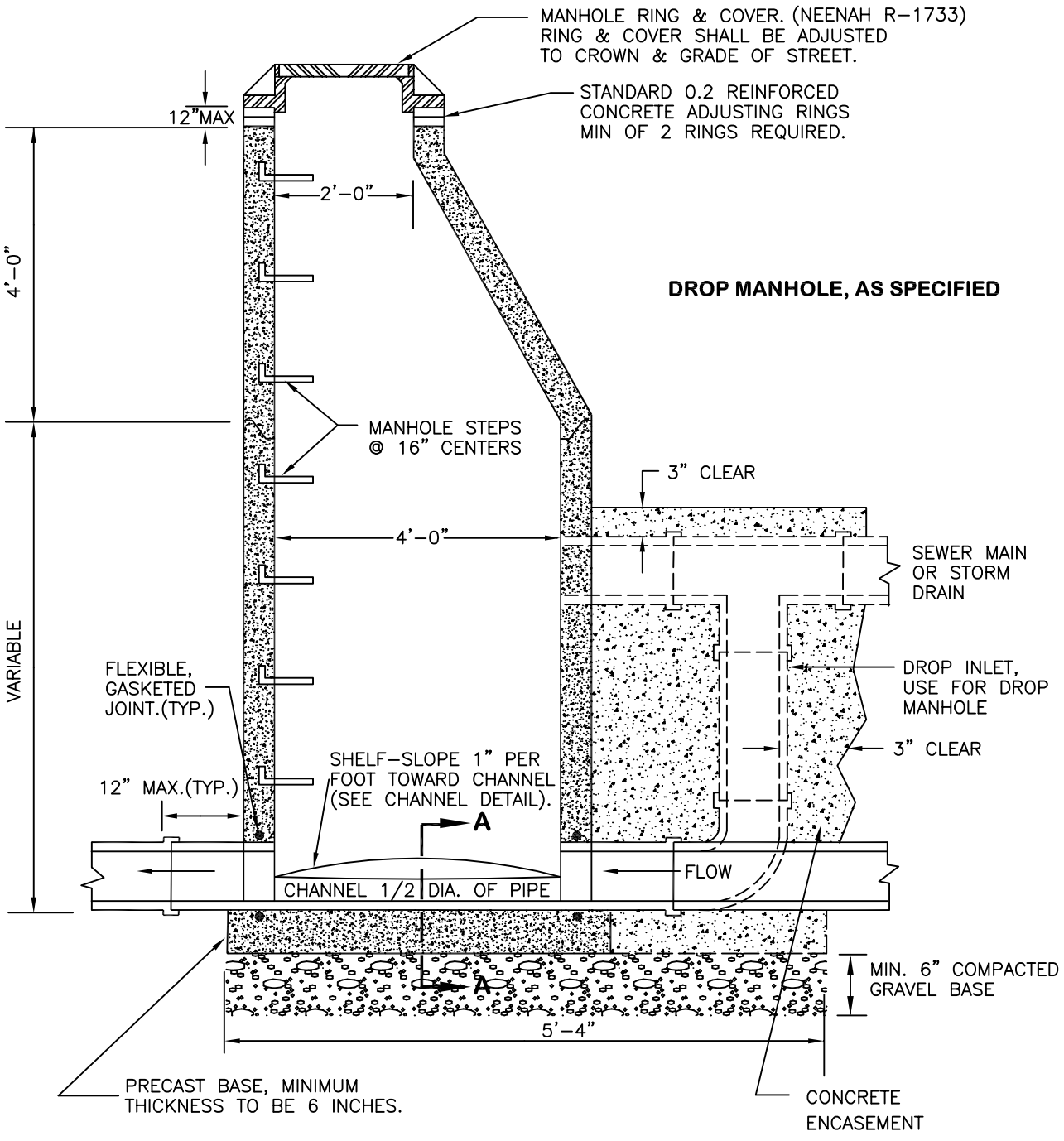
3.3.7. MATERIALS AND EQUIPMENT FOR TESTING

3.3.7.1. All labor, equipment and materials (including water) necessary for performing the tests of sewer lines shall be furnished by the Contractor.

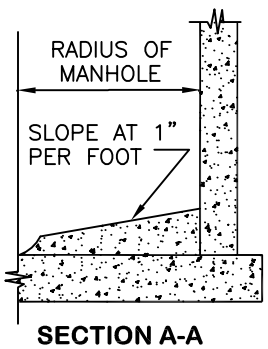
3.4. WATER AND SEWER MAIN SEPARATION

3.4.1. Horizontal and vertical separation between water mains and sewer mains shall be maintained in accordance with the details shown on Standard Drawing No. 02713-2.

END OF SECTION



DROP MANHOLE, AS SPECIFIED



SECTION A-A

NOTE:
ALL JOINTS SHALL BE WATER TIGHT. USE "RAM-NEK" OR "O-RING" PER SECTION 02722.05 OF STANDARD SPECIFICATIONS.

2013

ATEC AMERITECH ENGINEERING CORPORATION

SCALE: NONE

SANITARY SEWER AND STORM DRAIN MANHOLE

STANDARD DRAWINGS
02722-1

SANITARY SEWER SERVICES
SECTION 02724

PART 1 - GENERAL

1.1. DESCRIPTION. This section covers construction of sanitary sewer services, complete.

1.2. STANDARD DRAWINGS. Standard Drawings which are applicable to this section are as follows:

Standard Drawing No. 02724-1 - Sanitary Sewer Service Line

PART 2 - PRODUCT

2.1. GENERAL

2.1.1. All sewer pipe and fittings furnished under this Project shall be as specified in the Contract Documents. Wye and tee branches shall be of the same material and design as the sewer pipe used. Pipe strength classifications shall be as shown on the Drawings and as specified in the Contract Documents.

2.1.2. The Contractor shall furnish certification by the manufacturer of the pipe and fittings to be furnished on this Project, certifying that the pipe and fittings meet the specifications.

2.1.3. Where the reference is made to an **ASTM**, **ANSI** or **AASHTO** designation, it shall be the latest revision at the time of advertisement for bids.

2.1.4. All pipe shall be clearly marked with type, class and/or, thickness as applicable. Lettering shall be legible and permanent under normal conditions of handling and storage. Type of joint, class, thickness designation, castings, lining, marking, testing, etc. shall be as specified.

PART 3 - EXECUTION

3.1. GENERAL

3.1.1. Service lines shall be constructed in accordance with the Standard Drawings. The service line shall be installed to the property line unless shown or specified otherwise. The end of the service line shall be capped with a secure fitting PVC cap, or plugged with a stopper and gasket, the gasket being the same type used for pipe jointing. Grouting of plugs will not be permitted.

3.2. EXCAVATION AND BACKFILL

3.2.1. Excavation and backfill for service lines shall conform to the applicable portions of **SECTION 02221, TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES**.

3.3. RESPONSIBILITY FOR MATERIAL

3.3.1. The Contractor shall be responsible for all material furnished by him and shall replace at his own expense all such material found defective in manufacture or damaged in handling after delivery. This shall include furnishing all material and labor required for the replacement of installed material discovered defective prior to final acceptance of the Work or during the guarantee period.

3.3.2. The Contractor shall be responsible for the safe storage of material intended for the Work until it has been incorporated in the completed project.

3.4. HANDLING OF PIPE

3.4.1. All pipe furnished by the Contractor shall be delivered and distributed at the site by the Contractor. Pipe, fittings and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.

3.4.2. In distributing the material at the site of the Work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench. The interior of all pipe and other accessories shall be kept free from dirt and foreign matter at all times.

3.4.3. Pipe shall be handled so that no coating or lining will be damaged. If, however, any part of the coating or lining is damaged, the repair shall be made by the Contractor at his expense in a manner satisfactory to the Engineer.

3.5. LAYING PIPE

3.5.1. All pipe shall be laid to and maintained at the required lines and grades with fittings, tees and manholes at the required locations.

3.5.2. Wye or tee fittings shall be installed in the mainline sewer for connection of service lines. Wye or tee fittings shall be of the same material and design and of the same specifications as the sewer main pipe. Jointing of service pipe to tee branches or main line pipe other than PVC shall be accomplished with special joint adaptors manufactured specifically for jointing the two different types of pipe.

3.5.3. Proper tools and equipment satisfactory to the Engineer shall be used by the Contractor for the safe and convenient prosecution of the Work. All pipe and fittings shall be carefully lowered into the trench in such a manner as to prevent damage to pipe materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped into the trench.

3.5.4. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a plug or other means approved by the Engineer. The Contractor shall clean and remove all sand, gravel, concrete, cement grout and other foreign material that has entered the lines in the process of construction.

3.6. TOLERANCES

3.6.1. The pipe shall be installed within one-half (½") inch of the specified alignment and within one-fourth (¼") inch of the specified grade.

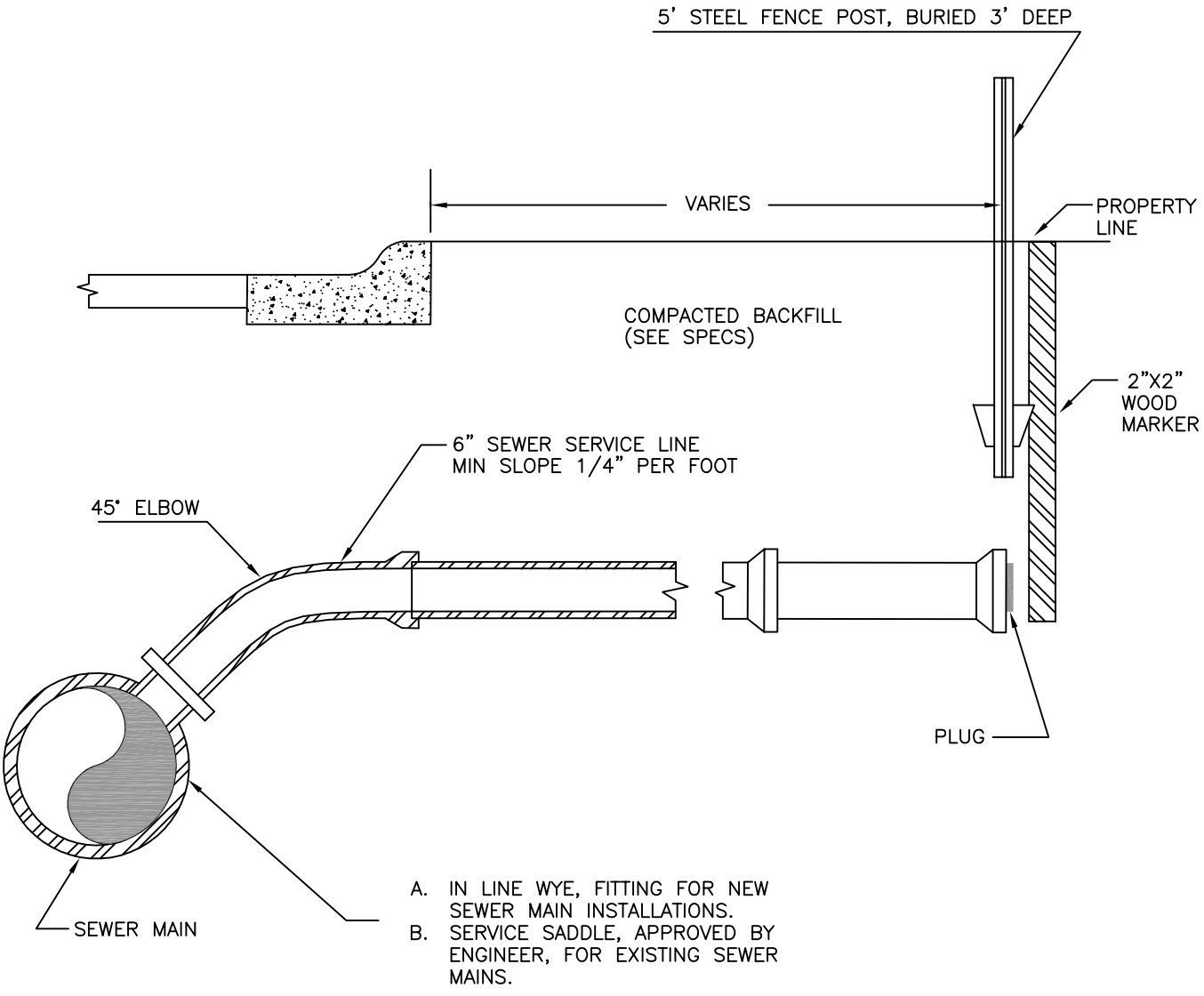
3.7. RESTORATION, FINISHING AND CLEANUP

3.7.1. The Contractor shall restore and/or replace all paved surfaces, curbing, sidewalks, or other disturbed surfaces to their original condition in such a manner as to meet the requirements of applicable sections. All surplus material and temporary structures, as well as all excess excavation, shall be removed and the entire site of Contractor operations shall be left in a neat and clean condition as specified in Section 02221.

3.8. END PIPE MARKER

3.8.1. Location of services shall be marked at the property line by the Contractor, by using a steel fence post five (5') feet long, buried in the ground three (3') feet. A 2" X 2" wood marker shall be wired to the steel fence post and shall extend from pipe invert to ground line. Where applicable, the existing concrete curb shall be marked to note the locations of services.

END OF SECTION



A. IN LINE WYE, FITTING FOR NEW SEWER MAIN INSTALLATIONS.
B. SERVICE SADDLE, APPROVED BY ENGINEER, FOR EXISTING SEWER MAINS.

2013

AMERITECH ENGINEERING CORPORATION	SCALE: NONE	SANITARY SEWER SERVICE LINE	STANDARD DRAWINGS 02724-1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION

FUEL COST ADJUSTMENT CLAUSE
Revision Date: 9/8/2006

Introduction

This Special Provision provides for price adjustments to the Contract when significant changes in the cost of motor fuels and burner fuels occur while completing the Contract work. Participation in fuel cost adjustment program is not mandatory. A Contractor is not required to notify the Department at the time of submitting bids whether the Contractor will or will not participate in the fuel cost adjustment provision.

The North Dakota Department of Transportation (NDDOT) will send the low responsible bidder a "Fuel Cost Adjustment Affidavit" (SFN 58393) with the proposed Contract. The Contractor shall return a completed Fuel Adjustment Affidavit with the signed Contract as specified in Standard Specification Section 103.06, Execution and Approval of the Contract. The affidavit shall be returned on all Contracts with this provision even if the Contractor elects not to participate in the provision.

Compensation adjustments for motor fuels and burner fuels consumed in prosecuting the Contract shall be determined by the Engineer in accordance with the provisions set forth herein. Compensation adjustments will be assessed monthly for the cost of the motor fuels and burner fuels whenever the Current Fuel Index (CFI) is outside the given threshold of the Base Fuel Index (BFI) for the Contract.

If the Contractor has a fixed price for fuel for motor or burner fuels to complete the work, no fuel cost adjustments will be made for that fuel type. If there is no fixed fuel price for motor or burner fuels, participation in the Fuel Adjustment provision is the decision of the prime Contractor.

If the prime Contractor decides not to participate, no fuel cost adjustments will be made to the Contract for the Contractor or any subcontractors. If the prime Contractor elects to participate in the fuel cost adjustment provision, the prime Contractor shall include the anticipated fuel cost of subcontractors who wish to participate. If fuel cost adjustments are made to the Contract, the prime Contractor shall ensure that participating subcontractors including second and lower tier, are included in the adjustments in proportion to the percentage of work and anticipated fuel cost by that subcontractor.

Fuel Indexes

Each month, NDDOT will record the average wholesale price for No. 2 diesel fuel and the average wholesale price for unleaded gasoline (87 octane). The monthly average will be the average of the daily rack prices for the month as reported by DTN Energy for Fargo ND.

The burner fuel index will be the No. 2 diesel fuel index regardless of the type of burner fuel actually used.

The Base Fuel Index (BFI) price for motor fuels and burner fuel to be used in the Contract will be the average wholesale price for the month prior to the bid opening.

The Current Fuel Index (CFI) price for motor fuels and burner fuel to be used for each monthly adjustment will be the average wholesale price for the month prior to the adjustment month.

Fuel Ratio

For motor fuels diesel and unleaded gas, the fuel ratio of the Contract will be determined by dividing the Contractor's affidavit costs for each motor fuel by the original Contract amount.

For burner fuels, the fuel ratio of the contract will be determined by dividing the Contractor's affidavit cost for burner fuels by the original Contract amount of plant-mixed hot bituminous pavement paid by the ton. Asphalt cement, binders and other miscellaneous bituminous items shall not be included.

The fuel ratio of the contract for motor and burner fuels will remain the same throughout the length of the contract. The sum of the affidavit fuel costs shall not exceed 15% of the original Contract amount.

The fuel ratio for the three fuel types will be determined by the following equation:

$$\textbf{Fuel Ratio}_{(x, y, z)} = \textbf{Affidavit Cost}_{(x, y, z)} / \textbf{Original Contract Amount}_{(x, y, z)}$$

(x)	=	Motor Fuel (Diesel)
(y)	=	Motor Fuel (Unleaded)
(z)	=	Burner Fuel
$\text{Fuel Ratio}_{(x, y, z)}$	=	Fuel ratio of the contract for each respective fuel type
$\text{Affidavit Cost}_{(x, y, z)}$	=	Fuel costs from Fuel Adjustment Affidavit (SFN 58393)
$\text{Original Contract Amount}_{(x, y)}$	=	Total of the original contract amount excluding lane rental, and Part B of the bid (when A+B bidding is used), if applicable.
$\text{Original Contract Amount}_{(z)}$	=	Total original contract amount for all hot bituminous pavement bid items combined, excluding bid items for asphalt cement, sawing and sealing joints, coring, etc. Only hot bituminous pavement bid items measured by the Ton will be included in the calculation.

Cost Change

The monthly change in fuel costs will be determined by the following equation:

$$\textbf{Cost Change}_{(x, y, z)} = (\textbf{CFI}_{(x, y, z)} - \textbf{BFI}_{(x, y, z)}) / \textbf{BFI}_{(x, y, z)}$$

(x)	=	Motor Fuel (Diesel)
(y)	=	Motor Fuel (Unleaded)
(z)	=	Burner Fuel (use diesel prices)
$\text{Cost Change}_{(x, y, z)}$	=	The relative change in the current CFI and the BFI for each fuel type
$\text{CFI}_{(x, y, z)}$	=	Current Fuel Index for each fuel type
$\text{BFI}_{(x, y, z)}$	=	Base Fuel Index for each fuel type

Contract Adjustments

Contract adjustments will be made for the cost of motor and burner fuels whenever the cost change exceeds a ±0.10 threshold. No fuel cost adjustment will be made for work done under liquidated damages. Adjustments will be determined for Motor Fuel (diesel), Motor Fuel (unleaded), and Burner Fuel (burner) separately and shall be computed on a monthly basis.

When the cost change is greater than 0.10, the rebate to the Contractor for each fuel type shall be computed according to the following formulas:

$$\mathbf{FCA_{(x,\,y,\,z)} = Fuel\ Ratio_{(x,\,y,\,z)} \times Estimate_{(x,\,y,\,z)} \times (Cost\ Change_{(x,\,y,\,z)} - 0.10)}$$

(x)	=	Motor Fuel (Diesel)
(y)	=	Motor Fuel (Unleaded)
(z)	=	Burner Fuel
$FCA_{(x,\,y,\,z)}$	=	Fuel Cost Adjustment for each of the fuel types
$Fuel\ Ratio_{(x,\,y,\,z)}$	=	Fuel Ratio for each of the fuel types
$Estimate_{(x,\,y)}$	=	The monthly total of work done on estimates issued in the current month excluding incentive or disincentive payments, pay factor adjustments and any work completed under liquidated damages.
$Estimate_{(z)}$	=	The monthly total of hot bituminous pavement work done on estimates issued in the current month, excluding bid items for asphalt cement, sawing and sealing joints, coring, etc. Only hot bituminous pavement bid items measured by the Ton will be included in the calculation. Hot bituminous pavement work completed under liquidated damages will not be included.
$Cost\ Change_{(x,\,y,\,z)}$	=	The monthly change in fuel costs for each of the fuel types

When the cost change is less than -0.10, the credit to the Department for each fuel type shall be computed according to the following formulas:

$$\mathbf{FCA_{(x, y, z)} = Fuel\ Ratio_{(x, y, z)} \times Estimate_{(x, y, z)} \times (Cost\ Change_{(x, y, z)} + 0.10)}$$

(x)	=	Motor Fuel (Diesel)
(y)	=	Motor Fuel (Unleaded)
(z)	=	Burner Fuel
$FCA_{(x, y, z)}$	=	Fuel Cost Adjustment for each of the fuel types
$Fuel\ Ratio_{(x, y, z)}$	=	Fuel Ratio for each of the fuel types
$Estimate_{(x, y)}$	=	The monthly total of work done on estimates issued in the current month excluding any incentive or disincentive payments, pay factor adjustments and any work completed under liquidated damages.
$Estimate_{(z)}$	=	The monthly total of hot bituminous pavement work done on estimates issued in the current month, excluding bid items for asphalt cement, sawing and sealing joints, coring, etc. Only hot bituminous pavement bid items measured by the Ton will be included in the calculation. Hot bituminous pavement work completed under liquidated damages will not be included.
$Cost\ Change_{(x, y, z)}$	=	The monthly change in fuel costs for each of the fuel types

Payments

Adjustments will be determined by the Engineer monthly. Adjustments will be made under the following spec and code for each fuel type:

109 0100	Motor Fuels (Diesel)
109 0200	Motor Fuels (Unleaded)
109 0300	Burner Fuel

When significant payment adjustments are made on final estimates to account for final in-place measured quantities, the Engineer may prorate the adjustments back to the months when the work was done.

Attachments

For informational purposes, a ‘Fuel Cost Adjustment Affidavit’ (SFN 58393) is included as Attachment A.

FUEL COST ADJUSTMENT AFFIDAVIT

North Dakota Department of Transportation, Construction Services
SFN 58393 (08-2006)

Attachment A

Project Number

The Contractor is not required to notify the Department at the time of submitting bids whether he will or will not participate in the fuel cost adjustment program. The Contractor shall return the affidavit on all Contracts with this Provision even if the Contractor elects not to participate.

Check the box for each fuel type that has a fixed price.
No adjustments in fuel price will be made for the boxes that are checked.

☐ Diesel ☐ Unleaded ☐ Burner Fuel

Does your company elect to participate in a fuel adjustment for this contract for the fuels that do not have a fixed price?
No adjustments in fuel prices will be made if **No** is checked.

☐ Yes ☐ No

If yes, provide the total dollars for each of the applicable fuels.

Diesel (x)	$		
Unleaded (y)	$		
Burner Fuel (z)	$		
Sum (x+y+z)	$	% of Original Contract Amount	%*

*The sum of the x, y, and z may not exceed 15% of the original contract amount.

Under the penalty of law for perjury of falsification, the undersigned,

_____, _____
Name Title

of _____, here by certifies that the documentation is submitted in good
Contractor

faith, that the information provided is accurate and complete to the best of their knowledge and belief, and that the monetary amount identified accurately reflects the cost for fuel, and that they are duly authorized to certify the above documentation on behalf of the company.

I hereby agree that the Department or its authorized representative shall have the right to examine and copy all Contractor records, documents, work sheets, bid sheets and other data pertinent to the justification of the fuel costs shown above.

_____ **X** _____
Date Signed

State of _____

County of _____

Subscribed and sworn to before me this _____ day of _____, _____.

(Seal)

X _____
Signature of Notary Public

My Commission Expires _____