

600 Investigation of Soils, Rock, and Surfacing Materials

600.1 General

This chapter explains the New Mexico Department of Transportation's (NMDOT's) procedures for geotechnical investigations pertaining to structures. The NMDOT's procedure for surfacing, subgrade evaluation, and pavement design is provided in Chapter 620 of the Design Manual.

The geotechnical investigation consists of the field exploration phase of a project in assisting with the development of the Preliminary and Final Geotechnical and Foundation Reports outlined in Chapter 610 of the Design Manual.

600.2 References

- American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, AASHTO, current edition - NMDOT uses the current edition of the AASHTO LRFD Bridge Design Specifications and the current interim editions as the primary standards for bridge design New Mexico.
- NMDOT Geotechnical Manual - Requirements and Guidelines for Highway Structure Foundation Investigation and Subsurface Exploration, 1990 – This document includes the NMDOT's requirements and guidelines for highway structure foundation investigation and subsurface exploration. This manual is outdated and the NMDOT is currently in the process of updating the manual. Until the NMDOT Geotechnical

Manual has been updated, geotechnical work conducted on behalf of the NMDOT should use the current edition of the AASHTO LRFD Bridge Design Specifications for investigations.

Chapter 620 of the Design Manual includes reference information for pavement design.

600.3 Geotechnical Investigation Procedure

NMDOT's procedure for geotechnical investigations for structures includes the following steps:

1. Reviewing the field geologic map to prepare the geotechnical and geophysical exploration plan.
2. Acquiring all applicable access permits, environmental permits, traffic control plan (where required), and utility locates.
3. Locating and drilling soil borings or performing rock coring operations to determine the geologic lithology and characterize subsurface soil, bedrock, and/or groundwater conditions.
4. Surveying boring locations for horizontal and vertical control. Borings should be surveyed by the NMDOT or the consultant's project surveyor.
5. Performing field soil and/or rock testing and/or geophysical activities to assess bedrock and potential excavation difficulties.
6. Backfilling soil borings when they are completed with soil spoils and patching them with quick pavement repair (where required). Grout or lean fill backfill may be required in existing waterways or where settlement needs to be minimized.
7. Collecting soil and/or rock samples and submitting them to the NMDOT Geotechnical Materials Lab.

600.4 Permits and Traffic Control

Access permits, traffic control (if applicable), environmental permits, and utility locates are required prior to the start of any field exploration program. Access and environmental permits should be acquired through the appropriate District office prior to entrance and/or work on the project site. Traffic control plans should be prepared in accordance with the current edition of the

Manual on Uniform Traffic Control Devices (MUTCD). New Mexico One Call shall be contacted a minimum of 48 hours prior to the scheduled borings and/or excavations to ensure that all utilities have been located and properly marked. Once the required permits, traffic control, and utility locates have been approved and completed, field work can begin.

600.5 Foundation Exploration Program

The field exploration program should be performed in accordance the AASHTO LRFD Bridge Design Specifications, current edition, and the NMDOT Geotechnical Manual.

600.6 Subsurface Exploration Methods

The subsurface exploration methods should be performed in accordance the AASHTO LRFD Bridge Design Specifications, current edition, and the NMDOT Geotechnical Manual.

600.7 Subsurface Exploration Requirements

The subsurface exploration requirements should be performed in accordance the AASHTO LRFD Bridge Design Specifications, current edition, and the NMDOT Geotechnical Manual.

600.8 Laboratory Testing

The laboratory testing should be performed in accordance with the most current AASHTO and/or American Society for Testing and Materials standards.

600.9 Structure Foundation Recommendations

The structure foundation recommendations should be performed in accordance the AASHTO LRFD Bridge Design Specifications, current edition, and the NMDOT Geotechnical Manual.

600.10 Documentation

The following documentation or permits may be required as discussed in Section 600.4 to conduct geotechnical investigations:

- Access permits
- Traffic control plans
- Environmental permits
- Utility locates