Colorado Department of Transportation

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David A. Stewart

Survey Unit

US 385 (M.P. 151.0 - 151.4)
LOCATED IN
SECTIONS 16 & 17, 20 & 21, T.14 S., R. 44 W., 6TH P.M.,
THE TOWN OF CHEYENNE WELLS, CHEYENNE COUNTY, COLORADO.

Land Survey Control Diagram

Title Sheet

Project Number: C R100-143

Project Location: US 385 (M.P. 151.0 - 151.4)

Project Location: CHEYENNE WELLS, CD

Project Code: Last Mod. Date Subset Sheet No. Plan Sheet No. 16619 01-08-09 3.01 of 3.04 3.01

DEPARTMENT OF TRANSPORTATION STATE OF COLORADO

CONSTRUCTION SURVEYING AND MONUMENTATION REQUIREMENTS

1. This Project Control Diagram represents the horizontal and vertical control for the project established by the Division. It is possible that some of the survey control monuments listed have been disturbed or obliterated. It is the Contractor's responsibility to verify the existence and stability of the control monuments before submitting a bid price and or using these for any CDOT

2. All Type 1 and Type 2 monuments shall be set flush with the ground. Witness posts shall be installed 1 foot from and facing all Type 1 and Type 2 monuments, or as directed by the Project Engineer.

Installation of Type 2A and 3A monuments shall be completed in the same day that installation is commenced. Under no circumstances shall holes in the roadway be left open overnight.

4. When installing Type 2A or 3A monuments, the aluminum monument box shall be positively secured in the roadway surface. The monument box shall be caulked with asphalt caulking between the monument box and the edges of the roadway surface to provide a positive moisture barrier around the monument box.

5. Control survey procedures, statistical analysis, and accuracy obtained for horizontal and vertical control shall be documented in the field book.6. Legible copies of the field books shall be submitted to the Project Engineer

for review on a monthly basis.

7. It is ultimately the prime contractor's responsibilty to insure that these requirements, as well as any contained in the CDOT specifications, project special provisions, and CDOT Survey Manual are fulfilled under the contract

8.The minimum staking intervals for each item are described on the plans or in the CDDT Survey Manual. If the contractor wishes to reduce the minimum intervals, a Contract Modification Order must be negotiated and the cost of the item reduced accordinally.

9. Whenever the contract includes the setting of CDOT Primary control monuments, a Project Control Diagram, signed and sealed by the P.L.S. in responsible charge, shall be submitted to the Project Engineer. A Microstation drawing file on CD shall accompany the hard copy.

MONUMENTATION NOTES:

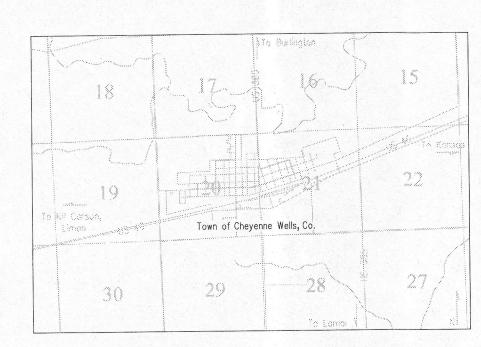
1. All Type 2 monuments have been set flush with the ground with witness posts installed within three feet from and facing all the monuments.

2. One Type 5 monument has been set flush with the top of curb at M.P. 151.0.3. Each monument has been set in accordance with the CDDT Survey Manual.



CP - Control Point Monuments set by CDDT. All Control Point Monuments unless otherwise noted are CDDT Type 2 monuments, which consist of a 3-1/4" dia. aluminum control monument cap (as shown) on a 3' $\times 3/4$ " dia. finned aluminum security rod and 3' $\times 3/4$ " dia. smooth aluminum rod assembly.

LAND SURVEY CONTROL DIAGRAM



Vicinity Map (Not To Scale) BASIS OF BEARINGS:

Bearings used in the calculation of coordinates are based on a grid bearing of N 01° 08' 53" W from CDDT US 385 control point CM-MP 151.1 (a CDDT Type II monument) to CDDT US 385 control point CM-MP 151.3 (a CDDT Type II monument) as obtained from a Global Positioning System (GPS) Survey based on the Colorado High Accuracy Network (CHARN). Said grid bearing is NAD '83 (1992) Colorado State Plane (Central Zone).

BASIS OF ELEVATIONS:

Project elevations are based on the First Order Class II NGS Bench Mark E 12 (PID JJ0003) a 3-1/2" brass disk set on the face of the south wall at the southeast corner of the Cheyenne County Courthouse, published with a NAVD88 Height of 4297.58'. Control Point elevations on this project were established through differential leveling from said E 12. No orthometric corrections were applied to the differential leveling on this project. CODRDINATE DATUM:

Coordinates on this project are for the use of the CDDT for the construction of this project and are considered Project Coordinates only.

NOTES:

1. This control survey is for the use of the Colorado Department of Transportation personnel. The survey is not a complete Boundary Survey. Title Policy, Title Commitment, and Title Research were not part of this control survey, therefore, easements, rights, rights of way, property boundaries, and restrictions, as described in the instruments of record, were not included in this control survey.

2. No guarantee as to the accuracy of the information contained on the attached drawing is either stated or implied unless this copy bears an original signature of the professional land surveyor hereon named.

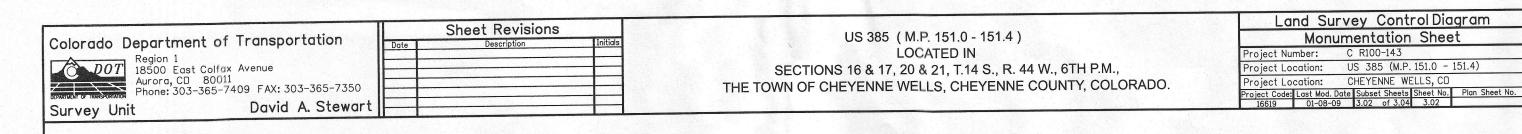
3. Refer to M-629-1 Survey Monuments of the Standard Plans, Colorado Department of Transportation's most current M & S Standards for the survey monument descriptions. Refer to M-100-1 Standard Symbols of the Standard Plans, Colorado Department of Transportation's most current M & S Standards for standard symbol definitions.

According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

SURVEYOR'S STATEMENT (Land Survey Control Diagram):

I, Jack R. Sparks, a Professional Land Surveyor, liscenced in the State of Colorado, do hereby state to the Colorado Department of Transportation this Land Survey Control Diagram was prepared and the field survey it represents was performed under my responsible charge and, based upon my knowledge, information and belief is in accordance with applicable standards of practice defined by the Colorado Department of Transportation publications. This statement is not a guaranty or warranty, either expressed or implied.

Jack R. Sparks, PLS No. 37961



PROJECT CONTROL MONUMENTATION

Geodetic Co	oordinate Summary Tal	ble - Adjusted Field Da	ta - Meters						
Geodetic Coo	ordinates NAD 83 (2007)	(CHARN)	NAD 83 (2007)	Zone 502					D - 1.11-
Point Name		Longitude	Northing (m)	Easting (m)	Ellip. Height (m)	Elev.(NAVD 88) (m)	Mapping Angle	Scale	Description
		102° 25' 32.33723" W		1181369.741	1318.395	1341.3	1º 56' 20.25931"	0.999948781	Ascalon NGS PID AB3995
ASCZ	38° 48' 34.25369" N		413659.989	1189647.611	1263.672	1286.6	1° 59' 52.85820"	0.999952429	Garcia NGS PID JJ0985
GARZ	38° 46' 14.69619" N	102° 19' 55.24763" W			1286.278	1309.122	1° 59' 11.36610"	0.999947661	CM-MP 151.0 CDOT Type 5
1510	38° 49' 20.98062" N	102° 21' 01.03610" W	419345.411	1187861.378				l	CM-MP 151.1 CDOT Type II
1511	38° 49' 24.91178" N	102° 21' 03.31522" W	419464.650	1187802.234	1282.430	1305.303	1° 59' 09.92868"	0.999947569	
	38° 49' 34.25170" N	102° 21' 03.14057" W	419752.620	1187796.463	1273.026	1295.884	1° 59' 10.03883"	0.999947352	CM-MP 151.3 CDOT Type II
1513			419983.640	1187770.006	1268.354	1291.199	1° 59' 09.55679"	0.999947179	CM-MP 151.4 CDOT Type II
1514	38° 49' 41.76905" N	102° 21' 03.90487" W	419903.040	1107770.000	1 1200.001				

Project Coordinate Summary Table - Adjusted Field Data - Modified State Plane							
Point Name	Northing (usft)	Easting (usft)	Elev.NAVD88(usft)	Description			
1510	1375802.07	3897175.26	4295.01	CM-MP 151.0 CDOT Type 5			
1511	1376193.37	3896981.17	4282.40	CM-MP 151.1 CDOT Type II			
1513	1377138.39	3896962.23	4251.53	CM-MP 151.3 CDOT Type II			
1514	1377896.52	3896875.41	4236.17	CM-MP 151.4 CDOT Type II			

PRDJECT COORDINATE PARAMETERS:

Geodetic Coordinates are based on NAD 83 (2007)

Project Elevations are based on NAVD 88

State Plane Coordinates are Colorado Central Zone (502)

Unit notations are: Metric (m), US Survey Feet (usft)

Conversion of Meters to US Survey Feet (3937/1200)

Project Coordinates are Modified State Plane Coordinates using a Computed Scale Factor from Project Location CM-MP 151.3 of 1.0002519887

National Geodetic Survey First Order Horizontal
Control Stations held fixed in the final fully constrained
least squares adjustment of the GPS data are as follows:

Designation: ASCALON
PID: AB3995
NAD 83 (2007) CHARN
Latitude 38° 48'34.25369" (N)
Longitude 102° 25'32.33723" (W)
Ellip. Height 1318.395 (meters)

Designation: GARCIA
PID: JJ0985
NAD 83 (2007) CHARN
Latitude 38° 46'14.69619" (N)
Longitude 102° 19'55.24763" (W)
Ellip. Height 1318.395 (meters)

CONVERSION FROM STATE PLANE COURDINATES TO PROJECT COURDINATES

State Plane Northing (m) - Project location Northing/Drigin (m)
x 1.0002519887 + Project Location Northing/Drigin (m)
x 3937/1200 = Project Coordinate Northing (USFT)/Modified State Plane

State Plane Easting (m) - Project location Easting/Drigin (m)
x 1.0002519887 + Project Location Easting/Drigin (m)
x 3937/1200 = Project Coordinate Easting (USFT)/Modified State Plane

FOUND ALIQUOT MOMUMENTATION

Point Name	Northing (usft)	Easting (usft)	Location		Description
5000	1377570.43		NE Corner, Section 20	T14S, R44W, 6PM	Fnd Spike in Roadway Surface
5001	1373605.41	3897091.20	S 1/16 Corner, Section 20 / 21	T14S, R44W, 6PM	Fnd - 2" Alum Cap on Rebar, 0.3' Below Surface
5002	1372286.63	3897142.48	SE Corner, Section 20	T14S, R44W, 6PM	Fnd 3-1/4" Brass Cap, 0.5' Below Surface
6592	1377682.06		N1/4 Corner, Section 21	T14S, R44W, 6PM	Fnd - 1" Pipe, 0.5' Below Surface

low Surface rface

