



Sheet Revisions

| Date | Description | Initials |
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PROJECT CONTROL DIAGRAM

LOCATED IN
ARAHAO NATIONAL FOREST
CLEAR CREEK COUNTY, COLORADO
US 40 MP 244.31 TO MP 247.1

Project Control Diagram

Title Sheet

| | | | |
|--------------------------------------|----------------|---------------|-----------|
| Project Number: NH 0403-501 | | | |
| Project Location: US 40 @ MP 245.85 | | | |
| Project Location: Clear Creek County | | | |
| Project Code: | Last Mod. Date | Subset Sheets | Sheet No. |
| 16532 | 12-28-07 | | 3 |

| POINT NAME | GEODETIC COORDINATES NAD-83(92) | | ELLIPSE HEIGHT (M) | NAD 83(92) ZONE 0502 | | ELEV. (M) NAVD(88) | MAPPING ANGLE | SCALE | PROJECT COORDINATES (TRUNCATED) | | | DESCRIPTION |
|--------------------|---------------------------------|-------------------|--------------------|----------------------|-------------|--------------------|-----------------|-------------|---------------------------------|----------------|--------------|--|
| | LATITUDE | LONGITUDE | | NORTHING (M) | EASTING (M) | | | | NORTHING (usft) | EASTING (usft) | ELEV. (usft) | |
| US 40 CM-MP 247.1 | 39°46'53.07133"N | 105°47'18.91741"W | 3136.914 | 521098.588 | 889679.656 | 3149.234 | -0°10'55.23436" | 1.000006365 | 70093.216 | 1279963.237 | 10332.07 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 246.89 | 39°46'59.23140"N | 105°47'14.29348"W | 3153.474 | 521288.227 | 889790.288 | 3165.797 | -0°10'52.31810" | 1.000006720 | 70715.708 | 1280326.388 | 10386.41 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 246.79 | 39°46'59.41420"N | 105°47'07.18799"W | 3160.027 | 521293.332 | 889959.384 | 3172.351 | -0°10'47.83676" | 1.000006731 | 70732.465 | 1280881.447 | 10407.92 | FOUND CDOT TYPE 5 BRASS CONTROL MONUMENT |
| US 40 CM-MP 246.74 | 39°47'01.53379"N | 105°47'03.79488"W | 3168.459 | 521358.451 | 890040.329 | 3180.784 | -0°10'45.69674" | 1.000006853 | 70946.219 | 1281147.149 | 10435.26 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 246.69 | 39°47'03.21322"N | 105°47'01.27289"W | 3170.791 | 521410.060 | 890100.502 | 3183.118 | -0°10'44.10615" | 1.000006950 | 71115.626 | 1281344.667 | 10443.24 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 246.6 | 39°47'01.17662"N | 105°47'06.90279"W | 3175.18 | 521347.667 | 889966.341 | 3187.504 | -0°10'47.65687" | 1.000068330 | 70910.820 | 1280904.283 | 10457.63 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 246.37 | 39°47'00.95922"N | 105°47'23.78943"W | 3200.454 | 521342.234 | 889564.498 | 3212.778 | -0°10'58.30709" | 1.000006820 | 70892.986 | 1279585.230 | 10540.55 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 246.19 | 39°47'03.78733"N | 105°47'12.66790"W | 3213.477 | 521428.618 | 889829.413 | 3225.802 | -0°10'51.29286" | 1.000006984 | 71176.542 | 1280454.816 | 10583.28 | FOUND CDOT TYPE 5 BRASS CONTROL MONUMENT |
| US 40 CM-MP 246.09 | 39°47'07.45052"N | 105°47'06.33139"W | 3223.233 | 521541.123 | 889980.545 | 3235.561 | -0°10'47.29649" | 1.000007196 | 71545.841 | 1280950.908 | 10615.30 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 245.99 | 39°47'09.57810"N | 105°46'59.84849"W | 3228.875 | 521606.259 | 890135.008 | 3241.206 | -0°10'43.20779" | 1.000007319 | 71759.650 | 1281457.934 | 10633.82 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 245.78 | 39°47'17.71770"N | 105°46'50.95490"W | 3238.474 | 521856.643 | 890347.402 | 3250.814 | -0°10'37.59870" | 1.000007792 | 72581.537 | 1282155.118 | 10665.34 | FOUND CDOT TYPE 5 ALUM. CONTROL MONUMENT |
| US 40 CM-MP 245.6 | 39°47'28.06784"N | 105°46'47.92872"W | 3255.72 | 522175.639 | 890420.390 | 3268.060 | -0°10'35.69011" | 1.000008396 | 73628.644 | 1282394.702 | 10721.96 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 245.54 | 39°47'27.80316"N | 105°46'53.19700"W | 3256.717 | 522167.863 | 890295.018 | 3269.066 | -0°10'39.01276" | 1.000008380 | 73603.119 | 1281983.168 | 10725.22 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 245.4 | 39°47'20.06243"N | 105°46'57.66315"W | 3264.935 | 521929.454 | 890188.013 | 3277.275 | -0°10'41.82952" | 1.000007929 | 72820.540 | 1281631.923 | 10752.13 | FOUND CDOT TYPE 5 ALUM. CONTROL MONUMENT |
| US 40 CM-MP 245.3 | 39°47'14.37522"N | 105°47'03.54061"W | 3276.618 | 521754.486 | 890047.619 | 3288.952 | -0°10'45.53637" | 1.000007598 | 72246.206 | 1281171.079 | 10790.46 | FOUND CDOT TYPE 5 ALUM. CONTROL MONUMENT |
| US 40 CM-MP 245.21 | 39°47'12.57148"N | 105°47'09.97941"W | 3284.62 | 521699.336 | 889894.239 | 3296.952 | -0°10'49.59725" | 1.000007493 | 72065.176 | 1280667.608 | 10816.71 | FOUND CDOT TYPE 5 ALUM. CONTROL MONUMENT |
| US 40 CM-MP 245.05 | 39°47'09.20977"N | 105°47'19.13915"W | 3297.024 | 521596.344 | 889675.961 | 3309.353 | -0°10'55.37421" | 1.000007298 | 71727.104 | 1279951.108 | 10857.39 | FOUND CDOT TYPE 5 ALUM. CONTROL MONUMENT |
| US 40 CM-MP 244.9 | 39°47'09.66566"N | 105°47'27.61658"W | 3306.483 | 521611.048 | 889474.290 | 3318.814 | -0°11'00.72083" | 1.000007324 | 71775.370 | 1279289.122 | 10888.43 | FOUND CDOT TYPE 5 BRASS CONTROL MONUMENT |
| US 40 CM-MP 244.7 | 39°47'16.79156"N | 105°47'41.16777"W | 3325.689 | 521831.864 | 889152.560 | 3338.039 | -0°11'09.26743" | 1.000007738 | 72500.200 | 1278233.041 | 10951.50 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 244.6 | 39°47'16.32691"N | 105°47'35.81682"W | 3329.539 | 521817.121 | 889279.833 | 3341.887 | -0°11'05.89264" | 1.000007711 | 72451.806 | 1278650.815 | 10964.14 | FOUND CDOT TYPE 2 CONTROL MONUMENT |
| US 40 CM-MP 244.45 | 39°47'12.59314"N | 105°47'29.20236"W | 3336.694 | 521701.458 | 889436.847 | 3349.028 | -0°11'01.72097" | 1.000007494 | 72072.142 | 1279166.215 | 10987.56 | FOUND CDOT TYPE 5 ALUM. CONTROL MONUMENT |
| US 40 CM-MP 244.31 | 39°47'13.29015"N | 105°47'20.74291"W | 3345.635 | 521722.312 | 889638.201 | 3357.968 | -0°10'56.38568" | 1.000007535 | 72140.595 | 1279827.161 | 11016.89 | FOUND CDOT TYPE 5 BRASS CONTROL MONUMENT |

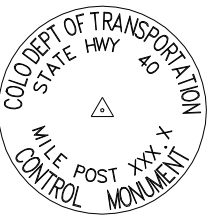
CONSTRUCTION SURVEYING AND MONUMENTATION REQUIREMENTS:

- 1). This Control Survey Diagram represents the horizontal and vertical control for the project. 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.
- 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.
- 3). Installation of Type 3 and Type 3-A 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 3-A monuments, the aluminum access cover shall be positively secured to the PVC pipe with screws or glue. The access cover shall be caulked with asphalt caulking between the cover and the edges of the roadway surface to provide a positive moisture barrier around the access cover.
- 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 responsibility to insure that these requirements, as well as any contained in the CDOT specifications, project special provisions, and CDOT Survey Manual are fulfilled under this contract.
- 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.

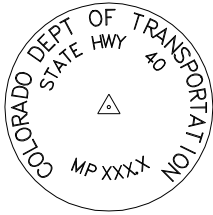
BASIS OF BEARINGS: Bearings used in the calculation of coordinates are based on a grid bearing of S. 40° 18' 25" W. from S.H. 40 CM-MP 245.78 to S.H. 40 CM-MP 245.99 as obtained from a Global Positioning System (GPS) survey based on the Colorado High Accuracy Reference Network (CHARN).

BASIS OF ELEVATIONS: Project is based on a U.S. Geodetic Survey (USGS) benchmark COLO D 7 1924 a 3 inch brass cap set in a boulder with an NAVD '88 elevation of 3450.227 meters. COLO D 7 1924 is part of Colorado Line 72.

COORDINATE DATUM: Project coordinates are modified Colorado state plane central zone NAD '83(92) coordinates. State Plane coordinates were modified to a mean project elevation of 3294.608 m. The combined elevation/scale correction factor used to modify the state plane to project coordinates was 1.000510205. Project Coordinates were truncated by 500,000m in the Northing and 500,000m in the Easting. The project coordinates are then multiplied by (3937/1200) to convert to US survey feet. The CHARN is based on the WGS '84 (92) datum
Project Coordinates= ((State Plane Coordinates * 1.000510205)-500000) * (3937/1200).



Typical Control Monument Cap Type 2
Not to Scale



Typical Control Monument Cap Type 5
Not to Scale

▲ CP - Control Point Monuments. They are CDOT type 2 & type 5 monuments. Type 2 monuments are a 3-1/4" dia. aluminum control monument cap (as shown) on a 3' X 3/4" dia. finned aluminum security rod on a 3' X 3/4" dia. smooth aluminum rod. Type 5 monuments are a 3-1/4" dia. brass or aluminum control monument cap (as shown) drilled and concreted flush with the surface.

NOTE: Refer to M-629-1 SURVEY MONUMENTS of the STANDARD PLANS, COLORADO DEPARTMENT OF TRANSPORTATION, most current M&S STANDARDS, for survey monument descriptions. Refer to the M-100-1 STANDARD SYMBOLS of the STANDARD PLANS, COLORADO DEPARTMENT OF TRANSPORTATION, most current M&S STANDARDS, for standard symbol definitions.

NOTE: This control survey is for the use of the Colorado Department of Transportation personnel. The survey is not a complete Boundary Survey and does not subdivide land. Title Policy, Title Commitment, and Title Research were not part of this control survey, therefore, easements, rights, and restrictions of record are not shown. The verification of the physical evidence with relation to easements, rights of way, property boundaries, and restriction, as described in the instruments of record, were not included in this control survey.

NOTE: 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 statement shown.

SURVEYOR STATEMENT (PROJECT CONTROL DIAGRAM)

I, David A. Stewart, a professional land surveyor licensed in the State of Colorado, do hereby state to the Colorado Department of Transportation this Project 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 Colorado Department of Transportation publications. This statement is not a guaranty or warranty, either expressed or implied.

David A. Stewart PLS No. 28664



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Aurora, CO 80011
Phone: 303-365-7409 FAX: 303-365-7350

Region 1

David A. Stewart

Sheet Revisions

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PROJECT CONTROL DIAGRAM

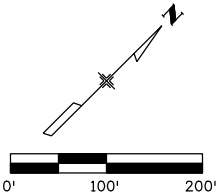
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US 40 MP 244.31 TO MP 247.1

Project Control Diagram

Plan Sheet

Project Number: STA 0403-501
Project Location: US 40 @ MP 245.85
Project Location: Clear Creek County

| Project Code: | Last Mod. Date | Subset Sheets | Sheet No. |
|---------------|----------------|---------------|-----------|
| 16532 | 12-28-07 | | 3A |



CM MP 246.37
N 70892.99
E 1279585.23
EL 10540.55

CM MP 246.89
N 70715.71
E 1280326.39
EL 10386.41

CM MP 246.19
N 71176.54
E 1280454.82
EL 10583.28

CM MP 246.09
N 71545.84
E 1280950.91
EL 10615.30

CM MP 245.99
N 71759.65
E 1281457.93
EL 10633.82

CM MP 247.1
N 70093.22
E 1279963.24
EL 10332.07

CM MP 246.6
N 70910.82
E 1280904.28
EL 10457.63

CM MP 246.79
N 70732.47
E 1280881.45
EL 10407.92

CM MP 246.74
N 70946.22
E 1281147.15
EL 10435.26

CM MP 246.69
N 71115.63
E 1281344.67
EL 10443.24



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PROJECT CONTROL DIAGRAM

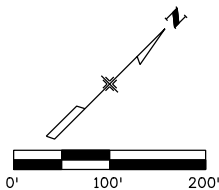
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| 16532 | 12-28-07 | | 3B |



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← Winter Park

CM MP 245.21
N 72065.18
E 1280667.61
EL 10816.71

CM MP 245.3
N 72246.21
E 1281171.08
EL 10790.46

CM MP 245.4
N 72820.54
E 1281631.92
EL 10752.13

CM MP 245.54
N 73603.12
E 1281983.17
EL 10725.22

CM MP 245.6
N 73628.64
E 1282394.70
EL 10721.96

← Empire

CM MP 246.09
N 71545.84
E 1280950.91
EL 10615.30

CM MP 245.99
N 71759.65
E 1281457.93
EL 10633.82

CM MP 245.78
N 72581.54
E 1282155.12
EL 10665.34



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| 16532 | 12-28-07 | | 3C |

