



Region 1
Address: 18500 East Colfax Avenue
Aurora, CO 80011
Phone: (303) 757-9744 FAX: (303) 757-9728

Survey Unit: Joseph P. Conway

Sheet Revisions		
mm/yy	XXXXX	XXX

SH 71 MP 71.0 to MP 81.6
Located in:
Sections 29, 30, 31, 32 Township 12 South, Range 56 West
Sections 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
Township 13 South, Range 56 West
of the 6th Principal Meridian
County of Lincoln,
State of Colorado

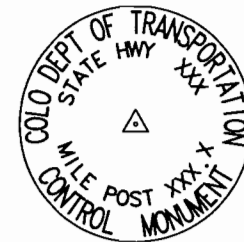


Project Number: BR 0711-014				
Project Location: SH 71-PUNKIN CTR @ MIDDLE &				
Project Location: SOUTH RUSH CREEK				
Project Code:	Last Mod. Date	Subset Sheets	Sheet No.	Total No. of Sheets
14277	00-00-00	1 of 5	3	

LAND SURVEY CONTROL DIAGRAM

GEODETTIC COORDINATE SUMMARY TABLE (ADJUSTED FIELD DATA)

POINT NAME	GEODETTIC COORDINATES NAD-83(92) (CHARN)		ELLIP. HEIGHT	ELEV. (NAVD '88)m	MAPPING ANGLE	SCALE	NAD 83(92) ZONE 0502	
	LATITUDE(N)	LONGITUDE(W)					NORTHING (m)	EASTING (m)
St. Hwy. CM-MP 71 75.40	38° 53' 22.68902"	103° 42' 01.88915"	1575.331	1595.717	1° 08' 05.67685"	0.999942680	423603.63	1070506.612
St. Hwy. CM-MP 71 75.50	38° 53' 32.63540"	103° 42' 02.41760"	1577.709	1598.020	1° 08' 05.34356"	0.999942505	423910.01	1070487.805
St. Hwy. CM-MP 71 75.60	38° 53' 40.51232"	103° 42' 03.68929"	1577.384	1597.759	1° 08' 04.54152"	0.999942367	424152.25	1070452.357
St. Hwy. CM-MP 71 75.80	38° 53' 51.59397"	103° 42' 02.55934"	1592.844	1613.216	1° 08' 05.25417"	0.999942176	424494.43	1070472.813
St. Hwy. CM-MP 71 76.00	38° 54' 02.02123"	103° 42' 03.86883"	1595.744	1616.106	1° 08' 04.42829"	0.999941999	424815.27	1070434.899
St. Hwy. CM-MP 71 80.00	38° 57' 36.30550"	103° 42' 05.27824"	1624.953	1645.172	1° 08' 03.53939"	0.999938920	431420.85	1070270.141
St. Hwy. CM-MP 71 80.20	38° 57' 47.07177"	103° 42' 06.74358"	1619.751	1639.896	1° 08' 02.61521"	0.999938794	431752.07	1070228.299
St. Hwy. CM-MP 71 80.22	38° 57' 48.94459"	103° 42' 06.77762"	1617.942	1638.157	1° 08' 02.59374"	0.999938772	431809.79	1070226.337
St. Hwy. CM-MP 71 80.40	38° 57' 57.62347"	103° 42' 05.55444"	1620.920	1641.132	1° 08' 03.36519"	0.999938673	432077.94	1070250.480
St. Hwy. CM-MP 71 80.55	38° 58' 04.37187"	103° 42' 07.02269"	1627.723	1647.929	1° 08' 02.43918"	0.999938597	432285.29	1070211.024
CHARN "K81"	38° 55' 27.87134"	103° 42' 03.68202"	1610.044	1630.329	1° 08' 04.54611"	0.999940637	427462.06	1070386.981
CHARN "Q81"	38° 59' 48.57046"	103° 42' 05.89710"	1641.704	1661.846	1° 08' 03.14908"	0.999937556	435498.22	1070174.514
CHARN "T77"	38° 51' 07.92766"	103° 44' 17.03877"	1631.163	1651.535	1° 06' 40.43940"	0.999945289	419385.18	1067330.875



Typical Control Monument Cap
Not to Scale

CM-MP - Control Point Monuments set by CDOT. They are CDOT type 2 monuments, 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.
BASIS OF BEARINGS: Bearings used in the calculation of coordinates are based on a grid bearing of N 3°30'45" W from SH 71 CM-MP 75.40 to SH 71 CM-MP 75.50, as obtained from a Global Positioning System (GPS) survey based on the Colorado High Accuracy Reference Network (CHARN).

BASIS OF ELEVATIONS: The northerly site is based on "N81", a USCGS bench mark having an elevation of 1647.929m or 5406.58ft. The southerly site is based off of "J81", a USCGS bench mark having an elevation of 1620.709m or 5317.28ft. All elevations are based on the NAVD 88 datum. On both sites differential level loops were run from the USCGS benchmarks through the project control points to establish the project elevations. All the loops met the CDOT standard stated in Chapter 5 of the 2003 Survey Manual at 5.86' CDOT Tolerance = sq. root of the distance in miles * 0.035'.

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 1623.9485 meters. The combined elevation/scale factor used to modify the coordinates from state plane to project coordinates was 1.000314486. Project coordinates were truncated by 0.0m in the Northing and by 0.0m in the Easting after converting from state plane coordinates to project coordinates. The CHARN is based on the NAD '83(92) datum. Project Coordinates = SPC * 3937/1200 * 1.000314486.

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: Refer to M-629-1 Survey Monuments of the Standard Plans, Colorado Department of Transportation, M & S Standards October 2000 for survey monument descriptions. Refer to M-100-1 Standard Symbols of the Standard Plans, Colorado Department of Transportation, M & S Standards October 2000 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 statement shown hereon.

SURVEYORS STATEMENT: I, David A. Stewart, a Professional Land Surveyor in the State of Colorado, hereby state that this Control Survey Diagram was prepared under my direct supervision this 4th day of December, 2003, from a field survey performed under my supervision and checking from September 24, 2003 to December 3, 2003, for and on behalf of the Department of Transportation, State of Colorado, and is not a Land Survey Plat or Right-of-Way Survey Plat and to the best of my knowledge and belief this control survey, as shown, meets the minimum horizontal control tolerances of a CDOT Type B Survey, as listed in Chapter Three at 3.8.3 of the Colorado Department of Transportation 2003 Survey Manual.

PROJECT COORDINATE SUMMARY TABLE (ADJUSTED FIELD DATA IN U.S. FEET)

POINT NAME	PROJECT COORDINATES		ELEV(ft)	DESCRIPTION
	NORTH (ft)	EAST (ft)		
St. Hwy. CM-MP 71 75.80	1393133.46	3513147.37	5292.69	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 76.00	1394186.41	3513022.95	5302.17	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 75.60	1392010.48	3513080.24	5241.98	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 75.40	1390209.98	3513258.30	5235.28	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 75.50	1391215.50	3513196.58	5242.84	CDOT Type 2 Control Monument
CHARN "K81"	1402872.82	3512865.69	5348.84	USCGS Bench Mark "K81" in conc. post
St. Hwy. CM-MP 71 80.40	1418021.52	3512417.71	5384.28	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 80.55	1418702.01	3512288.22	5406.58	USCGS Bench Mark "N81" in conc. post
St. Hwy. CM-MP 71 80.22	1417141.49	3512338.47	5374.52	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 80.00	1415865.03	3512482.23	5397.54	CDOT Type 2 Control Monument
St. Hwy. CM-MP 71 80.20	1416952.05	3512344.91	5380.23	CDOT Type 2 Control Monument

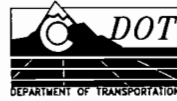
CONSTRUCTION SURVEYING AND MONUMENTATION REQUIREMENTS:

- This Control Survey 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.
- 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 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.
- When installing Type 3-A 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.
- Control survey procedures, statistical analysis, and accuracy obtained for horizontal and vertical control shall be documented in the field book and/or survey report.
- Legible copies of the field books shall be submitted to the Project Engineer for review on a monthly basis.
- It is ultimately the prime Contractors 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.
- 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.
- Whenever the contract includes the setting of CDOT Type 2 monuments, a Project Control Diagram, signed and sealed by the P.L.S. in responsible charge, shall be submitted to the Engineer. An AutoCad drawing on CD shall accompany the hard copy.

David A. Stewart
Colorado PLS No. 28664

Date

COLORADO DEPARTMENT OF TRANSPORTATION



Region 1
Address: 18500 East Calfax Avenue
Aurora, CO 80011
Phone: (303) 757-9744 FAX: (303) 757-9728

Survey Unit: Joseph P. Conway

Sheet Revisions

mm/yy	XXXXX	XXX

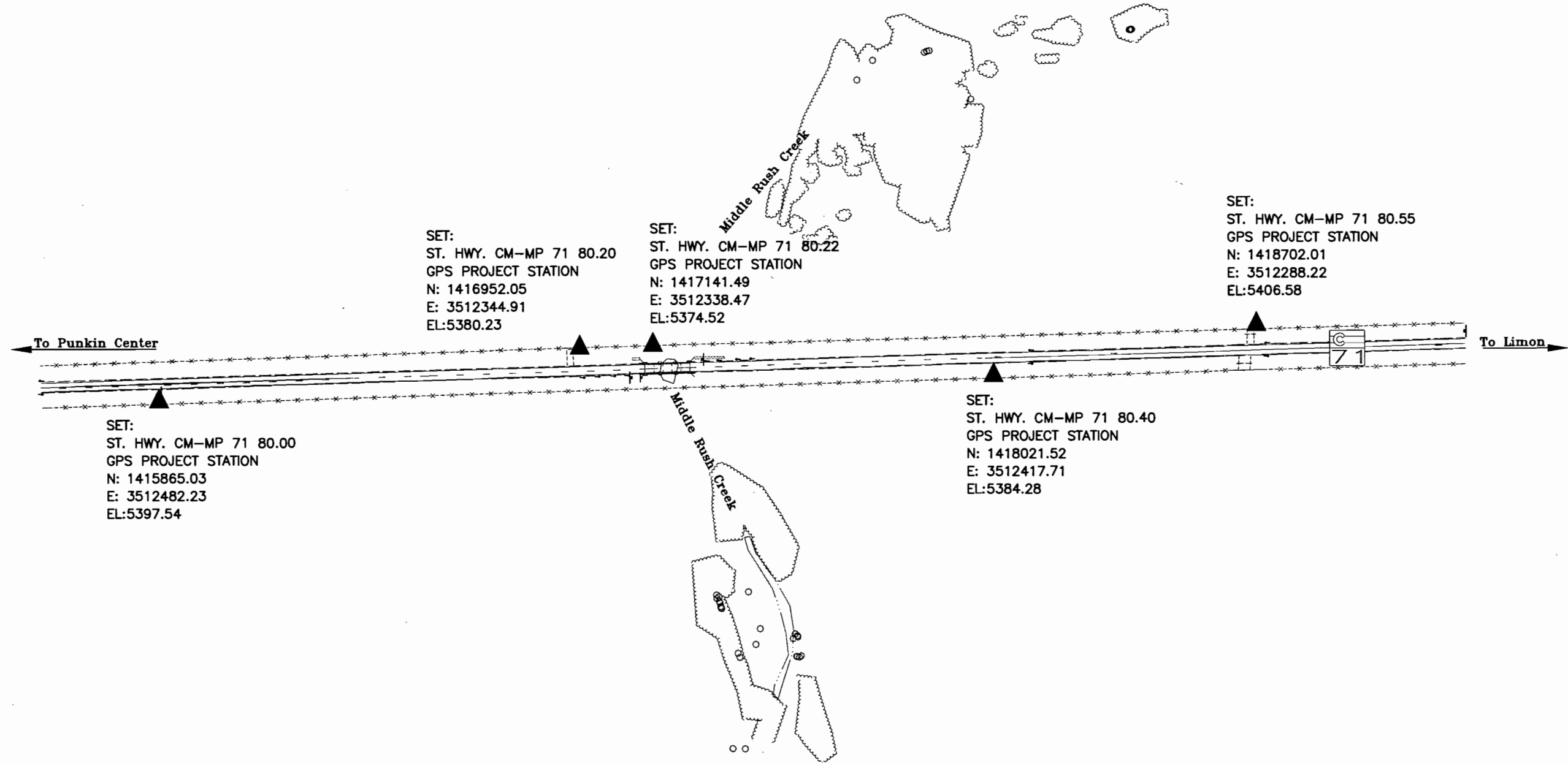
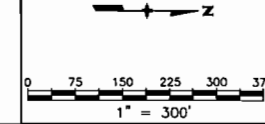
SH 71 MP 71.0 to MP 81.6

Located in:
Sections 29, 30, 31, 32 Township 12 South, Range 56 W
Sections 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
Township 13 South, Range 56 West
of the 6th Principal Meridian,
County of Lincoln,
State of Colorado

Land Survey Control Diagram

Plan Sheet

Project Number: BR 0711-014				
Project Location: SH 71-PUNKIN CTR @ MIDDLE &				
Project Location: SOUTH RUSH CREEK				
Project Code:	Last Mod. Date	Subset Sheets	Sheet No.	Total No. of Sheets
14277	00-00-00	2 of 5	3A	



DEPOSITED THIS ____ DAY OF ____ 19____, AT ____ M., FOR INFORMATION
ONLY IN BOOK ____ OF THE COUNTY LAND SURVEYS/RIGHT OF WAY
SURVEYS AT PAGE ____ RECEPTION NUMBER ____

SIGNED _____
DEPT. _____

COLORADO DEPARTMENT OF TRANSPORTATION



Region 1
Address: 18500 East Colfax Avenue
Aurora, CO 80011
Phone: (303) 757-9744 FAX: (303) 757-9728

Survey Unit: Joseph P. Conway

Sheet Revisions

mm/yy	XXXXX	XXX

SH 71 MP 71.0 to MP 81.6

Located in:

Sections 29, 30, 31, 32 Township 12 South, Range 56 W
Sections 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
Township 13 South, Range 56 West
of the 6th Principal Meridian
County of Lincoln,
State of Colorado

Land Survey Control Diagram

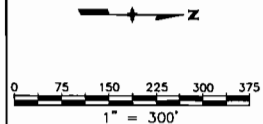
Plan Sheet

Project Number: BR 0711-014

Project Location: SH 71-PUNKIN CTR @ MIDDLE &

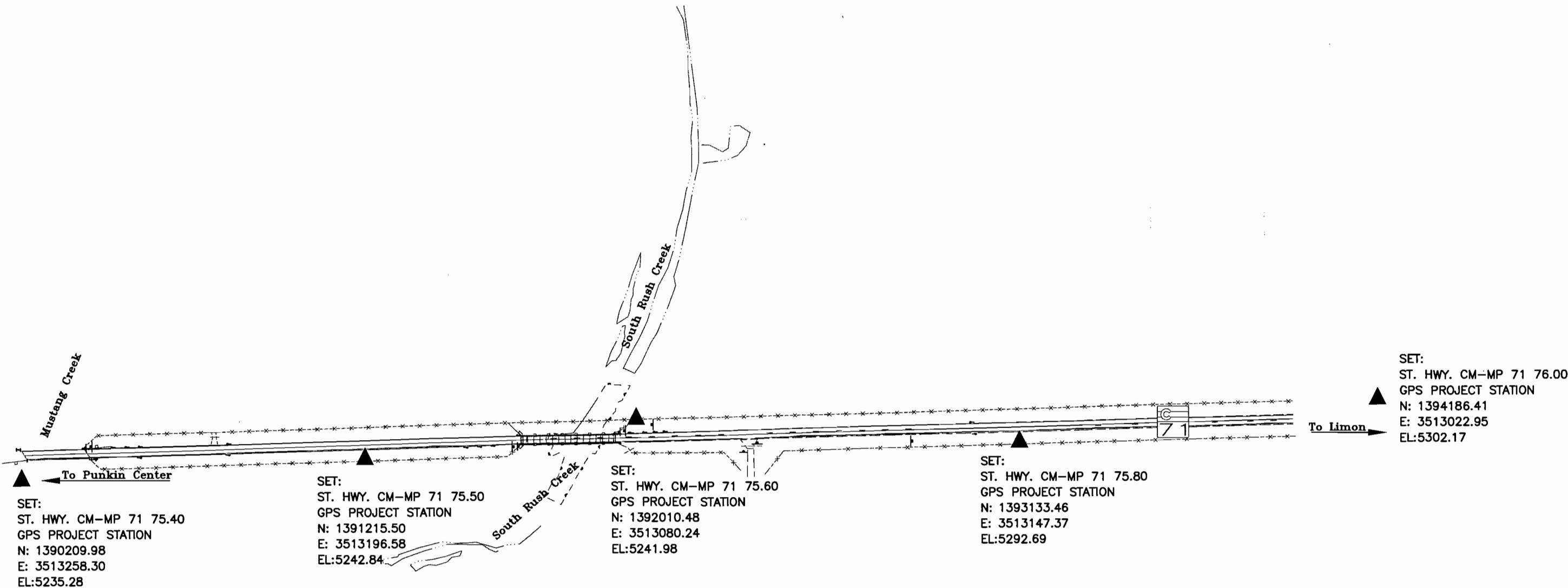
Project Location: SOUTH RUSH CREEK

Project Code	Last Mod. Date	Subset Sheets	Sheet No.	Total No. of Sheets
14277	00-00-00	3 of 5	38	



DEPOSITED THIS ____ DAY OF ____, 19 ____, AT ____ M., FOR INFORMATION
ONLY IN BOOK ____ OF THE COUNTY LAND SURVEYS/RIGHT OF WAY
SURVEYS AT PAGE ____, RECEPTION NUMBER ____

SIGNED _____
DEPT. _____



COLORADO DEPARTMENT OF TRANSPORTATION



Region 1
Address: 18500 East Colfax Avenue
Aurora, CO 80011
Phone: (303) 757-9744 FAX: (303) 757-9728

Survey Unit: Joseph P. Conway

Sheet Revisions

mm/yy	XXXXX	XXX

SH 71 MP 71.0 to MP 81.6

Located in:

Sections 29, 30, 31, 32 Township 12 South, Range 56 W
Sections 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
Township 13 South, Range 56 West
of the 6th Principal Meridian,
County of Lincoln,
State of Colorado.

Land Survey Control Diagram

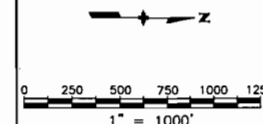
Plan Sheet

Project Number: BR 0711-014

Project Location: SH 71-PUNKIN CTR @ MIDDLE &

Project Location: SOUTH RUSH CREEK

Project Code	Last Mod. Date	Subset Sheets	Sheet No.	Total No. of Sheets
14277	00-00-00	4 of 5	3C	



DEPOSITED THIS ____ DAY OF ____ 19____, AT ____ M., FOR INFORMATION
ONLY IN BOOK ____ OF THE COUNTY LAND SURVEYS/RIGHT OF WAY
SURVEYS AT PAGE ____ RECEPTION NUMBER ____

SIGNED
DEPT.

14277d.dwg 24 NOV 2003 16:05:15.4 PLOT/EDIT by DAS

TOWNSHIP 13 SOUTH
TOWNSHIP 14 SOUTH

SECTION 31
T 13 S, R 56 W



FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1418+30.5 STAMPED "60FT"
N: 1381764.33
E: 3513381.07

FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1418+30.5 STAMPED "87FT"
N: 1381870.77
E: 3513482.41



SECTION 32
T 13 S, R 56 W

SECTION 30
T 13 S, R 56 W



FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1365+59.4 STAMPED "50FT"
N: 1387075.46
E: 3513220.03

FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1365+59.4 STAMPED "50FT"
N: 1387078.17
E: 3513319.84

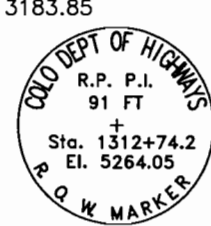


SECTION 29
T 13 S, R 56 W



FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1312+74.2 STAMPED "76FT"
N: 1392294.58
E: 3513068.67

FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1312+74.2 STAMPED "91FT"
N: 1392415.54
E: 3513183.85



SECTION 19
T 13 S, R 56 W

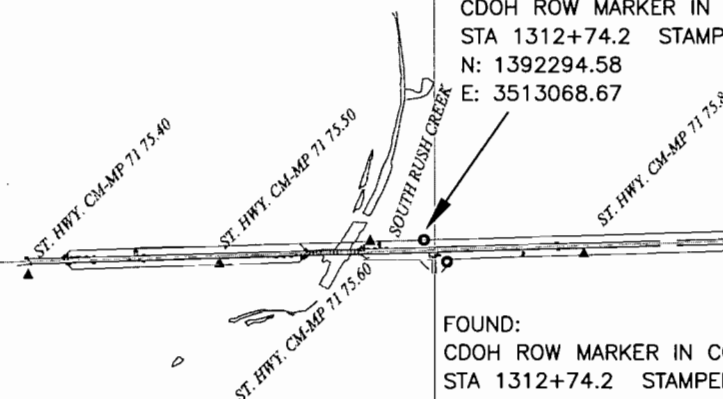


FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1260+02.3 STAMPED "70FT"
N: 1397569.70(NTS)
E: 3512931.04(NTS)

FOUND:
CDOH ROW MARKER IN CONCRETE POST
STA 1260+02.3 STAMPED "91FT"
N: 1397686.69(NTS)
E: 3513041.56(NTS)



SECTION 20
T 13 S, R 56 W



COLORADO DEPARTMENT OF TRANSPORTATION



Region 1
Address: 18500 East Colfax Avenue
Aurora, CO 80011
Phone: (303) 757-9744 FAX: (303) 757-9728

Survey Unit: Joseph P. Conway

Sheet Revisions

mm/yy	XXXXX	XXX

SH 71 MP 71.0 to MP 81.6

Located in:

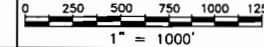
Sections 29, 30, 31, 32 Township 12 South, Range 56 W
Sections 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
Township 13 South, Range 56 West
of the 6th Principal Meridian,
County of Lincoln,
State of Colorado

Land Survey Control Diagram

Plan Sheet

Project Number: BR 0711-014
Project Location: SH 71-PUNKIN CTR @ MIDDLE &
Project Location: SOUTH RUSH CREEK

Project Code	Last Mod. Date	Subst Sheets	Sheet No.	Total No. of Sheets
14277	00-00-00	5 of 5	30	



SECTION 6
T 13 S, R 56 W



FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1411490.01
E: 3512512.85

FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1411492.60
E: 3512600.67



SECTION 5
T 13 S, R 56 W

TOWNSHIP 12 SOUTH
TOWNSHIP 13 SOUTH

SECTION 31
T 12 S, R 56 W



FOUND:
SHD ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1416565.36
E: 3512357.75

FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1413443.04
E: 3512556.69



SECTION 32
T 12 S, R 56 W



FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1418699.14
E: 3512299.29



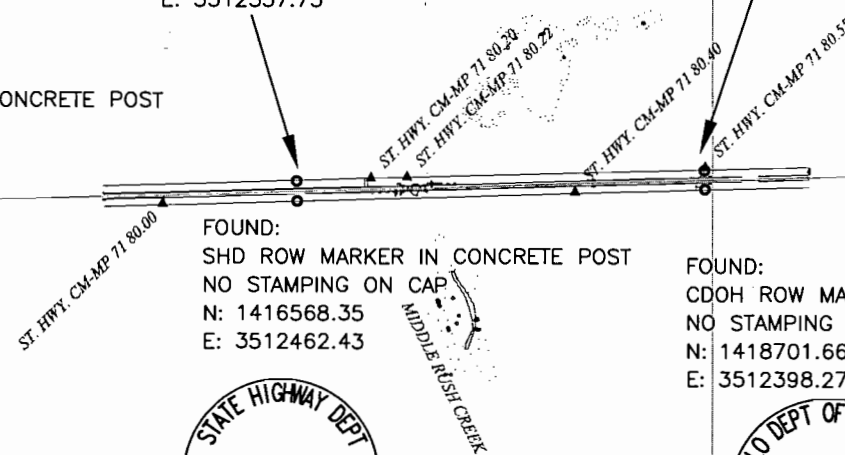
FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1419482.41
E: 3512279.36



FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1423958.80
E: 3512258.25



SECTION 29
T 12 S, R 56 W



FOUND:
SHD ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1416568.35
E: 3512462.43

FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1418701.66
E: 3512398.27

FOUND:
CDOH ROW MARKER IN CONCRETE POST
NO STAMPING ON CAP
N: 1419485.05
E: 3512377.30

RETURN VERIFICATION
DEPOSITED THIS DAY OF 19 AT M., FOR INFORMATION
ONLY IN BOOK OF THE COUNTY LAND SURVEYS/RIGHT OF WAY
SURVEYS AT PAGE RECEPTION NUMBER

SIGNED
DEPT.