

CHAPTER 1
ADMINISTRATION

TABLE OF CONTENTS

1.1 FUNCTIONS AND RESPONSIBILITIES1-1

 1.1.1 Division Vision/Mission 1-2

 1.1.1.1 Bridge Management Vision..... 1-2

 1.1.1.2 Bridge Management Mission 1-2

 1.1.2 Federal Highway Administration Coordination..... 1-2

 1.1.3 Planning and Programming 1-3

 1.1.4 Bridge Inspection Program 1-3

 1.1.5 Load Rating Program 1-3

 1.1.6 Emergency Response Plan 1-4

 1.1.7 Bridge Maintenance 1-4

 1.1.8 Local Government Coordination 1-4

1.2 DEFINITIONS AND ACRONYMS..... 1-5

 1.2.1 Definitions 1-5

 1.2.2 Acronyms 1-9

LIST OF FIGURES

Figure 1.1 — ORGANIZATION CHART 1-1

Chapter 1 ADMINISTRATION

This chapter presents an overview of the functions and responsibilities of the Bridge Management Division, and acronyms and definitions of key words commonly used throughout the UDOT *Bridge Management Manual* (BMM). The Bridge Management Division is part of the Structures Division.

1.1 FUNCTIONS AND RESPONSIBILITIES

In general, the Bridge Management Division focuses on the responsible management of the in service bridge inventory. Figure 1.1 presents both the Bridge Management Division and Structures Project Delivery Division organization.

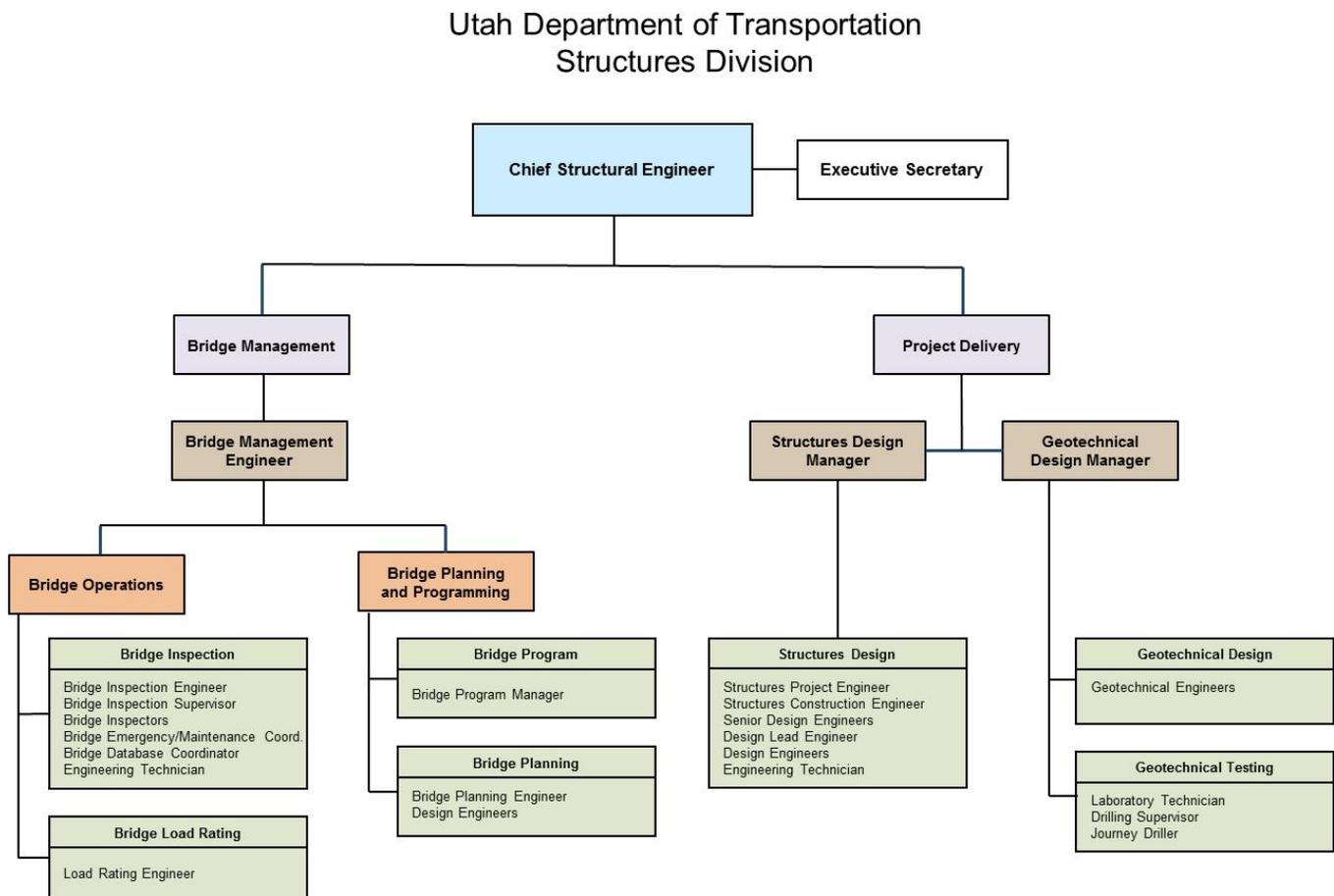


Figure 1.1 — ORGANIZATION CHART

1.1.1 Division Vision/Mission

1.1.1.1 Bridge Management Vision

The Bridge Management Division provides data to support structure project prioritization for preservation, rehabilitation and replacement, and emergency services to ensure the safety of the traveling public.

1.1.1.2 Bridge Management Mission

The Bridge Management Division inspects, monitors, reports and effectively manages the structure inventory for a safe, reliable transportation system.

1.1.2 Federal Highway Administration Coordination

1.1.2.1 General

The Bridge Management Division ensures compliance with FHWA requirements related to managing the existing inventory of bridges. The National Bridge Inspection Standards (NBIS) and 23 Code of Federal Regulations (CFR) §650 discuss several of the requirements. The BMM documents the UDOT policies and procedures (including submission requirements) to comply with the following FHWA requirements:

- Bridge inspection program (e.g., qualifications, inspection frequencies)
- Plan of action (POA) for scour critical bridges
- Critical findings
- Quality control/quality assurance (QC/QA)
- Bridge inventory (e.g., maintenance of, annual submission to FHWA)
- Load rating

The Bridge Management Division and FHWA hold quarterly meetings to discuss the status on each of the FHWA requirements. The meetings address issues such as scheduled bridge inspections for the next few months.

1.1.2.2 Metrics

In 2010, Congress directed FHWA “to make more significant progress in improving its oversight of bridge conditions and safety.” In response, FHWA overhauled the “Metrics for the Oversight of the National Bridge Inspection Program.” The publication presents 23 metrics, which address the following topics:

- State DOT organization and record keeping
- Qualifications of NBI personnel
- Bridge inspection frequency and procedures
- Load rating and bridge posting

One fundamental goal of the FHWA metrics is to set minimum requirements for FHWA reviews to promote a data driven, risk based approach to oversight during annual NBIS compliance reviews. The metrics are intended to present:

- Clear and uniform expectations for all states
- Consistent criteria for judging each metric
- Compliance determination based upon the criteria for each metric

1.1.3 Planning and Programming

Chapter 2 discusses the Structures Division's planning and programming activities for bridge projects to preserve the infrastructure, optimize mobility, improve safety and strengthen the economy. Chapter 2 discusses the:

- UDOT strategic direction
- Funding sources
- Asset management
- Structures Division planning (e.g., bridge rehabilitation/replacement, bridge preservation, bridge scour)
- Bridge programs

1.1.4 Bridge Inspection Program

Chapter 3 discusses the bridge inspection program. The basic objectives are to ensure the structural integrity of bridges, to properly understand the overall condition of the bridges and to comply with the NBIS and 23 CFR §650. Chapter 3 discusses:

- General considerations (e.g., training, safety, equipment)
- Qualifications and responsibilities of Bridge Management Division positions
- Inspection types, frequency and procedures for inspections
- Bridge inventory
- Structure number

1.1.5 Load Rating Program

Chapter 4 discusses the load rating program. The basic objectives are to:

- Determine which structures have substandard load capacities and require posting or other remedial action
- Effectively prioritize projects for rehabilitation or replacement
- Assist in the overload permit review process
- Satisfy FHWA requirements for submitting load ratings

Chapter 4 topics include:

- Policies on load rating, posting, permitting and QC/QA
- Detailed load rating procedures
- Guidelines on load rating for specific types of structures
- Documentation (e.g., load rating report)

1.1.6 Emergency Response Plan

Chapter 5 discusses the Structures Division's emergency response plan. The basic objective is to provide a rapid, efficient and uniform method of ensuring the structural integrity of bridges after an event that potentially compromises a structure's integrity. The plan includes:

- Safety plan and equipment checklists
- Communication plan
- Personnel roles and responsibilities
- Training
- Route prioritization plan for bridge inspections
- Basic inspection procedures
- Emergency field inspection report

1.1.7 Bridge Maintenance

Chapter 6 discusses the Bridge Management Division's coordination with the Region maintenance stations to assist with routine bridge maintenance. The chapter discusses the:

- Communication of maintenance recommendations from the Bridge Management System (BMS) to the maintenance stations (e.g., Structures Inspection Recommendations Report)
- Typical bridge maintenance activities
- Maintenance training

1.1.8 Local Government Coordination

The UDOT Local Government Engineer coordinates all federally funded local government projects. The UDOT Local Government Engineer coordinates with the Bridge Management Division for bridge related projects. The Bridge Management Division coordinates with local governments for bridge inspection and maintenance issues.

Chapter 7 discusses the local government's responsibilities throughout the life of the bridge. The chapter discusses the interaction between the Bridge Management Division and the local government on several issues, including:

- Bridge inspections
- Load ratings
- Emergency response
- Maintenance

1.2 DEFINITIONS AND ACRONYMS

1.2.1 Definitions

1. Anchored Walls (Soil Nails or Rock Anchors). Retaining walls consisting of horizontal soil reinforcing elements drilled into an existing fill to stabilize the soil and connected to a facing material to retain the soil. Anchored walls are typically constructed from the top down.
2. Bridge. A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having a bridge length of more than 20 ft.
3. Bridge File. Electronic directory of all bridge records located on an independent server. Informally known as the bridge inventory.
4. Bridge Folder. A tangible folder containing hard copies of inspection reports, plan sets, sketches and other pertinent bridge information.
5. Bridge Health Index. A measure to describe the overall structural condition of each bridge; used as a tracking and planning tool.
6. Bridge Length. The measurement taken at the centerline of the roadway between front faces of abutments, spring lines of arches, or extreme ends of openings for multiple boxes; bridge length can also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.
7. Bridge Load Rating Model. Software used to model the load rating analysis and calculations to comply with NBIS requirements and UDOT requirements in Chapter 4. Also informally referred to as a bridge model or a BrR model.
8. Bridge Load Rating Program. Program required by the NBIS for a state's inventory of bridges to load rate all bridges; to meet NBIS requirements for a state DOT organization; and to meet NBIS requirements for the qualifications of load rating personnel.
9. Bridge Management Software. Interface for database of bridge inventory and condition data specifically used in the BMS. Does not contain plans, etc.
10. Bridge Management System. A collection of tools consisting of comprehensive bridge data, deterioration models, costs (agency and user), software and other tools, designed to provide decision support in optimizing the use of available resources for the inspection, maintenance, rehabilitation and replacement of bridges.

11. Bridge Record. Electronic file of all bridge documents for a single bridge.
12. Bridge Preservation. Actions or strategies that prevent, delay or reduce deterioration of bridges or bridge elements, restore the function of existing bridges, keep bridges in good condition and extend their life. Preservation actions can be preventive or condition driven.
13. Bridge Rehabilitation. Work required to restore the structural integrity or correct safety deficiencies.
14. Bridge Replacement. Total replacement of a bridge with a new facility constructed in the same general traffic corridor. The replacement structure must meet the current geometric, material and structural standards required for the types and volume of projected traffic on the facility over the design life.
15. Clearance Sign. A sign either attached to the structure or on the roadway before the structure warning vehicles of the allowable vertical clearance under the structure.
16. Condition Rating. An overall assessment of the physical condition of the deck, the superstructure and the substructure of a bridge or culvert. General condition (NBI) ratings range from 0 (failed condition) to 9 (excellent condition).
17. Construction Load Ratings. Special request load rating for local construction loads.
18. Criticality Score. Reflects the overall numerical value of the importance of the bridge based on a summation of the individual scores of each importance factor.
19. Culvert. A structure that is designed to convey water and provide a path under an obstruction. Most culverts have a structural floor and are covered with embankment material. However, buried three sided structures, arches, pipes, boxes, etc., are also culverts if the structures are designed to convey water. If the structure is designed to convey water and has a structural floor, but is not covered with embankment material, the structure is still a culvert. The Structures Division assigns a structure number to all culverts requiring design plans; which typically applies to any box culvert with a span or rise greater than 12 ft.
20. Deck. The riding surface of the bridge.
21. Federal Aid Highway. Highways on the Federal Aid Highway System (the National Highway System and the Dwight D. Eisenhower National System of Interstate and Defense Highways) and all other public roads not classified as local roads or rural minor collectors.
22. Fracture Critical Bridge. A bridge containing a fracture critical member. A bridge that does not contain redundant supporting elements.
23. Fracture Critical Member. A steel member in tension, or with a tension element, whose failure would likely result in a total or partial bridge collapse.

24. Functionally Obsolete. A bridge that was built to standards that do not meet the minimum federal functional requirements for a new bridge. The bridges are not necessarily rated as structurally deficient nor are they inherently unsafe. Functionally obsolete bridges include those that have substandard geometric features such as narrow lanes, narrow shoulders, poor approach alignment or inadequate vertical clearance.
25. Importance Factors (AADT, Significance and Bridge Length). Measure the functional and operational significance of the bridge for a specific area of need. Factors are scored based on the perspective of the consequences incurred if the bridge is out of service.
26. Inventory Level Rating (LRFR). Generally corresponds to the rating at the design level of reliability for new bridges in the AASHTO *LRFD Bridge Design Specifications*, but reflects the existing bridge and material conditions with regard to deterioration and loss of section.
27. Inventory Rating (LFR). Load ratings based on the inventory level allow comparisons with the capacity for new structures and, therefore, results in a live load that can safely utilize an existing structure for an indefinite period of time.
28. Legal Level Rating (LRFR). This second level rating provides a single safe load capacity (for a given truck configuration) applicable to AASHTO and state legal loads. Live load factors are selected based on the truck traffic conditions at the site. Strength is the primary limit state for load rating; service limit states are selectively applied. Use the results of the load rating for legal loads as a basis for decision making related to load posting or bridge strengthening.
29. Load Limit Posting Sign. A sign indicating a weight limit that the structure is capable to carry.
30. Load Posting. The necessary regulatory action to provide restrictive signing in advance of a bridge when the maximum legal load under state law exceeds the safe load carrying capacity of a structure.
31. Load Rating. The determination of the live load carrying capacity of a bridge. Bridges are rated at two different stress levels referred to as Inventory Rating and Operating Rating.
32. Load Testing. The observation and measurement of the response of a bridge subjected to controlled and predetermined loadings without causing changes in the elastic response of the structure.
33. LRFD Specifications. The national standard for bridge design. Establish minimum requirements consistent with current nationwide practices that apply to common highway bridges and other structures such as retaining walls and culverts; long span structures can require additional design provisions. Present a load and resistance factor design methodology for structural design.

34. MSE Wall. Retaining walls consisting of horizontal soil reinforcing elements connected to a facing material to retain the soil. MSE walls are constructed from the bottom up; see Figure 7.4.
35. National Highway Performance Program. A federal aid transportation program to provide support for the condition and performance of the NHS, provide support for the construction of new facilities on the NHS and ensure that the investments of federal aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a state's asset management plan for the NHS.
36. National Highway System. Consists of roadways important to the nation's economy, defense and mobility. The NHS includes the following subsystem of roadways — interstate, other principal arterials, strategic highway network, major strategic highway network connectors and intermodal connectors.
37. Operating Level Rating. Maximum load level to which a structure may be subjected. Generally corresponds to the rating at the operating level of reliability in past load rating practice.
38. Operating Rating. Load ratings based on the operating level generally describe the maximum permissible live load to which the structure may be subjected. Allowing unlimited numbers of vehicles to use the bridge at operating level may shorten the life of the bridge.
39. Permit Level Rating. Permit load rating checks the safety and serviceability of bridges in the review of permit applications for the passage of vehicles above the legally established weight limitations.
40. Project Site. Within the context of the load rating program for existing bridges, the location within the bridge record to which the results of the bridge load ratings, reports and comments are posted.
41. Roadway Undercrossing. A grade separation where the subject road passes under an intersecting road or railroad. Also referred to as an underpass. Also a structure meeting the definition of a culvert except it is not designed to convey water. These are commonly used for pedestrian access under a roadway.
42. Scour. Erosion of streambed or bank material due to flowing water; often considered as being localized around bents and abutments of bridges.
43. Scour Critical. A bridge with a foundation element that has been determined to be unstable for the observed or evaluated scour conditions.
44. State Highway. A public road owned by a state agency.
45. Structurally Deficient. Bridges that have a general condition (or NBI) rating for the deck, superstructure, substructure or culvert as 4 or less, has insufficient load carrying capacity or if the roadway approaches regularly overtop due to flooding.

46. Substructure. The system of elements that support the superstructure. The substructure transfers the loads to the earth and retains material behind the supports. Substructure elements include abutments, bents, footings, piles, wingwalls, backwalls, etc.
47. Sufficiency Rating. The method of evaluating highway bridge data by calculating four separate factors to obtain a numeric value that is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which 100% represents an entirely sufficient bridge and 0% represents an entirely deficient bridge.
48. Superstructure. The system of elements that spans the feature being crossed. The superstructure rests on the substructure. The superstructure includes the deck, parapets and girders or other support elements (e.g., trusses, arches, box girders).
49. Surface Transportation Program. A federal aid transportation program to provide flexible funding that can be used by the states and localities for projects to preserve and improve the condition and performance on any federal aid highway, bridge or tunnel project on any road, pedestrian or bicycle infrastructure or transit capital projects, including intercity bus terminals.
50. Tunnel. An enclosed roadway with vehicle access that is restricted to portals regardless of type of structure or the method of tunnel construction
51. Vulnerability Score. Measures the overall risk of a structure based on the physical condition of the structure.

1.2.2 Acronyms

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ABC	Accelerated Bridge Construction
ABET	Accreditation Board for Engineering and Technology
ADCI	Association of Diving Contractors International
ADTT	Average Daily Truck Traffic
AFB	Air Force Base
AMS	Asset Management System
ASD	Allowable Stress Design
ATMS	Advanced Transportation Management System
BHI	Bridge Health Index
BLM	Bureau of Land Management
BMM	Bridge Management Manual
BMS	Bridge Management System
BMT	Bridge Management Team
BrR	AASHTO Bridge Rating
CDL	Commercial Driver's License
CID	Charge Identification Number
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
CPR	Collaborative Peer Review

DOT	Department of Transportation
dTIMS	Deighton Total Infrastructure Management System
DW	Dead Weight
EIT	Engineer in Training
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EOR	Engineer of Record
ePM	Electronic Program Management
ERMG	Emergency Response Management Group
FCM	Fracture Critical Member
FEM	Finite Element Method
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FO	Functionally Obsolete
FTA	Federal Transit Administration
FY	Fiscal Year
GASB	Government Accounting Standards Board
IM	Dynamic Load Allowance
LFD	Load Factor Design
LFR	Load Factor Rating
LR	Operating Load Rating
LRFD	Load and Resistance Factor Design
LRFR	Load and Resistance Factor Rating
LRS	Operating Load Rating Score
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBE	<i>AASHTO Manual for Bridge Evaluation</i>
MPO	Metropolitan Planning Organization
MSE	Mechanically Stabilized Earth
MUTCD	Manual on Uniform Traffic Control Devices
NBI	National Bridge Inventory
NBIS	National Bridge Inspection Standards
NCEES	National Council of Examiners for Engineering and Surveying
NDT	Nondestructive Testing
NICET	National Institute for Certification in Engineering Technologies
NHI	National Highway Institute
NHPP	National Highway Performance Program
NHS	National Highway System
OMS	Operational Management System
OSC	Operations Section Chief
OSHA	Occupational Safety and Health Administration
PE	Professional Engineer
PIN	Project Identification Number
POA	Plan of Action
POI	Point of Interest
PMT	Pavement Management Team
PS&E	Plans, Specifications and Estimate
QC	Quality Control
QA	Quality Assurance
QC/QA	Quality Control / Quality Assurance
RFQ	Request for Qualifications

S&E	Scope and Estimate
SD	Structurally Deficient
SDDM	<i>Structures Design and Detailing Manual</i>
SHV	Specialized Hauling Vehicle
SI	International System of Units (Metric)
SI&A	Structure Inventory and Appraisal
SPMT	Self Propelled Modular Transporter
SR	Sufficiency Rating
STIP	Statewide Transportation Improvement Program
STP	Surface Transportation Program
STRAHNET	Strategic Highway Network
TEP	Transportation Education Program
TOC	Traffic Operations Center
TRANSMAT	Transportation Asset Management Team
UBIC	Under Bridge Inspection Crane
UDOT	Utah Department of Transportation
UHP	Utah Highway Patrol
UPRR	Union Pacific Railroad
USGS	United States Geological Survey

