

# COLORADO DEPARTMENT OF TRANSPORTATION



Region One  
18500 East Colfax Avenue  
Aurora, Colorado 80011  
Phone: (303) 757-9744 FAX: (303) 757-9746

SURVEY UNIT: Joseph P. Conway

## Sheet Revisions




I-70 MP 326.9 to MP 327.6 and MP 328.9 to MP 329.7

Located in Sections:  
18, 19, 30 T.5S., R.59W. of the 6th P.M.  
and in Sections:  
12, 13 T.5S., R.60W. of the 6th P.M.  
Arapahoe County, Colorado



## CONTROL SURVEY DIAGRAM

IM 0704-184

I-70 & DEER TRAIL INTERCHANGE

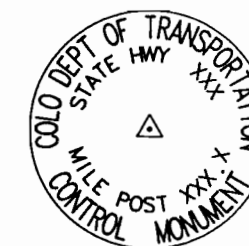
PROJECT CODE: 11849

Sheet Subst: 1 of 4

Sheet Number:

## GEODETIC COORDINATE SUMMARY TABLE (ADJUSTED FIELD DATA)

POINT NAME	GEODETIC COORDINATES NAD-83(92) (CHARN)		ELLIP. HEIGHT	ELEV. (NAVD '88)	MAPPING ANGLE	SCALE	NAD 83(92) ZONE 0502	
	LATITUDE(N)	LONGITUDE(W)					NORTHING (m)	EASTING (m)
CDOT I-70 CM-MP 327.04	39° 37' 52.57532" N	104° 3' 5.43756" W	1573.318	1592.167	0° 54' 48.77007"	0.999978670	505381.148	1038748.755
WSSI I-70 CM-MP 328.61	39° 36' 39.74515" N	104° 2' 17.77690" W	1571.984	1590.806	0° 55' 18.82915"	0.999975465	503153.544	1039921.316
CDOT I-70 CM-MP 327.2	39° 37' 43.99345" N	104° 3' 2.66716" W	1568.282	1587.131	0° 54' 50.51733"	0.999978285	505117.568	1038819.034
CDOT I-70 CM-MP 327.4	39° 37' 34.30594" N	104° 2' 56.06925" W	1568.770	1587.621	0° 54' 54.67856"	0.999977854	504821.352	1038981.132
WSSI I-70 CM-MP 327.6	39° 37' 26.15938" N	104° 2' 49.75342" W	1565.934	1584.786	0° 54' 58.66189"	0.999977493	504572.549	1039135.756
WSSI I-70 CM-MP 327.8	39° 37' 17.56570" N	104° 2' 43.88444" W	1564.591	1583.445	0° 55' 2.36339"	0.999977114	504309.792	1039279.954
WSSI I-70 CM-MP 328.8	39° 36' 30.36225" N	104° 2' 14.16083" W	1574.675	1593.527	0° 55' 21.10976"	0.999975061	502865.600	1040012.221
CDOT I-70 CM-MP 329.0	39° 36' 20.55148" N	104° 2' 11.27621" W	1576.803	1595.665	0° 55' 22.92907"	0.999974641	502564.183	1040085.899
CDOT I-70 CM-MP 329.2	39° 36' 9.29427" N	104° 2' 7.70453" W	1576.698	1595.560	0° 55' 25.18168"	0.999974162	502218.428	1040176.689
CDOT I-70 CM-MP 329.5	39° 35' 58.85303" N	104° 2' 2.27134" W	1578.633	1597.496	0° 55' 28.60834"	0.999973721	501898.552	1040311.487
P 258 1938	39° 35' 9.85132" N	104° 1' 42.73205" W	1581.540	1600.366	0° 55' 40.93157"	0.999971682	500395.077	1040802.068



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.

## PROJECT COORDINATE SUMMARY TABLE (ADJUSTED FIELD DATA METERS)

POINT NAME	PROJECT COORDINATES		ELEV(m)	DESCRIPTION
	NORTH (m)	EAST (m)		
CDOT I-70 CM-MP 327.04	455516.880	39027.733	1592.167	CDOT Type II Control Monument
CDOT I-70 CM-MP 327.2	455253.228	39098.032	1587.131	CDOT Type II Control Monument
CDOT I-70 CM-MP 327.4	454956.933	39260.174	1587.621	CDOT Type II Control Monument
CDOT I-70 CM-MP 329.0	452699.157	40365.237	1595.665	CDOT Type II Control Monument
CDOT I-70 CM-MP 329.2	452353.310	40456.052	1595.560	CDOT Type II Control Monument
CDOT I-70 CM-MP 329.5	452033.348	40590.886	1597.496	CDOT Type II Control Monument
WSSI I-70 CM-MP 327.6	454708.063	39414.839	1584.786	CDOT Type II Control Monument
WSSI I-70 CM-MP 327.8	454445.235	39559.076	1583.445	CDOT Type II Control Monument
WSSI I-70 CM-MP 328.61	453288.677	40200.610	1590.846	CDOT Type II Control Monument
WSSI I-70 CM-MP 328.8	453000.656	40291.539	1593.534	CDOT Type II Control Monument
P 258 1938	450529.469	41081.598	1600.366	P 258 1938

## PROJECT COORDINATE SUMMARY TABLE (ADJUSTED FIELD DATA FEET)

POINT NAME	PROJECT COORDINATES		ELEV(ft)	DESCRIPTION
	NORTH (ft)	EAST (ft)		
CDOT I-70 CM-MP 327.04	1494474.96	128043.49	5223.63	CDOT Type II Control Monument
CDOT I-70 CM-MP 327.2	1493609.97	128274.13	5207.11	CDOT Type II Control Monument
CDOT I-70 CM-MP 327.4	1492637.87	128806.09	5208.72	CDOT Type II Control Monument
CDOT I-70 CM-MP 329.0	1485230.49	132431.61	5235.11	CDOT Type II Control Monument
CDOT I-70 CM-MP 329.2	1484095.82	132729.56	5234.77	CDOT Type II Control Monument
CDOT I-70 CM-MP 329.5	1483046.08	133171.93	5241.12	CDOT Type II Control Monument
WSSI I-70 CM-MP 327.6	1491821.37	129313.52	5199.42	CDOT Type II Control Monument
WSSI I-70 CM-MP 327.8	1490959.08	129786.73	5195.02	CDOT Type II Control Monument
WSSI I-70 CM-MP 328.61	1487164.60	131891.50	5219.30	CDOT Type II Control Monument
WSSI I-70 CM-MP 328.8	1486219.65	132189.83	5228.12	CDOT Type II Control Monument
P 258 1938	1478112.10	134781.88	5250.53	P 258 1938

BASIS OF BEARINGS: Bearings used in the calculation of coordinates are based on a grid bearing of S 28°45'27" E from W.S.S.I. CM-MP 327.6 to W.S.S.I. CM-MP 327.8, as obtained from a Control Survey Diagram prepared for the C.D.O.T. by Charles N. Beckstrom, PLS No. 33202 of Western States Surveying Inc. (W.S.S.I.), on 6/21/99, refer to W.S.S.I. Job Number 9824-003.

BASIS OF ELEVATIONS: Project is based on a U.S. Coast and Geodetic Survey (USCGS) benchmark R 258 1938, a found 3-1/4" brass disk in a concrete post stamped R 258 1938. Approximately 160 feet South of SH 40 and 90' North of the Union Pacific Rail Road tracks, in line with a row of utility poles at Rail Road mile post 585, with a NAVD '88 and project elevation of 1576.686 meters or 5172.84 feet. R 258 1938 is a First Order Class II benchmark which was determined by differential leveling and adjusted by the National Geodetic Survey in June 1991.

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 1567.623 meters. The combined elevation/scale factor, used to modify the coordinates from state plane to project coordinates was 1.000268572. Project coordinates were truncated by 50,000' in the Northing and by 1,000,000' in the Easting after converting from state plane coordinates to project coordinates. The CHARN is based on the NAD '83(92) datum.

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 November 1992 for survey monument descriptions. Refer to M-100-1 Standard Symbols of the Standard Plans, Colorado Department of Transportation, M & S Standards November 1992 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, Daniel A. Smith, a Professional Land Surveyor in the State of Colorado, hereby state that this Control Survey Diagram was prepared under my direct supervision this 10th day of April, 2000, from a field survey performed under my supervision and checking from November, 1999, to January, 2000, 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 of the Colorado Department of Transportation 1992 Survey Manual.

TMOSS field survey data was provided to the CDOT by CDOT personnel from approximately mile post 326.9 to 327.6, and from mile post 328.9 to 329.7, and to the best of my knowledge and belief meets the minimum horizontal control tolerances of a CDOT type D Survey, as listed in Chapter Three of the Colorado Department of Transportation 1992 Survey Manual.

Control monumentation and TMOSS field survey data was provide to the CDOT for this project from Western States Surveying Inc. (WSSI) from approximately mile post 327.6 to 328.9. Refer to WSSI Job Number 9824-003 for surveyors statement as to the accuracy of the survey and CDOT task order number 3 dated 3/11/99 for CDOT required survey tolerances and required items.

### 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.
- 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.

Daniel A. Smith  
Colorado PLS No. 29769

Date:

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

SIGNED \_\_\_\_\_  
DEPT. \_\_\_\_\_

11849dtd.dwg 10 APRIL 2000 04:00:01.0 PLOT/EDIT by D.A.S.

STATE OF COLORADO  
C.D.O.T. FORM 1286c  
REVISED JULY 1998

# COLORADO DEPARTMENT OF TRANSPORTATION



Region One  
18500 East Colfax Avenue  
Aurora, Colorado 80011  
Phone: (303) 757-9744 FAX: (303) 757-9746

SURVEY UNIT: Joseph P. Conway

## Sheet Revisions

NO.	DESCRIPTION	DATE

I-70 MP 326.9 to MP 327.6 and MP 328.9 to MP 329.7

Located in Sections:  
18, 19, 30 T.5S., R.59W. of the 6th P.M.  
and in Sections:  
12, 13 T.5S., R.60W. of the 6th P.M.  
Arapahoe County, Colorado

## CONTROL SURVEY DIAGRAM

IM 0704-184

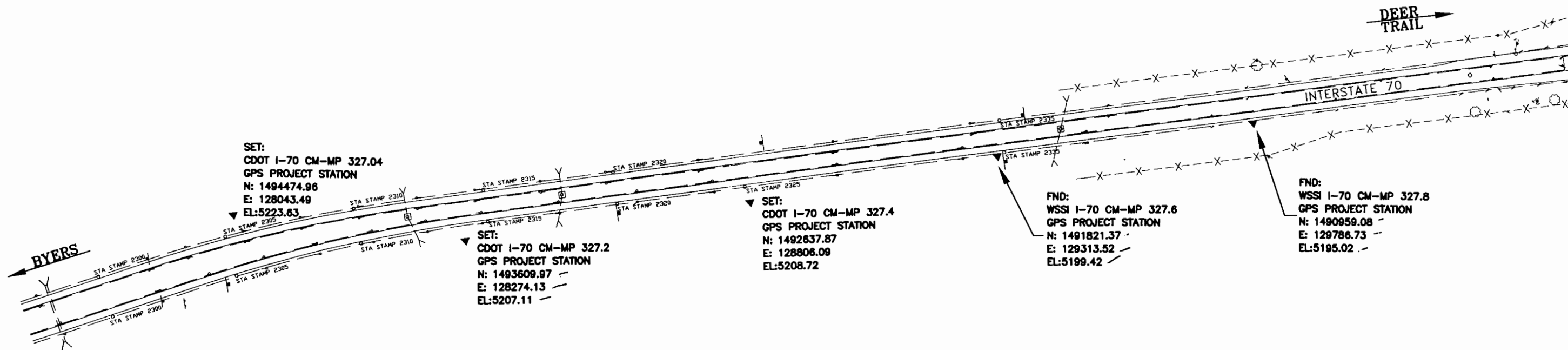
I-70 & DEER TRAIL INTERCHANGE

PROJECT CODE: 11849

Subst Sheets: 2 of 4

SHEET NUMBER:

Half-size scale: 1" = 400' Full-size scale: 1" = 200'



STATE OF COLORADO  
DOT FORM 1286c  
REVISED JULY 1995

# COLORADO DEPARTMENT OF TRANSPORTATION



Region One  
18500 East Colfax Avenue  
Aurora, Colorado 80011  
Phone: (303) 757-9744 FAX: (303) 757-9746

SURVEY UNIT: Joseph P. Conway

## Sheet Revisions


I-70 MP 326.9 to MP 327.6 and MP 328.9 to MP 329.7

Located in Sections:  
18, 19, 30 T.5S., R.59W. of the 6th P.M.  
and in Sections:  
12, 13 T.5S., R.60W. of the 6th P.M.  
Arapahoe County, Colorado

## CONTROL SURVEY DIAGRAM

IM 0704-184

I-70 & DEER TRAIL INTERCHANGE

PROJECT CODE: 11849

Subset Sheets: 3 of 4

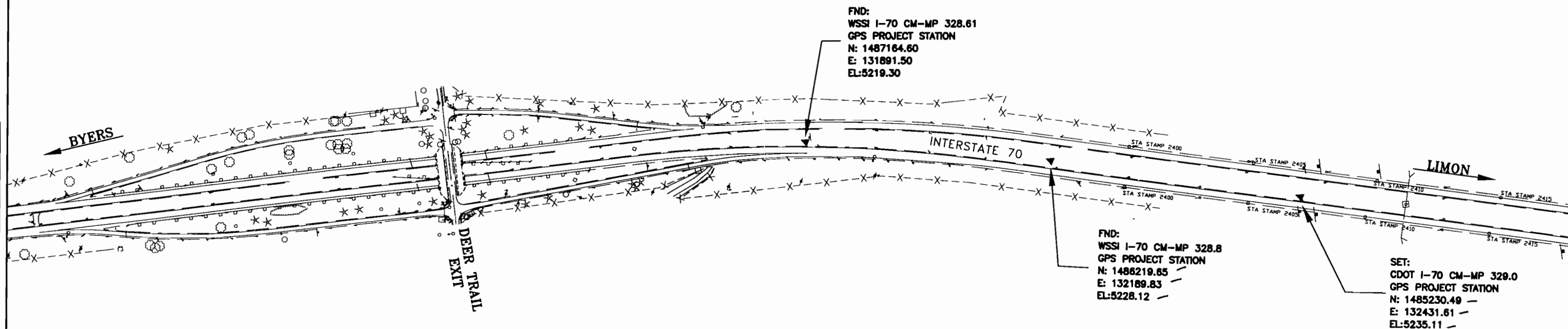
SHEET NUMBER:

Half-size scale: 1" = 400' Full-size scale: 1" = 200'

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.

11849dtsd.dwg 10 APRIL 2000 04:00:01.0 PLOT/EDIT by D.A.S.



STATE OF COLORADO  
C.D.O.T. 1286  
REVISED 12/98

**COLORADO DEPARTMENT OF TRANSPORTATION**



Region One  
18500 East Colfax Avenue  
Aurora, Colorado 80011  
Phone: (303) 757-9744 FAX: (303) 757-9746

**SURVEY UNIT: Joseph P. Conway**

**Sheet Revisions**


**I-70 MP 326.9 to MP 327.6 and MP 328.9 to MP 329.7**

Located in Sections:  
18, 19, 30 T.5S., R.59W. of the 6th P.M.  
and in Sections:  
12, 13 T.5S., R.60W. of the 6th P.M.  
Arapahoe County, Colorado

**CONTROL SURVEY DIAGRAM**

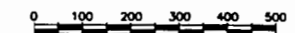
**IM 0704-184**

**I-70 & DEER TRAIL INTERCHANGE**

**PROJECT CODE: 11849**

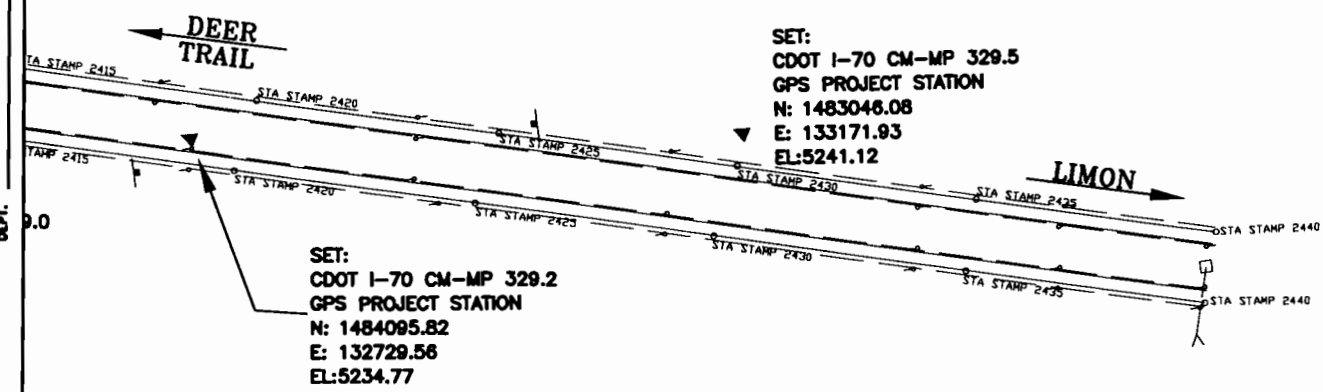
**Subtotal Sheets: 4 of 4**

**SHEET NUMBER:**



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

SIGNED  
DEPT.





Region 1  
18500 E. Colfax Ave  
Aurora, CO 80011  
Phone: (303) 757-9117 FAX: (303) 757-9746

RIGHT OF WAY PLANS UNIT: KEVIN A. WILLIAMS

Sheet Revisions

Rev	Date	Description

TMOSS

SURVEY CONTROL DIAGRAM

I-70 & DEER TRAIL INTERCHANGE

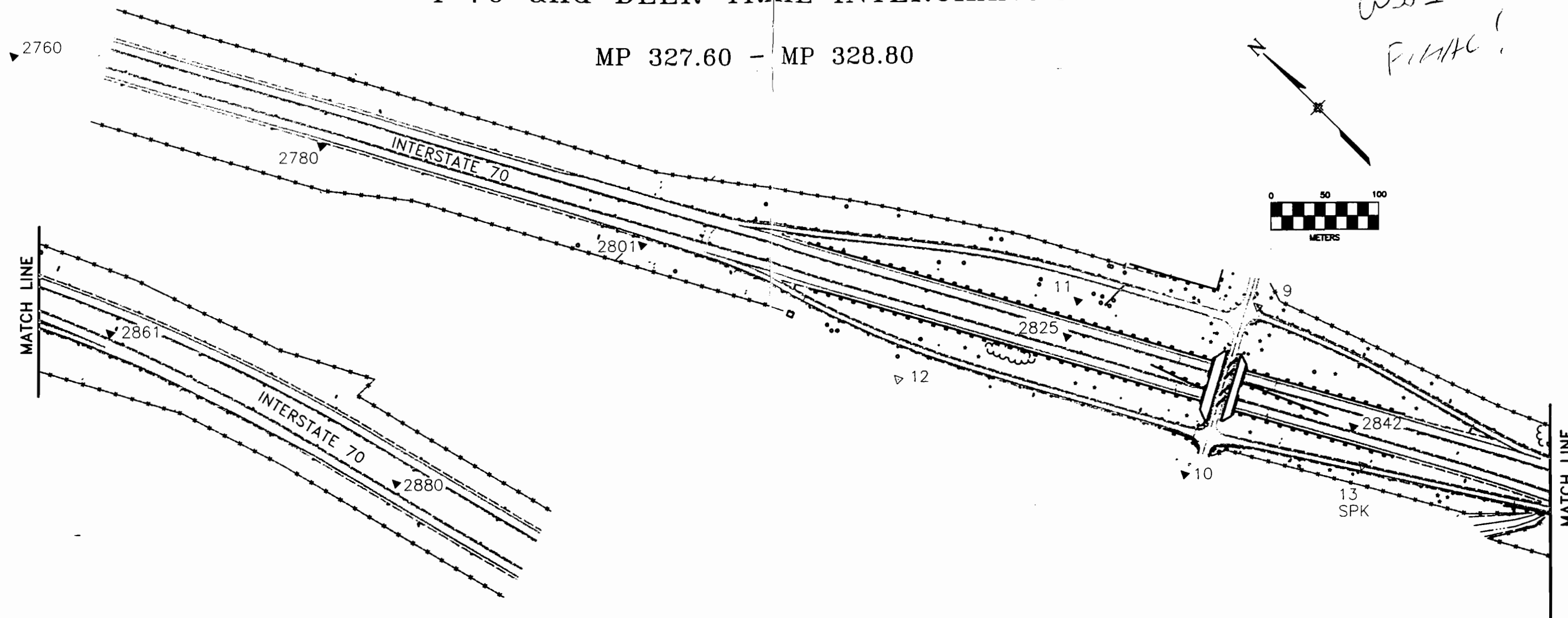
PROJECT NUMBER IM 0704-184

PROJECT CODE: 11849

SHEET NUMBER:

# I 70 and DEER TRAIL INTERCHANGE

MP 327.60 - MP 328.80



Colorado State Plane Central Zone									
Point No	SPC (m) Northing	SPC (m) Easting	GPS (m) Elevation	Point No	PRJ (m) Northing	PRJ (m) Easting	Dif. Level Elevation	Monument Description	
0009	503576.436	1039798.490	1585.711	0009	453711.683	40077.751	1585.704	"2" aluminum cap on #4 rebar for secondary control"	
0010	503515.304	1039640.778	1584.478	0010	453650.534	39919.996	1584.485	"2" aluminum cap on #4 rebar for secondary control"	
0011	503700.829	1039683.472	1584.322	0011	453836.109	39962.702	1584.314	"2" aluminum cap on #4 rebar for secondary control"	
2740	504821.348	1038981.140	1587.614	2740	454956.929	39260.181	1587.627	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2760	504572.549	1039135.756	1584.769	2760	454708.063	39414.839	1584.786	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2780	504309.792	1039279.954	1583.439	2780	454445.235	39559.076	1583.445	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2801	504032.450	1039428.091	1583.332	2801	454167.819	39707.253	1583.338	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2825	503684.583	1039652.858	1590.087	2825	453819.858	39932.080	1590.093	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2842	503436.042	1039781.706	1590.251	2842	453571.251	40060.962	1590.254	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2861	503153.544	1039921.316	1590.816	2861	453288.677	40200.610	1590.846	"3-1/4" aluminum cap on 6' Berstein Monumnet"	
2880	502865.600	1040012.221	1593.518	2880	453000.656	40291.539	1593.534	"3-1/4" aluminum cap on 6' Berstein Monumnet"	

Mean Combined Factor = 0.999731500

Ave Elevation = 1587.960



I-70 MP 327.6 to MP 328.8  
DEER TRAIL INTERCHANGE  
ARAPAHOE COUNTY, COLORADO