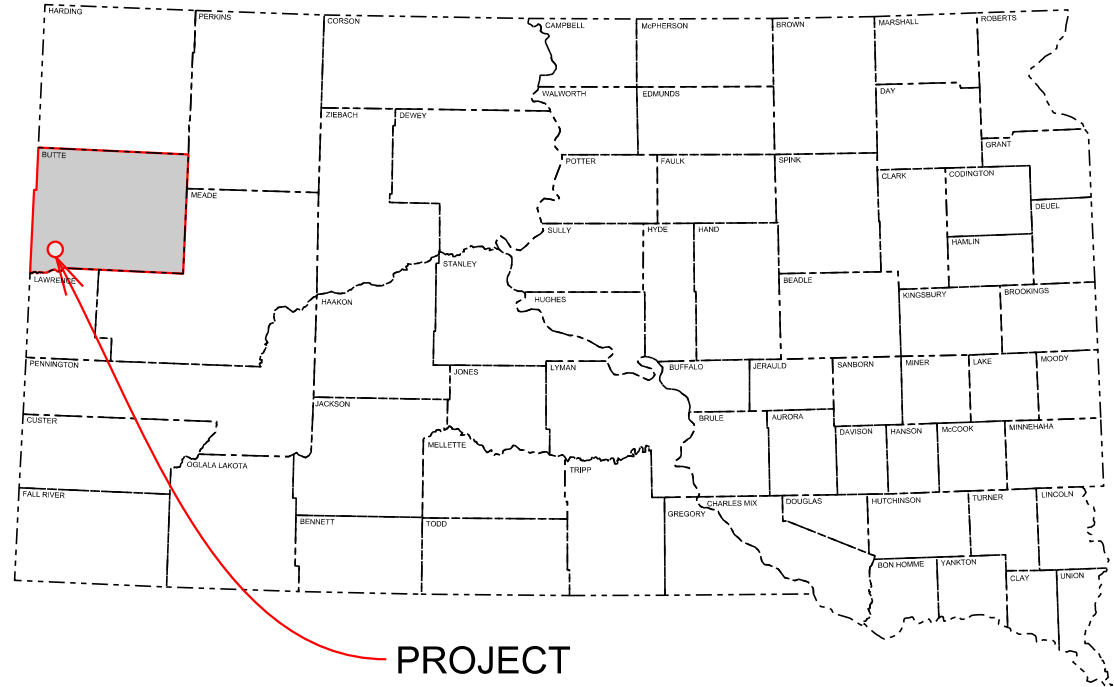


Plot Scale - 1:200

Plotted From - irrc11610



PROJECT

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECT 212-471
US HIGHWAY 212
BUTTE COUNTY
DRAINAGE REPAIR
PCN i49k

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	212-471	1	21

Plotting Date: 05/18/2016

INDEX OF SHEETS

- 1 General Layout with Index
- 2-5 Estimate With General Notes & Tables
- 6 Horizontal Alignment Data
- 7 Legend
- 8 Plan Sheet
- 9 Profile Sheet
- 10-15 Cross Sections
- 16 Pipe Sections
- 17-21 Standard Plates

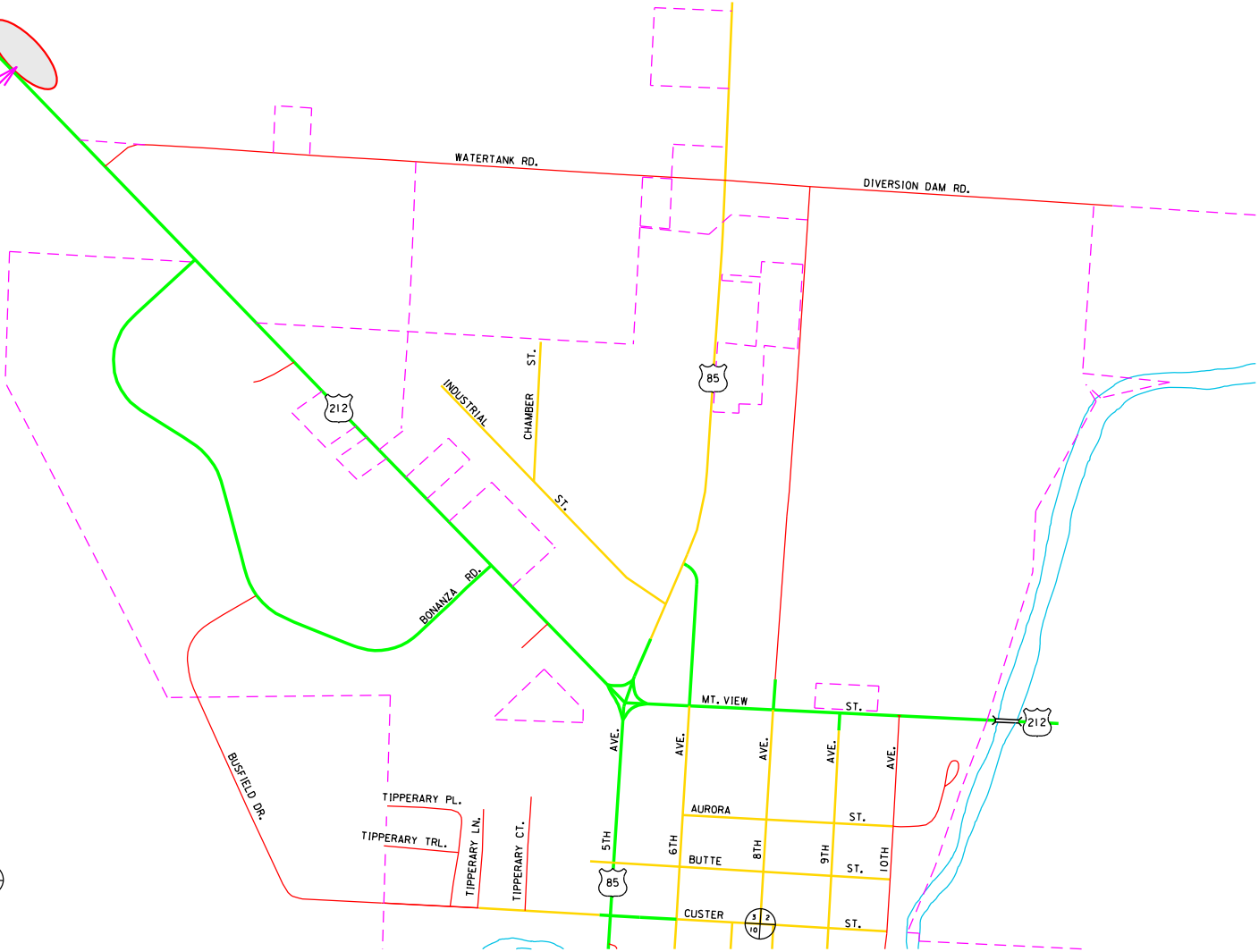
PROJECT 212-471
MRM 12.0 +0.36

DESIGN DESIGNATION

ADT (2015)	3984
ADT (2035)	4486
DHV	700
D	50 %
T DHV	8.1 %
T ADT	17.7 %
V	45 MPH

STORM WATER PERMIT

None Required



BELLE FOURCHE

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	212-471	2	21

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E4100	Reprofiling Ditch	2.8	Sta
230E0020	Contractor Furnished Topsoil	70	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E3010	Gravel Surfacing	52.0	Ton
450E4759	18" CMP 16 Gauge, Furnish	172	Ft
450E4760	18" CMP, Install	172	Ft
450E5406	18" CMP Safety End, Furnish	4	Each
450E5407	18" CMP Safety End, Install	4	Each
450E8900	Cleanout Pipe Culvert	1	Each
634E0110	Traffic Control Signs	74.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Board	1	Each
720E1015	Bank and Channel Protection Gabion	41.5	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	100	Ft

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for 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 Project 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 and/or 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 and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public 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 Public 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.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC 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 artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

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.

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

GRAVEL SURFACING

Included in the estimate of quantities is 26 ton of gravel surfacing per approach applied depth of 3” to the disturbed area.

CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 ⅔-inch X ½-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch X 1-inch or 5-inch X 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

The gauge of the corrugated metal ends shall match the thickest gauge of corrugated metal pipe it is connected to.

PIPE FOR APPROACHES

Class II reinforced concrete pipe, high density polyethylene pipe, corrugated polypropylene pipe, or steel reinforced polyethylene pipe may be substituted for corrugated metal pipe at approaches at no additional cost to the State.

If corrugated metal pipes are provided, the pipes shall be as specified in the CORRUGATED METAL PIPE note.

If high density polyethylene pipe, corrugated polypropylene pipe, or steel reinforced polyethylene pipe are provided, then the end sections shall be metal, be compatible, and conform to the type of end section as shown in the plans.

TABLE OF PIPE

		Corrugated Metal	Circular
		18”	Safety End
		16 Ga	18”
Station		(Ft)	(Each)
650+77	L	94	2
652+30	L	78	2
Totals:		172	4

REMOVE AND REPLACE TOPSOIL

Topsoil shall also be salvaged and stockpiled prior to reprofiling the ditch area(s). Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil shall be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 70 CuYd.

All costs associated with removing and replacing the topsoil in areas to be reprofiled shall be incidental to the contract lump sum price for “Remove and Replace Topsoil”.

REPROFILING DITCH

The Contractor shall reprofile the ditch to restore drainage into/out of the approach pipes, between the concrete gutter, the approach pipe and existing to the mainline cross pipe to ensure positive drainage. The work will require removing sedimentation along with placing the removed material where areas need material to fill in erosion. Placement and location of the cleanout material shall be approved by the Engineer.

All cost associated with reshaping the existing ditch including labor, excavation, placing material, equipment, and incidentals shall be paid for at the contract unit price per station for “Reprofiling Ditch”. Payment will be plans quantity and no field measurement will be required.

TABLE OF REPROFILING DITCH

Station	to	Station	L/R	Quantity (Sta)
649+00		650+24	L	1.24
651+25		651+86	L	0.61
652+70		653+61	L	0.91
Total:				2.76

CLEAN OUT PIPE CULVERT

The mainline 24” RCP at Sta. 649+60 shall be cleaned such that the bottom of the pipe is visible throughout its length to re-establish the flow line.

It is the responsibility of the Contractor to visit the site to determine the method and extent of culvert cleaning work required.

Wattles shall be used to catch any pipe cleanout material from leaving the projects limits. Placement of the wattles shall be as directed by the Engineer.

Cleaning method shall be approved by the Engineer. The culvert shall be cleaned to the satisfaction of the Engineer. The Contractor shall be responsible for repairing any damage caused by the cleaning process. These repairs, if required, shall be the responsibility of the Contractor.

All sediment and debris removed from the culvert shall be disposed of as waste. The Contractor shall shape the area of the culvert ends to restore ditch flow. All costs associated with cleaning out the existing culvert, the removal of debris and shaping of the outlet shall be incidental to the contract unit price per each for “Cleanout Pipe Culvert”.

TABLE OF BANK AND CHANNEL PROTECTION GABIONS

		Bank and Channel Protection Gabion (CuYd)
Station	L/R	
649+00 to 650+29	L	21.5
651+25 to 651+96	L	12.0
652+53 to 653+01	L	8.0
Totals:		41.5

CONTRACTOR FURNISHED TOPSOIL

It is anticipated that a larger volume of topsoil will be needed for the reprofiled ditch area than can be salvaged from the existing grade. The Contractor will be required to furnish and place 2 inches of topsoil on the reprofiled ditch area and areas as determined by the Engineer during construction.

Contractor furnished topsoil shall be free from clay lumps, stones, coarse gravel, or similar objects larger than 1/2 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, litter, or any other material which may be harmful to plant growth will not be allowed. Organic material shall be decomposed.

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

EROSION CONTROL

The estimated area requiring erosion control is 11,327 square feet (0.26 acres). All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, fertilizing, and fiber mulching shall be incidental to the contract lump sum price for “Erosion Control”.

The limits of erosion control work will be determined by the Engineer during construction.

Mycorrhizal Inoculum

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract lump sum price for “Erosion Control”.

The mycorrhizal inoculum shall be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 http://www.mycorrhizae.com/

EROSION CONTROL (Cont.)

Fertilizing

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer shall have a minimum guaranteed analysis of 4-6-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 3.2%, a minimum of 6% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer shall be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer shall have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer shall also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer shall be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer’s recommended method of application.

The all-natural slow release fertilizer shall be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 http://www.sustane.com/

Permanent Seeding

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, 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

EROSION CONTROL (Cont.)

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 approved product list. 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 3,000 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 lump sum price for “Erosion Control”.

The fiber mulch provided shall be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

Table of Fiber Mulching
(For Information Only)

Station	to	Station	L/R	Quantity (Lb)
649+51		650+57	L	243
650+98		652+09	L	268
652+47		653+04	L	150
Total:				661

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 Standard Plate 734.06 for details.

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

Erosion control wattles shall remain on the project to decompose.

An additional quantity of 12” 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 flow silt fence at the pipe cleanout area adjacent to the highway.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

TABLE OF EROSION CONTROL WATTLE

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
649+60	L	12	Pipe Inlet	20
650+98	L	12	Pipe Inlet	20
652+62	L	12	Pipe Inlet	20
			Additional Quantity:	40
			Total:	100

TRAFFIC CONTROL – GENERAL NOTES

Pipe installation shall be done one approach at a time and be backfilled and gravel surfaced to roadway elevation before opening the approach.

At the end of each day’s work all traffic, control devices shall be pulled off the roadway and taken down and traffic shall be opened to two lanes. Applicable signing shall remain in place, i.e. “Road Work Ahead” etc.

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 one week prior to potential implementation.

Unless otherwise stated in these plans, no work will be allowed during hours of darkness.

Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.

All non-applicable existing signing and temporary traffic control devices shall be covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 48 hours. The cost of removing or covering non-applicable signs and temporary traffic control devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.

All construction operations shall be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD – whichever is more stringent shall be used, as determined by the Engineer.

Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5’ spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

TABLE OF TRAFFIC CONTROL DEVICES

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16	16
W20-1	ROAD WORK AHEAD	2	48" x 48"	16	32
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16	16
G20-2	END ROAD WORK	2	36" x 18"	5	10
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		74			

HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	212-471	6	21

MAINLINE				Type	Station	Northing	Easting
				POB	648+66.96	337365.757	962290.849
				POE	654+41.99	336950.299	962688.409

TL= 575.03 S 43°44'20" E

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/xx); epoch 20 xx.xx; Geoid xxx; SF = 0.xxxxxxxxxx

Plot Scale - 1:200

Plotted From - Irrc11610

LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	212-471	7	21

Plotting Date: 05/18/2016

Anchor		Hedge		Shrub Tree		State and National Line	
Antenna		Highway R.O.W. Marker		Sidewalk		County Line	
Approach		Interstate Close Gate		Sign Face		Section Line	
Assumed Corner		Iron Pin		Sign Post		Quarter Line	
Azimuth Marker		Irrigation Ditch		Slough Or Marsh		Sixteenth Line	
BBQ Grill/ Fireplace		Lake Edge		Spring		Property Line	
Bearing Tree		Lawn Sprinkler		Stream Gauge		Construction Line	
Bench Mark		Mailbox		Street Marker		R. O. W. Line	
Box Culvert		Manhole Electric		Subsurface Utility Exploration Test Hole		New R. O. W. Line	
Bridge		Manhole Gas		Telephone Fiber Optics		Cut and Fill Limits	
Brush		Manhole Misc		Telephone Junction Box		Control of Access	
Buildings		Manhole Sanitary Sewer		Telephone Pole		New Control of Access	
Bulk Tank		Manhole Storm Sewer		Television Cable Jct Box		Proposed ROW	
Cattle Guard		Manhole Telephone		Television Tower		(After Property Disposal)	
Cemetery		Manhole Water		Test Wells/Bore Holes			
Centerline		Merry-Go-Round		Traffic Signal			
Cistern		Microwave Radio Tower		Trash Barrel		Drainage Arrow	
Clothes Line		Misc. Line		Tree Belt			
Commercial Sign Double Face		Misc. Property Corner		Tree Coniferous			
Commercial Sign One Post		Misc. Post		Tree Deciduous		Remove Concrete Pavement	
Commercial Sign Overhead		Overhang Or Encroachment		Tree Stumps		Remove Concrete Driveway Pavement	
Commercial Sign Two Post		Overhead Utility Line		Triangulation Station		Remove Asphalt Concrete Pavement	
Concrete Symbol		Parking Meter		Underground Electric Line		Remove Concrete Sidewalk	
Creek Edge		Pipe With End Section		Underground Gas Line		Remove Concrete Approach Pavement	
Curb/Gutter		Pipe With Headwall		Underground High Pressure Gas Line		Remove Concrete Median Pavement	
Curb		Pipe Without End Section		Underground Sanitary Sewer		Remove Concrete Curb	
Dam Grade/Dike/Levee		Playground Slide		Underground Storm Sewer		Remove Concrete Curb and Gutter	
Deck Edge		Playground Swing		Underground Tank		Remove Concrete Gutter	
Ditch Block		Power And Light Pole		Underground Telephone Line			
Doorway Threshold		Power And Telephone Pole		Underground Television Cable			
Drainage Profile		Power Meter		Underground Water Line			
Drop Inlet		Power Pole		Warning Sign One Post			
Edge Of Asphalt		Power Pole And Transformer		Warning Sign Two Post			
Edge Of Concrete		Power Tower Structure		Water Fountain			
Edge Of Gravel		Propane Tank		Water Hydrant			
Edge Of Other		Property Pipe		Water Meter			
Edge Of Shoulder		Property Pipe With Cap		Water Tower			
Elec. Trans./Power Jct. Box		Property Stone		Water Valve			
Environmental Sensitive Site		Public Telephone		Water Well			
Fence Barbwire		Railroad Crossing Signal		Weir Rock			
Fence Chainlink		Railroad Milepost Marker		Windmill			
Fence Electric		Railroad Profile		Wingwall			
Fence Misc.		Railroad R.O.W. Marker		Witness Corner			
Fence Rock		Railroad Signs					
Fence Snow		Railroad Switch					
Fence Wood		Railroad Track					
Fence Woven		Railroad Trestle					
Fire Hydrant		Rebar					
Flag Pole		Rebar With Cap					
Flower Bed		Reference Mark					
Gas Valve Or Meter		Regulatory Sign One Post					
Gas Pump Island		Regulatory Sign Two Post					
Grain Bin		Retaining Wall					
Guardrail		Riprap					
Guide Sign One Post		River Edge					
Guide Sign Two Post		Rock And Wire Baskets					
Gutter		Rockpiles					
Guy Pole		Satellite Dish					
Haystack		Septic Tank					
						Detectable Warning	
						Pedestrian Push Button Pole	
						and 30" x 48" Clear Space	
						with 1.5% slope	

Plot Scale - 1"=40'

Plotted From - Irrc11610

Reprofile Ditch at the following locations:
649+00 L to 650+24 L
651+25 L to 651+86 L
652+70 L to 653+61 L

650+77 - 65.5'L
Install 18" - 94' CMP
& 2 Safety Ends

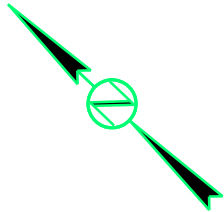
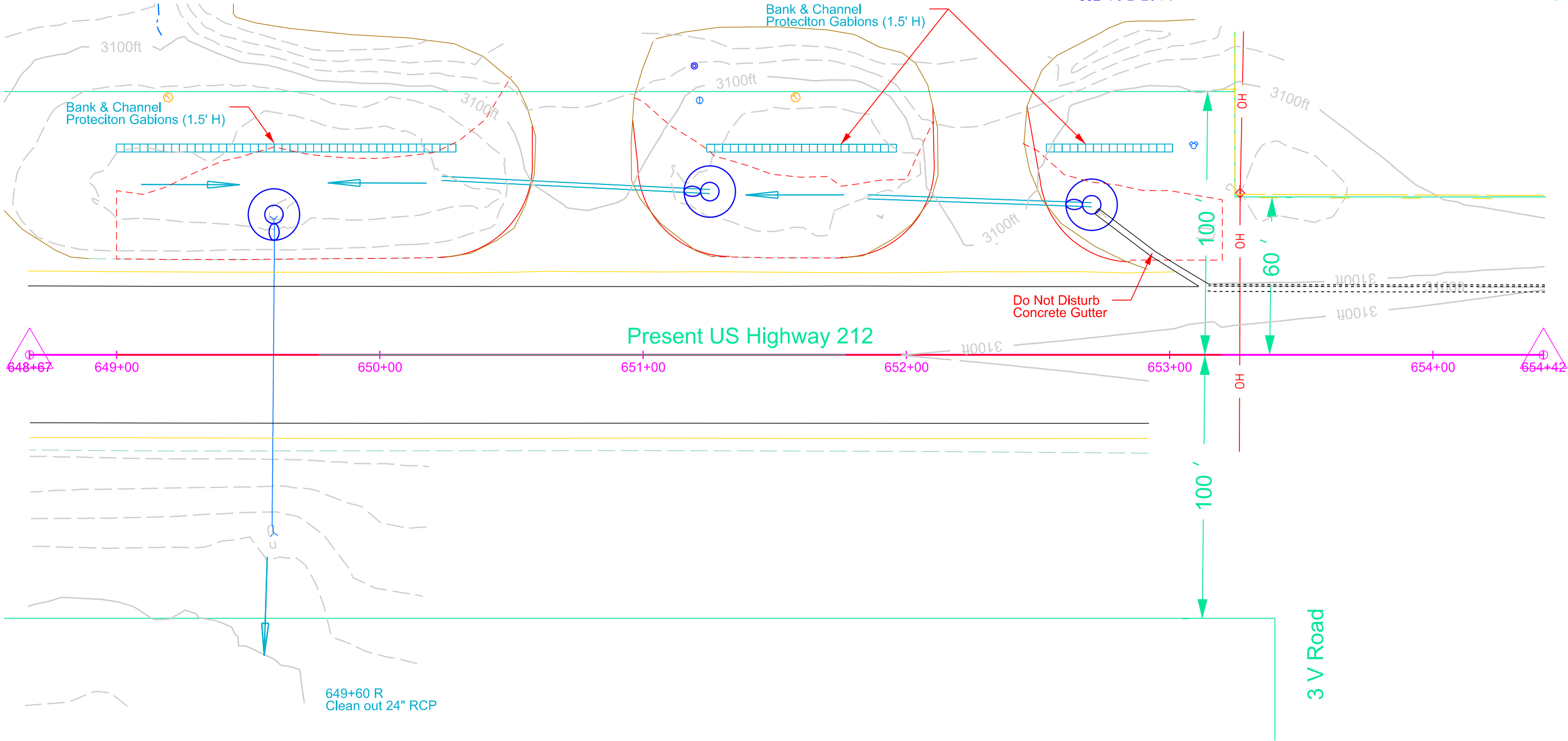
652+30 - 57.5'L
Install 18" - 78' CMP
& 2 Safety Ends

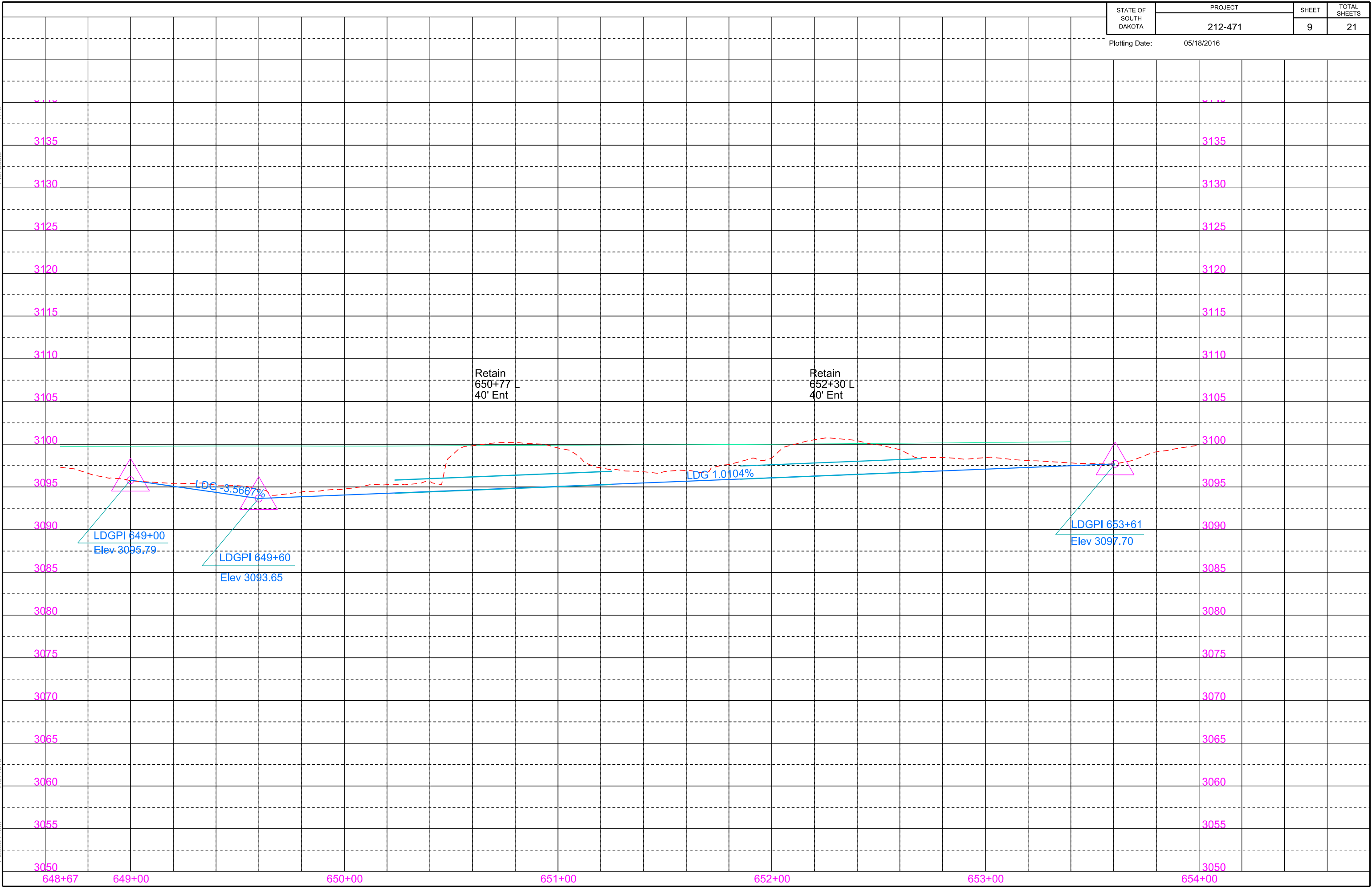
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	212-471	8	21

Plotting Date: 05/18/2016

Install Bank & Channel
Protection Gabions (1.5' H)
at the following locations:
649+00 - 77' L to 650+29 - 77' L (21.5 CuYd)
651+25 - 77' L to 651+96 - 77' L (12 CuYd)
652+53 - 77' L to 653+01 - 77' L (8 CuYd)

Install 12" Diameter Erosion Control
Wattles around pipe inlets
at the following locations:
649+60 L 20 Ft
651+25 L 20 Ft
652+70 L 20 Ft



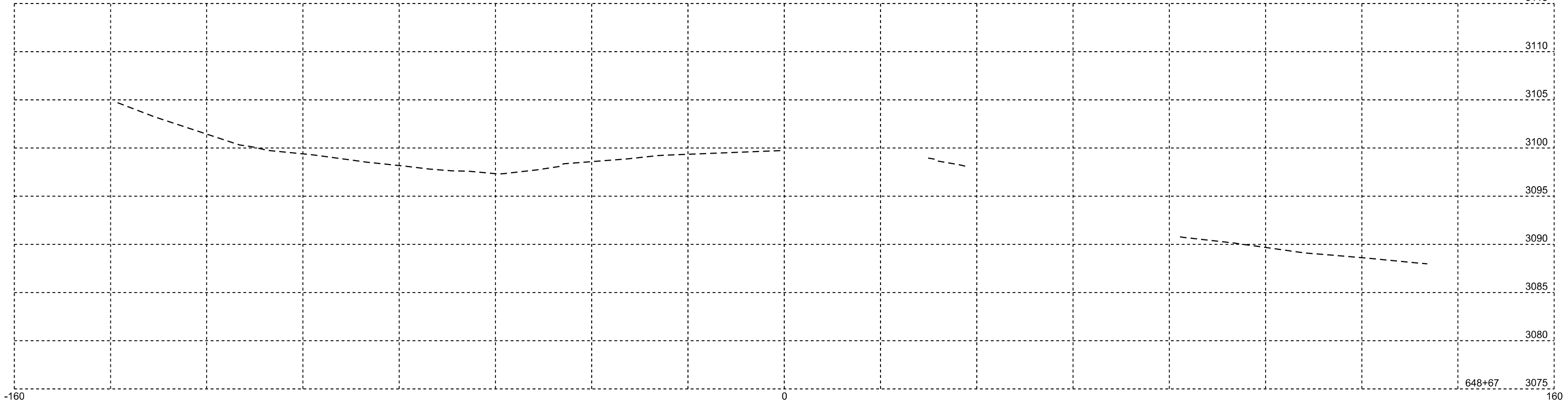
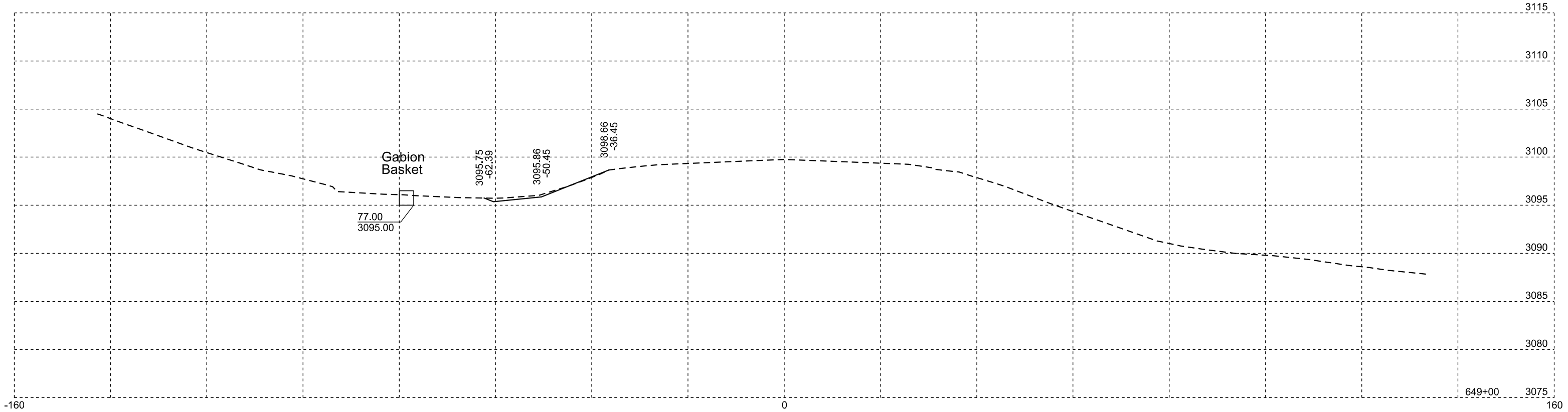


Plot Scale - 1:40

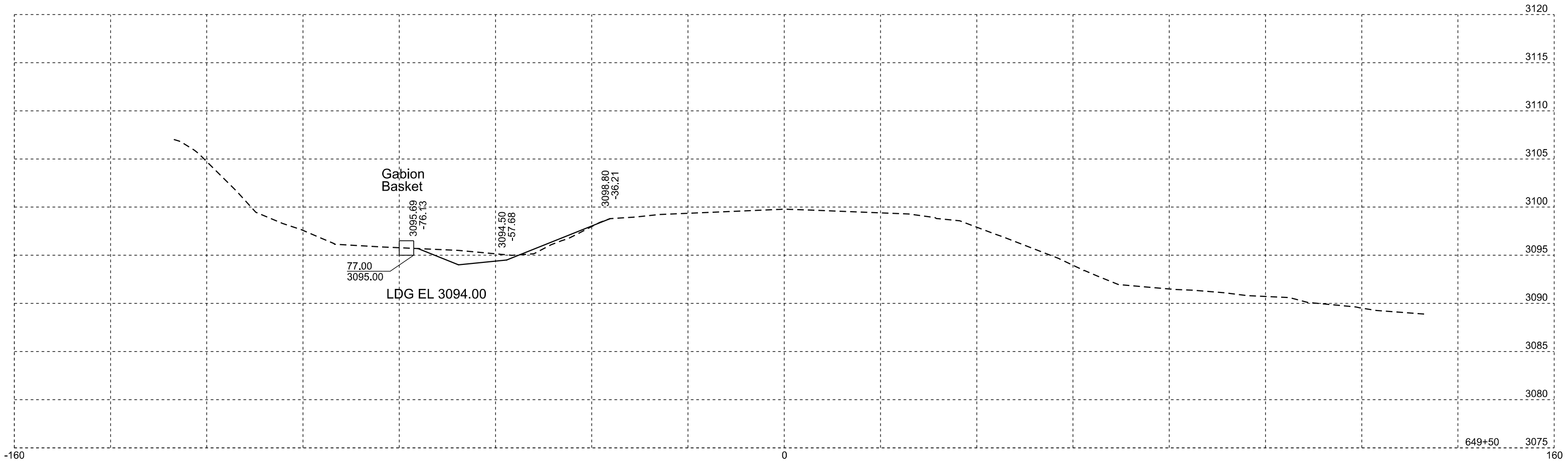
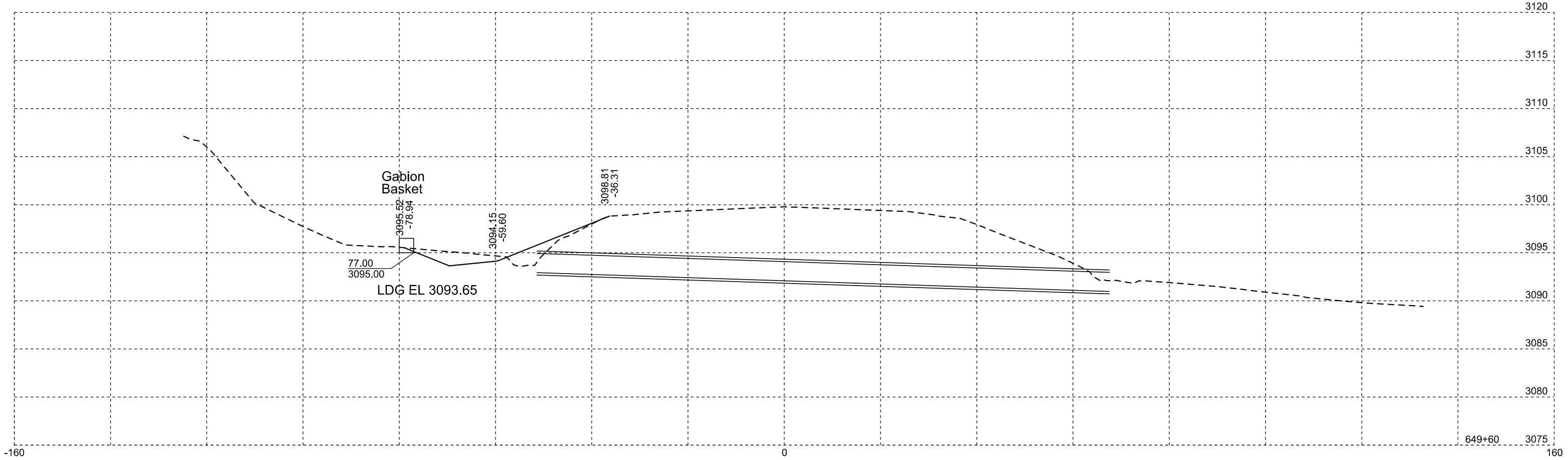
Plotted From - Irc11610

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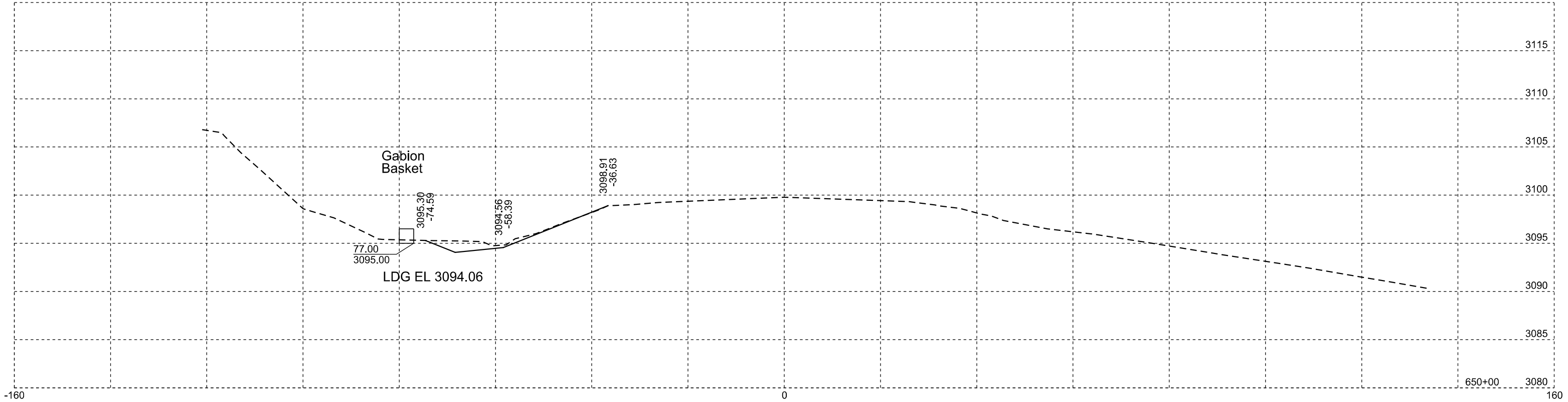
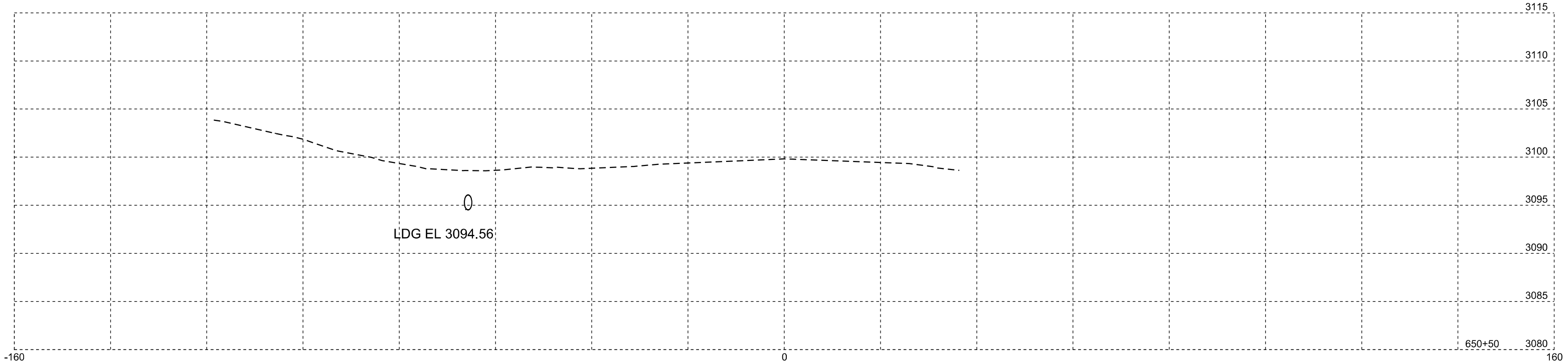
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	212-471	10	21



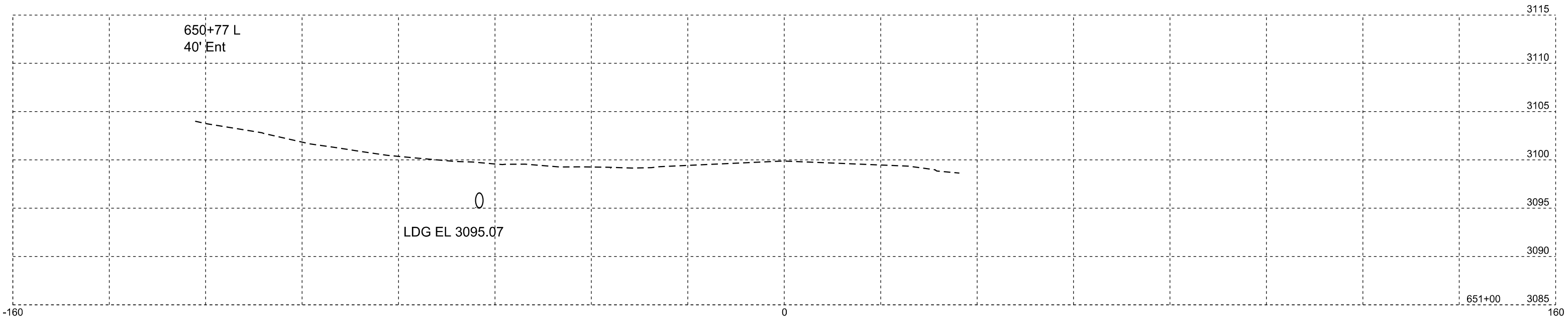
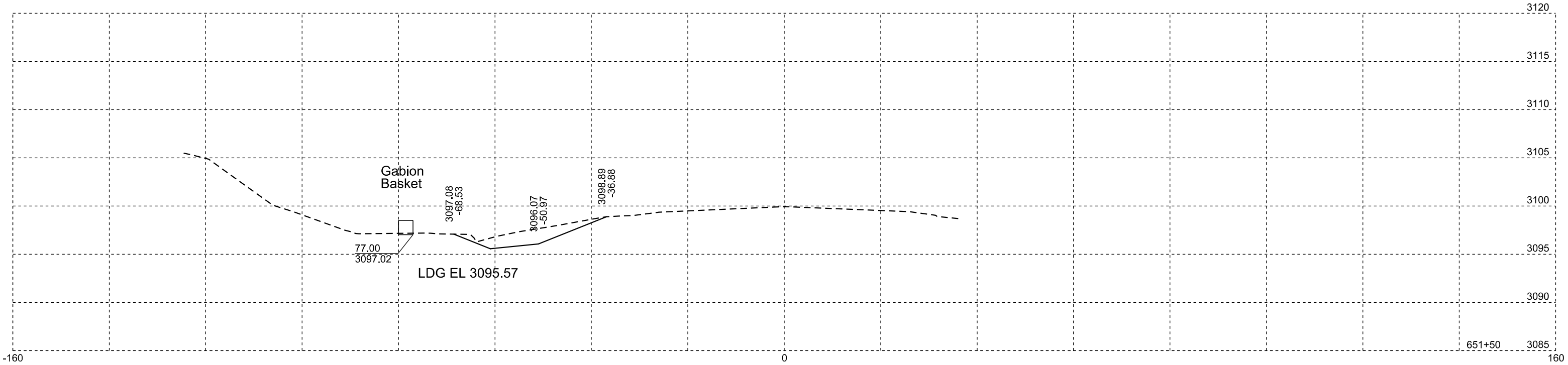
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	212-471	11	21



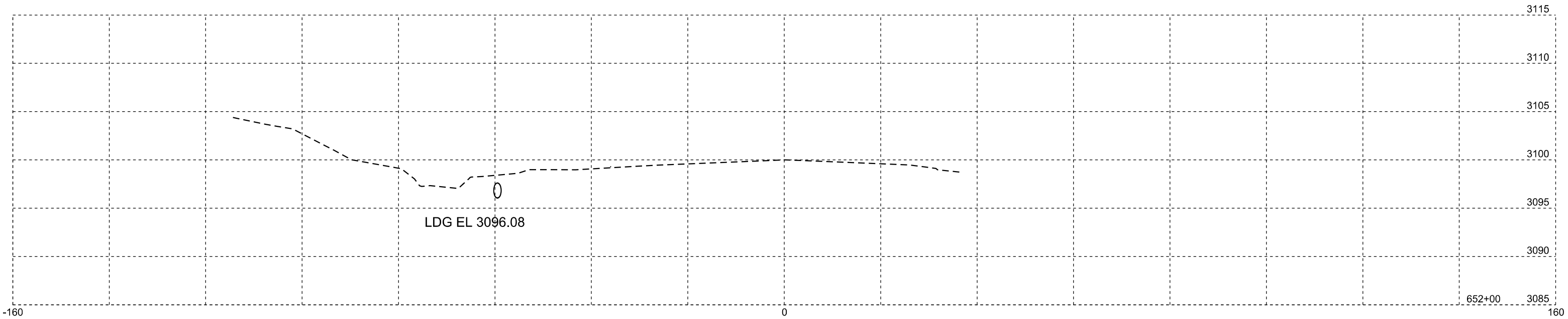
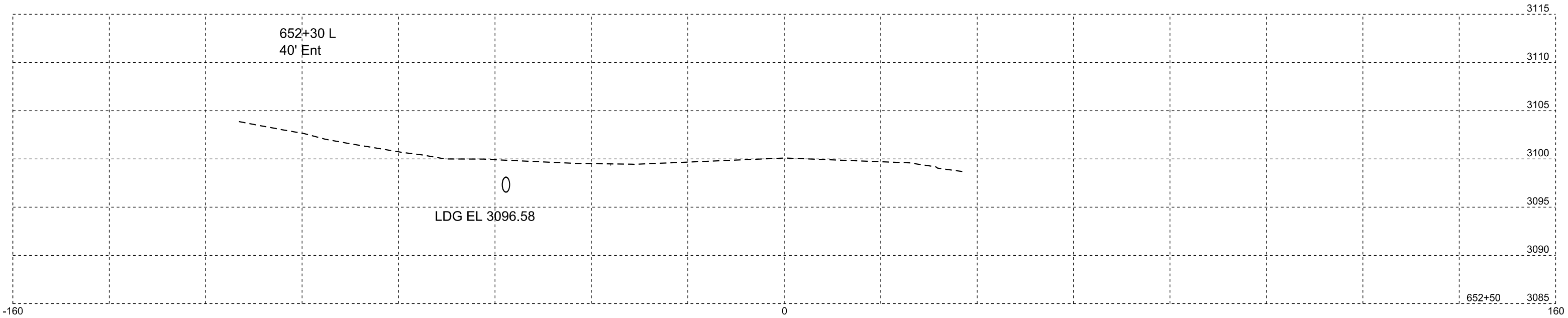
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	212-471	12	21



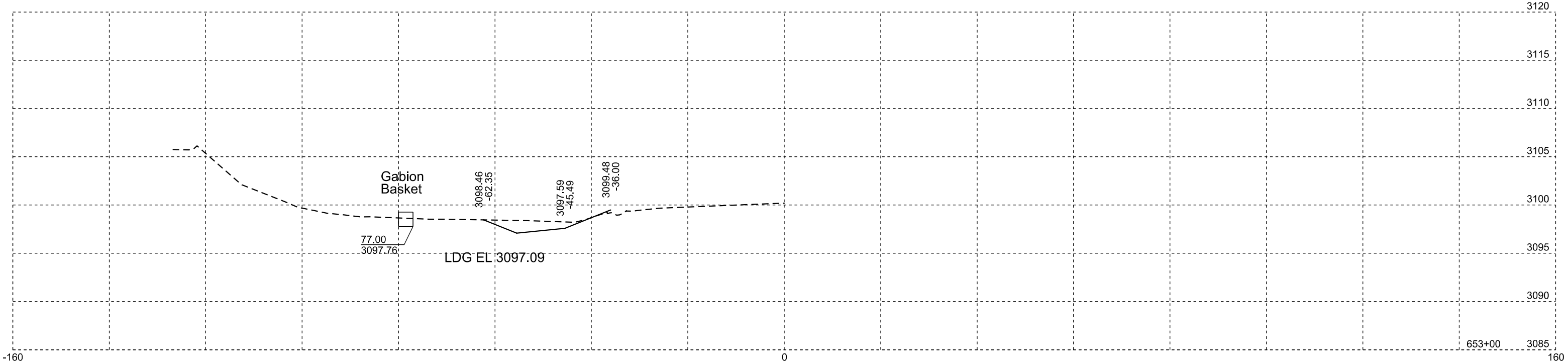
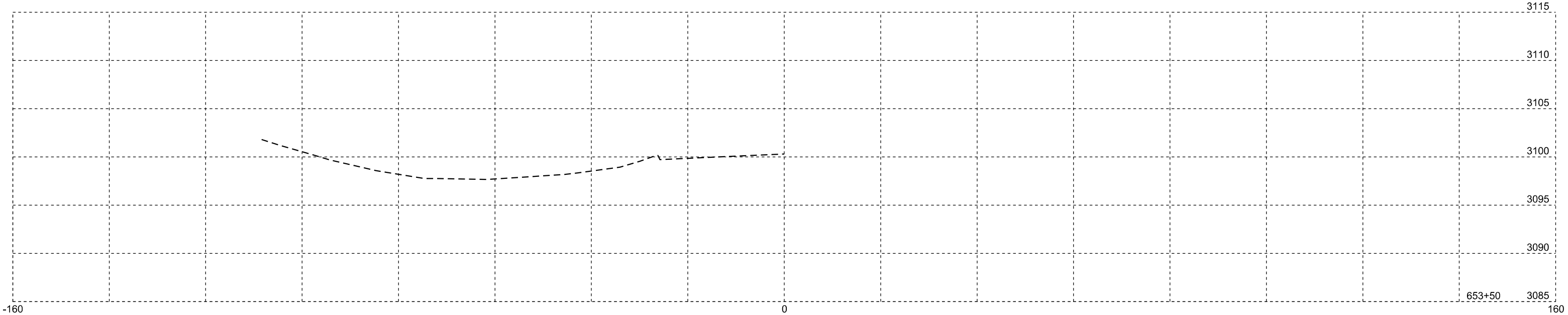
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	212-471	13	21

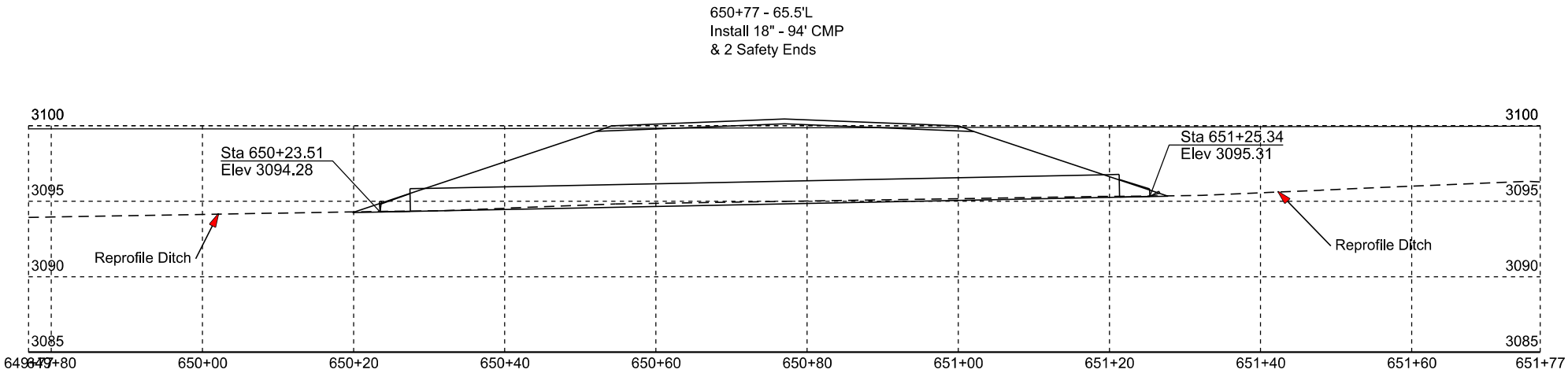
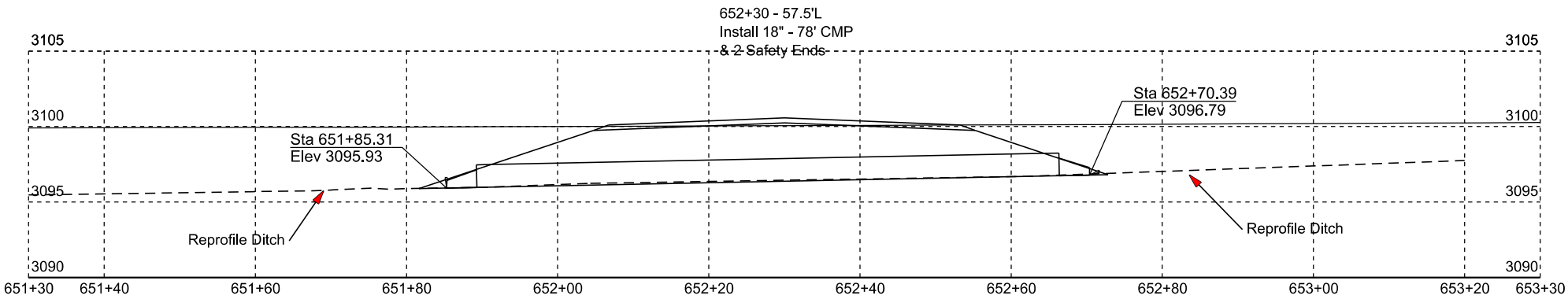


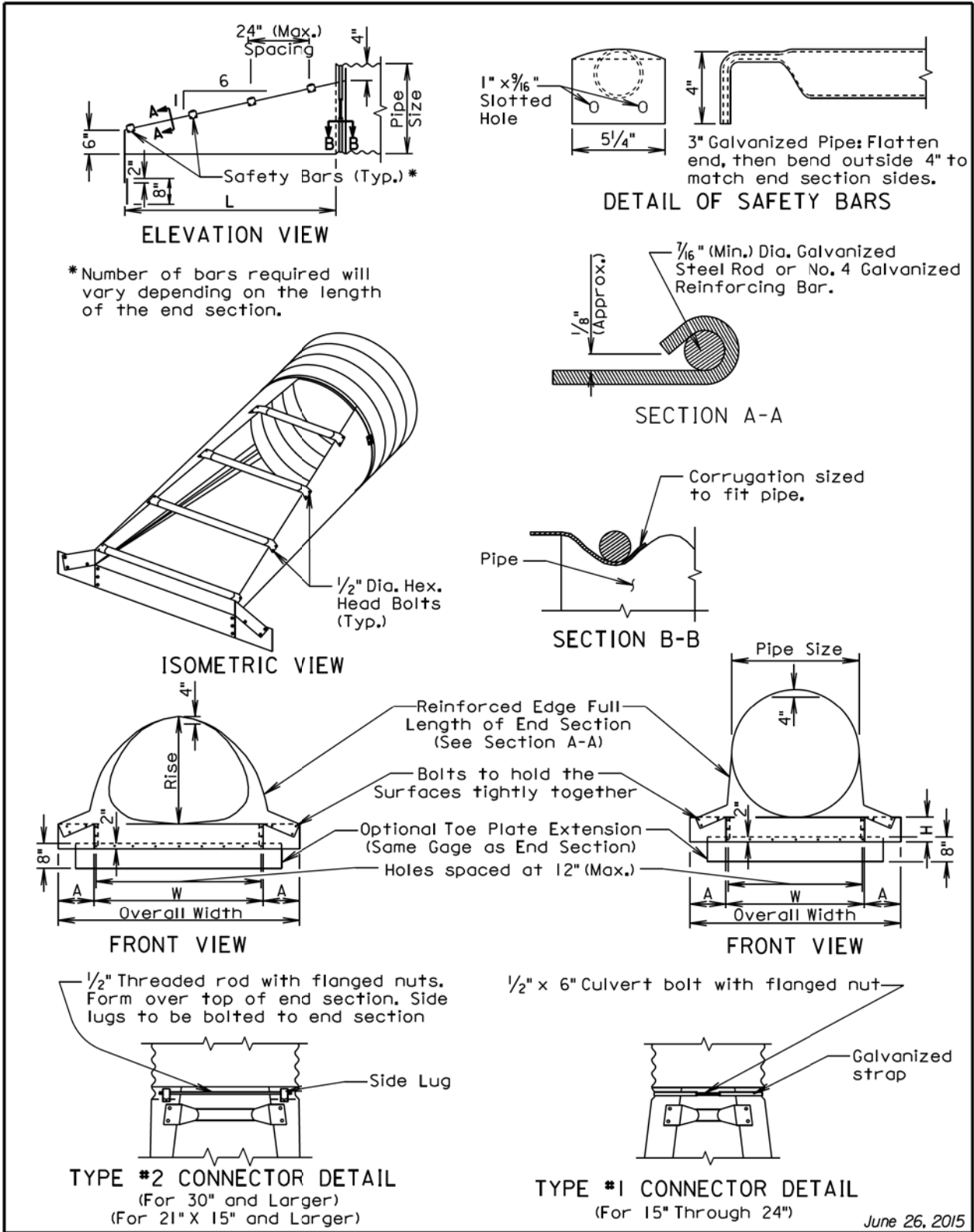
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	212-471	14	21



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	212-471	15	21







Published Date: 2nd Qtr. 2016	S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 1 of 2

ARCH C.M.P. SAFETY ENDS										
Equiv. Dia. (Inch)	(Inches)		Min. Thick. Inch	Gage	Dimensions (Inches)			L Dimensions		
	Span	Rise			A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	38	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

CIRCULAR C.M.P. SAFETY ENDS								
Pipe Dia. (Inch)	Min. Thick.		Dimensions (Inches)				L Dimensions	
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

GENERAL NOTES:

Safety ends shall be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars shall be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5X.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment shall be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.

When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of safety ends shall be incidental to the bid items for the various sizes of safety ends.

Published Date: 2nd Qtr. 2016	S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *

* Spacing is 40' for 42" cones.

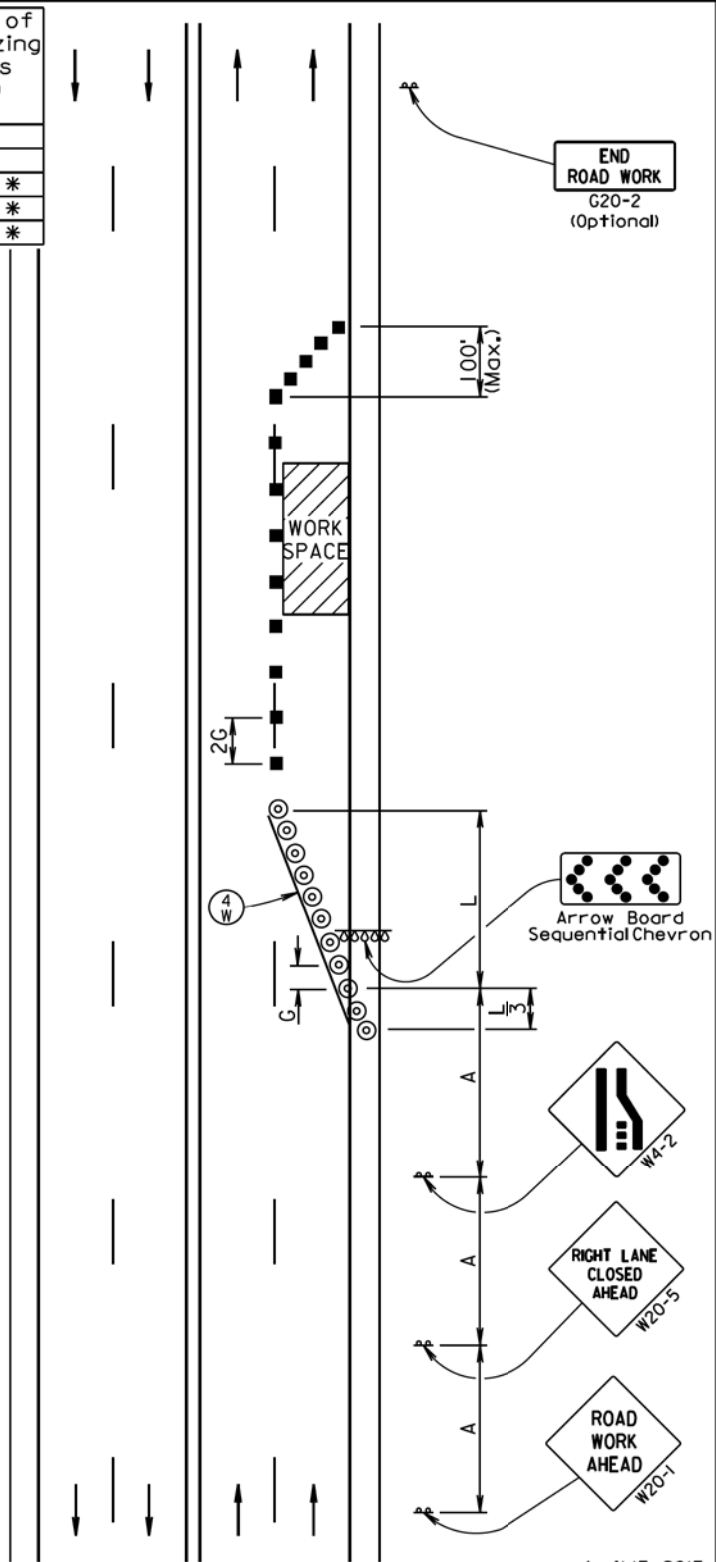
- ⊙ Reflectorized Drum
- Channelizing Device
- ④ W 4" White Temporary Pavement Marking

The channelizing devices shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

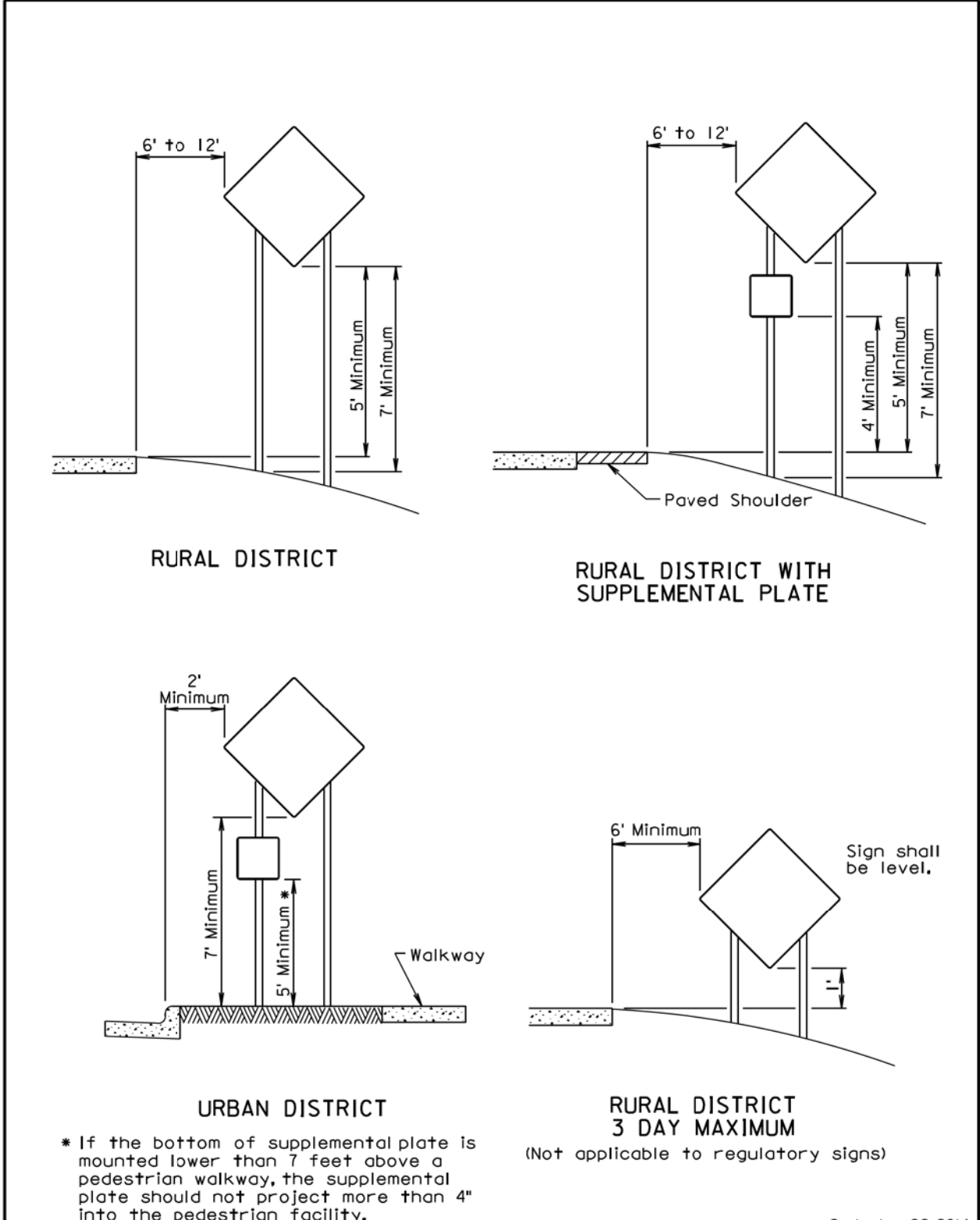
Temporary pavement markings shall be used if traffic control must remain overnight.

The length of A and L may be adjusted to fit field conditions.



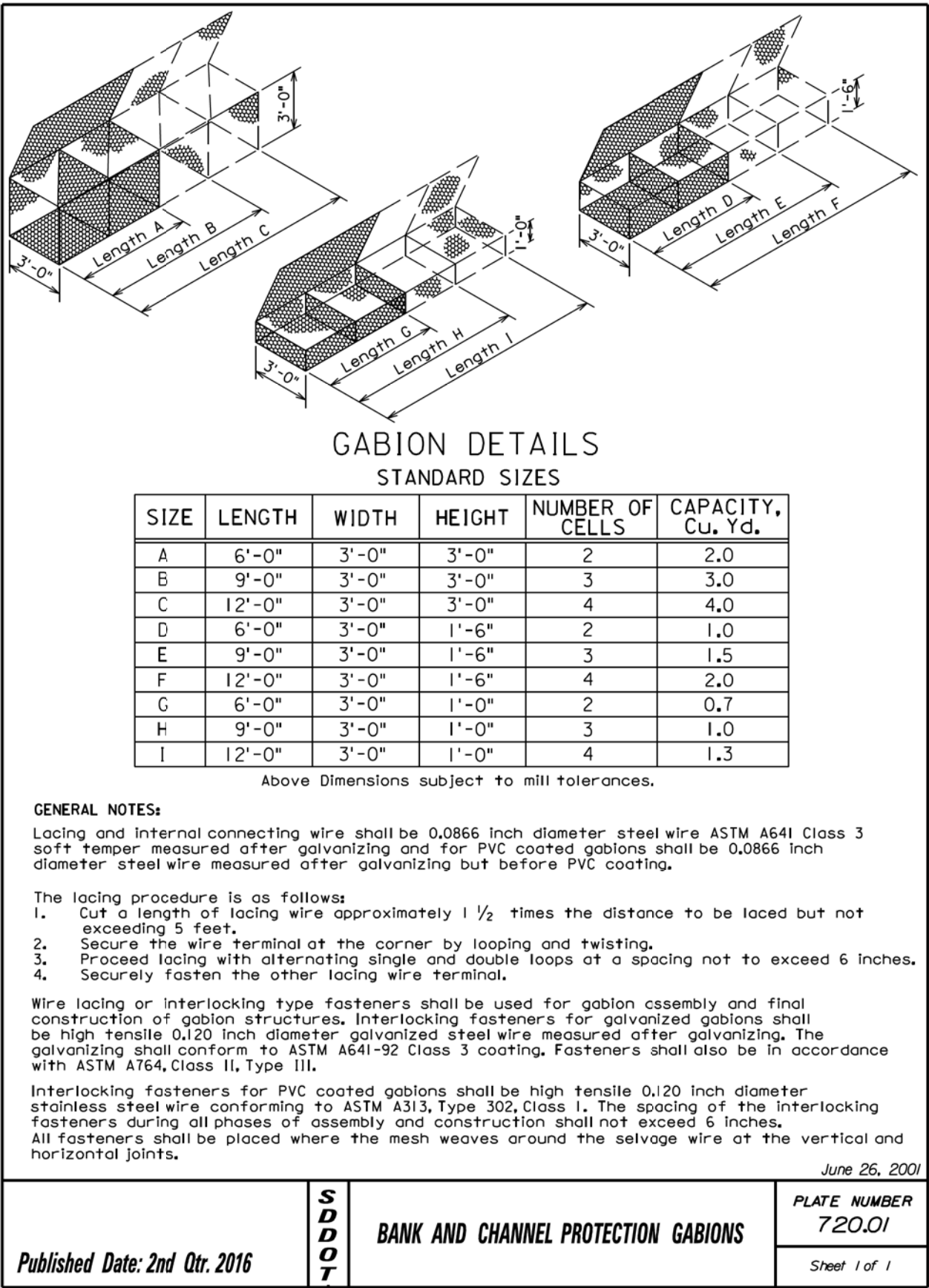
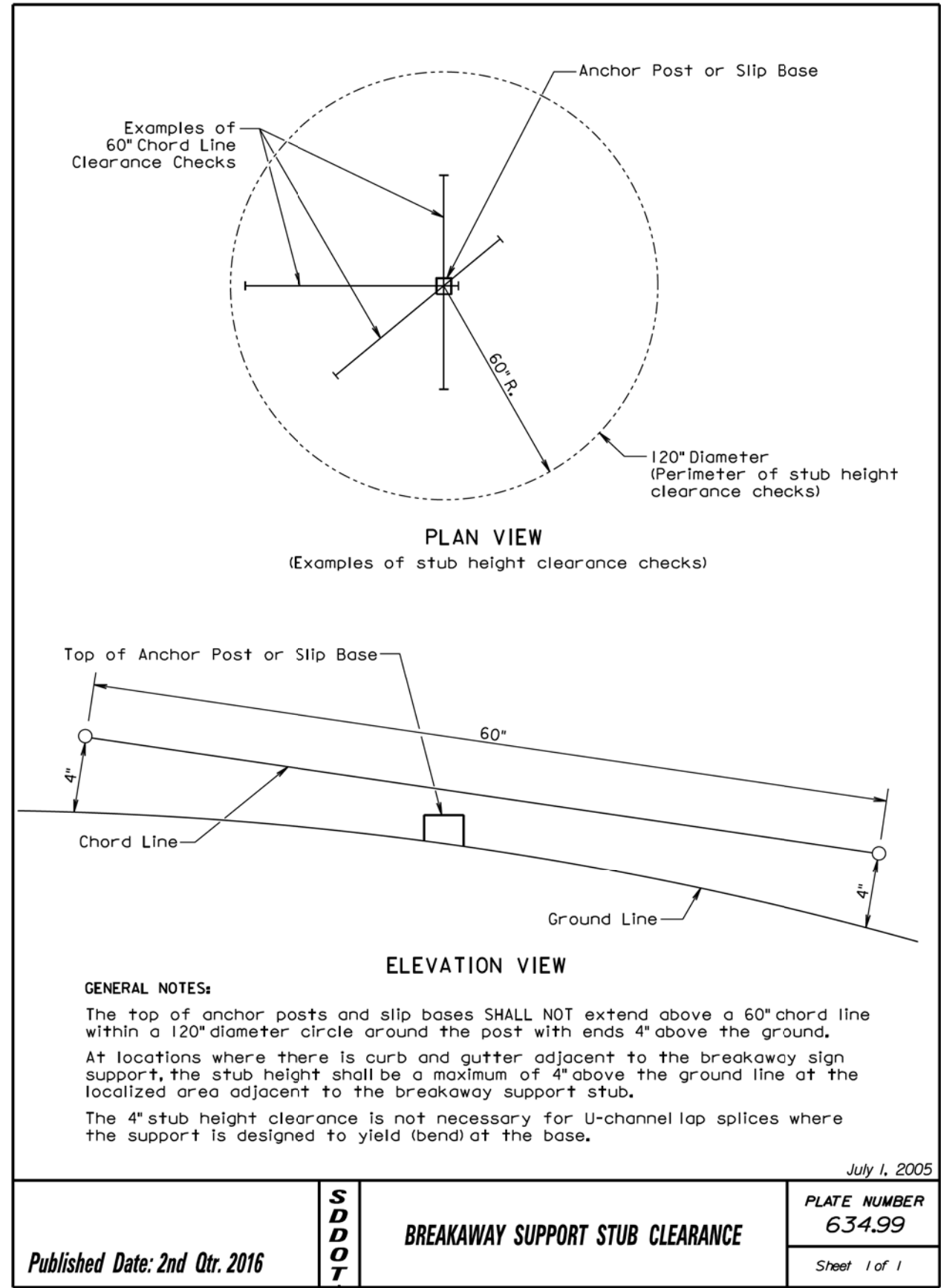
April 15, 2015

Published Date: 2nd Qtr. 2016	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
			Sheet 1 of 1



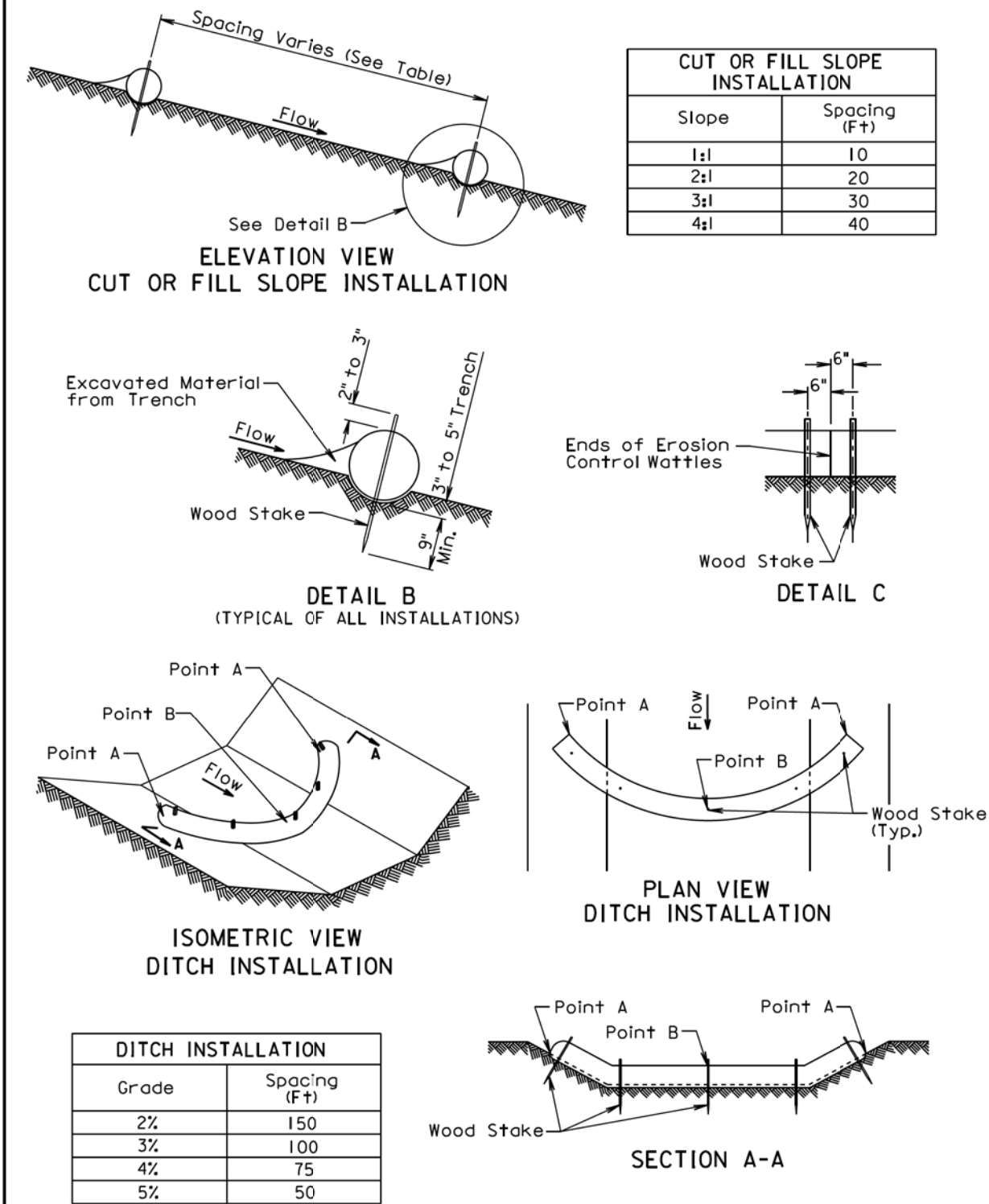
September 22, 2014

Published Date: 2nd Qtr. 2016	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	212-471	21	21

Plotting Date: 05/18/2016



December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 1 of 2

Published Date: 2nd Qtr. 2016

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

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 2 of 2

Published Date: 2nd Qtr. 2016