

**Appendix A:**

**Survey and Hydraulic Work Order Requirements - A2 thru A15**

**Type, Size, and Location (TS&L) Reports - A16 thru A20**

**Foundation Investigation (Bridges - Ex. 3) - A21 thru A23**

**Undercut Recommendation (Boxes/Pipe - Ex. 4) - A24**

**Examples Include:**

**Preliminary Hydraulic Data Sheet - A25 thru A26**

**Plan/Profile Sketches and Gradelines - A27 thru A32**

**Drainage Data Sheet and Contour Map - A33 thru A34**

**Photo Documentation and Record Search - A35 thru A38**

**New Information**

**Deleted Information**

**Replaced Information**

# Local Bridge Improvement Grant (BIG) Procedure

## Bridge Improvement Grant Work Order Requirements for Survey and Hydraulics

### SCOPE OF SERVICES TEMPLATE – Survey & Hydraulics

#### Category-Specific Technical Requirements & Provisions, from the Current SDDOT Consultant Retainer, Shall Be Applied

1. **Field survey for completion of the Drainage Data Sheet and Contour Map.** The information required for placement on these sheets is listed below. An example is attached containing the required information.
  - Stationing from south to north or west to east.
  - Beginning and ending stations of the current structure.
  - Proposed and inplace gradelines.
  - Stream profile. (Including a table of stations and elevations for each shot taken.) Refer specifically to the *SD Highway Surveying Manual, Chapter 6 – Preliminary Surveys*, starting on page 36 for guidance.
  - Sea level datum is required. Stations, elevations, and offsets from and descriptions of permanent objects will be required for project benchmarks. (The High Accuracy Reference Network (HARN) map and the County Bench Mark map for the State of South Dakota can be found at the following web site – <https://dot.sd.gov/doing-business/engineering/design-services/surveyors>)
  - Include an electronic file (DGN) containing the plan/profile of the inplace gradeline at the structure. (This will be submitted with the final hydraulics and only when the replacement structure will be a bridge. The Consultant will submit this file through the LGA SFTP site.)
  - Landowners with their addresses, phone numbers, and location of property.
  - Utilities with their addresses, phone numbers, and locations along the project.
  
2. **Field survey as necessary for preparation of construction plans.** Required information is listed below.
  - Establishment of transit points, land ties and benchmarks as well as cross sections and topography. (Stations, elevations, and offsets from permanent objects will be required for project benchmarks.)
  - Project limits as established by consultation with the County Highway Superintendent / City Engineer.
  - Additional legal survey as required for preparation of right-of-way plats.
  - The geometrics of horizontal and vertical alignment in accordance with the Local Roads Plan design standards.
  - Survey notes are to be retained on file with the Consultant for subsequent use in the preparation of construction plans and are to be available to the County/City upon request.

It is anticipated that this item will permit the issuance of a separate work order (after the Type, Size and Location (TS&L) Inspection) for the development of construction plans with no further survey needed.
  
3. **Photo Documentation and Record Search of the Structure as defined in Attachment #2.**
  
4. **Preliminary Hydraulic Design Report, Plan/Profile Sketches (Preliminary Hydraulic Layouts) and gradelines, Electronic Copy of Hydraulic Model, Draft Hydraulic Design Report in accordance with the newest version of the South Dakota Drainage Manual, and cost estimates for all proposed structure alternatives. THE DESIGN YEAR FOR THIS SITE SHALL BE IN ACCORDANCE WITH THE LOCAL ROADS PLAN (SPECIFICALLY BY FUNCTIONAL CLASSIFICATION).** (More than one feasible alternative is required. This includes options on different alignments if applicable. The options need to be acceptable to the owner's future needs and maintenance capabilities. If there is only one type of structure that can reasonably be constructed at a site, simply provide an explanation instead of alternatives.) The newest version of the South Dakota Drainage Manual is available at the following location: <https://dot.sd.gov/doing-business/engineering/design-services/forms-manuals>. Guidance and an example Final Drainage Memo/Letter can be found in Chapter 6 of the manual. **The current preliminary hydraulic data sheet to be used can be found in the folder under "000 LGA General Info and Docs" located on the Consultant's LGA SFTP site.** Directions for filling out the form can be found at the same location. All items will be submitted to the Local Government Assistance Office for distribution to SDDOT personnel for review for compliance with minimum required State and Federal standards. Necessary revisions shall be provided in writing by the SDDOT and shall

## Local Bridge Improvement Grant (BIG) Procedure

be forwarded to the Consultant by the Local Government Assistance Office. Necessary revisions shall be completed by the consultant and the Revised Draft Hydraulic Design Report submitted within 2 weeks of receipt of revisions from LGA. The Consultant is wholly responsible for the accuracy of the design calculations and the independent check design calculations.

**Culvert Countersink Depth Requirements will be in accordance with the US Army Corps of Engineers Current Nationwide Permits Regional Conditions, Omaha District, State of South Dakota, which can be found under Booklets, Manuals, & Guides at: <https://usace.contentdm.oclc.org/> Section B.2. from the 2021 Regional Conditions, current at the time of this publication, is show below.**

### 2. Culvert Countersink Depth:

For all NWP in jurisdictional streams and a stable stream bed, culvert stream crossings shall be installed with the culvert invert set below the natural stream channel flow line according to the table below. This regional condition does not apply in instances where the lowering of the culvert invert would allow a headcut to migrate upstream of the project into an unaffected stream reach or result in lowering the elevation of the stream reach.

Culvert Type	Drainage Area	Minimum Distance Culvert Invert Shall Be Lowered Below Stream Flow Line
All culvert types	< 100 acres	Not required
Pipe diameter <8.0 ft	100 to 640 acres	1/2-ft
Pipe diameter <8.0 ft	>640 acres	1-ft
Pipe diameter > 8.0 ft	All drainage sizes	20% of pipe diameter
Box culvert	All drainage sizes	1-ft

- a. The stream flow line shall be defined as the longitudinal average of the low flow stream channel.
- b. The slope of the culvert should be parallel to the slope of the stream flow line.
- c. The culvert invert depression depth shall be measured at the culvert inlet for culverts installed at a slope less than the slope of the stream flow line.
- d. Riprap inlet and outlet protection shall be placed to match the height of the culvert invert.

5. **Conduct TS&L inspection, assistance in the selection of the type, size and location of the replacement structure, and preparation of TS&L summary letter (See **Examples #1 & #2** following the attachments).** The county or city (owner) shall be in attendance and advance notice given the Local Government Assistance Office so if time allows, a staff member can attend.
6. **Report of Foundation Investigation.** Conduct field investigation and provide design recommendations according to AASHTO LRFD Bridge Design Specifications Section 10. Report shall include boring information, lab results, and design recommendations. See **Examples #3 and #4, following the attachments**, for reports that are typically developed by SDDOT Geotechnical Engineering Activity.
7. **Obtain Traffic Data.** Conduct field study to obtain 24-hour traffic volumes for existing structure. Data shall be gathered using a mechanical or electronic device. Study shall be conducted on a typical weekday (Tuesday-Thursday) from midnight to midnight. Report of traffic data shall include structure number, counter brand, serial number, date collected, and total volume.
8. **For Structure Chosen at TS&L: Final Hydraulic Design Report, Final Hydraulic Data Sheet (use the current data sheet found in the folder "000 LGA General Info and Docs" located on the LGA SFTP site,) Hydraulic Model with existing and proposed conditions, and if the structure selected is a bridge, Scour Memo summarizing hydraulic scour calculation, Scour Calculation, and Berm Slope Protection Recommendations (if applicable.)**

Please refer to the checklist in **Attachment #1** for the TS&L Packet of items that shall be submitted to the Local Government Assistance Office. **Attachment #3** provides guidance on aquatic resources in relation to the 404 permitting process.

# Local Bridge Improvement Grant (BIG) Procedure

## Attachment #1 Bridge Improvement Grant Checklist for Survey and Hydraulics Work Order TS&L Packet

These items must be submitted to DOT/Local Government Assistance.  
If any of these items are missing, the full packet will be returned for completion and resubmission to this office.

Project Number \_\_\_\_\_ County \_\_\_\_\_ PCN \_\_\_\_\_

Survey Sheets and Contour Map (submit as PDF and DGN files) including the following information:

Stationing from south to north or west to east

Beginning and ending stations of the existing structure

Beginning and ending stations of proposed structures

Proposed and existing gradelines

Stream profile and cross sections (Downstream to upstream direction including a table showing stations and elevations for each shot taken). Refer specifically to the SD Highway Surveying Manual, Chapter 6 – Preliminary Surveys, starting on page 36 for guidance.

Elevation and location of buildings and other structures

Survey information using sea level datum and showing station, elevation, offset, and physical description of each project benchmark

Landowner names, addresses, phone numbers, and legal descriptions of their property

Utility names, addresses, phone numbers, and locations along the project

Photo Documentation and Historical Record Search of the Structure (including list of files or repositories searched) as defined in Attachment #2. (In the event that nothing is found, a letter indicating lack of findings, along with files or repositories searched, shall be submitted to the SDDOT/Local Government Assistance Office.)

**NOTE: THE DESIGN YEAR FOR THIS SITE SHALL BE IN ACCORDANCE WITH THE LOCAL ROADS PLAN (SPECIFICALLY BY FUNCTIONAL CLASSIFICATION).**

Preliminary Hydraulic Design Report (use current data sheet found on the LGA SFTP site in the “000 LGA General Info & Docs” folder) including the following information:

Calculated flows

Inplace conditions (Ordinary High Water Elevation,  $HW_{100}$ ,  $V_{max}$ ,  $OT_{fr}$ )

Proposed conditions for each option ( $HW_2$ ,  $HW_{25}$ ,  $HW_{100}$ ,  $V_{max}$  Qot,  $OT_{fr}$ ,  $E_{Lover}$ top)

Ordinary High Water Elevation Shown on Cross-Sections **vegetation-elevation-on-stream-banks** (in the absence of identifiable bed & bank, use approx. 2-year flow)

Observed High Water Elevation (identifiable high water mark)

Electronic copy of Hydraulic Model of existing and proposed conditions



## Local Bridge Improvement Grant (BIG) Procedure

Plan and profile sketches (preliminary hydraulic layout sheets) for the existing structure and proposed gradelines for each option **(submit as PDF and DGN files)** More than one feasible alternative is required. This includes options on different alignments if applicable. The options need to be acceptable to the owner's future needs and maintenance capabilities. If there is only one type of structure that can reasonably be constructed at a site, simply provide an explanation instead of alternatives.

Cost Estimates (including design and construction engineering and construction costs for each option)

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TS&L Summary Letter

Report of Foundation Investigation (see Examples 3 and 4 in this appendix)

For Structure Chosen at TS&L

Final Hydraulic Design Report

**in the folder "000 LGA General Info and Docs" located on the LGA SFTP site**

Final Hydraulic Data Sheet (use current data sheet found **on the LGA SFTP site in the "000 LGA General Info and Docs" folder**)

Hydraulic model with existing and proposed conditions

Scour memo, scour calculations, and berm slope protection recommendations (Bridges Only)

# Local Bridge Improvement Grant (BIG) Procedure

## **Attachment #2 Local Government Assistance Photo Documentation and Record Search of the Structure**

The information defined below will satisfy one of the requirements of the State Historic Preservation Society in clearing the structure for removal.

### **Photo Documentation of the Structure**

- Site map and photo log of all photos**
- Photos will be taken of: (*at minimum*)**
  - Full views of the structure's primary elevations
  - Close-ups of any decorative, character-defining or structural features
  - General views of the bridge and its environment
- Photos will be labeled as follows:**
  - Photo Number - from photo log and site map
  - Name and Address of property – if property does not have legal address then please note either the Universal Transverse Mercator (UTM) or the legal location down to the quarter section.
  - Month and Year of photograph
  - Description of view, including camera direction (cardinal direction – N, S, E, W)
- Photos will be submitted in one of the following formats:**
  - Digital Photographs
    - At least 2000 X 3000 pixels at 300 dpi
    - Saved as TIFFs submitted on CDs
  - 35mm Black and White Photographs
    - 35mm black/white film printed on black/white photographic paper
    - Both prints and negatives submitted

### **Historical Record Search of the Structure**

- Any or all of the following are needed:**
  - Reports – maintenance or otherwise indicating modifications to the original structure – what was done and why
  - Any Photographs of the original structure (not inspection photos; not photos referenced in this work order)
  - Original Drawings
  - Original Plans
  - Any other documentation
  
- Names of Files or Repositories (courthouse, county historical society, etc.) Searched**

If possible, provide the original copy of this information. If not, submit the information in the following format. High quality clear Xerox copies of any reports, drawings, or plans; and photographs scanned at 600 dpi, saved as TIFFs, and submitted on a CD.

If these documents are not otherwise restricted through state or federal law; submit them to the SDDOT/Local Government Office for submission to the South Dakota State Historical Society for public use and reproduction. In the event that nothing is found, a letter indicating lack of findings, along with files or repositories searched, shall be submitted to the SDDOT/Local Government Assistance Office.

**Attachment #3**  
**Local Government Assistance**  
**Aquatic Resources Checklist & Summary Example**  
**Information to Assist in Applying for a 404 Permit**

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The following information is an example of what the SDDOT Environmental Office collects and uses when applying for 404 Permits for DOT Administered projects. This information is provided here both to show that the Final Hydraulic Design Report is a source of this information, and to provide guidance to help locals and their consultants on Locally Administered projects.

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- The checklist itself is not sent as it is included in a table format in the summary.
- Plans and the final hydraulic design report are sent as attachments to support the summary.

●

This is the type of information the US Army Corp of Engineers is looking for. The more stream characteristics impacted by a project, the more likely mitigation will be required. (No mitigation was required under Section 404 for the project shown in the example.)

Project Number: \_\_\_\_\_ PCN: \_\_\_\_\_ Structure Number: \_\_\_\_\_

County: \_\_\_\_\_ Stream Name: \_\_\_\_\_ Date: \_\_\_\_\_



### Characteristics of Stream

- Flow Regime (Ephemeral, Intermittent, Perennial):
  
- Cross-section (shape, channel width, floodplain connectivity):
  
- Longitudinal Profile (Riffle Pool complex/sequence):
  
- Bed Material (NRCS Soils Data):
  
- Presence of T&E Species (Likely Topeka Shiners):
  
- Beneficial Use (DANR):
  
- Chemical, Physical, Biological Integrity:

**Planning and Engineering**

Environmental Office

700 E Broadway Avenue

Pierre, SD 57501-2586

O: 605.773.4336

[dot.sd.gov](http://dot.sd.gov)

January 8, 2024

**RE: Project BRO-B 8058(32), PCN 08N9, Spink County, Aquatic Resource Impact Summary**

Structure 1 S &amp; 1.8 W of Northville on 155th St over Snake Ck SN 58-052-070

Structure, Approach Grading, PE (2021 Local Federal Bridge Replacement Program)

**Project Background:** The South Dakota Department of Transportation (SDDOT) proposes a bridge replacement and approach grading for the poor condition Structure Number 58-052-070 located 1 mile south and 1.8 miles west of Northville on 155<sup>th</sup> Street over Snake Creek in Spink County, South Dakota. The project is part of the 2021 Local Federal Bridge Replacement Program.

**Aquatic Resources Delineation:** A desktop wetland and stream delineation was conducted by Emily Calhoun in the SDDOT Environmental Office on January 4, 2024. Resources reviewed during the desktop delineation included aerial imagery, USDA Web Soil Survey, the National Wetlands Inventory mapping, and existing topographic information. Additionally, design plans, site photographs, and the final hydraulic design report (dated September 2022) were examined, all prepared by the Consultant. The resulting desktop delineation identified aquatic resources, including one wetland (Wetland 1) encompassing 0.17 acres and a segment of Snake Creek encompassing 1.36 acres.

**Wetland Impacts:** The project will result in 0.02 acres of permanent impact to wetlands and 0.11 acres of temporary wetland impact. The wetland impacts are shown on the aerial map following this summary. Permanent impacts are those that occur to wetlands within the work limits that will not retain wetland characteristics after construction.

**Streambed Impacts:** The project will result in 0.14 acres of permanent impact and 0.28 acres of temporary impact to Snake Creek. The stream impacts are shown on the aerial map following this summary. Permanent streambed impacts are those that occur to streams within the work limits. Temporary stream impacts identified along the project will not require mitigation, as they occur within temporary easements or associated with temporary works that will be restored to pre-construction contours and elevations.

**Wetland Mitigation Discussion:** The proposed project does not require mitigation under Section 404 of the CWA as permanent impacts do not exceed 0.1 acre to a single aquatic resource. However, to satisfy the mitigation requirements under E.O. 11990, the permanent impacts (0.02 acres) will be mitigated off-site under the *Statewide Wetland Finding dated February 2018*.

**Streambed Mitigation Discussion:** The proposed project should not require streambed mitigation under Section 404 of the CWA. Although the project will permanently impact 0.14 acres of streambed, which exceeds the current USACE 0.03-acre mitigation threshold, the total footprint of the project and changes to the system will result in a neutral or positive effect to stream function. When assessing impact SDDOT examined multiple stream characteristics including as outlined in the following table, along with notes on existing condition and assessment of effect the proposed project will have on Snake Creek.

Stream Characteristic	Existing Condition and Proposed Construction	Assessment of Effect from Proposed Construction
Flow Regime	Snake Creek is a perennial stream.	No permanent effect or alteration of Snake Creek's flow regime.
Stream Cross-Section	The current bridge constricts the channel width at this location to 41 feet. The stream channel width will be expanded with the installation of a 4-barrel 12 x 9-foot-box culvert. Stream channel expansions will allow for less constriction and greater floodplain connectivity	Neutral/Positive effects to the Snake Creek cross section following structure replacement.
Longitudinal Profile	The box culvert will be counter-sunk by 1 foot in order to allow for the streambed to naturally reestablish and for aquatic organism passage (see attached plans). Natural riffle-pool complexes will re-establish after construction.	No permanent effect to the longitudinal profile of Snake Creek.
Bed Material	The geotechnical investigation at the bridge location revealed the underlying soils are $\pm 10'$ clay-silt on top of $\pm 20'$ of sand. The box culvert will be counter-sunk to allow for the streambed to naturally reestablish bed material.	No permanent effect on the bed material of Snake Creek.
T/E Species	The portion of Snake Creek in the current project extent has not been identified by USFWS as a Topeka Shiner Stream. Coordination with SD GF&P did not identify any occurrences of endangered, rare or threatened species in the immediate project area.	No effect on known T/E Species within Snake Creek.
Beneficial Uses	Snake Creek is classified as a warm water marginal fishery; limited contact recreation waters; fish and wildlife propagation, recreation, and stock watering waters; and irrigation waters.  Proposed construction will not permanently impact or alter any of these beneficial uses. Construction practices will ensure the 30-day average total suspended solids criterion of 150 mg/L and the daily maximum total suspended solids criterion of 263 mg/L will not be violated.	No permanent effect on beneficial uses of Snake Creek.
Chemical, Physical and Biological Integrity	Snake Creek is warm water tributary of the James River. Special construction measures will be taken to ensure impacts to the chemical, physical, and biological characteristics will be minimized.	No permanent effects on the chemical, physical and biological integrity of Snake Creek are anticipated.

A review of the stream characteristics above indicates that the proposed construction is not anticipated to have any permanent negative impacts to Snake Creek. Changes to the stream cross section at its crossing with 155th Street are expected to have positive or neutral permanent impact on the stream. Aerial imagery indicates the stream is constricted at this location by the existing bridge. A historical review of aerial imagery indicates that the upstream pooling and constriction has been degrading over time. The stream channel width will be expanded with the installation of a 4-barrel 12 x 9-foot-box culvert at this location. The current bridge constricts the channel width at this location to 41 feet, while the channel width following the box culvert installation will be 48 feet, 10.5 inches. The proposed box culvert will expand the existing streambed, resulting in no loss of streambed acreage, and will expand/open areas that the bridge embankment had previously filled and constricted.

Sincerely,

Attachments: Preliminary Design Plans, Final Hydraulic Design Report (including site photographs, cross section and longitudinal profiles)

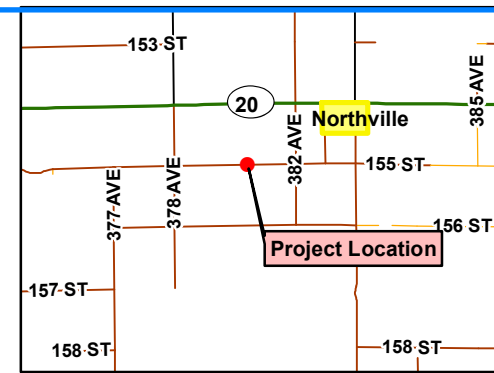
EXAMPLE



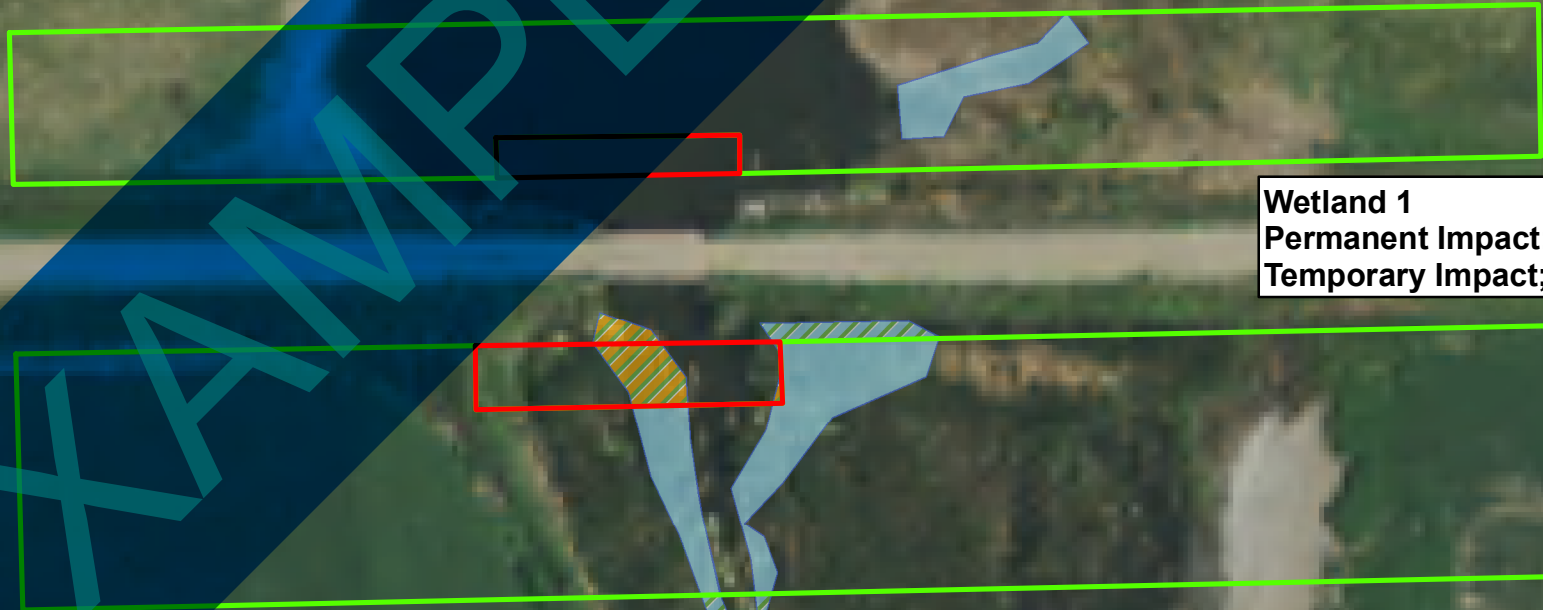


BRO 8058(32), PCN 08N9  
Spink County  
1 S & 1.8 W of Northville on 155th St over Snake Ck  
Replace Structure 58-052-070, Approach Grading, PE  
(2021 Local Federal Bridge Replacement Program)

### Wetland Impact Determination



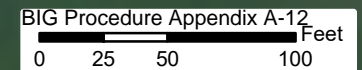
This map was prepared by  
SDDOT Environmental Office 01/04/2023



**Wetland 1**  
Permanent Impact: 0.02  
Temporary Impact; 0.11

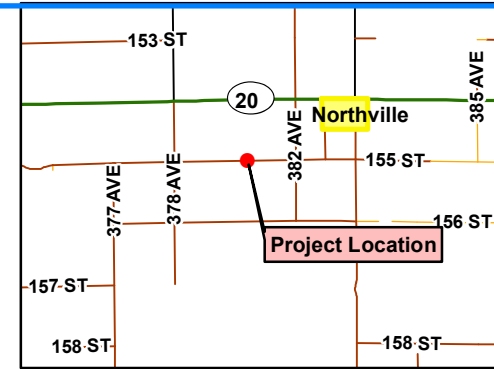
#### Legend

- Permanent Easement
- Temporary Easement
- Desktop Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact



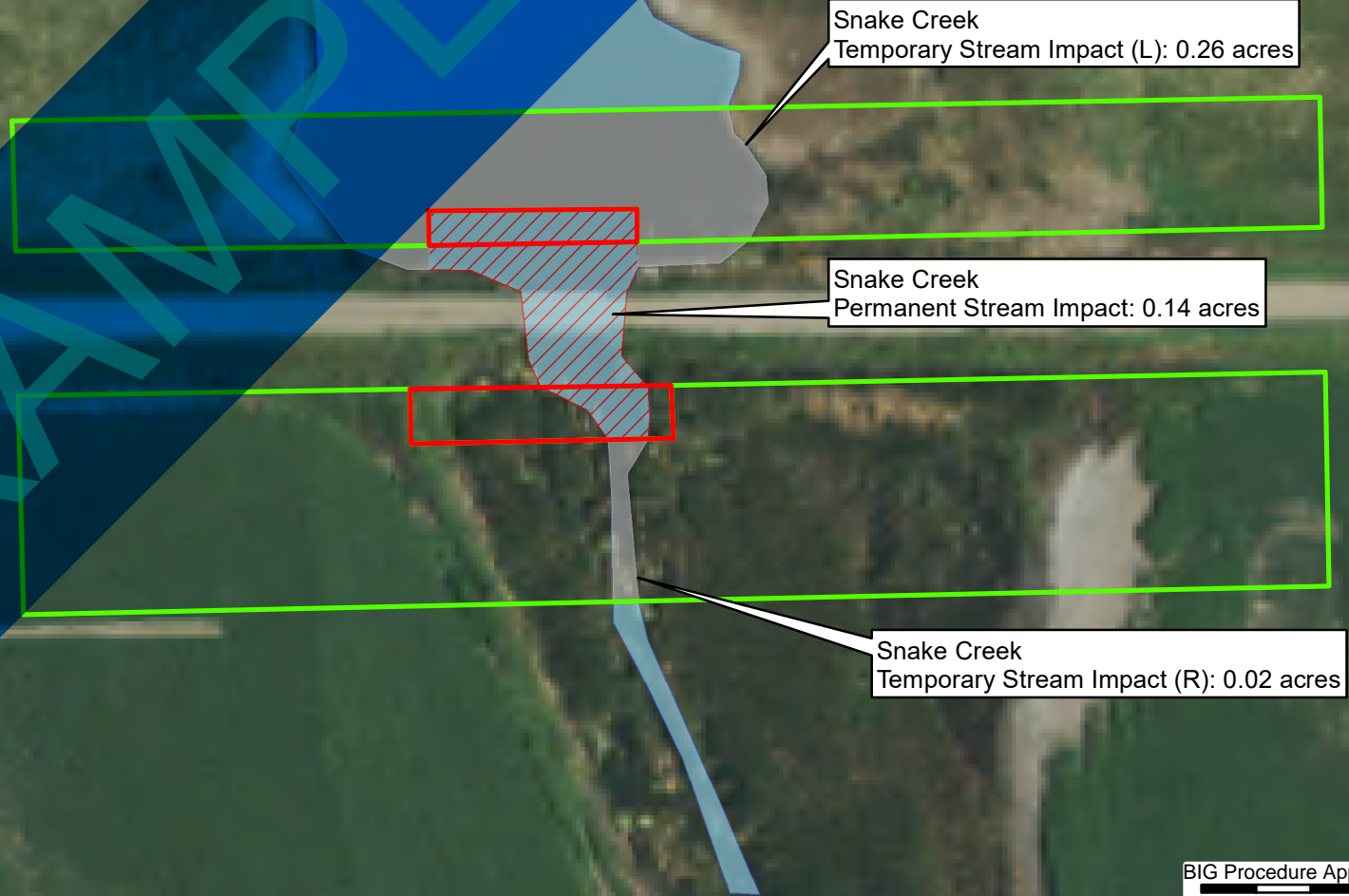


BRO 8058(32), PCN 08N9  
Spink County  
1 S & 1.8 W of Northville on 155th St over Snake Ck  
Replace Structure 58-052-070, Approach Grading, PE  
(2021 Local Federal Bridge Replacement Program)



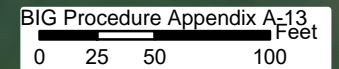
### Stream Impact Determination

This map was prepared by  
SDDOT Environmental Office 01/04/2023



**Legend**

- Permanent Easement
- Temporary Easement
- Desktop Delineated Stream
- Permanent Stream Impact
- Temporary Stream Impact

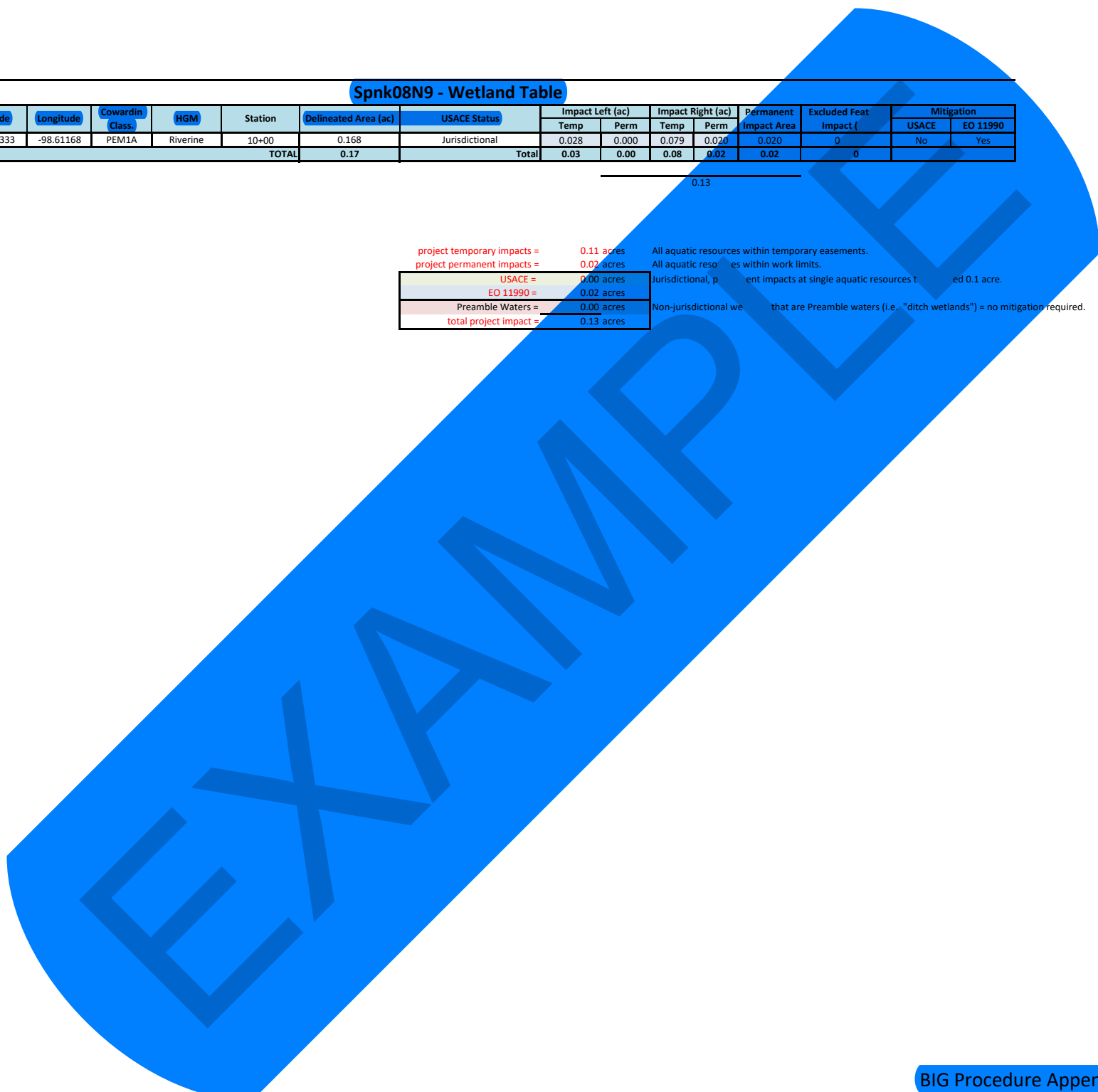


**Spnk08N9 - Wetland Table**

Aquatic Resource	Latitude	Longitude	Cowardin Class.	HGM	Station	Delineated Area (ac)	USACE Status	Impact Left (ac)		Impact Right (ac)		Permanent Impact Area	Excluded Feet Impact (	Mitigation	
								Temp	Perm	Temp	Perm			USACE	EO 11990
WL 1	45.144333	-98.61168	PEM1A	Riverine	10+00	0.168	Jurisdictional	0.028	0.000	0.079	0.020	0.020	0	No	Yes
<b>TOTAL</b>						<b>0.17</b>	<b>Total</b>	<b>0.03</b>	<b>0.00</b>	<b>0.08</b>	<b>0.02</b>		<b>0</b>		

0.13

project temporary impacts =	0.11 acres	All aquatic resources within temporary easements.
project permanent impacts =	0.02 acres	All aquatic resources within work limits.
USACE =	0.00 acres	Jurisdictional, permanent impacts at single aquatic resources totaled 0.1 acre.
EO 11990 =	0.02 acres	
Preamble Waters =	0.00 acres	Non-jurisdictional wetlands that are Preamble waters (i.e., "ditch wetlands") = no mitigation required.
<b>total project impact =</b>	<b>0.13 acres</b>	



**Robt08N5- OW Table**

Aquatic Resource	Latitude	Longitude	Cowardin Class	OW Class	Station	Delineated Length (ft)	Delineated Stream Bed Area (ac)	USACE Status	Stream Bed Impacts (ac)		Mitigation USACE	Impact Left (ft)		Impact Right (ft)		Permanent Impact Length	Preamble Impact (ft)	Mitigation USACE
									Temp	Perm		Temp	Perm	Temp	Perm			
OW 1-Snake Creek	45.144862	-98.611838		Perennial	10+00	650.000	1.360	Jurisdictional	0.28	0.14	No	45	0	70	60	110	0	No
<b>TOTAL</b>						650.00		<b>Total</b>	<b>0.28</b>	<b>0.14</b>		<b>45</b>	<b>50</b>	<b>70</b>	<b>60</b>	<b>110</b>	<b>0</b>	

project temporary impacts =	0.28 acres
project permanent impacts =	0.14 acres
project temporary impacts =	115 feet
project permanent impacts =	110 feet
USACE Stream Length =	0 feet
USACE Stream Bed =	0.00 acres
Preamble Waters =	0.00 acres
Preamble Waters =	0 feet
<b>total project impact =</b>	<b>0.42 Acres</b>
<b>total project impact =</b>	<b>225 feet</b>



**ABC ENGINEERING**

Street Address  
City, State, ZIP  
PHONE / FAX

DATE

ADDRESS BLOCK

RE: BR\_###(00), COUNTY OR CITY, PCN  
STRUCTURE NUMBER, LOCATION

Dear NAME:

A Type, Size, and Location inspection was held on DATE, for the above referenced project. The following personnel were in attendance:

ATTENDEE NAMES, TITLES

The following items were discussed and agreed upon by the inspection participants:

The most applicable structure for this site, based on numerous items discussed during the inspection, is a 63' 1 span precast channel bridge with a 24' deck (22' clear width) and a 30° LHF OR RHF skew. **IF LESS THAN 28' CLEAR ADD THE FOLLOWING SENTENCE** The county has selected a narrower width than the minimum standard as they have no intention of widening the roadway in the future ensuring the structure will not end up being a hazard by being narrower than the roadway. Crown slope of the structure shall be 0.02 ft/ft. The substructure shall consist of steel pile abutments. (Also note bent type if known – such as 2-column bents, etc.) The bridge location will be shown on the Final Hydraulic Data Sheet and will be centered at approximately station 10+00. T101 OR T115 OR SL1 steel rail OR Concrete barrier meeting MASH TL-3 (32") will be shown in the plans. Approach rail will OR will not be needed. Fence anchor eyes will OR will not be provided.

The Contractor will remove and dispose of the existing structure. OR The Contractor will remove and dispose of the existing structure with the exception of the following items to be salvaged for the County OR City: beams, wood planks, and railing. This shall be noted in plans for bidding purposes. Remaining materials shall be disposed of by the Contractor. The abutments and bents shall be removed to 1' below flowline.

The road will be closed during construction with no detour necessary. OR An onsite detour on the DIRECTION side of the structure will be shown in the plans.

Project limits will run from approximately 100' north to 100' south of the structure. The current grade shall be maintained. The typical section will include a crown slope of 0.04 ft/ft (MAY VARY FOR COUNTY) for gravel surfaces OR 0.02 ft/ft for paved surfaces, 4:1 inslopes, 5:1 backslopes, and a standard 10' ditch at 20:1. The approach subgrade shall taper from the structure to match the existing subgrade. The surfacing will consist of gravel OR asphalt, which will be furnished and installed by the County OR City. Clear zone for this site has been set at 10' as per the AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads OR \_\_\_' as per Table 3.1 of the AASHTO Roadside Design Guide. Unless otherwise noted, all design data for the project will meet the current design speed for the roadway which is ## mph.

**EXAMPLE 1**

**Bridge TS&L Letter Template**

Items to be customized for the specific project and conditions are in blue font. Guidance notes are highlighted.

## Local Bridge Improvement Grant (BIG) Procedure

No channel change and no channel cleanout will be necessary at this site. **OR** No channel change will be necessary at this site. Some channel cleanout of trees and/or brush will be necessary to the northeast and southeast.

The Consultant will provide erosion protection recommendations with the Final Hydraulic Data Sheet. The southwest bank will need to be built up and protected with riprap. (Note location of any out-of-the-ordinary need for riprap and reason why.)

Specific project notes for this project are attached. (ADD ANY PROJECT SPECIFIC NOTES AS ATTACHMENT TO THIS MEMO.)

The Contractor will be responsible for traffic control, topsoiling, and seeding.

The **County OR City** will be responsible for the following items without Grant Participation:

- 1) Right of way and temporary and permanent easements
- 2) Coordination of any utility adjustments
- 3) Furnish and install final surfacing
- 4) Furnish and install temporary and/or permanent fencing
- 5) Remove silt fence in permanently seeded areas

The SDDOT Geotechnical Engineering Activity is requested to provide foundation and backfill recommendations by **DATE (12-18 months from letter date)**. Debris and ice are a known concern at this site. **OR** Debris and ice are not a concern at this site.

The Consultant will provide the name, address, and phone number of adjacent landowners. Utility Company contact information is also needed in the plans for any utilities that exist within the project area. **The DOT Local Government Office (DOT LET) OR the County OR City (LOCALLY LET)** will initiate the 404 permit and other related environmental clearances and will provide the Consultant with materials recommendations if needed.

The Consultant will outline and number the archeological sites on the roadway plan sheet. These sites are located within \_\_\_\_ mile of the structure and cannot be disturbed. Notes stating this shall be placed in the plans and are located with the other project specific notes. These sites will only be labeled in the plans as "Environmentally Sensitive Site #1, 2, 3," etc. No specific identification numbering from SHPO shall be used in the plans to protect these sites from scavenging. **THIS ONLY APPLIES IF SHPO STATES THAT SITES HAVE BEEN FOUND AND MUST BE AVOIDED. DELETE IF NOT NEEDED.**

The letting date will be determined later as it depends on whether this project will be let with local funding or a successful award of a Bridge Improvement Grant for Replacement.

If there are any questions or comments please contact me at **NUMBER**.

Sincerely,

**NAME**  
**TITLE**

Attachment – Drainage Data Sheet & Contour Map for Existing Site & Plan/Profile for Selected Option  
CC: **COUNTY/CITY – CONTACT NAME**  
**LGA – CONTACT NAME**



**ABC ENGINEERING**  
Street Address  
City, State, ZIP  
PHONE / FAX

**EXAMPLE 2**

**Box Culvert/Pipe TS&L Letter  
Template**

Items to be customized for the specific project and conditions are in **blue font**. Guidance notes are **highlighted**.

DATE

ADDRESS BLOCK

RE: BR\_ ###(00), COUNTY, PCN  
STRUCTURE NUMBER, LOCATION

Dear NAME:

A Type, Size, and Location meeting was held on DATE, for the above referenced project. The following personnel were in attendance:

ATTENDEE NAMES, TITLES

The following items were discussed and agreed upon by the inspection participants:

The most applicable structure for this site, based on numerous items discussed during the inspection, is a 5 barrel 12' X 5' cast-in-place **OR** precast RCBC with a 0° RHF **OR** LHF skew, and 0° flared wingwalls at the inlet & 0° flared wingwalls at the outlet. **(REMOVE IF NOT NEEDED.)** As debris and ice are a known concern at this site the center wall(s) will be extended on the inlet. Cutoff wall is to be extended 6" below the recommended outlet protection. The new structure will be centered at approximately sta. 10+07. Fence anchor eyes **will OR will not** be required at this site. The thickness of the bottom slab shall be the same or greater than the thickness of the top slab.

The flowline of the box culvert and riprap to be submerged a minimum of 1' to aid in fish passage. This needs to be documented both on the final hydraulic data sheet and on the structure, general drawing plan sheet. **OR** This location is environmentally sensitive due to the presence of the Topeka Shiner; therefore, the box culvert and riprap will need to be submerged 6" below the flowline to aid migration of the Shiner during its spawning period. This needs to be documented both on the final hydraulic data sheet and on the structure, general drawing plan sheet. **(TOPEKA SHINER SITES NEED TO BE SPECIFICALLY MENTIONED TO INDICATE TO ALL THAT THEY HAVE BEEN IDENTIFIED AT THE SITE AND ACCOMMODATIONS WILL BE MADE.)**

The Contractor shall remove and dispose of the in-place structure. **ADD SPECIFIC SALVAGE ITEMS AS NEEDED** - The Contractor shall salvage the beams, wood planks, and railing for the County, which shall be noted in the plans for bidding purposes. The abutments and bents shall be removed to 1' below flowline.

The project limits shall be from approximately 150' south to 150' north of the structure. The road will be closed with no detour necessary. **Only local traffic will be allowed access.** **OR** An onsite detour on the **DIRECTION** side of the structure will be shown in the plans.



## Local Bridge Improvement Grant (BIG) Procedure

### **USE THE FOLLOWING Paragraph FOR GRAVEL ROADS (delete if asphalt)**

The typical section will include a crown slope of 0.04 ft/ft (**MAY VARY PER COUNTY**), 4:1 inslopes, 5:1 backslopes, and a standard 10' ditch at 20:1. The surfacing will consist of gravel, which will be furnished and installed by the County. The approach subgrade will taper into the existing. (**IF EXISTING FINISHED SURFACE MEETS OR EXCEEDS LRP MIN. OF 24'**) The length of box shall accommodate the finished surface width of 24' which will match the existing finished surface width. **OR** The length of box shall accommodate the finished surface width of \_\_\_' to ensure the box openings remain outside the clear zone when the roadway is widened. (**OR IF FINISHED WIDTH WILL BE LESS THAN 24' MIN.**) The length of box shall accommodate a finished surface width of \_\_\_'. Although this is narrower than the minimum finished surface width the county has no intention of widening the roadway in the future so the box openings will remain safely outside the clear zone. Clear zone for this site has been set at 10' as per the AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads **OR** \_\_\_' as per Table 3.1 of the AASHTO Roadside Design Guide. Clear zone is measured from the edge of the traveled way (finished surface) to the inside of the parapet of the box. Unless otherwise stated, all design data for the project will meet the current design speed of the roadway which is \_\_\_mph.

### **USE THE FOLLOWING Paragraph FOR ASPHALT ROADS (delete if gravel)**

The typical section will include a crown slope of 0.02 ft/ft, 4:1 inslopes, 5:1 backslopes, and a standard 10' ditch at 20:1. The surfacing will consist of asphalt, which will be furnished and installed by the County. The approach subgrade will taper into the existing. (**IF PROPOSED MEETS OR EXCEEDS LRP MIN. LANE WIDTH OF 12' AND LRP MIN. SHOULDER WIDTH OF 2'**) The length of box shall accommodate 2-12' driving lanes and 2-2' shoulders to match existing roadway. **OR** The length of box shall accommodate 2-\_\_\_' driving lanes and 2-\_\_\_' shoulders to ensure the box openings remain outside the clear zone when the roadway is widened. (**OR IF FINISHED LANES/SHOULDERS WILL BE LESS THAN MIN.**) The length of box shall accommodate 2-\_\_\_' driving lanes and 2-\_\_\_' shoulders. Although this is narrower than the minimum roadway cross section, the county has no intention of widening the roadway in the future so the box openings will remain safely outside the clear zone. Clear zone for this site has been set at 10' as per the AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads **OR** \_\_\_' as per Table 3.1 of the AASHTO Roadside Design Guide. Clear zone is measured from the edge of the traveled way (driving lanes) to the inside of the parapet of the box. Unless otherwise stated, all design data for the project will meet the current design speed of the roadway which is \_\_\_mph.

The Consultant will provide inlet and outlet recommendations on the Final Hydraulic Data Sheet. The inlet & outlet protection shall be riprap. **Inlet & outlet aprons shall be concrete. OR At landowner request the aprons will be riprap to prevent cattle from walking through the box culvert.** Any further inlet & outlet protection shall be riprap. (**Any extra riprap needed? If so, where and why?**)

**No channel change and no channel cleanout will be necessary at this site. OR No channel change will be necessary at this site. Some channel cleanout of trees and/or brush will be necessary. A temporary diversion channel will be installed south of the structure.**

The Contractor will be responsible for traffic control, topsoil stripping, and seeding.

The **County OR City** will be responsible for the following items without Grant Participation:

- 1) Right of way and temporary and permanent easements
- 2) Coordination of any utility adjustments
- 3) Furnish and install final surfacing
- 4) Furnish and install temporary and/or permanent fencing
- 5) Remove silt fence in permanently seeded areas

The SDDOT Geotechnical Engineering Activity Office is requested to provide undercut recommendations by **DATE (12 months from letter).**

**6-months**

## Local Bridge Improvement Grant (BIG) Procedure

The Consultant will provide names, addresses, and phone numbers of the adjacent landowners. Utility Company contact information is also needed in the plans for any utilities that exist within the project area. **(FOR DOT LET PROJECTS) The DOT Local Government Office OR (FOR LOCALLY LET PROJECTS) The County OR City** will initiate the 404 permit and other related environmental clearances and will provide the consultant with materials recommendations.

The Consultant will outline and number the archeological sites on the roadway plan sheet. These sites are located within \_\_\_\_ mile of the structure and cannot be disturbed. Notes stating this shall be placed in the plans and are located with the other project specific notes. These sites will only be labeled in the plans as “Environmentally Sensitive Site #1, 2, 3,” etc. No specific identification numbering from SHPO shall be used in the plans to protect these sites from scavenging. **THIS ONLY APPLIES IF SHPO STATES THAT SITES HAVE BEEN FOUND AND MUST BE AVOIDED. DELETE IF NOT NEEDED.**

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If there are any questions or comments please contact me at **NUMBER**.

Sincerely,

**NAME**  
**TITLE**

Attachment – Drainage Data Sheet & Contour Map for Existing Site & Plan/Profile for Selected Option

cc: **COUNTY/CITY – CONTACT NAME**  
**LGA – CONTACT NAME**

# Local Bridge Improvement Grant (BIG) Procedure

## EXAMPLE 3

### REPORT OF FOUNDATION INVESTIGATION

**PROJECT:** BRO 8048(03) Mellette County PCN 02DY

**LOCATION:** Structure No. 48-102-010, 18.9 miles North & 0.8 miles West of Cedar Butte over the White River.

#### **METHOD OF INVESTIGATION:**

All soundings are made according to the Standard South Dakota Subsurface Investigation Techniques and AASHTO Specifications. Auger holes are drilled with a 4-1/2 inch continuous flight auger. Penetration and Push Test holes are drilled with a 6-5/8 inch continuous hollow stem auger. Push core samples are obtained by hydraulically ramming a 2 foot long lined split spoon sampler into the soil to obtain 2 inch nominal diameter soil samples. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil. Corings with the SDDOT drive rig are performed by using a California retractable plug sampler, which is driven with a 490 pound hammer. The drill stem is P.K. rod, which is 2-7/8 inch O.D., and 2 inch nominal diameter cores are obtained. All laboratory tests are performed in accordance with standard AASHTO or SDDOT laboratory procedures.

#### **RECOMMENDATIONS:**

##### Abutments:

##### I. Steel HP10 X 42 Piling

A. A LRFD maximum factored pile bearing resistance of 77 tons can be used for design.

B. The anticipated tip elevations are:

<u>Station</u>	<u>Elevation</u>
22+06	1910
25+27	1892

C. The nominal pile bearing resistance shall be 192 tons verified by the SDDOT's Modified ENR formula.

##### Bents:

##### I. Drilled Shafts

A. A LRFD maximum factored resistance value of 2,800 psf can be used for design below elevation 1912 ft. or maximum scour whichever is lower.

B. Permanent casings will be required to elevation 1915 ft.

C. The point of fixity within the bedrock can be assumed to be the elevation 1912 ft.

#### **DISCUSSION:**

The proposed structure location is underlain by brown sand-silt (alluvium) overlying brown silt-sand with gravel (alluvium). The alluvial sediments rest upon gray silt-clay (Pierre Shale). The D50 of the brown sand-silt, brown silt-sand with gravel, and gray silt-clay (Pierre Shale) can be assumed to be 0.06 mm, 1.0 mm, and 0.004 mm. The D95 of the brown sand-silt, brown silt-sand with gravel, and gray silt-clay (Pierre Shale) can be assumed to be 1.0 mm, 6.0 mm, and 0.06 mm.

Steel HP10X42 piling along with the anticipated tip elevations, are listed in the recommendations for use in the abutments. Drilled Shafts are listed in the recommendations for use at the bents.

The piling were evaluated for drivability and group effects at the LRFD Strength Limit State. Settlement of the substructure units was evaluated at the LRFD Service Limit State.

Drivability –

# Local Bridge Improvement Grant (BIG) Procedure

A drivability analysis was performed for the steel HP10X42 piling using the wave equation analysis program (GRLWEAP). A group of pile hammers that were evaluated and found to produce acceptable driving stresses is listed later in this report for inclusion in the plans.

## Pile Group Effects:

### Axial Loading – Abutments

For a single row of piling, AASHTO requires the center-to-center pile spacing to be at least 30" or 2.5 times the width of the pile, whichever is greater. Therefore, for the steel HP10x42 piling at the abutment the center-to-center spacing shall be at least 30".

### Settlement –

The steel pile tips will be founded in the Pierre Shale. Unconfined compression test results of the Pierre Shale exceed the proposed bridge loadings. Past experience for piling driven into hard shale soil bedrocks has shown little, if any, settlement has occurred. Therefore, 1/4 inch or less of total settlement can be used to design the substructure units.

### Horizontal Movement –

AASHTO states that if the center-to-center spacing of the piling in the substructure unit is greater than 5 times the width of the pile then group effects can be ignored. Therefore, if the designed spacing is greater than 5 times the pile width a group efficiency factor of 1.0 can be used with no reduction in pile loading required. If this minimum pile spacing is not met a reduction factor will need to be calculated according to the AASHTO code.

For the drilled shafts, a LRFD maximum factored resistance value (skin friction) of 2,800 psf is recommended below elevation 1912 for the bents or maximum scour whichever is lower. The point of fixity within the bedrock can be assumed to be 1912 for the bents.

Each drilled shaft shall have a minimum of 3 access tubes for a shaft diameter of 3.0' and less. The number of access tubes needed shall be increased by 1 for each foot increase in shaft diameter above the 3.0'. The access tubes shall be furnished and installed according to the South Dakota Department of Transportation's 2004 Standard Specifications for Roads and Bridges. These access tubes shall be equally spaced in the shaft reinforcement prior to placing the reinforcement cage.

A representative of the **CONSULTING FIRM (NAME AND NUMBER)** shall be present during drilling operations to confirm the elevations provided in this report and to observe the placement of the drilled shafts. In addition to the notes below, contact the **CONSULTANT REPRESENTATIVE** for the most current drilled shaft construction notes to be included in the plans.

### **The following notes shall be placed in the plans:**

A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The pile hammers listed below were evaluated and found to produce acceptable driving stresses. Pile hammers not listed will require evaluation and approval prior to use from the **CONSULTANT REPRESENTATIVE NAME AND PHONE NUMBER**.

*Hammers need to be sized according to site specific soil parameters and structure design requirements. The following list of hammers is owned and readily available by contractors that do work in SD. Select and specify in the report which hammers are acceptable for use on individual projects.*

ICE 180	Delmag D12-42	FEC 1500	Delmag D16-32	Delmag D19-32
Delmag D19-42	MVE M-19	ICE 42S	MKT DE 42/35	APE D19-42
Delmag D25-32	Delmag D30-32	SPI D30	Delmag D46-32	

~~Horizontal movement at the substructure units can be calculated using the following soil parameters:~~

~~Sand-silt (alluvium); phi angle = 24 degrees, cohesion = 50 psf, wet unit weight = 118 pcf  
Silt-sand with gravel (alluvium); phi angle = 32 degrees, cohesion = 0 psf, wet unit weight = 130 pcf  
Silt-clay (Pierre Shale); phi angle = 18 degrees, cohesion = 1,000 psf, wet unit weight = 130 pcf~~

# Local Bridge Improvement Grant (BIG) Procedure

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

Plotting Date: 03/26/2013

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.

### LEGEND

- ⊕ Auger Test
- ⊙ Drive Test
- ∇ Water
- ⊖ Caved
- Penetration Test
- ▬ Sample Zone

Drive test are conducted by dropping a 490 pound hammer 30 inches to drive a 2 1/8 inch drill stem with attached retractable plug sampler for taking samples and to measure the resistance to penetration of the soil.

Auger holes are drilled with a 4 1/2 inch diameter continuous flight auger. Penetration and Push Test holes are drilled with a 6 3/8 inch diameter hollow stem auger. Push core samples are obtained by hydraulically ramming a 2 foot long lined split spoon sampler into the soil to obtain 2 inch nominal diameter soil samples.

### GROUND WATER ELEVATIONS

as of December 2012

T1	(Caved)	1931.3
T2	(Caved)	1910.9
T3	Dry	
T4		1929.7
T5		1926.9
T6		1928.9
T7		1930.2
T8		1929.1
T9		1930.0
T10		1929.3
T11	Dry	
T12		1929.8

### MEASURED SKIN FRICTION

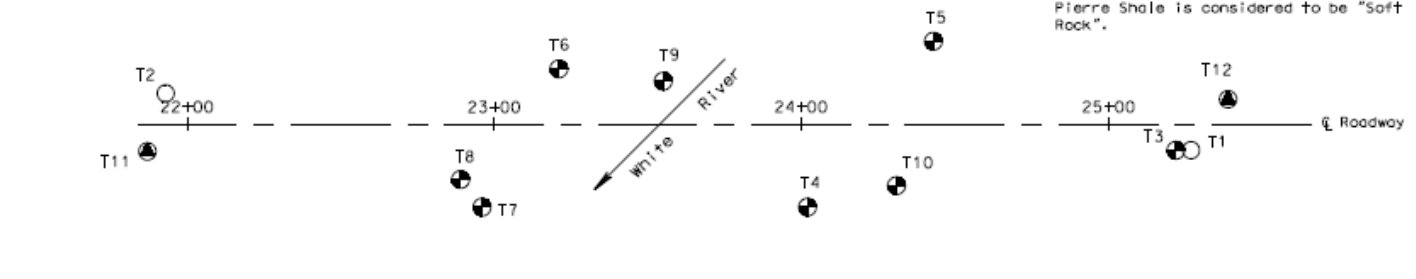
	Elev	psf
T11	1924.0	2,193
T12	1907.3	1,214

BRD 8048(03) MELLETTIE COUNTY PCN 02DY  
18.9 MILES N. AND 0.8 MILES W. OF CEDAR BUTTE  
SECTION 28 TOWNSHIP 45 W. RANGE 31 W.  
OVER WHITE RIVER  
STR. NO. 48-102-010

Pierre Shale is a marine shale with a textural classification that varies from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain concretions that are normally thin but occasionally are massive. These zones may be considered hard and dense. Thin zones may be present that are cemented resulting in claystone or siltstone seams. Bentonite zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be "Soft Rock".

Hole Number	Station	Depth	Soil Color	Classification	Strength (Q <sub>u</sub> )	Dry Density	Wet Density	Moisture	Pass No. 10	Pass No. 40	Pass No. 200	Sand Content	Silt Content	Clay Content
T2	21493	5.8	Brown	Sand-Clay	85.3	pcf	101.7	12.3	95.9	51.1	55.1	44.9	45.1	10.0
T3	23492	5.7	Brown	Silt	81.7	pcf	97.8	12.3	95.2	51.1	55.1	44.9	45.1	10.0
T4	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0
T5	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0
T6	21497	23.8	Gray	Clay	55.490	pcf	115.3	16.9	95.8	51.1	55.1	44.9	45.1	10.0
T7	21497	23.8	Gray	Clay	55.490	pcf	115.3	16.9	95.8	51.1	55.1	44.9	45.1	10.0
T8	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0
T9	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0
T10	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0
T11	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0
T12	23492	17.0	Brown	Sand	107.0	pcf	127.0	9.4	96.2	51.1	55.1	44.9	45.1	10.0

PLOT SCALE - 1/2" = 1'-0"

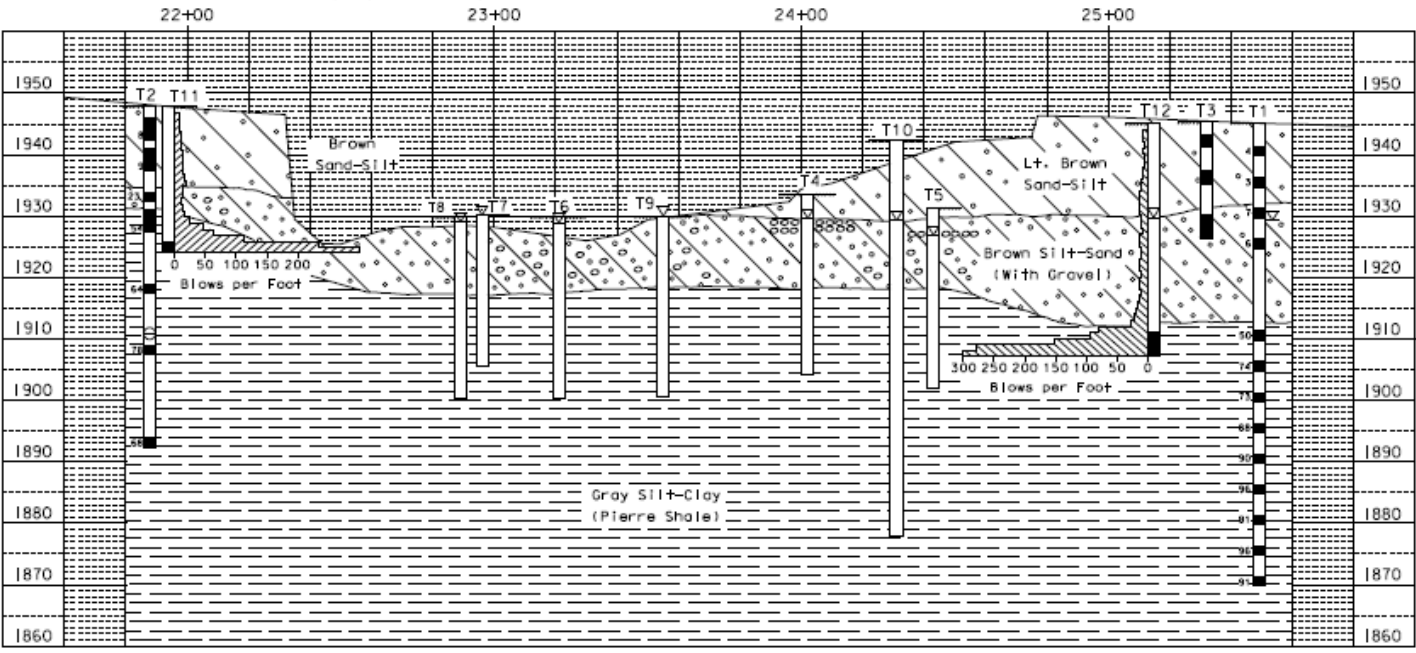


\* Values represent uncorrected "N" values from Penetration Test.

Sample Zone 48 Blows Per Foot

Bore holes on profile are moved slightly for clarity

Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.



### SITE PLAN & SUBSURFACE PROFILE

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	NN	JW	

FILE .....SUBSURFACE PROFILE.DWG.DGN

# Local Bridge Improvement Grant (BIG) Procedure

## RECOMMENDATIONS

## EXAMPLE 4

**Re:** BRO 8027(29), Gregory County, PCN 00QR  
Str. No. 27-030-081, located 2.0 West & 0.1 South of the Jct of SD44/SD47  
RCBC Undercut Recommendation

Soils maps of the area indicate the soils at the location of the proposed structure have the following characteristics.

### Station 16+86 (Str. No. 27-030-081)

CLASSIFICATION: A-7  
Clay & Silty Clay  
AVERAGE LIQUID LIMIT: 66  
SHRINK-SWELL POTENTIAL: High to Very High  
FROST ACTION POTENTIAL: Low  
CORROSIVITY: High for steel, Low to Moderate for concrete

### **RECOMMENDATIONS:**

Provide 24 inches of undercut and backfill.

### **DISCUSSION:**

The project consists of replacing an existing single span 22' steel stringer bridge with a 2 barrel 13' x 6' cast-in-place RCBC. The proposed box culvert will be in the same location as the existing bridge location. The existing surfacing on the road is gravel and will be resurfaced with gravel upon completion. Minimal grading at the proposed box culvert location is anticipated, therefore, the material shall be compacted using the Ordinary Compaction Method.

A subsurface investigation was conducted for the proposed RCBC. The subsurface investigation consisted of placing a boring near both the proposed inlet and outlet ends of the structure and logging the material to 3 feet below the flow line. Samples were collected from below the flow line for soils classification. A dynamic cone penetrometer was used at both the inlet and outlet ends to identify the change in relative density of the subsurface material below flow line.

Subsurface soils at the proposed site consist of brown silt-clay to 3' below the existing flow line.

The 2' undercut depth is recommended to remove the low strength soils with high shrink-swell potential from below the box culvert.

### **The following paragraphs shall be placed in the plans:**

Compaction of earth embankment and box culvert backfill material shall be governed by the Ordinary Compaction Method.

Any questions about the recommendations or the subsurface conditions can be directed to the [CONSULTANT CONTACT NAME AND PHONE NUMBER](#).

# Local Bridge Improvement Grant (BIG) Procedure

## HYDRAULIC DATA SHEET

County \_\_\_\_\_ Project No. \_\_\_\_\_ PCN \_\_\_\_\_ Sec. \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_  
 Station 23+41.8 Over North Branch of CREEK Drainage Area 52.3 Sq. Mi. Direction of Flow East  
 Preliminary X Final \_\_\_\_\_ Q-Design Yr. Frequency 25-year Observed H.W. Elev 1283.1  
 STRUCTURE NO. ##-###-### LOCATION LOCATION

Cross Section	Qd. cfs	W.W. Area sq.ft.	V fps	So. ft./ft.	Bottom		H.W. ft.	dn ft.	C.L. FL Elev.	D.H.W. Elev.		Ch Ch	Degree Skew
					Structure	Ch.				Culv. Inlet	Bridge		
Trapezoid 2:1 S:S	1979	335	5.9	.0018		Natural		8.1	1273.18*		1281.8	No**	0°
Rectangle II	1979	330	6.0	.0018	4B=40'		8.7	8.3	1273.18*	1281.9		No**	0°
Rectangle III	1979	360	5.5	.0018	4B=44'		8.7	8.3	1273.18*	1281.9		No**	0°

Type: I. Berm Type Bridge II. RCBC w/30° Flared Wing walls at Inlet and 0° Flared at Outlet III. Precast CBC with 0° Flared Wing walls at Inlet and Outlet

Size: I. 82.0 ft. (single span with 45 M Section) II. 4-10'x10' (effective opening 4-10'x9') III. 4-11'x10' (effective opening 4-11'x9')

Proposed Location I. Center at Sta. 23+26, berm toes located at Sta. 23+12± (elev. 1274.0) & Sta. 23+40 ± (Elev. 1274.0) II. Center at Sta. 23+37 III. Center at Sta. 23+37

Notes or Remarks: Discharges were obtained from Methods Outlined in Water Resources Report 98-4055 for ungaged sites near a gaging station on the same stream. Stream gage # 06478260 for years of record from 1956-1978. Q<sub>2</sub> = 91 cfs; Q<sub>25</sub> = 1979 cfs; Q<sub>100</sub> = 4997 cfs; Q<sub>500</sub> = 11,811 cfs. Structure width and flowline elevation for the box culvert options meet the criteria called for in the US Army Corp. of Engineers 2012 Regional Conditions for aquatic organisms.

INPLACE CONDITIONS: Q<sub>2</sub> Elev. = 1275.0, HW<sub>25</sub> = 1281.8, HW<sub>100</sub> = 1286.9 \*\*\* Overtop Freq. = Q<sub>85</sub> = 4500 cfs, V<sub>max</sub> = V<sub>85</sub> = 9.1 fps  
PROPOSED CONDITIONS: I. Q<sub>2</sub> Elev. = 1274.9, V<sub>2</sub> = 2.8 fps, HW<sub>100</sub> = 1284.8, \*\*\*Overtop Freq. = Q<sub>274</sub> = 8000 cfs, V<sub>max</sub> = V<sub>100</sub> = 11.7 fps  
II. Q<sub>2</sub> Elev. = 1274.4, (Q<sub>2</sub> Depth = 1.1 ft. and V<sub>2</sub> = 2.1 fps at culvert outlet), HW<sub>100</sub> = 1287.2, \*\*\*Overtop Freq. = Q<sub>185</sub> = 6450 cfs, V<sub>max</sub> = V<sub>100</sub> = 13.9 fps  
III. Q<sub>2</sub> Elev. = 1274.4, (Q<sub>2</sub> Depth = 1.1 ft. and V<sub>2</sub> = 1.9 fps at culvert outlet), HW<sub>100</sub> = 1287.2, \*\*\*Overtop Freq. = Q<sub>180</sub> = 6400 cfs, V<sub>max</sub> = V<sub>100</sub> = 12.6 fps

Additional Remarks: \*Elevation of the Stream flowline at the centerline of the proposed roadway. The box culvert flowline has been lowered 12" below stream flowline and this embedded depth is assumed to not convey any water.  
\*\*Minor channel shaping will be required at channel inlet and outlet.  
\*\*\*The existing roadway overtops at Elev. 1286.23 near Sta. 23+75 and the proposed gradeline overtops at Elev. 1290.8 at Sta. 23+50.  
Δ Hutchinson County is participating in NFIP.  
◆ The area is not mapped and is considered NSFHA (No Special Flood Hazard Area)

PRELIMINARY X FINAL SCOUR RECOMMENDATIONS: I. Riprap will be required on both bridge berms. Foundation Report has not been received. Contraction Scour for proposed bridge is estimated at 6.0 ft. for the 100 year event. Scour estimate is based on assumed D<sub>50</sub> = .2mm. II & III. Provide 33 in. thick Class B riprap on newly graded 2:1 bank slopes from elev. 1280.0 down to culvert Flowline and across channel at outlet. Extend riprap 18.0 ft. downstream of wings. Provide Type B drainage fabric beneath all riprap. Natural Stream bed material will not need to be placed over riprap and culvert invert.

Vertical Datum Used: NAVD 88: X NGVD 29: \_\_\_\_\_ Unknown: \_\_\_\_\_  
 Topeka Shiner Stream: Yes X No \_\_\_\_\_  
 Community Participating in NFIP Program: Yes X Δ No \_\_\_\_\_  
 Site in Identified NFIP Floodplain: Yes \_\_\_\_\_ No X ◆

Prepared by: Signature  
 Date: DATE  
 Checked by: Signature  
 Date: DATE

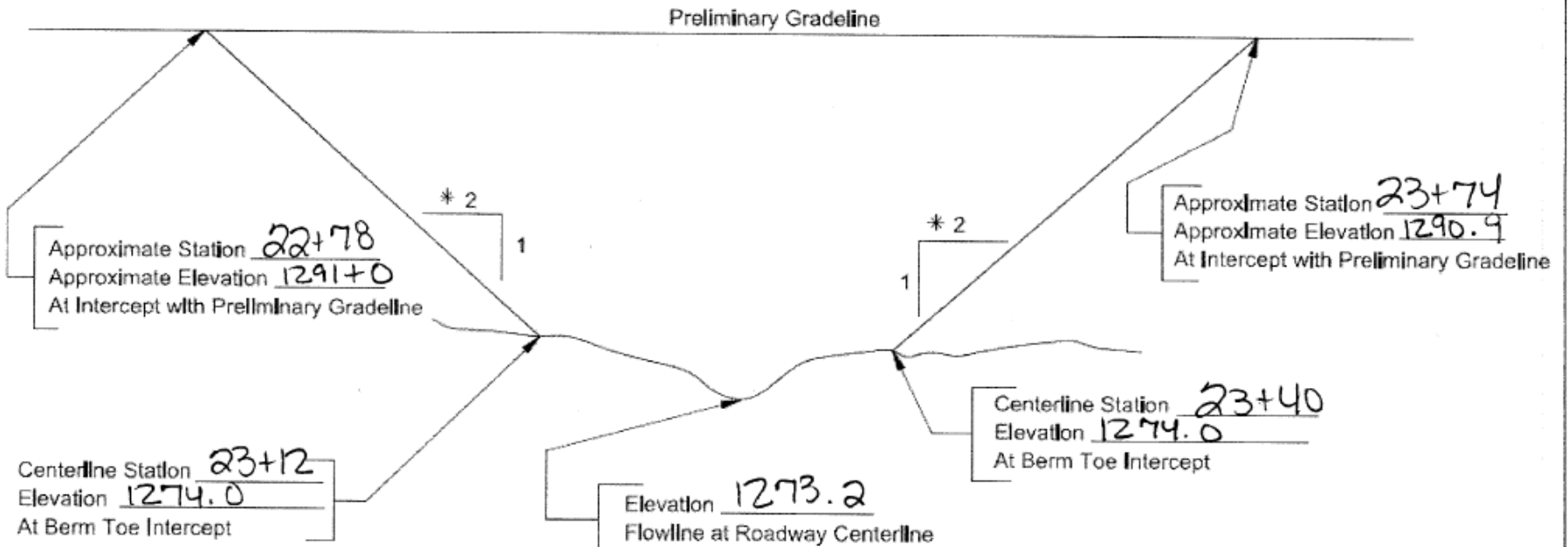


# PRELIMINARY HYDRAULIC DATA LAYOUT

To Define the Minimum Channel Configuration at Bridge

Project BR - #### (00)  
 County \_\_\_\_\_  
 PCN \_\_\_\_\_

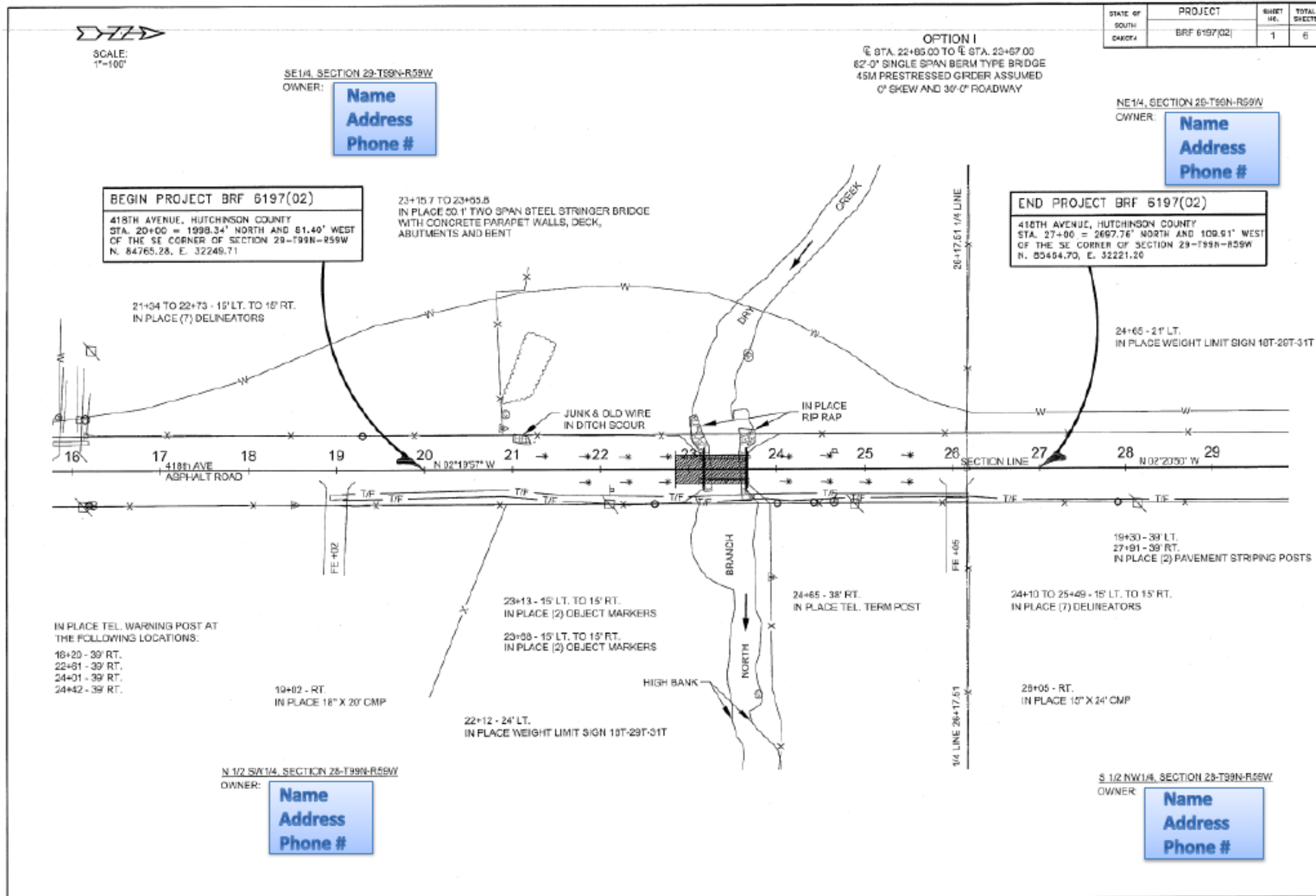
Station 23+26  
 Skew 0°  
 Date Prepared DATE



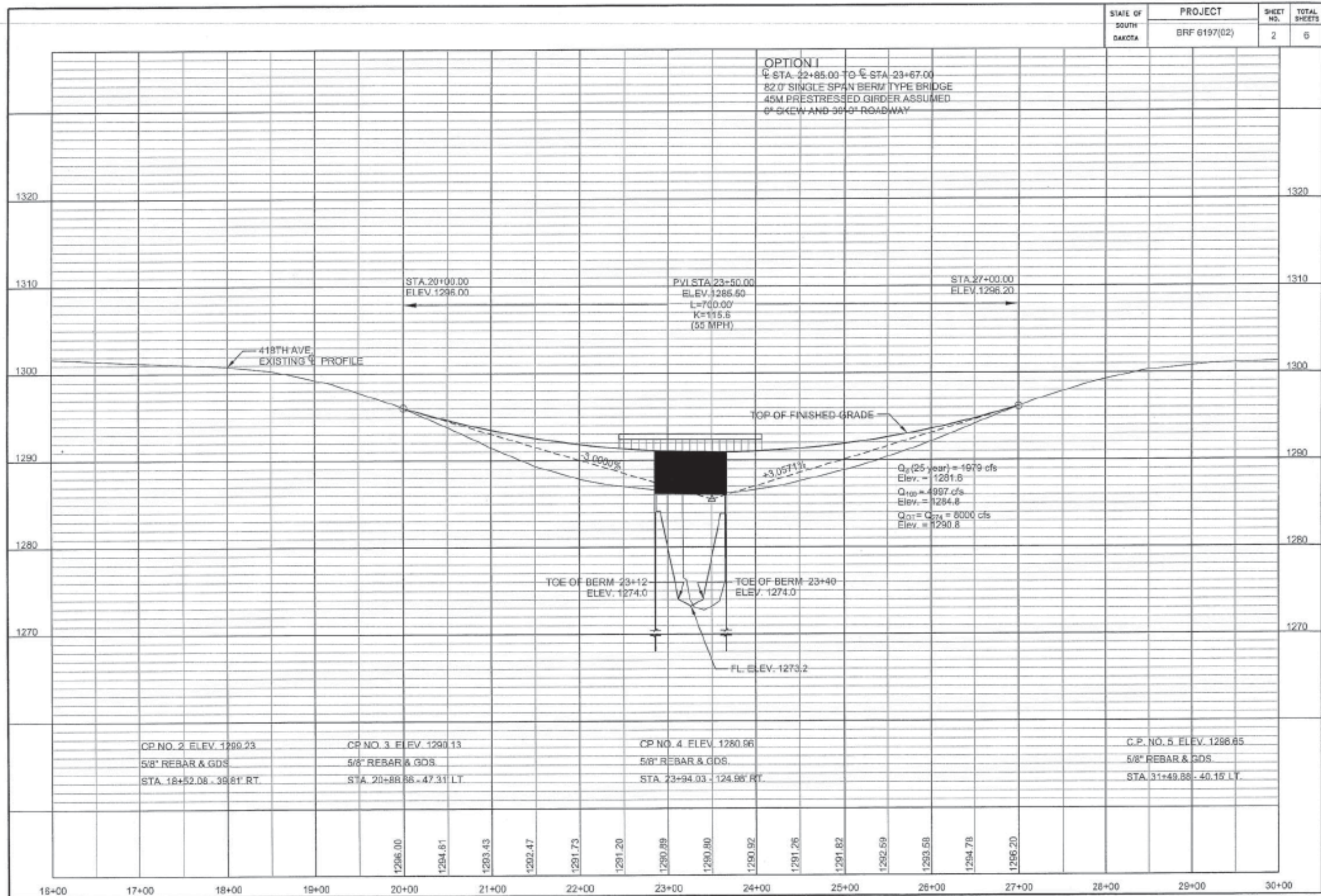
\* Berm slope perpendicular to channel centerline. If bridge is skewed, berm slope must be adjusted to meet skew.

This idealized drawing is not to scale.  
 See project roadway profile for more details.

Local Bridge Improvement Grant (BIG) Procedure

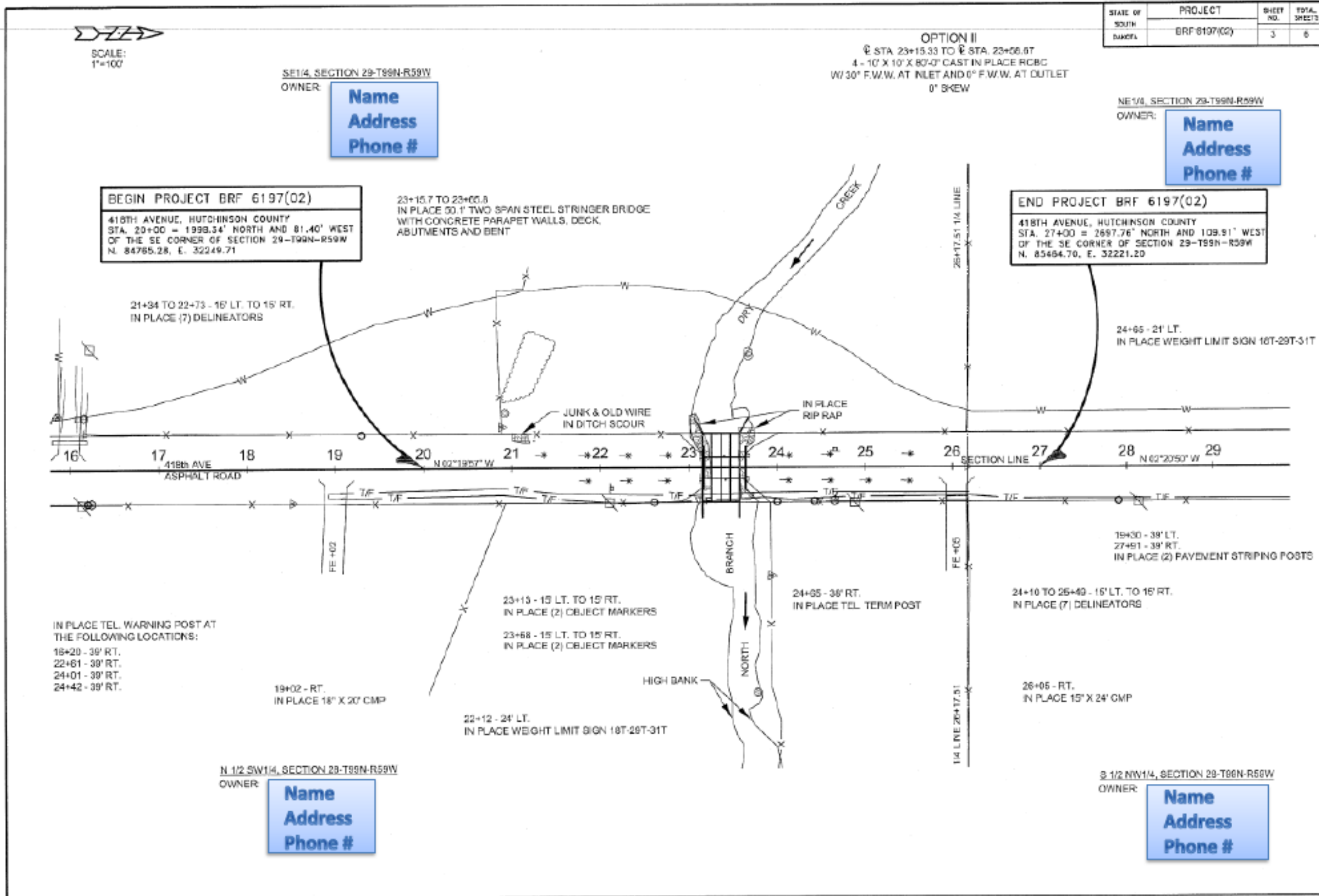


# Local Bridge Improvement Grant (BIG) Procedure

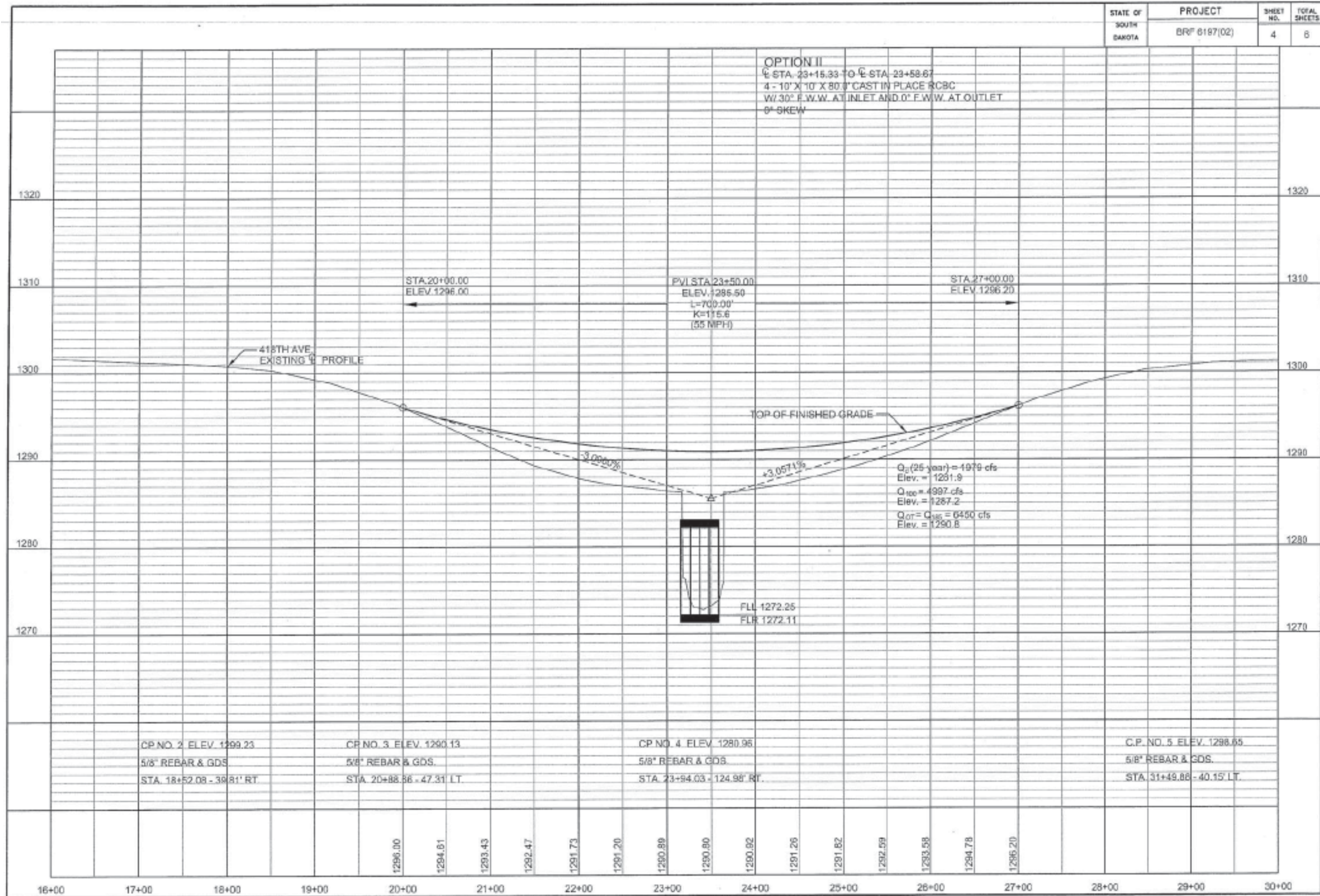




Local Bridge Improvement Grant (BIG) Procedure

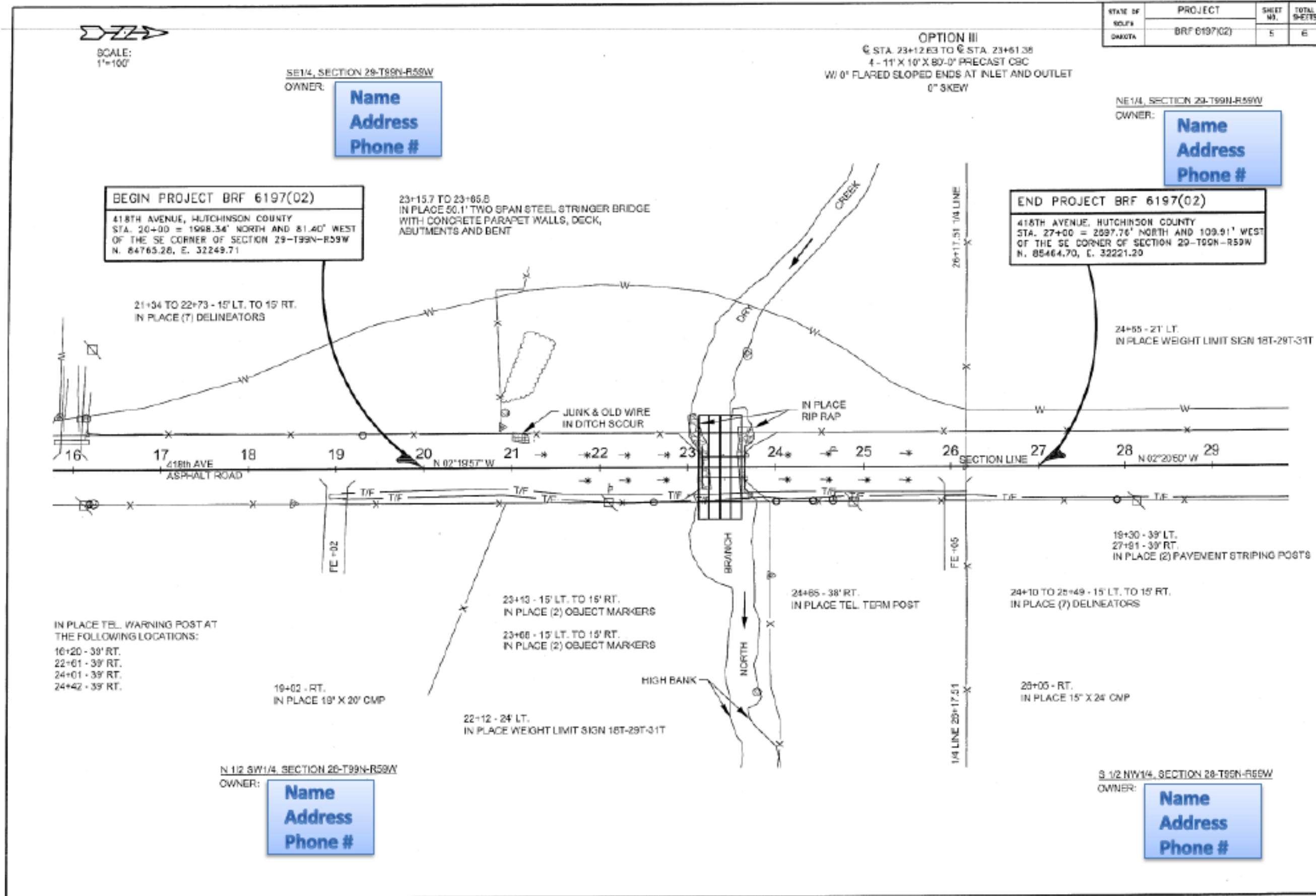


Local Bridge Improvement Grant (BIG) Procedure

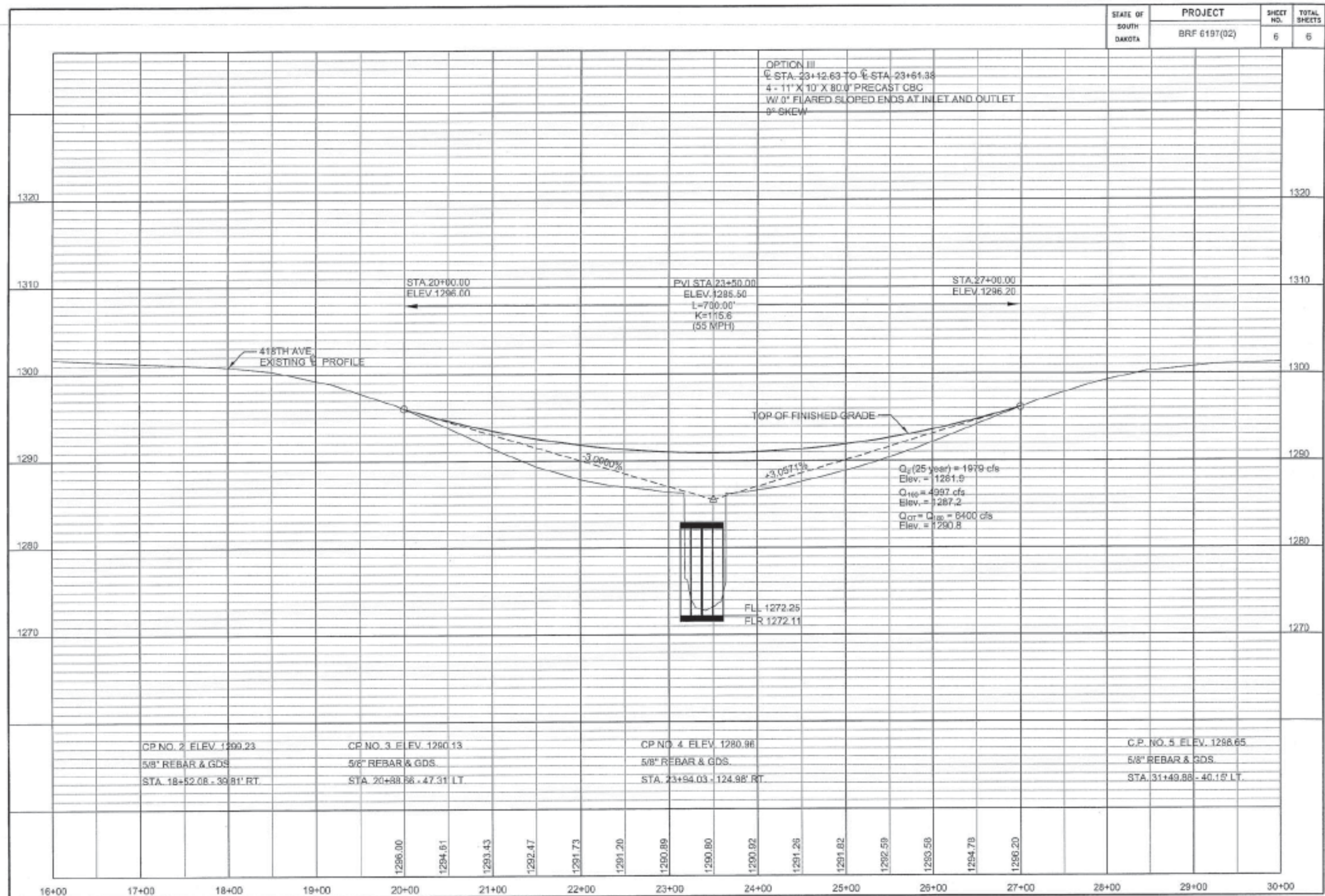




Local Bridge Improvement Grant (BIG) Procedure

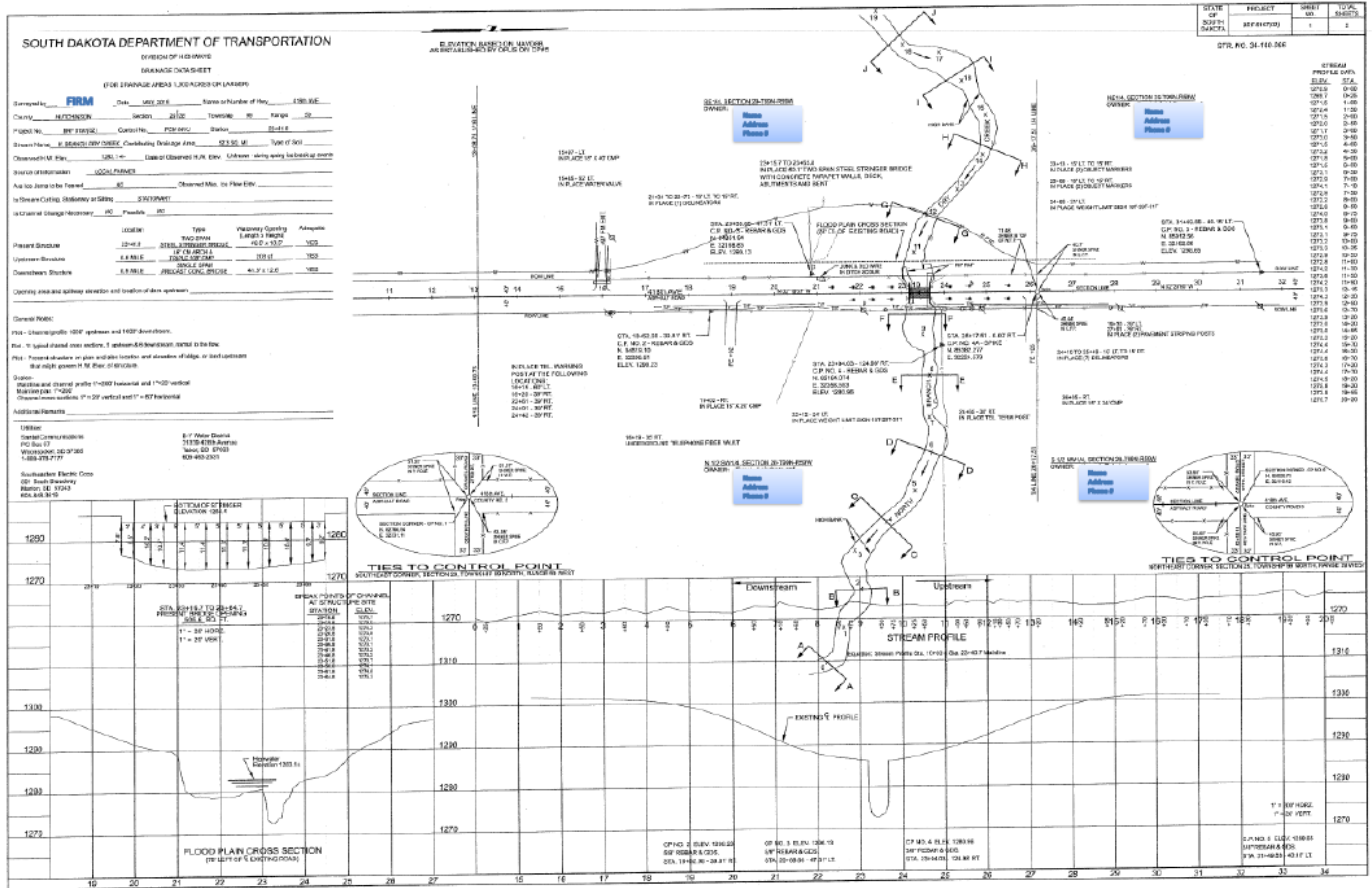


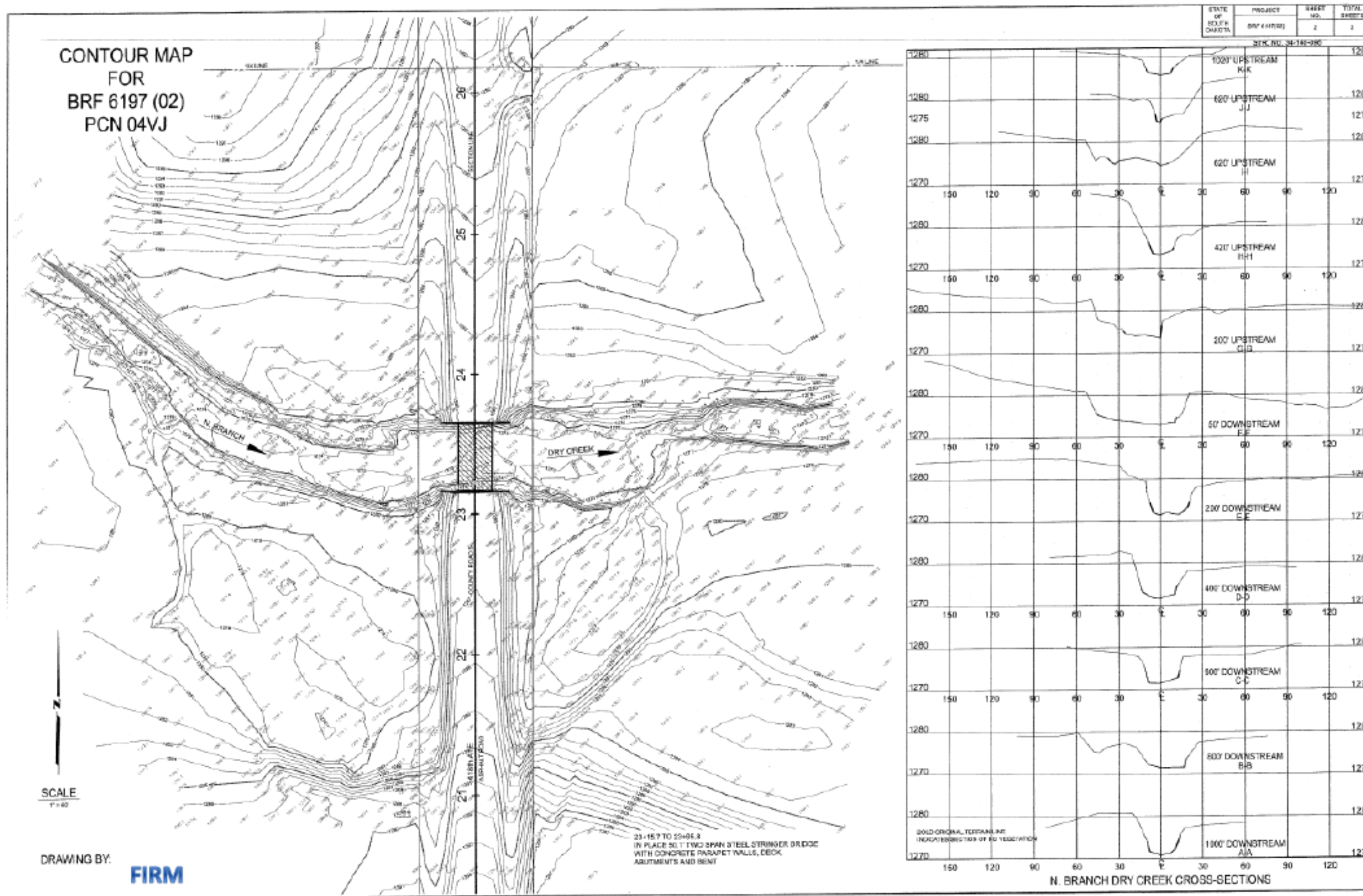
# Local Bridge Improvement Grant (BIG) Procedure





# Local Bridge Improvement Grant (BIG) Procedure







## Local Bridge Improvement Grant (BIG) Procedure

Photo Documentation and Record Search for Hutchinson County Structure No. 34-140-096

The offices and individuals contacted include:

Hutchinson County Assessor	Tony Dewald	No Information
Hutchinson County Auditor	Diane Murtha	No Information
Hutchinson County Highway Superintendent	Joel Baumiller	Inspections Reports (We already had)
Hutchinson County Register of Deeds	Unknown	No Information
Hutchinson County Treasurer	Tamara Miller	No Information
Heritage Hall Museum (in Freeman)	Kelsey Ortman	No Information
Heritage Hall Archives (in Freeman)	Kelsey Ortman	No Information

The Hutchinson County Assessor, Tony Dewald, was contacted on May 25<sup>th</sup>, 2015 by Diane Murtha. Murtha reported that Dewald had not found any information regarding the structure.

The Hutchinson County Auditor, Diane Murtha, was contacted on May 6<sup>th</sup>, 2015 by email. Murtha noted that she had not found any information regarding the structure. She also noted that she had talked to the Department of Equalization and the Register of Deeds, neither of which could provide information about the structure.

The Hutchinson County Highway Superintendent, Joel Baumiller, was contacted on May 6<sup>th</sup>, 2015 by email. Baumiller then responded by phone that same day and was not able to provide information other than the inspection reports that we ( **FIRM** ) already had. The reports provided the approximated date of completion of the structure (1935) as well as information specific to the construction and condition of the structure. The inspection report is attached.

The Hutchinson County Register of Deeds, Unknown, was contacted on May 25<sup>th</sup>, 2015 by Diane Murtha. Murtha reported that the Register of Deeds had not found any information regarding the structure.

The Hutchinson County Treasurer, Tamara Miller, was contacted on May 6<sup>th</sup>, 2015 by email. Miller has not yet responded.

The Heritage Hall Museum and Heritage Hall Archives, run by Kelsey Ortman, were contacted on May 25<sup>th</sup>, 2015 by email. Ortman reported that she had not found any information regarding the structure.

The State Historic Preservation Office's CRGRID was also used to find any historic survey's conducted on the structure. It revealed the structure was Surveyed in 2004. The survey summary and report are attached.

Local Bridge Improvement Grant (BIG) Procedure

SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE

RECORD SEARCH SUMMARY - BRIDGE

04-16-2015



<u>SHPO ID</u>	<u>Bridge Name</u>	<u>UTM Zone</u>	<u>UTM Easting</u>	<u>UTM Northing</u>	<u>Date Built</u>
HT00001571	34-140-096	14	594245.0000	4801719.0000	1935
<u>Survey Date</u>	<u>Street</u>	<u>City</u>	<u>County</u>	<u>Location Description</u>	<u>TWP</u>
6/25/2004 12:00:00 AM	418 AVE	Parkston	HT	8E 2.6S PARKSTON	99N
<u>Rng</u>	<u>Sec</u>	<u>Quarter1</u>	<u>Quarter2</u>	<u>DOE</u>	<u>Nomination Status</u>
59W	28	NW	SW	NR Eligible	

# Local Bridge Improvement Grant (BIG) Procedure

SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE  
HISTORIC SITES SURVEY BRIDGE FORM 04-16-2015



**SHPOID** HT00001571  
**SiteID** 48635  
**BridgID** 2211

## SITE INFORMATION

**\*Survey Date:** 6/25/2004 12:00:00 AM  
**\*Surveyor:** Jennie Goff / Renewable Technologies, Inc.  
**\*Property Address:** 418 AVE  
**\*County:** HT  
**\*City:** Parkston  
**\*Quarter1:** NW  
**\*Quarter2:** SW  
**\*Township:** 99N  
**\*Range:** 59W  
**\*Section:** 28  
**Acres:**  
**Quadname:** Parkston SE (1968)  
**Legal Description:** North Branch of Dry Creek

**Location Description:** 8E 2.6S PARKSTON

**Owner Code1:**  
**Owner Code2:**  
**Owner Code3:**  
**Owner Name:**  
**Owner Address:**  
**Owner City:**  
**Owner State:**  
**Owner Zip:**

## HISTORIC SIGNIFICANCE

**\*DOE:** NR Eligible  
**\*DOE Date:** 6/25/2004 12:00:00 AM  
**Nomination Status:**  
**Listed Date:**  
**Ref Num:**  
**Period:**  
**Category:**  
**Historic District Rating:**  
**Register Name:** 34-140-096  
**Multiple Property Name:**  
**SignificanceLevel1:**  
**SignificanceLevel2:**  
**NR Criteria 1:**  
**NR Criteria 2:**  
**NR Criteria 3:** C  
**NR Criteria 4:**

**Significance Notes :** This bridge retains historic integrity, although it has minor condition problems due to collision damage. It is a good example of pre-World War II steel stringer bridge construction in South Dakota, reflecting both the history and technology of such projects. Bridge 34-140-096 is eligible for listing in the National Register of Historic Places under criterion C, as an example of the steel stringer type for the Depression period.

# Local Bridge Improvement Grant (BIG) Procedure

SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE  
HISTORIC SITES SURVEY BRIDGE FORM 04-16-2015



## BRIDGE DETAILS

**\*Bridge Name:** 34-140-096

**Other Name:**

**\*Date Built:** 1935

**Significant Person:**

**Structural System:**

**Type:** Stringer

**Length:** 50

**Style:** No Style

**Number Of Spans:** 2

**Materials:** Steel

**ApproachSpanType:** N/A

**Occupied:**

**\*UTM Zone:** 14

**Accessible:**

**\*UTM Easting:** 594245.0000

**\*UTM Northing:** 4801719.0000

**Restricted:** N

**Altered/Moved Notes:**

**Physical Notes:** This structure is a two span steel stringer bridge that carries 418th Avenue (paved) over the North Branch of Dry Creek. It is located in rural Hutchinson County about 8.5 miles southeast of Parkston in a region of cultivated fields and rolling grassland. The superstructure consists of 12 steel I-beam stringers supporting a concrete deck. Precast concrete balustrade rails with elliptical openings flank the bridge. A short portion of the south end of the west rail has been damaged by a vehicle collision. Abutments, backwalls, and wingwalls are solid concrete. The intermediate pier is open concrete, consisting of two rectangular (in cross section) vertical posts with a solid, cantilevered cap. Recessed panels bearing the date "1935" are found on the insides of the curbs. Other than the moderate rail damage, the structure remains essentially as-built.

**Link to National Register Nomination:**

**No National Register Nomination Available**

**Appendix B – Structure Design Work Order Requirements**



# Local Bridge Improvement Grant (BIG) Procedure

## Bridge Improvement Grant Work Order Requirements for Structure Design

### SCOPE OF SERVICES TEMPLATE – Design

#### Category-Specific Technical Requirements & Provisions, from the Current SDDOT Consultant Retainer, Shall Be Applied

1. **Preparation of sketches of the structure as selected during the TS&L.** The Consultant shall submit general drawing sheets, a riprap layout, and plan/profile of the selected option to the Local Government Assistance Office for review at the START OF DESIGN. (Not applicable for Bid Ready grants.)
2. **Survey and plans for the above referenced project as described in the TS&L letter and Final Hydraulics Data Sheet, design calculations, independent design check, and load ratings.** Review plans (100% complete) are to be submitted in PDF format. Specifications shall follow the most current edition of the Standard Specification for Roads and Bridges. South Dakota Department of Transportation Bid Items, Standard plates and plan notes, from the SDDOT website, must be used in development of the plans.

The consultant shall provide design calculations, independent **design** check **calculations**, and load ratings for the structure as set forth in the Master Retainer Contract. The Consultant is wholly responsible for the accuracy and safe keeping of the design calculations and the independent design check.

3. **Incorporation into the plans of any changes that may be requested in the SDDOT plan review comments or provide written explanation for items not changed.**
4. **Review of shop fabrication drawings as may be required and submittal of the approved shop drawings to the Consultant.** This item is to be completed within two (2) weeks of receipt of shop or fabrication drawings from the contractor and shall be noted accordingly in the plans.
7. **Provide a Construction Management Plan based on SDDOT Materials Manual.** This document must be reviewed by the SDDOT prior to the notice to proceed being issued to the contractor. See **Appendix D** for requirements.

Please refer to the checklist in **Attachment #1** for the items required to be submitted to the Local Government Assistance Office.

**NOTE: Foundation investigation will need to be included for projects that did not have this work included in the preliminary engineering. See BIG Procedures for direction on whether DOT Foundations or a subconsultant on the Retainer for Geotech Investigation will do this work. See also Appendix C, Examples #1 and #2 for requirements.**

Local Bridge Improvement Grant (BIG) Procedure

**Attachment #1**  
**Local Government Assistance**  
**Checklist for Structure Design Work Order**

These items must be submitted to DOT/Local Government Assistance.  
If any of these items are missing, the full packet will be returned for completion and resubmission to this office.

Project Number \_\_\_\_\_ County \_\_\_\_\_ PCN \_\_\_\_\_

---

To be submitted at the START OF DESIGN

- Plan/profile, general drawing sketches, and riprap layout as selected during the TS&L

---

To be submitted well in advance of anticipated letting

- Review Plans (100% complete & ready for review) in PDF Format
- Design calculations, independent design check **calculations**, and load ratings

---

To be submitted after SDDOT plan review is complete

- All Plan Review Comments must be Addressed and Documented
- Final Plans – Electronic PDF file of the engineered, stamped set of plans
- Construction Management Plan

**Appendix C – Structure Preservation or Rehabilitation Work Order Requirements**

# Local Bridge Improvement Grant (BIG) Procedure

## Bridge Improvement Grant

### Work Order Requirements for Structure Preservation or Rehabilitation

**Note:** Not all preservation or rehabilitation work will require hydraulic analysis or foundation investigation. For this reason, several of the related items below have been marked “**if needed.**” If the Subject project does not require hydraulic analysis and/or foundation investigation, simply do not include these items in the breakdown of estimated costs.

#### SCOPE OF SERVICES TEMPLATE – Structure Preservation or Rehabilitation

##### Category-Specific Technical Requirements & Provisions, from the Current SDDOT Consultant Retainer, Shall Be Applied

1. **Field survey for completion of the Drainage Data Sheet and Contour Map.** The information required for placement on these sheets is listed below. An example is attached containing the required information.
  - Stationing from south to north or west to east.
  - Beginning and ending stations of the current structure.
  - Proposed and in-place gradelines.
  - Stream profile. (Including a table of stations and elevations for each shot taken.) **Refer specifically to the *SD Highway Surveying Manual, Chapter 6 – Preliminary Surveys, starting on page 36 for guidance.***
  - Sea level datum is required. Stations, elevations, and offsets from and descriptions of permanent objects will be required for project benchmarks. (The High Accuracy Reference Network (HARN) map and the County Bench Mark map for the State of South Dakota can be found at the following web site – <https://dot.sd.gov/doing-business/engineering/design-services/surveyors>)
  - Include an electronic file (**DGN**) containing the plan/profile of the in-place gradeline at the structure. **(This will be submitted with the final hydraulics and only when the replacement structure will be a bridge. The Consultant will submit this file through the LGA SFTP site.)**
  - Landowners with their addresses, phone numbers, and location of property.
  - Utilities with their addresses, phone numbers, and locations along the project.
  
2. **Field survey as necessary for preparation of construction plans.** Required information is listed below.
  - Establishment of transit points, land ties and benchmarks as well as cross sections and topography. (Stations, elevations, and offsets from permanent objects will be required for project benchmarks.)
  - Project limits as established by consultation with the County Highway Superintendent / City Engineer.
  - Additional legal survey as required for preparation of right-of-way plats.
  - The geometrics of horizontal and vertical alignment in accordance with the Local Roads Plan design standards.
  - Survey notes are to be retained on file with the Consultant for subsequent use in the preparation of construction plans and are to be available to the County/City upon request.
  
3. **(If needed.) Preliminary Hydraulic Design Report, Plan/Profile Sketches (Preliminary Hydraulic Layouts) and gradelines, Electronic Copy of Hydraulic Model, Draft Hydraulic Design Report in accordance with the newest version of the South Dakota Drainage Manual, and cost estimates for all proposed structure alternatives. **THE DESIGN YEAR FOR THIS SITE SHALL BE IN ACCORDANCE WITH THE LOCAL ROADS PLAN (SPECIFICALLY BY FUNCTIONAL CLASSIFICATION).**** (More than one feasible alternative is required. This includes options on different alignments if applicable. The options need to be acceptable to the owner’s future needs and maintenance capabilities. If there is only one type of structure that can reasonably be constructed at a site, simply provide an explanation instead of alternatives.) The newest version of the South Dakota Drainage Manual is available at the following location: <https://dot.sd.gov/doing-business/engineering/design-services/forms-manuals> . Guidance and an example Final Drainage Memo/Letter can be found in Chapter 6 of the manual. **The current preliminary hydraulic data sheet to be used can be found in the folder under “000 LGA General Info and Docs” located on the Consultant’s LGA SFTP site.** Directions for filling out the form can be found at the same location. All items will be submitted to the Local

## Local Bridge Improvement Grant (BIG) Procedure

Government Assistance Office for distribution to SDDOT personnel for review for compliance with minimum required State and Federal standards. Necessary revisions shall be provided in writing by the SDDOT and shall be forwarded to the Consultant by the Local Government Assistance Office. Necessary revisions shall be completed by the consultant and the Revised Draft Hydraulic Design Report submitted within 2 weeks of receipt of revisions from LGA. The Consultant is wholly responsible for the accuracy of the design calculations and the independent check design calculations.

4. **(If needed.) Conduct TS&L inspection, assistance in the selection of the type of preservation or rehabilitation, and preparation of TS&L summary letter.** The county or city (owner) shall be in attendance and advance notice given the Local Government Assistance Office so if time allows, a staff member can attend.
5. **(If needed.) Report of Foundation Investigation.** Conduct field investigation and provide design recommendations according to AASHTO LRFD Bridge Design Specifications Section 10. Report shall include boring information, lab results, and design recommendations. See **Examples #1 and #2, following the attachments**, for reports that are typically developed by SDDOT Geotechnical Engineering Activity.
6. **(If needed.) For Structure Chosen at TS&L: Final Hydraulic Design Report, Final Hydraulic Data Sheet (use the current data sheet found on the LGA SFTP site in the "000 LGA General Info and Docs" folder,) Hydraulic model with existing and proposed conditions, and if the structure selected is a bridge, Scour Memo summarizing hydraulic scour calculation, Scour Calculation, and Berm Slope Protection Recommendations (if applicable.)**
7. **Survey and plans for the above referenced project as described in the application or TS&L letter (if applicable) and Final Hydraulics Data Sheet, design calculations, independent design check, and load ratings.** Review plans (100% complete) are to be submitted in PDF format. Specifications shall follow the most current edition of the Standard Specification for Roads and Bridges. South Dakota Department of Transportation Bid Items, Standard plates and plan notes, from the SDDOT website, must be used in development of the plans.  
  
If applicable to the type of rehabilitation, the consultant shall provide design calculations, independent check, and load ratings for the structure as set forth in the Master Retainer Contract. The Consultant is wholly responsible for the accuracy and safe keeping of the design calculations and the independent design check.
8. **Incorporation into the plans of any changes that may be requested in the SDDOT plan review comments or provide written explanation for items not changes.**
9. **Review of shop fabrication drawings as may be required and submittal of the approved shop drawings to the Consultant.** This item is to be completed within two (2) weeks of receipt of shop or fabrication drawings from the contractor and shall be noted accordingly in the plans.
10. **Provide Quality Assurance / Quality Control Testing Plan based on SDDOT Materials Manual.** This document must be reviewed by the SDDOT prior to the notice to proceed being issued to the contractor. See **Appendix D** for requirements.

Please refer to the checklist in **Attachment #1** for the TS&L Packet of items that shall be submitted to the Local Government Assistance Office.

# Local Bridge Improvement Grant (BIG) Procedure

## Attachment #1 Bridge Improvement Grant Checklist for Structure Preservation or Rehabilitation Work Order

[These items must be submitted to DOT/Local Government Assistance.](#)  
[If any of these items are missing, the full packet will be returned for completion and resubmission to this office.](#)

Project Number \_\_\_\_\_ County \_\_\_\_\_ PCN \_\_\_\_\_

**CROSS OFF ANY NON-APPLICABLE ITEMS**

Survey Sheets and Contour Map including the following information:

Stationing from south to north or west to east

Beginning and ending stations of the existing structure

Beginning and ending stations of proposed structures

Proposed and existing gradelines

Stream profile and cross sections (Downstream to upstream direction including a table showing stations and elevations for each shot taken). Refer specifically to the SD Highway Surveying Manual, Chapter 6 – Preliminary Surveys, starting on page 36 for guidance.

Elevation and location of buildings and other structures

Survey information using sea level datum and showing station, elevation, offset, and physical description of each project benchmark

Landowner names, addresses, phone numbers, and legal descriptions of their property

Utility names, addresses, phone numbers, and locations along the project

Preliminary Hydraulic Data Sheet (use current data sheet found on the LGA SFTP site in the “000 LGA General Info and Docs” folder) including the following information:

Calculated flows

Inplace conditions (Ordinary High Water Elevation,  $HW_{100}$ ,  $V_{max}$ ,  $OT_{fr}$ )

Proposed conditions for each option ( $HW_2$ ,  $HW_{25}$ ,  $HW_{100}$ ,  $V_{max}$  Qot,  $OT_{fr}$ ,  $E_{Lover}$ top)

Ordinary High Water Elevation Shown on Cross-Sections (**vegetation elevation on stream banks** in the absence of identifiable bed & bank, use approx. 2-year flow)

Observed High Water Elevation (identifiable high water mark)

Electronic copy of Hydraulic Model of existing and proposed conditions

# Local Bridge Improvement Grant (BIG) Procedure

- Plan and profile sketches (preliminary hydraulic layout sheets) for the existing structure and proposed gradelines for each option (submit as PDF and DGN files) (More than one feasible alternative is required. This includes options on different alignments if applicable. The options need to be acceptable to the owner's future needs and maintenance capabilities. If there is only one type of structure that can reasonably be constructed at a site, simply provide an explanation instead of alternatives.)
  - Cost Estimates (including design and construction engineering and construction costs for each option.)
  - Revised Draft Hydraulic Report
- 

- TS&L Summary Letter
  - Report of Foundation Investigation (see Examples 1 and 2 in this appendix)
  - For Structure Chosen at TS&L
    - Final Hydraulic Design Report
    - Final Hydraulic Data Sheet (use current data sheet found on the LGA SFTP site in the "000 LGA General Info and Docs" folder)
    - Hydraulic model with existing and proposed conditions
    - Scour memo, scour calculations, and berm slope protection recommendations (Bridges Only)
  - Plan/profile, general drawing sketches, and riprap layout as selected during the TS&L
  - Review Plans (100% complete & ready for review) in PDF Format
  - Design calculations, independent design check, and load ratings
- 

To be submitted after plan review is complete

- All Plan Review Comments must be Addressed and Documented
- Final Plans – Electronic PDF file of the engineered, stamped set of plans
- Construction Management Plan



**REPORT OF FOUNDATION INVESTIGATION**

**PROJECT:** BRO 8048(03) Mellette County PCN 02DY

**LOCATION:** Structure No. 48-102-010, 18.9 miles North & 0.8 miles West of Cedar Butte over the White River.

**METHOD OF INVESTIGATION:**

All soundings are made according to the Standard South Dakota Subsurface Investigation Techniques and AASHTO Specifications. Auger holes are drilled with a 4-1/2 inch continuous flight auger. Penetration and Push Test holes are drilled with a 6-5/8 inch continuous hollow stem auger. Push core samples are obtained by hydraulically ramming a 2 foot long lined split spoon sampler into the soil to obtain 2 inch nominal diameter soil samples. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil. Corings with the SDDOT drive rig are performed by using a California retractable plug sampler, which is driven with a 490 pound hammer. The drill stem is P.K. rod, which is 2-7/8 inch O.D., and 2 inch nominal diameter cores are obtained. All laboratory tests are performed in accordance with standard AASHTO or SDDOT laboratory procedures.

**RECOMMENDATIONS:**

Abutments:

I. Steel HP10 X 42 Piling

A. A LRFD maximum factored pile bearing resistance of 77 tons can be used for design.

B. The anticipated tip elevations are:

<u>Station</u>	<u>Elevation</u>
22+06	1910
25+27	1892

C. The nominal pile bearing resistance shall be 192 tons verified by the SDDOT's Modified ENR formula.

Bents:

I. Drilled Shafts

A. A LRFD maximum factored resistance value of 2,800 psf can be used for design below elevation 1912 ft. or maximum scour whichever is lower.

B. Permanent casings will be required to elevation 1915 ft.

C. The point of fixity within the bedrock can be assumed to be the elevation 1912 ft.

**DISCUSSION:**

The proposed structure location is underlain by brown sand-silt (alluvium) overlying brown silt-sand with gravel (alluvium). The alluvial sediments rest upon gray silt-clay (Pierre Shale). The D50 of the brown sand-silt, brown silt-sand with gravel, and gray silt-clay (Pierre Shale) can be assumed to be 0.06 mm, 1.0 mm, and 0.004 mm. The D95 of the brown sand-silt, brown silt-sand with gravel, and gray silt-clay (Pierre Shale) can be assumed to be 1.0 mm, 6.0 mm, and 0.06 mm.

Steel HP10X42 piling along with the anticipated tip elevations, are listed in the recommendations for use in the abutments. Drilled Shafts are listed in the recommendations for use at the bents.

The piling were evaluated for drivability and group effects at the LRFD Strength Limit State. Settlement of the substructure units and horizontal movement of the abutment piling were evaluated at the LRFD Service Limit State.

Drivability –

# Local Bridge Improvement Grant (BIG) Procedure

A drivability analysis was performed for the steel HP10X42 piling using the wave equation analysis program (GRLWEAP). A group of pile hammers that were evaluated and found to produce acceptable driving stresses is listed later in this report for inclusion in the plans.

## Pile Group Effects:

### Axial Loading – Abutments

For a single row of piling, AASHTO requires the center-to-center pile spacing to be at least 30" or 2.5 times the width of the pile, whichever is greater. Therefore, for the steel HP10x42 piling at the abutment the center-to-center spacing shall be at least 30".

### Settlement –

The steel pile tips will be founded in the Pierre Shale. Unconfined compression test results of the Pierre Shale exceed the proposed bridge loadings. Past experience for piling driven into hard shale soil bedrocks has shown little, if any, settlement has occurred. Therefore, 1/4 inch or less of total settlement can be used to design the substructure units.

### Horizontal Movement –

AASHTO states that if the center-to-center spacing of the piling in the substructure unit is greater than 5 times the width of the pile then group effects can be ignored. Therefore, if the designed spacing is greater than 5 times the pile width a group efficiency factor of 1.0 can be used with no reduction in pile loading required. If this minimum pile spacing is not met a reduction factor will need to be calculated according to the AASHTO code.

For the drilled shafts, a LRFD maximum factored resistance value (skin friction) of 2,800 psf is recommended below elevation 1912 for the bents or maximum scour whichever is lower. The point of fixity within the bedrock can be assumed to be 1912 for the bents.

Each drilled shaft shall have a minimum of 3 access tubes for a shaft diameter of 3.0' and less. The number of access tubes needed shall be increased by 1 for each foot increase in shaft diameter above the 3.0'. The access tubes shall be furnished and installed according to the South Dakota Department of Transportation's 2004 Standard Specifications for Roads and Bridges. These access tubes shall be equally spaced in the shaft reinforcement prior to placing the reinforcement cage.

A representative of the **CONSULTING FIRM (NAME AND NUMBER)** shall be present during drilling operations to confirm the elevations provided in this report and to observe the placement of the drilled shafts. In addition to the notes below, contact the **CONSULTANT REPRESENTATIVE** for the most current drilled shaft construction notes to be included in the plans.

### **The following notes shall be placed in the plans:**

A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The pile hammers listed below were evaluated and found to produce acceptable driving stresses. Pile hammers not listed will require evaluation and approval prior to use from the **CONSULTANT REPRESENTATIVE NAME AND PHONE NUMBER**.

*Hammers need to be sized according to site specific soil parameters and structure design requirements. The following list of hammers is owned and readily available by contractors that do work in SD. Select and specify in the report which hammers are acceptable for use on individual projects.*

ICE 180	Delmag D12-42	FEC 1500	Delmag D16-32	Delmag D19-32
Delmag D19-42	MVE M-19	ICE 42S	MKT DE 42/35	APE D19-42
Delmag D25-32	Delmag D30-32	SPI D30	Delmag D46-32	

~~Horizontal movement at the substructure units can be calculated using the following soil parameters:~~

~~Sand-silt (alluvium); phi angle = 24 degrees, cohesion = 50 psf, wet unit weight = 118 pcf  
Silt-sand with gravel (alluvium); phi angle = 32 degrees, cohesion = 0 pcf, wet unit weight = 130 pcf  
Silt-clay (Pierre Shale); phi angle = 18 degrees, cohesion = 1,000 psf, wet unit weight = 130 pcf~~

# Local Bridge Improvement Grant (BIG) Procedure

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

Plotting Date: 03/26/2013

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.

### LEGEND

- ⊕ Auger Test
- ⊙ Drive Test
- ∇ Water
- ⊖ Caved
- Penetration Test
- ▬ Sample Zone

Drive test are conducted by dropping a 490 pound hammer 30 inches to drive a 2 1/8 inch drill stem with attached retractable plug sampler for taking samples and to measure the resistance to penetration of the soil.

Auger holes are drilled with a 4 1/2 inch diameter continuous flight auger. Penetration and Push Test holes are drilled with a 6 3/8 inch diameter hollow stem auger. Push core samples are obtained by hydraulically ramming a 2 foot long lined split spoon sampler into the soil to obtain 2 inch nominal diameter soil samples.

### GROUND WATER ELEVATIONS

as of December 2012

T1	(Caved)	1931.3
T2	(Caved)	1910.9
T3	Dry	
T4		1929.7
T5		1926.9
T6		1928.9
T7		1930.2
T8		1929.1
T9		1930.0
T10		1929.3
T11	Dry	
T12		1929.8

### MEASURED SKIN FRICTION

	Elev	psf
T11	1924.0	2,193
T12	1907.3	1,214

BRD 8048(03) MELLETTIE COUNTY PCN 02DY  
18.9 MILES N. AND 0.8 MILES W. OF CEDAR BUTTE  
SECTION 28 TOWNSHIP 45 W. RANGE 31 W.  
OVER WHITE RIVER  
STR. NO. 48-102-010

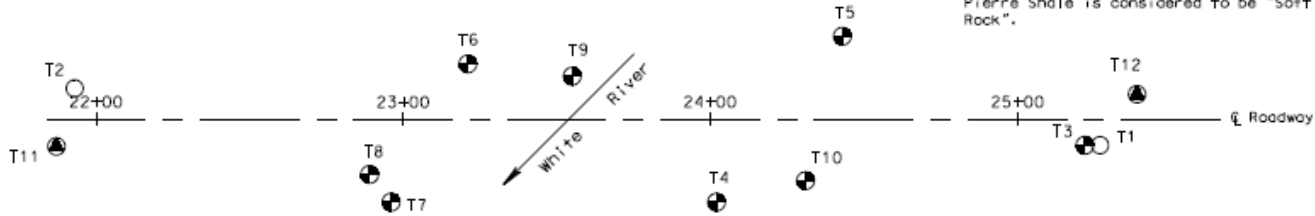
### SITE PLAN & SUBSURFACE PROFILE

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	NN	JW	

BRIDGE ENGINEER

Pierre Shale is a marine shale with a textural classification that varies from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain concretions that are normally thin but occasionally are massive. These zones may be considered hard and dense. Thin zones may be present that are cemented resulting in claystone or siltstone seams. Bentonite zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be "Soft Rock".

Hole Number	Station	Depth	Soil Color	Classification	Strength (Q <sub>u</sub> )	Dry Density	Wet Density	Moisture	Pass No. 10	Pass No. 40	Pass No. 200	Sand Content	Silt Content	Clay Content
T2	21493	5.8	Brown	Sand-Clay	85.3	121.5	135.5	14.8	84.4	76.2	61.9	22.6	25.0	38.8
T3	23492	5.7	Brown	Silt	81.7	117.0	127.0	12.3	95.9	91.1	55.1	44.9	45.1	10.0
T4	23492	17.0	Brown	Sand	97.8	127.0	127.0	9.4	96.2	74.9	9.9	86.3	9.9	0.0
T5	21497	23.8	Gray	Clay	55.490	115.9	135.6	16.9	95.8	95.7	96.9	2.8	41.1	55.9
T6	23499	37.8	Gray	Clay	49.749	112.5	135.3	18.5	99.8	99.8	99.5	0.3	39.4	59.9

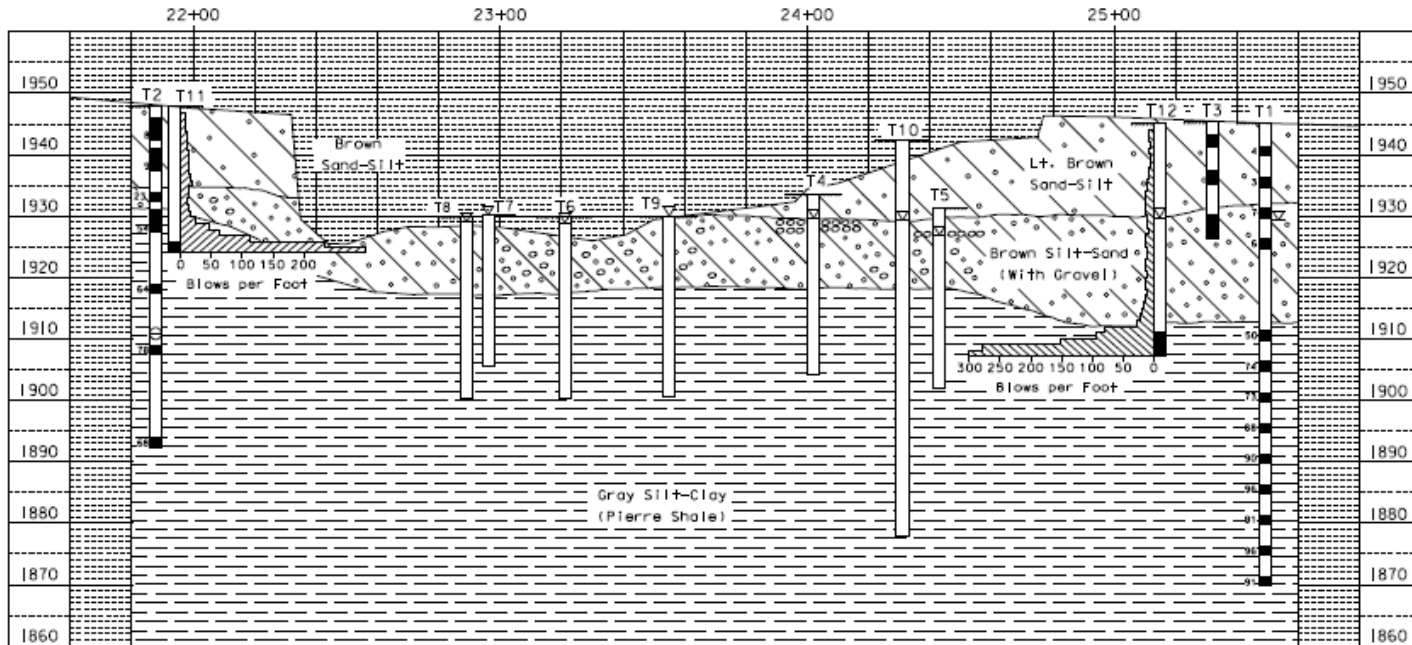


\* Values represent uncorrected "N" values from Penetration Test.

Sample Zone 48 Blows Per Foot

Bore holes on profile are moved slightly for clarity

Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.



PLOT SCALE - 1/2" = 1'-0"

PLOTTER FROM - TEMPL 0174

FILE - ...SUBSURFACE PROFILE.DWG.DGN

# Local Bridge Improvement Grant (BIG) Procedure

## RECOMMENDATIONS

## EXAMPLE 2

**Re:** BRO 8027(29), Gregory County, PCN 00QR  
Str. No. 27-030-081, located 2.0 West & 0.1 South of the Jct of SD44/SD47  
RCBC Undercut Recommendation

Soils maps of the area indicate the soils at the location of the proposed structure have the following characteristics.

Station 16+86 (Str. No. 27-030-081)

CLASSIFICATION: A-7  
Clay & Silty Clay  
AVERAGE LIQUID LIMIT: 66  
SHRINK-SWELL POTENTIAL: High to Very High  
FROST ACTION POTENTIAL: Low  
CORROSIVITY: High for steel, Low to Moderate for concrete

### RECOMMENDATIONS:

Provide 24 inches of undercut and backfill.

### DISCUSSION:

The project consists of replacing an existing single span 22' steel stringer bridge with a 2 barrel 13' x 6' cast-in-place RCBC. The proposed box culvert will be in the same location as the existing bridge location. The existing surfacing on the road is gravel and will be resurfaced with gravel upon completion. Minimal grading at the proposed box culvert location is anticipated, therefore, the material shall be compacted using the Ordinary Compaction Method.

A subsurface investigation was conducted for the proposed RCBC. The subsurface investigation consisted of placing a boring near both the proposed inlet and outlet ends of the structure and logging the material to 3 feet below the flow line. Samples were collected from below the flow line for soils classification. A dynamic cone penetrometer was used at both the inlet and outlet ends to identify the change in relative density of the subsurface material below flow line.

Subsurface soils at the proposed site consist of brown silt-clay to 3' below the existing flow line.

The 2' undercut depth is recommended to remove the low strength soils with high shrink-swell potential from below the box culvert.

### The following paragraphs shall be placed in the plans:

Compaction of earth embankment and box culvert backfill material shall be governed by the Ordinary Compaction Method.

Any questions about the recommendations or the subsurface conditions can be directed to the [CONSULTANT CONTACT NAME AND PHONE NUMBER](#).

**Appendix D - Construction Engineering Requirements**  
**Initial NBI Inspection Requirement - D2**  
**Construction Management Plan - D3 thru D9**

## Bridge Improvement Grant

### Initial NBI Inspection Requirement

The County / City will require the construction engineering firm or their subconsultant, either of which must be on the SDDOT's current consultant retainer for local bridge inspection, to perform an initial NBI inspection of the structure, ensuring a qualified Team Leader is on site for the inspection. Within 90 days of the structure being opened to traffic, the County / City will submit the completed report, BrM coding sheets, plans, applicable load ratings, and approved shop plans for girders, reinforced concrete box culverts, and other applicable items, to the SDDOT's LGA Bridge Inspection Engineer.

**Use and Limitation:** The Consultant shall use this document as a guide in preparing a construction management plan to be included in the bid documents for their specific project. Consultants are cautioned that the provision of this suggested sample construction management plan is not an implied or explicit guarantee of grant obligation compliance. The Consultant is solely responsible for the preparation and submittal of compliant construction management plan in accordance with the grant conditions. ONLY INCLUDE PROJECT SPECIFIC INFORMATION.

# Construction Management Plan

*[Date]*

*[Location]*

*[Project Number]*

*[PCN Number]*

**Prepared For**

*[       ]*

**Prepared By**

*[       ]*



## PROJECT INFORMATION

This Construction Management Plan (CMP) details the measures and procedures required to assure compliance with the quality assurance and acceptance provisions of the Bridge Improvement Grant construction contract for Project No. [ ] with **[County or City name]. South Dakota**. The work to be accomplished in this project consists of:

PROJECT SPONSOR: ***[Name & contact information for sponsor]***

CONTRACT  
ADMINISTRATION: ***[Name of firm Responsible for Const.  
Observation & QA testing]***

***[Name of QA firm]*** – Field tests

***[Name & contact info for QA lab]*** – Lab tests

## **RESPONSIBILITIES**

### ***Project Manager/Engineer***

The Project Manager / Engineer, on behalf of the sponsor is the person with overall responsibility for contract administration of this project. The Project Manager / Engineer has the authority to take the necessary actions to monitor compliance with the contract documents.

### ***Construction Observer***

The responsibilities of the Construction Observer shall include monitoring all aspects of the job, sampling materials for acceptance, conducting tests on embankment and excavation areas, reviewing and analyzing all test results, assuring that work is within specification limits, advising the Contractor's Superintendent and Project Engineer of nonconformance and possible corrective actions, and measuring quantities for payment.

### ***Quality Acceptance Laboratory***

[As appropriate, clarify which firm is responsible for what QA duties], testing lab duties shall include sampling materials for acceptance and conducting tests on: [embankment, excavation, subbase, base, rip rap, class A45 concrete, pile, PCC]. (If responsibilities for testing of materials are split between different organizations, list which firm is responsible for which QA tests.)

[QA Lab name] personnel assigned to construction testing have received certified training from the [Name of appropriate certifications] (e.g. Troxler Nuclear Equipment Seminar and the American Concrete Institute (ACI)).

All QA testing shall be performed by an (ASTM C1077 and D3666) accredited laboratory and a copy of the current accreditation shall be supplied to the Engineer and Owner, for approval, prior to submitting test results.

## QUALITY ASSURANCE INSPECTION PROCEDURES

1. Quality Assurance Tests: A list of tests and certifications required by the contract specifications can be found in the attached Appendix A. The list includes the referenced specification section and testing requirements. All parties will be informed of their responsibilities. This information will be reviewed at the preconstruction conference and monitored throughout the project.
2. Submittals: The Engineer shall maintain a file containing certifications and submittals required by contract as provided by the contractor, as well as approvals from the Engineer.
3. [Names of firm(s) responsible for QA test reports] will provide acceptance test reports to the [Owner / Engineer] as soon as the results are available, electronically. Typed copies shall be made available within [one] working day [delivered via electronic mail].
4. Material Test Reports: Material test results shall be verbally made available to the [Owner / Engineer] within [one hour] after the test report is completed and typed copies shall be made available within one working day [delivered via electronic mail].
  - Calibration check on equipment used to determine the noncompliance item, if applicable.
  - Confirmation of noncompliance through retesting and/or follow-up observations.
  - If a solution to the nonconformance issue is not reached in a reasonable time frame, additional qualified contractor personnel will be contacted to assist in identifying and correcting the problem.
  - If a severe nonconformance problem is detected and a reasonable solution cannot be implemented in a reasonable time frame, the Construction Superintendent will consult with the Project Engineer and the work will be suspended.
  - The work will not begin again until the Construction Superintendent and Project Engineer concur that a solution to the problem has been found and successfully implemented.
5. Test Reports Which Require Corrective Actions: Should test results or observations indicate noncompliance with the project contract, plans, or specifications, the following communication and follow-up action will be implemented, as applicable:
  - Verbal notification to the sponsor, Construction Superintendent, work area foreman and/or plant operator.

## Local Bridge Improvement Grant (BIG) Procedure

- On restarting the work, the nonconforming testing element or observation will be monitored at an appropriate higher frequency for a reasonable amount of time, e.g. double the testing frequency listed.
  - After the area in noncompliance has been repaired, acceptance retesting will resume. The test reports will include the failed test number for tracking.
6. Daily Reports: The project manager or his representative will maintain a daily diary summarizing pertinent construction items. Items recorded shall include (as a minimum):
- a) Date
  - b) Weather Conditions
  - c) Brief Summary of Work Performed
  - d) Number of workers on site
  - e) Type and Amount of Major Equipment being utilized
  - f) Running total of working/calendar days used on project
  - g) Significant Directives/Communication with contractor (e.g. regarding construction procedures or material quality)
  - h) Summary of QA tests performed that day
  - i) Arrival / Departure Time of On Site Inspection Staff
7. Bi-Weekly Reports: A summary of bi-weekly construction status shall be prepared and submitted to [owner] every [list day, e.g. Friday]. Report shall include summary of work completed in that 2 week period, summary of QA test results, discussion of any controversial issues that came up, and work anticipated during next reporting period. A sample report is included in Appendix B.
8. The resident observer and acceptance testing lab personnel shall maintain all acceptance test reports and provide copies to the owner/engineer as soon as results are available.
9. [Name of firm responsible for final construction report] will prepare a final project construction material testing and acceptance report that includes a summary of: all acceptance tests results, quantity of materials, and all bi-weekly reports. (Actual test reports will be available upon request). This will be submitted to the SDDOT with the final pay application.

Include listing of all QC/QA tests and certifications required by the contract specifications.

Recommend including the following information in your listing:

- Material
- Specification
- Specification reference section
- Test Required
- Minimum Testing Frequency
- Test Requirements
- Notes

Material	Specification	Spec Section	Test Required	Min. Test Frequency	Requirements	Notes
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Local Bridge Improvement Grant (BIG) Procedure

**APPENDIX B**

Bi-Weekly Progress Report

**SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION**

BI-Weekly Progress Report No. \_\_\_\_\_

Project No. \_\_\_\_\_ PCN \_\_\_\_\_ Period Ending \_\_\_\_\_ 20\_\_\_\_

County \_\_\_\_\_ Contract Time \_\_\_\_\_

Type of Work \_\_\_\_\_ Working Days This Period \_\_\_\_\_

Prime Contractor \_\_\_\_\_ Working Days to Date \_\_\_\_\_

\_\_\_\_\_ Percent Complete \_\_\_\_\_

**WORK IN PROGRESS THIS PERIOD**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_

General Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Contractor Working (Indicate after each: 1-1<sup>st</sup> Week; 2-2<sup>nd</sup> Week; 3-Both Weeks **E** if contractor/sub is Exempt - i.e. 1E,2E)

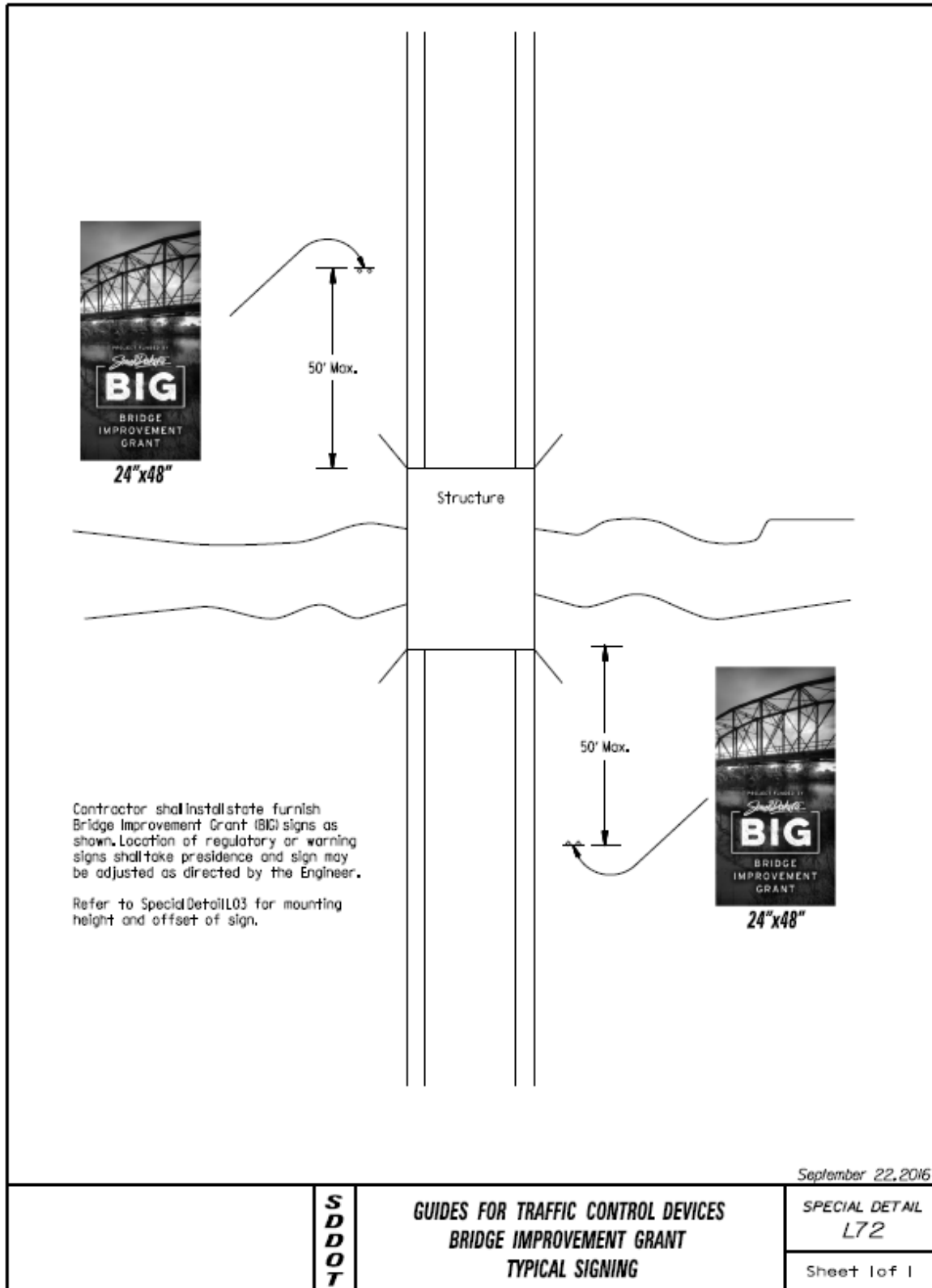
Work Started: \_\_\_\_\_  
 Work Suspended: \_\_\_\_\_  
 Work Resumed: \_\_\_\_\_  
 Field Work Completed: \_\_\_\_\_

Day	Date	Working Day No.	Weather and Comments	Temperature	
				High	Low
Sunday					
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					

Prepared by \_\_\_\_\_



## **Appendix E - Bridge Improvement Grant Sign Layout**



## **Appendix F – Bridge Improvement Grant Checklists**

## Bridge Improvement Grant - Local Administration Check List (Source of Info – BIG Procedures and BIG Funding Agreement)

Multiple grants can be let together but all estimates, bids, and payments must be sent to LGA **per grant (not combined)**.  
LGA Project Managers will keep 'U' drive project folders current at all times with all project documents & e-mail correspondence as received for prompt availability to staff for questions and expediting reimbursements/payouts.

Responsibilities of County/City

- Hire a Professional Engineer (PE) from SDDOT Consultant Retainer Lists for Local Gov't or State Bridge Design Categories. **Any geotechnical sub-consultants must also be on the SDDOT Consultant Retainer Lists for Local Gov't or State Geotechnical Services.\***
  - Prepare contract between county/city and consultant which must contain:
    - Scope of services & retainer requirements as included in DOT funding agreement (**NOTE: retainer requirements reflect the active retainer at the time the BIG Procedures for the applicable grant year are approved by the Transportation Commission**)
    - Reference must be made to the project number and/or structure number associated with the grant

**BGPE(00)23-1, PCN-08A4**

**PRIOR TO ADVERTISEMENT**

**10/1/22 & 9/30/23**

- Obtain and submit (as needed) to DOT for review (signed and sealed by a PE) **LGA Project Managers – add following note to 1<sup>st</sup> page of all BIG BlueBeam reviews, “NOTICE: State forces, please charge time to BR BGPE(00)25-1, PCN 08QC.” (This # in effect only between 10/1/24 & 9/30/25 – contact N. Clocksin):**
  - Final Hydraulic Design Report, Final Hydraulic Data Sheet, Hydraulic model with existing and proposed conditions and Scour Memo (if applicable) summarizing hydraulic scour calculation, Scour Calculation, and Berm Slope Protection Recommendations (if applicable) \*
  - Foundations report (as defined in the funding agreement attachment); NOTE: firm must be on the SDDOT Consultant Retainer category for Local Gov't or State Geotechnical Services \*
  - review plans (100% complete – anything less won't be reviewed)
  - bid documents / specs (engineer's construction estimate and any special out of the ordinary specs)
  - design calculations, independent check design calculations, scour analyses \*, load rating and analysis for bridge inspection file
  - all necessary permits
    - Corp of Engineers 404 Permit (**along with FEMA floodplain coordination, wetland/stream mitigation if applicable**)\*, DOT/LGA Utility Cert, DOT/LGA ROW Cert, Federal Lands, BIA, Tribal, Stormwater, Municipal, etc. (**Additionally, copies of ROW forms & utility relocation contracts if grant funds will be used for ROW and utility relocation costs.**)
  - BIG Construction Management Plan
  - Draft contract (showing hours) for construction engineering & Initial NBI Inspection – consultant must be a PE on the SDDOT Consultant Retainer List for State Construction Administration to do Construction Engineering & consultant or their subconsultant must be on the SDDOT Consultant Retainer List for Local Bridge Inspection to do the Initial NBI Inspection.
- Obtain DOT approval letter to advertise (**All applicable documents noted above must be revised as needed and approved by DOT before this letter will be sent from the DOT**)
- Advertise project for bids and conduct bid letting

\* Not applicable in all cases (for example, simple deck overlay)

**PRIOR TO SIGNING CONTRACT WITH CONTRACTOR**

- Submit to DOT for review bid tabulation showing engineer's estimate and all bidders, in addition to the county/city's recommendation for award
- Obtain DOT bid concurrence letter

**AFTER DOT BID CONCURRENCE**

- Enter into construction & construction engineering contracts and issue notice to proceed
- Submit copies of both contracts to DOT for release of 75% of the grant fund portion of the combined total of the contract amounts
- Obtain and supply to DOT as-built plans and notification of completion of project
- Submit all design, construction, and CE billings to DOT for reimbursement of remaining grant funds

## REIMBURSEMENT PROCESS

### Bridge Improvement Grant - Local Administration Check List

#### (Source of Info – BIG Procedures and BIG Funding Agreement)

Multiple grants can be let together but all estimates, bids, and payments must be sent to LGA per grant (not combined)

Responsibilities of County/City

- Submit to DOT for Payment of 75% of BIG share for **Design Billings**
  - Copy of signed design contract
  
- Submit to DOT for Payment of 75% of BIG share for **Construction & Construction Engineering**
  - Copy of signed construction contract and signed construction engineering contract

## FINALING PROCESS

### Bridge Improvement Grant - Local Administration Check List

#### (Source of Info – BIG Procedures and BIG Funding Agreement)

Multiple grants can be let together but all estimates, bids, and payments must be sent to LGA per grant (not combined)

Responsibilities of County/City

- Submit to DOT for Reimbursement a FINAL **Design Billing**
  - Submit “BIG Direct Payment Invoice” with Final Billing box checked (blue box on lower right)
  - Copy of bill(s) from consultant
  
- Submit to DOT for Reimbursement a FINAL **Construction Engineering (CE) Billing** – *NOTE: CE billings must be processed separately from design billings as CE does not count against the grant cap.*
  - Submit “BIG Direct Payment Invoice” with Final Billing box checked (blue box on lower right)
  - Copy of bills(s) from consultant
  
- Submit to DOT copy of testing documents as defined in the BIG Construction Management Plan prior to or with FINAL Contractor Billing
  
- Submit to DOT for Reimbursement a FINAL **Contractor Billing**
  - Submit “BIG Direct Pymts Invoice” with Final Billing box checked (blue box on lower right) for Construction along with copies of all billings from contractor
    - Any applicable Change Orders must be sent in as well, as approved and signed by contractor, consultant, and county/city
  
- Submit to SDDOT’s LGA Bridge Inspection Engineer the following items within 90 days of a new structure being opened to traffic, as per the BIG Procedures
  - Completed Report, BrM coding sheets, plans, applicable load ratings, and approved shop plans for girders, reinforced concrete box culverts, and other applicable items

# Bridge Improvement Grants

## LOCATION OF DOCUMENTS

Document	LGA Location	External Location for Download
SDDOT Consultant Retainer Lists for Local Gov't or State Bridge Design and Local Gov't Geotechnical Services	<a href="https://dot.sd.gov/doing-business/engineering/design-services/consultant-services">https://dot.sd.gov/doing-business/engineering/design-services/consultant-services</a>	<a href="https://dot.sd.gov/doing-business/engineering/design-services/consultant-services">https://dot.sd.gov/doing-business/engineering/design-services/consultant-services</a>
BIG Scopes of Services	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\Scopes of Services & Current Retainer List\03 Structure Scopes\BIG Scopes	<i>Not Available – Generated by LGA Programs &amp; Funding Engineer</i>
DOT Utility Cert for BIGs	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\Certifications & ROW Forms \ <b><i>“BIG Utilities Cert”</i></b>	Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.
DOT Right-of-Way Cert for BIGs	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\Certifications & ROW Forms \ <b><i>“BIG ROW5-CERT” or “BIG No ROW Needed Cert”</i></b>	Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.
BIG Construction Management Plan	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\BIG Construction Management Plan Template \ <b><i>“BIG Construction Management Plan”</i></b>	Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.
DOT BIG Letting Authorization	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\BIG Let Auth and Concur in Award of Letting \ <b><i>“BIG Letting Authorization”</i></b>	<i>Not Available – Generated by LGA Project Manager</i>
DOT BIG Award Concurrence	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\BIG Let Auth and Concur in Award of Letting \ <b><i>“BIG Award Concurrence”</i></b>	<i>Not Available – Generated by LGA Project Manager</i>
BIG Grant Payout Request Form	M:\DOT\FPA\LGA\Project_Info_&_Funding\00 BIGs\BIG PE CE & Constr Reimb OR Payout Docs \ <b><i>“BIG Grant PAYOUT Request Form.docx”</i></b>	If not provided during the project, request from <i>Local Government Engineer</i> or <i>LGA Programs &amp; Funding Engineer</i>
BIG Direct Pymts Invoice (NOTE: File contains worksheets for Prel. Engr., Construction Engr., and CONSTRUCTION BILLINGS)	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\BIG PE CE & Construction Reimbursement Docs\ <b><i>“BIG Direct Pymts Invoice PCN”</i></b>	Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.
Pay Est SHELL BIGs (Submitted with Constr. Billing BIG Direct Pymts Invoice noted above.)	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\BIG PE CE & Construction Reimbursement Docs\ <b><i>“Pay Est SHELL BIGs”</i></b>	Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.
LGA Bridge Networks (Shows Potential Timeline of each type of BIG)	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\Bridge LGA Bridge Networks\ <b><i>“LGA Bridge Network”</i></b>	Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.
BIG CHECKLISTS	M:\DOT\FPA\LGA\Project_Info_&_Funding\Forms\BIG CHECKLISTS	(Provided to all consultants & local government with copy of BIG funding agreement.) Request from any LGA staff member – can be e-mailed or placed in a firm's LGA SFTP folder.