

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
BRIDGE IMPROVEMENT GRANT AGREEMENT FOR
REHABILITATION/REPLACEMENT – LOCAL ADMINISTRATION

This Agreement is made and entered into by and between the State of South Dakota, acting by and through its Department of Transportation, referred to in this Agreement as the "STATE," and Brookings County, South Dakota, referred to in this Agreement as the "COUNTY."

BACKGROUND:

1. The STATE has funding available for preservation, rehabilitation, or replacement of eligible local public agency bridges. The funding is only available for bridges located on local public roads.
2. The COUNTY has applied for and the STATE has awarded to the COUNTY a Bridge Improvement Grant ("BIG") for bridge replacement for structure number 06-120-053, project number BRF 6295(00)20-8 PCN 07TN, referred to in this Agreement as the "PROJECT."

THE STATE AND THE COUNTY MUTUALLY AGREE AS FOLLOWS:

1. The COUNTY applied for and was awarded a BIG for replacement for the PROJECT. The BIG award amount is One million three hundred seventy-five thousand dollars (\$1,375,000), plus eighty (80%) of the actual costs of reasonable and necessary construction engineering for the PROJECT.
2. The STATE issued a letter on February 27, 2020, notifying the COUNTY of the award of the BIG. The letter of award is attached to and incorporated in this Agreement as **Exhibit A**.
3. This Agreement is effective on the date of the letter of award attached as **Exhibit A**. The preservation work contemplated by this Agreement will be completed no later than four years from the date of the letter of award. No reimbursements will be processed by the STATE for work performed after the date of February 27, 2024.
4. The COUNTY will select and hire a geotechnical firm to conduct the foundation investigation if the STATE'S Geotechnical Office is unable to meet the project timeline. The firm must be on the STATE'S current consultant retainer list for the local geotechnical services category of work. The COUNTY will submit a copy of the contract between the geotechnical firm and the COUNTY to the STATE. The scope of work to be performed by the firm is identified in the attached **Exhibit B**.
5. The COUNTY will select and hire a professional engineering firm from the STATE'S current consultant retainer list for the bridge design category of work. The COUNTY will submit a copy of the contract between the design firm and the COUNTY to the STATE. The scope of work to be performed by the firm is identified in the attached **Exhibit B**.
6. The COUNTY will require the design firm to submit plans, design calculations, and check design calculations to the STATE.
7. The COUNTY will also require the design firm to load rate each structure, including culverts that are bridge length, in accordance with the edition of the AASHTO "Manual for Bridge Evaluation" with latest Interim Revisions using the LRFR method currently in place at the time of execution of the design engineering contract. The design firm will perform an HL-93 design load rating for each structure. The design firm will analyze the AASHTO HS20 vehicle for Inventory and Operating Ratings. The design firm will also perform a legal load rating for South Dakota legal trucks, the notional rating load, and the four specialized hauling vehicles. The design firm will submit a copy of the rating analyses to the STATE. The STATE will review load ratings and provide comments to the design firm. The design firm will address all STATE comments to the satisfaction of the STATE. The design firm will provide a separate summary table of all load ratings to be included in the STATE'S bridge inspection file.

8. If applicable, the COUNTY will also require the bridge design engineering firm to submit scour analyses and develop a Quality Control/Quality Assurance (QC/QA) plan. The QC/QA plan must follow the format developed by the STATE.
9. The COUNTY will obtain and submit to the STATE a copy of the bid documents, plans, and specifications sealed and signed by a professional engineer licensed in the State of South Dakota. The COUNTY will address, in writing, all comments made by the STATE to the STATE'S satisfaction. The COUNTY must obtain the STATE'S approval of the final bid documents, plans, and specifications before proceeding with any award of the contract.
10. If applicable, the COUNTY will have the design engineer review shop plans of prefabricated products.
11. The COUNTY will retain a construction engineering firm to perform the construction engineering services for the PROJECT. The COUNTY will select and hire the firm from the STATE'S current consultant retainer list for construction administration, inspection, and testing. The scope of the construction engineering services to be performed is identified in the attached **Exhibit C**.
12. The COUNTY will obtain the STATE'S concurrence in the award of the contract.
13. The STATE will review and approve a quality assurance and testing plan for construction testing and inspection.
14. The COUNTY will obtain all necessary right-of-way for the PROJECT according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended in 1987. The COUNTY will use STATE forms in obtaining right-of-way.
15. The COUNTY will arrange for all needed utility adjustments as part of the PROJECT and certify prior to advertisement or letting that all right-of-way and utility adjustments or agreements are in place.
16. The COUNTY will obtain all necessary PROJECT environmental clearances and permits as required for this Agreement. If any part of the PROJECT affects the Federal Emergency Management Agency's (FEMA) flood plain insurance maps, the COUNTY will be responsible for all map revisions and obtaining FEMA approval or a Conditional Letter of Map Revision (CLOMR).
17. The COUNTY will notify the STATE upon completion of the rehabilitation/replacement work under this Agreement.
18. The STATE will conduct a final inspection of the PROJECT.
19. The parties recognize that unanticipated and time-sensitive work may be needed for completion of the PROJECT and that delays in completing such work could jeopardize the PROJECT schedule. The COUNTY authorizes the STATE to write work orders and hire consultants for the PROJECT for unanticipated and time-sensitive work that must be completed promptly in order to avoid PROJECT delays and increased PROJECT costs. The COUNTY'S signature will not be required for these work orders or consultant agreements, and the COUNTY agrees to pay for the cost of this additional work in accordance with the provisions of this Agreement. The STATE will notify the COUNTY of the purpose and need of any such work orders or consultant agreements prior to the STATE issuing a Notice to Proceed for the additional work. The STATE will provide the COUNTY with a fully executed copy of any work order or consultant agreement executed by the STATE pursuant to this section of the Agreement.
20. As part of the PROJECT, one or more signs will be erected to indicate the PROJECT was built with a BIG. The COUNTY will be responsible for maintaining these signs for the life of the bridge.
21. The COUNTY will directly pay the professional engineering firm and construction engineer firm for all PROJECT costs.

22. The COUNTY will submit all documentation requested by the STATE, relating to the PROJECT costs paid by the COUNTY. Documentation submitted by the COUNTY will include the COUNTY'S preservation contracts including any amendments and the pay estimates. The COUNTY will submit a written request for reimbursement of engineering fees on the form developed by the STATE, a copy of which is attached to this Agreement as **Exhibit C**. The COUNTY must submit all documentation, including but not limited to progress reports and a summary of QC/QA test results, to the STATE on at least a quarterly basis, but not more frequently than monthly.
23. The STATE will reimburse the COUNTY for eighty percent (80%) of the actual cost of construction engineering services for the PROJECT. For all other PROJECT work, the STATE will reimburse the COUNTY for fifty percent (50%) of eligible costs, not to exceed the BIG award amount of One million three hundred seventy-five thousand dollars (\$1,375,000). The COUNTY will be one hundred percent (100%) responsible for any PROJECT costs incurred prior to the date of the letter of award or after the PROJECT completion date. PROJECT costs include engineering, testing and environmental services performed by STATE forces. PROJECT costs incurred by the STATE through the use of STATE forces will be billed to the COUNTY or will be applied to reduce the BIG award amount. If the BIG award amount has not been fully expended, the COUNTY will be billed for fifty percent (50%) of the PROJECT costs incurred by the STATE. If the BIG award amount has been fully expended, the COUNTY will be billed for one hundred percent (100%) of the PROJECT costs incurred by the STATE. The COUNTY will pay the STATE within thirty (30) days of receipt of billing.
24. The COUNTY certifies the COUNTY has a conflict of interest policy and enforces said policy.
25. The COUNTY certifies the COUNTY has filed an Internal Revenue Services (IRS) Form 990 in compliance with federal law, if applicable. The COUNTY will display the filed IRS Form 990 on the COUNTY'S website immediately upon filing.
26. The COUNTY certifies the COUNTY employs an effective internal control system.
27. The COUNTY certifies the COUNTY is in compliance with the federal Single Audit Act and the requirements of SDCL § 4-11-2.1, if applicable. The COUNTY further certifies audits are displayed on the COUNTY'S website.
28. The COUNTY will include provisions in the COUNTY'S contracts and subcontracts, if any, requiring the COUNTY'S contractors and subcontractors to comply with the applicable provisions of this Agreement, to indemnify the STATE, and to provide insurance coverage for the benefit of the STATE, all in a manner consistent with this Agreement. The COUNTY will cause the COUNTY'S contractors, subcontractors, agents, and employees to comply with applicable federal, state, and local laws, regulations, ordinances, guidelines, permits, and requirements and will adopt such review and inspection procedures as are necessary to assure such compliance.
29. The COUNTY will indemnify the STATE, its officers, agents, and employees against any and all actions, suits, damages, liability, or other proceedings that may arise as the result of the COUNTY'S performance under this Agreement. This section does not require the COUNTY to be responsible for or defend against claims or damages arising from errors or omissions of the STATE, its officers, agents, or employees.
30. All PROJECT charges will be subject to audit by the STATE. The COUNTY and the COUNTY'S contractors and subcontractors will keep accounting records clearly identified with this Agreement, and will support all PROJECT charges by documents which evidence, in detail, the nature and propriety of those charges.
31. Upon reasonable notice, the COUNTY and the COUNTY'S contractors and subcontractors will allow the STATE, through any authorized representative, to have access to and the right to examine and copy all records, books, papers, or documents related to services rendered under this Agreement. The COUNTY will keep these records clearly identified and readily accessible for a period of three (3) years

after the date of final payment under this Agreement.

32. The COUNTY will abide by the requirements of Title VI of the Civil Rights Act of 1964, incorporated in and attached to this Agreement as **Exhibit D**.
33. The COUNTY will perform under this Agreement in compliance with the Americans with Disabilities Act of 1990 and any amendments.
34. This Agreement may not be amended, except in writing, which writing will be expressly identified as a part of this Agreement, and be signed by an authorized representative of each of the parties.
35. This Agreement depends upon the continued availability of appropriated funds and expenditure authority from the Legislature for this purpose. If for any reason the Legislature fails to appropriate funds or grant expenditure authority, or funds become unavailable by operation of law or federal funds reductions, the STATE may terminate this Agreement. Termination for any of these reasons is not a default by the STATE nor does it give rise to a claim against the STATE.
36. The parties may terminate this Agreement by mutual written agreement. The STATE may also terminate this Agreement if the COUNTY breaches any terms of this Agreement. If the STATE terminates this Agreement due to the COUNTY'S breach, then any payments owed to the COUNTY at the time of termination may be adjusted to cover any additional costs to the STATE because of the COUNTY'S breach. The adjustment of payments will be in addition to any other remedies the STATE may pursue as a result of COUNTY'S breach, and the STATE does not waive these other remedies by making a payment adjustment. If termination is not due to a breach by the COUNTY, then the COUNTY will be paid for eligible PROJECT costs incurred up to the date of termination, subject to the maximum limiting amount of the BIG.
37. The COUNTY must comply with all federal, state, and local laws, together with all ordinances and regulations applicable to the work and will be solely responsible for obtaining current information on such requirements. The COUNTY must procure all licenses, permits, or other rights necessary for the fulfillment of its obligations under this Agreement.
38. This Agreement will be governed by and construed in accordance with the laws of the State of South Dakota. Any lawsuit pertaining to or affecting this Agreement will be venued in Circuit Court, Sixth Judicial Circuit, Hughes County, South Dakota.
39. If any court of competent jurisdiction holds any provision of this Agreement unenforceable or invalid, such holding will not invalidate or render unenforceable any other provision of this Agreement.
40. All other prior discussions, communications, and representations concerning the subject matter of this Agreement are superseded by the terms of this Agreement, and, except as specifically provided in this Agreement, this Agreement constitutes the entire agreement with respect to its subject matter.
41. The COUNTY has designated its County Commission Chairperson as the COUNTY'S authorized representative and has empowered the Chairperson with the authority to sign this Agreement on behalf of the COUNTY. A copy of the COUNTY'S Commission minutes or resolution authorizing the execution of this Agreement by the Chairperson as the COUNTY'S authorized representative is attached to this Agreement as **Exhibit E**.

SIGNATURES FOLLOW

This Agreement is binding upon the signatories not as individuals but solely in their capacities as officials of their respective organizations and acknowledges proper action of the STATE and the COUNTY to enter into the same.

Brookings County, South Dakota

State of South Dakota
Department of Transportation

By: _____

By: _____

Its: Commission Chairperson

Its: Program Manager,
Administration Program

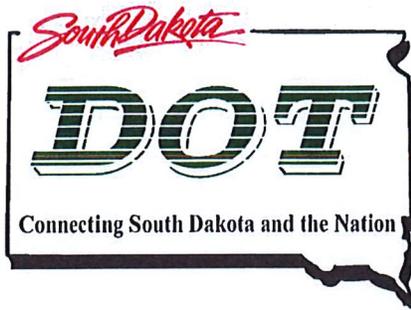
Date: _____

Date: _____

Attest:

County Auditor/Clerk

(COUNTY SEAL)



Department of Transportation

Office of the Secretary

700 E Broadway Avenue
Pierre, South Dakota 57501-2558

Phone: 605.773.5105

Web site: www.sddot.com and www.safetravelusa.com/sd



February 27, 2020
BIG Notice to Proceed Date

County Commissioners
Brookings County

NOTICE OF AWARD

2020 Replacement/Major Rehabilitation Bridge Improvement Grant
Structure Number 06-120-053
Project Number BRF 6295(00) 20-8, PCN 07TN
Grant Amount = \$1,375,000.00(50%)

I am pleased to inform you that the South Dakota Transportation Commission approved a Local Bridge Improvement Grant (BIG) in the amount shown above for the noted structure during their February 27, 2020 commission meeting. A funding agreement and specific information and documents for this grant will be sent to you at a later date.

If you have questions, please feel free to contact Tammy Williams at 605.773.8149 or Doug Kinniburgh at 605.773.4284.

Sincerely,

Darin P. Bergquist
Secretary

Attachment

cc: County Highway Superintendent
File

Bridge Improvement Grant Work Order Requirements for Structure Design

SCOPE OF SERVICES TEMPLATE – Design

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.)

NOTE: Foundation Investigation will need to be included for projects that did not have this work included in the preliminary engineering. If not handled by the SDDOT Geotechnical Activity Office, the requirements are as follows:

Report of Foundations 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**, for reports that are typically developed by the SDDOT Geotechnical Engineering Activity Office.

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 **11" x 17" Non Section Method** plan set.

The consultant shall provide design calculations, independent check, and load ratings for the structure as set forth in the Master Retainer Contract. In addition, load ratings for the Special Hauling Vehicles and Emergency Vehicles specified in **Attachment #2** shall also be submitted. 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 changes.**
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 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 items required to be submitted to the Local Government Assistance Office.

Attachment #3 contains applicable excerpts from the Current SDDOT Consultant Retainer, DOT-900 AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES.

**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, 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
- Quality Assurance / Quality Control Testing Plan

Attachment #2

Bridge Improvement Grant

Load Rating Requirements for the Special Hauling Vehicles



U.S. Department
of Transportation
Federal Highway
Administration

Memorandum

Subject: **ACTION:** Load Rating of Specialized Hauling
Vehicles

Date: November 15, 2013

/s/ *Original Signed by*
From: Joseph S. Krolak
Acting Director, Office of Bridge Technology

In Reply Refer To:
HIBT-10

To: Federal Lands Highway Division Engineers
Division Administrators

The purpose of this memorandum is to clarify FHWA's position on the analysis of *Specialized Hauling Vehicles* (SHVs) as defined in the AASHTO Manual for Bridge Evaluation (MBE) during bridge load rating and posting to comply with the requirements of the *National Bridge Inspection Standards* (NBIS). The intent of the load rating and posting provisions of the NBIS is to insure that all bridges are appropriately evaluated to determine their safe live load carrying capacity considering all unrestricted legal loads, including State routine permits, and that bridges are appropriately posted if required, in accordance with the MBE.

The SHVs are closely-spaced multi-axle single unit trucks introduced by the trucking industry in the last decade. Examples include dump trucks, construction vehicles, solid waste trucks and other hauling trucks. SHVs generally comply with Bridge Formula B and are for this reason considered legal in all States, if a States' laws do not explicitly exclude the use of such vehicles.

NCHRP Project 12-63 (Report 575, 2007) studied the developments in truck configurations and State legal loads and found that AASHTO Type 3, 3-S2 and 3-3 legal vehicles are not representative of all legal loads, specifically SHVs. As a result, legal load models for SHVs were developed and adopted by AASHTO in 2005, recognizing that there is an immediate need to incorporate SHVs into a State's load rating process, if SHVs operate within a State. The SHV load models in the MBE include SU4, SU5, SU6 and SU7 representing four- to seven-axle SHVs respectively, and a Notional Rating Load (NRL) model that envelopes the four single unit load models and serves as a screening load. If the load rating factor for the NRL model is 1.0 or greater, then there is no need to rate for the single-unit SU4, SU5, SU6 and SU7 loads. However, if the load rating factor for the NRL is less than 1.0, then the single-unit SU4, SU5, SU6 and SU7 loads need to be considered during load rating and posting.

The SHVs create higher force effects, and thus result in lower load ratings for certain bridges, especially those with a shorter span or shorter loading length such as transverse floor beams, when compared to AASHTO Type 3, 3-S2 and 3-3 legal loads and HS20 design load. Therefore, SHVs, i.e., SU4, SU5, SU6 and SU7 or NRL, are to be included in rating and posting analyses in accordance with Article 6A.2.3 and Article 6B.9.2 of the 1st Edition of the MBE (Article 6B.7.2 of the 2nd Edition of the MBE), unless one of the following two conditions is met:

Condition A: The State verifies that State laws preclude SHV use; or

Condition B: The State has its own rating vehicle models for legal loads and verifies that the State legal load models envelope the *applicable* AASHTO SHV loading models specified in Appendix D6A and Figure 6B.9.2-2 of the 1st Edition of the MBE (Figure 6B.7.2-2 of the 2nd Edition of the MBE), and the State legal load models have been included in rating/posting analyses of all bridges. The SHV types, e.g. six- or seven-axle SHVs, precluded by State laws need not be considered.

The SHV load models apply to Allowable Stress Rating, Load Factor Rating, and Load and Resistance Factor Rating in accordance with Section 6A and 6B of the MBE.

The FHWA recognizes that there are bridges in the inventory that have not been rated for SHVs and that it is not feasible to include SHVs in the ratings for the entire inventory at once. FHWA is establishing the following timelines for rating bridges for SHVs, if neither Condition A or B is met:

Group 1: Bridges with the shortest span not greater than 200 feet should be re-rated after their next NBIS inspection, but no later than December 31, 2017, that were last rated by:

- a) either Allowable Stress Rating (ASR) or Load Factor Rating (LFR) method and have an operating rating for the AASHTO Routine Commercial Vehicle either Type 3, Type 3S2, or Type 3-3 less than 33 tons (English), 47 tons (English), or 52 tons (English) respectively; or
- b) Load and Resistance Factor Rating (LRFR) method and have a legal load rating factor for the AASHTO Routine Commercial Vehicle, either Type 3, Type 3S2 or Type 3-3, less than 1.3.

Group 2: Rate those bridges not in Group 1 no later than December 31, 2022.

For either group, if a re-rating is warranted due to changes of structural condition, loadings, or configuration, or other requirements, the re-rating should include SHVs.

The selection of load rating method should comply with FHWA's Policy Memorandum *Bridge Load Ratings for the National Bridge Inventory*, dated October 30, 2006.

A State may utilize an alternative approach in lieu of the above to address the load rating for SHVs for bridges in their inventory; however, the approach must be reviewed and formally accepted by FHWA.

The timeline presented above will be incorporated into the review of Metric 13 under the National Bridge Inspection Program (NBIP); specifically, it is expected that all bridges meeting Group 1 criteria be load rated for SHVs by the end of 2017. Please work with your State to assist them in developing appropriate actions to meet those timelines. If your State is currently developing or implementing a Plan of Corrective Actions (PCA) for load rating bridges, the PCA should be reviewed and modified as necessary to take into account the rating of SHVs for those bridges and these timelines.

We request that you share this memorandum with your State or Federal agency partner. All questions that cannot be resolved at the Division Office level should be directed to Lubin Gao at lubin.gao@dot.gov or at 202-366-4604.

Load Rating Requirements for the Emergency Vehicles



Memorandum

Subject: **ACTION:** Load Rating for the FAST Act's
Emergency Vehicles

Date: November 3, 2016

From: /Original signed by/
Joseph L. Hartmann, Ph.D., P.E.
Director, Office of Bridges and Structures

In Reply Refer To: HIBS-1

To: Division Administrators
Federal Lands Highway Division Directors

On December 4, 2015, the President signed into law the *Fixing America's Surface Transportation Act* (FAST Act) (Pub. L. 114-94). Section 1410 of the FAST Act amended 23 U.S.C. 127, *Vehicle weight limitations—Interstate System*, by revising the weight limits for certain vehicles on the Interstate System. The purpose of this memorandum is to provide guidance on maintaining compliance with the load rating and posting requirements of 23 CFR Part 650—specifically for the amended weight limits in 23 U.S.C. 127(r), *Emergency Vehicles*, for bridges on the Interstate System and within reasonable access to the Interstate System. Reasonable access is defined in a September 30, 1992 Non-Regulatory Supplement to 23 CFR Part 658 as at least one-road-mile from access to and from the National Network of highways, which includes the Interstate System, or further if the limits of a State's reasonable access policy for food, fuel, repairs, and rest extend to facilities beyond one-road-mile.

An emergency vehicle as defined in the FAST Act is designed to be used under emergency conditions to transport personnel and equipment to support the suppression of fires and mitigation of other hazardous situations (23 U.S.C. 127(r)(2)). The gross vehicle weight limit for emergency vehicles is 86,000 pounds under section 127(r). The statute imposes the following additional limits, depending upon vehicle configuration:

- 24,000 pounds on a single steering axle
- 33,500 pounds on a single drive axle
- 62,000 pounds on a tandem axle
- 52,000 pounds on a tandem rear drive steer axle

Emergency vehicles are typically operated by fire departments and are primarily equipped for firefighting, but are also used to respond to and mitigate other hazardous situations in

an emergency. These vehicles may not meet Federal Bridge Formula B. They can create higher load effects compared to the AASHTO legal loads (i.e., Types 3, 3S2, 3-3, and SU4 to SU7) which are currently included in the AASHTO Manual for Bridge Evaluation (MBE). The Federal Highway Administration (FHWA) has determined that, for the purpose of load rating, two emergency vehicle configurations produce load effects in typical bridges that envelop the effects resulting from the family of typical emergency vehicles that is covered by the FAST Act:

1. Type EV2 - for single rear axle emergency vehicles

Front Single Axle: 24,000 pounds
Rear Single Axle: 33,500 pounds
Wheelbase: 15 ft.

2. Type EV3 – for tandem rear axle emergency vehicles

Front Single Axle: 24,000 pounds
Rear Tandem Axle: 62,000 pounds (two 31,000 pound axles spaced at 4 ft.)
Wheelbase: 17 ft. (distance from front axle to the centerline of rear tandem axle)

Load ratings (or rating factors) should be determined for these emergency vehicle configurations i.e., Types EV2 and EV3, at the operating or legal load rating level in accordance with the methods specified in the AASHTO MBE, First Edition with two exceptions:

1. Multiple presence: If necessary, when combined with other unrestricted legal loads for rating purposes, the emergency vehicle needs only to be considered in a single lane of one direction of a bridge.
2. Live load factor: A live load factor of 1.3 may be utilized in the Load and Resistance Factor Rating (LRFR) or Load Factor Rating (LFR) method.

Under 23 CFR 650.313(c), all highway bridges must be load rated and, if necessary, posted in accordance with the MBE. Recognizing that States and Federal agencies cannot immediately load rate every Interstate System bridge and bridges within reasonable access to the Interstate, FHWA recommends utilizing the following approach to prioritize load rating and posting for emergency vehicles:

Group 1: Bridges that meet any one of the following criteria do not need to be immediately load rated for emergency vehicles.

- a. An operating or legal load rating factor for the AASHTO Type 3 vehicle of at least 1.85;
- b. an inventory rating factor for the HS 20 design load of at least 1.0 using the LFR method, or

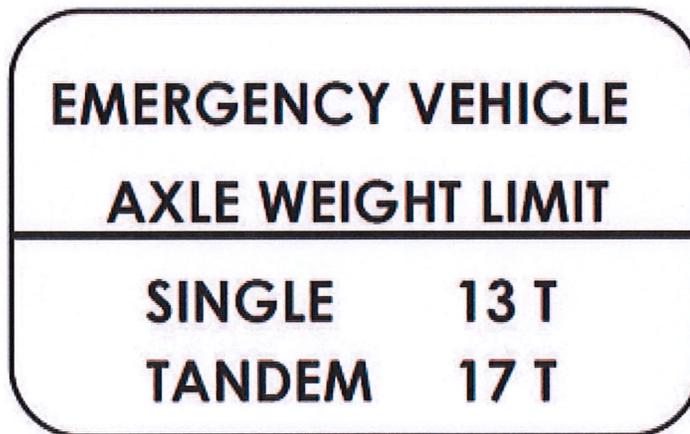
- c. an inventory rating factor for the HL-93 design load of at least 0.9 using the LRFR method.

However, the bridges in this group shall be rated for the emergency vehicles when a normal re-rating is warranted, including changes in structural condition and other loadings.

Group 2: Bridges not in Group 1 should be rated for the emergency vehicles following their next inspection to incorporate the latest condition of the bridge, but no later than December 31, 2019. Emergency vehicles should be included in any new load ratings for these bridges when the load ratings occur before December 31, 2019.

If a State or Federal agency wants to utilize an alternative approach in lieu of the above to group bridges in an inventory for the purpose of prioritization, it should seek FHWA's review and concurrence of the alternative approach. Regardless of the prioritization approach used, the selection of load rating method should comply with FHWA's Policy Memorandum [Bridge Load Ratings for the National Bridge Inventory, dated October 30, 2006.](#)

When a load rating results in an operating rating factor less than 1.0 for the emergency vehicles, the bridge shall be appropriately posted for both the governing single axle weight limit and tandem axle weight limit derived from the above emergency vehicle configurations, i.e., Types EV2 and EV3 (23 CFR 650.313(c)). When posting is necessary, the following sign format, using the appropriate weight limits, should be considered:



If a State law allows or exempts emergency vehicles to operate without restriction off the Interstate System as legal loads, 23 CFR 650.313(c) requires bridges on these highways to be load rated and posted, if necessary, for these vehicles. Unless State law relies on a different definition of emergency vehicle than that included in the FAST Act (23 U.S.C. 127(r)(2)), States can perform load ratings on these highways using the two emergency vehicle configurations included in this memorandum.

Division Offices should work with their State DOT or Federal agency partners to develop

an action plan by March 31, 2017, with defined tasks, completion dates, and progress reporting requirements. Although this guidance focuses on highway bridges, 23 CFR 650.513(g) also requires States and Federal agencies to load rate and post highway tunnels, if necessary. Therefore, the action plan should also incorporate highway tunnels. States and Federal agencies should load rate tunnels for the emergency vehicle configurations above by December 31, 2019. Each Division Office should coordinate this action plan with its Bridge Safety Engineer.

We request that you share this memorandum with your State DOT or Federal agency partners immediately. If you have any questions or need more information, please contact Lubin Gao at (202)366-4604 or Lubin.Gao@dot.gov, or your Bridge Safety Engineer.

cc:

Directors of Field Services

Director of Technical Service

HIBS-10

HIBS-30

HRDI-1

Team Manager, RC Structures TST

Branch Chief, FLH Bridge Engineer

Attachment #3
Bridge Improvement Grant
Excerpts from Current DOT-900 (10/2016)
AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES
(SDDOT Consultant Retainer)

FURNISHING OF DOCUMENTS (DOT-900, 10/2016, Section B.3.)

Except where otherwise specifically provided, the CONSULTANT will furnish to the DEPARTMENT all documents, reports, exhibits, electronic files, and other presentations for all phases of the work performed under the terms of this Agreement.

The CONSULTANT will furnish to the DEPARTMENT all design and check design computations. All documents furnished, including all original drawings, software generated electronic files, design computations, and check design computations, will become and remain the property of the DEPARTMENT and may be used by the DEPARTMENT without restriction for any public purpose.

The CONSULTANT will provide survey documents for bench levels and for the checking of bench levels on standard loose-leaf transit field book sheets. The CONSULTANT will provide all other data collected in an electronic format and will include the following files: FWD file, DGN file, DTM file, ALG file, and the RAW data file. The FWD file, DGN file, DTM file, and ALG file, will be compatible with the DEPARTMENT'S current version of InRoads. The RAW data file will be in ASCII format and will include the following information: point number, northing, easting, description, and any pertinent notes corresponding to a particular point.

The CONSULTANT, as requested by the DEPARTMENT, will submit construction documents, either electronic or paper format, and said documents will become and remain the DEPARTMENT'S property.

The CONSULTANT will return all data furnished to the CONSULTANT by the DEPARTMENT to the DEPARTMENT.

Compliance with all of the foregoing will be considered to be within the purview of this Agreement and will not constitute a basis for additional or extra compensation.

GENERAL REQUIREMENTS (DOT-900, 10/2016, Section C.3.)

- b. Survey for roadway and hydraulic design will be in accordance with the edition of the Department of Transportation Survey Manual currently in place at the time of execution of the Work Order.
- c. Wetland delineation will be in conformance with the US Army Corps of Engineers Wetland Delineation Manual and Regional Supplements. Wetland mitigation plans will include construction plans, performance criteria, and a five (5) year monitoring plan.
- d. Hydrologic/Hydraulic design will be in accordance with the edition of the South Dakota Drainage Manual (and its revisions) currently in place at the time of execution of the Work Order.

ROADWAY DESIGN (DOT-900, 10/2016, Section C.4.)

Unless otherwise modified by the Work Order, the CONSULTANT will meet the following requirements:

- a. Roadway design will be in accordance with the edition of the Department of Transportation Road Design Manual (and its revisions) currently in place at the time of execution of the Work Order and the American Association of State Highway and Transportation Officials (AASHTO) Specifications, "A Policy on Geometric Design of Highways and Streets" (2011 or the version in place at the time of execution of the Work Order), and Interims, or the Local Roads Plan.
- b. The CONSULTANT will complete and furnish to the DEPARTMENT, at the time the plans are delivered to the DEPARTMENT, a DEPARTMENT provided checklist. This checklist will provide certification that a separate check has been performed, all review revisions have been made, and the plans are correct and complete.

- c. The CONSULTANT will furnish basic design criteria in the Scope Summary Report and in the Scope of Services.
- d. The CONSULTANT may obtain standard drawings of roadway appurtenances from the DEPARTMENT'S Office of Road Design.
- e. The CONSULTANT will contact the DEPARTMENT'S Office of Bridge Design, if a DEPARTMENT structure's drainage area is greater than 1,000 acres. For these structures, the DEPARTMENT'S Office of Bridge Design will make a hydraulics recommendation, or will concur on the hydraulics requirement if hydraulics is part of the work order scope.
- f. The DEPARTMENT will furnish basic surfacing design criteria, such as type, thickness, and width of pavement.
- g. The DEPARTMENT will furnish material recommendations.

STRUCTURE DESIGN (DOT-900, 10/2016, Section C.5.)

Unless otherwise modified by the Work Order, the CONSULTANT will meet the following requirements:

- a. Prior to initiating design, the CONSULTANT will be required to submit the QC/QA plan/procedure to be followed for structure design to the DEPARTMENT for approval. The CONSULTANT may not begin structure design work until the QC/QA plan/procedure is approved and documented. If the CONSULTANT has a prior approved structure design QC/QA plan/procedure document on file with the OBD, and no changes to that document are anticipated for the current contract, the CONSULTANT will not need to resubmit a structure design QC/QA plan/procedure document.
- b. The CONSULTANT will design bridges, box culverts, and miscellaneous highway structures in accordance with the edition of the "AASHTO LRFD Bridge Design Specifications," currently in place at the time of execution of the Work Order except as modified by the DEPARTMENT'S design practices. Prior to beginning design work, the DEPARTMENT will supply the CONSULTANT with a copy of design practices along with examples of standard detailing procedures and typical plans.
- c. The CONSULTANT will design highway structures for a vehicular live loading of HL-93. Additional design criteria may be included in the Scope of Work.
- d. The CONSULTANT will load rate each structure, including culverts that are bridge length, in accordance with the edition of the AASHTO "Manual for Bridge Evaluation" with latest Interim Revisions using the LRFR method currently in place at the time of execution of the Work Order. The CONSULTANT will perform an HL-93 Design Load Rating for each structure. The CONSULTANT will analyze the AASHTO HS20 vehicle for Inventory and Operating Ratings. The CONSULTANT will also perform a Legal Load Rating for South Dakota legal trucks, the notional rating load, and the four specialized hauling vehicles. The CONSULTANT will submit a copy of the rating analyses to the DEPARTMENT along with the Final Plans for bid letting purposes. The Bridge Management Engineer from the DEPARTMENT'S Office of Bridge Design will review load ratings. Load ratings must be above the Legal Loads. The CONSULTANT will provide a separate summary table of all load ratings to be included in the Bridge Inspection file.
- e. The CONSULTANT will provide the DEPARTMENT a hard copy of design computations, independent check design computations, and load ratings, including computer output if applicable, with the final review set of drawings.
- f. The CONSULTANT will review shop plans for fabricated items, and will forward marked-up shop plans to the DEPARTMENT. The DEPARTMENT must authorize any fabrication.

PLANS, SPECIFICATIONS, AND ESTIMATES, GENERAL (DOT-900, 10/2016, Section C.8.)

Unless otherwise modified by the Work Order, the CONSULTANT will meet the following requirements:

- a. When complete plans, supplemental specifications, or special provisions are prepared, these will become the property of the DEPARTMENT, County, or City.

- b. The CONSULTANT will furnish and deliver to the DEPARTMENT original drawings of all sheets comprising the set of plans, together with all reports, drawings, computer files, studies, memoranda, and other data pertaining thereto.
- c. The CONSULTANT will furnish to the DEPARTMENT an electronic MS Word file of all special specifications.
- d. The CONSULTANT will prepare plans in conformance with the DEPARTMENT'S customary practices. The CONSULTANT will use standard format for notes, tables, and rates of materials.
- e. The CONSULTANT will prepare plans on sheets 11" x 17" or 8 1/2" x 11" in size, under the guidance of the Road Design Manual's Chapter 18 – Plans Assembly: www.sddot.com/business/design/forms/roaddesign/Default.aspx or as directed by the DEPARTMENT. The CONSULTANT will follow the specific section of the Road Design Manual's Chapter 18 as it relates to plans produced by consultants in order to provide accurate electronic plans and bid items for the DEPARTMENT'S electronic bidding system. The CONSULTANT will utilize the DEPARTMENT'S web site: <http://www.sddot.com/business/design/Default.aspx> for Plan Preparation (i.e. Road Design Manual, CADD Procedure Manual, and User Guide for Electronic Plan Review), Downloadable Files (i.e. Form Letters, Microstation and InRoad files, and Plan Notes) and other information as necessary to design and prepare plans. The CONSULTANT will follow the properties and procedures set up for the DEPARTMENT'S electronic plans as set forth in document located at the following web site address: <http://sddot.com/business/design/forms/cadd/Default.aspx> . Electronic plans will be used for bidding purposes and must contain a watermark on each sheet stating "For Bidding Purposes Only." Refer to Paragraph i. below for details on the set of plans to be used for construction.
- f. The CONSULTANT will prepare plans with sufficient precision to permit the convenient layout in the field for construction and for other purposes. The plans will also provide for the production of an accurate estimate of quantities for the work to be performed in the construction of the project.
- g. The CONSULTANT will furnish such other pertinent information and data with respect to the plans and designs as the DEPARTMENT may request.
- h. The DEPARTMENT will require all persons designing, detailing, and checking structure plans to legibly place their names or initials on each plan sheet in the spaces provided for this purpose.
- i. The DEPARTMENT will designate the basic premises and criteria for the design. The CONSULTANT will develop plans in accordance with the DEPARTMENT'S standard specifications for roadway and bridge construction.
- j. As part of the work embraced in the preparation of plans, the CONSULTANT will prepare and furnish to the DEPARTMENT special provisions in standard DEPARTMENT format, for items of work included in the plans which are not covered by the standard specifications, plan notes, or DEPARTMENT-approved special provisions.
- k. The CONSULTANT will ensure scales, lettering, and the general delineation of the plans mirror the DEPARTMENT format and provide readily legible reproductions.
- l. The CONSULTANT will ensure each plan sheet bears the South Dakota registered professional seal and endorsement of the CONSULTANT as per the requirements of the South Dakota Board of Technical Professions.
- m. The CONSULTANT will use software acceptable to the DEPARTMENT as agreed to in the Work Order.

Note: The DEPARTMENT'S standard software programs are the Bentley Civil Products (InRoads Suite), MicroStation, AASHTOWare products, Adobe Acrobat, Bluebeam, and the Microsoft Office Suite. The DEPARTMENT may require other software on Work Orders.

CONSTRUCTION ENGINEERING TECHNICAL REQUIREMENTS (DOT-900, 10/2016, Section D1.)

1. **CONSULTANT'S RESPONSIBILITIES.** The CONSULTANT will be responsible to the DEPARTMENT, and will complete all work to the DEPARTMENT'S satisfaction.

Subject to availability, the CONSULTANT will provide personnel for the areas of expertise necessary to satisfactorily complete the work specified in the Work Order and this Agreement. The DEPARTMENT will notify the CONSULTANT as to the proper medium that will be used for recording purposes of field data. The CONSULTANT will submit reports in a timely manner as directed by the DEPARTMENT'S Office issuing the Work Order. The responsibilities for these areas are described in **Exhibit 4, CONSTRUCTION ENGINEERING CONSULTANT RESPONSIBILITIES.**

EXHIBIT 4 (DOT-900, 10/2016)

CONSULTANT CONSTRUCTION OVERSITE RESPONSIBILITIES

GENERAL

The CONSULTANT will:

1. Be knowledgeable of the requirements of the project plans and specifications, the DEPARTMENT'S Survey Manual, Road Design Manual, South Dakota Drainage Manual, and Computer-Aided Design and Drafting (CADD) Procedures Manual.
2. Assure project personnel are knowledgeable of their duties and responsibilities.
3. Assure project personnel are knowledgeable of the DEPARTMENT'S Materials Manual.
4. Oversee day to day activities to ensure the project is constructed in accordance with plans and specifications.
5. Ensure all documentation and reports are accurate and kept current.
6. Prepare and electronically submit Biweekly Progress Reports, Construction Change Orders, Progress Pay Estimates, Final Pay Estimate, and Final Construction Change Order, all on the current version of the DEPARTMENT'S Construction Management System. The CONSULTANT will submit these reports in a timely manner as directed by the DEPARTMENT'S Office issuing the Work Order.
7. Require all individuals providing acceptance testing and independent assurance testing of construction materials or acceptance inspection to record all data/results electronically on the current version of the DEPARTMENT'S Construction Management System, or as instructed by the DEPARTMENT.
8. Require all individuals providing acceptance testing and independent assurance testing of materials or acceptance inspection to meet the requirements of the DEPARTMENT'S Materials Testing and Inspection Certification Program Manual.
9. Ensure testing equipment identified in the DEPARTMENT'S Materials Testing and Inspection Certification Program Manual is calibrated and documented according to the designated frequencies and procedures designated in the Manual.
10. Perform other duties assigned by the DEPARTMENT as defined in this Agreement.

The CONSULTANT'S PROJECT ENGINEER will:

1. Assist with conducting the pre-construction meeting.
2. Prepare biweekly progress reports, construction change orders, progress pay estimates, final estimate, and final construction change order electronically on the current version of the DEPARTMENT'S Construction Management System.

3. Handle equal employment opportunity (EEO) and labor compliance activities.
4. Ensure that subcontractors working on the project are approved by the DEPARTMENT.

The CONSULTANT'S INSPECTOR will:

1. Assure the asphalt or concrete plant is properly calibrated.
2. Perform scale accuracy checks.
3. Ensure construction activities remain inside the acquired right-of-way or easement as specified on the plans unless approved by the DEPARTMENT.

The CONSULTANT'S SURVEY PARTY CHIEF will:

1. Record field notes for slope stakes, blue tops, paving grades, pipe, structure layout, and other items of the same sort in electronic format, FWD files, DGN files, DTM files, ALG files, and RAW files compatible to the current version of InRoads being used by the DEPARTMENT.
2. Set centerline, offset lines, bluetops, slope stakes, pipe stakes, structure stakes, and other items of the same sort by electronic or manual means.
3. Run bench levels within acceptable tolerances of the DEPARTMENT'S Survey Manual and maintain field notes on standard loose-leaf transit field book sheets.
4. Obtain necessary topographic data within acceptable tolerances of the DEPARTMENT'S Survey Manual.
5. Supervise and assure the survey crew is knowledgeable as to its duties and responsibilities.

The CONSULTANT'S TEST PERSON AND EQUIPMENT will:

1. Be knowledgeable of the requirements of the project plans and specifications.
2. Sample and test materials for acceptance as specified by the DEPARTMENT'S Materials Manual. Perform material tests for QC/QA projects in accordance with QC/QA manual and have the proper QC/QA certification.

Recognize and have the ability to take corrective action for calibration of testing equipment.

EXAMPLE 1

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 –

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.

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

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 D19-42
Delmag D25-32

Delmag D12-42
MVE M-19
Delmag D30-32

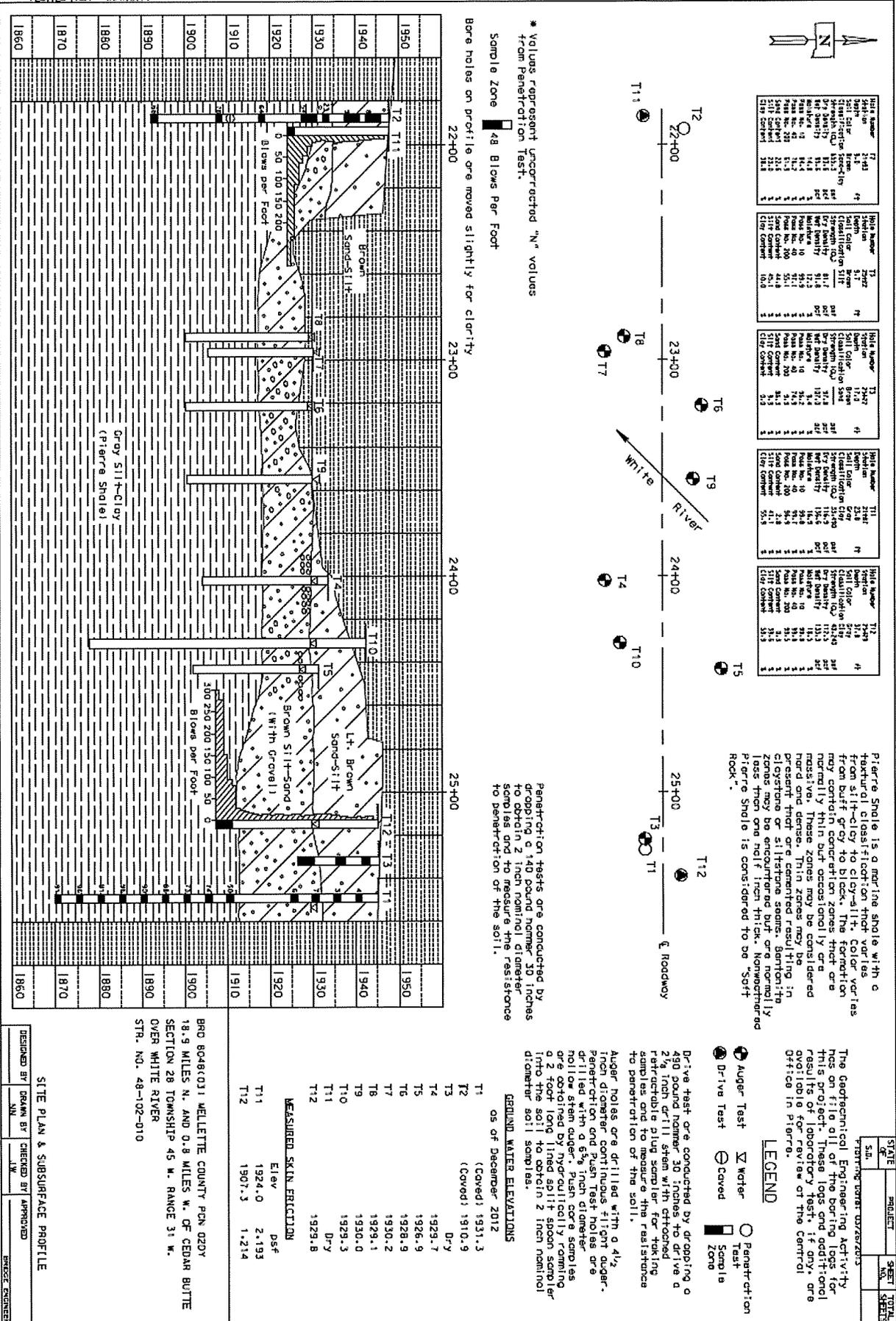
FEC 1500
ICE 42S
SPI D30

Delmag D16-32
MKT DE 42/35
Delmag D46-32

Delmag D19-32
APE D19-42

PLATT SCALE - 1+20

PLOTTED FROM - TPA181874



Pierre Shale is a marine shale with a high siliceous content and is derived from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain occasional zones 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. Bentonitic zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be Soft Rock.

The geotechnical engineering activity has on file all of the boring logs for this project. These logs and additional results of laboratory tests, if any, are available for review at the central office in Pierre.

* Values represent uncorrected "N" values from Penetration Test.
Sample Zone 48 Blows Per Foot

Bore holes on profile are moved slightly for clarity

BRD 8048031 WELLETTE COUNTY PCN 020Y
18.9 MILES N. AND 0.8 MILES W. OF CEDAR BUTTE
SECTION 28 TOWNSHIP 45 N., RANGE 31 W.
OVER WHITE RIVER
STR. NO. 48-102-010

SITE PLAN & SUBSURFACE PROFILE
DESIGNED BY: [] DRAWN BY: [] CHECKED BY: [] APPROVED: []
MIN. [] L.W. []
PROJECT ENGINEER

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**.

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.

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.

- 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 County with the final pay application.

APPENDIX A

List of Tests

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

SDDOT Bridge Improvement Grant (BIG)
Request for Reimbursement of DESIGN Engineering Fees

Name of City or County

Project: BR_NNNN(00)NN-N PCN: NNNN

Grant Cap: \$0.00

Agreement Number: _____ Payment Number: NN

Billing Period: From: _____ To: _____.

Consultant Name	Total Billed	Reimbursable Portion (80% of total)
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
Total Amount Due		\$0.00

Grant Cap	Reimbursable Portion This Invoice	Reimbursable Portion(s) Previously Billed	Grant Funds Remaining
\$0.00	\$0.00	\$0.00	\$0.00

Required Attachments for this Reimbursement

Request Form:

*Copy of Contract between County/City and Consultant (required only with 1st billing; must include required scope of services and must reference structure # for applicable grant)

*Copy of the bill(s) from Consultant

*Proof of payment by County/City (i.e. copy of check or commission minutes, etc.)

Billing frequency shall be a maximum of monthly and a minimum of quarterly.

Remit to: CHERI BARTLETT for Doug Kinniburgh SD DOT-LGA 700 E Broadway Ave		<p>FINAL BILLING</p> <p><i>Check blue box if submitting the final billing (indicates that this portion of the project can be finalled as no more billings will be submitted.)</i></p>
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Construction Engineering Plan (Scope) & Payment Invoices for Design, CE, & Construction

SDDOT Bridge Improvement Grant (BIG)
Request for Reimbursement of Construction Engineering Fees

Name of City or County

Project: BR_ NNNN(00)NN-N PCN: NNNN

Grant Cap: \$0.00

Agreement Number: _____ Payment Number: NN

Billing Period: From: _____ To: _____.

Consultant Name	Total Billed	Reimbursable Portion (80% of total)
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
Total Amount Due		\$0.00

Grant Cap	Reimbursable Portion This Invoice	Reimbursable Portion(s) Previously Billed	Grant Funds Remaining
\$0.00	\$0.00	\$0.00	\$0.00

Required Attachments for this Reimbursement

Request Form:

- *Copy of Contract between County/City and Consultant (required only with 1st billing; must include required scope of services and must reference structure # for applicable grant)
- *Copy of the bill(s) from Consultant
- *Proof of payment by County/City (i.e. copy of check or commission minutes, etc.)

Billing frequency shall be a maximum of monthly and a minimum of quarterly.

<p>Remit to: CHERI BARTLETT for Doug Kinniburgh SD DOT-LGA 700 E Broadway Ave Pierre, SD 57501</p>	<p>FINAL BILLING</p> <p><i>Check blue box if submitting the final billing (indicates that this portion of the project can be finalled as no more billings will be submitted.)</i></p>
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Construction Engineering Plan (Scope) & Payment Invoices for Design, CE, & Construction

SDDOT Bridge Improvement Grant (BIG)
Request for Reimbursement of CONSTRUCTION COSTS

Name of City or County

Project: BR_ NNNN(00)NN-N PCN: NNNN

Grant Cap: \$0.00

Agreement Number: _____ Payment Number: NN

Billing Period: From: _____ To: _____

Contractor Name	Total Billed	Reimbursable Portion (__% of total)
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
	\$0.00	\$0.00
Total Amount Due		<u>\$0.00</u>

Reimbursable Portion This Invoice	Reimbursable Portion(s) Previously Billed
\$0.00	\$0.00

Required Attachments for this Reimbursement

Request Form:

*Copy of Contract between County/City and Contractor (required only with 1st billing; must reference structure # for applicable grant)

*Copy of the bill(s) from Contractor AND "Pay Est SHELL BIGs.xls"

*Proof of payment by County/City (i.e. copy of check or commission minutes, etc.)

Billing frequency shall be a maximum of monthly and a minimum of quarterly.

<p>Remit to: CHERI BARTLETT for Doug Kinniburgh SD DOT-LGA 700 E Broadway Ave Pierre, SD 57501</p>		<p align="center">FINAL BILLING</p> <p align="center"><i>Check blue box if submitting the final billing (indicates that this portion of the project can be finalled as no more billings will be submitted.)</i></p>
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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
STANDARD TITLE VI / NONDISCRIMINATION ASSURANCES
APPENDIX A & E
MARCH 1, 2016**

During the performance of this Agreement, the COUNTY, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

During the performance of this Agreement, the COUNTY, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973 (23 U.S.C. § 324 *et seq.*) (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 *et seq.*) as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended (42 U.S.C. § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC Ch. 471, § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-209) (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 CFR Parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. Ch. 471, § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*).
