

INTRODUCTION



OVERVIEW

ABOUT THIS MANUAL

The purpose of this document is to provide general guidance and standards for surveying, including data setup, preliminary field work, construction staking and documentation of survey information for various NDOT projects. It is to also serve as a guide for local public agencies, service providers and others, both within and outside of NDOT, who are responsible for project survey.

This manual is divided into the following chapters:

1. Introduction
2. Analysis of Contract Plans
3. Data Setup
4. Preliminary Fieldwork
5. Robotic Total Station
6. Global Positioning System (GPS)
7. Construction Stakeout
8. Equipment

This manual should be easily read and understood by anyone with a fundamental understanding of NDOT's construction process. In conjunction with related documentation and supplemental training, this manual will serve as a framework for administering NDOT contracts.

The *Construction Survey Manual* does not address every phase, process or event throughout the surveying process in detail, nor will it replace good engineering judgment. References to documents and/or related resources are provided throughout this manual where necessary or applicable.

CONVENTIONS USED IN THIS MANUAL

References in this manual include the following:

- "The Department": the Nevada Department of Transportation (NDOT).
- "Project": The lifecycle of an NDOT project up until it is advertised.
- "Contract": The lifecycle of an NDOT project upon advertisement.
- "Total Station": Refers to any of the robotic systems used for the purposes of construction survey (e.g. Trimble, Leica, Topcon, Sokia)
- "Data Collector": refers to the field data collection and storage device (e.g., Trimble TSCe, TSCxxx, Leica CS15 etc.).
- "Standard Specifications": NDOT's [Standard Specifications for Road and Bridge Construction](#). (This includes "Special Provisions", unless otherwise stated.)
- "Standard Plans": NDOT's [Standard Plans for Road and Bridge Construction](#).
- "Project plans": Plans, as defined in Subsection 101.03, "(Terms and Conditions) Definitions", of the Standard Specifications, specific to the contract/project.

- "Special Provisions": Specifications specific to the contract/project.
- "Contract documents": All documents identified under "Contract" in Subsection 101.03, "(Terms and Conditions) Definitions", of the Standard Specifications.

The order of precedence of contract documents is:

1. Supplemental Notices
2. Special Provisions
3. Contract Plans
4. Standard Specifications
5. Standard Plans

When discrepancies and/or contradictions exist within the above referenced documents occur, always follow the order of precedence to determine the governing documents. Guidelines when working with Standard Specifications, Standard Plans, Project Plans and/or Special Provisions include:

- Always verify changes to the Standard Plans and Standard Specifications by referencing the Special Provisions, Project Plans and Supplemental Notices.
- Changes to Standard Specifications in between published editions are made as Pull Sheets. When a Pull Sheet is implemented, it is included in a project's Special Provisions. (This incorporation of change in contract documents is a reason why Special Provisions take precedence over Standard Specifications.)
- Changes to Standard Plans are made as Special Details. When Special Details are implemented, they will be included in the Project Plans. (This incorporation of change in contract documents is a reason why Project Plans take precedence over Standard Plans.)
- Changes to contract documents after a project is advertised but before the bid is opened are provided in a Supplemental Notice.

UPDATES, REVISIONS TO THIS MANUAL

The Construction Division is responsible for maintaining an updated *Construction Survey Manual*. The Construction Division will revise and/or issue updates as needed. Users can request a revision to the guide in writing to the Construction Division at ndotconstruction@dot.nv.gov. The Construction Division will review the request and take appropriate action. Between revisions/updates, the Construction Division may issue interim Construction Division policy memorandums that would be incorporated into the next revision.

DISTRIBUTION OF THIS MANUAL

The latest approved version of the *Construction Survey Manual* is posted on the NDOT Internet site [<https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/operations/construction/construction-survey-manual>].