

Colorado Department of Transportation



Region 1  
18500 East Colfax Avenue  
Aurora, CO 80011  
Phone: 303-365-7409 FAX: 303-365-7350

Survey Unit

David A. Stewart

Sheet Revisions

Date	Description	Initials
01/26/09	Project Number Update	JRS

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 ControlDiagram

Title Sheet

Project Number:	STA R100-143			
Project Location:	US 385 (M.P. 151.0 - 151.4)			
Project Location:	CHEYENNE WELLS, CD			
Project Code:	Last Mod. Date	Subset Sheets	Sheet No.	Plan Sheet No.
16619	01-08-09	3.01 of 3.04	3.01	35

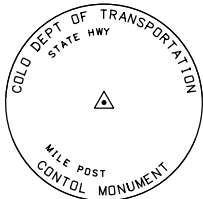
DEPARTMENT OF TRANSPORTATION  
STATE OF COLORADO  
LAND SURVEY CONTROL DIAGRAM

CONSTRUCTION SURVEYING AND MONUMENTATION REQUIREMENTS

1. This Project ControlDiagram represents the horizontaland verticalcontrol for the project established by the Division. It is possible that some of the survey controlmonuments 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 project.
2. All Type 1 and Type 2 monuments shallbe set flush with the ground. Witness posts shallbe installed 1 foot from and facing all Type 1 and Type 2 monuments, or as directed by the Project Engineer.
3. Installation of Type 2A and 3A monuments shallbe completed in the same day that installation is commenced. Under no circumstances shallholes 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 shallbe 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. Controlsurvey procedures, statistical analysis, and accuracy obtained for horizontaland verticalcontrolshallbe documented in the field book.
6. Legible copies of the field books shallbe 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 Manualare fulfilled under the contract for this project.
8. The minimum staking intervals for each item are described on the plans or in the CDOT 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 accordingly.
9. Whenever the contract includes the setting of CDOT Primary controlmonuments, a Project ControlDiagram, signed and sealed by the P.L.S. in responsible charge, shallbe submitted to the Project Engineer. A Microstation drawing file on CD shallaccompany the hard copy.

MONUMENTATION NOTES:

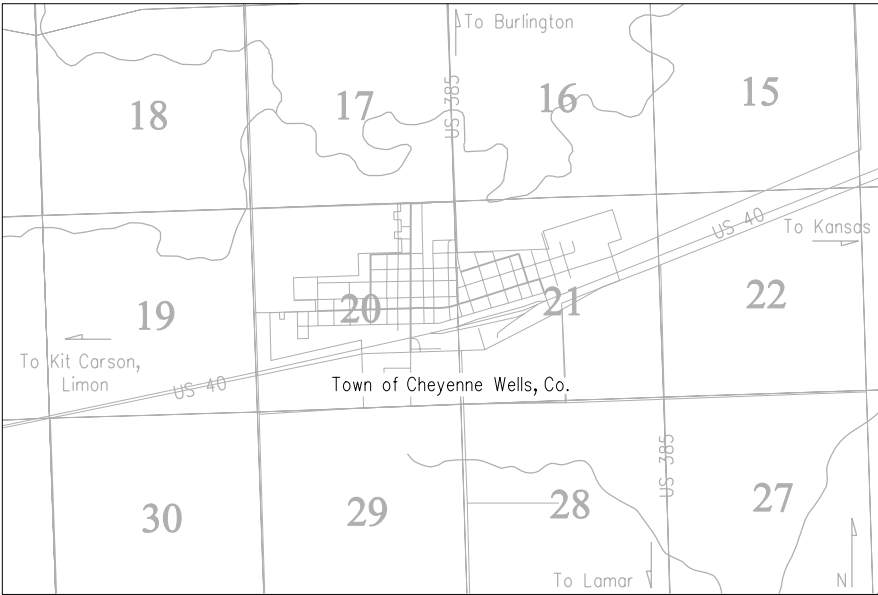
1. All Type 2 monuments have been set flush with the ground with witness posts installed within three feet from and facing all the monuments.
2. One Type 5 monument has been set flush with the top of curb at M.P. 151.0.
3. Each monument has been set in accordance with the CDOT Survey Manual.



Typical Control Monument Cap  
(Not To Scale)



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



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 CDOT US 385 controlpoint CM-MP 151.1 (a CDOT Type II monument) to CDOT US 385 controlpoint CM-MP 151.3 (a CDOT 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.

COORDINATE DATUM:

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

NOTES:

1. This controlsurvey 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 controlsurvey, therefore, easements, rights, rights of way, property boundaries, and restrictions, as described in the instruments of record, were not included in this controlsurvey.

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.

NOTICE:

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 ControlDiagram):

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 ControlDiagram 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

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THE TOWN OF CHEYENNE WELLS, CHEYENNE COUNTY, COLORADO.

Land Survey Control Diagram

Monumentation Sheet

Project Number:	STA R100-143			
Project Location:	US 385 (M.P. 151.0 - 151.4)			
Project Location:	CHEYENNE WELLS, CO			
Project Code:	Last Mod. Date	Subset Sheets	Sheet No.	Plan Sheet No.
16619	01-08-09	3.02 of 3.04	3.02	36

PROJECT CONTROL MONUMENTATION

Geodetic Coordinate Summary Table - Adjusted Field Data - Meters									
Geodetic Coordinates NAD 83 (2007) (CHARN)			NAD 83 (2007) Zone 502						
Point Name	Latitude	Longitude	Northing (m)	Easting (m)	Ellip. Height (m)	Elev.(NAVD 88) (m)	Mapping Angle	Scale	Description
ASCZ	38° 48' 34.25369" N	102° 25' 32.33723" W	417681.273	1181369.741	1318.395	1341.3	1° 56' 20.25931"	0.999948781	Ascalon NGS PID AB3995
GARZ	38° 46' 14.69619" N	102° 19' 55.24763" W	413659.989	1189647.611	1263.672	1286.6	1° 59' 52.85820"	0.999952429	Garcia NGS PID JJ0985
1510	38° 49' 20.98062" N	102° 21' 01.03610" W	419345.411	1187861.378	1286.278	1309.122	1° 59' 11.36610"	0.999947661	CM-MP 151.0 CDOT Type 5
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	CM-MP 151.1 CDOT Type II
1513	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
1514	38° 49' 41.76905" N	102° 21' 03.90487" W	419983.640	1187770.006	1268.354	1291.199	1° 59' 09.55679"	0.999947179	CM-MP 151.4 CDOT Type II

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

PROJECT 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

NOTE:

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 1263.672 (meters)
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CONVERSION FROM STATE PLANE COORDINATES TO PROJECT COORDINATES

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

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

FOUND ALIQUOT MOMUMENTATION

Found Aliquot Corner Coordinate Table				
Point Name	Northing (usft)	Easting (usft)	Location	Description
5000	1377570.43	3896935.29	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	3899580.34	N1/4 Corner, Section 21 T14S, R44W, 6PM	Fnd - 1" Pipe, 0.5' Below Surface

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16619	01-08-09	3.03 of 3.04	3.03	37	

SEC 16

SEC 21

1510

CM-MP 151.0  
(CDOT TYPE 5)  
N 1375802.065  
E 3897175.259  
EL 4295.01'

5000

NORTHING 1377570.43  
EASTING 3896935.29  
FOUND SPIKE IN ROADWAY  
NE CORNER, SECTION 20, T14S R44W, 6PM

1513

CM-MP 151.3  
N 1377138.389  
E 3896962.230  
EL 4251.53'

1511

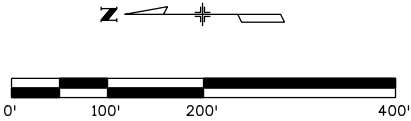
CM-MP 151.1  
N 1376193.369  
E 3896981.169  
EL 4282.40'

1514

CM-MP 151.4  
N 1377896.518  
E 3896875.406  
EL 4236.17'

SEC 17

SEC 20



LEGEND



INDICATES FOUND ALIQUOT CORNER



INDICATES SURVEY CONTROL POINT

Notes:

- 1) CDOT Type 5 monument is a 3-1/4" aluminum cap (per M & S standard, 07/06)
- 2) Section lines depicted herein are for graphic reference only

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16619	01-08-09	3.04 of 3.04	3.04	38	

6592

NORTHING 1377682.06  
EASTING 3899580.34  
FOUND 1" PIPE (BENT)  
N<sup>1</sup>/<sub>4</sub>CORNER, SECTION 21, T14S, R44W, 6PM

SEC 16

SEC 21

TOWN OF CHEYENNE WELLS

5000

NORTHING 1377570.43  
EASTING 3896935.29  
FOUND SPIKE IN ROADWAY  
NE CORNER, SECTION 20, T14S, R44W, 6PM

CM-MP 151.0  
(CDOT Type 5)

5001

NORTHING 1373605.41  
EASTING 3897091.20  
FOUND 2" ALUM. CAP  
S<sup>1</sup>/<sub>16</sub>CORNER, SECTION 20/21, T14S, R44W, 6PM

5002

NORTHING 1372286.63  
EASTING 3897142.48  
FOUND 3-1/4" BRASS CAP  
SE CORNER, SECTION 20, T14S, R44W, 6PM

US 40

US 385

CM-MP 151.3

CM-MP 151.1

CM-MP 151.4

0' 200' 400' 800'

LEGEND



INDICATES FOUND ALIQUOT CORNER



INDICATES SURVEY CONTROL POINT

Notes:

1) CDOT Type 5 is a 3-1/4" aluminum cap  
(per M & S standard, 07/06)

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