



Public Works Manual

Revised September 2015



Traffic Control & Testing

later if necessary, or may be broken at 28 days for confirmation of the other cylinder breaks.

11.00 HOT BITUMINOUS PAVEMENT TESTING

11.01 SCOPE

The work shall consist of constructing one or more courses of bituminous pavement on a prepared base in accordance with these specifications, and in reasonably close conformity with the lines, grades, thicknesses and typical cross-sections shown on the plans or established.

11.02 REFERENCE SPECIFICATIONS

The Standard Specifications of the Colorado Department of Highways (current edition) are herein included by reference and the section and subsection numbers listed herein refer to that document.

11.03 MATERIALS

The materials shall conform to the requirements of subsections 401.02 through 401.06. A tack coat of emulsified asphalt Grade CSS-1H conforming to the requirements of section 702 shall be applied to all existing paved surfaces including edges and joints at all stations where a bituminous overlay or edge addition is required. Additionally, a tack coat shall be applied to the face of any concrete, curb, gutter or sidewalk to which it will abut.

A job mix formula shall be established and submitted to the Town of Gypsum for approval. The job mix shall be based on Grade C or C Modified mixes and conforms to the requirements of sections 702 and 703. Asphalt shall be grade AC-10.

11.04 CONSTRUCTION

The placement of hot bituminous pavement shall not commence until reports have been submitted by the Geotechnical Engineer to the Town of Gypsum, which state and illustrate that the subgrade preparation and the base course aggregate installation meet specifications. The construction requirements shall be as prescribed in subsections 401.07 through 401.20. The tack coat shall be installed in conformance with the requirements of section 407. After the bituminous mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. Rolling shall be continued until all roller marks are eliminated and a density of 92% to 96% of the maximum theoretical density according to AASHTO T 209 is achieved.

12.00 TRAFFIC REGULATION

12.01 SCOPE

Whenever construction activities are on, adjacent to a traffic way, or in any way impact traffic, these specifications shall apply.

Traffic Regulation in the construction area shall conform to "Manual on Uniform Traffic Control Devices" (MUTCD), U.S. Department of Transportation, or applicable statutory requirements of Government authority having jurisdiction in the construction area.

- a. Unless otherwise authorized, at least one lane of traffic shall be kept open at all times.
- b. When work is not in progress all traffic lanes shall be kept open.
- c. All traffic lanes shall be open during hours of darkness, weekends, and holidays.

Operations on or about traffic areas and provisions for regulating traffic will be subject to the regulation of governmental agencies having jurisdiction over the affected areas.

Traffic areas shall be kept free of excavated material, construction equipment, pipe, and other materials and equipment.

12.02 FLAG PERSON (S)

The contractor shall provide for public safety and the regulation of traffic, by the use of qualified and properly equipped flag persons.

12.03 WARNING SIGNS AND LIGHTS

The Contractor shall:

- a. Protect all roadways by effective barricades on which are placed warning signs.
- b. Provide barricades and warning signs for open trenches, other excavations and obstructions.
- c. Illuminate by means of warning lights all barricades and obstructions from sunset to sunrise.

13.00 TESTING AND INSPECTION

13.01 SCOPE

The work shall consist of providing for independent testing of soils compaction, aggregate compaction, concrete strength and welding, when, as a part of the work of the contract, soils and/or aggregate materials are placed and compacted, concrete is placed or welding is accomplished. Additionally, the work includes providing notice to the Town of Gypsum of the work schedule of the CONTRACTOR. The CONTRACTOR shall be responsible for calling for and the DEVELOPER shall be responsible for paying for all testing and inspection necessary in the course of the work, to illustrate that the specifications and design criteria are being met.

13.02 COMPACTION TESTING

The compaction testing shall be accomplished by an approved geotechnical engineering firm. The number of tests performed shall conform to normal industry and ASTM standards and shall be sufficient for the geotechnical engineering firm to confirm that the quality of the work meets the contract specifications. Copies of the test results shall be promptly supplied to the Town of

Gypsum by the testing firm. The field representative of the geotechnical engineering firm shall immediately (within 2 hours) notify the town's construction inspector for the project of failed tests or any tests which do not comply with either the Town of Gypsum Construction Specifications or the design or construction specifications for the project. If the Town of Gypsum has reason to suspect that the tests performed do not sufficiently confirm the quality of the work accomplished, the Town of Gypsum may require that the DEVELOPER provide and pay for additional tests.

13.03 CONCRETE TESTING

The concrete sampling and testing shall be accomplished by an approved materials testing engineering firm. The number of tests performed shall conform to normal industry and ASTM standards or called for in the PORTLAND CEMENT CONCRETE specifications, whichever is greater, and shall be sufficient for the materials testing engineering firm to confirm that the quality of the work meets the contract specifications and may require work to stop until such documentation is provided. Copies of the test results shall be promptly supplied to the Town of Gypsum by the testing firm. **If the Town of Gypsum has reason to suspect that the tests performed do not sufficiently confirm the quality of the work accomplished, the Town of Gypsum may require that the CONTRACTOR provide and pay for additional tests.**

13.04 WELDING INSPECTION AND TESTING

The special inspection and testing of welds shall be accomplished by an approved materials testing engineering firm. The number of tests and type of tests performed shall conform to normal industry and ASTM standards and shall be sufficient for the materials testing engineering firm to confirm that the quality of the work meets the contract specifications. Copies of the test results shall be supplied to the Town of Gypsum by the testing firm. If the Town of Gypsum has reason to suspect that the tests performed do not sufficiently confirm the quality of the work accomplished, the Town of Gypsum may require that the CONTRACTOR provide and pay for additional tests.

13.05 NOTIFICATION of the TOWN OF GYPSUM by the CONTRACTOR of WORK SCHEDULE

The CONTRACTOR shall notify the Town of Gypsum CONSTRUCTION INSPECTORS of the proposed schedule of work. When the work is intermittent, the CONTRACTOR shall give notice to the Town of Gypsum CONSTRUCTION INSPECTORS, 48 hours in advance of proceeding with a portion of the work. The notice shall advise the Town of Gypsum CONSTRUCTION INSPECTORS of the nature of the work and the time that the work is proposed to start. If, after proper notification, the Town of Gypsum CONSTRUCTION INSPECTORS are not represented at the work site at the appointed time, the CONTRACTOR may proceed with the work after placing a call to the office of the Town of Gypsum CONSTRUCTION INSPECTORS. If the CONTRACTOR fails to attend the work at the appointed time, after notifying the Town of Gypsum CONSTRUCTION INSPECTORS of their intention to do work, or if the CONTRACTOR fails to notify the Town of Gypsum CONSTRUCTION INSPECTORS of his intention NOT to show up on the job site to conduct work when he would normally be expected to do so, the CONTRACTOR shall be responsible for the cost of the time of the representative(s) of the Town of Gypsum in waiting for the CONTRACTOR to show up on the job. This time shall include travel time to and from the office of the Town of Gypsum CONSTRUCTION INSPECTORS to the site of

the work. The developer for whom the CONTRACTOR is working shall be billed for the time of the Town of Gypsum CONSTRUCTION INSPECTORS at the regular hourly billing rates of the Town of Gypsum CONSTRUCTION INSPECTORS. All references to the CONTRACTOR shall be considered to include all SUB-CONTRACTORS to the CONTRACTOR.

13.06 STOPPAGE OF WORK

It is the sole discretion of the Town of Gypsum inspector to stop work due to unsuitable condition that may negatively affect the quality of work.

13.07 SEWER INSPECTION/VIDEO

In order to facilitate the review of the sewer video, the interior of all sewer service wyes' shall be labeled with service address or lot number per the approved construction plans. In addition, the interior of all sewer manholes shall be labeled per the approved construction plans. The labels shall be located and sized so that they can be readily seen by the pipe camera.

14.00 RECORD DRAWINGS

14.01 SCOPE

It is required that the developer provide a set of as-built survey plans and details of all infrastructure constructed that shall be prepared and certified by a Land Surveyor registered in the State of Colorado and tied to permanent survey monuments on or near the project. The details shall be prepared and certified by a Professional Engineer registered in the State of Colorado. The plans and details shall be submitted to the Town of Gypsum prior to the Town accepting the infrastructure for maintenance and ownership dedication. The as-built survey and details shall provide the location of all utilities including water, sewer, sub-surface under drain, gas, electric, phone, cable-TV, irrigation lines; and storm sewer.

The purpose of these drawings is to provide information for the preparation of "as-built" drawings of the project.

The as-built drawing shall be based on the Town of Gypsum coordinate system and control network. The accuracy of as-built location data shall be as follows:

Sewer inverts, vertical = +/- 0.02 feet

All other infrastructure features, vertical = +/- 0.10 feet

All infrastructure features, horizontal = +/- 0.10 feet

14.02 RECORDING DURING CONSTRUCTION

- a. Each drawing shall be labeled "DRAWING OF RECORD" in neat large printed letters.
- b. Information shall be recorded concurrently with construction progress. Work shall not be covered until required information is recorded.

This drawing shall illustrate the infrastructure system, complete with dimensions and "swing ties" to service line ends and other subsurface features as required. Drawings shall be marked to record actual construction. Following is a list of all information required to be located for each infrastructure system:

Water System: Horizontal locations of the following: Water Main Pipelines; Bends; Tees; Crosses; Gate Valves; Air-vac Valves; Pressure Reducing Valves; Pump Stations; Water Service Lines (Appendix B-14.02; Water Services Taps; and Water Service Curb Stops. Details of all water system components listed above which provides a description, pipe diameter, material classification, manufacturer, part number, and supplier as applicable for all individual parts and components.

Sewer System: Horizontal and vertical locations of the following: Sewer Main Pipeline; Sewer Manholes; Sewer Service Connections; Sewer Service Pipelines, and Sewer Service Cleanouts. Details of each sewer manhole that provide the location and elevation of all inverts in and out, and rim elevation. Details of all sewer system components listed above which provides a description, pipe diameter, material classification as applicable for all individual parts and components.

Sub-surface Under drain System: Horizontal and vertical locations of the following: Under drain Pipeline; under drain Manholes; and under drain Cleanouts. Details of each under drain manhole that provide the location and elevation of all inverts in and out, and rim elevation. Details of all under drain system components listed above which provides a description, pipe diameter, material classification, as applicable for all individual parts and components.

Natural Gas System: Horizontal locations of the following: Natural Gas Pipeline; pressure reducing stations; pigging stations; main meters; and Natural Gas Service Lines.

Electrical System: Horizontal locations of the following: Electrical Main Lines; Electrical Service Lines; splice vaults; and Electrical Transformers.

Telephone System: Horizontal locations of the following: Telephone Main Lines, Telephone Service Lines; and Telephone Risers.

Cable Television System: Horizontal locations of the following: Cable Television Main Lines, Cable Television Service Lines; and Cable Television Risers.

Irrigation System: Horizontal locations of the following: Irrigation Main Pipelines; Bends; Tees; Crosses; Gate Valves; Air-vac Valves; Pressure Reducing Valves; Pump Stations; Wells; Service Lines; Services Taps; Service Curb Stops; drain valves; and Sprinkler Heads.

Storm Sewer System: Horizontal and vertical locations of the following: Storm Sewer Main Pipeline; Manholes; Catch Basins; Curb Inlets; Scuppers; Valley Pans; Ditches; Culverts; Headwalls; Inlet Structures; Outlet Structures; Stilling Basins; Curb Openings; Trench Drains; and Detention Ponds. Details of each storm sewer manhole that provide the location and elevation of all inverts in and out, and rim elevation. Details of all storm sewer system components listed above which provides a description, pipe diameter as applicable for all individual parts and components.

Roadway System: Horizontal locations of the following: Edge of Pavement; Crown of Road; Grade Breaks in Paved Surface; Flowline of Curb; Top Back of Curb; and Edge of Sidewalks. Details of all roadway system components listed above and constructed cross sections for each different section of roadway, which shall provide descriptions of materials, depths of materials, material classification, manufacturer, and supplier as applicable for all roadway components.

When required by the Town of Gypsum, the as-built plans shall illustrate the horizontal and vertical location of all flood plain benchmark or monuments within the project boundary.

In instances where utilities cross over and under, elevations will be required on all.

14.03 SUBMISSION

At the completion of the work, the Contractor/Project Owner shall submit the as-built information to the Town of Gypsum with a transmittal letter.

Each drawing title block shall contain the following:

- a. Date.
- b. Project title and number.
- c. Contractor's name, address and telephone number.
- d. Title and number of each Record Document.
- e. Statements of certification with signatures and seals by engineer and surveyor.

All information requested two copies shall be provided, one for Public Works and one for Engineering and on disk in an AutoCAD Release 12 or higher DWG file. All entities on the AutoCAD file which represent separate infrastructure components shall be placed on readily identifiable layers such as: Sewer Manholes (layer: SMH); Water Line (layer: WTRLIN); etc. All text entities on the AutoCAD drawing shall also be placed on separate layers which represent the infrastructure system which they are describing for example: SEWERTXT; WATERTXT; UDRNTXT; etc. The AutoCAD file shall also include the survey point blocks compatible with Softdesk (node, point number, elevation, and description) for both the permanent survey monuments as well as all points surveyed for the improvements. The AutoCAD layers for these points and the AutoCAD blocks shall be submitted in the format provided on disk by the Town of Gypsum. This disk will be available, upon request, to project engineers and surveyors, from the office of the Town of Gypsum.

Hard copies (paper, mylar, etc.) shall be prepared to illustrate a single infrastructure system on a separate drawing. Other infrastructure features shall be illustrated on this drawing in a shaded gray scale, which clearly differentiates them from the primary system of the drawing.

The dedication exhibit drawings shall show street names, lot numbers, block numbers and the horizontal control coordinate system on a 500-foot grid and shall be drawn at a scale of 1 inch= 100 feet.