



2000 South Holly
Denver, CO 80222
Phone: 303-757-9922 FAX: 303-757-9390

Region 6

SLK

Sheet Revisions

Date mm/dd/yy	Description XXXXXXXX	Initials XXX

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Sheet Revisions

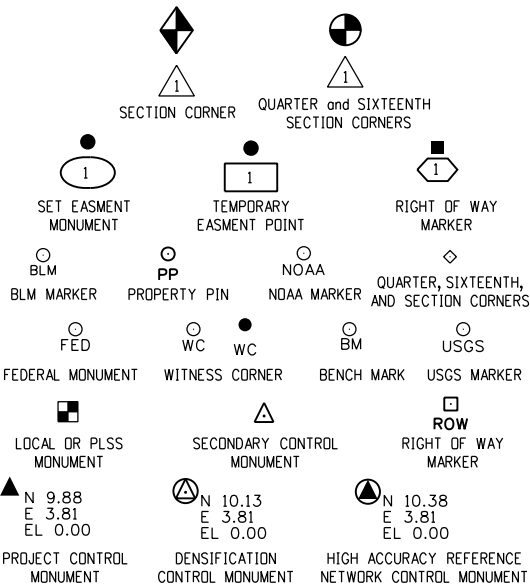
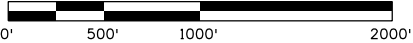
Date mm/dd/yy	Description XXXXXXXX	Initials XXX



Land Survey Control Diagram

Title Sheet (with monuments)

Project Number: BR 030A - 0247			
Project Location: SH - 30, Havana @ Cherry Creek			
Sec. 34 & 35, T4S, Sec. 3, T5S R67W, Denver, CO			
Project Code: 16726/18081	Last Mod. Date: 10-18-10	Subset: 1 of 3	Sheet No.: 3.01



Refer to the M-629-1 Survey Monuments of the Standard Plans dated July, 2006 found in The Colorado Department of Transportation, M & S Standards for survey monument descriptions.

T4S R67W

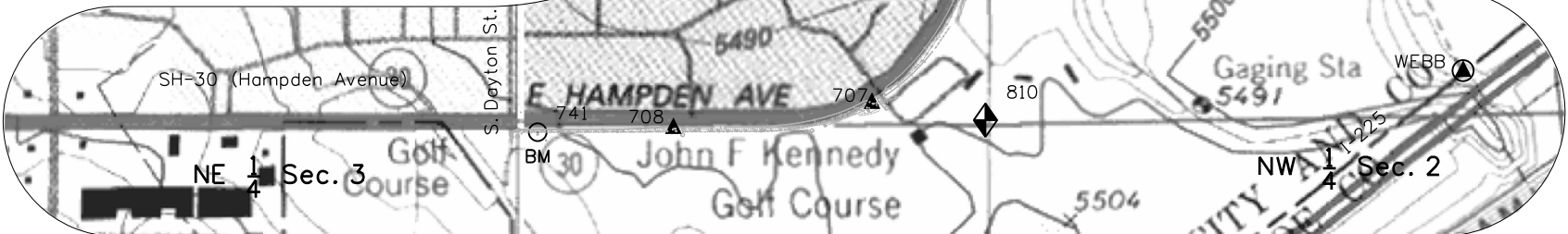
SE 1/4 Sec. 34
T4S, R67W/6th PM

City & County of Denver

SW 1/4 Sec. 35
T4S, R67W/6th PM

City & County of Denver

Arapahoe County



GENERAL NOTES:

- This **Land Survey Control Diagram** (with monuments) is to document the recovery and/or establishment of survey points that will be the basis of future surveys for design purposes, right-of-way acquisitions, monumentation, and/or roadway construction. This Land Survey Control Diagram will identify and call for monuments to be set on the existing right-of-way lines only and does not address matters of title.
- BASIS OF BEARINGS:** Bearings are grid bearings of the Colorado state plane coordinate system of 1983, central zone. The line between point 741 and point 746, described herein, bears N23°29'26"E, a distance of 5996.21' feet.
- Geodetic coordinates are NAD'83 (1992) datum based on a Fast Static GPS survey holding published values on the primary control points shown herein.
- Project specific** coordinates were obtained by multiplying the project's state plane coordinates by 1.0002773700 and then truncating the northing by 1,000,000 and the easting by 3,000,000. Published units are in US survey feet: 1 survey foot = (1200/3937) meters
- Horizontal Control Tolerances meet the precision requirements of CDOT type A control (+/- 0.07' with 95% certainty).
- Vertical Datum: Elevations are NAVD '88 Datum established by digital differential levels run from NGS benchmark "Z 407" (PID KK1500), elevation = 5506.01'. This benchmark is project point number 741.
- Elevations on control points were established by digital differential levels with an accuracy meeting or exceeding 0.035' times the square root of the distance leveled in miles.

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 Control Diagram):

I, Donald D. Hansen, a professional land surveyor licensed in the State of Colorado, do hereby state to the Colorado Department of Transportation that this **Land Survey Control Diagram** (with monuments) 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.

Donald D. Hansen, PLS No. 14599 Date

City & County of Denver Survey Depositing Certificate:

Deposited this ____ day of _____, 20____, at ____ o'clock ____M. in Book ____ at page ____ of Land Surveys/Right of Way Surveys, under Reception No. _____.

By: _____

Title: _____



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Land Survey ControlDiagram

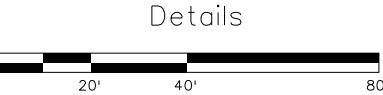
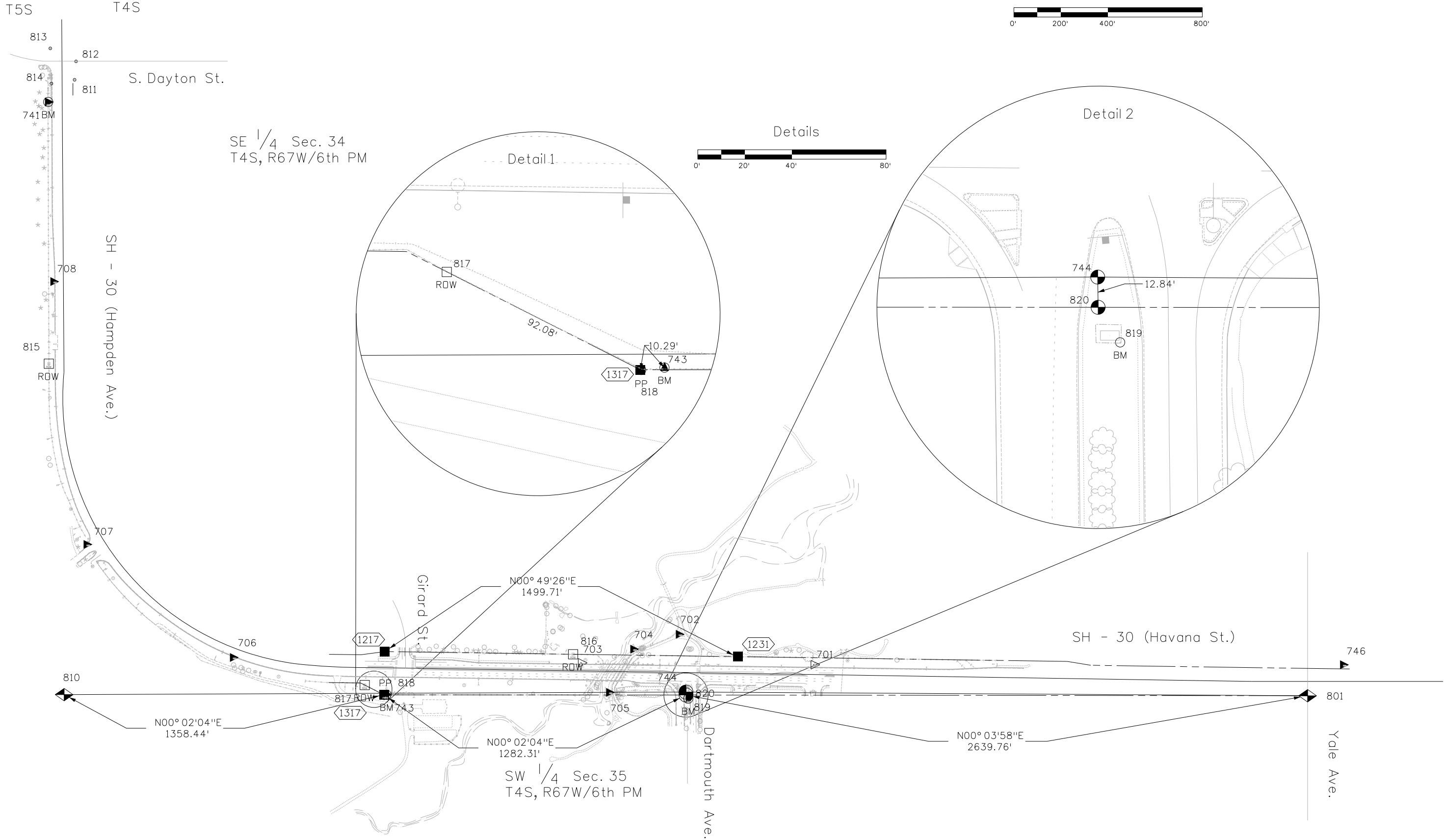
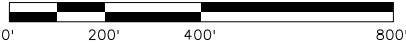
Plan Sheet (with monuments)

Project Number: BR 030A - 0247

Project Location: SH-30, Havana @ Cherry Creek

Sec. 34 & 35, T4S, Sec. 3, T5S all in R67W, Denver, CO

Project Code:	Last Mod. Date	Subset	Sheet No.
16726/18081	10-18-10	2 of 3	3.02



Colorado Department of Transportation



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Land Survey Control Diagram

Plan Sheet (with mounments)

Project Number: BR 030A - 0247			
Project Location: SH - 30, Havana @ Cherry Creek			
Sec. 34 & 35, T4S, Sec. 3, T5S R67W, Denver, CO			
Project Code:	Last Mod. Date	Subset	Sheet No.
16726/18081	02-07-11	3 of 3	3.03

Existant control used in constraining Fast Static GPS Survey ((P) - Benched elevations from TREX Project otherwise elevations GPS derived)

Point	Latitude	Longittude	Ellipsoid Height	Convergence Angle	Northing (SP 502)	Easting (SP 502)	Name	Northing (Project)	Easting (Project)	Elevation NAVD'88	Description
CTMC	39°43'17.49291"N	105°11'34.33618"W	5971.82	0°11'37.3"	1687841.250	3086394.015	CTMC	688309.407	87250.088	6023.33	CDOT Region 6 Base Station at Colorado Transportation Management Center
DSRC	39°59'29.12979"N	105°15'39.67589"W	5440.06	0°09'02.6"	1786103.692	3066965.148	DSRC	786599.104	67815.832	5491.50	DSRC (BOULDER CORS ARP) NAD'83 (CORS) 2002, PID - A12151
DU	39°40'28.29695"N	104°57'47.69959"W	5351.64	0°20'18.7"	1671021.570	3151086.047	DU	671485.061	151960.064	5407.76	Compass Tools Inc. base station at Denver University
HILL	39°38'20.80447"N	104°54'49.02620"W	5569.38	0°22'11.4"	1658208.143	3165139.550	HILL	658668.080	166017.465	5625.89 (P)	CHARN point HILLCREST, alum. Rod in logo box PID - AE5257
WEBB	39°39'13.45596"N	104°51'23.59722"W	5490.06	0°24'20.9"	1663644.196	3181172.082	WEBB	664105.641	182054.444	5547.17 (P)	CHARN point WEBB, NGS disc in concrete PID - AE5254

Fast Static GPS Survey Project Control (Benched elevations)

Point	Latitude	Longittude	Ellipsoid Height	Convergence Angle	Northing (SP 502)	Easting (SP 502)	Name	Northing (Project)	Easting (Project)	Elevation NAVD'88	Description
702	39°39'36.69663"N	104°52'00.97986"W	5423.63	0°23'57.4"	1665975.154	3178231.946	702	666437.246	179113.492	5480.68	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 702"
704	39°39'34.77931"N	104°52'00.19094"W	5415.27	0°23'57.9"	1665781.589	3178294.996	704	666243.627	179176.559	5472.33	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 704"
705	39°39'33.75423"N	104°51'57.85723"W	5418.63	0°23'59.3"	1665679.146	3178478.226	705	666141.155	179359.841	5475.70	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 705"
706	39°39'17.97946"N	104°51'59.89099"W	5442.68	0°23'58.0"	1664081.937	3178330.304	706	664543.504	179211.877	5499.74	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 706"
707	39°39'11.87343"N	104°52'06.08271"W	5444.60	0°23'54.1"	1663460.755	3177850.345	707	663922.149	178731.785	5501.64	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 707"
708	39°39'10.55456"N	104°52'20.36354"W	5443.56	0°23'45.1"	1663319.569	3176734.335	708	663780.924	177615.466	5500.55	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 708"
741	39°39'10.38720"N	104°52'30.11583"W	5449.05	0°23'39.0"	1663297.378	3175971.702	741	663758.727	176852.622	5506.01	Recovered NGS 5/8" stainless steel rod in logo box, A 408, PID - KK 1500
743	39°39'24.40803"N	104°51'57.81641"W	5428.56	0°23'59.3"	1664733.514	3178488.018	743	665195.261	179369.635	5485.63	Recovered NGS 5/8" stainless steel rod in logo box, Z 407, PID - KK 1501
744	39°39'36.97507"N	104°51'57.84529"W	5429.17	0°23'59.3"	1666005.037	3178476.886	744	666467.137	179358.500	5486.24	Recovered 3-1/4" Brass cap in City of Aurora monument box (1/4 corner)
746	39°40'04.55712"N	104°51'59.07670"W	5484.82	0°23'58.6"	1668795.134	3178361.121	746	669258.008	179242.703	5541.88	Recovered CDOH Type 2 mon. w/3-1/4" Alum. Cap "2.027105"

Land Surveyor's Notes

- Research:
In determining the location of the existing right-of-way lines that encompass the project limits, the Surveyor of Record examined many documents from a number of different sources. Sources included Colorado Department of Transportation files, The City and County of Denver Public Works/GIS Departments' pages on the DenverGov.org web site; The City of Aurora Public Works/GIS Departments' pages on the AuroraGov.org web site; Arapahoe County's Gis.co.arapahoe.co.us web site; and monument records on the Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors under the Colorado Department of Regulatory Agencies (DORA) web portal.
- Objectives and methodology:
The intent of setting the three (3) monuments, called for in these plans, is to preserve the original right-of-way corridor based on plans for FAP Project S 0055 (2). The two southerly monuments are at angle points in their respective lines while the northwesterly monument is near/at the northerly limit of this project. These locations were determined from recovered monuments, shown herein, and from the original right-of-way plans.
- Areas of Concern:
In researching the double quarter corner monuments at the intersection of Havana St. and Dartmouth Ave., this surveyor recovered correspondence dated March 21, 1972, from the City and County of Denver (Denver) that indicated that the section line, between sections 34 and 35, called for in the right-of-way plans and noted in field notes written in January of 1953, was probably in error. This correspondence also stated that because of intensive and long time use of the monument at Havana St. and Yale Ave., Denver would honor that monument's location and would use the easterly monument in Dartmouth Ave. (in effect, maintaining the easterly right-of-way line near its original location).

Double Based GPS Survey Project Control (Benched Elevations)

Name	Northing (Project)	Easting (Project)	Elevation NAVD'88	Description
701	667009.508	179242.856	5494.20	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 701"
703	666021.495	179235.020	5485.42	Set CDOT Type 2 mon. w/3-1/4" Alum. Cap "CP 703"

Property evidence recovered (mean of double based RTK observation)

Point	Northing (Project)	Easting (Project)	Elevation NAVD'88	Description
815	663761.35	177964.32	5498.07	3" brass cap "STATE HIGHWAY DEPT. ROW MARKER St 325+61.9"
816	665987.83	179198.24	5480.83	3" brass cap "STATE HIGHWAY DEPT. ROW MARKER St 296+00"
817	665102.81	179329.05	5490.10	3" brass cap "STATE HIGHWAY DEPT. ROW MARKER St 304+82.9 El 5487.72"
818	665185.36	179370.67	5486.49	1" red plastic cap illegible (possibly 29037 or 29937)

Aliquot evidence recovered (mean of double based RTK observation)

Point	Northing (Project)	Easting (Project)	Elevation NAVD'88	Description
801	669107.08	179374.38	5537.09	3" brass cap "LS 12021" in range box Yale Ave. at Havana St.
810	665987.83	179197.65	5480.87	Stone with cross "+" in Denver Range box in Kennedy Golf Course
811	663870.69	176758.54	5505.05	1.25" brass cap PLS 29028 reference marker NE quad Dayton St at Hampden Ave
812	663876.95	176680.39	5505.96	Chisled "+" reference marker, NW quad Dayton St. at Hampden Ave.
813	663767.59	176625.18	5506.65	1.25" brass cap reference marker, SW quad Dayton St. at Hampden Ave.
814	663772.65	176774.49	5504.96	1.25" brass cap reference marker, SE quad Dayton St. at Hampden Ave.
819	666476.67	179386.21	5487.33	3" brass cap "COA BM 3-085 R-010" (4S6735NW001 5487.378)
820	666467.32	179371.33	5486.67	No. 8 rebar, no cap, in range box (12.83' Ely of point 744, City of Aurora 1/4 cor.)

Right of Way Markers set by CDOT Region 6 personnel (CDOT type 1, unless noted otherwise, stamped with Project Code and PLS No. of Land Surveyor in responsible charge)

Point	Northing (Project)	Easting (Project)	Description
1217	665187.6472	179186.8120	304+00 R 75.00 (Proj. S 0055 (2) stationing), PLS 14599
1231	666687.2022	179208.3742	289+00 R 75.00 (Proj. S 0055 (2) stationing), PLS 14599
1317	665185.0051	179370.5584	304+00 L 108.76 (Proj. S 0055 (2) stationing) Not set, concrete rubble under surface, see sheet 3.02 for ties

Coordinate System

Coordinate System: Site(at ground)
Zone: Colorado Central 0502
Geoid Model: GEOID03 (Conus)

Local site settings

Project latitude: 39°39'13.45597"N
Project longitude: 104°51'23.59722"W
Project height: 5442.641sft
Ground scale factor: 1.0002773700
False northing offset: 999538.555sft
False easting offset: 2999117.638sft