

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

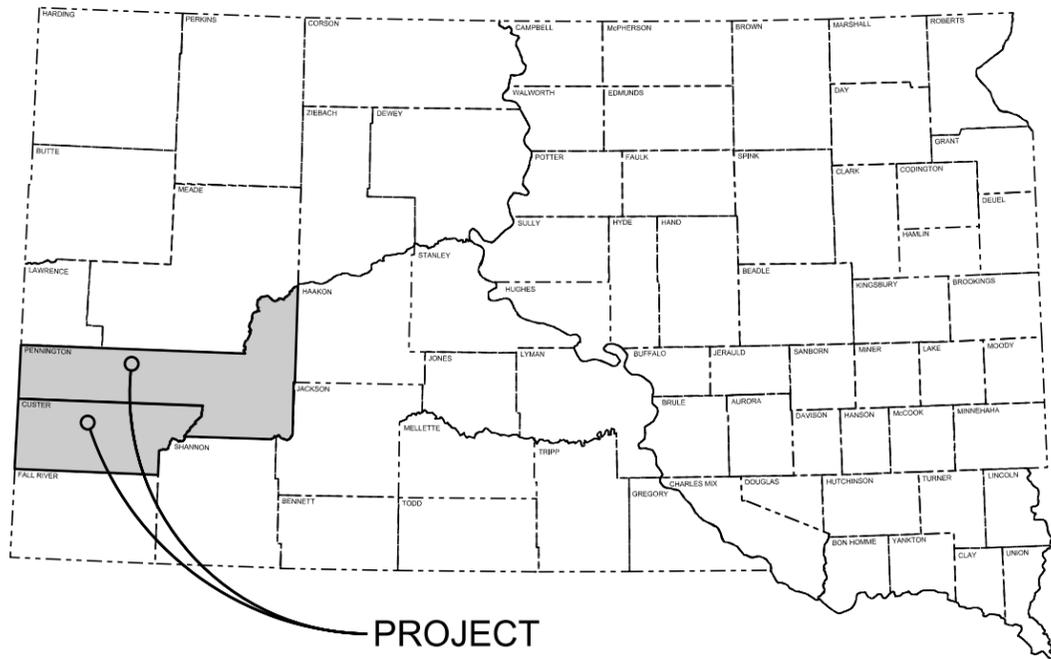
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 016A(07)25 & P 0044(171)51	1	38
Plotting Date: 07/01/2014			

PROJECTS P 016A(07)25
& P 0044(171)51
US HIGHWAY 16A
& SD HIGHWAY 44
CUSTER & PENNINGTON
COUNTIES

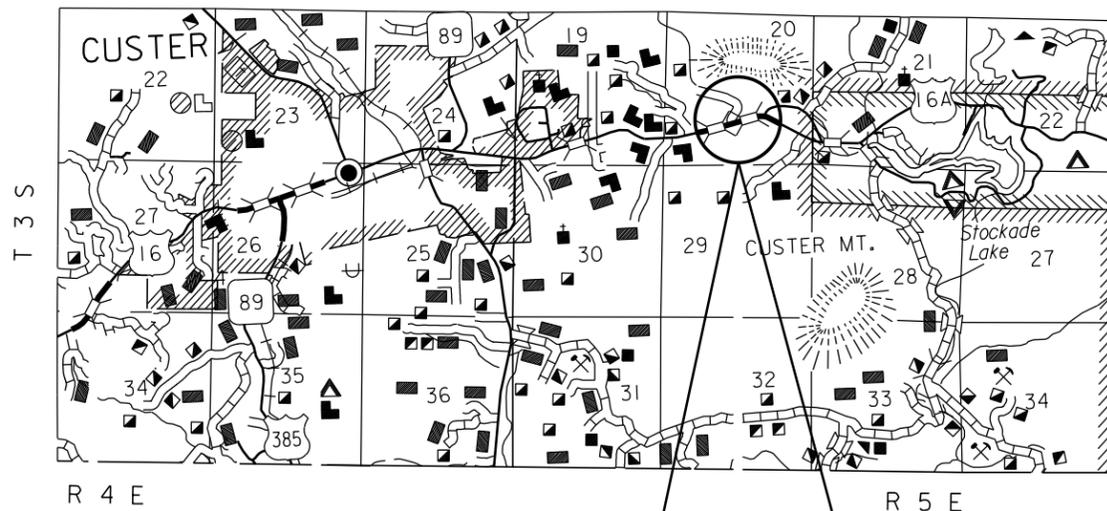
SCOUR PROTECTION
PCN 02A5 & 039W

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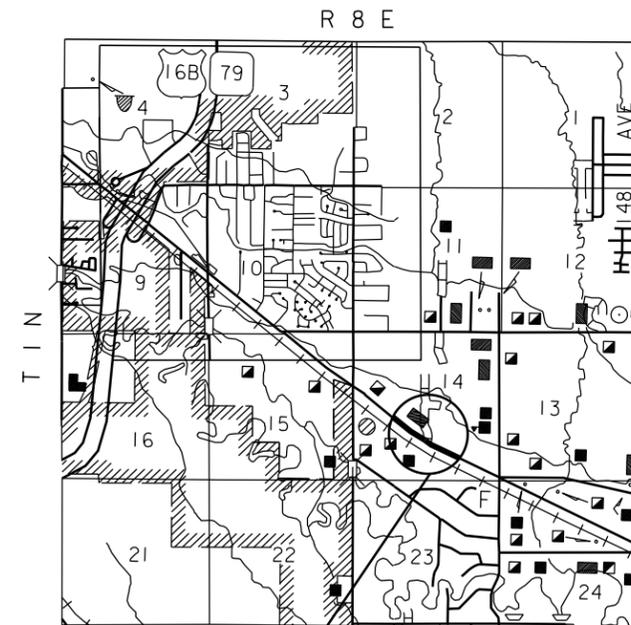


PROJECT



Project No. P 016A(07)25
Str. No. 17-254-067
MRM 25.01
US Highway 16A

Project No. P 016A(07)25
Str. No. 17-256-066
MRM 25.22
US Highway 16A



Project No. P0044(171)51
Str. No. 52-462-326
MRM 51.08
SD Highway 44 E/W

DESIGN DESIGNATION
PROJECT NO. P016A(07)25

ADT (2013)	1959
ADT (2033)	2380
DHV	538
D	50%
T DHV	2.8%
T ADT	6.2%
V	65 MPH

DESIGN DESIGNATION
PROJECT NO. P0044(171)51

ADT (2013)	2825
ADT (2033)	4921
DHV	610
D	50%
T DHV	0.8%
T ADT	1.8%
V	65 MPH

STORM WATER PERMIT
PROJECT NO. P016A(07)25

Major Receiving
Body of Water: French Creek
Area Disturbed: 0.5 acre
Total Project Area: 0.7 acre
Approx. Begin Lat/Long 43°46'15.25" N/103°33'06.15" W

STORM WATER PERMIT
PROJECT NO. P0044(171)51

Major Receiving
Body of Water: Rapid Creek
Area Disturbed: 0.1 acre
Total Project Area: 0.1 acre
Approx. Begin Lat/Long 44°02'41.91" N/103°07'36.68" W

ESTIMATE OF QUANTITIES, PROJECT NO. P 016A(07)25 - PCN 02A5

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0600	Remove Fence	115	Ft
250E0010	Incidental Work	Lump Sum	LS
320E1200	Asphalt Concrete Composite	22.0	Ton
634E0010	Flagging	150	Hour
634E0100	Traffic Control	357	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
730E0210	Type F Permanent Seed Mixture	54	Lb
732E0100	Mulching	0.2	Ton
734E0900	Temporary Diversion Channel and/or Pipe	2	Each

STRUCTURE NUMBER 17-254-067

Bid Item Number	Item	Quantity	Unit
462E0200	Controlled Density Fill	12.0	CuYd
700E0410	Class D Riprap	2,177.0	Ton
831E0110	Type B Drainage Fabric	1,365	SqYd

STRUCTURE NUMBER 17-256-066

Bid Item Number	Item	Quantity	Unit
700E0410	Class D Riprap	2,287.2	Ton
831E0110	Type B Drainage Fabric	1,251	SqYd

ESTIMATE OF QUANTITIES, PROJECT NO. P 0044(171)51 - PCN 039W

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
250E0010	Incidental Work	Lump Sum	LS
320E1200	Asphalt Concrete Composite	11.0	Ton
634E0010	Flagging	150	Hour
634E0100	Traffic Control	204	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each
730E0210	Type F Permanent Seed Mixture	27	Lb
732E0100	Mulching	0.1	Ton
734E0900	Temporary Diversion Channel and/or Pipe	1	Each

STRUCTURE NUMBER 52-462-326

Bid Item Number	Item	Quantity	Unit
700E0410	Class D Riprap	594.5	Ton
831E0110	Type B Drainage Fabric	366	SqYd

SEQUENCE OF OPERATIONS

1. Set up traffic control.
2. Remove fence if necessary.
3. Complete riprap installation.
4. Repair damage to ditches and vegetation.
5. Remove traffic control.

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 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 B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

French Creek and Rapid Creek are classified as a cold water marginal fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended solids.

French Creek and rapid Creek are classified as fish and wildlife propagation, recreation, irrigation and stock watering waters. Because of these beneficial uses, special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

The Contractor is advised the South Dakota Surface Water Quality Standards, administered by the Department of Environment and Natural Resources (DENR), apply to this project. Special construction measures shall be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

French Creek is classified as a cold water marginal fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended solids.

French Creek is classified as fish and wildlife propagation, recreation, irrigation and stock watering waters. Because of these beneficial uses, special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

If construction dewatering is required, the Contractor shall obtain a Temporary Discharge Permit from the DENR and provide a copy to the Project Engineer. Contact the DENR Surface Water Program at 605-773-3351 to apply for a permit.

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

The Contractor shall adhere to the "Special Provision Regarding Storm Water Discharges to Waters of the State".

A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance with the SWPPP. The SWPPP is a dynamic document and is to be available on-site at all times.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT: <http://sddot.com/transportation/highways/environmental/stormwater/Default.aspx>

DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

The "Department of Environmental and Natural Resources – Contractor Certification Form" (SD EForm – 2110LDV1-ContractorCertification.pdf) shall be completed by the Contractor or their certified Erosion Control Supervisor after the award of the contract. Work may not begin on the project until this form is signed.

The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the Surface Water Discharge General Permit for Storm Water Discharges Associated with Construction Activities for the Project.

The online form can be found at:

<http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

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 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 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 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.

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 designated option borrow 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: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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 staging areas, borrow sites, waste disposal sites, or material processing sites 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.

COMMITMENT K: RAPID CITY AREA AIR QUALITY CONTROL ZONE

Administrative Rule of South Dakota (ARSD) 74:36:18:03 states that "no state facility or state contractor may engage in any construction activity or continuous operation activity within the Rapid City air quality control zone which may cause fugitive emissions of particulate to be released into the ambient air without first obtaining a permit issued by the board or the secretary."

Construction activity is defined as any temporary activity at a state facility, which involves the removal or alteration of the natural or pre-existing cover of one acre or more of land. One acre of surface area is based on a cumulative area of disturbance to be completed for the entire project. Construction activity shall include, but not be limited to, stripping of topsoil, drilling, blasting, excavation, dredging, ditching, grading, street maintenance and repair, or earth moving. Construction activity is generally completed within one year. It also includes stockpiles, access roads, and disposal areas. An off-site disposal area of excess material will require an additional permit.

Action Taken/Required:

In order to be considered eligible for authorization to conduct a construction activity under the terms and conditions of this permit, the owner operator must submit a Notice of Intent (NOI) form. The form must be submitted to the address below at least seven business days prior to the anticipated date of beginning the construction activity.

South Dakota Department of Environment and Natural Resources Air Quality Program
523 East Capitol, Joe Foss Building
Pierre, SD 57501-3181
Phone: 605-773-3151

The permit requires the Contractor to use reasonably available technology to control fugitive dust emissions. The Contractor is required to use control measures for track out, paved areas, unpaved roads, unpaved parking lots, disturbed areas, and for material handling and storage. The control measures that the Contractor is required to use are listed in the permit.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

COMMITMENT R: FIRE PREVENTION IN THE BLACK HILLS AREA

This project is located within the confines of the Black Hills Forest Fire Protection Boundary.

Action Taken/Required:

The Contractor shall adhere to the "Special Provision for Fire Plan".

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.

Underground telephone/fiberoptic cables lie adjacent to the work limits for structures 17-254-067 and 17-256-066. Utmost care shall be taken by the Contractor to avoid these utilities.

Any damage done to a utility will be the Contractor's responsibility to repair.

Utilities within the limits of the proposed construction shall be adjusted by the owner unless otherwise indicated in these plans.

SHOULDER AND INSLOPE REPAIR

Shoulders damaged during construction for material delivery shall be repaired by the Contractor.

Damaged asphalt shall be removed and replaced with Asphalt Concrete Composite at a depth of 3".

Where new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

An inspection of the gravel cushion shall be made after removing asphalt concrete from each repair area. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose and excess material shall be removed. Each repair area shall be leveled and compacted to the satisfaction of the Engineer.

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1. All other requirements in the Specifications for Asphalt Concrete Composite shall apply. The asphalt binder used in the mixture shall be PG 64-22, PG 64-28, or PG 64-34 Asphalt Binder.

All costs associated with shoulder repair shall be incidental to the contract unit price per ton for "Asphalt Concrete Composite".

Vegetation damage resulting from the work required by this contract shall be seeded with the following seed mixture:

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 Sq Ft)
Western Wheatgrass	Flintlock, Rodan, Rosana	2.5
Green Needlegrass	Lodorm	1.5
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	1
Blue Grama	Bad River, Willis	1
Oats or Spring Wheat: April through May; Winter Wheat: August through November		3
Total:		9

Hand seeding devices approved by the Engineer will be allowed. Following the seeding operation the area shall be hand raked (incorporated) within the top 1/4" to 1/2" of topsoil when possible to the satisfaction of the Engineer.

All costs for seeding shall be incidental to the contract unit price per pound for "Type F Permanent Seed Mixture".

Mulching material shall be grass hay or straw.

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

All costs for mulching shall be incidental to the contract unit price per ton for "Mulching".

TABLE OF SHOULDER AND INSLOPE REPAIR

Table of Shoulder and Inslope Repair			
Location	Asphalt Concrete Composite	Type F Permanent Seed Mixture	Mulching
	Ton	Lbs	Tons
PCN 02A5			
Structure No. 17-254-067	11	27	0.1
Structure No. 17-256-066	11	27	0.1
Total	22	54	0.2
PCN 039W			
Structure No. 17-256-066	11	27	0.1
Total	11	27	0.1

INCIDENTAL WORK

All other costs associated with access to the work site shall be incidental to the contract lump sum price for "Incidental Work".

TABLE OF FENCE REMOVAL – PCN 02A5

Table of Fence Removal			
Location			Ft
Station	to	Station	L/R
113+73		113+91	L
114+78		114+78	L
Total			115

TRAFFIC CONTROL – GENERAL NOTES

Traffic shall not be delayed for a cumulative period longer than 15 minutes throughout the project.

Cones with a height of 42" will be allowed in areas where drums will not fit on the road for maintaining traffic.

Vehicles working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions. The amber light shall be mounted on the uppermost part of the contractor's vehicle. Lights must have peak intensity within the range of 40 to 400 candelas and must flash at 75 ± 15 flashes per minute. Vehicle flasher/hazard lights are not acceptable.

Traffic control shall be in accordance with MUTCD Standards, the Specifications and these plans.

The Contractor shall keep the portion of the project being used by public traffic in a condition that will adequately and safely accommodate traffic. A power broom will be required to clean all loose debris off of paved surfacing.

Storage of vehicles, materials and equipment shall be outside the clear zone and as near as possible to the right-of-way line. 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.

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.

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various 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.

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.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports at the time of initial installation.

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.

If the Contractor elects not to work in an area for more than 3 days, for reasons within the control of the Contractor, the Contractor shall remove applicable traffic control devices and replace them when work resumes. There will be no payment for this work.

Work activities shall only be during daylight hours. Daylight hours are considered to be ½ hour before sunrise until ½ hour after sunset.

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.

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.

The quantity of signs paid for will be for the most installations per sign in place at any one time regardless of the number of set-ups per project site.

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. Exceptions will be at locations where the project requires a permanent closure or at locations determined by the Engineer where it would be better to maintain a partial width closure during non-working hours.

**INVENTORY OF TRAFFIC CONTROL DEVICES
PROJECT NO. P 016A(07)25 - PCN 02A5**

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	3	17	51
W3-4	48" x 48"	BE PREPARED TO STOP	2	34	68
W20-1	48" x 48"	ROAD WORK AHEAD	3	34	102
W20-7a	48" x 48"	FLAGGER	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
TOTAL UNITS					357

**INVENTORY OF TRAFFIC CONTROL DEVICES
PROJECT NO. P 0044(171)51 - PCN 039W**

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
W4-2	48" x 48"	RIGHT LANE ENDS (SYMBOL)	1	34	34
W20-1	48" x 48"	ROAD WORK AHEAD	2	34	68
W20-5	48" x 48"	RT. LANE CLOSED AHEAD	1	34	34
W20-7a	48" x 48"	FLAGGER	1	34	34
TOTAL UNITS					204

PRESS RELEASE ANNOUNCEMENTS

The DOT will prepare a Press Release to be released 48 hours prior to any phase change or any other major change that affects traffic flow. The DOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor shall provide the Engineer with pertinent information 4 days prior to any major change that affects traffic flow.

TEMPORARY DIVERSION CHANNEL AND/OR PIPE

A temporary stream diversion will be required to divert stream flows away for the work areas. A quantity of 1 each is provided for each structure.

The type of temporary stream diversion device shall be chosen by the Contractor in accordance with the details provided in these plans. All costs for labor, equipment, materials to complete the temporary stream diversion shall be incidental to the contract unit price per each for "Temporary Diversion Channel and/or Pipe". "Temporary Diversion Channel and/or Pipe" will be paid for once per site regardless of the number of times water is diverted at each individual site.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 016A(07)25 & P 0044(171)51	6	38

CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS

No excavation shall be made below the ordinary high water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting.

All dredged or excavated materials shall be placed at a site above the ordinary high water elevation in a confined area (not classified as a wetland) to prevent return of such material to the waterway

The construction of temporary work platforms, crossings, or berms below the ordinary high water elevation will be allowed provided that all material placed below the ordinary high water elevation consists of Class B or larger riprap.

All temporary caissons, cribs, cofferdams, steel piling, sheeting, work platforms, crossings, and berms shall be removed with minimal disturbance to the streambed. Proper construction practices shall be used to minimize increases in suspended solids and turbidity in the waterway.

Bridge berms, wing dams, traffic diversions, channel reconstruction, grading, etc. shall be constructed in close conformity with the plans to ensure that the hydraulic capacity of the waterway is not changed.

Temporary waterway crossings required for the Contractors construction operations shall be constructed with an adequate drainage structure size and minimum fill height to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

STRUCTURE NO. 17 - 254 - 067

STATE OF SOUTH DAKOTA	PROJECT P 016A(07)25 & P 0044(171)51	SHEET 7	TOTAL SHEETS 38
Plotting Date: 07/01/2014			

Wormstadt Family Properties, L.L.C.

Lot B of Tract Bismark
of H.E.S. 338 of
Section 20 - Township 3 South -
Range 5 East of the BHM

Station 113+73 - 99' L to
Station 113+91 - 20' L
Remove Fence - 82'

Station 114+78 - 53' L to
Station 114+78 - 20' L
Remove Fence - 33'

Sec. 20 - T3S - R5E

United State of America - USDA
Government Lot 15 in the W1/2 of
Section 20 - Township 3 South -
Range 5 East of the BHM

Ralph G. Adam & Tamara K. Adam

Lot 1 of Tract Calamity #1
of H.E.S. #338 of
Section 20 - Township 3 South -
Range 5 East of the BHM



ROW Line

ROW Line

200'

US Highway 16A

112+00

113+00

114+00

115+00

116+00

117+00

ROW Line

Michael Pease & Anita R. Pease

Lot 2 of French Creek Subdivision of
Tract Stockade of H.E.S. #338 in the SW1/4
of Section 20 - Township 3 South -
Range 5 East of the BHM

Plot Scale - 1"=40'

Plotted From - trc12608

File - ...\STRUCTURE 17-254-067.dgn

STRUCTURE NO. 17-256-066

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 016A(07)25 & P 0044(171)51	8	38
Plotting Date: 07/01/2014			

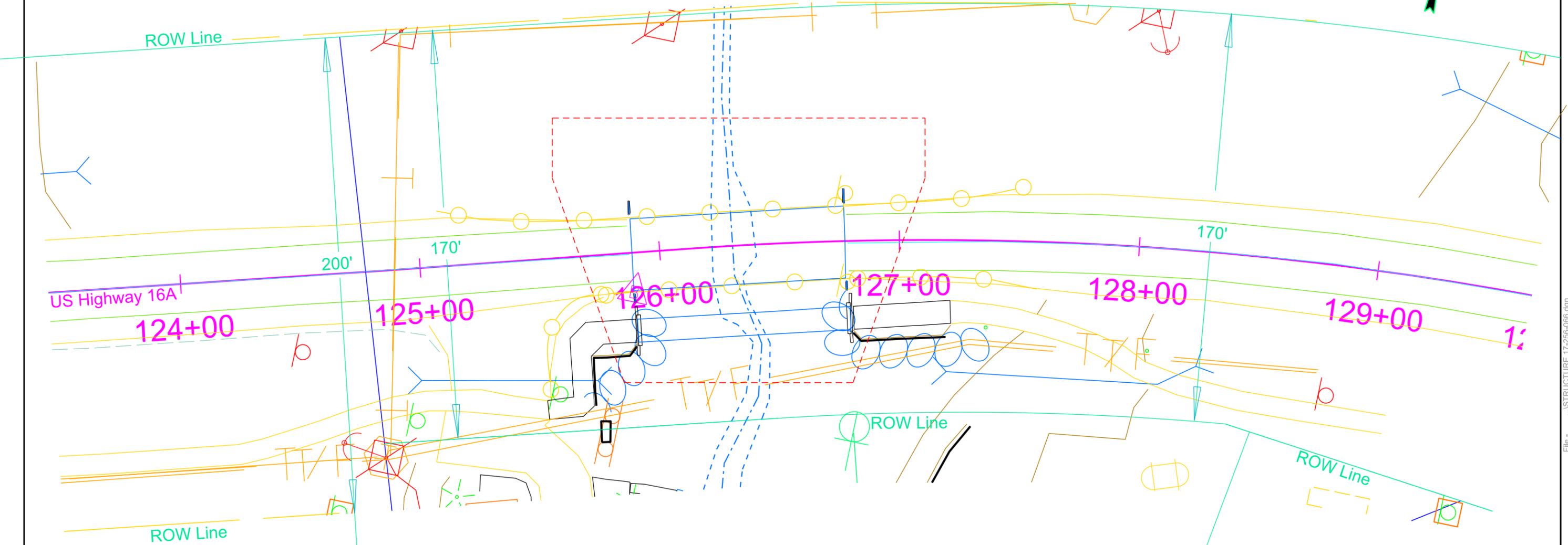
Richard M. Wilkey & Doris K. Wilkey

Sec. 20 - T3S - R5E

Tract Bill of Lot 2 of
Replated Tract Calamity #1 of
Calamity Subdivision of H.E.S. #338 of
Section 20 - Township 3 South -
Range East of the BHM



Plot Scale - 1:40



CrSuWr, L.L.C.
Lot 1 of Tract Stockade of
H.E.S. #338 in the SW1/4 of
Section 20 - Township 3 South -
Range East of the BHM

CrSuWr, L.L.C.
an area of 1.76 acres,
AKA Jones Tract #1 of H.E.S. #338 and
Jones Tract #2 of H.E.S. #338 of
Section 20 - Township 3 South -
Range East of the BHM

Plotted From - trc:12608

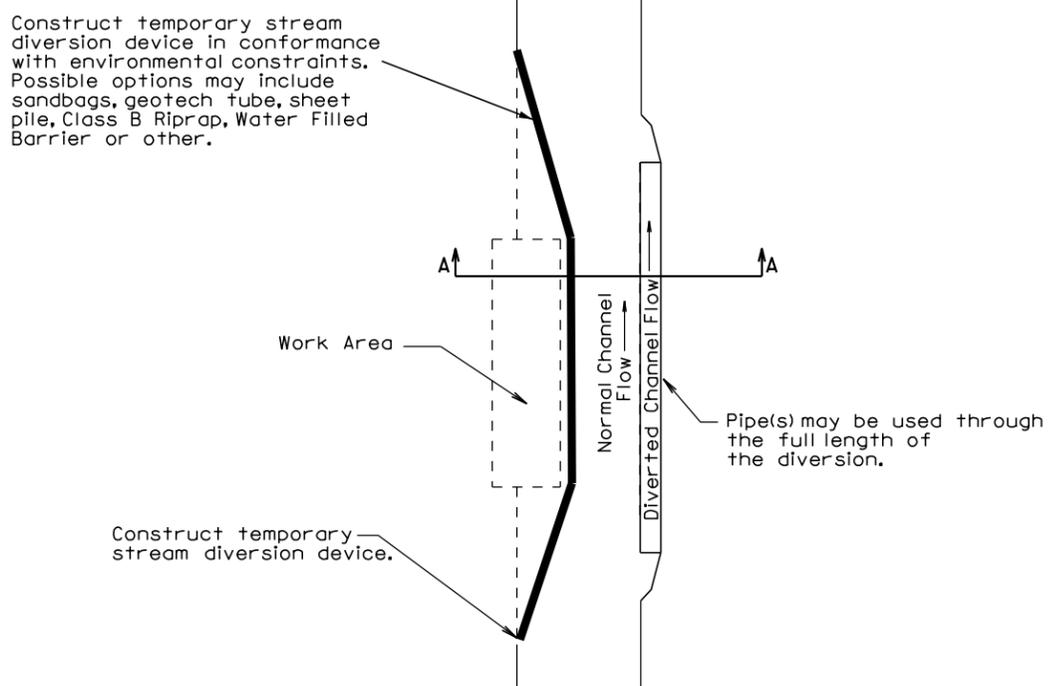
File - ...STRUCTURE 17-256-066.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 016A(07)25 & P 0044(171)51	9	38

Plotting Date: mumm
Revised 7/9/2014 GDS

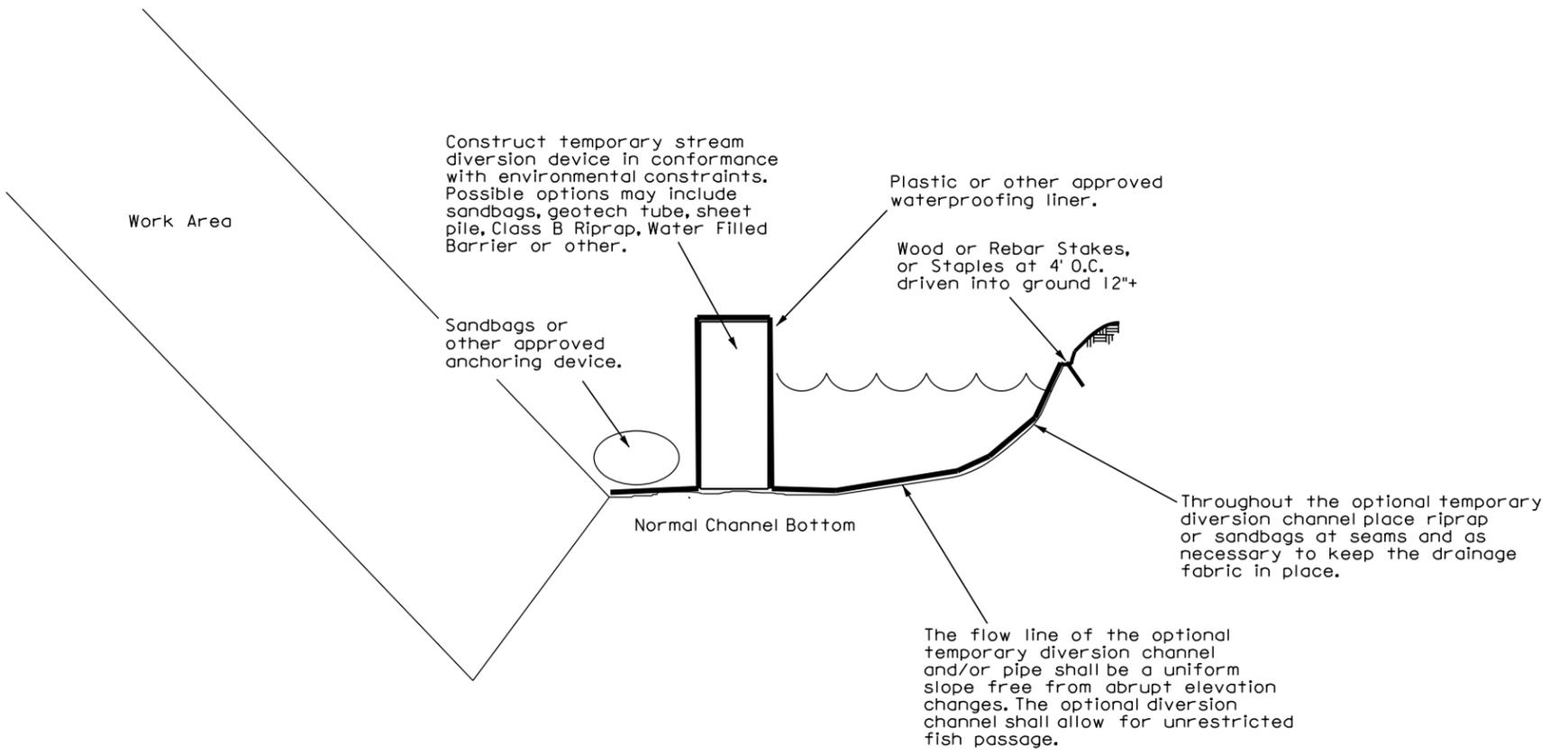
TEMPORARY WATERWAY DIVERSION DETAILS

PLOT SCALE - 1:200



GENERAL NOTES:
 If hydraulic capacity cannot be maintained within the existing channel, a temporary diversion channel and/or pipe(s) shall be used to divert stream or drainage away from a construction area to provide a dry work area for construction. The diversion of streams and waterways is intended to protect the streams and waterways from various construction contaminants and sediment. Disturbing the existing stream channel and riparian zone should be minimized. Equipment shall not cross through the stream outside of the work area.
 Sizing of the temporary diversion channel and/or pipe(s) shall be the Contractor's responsibility.
 The method and materials used to construct the stream diversion device shall be the Contractor's responsibility, however, earthen berms are not acceptable since their removal causes siltation problems.
 The Contractor shall restore the original channel bottom to its original condition prior to returning any flows. Upon completion of the new permanent drainage structure, the temporary stream diversion block or device shall be removed in a manner that will not cause violation of water quality standards. The temporary diversion channel shall then be backfilled and any pipe(s) (if used) shall be removed. The entire work area shall be cleaned and restored to smooth/even contours.
 All costs for labor, equipment, materials and incidentals necessary to divert water away from the work area shall be incidental to the contract unit price per each for "Temporary Diversion Channel and/or Pipe(s)". "Temporary Diversion Channel and/or Pipe(s)" will be paid for once per structure site regardless of the number of times water is diverted at the individual site.

SECTION A-A
TEMPORARY WATERWAY DIVERSION



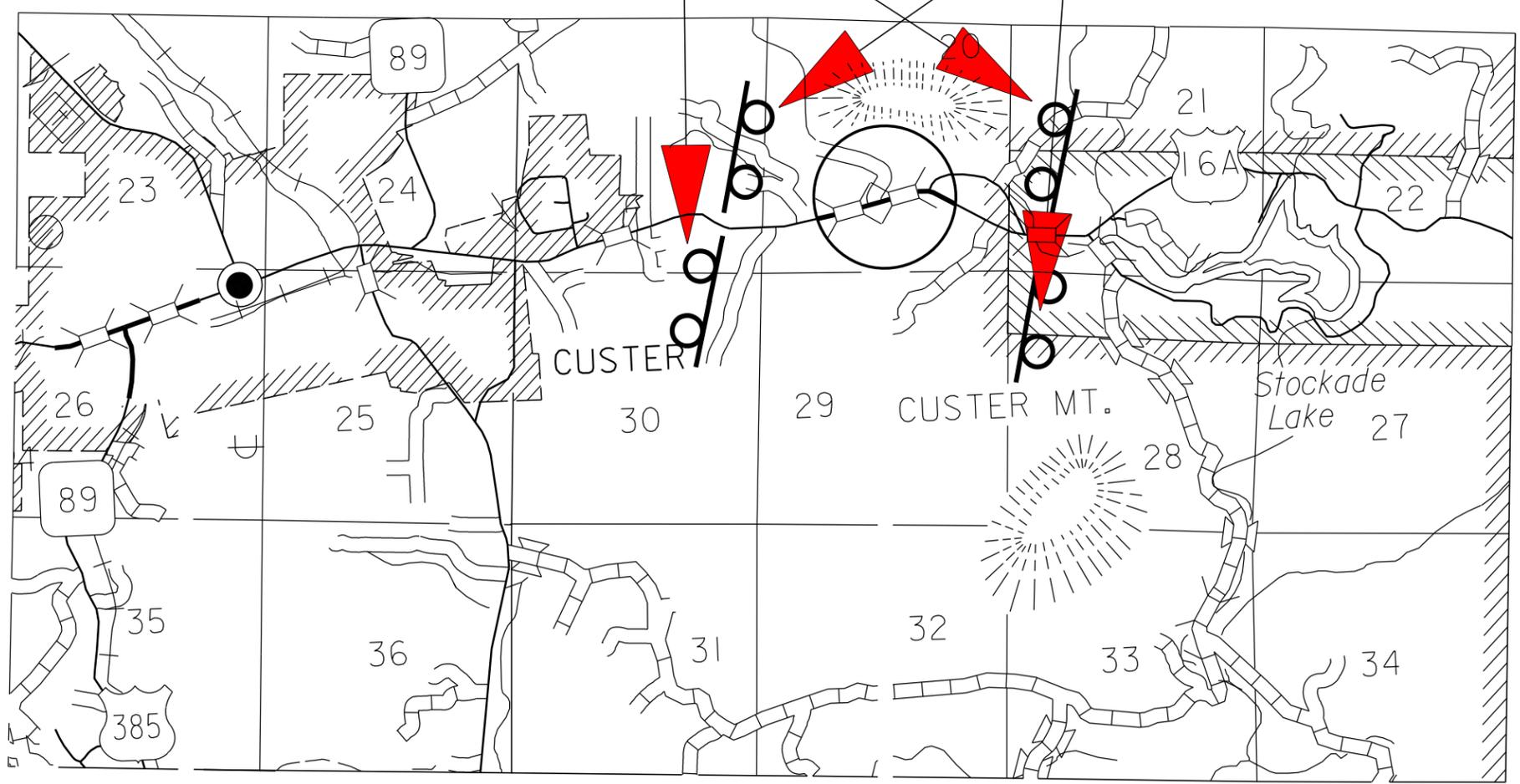
PLOTTED FROM - TRRC12608

PLOT NAME - 2

FILE - ... \CUST0205\DESIGN\DWATERING.DGN

FIXED LOCATION SIGNING

Str. 17-254-067 & Str. 17-256-066



FIXED LOCATION SIGNING

Str. 5 2-46 2-326

PLOT SCALE - 1:164,563

PLOT NAME - 2

**END
ROAD WORK**

G20-2A



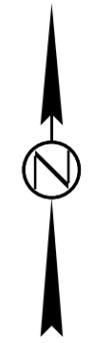
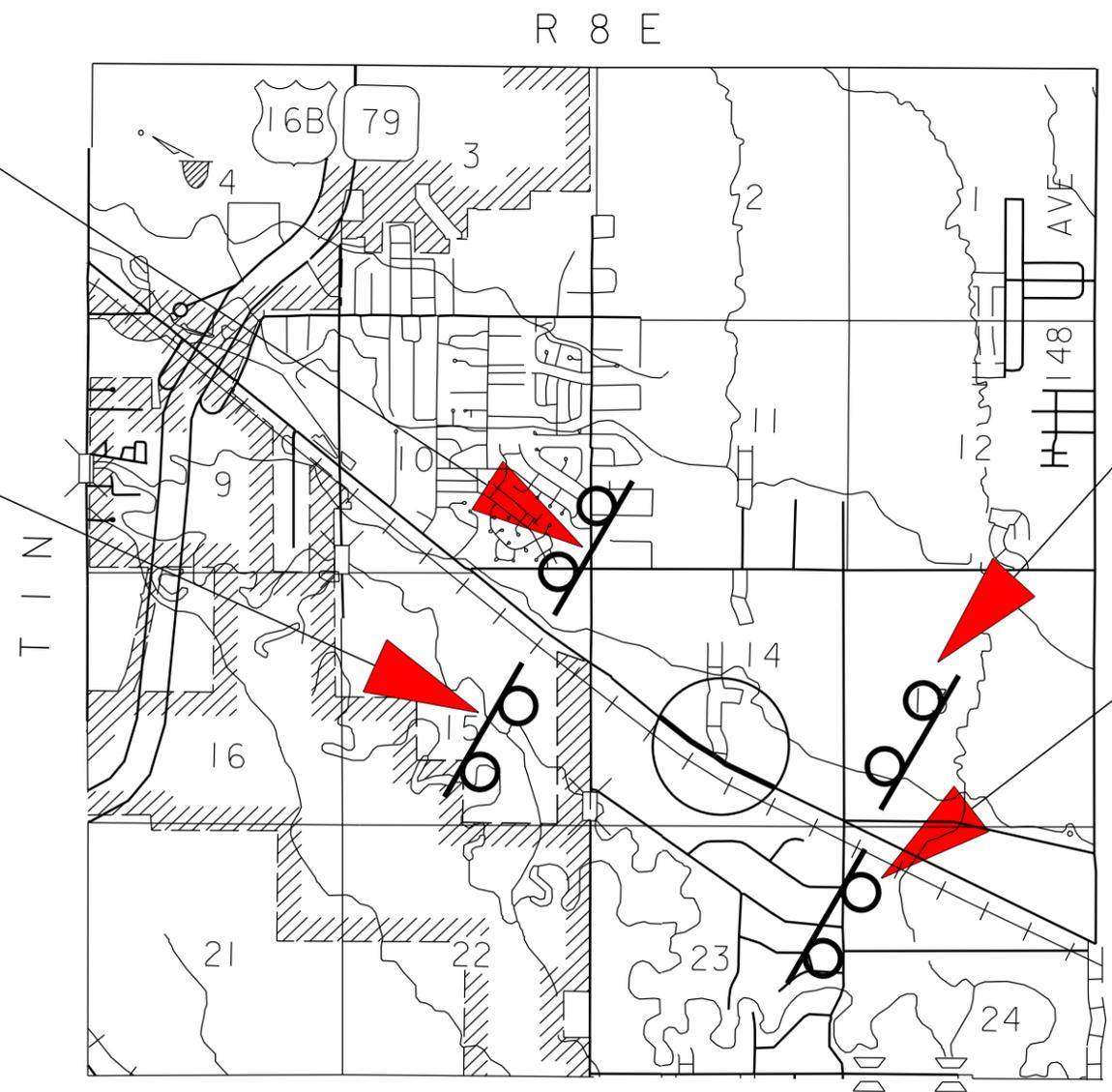
W20-1



W20-1

**END
ROAD WORK**

G20-2A



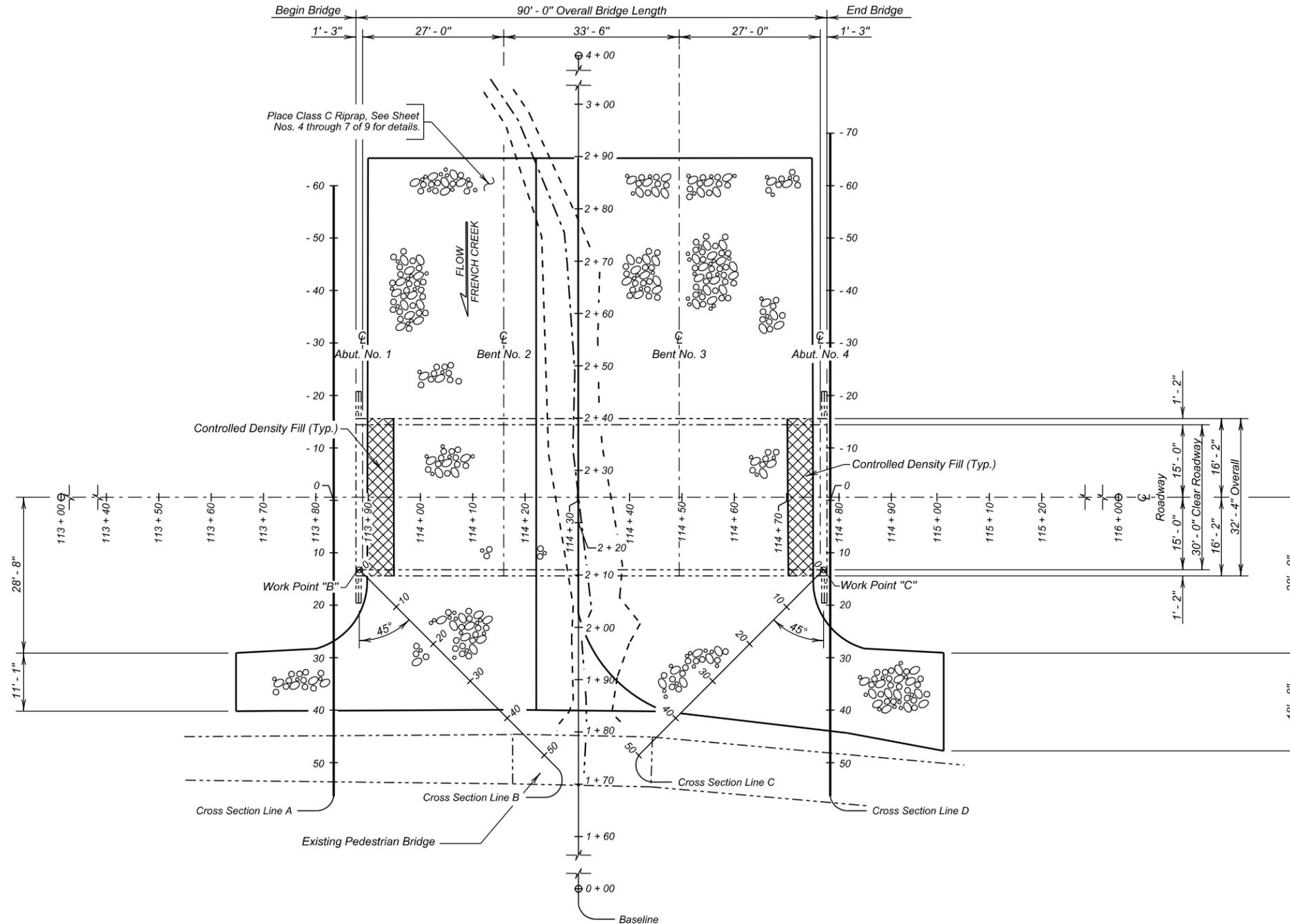
PLOTTED FROM - TRCU10206

FILE - H:\PCN 02A5\02A5 TRAFFIC.DGN

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	12	38



PLAN

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Riprap Placement
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Topography and Control Points
- Sheet No. 4 - Channel Cross Sections
- Sheet No. 5 - Channel Cross Sections (Continued)
- Sheet No. 6 - Channel Cross Sections (Continued)
- Sheet No. 7 - Channel Cross Sections (Continued)
- Sheet No. 8 - Original Construction Plans
- Sheet No. 9 - Original Construction Plans (Continued)

**LAYOUT OF RIPRAP PLACEMENT
FOR**

90' - 0" CONTINUOUS CONCRETE BRIDGE
 30' - 0" ROADWAY 0° SKEW
 OVER FRENCH CREEK SEC. 20-T3S-R5E
 STR. NO. 17-254-067 P 016A(07)25
 PCN 02A5

CUSTER COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2014

PLANS BY:
 OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RA01	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
462E0200	Controlled Density Fill	12.0	CuYd
700E0410	Class D Riprap	2177.0	Ton
831E0110	Type B Drainage Fabric	1365	SqYd

SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown elsewhere in the plans.

- Reshape the channel within the limits shown in the plans and place riprap to the limits shown in the plans.
- Place Controlled Density Fill within the limits shown in the plans.

RIPRAP

- The cross sections shown in this plan set are provided as a guide for riprap placement and are based on the existing ground locations at the time of the survey. The location of the toe of the riprap may vary to suit local site conditions as long as the following items are adhered to:
 - The 4.0 foot of riprap thickness is attained.
 - The opening provided under the structure for water flow is not reduced from what is shown on the cross sections.
 - Any changes in the riprap configuration are approved by the Engineer.
- Excavate to limits shown on cross section for Riprap placement and cut off all old exposed timber pilings. Piling shall be cut off to at least below the finished riprap or channel bottom surface. Any excess material shall be disposed of by the Contractor as approved by the Engineer. All costs associated with excavating and disposing material including all labor, equipment and incidentals necessary shall be incidental to the contract unit price per ton for "Class D Riprap".
- Type B Drainage Fabric will be placed underneath the Class D Riprap. The fabric shall conform to Section 831 of the Construction Specifications.
- All labor, equipment, material and incidental costs associated with piling cut off for finished riprap or channel bottom surface shall be incidental to the contract unit price per ton for "Class D Riprap".
- The Class D Riprap shall be constructed to the configuration, limits and elevations shown on Sheet Nos. 4 through 7 of 9. All costs associated with placement of the riprap including all material, labor and equipment shall be incidental to the contract unit price per ton for "Class D Riprap."
- A factor of 1.4 tons/cu.yd. was used to convert the Riprap quantity from Cu. Yds. to Tons.

CONTROLLED DENSITY FILL

Controlled density fill shall be placed at the top of the bridge berms as shown on the plans.

Controlled density fill shall be a flowable mortar material. Material and mixing shall be in accordance with the Section 462 of the Specifications, except as modified below. The mix shall be as follows:

Mix Design:

Material	Rate per Cubic Yard
Portland Cement, Type I	100 Lb
Fine Aggregate	2,600 Lb
Coarse Aggregate	None
Water	60 Gal
Fly Ash, Type C	300 Lb

The fine aggregate shall be natural sand consisting of mineral aggregate particles conforming to the following gradation requirements:

Passing a 3/8 Inch Sieve	100%
Passing a No. 200 Sieve	0-10%

The mix shown above is designed to produce a minimum compressive strength of 100 psi. The Engineer may allow adjustments to the proportion of water at the site to provide the necessary consistency of the mix.

Controlled density fill shall be contained within the required limits with sandbags or other methods approved by the Engineer.

Cost for furnishing and installing the controlled density fill, including sandbags, labor, material, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for Controlled Density Fill. Installation of the 3/4" preformed expansion joint material at abutment backwall shall be incidental to the contract unit price for Controlled Density Fill.

Plans quantity will be the basis of payment unless otherwise ordered by the Engineer.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 17-254-067

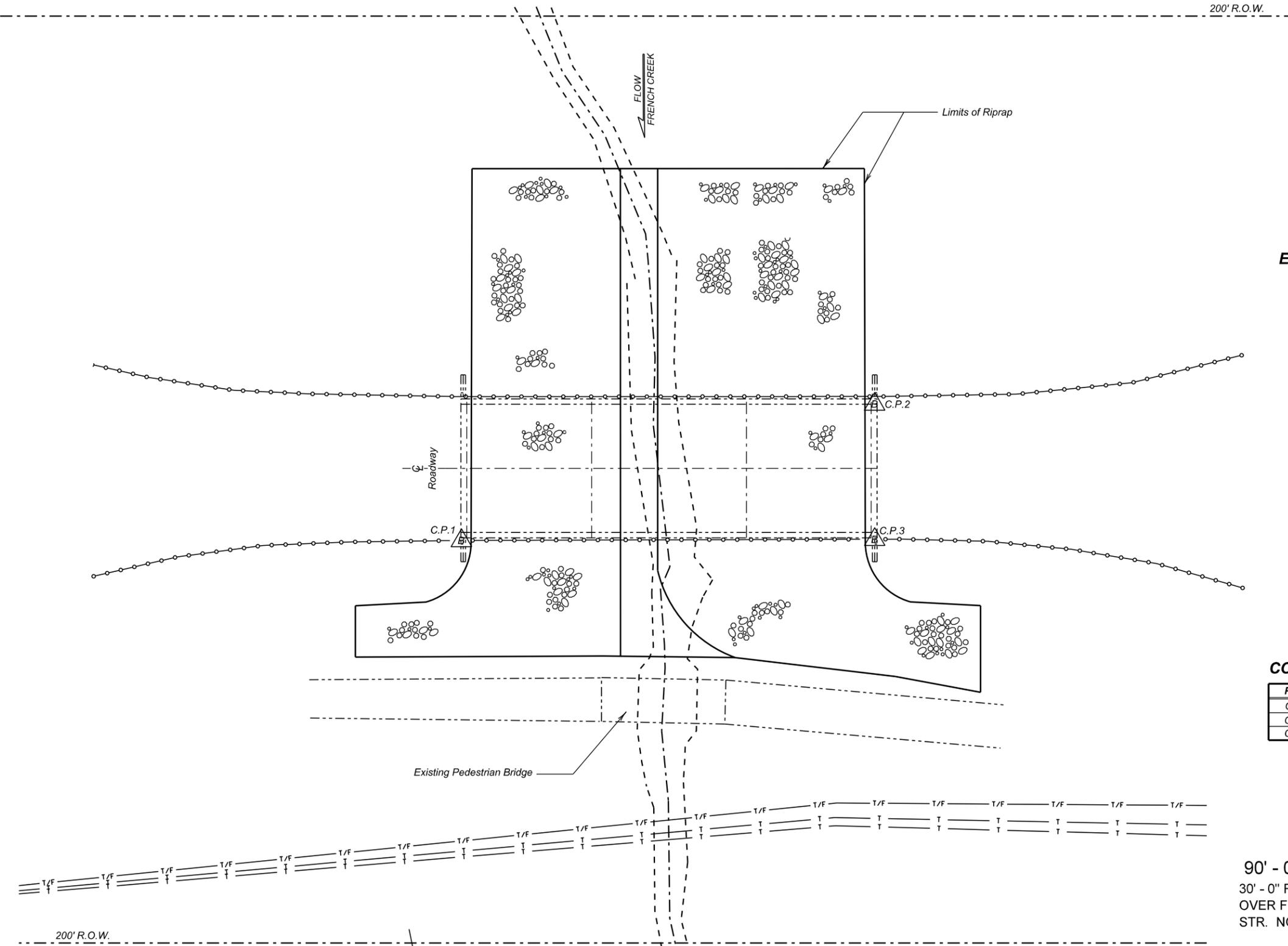
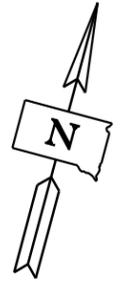
APRIL 2014

2 OF 9

DESIGNED BY SA/BWS CUST02A5	CK. DES. BY KK 02A5RA02	DRAFTED BY BWS	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	14	38



EXISTING TOPOGRAPHY SYMBOLOGY

- Existing Channel Bank -----
- Existing ROW -----
- Telephone Fiber Optics ----- T/F -----
- Underground Telephone Line ----- T -----
- Underground Electric Line ----- P -----

CONTROL POINT LEGEND

POINT	N DIRECTION	E DIRECTION	ELEVATION
C. P. 1	1114286.7320	540326.5890	5255.54
C. P. 2	1125496.5080	540888.9260	5224.28
C. P. 3	1119121.5540	540454.1210	5218.97

TOPOGRAPHY AND CONTROL POINTS

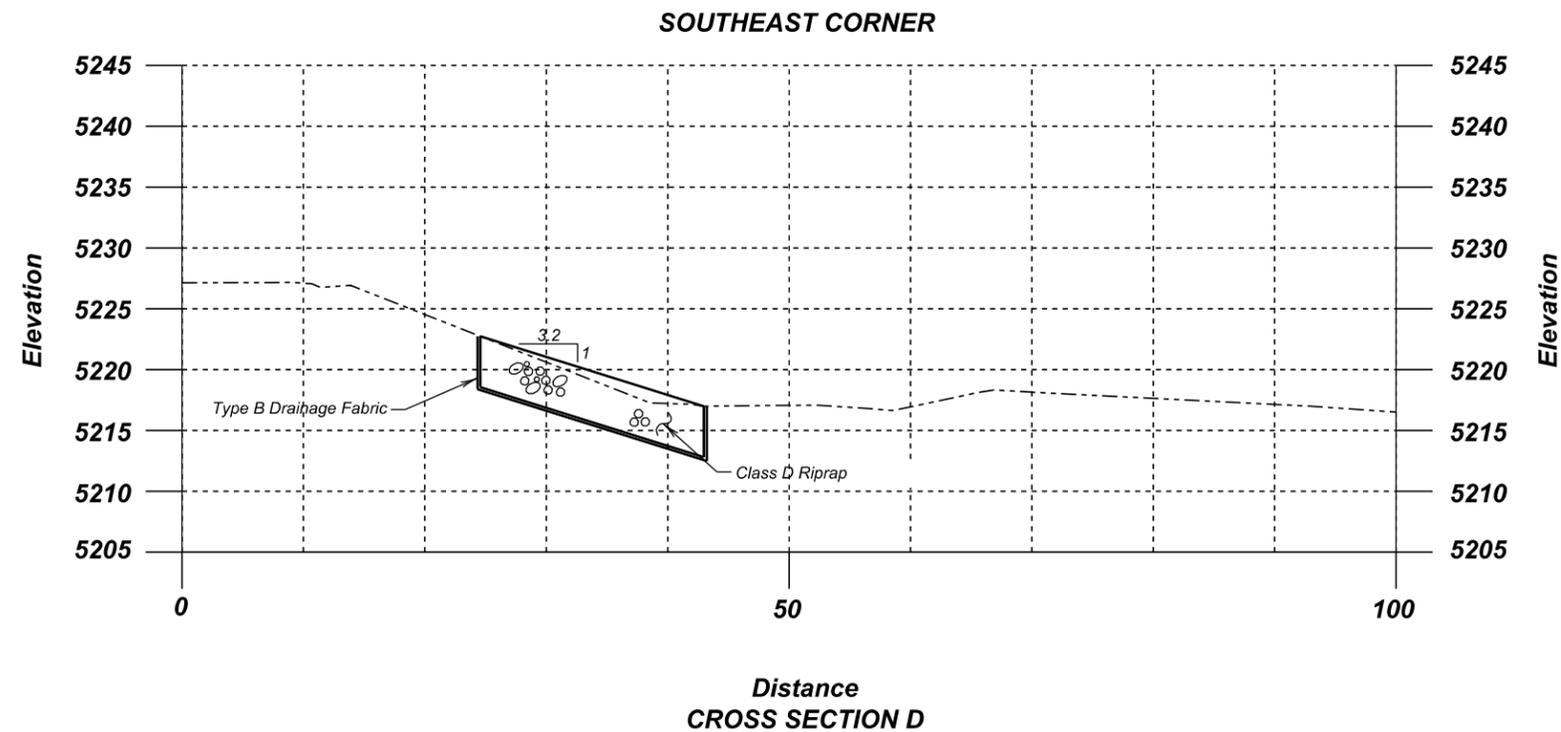
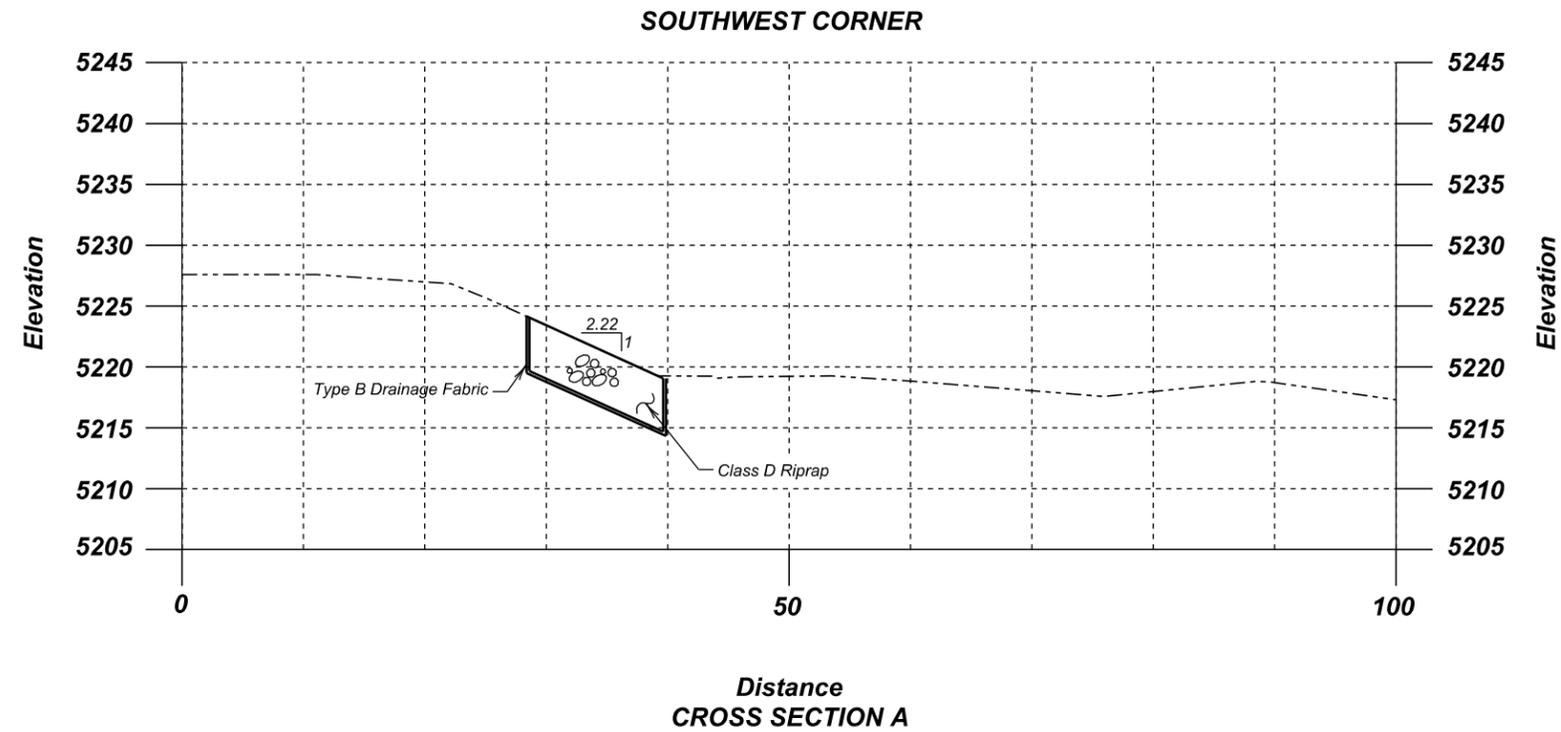
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
 30' - 0" ROADWAY 0° SKEW
 OVER FRENCH CREEK SEC. 20-T3S-R5E
 STR. NO. 17-254-067 P 016A(07)25

CUSTER COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2014

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RA03	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	15	38



--- Existing Ground Line



**CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY
OVER FRENCH CREEK
STR. NO. 17-254-067**

0° SKEW
SEC. 20-T3S-R5E
P 016A(07)25

CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

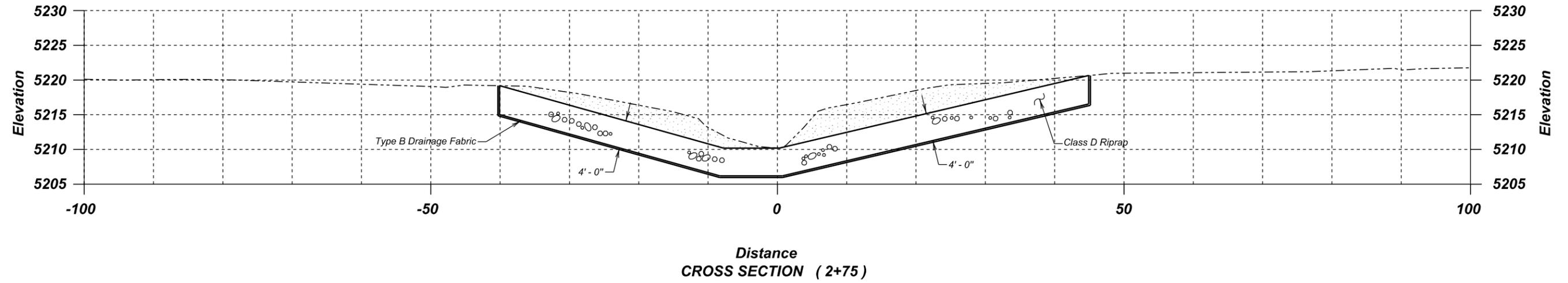
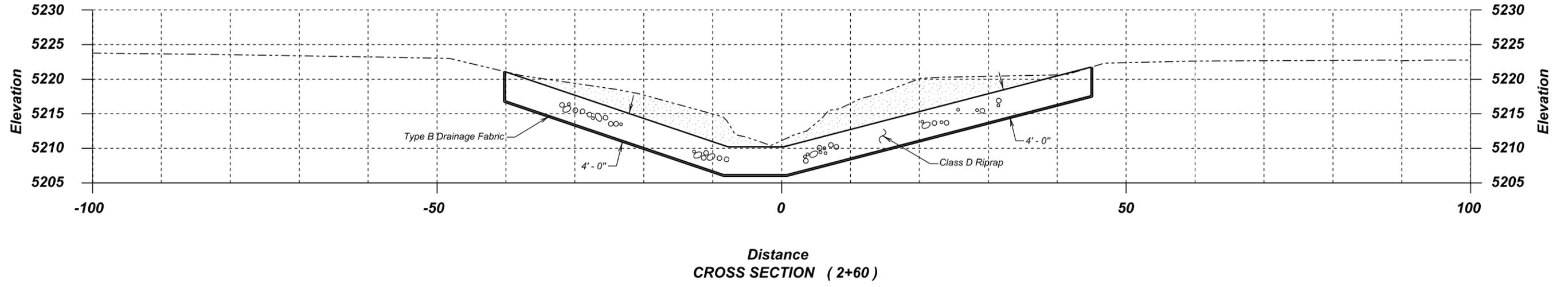
APRIL 2014

4 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RA04	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	16	38



----- Existing Ground Line



CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY 0° SKEW
OVER FRENCH CREEK SEC. 20-T3S-R5E
STR. NO. 17-254-067 P 016A(07)25

CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

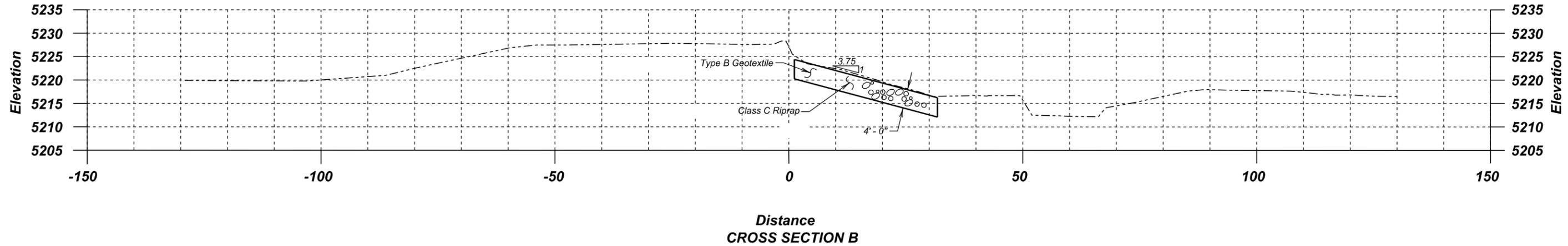
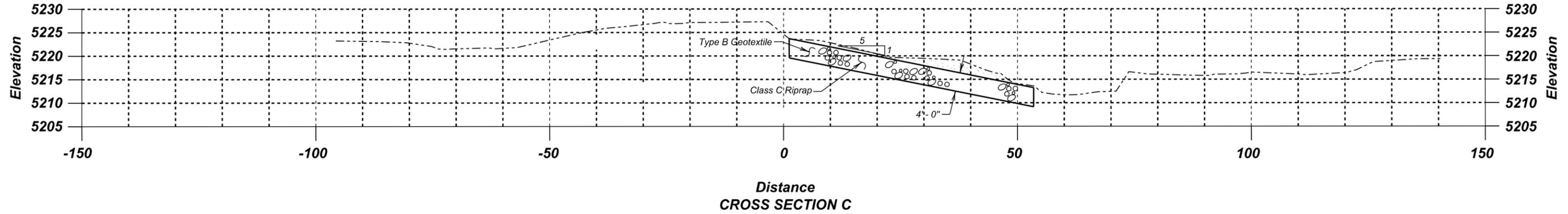
APRIL 2014

5 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RA05	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	17	38



- Existing Ground Line
-  Class D Riprap
-  Excavated Material

CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY 0° SKEW
OVER FRENCH CREEK SEC. 20-T3S-R5E
STR. NO. 17-254-067 P 016A(07)25

CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

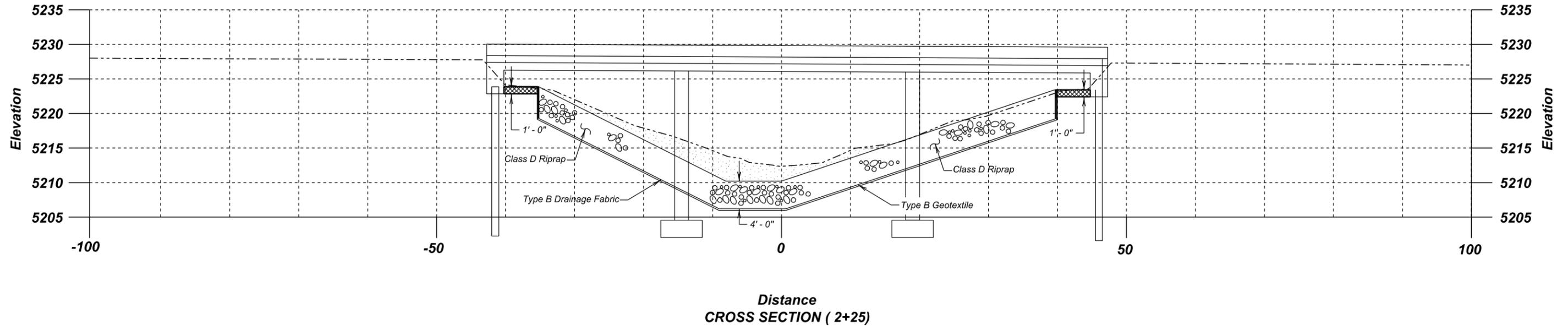
APRIL 2014

6 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RA06	DRAFTED BY KR	 BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	18	38

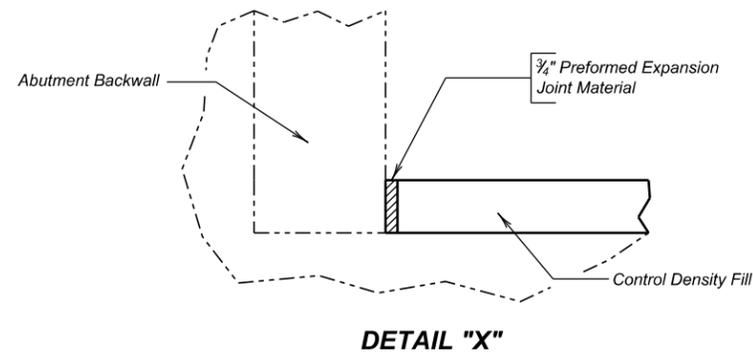


--- Existing Ground Line

 Class D Riprap

 Excavated Material

 Control Density Fill



DETAIL "X"

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
* Class D Riprap	Ton	2177.0
Control Density Fill	Cu. Yd.	12.0
Type B Drainage Fabric	Sq. Yd.	1365

* A factor of 1.4 was used to convert Cubic Yards to Tons.

For informational purposes only, 2037 cubic yards of excavated material is included in this payment item

CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY 0° SKEW
OVER FRENCH CREEK SEC. 20-T3S-R5E
STR. NO. 17-254-067 P 016A(07)25

CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2014

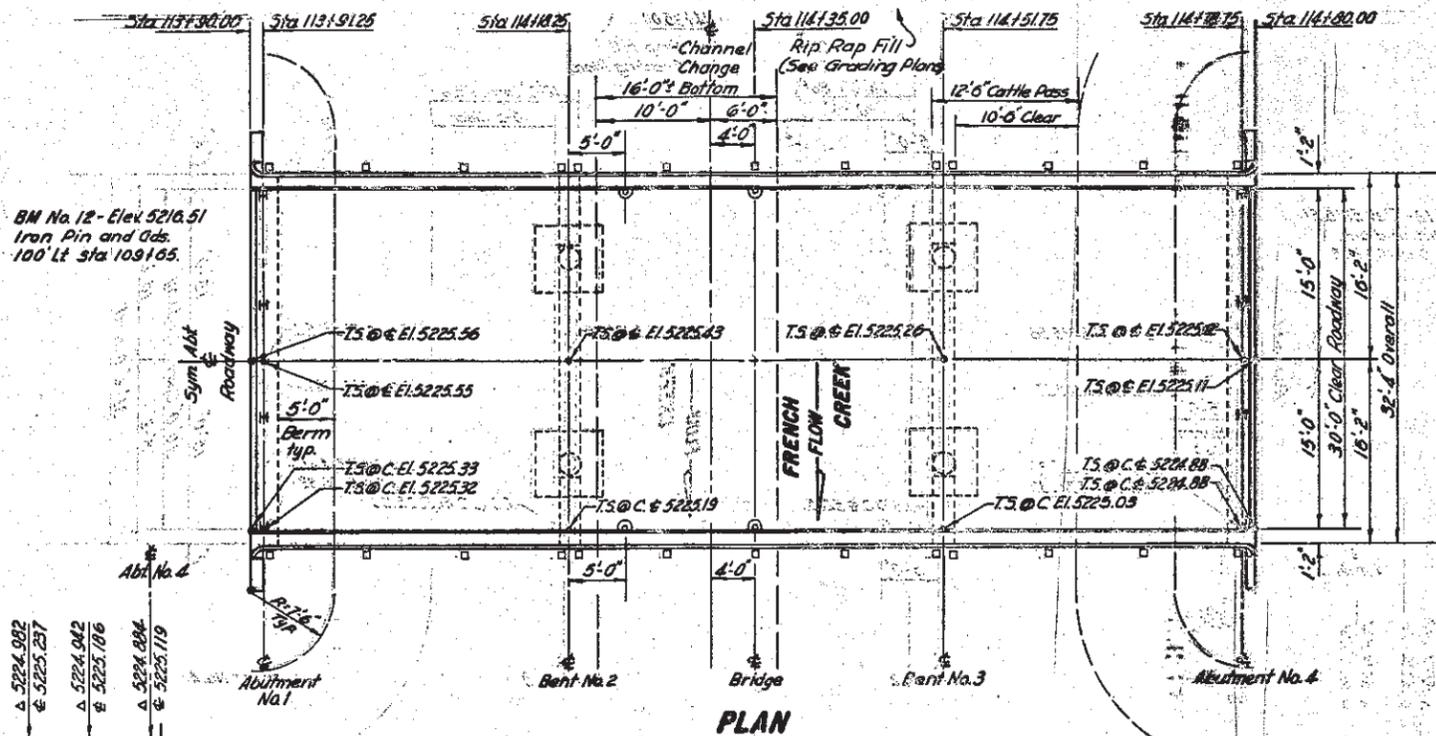
7 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RA07	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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- X020 -
INDEX OF BRIDGE SHEETS

- Sheet No. 1 General Drawing and Quantities.
- Sheet No. 2 Subsurface Investigation.
- Sheet No. 3 Details of Abutment.
- Sheet No. 4 Bent Details.
- Sheet No. 5 Details of Superstructure.
- Sheet No. 6 Type RRA-1 Railing and Drain Details.

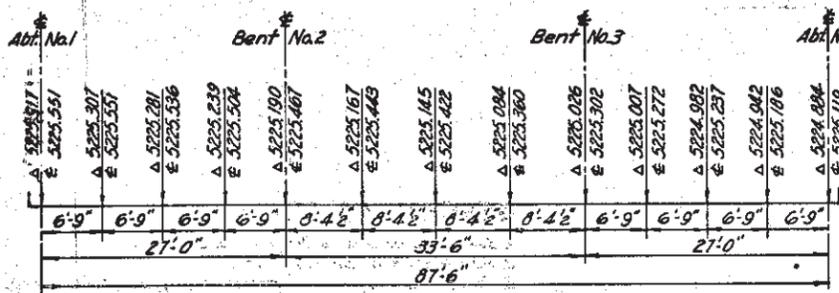
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 016A(07)25 P 0044(17)151	19	38



BM No. 12 - Elev. 5216.51
Iron Pin and Gds.
100 Lt. Sta. 109+05.

BM No. 13 - Elev. 5216.01
Iron Pin and Gds.
110 Rt. Sta. 120+00

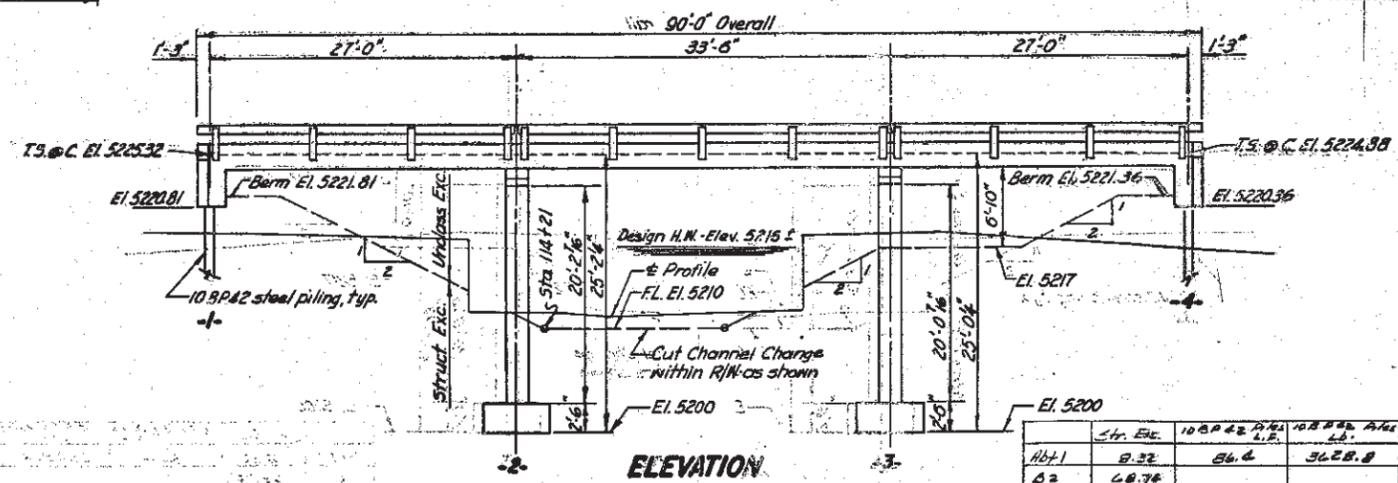
Note: TS@C - Top of Slab @ Centerline
TS@C - Top of Slab @ Curb



Note: Elevations indicated with Δ are top of finished slab at curb and with $\&$ are top of finished slab at centerline roadway. Camber for dead load deflection plus plastic flow, shown on sheet No. 5 of bridge plans, have been included in the elevations shown above.

CURB AND E ELEVATIONS

Q	1200 cfs
A	168 sq. ft.
V	7.1 fps



ELEVATION

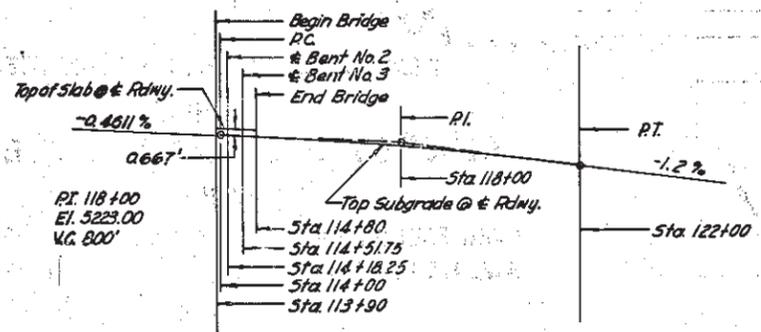
	Sta. Etc.	10.9P42 Steel Piling, Lbs.	10.9P42 Steel Piling, Lbs.	Total
Abt 1	8.32	86.4	3628.8	
B2	48.78			
B3	28.88			
Abt 4	8.10	87.3	3666.6	
Total	184.88	173.7	7295.4	

GENERAL NOTES.

1. See Notes on sheets No. 3, 4, 5 and 6.
2. Rail Posts shall be built vertical.
3. Place floor drains in interior span only, as shown (4 required)
4. Design Data:
 - (a) Loading: H-20-S16-44 A.A.S.H.O. (T-Current).
 - (b) Unit Stresses:
 - 1. Concrete $f_c = 1900$ psi.
 - 2. Reinforcing Steel $f_s = 20,000$ psi (Int. Grade Steel).
 - 3. Soil Equivalent Fluid Pressure = 40 lb. per sq. ft.
5. All reinforcing steel bars shall conform to A.S.T.M. Specifications A 305 (T-Current) and A 15 (T-Current).

SPECIFICATION NOTES.

1. Use current South Dakota Standard Specifications for Roads and Bridges and the Supplemental Specifications as included in the proposal.
2. All concrete shall be class A (Type II Cement) with air entrainment.



SUBGRADE CURVE DATA

Description	ESTIMATED QUANTITIES				
	cu. Conc. Ids.	Steel Lbs. Reinf. Struct.	Steel Railing Type II Lin. Ft.	Steel Bearing Piles Lbs. P.	Expans. Top-cu. yds. Struct. Unclass. Rip/Rap Fill. GY
Superstructure	24.0	38,111	86	182.5	
Abutment No. 1	12.0	2546	286	4-42" x 24" - 1032	8
Bent No. 2	14.6	3046			61
Bent No. 3	14.5	3035			100
Abutment No. 4	12.0	2546	286	4-42" x 24" - 1032	8
Totals	177.1	47,290	688	182.5	177

See Grading Plans for Unclassified Excavation and Rip/Rap/Fill.
 TEST PILE NOTE: One 10.9P42 Steel Bearing Test Pile shall be driven at Abutments No. 1 and No. 4 before the remaining piles are ordered.
 PILE NOTE: Piles driven at Abutments No. 1 and No. 4 including Test Piles, shall obtain their full bearing (35 Tons) in the natural ground below the new embankment elevations 5219.0 ± and 5217.0 ± respectively. Pre-bored holes through the fill are required and shall not be less than 14" diameter.
 INCIDENTAL WORK NOTE: In place 12" Rt. & Sta. 114+13 to 14" Rt. & Sta. 114+43, 30' x 24' roadway, single span I-beam bridge with timber abutments. Remove bituminous covering on deck. Dismantle and salvage superstructure and substructure, pull piling if possible. Piling not pulled shall be cut-off 1' below finished ground line or as necessary for construction of footings of new bridge. Care shall be taken not to injure the structural properties of the plank deck, I-beam stringers and any other salvageable materials present. All spikes, nails, bolts and screws shall be removed from salvaged material. All salvaged materials shall be placed neatly within right of way as directed by the ENGINEER to be picked up by State Forces. Materials not salvaged shall be disposed of as directed by the ENGINEER.

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING AND QUANTITIES
FOR
90'-0" CONTINUOUS CONCRETE BRIDGE
30'-0" ROADWAY
OVER FRENCH CREEK
STA. 113+90 TO 114+80
STR. NO. 17-254-067

SEC. 20-T3S-R5E
F-022 - (13)
H20 - S16-44

CUSTER COUNTY
SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS

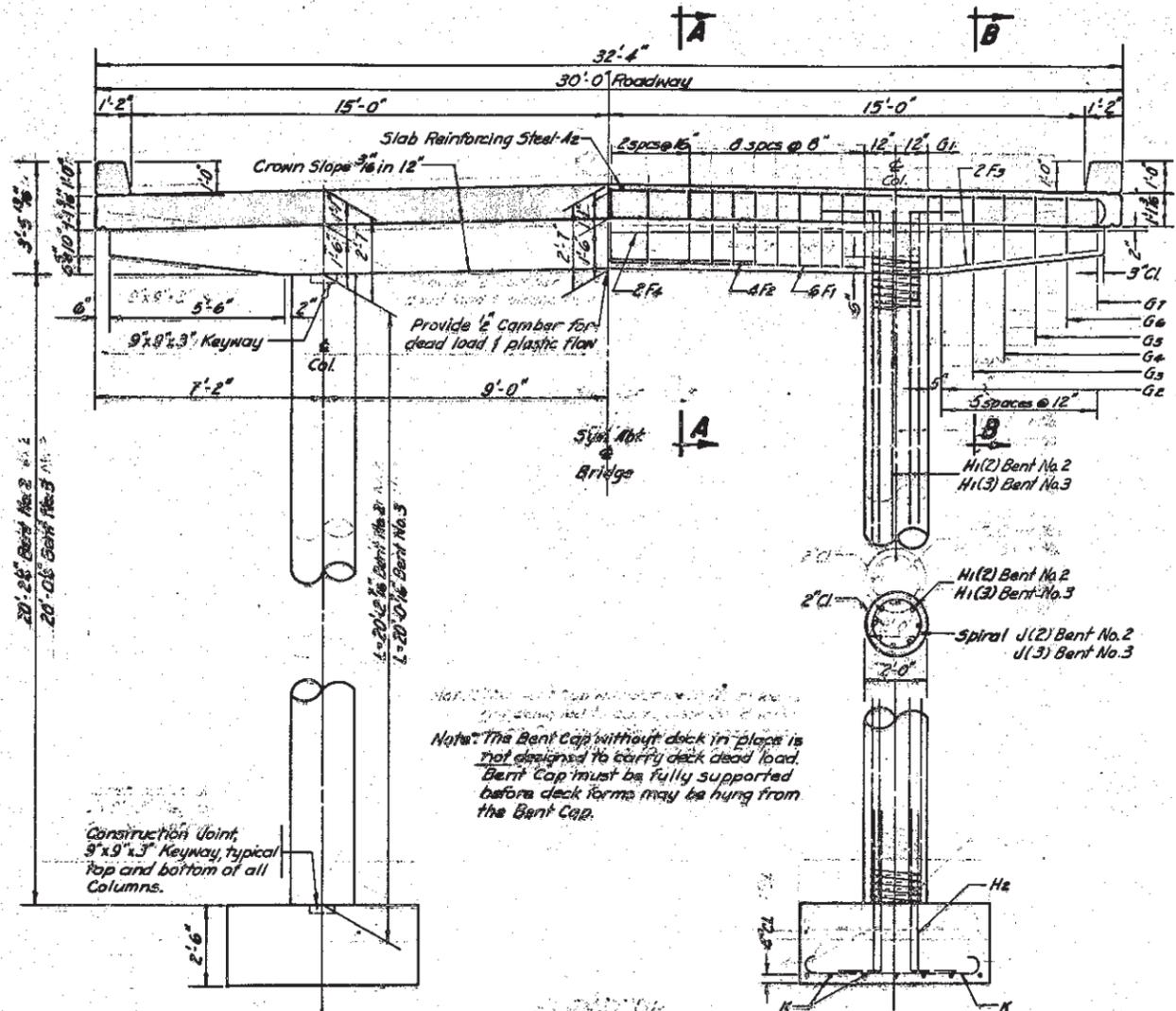
FEB. 1963

- X020 -

DESIGNED BY H.M.R.	DRAWN BY R.E.J.	CHECKED BY C.M.L.	APPR. BY <i>[Signature]</i> BRIDGE ENGINEER
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17-367

STAVEN ENGINEERING COMPANY
RAPID CITY, SOUTH DAKOTA



Note: The Bent Cap without deck in place is not designed to carry deck dead load. Bent Cap must be fully supported before deck forms may be hung from the Bent Cap.

Construction Joint, 9'x9'x3" Keyway, typical top and bottom of all Columns.

ELEVATION
BENTS 2 & 3

REINFORCING SCHEDULE				Bending Details	
Mark	No.	Size	Length	Type	
F1	12	9	20'-0"	19	Type (19)
F2	8	9	3'-4"	19	
F3	8	5	6'-6"	19	Type (19)
F4	4	5	3'-0"	Str.	
G1	92	5	8'-0"	T1	Type (17)
G2	4	4	8'-8"	T1	
G3	4	4	8'-4"	T1	
G4	4	4	8'-0"	T1	
G5	4	4	7'-9"	T1	
G6	4	4	7'-6"	T1	
G7	4	4	7'-2"	T1	Type (17)
H1(2)	16	7	23'-6"	2	
H1(3)	16	7	23'-4"	2	
H2	32	7	6'-2"	2	Type (2)
J(2)	2	4	536'-10"	Spiral	
J(3)	2	4	533'-1"	Spiral	Type (2)
K	56	6	6'-10"	1	

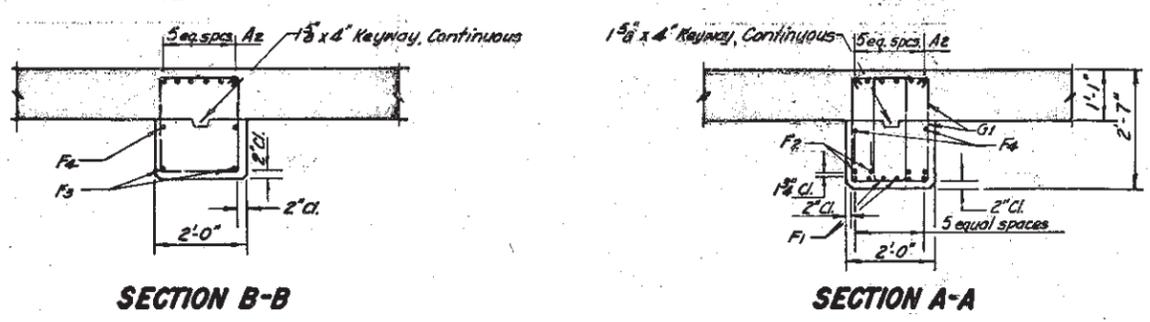
Spirals - 2" pitch - 1/2 extra turns at each end. Splice as required, using a lap of 1 1/2 turns or weld as approved by the Bridge Section. Use 4 vertical spacer bars per column.

All dimensions are out to out of bars. Total length in feet of Spiral reinforcement can be determined by the equation: 25.2L + 28.3. L = Length of Column as shown on plans.

ESTIMATED QUANTITIES			
Item	Unit	Quantity	
Class A Concrete	Cu Yds	14.5	
Reinforcing Steel	Lbs	3025	3035
Structure Excavation	Cu Yds	6	100

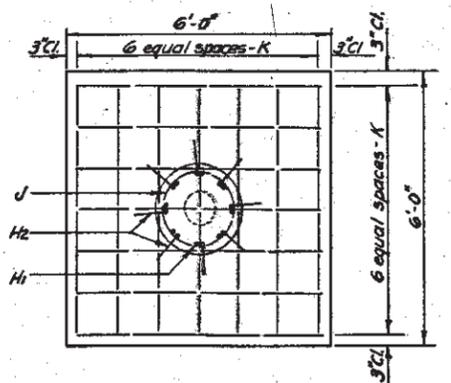
- NOTES.—**
- All exposed edges shall be chamfered one inch unless otherwise shown.
 - Use 2" clear cover on all reinforcement unless otherwise shown.
 - Quantities: For a one-foot variation in the length of one column the following modification of quantities will be required.
 - (a) 33 lbs. of reinforcing steel.
 - (b) 0.12 cu. yds. of class A concrete.
 - (c) 3.0 cu. yds. structural excavation.

- EXCAVATION NOTES.—**
- Footings for Bents No. 2 and No. 3 shall be cast against solid undisturbed Mica Schist and carried into same approximately the depth of footings. Limits of Mica Schist excavation for these footings shall be bounded as nearly as practicable by the neat lines as shown in the details of footings for Bents No. 2 and No. 3 on sheet No. 4 of 6.
 - Mica Schist shall develop a minimum bearing value of 4.0 tons per sq. ft. If the bearing value is less than 4.0 tons per sq. ft. communicate with the BRIDGE SECTION.
 - Final footing elevations for Bents shall be established before ordering column reinforcing steel for the respective Bents.



SECTION B-B

SECTION A-A



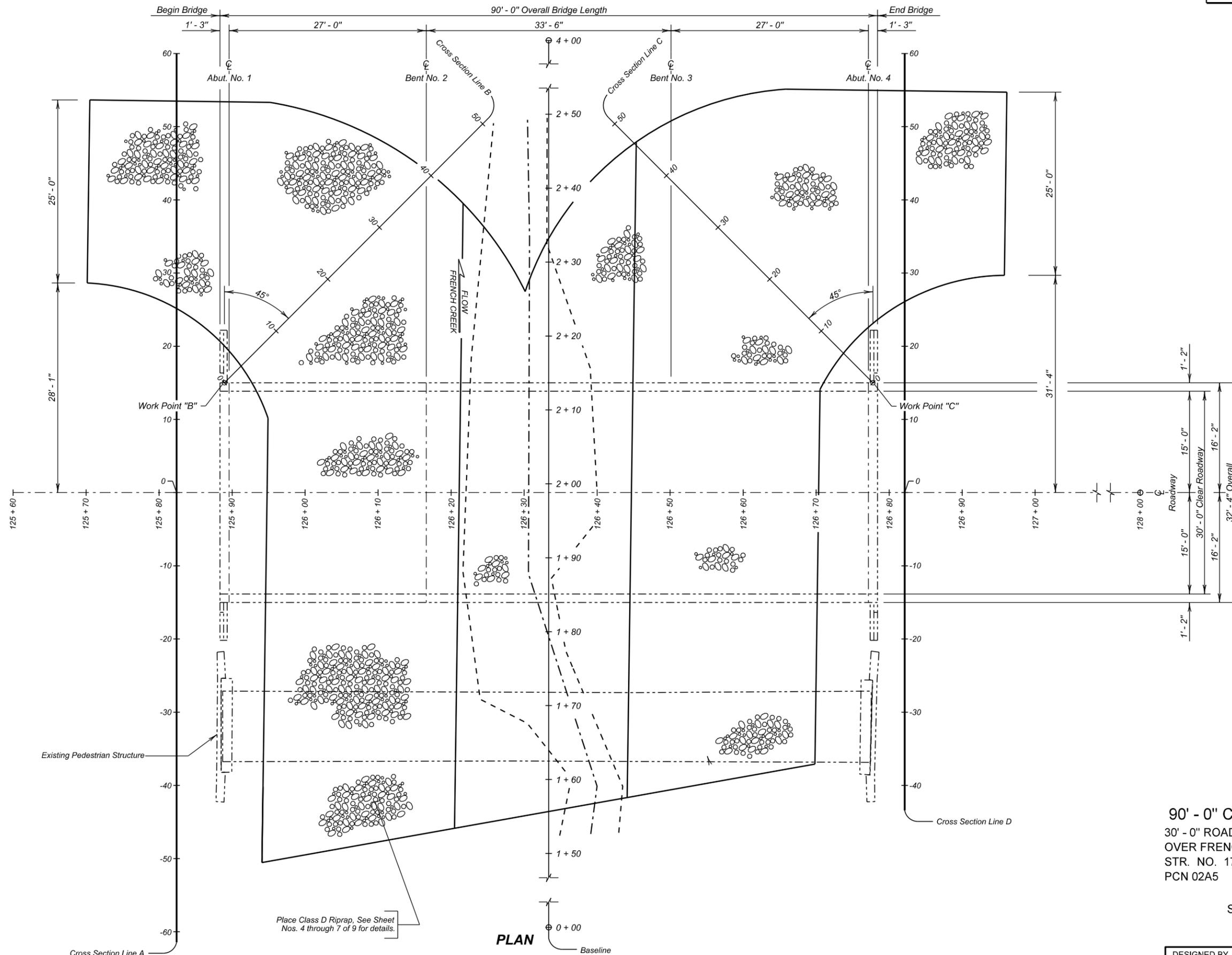
TYPICAL FOOTING

ORIGINAL CONSTRUCTION PLANS

BENT DETAILS FOR 90'-0" CONTINUOUS CONCRETE BRIDGE
 30'-0" ROADWAY
 OVER FRENCH CREEK SEC. 20-T3S-R5E
 STA. 113+90 TO 114+80 F-022-1(3)
 STR. NO. 17-254-067 H20-S16-44
 CUSTER COUNTY
 SOUTH DAKOTA
 DEPARTMENT OF HIGHWAYS

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	21	38



INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Riprap Placement
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Topography and Control Points
- Sheet No. 4 - Channel Cross Sections
- Sheet No. 5 - Channel Cross Sections (Continued)
- Sheet No. 6 - Channel Cross Sections (Continued)
- Sheet No. 7 - Channel Cross Sections (Continued)
- Sheet No. 8 - Original Construction Plans
- Sheet No. 9 - Original Construction Plans (Continued)

LAYOUT OF RIPRAP PLACEMENT FOR

90' - 0" CONTINUOUS CONCRETE BRIDGE
 30' - 0" ROADWAY 0° SKEW
 OVER FRENCH CREEK SEC. 20-T3S-R5E
 STR. NO. 17-256-066 P 016A(07)25
 PCN 02A5

CUSTER COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2014

1 OF 9

PLANS BY:
 OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RB01	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
700E0410	Class D Riprap	2287.2	Ton
831E0110	Type B Drainage Fabric	1251	SqYd

SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown elsewhere in the plans.

Reshape the channel within the limits shown in the plans and place riprap to the limits shown in the plans.

RIPRAP

1. The cross sections shown in this plan set are provided as a guide for riprap placement and are based on the existing ground locations at the time of the survey. The location of the toe of the riprap may vary to suit local site conditions as long as the following items are adhered to:
 - a. The 5.0 foot of riprap thickness is attained.
 - b. The opening provided under the structure for water flow is not reduced from what is shown on the cross sections.
 - c. Any changes in the riprap configuration are approved by the Engineer.
2. Excavate to limits shown on cross section for Riprap placement. Any excess material shall be disposed of by the Contractor as approved by the Engineer. All costs associated with excavating and disposing material including all labor, equipment and incidentals necessary shall be incidental to the contract unit price per ton for "Class D Riprap".
3. Type B Drainage Fabric will be placed underneath the Class D Riprap. The fabric shall conform to Section 831 of the Construction Specifications.
4. All labor, equipment, material and incidental costs associated with piling cut off for finished riprap or channel bottom surface shall be incidental to the contract unit price per ton for "Class D Riprap".
5. The Class D Riprap shall be constructed to the configuration, limits and elevations shown on Sheet Nos. 4 through 7 of 9. All costs associated with placement of the riprap including all material, labor and equipment shall be incidental to the contract unit price per ton for "Class D Riprap."
6. A factor of 1.4 tons/cu.yd. was used to convert the Riprap quantity from Cu. Yds. to Tons.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE**

STR. NO. 17-256-066

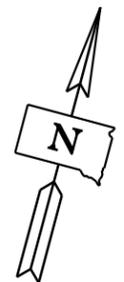
APRIL 2014

(2) OF (9)

DESIGNED BY SA/BWS CUST02A5	CK. DES. BY KK 02A5RA02	DRAFTED BY BWS	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	23	38



200' R.O.W.

FLOW
FRENCH CREEK

Limits of Riprap

CONTROL POINT LEGEND

POINT	N DIRECTION	E DIRECTION	ELEVATION
C. P. 1	1114286.7320	540326.5890	5255.54
C. P. 2	1125496.5080	540888.9260	5224.28
C. P. 3	1119121.5540	540454.1210	5218.97

EXISTING TOPOGRAPHY SYMBOLOGY

- Existing Channel Bank ---
- Existing ROW - - - - -
- Telephone Fiber Optics — T/F —
- Underground Telephone Line — T —
- Underground Electric Line — P —

Existing Pedestrian Structure

Roadway

C.P.1

C.P.2

C.P.3

TOPOGRAPHY AND CONTROL POINTS

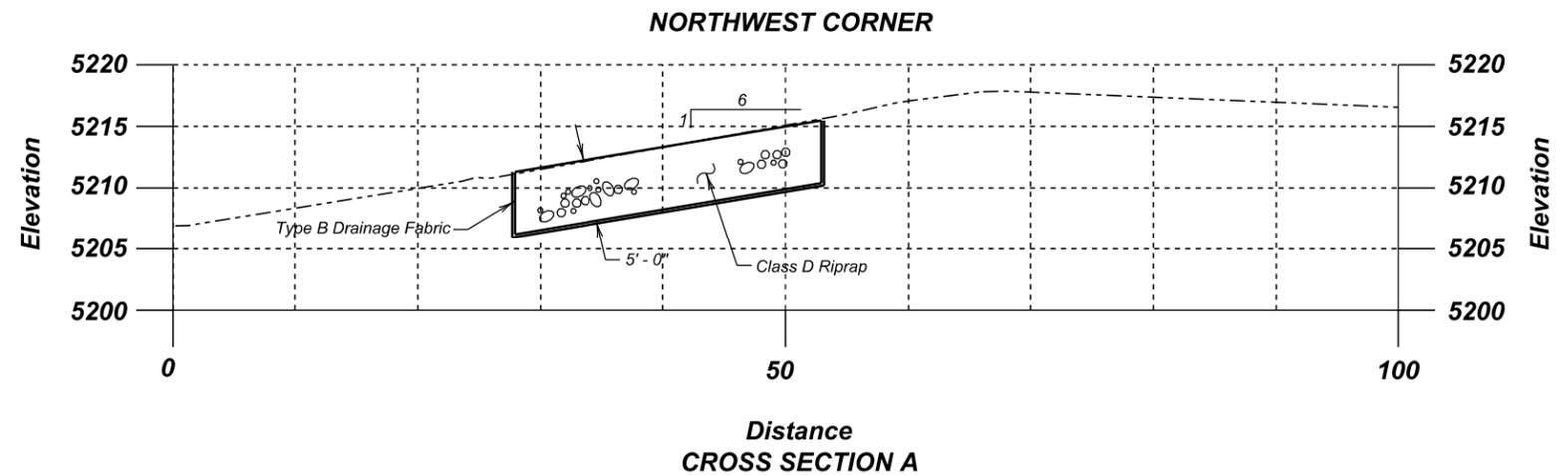
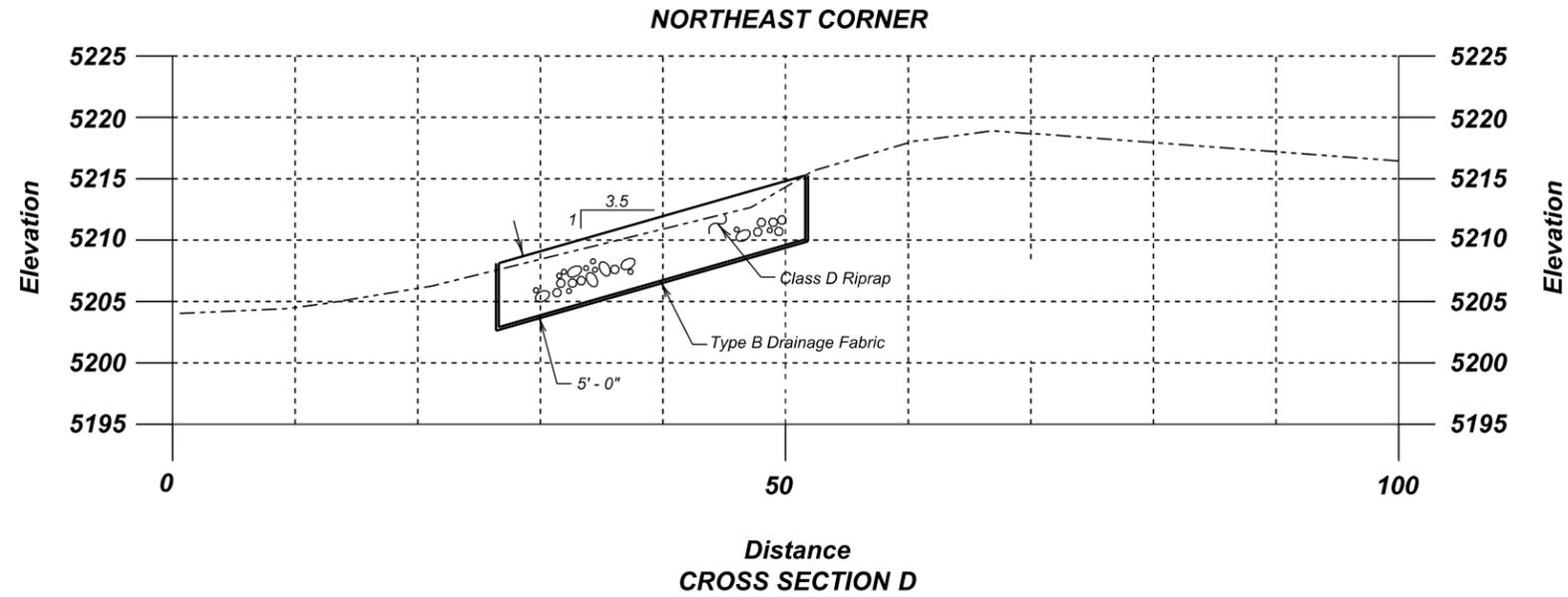
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
 30' - 0" ROADWAY 0° SKEW
 OVER FRENCH CREEK SEC. 20-T3S-R5E
 STR. NO. 17-256-066 P 016A(07)25

CUSTER COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPT 2014

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RB03	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	24	38



----- Existing Ground Line



**CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY 0° SKEW
OVER FRENCH CREEK SEC. 20-T3S-R5E
STR. NO. 17-256-066 P 016A(07)25**

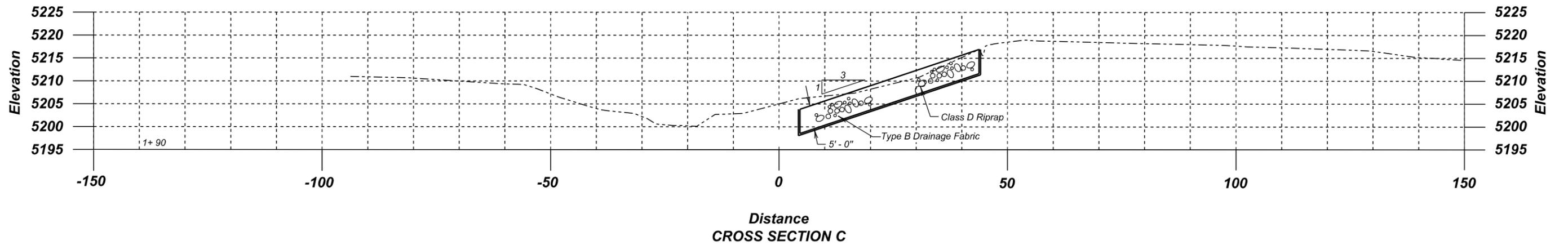
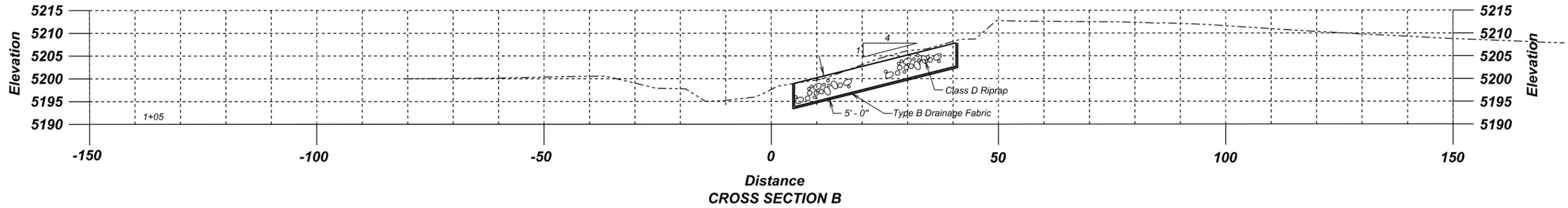
CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2014

4 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RB04	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	25	38



----- Existing Ground Line



Class D Riprap



Excavated Material

CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY 0° SKEW
OVER FRENCH CREEK SEC. 20-T3S-R5E
STR. NO. 17-256-066 P 016A(07)25

CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

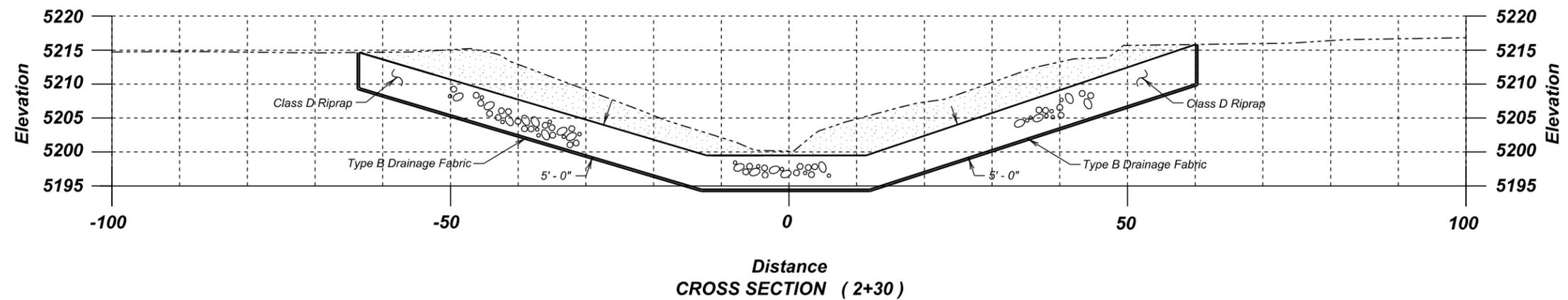
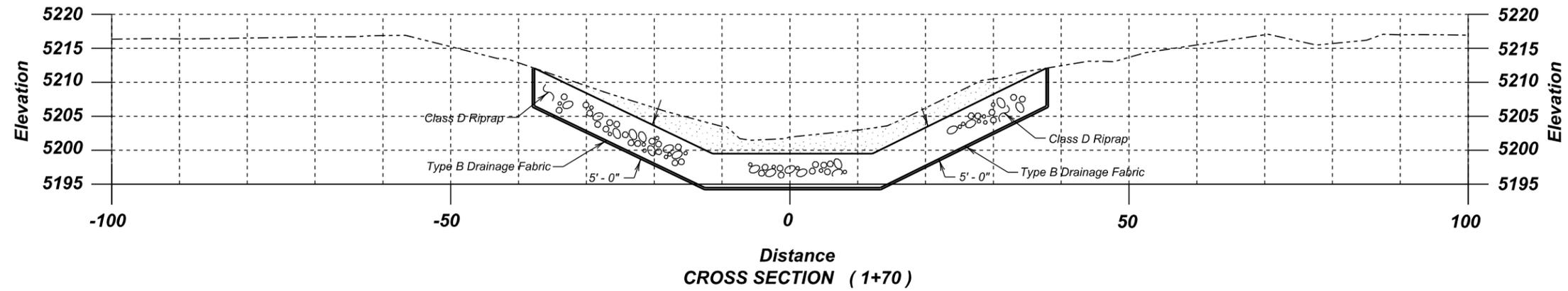
APRIL 2014

5 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RB05	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	26	38



----- Existing Ground Line

 Class D Riprap

 Excavated Material

CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY 0° SKEW
OVER FRENCH CREEK SEC. 20-T3S-R5E
STR. NO. 17-256-066 P 016A(07)25

CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

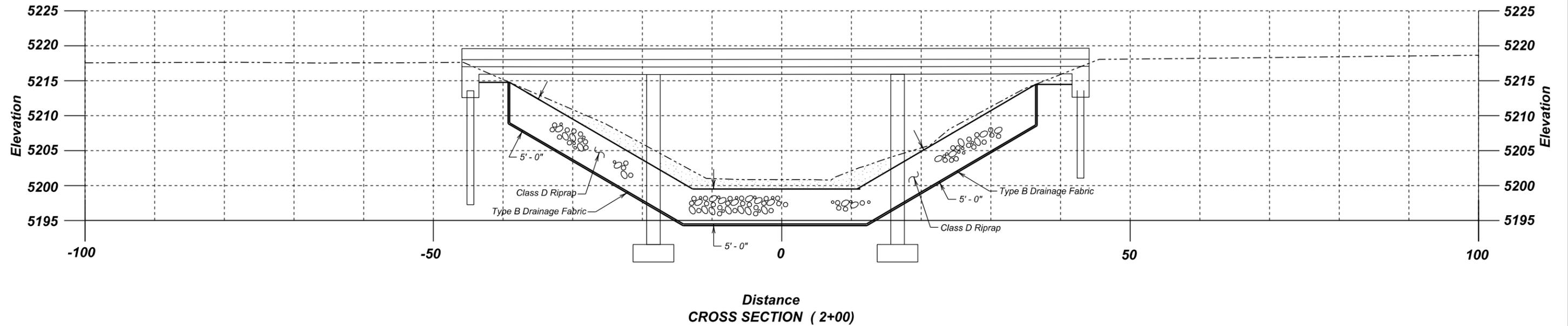
APRIL 2014

6 OF 9

DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RB06	DRAFTED BY KR	 BRIDGE ENGINEER
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Revised 08-11-2014 BWS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(171)151 P 016A(07)25	27	38



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
* Class D Riprap	Ton	2287.2
Type B Drainage Fabric	Sq. Yd.	1251

* A factor of 1.4 was used to convert Cubic Yards to Tons.

For informational purposes only, 2135 cubic yards of excavated material is included in this payment item

--- Existing Ground Line



CHANNEL CROSS SECTIONS
FOR
90' - 0" CONTINUOUS CONCRETE BRIDGE
30' - 0" ROADWAY
OVER FRENCH CREEK
STR. NO. 17-256-066

0° SKEW
SEC. 20-T3S-R5E
P 016A(07)25

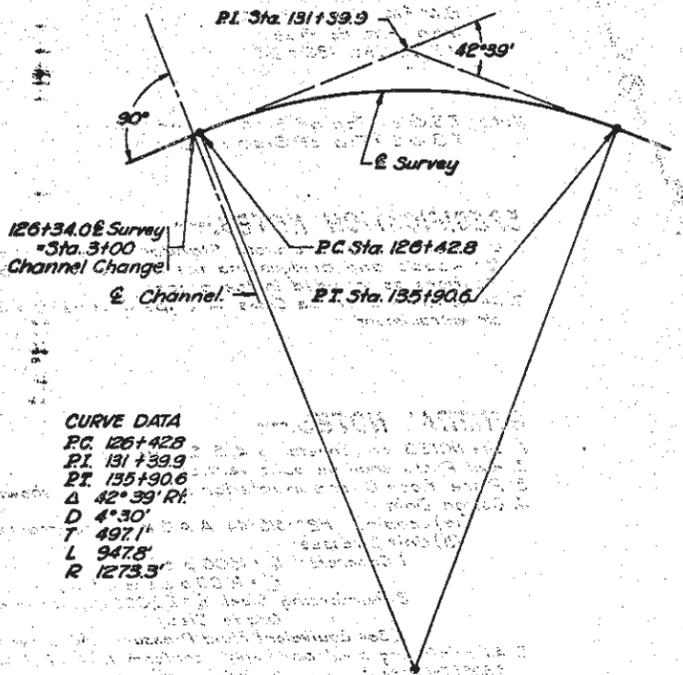
CUSTER COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2014

7 OF 9

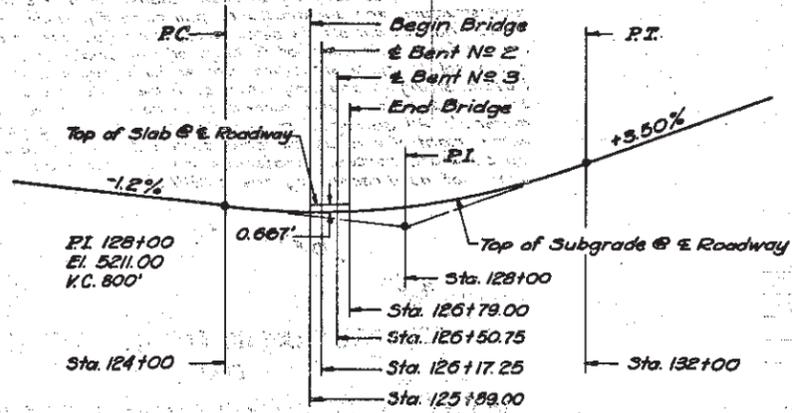
DESIGNED BY SA/BWS CUST02A5	DES. CK. BY KK 02A5RB07	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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INDEX OF BRIDGE SHEETS.
 Sheet No 1 General Drawing and Quantities.
 Sheet No 2 Subsurface Investigation.
 Sheet No 3 Details of Abutment No 1.
 Sheet No 4 Details of Abutment No 4.
 Sheet No 5 Bent Details.
 Sheet No 6 Details of Superstructure.
 Sheet No 7 Curve Ordinates & Slab Elevations.
 Sheet No 8 Type RRA-1 Railing & Drain Details.



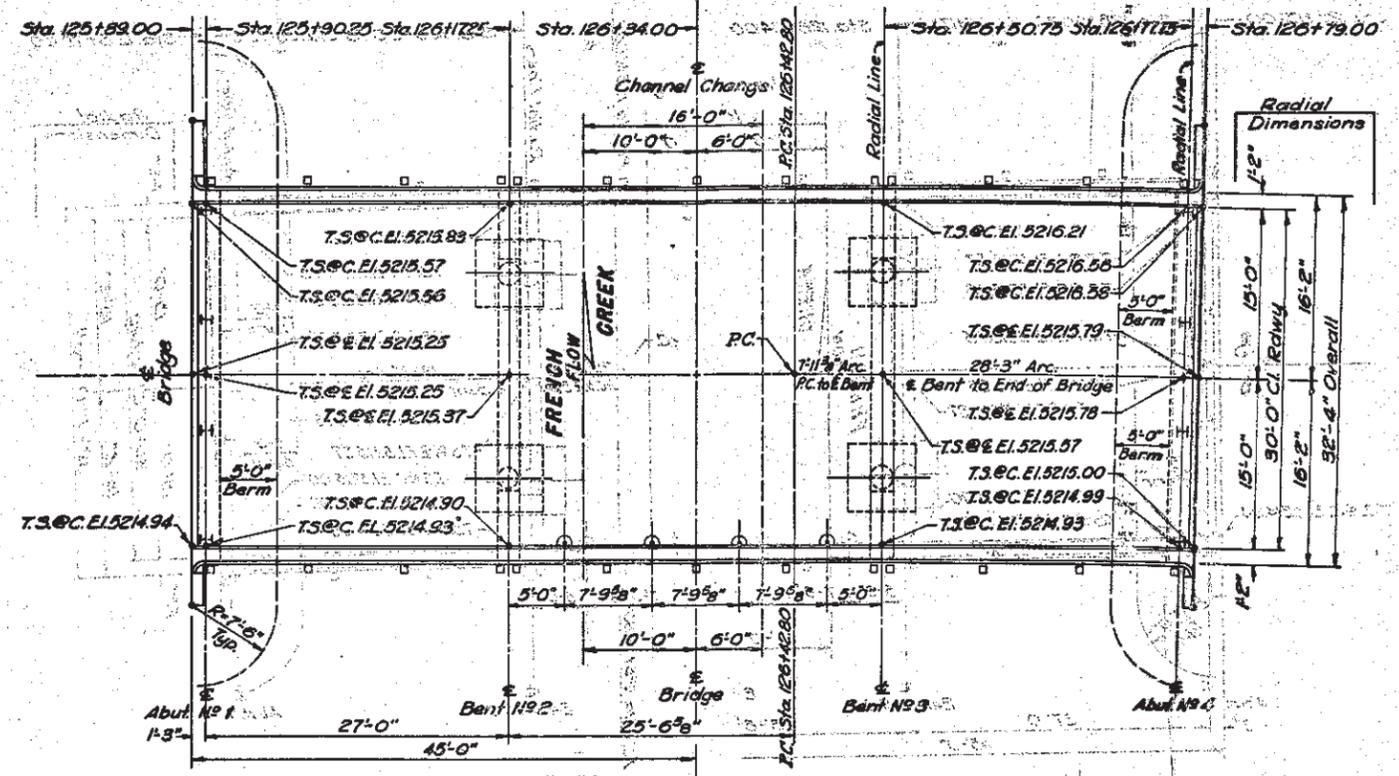
CURVE DATA
 PC 126+42.8
 PI 131+39.9
 PT 135+90.6
 Δ 42° 39' Rt.
 D 4° 30'
 T 497.1'
 L 947.8'
 R 1273.3'

HORIZONTAL CURVE DATA

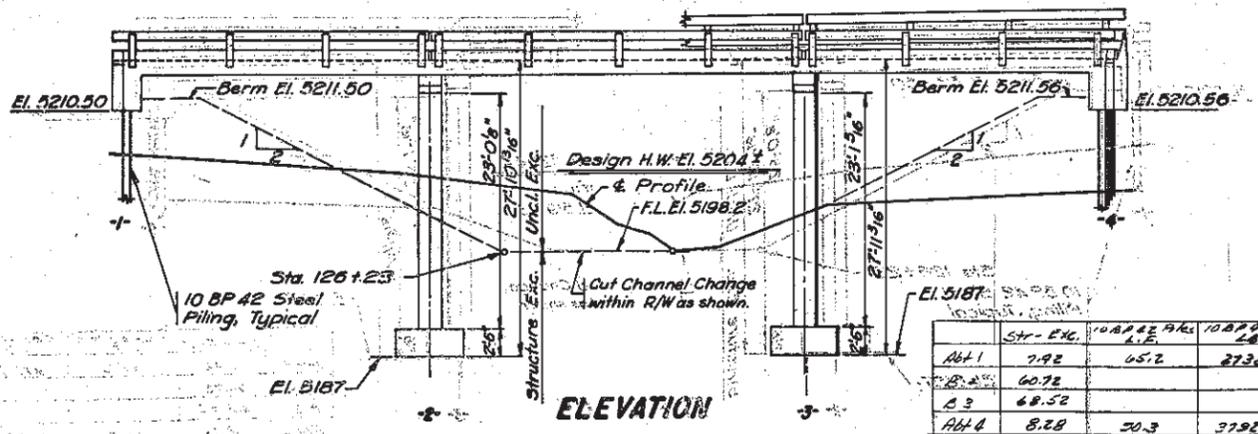


VERTICAL CURVE DATA

Q	1250 c.f.s.
A	183.3 sq. ft.
V	6.8 f.p.s.



PLAN



ELEVATION

Description	Ck. 'A' Conc. Cu. Yds.	Steel - Lbs.		Steel Railing Type RRA-1 Lin. Ft.	Steel Bearing Piles - Lbs.	Excavation - Cu. Yds.	
		Reinft.	Struct.			Struct.	Uncl. Exc.
Superstructure	124.0	1,361.17	86	182.3			
Abutment No 1	12.3	1,840	296		4-42"Ø 20' x 3,360		
Bent No 2	15.3	8,250					109
Bent No 3	17.4	3,263					87
Abutment No 4	13.0	1,441	285		4-42"Ø 23' x 3,364		
Totals	181.9	14,741	668	182.3	4-42"Ø 23' x 3,364	208	

▲ See Grading Plans for Unclassified Excavation.
 * Test Pile Note: One 10BP42 Steel Bearing Test Pile shall be driven at Abutments No 1 & No 4 before the remaining piles are ordered.
 PILE NOTE - Piles driven at Abutments No 1 & No 4, including Test Piles, shall obtain their full bearing (35 Tons) in the natural ground below the new embankment elevations, 5207.03 and 5203.01 respectively. Prebored holes through the fill are required & shall be not less than 14" diameter.
 * INCIDENTAL WORK - See note, RI column, this sheet.



B.M. #13 - Elev. 5216.01
 Iron Pin & Gds.
 110' Rt. Sta. 120+00

B.M. #14 - Elev. 5210.70
 Iron Pin & Gds.
 110' Lt. Sta. 130+00

Note: T.S.@C = Top of Slab at Centerline;
 T.S.@C = Top of Slab at Curb.

SPECIFICATION NOTES.
 1. Use Current South Dakota Standard Specifications for Roads and Bridges and the Supplemental Specifications as included in the proposal.
 2. All concrete shall be Class "A" (Type II Cement) with air entrainment.

GENERAL NOTES.
 1. See NOTES on Sheets 3, 4, 5, 6, 7 and 8.
 2. Rail Posts shall be built vertical.
 3. Place Floor Drains in interior span, only, as shown. (if req'd).
 4. Design Data:
 (a) Loading: H20-S16-44 A.A.S.H.O. (T-Current)
 (b) Unit Stresses:
 1. Concrete: $f_c = 1600$ p.s.i.
 $f'_c = 4000$ p.s.i. @ 28 days.
 2. Reinforcing Steel: $f_s = 20,000$ p.s.i. (Intermediate Grade Steel)
 3. Soil Equivalent Fluid Pressure: 40 lb. per sq. ft.
 5. All reinforcing steel bars shall conform to A.S.T.M. Specifications A305 (T-Current) and A15 (T-Current).

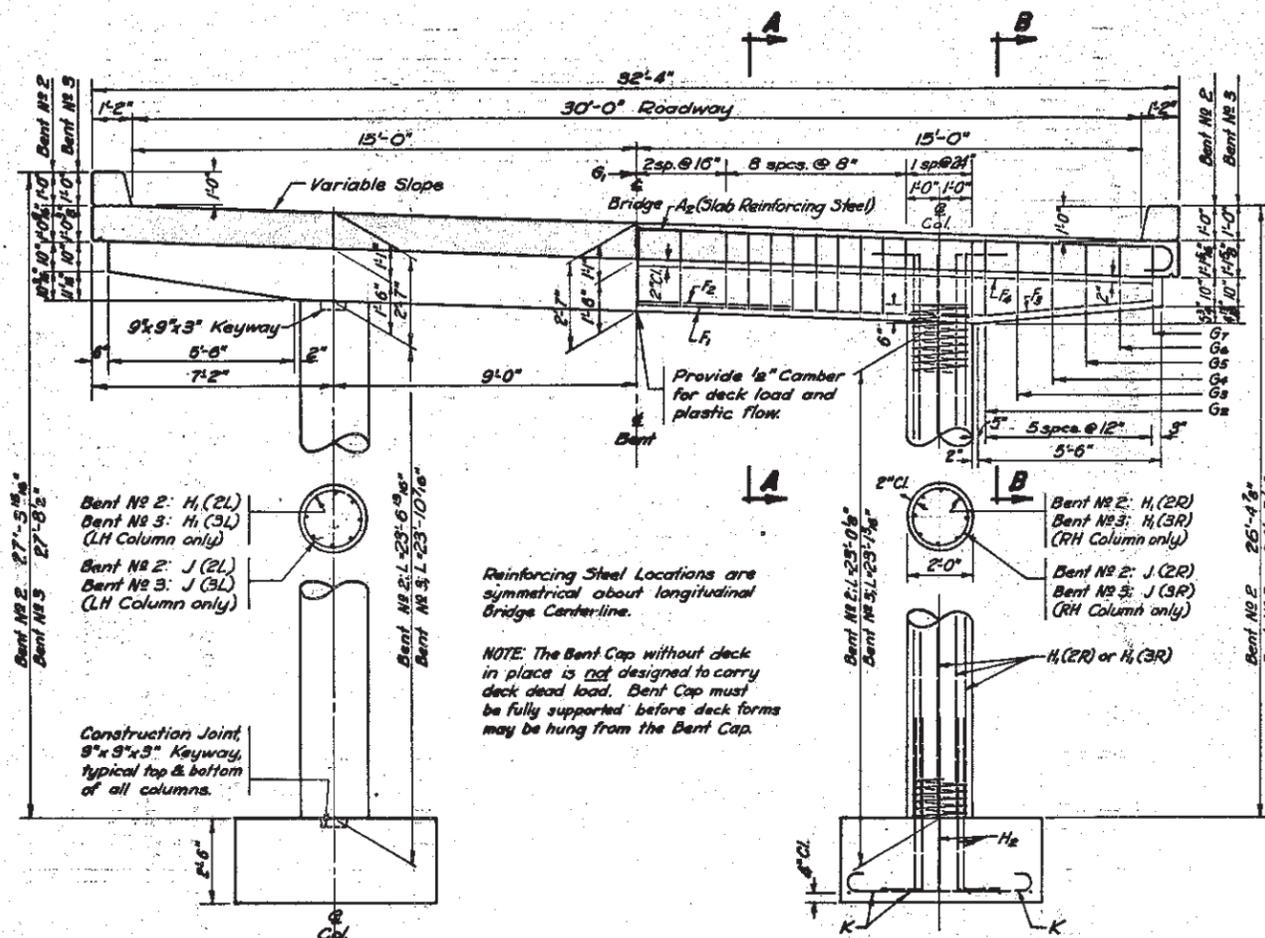
INCIDENTAL WORK.
 In place 32' Rt. @ Sta. 126+21 to 32' Rt. @ Sta. 126+52, 30' x 24' roadway, single span I-beam bridge with timber abutments. Remove bituminous covering on deck. Dismantle and salvage superstructure and substructure, pull piling if possible. Piling not pulled shall be cut off 1' below present ground line or as necessary for construction of footings of new bridge. Care shall be taken not to injure structural properties of the plank deck, I-beam stringers and any other salvable materials present. All spikes, nails, bolts and screws shall be removed from salvaged material. All salvaged materials shall be placed neatly within right of way as directed by the ENGINEER, to be picked up by State Forces. Materials not salvaged shall be disposed of as directed by the ENGINEER.

ORIGINAL CONSTRUCTION PLANS

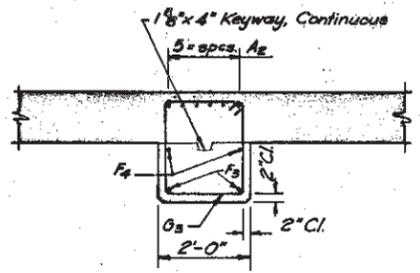
GENERAL DRAWING AND QUANTITIES
 FOR
90'-0" CONTINUOUS CONCRETE BRIDGE
 OVER FRENCH CREEK
 STA. 125+89 TO 126+79
 STR. NO. 17-256-066
 CUSTER COUNTY
 SOUTH DAKOTA

DEPARTMENT OF HIGHWAYS
 FEB. 1963
 DESIGNED BY C.M.L. DRAWN BY T.W.B. CHECKED BY H.M.R. APPROVED [Signature]
 BRIDGE ENGINEER

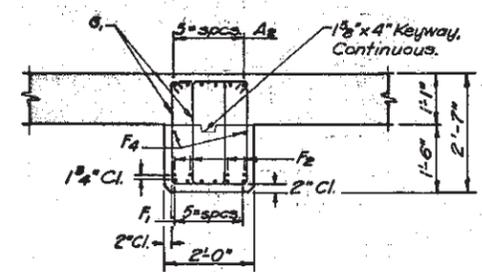
STAVEN ENGINEERING COMPANY
 RAPID CITY, SOUTH DAKOTA



ELEVATION
Bents 2 & 3

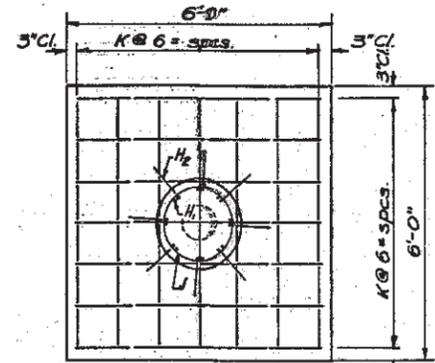


SECTION B-B



SECTION A-A

ESTIMATED QUANTITIES		
ITEM	UNIT	Qty
Class "A" Concrete	Cu. Yds.	183 1/4
Reinforcing Steel	Lbs.	3,250
Structural Exc.	Cu. Yds.	107 8/11



TYPICAL FOOTING

REINFORCING SCHEDULE					Bending Details	
Mark	No	Size	Length	Type		
F ₁	12	9	20'-0"	Str.	Type ①	
F ₂	8	9	9'-4"	Str.	Type ②	
F ₃	8	5	6'-6"	19	Type ③	
F ₄	4	5	31'-0"	Str.	Type ④	
G ₁	92	5	8'-0"	T.	Type ⑤	
G ₂	4	4	8'-8"	T.	Type ⑥	
G ₃	4	4	8'-4"	T.	Type ⑦	
G ₄	4	4	8'-0"	T.	Type ⑧	
G ₅	4	4	7'-9"	T.	Type ⑨	
G ₆	4	4	7'-6"	T.	Type ⑩	
G ₇	4	4	7'-2"	T.	Type ⑪	
H ₁ (2L)	8	7	26'-10"	2	Type ⑫	
H ₁ (3L)	8	7	27'-1"	2	Type ⑬	
H ₁ (3R)	8	7	26'-5"	2	Type ⑭	
H ₂	32	7	6'-2"	2	Type ⑮	
J(2L)	1	4	621'-4"	Spiral	Type ⑯	
J(3L)	1	4	607'-4"	Spiral	Type ⑰	
J(3R)	1	4	611'-0"	Spiral	Type ⑱	
K	36	6	6'-10"	1	Type ⑲	

NOTE: Spirals - 2'-2" pitch - 1/2 extra turns at each end. Splice as required, using a lap of 1/2 turns, or weld as approved by the Bridge Section. Use 4 vertical spacer bars per column. Total length of Spiral Reinforcement can be determined by the equation 25.2L + 28.3, where L = Length of Column as shown on plans.

NOTES.—

- All exposed edges shall be chamfered one inch unless otherwise shown.
- Use 2" clear cover on all reinforcement unless otherwise shown.
- Quantities: For a one foot variation in the length of one column, the following modification of quantities will be required:
 - 33 lbs. Reinforcing Steel.
 - 0.12 Cu. Yds. Class "A" Concrete.
 - 3.0 Cu. Yds. Structural Excavation.

EXCAVATION NOTES.—

- Footings for Bents No 2 and No 3 shall be cast against solid undisturbed Mica Schist and carried into same approximately the depth of the footings. Schist excavation for these footings shall be bounded as nearly as possible by the neat lines as shown in the details of Typical Footing.
- Mica Schist shall develop a minimum bearing value of 4.0 tons per sq. ft. If the bearing value is LESS than 4.0 tons per sq. ft., communicate with the BRIDGE SECTION.
- Final footing elevations for Bents shall be established before ordering column reinforcing steel for the respective bents.

ORIGINAL CONSTRUCTION PLANS

BENT DETAILS FOR
90'-0" CONTINUOUS CONCRETE BRIDGE
30'-0" ROADWAY
OVER FRENCH CREEK **SEC. 20-T3S-R5E**
STA. 125 + 89 TO 126 + 79 **F-022 - 1(3)**
STR. NO. 17-256-066 **H20 - S16 - 44**
CUSTER COUNTY
SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS
FEB. 1963 **9 OF 9**

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
H.M.R.	T.W.B.	C.M.L.	<i>[Signature]</i>
			BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
700E0410	Class D Riprap	594.5	Ton
831E0110	Type B Drainage Fabric	366	SqYd

SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BOX CULVERT

All details and dimensions of the existing box culvert contained in these plans are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown elsewhere in the plans.

Reshape the channel within the limits shown in the plans and place riprap to the limits shown in the plans.

RIPRAP

- The cross sections shown in this plan set are provided as a guide for riprap placement and are based on the existing ground locations at the time of the survey. The location of the toe of the riprap may vary to suit local site conditions as long as the following items are adhered to:
 - The 5.0 foot of riprap thickness is attained.
 - Any changes in the riprap configuration are approved by the Engineer.
- Excavate to limits shown on cross section for Riprap. There is existing riprap in the area to be excavated. Any excess material or existing riprap shall be disposed of by the Contractor as approved by the Engineer. All costs associated with excavating and disposing material including all labor, equipment and incidentals necessary shall be incidental to the contract unit price per ton for "Class D Riprap".
- Type B Drainage Fabric will be placed underneath the Class D Riprap. The fabric shall conform to Section 831 of the Construction Specifications.
- All labor, equipment, material and incidental costs associated with piling cut off for finished riprap or channel bottom surface shall be incidental to the contract unit price per ton for "Class D Riprap".
- The Class D Riprap shall be constructed to the configuration, limits and elevations shown on Sheet No. 4 of 5. All costs associated with placement of the riprap including all material, labor and equipment shall be incidental to the contract unit price per ton for "Class D Riprap."
- A factor of 1.4 tons/cu.yd. was used to convert the Riprap quantity from Cu. Yds. to Tons.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

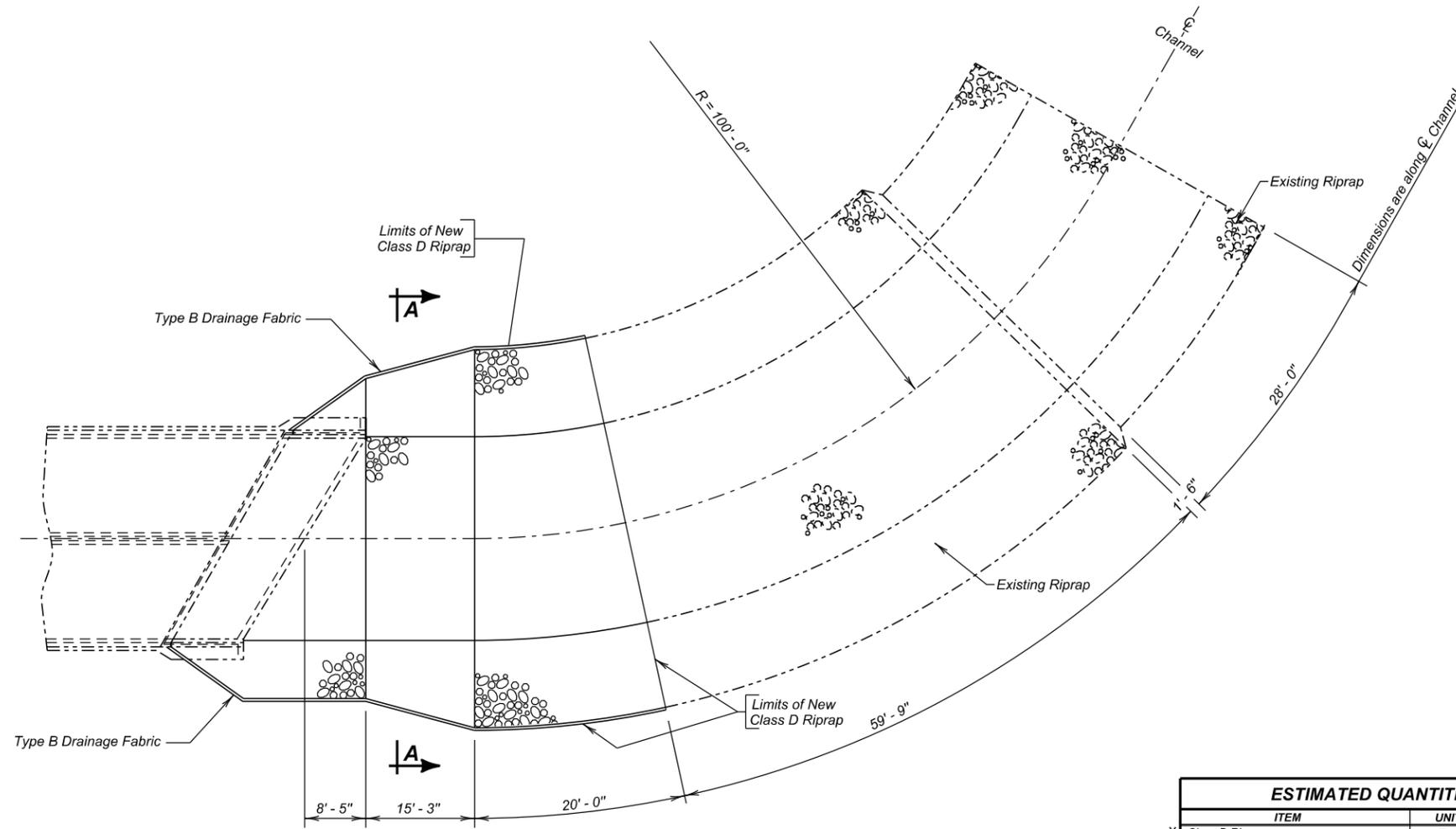
FOR
2 - 14' X 4' BOX CULVERT

STR. NO. 52-462-326

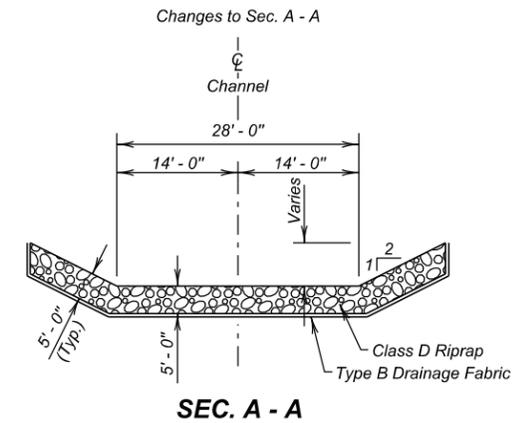
APRIL 2014

2 OF 5

DESIGNED BY SA/BWS PENNO39W	CK. DES. BY KK 039WRA02	DRAFTED BY NP	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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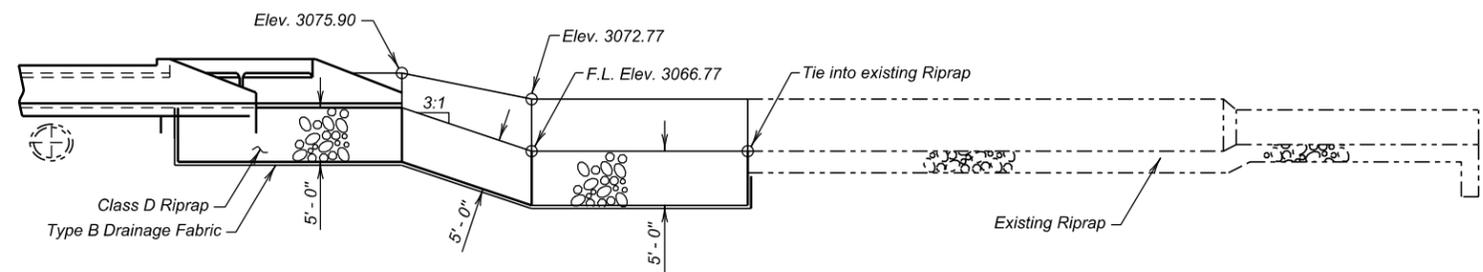
PLAN



SEC. A - A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
* Class D Riprap	Ton	594.5
Type B Drainage Fabric	Sq. Yd.	366

* A factor of 1.4 was used to convert Cubic Yards to Tons.
For informational purposes only, 424 cubic yards of excavated material is included in this payment item



ELEVATION
(Shown along centerline channel)

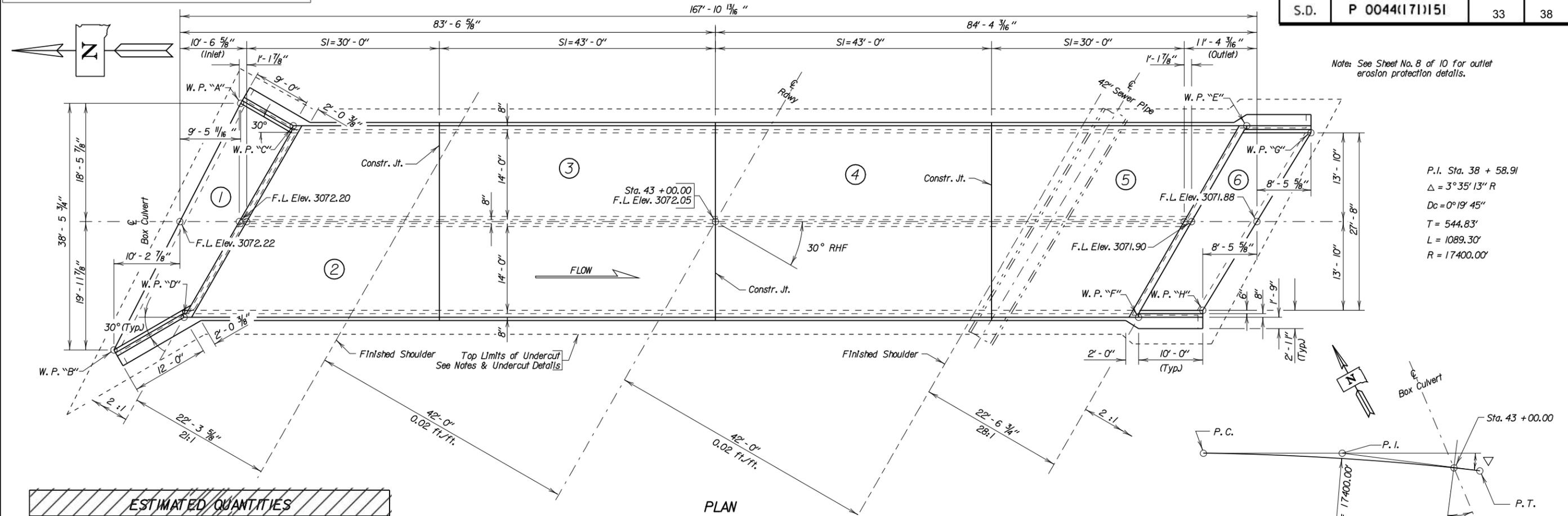
RIPRAP BASIN DETAILS
FOR
2 - 14' X 4' BOX CULVERT
OVER TRIB. TO RAPID CREEK
STA. 43 + 00.00
STR. NO. 52-462-326

30° SKEW R.H.F
SEC. 14-TIN-R8E
P 0044(52)50

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2014

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 016A(07)25 P 0044(17)151	33	38



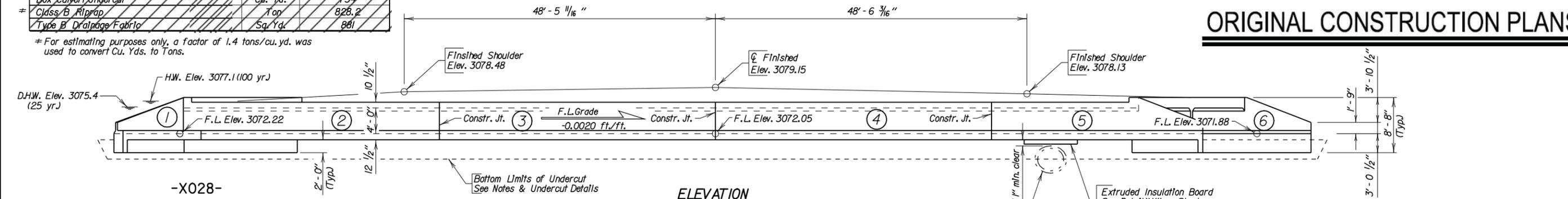
Note: See Sheet No. 8 of 10 for outlet erosion protection details.

P.I. Sta. 38 + 58.91
 $\Delta = 3^\circ 35' 13'' R$
 $D_c = 0^\circ 19' 45''$
 $T = 544.83'$
 $L = 1089.30'$
 $R = 17400.00'$

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	408.8
Reinforcing Steel	Lb.	86265
Structure Excavation, Box Culvert	Cu. Yd.	205
Box Culvert Undercut	Cu. Yd.	734
Class B Riprap	Top	828.2
Type B Drainage Fabric	Sq. Yd.	881

* For estimating purposes only, a factor of 1.4 tons/cu.yd. was used to convert Cu. Yds. to Tons.

ORIGINAL CONSTRUCTION PLANS



-X028- INDEX OF CULVERT SHEETS-

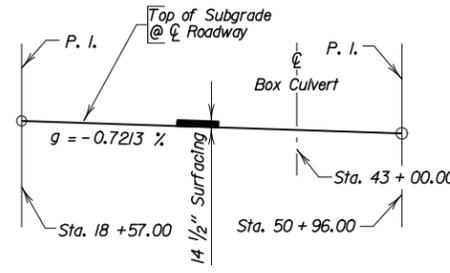
- Sheet No. 1 - General Drawing & Quantities
- Sheet No. 2 - Notes & Undercut Details
- Sheet No. 3 - Inlet Details (A)
- Sheet No. 4 - Inlet Details (B)
- Sheet No. 5 - Outlet Details
- Sheet No. 6 - SI Barrel End Section Details
- Sheet No. 7 - SI Barrel Interior Section Details
- Sheet No. 8 - Riprap Basin Details
- Sheet No. 9 - Details of Standard Plate No's. 460.02 & 460.10
- Sheet No. 10 - Details of Standard Plate No. 620.16

HYDRAULIC DATA

Q_d	470 cfs
A_d	76 sq.ft.
V_d	6.2 fps
Q_F	470 cfs
Q_{100}	867 cfs
V_{max}	8.2 fps

Q_d = Design discharge for the proposed culvert based on 25 year frequency. El. 3075.4
 Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 3077.1
 V_{max} = Maximum computed outlet velocity for the proposed culvert based on a 100 year frequency.

P. I. Sta. 18 + 57.01 Elev. 3095.56 (Subgrade) V. C. = 800'
 P. I. Sta. 50 + 95.98 Elev. 3072.20 (Subgrade) V. C. = 800'



GRADELINE DATA

TABLE OF WORKING POINTS

"W.P."	STATION	OFFSET
"A"	42+79.06	73.64' Lt
"B"	42+36.06	72.85' Lt
"C"	42+80.21	64.64' Lt
"D"	42+45.80	64.30' Lt
"E"	43+54.60	64.13' Rt
"F"	43+20.02	64.54' Rt
"G"	43+58.63	73.37' Rt
"H"	43+26.07	72.61' Rt

GENERAL DRAWING & QUANTITIES FOR

2 - 14' X 4' BOX CULVERT

OVER TRIB. TO RAPID CREEK 30° RHF SKEW
 STA. 43+00.00 SEC. 14-TIN-R8E
 STR. NO. 52-462-326 P 0044(52)50
 PCN 6437 HS 20-44 (& ALT.)

PENNINGTON COUNTY

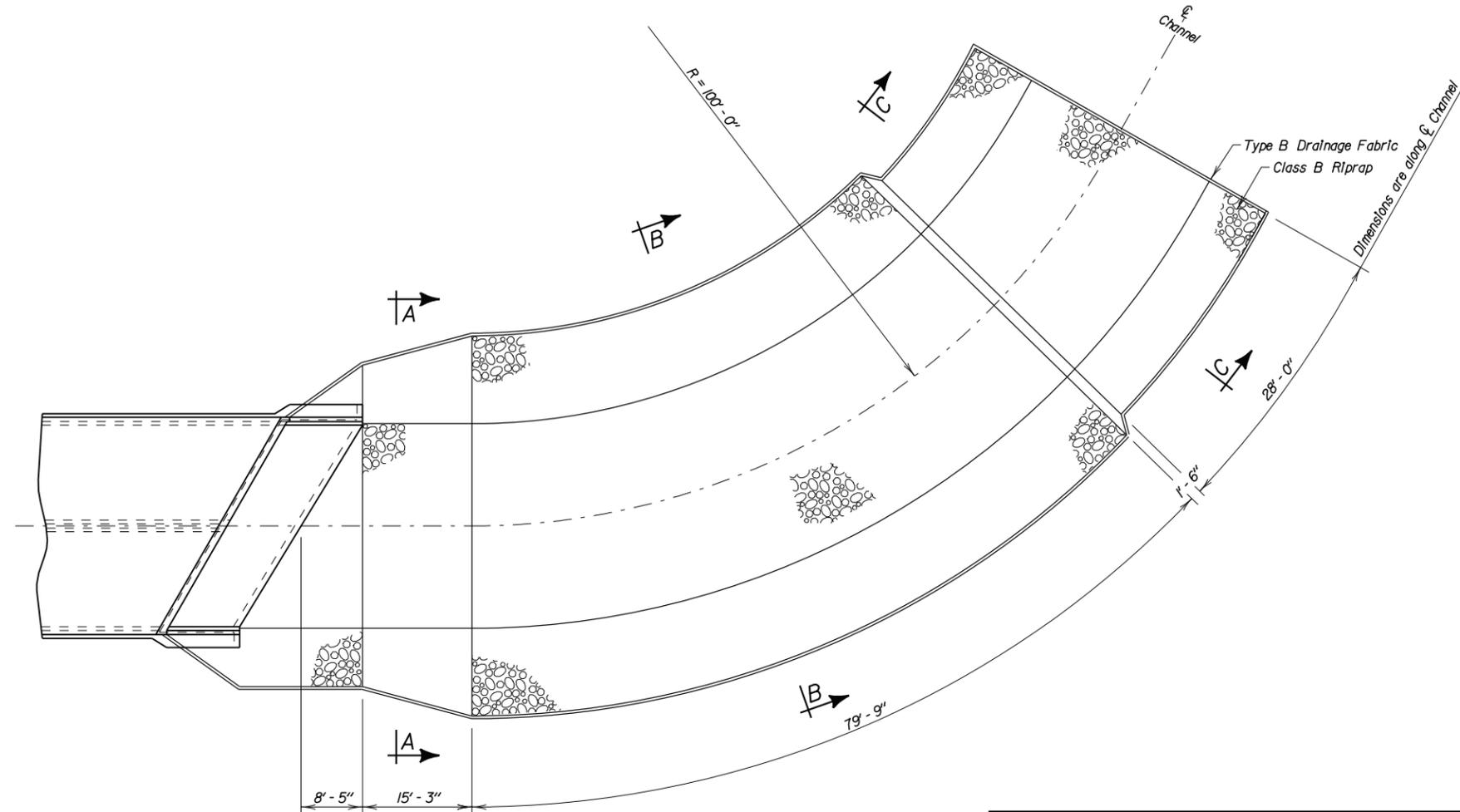
S. D. DEPT. OF TRANSPORTATION

-X028- DECEMBER 2005

PLANS BY : OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY SJ/AV PENN6437	DRAWN BY SG 6437GAOI	CHECKED BY SJ/AV	APPROVED John C. Cole BRIDGE ENGINEER
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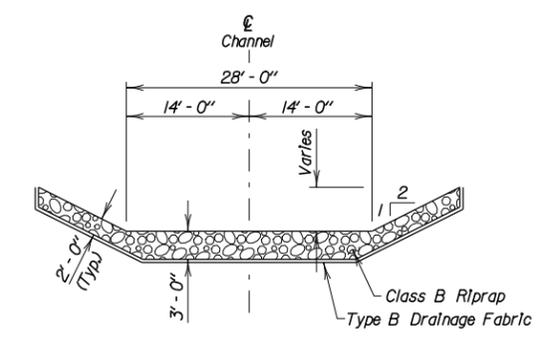
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 016A(07)25 P 0044(17)151	34	38



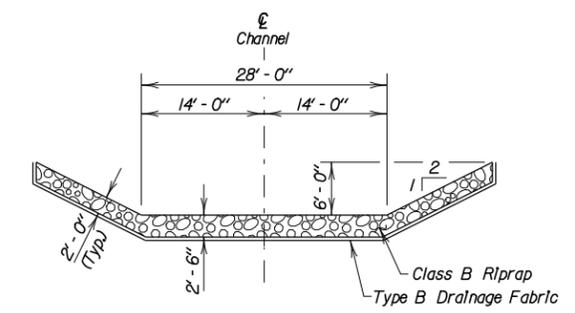
PLAN

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class B Riprap	Ton	828.2
Type B Drainage Fabric	Sq. Yd.	881

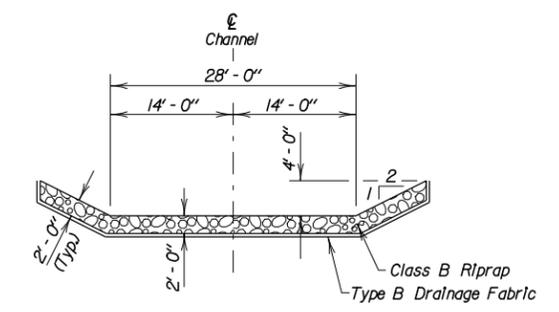
= For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yds. to Tons.



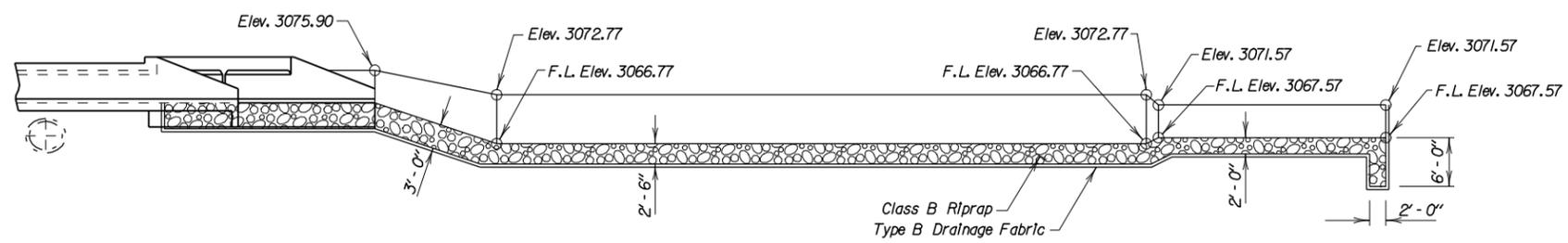
SEC. A - A



SEC. B - B



SEC. C - C



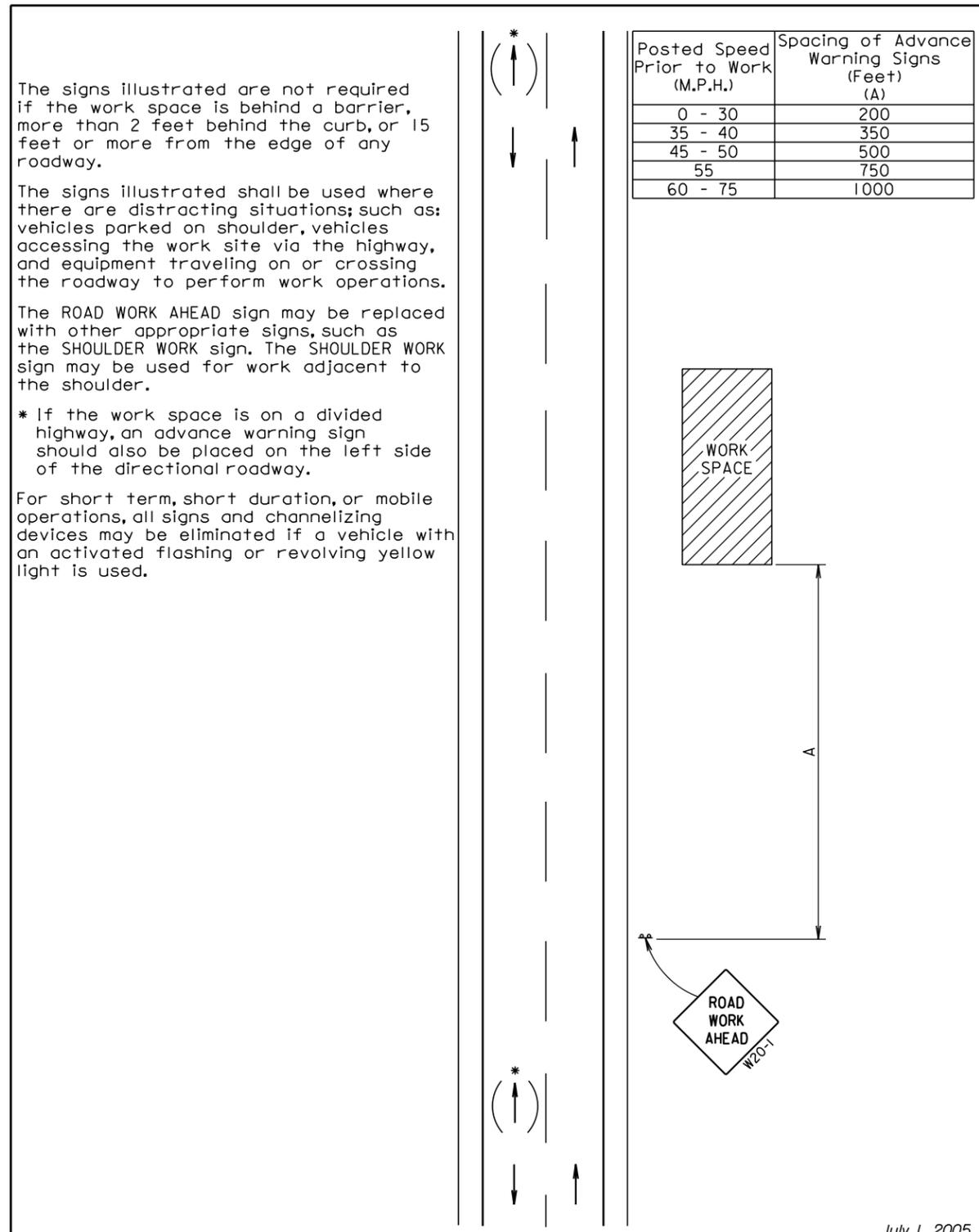
ELEVATION
(Shown along centerline channel)

ORIGINAL CONSTRUCTION PLANS

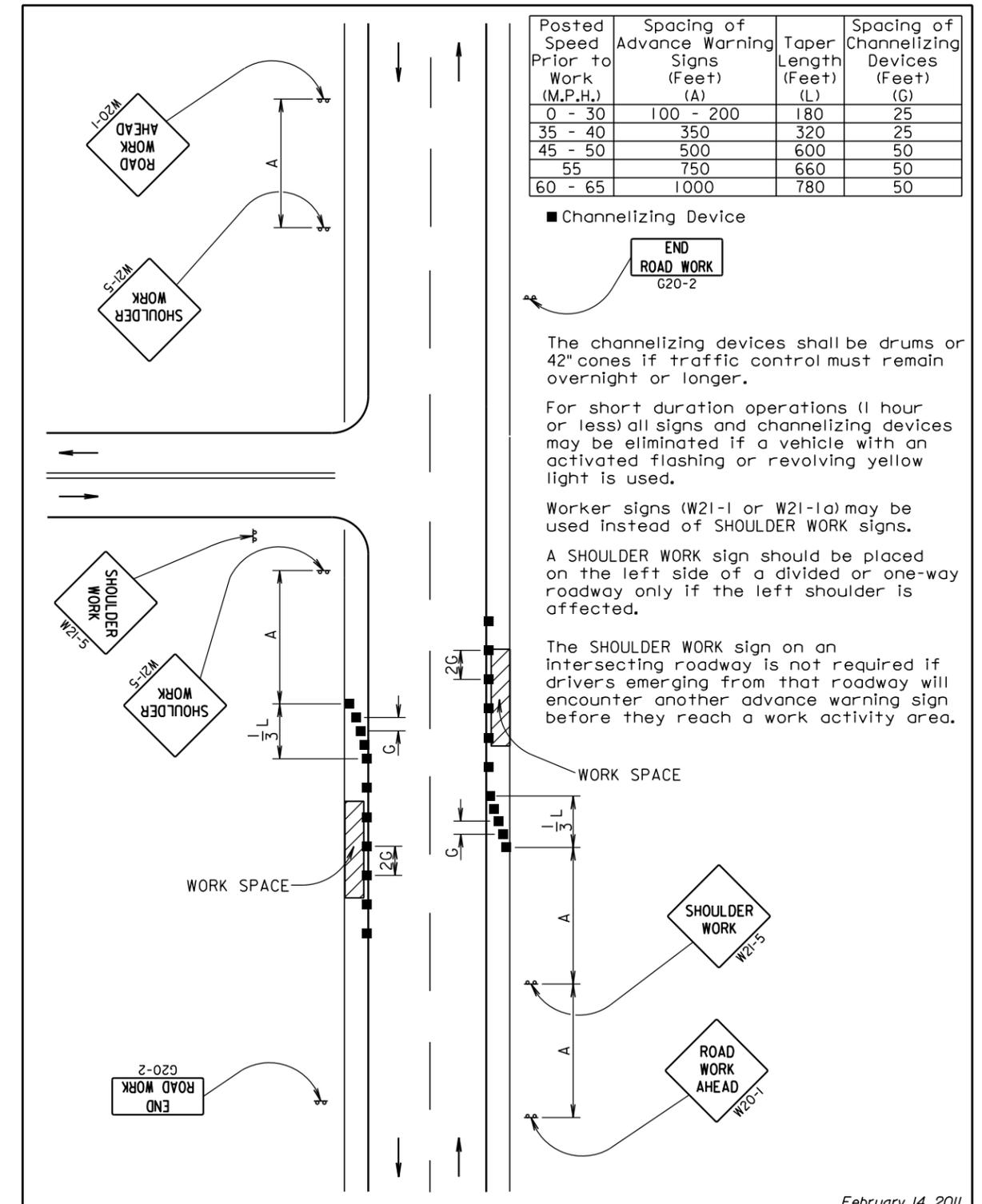
RIPRAP BASIN DETAILS
FOR
2 - 14' X 4' BOX CULVERT
OVER TRIB. TO RAPID CREEK 30° RHF SKEW
STA. 43+00.00 SEC. 14-TIN-R8E
STR. NO. 52-462-326 P 0044(52)50
HS 20-44 (& ALT.)

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2005

DESIGNED BY SJ/AV PENN6437	DRAWN BY SG 6437GA08	CHECKED BY SJ/AV	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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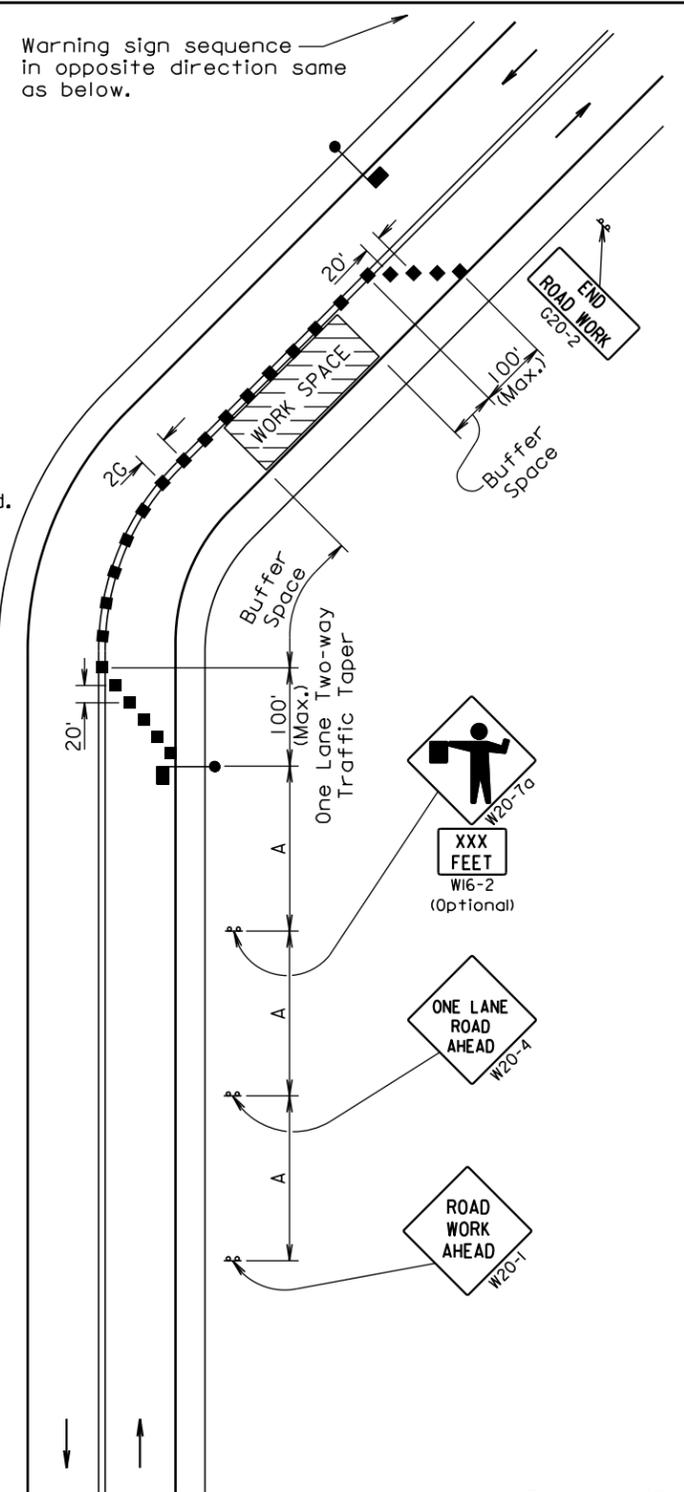


July 1, 2005



February 14, 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



Warning sign sequence in opposite direction same as below.

- 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.

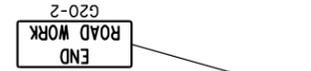
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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.

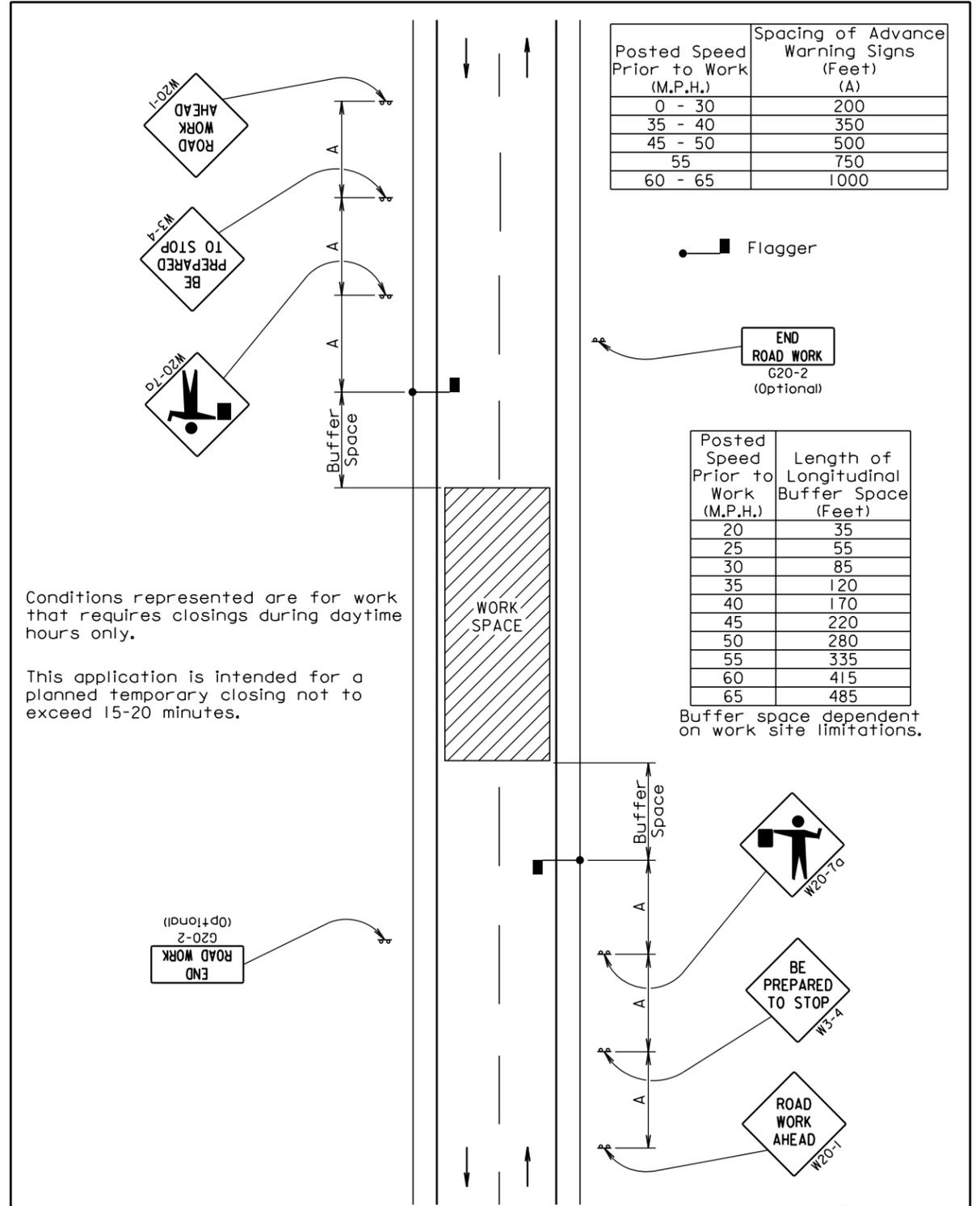
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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.

February 14, 2011



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 - 65	1000

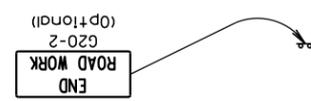
- Flagger

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485

Buffer space dependent on work site limitations.

Conditions represented are for work that requires closings during daytime hours only.

This application is intended for a planned temporary closing not to exceed 15-20 minutes.



February 14, 2011

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
	(A)	(B)	(C)		
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 to be every 40' for 42" cones.

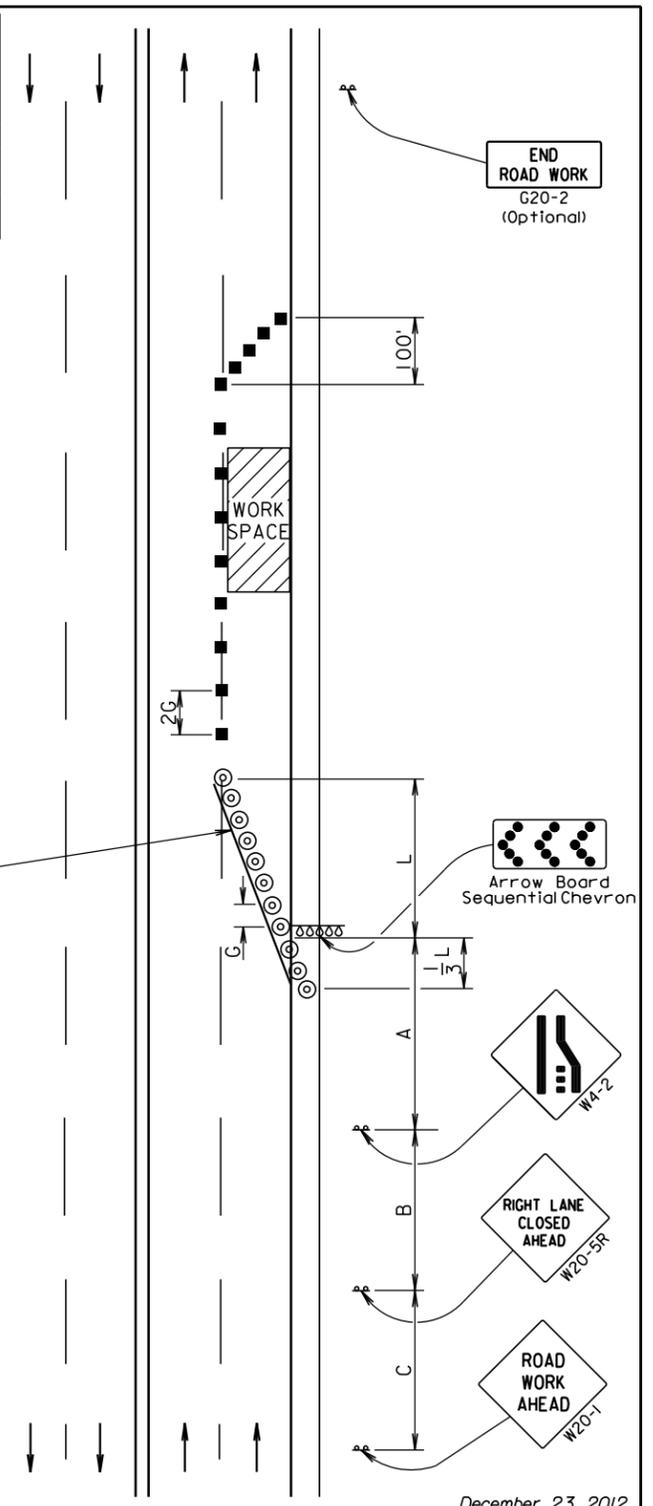
⊙ Reflectorized Drum

■ Channelizing Device shall be 42" cones or drums

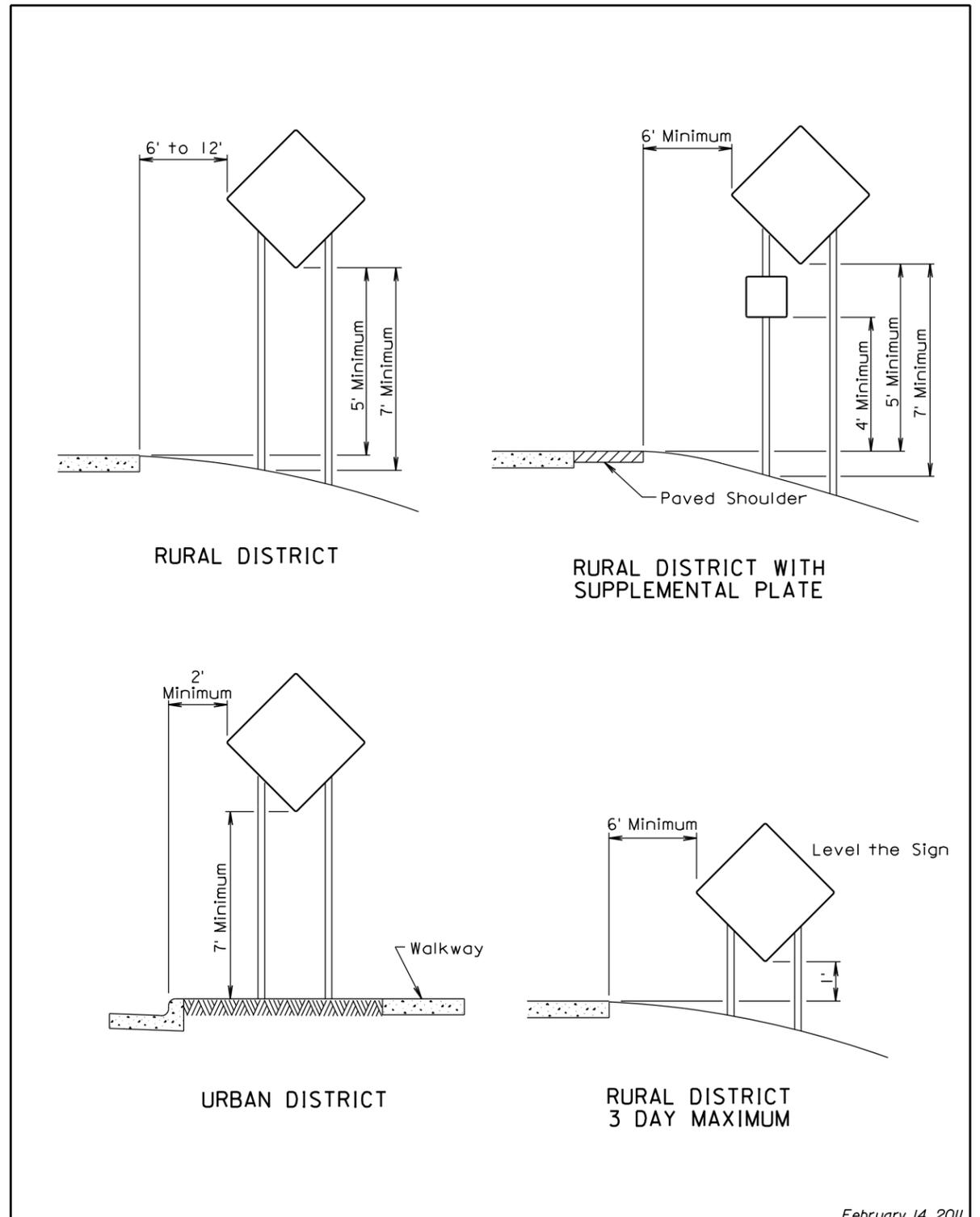
42" cones may be used in place of the drums shown in the taper if setup will not be used during any night time hours.

4" white temporary pavement marking shall be used for overnight and long term operations.

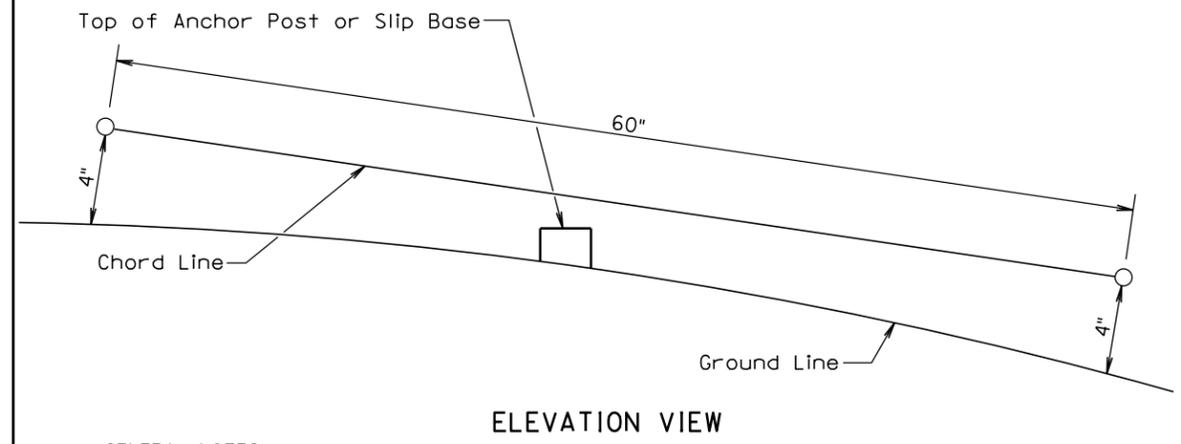
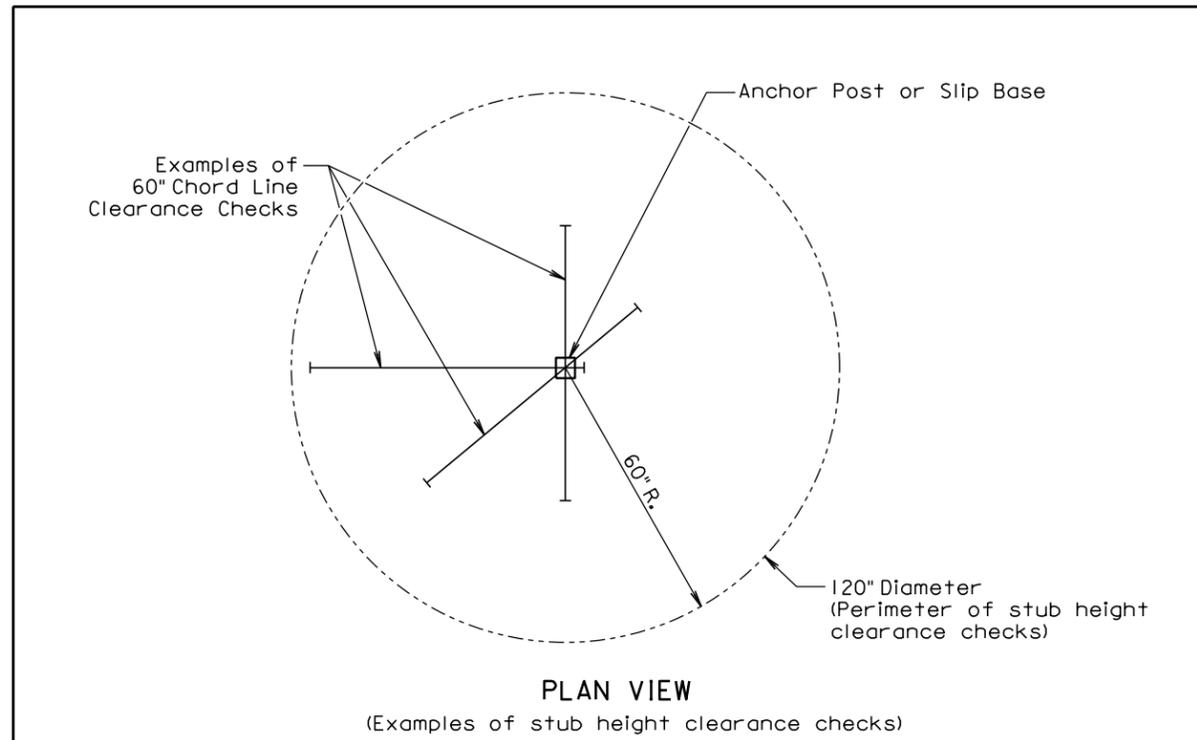
Longitudinal dimensions may be adjusted to fit project conditions such as horizontal curves, vertical curves, and other site restrictions.



December 23, 2012



February 14, 2011



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

<i>Published Date: 2nd Qtr. 2014</i>	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1