

PLOT SCALE - 200,000,000:1,000,000

PLOTTED FROM - TRRC12608

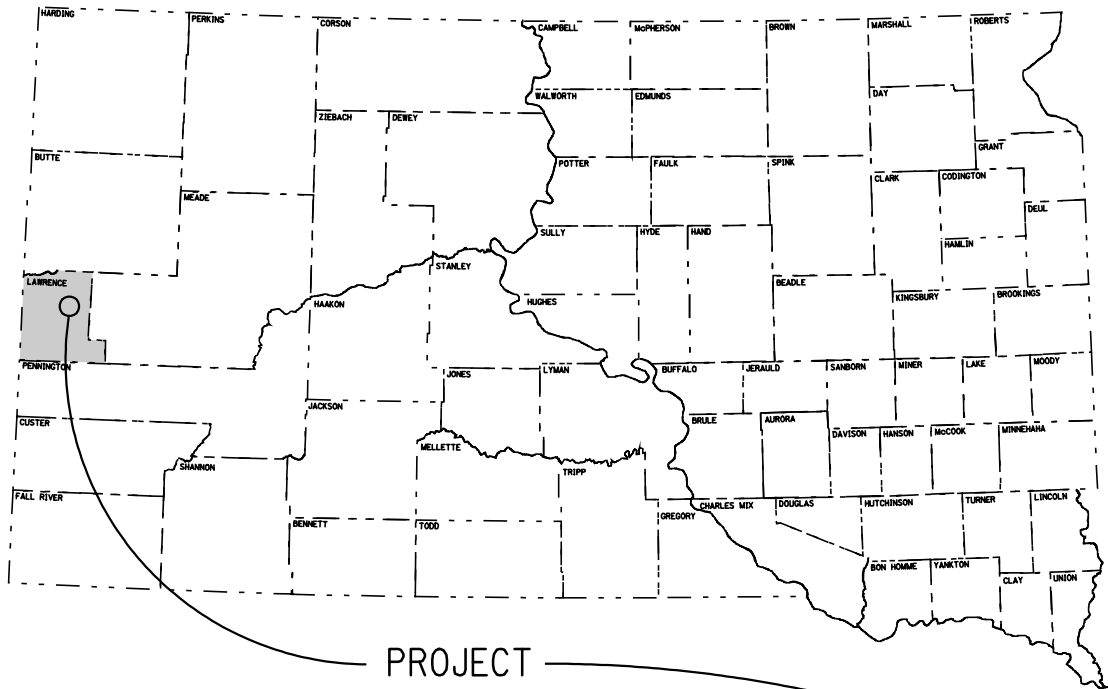
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECT 014A-451
US HIGHWAY 14A
LAWRENCE COUNTY
PIPE AND EROSION REPAIR
PCN 124E

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	014A-451	1	22

Plotting Date: 17-AUG-2011

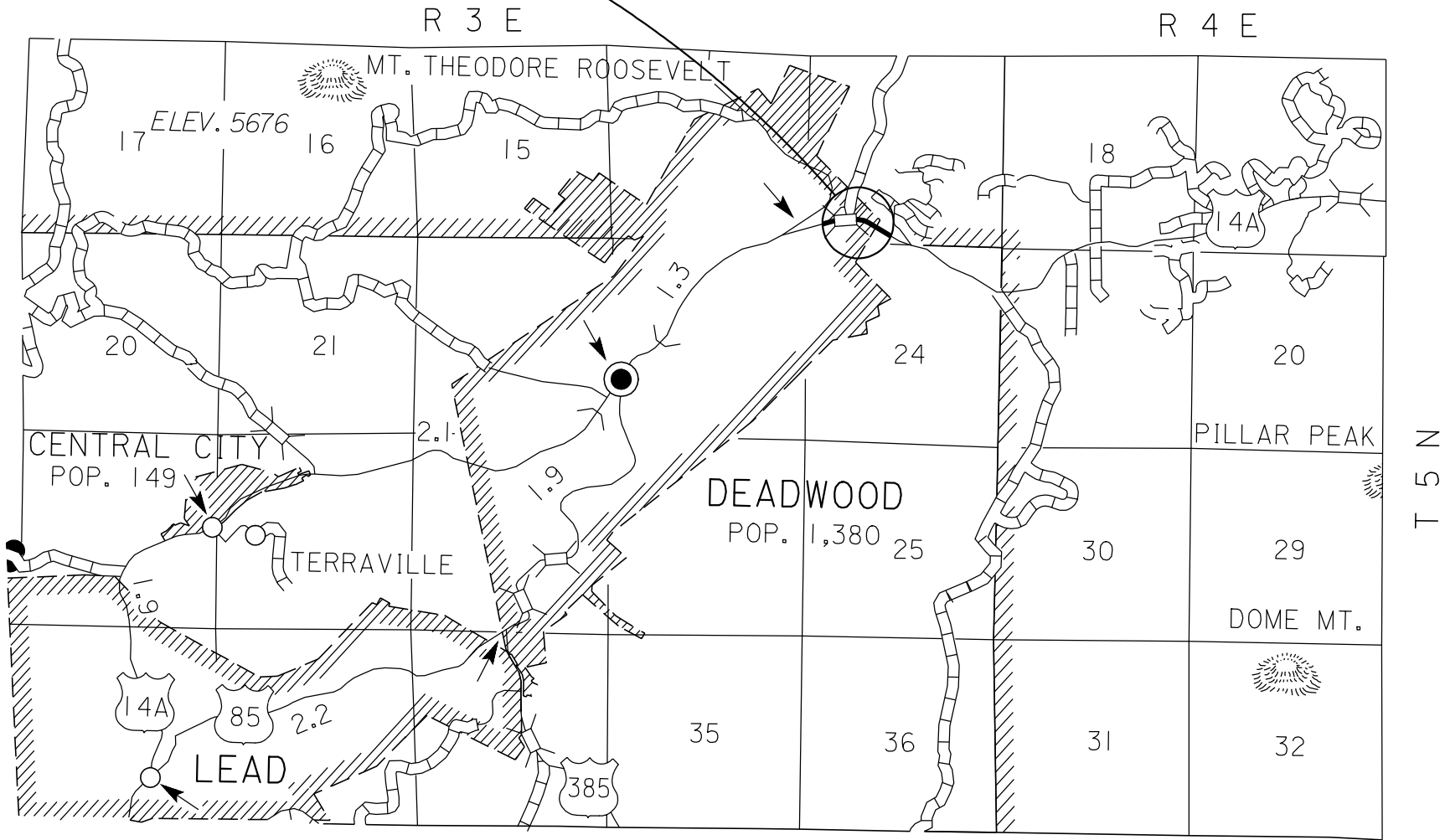
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PROJECT

MRM 42.34



STORM WATER PERMIT

No Storm Water Permit Required

DESIGN DESIGNATION

ADT (2010)	5460
ADT (2030)	5831
DHV	1236
D	50%
T DHV	3.3%
T ADT	7.2%
V	55 mph

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ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
120E0300	Borrow Unclassified Excavation	1,014	CuYd
230E0020	Placing Contractor Furnished Topsoil	100	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
250E0020	Incidental Work, Grading	Lump Sum	LS
450E4769	24" CMP 16 Gauge, Furnish	4	Ft
450E4770	24" CMP, Install	4	Ft
450E4807	48" CMP 12 Gauge, Furnish	118	Ft
450E4810	48" CMP, Install	118	Ft
450E5015	24" CMP Elbow, Furnish	1	Each
450E5016	24" CMP Elbow, Install	1	Each
450E5035	48" CMP Elbow, Furnish	1	Each
450E5036	48" CMP Elbow, Install	1	Each
450E5231	48" CMP Flared End, Furnish	1	Each
450E5232	48" CMP Flared End, Install	1	Each
634E0010	Flagging	10	Hour
634E0100	Traffic Control	442	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	2	Each
650E4120	Type C12 Concrete Gutter	76	Ft
671E0070	7' x 7' Junction Box	1	Each
700E0310	Class C Riprap	170.0	Ton
730E0210	Type F Permanent Seed Mixture	7	Lb
731E0100	Fertilizing	33	Lb
732E0250	Fiber Mulching	373	Lb
734E0150	6" Diameter Erosion Control Wattle	363	Ft
734E0604	High Flow Silt Fence	90	Ft
734E0610	Mucking Silt Fence	20	CuYd
734E0620	Repair Silt Fence	20	Ft
831E0110	Type B Drainage Fabric	130	SqYd

SPECIFICATIONS

Standard Specifications for Roads & Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

WORK DESCRIPTION

Work on this project will consist of the following:

1. Install Junction Box and Culvert.
2. Fill in erosion and shape slopes.
3. Place riprap and fabric.

UTILITIES

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the contractor shall contact the project engineer to determine modifications that will be necessary to avoid utility impacts.

SEQUENCE OF OPERATIONS - GENERAL

1. The intent of the plan sequence of operations is to have the least amount of impact on the traveling public and adjacent landowners. Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence shall be submitted for review a minimum of two week prior to potential implementation.

SEQUENCE OF OPERATIONS

1. Set up traffic control.
2. Place Riprap. Silt Fence, and Wattles.
3. Remove existing pipe ends.
4. Install junction box and new pipe
5. Backfill pipe.
6. Remove traffic control.

MAINTENANCE OF APPROACHES DURING OPERATIONS

Operations shall be conducted such that access to individual entrances are maintained at all times throughout the project.

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

CLEARING

Before clearing activities begin, the Contractor shall contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor's expense.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 9.24 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation Borrow".

Special ditch grades and other sections different from the typical sections. shall be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer for the proposed change.

BORROW UNCLASSIFIED EXCAVATION

The embankment material required to construct the slopes in accordance with the cross sections in these plans shall be obtained from slide debris material located approximately 1100' east of this project. The slide debris length is approximately 100' long. The slide debris shall be excavated to the original design template with a 2:1 backslope at Sta. 72+25 and warped to 1.5:1 backslope at Sta. 73+25 (This stationing is referenced from the original construction plans) The resulting cut would extend from the ditch elevation up slope approximately 40' to daylight at the break in slope. Field adjustments of the excavation by the Engineer may be required due to the existing conditions. Previously excavated slide debris adjacent to the slide may also be used to complete embankment construction. The slide debris excavation shall be performed within the DOT right-of-way.

PLACING CONTRACTOR FURNISHED TOPSOIL

It is anticipated that a larger volume of topsoil will be needed for the new grade than can be salvaged from the existing grade. The Contractor will be required to furnish and place 4 inches of topsoil on roadway inslopes and areas as determined by the Engineer during construction.

All costs to furnish and place the topsoil shall be incidental to the contract unit price per cubic yard for "Placing Contractor Furnished Topsoil".

REMOVE AND REPLACE TOPSOIL

Prior to beginning grading operations, a 4" depth of topsoil shall be removed and stockpiled at the toe of the inslope. Following completion of grading, topsoil shall be placed on all disturbed areas.

All cost associated with removing and replacing the topsoil along areas to be resurfaced shall be incidental to the lump sum price for "Remove and Replace Topsoil".

INCIDENTAL WORK, GRADING

Station	L/R	Remarks
59+50 to 60+22	L	Shape ditch for Type C12 Gutter
61+18 to 62+35	L	Excavate approximately 6 CuYds for ditch bottom as shown in cross sections.
61+18	L	Remove Pipe End Sections.

GENERAL MAINTENANCE OF TRAFFIC

1. The Contractor shall at all times, keep the portion of the project being used by public traffic in a condition that will adequately and safely accommodate traffic.
2. Storage of vehicles, materials, and equipment shall be not closer than 30' from the edge of the driving lane. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.
3. The Contractor shall coordinate his operations such that during non-working hours the roadway shall be open to two-way traffic on a uniform driving surface for the entire width of the roadway.
4. Work activities shall only be during daylight hours. Daylight hours are considered to be ½ hour before sunrise until ½ hour after sunset.

TRAFFIC CONTROL

1. Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. The cost of this work shall be incidental to the various contract bid items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.
2. The Contractor shall furnish, install, and maintain Truck Crossing signs. The exact number and location will be determined upon construction. Payment for additional signs will be based on the contract unit price per unit for Traffic Control. The Truck Crossing signs shall be displayed at all times when haul vehicles are hauling material. When the truck haul condition no longer exists, the signs shall be covered or removed from view.
3. Traffic control shall be in accordance with MUTCD Standards, the Standard Specifications and the layouts contained in these plans.
4. The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
5. Non-applicable signing will be covered or removed and reset during periods of in-activity. All costs to do this work shall be incidental to Traffic Control, Miscellaneous.

TRAFFIC CONTROL (CONTINUED)

6. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed supports, unless approved by the Engineer.
7. All Contractors' vehicles or equipment entering or leaving a closed work area shall display a flashing amber light.
8. The Contractor or designated traffic control subcontractor shall make night (after dark) inspections at the initial set up of traffic control and every week thereafter to ensure the adequacy, legibility and reflectivity of each sign and device. A written summary of each inspection shall be given to the Engineer within 24 hours after completion of the inspection. The cost for the nighttime inspection work shall be incidental to the related contract items.
9. The Contractor shall be required to have a person available 24 hour/day, 7 days/week to maintain traffic control devices. The name and cellular telephone number of this individual shall be given to the Engineer at the preconstruction meeting.
10. Standard Plate 634.23 may be utilized for material delivery operations. Actual work operations shall take place behind the guardrail so as not to effect traffic flows.

INVENTORY OF TRAFFIC CONTROL DEVICES

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
W8-6	48" x 48"	TRUCK CROSSING	2	34	68
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W20-7b	48" x 48"	BE PREPARED TO STOP (also shown as W3-4)	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
TOTAL UNITS					442

RIPRAP

The Class C Riprap shall be constructed to the configuration and limits shown on the plan sheet. The stream banks in the areas of Riprap placement shall be reconstructed to an alignment and elevations approved by the Engineer. Costs of reconstructing the stream banks shall be incidental to the contract unit price per ton for Class C Riprap except as noted otherwise in these plans.

Excavation necessary for the installation of Class C Riprap and used as fill shall be paid for as Contractor Furnished Borrow.

Type B Drainage fabric will be placed underneath the Class C Riprap. The fabric shall conform to Section 831 of the South Dakota Standard Specifications.

It is estimated that 170 tons of Class C Riprap 3' deep and 130 SqYd of Type B Drainage Fabric will be required to build to the limits and contours shown

A factor of 1.4 Tons/CuYd was used to convert CuYds of Class C Riprap to Tons.

PERMANENT SEEDING

The areas to be seeded comprise of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

All permanent seed shall be planted in the topsoil at a depth of ¼” to ½”.

All seed broadcast must be raked or dragged in (incorporated) within the top ¼” to ½” of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

FERTILIZING

A commercial fertilizer with a minimum guaranteed analysis of 22-5-10 shall be applied to all areas designated for permanent seeding.

The application rate of fertilizer shall be 3 pounds per 1000 SqFt.

FIBER MULCHING

Fiber mulch shall be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier shall be added to the fiber mulch product selected from the list below. If the product selected has guar gum tackifier included, then the additional 2% of tackifier shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier shall be synthetic.

Fiber mulch shall be applied at the rate of 2000 pounds per acre.

The Contractor shall allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials shall be incidental to the contract unit price per ton for “Fiber Mulching”.

FIBER MULCHING (CONTINUED)

The fiber mulch used on this project shall be one from the list below:

Product	Manufacturer
Mat-Fiber Plus	Mat, Inc. Floodwood, MN Phone: 1-888-477-3028 www.matinc.biz
Conwed Hydro Mulch 2000	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 www.conwedfibers.com
EcoFibre Plus Tackifier	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 www.profile-eco.com
Terra-Mulch Wood with Tacking Agent 3	Profile Products LLC Buffalo Grove, IL Phone: 1-800-726-6371 www.terra-mulch.com
Excel Fiber Mulch II with Tackifier	American Excelsior Co. Arlington, TX Phone: 1-800-777-7645 www.curlex.com

TABLE OF FIBER MULCHING

Station	to	Station	L/R	Quantity (Lb)
59+40		60+40	L	58
61+10		62+56	L	315
Total:				373

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Std. Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

An additional quantity of 40 feet of 6” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high silt fence at wetland areas adjacent to the highway.

EROSION CONTROL WATTLE (CONTINUED)

The erosion control wattle provided shall be from the list shown below:

Product	Manufacturer
Curlex Sediment Log	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 www.amerexcel.com
Aspen Excelsior Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 www.westernexcelsior.com
Amber Waves Straw Wattles	Limpert Environmental Litchfield, MN Phone: 1-320-693-2565 www.limpertenvironmental.com
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexcelsior.com
Patriot Wood Fiber Logs and Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-480-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

TABLE OF EROSION CONTROL WATTLE

Staiion	to	Station	L/R	Diamet er (Inch)	Location	Quantity (Ft)
61+20		62+48	L	6	Ditch	150
61+20		61+48	L	6	Ditch	120
62+38		62+41	L	6	Ditch	33
62+41		62+56	L	6	Ditch	20
ADDITIONAL QUANTITY						40
Total:						363

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided shall be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/Applications/HC54ApprovedProducts/main.asp>

High flow silt fence shall be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

An additional 20 feet of High Flow Silt Fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE

Station	L/R	Location	Quantity (Ft)
60+24	L	Pipe inlet	20
62+41 to 62+76	L	Riprap Outlet	50
		ADDITIONAL QUANTITY	20
		Total:	90

MUCKING SILT FENCE

Mucking silt fence shall consist of removing muck trapped by the silt fence and spreading the material evenly over the adjacent area to conform to the existing grade.

PLOT SCALE - 40'-00"000:1'-00"000

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ASPEN STORAGE, INC.
C/O HERTEL, STEVEN R.
M.S. 166 LOT 2B PT. OF LOT 2

PLOT SCALE - 21.523361:1.000000

PLOTTED FROM - TRRC12608

PROFILE SHEET

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	014A-451	7	22

Plotting Date: 17-AUG-2011

61+20.90 Mainline Station - 57.62' L
Install 7'x 7'x 7' Junction Box tie to existing culverts.

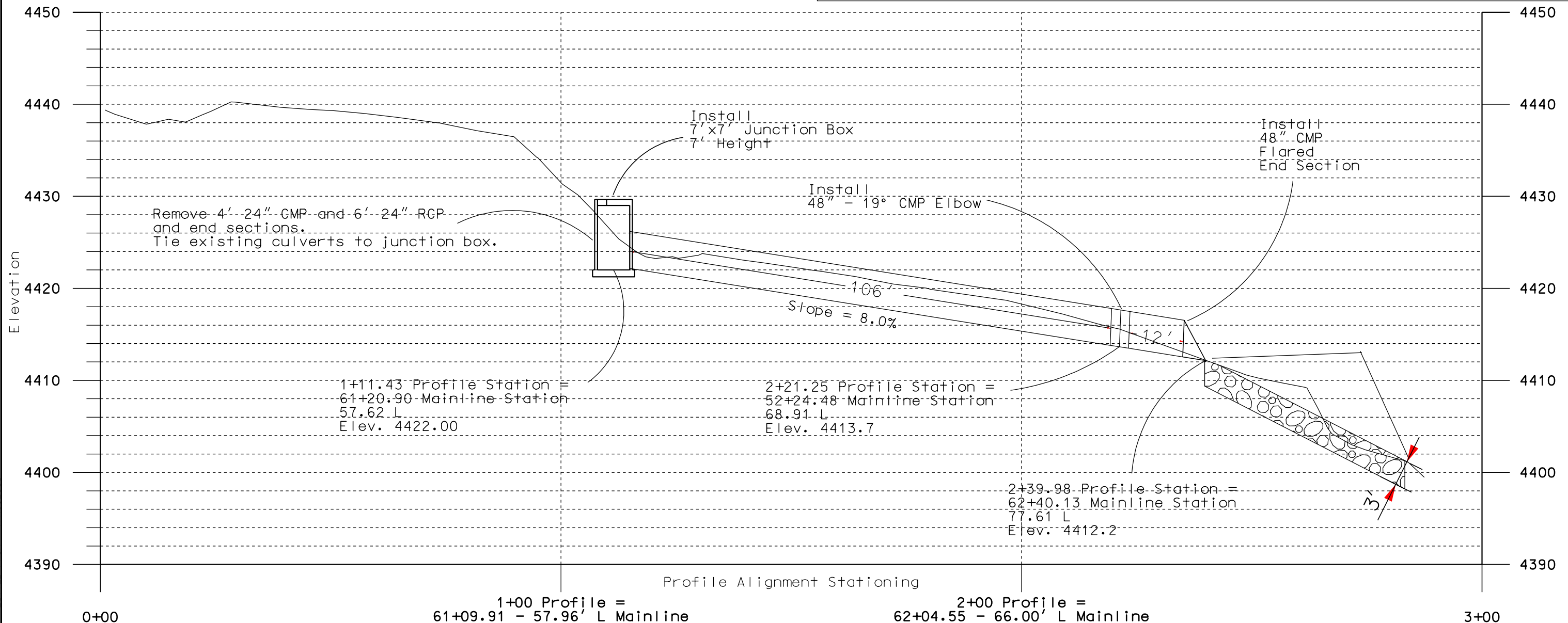
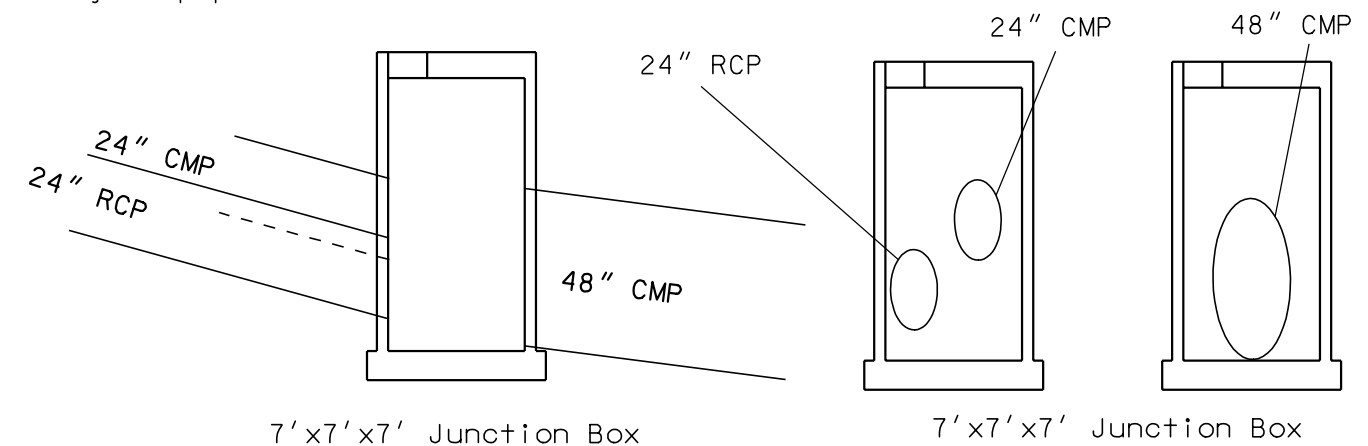
61+25.12 Mainline Station - 57.99' L to
62+22.66 Mainline Station - 68.63' L
Install 48" - 106' CMP

62+22.66 Mainline Station - 68.63' L to
62+26.13 Mainline Station - 69.81' L
Install 48" 19° - CMP Elbow

62+26.13 Mainline Station - 69.81' L to
62+35.36 Mainline Station - 74.92' L
Install 48" - 12' CMP

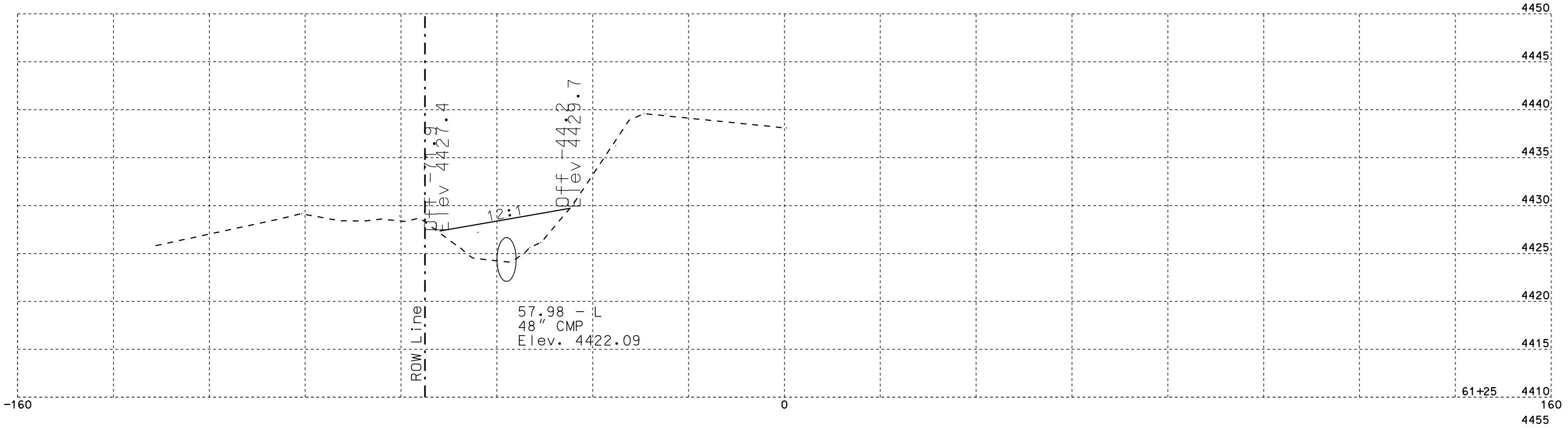
62+35.36 Mainline Station - 74.92' L to
62+39.82 Mainline Station - 77.4' L
Install 48" CMP Flared End section

Details for Junction Box
(Adjust pipe locations as needed)

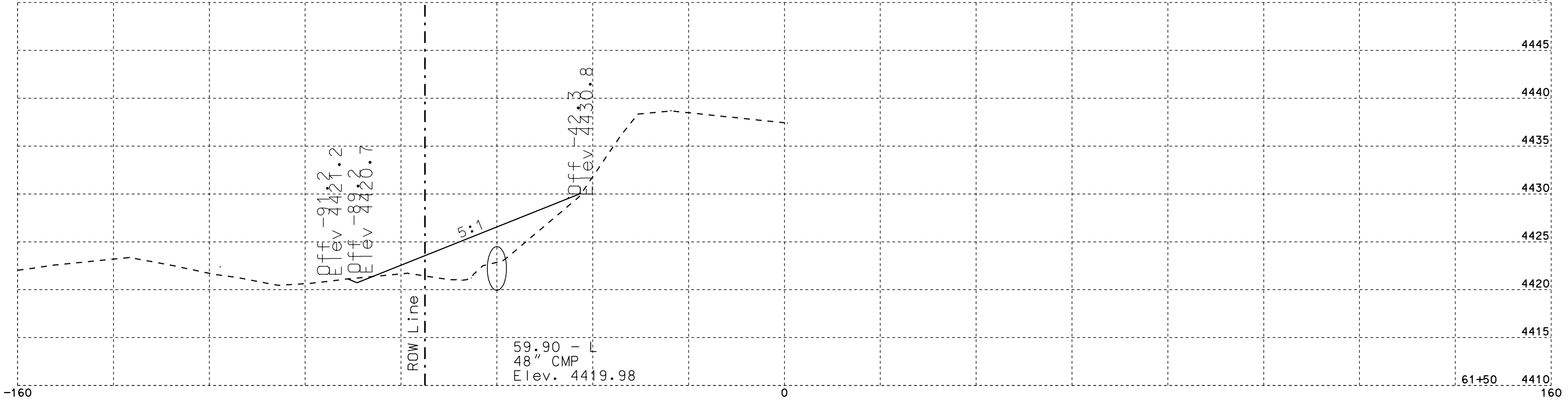
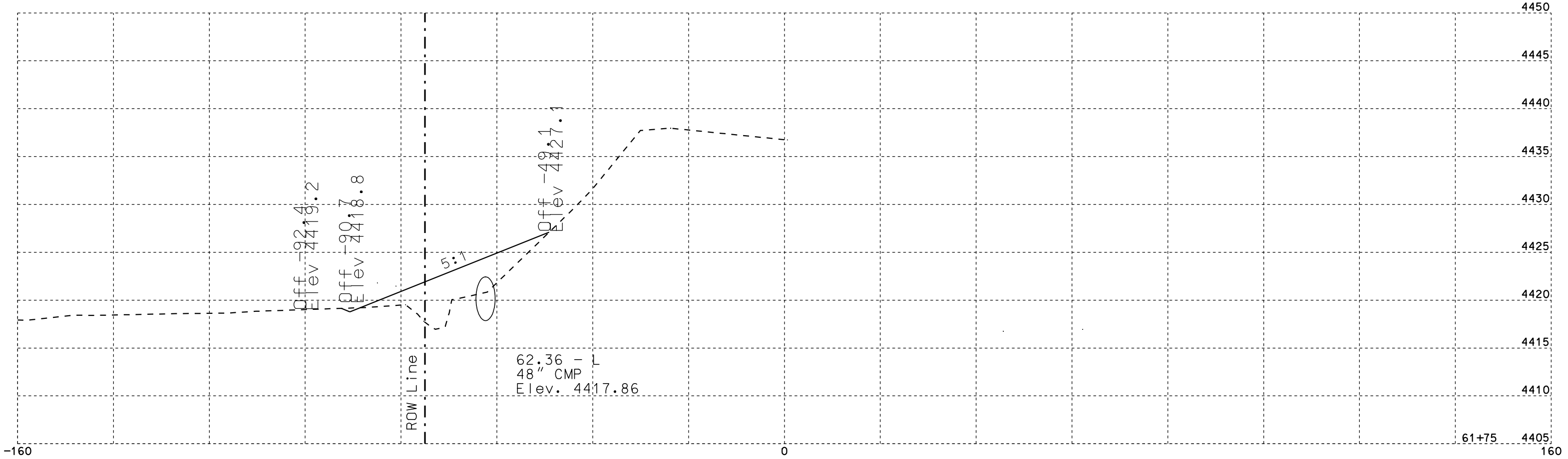


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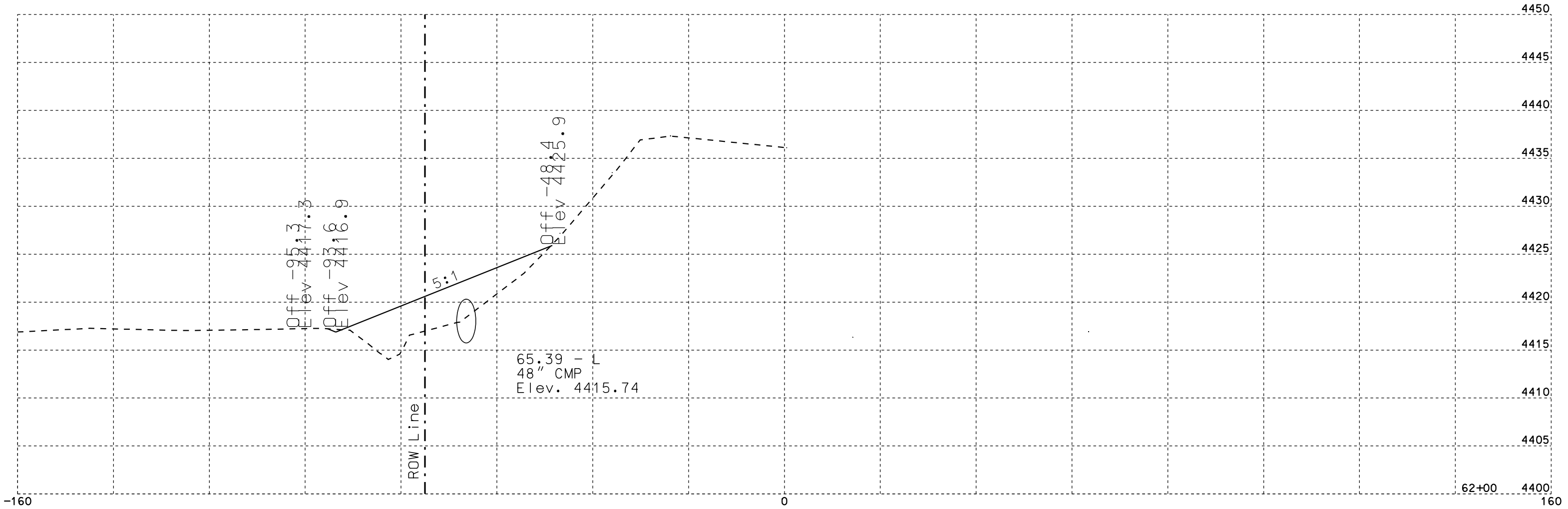
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	014A-451	8	22



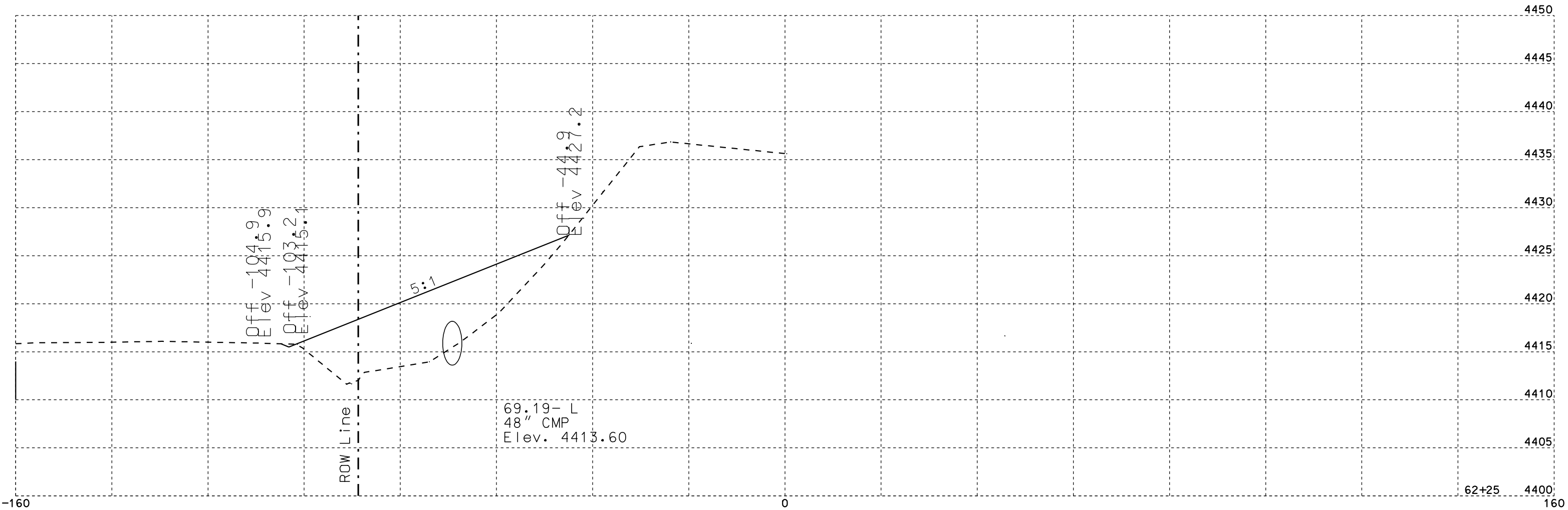
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	014A-451	9	22



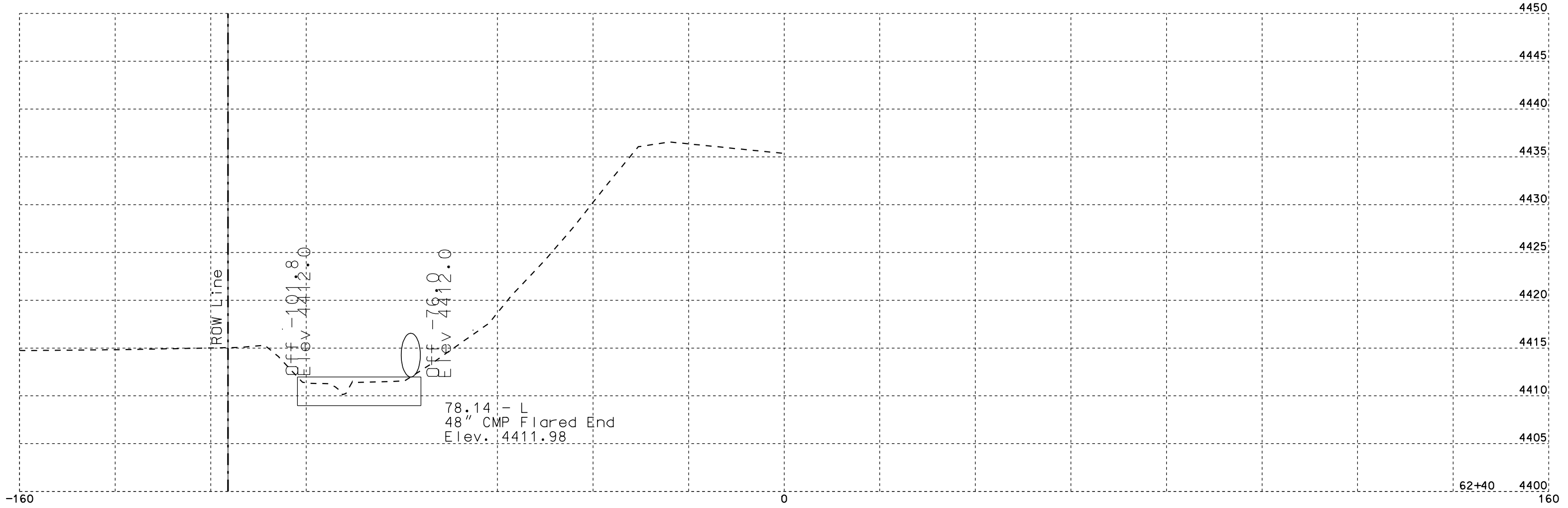
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	014A-451	10	22



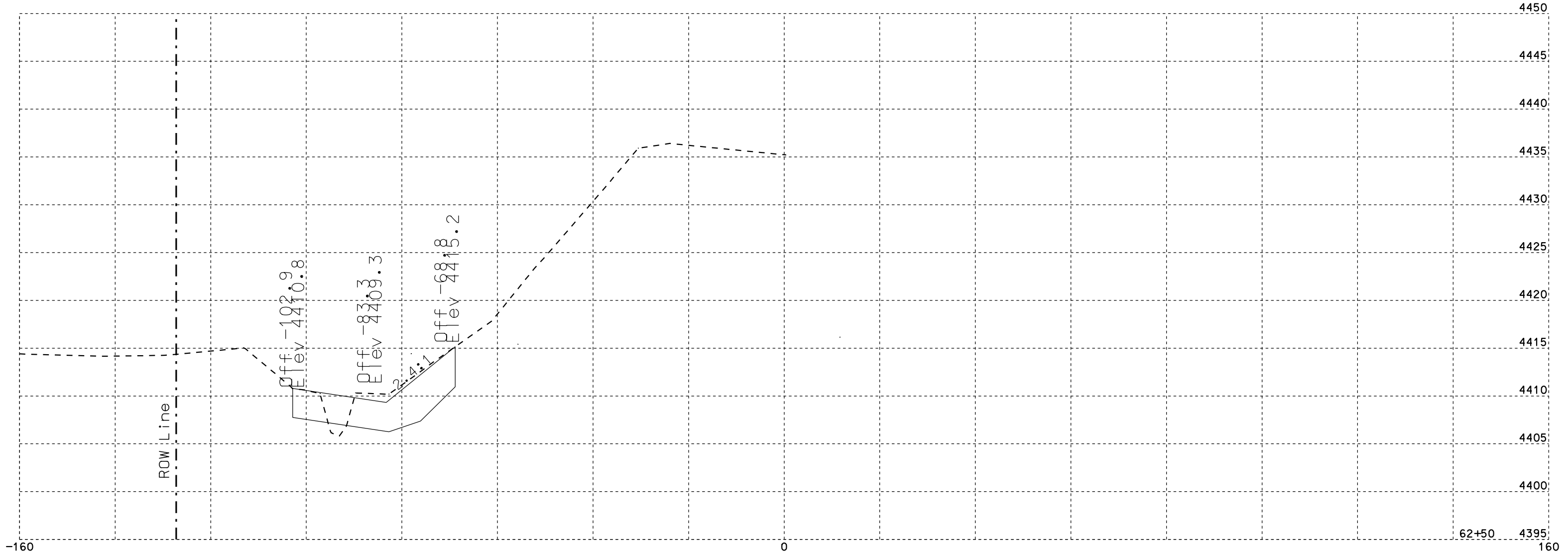
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	014A-451	11	22



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	014A-451	12	22



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	014A-451	13	22



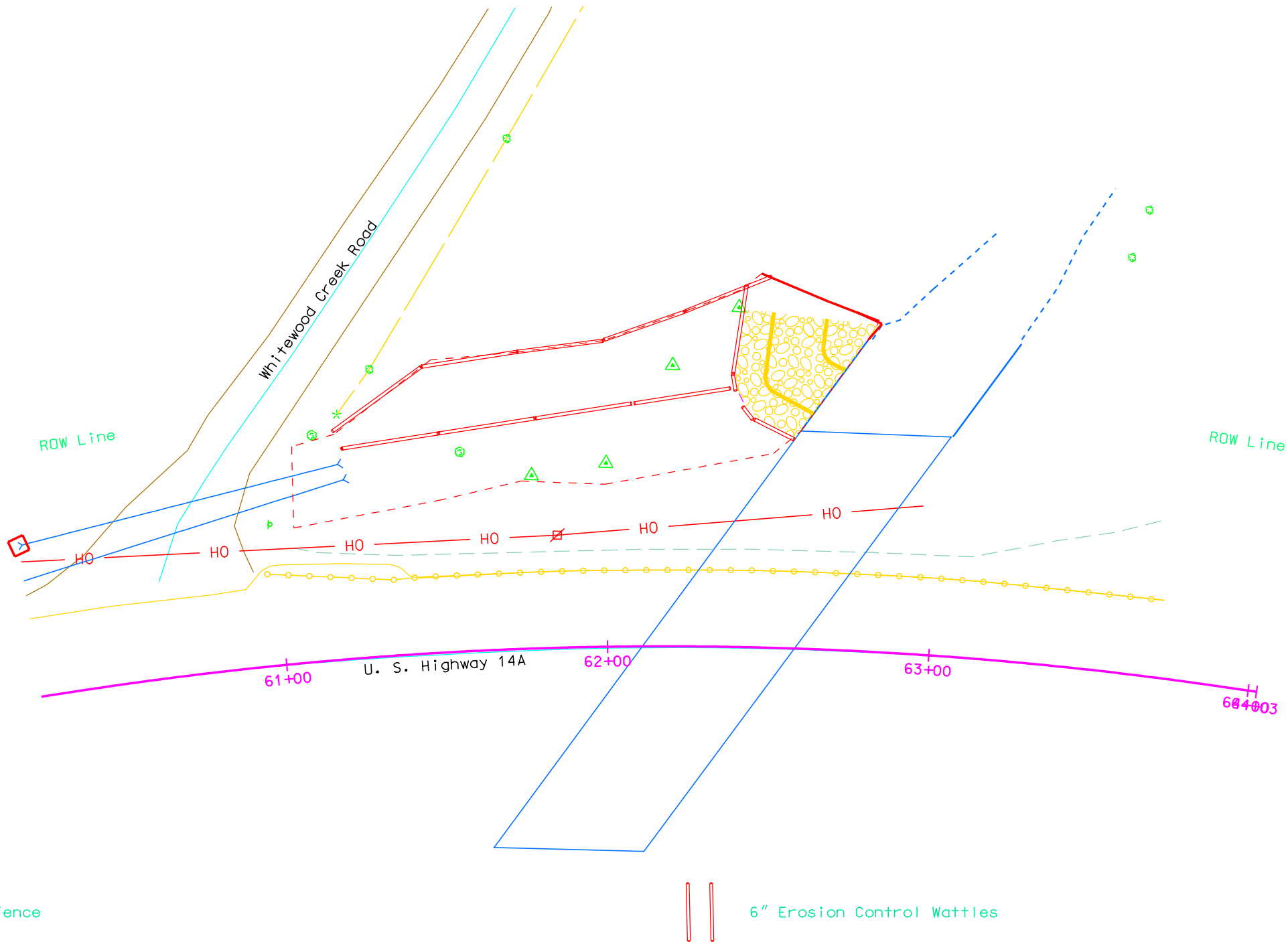
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EROSION CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	014A-451	14	22

Plotting Date: 17-AUG-2011

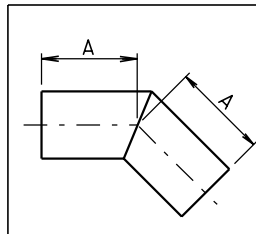
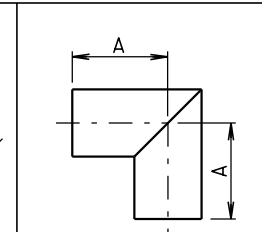
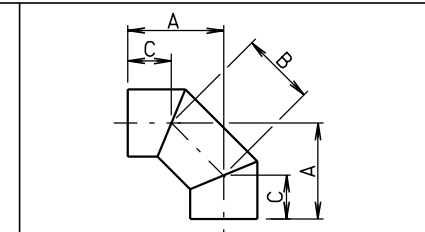
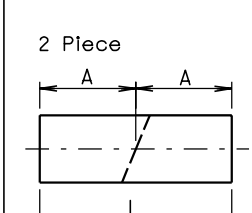
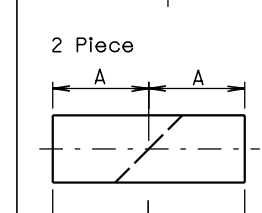
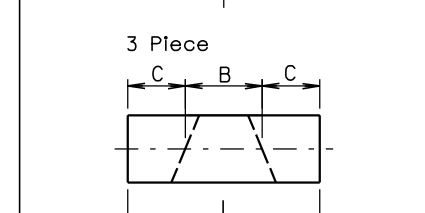


Install 12" High Flow Silt Fence at the Following Locations:
Mainline Station 60+24 - 48' L For use around pipe inlet - 20'
Mainline Station 62+41 - 106' L to Mainline Station 62+76 - 97' L - 50'

Install 12" Erosion Control Wattle at the Following Locations:
Mainline Station 61+20 - 71' L to Mainline Station 62+48 - 115' L 150' - 6"
Mainline Station 61+20 - 65' L to Mainline Station 62+48 - 80' L 120' - 6"
Mainline Station 62+38 - 80' L to Mainline Station 62+41 - 113' L 33' - 6"
Mainline Station 62+41 - 75' L to Mainline Station 62+56 - 65' L 20' - 6"

FILE - U:\REGION\RC\CONTRACT\MAINTENANCE\FY2012\PLANS\124E_014A-451 PIPE AND EROSION PREVENTION EC1.DGN

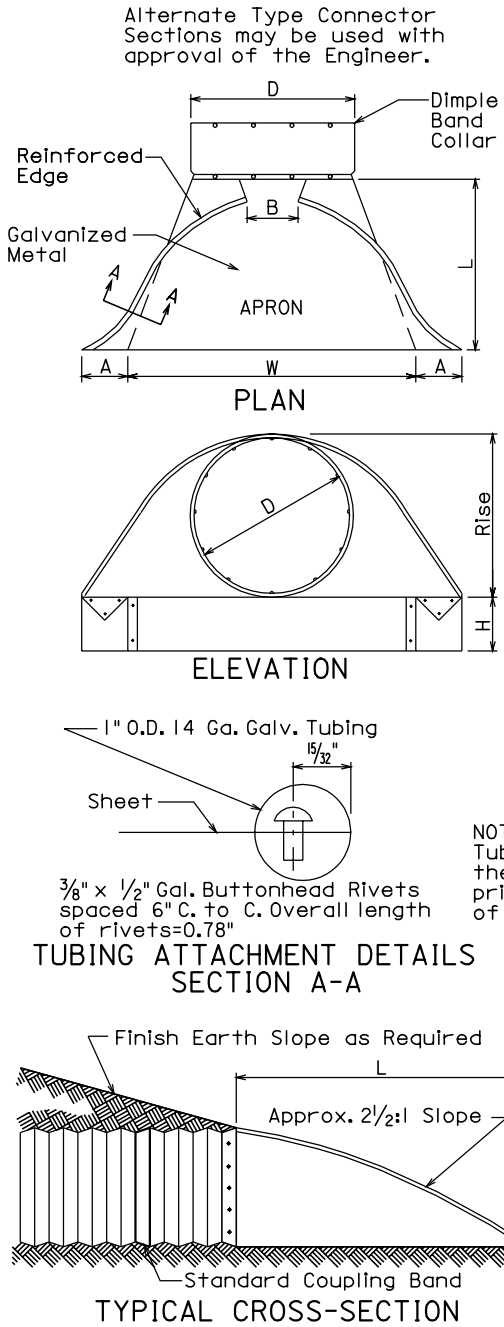
Plotting Date: 17-AUG-2011

										
2 Piece	2 Piece	3 Piece								
										
5° to 45° Elbow	50° to 90° Elbow	90° Elbow								
Diameter	A	L	Diameter	A	L	Diameter	A	B	C	L
Inches	Feet	Feet	Inches	Feet	Feet	Inches	Inches			Feet
12	1	2	12	2	4	12	25½	11	18½	4
15	1	2	15	2	4	15	26½	12	18	4
18	1	2	18	2	4	18	27	14	17	4
21	2	4	21	2	4	21	27	15	16½	4
24	2	4	24	2	4	24	27½	16	16	4
27	2	4	27	2	4	27	27½	17	15½	4
30	2	4	30	3	6	30	40	19	26½	6
33	2	4	33	3	6	33	40	20	26	6
36	2	4	36	3	6	36	40½	21	25½	6
42	2	4	42	3	6	42	41	23	24½	6
48	2	4	48	4	8	48	53½	26	35	8
54	3	6	54	4	8	54	54	28	34	8
60	3	6	60	4	8	60	54½	31	32½	8
66	3	6	66	4	8	66	54	33	31½	8
72	3	6	72	5	10	72	67½	36	42	10
78	3	6	78	5	10	78	68	39	40½	10
84	3	6	84	5	10	84	68½	41	39½	10
90	3	6	90	6	12	90	70	46	37	10
96	3	6	96	6	12	96	82	46	49	12

FABRICATED ELBOW LENGTHS FOR ALL CORRUGATIONS

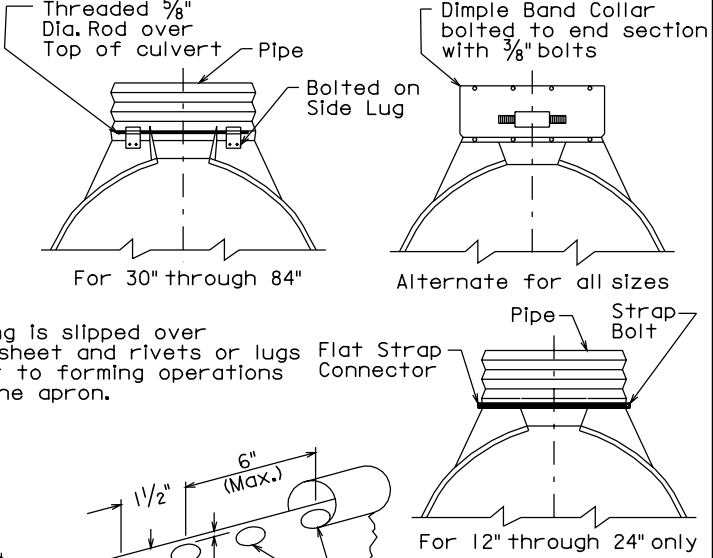
GENERAL NOTES:
All dimensions shown are nominal.
L = Linear Feet of C.M.P. required to fabricate fitting.

June 26, 2001

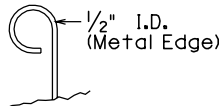


Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2½:1	1 Pc.
15	16	7	8	6	26	30	2½:1	1 Pc.
18	16	8	10	6	31	36	2½:1	1 Pc.
21	16	9	12	6	36	42	2½:1	1 Pc.
24	16	10	13	6	41	48	2½:1	1 Pc.
30	14	12	16	8	46	60	2½:1	1 Pc.
36	14	14	19	9	51	72	2½:1	2 Pc.
42	12	16	22	11	60	84	2½:1	2 Pc.
48	12	18	27	12	69	90	2¼:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1¾:1	3 Pc.
66	12	18	36	12	87	120	1½:1	3 Pc.
72	12	18	39	12	87	126	1½:1	3 Pc.
78	12	18	42	12	87	132	1¼:1	3 Pc.
84	12	18	45	12	87	138	1¼:1	3 Pc.

STANDARD CONNECTIONS



SECTION A-A (alternate)



SECTION A-A (alternate)

GENERAL NOTES:
All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2½" x 2½" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.
Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

Plotting Date: 17-AUG-2011

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000



July 1, 2005

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

PLATE NUMBER
634.01

Sheet 1 of 1

Published Date: 3rd Qtr. 2011

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

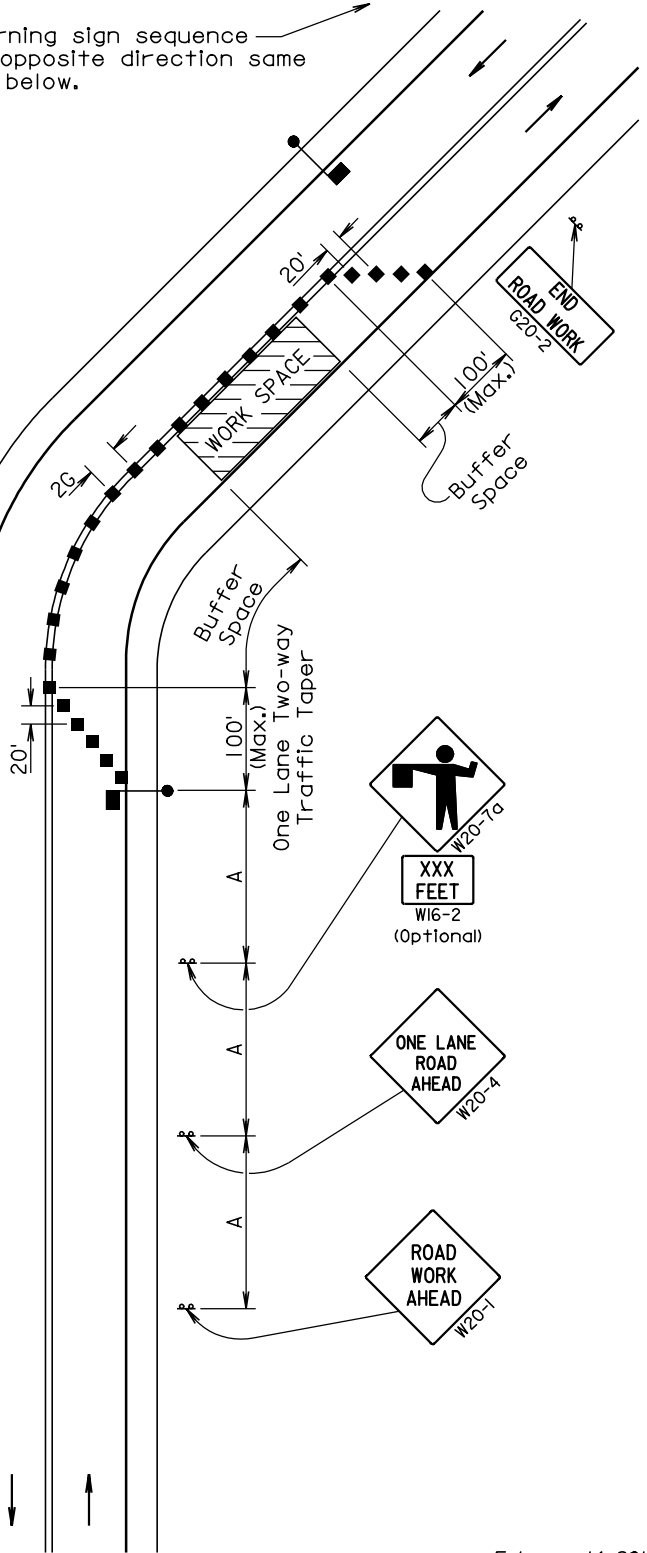
The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

Warning sign sequence
in opposite direction same
as below.



February 14, 2011

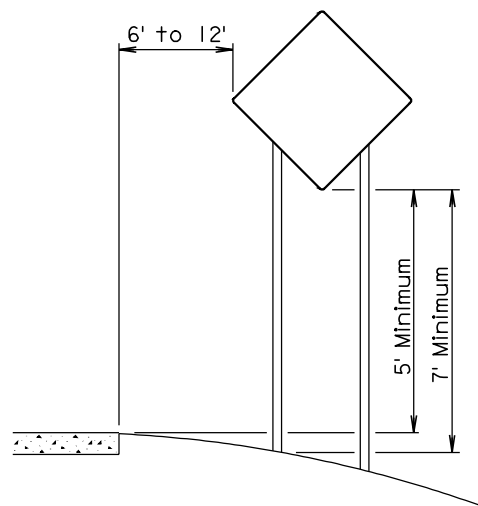
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GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

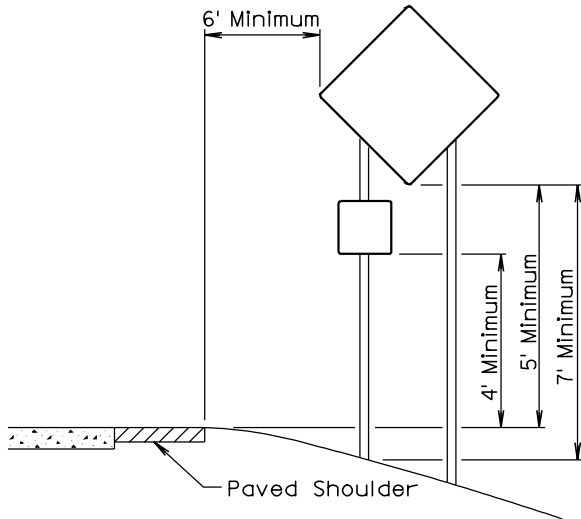
PLATE NUMBER
634.23

Sheet 1 of 1

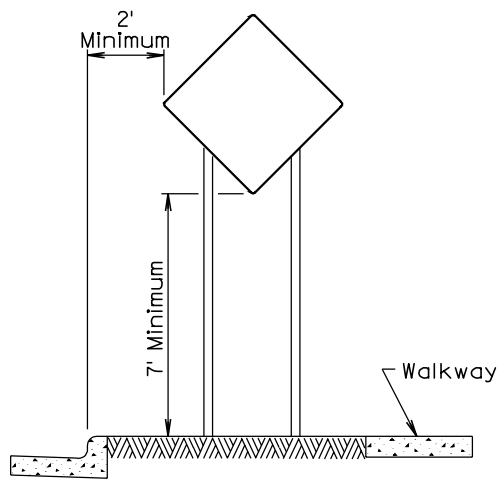
Published Date: 3rd Qtr. 2011



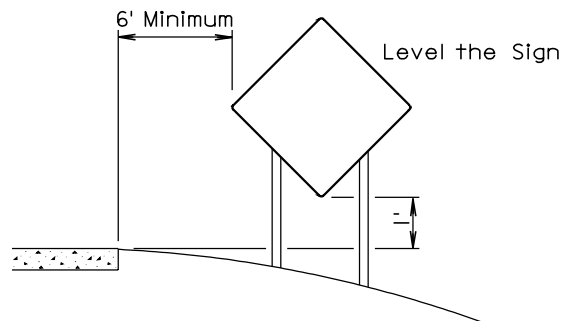
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT



RURAL DISTRICT
3 DAY MAXIMUM

February 14, 2011

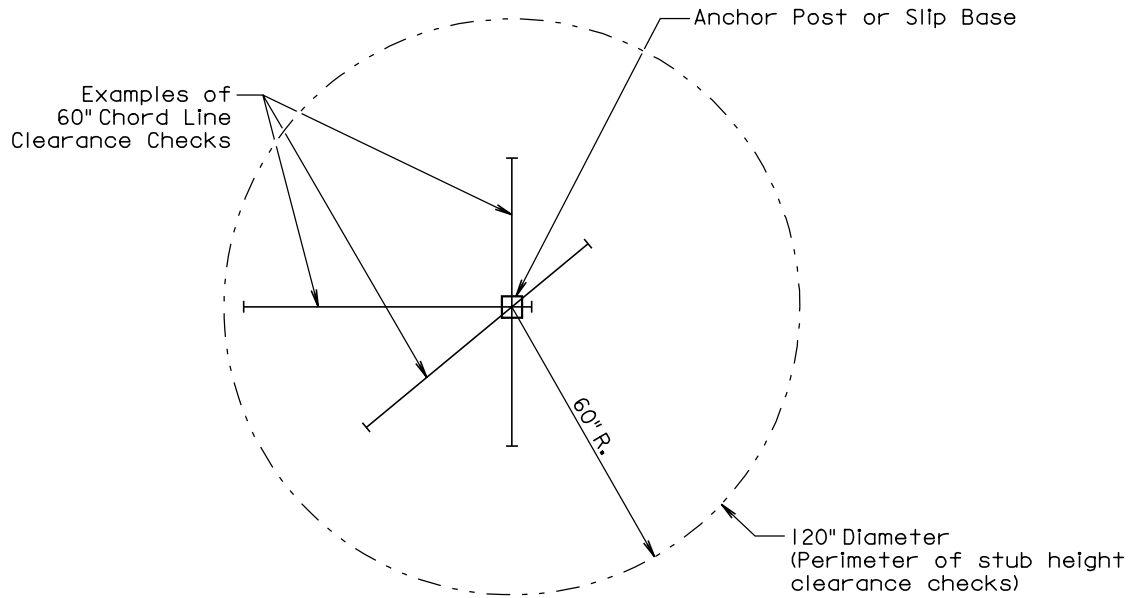
Published Date: 3rd Qtr. 2011

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CRASHWORTHY SIGN SUPPORTS
(Typical Construction Signing)

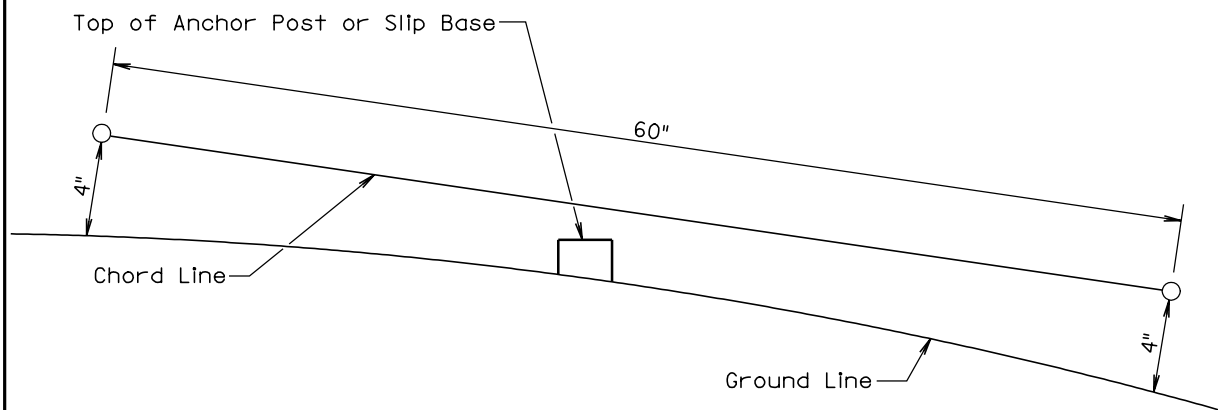
PLATE NUMBER
634.85

Sheet 1 of 1



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

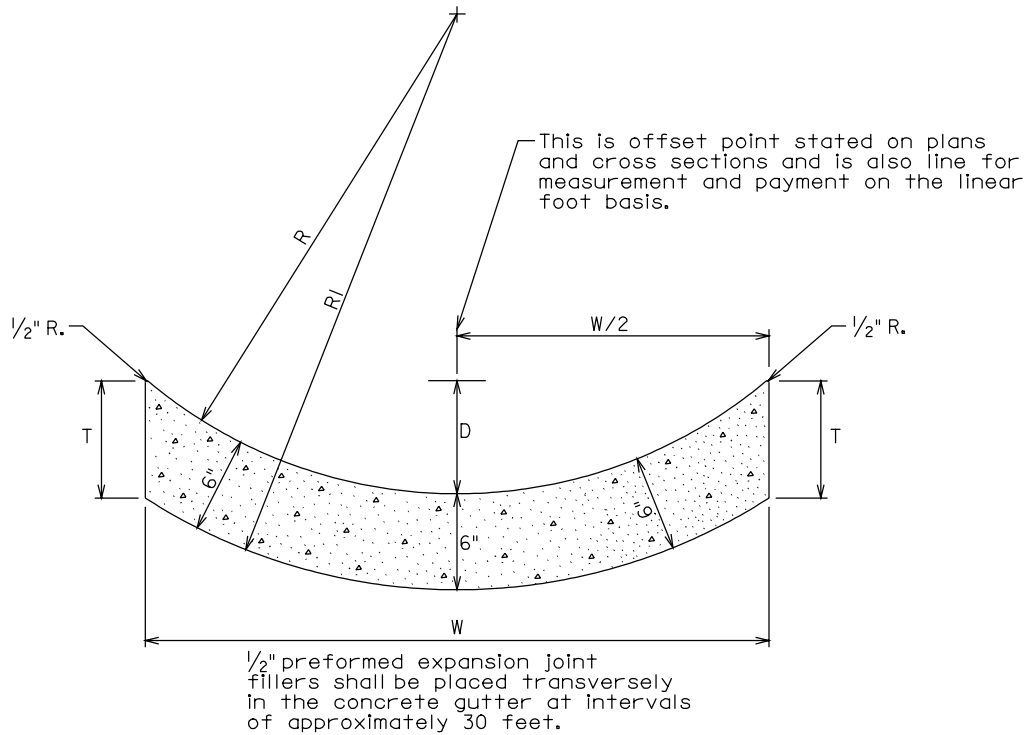
Published Date: 3rd Qtr. 2011

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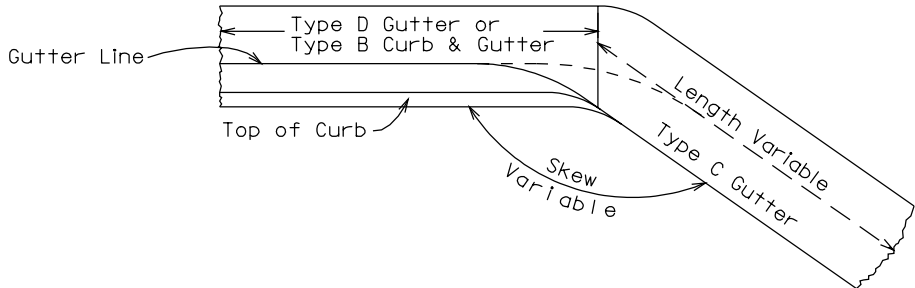
BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER
634.99

Sheet 1 of 1



Type	Gutter Depth D	Gutter Width W	Radius of Top of Gutter R	Radius of Bottom of Gutter RI	Vertical Depth of Concrete at Edges T	Cu. Yd. Per Lin. Foot	Lin. Ft. Per Cu. Yd.
C6	6"	30"	21 $\frac{3}{4}$ "	27 $\frac{3}{4}$ "	7 $\frac{5}{8}$ "	0.04982	20.1
C9	9"	48"	36 $\frac{1}{2}$ "	42 $\frac{1}{2}$ "	7 $\frac{5}{8}$ "	0.07966	12.6
C12	12"	72"	60"	66"	7 $\frac{3}{8}$ "	0.11828	8.5



Outlet end of Type D Gutter shall be warped in field to provide proper drainage into Type C Gutter without creating an excessive hump or dip at edge of driving surface.

GENERAL NOTE:

The concrete for the Type C Concrete Gutter shall comply with the requirements of the Standard Specifications for Class M6 Concrete.

March 31, 2000

Published Date: 3rd Qtr. 2011	S D D O T	TYPE C CONCRETE GUTTER	PLATE NUMBER 650.10
			Sheet 1 of 1

SPECIFICATIONS

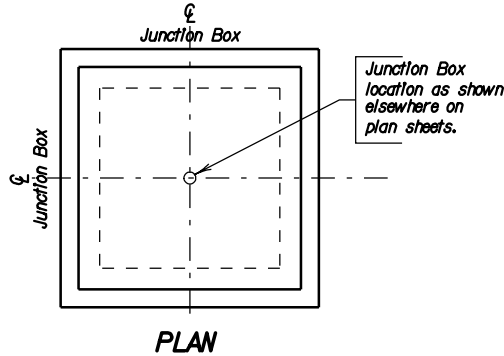
- Design Specifications: AASHTO Specifications for Highway Bridges, 1996 Edition (Service Load).
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications and/or Special Provisions as Included in the Proposal.

DESIGN MIX OF CONCRETE

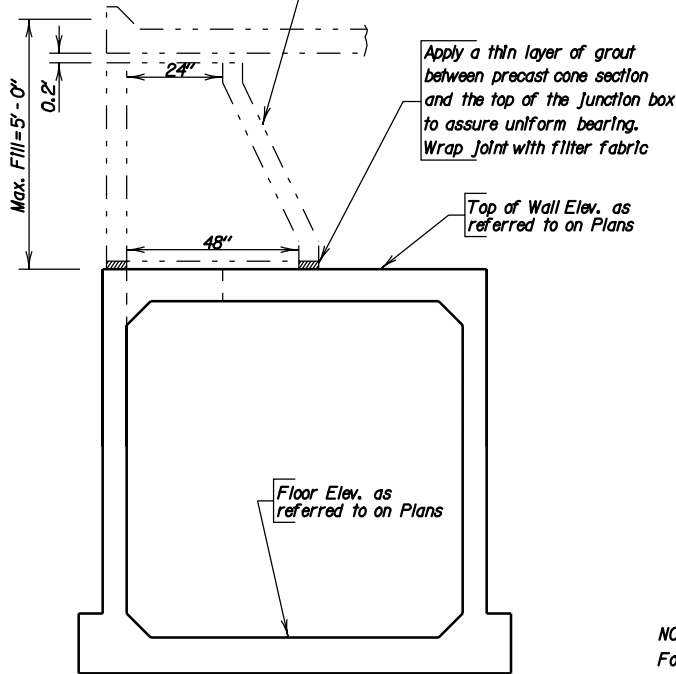
- Mix shall be designed to produce a concrete having a minimum compressive strength of 4000 p.s.i. at 28 days.
- Type II Cement is required.

GENERAL NOTES

- Design Live Load: HS 20-44 and Alternate Loading. No construction loading in excess of legal Load was considered.
- The design of the Junction box is based on a maximum fill over the Junction box of 5 feet.
- Unit Stresses: Concrete $f_c = 1600$ p.s.i.
Reinforcing Steel $f_s = 24000$ p.s.i.
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All exposed edges shall be chamfered $\frac{3}{4}$ ".
- Use 1" clear cover on all reinforcing steel except as shown.
- The cost of furnishing and installing the manhole steps shall be incidental to the contract unit prices per Lb. for "Reinforcing steel".
- Reinforcing steel shall be cut and bent in field as necessary to fit pipe and manhole openings. (Pipe openings are not shown in these details.) Number, size and location of pipes entering Junction box are shown elsewhere on plan sheets.
- All pipes entering the Junction box must fit between the inside faces of the walls.



△ Location, quantities and method of payment for precast eccentric manhole cone sections are shown elsewhere on plan sheets.



△ DETAIL OF CONNECTION BETWEEN PRECAST ECCENTRIC MANHOLE CONE SECTION AND JUNCTION BOX

ITEM	Class M6 Concrete	Reinforcing Steel
UNIT	Cu. Yd.	Lb.
H = 4'-0"	7.09	1506
H = 4'-6"	7.42	1541
H = 5'-0"	7.75	1622
H = 5'-6"	8.08	1657
H = 6'-0"	8.40	1692
H = 6'-6"	8.73	1773
H = 7'-0"	9.06	1808
H = 7'-6"	9.39	1843
H = 8'-0"	9.71	1924

NOTE:

For Informational purposes only, the estimated quantities for Junction Box height H are shown above. These quantities do not include quantity reduction for pipe openings, but do include the reduction for the 24" diameter manhole opening.

March 31, 2000

Published Date: 3rd Qtr. 2011

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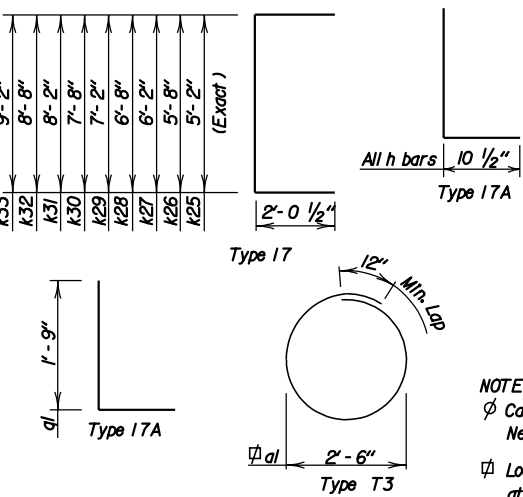
7' X 7' JUNCTION BOX

PLATE NUMBER
671.03

Sheet 1 of 3

REINFORCING SCHEDULE

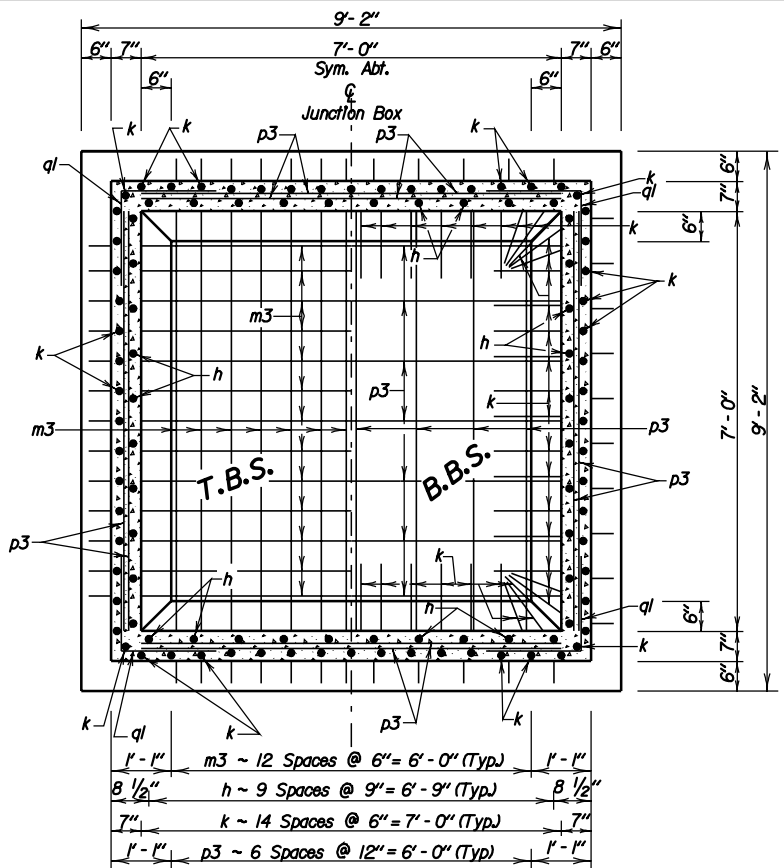
Mk.	No.	Size	Length	Type	Bending Details	Mk.	No.	Size	Length	Type
1	6	9'-0"	T3			1	6	9'-0"	T3	
2	4	-	-	-		2	7	-	-	-
25	40	4	5'-9"	17A		32	40	4	9'-3"	17A
25	64	4	9'-3"	17		32	64	4	12'-9"	17
3	26	6	8'-9"	Str.		3	26	6	8'-9"	Str.
3	26	6	7'-9"	Str.		3	26	6	7'-9"	Str.
3	60	4	7'-0"	Str.		3	76	4	7'-0"	Str.
1	8	4	3'-6"	17A		1	16	4	3'-6"	17A
1	6	9'-0"	T3			1	6	9'-0"	T3	
2	4	-	-	-		2	8	-	-	-
26	40	4	6'-3"	17A		33	40	4	9'-9"	17A
26	64	4	9'-9"	17		33	64	4	13'-3"	17
3	26	6	8'-9"	Str.		3	26	6	8'-9"	Str.
3	26	6	7'-9"	Str.		3	26	6	7'-9"	Str.
3	60	4	7'-0"	Str.		3	84	4	7'-0"	Str.
1	8	4	3'-6"	17A		1	20	4	3'-6"	17A
1	6	9'-0"	T3							
2	5	-	-	-						
27	40	4	6'-9"	17A						
27	64	4	10'-3"	17						
3	26	6	8'-9"	Str.						
3	26	6	7'-9"	Str.						
3	68	4	7'-0"	Str.						
1	12	4	3'-6"	17A						
1	6	9'-0"	T3							
2	5	-	-	-						
28	40	4	7'-3"	17A						
28	64	4	10'-9"	17						
3	26	6	8'-9"	Str.						
3	26	6	7'-9"	Str.						
3	68	4	7'-0"	Str.						
1	12	4	3'-6"	17A						
1	6	9'-0"	T3							
2	6	-	-	-						
29	40	4	7'-9"	17A						
29	64	4	11'-3"	17						
3	26	6	8'-9"	Str.						
3	26	6	7'-9"	Str.						
3	68	4	7'-0"	Str.						
1	12	4	3'-6"	17A						
1	6	9'-0"	T3							
2	6	-	-	-						
30	40	4	8'-3"	17A						
30	64	4	11'-9"	17						
3	26	6	8'-9"	Str.						
3	26	6	7'-9"	Str.						
3	76	4	7'-0"	Str.						
1	16	4	3'-6"	17A						
1	6	9'-0"	T3							
2	7	-	-	-						
31	40	4	8'-9"	17A						
31	64	4	12'-3"	17						
3	26	6	8'-9"	Str.						
3	26	6	7'-9"	Str.						
3	76	4	7'-0"	Str.						
1	16	4	3'-6"	17A						



NOTE:

- Cast Iron Manhole Steps (R - 1980 - C) from Neenah Foundry or equivalent.
- Locate in center of top slab with 3" clearance at manhole opening.

All dimensions are out to out of bars.



SEC. A-A

March 31, 2000

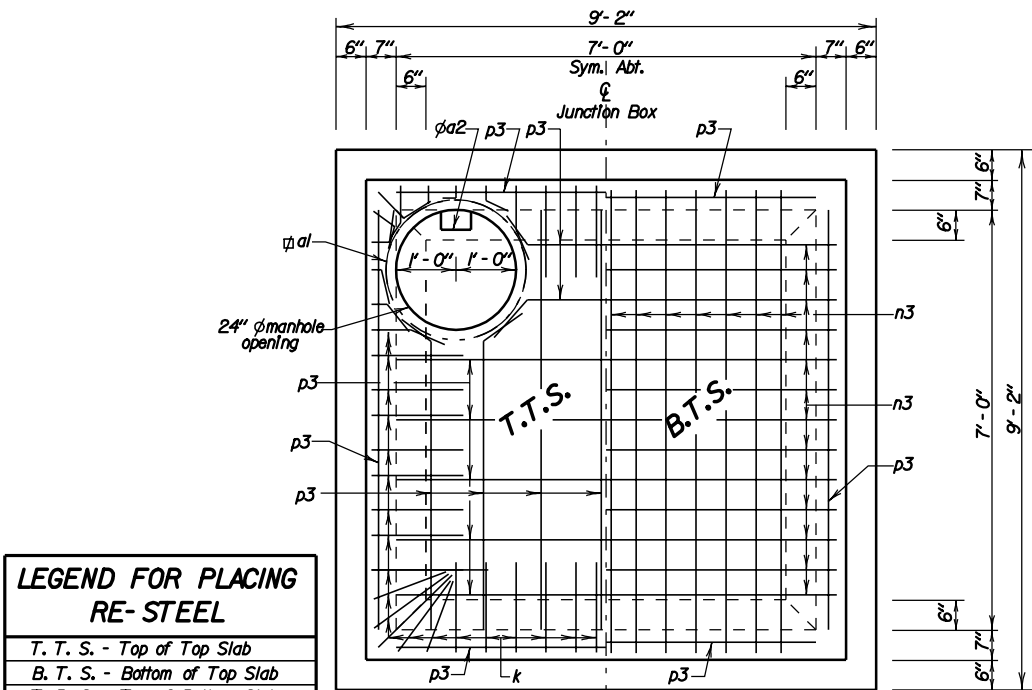
Published Date: 3rd Qtr. 2011

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7' X 7' JUNCTION BOX

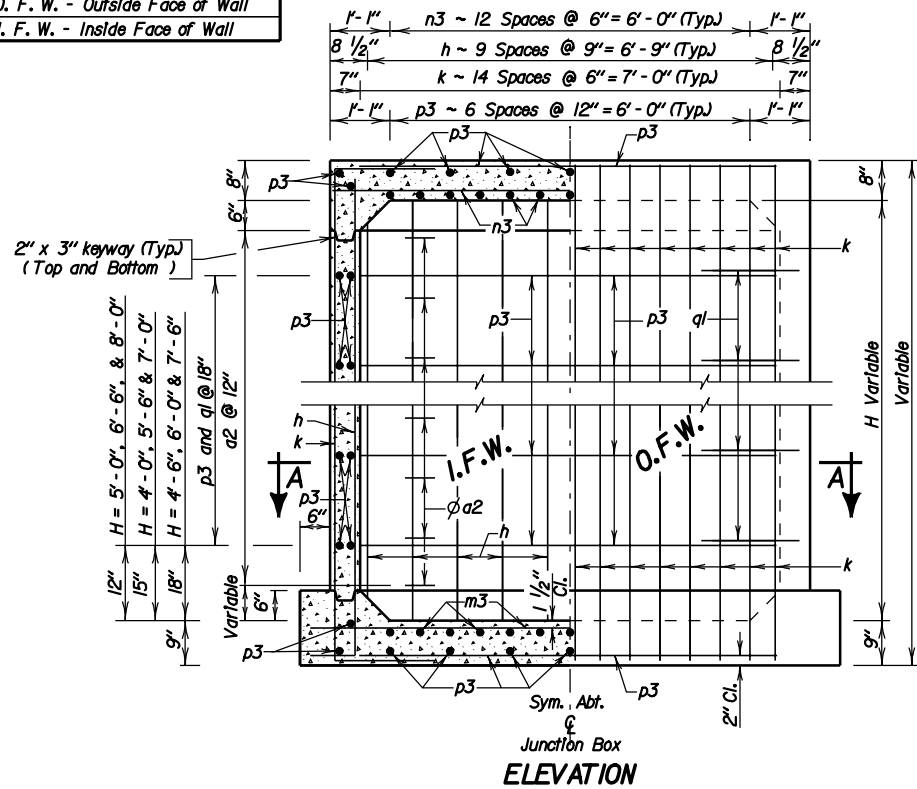
PLATE NUMBER
671.03

Sheet 2 of 3



LEGEND FOR PLACING RE-STEEL	
T. T. S. - Top of Top Slab	
B. T. S. - Bottom of Top Slab	
T. B. S. - Top of Bottom Slab	
B. B. S. - Bottom of Bottom Slab	
O. F. W. - Outside Face of Wall	
I. F. W. - Inside Face of Wall	

PLAN



ELEVATION

March 31, 2000

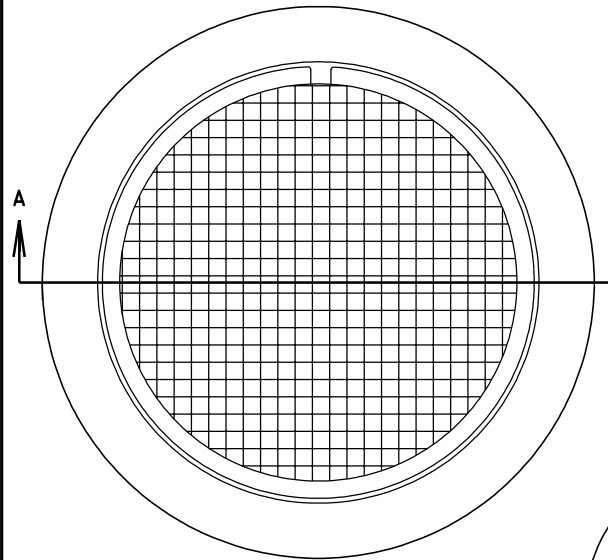
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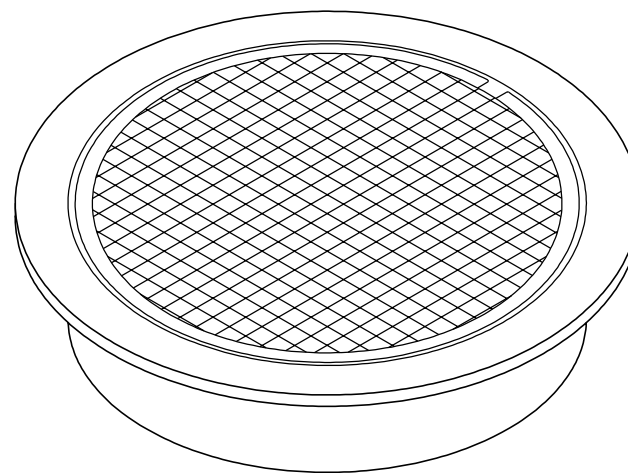
7' X 7' JUNCTION BOX

PLATE NUMBER
671.03

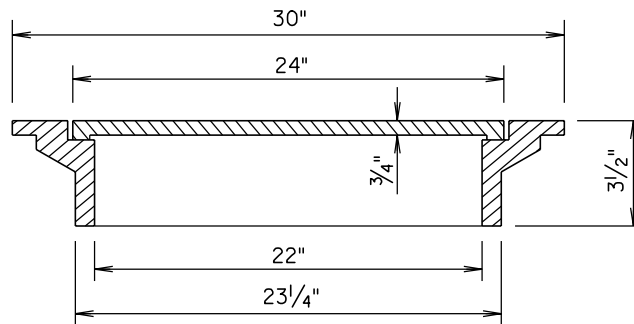
Sheet 3 of 3



PLAN VIEW



ASSEMBLED VIEW



SECTION A-A

GENERAL NOTE:

Total weight of the frame and lid shall be 140 Lbs. minimum.

March 31, 2000

Published Date: 3rd Qtr. 2011

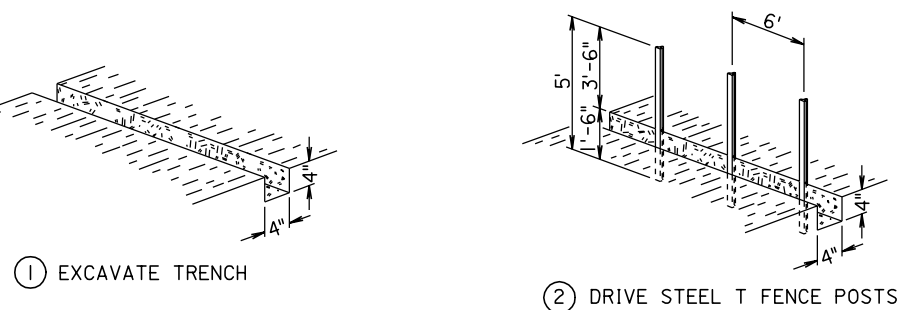
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TYPE S MANHOLE FRAME AND LID

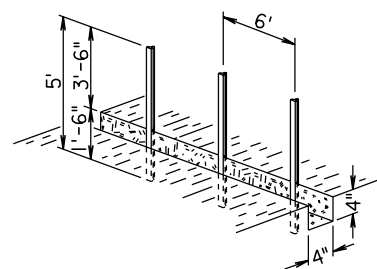
PLATE NUMBER
671.30

Sheet 1 of 1

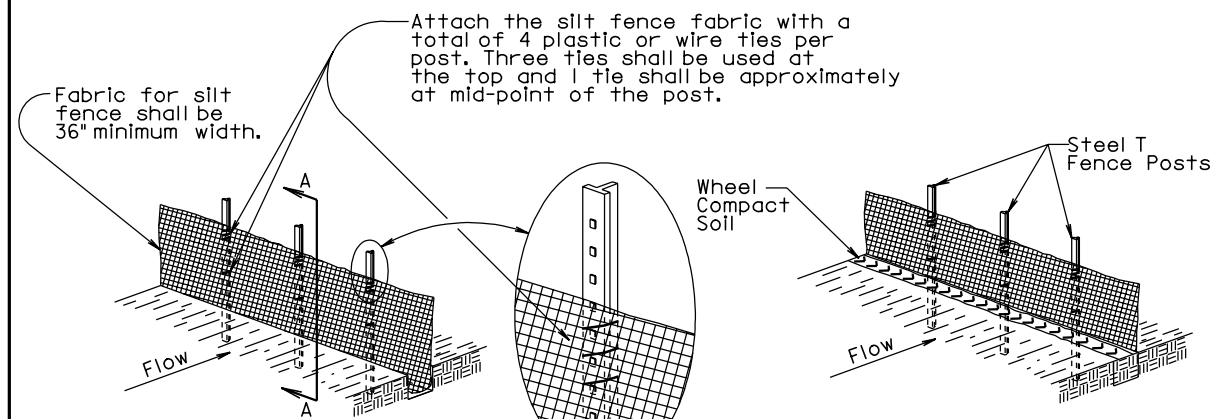
MANUAL HIGH FLOW SILT FENCE INSTALLATION



① EXCAVATE TRENCH

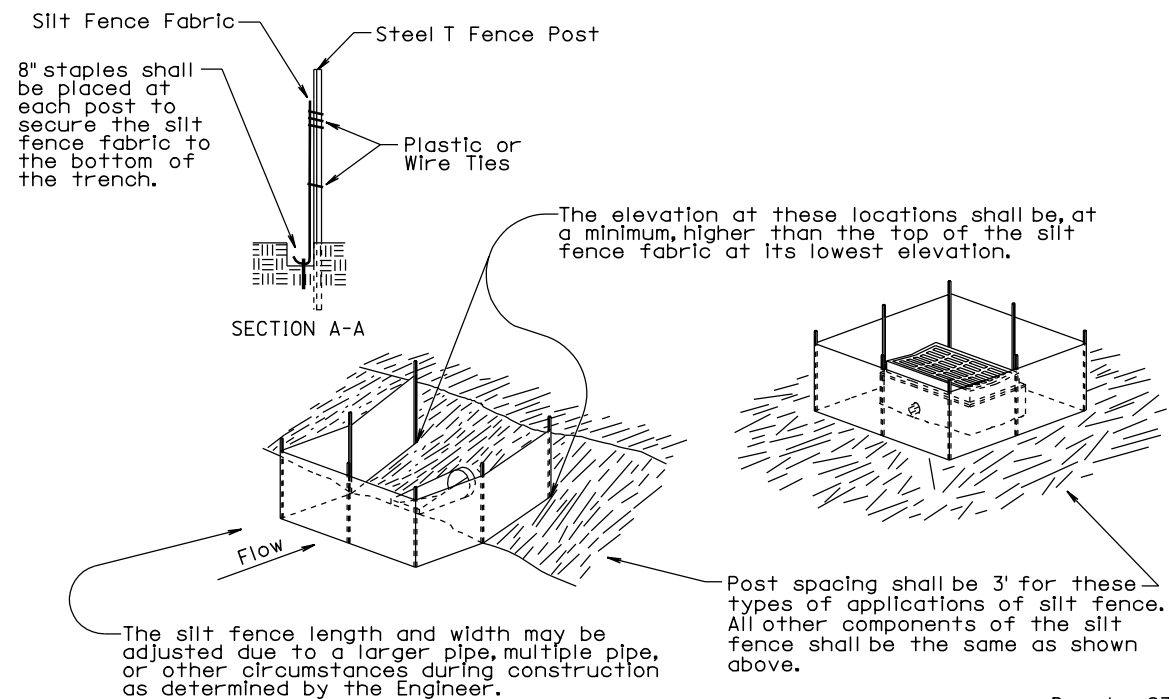


② DRIVE STEEL T FENCE POSTS



③ ATTACH SILT FENCE FABRIC

④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A

Post spacing shall be 3' for these types of applications of silt fence. All other components of the silt fence shall be the same as shown above.

The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

December 23, 2003

Published Date: 3rd Qtr. 2011

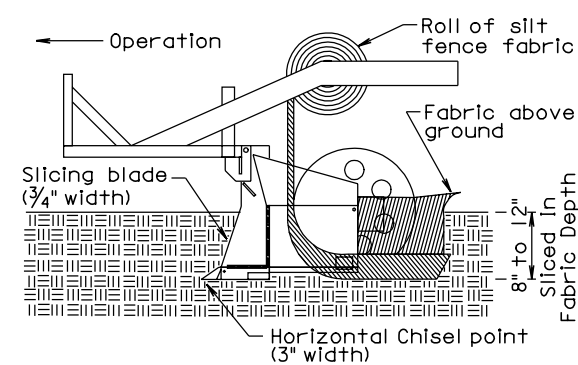
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HIGH FLOW SILT FENCE

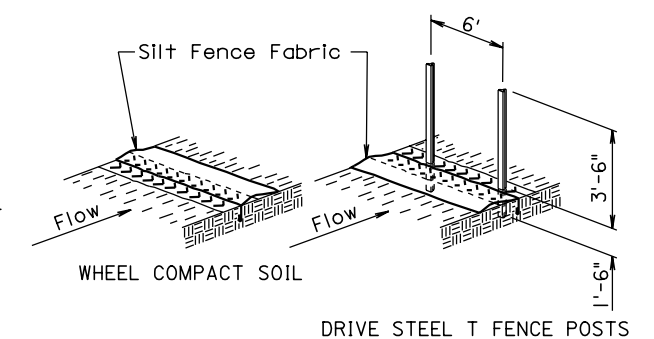
PLATE NUMBER
734.05

Sheet 1 of 2

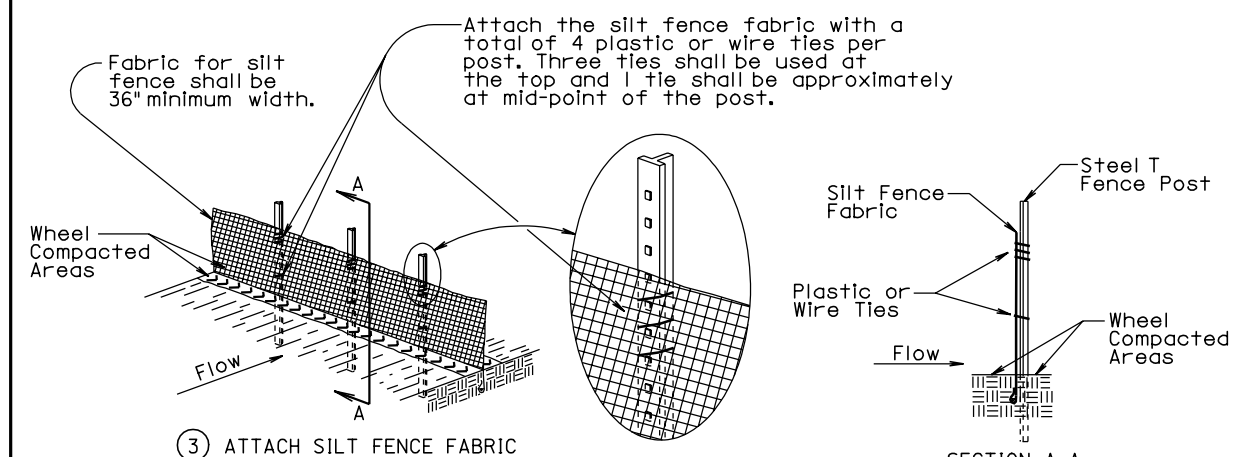
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

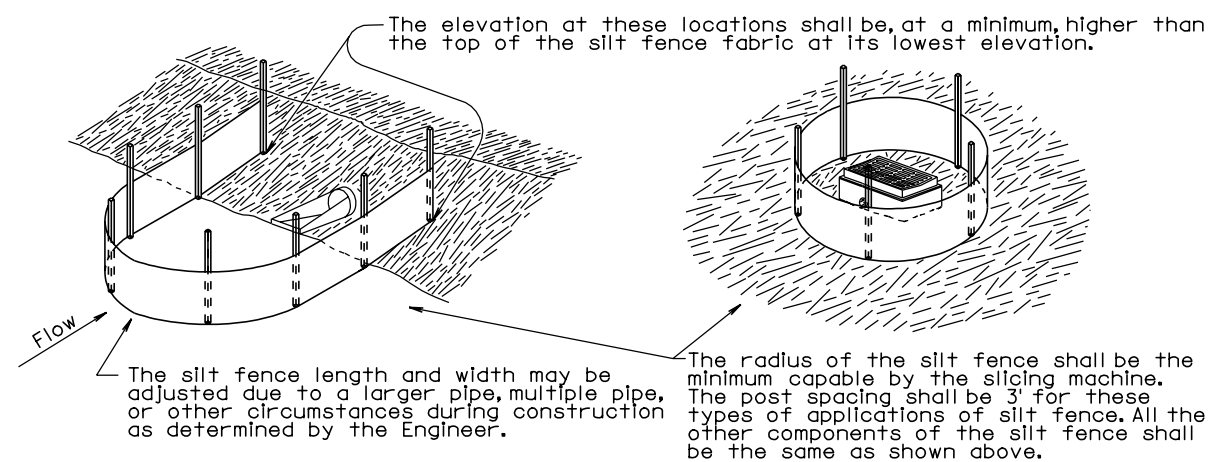


② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



③ ATTACH SILT FENCE FABRIC

SECTION A-A



GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

The radius of the silt fence shall be the minimum capable by the slicing machine. The post spacing shall be 3' for these types of applications of silt fence. All the other components of the silt fence shall be the same as shown above.

December 23, 2003

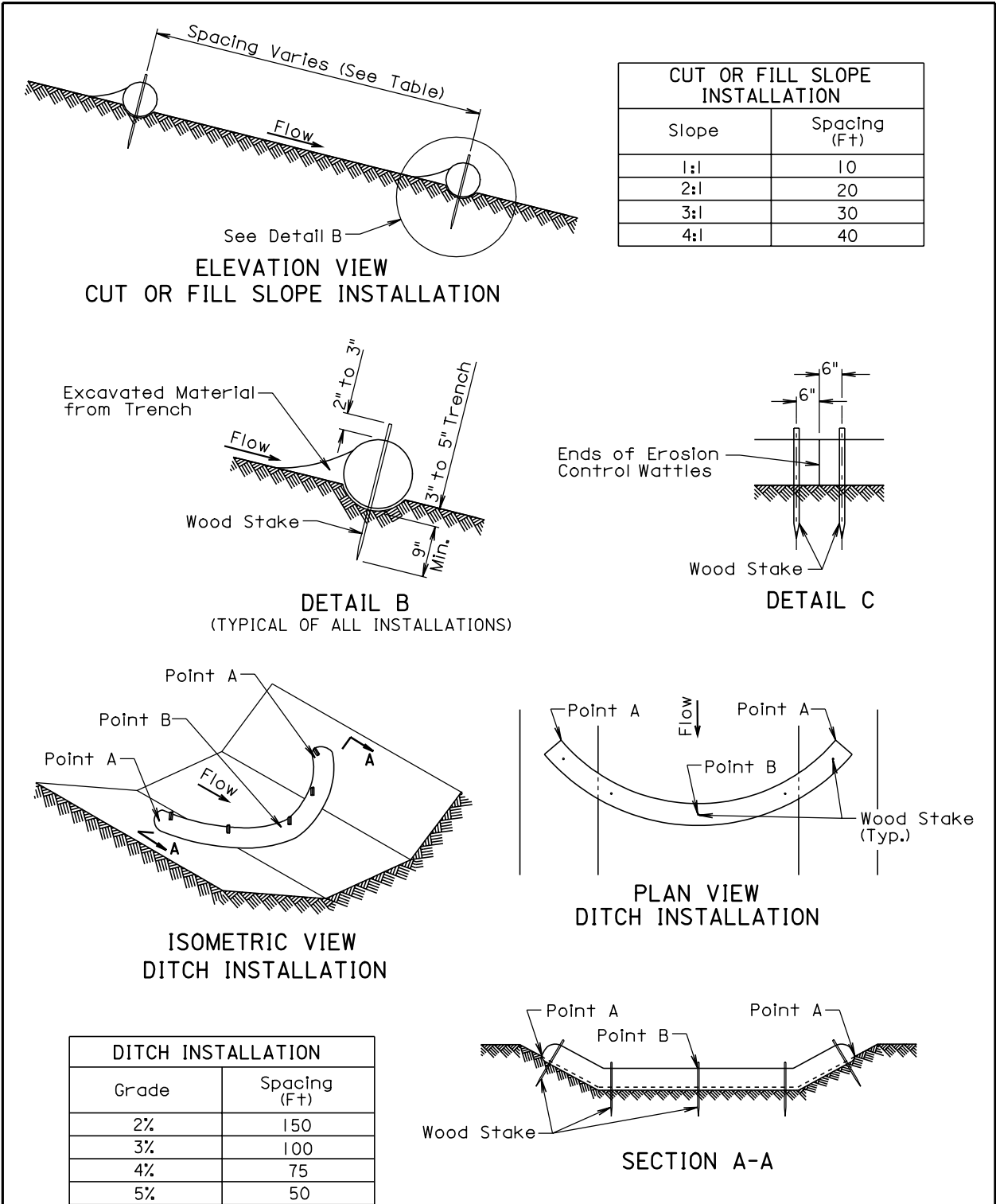
Published Date: 3rd Qtr. 2011

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HIGH FLOW SILT FENCE

PLATE NUMBER
734.05

Sheet 2 of 2



December 23, 2004

GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004