

Oversight / NHS

FHWA REGION VIII OVERSIGHT  NO  YES

NATIONAL HIGHWAY SYSTEM  NO  YES

# CITIES OF THORNTON AND WESTMINSTER

## PLAN AND PROFILE OF PROPOSED 136TH AVENUE AT I-25 INTERCHANGE ADAMS COUNTY, COLORADO

### CITY OF THORNTON PROJECT NO. 97-71

Related Projects:

P. E. UNDER PROJECT:  
Project Number  
Project Code

R.O.W. Projects:

R.O.W. Project Description  
Project Number  
Project Code

**SCALES OF DRAWINGS**

PLAN 1"=100'  
PROFILE 1"=100' HORIZONTAL  
1"=10' VERTICAL  
NOTE: PROFILE GRADE SHOWN  
AT FINISHED GRADE

**TABULATION OF LENGTH**

STATION	ROADWAY		STRUCTURE	
	LIN. FT.		LIN. FT.	
<b>136TH AVENUE</b>				
8+20.00 BEGIN 136TH AVENUE	2976.05			
37+96.05			272.25	
STR. NO. E-17-ZL				
40+68.30	1891.70			
59+60.00			198.00	
BIG DRY CREEK				
61+58.00			1022.46	
71+80.46				
<b>TOTAL 136TH AVENUE</b>	<b>5890.21</b>		<b>470.25</b>	
<b>SB ON RAMP</b>				
100+00.00				
103+00.80			87.42	
STR. NO. E-17-FH				
103+88.22	2404.79			
124+92.21				
<b>NB OFF RAMP</b>				
200+00.00			1726.13	
217+26.13				
<b>SB OFF RAMP</b>				
300+00.00			1508.51	
315+08.51				
<b>NB ON RAMP</b>				
400+00.00			2264.18	
422+64.18				
<b>SUMMARY OF PROJECT LENGTH</b>				<b>LIN. FT.</b>
ROADWAY (NET LENGTH)				13793.82
MAJOR STRUCTURES				557.67
PROJECT GROSS LENGTH				14351.49

**TABULATION OF DESIGN DATA**

ALIGNMENT	MIN. RADIUS OF CURVE	MAX. GRADE	MIN. SSD (VERT)	MIN. SSD (HORIZ)	MAX. DESIGN SPEED
	FT	%	FT	FT	MPH
136TH AVENUE	N/A	4.28	410	N/A	50
SB ON RAMP	1432.40	3.20	639	864	50
NB OFF RAMP	954.93	3.11	746	539	50
SB OFF RAMP	954.93	4.18	455	539	50
NB ON RAMP	1432.40	2.38	923	660	50

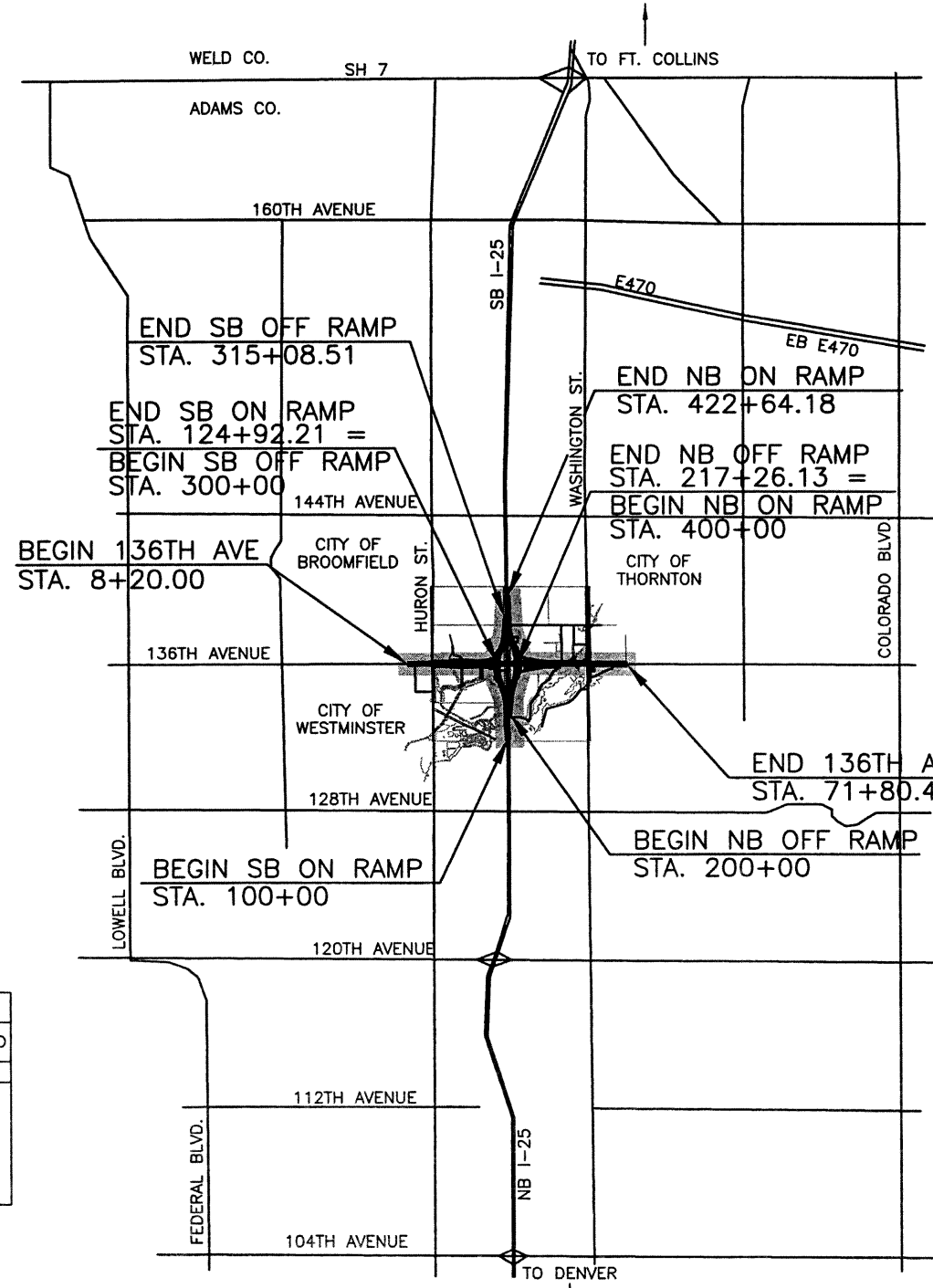
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ONLY THE COVER SHEET, DRAINAGE SHEETS AND THE WESTMINSTER WATER & SANITARY SHEETS ARE INCLUDED IN THIS AS-BUILT SET OF PLANS. THESE SHEETS ARE INDICATED INSIDE THE CLOUDED AREAS.

**RECORD DOCUMENTS  
- WARNING -**

*These Record Documents have been prepared based upon information provided by others. Felsburg Holt & Ullevig has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions that may be incorporated as a result of erroneous information provided by others.*



VICINITY MAP  
SCALE: 1"=6000'

**Computer File Information**

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Last Modification Date:	10/21/04	Initials:	DRS
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Acad Ver.	2000i	Scale:	1"=800' Units: English

**Index of Revisions**

NO.	DATE	REVISION	BY
(R-1)	02-18-03	REVISED SHEETS	RKZ



303.721.1440  
fax 303.721.0832  
thu@thueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	X
Void:	

136TH AVENUE AT I-25 INTERCHANGE	
(R-1) TITLE SHEET	
Designer:	RKZ
Detailer:	JAC
Sheet Subset:	TITLE
Subset Sheets:	TTL-01 of 01

Project No./Code	97-71
Sheet Number	1

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THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

TO ACQUIRE THE M & S STANDARDS, YOU CAN VISIT THE WEB SITE AT WWW.DOT.STATE.CO.US/DEVELOPPROJECTS/DESIGNSUPPORT. OR COLORADO DEPARTMENT OF TRANSPORTATION, BID PLANS OFFICE, 4201 E. ARKANSAS AVE., ROOM 117, DENVER, CO 80222. THE M & S STANDARDS ARE \$10 PER HARD COPY.

**COLORADO**  
**DEPARTMENT OF TRANSPORTATION**  
  
**STANDARD PLANS LIST**  
**M & S STANDARDS**  
**OCTOBER 1, 2000**

**NEW AND REVISED STANDARD PLANS**



<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>		136TH AVENUE AT I-25 INTERCHANGE <b>STANDARD PLANS LIST</b>	<b>Project No./Code</b>			
Creation Date:	12/28/00 Initials: JAC	<input type="checkbox"/>				No Revisions:			97-71			
Last Modification Date:	01/10/03 Initials: DRS	<input type="checkbox"/>				Revised:	Designer: RKZ					
Full Path:	J:\00033\Acad\Sheet\	<input type="checkbox"/>				Void:	Detailer: JAC					
Drawing File Name:	M00033SPL01.DWG	<input type="checkbox"/>				Sheet Subset: PLNSLST			Subset Sheets: SPL-01 of 01	Sheet Number <b>2</b>		
Acad Ver. 2000i	Scale: N.T.S. Units: English	<input type="checkbox"/>										

**GENERAL NOTES:**

1. ALL CONSTRUCTION SHALL BE COMPLETED PER THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD PLANS AND SPECIFICATIONS, LATEST EDITION, OR AS SHOWN.
2. UTILITY LINES AS SHOWN ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SUBSECTION 105.06 OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
3. THE CONTRACTOR SHALL CALL THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 1-800-922-1987 AT LEAST TWO BUSINESS DAYS, NOT INCLUDING THE DAY OF ACTUAL NOTIFICATION, TO HAVE THE UTILITIES LOCATED PRIOR TO ANY EXCAVATION.
4. IT IS SUGGESTED THAT THE CONTRACTOR INITIATE A REQUEST TO XCEL ENERGY FOR ANY CONSTRUCTION RELATED TEMPORARY ELECTRICAL POWER SOURCES AS SOON AS POSSIBLE. THE REQUEST SHOULD BE MADE THROUGH XCEL ENERGY - STREET LIGHTING, (303) 571-3505.
5. IT IS ESTIMATED THAT 40 HOURS OF POTHOLING WILL BE REQUIRED.
6. MAINTAIN ACCESS TO EXISTING SANITARY SEWER MANHOLES AT ALL TIMES. ADJUST TO GRADE ON AN INTERIM BASIS, IF NECESSARY SO THAT MANHOLE LIDS ARE AT GRADE AND ACCESSIBLE BY THE CITY'S EQUIPMENT AT ALL TIMES. CONTRACTOR SHALL SECURE MANHOLES SO THAT THERE IS NO INFLOW FROM THE CONSTRUCTION SITE AND SO NO DEBRIS ENTERS THE MANHOLE. IF THE MANHOLES ARE NOT ACCESSIBLE OR IF INFLOW OR DEBRIS ENTERS THE MANHOLE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES CAUSED BY A BACK-UP IN THE SYSTEM.
7. UTILITY CONTACTS FOR THE PROJECT INCLUDE:
 

CITY OF THORNTON WATER AND SANITATION:	MIKE GAY	303 538-7337
CITY OF WESTMINSTER WATER AND SANITATION:	LONNIE HENDERSON	303 430-2400, EXT 2134
UNITED POWER	JOHN BEALS	303 659-0551
QWEST	LISA HAUSWIRTH	303 451-2329
XCEL ENERGY (ELECTRIC)		
WEST OF I-25	ART PADILLA	303 938-2275
EAST OF I-25	CRAIG COON	303 425-3811
XCEL ENERGY (LIGHTING)	CHERI WEERS	303 571-3505
XCEL ENERGY (GAS)	JIM MCQUISTON	303 571-3744
AT&T BROADBAND	TIM GALEY	303 603-6746
FARMERS RESERVOIR AND IRRIGATION CO.	MANUAL MONTOYA	303 659-7373
8. ALL AREAS WITHIN THE CONSTRUCTION LIMITS SHALL BE CLEARED AND GRUBBED. CLEARING AND GRUBBING SHALL INCLUDE REMOVAL AND DISPOSAL OF TRASH, DEBRIS, LARGE ROCKS, TREES, BUSHES, ETC. UNLESS SPECIFICALLY DESIGNATED TO REMAIN.
9. AT LEAST SEVEN DAYS PRIOR TO REMOVAL OF ANY TREE, THE CONTRACTOR SHALL MARK EACH TREE TO BE REMOVED WITH SURVEY RIBBON AND NOTIFY THE ENGINEER IN WRITING. THE TREE SHALL NOT BE REMOVED UNTIL THE CONTRACTOR HAS RECEIVED WRITTEN CONFIRMATION FROM THE ENGINEER. IF THE CONTRACTOR DOES NOT FOLLOW THIS PROCEDURE AND/OR THE CONTRACTOR REMOVES A TREE THAT IS TO REMAIN, THE CONTRACTOR SHALL PLANT THE SAME TYPE OF TREE AT A 5:1 RATIO BASED ON THE CALIPER OF THE REMOVED TREE.
10. DEPTH OF MOISTURE DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:  
 FULL DEPTH OF ALL EMBANKMENT  
 BASES OF CUT AND FILLS 12 IN.
11. EXCAVATION REQUIRED FOR COMPACTION OF BASES OF CUTS AND FILLS SHALL BE CONSIDERED AS SUBSIDIARY TO THE EARTHWORK, AND WILL NOT BE PAID FOR SEPARATELY.
12. FOR PRELIMINARY PLAN QUANTITIES OF PAVEMENT STRUCTURE MATERIALS, THE FOLLOWING RATES OF APPLICATION WERE USED:  
 TACK COAT DILUTED EMULSIFIED ASPHALT (SLOW SETTING): . . . . . 0.10 GAL/SQ. YD (DILUTED)  
 BITUMINOUS PAVEMENT: . . . . . 110 LB./SQ. YD/INCH  
 AGGREGATE BASE COURSE: . . . . . 133.0 LB./CU FT  
  
 DILUTED EMULSIFIED ASPHALT FOR TACK COAT SHALL CONSIST OF 1 PART EMULSIFIED ASPHALT AND 1 PART WATER. A TACK COAT WILL BE REQUIRED BETWEEN LAYERS OF BITUMINOUS PAVEMENT. RATES OF APPLICATION SHALL BE AS DETERMINED BY THE ENGINEER AT THE TIME OF APPLICATION.
13. WATER USED AS A DUST PALLIATIVE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
14. WHERE IT IS REQUIRED TO CUT ANY EXISTING ASPHALT PAVEMENT, CONCRETE PAVEMENT, SIDEWALK, CURB AND GUTTER, OR ANY OTHER SURFACING, ALL CUTTING SHALL BE SAW CUT ONLY. SAW CUTTING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
15. A HEAVY TACK COAT IS REQUIRED BETWEEN NEW PAVEMENT AND ANY ABUTTING SURFACE, SUCH AS CURBING, EXISTING PAVEMENT, ETC.

16. THE CONTRACTOR SHALL SUBMIT A PAVING SEQUENCE SCHEDULE SHOWING ALL JOINTS IN ALL LIFTS TO THE ENGINEER AT LEAST 10 WORKING DAYS PRIOR TO BEGINNING THE PAVING OPERATION. PAVING SHALL NOT BEGIN UNTIL THE SCHEDULE HAS BEEN ACCEPTED IN WRITING BY THE ENGINEER.
17. THE CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION, DESIGNATED TO REMAIN, FROM DAMAGE DURING CONSTRUCTION. ANY MONUMENTS DISTURBED BY THE CONTRACTOR SHALL BE RESET AT HIS OWN EXPENSE AND DOCUMENTED BY A LICENSED LAND SURVEYOR. THE CONTRACTOR AND THE ENGINEER SHALL NOTE THOSE MONUMENTS IN THE FIELD PRIOR TO CONSTRUCTION.
18. AN EXISTING STOCKPILE OF EMBANKMENT MATERIAL IS LOCATED IN THE CITY OF WESTMINSTER, IN THE VICINITY OF 136TH AVENUE AND SHALL BE USED FOR THIS PROJECT.
19. PLACED TOPSOIL SHALL BE 4" DEEP. IF THE TOPSOIL IS NOT GENERATED WITHIN THE PROJECT LIMITS, IT SHALL BE TREATED WITH AN HERBICIDE APPLICATION AFTER PLACEMENT AND BEFORE NATIVE SEEDING. HERBICIDE TREATMENT SHALL BE PERFORMED BY A LICENSED HERBICIDE APPLICATOR AND SHALL BE INCLUDED IN THE COST OF SEEDING (NATIVE).
20. THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AND/OR TOES OF SLOPE AS SHOWN ON THE PLANS AND CROSS SECTIONS. ANY DISTURBANCES BEYOND THESE LIMITS SHALL BE RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. CONSTRUCTION ACTIVATES IN ADDITION TO NORMAL CONSTRUCTION PROCEDURE SHALL INCLUDE THE PARKING OF VEHICLES OR EQUIPMENT, DISPOSAL OF LITTER, AND ANY OTHER ACTION WHICH WOULD ALTER EXISTING CONDITIONS.
21. EROSION CONTROL MEASURES MUST BE IMPLEMENTED BEFORE CONSTRUCTION AND GRADING OPERATIONS BEGIN.
22. THE CONTRACTOR SHALL BE AWARE OF RESIDENCES WITHIN THE AREA. THE CONTRACTOR WILL BE LIMITED TO CONSTRUCTION ACTIVITIES WITHIN THE RESIDENTIAL AREAS BETWEEN 7:00 AM TO 10:00 PM. THERE WILL BE NO CONSTRUCTION RELATED TRUCK TRAFFIC THROUGH RESIDENTIAL NEIGHBORHOODS. ALL CONSTRUCTION EQUIPMENT IS TO BE WELL-MAINTAINED AND INCLUDE APPROPRIATE SOUND CONTROL MEASURES, SUCH AS MUFFLERS AND SOUND ENCLOSURES. IF THE ENGINEER OR THE CITIES RECEIVE COMPLAINTS ABOUT CONSTRUCTION NOISE, THE CONTRACTOR WILL ASSIST TO LIMIT THE NOISE OUTPUT FROM CONSTRUCTION. THESE MEASURES MAY INCLUDE NOISE BLANKETS ON ENGINES AND QUIET USE GENERATORS.

THE CONTRACT UNIT PRICES SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN ON THE PLANS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY PORTION OF THE WORK THAT IS NOT SPECIFICALLY COVERED BY A PAY ITEM SHALL BE CONSIDERED A SUBSIDIARY OBLIGATION OF THE CONTRACTOR AND ALL COSTS IN CONNECTION THEREWITH SHALL BE INCLUDED IN THE CONTRACT UNIT PRICES FOR THE VARIOUS ITEMS OF THE WORK. THERE WILL BE NO PAYMENT BEYOND THE CONTRACT UNIT PRICES FOR ANY WORK THAT IS SHOWN ON THE PLANS OR IS REQUIRED TO COMPLETE THE WORK SHOWN ON THE PLANS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.



J:\00033\acad\sheet\M00033GNR01.dwg, 01/27/2003 01:17:35 PM, Robbie

<b>Computer File Information</b>		<b>Index of Revisions</b>		<b>FELSBURG HOLT &amp; ULLEVIG</b>	303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE <b>GENERAL NOTES</b>	Project No./Code	
Creation Date:	12/28/00 Initials: JAC	○				No Revisions:		97-71	
Last Modification Date:	01/27/03 Initials: PRH	○				Revised:		Designer: RKZ	
Full Path:	J:\00033\Acad\Sheet\	○				Void:		Detailer: JAC	
Drawing File Name:	M00033GNR01.DWG	○				Sheet Subset:		GNRLNTS	
Acad Ver. 2000i	Scale: Units: English	○		Subset Sheets:	GNR-01 of 01	Sheet Number <b>3</b>			

SUMMARY OF EARTHWORK

CITY OF WESTMINSTER	PLAN CY	INTERCHANGE	PLAN CY	CITY OF THORNTON	PLAN CY	PROJECT TOTALS	PLAN CY
<b>EMBANKMENT MATERIAL (COMPLETE IN PLACE)</b> FROM ROADWAY CROSS SECTIONS 136TH AVE, STA 8+20 TO STA 14+00 136TH AVE, STA 14+00 TO STA 35+00 ADDITIONAL EMBANKMENT FROM PAVEMENT THICKNESS REVISION WEST OF CDOT R.O.W. AT SB RAMPS OVEREXCAVATION QUANTITY MEDIAN AREA DRAINAGE DITCH, 136TH AVE, STA 30+50, RT	0 79,000 750 8,450 4,500 1,100 0	<b>EMBANKMENT MATERIAL (COMPLETE IN PLACE)</b> FROM ROADWAY CROSS SECTIONS 136TH AVE, STA 35+00 TO STA 37+75 136TH AVE, STA 40+83 TO STA 43+50 SB ON RAMP, STA 100+00 TO STA 123+50 NB OFF RAMP, STA 200+00 TO STA 216+00 SB OFF RAMP, STA 301+50 TO STA 315+08.5 NB ON RAMP, STA 401+50 TO STA 411+50 I-25 WIDENING, STA 0+00 TO STA 11+60 ADDITIONAL EMBANKMENT FROM PAVEMENT THICKNESS REVISION OVEREXCAVATION QUANTITY ADJUST FOR QUANTITIES TO THE CITIES ②	78,100 110,300 32,800 32,600 27,400 70,100 15 900 6,300 -8,450 -16,300	<b>EMBANKMENT MATERIAL (COMPLETE IN PLACE)</b> FROM ROADWAY CROSS SECTIONS 136TH AVE, STA 43+50 TO STA 59+40 136TH AVE, STA 61+75 TO 66+00 136TH AVE, STA 66+50 TO STA 71+80.46 WASHINGTON STREET, STA 503+50 TO STA 513+00 ACCESS DETOUR, STA 1057+31 TO STA 1066+34 ADDITIONAL EMBANKMENT FROM PAVEMENT THICKNESS REVISION EAST OF CDOT R.O.W. AT NB RAMPS OVEREXCAVATION QUANTITY MEDIAN AREA REPLACE MUCK EXCAVATION	153,300 7,200 1,450 2,250 780 1,050 16,300 2,000 800 5,000	<b>EMBANKMENT MATERIAL (C.I.P.)</b> WESTMINSTER INTERCHANGE THORNTON	93,800 333,765 192,180
<b>TOTAL PAY QUANTITY</b>	93,800	<b>TOTAL PAY QUANTITY</b>	333,765	<b>TOTAL PAY QUANTITY</b>	192,180	<b>TOTAL PAY QUANTITY</b>	619,745
<b>FOR INFORMATION ONLY</b>		<b>FOR INFORMATION ONLY</b>		<b>FOR INFORMATION ONLY</b>		<b>FOR INFORMATION ONLY</b>	
EMBANKMENT MATERIAL (C.I.P.) R VALUE OF 20 ① OVEREXCAVATION	12,200 4,500	EMBANKMENT MATERIAL (C.I.P.) R VALUE OF 20 ① OVEREXCAVATION SB ON RAMP, STA 100+00 TO STA 123+50 NB OFF RAMP, STA 200+00 TO STA 216+00 SB OFF RAMP, STA 301+50 TO STA 315+08.5 NB ON RAMP, STA 401+50 TO STA 411+50 OVEREXCAVATION TOTAL	18,500 3,600 1,700 750 250 6,300	EMBANKMENT MATERIAL (C.I.P.) R VALUE OF 20 ① OVEREXCAVATION	13,900 2,000	EMBANKMENT MATERIAL (C.I.P.) R VALUE OF 20 ① OVEREXCAVATION	44,600 12,800
<b>UNCLASSIFIED EXCAVATION (FOR INFORMATION ONLY)</b>		<b>UNCLASSIFIED EXCAVATION (FOR INFORMATION ONLY)</b>		<b>UNCLASSIFIED EXCAVATION (FOR INFORMATION ONLY)</b>		<b>UNCLASSIFIED EXCAVATION (FOR INFORMATION ONLY)</b>	
FROM ROADWAY CROSS SECTIONS 136TH AVE, STA 8+20 TO STA 14+00 136TH AVE, STA 14+00 TO STA 35+00 HURON ST, STA 0+85 TO STA 7+30 LESS EXCAVATION FROM PAVEMENT THICKNESS REVISION WEST OF CDOT R.O.W. AT SB RAMPS DRAINAGE DITCH, 136TH AVE, STA 30+50, RT	750 3,300 50 -250 1,600 1,850	FROM ROADWAY CROSS SECTIONS SB ON RAMP, STA 100+00 TO STA 123+50 NB OFF RAMP, STA 200+00 TO STA 216+00 SB OFF RAMP, STA 301+50 TO STA 315+08.5 NB ON RAMP, STA 401+50 TO STA 411+50 I-25 WIDENING, STA 0+00 TO STA 11+60 LESS EXCAVATION FROM PAVEMENT THICKNESS REVISION ADJUST FOR QUANTITIES TO CITIES ②	19,700 14,700 350 70 400 -300 -1,600	FROM ROADWAY CROSS SECTIONS 136TH AVE, STA 43+50 TO STA 59+40 136TH AVE, STA 61+75 TO 66+00 136TH AVE, STA 66+50 TO STA 71+80.46 WASHINGTON STREET, STA 503+50 TO STA 513+00 ACCESS DETOUR LESS EXCAVATION FROM PAVEMENT THICKNESS REVISION EAST OF CDOT R.O.W. AT NB RAMPS	4,100 700 700 350 50 -350 0	WESTMINSTER INTERCHANGE THORNTON	7,300 33,320 5,550
<b>TOTAL (FOR INFORMATION ONLY)</b>	7,300	<b>TOTAL (FOR INFORMATION ONLY)</b>	33,320	<b>TOTAL (FOR INFORMATION ONLY)</b>	5,550	<b>TOTAL (FOR INFORMATION ONLY)</b>	46,170
<b>MUCK EXCAVATION</b>		<b>MUCK EXCAVATION</b>		<b>MUCK EXCAVATION</b>		<b>MUCK EXCAVATION</b>	
				136TH AVE, STA 61+75 TO 66+00	5,000		
<b>TOTAL PAY QUANTITY</b>	0	<b>TOTAL PAY QUANTITY</b>	0	<b>TOTAL PAY QUANTITY</b>	5,000	<b>TOTAL PAY QUANTITY</b>	5,000
<b>FOR INFORMATION ONLY</b>		<b>FOR INFORMATION ONLY</b>		<b>FOR INFORMATION ONLY</b>		<b>FOR INFORMATION ONLY</b>	
<b>COMPACTION (MOISTURE AND DENSITY CONTROL)</b>		<b>COMPACTION (MOISTURE AND DENSITY CONTROL)</b>		<b>COMPACTION (MOISTURE AND DENSITY CONTROL)</b>		<b>COMPACTION (MOISTURE AND DENSITY CONTROL)</b>	
EMBANKMENT (NET) BASES OF CUTS AND FILLS	93,800 16,600	EMBANKMENT (NET) BASES OF CUTS AND FILLS	333,765 28,150	EMBANKMENT (NET) BASES OF CUTS AND FILLS	192,180 18,150	EMBANKMENT (NET) BASES OF CUTS AND FILLS	619,745 62,900
<b>TOTAL (FOR INFORMATION ONLY)</b>	110,400	<b>TOTAL (FOR INFORMATION ONLY)</b>	361,915	<b>TOTAL (FOR INFORMATION ONLY)</b>	210,330	<b>TOTAL (FOR INFORMATION ONLY)</b>	682,645
<b>WETTING QUANTITIES (INFORMATION ONLY)</b>		<b>WETTING QUANTITIES (INFORMATION ONLY)</b>		<b>WETTING QUANTITIES (INFORMATION ONLY)</b>		<b>WETTING QUANTITIES (INFORMATION ONLY)</b>	
COMPACTION (110,400 x 0.040 MILLION GALLONS/ CY OF EARTHWORK)		COMPACTION (361,915 x 0.040 MILLION GALLONS/ CY OF EARTHWORK)		COMPACTION (210,330 x 0.040 MILLION GALLONS/ CY OF EARTHWORK)		COMPACTION (682,645 x 0.040 MILL GALS/ CY OF EARTHWORK)	
<b>TOTAL (FOR INFORMATION ONLY)</b>	4,420	<b>TOTAL (FOR INFORMATION ONLY)</b>	14,480	<b>TOTAL (FOR INFORMATION ONLY)</b>	8,415	<b>TOTAL (FOR INFORMATION ONLY)</b>	27,300
<b>ROADWAY QUANTITIES BALANCE (INFORMATION ONLY)</b>		<b>ROADWAY QUANTITIES BALANCE (INFORMATION ONLY)</b>		<b>ROADWAY QUANTITIES BALANCE (FOR INFORMATION ONLY)</b>		<b>ROADWAY QUANTITIES BALANCE (FOR INFO ONLY)</b>	
EXCAVATION UNCLASSIFIED OVEREXCAVATION BORROW STOCKPILE ON SITE BORROW UNDESIGNATED SOURCE EMBANKMENT x FACTOR (1.15) ROADWAY (93,800-(7300+4500)) x 1.15	7,300 4,500 94,300 0 94,300	EXCAVATION UNCLASSIFIED OVEREXCAVATION BORROW STOCKPILE ON SITE BORROW UNDESIGNATED SOURCE EMBANKMENT x FACTOR (1.15) ROADWAY (333,765-(33,320+6,300)) x 1.15	33,320 6,300 128,000 210,275 338,267	EXCAVATION UNCLASSIFIED OVEREXCAVATION BORROW STOCKPILE ON SITE BORROW UNDESIGNATED SOURCE EMBANKMENT x FACTOR (1.15) ROADWAY (192,180-(5550+2000)) x 1.15	5,550 2,000 0 212,325 212,325	EXCAVATION UNCLASSIFIED OVEREXCAVATION BORROW STOCKPILE ON SITE BORROW UNDESIGNATED SOURCE EMBANKMENT x FACTOR (1.15) ROADWAY (619,745-(46,170+12,800)) x 1.15	46,170 12,800 220,000 422,600 644,900
<b>TOPSOIL</b>	4,400	<b>TOPSOIL</b>	7,100	<b>TOPSOIL</b>	5,500	<b>TOPSOIL PAY QUANTITY</b>	17,000

① EMBANKMENT MATERIAL (C.I.P.) R VALUE OF 20 IS SHOWN FOR INFORMATION ONLY. THIS QUANTITY IS INCLUDED IN THE EMBANKMENT MATERIAL (COMPLETE IN PLACE).

② REFER TO SHEET SAQ-01 FOR DELINEATION OF EARTHWORK QUANTITIES ALONG RAMPS.

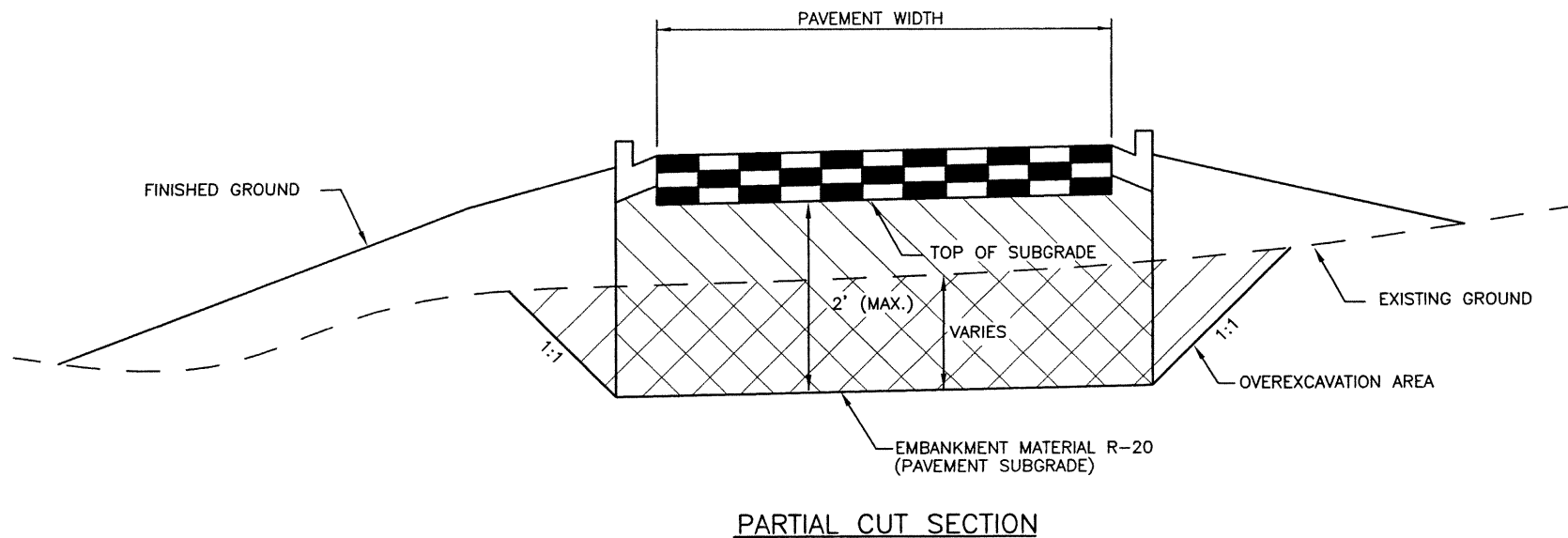


<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE SUMMARY OF EARTHWORK	<b>Project No./Code</b>	
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Last Modification Date: 01/27/03 Initials: PRH	<input type="checkbox"/>		Revised:		Designer: RKZ			
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Drawing File Name: M00033TAB05.dwg	<input type="checkbox"/>				Sheet Subset: EARTHWORK		Subset Sheets: GNR-01 of 02	
Acad Ver. 2000i Scale: Units: English	<input type="checkbox"/>				Sheet Number 4			

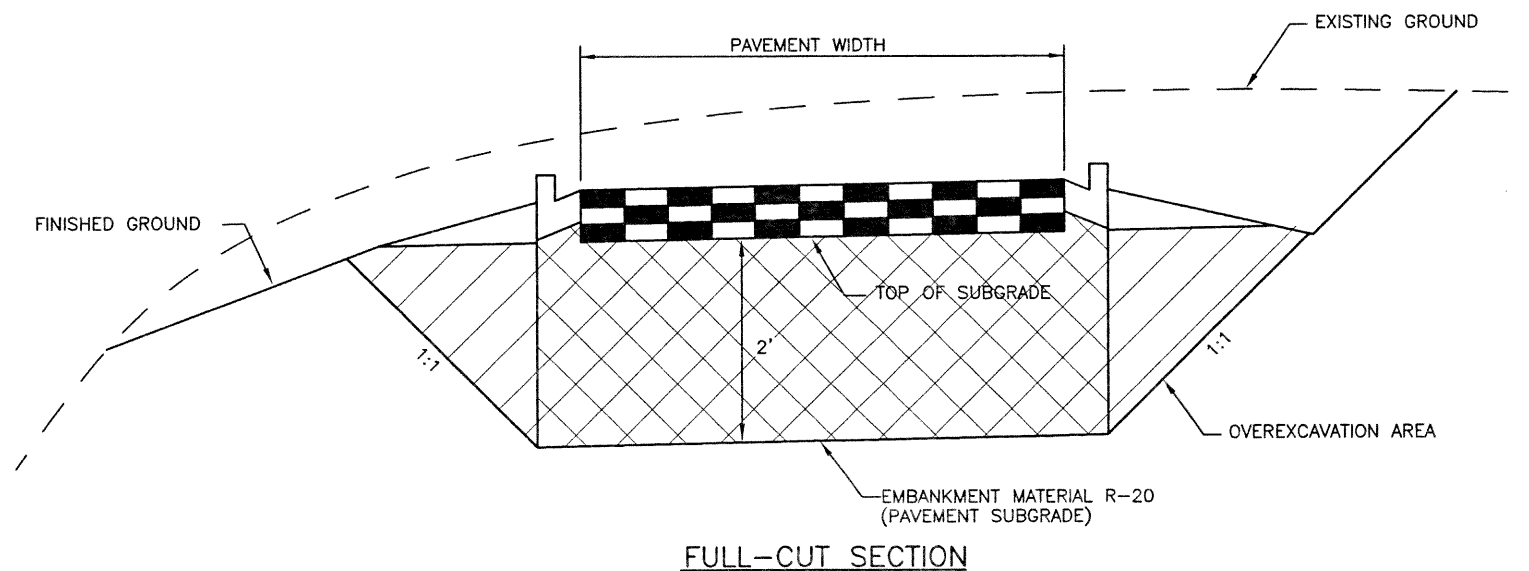
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**EARTHWORK NOTES**

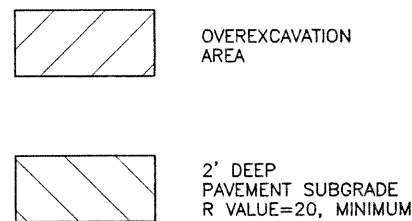
- SITE GRADING SHALL BE PERFORMED TO ACCOMMODATE A MINIMUM OF 2 FEET OF MOISTURE-DENSITY TREATED ON-SITE SOILS/BEDROCK PLACED BENEATH THE PAVEMENT. IN CUT AREAS AND SHALLOW FILLS, OVEREXCAVATION AND REPLACEMENT SHALL BE PERFORMED IN ORDER TO MEET THE 2 FOOT REQUIREMENT. THE OVEREXCAVATION SHALL CARRY THROUGH THE CUT AREAS AND TRANSITION FROM CUT TO FILL UNTIL THE DEPTH OF FILL IS A MINIMUM OF 2 FEET.
- THE UPPERMOST 2 FEET OF PAVEMENT SUBGRADE SHALL YIELD AN R-VALUE OF AT LEAST 20 AND EXHIBIT A MINIMUM COMPRESSIVE STRENGTH OF AT LEAST 180 PSI.
- TYPE C FLYASH MAY BE ADDED TO THE EMBANKMENT MATERIAL AT A RATE OF 12% PER DRY WEIGHT OF SOIL TO ACHIEVE AN R-20 VALUE.
- IT WILL BE NECESSARY TO STABILIZE THE SUBGRADE ON THE EAST SIDE OF I-25, ALONG 136TH AVENUE, IN THE VICINITY OF THE EXISTING WETLANDS AND AREAS OF SHALLOW GROUNDWATER. AFTER THE REMOVAL OF UNSUITABLE MATERIALS TO A DEPTH OF 2', THE UNDERLYING NATIVE SOILS SHALL BE SCARIFIED TO A DEPTH OF 12" AND STABILIZED WITH TYPE C FLYASH. A 12 INCH LIFT OF STABILIZED MATERIAL SHALL THEN BE PLACED OVER THE STABILIZED SUBGRADE TO ESTABLISH A FIRM PLATFORM FOR CONVENTIONAL FILLING. SEE ROADWAY PLANS FOR AREA OF MUCK EXCAVATION.
- EMBANKMENT MATERIAL TREATED WITH TYPE C FLYASH WILL NOT BE ALLOWED UNDER ANY LANDSCAPED AREAS.
- IT IS ESTIMATED THAT THE FOLLOWING QUANTITIES OF TYPE C FLYASH WILL BE REQUIRED FOR THE PROJECT:  
WESTMINSTER: 3150 T  
INTERCHANGE: 3600 T  
THORNTON: 3700 T
- OVEREXCAVATION AND PAVEMENT SUBGRADE WILL NOT BE REQUIRED FOR THE PAVEMENT WIDENING ON WASHINGTON STREET, 136TH AVENUE WEST OF HURON, 136TH AVENUE EAST OF WASHINGTON STREET, OR HURON STREET.
- A REPORT ENTITLED "SUBSURFACE EXPLORATION PROGRAM, GEOTECHNICAL RECOMMENDATIONS AND PAVEMENT DESIGN, 136TH AVENUE WITH INTERSTATE 25, WESTMINSTER AND THORNTON, COLORADO, DATED JULY 16, 2001 HAS BEEN PREPARED FOR THIS PROJECT BY GROUND ENGINEERING CONSULTANTS. ADDITIONAL RECOMMENDATIONS BY GROUND ENGINEERING ARE AVAILABLE IN A LETTER DATED APRIL 29, 2002.
- SOILS THAT CLASSIFY AS A-1 THROUGH A-5 (GRANULAR SOILS) SHALL BE COMPACTED TO 97 OR MORE PERCENT OF THE MAXIMUM MODIFIED PROCTER DRY DENSITY AT MOISTURE CONTENTS WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D-1557/AASHTO T-180. SOILS THAT CLASSIFY AS A-6 AND A-7 (COHESIVE MATERIALS) SHALL BE COMPACTED TO 98 PERCENT OF THE MAXIMUM STANDARD PROCTER DENSITY AT MOISTURE CONTENTS FROM 1 PERCENT BELOW TO 3 PERCENT ABOVE THE OPTIMUM AS DETERMINED BY ASTM D-698/AASHTO T-99.



**PARTIAL CUT SECTION**

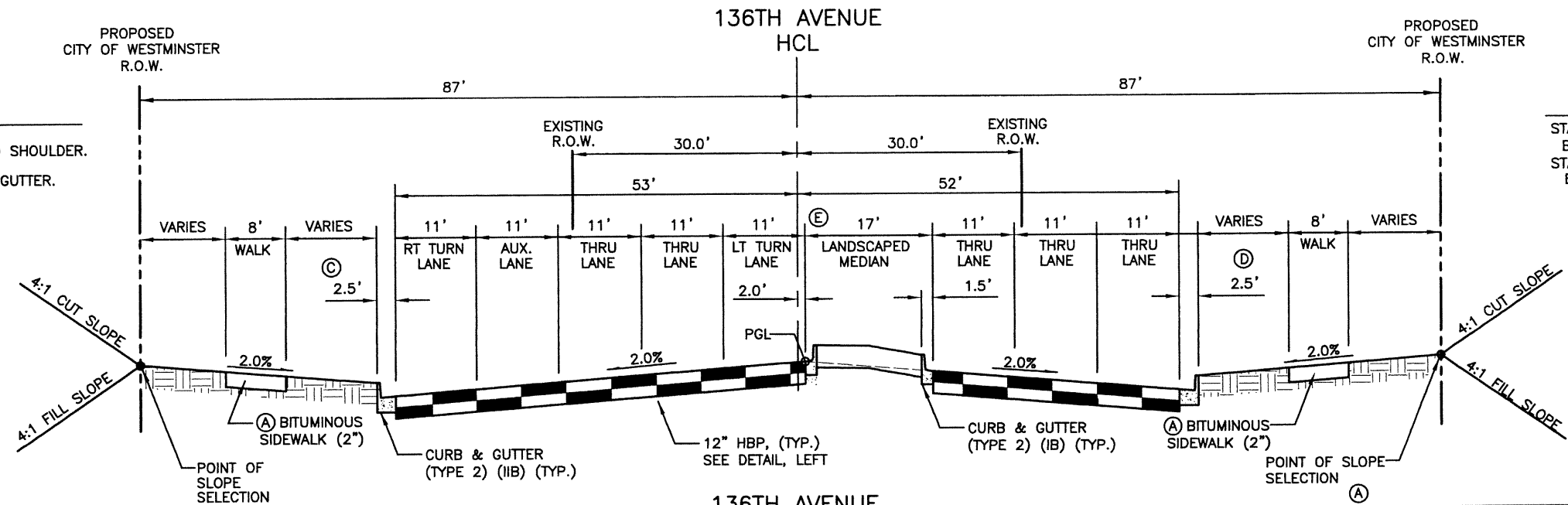


**FULL-CUT SECTION**



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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>		<b>136TH AVENUE AT I-25 INTERCHANGE EARTHWORK DETAILS</b>		<b>Project No./Code</b>		
Creation Date:	02/12/02 Initials: DRS				No Revisions:				97-71		
Last Modification Date:	12/19/02 Initials: PRH				Revised:		Designer:	RKZ			
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Drawing File Name:	M00033GNR02.DWG						Sheet Subset:	EARTHWORK	Subset Sheets:	GNR-02 of 2	Sheet Number
Acad Ver.	2000i	Scale:		Units:	English						



©  
 STA 14+19.85, 93.36' LT  
 BEGIN CURB RETURN WITH 4' PAVED SHOULDER.  
 STA 15+00, 42' LT  
 END CURB RETURN, BEGIN CURB & GUTTER.

①  
 STA 14+22.89, 93.66' RT  
 BEGIN CURB RETURN WITH 4' PAVED SHOULDER.  
 STA. 15+00, 41.00' RT, END CURB RETURN,  
 BEGIN CURB & GUTTER.

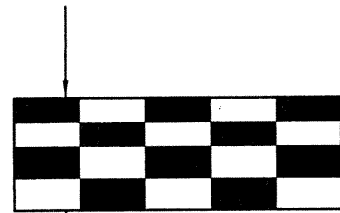
②  
 LANDSCAPED MEDIAN TRANSITION (W.R.T. NORTH  
 LIP OF MEDIAN C&G.  
 2' RT @ STA 18+35 TO 20' LT @ STA 21+65.

③  
 BITUMINOUS SIDEWALK (2"), LT  
 STA 14+25 TO STA 17+28  
 BEGIN 6" CONCRETE SIDEWALK, LT  
 STA 17+28  
 BITUMINOUS SIDEWALK (2"), RT  
 STA 14+25 TO STA 15+24  
 BEGIN 6" CONCRETE SIDEWALK, RT  
 STA 15+24

136TH AVENUE  
 STA 14+19.85 TO STA 21+65

136TH AVENUE/HURON STREET INTERSECTION

REMOVAL OF ASPHALT MAT (PLANING)  
 (ROTOMILL 2" ASPHALT IN INTERSECTION)  
 OVERLAY WITH 2" HBP (GRADING S) (A) (100) (PG 76-28)



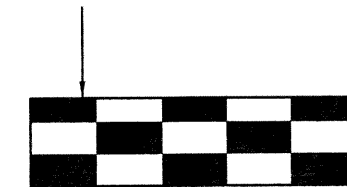
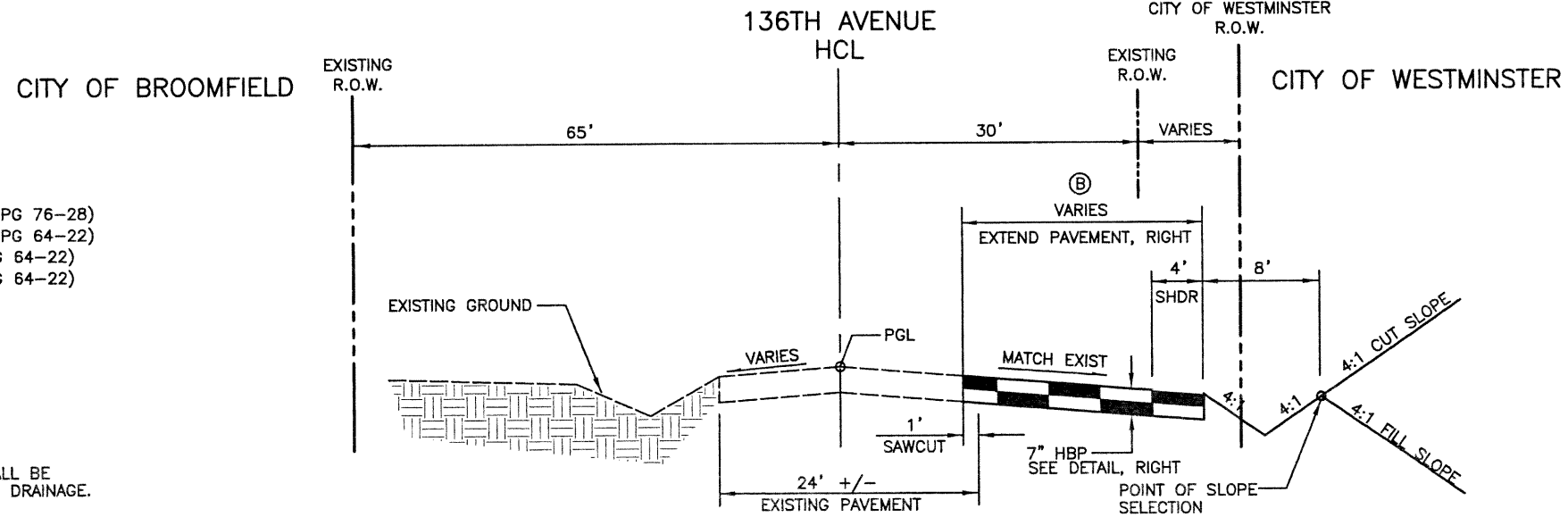
12" HOT BITUMINOUS  
 PAVEMENT THICKNESS

4 LIFTS:  
 LIFT THICKNESS  
 TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)  
 UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
 LOWER - 3" (GRADING S) (A) (100) (PG 64-22)  
 BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)

12" HBP DETAIL

TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.



7" HOT BITUMINOUS  
 PAVEMENT THICKNESS

3 LIFTS:  
 LIFT THICKNESS  
 TOP - 2" (GRADING S) (A) (100) (PG 76-28)  
 UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
 BOTTOM - 2 1/2" (GRADING S) (A) (100) (PG 64-22)

7" HBP DETAIL

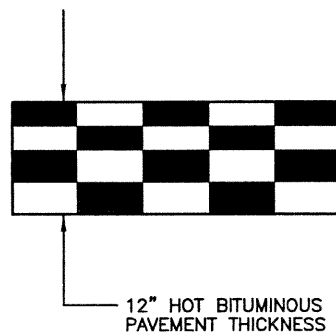
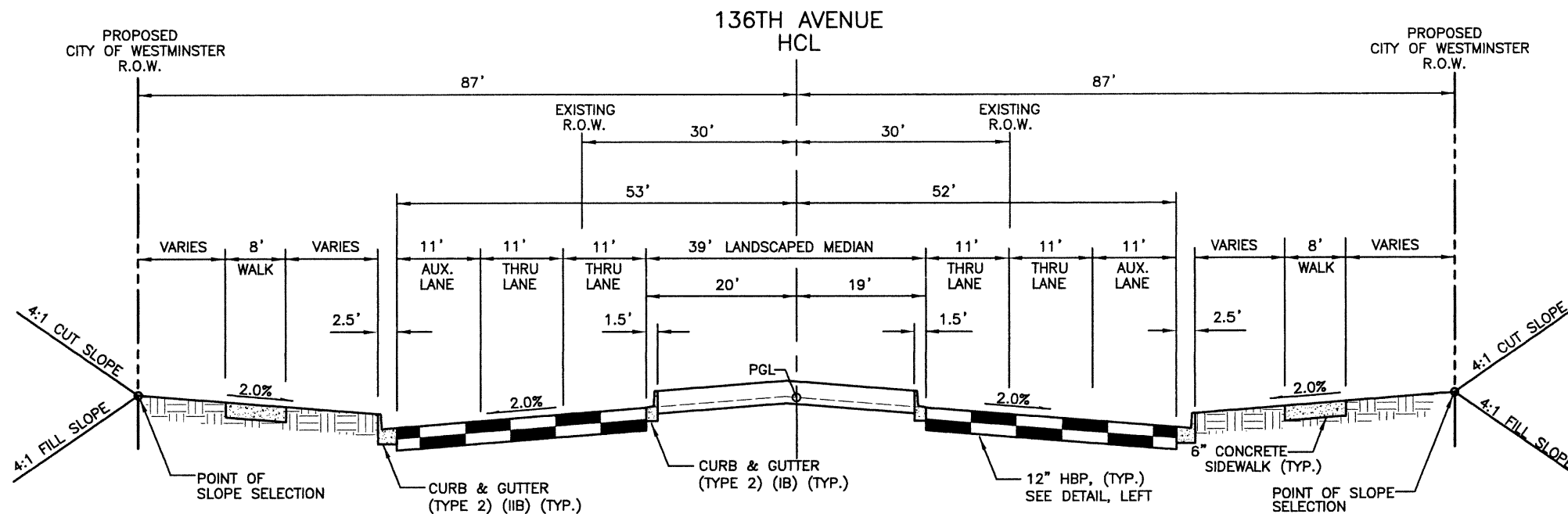
④  
 PAVEMENT TRANSITION  
 0' TO 34.3' STA 8+20 TO STA 13+32.8  
 34.3' STA 13+32.8 TO STA. 13+45.3  
 STA 13+45.3, 34.3' RT, BEGIN CURB RETURN  
 STA 13+97.1, 91.8' RT, END CURB RETURN

136TH AVENUE  
 APPROACH TO PROJECT  
 STA 8+20 TO STA 13+97.1

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Computer File Information		Index of Revisions		<p>303.721.1440          fax 303.721.0832          fhu@fhueng.com</p> <p>Greenwood Corporate Plaza          7951 E. Maplewood Ave. Ste. 200          Englewood, CO 80111</p>	As Constructed	136TH AVENUE AT I-25 INTERCHANGE 136TH AVE TYPICAL SECTIONS		Project No./Code
Creation Date:	12/19/00 Initials: JAC				No Revisions:			97-71
Last Modification Date:	12/17/02 Initials: PRH				Revised:	Designer: RKZ		
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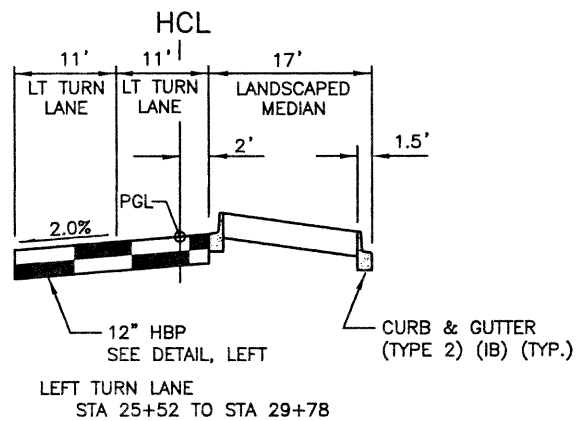
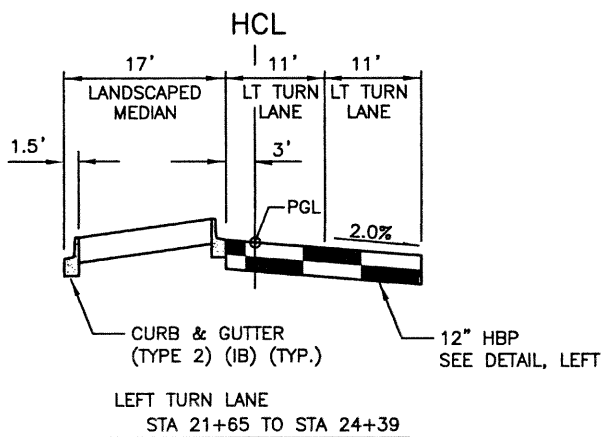


4 LIFTS:  
LIFT THICKNESS  
TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
LOWER - 3" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)

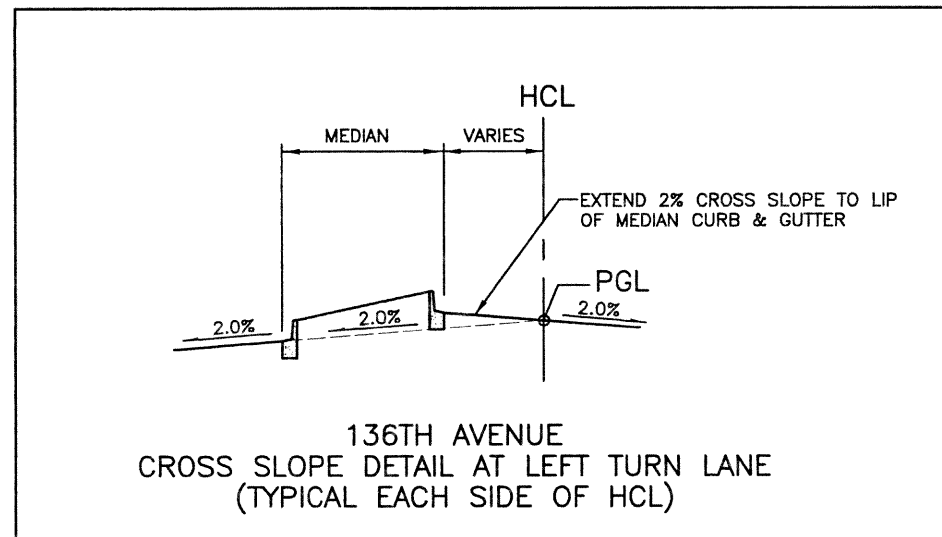
12" HBP DETAIL

TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.

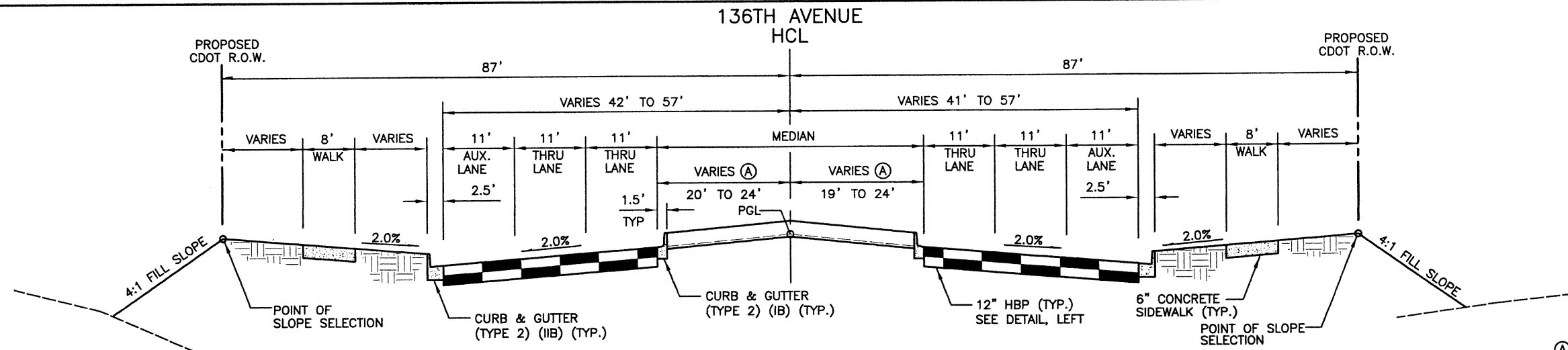


136TH AVENUE  
STA 21+65 TO STA 29+44



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Creation Date:	12/20/00 Initials: JAC				No Revisions:			97-71
Last Modification Date:	12/17/02 Initials: PRH				Revised:	Designer: RKZ		
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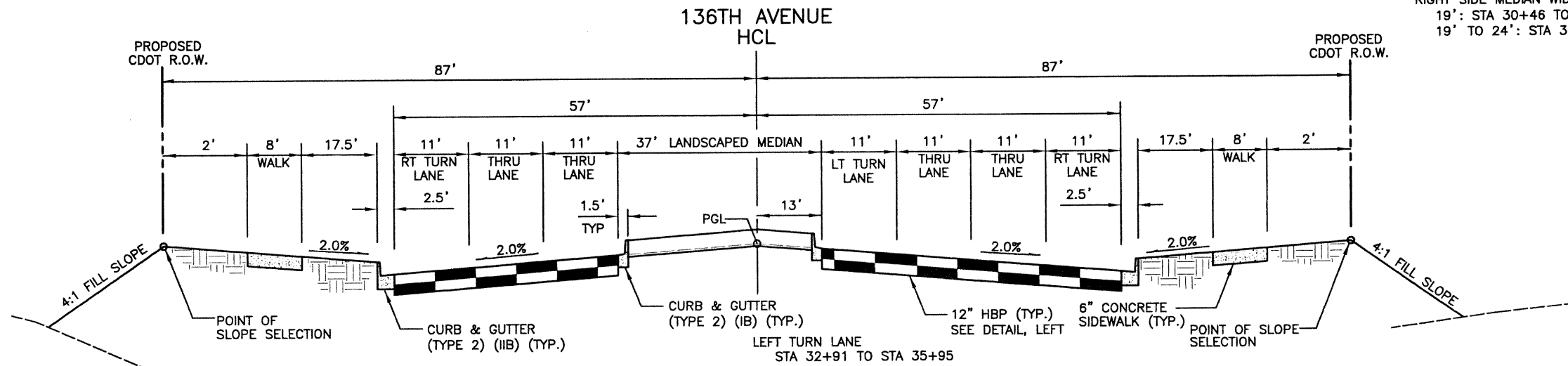
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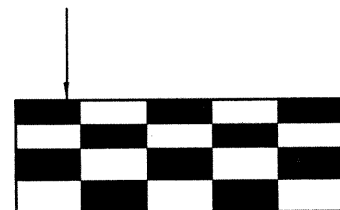
136TH AVENUE  
STA. 29+44 TO STA 33+23

(A)

LEFT SIDE MEDIAN WIDTH	20': STA 30+46 TO STA 31+43
	20' TO 24': STA 31+43 TO STA 33+23
RIGHT SIDE MEDIAN WIDTH	19': STA 30+46 TO STA 30+98
	19' TO 24': STA 30+98 TO STA 33+23



136TH AVENUE  
STA 33+23 TO STA 35+95



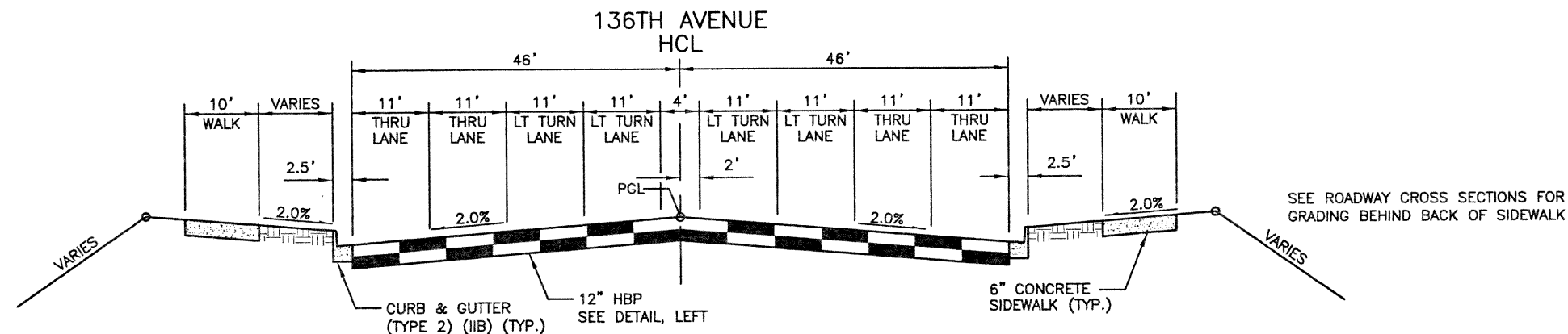
12" HBP THICKNESS

- 4 LIFTS:  
LIFT THICKNESS  
TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
LOWER - 3" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)

12" HBP DETAIL

TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.



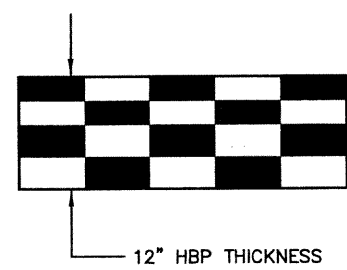
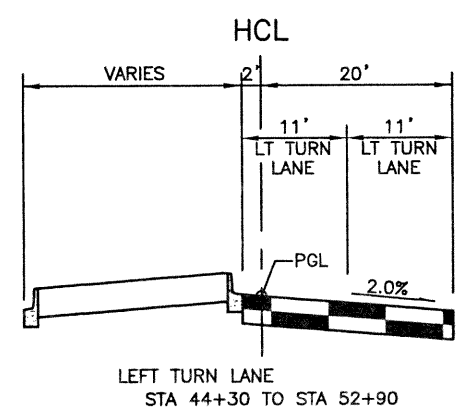
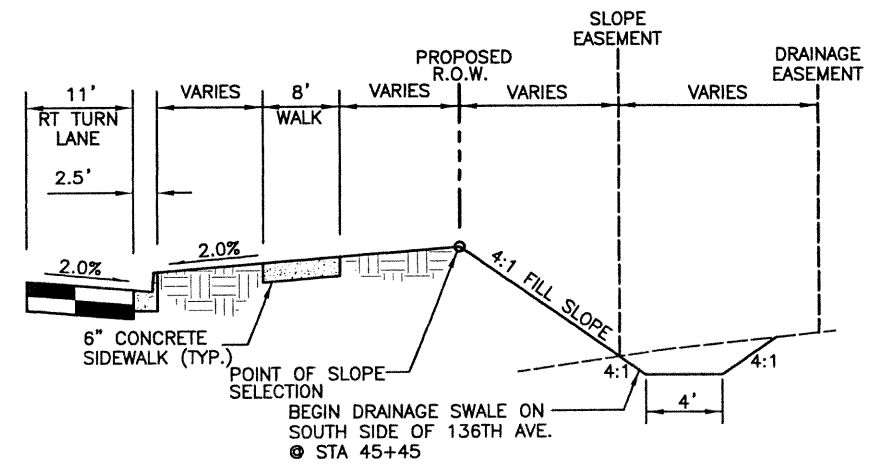
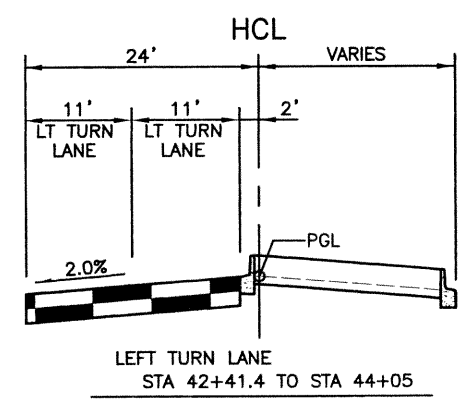
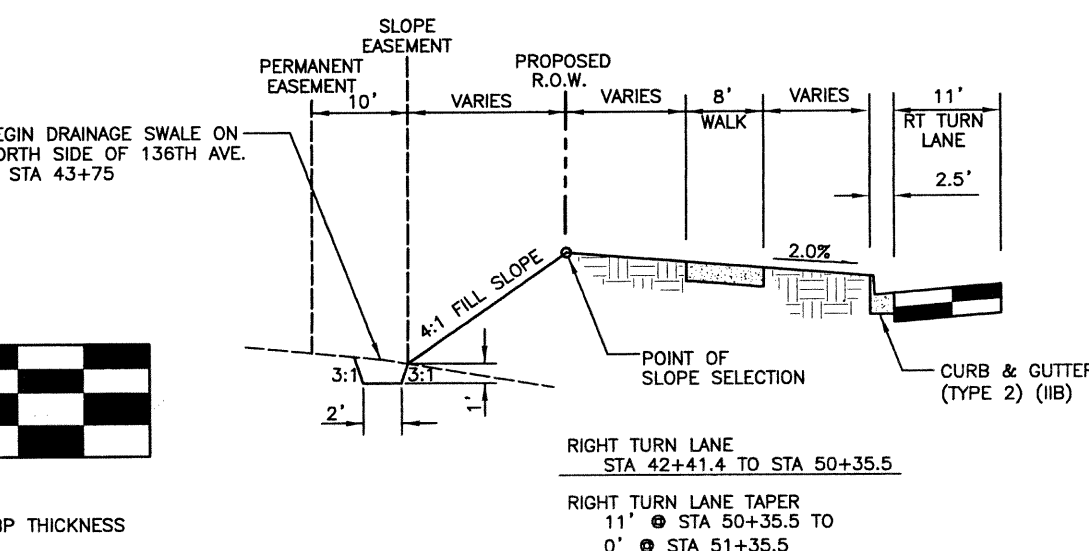
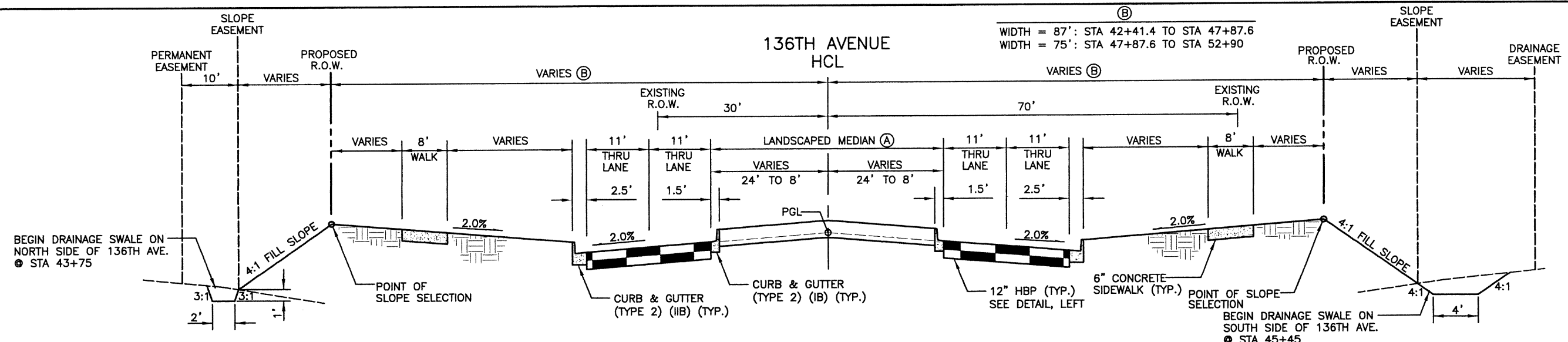
136TH AVENUE  
STA 36+25 TO STA 42+41.4  
(STR E-17-Z STA 37+96.05 TO STA 40+68.30) (SEE STR. SHT. FOR TYPICAL SECTION)



Computer File Information		Index of Revisions		 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed	136TH AVENUE AT I-25 INTERCHANGE 136TH AVE TYPICAL SECTIONS		Project No./Code
Creation Date:	12\20\00 Initials: JAC				No Revisions:			97-71
Last Modification Date:	12/17/02 Initials: PRH			Revised:	Designer: RKZ			
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Drawing File Name:	R00033TYP04.dwg				Sheet Subset: ROADWAY	Subset Sheets: TYP-03 of 10	Sheet Number 8	
Acad Ver. 2000i	Scale: 1"=20' Units: English							



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12" HBP THICKNESS

4 LIFTS:  
LIFT THICKNESS  
TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
LOWER - 3" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)

**12" HBP DETAIL**

**TYPICAL SECTION NOTES**

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.

(A)

LEFT SIDE MEDIAN WIDTH  
24': STA 42+41.4 TO STA 45+70  
24' TO 8': STA 45+70 TO STA 52+90

RIGHT SIDE MEDIAN WIDTH  
24': STA 42+41.4 TO STA 42+50  
24' TO 20': STA 42+50 TO STA 44+30  
20': STA 44+30 TO STA 52+90

**136TH AVENUE  
STA 42+41.4 TO STA 52+90**

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fax 303.721.0832  
fhu@fhueng.com

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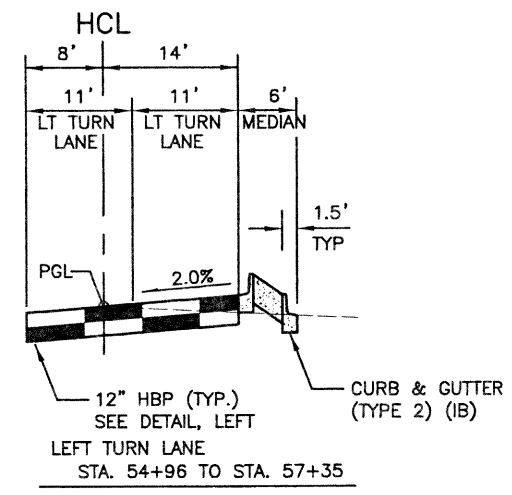
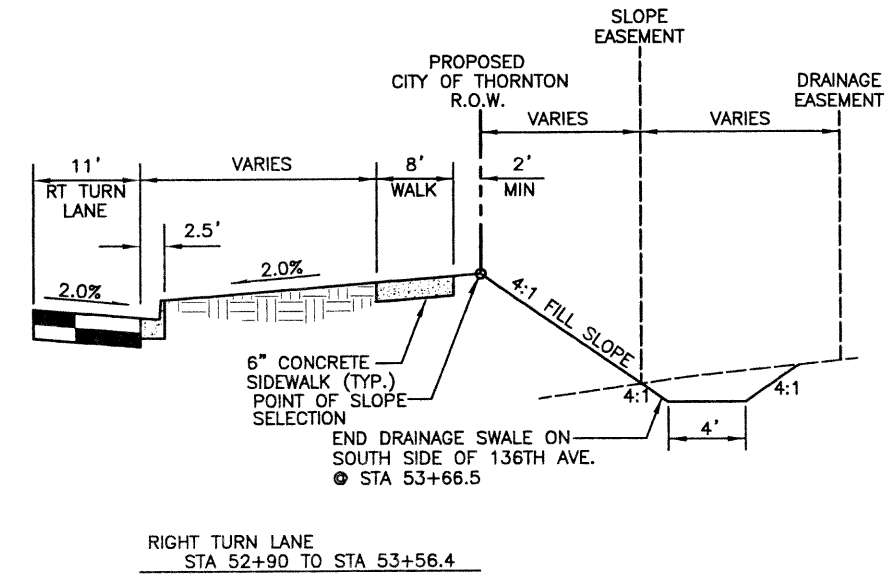
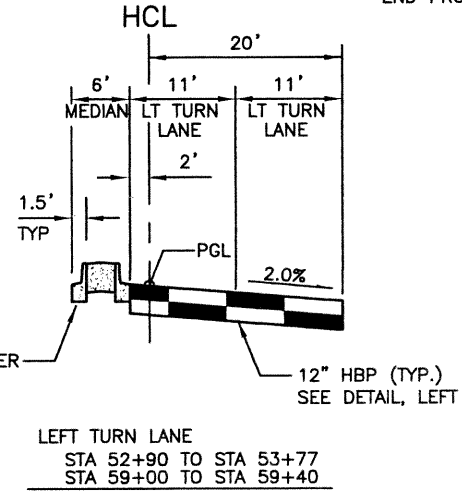
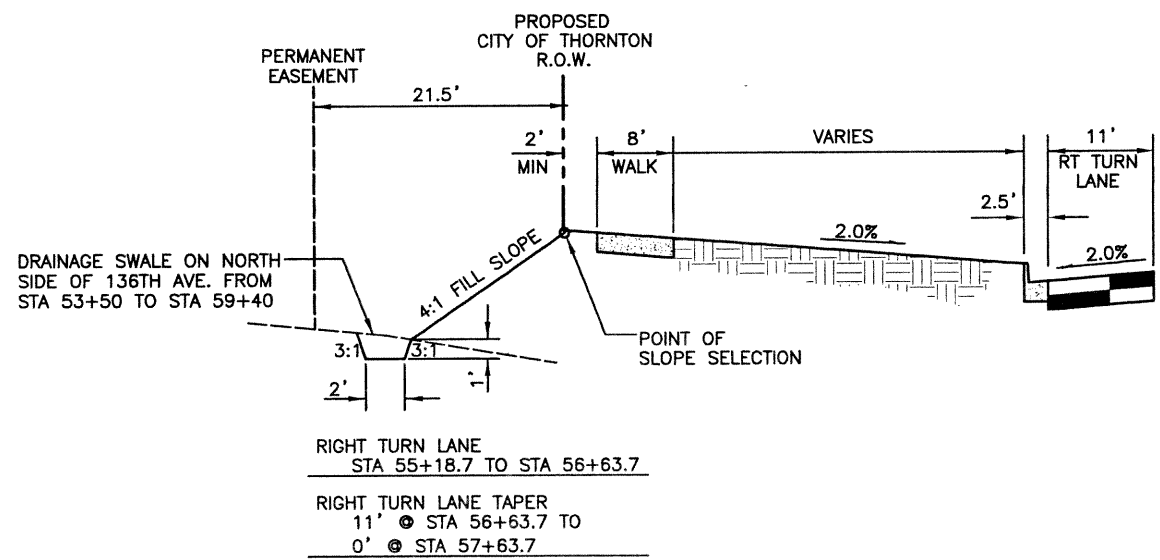
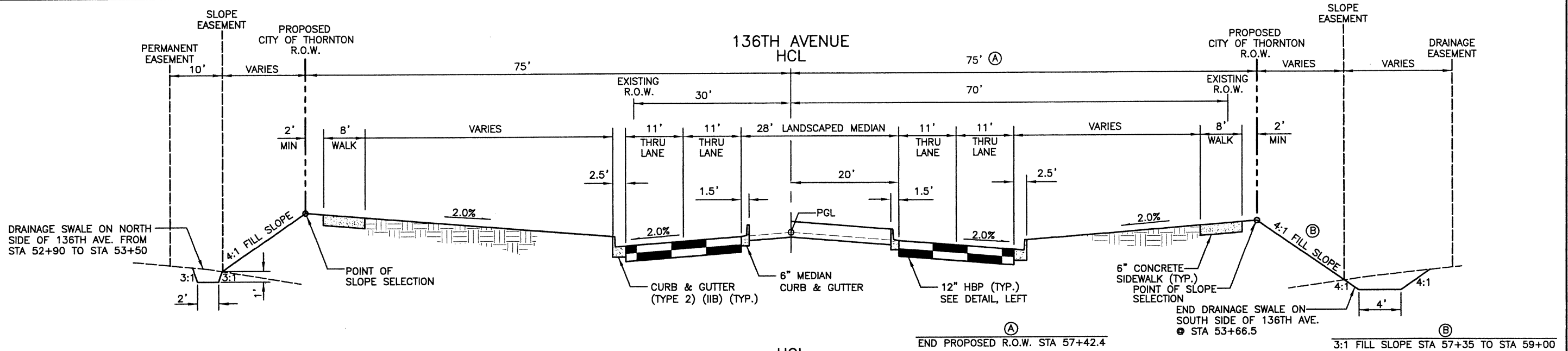
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Designer:	RKZ
Detailer:	JAC
Sheet Subset:	ROADWAY
Subset Sheets:	TYP-04 of 10

Project No./Code	97-71
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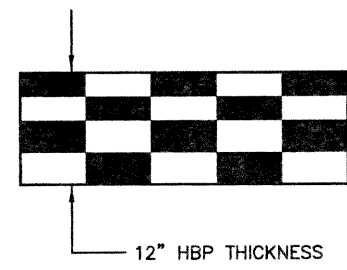
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**TYPICAL SECTION NOTES**

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.

- 4 LIFTS:  
LIFT THICKNESS
- TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)
  - UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)
  - LOWER - 3" (GRADING S) (A) (100) (PG 64-22)
  - BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)



**12" HBP DETAIL**

**136TH AVENUE STA 52+90 TO STA 59+40**

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Drawing File Name:	R00033TYP08.dwg
Acad Ver. 2000i	Scale: 1"=20' Units: English

Index of Revisions	

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

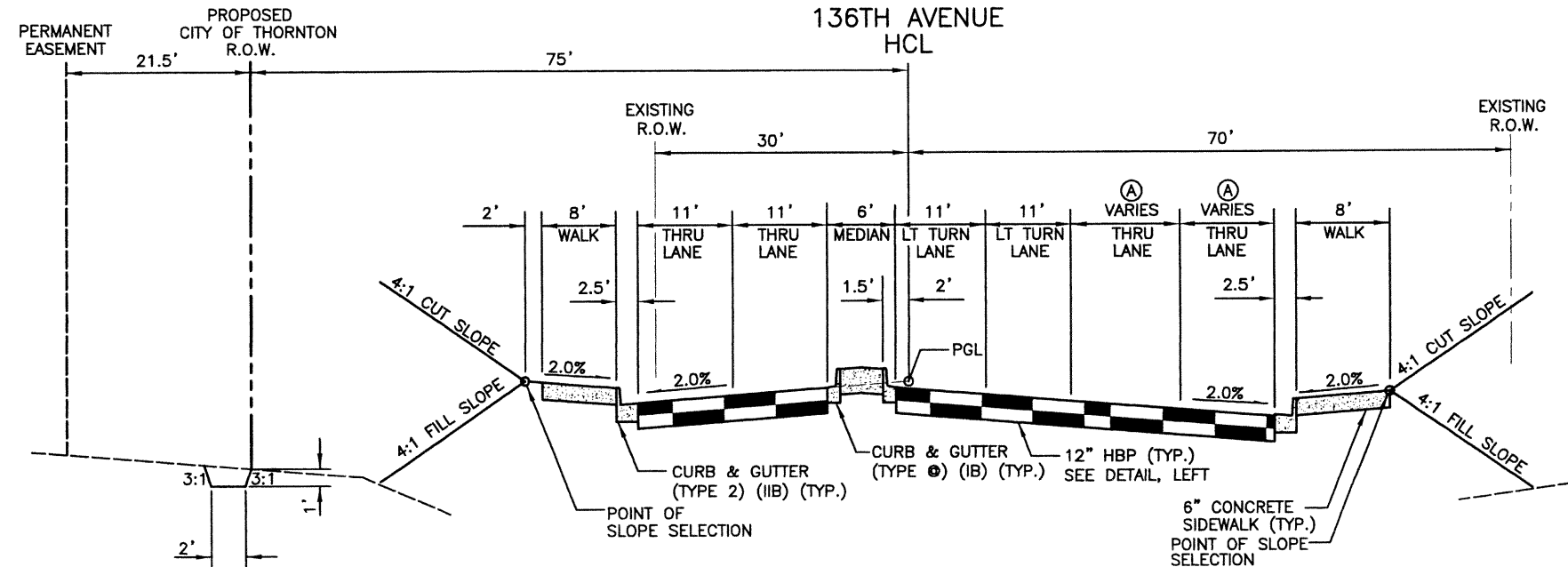
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Detailer:	JAC
Sheet Subset:	ROADWAY
Subset Sheets:	TYP-05 of 10

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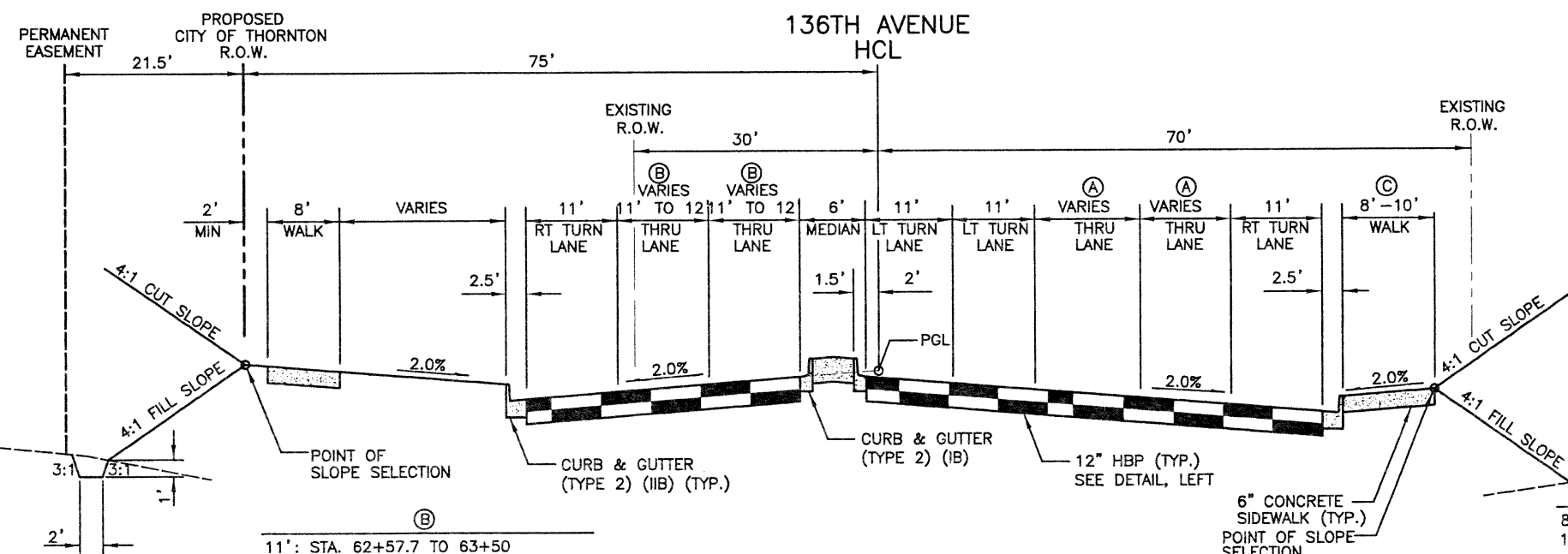


136TH AVENUE  
BIG DRY CREEK STRUCTURE  
(STA 59+40 TO STA 61+78) (SEE STR SHT FOR TYPICAL SECTION)



(A)  
11': STA. 61+78 TO 62+50  
11' TO 12': STA. 62+50 TO 63+50  
12': STA. 63+50 TO 65+91.4

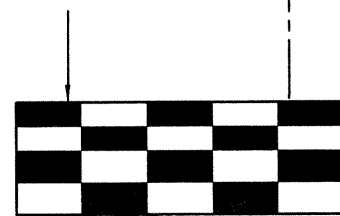
136TH AVENUE  
STA 61+78 TO STA 62+57.7



(C)  
8' WALK STA 62+57.7 TO STA 64+40  
10' WALK STA 64+40 TO STA 65+91.4

136TH AVENUE  
STA 62+57.7 TO STA 65+91.4

136TH AVENUE  
HCL  
PGL



12" HBP THICKNESS

- 4 LIFTS:  
LIFT THICKNESS  
TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
LOWER - 3" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)

12" HBP DETAIL

TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
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3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.

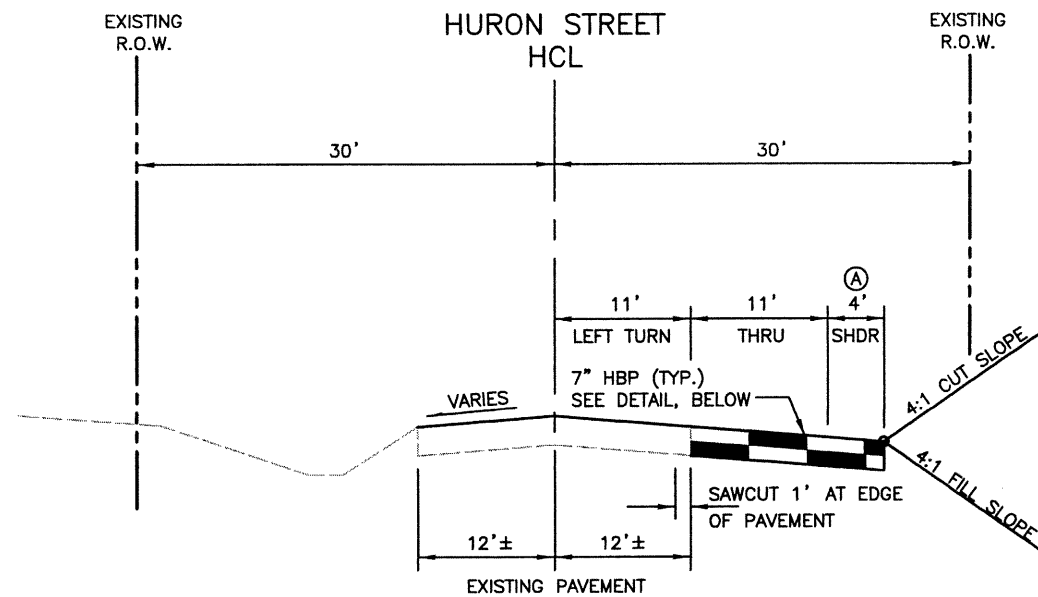
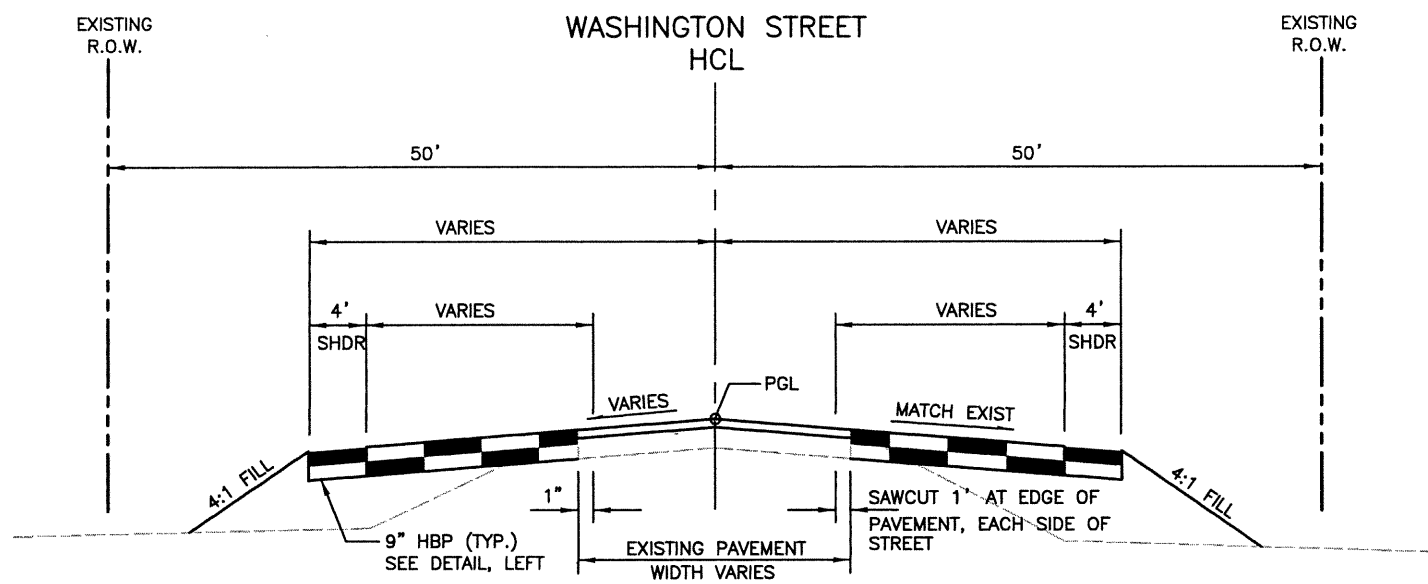
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Acad Ver. 2000i	Scale: 1"=20' Units: English								



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111





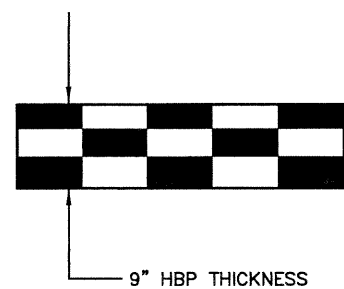
WASHINGTON STREET  
STA 503+50 TO STA 513+03

HURON STREET  
STA 0+85 TO STA 7+31

136TH AVENUE/WASHINGTON STREET INTERSECTION

REMOVAL OF ASPHALT MAT (PLANING)  
ROTMILL 2" ASPHALT IN INTERSECTION.  
OVERLAY WITH 2" HBP, (GRADING S) (A) (100) (PG 76-28)

(A)  
0' TO 4': STA. 0+85 TO STA. 1+35  
4' TO 0': STA. 6+81 TO STA. 7+31

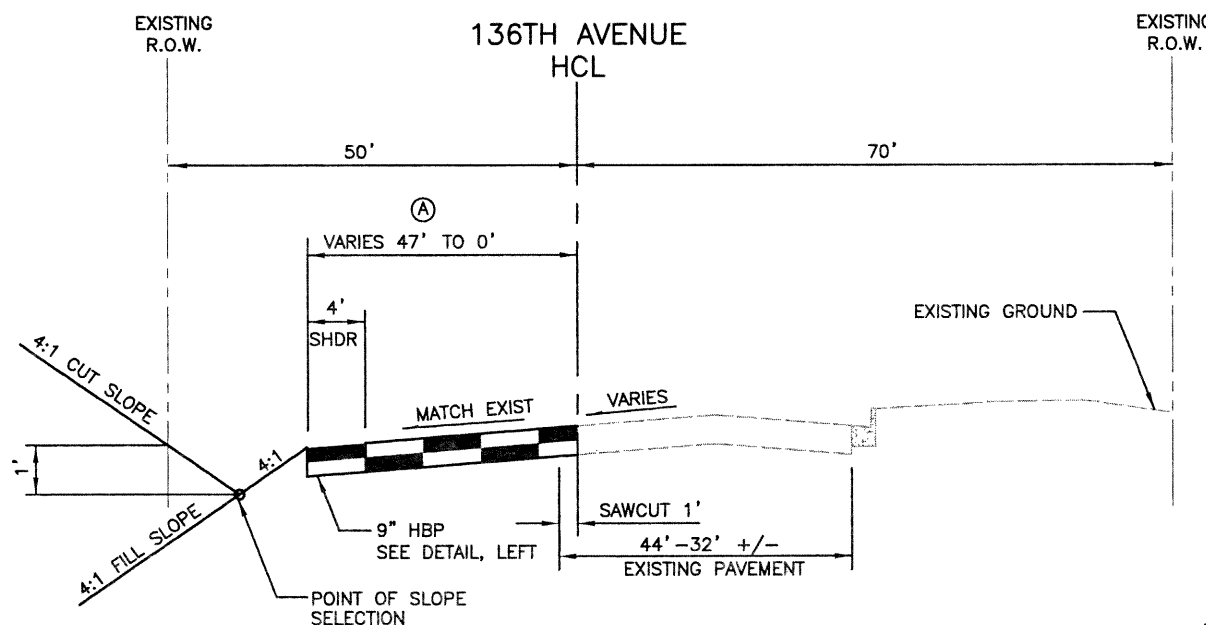


4 LIFTS:  
LIFT THICKNESS  
TOP - 2½" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 3" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 3½" (GRADING S) (A) (100) (PG 64-22)

9" HBP DETAIL

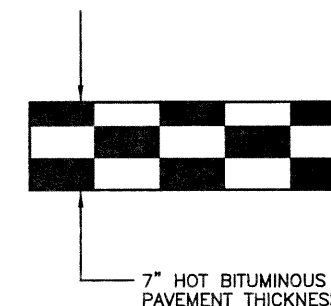
TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.



(A)  
47' TO 0': STA. 67+50.54 TO STA. 71+80.46

136TH AVENUE  
STA 67+00 TO STA 71+80.46



3 LIFTS:  
LIFT THICKNESS  
TOP - 2" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 2½" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 2½" (GRADING S) (A) (100) (PG 64-22)

7" HBP DETAIL

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Last Modification Date:	12/18/02 Initials: PRH
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fax 303.721.0832  
fhu@fhueng.com

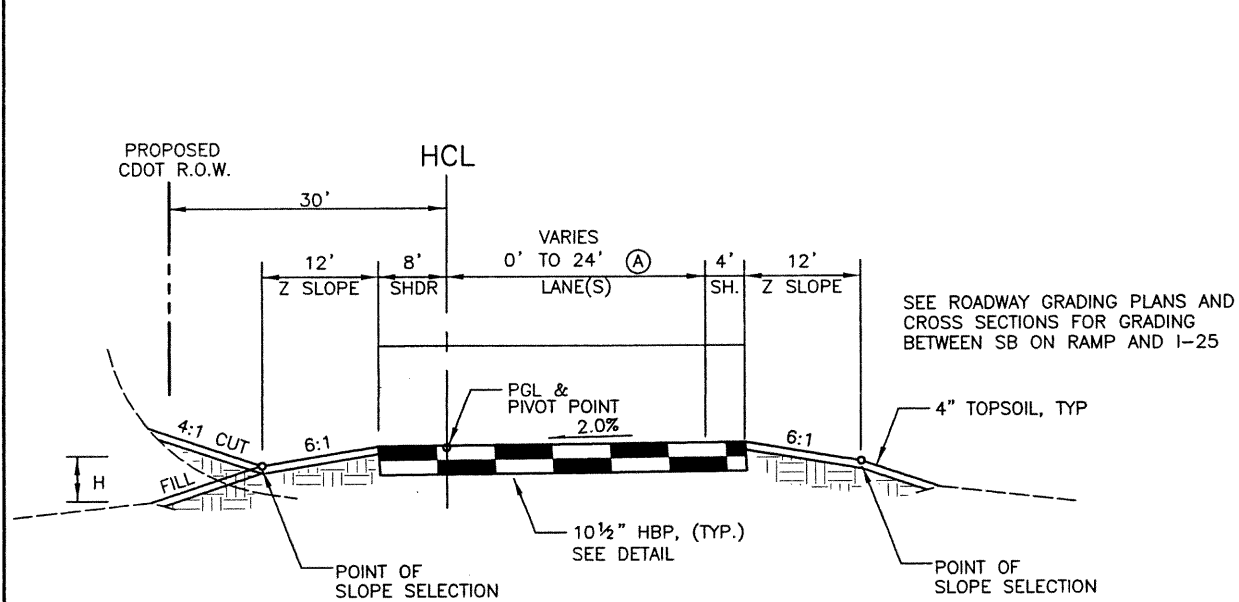
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Englewood, CO 80111

As Constructed	136TH AVENUE AT I-25 INTERCHANGE 136TH AND WASHINGTON TYPICALS
No Revisions:	
Revised:	
Void:	

Designer:	RKZ
Detailer:	JAC
Sheet Subset:	ROADWAY
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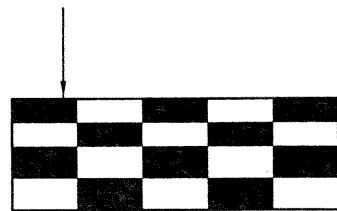
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FILL SLOPES  
6:1 IF H<4'  
4:1 IF H>4'

- (A) TAPER FROM 0' TO 12':  
STA 100+00 TO STA 103+00.2
- 12':  
STA 103+00.2 TO STA 110+13.7
- TAPER FROM 12' TO 15':  
STA 110+13.7 TO STA 111+06
- 15':  
STA 111+06 TO STA 112+45.6
- TAPER FROM 15' TO 24':  
STA 112+45.6 TO STA 115+10.4
- 24':  
STA 115+10.4 TO STA 124+00

SB ON RAMP  
STA 100+00 TO STA 124+00



10 1/2" HOT BITUMINOUS  
PAVEMENT THICKNESS

4 LIFTS:  
LIFT THICKNESS

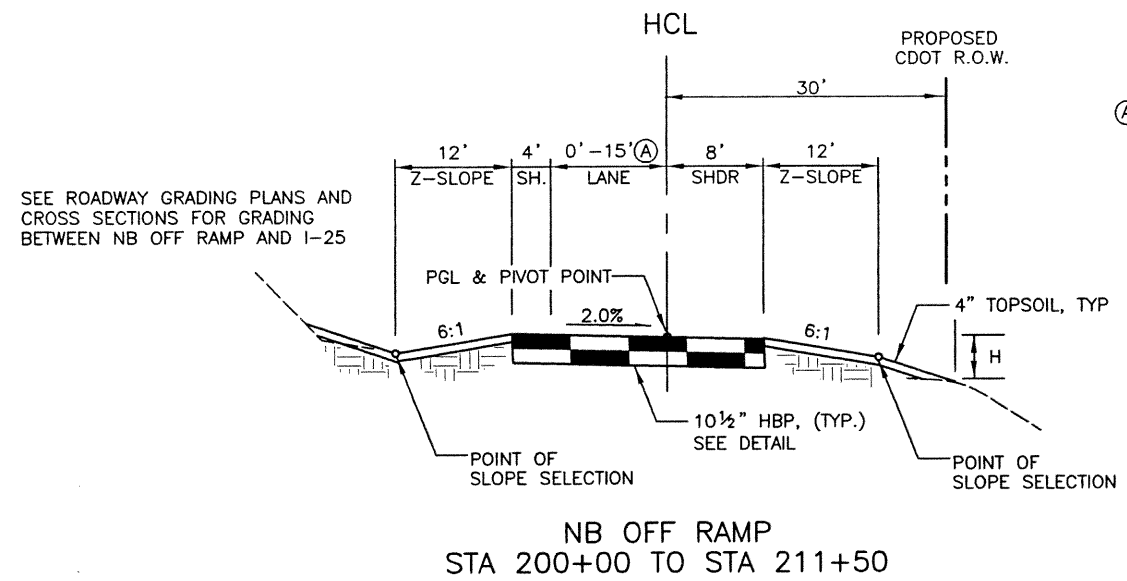
- TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)
- UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)
- LOWER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)
- BOTTOM - 3" (GRADING S) (A) (100) (PG 64-22)

10 1/2" HBP DETAIL

TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.

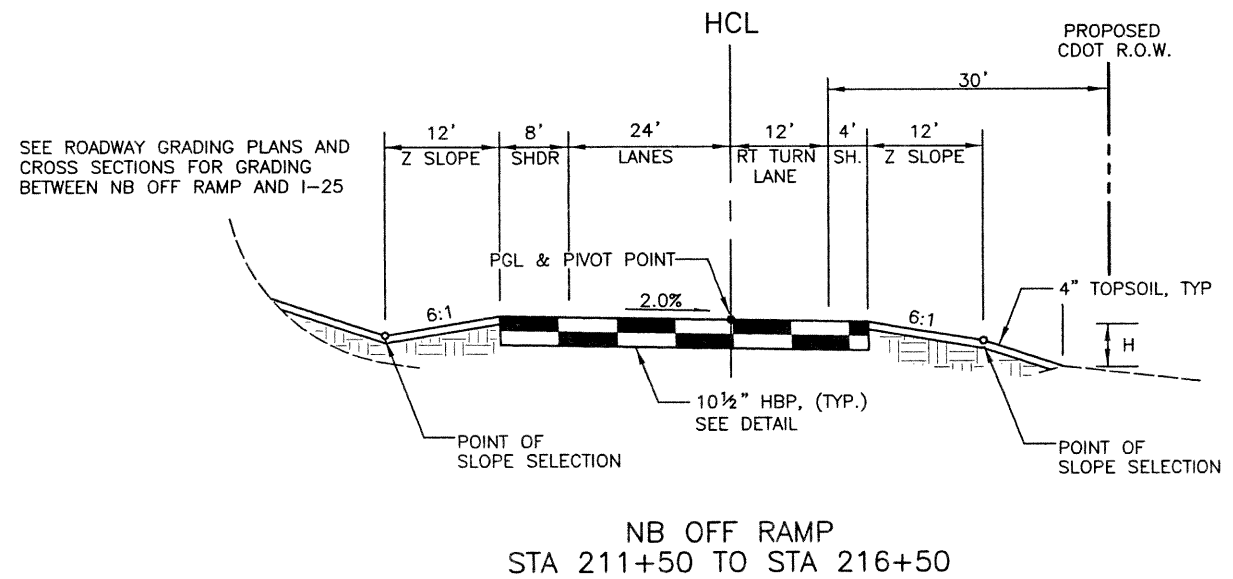
SEE ROADWAY GRADING PLANS AND  
CROSS SECTIONS FOR GRADING  
BETWEEN NB OFF RAMP AND I-25



- (A) TAPER FROM 0' TO 12':  
STA 200+00 TO STA 201+36
- TAPER FROM 12' TO 15':  
STA 201+36 TO STA 203+99
- 15':  
STA 203+99 TO STA 210+50
- TAPER FROM 15' TO 24':  
STA 210+50 TO STA 211+50

FILL SLOPES  
6:1 IF H<4'  
4:1 IF H>4'

SEE ROADWAY GRADING PLANS AND  
CROSS SECTIONS FOR GRADING  
BETWEEN NB OFF RAMP AND I-25



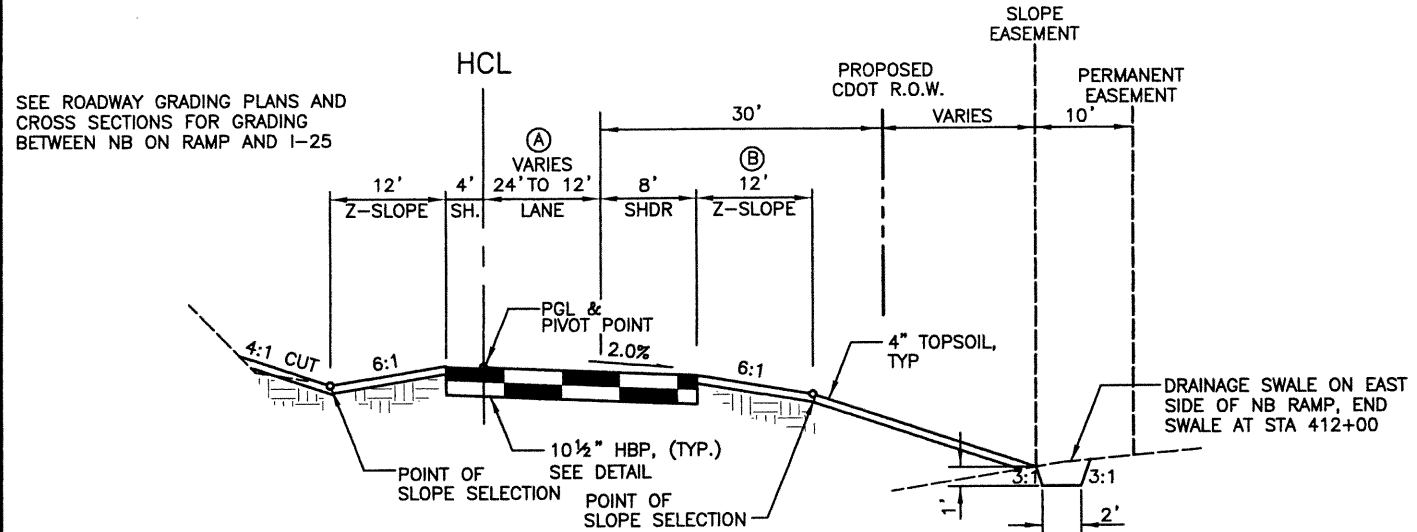
FILL SLOPES

6:1 IF H<4'  
4:1 IF H>4'



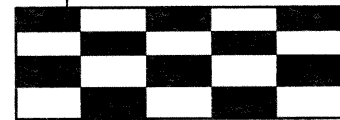
<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 thu@thueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE RAMPS TYPICAL SECTIONS</b>		<b>Project No./Code</b>	
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- ① 24': STA 400+50 TO STA 405+27.97  
 TAPER FROM 24' TO 15': STA 405+27.97 TO STA 409+32.97
- 15': STA 409+32.97 TO STA 412+91.7  
 TAPER FROM 15' TO 12': STA 412+91.7 TO STA 413+83.9
- 12': STA 413+83.9 TO STA 419+63.9  
 TAPER FROM 12' TO 0': STA 419+63.9 TO STA 422+64.18
- ② MATCH EXISTING PAVEMENT: STA 412+18  
 STRIPING ONLY: STA 412+18 TO STA 422+64.18

NB ON RAMP  
 STA 400+50 TO STA 422+64.18



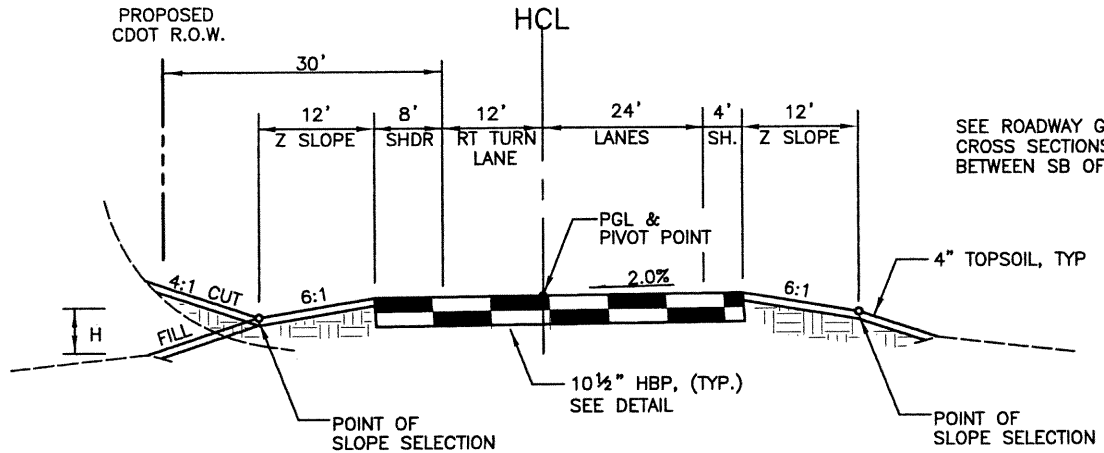
10 1/2" HOT BITUMINOUS PAVEMENT THICKNESS

- 4 LIFTS:  
 LIFT THICKNESS  
 TOP - 2 1/2" (GRADING S) (A) (100) (PG 76-28)  
 UPPER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
 LOWER - 2 1/2" (GRADING S) (A) (100) (PG 64-22)  
 BOTTOM - 3" (GRADING S) (A) (100) (PG 64-22)

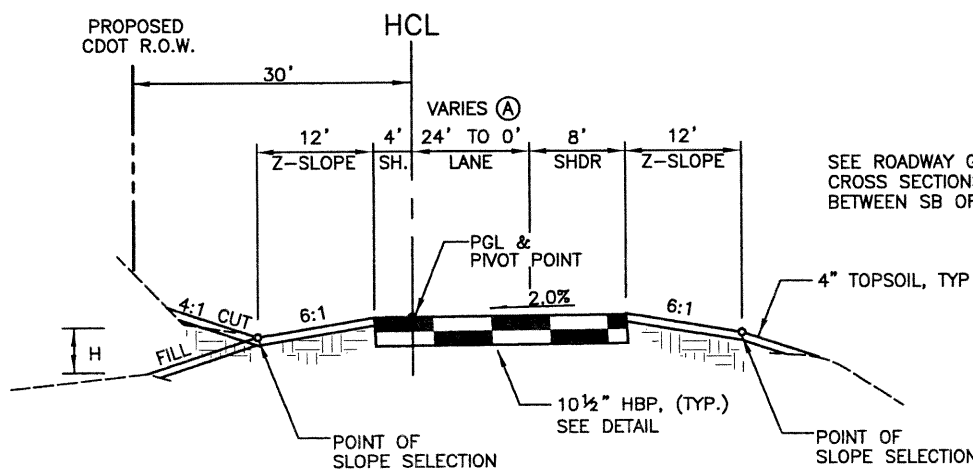
10 1/2" HBP DETAIL

TYPICAL SECTION NOTES

1. THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE.
2. BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE.
3. PLACE 4" OF TOPSOIL ON ALL CUT AND FILL SLOPES AND LANDSCAPED AREAS.



SB OFF RAMP  
 STA 300+50 TO STA 303+75.1



SB OFF RAMP  
 STA 303+75.1 TO STA 315+08.51

- ① TAPER FROM 24' TO 15': STA 303+75.1 TO STA 304+75.1
- 15': STA 304+75.1 TO STA 312+61.4
- TAPER FROM 15' TO 12': STA 312+61.4 TO STA 313+71.4
- TAPER FROM 12' TO 0': STA 313+71.4 TO STA 315+08.51

FILL SLOPES  
 6:1 IF H<4'  
 4:1 IF H>4'

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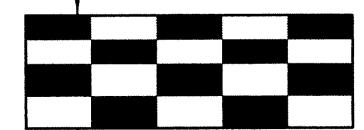
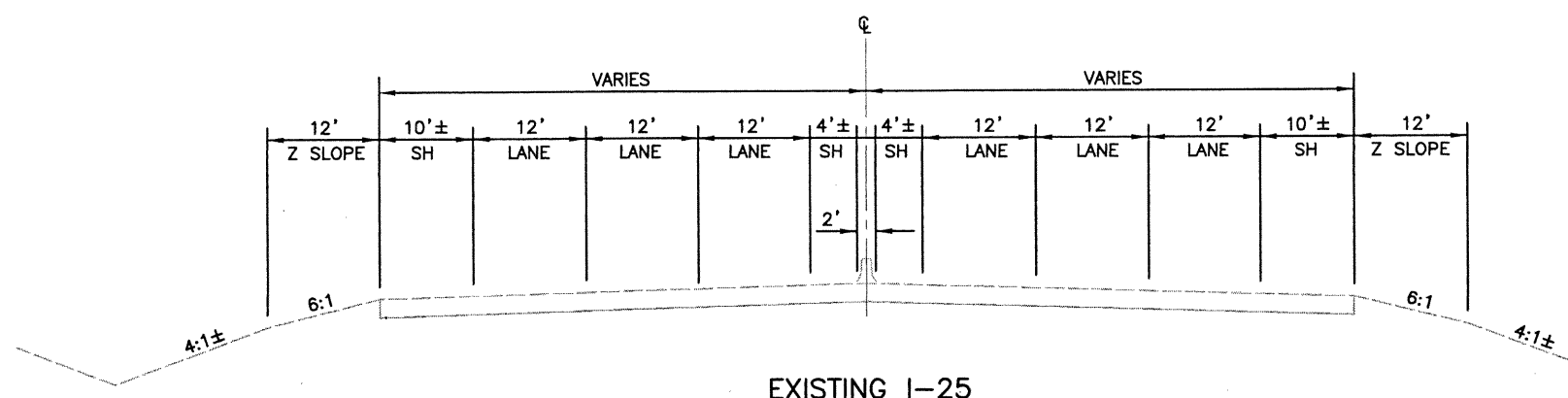
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Detailer:	JAC
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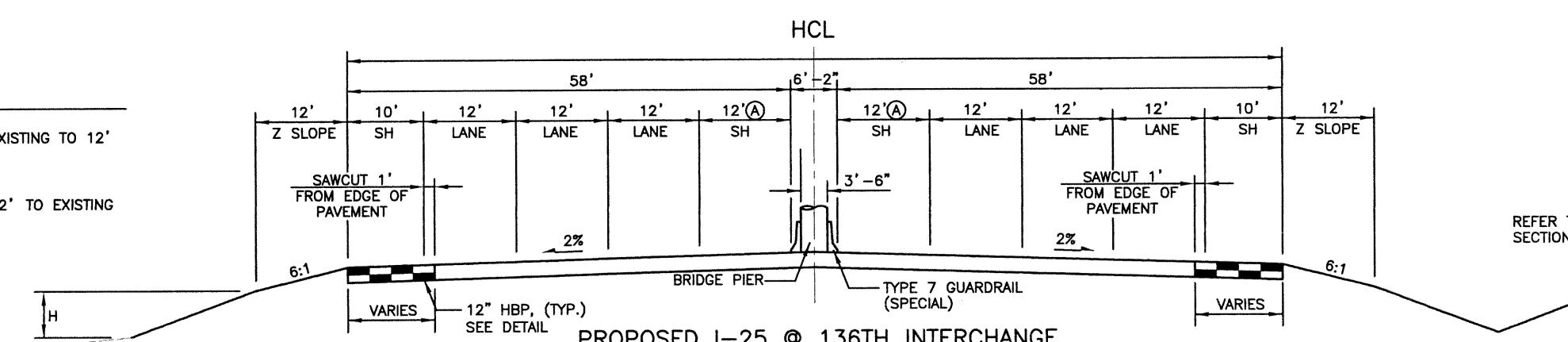
12" HOT BITUMINOUS PAVEMENT THICKNESS

4 LIFTS:  
LIFT THICKNESS  
TOP - 2½" (GRADING S) (A) (100) (PG 76-28)  
UPPER - 2½" (GRADING S) (A) (100) (PG 64-22)  
LOWER - 3" (GRADING S) (A) (100) (PG 64-22)  
BOTTOM - 4" (GRADING S) (A) (100) (PG 64-22)

12" HBP DETAIL

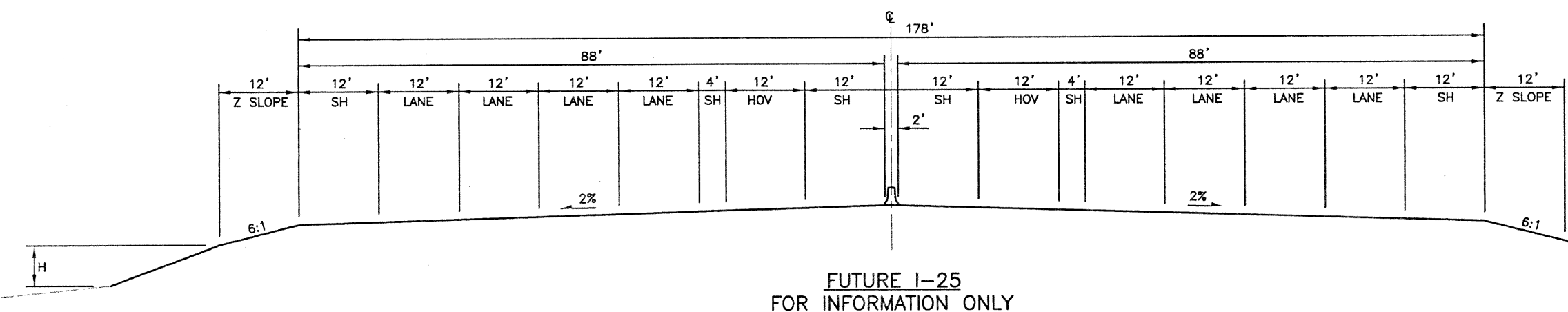
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STA 0+00 TO STA 7+00  
TAPER INSIDE SHOULDER FROM EXISTING TO 12'  
STA 7+00 TO STA 8+26  
12' INSIDE SHOULDER  
STA 8+26 TO STA 15+26  
TAPER INSIDE SHOULDER FROM 12' TO EXISTING



REFER TO ROADWAY CROSS SECTIONS FOR DETAILS

FILL SLOPES  
6:1 IF H<4'  
4:1 IF H<4'



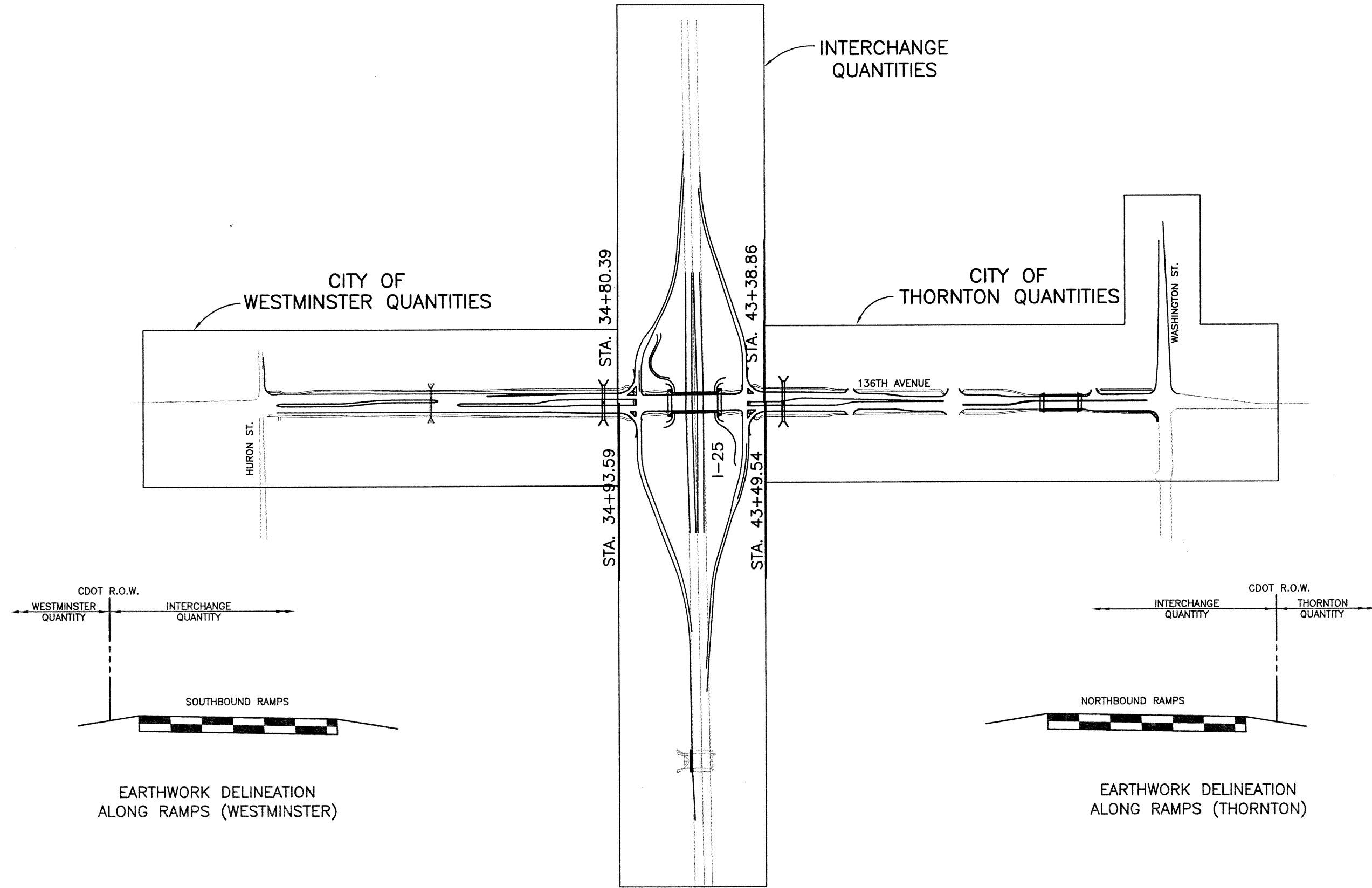
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Creation Date:	08/26/02 Initials: DRS			No Revisions:				97-71	
Last Modification Date:	10/28/02 Initials: PRH			Revised:		Designer:	RKZ		
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Drawing File Name:	R00033TYP11.dwg					Sheet Subset:	ROADWAY	Subset Sheets:	TYP-10 of 10
Acad Ver. 2000i	Scale: 1"=20' Units: English							Sheet Number	15

**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE DELINEATION OF QUANTITIES</b>	<b>Project No./Code</b>
Creation Date: 09/12/02	Initials: DRS				No Revisions:		
Last Modification Date: 10/17/02	Initials: PRH				Revised:	Designer: K. ALKANANI	
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Drawing File Name: M00033SAQ04.DWG						Sheet Subset: BRIDGE	Subset Sheets: SAQ-01 of 8
Acad Ver. 2000i	Scale: 1"=300'	Units: English					Sheet Number <b>16</b>




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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON								PROJECT TOTALS			
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG DRY STR		PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.				
1	201	CLEARING AND GRUBBING	LS	.27				.41						.32								1	
2	202	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	LS									1										1	
3	202	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER)	LS	1																		1	
4	202	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE)	LS					1														1	
5	202	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON)	LS											1								1	
6	202	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS											1								1	
7	202	CLEAN CULVERT	EA					1						1								2	
8	203	POTHOLING	HR	20										20								40	
9	203	DOZING (LANDSCAPING)	HR					200														200	
10	203	EMBANKMENT MATERIAL (COMPLETE IN PLACE) (BORROW)	CY					207,565						192,180								399,745	
11	203	EMBANKMENT MATERIAL (COMPLETE IN PLACE) (STOCKPILE)	CY	93,800				126,200														220,000	
12	203	MUCK EXCAVATION	CY											5,000								5,000	
13	206	STRUCTURE EXCAVATION	CY			310				5,545						960		279		197		7,291	
14	206	STRUCTURE BACKFILL (SPECIAL)	CY													730						730	
15	206	STRUCTURE BACKFILL (CLASS 1)	CY			792				4,956								821		107		6,676	
16	206	STRUCTURE BACKFILL (CLASS 2)	CY							1,378						210						1,588	
17	206	FILTER MATERIAL (CLASS A)	CY													535						535	
18	206	STRUCTURE BACKFILL (FLOWFILL)	CY									56										56	
19	206	MECHANICAL REINFORCEMENT OF SOIL	CY							4,956												4,956	
20	207	TOPSOIL	CY	4,400				7,100						5,500								17,000	
21	208	SILT FENCE	LF	2554				1,349						2,157								6,060	
22	208	STORM DRAIN INLET PROTECTION (DROP INLET)	EA					1														1	
23	208	STABILIZED CONSTRUCTION ENTRANCE	EA	1				2						1								4	
24	208	EROSION CONTROL SUPERVISOR	LS	.33				.34						.33								1	
25	210	RESET MAIL BOX	EA	1																		1	
26	210	RESET GROUND SIGN	EA					2						2								4	
27	210	RESET LIGHT STANDARD	EA					2														2	
28	210	RESET SIGN PANELS	EA											4								4	
29	210	RESET FIRE PREEMPTION UNIT AND TIMER	EA											2								2	
30	210	RESET FENCE (METAL CORRAL)	LF					90														90	
31	210	RESET FENCE (SPLIT RAIL)	LF											540								540	
32	210	RESET GUARDRAIL TYPE 3	LF											162.5								162.5	
33	210	ADJUST MANHOLE (SANITARY)	EA	3										4								7	
34	210	ADJUST VALVE BOX (WATER)	EA	5										5								10	
35	211	DEWATERING	LS					.67						.33								1	
36	212	SEEDING (NATIVE)	AC	9				14						11								34	
37	212	SEEDING (WETLANDS)	AC					.5														.5	
38	212	SEEDING (LAWN)	AC	.57				7.05						.33								7.95	
39	212	SEEDING (PASTURE LAWN)	AC											3.63								3.63	
40	212	SOIL PREPARATION (SPECIAL)	AC	.9				13						.36								14.26	

<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b> <b>SUMMARY OF APPROXIMATE QUANTITIES</b>	<b>Project No./Code</b>		
Creation Date: 12/13/01 Initials: DRS	<input type="checkbox"/>				No Revisions:			97-71	
Last Modification Date: 01/27/03 Initials: PRH	<input type="checkbox"/>				Revised:		Designer: RKZ		
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Drawing File Name: M00033SAQ01.dwg	<input type="checkbox"/>						Sheet Subset: QUANTITIES	Subset Sheets: SAQ-02 of 8	Sheet Number: 17
Acad Ver. 2000i Scale: Units: English	<input type="checkbox"/>								


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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON						PROJECT TOTALS						
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG DRY STR	PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.		
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.					
41	213	MULCHING (WEED FREE HAY)	AC	9				14						11								34		
42	213	CONCRETE LANDSCAPE BORDER	LF					1,200															1,200	
43	213	MULCH TACKIFIER	LB	900				1,400						1,100									3,400	
44	214	DECIDUOUS TREE (3 INCH CAL)	EA	64				125						28									217	
45	213	METAL LANDSCAPE BORDER	LF	1800				10,500						1,060									13,360	
46	214	SMALL DECIDUOUS TREE (8-10 FT HEIGHT)	EA	44				88						16									148	
47	214	EVERGREEN TREE (8-10 FT HEIGHT)	EA					155															155	
48	214	SHRUB (NO.5 CONT.)	EA	200				1,835						200									2,235	
49	214	GROUND COVERS VINES (PERENNIAL)	EA	274				2,562						274									3,110	
50	214	LANDSCAPE RESTORATION	LS											1									1	
51	214	LANDSCAPE MAINTENANCE	LS	.12				.80						.08									1	
52	216	SOIL RETENTION BLANKET (STRAW/COCONUT)	SY					205															205	
53	216	SOIL RETENTION BLANKET (SPECIAL)	SY											598									598	
54	304	AGGREGATE BASE COURSE (CLASS 6)	CY											220									220	
55	307	TYPE C FLYASH	T	3,150				3,600						3,700									10,450	
56	403	HOT BITUMINOUS PAVEMENT (PATCHING)(ASPHALT)	T	40				104						1067									1,211	
57	403	HOT BITUMINOUS PAVEMENT (GRADING S) (ASPHALT) (100) (PG 76-28)	T	3,022				3,369		533		24		3,708		310							10,966	
58	403	HOT BITUMINOUS PAVEMENT (GRADING S) (ASPHALT) (100) (PG 64-22)	T	11,234				12,543						11,874									35,651	
59	411	EMULSIFIED ASPHALT (SLOW SETTING)	GAL	8,683				9,166						11,370									29,219	
60	412	CONCRETE PAVEMENT (6 INCH)	SY											26									26	
61	502	PILE TIP	EA							92						36							128	
62	502	STEEL PILING (HP12X74)	LF							4,683						895							5,578	
63	503	DRILLED CAISSON (42 INCH)	LF													90							90	
64	503	DRILLED CAISSON (48 INCH)	LF					68															68	
65	503	DRILLED CAISSON (60 INCH)	LF							275													275	
66	504	NATIVE STONE LANDSCAPE WALL	SF							12,713													12,713	
67	505	SIGN WALL (WESTMINSTER)	LS	1																			1	
68	505	SIGN WALL (THORNTON)	LS											1									1	
69	506	GROUTED RIPRAP	CY													60							60	
70	506	RIPRAP (6")	CY							236													236	
71	506	RIPRAP (9")	CY	8				135						54									197	
72	506	RIPRAP (12")	CY	19				38						77		1,675							1,809	
73	506	RIPRAP (24")	CY													90							90	
74	507	DRY SLOPE AND DITCH PAVING	LF					570															570	
75	507	DRY SLOPE AND DITCH PAVING (SPECIAL)	LF					600															600	
76	509	STRUCTURAL STEEL	LB										10,718										10,718	
77	509	ARCHITECTURAL STEEL TRUSS	LS							1													1	
78	511	CORNER MONUMENT LIGHT SCULPTURE	EA							4													4	
79	511	PIER LIGHT SCULPTURE	EA							2													2	
80	512	BEARING DEVICE (TYPE I)	EA							30		3											33	
81	513	BRIDGE DRAIN	EA							4													4	

<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>		<b>136TH AVENUE AT I-25 INTERCHANGE</b>		<b>Project No./Code</b>	
Creation Date:	12/13/01 Initials: DRS				No Revisions:		SUMMARY OF APPROXIMATE QUANTITIES		97-71	
Last Modification Date:	01/27/03 Initials: PRH				Revised:		Designer: RKZ			
Full Path:	J:\00033\Acad\Sheet\				Void:		Detailer: DRS			
Drawing File Name:	M00033SAQ01.dwg						Sheet Subset: QUANTITIES		Subset Sheets: SAQ-03 of 8	
Acad Ver. 2000i	Scale: Units: English							Sheet Number 18		


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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON								PROJECT TOTALS				
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG	DRY STR	PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.	
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.			
82	514	PEDESTRIAN FENCE	LF							657						460						1,117		
83	514	PEDESTRIAN RAILING	LF			312												172					484	
84	515	WATERPROOFING (MEMBRANE)	SY							3,286		137				1,888							5,311	
85	517	WATERPROOFING (SPECIAL)	SY			930												1,075					2,005	
86	518	WATERSTOP (BENTONITE/BUTYL RUBBER)	LF			417												479					896	
87	518	WATERSTOP (6 INCH)	LF			79												79					158	
88	518	BRIDGE EXPANSION DEVICE (0-4 INCH)	LF							260						196							456	
89	519	NATIVE STONE VENEER (4 INCH)	SF			140				132						1,035		140					1,447	
90	519	NATIVE STONE VENEER (6 INCH)	SF							1,640												344	1,640	
91	519	NATIVE STONE VENEER (8 INCH)	SF																				344	
92	601	CONCRETE CLASS D (BOX CULVERT)	CY			510												605					1,115	
93	601	CONCRETE CLASS D (BRIDGE)	CY							2,567		48				1,460							4,075	
94	601	CONCRETE CLASS D (WALL)	CY																		65		65	
95	601	STRUCTURAL CONCRETE COATING	SY			303				2,195						1,090		303				86	3,977	
96	602	REINFORCING STEEL	LB			67,547				78,570						78,175		81,335			4,220		309,847	
97	602	REINFORCING STEEL (EXPOXY COATED)	LB							385,585		10,189				174,270							570,044	
98	603	18" REINFORCED CONCRETE PIPE	LF	954				634						552									2,140	
99	603	24" REINFORCED CONCRETE PIPE	LF	421										373									794	
100	603	30" REINFORCED CONCRETE PIPE	LF					71															71	
101	603	36" REINFORCED CONCRETE PIPE	LF					611															611	
102	603	48" REINFORCED CONCRETE PIPE	LF											316									316	
103	603	36" REINFORCED CONCRETE PIPE, CL. IV	LF					100															100	
104	603	68x43 INCH REINFORCED CONCRETE PIPE ELLIPTICAL	LF											71									71	
105	603	18 INCH REINFORCED CONCRETE END SECTION	EA					1						1									2	
106	603	24 INCH REINFORCED CONCRETE END SECTION	EA	2				2						2									6	
107	603	36 INCH REINFORCED CONCRETE END SECTION	EA					1															1	
108	603	48 INCH REINFORCED CONCRETE END SECTION	EA											12									12	
109	603	68x43 INCH REINFORCED CONCRETE END SECTION ELLIPTICAL	EA											1									1	
110	603	8 INCH PLASTIC PIPE	LF							537													537	
111	603	15 INCH PLASTIC PIPE	LF													125							125	
112	603	15 INCH CORRUGATED STEEL PIPE	LF	60																			60	
113	603	PLASTIC PIPE (SANITARY) - 12 INCH	LF											1,004									1,004	
114	603	PLASTIC PIPE (SANITARY) - 18 INCH	LF	109																			109	
115	603	PLASTIC PIPE (SANITARY) - 21 INCH	LF	601																			601	
116	604	INLET TYPE C (5 FOOT)	EA	1												1							2	
117	604	INLET TYPE D (10 FOOT)	EA					1															1	
118	604	INLET TYPE R L5 (5 FOOT)	EA					2															2	
119	604	INLET TYPE R L5 (10 FOOT)	EA					2															2	
120	604	INLET TYPE R L5 (15 FOOT)	EA											1									1	
121	604	INLET TYPE R L5 (20 FOOT)	EA					2															2	
122	604	INLET TYPE R L10 (5 FOOT)	EA	5										4									9	
123	604	INLET TYPE R L10 (10 FOOT)	EA	1										2									3	
124	604	INLET TYPE R L15 (5 FOOT)	EA	2										2									4	

Computer File Information		Index of Revisions			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed	136TH AVENUE AT I-25 INTERCHANGE		Project No./Code	
Creation Date:	12/13/01 Initials: DRS	<input type="checkbox"/>				No Revisions:	SUMMARY OF APPROXIMATE QUANTITIES		97-71	
Last Modification Date:	01/27/03 Initials: PRH	<input type="checkbox"/>				Revised:	Designer: RKZ			
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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON								PROJECT TOTALS			
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG DRY STR		PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.				
125	604	MANHOLE SLAB BASE (10 FOOT)	EA	1				2					3								6		
126	604	MANHOLE SLAB BASE (SANITARY) - 20 FOOT	EA	1									2								3		
127	604	MANHOLE SLAB BASE (SANITARY) - 25 FOOT	EA	3									2								5		
128	605	4 INCH PERFORATED PIPE UNDERDRAIN	LF			417											480		194		1,091		
129	605	6 INCH PERFORATED PIPE UNDERDRAIN	LF			148											136				284		
130	605	SUBSURFACE DRAIN OUTLET	LF						220						35				8		263		
131	606	GUARDRAIL, TYPE 3 (6-3 POST SPACING)	LF					587.5													587.5		
132	606	GUARDRAIL TYPE 7 (STYLE CA)	LF					160													160		
133	606	GUARDRAIL TYPE 7 (SPECIAL)	LF					126													126		
134	606	END ANCHORAGE TYPE 3D	EA					5													5		
135	606	END ANCHORAGE TYPE 3G	EA					1													1		
136	606	END ANCHORAGE TYPE 3H	EA					1													1		
137	606	END ANCHORAGE (SLOTTED RAIL TERMINAL)	EA					5													5		
138	606	PEDESTRIAN RAIL	LF							599											599		
139	606	BRIDGE RAIL (SPECIAL)	LF												481						481		
140	606	BRIDGE RAIL TYPE 7 (SPECIAL)	LF							636											636		
141	606	BRIDGE RAIL TYPE 10M	LF									128									128		
142	607	FENCE BARBED WIRE WITH METAL POSTS	LF					790					1,510								2,300		
143	607	FENCE COMBINATION WIRE WITH METAL POSTS	LF					5,875													5,875		
144	607	FENCE (TEMPORARY)	LF										1,569								1,569		
145	607	FENCE CHAIN LINK (72 INCH)	LF					660													660		
146	607	FENCE (SPECIAL)	LF										60								60		
147	607	16 FOOT GATE	EA										3								3		
148	607	LINE POSTS	EA					6													6		
149	607	CORNER & LINE BRACE POSTS	EA					15					5								20		
150	607	CORNER & LINE BRACE POSTS (CHAIN LINK)	EA					10													10		
151	608	CONCRETE SIDEWALK (6 INCH) (COLORED)	SY					757													757		
152	608	CONCRETE SIDEWALK (6 INCH)	SY	3,309				469					3,298								7,076		
153	608	CONCRETE CURB RAMP	SY					75					129								204		
154	608	BITUMINOUS SIDEWALK	TON	37																	37		
155	609	CURB TYPE 2 (SECTION B)	LF					362													362		
156	609	CURB AND GUTTER TYPE 2 (SECTION I-B)	LF	3,756				999					3,811								8,566		
157	609	CURB AND GUTTER TYPE 2 (SECTION II-B)	LF	3,975				1,654					4,003								9,632		
158	610	MEDIAN EDGING (PATTERNED CONCRETE)	LF	3220				1,760					1,550								6,530		
159	610	MEDIAN COVER MATERIAL (PATTERN CONCRETE)	SY	46				472					610								1,128		
160	610	MEDIAN COVER MATERIAL (STONE)	SY					3,451													3,451		

<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE SUMMARY OF APPROXIMATE QUANTITIES	Project No./Code
Creation Date: 12/13/01 Initials: DRS	<input type="checkbox"/>		No Revisions:		97-71		
Last Modification Date: 01/27/03 Initials: PRH	<input type="checkbox"/>		Revised:		Designer: RKZ		
Full Path: J:\00033\Acad\Sheet\	<input type="checkbox"/>		Void:		Detailer: DRS		
Drawing File Name: M00033SAQ01.dwg	<input type="checkbox"/>				Sheet Subset: QUANTITIES		
Acad Ver. 2000i Scale: Units: English	<input type="checkbox"/>			Subset Sheets: SAQ-05 of 8			
					Sheet Number <b>20</b>		

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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON								PROJECT TOTALS						
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG DRY STR		PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.			
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.							
161	612	DELINEATOR (TYPE I)	EA					89														89				
162	612	DELINEATOR (TYPE II)	EA	21				45						22									88			
163	612	DELINEATOR (TYPE III)	EA	1									1										2			
164	613	1 INCH ELECTRICAL CONDUIT	LF			433				262					481		498						1,674			
165	613	1 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	435				2,420						435										3,290		
166	613	2 INCH ELECTRICAL CONDUIT	LF							1,400					962									2,362		
167	613	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	2,615				4,435						2,140											9,190	
168	613	3 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	335				3,095						2,875											6,305	
169	613	WIRING	LS	.05				.9						.05											1	
170	613	GFCI RECEPTACLES	EA					23																	23	
171	613	METERED SERVICE PANEL	EA					4																	4	
172	613	PENDANT LUMINAIRE	EA							2						2									4	
173	613	COMPACT FLOURESCENT FLOOD (42 WATT)	EA	2				20						2											24	
174	614	SIGN PANEL (CLASS I)	SF	102				151						123											376	
175	614	SIGN PANEL (CLASS II)	SF					303																	303	
176	614	SIGN PANEL (CLASS III)	SF	101				651						65											817	
177	614	ILLUMINATED SIGN	EA					6																	6	
178	614	STEEL SIGN POST (2X2 INCH TUBING)	LF	136																					136	
179	614	STEEL SIGN POST (1 3/4 X 1 3/4 INCH TUBING)	LF											171											171	
180	614	STEEL SIGN POST (2.5 INCH ROUND)(SLIP BASE)	LF	62				570						62											694	
181	614	CANTILEVER STRUCTURE (25 TO LESS THAN 30 FOOT FRAME)	EA					4																	4	
182	614	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN TYPE)	EA	2				12						8											22	
183	614	TRAFFIC SIGNAL FACE (12-12-12)	EA					26						23											49	
184	614	TRAFFIC SIGNAL CONTROLLER CABINET (MODEL 333SD)	EA					2						1											3	
185	614	TRAFFIC SIGNAL CONTROLLER CABINET (NEMA PTS2 TYPE 1)	EA	1										1											1	
186	614	PEDESTRIAN PUSH BUTTON POLE (3 FOOT 6 INCH)	EA											1											1	
187	614	PEDESTRIAN PUSH BUTTON	EA	2																					2	
188	614	PEDESTRIAN PUSH BUTTON STATION	EA					12						8											20	
189	614	FIRE PREEMPTION UNIT AND TIMER	EA	2				2																	4	
190	614	FIBEROPTIC CABLE (SINGLE MODE) (12 STRAND)	LF	2,585				1,240						2,800											6,625	
191	614	TRAFFIC SIGNAL FACE (12-12-12) (L.E.D.)	EA	12																					12	
192	614	TRAFFIC SIGNAL FACE (12-12-12-12-12)	EA	4																					4	
193	614	TERMINATE FIBER OPTIC CABLE	EA	1				2						1											4	
194	614	TEST FIBER OPTIC CABLE	LS	.25				.50						.25											1	

<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b> <b>SUMMARY OF APPROXIMATE QUANTITIES</b>	<b>Project No./Code</b>	
Creation Date:	12/13/01 Initials: DRS	<input type="checkbox"/>				<b>No Revisions:</b>			<b>97-71</b>
Last Modification Date:	01/27/03 Initials: PRH	<input type="checkbox"/>				<b>Revised:</b>		Designer: RKZ	
Full Path:	J:\00033\Acad\Sheet\	<input type="checkbox"/>				<b>Void:</b>		Detailer: DRS	
Drawing File Name:	M00033SAQ01.dwg	<input type="checkbox"/>						Sheet Subset: QUANTITIES	Subset Sheets: SAQ-06 of 8
Acad Ver. 2000i	Scale:	Units: English	<input type="checkbox"/>				Sheet Number <b>21</b>		

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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON								PROJECT TOTALS			
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG DRY STR		PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.				
195	614	INTERSECTION DETECTION SYSTEM (CAMERA)	EA	4				6						4								14	
196	614	TELEPHONE SERVICE CONDUIT AND CABLE	LS	1																		1	
197	614	TRAFFIC SIGNAL LIGHT POLE STEEL (1 MAST ARM)	EA					6						4								10	
198	614	TRAFFIC SIGNAL PEDESTAL POLE STEEL	EA					2														2	
199	614	TRAFFIC SIGNAL SPAN WIRE POLE (12 INCH)	EA	4																		4	
200	614	TRAFFIC SIGNAL CONTROLLER (MASTER)	EA	1																		1	
201	614	TRAFFIC SIGNAL CONTROLLER (8 PHASE) (170E)	EA					2						1								3	
202	614	TRAFFIC SIGNAL CONTROLLER (NEMA)(ASC/2S-2100)	EA	1																		1	
203	618	PRESTRESSED CONCRETE BT 42 GIRDERS	LF													2932.5						2932.5	
204	618	PRESTRESSED CONCRETE I (BT72)	LF							4,032												4,032	
205	619	WELDED STEEL PIPE (JACKED) - 22 INCH OD	LF	35										476								511	
206	619	PLASTIC PIPE (WATER) - 3 INCH	LF	95										99								194	
207	619	PLASTIC PIPE (WATER) - 8 INCH	LF	384																		384	
208	619	PLASTIC PIPE (WATER) - 12 INCH	LF	1,742										1,560								3,302	
209	619	PLASTIC PIPE (WATER) - 6 INCH	LF	442										78								520	
210	619	DUCTILE IRON PIPE - 4 INCH	LF	95										99								194	
211	619	GATE VALVE - 6 INCH	EA	7										2								9	
212	619	GATE VALVE - 8 INCH	EA	4																		4	
213	619	GATE VALVE - 12 INCH	EA	11										6								17	
214	619	FIRE HYDRANT ASSEMBLY	EA	7										2								9	
215	619	AIR AND VACUUM VALVE	EA	2										1								3	
216	619	BENDS - 22 1/2 DEG (12 IN) - VERTICAL	EA											4								4	
217	619	BENDS - 45 DEG (12 IN) - VERTICAL	EA	4																		4	
218	619	BLOW-OFF ASSEMBLY	EA	7										4								11	
219	619	CROSS (12 IN X 12 IN)	EA	1																		1	
220	619	CROSS (12 IN X 8 IN)	EA	1																		1	
221	619	PLUG - 12 INCH	EA	2										3								5	
222	619	PLUG - 8 INCH	EA	4																		4	
223	619	REDUCERS (12 IN X 8 IN)	EA	2																		2	
224	619	REDUCERS (6 IN X 3 IN)	EA	1										1								2	
225	619	REDUCERS (8 IN X 6 IN)	EA	7																		7	
226	619	TAPPING TEE (12 IN X 24 IN)	EA	1										1								2	
227	619	TEE - (12 IN X 12 IN X 12 IN)	EA	1										2								3	
228	619	TEE - (12 IN X 12 IN X 6 IN)	EA	6										2								8	
229	619	TEE - (12 IN X 12 IN X 4 IN)	EA	1										1								2	
230	619	TEE - (8 IN X 8 IN X 6 IN)	EA	1																		1	
231	619	WATER METER AND VAULT - 3 IN METER	EA	1										1								2	



<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>		<b>136TH AVENUE AT I-25 INTERCHANGE</b>		<b>Project No./Code</b>	
Creation Date:	12/13/01 Initials: DRS	<input type="checkbox"/>			No Revisions:		<b>SUMMARY OF APPROXIMATE QUANTITIES</b>		97-71	
Last Modification Date:	01/27/03 Initials: PRH	<input type="checkbox"/>			Revised:	Designer: RKZ				
Full Path:	J:\00033\Acad\Sheet\	<input type="checkbox"/>			Void:	Detailer: DRS				
Drawing File Name:	M00033SAQ01.dwg	<input type="checkbox"/>				Sheet Subset: QUANTITIES	Subset Sheets: SAQ-07 of 8			Sheet Number 22
Acad Ver. 2000i	Scale: Units: English	<input type="checkbox"/>								

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ITEM NO.	ITEM CODE	CONTRACT ITEM	UNIT	CITY OF WESTMINSTER				INTERCHANGE				CITY OF THORNTON						PROJECT TOTALS					
				ROADWAY		PEDESTRIAN CBC		ROADWAY		STR. E-17-ZL		STR. E-17-FH		ROADWAY		136TH/BIG DRY STR		PEDESTRIAN CBC		RETAINING WALL		PLAN	AS CONST.
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.				
232	623	IRRIGATION SYSTEM	LS	.12				.80						.08								1	
233	625	CONSTRUCTION SURVEYING	LS	.33				.34						.33								1	
234	626	MOBILIZATION	LS	.33				.34						.33								1	
235	627	PAVEMENT MARKING PAINT (LOW VOC SOLVENT BASE)	GAL	15				20						50								85	
236	627	PREFORMED PLASTIC PAVEMENT MARKING (TYPE A)	GAL	309				790						444								1,543	
237	627	THERMOPLASTIC PAVEMENT MARKING PAINT	SF	5,656				10,564						8,714								22,934	
238	627	PREF. PLASTIC PAVEMENT MARKING (TYPE B) (WORD SYMBOL)	SF	186				639						388								1,212	
239	627	PREF. PLASTIC PAVEMENT MARKING (TYPE B) (X-WALK) (STOP LINE)	SF	690				832						2,284								3,806	
240	630	FLAGGING	HOUR	60										180								240	
241	630	TRAFFIC CONTROL MANAGEMENT	DAY	10				50						20								80	
242	630	UNIFORMED TRAFFIC CONTROL	HOUR					250						16								266	
243	630	TRAFFIC CONTROL INSPECTION	DAY	50				250						100								400	
244	630	FLASHING BEACON (PORTABLE)	EA					4														4	
245	630	BARRICADE (TYPE 3 M-B) (TEMPORARY)	EA	1				7						2								10	
246	630	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EA	4				15						6								25	
247	630	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EA	12				24						11								47	
248	630	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE C)	EA					12														12	
249	630	CONSTRUCTION TRAFFIC SIGN (SPECIAL)	SF	60				196						79								335	
250	630	PORTABLE MESSAGE SIGN PANEL	DAY					28														28	
251	630	ADVANCED WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EA					2						1								3	
252	630	DRUM CHANNELIZING DEVICE	EA	50				60						90								200	
253	630	CONCRETE BARRIER (TEMPORARY)	LF					4,000														4,000	
254	630	TRAFFIC CONE	EA	25				150						25								200	
255	630	MOBILE PAVEMENT MARKING ZONE	LS	.33				.34						.33								1	
256	630	IMPACT ATTENUATOR (TEMPORARY)	EA					6														6	
257	700	F/A WATER TAP - 3 INCH	F/A	1																		1	
258	700	F/A UTILITY ADJUSTMENTS	F/A											1								1	



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Creation Date:	12/13/01 Initials: DRS		No Revisions:		97-71		
Last Modification Date:	01/27/03 Initials: PRH		Revised:		Designer: RKZ		
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TABULATION OF SURFACING QUANTITIES


STATION/LOCATION	HOT BITUMINOUS PAVEMENT (GRADING S) (ASPHALT) (100)								HOT BITUMINOUS PAVEMENT (PATCHING)(ASPHALT)		EMULSIFIED ASPHALT (SLOW-SETTING)		REMOVAL OF ASPHALT MAT (PLANING) ■		
	(PG 76-28)				(PG 64-22)				TON	FINAL	GAL	FINAL	SQ. YD	FINAL	
	TOP		UPPER		LOWER		BOTTOM								
	TON	FINAL	TON	FINAL	TON	FINAL	TON	FINAL							
<b>WESTMINSTER</b>															
136TH AVENUE 8+20 TO 8+82										8		5			
136TH AVENUE 8+82 TO 13+95	163		204				214				452				
136TH AVENUE 14+35 TO 34+94	2740		2740		3290		4605				7968				
HURON 0+85 TO 1+46, RT.									14		11				
HURON 1+46 TO 6+73	119		88				93				235		430		
HURON 3+15 TO 3+33, LT.									6		4				
HURON 6+73 TO 7+30, RT.									12		8				
SUBTOTALS	3022		3032		3290		4912								
WESTMINSTER TOTALS	3022				11234				40		8683		430 ■		

TABULATION OF SURFACING QUANTITIES

STATION/LOCATION	HOT BITUMINOUS PAVEMENT (GRADING S) (ASPHALT) (100)								HOT BITUMINOUS PAVEMENT (PATCHING)(ASPHALT)		EMULSIFIED ASPHALT (SLOW-SETTING)		REMOVAL OF ASPHALT MAT (PLANING) ■	
	(PG 76-28)				(PG 64-22)				TON	FINAL	GAL	FINAL	SQ. YD	FINAL
	TOP		UPPER		LOWER		BOTTOM							
	TON	FINAL	TON	FINAL	TON	FINAL	TON	FINAL						
<b>THORNTON</b>														
136TH AVENUE 43+39 TO 59+40	1944		1944		2333		3266				5655			
136TH AVENUE 61+78 TO 66+21	659		659		790		1107				1916			
136TH AVENUE 66+21 TO 67+18	103										93		935	
136TH AVENUE 67+18 TO 71+12	201		241				295				438			
136TH AVENUE 71+12 TO 71+80									18		6			
WASHINGTON 503+46 TO 509+73 LT	176		214				260				385			
WASHINGTON 503+43 TO 512+16 RT	286		344				421				624			
WASHINGTON 512+16 TO 513+03 RT									26		14			
WASHINGTON 509+73 TO 511+79 LT									60		35			
SUBTOTALS	3369		3402		3123		5349							
THORNTON TOTALS	3369				11874				104		9166		935 ■	

■ ITEM AND QUANTITY SHOWN "FOR INFORMATION ONLY" - REMOVAL OF ASPHALT MAT (PLANING) TO BE INCLUDED IN "ITEM 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS".



<b>Computer File Information</b>		<b>Index of Revisions</b>		 <b>FELSBURG HOLT &amp; ULLEVIG</b>	303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>		136TH AVENUE AT I-25 INTRECHANGE		Project No./Code	
Creation Date: 02/12/02 Initials: DRS	<input type="checkbox"/>					No Revisions:		TAB. OF SURFACING QUANTITIES		97-71	
Last Modification Date: 01/27/03 Initials: PRH	<input type="checkbox"/>					Revised:	Designer: RKZ				
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TABULATION OF SURFACING QUANTITIES

STATION/LOCATION	HOT BITUMINOUS PAVEMENT (GRADING S) (ASPHALT) (100)								HOT BITUMINOUS PAVEMENT (PATCHING)(ASPHALT)		EMULSIFIED ASPHALT (SLOW-SETTING)		REMOVAL OF ASPHALT MAT (PLANING) ■	
	(PG 76-28)		(PG 64-22)						TON	FINAL	GAL	FINAL	SQ. YD	FINAL
	TOP		UPPER		LOWER		BOTTOM							
	TON	FINAL	TON	FINAL	TON	FINAL	TON	FINAL						
<b>INTERCHANGE</b>														
I-25 0+14 TO 11+42, RT.									433		250			
I-25 0+11 TO 11+59, LT.									476		275			
136TH AVENUE 34+80 TO 37+76	378		378		454		636				1101			
136TH AVENUE 40+88 TO 43+49	349		349		419		587				1016			
SB ON RAMP 100+00 TO 101+53									59	24				
SB ON RAMP 101+53 TO 103+00 103+87 TO 124+45	912		912		912		1150				2653			
NB OFF RAMP 200+23 TO 201+00									26	17				
NB OFF RAMP 201+00 TO 216+79	826		826		826		1041				2402			
SB OFF RAMP 300+47 TO 313+54	645		645		645		813				1875			
SB OFF RAMP 313+54 TO 314+85									40	16				
NB ON RAMP 400+47 TO 422+14	598		598		598		754				1739			
PAVING AT END ANCHORS SRT									33					
SUBTOTALS			3708		3854		4981							
INTERCHANGE TOTALS	3708				12,543				1,067		11,370		0	
<b>PROJECT SUMMARY</b>														
WESTMINSTER TOTALS	3022				11,234				40		8683		430	
THORNTON TOTALS	3369				11,874				104		9166		935	
INTERCHANGE TOTALS	3708				12,543				1067		11,370		0	
ROADWAY TOTALS	10,099				35,651				1211		29,219		1365 ■	

■ ITEM AND QUANTITY SHOWN "FOR INFORMATION ONLY" - REMOVAL OF ASPHALT MAT (PLANING) TO BE INCLUDED IN "ITEM 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS".

PAVEMENT DESIGN CRITERIA

ROADWAY	DESIGN PARAMETERS	FULL DEPTH ASPHALT SECTION
136TH AVENUE/ I-25 WIDENING	DESIGN LIFE (YEARS) 18-KIP ESAL INITIAL SERVICEABILITY TERMINAL SERVICEABILITY % RELIABILITY OVERALL STANDARD DEVIATION R-VALUE DESIGN (2' SUBGRADE) SOIL RESILIENT MODULUS CALC. DESIGN STR. NO.	20 2,813,516 4.5 2.5 95 0.44 20 4,941 PSI 4.77
	PAVEMENT THICKNESS (IN.) ASPHALT COEFFICIENT HBP (GRADING S) (100): TOP LAYER LOWER LAYERS LIFT THICKNESS (BOTTOM TO TOP)(IN.)	12 0.4 - (PG 76-28) (PG 64-22) 4-3-2.5-2.5

ROADWAY	DESIGN PARAMETERS	FULL DEPTH ASPHALT SECTION
RAMPS	DESIGN LIFE (YEARS) 18-KIP ESAL INITIAL SERVICEABILITY TERMINAL SERVICEABILITY % RELIABILITY OVERALL STANDARD DEVIATION R-VALUE DESIGN (2' SUBGRADE) SOIL RESILIENT MODULUS CALC. DESIGN STR. NO.	20 857,243 4.5 2.5 95 0.44 20 4,941 PSI 4.02
	PAVEMENT THICKNESS (IN.) ASPHALT COEFFICIENT HBP (GRADING S) (100): TOP LAYER LOWER LAYERS LIFT THICKNESS (BOTTOM TO TOP)(IN.)	10.5 0.4 - (PG 76-28) (PG 64-22) 3-2.5-2.5-2.5



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Creation Date: 02/12/02 Initials: DRS	<input type="checkbox"/>				No Revisions:			97-71			
Last Modification Date: 01/27/03 Initials: PRH	<input type="checkbox"/>				Revised:	Designer: RKZ					
Full Path: J:\00033\Acad\Sheet\ Drawing File Name: M00033TAB02.dwg Acad Ver. 2000i Scale: Units: English	<input type="checkbox"/>				Void:	Detailer: DRS		Sheet Subset: SURFACE Subset Sheets: TAB-02 of 04		Sheet Number 25	

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TABULATION OF CURB & GUTTER AND SIDEWALK

STATION/LOCATION	SIDE	CONCRETE SIDEWALK (6 INCH)		CONCRETE SIDEWALK (6 INCH) (COLORED)		2" BITUMINOUS SIDEWALK		CONCRETE PAVEMENT 6 INCH		CONCRETE CURB RAMP TYPE 3		CONCRETE CURB RAMP TYPE 1		CURB TYPE 2 (SECTION B)		CURB AND GUTTER - TYPE 2			
		SY		SY		TON		SY		SY		SY		LF		SECTION I-B		SECTION II-B	
		PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
WESTMINSTER																			
14+38 TO 15+24	RT						9												
14+37 TO 17+28	LT						28												
15+00 TO 34+80	LT																		1981
15+00 TO 34+94	RT																		1994
15+00 TO 24+38	LT & RT																1881		
15+24 TO 34+94	RT																		
17+28 TO 34+80	LT	1558																	
25+52 TO 34+94	LT & RT	1751																	
WESTMINSTER TOTALS		3309					37											3756	3975
INTERCHANGE																			
34+80 TO 35+95	LT	111								9				71				169	197
34+80 TO 35+95	LT & RT	31												75				239	
34+94 TO 35+95	RT	98								10				50				102	389
35+95 TO 37+76	LT			221						9									178
35+95 TO 37+76	RT			203						9									192
40+88 TO 42+37	LT			163						9									160
40+88 TO 42+37	RT			170						9									146
42+37 TO 43+39	LT	97								10								102	197
42+37 TP 43+50	LT & RT	22												47				226	
42+37 TO 43+50	RT	110								10				67				161	195
INTERCHANGE TOTALS		469		757						75				362				999	1654
THORNTON																			
43+39 TO 48+30	LT	417											8						489
43+50 TO 48+30	RT	407											8						477
43+39 TO 54+37	LT & RT																2076		
48+30 TO 54+37	LT	465								12			8						584
48+30 TO 54+37	RT	461								12			7						568
54+37 TO 59+40	LT	403								12									483
54+37 TO 59+40	LT & RT																901		
54+37 TO 59+40	RT	400								12									482
61+78 TO 66+30	LT	319								37									468
61+78 TO 66+30	LT																	834	
61+78 TO 66+30	RT	426						26		13									452
THORNTON TOTALS		3298						26		98			31					3811	4003
PROJECT TOTALS		7076		757			37		26	173			31		362			8566	9632



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Index of Revisions	



303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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No Revisions:	
Revised:	
Void:	

136TH AVENUE AT I-25 INTERCHANGE TABULATION OF CURB & GUTTER AND SIDEWALK	
Designer:	MRH
Detailer:	DRS
Sheet Subset:	C&G

Project No./Code	97-71
Sheet Number	26

TABULATION OF FENCE

STATION/LOCATION	SIDE	LINE POSTS		CORNER AND LINE BRACE POSTS		CORNER AND LINE BRACE POSTS (CHAIN LINK)		FENCE BARBED WIRE WITH METAL POST		FENCE COMBINATION WIRE WITH METAL POST		② FENCE CHAIN LINK 72 INCH		FENCE (SPECIAL)		16' GATE		RESET FENCE (METAL CORRAL)		RESET FENCE (SPLIT RAIL)	
		EACH		EACH		EACH		LF		LF		LF		LF		EACH		LF		LF	
		PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
INTERCHANGE																					
I-25																					
104+00 TO 124+07	LT			4						2040											
203+70 TO 216+40	RT			3						1425											
300+86 TO 313+25	LT			3						1270											
301+64 TO 304+71	RT					10						660									
400+85 TO 411+56	RT			3						1140											
402+18 TO 409+06	RT			2				790													
409+06 TO 410+52	RT	6																90			
THORNTON																					
136TH AVENUE																					
43+84 TO 57+68	LT			3				1430													
56+85 TO 57+48	RT			2				80													
57+48 TO 59+39	RT																				200
61+78 TO 62+58	RT																				90
62+58 TO 63+33	RT												60								
54+50	LT																				1
57+50	LT																				1
63+22	RT																				1
63+33 TO 65+82	RT																				250
TOTALS		6		20		10		2300		5875		660		60		3		90		540	

TABULATION OF GUARDRAIL

STATION/LOCATION	SIDE	GUARDRAIL TYPE 3 (6' -3" WOODEN POST SPACING)		GUARDRAIL TYPE 7 (STYLE CA)		GUARDRAIL TYPE 7 (SPECIAL)		END ANCHORAGE 3H		END ANCHORAGE 3D		END ANCHORAGE 3G		END ANCHORAGE (SLOTTED RAIL TERMINAL)		① RESET GUARDRAIL TYPE 3	
		LF		LF		LF		EACH		EACH		EACH		EACH		LF	
		PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
INTERCHANGE																	
I-25																	
101+78 TO 102+78	LT	62.5						1		1							
104+10 TO 105+48	LT	75										1		1			
BRIDGE PIER @ 136TH AVE.	CEN			160		126											
SIGNS																	
M.P. 223.83	RT	112.5								1				1			
M.P. 226.28	RT	112.5								1				1			
200+00	RT	112.5								1				1			
315+20	LT	112.5								1				1			
THORNTON																	
WASHINGTON STREET																	
510+53 TO 512+16	RT																162.5
TOTALS		587.5		160		126		1		5		1		5		162.5	

NOTES:

- ① RESET GUARDRAIL INCLUDES ALL TYPE 3 GUARDRAIL AND END ANCHORS.
- ② CHAIN LINK FENCE TO BE REMOVED AS DIRECTED BY THE ENGINEER. COST FOR REMOVAL WILL NOT BE PAID FOR SEPARATELY BUT WILL BE INCLUDED IN THE COST OF FENCE (CHAIN LINK) (72 INCH).
- ③ RESET FENCE (METAL CORRAL) SHALL REQUIRE CUTTING, WELDING AND PAINTING. CONTRACTOR SHALL COORDINATE WORK WITH PRIVATE CORRAL OWNER TO SECURE ANIMALS.



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Acad Ver. 2000i	Scale: Units: English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							Sheet Number 27	

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**TO ESTABLISH GEOMETRIC CONTROL FOR THE CONSTRUCTION OF THIS PROJECT, THE CITY HAS PROVIDED THE FOLLOWING INFORMATION:**

- Format\*  
 CONTROL DIAGRAM  
 CONTROL DIAGRAM  
 PLAN SHEETS  
 PLAN SHEETS/ CROSS SECTIONS  
 Other: \_\_\_\_\_

\*Specify the information format, i.e., plan sheet, computer disk, computer printout, or other.  
 The information marked is either contained on the plans or is available from the Engineer.

**TYPE OF PROJECT**

- Landscaping
- Signalization
- Safety Improvement
- Asphalt Overlay
- Concrete Overlay
- Minor Widening (1-25)
- Major Reconstruction
- New Roadway Construction
- Bridge Replacement
- Bridge Widening
- New Bridge
- Other: \_\_\_\_\_

SURVEY WORK TO BE PERFORMED BY OTHERS: \_\_\_\_\_

**WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER ITEM 625:**

- Establish and Maintain Project Centerline or Engineer Approved Offset Line(s)
- Verification and Maintenance of Horizontal and Vertical Control
- Verify or Determine existing grades and alignments
- Verify or Determine existing topography
- Clearing and Grubbing Limits
- Removal Limits
- Excavation and Embankment
  - Excavation
    - Unclassified
    - Stripping
    - Muck
    - Rock
    - Borrow
    - Other: DITCH
  - Embankment
    - Site Grading
    - Erosion Control (Perm)
    - Other: STOCKPILE
- As Staked Earthwork Quantities
- Landscaping
  - Top Soil
  - Seeding
  - Mulching
  - Planting
  - Other: \_\_\_\_\_
- Erosion Control
  - Seeding (Temp)
  - Silt Fences
  - Straw Bales
  - Temporary Berm
  - Riprap (Temp)
  - Other (Temp Diversion, Temp Slope Drain, Bush Barrier, Check Dam, Other: \_\_\_\_\_)

SLOPE STAKING	GRID	GRADE STAKES	SPECIAL INTERVAL
X	-	-	-
X	-	-	-
X	-	X	-
-	-	-	-
-	-	-	-
X	-	-	-
X	-	-	-
X	-	X	-
-	-	-	-

- Roadway Bases
  - Untreated Subgrade
  - Treated Subgrade
  - Aggregate Base Course
  - Other: R-VALUE OF 20
- Pavements
  - PMBB - Plant Mix Bituminous Base
  - HBP - Hot Bituminous Pavement
  - Concrete
  - Other: ABC, CLASS 6
- Roadway Elements
  - Curb and Gutter
  - Drop inlets - alignment and grades
  - Retaining Walls
  - Guard Rail
  - Sidewalk
  - Other: \_\_\_\_\_
- Riprap (Perm)
- Slope and Ditch Paving
- Minor Structures
  - Structure Excavation limits
  - Culverts
  - Culverts w/ Headwalls and Wingwalls
  - Concrete Box Culverts w/ Headwalls and Wingwalls
  - Pipes
    - Sanitary Sewer
    - Storm Sewer
    - Water
    - Irrigation
    - Miscellaneous
- Manholes
  - Inlets
  - Other: LANDSCAPE WALLS

- Major Structures - Overhead Signs, Concrete Box Culverts, Bridges - and all other structures assigned a structure number
  - Structure Excavation limits
  - Concrete Box Culverts w/ Headwalls and Wingwalls
  - Piling locations and cut off elevations
  - Caisson locations and elevations
  - Footing locations, alignment, and elevations
  - Abutment/Pier locations, alignment, and elevations
  - Wingwall skew angles/offsets
  - Structural concrete form locations
  - Substructure survey (Required by Subsection 601.12 for Bridges and S-614-50 for Overhead signs)
  - Bridge expansion joint(s) alignment and grade (longitudinal and transverse)
  - Deck grades at Girder 10th or "n" th point locations and elevations
  - Slope and Ditch Paving
  - Other: \_\_\_\_\_
- Fencing
  - Temporary
  - Permanent
  - Sound Barriers
  - Other: \_\_\_\_\_
- Delineators
  - Temporary
  - Permanent
- Lighting and Traffic Control Devices (Perm)
  - Signal pole locations and elevations
  - Light pole locations and elevations
  - Signs
  - Field verify sign post locations, elevations, and lengths before fabrication.
  - Other: \_\_\_\_\_
- Pavement Marking
  - Striping (Temp)
  - Striping (Perm)
  - Symbols
  - Other: \_\_\_\_\_

GRADE STAKES	GRID	SPECIAL INTERVAL	SPECIAL OFFSET
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
X	-	-	-
X	-	-	-
-	-	-	-
-	-	-	-

- Temporary Lighting and Construction Traffic Control Devices
  - Signal pole locations and elevations (Temp)
  - Light pole locations and elevations (Temp)
  - Signs (Temp)
  - Other: \_\_\_\_\_
- Easement (Temp)(Staking)

**WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER ITEM 629:**

- Monumentation
  - Control
  - Right of Way (Temp) (Staking)
  - Right of Way
  - Land corners, Aliquot corners
  - Easement (Temp)(Staking)
  - Easement (Perm)
  - Reference the specified existing monuments: \*\* 304, 312, 323, 325
  - Relocate the specified existing monuments: \*\* 304, 312, 323, 325
  - Locate monuments. It is estimated 8 hours are required.

\*\* A Tabulation of Survey Monuments may be provided on the plans.

**GENERAL NOTES:**

All work shall be done in accordance with the latest edition of the entire CDOT Survey Manual including all revisions to date:  
 - Chapter 5 - Construction Surveying, revised 02/07/96.

Adequate information for establishing lines, grades, and locations for all work items have been specified on the plans. Any additional information required to stake the item or element shall be generated by the Contractor's surveyor.

The Contractor's surveyor shall provide an estimate of the man-hours necessary to complete the work items indicated on this sheet. A copy of this sheet, with the estimated man-hours written on the blank line to the left of the specified items, shall be submitted with the Survey Schedule to the Engineer 3 days prior to the Presurvey Conference.

The following surveying notebooks are required:

- Alignment Notebook
- Benchmark Notebook
- Control Survey/Monumentation Notebook
- Minor Structure Notebook
- Major Structure Notebook
- Slope Staking Notebook
- Grade Notebook
- Other Notebook(s): ANY NOTEBOOK GENERATED

Stakes and Monuments which are damaged or destroyed by the progress of construction shall be replaced by the Contractor at no additional cost to the Department.

The Contractor shall furnish an As Staked earthwork quantity to the Engineer prior to completion of twenty percent (20%) of the planned earthwork in any phase as per the CDOT Survey Manual.  
 A printed copy of the As Staked earthwork data and a computer disk in the specified format shall be submitted to the Engineer.  
 The Contractor shall field verify original ground cross sections at maximum 160 m (500 ft) intervals.

Prior to beginning work on any subsequent operation, such as placing base course or paving, the Contractor shall certify in writing to the Engineer that the final grade is within the specified tolerance.

The Contractor shall perform all field surveying and calculations necessary to tie plan grades into field grades.

The Contractor shall coordinate construction staking on the project with any utility work, at no additional cost to the owner.

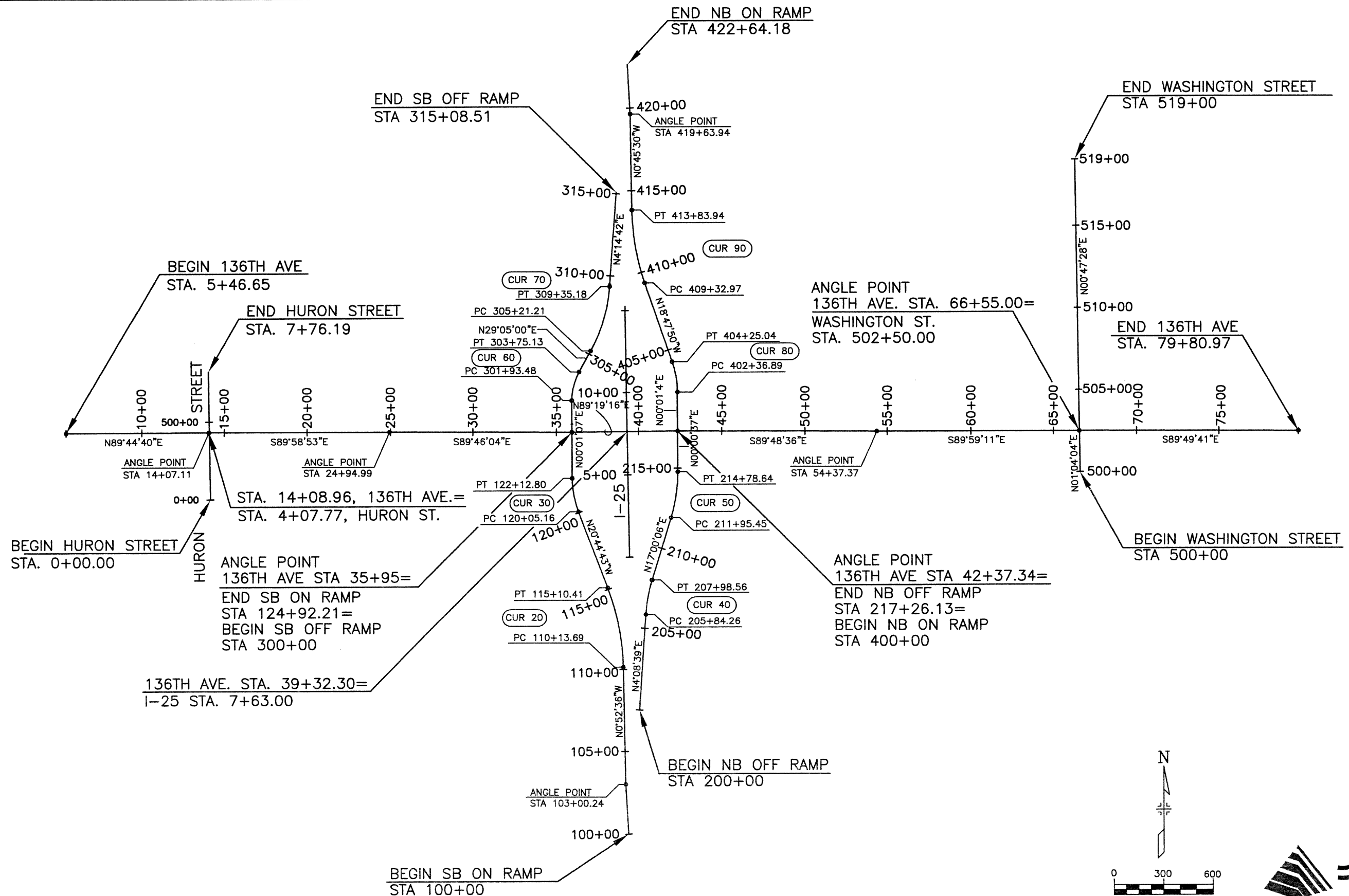
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303.721.1440  
 fax 303.721.0832  
 fhu@fhueg.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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Acad Ver. 2000i	Scale: 1"=600' Units: English										

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
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 Englewood, CO 80111

### 136TH AVENUE COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	5+46.65	N 89°44'40" E	1222491.1531	3140237.7558	BEGIN PROJECT
PI	14+07.11	S 89°58'53" E	1222494.9920	3141098.1993	ANGLE POINT
PI	24+94.99	S 89°46'04" E	1222494.6409	3142186.0812	ANGLE POINT
PI	35+95.00	S 89°19'16" E	1222490.1803	3143286.0798	ANGLE POINT
PI	42+37.34	S 89°48'36" E	1222497.7910	3143928.3784	ANGLE POINT
PI	54+37.37	S 89°59'11" E	1222493.8091	3145128.4066	ANGLE POINT
PI	66+55.99	S 89°49'41" E	1222493.5180	3146347.0230	ANGLE POINT
POE	79+80.97		1222489.5407	3147671.9977	END PROJECT

### I-25 COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	0+00.00	N 00°52'37" W	1221731.2530	3143634.1180	
PI	2+63.00	N 00°47'27" W	1221994.2215	3143630.0934	ANGLE POINT
PI	5+63.00	N 00°44'33" W	1222294.1929	3143625.9529	ANGLE POINT
PI	7+63.00	N 00°45'18" W	1222494.1768	3143623.3612	ANGLE POINT
PI	10+63.00	N 00°49'39" W	1222794.1501	3143619.4086	ANGLE POINT
PI	12+63.00	N 00°49'53" W	1222994.1309	3143616.5198	ANGLE POINT
POE	15+26.00		1223257.1070	3143612.7035	

### SB ON RAMP COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	100+00.00		1220046.3452	3143618.5952	BEGIN RAMP
PI	103+00.24		1220346.1265	3143602.0059	ANGLE POINT
PC 20	110+13.69	N 00°52'36" W	1221059.4972	3143591.0886	
PI 20			1221310.3441	3143587.2497	
PT 20	115+10.41	N 20°44'43" W	1221544.9546	3143498.3858	
PC 30	120+05.16		1222007.6291	3143323.1378	
PI 30			1222105.7939	3143285.9557	
PT 30	122+12.80	N 00°01'07" E	1222210.7644	3143285.9896	
POE	124+92.21		1222490.1803	3143286.0798	END RAMP

### SB OFF RAMP COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	300+00.00		1222490.1803	3143286.0798	BEGIN RAMP
PC 60	301+93.48	N 00°01'07" E	1222683.6588	3143286.1422	
PI 60			1222776.4857	3143286.1722	
PT 60	303+75.13	N 29°03'53" E	1222857.6084	3143331.2935	
PC 70	305+21.21		1222985.2707	3143402.3005	
PI 70			1223169.0444	3143504.5174	
PT 70	309+35.18	N 04°14'42" E	1223378.7556	3143520.0837	
POE	315+08.51		1223950.5058	3143562.5232	END RAMP

### SB ON RAMP HORIZONTAL CURVE DATA

CURVE No.	DELTA Degrees	RADIUS Feet	LENGTH Feet	TANGENT Feet	SSD Feet	MDS mph	e(MAX) ft/ft
CUR 20	19°52'06.6" LT.	1432.40	496.71	250.88	-	50	.052
CUR 30	20°45'49.6" RT.	572.96	207.64	104.97	-	30	.048

### SB OFF RAMP HORIZONTAL CURVE DATA

CURVE No.	DELTA Degrees	RADIUS Feet	LENGTH Feet	TANGENT Feet	SSD Feet	MDS mph	e(MAX) ft/ft
CUR 60	29°03'53.2" RT.	358.10	181.66	92.83	-	30	.039
CUR 70	24°50'17.3" LT.	954.93	413.97	210.29	-	50	.059

### NB OFF RAMP COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	200+00.00		1220798.7534	3143689.0900	BEGIN RAMP
PC 40	205+84.26	N 04°08'39" E	1221381.4888	3143731.3118	
PI 40			1221488.8055	3143739.3118	
PT 40	207+98.56	N 17°00'06" E	1221591.7010	3143770.5488	
PC 50	211+95.45		1221971.2503	3143886.6004	
PI 50			1222107.6580	3143928.3086	
PT 50	214+78.64	N 00°00'37" E	1222250.2997	3143928.3341	
POE	217+26.13		1222497.7910	3143928.3784	END RAMP

### NB ON RAMP COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	400+00.00		1222497.7910	3143928.3784	BEGIN RAMP
PC 80	402+36.89	N 00°01'04" E	1222734.6793	3143928.4517	
PI 80			1222829.6094	3143928.4517	
PT 80	404+25.04	N 18°47'50" W	1222919.4763	3143897.8926	
PC 90	409+32.97		1223400.3125	3143734.2280	
PI 90			1223615.5544	3143660.9650	
PT 90	413+83.94	N 00°45'30" W	1223842.9033	3143657.9557	
PI	419+63.94		1224422.8525	3143650.2791	ANGLE POINT
POE	422+64.18	N 03°02'56" W	1224722.6674	3143634.3096	END RAMP

### NB OFF RAMP HORIZONTAL CURVE DATA

CURVE No.	DELTA Degrees	RADIUS Feet	LENGTH Feet	TANGENT Feet	SSD Feet	MDS mph	e(MAX) ft/ft
CUR 40	12°51'27.1" RT.	954.93	214.29	107.60	-	50	.059
CUR 50	16°59'28.9" LT.	954.93	283.19	142.64	-	30	.038

### NB ON RAMP HORIZONTAL CURVE DATA

CURVE No.	DELTA Degrees	RADIUS Feet	LENGTH Feet	TANGENT Feet	SSD Feet	MDS mph	e(MAX) ft/ft
CUR 80	18°48'54.1" LT.	572.96	188.15	94.93	-	30	.048
CUR 90	18°02'20.1" RT.	1432.40	450.98	227.37	-	50	.052

### WASHINGTON STREET COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	500+00.00	N 01°04'04" E	1222243.5614	3146351.6816	
PI	502+50.00		1222493.5180	3146347.0230	
POE	519+00.00	N 00°47'28" E	1224143.3608	3146324.2411	

### HURON STREET COORDINATE TABLE

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	0+00.00	N 00°45'33.3" E	3141105.4585	1222087.2590	
POE	7+76.19		1222863.2763	3141095.1734	

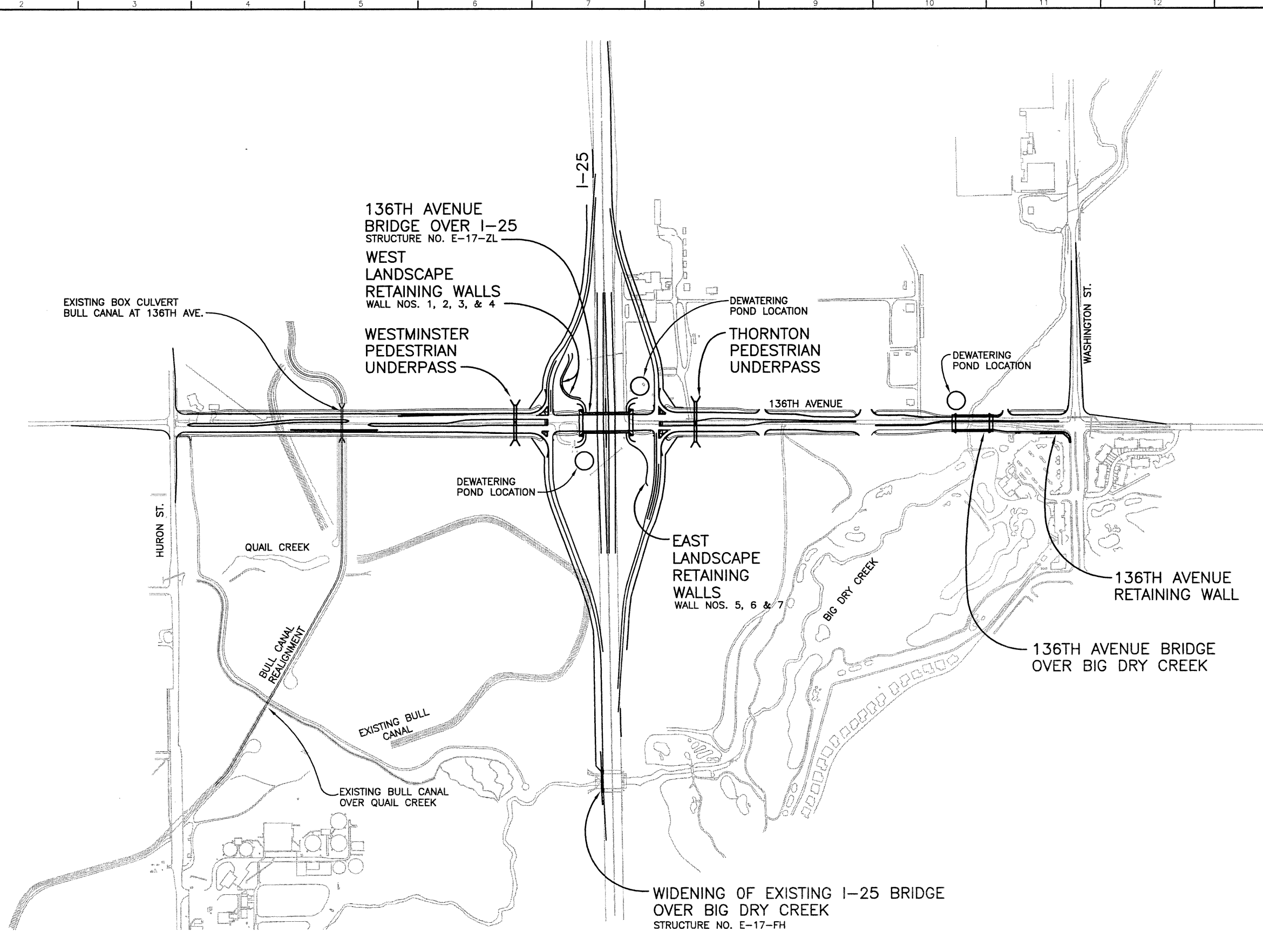



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Last Modification Date: 01\27\03 Initials: PRH						Revised:				Detailer: JAC			
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DESIGN		DETAIL		QUANTITIES	
Designed by	Checked by	Initial	Date	Initial	Date
Revision Dates			(Preliminary Stage Only)		



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Last Modification Date: 10/30/02	Initials: RAD			Designer: K. ALKANANI Structure								
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Acad Ver. 2000i	Scale: 1"=300'	Units: ENGLISH				Sheet Number <b>31</b>						

**GENERAL NOTES**

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) 1999 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, APPLICABLE TO THE PROJECT.

EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH CDOT M&S STANDARD M-206-2.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

COMPRESSED JOINT MATERIAL SHALL BE PRE-COMPRESSED, CHEMICALLY RESISTANT, OPEN CELL POLYURETHANE FOAM SEALANT, IMPREGNATED WITH A WATER-REPELLANT MATERIAL, WITH ADHESIVE BACKING ON BOTH SIDES. THE JOINT MATERIAL SHALL BE EPOXIED IN PLACE, AND ALL SPLICES SEALED, AS RECOMMENDED BY THE SUPPLIER OF THE JOINT MATERIAL. THE COST SHALL BE INCLUDED IN THE COST OF ITEM 601, CLASS D CONCRETE.

ACCEPTABLE COMPRESSED JOINT MATERIAL ALTERNATIVES:

- WILL-SEAL
- SEAL-MATE #517
- POLY-TITE "N"

CONCRETE CLASS BZ SHALL BE SULFATE RESISTING IN ACCORDANCE WITH PROJECT SPECIAL PROVISION, REVISION OF SECTION 601, STRUCTURAL CONCRETE.

A STRUCTURAL CONCRETE COATING WILL BE REQUIRED ON EXPOSED SURFACES TO 1'-0" BELOW FINISHED GRADE, AS SHOWN ON THE PLANS. THE COLORS SHALL BE EQUIVALENT TO FEDERAL STANDARD 595B COLOR NO. 30450 (MEDIUM BEIGE) AND COLOR NO. 30117 (BROWN).

TEST PANEL FOR STRUCTURAL CONCRETE COATING ON ACTUAL CONCRETE SURFACE SHALL BE PROVIDED FOR REVIEW AND APPROVED BY THE ENGINEER PRIOR TO PERFORMING THE WORK. CONCRETE TEST PANEL SHALL BE 6 FT x 6 FT.

ALL EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS 2 FINISH PRIOR TO APPLICATION OF STRUCTURAL CONCRETE COATING.

ALL ELECTRICAL CONDUIT IN BRIDGE CONCRETE SHALL BE GALVANIZED RIGID METAL CONDUIT. ALL CONDUIT RUNS SHALL INCLUDE A PULL STRING FOR FUTURE WIRING INSTALLATION.

THE FOLLOWING STRUCTURAL STEEL SHALL BE AASHTO M-183 (ASTM A-36) UNLESS SHOWN OR NOTED OTHERWISE: GIRDER DIAPHRAGMS, PILING, EXPANSION DEVICE, BRIDGE, AND ARCHITECTURAL RAILINGS.

LEVELING PADS ARE UNLAMINATED BEARINGS. THEY SHALL BE CUT OR MOLDED FROM AASHTO ELASTOMER GRADE 3, 4, OR 5 AS DESCRIBED IN TABLE 705-1 AND 705-2 WITH A DUROMETER (SHORE "A") HARDNESS OF 60.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE BLACK (NON-COATED) REINFORCING BARS UNLESS OTHERWISE NOTED.

ⓔ DENOTES EPOXY COATED REINFORCING STEEL.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-3"	1'-6"	1'-10"	2'-2"	3'-8"	4'-8"	5'-11"	7'-3"

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK (NON-COATED) REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"	4'-10"

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

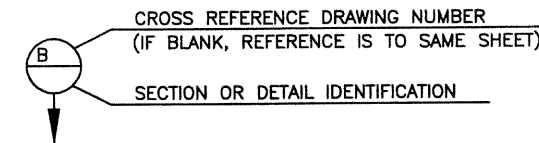
- E.F. = EACH FACE
- F.F. = FAR FACE
- N.F. = NEAR FACE
- T.O. = TOP OF

PERMANENT DECK FORMS ARE REQUIRED.

PERMANENT PRECAST CONCRETE DECK FORMS ARE OPTIONAL.

FOR STRUCTURE NUMBER INSTALLATION, SEE CDOT M&S STANDARD S-614-12.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.



**DESIGN DATA**

AASHTO, 16th EDITION, AS AMENDED BY 1997, 1998, 1999 & 2000 INTERIM REVISIONS.

DESIGN METHOD: LOAD FACTOR DESIGN.  
SERVICE LOAD DESIGN - H PILE AND CAISSON

LIVE LOAD: AASHTO HS-25-44 AND ALTERNATE MILITARY LOADING  
DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR BITUMINOUS PAVEMENT  
ASSUMES 5 LBS. PER SQ. FT. FOR PERMANENT STEEL DECK FORM

REINFORCED CONCRETE:

CDOT CLASS D CONCRETE:  $f'_c = 4,500$  psi  
CDOT CLASS BZ CONCRETE (CAISSON ONLY):  $f'_c = 4,000$  psi;  $n = 8$ ;  $f_c = 1,600$ psi  
REINFORCING STEEL:  $f_y = 60,000$  psi

STRUCTURAL STEEL: AASHTO M-183 (ASTM A-36)  $F_y = 36,000$  psi

PRESTRESSED CONCRETE: CLASS PS CONCRETE  $f'_c =$  (SEE DETAILS)  
 $f'_s = 270,000$  psi

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- B2 SUMMARY OF QUANTITIES
- B3 GENERAL LAYOUT
- B4 TYPICAL SECTION
- B5 ENGINEERING GEOLOGY
- B6 CONSTRUCTION LAYOUT
- B7 CAISSON & PILING LAYOUT
- B8 CAISSON & PILING DETAILS
- B9 ABUTMENT ARCHITECTURAL DETAILS
- B10 ABUTMENT 1 PLAN & ELEVATION
- B11 ABUTMENT 3 PLAN & ELEVATION
- B12 ABUTMENT SECTIONS & DETAILS
- B13 WINGWALL & ABUT. CORNER DETAILS (1 OF 2)
- B13A WINGWALL & ABUT. CORNER DETAILS (2 OF 2)
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- B15 PIER REINFORCING & DETAILS (1 OF 2)
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- B21 ABUTMENT & PIER DIAPHRAGM DETAILS
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- B24 BEARING DEVICE (TYPE I)
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- B34 PEDESTRIAN FENCE DETAILS
- B35 PEDESTRIAN FENCE & PEDESTRIAN RAIL DETAILS
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- B39 BRIDGE EXPANSION DEVICE DETAILS (1 OF 2)
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- B42 EXCAVATION & BACKFILL FOR BRIDGES
- B43 BRIDGE DECK ELEVATIONS (1 OF 4)
- B44 BRIDGE DECK ELEVATIONS (2 OF 4)
- B45 BRIDGE DECK ELEVATIONS (3 OF 4)
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- B47 WEST LANDSCAPE WALLS - GENERAL LAYOUT
- B48 EAST LANDSCAPE WALLS - GENERAL LAYOUT
- B49 LANDSCAPE WALLS - SECTIONS & DETAILS

**BRIDGE DESCRIPTION**

TWO SPAN (134'-0"/134'-0") BRIDGE,  
136th AVENUE OVER I-25  
PRECAST PRESTRESSED CONCRETE I GIRDER  
96'-0" ROADWAY WIDTH CURB TO CURB  
BRIDGE RAIL TYPE 7 (SPECIAL)

DESIGN	Checked by	Date	DETAIL		QUANTITIES		Checked by	Date
			Initial	Date	Initial	Date		
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		03/02	RAD	03/02	SEH	03/02		
		03/02	KMA	10/02	KMA	10/02		



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Last Modification Date:	12/12/02 Initials: RAD			Revised:		Designer:	K. ALKANANI	Structure	E-17-ZL
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\			Void:		Detailer:	R. DILLON	Numbers	
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Acad Ver. 2000i	Scale: None Units: ENGLISH								Sheet Number 32

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HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

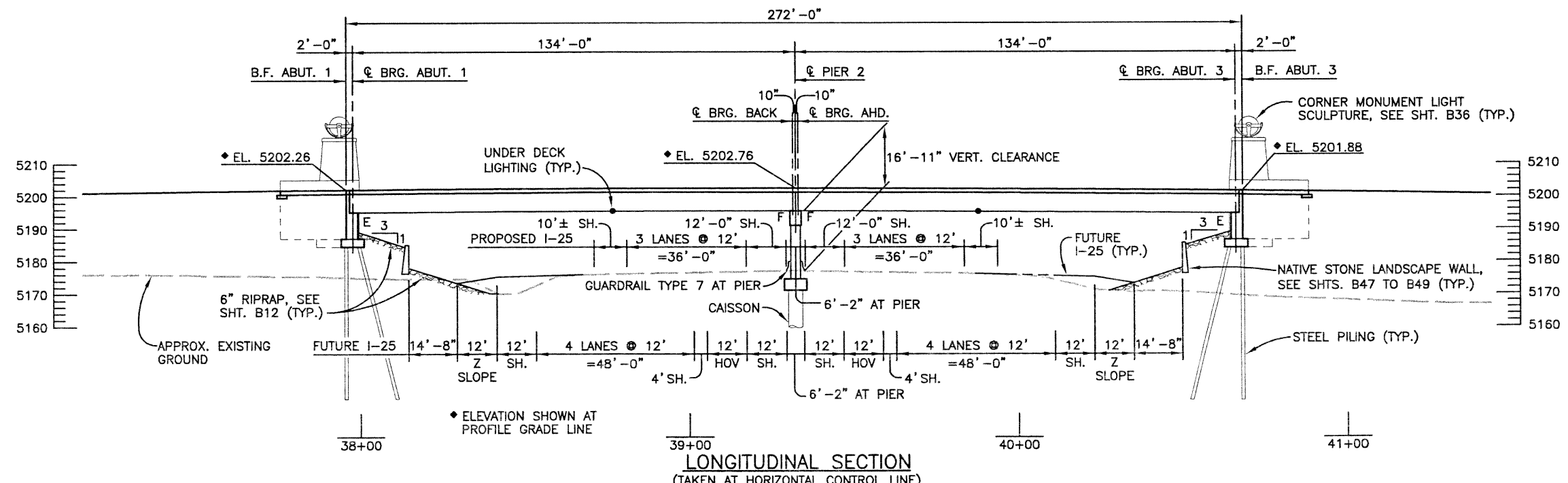
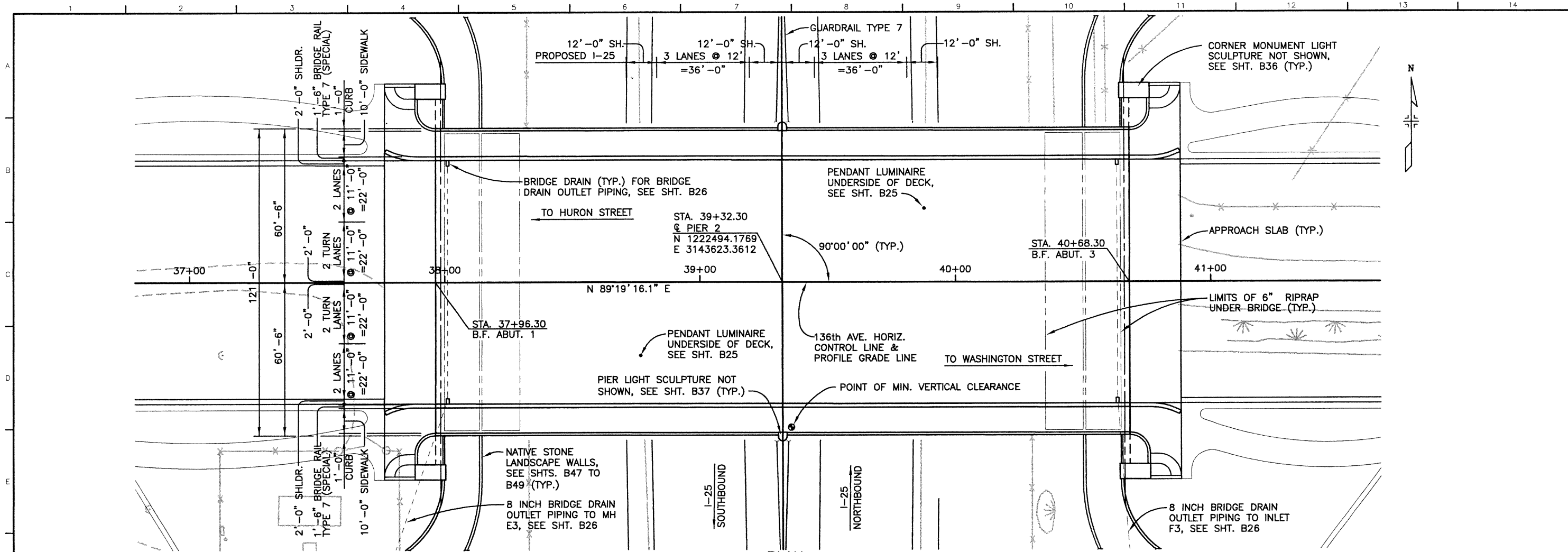
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111





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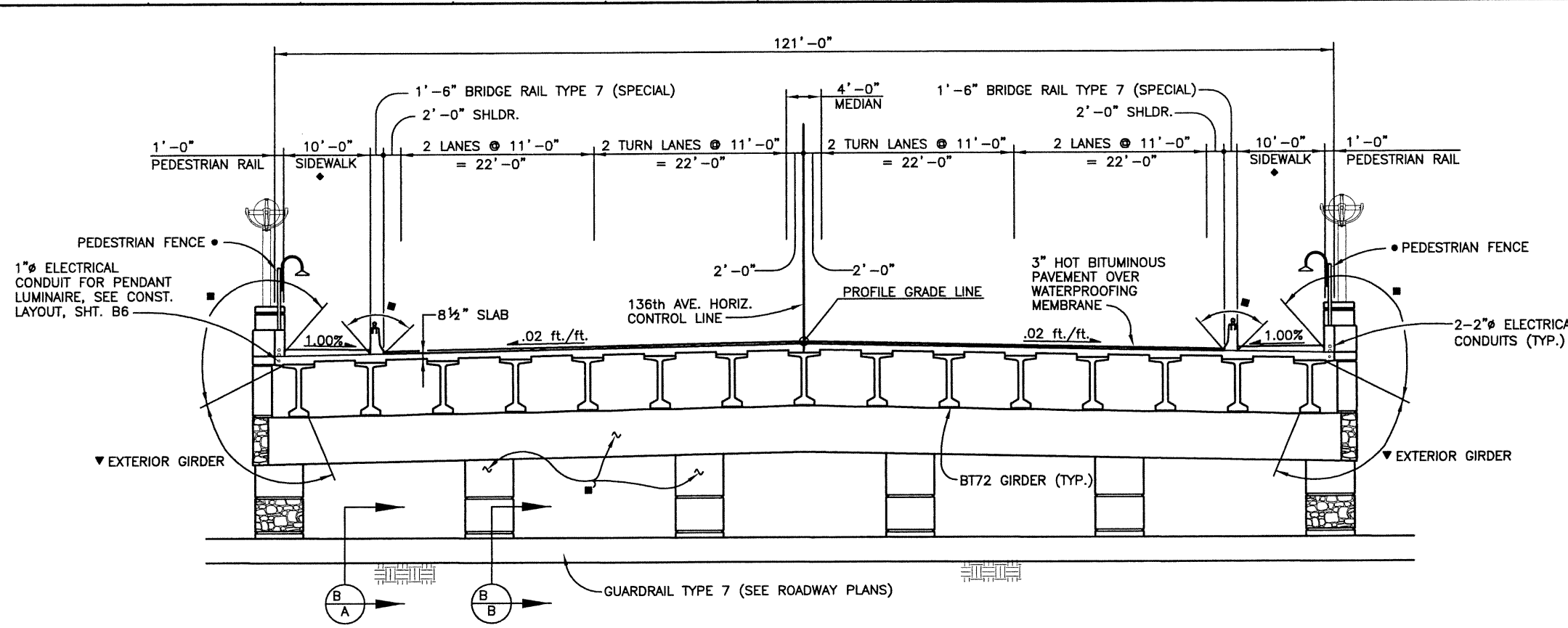
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fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

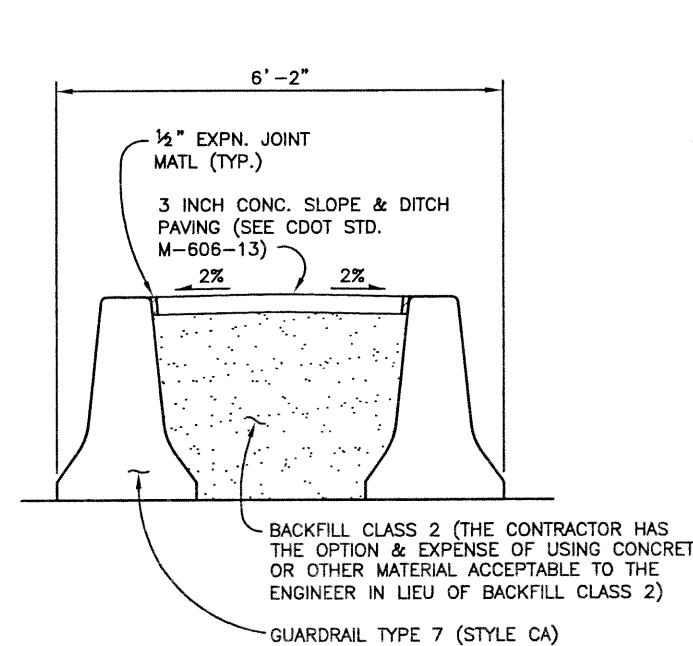
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No Revisions:				97-71	
Revised:		Designer: K. ALKANANI	Structure Numbers: E-17-ZL		
Void:		Detailer: R. DILLON	Subset Sheets: B3 of 49	Sheet Number 34	

**STRUCTURAL CONCRETE COATING AND STRUCTURAL STEEL PAINT COLORS:**

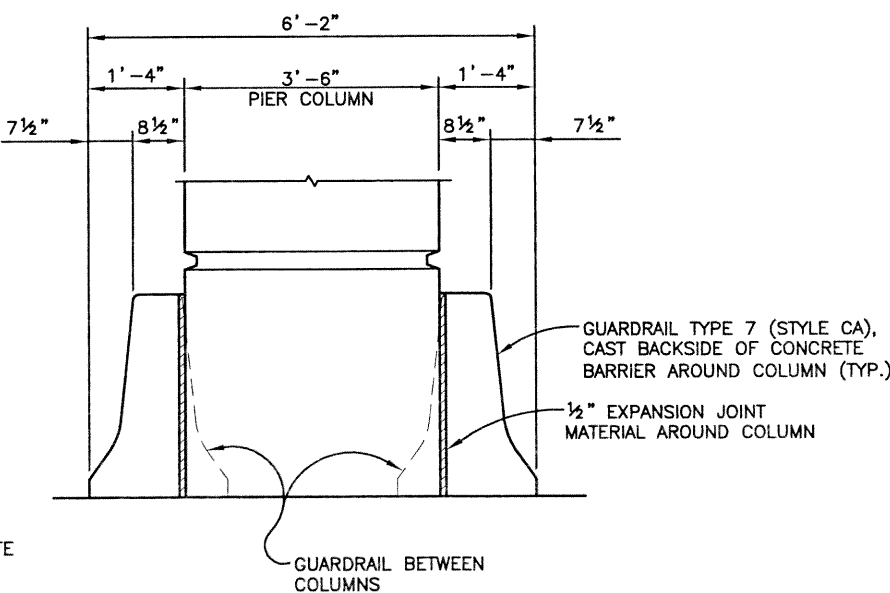
- FEDERAL COLOR NO. 30450 (BIEGE-SAND), EXPOSED FACES OF ABUTMENTS, WINGWALLS AND PIER, DOWN TO 1'-0" BELOW FINISH GRADE, AND EXPOSED SURFACES OF BRIDGE RAIL & PEDESTRIAN RAIL.
- ▼ FEDERAL COLOR NO. 30117 (BROWN), EXTERIOR GIRDERS.
- FEDERAL COLOR NO. 33717 (LIGHT SAND BEIGE), SIDEWALK SURFACES.
- FENCE, ARCHITECTURAL TRUSS, & STEEL BRIDGE RAIL SHALL BE PAINTED FEDERAL COLOR NO. 22516 (TERRA COTA).



**TYPICAL SECTION**  
(LOOKING AHEAD STATION)

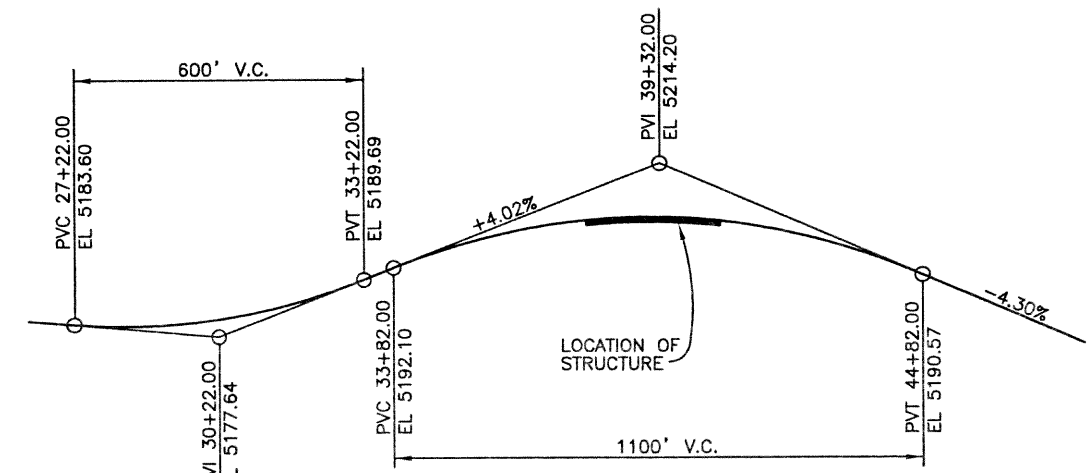


SECTION **B/A**



SECTION **B/B**

**NOTE:**  
TO BE PAID FOR AS GUARDRAIL TYPE 7 (SPECIAL), SEE ROADWAY PLANS



**PROFILE GRADE**

REVISION DATES		QUANTITIES		DETAIL		DESIGN	
No.	Date	Initial	Date	Initial	Date	Initial	Date
			03/02	SEH	03/02		
			10/02	KMA	10/02		

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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

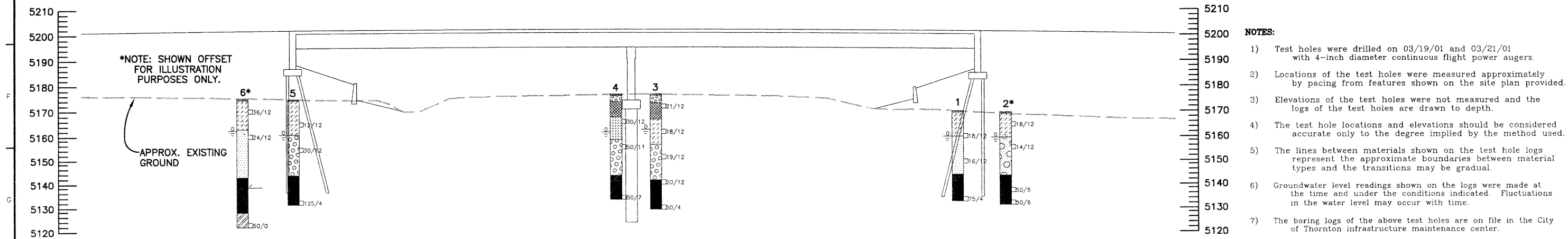
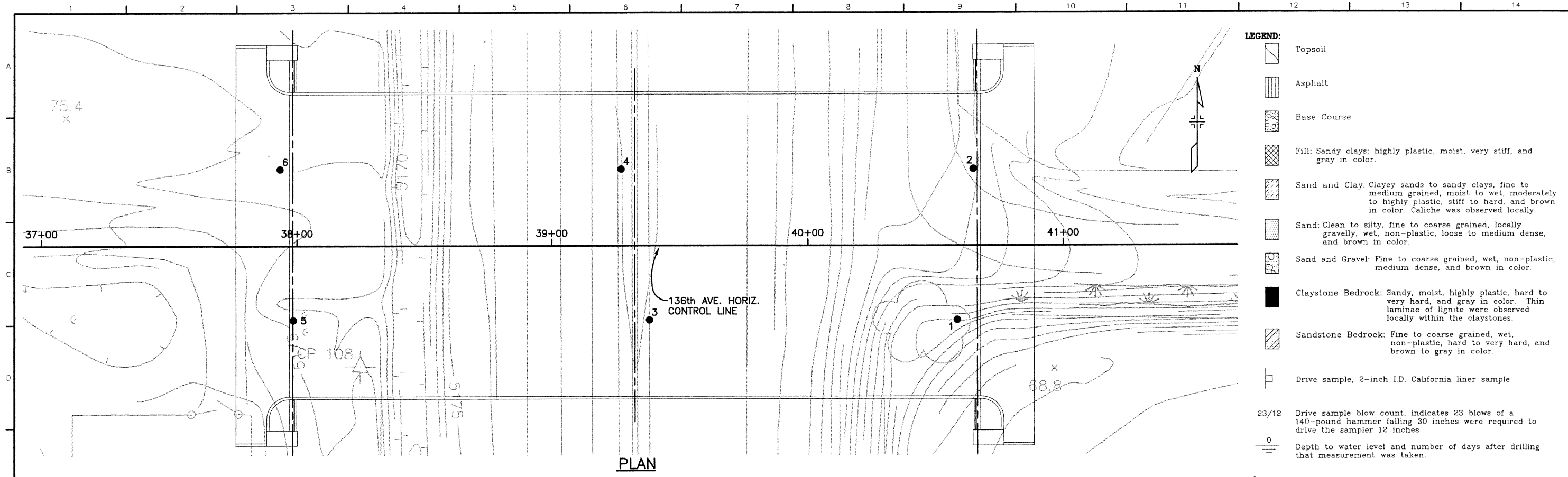
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136TH AVENUE OVER I-25 TYPICAL SECTION	
Designer:	K. ALKANANI
Detailer:	R. DILLON
Sheet Subset:	BRIDGE

Project No./Code	97-71
Structure Numbers	E-17-ZL
Subset Sheets:	B4 of 49
Sheet Number	35

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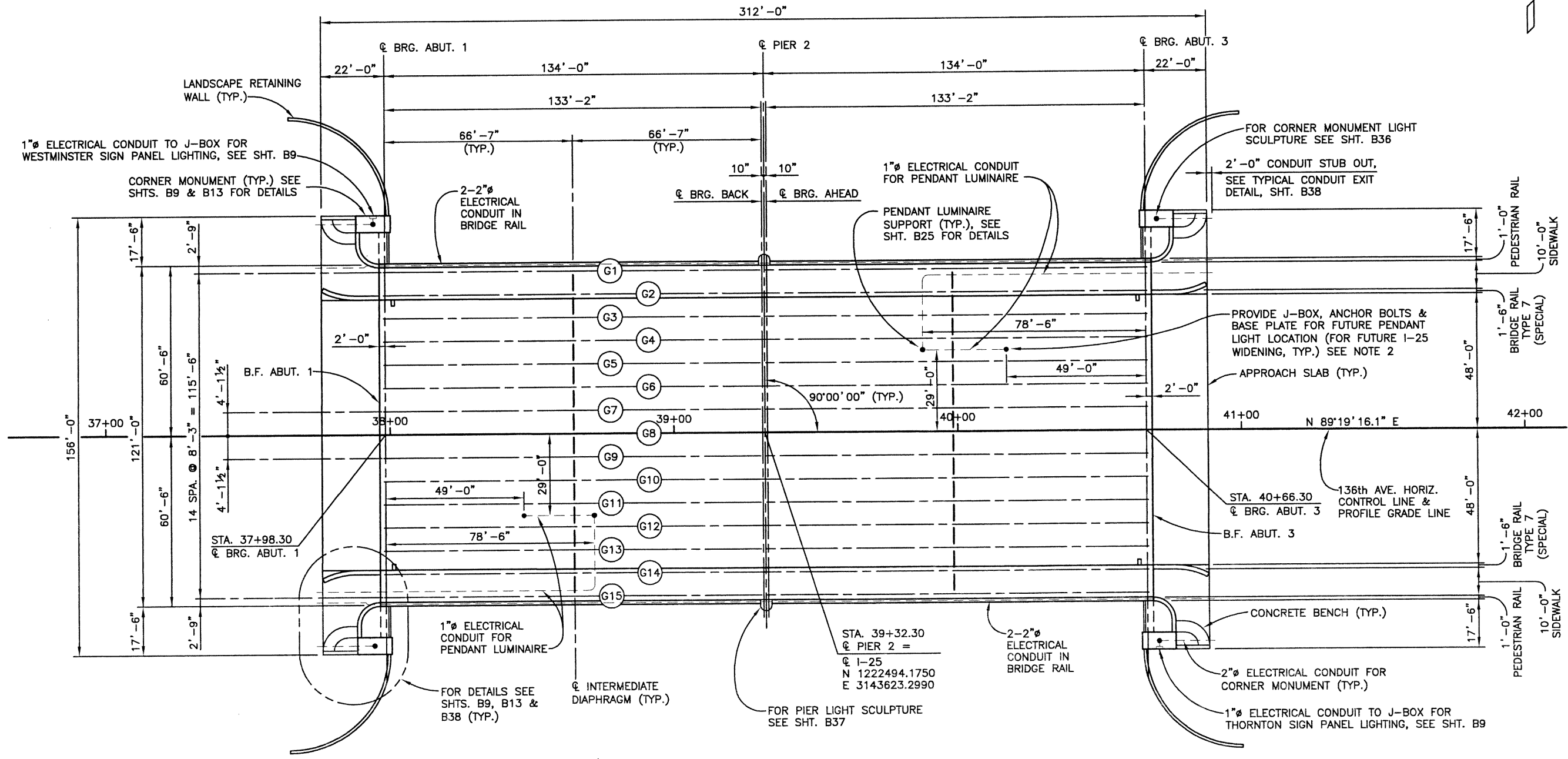
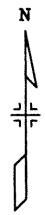


- NOTES:**
- 1) Test holes were drilled on 03/19/01 and 03/21/01 with 4-inch diameter continuous flight power augers.
  - 2) Locations of the test holes were measured approximately by pacing from features shown on the site plan provided.
  - 3) Elevations of the test holes were not measured and the logs of the test holes are drawn to depth.
  - 4) The test hole locations and elevations should be considered accurate only to the degree implied by the method used.
  - 5) The lines between materials shown on the test hole logs represent the approximate boundaries between material types and the transitions may be gradual.
  - 6) Groundwater level readings shown on the logs were made at the time and under the conditions indicated. Fluctuations in the water level may occur with time.
  - 7) The boring logs of the above test holes are on file in the City of Thornton infrastructure maintenance center.

Sample Test Hole No.	Location	Natural Moisture Content (%)	Natural Dry Density (pcf)	Gradation		Passing No. 200 Sieve (%)	Atterberg Limit		Swell vs. 1000 psf Surcharge (%)	Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	AASHTO Classification (GI)	Soil or Bedrock Type
				Gravel (%)	Sand (%)		Liquid Limit (%)	Plasticity Index (%)					
TH-1	9	25.1	91.5			66	39	27	0.1				Sandy Clay
TH-1	34	14.3	119.1			78	54	30		14,663			Claystone Bedrock
TH-2	14	13.4	120.5	11	82	7		N P					Gravelly Sand with Silt
TH-2	35	18.0	110.3			93	56	33		11,887			Claystone Bedrock
TH-3	4	19.8	105.8			71	38	22					Fill: Sandy Clay
TH-3	14	18.6	110.5			53	22	10	-0.1		< 0.01		Very Sandy Clay
TH-4	20	14.5	-	8	89	3		N P					Slightly Gravelly Sand
TH-4	40	20.8	-			79	51	31					Claystone Bedrock
TH-5	19	8.2	127.0	24	70	6		N P					Gravelly Sand with Silt
TH-6	4	18.1	108.9			78	47	28	3.1		0.2		Sandy Clay



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- NOTES:**
1. PROVIDE EXPANSION DEVICES FOR 1" AND 2" ELECTRICAL CONDUIT AT ABUTMENTS. COST OF EXPANSION DEVICES SHALL BE INCLUDED IN THE COST OF ELECTRICAL CONDUIT.
  2. THE COST OF THE J-BOX, ANCHOR BOLTS & BASE PLATE FOR FUTURE PENDANT LIGHT LOCATION SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 601 CONCRETE CLASS D (BRIDGE).

**CONSTRUCTION LAYOUT**

DESIGN		DETAIL		QUANTITIES		REVISION DATES	
Initial	Date	Initial	Date	Initial	Date	Initial	Date
WJM	10/02	RMA	03/02	SEH	03/02		
WJM	10/02	RMA	03/02	SEH	03/02		
WJM	10/02	RMA	03/02	SEH	03/02		

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Acad Ver.	2000i	Scale:	1"=20' Units: ENGLISH

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No.	Description	Date

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER I-25 CONSTRUCTION LAYOUT**

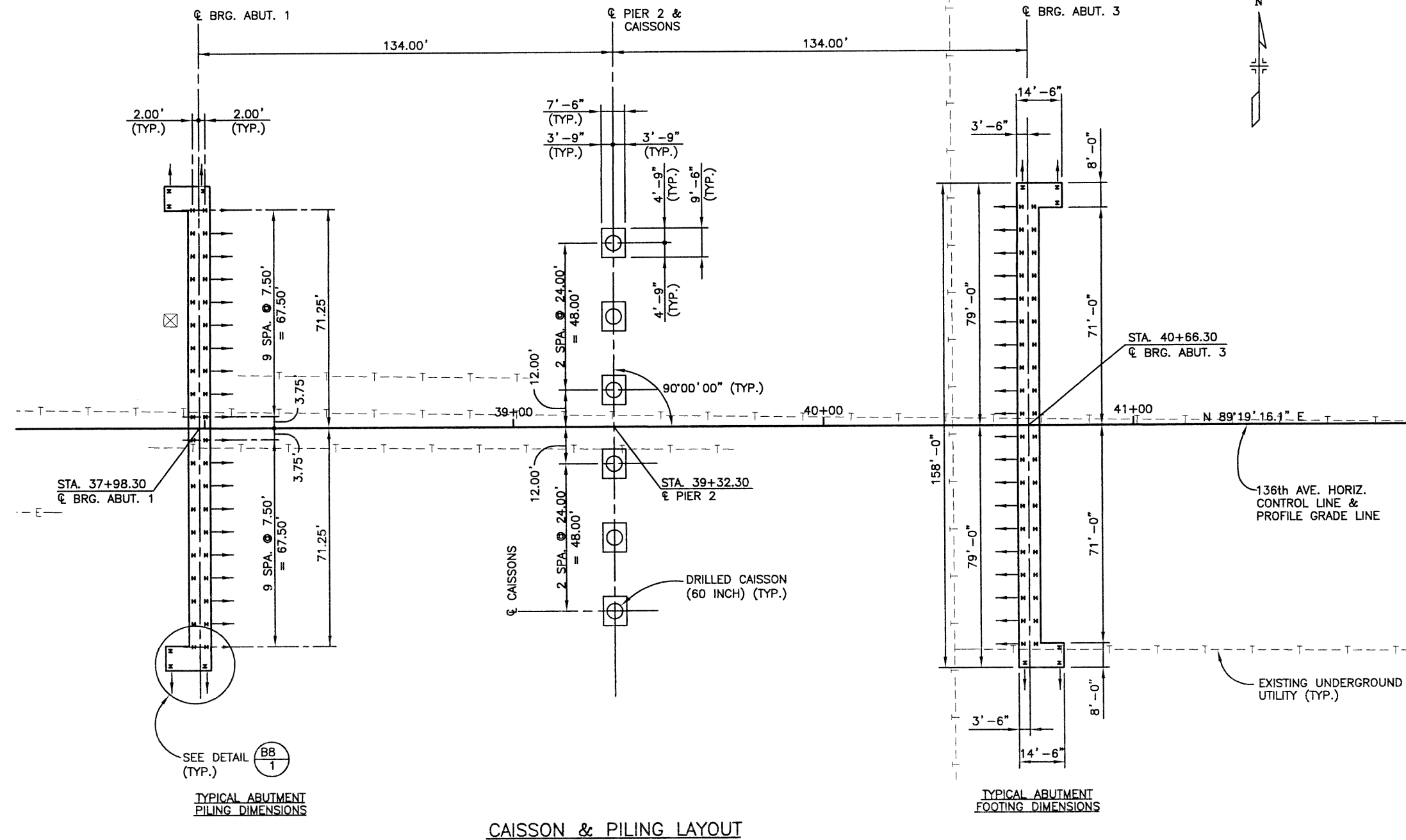
Designer:	K. ALKANANI	Structure Numbers:	E-17-ZL
Detailer:	R. DILLON		
Sheet Subset:	BRIDGE	Subset Sheets:	B6 of 49

**Project No./Code**

	97-71
Sheet Number	37

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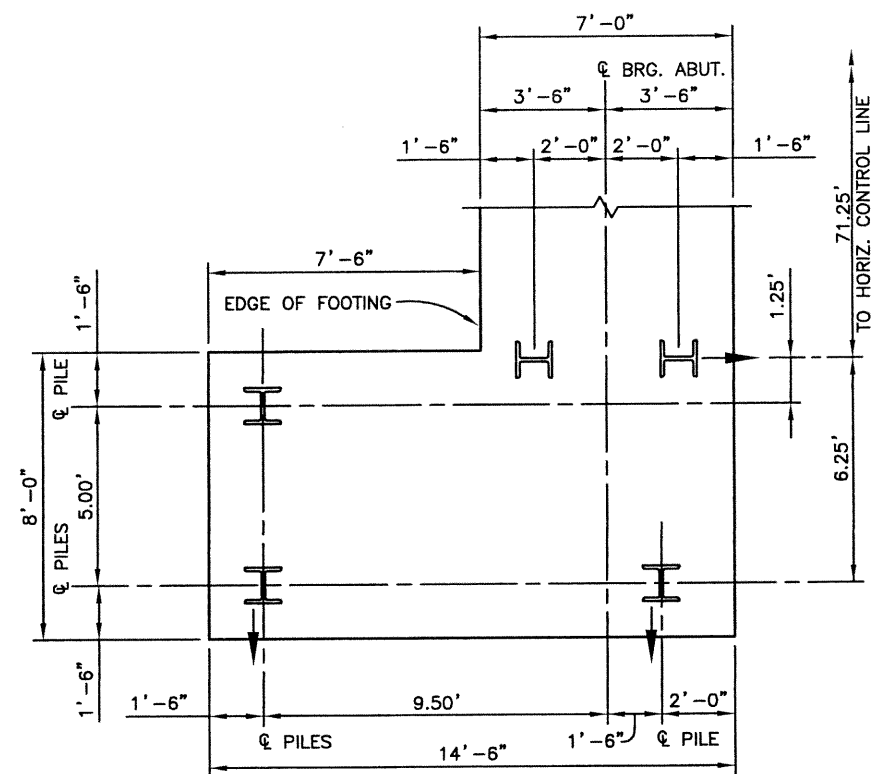


- NOTES:**
- ALL PILES ARE HP12x74.
  - ALL PILES ARE END BEARING. MAXIMUM ALLOWABLE LOADING:  
HP12x74: 196 KIPS
  - ESTIMATED PILE TIP ELEVATIONS:  
ABUTMENT 1: 5138.00  
ABUTMENT 3: 5138.00
  - MAXIMUM PILE DESIGN LOAD:  
HP12x74: 183 KIPS
  - ALL CAISSONS ARE DESIGNED FOR ALLOWABLE END BEARING PRESSURE OF 40 KSF AND A SKIN FRICTION OF 4 KSF.
  - ESTIMATED BOTTOM OF CAISSON ELEVATIONS AT PIER 2 = 5124.00
  - MAXIMUM CAISSON DESIGN LOAD = 2090 KIPS
  - SEE PIER DETAILS, SHT. B8 FOR CAISSON TYPICAL SECTION.
  - THE USE OF TEMPORARY CASING DURING DRILLING CAISSONS MAY BE REQUIRED. THE COST OF TEMPORARY CASING SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN ITEM 503 DRILLED CAISSON (60 INCH).
  - DIMENSIONS SHOWN FOR THE ABUTMENTS ARE AT THE BOTTOM OF THE CONCRETE.
- ↗ INDICATES 1:3 BATTER (1 HORIZONTAL : 3 VERTICAL)

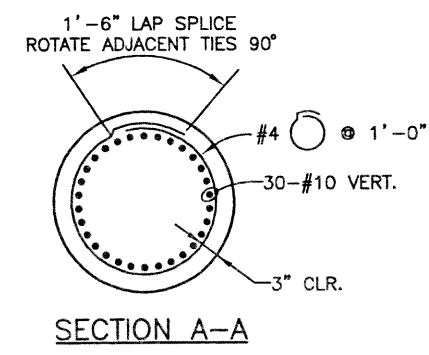
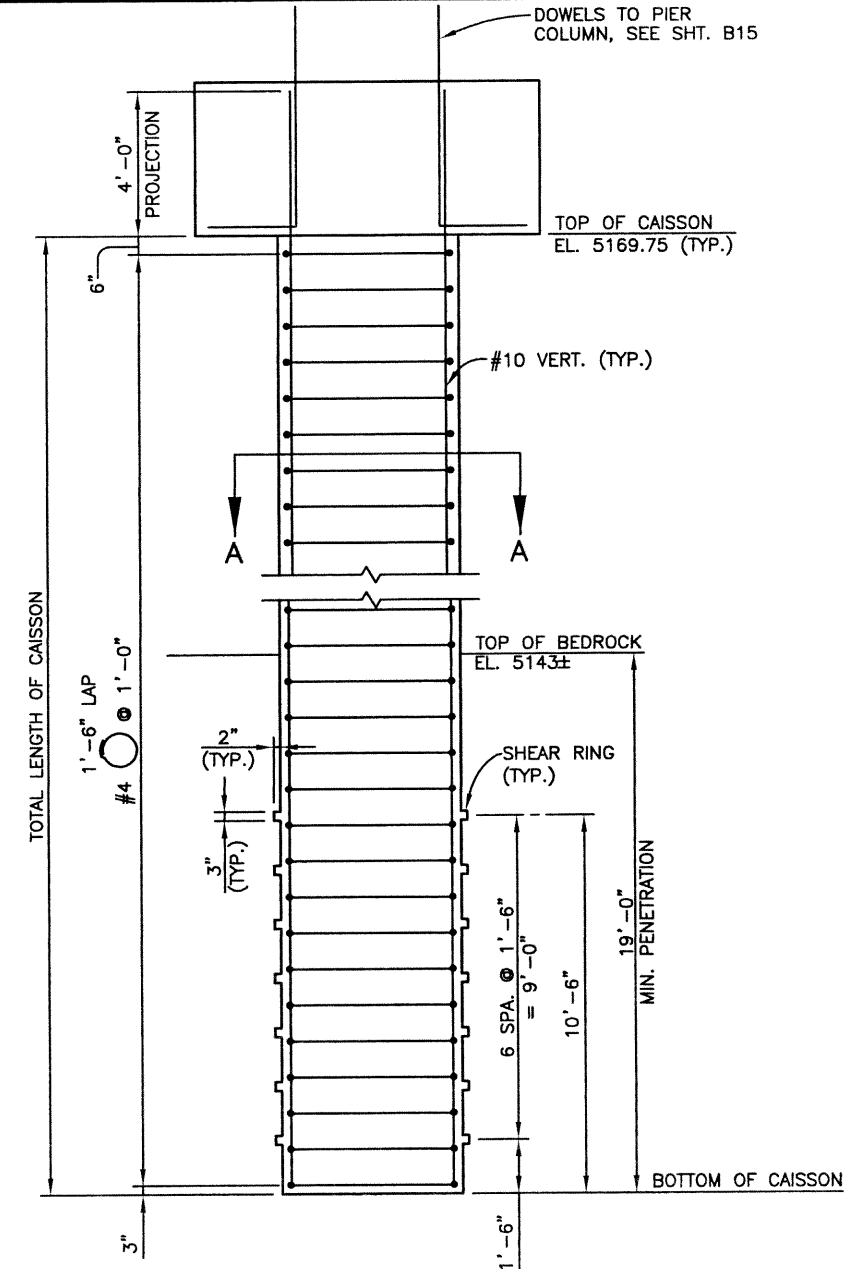
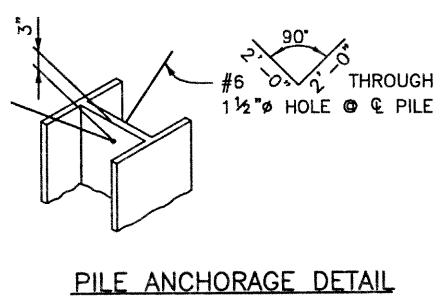
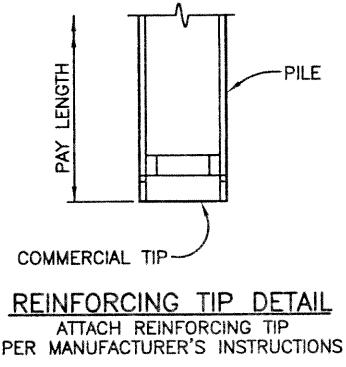
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Last Modification Date:	10/26/02	Initials:	PRH		Revised:		Designer:	K. ALKANANI	Structure	E-17-ZL	
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		03/02		03/02	
		KMA		KMA	
		03/02		10/02	
Revision Dates (Preliminary Stage Only)					



**DETAIL B7/1**  
(SIMILAR AT EACH ABUTMENT CORNER)



**DRILLED CAISSON (60 INCH)**

**Computer File Information**

Creation Date:	02/26/02	Initials:	PRH
Last Modification Date:	10/26/02	Initials:	PRH
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\		
Drawing File Name:	B00033FDN11.DWG		
Acad Ver.	2000i	Scale:	VARIABLES Units: ENGLISH

**Index of Revisions**




303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER I-25 CAISSON & PILING DETAILS**

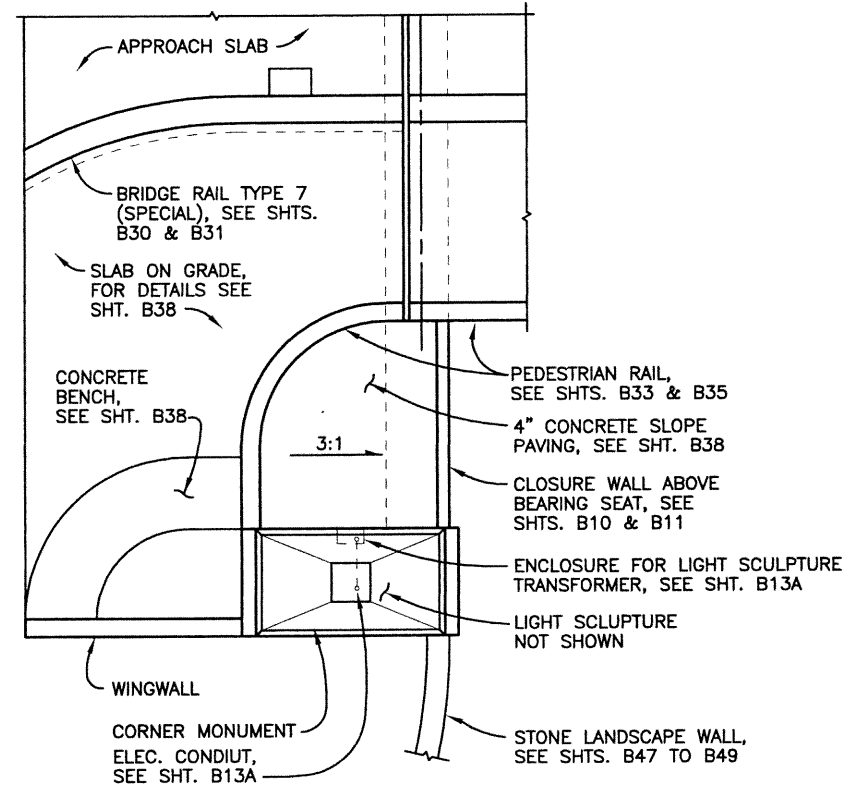
Designer:	K. ALKANANI	Structure Numbers	E-17-ZL
Detailer:	P. HELM	Subset Sheets:	B8 of 49
Sheet Subset:	BRIDGE		

**Project No./Code**

Project No./Code	97-71
Sheet Number	39



QUANTITIES		Revision Dates	
Initial	Date	Initial	Date
SEH	03/02	KMA	10/02
Checked by	Checked by	Checked by	Checked by
KMA	KMA	KMA	KMA
DESIGN		DETAIL	
Initial	Date	Initial	Date
WJM	10/02	KMA	03/02
Designed by	Checked by	Designed by	Checked by
KMA	WJM	KMA	KMA



TYPICAL PLAN AT ABUTMENT MONUMENT

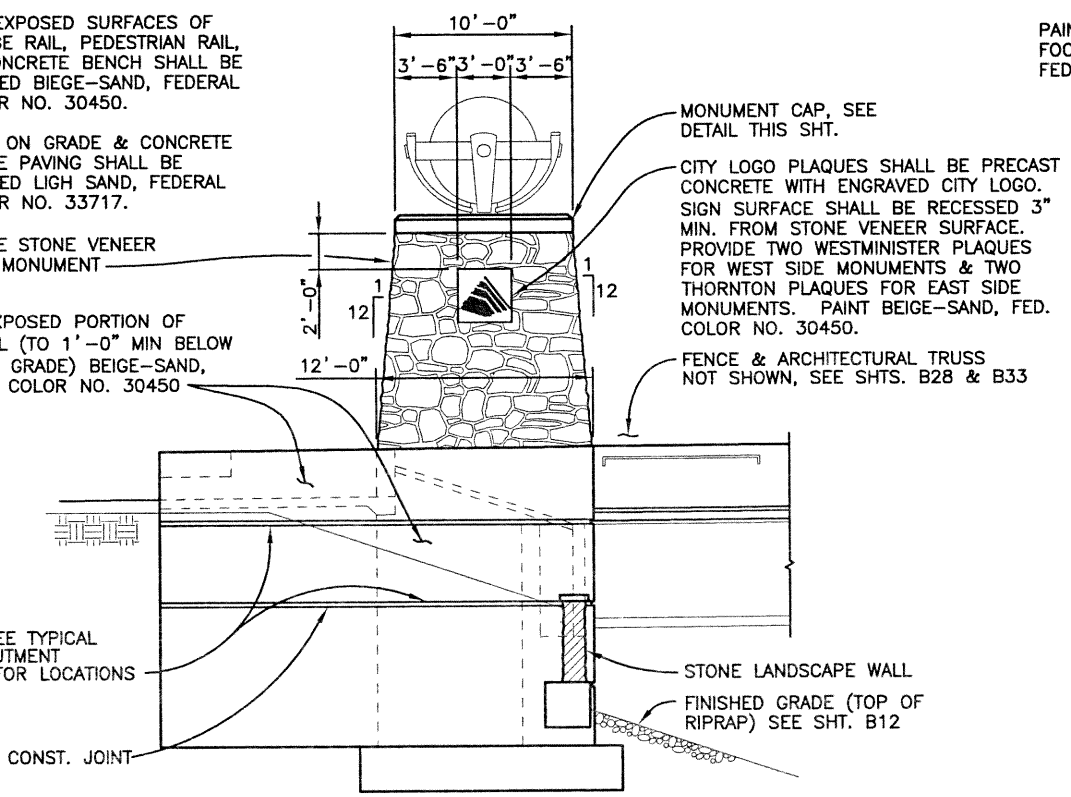
NOTES:

- ALL EXPOSED SURFACES OF BRIDGE RAIL, PEDESTRIAN RAIL, & CONCRETE BENCH SHALL BE PAINTED BEIGE-SAND, FEDERAL COLOR NO. 30450.
- SLAB ON GRADE & CONCRETE SLOPE PAVING SHALL BE PAINTED LIGHT SAND, FEDERAL COLOR NO. 33717.

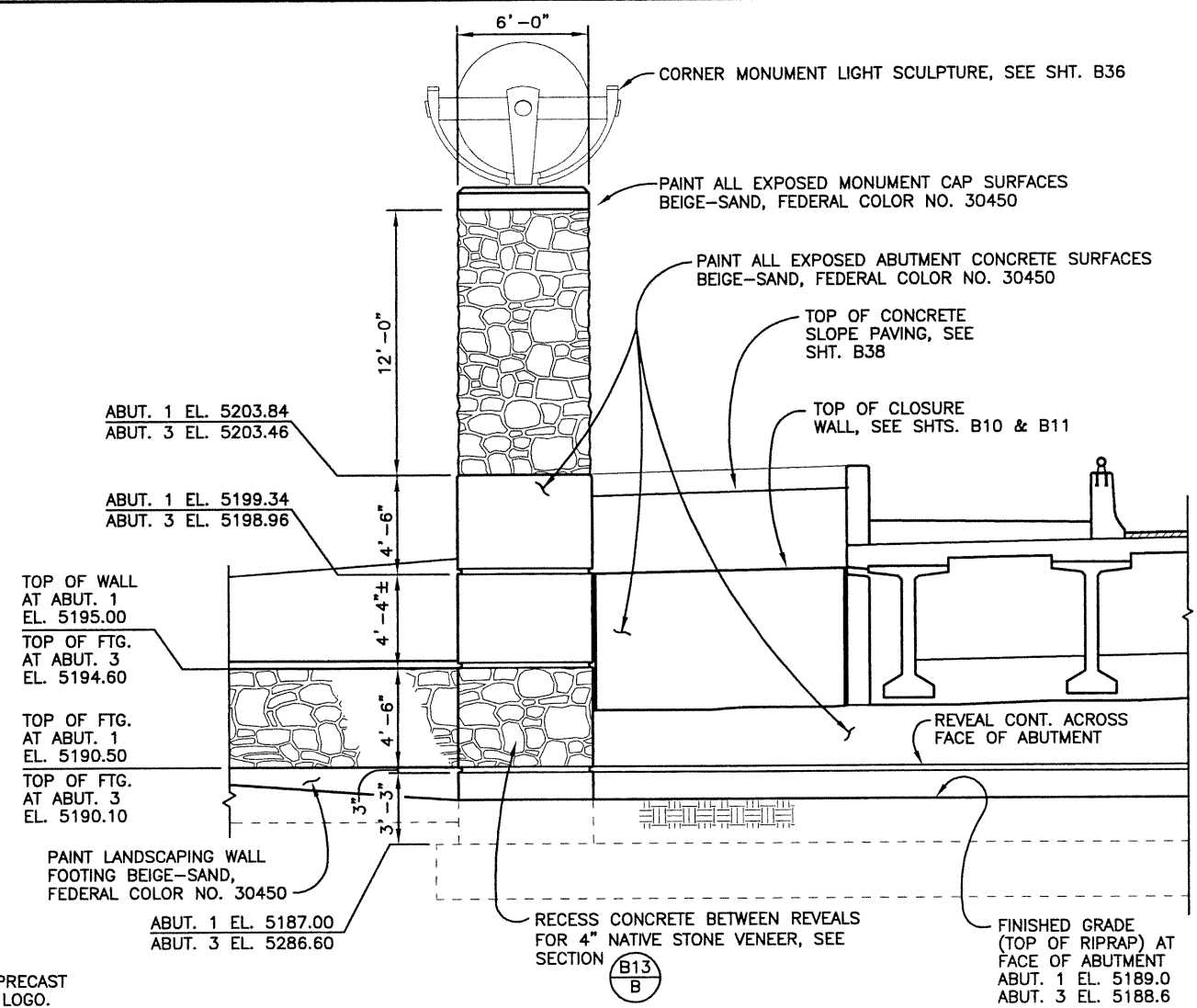
6" NATIVE STONE VENEER CORNER MONUMENT

PAINT EXPOSED PORTION OF WINGWALL (TO 1'-0" MIN BELOW FINISHED GRADE) BEIGE-SAND, FEDERAL COLOR NO. 30450

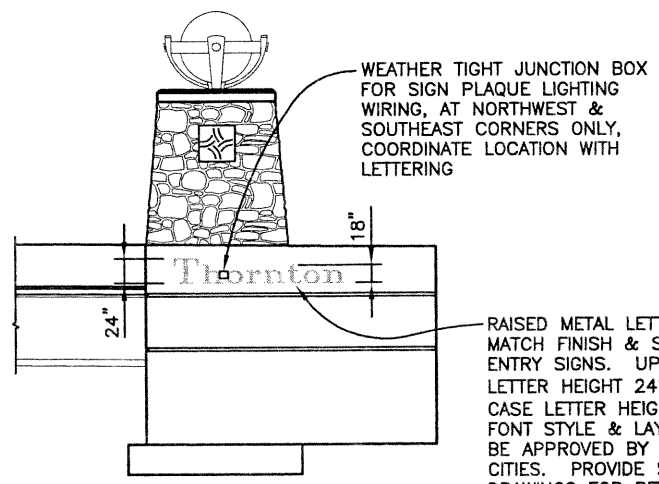
REVEALS, SEE TYPICAL PARTIAL ABUTMENT ELEVATION FOR LOCATIONS



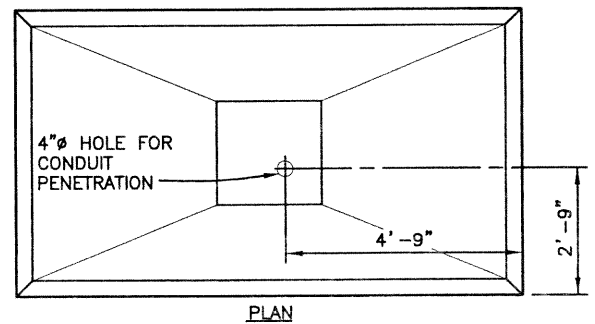
TYPICAL WINGWALL ELEVATION



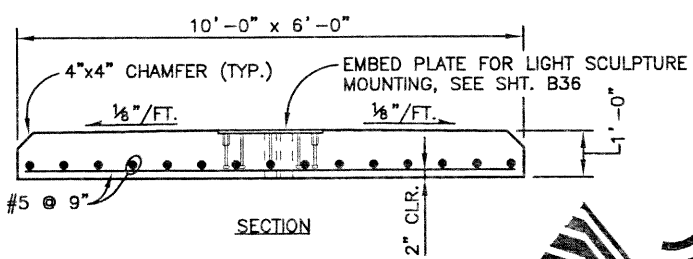
TYPICAL PARTIAL ABUTMENT ELEVATION (ABUTMENTS ARE SYMMETRICAL ABOUT 136th AVE. HORIZ. CONTROL LINE)



SIGN PLAQUE LIGHTING JUNCTION BOX

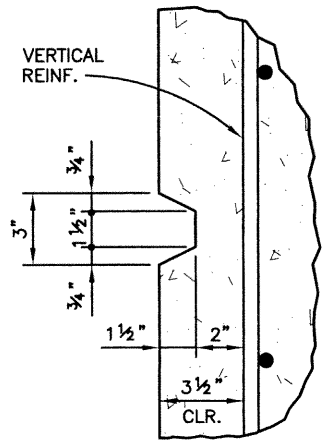


PLAN



SECTION

MONUMENT CAP DETAIL (CAST-IN-PLACE OR PRECAST)



REVEAL DETAIL

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Last Modification Date:	12/12/02	Initials:	RAD
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\		
Drawing File Name:	B00033ABT13.DWG		
Acad Ver.	2000i	Scale:	VARIES
Units:	ENGLISH		

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 fax 303.721.0832  
 fhu@fhueng.com

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 Englewood, CO 80111

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Revised:	
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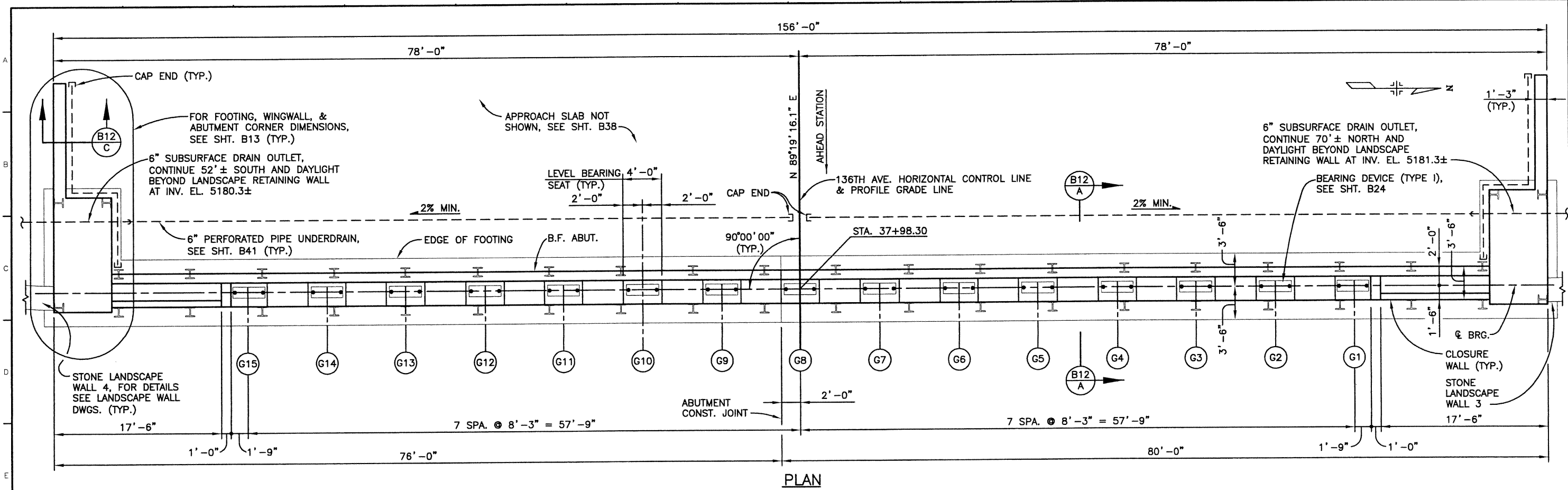
136TH AVENUE OVER I-25  
 ABUTMENT ARCHITECTURAL DETAILS

Designer:	K. ALKANANI	Structure	E-17-ZL
Detailer:	R. DILLON	Numbers	
Sheet Subset:	BRIDGE	Subset Sheets:	B9 of 49

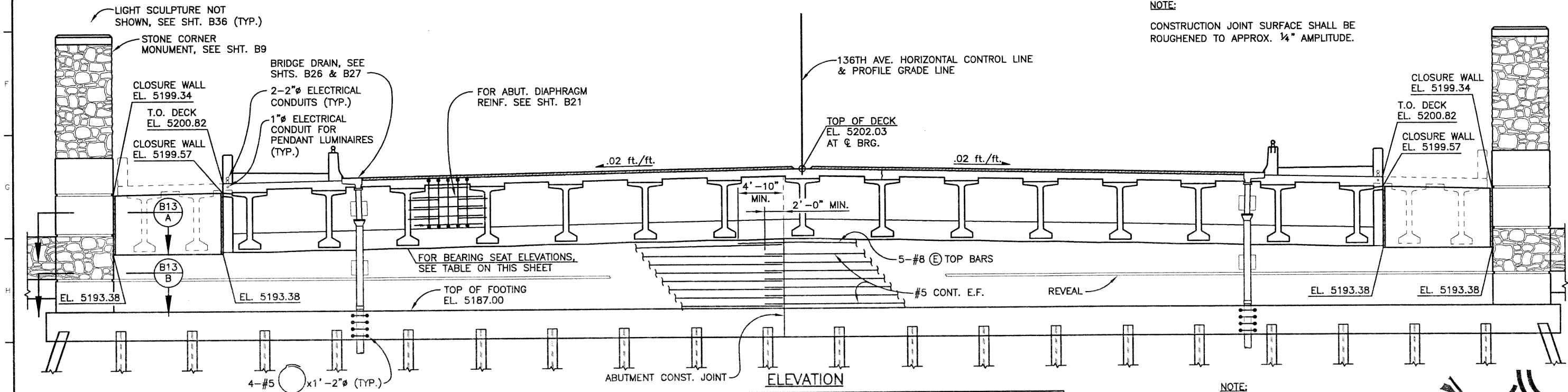
Project No./Code

97-71
Sheet Number 40





PLAN



NOTE:  
CONSTRUCTION JOINT SURFACE SHALL BE ROUGHENED TO APPROX. 1/4" AMPLITUDE.

		BEARING SEAT ELEVATION														
GIRDER		G15	G14	G13	G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1
ELEVATION - ABUT 1		5193.54	5193.71	5193.87	5194.04	5194.20	5194.37	5194.53	5194.70	5194.53	5194.37	5194.20	5194.04	5193.87	5193.71	5193.54

NOTE:  
FOR REVEAL SPACING & DETAILS SEE ABUTMENT ARCHITECTURAL DETAILS, SHT. B9.

DESIGN	CHECKED BY		DATE	
	W.M.	K.M.A.	10/02	03/02
DESIGNED BY	K.M.A.		10/02	
CHECKED BY	W.M.		10/02	
DATE	10/02		03/02	
INITIALS	K.M.A.		W.M.	
QUANTITIES	K.M.A.		10/02	
DESIGNED BY	K.M.A.		03/02	
CHECKED BY	K.M.A.		03/02	
DATE	03/02		03/02	
INITIALS	K.M.A.		K.M.A.	
QUANTITIES	K.M.A.		10/02	
DESIGNED BY	K.M.A.		03/02	
CHECKED BY	K.M.A.		03/02	
DATE	03/02		03/02	
INITIALS	K.M.A.		K.M.A.	

Computer File Information			
Creation Date:	10/11/01	Initials:	RAD
Last Modification Date:	11/27/02	Initials:	PRH
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Drawing File Name:	B00033ABT11.DWG		
Acad Ver.	2000i	Scale:	3/16" = 1'-0" Units: ENGLISH

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**FELSBURG HOLT & ULLEVIG**

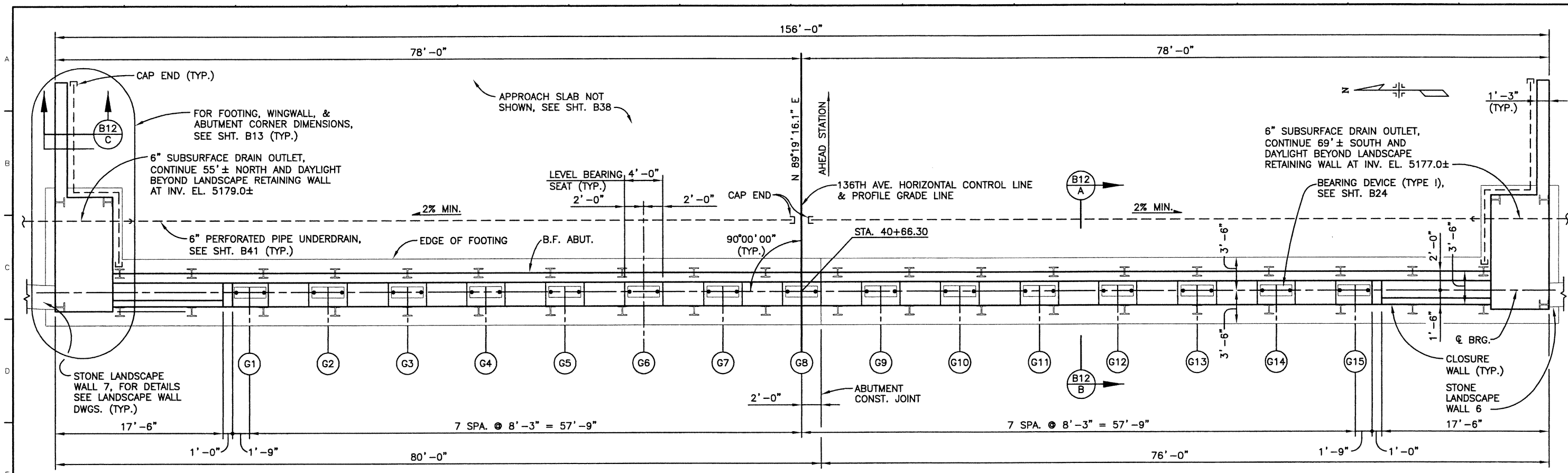
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

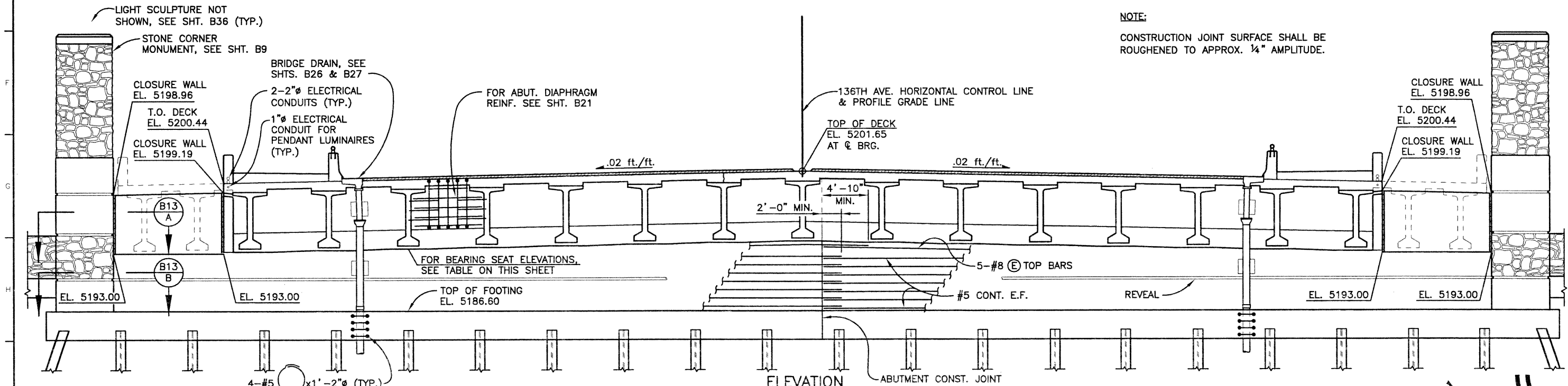
As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE OVER I-25 ABUTMENT 1 PLAN & ELEVATION			
Designer:	K. ALKANANI	Structure Numbers	E-17-ZL
Detailer:	R. DILLON	Sheet Subset:	BRIDGE
		Subset Sheets:	B10 of 49

Project No./Code	97-71
Sheet Number	41



PLAN



ELEVATION

		BEARING SEAT ELEVATION														
		G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15
ELEVATION - ABUT 1		5193.16	5193.33	5193.49	5193.66	5193.82	5193.99	5194.15	5194.32	5194.15	5193.99	5193.82	5193.66	5193.49	5193.33	5193.16

DESIGN	Checked by	WJM	Date	10/02/02
	Designed by	KWA	Date	03/02/02
DETAIL	Checked by	KWA	Date	03/02/02
	Detailled by	RAD	Date	03/02/02
QUANTITIES	Checked by	KWA	Date	10/02/02
	Quantities by	SEH	Date	03/02/02
Revision Dates (Preliminary Stage Only)				

NOTE:  
CONSTRUCTION JOINT SURFACE SHALL BE  
ROUGHENED TO APPROX. 1/4" AMPLITUDE.

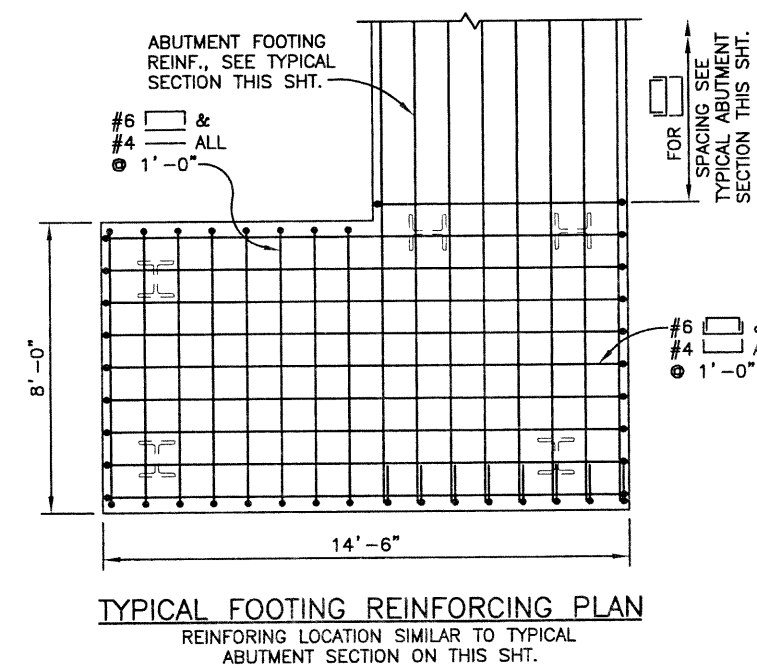
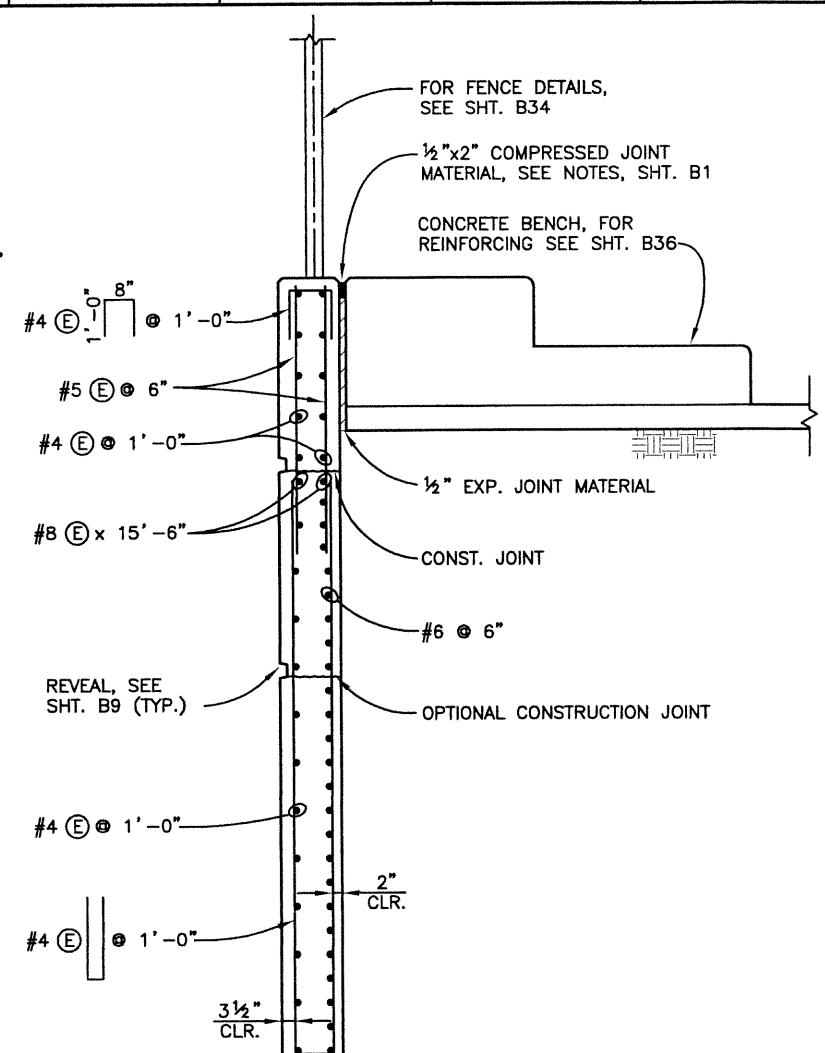
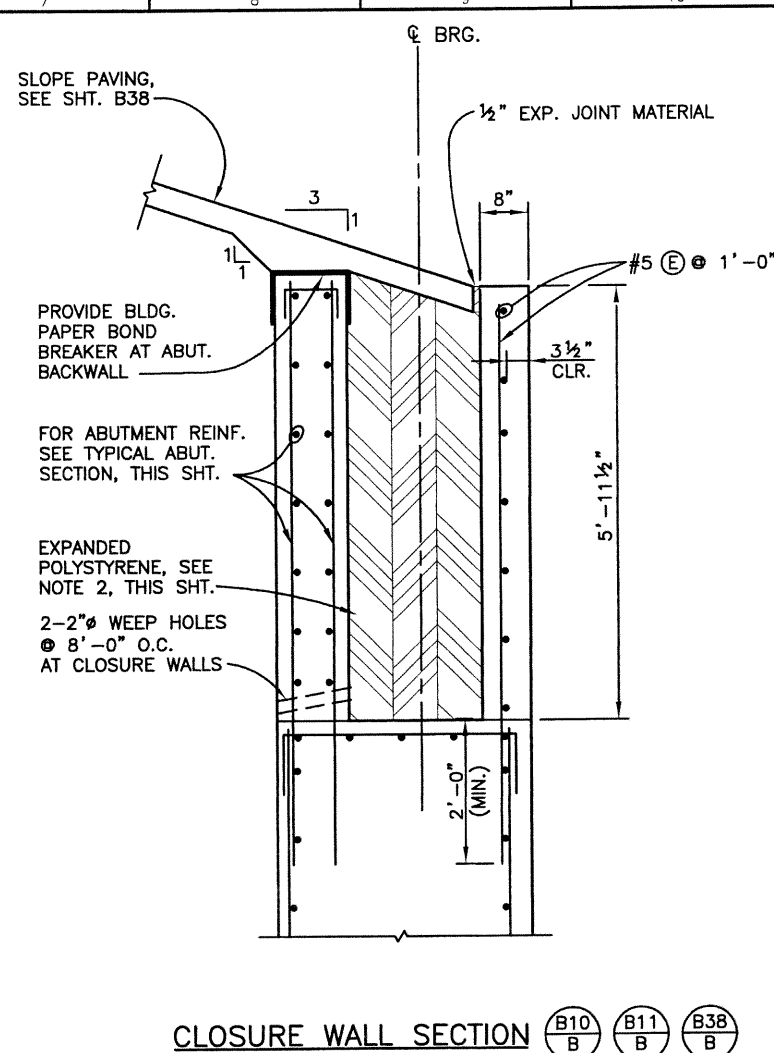
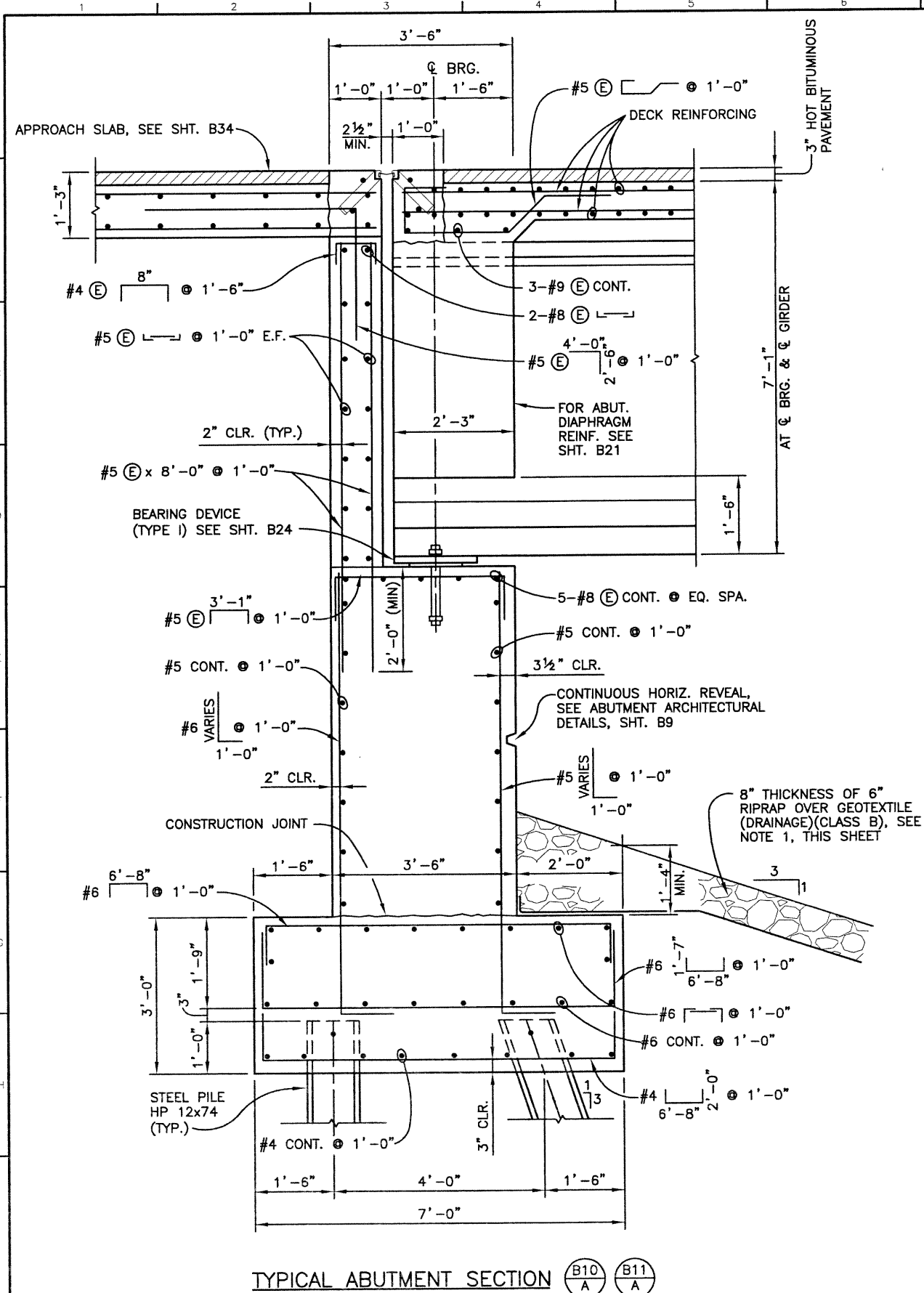
NOTE:  
FOR REVEAL SPACING & DETAILS  
SEE ABUTMENT ARCHITECTURAL  
DETAILS, SHT. B9.



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Checked by	WAM	Checked by	KMA	Checked by	KMA
Checked by	WAM	Checked by	KMA	Checked by	KMA
Checked by	WAM	Checked by	KMA	Checked by	KMA
Checked by	WAM	Checked by	KMA	Checked by	KMA



**NOTES:**

- GEOTEXTILE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 506-RIPRAP (6 INCH).
- EXPANDED POLYSTYRENE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 601-CONCRETE CLASS D (BRIDGE).

**Computer File Information**

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Last Modification Date:	10/26/02	Initials:	PRH
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Drawing File Name:	B00033ABT12.DWG		
Acad Ver.	2000i	Scale:	VARIABLES
Units:	ENGLISH		

**Index of Revisions**

No.	Description	Date	By

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER I-25 ABUTMENT SECTIONS & DETAILS**

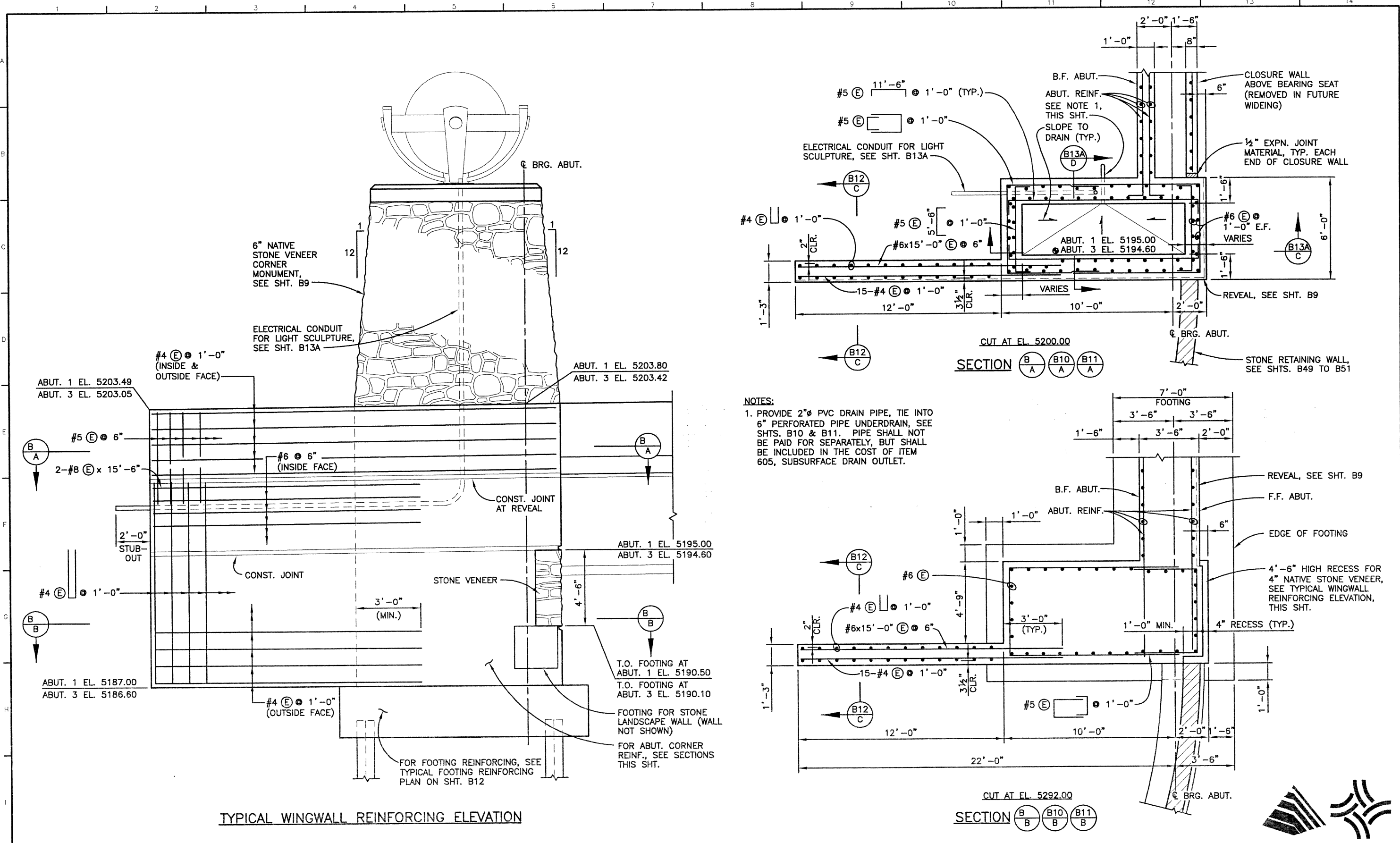
Designer:	K. ALKANANI	Structure Numbers:	E-17-ZL
Detailer:	P. HELM		
Sheet Subset:	BRIDGE	Subset Sheets:	B12 of 49

**Project No./Code**

Project No./Code:	97-71
Sheet Number:	43

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KMA	10/02		
DESIGN		DETAIL	
Initial	Date	Initial	Date
KMA	03/02	RAD	03/02
WJM	10/02	KMA	10/02



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Acad Ver.	2000i Scale: 3/8"=1'-0" Units: ENGLISH

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fax 303.721.0832  
fhu@fhueng.com

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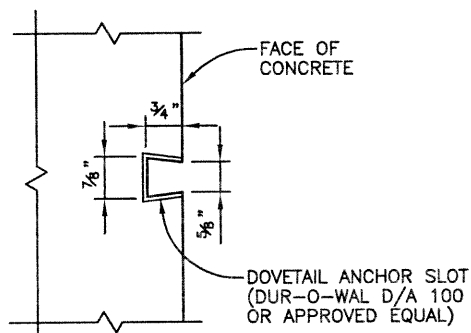
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Revised:	
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136TH AVENUE OVER I-25 WINGWALL & ABUTMENT CORNER DETAILS (1 OF 2)	
Designer:	K. ALKANANI
Detailer:	P. HELM
Sheet Subset:	BRIDGE
Structure Numbers	E-17-ZL
Subset Sheets:	B13 of 49

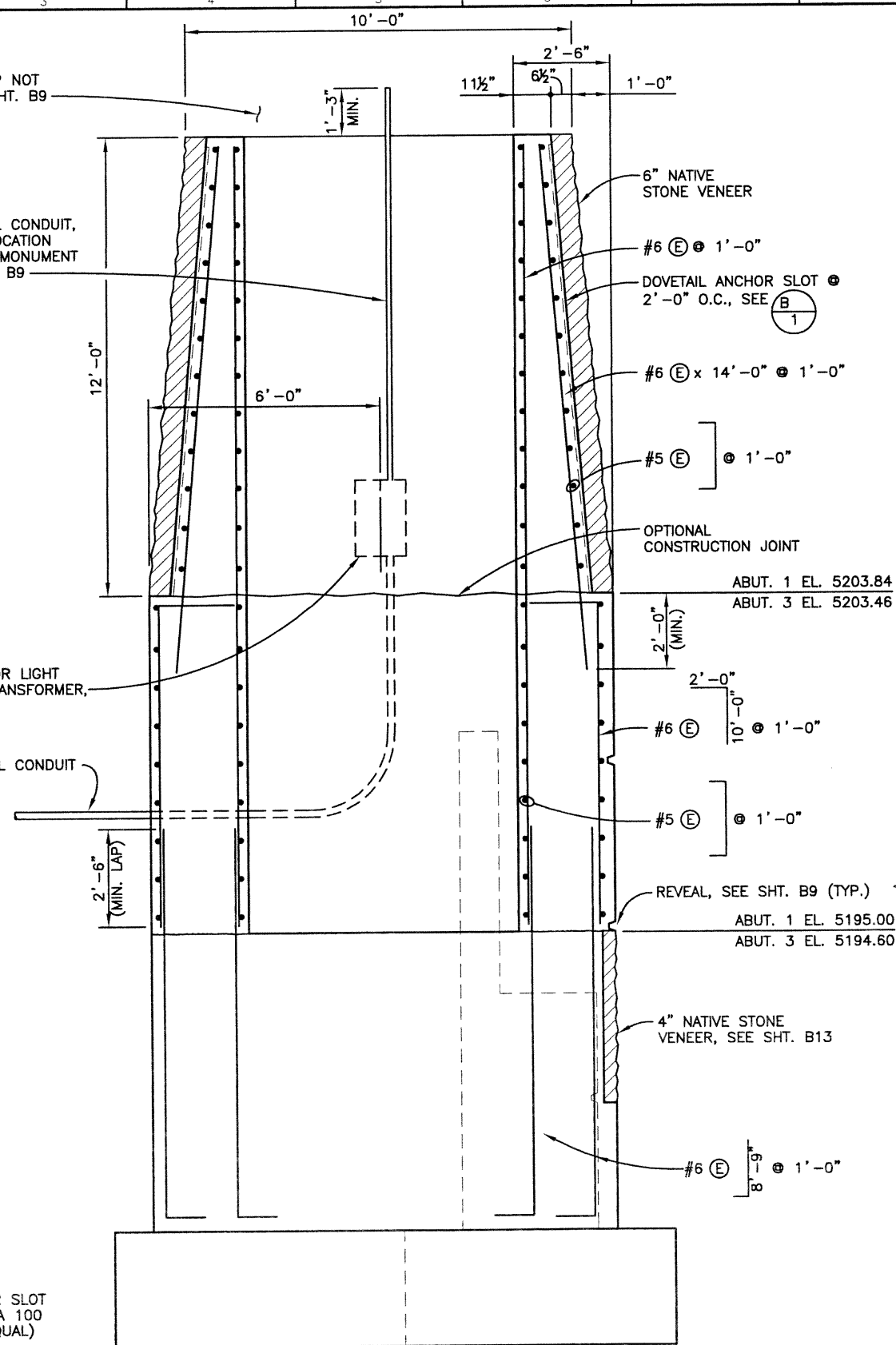
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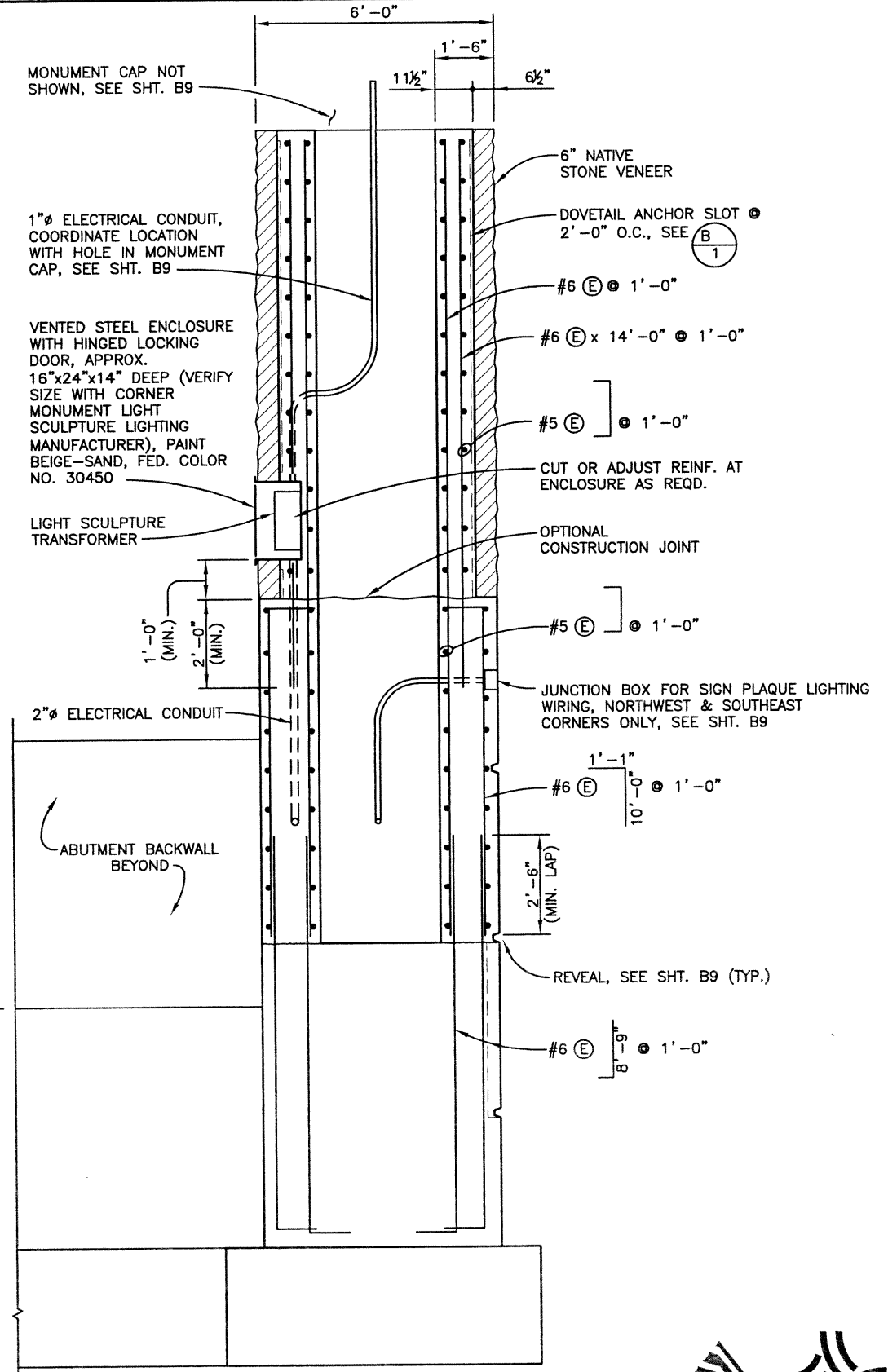
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KMA	03/02	RAD	03/02	SEH	03/02
WJM	10/02	KMA	03/02	KMA	10/02
Checked by		Checked by		Checked by	



**DOVETAIL ANCHOR DETAIL**  
FOR STONE VENEER ANCHORS



**SECTION B13 C**



**SECTION B13 D**



Computer File Information	
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Last Modification Date:	12/16/02 Initials: RAD
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\
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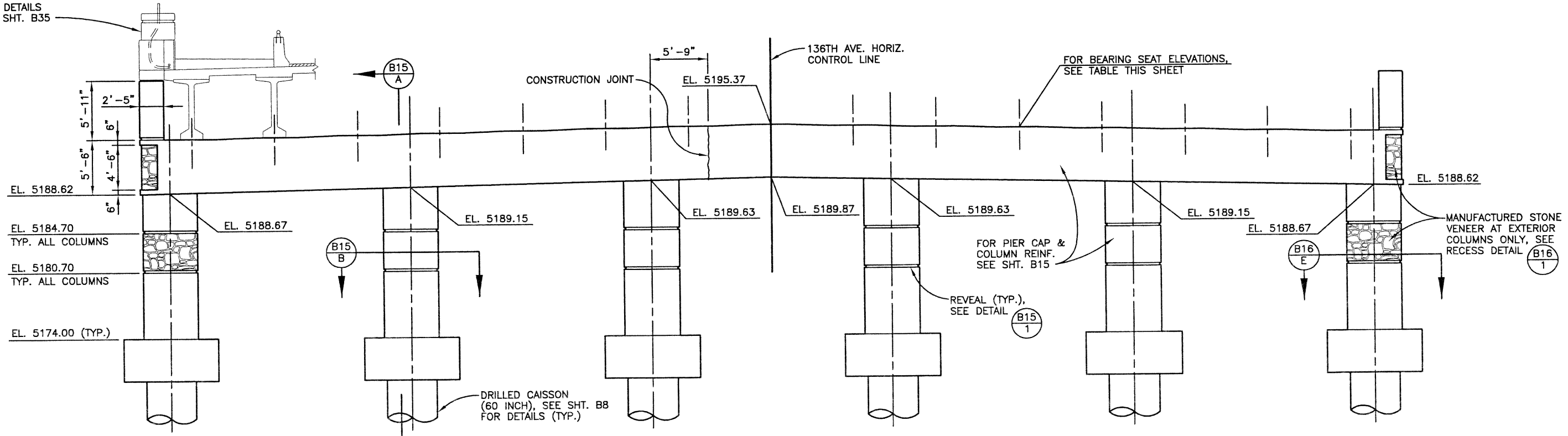
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed		136TH AVENUE OVER I-25 WINGWALL & ABUTMENT CORNER DETAILS (2 OF 2)		Project No./Code		
No Revisions:		Designer:	K. ALKANANI	Structure	E-17-ZL	
Revised:		Detailer:	P. HELM	Numbers		
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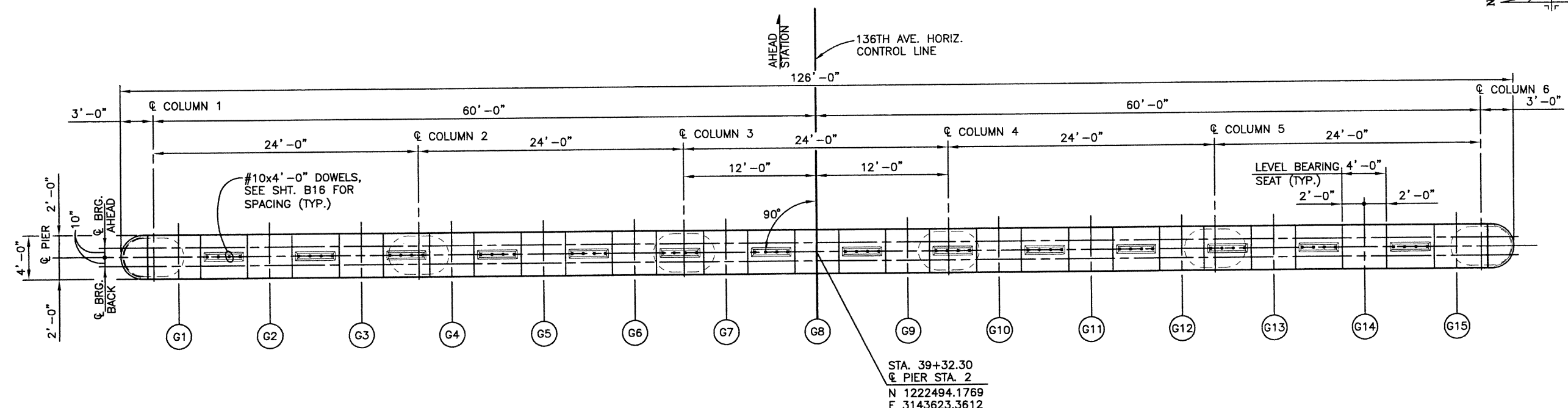
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Designed by	Checked by	Initial	Date	Initial	Date
KMA	WJM	RAD	03/02	SPH	03/02
		KMA	10/02	KMA	10/02

FOR DETAILS SEE SHT. B35



PLAN



ELEVATION

BEARING SEAT ELEVATION															
GIRDER	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15
ELEVATION - PIER 2	5194.217	5194.382	5194.547	5194.712	5194.877	5195.042	5195.207	5195.372	5195.207	5195.042	5194.877	5194.712	5194.547	5194.382	5194.217

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Last Modification Date:	12/02/02 Initials: PRH
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Drawing File Name:	B00033PIR11.DWG
Acad Ver. 2000i	Scale: 3/16" = 1'-0" Units: ENGLISH

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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

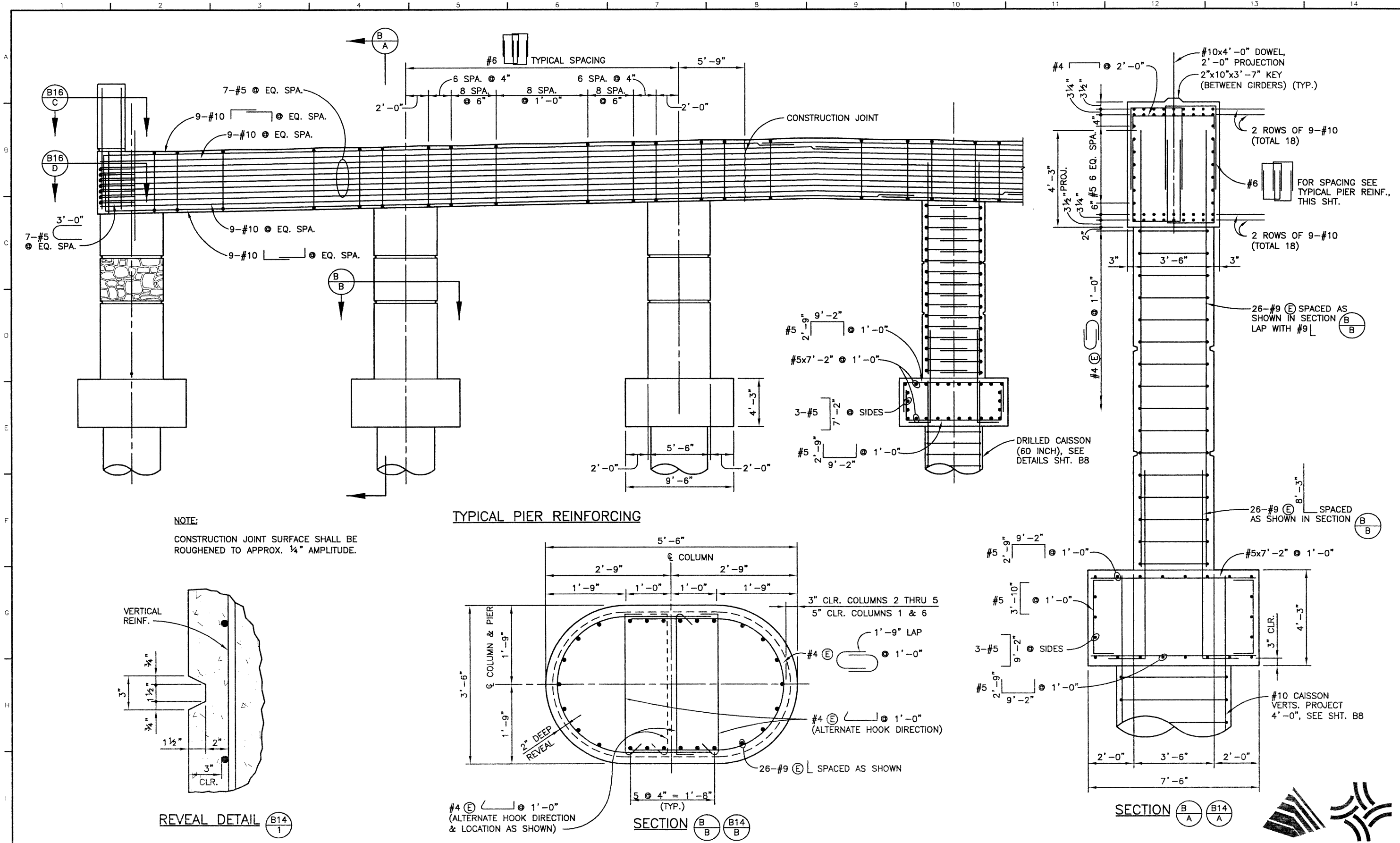
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No Revisions:
Revised:
Void:

136TH AVENUE OVER I-25 PIER 2 PLAN AND ELEVATION	
Designer: K. ALKANANI	Structure Numbers: E-17-ZL
Detailer: P. HELM	
Sheet Subset: BRIDGE	Subset Sheets: B14 of 49

Project No./Code	97-71
Sheet Number	46

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Initial	Date	Initial	Date	Initial	Date
KMA	03/02	RAO	03/02	SEH	03/02
WJM	10/02	KMA	03/02	KMA	10/02
Checked by		Checked by		Checked by	



Computer File Information	
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**FELSBURG HOLT & ULLEVIG**

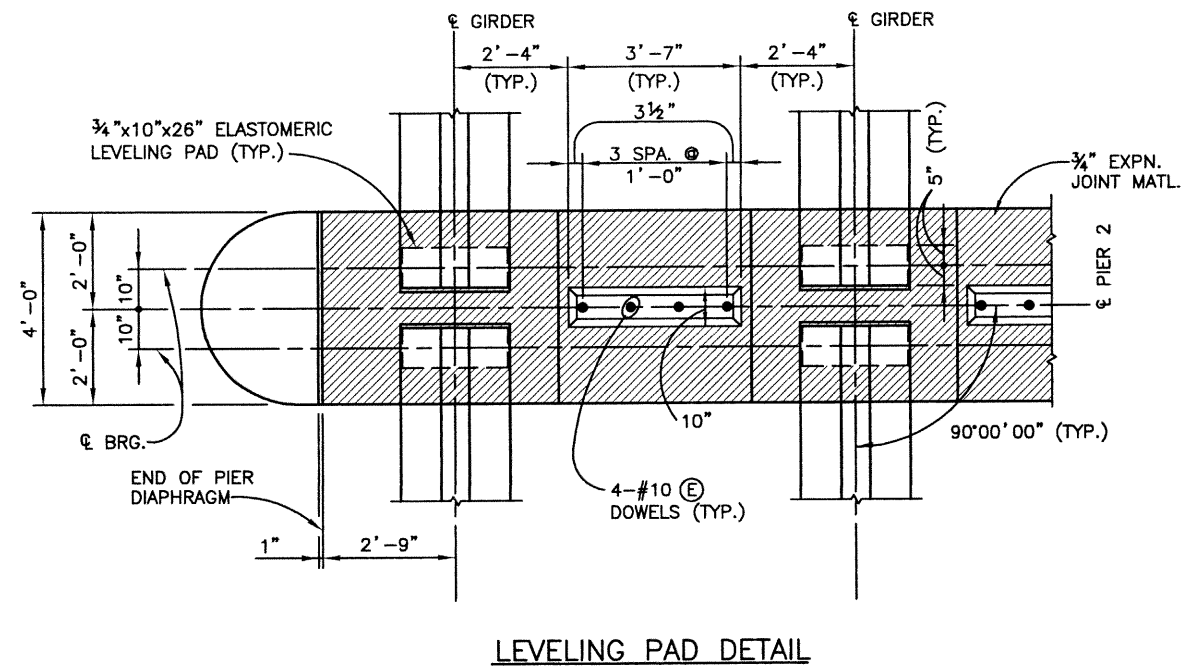
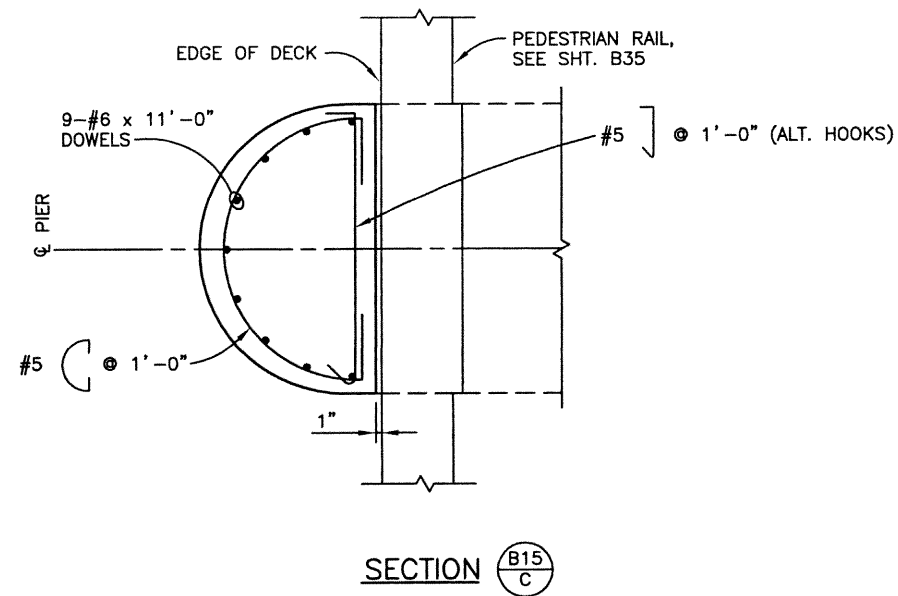
303.721.1440  
fax 303.721.0832  
fhu@thueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

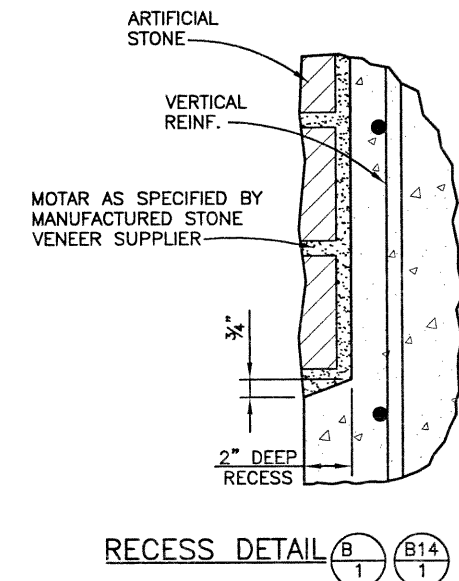
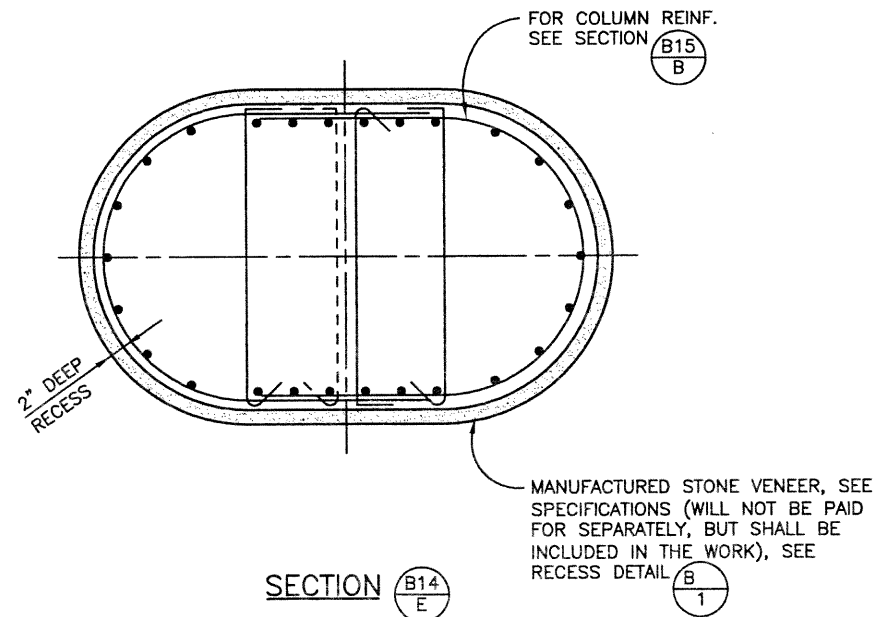
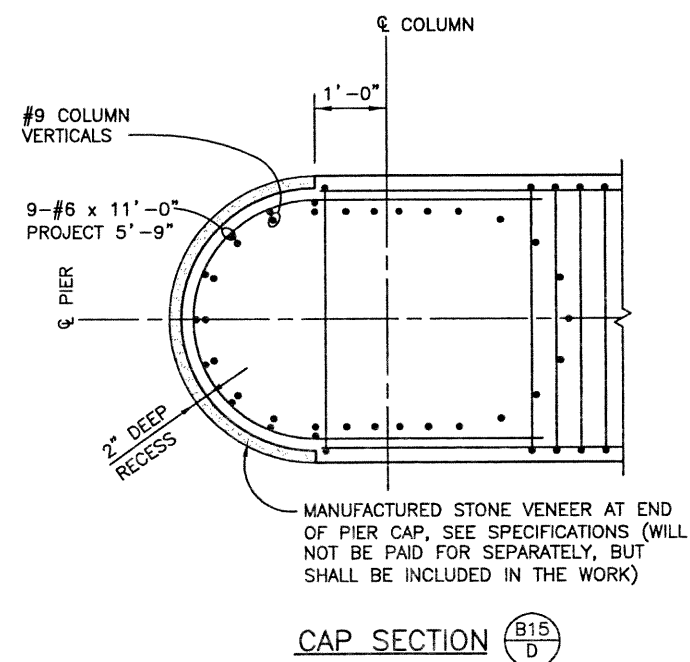
As Constructed		136TH AVENUE OVER I-25 PIER REINFORCING & DETAILS (1 of 2)		Project No./Code	
No Revisions:		Designer: K. ALKANANI	Structure Numbers: E-17-ZL	97-71	
Revised:		Detailer: P. HELM			
Void:		Sheet Subset: BRIDGE	Subset Sheets: B15 of 49	Sheet Number 47	

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Initial	Date	Initial	Date	Initial	Date
KMA	03/02	RAD	03/02	SEH	03/02
Checked by	10/02	Checked by	03/02	Checked by	10/02
KMA		KMA		KMA	



**NOTE:**  
THE 3/4" x 10" x 26" ELASTOMERIC LEVELING PAD SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 618, PRESTRESSED CONCRETE I (BT72).



Computer File Information			Index of Revisions			As Constructed		136TH AVENUE OVER I-25 PIER REINFORCING & DETAILS (2 of 2)		Project No./Code	
Creation Date:	03/04/02	Initials: RAD				No Revisions:		Designer: K. ALKANANI	Structure	E-17-ZL	97-71
Last Modification Date:	12/12/02	Initials: PRH				Revised:		Detailer: R. DILLON	Numbers		
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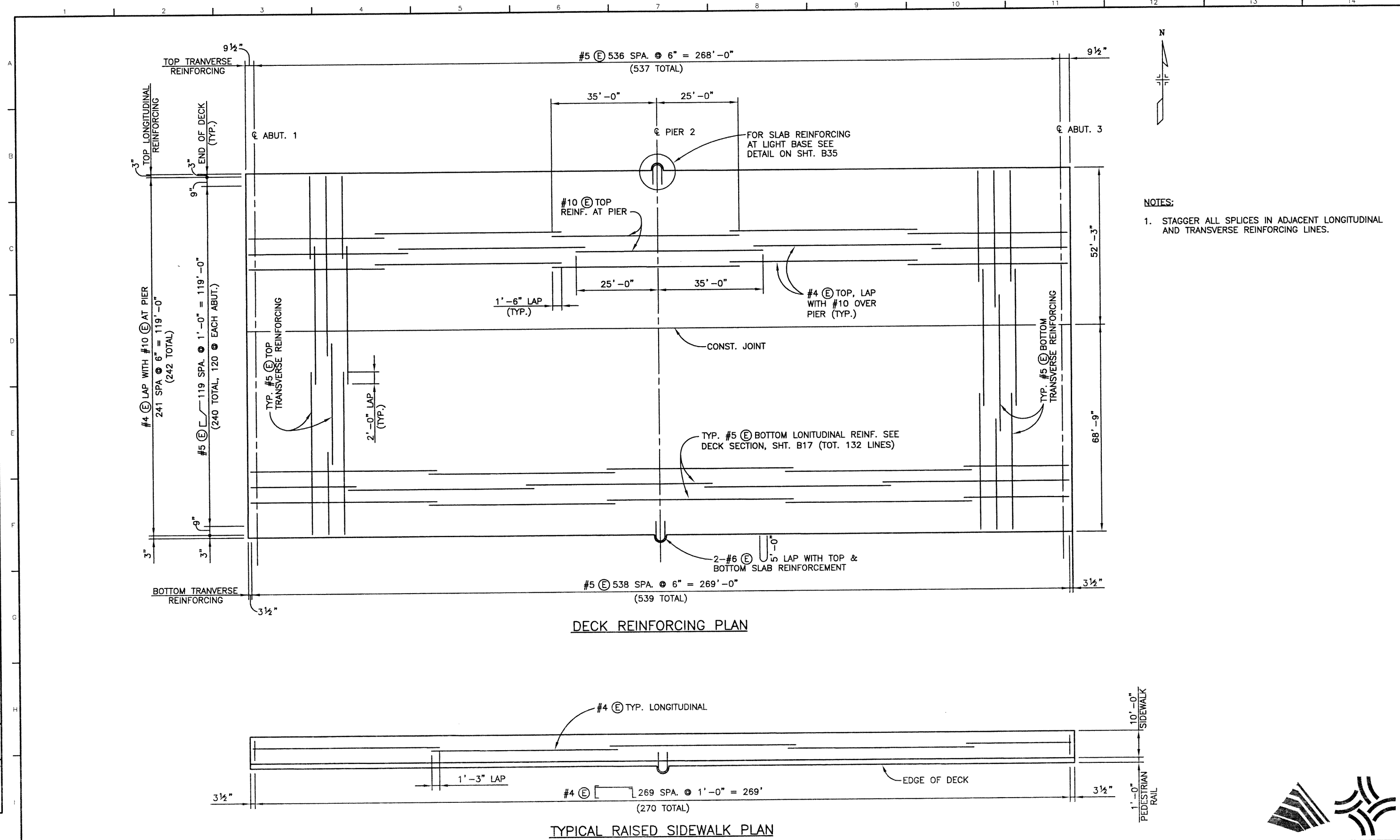
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
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7951 E. Maplewood Ave. Ste. 200  
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Checked by	WJM	Checked by	KMA	Checked by	KMA
Designed by		Detailed by		Quantities by	
Checked by		Checked by		Checked by	



**NOTES:**  
 1. STAGGER ALL SPLICES IN ADJACENT LONGITUDINAL AND TRANSVERSE REINFORCING LINES.



Computer File Information			Index of Revisions			As Constructed			136TH AVENUE OVER I-25 DECK REINFORCING PLAN			Project No./Code	
Creation Date:	03/07/02	Initials: PRH				No Revisions:			Designer: K. ALKANANI		Structure	97-71	
Last Modification Date:	12/12/02	Initials: PRH				Revised:			Detailer: R. DILLON		Numbers		
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Drawing File Name:	B00033SUP12.DWG											Sheet Number 50	
Acad Ver. 2000i	Scale: VARIES	Units: ENGLISH											

**FELSBURG  
HOLT &  
ULLEVIG**

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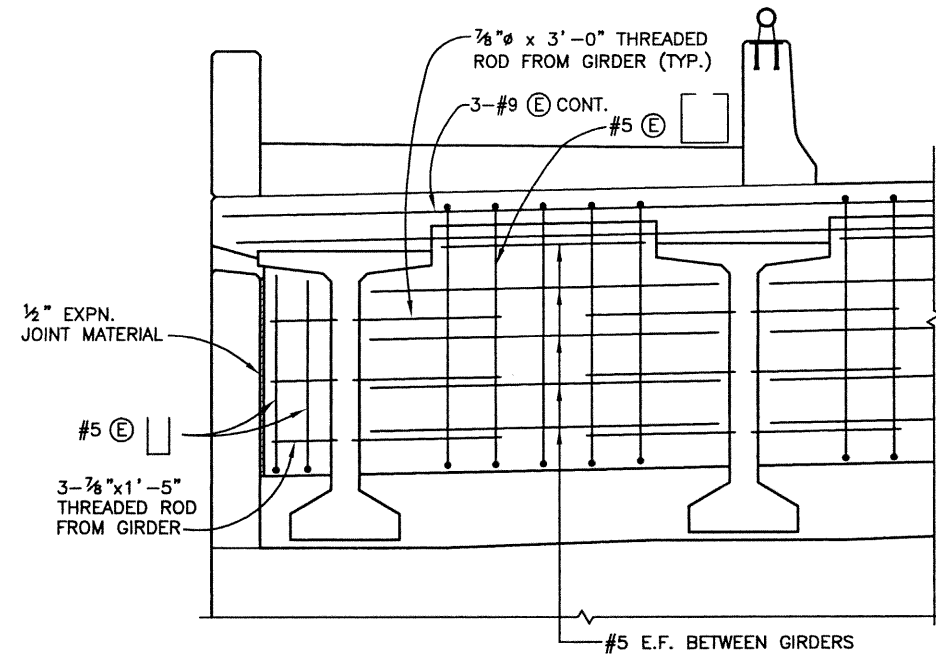


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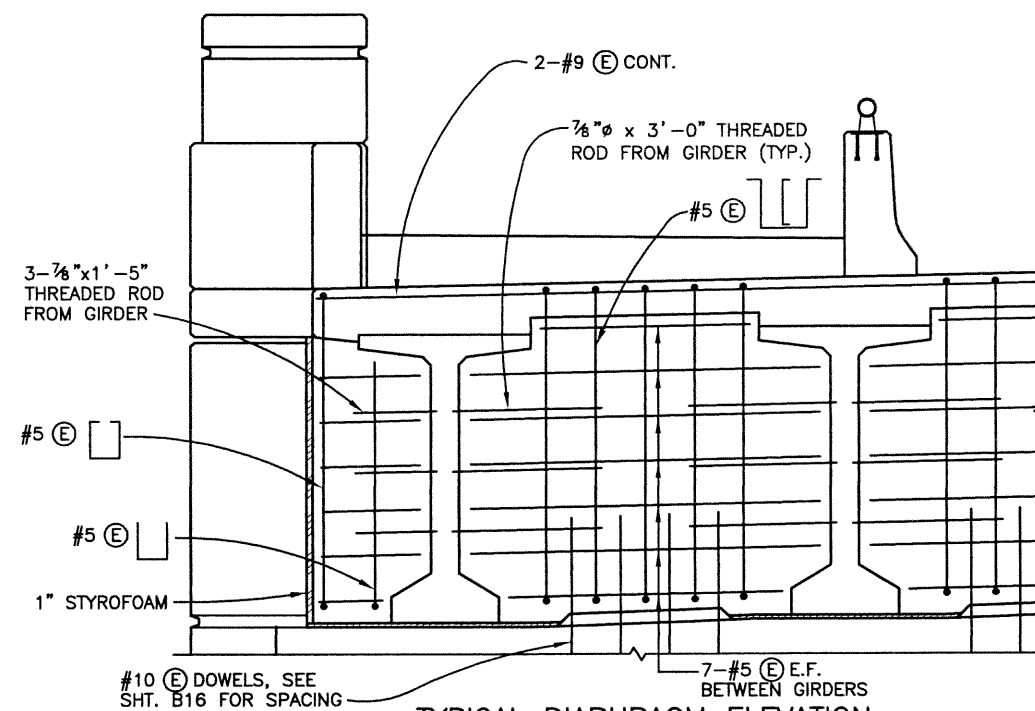
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KMA	10/02		

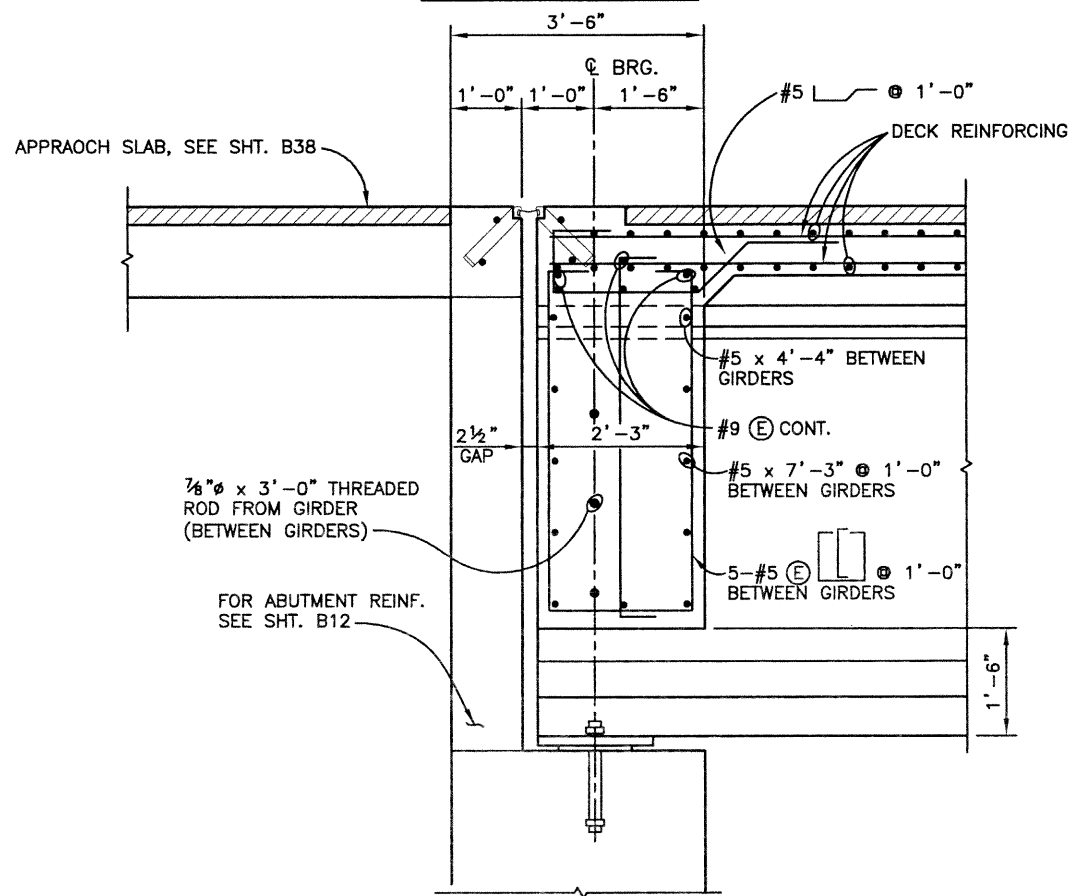
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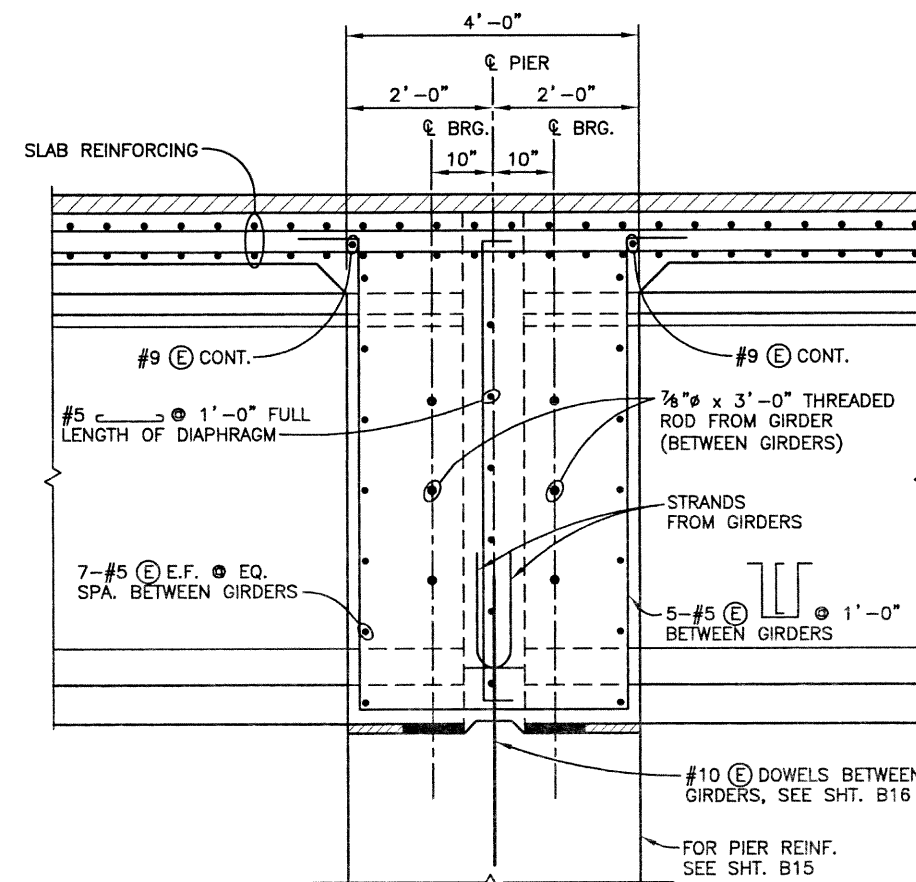
TYPICAL DIAPHRAGM ELEVATION  
ABUTMENT 1 OR 3



TYPICAL DIAPHRAGM ELEVATION  
PIER 2



TYPICAL DIAPHRAGM SECTION  
ABUTMENT 1 OR 3



TYPICAL DIAPHRAGM SECTION  
PIER 2



Computer File Information			Index of Revisions			As Constructed		136TH AVENUE OVER I-25 ABUTMENT & PIER DIAPHRAGM DETAILS		Project No./Code	
Creation Date:	03/14/02	Initials: PRH				No Revisions:				97-71	
Last Modification Date:	12/02/02	Initials: PRH				Revised:			Designer: K. ALKANANI	Structure	E-17-ZL
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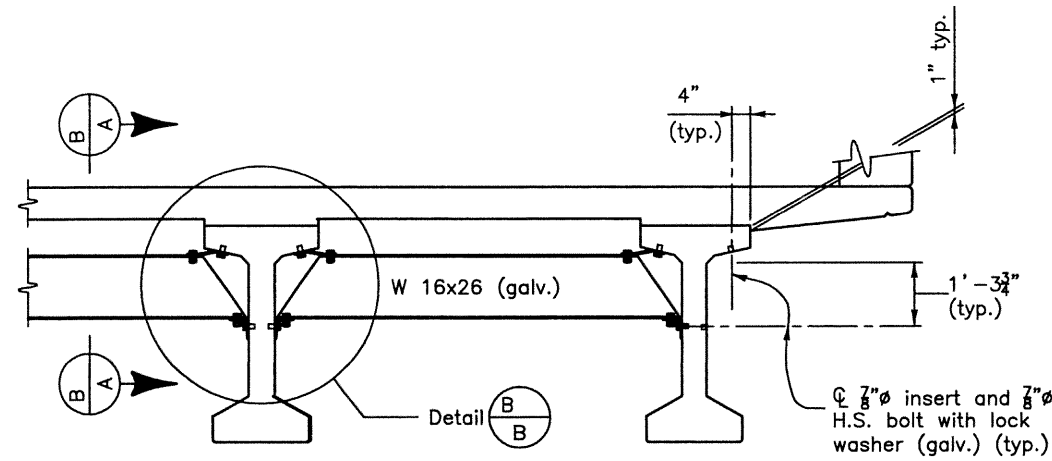


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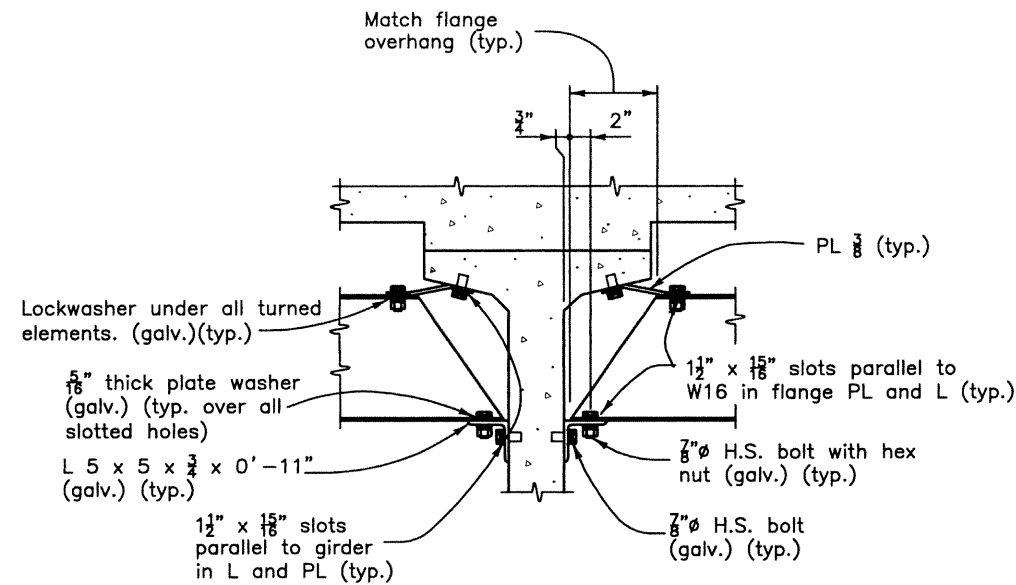


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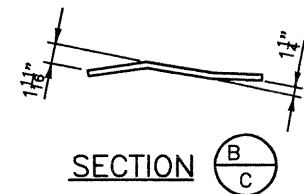
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Checked by	10/02	Checked by	03/02	Checked by	10/02
KMA		KMA		KMA	



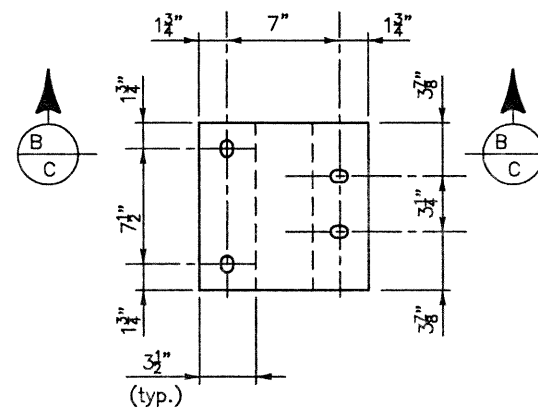
**INTERMEDIATE DIAPHRAGM DETAILS**  
For location of diaphragms, see Construction Layout.



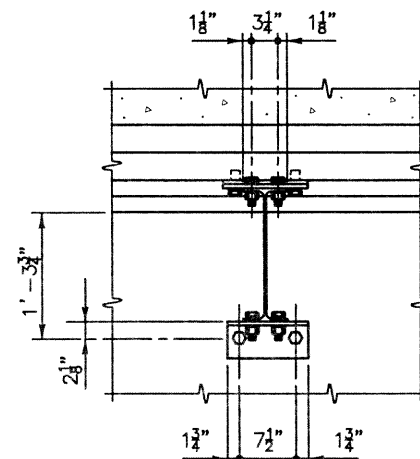
**DETAIL B-B**



**SECTION B-C**



**PLAN PLATE DETAIL**



**SECTION A-A**

**NOTES**

All diaphragm materials, including bolts, nuts, and washers shall be galvanized. Galvanizing may be before fabrication. Zinc or aluminum metalizing is an alternate to galvanizing.

Two copies of shop drawings of the diaphragm details shall be submitted to the Engineer for information only.

The bend dimensions shown for the connection PL may need to be adjusted for superelevations over .04'/'.

The diaphragms may be placed on a skew such that they are between 80° and 100° to the girders.

The Contractor is responsible for determining necessary bracing requirements and for providing adequate bracing for the specific wind and weather conditions to be encountered for each specific project.

When bracing or diaphragms are required, no girders shall be erected and left unbraced. The intermediate diaphragms (when used) shall be connected to the adjacent girders simultaneously with the erection of the girders.

Use and installation of the intermediate diaphragms shall not relieve the Contractor of full responsibility to construct the Work in a manner which provides all necessary rigidity, supports all loads imposed, and provides in the finished structure the lines and grades indicated on the plans.

All structural steel shall be A36 steel, Fy = 36,000 psi.

All bolts shall be high strength A325.



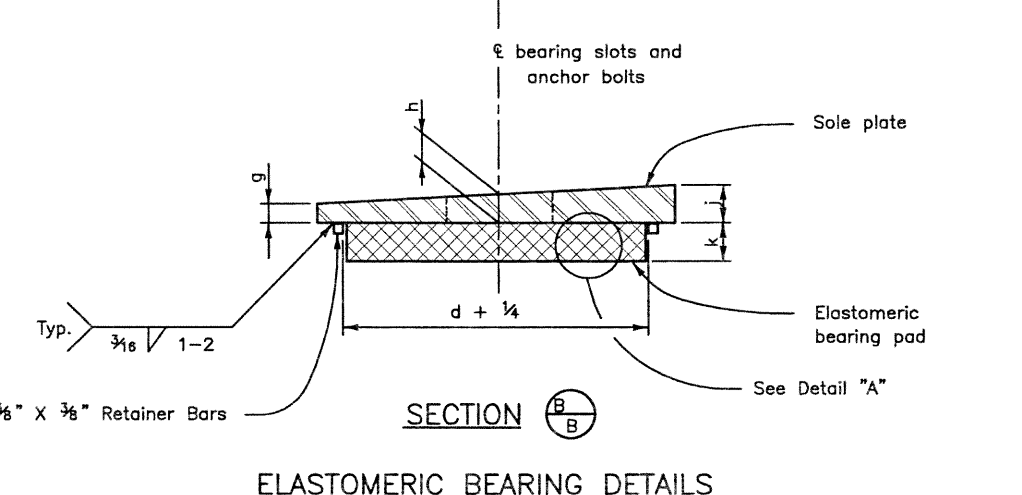
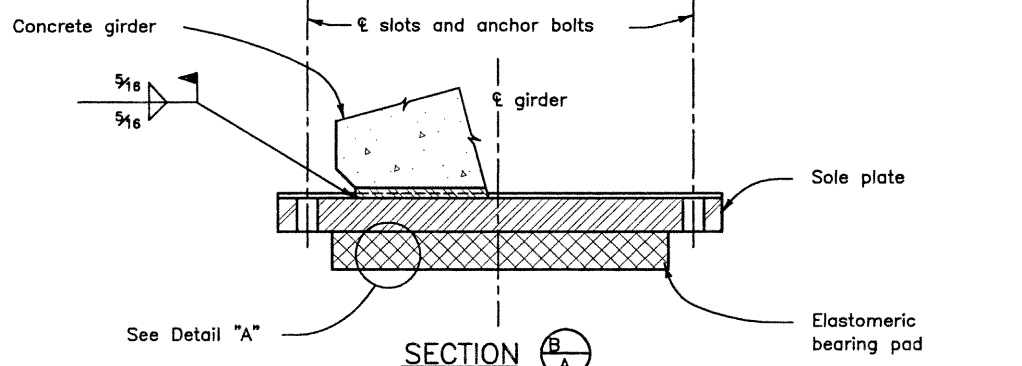
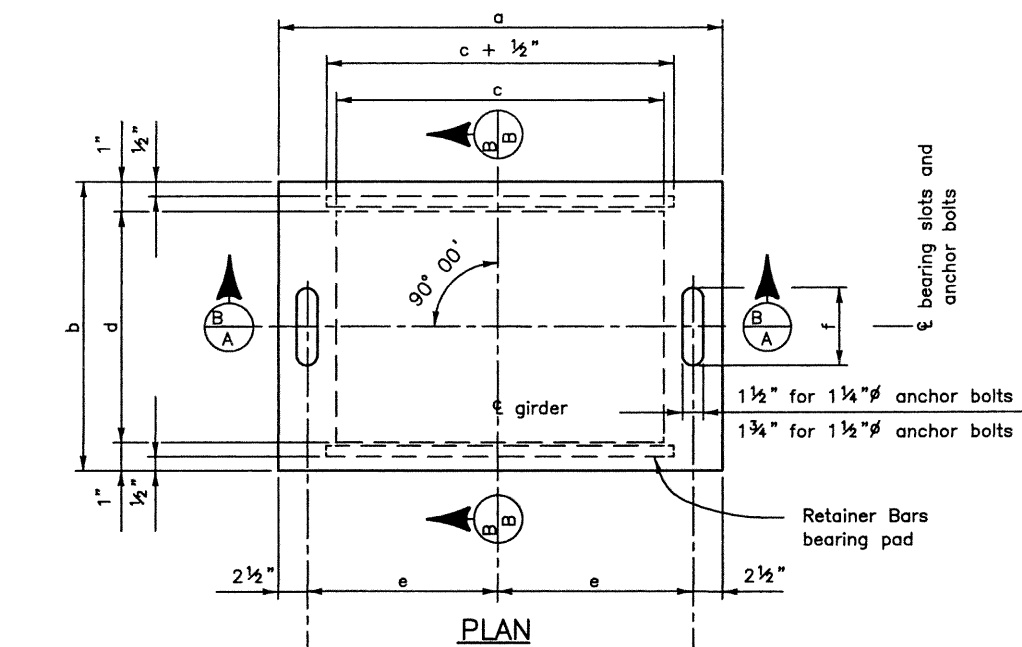
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Last Modification Date:	12/02/02 Initials: PRH			Revised:		Detailer: P. HELM		E-17-ZL	
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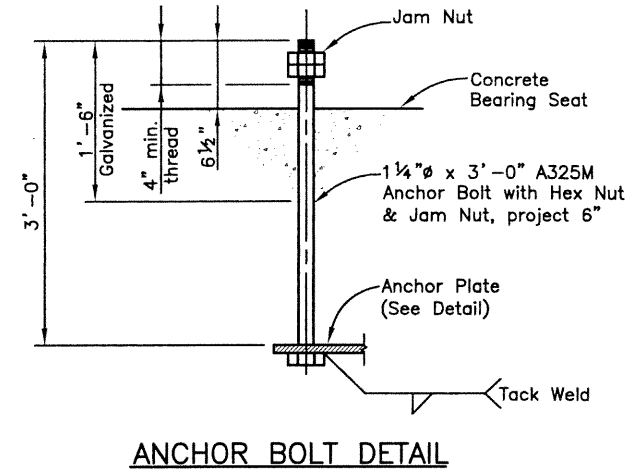
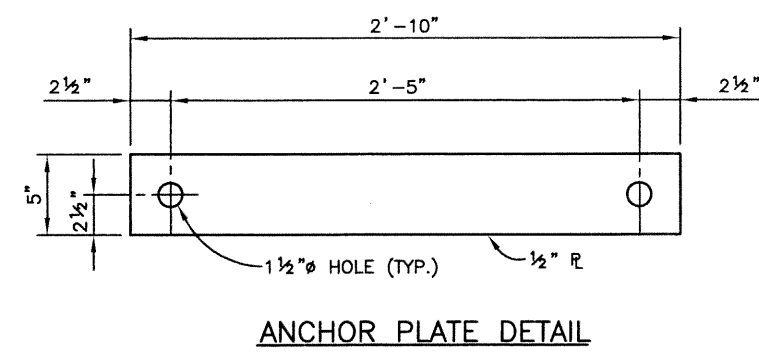
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fax 303.721.0832  
fhu@thueng.com  
  
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Checked by	Checked by	Checked by	Checked by	Checked by	Checked by
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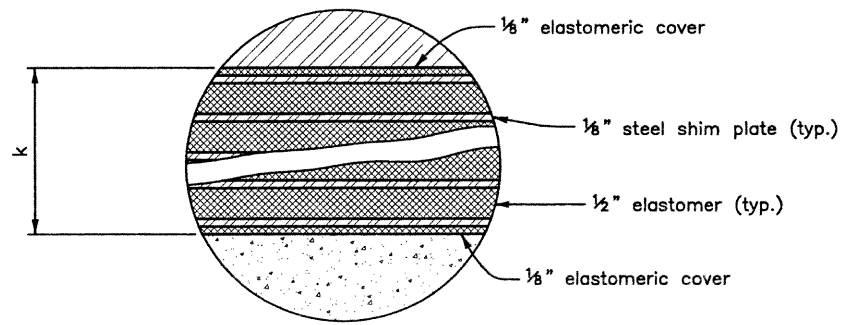


**ELASTOMERIC BEARING DETAILS**



**NOTES:**

- Provide 1/4" clearance between jam nut and sole plate under all temperature conditions prior to jamming with jam nuts.
- Do not paint steel surfaces in contact with elastomeric pad.
- Elastomeric pad, sole plate, anchor bolts and miscellaneous hardware shall be included in the bid price for Item 512, Bearing Device (Type I).
- Grade 3 elastomer shall be used. Higher grade elastomer may be substituted for grade 3.
- Design shear modulus G = 165 psi. at 73° F.
- Hardness = 60 Duro (Shore A).
- Prior to setting girders, the center line of the sole plate shall aligned with the anchor bolts.



Use for  $k > 3/4"$ . When  $k \leq 3/4"$ , a plain elastomeric pad shall be used.

Location	No. Req'd	Vertical Load Per Brg (kips)	Dimensions (Inches)									
			a	b	c	d	e	f	g	h	j	k
ABUT. 1	15	232	36	14	26	12	14.5	5	1.375	1.50	1.625	1.5
ABUT. 3	15	232	36	14	26	12	14.5	5	1.375	1.50	1.625	1.5



Computer File Information			Index of Revisions			As Constructed		136TH AVENUE OVER I-25 BEARING DEVICE (TYPE I)		Project No./Code	
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Last Modification Date:	12/02/02	Initials: PRH				Revised:			Designer: K. ALKANANI	Structure: E-17-ZL	
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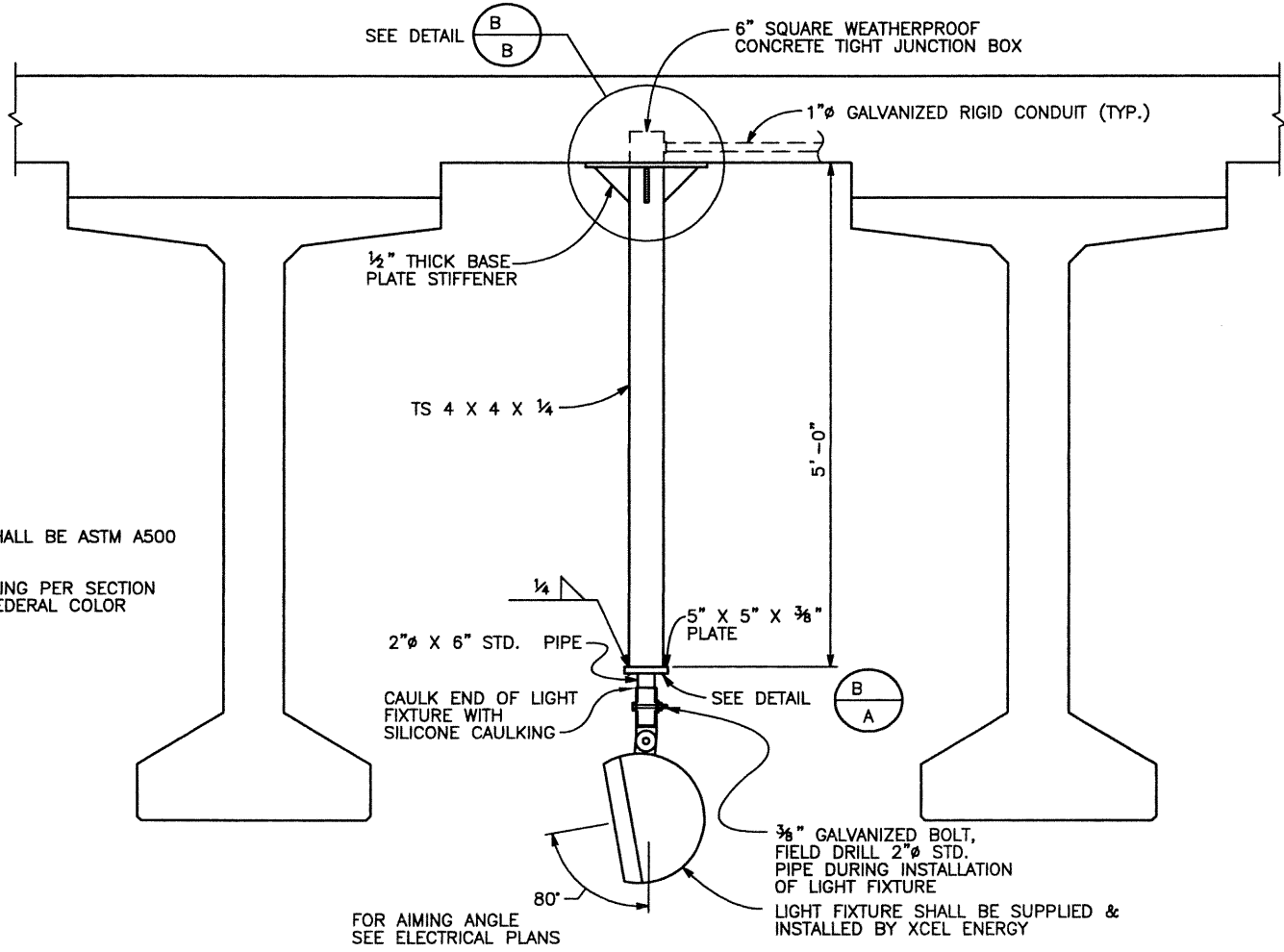
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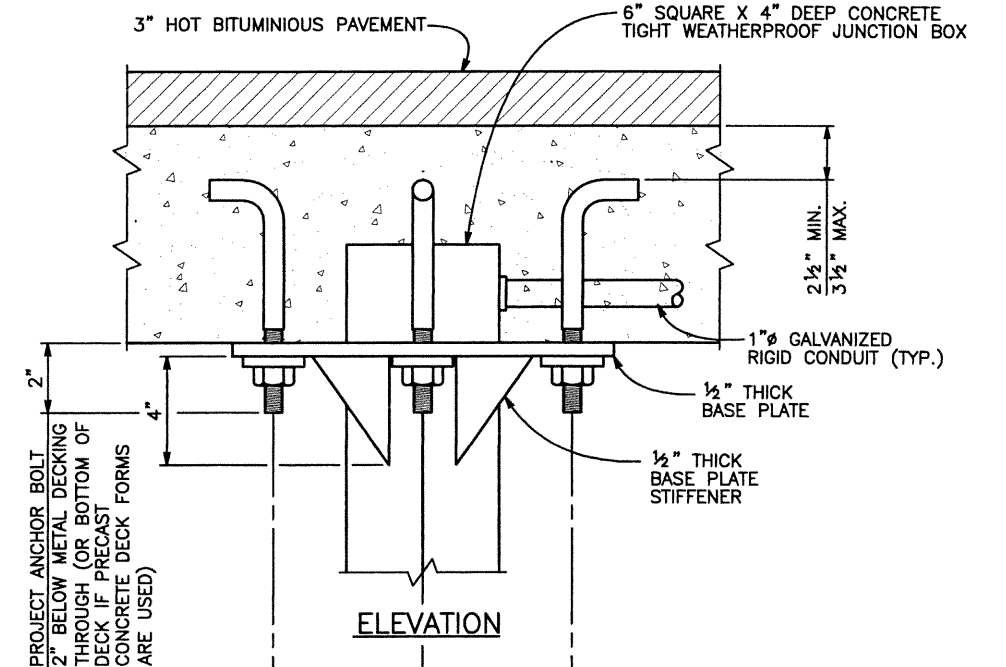
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**NOTES:**

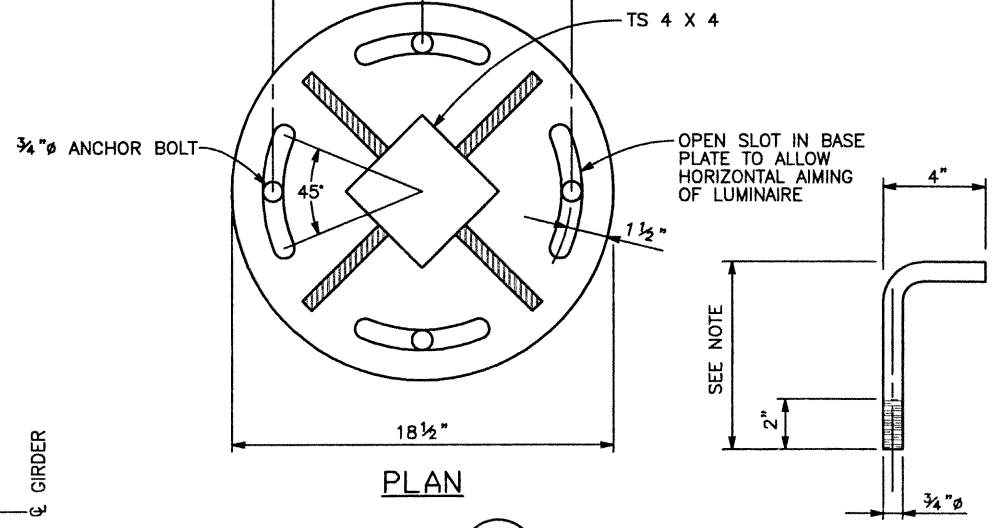
- STRUCTURAL TUBING SHALL BE ASTM A500 GRADE B.
- PAINT STRUCTURAL TUBING PER SECTION 509, COLOR SHALL FEDERAL COLOR NO. 30117 (BROWN).



**PENDANT LUMINAIRE MOUNTING DETAIL**

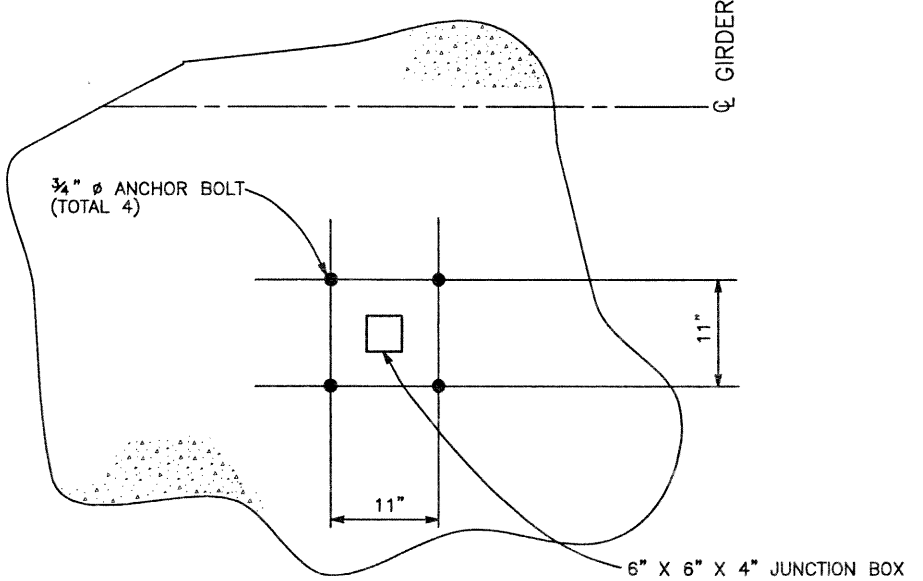


**ELEVATION**

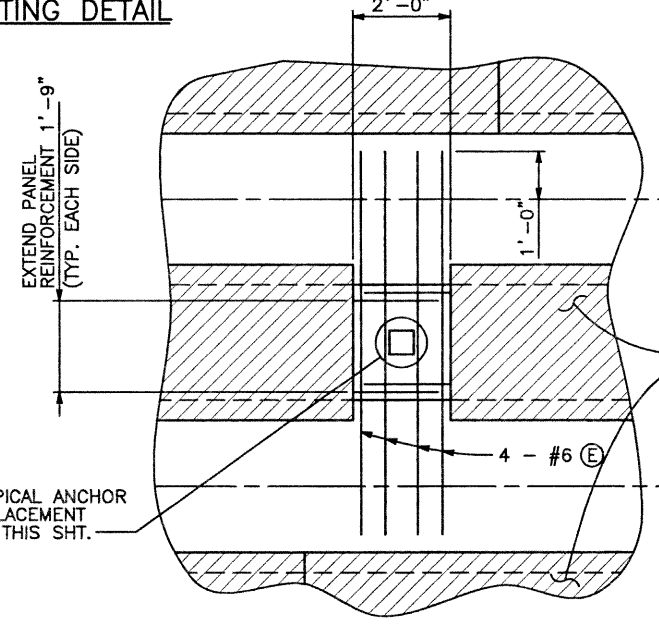


**PLAN**

**DETAIL B/B**

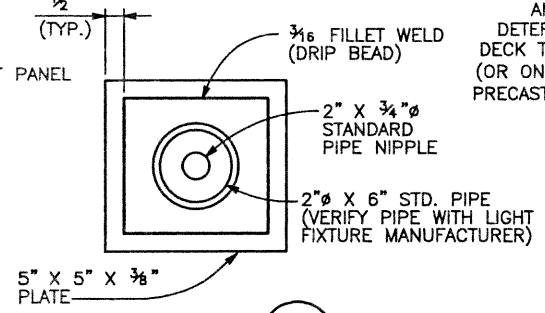


**TYPICAL ANCHOR BOLT PLACEMENT DIAGRAM**



**JUNCTION BOX DETAIL**

(OPTIONAL PRECAST CONCRETE DECK FORMS SHOWN)



**ANCHOR BOLT DETAIL**  
ANCHOR BOLT LENGTH SHALL BE DETERMINED BY CONTRACTOR BASED ON DECK THICKNESS & METAL DECKING DEPTH. (OR ON DECK THICKNESS ONLY IF OPTIONAL PRECAST CONCRETE DECK FORMS ARE USED)

**NOTE:**  
BOTTOM SLAB REINFORCING SHOWN. SEE SLAB DETAILS SHEET FOR REQUIRED TOP SLAB REINFORCING.

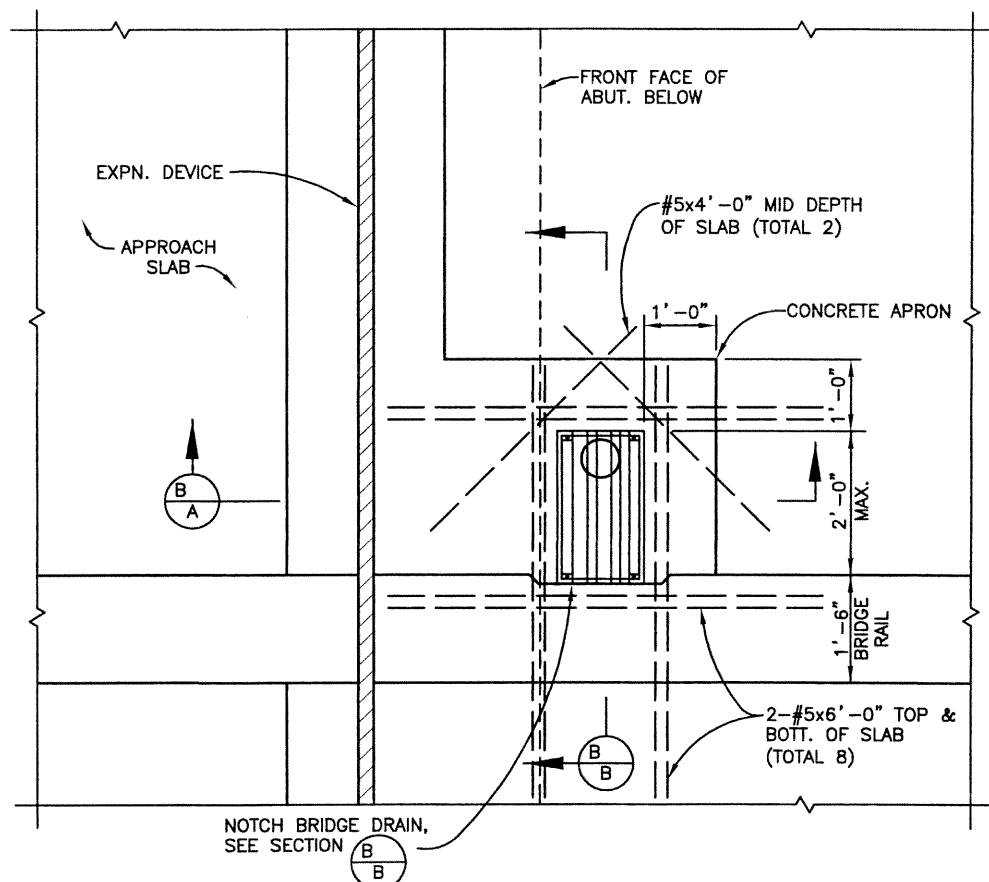
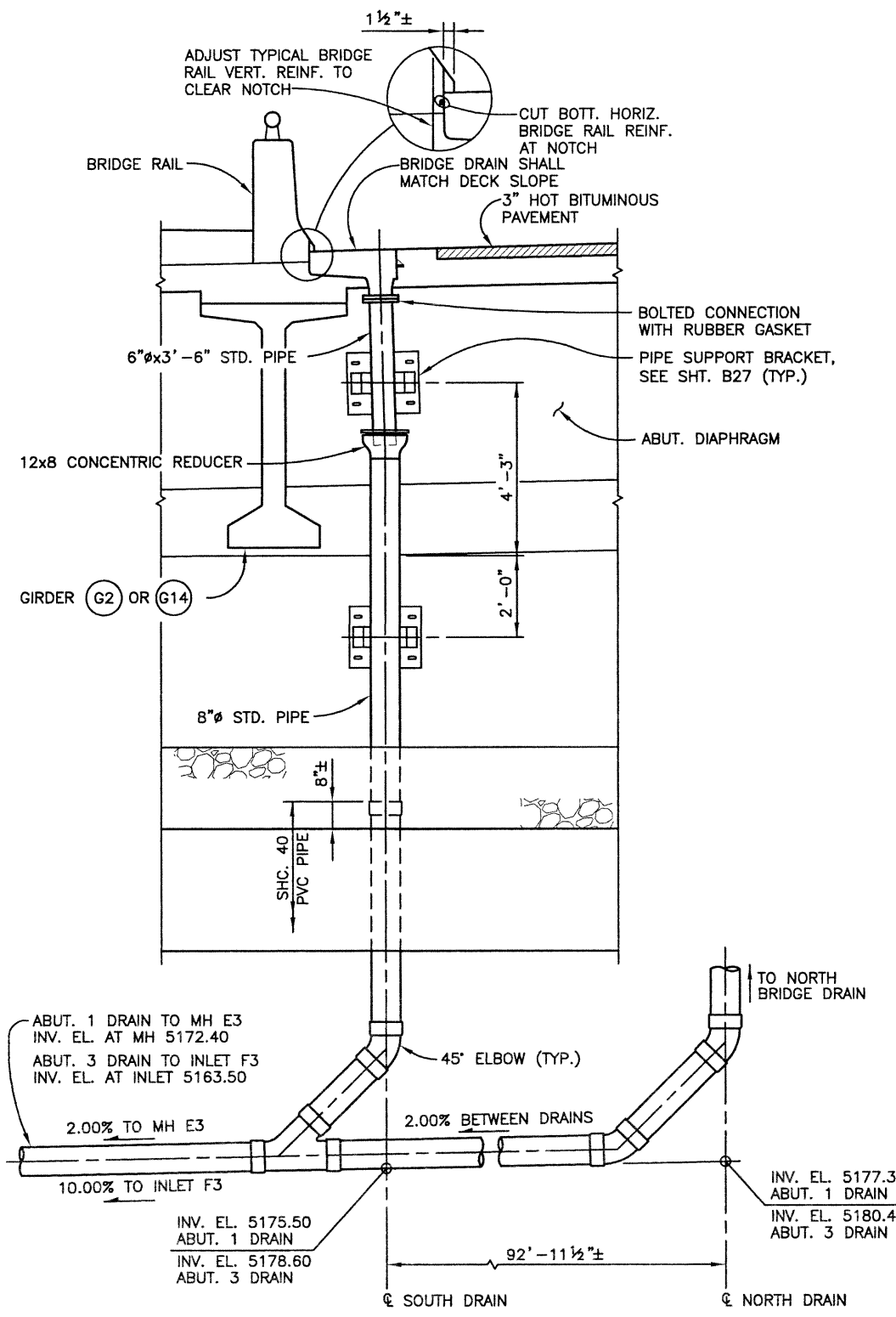
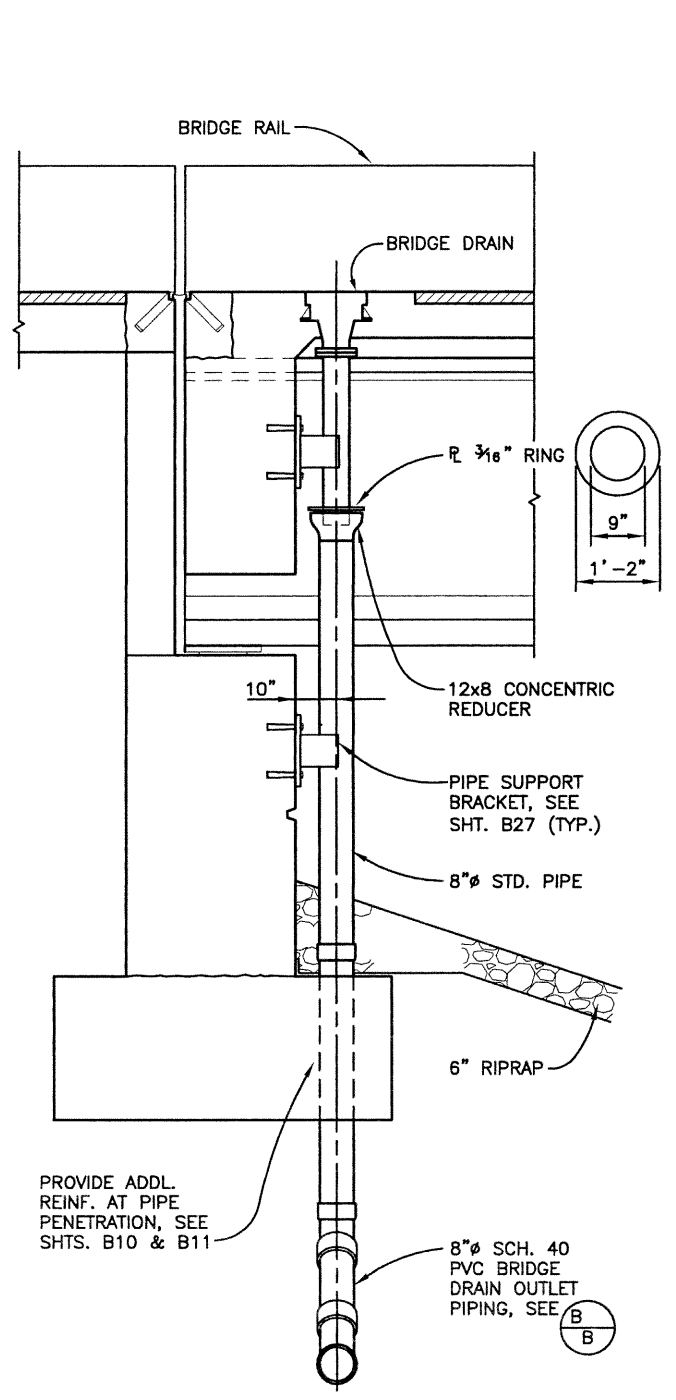
**DETAIL B/A**



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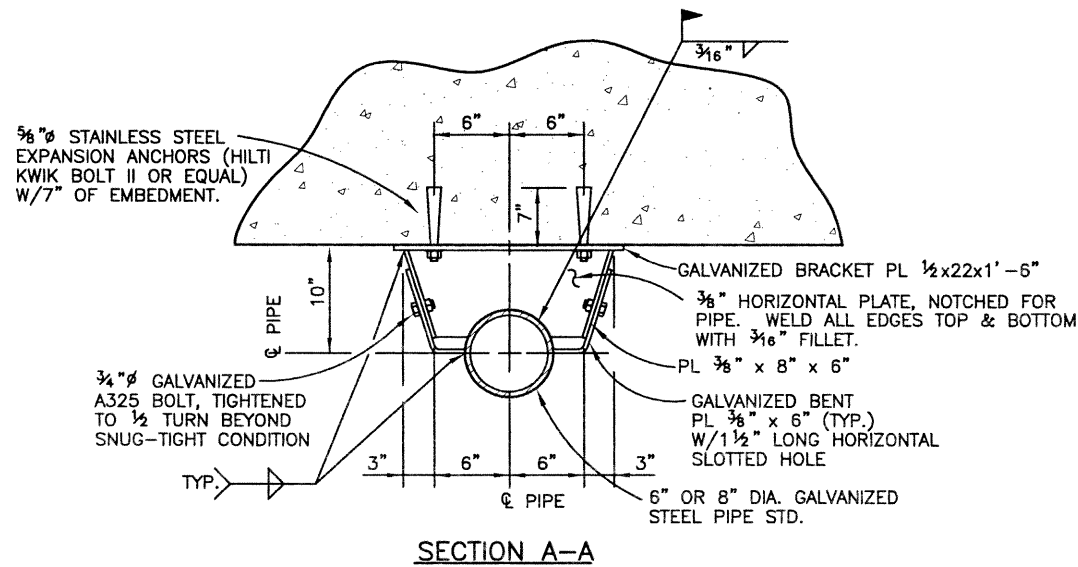
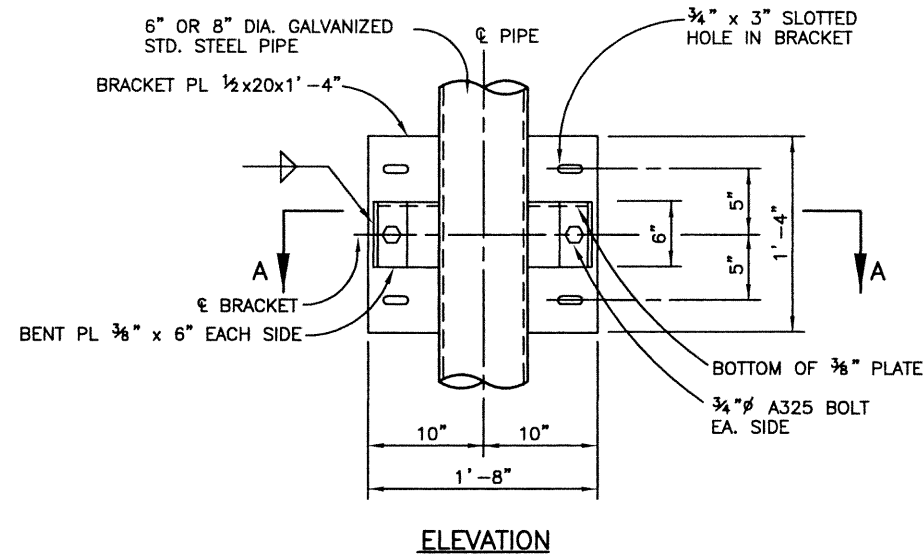
- NOTES:**
1. ALL STEEL PIPE, MISCELLANEOUS FITTINGS, HARDWARE AND PIPE SUPPORT ASSEMBLIES SHALL BE INCLUDED IN THE COST OF ITEM 513 - BRIDGE DRAIN.
  2. 8" SCH. 40 PVC PIPE SHALL BE PAID FOR UNDER ITEM 603 - 8 INCH PLASTIC PIPE.

<b>Computer File Information</b>			<b>Index of Revisions</b>			<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>		<b>136TH AVENUE OVER I-25 BRIDGE DRAIN DETAILS</b>			<b>Project No./Code</b>	
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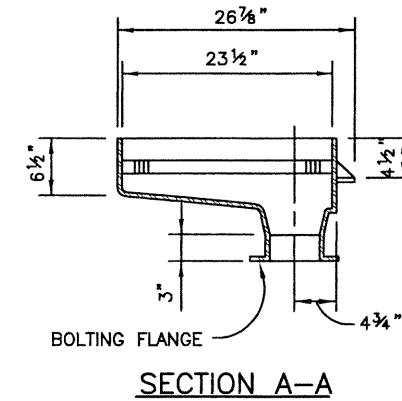
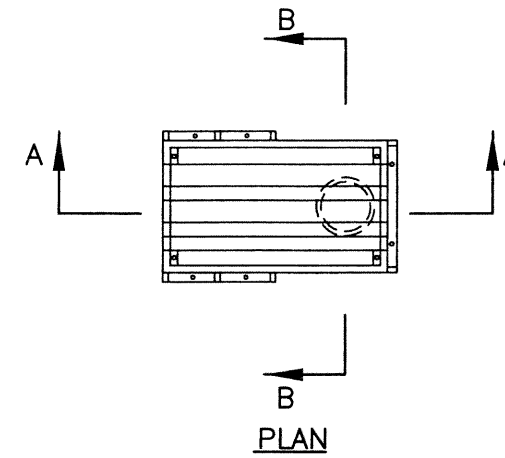
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REVISION DATES	
NO.	DATE

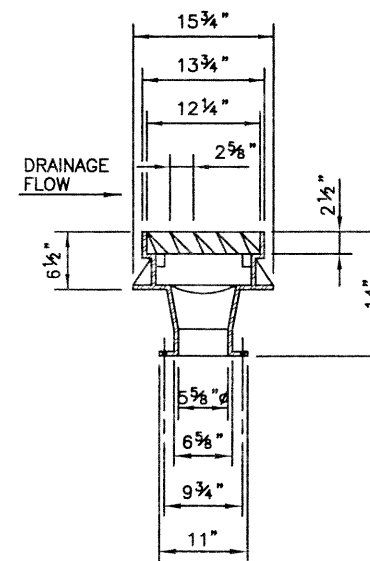
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WJM	10/02	KVA	05/02	KVA	10/02



**PIPE SUPPORT BRACKET**  
(GALVANIZE AFTER FABRICATION)



**SECTION A-A**



**SECTION B-B**  
**DECK DRAIN DETAILS**

**Computer File Information**

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Last Modification Date:	12/02/02	Initials:	PRH
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**Index of Revisions**

NO.	DATE	DESCRIPTION



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**As Constructed**

No Revisions:
Revised:
Void:

**136TH AVENUE OVER I-25  
BRIDGE DRAIN DETAILS**

(2 OF 2)

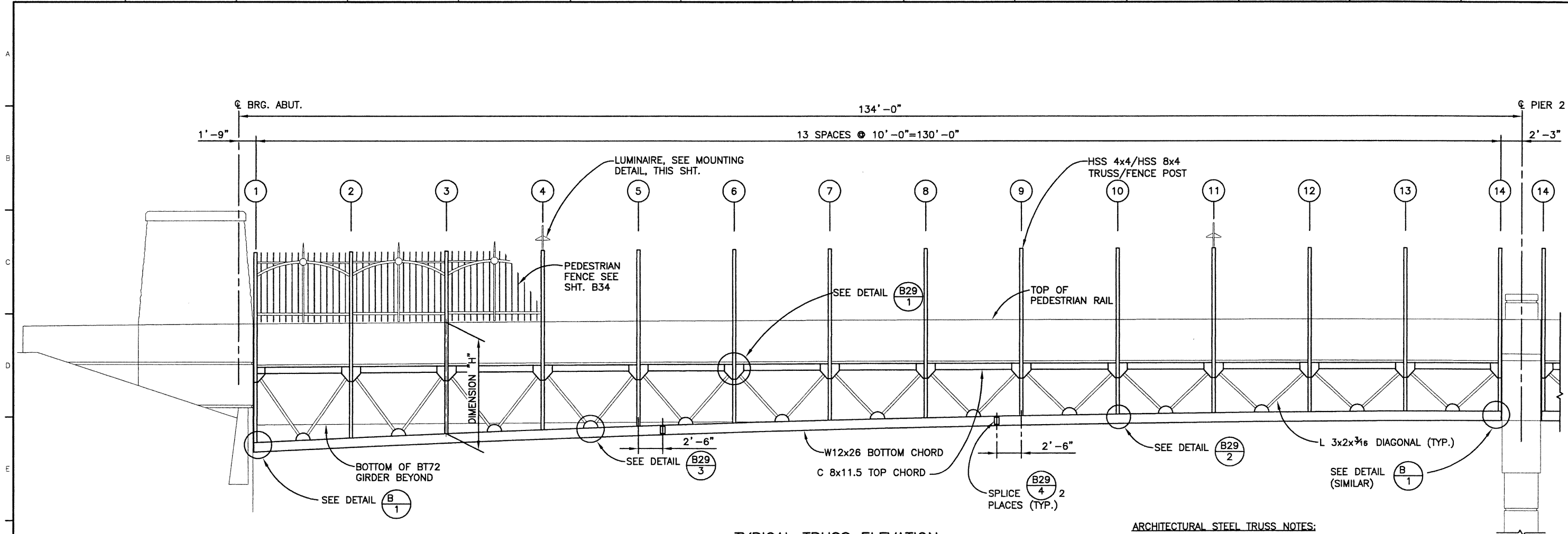
Designer:	K. ALKANANI
Detailer:	P. HELM
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Structure Numbers	E-17-ZL
Subset Sheets:	B27 of 49

**Project No./Code**

97-71

Sheet Number **59**



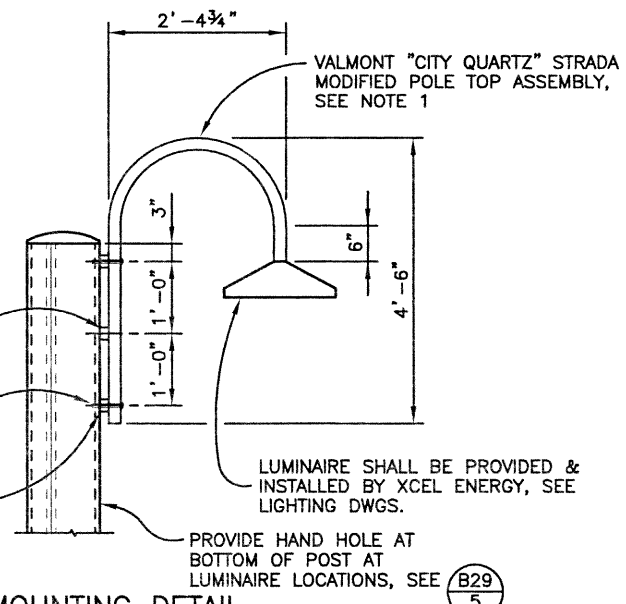
TYPICAL TRUSS ELEVATION

ARCHITECTURAL STEEL TRUSS NOTES:

1. TRUSS IS SYMMETRICAL ABOUT PIER C.
2. STRUCTURAL TUBING SHALL CONFORM TO ASTM A-500, GRADE B.
3. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO ASTM A-36.
4. ALL BOLTS SHALL BE 3/4" AND CONFORM TO ASTM A-325.
5. ALL TRUSS/FENCE POSTS SHALL BE PLUMB.
6. PRIOR TO FABRICATION, SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW IN ACCORDANCE WITH CDOT SPECIFICATIONS, SECTION 105.
7. TRUSS SHALL BE PAINTED AFTER FABRICATION IN ACCORDANCE WITH SECTION 509 OF THE CDOT STANDARD SPECIFICATIONS. THE COLOR SHALL BE LIGHT TERRA COTTA, EQUIVALENT TO FEDERAL STANDARD 595B, COLOR NO. 22516.

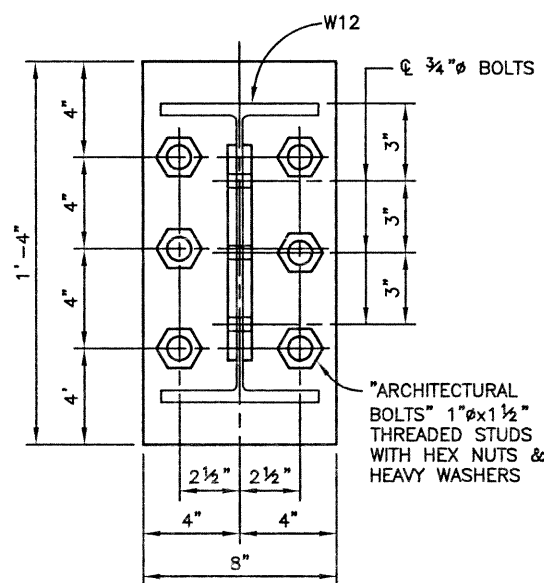
NOTES:

1. VALMONT "CITY QUARTZ" STRADA MODIFIED POLE TOP ASSEMBLY (#ST1-1-E2-ABK) TO INCLUDE ONLY THE ARM & SUPPORT STANDOFFS (NO VERTICAL UPRIGHT). THE ASSEMBLY WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 509 ARCHITECTURAL STEEL TRUSS.
2. HARDWARE FOR ATTACHMENT OF SUPPORT TO POST & FOR ATTACHMENT OF LUMINAIRE TO SUPPORT SHALL BE PROVIDED BY THE SUPPORT MANUFACTURER.
3. FOR JUNCTION BOX & CONDUIT AT LUMINAIRE LOCATIONS SEE (B35).

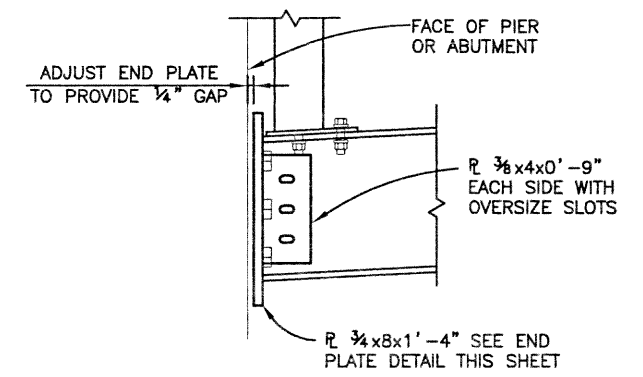


LUMINAIRE MOUNTING DETAIL

DIMENSION "H"	
VERTICAL NO.	DIMENSION (FT.)
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2	12.129
3	11.750
4	11.399
5	11.088
6	10.800
7	10.552
8	10.332
9	10.146
10	9.994
11	9.871
12	9.786
13	9.717
14	9.689



END PLATE DETAIL



DETAIL (B1)

DESIGN	QUANTITIES		REVISION DATES	
	Initial	Date	Initial	Date
Designed by	KMA	03/02	SEH	03/02
Checked by	WJM	10/02	KMA	10/02

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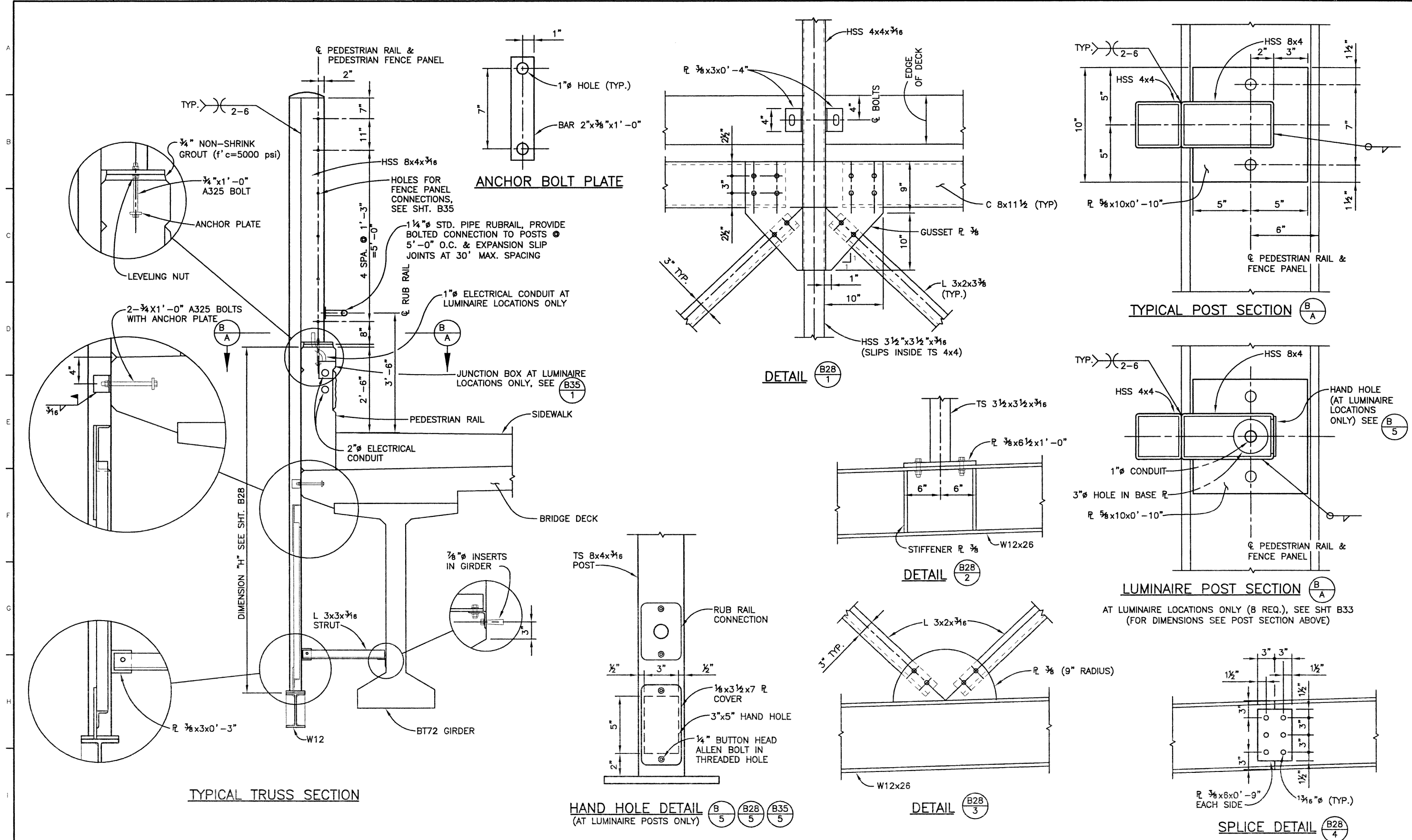
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 fax 303.721.0832  
 fhu@fhueng.com  
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 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE OVER I-25 ARCHITECTURAL STEEL TRUSS PLAN & ELEVATION	
Designer:	B. BEAMS
Detailer:	R. DILLON
Sheet Subset:	BRIDGE

Project No./Code	97-71
Structure Numbers	E-17-ZL
Subset Sheets:	B28 of 49
Sheet Number	60

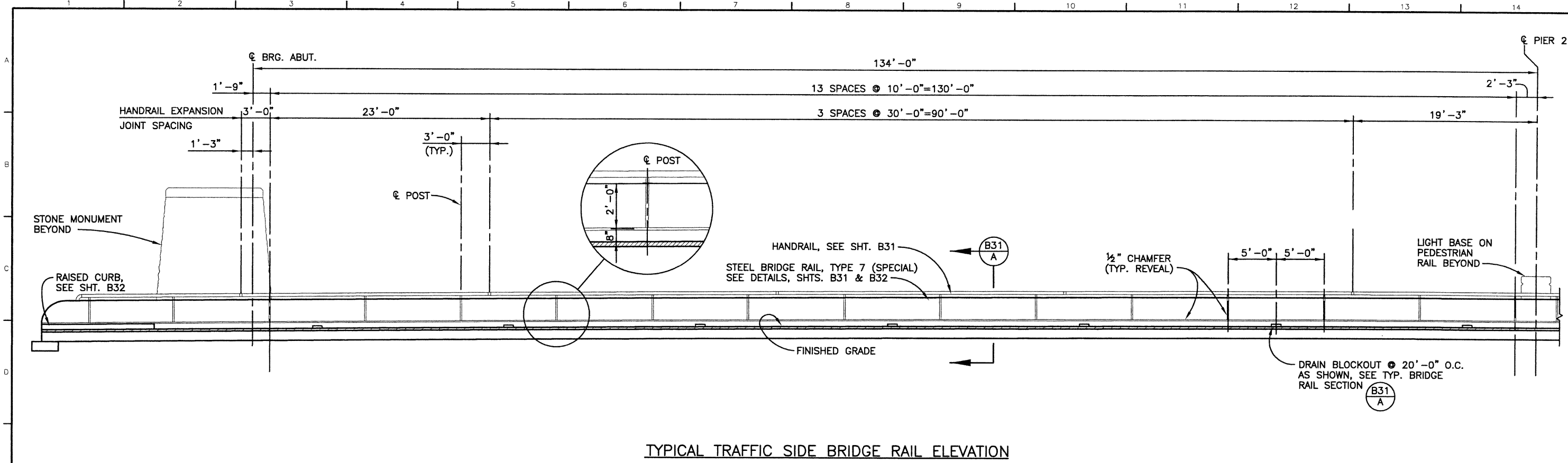
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Checked by	Checked by	Detailed by	Checked by	Quantities by	Checked by
RMA	RMA	RMA	03/02	RMA	RMA



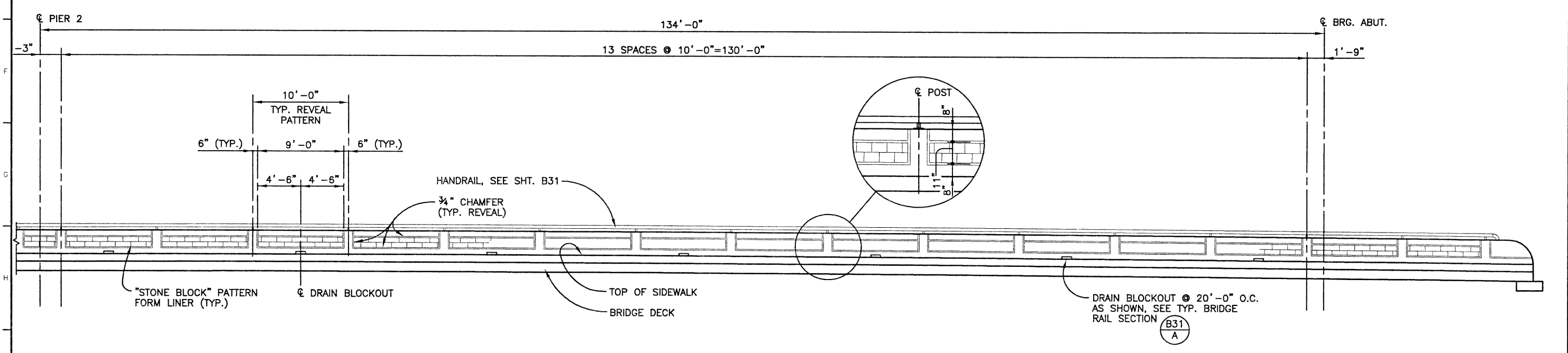
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Creation Date:	04/04/02	Initials:	RAD	No Revisions:		Designer: B. BEAMS		97-71	
Last Modification Date:	12/02/02	Initials:	PRH	Revised:		Detailer: DILLON/HELM		Structure: E-17-ZL	
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Drawing File Name:	B00033MSC15.DWG			Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111		Sheet Number		61	
Acad Ver. 2000i	Scale:	VARIES Units: ENGLISH		FELSBURG HOLT & ULLEVIG		303.721.1440 fax 303.721.0832 fhu@fhueng.com			

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Initial	Date	Initial	Date	Initial	Date
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Checked by WJM	10/02	Checked by KMA	03/02	Quantities by KMA	10/02
				Checked by KMA	10/02



TYPICAL TRAFFIC SIDE BRIDGE RAIL ELEVATION



TYPICAL SIDEWALK SIDE BRIDGE RAIL ELEVATION

Computer File Information	
Creation Date:	01/25/02 Initials: RAD
Last Modification Date:	12/04/02 Initials: PRH
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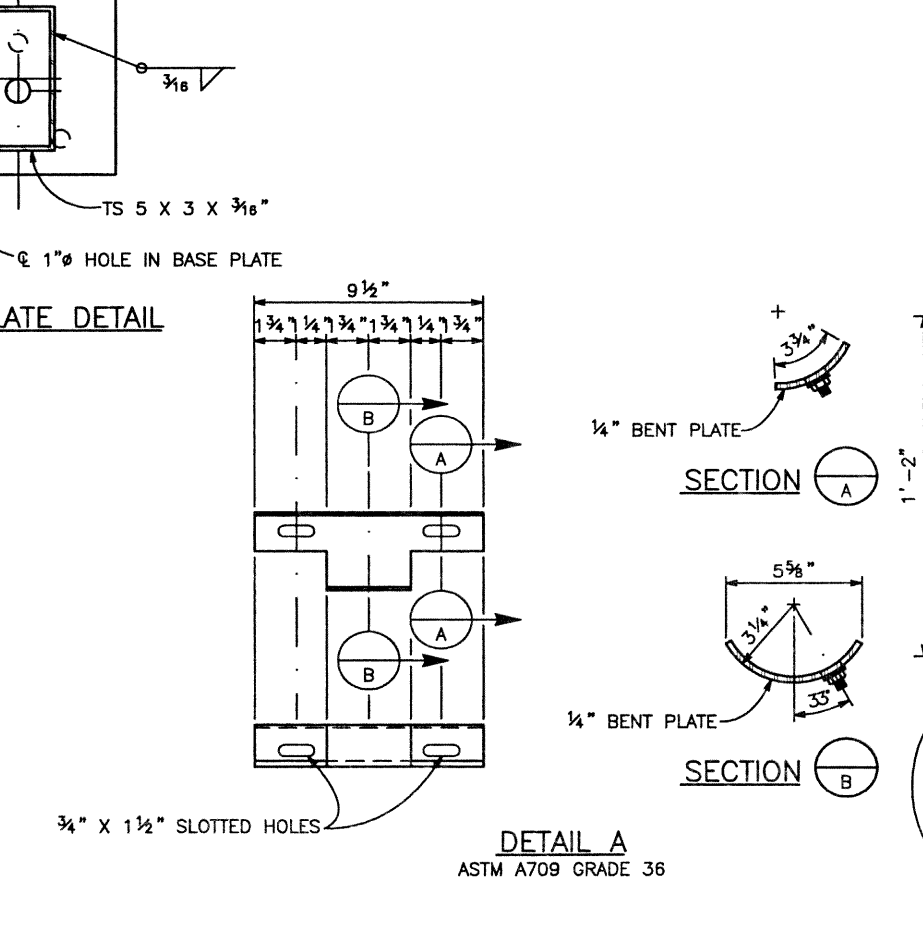
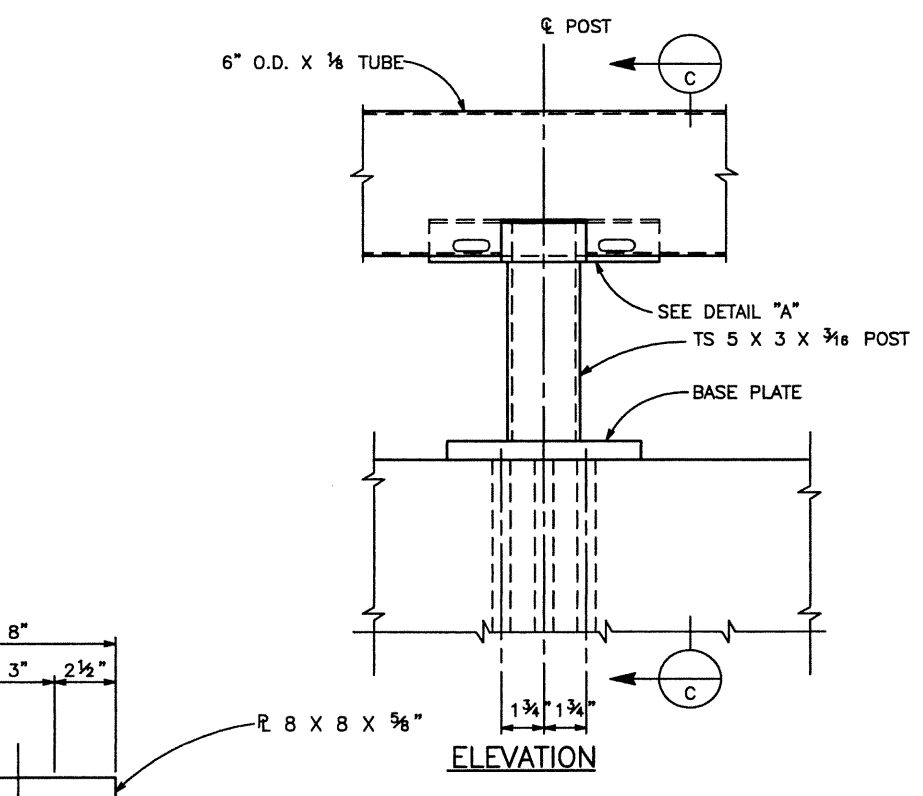
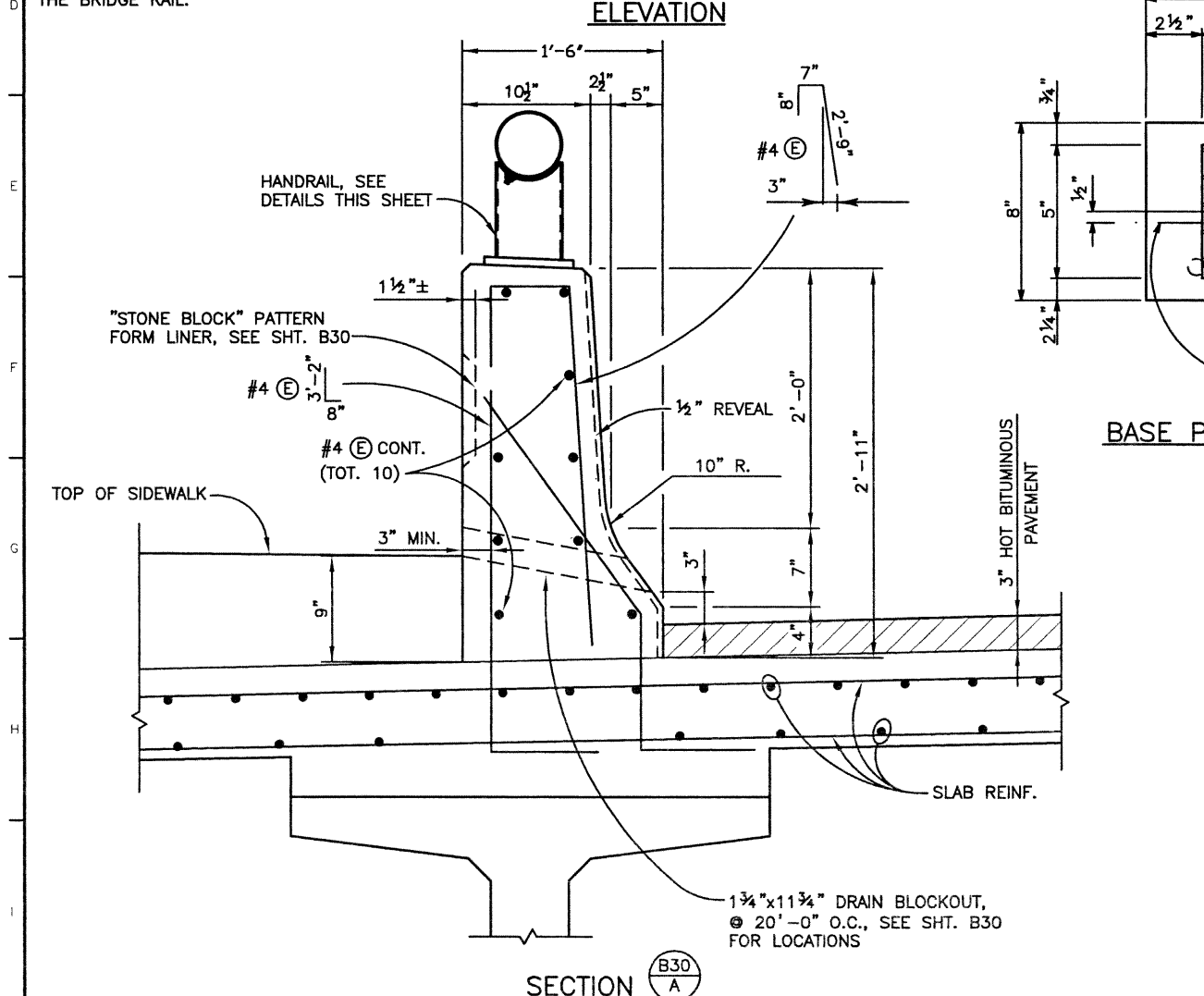
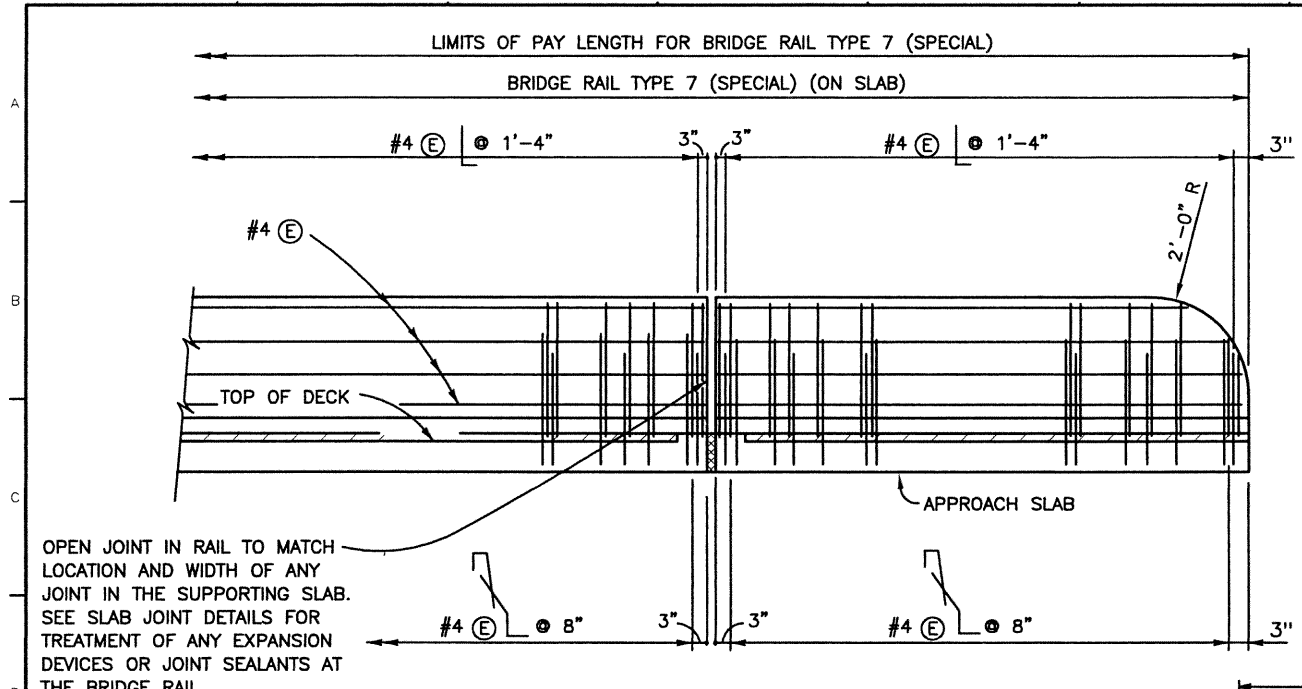
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fhu@fhueng.com  
  
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Englewood, CO 80111

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136TH AVENUE OVER I-25 BRIDGE RAIL ARCHITECTURAL DETAILS			
Designer:	K. ALKANANI	Structure	E-17-ZL
Detailer:	R. DILLON	Numbers	
Sheet Subset:	BRIDGE	Subset Sheets:	B30 of 49

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	97-71
Sheet Number	62

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	Checked by	WJM	Date	10/02
DETAIL	Detailed by	KMA	Date	03/02
	Checked by	WJM	Date	10/02
QUANTITIES	Initial	SEH	Date	03/02
	Checked by	KMA	Date	10/02
REVISION DATES	Revision	01	Date	03/02
	Revision	02	Date	10/02



**NOTES:**

ALL BRIDGE RAIL CONCRETE SHALL BE CLASS D (BRIDGE). LONGITUDINAL REINFORCEMENT SHALL STOP AT ALL EXPANSION JOINTS.

BRIDGE RAIL SHALL BE CONSTRUCTED PLUMB.

CONCRETE AND REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 601 AND 602. PAYMENT WILL BE MADE UNDER ITEM 606, BRIDGE RAIL TYPE 7 (SPECIAL).

THE SURFACE OF THE RAIL SHALL BE TESTED WITH A 10 FOOT STRAIGHTEDGE LAID ALONG THE SURFACE IN THE LONGITUDINAL DIRECTION. DEVIATION OF THE CONCRETE SURFACE FROM THE STRAIGHTEDGE SHALL BE LESS THAN PLUS ALLOWANCE FOR ROADWAY HORIZONTAL AND VERTICAL CURVATURE, IF ANY.

STRUCTURAL STEEL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 606 BRIDGE RAIL TYPE 7 (SPECIAL).

STRUCTURAL STEEL PIPE FOR RAILING SHALL BE ASTM A53, Fy = 35,000 psi. ALL OTHER STRUCTURAL STEEL SHALL BE ASTM A36, Fy = 36,000 psi.

ALL STRUCTURAL STEEL SHALL BE PAINTED FEDERAL COLOR NO. 22516 (TERRA COTA) IN ACCORDANCE WITH SECTION 509.

FOR HANDRAIL EXPANSION JOINT & RAIL SPLICE DETAILS SEE SHT. B32.

**DESIGN DATA**

REINFORCED CONCRETE:

CLASS D (BRIDGE) CONCRETE: f'c = 4,500 psi

REINFORCING STEEL: fy = 60,000 psi

**INFORMATION ONLY**

DESCRIPTION	UNIT	PER LIN. FT.
CONCRETE CLASS D	CU. YD.	0.12
REINFORCING STEEL (EPOXY)	LB.	16.2
STRUCTURAL STEEL	LB.	14.3

**Computer File Information**

Creation Date:	11/05/01	Initials:	PRH
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Units:	ENGLISH		

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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

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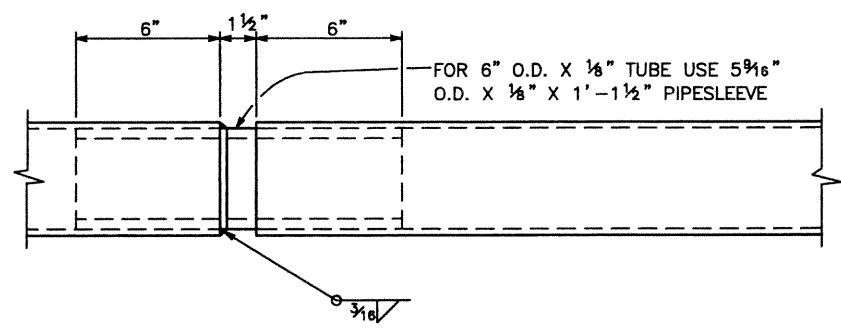
**136TH AVENUE OVER I-25 BRIDGE RAIL TYPE 7 (SPECIAL)**

Designer:	K. ALKANANI	Structure Numbers:	E-17-ZL
Detailer:	P. HELM	Sheet Subset:	BRIDGE
Subset Sheets:	B31 of 49	Sheet Number:	63

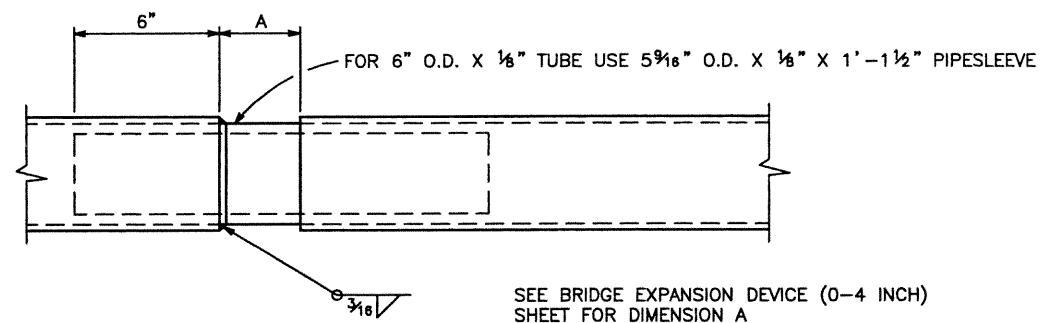
**Project No./Code**

97-71

DESIGN		DETAIL		QUANTITIES		Revision Dates (Preliminary Stage Only)	
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Checked by	WJM	Checked by	KMA	Quantity by	KMA	Checked by	10/02

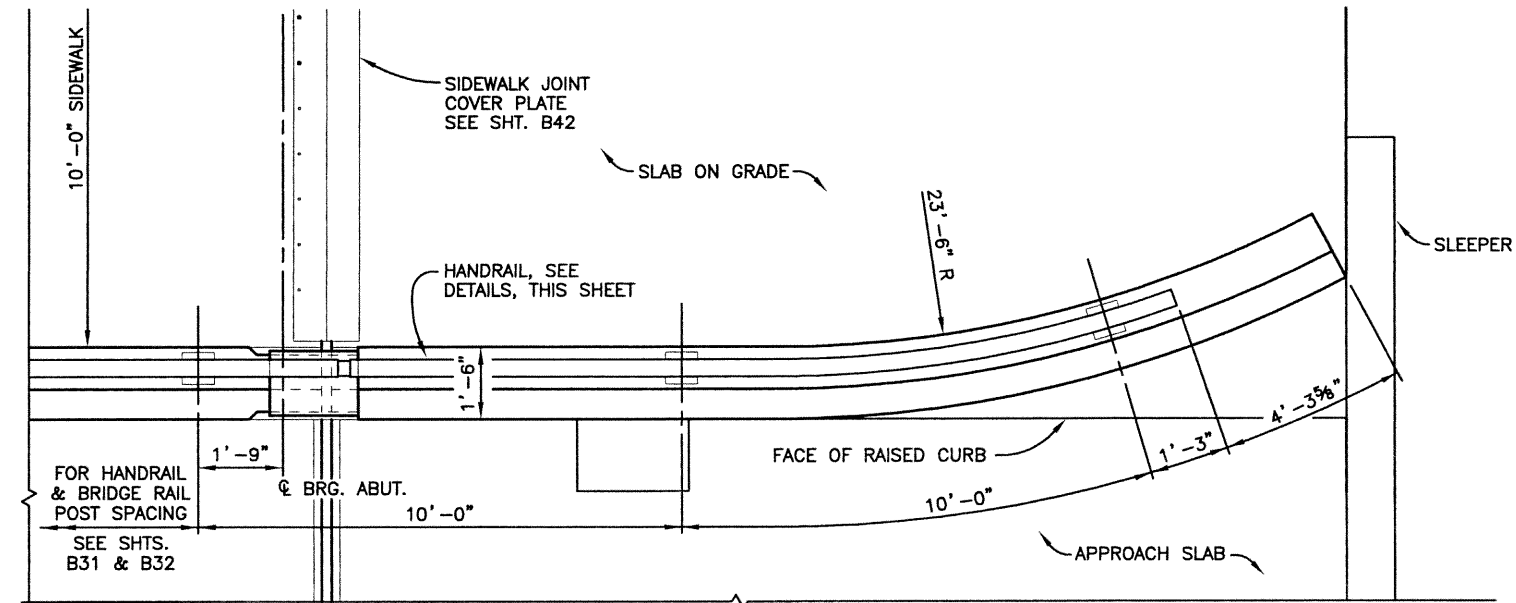


**HANDRAIL SPLICE**

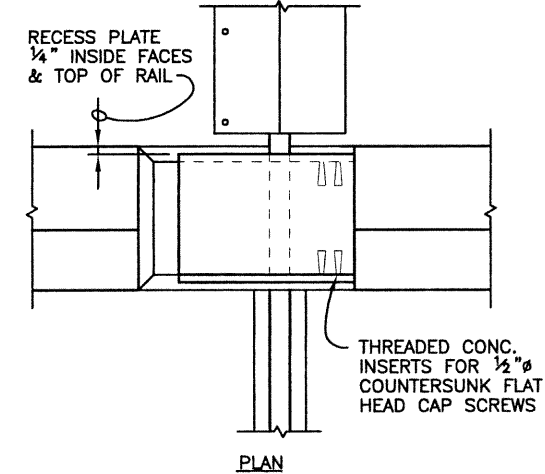


**HANDRAIL EXPANSION JOINT**

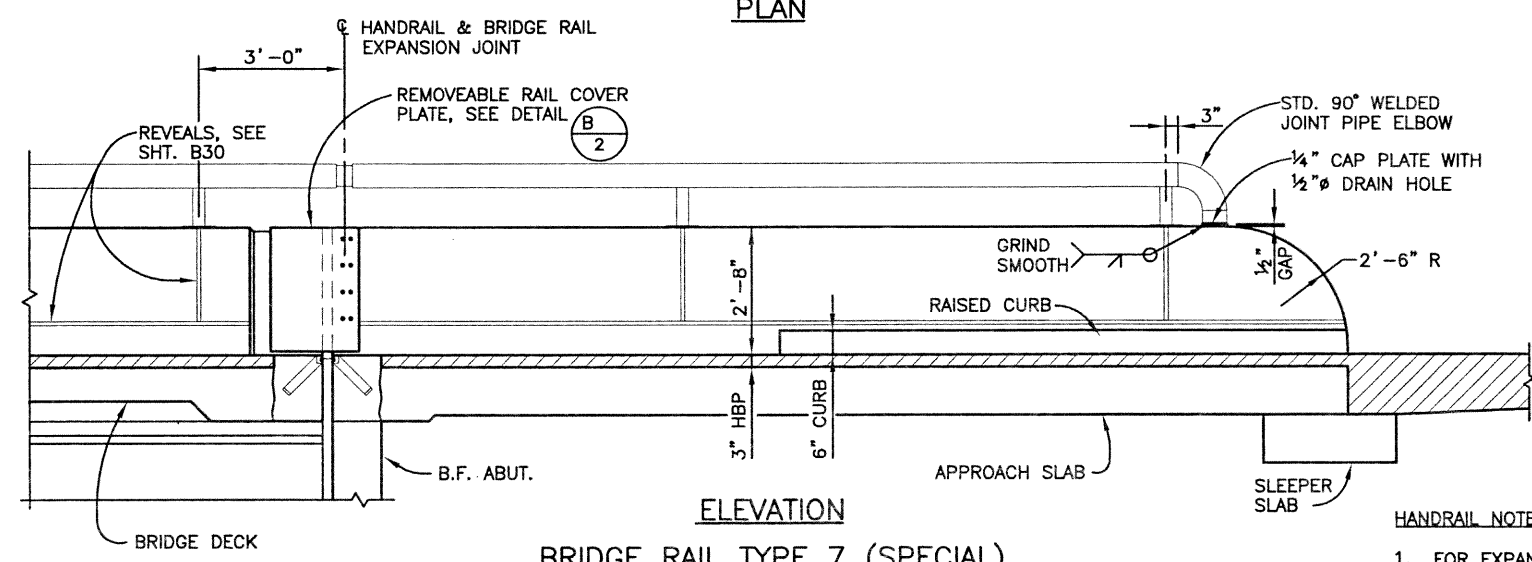
SEE BRIDGE EXPANSION DEVICE (0-4 INCH) SHEET FOR DIMENSION A



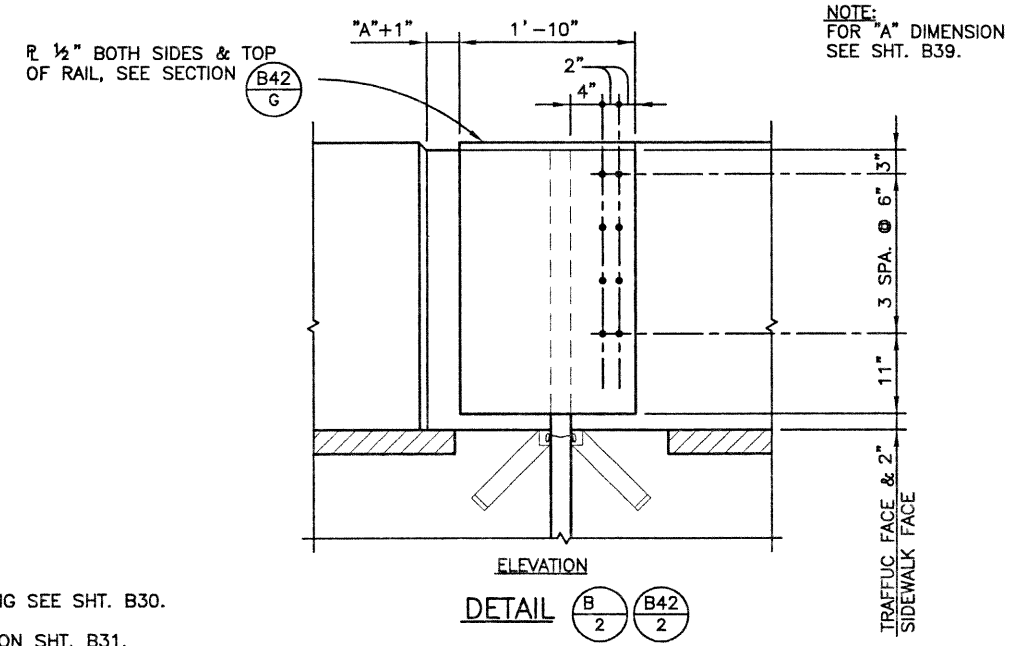
**PLAN**



**PLAN**



**ELEVATION**  
**BRIDGE RAIL TYPE 7 (SPECIAL) TERMINATION**



**ELEVATION**  
**DETAIL** (B/2) (B42/2)

NOTE: FOR "A" DIMENSION SEE SHT. B39.

**HANDRAIL NOTES:**

1. FOR EXPANSION JOINT SPACING SEE SHT. B30.
2. SEE STEEL HANDRAIL NOTES ON SHT. B31.

**Computer File Information**

Creation Date:	03/20/02	Initials:	RAD
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fax 303.721.0832  
fhu@fhueng.com

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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER I-25 MISCELLANEOUS BRIDGE RAIL DETAILS**

Designer:	K. ALKANANI	Structure	E-17-ZL
Detailer:	DILLON/HELM	Numbers	
Sheet Subset:	BRIDGE	Subset Sheets:	B32 of 49

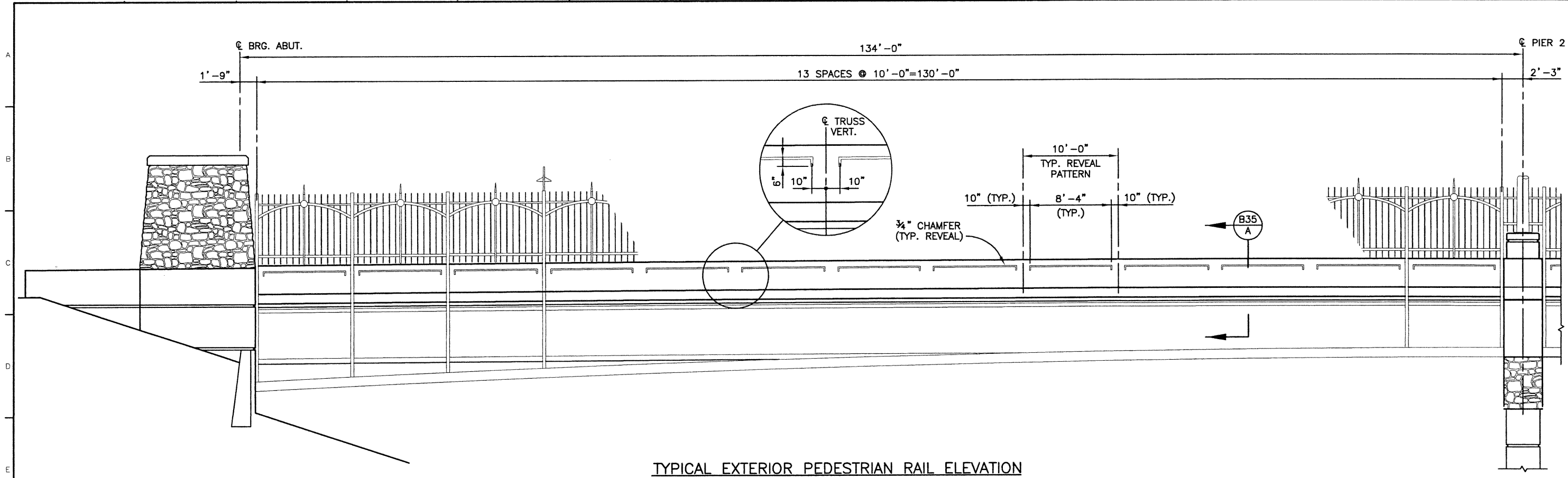
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97-71
Sheet Number <b>64</b>

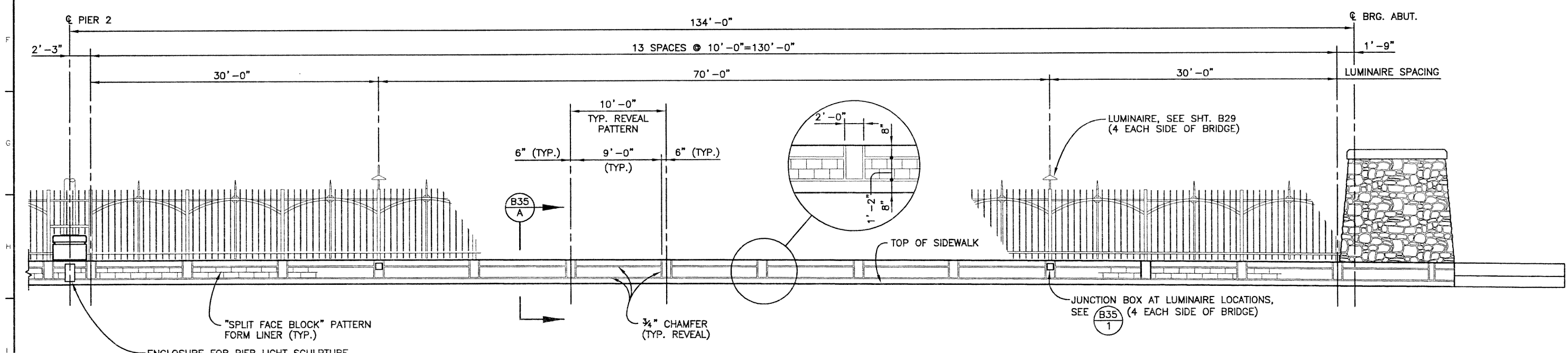


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Quantities by	Checked by	Quantities by	Checked by
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Designed by	Checked by	Designed by	Checked by
RAF	KMA	RAF	KMA

REVISION DATES			
(Preliminary Stage Only)			
Initial	Date	Initial	Date
RAF	03/02	SFH	03/02
Quantities by	Checked by	Quantities by	Checked by
RAF	KMA	SFH	KMA
DESIGN			
Initial	Date	Initial	Date
RAF	03/02	RAF	03/02
Designed by	Checked by	Designed by	Checked by
RAF	KMA	RAF	KMA



TYPICAL EXTERIOR PEDESTRIAN RAIL ELEVATION



TYPICAL SIDEWALK SIDE PEDESTRIAN RAIL ELEVATION

<b>Computer File Information</b>			<b>Index of Revisions</b>			<b>As Constructed</b>			<b>136TH AVENUE OVER I-25 PEDESTRIAN RAIL ARCHITECTURAL DETAILS</b>			<b>Project No./Code</b>	
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Last Modification Date:	12/05/02	Initials: PRH				Revised:			Designer: K. ALKANANI	Structure	E-17-ZL		
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\					Void:			Detailer: R. DILLON	Numbers			
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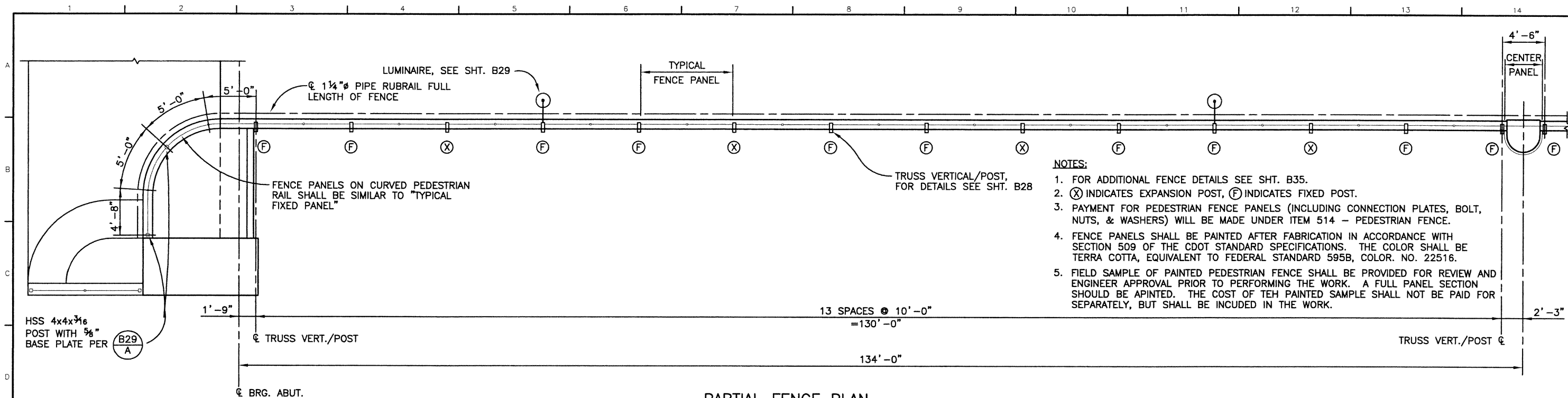


303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

1 2 3 4 5 6 7 8 9 10 11 12 13 14

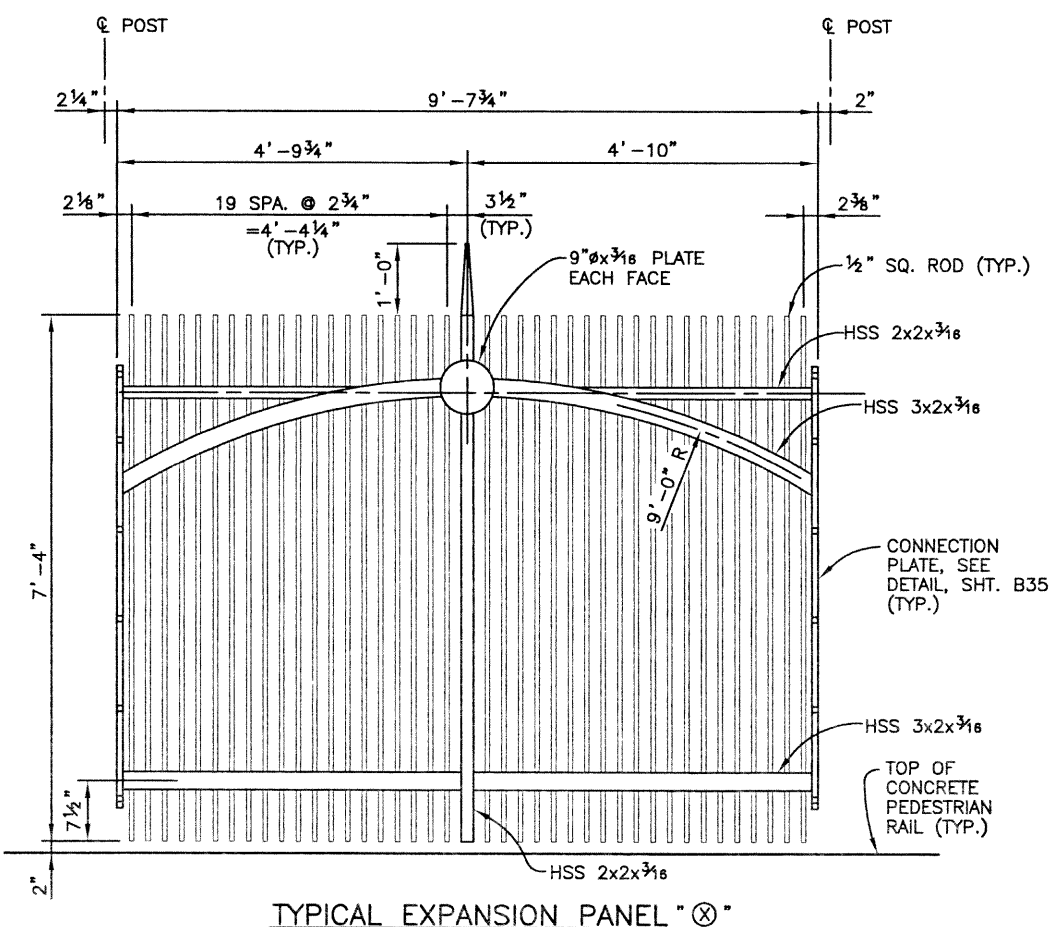
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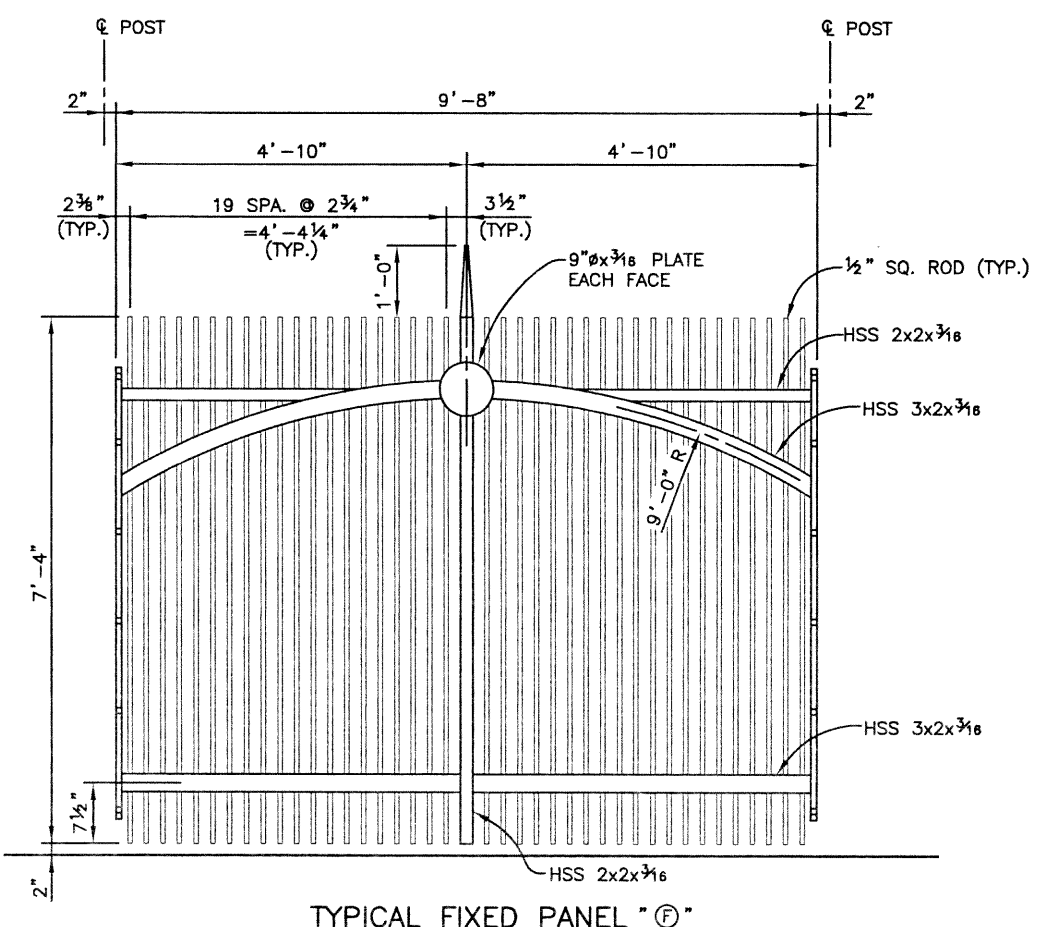


- NOTES:**
- FOR ADDITIONAL FENCE DETAILS SEE SHT. B35.
  - (X) INDICATES EXPANSION POST, (F) INDICATES FIXED POST.
  - PAYMENT FOR PEDESTRIAN FENCE PANELS (INCLUDING CONNECTION PLATES, BOLT, NUTS, & WASHERS) WILL BE MADE UNDER ITEM 514 - PEDESTRIAN FENCE.
  - FENCE PANELS SHALL BE PAINTED AFTER FABRICATION IN ACCORDANCE WITH SECTION 509 OF THE CDOT STANDARD SPECIFICATIONS. THE COLOR SHALL BE TERRA COTTA, EQUIVALENT TO FEDERAL STANDARD 595B, COLOR. NO. 22516.
  - FIELD SAMPLE OF PAINTED PEDESTRIAN FENCE SHALL BE PROVIDED FOR REVIEW AND ENGINEER APPROVAL PRIOR TO PERFORMING THE WORK. A FULL PANEL SECTION SHOULD BE APINTED. THE COST OF THE PAINTED SAMPLE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

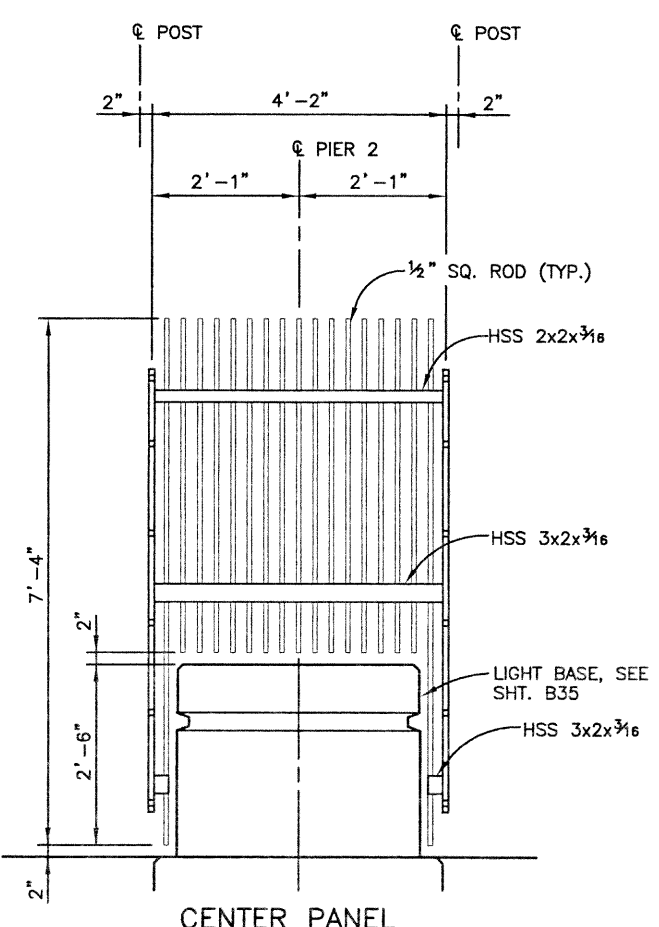
**PARTIAL FENCE PLAN**



TYPICAL EXPANSION PANEL "X"



TYPICAL FIXED PANEL "F"



CENTER PANEL

**TYPICAL FENCE PANEL ELEVATIONS**  
(LOOKING AT OUTSIDE FACE)

Computer File Information			Index of Revisions			As Constructed		136TH AVENUE OVER I-25 PEDESTRIAN FENCE DETAILS		Project No./Code	
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Last Modification Date:	12/05/02	Initials: PRH				Revised:	Designer: K. ALKANANI	Structure	E-17-ZL		
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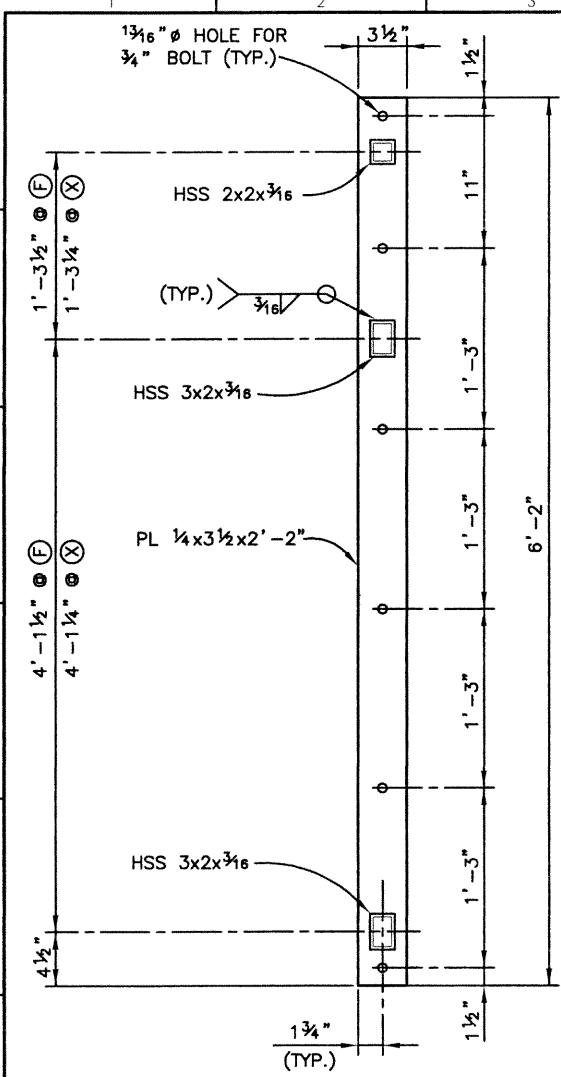
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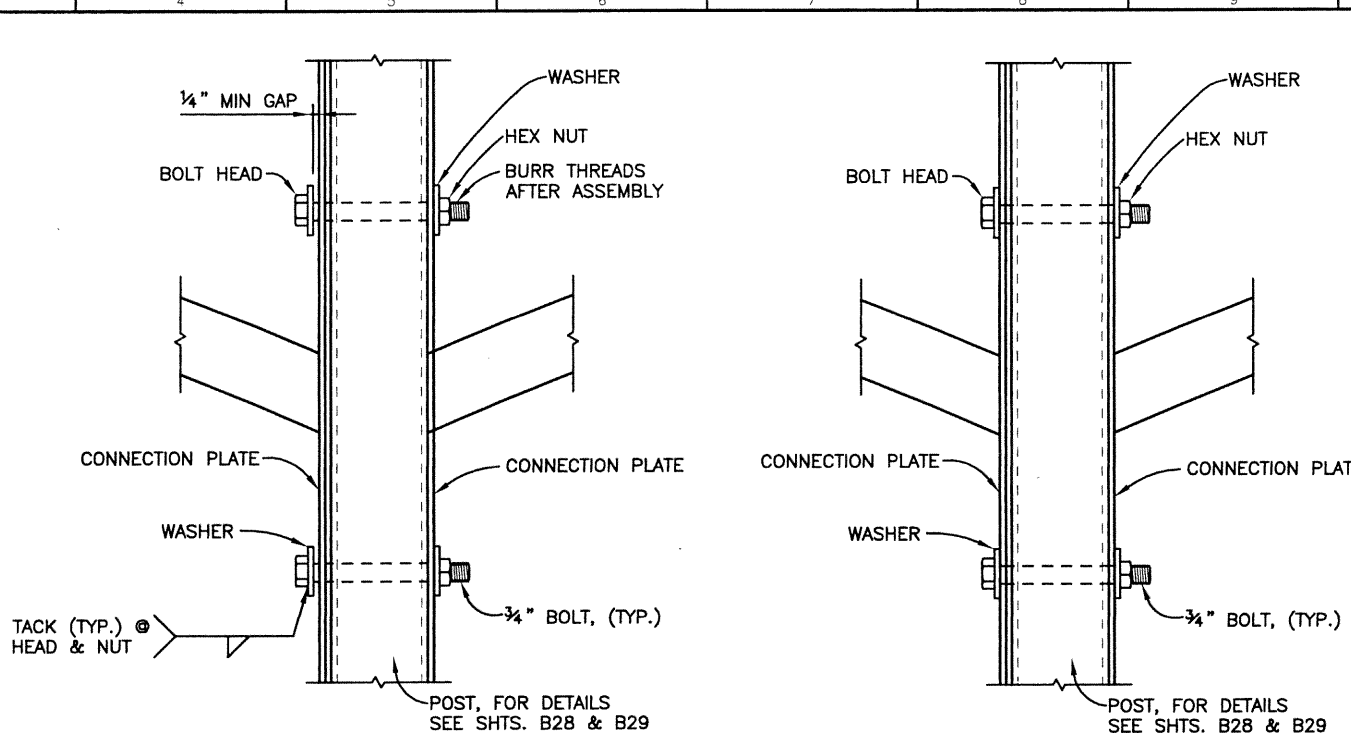
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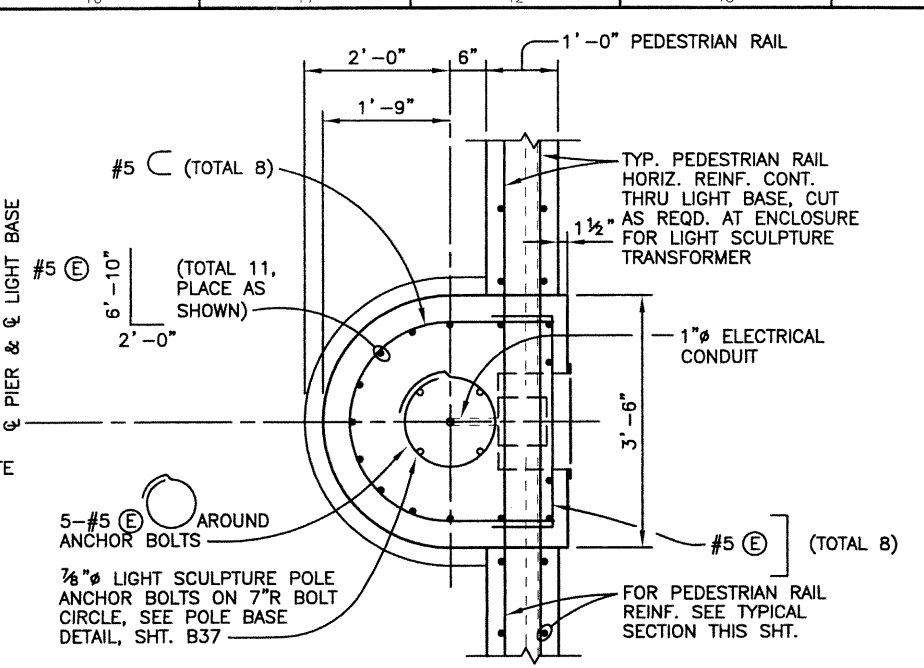
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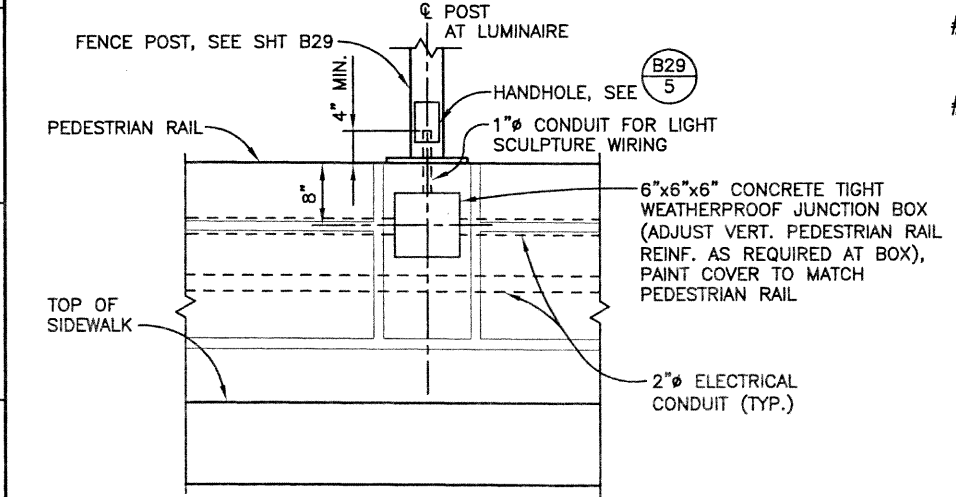
**FENCE PANEL CONNECTION PLATE DETAIL**



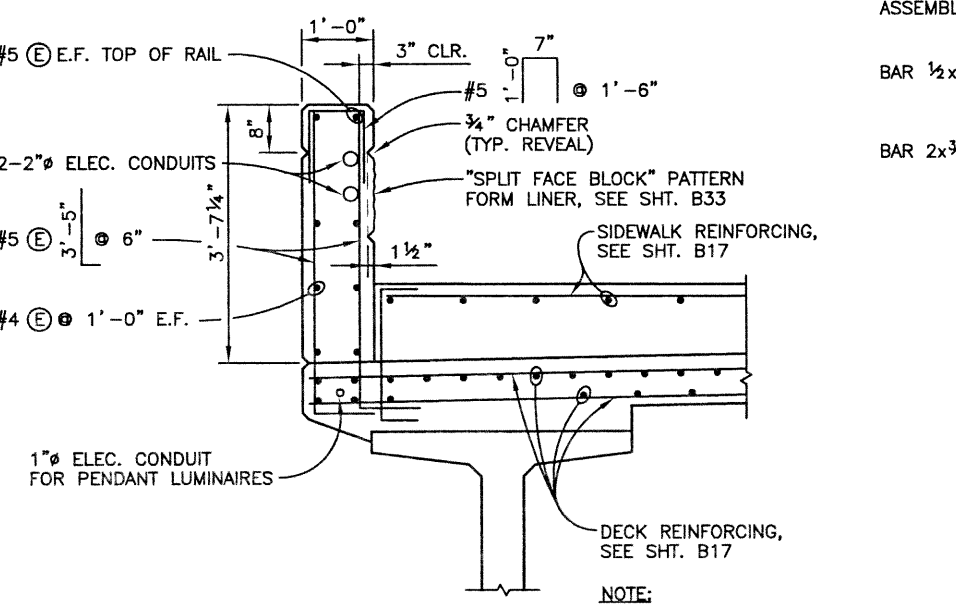
**EXPANSION CONNECTION  
FIXED CONNECTION  
FENCE PANEL/POST CONNECTION DETAILS**



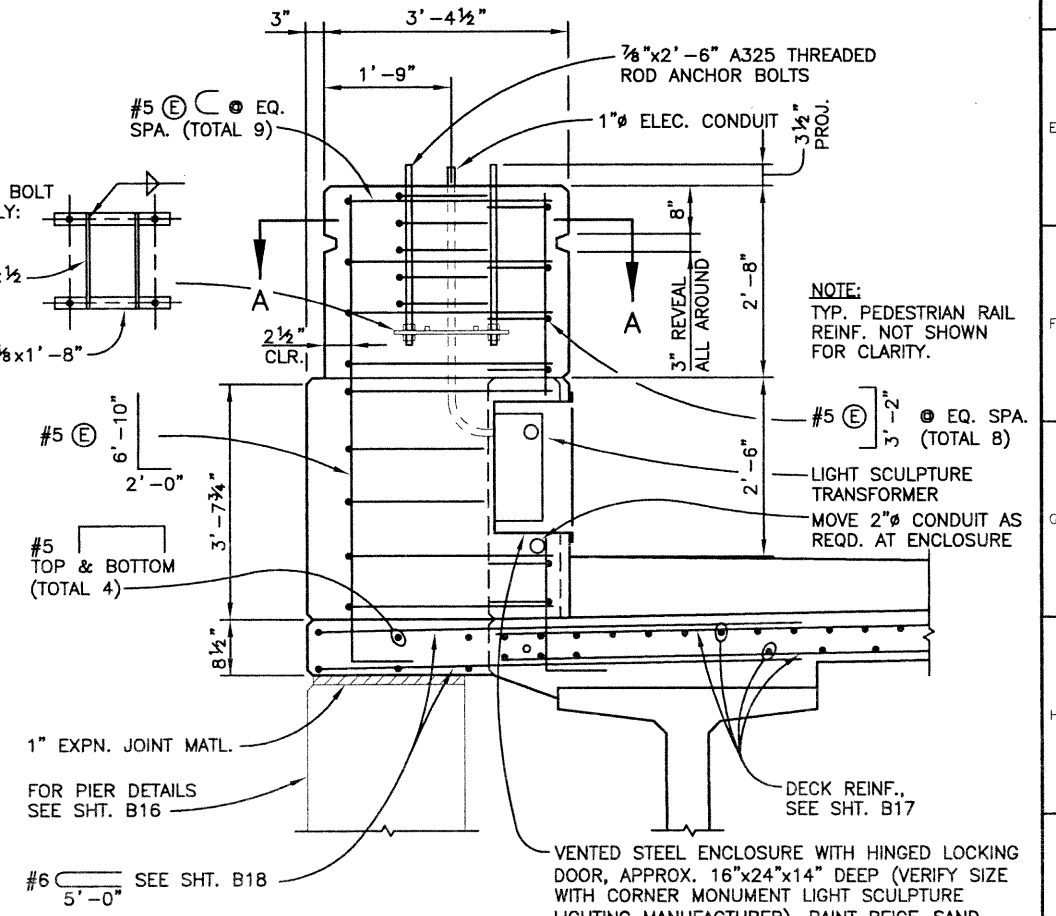
**SECTION A-A**



**LUMINAIRE JUNCTION BOX** (B28 1) (B29 1) (B33 1)



**TYPICAL PEDESTRIAN RAIL SECTION** (B33 A)



**ELEVATION  
LIGHT BASE DETAILS**

**Computer File Information**

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Drawing File Name:	B00033MSC11.DWG		
Acad Ver.	2000i	Scale:	VARIES Units: ENGLISH

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No.	Description

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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**136TH AVENUE OVER I-25  
PEDESTRIAN FENCE  
& PEDESTRIAN RAIL DETAILS**

Designer:	K. ALKANANI	Structure	E-17-ZL
Detailer:	R. DILLON	Numbers	
Sheet Subset:	BRIDGE	Subset Sheets:	B35 of 49

**Project No./Code**

Project No./Code	97-71
Sheet Number	67

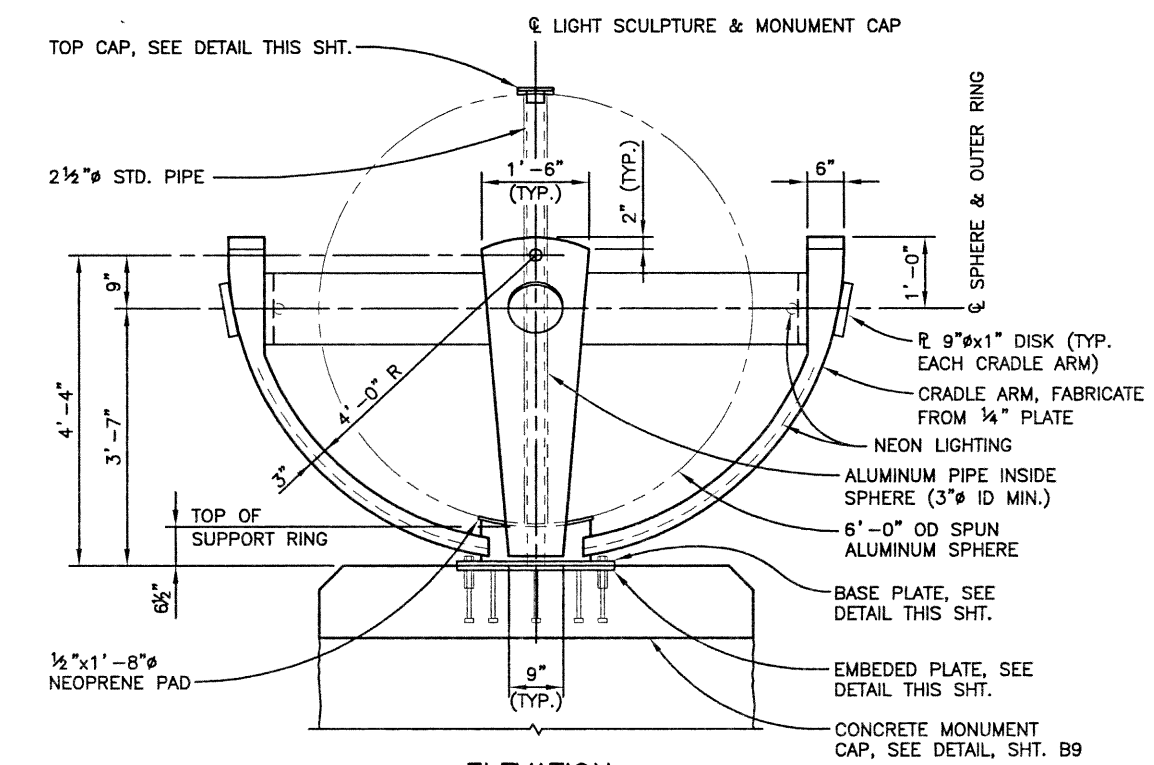
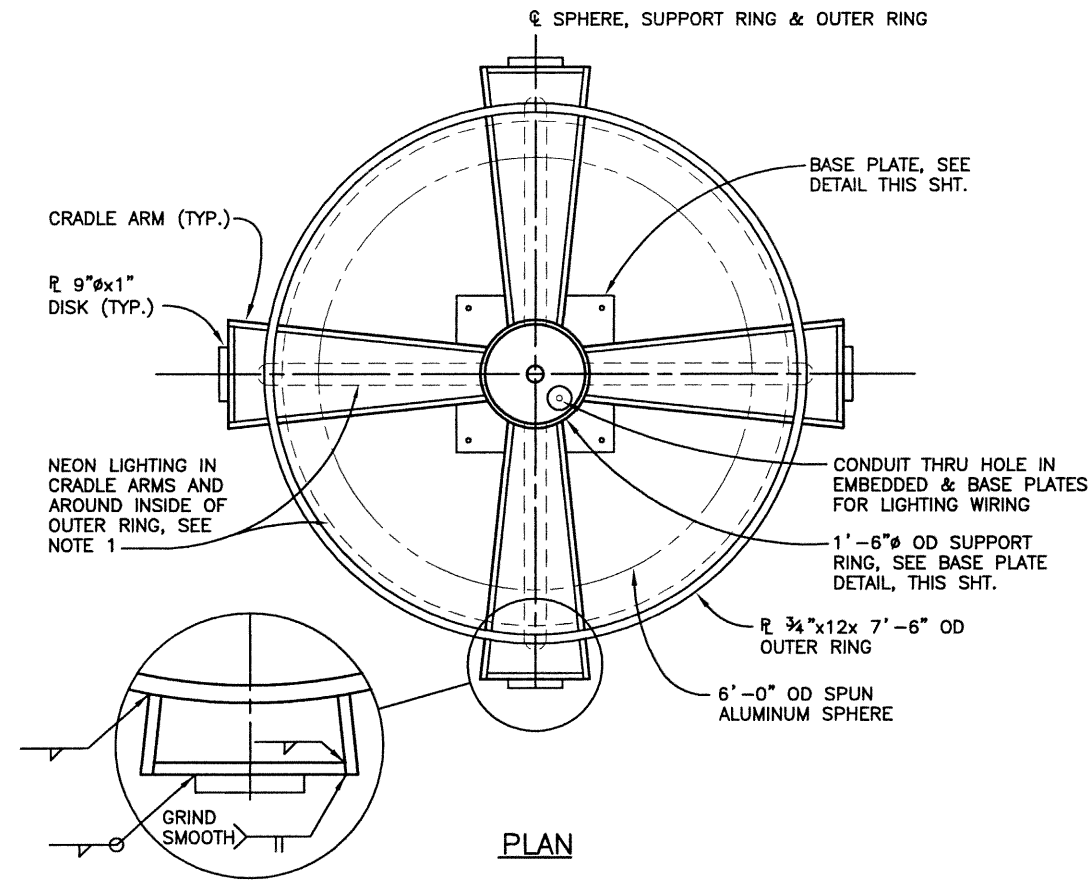
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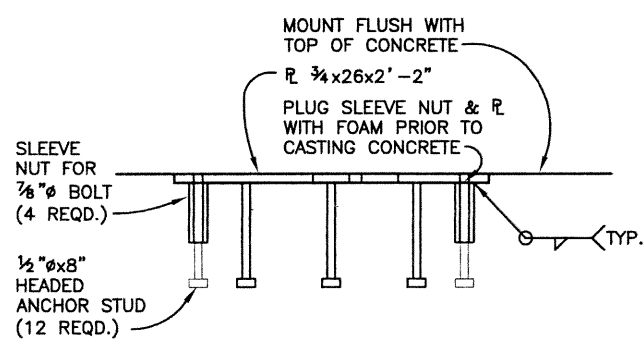
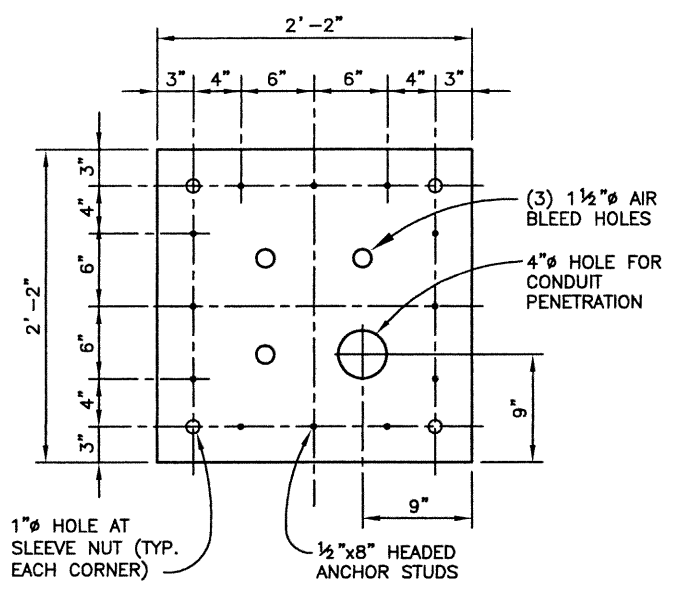
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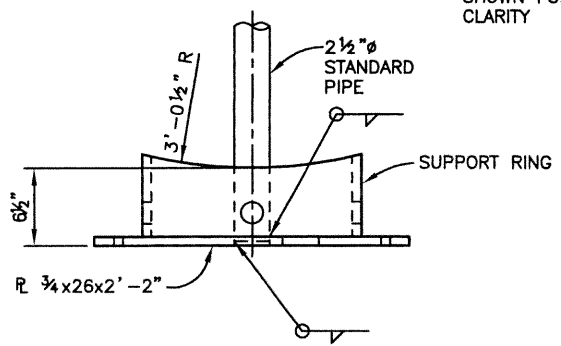
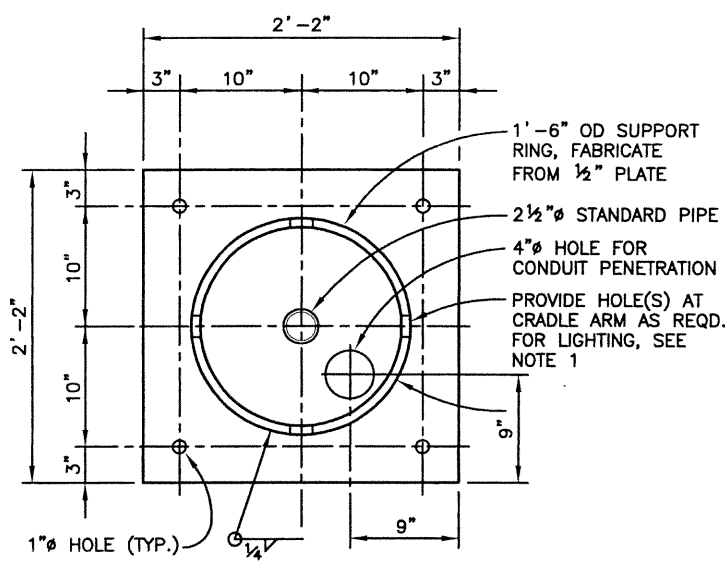
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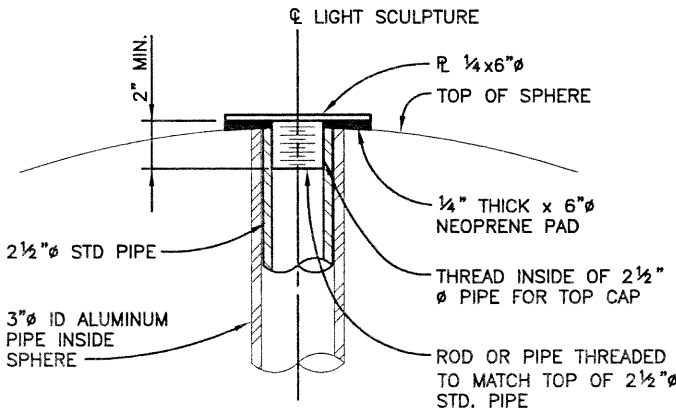
CORNER MONUMENT LIGHT SCULPTURE



EMBED PLATE DETAIL (GALVANIZE AFTER FABRICATION)



BASE PLATE DETAIL



TOP CAP DETAIL

NOTE: CRADLE ARMS NOT SHOWN FOR CLARITY

- NOTES:
1. SPHERE SHALL BE ILLUMINATED WITH A WHITE NEON LIGHTING SYSTEM. THE METAL FABRICATOR SHALL COORDINATE WITH THE LIGHTING MANUFACTURER IN DESIGN OF THE SYSTEM AND INCORPORATION OF THE REQUIRED COMPONENTS AND WIRING.
  2. FOR MORE INFORMATION SEE SPECIFICATION SECTION 511.
  3. MINIMUM FILLET WELD FOR STRUCTURAL STEEL FABRICATION SHALL BE 3/16".
  4. ALL BOLTS, NUTS & WASHERS SHALL BE GALVANIZED AND CONFORM TO ASTM A307. EXPOSED BOLT HEADS, NUTS & WASHERS SHALL BE FIELD PAINTED AFTER ERECTION TO MATCH THE POWDER COATED STEEL PARTS.
  5. STRUCTURAL STEEL PLATES SHALL BE GRADE A36.
  6. THE STEEL CRADLE/RING/BASE PLATE ASSEMBLY, TOP CAP, AND THE ALUMINUM SPHERE SHALL BE POWDER COATED AFTER FABRICATION. THE COLORS SHALL BE WHITE FOR THE SPHERE AND TOP CAP, AND BRONZE FOR THE STEEL CRADLE ASSEMBLY. POWDER COATING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 511.

Computer File Information

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 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
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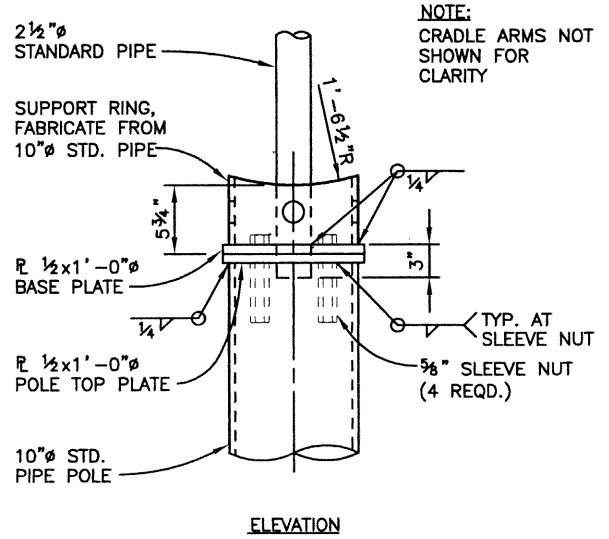
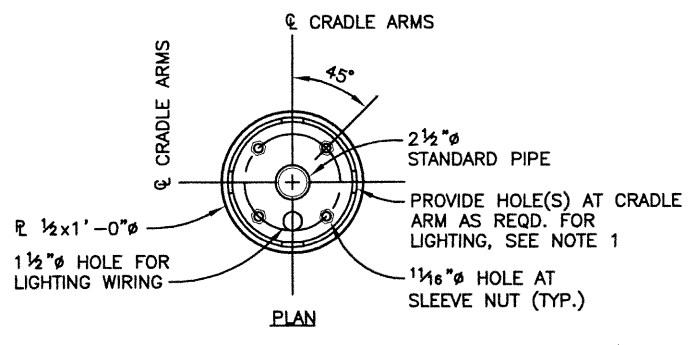
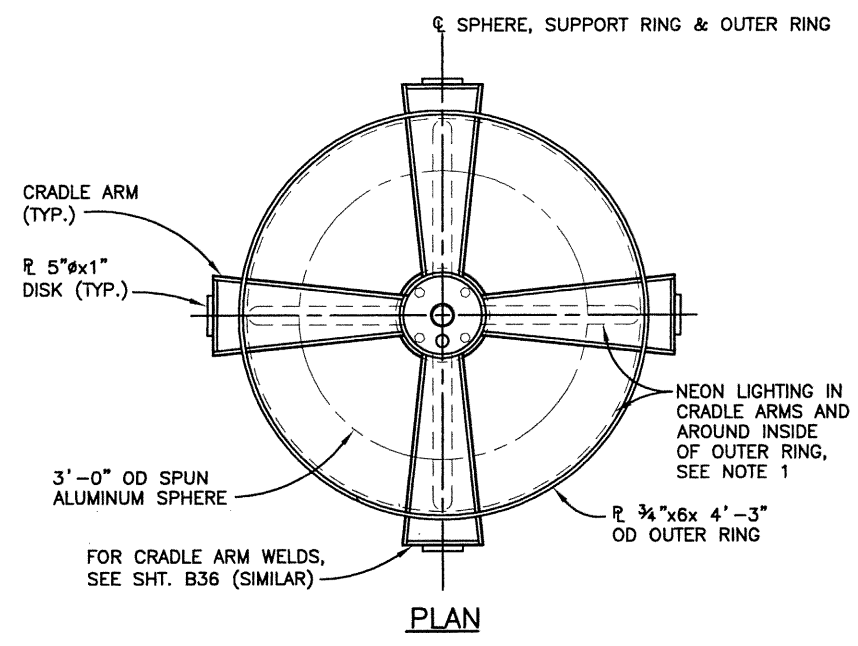
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No Revisions:	
Revised:	
Void:	

136TH AVENUE OVER I-25  
 CORNER MONUMENT  
 LIGHT SCULPTURE DETAILS

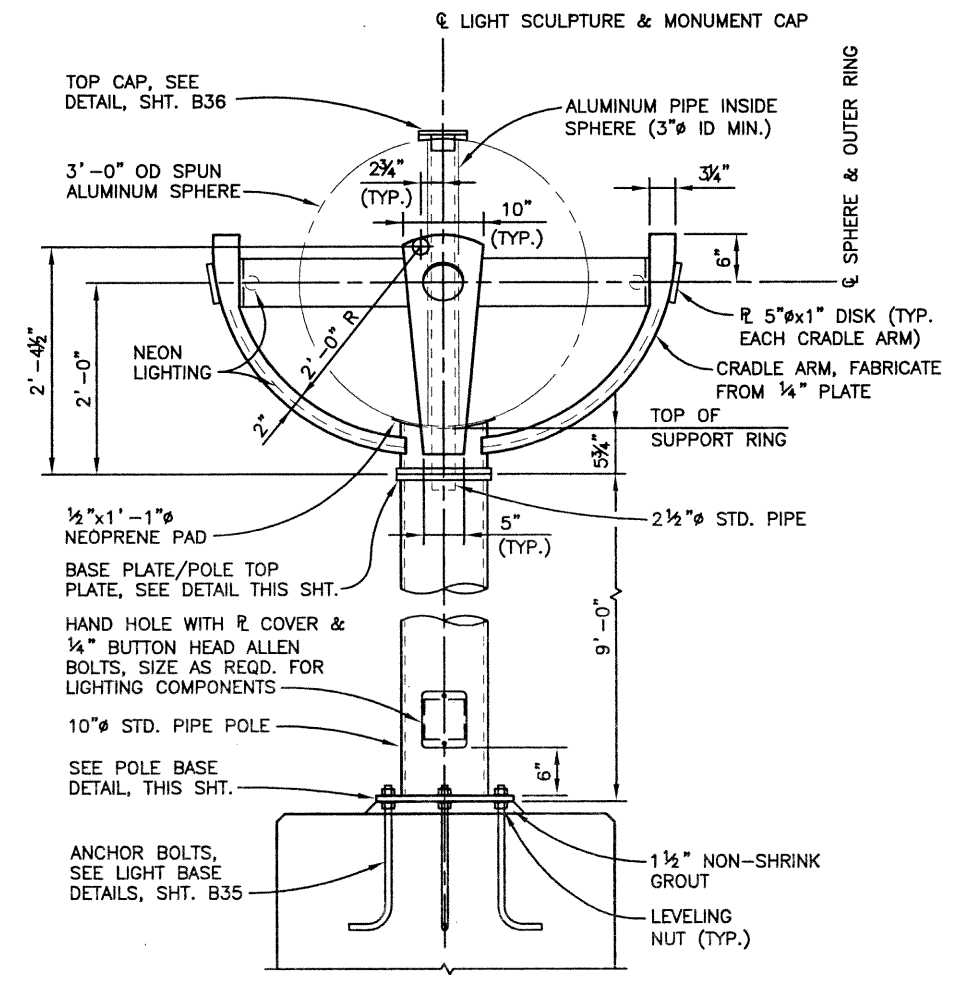
Designer:	ALKANANI/DILLON	Structure:	E-17-ZL
Detailer:	R. DILLON	Numbers:	
Sheet Subset:	BRIDGE	Subset Sheets:	B36 of 49

Project No./Code	97-71
Sheet Number	68

Revision Dates		QUANTITIES		DETAIL		DESIGN	
Initial	Date	Initial	Date	Initial	Date	Initial	Date
RAD	10/02	RAD	10/02	RAD	10/02	RAD	10/02
Checked by		Checked by		Checked by		Checked by	
WJM		WJM		WJM		WJM	

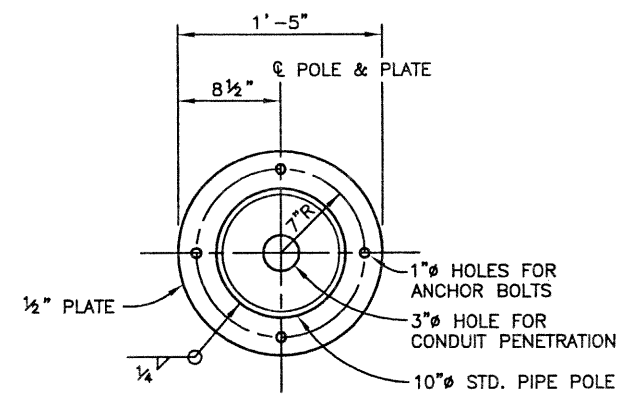


BASE PLATE/POLE TOP PLATE DETAIL



ELEVATION

PIER 2 LIGHT SCULPTURE



POLE BASE DETAIL

NOTES:

1. SPHERE SHALL BE ILLUMINATED WITH A WHITE NEON LIGHTING SYSTEM. THE METAL FABRICATOR SHALL COORDINATE WITH THE LIGHTING MANUFACTURER IN DESIGN OF THE SYSTEM AND INCORPORATION OF THE REQUIRED COMPONENTS AND WIRING.
2. FOR MORE INFORMATION SEE SPECIFICATION SECTION 511.
3. MINIMUM FILLET WELD FOR STRUCTURAL STEEL FABRICATION SHALL BE 3/16".
4. ALL BOLTS, NUTS & WASHERS SHALL BE GALVANIZED AND CONFORM TO ASTM A307. EXPOSED BOLT HEADS, NUTS & WASHERS SHALL BE FIELD PAINTED AFTER ERECTION TO MATCH THE POWDER COATED STEEL PARTS.
5. STRUCTURAL STEEL PLATES SHALL BE GRADE A36.
6. THE STEEL CRADLE/RING/BASE PLATE ASSEMBLY, POLE ASSEMBLY, TOP CAP, AND THE ALUMINUM SPHERE SHALL BE POWDER COATED AFTER FABRICATION. THE COLORS SHALL BE WHITE FOR THE SPHERE AND TOP CAP, AND BRONZE FOR THE STEEL CRADLE & POLE ASSEMBLIES. POWDER COATING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 511.

Computer File Information

Creation Date:	10/14/02	Initials:	RAD
Last Modification Date:	12/12/02	Initials:	RAD
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\		
Drawing File Name:	B00033MSC16.DWG		
Acad Ver.	2000i	Scale:	NONE Units: ENGLISH

Index of Revisions

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 fax 303.721.0832  
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No Revisions:	
Revised:	
Void:	

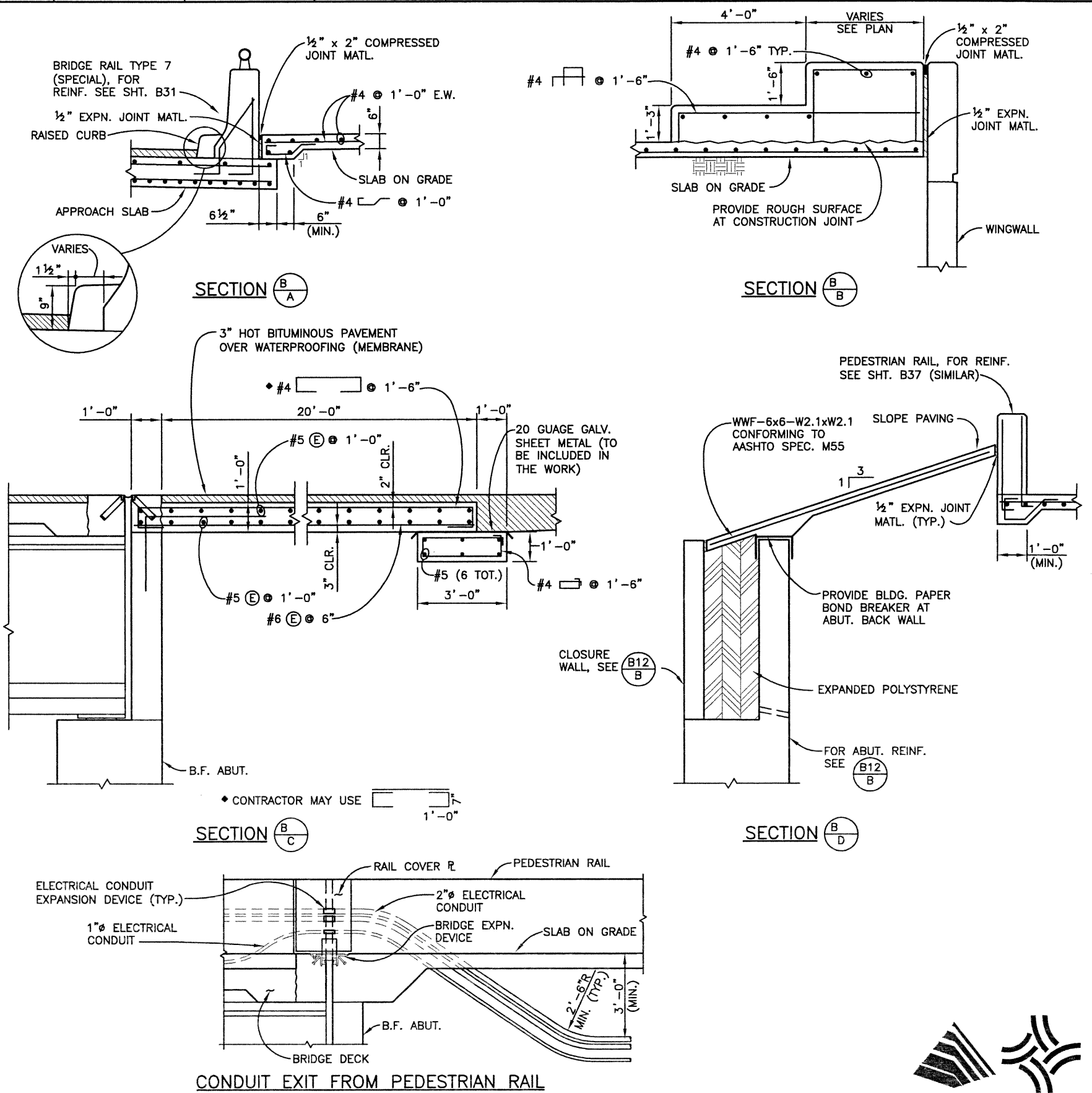
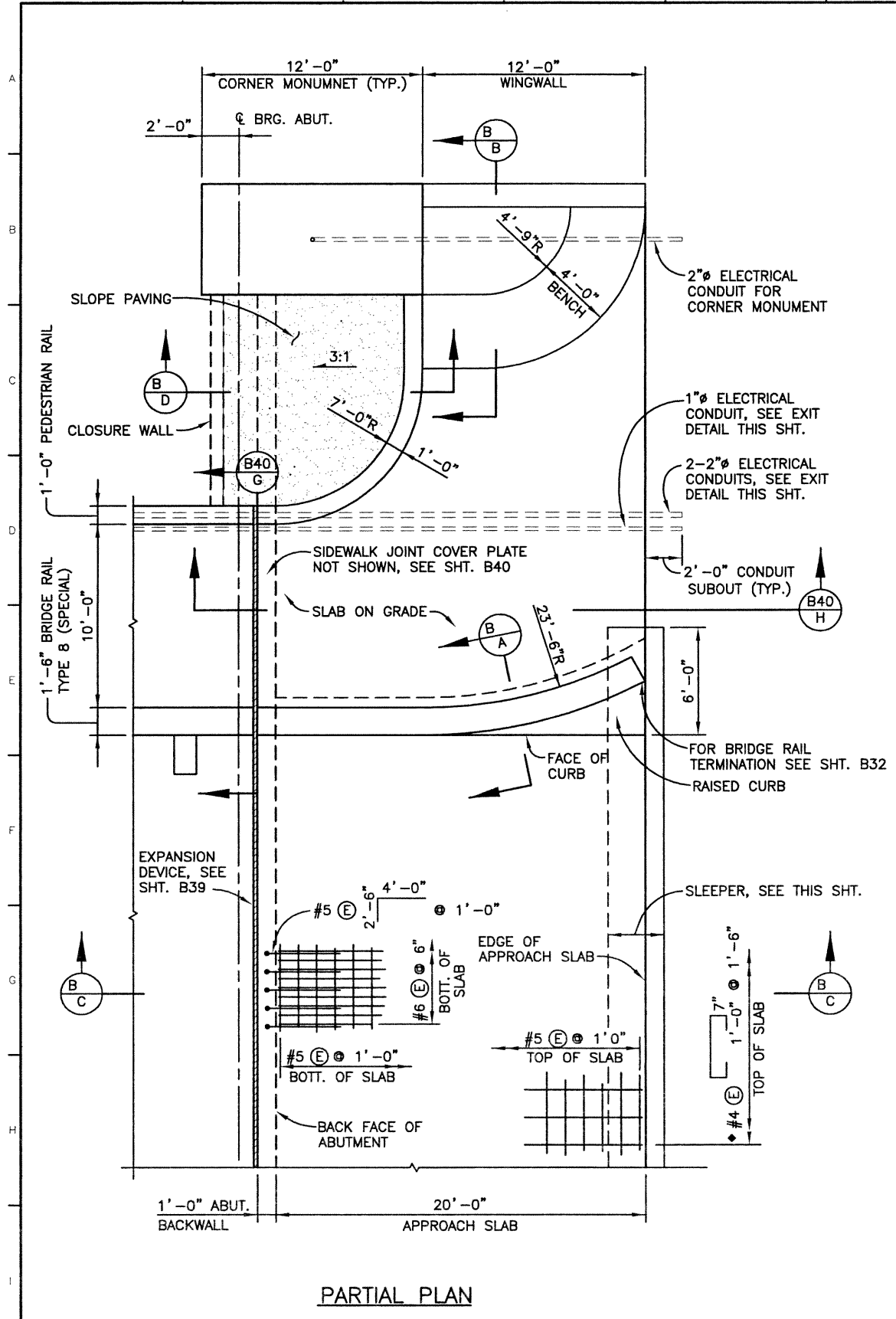
136TH AVENUE OVER I-25  
 PIER LIGHT SCULPTURE DETAILS

Designer:	ALKANANI/DILLON	Structure Numbers:	E-17-ZL
Detailer:	R. DILLON		
Sheet Subset:	BRIDGE	Subset Sheets:	B37 of 49

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Sheet Number
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DESIGN		DETAIL		QUANTITIES	
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Checked by		Date	10/01	Date	10/01
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		Initial		Initial	
		Date		Date	
		Checked by		Checked by	
		Initial		Initial	
		Date		Date	
		Checked by		Checked by	



PARTIAL PLAN

CONDUIT EXIT FROM PEDESTRIAN RAIL

Computer File Information			Index of Revisions			As Constructed			136TH AVENUE OVER I-25 APPROACH SLAB DETAILS			Project No./Code	
Creation Date:	11/06/01	Initials: PRH				No Revisions:			97-71			97-71	
Last Modification Date:	12/05/02	Initials: PRH				Revised:			Designer: K. ALKANANI			Structure: E-17-ZL	
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\					Void:			Detailer: P. HELM			Numbers:	
Drawing File Name:	B00033APR13.DWG								Sheet Subset: BRIDGE			Subset Sheets: B38 of 49	
Acad Ver. 2000i	Scale: VARIES	Units: ENGLISH										Sheet Number 70	

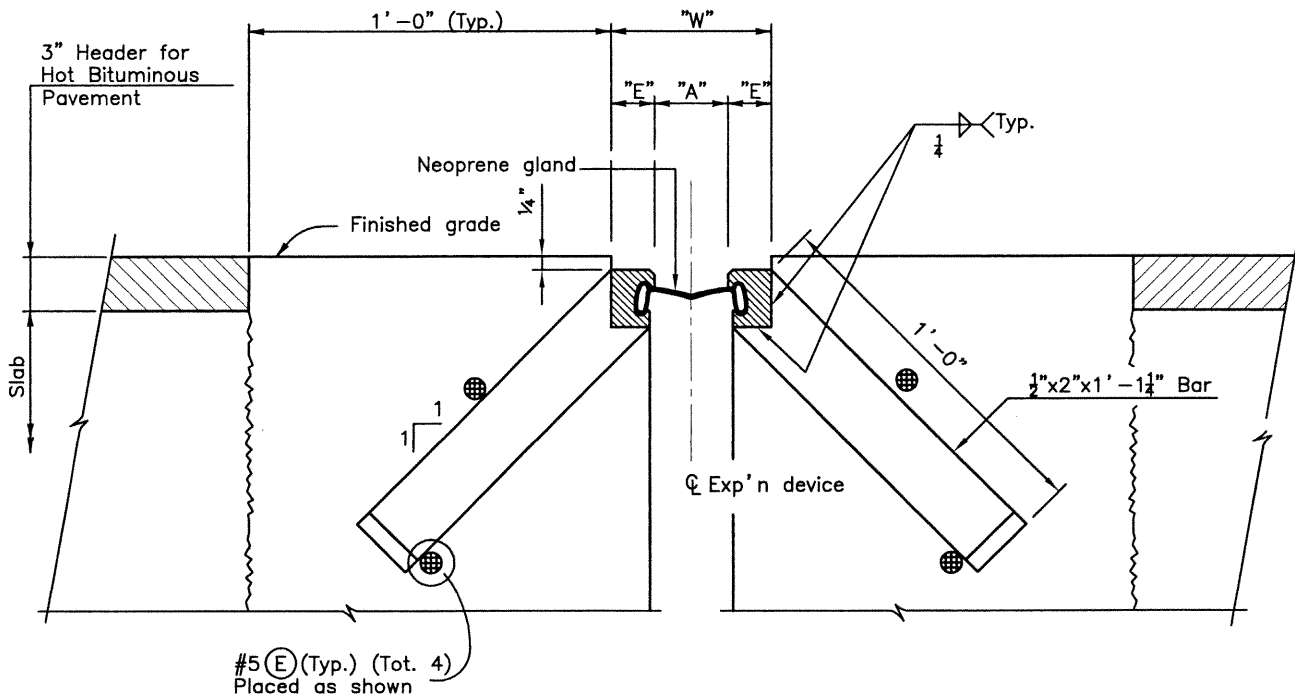


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 fax 303.721.0832  
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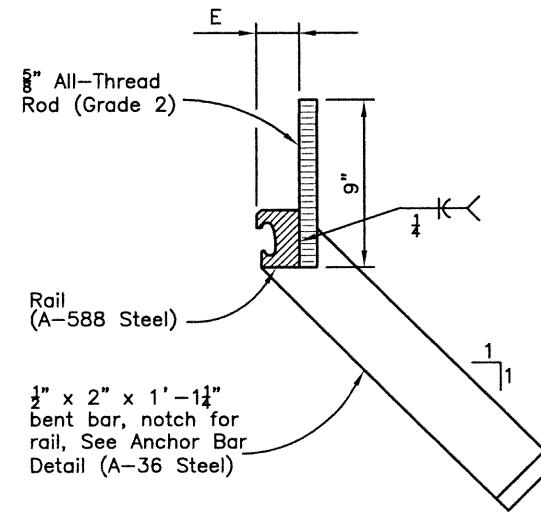
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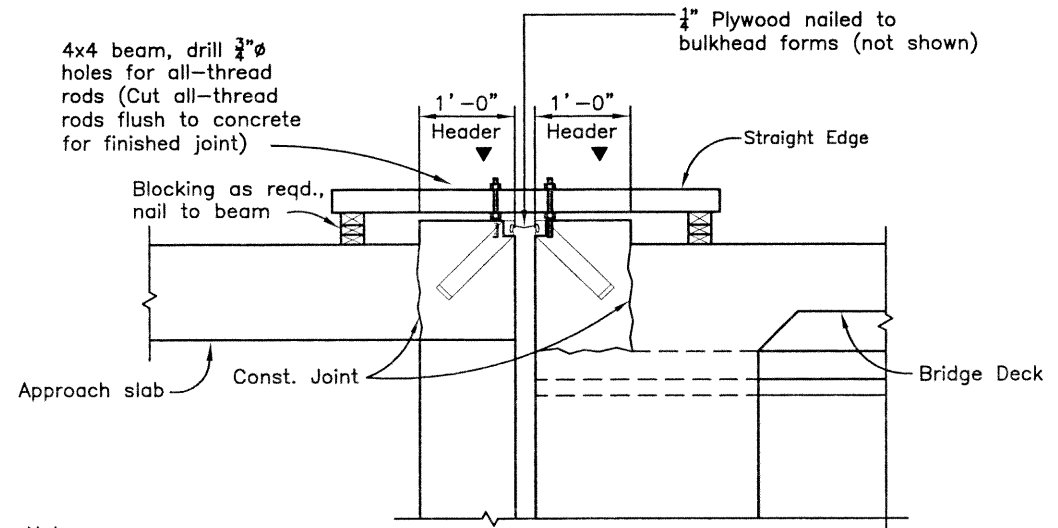
**SECTION THRU STRIP SEAL BRIDGE EXPANSION DEVICE**  
Section taken perpendicular to centerline of expansion device.

Welding not allowed in interior of rail that contacts rubber gland

**RAIL FIELD SPLICE DETAIL**

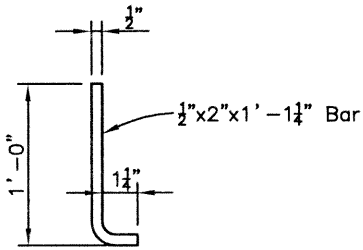


**ANCHORAGE DETAIL**

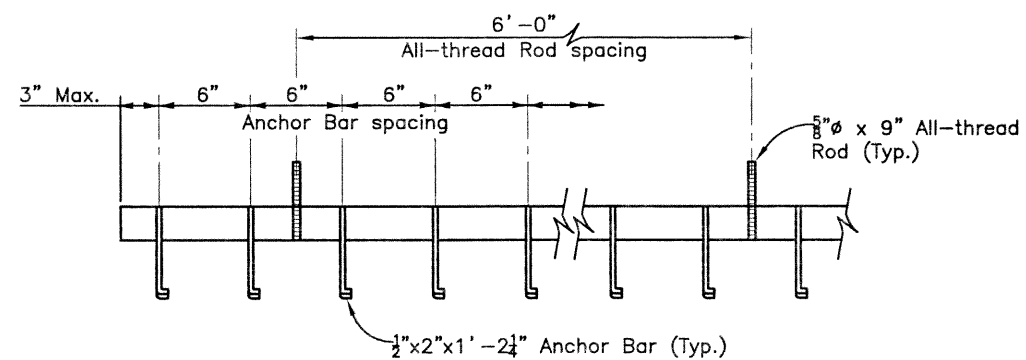


- Notes:**
- Provide expansion device support as shown at 6'-0" intervals.
  - For reinforcing see Approach Slab Details.
- ▼ Concrete shall be placed after expansion device has been adjusted to proper grade and approved by engineer.

**MINIMUM SUPPORT BRACKET REQUIREMENTS**



**TYPICAL ANCHOR BAR DETAIL**



**ANCHOR BAR SPACING**

**NOTES:**

The expansion device shall be installed on grade, parallel to the slope and grade of the deck.

After the concrete has attained initial set, the attachments used to hold the expansion device assembly in its proper position shall be removed.

Do not paint steel surfaces in contact with either concrete or seal.

"W" and "E" dimensions are dependent upon the particular expansion device supplied, and shall be shown on the working drawings.

Do not install the gland until dimension "A" has opened up to at least 2 1/2". Use section 518.10(b) in the Standard Specifications to determine the structure temperature.

The neoprene gland shall be installed in one piece in accordance with section 518 of the Standard Specifications.

See section 518 in the Standard Specifications for water tight integrity testing requirements.

**ACCEPTABLE EXPANSION DEVICE ALTERNATES**

D.S. Brown A2R400-SSA2  
WABO SE400 Type A  
Epoxy Industries S400-A



**Computer File Information**

Creation Date:	03/11/02	Initials:	RAD
Last Modification Date:	12/05/02	Initials:	PRH
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\		
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Acad Ver.	2000i	Scale:	VARIABLES Units: ENGLISH

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Revised:
Void:

**136TH AVENUE OVER I-25 BRIDGE EXPANSION DEVICE DETAILS**

(1 of 2)	
Designer:	K. ALKANANI
Detailer:	R. DILLON
Sheet Subset:	BRIDGE
Subset Sheets:	B39 of 49

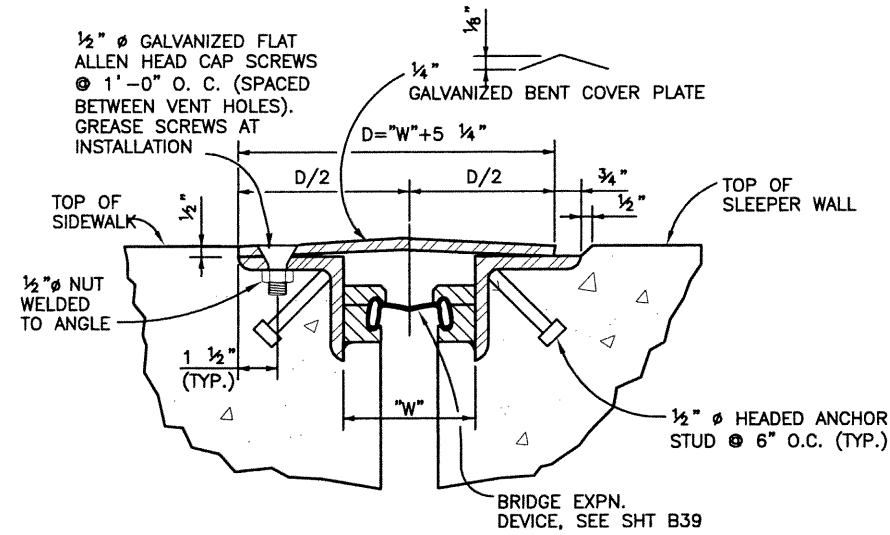
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E-17-ZL	
Sheet Number	71

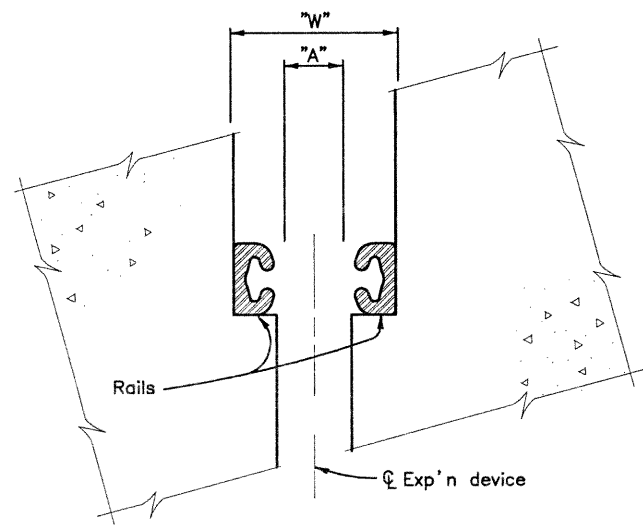
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Designed by	Checked by	Designed by	Checked by	Quantities by	Checked by

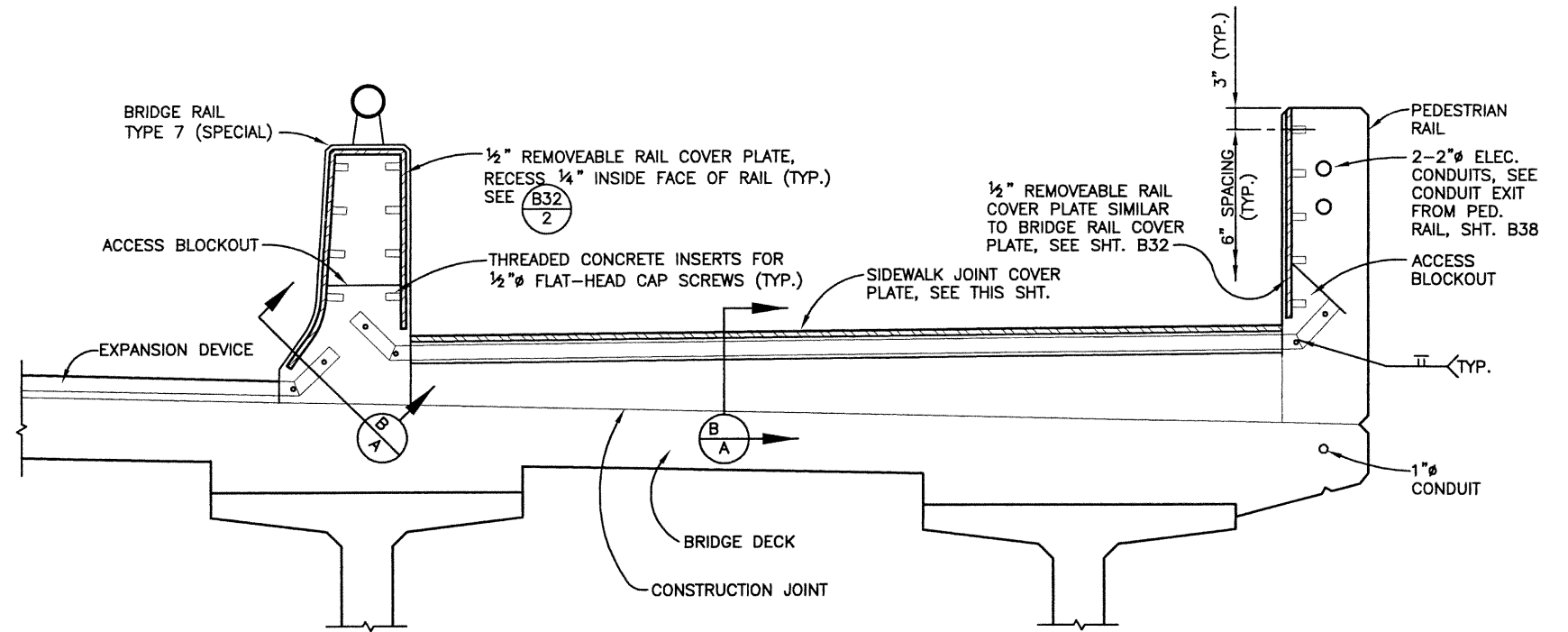
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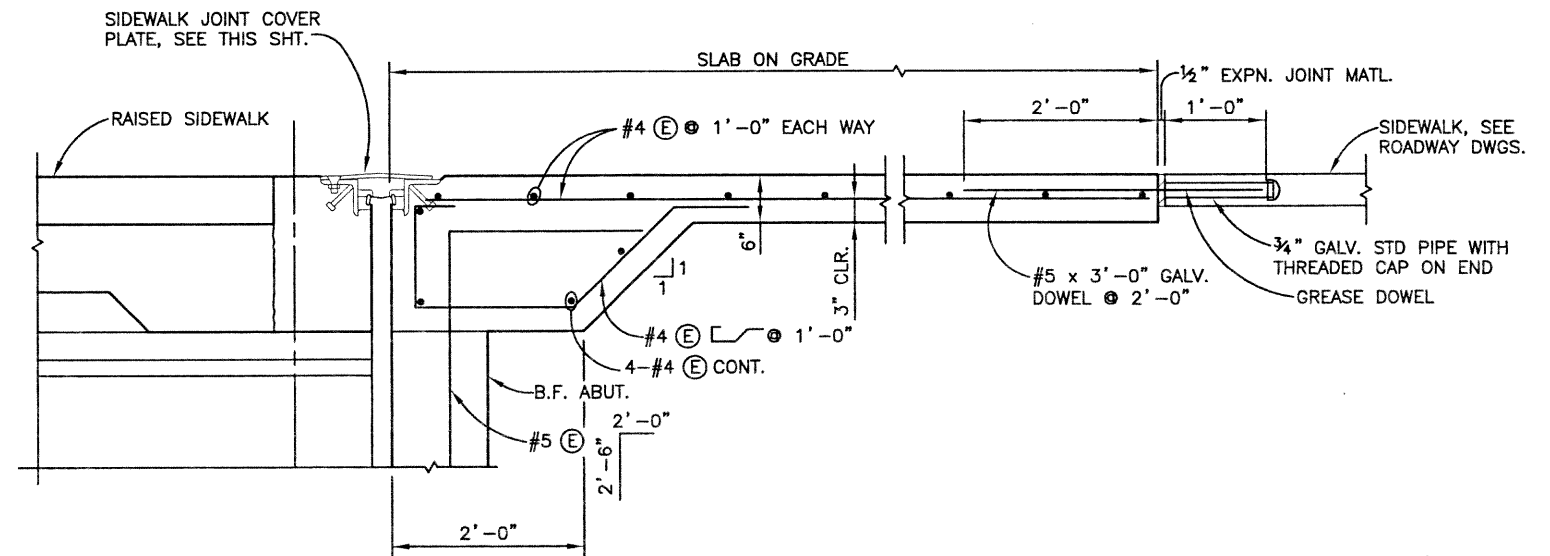
**SIDEWALK JOINT COVER PLATE**  
SECTION



SECTION **B-A**



AT RAISED SIDEWALK  
SECTION **B38**  
G



SECTION **B38**  
H



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Creation Date:	03/11/02 Initials: RAD
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Acad Ver. 2000i	Scale: VARIES Units: ENGLISH

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fax 303.721.0832  
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No Revisions:
Revised:
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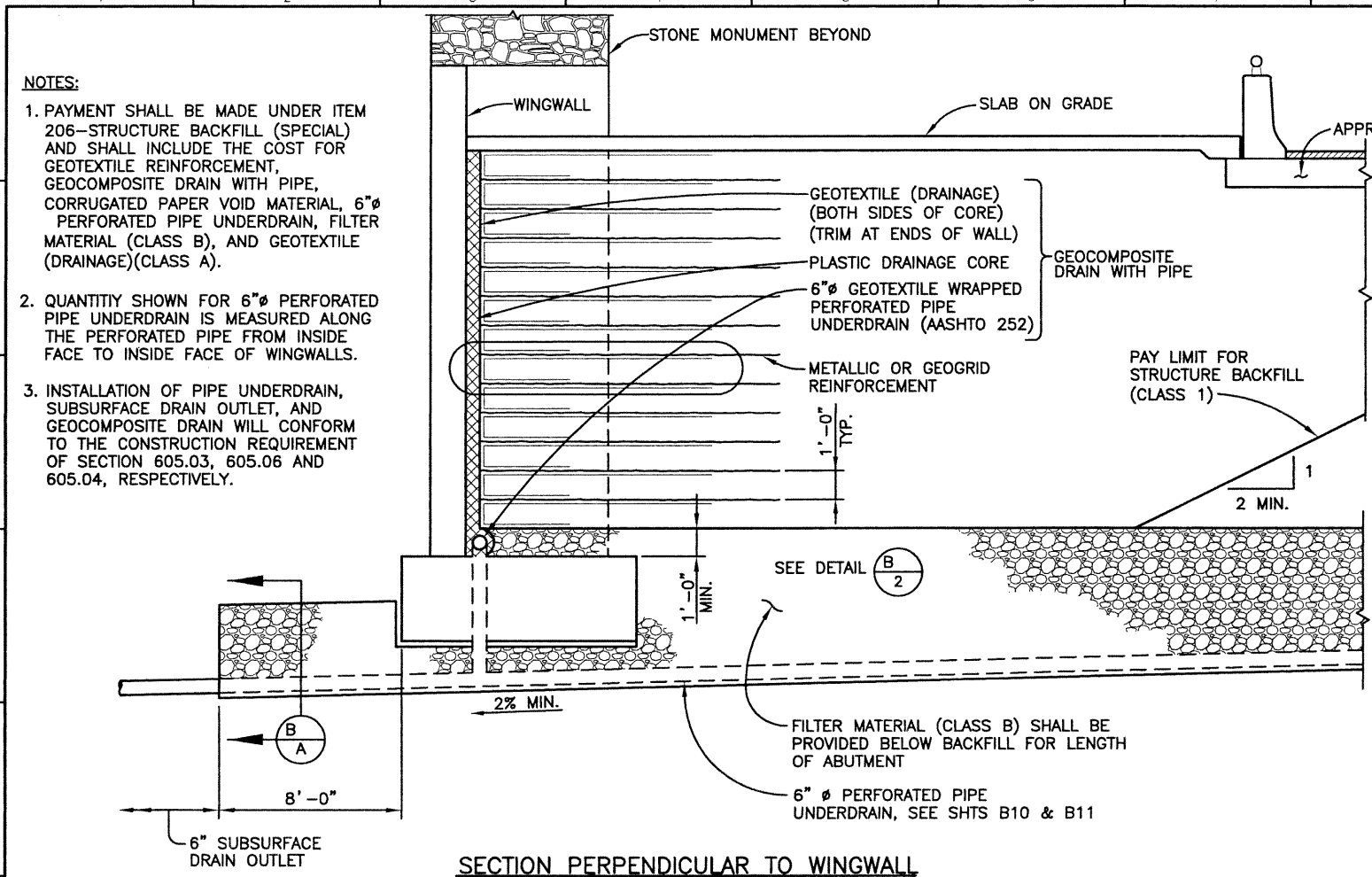
136TH AVENUE OVER I-25 BRIDGE EXPANSION DEVICE DETAILS	
(2 of 2)	
Designer: K. ALKANANI	Structure Numbers: E-17-ZL
Detailer: P. HELM	
Sheet Subset: BRIDGE	Subset Sheets: B40 of 49

Project No./Code
97-71
Sheet Number <b>72</b>



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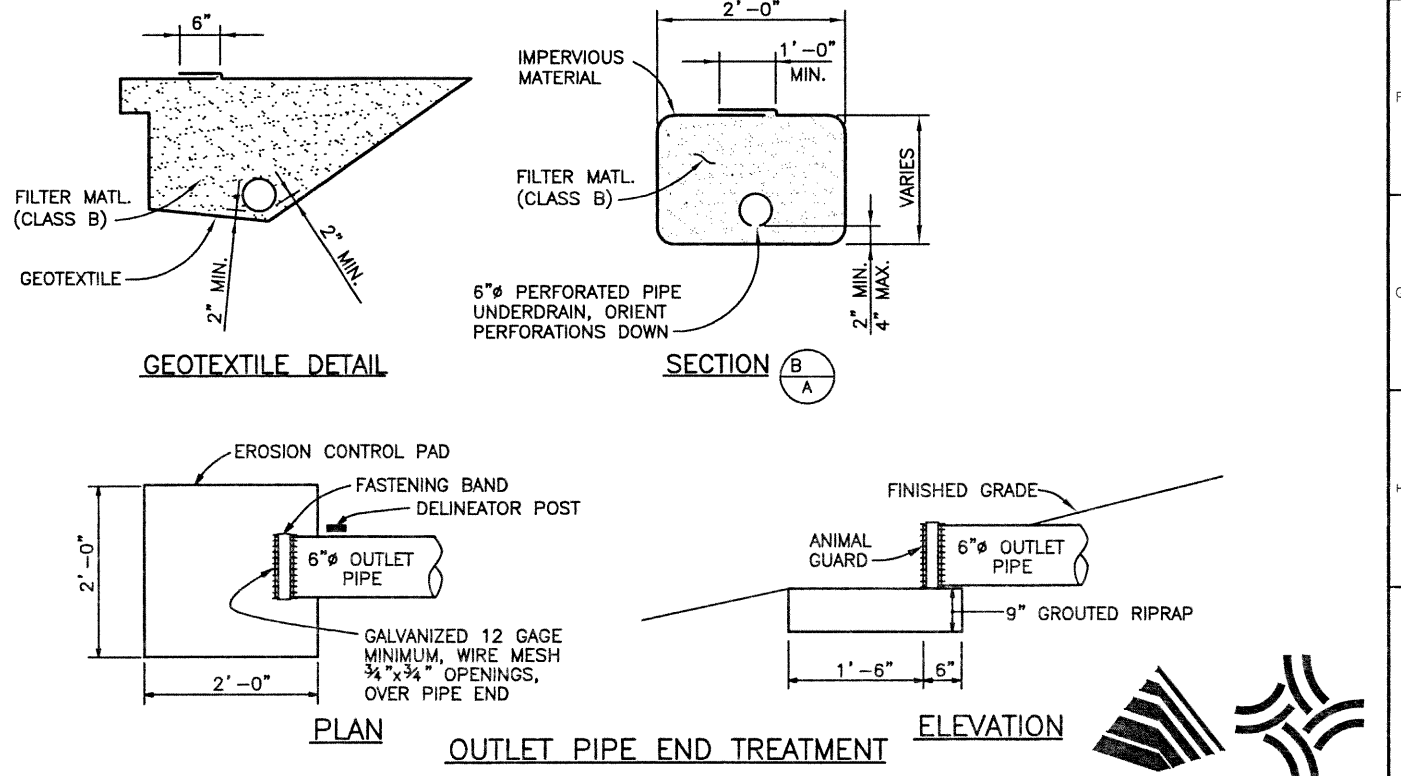
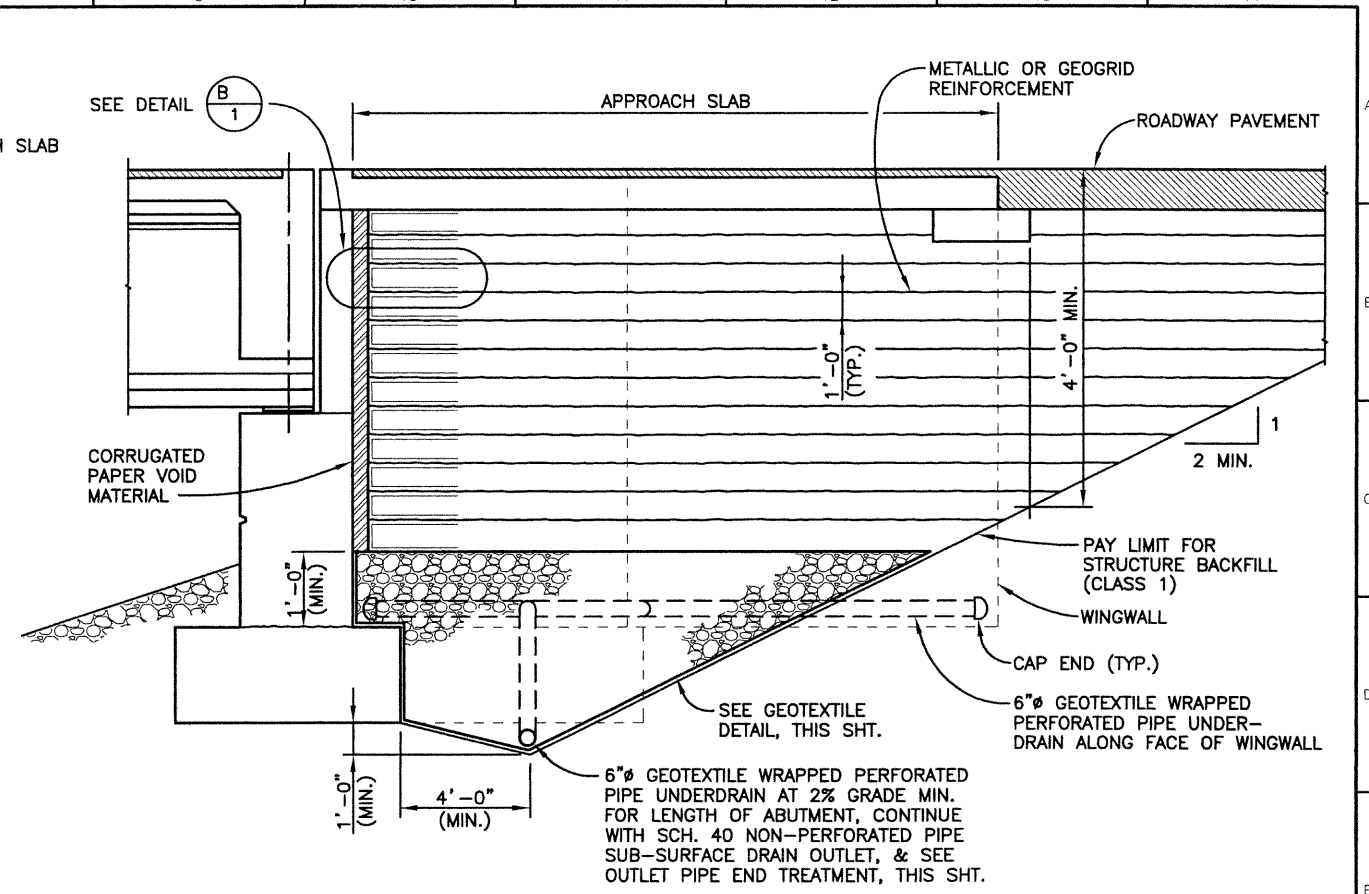
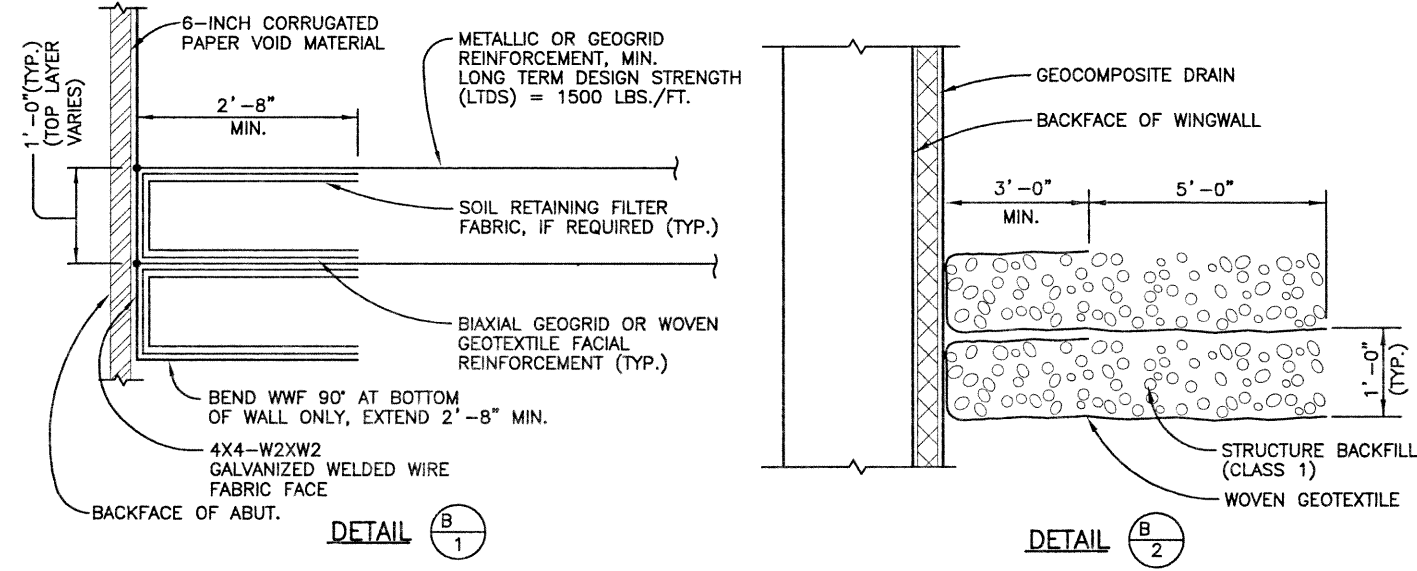
QUANTITIES		REVISION DATES	
Initial	Date	Initial	Date
SEH	03/02		
KMA	03/02		
WJM	10/02		



- NOTES:**
- PAYMENT SHALL BE MADE UNDER ITEM 206-STRUCTURE BACKFILL (SPECIAL) AND SHALL INCLUDE THE COST FOR GEOTEXTILE REINFORCEMENT, GEOCOMPOSITE DRAIN WITH PIPE, CORRUGATED PAPER VOID MATERIAL, 6" PERFORATED PIPE UNDERDRAIN, FILTER MATERIAL (CLASS B), AND GEOTEXTILE (DRAINAGE)(CLASS A).
  - QUANTITY SHOWN FOR 6" PERFORATED PIPE UNDERDRAIN IS MEASURED ALONG THE PERFORATED PIPE FROM INSIDE FACE TO INSIDE FACE OF WINGWALLS.
  - INSTALLATION OF PIPE UNDERDRAIN, SUBSURFACE DRAIN OUTLET, AND GEOCOMPOSITE DRAIN WILL CONFORM TO THE CONSTRUCTION REQUIREMENT OF SECTION 605.03, 605.06 AND 605.04, RESPECTIVELY.

**FOR INFORMATION ONLY**

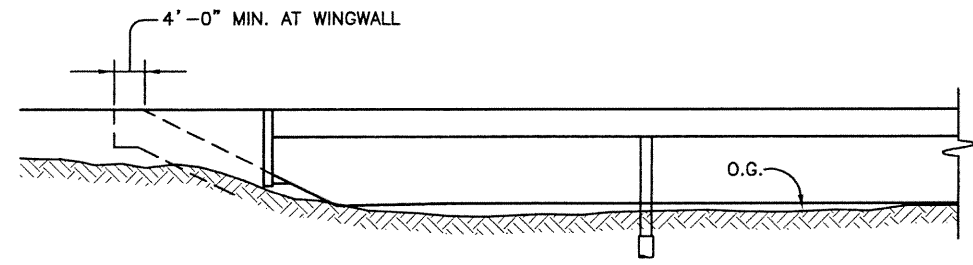
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6" PERFORATED PIPE UNDERDRAIN	FT	185	185
6" GEOTEXTILE WRAPPED PERFORATED PIPE UNDERDRAIN	FT	25	25
6" SUBSURFACE DRAIN OUTLET	FT	110	110



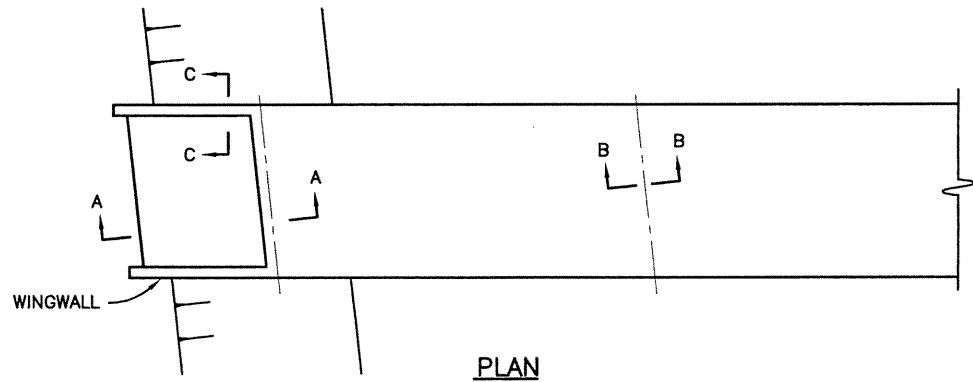
<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>		<b>136TH AVENUE OVER I-25 STRUCTURE BACKFILL</b>		<b>Project No./Code</b>	
Creation Date:	03/19/02	Initials:	RAD			No Revisions:			97-91		
Last Modification Date:	12/05/02	Initials:	PRH			Revised:			Designer: S. HOWARD		
Full Path:	J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\					Void:			Detailer: S. HOWARD		
Drawing File Name:	B00033EXC11.DWG							Structure Numbers		E-17-ZL	
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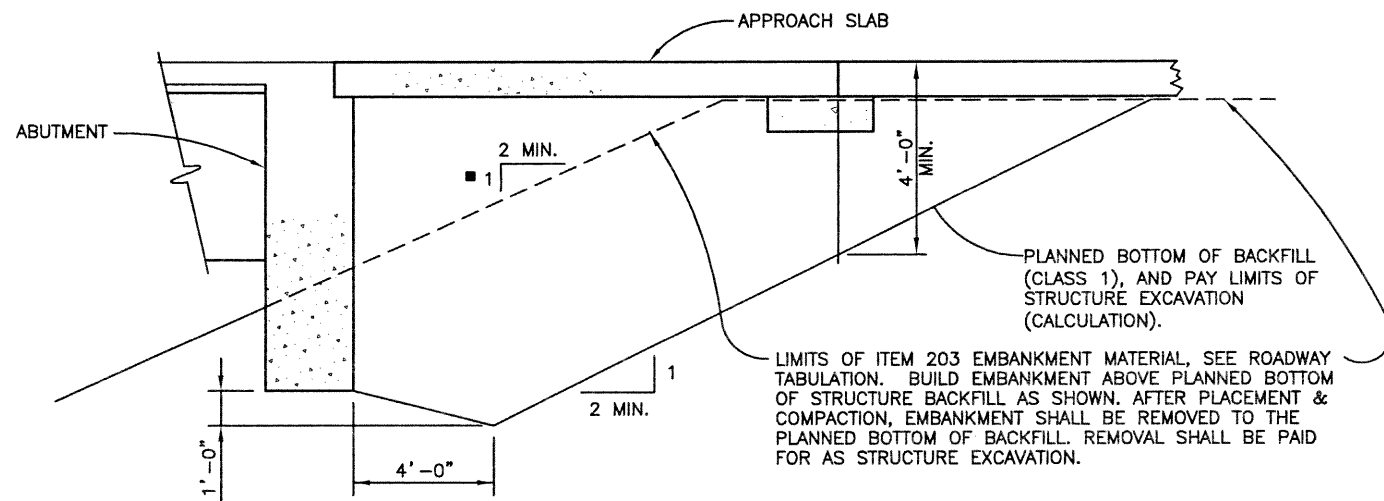
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WJM	10/02	KMA	03/02	KMA	10/02
Designed by		Detailed by		Quantities by	
Checked by		Checked by		Checked by	



ELEVATION



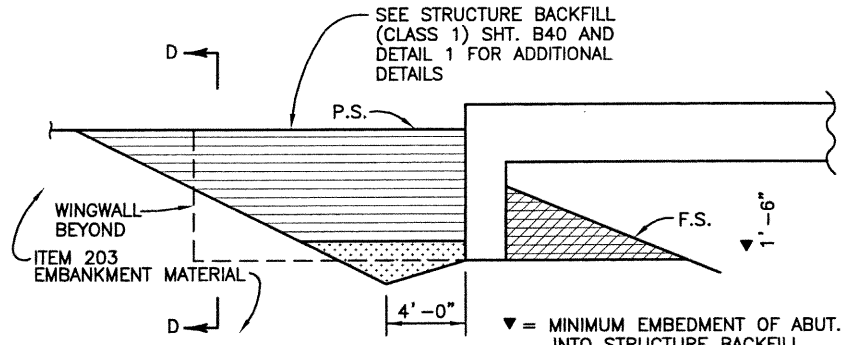
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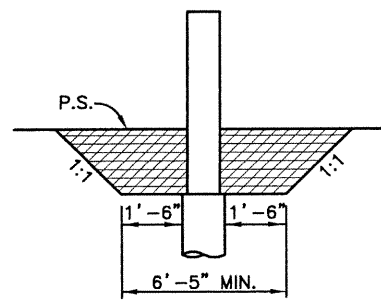
DETAIL 1  
(WITH APPROACH SLAB)

PLANNED BOTTOM OF BACKFILL (CLASS 1), AND PAY LIMITS OF STRUCTURE EXCAVATION (CALCULATION).  
LIMITS OF ITEM 203 EMBANKMENT MATERIAL, SEE ROADWAY TABULATION. BUILD EMBANKMENT ABOVE PLANNED BOTTOM OF STRUCTURE BACKFILL AS SHOWN. AFTER PLACEMENT & COMPACTION, EMBANKMENT SHALL BE REMOVED TO THE PLANNED BOTTOM OF BACKFILL. REMOVAL SHALL BE PAID FOR AS STRUCTURE EXCAVATION.

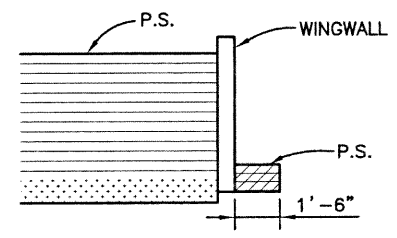
■ PAYMENT BASED ON 2:1 SLOPE. ADDITIONAL QUANTITIES SHALL BE INCLUDED IN THE WORK.



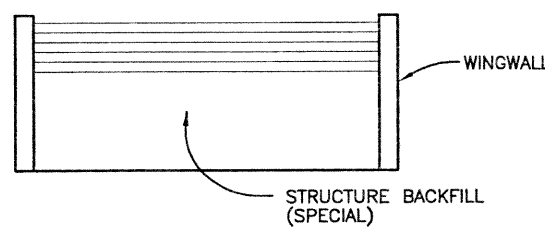
SECTION A-A (BACKFILL)



SECTION B-B (BACKFILL)



SECTION C-C (BACKFILL)



SECTION D-D (BACKFILL)

LEGEND

- STRUCTURE BACKFILL (CLASS 1) WITH MECHANICAL REINFORCEMENT OF SOIL AS SHOWN ON SHT. B41
- STRUCTURE BACKFILL (CLASS 2)
- FILTER MATERIAL

ABBREVIATIONS

- O.G. ORIGINAL GROUND
- P.S. PLANNED SUBGRADE
- F.S. PLANNED FINISHED SURFACE



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Creation Date:	03/19/02	Initials: RAD				No Revisions:			97-91		
Last Modification Date:	12/05/02	Initials: PRH				Revised:	Designer: S. HOWARD	Structure Numbers:	E-17-ZL		
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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
Greenwood Corporate Plaza  
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Checked by	WJM	Dated by	10/02	Checked by	10/02	Checked by	10/02	Checked by	10/02

LONGITUDINAL LINE: LEFT FLOW LINE												PARALLEL TO HORIZONTAL CONTROL				0.250000 FEET BELOW FINISHED GRADE				LONGITUDINAL LINE: CL G5												PARALLEL TO HORIZONTAL CONTROL				0.250000 FEET BELOW FINISHED GRADE			
BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	
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NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.25 FEET BELOW FINISHED GRADE. POSITIVE ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS, AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF STRUCTURAL COMPONENTS THRU THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

Computer File Information		Index of Revisions			As Constructed		136TH AVENUE OVER I-25 BRIDGE DECK ELEVATIONS		Project No./Code	
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Last Modification Date:	01/10/02	Initials:	KMA		Revised:	Designer:	K. ALKANANI	Structure Numbers:	E-17-ZL	
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Checked by	Checked by	Checked by	Checked by	Checked by	Checked by
KMA	KMA	WJM	WJM		

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BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	
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NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.25 FEET BELOW FINISHED GRADE. POSITIVE ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS, AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF STRUCTURAL COMPONENTS THRU THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

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Last Modification Date:	01/10/02	Initials:	KMA
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\		
Drawing File Name:	B00033DEC11.DWG		
Acad Ver.	2000i	Scale:	NONE Units: ENGLISH

Index of Revisions			



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	
No Revisions:	(3 of 4)
Revised:	
Void:	

136TH AVENUE OVER I-25 BRIDGE DECK ELEVATIONS			
Designer:	K. ALKANANI	Structure Numbers	E-17-ZL
Detailer:	R. DILLON	Sheet Subset:	BRIDGE
Subset Sheets:	B45 of 49	Sheet Number	77

Project No./Code	
97-71	

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DESIGN		DETAIL		QUANTITIES		REVISION DATES	
Designed by	Checked by	Initial	Date	Initial	Date	Initial	Date
KMA	WJM		10/10/02		10/10/02	SEH	10/02

LONGITUDINAL LINE: RIGHT FLOW LINE														PARALLEL TO HORIZONTAL CONTROL				0.250000 FEET BELOW FINISHED GRADE				LONGITUDINAL LINE: RIGHT EDGE OF DECK														PARALLEL TO HORIZONTAL CONTROL				0.250000 FEET BELOW FINISHED GRADE			
BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP										
[Data for Bents A, B, C, D, E, F, G, H, I, J follows]																																											



NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.25 FEET BELOW FINISHED GRADE. POSITIVE ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS, AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF STRUCTURAL COMPONENTS THRU THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

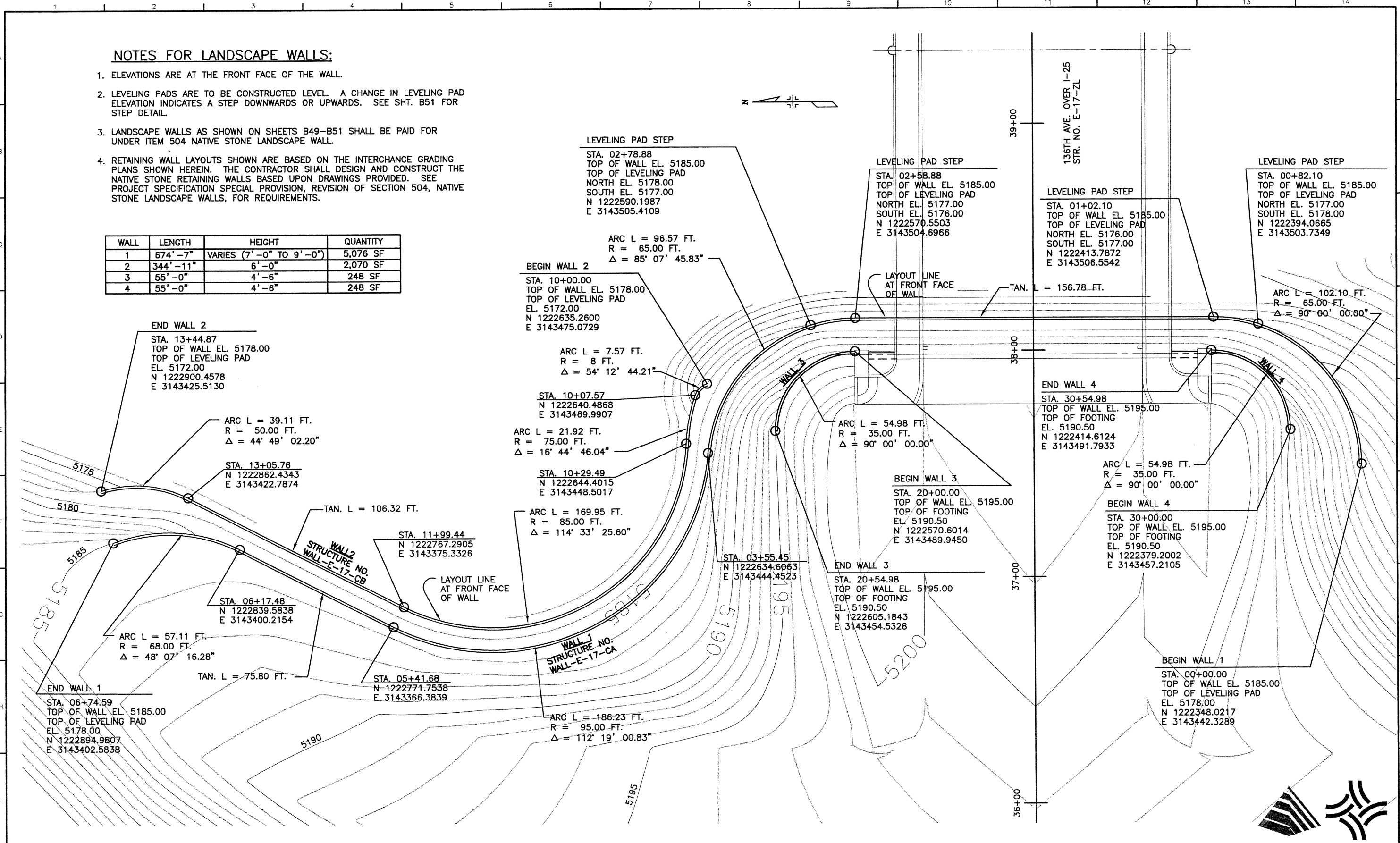
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Last Modification Date:	01/10/02	Initials:	KMA									
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Acad Ver. 2000i	Scale: NONE	Units:	ENGLISH	Void:			Detailer:	R. DILLON	Numbers			
				Greenwood Corporate Plaza			Sheet Subset: BRIDGE		Subset Sheets: B46 of 49		Sheet Number	78
				7951 E. Maplewood Ave. Ste. 200								
				Englewood, CO 80111								

**NOTES FOR LANDSCAPE WALLS:**

- ELEVATIONS ARE AT THE FRONT FACE OF THE WALL.
- LEVELING PADS ARE TO BE CONSTRUCTED LEVEL. A CHANGE IN LEVELING PAD ELEVATION INDICATES A STEP DOWNWARDS OR UPWARDS. SEE SHT. B51 FOR STEP DETAIL.
- LANDSCAPE WALLS AS SHOWN ON SHEETS B49-B51 SHALL BE PAID FOR UNDER ITEM 504 NATIVE STONE LANDSCAPE WALL.
- RETAINING WALL LAYOUTS SHOWN ARE BASED ON THE INTERCHANGE GRADING PLANS SHOWN HEREIN. THE CONTRACTOR SHALL DESIGN AND CONSTRUCT THE NATIVE STONE RETAINING WALLS BASED UPON DRAWINGS PROVIDED. SEE PROJECT SPECIFICATION SPECIAL PROVISION, REVISION OF SECTION 504, NATIVE STONE LANDSCAPE WALLS, FOR REQUIREMENTS.

WALL	LENGTH	HEIGHT	QUANTITY
1	674'-7"	VARIES (7'-0" TO 9'-0")	5,076 SF
2	344'-11"	6'-0"	2,070 SF
3	55'-0"	4'-6"	248 SF
4	55'-0"	4'-6"	248 SF

DESIGN	DETAIL		QUANTITIES	
	Initial	Date	Initial	Date
Designed by	KRK	03/02	Initial	07/02
Checked by	GWB	10/02	Checked by	SEH
DESIGNED BY	KRK	03/02	Checked by	SEH
Checked by	GWB	10/02	Checked by	SEH



**Computer File Information**

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Last Modification Date:	01/17/03	Initials:	PRH
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Drawing File Name:	B00033RWD01.DWG		
Acad Ver.	2000i	Scale:	1"=20' Units: ENGLISH

**Index of Revisions**

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 fax 303.721.0832  
 fhu@fhueng.com  
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No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER I-25  
 WEST LANDSCAPE WALLS  
 GENERAL LAYOUT**

Designer:	K. KERBER	Structure	WALL-E-17-CA
Detailer:	K. KERBER	Numbers	WALL-E-17-CB
Sheet Subset:	BRIDGE	Subset Sheets:	B47 of 49

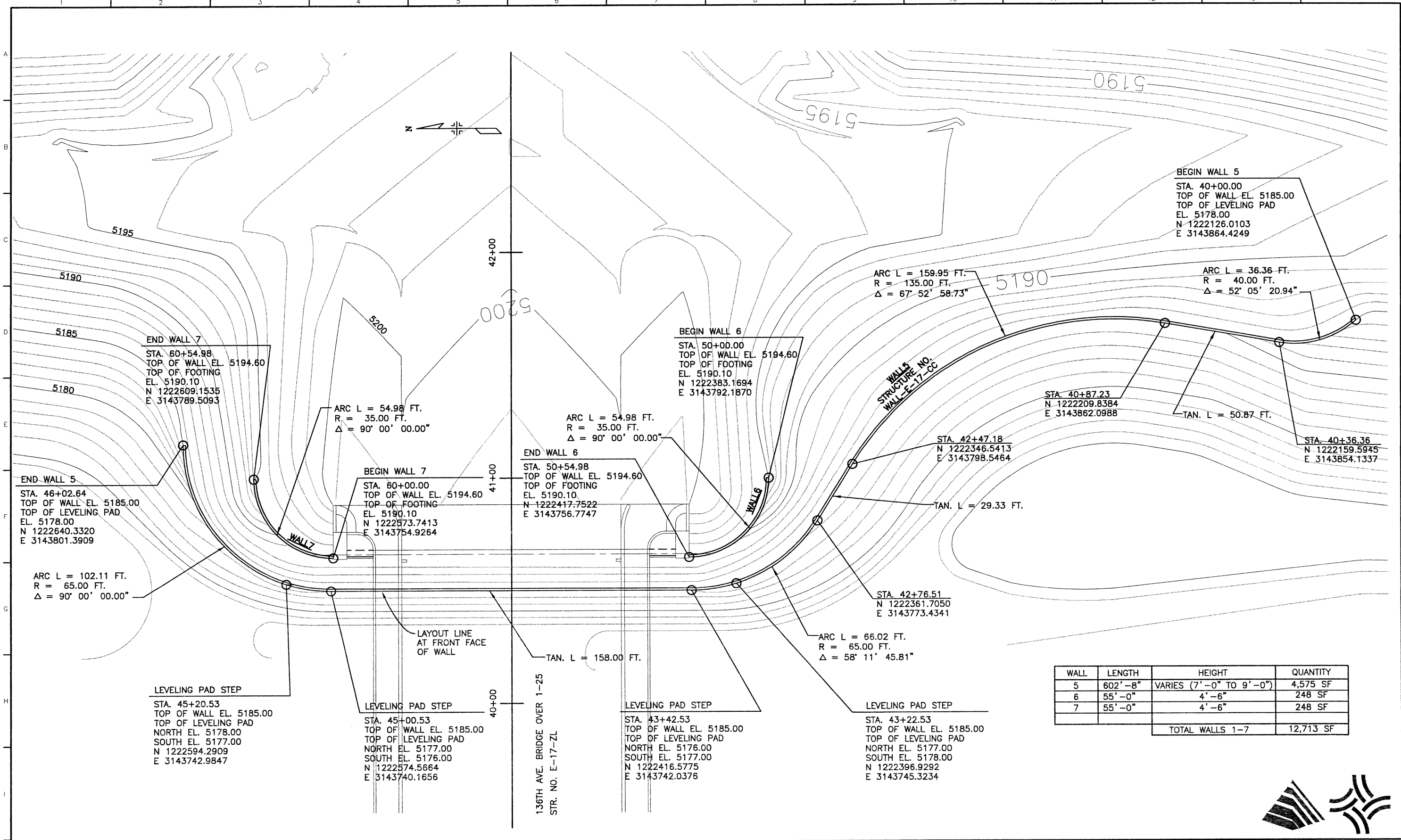
**Project No./Code**

97-71
Sheet Number <b>79</b>

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RRK	07/02	RRK	03/02	RRK	03/02	RRK	07/02
SEH	07/02	SEH	10/02	GWB	10/02	GWB	10/02
Checked by	Checked by	Checked by	Checked by	Checked by	Checked by	Checked by	Checked by



WALL	LENGTH	HEIGHT	QUANTITY
5	602'-8"	VARIABLE (7'-0" TO 9'-0")	4,575 SF
6	55'-0"	4'-6"	248 SF
7	55'-0"	4'-6"	248 SF
TOTAL WALLS 1-7			12,713 SF



Computer File Information	
Creation Date:	02/25/02 Initials: KRK
Last Modification Date:	12/05/02 Initials: PRH
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**FELSBURG  
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fax 303.721.0832  
fhu@fhueng.com

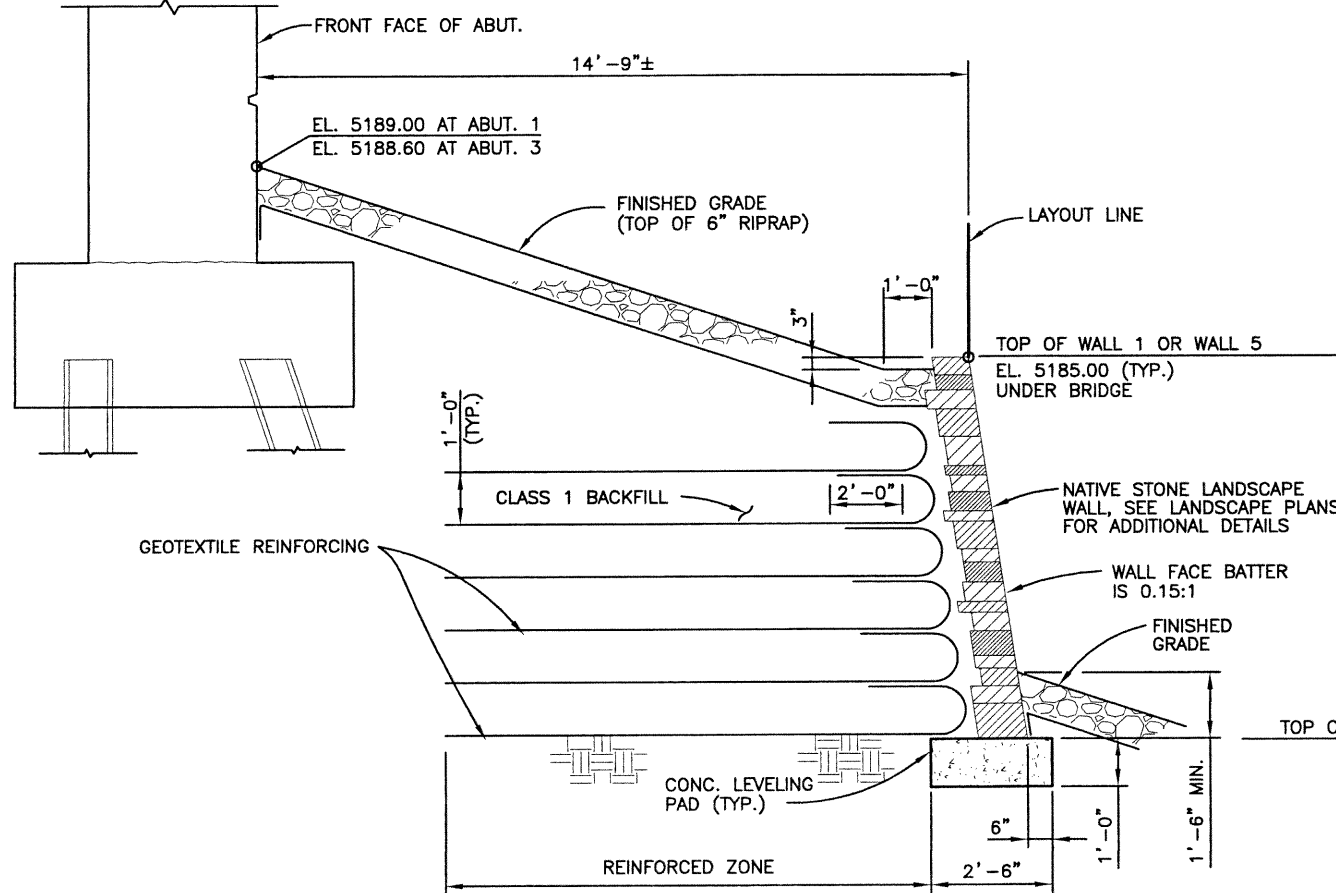
Greenwood Corporate Plaza  
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As Constructed		136TH AVENUE OVER I-25 EAST LANDSCAPE WALLS GENERAL LAYOUT		Project No./Code	
No Revisions:				97-71	
Revised:		Designer: K. KERBER	Structure Numbers: WALL-E-17-CC		
Void:		Detailer: K. KERBER	Subset Sheets: B48 of 49	Sheet Number 80	

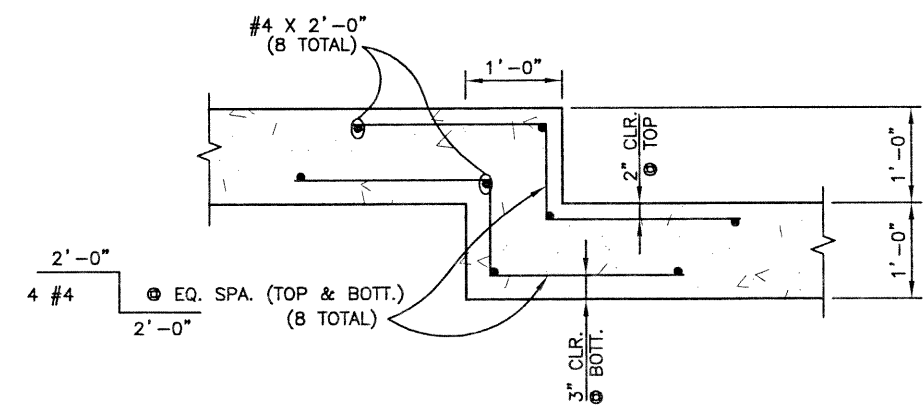


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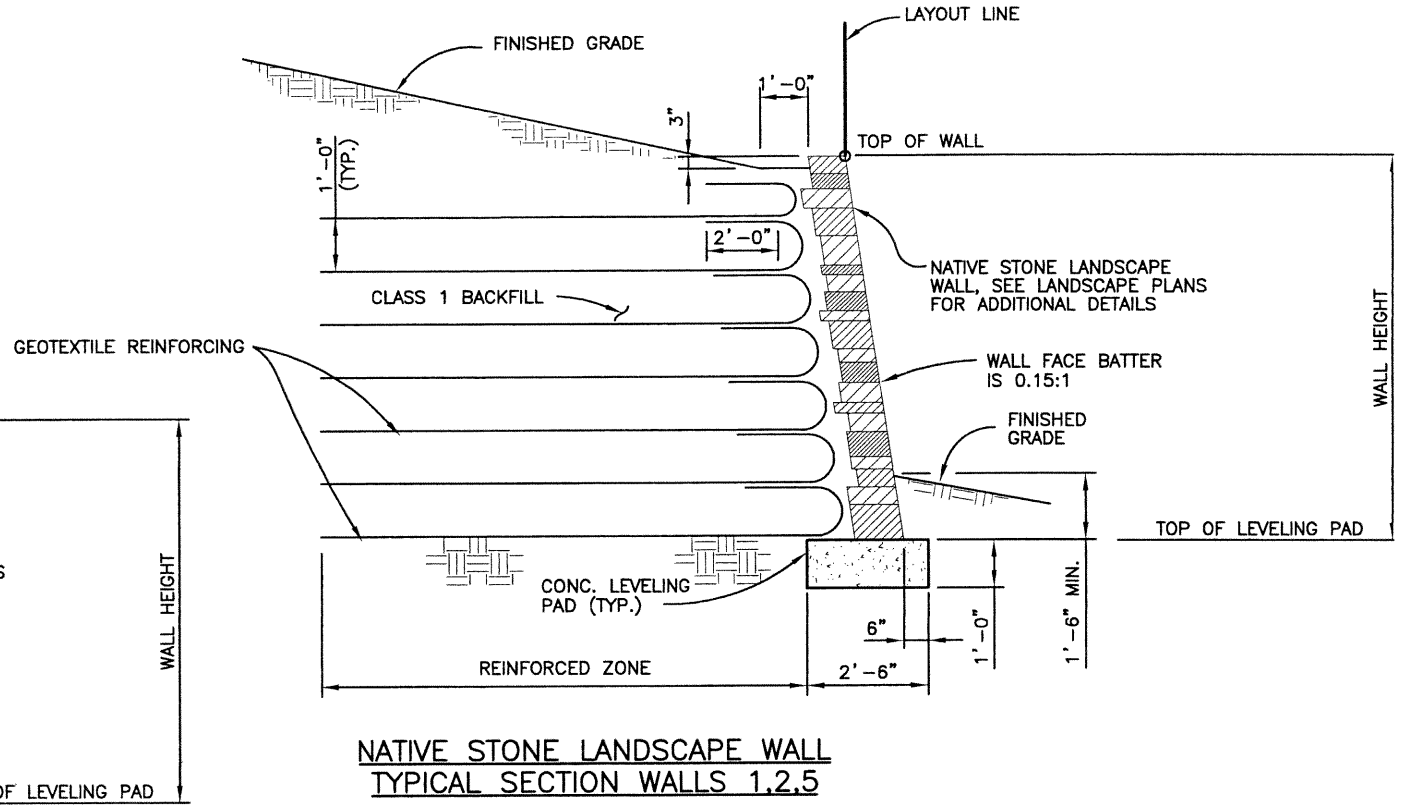
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Checked by		Checked by		Checked by	
GWB	10/02	GWB	10/02	SEH	07/02



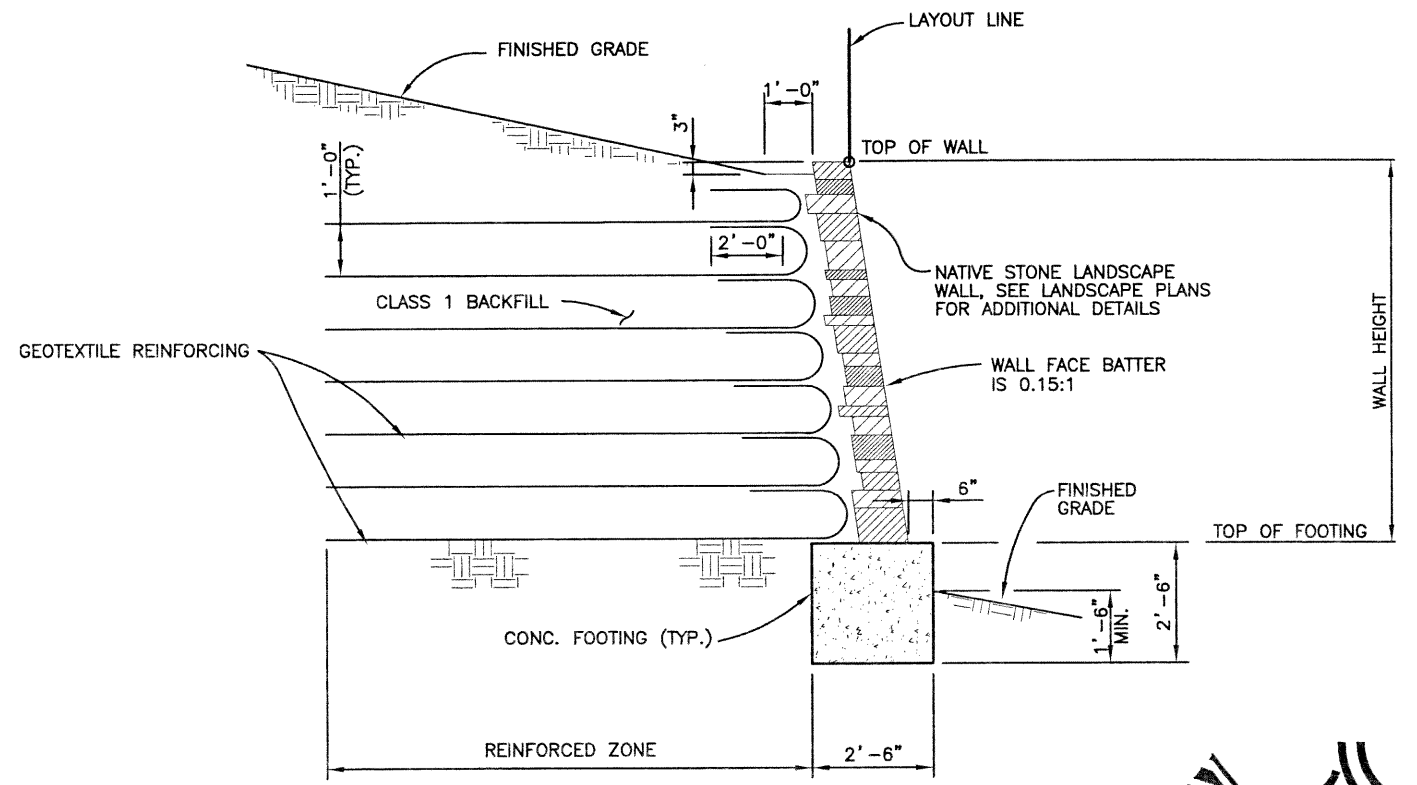
**NATIVE STONE LANDSCAPE WALL  
TYPICAL WALL SECTION AT BRIDGE**



**LEVELING PAD STEP DETAIL**



**NATIVE STONE LANDSCAPE WALL  
TYPICAL SECTION WALLS 1,2,5**



**NATIVE STONE LANDSCAPE WALL  
TYPICAL SECTION WALLS 3,4,6,7**

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Acad Ver.	2000i Scale: VARIES Units: ENGLISH

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 fhu@fhueng.com  
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 Englewood, CO 80111

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No Revisions:	
Revised:	
Void:	

136TH AVENUE OVER I-25 LANDSCAPE WALLS SECTIONS & DETAILS	
Designer:	K. KERBER
Detailer:	K. KERBER
Sheet Subset:	BRIDGE
Structure Numbers	
Subset Sheets:	B49 of 49

Project No./Code	97-71
Sheet Number	81

**GENERAL NOTES**

EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-2 FOR BRIDGES. SHORING MAY BE REQUIRED FOR EXCAVATION ADJACENT TO THE EXISTING ROADWAY. TEMPORARY EXCAVATION SUPPORT SHALL BE PAID FOR BY ITEM 206 SHORING.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE PAINTED IN ACCORDANCE WITH SECTION 509 OF THE STANDARD SPECIFICATIONS. THE COLOR SHALL MATCH THAT OF THE EXISTING GIRDERS.

THE FOLLOWING STRUCTURAL STEEL SHALL BE AASHTO M-183 (ASTM A-36): GIRDERS, DIAPHRAGMS, LATERAL BRACING, SPLICE PLATES, EXPANSION DEVICES, BEARING PLATES, AND BEARING DEVICES.

ALL BOLTS SHALL BE 7/8" DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.

FIELD WELDING OF ANY KIND SHALL NOT BE PERMITTED ON THE STEEL GIRDERS UNLESS SPECIFICALLY CALLED FOR IN THE PLANS.

LEVELING PADS ARE UNLAMINATED BEARINGS. THEY SHALL BE CUT OR MOLDED FROM AASHTO ELASTOMER GRADE 3, 4, OR 5 AS DESCRIBED IN TABLES 705-1 AND 705-2 WITH A DUROMETER (SHORE "A") HARDNESS OF 60.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

(N) DENOTES NON COATED REINFORCING STEEL.

**DESIGN DATA**

AASHTO, STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 16TH EDITION, 1996, WITH 1997, 1998, 1999, AND 2000 INTERIMS.

DESIGN METHOD: LOAD FACTOR DESIGN

LIVE LOAD: HS25-44 WITH ALTERNATE MILITARY LOADING  
DEAD LOAD: ASSUMES 50 LBS. PER SQ. FT. FOR BRIDGE DECK OVERLAY  
ASSUMES 5 LBS. PER SQ. FT. FOR PERMANENT STEEL DECK FORMS

REINFORCED CONCRETE:

CLASS D CONCRETE:  $f'_c = 4,500$  psi  
REINFORCING STEEL:  $f_y = 60,000$  psi

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-3"	1'-6"	1'-10"	2'-2"	3'-8"	4'-8"	5'-11"	7'-3"

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"	4'-10"

THE ABOVE SPLICE LENGTHS SHALL BE INCREASED BY 20 PERCENT FOR 3 BAR BUNDLES AND 33 PERCENT FOR 4 BAR BUNDLES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

- ABUT.= ABUTMENT
- B.F.= BACK FACE
- BRG.= BEARING
- CLR.= CLEAR
- CONST.= CONSTRUCTION
- E.F. = EACH FACE
- EQ.= EQUALLY
- F.F. = FAR FACE
- H.B.P.= HOT BITUMINOUS PAVEMENT
- H.C.L.= HORIZONTAL CONTROL LINE
- N.F. = NEAR FACE
- SHLDR.= SHOULDER
- SHT.= SHEET
- TYP.= TYPICAL
- T&B= TOP AND BOTTOM
- V.I.F.= VERIFY IN FIELD

PERMANENT STEEL DECK FORMS ARE OPTIONAL.

FOR STRUCTURE NUMBER INSTALLATION, SEE STANDARD S-614-12.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY AND THE "AS CONSTRUCTED PLANS". THESE STATIONS, ELEVATIONS, AND DIMENSIONS MAY BE ADJUSTED TO MEET THE EXISTING STRUCTURE. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE BITUMINOUS PAVEMENT SHALL BE REMOVED FROM THE EXISTING STRUCTURE AS INDICATED ON THE PLANS AND REPLACED TO THE GRADE AND CROSS SLOPE OF THE EXISTING CONCRETE DECK. IF ADDITIONAL DECK PREPARATION IS REQUIRED IT SHALL BE INCLUDED AS EXTRA WORK.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

STRUCTURAL STEEL: AASHTO M-183 (ASTM A-36)  $f_y = 36,000$ .  
AASHTO M-223 (ASTM A-572)  $F_y = 50,000$ .

ASSUMED SINGLE-LANE DESIGN-LIFE ADTT FOR FATIGUE = 2500 OR MORE  
BOLTED SURFACE CONDITIONS = CLASS A (SLIP COEFFICIENT 0.33)

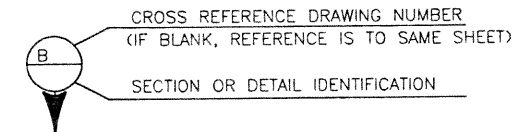
**INDEX OF DRAWINGS**

B1	GENERAL NOTES
B2	SUMMARY OF APPROXIMATE QUANTITIES
B3	GENERAL LAYOUT
B4	ABUTMENT & APPROACH SLAB DETAILS
B5	DECK DETAILS
B6	PIER DETAILS
B7	TYPE I BEARING DEVICE
B8	BRIDGE RAIL TYPE 10M
B9	BRIDGE RAIL TYPE 10M
B10	BRIDGE RAIL TYPE 10M

**BRIDGE DESCRIPTION**

STRUCTURE WIDENING OF EXISTING STRUCTURE E-17-FH LOCATED ON INTERSTATE 25 OVER BIG DRY CREEK. STRUCTURE IS A 2-SPAN CONTINUOUS STEEL WIDE FLANGE GIRDER WITH SPANS OF 42'-1" EACH.

DESIGN	Designed by	Initial	Date
	Checked by	AML	3-02
DETAIL	Detailed by	Initial	Date
	Checked by	GBD	3-02
QUANTITIES	Quantities by	Initial	Date
	Checked by	GBD	3-02
(Preliminary Stage Only)			




Computer File Information		Index of Revisions		<p>1726 Cole Boulevard, Suite 350 Golden, CO 80401-3213 (303) 271-9398 www.searbrown.com</p>	As Constructed	-GENERAL NOTES- 1-25 OVER BIG DRY CREEK		Project No./Code
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Last Modification Date:	- Initials: AML	<input type="checkbox"/>			Revised:	Designer: A. LEIFHEIT	Structure Numbers: E-17-FH	-
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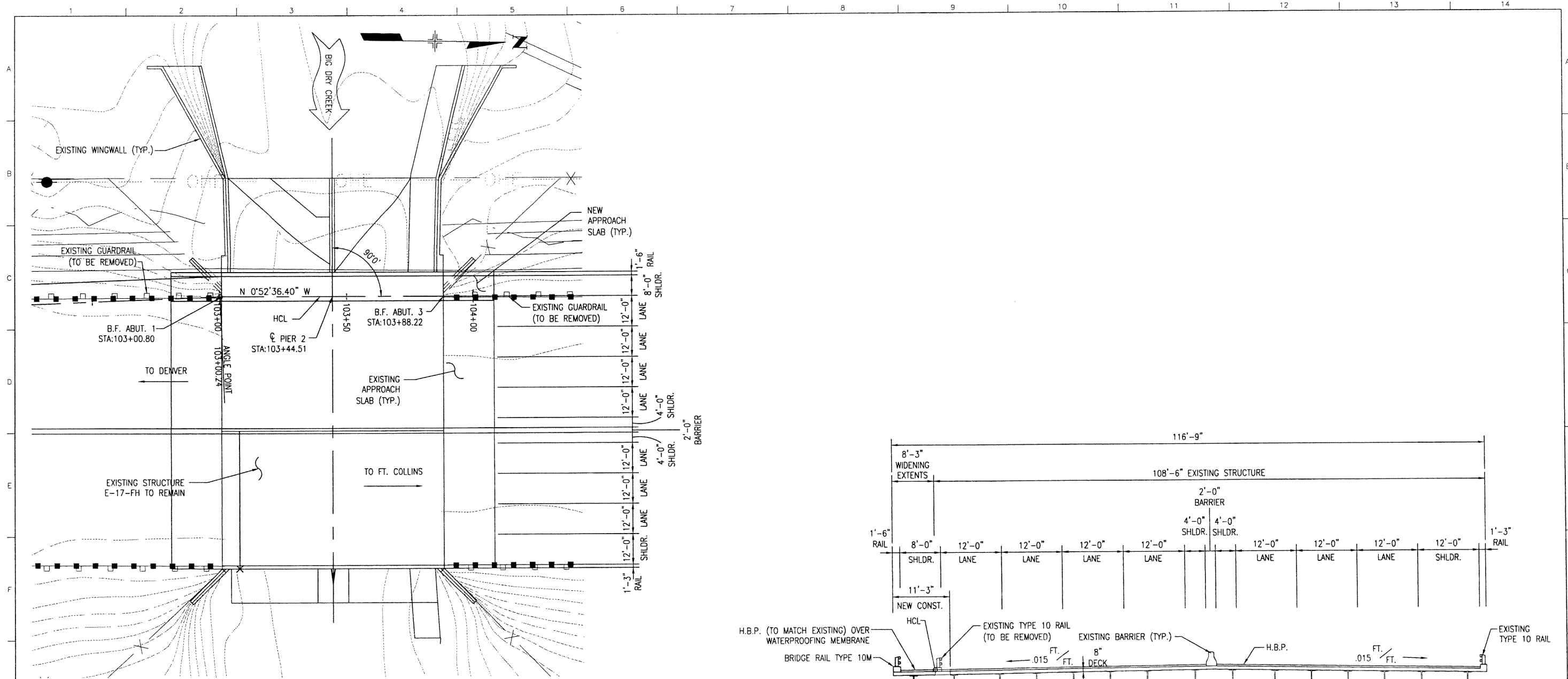
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Checked by	AML	3-02	AML	3-02	AML	3-02	(Preliminary Stage Only)
	GBO	3-02	GBO	3-02	GBO	3-02	

SUMMARY OF QUANTITIES									
ITEM NO	DESCRIPTION	UNIT	SUPER STRUCTURE	APPROACH SLAB	ABUT 1	PIER 2	ABUT 3	APPROACH SLAB	TOTALS
① 202	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	LS	1						1
206	STRUCTURE BACKFILL (FLOW FILL)	CY			28		28		56
403	HOT BITUMINOUS PAVEMENT (GR S)	TON	16	4				4	24
509	STRUCTURAL STEEL	LBS	10718						10718
512	BEARING DEVICE TYPE I	EACH			1	1	1		3
515	WATERPROOFING (MEMBRANE)	SY	95	21				21	137
601	CONCRETE CLASS D (BRIDGE)	CY	27	5	2	7	2	5	48
602	REINFORCING STEEL (EPOXY COATED)	LBS	7345	1422	139	120	139	1422	10189
606	BRIDGE RAIL TYPE 10M	LF	88	20				20	128

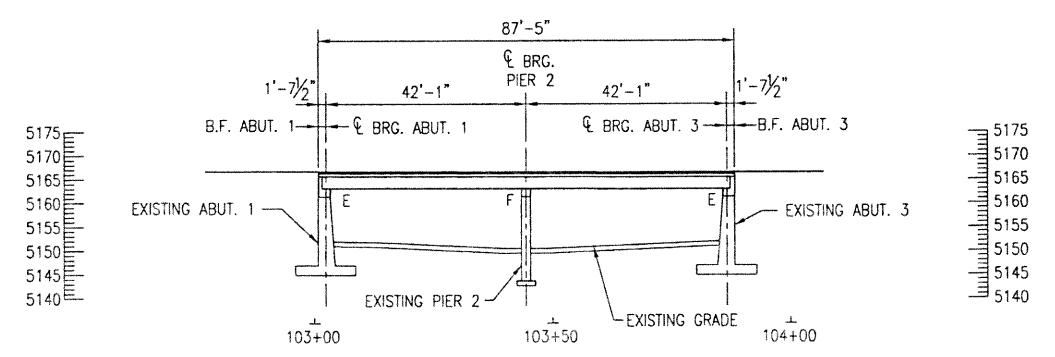
① INCLUDES REMOVAL OF PORTIONS OF ABUTMENTS AND WINGWALLS AT ABUT 1 AND ABUT 3, PORTIONS OF BRIDGE RAILING, AND PORTIONS OF CONCRETE SUPERSTRUCTURE DECK AS SHOWN IN THE PLANS.

Computer File Information		Index of Revisions		 1726 Cole Boulevard, Suite 350 Golden, CO 80401-3213 (303) 271-9398 www.searbrown.com	As Constructed		I-25 OVER BIG DRY CREEK APPROXIMATE QUANTITIES		Project No./Code	
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Last Modification Date:	7/24/02 Initials: AML	<input type="checkbox"/>			Revised:		Designer: A. LEIFHEIT	Structure	E-17-FH	
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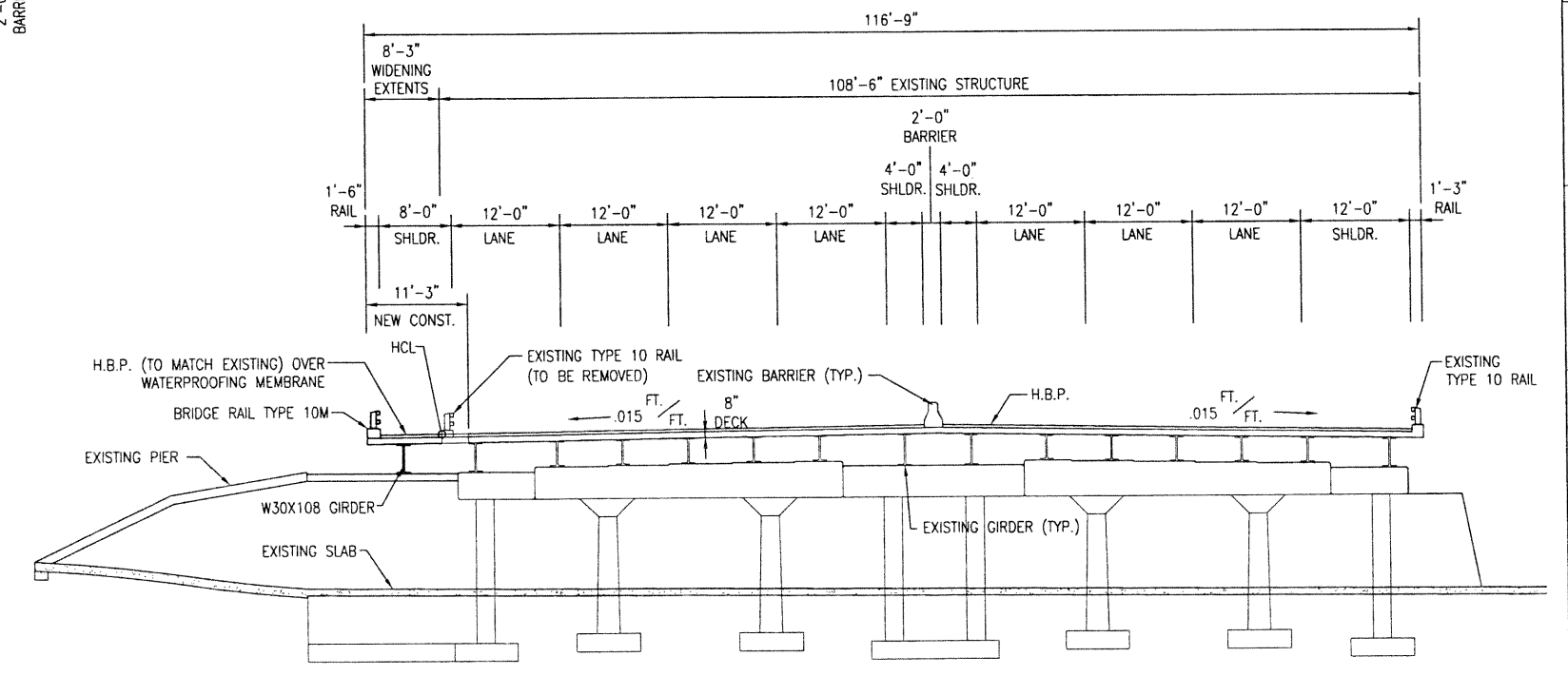
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Checked by	3-02	GBO	3-02	GBO	3-02
Revision		Dates		Quantities by	
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				GBO	



PLAN



SECTION  
TAKEN @ HCL

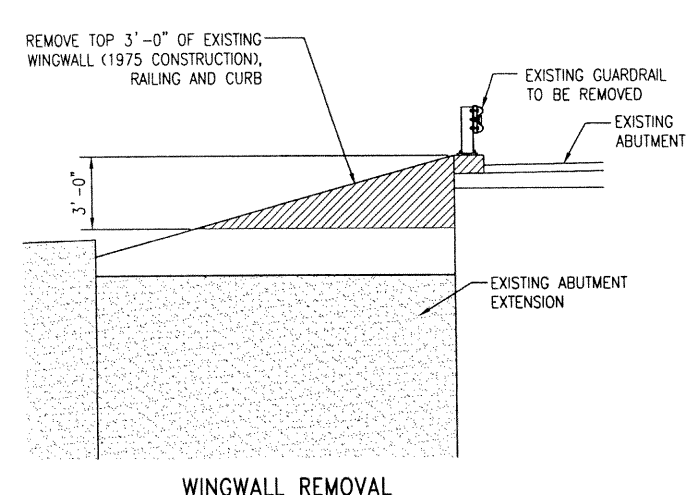
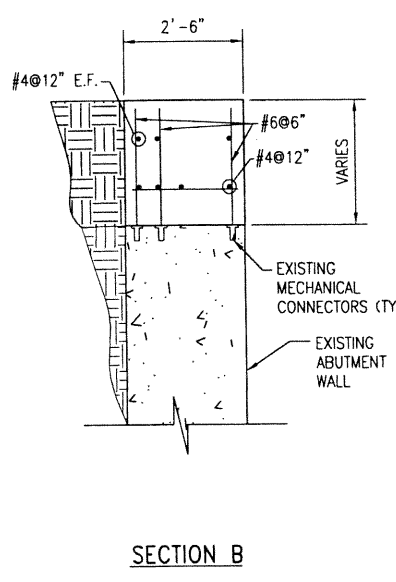
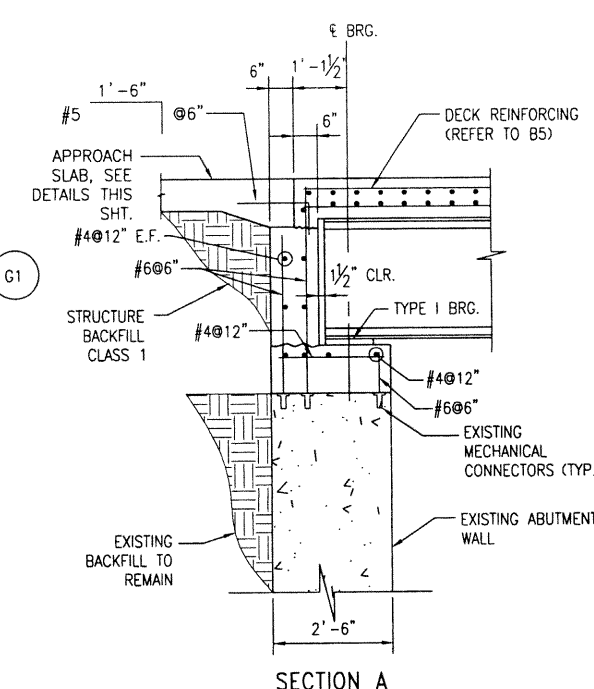
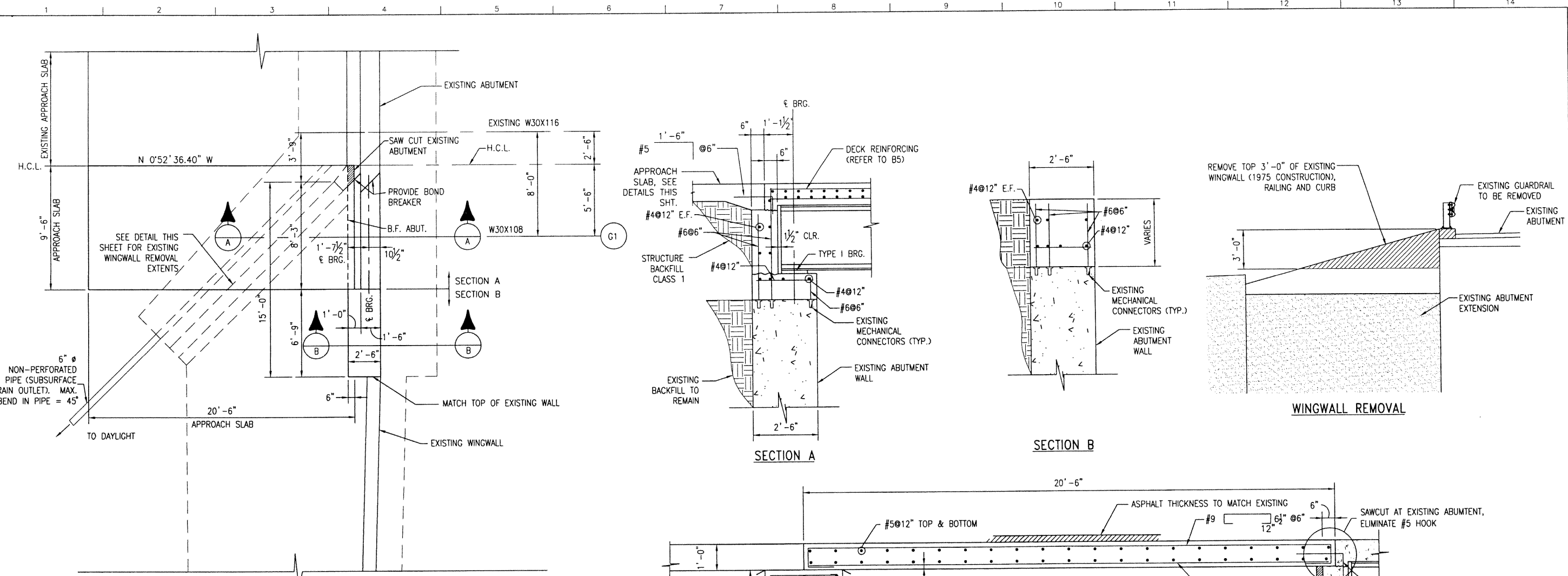


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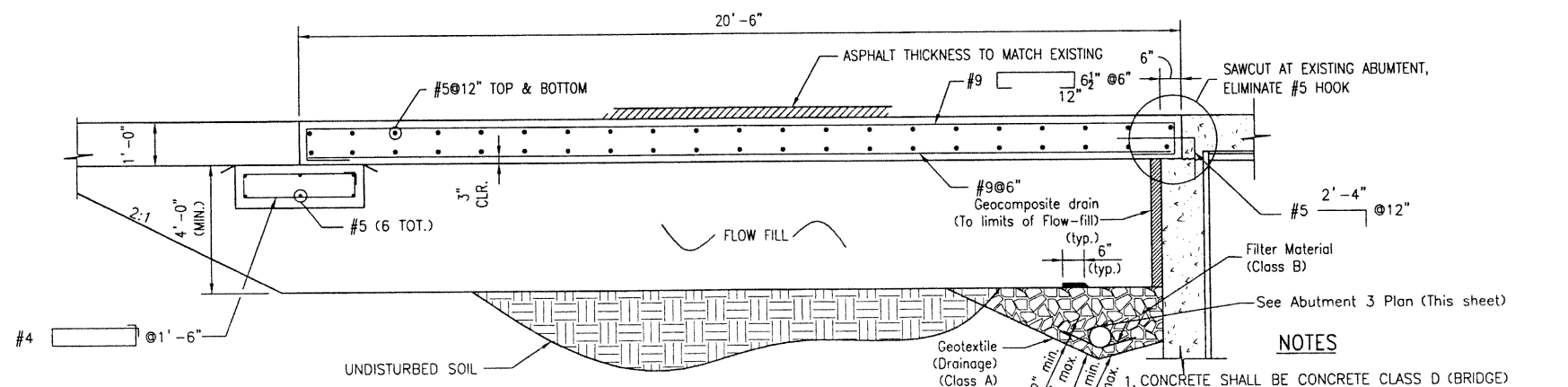
NOTE  
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Acad Ver.	2000i	Scale:	VARIES		Units:	ENGLISH		PROJECT #17412						

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ABUTMENT 3 PLAN  
(ABUTMENT 1 SIMILAR)

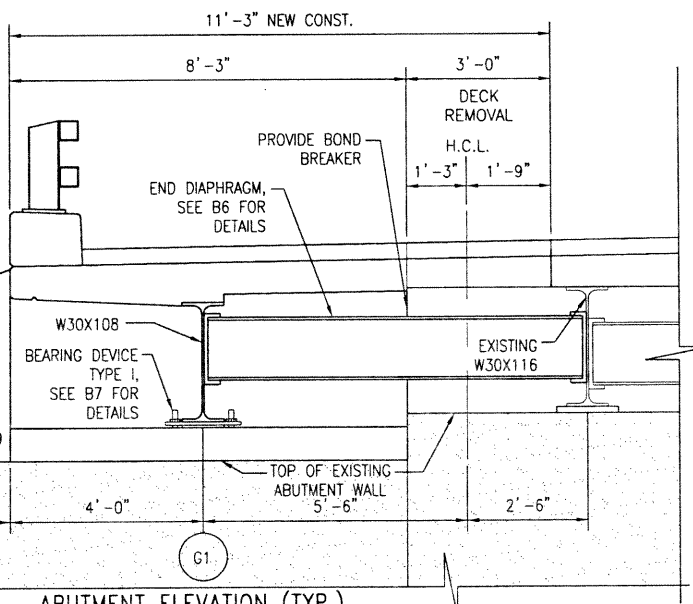


APPROACH SLAB DETAILS

6 INCH PERFORATED PIPE UNDERDRAIN

6 Inch Perforated Pipe Underdrain includes all Filter Material (Class B) and Geotextile (Drainage) (Class A) surrounding the Filter Material (Class B)

- NOTES
1. CONCRETE SHALL BE CONCRETE CLASS D (BRIDGE)
  2. REMOVAL OF PORTIONS OF EXISTING WINGWALL AND ABUTMENT SHALL BE PAID FOR UNDER ITEM 202, REMOVAL OF PORTIONS OF PRESENT STRUCTURE.
  3. REMOVAL OPERATIONS SHALL BE COORDINATED WITH THE ENGINEER AND SHALL BE CONDUCTED IN A MANNER TO ENSURE THE STRUCTURAL INTEGRITY OF THE BRIDGE.
  4. FLOW FILL SHALL BE PLACED THE FULL WIDTH OF NEW APPROACH SLAB. THE TOP 2 FEET OF EXISTING SOIL SHALL BE REMOVED PRIOR TO THE PLACEMENT OF FLOW FILL. REMOVAL OF EXISTING MATERIAL SHALL BE INCLUDED IN THE COST OF ITEM 206, FLOW FILL.
  5. PAYMENT WILL BE MADE UNDER ITEM 206 STRUCTURE BACKFILL (FLOW FILL) AND SHALL INCLUDE THE COST FOR POLYSTYRENE OR CARDBOARD VOID, GEOCOMPOSITE DRAIN, 6 INCH PERFORATED PIPE UNDERDRAIN, AND SUBSURFACE DRAIN OUTLET (6" NON PERFORATED PIPE).
  6. INSTALLATION OF PIPE UNDERDRAIN, SUBSURFACE DRAIN OUTLET AND GEOCOMPOSITE DRAIN WILL CONFORM TO THE CONSTRUCTION REQUIREMENTS OF SECTION 605.03, 605.06 AND 605.04, RESPECTIVELY.



ABUTMENT ELEVATION (TYP.)

QUANTITIES		DETAIL		DESIGN	
Initial	Date	Initial	Date	Initial	Date
AML	3-02	AML	3-02	AML	3-02
Checked by	Checked by	Checked by	Checked by	Checked by	Checked by
GB0	3-02	GB0	3-02	GB0	3-02

Computer File Information

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Last Modification Date:	7/24/02	Initials:	AML
Full Path:	L:\JOBS\17412\STRUCT		
Drawing File Name:	BRAB01.dwg		
Acad Ver.	2000i	Scale:	VARIES
Units:	ENGLISH		

Index of Revisions


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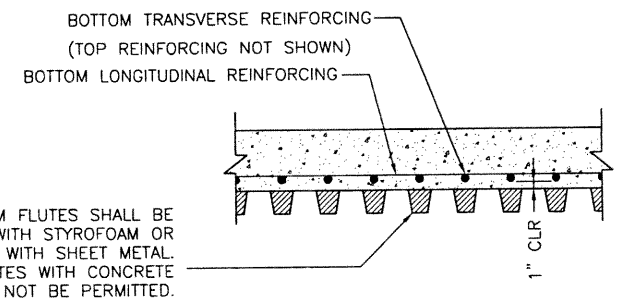
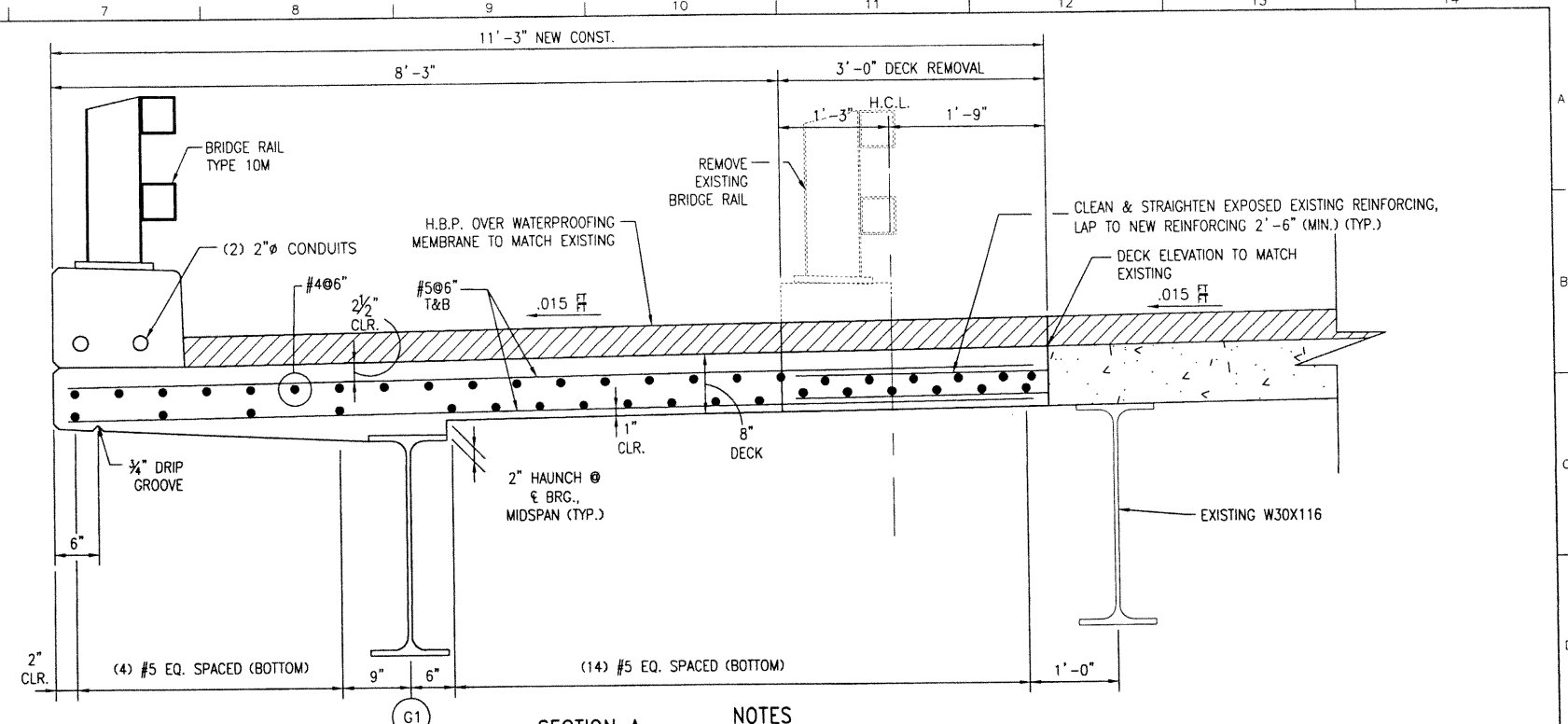
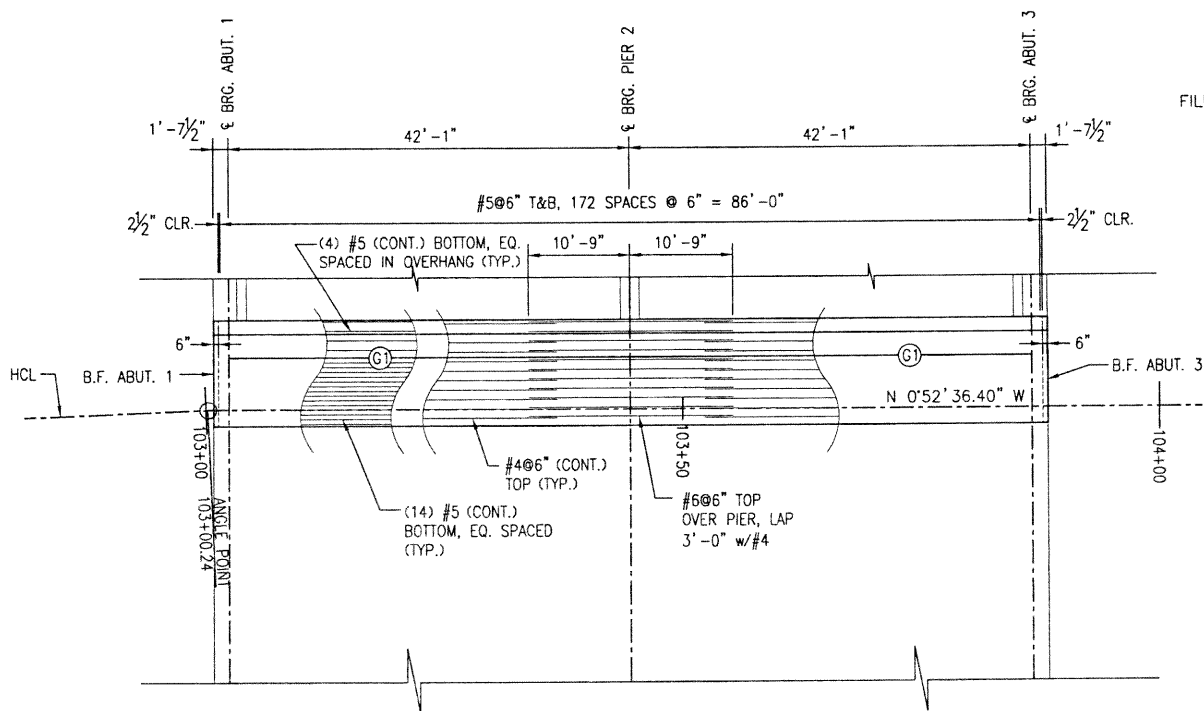
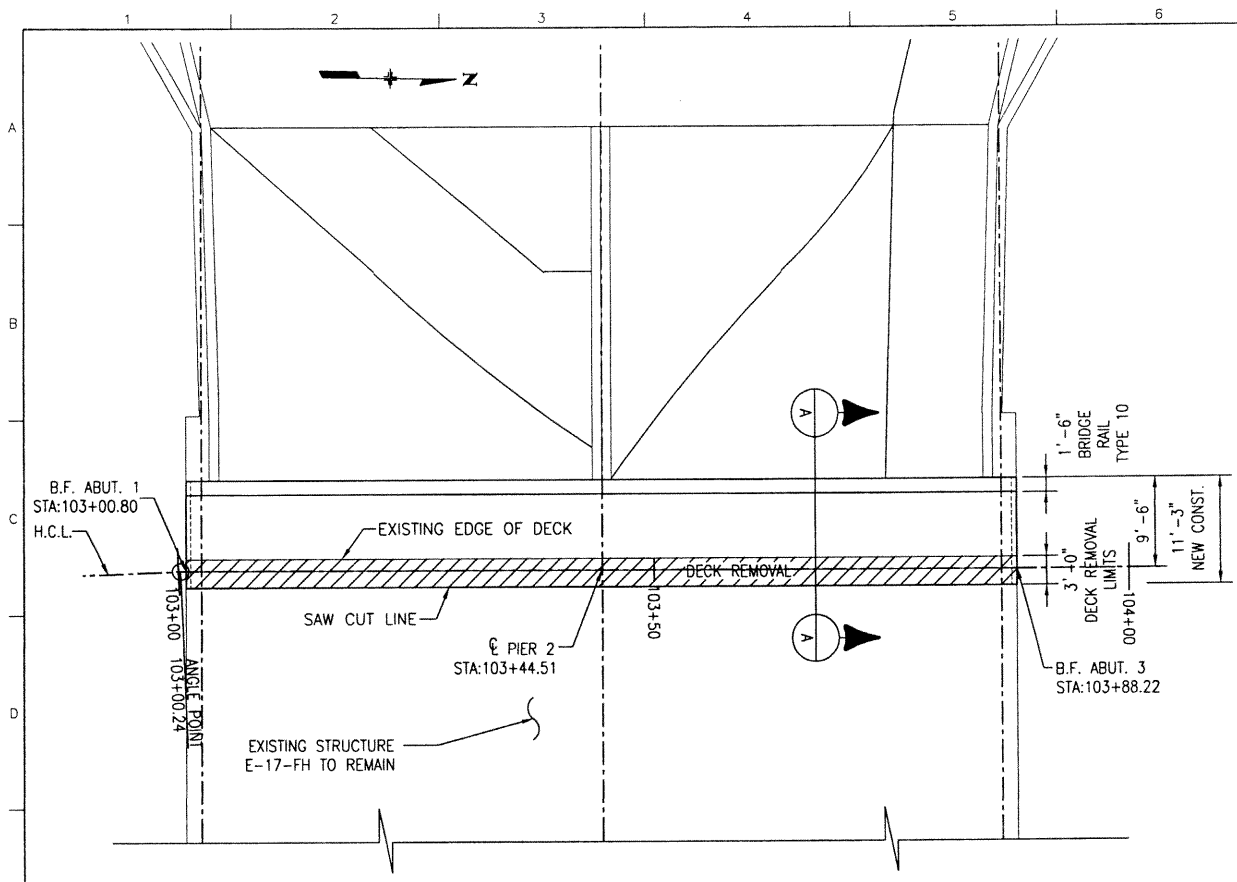
PROJECT #17412

As Constructed	1-25 OVER BIG DRY CREEK
No Revisions:	ABUTMENT & APPROACH SLAB DETAILS
Revised:	Designer: A. LEIFHEIT
Void:	Detailer: A. LEIFHEIT
	Sheet Subset: BRIDGE

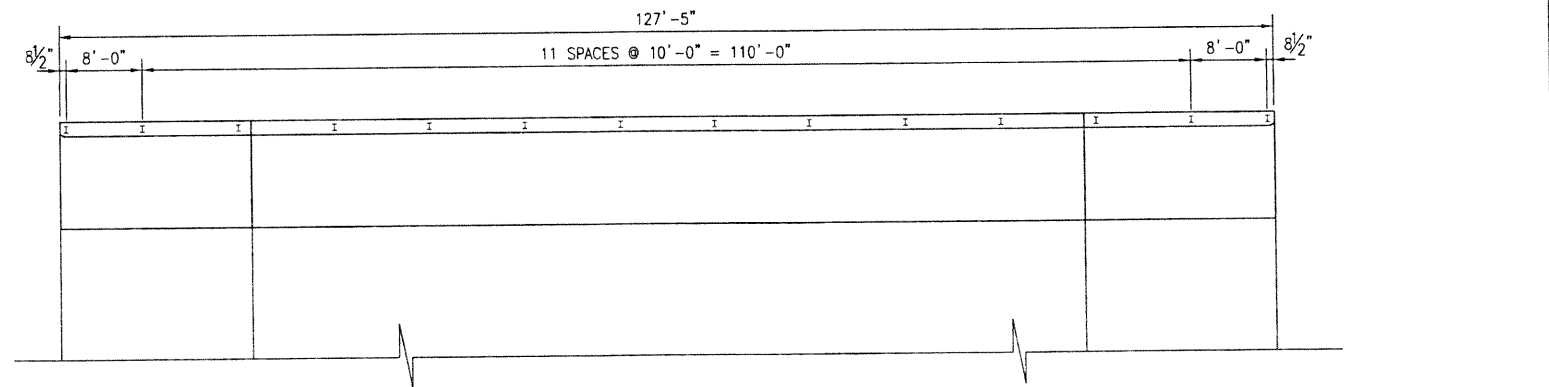
Project No./Code	97-71
Structure Numbers	E-17-FH
Subset Sheets:	B4 of 10
Sheet Number	85

Revision Dates (Preliminary Stage Only)		

DESIGN			QUANTITIES		



- NOTES**
- DECK CONCRETE SHALL BE CONCRETE CLASS D (BRIDGE).
  - PERMANENT DECK FORMS ARE NOT PERMITTED IN THE CANTILEVER PORTION OF THE DECK.
  - ALL COST OF ADDITIONAL MATERIAL & LABOR TO USE PERMANENT DECK FORMS SHALL BE INCLUDED IN THE WORK.
  - REMOVAL OPERATIONS SHALL BE COORDINATED WITH THE ENGINEER AND SHALL BE CONDUCTED IN A MANNER TO ENSURE THE STRUCTURAL INTEGRITY OF THE BRIDGE.
  - CARE SHALL BE TAKEN WHEN REMOVING CONCRETE TO PREVENT DAMAGE TO REINFORCING STEEL.
  - REMOVAL OF DECK AND BRIDGE RAIL SHALL BE PAID FOR UNDER ITEM 202, REMOVAL OF PORTIONS OF PRESENT STRUCTURE.
  - CLEANING OF THE EXISTING DECK REINFORCING DESIGNATED TO REMAIN AND THE DECK SHALL BE IN ACCORDANCE WITH SECTION 202, REMOVAL OF PORTIONS OF PRESENT STRUCTURE.
  - THE MAXIMUM DEPTH OF SAW CUT INTO THE CONCRETE DECK SHALL BE 1" TO PREVENT CUTTING OF TRANSVERSE DECK REINFORCING.
  - THE 2"Ø CONDUITS SHALL NOT BE PAID FOR SEPERATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 606, BRIDGE RAIL TYPE 10.



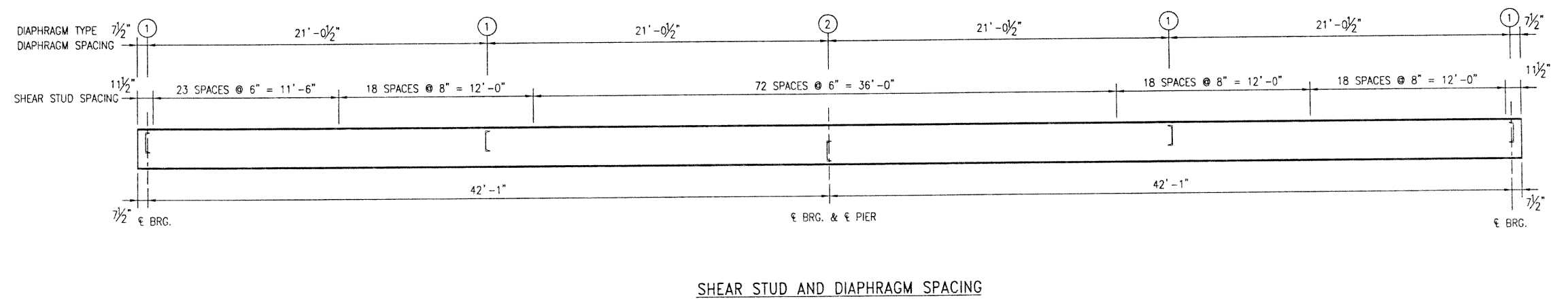
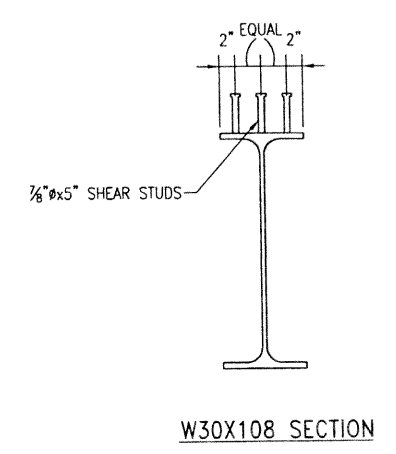
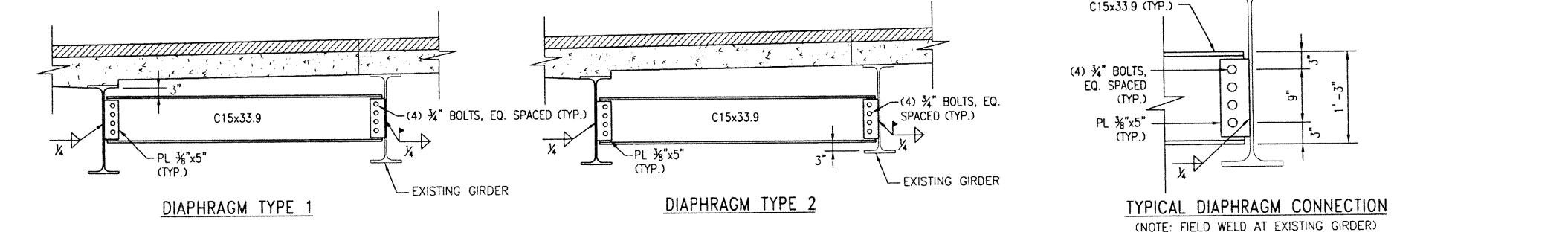
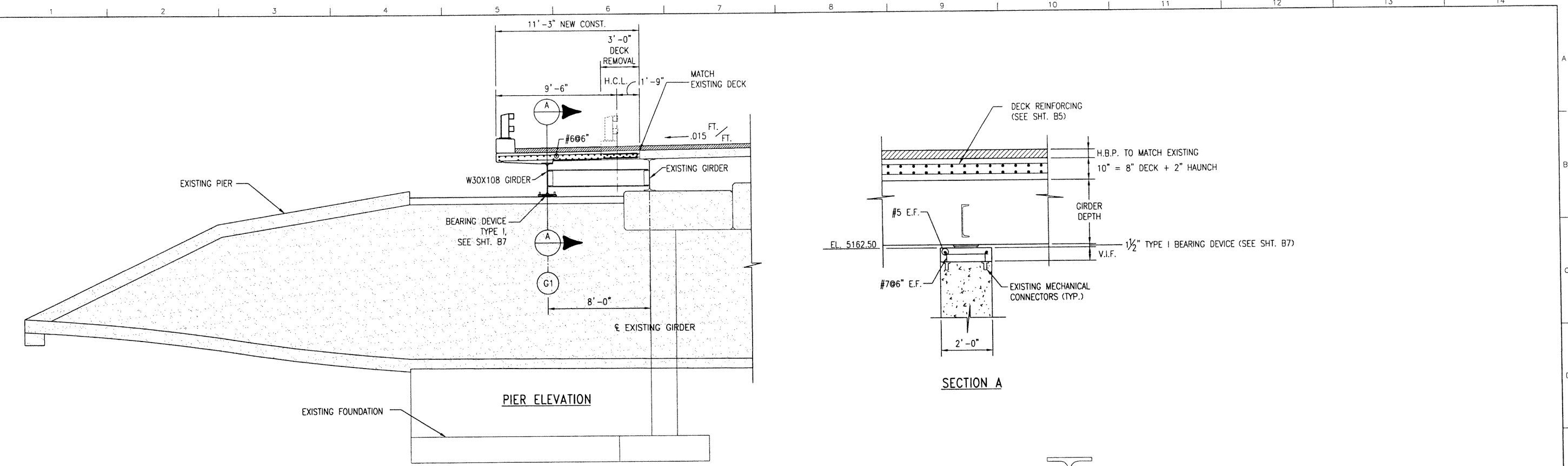
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As Constructed	1-25 OVER BIG DRY CREEK DECK DETAILS		Project No./Code
No Revisions:			97-71
Revised:	Designer: A. LEIFHEIT	Structure Numbers: E-17-FH	
Void:	Detailer: A. LEIFHEIT		
Sheet Subset: BRIDGE		Subset Sheets: B5 of 10	Sheet Number 86

PROJECT #17412

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		Date	3-02	Date	3-02

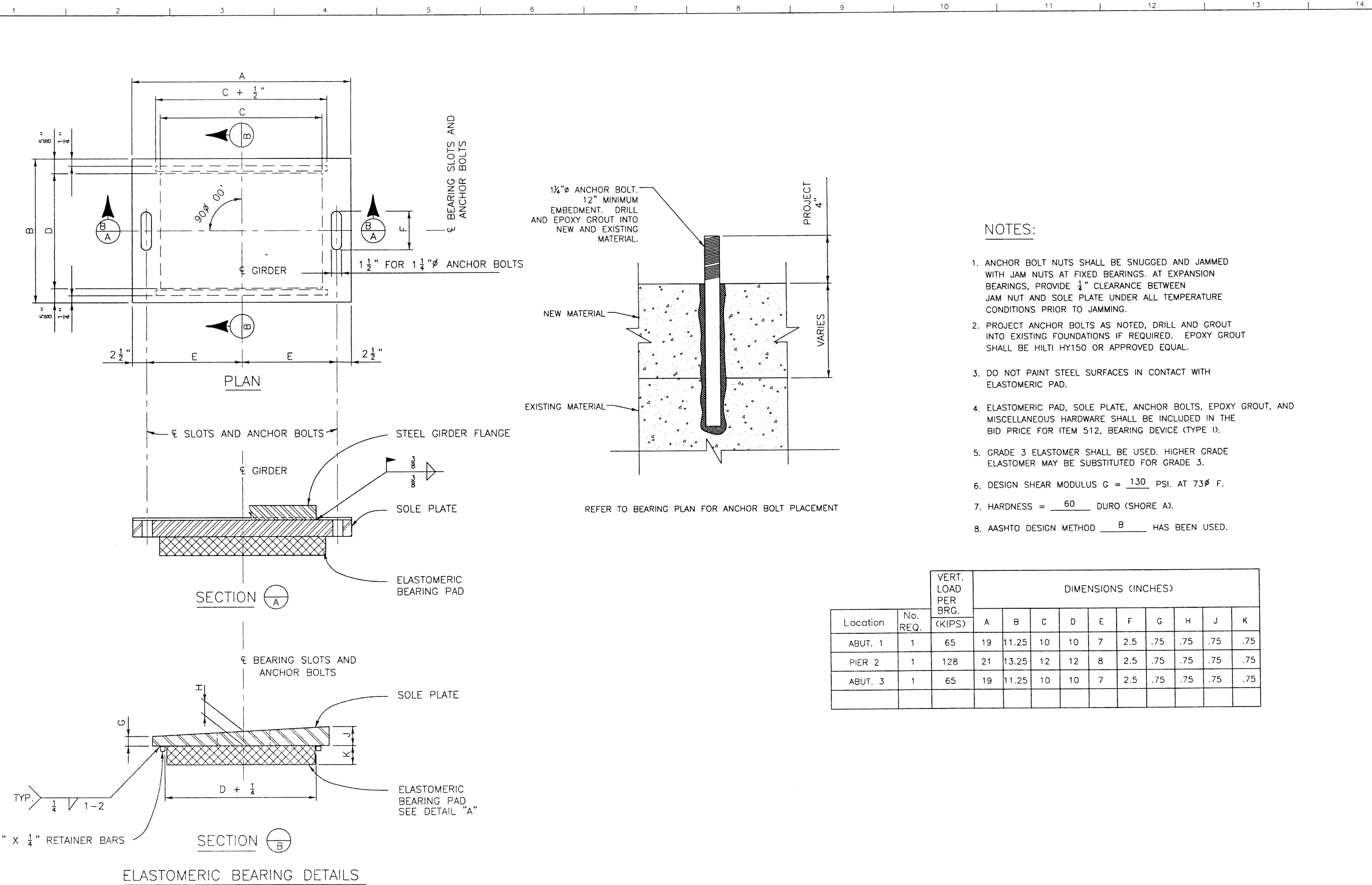


Computer File Information		Index of Revisions		As Constructed		1-25 OVER BIG DRY CREEK PIER AND GIRDER DETAILS		Project No./Code	
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Last Modification Date:	7/24/02 Initials: AML			Revised:		Designer:	A. LEIFHEIT	Structure	E-17-FH
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Acad Ver. 2000i	Scale: VARIES	Units: ENGLISH							Sheet Number <b>87</b>

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DESIGN		DETAIL		QUANTITIES	
Designed by	Date	Detailed by	Date	Initial	Date
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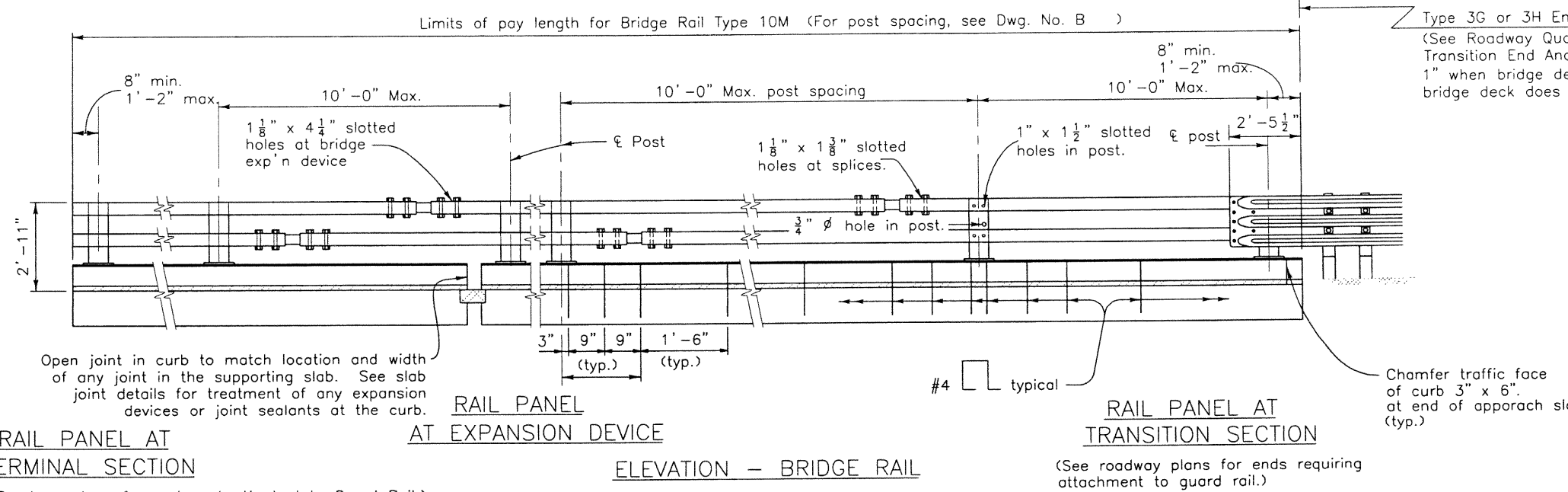
- NOTES:
- ANCHOR BOLT NUTS SHALL BE SNUGGED AND JAMMED WITH JAM NUTS AT FIXED BEARINGS. AT EXPANSION BEARINGS, PROVIDE  $\frac{1}{4}$ " CLEARANCE BETWEEN JAM NUT AND SOLE PLATE UNDER ALL TEMPERATURE CONDITIONS PRIOR TO JAMMING.
  - PROJECT ANCHOR BOLTS AS NOTED, DRILL AND GROUT INTO EXISTING FOUNDATIONS IF REQUIRED. EPOXY GROUT SHALL BE HILTI HY150 OR APPROVED EQUAL.
  - DO NOT PAINT STEEL SURFACES IN CONTACT WITH ELASTOMERIC PAD.
  - ELASTOMERIC PAD, SOLE PLATE, ANCHOR BOLTS, EPOXY GROUT, AND MISCELLANEOUS HARDWARE SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 512, BEARING DEVICE (TYPE I).
  - GRADE 3 ELASTOMER SHALL BE USED. HIGHER GRADE ELASTOMER MAY BE SUBSTITUTED FOR GRADE 3.
  - DESIGN SHEAR MODULUS  $G = 130$  PSI. AT  $73\text{° F}$ .
  - HARDNESS = 60 DURO (SHORE A).
  - AASHTO DESIGN METHOD B HAS BEEN USED.

Location	No. REQ.	VERT. LOAD PER BRG. (KIPS)	DIMENSIONS (INCHES)									
			A	B	C	D	E	F	G	H	J	K
ABUT. 1	1	65	19	11.25	10	10	7	2.5	.75	.75	.75	.75
PIER 2	1	128	21	13.25	12	12	8	2.5	.75	.75	.75	.75
ABUT. 3	1	65	19	11.25	10	10	7	2.5	.75	.75	.75	.75

Computer File Information			Index of Revisions			As Constructed			I-25 OVER BIG DRY CREEK TYPE I BEARING DEVICE			Project No./Code		
Creation Date:	10/4/01	Initials: AML				No Revisions:			97-71			97-71		
Last Modification Date:	7/24/02	Initials: AML				Revised:			Designer:	A. LEIFHEIT	Structure	E-17-FH	-	
Full Path:	L:\JOBS\17412\STRUCT								Detailer:	A. LEIFHEIT	Numbers	-	-	
Drawing File Name:	BRBG01.DWG								Sheet Subset:	BRIDGE	Subset Sheets:	B7 of 10	Sheet Number <b>88</b>	
Acad Ver. 2000i	Scale:	VARIES		Units:	ENGLISH	PROJECT #17412								







**NOTES**

All tubes shall be ASTM A-500 Grade B.  
All posts and base plates shall be ASTM A-572 Grade 50.  
All other steel shall be ASTM A-36 unless otherwise noted.

The above material and all anchor bolts and miscellaneous bolts, nuts, and washers shall be galvanized after fabrication in accordance with Section 509. Concrete, reinforcing steel, and structural steel elements shall conform to the requirements of Sections 601, 602 and 509, respectively.

Post anchor, encased in concrete, shall be ASTM A-36 (AASHTO M-183) steel and need not be galvanized.

The tubes shall be shop bent or fabricated to fit horizontal curve when radius is less than 1,500 feet.

Tubes shall be continuous over not less than two posts. No welded butt splices will be allowed in the tube sections.

The centerline of the tube splice shall be 1'-8" minimum and 2'-6" maximum from the centerline of the posts.

All bolts that have lock washers shall be tightened to snug only.

Posts shall be perpendicular to the longitudinal roadway grade.

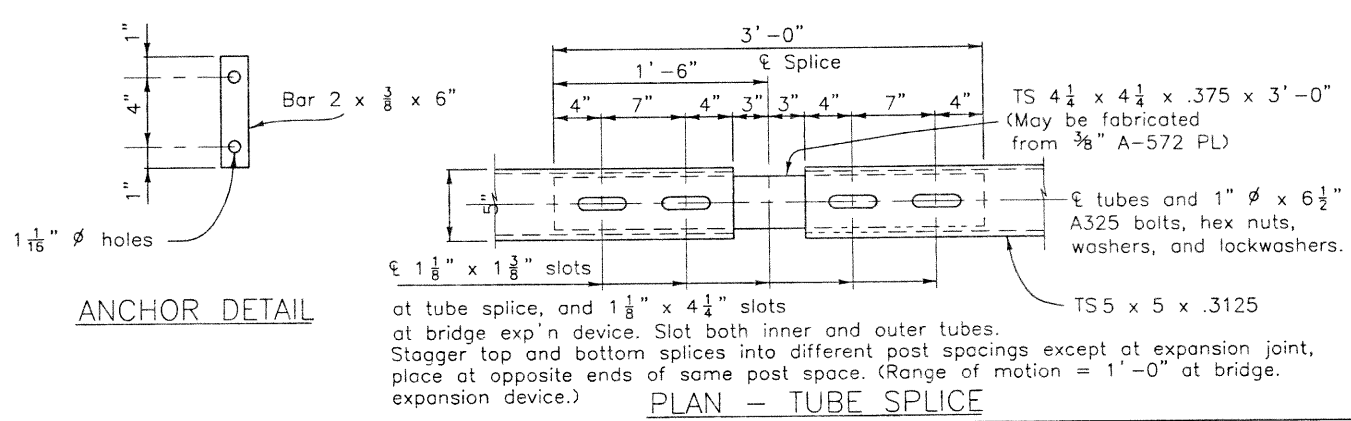
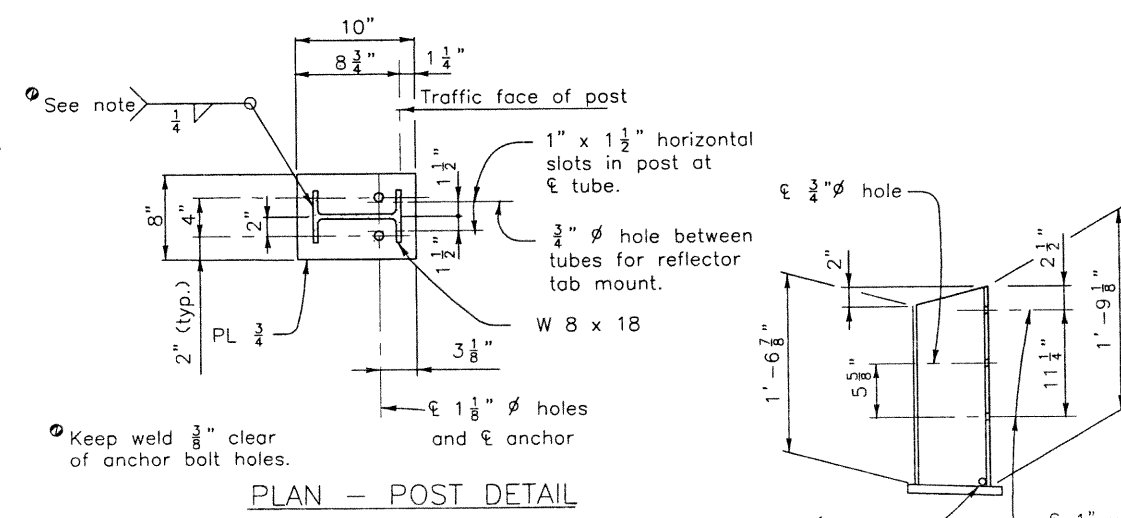
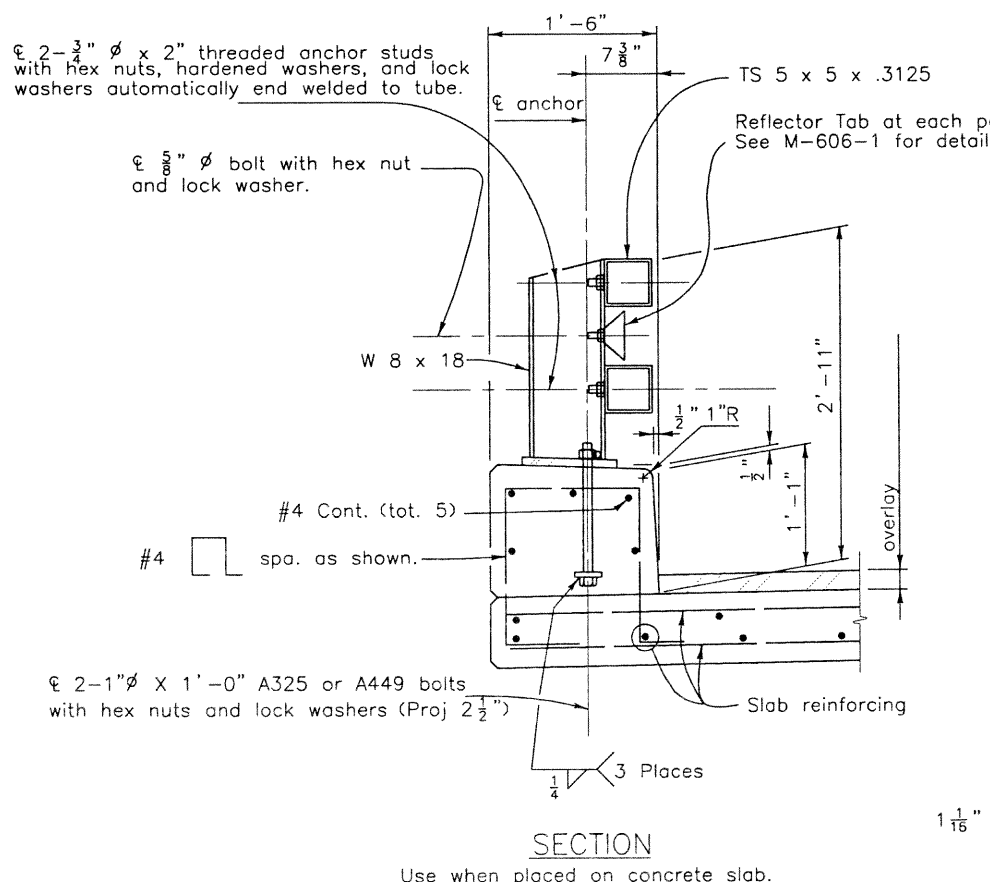
One or more 10'-0" post spacings may be reduced (6'-8" min.) in order to maintain dimensions from the end of the rail and expansion joints.

Payment will be made under Item 606, Bridge Rail Type 10M for all posts, post anchors, base plates, backing plates, anchor bolts, miscellaneous bolts, nuts, washers, tubes, tube expansion devices, tube splices, end plates, curb concrete (Class D), curb reinforcing steel, and reflector tabs.

Prior to fabrication of this item, three sets of working drawings which comply with the requirements of Section 105, shall be submitted to the Engineer for information only.

**Structural Steel:**  
AASHTO M-183 (ASTM A-36)  $f_y = 36,000$  psi  
AASHTO M-223 (ASTM A-572)  $f_y = 50,000$  psi  
Cold formed ASTM A-500 Grade B  $f_y = 46,000$  psi

For additional details see next rail sheets.



**INFORMATION ONLY**

Description	Unit	Per Lin. Ft.
Structural Steel (Galvanized)	Lb.	45.1
Concrete Class D (Bridge)	Cu.Yd.	.06
Reinforcing Steel (Epoxy Coated)	Lb.	6.6

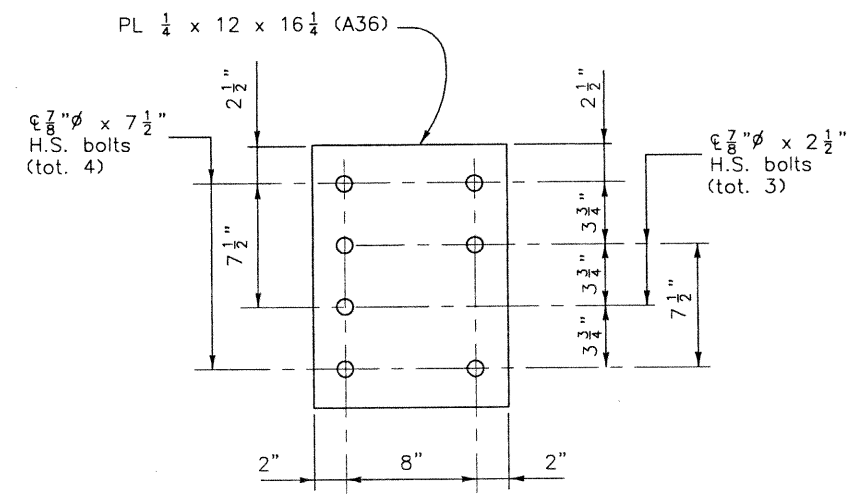
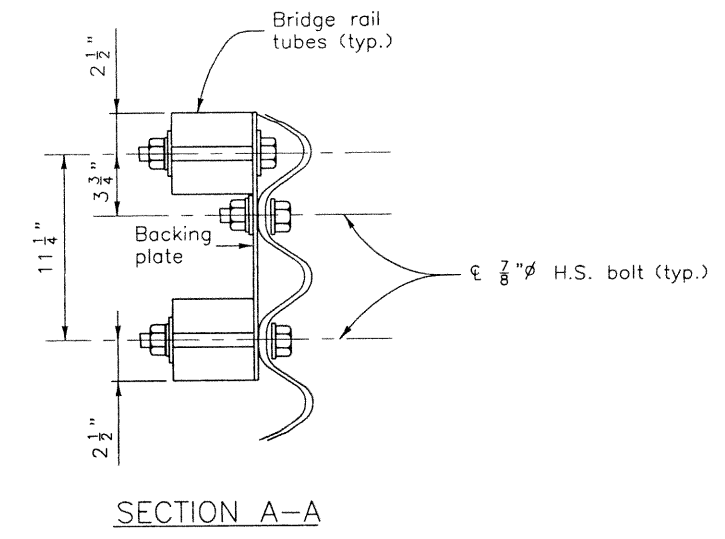
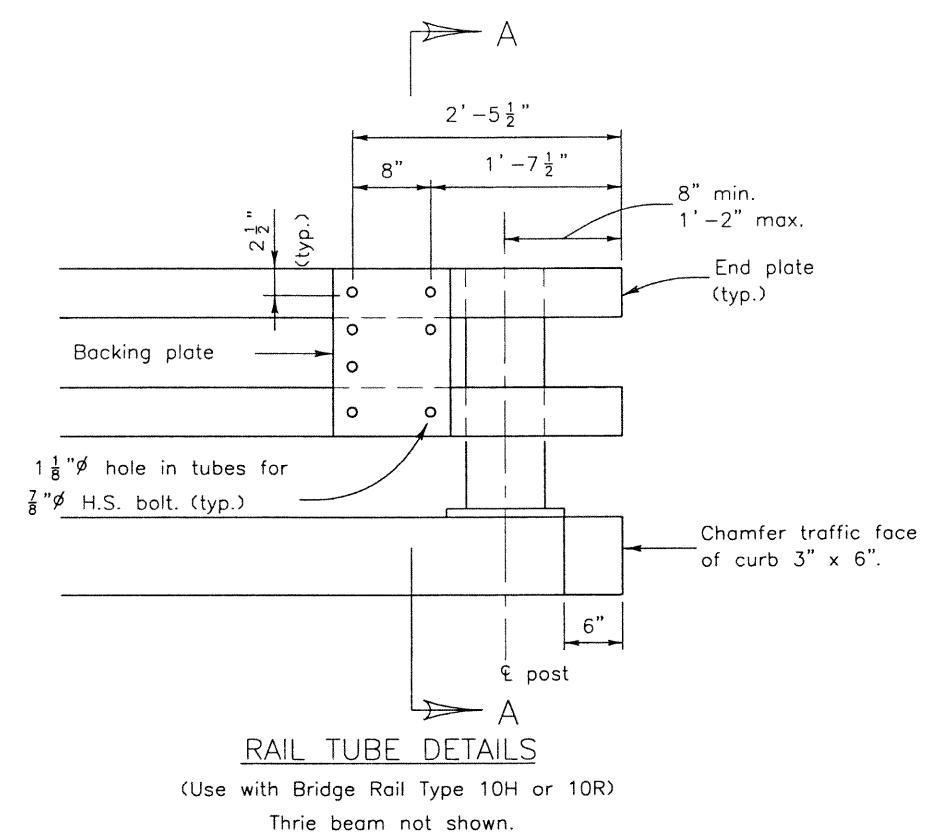
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Checked by	GBD	3-02	GBD	3-02
Detailed by	AML	3-02	AML	3-02
Checked by	GBD	3-02	GBD	3-02

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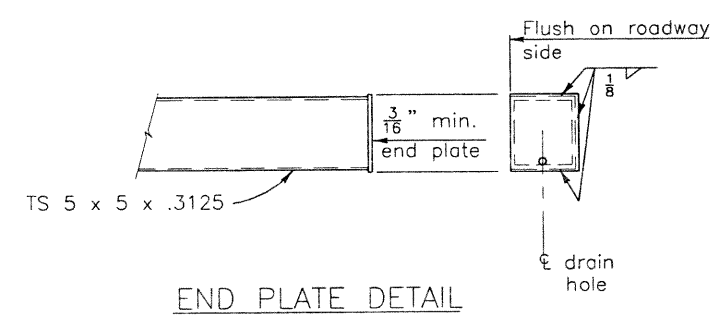
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Revision Dates	
Revision	Date



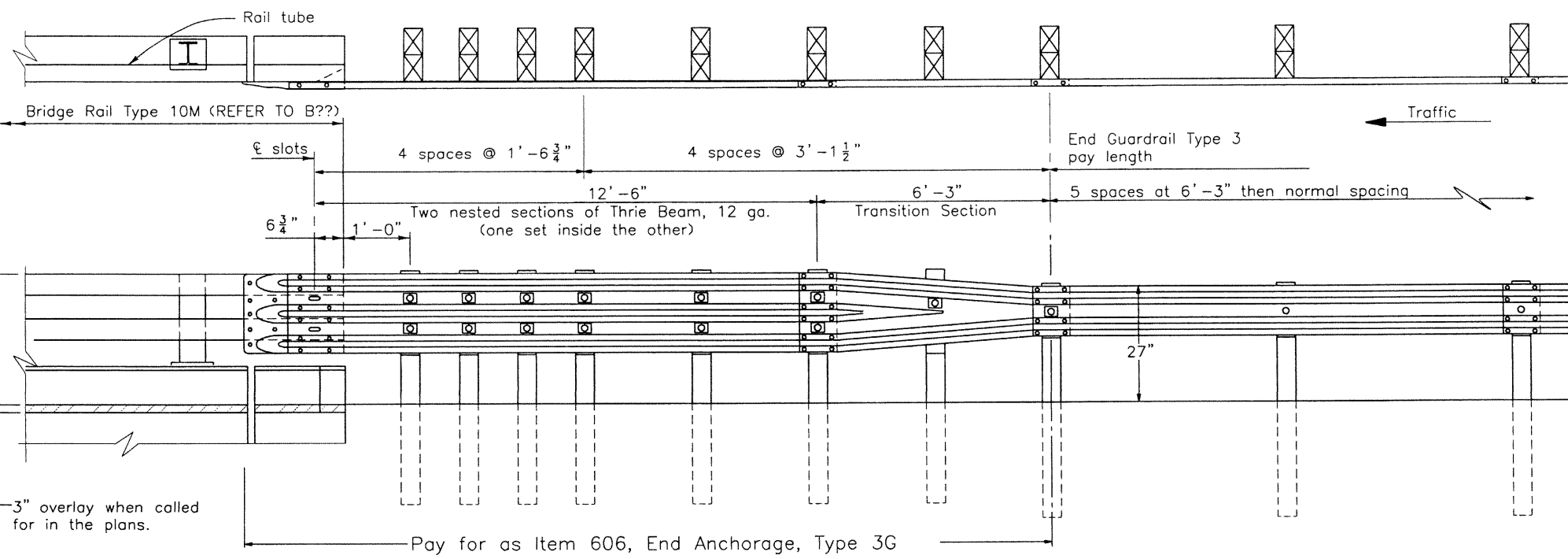
Holes are 1 1/8" for 7/8" H.S. bolts with hex nuts, 2 PL washers, and 1 lock washer.



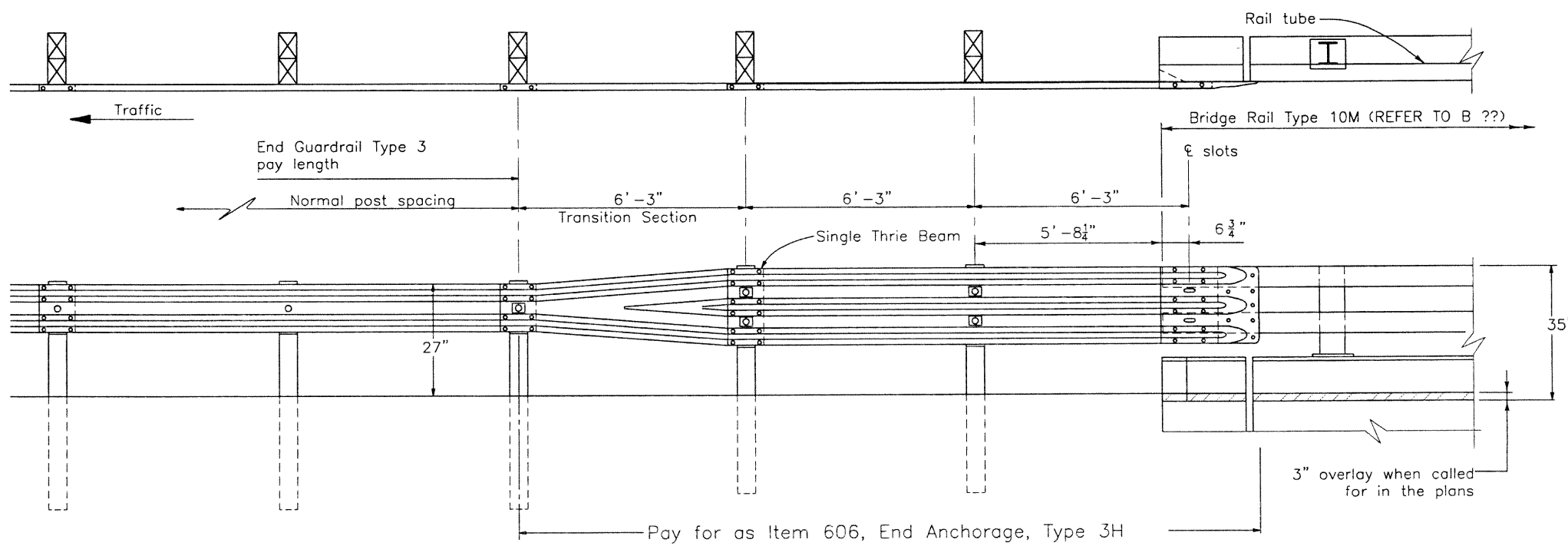
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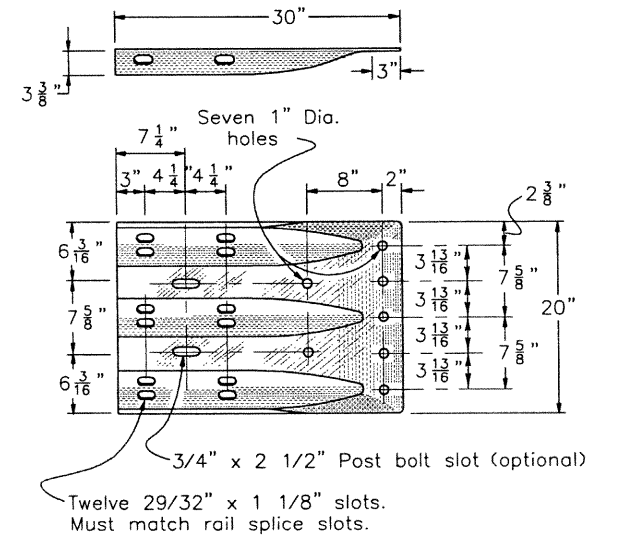
TYPE 3G END ANCHORAGE



TYPE 3H END ANCHORAGE

NOTES:

Type 3G End Anchorage is for use at both ends of bridges on two-way roads and the approach end of bridges on one-way roads.  
 Type 3H End Anchorage is for use at the trailing end of bridges on one-way roads.  
 See M-606-1 for additional details.



THRIE BEAM TERMINAL SECTION (CONNECTOR)

REVISION DATES		QUANTITIES	
Revision	Date	Initial	Date

DESIGN		DETAIL		QUANTITIES	
Designed by	Date	Detailed by	Date	Quantities by	Date

Computer File Information			Index of Revisions			As Constructed			I-25 OVER BIG DRY CREEK BRIDGE RAIL TYPE 10M			Project No./Code	
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Designer:	A. LEIFHEIT	Structure	E-17-FH
Detailer:	A. LEIFHEIT	Numbers	-
Sheet Subset:	BRIDGE	Subset Sheets:	B10 of 10

Sheet Number 91

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DESIGN	Initial	Date	QUANTITIES	Initial	Date
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DETAIL	Initial	Date	QUANTITIES	Initial	Date
	Detailed by	12/01		Checked by	03/02
REVISION	Initial	Date	QUANTITIES	Initial	Date
	Checked by	10/02		Checked by	03/02

**GENERAL NOTES**

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) 1999 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, APPLICABLE TO THE PROJECT.

EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH CDOT M&S STANDARD M-206-2.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

CONCRETE CLASS BZ SHALL BE SULFATE RESISTING IN ACCORDANCE WITH PROJECT SPECIAL PROVISION, REVISION OF SECTION 601, STRUCTURAL CONCRETE.

A STRUCTURAL CONCRETE COATING WILL BE REQUIRED ON EXPOSED SURFACES TO 1'-0" BELOW FINISHED GRADE, AS SHOWN ON THE PLANS. THE COLORS SHALL BE EQUIVALENT TO FEDERAL STANDARD 595B COLOR NO. 30450 (MEDIUM BEIGE) AND COLOR NO. 30117 (BROWN).

TEST PANEL FOR STRUCTURAL CONCRETE COATING ON ACTUAL CONCRETE SURFACE SHALL BE PROVIDED FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO PERFORMING THE WORK. CONCRETE TEST PANEL SHALL BE 6 FT x 6 FT.

ALL EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS 2 FINISH PRIOR TO APPLICATION OF STRUCTURAL CONCRETE COATING.

ALL ELECTRICAL CONDUIT IN BRIDGE CONCRETE SHALL BE GALVANIZED RIGID METAL CONDUIT. ALL CONDUIT RUNS SHALL INCLUDE A PULL STRING FOR FUTURE WIRING INSTALLATION.

THE FOLLOWING STRUCTURAL STEEL SHALL BE AASHTO M-183 (ASTM A-36) UNLESS SHOWN OR OTHERWISE NOTED: GIRDER DIAPHRAGMS, PILING, EXPANSION DEVICE, BRIDGE AND ARCHITECTURAL RAILINGS.

LEVELING PADS ARE UNLAMINATED BEARINGS. THEY SHALL BE CUT OR MOLDED FROM AASHTO ELASTOMER GRADE 3, 4, OR 5 AS DESCRIBED IN TABLE 705-1 AND 705-2 WITH A DUROMETER (SHORE "A") HARDNESS OF 60.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE BLACK (NON-COATED) REINFORCING BARS UNLESS OTHERWISE NOTED.

ⓔ DENOTES EPOXY COATED REINFORCING STEEL.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-3"	1'-6"	1'-10"	2'-2"	3'-8"	4'-8"	5'-11"	7'-3"

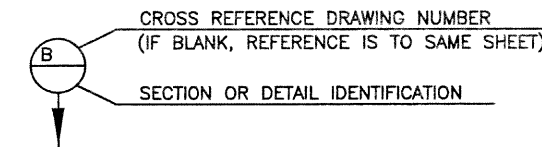
WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK (NON-EPOXY COATED) REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"	4'-10"

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

E.F. = EACH FACE  
F.F. = FAR FACE  
N.F. = NEAR FACE



PERMANENT DECK FORMS ARE REQUIRED.

PERMANENT PRECAST CONCRETE PANEL DECK FORMS ARE OPTIONAL.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

**DESIGN DATA**

AASHTO, 16th EDITION, AS AMENDED BY 1997, 1998, 1999 & 2000 INTERIM REVISIONS.

DESIGN METHOD: LOAD FACTOR DESIGN.  
SERVICE LOAD DESIGN - H-PILE AND CAISSONS

LIVE LOAD: AASHTO HS-25-44 AND ALTERNATE MILITARY LOADING  
DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR BITUMINOUS PAVEMENT  
ASSUMES 5 PSF FOR PERMANENT STEEL DECK FORMS

REINFORCED CONCRETE:  
CDOT CLASS BZ CONCRETE (CAISSON ONLY):  $f'_c = 4,000$  psi  $n=8$   $f_c=1600$  psi  
CDOT CLASS D CONCRETE:  $f'_c = 4,500$  psi  
REINFORCING STEEL:  $f_y = 60,000$  psi

STRUCTURAL STEEL: AASHTO M-183 (ASTM A-36)  $F_y = 36,000$ .

PRESTRESSED CONCRETE: CLASS PS CONCRETE  $f'_c =$  (SEE DETAILS)  
 $f'_s = 270,000$  psi

**INDEX OF DRAWINGS**

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- B2 SUMMARY OF APPROXIMATE QUANTITIES
- B3 GENERAL LAYOUT
- B4 TYPICAL SECTION
- B5 ENGINEERING GEOLOGY
- B6 BRIDGE HYDRAULIC INFORMATION (1 OF 2)
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- B12 ABUTMENT SECTIONS AND DETAILS
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- B14 ABUTMENT MONUMENT DETAILS
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- B16 PIER 2 SECTIONS AND DETAILS
- B17 SUPERSTRUCTURE SECTION
- B18 DECK REINFORCEMENT PLAN
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- B21 PENDANT LUMINAIRE DETAILS
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- B26 PEDESTRIAN FENCE DETAILS (1 OF 2)
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- B30 APPROACH SLAB INLET DETAILS (1 of 2)
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- B34 BRIDGE EXPANSION DEVICE DETAILS (3 of 3)
- B35 STRUCTURE BACKFILL (SPECIAL)
- B36 EXCAVATION AND BACKFILL FOR BRIDGES
- B37 BRIDGE DECK ELEVATIONS (1 of 4)
- B38 BRIDGE DECK ELEVATIONS (2 of 4)
- B39 BRIDGE DECK ELEVATIONS (3 of 4)
- B40 BRIDGE DECK ELEVATIONS (4 of 4)

**BRIDGE DESCRIPTION**

TWO SPAN (96'-11", 96'-11") BRIDGE, CONCRETE SLAB AND PRESTRESSED (PRECAST) CONCRETE GIRDERS.  
136TH AVENUE EASTBOUND AND WESTBOUND OVER BIG DRY CREEK.

76'-0" ROADWAY WIDTH CURB TO CURB, AND 8'-6" SIDEWALKS, NO SKEW, BRIDGE RAIL (SPECIAL) WITH STEEL PEDESTRIAN RAILING.




<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE OVER BIG DRY CREEK GENERAL INFORMATION</b>		<b>Project No./Code</b>	
Creation Date: 05/14/01	Initials: RAD	<input type="checkbox"/>			No Revisions:	Near DENVER	Sec. 22 & 27 T 1 S	R 68 W	97-91
Last Modification Date: 12/16/02	Initials: RAD	<input type="checkbox"/>			Revised:	Designer: K. ALKANANI	Structure		
Full Path: J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\		<input type="checkbox"/>			Void:	Detailer: R. DILLON	Numbers		
Drawing File Name: B00033\INF02.DWG		<input type="checkbox"/>			Sheet Subset: BRIDGE	Subset Sheets:	B1 of 40	Sheet Number 92	
Acad Ver. 2000i	Scale: None	Units: ENGLISH							

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Initial	Date	Initial	Date	Initial	Date
SEH	12/01	RAD	12/01	SEH	03/02
Checked by	10/02	Detailed by	10/02	Checked by	03/02
KMA		KMA		KRK	

SUMMARY OF QUANTITIES								
ITEM NO.	DESCRIPTION	UNIT	SUPER-STRUCTURE	ABUTMENT 1	PIER 2	ABUTMENT 3	APPROACH SLABS	TOTALS
206	STRUCTURE EXCAVATION	CY		480		480		960
206	STRUCTURE BACKFILL (SPECIAL)	CY		365		365		730
206	STRUCTURE BACKFILL (CLASS 2)	CY		105		105		210
206	FILTER MATERIAL (CLASS A)	CY		268		267		535
403	HOT BITUMINOUS PAVEMENT (GRADING S)	TON	260				50	310
502	PILE TIP	EA		18		18		36
502	STEEL PILING (HP 12x74)	LF		468		427		895
503	DRILLED CAISSON (42 INCH)	LF			90			90
506	RIPRAP (12 INCH)	CY		838		837		1675
506	RIPRAP (24 INCH)	CY		45		45		90
506	GROUTED RIPRAP	CY		60				60
514	PEDESTRIAN FENCE	LF	394				66	460
515	WATERPROOFING (MEMBRANE)	SY	1584				304	1888
518	BRIDGE EXPANSION DEVICE (0-4 INCH)	LF					196	196
519	NATIVE STONE VENEER (4 INCH)	SF	1035					1035
601	CONCRETE CLASS D (BRIDGE)	CY	750	200	115	200	195	1460
601	STRUCTURAL CONCRETE COATING	SY	925	65	35	65		1090
602	REINFORCING STEEL	LB	800	13770	21620	13770	28215	78175
602	REINFORCING STEEL (EPOXY COATED)	LB	163875	2760	4875	2760		174270
603	15 INCH PLASTIC PIPE	LF				125		125
605	SUBSURFACE DRAIN OUTLET	LF	35					35
606	BRIDGE RAIL (SPECIAL)	LF	396				85	481
① 613	1 INCH ELECTRICAL CONDUIT	LF	396				85	481
① 613	2 INCH ELECTRICAL CONDUIT	LF	792				170	962
② 613	LIGHT STANDARD DECORATIVE (25 FOOT)	EA	2					2
③ 613	PENDANT LUMINAIRE	EA	2					2
618	PRESTRESSED CONCRETE BT42 GIRDERS	LF	2932.5					2932.5

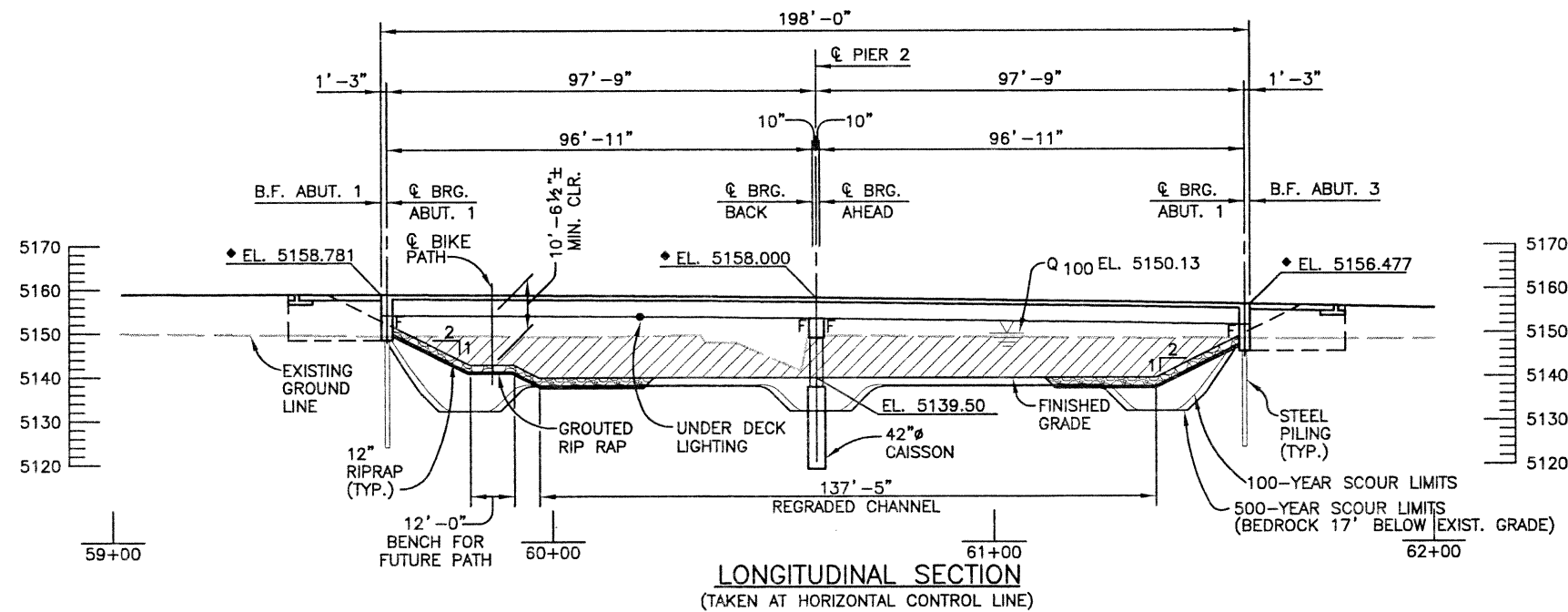
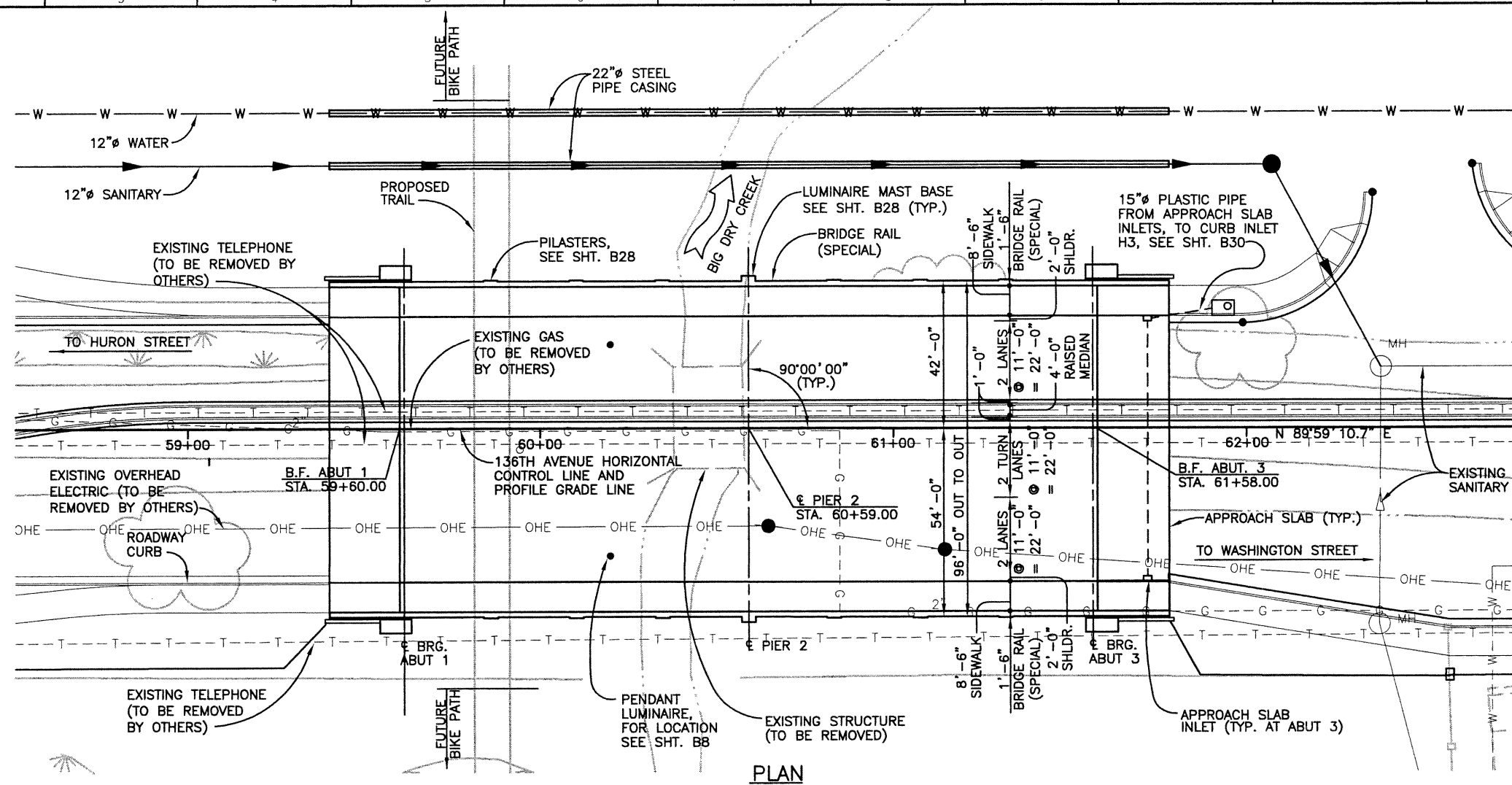
- ① ALL CONDUIT RUNS SHALL INCLUDE A PULL STRING FOR FUTURE WIRING INSTALLATION.
- ② FOR INFORMATION ONLY, TO BE SUPPLIED AND INSTALLED BY XCEL ENERGY.
- ③ LIGHT FIXTURE ONLY TO BE SUPPLIED AND INSTALLED BY XCEL ENERGY, CONTACTOR TO SUPPLY AND INSTALL MOUNTING ASSEMBLY.



<b>Computer File Information</b> Creation Date: 10/11/01 Initials: SEH Last Modification Date: 12/166/02 Initials: RAD Full Path: J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\ Drawing File Name: B00033SUM01.DWG Acad Ver. 2000i Scale: NONE Units: ENGLISH		<b>Index of Revisions</b> <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																		 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111		As Constructed No Revisions: Revised: Void:		136TH AVENUE OVER BIG DRY CREEK SUMMARY OF QUANTITIES Designer: S. HOWARD Detailer: S. HOWARD Sheet Subset: BRIDGE		Project No./Code 97-91 Structure Numbers Subset Sheets: B2 of 40 Sheet Number <b>93</b>	

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SEH	12/01	RAD	12/01	SEH	03/02
KMA	10/02	KMA	10/02	KRK	03/02
Designed by	Checked by	Detailed by	Checked by	Quantities by	Checked by



**LEGEND**

▨ CHANNEL IMPROVEMENTS

◆ ELEVATION SHOWN AT FINISH GRADE LINE

Computer File Information	
Creation Date:	02/28/01 Initials: RAD
Last Modification Date:	11/26/02 Initials: PRH
Full Path:	J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\
Drawing File Name:	B00033GLA01.DWG
Acad Ver.	2000i Scale: 1"=20' Units: ENGLISH

Index of Revisions	



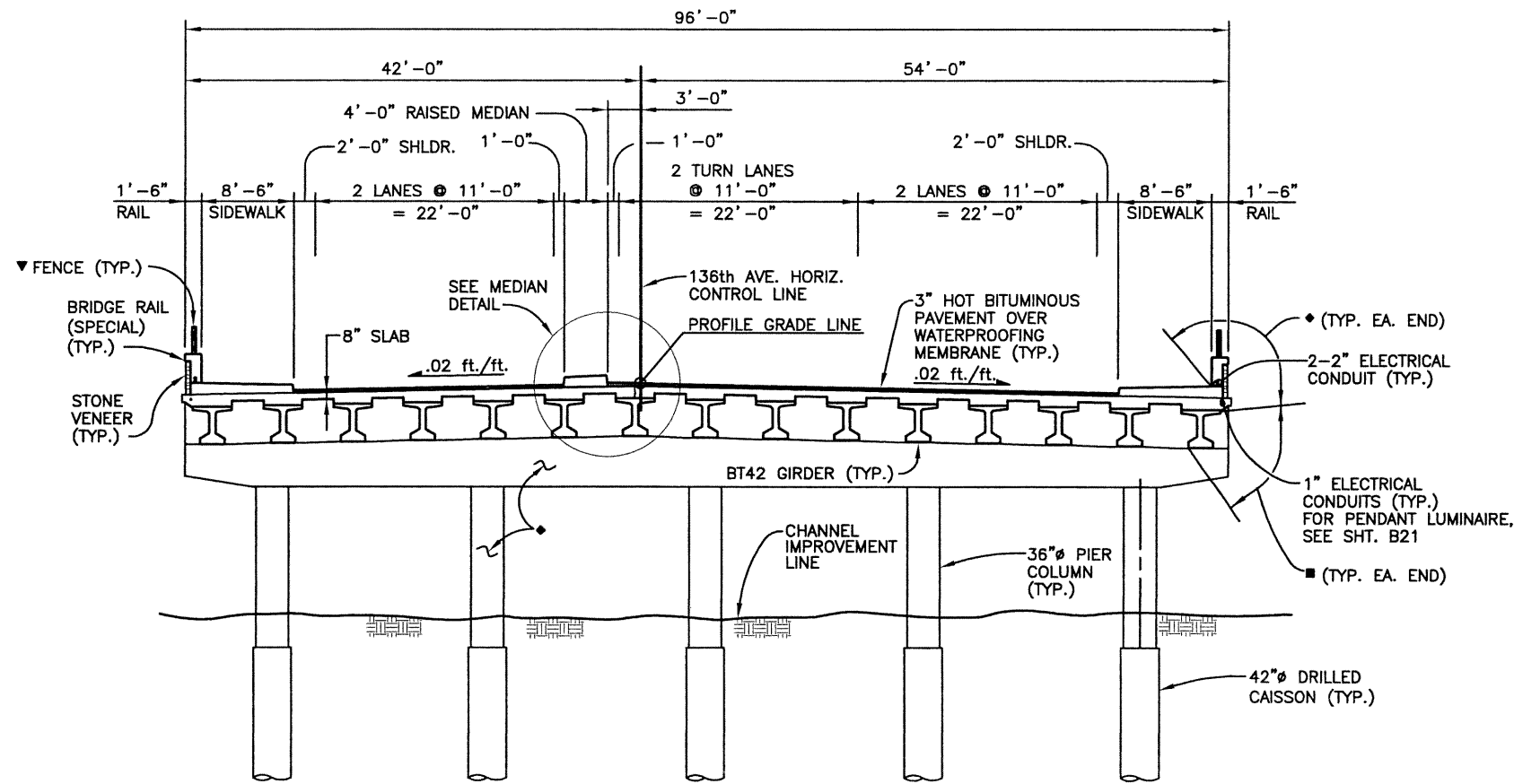
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fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

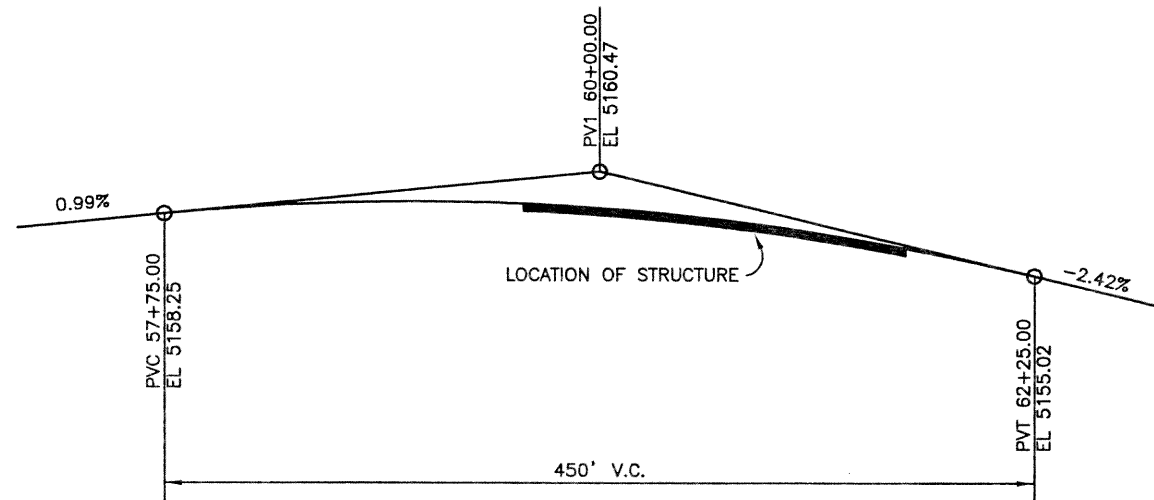
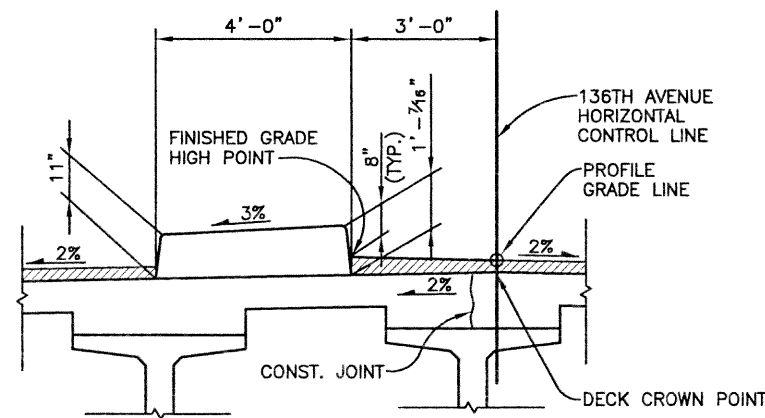
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No Revisions:		Designer:	K. ALKANANI	97-91	
Revised:		Detailer:	S. HOWARD		
Void:		Sheet Subset:	BRIDGE	Subset Sheets:	B3 of 40
				Sheet Number:	24

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Checked by	12/01	SEH	12/01	Checked by	03/02
Checked by	10/02	KMA	10/02	Checked by	03/02
				Checked by	
				Checked by	



- NOTES:**
- ◆ CONCRETE SURFACE TO RECEIVE A STRUCTURAL COLORED COATING, FEDERAL STANDARD 595B, COLOR NO. 30450 (MEDIUM BEIGE).
  - CONCRETE SURFACE TO RECEIVE A STRUCTURAL COLORED COATING, FEDERAL STANDARD 595B, COLOR NO. 30117 (BROWN).
  - ▼ FENCE SHALL BE PAINTED FEDERAL COLOR NO. 22516 (TERRA COTA).



**Computer File Information**

Creation Date:	03/01/01	Initials:	RAD
Last Modification Date:	11/26/02	Initials:	PRH
Full Path:	J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\		
Drawing File Name:	B00033GLA01.DWG		
Acad Ver.	2000i	Scale:	VARIES
Units:	ENGLISH		

**Index of Revisions**




303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

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No Revisions:	
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**136TH AVENUE OVER BIG DRY CREEK TYPICAL SECTION**

Designer:	K. ALKANANI	Structure Numbers	
Detailer:	S. HOWARD		
Sheet Subset:	BRIDGE	Subset Sheets:	B4 of 40

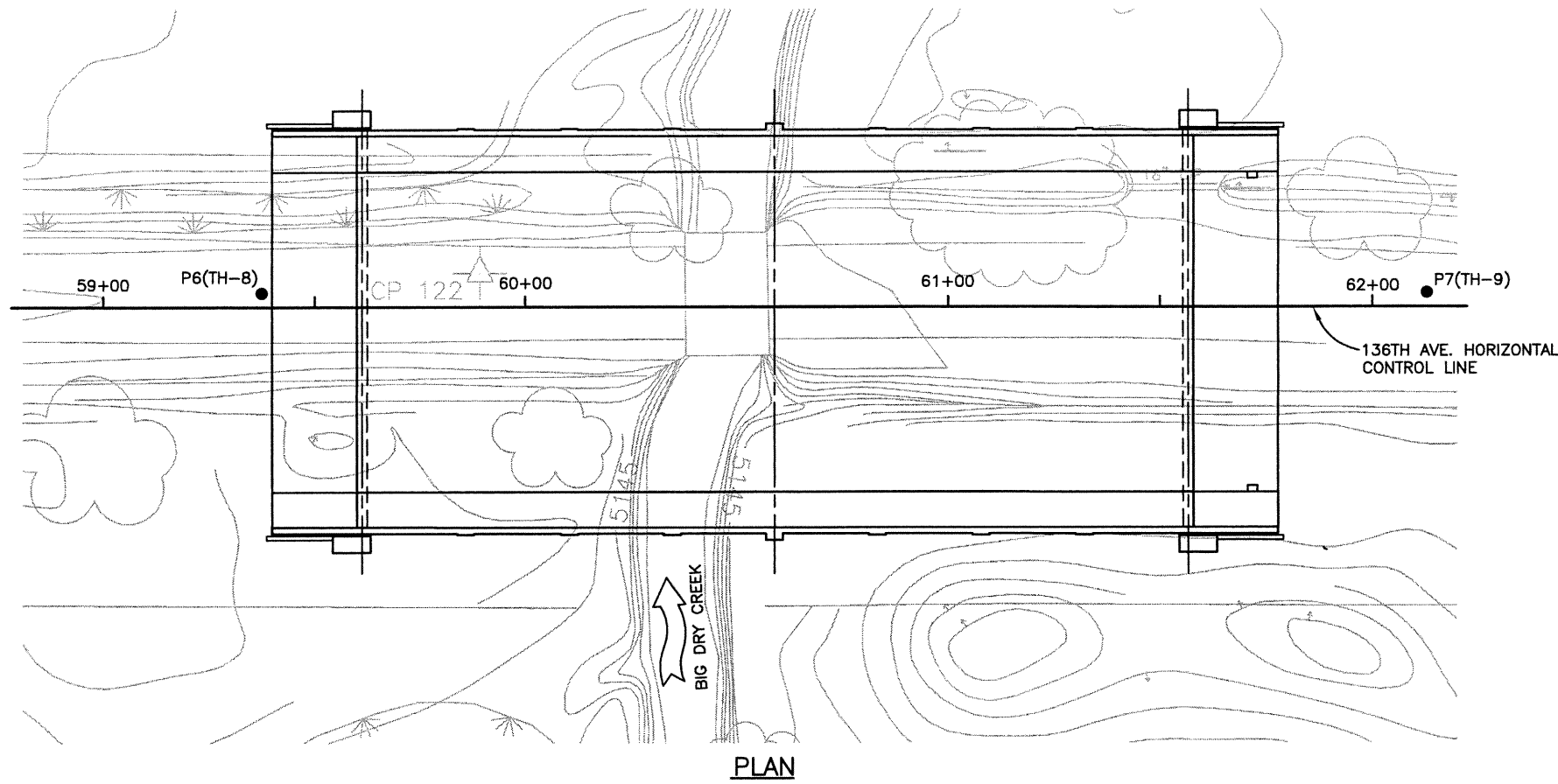
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	97-91
Sheet Number	95



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			01/02	KRK	01/02		



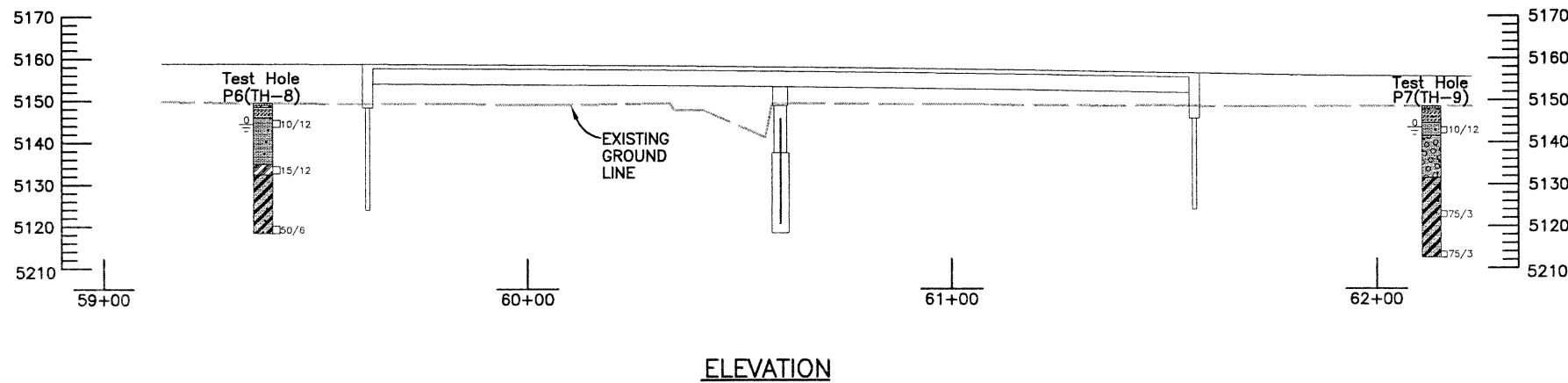
LEGEND:

- Asphalt
- Base Course
- Sand and Clay: Clayey sands to sandy clays, fine to medium grained, moist to wet, moderately to highly plastic, stiff to hard, and brown in color. Caliche was observed locally.
- Sand: Clean to silty, fine to coarse grained, locally gravelly, wet, non-plastic, loose to medium dense, and brown in color.
- Sand and Gravel: Fine to coarse grained, wet, non-plastic, medium dense, and brown in color.
- Weathered Claystone: Sandy, moist, moderately to highly plastic, very stiff, and brown in color.
- Interbedded Claystone and Sandstone Bedrock

- Drive sample, 2-inch I.D. California liner sample
- 23/12 Drive sample blow count, indicates 23 blows of a 140-pound hammer falling 30 inches were required to drive the sampler 12 inches.
- $\frac{0}{}$  Depth to water level and number of days after drilling that measurement was taken.

NOTES:

- 1) Test holes were drilled on 03/19/01 and 03/21/01 with 4-inch diameter continuous flight power augers.
- 2) Locations of the test holes were measured approximately by pacing from features shown on the site plan provided.
- 3) Elevations of the test holes were not measured and the logs of the test holes are drawn to depth.
- 4) The test hole locations and elevations should be considered accurate only to the degree implied by the method used.
- 5) The lines between materials shown on the test hole logs represent the approximate boundaries between material types and the transitions may be gradual.
- 6) Groundwater level readings shown on the logs were made at the time and under the conditions indicated. Fluctuations in the water level may occur with time.
- 7) The boring logs of the above test holes are on file in the City of Thornton infrastructure maintenance center.



SUMMARY OF LABORATORY TEST RESULTS

Sample Location	Test Hole No.	Depth (feet)	Natural Moisture Content (%)	Natural Dry Density (pcf)	Gradation		Passing No. 200 Sieve (%)	Atterberg Limit		Swell vs. 200 psf Surcharge (%)	Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	AASHTO Classification (G1)	Soil or Bedrock Type
					Gravel (%)	Sand (%)		Liquid Limit (%)	Plasticity Index (%)					
P6/TH-8	4	17.1	114.1			34	18	2					A-2-4 (0)	Silty Sand
P6/TH-8	15	22.9	96.0			81	43	26						Weathered Claystone
P6/TH-8	30	13.6	113.4			44	30	17	1.3 *					Sandstone Bedrock
P7/TH-9	5	21.1	-			30		NP					A-2-4 (0)	Silty Sand



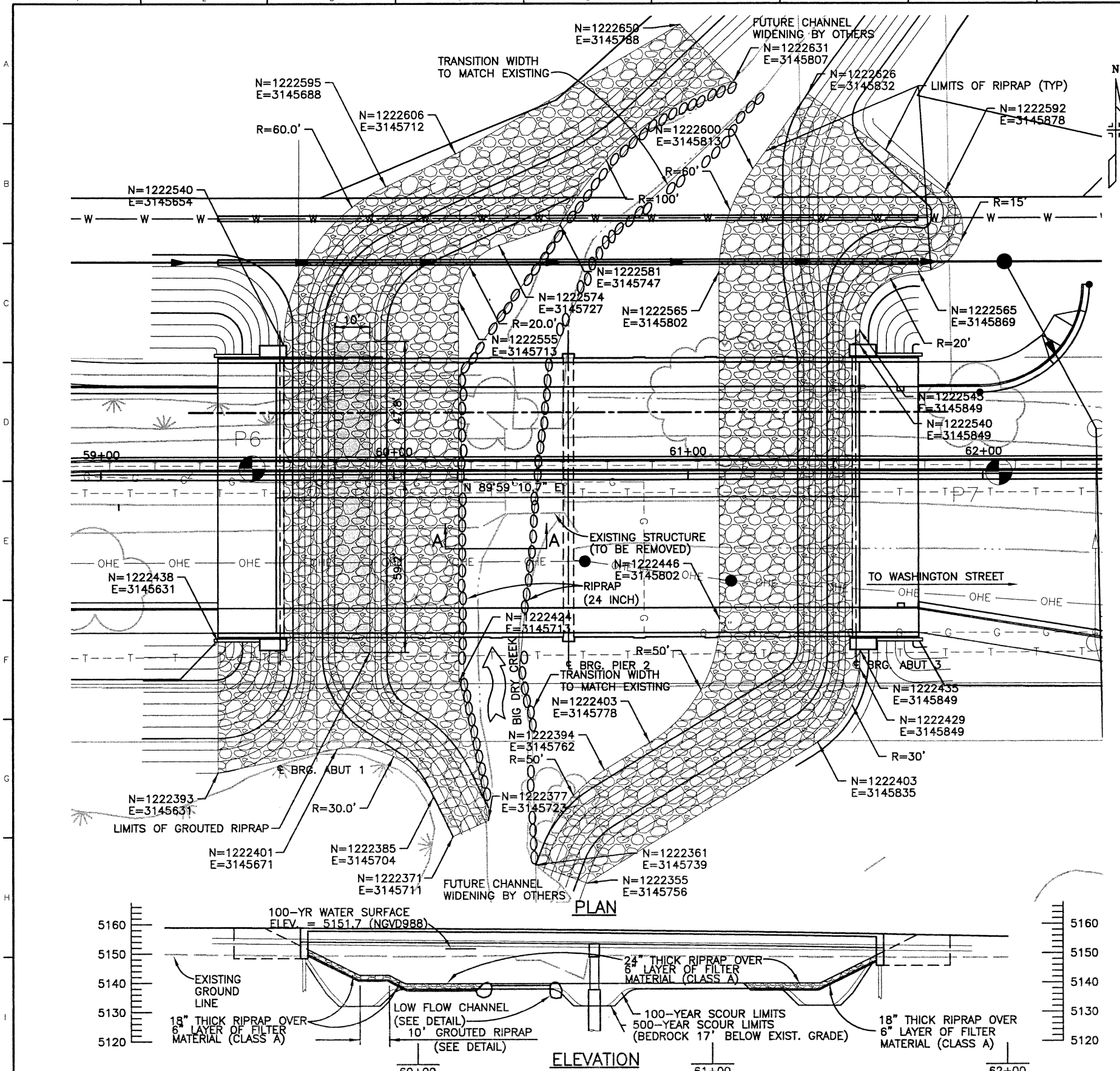
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**GROUND**  
ENGINEERING CONSULTANTS



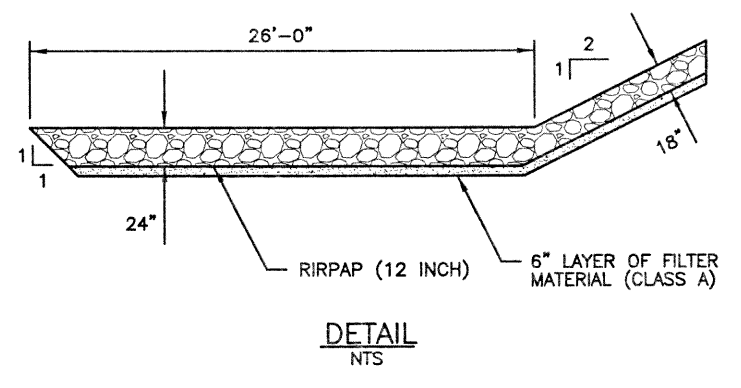
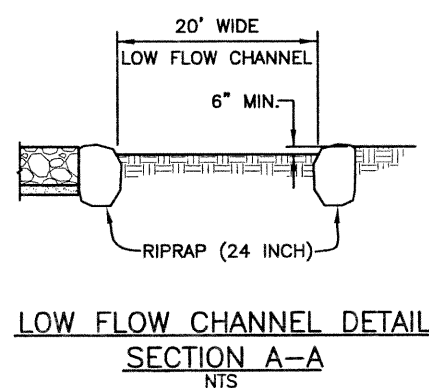
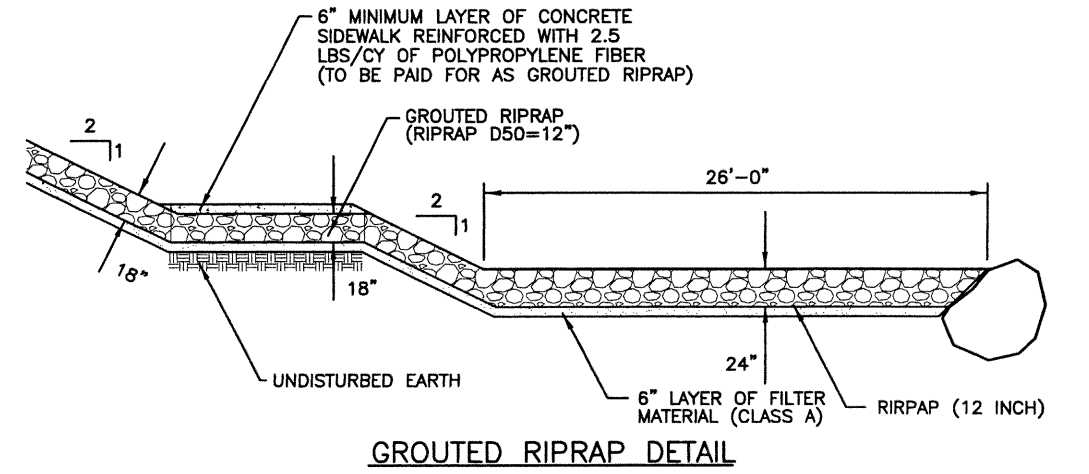
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QUANTITIES (Preliminary Stage Only)		REVISION DATES	
Initial	Date	Initial	Date
DESIGN		DETAIL	
Initial	Date	Initial	Date



TABULATION OF RIPRAP AT BRIDGE

ITEM	QUANTITY	UNIT
FILTER MATERIAL (CLASS A)	535	CY
GROUTED RIPRAP	60	CY
RIPRAP (12 INCH)	1675	CY
RIPRAP (24 INCH)	90	CY



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Last Modification Date:	12/18/02	Initials:	RAD
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Acad Ver.	2000i	Scale:	VARIES
Units:	ENGLISH		

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NO.	DATE	DESCRIPTION

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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
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No Revisions:	
Revised:	
Void:	

136TH AVENUE OVER BIG DRY CREEK  
BRIDGE HYDRAULIC INFORMATION

(1 OF 2)

Designer:	E. LIND	Structure Numbers	
Detailer:	C. TWISS		
Sheet Subset:	BRIDGE	Subset Sheets:	B6 of 40

Project No./Code

	97-91
Sheet Number	97

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**100-YEAR RECURRENCE INTERVAL**

FLOW UPSTREAM OF BRIDGE = 8839 C.F.S.  
 DRAINAGE AREA = 41.5± SQ. MI.

**CHANNEL DESCRIPTION**

BOTTOM MATERIAL: COHESIVE  NONCOHESIVE   
 BOTTOM MAT. SIZE: CLAY  SILT  SAND  GRAVEL  COBBLES  OTHERS \_\_\_\_\_  
 STREAM FORM: STRAIGHT  MEANDERING  BRAIDED   
 MANNING'S "n" FOR DESIGN: CHANNEL .040 OVERBANK .035  
 DEBRIS -- BRUSH  TREES/LOGS  ICE  OTHER \_\_\_\_\_

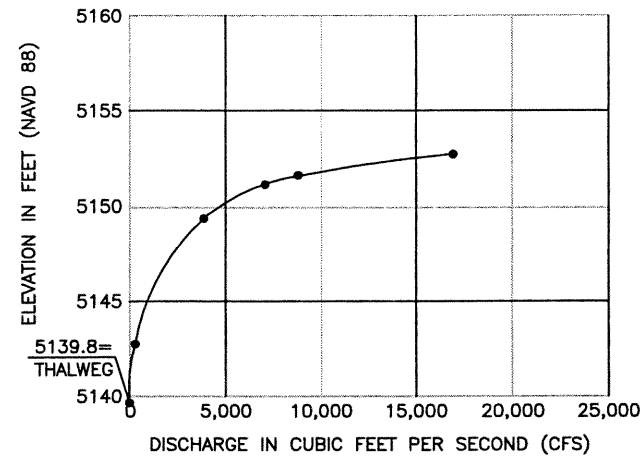
**COMPARISON HYDRAULICS (100 YEAR EVENT)**  
 (AT SECTION LOCATED 100 FEET UPSTREAM OF BRIDGE)

	VELOCITY (FT./SEC)		WS EL. (FT.)	MAX. BACKWATER (FT.)	FROUDE NO.
	AVERAGE	CHANNEL			
EXISTING CONDITIONS	3.9	6.3	5152.0	-	0.38
PROPOSED CONDITIONS	4.1	4.2	5151.8	-0.2	0.23

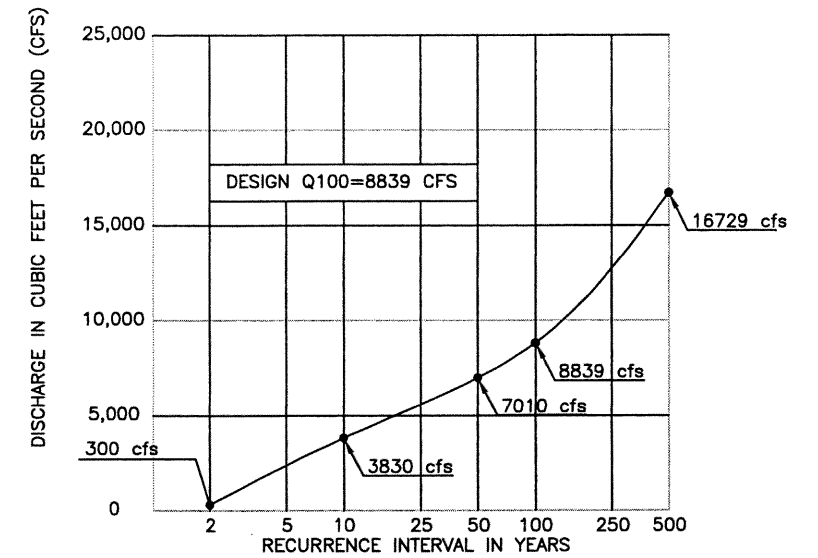
**HYDRAULIC DATA**

LOCATION	LOW CHORD ELEVATION AT ABUT. FRONT FACE		100-YEAR WATER SURFACE ELEVATION
	ABUT. 1	ABUT. 3	
S. SIDE (UPSTREAM)	5152.9	5150.6	5151.7
N. SIDE (DOWNSTREAM)	5153.1	5150.8	5151.6

ALL ELEVATIONS SHOWN ARE ON NAVD 88 DATUM. SUBTRACT 3.0 FEET TO GET NGVD 29 DATUM THAT FEMA AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT USE.

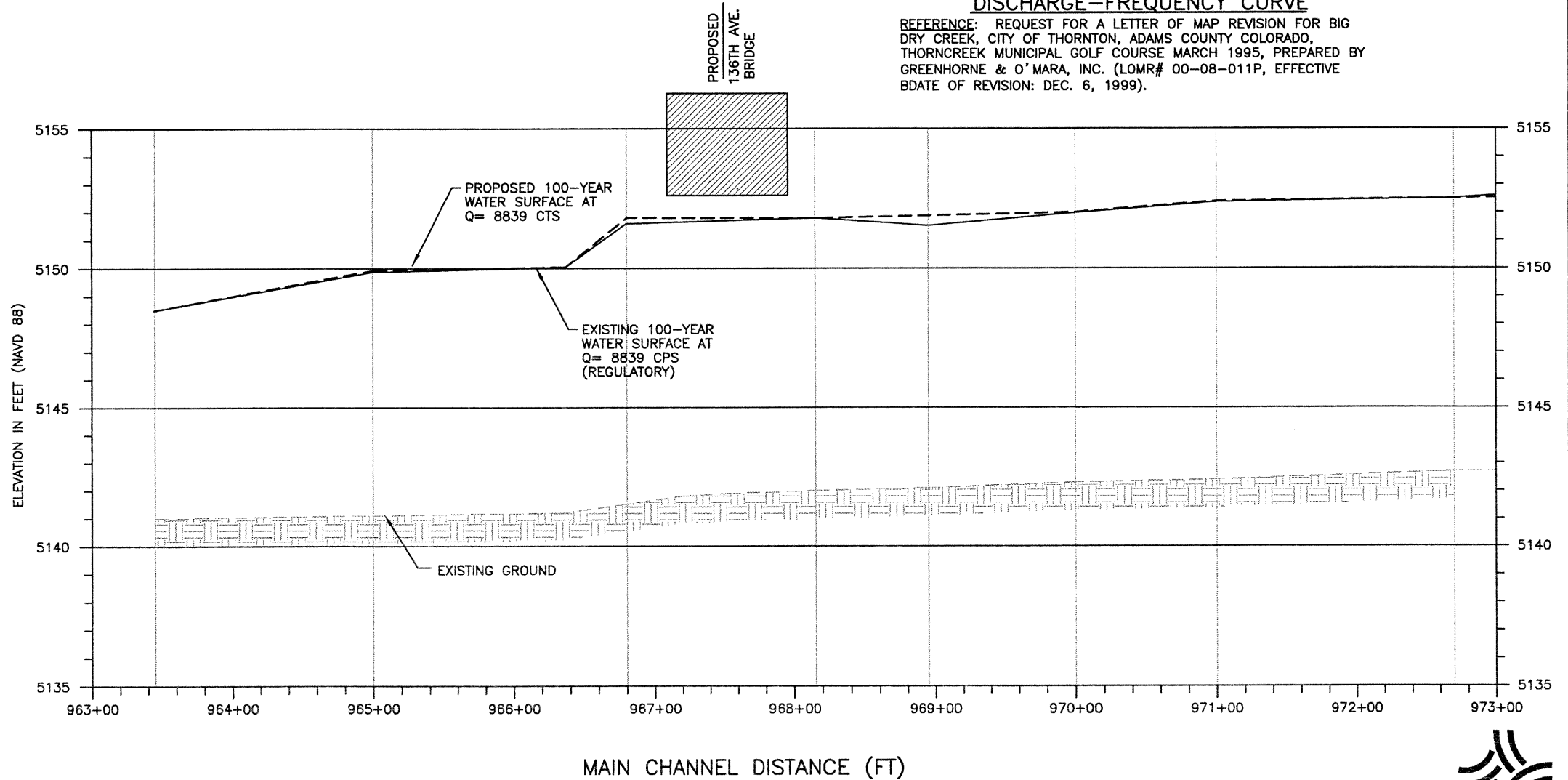


**STAGE-DISCHARGE CURVE AT UPSTREAM FACE OF NEW BRIDGE**



**DISCHARGE-FREQUENCY CURVE**

REFERENCE: REQUEST FOR A LETTER OF MAP REVISION FOR BIG DRY CREEK, CITY OF THORNTON, ADAMS COUNTY COLORADO, THORNCREEK MUNICIPAL GOLF COURSE MARCH 1995, PREPARED BY GREENHORNE & O'MARA, INC. (LOMR# 00-08-011P, EFFECTIVE BDATE OF REVISION: DEC. 6, 1999).



DESIGN	Initial	Date	QUANTITIES	
			Checked by	Date
DESIGNED BY	ELL	1/02	Checked by	SPG
CHECKED BY	SPG		Checked by	SPG
DETAIL	Initial	Date	Checked by	SPG
	ELL	1/02	Checked by	SPG
REVISION DATES	Initial	Date	Checked by	SPG
	ELL	1/02	Checked by	SPG

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**Index of Revisions**


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 fax 303.721.0832  
 fhu@fhueng.com

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As Constructed	
No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER BIG DRY CREEK BRIDGE HYDRAULIC INFORMATION**

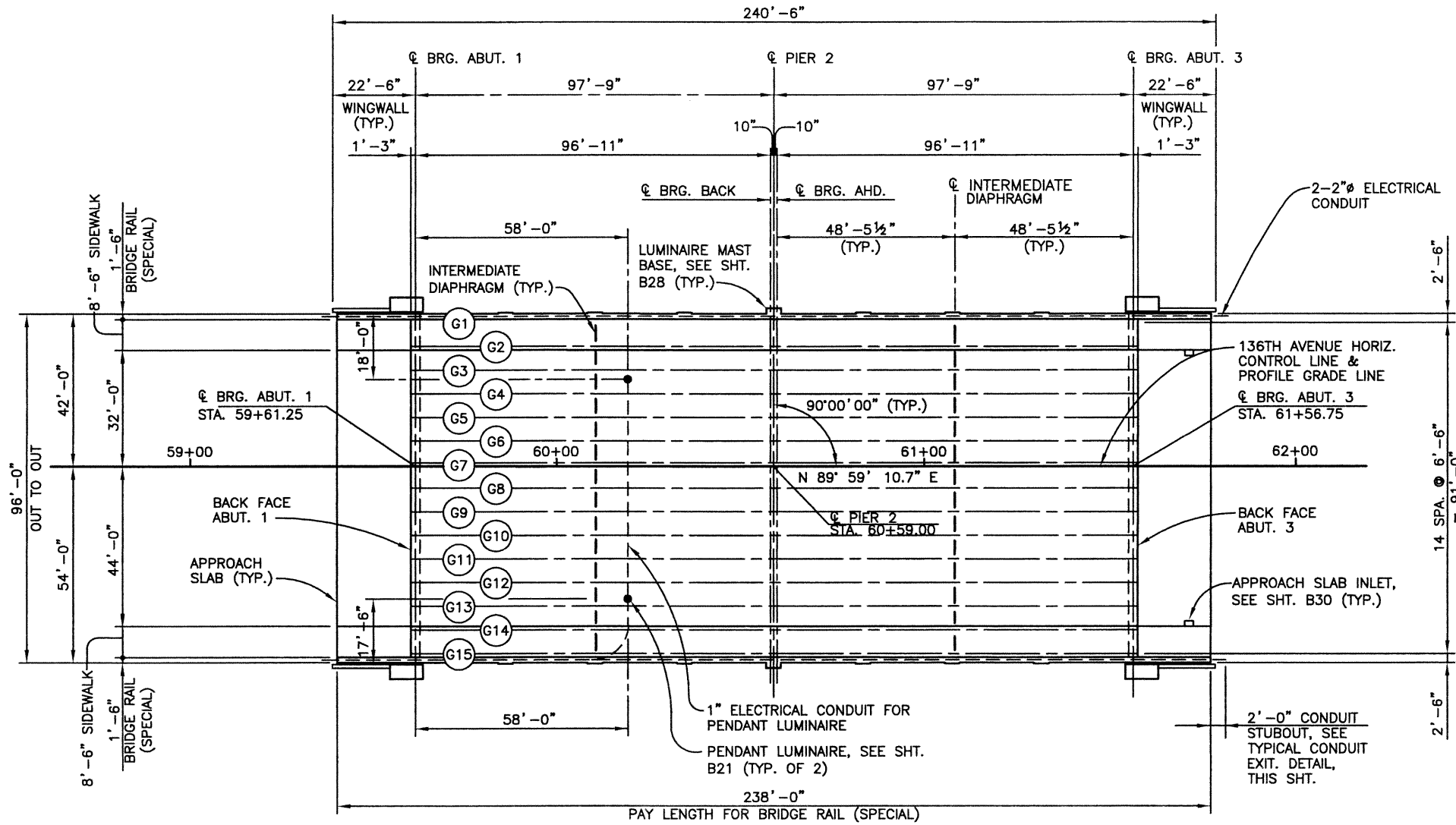
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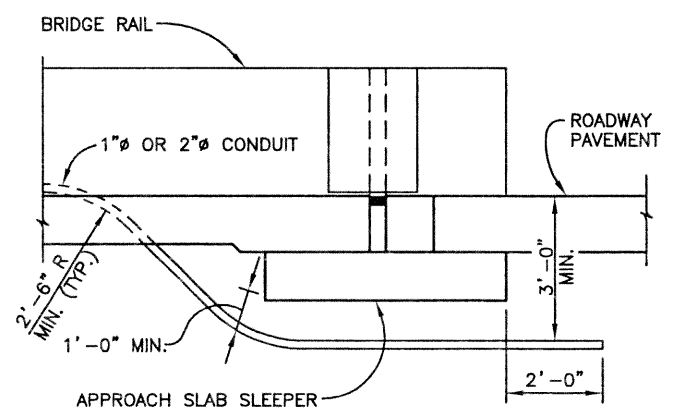
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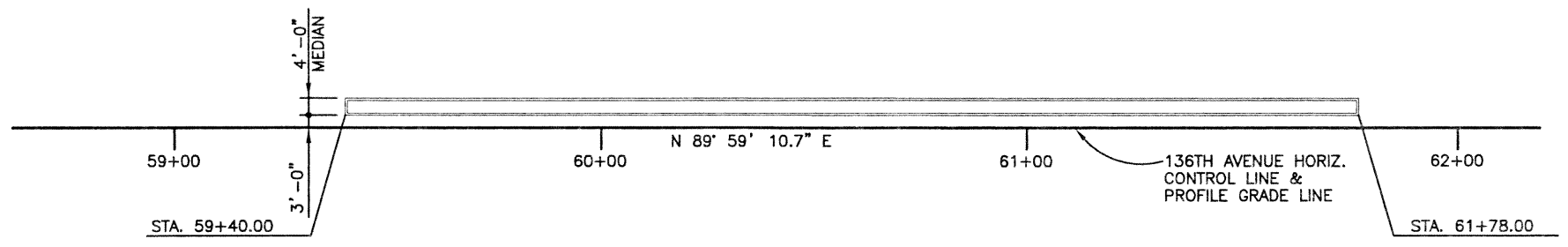
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KMA		KMA		KRK	



NOTE:  
FOR FENCE POST SPACING,  
SEE SHT. B26.



TYPICAL CONDUIT EXIT DETAIL



RAISED MEDIAN LAYOUT

Computer File Information	
Creation Date:	09/26/01 Initials: SEH
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Acad Ver.	2000i Scale: VARIES Units: ENGLISH

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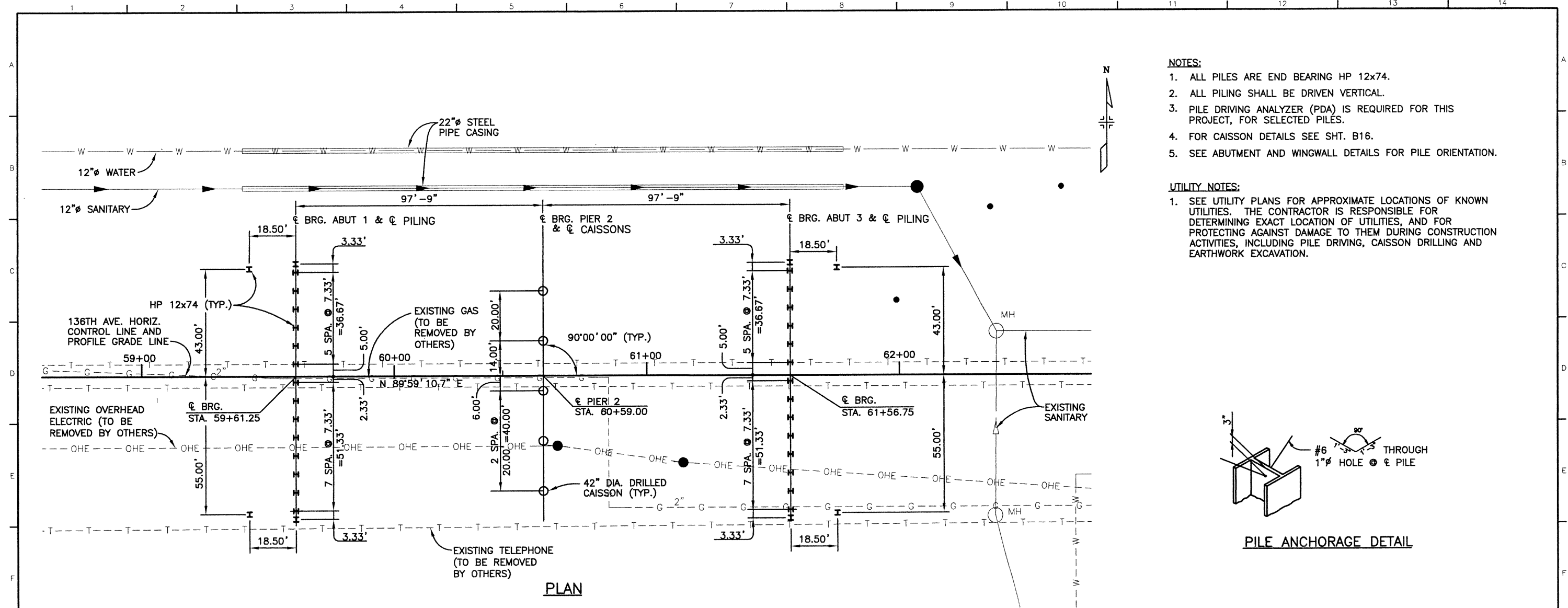
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	136TH AVENUE OVER BIG DRY CREEK CONSTRUCTION LAYOUT		Project No./Code
No Revisions:			97-91
Revised:	Designer: S. HOWARD	Structure Numbers	
Void:	Detailer: P. HELM		
	Sheet Subset: BRIDGE	Subset Sheets: 88 of 40	Sheet Number 99



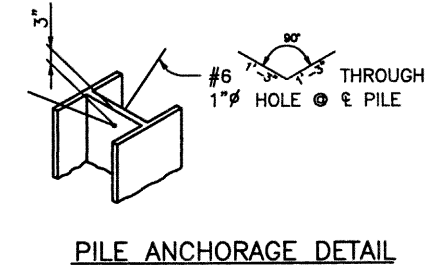
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10/02	KMA	10/02	KMA	03/02	KRK
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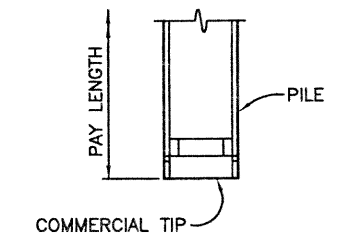


- NOTES:**
1. ALL PILES ARE END BEARING HP 12x74.
  2. ALL PILING SHALL BE DRIVEN VERTICAL.
  3. PILE DRIVING ANALYZER (PDA) IS REQUIRED FOR THIS PROJECT, FOR SELECTED PILES.
  4. FOR CAISSON DETAILS SEE SH. B16.
  5. SEE ABUTMENT AND WINGWALL DETAILS FOR PILE ORIENTATION.

- UTILITY NOTES:**
1. SEE UTILITY PLANS FOR APPROXIMATE LOCATIONS OF KNOWN UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING EXACT LOCATION OF UTILITIES, AND FOR PROTECTING AGAINST DAMAGE TO THEM DURING CONSTRUCTION ACTIVITIES, INCLUDING PILE DRIVING, CAISSON DRILLING AND EARTHWORK EXCAVATION.



PILE ANCHORAGE DETAIL



REINFORCING TIP DETAIL  
ATTACH REINFORCING TIP PER MANUFACTURER'S INSTRUCTIONS

PLAN

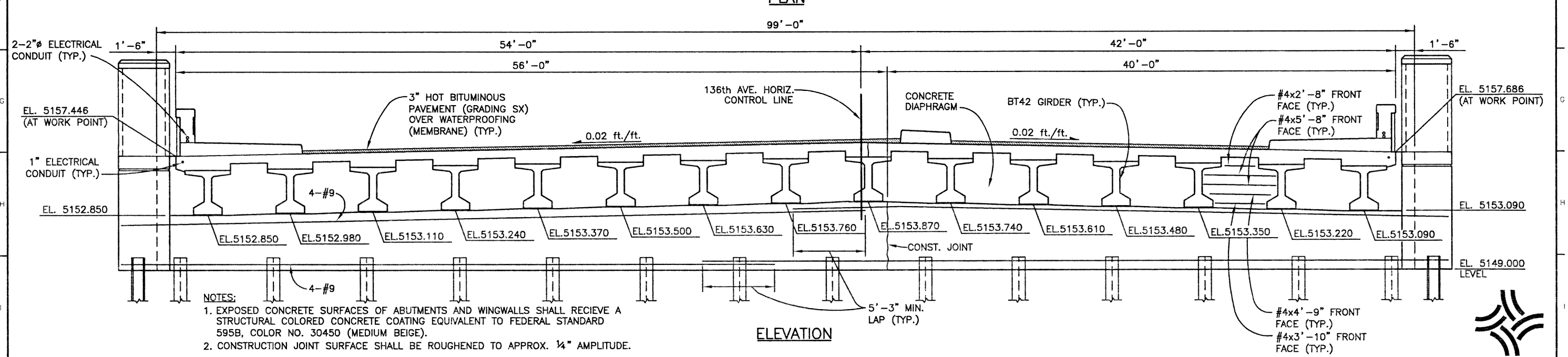
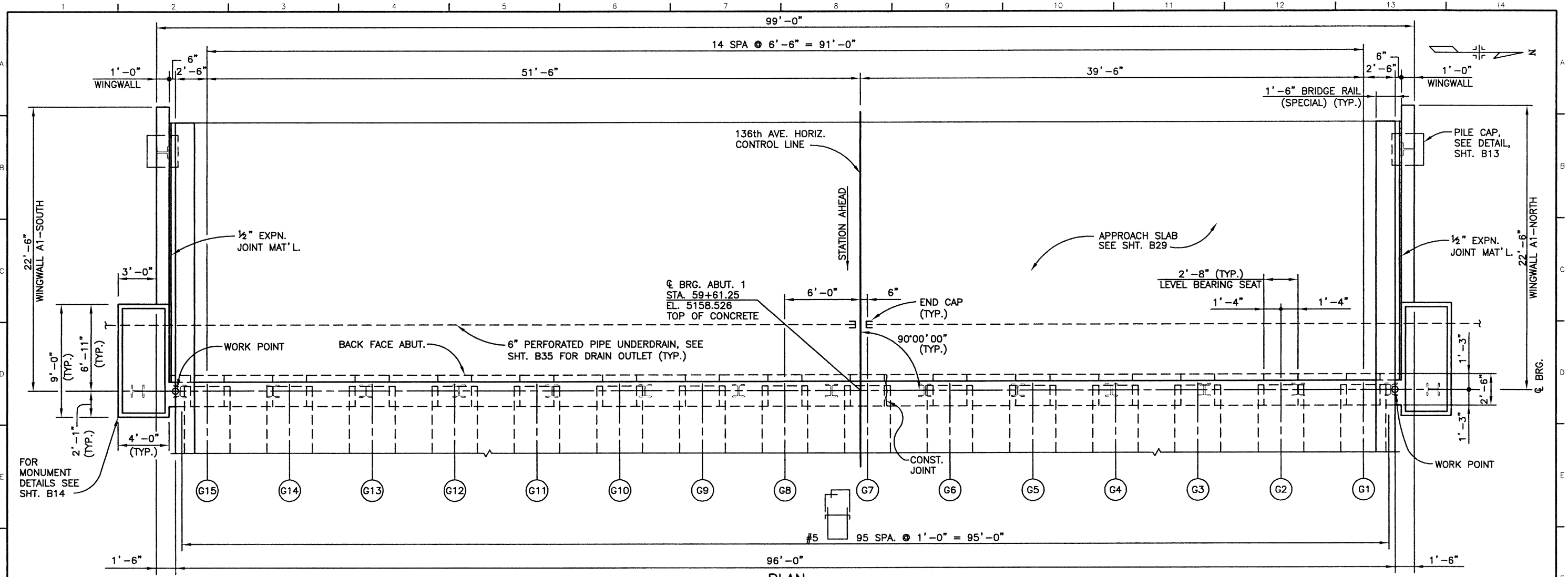
PIER CAISSON DATA								
LOCATION	SIZE	ALLOWABLE END BEARING (KSF)	ALLOWABLE SIDE SHEAR (KSF)	MAX. DESIGN CAISSON LOAD (KIPS)	MIN. BRG. TIP ELEV.	TOP OF CAISSON/PILE ELEVATION	CAISSON/PILE LENGTH (ft)	MIN. EMBEDMENT INTO BEDROCK
ABUT. 1	HP 12x74	196	---	191	5124.00	5150.00	26.00	8'-0"
PIER 2	42"Ø	45	4.5	1030	5119.00	5137.00	18.00	13'-0"
ABUT. 3	HP 12x74	196	---	191	5124.00	5147.70	23.70	8'-0"

<b>Computer File Information</b> Creation Date: 10/12/01 Initials: SEH Last Modification Date: 06/19/02 Initials: PRH Full Path: J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\ Drawing File Name: B00033FDN01.DWG Acad Ver. 2000i Scale: VARIES Units: ENGLISH		<b>Index of Revisions</b> <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																		 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111		<b>As Constructed</b> No Revisions: Revised: Void:		<b>136TH AVENUE OVER BIG DRY CREEK PILING AND CAISSON LAYOUT</b> Designer: S. HOWARD Detailer: P. HELM Sheet Subset: BRIDGE Structure Numbers: Subset Sheets: B9 of 40		<b>Project No./Code</b> 97-91 Sheet Number 100	



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Checked by	Checked by	Checked by	Checked by	Checked by	Checked by
KMA	10/02	RMA	10/02	RRK	03/02



Computer File Information		Index of Revisions		As Constructed		136TH AVENUE OVER BIG DRY CREEK ABUTMENT 1 PLAN AND ELEVATION		Project No./Code	
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Last Modification Date:	11/26/02 Initials: PRH			Revised:		Detailer:	P. HELM	Sheet Subset:	BRIDGE
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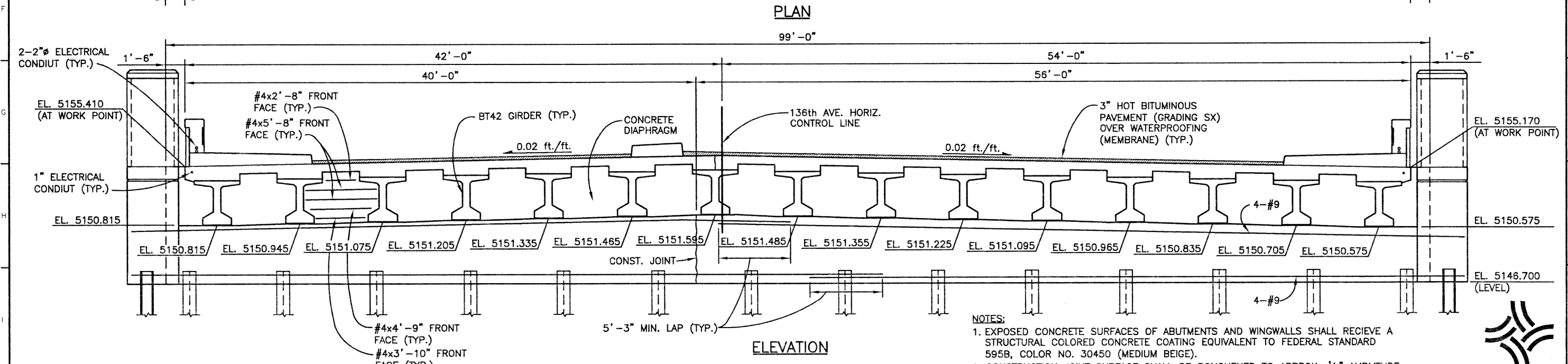
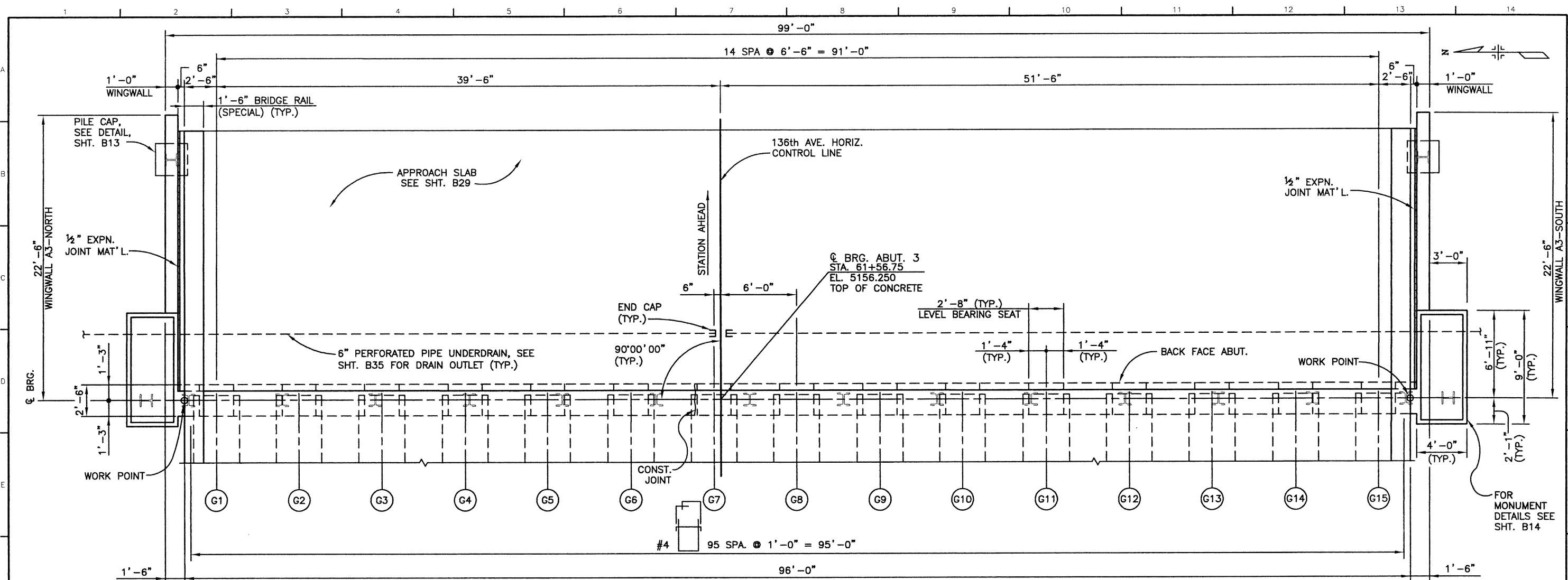
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 fax 303.721.0832  
 fhu@thueng.com

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KMA	10/02	KMA	10/02	KRK	03/02



- NOTES:**
1. EXPOSED CONCRETE SURFACES OF ABUTMENTS AND WINGWALLS SHALL RECEIVE A STRUCTURAL COLORED CONCRETE COATING EQUIVALENT TO FEDERAL STANDARD 595B, COLOR NO. 30450 (MEDIUM BEIGE).
  2. CONSTRUCTION JOINT SURFACE SHALL BE ROUGHENED TO APPROX. 1/4" AMPLITUDE.

**Computer File Information**

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Last Modification Date:	11/26/02	Initials:	PRH
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No.	Description

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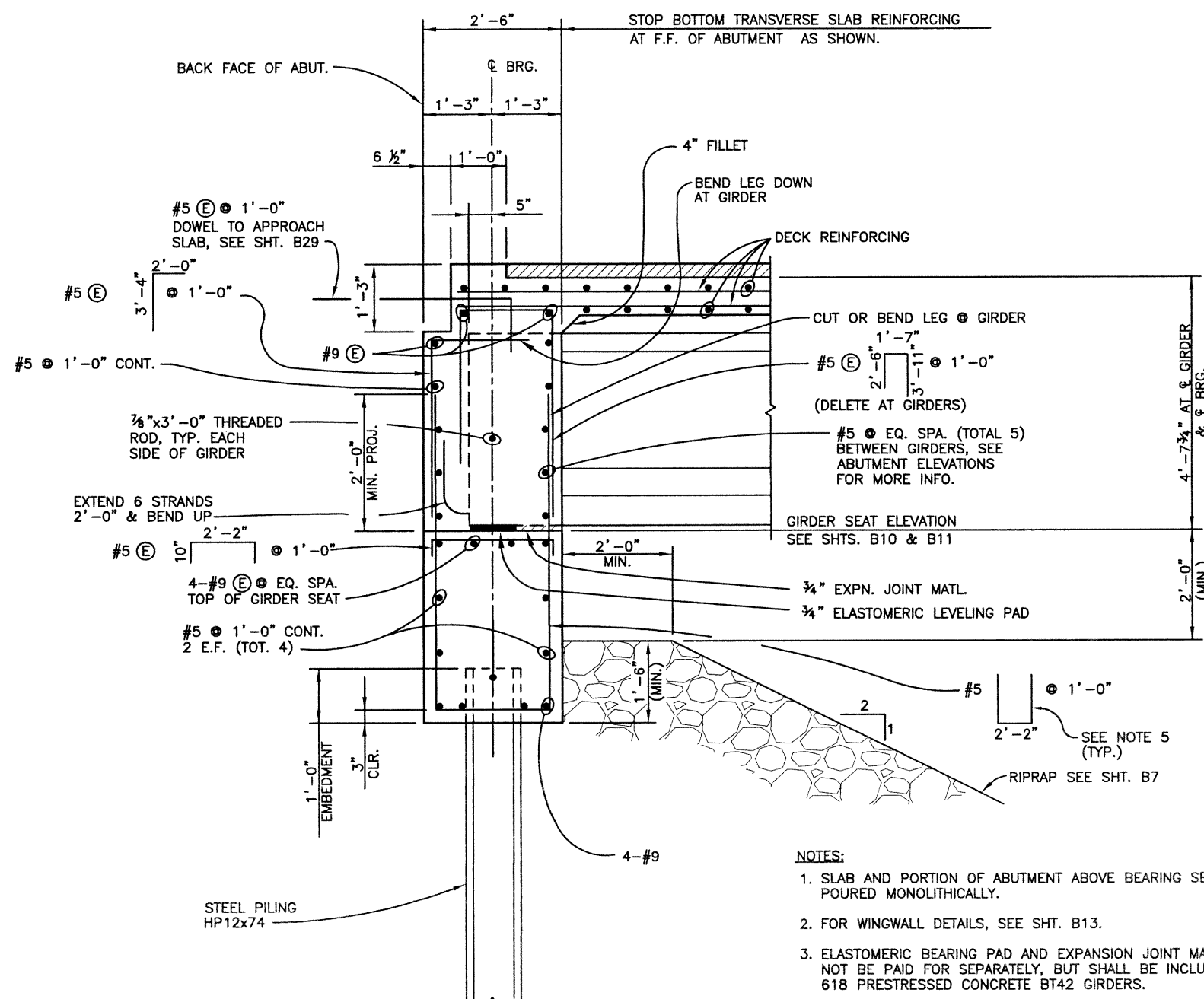
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fax 303.721.0832  
fhu@fhueng.com

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As Constructed	136TH AVENUE OVER BIG DRY CREEK ABUTMENT 3 PLAN AND ELEVATION	Project No./Code	97-91
No Revisions:	Designer: S. HOWARD	Structure Numbers	
Revised:	Detailer: P. HELM		
Void:	Sheet Subset: BRIDGE	Subset Sheets: B11 of 40	Sheet Number 102

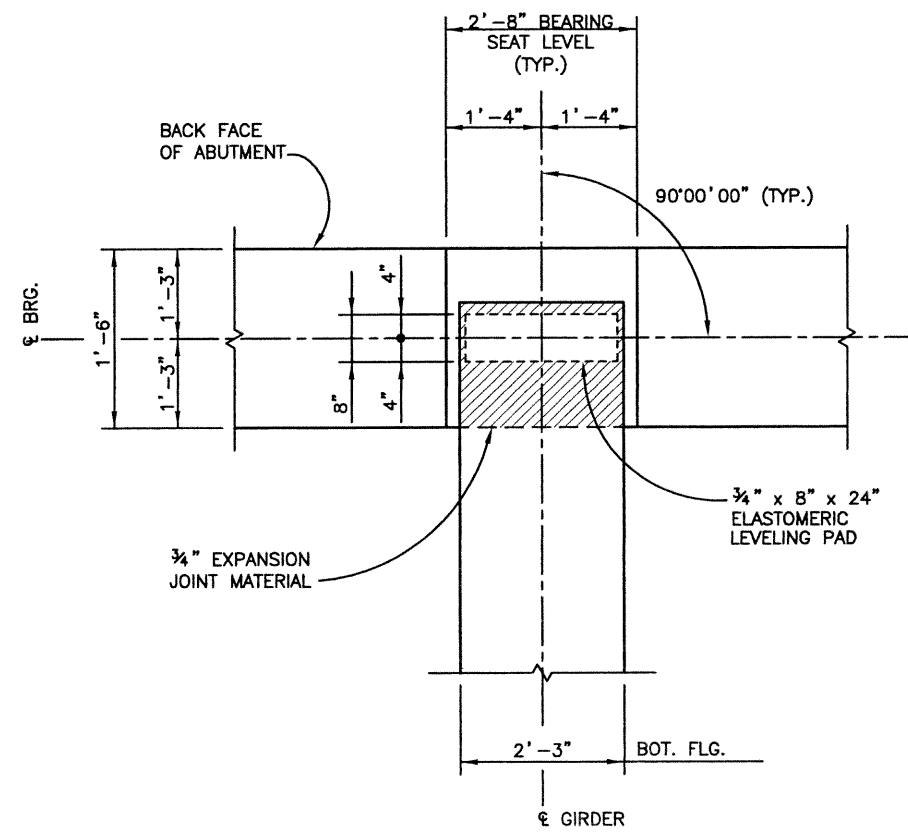
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SEH	12/01	RAD	12/01	SEH	03/02
KMA	10/02	KMA	10/02	KRK	03/02
Checked by		Checked by		Checked by	



TYPICAL ABUTMENT SECTION

- NOTES:**
1. SLAB AND PORTION OF ABUTMENT ABOVE BEARING SEAT TO BE POURED MONOLITHICALLY.
  2. FOR WINGWALL DETAILS, SEE SHT. B13.
  3. ELASTOMERIC BEARING PAD AND EXPANSION JOINT MATERIAL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 618 PRESTRESSED CONCRETE BT42 GIRDERS.
  4. ALL ABUTMENT AND WINGWALL CONCRETE SHALL BE CONCRETE CLASS D (BRIDGE).
  5. VARIES 6'-2" (MAX.) TO 5'-11" (MIN.) FOR ABUTMENT 1 AND ABUTMENT 3.
  6. FOR CONSTRUCTION LAYOUT, SEE SHT. BB.
  7. FOR PILING AND CAISSON LAYOUT, SEE SHT. B9.



BEARING DETAIL

Computer File Information			Index of Revisions			As Constructed		136TH AVENUE OVER BIG DRY CREEK ABUTMENT SECTIONS AND DETAILS		Project No./Code	
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Last Modification Date:	06/19/02	Initials: PRH				Revised:	Designer: S. HOWARD	Structure Numbers			
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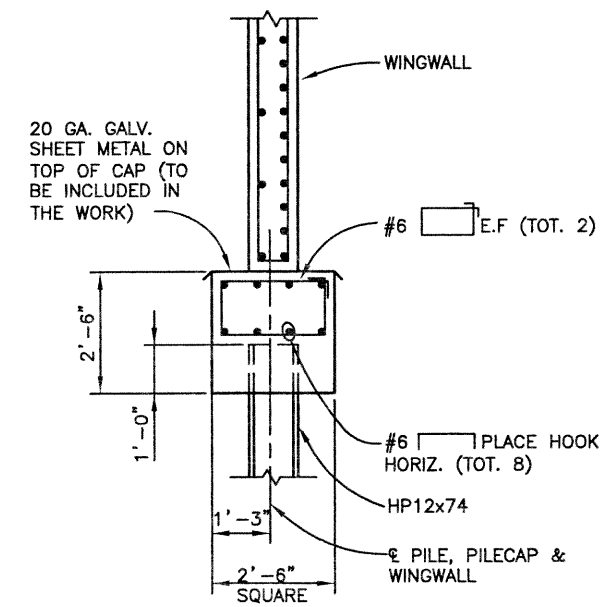
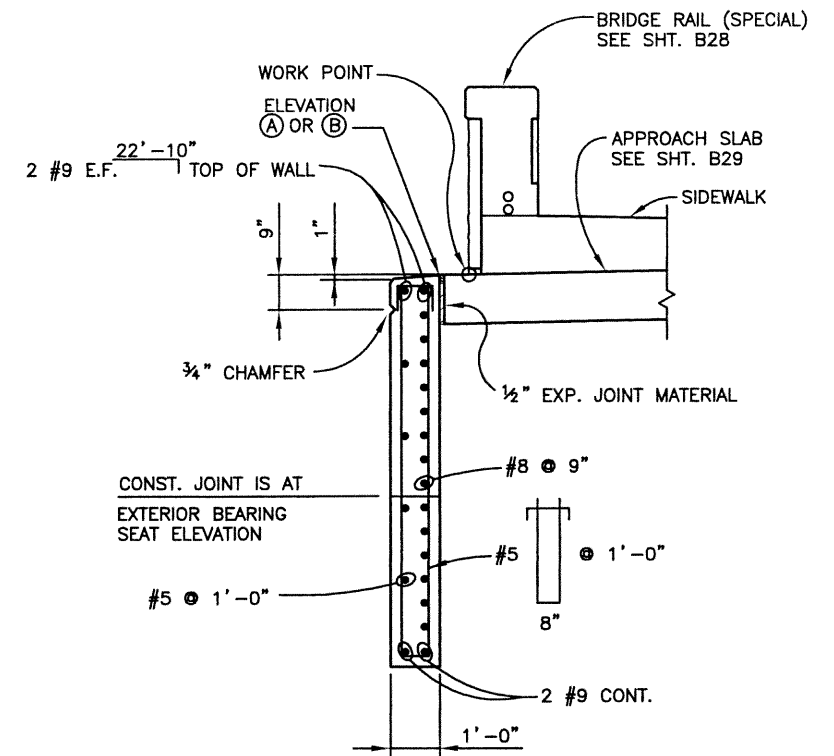
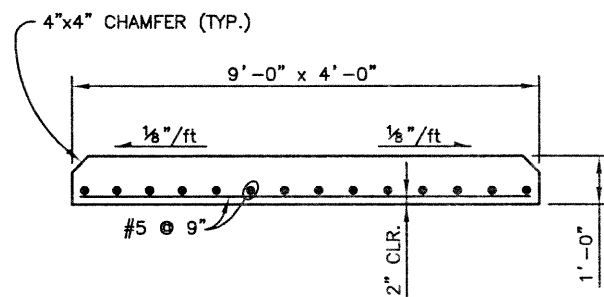
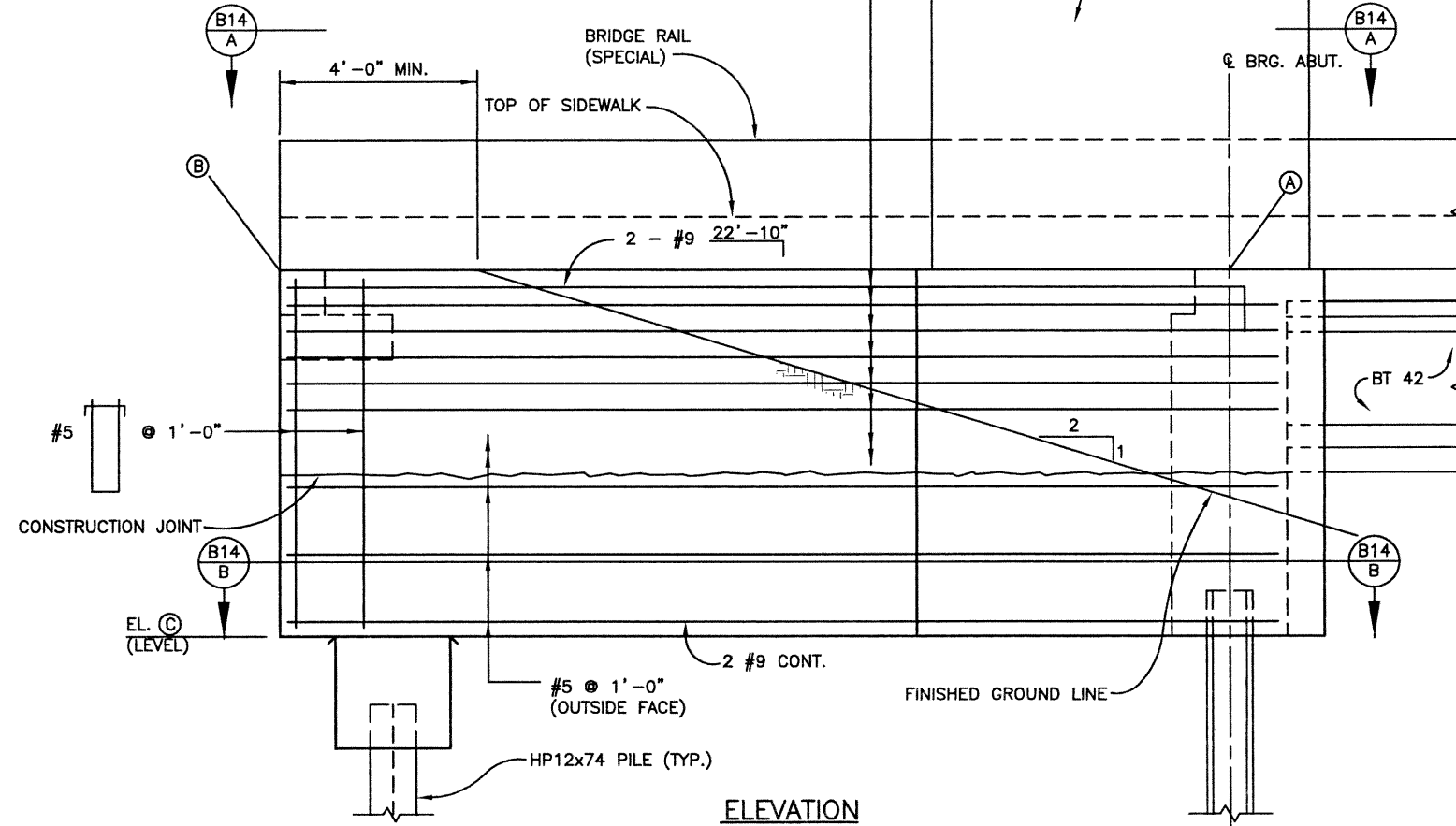


303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
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WINGWALL	ELEVATION			
	A	B	C	D
A1-NORTH	5157.936	5157.995	5149.000	5165.653
A1-SOUTH	5157.696	5157.755	5149.000	5165.413
A3-NORTH	5155.660	5155.200	5146.700	5163.378
A3-SOUTH	5155.400	5154.960	5146.700	5163.138



DESIGN		DETAIL		QUANTITIES	
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Checked by	10/02	Checked by	10/02	Checked by	03/02
KMA		KMA		KRK	

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Acad Ver.	2000i Scale: 1/2"=1'-0" Units: ENGLISH

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fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

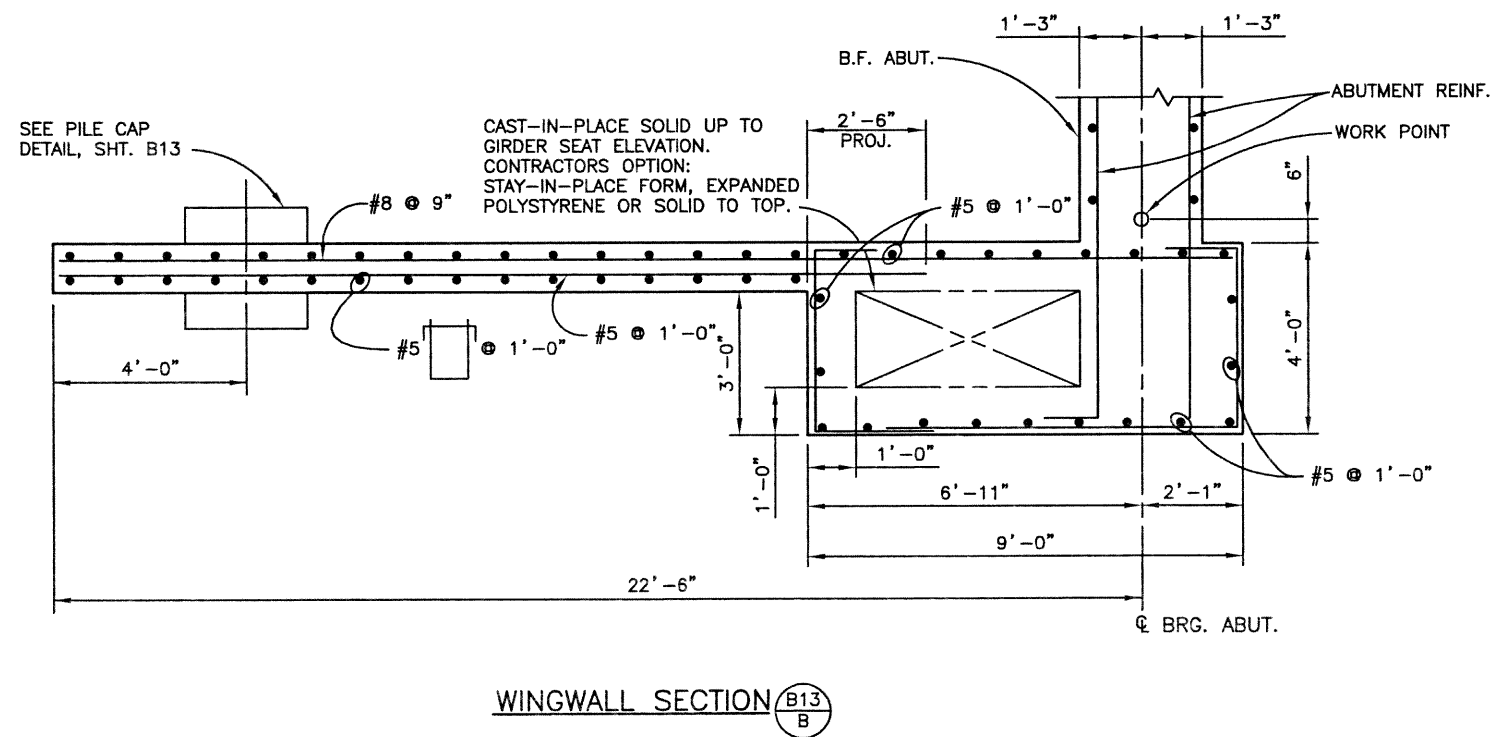
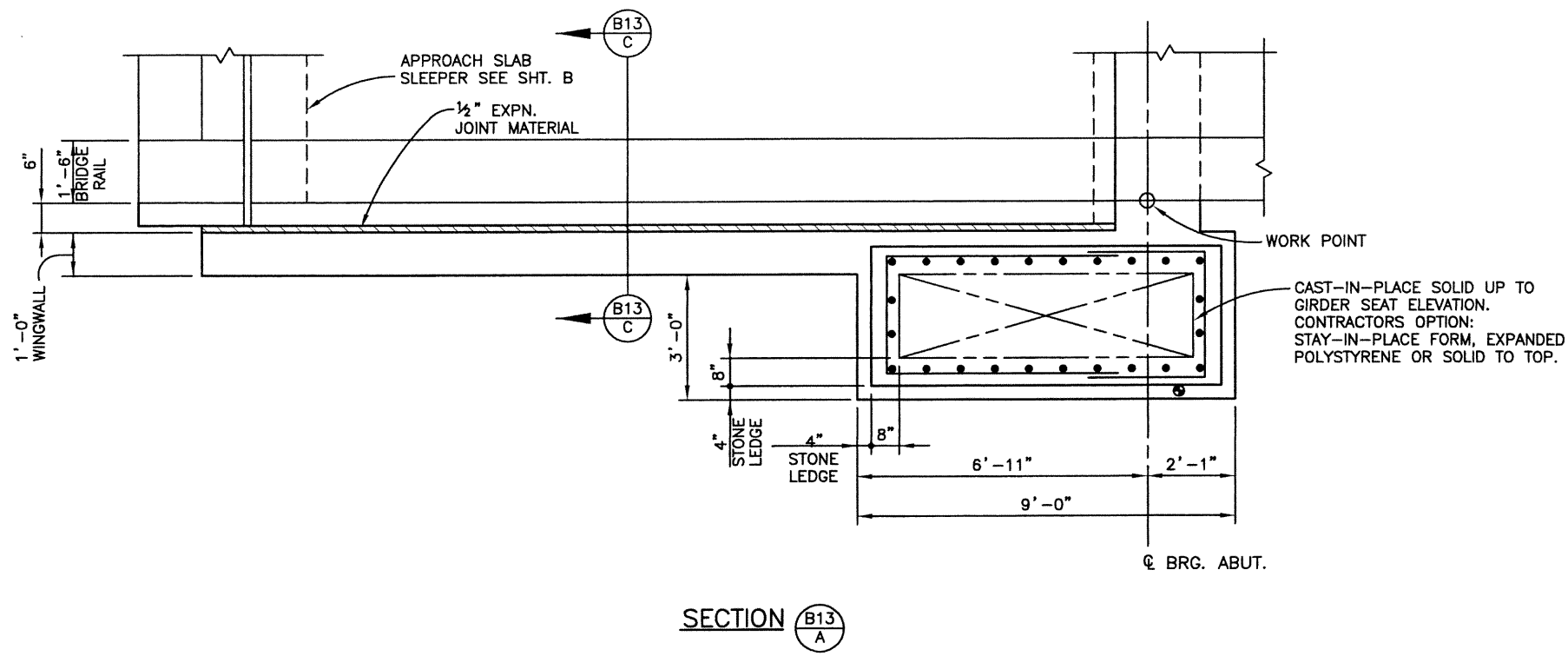
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Revised:		Detailer:	P. HELM	Subset Sheets:	B13 of 40
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fax 303.721.0832  
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No Revisions:
Revised:
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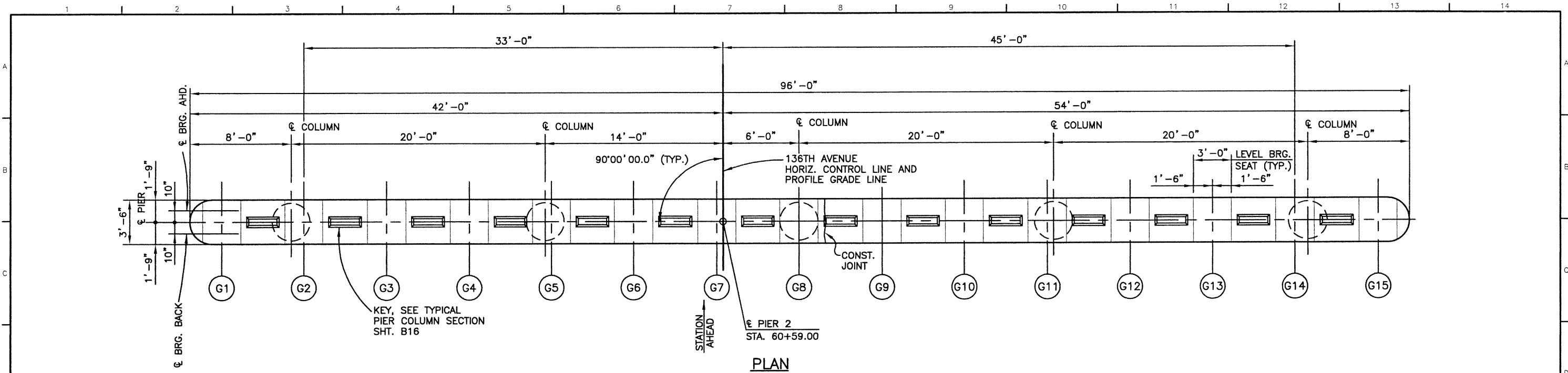
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Designer:	S. HOWARD
Detailer:	P. HELM
Sheet Subset:	BRIDGE
Subset Sheets:	B14 of 40

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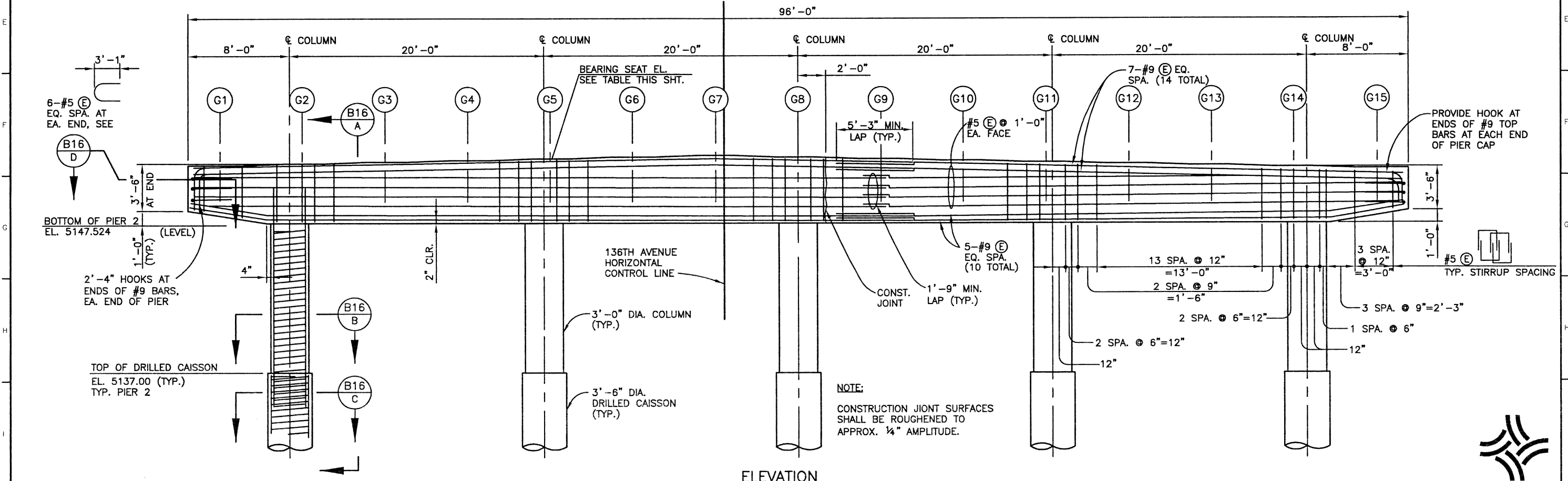


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KMA	10/02	KMA	10/02	KRK	03/02
Designed by	Checked by	Detailed by	Checked by	Quantities by	Checked by
SEH	KMA	SEH	KMA	SEH	KRK



BEARING SEAT ELEVATION															
GIRDER	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15
ELEVATION - PIER 2	5152.374	5152.504	5152.634	5152.764	5152.894	5153.024	5153.094	5152.984	5152.854	5152.724	5152.594	5152.464	8152.334	5152.204	5152.074



NOTE:  
CONSTRUCTION JOINT SURFACES SHALL BE ROUGHENED TO APPROX. 1/4" AMPLITUDE.

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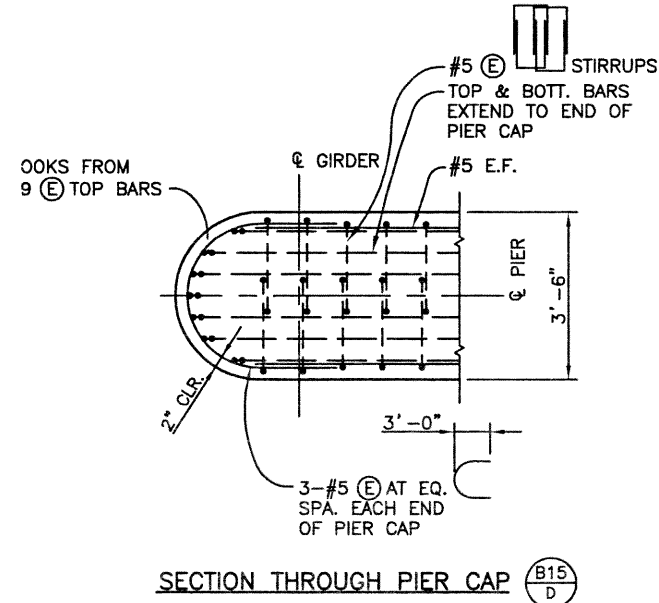
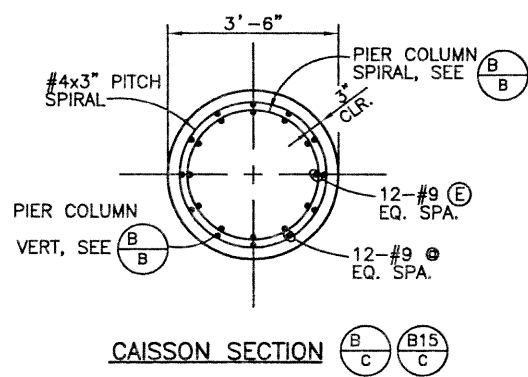
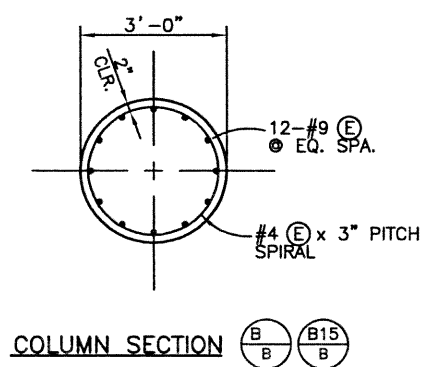
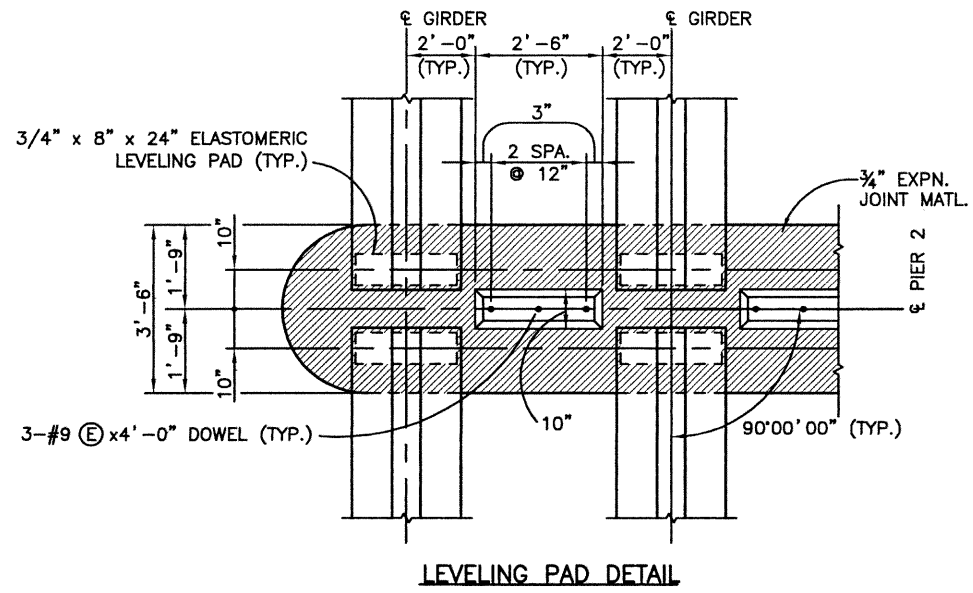
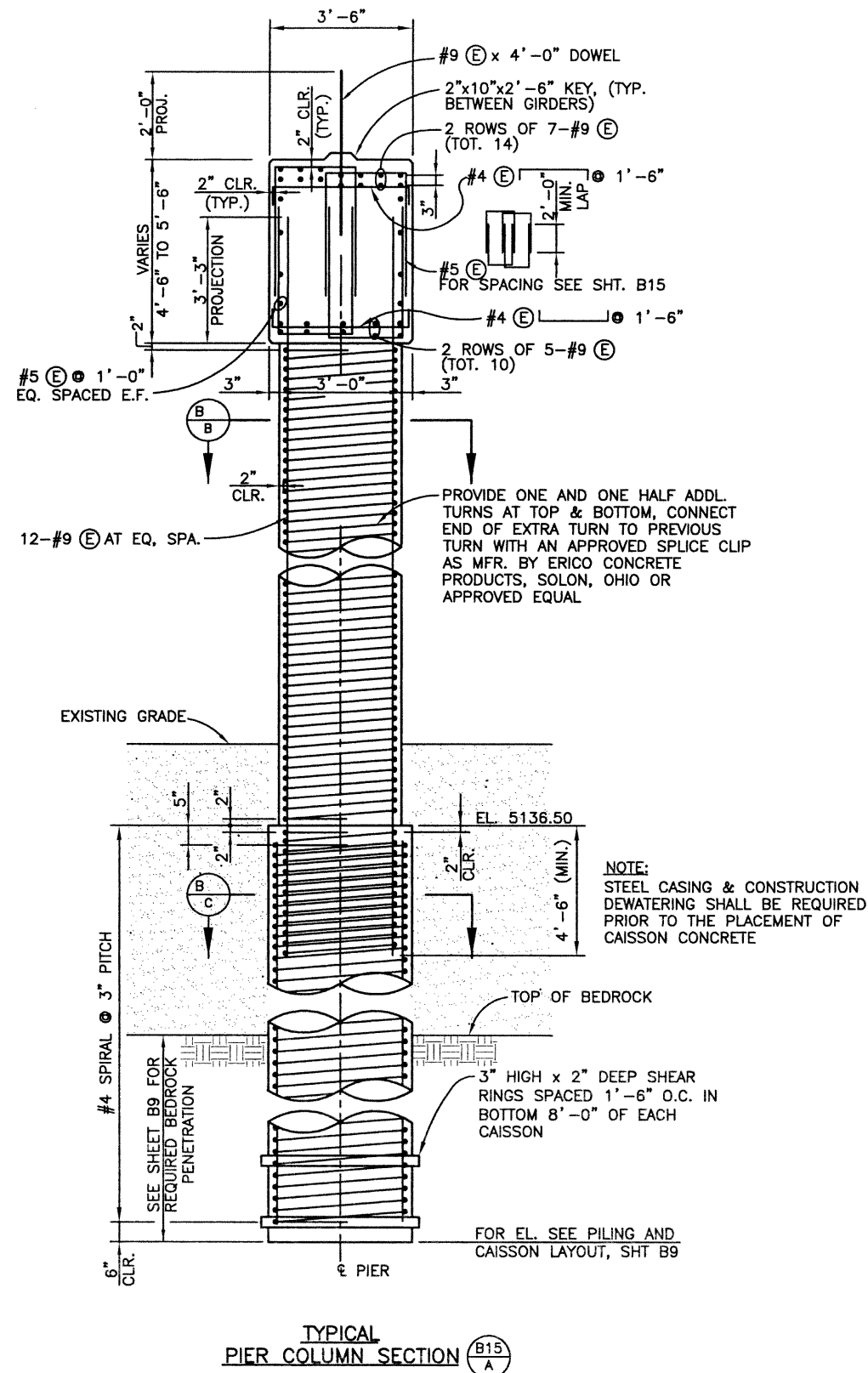
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fax 303.721.0832  
fhu@fhueng.com

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As Constructed		136TH AVENUE OVER BIG DRY CREEK PIER 2 PLAN AND ELEVATION		Project No./Code		
No Revisions:		Designer:	S. HOWARD	Structure Numbers		
Revised:		Detailer:	P. HELM			
Void:		Sheet Subset:	BRIDGE	Subset Sheets:	B15 of 40	
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fax 303.721.0832  
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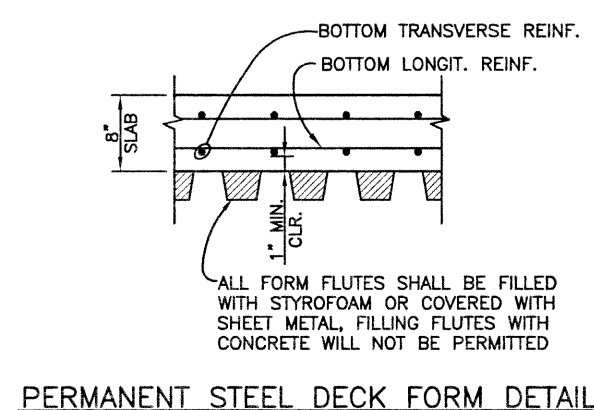
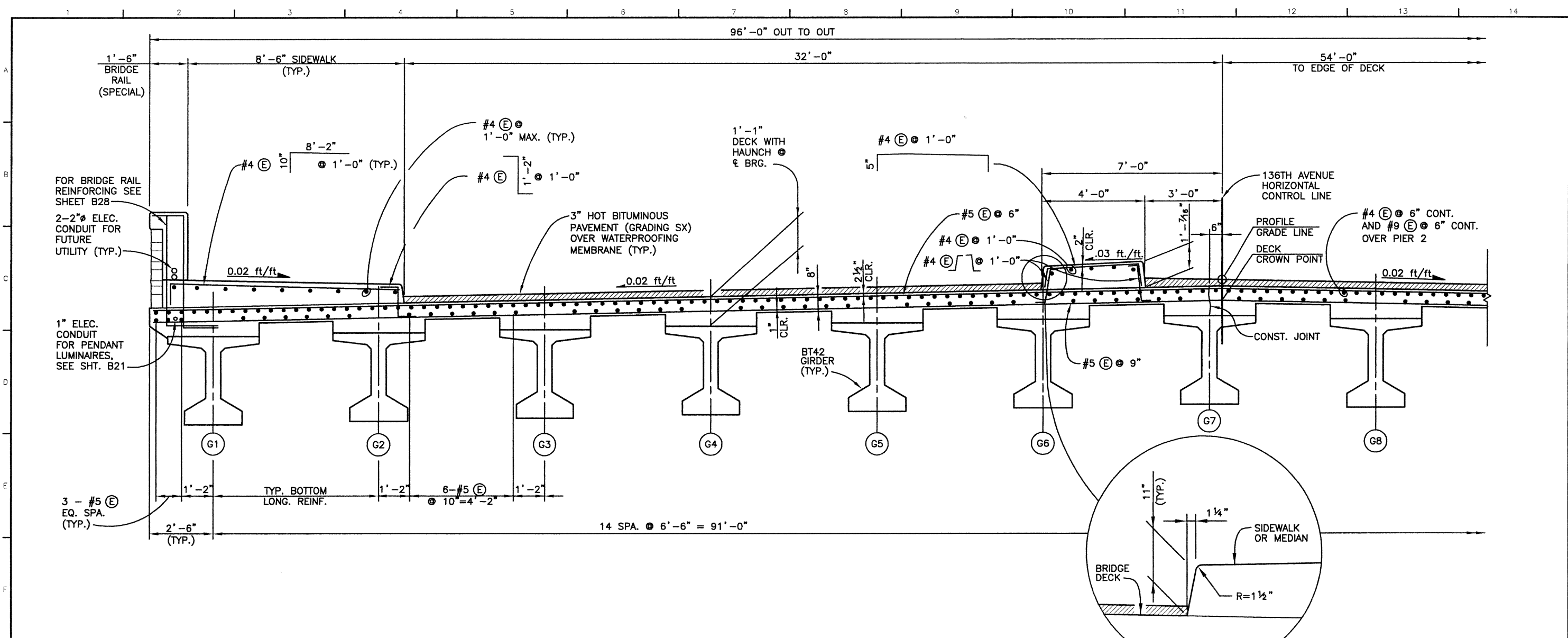
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As Constructed		136TH AVENUE OVER BIG DRY CREEK PIER 2 SECTIONS AND DETAILS		Project No./Code	
No Revisions:		Designer:	S. HOWARD	Structure	
Revised:		Detailer:	P. HELM	Numbers	
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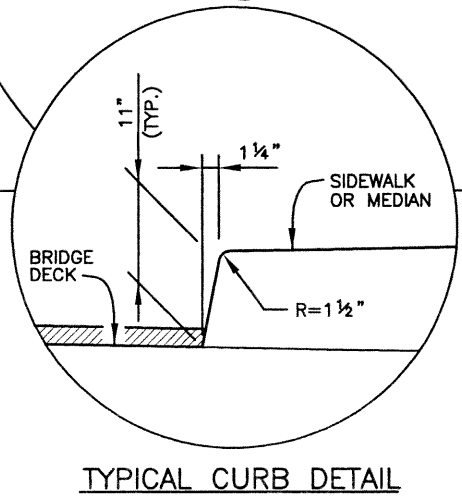


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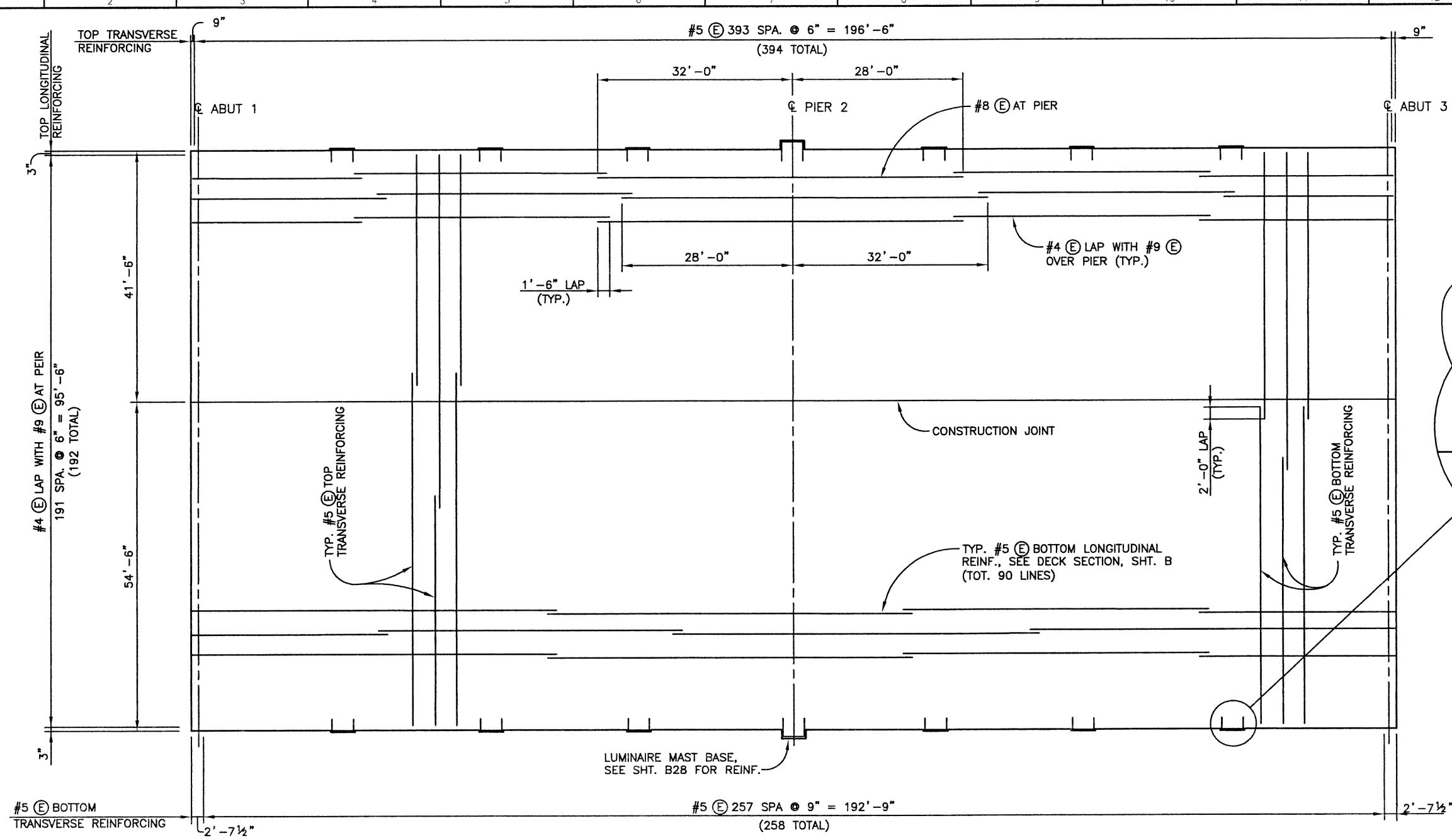
- NOTES:**
1. DECK, SIDEWALK AND MEDIAN CONCRETE SHALL BE CONCRETE CLASS D (BRIDGE).
  2. FOR DECK REINFORCING PLAN, SEE SHT B18.
  3. PERMANENT DECK FORMS ARE NOT PERMITTED IN THE CANTILEVER PORTIONS OF THE DECK SLAB.
  4. ALL COST OF ADDITIONAL MATERIAL AND LABOR REQUIRED TO USE PERMANENT DECK FORMS SHALL BE INCLUDED IN ITEM 601, CONCRETE CLASS D (BRIDGE).
  5. FOR BRIDGE RAIL REINFORCING EXTENDED INTO DECK SEE SHT. B28.
  6. PROVIDE TRANSVERSE COARSE BROOM FINISH ON BRIDGE DECK IN THE AREAS WHERE RAISED MEDIAN AND SIDEWALKS WILL BE PLACED.
  7. FOR LUMINAIRE SUPPORT DETAILS SEE SHT. B21.
  8. CONCRETE SEALER SHALL BE APPLIED TO CONCRETE DECK, SIDEWALK, RAISED MEDIAN AND APPROACH SLABS.



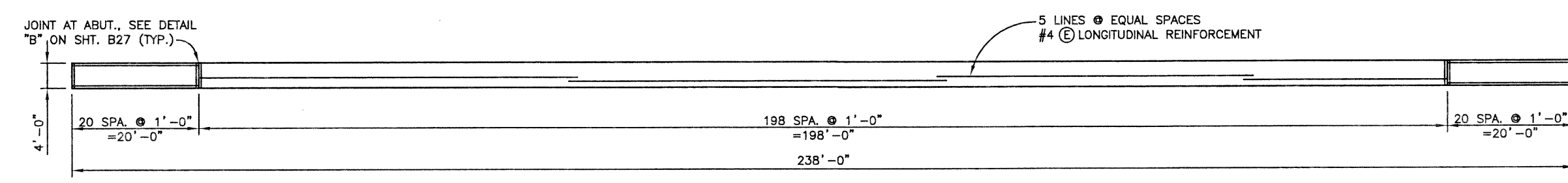
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KMA	10/02	KMA	10/02	KRK	03/02		



DECK REINFORCING PLAN



RAISED MEDIAN REINFORCING PLAN

- NOTES:
- SIDEWALK & BRIDGE RAIL NOT SHOWN, SEE SHTS B17 & B26.
  - STAGGER ALL SPLICES IN ADJACENT LONGITUDINAL AND TRANSVERSE REINFORCING LINES.

Computer File Information			Index of Revisions			As Constructed			136TH AVENUE OVER BIG DRY CREEK DECK REINFORCEMENT PLAN			Project No./Code	
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Last Modification Date:	11/26/02	Initials: PRH				Revised:			Designer: S. HOWARD	Structure Numbers:			
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Drawing File Name:	B00033SUP02.DWG								Sheet Subset: BRIDGE	Subset Sheets:	B18 of 40		Sheet Number 109
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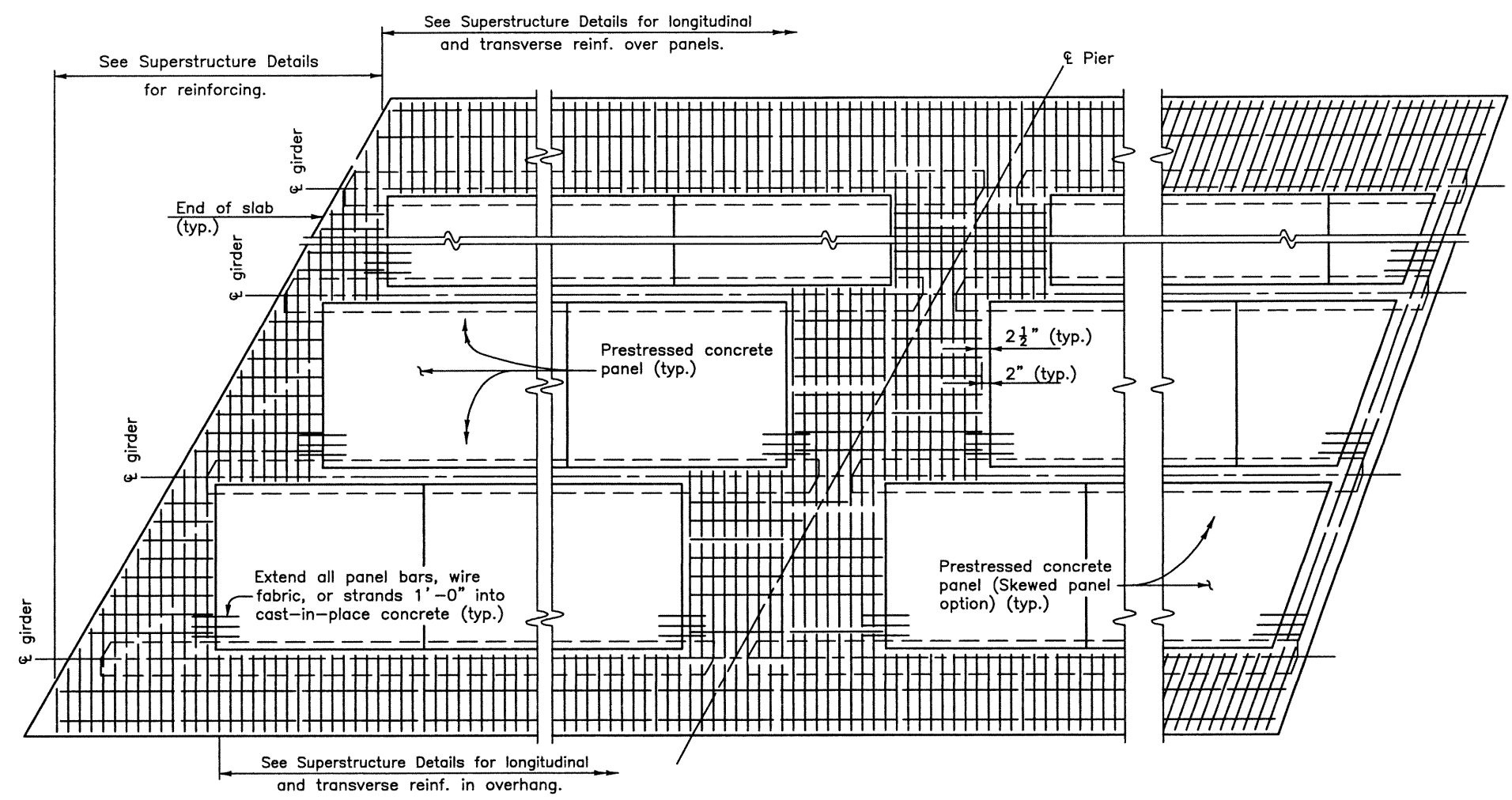
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fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
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Initial	Date	Initial	Date	Initial	Date	Initial	Date
SEA	12/01	RAD	12/01	SEA	03/02	SEA	03/02
SEA	10/02	KMA	10/02	KRK	03/02		



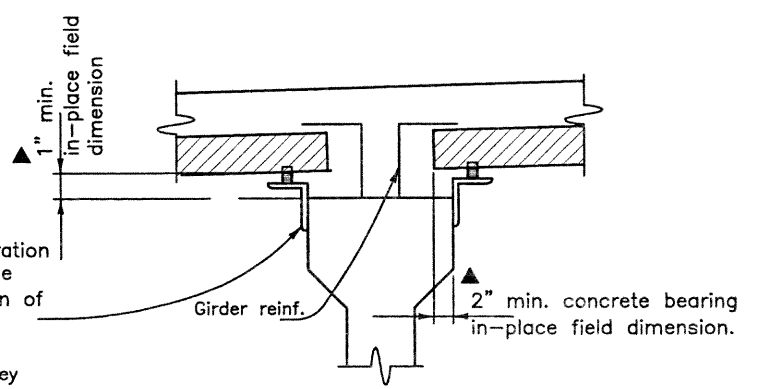
**END OF SLAB  
RECTANGULAR PANEL OPTION AND  
SKEWS LESS THAN 70°**

Rectangular panel option shall be used for skews less than 70°.

**CONTINUOUS SLAB  
OVER PIER**

**END OF SLAB  
SKEWED PANEL OPTION FOR  
SKEWS 70° TO 90°**

**PART PLAN**



The angle and resilient material are shown for illustration and show only one potential method of support. The Contractor is responsible for the selection and design of the panel support and attachment to the girder. Support details shall be shown on the shop plans. Alternate methods for support may be used, provided they are shown on the shop plans and approved by the Engineer.

**SUPPORT DETAIL**

**NOTES:**  
Composite total slab designed for HS 25-44 and Alternate Military Loading.

All concrete shall be Class S with release strength  $f'_{ci} = 4500$  psi and minimum 28 day strength  $f'_c = 6000$  psi. The strength shall be at least 5000 psi at the time of the deck pour.

Use  $\frac{3}{8}$ " low relaxation strands meeting the requirements of ASTM A416 grade 270. Jacking force per strand ( $F_j$ ) shall be at least 17.2 kips. Final force per strand ( $F_f$ ) is estimated to be 14.2 kips.

Installation of Bar U (#3) is mandatory. All four Bar U (#3) loops shall be used simultaneously for lifting the panels. Alternate methods may be used, for lifting, provided they are shown on the shop plans and approved by the Engineer.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete mortar under the edges of the panels. It is also important that adequate space ( $\blacktriangle$  min. 1" x 2") is provided for the concrete to fill the space under the panel as the slab concrete is placed. Panel lengths and width shall be determined by the Contractor and shown on the shop plans.

The Contractor is responsible for the stability of the panels on the girders. Erected panels shall be uniformly supported along the length of the panel. The Contractor is responsible for meeting the total slab thickness shown on the Superstructure Details.

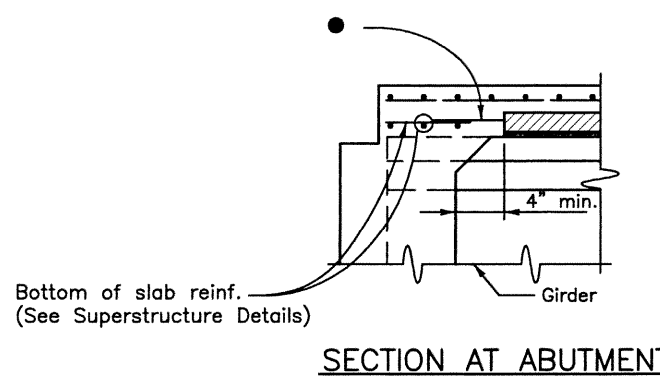
All planes of reinforcing steel shown in the superstructure details are required for areas not formed with precast panels.



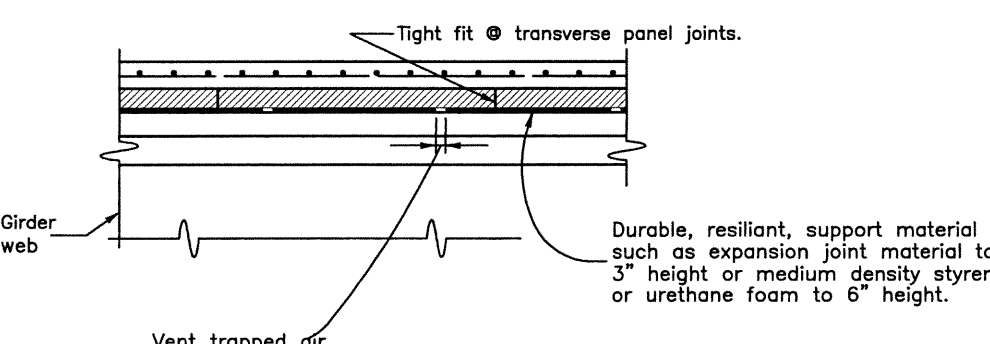
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Last Modification Date:	03/28/02	Initials: PRH												97-91
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Drawing File Name:	B00033SUP03.DWG													
Acad Ver.	2000i	Scale:	VARIES	Units:	ENGLISH									
									303.721.1440 fax 303.721.0832 fhu@fhueng.com			(1 OF 2)		
						Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111			Designer: S. HOWARD Detailer: R. DILLON			Structure Numbers		
									Sheet Subset: BRIDGE			Subset Sheets: B19 of 40		
												Sheet Number 110		

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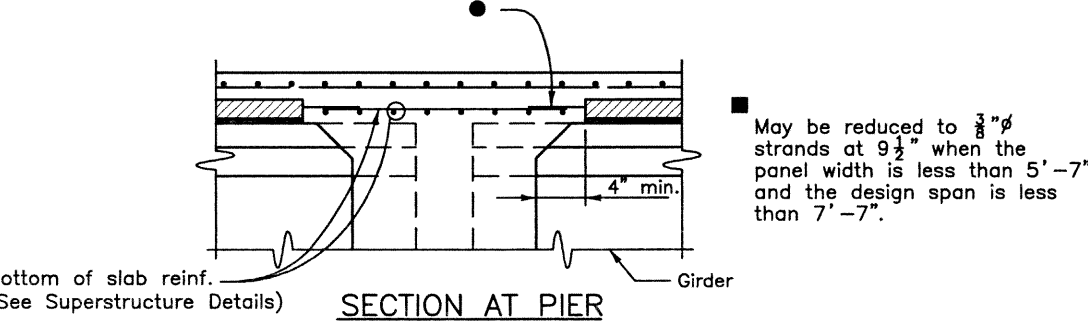
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Initial	Date	Initial	Date	Initial	Date
SEH	12/01	RAD	12/01	SEH	03/02
KMA	10/02	KMA	10/02	KRK	03/02
Designed by	Checked by	Designed by	Checked by	Quantities by	Checked by



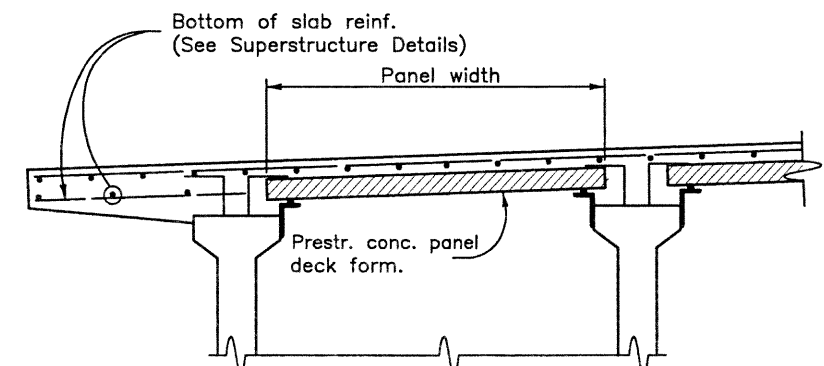
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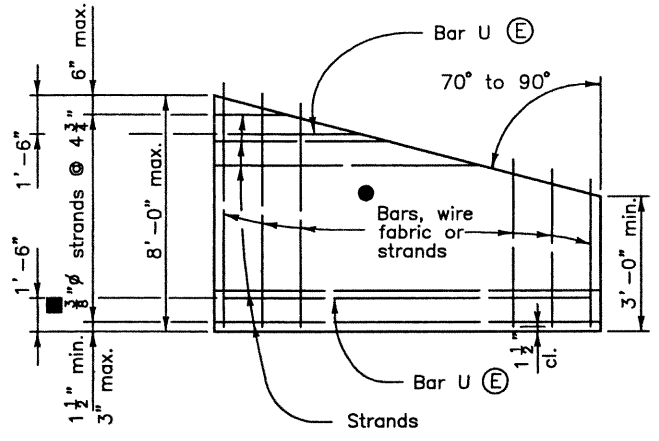
SECTION THRU TRANSVERSE PANEL JOINTS



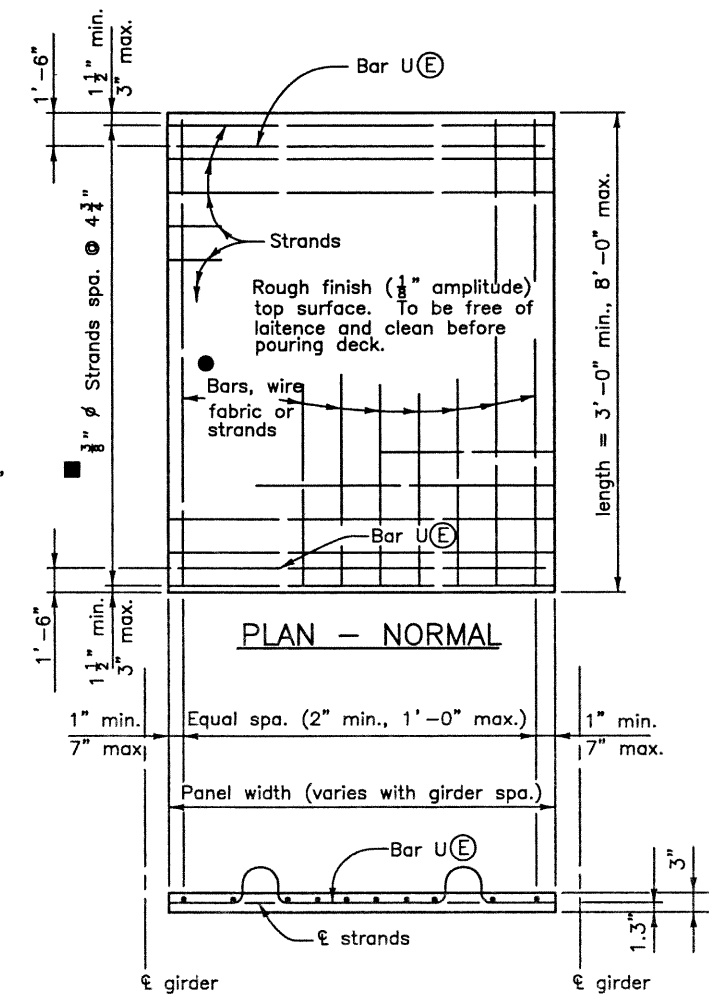
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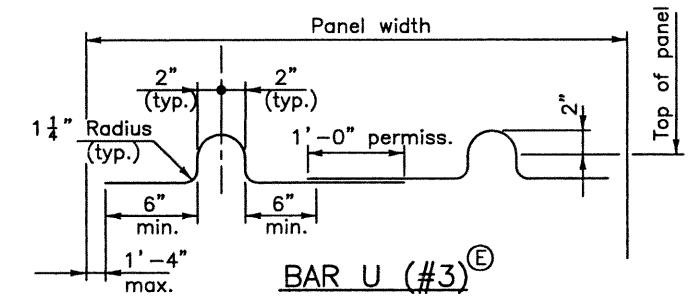
SECTION



PLAN - SKEWS 70° TO 90°  
OPTIONAL END PANEL



PLAN - NORMAL  
PRESTRESSED PANEL DETAILS



PRESTRESSED PANEL DETAILS

Notes:  
Sawing of panels is acceptable in areas where projecting reinforcement is not required. It is desirable to have the prestressing strands project from the panels as long as the projecting strands do not interfere with other bridge components.

- Reinforcing perpendicular to strands may be deformed reinf. bars, welded wire fabric, or welded deformed bar mats, and shall be placed directly above the strands. Minimum area of reinforcing perpendicular to strands shall be 0.11 sq. in. per ft. Tensioned or untensioned strands may also be used. These individual bars or wires shall be no larger than .375" diameter. For location of longitudinal bar extensions, see sheet 2 of 2.

The longitudinal reinforcing steel in the cast-in-place portion of the deck may rest directly on the panels as necessary to obtain clearances at the top of deck, unless otherwise noted.

(E) denotes epoxy coated reinforcing.  
The tolerance on strand placement shall not exceed  $\pm \frac{1}{4}$ ".  
The tolerance on panel thickness shall not exceed  $\pm \frac{1}{4}$ ".

Concentrated construction loads shall not exceed 500 lb for 3" panels, 700 lb for 3.5" panels, nor 1100 lb for 4" panels unless the load is distributed to less than 117 psf. Total loads applied to any panel during construction shall not exceed 117 psf.

Bottom flexural cracks, sags greater than .5", or cambers greater than .5" will be considered evidence of mishandling, overloading, or exceeding allowable tolerances, and may be cause for rejecting panels at the Engineer's discretion.

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Last Modification Date:	03/28/02 Initials: PRH
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Drawing File Name:	B00033SUP04.DWG
Acad Ver.	2000i Scale: VARIES Units: ENGLISH

Index of Revisions	

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed		136TH AVENUE OVER BIG DRY CREEK OPTIONAL PRECAST PANEL DECK FORM		Project No./Code	
No Revisions:	(2 OF 2)			97-91	
Revised:	Designer: S. HOWARD	Structure			
Void:	Detailer: R. DILLON	Numbers			
	Sheet Subset: BRIDGE	Subset Sheets:	B20 of 40	Sheet Number <u>  ///  </u>	

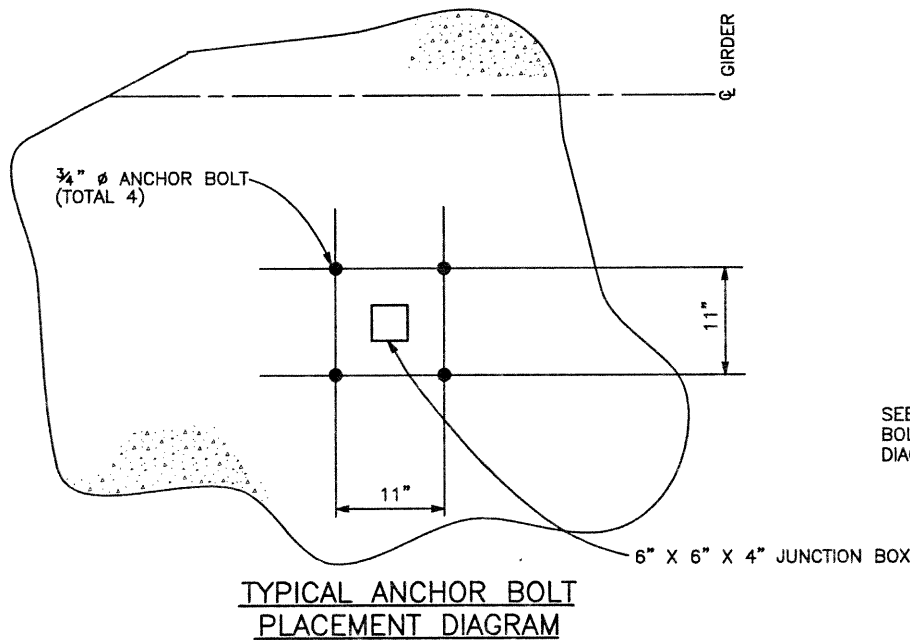


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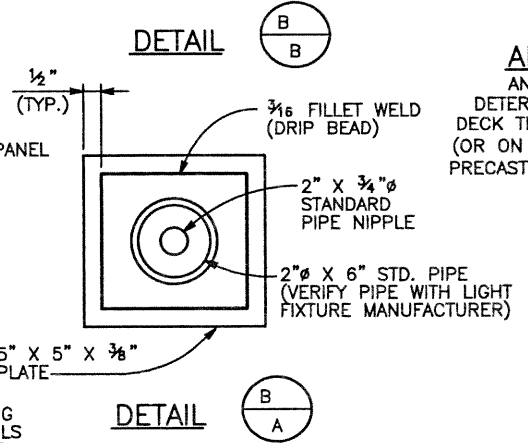
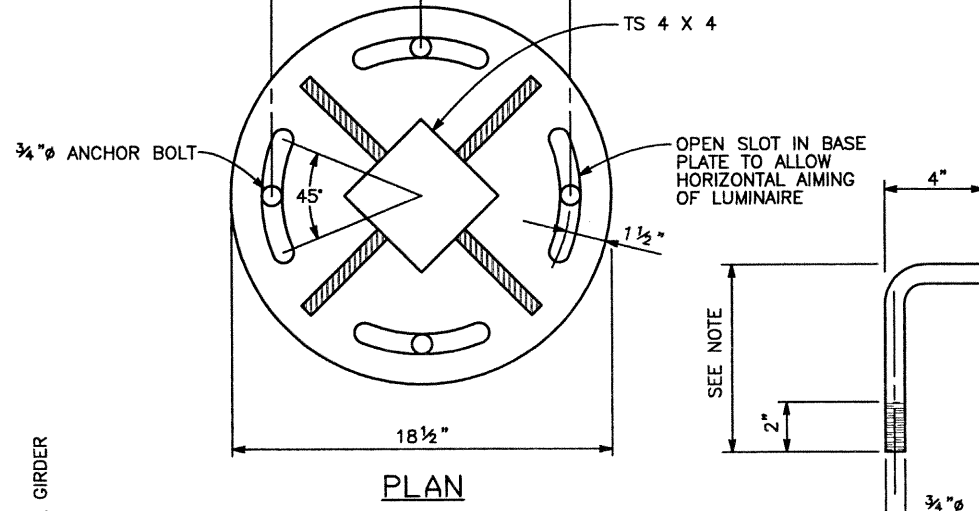
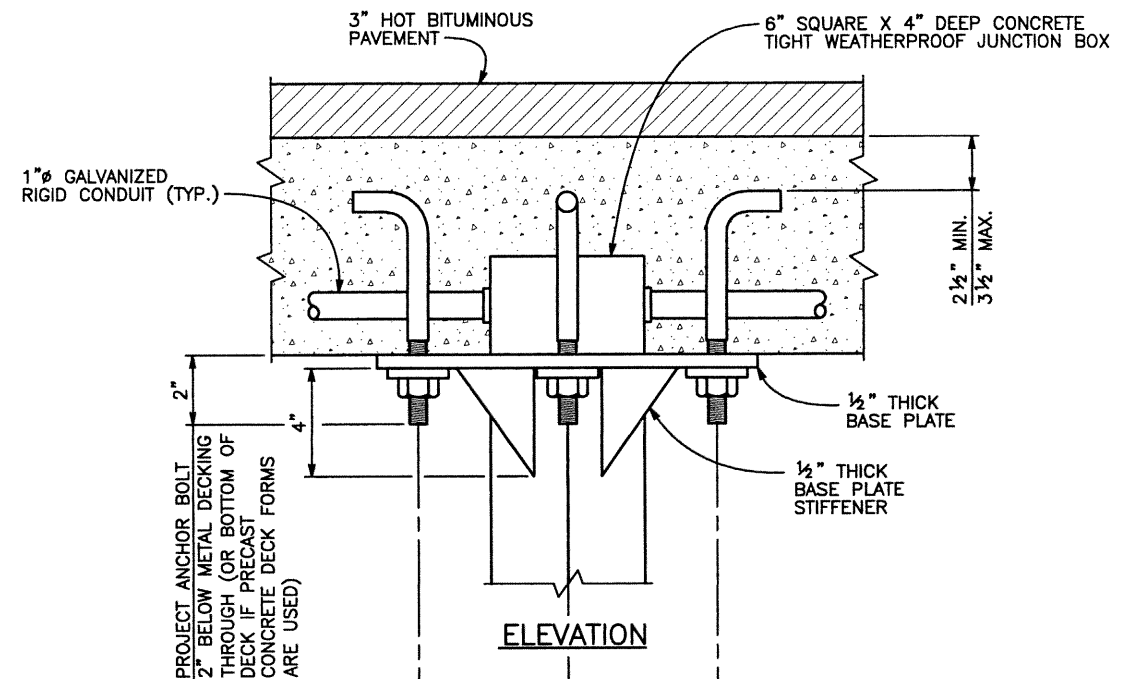
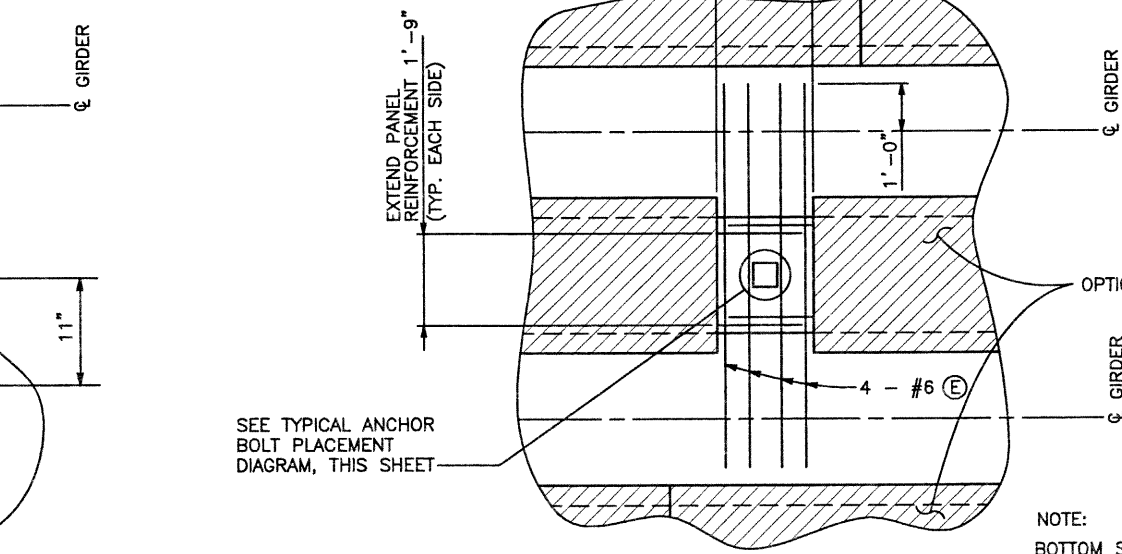
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SEH	12/01	RAD	12/01	SEH	03/02
KMA	10/02	KMA	10/02	KRK	03/02
Checked by		Checked by		Checked by	

**NOTES:**

- STRUCTURAL TUBING SHALL BE ASTM A500 GRADE B.
- PAINT STRUCTURAL TUBING PER SECTION 509, COLOR SHALL BE FEDERAL COLOR NO. 30117 (BROWN).



**PENDANT LUMINAIRE MOUNTING DETAIL**



**ANCHOR BOLT DETAIL**  
ANCHOR BOLT LENGTH SHALL BE DETERMINED BY CONTRACTOR BASED ON DECK THICKNESS & METAL DECKING DEPTH. (OR ON DECK THICKNESS ONLY IF OPTIONAL PRECAST CONCRETE DECK FORMS ARE USED)

**NOTE:**  
BOTTOM SLAB REINFORCING SHOWN. SEE SLAB DETAILS SHEET FOR REQUIRED TOP SLAB REINFORCING.

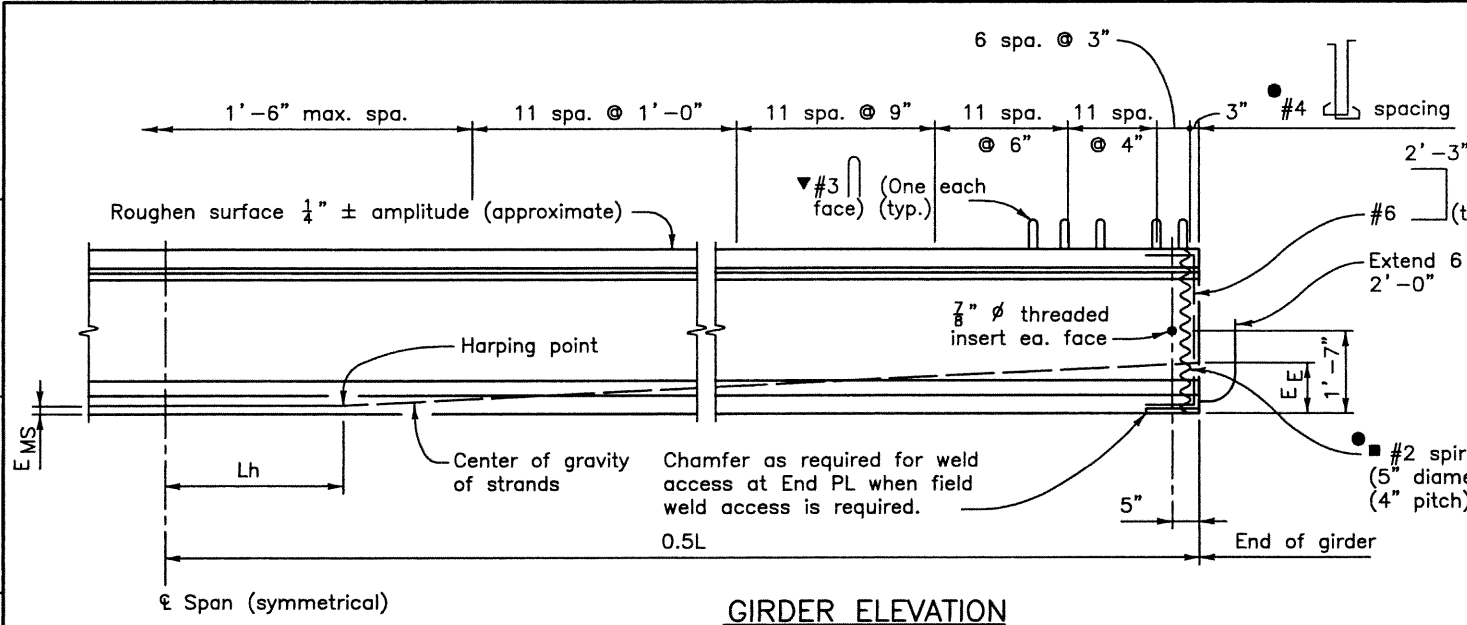
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						303.721.1440 fax 303.721.0832 thu@fhueng.com		Revised:		Detailer: P. HELM	
						Void:		Sheet Subst: BRIDGE		Subset Sheets: B21 of 40	
										Sheet Number 112	





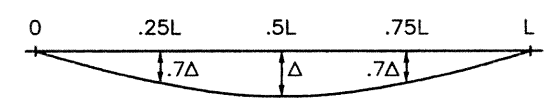
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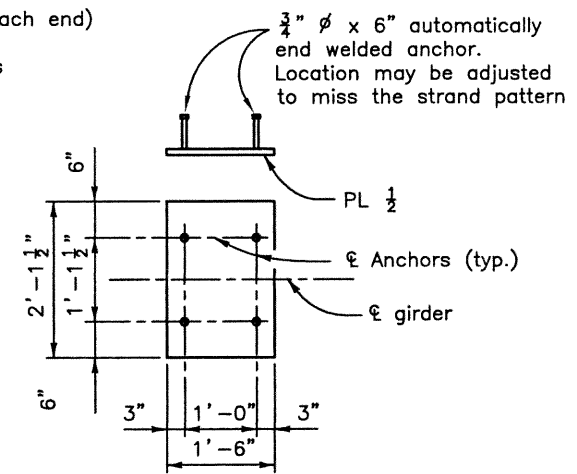
GIRDER ELEVATION

- The Contractor may submit an alternate cross tie arrangement, at the end of the web, for approval by the Engineer.
- ▼ Space with #4 for stirrup spacings of 9" or more. Space at 1'-0" for stirrup spacings less than 9".
- D20 wires may be used in lieu of #4. 2 - D20 wires may be used in lieu of #6. D11 or W10.9 wires may be used in lieu of #3. W5 wires may be used in lieu of #2.



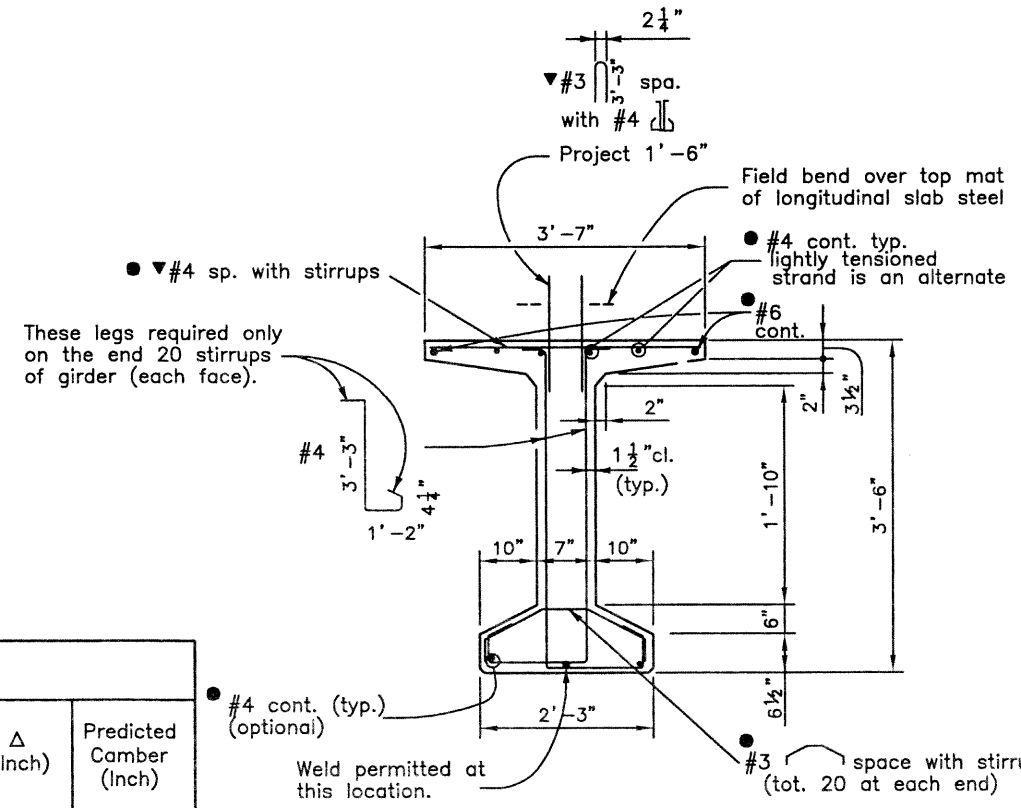
DEAD LOAD DEFLECTION DIAGRAM

GIRDER SCHEDULE													
Girder Type	Span No.	Girder No.	L (Feet)	Lh (Feet)	A <sub>s</sub> * (Square Inch)	E <sub>MS</sub> (Inch)	E <sub>E</sub> (inch)	F <sub>j</sub> (KIPS)	F <sub>f</sub> (KIPS)	Concrete Strength		Δ (Inch)	Predicted Camber (Inch)
										f'ci (PSI)	f'c (PSI)		
BT42	1	G1-G15	97.75	9.69	7.378	4.24	11.88	1494	1161	6700	7500	4.965	6.840
BT42	2	G1-G15	97.75	9.69	7.378	4.24	11.88	1494	1161	6700	7500	4.965	6.840



END PLATE DETAIL

Galvanize after fabrication



TYPICAL GIRDER SECTION

NOTES:

All work necessary to fabricate and install the integral parts of the girder (including the intermediate diaphragms, 7/8" threaded rods, and leveling pads), as shown on the plans, shall be included in the bid price for Item No. 618, Prestressed Concrete I (BT42), with a pay unit of Feet which shall be measured by dimension L.

When approved by the Engineer, a minimum of tack welding will be permitted on ASTM A706 uncoated reinforcing steel.

Reinforcing projecting from the top of the girder and reinforcing within eight feet of an expansion device in the bridge deck shall be epoxy coated. Damaged coating on girder reinforcing need not be repaired. The minimum cover for reinforcing steel is 1".

At girder ends not embedded in concrete diaphragms, cut strands off 1" below the surface of the concrete and finish with an approved epoxy grout. At girder ends embedded in concrete diaphragms, cut strands to project 3", except as shown. Do not make cosmetic repairs (damage less than 1 1/2" deep) to the parts of the girders embedded in concrete.

Use low relaxation strands meeting the requirements of ASTM A-416 Grade 270. The minimum clear distance between groups or individual strands shall be 2.3(d<sub>s</sub>) but not less than 1 1/4". The minimum cover for prestressing steel is 1 1/2".

A minimum of two harping points shall be used per girder. Harped strands shall be well distributed at the girder ends, starting within 4" of the top of the girder and distributed such that there is no space between strands greater than 1'-0" at the end of the girder. As an alternate the Contractor may place #4 x 10'-0" in the sides of the end of the web parallel to the harped strands such that there is no space greater than 1'-0".

A<sub>s</sub>\* = minimum area of the prestressing steel.  
d<sub>s</sub> = nominal strand diameter.  
f'<sub>s</sub> = ultimate strength of prestressing steel.  
F<sub>j</sub> = jacking force per girder.  
F<sub>f</sub> = final force per girder after all losses.  
f'<sub>ci</sub> = required concrete strength at release of prestress force.  
f'<sub>c</sub> = required concrete strength at 28 days of age.  
L = length of girder along the grade of the girder.  
Δ = deflection at centerline of span due to cast-in-place slab, diaphragms, asphalt, curbs, rails, and walks.

Concrete shall be Class PS.

Entrained air is not required for girder concrete.

Use 1/2" chamfer on all corners, except as noted.

Predicted camber is the camber for the girder alone at 90 days. The Contractor shall limit the camber growth to a value not to exceed the predicted camber plus 1" prior to the deck pour by weighting, scheduling fabrication, post tensioning, or other means and must report to the Engineer values of camber which exceed the predicted camber plus 1". Remedial measures, as approved by the Engineer, shall be taken if the predicted camber plus 1" is exceeded. The approved remedial measures shall be free of any adverse impact. The costs associated with all remedial measures shall be borne by the Contractor.

Product dimensional tolerances specified in MNL-116, Section 6.4 shall apply as specification tolerance.

Computer File Information			Index of Revisions			As Constructed		136TH AVENUE OVER BIG DRY CREEK PRESTRESSED CONCRETE GIRDER		Project No./Code	
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Last Modification Date:	03/28/02	Initials: PRH				Revised:		Designer: K. ALKANANI		Structure Numbers	
Full Path:	J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\							Detailer: S. HOWARD			
Drawing File Name:	B00033GIR01.DWG							Sheet Subset: BRIDGE		Subset Sheets: B22 of 40	
Acad Ver. 2000i	Scale: VARIES	Units: ENGLISH				Void:		Sheet Number 113			



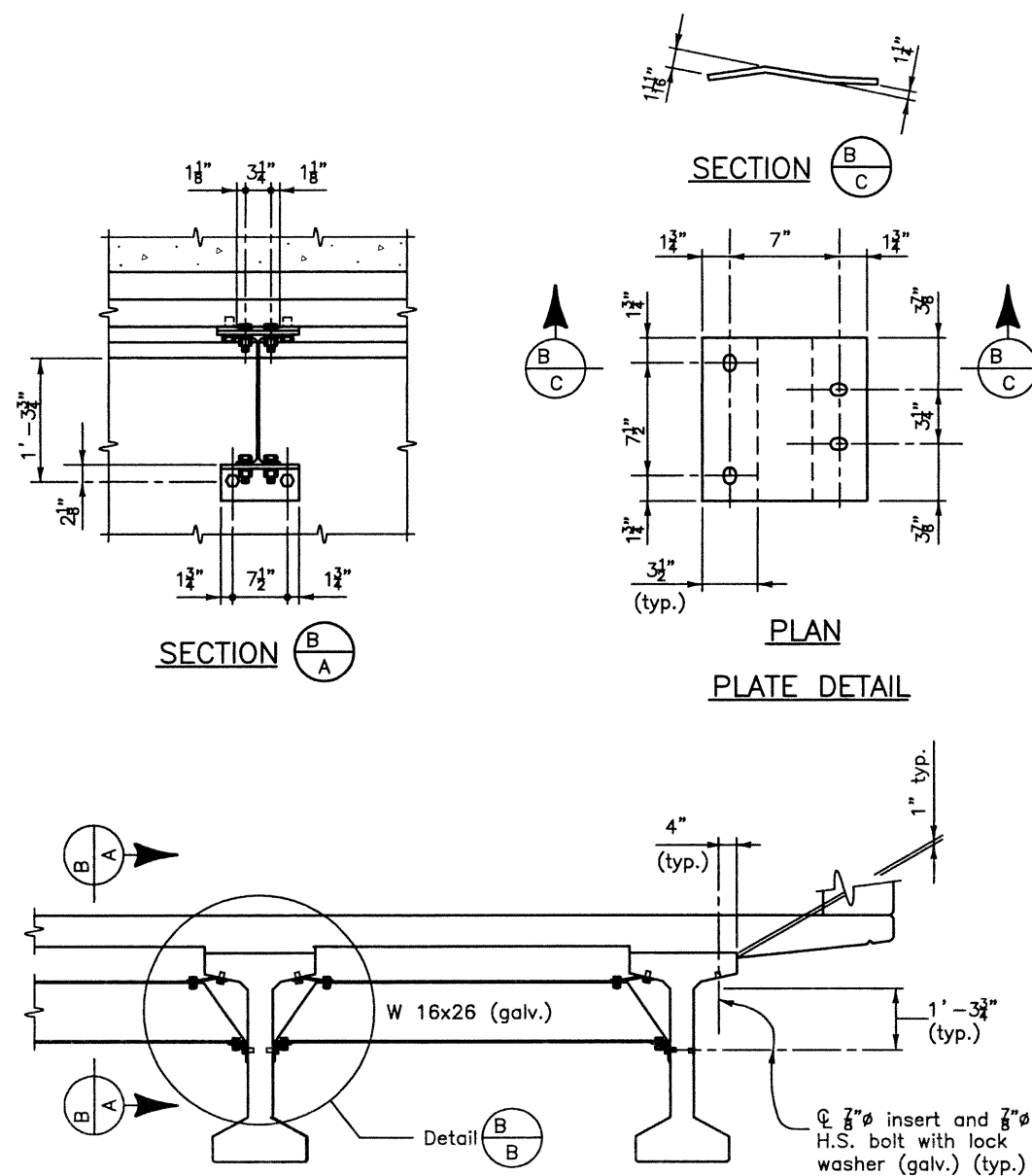
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fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111



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SEH	12/01	BMB	12/01	SEH	03/02		
KMA	10/02	BMB	10/02	KRK	03/02		



**INTERMEDIATE DIAPHRAGM DETAILS**  
 ★ For location of diaphragms, see Construction Layout.

**NOTES**

All diaphragm materials, including bolts, nuts, and washers shall be galvanized. Galvanizing may be before fabrication. Zinc or aluminum metalizing is an alternate to galvanizing.

★ If the construction layout does not specify diaphragms near midspan, BT sections deeper than 54", and BT54 spans over 134' shall have at least one diaphragm near the center of the span.

Two copies of shop drawings of the diaphragm details shall be submitted to the Engineer for information only.

The bend dimensions shown for the connection PL may need to be adjusted for superelevations over .04'/'.

The diaphragms may be placed on a skew such that they are between 80° and 100° to the girders.

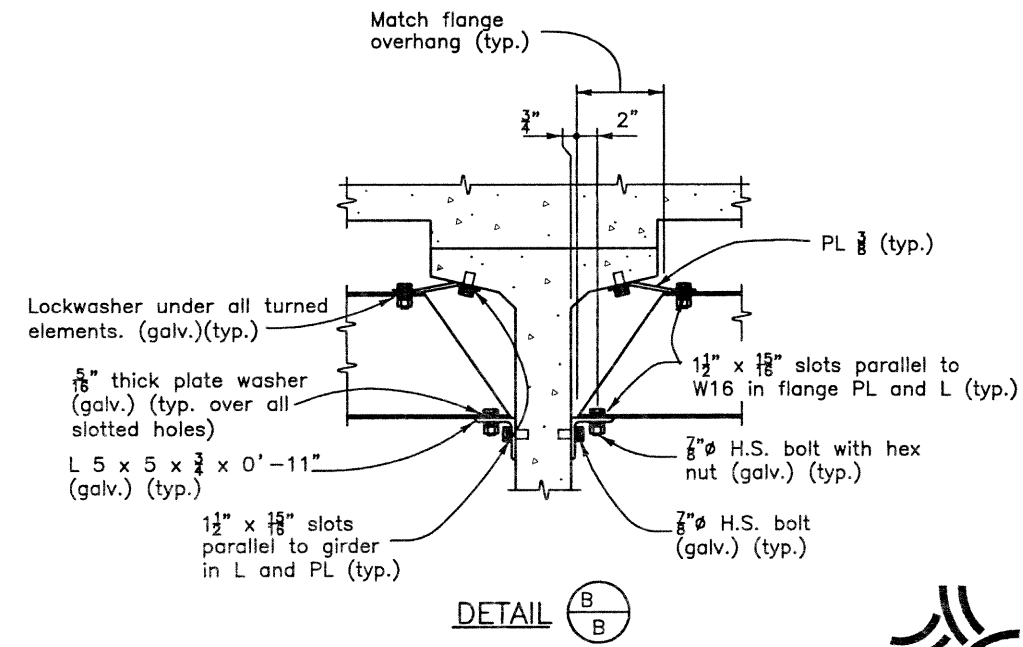
The Contractor is responsible for determining necessary bracing requirements and for providing adequate bracing for the specific wind and weather conditions to be encountered for each specific project.

When bracing or diaphragms are required, no girders shall be erected and left unbraced. The intermediate diaphragms (when used) shall be connected to the adjacent girders simultaneously with the erection of the girders.

Use and installation of the intermediate diaphragms shall not relieve the Contractor of full responsibility to construct the Work in a manner which provides all necessary rigidity, supports all loads imposed, and provides in the finished structure the lines and grades indicated on the plans.

All structural steel shall be A36 steel, Fy = 36,000 psi.

All bolts shall be high strength A325.

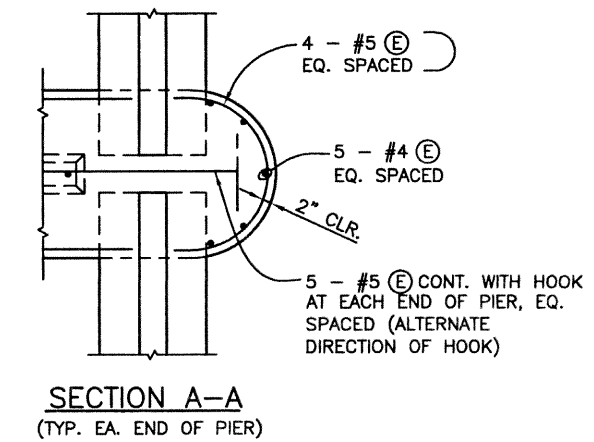
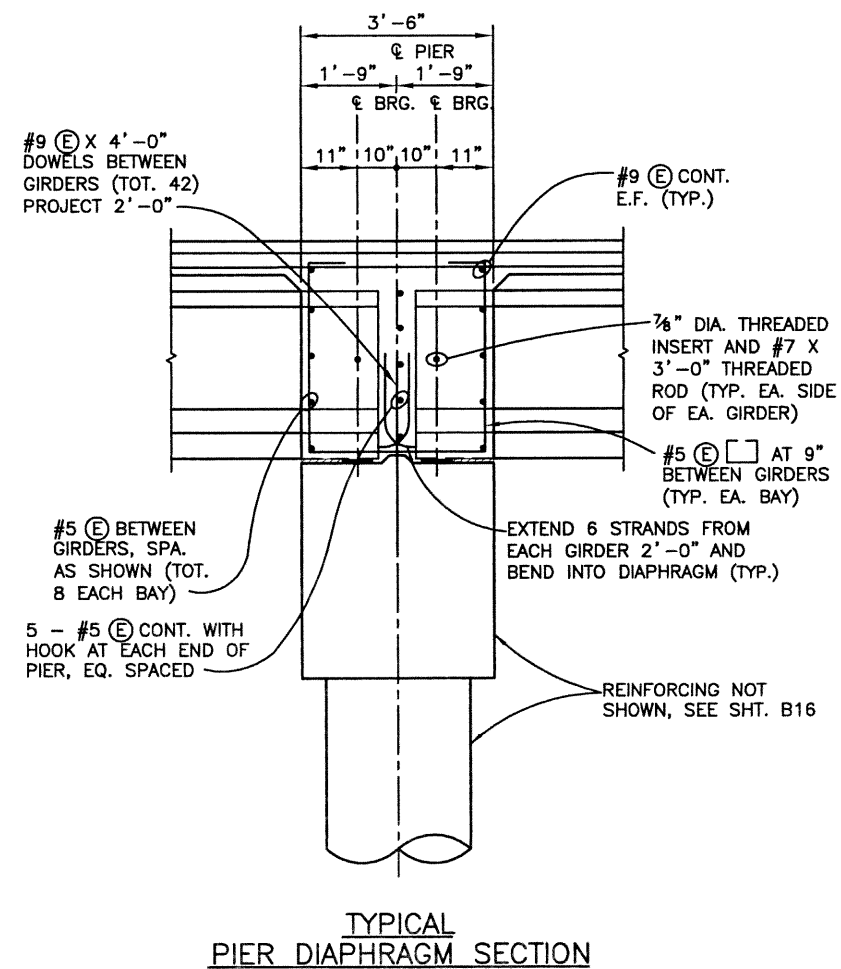
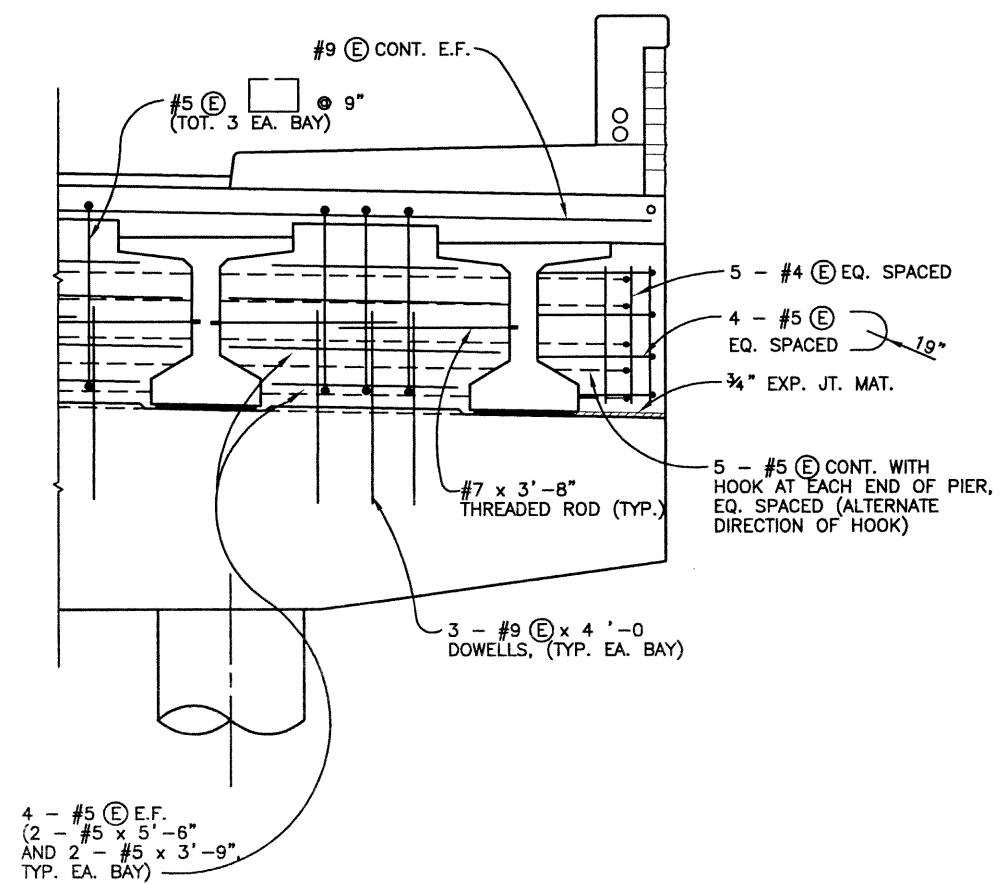


**DETAIL B-B**

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Last Modification Date:	03/28/02	Initials: PRH				Revised:					
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Drawing File Name:	B00033GIR02.DWG					Revised:		Detailer:	S. HOWARD	Numbers	
Acad Ver.	2000i	Scale:	VARIABLES	Units:	ENGLISH	Void:		Sheet Subset:	BRIDGE	Subset Sheets:	B23 of 40
						Greenwood Corporate Plaza		Project No./Code 97-91 Sheet Number 114			
						7951 E. Maplewood Ave. Ste. 209					
						Englewood, CO 80111					

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303.721.1440  
fax 303.721.0832  
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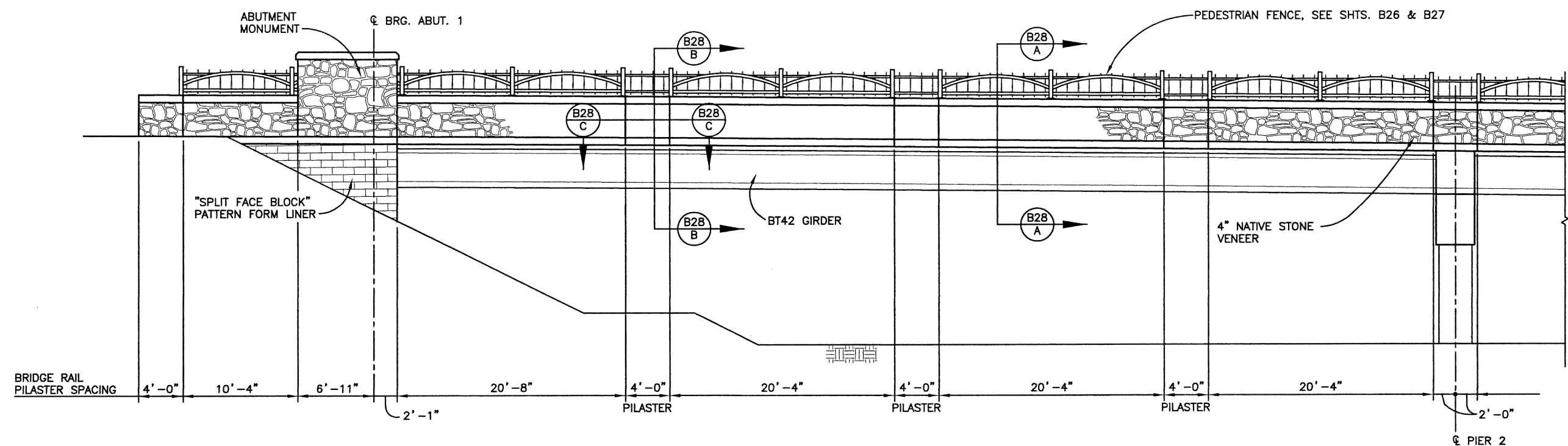
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed		136TH AVENUE OVER BIG DRY CREEK PIER 2 DIAPHRAGM DETAILS		Project No./Code	
No Revisions:		Designer:	S. HOWARD	Structure Numbers	
Revised:		Detailer:	S. HOWARD	Subset Sheets:	B24 of 40
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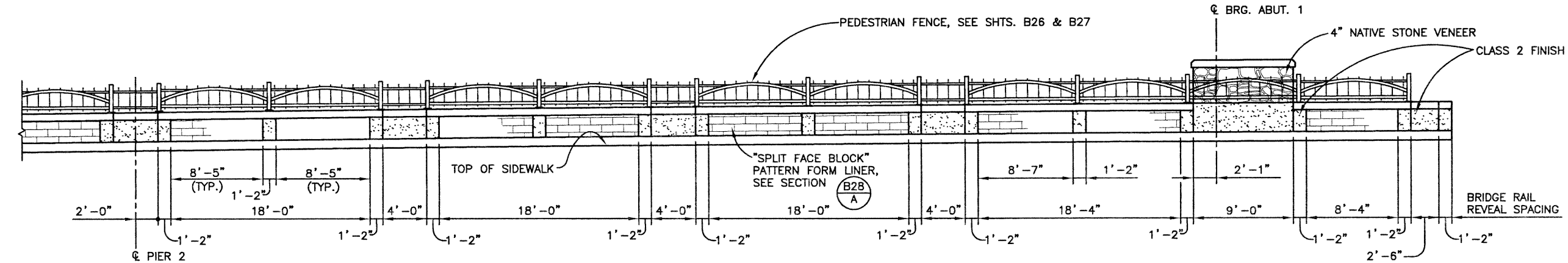


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Checked by	Checked by	Checked by	Checked by	Checked by	Checked by
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TYPICAL EXTERIOR BRIDGE RAIL ELEVATION



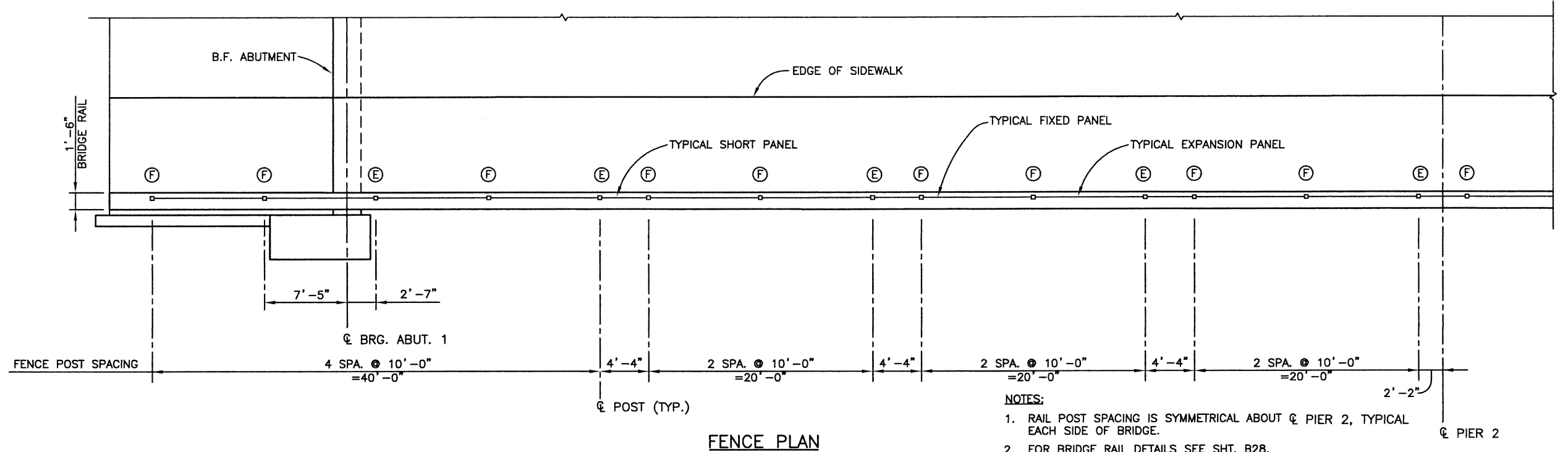
TYPICAL INTERIOR BRIDGE RAIL ELEVATION

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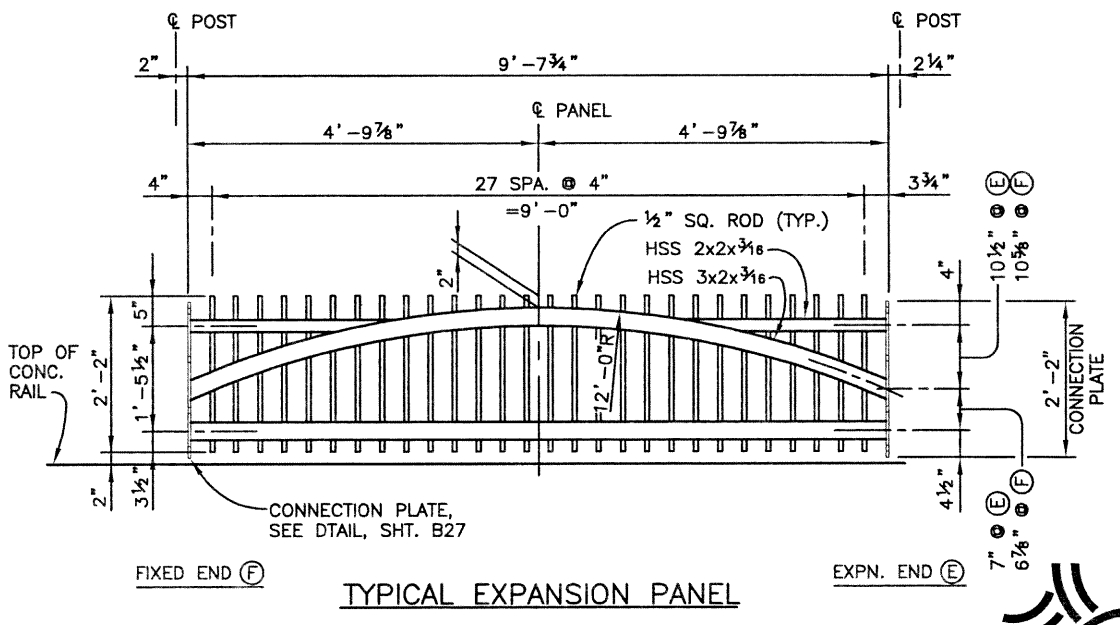
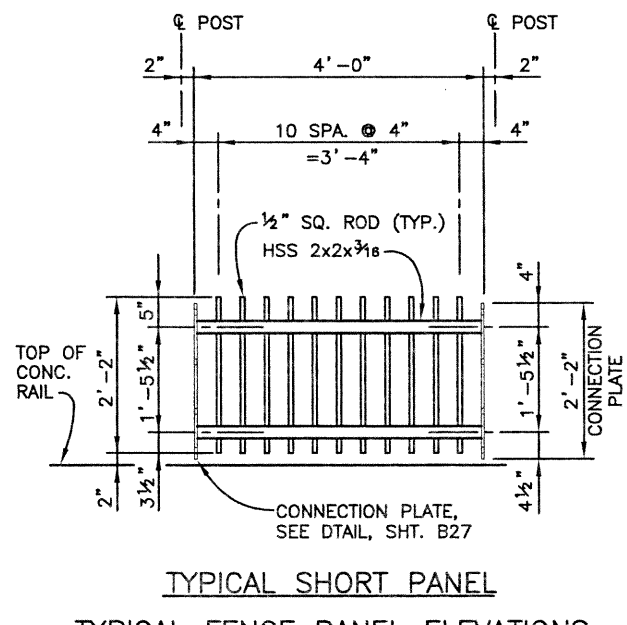
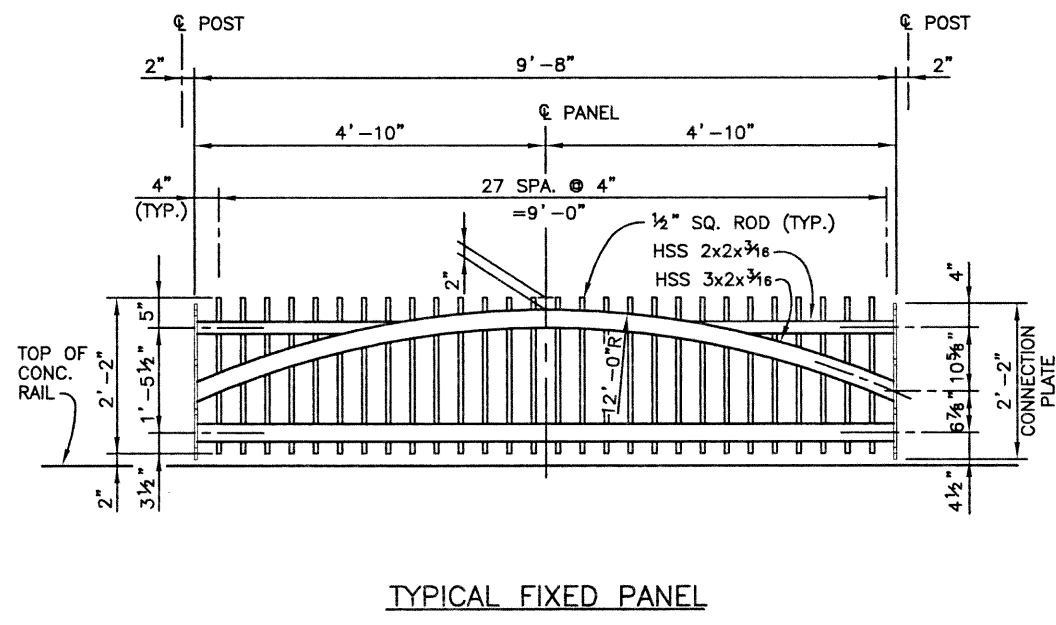


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SEH	12/01	SEH	12/01	SEH	03/02
KMA	10/02	BRM	10/02	KRK	03/02
Designed by	Checked by	Detailed by	Checked by	Quantities by	Checked by
SEH	KMA	BRM	BRM	SEH	KRK
(Preliminary Stage Only)					
Revision Dates					



- NOTES:**
- RAIL POST SPACING IS SYMMETRICAL ABOUT  $\phi$  PIER 2, TYPICAL EACH SIDE OF BRIDGE.
  - FOR BRIDGE RAIL DETAILS SEE SHT. B28.
  - PAYMENT FOR PEDESTRIAN FENCE (INCLUDING CONNECTION PLATES, BASE PLATES, ANCHOR BOLTS, MISCELLANEOUS BOLTS, NUTS, WASHERS, TUBES, SQUARE BARS AND POST CAPS) WILL BE MADE UNDER ITEM 514-PEDESTRIAN FENCE.
  - PEDESTRIAN FENCE PANELS SHALL BE PAINTED AFTER FABRICATION IN ACCORDANCE WITH SECTION 509 OF THE CDOT STANDARD SPECIFICATIONS. THE COLOR SHALL BE TERRA COTA, EQUIVALENT TO FEDERAL STANDARD 595B, COLOR. NO. 22516.
  - FIELD SAMPLE OF PAINTED PEDESTRIAN FENCE SHALL BE PROVIDED FOR REVIEW AND ENGINEER APPROVAL PRIOR TO PERFORMING THE WORK. A FULL PANEL SECTION SHOULD BE APINTED. THE COST OF TEH PAINTED SAMPLE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.



**TYPICAL FENCE PANEL ELEVATIONS**  
(LOOKING AT OUTSIDE FACE)

Computer File Information		Index of Revisions		As Constructed		136TH AVENUE OVER BIG DRY CREEK PEDESTRIAN FENCE DETAILS (1 OF 2)		Project No./Code	
Creation Date:	10/08/01 Initials: SEH			No Revisions:		Designer: S. HOWARD Structure		97-91	
Last Modification Date:	08/06/02 Initials: PRH			Revised:		Detailer: P. HELM Numbers			
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Drawing File Name:	B00033RAL01.DWG								
Acad Ver. 2000i	Scale: VARIES Units: ENGLISH								

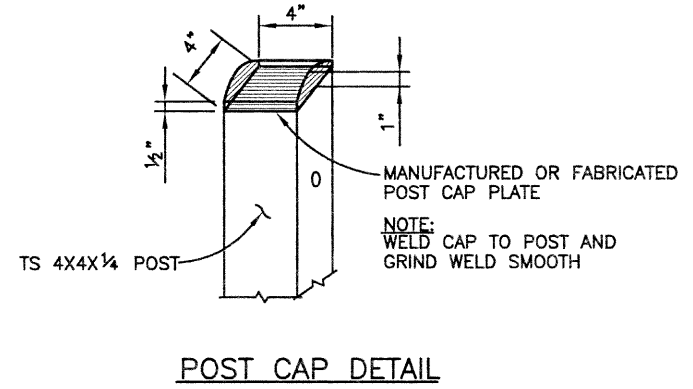
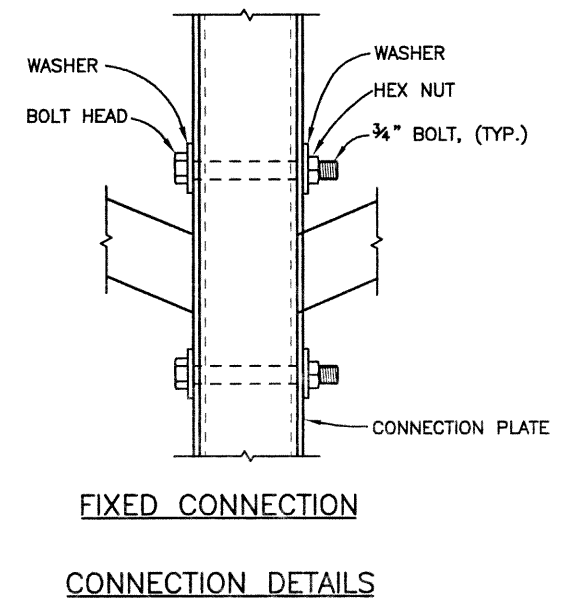
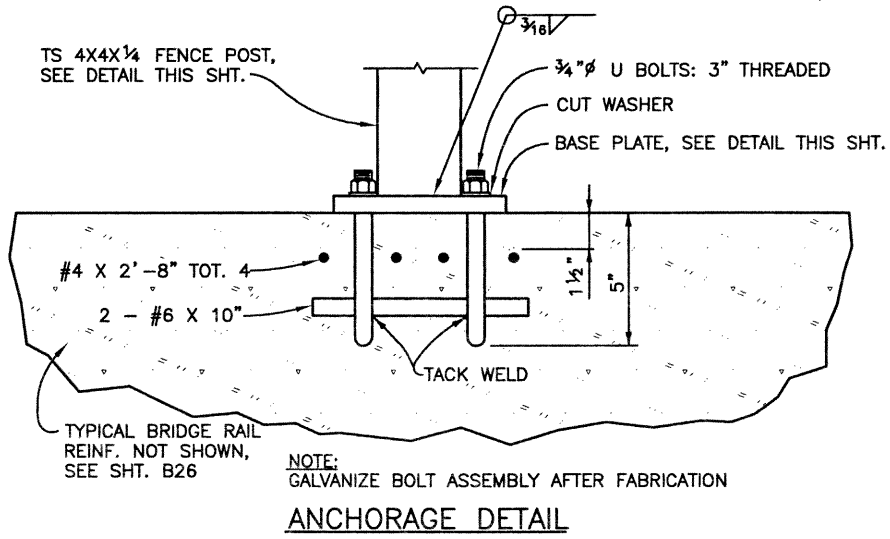
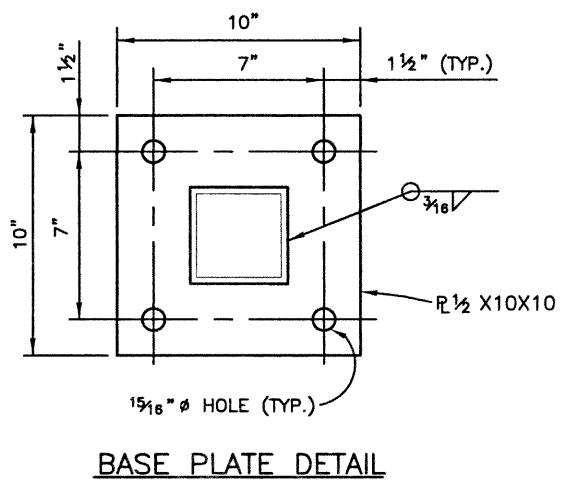
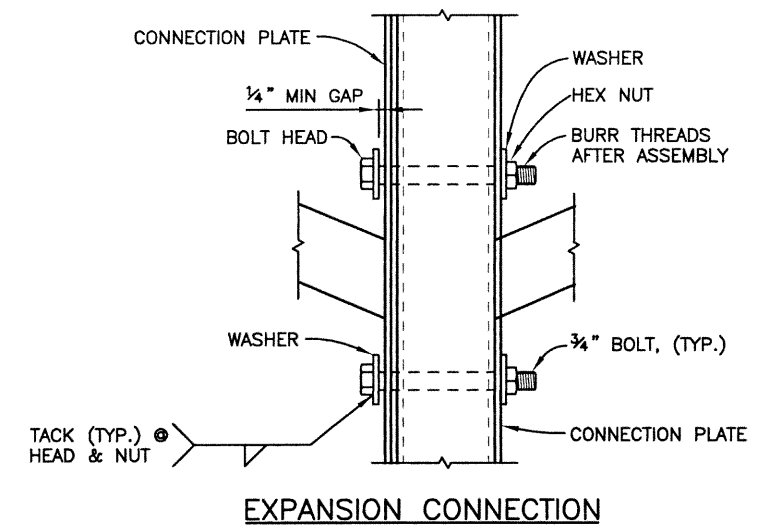
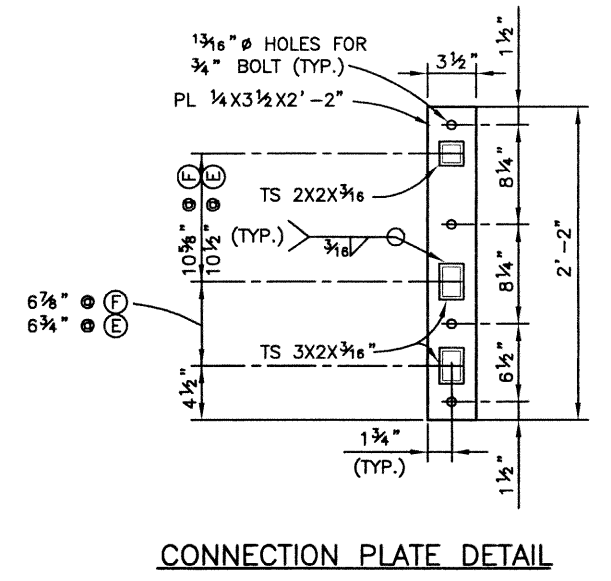
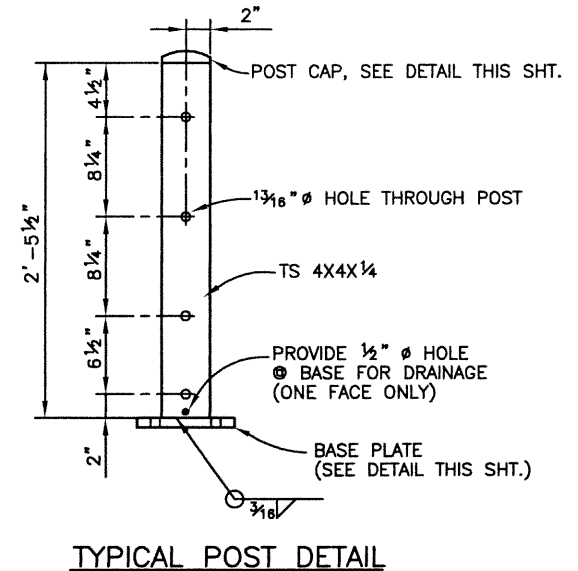


303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111



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Computer File Information		Index of Revisions		As Constructed		136TH AVENUE OVER BIG DRY CREEK PEDESTRIAN FENCE DETAILS (2 OF 2)		Project No./Code	
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Last Modification Date:	10/14/02	Initials:	RAD		Revised:				
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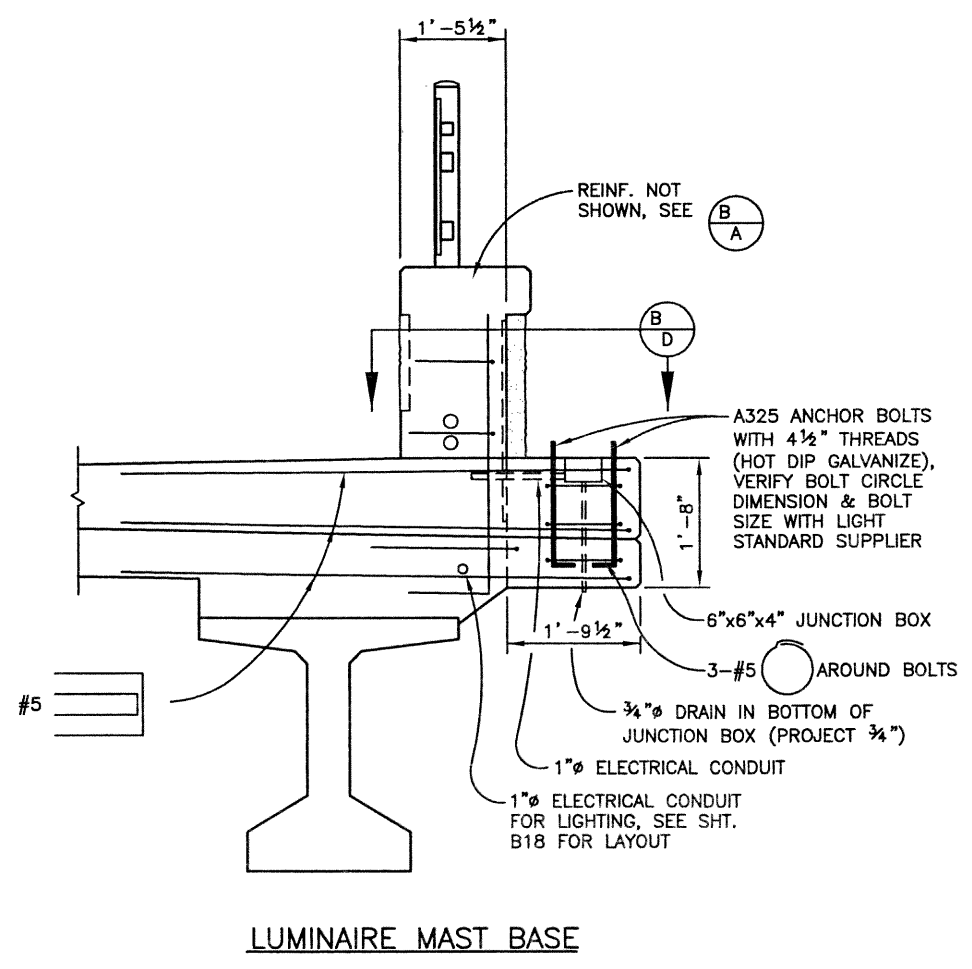
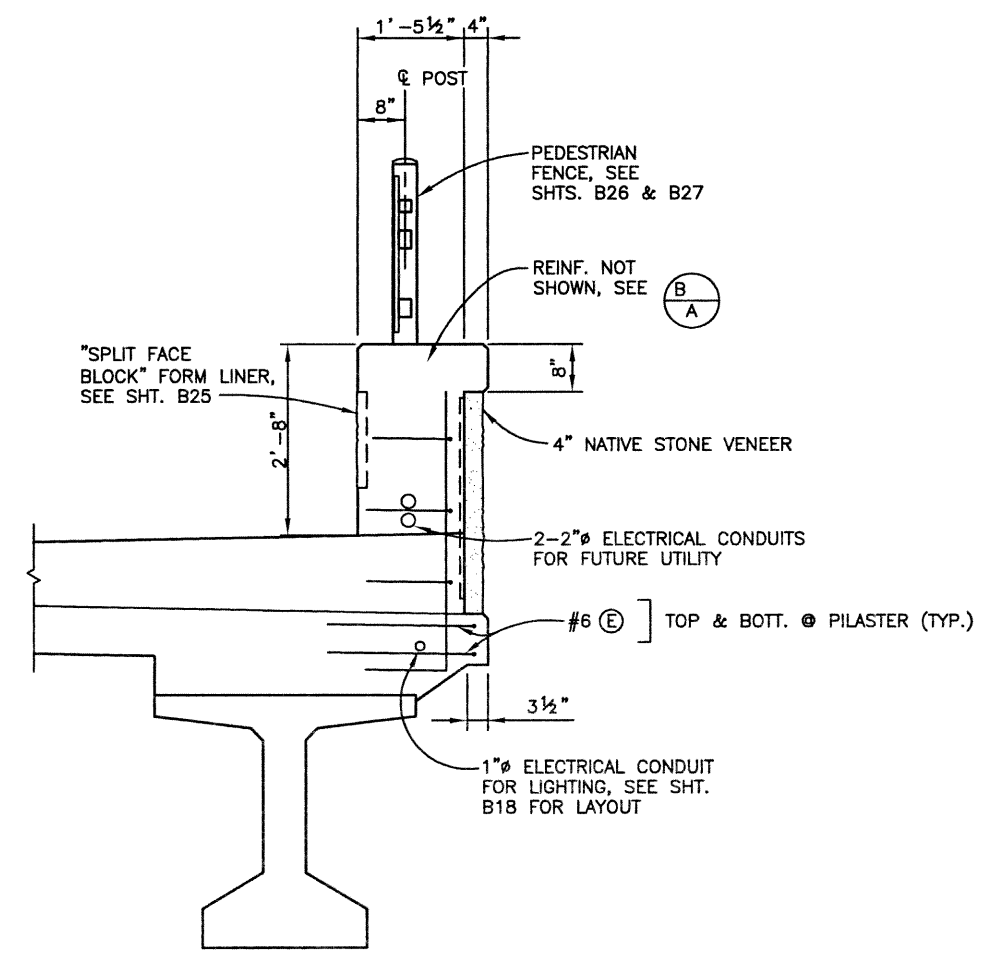
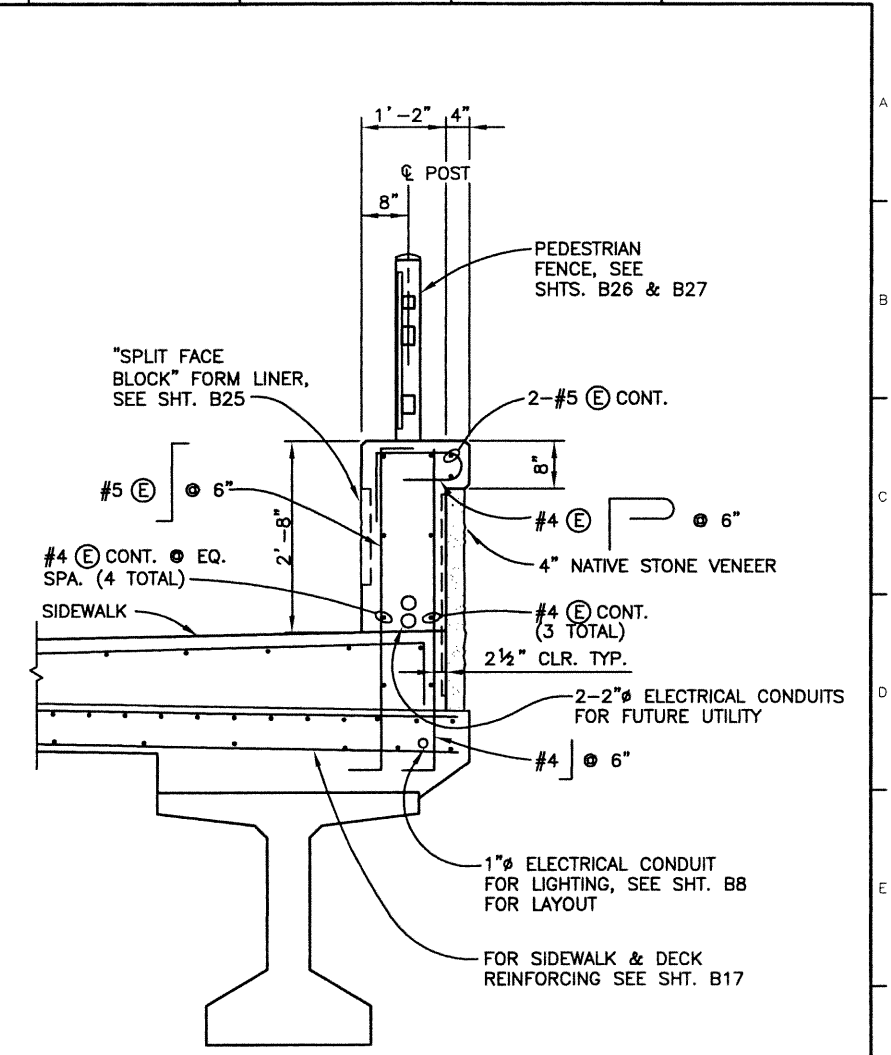
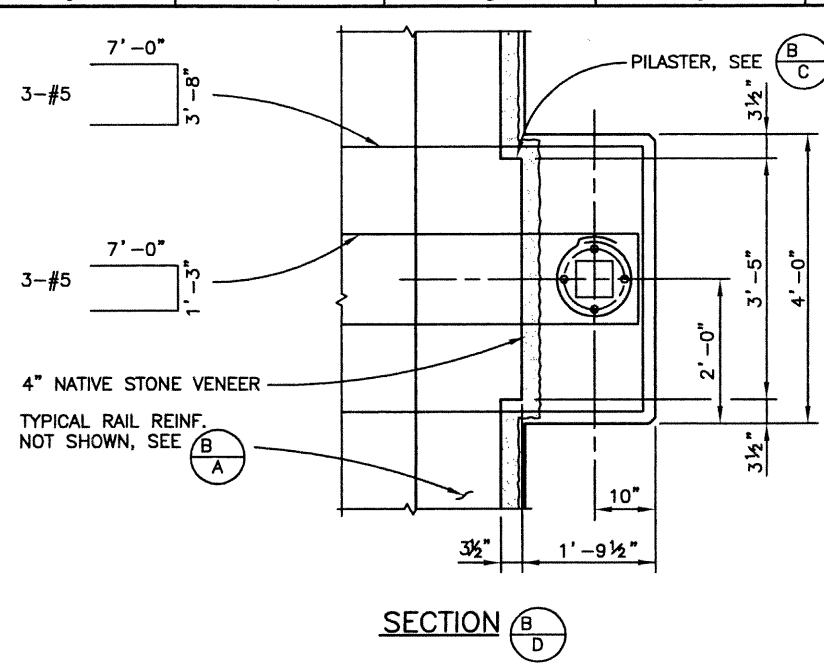
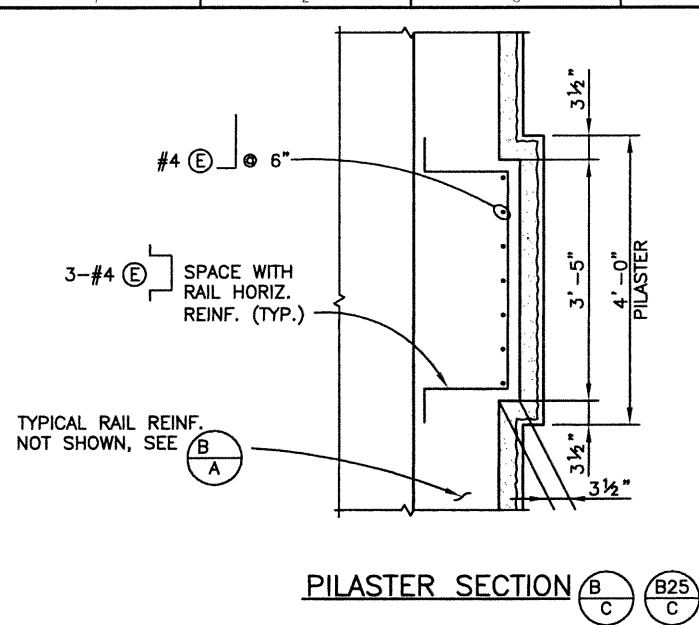


303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
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KWA	10/02	R&B	10/02	KRK	03/02



**PILASTER SECTION (B25/B)**  
(AT PILASTER) (REINFORCING SIMILAR TO TYPICAL BRIDGE RAIL SECTION EXCEPT AS SHOWN)

**Computer File Information**

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Last Modification Date:	12/16/02	Initials:	RAD
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Units:	ENGLISH		

**Index of Revisions**

No.	Description

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	
Void:	

**136TH AVENUE OVER BIG DRY CREEK BRIDGE RAIL (SPECIAL)**

Designer:	S. HOWARD	Structure Numbers:	
Detailer:	P. HELM		
Sheet Subset:	BRIDGE	Subset Sheets:	B28 of 40

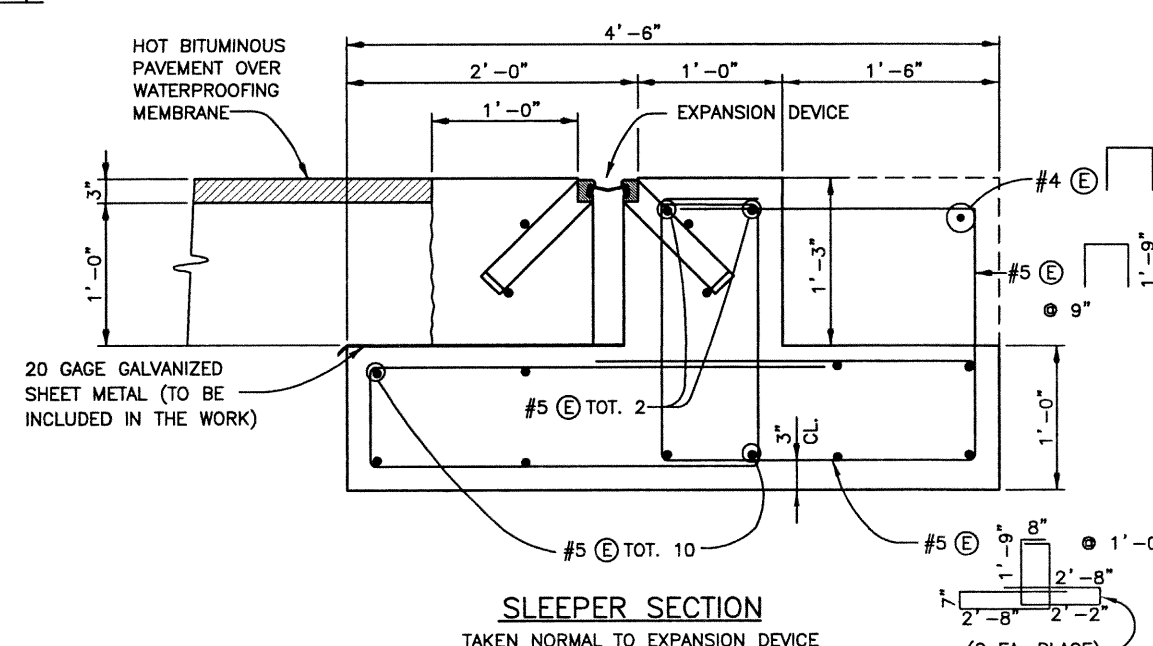
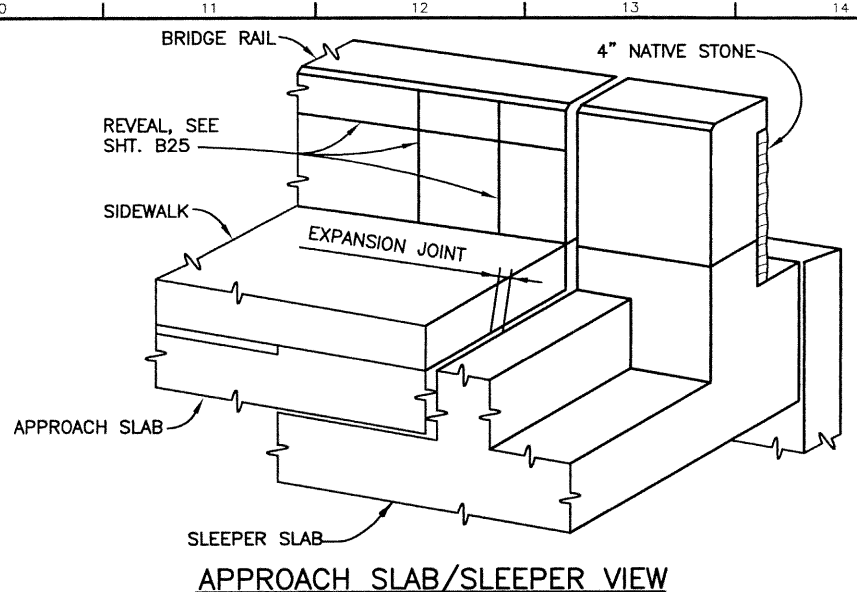
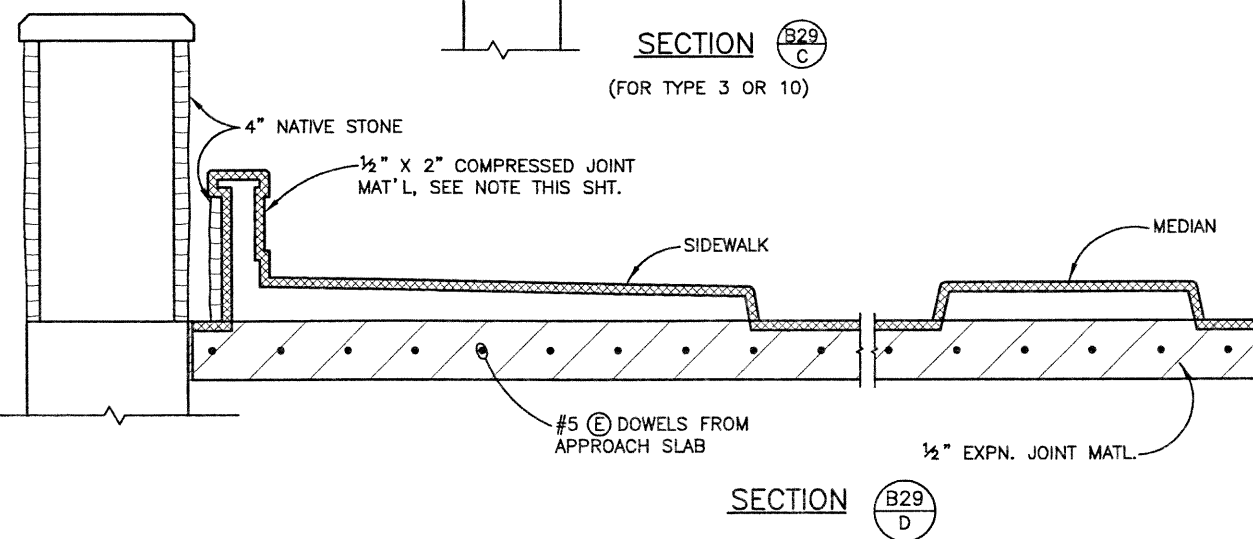
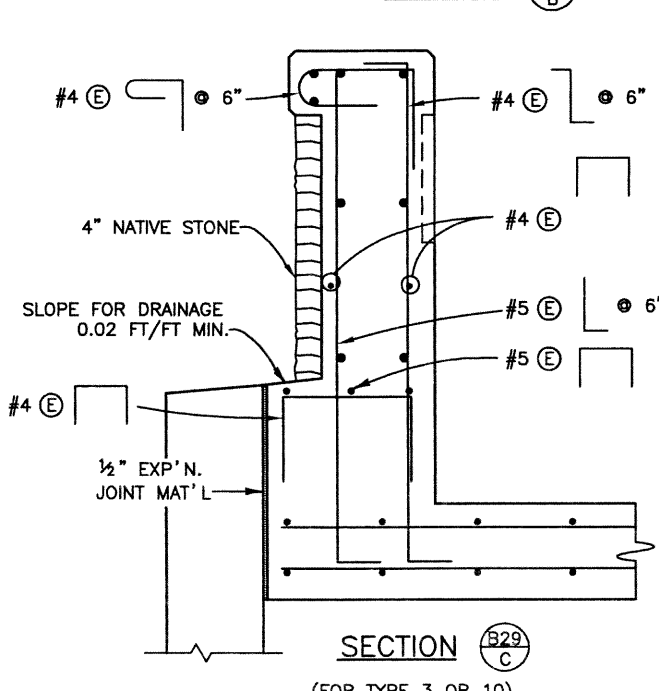
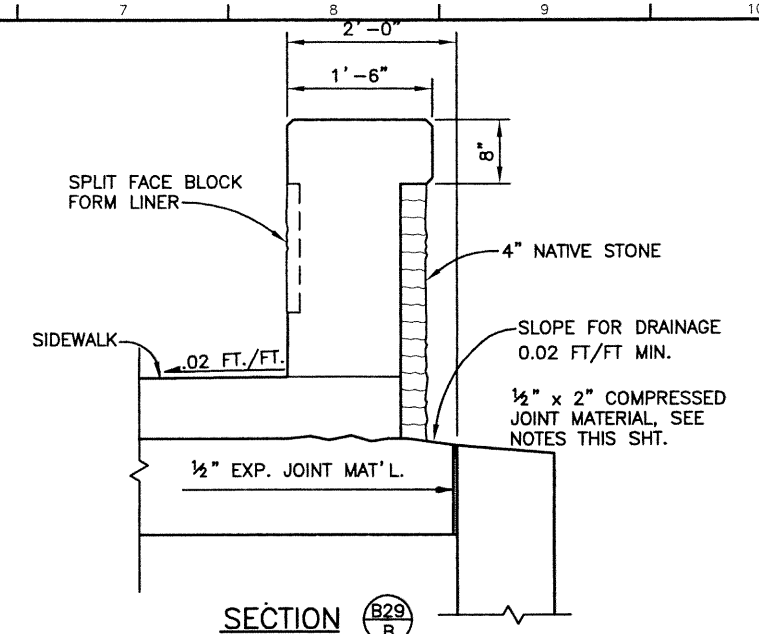
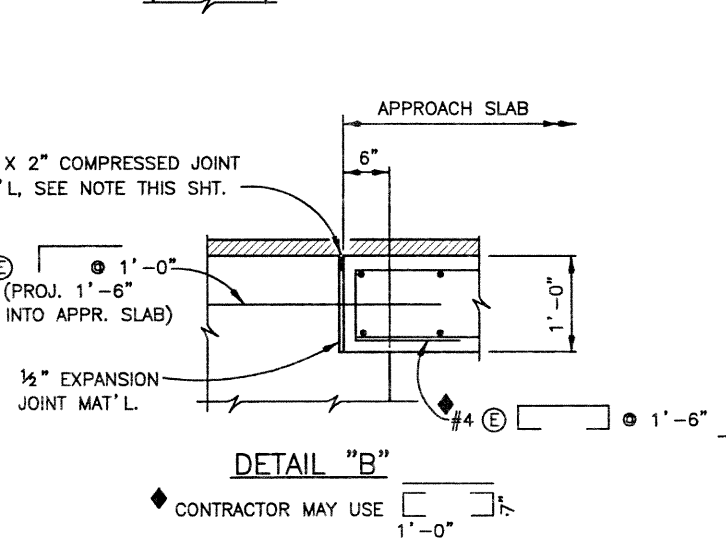
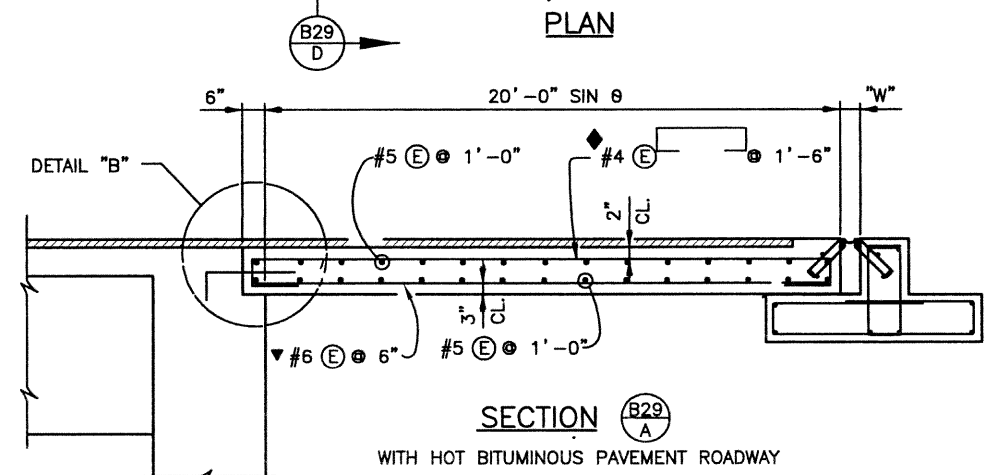
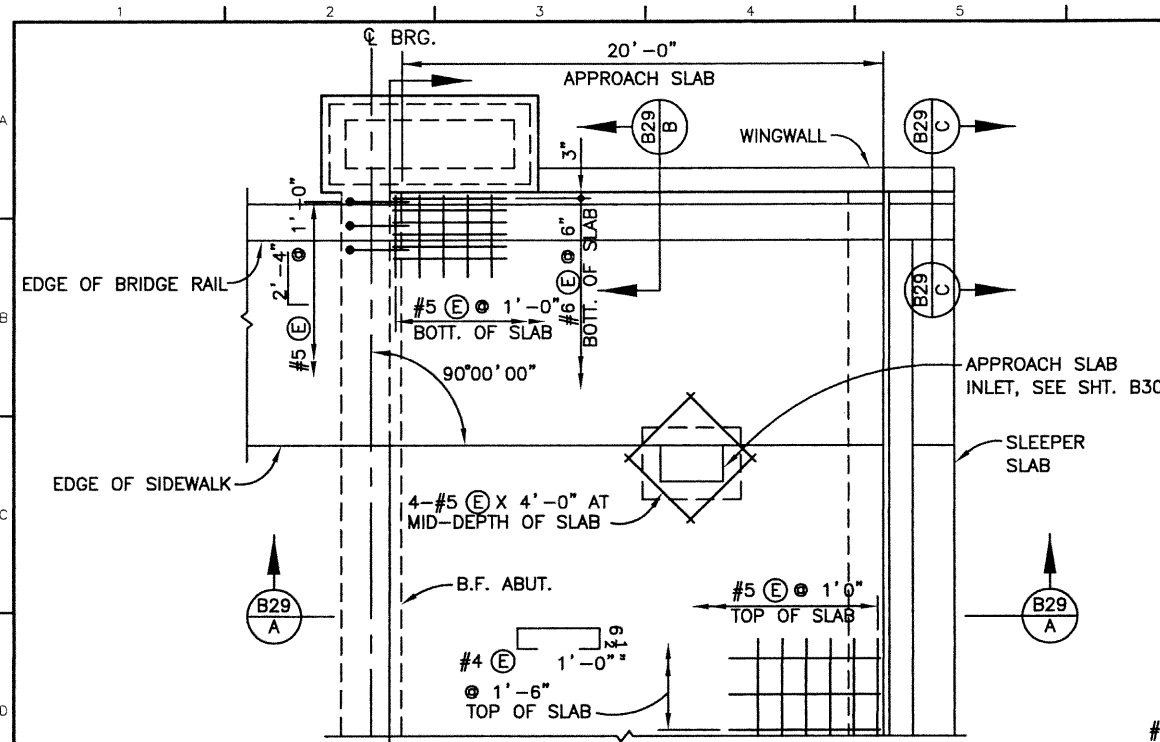
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	97-91
Sheet Number	119



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Checked by	RMA	Delivered by	10/02	Checked by	RRK
		Checked by	10/02	Checked by	RRK
		Checked by	10/02	Checked by	RRK



- NOTES:**
1. CONCRETE CLASS D (BRIDGE) SHALL BE USED FOR APPROACH SLABS.
  2. 1/2" EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPEC. M213.
  3. FOR EXPANSION DEVICE DETAILS SEE SHT. B30.
  4. FOR BRIDGE RAIL DETAILS SEE SHT. B26.
  5. COMPRESSED JOINT MATERIAL SHALL BE PRE-COMPRESSED, CHEMICALLY RESISTANT, OPEN CELL POLYURETHANE FOAM SEALANT, IMPREGNATED WITH A WATER-REPELLANT MATERIAL, WITH ADHESIVE BACKING ON BOTH SIDES. THE JOINT MATERIAL SHALL BE EPOXIED IN PLACE, AND ALL SPLICES SEALED, AS RECOMMENDED BY THE SUPPLIER OF THE JOINT MATERIAL. THE COST SHALL BE INCLUDED IN THE COST OF ITEM 601, CLASS D CONCRETE.
- ACCEPTABLE COMPRESSED JOINT MATERIAL ALTERNATIVES:**
- WILL-SEAL
  - SEAL-MATE #517
  - POLY-TITE STANDARD



Computer File Information	
Creation Date:	10/10/01 Initials: SEH
Last Modification Date:	07/22/02 Initials: PRH
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Drawing File Name:	B00033APR01.DWG
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Index of Revisions	



303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

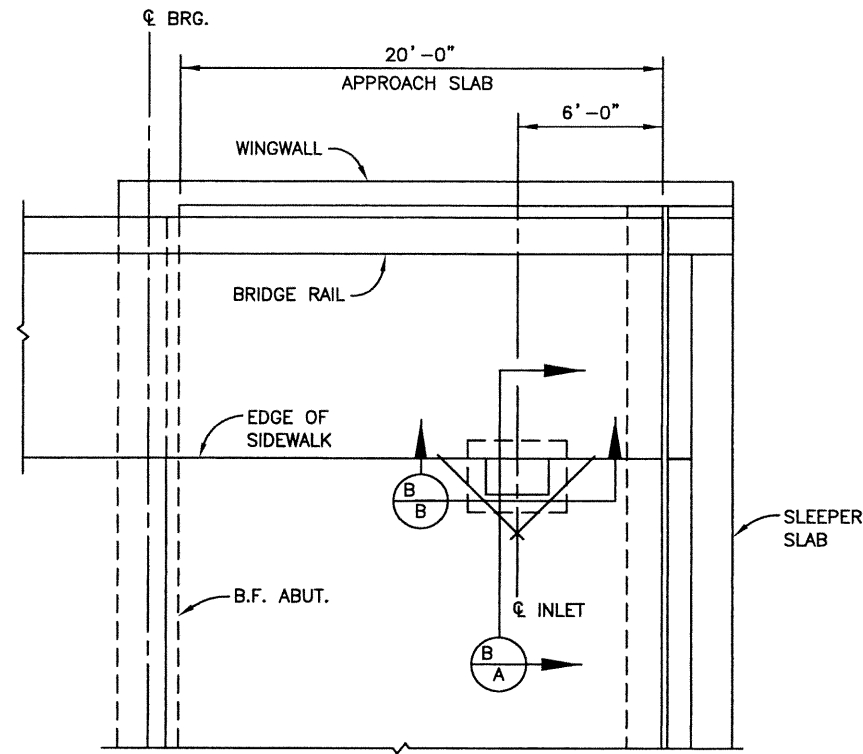
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As Constructed		136TH AVENUE OVER BIG DRY CREEK APPROACH SLAB DETAILS		Project No./Code	
No Revisions:		Designer:	S. HOWARD	Structure	
Revised:		Detailer:	P. HELM	Numbers	
Void:		Sheet Subset:	BRIDGE	Subset Sheets:	B29 of 40
				Sheet Number	120



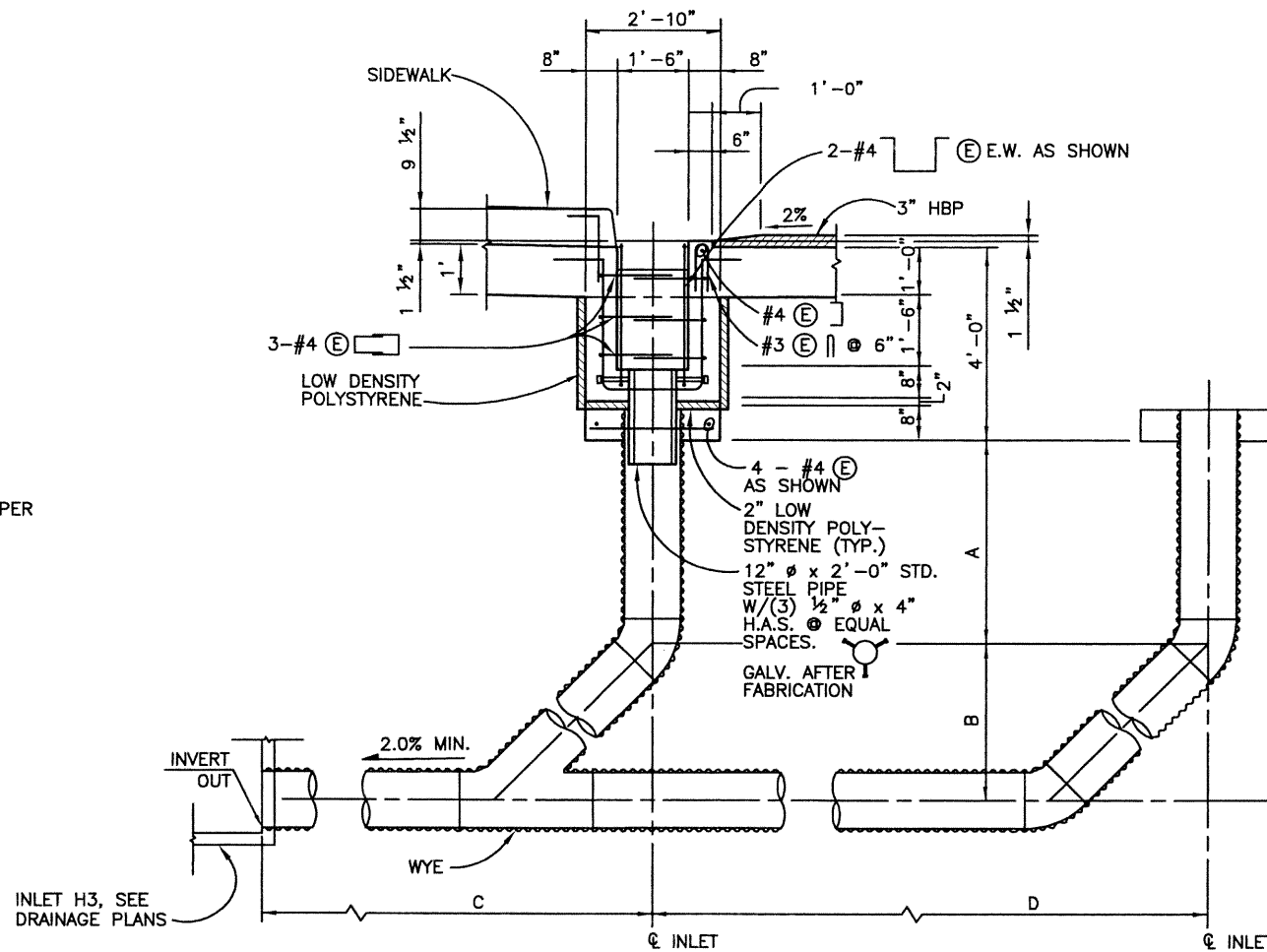
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SEH	RMA	SEH	12/01	SEH	03/02
Checked by		Checked by		Checked by	
		BBB	12/01	RRK	03/02
		BBB	10/02		



NOTE:  
SLAB REINFORCING NOT SHOWN, SEE SHT. B

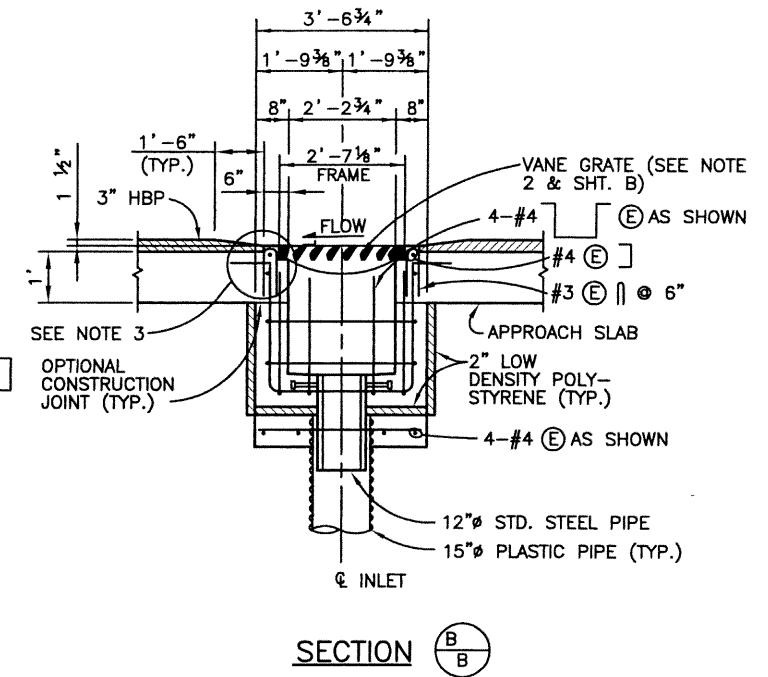
TYPICAL APPROACH SLAB  
INLET LOCATION



INLET	OUTLET PIPE DIMENSIONS				INVERT OUT	INLET NO.
	A	B	C	D		
ABUT. 3 NORTH	1'-0"	2'-6"	19'-1"	-	5145.00	H3
ABUT. 3 SOUTH	1'-0"	4'-9"	-	99'-0"	-	-

PERPENDICULAR TO BRIDGE RAIL

SECTION A-A



SECTION B-B

INLET NOTES:

- CUT APPROACH SLAB REINFORCING AS REQUIRED FOR INLET OPENING. PAINT CUT ENDS OF EPOXY COATED REINFORCING WITH AN APPROVED COATING.
- PROVIDE INLET GRATE AS SHOWN ON SHT. B29. PROVIDE ANCHOR BOLTS AS SHOWN ON THE GRATE INSTALLATION DETAIL.
- GRATE TO BE INSTALLED DURING CONSTRUCTION OF INLET WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME. THE COST OF THE GRATE, GRATE FRAME, EXPN. JOINT MATL., EXPANDED POLYSTYRENE AND STEEL PIPE WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN ITEM 601 CONCRETE CLASS D (BRIDGE).
- THE COST OF ELBOWS, GALV. METAL END SECTIONS AND ALL MISCELLANEOUS ITEMS REQUIRED TO INSTALL OUTLET PIPING SHALL BE INCLUDED IN THE COST OF ITEM 603, 15" PLASTIC PIPE.
- PLASTIC PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M294, TYPE S. PLASTIC PIPE SHALL BE JOINED BY WATERTIGHT COUPLING AS RECOMMENDED BY THE PIPE SUPPLIER OR AS APPROVED. ALL JOINTS SHALL BE MECHANICALLY RESTRAINED TO PREVENT SEPARATION.
- APPROACH SLAB INLET CONCRETE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 601 - CONCRETE CLASS D (BRIDGE), FOR THE APPROACH SLAB.
- APPROACH SLAB INLET REINFORCING STEEL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 602 - REINFORCING STEEL, FOR THE APPROACH SLAB.

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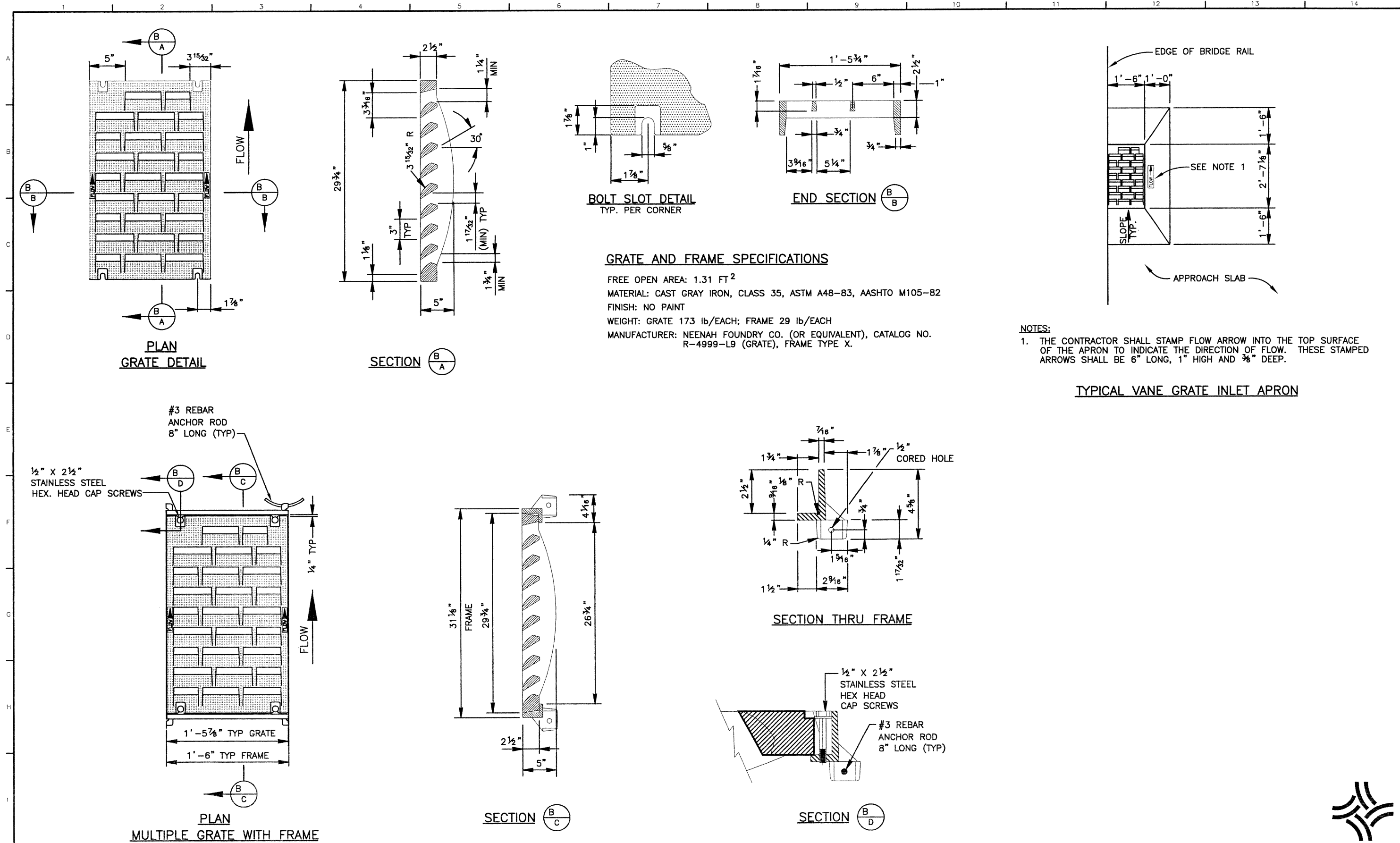
303.721.1440  
fax 303.721.0832  
fhu@fhueg.com  
  
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Englewood, CO 80111

As Constructed		136TH AVENUE OVER BIG DRY CREEK APPROACH SLAB INLET DETAILS (1 OF 2)		Project No./Code	
No Revisions:		Designer:	S. HOWARD	97-91	
Revised:		Detailer:	P. HELM	Structure Numbers	
Void:		Sheet Subset:	BRIDGE	Subset Sheets:	B30 of 40
				Sheet Number 121	



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Checked by		Detailed by		Quantities by	
		BBA	10/02	RRK	03/02
		Checked by		Checked by	



**BOLT SLOT DETAIL**  
TYP. PER CORNER

**END SECTION** B/B

**GRATE AND FRAME SPECIFICATIONS**

FREE OPEN AREA: 1.31 FT<sup>2</sup>  
 MATERIAL: CAST GRAY IRON, CLASS 35, ASTM A48-83, AASHTO M105-82  
 FINISH: NO PAINT  
 WEIGHT: GRATE 173 lb/EACH; FRAME 29 lb/EACH  
 MANUFACTURER: NEENAH FOUNDRY CO. (OR EQUIVALENT), CATALOG NO. R-4999-L9 (GRATE), FRAME TYPE X.

**NOTES:**  
 1. THE CONTRACTOR SHALL STAMP FLOW ARROW INTO THE TOP SURFACE OF THE APRON TO INDICATE THE DIRECTION OF FLOW. THESE STAMPED ARROWS SHALL BE 6" LONG, 1" HIGH AND 3/8" DEEP.

**TYPICAL VANE GRATE INLET APRON**

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Creation Date:	10/22/01	Initials: RAD				No Revisions:		Designer: S. HOWARD	Structure Numbers		97-91
Last Modification Date:	03/28/02	Initials: PRH				Revised:		Detailer: P. HELM	Sheet Subset: BRIDGE	Subset Sheets: B31 of 40	Sheet Number 122
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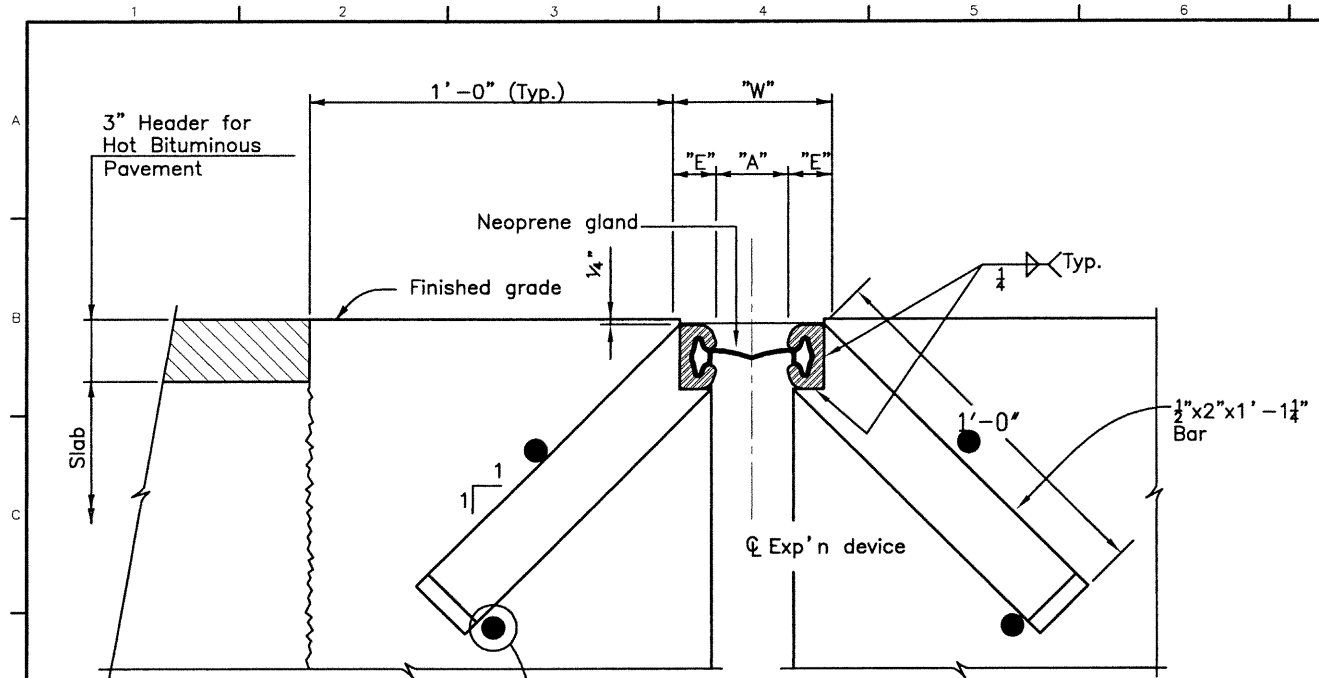


303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
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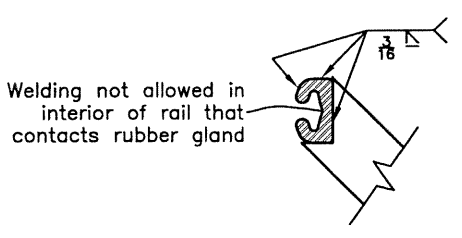


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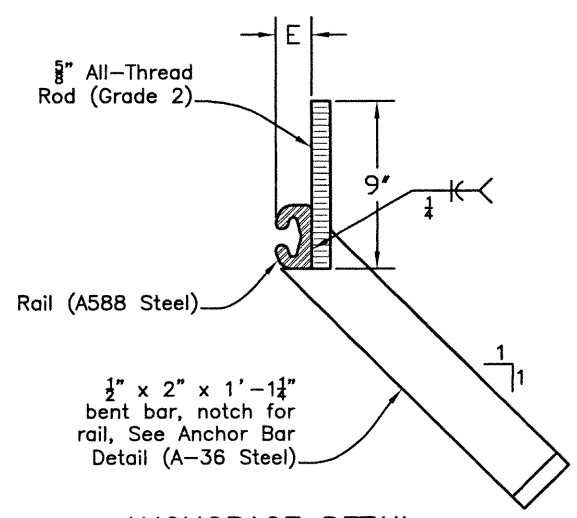
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SEH	12/01	SEH	12/01	SEH	03/02
Checked by		Checked by		Checked by	
KMA	10/02	RRK	03/02	RRK	03/02



**SECTION THRU STRIP SEAL BRIDGE EXPANSION DEVICE**  
Section taken perpendicular to  $\phi$  exp'n device.



**RAIL FIELD SPLICE DETAIL**



**ANCHORAGE DETAIL**

**NOTES:**

The expansion device shall be installed on grade, parallel to the slope and grade of the deck.

After the concrete has attained initial set, the attachments used to hold the expansion device assembly in it's proper position shall be removed.

Do not paint steel surfaces in contact with either concrete or seal.

"W" and "E" dimensions are dependent upon the particular expansion device supplied, and shall be shown on the working drawings.

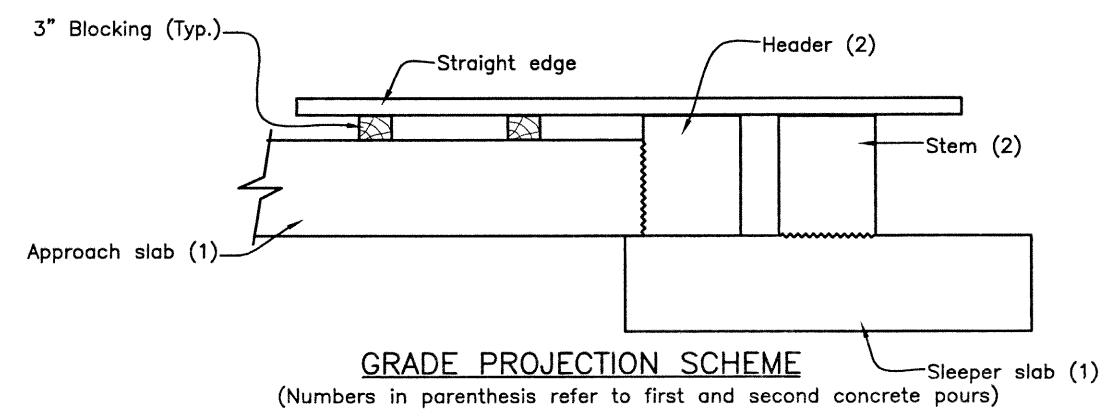
Do not install the gland until dimension "A" has opened up to at least 1 1/2". Use section 518.10(b) in the Standard Specifications to determine the structure temperature.

The neoprene gland shall be installed in one piece in accordance with section 518 of the Standard Specifications.

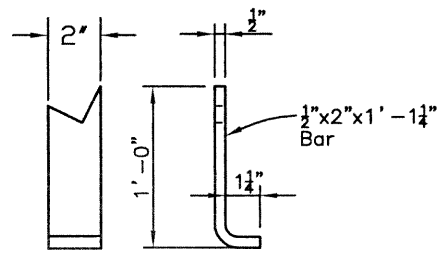
See section 518 in the Standard Specifications for water tight integrity testing requirements.

**ACCEPTABLE EXPANSION DEVICE ALTERNATES**

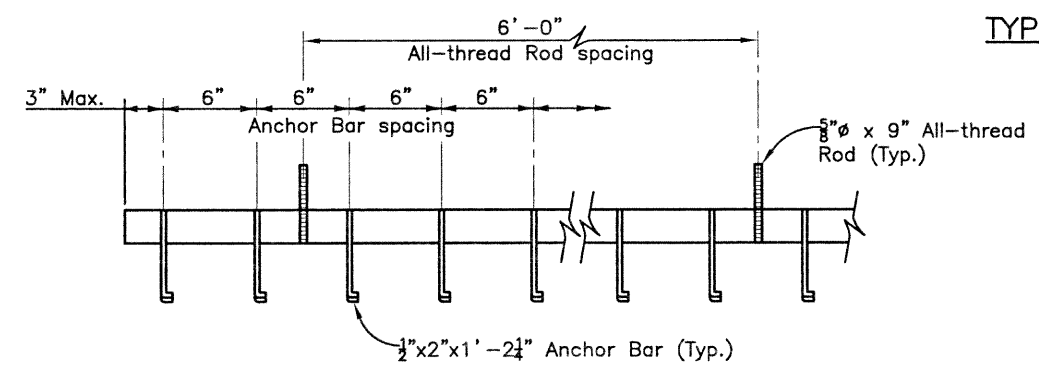
D.S. Brown A2R400-SSA2  
WABO SE400 Type A  
Epoxy Industries S400-A



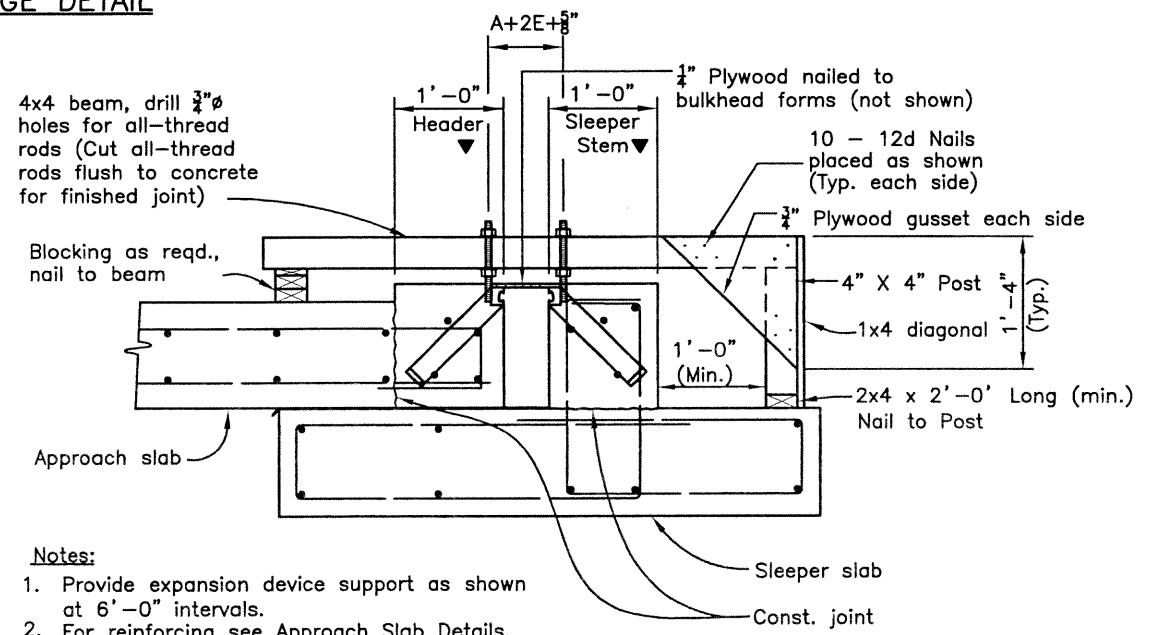
**GRADE PROJECTION SCHEME**  
(Numbers in parenthesis refer to first and second concrete pours)



**TYPICAL ANCHOR BAR DETAIL**



**ANCHOR BAR SPACING**



**Notes:**

- Provide expansion device support as shown at 6'-0" intervals.
- For reinforcing see Approach Slab Details.

▼ Concrete shall be placed after expansion device has been adjusted to proper grade and approved by engineer.

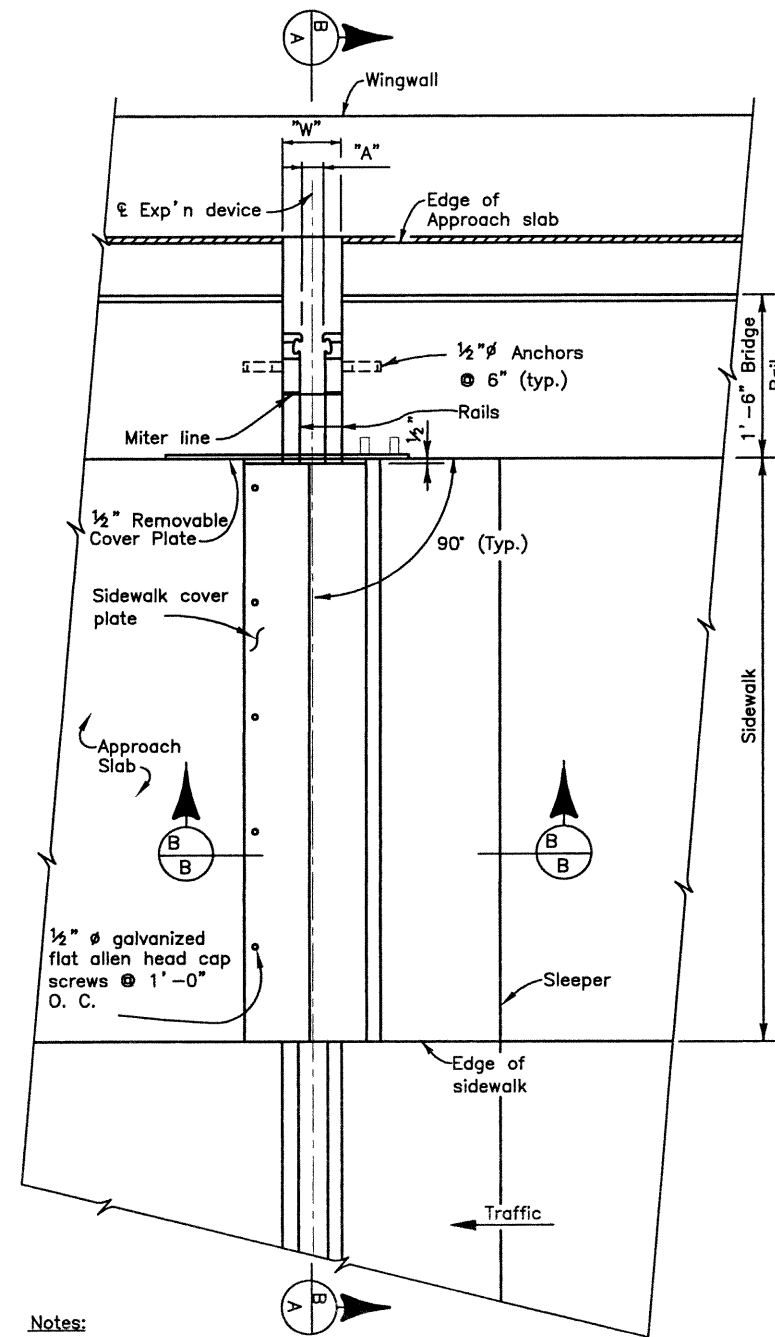
**MINIMUM SUPPORT BRACKET REQUIREMENTS**



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Creation Date:	10/24/01 Initials: RAD			No Revisions:		(1 of 3)		97-91	
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Acad Ver.	2000i Scale: VARIES Units: ENGLISH								Sheet Number 123

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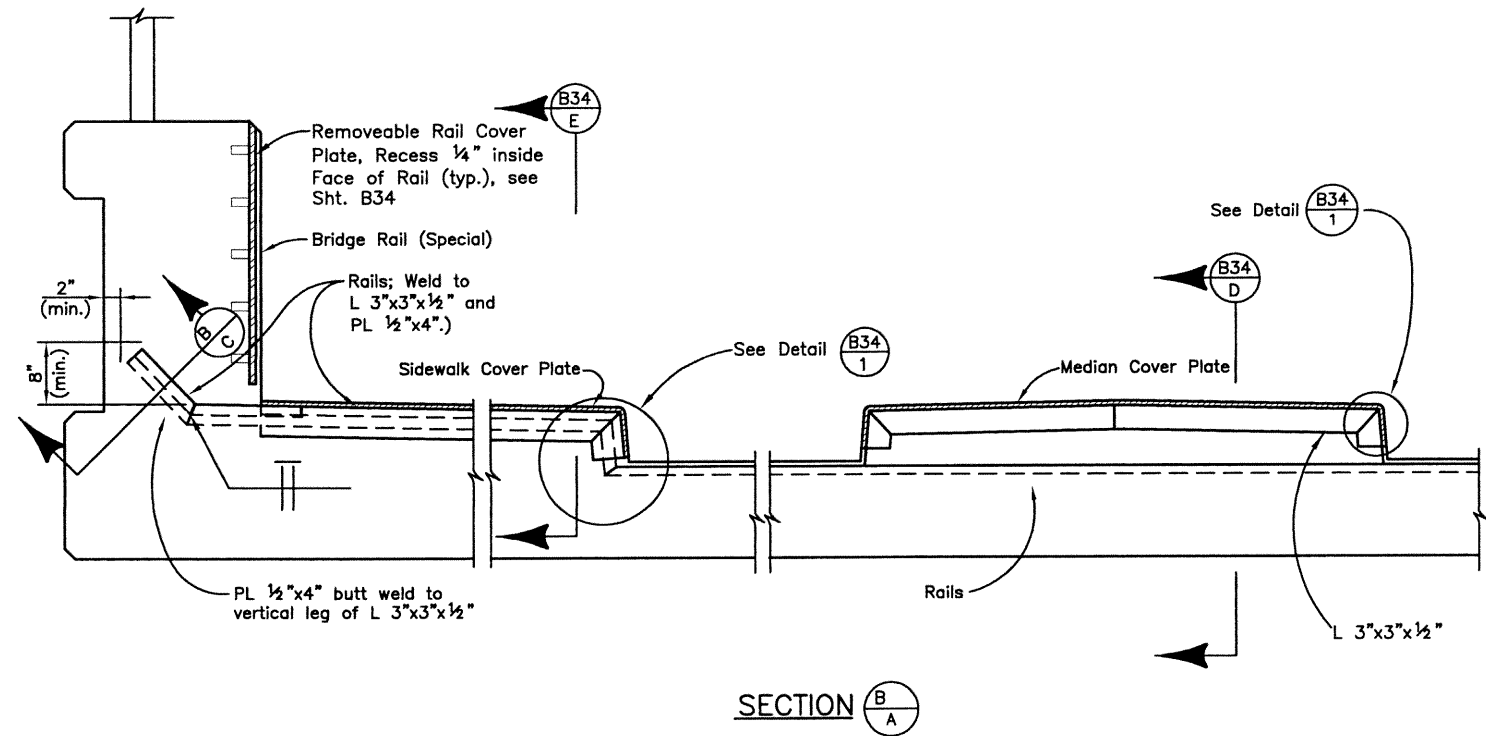
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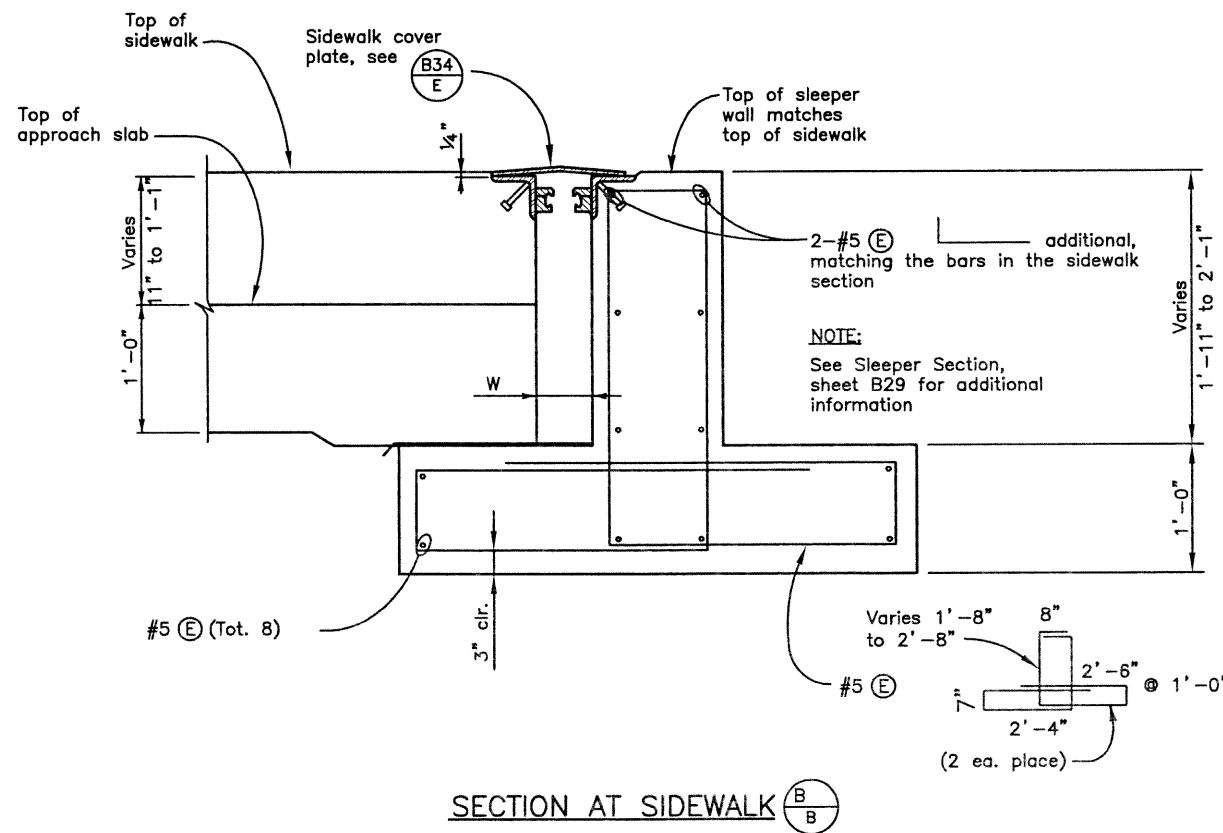
**Notes:**

1. Sidewalk cover plate, nuts and screws shall be included in the cost of item 518, Bridge Expansion Device (0-4").
2. Screws and nuts shall conform to AASHTO M-164M.
3. Steel cover plate shall conform to AASHTO M-183 (ASTM A-36, F<sub>y</sub>=36 ksi).
4. Provide 2" cover between anchors and all concrete surfaces.

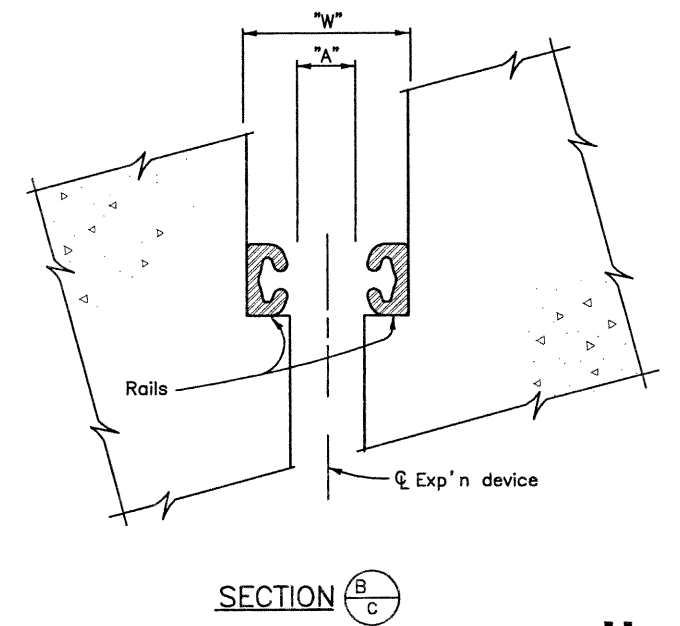
PLAN



SECTION B-A



SECTION AT SIDEWALK B-B



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Last Modification Date:	10/26/02	Initials:	PRH
Full Path:	J:\00033\Acad\Sheet\136-Big Dry Creek Bridge\		
Drawing File Name:	B00033EXP02.DWG		
Acad Ver.	2000i	Scale:	VARIES Units: ENGLISH

Index of Revisions			

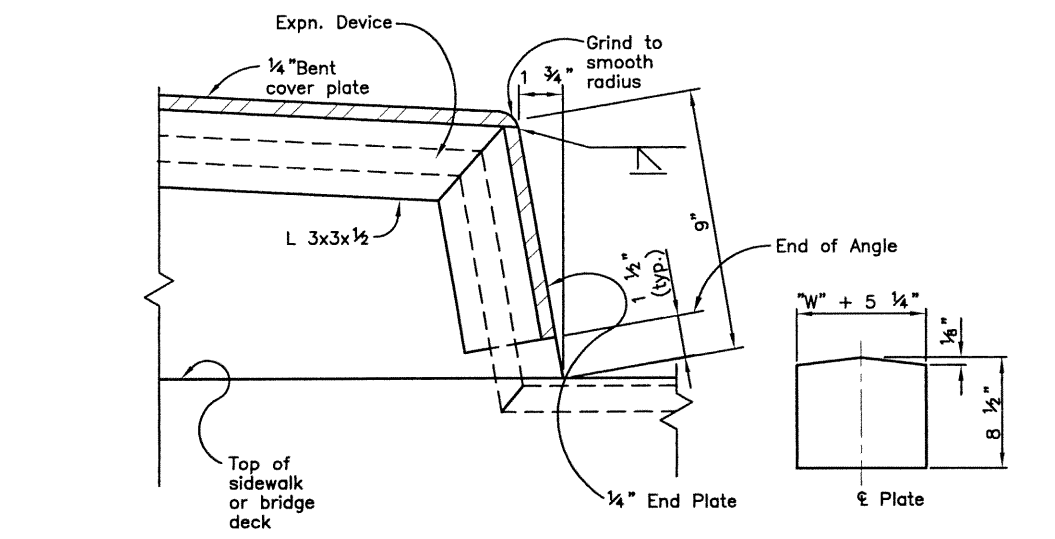


303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

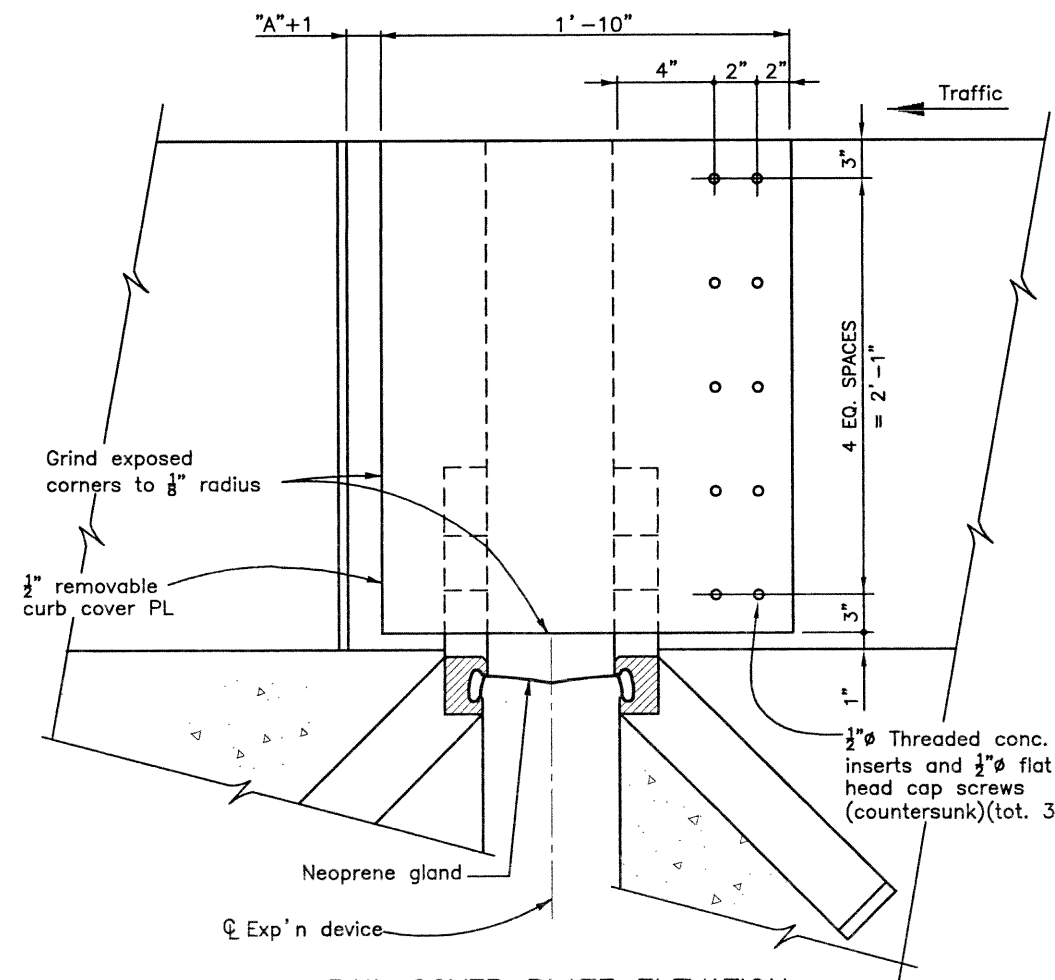
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No Revisions:		(2 of 3)		97-91	
Revised:		Designer:	S. HOWARD	Structure Numbers	
Void:		Detailer:	S. HOWARD		
		Sheet Subset:	BRIDGE	Subset Sheets:	B33 of 40
				Sheet Number	124

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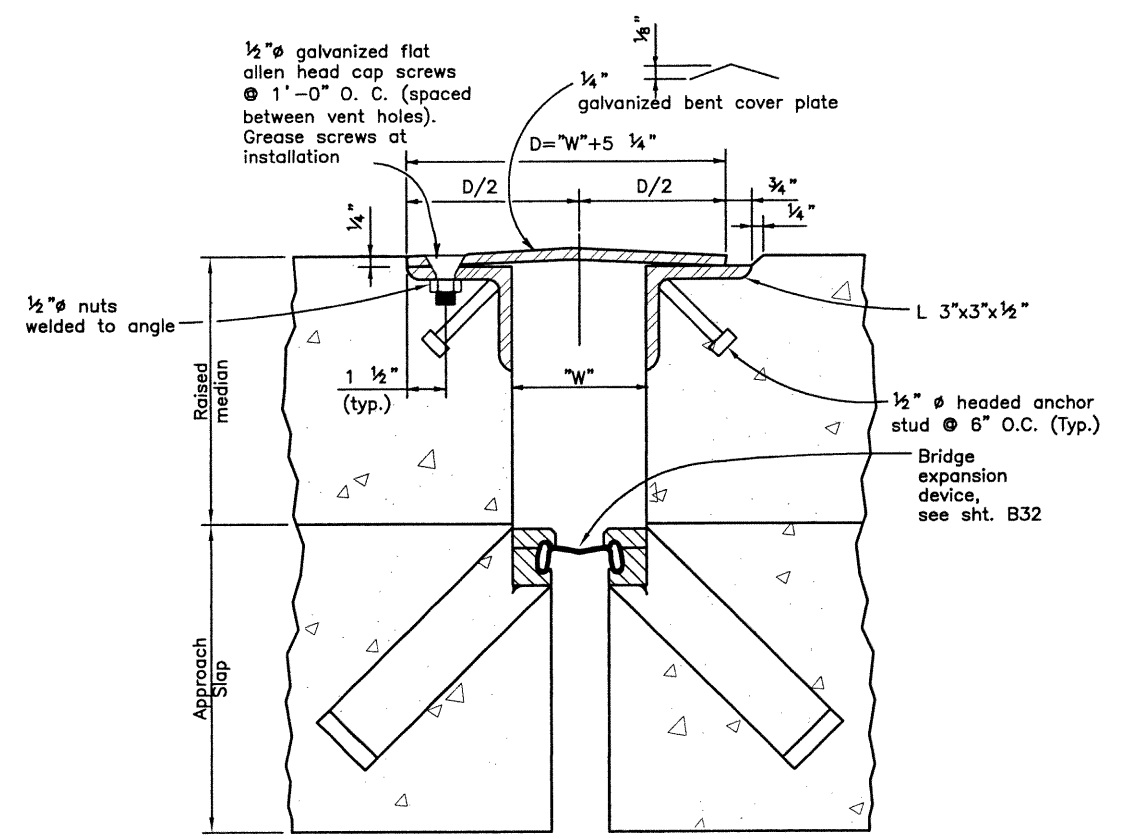
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		RAM	10/02	RAM	10/02		



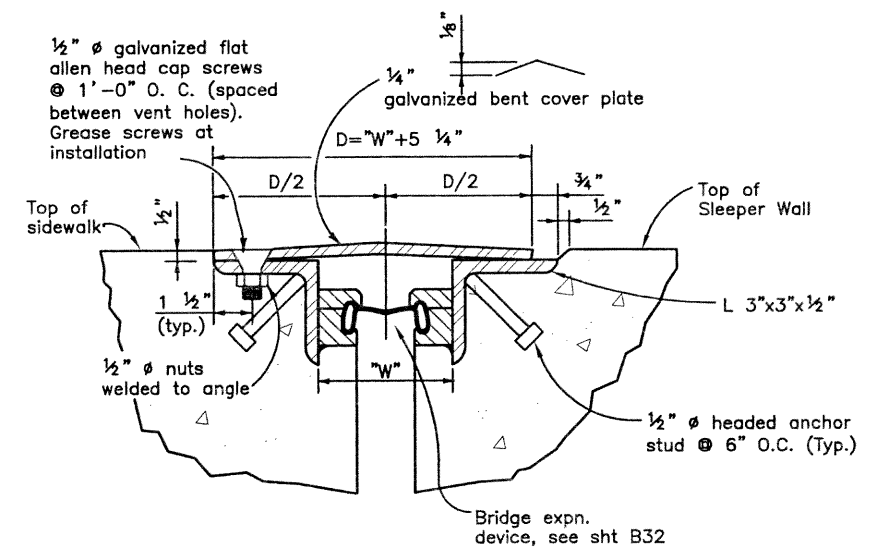
**SIDEWALK COVER PLATE**  
DETAIL B33/1



**RAIL COVER PLATE ELEVATION**



**MEDIAN COVER PLATE**  
SECTION B33/D



**SECTION B33/E**

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Units:	ENGLISH		

Index of Revisions			



303.721.1440  
fax 303.721.0832  
flu@flueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	
No Revisions:	
Revised:	
Void:	

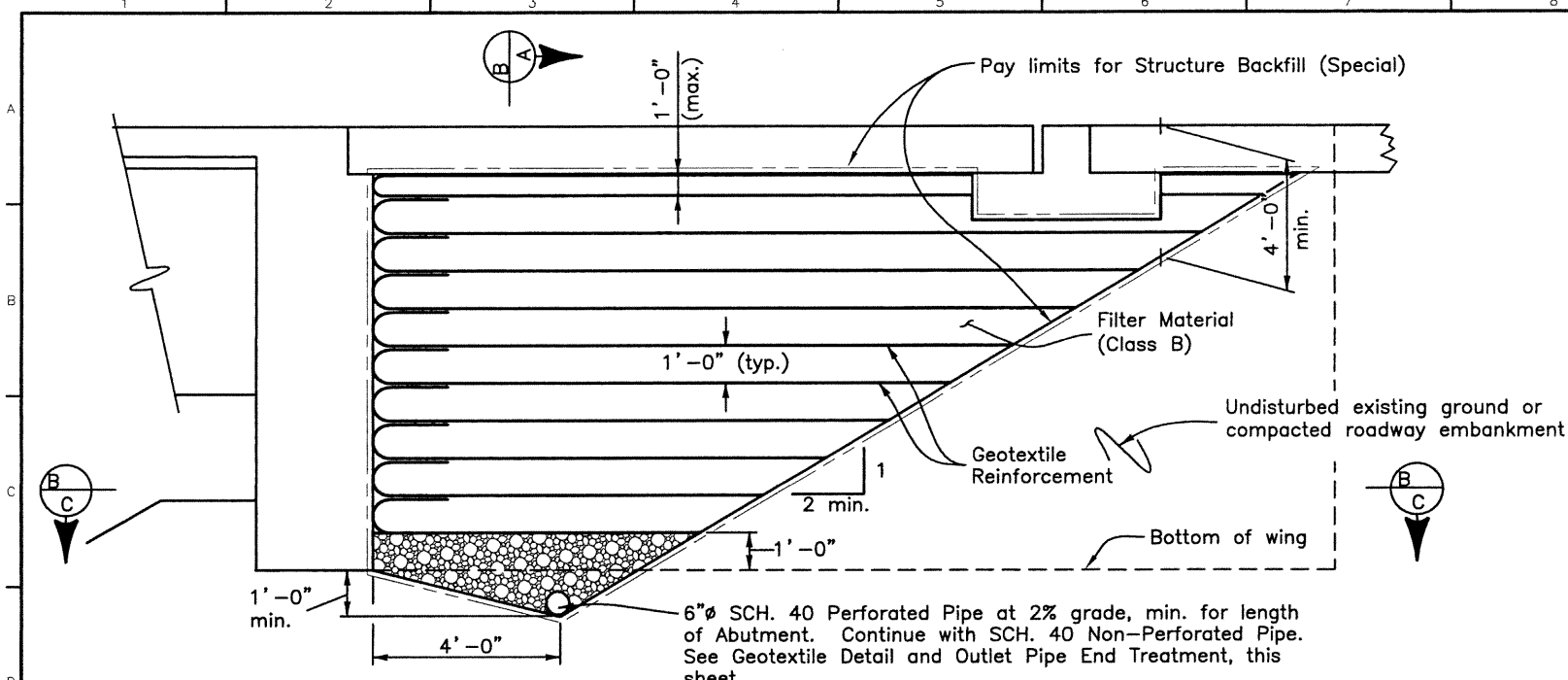
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(3 OF 3)			
Designer:	S. HOWARD	Structure	
Detailer:	P. HELM	Numbers	
Sheet Subset:	BRIDGE	Subset Sheets:	B34 of 40

Project No./Code	
97-91	
Sheet Number	125

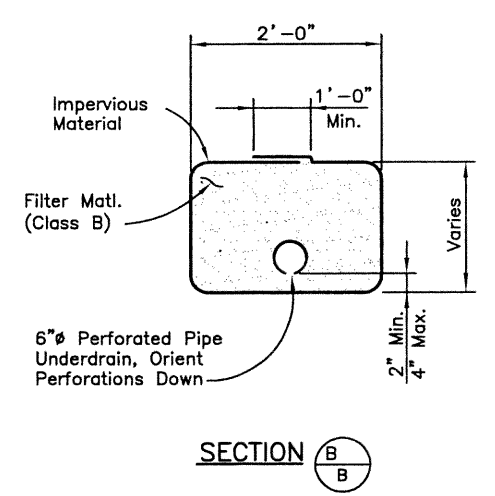


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KMA	10/02	KMA	10/02	KRK	03/02

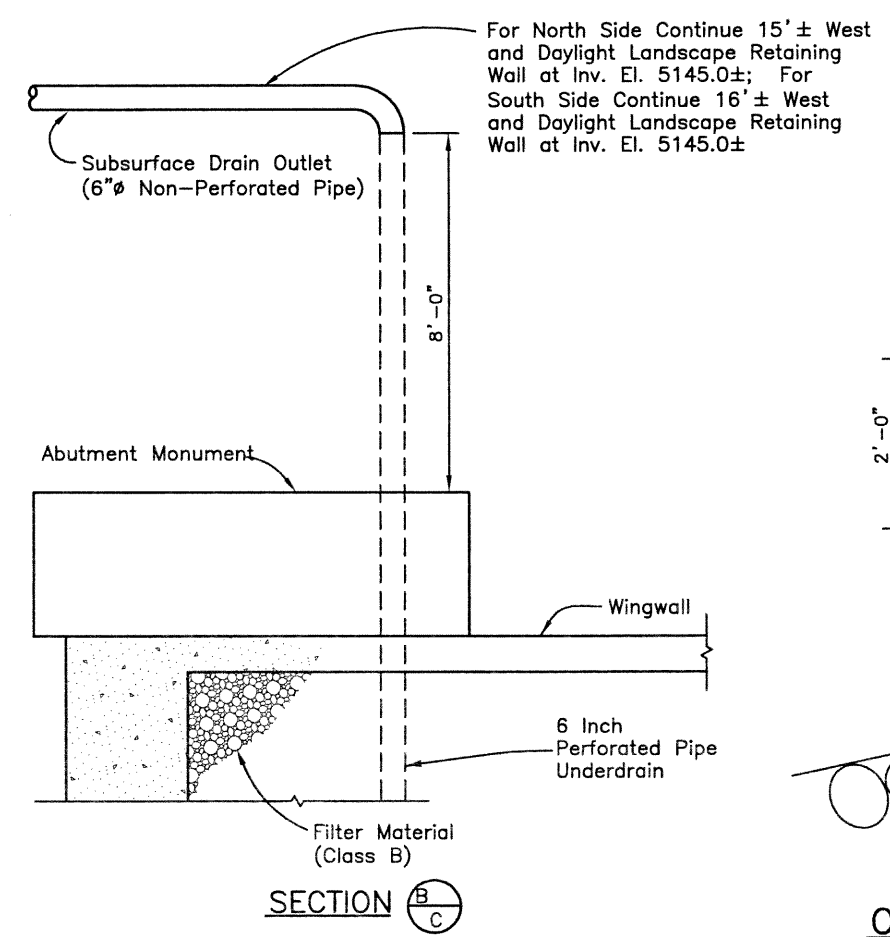


SECTION PERPENDICULAR TO ABUTMENT



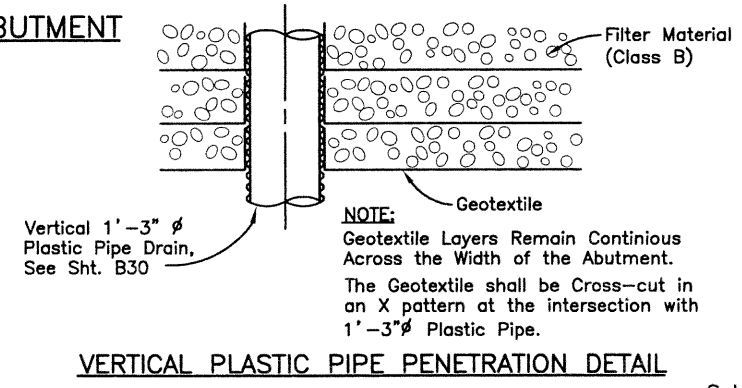
SECTION B-B

- Notes:
1. Geotextile Reinforcement shall be woven fabric with a Minimum Average Roll Value of 2400 lb/ft based on ASTM D4595.
  2. Geotextile Reinforcement shall be placed by alternating Machine Direction (MD) with Cross Machine Direction (XD) from layer to layer.
  3. The Geotextile Reinforcement wrap at Back Face of Abutment shall be pulled back slack free with its end anchored to soil underneath with staples or pins.
  4. Minimum splice of all Geofabric shall consist of 6" of overlap.
  5. Payment will be made under Item 206 Structure Backfill (Special) and shall include the cost for Geotextile Reinforcement, 6" Perforated Pipe Underdrain, Filter Material (Class B), and Geotextile (Drainage) (Class A).
  6. Installation of Pipe Underdrain and Subsurface Drain Outlet will conform to the Construction requirements of section 605.03 and 605.06, respectively.
  7. Outlet Pipe Treatment shall be included in the cost of Item 605 Subsurface Drain Outlet.

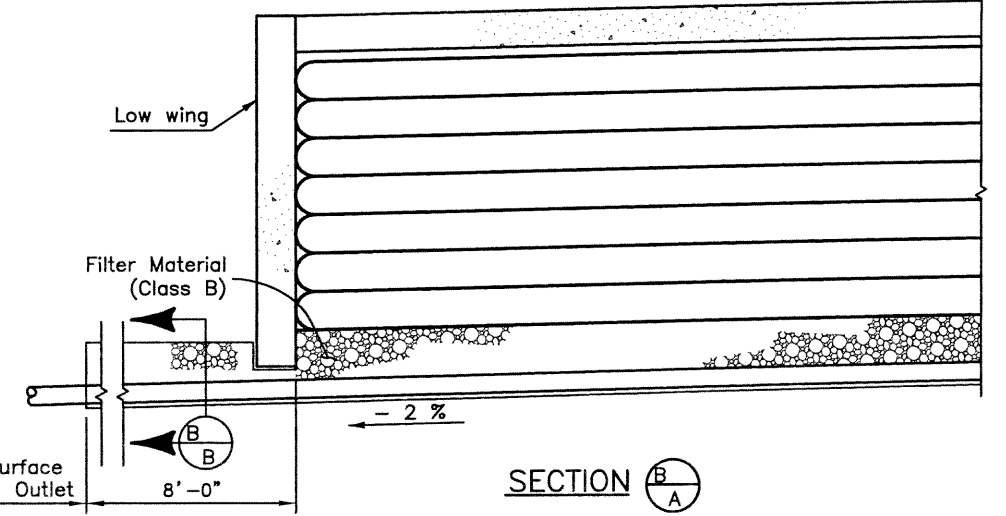


SECTION B-C

For North Side Continue 15' ± West and Daylight Landscape Retaining Wall at Inv. El. 5145.0±; For South Side Continue 16' ± West and Daylight Landscape Retaining Wall at Inv. El. 5145.0±



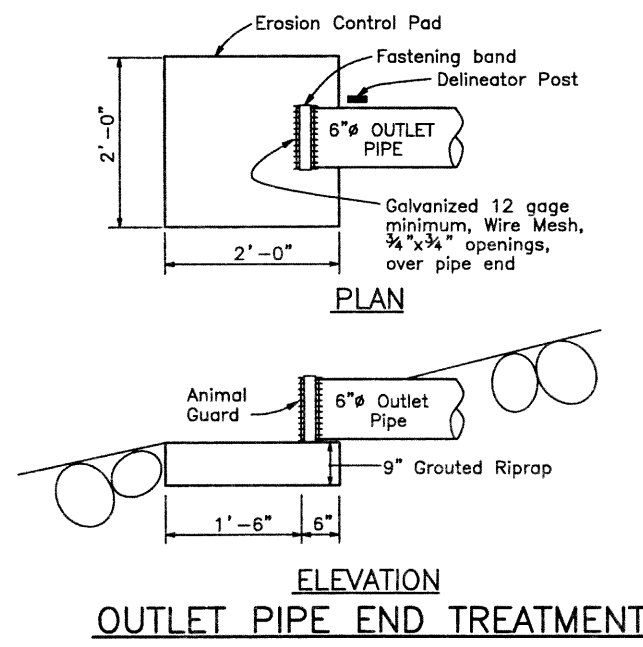
VERTICAL PLASTIC PIPE PENETRATION DETAIL



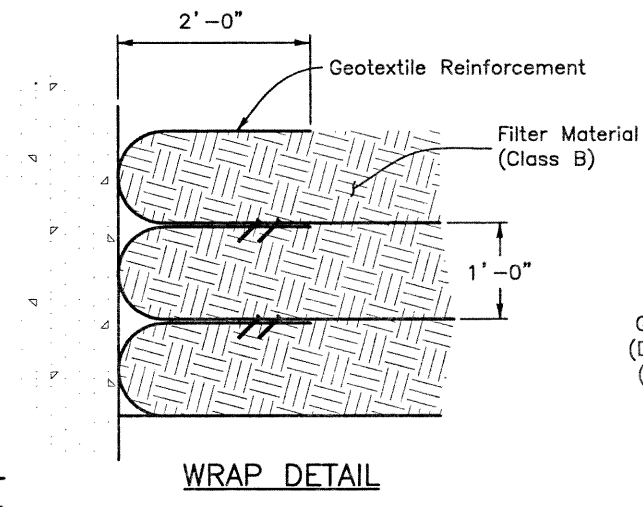
SECTION B-A

FOR INFORMATION ONLY

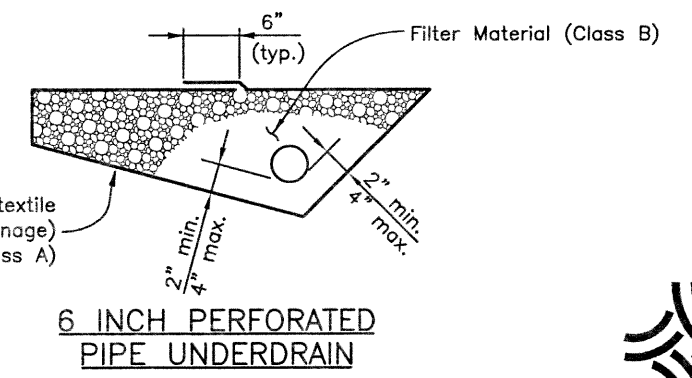
DESCRIPTION	UNITS	ABUT. 1	ABUT. 3
6" PERFORATED PIPE UNDERDRAIN	ft.		125
SUBSURFACE DRAIN OUTLET	ft.		35



ELEVATION OUTLET PIPE END TREATMENT



WRAP DETAIL



6 INCH PERFORATED PIPE UNDERDRAIN



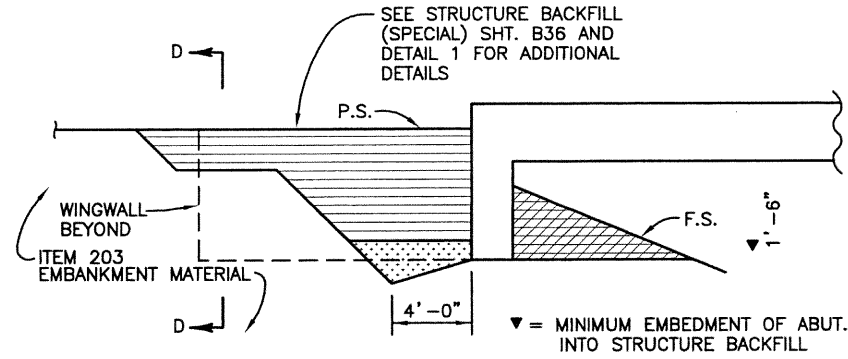
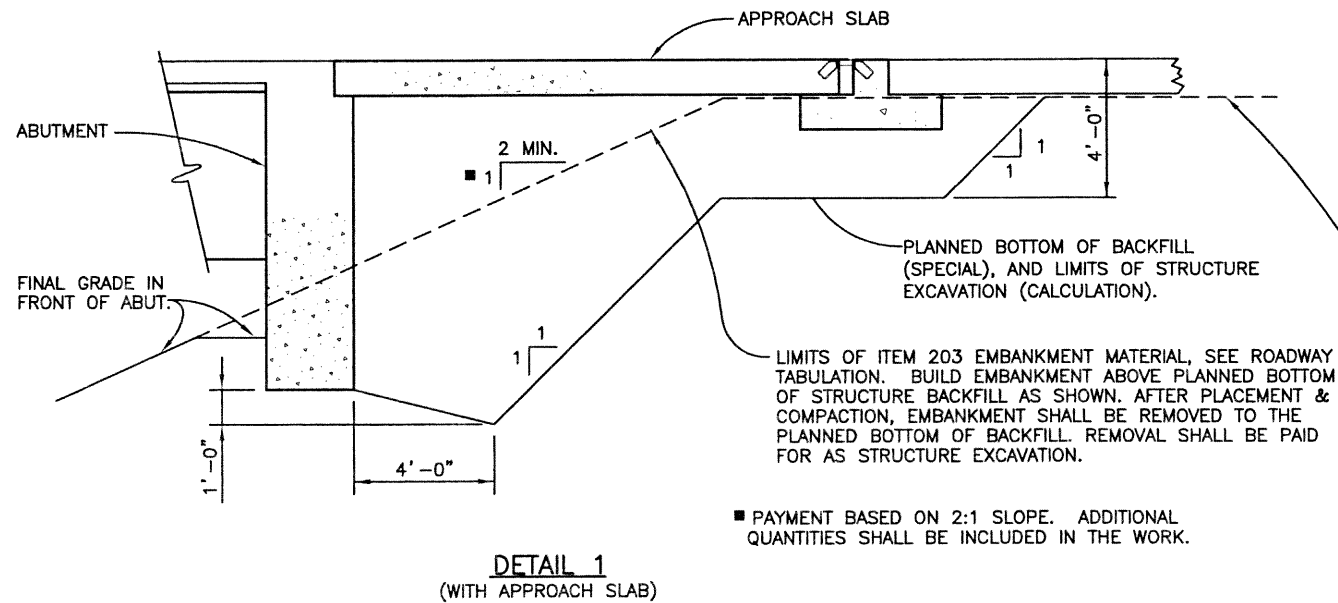
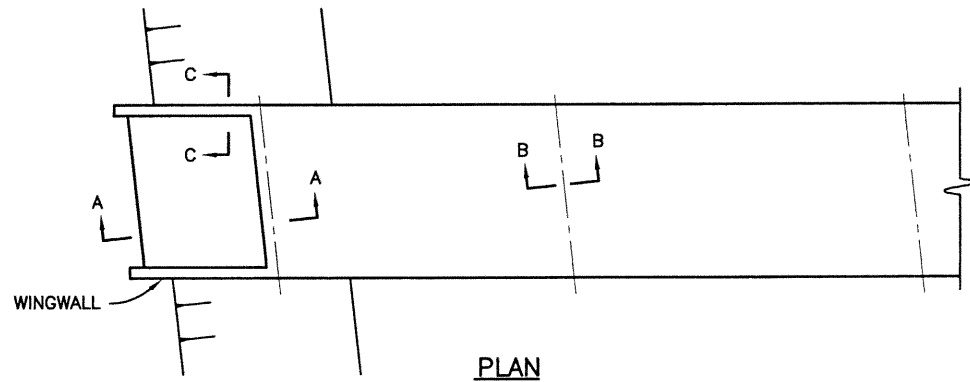
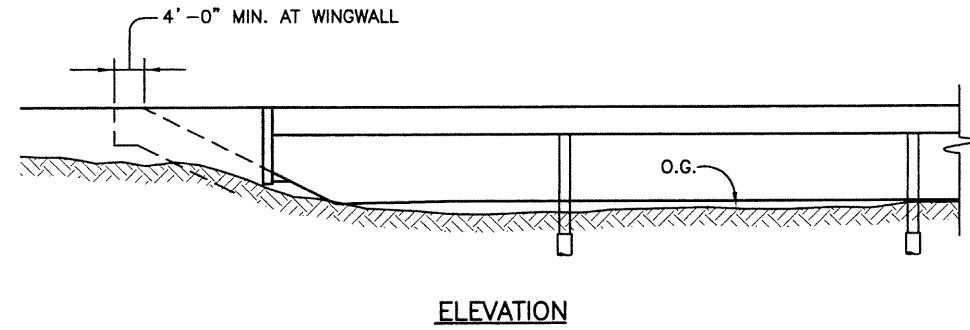
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Last Modification Date:	06/19/02	Initials: PRH				Revised:					97-91
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											126



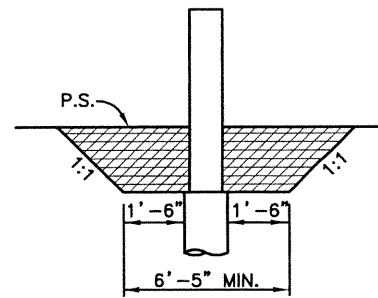
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	136TH AVENUE OVER BIG DRY CREEK STRUCTURE BACKFILL (SPECIAL)	Project No./Code
No Revisions:		97-91
Revised:	Designer: S. HOWARD Detailer: S. HOWARD	Structure Numbers
Void:	Sheet Subset: BRIDGE Subset Sheets: B35 of 40	Sheet Number

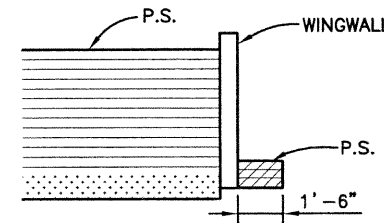
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Revision Dates (Preliminary Stage Only)					



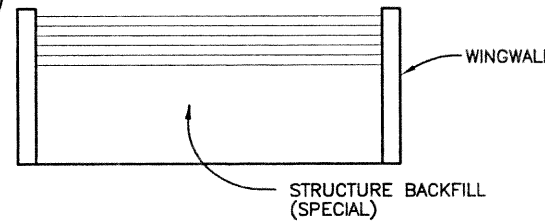
SECTION A-A (BACKFILL)



SECTION B-B (BACKFILL)



SECTION C-C (BACKFILL)



SECTION D-D (BACKFILL)

LEGEND

- STRUCTURE BACKFILL (SPECIAL)
- STRUCTURE BACKFILL (CLASS 2)
- FILTER MATERIAL

ABBREVIATIONS

- O.G. ORIGINAL GROUND
- P.S. PLANNED SUBGRADE
- F.S. PLANNED FINISHED SURFACE



**Computer File Information**

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Last Modification Date:	03/28/02	Initials:	PRH
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Units:	ENGLISH		

**Index of Revisions**


**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	136TH AVENUE OVER BIG DRY CREEK EXCAVATION & BACKFILL FOR BRIDGES	Project No./Code 97-91
No Revisions:		
Revised:	Designer: S. HOWARD	Structure Numbers
Void:	Detailer: S. HOWARD	
	Sheet Subset: BRIDGE	Subset Sheets: B36 of 40

Sheet Number **127**

STRUCTURE ID: X-XX-X BRIDGE GEOMETRY (WIN 2.00e) 01/11/30 15:22

DESCRIPTION

Units: feet; Project: ; Subaccount: ; Designer: Kass Alkanani; Detailer: Rick Dillon; Location: 136th Avenue over Big Dry Creek; Two Span Bridge Carries 136th Avenue Eastbound and Westbound over Big Dry Creek. Composite slab on precast prestressed concrete I Girder (BT-42) Felsburg Holt & Ullevig Proj. No. 00-033

HORIZONTAL ALIGNMENT DATA

HORIZONTAL TANGENT

VERTICAL ALIGNMENT DATA

Table with columns: ELEVATION AT PI, ELEVATION AT GRADE, STATION, ELEVATION AT GRADE, ELEVATION AT PI, PERCENT GRADE. Includes data for stations 57+75.000 to 65+75.000.

TABLE OF ROADWAY CROSS-SLOPES (SUPERELEVATION: E=-NC--)

Table with columns: STATION, SLOPE LEFT, SLOPE RIGHT, VC LENGTH. Shows slope values of -0.0200 and VC length of 50.00 (MAX).

OFFSET PROFILE CONTROL TO PIVOT POINT = 0.0000 FEET

LIMITS OF VALID ELEVATION AND CROSS-SLOPE DATA

BEGIN \* UNLIMITED \* END \* UNLIMITED \*

LAYOUT LINE DATA

LAYOUT LINE DEFINED TO BE COINCIDENT WITH HORIZONTAL CONTROL

Table showing layout line intersections: LAYOUT LINE INTERSECTS REF LINE AT HCL STA 59+61.2500, OFFSET 0.00000000, X 0.0000, Y 0.0000.

DEAD LOAD DEFLECTION DATA

DEFLECTIONS AT TENTH POINTS FROM FITTED CURVE

Table with columns 0.0 to 1.0 showing deflection values for bent line CL BRG A 1 and others.

FOR BENT LINE: CL BRG A 1 AND OTHERS

Table with columns: INCH, FOOT, SLOPE and values for various stations and girders. Includes A4=0.00000, A3=0.00000, A2=19.7551, A1=19.7551, A0=-14.9622.

LONGITUDINAL LINE: LEFT EDGE OF DECK

Table with columns: BENT LINE, STATION, OFFSET, ELEVATION, ELEV+DL, X, Y, NORTHING, EASTING, BENT LNTH, SKEW, GIRDER LNTH, CRS-SLP. Includes data for B.F. ABUT 1 and CL BRG A 1.

LONGITUDINAL LINE: CL PIER 2

Table with columns: BENT LINE, STATION, OFFSET, ELEVATION, ELEV+DL, X, Y, NORTHING, EASTING, BENT LNTH, SKEW, GIRDER LNTH, CRS-SLP. Includes data for CL PIER 2 and B.F. ABUT 3.

LONGITUDINAL LINE: CL G1

Table with columns: BENT LINE, STATION, OFFSET, ELEVATION, ELEV+DL, X, Y, NORTHING, EASTING, BENT LNTH, SKEW, GIRDER LNTH, CRS-SLP. Includes data for B.F. ABUT 1 and CL PIER 2.

LONGITUDINAL LINE: CL PIER 2

Table with columns: BENT LINE, STATION, OFFSET, ELEVATION, ELEV+DL, X, Y, NORTHING, EASTING, BENT LNTH, SKEW, GIRDER LNTH, CRS-SLP. Includes data for CL PIER 2 and B.F. ABUT 3.

LONGITUDINAL LINE: CL G2

Table with columns: BENT LINE, STATION, OFFSET, ELEVATION, ELEV+DL, X, Y, NORTHING, EASTING, BENT LNTH, SKEW, GIRDER LNTH, CRS-SLP. Includes data for B.F. ABUT 1 and CL PIER 2.

LONGITUDINAL LINE: CL PIER 2

Table with columns: BENT LINE, STATION, OFFSET, ELEVATION, ELEV+DL, X, Y, NORTHING, EASTING, BENT LNTH, SKEW, GIRDER LNTH, CRS-SLP. Includes data for CL PIER 2 and B.F. ABUT 3.

NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.25 FEET BELOW FINISHED GRADE. POSITIVE ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS, AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF STRUCTURAL COMPONENTS THRU THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

Computer File Information table with columns: Creation Date, Last Modification Date, Full Path, Drawing File Name, Acad Ver., Scale, Units.

Index of Revisions table with columns: Revision Number, Description, Date, Initials.



Contact information for Felsburg Holt & Ullevig: 303.721.1440, fax 303.721.0832, rhu@fhueng.com, Greenwood Corporate Plaza, 7951 E. Maplewood Ave. Ste. 200, Englewood, CO 80111

Project information table with columns: As Constructed, No Revisions, Revised, Void, Project No./Code, Designer, Detailer, Sheet Subset, Subst Sheets, Sheet Number.






J:\00033\acad\sheet\136-Big Dry Creek Bridge\B00033DEC01.dwg, 11/27/02 07:16:57 AM, Phillip

LONGITUDINAL LINE: LEFT FLOW LINE	PARALLEL TO HORIZONTAL CONTROL								0.250000 FEET BELOW FINISHED GRADE				LONGITUDINAL LINE: CL G5	PARALLEL TO HORIZONTAL CONTROL								0.250000 FEET BELOW FINISHED GRADE			
	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH		CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW
B. F. ABUT 1	59+60.0000	-32.0000	5157.8912	0.0000	-32.0000	-1.2500	1222525.6843	3145651.0408	-32.0000	0 00 00.00	-1.2500	-0.020000	B. F. ABUT 1	59+60.0000	-13.5000	5158.2612	0.0000	-13.5000	-1.2500	1222507.1843	3145651.0363	-13.5000	0 00 00.00	-1.2500	-0.020000
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F-3	59+90.5750	-32.0000	5157.7290	5158.0634	-32.0000	29.3250	1222525.6770	3145681.6158	-32.0000	0 00 00.00	29.3250	-0.020000	F-3	59+90.5750	-13.5000	5158.0990	5158.4334	-13.5000	29.3250	1222507.1770	3145681.6113	-13.5000	0 00 00.00	29.3250	-0.020000

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DESIGNED BY	SEH	AMA	03/02	03/02	SEH	AMA
CHECKED BY	SEH	AMA	03/02	03/02	SEH	AMA
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DESIGNED BY	SEH	AMA	03/02	03/02	SEH	AMA
CHECKED BY	SEH	AMA	03/02	03/02	SEH	AMA

NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.25 FEET BELOW FINISHED GRADE. POSITIVE ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS, AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF STRUCTURAL COMPONENTS THRU THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

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		10/02	SEH	SEH	03/02		

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Last Modification Date:	06/18/02	Initials: PRH					Revised:	Designer: K. ALKANANI	Structure Numbers:			
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Acad Ver. 2000i	Scale: NONE	Units: ENGLISH				Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111						

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	Checked by	SEH	12/01	KRK	03/02
	Checked by	KMA	10/02		
	Checked by				
DETAIL	Initial	Date	Checked by	Checked Date	
	SEH	12/01	KRK	03/02	
QUANTITIES	Checked by	Date	Checked by	Checked Date	
Revision Dates (Preliminary Stage Only)					

LONGITUDINAL LINE: CL G13										PARALLEL TO HORIZONTAL CONTROL				0.250000 FEET BELOW FINISHED GRADE				LONGITUDINAL LINE: CL G15										PARALLEL TO HORIZONTAL CONTROL				0.250000 FEET BELOW FINISHED GRADE						
BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP	BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	NORTHING	EASTING	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
B.F ABUT 1	59+60.0000	38.5000	5157.7612	0.0000	38.5000	-1.2500	1222455.1843	3145651.0239	38.5000	0 00 00.00	-1.2500	-0.020000	B.F ABUT 1	59+60.0000	51.5000	5157.5012	0.0000	51.5000	-1.2500	1222442.1843	3145651.0208	51.5000	0 00 00.00	-1.2500	-0.020000	B.F ABUT 1	59+60.0000	51.5000	5157.5012	0.0000	51.5000	-1.2500	1222442.1843	3145651.0208	51.5000	0 00 00.00	-1.2500	-0.020000
CL BRG A 1	59+61.2500	38.5000	5157.7559	5157.7559	38.5000	0.0000	1222455.1840	3145652.2739	38.5000	0 00 00.00	0.0000	-0.020000	CL BRG A 1	59+61.2500	51.5000	5157.4959	5157.4959	51.5000	0.0000	1222442.1840	3145652.2708	51.5000	0 00 00.00	0.0000	-0.020000	CL BRG A 1	59+61.2500	51.5000	5157.4959	5157.4959	51.5000	0.0000	1222442.1840	3145652.2708	51.5000	0 00 00.00	0.0000	-0.020000
F-1	59+71.0250	38.5000	5157.7108	5157.8364	38.5000	9.7750	1222455.1817	3145662.0489			9.7750	-0.020000	F-1	59+71.0250	51.5000	5157.4508	5157.5764	51.5000	9.7750	1222442.1817	3145662.0458			9.7750	-0.020000	F-1	59+71.0250	51.5000	5157.4508	5157.5764	51.5000	9.7750	1222442.1817	3145662.0458			9.7750	-0.020000
F-2	59+80.8000	38.5000	5157.6585	5157.9001	38.5000	19.5500	1222455.1793	3145671.8239			19.5500	-0.020000	F-2	59+80.8000	51.5000	5157.3885	5157.6401	51.5000	19.5500	1222442.1793	3145671.8208			19.5500	-0.020000	F-2	59+80.8000	51.5000	5157.3885	5157.6401	51.5000	19.5500	1222442.1793	3145671.8208			19.5500	-0.020000
F-3	59+90.5750	38.5000	5157.5990	5157.9334	38.5000	29.3250	1222455.1770	3145681.5989			29.3250	-0.020000	F-3	59+90.5750	51.5000	5157.3390	5157.6734	51.5000	29.3250	1222442.1770	3145681.5958			29.3250	-0.020000	F-3	59+90.5750	51.5000	5157.3390	5157.6734	51.5000	29.3250	1222442.1770	3145681.5958			29.3250	-0.020000

NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.25 FEET BELOW FINISHED GRADE. POSITIVE ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS, AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF STRUCTURAL COMPONENTS THRU THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

Computer File Information			Index of Revisions				As Constructed		136TH AVENUE OVER BIG DRY CREEK BRIDGE DECK ELEVATIONS			Project No./Code	
Creation Date:	10/09/01	Initials: RAD					No Revisions:	(4 of 4)			97-91		
Last Modification Date:	06/18/02	Initials: PRH					Revised:	Designer: K. ALKANANI	Structure Numbers				
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Drawing File Name:	B00033DEC01.DWG					Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111		Sheet Subset: BRIDGE		Sheet Number 131			
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DETAIL	Initial	Date	QUANTITIES	Initial	Date
	Detailed by RAD	01/00		Checked by WJM	01/00
REVISION	Initial	Date	QUANTITIES	Initial	Date
	Checked by KMA	01/00		Checked by WJM	01/00

**GENERAL NOTES**

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1999 EDITION (PURPLE BOOK), AS APPLICABLE TO THE PROJECT.

STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH CDOT STANDARD PLANS, M&S STANDARDS M-206-1 AND M-206-2 OCTOBER 2000, UNLESS OTHERWISE NOTED ON PLANS.

STRUCTURE BACKFILL FOR THE BOX CULVERT AND WINGWALLS SHALL CONFORM TO STRUCTURE BACKFILL (CLASS 1) SPECIFICATIONS, AND SHALL BE PLACED IN ACCORDANCE WITH CDOT SPECIFICATIONS, SECTION 206.

THE SOILS AND FOUNDATION INVESTIGATION FOR THE PEDESTRIAN UNDERPASS CONCRETE BOX CULVERT AND WINGWALLS WAS PERFORMED BY GROUND ENGINEERING CONSULTANTS. THE SUB SURFACE CONDITIONS AND RECOMMENDATIONS FOR THE STRUCTURE ARE CONTAINED IN A REPORT DATED JULY 16, 2001, JOB NO. 00-0104. COPIES OF THIS REPORT WILL BE MADE AVAILABLE FROM THE CITY OF WESTMINSTER FOR THE CONTRACTOR'S REVIEW AND INFORMATION.

THE BOTTOM SLAB OF THE BOX CULVERT, AND THE WINGWALL FOOTINGS SHALL NOT BE PLACED UNTIL SUBGRADE IS OBSERVED AND APPROVED IN WRITING BY THE ENGINEER.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

THE COST FOR THE COMPRESSED JOINT MATERIAL AND EXPANSION JOINT MATERIAL SHALL NOT BE PAID FOR SEPERATELY BUT SHALL BE INCLUDED IN THE COST OF ITEM 601, CLASS D CONCRETE.

NEOPRENE WATER STOPS SHALL MEET THE REQUIREMENTS OF SECTION 518.

WATERPROOFING SHALL MEET AASHTO SPECIFICATION M-115.

THE BOX CULVERT SHALL HAVE LIGHTING FIXTURES PER LIGHTING DETAILS ON SHT. C3. THE COST FOR THE JUNCTION BOXES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 601 CONCRETE CLASS D (BOX CULVERT).

ALL CONCRETE IN CONTACT WITH THE SOIL SHALL BE SULFATE RESISTING IN ACCORDANCE WITH PROJECT SPECIAL PROVISION, REVISION OF SECTION 601, STRUCTURAL CONCRETE.

ALL CONCRETE SHALL BE CLASS D (BOX CULVERT)

ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED AND ROUGHENED BEFORE FRESH CONCRETE IS PLACED.

ALL CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS SHALL BE APPROVED BY THE ENGINEER.

WINGWALL FOOTINGS AND BOTTOM SLAB OF BOX CULVERT SHALL BE PLACED MONOLITHICALLY.

ALL ELECTRICAL CONDUIT IN BOX CULVERT SHALL BE GALVANIZED RIGID METAL CONDUIT. ALL CONDUIT RUNS SHALL INCLUDE A PULL STRING FOR FUTURE WIRING INSTALLATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

THE CONTRACTOR SHALL NOT BACKFILL STRUCTURES UNTIL TOP SLAB AND WALLS HAVE REACHED DESIGN STRENGTH  $f' = 4,500$  psi.

ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED  $\frac{3}{4}$ ", UNLESS SHOWN OR OTHERWISE NOTED.

THE EXPOSED INSIDE SURFACES OF THE PEDESTRIAN CULVERT (WALLS & TOP SLAB) SHALL RECEIVE A CLASS 5 FINISH IN ACCORDANCE WITH SECTION 601.14

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE BLACK (NON-EPOXY COATED).

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK (NON-EPOXY COATED) REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06, UNLESS SHOWN OR NOTED OTHERWISE ON THE PLANS.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10
SPLICE LENGTH FOR CLASS D CONCRETE	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"

ALL REINFORCEMENT SHALL HAVE A CLEAR COVERAGE OF 2", EXCEPT AS SHOWN ON THE PLANS. CLEAR COVERAGE SHALL BE MEASURED FROM THE SURFACE OF THE CONCRETE TO THE OUTSIDE OF THE REINFORCEMENT.

THE STOCK LENGTH USED FOR ALL REINFORCING IS 60 FEET.

ALL TRANSVERSE REINFORCING SHALL BE NORMAL TO THE CENTERLINE OF THE BOX

THE COST FOR THE GALVANIZED BOLT ANCHORAGE ASSEMBLY AND RAILING ASSEMBLY SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN ITEM 514 PEDESTRIAN RAILING (STEEL), LF.

A COLORED STRUCTURAL CONCRETE COATING FINISH IS REQUIRED ON EXPOSED CONCRETE SURFACES TO 1'-0" BELOW FINISHED GRADE. THE COLOR SHALL BE MEDIUM BEIGE, EQUIVALENT TO FEDERAL STANDARD 595B COLOR NO. 30450.

FILTER MATERIAL AND CLOTH FOR WINGWALL DRAIN HOLES SHALL BE INCLUDED IN ITEM 601 CONCRETE CLASS D.

EXCAVATION, FILTER MATERIAL, AND GEOTEXTILE FOR THE UNDERDRAIN INSTALLATION SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 605.03, PIPE UNDERDRAIN.

FILL HEIGHT IS THE DISTANCE MEASURED FROM TOP OF SLAB TO TOP OF FUTURE FINISHED GRADE.

ALL DIMENSIONS ARE PERPENDICULAR TO THE CENTERLINE OF THE BOX.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

**DESIGN DATA**

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 16th EDITION  
W/ 1997, 1998, 1999, AND 2000 INTERIMS

DESIGN METHOD:

WORKING STRESS DESIGN

DESIGN LOADING (BOX CULVERT):

AASHTO, HS 20-44

LIVE LOAD SURCHARGE ON EXTERIOR WALLS = 2 FT. OF EARTH

UNIT SOIL WEIGHT = 125 pcf

MAXIMUM DESIGN FILL HEIGHT = 5'-6"

DESIGN LOADING (WINGWALLS):

ALLOWABLE BEARING PRESSURE = 2000 psf

UNIT SOIL WEIGHT = 125 pcf

ACTIVE LATERAL EARTH PRESSURE = 36 psf

COEFFICIENT OF SLIDING FRICTION = 0.35

REINFORCED CONCRETE:

CLASS D CONCRETE:  $f'_c = 4,500$  psi  $f_c = 1,800$  psi  $n=8$

REINFORCING STEEL:  $f_y = 60,000$  psi  $f_s = 24,000$  psi

**SUMMARY OF QUANTITIES**

ITEM NO.	UNIT	DESCRIPTION	CONCRETE BOX	WINGWALLS	TOTAL
206	CY	STRUCTURE EXCAVATION	200	110	310
206	CY	STRUCTURE BACKFILL (CLASS 1)	512	280	792
514	LF	PEDESTRIAN RAILING	▼ 56	▼ 256	▼ 312
517	SY	WATERPROOFING (SPECIAL)	930		930
518	LF	WATER STOP (BENTONITE/BUTYL RUBBER)	417		417
518	LF	WATER STOP (6 INCH)	79		79
519	SF	NATIVE STONE VENEER (4 INCH)	140		140
601	CY	CONCRETE CLASS D (BOX CULVERT)	426	84	510
601	SY	STRUCTURAL CONCRETE COATING	154	149	303
602	LB	REINFORCING STEEL	62330	5217	67547
605	LF	4 INCH PERFORATED PIPE UNDERDRAIN	417		417
605	LF	6 INCH PERFORATED PIPE UNDERDRAIN		148	148
① 613	EA	LUMINAIRE (WALL TYPE)	6		6
② 613	LF	1 INCH ELECTRICAL CONDUIT	433		433

▼ INCLUDES THE QUANTITY OF THE BULL CANAL C.B.C. RAILING (SEE SHT. C10-C11).

① FOR INFORMATION ONLY; TO BE SUPPLIED & INSTALLED BY XCEL ENERGY

② ALL CONDUIT RUNS SHALL INCLUDE A PULL STRING FOR FUTURE WIRING INSTALLATION.

**INDEX OF DRAWINGS**

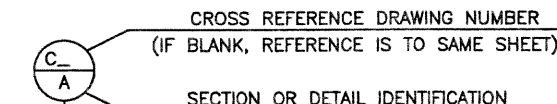
- C1 GENERAL INFORMATION/SUMMARY OF QUANTITIES
- C2 GENERAL LAYOUT
- C3 BOX CULVERT SECTION AND DETAILS 1 OF 2
- C4 BOX CULVERT SECTION AND DETAILS 2 OF 2
- C5 WINGWALL ELEVATION & DETAILS
- C6 SKY LIGHT DETAILS
- C7 MISCELLANEOUS DETAILS
- C8 PEDESTRIAN RAILING (1 OF 2)
- C9 PEDESTRIAN RAILING (2 OF 2)
- C10 BULL CANAL C.B.C. PEDESTRIAN RAILING (1 OF 2)
- C11 BULL CANAL C.B.C. PEDESTRIAN RAILING (2 OF 2)

**STRUCTURE DESCRIPTION**

PEDESTRIAN UNDERPASS WEST OF I-25 UNDER 136th AVENUE AT STATION 34+00.00. SINGLE 12'-0" x 10'-0" ARCHED CELL CONCRETE BOX CULVERT, 208.2 FT. LONG.

**ABBREVIATIONS**

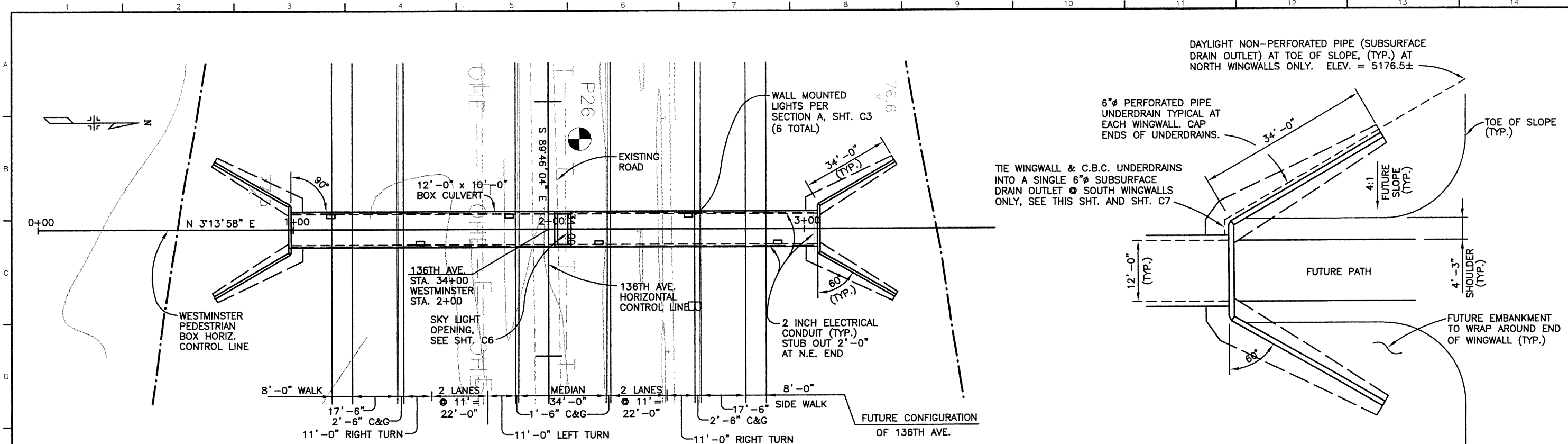
- E.F. = EACH FACE
- F.F. = FAR FACE
- N.F. = NEAR FACE
- C.J. = CONSTRUCTION JOINT
- I.F. = INSIDE FACE
- O.F. = OUTSIDE FACE
- O.D. = OUTSIDE DIAMETER



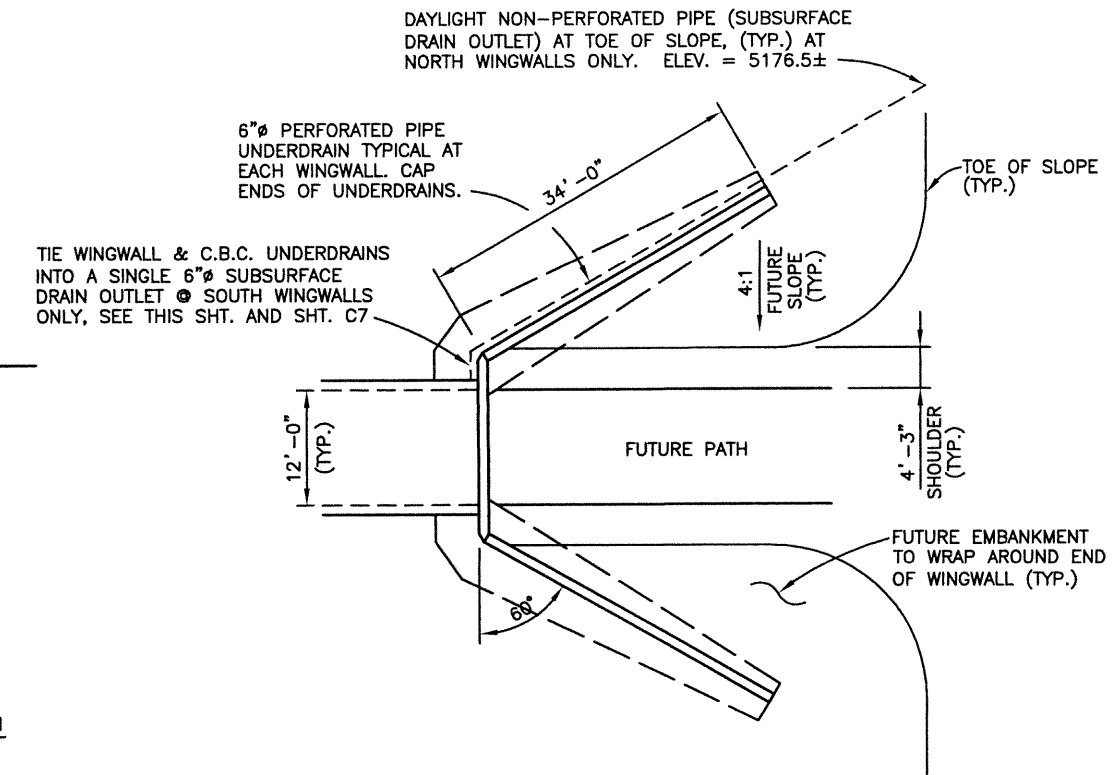
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Last Modification Date: 10/28/02	Initials: PRH	<input type="checkbox"/>			Revised:	Designer: K. KERBER	Structure Numbers	
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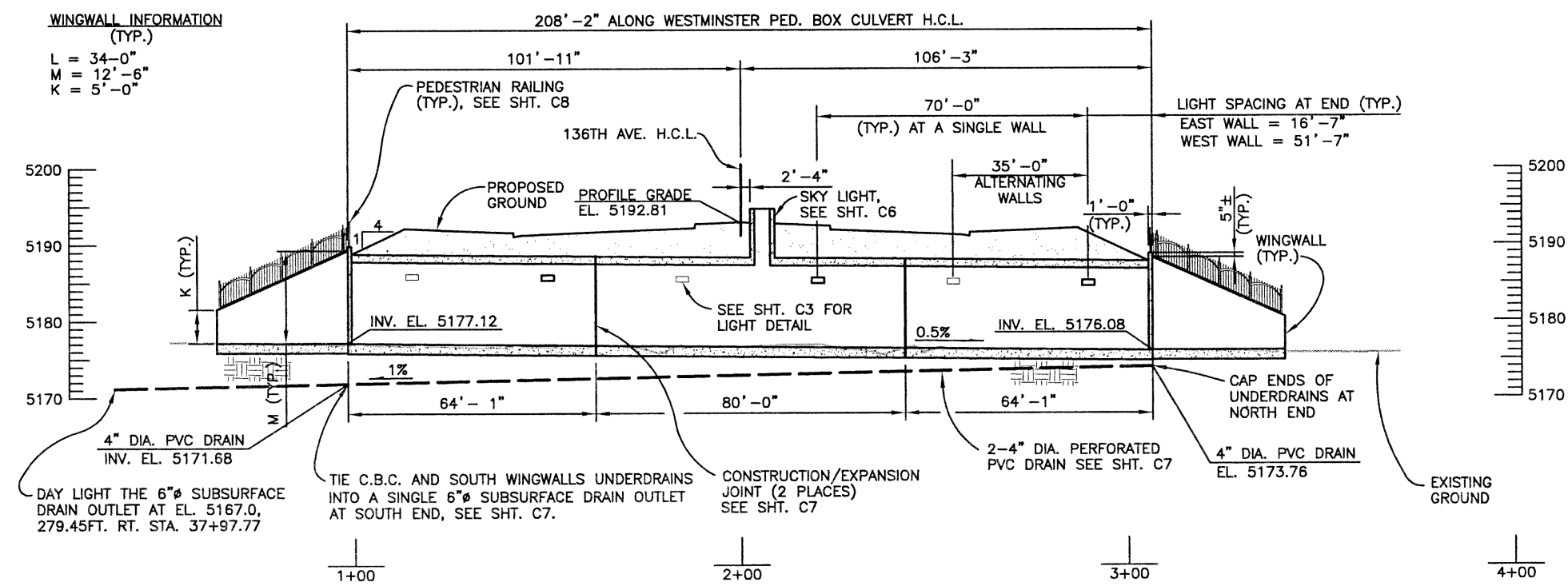


**PLAN**



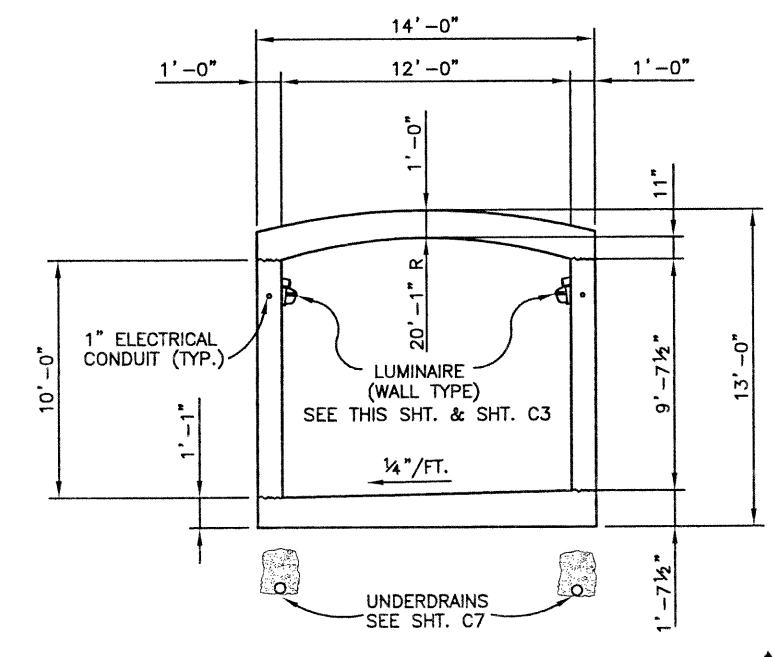
**EMBANKMENT LAYOUT**

**WINGWALL INFORMATION (TYP.)**  
 L = 34'-0"  
 M = 12'-6"  
 K = 5'-0"



**LONGITUDINAL SECTION**

LOOKING DOWN STA. 136TH AVE.  
 \*ALL INVERT ELEVATIONS ARE AT C/L OF CBC



**TYPICAL SECTION**  
 (12'-0" x 10'-0" CONC. BOX CULVERT LOOKING NORTH)

Computer File Information			Index of Revisions			As Constructed			136TH AT I-25 INTERCHANGE WESTMINSTER PEDESTRIAN UNDERPASS GENERAL LAYOUT			Project No./Code	
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Last Modification Date:	10/28/02	Initials: PRH				Revised:			Detailer: K. KERBER			Sheet Number 133	
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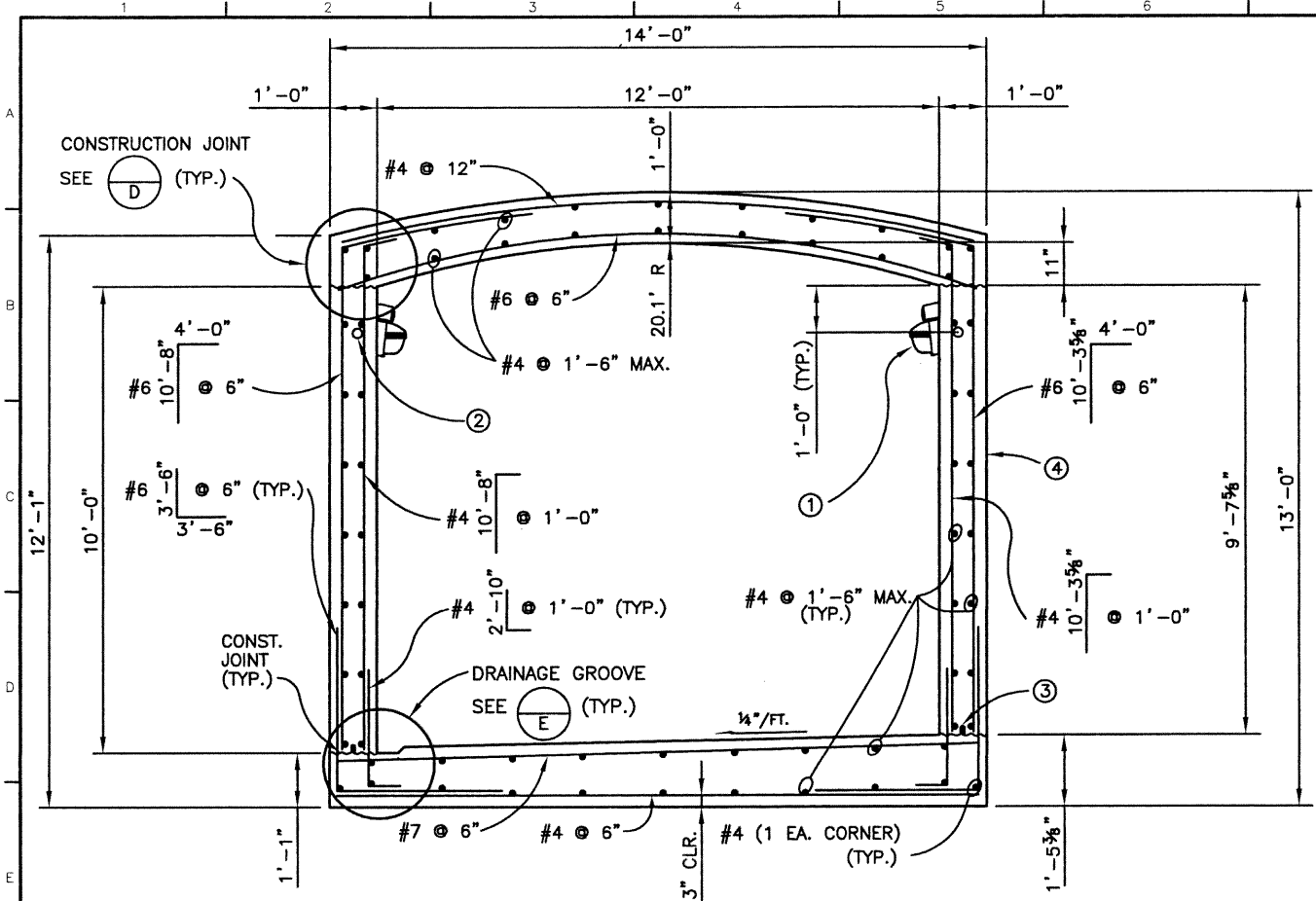


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 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
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 Englewood, CO 80111

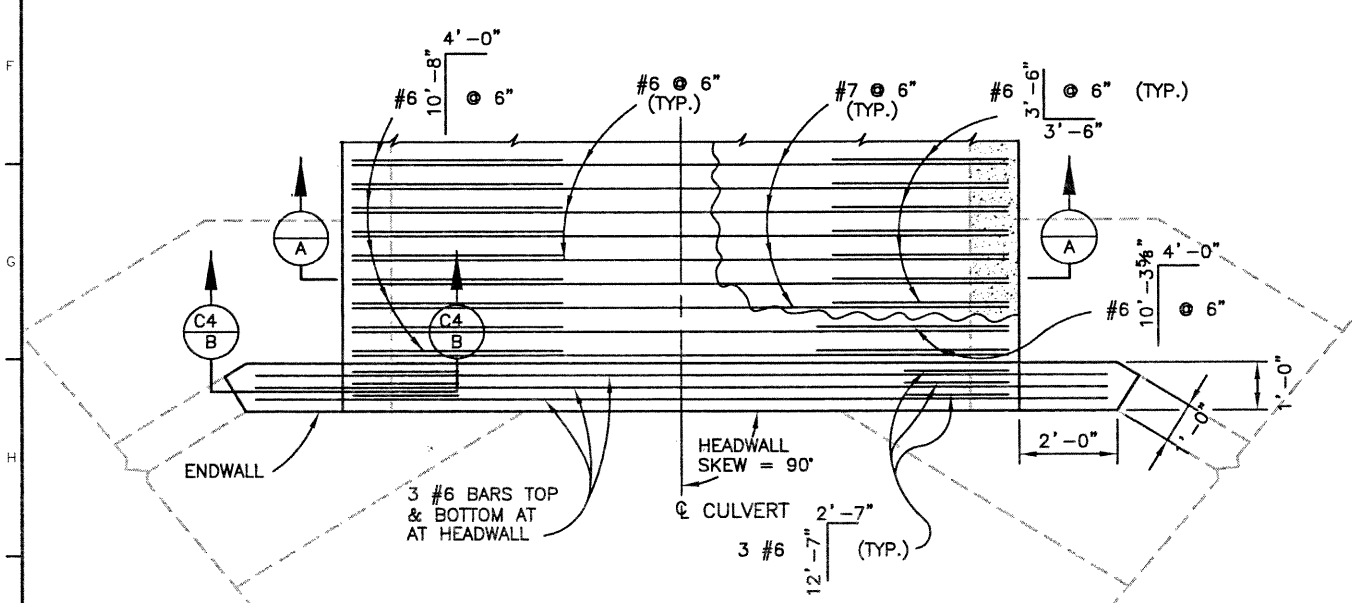


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TYPICAL BOX CULVERT SECTION (LOOKING NORTH)

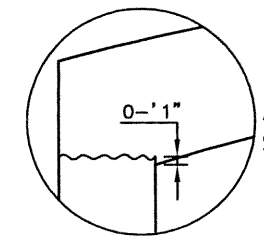


REINFORCING PLAN

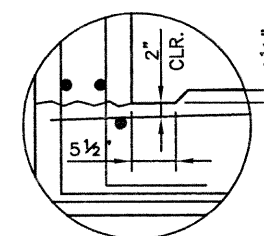
BOX CULVERT DETAILS

NOTES

- LUMINAIRES AND JUNCTION BOXES SHALL BE SPACED AT 35'-0" O.C., ALTERNATING SIDES FROM THE EAST WALL TO THE WEST WALL, FOR LIGHTS AT LOCATIONS INDICATED PER THIS DETAIL AND SHT. C2. LIGHTS SHALL BE XCEL ENERGY STANDARD WITH (1) 100 WATT HPS LAMP ON WALLS (6 TOTAL). SEE LIGHTING PLANS FOR ADDITIONAL LIGHT DETAILS. XCEL ENERGY SHALL WIRE THE BOX CULVERT, AND SUPPLY & INSTALL THE LUMINAIRES.
- PROVIDE 1" DIAMETER ELECTRICAL CONDUIT FOR LIGHTING IN EACH SIDE WALL. SET CONDUIT WITHIN MIDDLE 4" OF WALL FOR ENTIRE LENGTH OF CULVERT. AT NORTH END PROVIDE CONDUIT IN TOP ARCHED SLAB, PERPENDICULAR TO CENTER LINE OF BOX, CONNECTING THE TWO SIDE WALL CONDUITS, STUB CONDUIT OUT 2'-0" ON NORTH EAST SIDE. SET JUNCTION BOXES FOR LIGHTS AS REQUIRED AND PROVIDE A MINIMUM OF 1 1/2" CLEAR FROM ANY REINFORCING. ADJUST REINFORCING AS NEEDED TO PROVIDE CLEARANCE. PROVIDE EXPANSION COUPLINGS AT CONDUIT AT EACH EXPANSION JOINT.
- PROVIDE CONTINUOUS BENTONITE/BUTYL RUBBER-BASED WATERSTOP (MIRADRI MIRASTOP OR APPROVED EQUAL) AT JOINTS AT BASE OF EACH WALL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- APPLY SHEETED WATERPROOFING (MIRADRI 860/861 OR APPROVED EQUAL) ON THE EXTERIOR OF EACH SIDE WALL AND ON THE TOP OF THE TOP SLAB FOR THE FULL LENGTH OF THE BOX CULVERT. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PAYMENT SHALL BE MADE UNDER ITEM 517, WATERPROOFING (SPECIAL).



CONSTRUCTION JOINT DETAIL  
DETAIL D



DRAINAGE GROOVE DETAIL  
DETAIL E

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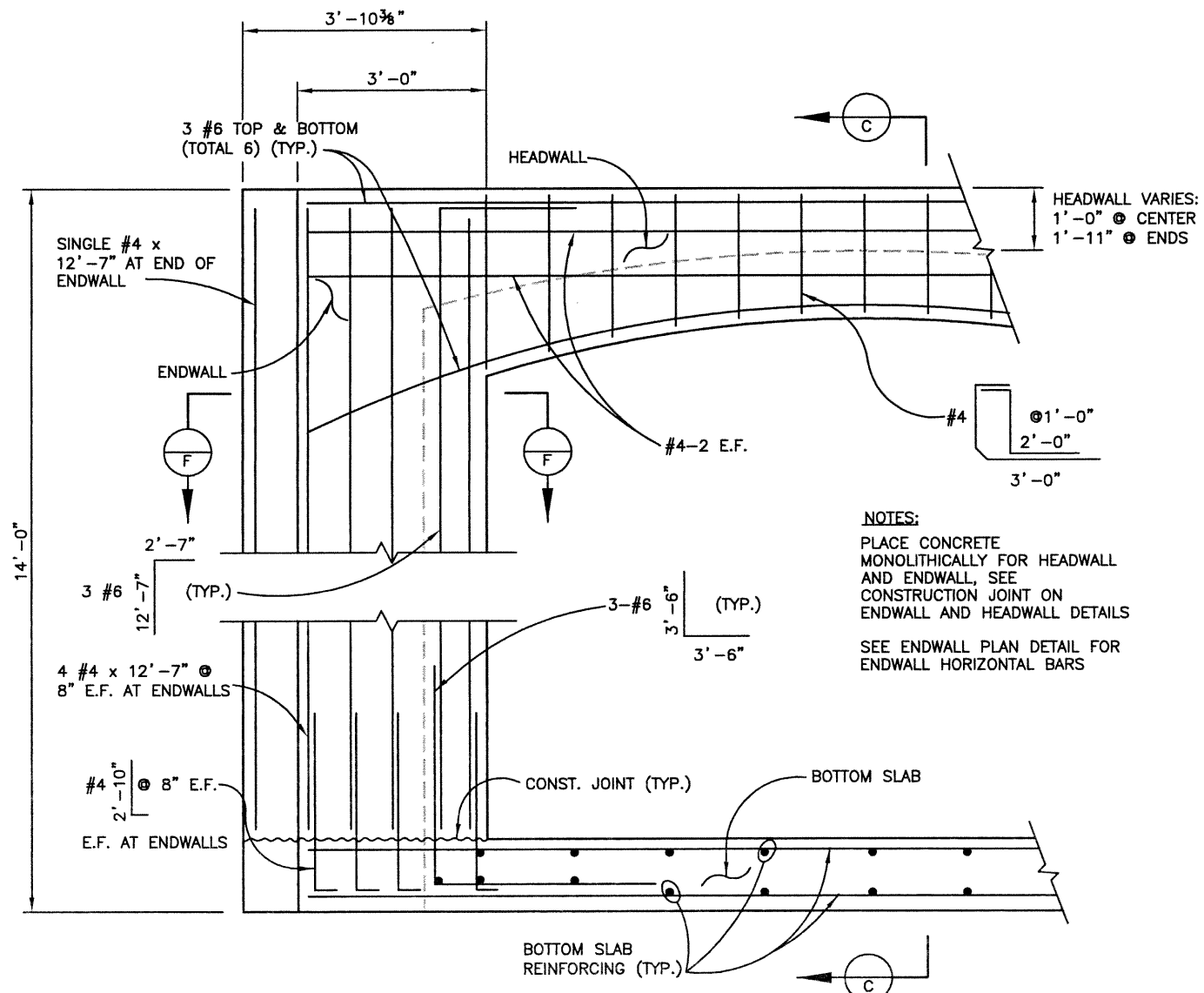
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fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111



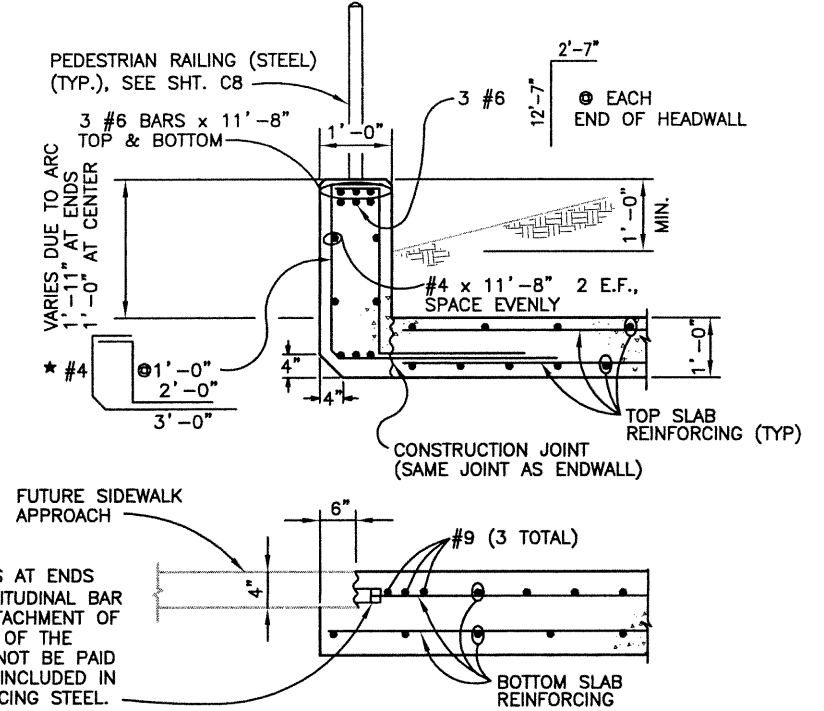
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TYPICAL END OF BOX CULVERT SECTION (C3/B)

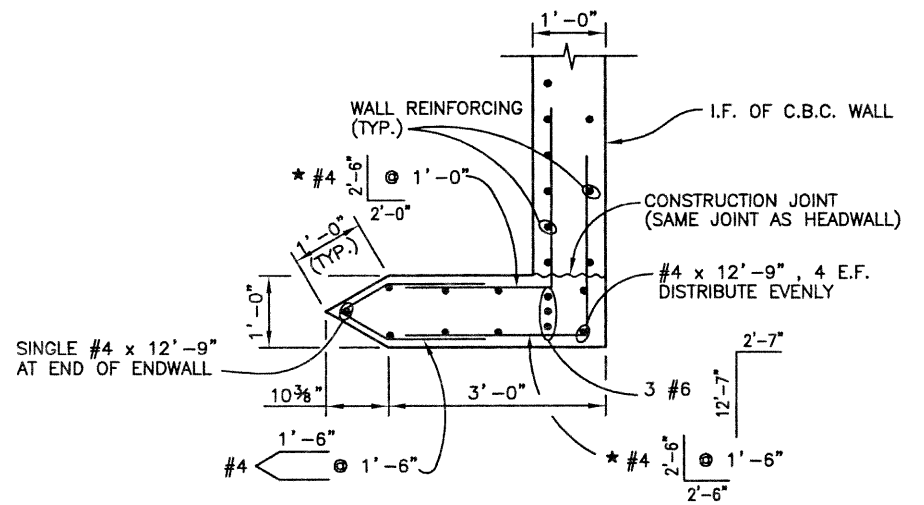
**NOTES:**  
 PLACE CONCRETE MONOLITHICALLY FOR HEADWALL AND ENDWALL, SEE CONSTRUCTION JOINT ON ENDWALL AND HEADWALL DETAILS  
 SEE ENDWALL PLAN DETAIL FOR ENDWALL HORIZONTAL BARS



HEADWALL SECTION DETAIL (C)

PROVIDE REBAR SPLICE COUPLERS AT ENDS OF EACH TOP #4 @ 1'-6" LONGITUDINAL BAR IN BOTTOM SLAB FOR FUTURE ATTACHMENT OF SIDEWALK APPROACH. THE COST OF THE REBAR SPLICE COUPLERS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 602, REINFORCING STEEL.

**\* NOTE:**  
 EXTEND HEADWALL VERTICAL BARS BEYOND ENDS OF C.B.C. TOP SLAB  
 CONTRACTOR MAY USE FORM SAVERS (REBAR COUPLERS) AT THE EXPENSE OF THE CONTRACTOR  
 FORM SAVER PLACEMENT MUST BE APPROVED BY THE ENGINEER



ENDWALL PLAN DETAIL (F)

**\* NOTE:**  
 EXTEND ENDWALL HORIZONTAL BARS BEYOND ENDS OF C.B.C. WALL AS SHOWN  
 CONTRACTOR MAY USE FORM SAVERS (REBAR COUPLERS) AT THE EXPENSE OF THE CONTRACTOR  
 FORM SAVER PLACEMENT MUST BE APPROVED BY THE ENGINEER

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Last Modification Date:	06/10/02 Initials: PRH
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Acad Ver.	2000i Scale: VARIES Units: ENGLISH

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303.721.1440  
 fax 303.721.0832  
 fhu@thueng.com

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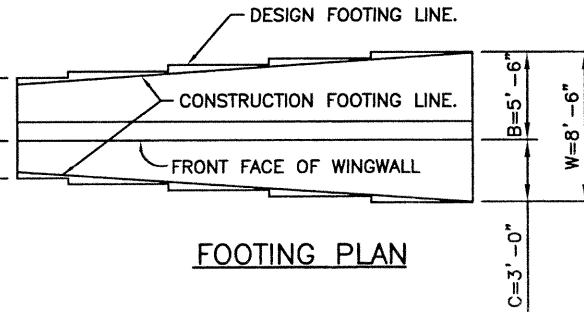
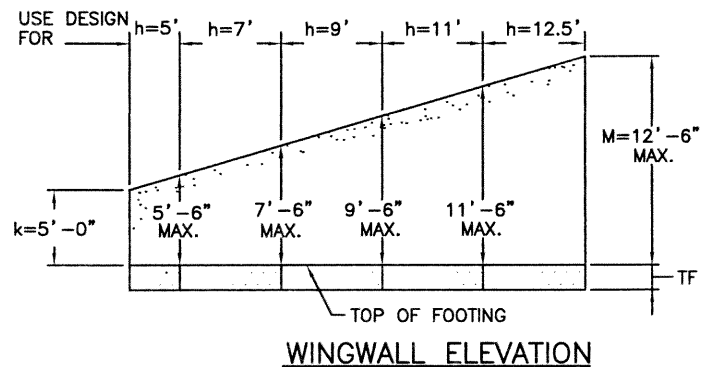
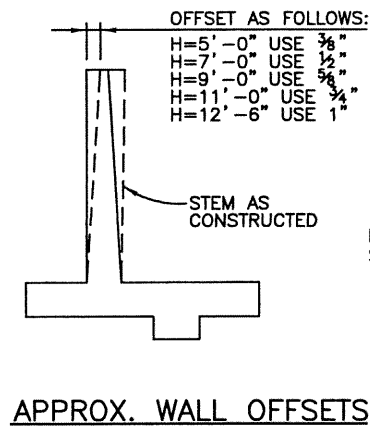
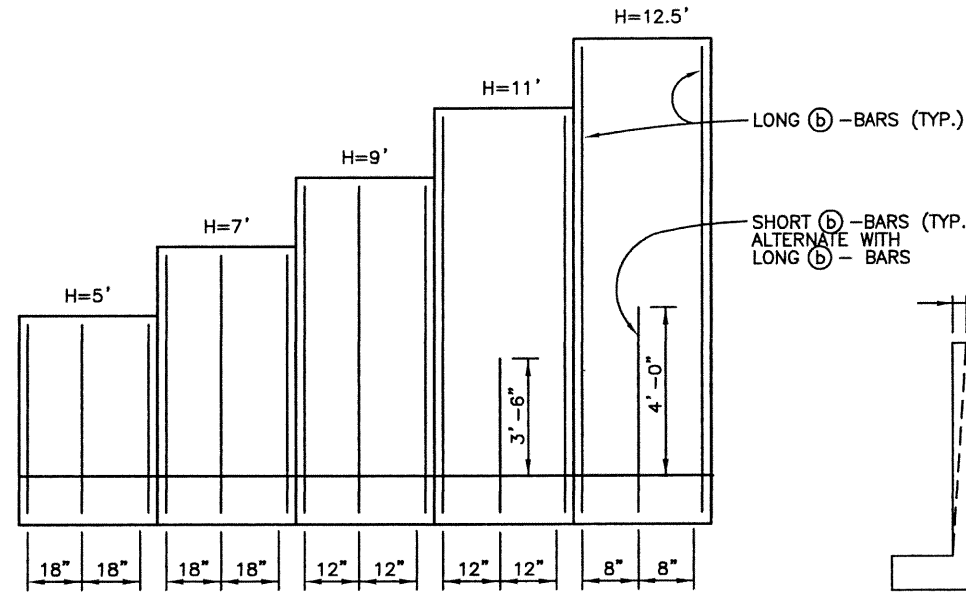
136TH AT I-25 INTERCHANGE WESTMINSTER PEDESTRIAN UNDERPASS C.B.C. SECTION AND DETAILS (2 OF 2)	
Designer:	K. KERBER
Detailer:	K. KERBER
Sheet Subset:	BOX
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Project No./Code	97-71
Sheet Number	135



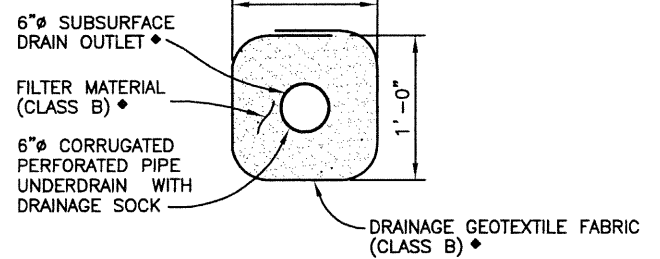
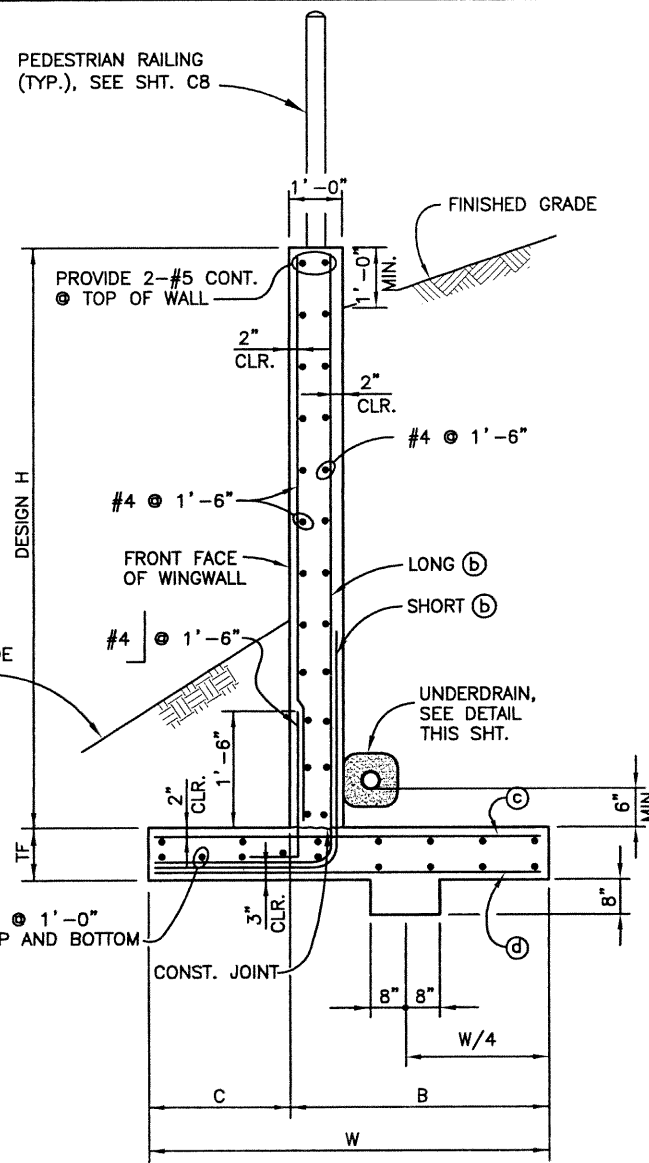
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Designed by	Checked by	Initial	Date	Initial	Date
X	X	X	X	X	X
REVISION DATES (Preliminary Stage Only)		DESIGNED		CHECKED	



H ♦	5'	7'	9'	11'	12'-6"
W	4'-0"	5'-0"	6'-0"	7'-0"	8'-6"
C	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"
B	2'-9"	3'-6"	4'-0"	4'-6"	5'-6"
TF	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"
(b) BARS	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 12"	#5 @ 12"	#6 @ 8"
(c) BARS	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 12"	#4 @ 8"
(d) BARS	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-4"
CONCRETE (CY/LIN. FT)	0.42	0.46	0.66	0.78	0.92
REINF. STEEL (LB/FT)	26.4	33.1	41.5	51.4	69.8

♦ DESIGN HEIGHT "H" MAY BE EXCEEDED BY 6" BEFORE GOING TO NEXT HIGHER DESIGN HEIGHT IN TABLE



**NOTES:**

PROVIDE A MINIMUM OF 3" OF FILTER MATERIAL (CLASS B) ON ALL SIDES OF PERFORATED PIPE. SURROUND THE GRAVEL AND DRAIN PIPE WITH CLASS B GEOTEXTILE FABRIC FOR FULL LENGTH OF WINGWALLS ONLY, PROTECT ENDS OF DRAINS FROM WATER INTRUSION DURING CONSTRUCTION.

TIE THE UNDERDRAINS AT THE WINGWALLS INTO SEPARATE 6" Ø SCH. 40 NON-PERFORATED PIPE (SUBSURFACE DRAIN OUTLETS) AT THE END OF THE WINGWALL FOR THE NORTH WINGWALLS ONLY. THE SOUTH WINGWALL UNDERDRAINS SHALL BE TIED INTO A SINGLE 6" Ø SUBSURFACE DRAIN OUTLET AS SPECIFIED ON SHT. C2 AND SHT. C7. ALL PIPE SHALL MAINTAIN A MINIMUM SLOPE OF 1%.

DAYLIGHT THE SUBSURFACE DRAIN OUTLET AT THE TOE OF EMBANKMENT FILL AS SPECIFIED ON SHT. C2 FOR THE NORTH WINGWALLS ONLY.

AT THE DAYLIGHT LOCATION PROVIDE A GALVANIZED 12 GAGE MINIMUM WIRE MESH, 3/4" X 3/4" OPENINGS, OVER PIPE END. PROVIDE A 2'-0" X 2'-0" EROSION CONTROL PAD CONSISTING OF 9" GROUTED RIPRAP.

♦ ITEMS SHALL BE ASSEMBLED & PAID FOR AS PERFORATED PIPE UNDERDRAIN PER SPECIFICATION SECTION 605, EXTENDING FOR THE FULL LENGTH OF WINGWALLS, AND SHALL BE INCLUDED IN THE COST OF ITEM 605 6" Ø PERFORATED PIPE UNDERDRAIN.

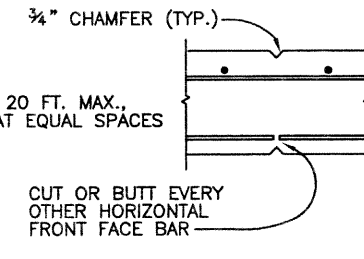
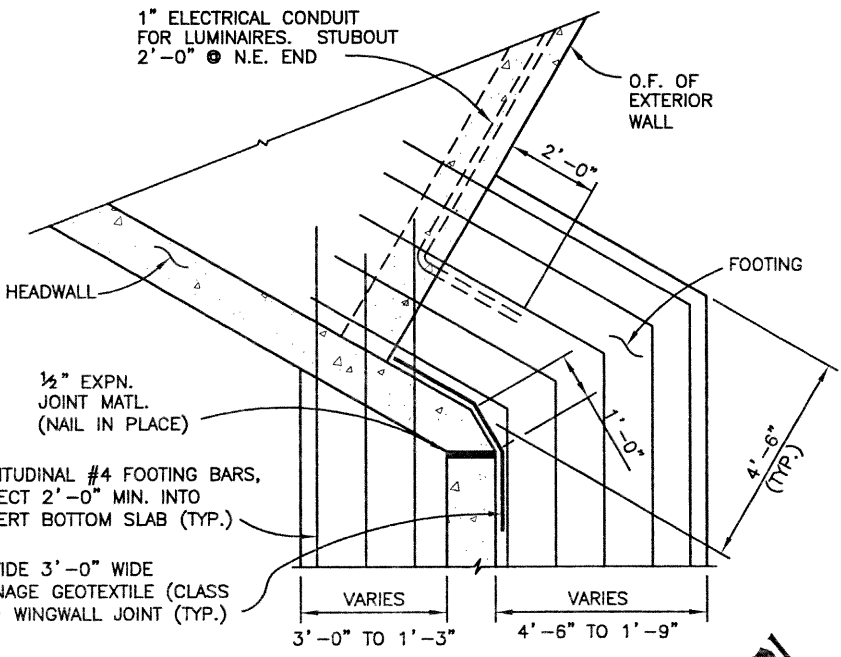
**WINGWALL UNDERDRAIN DETAIL**

FOR INFORMATION ONLY

DESCRIPTION	UNITS	NORTH WINGWALLS	SOUTH WINGWALLS
6" Ø PERFORATED PIPE UNDERDRAIN	FT	74	74
6" Ø SUBSURFACE DRAIN OUTLET	FT	50	0*

\* SEE C.B.C. SUBSURFACE DRAIN OUTLET, SHT. C7

1" ELECTRICAL CONDUIT FOR LUMINAIRES. STUBOUT 2'-0" @ N.E. END

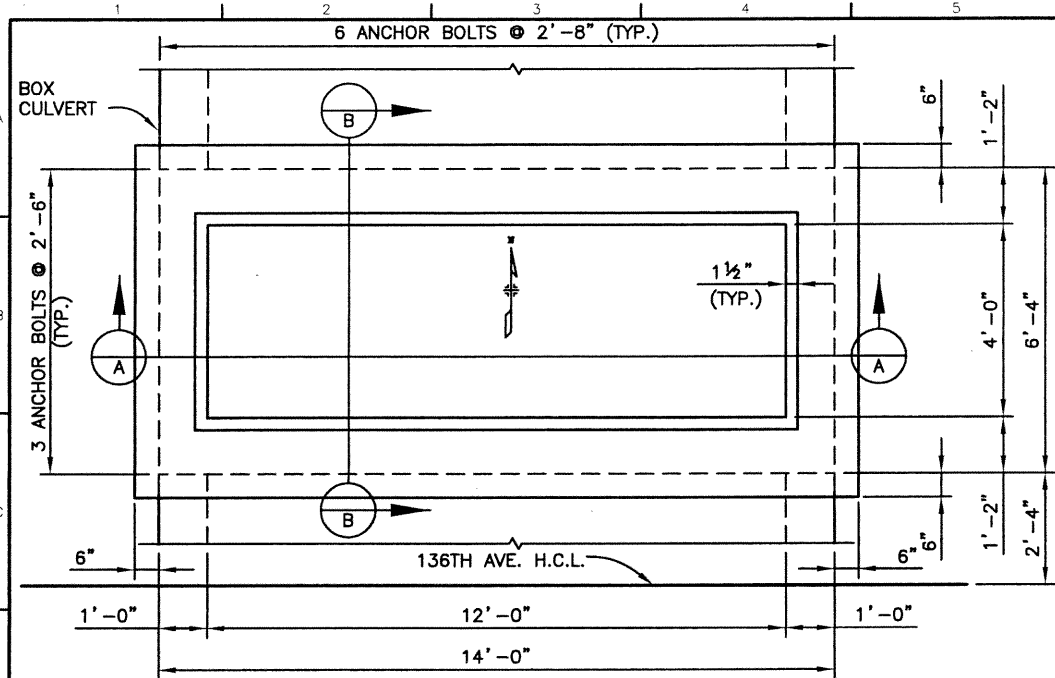


<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AT I-25 INTERCHANGE WESTMINSTER PEDESTRIAN UNDERPASS WINGWALL ELEVATION AND DETAILS</b>		<b>Project No./Code</b>
Creation Date:	09/13/01 Initials: KRK				No Revisions:			97-71
Last Modification Date:	11/27/02 Initials: PRH				Revised:	Designer: K. KERBER	Structure Numbers:	
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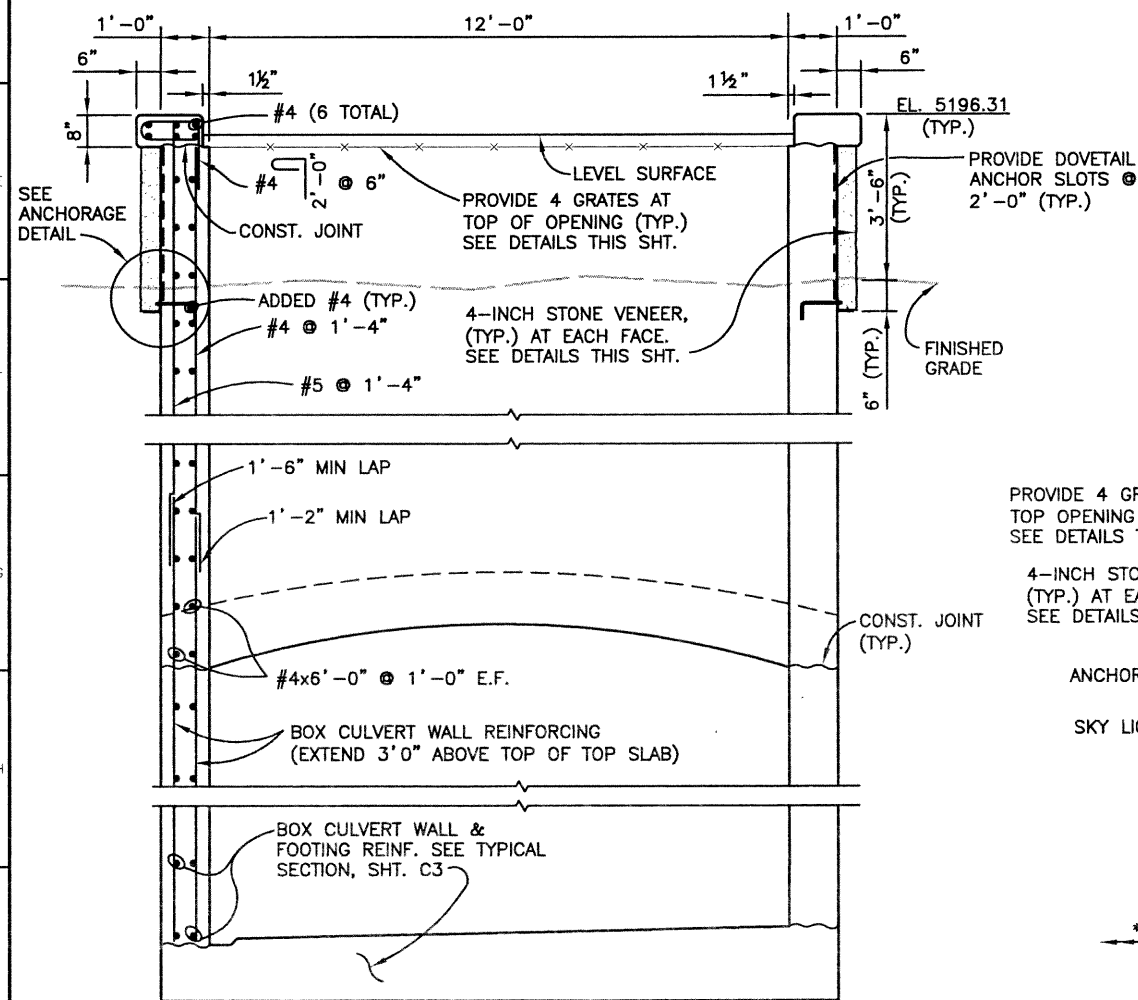


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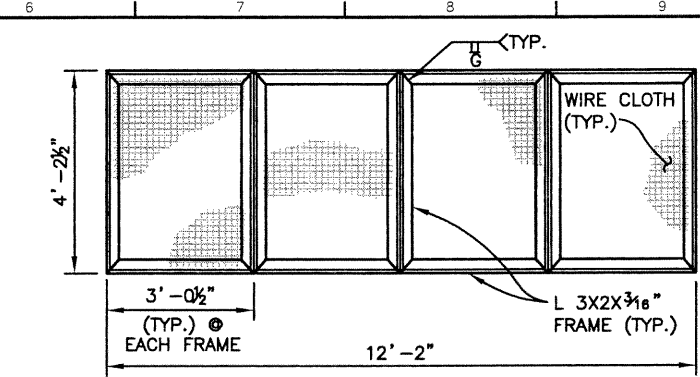
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Initial	Date	Initial	Date	Initial	Date
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Designed by		Detailed by		Quantities by	
Checked by		Checked by		Checked by	



SKY LIGHT PLAN VIEW

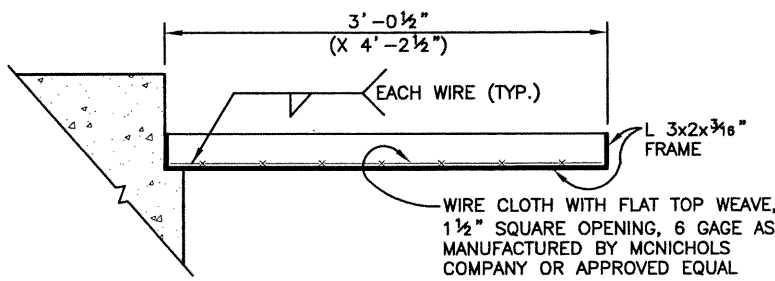


SECTION A



PLAN (4 FRAMES TOTAL)

FRAME SECTION (4 FRAMES TOTAL) GRATE DETAILS



NOTES:

ALL GRATE MATERIALS, WIRE CLOTH, FRAME ASSEMBLY, ANCHOR BOLTS AND LEDGER ANGLES SHALL BE GALVANIZED AFTER FABRICATION.

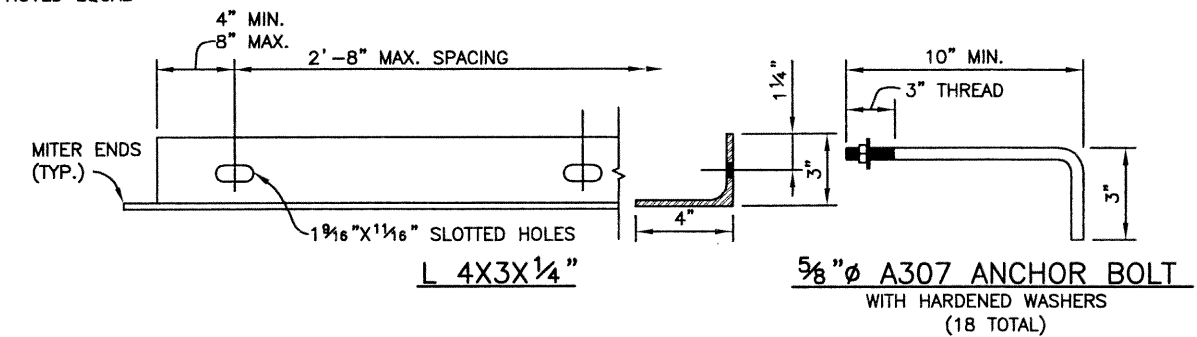
APPLY SHEETED WATERPROOFING (MIRADRI 860/861 OR APPROVED EQUAL) ON THE EXTERIOR OF EACH SKYLIGHT WALL BELOW THE STONE VENEER.

APPLY AN ASPHALT COATING TO THE EXTERIOR OF EACH SKYLIGHT WALL BEHIND THE STONE VENEER, INCLUDE THE 4X3X1/4" LEDGER ANGLE.

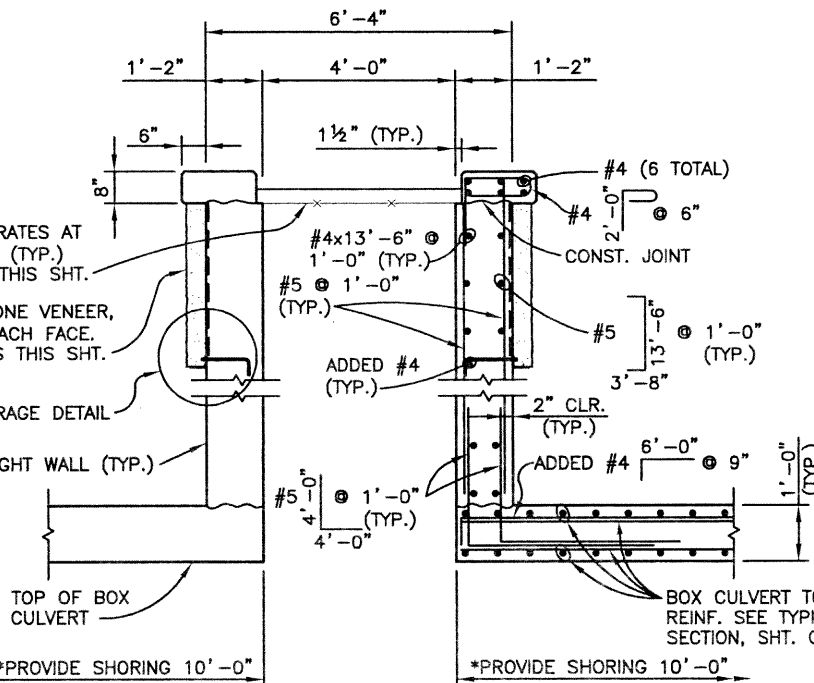
THE L 3x2x3/16" FRAME AND L 4X3X1/4" LEDGER SHALL BE AASHTO M-183 (ASTM A-36).

THE COST OF THE WIRE CLOTH, FRAME ASSEMBLY, LEDGER ANGLES, ANCHORAGE ASSEMBLY AND ASPHALT COATING SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 601, CONCRETE CLASS D (BOX CULVERT).

DOVETAIL ANCHORAGE SLOTS SHALL BE PROVIDED (DUROWALL D/A 100, OR APPROVED EQUAL).



STONE VENEER ANCHORAGE DETAILS



SECTION B

\*TOP SLAB FLASEWORK OR SHORING SHALL REMAIN IN PLACE FOR 10'-0" (MIN.) IN EACH DIRECTION, AS SHOWN, UNTIL SKY LIGHT WALLS HAVE BEEN POURED AND DESIGN STRENGTH HAS BEEN REACHED.

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303.721.1440  
fax 303.721.0832  
thu@thueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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136TH AT I-25 INTERCHANGE WESTMINSTER PEDESTRIAN UNDERPASS SKY LIGHT DETAILS		
Designer:	K. KERBER	Structure Numbers
Detailer:	P. HELM	
Sheet Subset:	BOX	Subset Sheets: C6 of 11

Project No./Code	
97-71	
Sheet Number	137

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X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X

PROVIDE 14 GAGE x 12" x CONTINUOUS COVER PLATE CENTERED ALONG EXPANSION JOINTS ON BACKFILL SIDE OF TOP SLAB AND WALLS. ATTACH PLATE TO CULVERT ON ONLY ONE SIDE OF JOINT W/ 0.177" DIA. POWDER-ACTUATED FASTENERS (HILTI DS 27 P10, OR EQUAL) AT 1'-6" ON-CENTER. THE COST OF THE COVER PLATES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 518, WATERSTOP (6 INCH).

6" CENTER-BULB x CONT. NEOPRENE WATERSTOP CENTERED IN TOP SLAB AND SIDE WALLS AT EXPANSION JOINTS (TYP.)

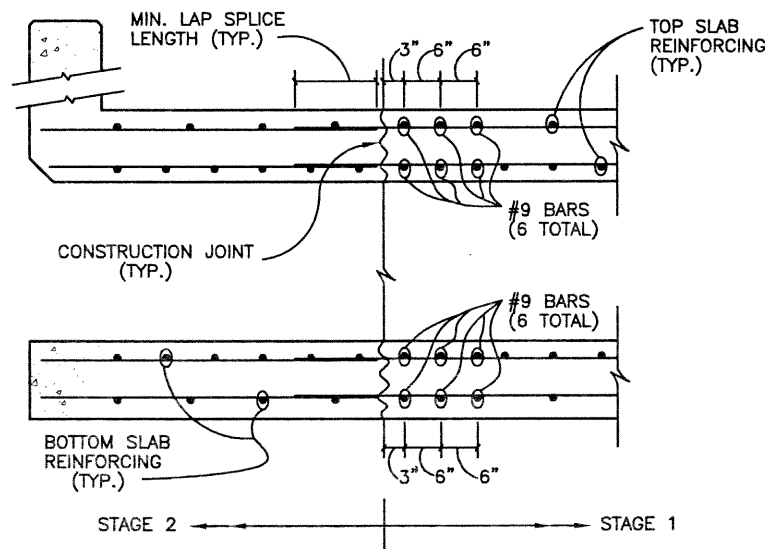
PROVIDE 1/2" COMPRESSED JOINT MATERIAL BETWEEN WALLS AND TOP SLAB ONLY AT EACH JOINT BETWEEN EXPANSION JOINTS INDICATED ON ON SHT. C2, SEE DETAIL THIS SHT.

PROVIDE 1/2" EXPANSION JOINT MATERIAL. SEE DETAIL THIS SHT.

TOP SLAB OR WALL SEE CONSTRUCTION JOINT DETAIL THIS SHT. FOR BOTTOM SLAB

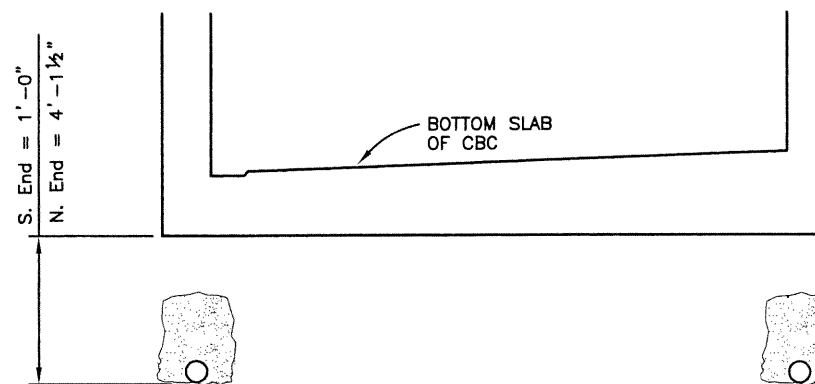


EXPANSION JOINT DETAIL



CONSTRUCTION JOINT DETAIL FOR STAGED CONSTRUCTION

NOTE: THIS DETAIL IS FOR CONSTRUCTION JOINTS PERPENDICULAR TO THE Q OF THE BOX ONLY



NOTES

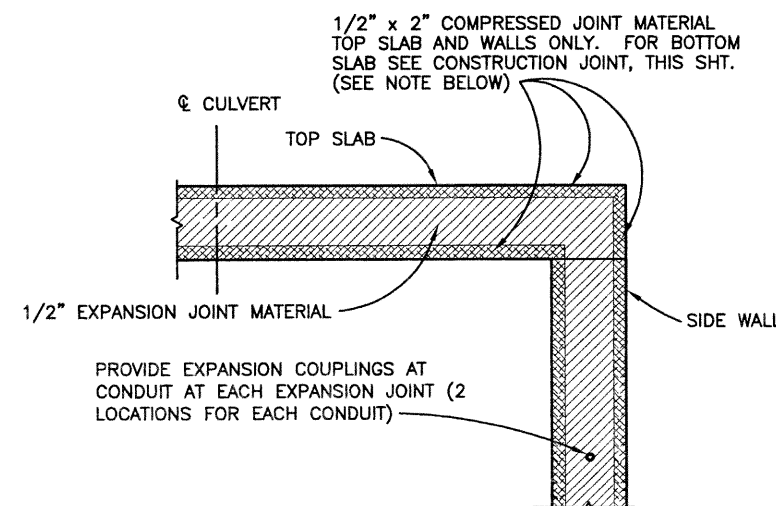
PROVIDE TWO 4 INCH PERFORATED PIPE UNDERDRAINS CONSISTING OF 4"Ø SCH. 40 PERFORATED PLASTIC DRAIN PIPE BENEATH FULL LENGTH OF CULVERT. AT SOUTH END OF CULVERT ONLY TIE THE TWO 4 INCH PERFORATED PIPE UNDERDRAINS, AND THE TWO 6 INCH PERFORATED PIPE WINGWALL UNDERDRAINS INTO A SINGLE 6"Ø SCH. 40 NON-PERFORATED PIPE (SUBSURFACE DRAIN OUTLET). ALL PIPES SHALL MAINTAIN A MINIMUM SLOPE OF 1%. REFER TO SHT. C2 FOR INVERT ELEV.

PROVIDE A MIN. OF 6" OF FILTER MATERIAL (CLASS B) ON SIDES AND ABOVE EACH PERFORATED DRAIN PIPE. SURROUND THE GRAVEL AND DRAINPIPES WITH CLASS B GEOTEXTILE FABRIC FOR FULL LENGTH OF PERFORATED DRAINS. PROTECT ENDS OF DRAINS FROM WATER INTRUSION AS REQ'D DURING CONSTRUCTION PHASES.

DAYLIGHT THE 6"Ø SUBSURFACE DRAIN OUTLET AS SPECIFIED ON SHT C2 AND PROVIDE A GALVANIZED 12 GAGE MINIMUM WIRE MESH, 3/4" X 3/4" OPENINGS, OVER PIPE END. PROVIDE A 2'-0" X 2'-0" EROSION CONTROL PAD CONSISTING OF 9" GROUTED RIPRAP AT DAYLIGHT LOCATION.

EXCAVATION, FILTER MATERIAL, GEOTEXTILE, PIPE END CAP, 6"Ø SUBSURFACE DRAIN OUTLET, AND OUTLET PIPE END TREATMENT FOR THE UNDERDRAIN INSTALLATION SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 605 4" PERFORATED PIPE UNDERDRAIN.

UNDERDRAIN DETAIL



NOTES:

COMPRESSED JOINT MATERIAL SHALL BE PRE-COMPRESSED, CHEMICALLY RESISTANT, OPEN CELL POLYURETHANE FOAM SEALANT, IMPREGNATED WITH A WATER-REPELLANT MATERIAL, WITH ADHESIVE BACKING ON BOTH SIDES. THE JOINT MATERIAL SHALL BE EPOXIED IN PLACE, AND ALL SPLICES SEALED, AS RECOMMENDED BY THE SUPPLIER OF THE COMPRESSED JOINT MATERIAL.

THE COST FOR THE COMPRESSED JOINT MATERIAL AND EXPANSION JOINT MATERIAL SHALL BE INCLUDED IN THE COST OF ITEM 601 CONCRETE CLASS D.

1/2" EXPANSION JOINT MATERIAL SHALL MEET A.A.S.H.T.O. SPEC. M-213.

TWO ACCEPTABLE COMPRESSED JOINT MATERIAL ALTERNATES INCLUDE:

1. WILL-SEAL
2. SEAL-MATE #517

EXPANSION JOINT MATERIAL DETAIL

FOR INFORMATION ONLY

DESCRIPTION	UNITS	C.B.C.
4"Ø PERFORATED PIPE UNDERDRAIN	FT	417
6"Ø SUBSURFACE DRAIN OUTLET	FT	455

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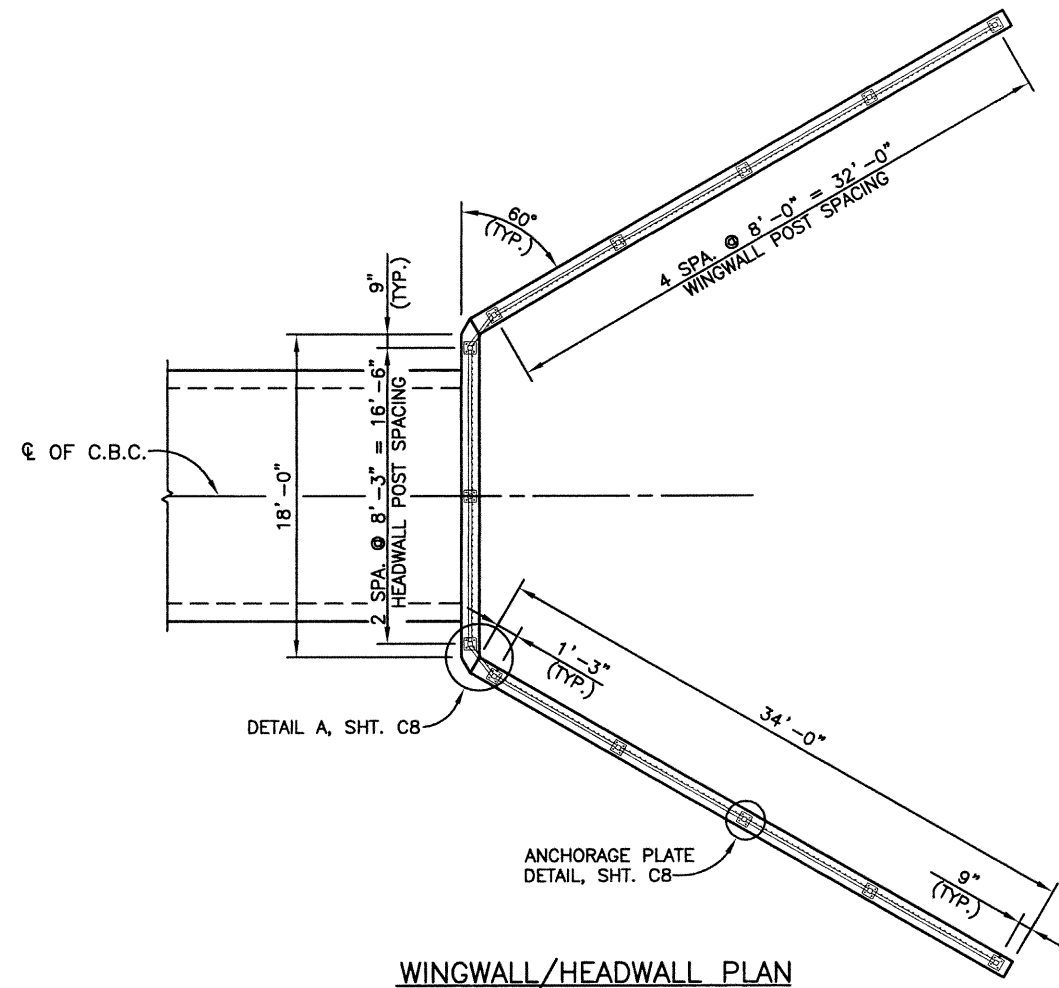
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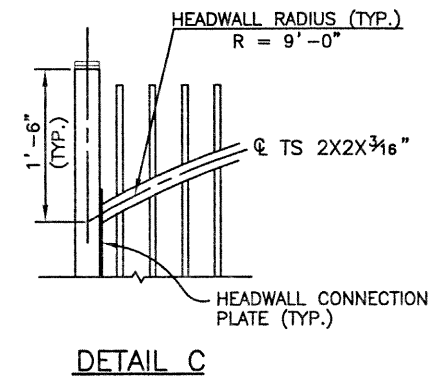
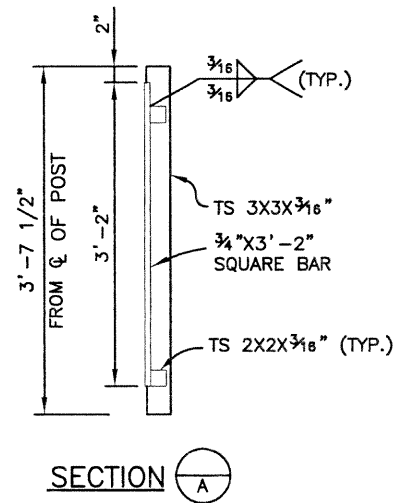
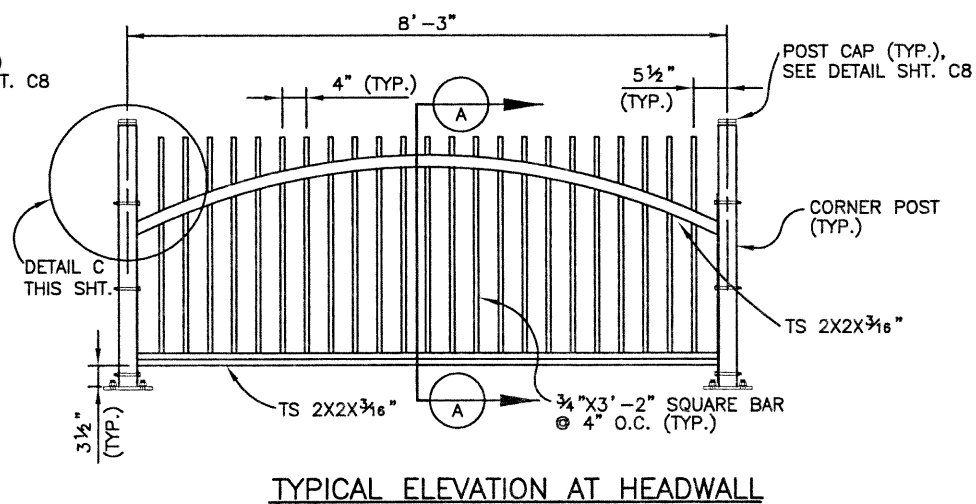
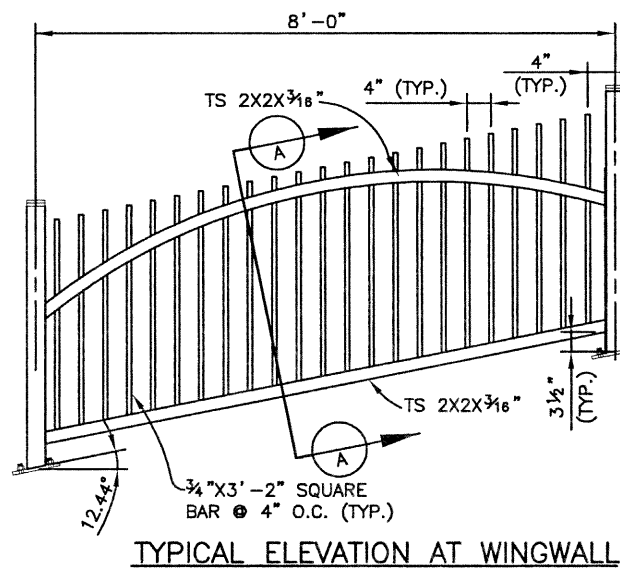
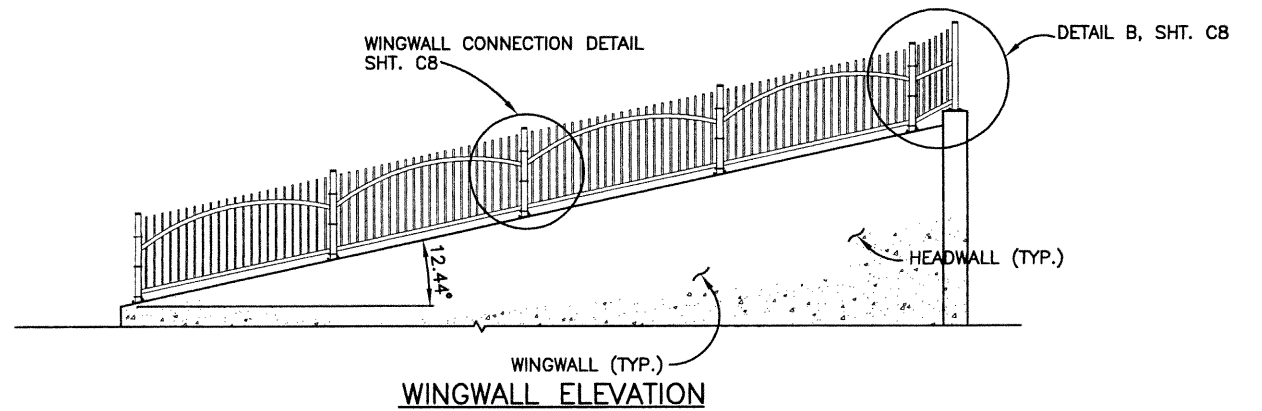
Revision Dates		Quantities	

DESIGN		DETAIL		QUANTITIES	



**NOTES:**

- FIELD VERIFY MEASUREMENTS BEFORE FABRICATION.
- ALL TUBES SHALL BE ASTM A-500 GRADE B. ALL OTHER STEEL SHALL BE ASTM A-36.
- ALL BOLTS THAT HAVE LOCK WASHERS SHALL BE TIGHTENED TO SNUG ONLY.
- PAYMENT WILL BE MADE UNDER ITEM 514 PEDESTRIAN RAILING.
- STRUCTURAL STEEL:  
 AASHTO M-183 (ASTM A-36)  $F_y = 36,000$  psi  
 COLD FORMED ASTM A-500 GRADE B  $F_y = 46,000$  psi
- THE PEDESTRIAN RAILING SHALL BE SHOP PAINTED IN ACCORDANCE WITH SECTION 509. THE COLOR SHALL BE APPROVED BY THE ENGINEER.



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**FELSBURG HOLT & ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

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 Englewood, CO 80111

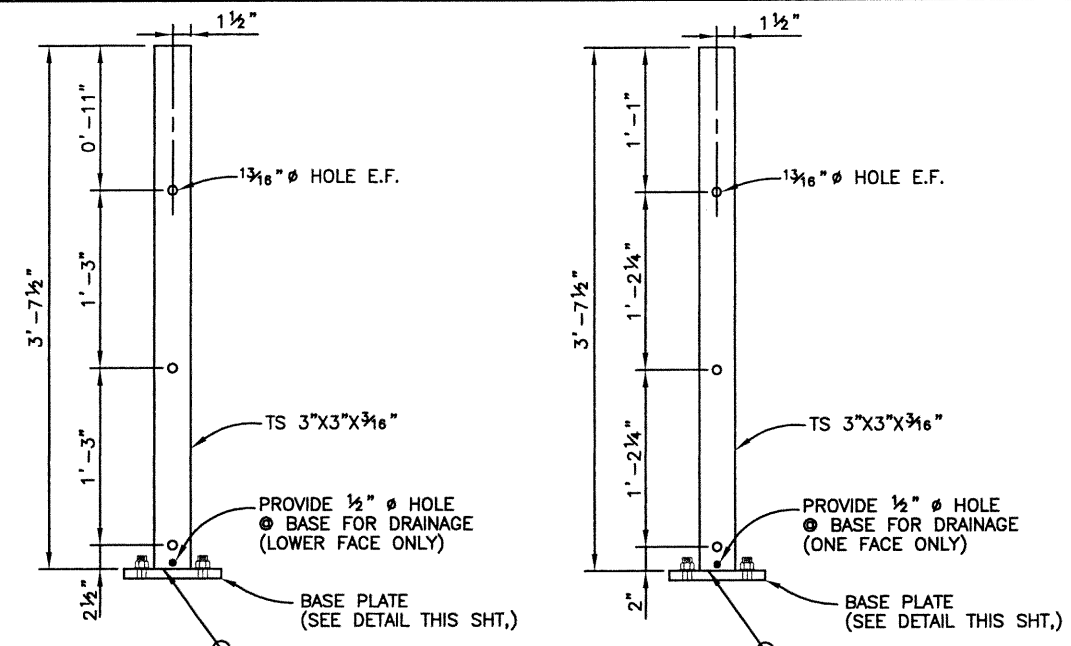
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Detailer:	K. KERBER
Sheet Subset:	BOX
Structure Numbers	
Subset Sheets:	C8 of 11

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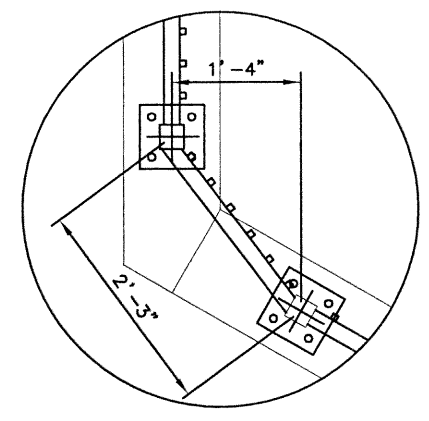
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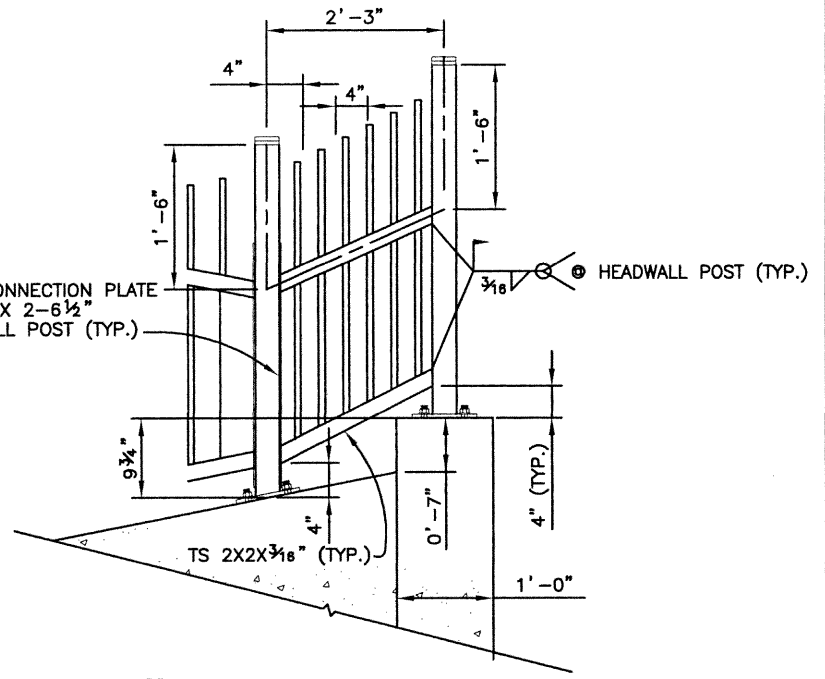
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DIMENSIONS AT  $\phi$  OF POST

**HEADWALL POST DETAIL**  
DIMENSIONS AT  $\phi$  OF POST

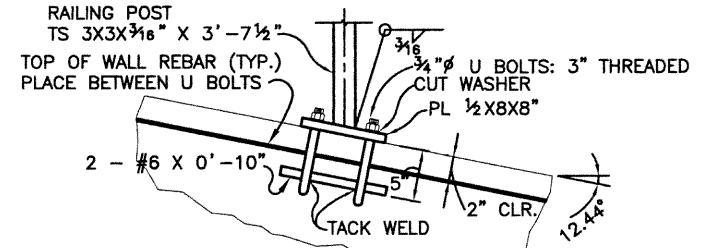


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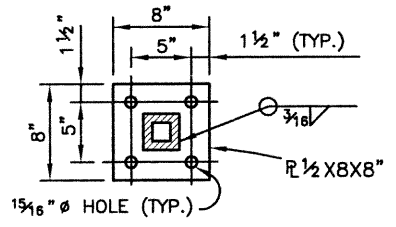
**NOTES**  
ANCHORAGE ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.  
  
ANCHORAGE ASSEMBLY WILL NOT BE PAID FOR SEPARATELY, BUT THE COST SHALL BE INCLUDED IN ITEM 607 PEDESTRIAN RAILING



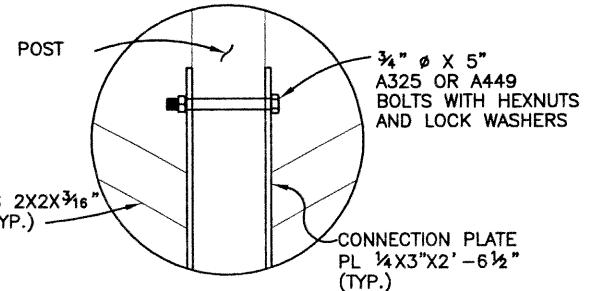
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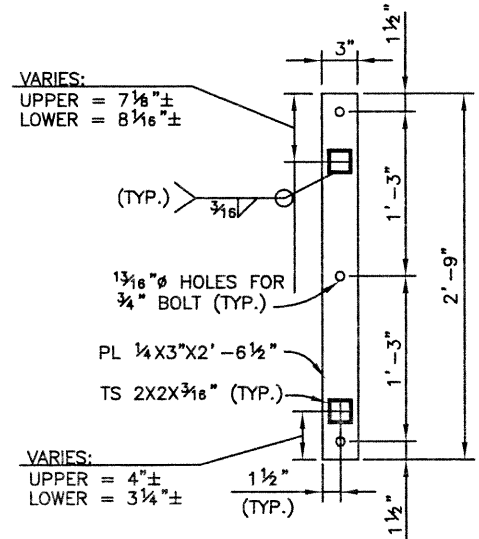
**ANCHORAGE ELEVATION DETAIL**



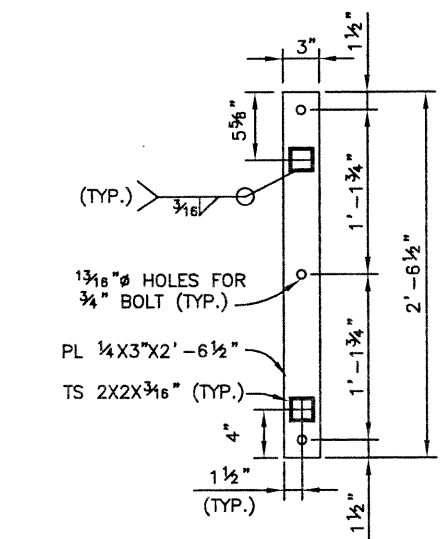
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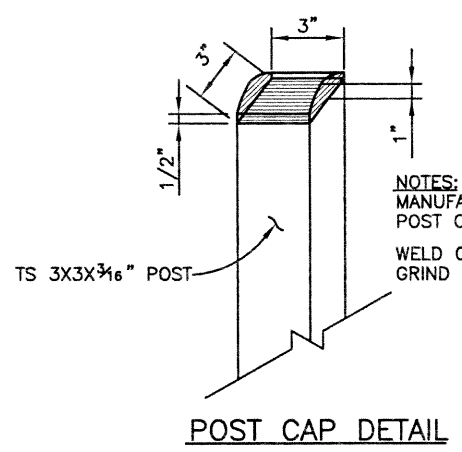
**DETAIL D (TYP.)**



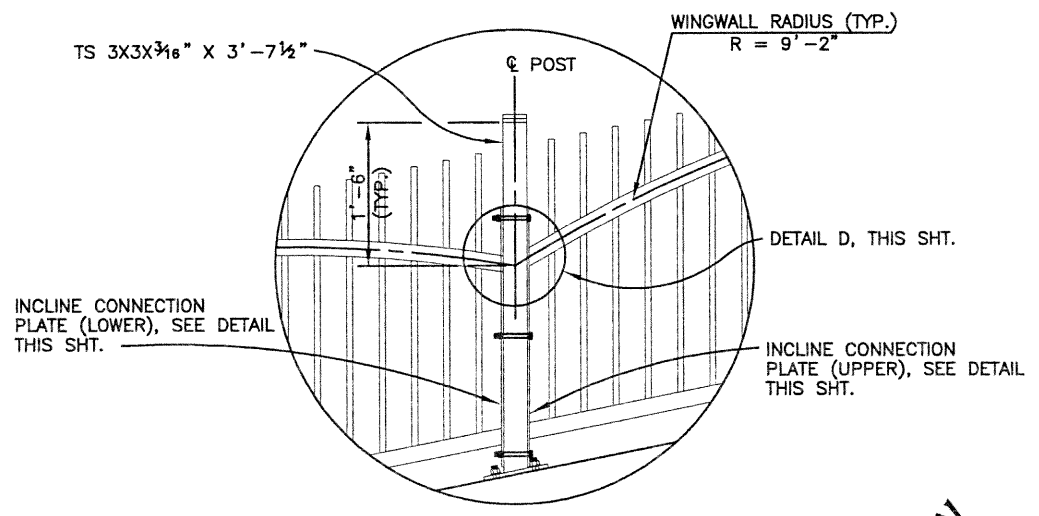
**INCLINE CONNECTION PLATE DETAIL**



**HEADWALL CONNECTION PLATE DETAIL**



**POST CAP DETAIL**

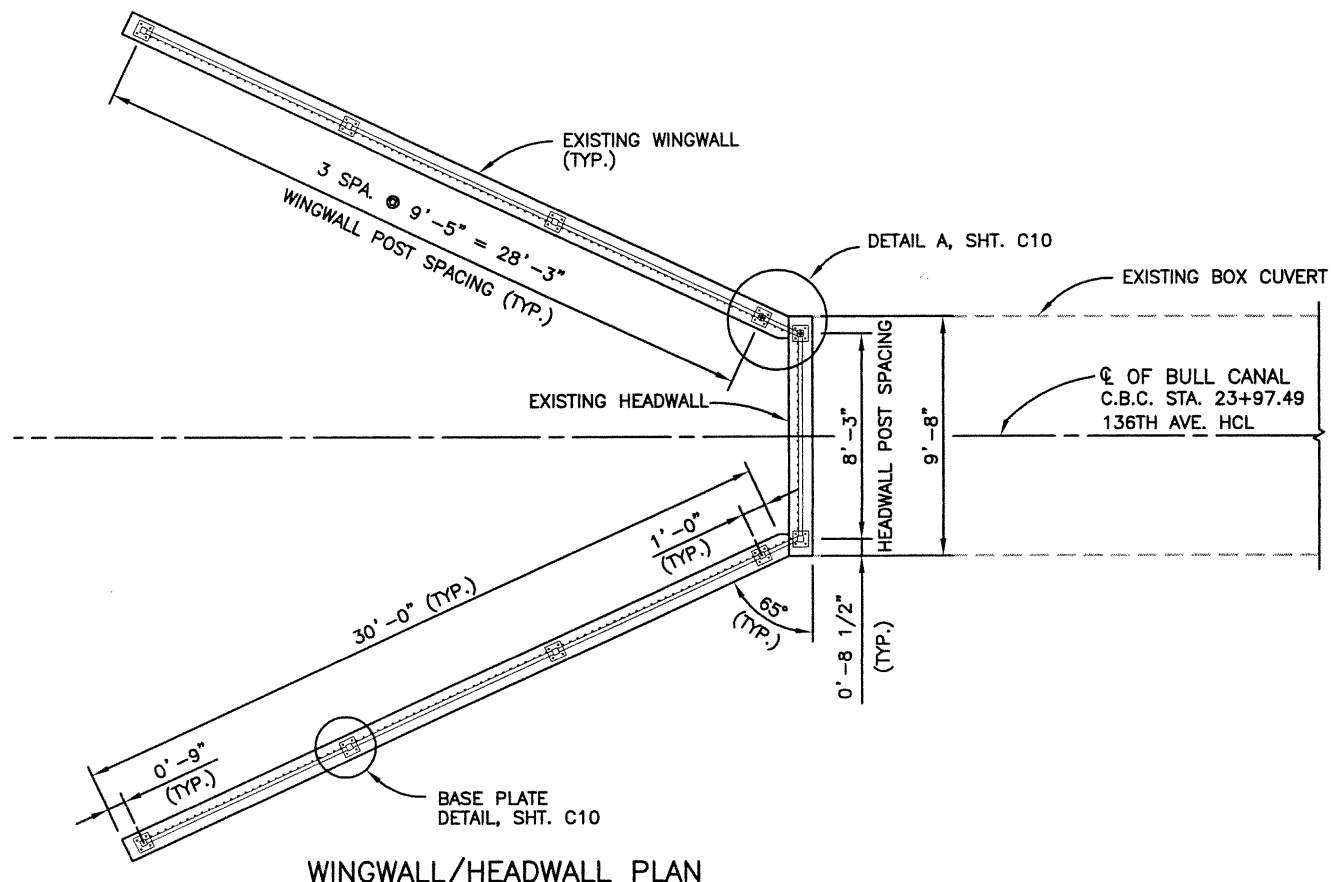


**WINGWALL POST CONNECTION DETAIL**

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						303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111			Designer: K. KERBER Detailer: K. KERBER Sheet Subset: BOX			Structure Numbers Subset Sheets: C9 of 11 Sheet Number 140	

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Initial	Date	Initial	Date	Initial	Date
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Checked by		Checked by		Checked by	
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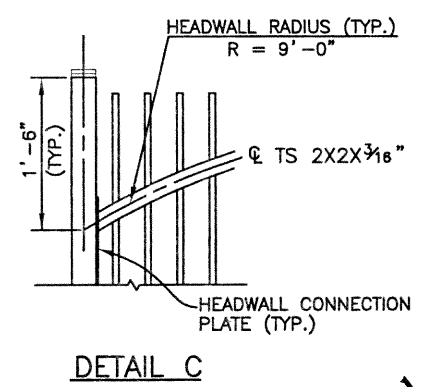
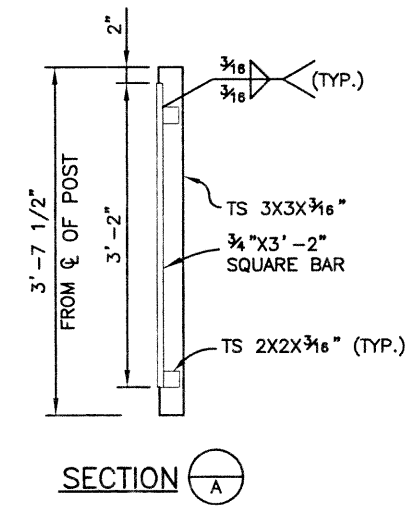
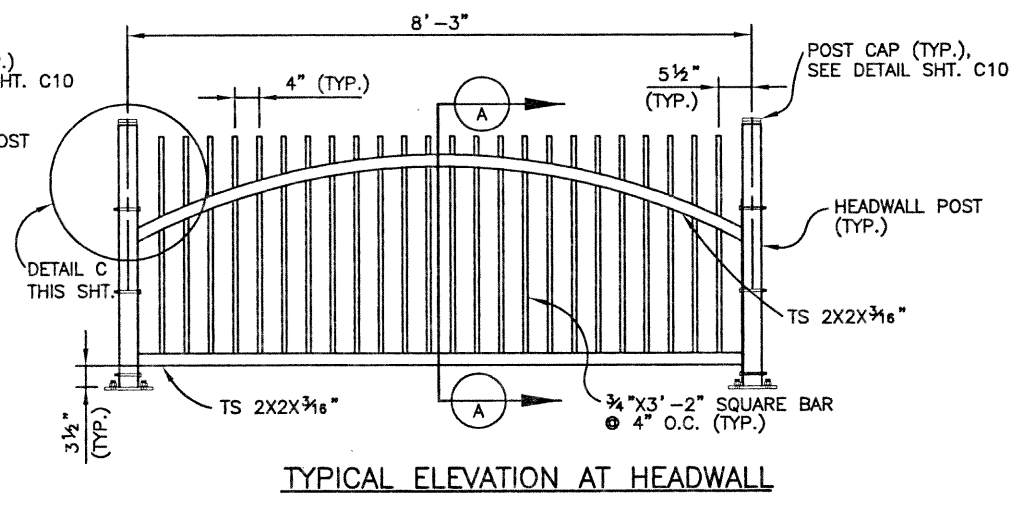
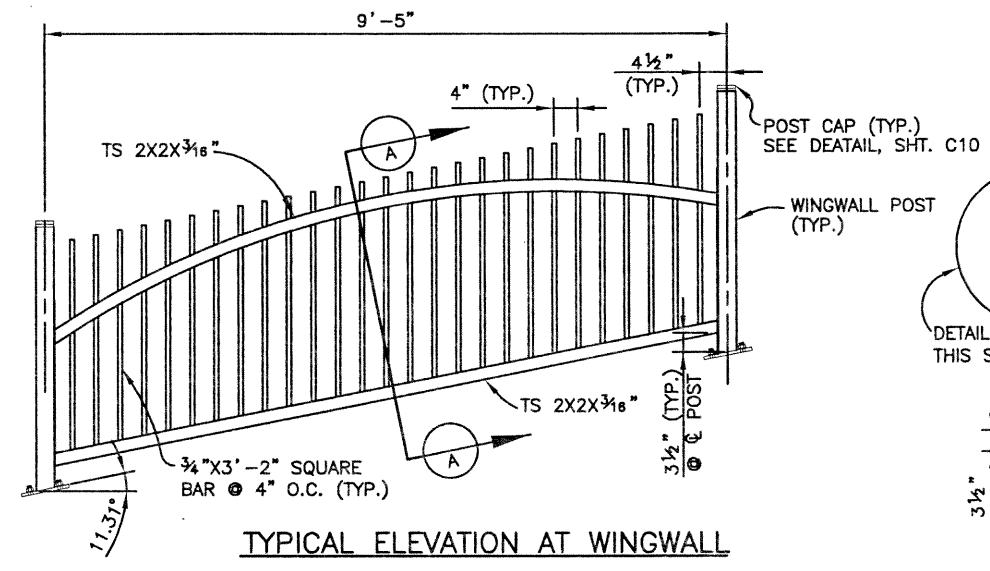
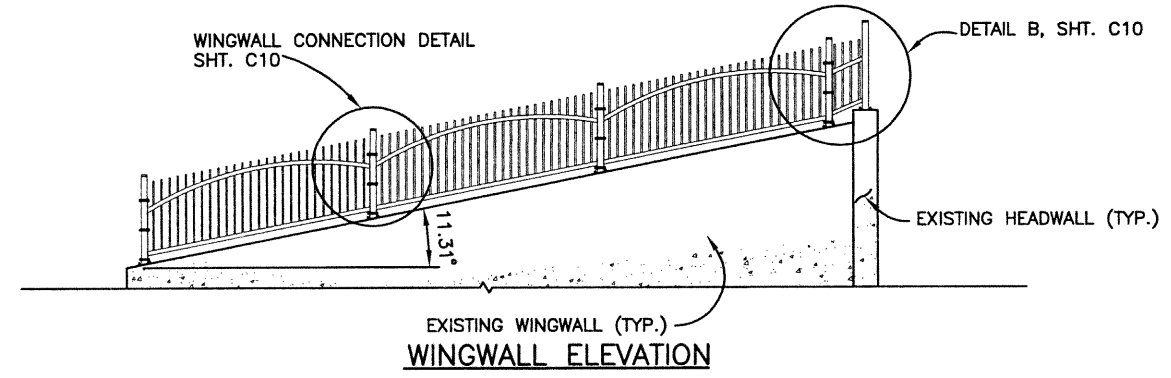
THE CONTRACTOR SHALL FIELD VERIFY ALL MEASUREMENTS BEFORE FABRICATION.  
 ALL TUBES SHALL BE ASTM A-500 GRADE B. ALL OTHER STEEL SHALL BE ASTM A-36.  
 ALL BOLTS THAT HAVE LOCK WASHERS SHALL BE TIGHTENED TO SNUG ONLY.  
 PAYMENT WILL BE MADE UNDER ITEM 514 PEDESTRIAN RAILING.

STRUCTURAL STEEL:  
 AASHTO M-183 (ASTM A-36)  $F_y = 36,000$  psi  
 COLD FORMED ASTM A-500 GRADE B  $F_y = 46,000$  psi

THE PEDESTRIAN RAILING SHALL BE SHOP PAINTED IN ACCORDANCE WITH SECTION 509.  
 THE COLOR SHALL BE APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL PROVIDE AND INSTALL PAINTED WASHERS AND NUTS TO SECURE  
 THE RAIL TO THE ANCHORAGE.

THE CONTRACTOR SHALL THOROUGHLY CLEAN OR RE-THREAD THE ANCHORAGE BOLTS TO  
 PROVIDE THE REQUIRED CONNECTION.



**Computer File Information**

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Last Modification Date:	12/17/02	Initials:	DRS
Full Path:	J:\01133\ACAD\SHEETS\		
Drawing File Name:	C00033MSC03.DWG		
Acad Ver.	R14	Scale:	VARIES
		Units:	ENGLISH

**Index of Revisions**

No.	Description

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

**As Constructed**

No Revisions:

Revised:

Void:

**136TH AT I-25 INTERCHANGE  
 WESTMINSTER PEDESTRIAN UNDERPASS  
 BULL CANAL RAILING (1 OF 2)**

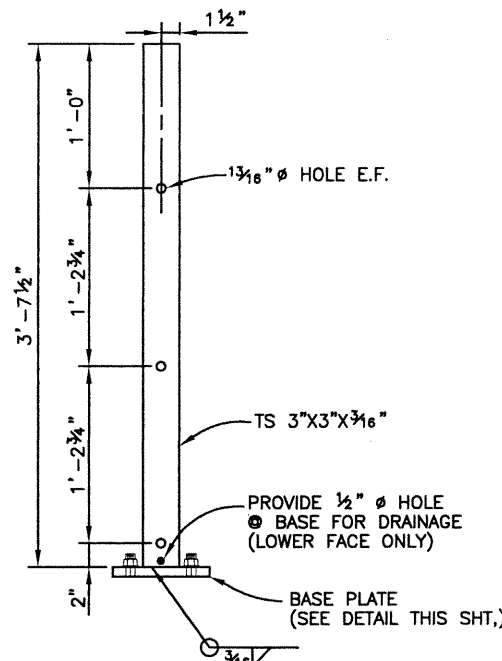
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Detailer:	K. KERBER		
Sheet Subset:	X	Subset Sheets:	C10 of 11

**Project No./Code**

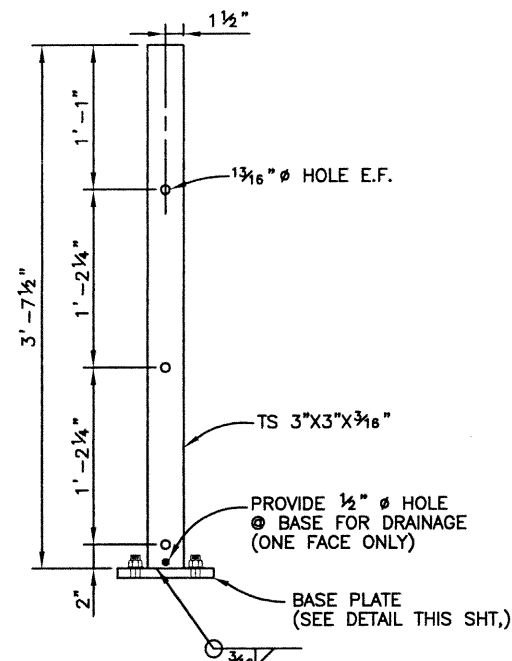
97-71

Sheet Number **141**

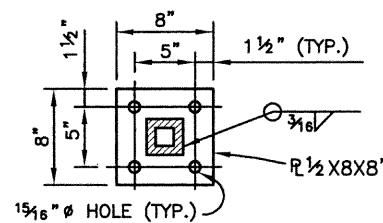
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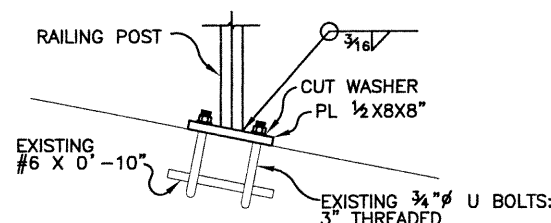
**WINGWALL POST DETAIL**  
DIMENSIONS AT  $\phi$  OF POST



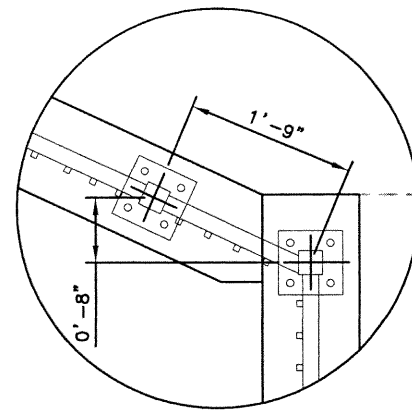
**HEADWALL POST DETAIL**  
DIMENSIONS AT  $\phi$  OF POST



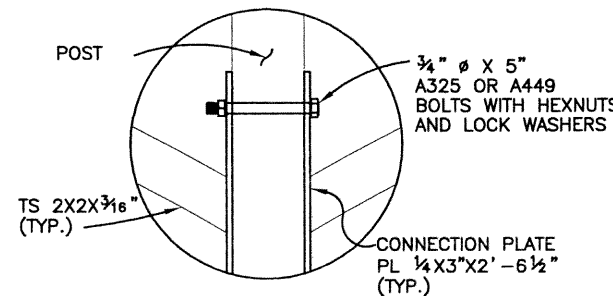
**BASE PLATE DETAIL**



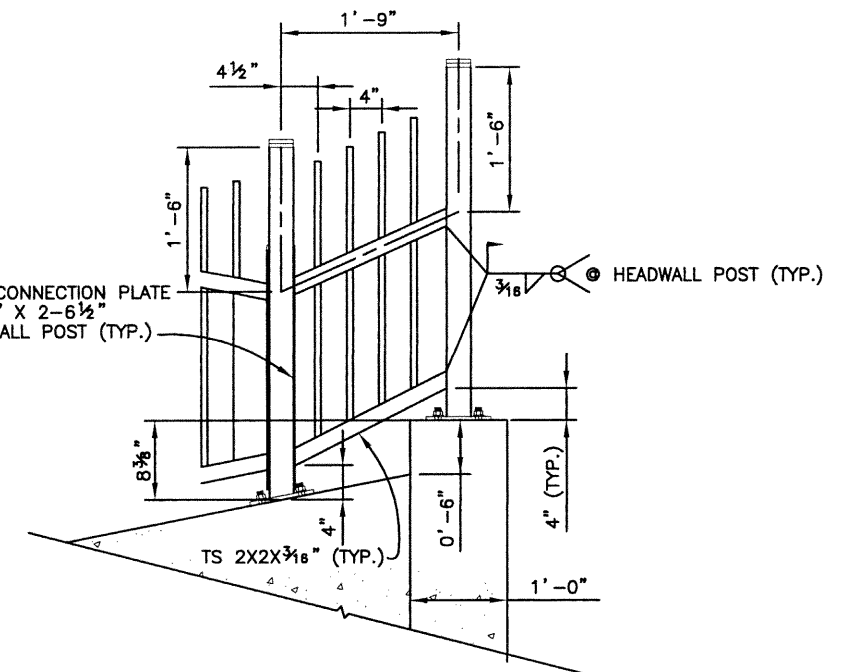
**ANCHORAGE ELEVATION DETAIL**



**DETAIL A**

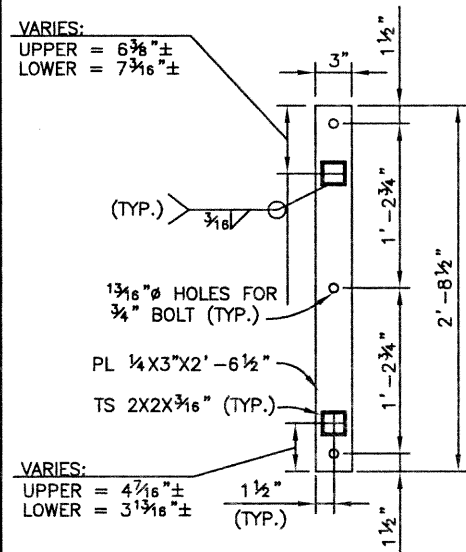


**DETAIL D (TYP.)**

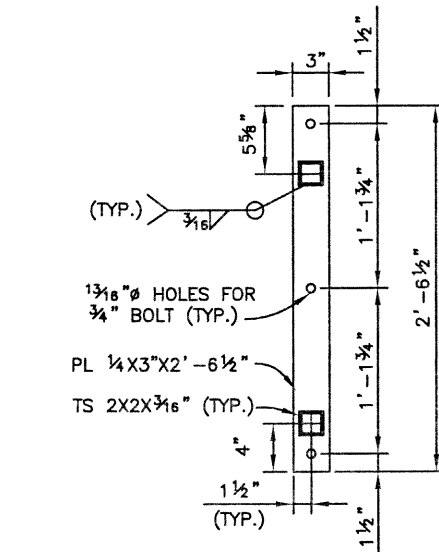


NOTE:  
PROVIDE TYPICAL CONNECTION PLATE AT WINGWALL POST ONLY. FIELD WELD RAILING TO HEADWALL POST.

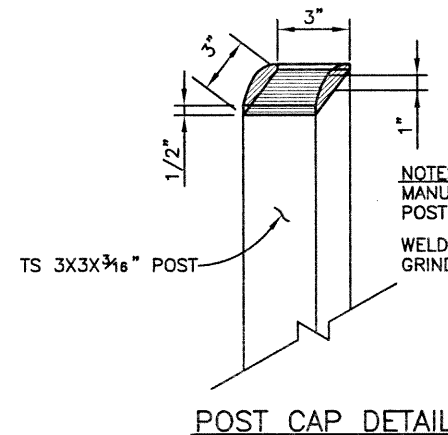
**DETAIL B**



**INCLINE CONNECTION PLATE DETAIL**

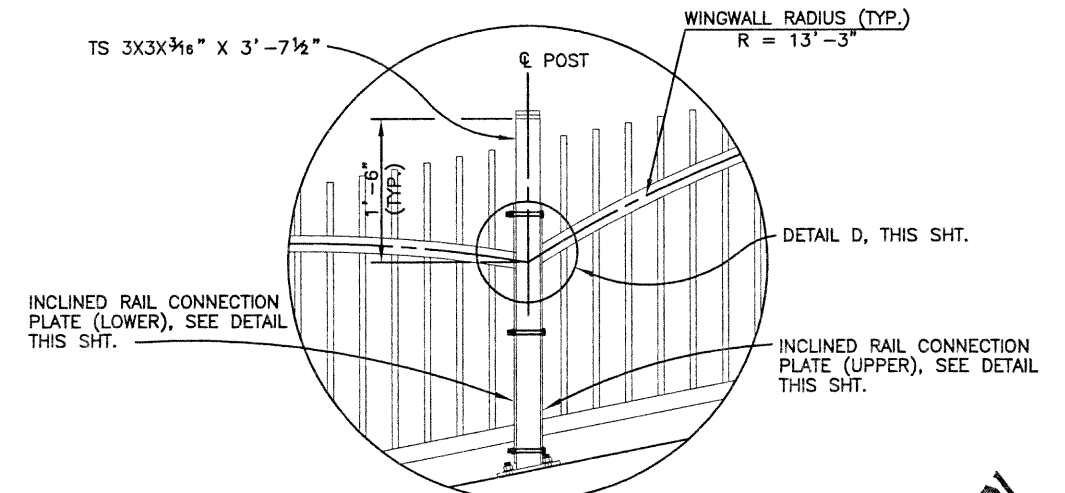


**HEADWALL CONNECTION PLATE DETAIL**



**POST CAP DETAIL**

NOTES:  
MANUFACTURE OR FABRICATE POST CAP PLATE  
WELD CAP TO POST AND GRIND WELD SMOOTH



**WINGWALL POST CONNECTION DETAIL**

Computer File Information			Index of Revisions			As Constructed			136TH AT I-25 INTERCHANGE WESTMINSTER PEDESTRIAN UNDERPASS BULL CANAL RAILING (2 OF 2)			Project No./Code	
Creation Date:	10/29/01	Initials: KRK				No Revisions:			Designer: K. KERBER	Structure Numbers			97-71
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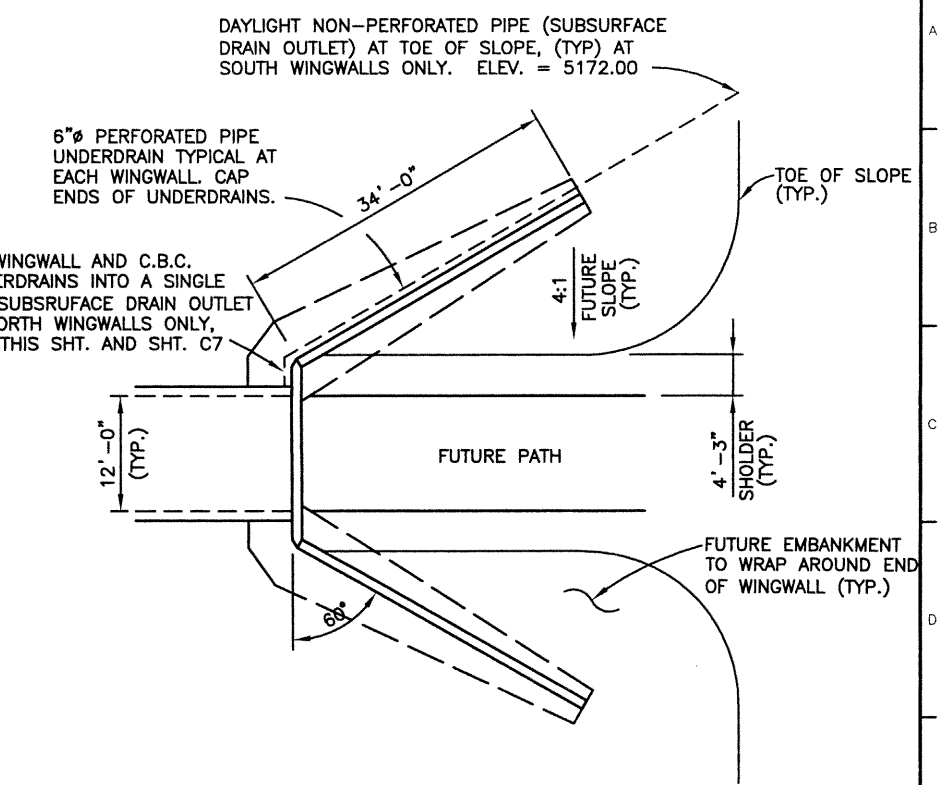
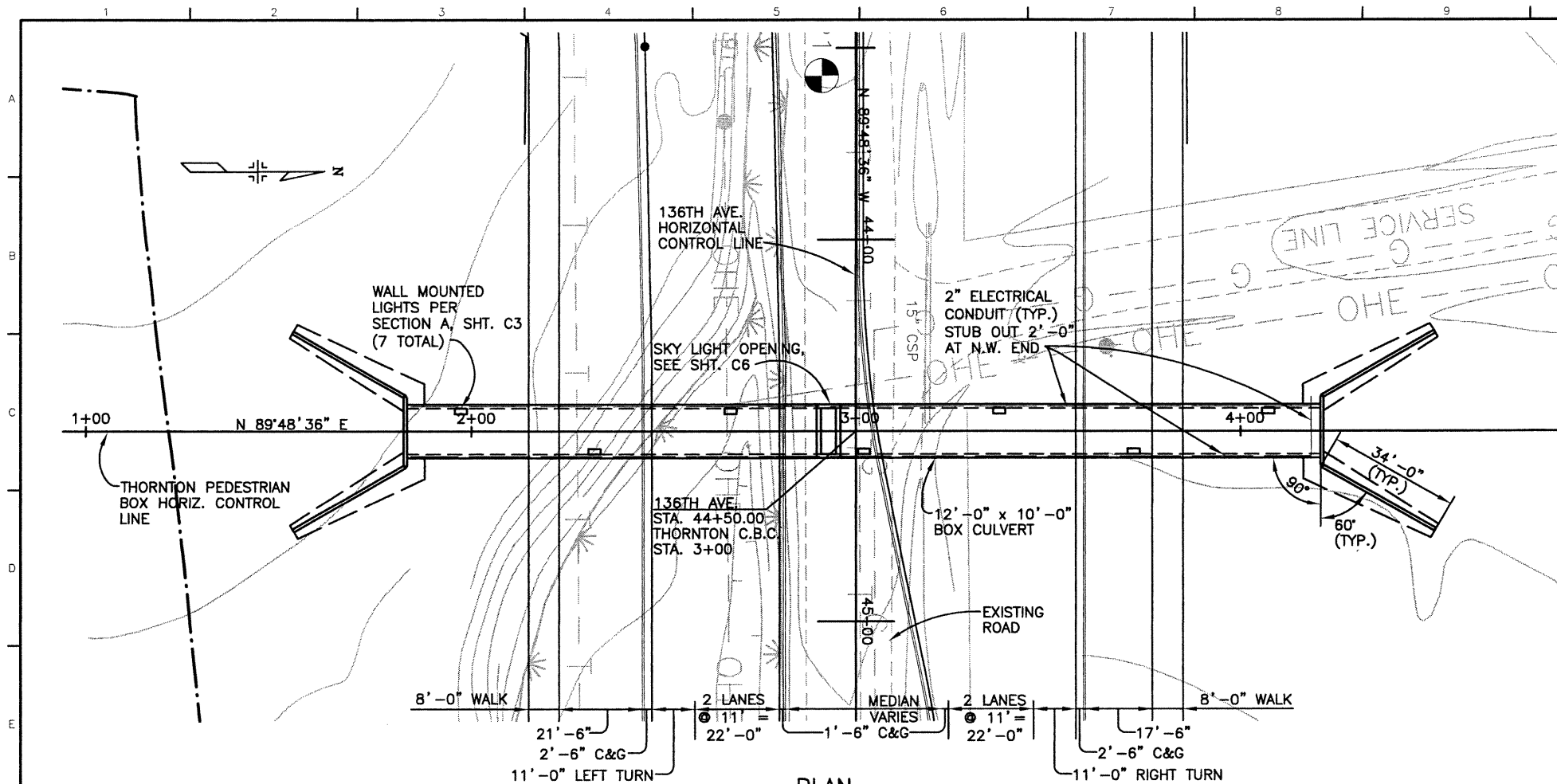


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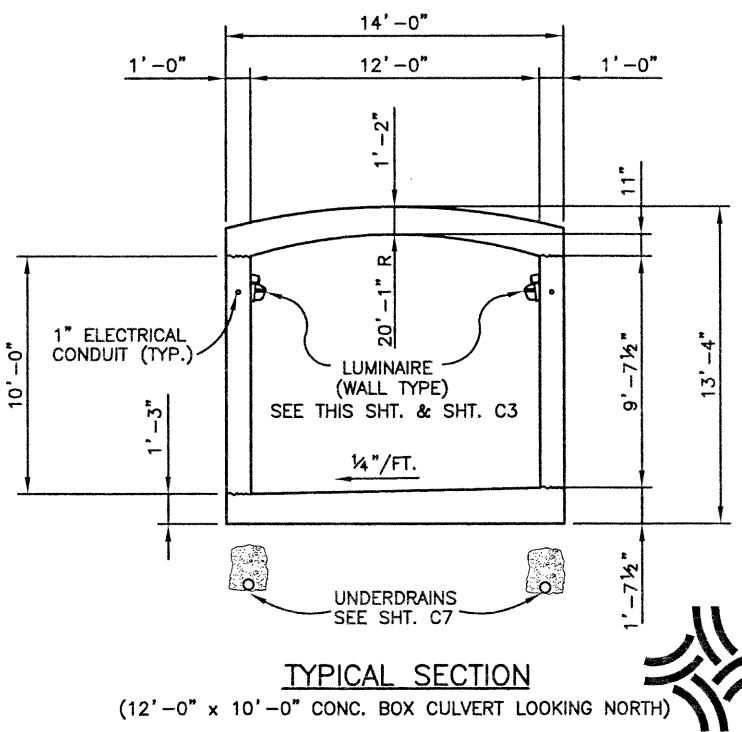
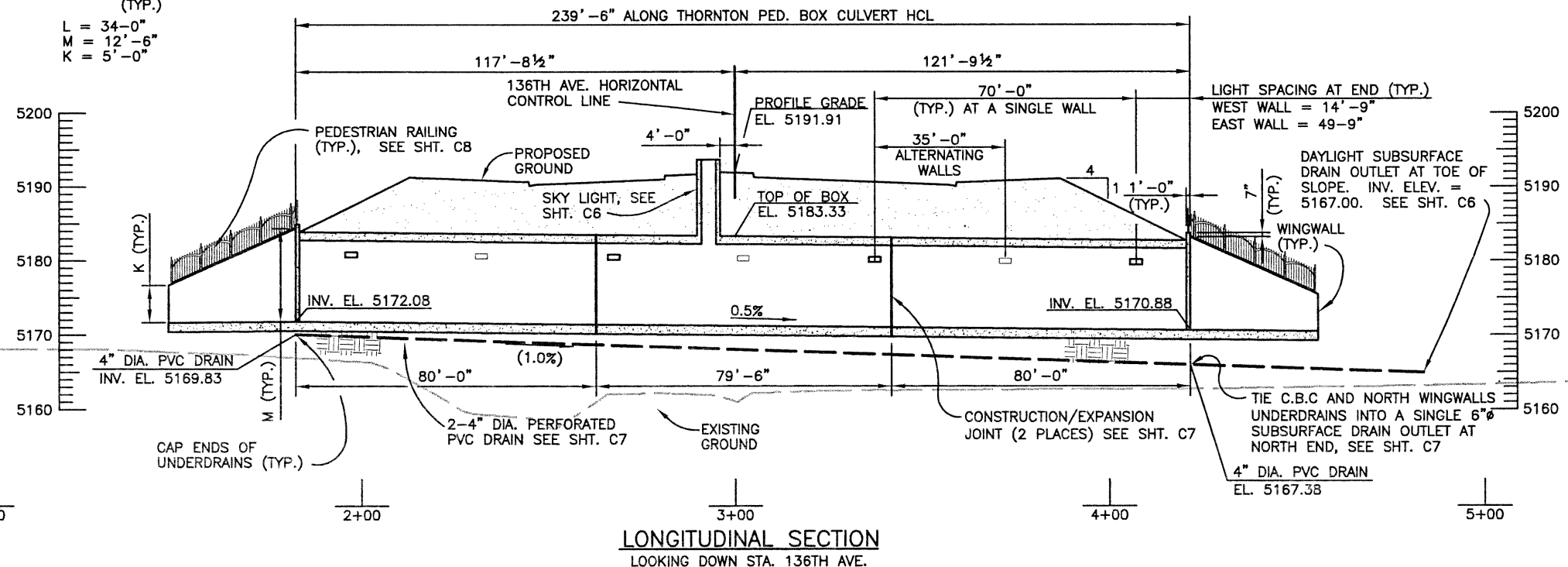


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**WINGWALL INFORMATION**  
(TYP.)

L = 34'-0"  
M = 12'-6"  
K = 5'-0"



DESIGN	DATE	INITIALS	DATE	INITIALS
DESIGNED BY				
CHECKED BY				
DESIGNED BY				
CHECKED BY				
QUANTITIES	DATE	INITIALS	DATE	INITIALS
DESIGNED BY				
CHECKED BY				
DESIGNED BY				
CHECKED BY				
REVISIONS	DATE	INITIALS	DESCRIPTION	

Computer File Information		Index of Revisions		As Constructed		136TH AT I-25 INTERCHANGE THORNTON PEDESTRIAN UNDERPASS GENERAL LAYOUT		Project No./Code
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Last Modification Date:	10/28/02 Initials: PRH			Revised:		Detailer:	K. KERBER	
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fax 303.721.0832  
fhu@fhueng.com

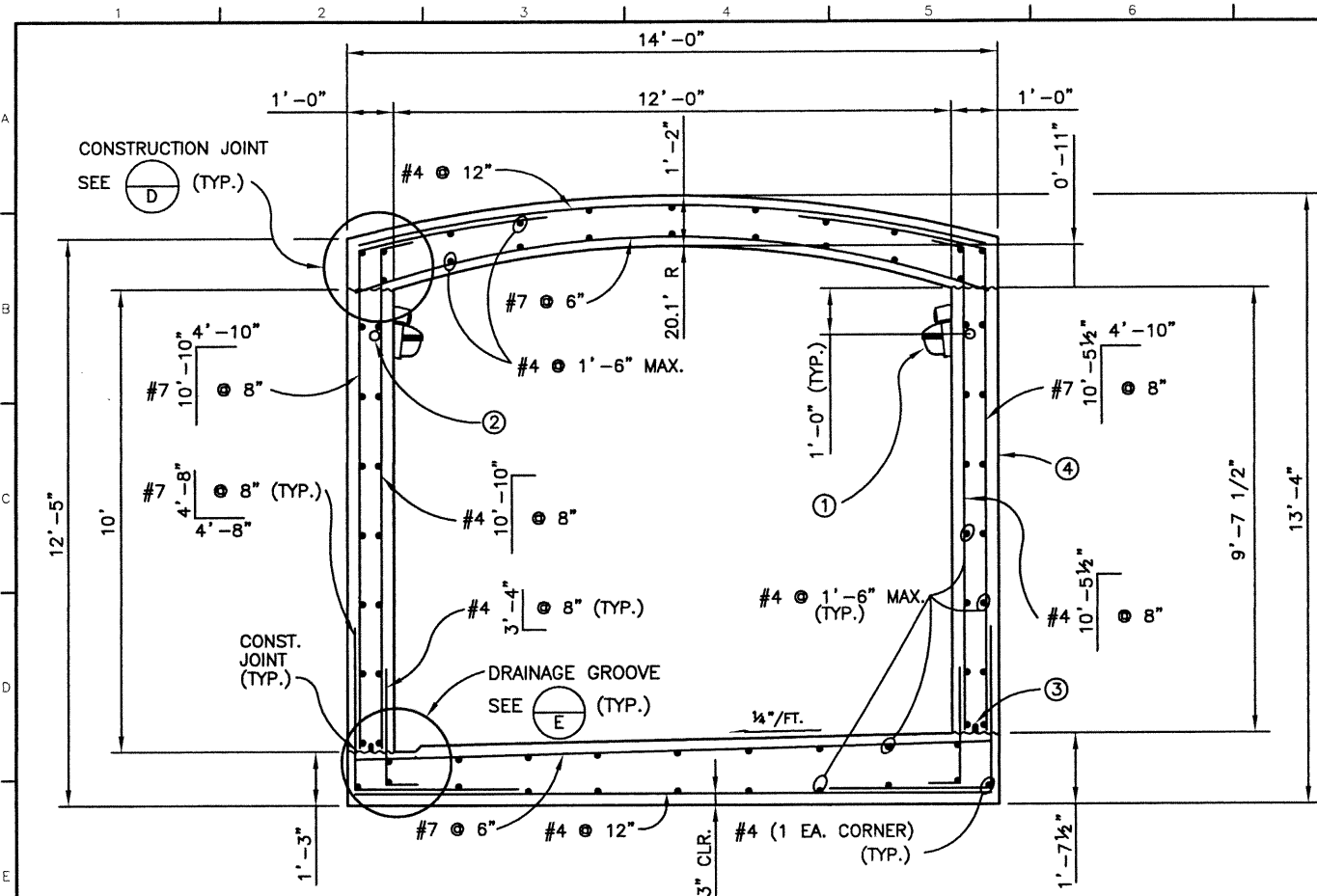
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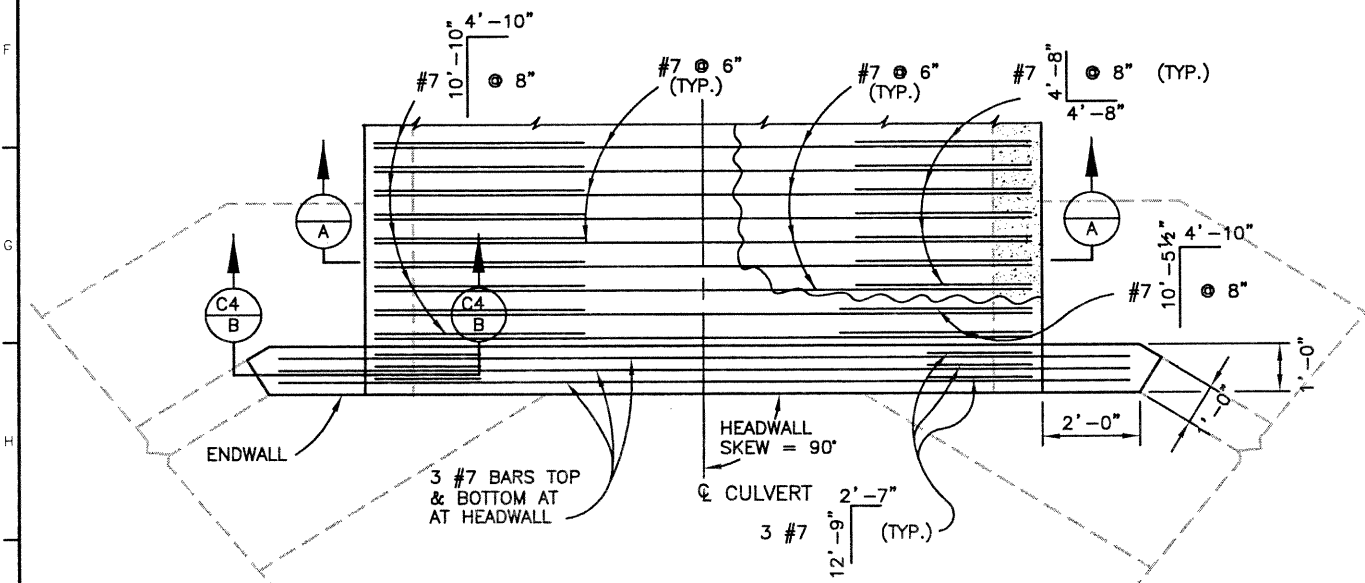


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**TYPICAL BOX CULVERT SECTION**  
(LOOKING NORTH)

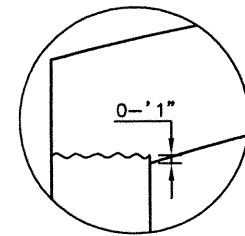


**REINFORCING PLAN**

**BOX CULVERT DETAILS**

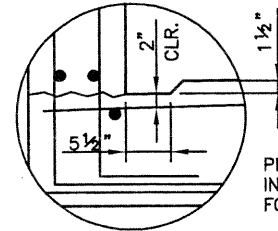
**NOTES**

- LUMINAIRES AND JUNCTION BOXES SHALL BE SPACED AT 35'-0" O.C., ALTERNATING SIDES FROM THE EAST WALL TO THE WEST WALL, FOR LIGHTS AT LOCATIONS INDICATED PER THIS DETAIL AND SHT. C2. LIGHTS SHALL BE EXCEL ENERGY STANDARD WITH (1) 100 WATT HPS LAMP ON WALLS (7 TOTAL). SEE LIGHTING PLANS FOR ADDITIONAL LIGHT DETAILS. XCEL ENERGY SHALL WIRE THE BOX CULVERT, AND SUPPLY & INSTALL THE LUMINAIRES.
- PROVIDE 1" DIAMETER ELECTRICAL CONDUIT FOR LIGHTING IN EACH SIDE WALL. SET CONDUIT WITHIN MIDDLE 4" OF WALL FOR ENTIRE LENGTH OF CULVERT. AT NORTH END PROVIDE CONDUIT IN TOP ARCHED SLAB, PERPENDICULAR TO CENTER LINE OF BOX, CONNECTING THE TWO SIDE WALL CONDUITS, STUB CONDUIT OUT 2'-0" ON NORTH WEST SIDE. SET JUNCTION BOXES FOR LIGHTS AS REQUIRED AND PROVIDE A MINIMUM OF 1 1/2" CLEAR FROM ANY REINFORCING. ADJUST REINFORCING AS NEEDED TO PROVIDE CLEARANCE. PROVIDE EXPANSION COUPLINGS AT CONDUIT AT EACH EXPANSION JOINT.
- PROVIDE CONTINUOUS BENTONITE/BUTYL RUBBER-BASED WATERSTOP (MIRADRI MIRASTOP OR APPROVED EQUAL) AT JOINTS AT BASE OF EACH WALL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- APPLY SHEETED WATERPROOFING (MIRADRI 860/861 OR APPROVED EQUAL) ON THE EXTERIOR OF EACH SIDE WALL AND ON THE TOP OF THE TOP SLAB FOR THE FULL LENGTH OF THE BOX CULVERT. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PAYMENT SHALL BE MADE UNDER ITEM 517, WATERPROOFING (SPECIAL).



AT ARCH CORNERS RAISE CONSTRUCTION JOINT 1" FROM BOTTOM OF TOP SLAB TO FORM A CLEAN JOINT

**CONSTRUCTION JOINT DETAIL**



PROVIDE 5 1/2" X 1 1/2" DRAINAGE GROOVE IN THE WEST SIDE OF BOTTOM SLAB FOR FULL LENGTH OF CULVERT.

**DRAINAGE GROOVE DETAIL**

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Last Modification Date:	11/27/02 Initials: PRH
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Index of Revisions	

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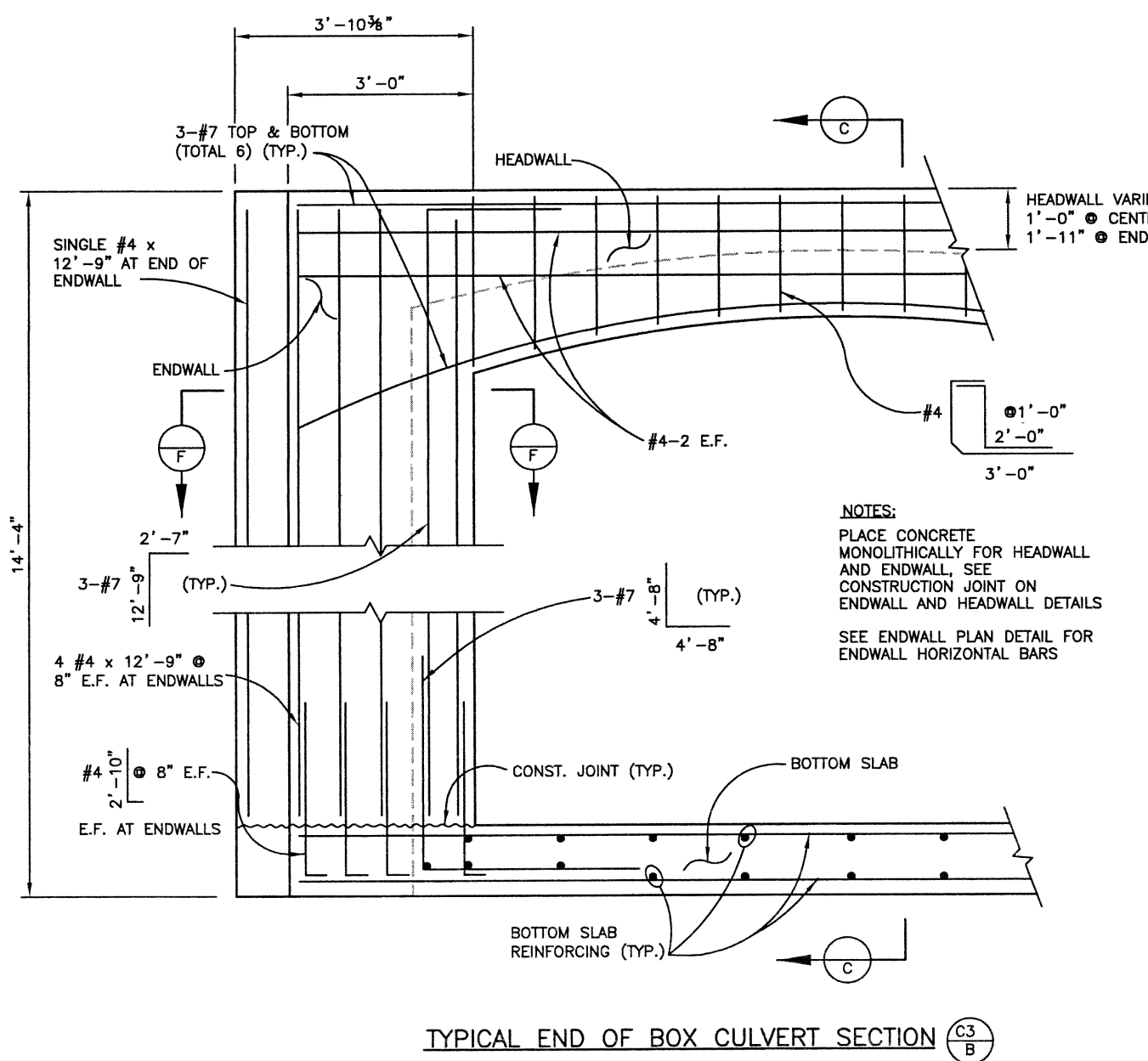
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As Constructed	136TH AT I-25 INTERCHANGE THORNTON PEDESTRIAN UNDERPASS C.B.C. SECTION AND DETAILS 1 OF 2	Project No./Code 97-71
No Revisions:	Designer: K. KERBER Detailer: P. HELM	Structure Numbers
Revised:	Sheet Subset: BOX	Subset Sheets: C3 of 9
Void:		Sheet Number 145

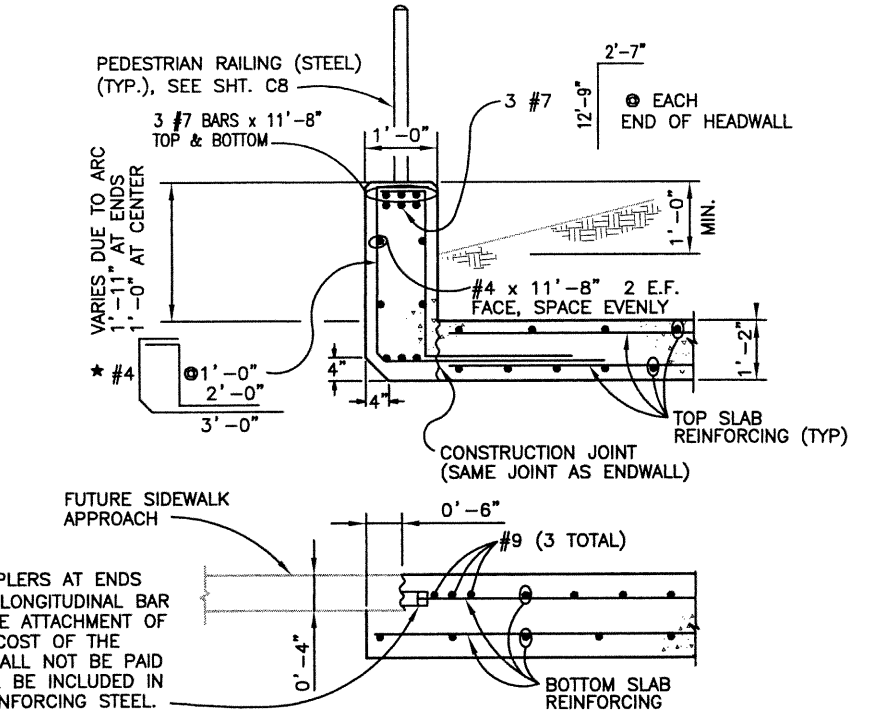


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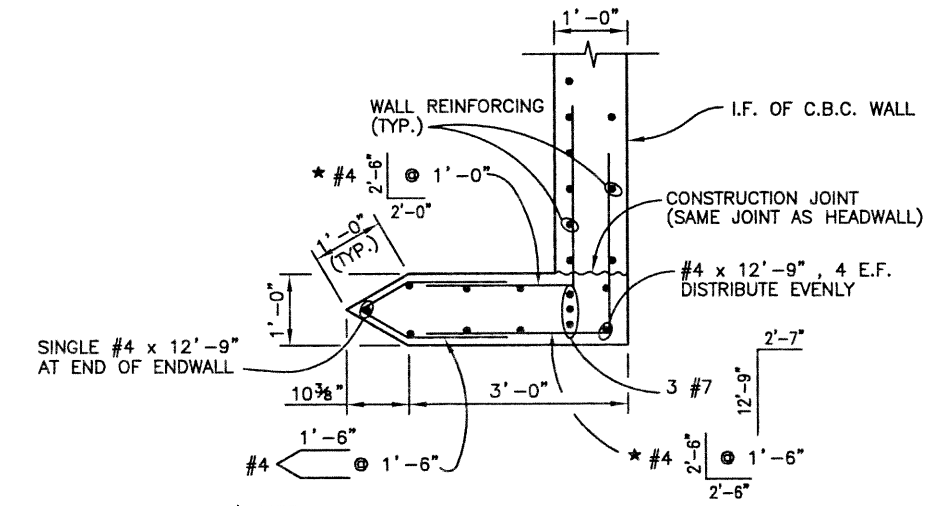


**NOTES:**  
 PLACE CONCRETE MONOLITHICALLY FOR HEADWALL AND ENDWALL, SEE CONSTRUCTION JOINT ON ENDWALL AND HEADWALL DETAILS  
 SEE ENDWALL PLAN DETAIL FOR ENDWALL HORIZONTAL BARS



PROVIDE REBAR SPLICE COUPLERS AT ENDS OF EACH TOP #4 @ 1'-6" LONGITUDINAL BAR IN BOTTOM SLAB FOR FUTURE ATTACHMENT OF SIDEWALK APPROACH. THE COST OF THE REBAR SPLICE COUPLERS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 602, REINFORCING STEEL.

**\* NOTE:**  
 EXTEND HEADWALL VERTICAL BARS BEYOND ENDS OF C.B.C. TOP SLAB  
 CONTRACTOR MAY USE FORM SAVERS (REBAR COUPLERS) AT THE EXPENSE OF THE CONTRACTOR  
 FORM SAVER PLACEMENT MUST BE APPROVED BY THE ENGINEER



**\* NOTE:**  
 EXTEND ENDWALL HORIZONTAL BARS BEYOND ENDS OF C.B.C. WALL AS SHOWN  
 CONTRACTOR MAY USE FORM SAVERS (REBAR COUPLERS) AT THE EXPENSE OF THE CONTRACTOR  
 FORM SAVER PLACEMENT MUST BE APPROVED BY THE ENGINEER

Computer File Information		Index of Revisions		As Constructed		136TH AT I-25 INTERCHANGE THORNTON PEDESTRIAN UNDERPASS C.B.C. SECTION AND DETAILS 2 OF 2		Project No./Code	
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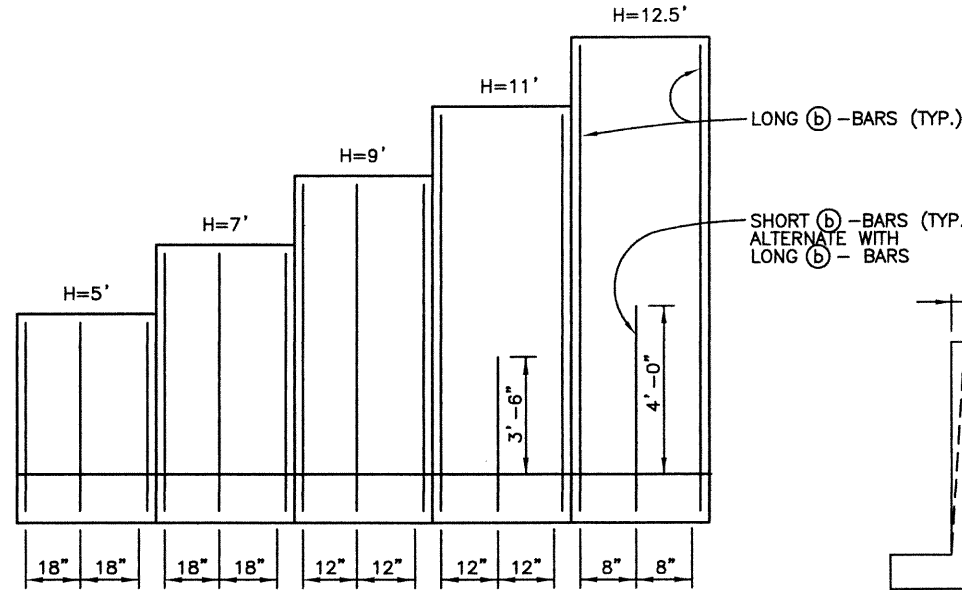


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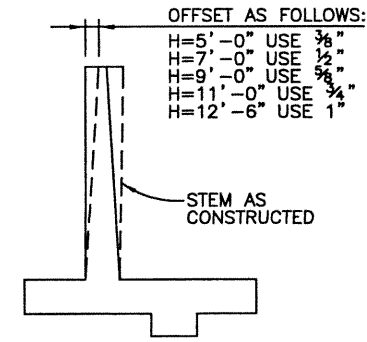


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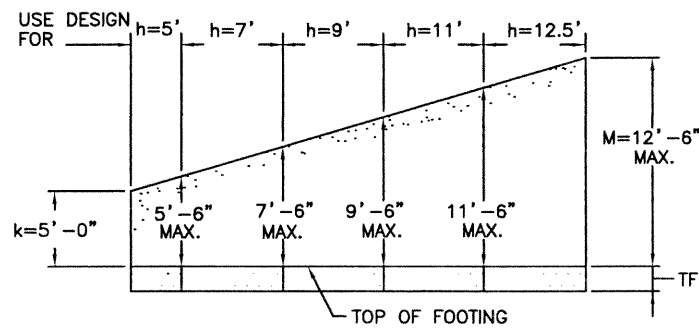
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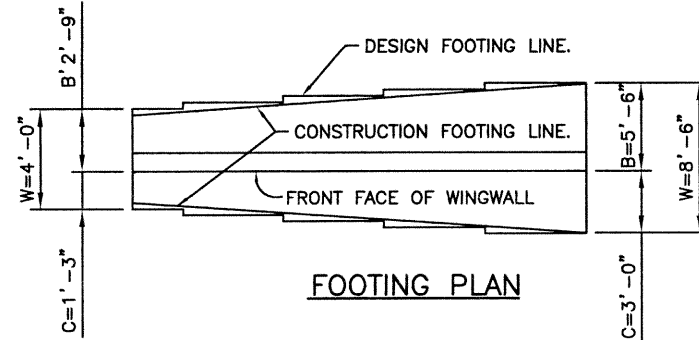
ELEVATION



APPROX. WALL OFFSETS



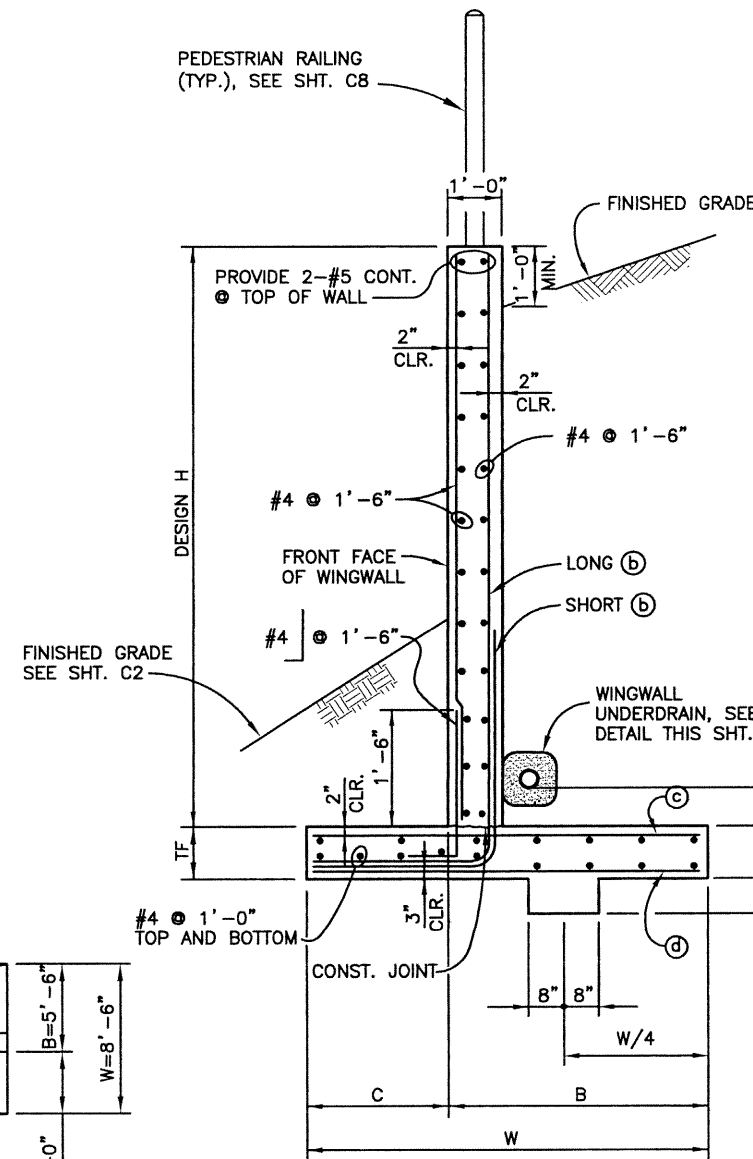
WINGWALL ELEVATION



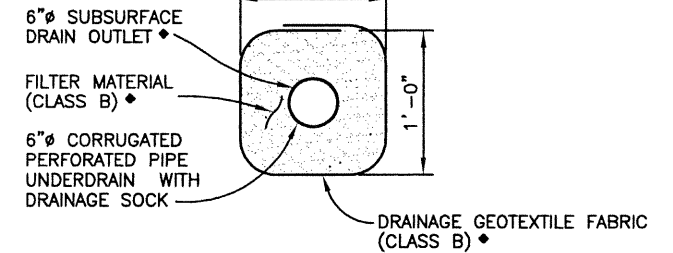
FOOTING PLAN

DESIGN DATA -- REINFORCING STEEL -- DIMENSIONS					
H*	5'	7'	9'	11'	12'-6"
W	4'-0"	5'-0"	6'-0"	7'-0"	8'-6"
C	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"
B	2'-9"	3'-6"	4'-0"	4'-6"	5'-6"
TF	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"
(b) BARS	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 12"	#5 @ 12"	#6 @ 8"
(c) BARS	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 12"	#4 @ 8"
(d) BARS	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-6"	#4 @ 1'-4"
CONCRETE (CY/LIN. FT)	0.42	0.46	0.66	0.78	0.92
REINF. STEEL (LB/FT)	26.4	33.1	41.5	51.4	69.8

\* DESIGN HEIGHT "H" MAY BE EXCEEDED BY 6" BEFORE GOING TO NEXT HIGHER DESIGN HEIGHT IN TABLE



TYPICAL SECTION



NOTES:

PROVIDE A MINIMUM OF 3" OF FILTER MATERIAL (CLASS B) ON ALL SIDES OF PERFORATED PIPE. SURROUND THE GRAVEL AND DRAIN PIPE WITH CLASS B GEOTEXTILE FABRIC FOR FULL LENGTH OF WINGWALLS ONLY, PROTECT ENDS OF DRAINS FROM WATER INTRUSION DURING CONSTRUCTION.

TIE THE UNDERDRAINS AT THE WINGWALLS INTO SEPARATE 6" SCH. 40 NON-PERFORATED PIPE (SUBSURFACE DRAIN OUTLETS) AT THE END OF THE WINGWALL FOR THE SOUTH WINGWALLS ONLY. THE NORTH WINGWALL UNDERDRAINS SHALL BE TIED INTO A SINGLE 6" SUBSURFACE DRAIN OUTLET AS SPECIFIED ON SHT. C2 AND SHT. C7. ALL PIPE SHALL MAINTAIN A MINIMUM SLOPE OF 1%.

DAYLIGHT THE SUBSURFACE DRAIN OUTLET AT THE TOE OF EMBANKMENT FILL AS SPECIFIED ON SHT. C2 FOR THE SOUTH WINGWALLS ONLY.

AT THE DAYLIGHT LOCATION PROVIDE A GALVANIZED 12 GAGE MINIMUM WIRE MESH, 3/4" X 3/4" OPENINGS, OVER PIPE END. PROVIDE A 2'-0" X 2'-0" EROSION CONTROL PAD CONSISTING OF 9" GROUTED RIPRAP.

\* ITEMS SHALL BE ASSEMBLED & PAID FOR AS PERFORATED PIPE UNDERDRAIN PER SPECIFICATION SECTION 605, EXTENDING FOR THE FULL LENGTH OF WINGWALLS, AND SHALL BE INCLUDED IN THE COST OF ITEM 605 6" PERFORATED PIPE UNDERDRAIN.

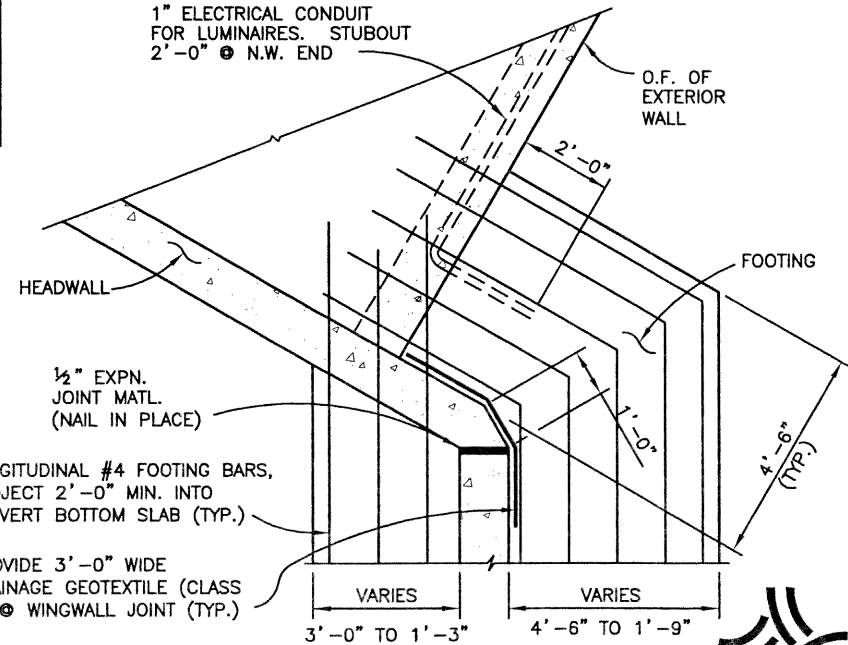
UWINGWALL NDERDRAIN DETAIL

FOR INFORMATION ONLY

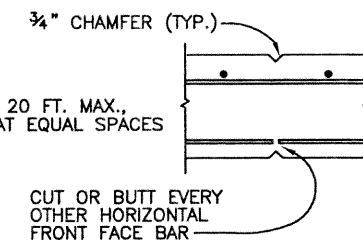
DESCRIPTION	UNITS	NORTH WINGWALLS	SOUTH WINGWALLS
6" PERFORATED PIPE UNDERDRAIN	FT	74	74
6" SUBSURFACE DRAIN OUTLET	FT	0*	50

\* SEE C.B.C. SUBSURFACE DRAIN OUTLET, SHT. C7

1" ELECTRICAL CONDUIT FOR LUMINAIRES. STUBOUT 2'-0" @ N.W. END



BOX CULVERT/WINGWALL JOINT DETAIL



WEAKENED PLANE

NOTE: SPACE AT 20 FT. MAX., PROVIDE AT EQUAL SPACES

CUT OR BUTT EVERY OTHER HORIZONTAL FRONT FACE BAR

Computer File Information

Creation Date:	12/04/01	Initials:	KRK
Last Modification Date:	11/27/02	Initials:	PRH
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Drawing File Name:	C00033WWL11.DWG		
Acad Ver.	2000i	Scale:	VARIES
Units:	ENGLISH		

Index of Revisions




303.721.1440  
 fax 303.721.0832  
 thu@thueng.com  
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 Englewood, CO 80111

As Constructed

No Revisions:	
Revised:	
Void:	

136TH AT I-25 INTERCHANGE  
 THORNTON PEDESTRIAN UNDERPASS  
 WINGWALL ELEVATION AND DETAILS

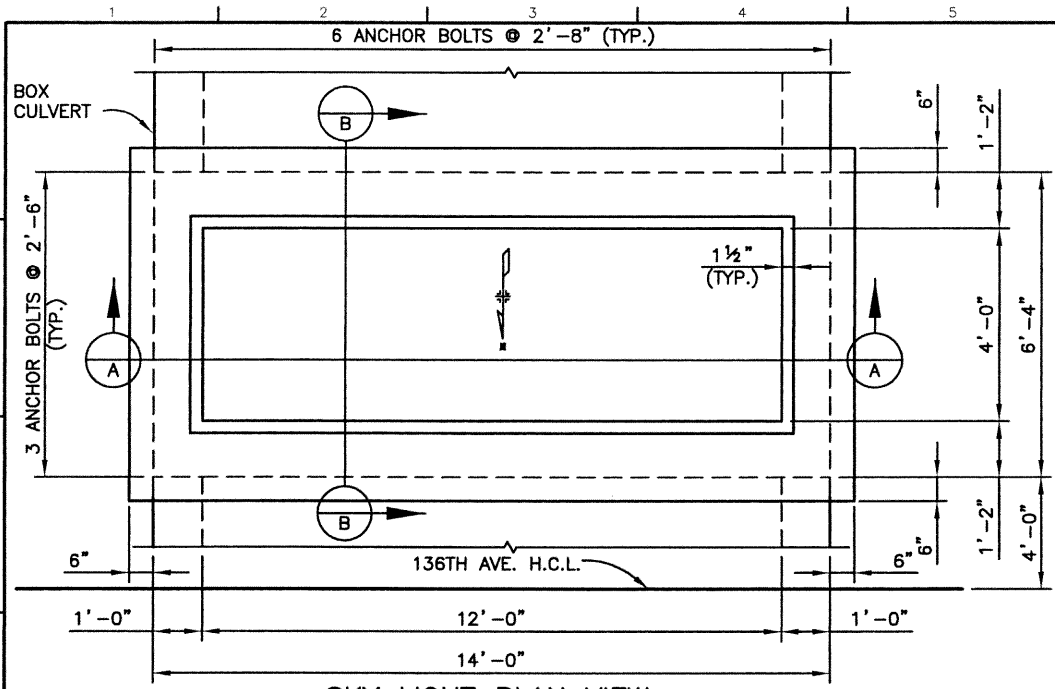
Designer:	K. KERBER	Structure Numbers:	
Detailer:	P. HELM		
Sheet Subset:	BOX	Subset Sheets:	C5 of 9

Project No./Code

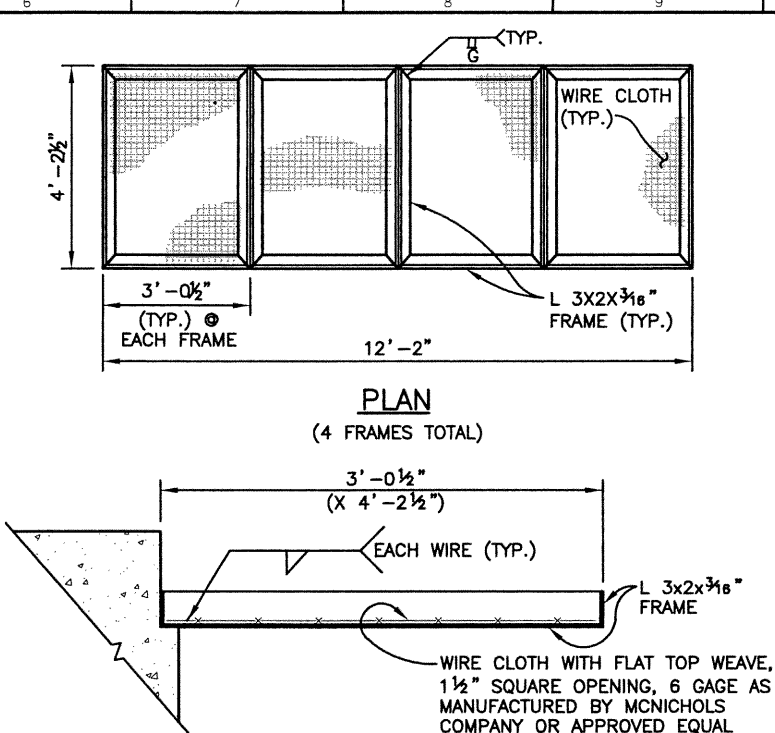
97-71
Sheet Number 147

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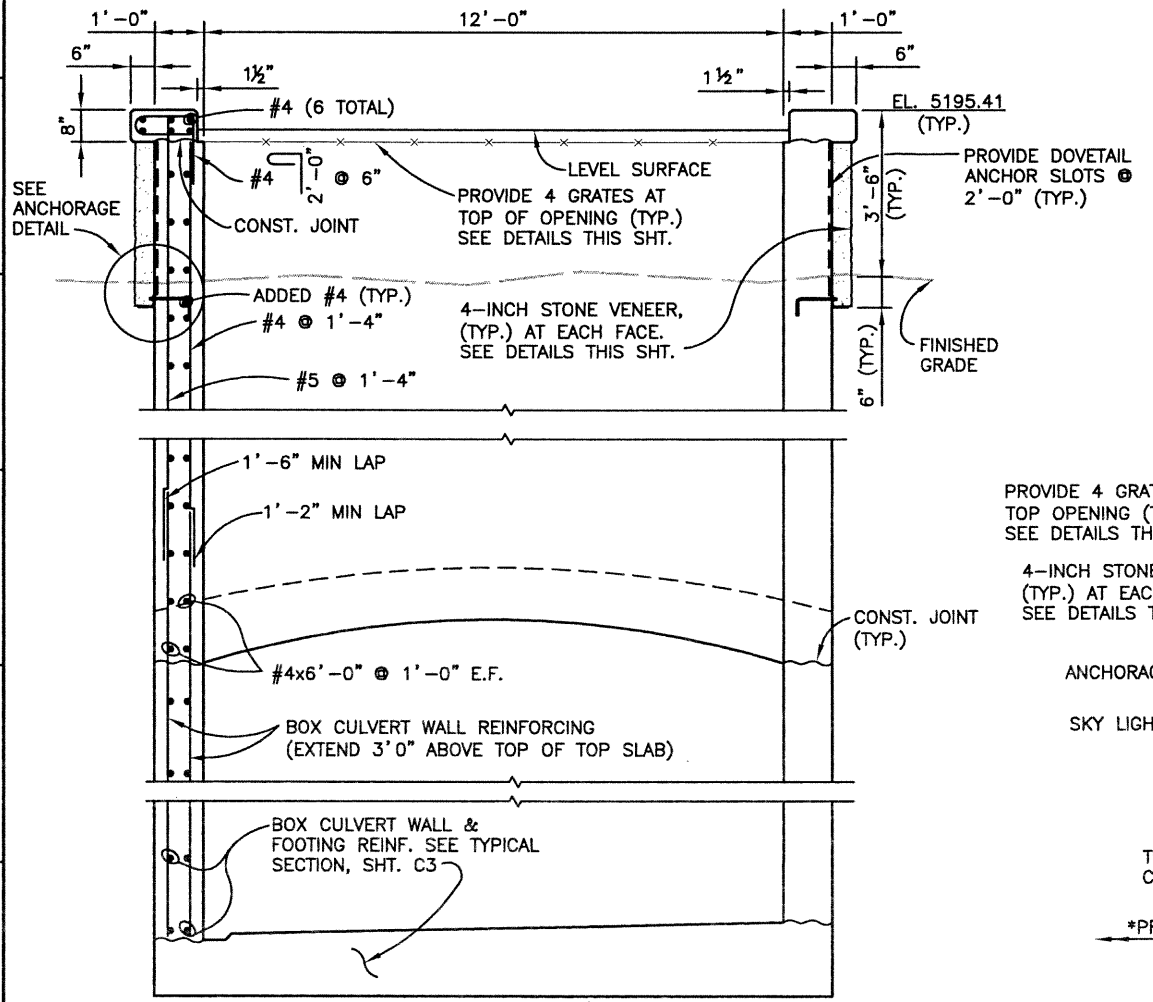
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Initial	Date	Initial	Date	Initial	Date
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	Checked by	Checked by	Checked by	Checked by	Checked by
	Checked by	Checked by	Checked by	Checked by	Checked by



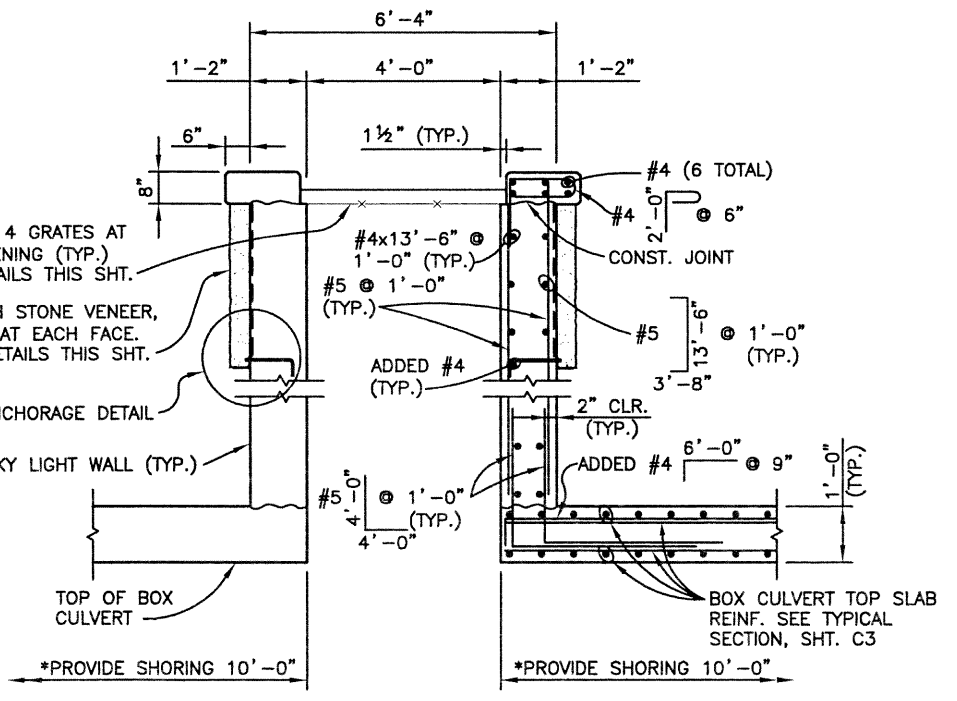
SKY LIGHT PLAN VIEW



FRAME SECTION  
(4 FRAMES TOTAL)  
GRATE DETAILS

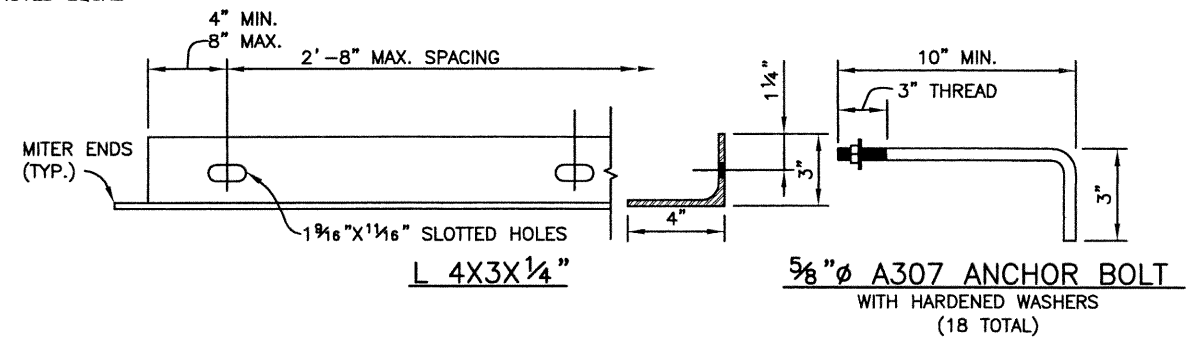


SECTION A



SECTION B

\*TOP SLAB FLASEWORK OR SHORING SHALL REMAIN IN PLACE FOR 10'-0" (MIN.) IN EACH DIRECTION, AS SHOWN, UNTIL SKY LIGHT WALLS HAVE BEEN POURED AND DESIGN STRENGTH HAS BEEN REACHED.



STONE VENEER ANCHORAGE DETAILS

NOTES:

ALL GRATE MATERIALS, WIRE CLOTH, FRAME ASSEMBLY, ANCHOR BOLTS AND LEDGER ANGLES SHALL BE GALVANIZED AFTER FABRICATION.

APPLY SHEETED WATERPROOFING (MIRADRI 860/861 OR APPROVED EQUAL) ON THE EXTERIOR OF EACH SKYLIGHT WALL BELOW THE STONE VENEER.

APPLY AN ASPHALT COATING TO THE EXTERIOR OF EACH SKYLIGHT WALL BEHIND THE STONE VENEER, INCLUDE THE 4X3X1/4" LEDGER ANGLE.

THE L 3x2x3/8" FRAME AND L 4X3X1/4" LEDGER SHALL BE AASHTO M-183 (ASTM A-36).

THE COST OF THE WIRE CLOTH, FRAME ASSEMBLY, LEDGER ANGLES, ANCHORAGE ASSEMBLY AND ASPHALT COATING SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 601, CONCRETE CLASS D (BOX CULVERT).

DOVETAIL ANCHORAGE SLOTS SHALL BE PROVIDED (DUROWALL D/A 100, OR APPROVED EQUAL).

Computer File Information

Creation Date:	04/04/02	Initials:	PRH
Last Modification Date:	07/30/02	Initials:	KRK
Full Path:	J:\00033\Acad\Sheet\Ped Box Sta 44+50\		
Drawing File Name:	C00033MSC13.DWG.		
Acad Ver.	2000i	Scale:	VARIES Units: ENGLISH

Index of Revisions

No.	Revision	Date	By



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed

No Revisions:	
Revised:	
Void:	

136TH AT I-25 INTERCHANGE  
THORNTON PEDESTRIAN UNDERPASS  
SKY LIGHT DETAILS

Designer:	K. KERBER	Structure Numbers:	
Detailer:	P. HELM	Subset Sheets:	C6 of 9

Project No./Code

97-71	
Sheet Number	148

Revision Dates	(Preliminary Stage Only)

DESIGN	DETAIL	QUANTITIES
Designed by	Initial	Initial
Checked by	Date	Date

PROVIDE 14 GAGE x 12" x CONTINUOUS COVER PLATE CENTERED ALONG EXPANSION JOINTS ON BACKFILL SIDE OF TOP SLAB AND WALLS. ATTACH PLATE TO CULVERT ON ONLY ONE SIDE OF JOINT W/ 0.177" DIA. POWDER-ACTUATED FASTENERS (HILTI DS 27 P10, OR EQUAL) AT 1'-6" ON-CENTER. THE COST OF THE COVER PLATES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 518, WATERSTOP (6 INCH).

6" CENTER-BULB x CONT. NEOPRENE WATERSTOP CENTERED IN TOP SLAB AND SIDE WALLS AT EXPANSION JOINTS, TYP.

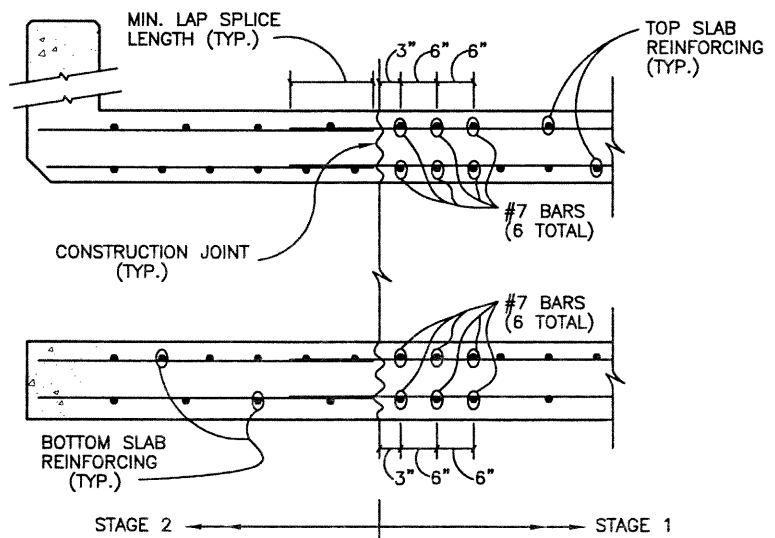
PROVIDE 1/2" COMPRESSED JOINT MATERIAL BETWEEN WALLS AND TOP SLAB ONLY AT EACH JOINT BETWEEN EXPANSION JOINTS INDICATED ON ON SHT. C2. SEE DETAIL THIS SHT.

PROVIDE 1/2" EXPANSION JOINT MATERIAL. SEE DETAIL THIS SHT.

TOP SLAB OR WALL SEE CONSTRUCTION JOINT DETAIL THIS SHT. FOR BOTTOM SLAB

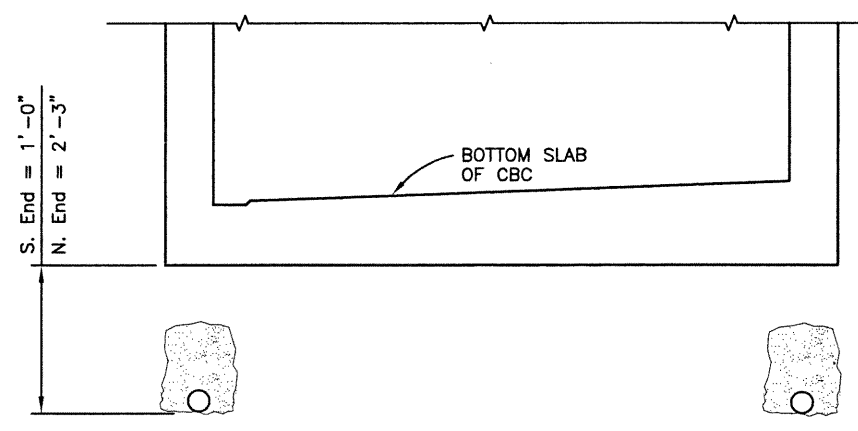


### EXPANSION JOINT DETAIL



### CONSTRUCTION JOINT DETAIL FOR STAGED CONSTRUCTION

NOTE: THIS DETAIL IS FOR CONSTRUCTION JOINTS PERPENDICULAR TO THE C<sub>E</sub> OF THE BOX ONLY



### NOTES

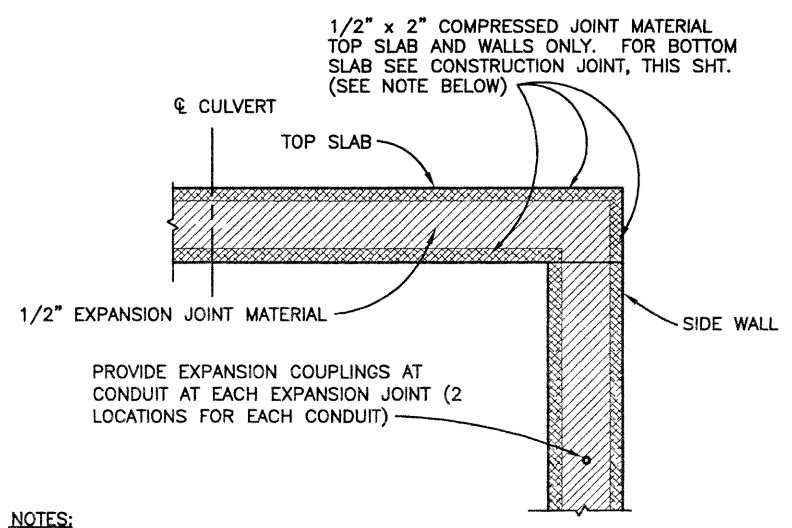
PROVIDE TWO 4 INCH PERFORATED PIPE UNDERDRAINS CONSISTING OF 4"Ø SCH. 40 PERFORATED PLASTIC DRAIN PIPE BENEATH FULL LENGTH OF CULVERT. AT NORTH END OF CULVERT ONLY, TIE THE TWO 4 INCH PERFORATED PIPE UNDERDRAINS AND THE 6"Ø PERFORATED PIPE WINGWALL UNDERDRAINS INTO A SINGLE 6"Ø SCH. 40 NON-PERFORATED PIPE (SUBSURFACE DRAIN OUTLET). ALL PIPES SHALL MAINTAIN A MINIMUM SLOPE OF 1%. REFER TO SHT. C2 FOR INVERT ELEV.

PROVIDE A MIN. OF 6" OF FILTER MATERIAL (CLASS B) ON SIDES AND ABOVE EACH PERFORATED DRAIN PIPE. SURROUND THE GRAVEL AND DRAINPIPES WITH CLASS B GEOTEXTILE FABRIC FOR FULL LENGTH OF PERFORATED DRAINS. PROTECT ENDS OF DRAINS FROM WATER INTRUSION AS REQ'D DURING CONSTRUCTION PHASES.

DAYLIGHT THE 6"Ø SUBSURFACE DRAIN OUTLET AS SPECIFIED ON SHT C2 AND PROVIDE A GALVANIZED 12 GAGE MINIMUM WIRE MESH, 3/4" X 3/4" OPENINGS, OVER PIPE END. PROVIDE A 2'-0" X 2'-0" EROSION CONTROL PAD CONSISTING OF 9" GROUTED RIPRAP AT DAYLIGHT LOCATION.

EXCAVATION, FILTER MATERIAL, GEOTEXTILE, PIPE END CAP, 6"Ø SUBSURFACE DRAIN OUTLET, AND OUTLET PIPE END TREATMENT FOR THE UNDERDRAIN INSTALLATION SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 605 4" PERFORATED PIPE UNDERDRAIN.

### UNDERDRAIN DETAIL



### NOTES:

COMPRESSED JOINT MATERIAL SHALL BE PRE-COMPRESSED, CHEMICALLY RESISTANT, OPEN CELL POLYURETHANE FOAM SEALANT, IMPREGNATED WITH A WATER-REPELLANT MATERIAL, WITH ADHESIVE BACKING ON BOTH SIDES. THE JOINT MATERIAL SHALL BE EPOXIED IN PLACE, AND ALL SPLICES SEALED, AS RECOMMENDED BY THE SUPPLIER OF THE COMPRESSED JOINT MATERIAL.

THE COST FOR THE COMPRESSED JOINT MATERIAL AND EXPANSION JOINT MATERIAL SHALL BE INCLUDED IN THE COST OF ITEM 601 CONCRETE CLASS D.

1/2" EXPANSION JOINT MATERIAL SHALL MEET A.A.S.H.T.O. SPEC. M-213.

TWO ACCEPTABLE COMPRESSED JOINT MATERIAL ALTERNATES INCLUDE:

1. WILL-SEAL
2. SEAL-MATE #517

### EXPANSION JOINT MATERIAL DETAIL

#### FOR INFORMATION ONLY

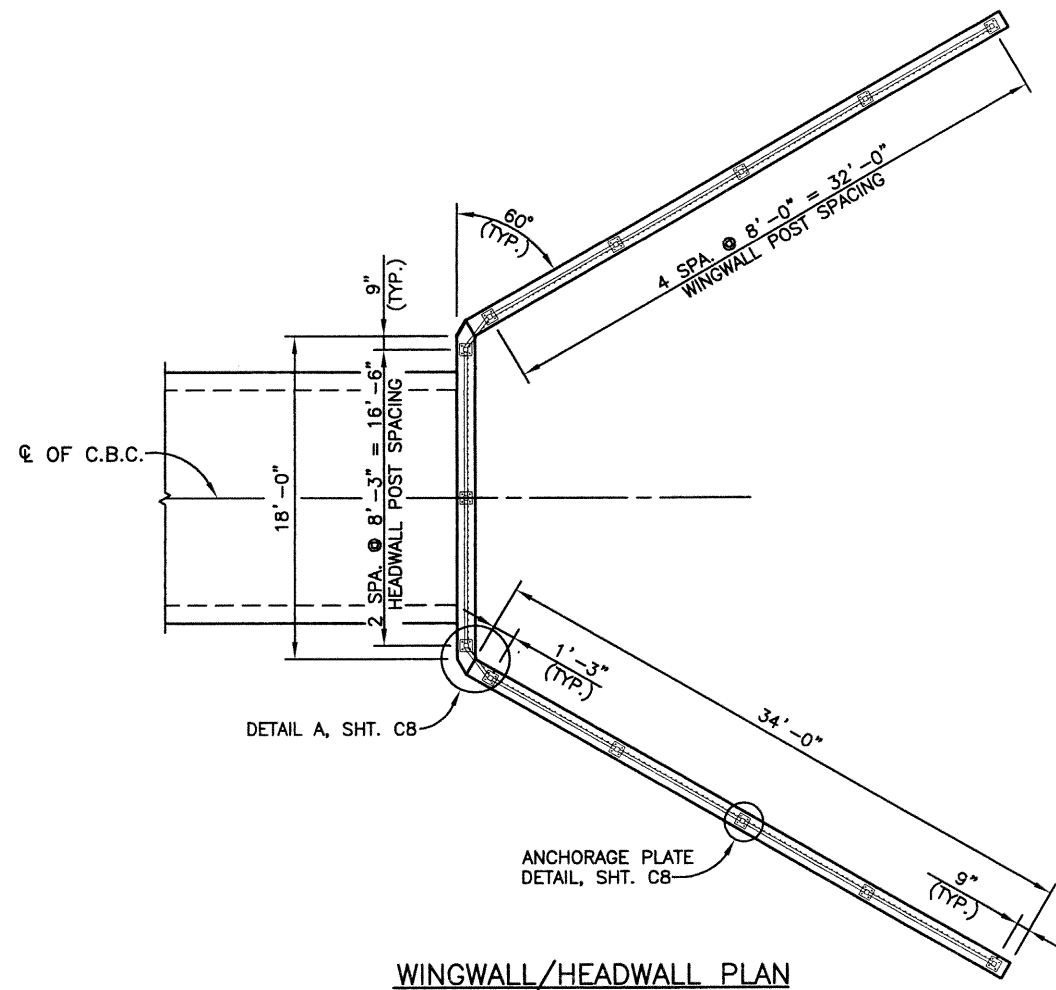
DESCRIPTION	UNITS	C.B.C.
4"Ø PERFORATED PIPE UNDERDRAIN	FT	480
6"Ø SUBSURFACE DRAIN OUTLET	FT	30



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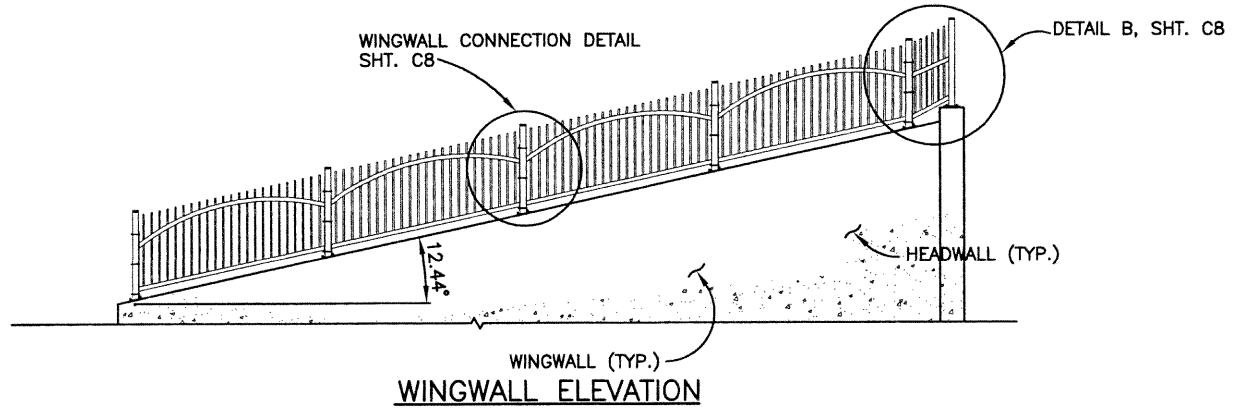
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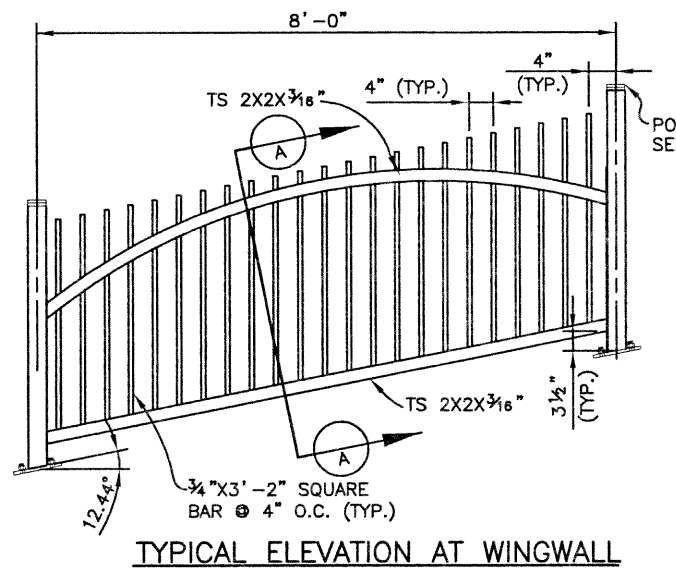


WINGWALL/HEADWALL PLAN

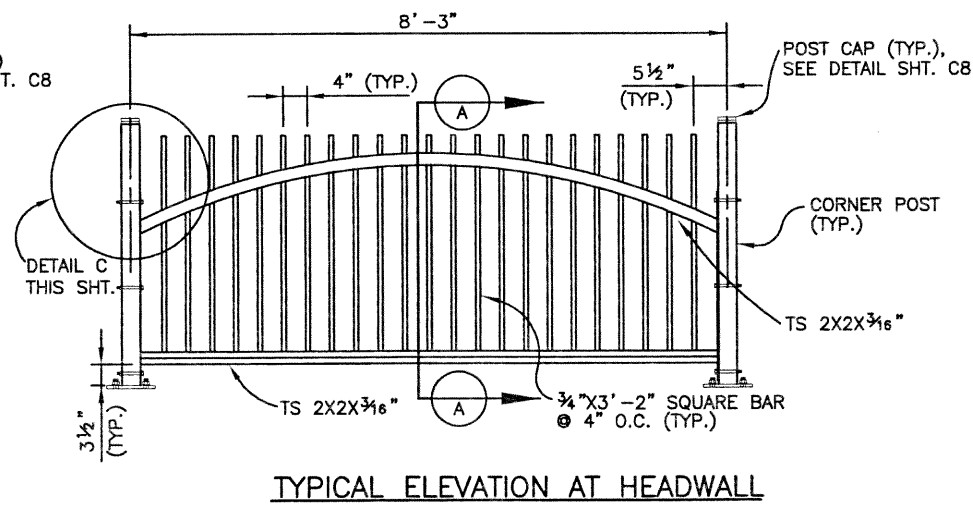
**NOTES:**  
 ALL TUBES SHALL BE ASTM A-500 GRADE B. ALL OTHER STEEL SHALL BE ASTM A-36.  
 ALL BOLTS THAT HAVE LOCK WASHERS SHALL BE TIGHTENED TO SNUG ONLY.  
 PAYMENT WILL BE MADE UNDER ITEM 514 PEDESTRIAN RAILING.  
 STRUCTURAL STEEL:  
 AASHTO M-183 (ASTM A-36) Fy = 36,000 psi  
 COLD FORMED ASTM A-500 GRADE B Fy = 46,000 psi  
 FIELD VERIFY MEASUREMENTS BEFORE FABRICATION.  
 THE PEDESTRIAN RAILING SHALL BE SHOP PAINTED IN ACCORDANCE WITH SECTION 509.  
 THE COLOR SHALL BE APPROVED BY THE ENGINEER.



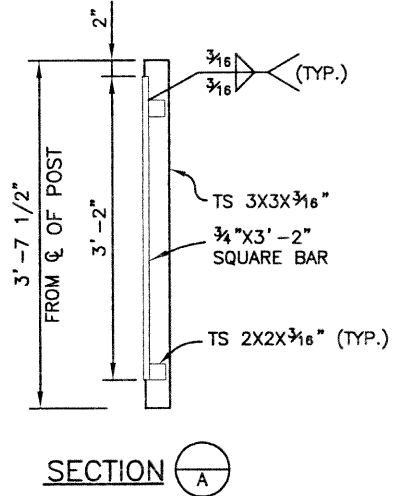
WINGWALL ELEVATION



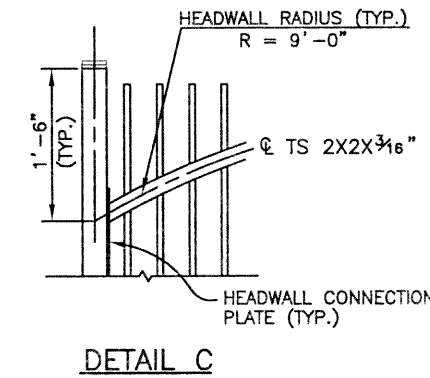
TYPICAL ELEVATION AT WINGWALL



TYPICAL ELEVATION AT HEADWALL



SECTION A



DETAIL C

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Last Modification Date:	10/28/02	Initials:	PRH
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Acad Ver.	2000i	Scale:	VARIABLES Units: ENGLISH

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**FELSBURG HOLT & ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

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 Englewood, CO 80111

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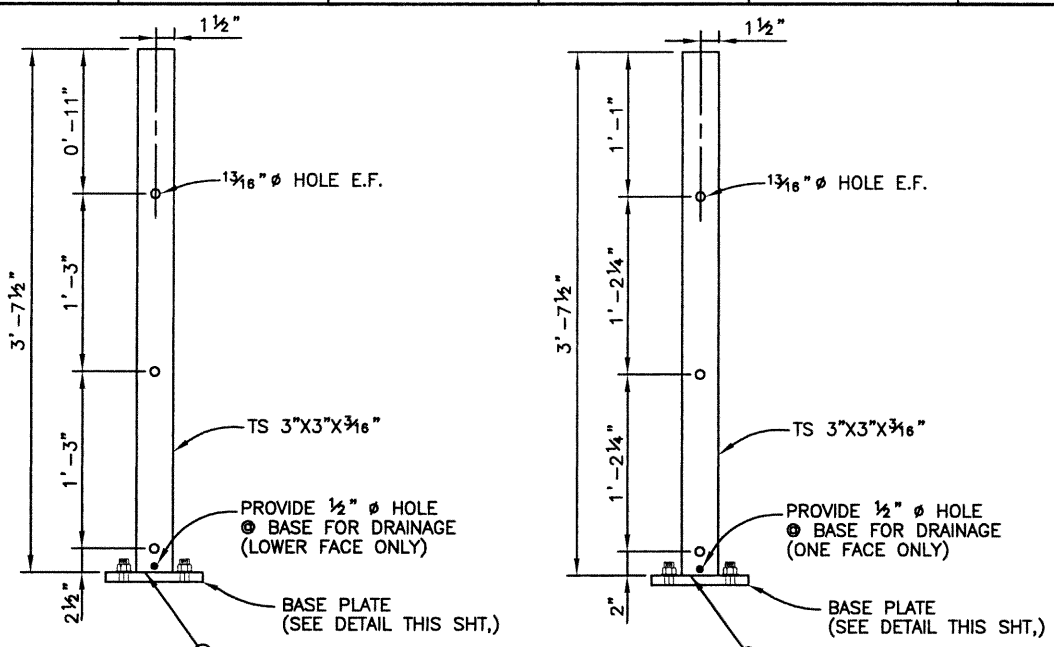
136TH AT I-25 INTERCHANGE THORNTON PEDESTRIAN UNDERPASS PEDESTRIAN RAILING (1 OF 2)			
Designer:	K. KERBER	Structure	
Detailer:	K. KERBER	Numbers	
Sheet Subset:	BOX	Subset Sheets:	C8 of 9

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	97-71
	Sheet Number 150



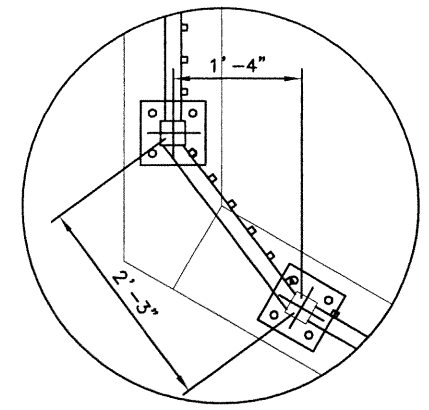
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DATE			DATE		
INITIALS			INITIALS		
DESIGNED BY			DESIGNED BY		
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DATE			DATE		
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DATE			DATE		
INITIALS			INITIALS		



**WINGWALL POST DETAIL**  
DIMENSIONS AT  $\phi$  OF POST

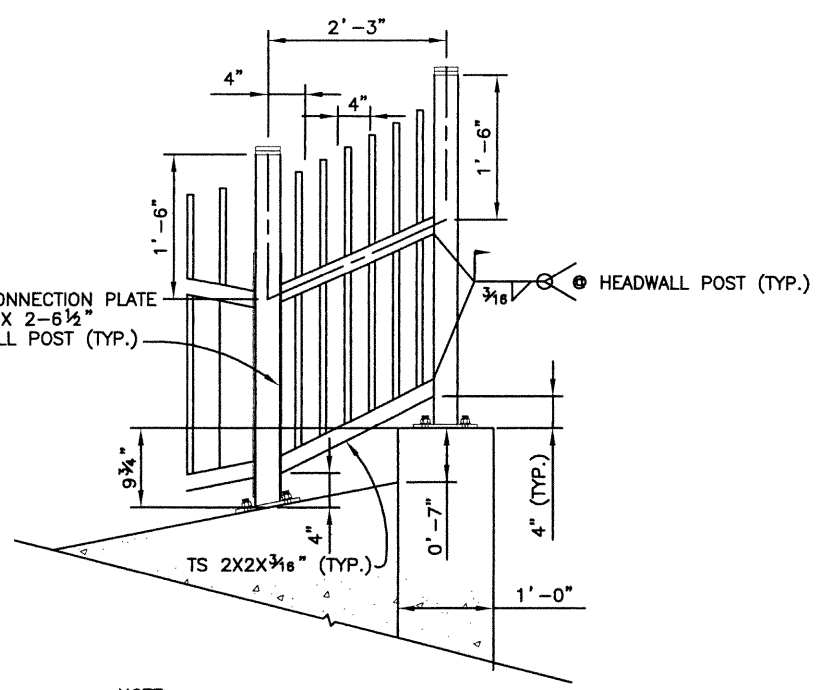
**HEADWALL POST DETAIL**  
DIMENSIONS AT  $\phi$  OF POST



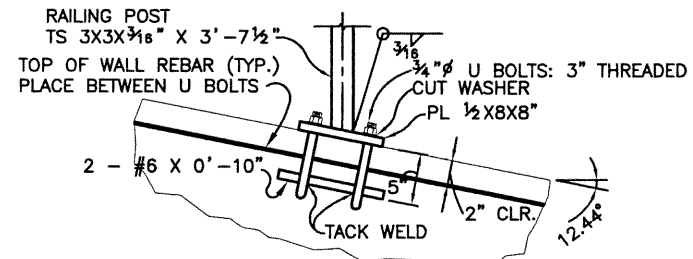
**DETAIL A**

**NOTES**

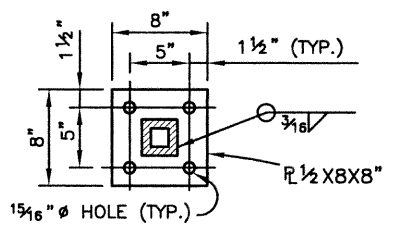
ANCHORAGE ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.  
ANCHORAGE ASSEMBLY WILL NOT BE PAID FOR SEPERATELY, BUT THE COST SHALL BE INCLUDED IN ITEM 607 PEDESTRIAN RAILING



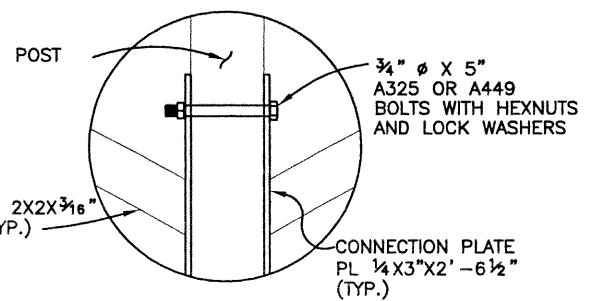
**DETAIL B**



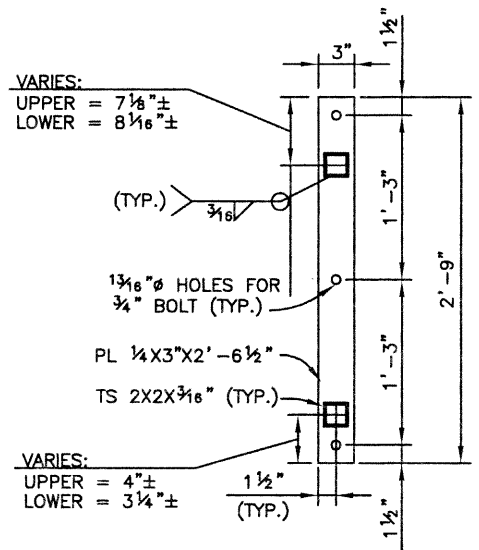
**ANCHORAGE ELEVATION DETAIL**



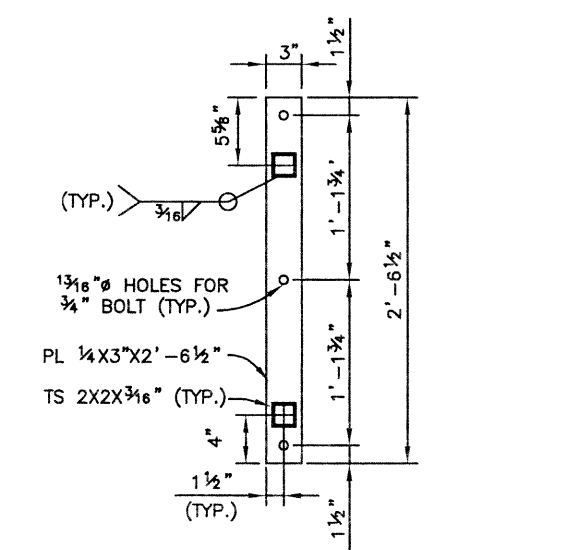
**BASE PLATE DETAIL**



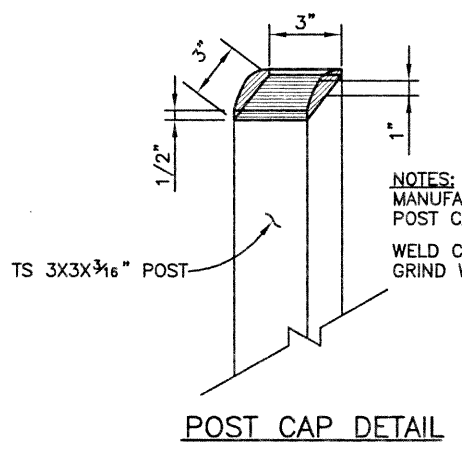
**DETAIL D (TYP.)**



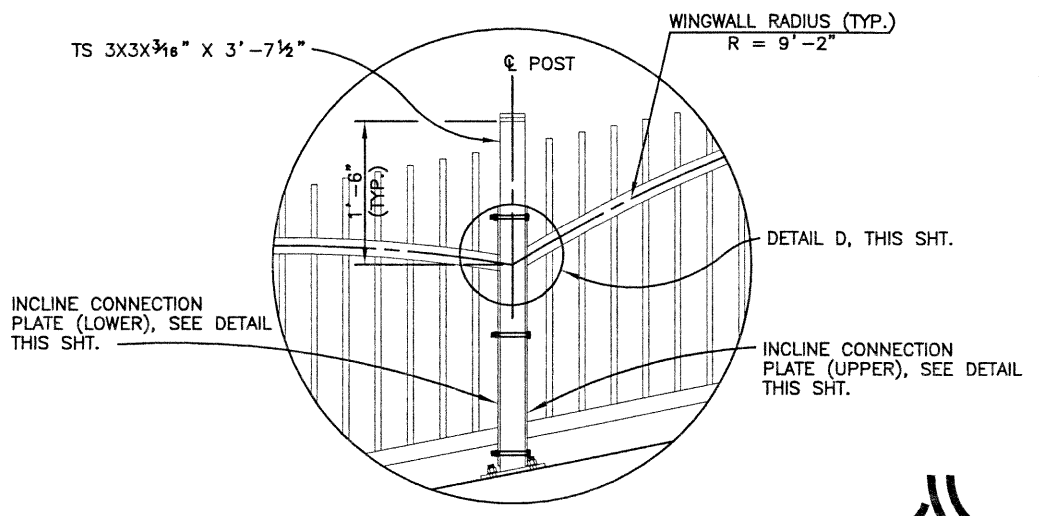
**INCLINE CONNECTION PLATE DETAIL**



**HEADWALL CONNECTION PLATE DETAIL**



**POST CAP DETAIL**



**WINGWALL POST CONNECTION DETAIL**

<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 thu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	136TH AT I-25 INTERCHANGE THORNTON PEDESTRIAN UNDERPASS PEDESTRIAN RAILING (2 OF 2)		Project No./Code
Creation Date:	03/15/02 Initials: KRK				No Revisions:			97-71
Last Modification Date:	10/28/02 Initials: PRH				Revised:	Designer: K. KERBER	Structure Numbers	
Full Path:	J:\00033\Acad\Sheet\				Void:	Detailer: K. KERBER		
Drawing File Name:	C00033MSC12.DWG					Sheet Subset: BOX	Subset Sheets: C9 of 9	Sheet Number 151
Acad Ver. 2000i	Scale: VARIES Units: ENGLISH							

**GENERAL NOTES**

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) 1999 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, APPLICABLE TO THE PROJECT.

A COLORED STRUCTURAL CONCRETE COATING WILL BE REQUIRED ON EXPOSED SURFACES TO 1'-0" BELOW FINISHED GRADE, AS SHOWN ON THE PLANS. THE COLORS SHALL BE EQUIVALENT TO FEDERAL STANDARD 595B COLOR NO. 30450 (MEDIUM BEIGE).

STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH CDOT STANDARD PLANS, M & S STANDARDS, OCTOBER 2000, M-206-1, UNLESS OTHERWISE NOTED ON PLANS.

STRUCTURE BACKFILL FOR RETAINING WALLS SHALL COMPLY WITH CDOT STRUCTURE BACKFILL (CLASS 1).

THE CONTRACTOR SHALL NOT BACKFILL STRUCTURES UNTIL THE WALLS HAVE REACHED DESIGN STRENGTH,  $f'_c = 4500$  psi.

THE BACKFILL SHALL BE PLACED EQUALLY EACH SIDE OF RETAINING WALLS UNTIL THE FRONT FACE FINISHED GRADE HAS BEEN REACHED.

DOVETAIL ANCHOR SLOTS EMBEDDED IN CONCRETE WALLS FOR STONE VENEER WILL NOT BE PAID FOR SEPARATELY, BUT THE COST SHALL BE INCLUDED IN THE WORK.

FOR STONE VENEER REQUIREMENTS, SEE PROJECT SPECIFICATIONS.

THE SOILS AND FOUNDATION INVESTIGATION FOR THE RETAINING WALLS WAS PERFORMED BY GROUND ENGINEERING CONSULTANTS, INC. THE SUBSURFACE CONDITIONS AND RECOMMENDATIONS ARE CONTAINED IN A REPORT DATED JULY 16, 2001, JOB NO. 00-0104. COPIES OF THIS REPORT WILL BE MADE AVAILABLE FOR THE CONTRACTOR'S REVIEW AND INFORMATION.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

ALL STRUCTURAL CONCRETE SHALL BE CDOT CLASS D.

ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED.

CONSTRUCTION JOINTS AT LOCATIONS OTHER THAN THAT AS SHOWN ON THE PLANS SHALL BE APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED  $\frac{3}{4}$ ", UNLESS SHOWN OR OTHERWISE NOTED.

GRADE 60 REINFORCING STEEL IS REQUIRED.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK (NON-COATED) REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10
SPLICE LENGTH FOR CLASS D CONCRETE	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"

ALL REINFORCEMENT SHALL HAVE A CLEAR COVERAGE OF 2", EXCEPT AS SHOWN ON THE PLANS. CLEAR COVERAGE SHALL BE MEASURED FROM THE SURFACE OF THE CONCRETE TO THE OUTSIDE OF THE REINFORCEMENT.

THE STOCK LENGTH USED FOR ALL REINFORCING IS 60 FEET.

CROSS REFERENCE DRAWING NUMBER  
(IF BLANK, REFERENCE IS TO SAME SHEET)

SECTION OR DETAIL IDENTIFICATION



THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

**ABBREVIATIONS:**

- E.F. = EACH FACE
- N.F. = NEAR FACE
- C.J. = CONSTRUCTION JOINT
- F.F. = FAR FACE
- T.O.F. = TOP OF FOOTING
- T.O.W. = TOP OF WALL

**DESIGN DATA**

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 16th EDITION WITH 1997, 1998, 1999, AND 2000 INTERIMS

**DESIGN METHOD:**

LOAD FACTOR DESIGN

**DESIGN LOADING:**

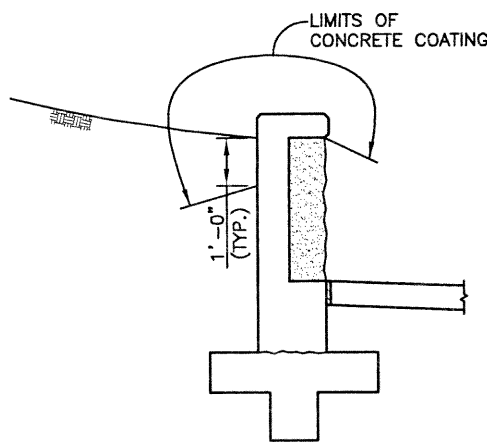
- LIVE LOAD SURCHARGE = 2 ft of Earth
- UNIT SOIL WEIGHT = 125 pcf
- EQUIVALENT FLUID UNIT WEIGHT = 35 pcf
- ANGLE OF INTERNAL FRICTION ( $\phi$ ) = 34°

ALLOWABLE BEARING PRESSURE = 2000 psf

COEFFICIENT OF FRICTION FOR SLIDING = 0.35

**REINFORCED CONCRETE:**

- CLASS D CONCRETE:  $f'_c = 4,500$  psi
- REINFORCING STEEL:  $f_y = 60,000$  psi



CONCRETE COATING DIAGRAM

**INDEX OF DRAWINGS**

- W1 GENERAL INFORMATION
- W2 GENERAL LAYOUT
- W3 RETAINING WALL DETAILS

**RETAINING WALL DESCRIPTION**

**136TH AVENUE RETAINING WALL**  
SOUTH SIDE OF 136TH AVENUE WEST OF WASHINGTON STREET, CAST-IN-PLACE CONCRETE RETAINING WALL  
LENGTH=200'-0", HEIGHT VARIES FROM 3'-0" TO 5'-0"

**SUMMARY OF APPROXIMATE QUANTITIES**

ITEM NO.	DESCRIPTION	UNIT	TOTAL
206	STRUCTURE EXCAVATION	CY	197
206	STRUCTURE BACKFILL (CLASS 1)	CY	107
519	NATIVE STONE VENEER (8 INCH)	SF	344
601	CONCRETE CLASS D (WALL)	CY	65
601	STRUCTURAL CONCRETE COATING	SY	86
602	REINFORCING STEEL	LB	4220
605	4 INCH PERFORATED PIPE UNDERDRAIN	LF	194
605	SUBSURFACE DRAIN OUTLET	LF	8

DESIGN	Checked by	Date	DETAIL		QUANTITIES		Checked by	Date	Revision Dates	(Preliminary Stage Only)
			Initial	Final	Initial	Final				

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Acad Ver.	2000i	Scale:	VARIABLES
		Units:	ENGLISH

**Index of Revisions**

No.	Description	By	Date



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	
Void:	

**136TH RETAINING WALL  
GENERAL INFORMATION**

Designer:	S. HOWARD	Structure Numbers:	
Detailer:	P. HELM	Subset Sheets:	W1 of 3

**Project No./Code**

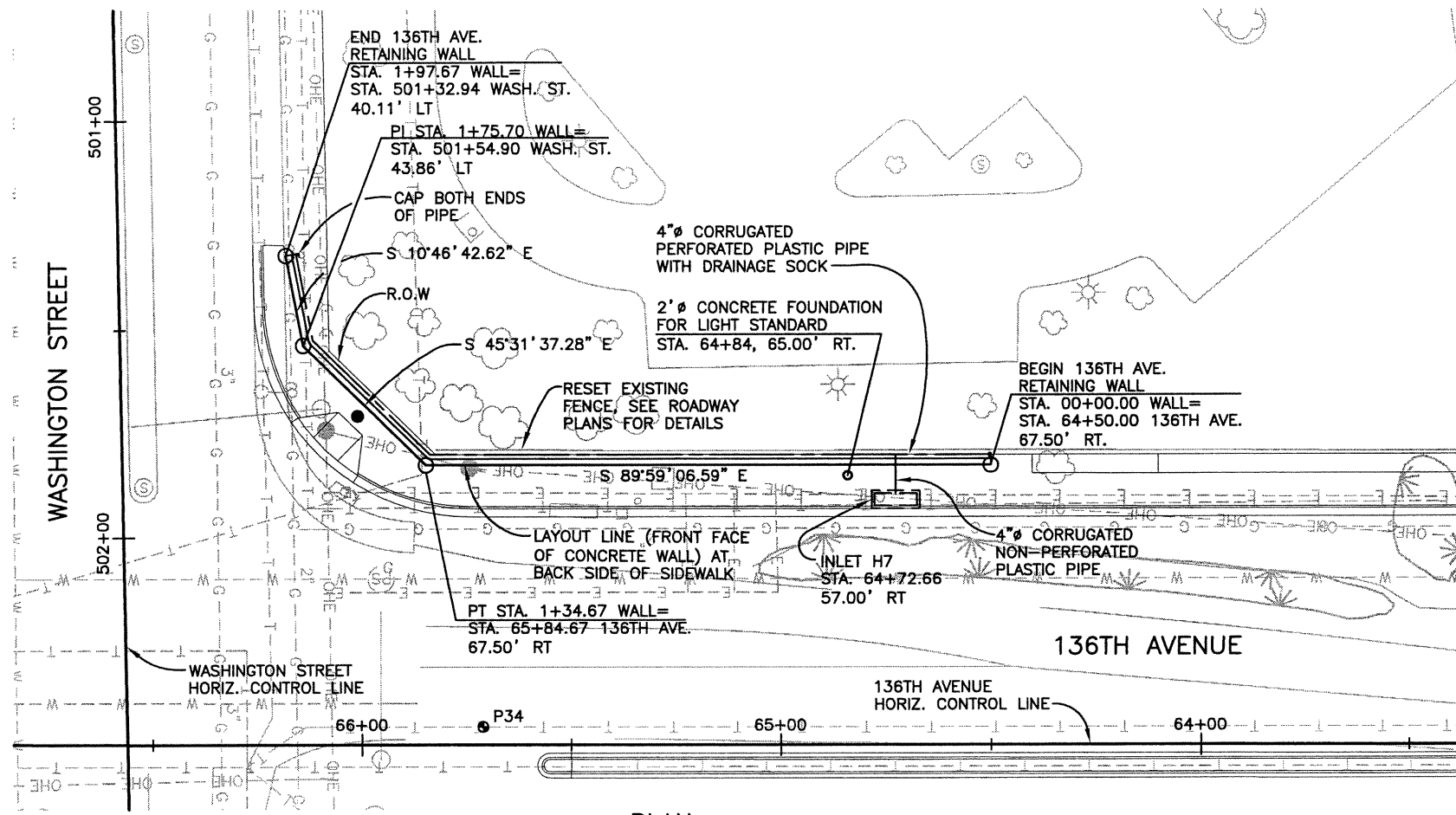
97-71

Sheet Number **152**

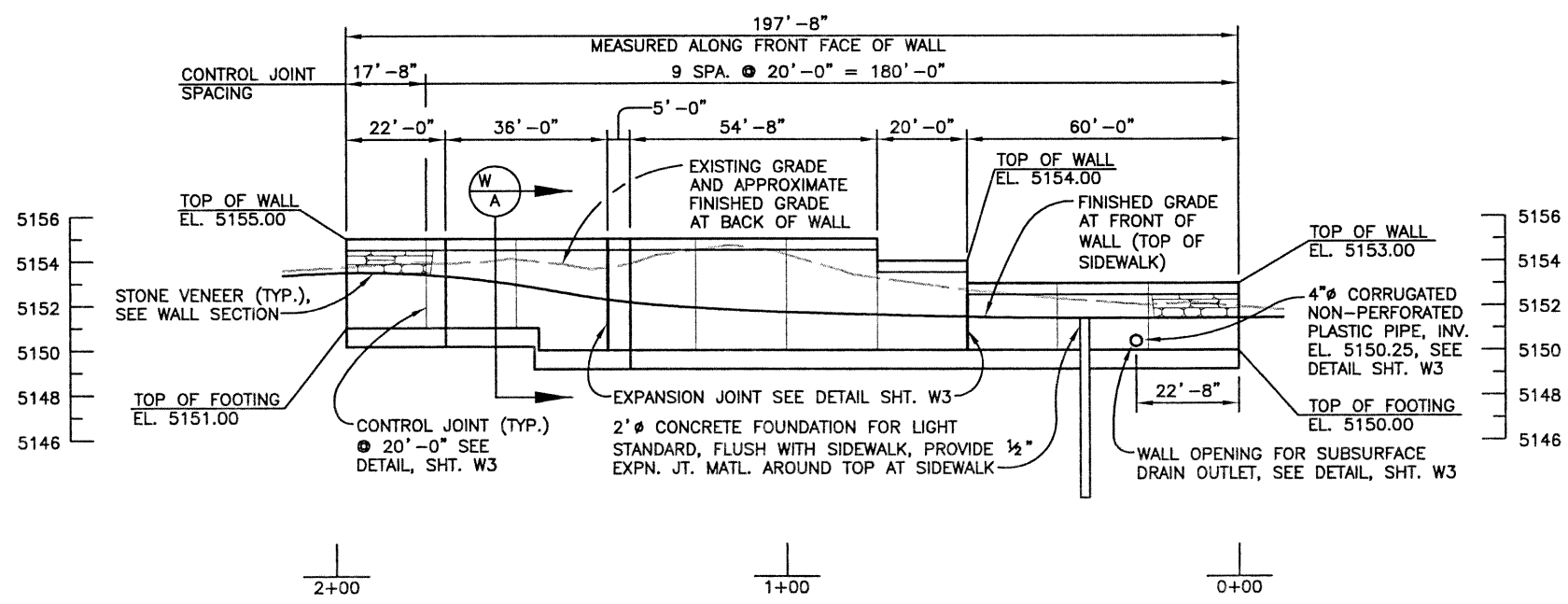


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DESIGN		DETAIL		QUANTITIES	
Designed by	Date	Detailed by	Date	Quantities by	Date
Checked by		Checked by		Checked by	



● DENOTES APPROXIMATE LOCATION OF TEST BORING HOLE.



Computer File Information		Index of Revisions		As Constructed		136TH RETAINING WALL GENERAL LAYOUT		Project No./Code	
Creation Date:	08/23/02 Initials: PRH			No Revisions:				97-71	
Last Modification Date:	12/17/02 Initials: RAD			Revised:		Designer:	S. HOWARD	Structure Numbers:	
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Acad Ver. 2000i	Scale: VARIES Units: ENGLISH								Sheet Number 153

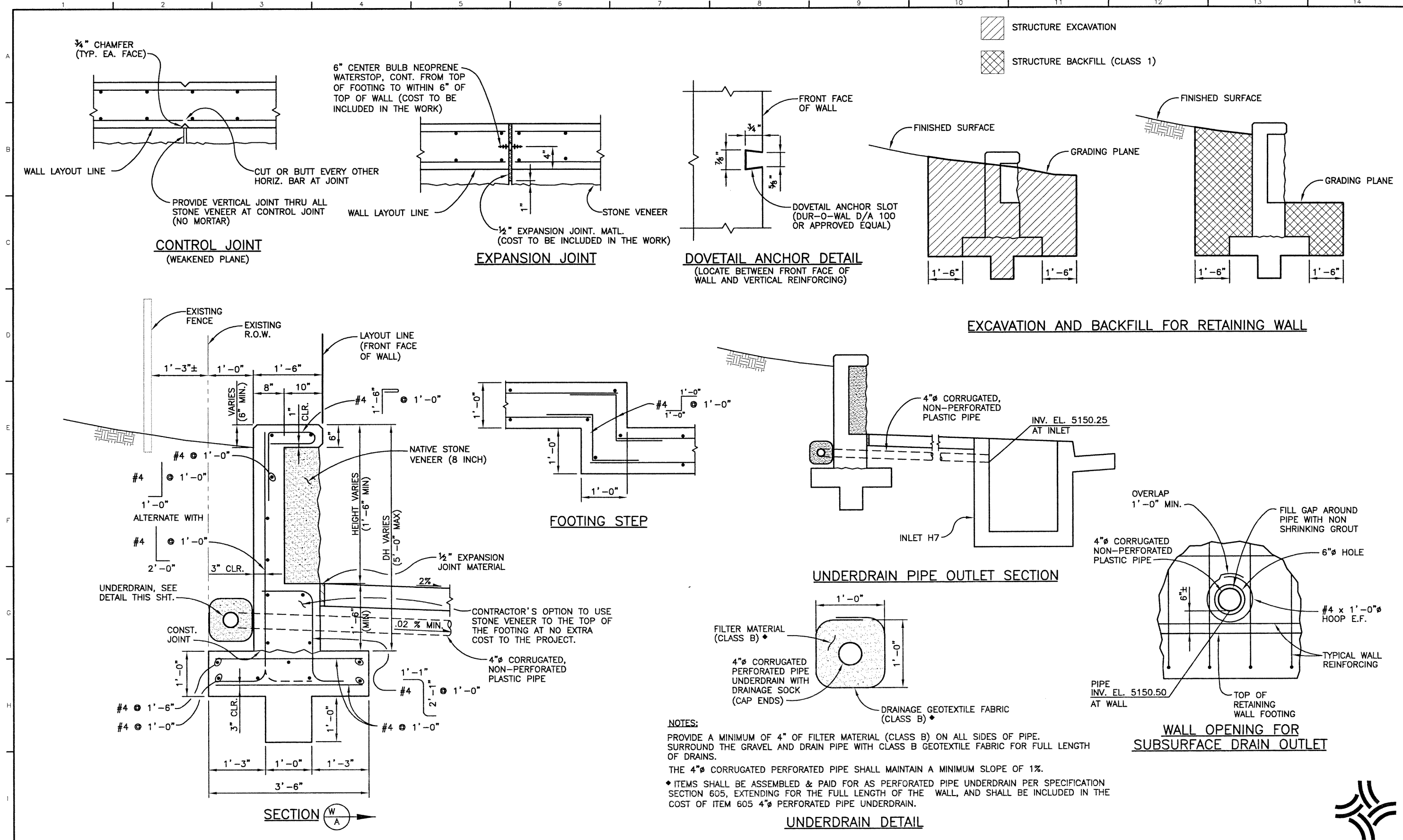


303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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REVISION DATES	(Preliminary Stage Only)			
	Date	Initial	Quantity	Checked by
DESIGN	Date	Initial	Detailed by	Checked by
	Date	Initial	Checked by	Checked by



Computer File Information			
Creation Date:	08/23/02	Initials:	PRH
Last Modification Date:	12/03/02	Initials:	SEH
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Acad Ver.:	2000i	Scale:	VARIES Units: ENGLISH

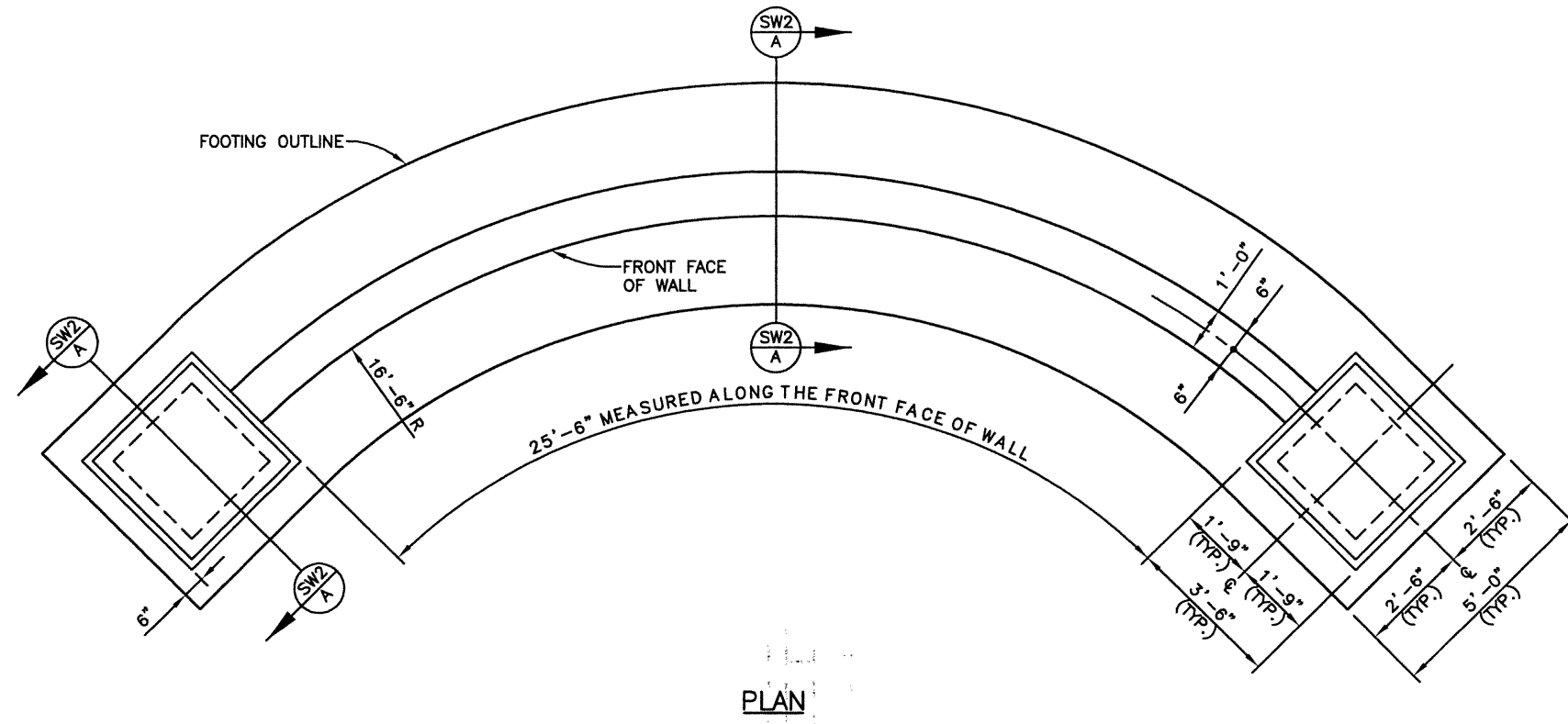
Index of Revisions			

 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed			136TH RETAINING WALL			Project No./Code		
	No Revisions:			RETAINING WALL DETAILS			97-71		
	Revised:			Designer:	S. HOWARD	Structure			
	Void:			Detailer:	P. HELM	Numbers			
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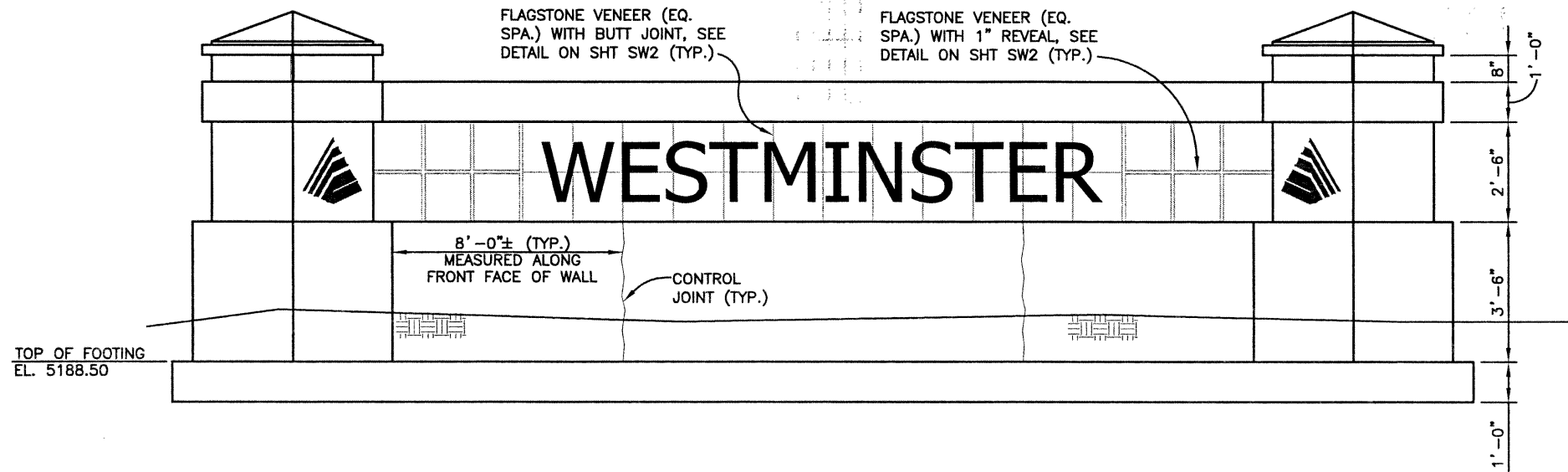
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FOR INFORMATION ONLY  
(PAID FOR AS 505 SIGN WALL (WESTMINSTER))

SUMMARY OF APPROXIMATE QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	TOTAL
206	STRUCTURE EXCAVATION	CY	57
206	STRUCTURE BACKFILL (CLASS 1)	CY	46
504	FLAGSTONE VENEER	SF	66
601	CONCRETE CLASS D (WALL)	CY	16.1
602	REINFORCING STEEL (EPOXY COATED)	LB	6455



PLAN



ELEVATION

NOTES:

1. ALL CONCRETE SHALL BE CLASS D (WALL).
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. THE CONTRACTOR SHALL SUBMIT A 1'-3" x 1'-3" RED FLAGSTONE VENEER TO THE ENGINEER FOR APPROVAL PRIOR TO THE INSTALLATION OF THE RED FLAGSTONE VENEER.
4. LATICRETE 4701 & 4237 SHALL BE APPLIED TO THE WALL PER THE MANUFACTURE RECOMMENDATIONS.

REVISION DATES	
NO.	DATE

DESIGN		DETAIL		QUANTITIES	
Initial	Date	Initial	Date	Initial	Date

Computer File Information	
Creation Date:	10/16/02 Initials: PRH
Last Modification Date:	12/30/02 Initials: DRS
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Drawing File Name:	B00033RWD05.DWG
Acad Ver.	2000i Scale: VARIES Units: ENGLISH

Index of Revisions	

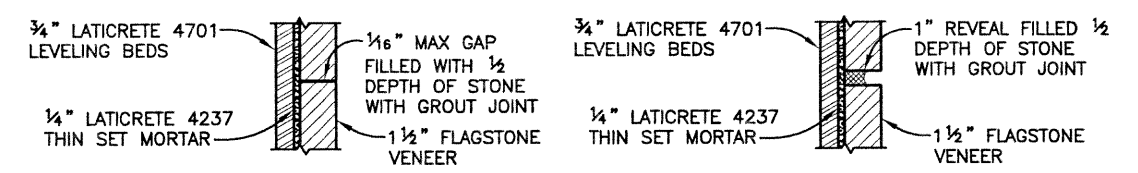
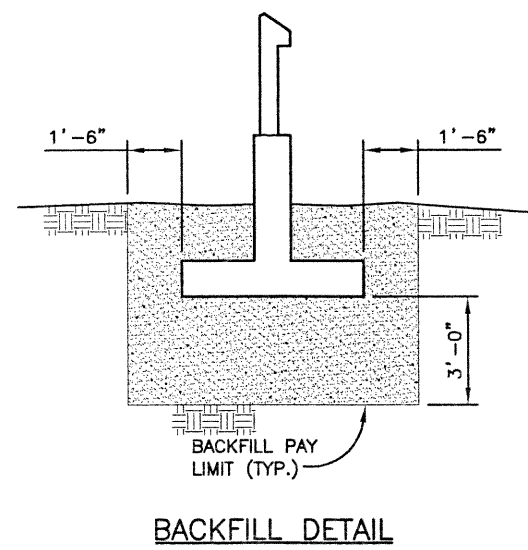
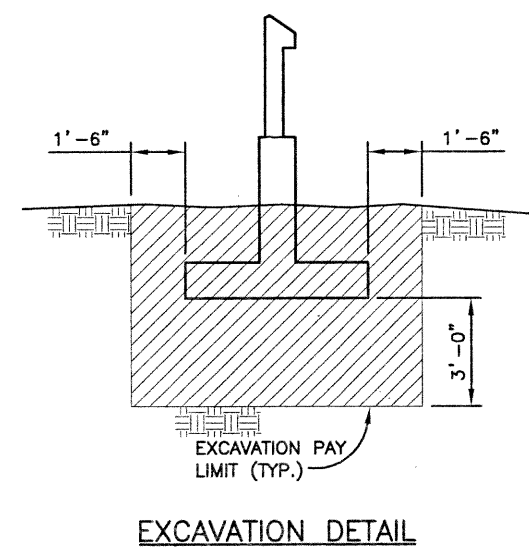
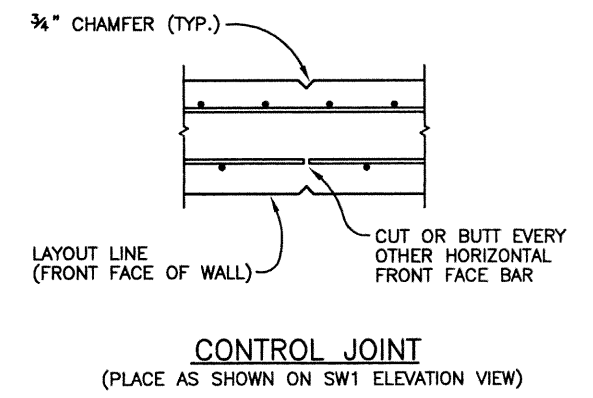
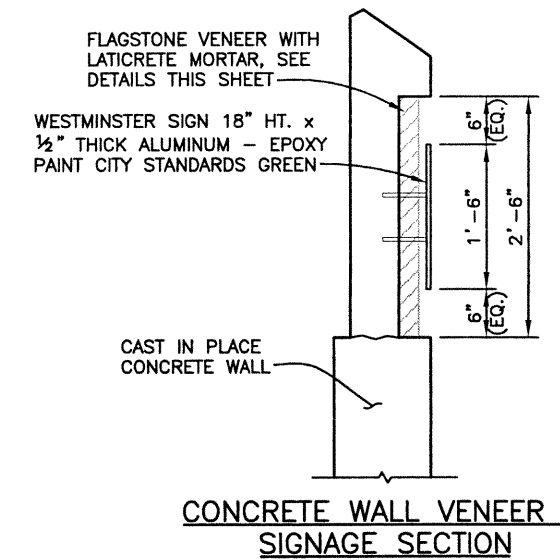
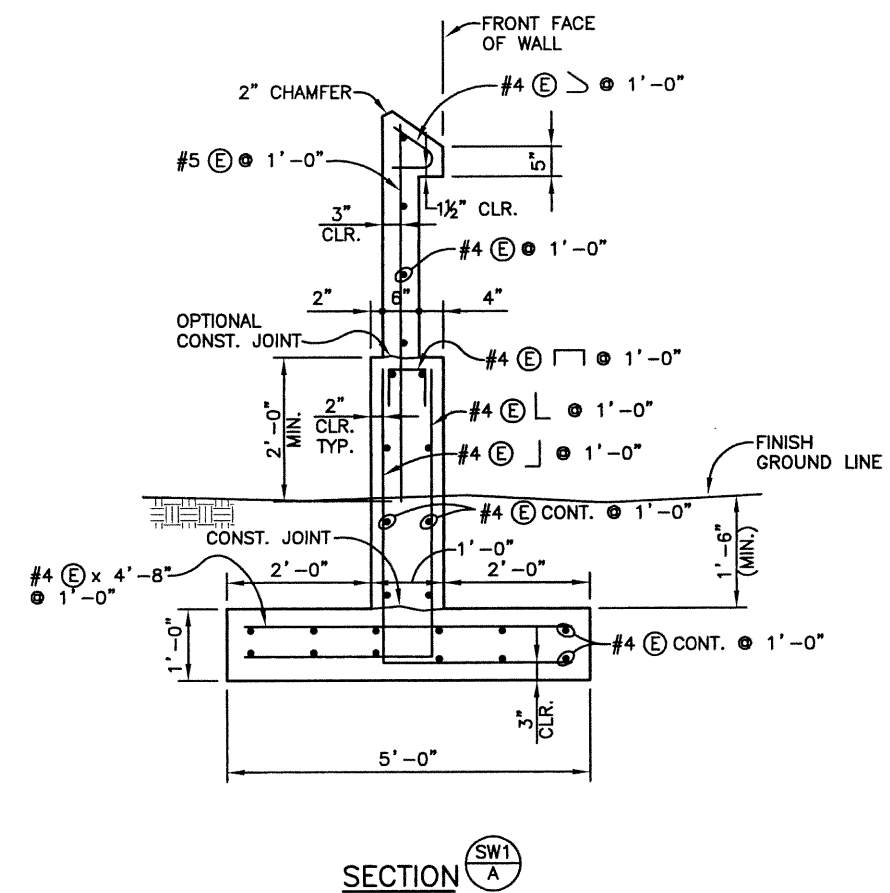
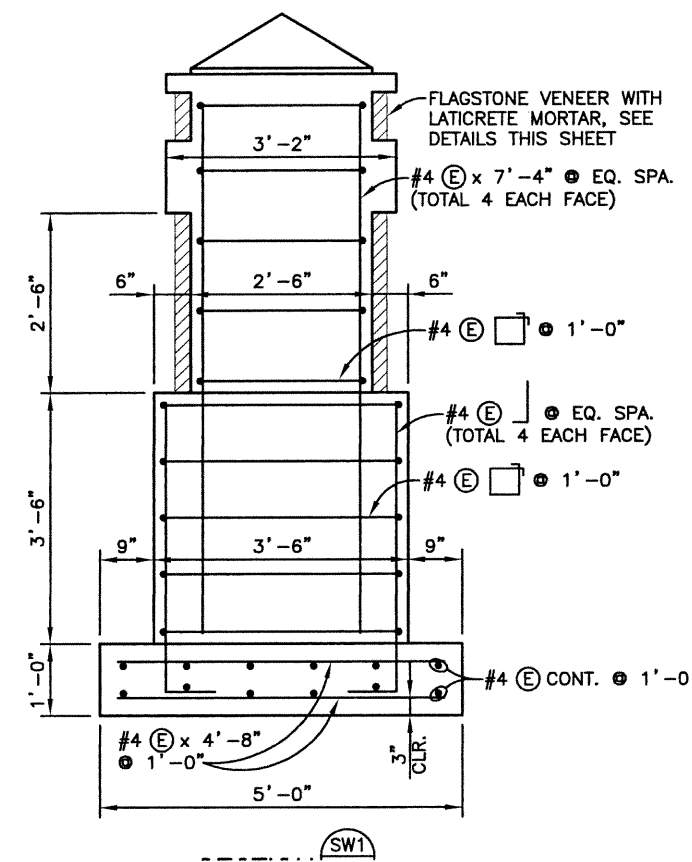


303.721.1440  
fax 303.721.0832  
flu@flueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed		136TH AVENUE SIGN WALL PLAN & ELEVATION (WESTMINSTER)		Project No./Code	
No Revisions:		Designer:	K. ALKANANI	97-71	
Revised:		Detailer:	P. HELM	Structure Numbers	
Void:		Sheet Subset:	SIGN	Subset Sheets:	SW1 of 2
				Sheet Number	155

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XXX	XXX	XXX	XXX	XXX	XXX
Revision	Date	Revision	Date	Revision	Date



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Creation Date:	10/16/02 Initials: PRH
Last Modification Date:	10/24/02 Initials: PRH
Full Path:	J:\00033\Acad\Sheet\136-125 Bridge\
Drawing File Name:	B00033RWD05.DWG
Acad Ver.	2000i Scale: VARIES Units: ENGLISH

Index of Revisions	

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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

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Revised:
Void:

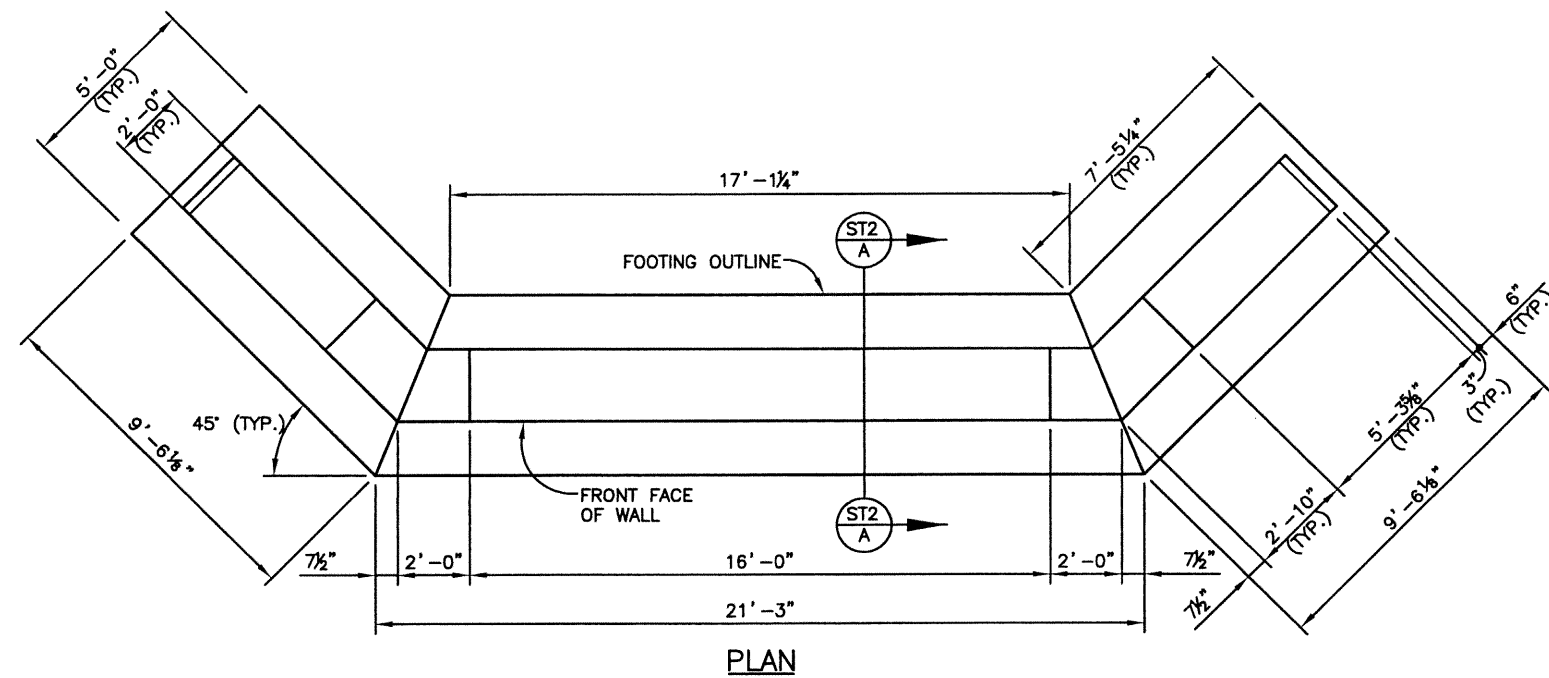
136TH AVENUE SIGN WALL DETAILS (WESTMINSTER)	
Designer:	K. ALKANANI
Detailer:	P. HELM
Sheet Subset:	SIGN
Subset Sheets:	SW2 of 2

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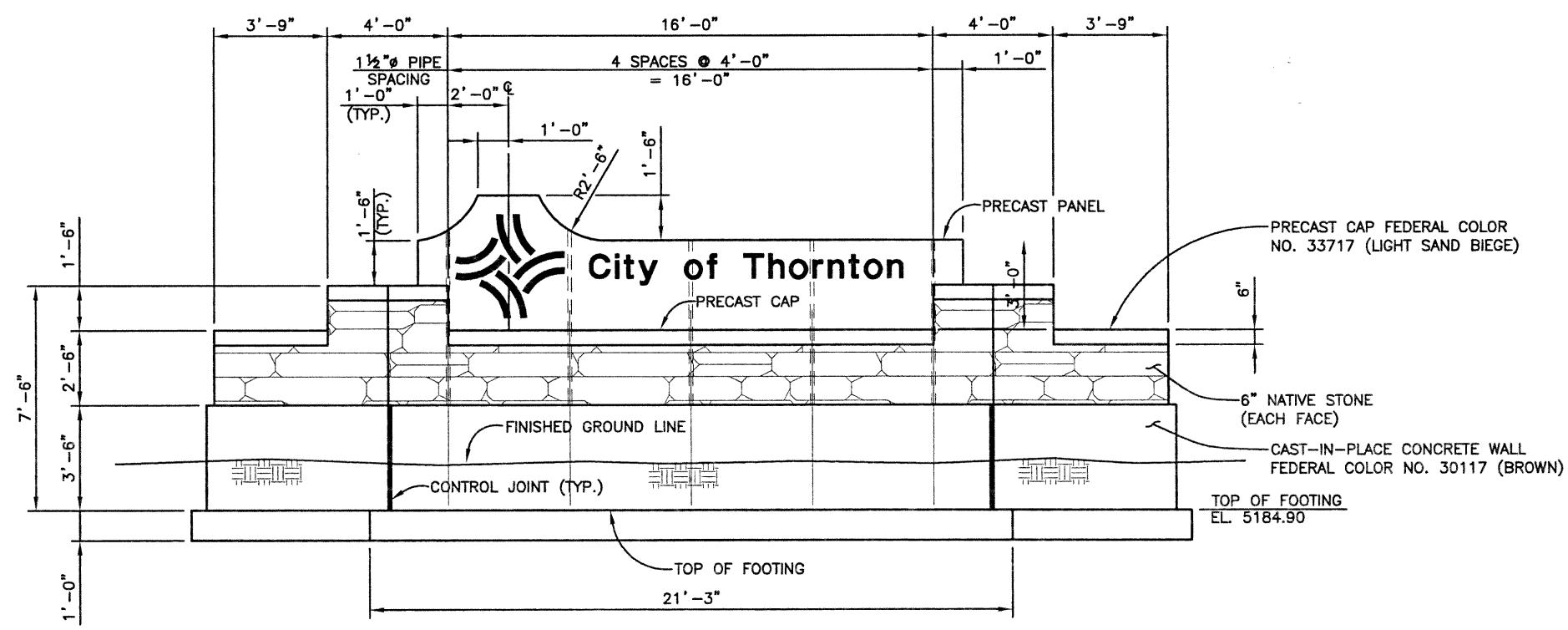


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XXX	XXX	XXX	XXX	XXX	XXX



PLAN



ELEVATION

FOR INFORMATION ONLY  
PAID FOR AS SIGN WALL (THORNTON)

SUMMARY OF APPROXIMATE QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	TOTAL
206	STRUCTURE EXCAVATION (CLASS 1)	CY	60
206	STRUCTURE BACKFILL	CY	49
519	NATIVE STONE (6 INCH)	SF	101
601	STUCTURAL CONCRETE COATING	SY	64
601	CONCRETE CLASS D (WALL)	CY	16.2
602	REINFORCING STEEL (EPOXY COATED)	LB	5840
618	PRECAST PANEL (18'-0"x3'-0")	LF	18

NOTES:

1. ALL CONCRETE SHALL BE CLASS D (WALL).
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. FOR ADDITIONAL INFORMATION, SEE LANDSCAPE PLAN.
4. THE 6" NATIVE STONE COLOR SHALL MATCH BRIDGE CORNER MONUMENT.
5. THE CONTRACTORS RESPONSIBILITY IS TO COORDINATE THE EXACT LOCATION OF THE 1 1/2" GALV. PIPE FOR THE SIGN PANEL AND THE 5/8" BAR WITH PRECASTER PRIOR TO THE FABRICATION. THE COST OF THE 1 1/2" GALV. PIPE SHALL BE INCLUDED IN THE WORK.
6. ALL EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS TWO FINISH.
7. THE PRECAST CONCRETE PANEL SHALL RECEIVE AN ACID ETCHED FINISH (BEIGE).
8. THE PRECAST CAP SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF ITEM 505 SIGN WALL (THORNTON).



Computer File Information		Index of Revisions		As Constructed		136TH AVENUE SIGN WALL PLAN & ELEVATION (THORNTON)		Project No./Code	
Creation Date:	10/04/02 Initials: PRH			No Revisions:				97-71	
Last Modification Date:	12/30/02 Initials: DRS			Revised:		Designer:	K. ALKANANI	Structure	
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Acad Ver. 2000i	Scale: VARIES Units: ENGLISH								Sheet Number 157

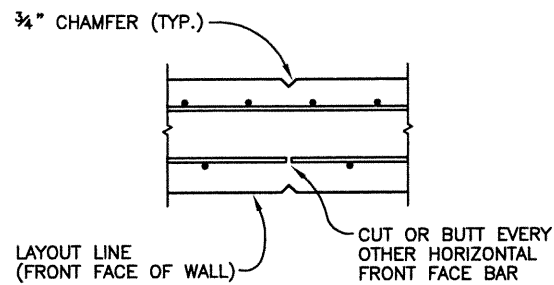


303.721.1440  
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fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
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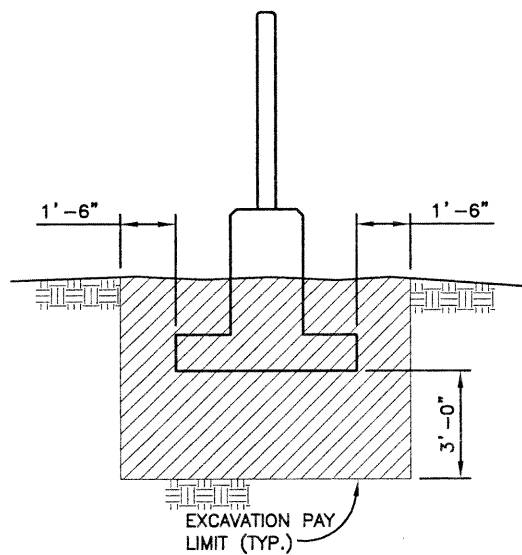
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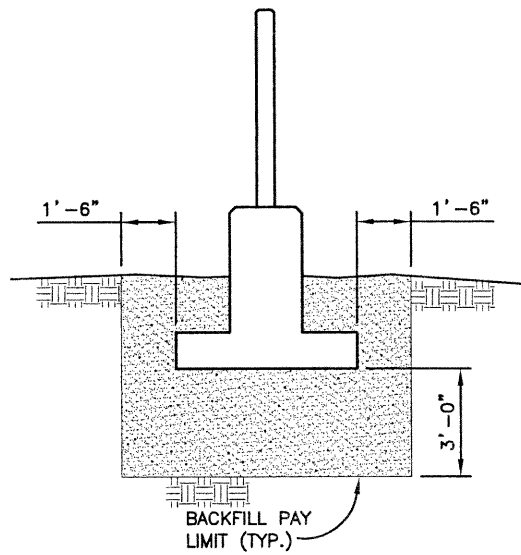
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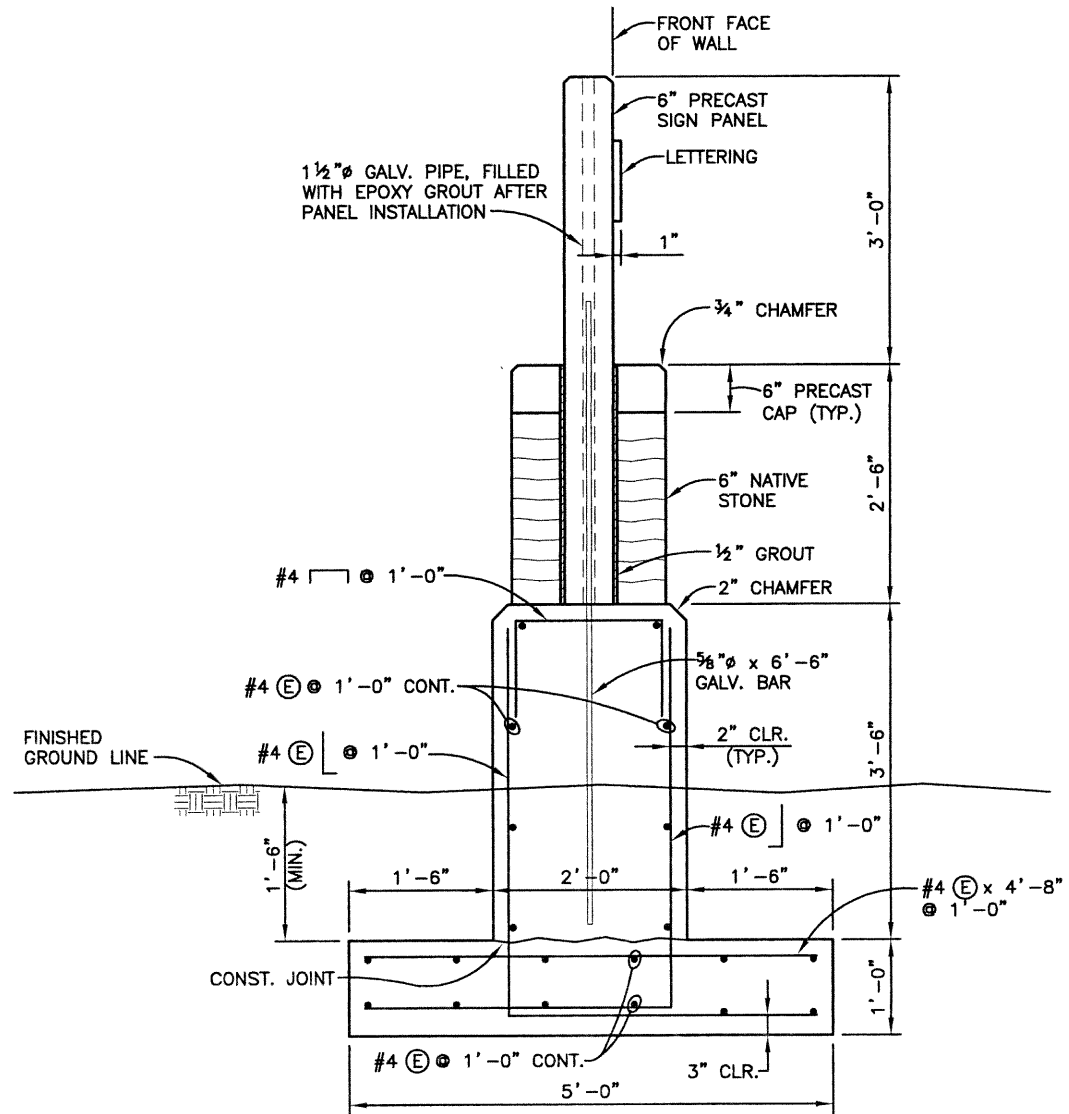
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(@ 20'-0" MAX.)



**EXCAVATION DETAIL**



**BACKFILL DETAIL**



**SECTION ST1 A**

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Acad Ver.	2000i	Scale:	VARIES Units: ENGLISH

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**FELSBURG HOLT & ULLEVIG**

303.721.1440  
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















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No Revisions:
Revised:
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136TH AVENUE SIGN WALL DETAILS (THORNTON)			
Designer:	K. ALKANANI	Structure Numbers	
Detailer:	P. HELM		
Sheet Subset:	SIGN	Subset Sheets:	ST2 of 2

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97-71
Sheet Number <b>158</b>



**LEGEND**


-  TOPSOIL.
-  ASPHALT.
-  BASE COURSE.
-  FILL: SANDY CLAYS, HIGHLY PLASTIC, MOIST, VERY STIFF, AND GRAY IN COLOR.
-  TOPSOIL AND AND CLAY: CLAYEY SANDS TO SANDY CLAYS, FINE TO MEDIUM GRAINED, MOIST TO WET, MODERATELY TO HIGHLY PLASTIC, STIFF TO HARD, AND BROWN IN COLOR. CALICHE WAS OBSERVED LOCALLY.
-  SAND: CLEAN TO SILTY, FINE TO COARSE GRAINED, LOCALLY GRAVELLY, WET, NON-PLASTIC, LOOSE TO MEDIUM DENSE, AND BROWN IN COLOR.
-  SAND AND GRAVEL: FINE TO COARSE GRAINED, WET, NON-PLASTIC, MEDIUM DENSE, AND BROWN IN COLOR.
-  WEATHERED CLAYSTONE: SANDY, MOIST, MODERATELY TO HIGHLY PLASTIC, VERY STIFF, AND BROWN IN COLOR.
-  CLAYSTONE BEDROCK: SANDY, MOIST, HIGHLY PLASTIC, HARD TO VERY HARD, AND GRAY IN COLOR. THIN LAMINAE OF LIGNITE WERE OBSERVED LOCALLY WITHIN THE CLAYSTONES.
-  SANDSTONE BEDROCK: FINE TO COARSE GRAINED, WET, NON-PLASTIC, HARD TO VERY HARD, AND BROWN TO GRAY IN COLOR.
-  INTERBEDDED CLAYSTONES AND SANDSTONE BEDROCK.
-  DRIVE SAMPLE, 2-INCH I.D. CALIFORNIA LINER SAMPLE.
-  23/12 DRIVE SAMPLE BLOW COUNT, INDICATES 23 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE TO DRIVE THE SAMPER 12 INCHES.
-   $\frac{0}{11}$  DEPTH TO WATER LEVEL AND NUMBER OF DAYS AFTER DRILLING THAT MEASUREMENT WAS TAKEN.
-   CAVED HOLE.

**NOTES**

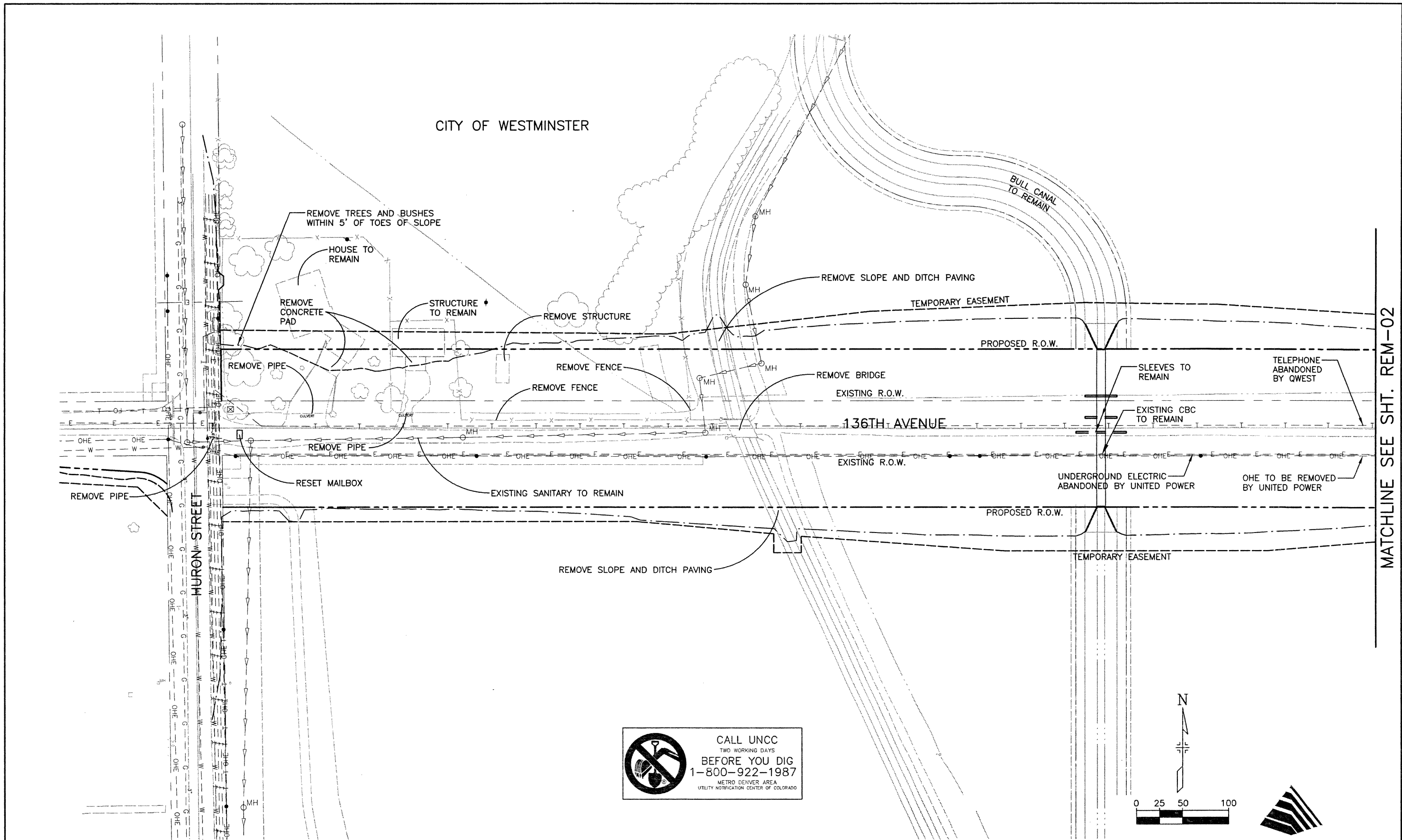
1. TEST HOLES WERE DRILLED ON 03/19/01 AND 03/21/01 WITH 4-INCH DIAMETER CONTINUOUS FLIGHT POWER AUGERS.
2. LOCATIONS OF THE TEST HOLES WERE MEASURED APPROXIMATELY BY PACING FROM FEATURES SHOWN ON THE SITE PLAN PROVIDED.
3. ELEVATIONS OF THE TEST HOLES WERE NOT MEASURED AND THE LOGS OF THE TEST HOLES ARE DRAWN TO DEPTH.
4. THE TEST HOLE LOCATIONS AND ELEVATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
5. THE LINES BETWEEN MATERIALS SHOWN ON THE TEST HOLE LOGS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES AND THE TRANSITIONS MAY BE GRADUAL.
6. GROUNDWATER LEVEL READINGS SHOWN ON THE LOGS WERE MADE AT THE TIME AND UNDER THE CONDITIONS INDICATED. FLUCTUATIONS IN THE WATER LEVEL MAY OCCUR WITH TIME.
7. THE TEST HOLE LOCATIONS ARE SHOWN ON THE PLAN SHEETS.
8. SOIL BORING LOGS ARE SHOWN ON THE APPROPRIATE PROFILE SHEETS.



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<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE SOIL BORING LOGS</b>		<b>Project No./Code</b>	
Creation Date:	01/25/02 Initials: DRS				No Revisions:			97-71	
Last Modification Date:	10/22/02 Initials: PRH				Revised:	Designer:	BHR		
Full Path:	J:\00033\Acad\Sheet\				Void:	Detailer:	DRS		
Drawing File Name:	M00033SBL05.DWG				Sheet Subset:		Subset Sheets:	SB-1 of 1	Sheet Number <b>159</b>
Acad Ver. 2000i	Scale: Units: English								

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Creation Date:	03/27/02 Initials: DRS
Last Modification Date:	12/19/02 Initials: PRH
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Drawing File Name:	R00033REM04.dwg
Acad Ver.	2000i Scale: 1"=100' Units: English

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As Constructed
No Revisions:
Revised:
Void:

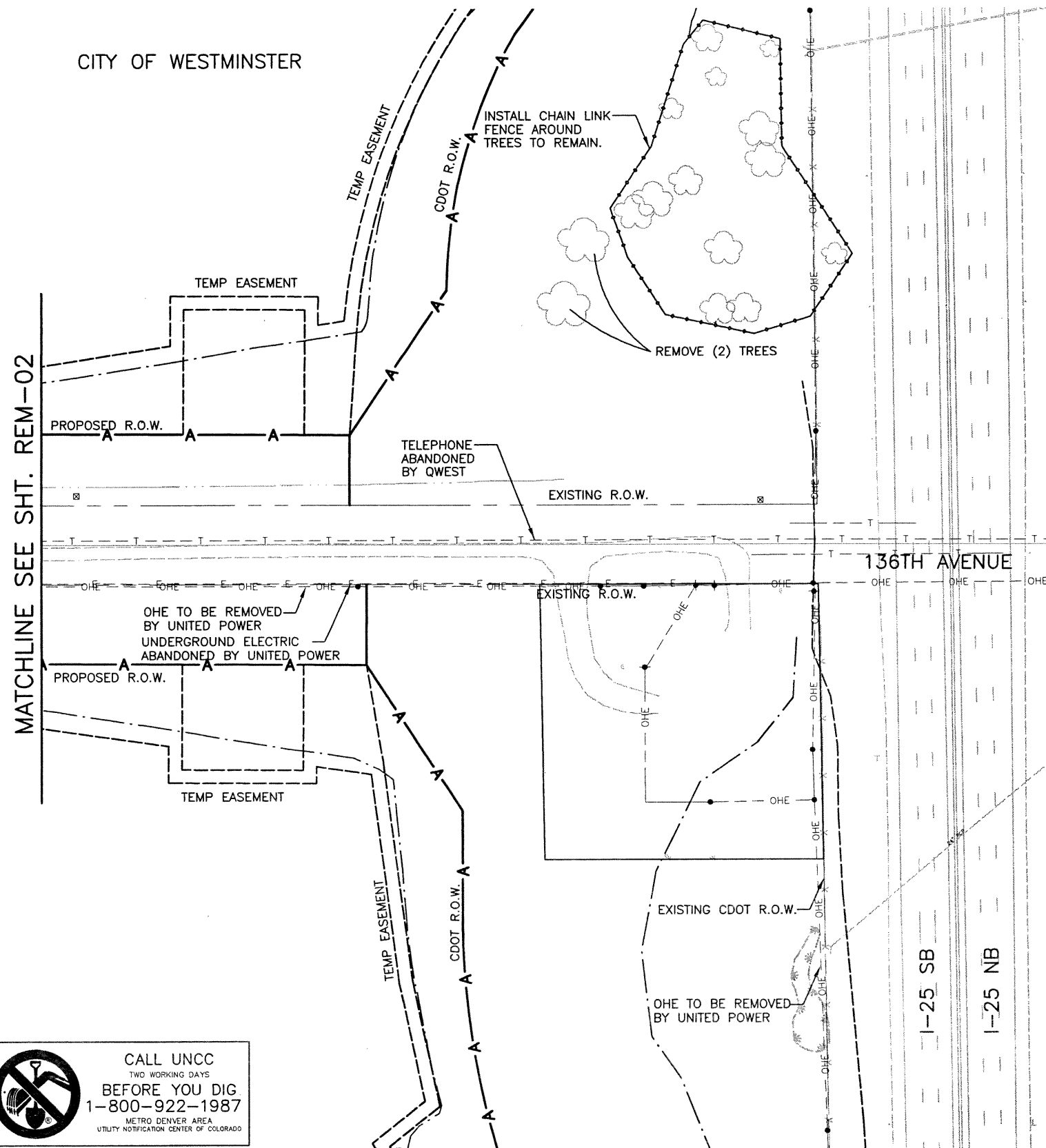
136TH AVENUE AT I-25 INTERCHANGE REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER)	
Designer:	RKZ
Detailer:	JAC
Sheet Subset:	ROADWAY
Subset Sheets:	REM-01 of 05

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Sheet Number	160



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CITY OF WESTMINSTER



AT LEAST SEVEN DAYS PRIOR TO REMOVAL OF ANY TREE, THE CONTRACTOR SHALL MARK EACH TREE TO BE REMOVED WITH SURVEY RIBBON AND NOTIFY THE ENGINEER IN WRITING. THE TREE SHALL NOT BE REMOVED UNTIL THE CONTRACTOR HAS RECEIVED WRITTEN CONFIRMATION FROM THE ENGINEER. IF THE CONTRACTOR DOES NOT FOLLOW THIS PROCEDURE AND/OR THE CONTRACTOR REMOVES A TREE THAT IS TO REMAIN, THE CONTRACTOR SHALL PLANT THE SAME TYPE OF TREE AT A 5:1 RATIO BASED ON THE CALIPER OF THE REMOVED TREE, AT NO COST TO THE OWNER.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER) LIMITS ARE FROM THE TEMPORARY EASEMENT ON THE NORTH TO THE TEMPORARY EASEMENT ON THE SOUTH. THE EASTERN LIMIT IS THE TEMPORARY EASEMENT ON THE WEST SIDE OF I-25. THE ONLY EXCEPTION TO THESE LIMITS ARE ON THE NORTHEAST CORNER OF 136TH/ HURON. REMOVALS IN THIS AREA ARE AS SHOWN.

**REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER)**

NOTICE: EXISTING FEATURES SHOWN ON THIS PLAN AS "TO BE REMOVED" WERE OBTAINED BY FIELD OBSERVATION AND FROM THE BEST AVAILABLE MAPPING. THE CONTRACTOR SHALL BE AWARE THAT ADDITIONAL ITEMS MAY BE ENCOUNTERED THAT ARE TO BE DEMOLISHED ON THESE PARCELS AND REMOVED FROM THE SITE. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL ITEMS IN ACCORDANCE WITH ARTICLE 3.2 OF THE GENERAL CONDITIONS, THE CONTRACTOR SHALL CONDUCT A REVIEW OF THE EXISTING FIELD CONDITIONS PRIOR TO SUBMITTING A BID.

ALL ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE REMOVED FROM THE SITE. NO ITEMS WILL BE ALLOWED TO BE BURIED ON THE PROJECT SITE. THE CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL LAWS IN THE REMOVAL, HAULING, AND DISPOSAL OF DEMOLISHED ITEMS. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY ITEM WRONGFULLY REMOVED OR DAMAGED BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, IN WRITING, OF ANY ITEM NOT DESIGNATED IN THE CONTRACT TO BE REMOVED WHICH CONFLICTS WITH THE WORK. THE ENGINEER SHALL DECIDE WHETHER THE ITEM IS TO BE REMOVED. THE CONTRACTOR SHALL NOT BE PERMITTED TO REMOVE ITEMS SOLELY TO IMPROVE CONSTRUCTABILITY.

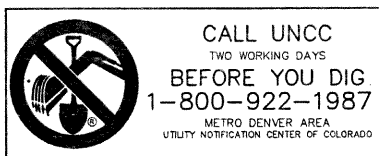
UTILITIES: THE CONTRACTOR TO COORDINATE WITH THE VARIOUS UTILITY COMPANIES TO DISCONNECT AND REMOVE THE UTILITY SERVICE LINES AND CONNECTIONS. THE CONTRACTOR IS TO COORDINATE WITH UNITED POWER TO DISCONNECT THE ELECTRIC SERVICE, AND WITH QWEST TO DISCONNECT THE TELEPHONE SERVICE.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER) TO INCLUDE: WITHIN THE ENTIRE LIMITS, THE DEMOLITION TO INCLUDE THE REMOVAL OF ALL STRUCTURES, AND ONE BRIDGE INCLUDING COMPLETE REMOVAL OF ALL FOUNDATIONS: ALL TREES, BUSHES AND MISCELLANEOUS LANDSCAPE ITEMS: ALL TRASH, DEBRIS, LARGE STONES, SLOPE AND DITCH PAVING, FENCES, SIDEWALKS, CURB AND GUTTER, MAIL BOXES, PAVEMENT, GRAVEL AND OTHER OBSTRUCTIONS THAT ARE NOT DESIGNATED TO REMAIN ON THESE PARCELS. AFTER ALL ITEMS HAVE BEEN REMOVED, THE CONTRACTOR IS TO FILL ALL HOLES AND GRADE SMOOTH THE ENTIRE PARCELS TO THE EXISTING GRADES. PARTICULARLY, EXCAVATIONS TO BE BACKFILLED WITH CLEAN FILL MATERIAL COMPACTED TO 95% RELATION DENSITY (STANDARD) TO THE LEVEL OF THE SURROUNDING GROUND. ANY REMAINING PIPE CASINGS ARE TO BE FILLED WITH SAND.

MEASUREMENT AND PAYMENT: PAYMENT FOR THE ABOVE DESCRIBED ITEMS ARE TO BE PAID FOR AS ITEM - 202, "REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER)". FOR ALL THE DESCRIBED TASKS FOR DEMOLITION ON THIS PARCEL THE PAY QUANTITY SHALL BE LUMP SUM.

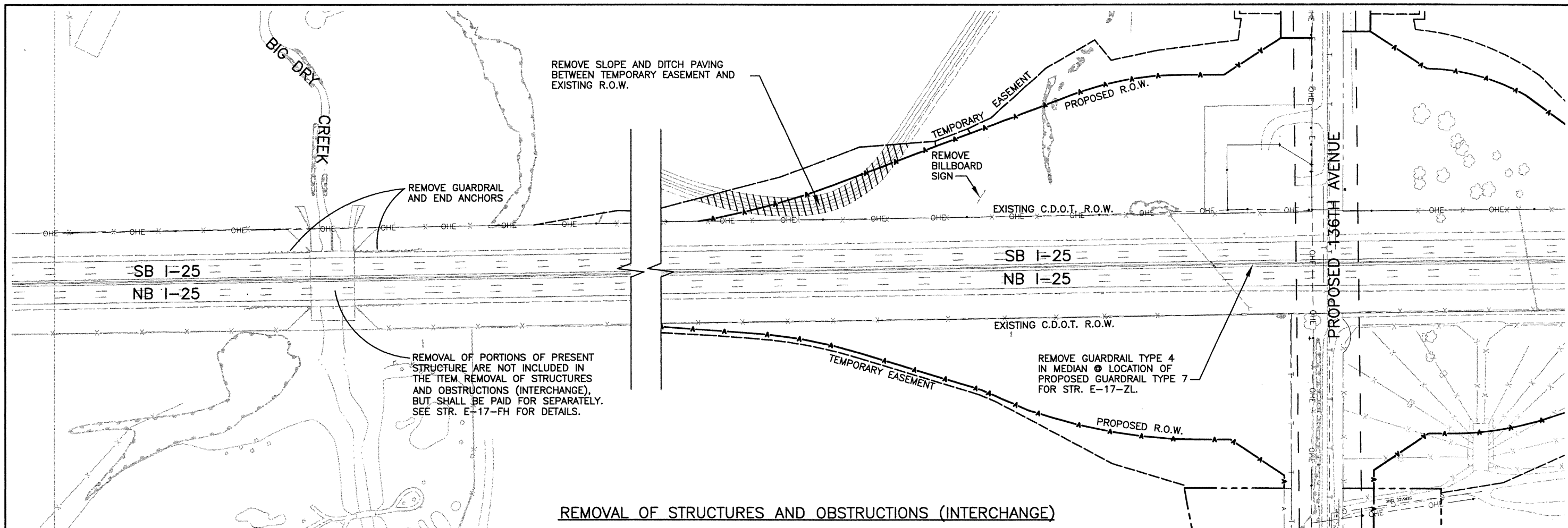
REFER TO RIGHT-OF-WAY PLANS FOR PROPOSED RIGHT-OF-WAY LIMITS, PERMANENT AND TEMPORARY EASEMENTS.

THE CONTRACTOR IS TO RECEIVE WRITTEN APPROVAL FROM THE PROJECT ENGINEER FOR ALL ITEMS TO BE REMOVED BEFORE BEGINNING ANY DEMOLITION. THE CONTRACTOR SHALL REQUEST THE ENGINEERS APPROVAL FOR EACH ITEM TO BE REMOVED A MINIMUM OF 24 HOURS IN ADVANCE OF THE REMOVAL OPERATION. ANY ITEM WRONGFULLY REMOVED BY THE CONTRACTOR, WITHOUT HAVING THE PROJECT ENGINEER'S VERIFICATION, SHALL BE RESTORED BY THE CONTRACTOR AT NO COST TO THE CITY OF WESTMINSTER.



Computer File Information		Index of Revisions		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	<b>136TH AVENUE AT I-25 INTERCHANGE REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WESTMINSTER) (INTERCHANGE)</b>	Project No./Code	
Creation Date:	03/27/02 Initials: DRS				No Revisions:			97-71
Last Modification Date:	12/19/02 Initials: PRH				Revised:		Designer: RKZ	
Full Path:	J:\00033\Acad\Sheet\				Void:		Detailer: JAC	
Drawing File Name:	R00033REM05.dwg						Sheet Subset: ROADWAY	Subset Sheets: REM-02 of 05
Acad Ver. 2000i	Scale: 1"=100' Units: English					Sheet Number 161		

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**REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE)**

NOTICE: EXISTING FEATURES SHOWN ON THIS PLAN AS "TO BE REMOVED" WERE OBTAINED BY FIELD OBSERVATION AND FROM THE BEST AVAILABLE MAPPING. THE CONTRACTOR SHALL BE AWARE THAT ADDITIONAL ITEMS MAY BE ENCOUNTERED THAT ARE TO BE DEMOLISHED ON THESE PARCELS AND REMOVED FROM THE SITE. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL ITEMS IN ACCORDANCE WITH ARTICLE 3.2 OF THE GENERAL CONDITIONS. THE CONTRACTOR SHALL CONDUCT A REVIEW OF THE EXISTING FIELD CONDITIONS PRIOR TO SUBMITTING A BID.

ALL ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE REMOVED FROM THE SITE. NO ITEMS WILL BE ALLOWED TO BE BURIED ON THE PROJECT SITE. THE CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL LAWS IN THE REMOVAL, HAULING, AND DISPOSAL OF DEMOLISHED ITEMS. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY ITEM WRONGFULLY REMOVED OR DAMAGED BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, IN WRITING, OF ANY ITEM NOT DESIGNATED IN THE CONTRACT TO BE REMOVED WHICH CONFLICTS WITH THE WORK. THE ENGINEER SHALL DECIDE WHETHER THE ITEM IS TO BE REMOVED. THE CONTRACTOR SHALL NOT BE PERMITTED TO REMOVE ITEMS SOLELY TO IMPROVE CONSTRUCTABILITY.

UTILITIES: THE CONTRACTOR TO COORDINATE WITH THE VARIOUS UTILITY COMPANIES TO DISCONNECT AND REMOVE THE UTILITY SERVICE LINES AND CONNECTIONS. THE CONTRACTOR IS TO COORDINATE WITH UNITED POWER TO DISCONNECT THE ELECTRIC SERVICE.

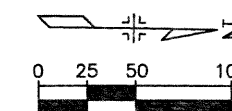
REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE) TO INCLUDE: REMOVAL OF LARGE STONES, PAVEMENT, GRAVEL, ALL TREES, BUSHES AND MISCELLANEOUS LANDSCAPE ITEMS: ALL TRASH, DEBRIS, SLOPE AND DITCH PAVING, FENCES, GUARDRAIL TYPE 3, END ANCHORS, MEDIAN GUARDRAIL TYPE 4 THAT ARE NOT DESIGNATED TO REMAIN ON THESE PARCELS. AFTER ALL ITEMS HAVE BEEN REMOVED, THE CONTRACTOR IS TO FILL ALL EXCAVATIONS TO BE BACKFILLED WITH CLEAN FILL MATERIAL COMPACTED TO 95% RELATIVE DENSITY (STANDARD) TO THE LEVEL OF THE SURROUNDING GROUND.


MEASUREMENT AND PAYMENT: PAYMENT FOR THE ABOVE DESCRIBED ITEMS ARE TO BE PAID FOR AS ITEM 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE). FOR ALL THE DESCRIBED TASKS FOR DEMOLITION THE PAY QUANTITY SHALL BE LUMP SUM.

REFER TO RIGHT-OF-WAY PLANS FOR PROPOSED RIGHT-OF-WAY LIMITS, PERMANENT AND TEMPORARY EASEMENTS.

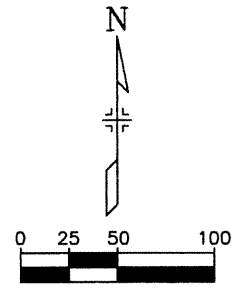
THE CONTRACTOR IS TO RECEIVE WRITTEN APPROVAL FROM THE PROJECT ENGINEER FOR ALL ITEMS TO BE REMOVED BEFORE BEGINNING ANY DEMOLITION. THE CONTRACTOR SHALL REQUEST THE ENGINEERS APPROVAL FOR EACH ITEM TO BE REMOVED A MINIMUM OF 24 HOURS IN ADVANCE OF THE REMOVAL OPERATION.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE) LIMITS ARE WITHIN THE PROPOSED CDOT R.O.W. AND TEMPORARY EASEMENTS, INCLUDING THE SOUTH BARN AND THE BLUE COMMERCIAL BUILDING ON THE WHITE PROPERTY. SEE SHEET REM-04 OF 05.



<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	<b>136TH AVENUE AT I-25 INTERCHANGE REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE)</b>		Project No./Code
Creation Date:	10/24/02 Initials: DRS				No Revisions:			97-71
Last Modification Date:	01/21/03 Initials: DRS				Revised:	Designer: RKZ		
Full Path:	J:\00033\Acad\Sheet\				Void:	Detailer: DRS		
Drawing File Name:	R00033REM02.dwg					Sheet Subset: ROADWAY	Subset Sheets: REM-03 of 05	Sheet Number 162
Acad Ver. 2000i	Scale: 1"=100' Units: English							

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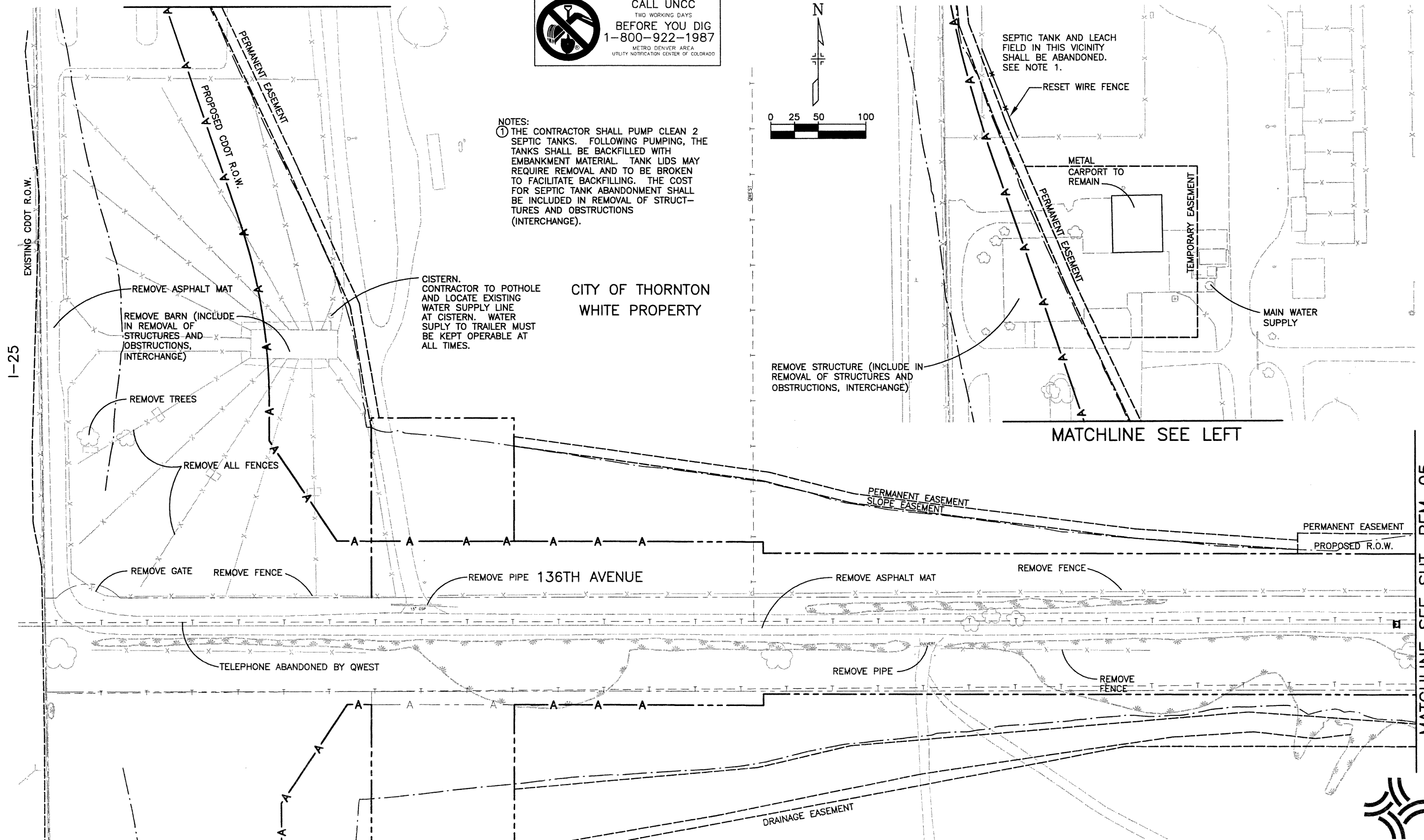


NOTES:  
 ① THE CONTRACTOR SHALL PUMP CLEAN 2 SEPTIC TANKS. FOLLOWING PUMPING, THE TANKS SHALL BE BACKFILLED WITH EMBANKMENT MATERIAL. TANK LIDS MAY REQUIRE REMOVAL AND TO BE BROKEN TO FACILITATE BACKFILLING. THE COST FOR SEPTIC TANK ABANDONMENT SHALL BE INCLUDED IN REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INTERCHANGE).

CISTERN. CONTRACTOR TO POTHOLE AND LOCATE EXISTING WATER SUPPLY LINE AT CISTERN. WATER SUPPLY TO TRAILER MUST BE KEPT OPERABLE AT ALL TIMES.

CITY OF THORNTON  
 WHITE PROPERTY

SEPTIC TANK AND LEACH FIELD IN THIS VICINITY SHALL BE ABANDONED. SEE NOTE 1.



Computer File Information	
Creation Date:	03/27/02 Initials: DRS
Last Modification Date:	01/07/03 Initials: DRS
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Revised:
Void:

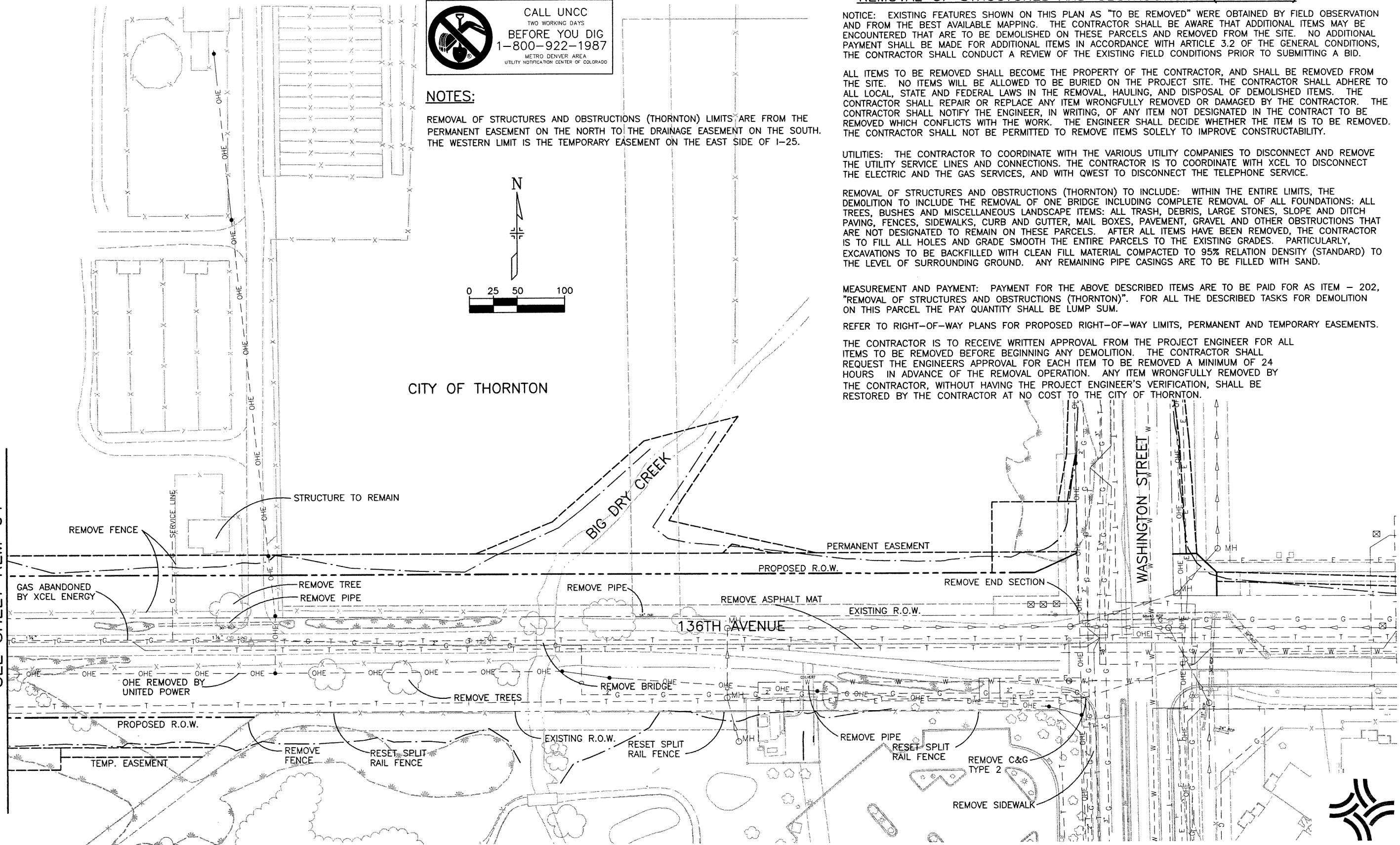
136TH AVENUE AT I-25 INTERCHANGE REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON) (INTERCHANGE)	
Designer:	RKZ
Detailer:	JAC
Sheet Subset:	ROADWAY
Subset Sheets:	REM-04 of 05

Project No./Code
97-71
Sheet Number 163



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SEE SHEET REM-04



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**NOTES:**  
REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON) LIMITS ARE FROM THE PERMANENT EASEMENT ON THE NORTH TO THE DRAINAGE EASEMENT ON THE SOUTH. THE WESTERN LIMIT IS THE TEMPORARY EASEMENT ON THE EAST SIDE OF I-25.

**REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON)**

**NOTICE:** EXISTING FEATURES SHOWN ON THIS PLAN AS "TO BE REMOVED" WERE OBTAINED BY FIELD OBSERVATION AND FROM THE BEST AVAILABLE MAPPING. THE CONTRACTOR SHALL BE AWARE THAT ADDITIONAL ITEMS MAY BE ENCOUNTERED THAT ARE TO BE DEMOLISHED ON THESE PARCELS AND REMOVED FROM THE SITE. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL ITEMS IN ACCORDANCE WITH ARTICLE 3.2 OF THE GENERAL CONDITIONS, THE CONTRACTOR SHALL CONDUCT A REVIEW OF THE EXISTING FIELD CONDITIONS PRIOR TO SUBMITTING A BID.

ALL ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE REMOVED FROM THE SITE. NO ITEMS WILL BE ALLOWED TO BE BURIED ON THE PROJECT SITE. THE CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL LAWS IN THE REMOVAL, HAULING, AND DISPOSAL OF DEMOLISHED ITEMS. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY ITEM WRONGFULLY REMOVED OR DAMAGED BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, IN WRITING, OF ANY ITEM NOT DESIGNATED IN THE CONTRACT TO BE REMOVED WHICH CONFLICTS WITH THE WORK. THE ENGINEER SHALL DECIDE WHETHER THE ITEM IS TO BE REMOVED. THE CONTRACTOR SHALL NOT BE PERMITTED TO REMOVE ITEMS SOLELY TO IMPROVE CONSTRUCTABILITY.

**UTILITIES:** THE CONTRACTOR TO COORDINATE WITH THE VARIOUS UTILITY COMPANIES TO DISCONNECT AND REMOVE THE UTILITY SERVICE LINES AND CONNECTIONS. THE CONTRACTOR IS TO COORDINATE WITH XCEL TO DISCONNECT THE ELECTRIC AND THE GAS SERVICES, AND WITH QWEST TO DISCONNECT THE TELEPHONE SERVICE.

**REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON) TO INCLUDE:** WITHIN THE ENTIRE LIMITS, THE DEMOLITION TO INCLUDE THE REMOVAL OF ONE BRIDGE INCLUDING COMPLETE REMOVAL OF ALL FOUNDATIONS: ALL TREES, BUSHES AND MISCELLANEOUS LANDSCAPE ITEMS: ALL TRASH, DEBRIS, LARGE STONES, SLOPE AND DITCH PAVING, FENCES, SIDEWALKS, CURB AND GUTTER, MAIL BOXES, PAVEMENT, GRAVEL AND OTHER OBSTRUCTIONS THAT ARE NOT DESIGNATED TO REMAIN ON THESE PARCELS. AFTER ALL ITEMS HAVE BEEN REMOVED, THE CONTRACTOR IS TO FILL ALL HOLES AND GRADE SMOOTH THE ENTIRE PARCELS TO THE EXISTING GRADES. PARTICULARLY, EXCAVATIONS TO BE BACKFILLED WITH CLEAN FILL MATERIAL COMPACTED TO 95% RELATION DENSITY (STANDARD) TO THE LEVEL OF SURROUNDING GROUND. ANY REMAINING PIPE CASINGS ARE TO BE FILLED WITH SAND.

**MEASUREMENT AND PAYMENT:** PAYMENT FOR THE ABOVE DESCRIBED ITEMS ARE TO BE PAID FOR AS ITEM - 202, "REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON)". FOR ALL THE DESCRIBED TASKS FOR DEMOLITION ON THIS PARCEL THE PAY QUANTITY SHALL BE LUMP SUM.

REFER TO RIGHT-OF-WAY PLANS FOR PROPOSED RIGHT-OF-WAY LIMITS, PERMANENT AND TEMPORARY EASEMENTS.

THE CONTRACTOR IS TO RECEIVE WRITTEN APPROVAL FROM THE PROJECT ENGINEER FOR ALL ITEMS TO BE REMOVED BEFORE BEGINNING ANY DEMOLITION. THE CONTRACTOR SHALL REQUEST THE ENGINEERS APPROVAL FOR EACH ITEM TO BE REMOVED A MINIMUM OF 24 HOURS IN ADVANCE OF THE REMOVAL OPERATION. ANY ITEM WRONGFULLY REMOVED BY THE CONTRACTOR, WITHOUT HAVING THE PROJECT ENGINEER'S VERIFICATION, SHALL BE RESTORED BY THE CONTRACTOR AT NO COST TO THE CITY OF THORNTON.

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Drawing File Name:	R00033REM06.dwg
Acad Ver. 2000i	Scale: 1"=100' Units: English

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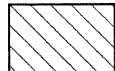


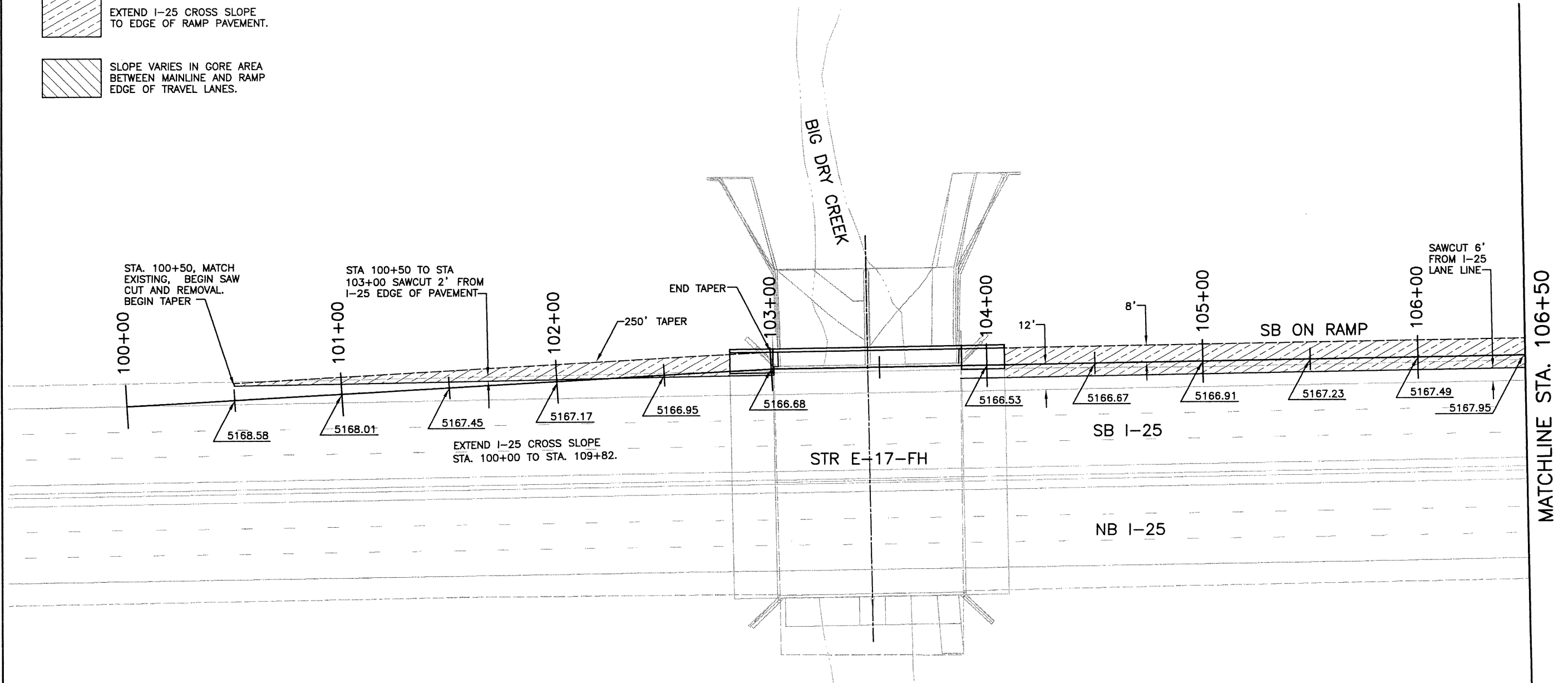
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Englewood, CO 80111

As Constructed	136TH AVENUE AT I-25 INTERCHANGE
No Revisions:	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (THORNTON)
Revised:	Designer: RKZ
Void:	Detailer: JAC
	Sheet Subset: ROADWAY Subset Sheets: REM-05 of 05

Project No./Code	97-71
Sheet Number	164

**LEGEND**


-  EXTEND I-25 CROSS SLOPE TO EDGE OF RAMP PAVEMENT.
-  SLOPE VARIES IN GORE AREA BETWEEN MAINLINE AND RAMP EDGE OF TRAVEL LANES.

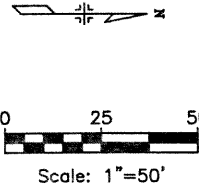


**NOTES**

1. FOR ROADWAY GEOMETRICS, SEE COORDINATE GEOMETRY SHEETS.
2. FOR PAVEMENT CROSS SLOPES OUTSIDE GORE AREA, SEE ROADWAY PROFILE SHEETS.
3. SPOT ELEVATIONS REPRESENT FINISHED GRADE.
4. ALL SPOT ELEVATION LOCATIONS ARE SHOWN AT EVEN 50 FOOT INCREMENTS OF STATIONING UNLESS OTHERWISE NOTED.

**ELEVATIONS ARE FOR INFORMATION ONLY**  
 THE CONTRACTOR SHALL VERIFY AND MATCH THE EXISTING VERTICAL GRADE AND CROSS SLOPE OF I-25.


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Computer File Information	
Creation Date:	01/29/02 Initials: DRS
Last Modification Date:	01/07/03 Initials: DRS
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Drawing File Name:	R00033DET15.DWG
Acad Ver. 2000i	Scale: 1"=50' Units: English

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No Revisions:
Revised:
Void:


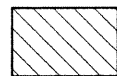

136TH AVENUE AT I-25 INTERCHANGE GORE DETAILS	
Designer:	RKZ
Detailer:	DRS
Sheet Subset:	ROAD
Subset Sheets:	DET-01 of 17

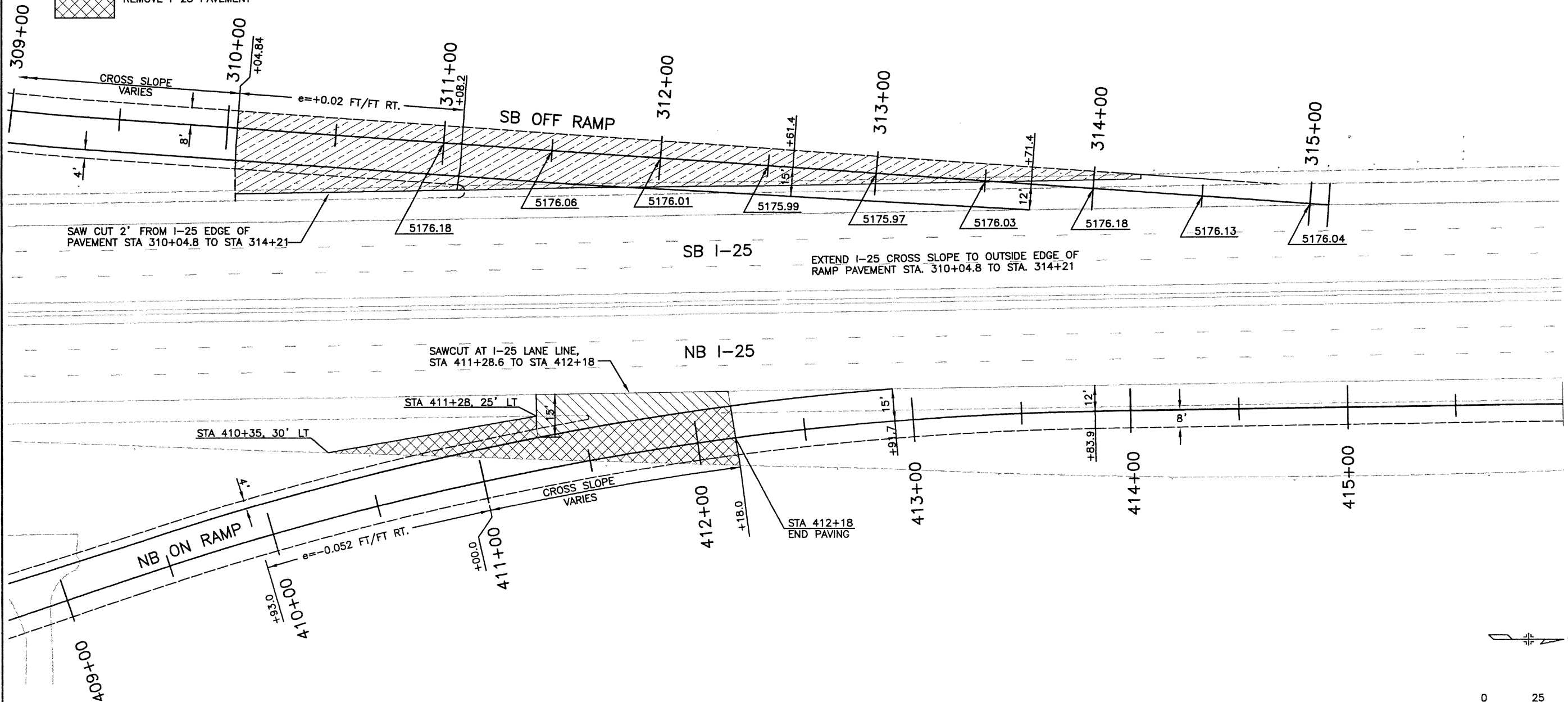
Project No./Code	97-71
Sheet Number	165



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**LEGEND**

-  EXTEND I-25 CROSS SLOPE TO EDGE OF RAMP PAVEMENT.
-  SLOPE VARIES IN GORE AREA BETWEEN MAINLINE AND RAMP EDGE OF TRAVEL LANES.
-  REMOVE I-25 PAVEMENT

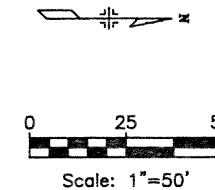


**NOTES**

1. FOR ROADWAY GEOMETRICS, SEE COORDINATE GEOMETRY SHEETS.
2. FOR PAVEMENT CROSS SLOPES OUTSIDE GORE AREA, SEE ROADWAY PROFILE SHEETS.
3. SPOT ELEVATIONS REPRESENT FINISHED GRADE.
4. ALL SPOT ELEVATION LOCATIONS ARE SHOWN AT EVEN 50 FOOT INCREMENTS OF STATIONING UNLESS OTHERWISE NOTED.

**ELEVATIONS ARE FOR INFORMATION ONLY**  
 THE CONTRACTOR SHALL VERIFY AND MATCH THE EXISTING VERTICAL GRADE AND CROSS SLOPE OF I-25.

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Creation Date:	01/29/02 Initials: DRS
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Drawing File Name:	R00033DET10.DWG
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As Constructed	136TH AVENUE AT I-25 INTERCHANGE	Project No./Code
No Revisions:	GORE DETAILS	97-71
Revised:	Designer: RKZ	Sheet Number 167
Void:	Detailer: DRS	
	Sheet Subset: ROAD	Subset Sheets: DET-03 of 17

**NORTH BOUND OFF RAMP CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
<b>SOUTHEAST CURB RETURN</b>						
POB	0+00 SE CURB	0'	5194.50	1222442.6229	3144040.3981	PCR
SE01	42+44.50 136TH AVE.	47.00' RT.	5197.70	1222450.7675	3143935.3813	PCR
SE02	42+88.15 136TH AVE.	46.16' RT.	5196.55	1222451.4647	3148979.0318	PCR
SE03	216+33.67 NBOFF RAMP	4.00' RT.	5196.88	1222405.3247	3143932.3627	PCR
SE04	216+76.11 NBOFF RAMP	4.00' RT.	5197.73	1222447.7682	3143932.3714	PCR
SE05	1+02.82 SE CURB	20.00' RT.	5196.72	1222403.7717	3143937.9298	PCR
SE06	0+52.18 SE CURB	20.00' RT.	5195.81	1222445.8775	3143980.6062	PCR
POE	1+99.04 SE CURB	0'	5194.96	1222300.9746	3143948.3548	PCR
<b>SOUTHWEST CURB RETURN</b>						
POB	0+00 SW CURB	0'	5198.96	1222451.2395	3143882.1055	PCR
POE	0+48.22 SW CURB	0'	5197.85	1222416.6497	3143900.4066	PCR

**NORTH BOUND ON RAMP CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
<b>NORTHEAST CURB RETURN</b>						
POB	0+00 NE CURB	0'	5194.80	1222554.4539	3144030.0830	PCR
NE01	42+46.37 136TH AVE.	47.31' LT.	5197.65	1222545.0747	3143937.5652	PCR
NE02	42+74.23 136TH AVE.	49.00' LT.	5196.88	1222546.6683	3143965.4349	PCR
NE03	400+50.28 NBON RAMP	6.00' RT.	5197.67	1222548.0707	3143934.3940	PCR
NE04	400+75.16 NBON RAMP	6.00' RT.	5197.18	1222572.9539	3143934.4017	PCR
NE05	0+85.27 NE CURB	20.00' LT.	5197.01	1222574.9570	3143939.6341	PCR
NE06	0+55.42 NE CURB	20.00' LT.	5196.73	1222552.2312	3143967.0043	PCR
POE	2+00.60 NE CURB	0'	5194.93	1222696.0947	3143936.4398	PCR
<b>NORTHWEST CURB RETURN</b>						
POB	0+00 NW CURB	0'	5199.23	1222543.0770	3143867.8423	PCR
POE	0+75.03 NW CURB	0'	5197.50	1222596.7974	3143900.4090	PCR

**SOUTH BOUND OFF RAMP CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
<b>NORTHWEST CURB RETURN</b>						
POB	0+00 NW CURB	0'	5194.55	1222547.6446	3143171.7176	PCR
NW01	35+41.58 136TH AVE.	47.00' LT.	5196.61	1222537.3965	3143232.8574	PCR
NW02	35+87.81 136TH AVE.	47.00' LT.	5197.83	1222537.2091	3143278.4588	PCR
NW03	300+50.03 SBOFF RAMP	4.00' LT.	5197.86	1222540.2081	3143282.0959	PCR
NW04	300+94.82 SBOFF RAMP	4.00' LT.	5196.98	1222584.9986	3143282.1104	PCR
NW05	1+05.19 NW CURB	20.00' RT.	5196.89	1222586.5511	3143276.5427	PCR
NW06	0+52.17 NW CURB	20.00' RT.	5196.45	1222543.0185	3143231.4116	PCR
POE	2+01.15 NW CURB	0'	5194.67	1222689.1007	3143266.1905	PCR
<b>NORTHEAST CURB RETURN</b>						
POB	0+00 NE CURB	0'	5199.07	1222536.7320	3143332.3626	PCR
POE	0+48.26 NE CURB	0'	5197.75	1222571.3509	3143314.1060	PCR

**SOUTH BOUND ON RAMP CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
<b>SOUTHWEST CURB RETURN</b>						
POB	0+00 SW CURB	0'	5194.97	1222433.5920	3143184.4422	PCR
SW01	35+58.17 136TH AVE.	49.00' RT.	5197.03	1222441.3298	3143249.0568	PCR
SW02	35+86.14 136TH AVE.	47.00' RT.	5197.79	1222443.2164	3143277.0365	PCR
SW03	124+42.25 SBON RAMP	6.00' LT.	5197.81	1222440.2155	3143280.0637	PCR
SW04	124+17.12 SBON RAMP	6.00' LT.	5197.31	1222415.0843	3143280.0556	PCR
SW05	0+85.20 SW CURB	20.00' LT.	5197.15	1222413.0815	3142374.8229	PCR
SW06	0+55.42 SW CURB	20.00' LT.	5196.88	1222435.7682	3143247.5226	PCR
POE	2+00.51 SW CURB	0'	5194.91	1222291.9645	3143278.0158	PCR
<b>SOUTHEAST CURB RETURN</b>						
POB	0+75.06 SE CURB	0'	5199.33	1222444.8941	3143346.5905	PCR
POE	0+00 SE CURB	0'	5197.63	1222391.1262	3143214.0478	PCR

**THORNTON RIGHT TURN ONLY CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
<b>NORTHWEST CURB RETURN</b>						
POB	47+86.36 136TH AVE.	52.21' LT.	5176.45	1222548.1790	3144477.5749	PCR STA 0+00
POE	48+20.53 136TH AVE.	75.00' LT.	5174.61	1222570.8555	3144511.8150	PCR STA 0+43.54
<b>NORTHEAST CURB RETURN</b>						
POB	48+88.36 136TH AVE.	49.95' LT.	5172.14	1222545.5823	3144578.7454	PCR STA 0+00
POE	48+53.34 136TH AVE.	75.00' LT.	5173.12	1222570.7466	3144544.6296	PCR STA 0+45.95
<b>SOUTHWEST CURB RETURN</b>						
POB	47+86.36 136TH AVE.	53.00' RT.	5176.43	1222442.9691	3144477.2258	PCR STA 0+00
POE	48+20.18 136TH AVE.	75.00' RT.	5174.62	1222420.8574	3144510.9755	PCR STA 0+42.67
<b>SOUTHEAST CURB RETURN</b>						
POB	48+88.36 136TH AVE.	42.00' RT.	5172.27	1222453.6311	3144579.2617	PCR STA 0+00
POE	48+51.58 136TH AVE.	75.00' RT.	5173.20	1222420.7533	3144542.3693	PCR STA 0+54.11

**THORNTON FULL MOVEMENT INTERSECTION CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
<b>NORTHWEST CURB RETURN</b>						
POB	53+56.37 136TH AVE.	30.00' LT.	5156.95	1222524.0789	3145047.5029	PCR STA 0+00
POE	54+07.90 136TH AVE.	75.00' LT.	5154.60	1222568.9065	3145099.1822	PCR STA 0+74.66
<b>NORTHEAST CURB RETURN</b>						
POB	55+18.66 136TH AVE.	41.00' LT.	5155.50	1222534.7897	3145209.7032	PCR STA 0+00
POE	54+69.88 136TH AVE.	75.00' LT.	5154.59	1222568.8010	3145160.9262	PCR STA 0+63.30
<b>SOUTHWEST CURB RETURN</b>						
POB	53+56.37 136TH AVE.	53.00' RT.	5156.49	1222441.0782	3145047.2312	PCR STA 0+00
POE	53+98.85 136TH AVE.	75.00' RT.	5154.98	1222418.9374	3145089.6315	PCR STA 0+49.70
<b>SOUTHEAST CURB RETURN</b>						
POB	55+18.08 136TH AVE.	42.00' RT.	5155.48	1222451.7899	3145209.1075	PCR STA 0+00
POE	54+69.68 136TH AVE.	75.00' RT.	5154.58	1222418.8014	3145160.6951	PCR STA 0+62.23



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**Index of Revisions**

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fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed

No Revisions:

Revised:

Void:

136TH AVENUE AT I-25 INTERCHANGE  
INTERSECTION DETAILS  
GEOMETRIC DATA

Designer: RKZ  
Detailer: JAC

Sheet Subset: ROADWAY Subset Sheets: DET-04 of 17

Project No./Code

97-71

Sheet Number 168



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**THORNTON TURN ONLY CURB RETURNS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
NORTHWEST CURB RETURN						
POB	61+99.00 136TH AVE.	30.00' LT.	5155.03	1222523.6272	3145890.0471	PCR STA 0+00
POE	62+36.00 136TH AVE.	67.00' LT.	5152.83	1222560.6183	3145927.0478	PCR STA 0+58.12
NORTHEAST CURB RETURN						
POB	63+01.00 136TH AVE.	41.00' LT.	5152.65	1222534.6028	3145992.0416	PCR STA 0+00
POE	62+64.12 136TH AVE.	75.00' LT.	5152.67	1222568.6115	3145955.1716	PCR STA 0+55.12


**WASHINGTON ST. INTERSECTION**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
NORTHWEST CURB RETURN						
POB	65+59.65 136TH AVE.	43.00' LT.	5151.54	1222536.5410	3146250.6894	PCR STA 0+00
POE	503+46.34 WASHINGTON ST.	43.00' LT.	5150.60	1222589.2590	3146303.3219	PCR STA 0+82.41
SOUTHWEST CURB RETURN						
POB	65+73.80 136TH AVE.	55.00' RT.	5151.43	1222438.5376	3146264.8147	PCR STA 0+00
POT	501+44.58 WASHINGTON ST.	32.20' LT.	5152.94	1222387.5066	3146316.7932	PCR STA 0+80.70
POE	501+30.25 WASHINGTON ST.	32.20' LT.	5153.05	1222373.1875	3146317.0629	PCR STA 0+95.02

**DRIVEWAY ENTRANCE**

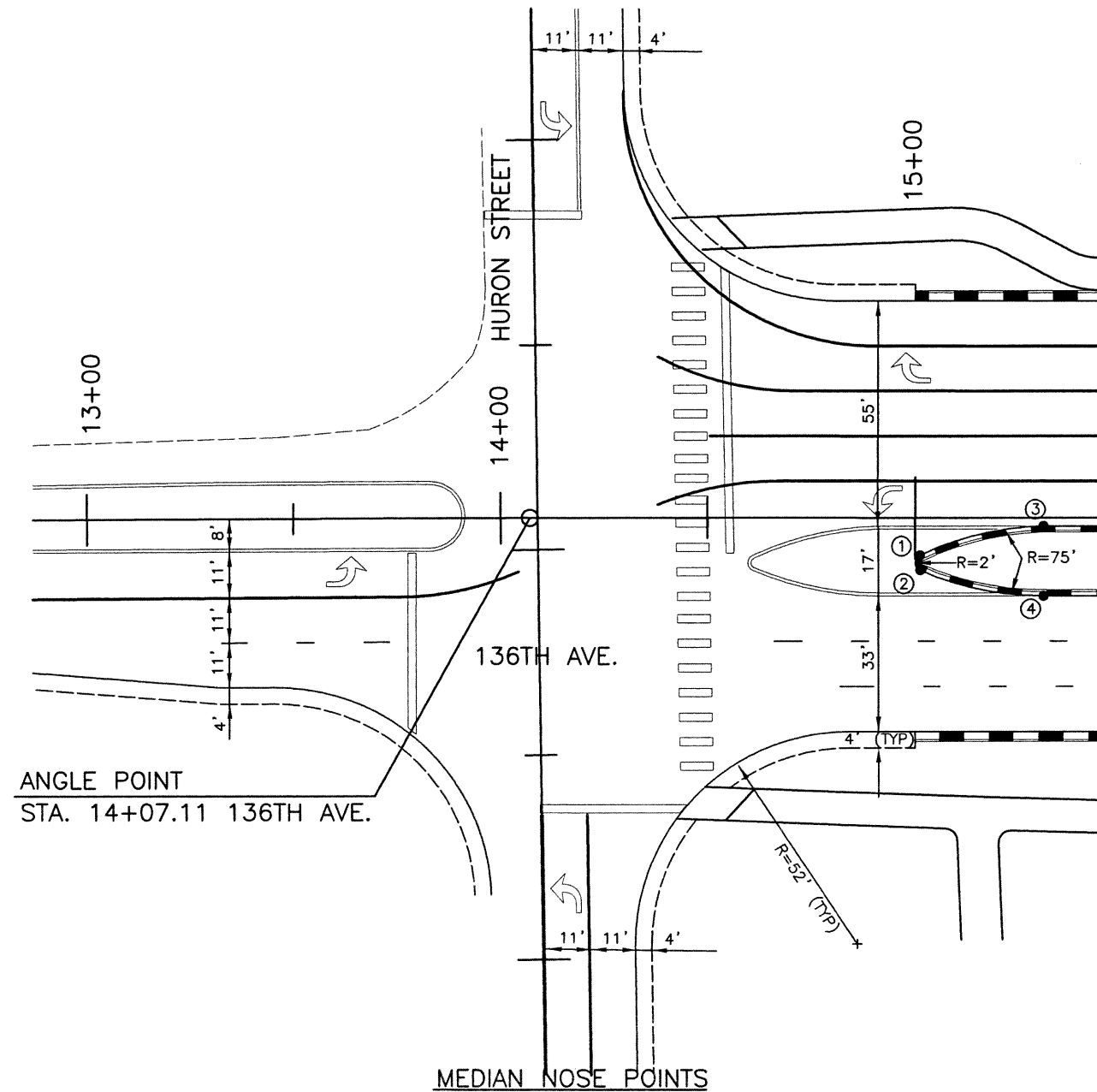
POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING	DESCRIPTION
DRIVEWAY ENTRANCE						
POB	63+22.16 136TH AVE.	121.50' RT.	5151.40	1222372.0978	3146013.1622	DRIVEWAY STA 0+00.50
POE	63+22.16 136TH AVE.	63.50' RT.	5152.08	1222430.0978	3146013.1760	DRIVEWAY STA 0+58.50



<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE INTERSECTION DETAILS GEOMETRIC DATA</b>	<b>Project No./Code</b>
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Acad Ver. 2000i Scale: Units: English	<input type="checkbox"/>				Sheet Number 169		

**NOTES:**

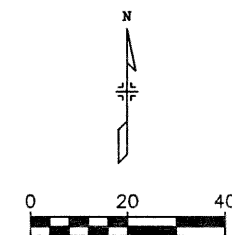
1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.




ANGLE POINT  
STA. 14+07.11 136TH AVE.

**MEDIAN NOSE POINTS**

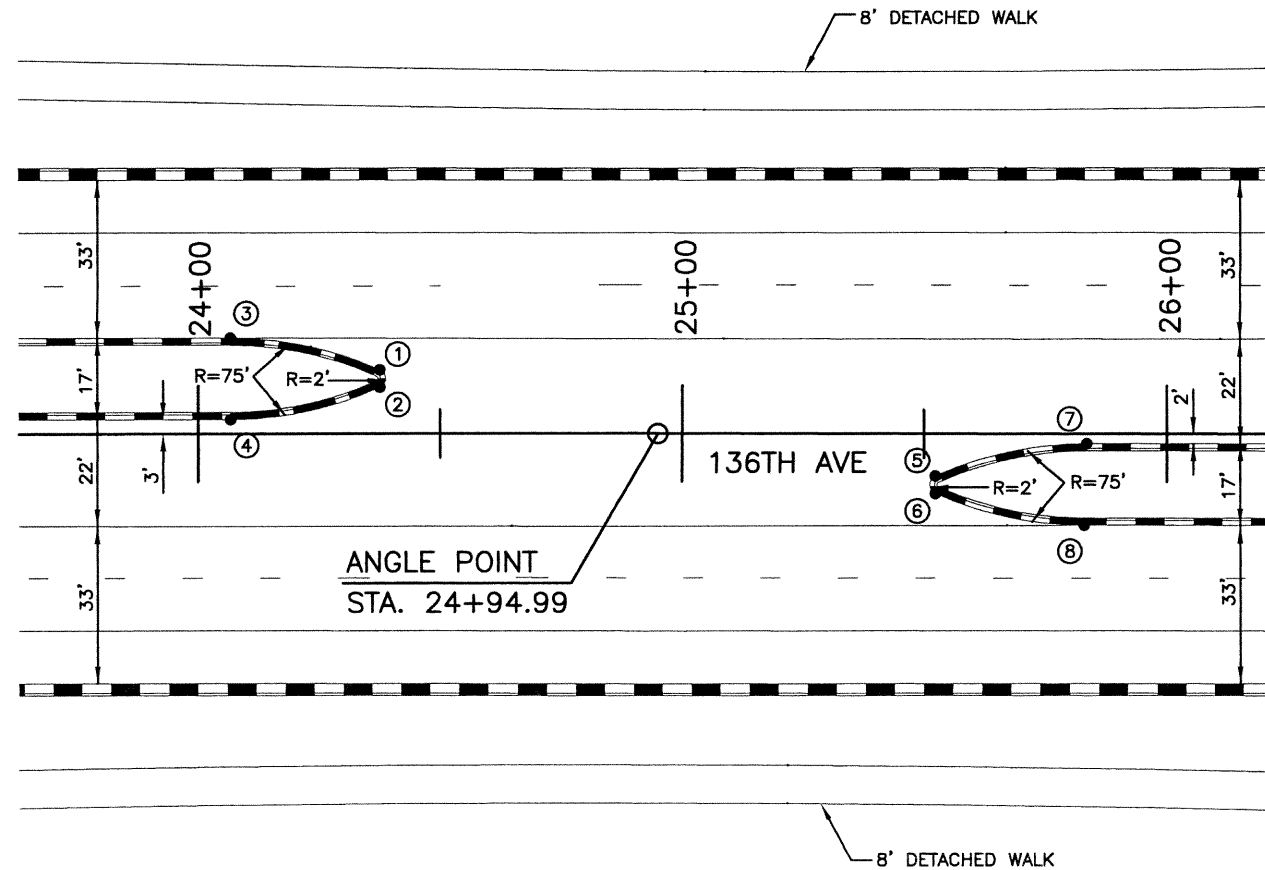
POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING
1	15+01.15	9.12' RT	5183.27	1222485.8371	3141192.2386
2	15+01.20	12.77' RT	5183.19	1222483.1932	3141192.2901
3	15+31.13	2.00' RT	5183.17	1222492.9520	3141222.2250
4	15+31.13	19.00' RT	5182.75	1222475.9520	3141222.2197



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Last Modification Date:	11/26/02 Initials: DRS				Revised:	Designer: RKZ				
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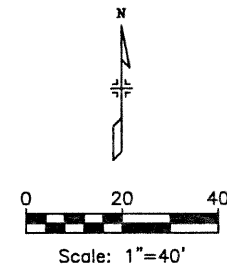
**NOTES:**

1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.




**MEDIAN NOSE POINTS**

POINT	STATION	OFFSET	ELEVATION	NORTHING	EASTING
1	24+37.60	13.32' LT	5187.16	1222507.9813	3142128.6959
2	24+37.60	9.68' LT	5187.24	1222504.3375	3142128.6947
3	24+06.66	20.00' LT	5187.20	1222514.6694	3142097.7608
4	24+06.66	3.00' LT	5187.66	1222497.6694	3142097.7553
5	25+52.40	8.79' RT	5186.22	1222485.6146	3142243.4608
6	25+52.40	12.44' RT	5186.15	1222481.9707	3142243.4596
7	25+83.10	2.00' RT	5186.04	1222492.2816	3142274.6791
8	25+83.10	19.00' RT	5185.62	1222475.2838	3142274.1138

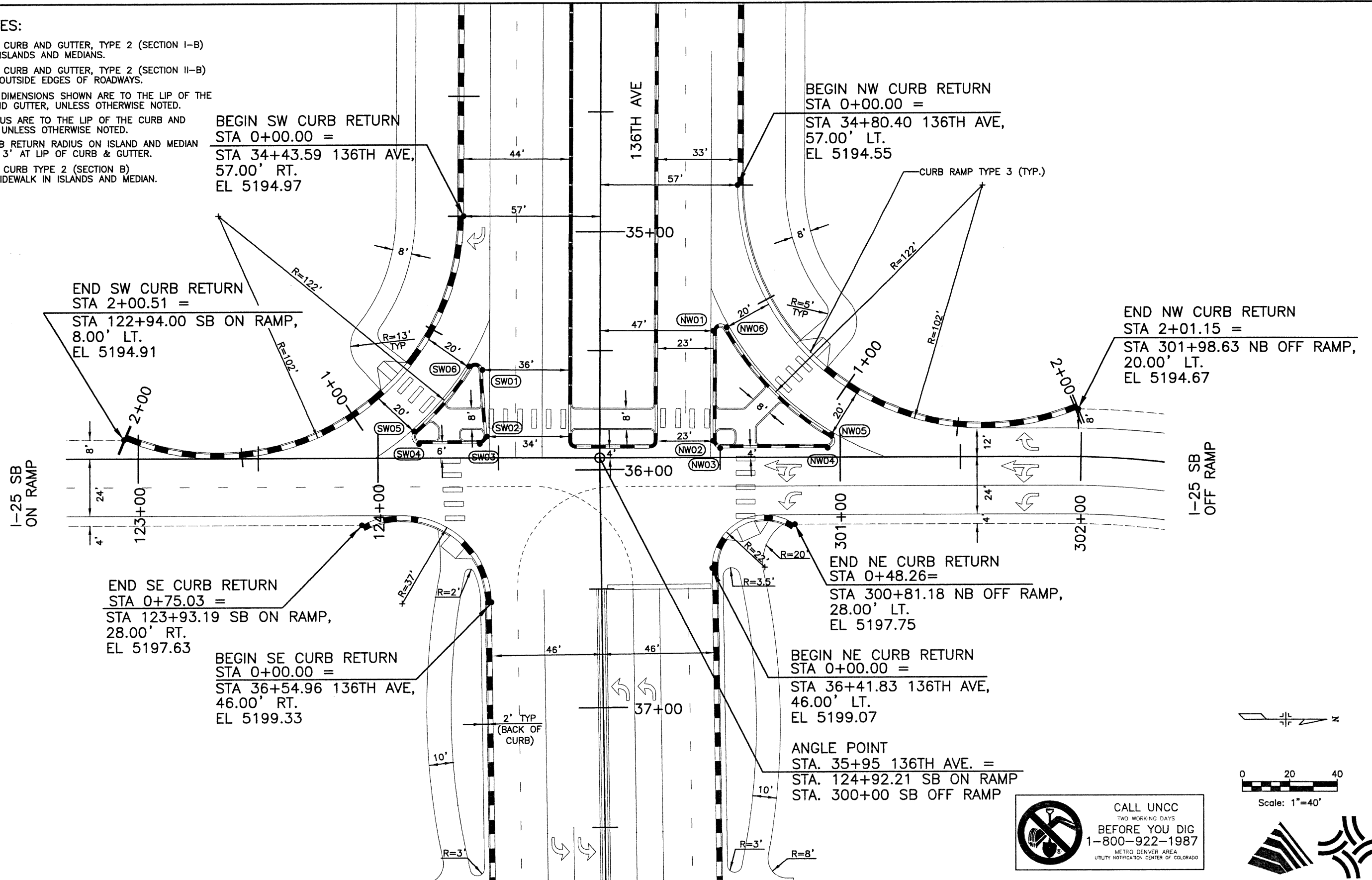


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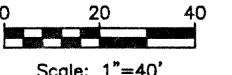
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Last Modification Date:	11\27\02 Initials: DRS				Revised:	Designer: RKZ	
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Drawing File Name:	R00033DET05.dwg				Sheet Subset: ROADWAY	Subset Sheets: DET-07 of 17	Sheet Number <i>171</i>
Acad Ver. 2000i	Scale: 1"=40' Units: English						

**NOTES:**

1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
5. CURB RETURN RADIUS ON ISLAND AND MEDIAN NOSE = 3' AT LIP OF CURB & GUTTER.
6. USE CURB TYPE 2 (SECTION B) ALONG SIDEWALK IN ISLANDS AND MEDIAN.



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Acad Ver.	2000i Scale: 1"=40' Units: English

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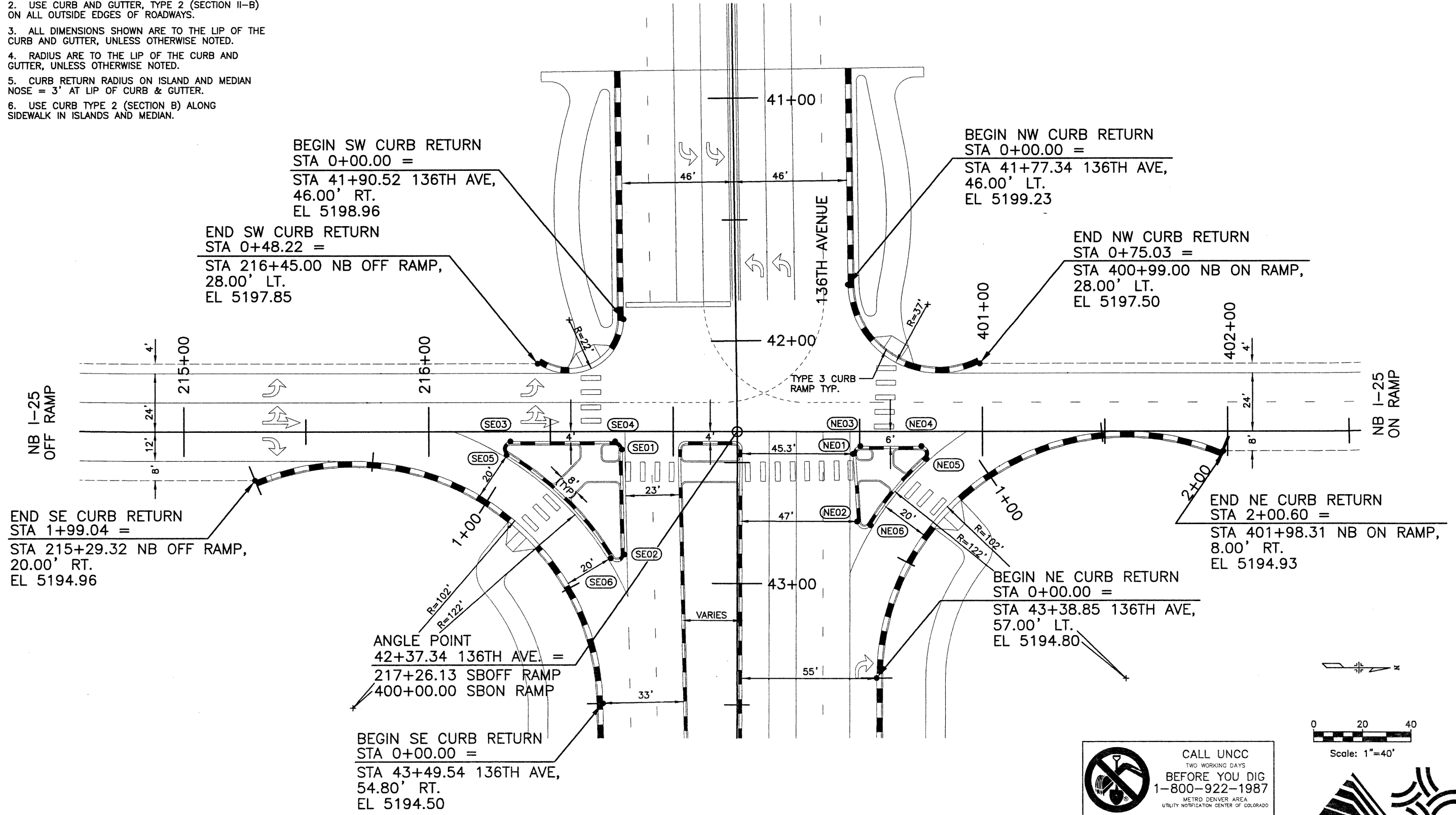
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136TH AVENUE AT I-25 INTERCHANGE SOUTHBOUND RAMPS/136TH AVENUE	
Designer:	RKZ
Detailer:	DRS
Sheet Subset:	ROAD Subset Sheets: DET-08 of 17

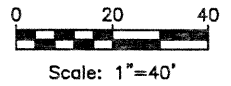
Project No./Code	97-71
Sheet Number	172

**NOTES:**

1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
5. CURB RETURN RADIUS ON ISLAND AND MEDIAN NOSE = 3' AT LIP OF CURB & GUTTER.
6. USE CURB TYPE 2 (SECTION B) ALONG SIDEWALK IN ISLANDS AND MEDIAN.



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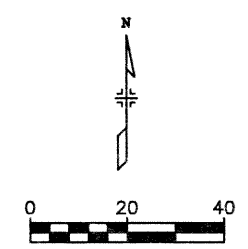
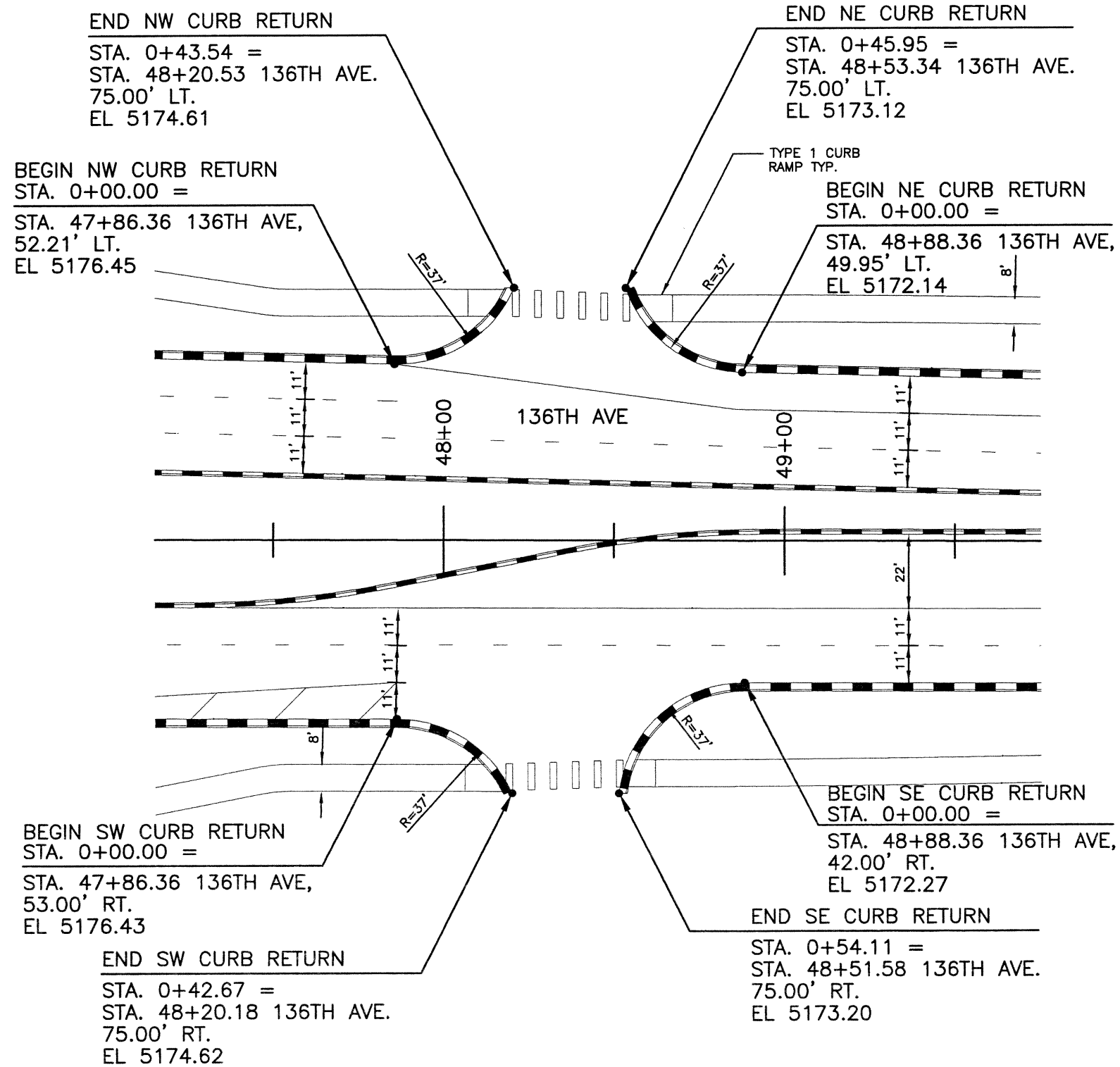


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**NOTES:**

1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.

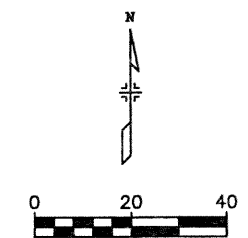
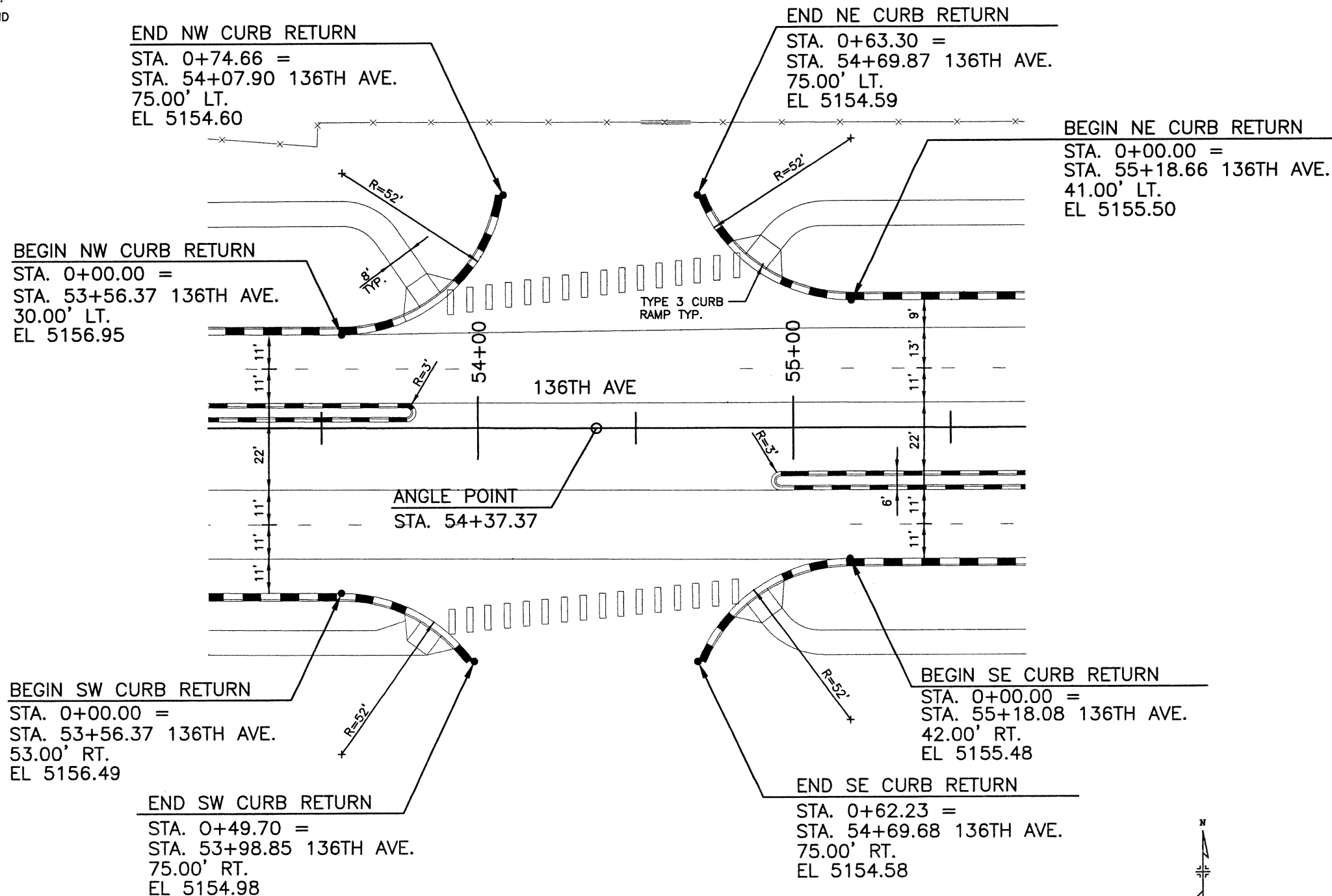


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Last Modification Date:	10/22/02 Initials: PRH				Revised:	Designer: RKZ		
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Acad Ver. 2000i	Scale: 1"=40' Units: English							

**NOTES:**

1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.

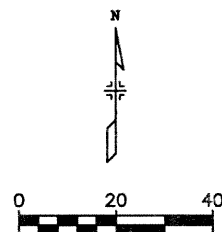
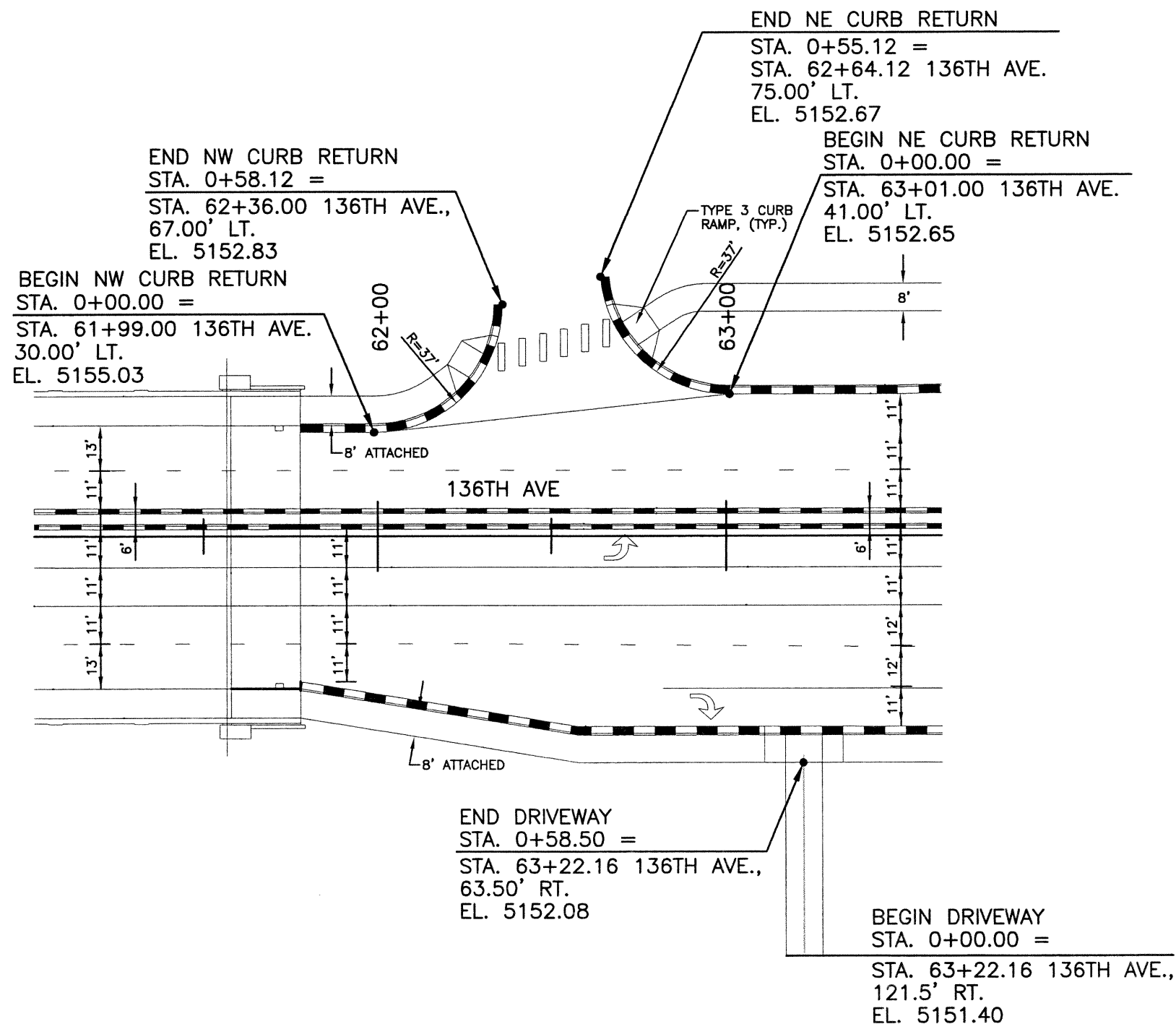


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**NOTES:**

1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
3. ALL DIMENSIONS SHOWN ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.
5. TRANSITION EB THRU LANES FROM 11' @ STA. 62+50 TO 12' @ STA. 63+50.
6. TRANSITION WB THRU LANES FROM 11' @ STA. 63+50 TO 12' @ STA. 63+40.



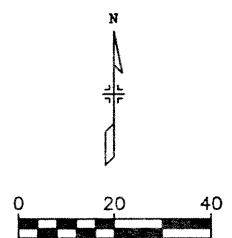
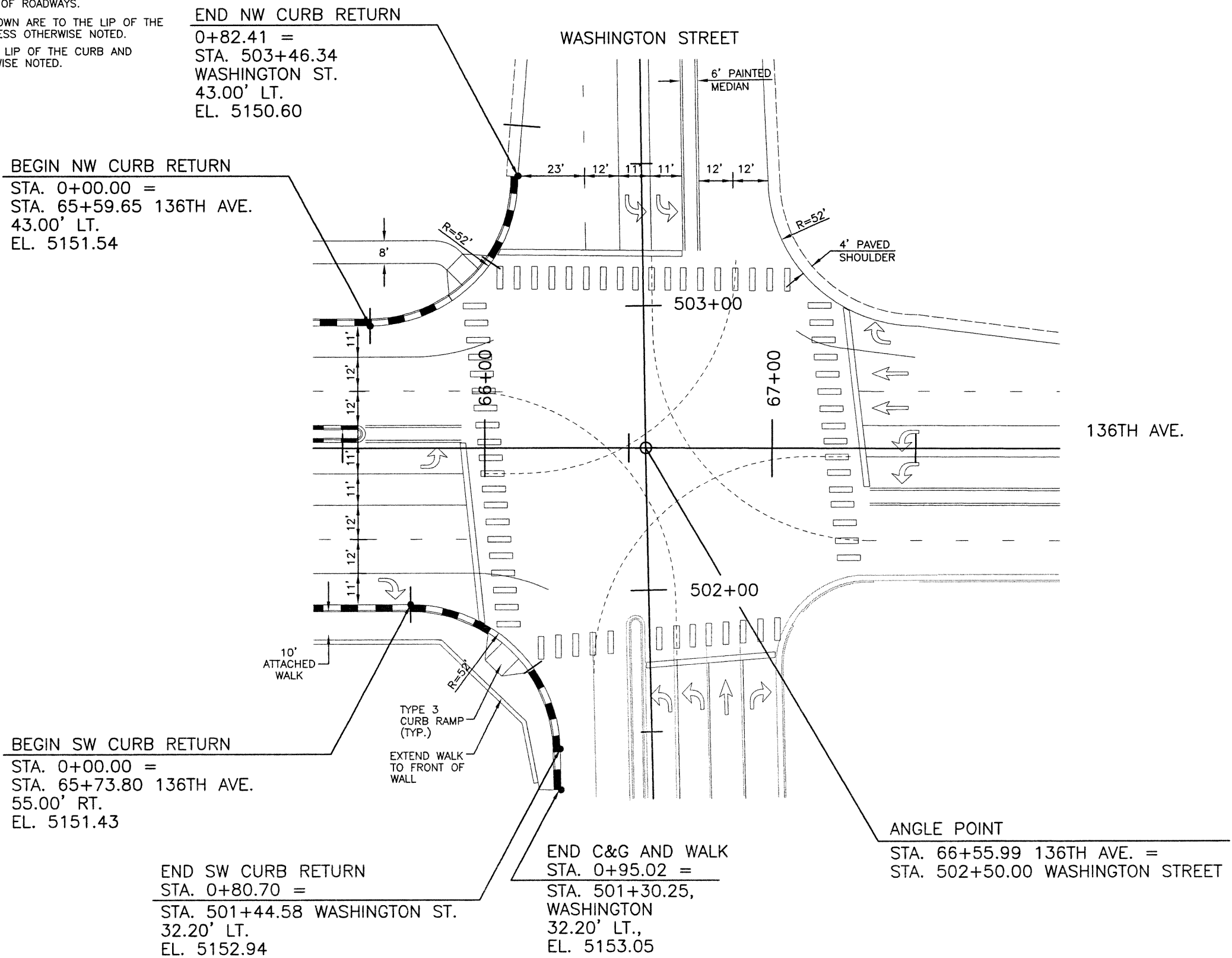
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Last Modification Date:	10/22/02 Initials: PRH				Revised:	Designer: RKZ		
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**NOTES:**

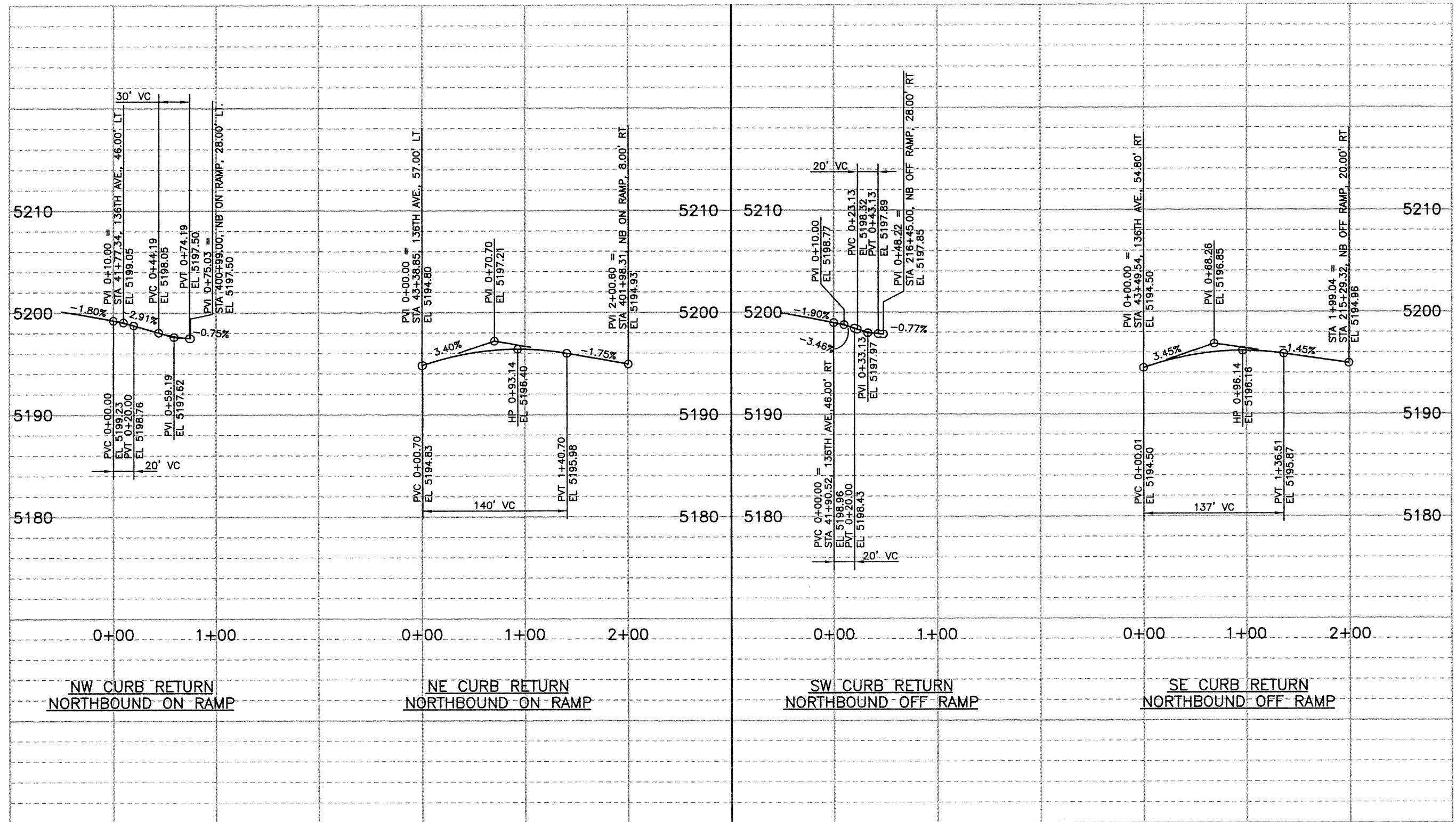
1. USE CURB AND GUTTER, TYPE 2 (SECTION I-B) ON ALL ISLANDS AND MEDIANS.
2. USE CURB AND GUTTER, TYPE 2 (SECTION II-B) ON ALL OUTSIDE EDGES OF ROADWAYS.
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4. RADIUS ARE TO THE LIP OF THE CURB AND GUTTER, UNLESS OTHERWISE NOTED.



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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p>	303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	<b>136TH/WASHINGTON INTERSECTION DETAILS WASHINGTON/136TH AVENUE</b>		Project No./Code	
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HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



NOTE: ELEVATIONS ARE SHOWN AT THE LIP OF CURB & GUTTER

**136TH @ I-25 RAMPS**

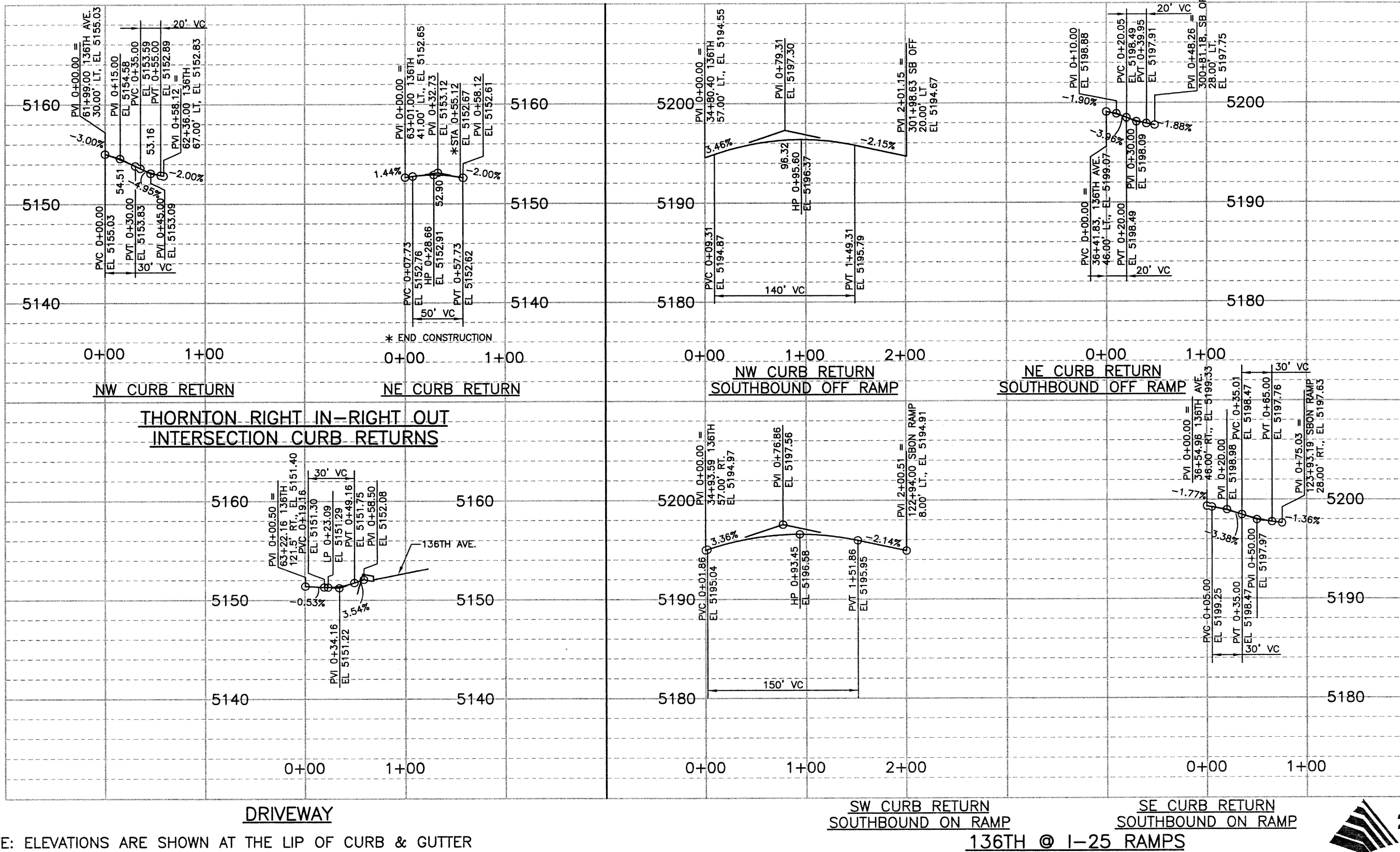


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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>FELSBURG HOLT &amp; ULLEVIG</p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b> <b>CURB RETURN PROFILE</b>	<b>Project No./Code</b>	
Creation Date:	01/31/02 Initials: DRS				No Revisions:			97-71
Last Modification Date:	10/28/02 Initials: PRH				Revised:		Designer: RKZ	
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Acad Ver. 2000i	Scale: 1"=100 Units: English					Sheet Number <b>178</b>		

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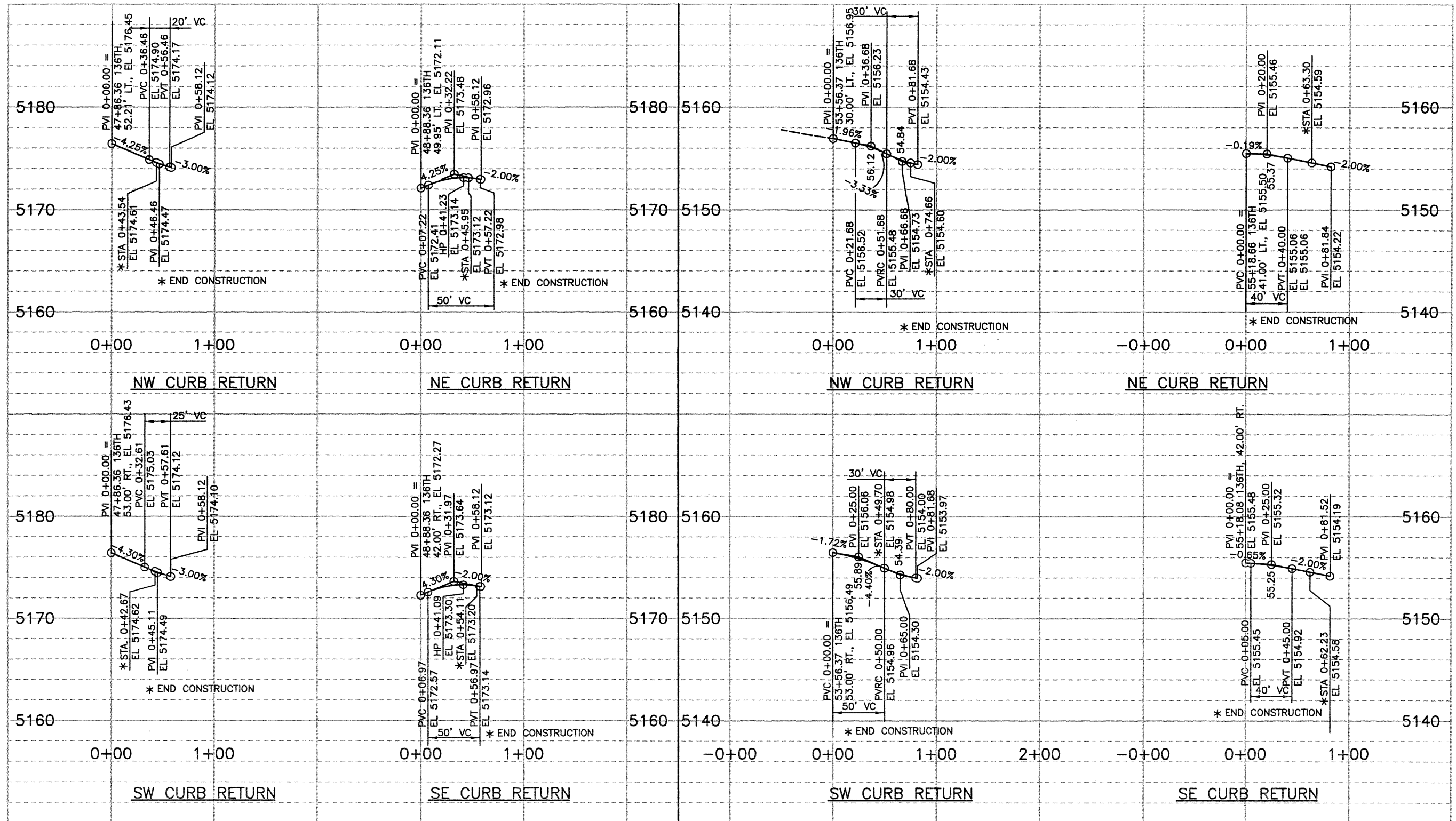
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VERTICAL SCALE: 1"=10'



Computer File Information		Index of Revisions		<p>FELSBURG HOLT &amp; ULLEVIG</p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	136TH AVENUE AT I-25 INTERCHANGE CURB RETURN PROFILES	Project No./Code
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Last Modification Date:	10/28/02 Initials: PRH		Revised:		Designer: RKZ		
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Acad Ver. 2000i	Scale: 1"=100' Units: English					179	

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HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



**THORNTON RIGHT IN-RIGHT OUT  
INTERSECTION CURB RETURNS**

**THORNTON FULL MOVEMENT  
CURB RETURNS**

NOTE: ELEVATIONS ARE SHOWN AT THE LIP OF CURB & GUTTER



Computer File Information	
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Last Modification Date:	10/28/02 Initials: PRH
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Drawing File Name:	R00033PRO15.dwg
Acad Ver. 2000i	Scale: Units: English

Index of Revisions	
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Englewood, CO 80111

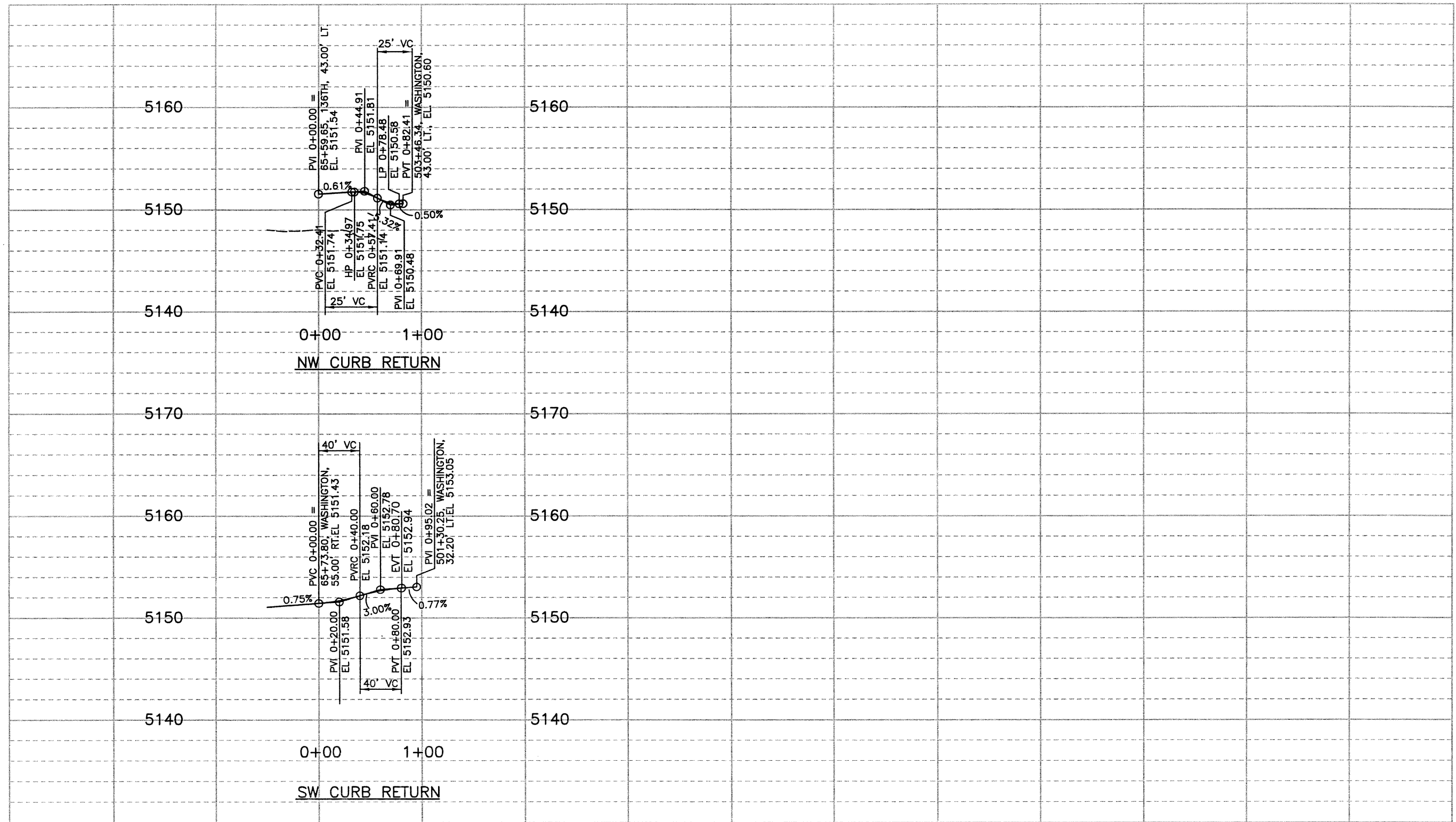
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Revised:	
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Designer:	RKZ
Detailer:	DRS
Sheet Subset:	PROFILE
Subset Sheets:	DET-16 of 17

Project No./Code	97-71
Sheet Number	180

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HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



**136TH AND WASHINGTON**

NOTE: ELEVATIONS ARE SHOWN AT THE LIP OF CURB & GUTTER



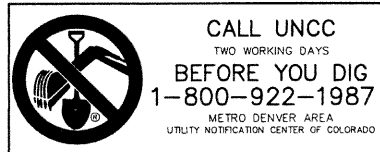
<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b> <b>CURB RETURN PROFILE</b>	<b>Project No./Code</b>	
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Acad Ver. 2000i	Scale: 1"=100	Units: English							

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**SIDEWALK CONTROL POINTS**

136TH AVE. STA. 15+50 TO STA. 35+00

POINT NO.	DESCRIPTION	RADIUS	NORTHING	EASTING	
1	POB		1222560.8751	3141150.6361	
2	PC	} 25'	1222562.8862	3141200.0532	
3	PT		1222559.6752	3141212.7968	
4	PC		1222553.4720	3141224.2334	
5	PT	} 25'	1222550.4475	3141236.1450	
6	PC		1222550.4246	3141306.9981	
6A	PT		1222550.6784	3141310.5589	
7	PC	} 25'	1222565.6567	3141414.8867	
8	PRC		1222565.9103	3141418.5258	
9	MIDPOINT		6000'	1222565.4014	3141478.6555
10	PRC	} 6000'	1222564.2899	3141538.7770	
11	MIDPOINT		6000'	1222562.6347	3141676.1381
12	PRC		1222564.1248	3141813.5010	
13	MIDPOINT	} 6000'	1222565.6121	3141953.9609	
14	PRC		1222563.8110	3142094.4170	
15	MIDPOINT		6000'	1222562.0989	3142274.9511
16	PRC	} 6000'	1222565.8193	3142455.4550	
17	MIDPOINT		6000'	1222568.8837	3142574.5413
18	PT		1222569.5833	3142693.6649	
19	POE	} 6000'	1222567.6444	3143171.7912	
20	POB		1222428.9965	3141152.4447	
21	PC		1222428.3431	3141169.3077	
22	MIDPOINT	} 6000'	1222424.0383	3141353.3088	
23	PRC		1222425.3792	3141537.3553	
24	MIDPOINT		6000'	1222426.9144	3141674.7015
25	PRC	} 6000'	1222425.3052	3141812.0468	
26	MIDPOINT		6000'	1222423.7185	3141934.4877
27	PRC		1222424.6309	3142056.9356	
28	MIDPOINT	} 6000'	1222425.1815	3142230.7918	
29	PRC		1222420.6947	3142404.5910	
30	MIDPOINT		6000'	1222417.2987	3142513.2683
31	PRC	} 6000'	1222415.8726	3142621.9892	
32	POE		1222413.5922	3143184.3682	



**DRIVWAY CURB CUTS**

☉ STA. 15+46.4, LT., W=45'  
☉ STA. 16+51, LT., W=38'

CITY OF BROOMFIELD

**BEGIN 136TH AVENUE**  
STA 8+20.00

**SIDEWALK CONTROL POINTS**

136TH AVE. STA. 43+00 TO STA. 66+00

POINT NO.	DESCRIPTION	RADIUS	NORTHING	EASTING	POINT NO.	DESCRIPTION	RADIUS	NORTHING	EASTING	
33	POB		1222574.4538	3144030.1594	55	POE		1222558.5356	3146273.3715	
34	PC	} 50'	1222573.3319	3144368.2597	56	POB		1222420.4194	3144040.2601	
35	PT		1222572.7472	3144375.7195	57	PC	} 50'	1222419.2813	3144383.2277	
36	PC		1222563.1608	3144437.8401	58	PT		1222420.2079	3144392.9762	
37	PT	1222562.5762	3144445.2998	59	PC	1222428.6463		3144436.1896		
38	POE	} 50'	1222562.4004	3144498.2585	60	PT	1222429.5728	3144445.9381		
39	POB		1222560.7011	3144558.3471	61	POE	1222429.4030	3144497.1183		
40	MIDPOINT		6000'	1222560.2824	3144629.2229	62	POB	1222430.7177	3144553.1075	
41	PRC	} 6000'	1222559.0266	3144700.0887	63	MIDPOINT	6000'	1222430.9535	3144606.2659	
42	MIDPOINT		6000'	1222557.3852	3144821.9215	64	PRC	6000'	1222431.6607	3144659.4466
43	PRC		1222558.2180	3144943.7626	65	MIDPOINT	6000'	1222432.5705	3144785.7211	
44	MIDPOINT	} 6000'	1222558.8760	3144995.7379	66	PRC	6000'	1222430.8227	3144911.9867	
45	POE		1222559.0836	3145047.7170	67	MIDPOINT	6000'	1222429.4869	3144985.0820	
46	POB		1222558.7918	3145199.6151	68	POE	6000'	1222429.0418	3145058.1878	
47	PC	} 292'	1222558.7425	3145406.1613	69	POB	6000'	1222428.7922	3145199.2045	
48	MIDPOINT		292'	1222555.6688	3145448.3478	70	PC	6000'	1222428.7522	3145366.7402
49	PT		1222546.5324	3145489.6477	71	MIDPOINT	292'	1222429.1966	3145282.9130	
50	PC	} 308'	1222539.0750	3145514.6192	72	PT	308'	1222430.5360	3145399.0364	
51	MIDPOINT		308'	1222529.4379	3145558.1820	73	PC	308'	1222447.3187	3145550.1743
52	PT		1222526.1958	3145602.6800	74	MIDPOINT	308'	1222448.7315	3145567.1811	
53	POE	} 308'	1222526.1891	3145631.0396	75	PT	308'	1222449.2002	3145484.2401	
54	PT		1222558.6046	3145984.1439	76	POE	308'	1222449.1891	3145631.0212	

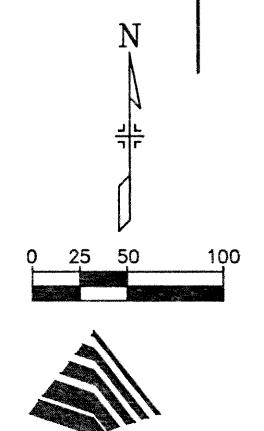
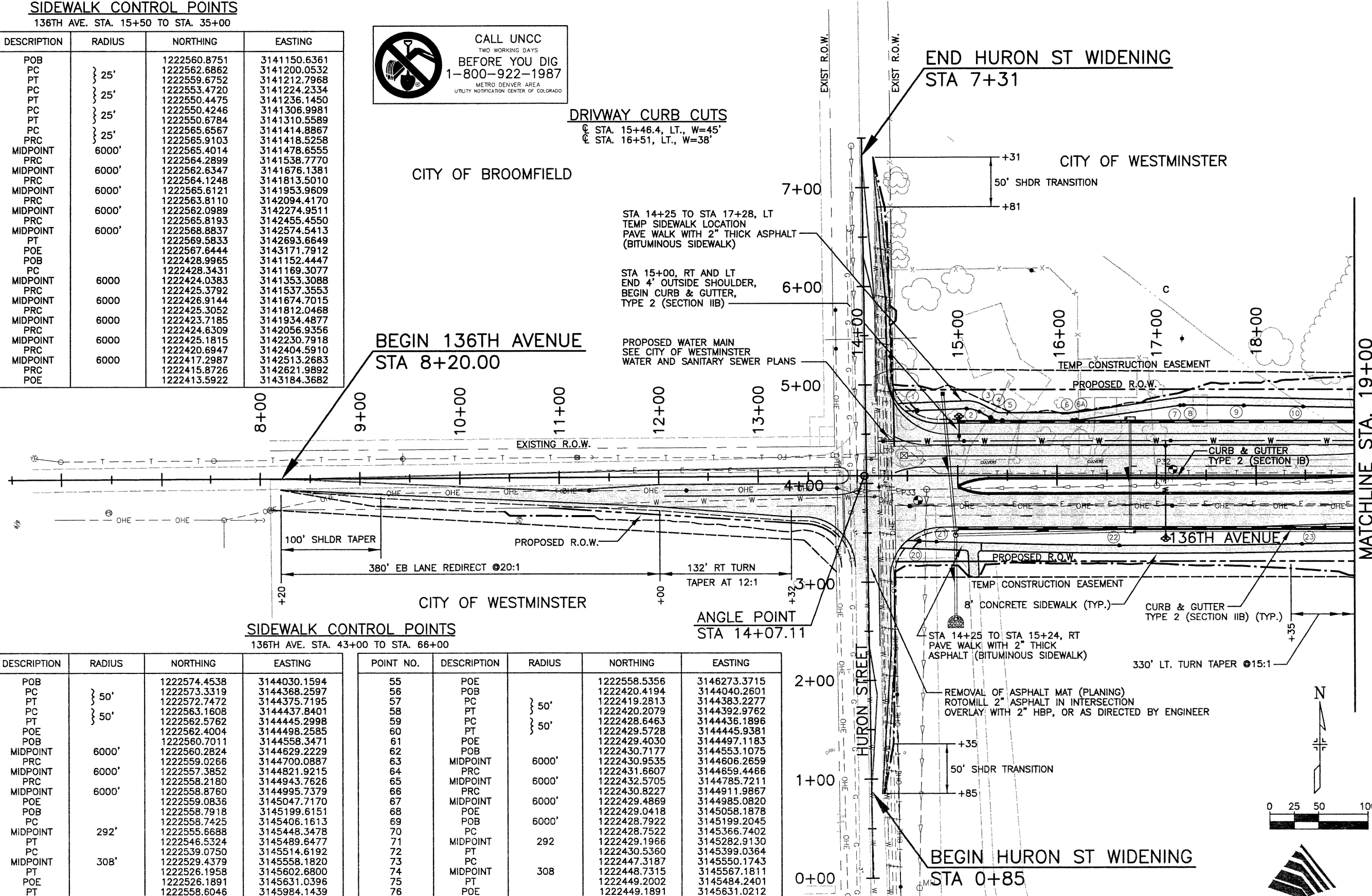
CITY OF WESTMINSTER

**ANGLE POINT**  
STA 14+07.11

**END HURON ST WIDENING**  
STA 7+31

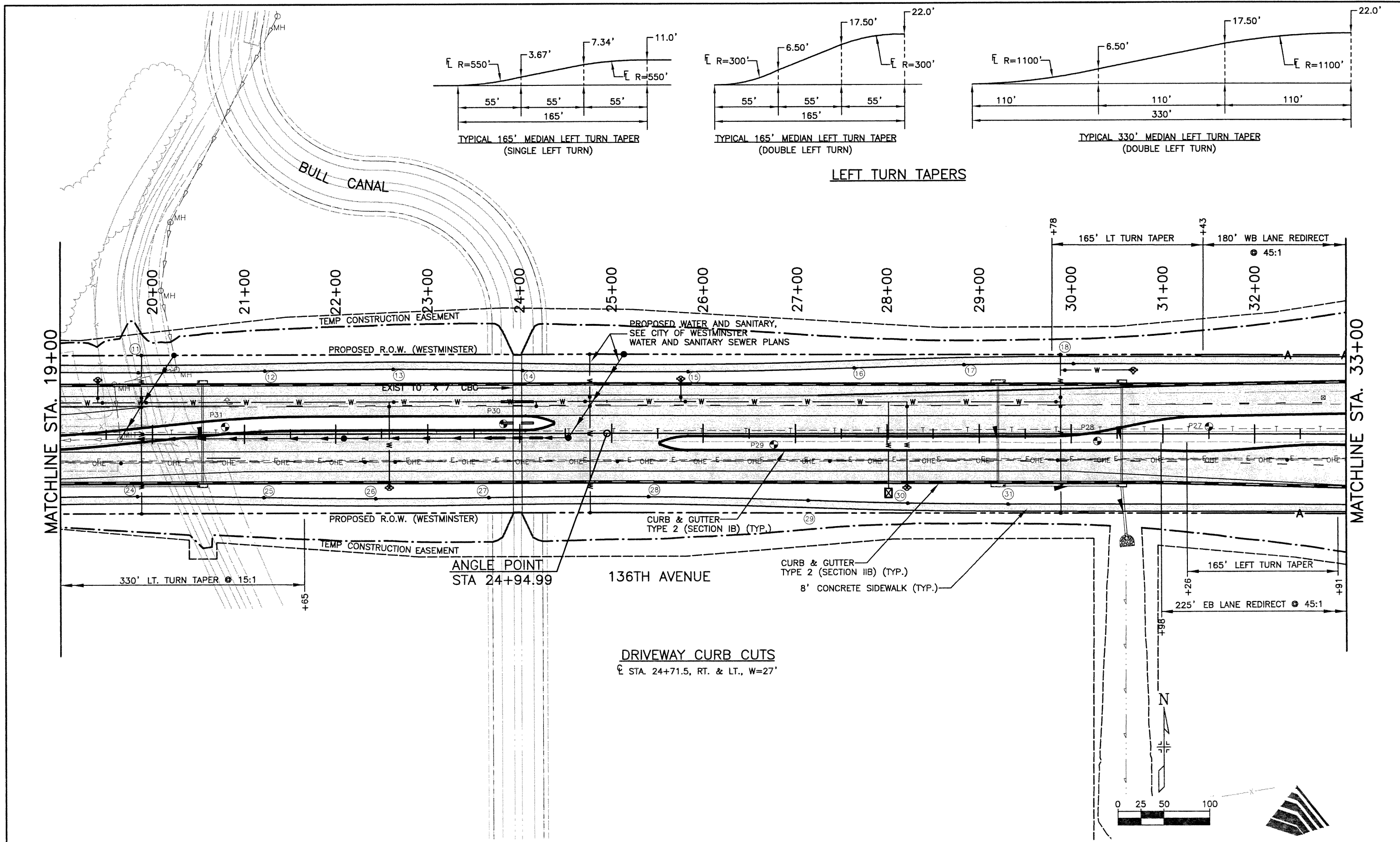
CITY OF WESTMINSTER


MATCHLINE STA. 19+00



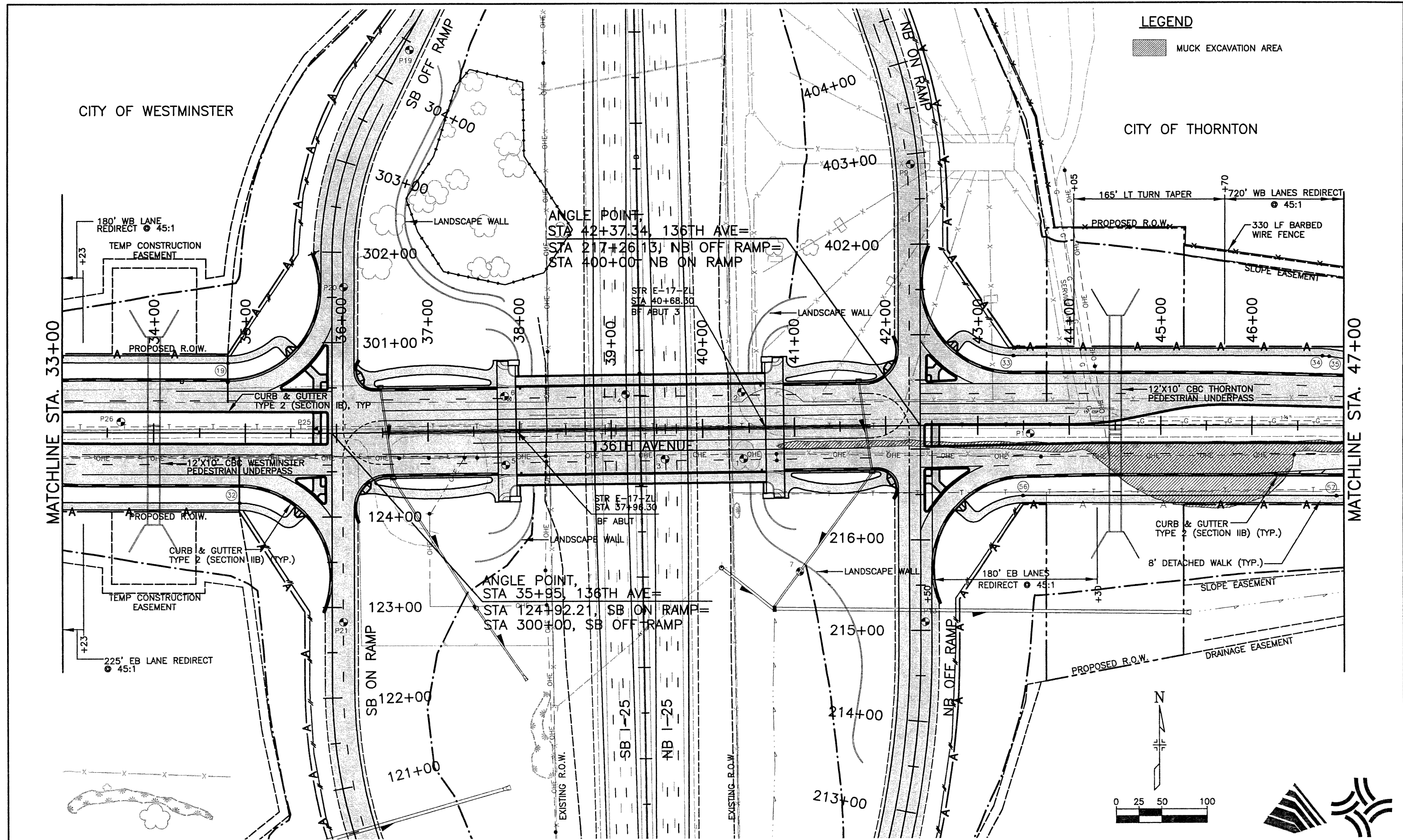
<b>Computer File Information</b>		<b>Index of Revisions</b>		 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b> <b>136TH AVENUE PLAN</b> <b>STA. 8+20 TO STA. 19+00</b>	<b>Project No./Code</b> <b>97-71</b>
Creation Date:	11/15/00 Initials: JAC				No Revisions:		
Last Modification Date:	01/20/03 Initials: DRS				Revised:	Designer: RKZ	
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<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b> No Revisions: Revised: Void:	<b>136TH AVENUE AT I-25 INTERCHANGE</b> <b>136TH AVENUE PLAN</b> STA. 19+00 TO STA. 33+00		Project No./Code	
Creation Date:	11/15/00 Initials: JAC							97-71	
Last Modification Date:	01/20/03 Initials: DRS								
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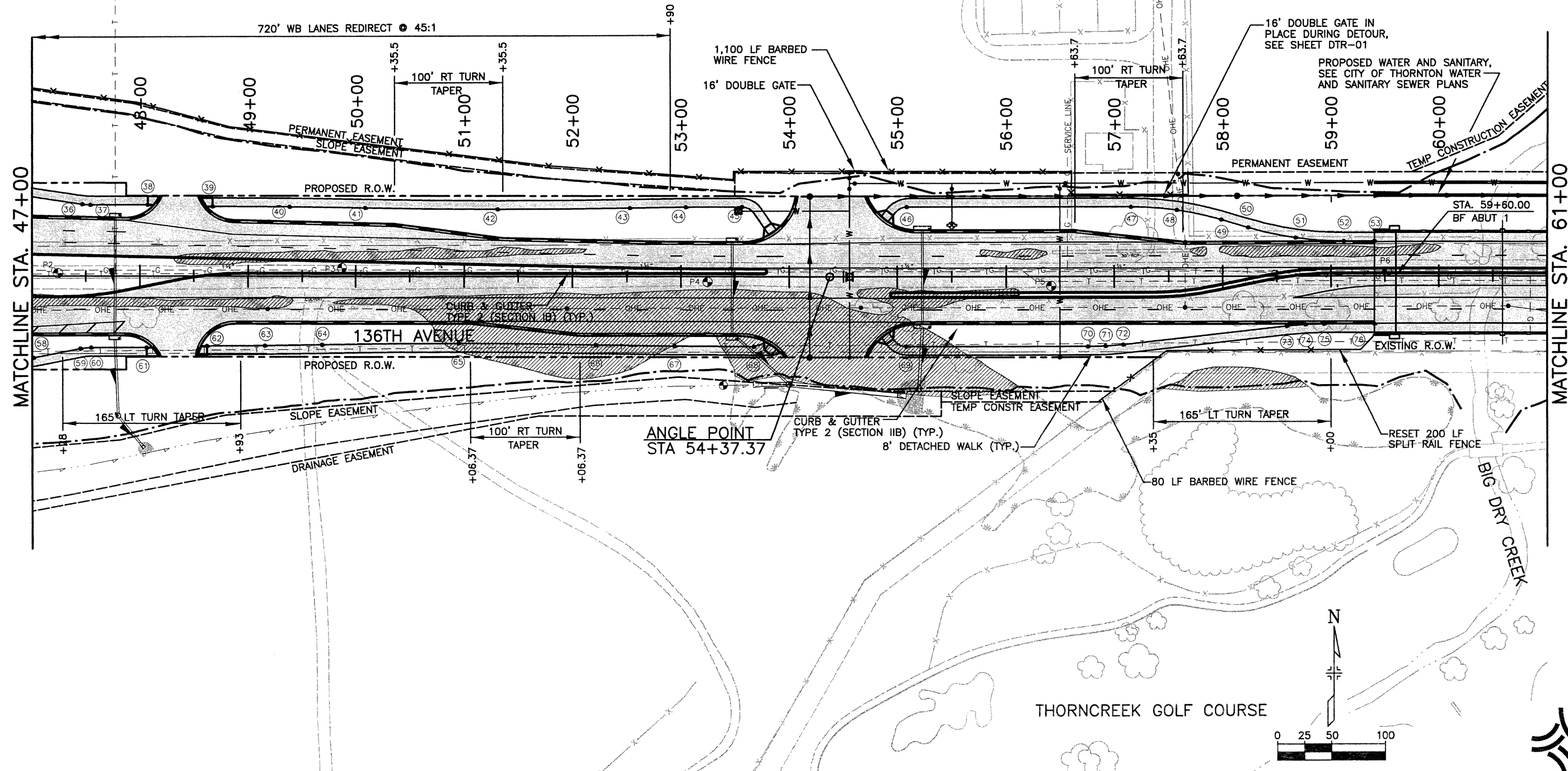



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Creation Date:	11/15/00 Initials: JAC				No Revisions:		Designer: RKZ Detailer: JAC	97-71	
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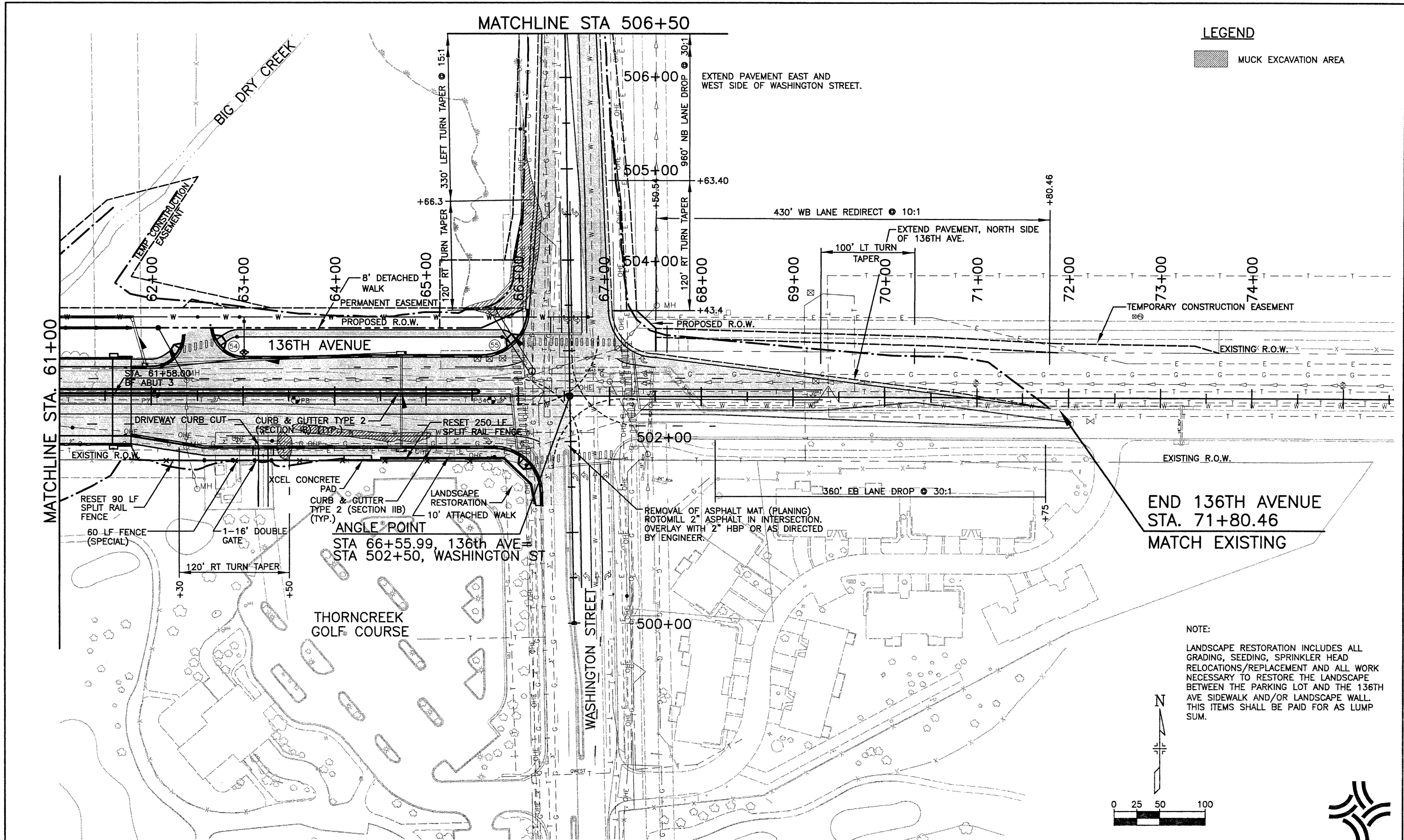
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**LEGEND**  
 MUCK EXCAVATION AREA



<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440          fax 303.721.0832          fhu@fhueng.com</p> <p>Greenwood Corporate Plaza          7951 E. Maplewood Ave. Ste. 200          Englewood, CO 80111</p>	<b>As Constructed</b>		<b>136TH AVENUE AT I-25 INTERCHANGE</b>		<b>Project No./Code</b>		
Creation Date:	11/15/00 Initials: JAC				No Revisions:		136TH AVENUE PLAN		97-71		
Last Modification Date:	12/19/02 Initials: PRH				Revised:		STA. 47+00 TO STA. 61+00				
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**LEGEND**


MUCK EXCAVATION AREA

END 136TH AVENUE  
STA. 71+80.46  
MATCH EXISTING

NOTE:  
LANDSCAPE RESTORATION INCLUDES ALL GRADING, SEEDING, SPRINKLER HEAD RELOCATIONS/REPLACEMENT AND ALL WORK NECESSARY TO RESTORE THE LANDSCAPE BETWEEN THE PARKING LOT AND THE 136TH AVE SIDEWALK AND/OR LANDSCAPE WALL. THIS ITEMS SHALL BE PAID FOR AS LUMP SUM.

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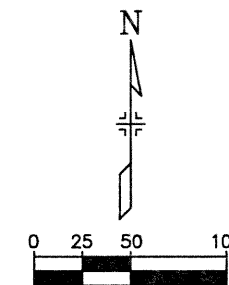
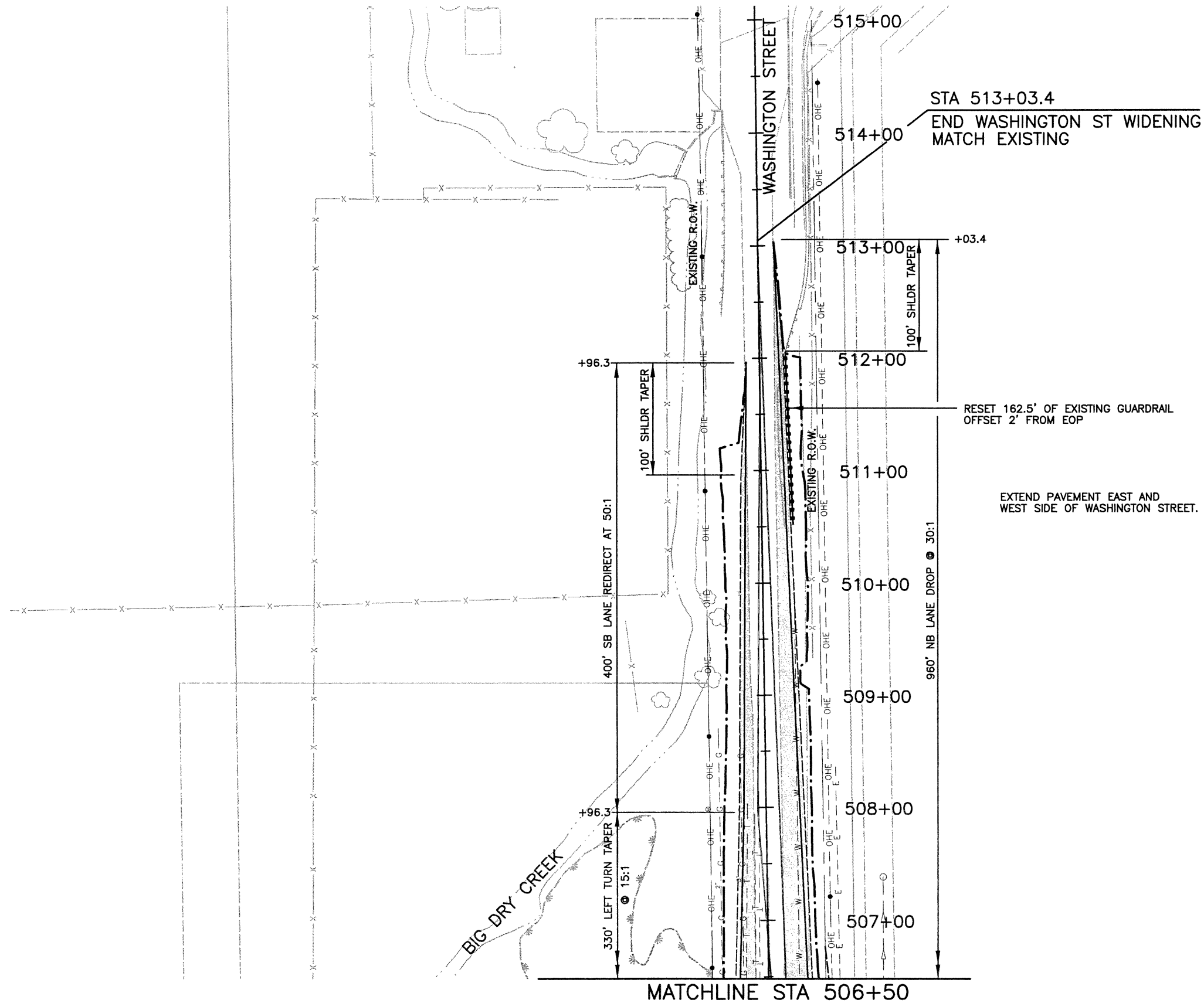
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111


As Constructed	136TH AVENUE AT I-25 INTERCHANGE
No Revisions:	136TH AVENUE PLAN
Revised:	STA. 61+00 TO STA. 71+80.46
Void:	

Designer:	RKZ
Detailer:	JAC
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Subset Sheets:	PLN-05 of 10

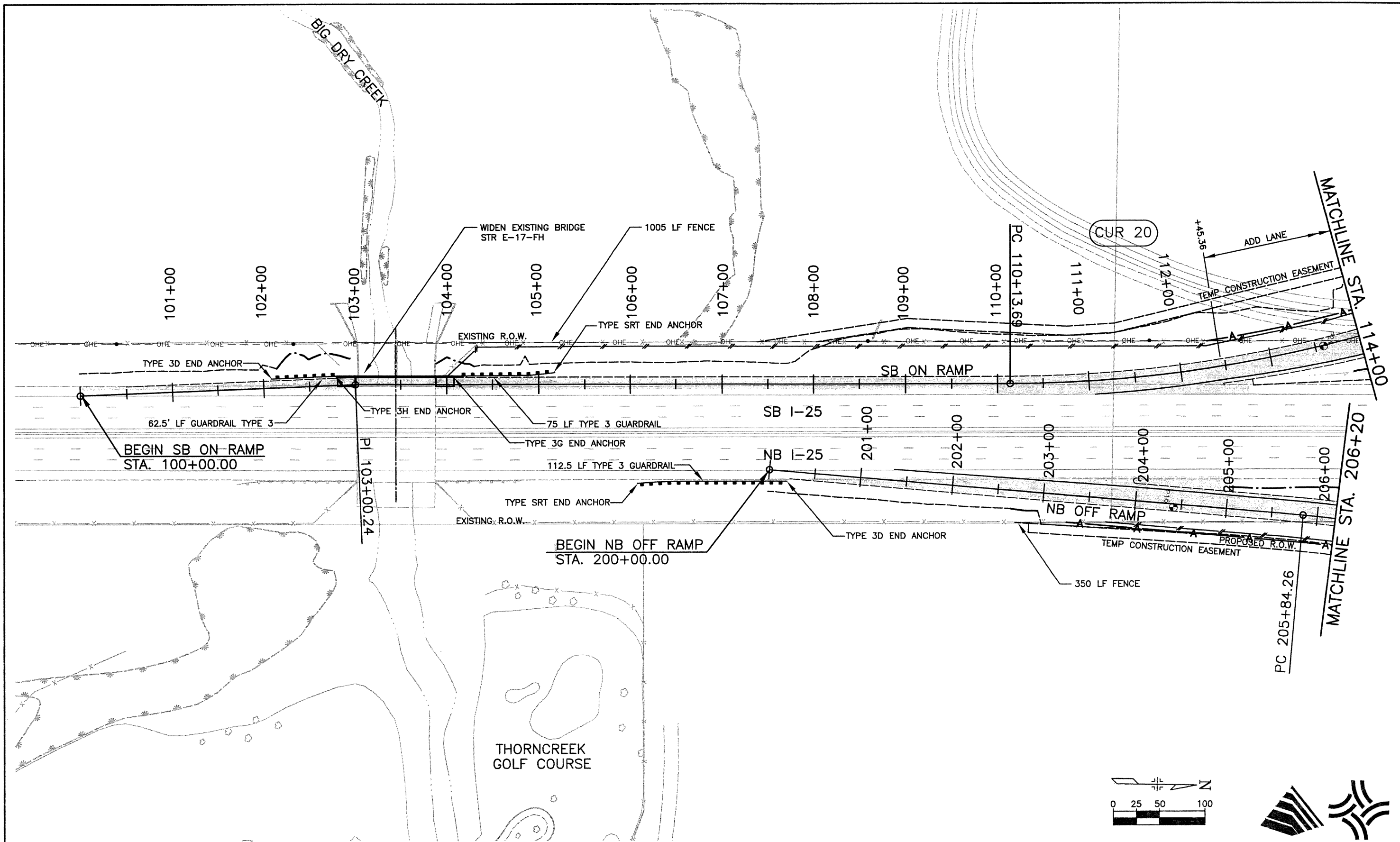
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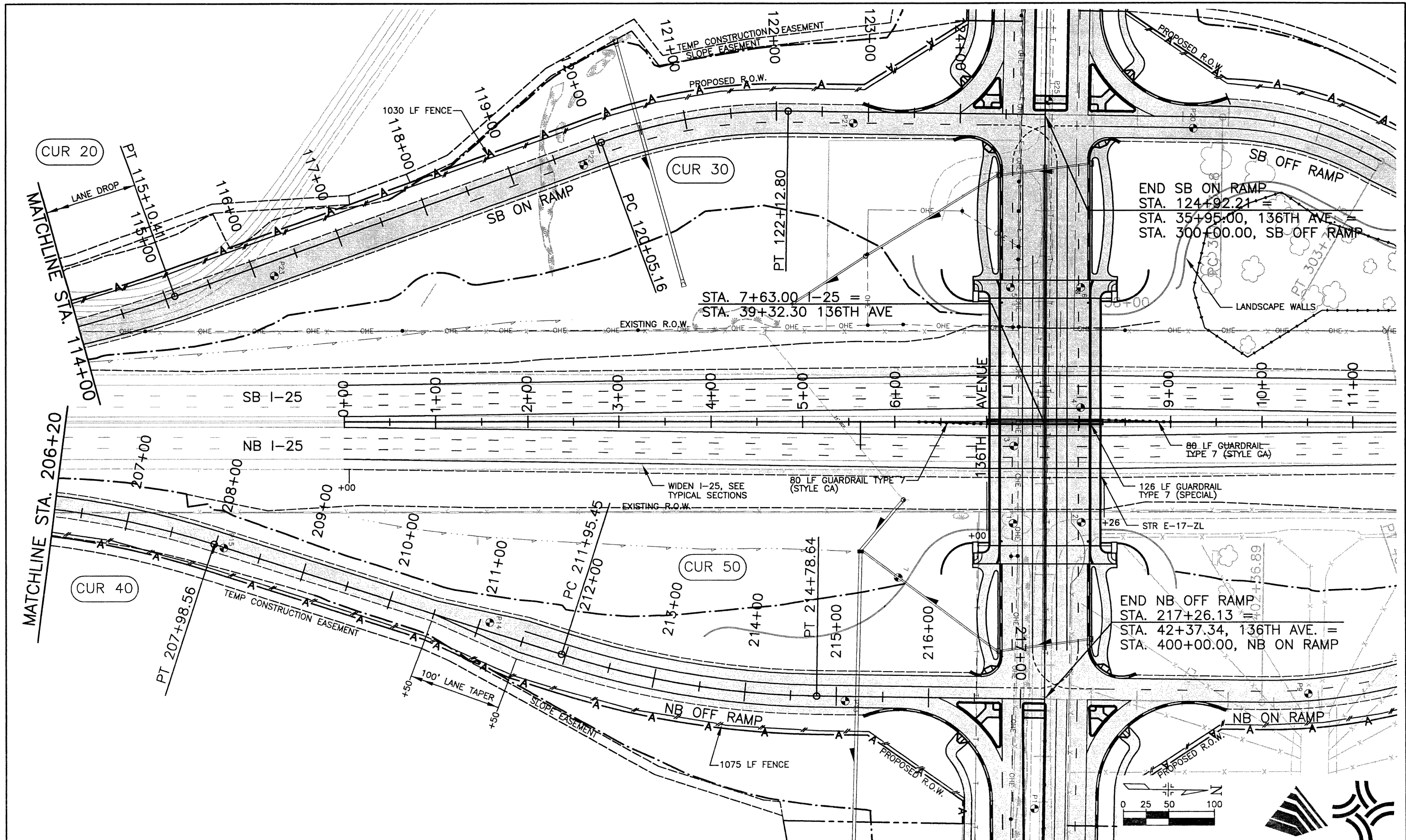
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Creation Date:	04\03\01 Initials: JAC				No Revisions:			97-71
Last Modification Date:	10\17\02 Initials: DRS				Revised:	Designer: RKZ		
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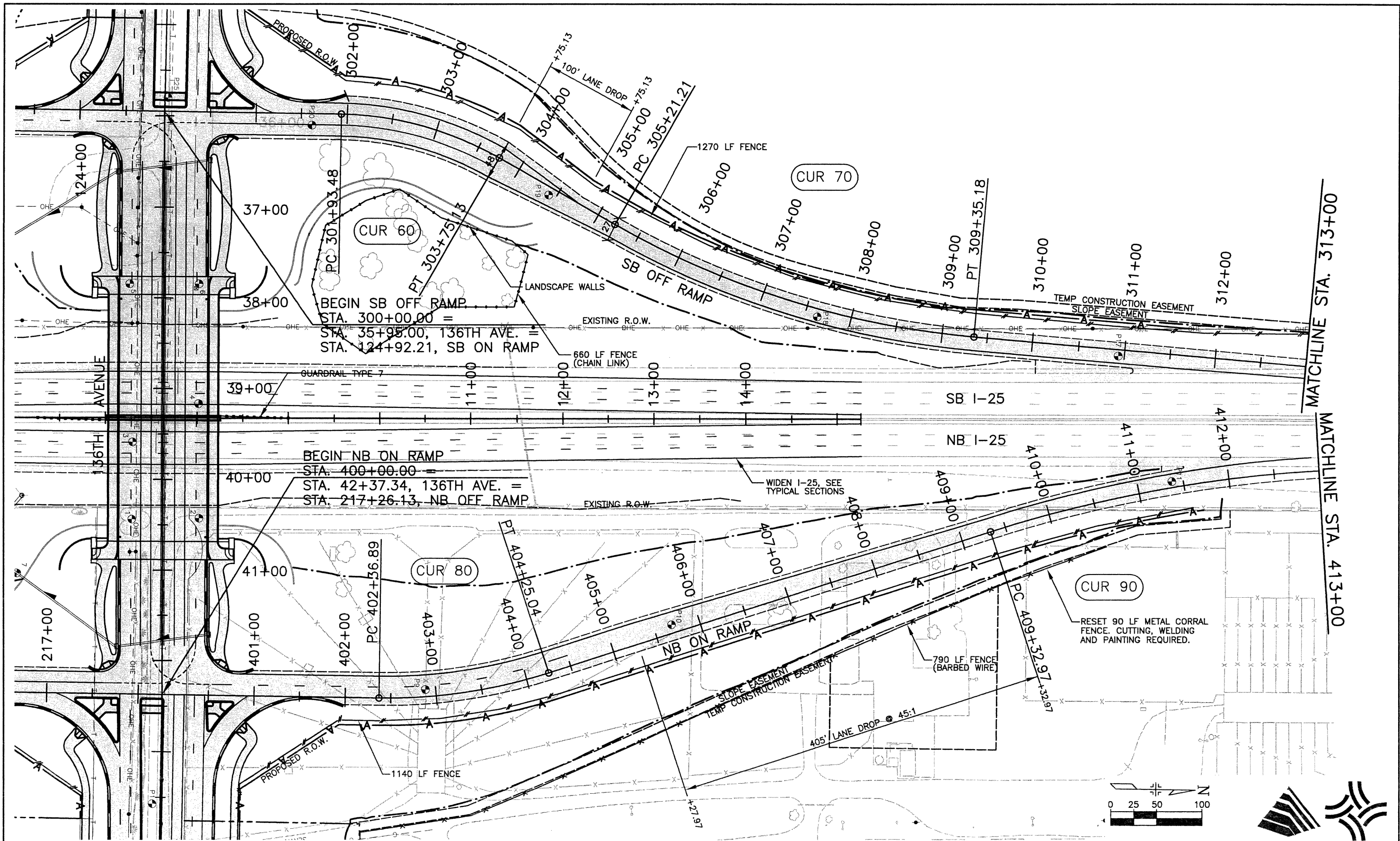
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<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>FELSBURG HOLT &amp; ULLEVIG</p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b>	<b>Project No./Code</b>
Creation Date:	12/05/00 Initials: JAC				No Revisions:	SB ON RAMP 114+00 - 124+92.21	97-71
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303.721.1440  
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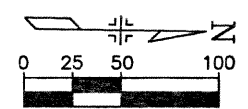
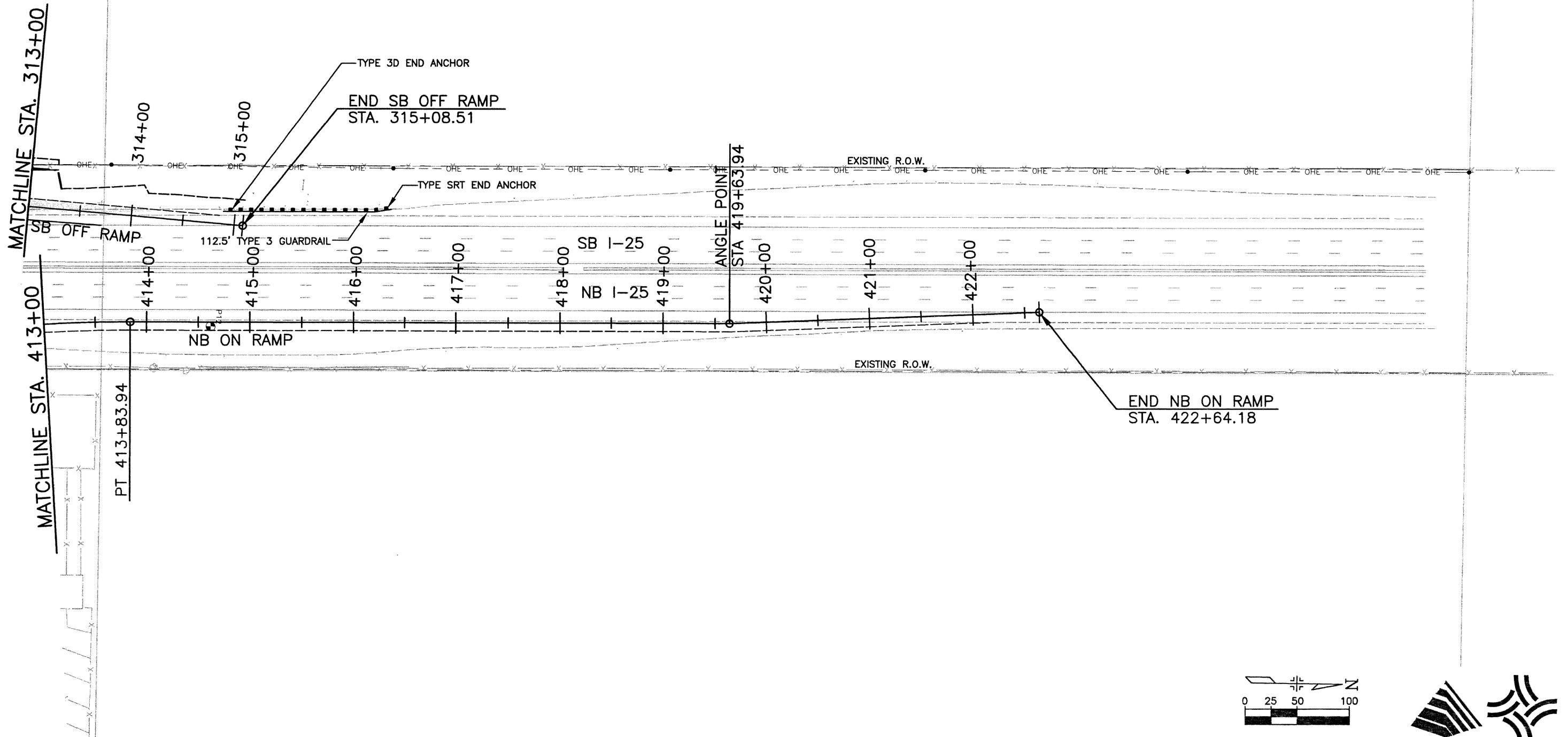
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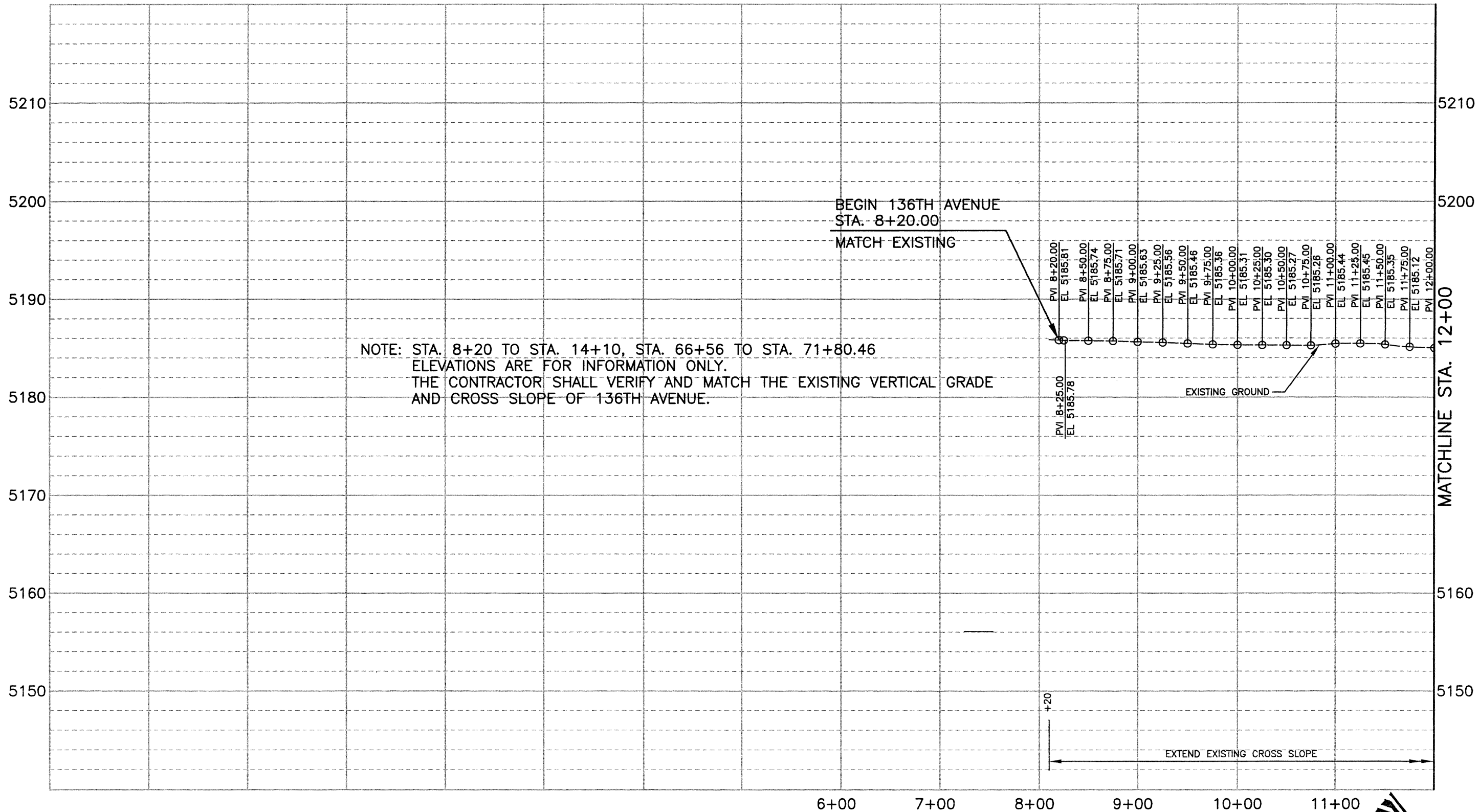


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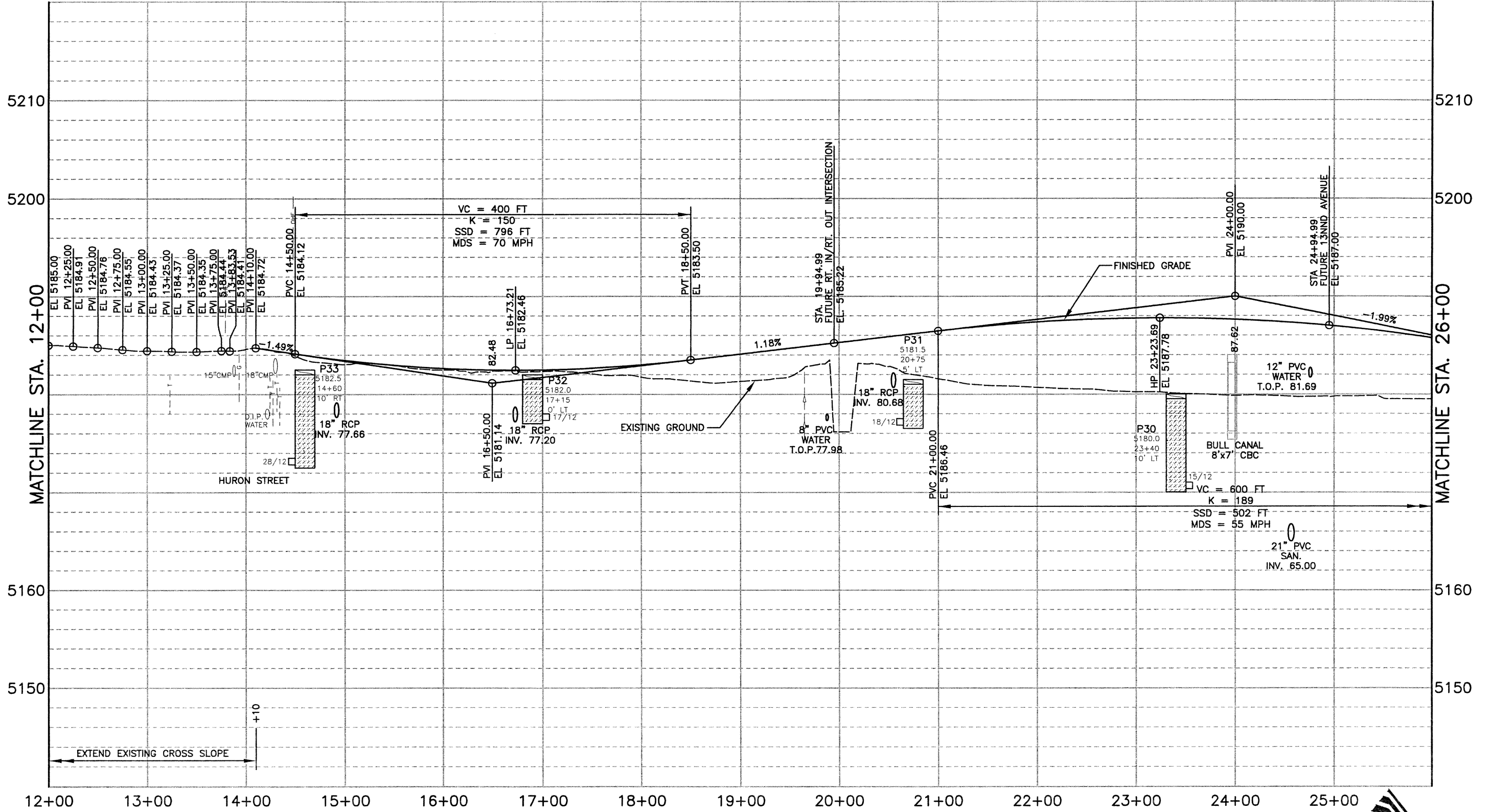
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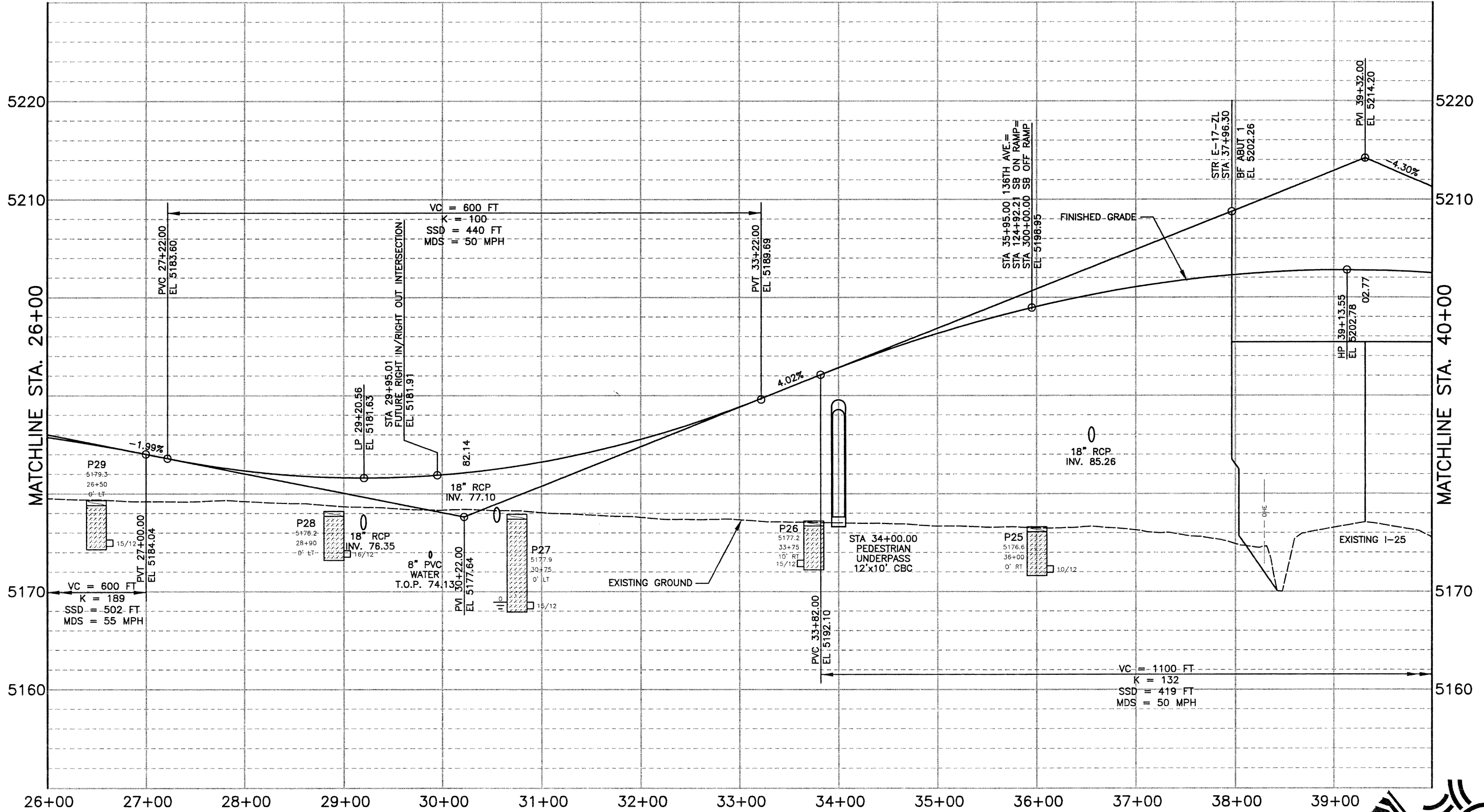
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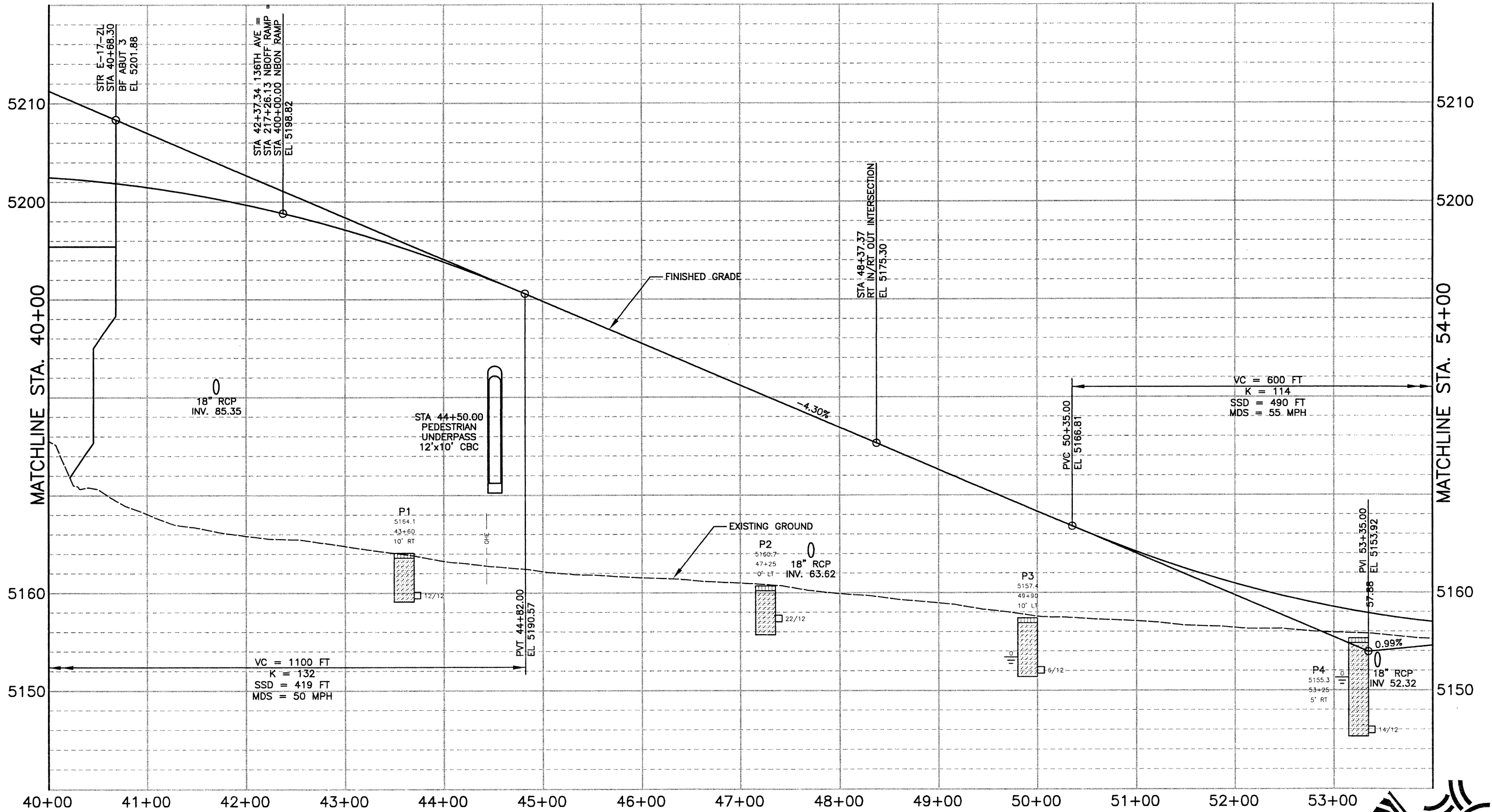
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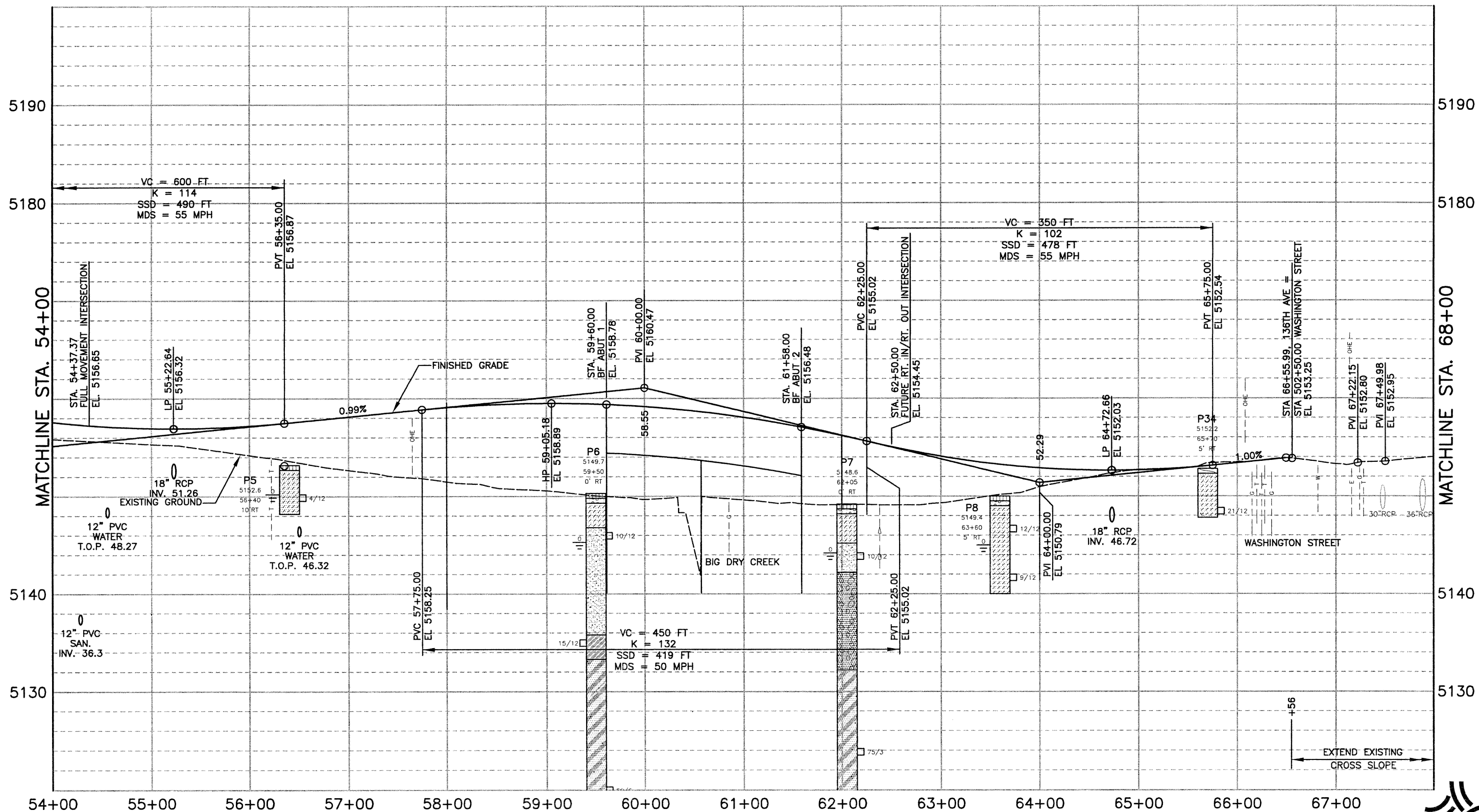
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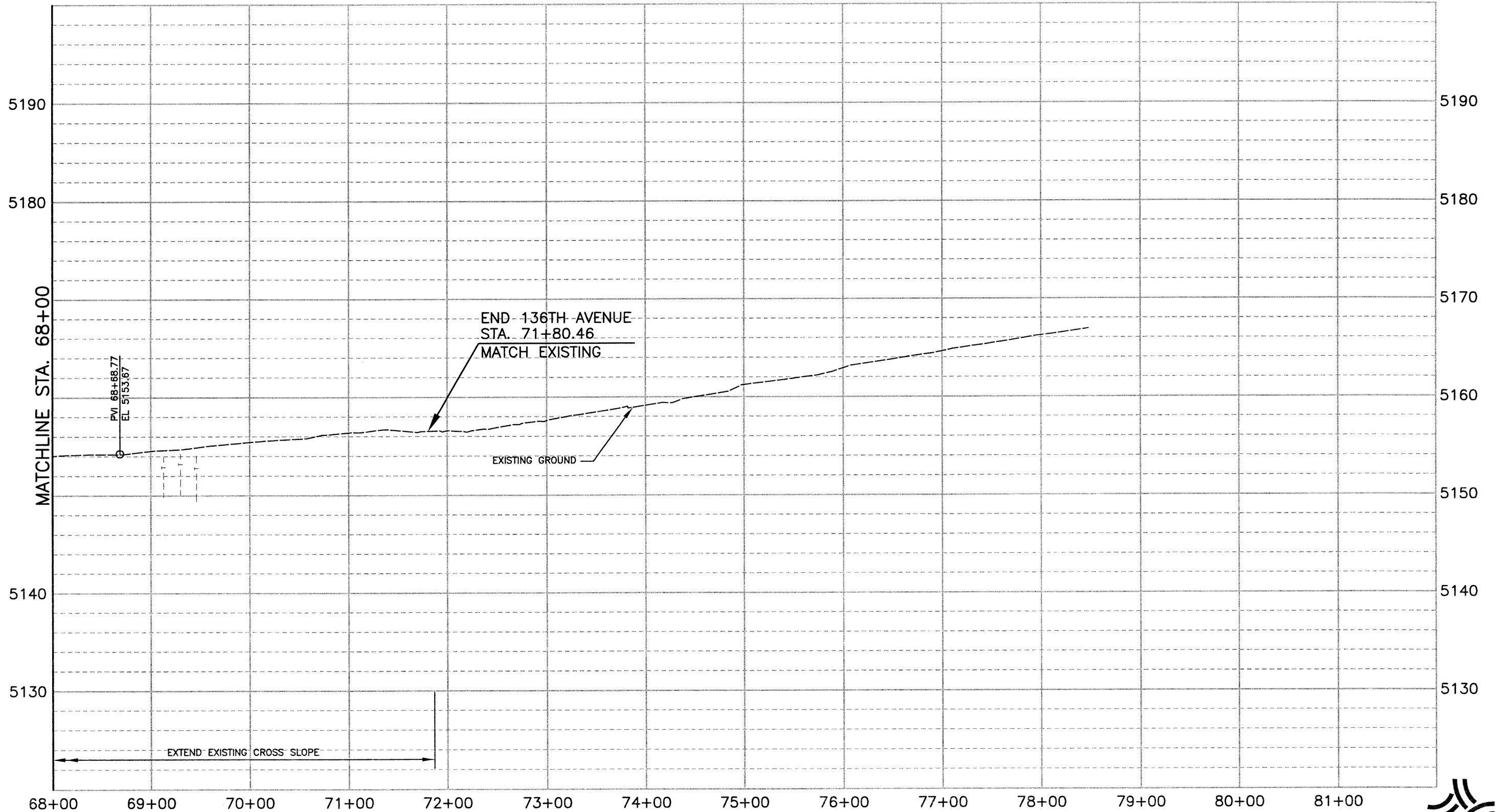



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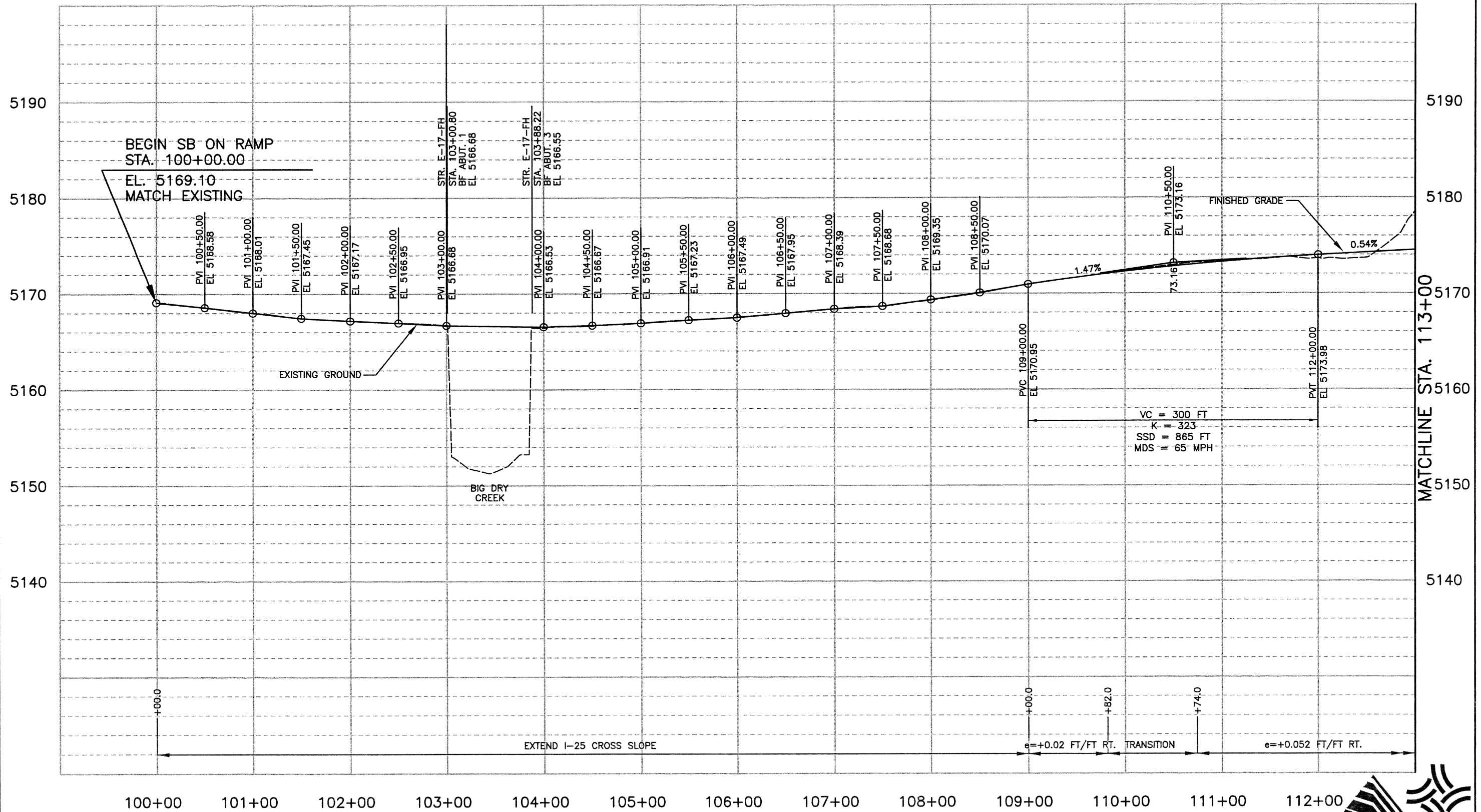
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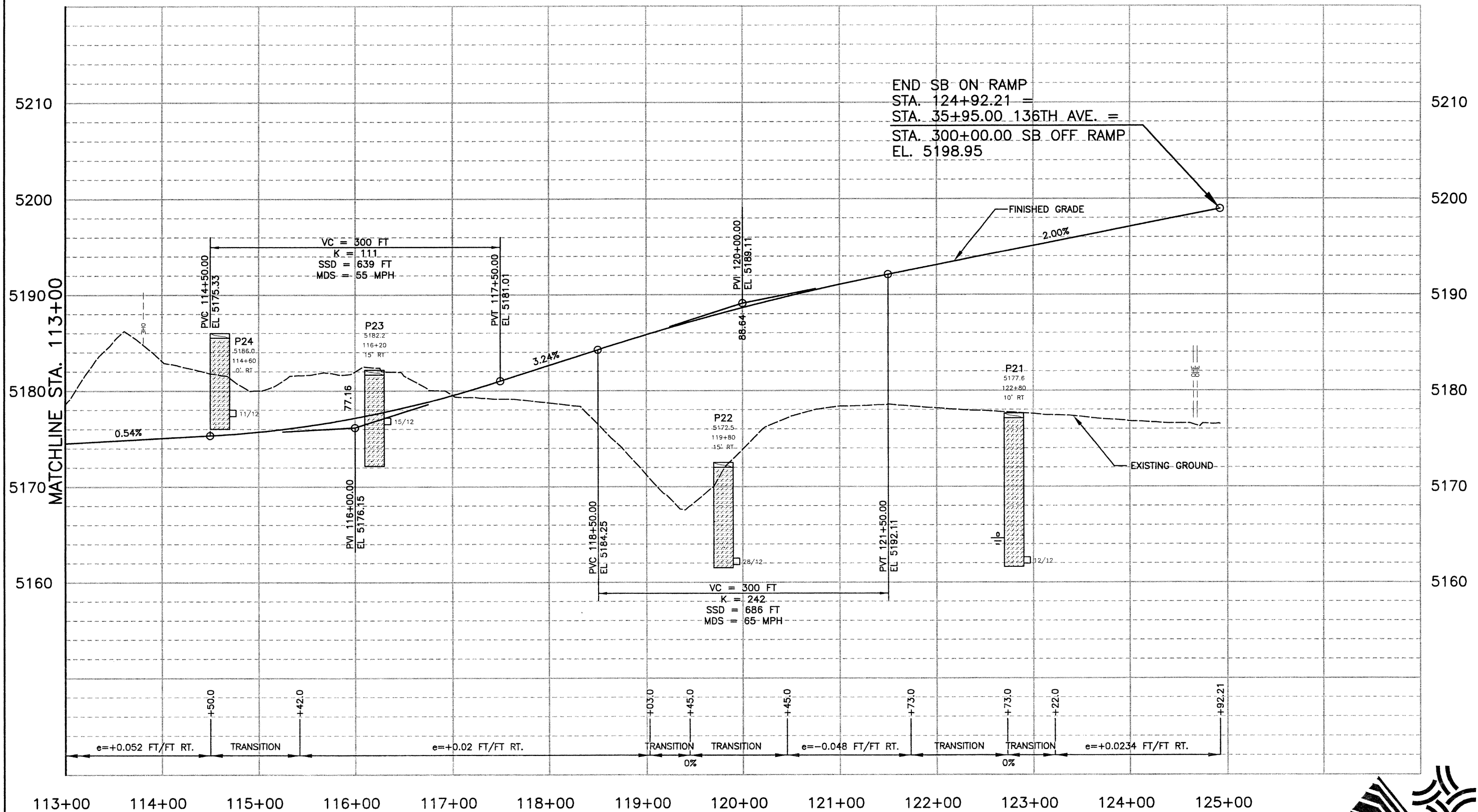
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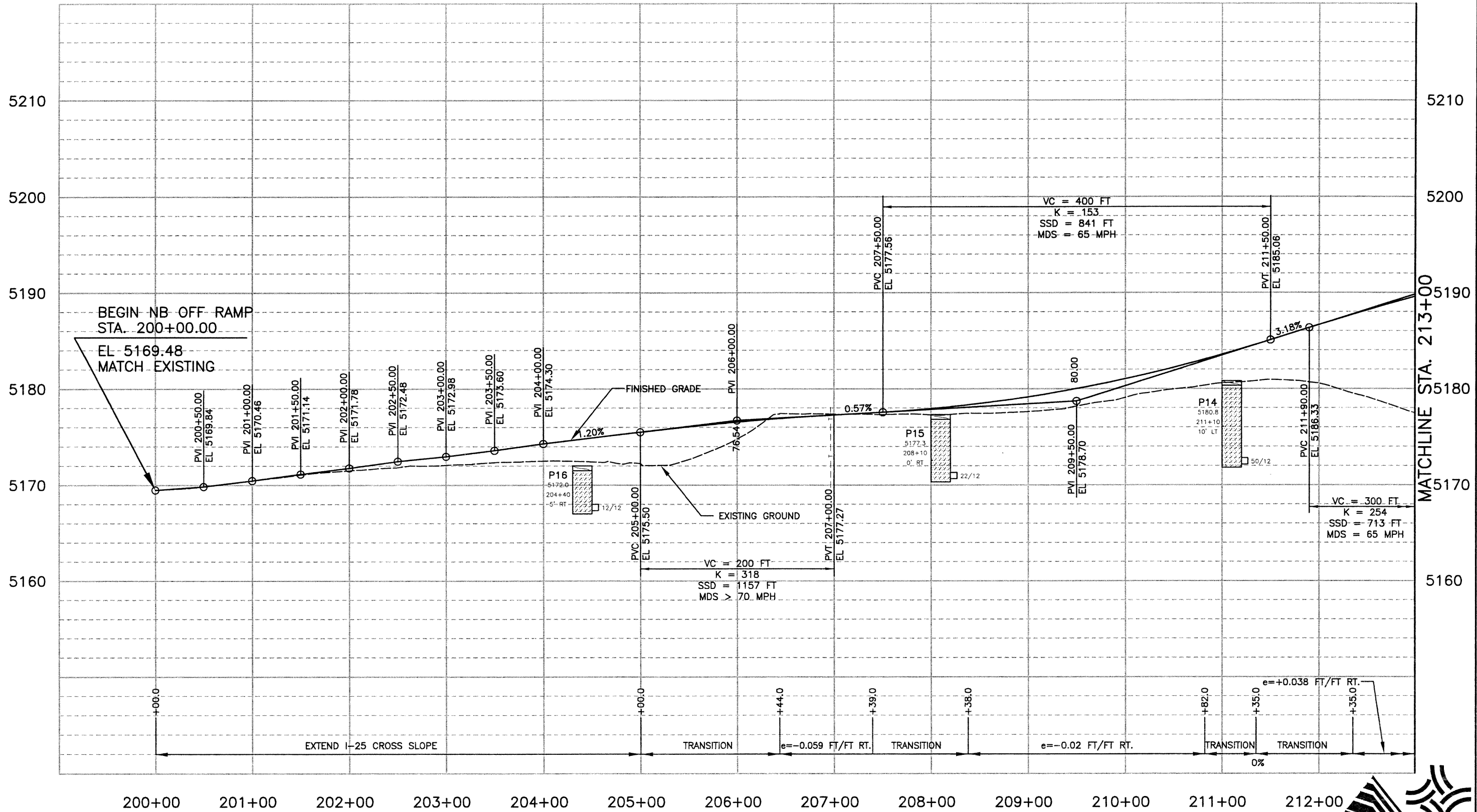
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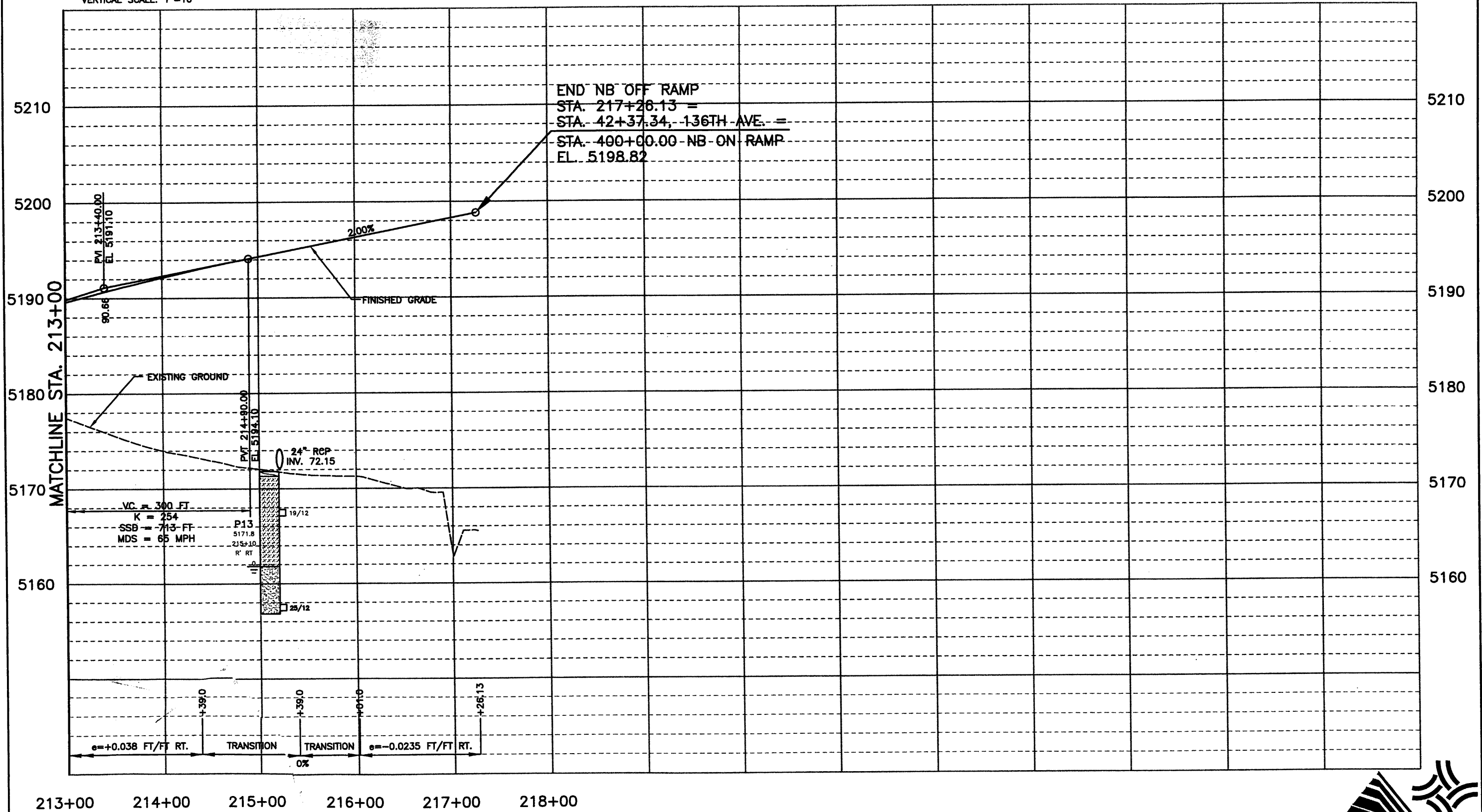
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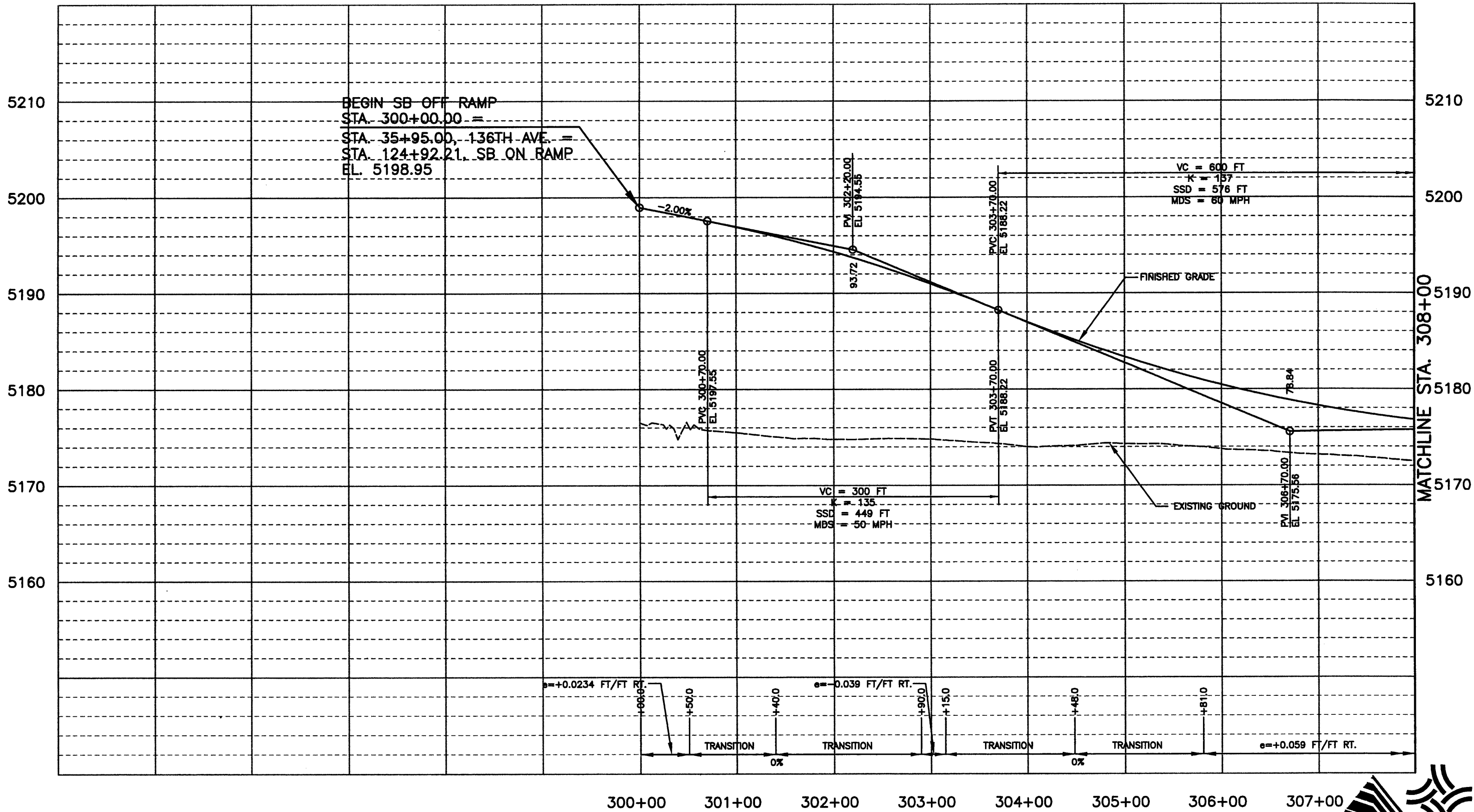
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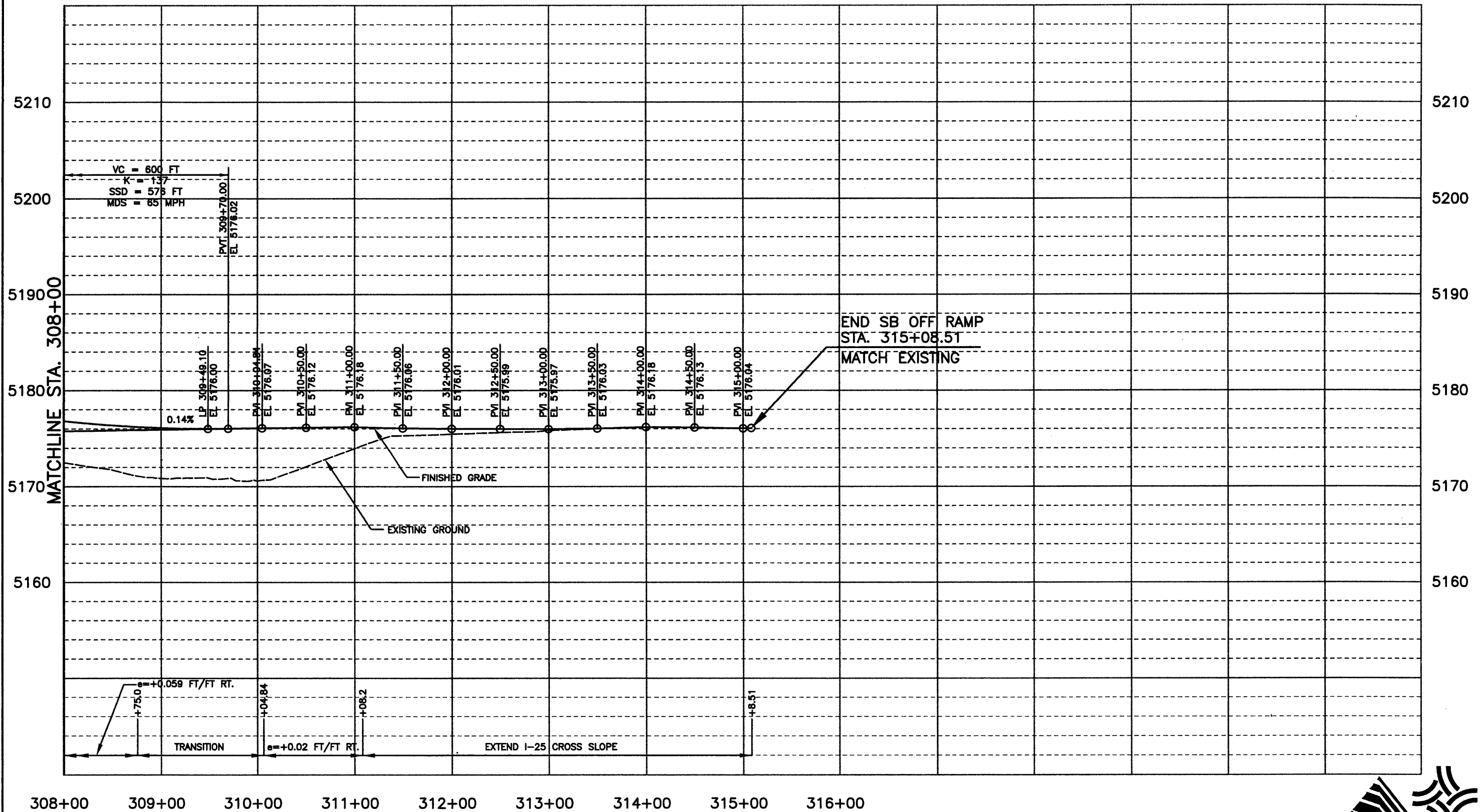
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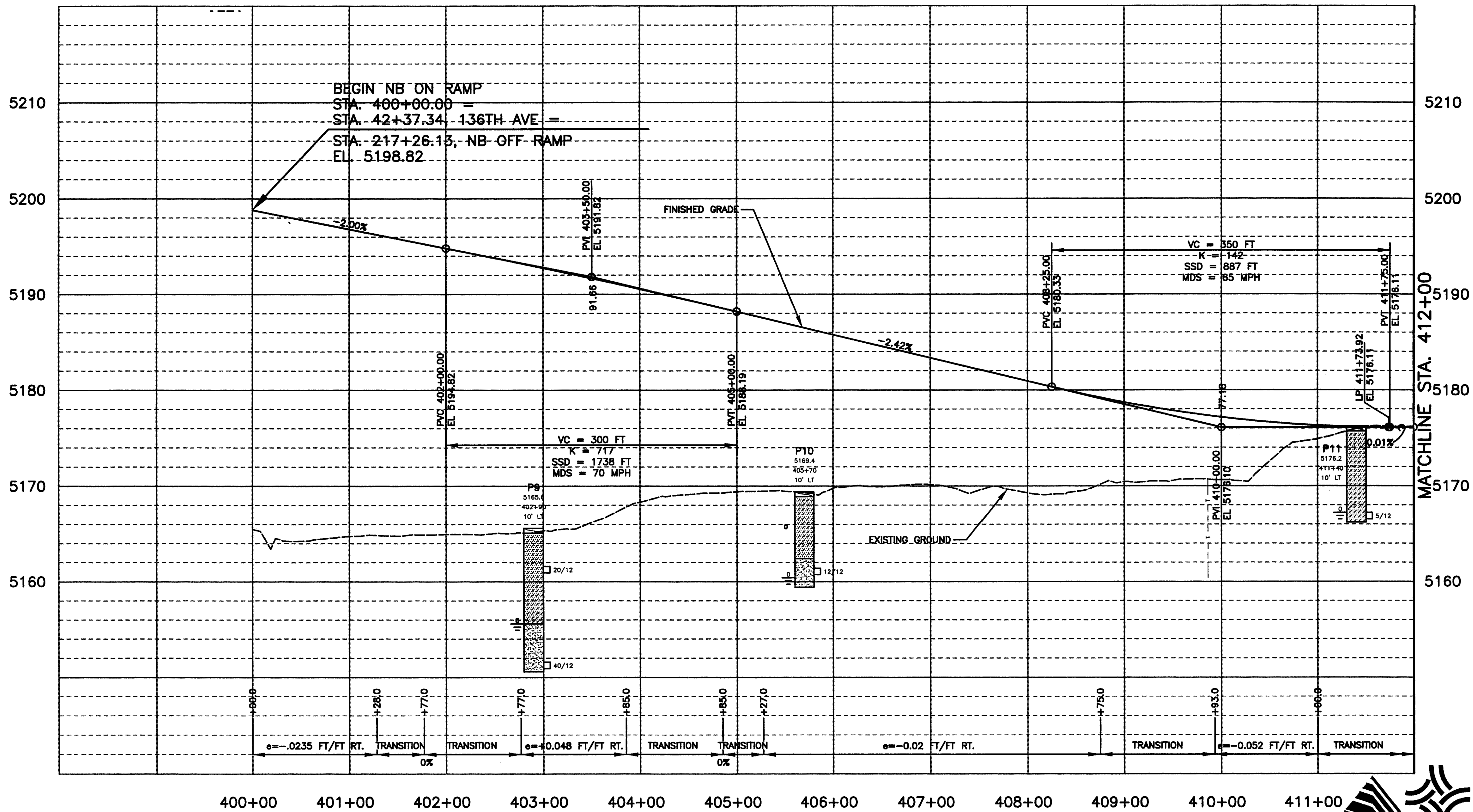
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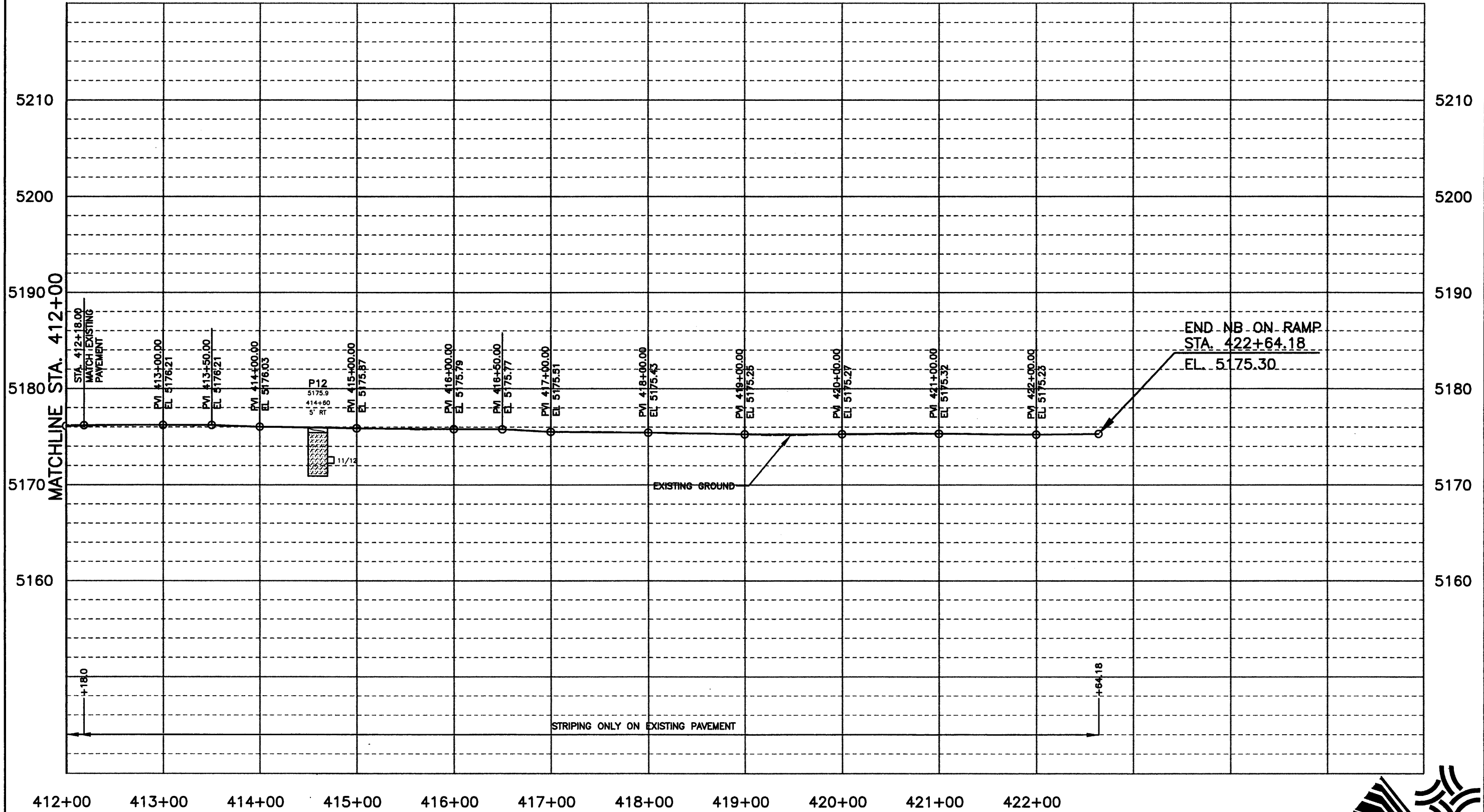
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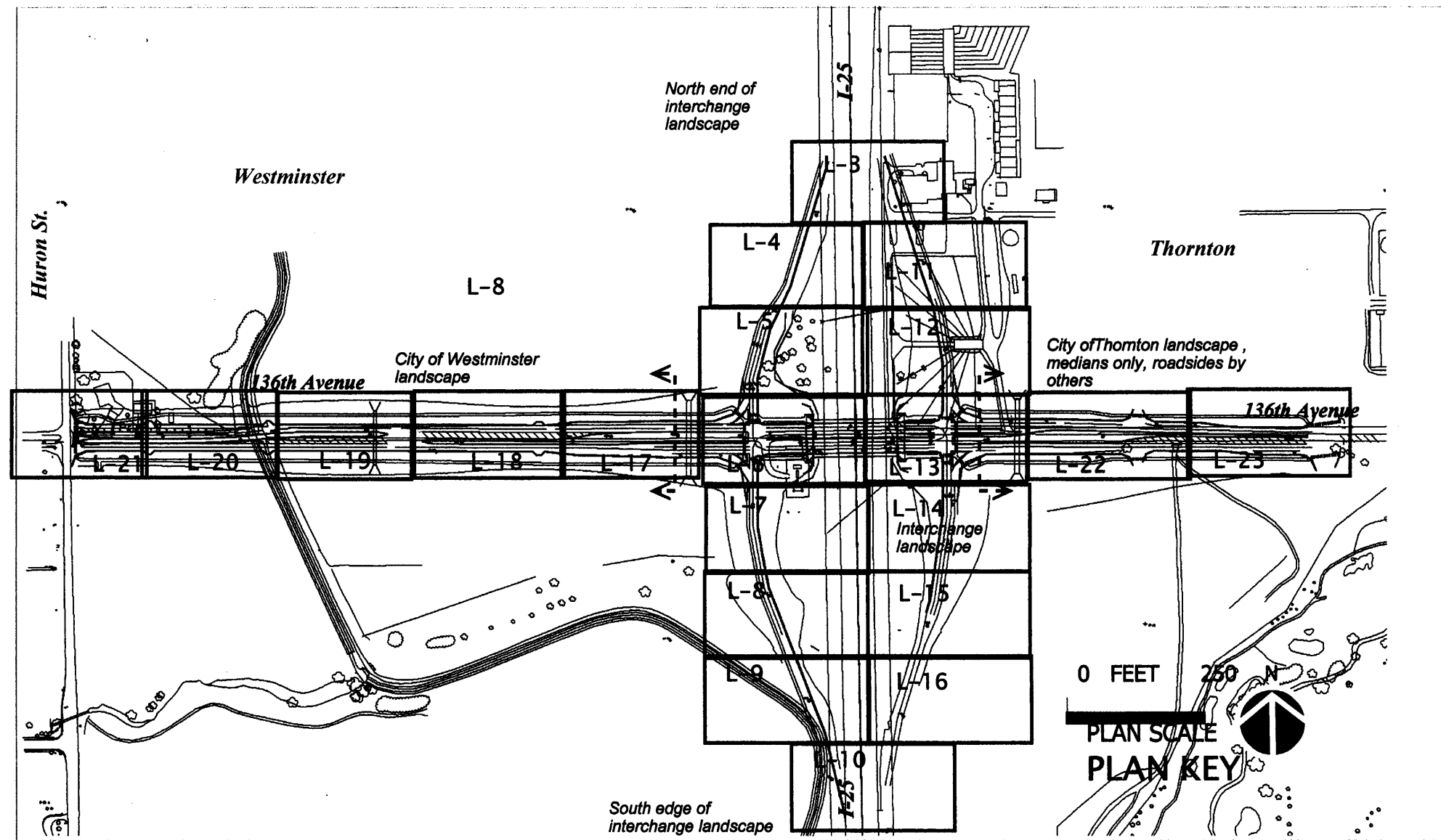
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**LANDSCAPE PLAN NOTES**

- These are final design landscape plans**. Included in this set are the following landscape construction items :
  - Interchange finished grading
  - Native stone landscape walls in interchange
  - Median paving, median edging,
  - Planting plans for trees shrubs, grass seeding, mulching,
  - Edging for water quality basins, and drainage channel treatments
  - Irrigation system installation
  - Landscape maintenance
- Note limits of landscape** described above and in enclosed plans. The roadside areas will be native seeded and mulched as a part of this project. Also see storm water management plans.
- Specifications** for landscape are based on CDOT standards specifications. See special provisions for those sections that specific to this project landscape and irrigation installation.
- Landscape planning **clear zones** noted on plans, for I-25 corridor take into account future roadway widening. No trees shall be placed in this zone.

**5. Protective fencing** is shown on plans for existing cottonwood grove in the northwest quadrant of the interchange. The intent is to minimize the impact of construction activities on these trees and their root zones. Construction activities may require some adjustment to these work limits. Contractor shall provide plans and strategy for protecting this grove of trees during construction. Storage of equipment, construction vehicle traffic, and otherwise disturbance of surface grades is not permitted in protected area. See special provision 107

**6. Native stone landscape walls** shown on plans shall be structurally engineered to retain the slopes behind them. Contractor shall provide shop drawing details and structural analysis for proposed walls for approval by project engineer prior to proceeding on wall construction.. See structural sheets for landscape wall construction. Also see special provision 504

**7. Entry monument signs** - for Thornton and Westminster are located on the 136th Avenue medians, east and west, note locations on these plans, see other roadway and structure plans this set for details

**8. Soil preparation** for irrigated landscape areas shall consist of reapplying salvaged topsoil (from clearing and grubbing activities) adding 12-46-0 fertilizer and 4 cubic yards per 1000 sf of approved organic matter, thoroughly tilled into the top 6 inches of soil. Native seeded areas shall receive topsoil only. No further amending of tree and shrub planting is required.

**9. Architectural treatments** for bridge structure will be a part of bridge plans.

**10. Seeding, irrigated lawns** on the east side will differ somewhat from the lawn grasses on the west side. Thornton side, (east) has two types of irrigated lawn grasses while Westminister on the west has one type. Lawns to be established by drill seeding and or broadcast seeding, followed by hydromulching. See special provision 212 lawn seeding

**FRANK MILTENBERGER**  
 LANDSCAPE ARCHITECT  
 1178 South Race Street  
 Denver, Colorado 80210  
 303.722.7563

**FELSBERG  
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 ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

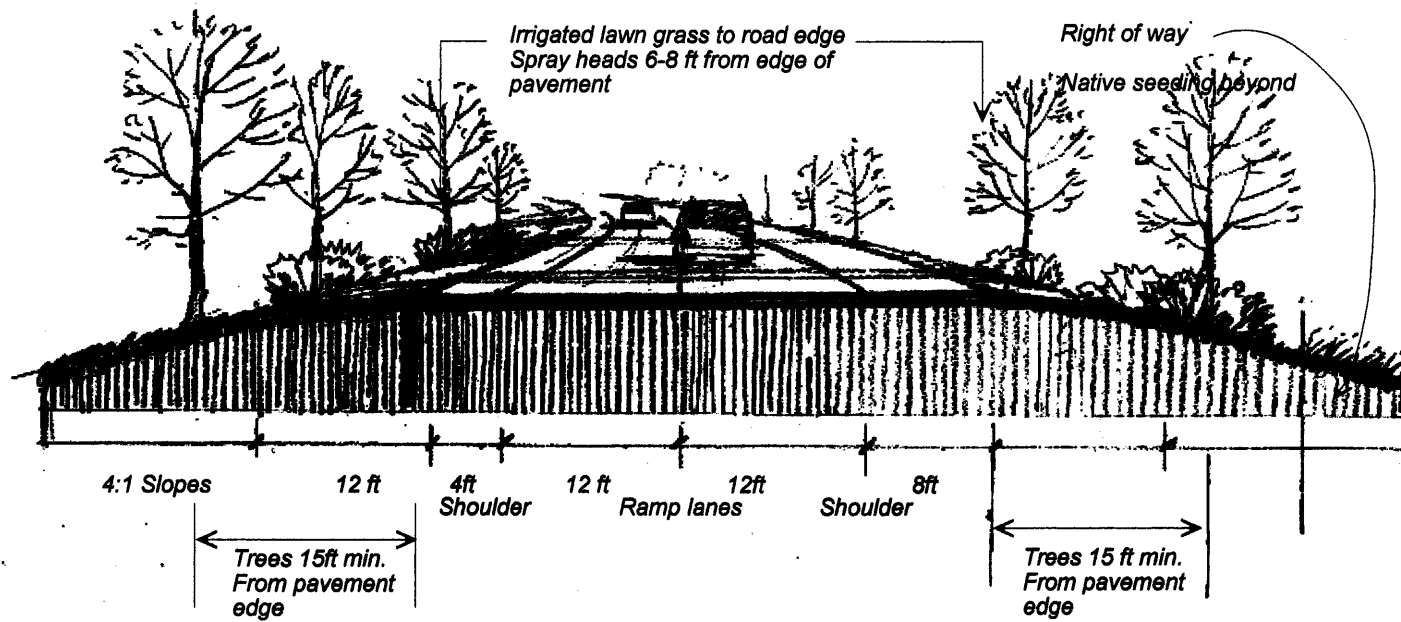
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**LANDSCAPE COVER SHEET**

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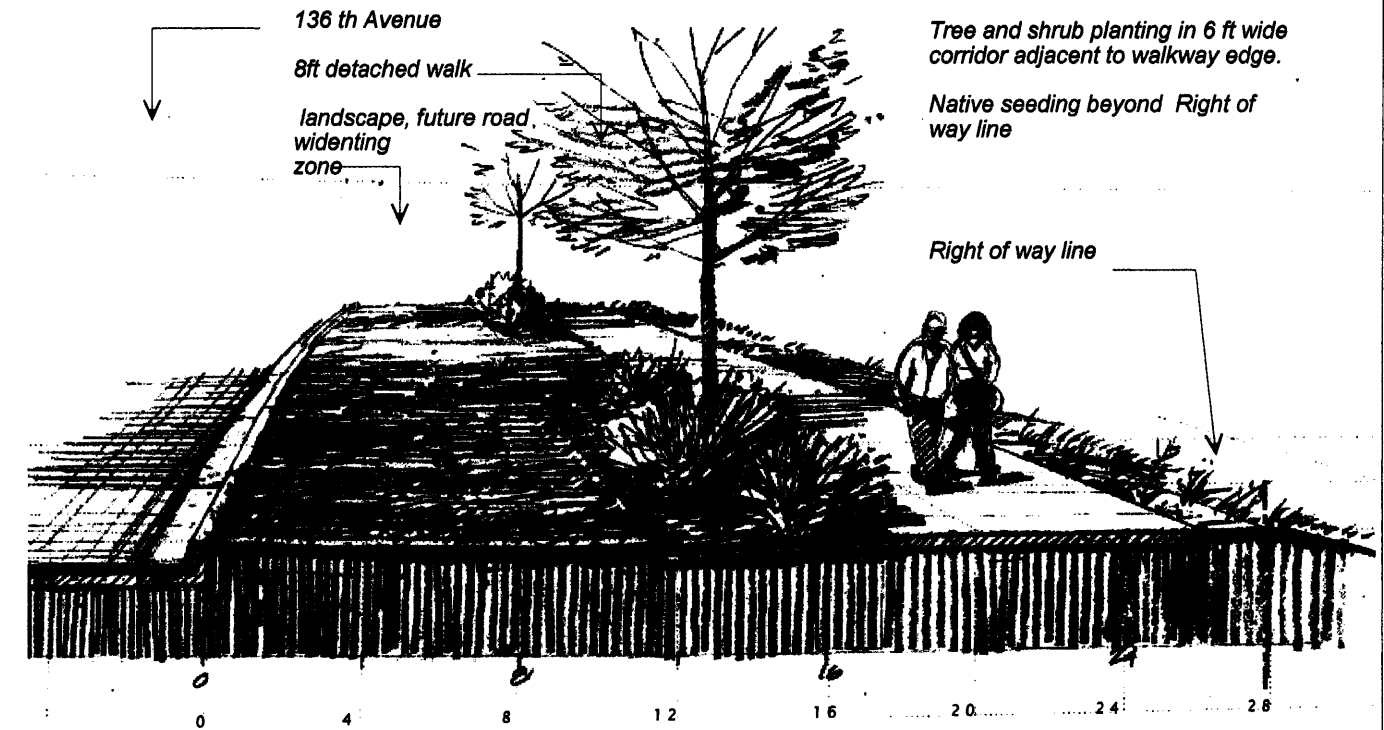
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SEE CONSTRUCTION DETAILS THIS SET



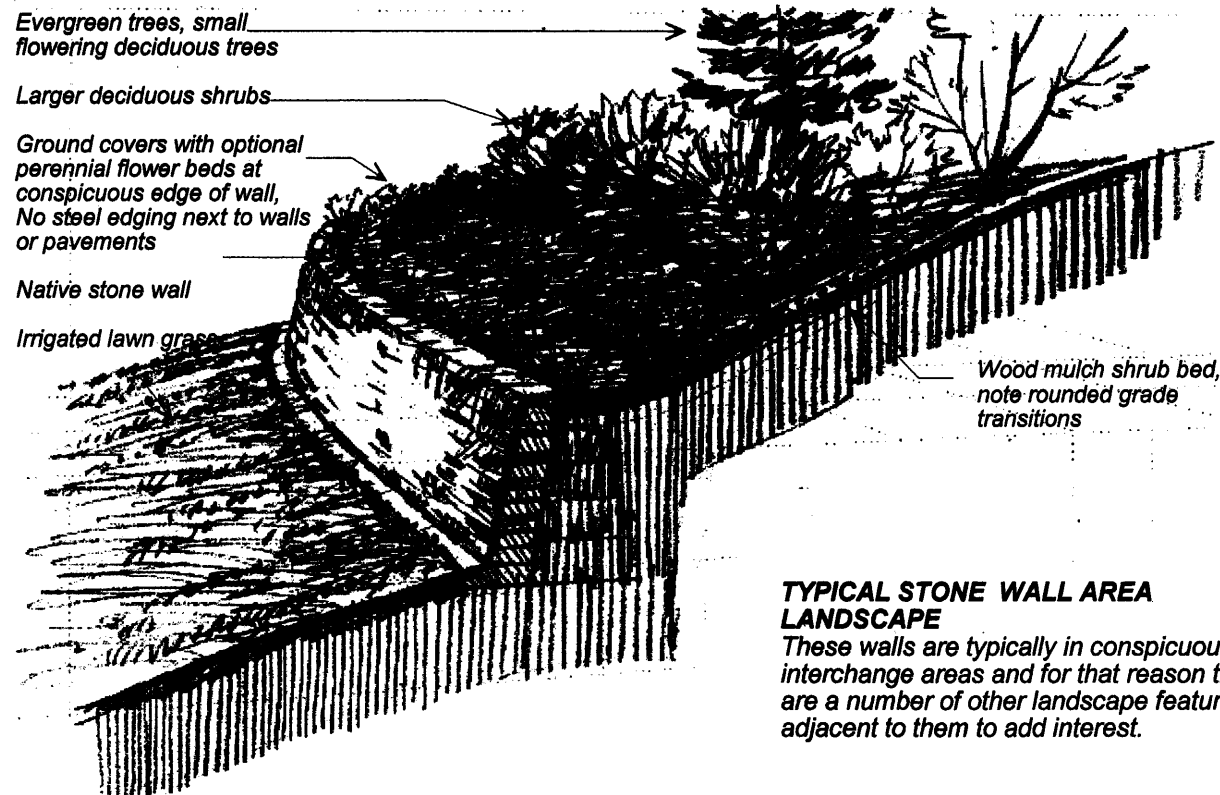
**TYPICAL ON AND OFF RAMP LANDSCAPE**

Clear zone is approximately 17 ft from edge of travel lane. Paved shoulders are 8 ft wide on the outside of the curve and 4 ft wide on the inside of the curve. Trees are located 15 ft from edge of pavement minimum allowing extra clear zone space and wide mower access along shoulders. Irrigated lawn grasses extend to pavement edge while irrigation spray heads are located 6-8 ft from pavement. Spray heads are head to head coverage. Many of the trees along the ramps are in shrub beds.



**TYPICAL 136th AVENUE ROADSIDE**

Sidewalk is located so future road widening will be 6 ft or so from walkway edge. For the same reason trees are located between walkway and where this future lane is to be. Also all irrigation mainline and valves should be located outside of this future roadway widening area.

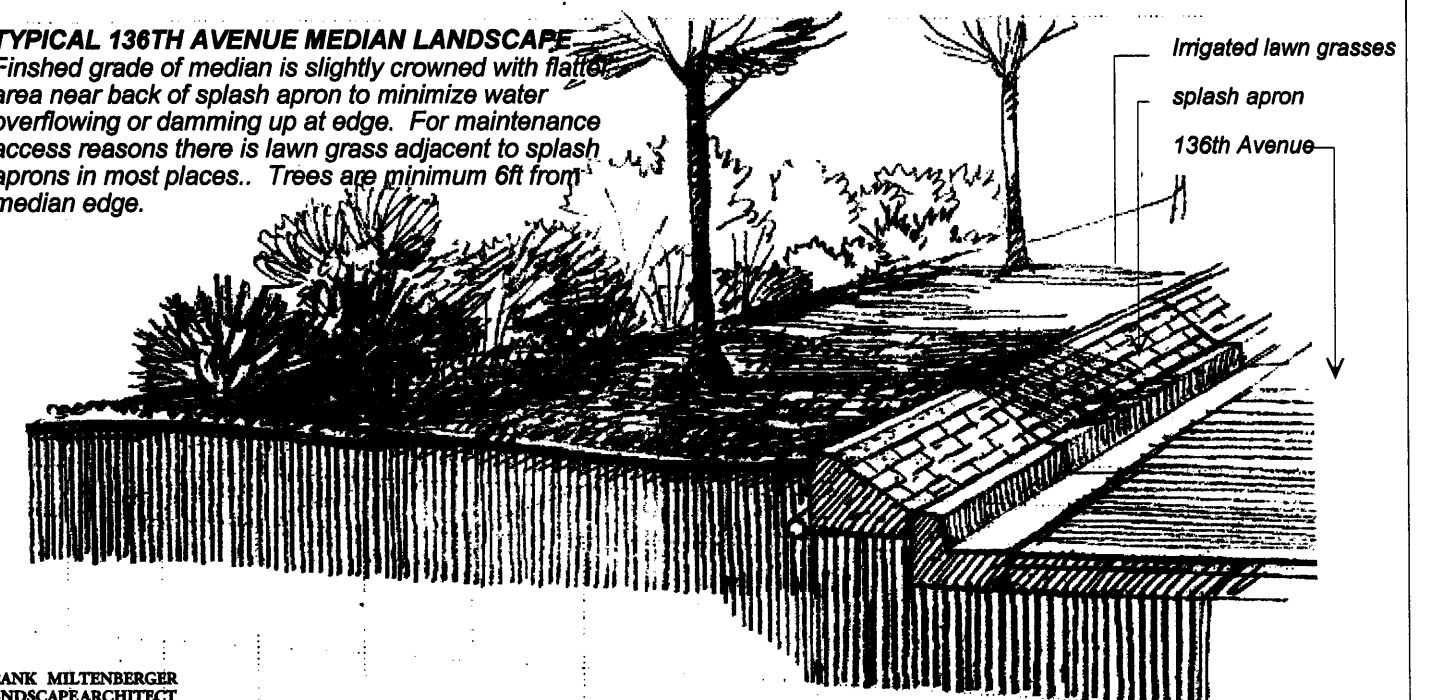


**TYPICAL STONE WALL AREA LANDSCAPE**

These walls are typically in conspicuous interchange areas and for that reason there are a number of other landscape features adjacent to them to add interest.

**TYPICAL 136th AVENUE MEDIAN LANDSCAPE**

Finished grade of median is slightly crowned with flatter area near back of splash apron to minimize water overflowing or damming up at edge. For maintenance access reasons there is lawn grass adjacent to splash aprons in most places. Trees are minimum 6 ft from median edge.



**TYPICAL LANDSCAPE FEATURES**

**FRANK MILTENBERGER**  
LANDSCAPE ARCHITECT  
1178 South Race Street  
Denver, Colorado 80210  
303.722.7563

**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed

No Revisions:

Revised:

Void:

**LANDSCAPE PLANS**  
I-25 / 136 Avenue Interchange  
Cities of Westminster and Thornton, CO

Designer: **FM**

Detailer:

Sheet Subset:

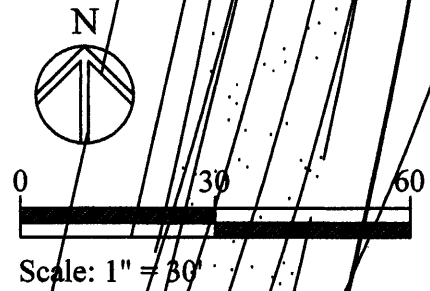
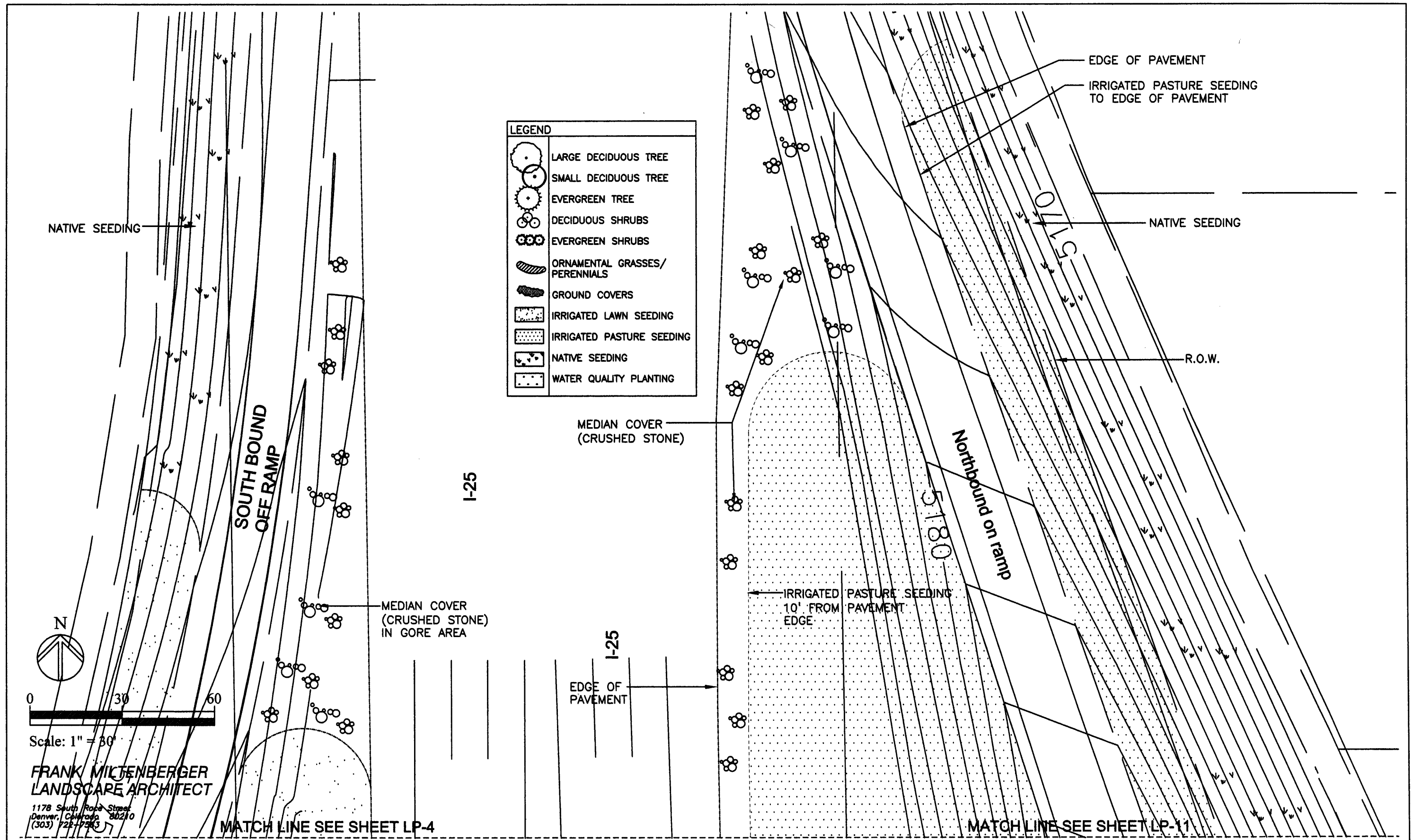
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Project No./Code

Sheet Number **207**

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Drawing File Name:	
Acad Ver. 2000i	Scale: Units: English

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**FRANK MILTENBERGER**  
**LANDSCAPE ARCHITECT**  
 1178 South Race Street  
 Denver, Colorado 80210  
 (303) 722-7563

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

Computer File Information			
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Last Modification Date: 1-21-03	Initials: S.T.		
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Acad Ver. 2000i	Scale: 1"=30'	Units: English	

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 fax 303.721.0832  
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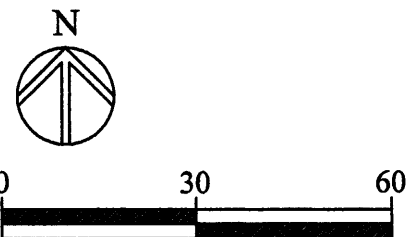
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Designer: FM	
Detailer: ST	
Sheet Subset: L-3	Subset Sheets: L-3 of L-24

Project No./Code
Sheet Number 208



MATCH LINE SEE SHEET LP-3

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING



Scale: 1" = 30'

**FRANK MILTENBERGER**  
LANDSCAPE ARCHITECT

1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7583

R.O.W.  
TOE OF FILL SLOPE  
EDGE OF PAVEMENT  
IRRIGATED LAWN

10-NR  
2-AP  
1-PP  
13-GC  
3-CH

PERENNIALS:  
19-FRG  
19-BAG  
19-AJS  
19-GD  
16-BL  
15-GY  
15-DL

PERENNIALS

SOUTH BOUND  
OFF RAMP

20' LANDSCAPE  
PLANNING CLEAR  
ZONE

PERENNIALS

3-PC  
1-AP  
8-NR  
3-PP  
3-CH

MATCH LINE SEE SHEET LP-5

LANDSCAPE PLANNING  
CLEAR ZONE TO CENTER LINE OF I-25

EDGE OF PAVEMENT

EXIST. EDGE OF I-25

I-25

Computer File Information	
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Last Modification Date: 12-10-02	Initials: S.T.
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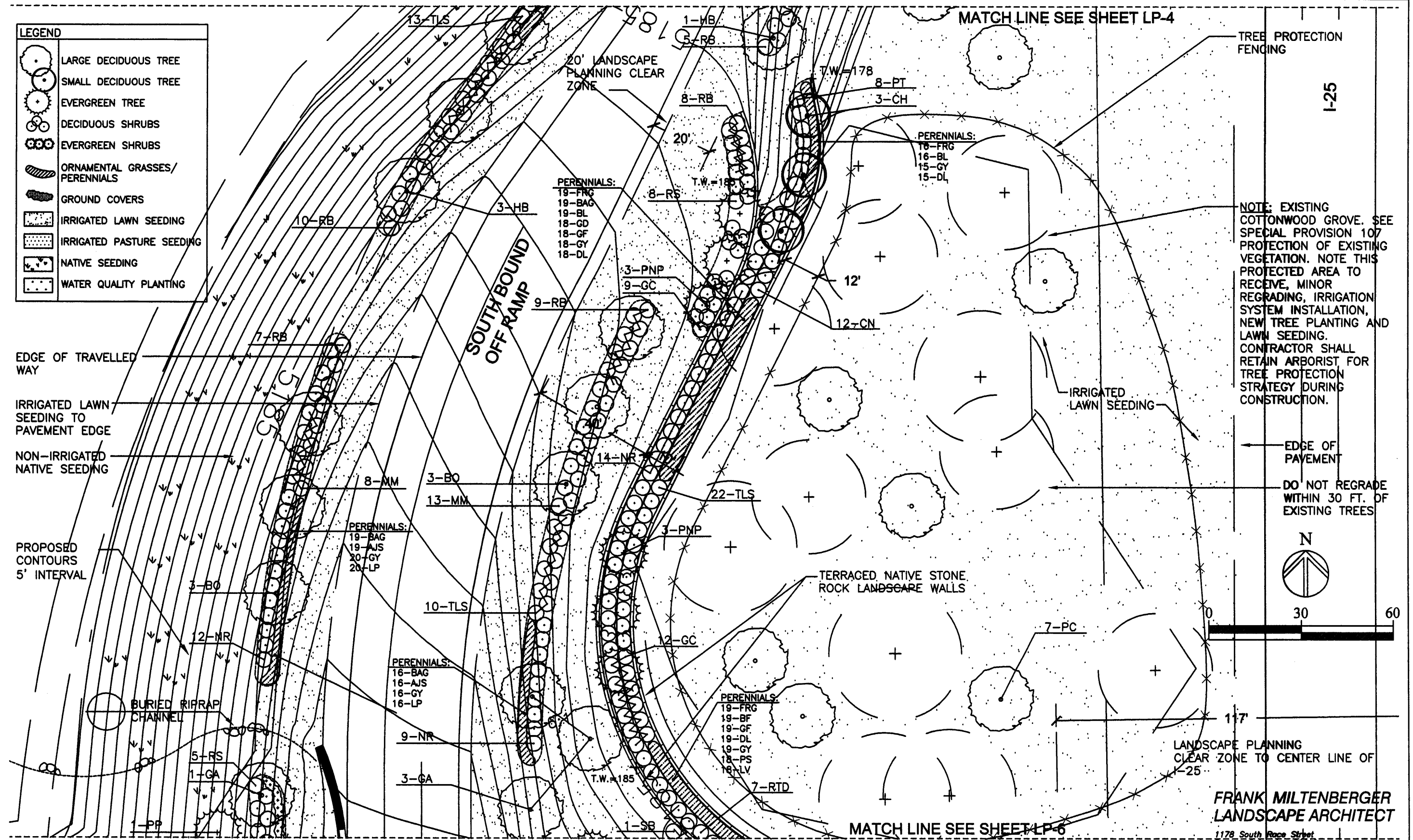
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Revised:  
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**LANDSCAPE PLAN**

Designer: FM  
Detailer: ST  
Sheet Subset: LP-4  
Subset Sheets: L-4 of L-24

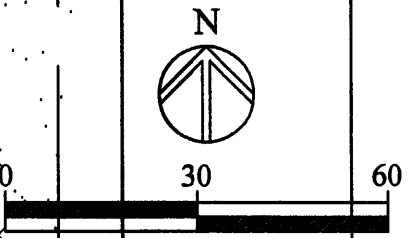
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Sheet Number **209**

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING



NOTE: EXISTING COTTONWOOD GROVE. SEE SPECIAL PROVISION 107 PROTECTION OF EXISTING VEGETATION. NOTE THIS PROTECTED AREA TO RECEIVE, MINOR REGRADING, IRRIGATION SYSTEM INSTALLATION, NEW TREE PLANTING AND LAWN SEEDING. CONTRACTOR SHALL RETAIN ARBORIST FOR TREE PROTECTION STRATEGY DURING CONSTRUCTION.

DO NOT REGRADE WITHIN 30 FT. OF EXISTING TREES



FRANK MILTENBERGER  
LANDSCAPE ARCHITECT

1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7563

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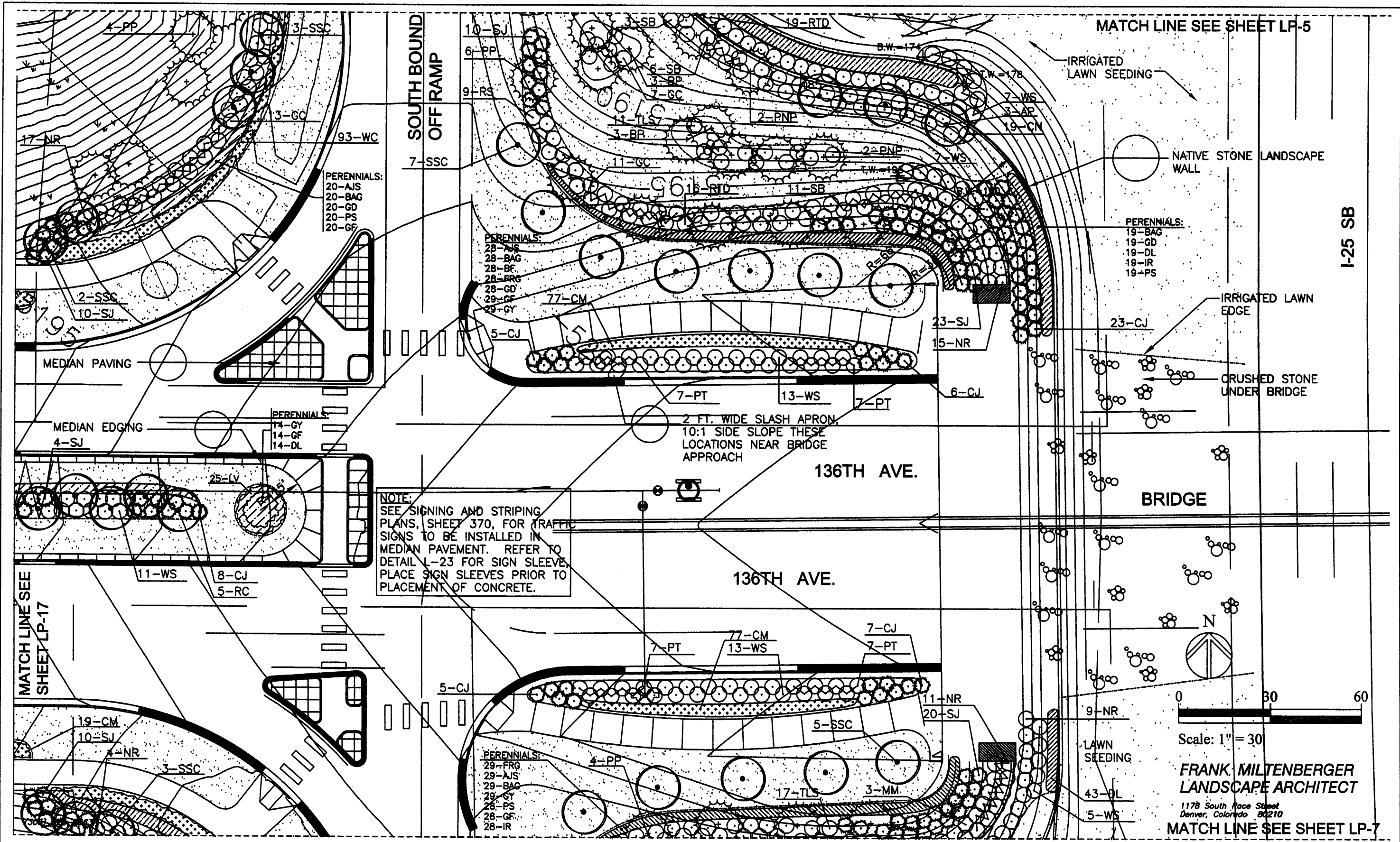


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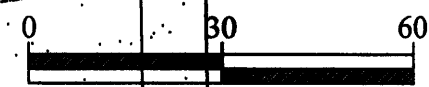
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Void:

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Detailer: ST	
Sheet Subset: L-5	Subset Sheets: L-5 of L-24

Project No./Code
Sheet Number <b>210</b>



**NOTE:**  
 SEE SIGNING AND STRIPING PLANS, SHEET 370, FOR TRAFFIC SIGNS TO BE INSTALLED IN MEDIAN PAVEMENT. REFER TO DETAIL L-23 FOR SIGN SLEEVES. PLACE SIGN SLEEVES PRIOR TO PLACEMENT OF CONCRETE.



Scale: 1" = 30'  
**FRANK MILTENBERGER**  
 LANDSCAPE ARCHITECT  
 1178 South Race Street  
 Denver, Colorado 80210  
 MATCH LINE SEE SHEET LP-7

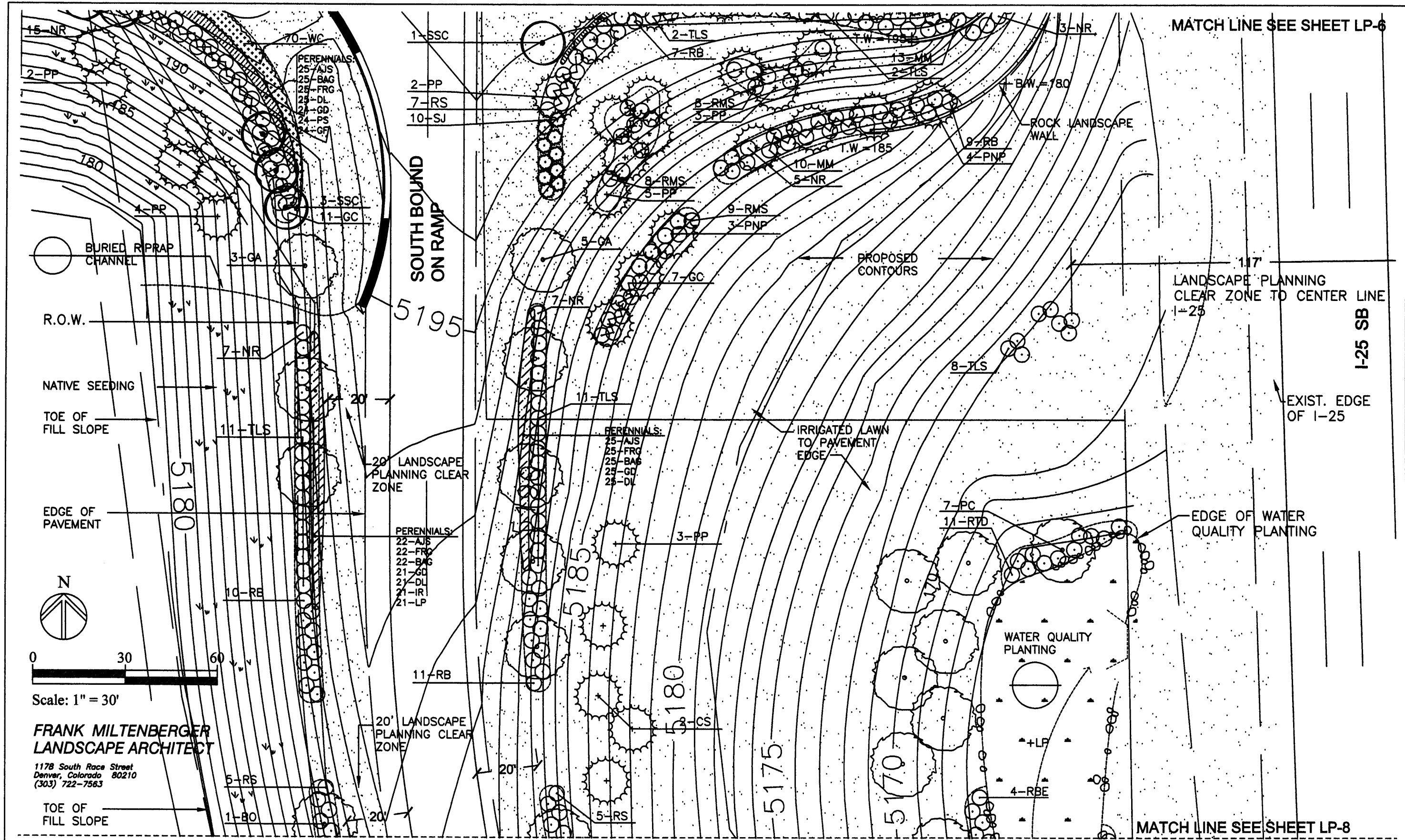
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Revised:		Detailer: ST		
Void:		Sheet Subset: L-6	Subset Sheets: L-6 of L-24	Sheet Number <b>211</b>



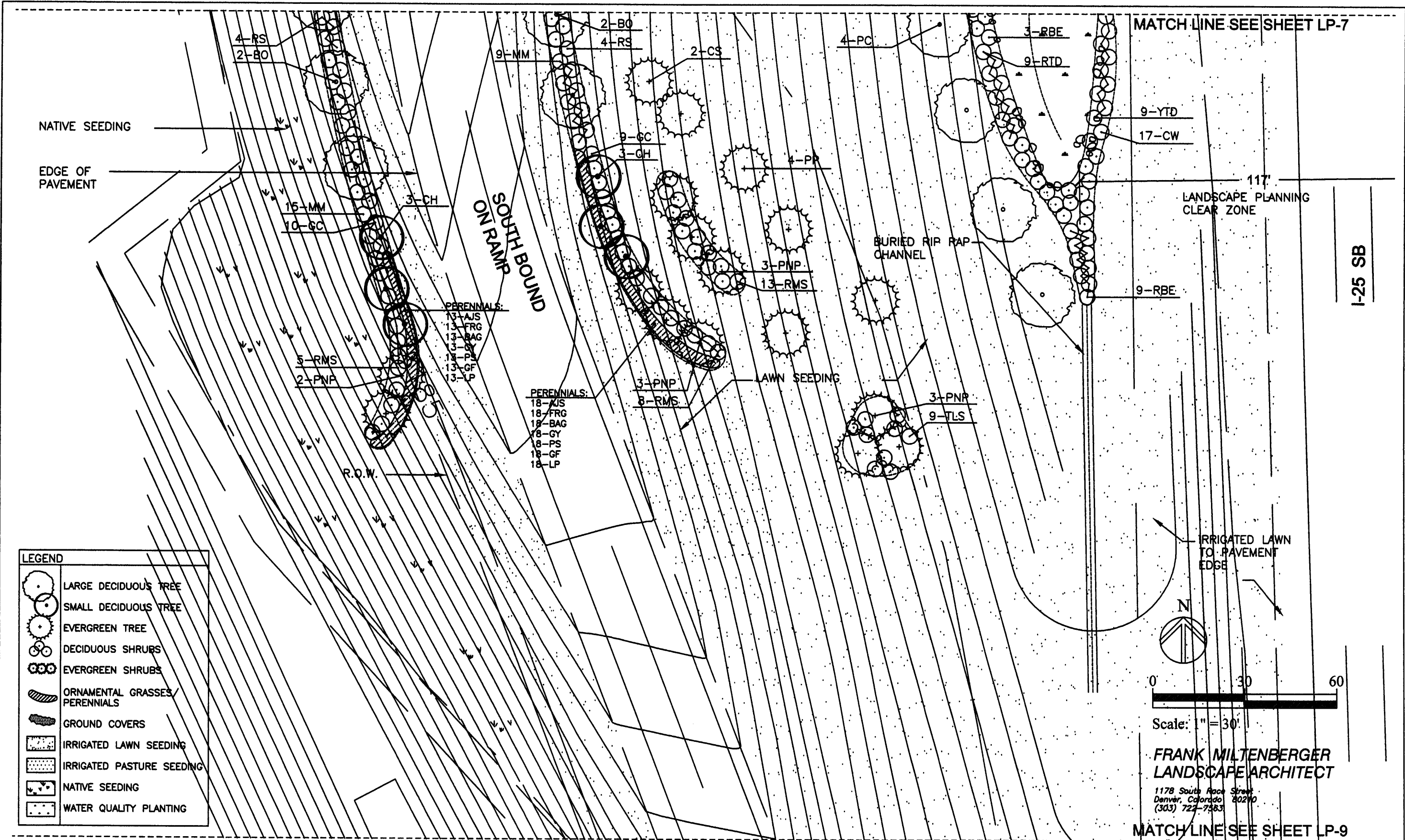
BURIED RIPRAP CHANNEL  
 R.O.W.  
 NATIVE SEEDING  
 TOE OF FILL SLOPE  
 EDGE OF PAVEMENT  
 TOE OF FILL SLOPE  
 5180  
 5180  
 5175  
 5170  
 5175  
 5180  
 5185  
 5195  
 117  
 1-25 SB  
 1-25  
 EXIST. EDGE OF I-25  
 EDGE OF WATER QUALITY PLANTING  
 MATCH LINE SEE SHEET LP-6  
 MATCH LINE SEE SHEET LP-8  
 SCALE: 1" = 30'  
**FRANK MILTENBERGER**  
**LANDSCAPE ARCHITECT**  
 1178 South Race Street  
 Denver, Colorado 80210  
 (303) 722-7583

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MATCH LINE SEE SHEET LP-7

I-25 SB

MATCH LINE SEE SHEET LP-9



LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

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Drawing File Name:	
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Designer: FM	
Detailer: ST	
Sheet Subset: L-8	Subset Sheets: L-8 of L-24

Project No./Code
Sheet Number <b>213</b>

MATCH LINE SEE SHEET LP-8



I-25 SB

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

N

30 60

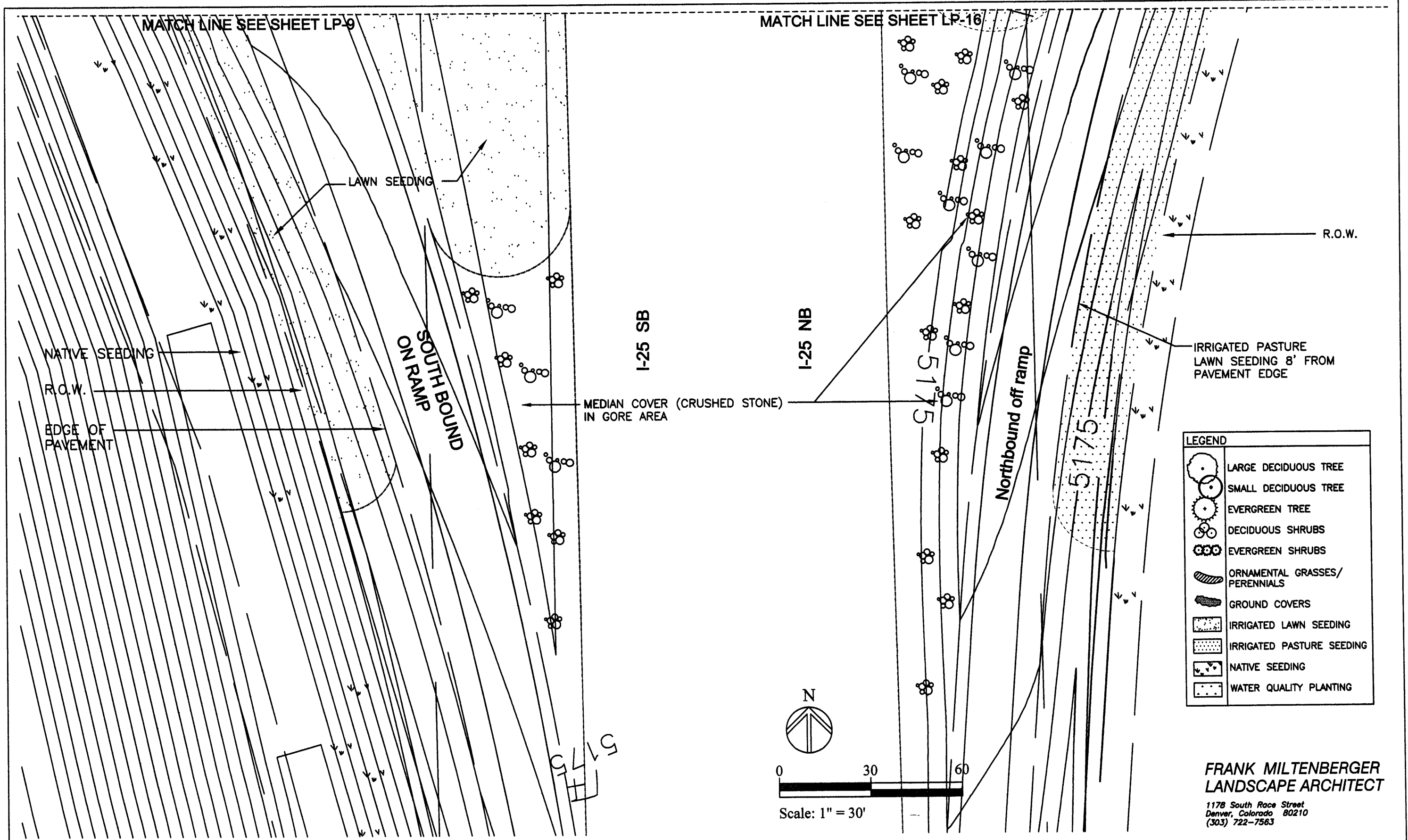
Scale: 1" = 30'

**FRANK MILTENBERGER**  
LANDSCAPE ARCHITECT

1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7563

MATCH LINE SEE SHEET LP-10

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Drawing File Name:						Sheet Subset: L-9	Subset Sheets: L-9 of L-24	Sheet Number 214
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LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

**FRANK MILTENBERGER**  
**LANDSCAPE ARCHITECT**  
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 (303) 722-7563

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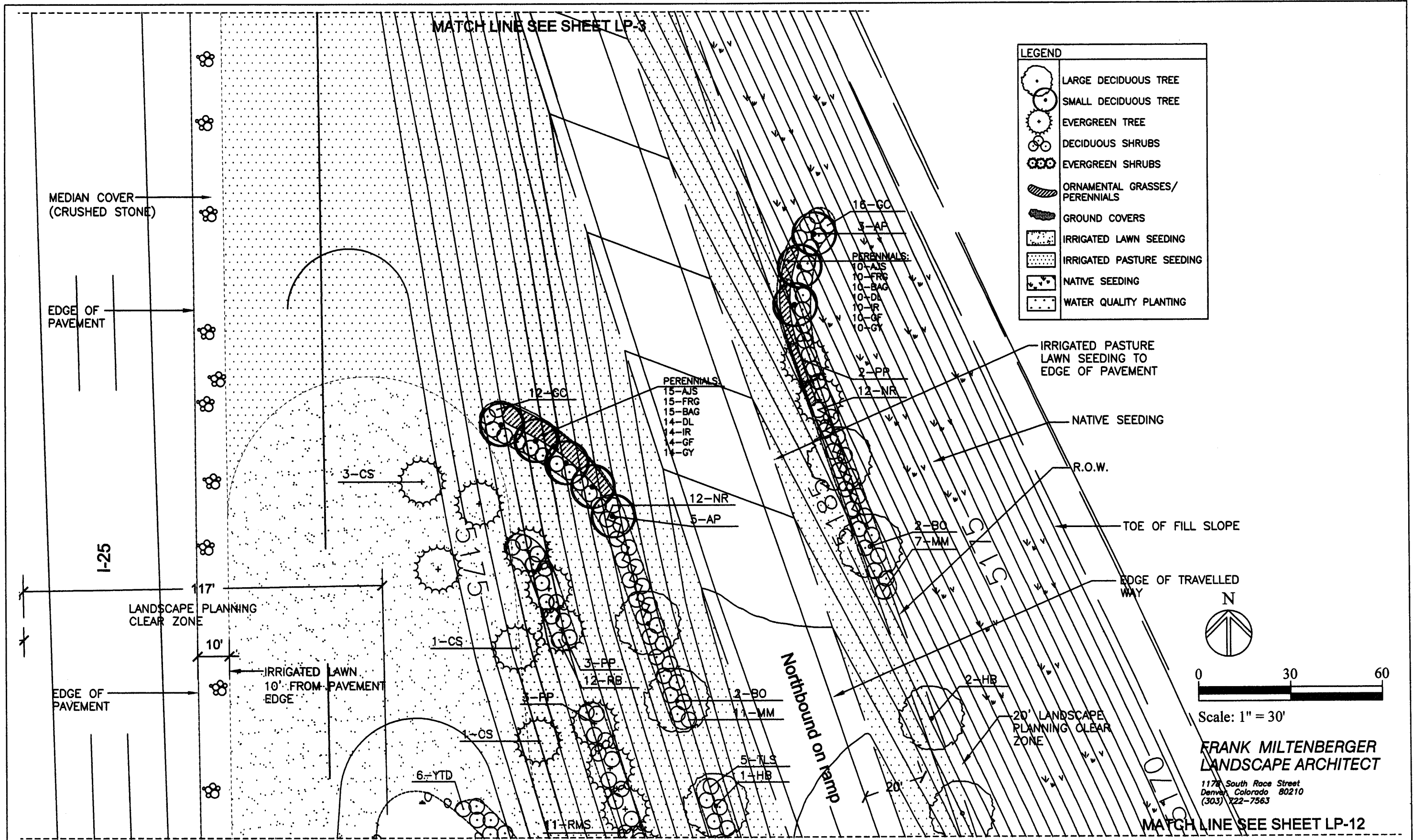


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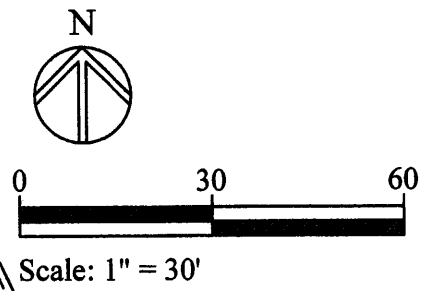
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Designer: FM	
Detailer: ST	
Sheet Subset: L-10	Subset Sheets: L-10 of L-24

Project No./Code
Sheet Number 215



LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING



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303.721.1440  
fax 303.721.0832  
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Sheet Number 216



WATER QUALITY  
EDGE

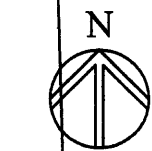
MATCH LINE SEE SHEET LP-11

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	MEDIUM EVERGREEN SHRUBS
	CRUSHED STONE
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

I-25-NB

EDGE OF  
PAVEMENT

IRRIGATED LAWN  
10' FROM PAVEMENT  
EDGE.



0 30 60

Scale: 1" = 30'

**FRANK MILTENBERGER  
LANDSCAPE ARCHITECT**

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PROPOSED  
CONTOURS.

LAWN SEEDING

MATCH LINE SEE SHEET LP-13

IRRIGATED  
PASTURE SEEDING  
TO EDGE OF  
PAVEMENT

TOE OF  
FILL SLOPE

NATIVE  
SEEDING

R.O.W.

BURIED  
RIP RAP  
CHANNEL

5-YTD

1-PP

11-RTD

3-RMS

4-TLS

1-HB

6-GC

0815180

13-GC

3-B0

15-RBE

1-CS

13-GC

13-TLS

20' LANDSCAPE  
PLANNING CLEAR  
ZONE

3-B0

13-TLS

PERENNIALS:

13-AJS

13-FRG

13-BAG

13-DL

13-GY

PERENNIALS:

14-AJS

14-FRG

14-GY

14-DL

14-PS

14-BF

14-LP

2-GA

16-NR

2-GA

13-NR

1-GA

7-CN

2-BP

3-RS

5-SJ

1-SSC

6:1

5185

5180

190

180

+LP

WATER QUALITY  
PLANTING



14-PC

11-YTD

5:1

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Creation Date:	Initials:			No Revisions:				
Last Modification Date: 1-21-03	Initials: S.T.			Revised:	Designer: FM			
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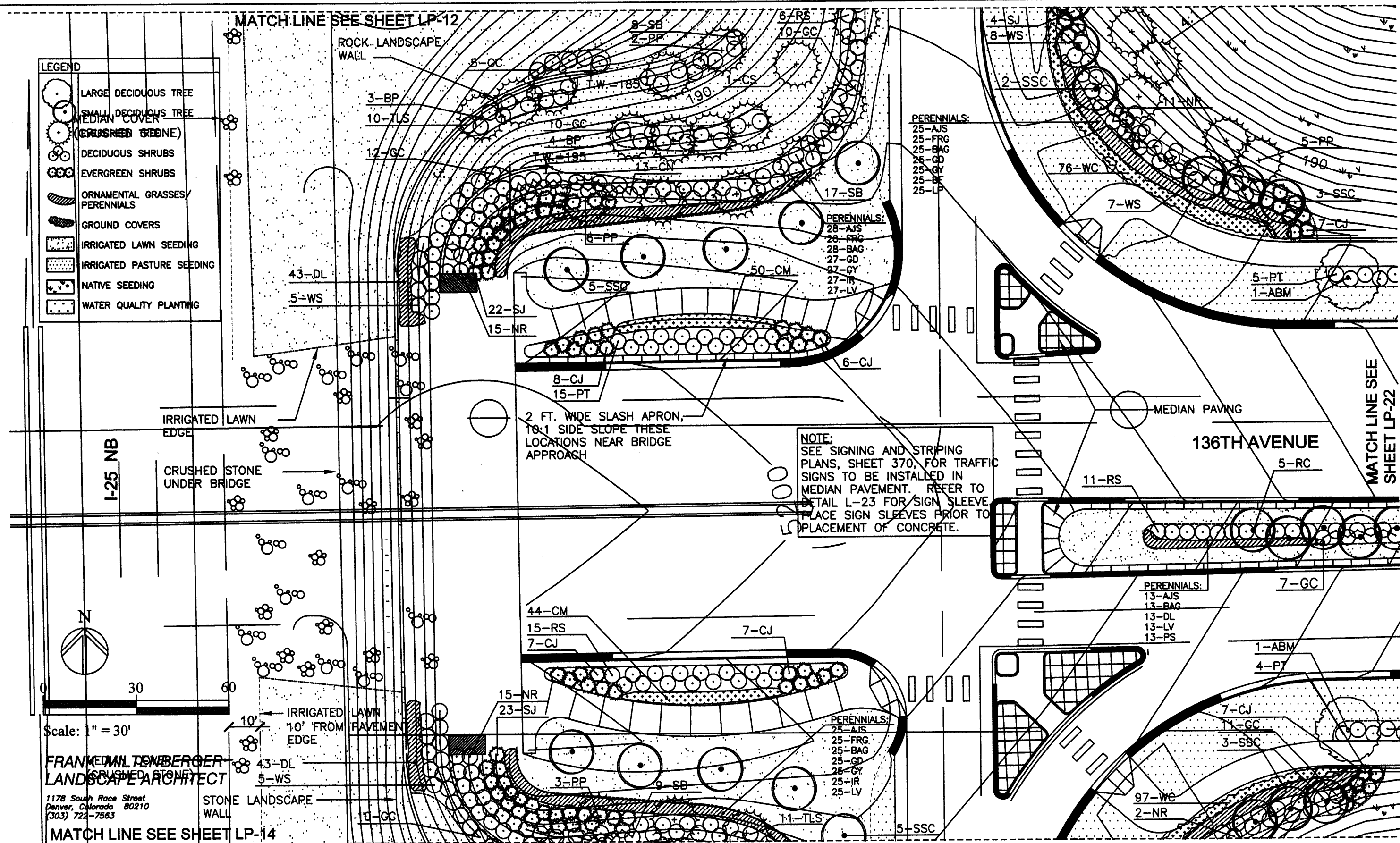


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fax 303.721.0832  
fhu@fhueng.com  
  
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Englewood, CO 80111

MATCH LINE SEE SHEET LP-12

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	MEDIAN COVER
	CRUSHED STONE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

ROCK LANDSCAPE WALL



2 FT. WIDE SLASH APRON,  
10:1 SIDE SLOPE THESE  
LOCATIONS NEAR BRIDGE  
APPROACH

NOTE:  
SEE SIGNING AND STRIPING  
PLANS, SHEET 370, FOR TRAFFIC  
SIGNS TO BE INSTALLED IN  
MEDIAN PAVEMENT. REFER TO  
DETAIL L-23 FOR SIGN SLEEVE.  
PLACE SIGN SLEEVES PRIOR TO  
PLACEMENT OF CONCRETE.

136TH AVENUE

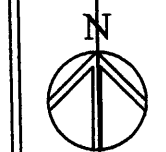
I-25 NB

IRRIGATED LAWN  
EDGE

CRUSHED STONE  
UNDER BRIDGE

MEDIAN PAVING

MATCH LINE SEE  
SHEET LP-22



0 30 60

Scale: 1" = 30'

FRANK M. TENBERGER  
LANDSCAPE ARCHITECT

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MATCH LINE SEE SHEET LP-14

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No Revisions:
Revised:
Void:

LANDSCAPE PLAN

Designer: FM  
Detailer: ST

Sheet Subset: L-13

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Project No./Code

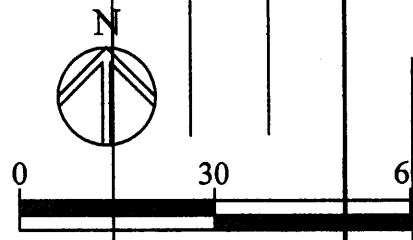
Sheet Number 218

MATCH LINE SEE SHEET LP-13

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	MEDIAN COVER (CRUSHED STONE)
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

OF

I-25 NB

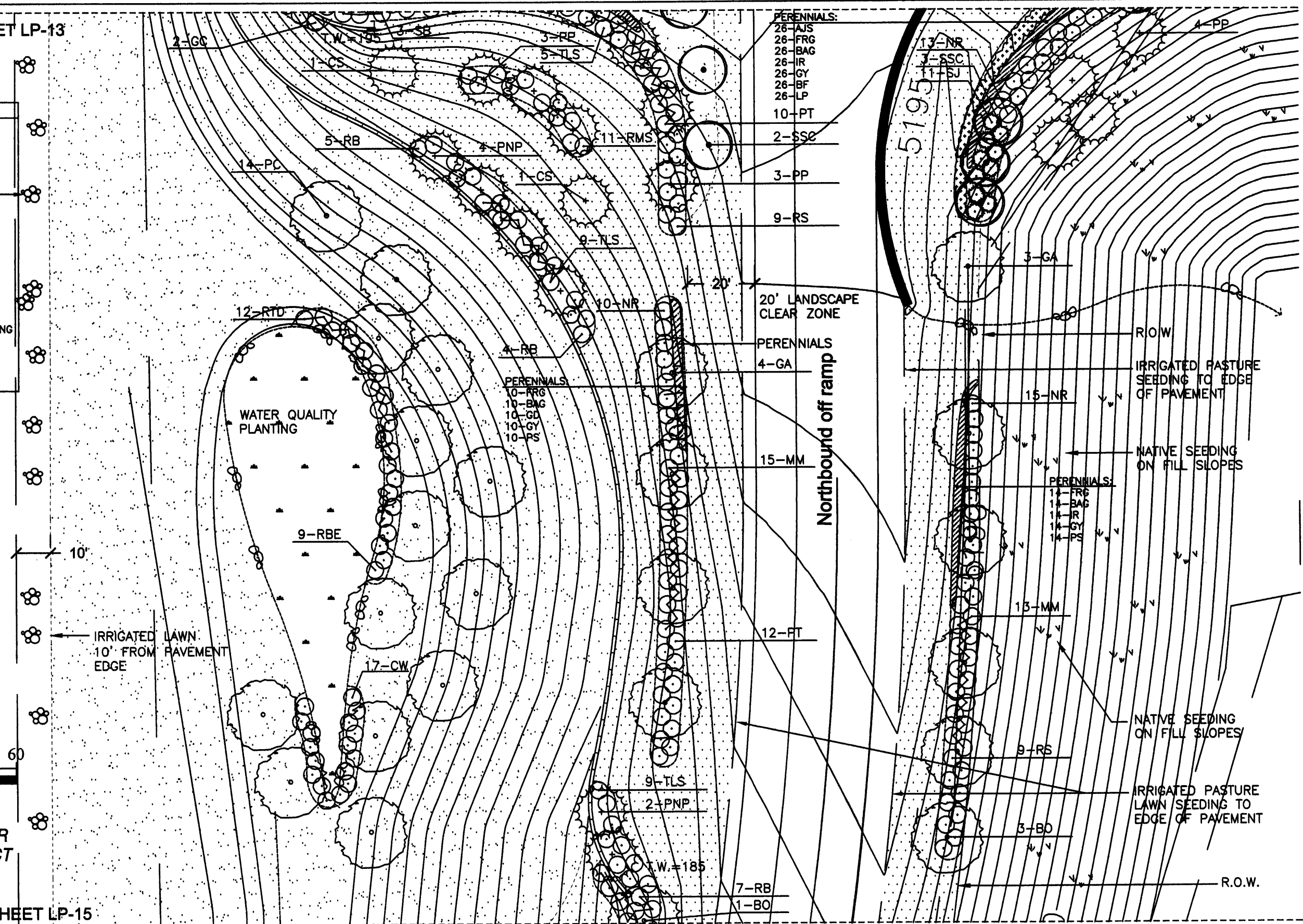


Scale: 1" = 30'

**FRANK MILTENBERGER**  
LANDSCAPE ARCHITECT

1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7563

MATCH LINE SEE SHEET LP-15



PERENNIALS:

- 26-AJS
- 26-FRG
- 26-BAG
- 26-IR
- 26-GY
- 26-BF
- 26-LP
- 10-PT

PERENNIALS:

- 2-SSC
- 3-PP
- 9-RS

PERENNIALS:

- 4-GA
- 15-MM

PERENNIALS:

- 11-FRG
- 11-BAG
- 11-IR
- 11-GY
- 11-PP

PERENNIALS:

- 7-RB
- 1-BO

PERENNIALS:

- 13-NR
- 7-SSC
- 11-SJ

PERENNIALS:

- 10-ARG
- 10-BAG
- 10-GA
- 10-GY
- 10-PS

PERENNIALS:

- 12-FT
- 13-MM
- 9-RS
- 3-BO

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Creation Date:	Initials:
Last Modification Date: 1-21-03	Initials: S.T.
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Acad Ver. 2000i	Scale: 1"=30' Units: English

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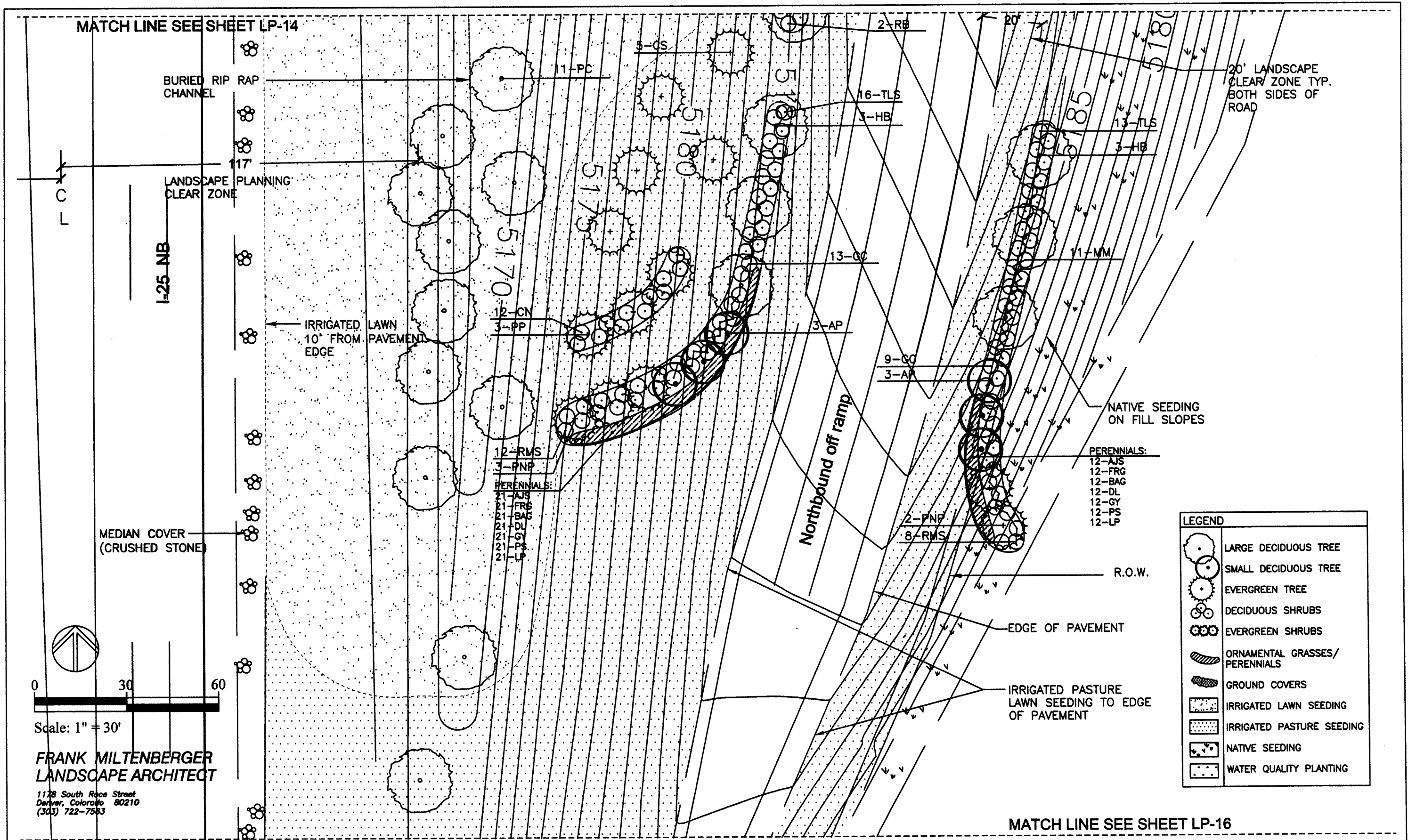


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Revised:
Void:

LANDSCAPE PLAN	
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Detailer: ST	
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Sheet Number 219



LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

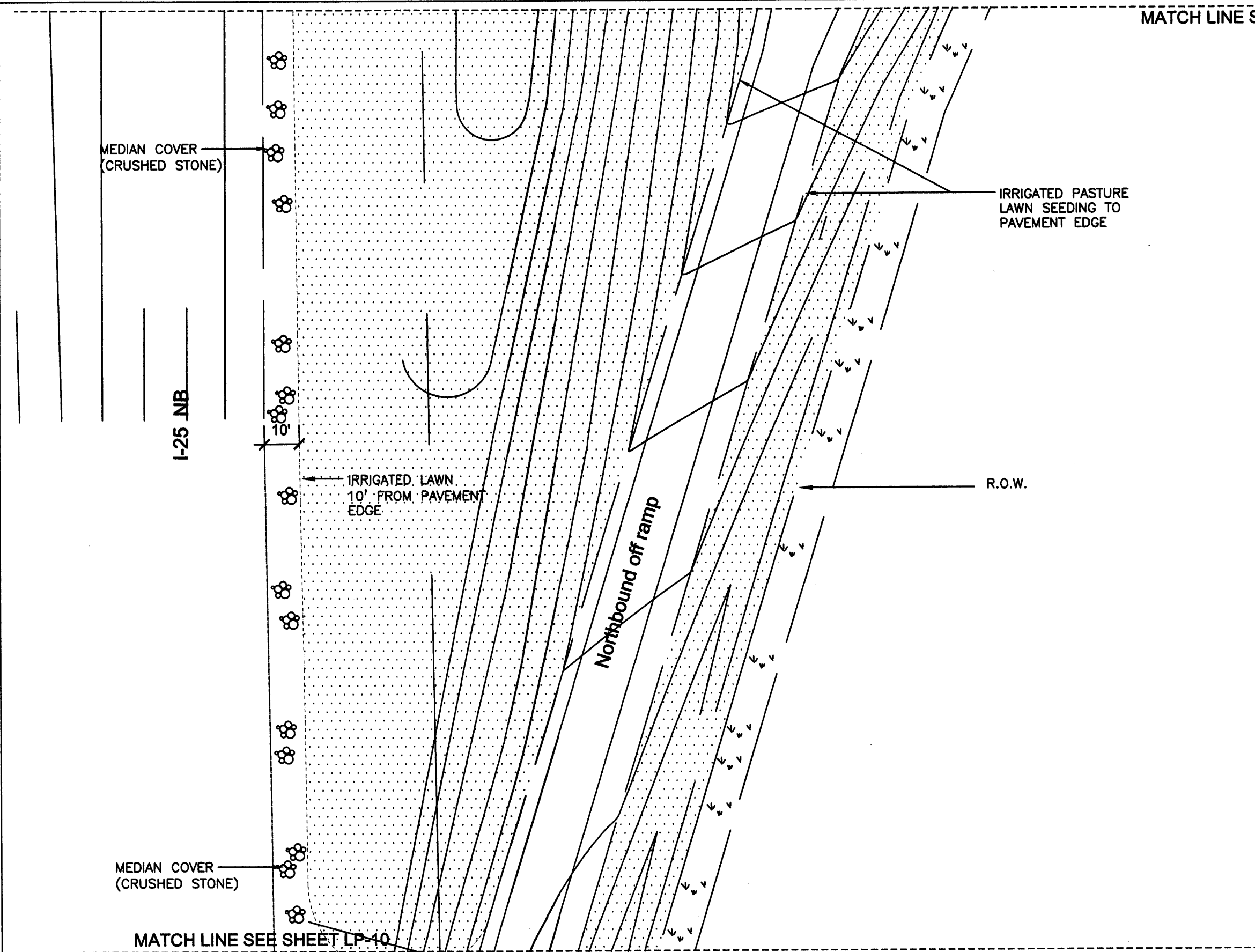
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fhu@fhueng.com

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MATCH LINE SEE SHEET LP-15



MEDIAN COVER  
(CRUSHED STONE)

I-25 NB

IRRIGATED PASTURE  
LAWN SEEDING TO  
PAVEMENT EDGE

IRRIGATED LAWN  
10' FROM PAVEMENT  
EDGE

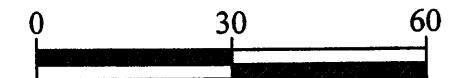
R.O.W.

Northbound off ramp

MEDIAN COVER  
(CRUSHED STONE)

MATCH LINE SEE SHEET LP-10

LEGEND	
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	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING



Scale: 1" = 30'

**FRANK MILTENBERGER**  
**LANDSCAPE ARCHITECT**

1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7563

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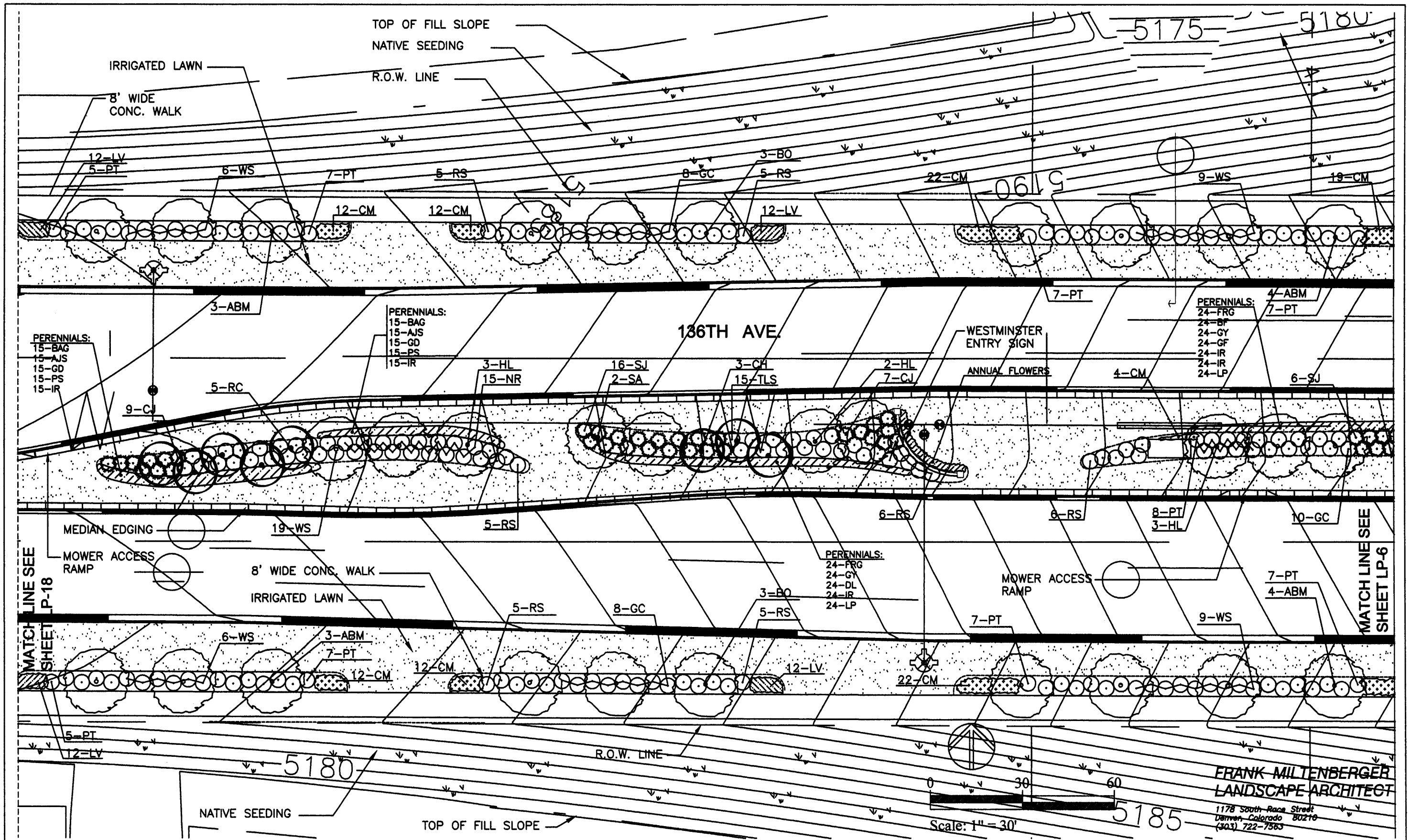
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 Denver, Colorado 80210  
 (303) 722-7563

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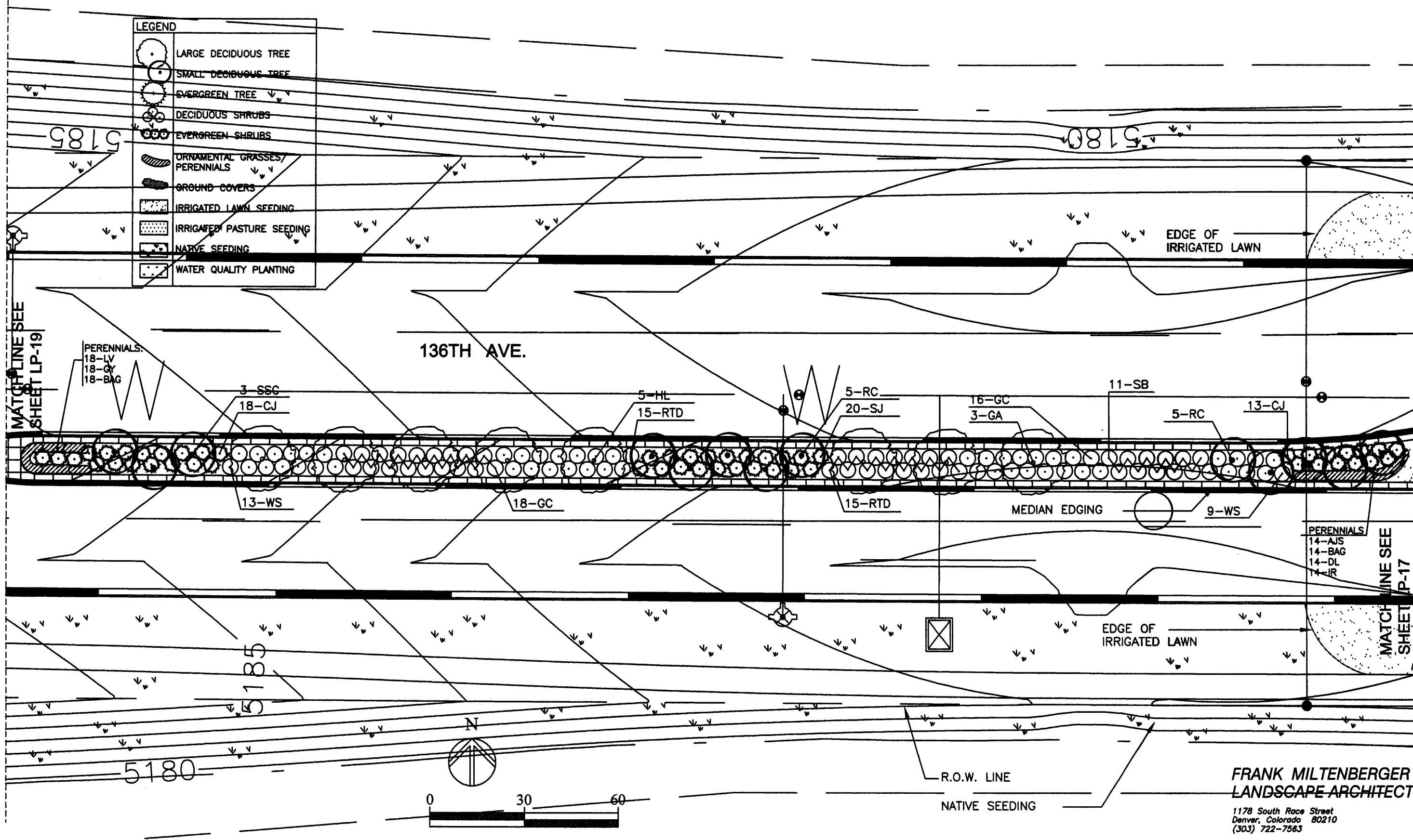
303.721.1440  
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 fhu@fhueng.com  
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 Englewood, CO 80111

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Revised:
Void:

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Detailer: ST	
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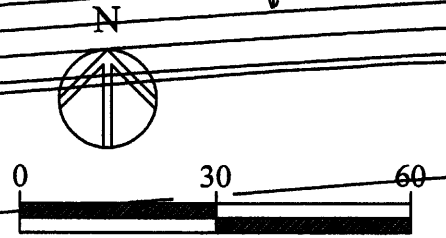
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	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING



MATCHLINE SEE SHEET LP-19

MATCHLINE SEE SHEET LP-17

136TH AVE.



**FRANK MILTENBERGER**  
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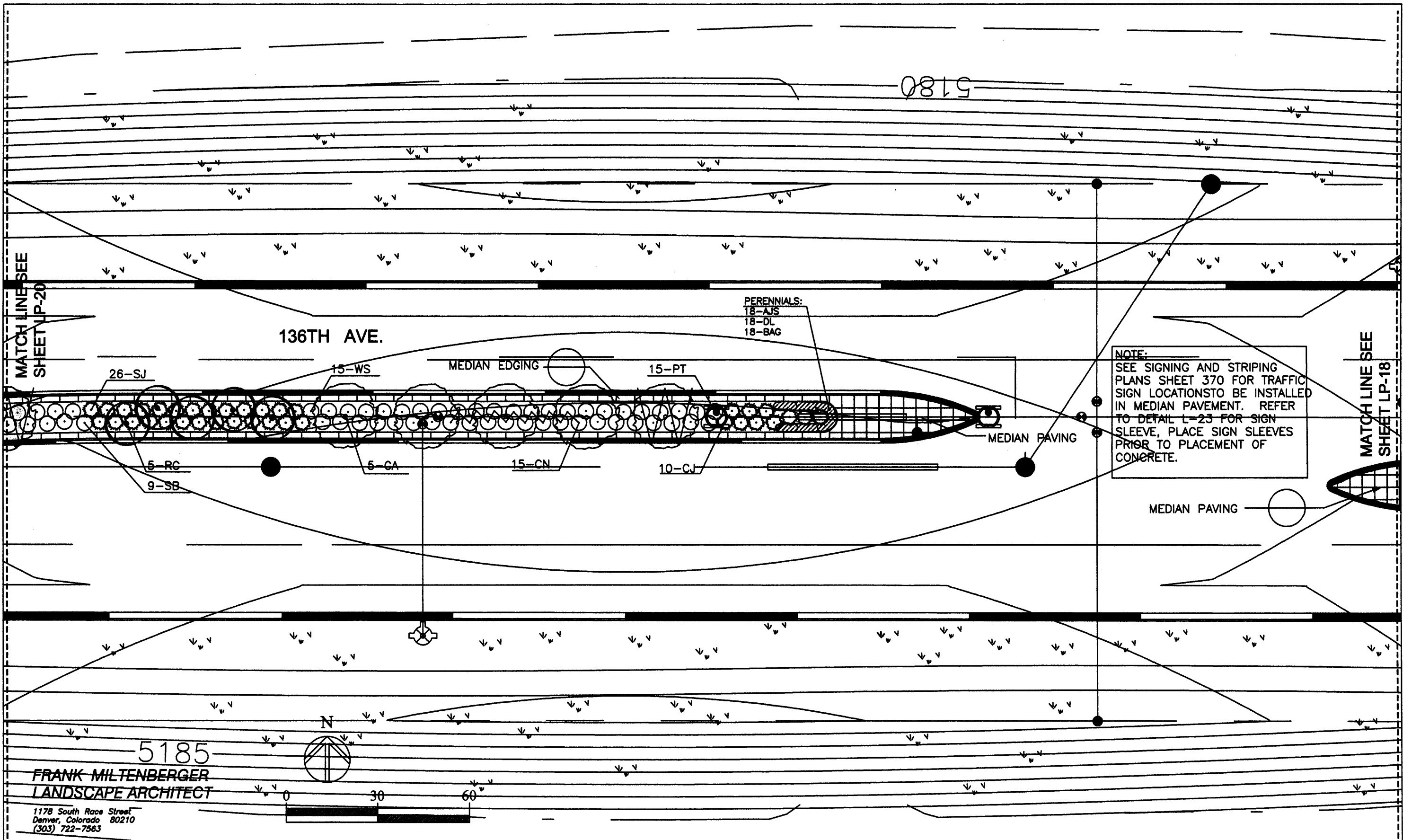
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fhu@fhueng.com  
  
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Revised:		Detailer: ST			
Void:		Sheet Subset: L-18	Subset Sheets: L-18 of L-24		Sheet Number <b>223</b>

5180



**NOTE:**  
 SEE SIGNING AND STRIPING PLANS SHEET 370 FOR TRAFFIC SIGN LOCATIONS TO BE INSTALLED IN MEDIAN PAVEMENT. REFER TO DETAIL L-23 FOR SIGN SLEEVE, PLACE SIGN SLEEVES PRIOR TO PLACEMENT OF CONCRETE.

MATCH LINE SEE SHEET LP-20

MATCH LINE SEE SHEET LP-18

136TH AVE.

MEDIAN EDGING

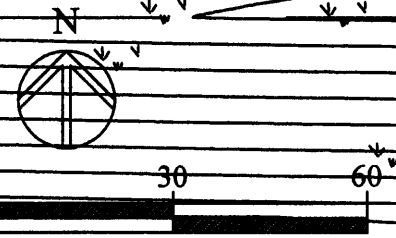
MEDIAN PAVING

MEDIAN PAVING

5185

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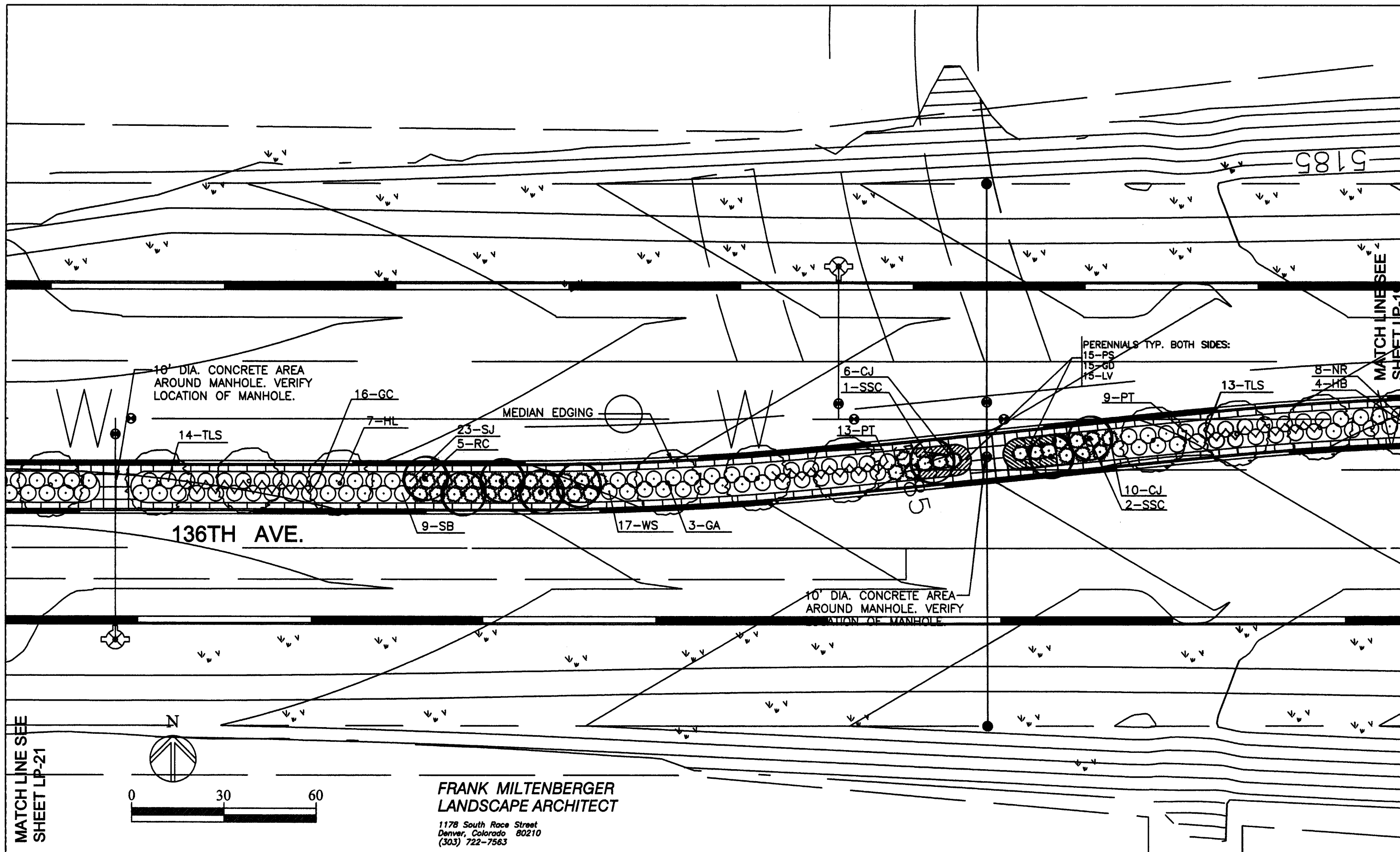
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Void:

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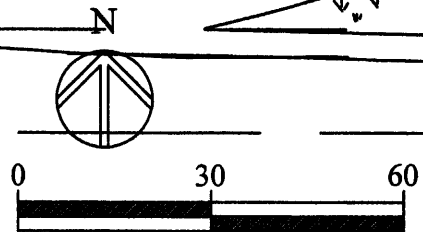
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MATCH LINE SEE SHEET LP-21

MATCH LINE SEE SHEET LP-13



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Acad Ver. 2000i	Scale: 1"=30' Units: English

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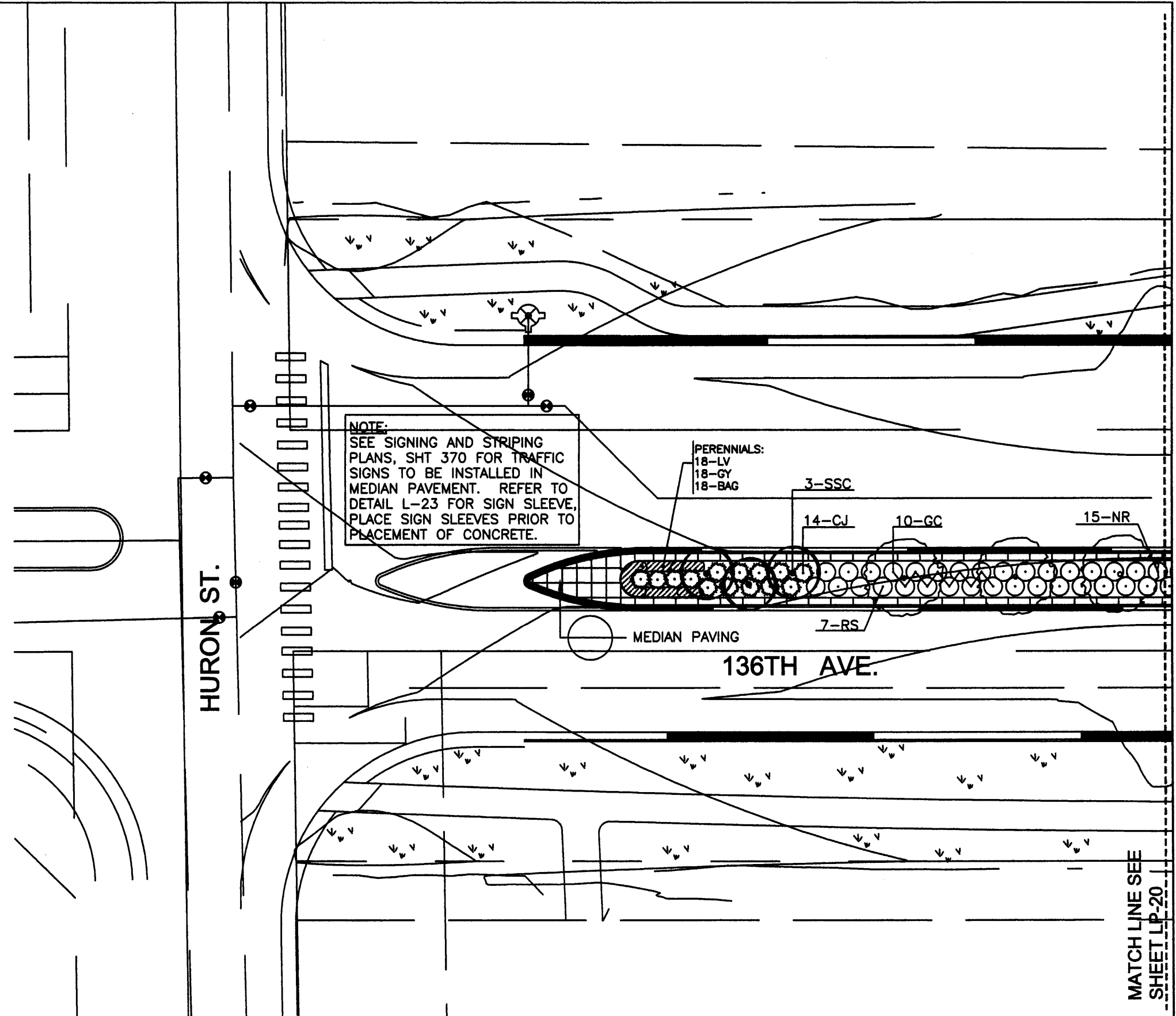


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fax 303.721.0832  
fhu@fhueng.com  
  
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Sheet Subset: L-20	Subset Sheets: L-20 of L-24

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Sheet Number <b>225</b>



**NOTE:**  
 SEE SIGNING AND STRIPING PLANS, SHT 370 FOR TRAFFIC SIGNS TO BE INSTALLED IN MEDIAN PAVEMENT. REFER TO DETAIL L-23 FOR SIGN SLEEVE, PLACE SIGN SLEEVES PRIOR TO PLACEMENT OF CONCRETE.

PERENNIALS:  
 18-LV  
 18-GY  
 18-BAG

3-SSC

14-CJ

10-GC

15-NR

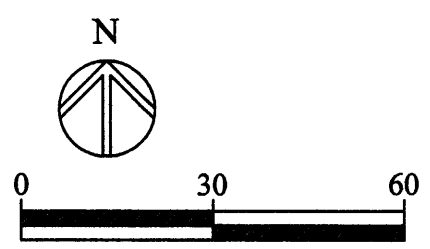
MEDIAN PAVING

7-RS

136TH AVE.

HURON ST.

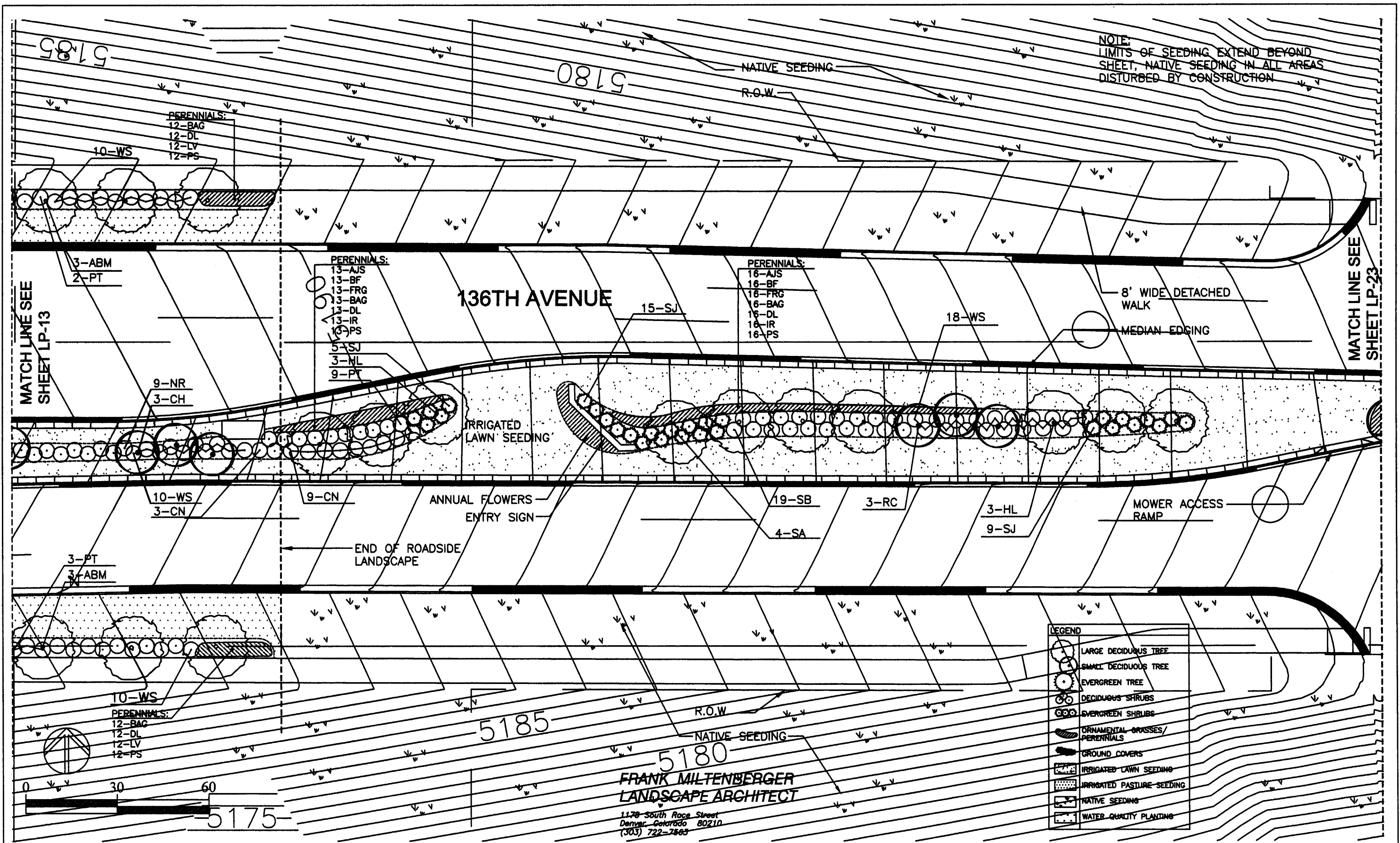
MATCH LINE SEE SHEET LP-20



**FRANK MILTENBERGER**  
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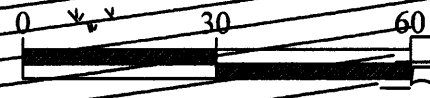
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Last Modification Date: 1-14-03	Initials: S.T.				Revised: 1-14-03	Designer: FM			
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Drawing File Name:					Sheet Subset: L-21	Subset Sheets: L-21 of L-24	Sheet Number <b>226</b>		
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NOTE:  
LIMITS OF SEEDING EXTEND BEYOND SHEET, NATIVE SEEDING IN ALL AREAS DISTURBED BY CONSTRUCTION

MATCH LINE SEE SHEET LP-13

MATCH LINE SEE SHEET LP-23



**FRANK MILTENBERGER**  
**LANDSCAPE ARCHITECT**  
1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7883

LEGEND	
	LARGE DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	EVERGREEN TREE
	DECIDUOUS SHRUBS
	EVERGREEN SHRUBS
	ORNAMENTAL GRASSES/ PERENNIALS
	GROUND COVERS
	IRRIGATED LAWN SEEDING
	IRRIGATED PASTURE SEEDING
	NATIVE SEEDING
	WATER QUALITY PLANTING

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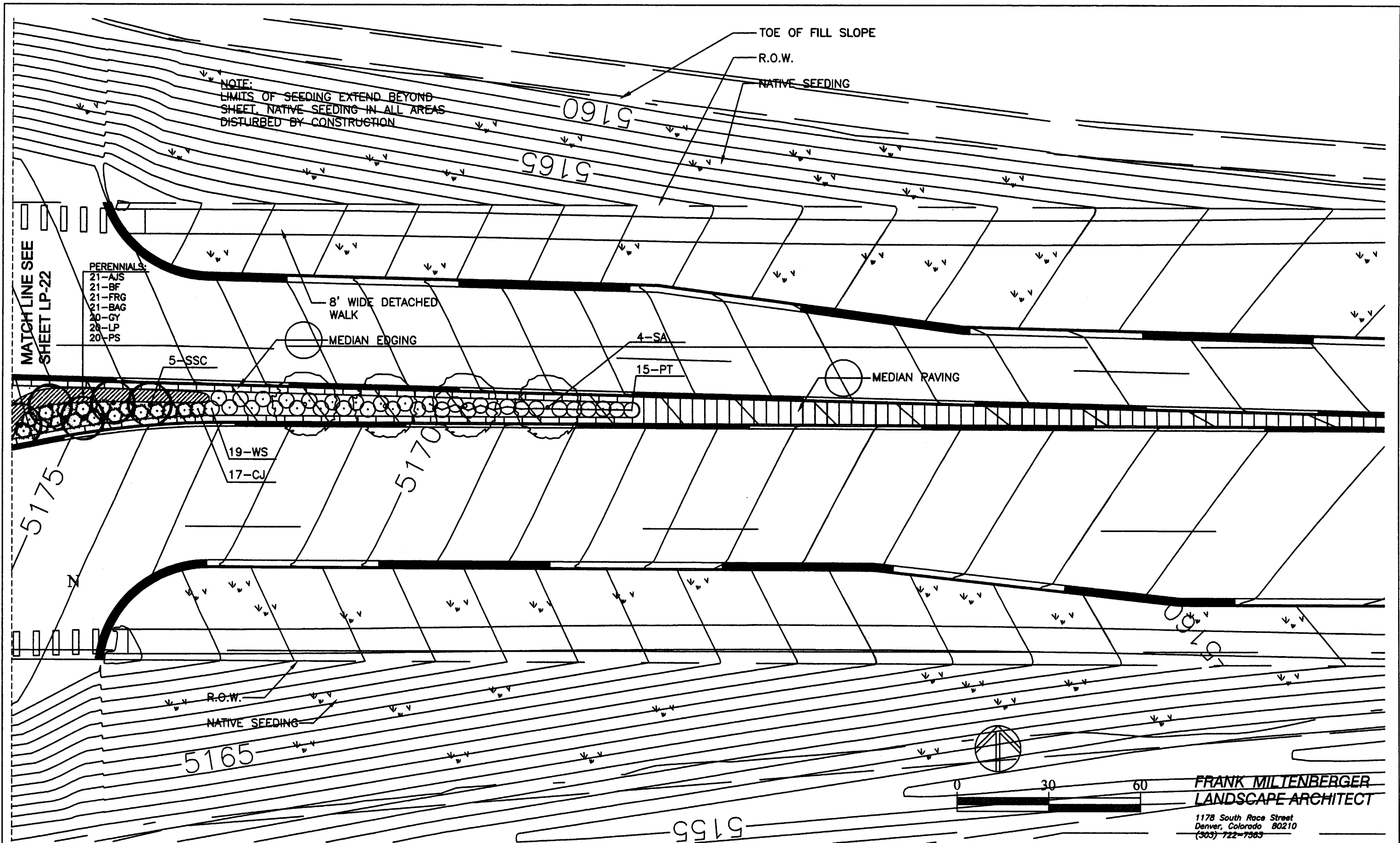


303.721.1440  
fax 303.721.0832  
fhu@fhug.com  
  
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1178 South Race Street  
Denver, Colorado 80210  
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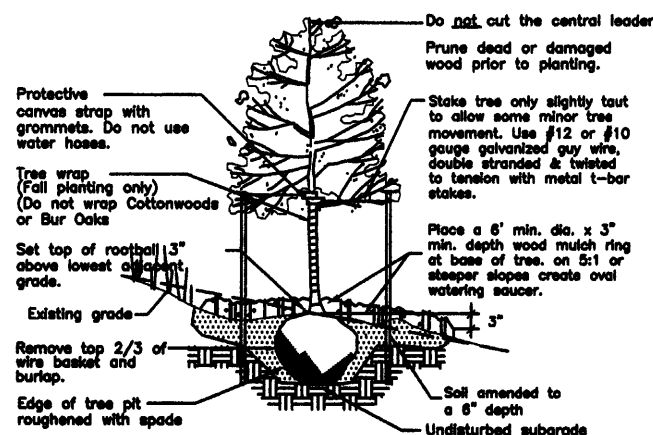


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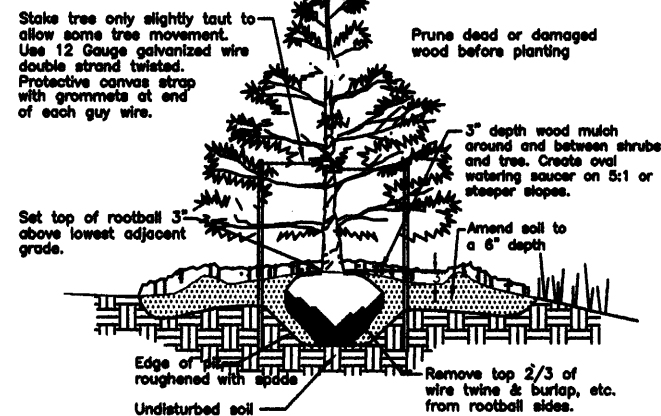
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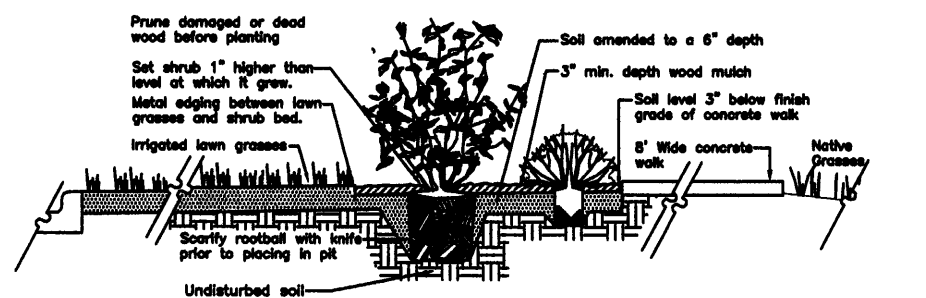
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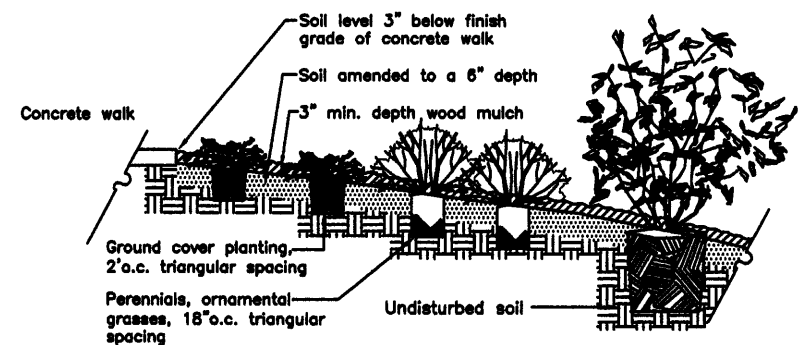
1 DECIDUOUS TREE PLANTING--  
Not to scale



2 EVERGREEN TREE PLANTING  
Not to scale



3 SHRUB BED PLANTING ADJACENT TO WALK DETAIL  
Not to scale



4 GROUND COVER, PERENNIAL, SHRUB BED PLANTING  
Not to scale

PLANT MATERIALS LIST

SYM	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
<b>LARGE DECIDUOUS TREES - 202</b>					
ARM	22	ACER FREEMANII 'AUTUMN BLAZE'	AUTUMN BLAZE MAPLE	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
BO	31	QUERCUS MACROCARPA	BUR OAK	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
GA	35	FRAXINUS PENNSYLVANICA 'PATMORE'	PATMORE ASH	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
HB	18	CELTIS OCCIDENTALIS	WESTERN HACKBERRY	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
HL	26	GLEDTISIA TRIACANTHOS 'IMPERIAL'	IMPERIAL HONEYLOCUST	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
PC	60	POPULUS SARAGENTII	PLAINS COTTONWOOD	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
SA	10	FRAXINUS PENNSYLVANICA 'SUMMIT'	SUMMIT ASH	3" CAL. B&B	SINGLE TRUNK, STRAIGHT LEADER, BALANCED CROWN
<b>SMALL DECIDUOUS TREES - 141</b>					
AP	20	PRUNUS AMERICANA	AMERICAN PLUM	6-8" HT. CLUMP	MULTI-STEM, BALANCED, FULL CROWN
CH	21	CRATAEGUS CRUS-GALLI 'INERMIS'	THORNLESS COCKSPUR HAWTHORN	1 1/2" CAL. B&B	MULTI-STEM, BALANCED, FULL CROWN
SC	38	MALUS SP.	RADIANT CRABAPPLE	2" CAL. B&B	SINGLE STEM, BALANCED, FULL CROWN
RC	62	MALUS SP.	SPRING SNOW CRABAPPLE	2" CAL. B&B	SINGLE STEM, BALANCED, FULL CROWN
<b>EVERGREEN TREES - 152</b>					
BP	15	PINUS ARISTATA	BRISTLEcone PINE	8' HT. B&B	FULL, SYMMETRICAL FORM, FULLY SKIRTED
CS	18	PICEA PUNGENS	COLORADO SPRUCE	8' HT. B&B	FULL, SYMMETRICAL FORM, FULLY SKIRTED
PMP	39	PINUS CEMEROIDES EDULIS	PINYON PINE	8' HT. B&B	FULL, SYMMETRICAL FORM, FULLY SKIRTED
PP	80	PINUS PONDEROSA	PONDEROSA PINE	8' HT. B&B	FULL, SYMMETRICAL FORM, FULLY SKIRTED
<b>SHRUBS - 2,765</b>					
CI	200	JUNIPERUS COMMUNIS	COMMON JUNIPER	NO. 5 CONT.	18-24" SPREAD
CN	90	PHYSCARPUS OPULIFOLIUS	COMMON NINEBARK		4 CANES MIN., 18-24" HT.
CW	34	SALIX EXGLIA	COYOTE WILLOW		4 CANES MIN., 18-24" HT.
RB	106	CHRYSOTHAMNUS NAUSEOSUS	RABBITBRUSH		5 CANES MIN., 12-18" HT.
GC	351	RIBES AUREUM	GOLD CURRANT		4 CANES MIN., 18-24" HT.
NR	327	ROSA WOODSII	NATIVE ROSE		4 CANES MIN., 18-24" HT.
PT	208	POTENTILLA FRUTICOSA	NATIVE POTENTILLA		5 CANES MIN., 12-18" HT.
NM	128	CERCOCARPUS MONTANUS	MOUNTAIN MAHOGANY		4 CANES MIN., 18-24" HT.
RBE	40	SAMBUCUS PUBENS	RED BERRIED ELDER		4 CANES MIN., 18-24" HT.
RMS	96	RHUS GLABR VAR. CISMONTANA	ROCKY MOUNTAIN SUMAC		4 CANES MIN., 18-24" HT.
RTD	130	CORNUS SERICEA 'SANTIT'	REDTWIG DOGWOOD		4 CANES MIN., 18-24" HT.
RS	129	PERVOSKIA ATRIPLICIFOLIA	RUSSIAN SAGE		5 CANES MIN., 12-18" HT.
SB	106	AMELANCHER CANADENSIS	SERVICEBERRY		4 CANES MIN., 18-24" HT.
SI	272	JUNIPERUS SABINA 'SCANDIA'	SCANDIA JUNIPER		18-24" SPREAD
TLS	266	RHUS TRILOBATA	THREE LEAF SUMAC		4 CANES MIN., 18-24" HT.
WS	251	PRUNUS BESSEYI	WESTERN SAND CHERRY		4 CANES MIN., 18-24" HT.
YTD	31	CORNUS SERICEA 'FLAVIRAMEA'	YELLOW-TWIG DOGWOOD		4 CANES MIN., 18-24" HT.
<b>ORNAMENTAL GRASSES/ PERENNIALS - 4,139</b>					
AIS	472	SEDUM 'AUTUMN JOY'	AUTUMN JOY SEDUM	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
BAG	580	HELICTOTRICHON SEMPERVIRENS	BLUE AVENA GRASS	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
BF	216	GALLARDIA ARISTATA	BLANKET FLOWER	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
DL	477	HEMEROCALLIS SP.	DAYLILLIES 'YELLOW, ORANGE, RED'	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
FRG	468	CALAMAGROSTIS ACUT. 'KARL FORESTER'	FEATHER REED GRASS	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
GD	274	RUDBECKIA HIRTA	GLORIOSA DAISY	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
GF	160	LIATRIS PUNCTATA	NATIVE GAYFEATHER	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
GY	435	ACHILLEA FILIPENDULA	GOLD YARROW	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
IR	277	IRIS (TALL BEARDED)	TALL BEARDED IRIS - YELLOW, BLUE	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
LP	254	LUPINUS ARGENTEUS	LUPINE	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
LV	221	LAVANDULAR ANGUSTIFOLIA 'HIDCOTE'	HIDCOTE LAVENDER	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
PS	305	PENSTEMON STRICTUS	ROCKY MOUNTAIN PENSTEMON	NO. 1 CONT.	#1 CONT. 18" O.C. SPACING
<b>GROUND COVER - 718</b>					
CH	382	MAHONIA REPENS	CREeping MAHONIA	NO. 1 CONT.	#1 CONT. 2' O.C. SPACING
WC	336	EUONYMUS FORTUNEI 'COLORATUS'	WINTERCREEPER	NO. 1 CONT.	#1 CONT. 2' O.C. SPACING

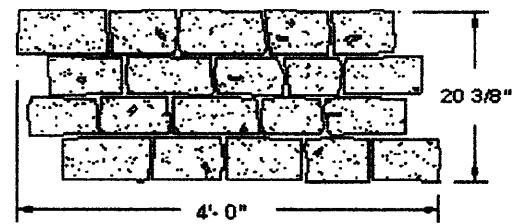
LAWN SEEDING-

IRRIGATED LAWN GRASSES SHALL BE A MIX OF SPECIES PRIMARILY (70% MIN.) REFINED TALL FESCUE VARIETIES (FESTUCA ARUNDINACEA); IRRIGATED PASTURE GRASSES SHALL BE A MIX OF SMOOTH BROME & CRESTED WHEATGRASS; NATIVE SEEDING SHALL BE A BLEND OF NATIVE GRASSES AND FORBS. REFER TO SPECIAL PROVISION 212 SEEDING FOR SPECIES AND SEEDING RATES.

FRANK MILTENBERGER  
LANDSCAPE ARCHITECT

1178 South Race Street  
Denver, Colorado 80210  
(303) 722-7563

Computer File Information		Index of Revisions			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed		LANDSCAPE DETAILS		Project No./Code			
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Last Modification Date: 1-10-03	Initials: S.T.					Revised:		Designer: FM					
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Drawing File Name: LADETS.DWG						Sheet Subset: L-24		Subset Sheets: L-24 of L-24		Sheet Number 229			
Acad Ver. 2000i	Scale:	Units:	English										



Surface pattern on concrete is an old world style coursed running bond irregular street cobble or block paving. Surface texture is irregular stone like rather than smooth. Colors; a combination of a base color with a second surface highlight color to mimic native stone color used on walls and bridge.

8" dia pvc pipe, for sign sleeve. 1/2" exp. It between pipe and pavement

6.0

Expansion joint next to curb

6:1 side slope with middle top third rounded off.

5 inch thick concrete over 95% MDD compacted base

Splash apron has the same color finish as the median paving; a base color with a second highlight color, finish with a double coat of semi gloss sealer

Finished grade 3 inches below tip of splash apron, may require topsoil import

Perforated drain pipe with connection to weep hole in curb face

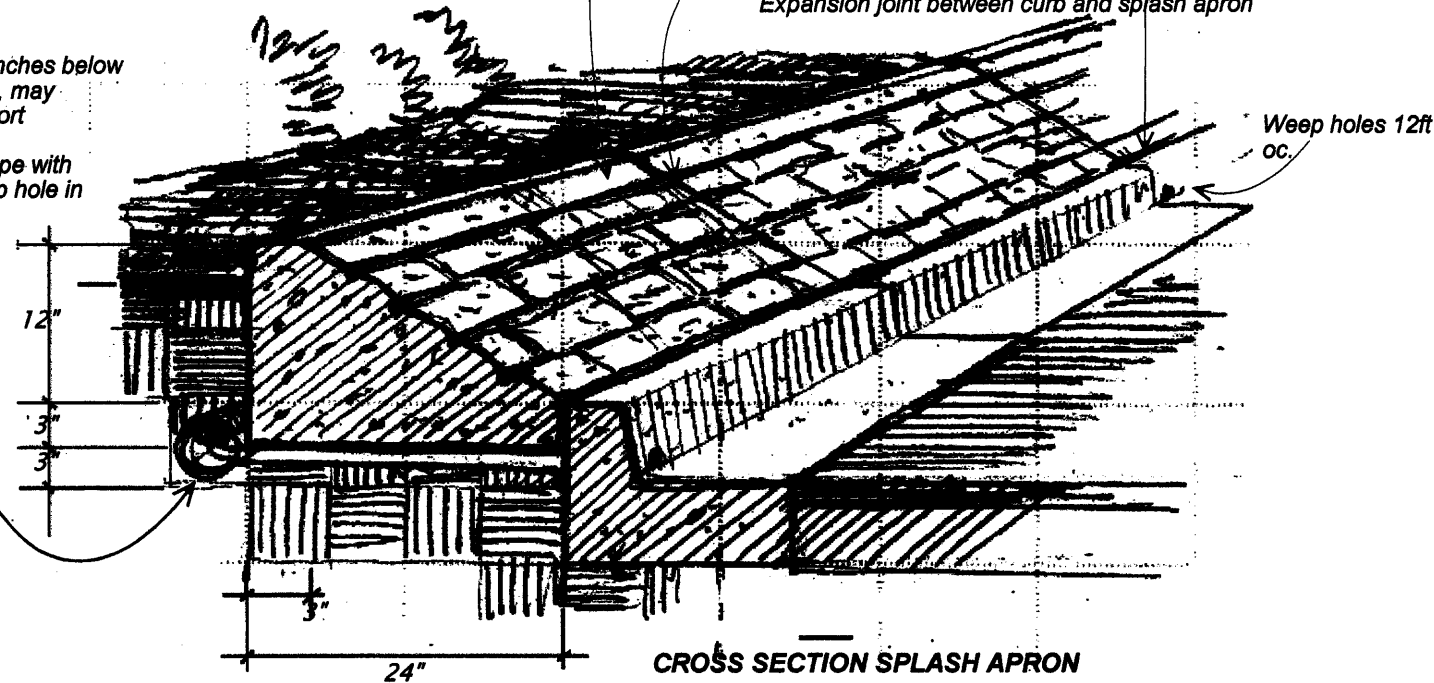
Smooth finish 'coping' top 3"

Running bond street cobble pattern, same as median paving

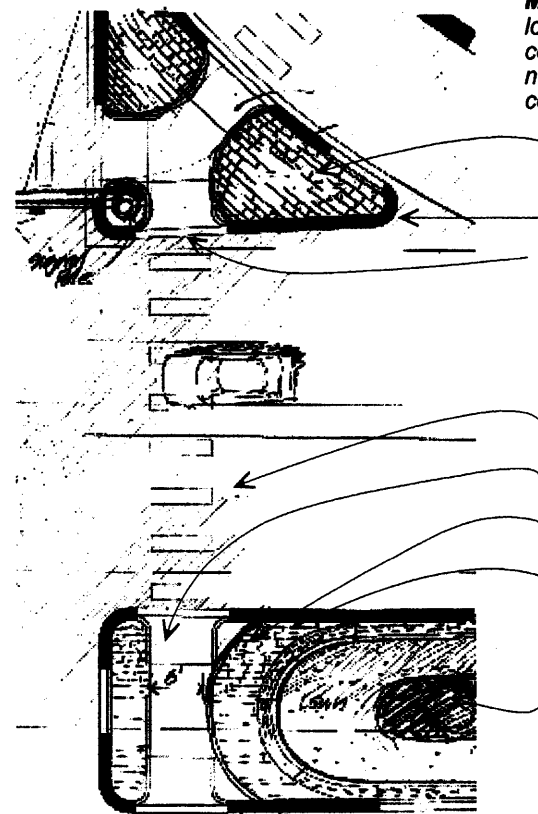
Control joints align with curb joints

Expansion joint between curb and splash apron

Weep holes 12ft oc.



**CROSS SECTION MEDIAN PAVEMENT**  
NOTE; SEE SIGNING AND STRIPING PLANS FOR TRAFFIC SIGNS TO BE INSTALLED IN MEDIAN PAVEMENT, coordinate final sign locations with project engineer before placing concrete. Coring into concrete for sign post will not be allowed. Cost of sleeves is included in the cost of the work



Right turn island, concrete pattern parallel to right turn curb

Curb and gutter

Walkway / cross walk

Wide median

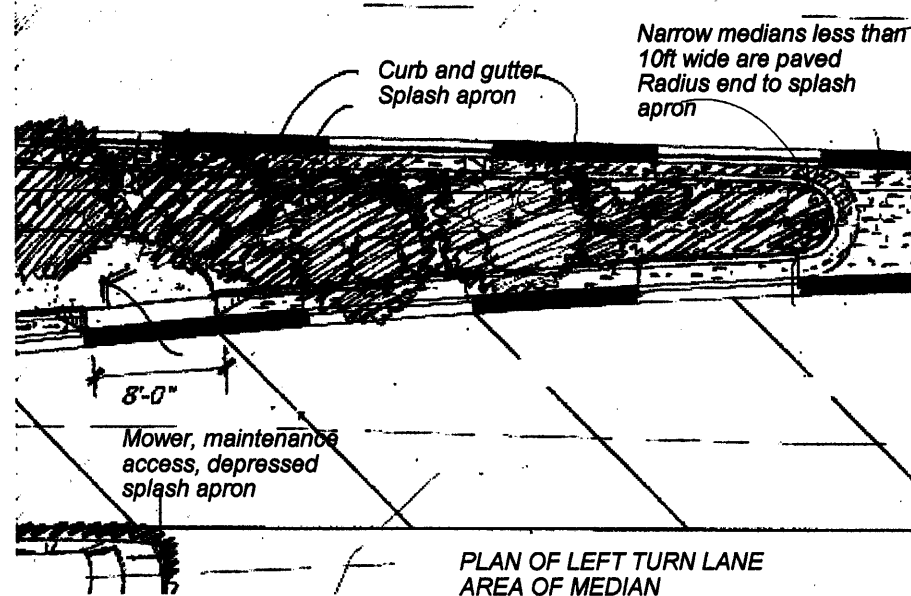
Walkway, cross walk

Median paving

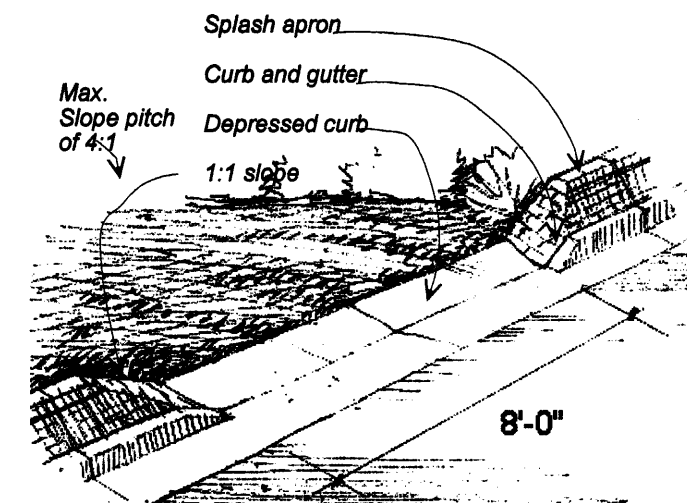
Radius end to splash apron

Curb and gutter

Landscape area



PLAN OF LEFT TURN LANE AREA OF MEDIAN



MOWER ACCESS RAMP- Splash apron and curb taper down to flowline at a 1:1 slope and are depressed to allow mower access to median landscape, note locations on plans near left turn pockets.

Mock up sample panel- provide 10 square ft sample of median pavement and 6 ft length of splash apron for approval by project engineer prior to proceeding.

**MEDIAN PAVING**

**MEDIAN SPLASH APRON**

Also see standard specification section 610

**MEDIAN PAVING, SPLASH APRONS**

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Acad Ver. 2000i	Scale: Units: English

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**F M L A**  
FRANK MILTENBERGER  
LANDSCAPE ARCHITECT  
1178 South Race Street  
Denver, Colorado 80210  
303.722.7563

**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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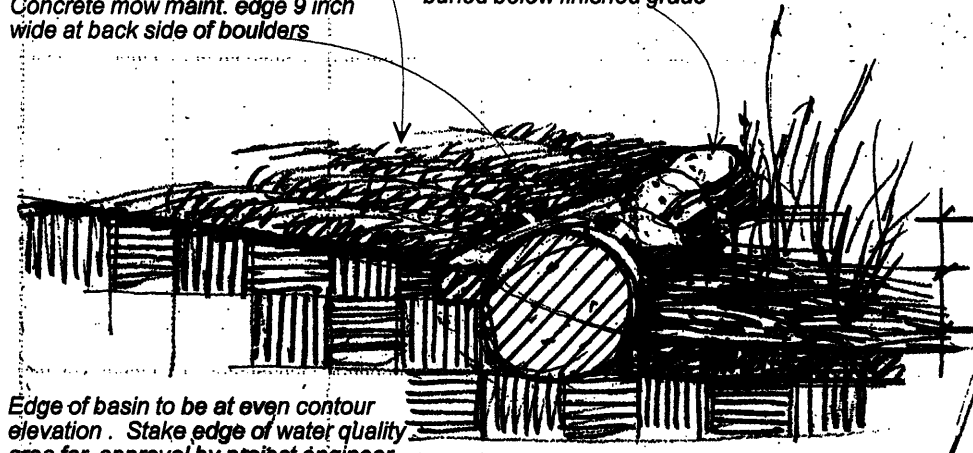
LANDSCAPE PLANS	
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Irrigated lawn typical, finished grade 12 inches above basin elevation

Concrete mow maint. edge 9 inch wide at back side of boulders

Boulder edge 12-30 inch dia rounded boulders placed at edge of low water collection areas indicated on plans. Mix of sizes and colors. One half of boulders buried below finished grade



Edge of basin to be at even contour elevation. Stake edge of water quality area for approval by project engineer prior to placing boulders

Wet meadow seeding in basin

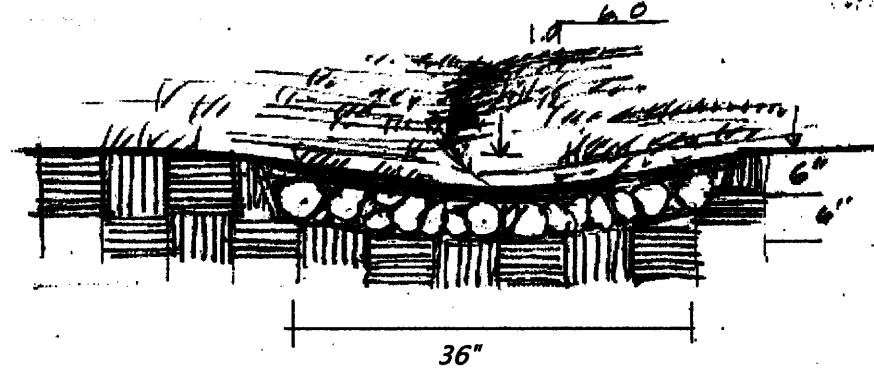
CROSS SECTION VIEW

Seeded lawn grasses, typical

Erosion control blanket

6: side slope with rounded bottom

2-4 inch cobble, 6 inches deep with crushed stone backfill. Cover, bury stone with site soil, seed and mulch.



CROSS SECTION DRAINAGE CHANNEL ON LESS STEEP INFIELD SLOPES

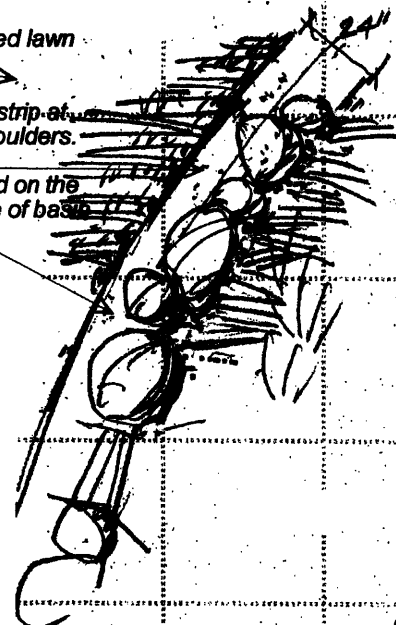
**DRAINAGE CHANNELS**

PAID FOR AS 507 DRY SLOPE AND DITCH PAVING

Irrigated, mowed lawn area

Concrete mow strip at upper side of boulders

Boulders placed on the contour at edge of basin



Intent of cobble edge is to create a definable edge for mowing and maintenance. Water quality basin area is to receive interchange run off, intercept non point source pollutants and release the water into local drainage way

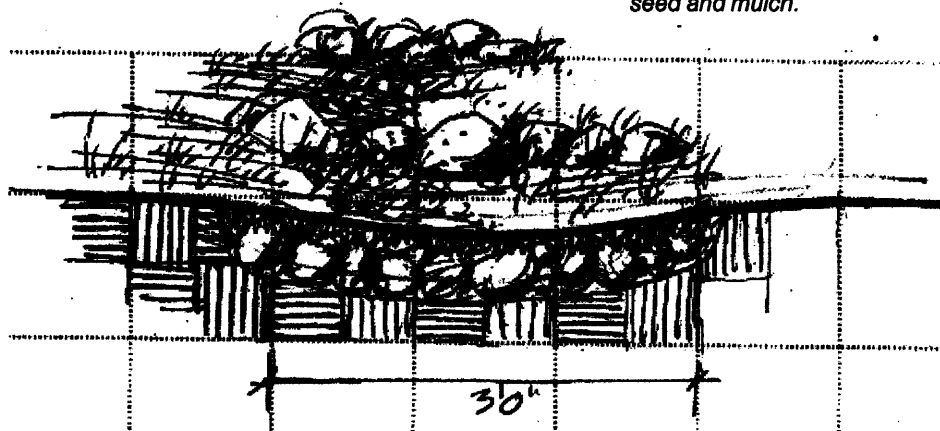
Broadcast seed and rake into soil, wetland meadow seed mix. See Special provision 212

PLAN VIEW

Native seeded areas, typical

check dams every 6-8 ft.; a radome row of 12-18" dia rounded boulders half buried laid across drainage course.

2-4 inch cobble, 6 inches deep with crushed stone backfill. Cover, bury stone with site soil, seed and mulch.



CROSS SECTION DRAINAGE CHANNEL ON STEEP SLOPES 6:1 OR STEEPER, NEAR CORNER OF RAMPS AND 136TH AVE.

**STEEP DRAINAGE CHANNELS**

PAID FOR AS 507 DRY SLOPE AND DITCH PAVING (SPECIAL)

**EDGE OF WATER QUALITY BASINS**

PAID FOR AS 213 CONCRETE LANDSCAPE BORDER

**F M L A**  
FRANK MILTENBERGER  
LANDSCAPE ARCHITECT  
1178 South Race Street  
Denver, Colorado 80210  
303.722.7563

**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed

No Revisions:

Revised:

Void:

**LANDSCAPE DRAINAGE FEATURES**

**LANDSCAPE**  
I-25/136 Avenue Interchange  
Cities of Westminster and Thornton, CO

Designer: I-13-03

Detailer:

Sheet Subset:

Subset Sheets: L-26 of

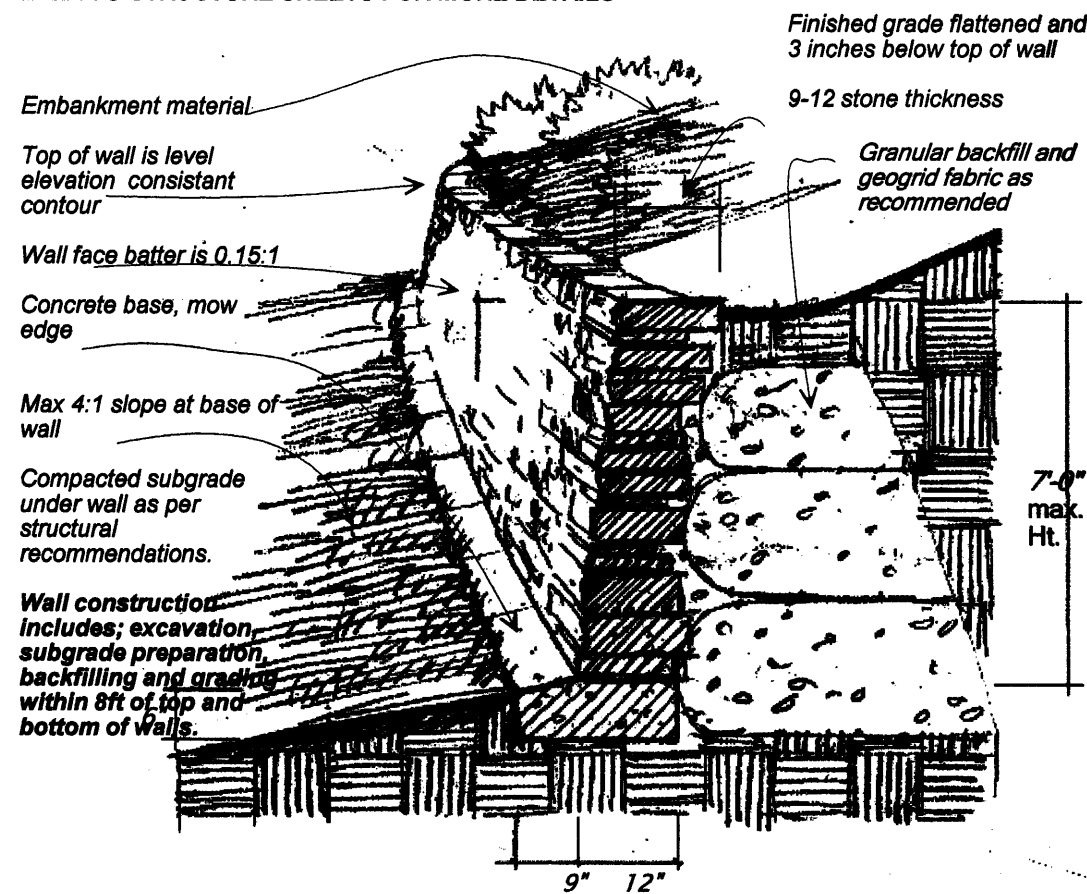
Project No./Code

Sheet Number **231**

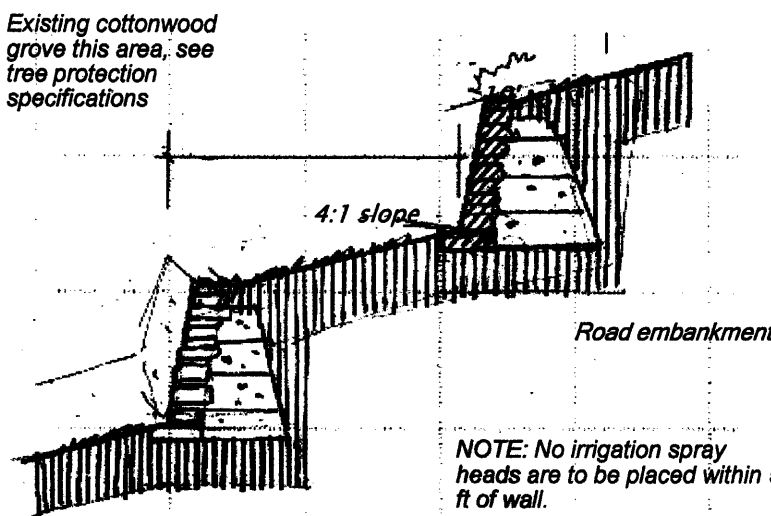
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FOR ARCHITECTURAL INFORMATION PURPOSES ONLY,  
REFER TO STRUCTURE SHEETS FOR MORE DETAILS



TYPICAL WALL CROSS SECTION



TWO TIERED WALL CONDITION AT NORTHWEST QUADRANT OF INTERCHANGE

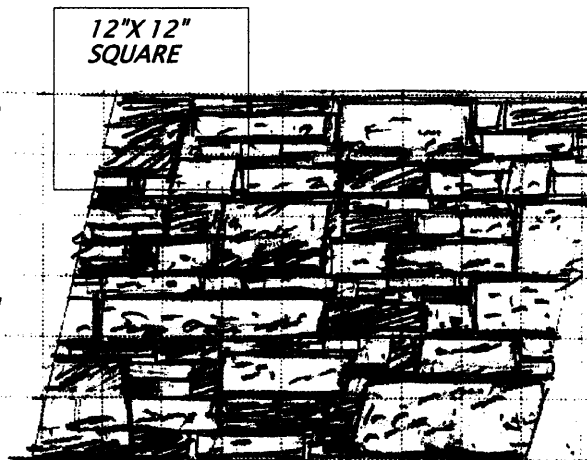
**NATIVE STONE LANDSCAPE WALLS**  
See special provision 504 NATIVE STONE LANDSCAPE WALLS

**Structural Design** - for retaining wall is intended to be a mechanically stabilized earth (MSE) wall with detailed design and shop drawings to be provided by contractor.

Maximum height of wall will be 7ft above finished grade at base of front of wall in area under the bridge, elsewhere walls are 5ft ht. Max. A structural analysis of retaining requirements and recommendations for backfill and geogrid configuration is to be provided to project engineer and approved prior to commencing with wall construction.

**Wall alignment**, horizontal and vertical shall be as shown on the plans and approved by project engineer. Horizontal alignment shall be with large even radius curves and straight tangents, with dimensions and layout information on plans.

Top of wall shall be a consistent flat even elevation without irregularities or variations of 1/8 inch. Alignment shall be staked out by contractor in the field in 50ft spaced stakes and approved by project engineer prior to wall construction.



TYPICAL SURFACE MASONRY PATTERN

14 ft between abutment face and lower wall; max.3:1 slope

Lower wall is 7ft in height under bridge, elsewhere 5 ft ht

**STONE MASONRY**  
Native, local front range quarried sandstone, flagstone. Colors and sizes and masonry pattern to match bridge stone veneer. Contractor to provide and 8ft long by 4ft ht mock up panel with representative sample of proposed stone masonry to be used before proceeding with wall construction.

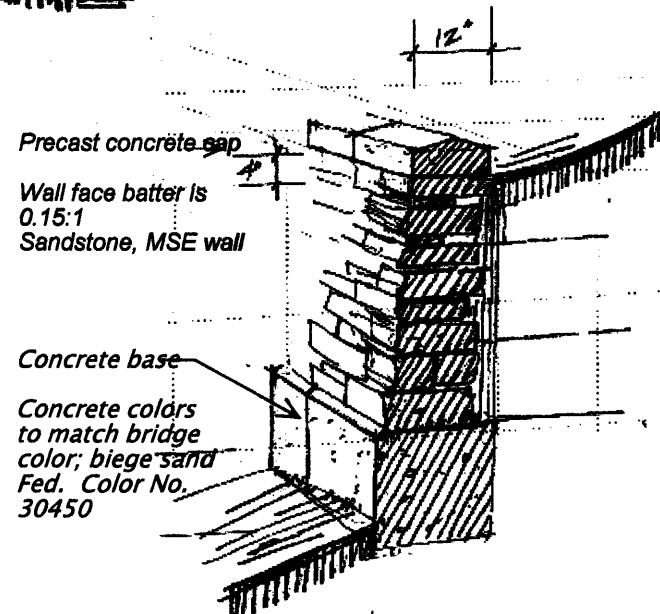
**Colors**  
Beige, pink, brown mix with min. 30% natural mineralized faces, 30% pink red, 40% Bieges,

**Sizes:**  
20% < 2inch thickness  
40% 2-4 inch thickness  
40% 4-6 inch thickness stone  
Lengths vary

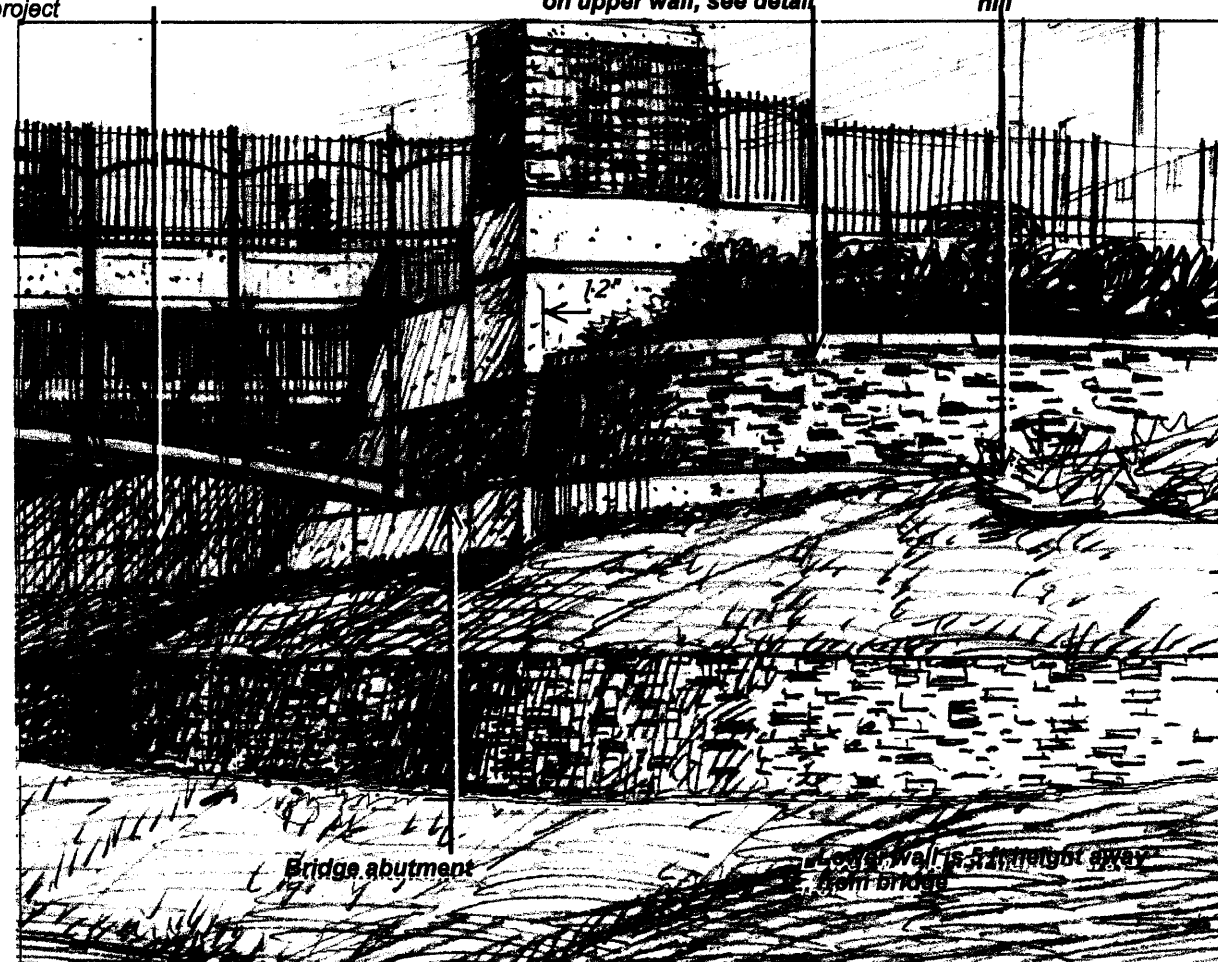
Masonry pattern is random rubble, uncoursed, evenly distributed sizes and colors throughout face of walls. Mortar joints are to be 3/8 inch thick recessed. Surface relief variation is 2 inches.

Top wall, abutment wing wall, stone aligns with veneer on abutment note concrete base and cap on upper wall, see detail

Rounded grade transitions Upper wall top is level, grade at bottom tapers up hill



BRIDGE ABUTMENT WING WALL with precast cap



View of corner abutment with native stone landscape walls, for information purposes only

NATIVE STONE LANDSCAPE WALLS

NATIVE STONE, ROCK LANDSCAPE WALLS

FRANK MILTENBERGER  
LANDSCAPE ARCHITECT  
1178 South Race Street  
Denver, Colorado 80210  
303.722.7563  
F M L A

FELSBURG  
HOLT &  
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303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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**TABULATION OF APPROXIMATE LANDSCAPE QUANTITIES**

ITEM NO.	ITEM DESCRIPTION	UNIT	INTERCHANGE LANDSCAPE	WESTMINSTER 136 <sup>TH</sup> AVE.	THORNTON 136 <sup>TH</sup> AVENUE	REMARKS
207	TOPSOIL	CY	7100	4400	5,500	APPLICABLE ONLY IF ON SITE TOPSOIL IS AVAILABLE, DO NOT IMPORT TOP SOIL
208	DOZING ( LANDSCAPING )	HR	200			FOR LANDSCAPE FINISH GRADING, EQUIPMENT SIZE 90 HORSEPOWER
212	SOIL PREPARATION ( SPECIAL )	ACRE	13.0	0.80	0.36	FOR AREA AROUND NEW TREE AND SHRUB PLANTING AND IRRIGATED LAWN AREAS, NOT NATIVE SEEDED AREAS
212	SEEDING ( NATIVE )	ACRE	14.0	9.0	11.0	BROADCAST SEEDING, NATIVE WEED FREE HAY MULCH WITH TACKIFIER, NOTE NATIVE SEEDING EXTENDS BEYOND LIMITS SHOWN ON LANDSCAPE PLANS, QUANTITY REFLECTS ONLY THAT SHOWN ON LANDSCAPE PLANS.
212	MULCHING ( WEED FREE NATIVE HAY )	ACRE	14.0	9.0	11.0	
212	MULCH TACKIFIER	LB	1400	900	1100	
212	SEEDING ( LAWN )	ACRE	7.05	0.57	0.33	IRRIGATED AREAS ONLY , BLEND OF SPECIES, SEE PLANT LIST, DRILL AND BROADCAST, AND HYDROMULCHED.
212	SEEDING ( PASTURE LAWN )	ACRE	3.63	0	0	FOR THORNTON SIDE ONLY, MIXTURE OF SMOOTH BROME AND CRESTED WHEAT GRASS, ON UPPER SLOPES
212	SEEDING ( WETLAND )	ACRE	0.5	0	0	FOR WATER QUALITY BASINS ONLY
213	CONCRETE LANDSCAPE BORDER	LF	1200	0	0	BOULDERS WITH CONCRETE, BASIN EDGE WATER QUALITY AREA
213	METAL LANDSCAPE BORDER	LF	10,500	1800	1080	FOR MULCHED SHRUB BED EDGE
214	DECIDUOUS TREE ( 3 INCH CAL.)	EA	125	64	28	BALLED AND BURLAPPED, BALANCED CROWN, BRANCHED FROM 5'-6"
214	SMALL DECIDUOUS TREE ( 8- 10FT HT )	EA	88	44	16	MULTI STEM SPECIMENS, 2 OR MORE TRUNK
214	EVERGREEN TREE ( 8-10 FT HT )	EA	155	0	0	BALANCED MIX OF SIZES, SEE PLANT LIST
214	SHRUB ( NO.5 CONT.)	EA	1835	200	200	4-5 FT O.C. IN MULCHED BEDS, MULCH INCLUDED IN THE WORK
214	GROUND COVERS, ( VINES PERENNIALS )	EA	2562	274	274	IN MULCHED SHRUB BEDS THROUGHOUT PROJECT AREA
214	LANDSCAPE , RESTORATION	LS	0	0	1	FOR THORNCREEK GOLF COURSE FRONTAGE, INCLUDES SEEDING, RESETTING IRRIG. HEADS, FINISHED GRADING, SODDING
214	LANDSCAPE ( MAINTENANCE )	LS	80%	12%	8%	FOR TWO YEARS AFTER FINAL ACCEPTANCE,,, UNTIL JUNE 2008 , FOR ALL NEW LANDSCAPE INSTALLATION, SEEP SPECIAL PROVISION 214
507	DRY SLOPE AND DITCH PAVING	LF	570	0	0	DRAINAGE CHANNELS IN LANDSCAPED AREAS SEE DRAINAGE DETAILS
507	DRY SLOPE AND DITCH PAVING ( SPECIAL )	LF	600	0	0	SEE DRAINAGE DETAILS, STEEPER CHANNEL
607	FENCE CHAIN LINK ( 72 INCH )	LF	680	00	00	AROUND EDGE OF EXISTING COTTONWOOD GROVE, CHAN LINK FENCE TYPE, SEE ROADWAY PLANS
610	MEDIAN COVER MATERIAL ( STONE )	SY	3451	0	0	4 INCH DEPTH , FOR UNDER THE BRIDGE, GORE AREA, AND EAST EDGE OF I-25
610	MEDIAN EDGING ( PATTERNED CONCRETE )	LF	1760	3220	1550	PATTERNED CONCRETE, INCLUDES SUB SURFACE DRAIN PIPES AND RELATED.
610	MEDIAN COVER MATERIAL ( PATTERNED CONCRETE )	SY	472	46	610	PATTERNED CONCRETE.
623	IRRIGATION SYSTEM	LS	80%	12%	8%	SEE IRRIGATION PLANS FOR ITEMIZED QUANTITIES

Tabulations above do not include quantities for frontage landscape with golf course south side 136 th Avenue Thornton



**TABULATION OF APPROXIMATE LANDSCAPE QUANTITIES**

Computer File Information		Index of Revisions		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	<b>LANDSCAPE PLANS</b> <b>I-25 / 136 Avenue Interchange</b> <b>Cities of Westminster and Thornton, CO</b>	Project No./Code
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Last Modification Date:	Initials:				Revised:	Designer: <i>FM 1-21-03</i>	
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Acad Ver. 2000i	Scale:	Units: English			Subset Sheets: <b>L-28</b>	of	Sheet Number <b>233</b>



# CITY OF THORNTON

Irrigation Schedule - City of Thornton							
ITEM #	SYMBOL	DESCRIPTION	UNIT	DETAIL #	REMARKS	MFG	Qty.
623-		6" INCH POP-UP LAWN SPRAY	EA	1	1806-SAM-PRO SERIES W/NOZZLE	RAIN BIRD	568
623-		1/4" INCH 6" POP-UP ROTARY SPRINKLER	EA	3	HUNTER 1-20 SERIES W/ NOZZLE (SEE PLAN)	HUNTER	261
623-		1" INCH POP-UP ROTARY SPRINKLER	EA	3	HUNTER 1-25-ADV SERIES W/1" NOZZLE	HUNTER	48
623-		1" INCH AUTOMATIC CONTROL VALVE	EA	4	RAIN BIRD EP8-CP SERIES ELECTRIC VALVE	RAIN BIRD	1
623-		1 1/2" INCH AUTOMATIC CONTROL VALVE	EA	4	RAIN BIRD EP8-CP SERIES ELECTRIC VALVE	RAIN BIRD	24
623-		2" INCH AUTOMATIC CONTROL VALVE	EA	4	RAIN BIRD EP8-CP SERIES ELECTRIC VALVE	RAIN BIRD	2
623-		16 STATION AUTOMATIC CONTROLLER	EA	21	SCORPIO V2	MOTOROLA	1
623-		32 STATION AUTOMATIC CONTROLLER	EA	21	SCORPIO V2	MOTOROLA	1
623-		36 STATION AUTOMATIC CONTROLLER	EA	26	IRRSNET	MOTOROLA	1
623-		EMITTER VALVE ASSEMBLY	EA	9	1/4" DRIP VALVE ASSEMBLY	RAIN BIRD	13
618-		3/4" INCH PLASTIC PIPE	LF	10	3/4" INCH DRIP PIPE	TORO	3400
623-		DRIP BLOW OUT STUB	EA	11	DRIP BLOW OUT STUB		26
623-	NOT SHOWN	DRIP EMITTER	EA		T8C SERIES DRIP EMITTERS	TORO	1130
618-		3/4" INCH PLASTIC PIPE	LF	22	CL2000BE PVC LATERAL		7600
618-		1" INCH PLASTIC PIPE	LF	22	CL2000BE PVC LATERAL		3210
618-		1 1/4" INCH PLASTIC PIPE	LF	22	CL2000BE PVC LATERAL		2280
618-		1 1/2" INCH PLASTIC PIPE	LF	22	CL2000BE PVC LATERAL		1520
618-		2" INCH PLASTIC PIPE	LF	22	CL2000BE PVC LATERAL		1780
618-		2 1/2" INCH PLASTIC PIPE	LF	22	CL2000BE PVC LATERAL		485
618-		1 1/2" INCH PLASTIC PIPE	LF	6 + 22	CL2000BE PVC MAINLINE		0
618-		2 1/2" INCH PLASTIC PIPE	LF	6 + 22	CL2000BE PVC MAINLINE		275
618-		4" INCH PLASTIC PIPE	LF	62223	CL200RT PVC MAINLINE		2300
618-		6" INCH PLASTIC PIPE	LF	62223	CL200RT PVC MAINLINE		3100
618-		2" INCH PLASTIC PIPE	LF		CL1600BE PVC SLEEVE		0
618-		4" INCH PLASTIC PIPE	LF		CL1600BE PVC SLEEVE		0
618-		6" INCH PLASTIC PIPE	LF		CL1600BE PVC SLEEVE		0
618-		8" INCH PLASTIC PIPE	LF		CL1600BE PVC SLEEVE		0
618-		12" INCH PLASTIC PIPE	LF		CL1600BE PVC SLEEVE		0
623-		3" DUCTILE IRON PIPE	LF		DUCTILE IRON PIPE (CLASS B)		40
623-		3" INCH BACKFLOW PREVENTER	EA	20 + 21	880N-3" - BACKFLOW PREVENTER	FEBCO	1
623-		4" GATE VALVE	EA	1 + 8	GATE VALVE		0
623-		6" GATE VALVE	EA	1 + 8	GATE VALVE		0
623-		1" INCH QUICK COUPLER VALVE	EA	5	44LRC SERIES QUICK COUPLER VALVE	RAIN BIRD	23
623-		CONTROL WIRE 24 VOLT	LF		CONTROL WIRE 24 VOLT		70130
623-		POWER SOURCE WIRE	LF		POWER SOURCE WIRE		50
623-		FLOW SENSOR CABLE	LF		FLOW SENSOR CABLE		1340
623-		VALVE BOX	EA		CARSON/BROOKS VALVE BOX		0
623-		3" FLOW SENSOR	EA	20	980-UP SERIES - 3"	BERMAD	1



**INSTALL ALL MAINLINE OUTSIDE OF INTERSTATE 25 FUTURE CLEAR ZONE (REFER TO LANDSCAPE PLANS)**

## Construction Notes

- ALL BASE INFORMATION HAS BEEN TAKEN FROM DRAWINGS PREPARED BY M.L.A.
- REFER TO TECHNICAL SPECIFICATIONS AND CONSTRUCTION DETAILS FOR INSTALLATION PROCEDURES.
- CONTRACTOR SHALL FIELD VERIFY PRESSURE AT BACKFLOW PREVENTER LOCATION FOR EACH TAP PRIOR TO ORDERING MATERIALS OR STARTING ANY IRRIGATION INSTALLATION AND NOTIFY CONSULTANT OF ANY DIFFERENCES FROM STATED PRESSURE. IF CONTRACTOR FAILS TO NOTIFY CONSULTANT HE ASSUMES FULL RESPONSIBILITY FOR ANY SYSTEM ALTERATIONS.

TAP LOCATION NUMBER	REQUIRED PRESSURE
	85 PSI

PIPE SIZE OR WIRE QUANTITY	REQUIRED SLEEVE
3/4" - 1 1/2" PIPING	1/2" PVC SLEEVE
1 1/2" - 2" PIPING	1/4" PVC SLEEVE
2 1/2" - 3" PIPING	1/8" PVC SLEEVE
4" PIPING	1/8" PVC SLEEVE
6" PIPING	1/2" PVC SLEEVE
1-25 CONTROL WIRES	1/2" PVC SLEEVE
26-75 CONTROL WIRES	1/3" PVC SLEEVE

NOTE: EACH LENGTH OF SLEEVED PIPE SHOWN SHALL BE ROUTED THROUGH SEPARATE SLEEVE.

- INSTALL TORO PRESSURE COMPENSATING TURBO-8C SERIES EMITTERS IN BED AREAS AS FOLLOWS.

PLANT SIZE	EMITTER NUMBER	QUANTITY
1 GALLON MAT.	T8C-05	ONE EACH
5 GALLON MAT.	T8C-05	TWO EACH
2" CALIPER TREE	T8C-10	THREE EACH
2 1/2" CALIPER TREE	T8C-10	FOUR EACH
8 FT. CONIFER	T8C-10	FOUR EACH

- CONTRACTOR TO INSTALL PLASTIC 15 SERIES NOZZLES ON ALL POP-UP SPRAY HEADS SPACED GREATER THAN 12 FEET. INSTALL PLASTIC 12 SERIES NOZZLES ON ALL POP-UP SPRAY HEADS SPACED 10-12 FEET. INSTALL PLASTIC 10 SERIES NOZZLES ON ALL POP-UP SPRAY HEADS SPACED 8-10 FEET. INSTALL PLASTIC 8 SERIES NOZZLES ON ALL POP-UP SPRAY HEADS SPACED 5 FEET OR LESS.
- REFER TO PLANTING PLAN FOR EXACT TREE LOCATIONS AND QUANTITIES, TREES SHOWN ON IRRIGATION PLANS ARE APPROXIMATE.
- PRIOR TO ORDERING CONTROLLER ASSEMBLIES CONTRACTOR SHALL HAVE MOTOROLA DISTRIBUTOR PERFORM ON-SITE RADIO SIGNAL TEST AT PROPOSED CONTROLLER LOCATIONS. IF TEST REVEALS INADEQUATE RADIO SIGNAL STRENGTH TO PROPERLY OPERATE CONTROLLERS CONTRACTOR SHALL CONTACT PROJECT ENGINEER FOR DIRECTION AS HOW TO PROCEED.

**HydroSystems-KDI, Inc.** Hydrology Consulting  
 300 Union Blvd. Suite 405  
 Lakewood, Colorado 80228  
 303-980-9077  
 Fax: 303-980-6384

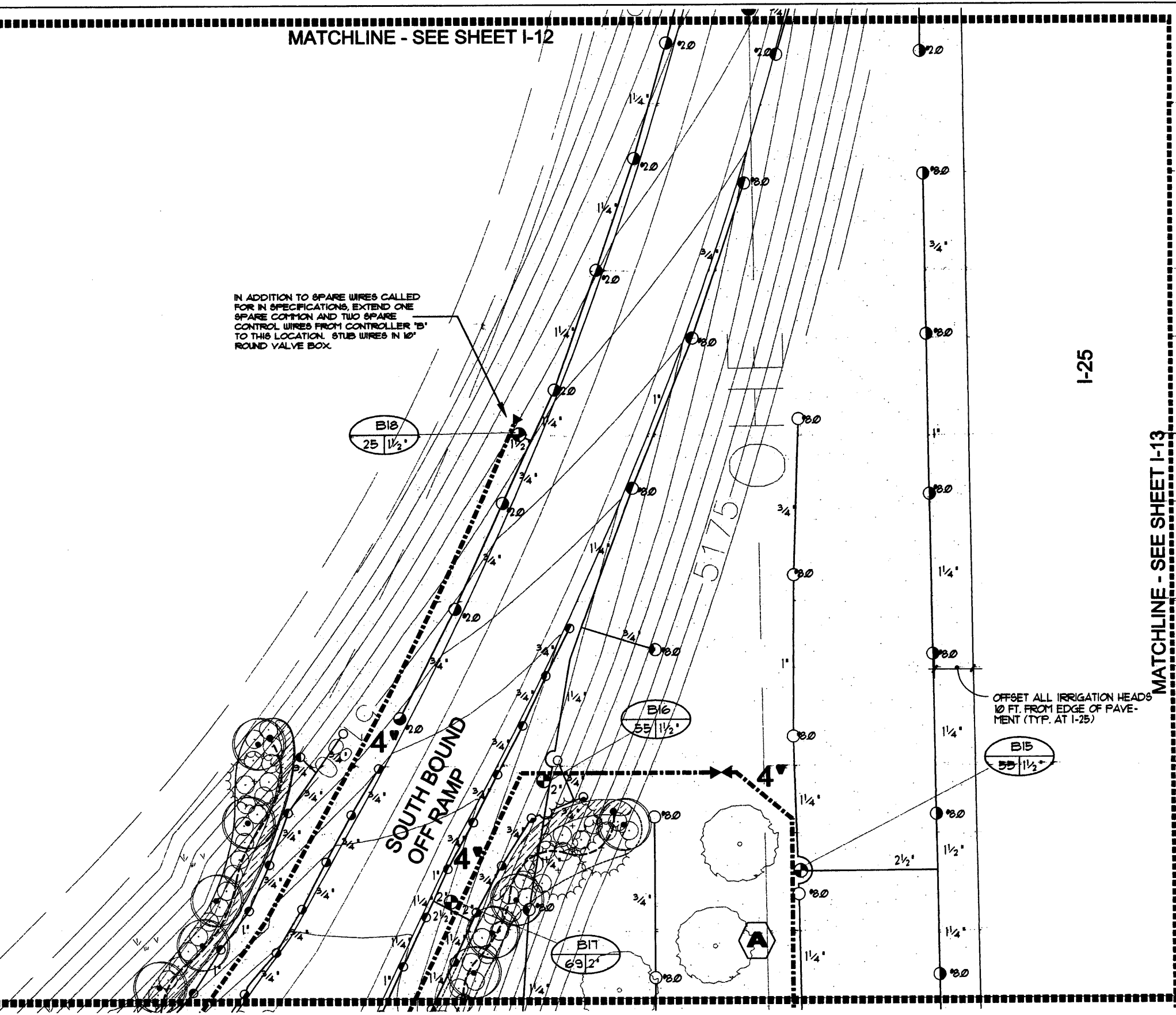
Computer File Information		Index of Revisions			303.721.1440 fax 303.721.0832 fhu@fhueng.com	As Constructed	IRRIGATION SCHEDULE & NOTES CITY OF THORNTON		Project No./Code		
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Full Path:	D:\2265-IRR				Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	Sheet Subset:		Subset Sheets:	1 of 26	Sheet Number	1-1
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MATCHLINE - SEE SHEET I-12

**HydroSystems-KDI, Inc.**  
 300 Utah Blvd Suite 400  
 Greenwood Village, CO 80224  
 Tel: 303-757-0307  
 Fax: 303-757-0304



IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'B' TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.



MATCHLINE - SEE SHEET I-3

I-25

MATCHLINE - SEE SHEET I-13

OFFSET ALL IRRIGATION HEADS 10 FT. FROM EDGE OF PAVEMENT (TYP. AT I-25)

Computer File Information		Index of Revisions		<p>303.721.1440                  fax 303.721.0832                  fhru@fhrueng.com</p> <p>Greenwood Corporate Plaza                  7951 E. Maplewood Ave. Ste. 200                  Englewood, CO 80111</p>	As Constructed	IRRIGATION PLAN		Project No./Code	
Creation Date:	12/15/02	Initials:	JBM/MJB		No Revisions:				
Last Modification Date:		Initials:	JBM/MJB		Revised:		Designer:	JBM/MJB	
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Drawing File Name:							Sheet Subset:		
Acad Ver.	2000i	Scale:	1" = 30'	Units:	English	Subset Sheets:	2 of 26	Sheet Number	I-2

236

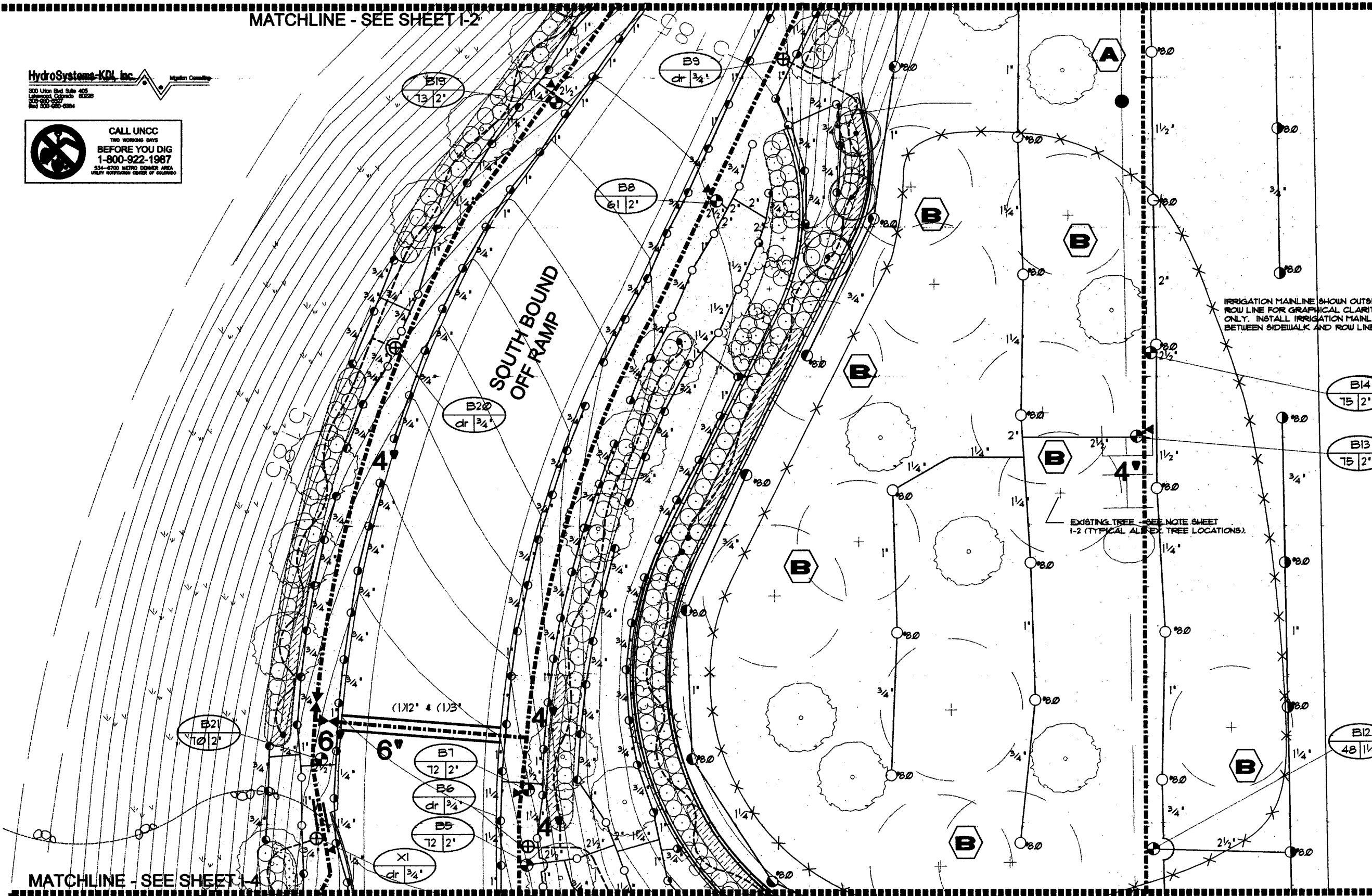
MATCHLINE - SEE SHEET I-2

HydroSystems-KOL, Inc. Irrigation Consulting  
 300 Union Blvd Suite 405  
 Littleton, Colorado 80120  
 303-750-0000  
 Fax 303-950-0084



I-25

MATCHLINE - SEE SHEET I-14



MATCHLINE - SEE SHEET I-4

Computer File Information		Index of Revisions		 303.721.1440 fax 303.721.0832 fh@fheng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed	IRRIGATION PLAN		Project No./Code
Creation Date:	12/15/02	Initials:	JBM/MJB		No Revisions:	Designer:	JBM/MJB	237
Last Modification Date:		Initials:	JBM/MJB		Revised:	Detailer:	JBM/MJB	
Full Path:	D:\2265-IRR				Void:	Sheet Subset:		
Drawing File Name:						Subset Sheets:	3 of 26	Sheet Number I-3
Acad Ver. 2000i	Scale: 1" = 30'	Units:	English					

MATCHLINE - SEE SHEET I-8

HydroSystems-KOL Inc.  
 CALL UNCC  
 BEFORE YOU DIG  
 1-800-922-1967

MATCHLINE - SEE SHEET I-8

B4  
65 1 1/2'

B3  
dr 3/4'

B1  
dr 3/4'

B2  
72 2'

B10  
dr 3/4'

B11  
55 1 1/2'

SOUTH BOUND  
OFF RAMP

**CONTROLLER LOCATION "B"**

City of Westminster  
 CONTRACTOR SHALL INSTALL ONE UNITED GREENTECH SAI-RE2-40/R1LP/L1EM/FR  
 CONTROLLER ASSEMBLY. 120 VOLT ELECTRICAL POWER IS AVAILABLE WITHIN 20 LF. OF  
 CONTROLLER LOCATION. ELECTRICAL POWER AND CONNECTION TO CONTROLLER IS BY  
 CONTRACTOR WITH WORK CONFORMING TO LOCAL CODE. FEES AND PERMITS ASSOCIATED WITH  
 WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL CONTROLLER LOCATION  
 SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION. EXTEND THREE #4 AWG UFIL WIRES  
 (ONE BROWN, ONE ORANGE, ONE BLACK) FROM CONTROLLER TO MASTER VALVE. THIRD #4  
 WIRE IS SPARE. STUB 48" LENGTH OF SPARE WIRING WITHIN VALVE BOX CONTAINING MASTER  
 VALVE. CONNECT WIRING AND CABLE TO MASTER VALVE PER MANUFACTURER'S  
 RECOMMENDATIONS.

IN ADDITION TO SPARE WIRES  
 CALLED FOR IN SPECIFICATIONS,  
 EXTEND ONE SPARE COMMON AND  
 TWO SPARE CONTROL WIRES FROM  
 CONTROLLER "B" TO THIS  
 LOCATION. STUB WIRES IN 10'  
 ROUND VALVE BOX.

**CONTROLLER LOCATION "X"**

City of Westminster  
 CONTRACTOR SHALL INSTALL ONE UNITED GREENTECH  
 SAI-RE2-32/LFEM-320/FSP/R1LP/L1EM/FR CONTROLLER ASSEMBLY. 120 VOLT ELECTRICAL  
 POWER IS AVAILABLE WITHIN 20 LF. OF CONTROLLER LOCATION. ELECTRICAL POWER AND  
 CONNECTION TO CONTROLLER IS BY CONTRACTOR WITH WORK CONFORMING TO LOCAL CODE.  
 FEES AND PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR.  
 FINAL CONTROLLER LOCATION SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION.  
 EXTEND ONE RUN REGENCY PE-54 CABLE AND THREE #4 AWG UFIL WIRES (ONE BLUE, ONE  
 GREEN, ONE PURPLE) FROM CONTROLLER TO FLOW SENSOR AND MASTER VALVE. THIRD #4  
 WIRE IS SPARE. STUB 48" LENGTH OF SPARE WIRING WITHIN VALVE BOX CONTAINING MASTER  
 VALVE. CONNECT WIRING AND CABLE TO MASTER VALVE AND FLOW SENSOR PER  
 MANUFACTURER'S RECOMMENDATIONS.

MATCHLINE - SEE SHEET I-5

I-25 SB

MATCHLINE - SEE SHEET I-15

136TH AVE.

BRIDGE

Computer File Information

Creation Date:	12/15/02	Initials:	JBM/MJB
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Full Path:	D:\2265-IRR		
Drawing File Name:			
Acad Ver.	2000i	Scale:	1" = 30'
Units:	English		

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303.721.1440  
 fax 303.721.0832  
 flu@flueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

As Constructed

No Revisions:	
Revised:	
Void:	

IRRIGATION PLAN

Designer:	JBM/MJB
Detailer:	JBM/MJB
Sheet Subset:	
Subset Sheets:	4 of 26

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MATCHLINE - SEE SHEET I-4

MATCHLINE - SEE SHEET I-16  
BS 52-1

**CONTROLLER LOCATION "A"**

City of Westminster  
CONTRACTOR SHALL INSTALL ONE UNITED GREENTECH SA1-REG-32R7MLP/LLP/MFR CONTROLLER (682821). 120 VOLT ELECTRICAL POWER IS AVAILABLE WITHIN 20 LF. OF CONTROLLER LOCATION. ELECTRICAL POWER AND CONNECTION TO CONTROLLER IS BY CONTRACTOR WITH WORK CONFORMING TO LOCAL CODE. FEES AND PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL CONTROLLER LOCATION SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION. EXTEND THREE #14 AWG URUL WIRES (ONE BROWN, ONE ORANGE, ONE BLACK) FROM CONTROLLER TO MASTER VALVE. THIRD #14 WIRE IS SPARE. STUB 46" LENGTH OF SPARE WIRING WITHIN VALVE BOX CONTAINING MASTER VALVE. CONNECT WIRING AND CABLE TO MASTER VALVE PER MANUFACTURER'S RECOMMENDATIONS.

**A**

- A2  
16 | 1'
- A1  
dr 3/4'
- A3  
77 | 2'
- A4  
dr 3/4'
- A24  
74 | 2'
- A23  
dr 3/4'
- A5  
19 | 1'
- A6  
27 | 1 1/2'
- A7  
dr 3/4'
- A9  
55 | 1 1/2'
- A10  
36 | 1 1/2'
- A11  
68 | 2'
- A8  
68 | 2'
- A22  
dr 3/4'
- A21  
62 | 2'

- A12  
55 | 1 1/2'
- A13  
70 | 2'
- A14  
48 | 1 1/2'

**SOUTH BOUND  
ON RAMP**

HydroSystems-KDI, Inc.  
300 Utah Blvd Suite 400  
Greenwood, Colorado 80220  
303-721-1440  
Fax 303-721-0832

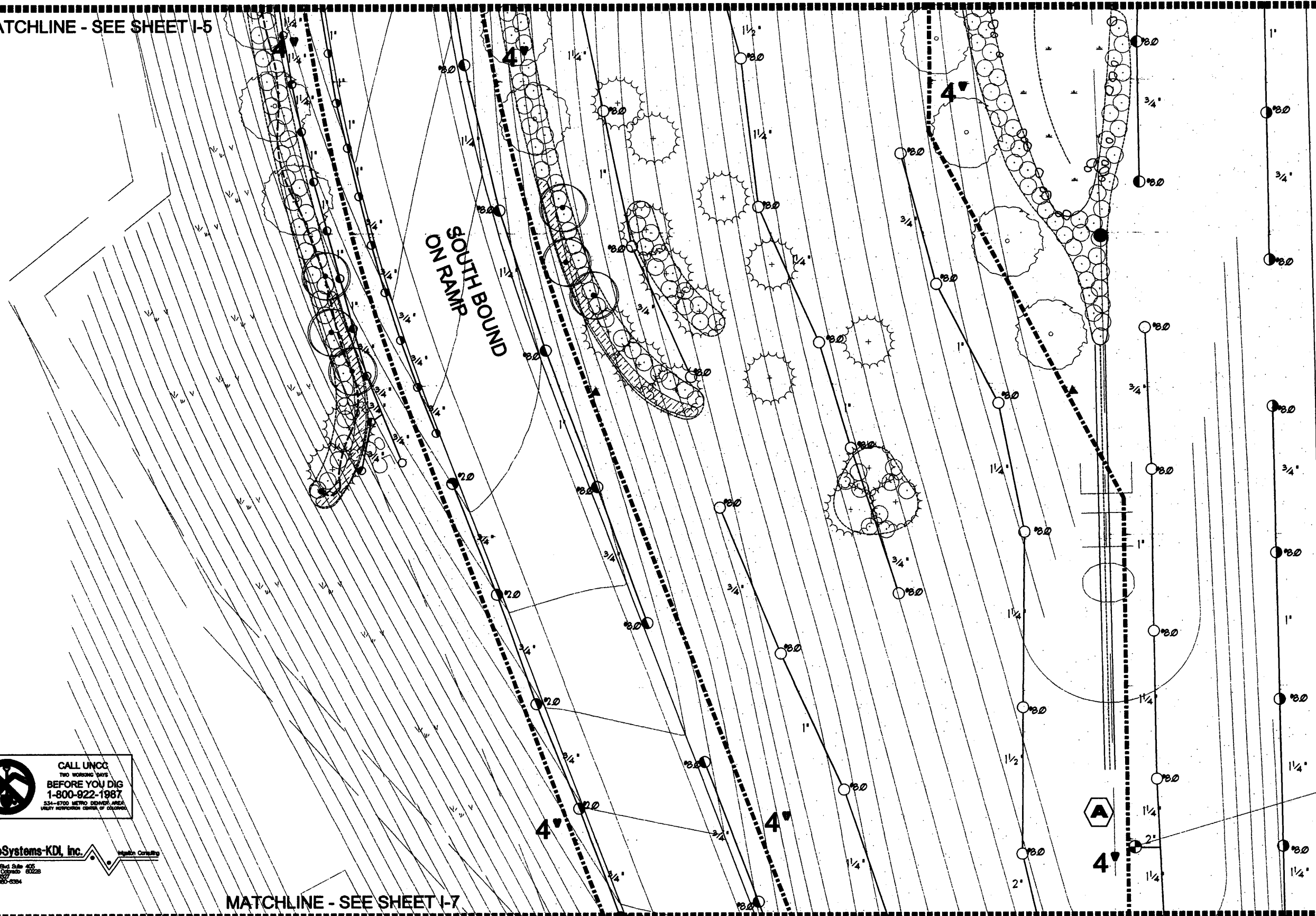


MATCHLINE - SEE SHEET I-6

Computer File Information		Index of Revisions		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	IRRIGATION PLAN		Project No./Code
Creation Date:	12/15/02	Initials:	JBM/MJB		No Revisions:			
Last Modification Date:		Initials:	JBM/MJB		Revised:	Designer:	JBM/MJB	239
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MATCHLINE - SEE SHEET I-5

MATCHLINE - SEE SHEET I-17  
BS 52-1



CALL UNCC  
TWO WORKING DAYS  
BEFORE YOU DIG  
1-800-822-1987  
534-8700 METRO DENVER AREA  
VALLEY HONORARIUM CENTER OF COLORADO

HydroSystems-KDI, Inc.   
300 Union Blvd. Suite 405  
Littleton, Colorado 80120  
303-957-0277  
Fax 303-980-8384

MATCHLINE - SEE SHEET I-7

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Acad Ver. 2000i	Scale: 1" = 30' Units: English

Index of Revisions	
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303.721.1440  
fax 303.721.0832  
fhu@fheng.com  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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IRRIGATION PLAN	
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Project No./Code
240
Sheet Number 1-6



MATCHLINE - SEE SHEET I-6

A16  
40 | 1 1/2'

A15  
62 | 2'

A20  
42 | 1 1/2'

A18  
62 | 2'

A17  
48 | 1 1/2'

IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'A' TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.

IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'A' DOWN EACH LEG OF LOOP (TWO COMMON AND FOUR CONTROL) TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.

SOUTH BOUND  
ON RAMP

MATCHLINE - SEE SHEET I-19

MATCHLINE - SEE SHEET I-18  
BS 52-1



HydroSystems-KDI, Inc. Integrity. Creativity.  
300 Utah Blvd Suite 405  
Littleton, Colorado 80228  
303-985-1337  
Fax 303-985-0384

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
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Acad Ver. 2000i	Scale: 1" = 30' Units: English

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fax 303.721.0832  
fm@fhug.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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IRRIGATION PLAN	
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Project No./Code
241
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HydroSystems-KDI, Inc. Hydro Quality  
 300 Utah Blvd Suite 405  
 Greenwood Village, CO 80224  
 303-750-0000  
 Fax 303-750-0009

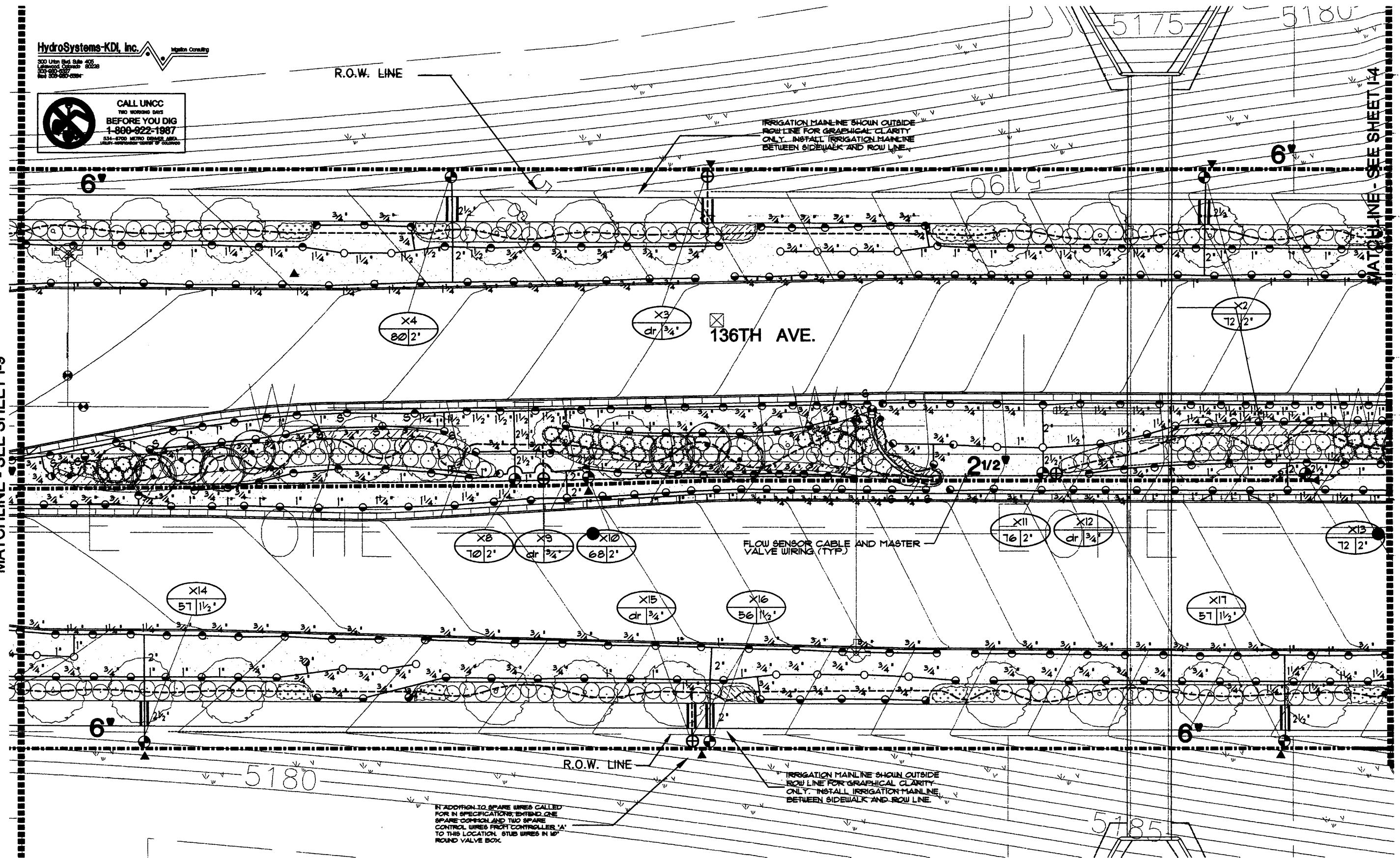


R.O.W. LINE

IRRIGATION MAINLINE SHOWN OUTSIDE ROW LINE FOR GRAPHICAL CLARITY ONLY. INSTALL IRRIGATION MAINLINE BETWEEN SIDEWALK AND ROW LINE.

MATCHLINE - SEE SHEET I-9

MATCHLINE - SEE SHEET I-4



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Drawing File Name:			
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 fax 303.721.0832  
 flu@flueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

As Constructed

No Revisions:

Revised:

Void:

IRRIGATION PLAN

Designer: JBM/MJB

Detailer: JBM/MJB

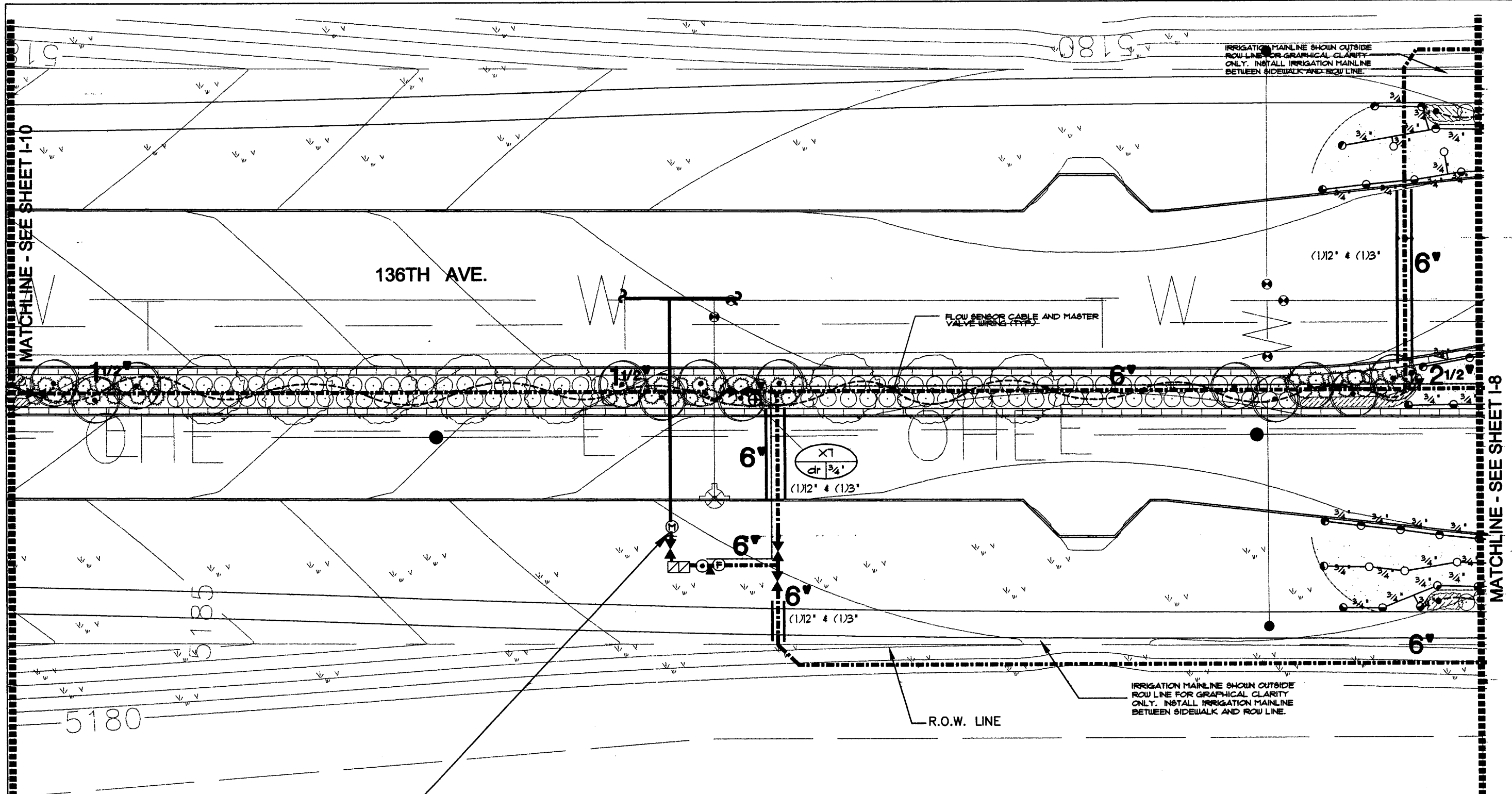
Sheet Subset:

Subset Sheets: 8 of 26

Project No./Code

242

Sheet Number I-8



**POINT OF CONNECTION #1 - 3"**

Peak Flow - 160 GPM  
 City of Westminster  
 CONTRACTOR SHALL TIE ONTO 3" WATER METER AT INDICATED LOCATION AND EXTEND 3' CLASS 51 DUCTILE IRON PIPING AT 48" DEPTH TO BACKFLOW PREVENTER LOCATION. INSTALL ONE 1" MANUAL BACKFLOW PREVENTER DRAIN VALVE, ONE 3" REDUCED PRESSURE BACKFLOW PREVENTER WITH ENCLOSURE, ONE 3/4" MANUAL DRAIN VALVE, ONE 3" FLOW SENSOR, ONE QUICK COUPLING VALVE, ONE 3" MASTER VALVE AND EXTEND 6' CL3020RT PVC MAIN AS SHOWN. WORK SHALL CONFORM TO LOCAL CODE. FEES AND PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL LOCATION OF BACKFLOW PREVENTER AND ASSOCIATED EQUIPMENT SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION.

CALL UNCC  
 TWO WORKING DAYS  
**BEFORE YOU DIG**  
 1-800-922-1987  
534-0700 METRO DENVER AREA  
 330-2500 COLORADO  
 303-555-5257  
 303-680-0384

**HydroSystems-KDI, Inc.** Hydro Control  
300 Utah Blvd Suite 405  
 Greenwood Village CO 80228  
 303-755-5257  
 303-680-0384

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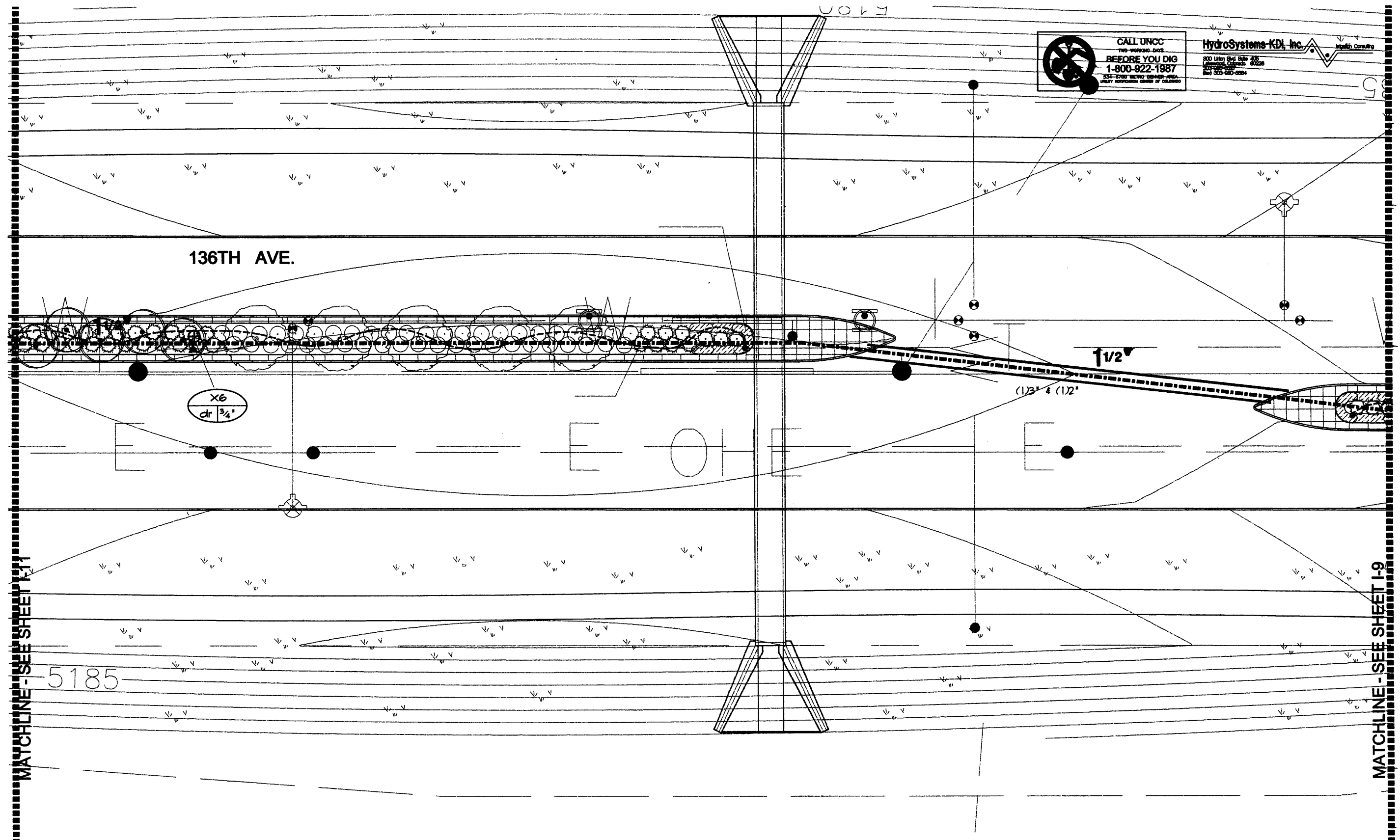


303.721.1440  
 fax 303.721.0832  
 flu@fhmeng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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No Revisions:
Revised:
Void:

IRRIGATION PLAN	
Designer:	JBM/MJB
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CALL UNCC  
 TWO-WAYING DUGS  
**BEFORE YOU DIG**  
 1-800-822-1987  
 ALL OTHER METRO TOWNSHIP-AREA  
 UTILITY SERVICES UNDER OF CHARGE

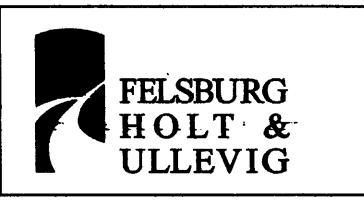
**HydroSystems-KDI, Inc.**  
 830 Upton Blvd. Suite 205  
 Englewood, Colorado 80226  
 303-721-1000  
 Fax 303-721-0284

MATCHLINE - SEE SHEET 1-11

MATCHLINE - SEE SHEET 1-9

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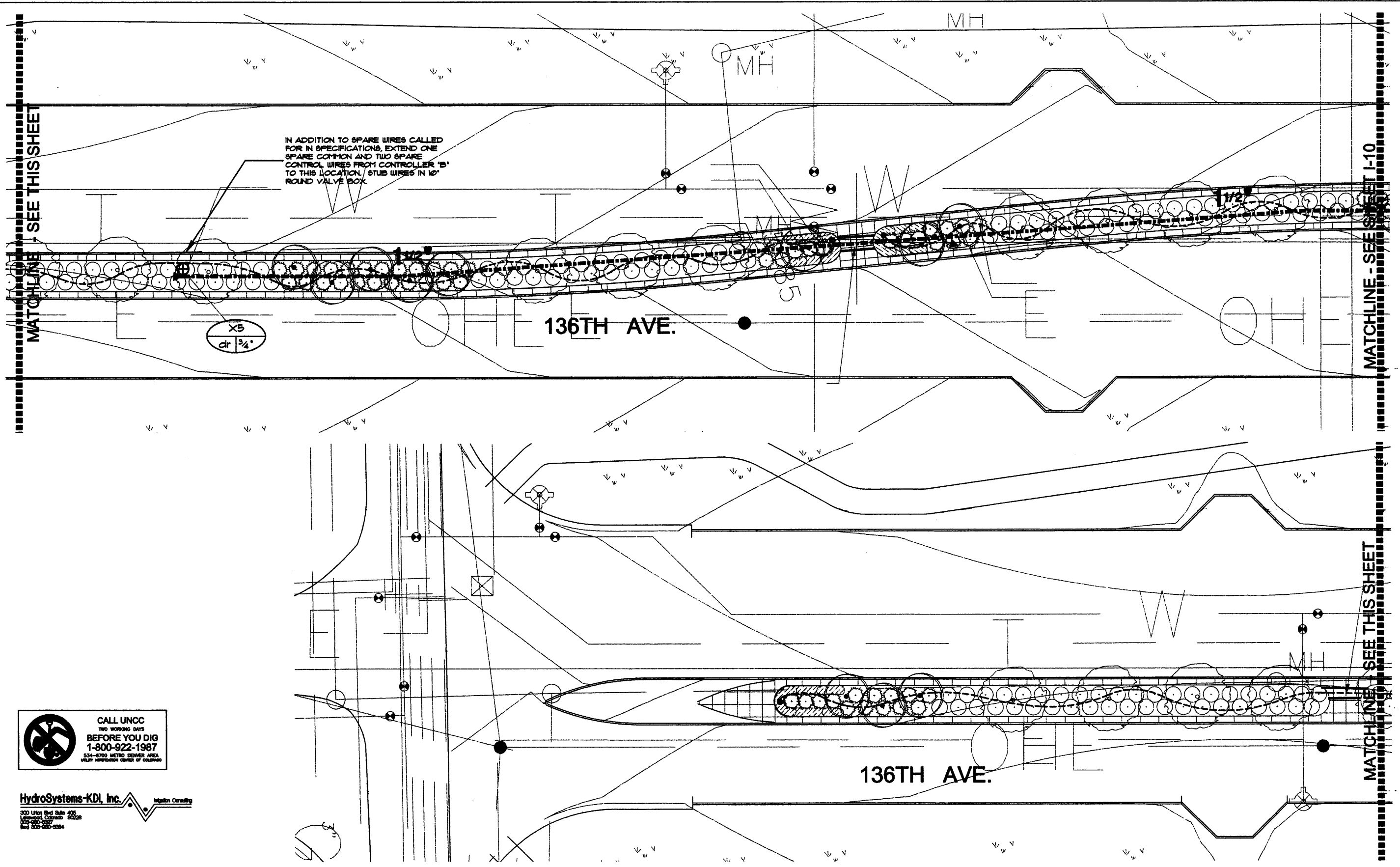


303.721.1440  
 fax 303.721.0832  
 fm@fimg.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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IRRIGATION PLAN	
Designer:	JBM/MJB
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244
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**CALL UNCC**  
 TWO WORKING DAYS  
**BEFORE YOU DIG**  
 1-800-922-1987  
534-8700 METRO DENVER AREA  
 UTILITY INFORMATION CENTER OF COLORADO

**HydroSystems-KDI, Inc.**  
300 Union Blvd Suite 402  
 Littleton, Colorado 80120  
 303-980-2997  
 Fax 303-980-0384

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
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**FELSBURG  
 HOLT &  
 ULLEVIG**


303.721.1440  
 fax 303.721.0832  
 fh@fheng.com

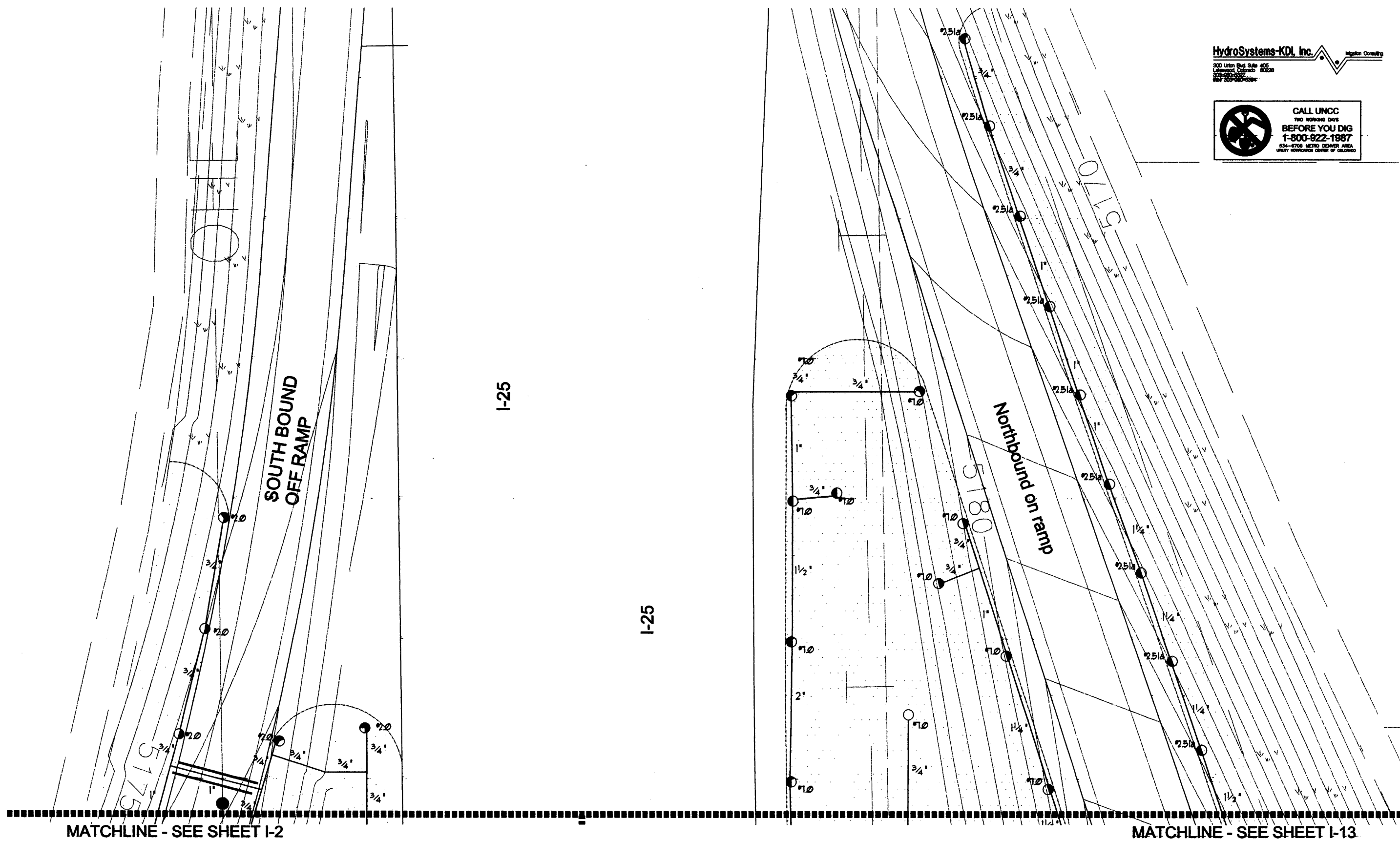
Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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No Revisions:
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IRRIGATION PLAN	
Designer:	JBM/MJB
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HydroSystems-KDI, Inc.   
 300 Utah Blvd. Suite 405  
 Littleton, Colorado 80120  
 303-721-1440  
 FAX 303-721-0832




MATCHLINE - SEE SHEET I-2

MATCHLINE - SEE SHEET I-13

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
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 fax 303.721.0832  
 fm@flueng.com  
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Designer:	JBM/MJB
Detailer:	JBM/MJB
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Sheet Number	I-12

MATCHLINE - SEE SHEET I-12

**HydroSystems-KDI, Inc.**  
 Irrigation Consulting  
 300 Union Blvd Suite 425  
 Greenwood Village, CO 80228  
 Phone: 303-750-0254  
 Fax: 303-750-0254

**CALL UNCC**  
 TWO WORKING DAYS  
 BEFORE YOU DIG  
 1-800-922-1987  
 534-6700 METRO DENVER AREA  
 UTILITY HOPECENTER CENTER OF COLORADO

IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'C' TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.

IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'C' TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.

MATCHLINE - SEE SHEET I-2

I-25

OFFSET ALL IRRIGATION HEADS 10 FT. FROM EDGE OF PAVEMENT (TYP. AT I-25)

- C16  
56 | 1 1/2'
- C14  
70 | 2'
- C15  
77 | 2'

- C18  
39 | 1 1/2'
- C17  
63 | 2'

- C12  
30 | 1 1/2'
- C19  
47 | 1 1/2'

- C13  
70 | 2'
- C20  
dr | 3/4'

Northbound on ramp

MATCHLINE - SEE SHEET I-14

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Creation Date:	12/15/02 Initials: JBM/MJB
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Acad Ver. 2000i	Scale: Units: English

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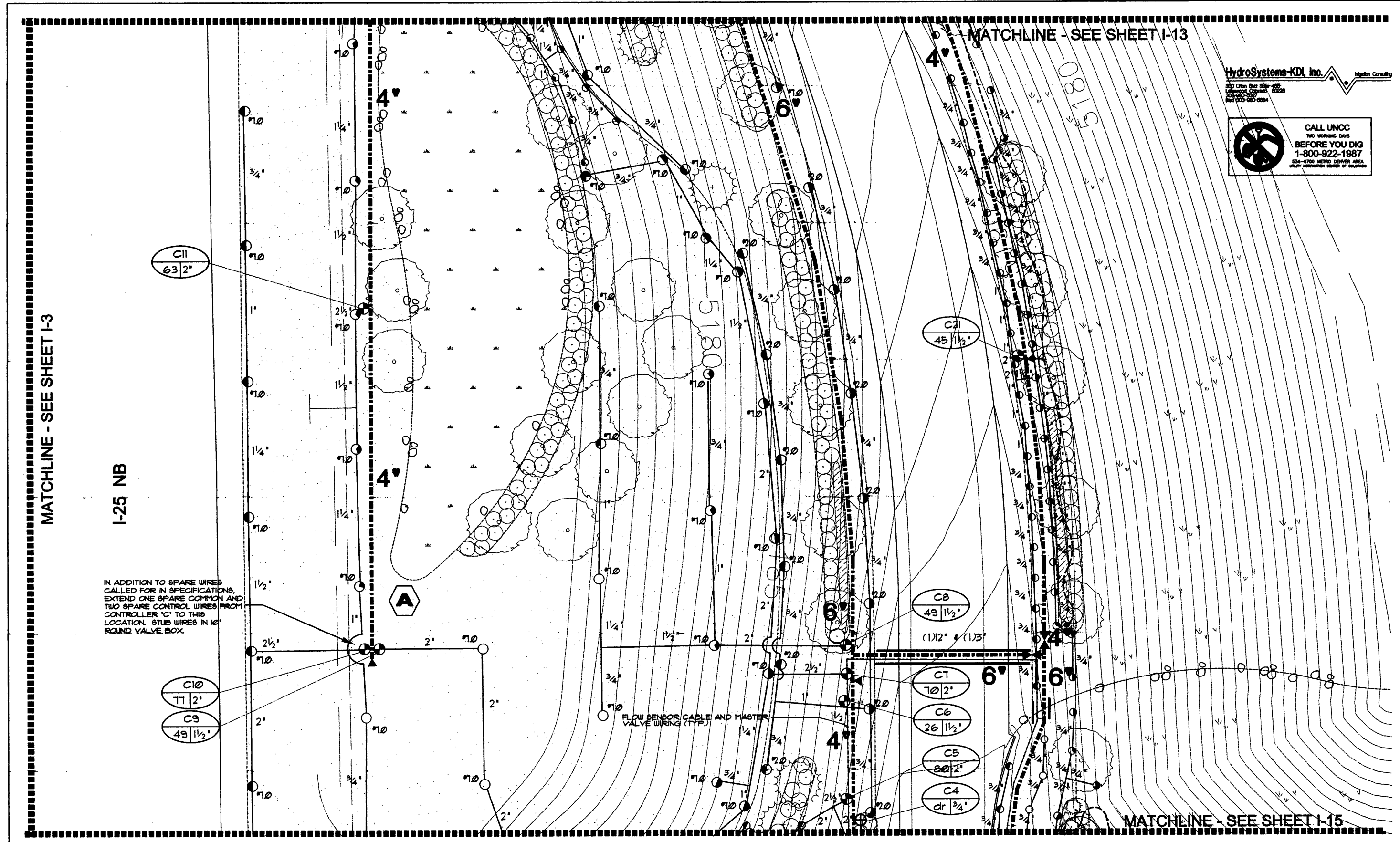


303.721.1440  
 fax 303.721.0832  
 fh@fheng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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No Revisions:
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IRRIGATION PLAN	
Designer:	JBM/MJB
Detailer:	JBM/MJB
Sheet Subset:	Subset Sheets: 13 of 26

Project No./Code	247
Sheet Number	I-13



HydroSystems-KDI, Inc. Hydro Consulting  
 233 Ultra Blue Drive  
 Englewood, Colorado 80228  
 Tel: 303-721-4277  
 Fax: 303-721-4284

**CALL UNCC**  
 BEFORE YOU DIG  
 1-800-922-1987  
 534-8700 METRO DENVER AREA  
 QUALITY ASSURANCE CENTER OF COLORADO

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
Last Modification Date:	Initials: JBM/MJB
Full Path:	D:\2265-IRR
Drawing File Name:	
Acad Ver. 2000i	Scale: 1" = 30' Units: English

Index of Revisions	

**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 flu@flueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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 Revised:  
 Void:


**IRRIGATION PLAN**

Designer: JBM/MJB  
 Detailer: JBM/MJB  
 Sheet Subset: Subset Sheets: 14 of 26

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MATCHLINE - SEE SHEET I-14

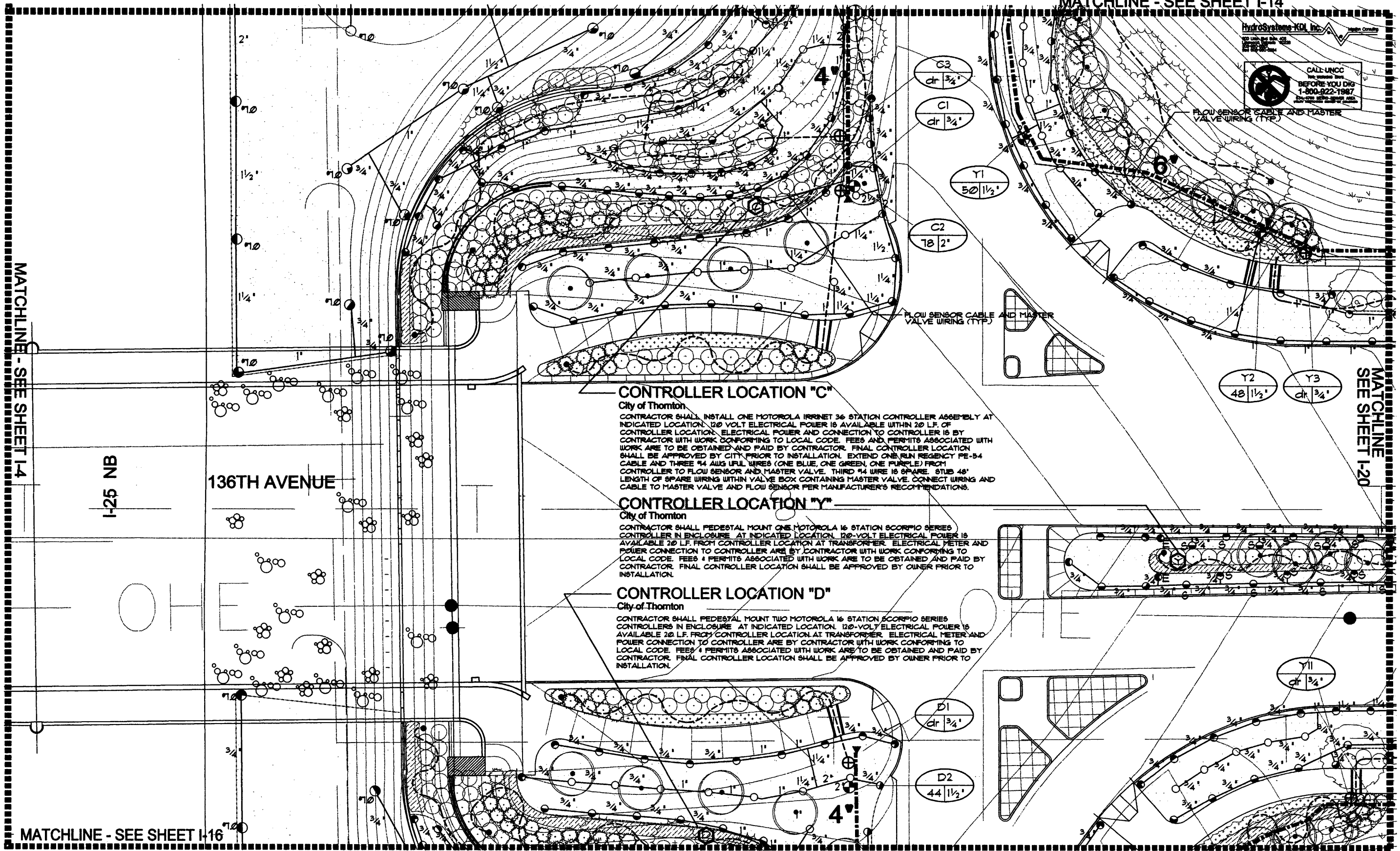
HydroSystems-KDI, Inc.  Water Control

CALL UNCC  
BEFORE YOU DIG  
1-800-922-1987

FLOW SENSOR CABLE AND MASTER VALVE WIRING (TYP.)

MATCHLINE - SEE SHEET I-4

MATCHLINE  
SEE SHEET I-20



**CONTROLLER LOCATION "C"**

City of Thornton  
CONTRACTOR SHALL INSTALL ONE MOTOROLA IRRINET 36 STATION CONTROLLER ASSEMBLY AT INDICATED LOCATION. 120 VOLT ELECTRICAL POWER IS AVAILABLE WITHIN 20 LF. OF CONTROLLER LOCATION. ELECTRICAL POWER AND CONNECTION TO CONTROLLER IS BY CONTRACTOR WITH WORK CONFORMING TO LOCAL CODE. FEES AND PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL CONTROLLER LOCATION SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION. EXTEND ONE RUN REGENCY PE-54 CABLE AND THREE #4 AWG LFL WIRES (ONE BLUE, ONE GREEN, ONE PURPLE) FROM CONTROLLER TO FLOW SENSOR AND MASTER VALVE. THIRD #4 WIRE IS SPARE. STUDS 48" LENGTH OF SPARE WIRING WITHIN VALVE BOX CONTAINING MASTER VALVE. CONNECT WIRING AND CABLE TO MASTER VALVE AND FLOW SENSOR PER MANUFACTURER'S RECOMMENDATIONS.

**CONTROLLER LOCATION "Y"**

City of Thornton  
CONTRACTOR SHALL PEDESTAL MOUNT ONE MOTOROLA 16 STATION SCORPIO SERIES CONTROLLER IN ENCLOSURE AT INDICATED LOCATION. 120-VOLT ELECTRICAL POWER IS AVAILABLE 20 LF. FROM CONTROLLER LOCATION AT TRANSFORMER. ELECTRICAL METER AND POWER CONNECTION TO CONTROLLER ARE BY CONTRACTOR WITH WORK CONFORMING TO LOCAL CODE. FEES & PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL CONTROLLER LOCATION SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.

**CONTROLLER LOCATION "D"**

City of Thornton  
CONTRACTOR SHALL PEDESTAL MOUNT TWO MOTOROLA 16 STATION SCORPIO SERIES CONTROLLERS IN ENCLOSURE AT INDICATED LOCATION. 120-VOLT ELECTRICAL POWER IS AVAILABLE 20 LF. FROM CONTROLLER LOCATION AT TRANSFORMER. ELECTRICAL METER AND POWER CONNECTION TO CONTROLLER ARE BY CONTRACTOR WITH WORK CONFORMING TO LOCAL CODE. FEES & PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL CONTROLLER LOCATION SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.

MATCHLINE - SEE SHEET I-16

Computer File Information	
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Last Modification Date:	Initials: JBM/MJB
Full Path:	D:\2265-IRR
Drawing File Name:	
Acad Ver.	2000i Scale: 1" = 30' Units: English

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303.721.1440  
fax 303.721.0832  
fhu@fheng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed
No Revisions:
Revised:
Void:

IRRIGATION PLAN	
Designer:	JBM/MJB
Detailer:	JBM/MJB
Sheet Subset:	Subset Sheets: 15 of 26

Project No./Code	249
Sheet Number	I-15

MATCHLINE - SEE SHEET I-15

MATCHLINE - SEE SHEET I-5

I-25 NB

MATCHLINE - SEE SHEET I-17

IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'D' TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.



HydroSystems-KDI, Inc.  
800 Union Blvd. Suite 405  
Englewood, Colorado 80110  
303.721.1440  
303.721.0832  
hfm@hfmeng.com

D13  
41 1 1/2'

D12  
22 1'

D3  
43 1 1/2'

D4  
dr 3/4'

D5  
42 1 1/2'

D6  
dr 3/4'

D75  
18 2'

Northbound off ramp

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
Last Modification Date:	Initials: JBM/MJB
Full Path:	D:\2265-IRR
Drawing File Name:	
Acad Ver.	2000i Scale: 1" = 30' Units: English

Index of Revisions	

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
hfm@hfmeng.com

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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	
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Revised:	
Void:	

IRRIGATION PLAN	
Designer:	JBM/MJB
Detailer:	JBM/MJB
Sheet Subset:	
Subset Sheets:	16 of 26

Project No./Code	
Sheet Number	I-16

250

MATCHLINE - SEE SHEET I-16

I-25 NB

MATCHLINE - SEE SHEET I-6

D14  
42 | 1 1/2'

D15  
35 | 1 1/2'

D16  
63 | 2'

D17  
27 | 1 1/2'

D7  
18 | 1'

D8  
63 | 2'

D9  
63 | 2'

D10  
42 | 1 1/2'

D11  
56 | 1 1/2'

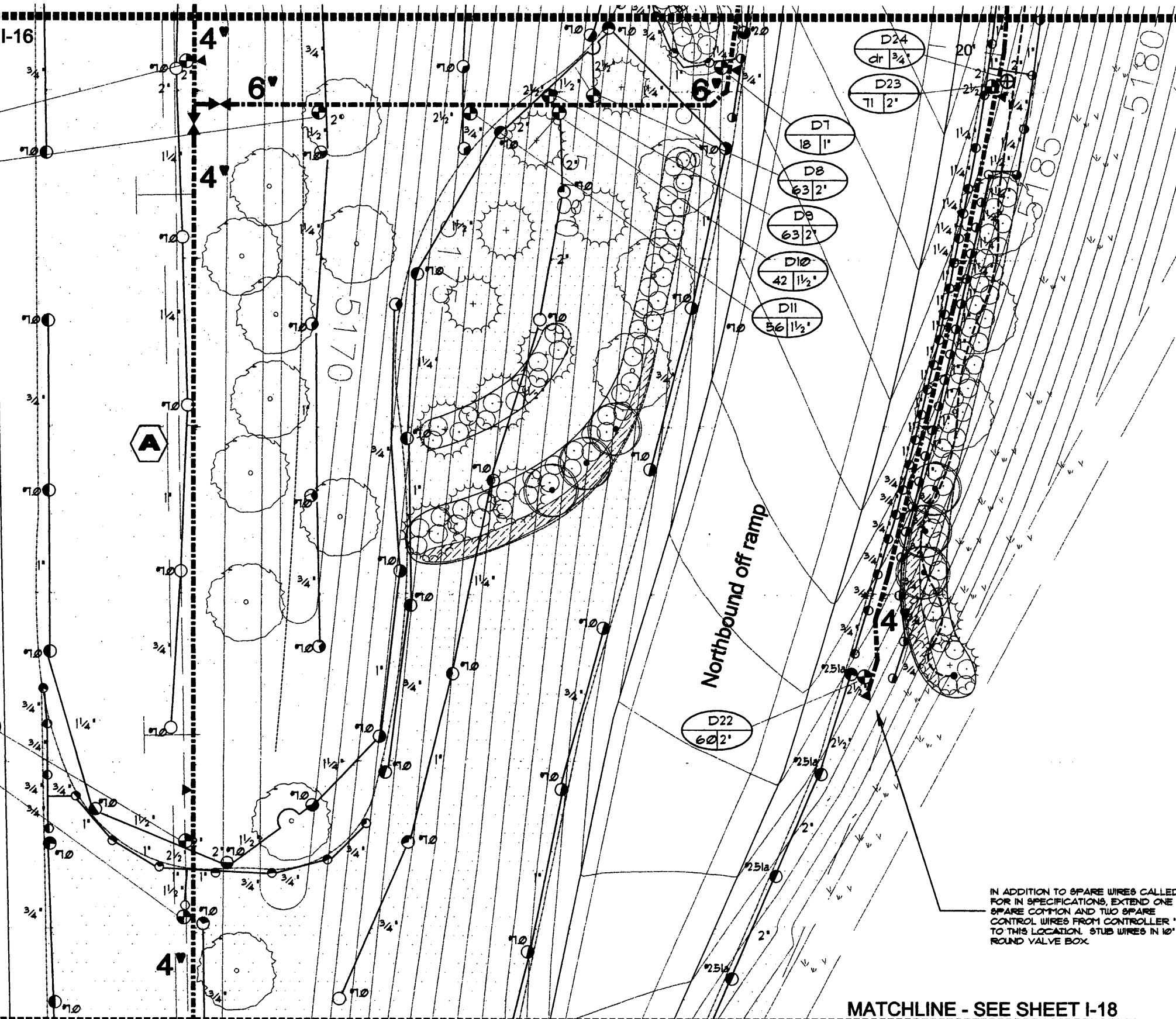
D24  
dr 3/4'

D23  
71 | 2'

D22  
60 | 2'

HydroSystems-KDI, Inc. Irrigation Consulting  
3845 Lowell Blvd. Suite 200  
Englewood, CO 80150  
303.721.1440  
Fax 303.721.0832

CALL UNCC  
TWO WORKING DAYS  
BEFORE YOU DIG  
1-800-922-1987  
534-4700 METRO DENVER AREA  
UTILITY RESPONSE CENTER OF COLORADO



IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'D' TO THIS LOCATION. STUB WIRES IN 10" ROUND VALVE BOX.

MATCHLINE - SEE SHEET I-18

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
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Drawing File Name:	
Acad Ver. 2000i	Scale: 1" = 30' Units: English

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fax 303.721.0832  
fhu@fhueng.com  
  
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Englewood, CO 80111


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Revised:
Void:

IRRIGATION PLAN	
Designer:	JBM/MJB
Detailer:	JBM/MJB
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MATCHLINE - SEE SHEET I-17

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 303.721.1440  
 303.721.0832  
 fax 303.721.0832  
 hku@fheng.com

 CALL UNCC  
 TWO WORKING DAYS  
 BEFORE YOU DIG  
 1-800-922-1987  
 534-5700 METRO DENVER AREA  
 GREAT NEIGHBORHOOD CENTER OF DENVER

MATCHLINE - SEE SHEET I-7

I-25 NB

IN ADDITION TO SPARE WIRES CALLED FOR IN SPECIFICATIONS, EXTEND ONE SPARE COMMON AND TWO SPARE CONTROL WIRES FROM CONTROLLER 'D' TO THIS LOCATION. STUB WIRES IN 10' ROUND VALVE BOX.

Northbound off ramp

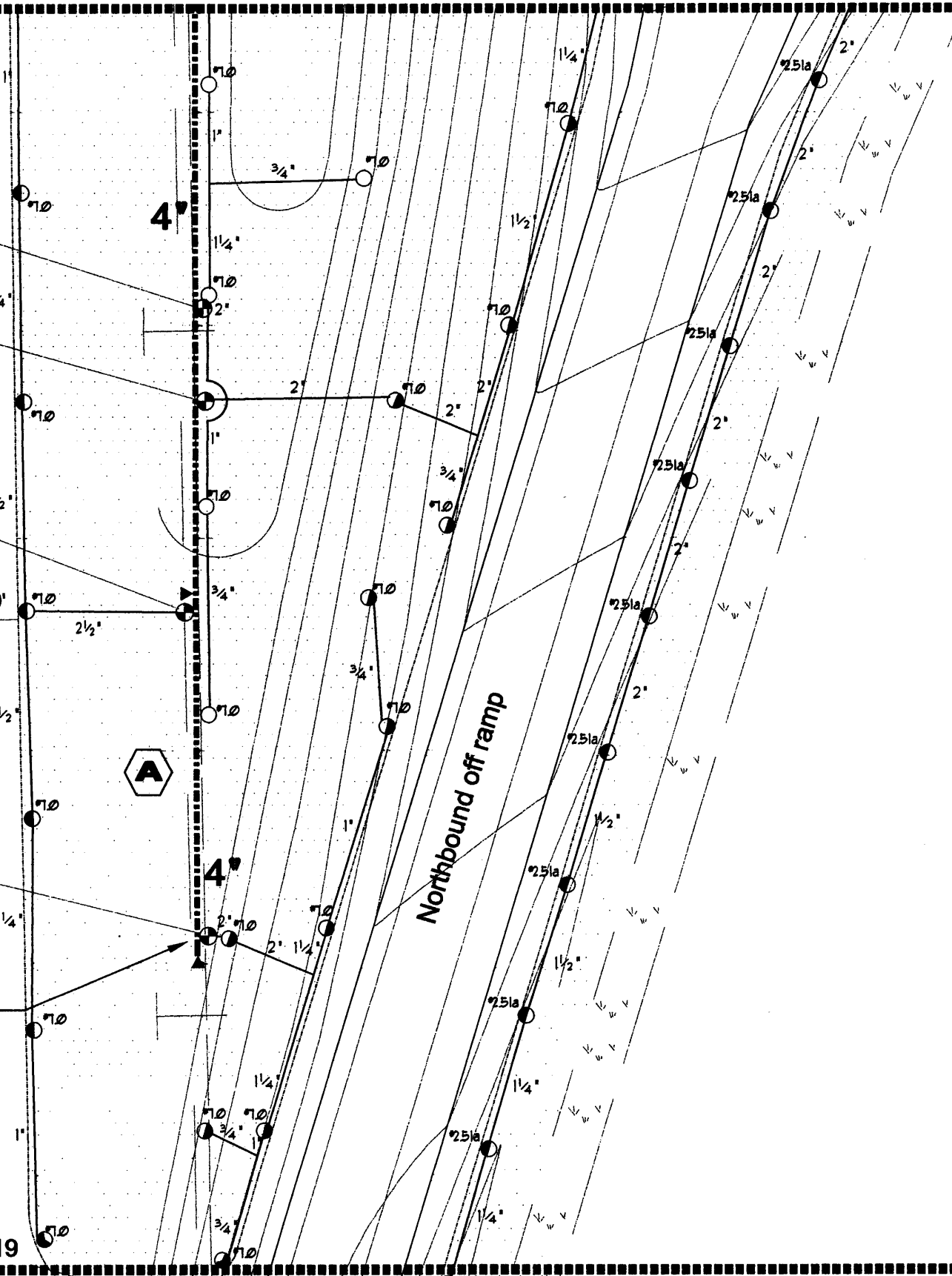
MATCHLINE - SEE SHEET I-19


D18  
42 1 1/2'

D19  
49 1 1/2'

D20  
63 2'

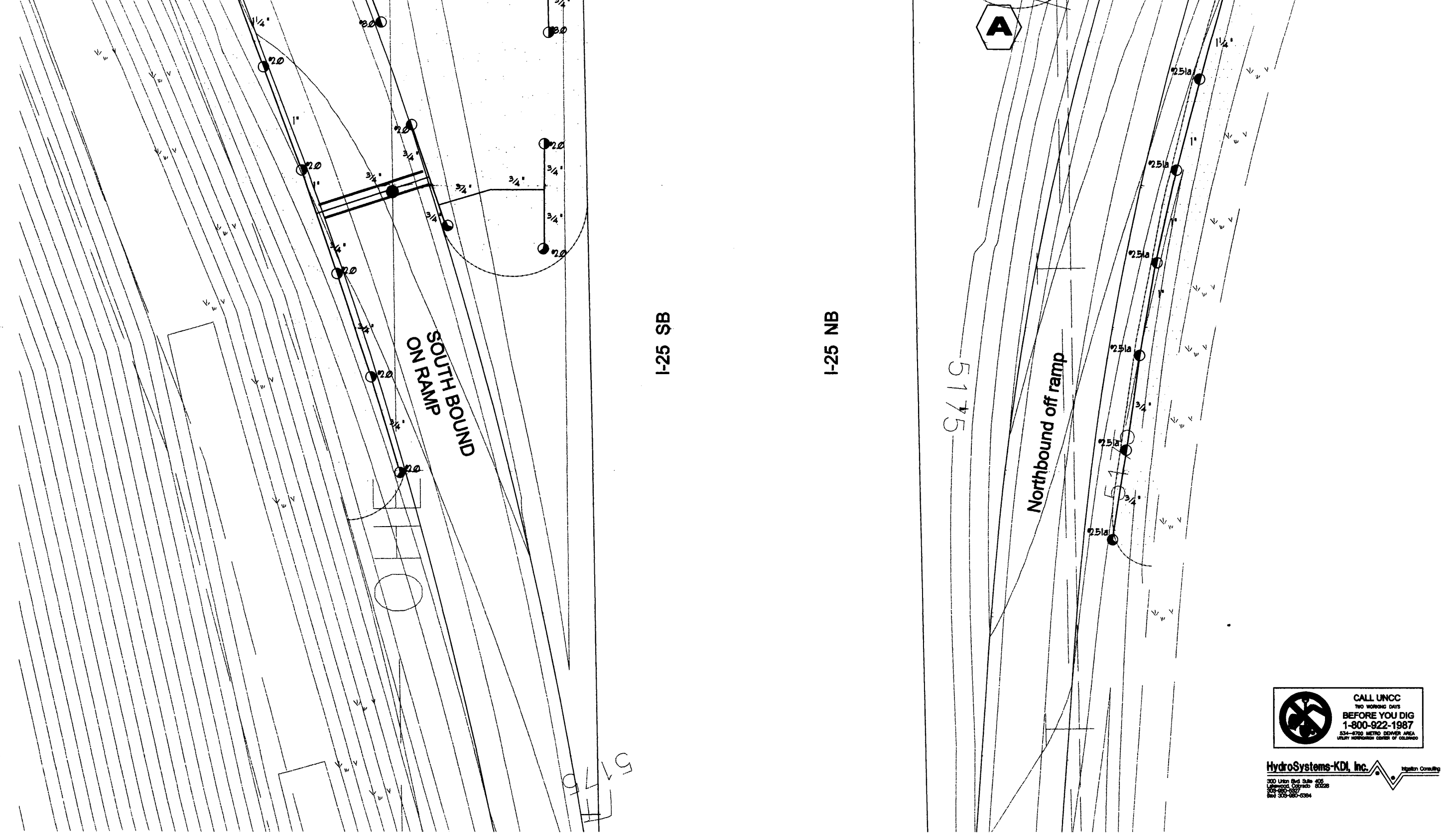
D21  
49 1 1/2'



Computer File Information		Index of Revisions		 <p>303.721.1440                  fax 303.721.0832                  fhku@fheng.com</p> <p>Greenwood Corporate Plaza                  7951 E. Maplewood Ave. Ste. 200                  Englewood, CO 80111</p>	As Constructed	IRRIGATION PLAN		Project No./Code
Creation Date:	12/15/02	Initials:	JBM/MJB		No Revisions:			
Last Modification Date:		Initials:	JBM/MJB		Revised:	Designer:	JBM/MJB	252
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Drawing File Name:						Sheet Subset:		Sheet Number
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MATCHLINE - SEE SHEET I-7

MATCHLINE - SEE SHEET I-18



**HydroSystems-KDI, Inc.** Regulation Consulting  
300 Utah Blvd Suite 405  
Greenwood, Colorado 80228  
Tel: 303-980-0394

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Drawing File Name:	
Acad Ver. 2000i	Scale: 1" = 30' Units: English

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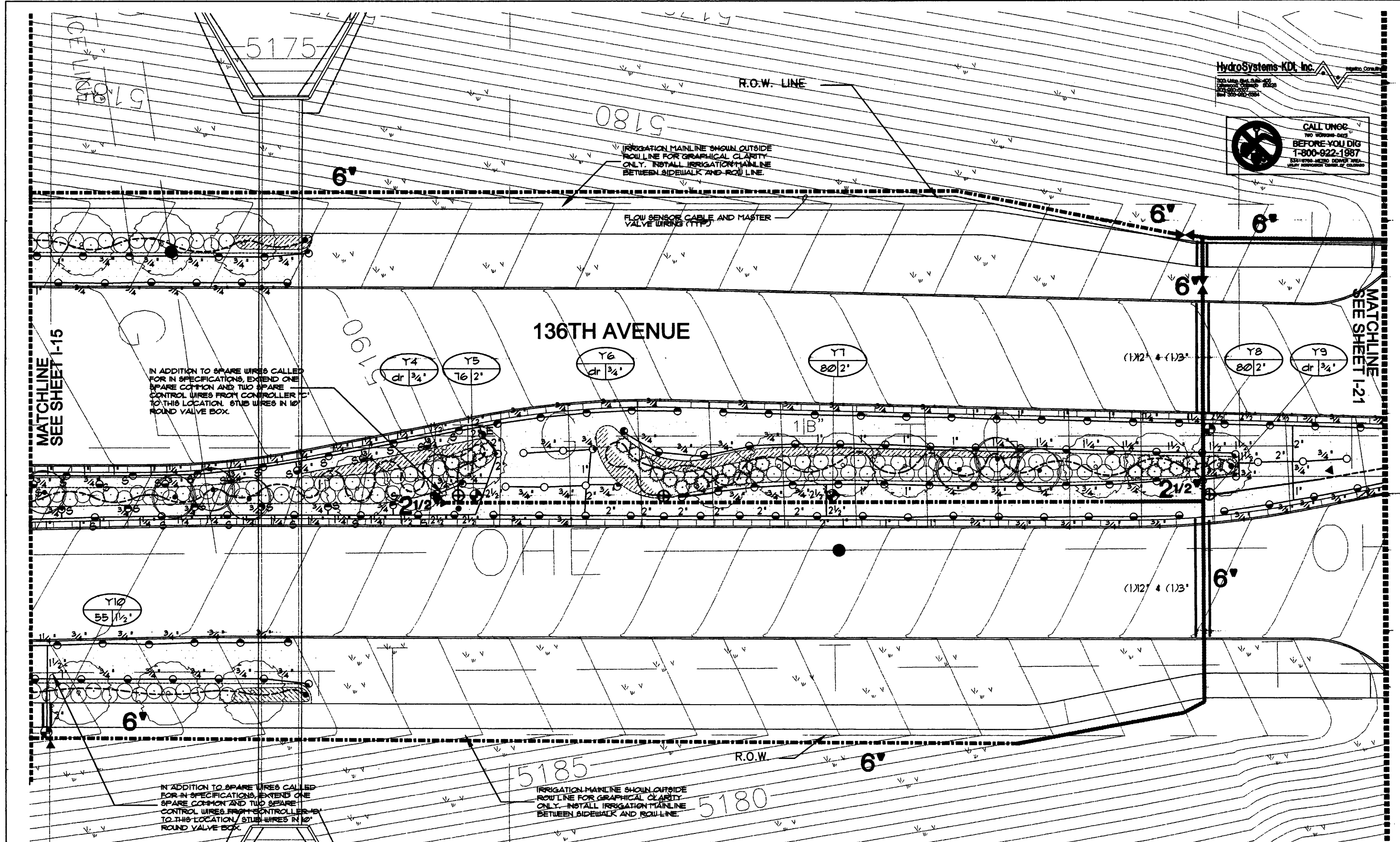


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fax 303.721.0832  
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Englewood, CO 80111

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IRRIGATION PLAN	
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253
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HydroSystems-KDI, Inc. Hydro Control  
 5200 Littlefield Blvd. Suite 400  
 Greenwood Village, CO 80122  
 Tel: 303-752-2800  
 Fax: 303-752-2801

CALL UNUS  
 NO WORKING DIG  
 BEFORE YOU DIG  
 1-800-822-1987  
 800-822-1987  
 800-822-1987  
 800-822-1987

MATCHLINE  
SEE SHEET I-15

MATCHLINE  
SEE SHEET I-21

IN ADDITION TO SPARE WIRES CALLED  
 FOR IN SPECIFICATIONS, EXTEND ONE  
 SPARE COMMON AND TWO SPARE  
 CONTROL WIRES FROM CONTROLLER TO  
 THIS LOCATION. STUB WIRES IN 10"  
 ROUND VALVE BOX.

IN ADDITION TO SPARE WIRES CALLED  
 FOR IN SPECIFICATIONS, EXTEND ONE  
 SPARE COMMON AND TWO SPARE  
 CONTROL WIRES FROM CONTROLLER TO  
 THIS LOCATION. STUB WIRES IN 10"  
 ROUND VALVE BOX.

136TH AVENUE

Computer File Information

Creation Date:	12/15/02	Initials:	JBM/MJB
Last Modification Date:		Initials:	JBM/MJB
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Drawing File Name:			
Acad Ver. 2000i	Scale: 1" = 30'	Units:	English

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HOLT &  
ULLEVIG**

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 fax 303.721.0832  
 fm@fhueng.com

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 Englewood, CO 80111

As Constructed

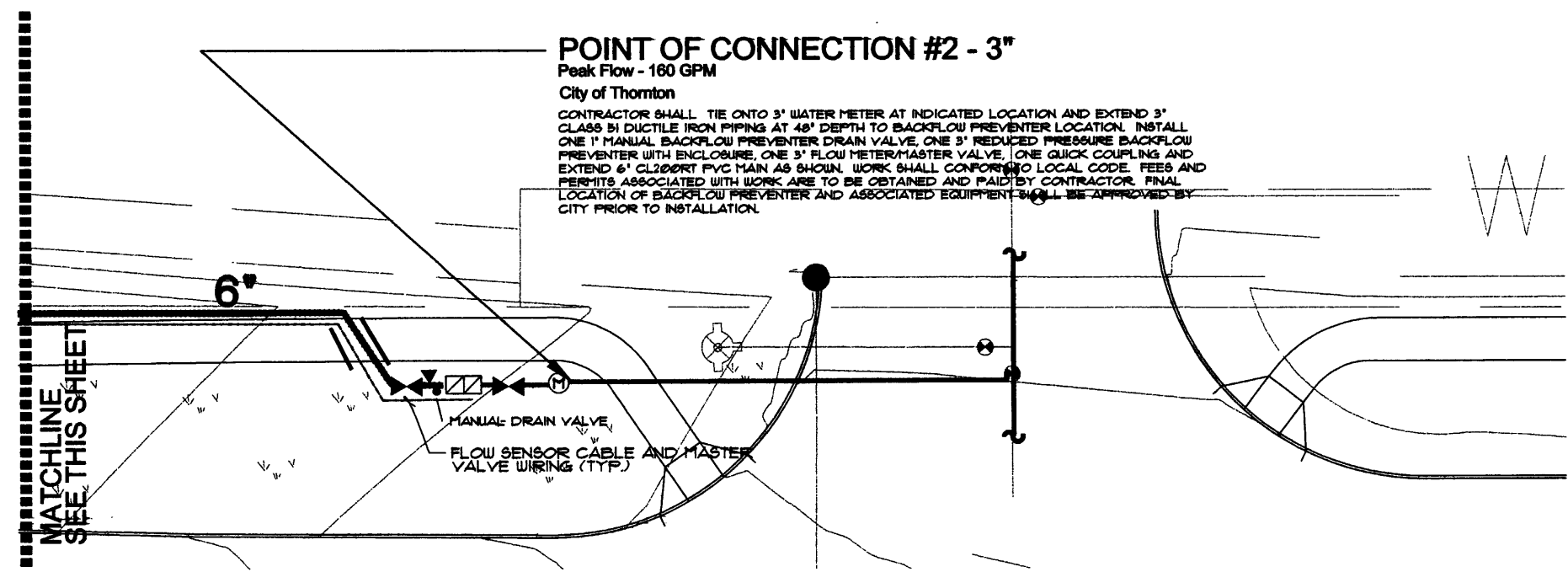
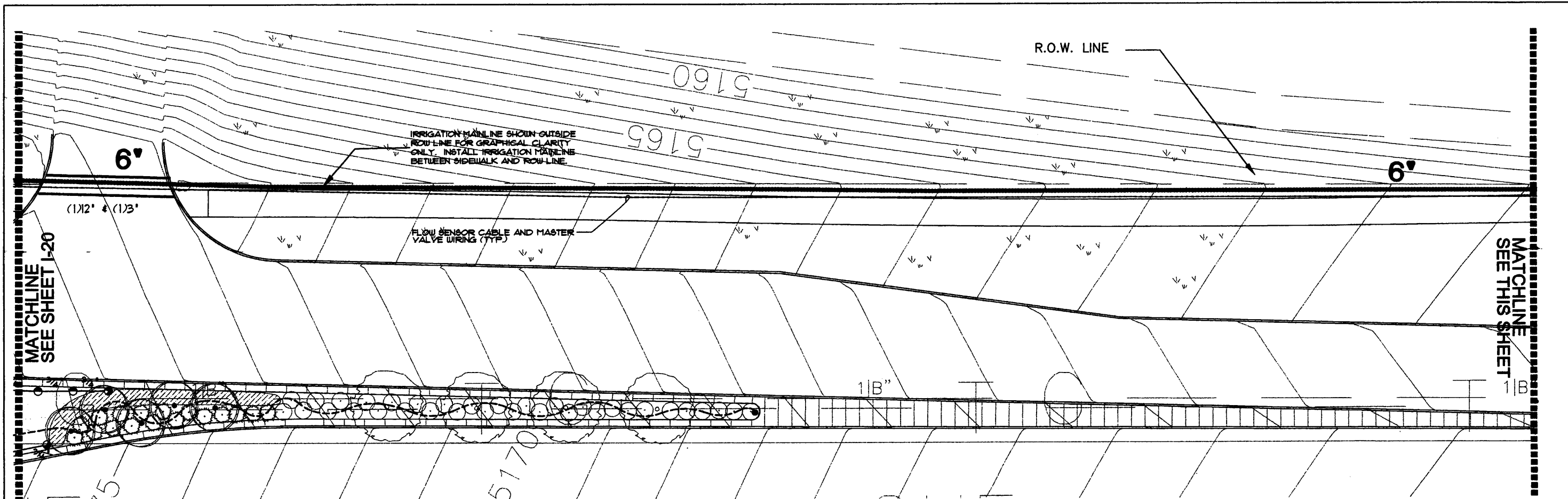
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IRRIGATION PLAN

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Sheet Number I-20



**HydroSystems-KDI, Inc.** Irrigation Consulting  
 300 Union Blvd. Suite 402  
 Lakewood, Colorado 80226  
 303-985-3597  
 Fax 303-985-6284



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Drawing File Name:	
Acad Ver. 2000i	Scale: 1" = 30' Units: English

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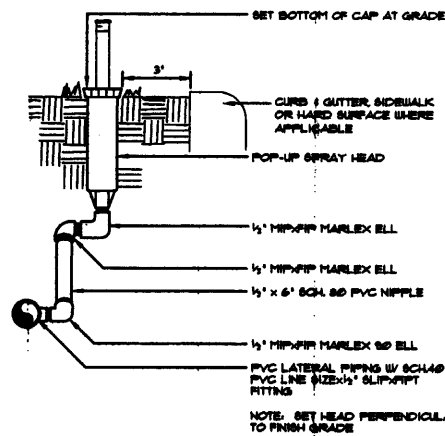
303.721.1440  
 fax 303.721.0832  
 flu@flueng.com

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 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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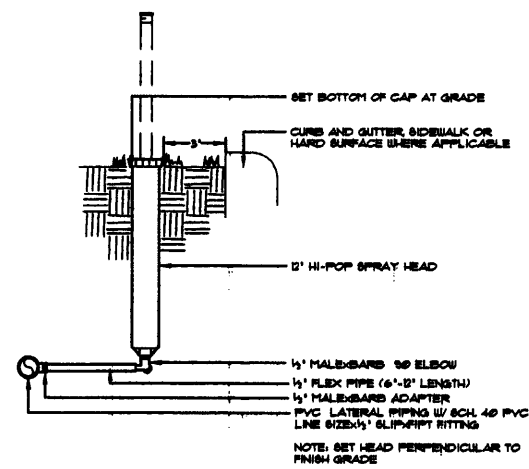
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Detailer:	JBM/MJB
Sheet Subset:	Subset Sheets: 21 of 26

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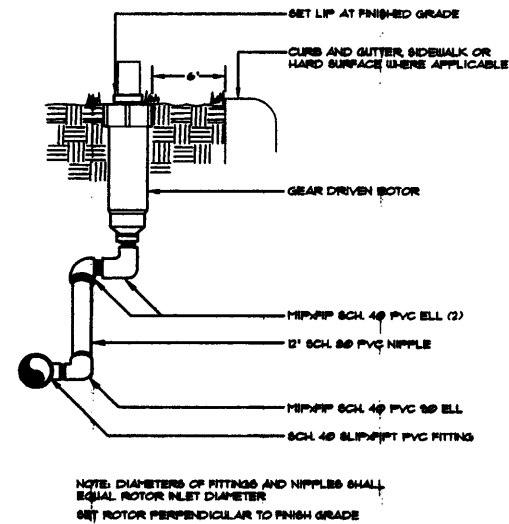
6" POP-UP SPRAY HEAD

1



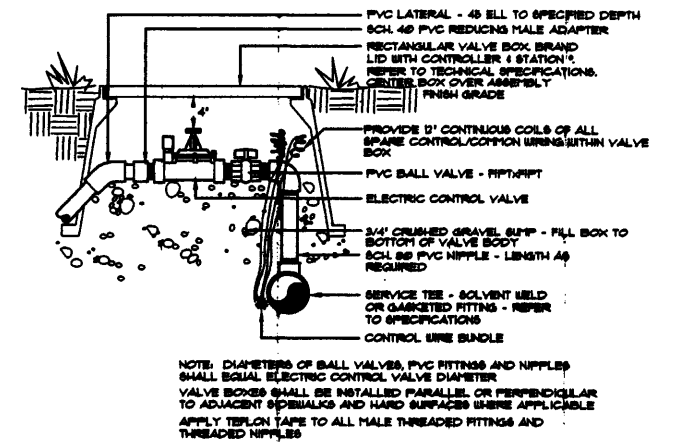
HI-POP SPRAY HEAD

2



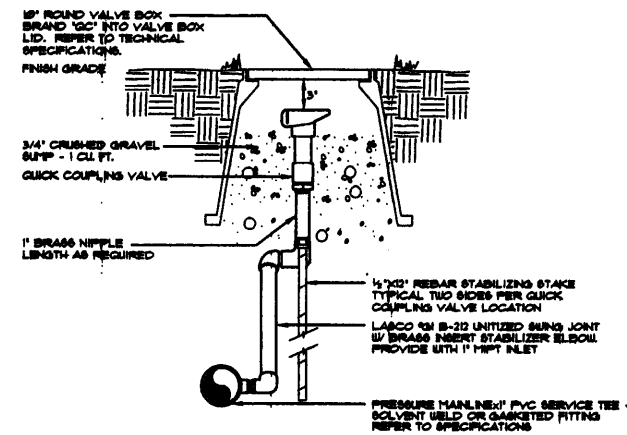
GEAR DRIVEN ROTOR

3



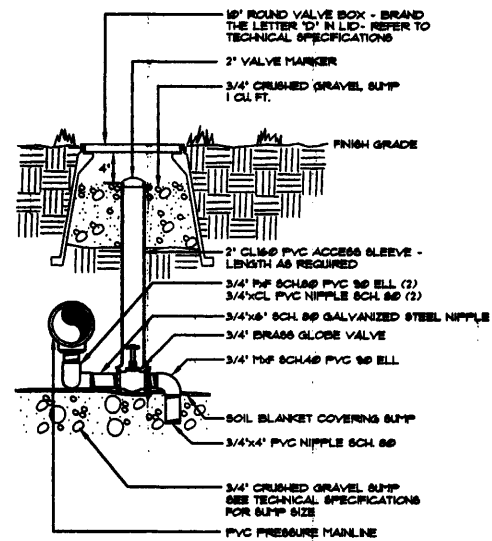
ELECTRIC CONTROL VALVE

4



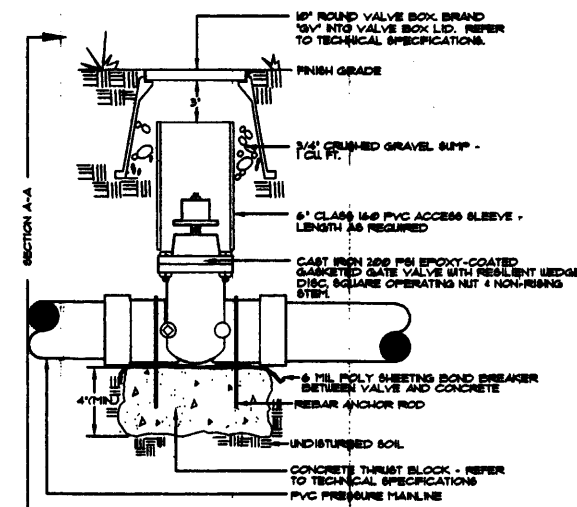
QUICK COUPLING VALVE

5



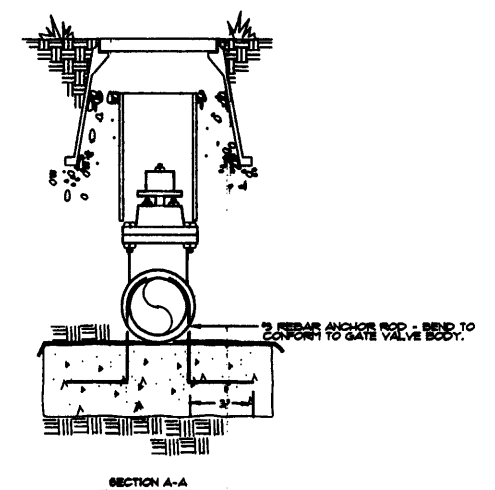
MANUAL DRAIN VALVE

6



GATE VALVE ON PVC MAIN - 3" AND LARGER

7



HydroSystems-KDI, Inc. Hydro Consulting

300 Union Blvd. Ste. 405  
Littleton, Colorado 80120  
801 303-260-4384

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Full Path:	D:\2285-IRR		
Drawing File Name:			
Acad Ver.	2000	Scale:	1" = 3'
		Units:	English

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fax 303.721.0832  
fhu@fhueng.com

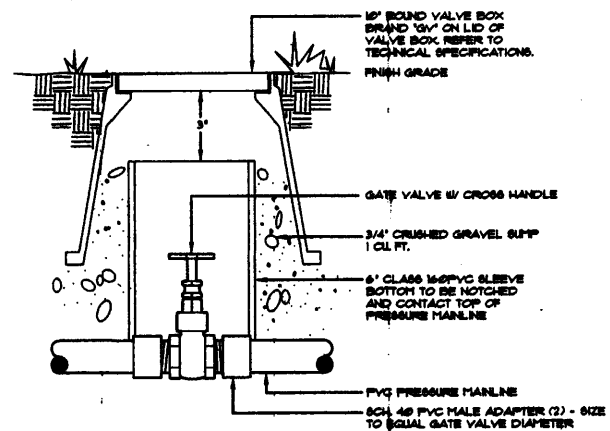
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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Revised:
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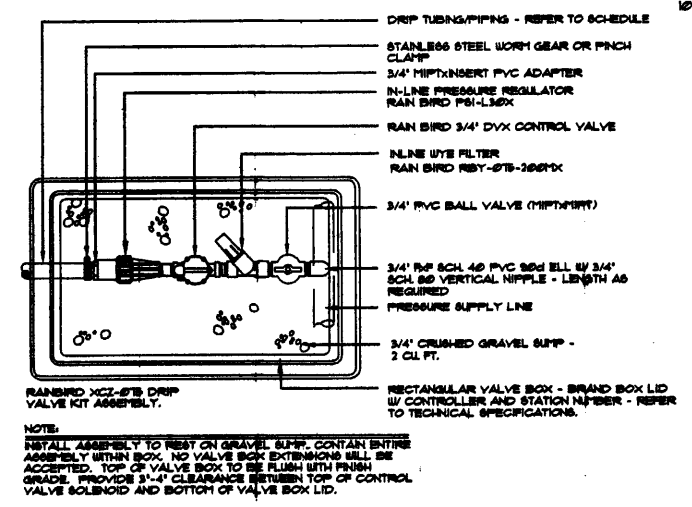
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Detailer:	JBM/MJB
Sheet Subset:	

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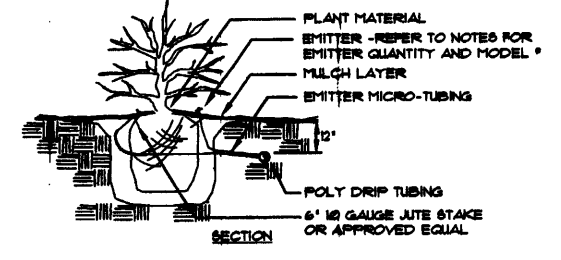
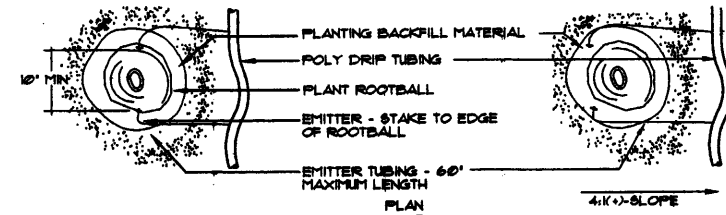




**GATE VALVE - 2-1/2" AND SMALLER** 8

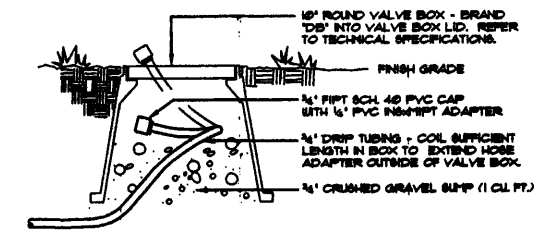


**DRIP VALVE ASSEMBLY** 9

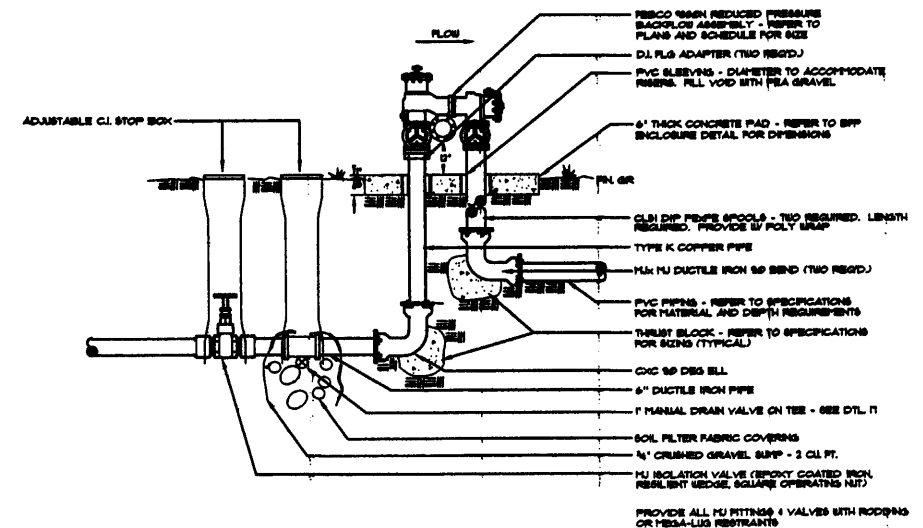


NOTE:  
INSTALL EMITTERS ON OPPOSING SIDES OF ROOTBALL. EMITTERS ARE TO BE INSTALLED TO CLEAR SURFACE BY A MINIMUM OF 1" AND A MAXIMUM OF 2". FLUSH ALL LINES THOROUGHLY, INCLUDING EMITTER MICRO-TUBING PRIOR TO EMITTER INSTALLATION. IF PLANTING ON A 4:1 SLOPE OR GREATER, INSTALL BOTH EMITTERS ON UPHILL SIDE OF ROOTBALL.

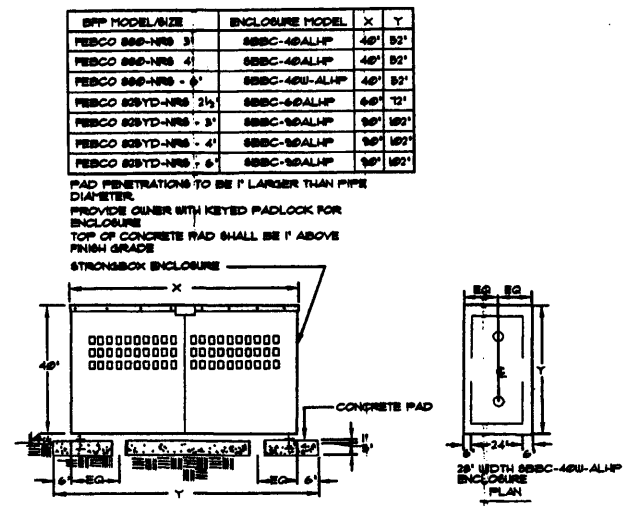
**EMITTER** 10



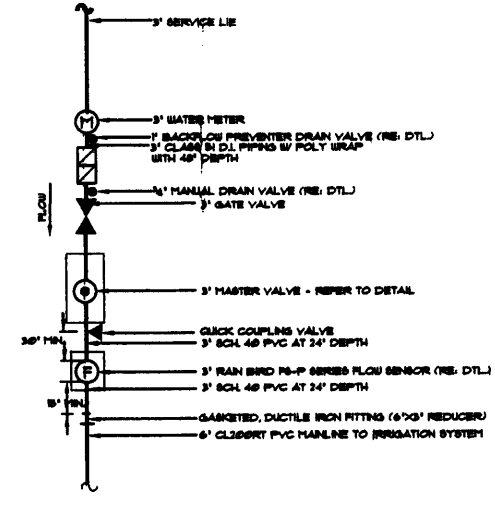
**DRIP LINE BLOW-OUT STUB** 11



**BACKFLOW PREVENTER - 3"**  
City of Westminster Parks Maintenance 12



**BACKFLOW ENCLOSURE**  
City of Westminster Parks Maintenance 13



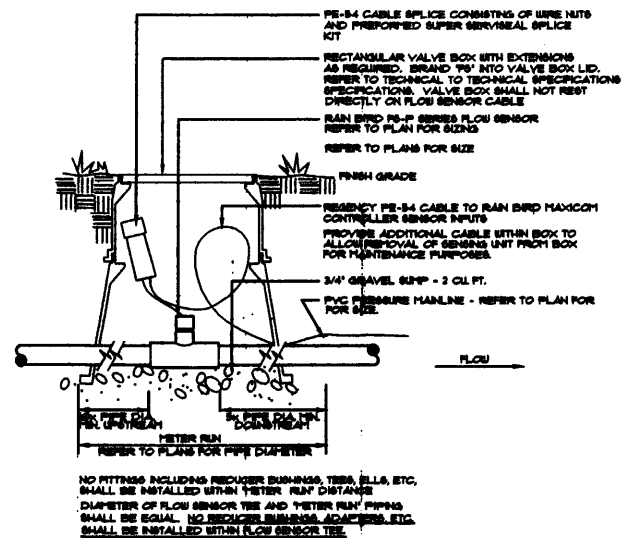
**POINT OF CONNECTION #1 SCHEMATIC**  
City of Westminster Parks Maintenance 14

HydroSystems-KDI, Inc.

300 Union Blvd Suite 405  
Greenwood, Colorado 80228  
303-980-8877  
Fax 303-980-8884

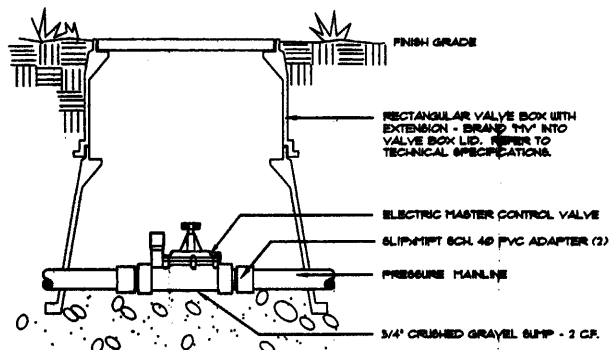
Computer File Information		Index of Revisions		FELSBURG HOLT & ULLEVIG	303.721.1440 fax 303.721.0832 fhu@fhueng.com	Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed		IRRIGATION DETAILS		Project No./Code	
Creation Date:	12/15/02	Initials:	JBM/MJB					No Revisions:		Designer:	JBM/MJB	
Last Modification Date:		Initials:	JBM/MJB		Revised:		Detailer:	JBM/MJB				
Full Path:	D:\2265-IRR				Vpid:		Sheet Subset:		Subset Sheets:	23 of 26	Sheet Number	1-23
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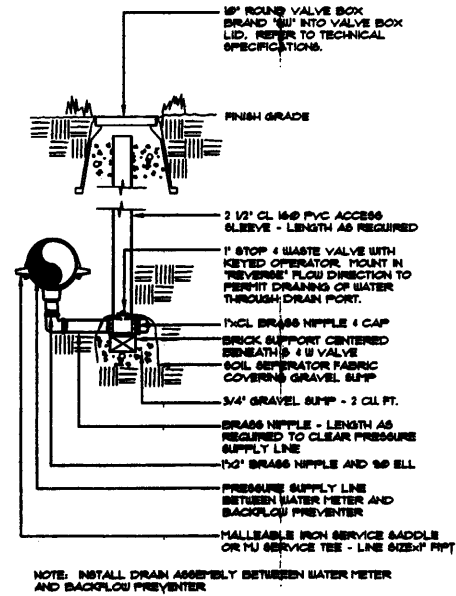
**FLOW SENSOR**  
City of Westminster Parks Maintenance

16



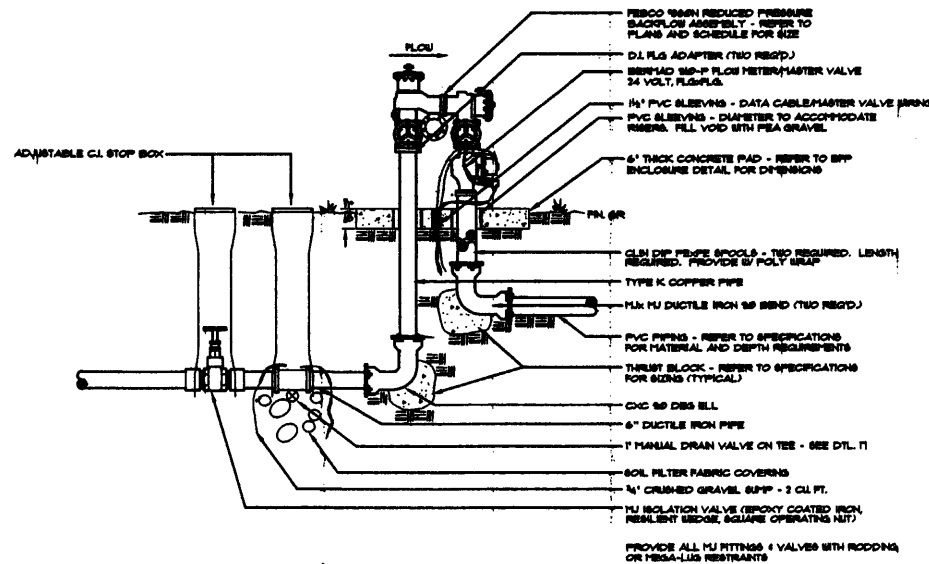
**MASTER VALVE**  
City of Westminster Parks Maintenance

17



**BACKFLOW PREVENTER DRAIN VALVE**

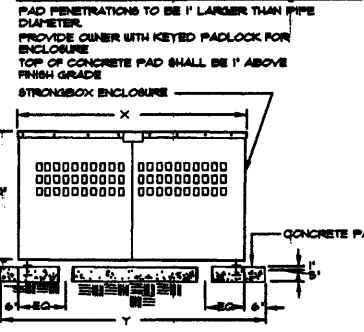
18



**BACKFLOW PREVENTER - 3'**  
City of Thornton Parks Maintenance

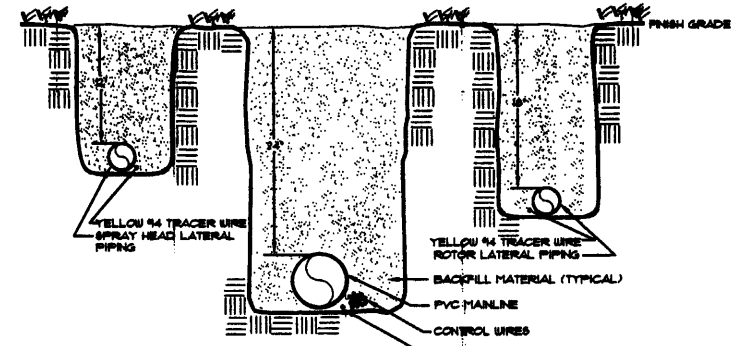
20

BPP MODEL/SIZE	ENCLOSURE MODEL	X	Y
FEBCO 88D-NRS 3'	88BC-46ALHP	48"	82"
FEBCO 88D-NRS 4'	88BC-46ALHP	48"	82"
FEBCO 88D-NRS - 6'	88BC-46U-ALHP	48"	82"
FEBCO 82YD-NRS 2 1/2'	88BC-66ALHP	66"	72"
FEBCO 82YD-NRS - 3'	88BC-66ALHP	66"	72"
FEBCO 82YD-NRS - 4'	88BC-66ALHP	66"	72"
FEBCO 82YD-NRS - 6'	88BC-66ALHP	66"	72"



**BACKFLOW ENCLOSURE**  
City of Thornton Parks Maintenance

21



**TRENCH**

22

HydroSystems-KDI, Inc. Hydro Consulting  
300 Utah Blvd Suite 405  
Lafayette, Colorado 80228  
303-555-0377  
Fax 303-555-0384

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
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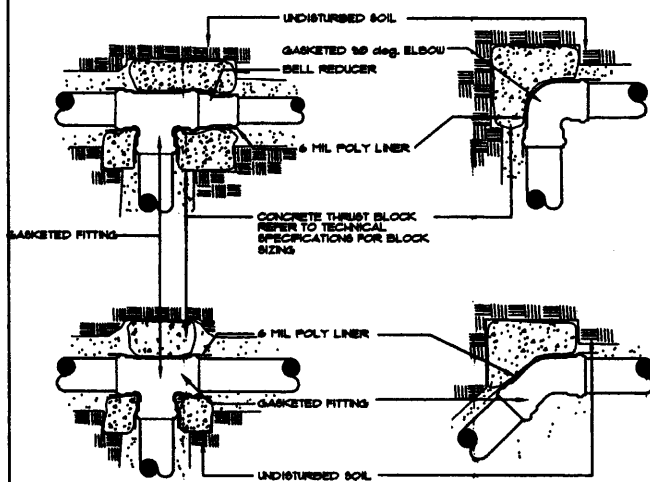


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fax 303.721.0832  
fm@fheng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

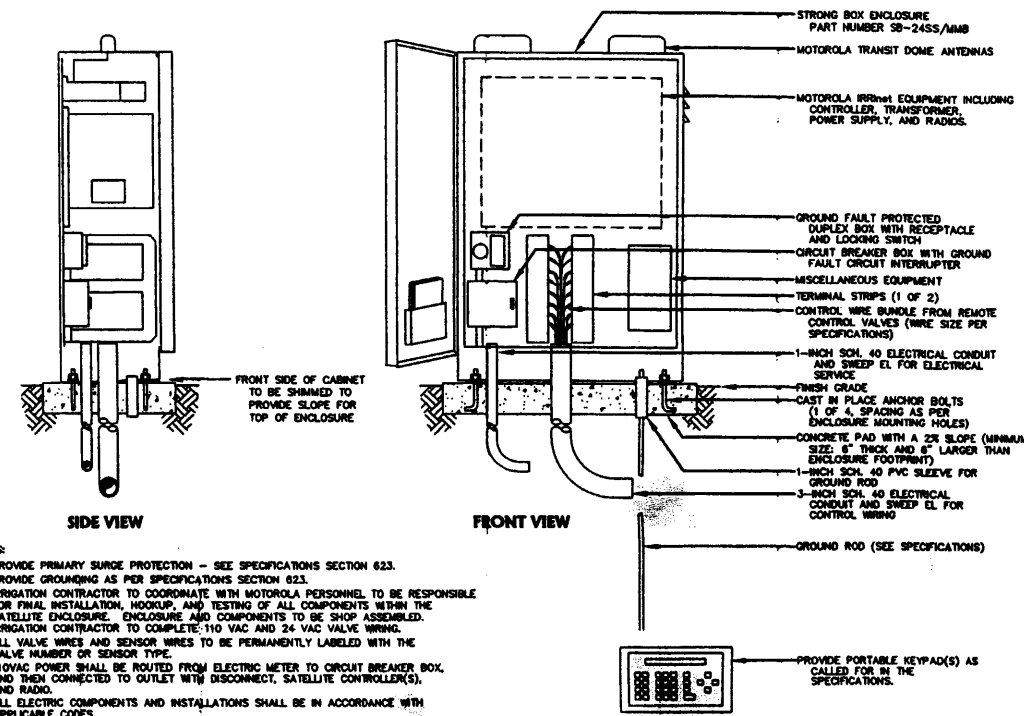
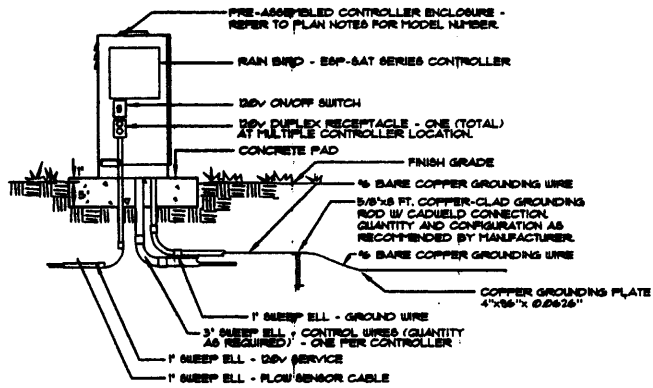
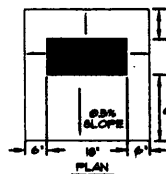
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Revised:
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**NOTE:**  
 CONTRACTOR TO GROUND AND PROVIDE SURGE PROTECTION FOR FIELD UNIT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND GROUND ROD(S) SHOWN. CONTRACTOR TO SET UP A SAMPLE PEDISTAL FOR CONSULTANT REVIEW AND APPROVAL PRIOR TO INSTALLING BALANCE OF CONTROLLERS. INSTALL A BRASS DISCONNECT W/ 6.25 A/F FUSE AND 00V DUPLEX RECEPTACLE INSIDE PEDISTAL. ALL ELECTRICAL WORK TO CONFORM TO LOCAL CODE.  
 MOUNT PEDISTAL TO CONCRETE BASE AS PER MANUFACTURER'S RECOMMENDATIONS.  
 PROVIDE KEYS TO OWNER AS PART OF TURN-OVER MATERIALS.



- NOTES:**
1. PROVIDE PRIMARY SURGE PROTECTION - SEE SPECIFICATIONS SECTION 623.
  2. PROVIDE GROUNDING AS PER SPECIFICATIONS SECTION 623.
  3. IRRIGATION CONTRACTOR TO COORDINATE WITH MOTOROLA PERSONNEL TO BE RESPONSIBLE FOR FINAL INSTALLATION, HOOKUP, AND TESTING OF ALL COMPONENTS WITHIN THE SATELLITE ENCLOSURE. ENCLOSURE AND COMPONENTS TO BE SHOP ASSEMBLED. IRRIGATION CONTRACTOR TO COMPLETE 110 VAC AND 24 VAC VALVE WIRING.
  4. ALL VALVE WIRES AND SENSOR WIRES TO BE PERMANENTLY LABELED WITH THE VALVE NUMBER OR SENSOR TYPE.
  5. 110VAC POWER SHALL BE ROUTED FROM ELECTRIC METER TO CIRCUIT BREAKER BOX, AND THEN CONNECTED TO OUTLET WITH DISCONNECT, SATELLITE CONTROLLER(S), AND RADIO.
  6. ALL ELECTRIC COMPONENTS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH APPLICABLE CODES.

**THRUST BLOCK**

23

**ELECTRIC CONTROLLER**

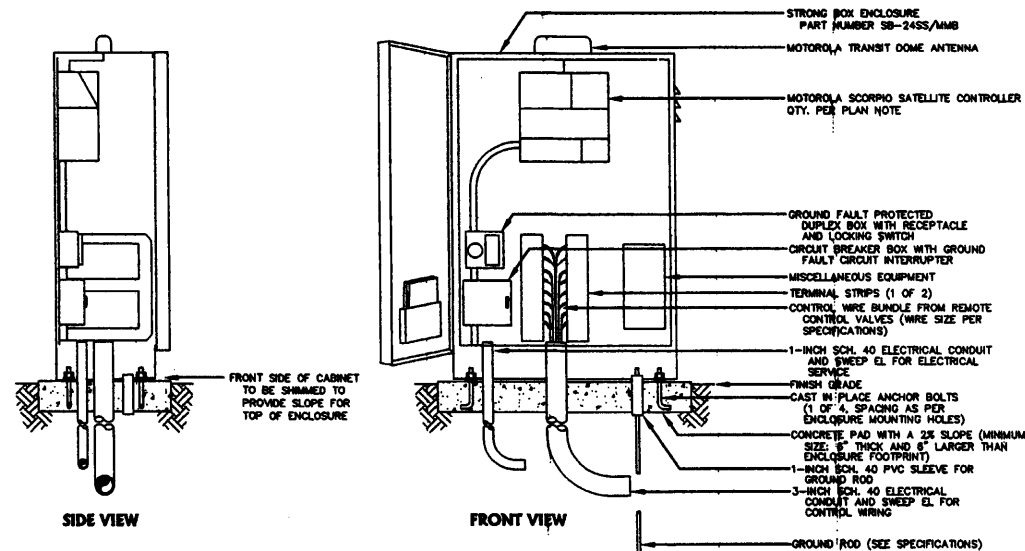
City of Westminster Parks Maintenance

25

**ELECTRIC CONTROLLER - MOTOROLA IRRINET**

City of Thornton Parks Maintenance

26



- NOTES:**
1. PROVIDE PRIMARY SURGE PROTECTION - SEE SPECIFICATIONS SECTION 623.
  2. PROVIDE GROUNDING AS PER SPECIFICATIONS SECTION 623.
  3. IRRIGATION CONTRACTOR TO COORDINATE WITH MOTOROLA PERSONNEL TO BE RESPONSIBLE FOR FINAL INSTALLATION, HOOKUP, AND TESTING OF ALL COMPONENTS WITHIN THE SATELLITE ENCLOSURE. ENCLOSURE AND COMPONENTS TO BE SHOP ASSEMBLED. IRRIGATION CONTRACTOR TO COMPLETE 110 VAC AND 24 VAC VALVE WIRING.
  4. ALL VALVE WIRES AND SENSOR WIRES TO BE PERMANENTLY LABELED WITH THE VALVE NUMBER OR SENSOR TYPE.
  5. 110VAC POWER SHALL BE ROUTED FROM ELECTRIC METER TO CIRCUIT BREAKER BOX, AND THEN CONNECTED TO OUTLET WITH DISCONNECT, SATELLITE CONTROLLER(S), AND RADIO.
  6. ALL ELECTRIC COMPONENTS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH APPLICABLE CODES.

**ELECTRIC CONTROLLER - MOTOROLA SCORPIO**

City of Thornton Parks Maintenance

27

**HydroSystems-KDI, Inc.**  
 300 Union Blvd. Suite 402  
 Littleton, CO 80120  
 303-960-0377  
 Fax 303-960-0384

Computer File Information	
Creation Date:	12/15/02 Initials: JBM/MJB
Last Modification Date:	Initials: JBM/MJB
Full Path:	D:\2265-IRR
Drawing File Name:	
Acad Ver.	2000i Scale: 1" = 30' Units: English

Index of Revisions	



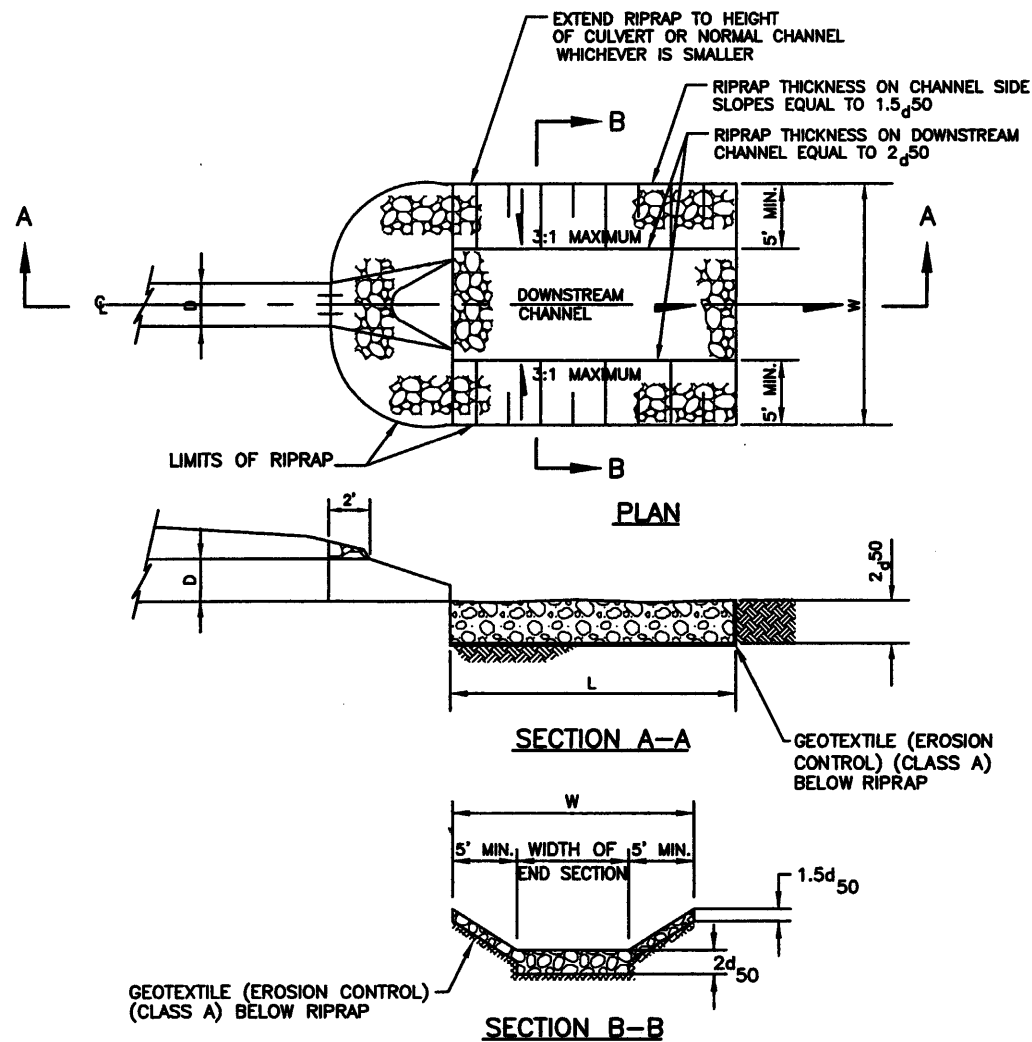
303.721.1440  
 fax 303.721.0832  
 fm@fmeng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Ranglewood, CO 80111

As Constructed	IRRIGATION DETAILS		Project No./Code
No Revisions:	Designer:	JBM/MJB	259
Revised:	Detailer:	JBM/MJB	
Void:	Sheet Subset:	Subset Sheets: 25 of 26	Sheet Number I-25







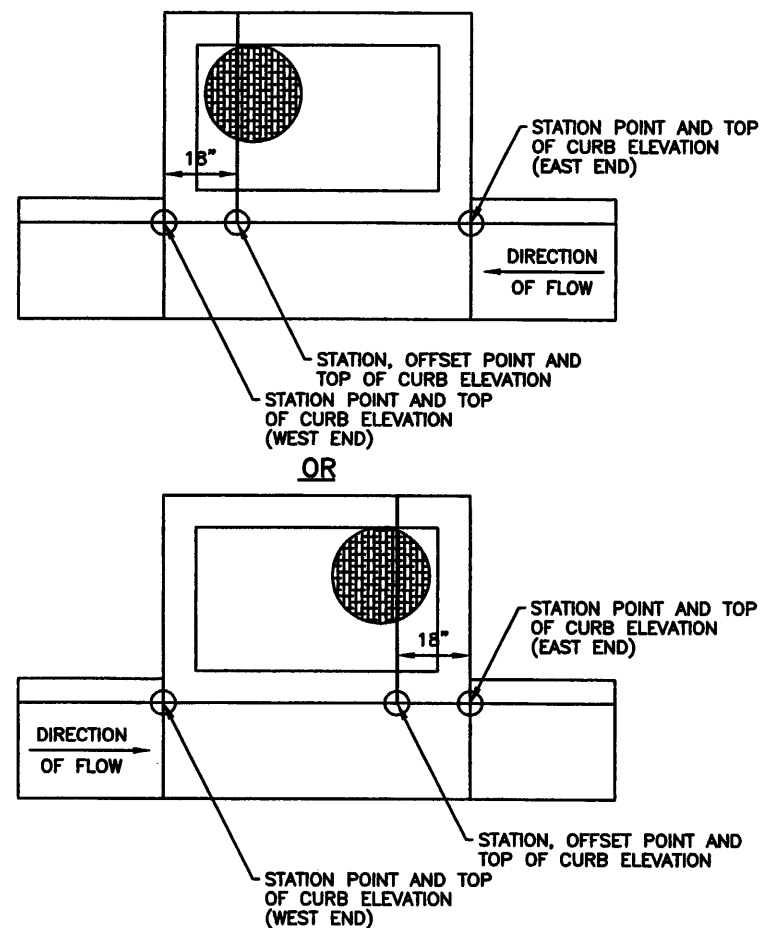


**RIPRAP DETAIL FOR PIPE OUTLETS  
OPEN CHANNEL APPLICATION**

ID	DIMENSIONS					QUANTITIES		NOTES
	D (in)	W (ft)	L (ft)	RIPRAP TYPE	d50 (in)	RIPRAP (12 INCH) (CY)	*GEOTEXTILE (EROSION CONTROL) (CL. A)(S.Y.)	
B1	24	16	8	M	12	9.5	28.9	
C1	24	16	8	M	12	9.5	28.9	
E1	18	12	6	M	12	6.1	19.6	
F1	36	24	12	M	12	21.2	57.1	
D1	24	16	8	M	12	9.5	28.9	
G1	18	12	6	M	12	6.1	19.6	
K1	48	32	16	M	12	35.8	90.3	
L1	24	16	8	M	12	9.5	28.9	
H1	24	16	8	M	12	9.5	28.9	
I1	*	36	18	M	12	15.9	44.5	68X43 (EQUIV. 54")

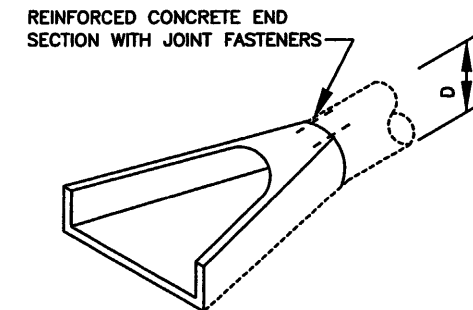
**TABULATION OF RIPRAP AND FILTER MATERIAL**

- NOTES:  
 1. THESE QUANTITIES HAVE BEEN CARRIED FORWARD TO THE TABULATION OF STORM SEWER SYSTEM.  
 \* ALL RIPRAP SHALL BE BURIED WITH 6 INCHES OF TOPSOIL. GEOTEXTILE (EROSION CONTROL) (CLASS A), EXCAVATION, TOPSOIL, ADDITIONAL WORK AND MATERIALS ARE INCLUDED IN COST OF RIPRAP (12 INCH).



INLET ID	STATION, OFFSET	STATION(WEST)	TOC EL.	STATION(EAST)	TOC EL.
B7	20+50.5, 54.0 RT.	20+49.0	5185.15	20+60.33	5185.28
B9	20+50.5, 55.0 LT.	20+49.0	5185.13	20+60.33	5185.26
C3	30+51.0, 54.0 RT.	30+49.5	5181.75	30+60.83	5181.91
C9	30+51.0, 55.0 LT.	30+49.5	5181.73	30+60.83	5181.89
E3	36+59.5, 48.0 RT.	36+58.0	5199.72	36+64.33	5199.84
E5	36+46.7, 48.0 LT.	36+45.2	5199.47	36+51.53	5199.60
F7	41+86.0, 48.0 RT.	41+81.17	5199.48	41+87.5	5199.35
F9	41+72.8, 48.0 LT.	41+67.97	5199.74	41+74.3	5199.62
G3	47+81.0, 57.0 RT.	47+71.17	5177.38	47+82.5	5176.89
G5	47+81.0, 54.32 LT.	47+71.17	5177.43	47+82.5	5176.95
K7	53+51.8, 55.0 RT.	53+41.97	5157.04	53+53.3	5156.87
K9	53+51.8, 32.0 LT.	53+41.97	5157.50	53+53.3	5157.33
H3	61+95.0, 32.0 LT.	61+90.17	5155.54	61+96.5	5155.41

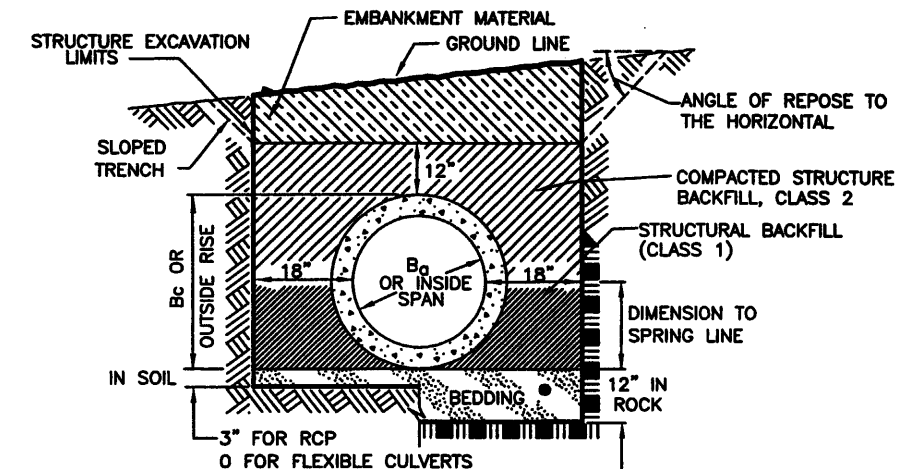
**ADDITIONAL TOP OF CURB ELEVATION  
FOR TYPE R INLETS ON GRADE**



**NOTES:**

- D= INSIDE DIAMETER OF REINFORCED CONCRETE PIPE.
- EACH REINFORCED CONCRETE END SECTION SHALL BE CONNECTED TO THE REINFORCED CONCRETE PIPE WITH CONCRETE PIPE JOINT FASTENERS (2-EACH). CONCRETE PIPE JOINT FASTENERS SHALL BE INCLUDED IN THE COST OF THE REINFORCED CONCRETE END SECTION.
- ALL CONNECTIONS, STRUCTURE EXCAVATION, AND EXTRA WORK REQUIRED TO MODIFY OTHER PAY ITEMS SHALL BE INCLUDED IN THE COST OF REINFORCED CONCRETE END SECTION.

**CONCRETE END SECTION FOR  
REINFORCED CONCRETE PIPE**



- BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 3" THICKNESS OF LOOSE STRUCTURE BACKFILL, CLASS 1 (NO BEDDING REQUIRED FOR FLEXIBLE PIPE IN SOIL). BEDDING MATERIAL FOR RIGID OR FLEXIBLE PIPE IN ROCK SHALL BE 12" THICKNESS LOOSE STRUCTURE BACKFILL CLASS 1.

**STRUCTURAL BACKFILL FOR STORM SEWER**

**RECORD DOCUMENTS  
- WARNING -**

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<b>Computer File Information</b>		<b>Index of Revisions</b>		<b>As Constructed</b>		<b>136TH AVENUE AT I-25 INTERCHANGE DRAINAGE DETAILS</b>		<b>Project No./Code</b>	
Creation Date:	5/1/01 Initials: SCD			No Revisions:	X			97-71	
Last Modification Date:	10/21/04 Initials: DRS			Revised:		Designer:	ELL/SCD		
Full Path:	J:\00033\AS-BUILT\			Void:		Detailer:	SCD		
Drawing File Name:	D00033DET01AB.dwg					Sheet Subset:	DRAINAGE	Subset Sheets:	DD-1 of 2
Acad Ver. 2000i	Scale: NONE Units: English							Sheet Number	263



303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111



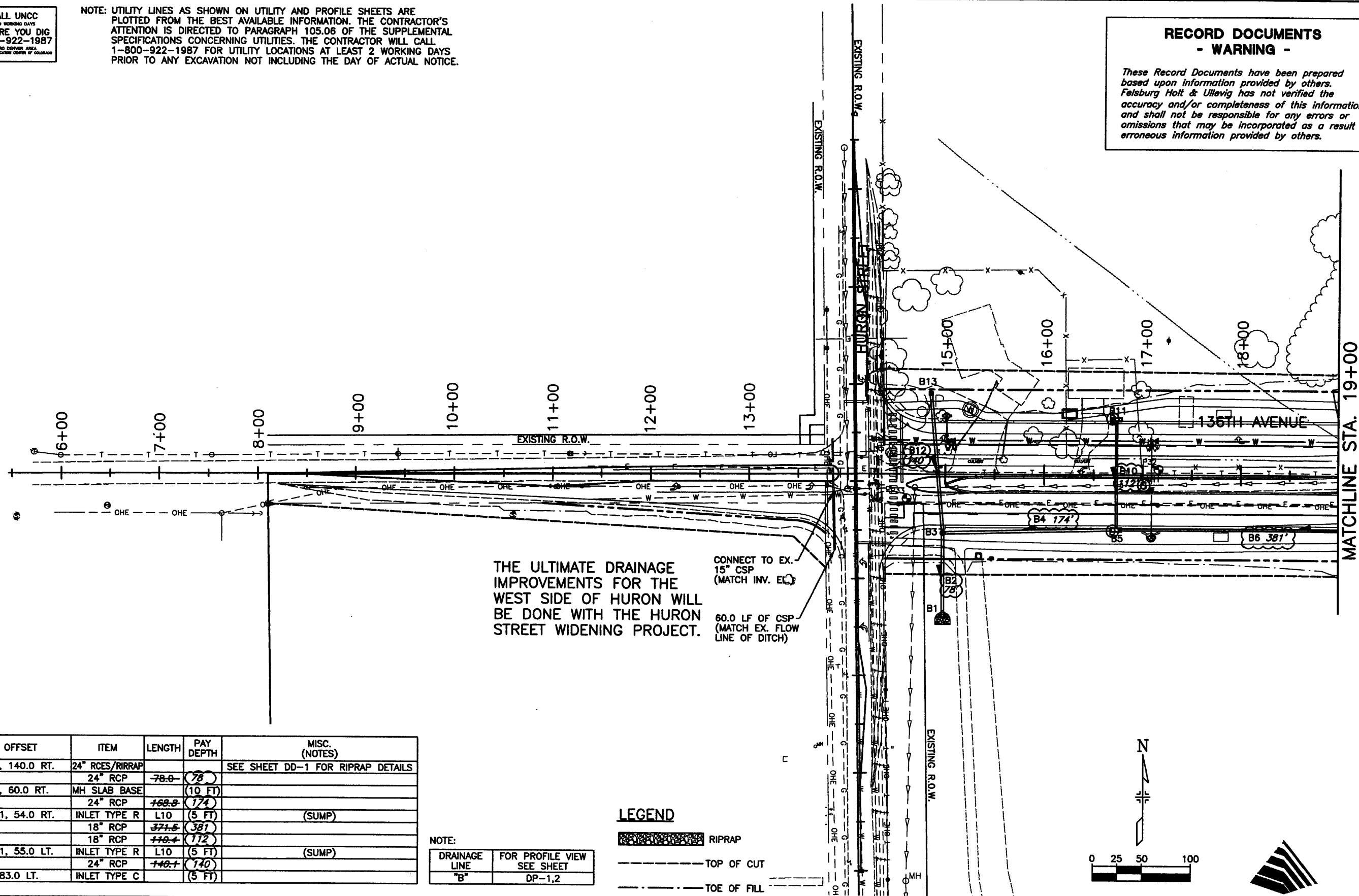




NOTE: UTILITY LINES AS SHOWN ON UTILITY AND PROFILE SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.06 OF THE SUPPLEMENTAL SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR WILL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION NOT INCLUDING THE DAY OF ACTUAL NOTICE.

**RECORD DOCUMENTS  
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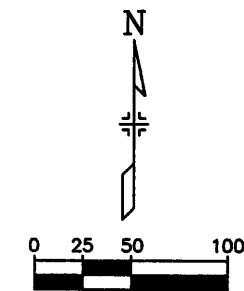
ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
B1	14+97.5, 140.0 RT.	24" RCES/RIRRAP			SEE SHEET DD-1 FOR RIRRAP DETAILS
B2		24" RCP	78.0	(78)	
B3	14+97.5, 60.0 RT.	MH SLAB BASE		(10 FT)	
B4		24" RCP	168.9	(174)	
B5	16+73.21, 54.0 RT.	INLET TYPE R	L10	(5 FT)	(SUMP)
B6		18" RCP	371.6	(381)	
B10		18" RCP	110.4	(112)	
B11	16+73.21, 55.0 LT.	INLET TYPE R	L10	(5 FT)	(SUMP)
B12		24" RCP	140.4	(140)	
B13	14+85, 83.0 LT.	INLET TYPE C		(5 FT)	

NOTE:

DRAINAGE LINE "B"	FOR PROFILE VIEW SEE SHEET DP-1,2
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**LEGEND**

- RIPRAP
- TOP OF CUT
- TOE OF FILL



**Computer File Information**

Creation Date:	12/11/00	Initials:	JAC
Last Modification Date:	10/11/04	Initials:	DRS
Full Path:	J:\00033\AS-BUILT\		
Drawing File Name:	D00033PLN01AB.dwg		
Acad Ver.	2000i	Scale:	1"=100
Units:	English		

**Index of Revisions**




303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	X
Void:	

**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVENUE DRAINAGE PLAN  
BEGIN TO STA. 19+00**

Designer:	ELL/SCD
Detailer:	SCD
Sheet Subset:	DRAINAGE
Subset Sheets:	DR-1 of 6

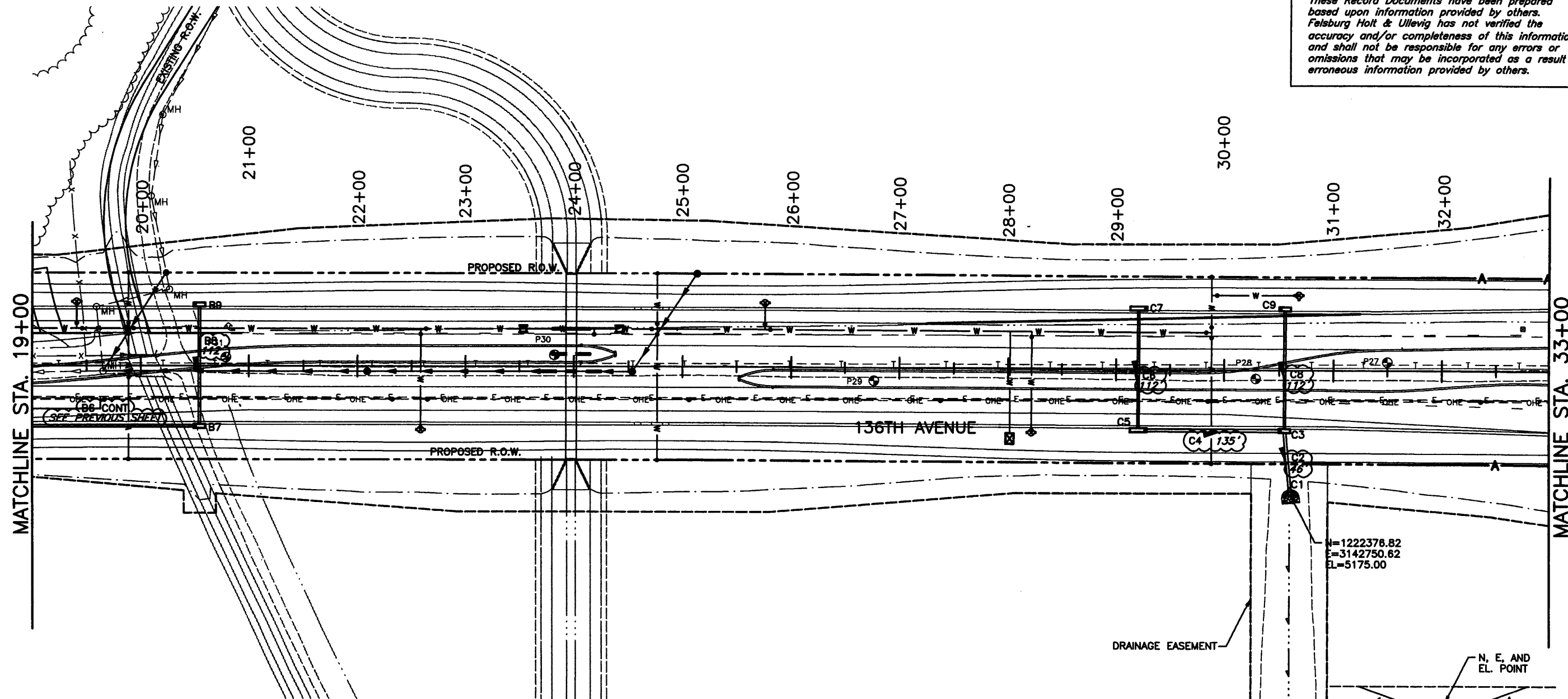
Project No./Code	97-71
Sheet Number	265



NOTE: UTILITY LINES AS SHOWN ON UTILITY AND PROFILE SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.06 OF THE SUPPLEMENTAL SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR WILL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION NOT INCLUDING THE DAY OF ACTUAL NOTICE.

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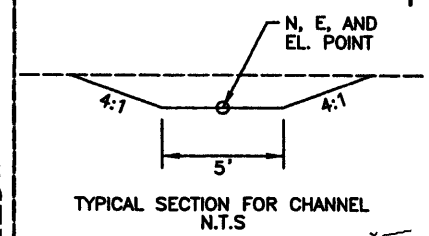
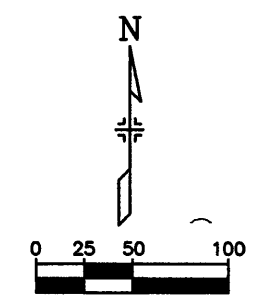
ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
B7	20+50.5, 54.0 RT.	INLET TYPE R	L10	(5 FT)	
B8		18" RCP	+10.4	772	
B9	20+50.5, 55.0 LT.	INLET TYPE R	L10	(5 FT)	
C9	30+51.0, 55.0 LT.	INLET TYPE R	L10	(5 FT)	
C8		18" RCP	+10.4	772	
C7	29+20.56, 55.0 LT.	INLET TYPE R	L15	(5 FT)	(SUMP)
C6		18" RCP	+10.4	772	
C5	29+20.56, 54.0 RT.	INLET TYPE R	L15	(5 FT)	(SUMP)
C4		24" RCP	+22.2	735	
C3	30+51.0, 54.0 RT.	INLET TYPE R	L10	(10 FT)	
C2		24" RCP	-61.6	46	
C1	30+60.0, 109.0 RT.	24" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS

NOTE:

DRAINAGE LINE	FOR PROFILE VIEW SEE SHEET
"B"	DP-1
"C"	DP-3

**LEGEND**

- RIPRAP
- TOP OF CUT
- TOE OF FILL



N=1222376.82  
E=3142750.62  
EL=5175.00

N=1222033.90  
E=3142749.23  
EL=5173.29

**Computer File Information**

Creation Date:	11/15/00	Initials:	JAC
Last Modification Date:	10/11/04	Initials:	DRS
Full Path:	J:\00033\AS-BUILT\		
Drawing File Name:	D00033PLN02AB.dwg		
Acad Ver.	2000i	Scale:	1"=100' Units: English

**Index of Revisions**




303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	X
Void:	

**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVENUE DRAINAGE PLAN  
STA. 19+00 TO STA. 33+00**

Designer:	ELL/SCD
Detailer:	SCD
Sheet Subset:	DRAINAGE
Subset Sheets:	DR-2 of 6

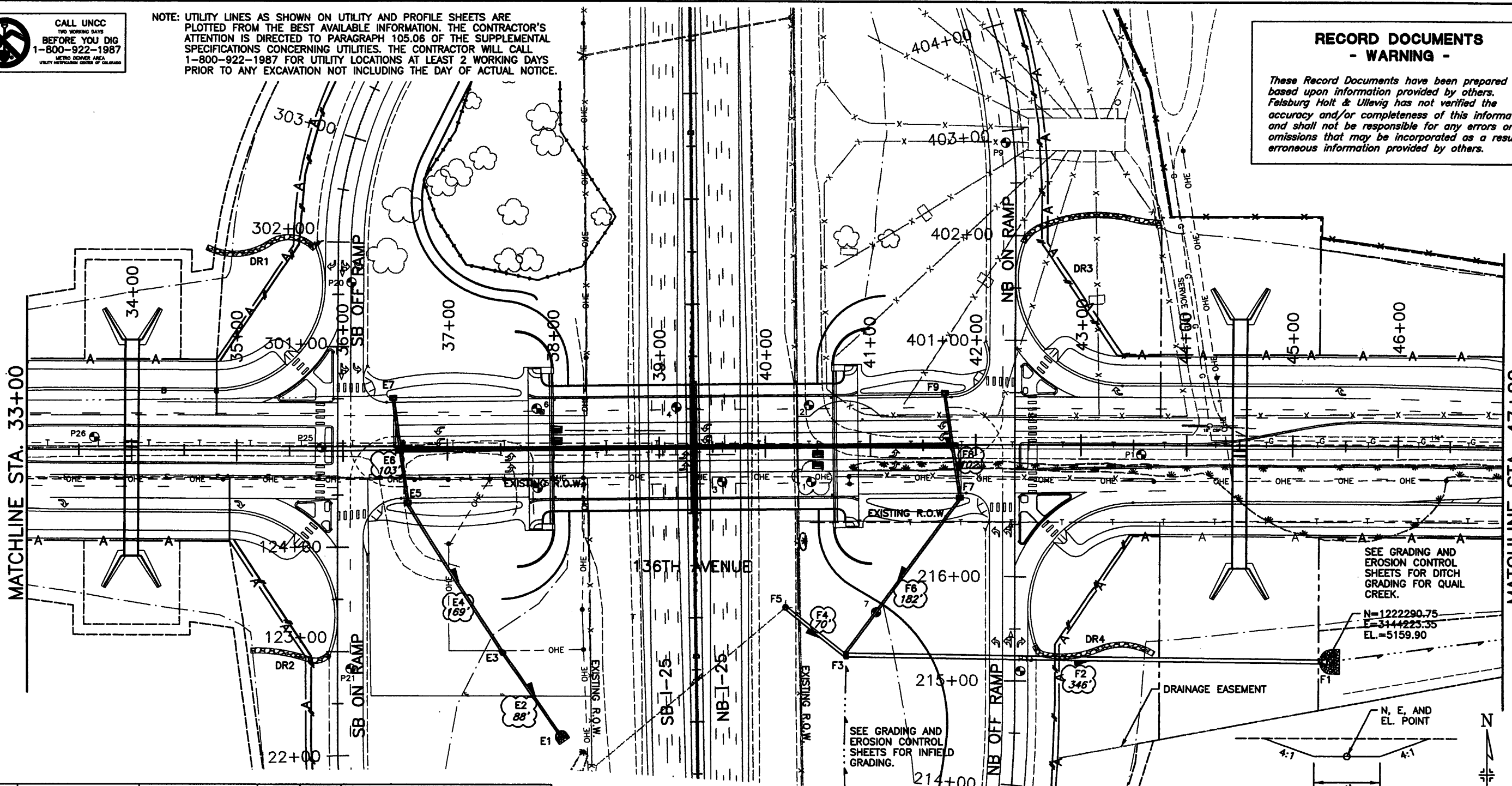
Project No./Code	97-71
Sheet Number	266



NOTE: UTILITY LINES AS SHOWN ON UTILITY AND PROFILE SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.06 OF THE SUPPLEMENTAL SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR WILL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION NOT INCLUDING THE DAY OF ACTUAL NOTICE.

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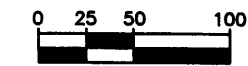
ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
DR1	302+00 LT.	RIPRAP (9 INCH)			SEE SHEET DD-2
DR2	123+00 LT.	RIPRAP (9 INCH)			SEE SHEET DD-2
DR3	402+00 RT.	RIPRAP (9 INCH)			SEE SHEET DD-2
DR4	215+00 RT.	RIPRAP (9 INCH)			SEE SHEET DD-2
E7	36+46.7, 48.0 LT.	INLET TYPE R	L5	(5 FT)	
E6		18" RCP	98.2	(103)	
E5	36+59.5, 48.0 RT.	INLET TYPE R	L5	(10 FT)	
E4		18" RCP	166.7	(169)	
E3	37+50.0, 195.0 RT.	MH SLAB BASE		(10 FT)	
E2		18" RCP	88.2	(88)	
E1	38+00, 270.0 RT.	18" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
F9	41+72.8, 48.0 LT.	INLET TYPE R	L5	(5 FT)	
F8		18" RCP	98.3	(102)	
F7	41+86.0, 48.0 RT.	INLET TYPE R	L5	(10 FT)	
F6		18" RCP	182.0	(182)	
F5	40+18.0, 153.84 RT.	MH SLAB BASE		(10 FT)	
F4		30" RCP	70.3	(70)	
F3	40+75.0, 200.0 RT.	INLET TYPE D		(10 FT)	
F2		36" RCP	445.6	(346)	
F1	45+25.0, 206.0 RT.	36" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS

**LEGEND**

- RIPRAP
  - TOP OF CUT
  - TOE OF FILL
- NOTE:
- |               |                  |
|---------------|------------------|
| DRAINAGE LINE | FOR PROFILE VIEW |
| "E"           | DP-4             |
| "F"           | DP-5,6           |

TYPICAL SECTION FOR CHANNEL N.T.S.



**Computer File Information**

Creation Date:	11/15/00	Initials:	JAC
Last Modification Date:	10/11/04	Initials:	DRS
Full Path:	J:\00033\AS-BUILT\		
Drawing File Name:	D00033PLN03AB.dwg		
Acad Ver.	2000i	Scale:	1"=100' Units: English

**Index of Revisions**


**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:	
Revised:	X
Void:	

**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVENUE DRAINAGE PLAN  
STA. 33+00 TO STA. 47+00**

Designer:	ELL/SCD
Detailer:	SCD
Sheet Subset:	DRAINAGE
Subset Sheets:	DR-3 of 6

**Project No./Code**

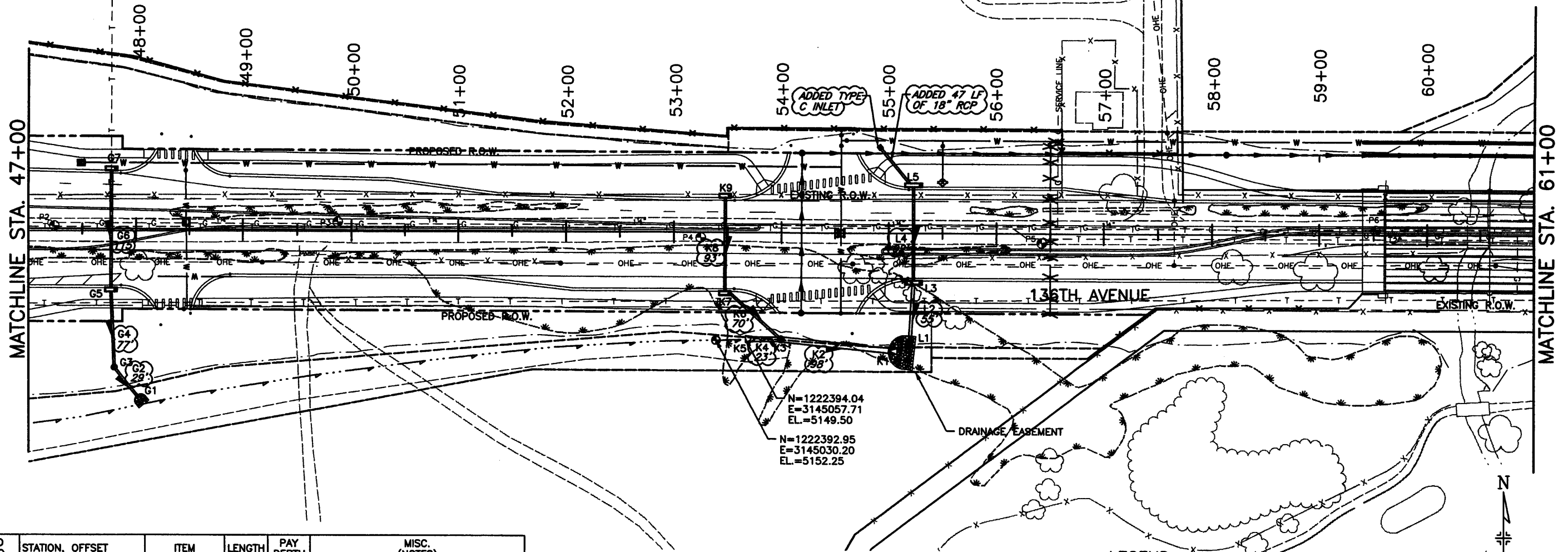
Project No./Code	97-71
Sheet Number	267



NOTE: UTILITY LINES AS SHOWN ON UTILITY AND PROFILE SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.06 OF THE SUPPLEMENTAL SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR WILL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION NOT INCLUDING THE DAY OF ACTUAL NOTICE.

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ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
G7	47+81.0, 54.32 LT.	INLET TYPE R	L10	(5 FT)	
G6		18" RCP	110.8	77.5	
G5	47+81.0, 57.0 RT.	INLET TYPE R	L10	(10 FT)	
G4		18" RCP	69.5	77	
G3	47+80.0, 130.0 RT.	MH SLAB BASE		(10 FT)	
G2		18" RCP	30.1	29	
G1	48+00.0, 160.0 RT.	18" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS
L5	55+23.10, 43.0 LT.	INLET TYPE R	L15	(5 FT)	(SUMP)
L4		18" RCP	88.4	92	
L3	55+23.10, 44.0 RT.	INLET TYPE R	L15	(5 FT)	(SUMP)
L2		24" RCP	52.5	55	
L1	55+20.0, 100.0 RT.	24" RCES			RIPRAP INCLUDED IN K1 QUANTITY

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
K9	53+51.8, 32.0 LT.	INLET TYPE R	L10	(5 FT)	
K8		18" RCP	88.4	93	
K7	53+51.8, 55.0 RT.	INLET TYPE R	L10	(5 FT)	
K6		18" RCP	61.4	70	
K5	53+75.0, 100.0 RT.	48" RCES			
K4		48" RCP	22.5	23	
K3	54+00.0, 100.0 RT.	MH SLAB BASE		(10 FT)	
K2		48" RCP	98.4	98	
K1	55+00.0, 110.0 RT.	48" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS

**LEGEND**

- RIPRAP
- TOP OF CUT
- TOE OF FILL

NOTE:

DRAINAGE LINE	FOR PROFILE VIEW SEE SHEET
"G"	DP-7
"K"	DP-7,8
"L"	DP-8



Computer File Information	
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Last Modification Date:	10/11/04 Initials: DRS
Full Path:	J:\00033\AS-BUILT\
Drawing File Name:	D00033PLN04AB.dwg
Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

**As Constructed**

No Revisions:  
Revised: X  
Void:

**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVENUE DRAINAGE PLAN  
STA. 47+00 TO STA. 61+00**

Designer: ELL/SCD  
Detailer: SCD  
Sheet Subset: DRAINAGE

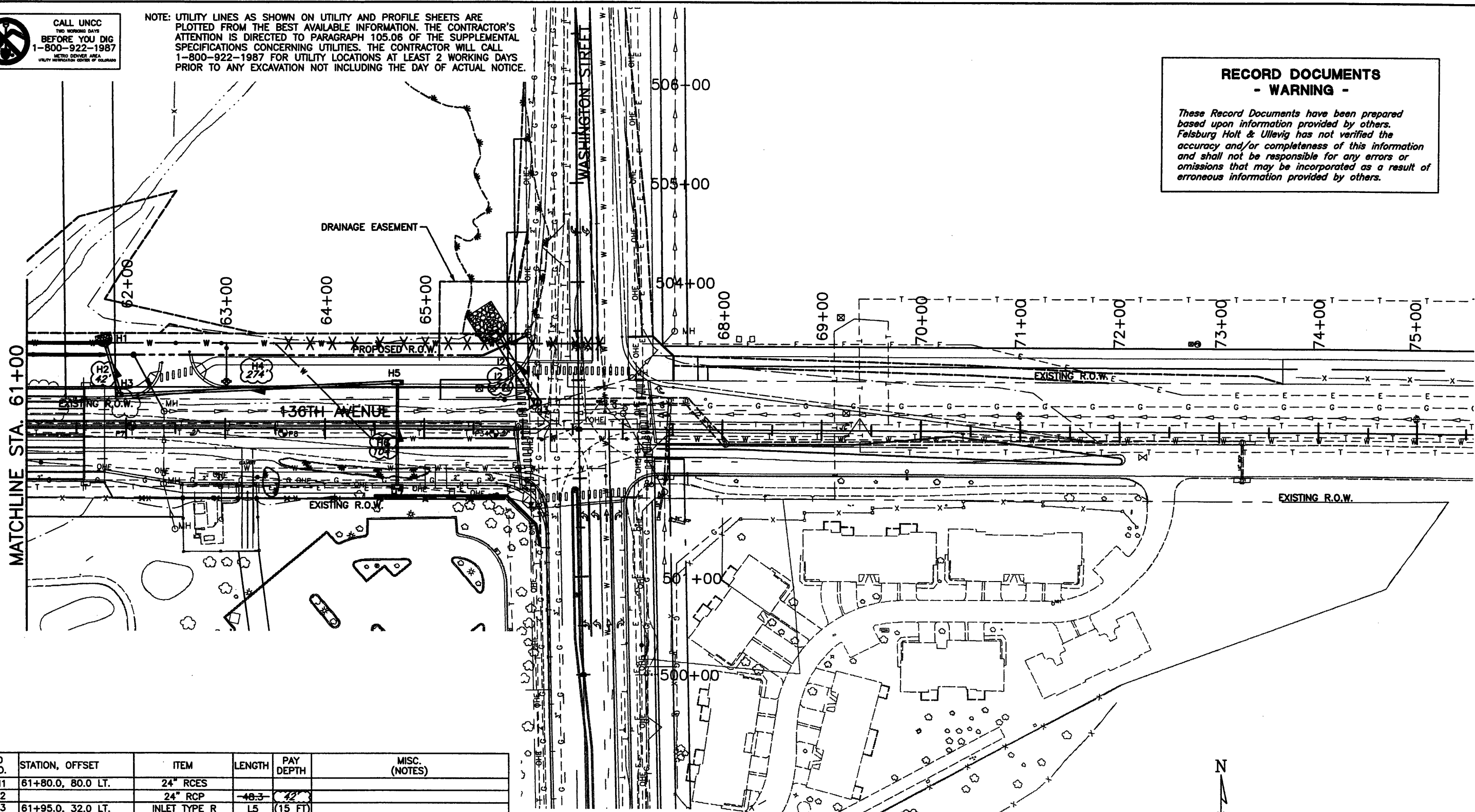
Project No./Code  
97-71

Subset Sheets: DR-4 of 6 Sheet Number 268



NOTE: UTILITY LINES AS SHOWN ON UTILITY AND PROFILE SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.06 OF THE SUPPLEMENTAL SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR WILL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION NOT INCLUDING THE DAY OF ACTUAL NOTICE.

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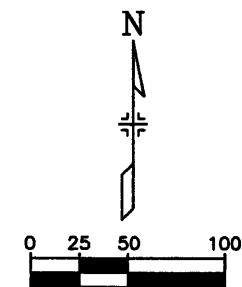


ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
H1	61+80.0, 80.0 LT.	24" RCES			
H2		24" RCP	48.3	42"	
H3	61+95.0, 32.0 LT.	INLET TYPE R	L5	(15 FT)	
H4		24" RCP	272.2	27"	
H5	64+72.66, 45.0 LT.	INLET TYPE R	L10	(10 FT)	(SUMP)
H6		18" RCP	183.4	10"	
H7	64+72.66, 57.0 RT.	INLET TYPE R	L10	(5 FT)	(SUMP)
I1	65+75.0, 90.0 LT.	68X43" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS
I2		68X43" RCP	70.7	71"	
I3	66+14.5, 27.5 LT.	MH SLAB BASE		(10 FT)	(CONNECT TO EXISTING PIPE)

NOTE:

DRAINAGE LINE	FOR PROFILE VIEW SEE SHEET
"H"	DP-9
"I"	DP-10

- LEGEND**
- RIPRAP
  - TOP OF CUT
  - TOE OF FILL



**Computer File Information**

Creation Date:	11/15/00	Initials:	JAC
Last Modification Date:	10/13/04	Initials:	DRS
Full Path:	J:\00033\AS-BUILT\		
Drawing File Name:	D00033PLN05AB.dwg		
Acad Ver.	2000i	Scale:	1"=100' Units: English

**Index of Revisions**




303.721.1440  
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 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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No Revisions:	
Revised:	X
Void:	

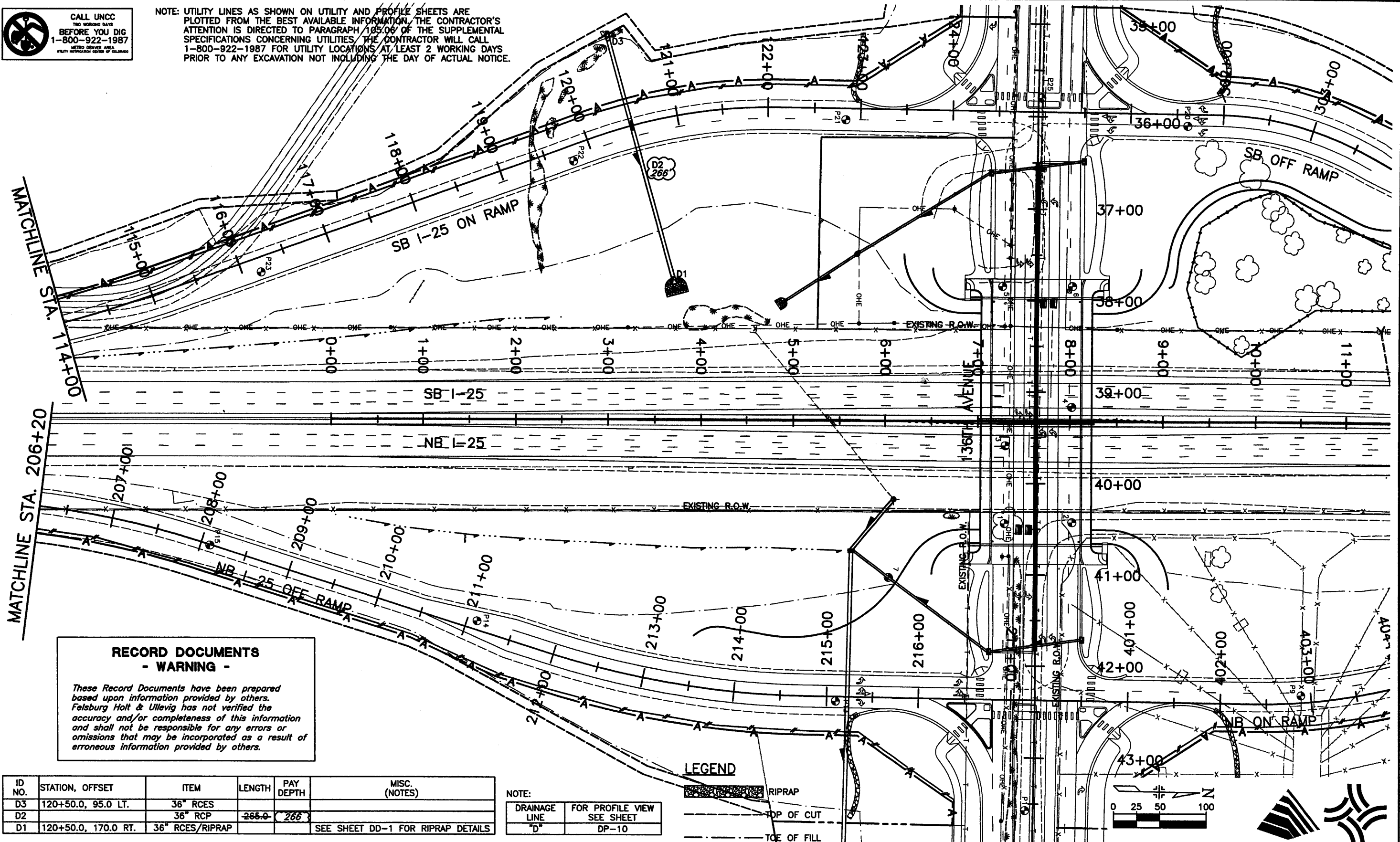
**136TH AVENUE AT I-25 INTERCHANGE  
 136TH AVENUE DRAINAGE PLAN  
 STA. 61+00 TO STA. 75+00**

Designer:	ELL/SCD
Detailer:	SCD
Sheet Subset:	DRAINAGE
Subset Sheets:	DR-5 of 6

Project No./Code	97-71
Sheet Number	269



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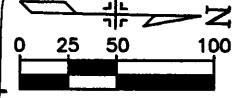
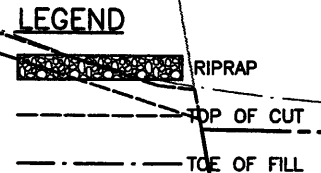
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ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
D3	120+50.0, 95.0 LT.	36" RCES			
D2		36" RCP	265.0	266	
D1	120+50.0, 170.0 RT.	36" RCES/RIPRAP			SEE SHEET DD-1 FOR RIPRAP DETAILS

NOTE:

DRAINAGE LINE "D"	FOR PROFILE VIEW SEE SHEET DP-10
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**Computer File Information**

Creation Date:	12/15/00	Initials:	JAC
Last Modification Date:	10/13/04	Initials:	DRS
Full Path:	J:\00033\AS-BUILT\		
Drawing File Name:	D00033PLN07AB.dwg		
Acad Ver.	2000i	Scale:	1"=100' Units: English

**Index of Revisions**




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 fax 303.721.0832  
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**136TH AVENUE AT I-25 INTERCHANGE  
 SB ON/NB OFF RAMP  
 DRAINAGE PLANS**

Designer: ELL/SCD  
 Detailer: SCD  
 Sheet Subset: DRAINAGE Subset Sheets: DR-6 of 6

Project No./Code  
 97-71

Sheet Number  
 270

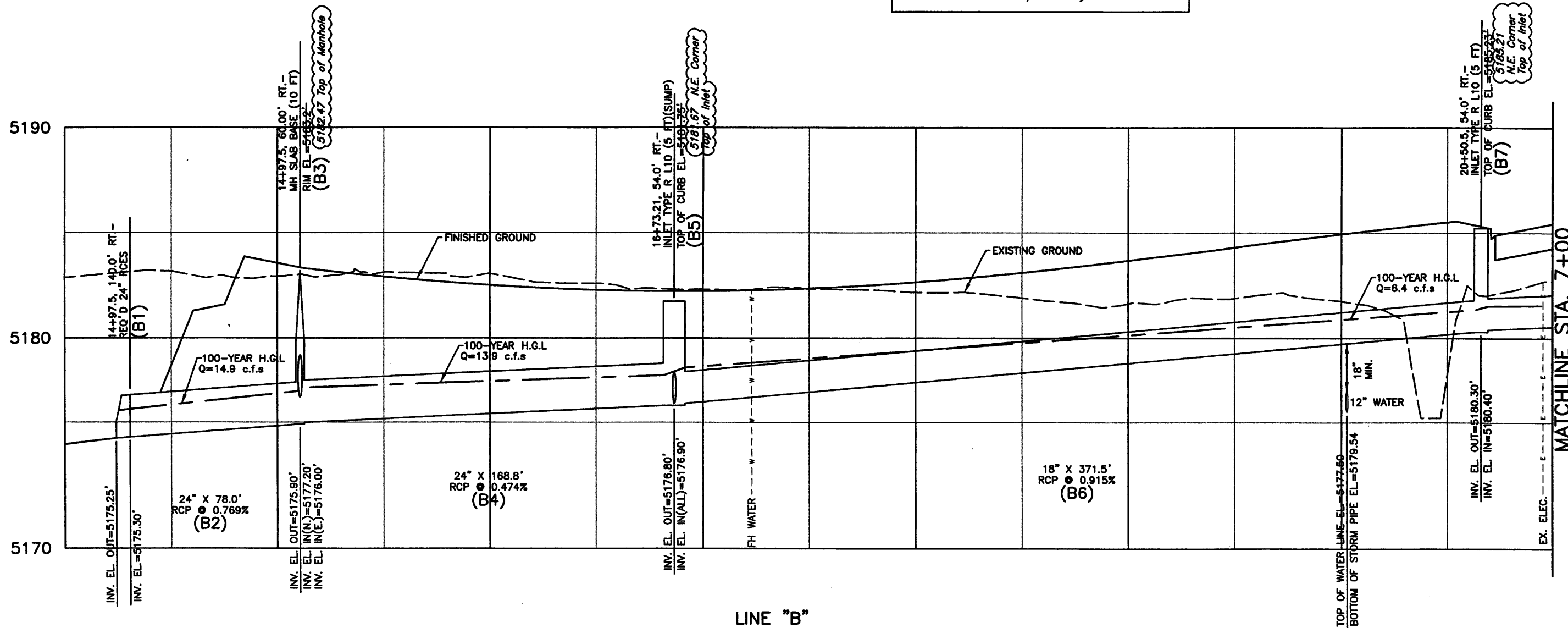


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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT		
	B2	B4	B6
STRUCTURE EXCAVATION	138 CY	246 CY	323 CY
EMB MATL (CIP)	83 CY	127 CY	125 CY
STR BKFL (CL1)	41 CY	88 CY	157 CY



NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"B"	DR-1,2

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL



Computer File Information	
Creation Date:	08/20/01 Initials: DCB
Last Modification Date:	10/13/04 Initials: DRS
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Acad Ver.	2000i Scale: AS SHOWN Units: English

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<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	Project No./Code 97-71
No Revisions:	Designer: SCD	
Revised: X	Detailer: DCB	
Void:	Sheet Subset: PROFILE	Subset Sheets: DP-1 of 10
		Sheet Number 271

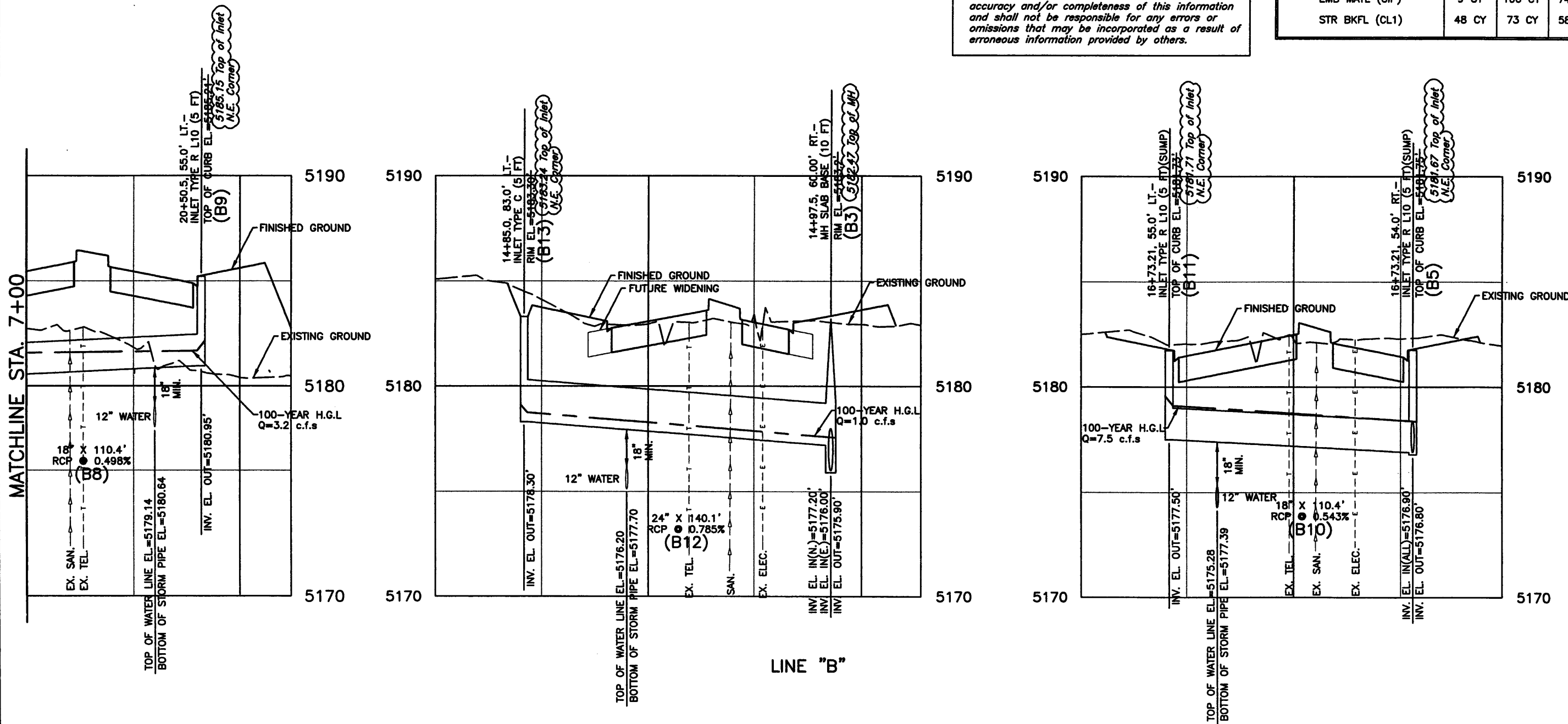


NOTE: UTILITY LINES AS SHOWN ON UTILITY AND PROFILE SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.06 OF THE SUPPLEMENTAL SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR WILL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION NOT INCLUDING THE DAY OF ACTUAL NOTICE.

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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT		
	B8	B12	B10
STRUCTURE EXCAVATION	70 CY	205 CY	152 CY
EMB MATL (CIP)	9 CY	106 CY	74 CY
STR BKFL (CL1)	48 CY	73 CY	58 CY



NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"B"	DR-1,2

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL

Computer File Information	
Creation Date:	08/20/01 Initials: DCB
Last Modification Date:	10/14/04 Initials: DRS
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Drawing File Name:	D00033PRO02.dwg
Acad Ver.	2000i Scale: AS SHOWN Units: English

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136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	
Designer:	SCD
Detailer:	DCB
Sheet Subset:	PROFILE
Subset Sheets:	DP-2 of 10

Project No./Code	97-71
Sheet Number	272



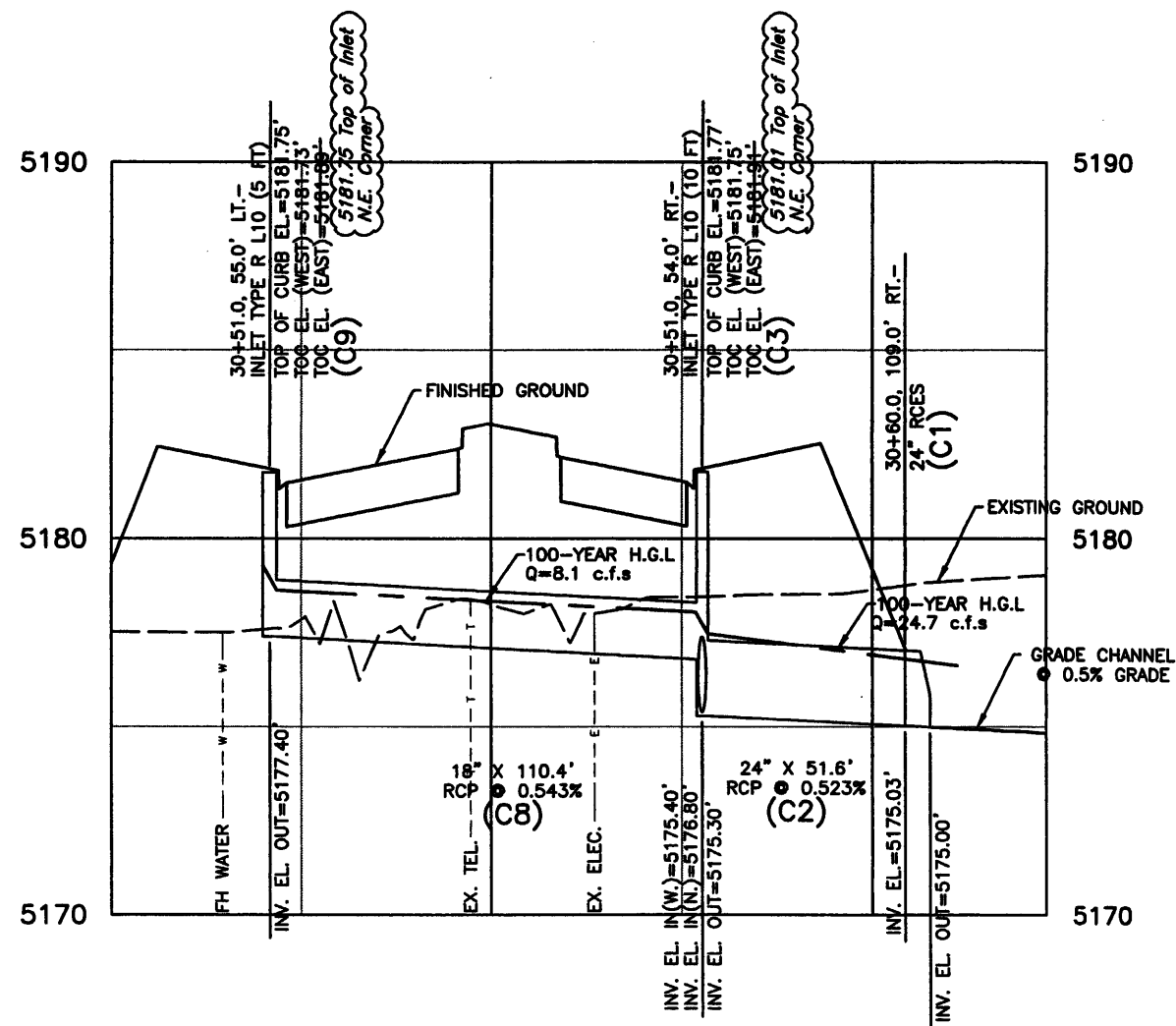
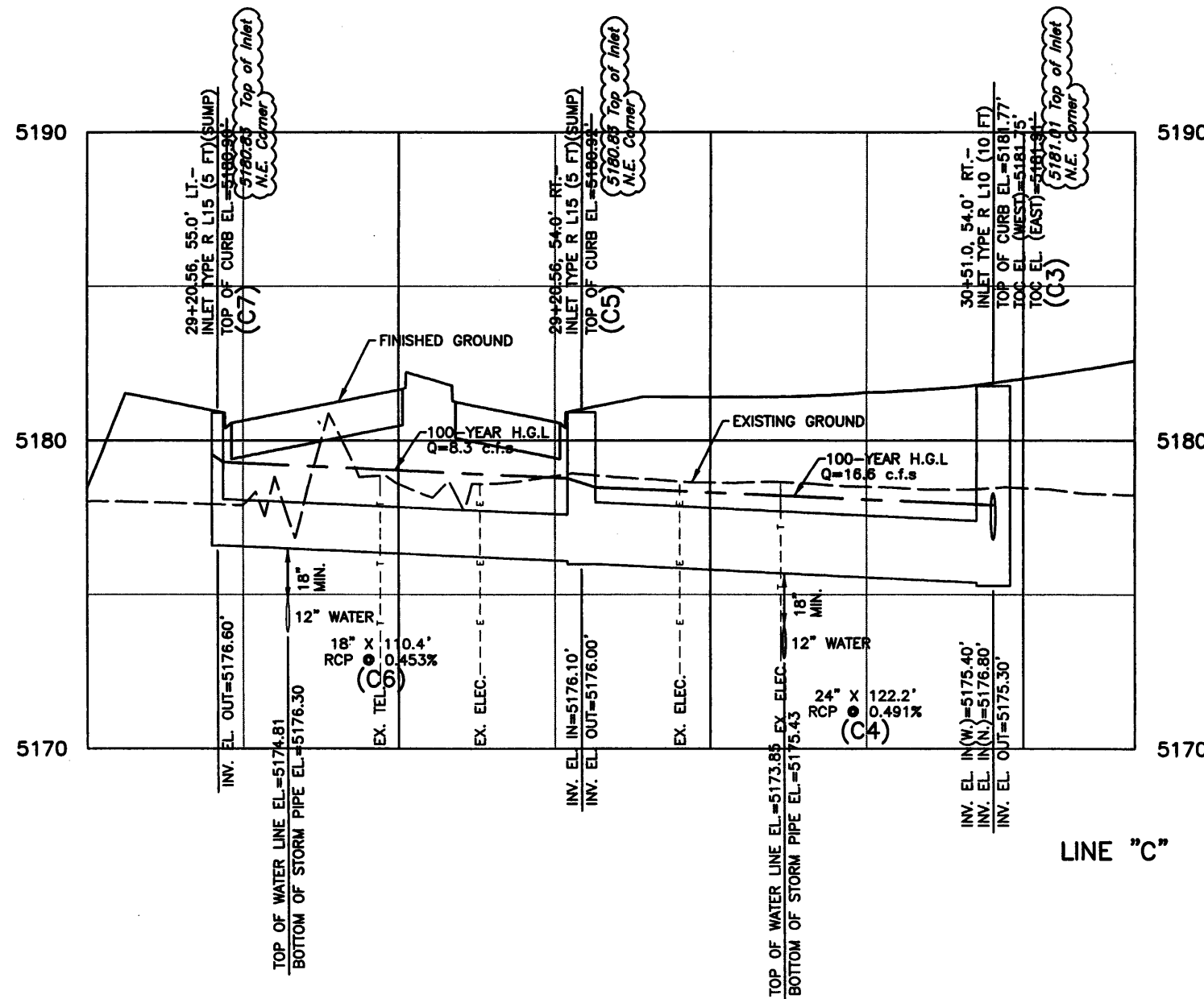


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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT			
	C6	C4	C8	C2
STRUCTURE EXCAVATION	79 CY	110 CY	60 CY	53 CY
EMB MATL (CIP)	19 CY	23 CY	0 CY	15 CY
STR BKFL (CL1)	48 CY	64 CY	48 CY	28 CY



LINE "C"

NOTE:

DRAINAGE LINE "C"	FOR PLAN VIEW SEE SHEET DR-2
-------------------	------------------------------

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL

Computer File Information	
Creation Date:	08/20/01 Initials: DCB
Last Modification Date:	10/14/04 Initials: DRS
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Drawing File Name:	D00033PRO03AB.dwg
Acad Ver.	2000i Scale: AS SHOWN Units: English

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<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	Project No./Code 97-71
No Revisions:	Designer: SCD	
Revised: X	Detailer: DCB	
Void:	Sheet Subset: PROFILE Subset Sheets: DP-3 of 10	Sheet Number 273

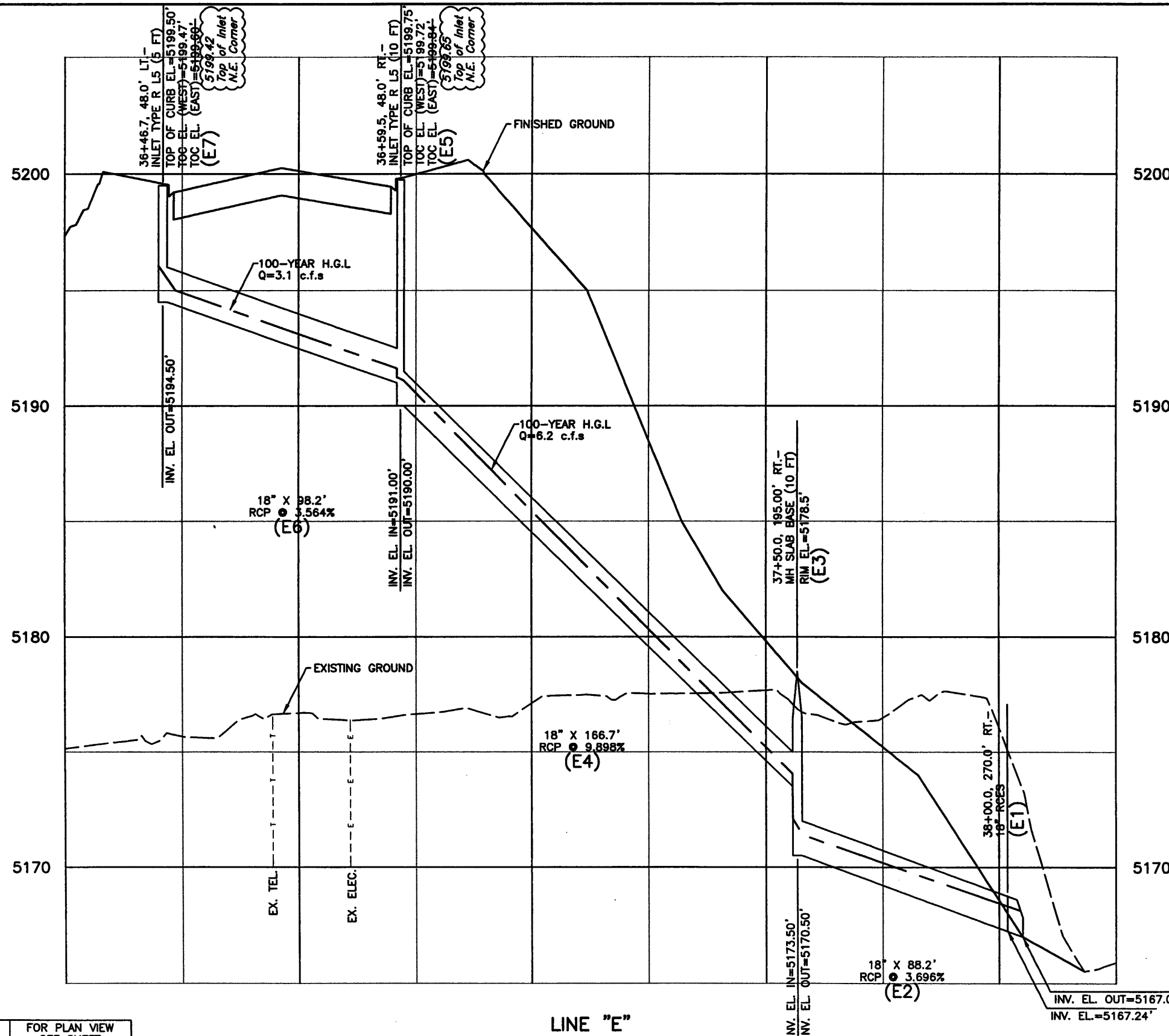


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EXCAVATION AND BACKFILL FOR STRUCTURES (INFORMATION ONLY QUANTITIES INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT		
	E6	E4	E2
STRUCTURE EXCAVATION	54 CY	90 CY	150 CY
EMB MATL (CIP)	0 CY	0 CY	102 CY
STR BKFL (CL1)	43 CY	71 CY	38 CY

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NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"E"	DR-3

LINE "E"

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL



Computer File Information	
Creation Date:	08/20/01 Initials: DCB
Last Modification Date:	10/14/04 Initials: DRS
Full Path:	J:\00033\AS-BUILT\
Drawing File Name:	D00033PRO04AB.dwg
Acad Ver. 2000i	Scale: AS SHOWN Units: English

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136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	
Designer:	SCD
Detailer:	DCB
Sheet Subset:	PROFILE
Subset Sheets:	DP-4 of 10

Project No./Code	97-71
Sheet Number	274

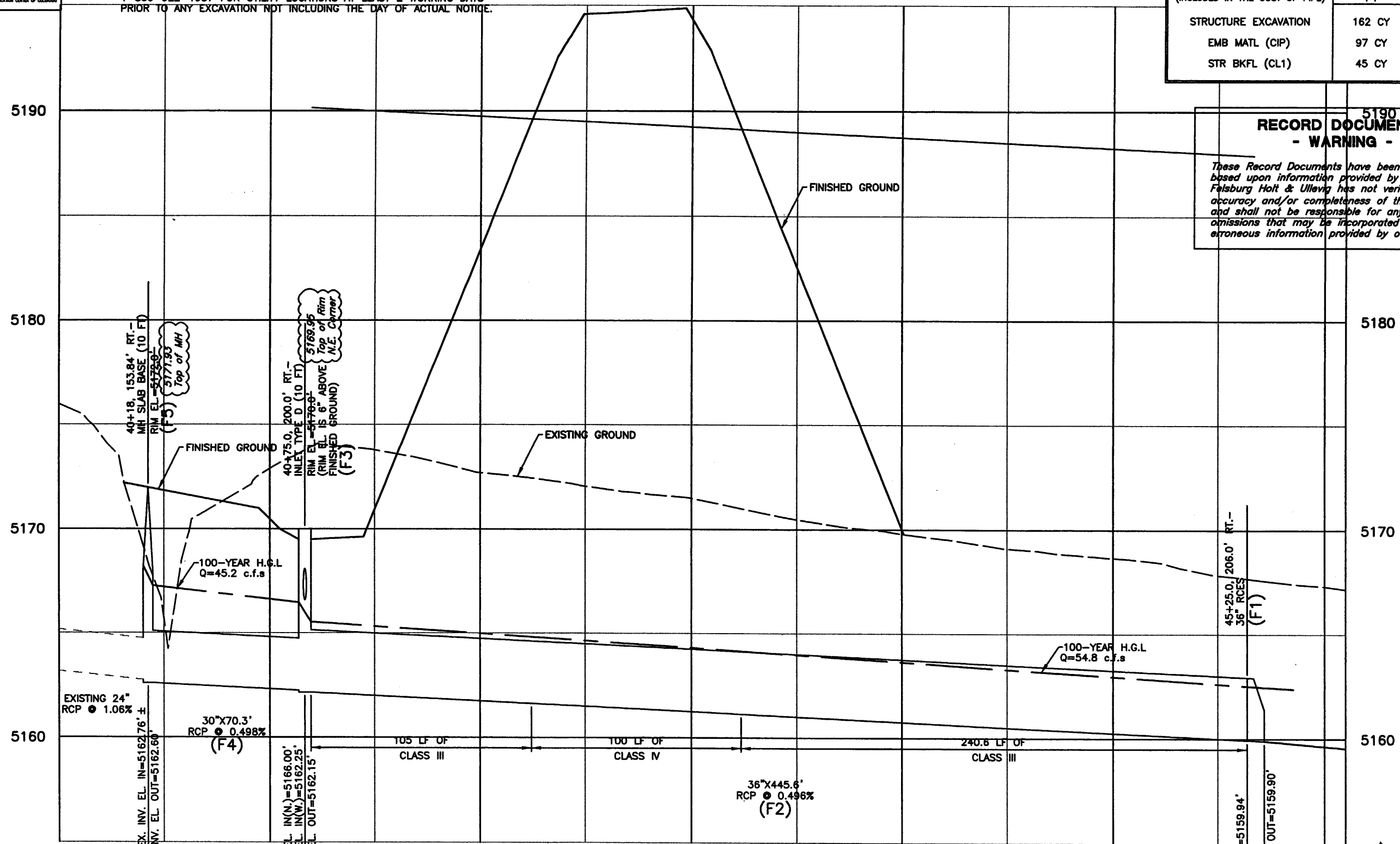


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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT	
	F4	F2
STRUCTURE EXCAVATION	162 CY	1137 CY
EMB MATL (CIP)	97 CY	648 CY
STR BKFL (CL1)	45 CY	314 CY

**RECORD DOCUMENTS - WARNING -**

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NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"F"	DR-3

LINE "F"

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL

Computer File Information	
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Last Modification Date:	10/14/04 Initials: DRS
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Drawing File Name:	D00033PRO05.dwg
Acad Ver. 2000i	Scale: AS SHOWN Units: English

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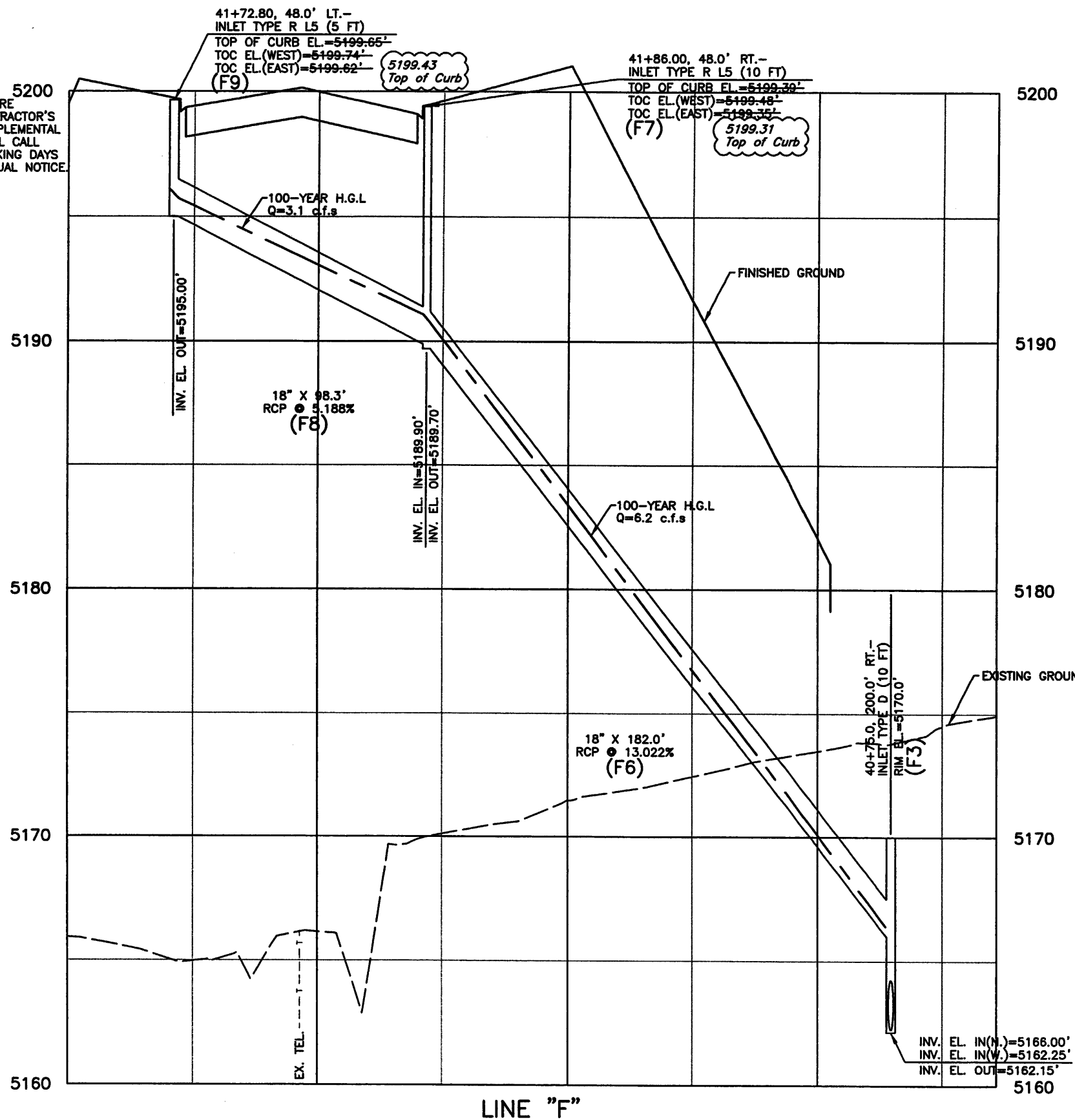
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No Revisions:
Revised: X
Void:

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Designer:	SCD
Detailer:	DCB
Sheet Subset:	PROFILE
Subset Sheets:	DP-5 of 10

Project No./Code	97-71
Sheet Number	275



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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT	
	F8	F6
STRUCTURE EXCAVATION	54 CY	144 CY
EMB MATL (CIP)	0 CY	46 CY
STR BKFL (CL1)	43 CY	78 CY

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NOTE:

DRAINAGE LINE "F"	FOR PLAN VIEW SEE SHEET DR-3
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SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL



Computer File Information	
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Last Modification Date:	10/14/04 Initials: DRS
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Drawing File Name:	D00033PRO06AB.dwg
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136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	
Designer:	SCD
Detailer:	DCB
Sheet Subset:	PROFILE
Subset Sheets:	DP-6 of 10

Project No./Code	97-71
Sheet Number	276



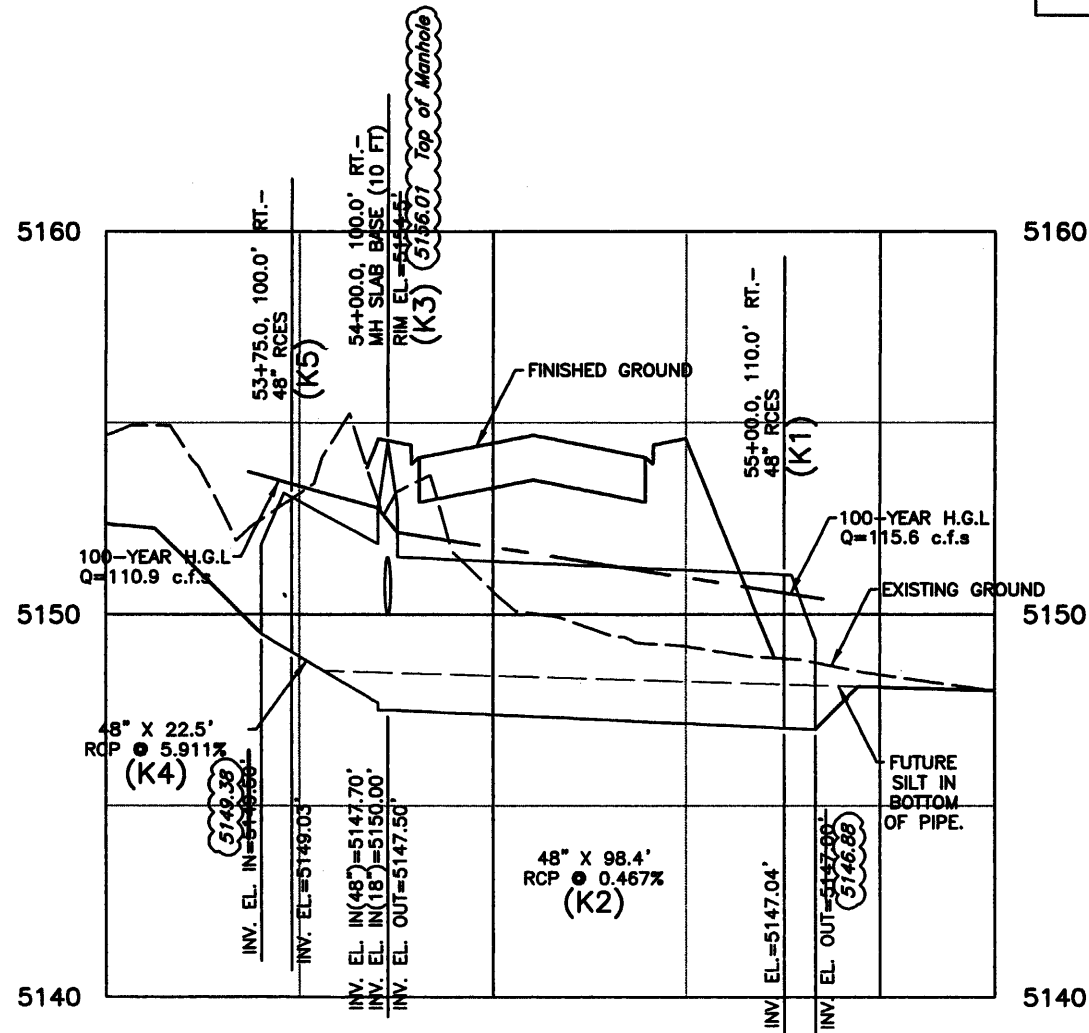


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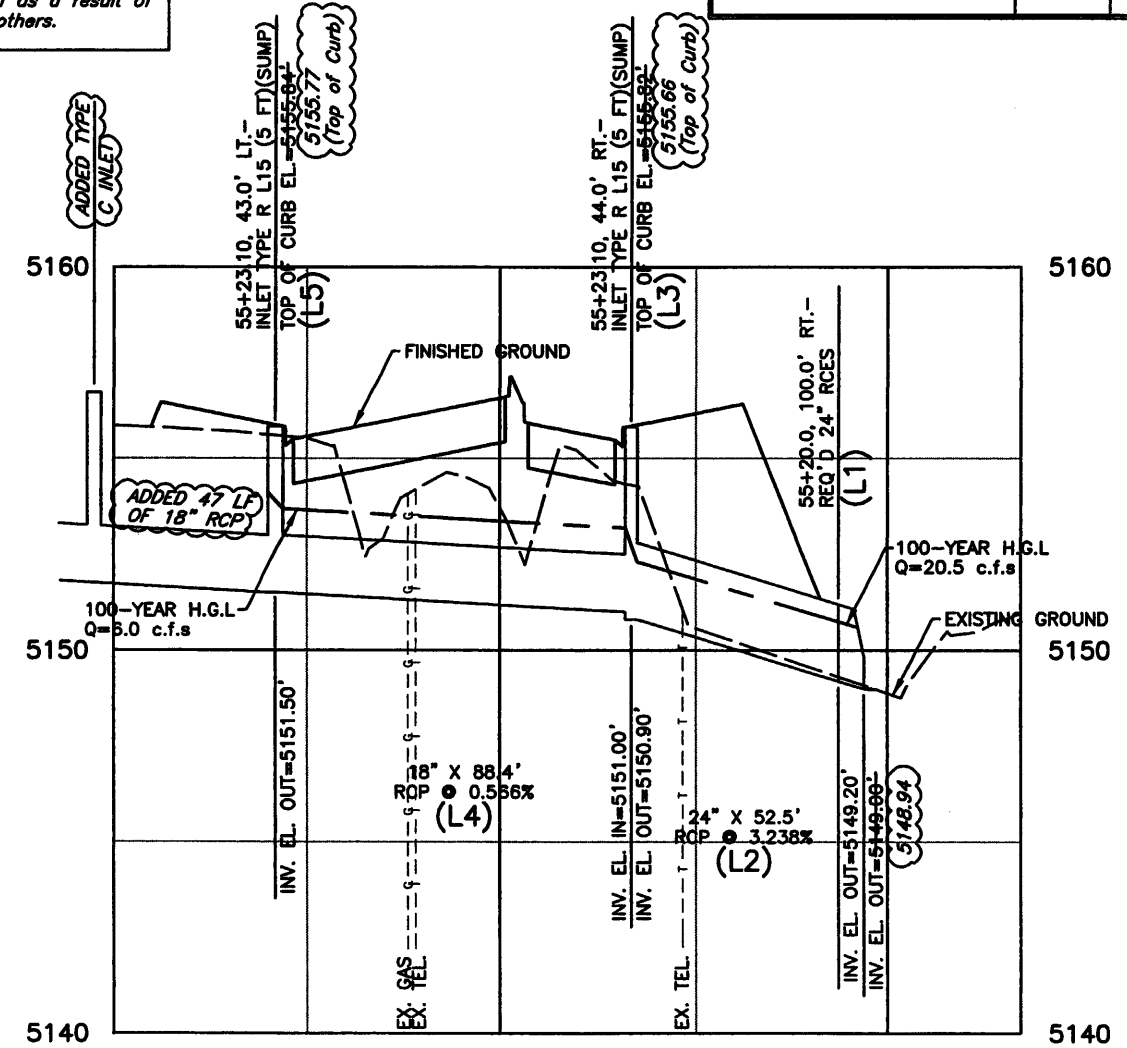
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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT		
	K2	L4	L2
STRUCTURE EXCAVATION	173 CY	71 CY	41 CY
EMB MATL (CIP)	13 CY	23 CY	3 CY
STR BKFL (CL1)	92 CY	38 CY	28 CY



LINE "K"



LINE "L"

NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"K"	DR-4
"L"	DR-4

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL



Computer File Information	
Creation Date:	08/20/01 Initials: DCB
Last Modification Date:	10/14/04 Initials: DRS
Full Path:	J:\00033\AS-BUILT\
Drawing File Name:	D00033PRO08AB.dwg
Acad Ver.	2000i Scale: AS SHOWN Units: English

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136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	
Designer:	SCD
Detailer:	DCB
Sheet Subset:	PROFILE
Subset Sheets:	DP-8 of 10

Project No./Code	97-71
Sheet Number	278

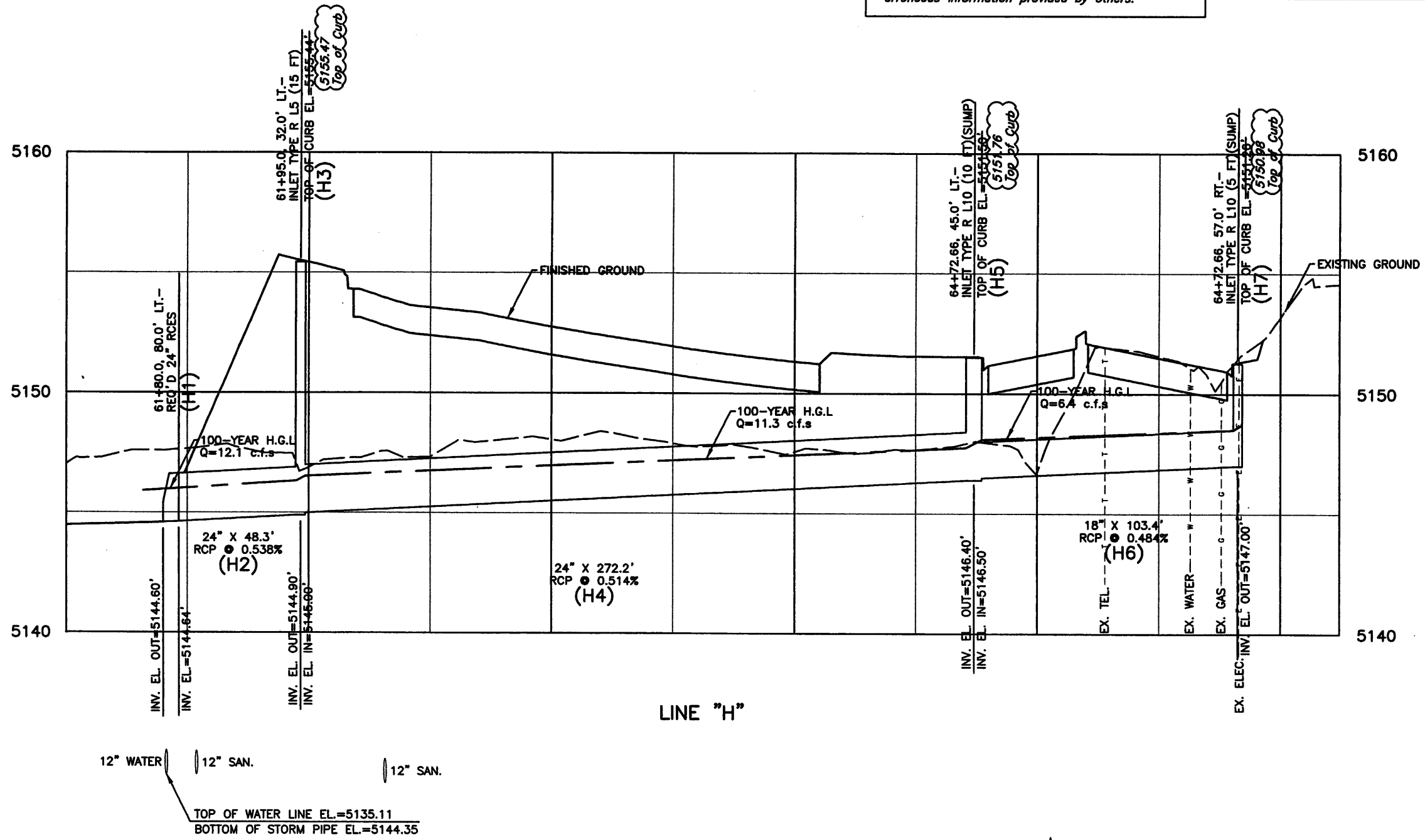


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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT		
	H2	H4	H6
STRUCTURE EXCAVATION	45 CY	215 CY	92 CY
EMB MATL (CIP)	10 CY	25 CY	35 CY
STR BKFL (CL1)	26 CY	140 CY	45 CY



NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"H"	DR-5

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL



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Creation Date:	08/20/01 Initials: DCB							No Revisions:
Last Modification Date:	10/14/04 Initials: DRS					Revised: X	Designer: SCD	
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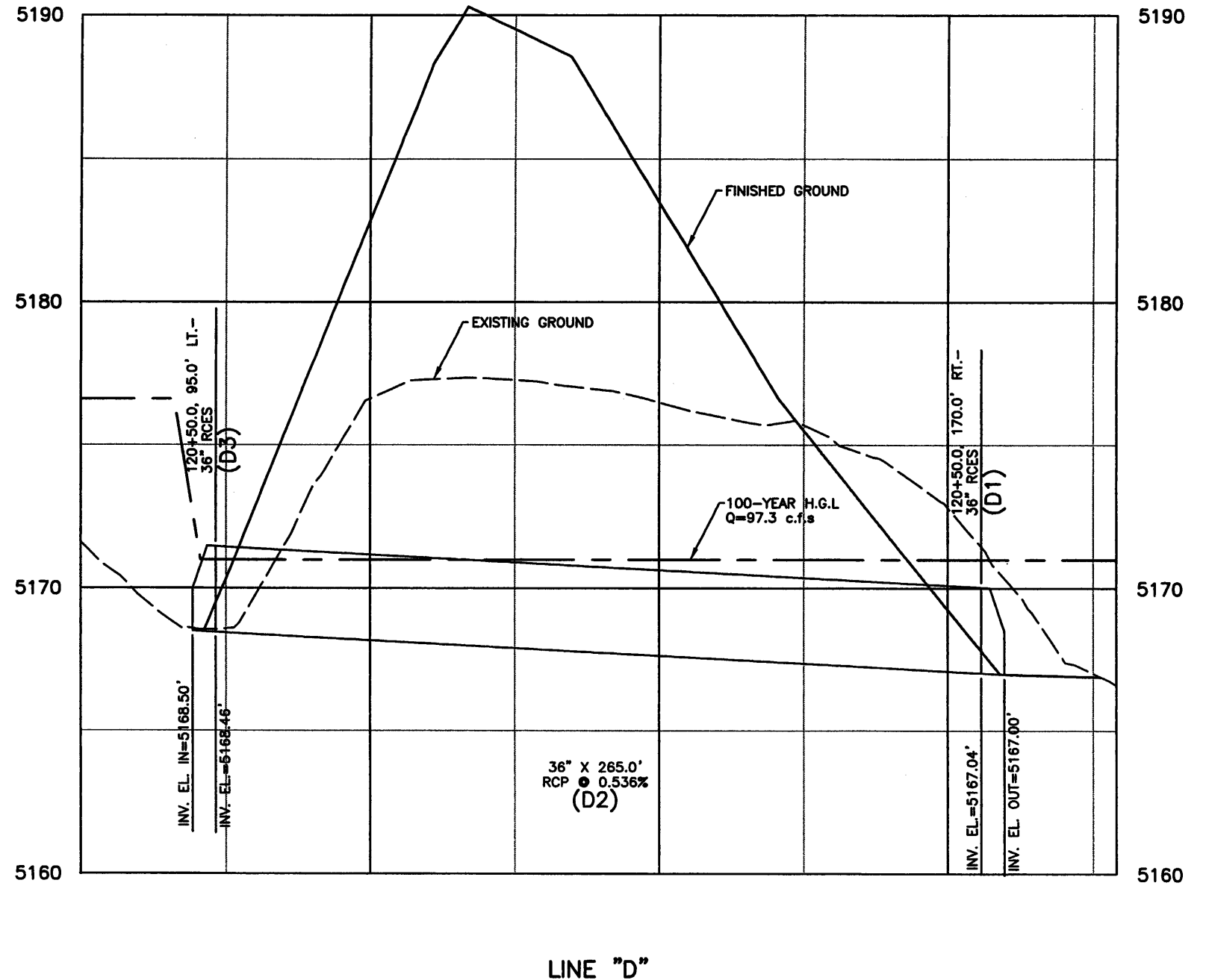
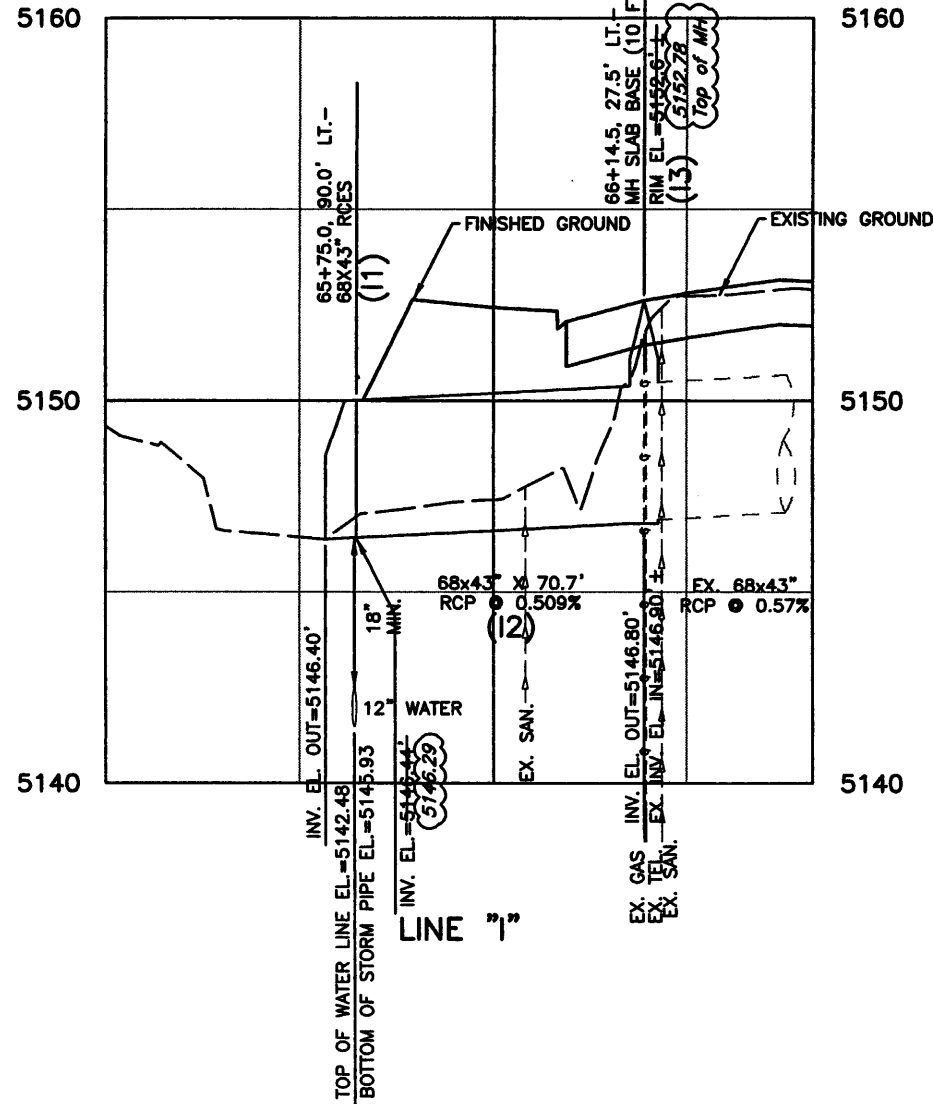


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EXCAVATION AND BACKFILL FOR STRUCTURES INFORMATION ONLY QUANTITIES (INCLUDED IN THE COST OF PIPE)	PIPE SEGMENT	
	I2	J2
STRUCTURE EXCAVATION	224 CY	29 CY
EMB MATL (CIP)	0 CY	11 CY
STR BKFL (CL1)	110 CY	13 CY



NOTE:

DRAINAGE LINE	FOR PLAN VIEW SEE SHEET
"I"	DR-5
"D"	DR-6

SCALE: 1"=50' HORIZONTAL  
1"=5' VERTICAL



Computer File Information	
Creation Date:	08/20/01 Initials: DCB
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Drawing File Name:	D00033PRO10AB.dwg
Acad Ver.	2000i Scale: AS SHOWN Units: English

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136TH AVENUE AT I-25 INTERCHANGE 136TH AVENUE DRAINAGE PROFILE	
Designer:	SCD
Detailer:	DCB
Sheet Subset:	PROFILE
Subset Sheets:	DP-10 of 10

Project No./Code	97-71
Sheet Number	280



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**STORMWATER MANAGEMENT PLAN-ADDITIONAL INFORMATION**

Estimated Runoff coefficient  
 Pre-construction: 0.10 Post-construction: 0.33

Existing data describing soil or quality of discharge: SOILS ARE LOAMS AND CLAY LOAMS.

Existing vegetation: NATIVE GRASSES, WETLAND VEGETATION AND WEEDS.

Proposed sequence for major activities, location of any other potential pollution source, areas used for storage of building materials, soils or wastes, and location of any dedicated asphalt or concrete batch plants: see water quality and erosion control specifications, and documents submitted by the contractor at the preconstruction conference.

100-year Flood plain boundaries: see bridge hydraulic information sheet or roadway plans (if existent).

Description of the construction activity, estimate of the total site area and of the area expected to undergo excavation, and name of the receiving water: see CDPS stormwater permit application.

Contract Document location of erosion control and stormwater quality management measures not referenced above nor included on the Stormwater Management Plan Sheet(s):

HYDROLOGY AND HYDRAULICS REPORT/STORMWATER MANAGEMENT PLAN FOR THE 136TH AVENUE AT I-25 INTERCHANGE, WESTMINSTER AND THORNTON COLORADO, BY FELSBURG HOLT & ULLEVIG, OCTOBER 24, 2002.

Site map and construction site boundaries: see title sheet

Areas of cuts and fills and areas of soil disturbance: see plan and profile sheets and roadway cross sections.

Surface waters: see title sheet and bridge hydraulic information sheet or Roadway Plans (if existent)

Materials handling and spill prevention: see water quality specification (107.25).

Inspection and maintenance: see erosion control specifications (107.25 or 208).

**SEED BED PREPARATION**

TOPSOIL OR A HORIZON SOIL LAYER SHALL BE SALVAGED FROM ORIGINAL EARTHWORK AND EVENLY REAPPLIED TO ALL DISTURBED SLOPES AND SEEDED AREAS. SALVAGED TOPSOIL IS INTENDED PRIMARILY AS A NATIVE SEED SOURCE RATHER THAN FOR ITS FERTILITY CHARACTERISTICS. TOPSOIL SHALL NOT BE IMPORTED FOR PROJECT UNLESS DIRECTED BY PROJECT ENGINEER.

THE SEED BED SHALL BE FRIABLE ENOUGH TO ALLOW PLACEMENT OF SEED WHEN BROADCASTED. SOILS THAT HAVE BEEN OVER COMPACTED BY TRAFFIC OR HEAVY EQUIPMENT SHALL BE RIPPED OR TILLED TO BREAK UP RESTRICTIVE LAYERS. THE PREPARED SURFACE SHALL BE ROUGH AND FREE OF DEBRIS LARGER THAN 1 INCH.

**DRAINAGE SWALE FINISHED GRADING-FOR AREAS TO RECEIVE EROSION CONTROL BLANKET**

AFTER BROADCASTING OF SEED MIXTURE THE SWALE SURFACE SHALL BE RAKED TO A SMOOTH FINISH FREE OF CLODS, ROOTS, BRANCHES, AND ROCKS. PLANTING OF SEED MUST BE ACCOMPLISHED BEFORE PLACEMENT OF EROSION CONTROL BLANKET.

**NATIVE SEEDING**

THE SEED MIXTURE SHALL CONSIST OF LOCALLY NATIVE SPECIES OF PERENNIAL GRASSES, NATIVE WILD FLOWERS, AND A TEMPORARY COVER CROP. SOIL SHALL NOT BE FROZEN OR WET AT THE TIME OF PLANTING. SEEDING CAN BE ACCOMPLISHED BY SEPARATE BROADCAST APPLICATIONS FOR THE VARIOUS SEED MIX COMPONENTS. THE FOLLOWING SEED MIXTURES AND SEEDING RATES SHALL BE USED. AFTER BROADCAST SEEDING THE AREA SHALL BE HAND RAKED TO EFFECTIVELY AND LIGHTLY COVER SEEDS. SEEDS SHALL BE COVERED WITH A MAXIMUM OF 1/4 INCHES OF SOIL DEPTH. NOTE THAT THE PERIMETER OF THE WETLAND MITIGATION AREA SHALL RECEIVE A SEPARATE SEED MIX DESCRIBED AS WET MEADOW MIX.

**NATIVE GRASS SEEDING**

GRASS SPECIES- THIS GRASS SPECIES MIX AND THE FOLLOWING WILD FLOWER SPECIES MIX SHALL BE SEEDED OVER ALL AREAS INDICATED ON THE PLANS AS NATIVE SEEDING.

GRASS SPECIES	VARIETY	% OF MIX	RATE: POUNDS PLS/ACRE
WESTERN WHEATGRASS AGROPYRUM SMITHII	ARRIBA, BARTON	22	4.4
BLUE GRAMMA BOUPELOUA GRACILIS	LOVINGTON	10	2.0
GREEN NEEDLEGRASS STIPA VIRIDULA	LODORM	15	3.0
BIG BLUESTEM ANDROPOGON GERARDII	KAW	10	2.0
SWITCHGRASS PANICUM VERGATUM	BLACKWELL NEBRASKA	16	3.2
SIDE OATS GRAMA BOUPELOUA CURTIPENDULA	VAUGHN, BUTTE	16	3.2
BUFFALOGRASS BUCHLOE DACTYLOIDES		6	1.2
SLENDER WHEATGRASS AGROPYRON TRACHYCAULUM		5	1.0
<b>TOTAL</b>		<b>100</b>	<b>20.0</b>

**WILD FLOWER, FORB MIX:**

SPECIES	PERCENT OF MIX	RATE: POUNDS PLS/ACRE
BEE PLANT - CLEOME SERRULATA	25	2.5
PLAINS COREOPSIS- COREOPSIS TINTORIA	25	2.5
PURPLE PRAIRIE CLOVER- DALEAPURPUREA	18	1.8
BLUE FLAX- LINIUM LEWISII	8	0.8
PRICKLY POPPY- ARGEMONE POLYANTHEMOS	8	0.8
PRAIRIE CONEFLOWER- RATIBA COLUMNIFERA	8	0.8
WAND PENSTEMON- PENSTEMON VIRGATUS	8	0.8
<b>TOTAL</b>	<b>100</b>	<b>10</b>

**TEMPORARY COVER CROP:**

THIS TEMPORARY COVER CROP SHALL BE ADDED TO THE AREAS SEEDED WITH NATIVE GRASS AND WILD FLOWER, FORB MIX. THE SPECIES TO BE USED IS DEPENDENT ON THE DATES WHEN SEEDING CAN BE DONE.

SPECIES	SEEDING DATES	BULK POUNDS/ACRE
SPRING WHEAT OR WINTER WHEAT	AUG. 1-MAY 15	20
MILLET OR SORGHUM	MAY 16-JULY 31	10

**WET MEADOW SEED MIX**

THIS MIX OF GRASSES AND FORBS SHALL BE USED AROUND THE PERIMETER OF THE WETLAND MITIGATION AREA IN LUE OF THE NATIVE GRASSES AND WILDFLOWERS. SEEDING SHALL BE ACCOMPLISHED BY BROADCAST SEEDING FOLLOWED BY HAND RACKING AND MULCHING. NOTE ON MITIGATION PLANS THE CONTOURS THAT DEFINE THE WET MEADOW SEEDING AREA.

SPECIES	PERCENT OF MIX	RATE: POUNDS PLS/1000 SQ. FT.
SLENDER WHEATGRASS-AGROPYRON TACHYCAULUM	18	0.18
SLOUGHGRASS-BEKMANNIA SYZIGACHNE	16	0.16
CANADA WILDRIE- ELYMUS CANADENSIS	18	0.18
FOWL MANNAGRASS- GLYCERRIASTRIATA	8	0.08
SWITCHGRASS-PANICUM VIRGATUM	18	0.18
SOFT STEM BULRUSH-SCIRPUS VALIDUS	12	0.12
ALKALI BULRUSH- SCIRPUS PALUDOSUS	10	0.10
<b>TOTAL</b>	<b>100</b>	<b>1.0</b>

**MULCHING REQUIREMENTS**

CERTIFIED WEED FREE NATIVE HAY OR STRAW SHALL BE APPLIED EVENLY TO ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE. ALL MULCHED AREAS SHALL RECEIVE TACKIFIER PER THE MANUFACTURERS APPLICATION RATES.

**FERTILIZER**

CONTRACTOR SHALL OBTAIN AGRONOMIC SOIL ANALYSIS FOR 6 REPRESENTATIVE SOIL SAMPLES IN SEEDED AREAS AFTER SALVAGED TOPSOIL IS REAPPLIED AND FINISHED GRADES ARE ESTABLISHED TO DETERMINE IF THERE IS A NEED FOR FERTILIZER IN SEEDED AREAS. BASED ON THESE TEST RESULTS THE NEED FOR FERTILIZER APPLICATION SHALL BE DETERMINED. THE RATE OF FERTILIZER ASSUMED WILL BE NITROGEN AT 27 LBS/AC, PHOSPHORUS AT 70 LBS/AC, POTASSIUM AT 0 LBS/AC. THESE RATES ARE FOR INFORMATION ONLY, AND SHALL BE VERIFIED. NO FERTILIZER SHALL BE USED ADJACENT TO EXISTING WETLANDS, WETLAND MITIGATION SITES OR STREAMS.



Computer File Information		Index of Revisions		As Constructed		136TH AVENUE AT I-25 INTERCHANGE STORMWATER MANAGEMENT PLAN		Project No./Code	
Creation Date:	07/01/01 Initials: DCB	<input type="checkbox"/>		No Revisions:				97-71	
Last Modification Date:	07/01/01 Initials: DCB	<input type="checkbox"/>		Revised:		Designer:	ELL		
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303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

TABULATION OF EROSION CONTROL FACILITIES (CITY OF WESTMINSTER)

SHEET NO.	** SILT FENCE		** TEMPORARY FENCE		SOIL RETENTION BLANKET (SPECIAL)		SOIL RETENTION BLANKET (STRAW/COCONUT)		** RIPRAP (9 INCH) (SEDIMENT TRAP)		STORM DRAIN * INLET PROTECTION (DROP INLET BLOCK AND GRAVEL FILTER)		NO. 3 COARSE AGGREGATE (SEE NOTE 3)		GEOTEXTILE (DRAINAGE) (CLASS A) (SEE NOTE 3)	
	L.F.		L.F.		S.Y.		S.Y.		C.Y.		EACH		C.Y.		S.Y.	
	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
ER-1	688															
ER-2	1652								7.6							
ER-3	214															
TOTALS	2554								7.6							

● FROM STATION 33+00 TO 35+00

TABULATION OF EROSION CONTROL FACILITIES (INTERCHANGE)

SHEET NO.	** SILT FENCE		** TEMPORARY FENCE		SOIL RETENTION BLANKET (SPECIAL)		SOIL RETENTION BLANKET (STRAW/COCONUT)		** RIPRAP (9 INCH) (SEDIMENT TRAP)		STORM DRAIN * INLET PROTECTION (DROP INLET BLOCK AND GRAVEL FILTER)		NO. 3 COARSE AGGREGATE (SEE NOTE 3)		GEOTEXTILE (DRAINAGE) (CLASS A) (SEE NOTE 3)	
	L.F.		L.F.		S.Y.		S.Y.		C.Y.		EACH		C.Y.		S.Y.	
	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
ER-3 ▲																
ER-7	192								7.6							
ER-8							205		15.2		1					
ER-9	1157								7.6							
ER-10									7.6							
TOTALS	1349						205		45.6		1					

▲ FROM STATION 35+00 TO 43+50

TABULATION OF EROSION CONTROL FACILITIES (CITY OF THORNTON)

SHEET NO.	** SILT FENCE		** TEMPORARY FENCE		SOIL RETENTION BLANKET (SPECIAL)		SOIL RETENTION BLANKET (STRAW/COCONUT)		** RIPRAP (9 INCH) (SEDIMENT TRAP)		STORM DRAIN * INLET PROTECTION (DROP INLET BLOCK AND GRAVEL FILTER)		NO. 3 COARSE AGGREGATE (SEE NOTE 3)		GEOTEXTILE (DRAINAGE) (CLASS A) (SEE NOTE 3)	
	L.F.		L.F.		S.Y.		S.Y.		C.Y.		EACH		C.Y.		S.Y.	
	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
ER-3 ■					123				15.2							
ER-4	976		770		475				30.4							
ER-5	715		331						7.6							
ER-6	466		468													
TOTALS	2157		1569		598				53.2							

■ FROM STATION 43+50 TO 47+00

NOTES

- FOR DETAILS, SEE STANDARD M-208-1, TEMPORARY EROSION CONTROL.
  - SEE TABULATION OF STORM SEWER SYSTEM SHEETS FOR RIPRAP QUANTITIES FOR OUTLET PROTECTION.
  - IT IS ESTIMATED THAT FOUR STABILIZED CONSTRUCTION ENTRANCES WILL BE REQUIRED. EACH ENTRANCE WILL REQUIRE APPROXIMATELY 26 CY OF NO. 3 COARSE AGGREGATE AND 160 SY OF GEOTEXTILE (DRAINAGE) (CLASS A) AS SHOWN ON ED-1. COARSE AGGREGATE AND GEOTEXTILE (CLASS A) WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE PAID FOR AS 208 STABILIZED CONSTRUCTION ENTRANCE.
  - SEDIMENT REMOVAL AND DISPOSAL SHALL BE INCLUDED IN THE COST OF THE EROSION CONTROL BID ITEMS. EROSION CONTROL BID ITEMS INCLUDE INSTALLION/CONSTRUCTION, MAINTENANCE AND REMOVAL.
  - EROSION CONTROL SUPERVISION IS REQUIRED ON THIS PROJECT AND WILL BE PAID FOR AS EROSION CONTROL SUPERVISOR, LUMP SUM.
  - THE STORMWATER MANAGEMENT PLAN IS A GUIDE FOR GENERALIZED IMPLEMENTATION OF BEST MANAGEMENT PRACTICES DURING CONSTRUCTION AS SHOWN RELATIVE TO THE FINAL ALIGNMENT. THE SWMP DOES NOT TAKE INTO CONSIDERATION ANY CHANGES NEEDED DURING PHASES OR INTERIM CONDITIONS, TO ACCOMPLISH THE FINAL ALIGNMENT. THE CONTRACTOR SHALL MODIFY THE STORMWATER MANAGEMENT PLAN AND BEST MANAGEMENT PRACTICES IN THE FIELD, THROUGH-OUT THE DURATION OF ALL PROJECT STAGES, TO FULLY CONTAIN SEDIMENT FROM LEAVING THE PROJECT SITE AND TO PREVENT EROSION THROUGH OUT THE PROJECT.
  - STOCKPILE AREAS WILL BE DESIGNATED BY THE ENGINEER. SILT FENCE SHALL BE PLACED AT THE TOE OF ALL STOCKPILES AND IS INCLUDED IN THE COST OF THE WORK.
  - THE CONTRACTOR SHALL PROTECT ALL STORM DRAIN FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE & PROPERLY DISPOSE OF ALL WATER PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM DRAIN SYSTEM IS PROHIBITED.
  - UNLESS CONFINED IN A PREDEFINED, BERMED CONTAINMENT AREA, THE CLEANING OF CEMENT TRUCK DELIVERY CHUTES IS PROHIBITED AT THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM DRAINAGE SYSTEM IS PROHIBITED. WASHING OUT OF CONCRETE TRUCKS SHALL BE LIMITED TO SPECIFIC SITES PRE-APPROVED BY THE ENGINEER. THESE SITES SHALL BE BERMED OR CONTAINED SITES THAT DO NOT ALLOW CONCRETE WASTE-WATER TO ENTER INTO THE STORM DRAINAGE SYSTEMS. AFTER ALL CONCRETE OPERATIONS ARE COMPLETE, THESE AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR, AT NO COST TO THE PROJECT.
  - THE LOCATION OF WHERE THE CONCRETE TRUCKS ARE EMPTIED AND WASHED OUT SHALL BE APPROVED BY THE ENGINEER. IT IS ESTIMATED THAT 2 EACH OF CONCRETE WASHOUT STRUCTURES SHALL BE REQUIRED.
  - WHENEVER SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD, THE ROAD SHALL BE CLEANED AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR SWEEPING AND BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA AT NOT COST TO THE PROJECT. STREET WASHING SHALL NOT BE ALLOWED UNTIL AFTER SEDIMENT IS REMOVED IN THIS MANNER. STORM DRAIN INLET PROTECTIVE MEASURE SHALL BE IN PLACE PRIOR TO THE TIME OF STREET WASHING. WORK SHALL BE INCLUDED IN THE COST OF THE WORK.
  - SOIL RETENTION BLANKETS SHALL BE PLACED IN THE FLOW LINES OF DITCHES AND SWALES STEEPER THAN 2% AND ARE REQUIRED ON ALL SLOPES 3:1 OR GREATER.
  - THESE QUANTITIES HAVE BEEN TAKEN FORWARD TO THE SUMMARY OF APPROXIMATE QUANTITIES.
  - FOR DETAILS, SEE ED-1.
  - SEE LANDSCAPE PLANS FOR SEEDING, FERTILIZER AND MULCHING QUANTITIES.
  - SEDIMENT TRAPS ARE NOT TO BE REMOVED UNLESS DIRECTED BY THE ENGINEER.
- \* ALL MATERIAL, LABOR, AND SEDIMENT REMOVAL SHALL BE INCLUDED IN THE COST OF THE ITEM. THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.
- \*\* THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.

NOTE:

THE CONTRACTOR SHALL NOT STORE EQUIPMENT, MAINTAIN EQUIPMENT, OR REFUEL EQUIPMENT WITHIN 100 FEET OF ANY WETLANDS.

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Computer File Information		Index of Revisions		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	136TH AVENUE AT I-25 INTERCHANGE STORMWATER MANAGEMENT PLAN	Project No./Code
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**SPECIAL NOTES**

- SEEDING OF ALL DISTURBED LANDSCAPE/EMBANKMENT AREAS SHALL OCCUR WITHIN 14 DAYS. IT IS ESTIMATED THAT SEVERAL MOBILIZATIONS FOR SOIL PREPARATION (SPECIAL), TOPSOIL, SEEDING AND MULCHING (WEED FREE) WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PRICE OF THE WORK.
- THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THE AREAS WITHIN THE LIMITS OF DISTURBANCE OR THE TOES OF SLOPES.
- SILT FENCE AND EROSION BALE (WEED-FREE) AREAS SHALL BE INSPECTED CONTINUOUSLY AND THE TRAPPED SEDIMENT REMOVED AND RELOCATED TO THE PROPOSED LANDSCAPE AREAS OR TO A DESIGNATED TOPSOIL STOCKPILE AREA, EVERY WEEK AND/OR AFTER EVERY STORM.
- THE CONTRACTOR SHALL SEED AND FERTILIZE THE OPEN DISTURBED AREAS AND PROVIDE IRRIGATION WATER TO THESE AREAS UNTIL A GROUND COVER IS ESTABLISHED.
- EROSION CONTROL MEASURES MUST BE IMPLEMENTED BEFORE CONSTRUCTION AND GRADING OPERATIONS BEGIN.
- MATERIALS THAT ARE ANTICIPATED TO BE HANDLED AT THE SITE ARE FERTILIZER AND MATERIALS FOR CONSTRUCTION EQUIPMENT SUCH AS FUEL, OIL AND HYDRAULIC FLUIDS. ALL OF THESE MATERIALS AND OTHERS THAT ARE HAZARDOUS SHALL BE STORED OR HANDLED IN A COVERED AREA WITHIN THE PROJECT LIMITS. THE COVERED AREA SHALL BE DESIGNED TO CONFINED ANY SPILL FOR IMMEDIATE REMOVAL AND DISPOSAL AT A SUITABLE PLACE. ALL SPILLS ARE TO BE REPORTED TO THE SWMP ADMINISTRATOR. FERTILIZER SHALL NOT BE BROUGHT TO THE SITE UNTIL JUST PRIOR TO APPLICATION. ABSORBENTS FOR FUEL AREAS AND CONTAINERS FOR USED ABSORBENTS SHALL BE MADE AVAILABLE. IN THE EVENT OF A MAJOR SPILL, THE COLORADO DEPARTMENT OF HEALTH SHALL BE CONTACTED.
- VEHICLE WASHING SHALL NOT BE ALLOWED AT THE SITE.
- CONSTRUCTION DEBRIS SUCH AS BROKEN CONCRETE AND ASPHALT SHALL BE HAULED OFF TO A SUITABLE LANDFILL OR RECYCLED. TRASH AND WASTE PRODUCED DURING THE CONSTRUCTION SHALL BE PLACED IN ON-SITE DUMPSTERS AND PERIODICALLY HAULED OFF TO A LANDFILL. PORTABLE TOILETS SHALL BE PROVIDED ON-SITE AND SHALL BE MAINTAINED ON A REGULAR BASIS. THE ITEMS THAT DO NOT HAVE A BID QUANTITY SHALL BE INCIDENTAL TO THE COST OF THE PROJECT.
- WATER SHALL BE USED AS A DUST PALLIATIVE.
- A THOROUGH INSPECTION OF THE STORM WATER MANAGEMENT SYSTEM SHALL BE PERFORMED EVERY 14 DAYS AND AFTER ANY PRECIPITATION OR SNOW MELT EVENT THAT MAY HAVE CAUSED EROSION. PERIODIC INSPECTIONS SHALL ALSO INCLUDE INSPECTING EQUIPMENT FOR LEAKS AND REVIEWING EQUIPMENT MAINTENANCE PRACTICES. ALL INSPECTIONS AND MAINTENANCE SHALL BE DOCUMENTED BY THE PROJECT SWMP ADMINISTRATOR AND MADE AVAILABLE TO THE COLORADO DEPARTMENT OF HEALTH UPON REQUEST.
- PRIOR TO WINTER SHUTDOWN: ALL COMPLETED SLOPES SHALL BE TOP SOILED SEEDED, MULCHED AND TACKIFIED. UNCOMPLETED SLOPES SHALL BE MULCHED WITH 2 TONS OF MULCHING (WEED FREE) PER ACRE, MECHANICALLY CRIMPED INTO THE TOPSOIL IN COMBINATION WITH AN ORGANIC MULCH TACKIFIER PER 213.
- WHEN DISTURBED AREAS EXCEED LIMITS REFERENCED IN 208 AND DURING THE SUMMER WHEN SEEDING IS NOT ALLOWED, APPLY 2 TONS OF MULCHING (WEED FREE) MECHANICALLY CRIMPED INTO THE SOIL WITH AN ORGANIC TACKIFIER PER SECTION 213
- DISTURBED SURFACES SHALL BE LEFT IN A ROUGHENED CONDITION AT ALL TIMES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEDING OF ALL AREAS DISTURBED OUTSIDE THE PROJECT LIMITS AT NO ADDITIONAL CHARGE TO THE PROJECT.
- IT IS ESTIMATED THAT 160 HOURS OF BLADING AND 40 HOURS OF BACKHOE MAY BE REQUIRED FOR MISCELLANEOUS EROSION CONTROL WORK AS NEEDED OR DIRECTED BY THE ENGINEER. THIS WORK MAY INCLUDE (BUT IS NOT LIMITED TO): SLOPE ROUGHENING, DITCH GRADING, ETC. THE BLADING SHALL UTILIZE MOTOR GRADERS WITH A HORSEPOWER RATING OF 120. THE BACKHOE SHALL UTILIZE A WHEEL LOADER WITH A HORSEPOWER RATING OF 90. THIS WORK SHALL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
- NEWLY CONSTRUCTED INLETS SHALL BE PROTECTED IMMEDIATELY UPON COMPLETION OF INLET CONSTRUCTION.

**PHASING PLANS**

\* THE CONTRACTOR'S PHASING AND DETOUR PLANS SHALL INCORPORATE EROSION CONTROL MEASURES.

**SPECIAL CONDITIONS**

**A. STRUCTURAL CROSSINGS**

- RESTORE STREAM PROFILE, SUBSTRATE AND HABITAT VALUES TO SIMILAR TO, OR BETTER THAN, PRECONSTRUCTION CONDITIONS, AS PRACTICABLE.
- WATER WILL BE DIVERTED AROUND OR PIPED THROUGH THE ACTIVE CONSTRUCTION SITE TO MINIMIZE WATER QUALITY CONTAMINATION, SILTATION, AND SEDIMENTATION.
- EMBED AND BACKFILL TEMPORARY OR PERMANENT CULVERTS 12 INCHES INTO THE CHANNEL SUBSTRATE UNLESS OTHERWISE STIPULATED.
- HAY OR STRAW (TO A DEPTH OF NOT LESS THAN 24 INCHES) OR GEOTEXTILE FABRIC SHALL BE PLACED OVER WETLANDS PRIOR TO CONSTRUCTION IN CONNECTION WITH TEMPORARY FILLS.
- ALL TEMPORARY FILL WILL BE REMOVED TO AN UPLAND SITE UPON COMPLETION OF WETLAND OR INSTREAM CONSTRUCTION ACTIVITIES.

**B. BANK STABILIZATION**

- THE USE OF VEGETATION (I.E., WILLOWS) FOR STABILIZATION SHALL BE MADE WHERE PRACTICABLE.
- WHERE POSSIBLE, ALL WORK SHALL BE DONE FROM ABOVE, NOT IN THE STREAM.
- IN CLEARING TREES AND SHRUBS TO FACILITATE BANK WORK, PLANTS SHOULD BE TRIMMED ABOVE GROUND WITHOUT REMOVING THE ROOT MASS.
- RIPRAP MATERIALS SHOULD BE DURABLE ANGULAR ROCK FREE FROM LARGE QUANTITIES OF ORGANIC MATERIAL AND ERODIBLE MATERIAL SUCH AS DIRT AND GRAVEL. ROUNDED RIVER COBBLE OR STONE IS NOT ACCEPTABLE AS RIPRAP.
- IF GABIONS ARE USED IN BANK STABILIZATION, THE GABION SHOULD BE CLEAN, DURABLE ROCK MATERIAL FREE FROM SAND OR GRAVEL. RIVER COBBLE IS AN ACCEPTABLE MATERIAL FOR FILLER PROVIDED IT IS LARGE ENOUGH TO STAY WITHIN THE MESH.

**C. STREAM ENCROACHMENT**

- WHERE POSSIBLE, ALL WORK SHALL BE DONE FROM ABOVE, NOT IN THE STREAM.
- IN CLEARING VEGETATION TO FACILITATE BANK WORK, TREES AND SHRUBS SHOULD BE TRIMMED ABOVE GROUND WITHOUT REMOVING THE ROOT MASS.

**D. CHANNEL RE-ALIGNMENT**

- STREAM PROFILES, SUBSTRATE AND AQUATIC HABITAT VALUES SHOULD BE RESTORED EQUAL TO OR BETTER THAN PRECONSTRUCTION CONDITIONS AS PRACTICABLE.
- WATER SHOULD BE DIVERTED AROUND OR PIPED THROUGH THE ACTIVE CONSTRUCTION SITE TO MINIMIZE WATER QUALITY CONTAMINATION, SILTATION, AND SEDIMENTATION.
- ALL TEMPORARY FILL WILL BE REMOVED TO AN UPLAND SITE UPON COMPLETION OF WETLAND OR INSTREAM CONSTRUCTION ACTIVITIES.
- EXISTING STREAM LENGTH AND WIDTH SHOULD BE MAINTAINED IN THE RE-ALIGNMENT STREAM CHANNEL.
- EXISTING OR COMPARABLE STREAM BOTTOM MATERIAL SHOULD BE USED IN THE RE-ALIGNMENT STREAM CHANNEL.
- WHERE POSSIBLE, A REASONABLE VEGETATED BUFFER AREA SHOULD BE MAINTAINED BETWEEN THE STREAM AND THE HIGHWAY.
- HIGHWAY RUNOFF SHOULD BE DIVERTED AWAY FROM THE STREAM CHANNEL AS PRACTICABLE TO AVOID SILTATION-POLLUTION PROBLEMS. WHERE IT IS NECESSARY TO DIVERT DIRECTLY INTO THE STREAM CHANNEL, WATER HOLDING OR SILTATION-FILTRATION BASINS OF ADEQUATE SIZE SHALL BE CONSTRUCTED AS PRACTICABLE.

**GENERAL CONDITIONS**

- TEMPORARY FILLS, SUCH AS COFFER DAMS AND TEMPORARY ROAD CROSSINGS USING IMPORTED MATERIAL, SHALL UTILIZE CLEAN, CHEMICALLY FREE FILL TO AVOID A SUBSTANTIAL INCREASE IN SUSPENDED SOLIDS OR POLLUTION. FILL MATERIAL WILL NOT BE OBTAINED FROM THE LIVE WATER AREA IN THE STREAM UNLESS APPROVED BY THE DEPARTMENT OF WILDLIFE.
- POINT SOURCE DISCHARGE OF EFFLUENT INTO THE STREAM FROM COFFER DAMS OR NEW CHANNEL CONSTRUCTION WILL BE AVOIDED.
- ALL REASONABLE MEASURES SHALL BE TAKEN TO AVOID EXCESS APPLICATION AND INTRODUCTION OF CHEMICALS INTO AQUATIC ECOSYSTEMS. USE OF CHEMICALS SUCH AS SOIL STABILIZERS, DUST PALLIATIVES, STERILANTS, GROWTH INHIBITORS, FERTILIZERS, DEICING SALTS, ETC., DURING CONSTRUCTION AND MAINTENANCE OPERATIONS SHALL BE LIMITED TO APPROVED APPLICATION RATES.
- CONSTRUCTION STAGING AREAS SHALL BE LOCATED OUTSIDE OF THE AREA ADJACENT TO STREAMS, INCLUDING WETLANDS AND RIPARIAN AREAS.
- MEASURES SHALL BE TAKEN TO PREVENT SPILLED FUELS, LUBRICANTS, OR OTHER TOXIC MATERIALS FROM ENTERING AQUATIC ECOSYSTEMS.
- NO WET CONCRETE FROM PLACEMENT OF FORMS OR WASHING OF TRUCKS OR EQUIPMENT SHALL BE ALLOWED IN AQUATIC ECOSYSTEMS.
- EROSION CONTROL SHALL BE ADDRESSED ON ALL PROJECTS THAT INVOLVE WATER RELATED ENVIRONMENTS. TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AT THE EARLIEST PRACTICABLE TIME CONSISTENT WITH GOOD CONSTRUCTION PRACTICES AND SHALL BE MAINTAINED AS NECESSARY THROUGHOUT THE OPERATION OF THE PROJECT.
- INSTREAM WORK SHALL BE PERFORMED DURING LOW FLOWS AND THE USE OF HEAVY EQUIPMENT IN STREAMBEDS, ESPECIALLY IN LIVE OR FLOWING WATER, WILL BE MINIMIZED. RUBBER-TIRED VEHICLES SHOULD BE USED INSTREAM TO THE MAXIMUM EXTENT POSSIBLE IN ORDER TO MINIMIZE DAMAGE TO THE STREAM BOTTOM. WHERE PRACTICAL, EQUIPMENT SHALL BE OPERATED FROM BANKS OR SHOULDERS ABOVE RIPARIAN AND WETLAND AREAS.
- DURING THE PLANNING AND CONSTRUCTION OF A PROJECT, ALL MEASURES SHALL BE TAKEN TO AVOID DISTURBANCE TO EXISTING VEGETATION. SENSITIVE AREAS SHALL BE FENCED AS NECESSARY.
- IMMEDIATELY UPON COMPLETION OF A PROJECT, ALL DISTURBED AREAS ABOVE THE ORDINARY HIGH WATER MARK WILL BE REVEGETATED WITH APPROPRIATE PLANT SPECIES TO PROVIDE BANK STABILIZATION, EROSION CONTROL AND HABITAT REPLACEMENT. NATIVE PLANT SPECIES ARE PREFERRED. TEMPORARY SEEDING WILL BE DONE WHERE NECESSARY.

**APPROPRIATE PLANT SPECIES MEANS:**

- SPECIES LIKELY TO BECOME ESTABLISHED ON THE SITE;
- SPECIES PRESENT IN THE GENERAL VICINITY, OR CLOSELY RELATED SPECIES;
- SPECIES OF VALUE AS WILDLIFE HABITAT.

A JOINT AGENCY SPOT FIELD REVIEW OF SELECTED PROJECTS WILL BE USED TO DETERMINE REVEGETATION SUCCESS AFTER TWO GROWING SEASONS. THIS FIELD REVIEW WILL BE USED TO DETERMINE IF THE QUALITY AND QUANTITY OF ESTABLISHED VEGETATION INDICATES PROBABLE SUCCESS AND IF ADDITIONAL FIELD REVIEWS ARE NECESSARY. WHERE WETLANDS ARE INVOLVED A LONGER PERIOD OF REVIEW MAY BE NEEDED TO DETERMINE SUCCESSFUL VEGETATION OF THESE AREAS. IF POSSIBLE, A PHOTOGRAPH OF THE AREA PRIOR TO DISTURBANCE AND DURING THE GROWING SEASON WILL BE PROVIDED BY CDH FOR COMPARISON. A FINAL JOINT AGENCY FIELD REVIEW MAY BE CONDUCTED AFTER VEGETATION HAS BEEN ESTABLISHED IF DEEMED NECESSARY.

- TREES AND SHRUBS REMOVED DURING CONSTRUCTION SHALL BE REPLACED AS PRACTICABLE.
- BECAUSE OF THEIR IMPORTANCE TO WILDLIFE AND THE ENVIRONMENT, EVERY EFFORT WILL BE MADE TO REPLACE ALL WETLANDS.
- WHENEVER POSSIBLE, RIPRAP ABOVE THE HIGH WATER LINE SHALL BE COVERED WITH TOPSOIL AND RE-SEEDED.
- WHERE NECESSARY, SMALL CHECK DAMS OR LARGE ROCKS SHOULD BE USED TO DISSIPATE WATER VELOCITY, REDUCE EROSION, AND IMPROVE FISH HABITAT.
- STREAM CROSSING STRUCTURES SHALL NOT CONSTRICT THE STREAM FLOW SUCH THAT INCREASED WATER VELOCITIES UPSTREAM OR DOWNSTREAM DAMAGE THE STREAM CHANNEL OR BLOCK FISH MOVEMENT.

THE ABOVE CONDITIONS ADDRESS THE SENATE BILL 40 (SB 40).  
THEY ARE TO SERVE AS GUIDELINES FOR THE CONTRACTOR.



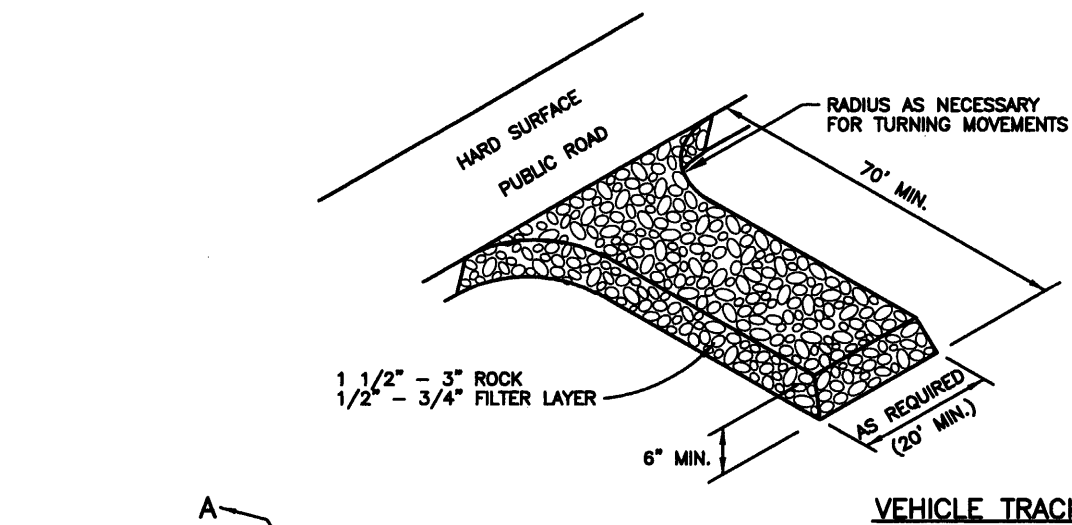
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Acad Ver. 2000i	Scale: N.T.S. Units: English	<input type="checkbox"/>						Sheet Number <b>283</b>	



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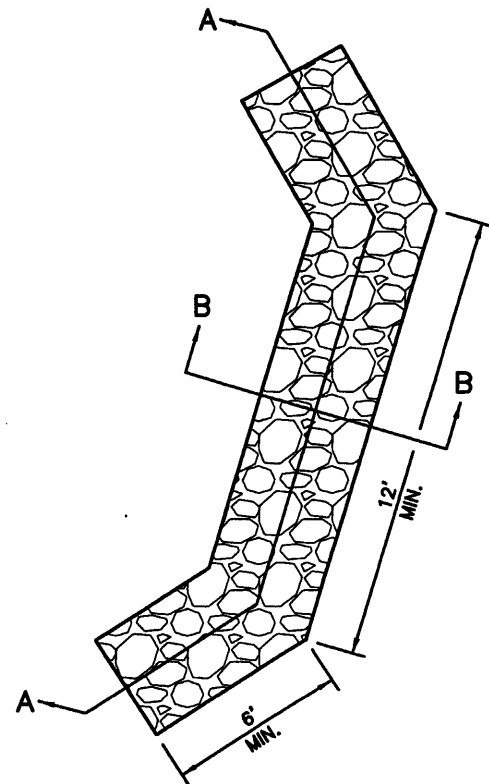
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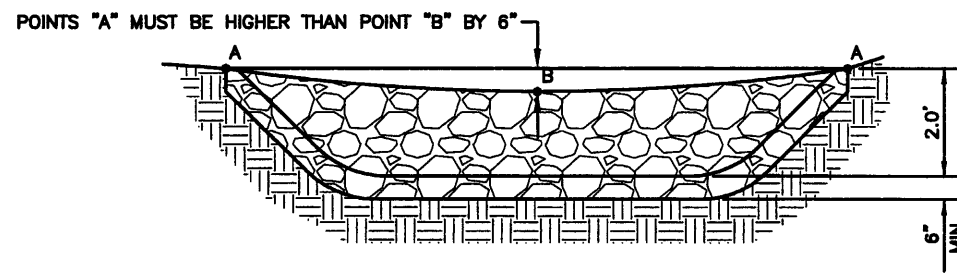
NOTES:

1. VEHICLE TRACKING CONTROL SHALL BE LOCATED AT HURON AND WASHINGTON STREET AS DIRECTED BY THE ENGINEER.
2. VEHICLE TRACKING CONTROL SHALL BE MAINTAINED AS NEEDED TO PREVENT ANY MATERIAL FROM BEING TRACKED ONTO PUBLIC ROADWAY.
3. SEDIMENT AND OTHER MATERIAL SPILLED, DROPPED OR TRACKED ONTO PUBLIC ROAD SHALL BE IMMEDIATELY REMOVED.

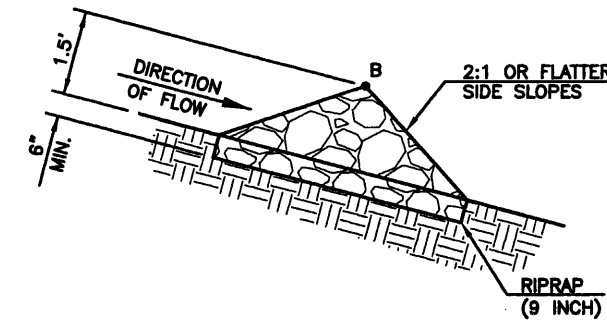
VEHICLE TRACKING CONTROL



PLAN VIEW



SECTION A-A



SECTION B-B

RIPRAP (9 INCH) (SEDIMENT TRAP) DETAIL



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Acad Ver. 2000i	Scale: N.T.S. Units: English							Sheet Number <b>284</b>	

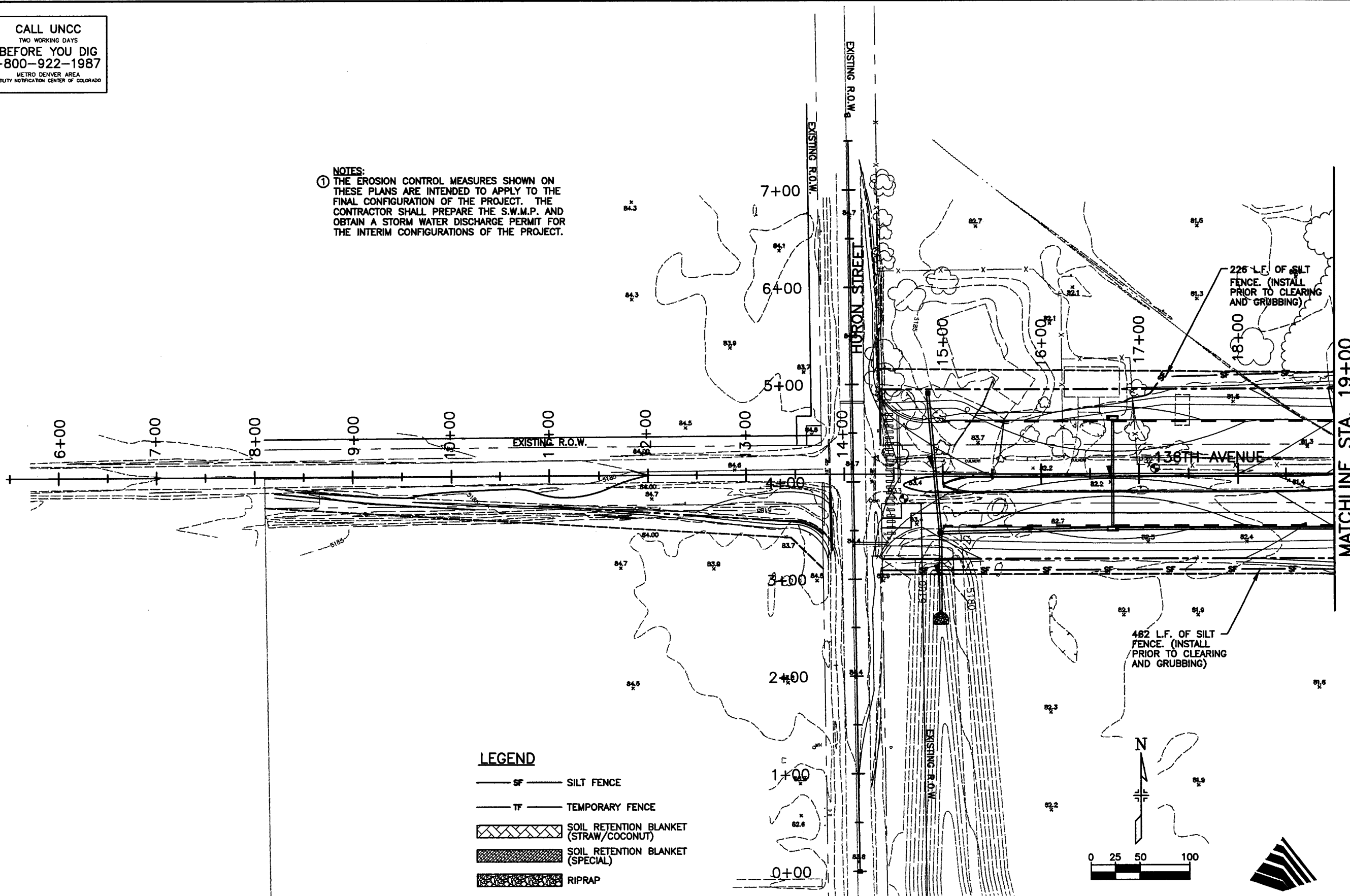
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**NOTES:**  
① THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS ARE INTENDED TO APPLY TO THE FINAL CONFIGURATION OF THE PROJECT. THE CONTRACTOR SHALL PREPARE THE S.W.M.P. AND OBTAIN A STORM WATER DISCHARGE PERMIT FOR THE INTERIM CONFIGURATIONS OF THE PROJECT.



**LEGEND**

- SF — SILT FENCE
- TF — TEMPORARY FENCE
- [Cross-hatched box] SOIL RETENTION BLANKET (STRAW/COCONUT)
- [Dotted box] SOIL RETENTION BLANKET (SPECIAL)
- [Stippled box] RIPRAP

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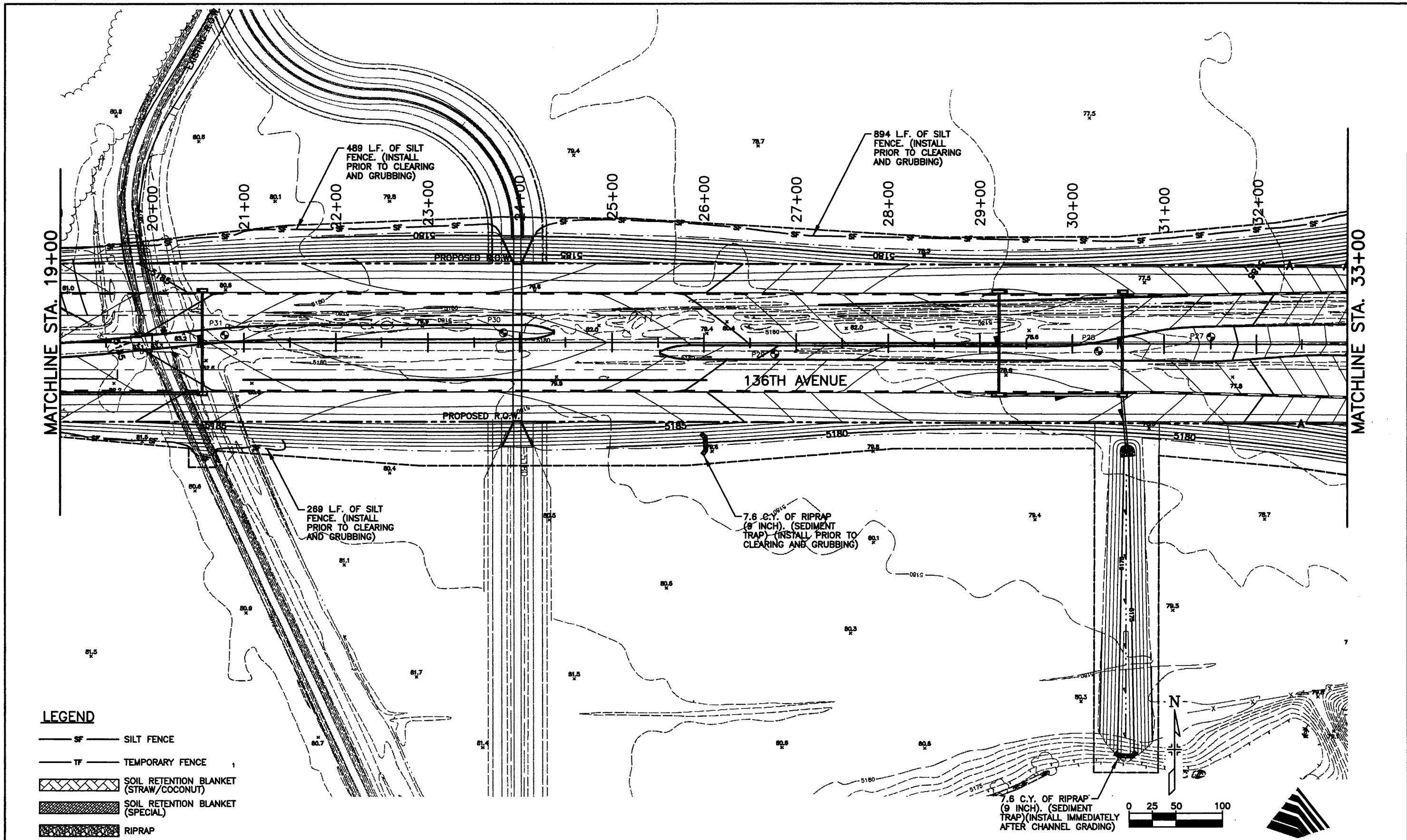
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Detailer:	JAC
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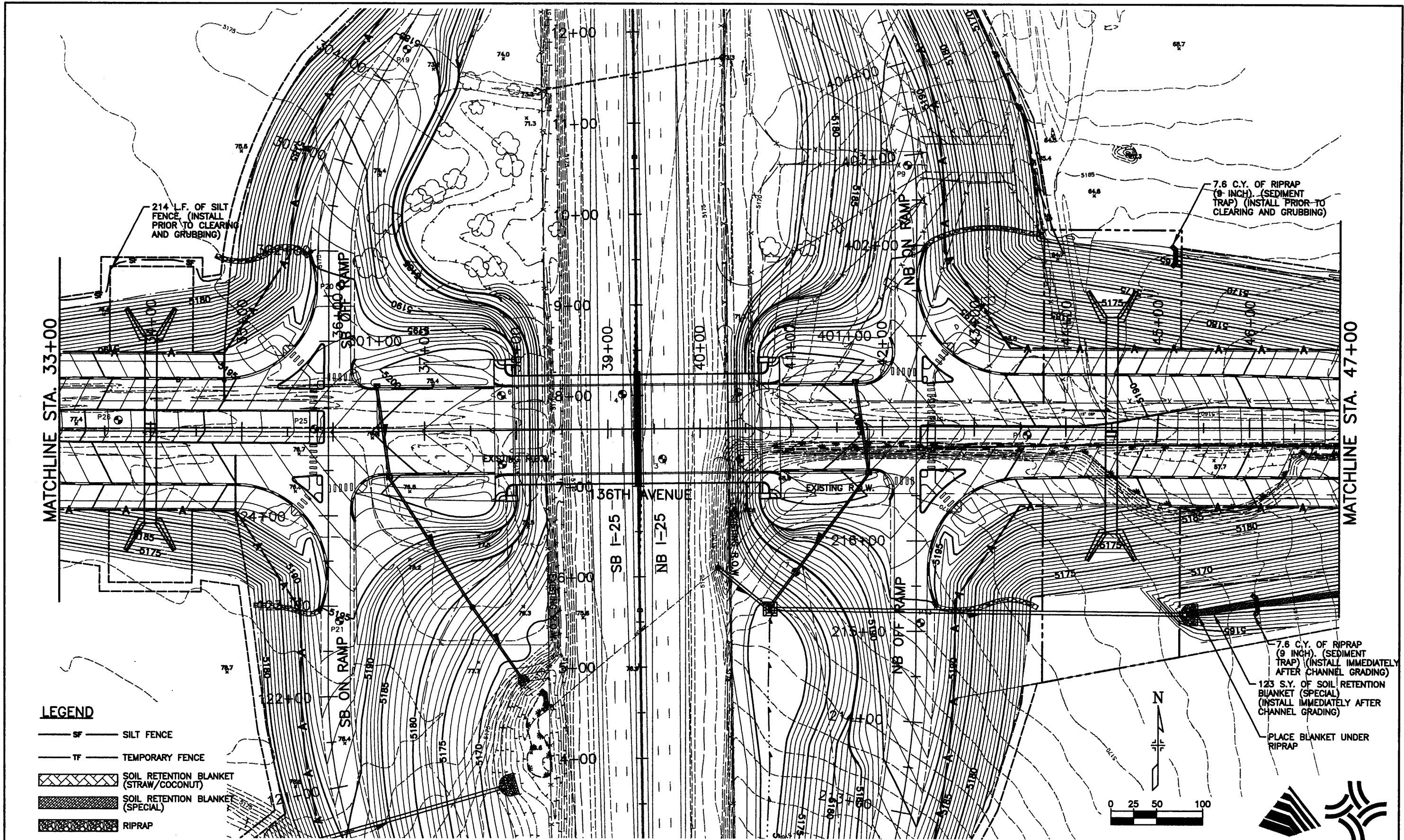
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Detailer:	JAC
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**LEGEND**

- SILT FENCE
- TEMPORARY FENCE
- SOIL RETENTION BLANKET (STRAW/COCONUT)
- SOIL RETENTION BLANKET (SPECIAL)
- RIPRAP

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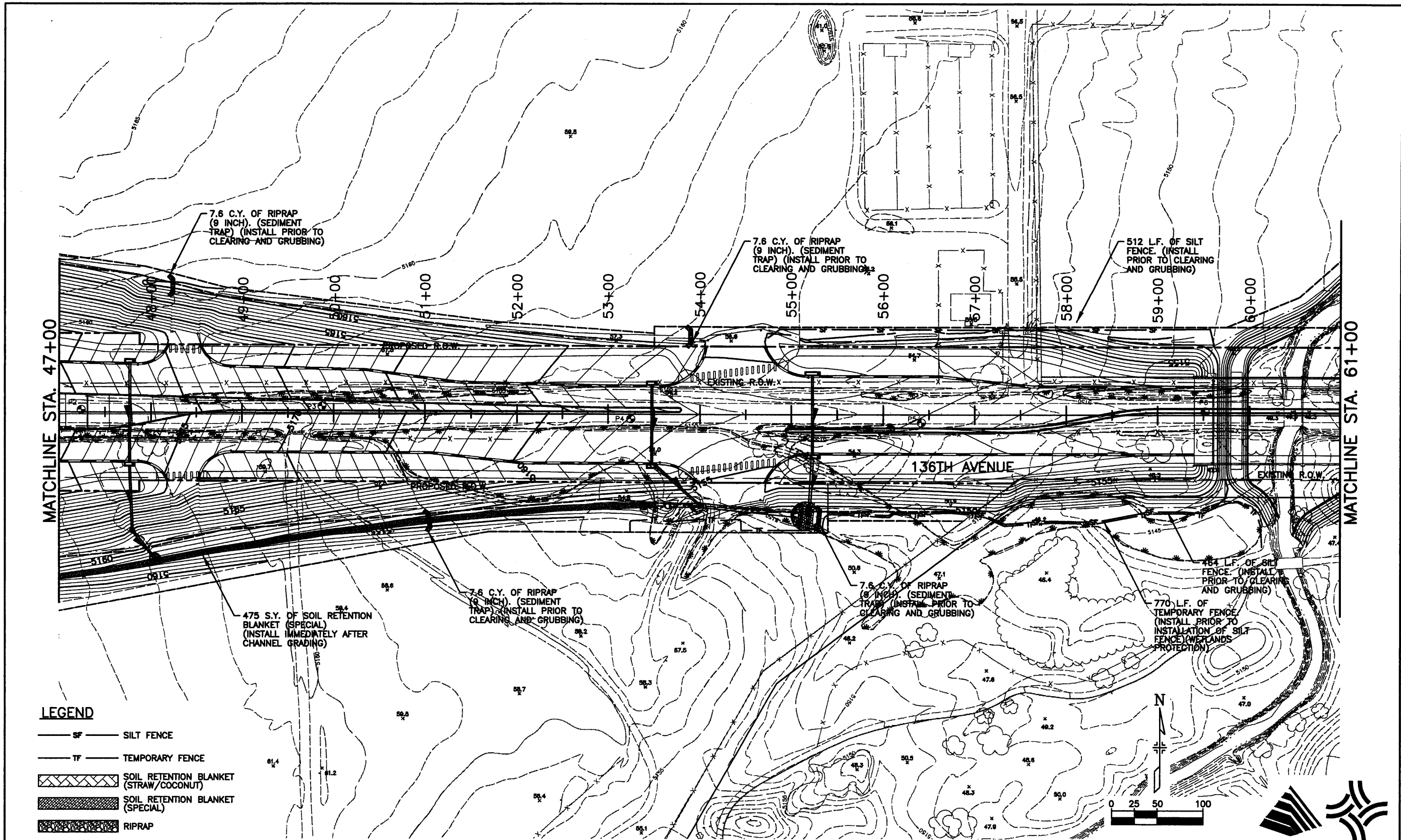
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Detailer:	JAC
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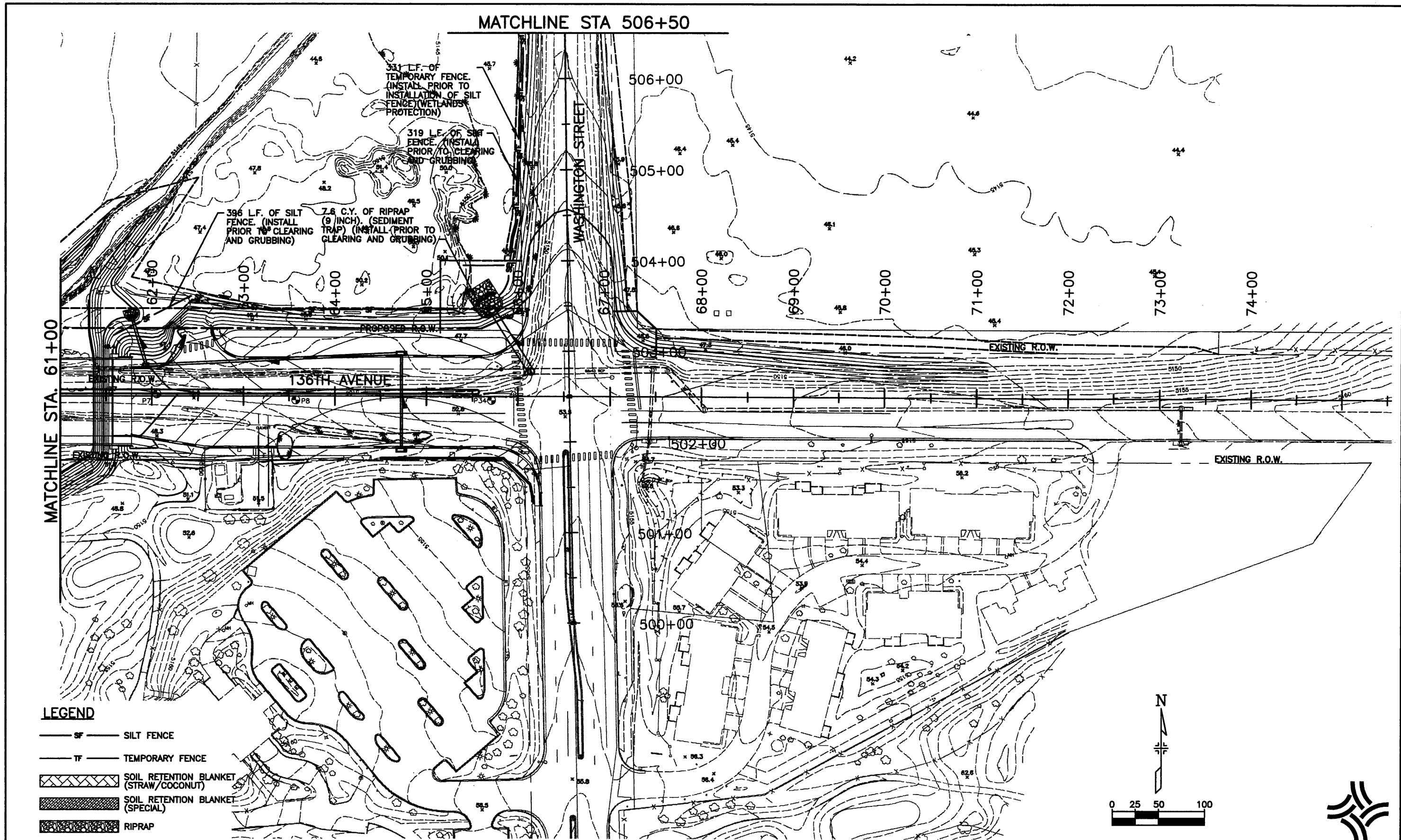
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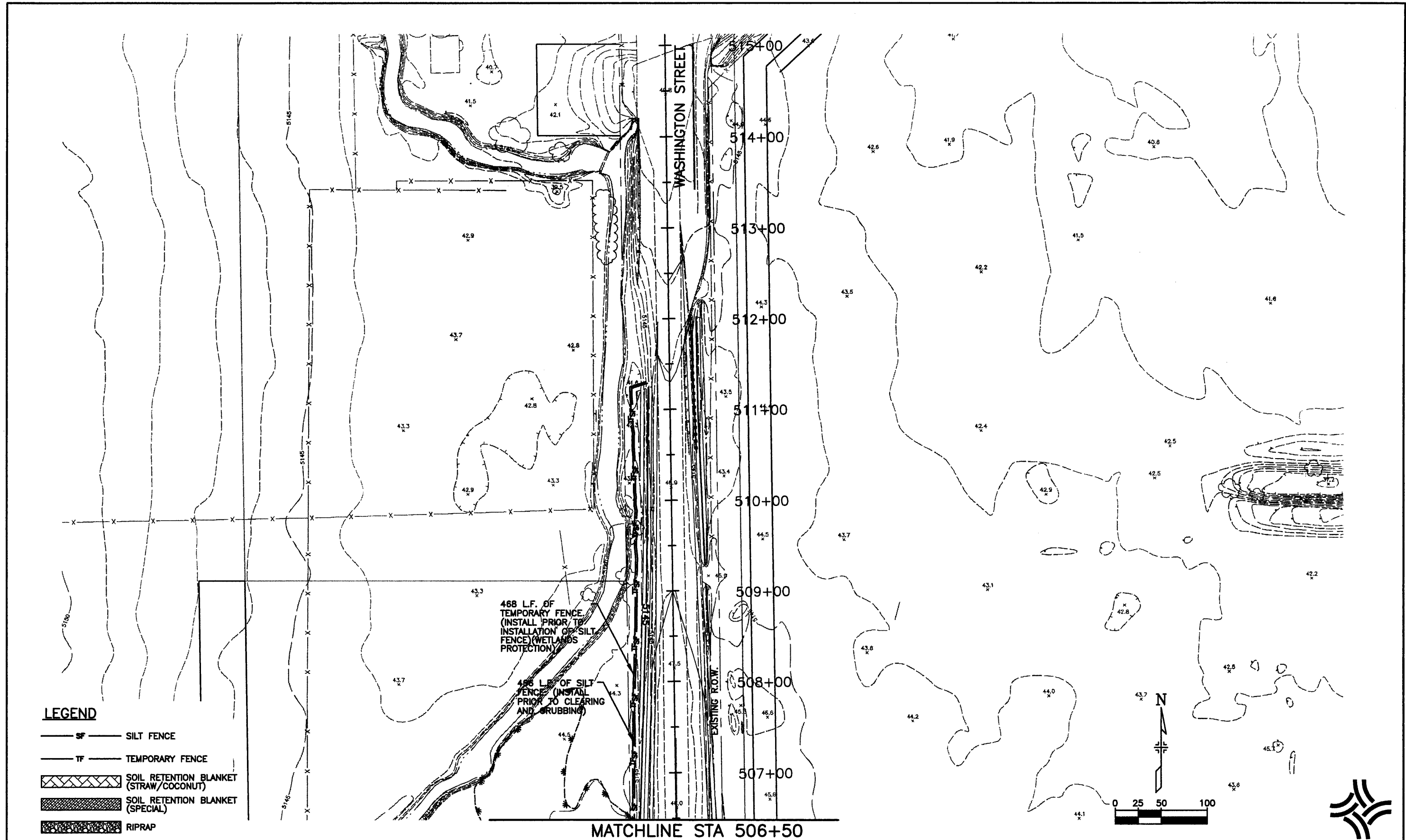
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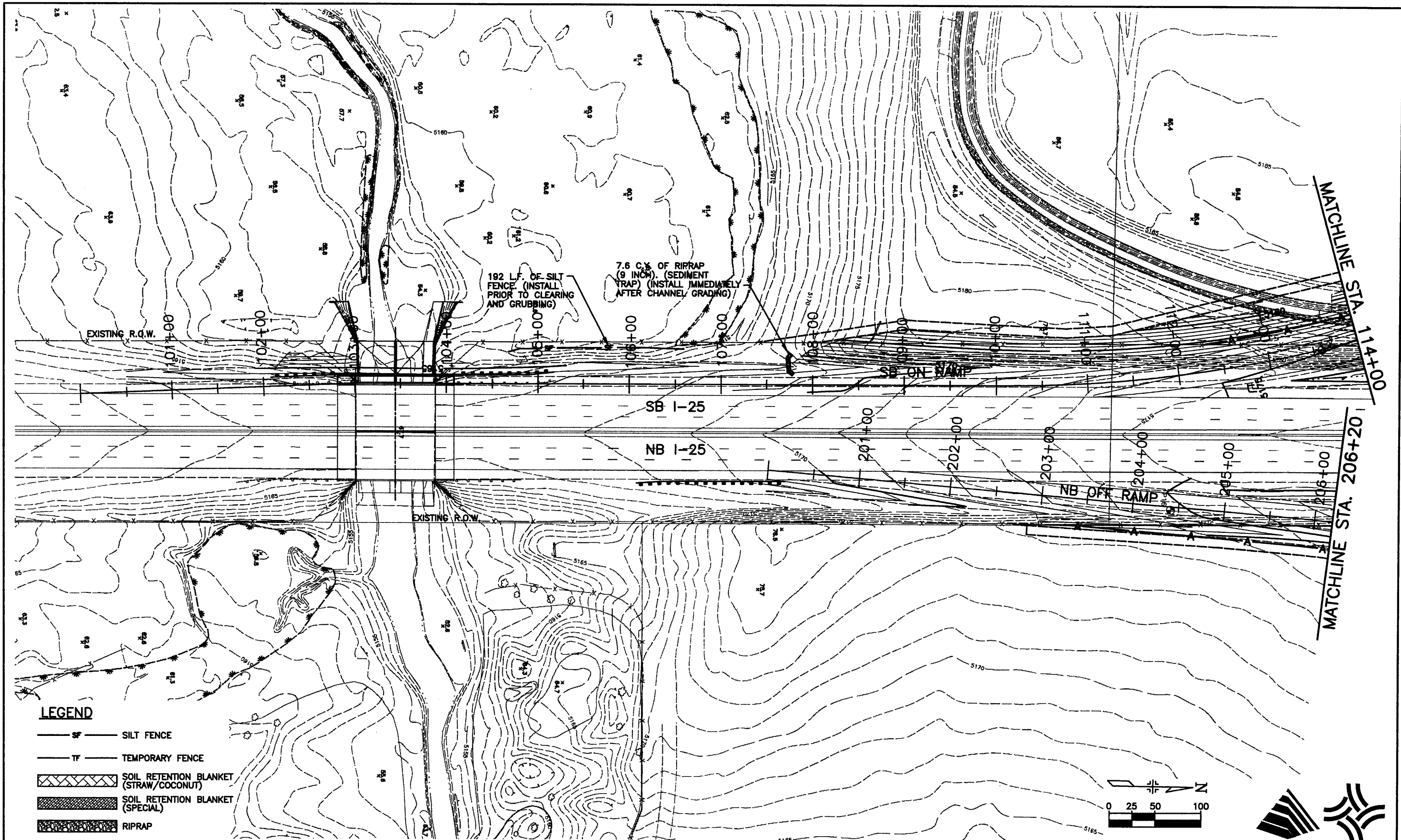
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**LEGEND**

- SILT FENCE
- TEMPORARY FENCE
- SOIL RETENTION BLANKET (STRAW/COCONUT)
- SOIL RETENTION BLANKET (SPECIAL)
- RIPRAP

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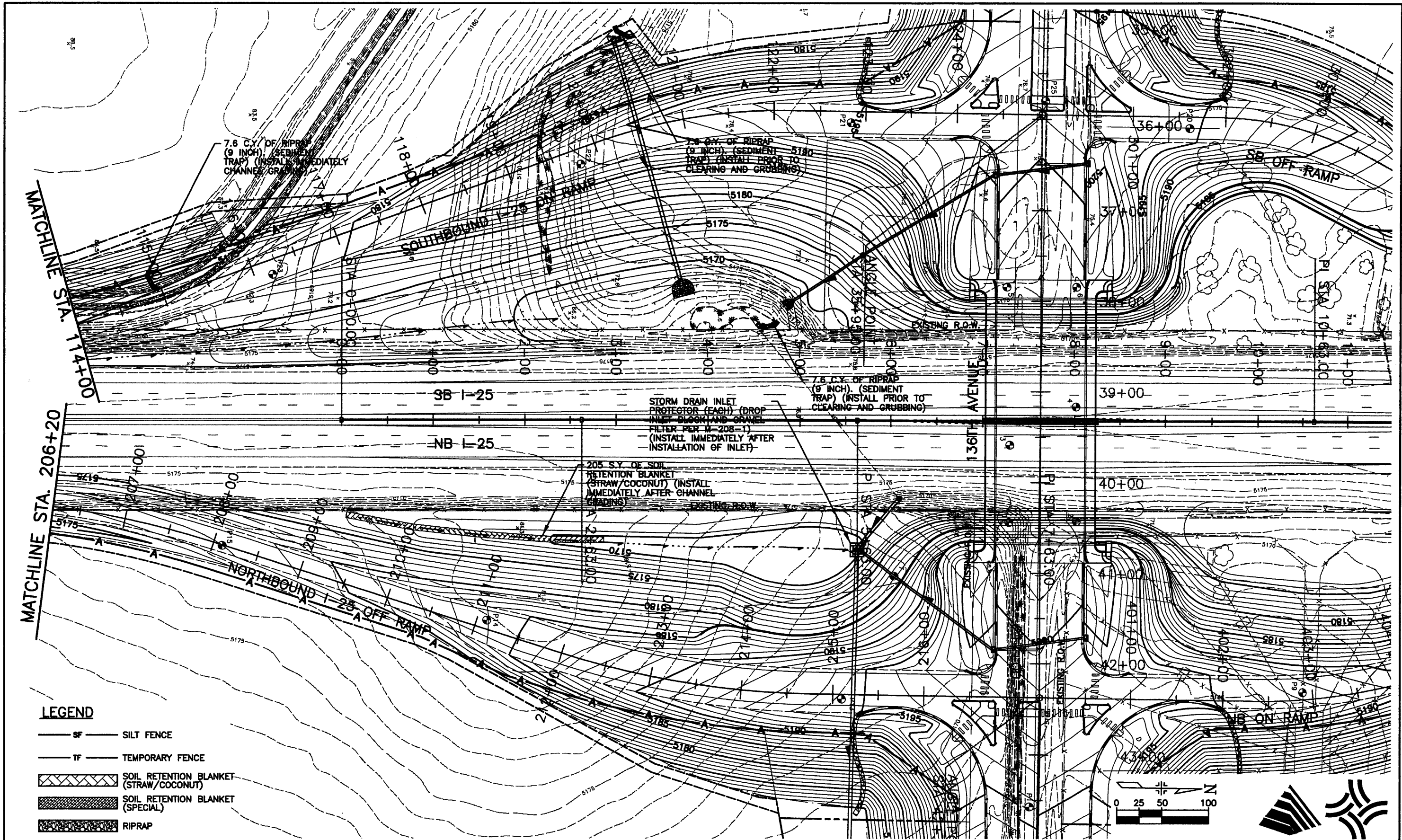


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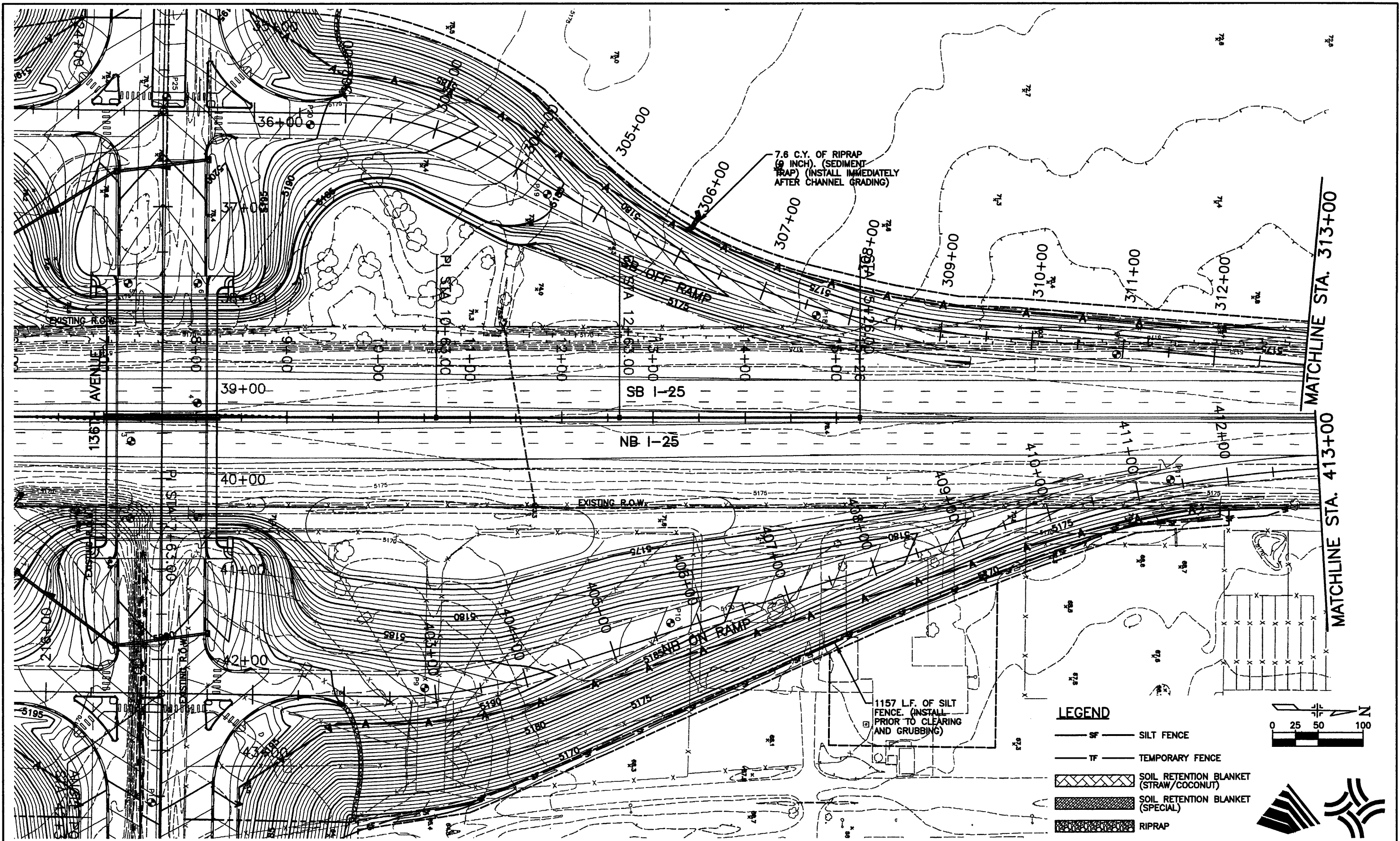
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**LEGEND**

- SF — SILT FENCE
- TF — TEMPORARY FENCE
- [Cross-hatch pattern] SOIL RETENTION BLANKET (STRAW/COCONUT)
- [Diagonal lines pattern] SOIL RETENTION BLANKET (SPECIAL)
- [Stippled pattern] RIPRAP

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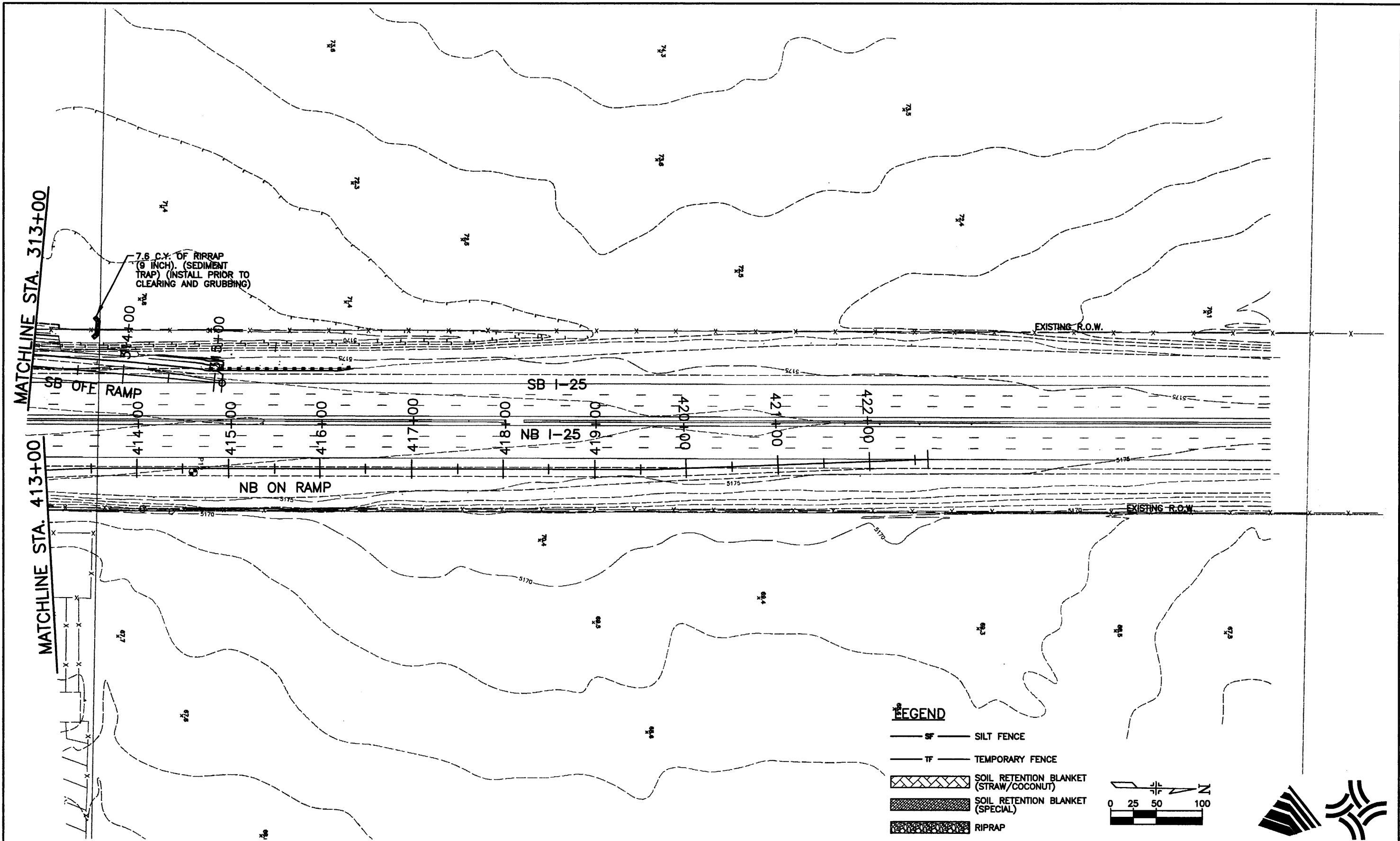
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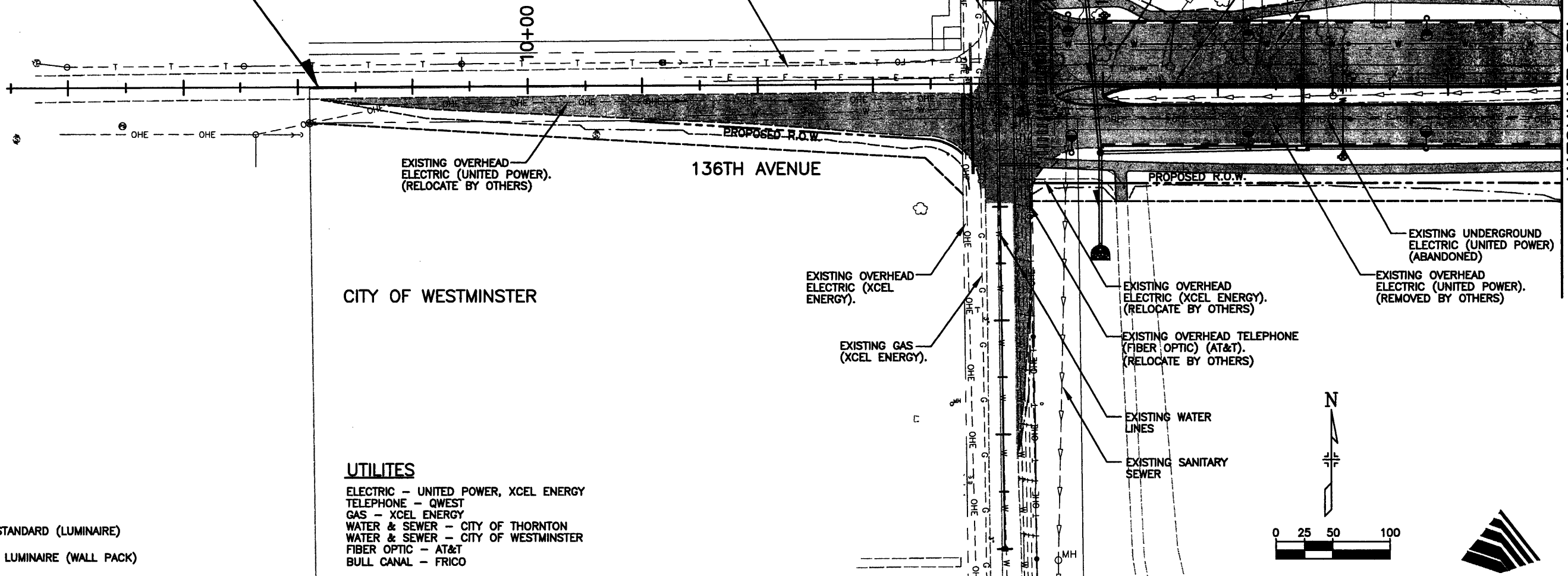


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BEGIN 136TH AVENUE  
STA 8+20

MATCHLINE STA. 19+00

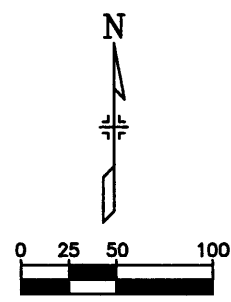


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- GAS - XCEL ENERGY
- WATER & SEWER - CITY OF THORNTON
- WATER & SEWER - CITY OF WESTMINSTER
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- BULL CANAL - FRICO

**LEGEND**

- LIGHT STANDARD (LUMINAIRE)
- BRIDGE LUMINAIRE (WALL PACK)



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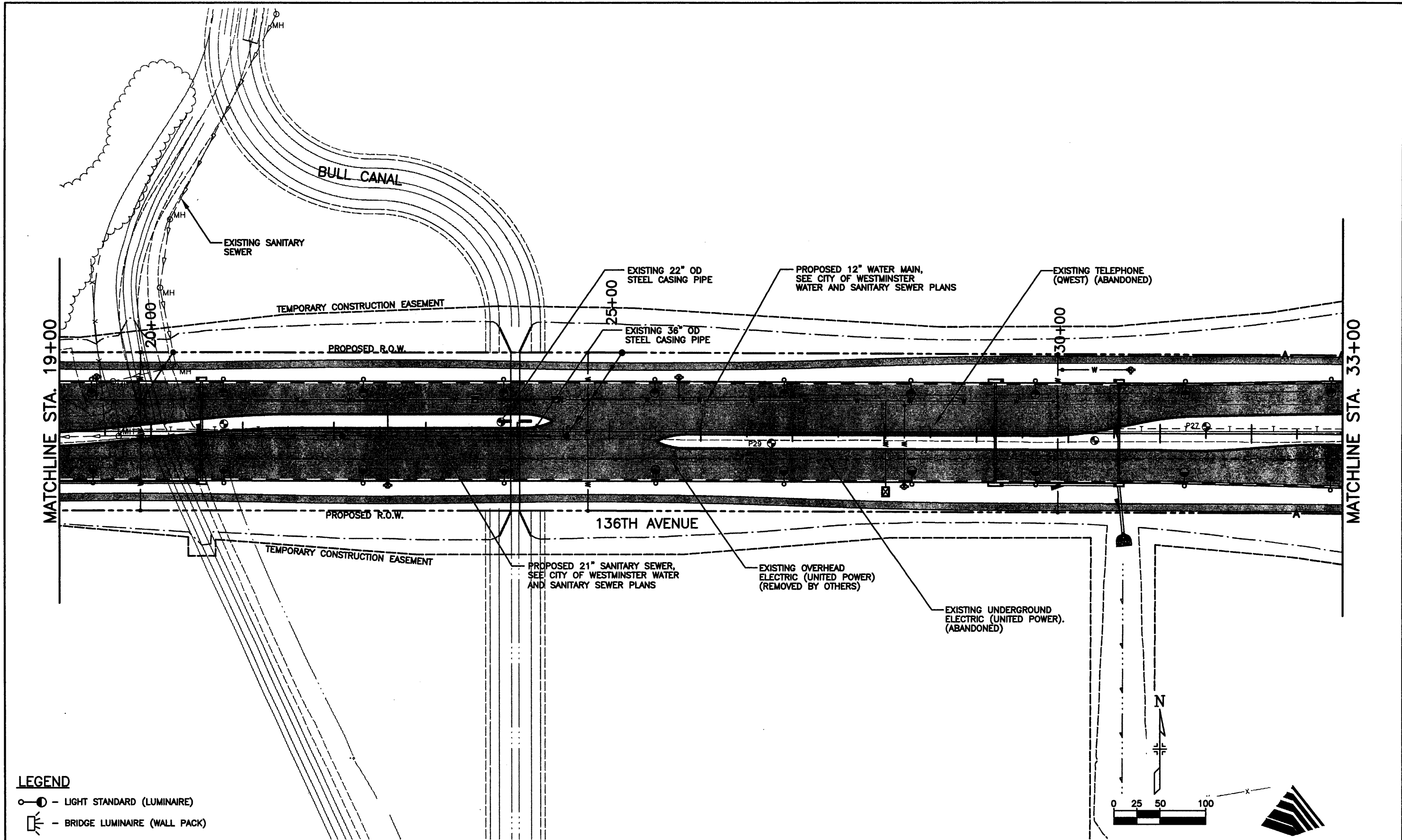
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Designer:	RKZ
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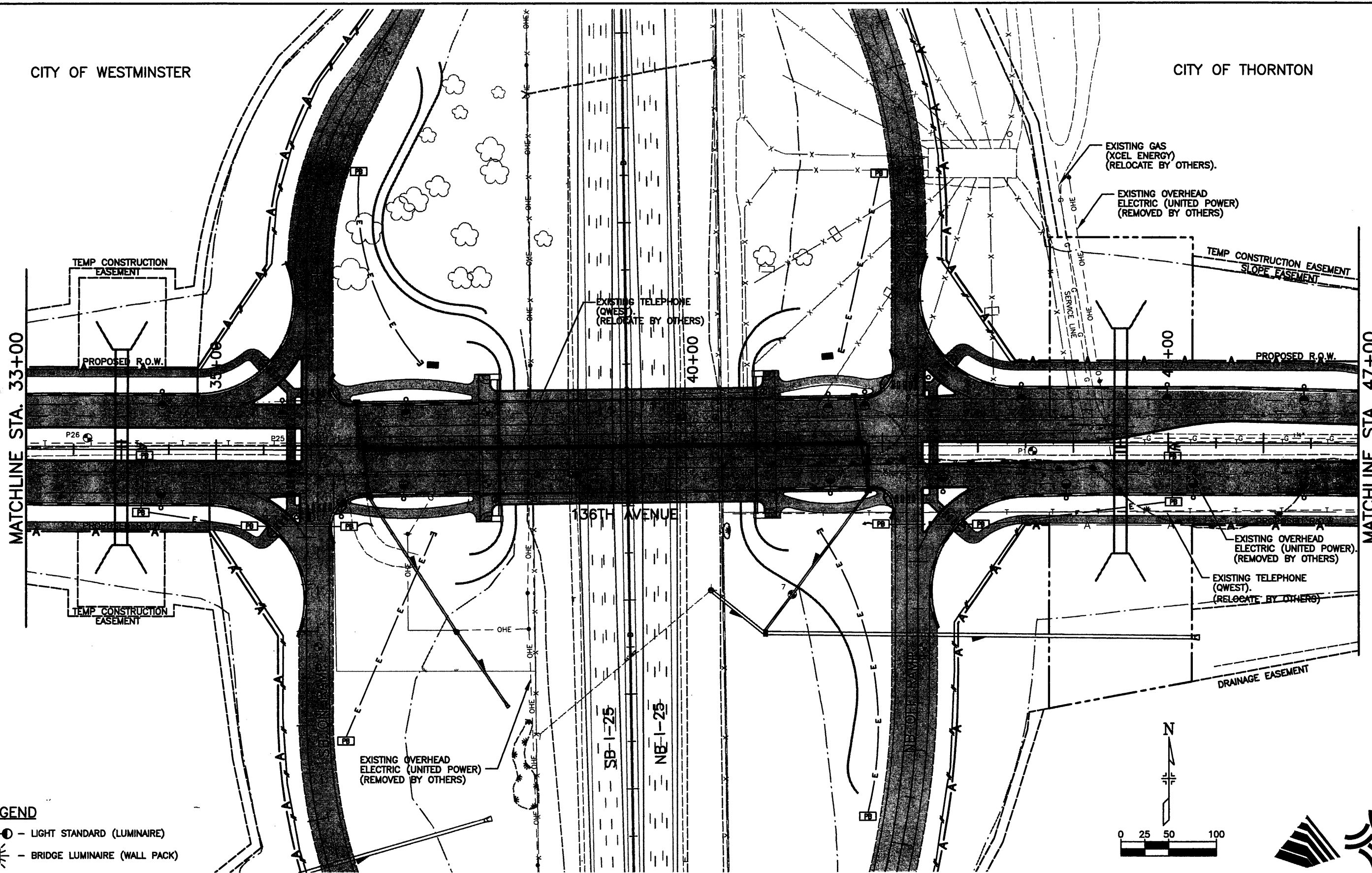
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**LEGEND**

- — LIGHT STANDARD (LUMINAIRE)
- ⊞ — BRIDGE LUMINAIRE (WALL PACK)

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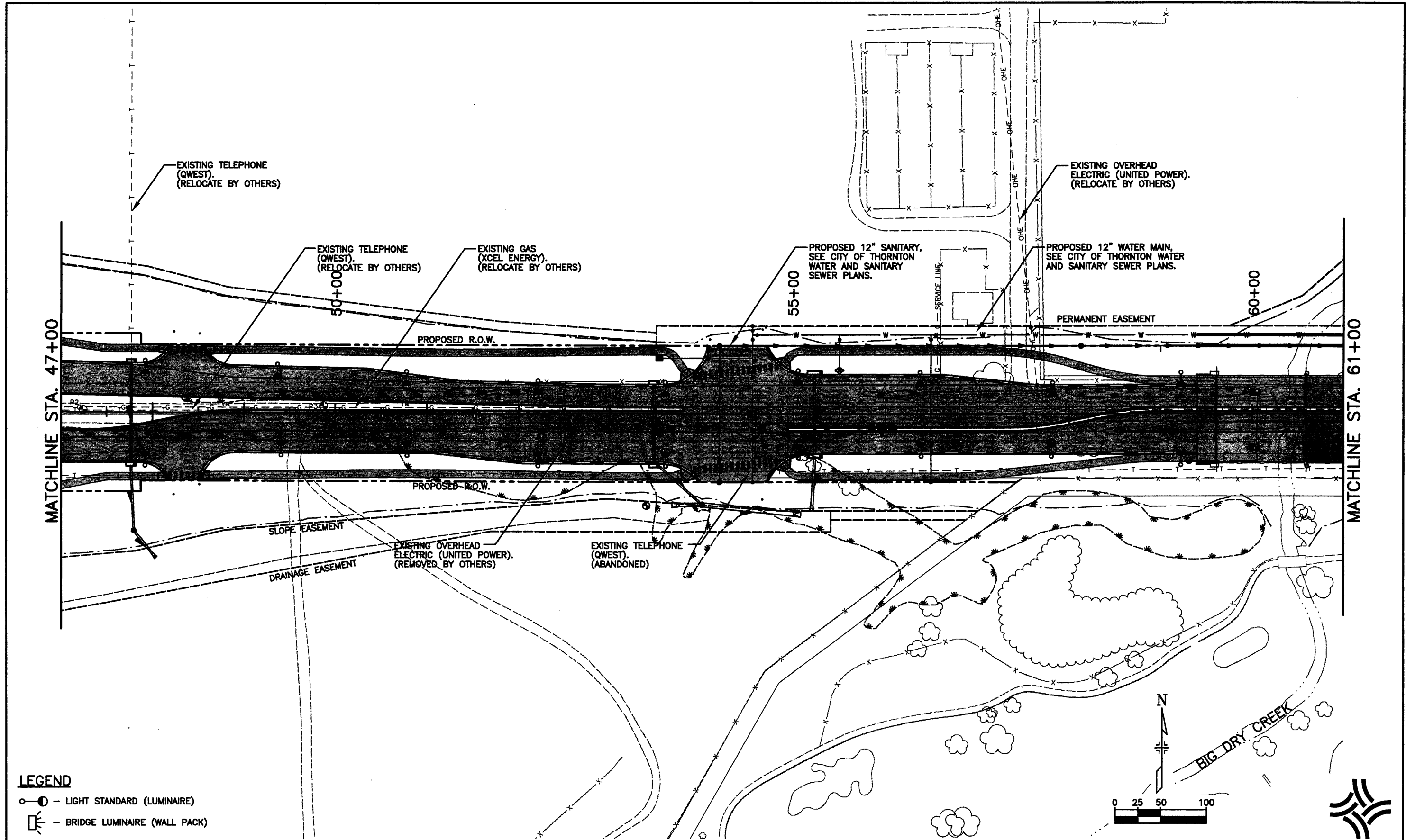
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**LEGEND**

- — LIGHT STANDARD (LUMINAIRE)
- — BRIDGE LUMINAIRE (WALL PACK)

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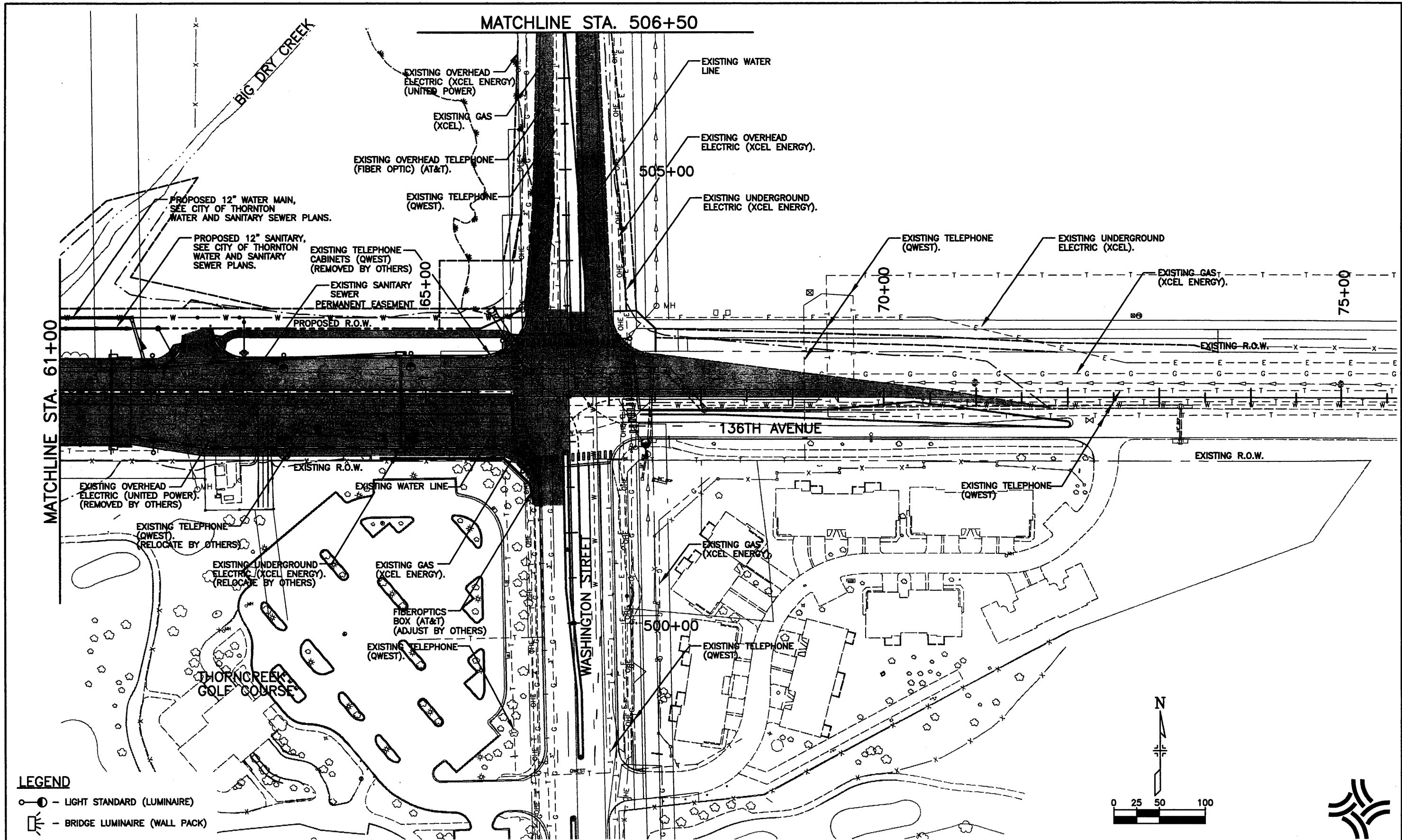
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Detailer:	JAC
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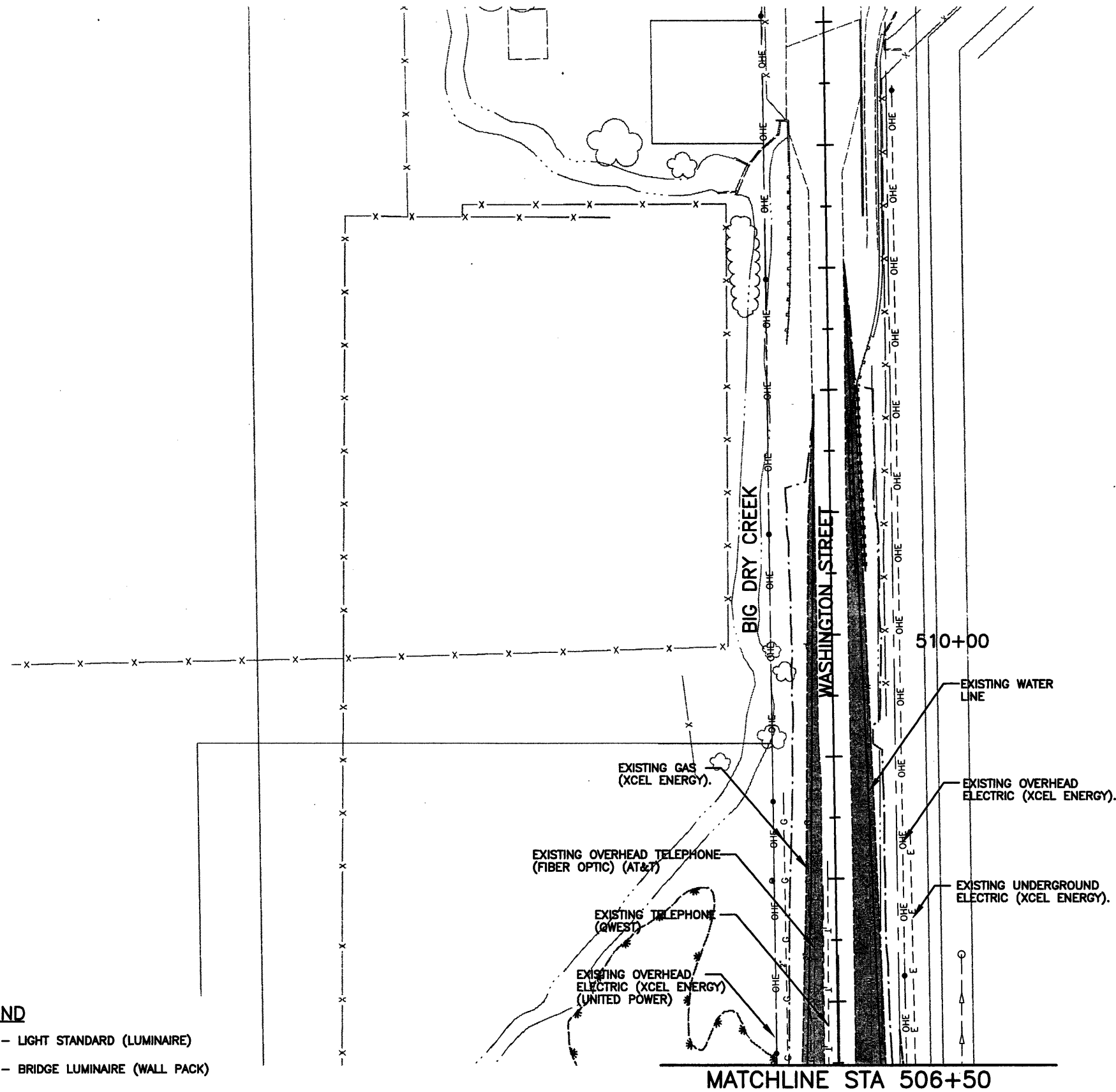
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- ⊞ - BRIDGE LUMINAIRE (WALL PACK)

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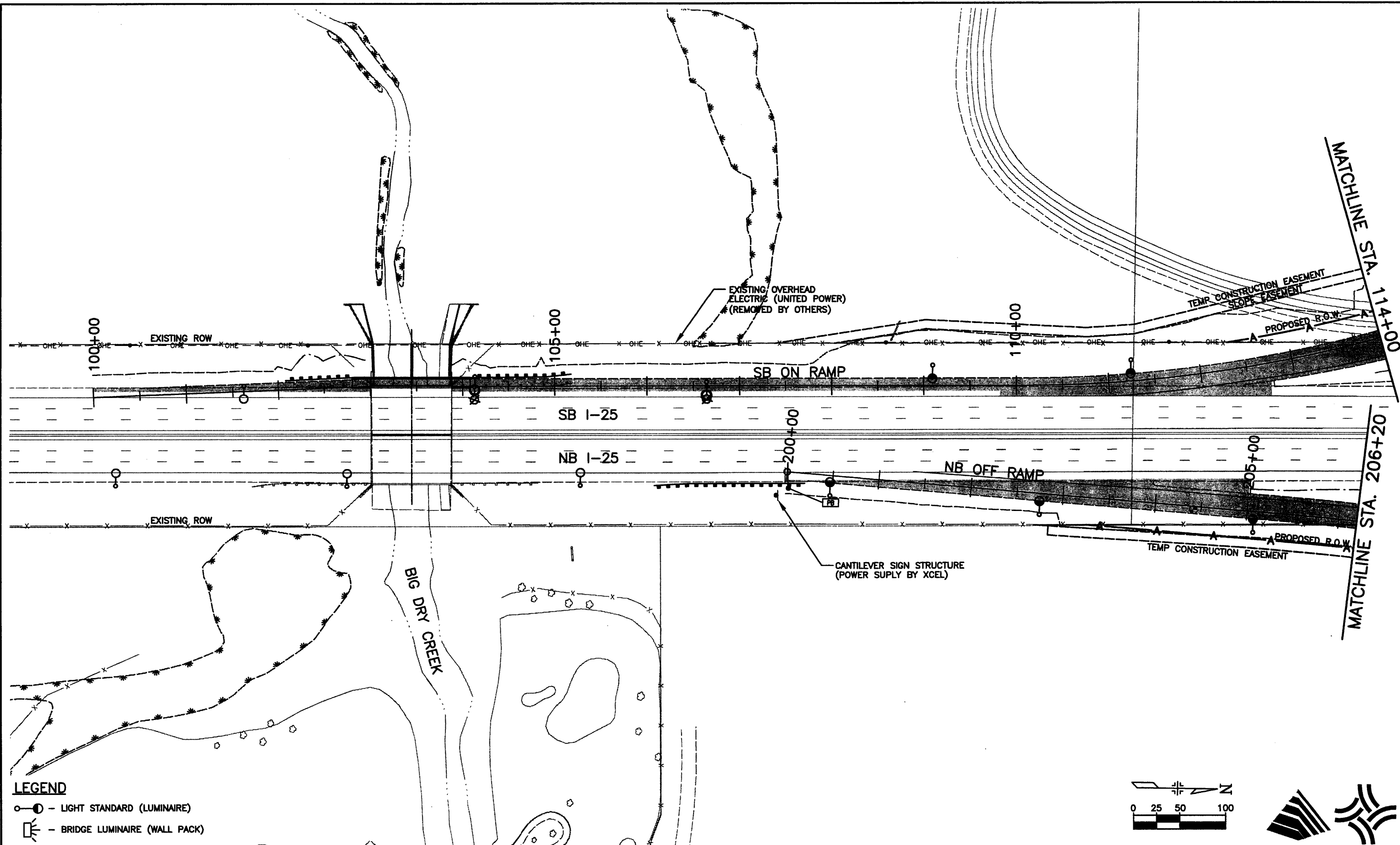
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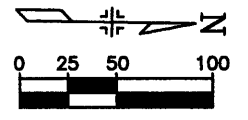
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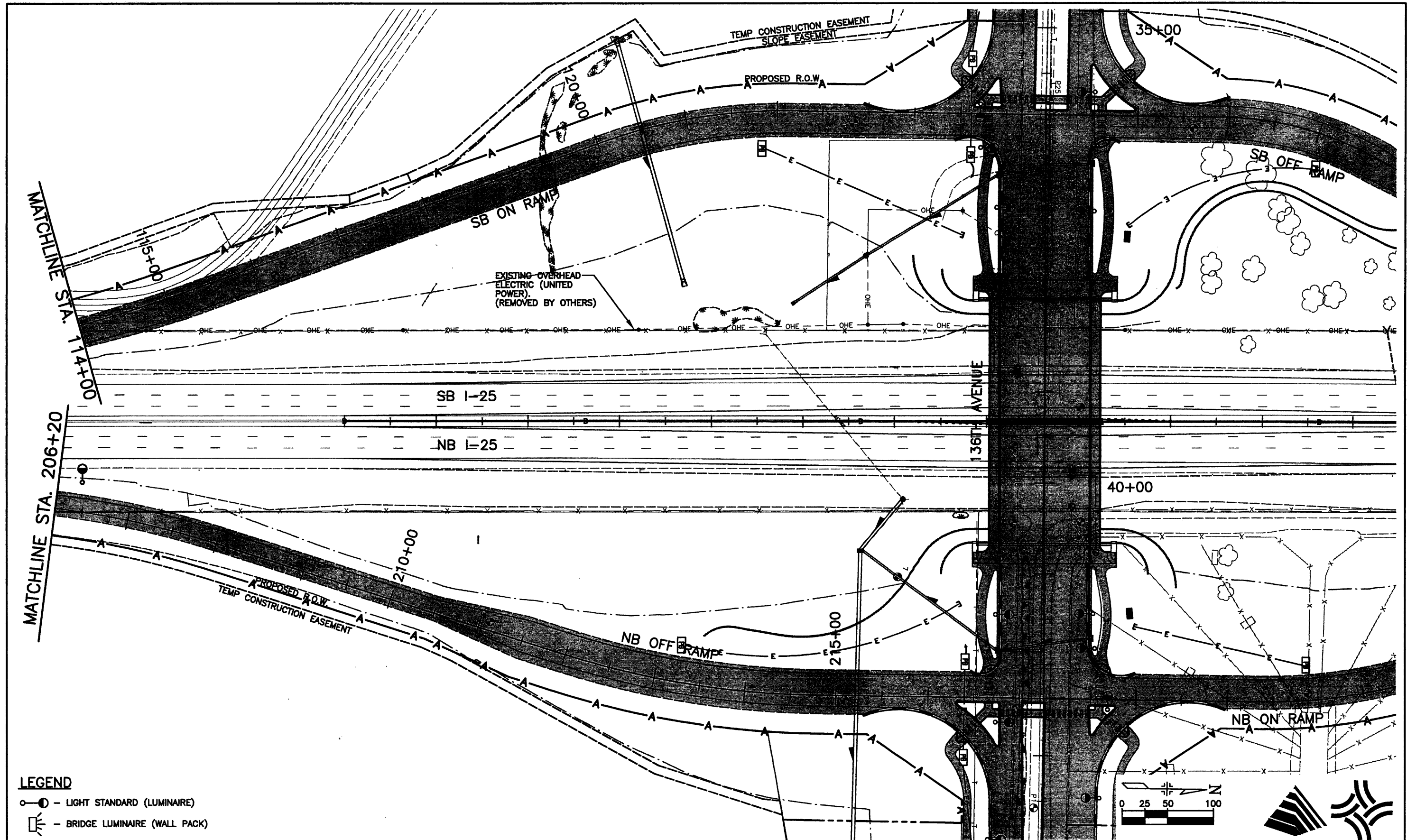
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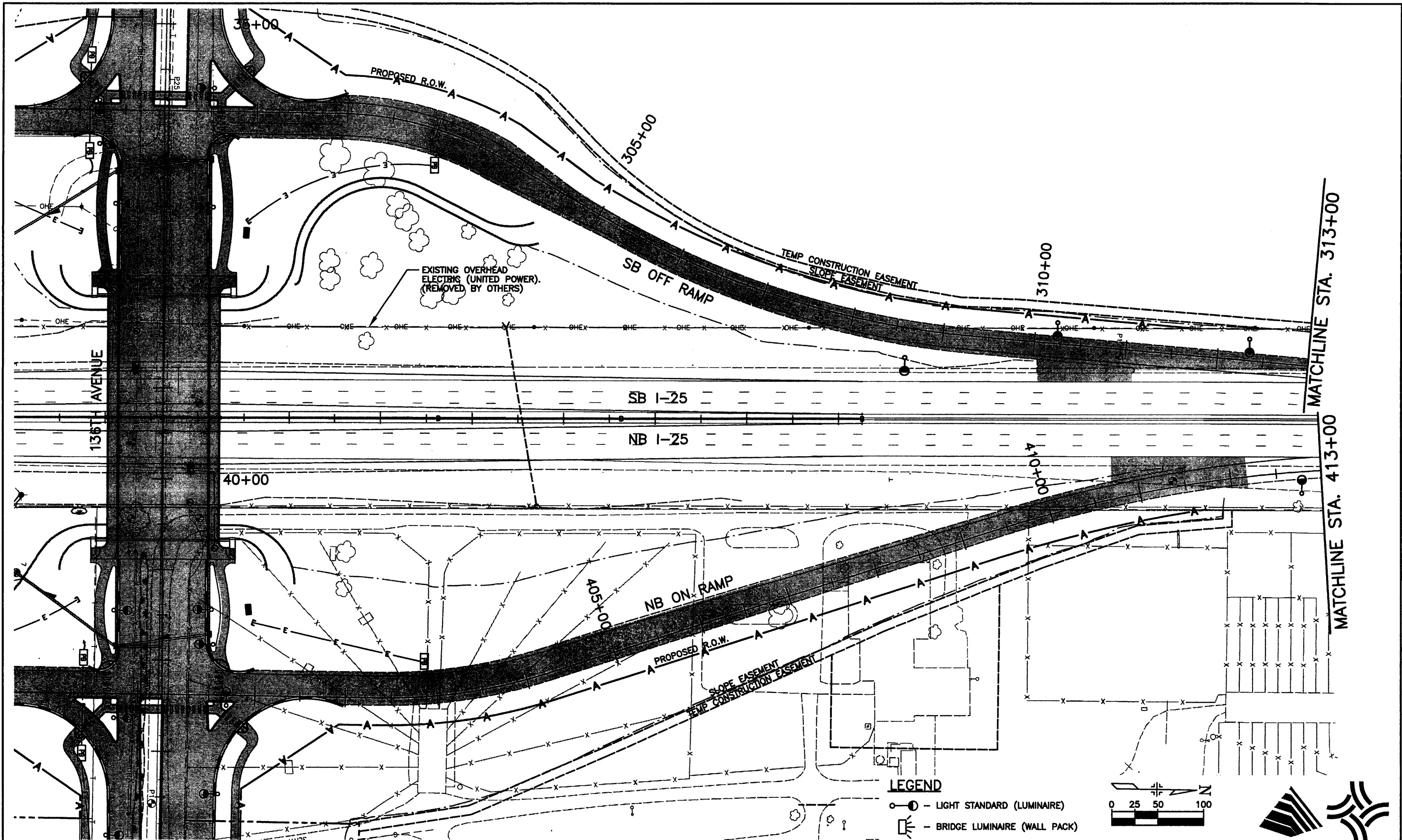
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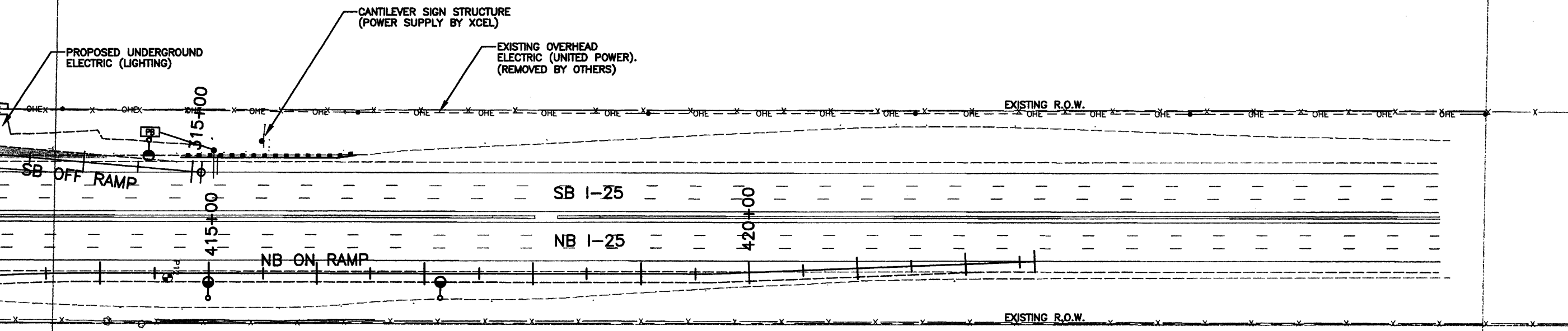
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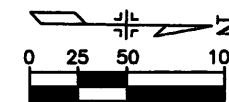
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- — BRIDGE LUMINAIRE (WALL PACK)



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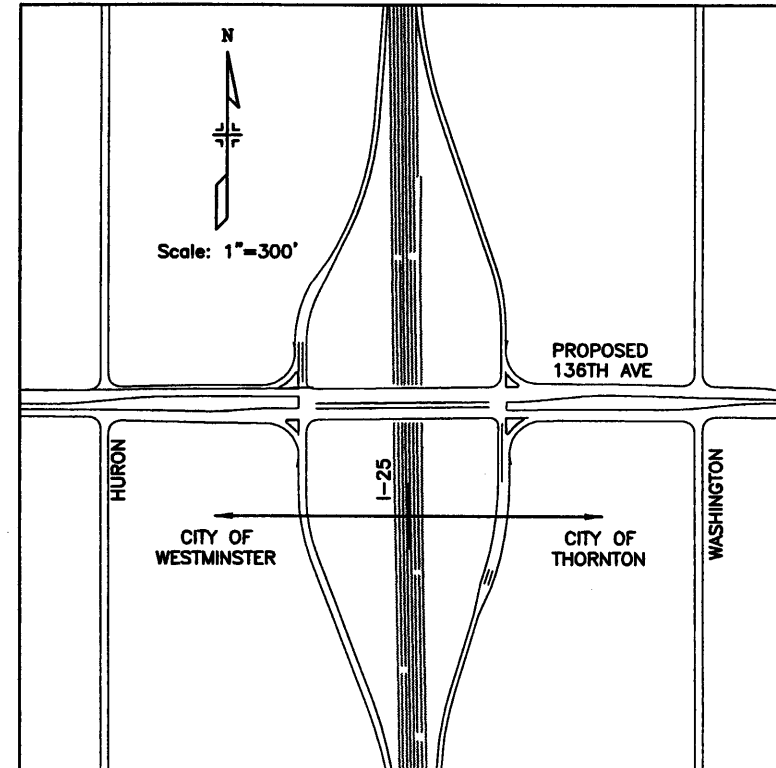
## WATER AND SANITARY SEWER PLANS

### (CITY OF WESTMINSTER)

CITY OF WESTMINSTER  
**TABULATION OF WATERLINE AND SANITARY SEWER**

ITEM NUMBER	ITEM	UNIT	QUANTITY
WATER			
210	ADJUST VALVE BOX (WATER)	EA	5
619	AIR AND VACUUM VALVE	EA	2
619	BENDS-45 DEG. (12IN.)-VERTICAL	EA	4
619	BLOW-OFF ASSEMBLY	EA	7
619	CROSS (12 IN. X 12 IN.)	EA	1
619	CROSS (12 IN. X 8 IN.)	EA	1
619	FIRE HYDRANT ASSEMBLY	EA	7
619	GATE VALVE-12 INCH	EA	11
619	GATE VALVE-8 INCH	EA	4
619	GATE VALVE-6 INCH	EA	7
619	PLASTIC PIPE (WATER)-12 INCH	LF	1742
619	PLASTIC PIPE (WATER)-8 INCH	LF	384
619	PLASTIC PIPE (WATER)-6 INCH	LF	442
619	DUCTILE IRON PIPE (WATER)-4 INCH	LF	95
619	PLUG-12 INCH	EA	2
619	PLUG-8 INCH	EA	4
619	REDUCERS (12 IN. X 8 IN.)	EA	2
619	TAPPING TEE (12 IN. X 24 IN.)	EA	1
619	TEE-(12 IN. X 12 IN. X 12 IN.)	EA	1
619	TEE-(12 IN. X 12 IN. X 6 IN.)	EA	6
619	TEE-(12 IN. X 12 IN. X 4 IN.)	EA	1
619	TEE-(8 IN. X 8 IN. X 6 IN.)	EA	1
619	WATER METER AND VAULT-3 INCH METER	EA	1
619	WELDED STEEL PIPE (JACKED)-22 INCH OD	LF	35
700	F/A WATER TAP-3 INCH	F/A	1

ITEM NUMBER	ITEM	UNIT	QUANTITY
SANITARY			
210	ADJUST MANHOLE (SANITARY)	EA	3
603	PLASTIC PIPE (SANITARY)-18 INCH	LF	109
603	PLASTIC PIPE (SANITARY)-21 INCH	LF	601
604	MANHOLE SLAB BASE (SANITARY)-20 FOOT	EA	1
604	MANHOLE SLAB BASE (SANITARY)-25 FOOT	EA	3



VICINITY MAP

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**WESTMINSTER WATERLINE AND SANITARY SEWER GENERAL NOTES:**

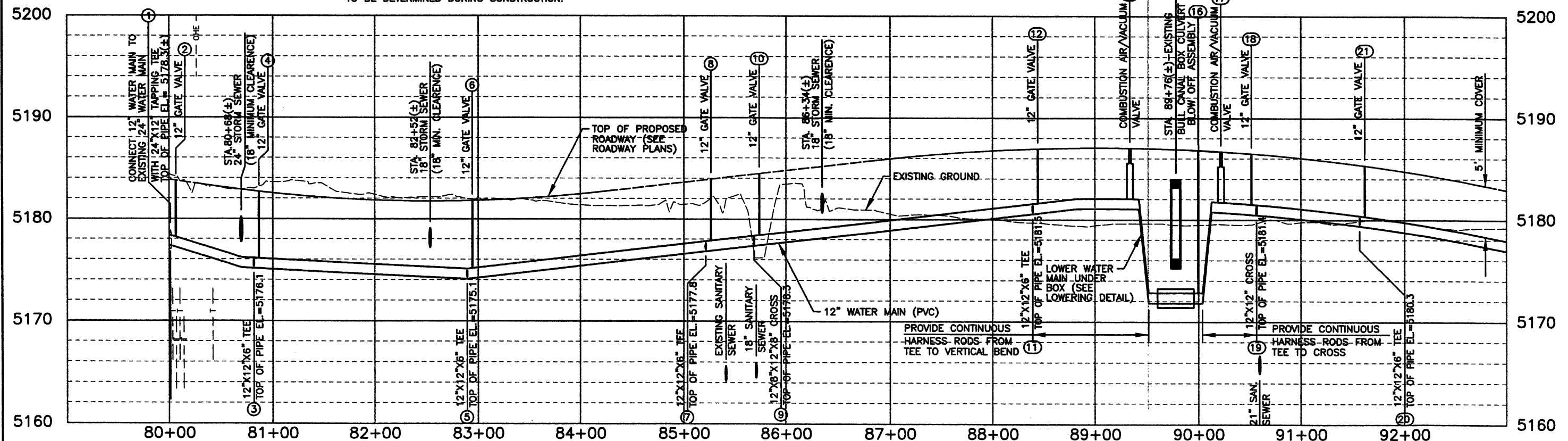
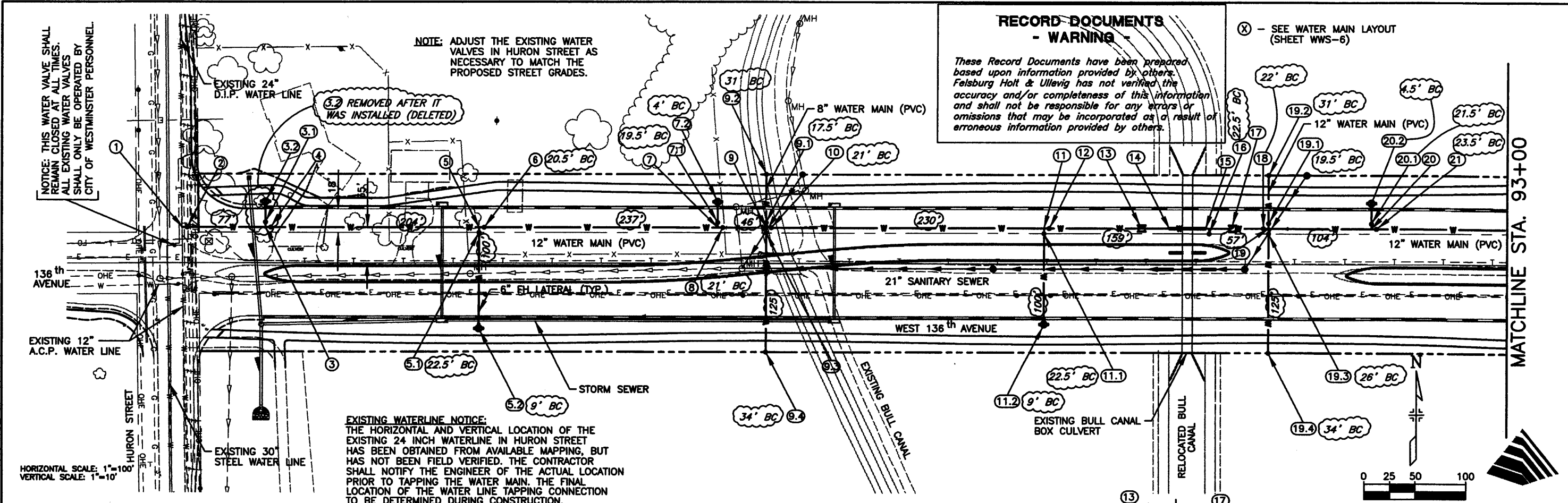
1. ALL MATERIALS, PLACEMENT, TESTING, AND PERMITS FOR THE WATER MAIN AND SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF WESTMINSTER SHALL BE DONE IN ACCORDANCE WITH THE CITY OF WESTMINSTER STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS (LATEST EDITION). THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL REQUIRED PERMITS FOR THE WATER AND SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF WESTMINSTER.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE NOTIFICATION AND COORDINATION WITH ALL CUSTOMERS THAT COULD BE AFFECTED BY THE OUTAGE OF WATER DURING THE CONSTRUCTION. WORK SHALL BE SCHEDULED SUCH THAT NO CUSTOMERS ARE OUT OF SERVICE BETWEEN 8:00 AM AND 11:00 PM. NOTIFICATION SHALL BE DONE AT LEAST 48 HOURS PRIOR TO ANY OUTAGE.
3. THE CONTRACTOR SHALL COMPLY WITH ARTICLE 1.5 OF TITLE 9, CRS (EXCAVATION REQUIREMENTS) WHEN EXCAVATION OR GRADING IS PLANNED IN THE AREA OF UNDERGROUND UTILITY FACILITIES. THE CONTRACTOR SHALL NOTIFY THE REPRESENTATIVES OF THE UTILITIES AT LEAST TWO BUSINESS DAYS PRIOR TO COMMENCING SUCH OPERATIONS. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES. CALLS ORIGINATING WITHIN THE DENVER METRO AREA USE PHONE NO. 303-534-6700. CALLS ORIGINATING OUTSIDE THE DENVER METRO AREA CALL 1-800-922-1987. ALL OTHER UNDERGROUND FACILITIES SHALL BE LOCATED BY CONTACTING THE RESPECTIVE OWNERS. UTILITY SERVICE LATERALS SHALL ALSO BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING. THE LOCATION OF UTILITY FACILITIES AS SHOWN ON THE PLAN AND PROFILE SHEETS, AND HEREON DESCRIBED, WERE OBTAINED FROM THE BEST AVAILABLE INFORMATION. ALL COST INCIDENTAL TO THE FOREGOING REQUIREMENTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
4. ALL WATERLINE FITTINGS, VALVES, DUCTILE IRON PIPE, HARNESS RODS, AND OTHER MISCELLANEOUS APPURTENANCES AS REQUIRED BY THE CITY OF WESTMINSTER SHALL BE WRAPPED WITH EIGHT MILLIMETERS MINIMUM THICK POLYETHYLENE MATERIAL IN ACCORDANCE WITH AWWA STANDARD C105. POLYETHYLENE WRAP SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WATER LINE PIPE.
5. TESTING, FLUSHING, AND DISINFECTING OF THE WATER LINES SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE CITY OF WESTMINSTER STANDARDS AND SPECIFICATIONS (LATEST EDITION), AND UNDER THE OBSERVATION OF THE CITY'S INSPECTOR. THE CHLORINATING AGENT NECESSARY FOR DISINFECTING THE WATER MAINS SHALL BE PROVIDED BY THE CONTRACTOR. THE CHLORINATED WATER SHALL NOT BE DISCHARGED DIRECTLY INTO ANY STREAMS OR PONDS. TESTING, FLUSHING, AND DISINFECTING SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATER LINE PIPE.
6. NO WATERLINE OR SANITARY SEWER PIPES SHALL BE BACKFILLED UNTIL THEY HAVE BEEN INSPECTED BY THE CITY OF WESTMINSTER.
7. ALL WATERLINE APPURTENANCES INCLUDING ADAPTERS, COUPLINGS, HARNESS RODS, POLYETHYLENE WRAP, THRUST BLOCKS, MECHANICAL JOINT RESTRAINTS, AND OTHER MISCELLANEOUS ITEMS NOT ITEMIZED, SHALL NOT BE PAID FOR SEPARATELY, SHALL BE INCLUDED IN THE UNIT COST OF THE WATER LINE PIPE.
8. WHERE WATER MAINS CROSS UNDER STORM SEWERS OR OTHER UTILITIES, A MINIMUM CLEARANCE OF 1.5 FOOT OF CLEARANCE SHALL BE MAINTAINED BETWEEN THE OUTSIDE OF THE PIPES. ALL STORM SEWERS CROSSING OVER THE WATER MAINS SHALL BE ENCASED A MINIMUM OF NINE FEET ON EACH SIDE OF THE WATERLINE, (SEE THE STORM SEWER PLANS).
9. DURING THE BACKFILLING OF THE WATERLINE, THE CONTRACTOR SHALL PLACE A 2-INCH WIDE METALLIC COATED LOCATOR TAPE LABELED "WATERLINE BURIED BELOW". THE TAPE SHALL BE CONTINUOUS ALONG THE LIMITS OF THE WATERLINE INCLUDING LATERALS, AND SHALL BE PLACED TWO FEET ABOVE AND DIRECTLY OVER THE PIPE. THE LOCATOR TAPE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATER LINE PIPE.
10. THE CONTRACTOR SHALL INSTALL A SINGLE, 12-GAGE, INSULATED COPPER TRACING WIRE TAPED TO THE WATER MAIN. THE TRACING WIRE SHALL BE ONE PIECE AND INSTALLED IN A CONTINUOUS RUN BETWEEN VALVES (SEE STANDARD DETAILS). THE TRACER WIRE TO BE TESTED BY THE CITY FOR CONTINUITY PRIOR TO ACCEPTANCE. THE TRACER WIRE AND ALL NECESSARY APPURTENANCES, SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATER LINE PIPE.
11. ONLY THE CITY OF WESTMINSTER PERSONNEL SHALL OPERATE EXISTING WATERLINE VALVES.
12. EXCAVATION, BACKFILL, BEDDING MATERIAL, MOISTURE CONTROL, COMPACTION, DISPOSAL OF EXCESS EXCAVATED MATERIAL, SHORING, AND TRENCH SUPPORTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
13. WHERE EXISTING CONCRETE OR ASPHALT MAT MUST BE REMOVED FOR EITHER WATER MAIN OR SANITARY SEWER MAIN CONSTRUCTION, THE MAT SHALL BE REMOVED BY SAW CUTTING ONLY. THE CONCRETE OR ASPHALT MAT SHALL BE REPLACED AS REQUIRED BY THE STANDARDS. SAW CUTTING AND MAT REPLACEMENT SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
14. IT IS ANTICIPATED THAT DEWATERING WILL BE NECESSARY. DEWATERING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ANY NECESSARY DEWATERING PERMITS.
15. THRUST BLOCKS SHALL BE PLACED AT FITTINGS, TEES, BENDS (BOTH HORIZONTAL AND VERTICAL), CROSSES, PLUGS, ETC., ACCORDING TO THE LATEST EDITION OF THE CITY OF WESTMINSTER STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS. WHERE HARNESS RODS ARE INSTALLED, THRUST BLOCKS SHALL ALSO BE PLACED, THUS THE WATER MAINS SHALL BE CONSTRUCTED HAVING A DOUBLE RESTRAINT SYSTEM WHICH INCLUDES INSTALLING BOTH THRUST BLOCKS AND HARNESS RODS. THRUST BLOCKS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WATER LINE PIPE.
16. HARNESS RODS ARE REQUIRED TO BE INSTALLED AS IDENTIFIED ON THE PLANS OR AS SPECIFIED IN THE STANDARDS. AFTER THE HARNESS RODS HAVE BEEN INSTALLED AND ACCEPTED, THE HARNESS RODS AND HARNESS ROD APPURTENANCES SHALL HAVE APPLIED IN THE FIELD A 16-MIL-THICK COATING OF COAL TAR EPOXY. THE HARNESS RODS AND COATING SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WATER LINE PIPE. AFTER THE HARNESS RODS HAVE BEEN COATED, THE RODS AND APPURTENANCES SHALL BE WRAPPED WITH 8 MIL POLYETHYLENE WRAP.
17. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO CONNECT THE SANITARY SEWERS INTO EXISTING MANHOLE W-1. THIS SHALL INCLUDE EXCAVATION TO THE BASE OF THE MANHOLE, REMOVING A PORTION OF THE BARREL SECTION IF NECESSARY, SEALING AROUND THE NEWLY INSTALLED PIPE, AND RESHAPING OR REPLACING THE MANHOLE BASE. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY PIPE.
18. THE CONTRACTOR SHALL PROVIDE A TEMPORARY PLUG AT THE END OF THE SANITARY SEWER STUB OUT FROM SANITARY MANHOLE W-4. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
19. AS DOCUMENTED IN THE REPORT TITLED SUBSURFACE EXPLORATION PROGRAM GEOTECHNICAL RECOMMENDATIONS AND PAVEMENT DESIGN 136TH AVENUE INTERCHANGE WITH INTERSTATE 25 WESTMINSTER AND THORNTON, COLORADO, BY GROUND ENGINEERING CONSULTANTS, THE CONTRACTOR SHOULD ANTICIPATE EXCAVATION WITHIN VERY STIFF TO VERY HARD MATERIAL.
20. THE TEMPORARY WATER LINE MARKERS SHALL BE INSTALLED AS DELINEATED ON THE PLANS AND AS DETAILED. THE WATER LINE MARKERS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WATER LINE PIPE.
21. IT IS ESTIMATED THAT FIVE WATER LINE VALVE BOXES WILL REQUIRE ADJUSTMENTS, AND ARE GENERALLY LOCATED AT THE NORTH HURON STREET AND WEST 136TH AVENUE INTERSECTION.

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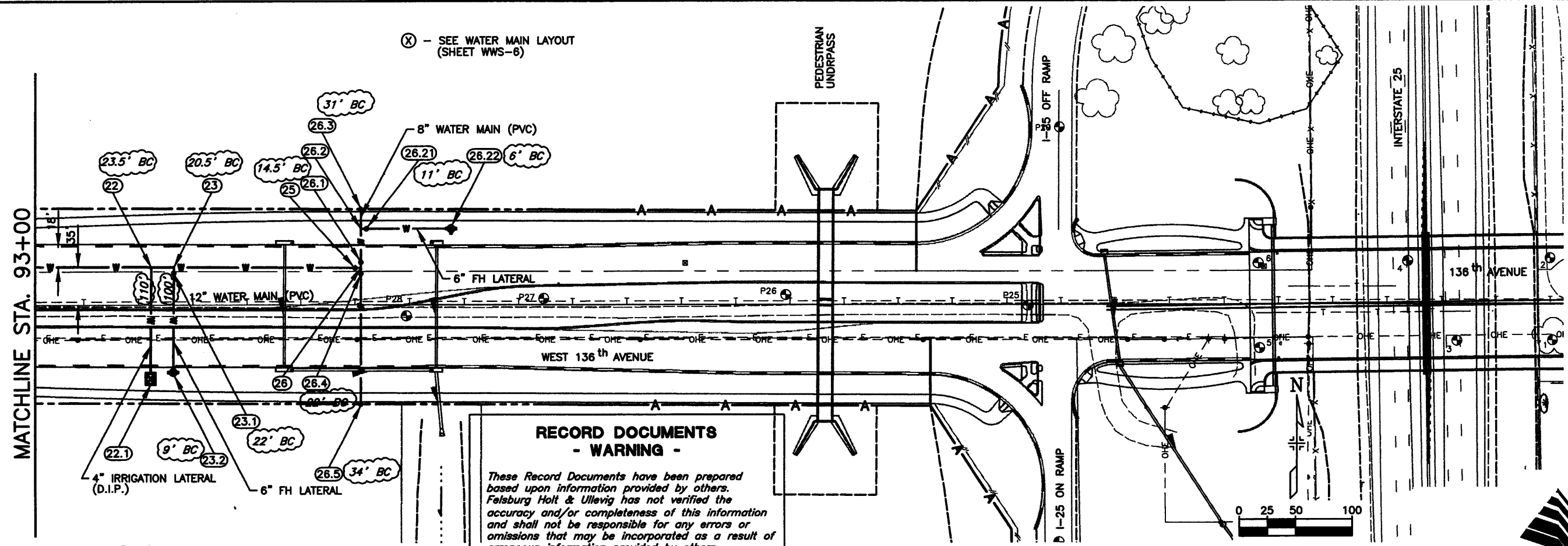
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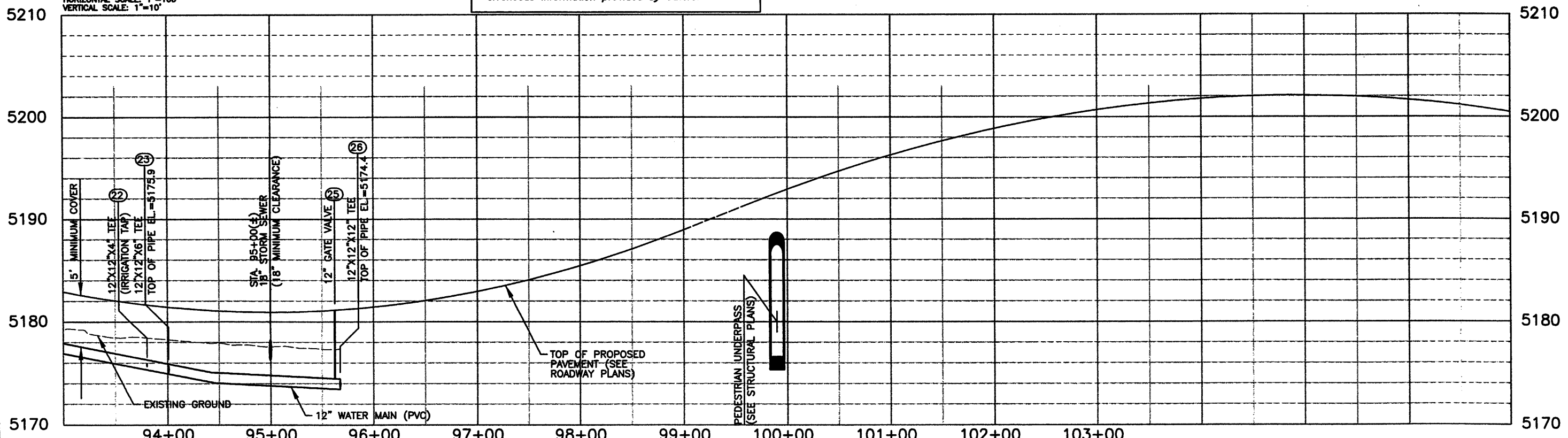
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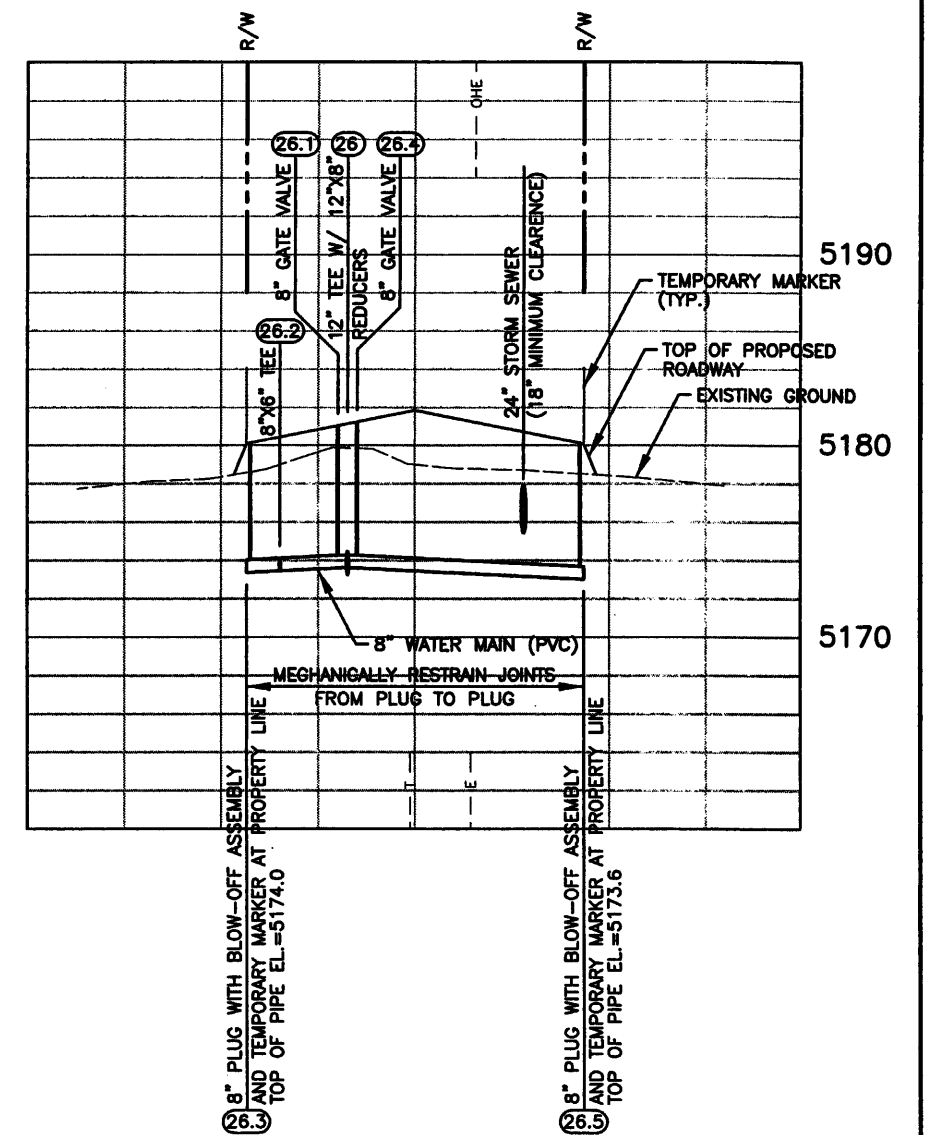
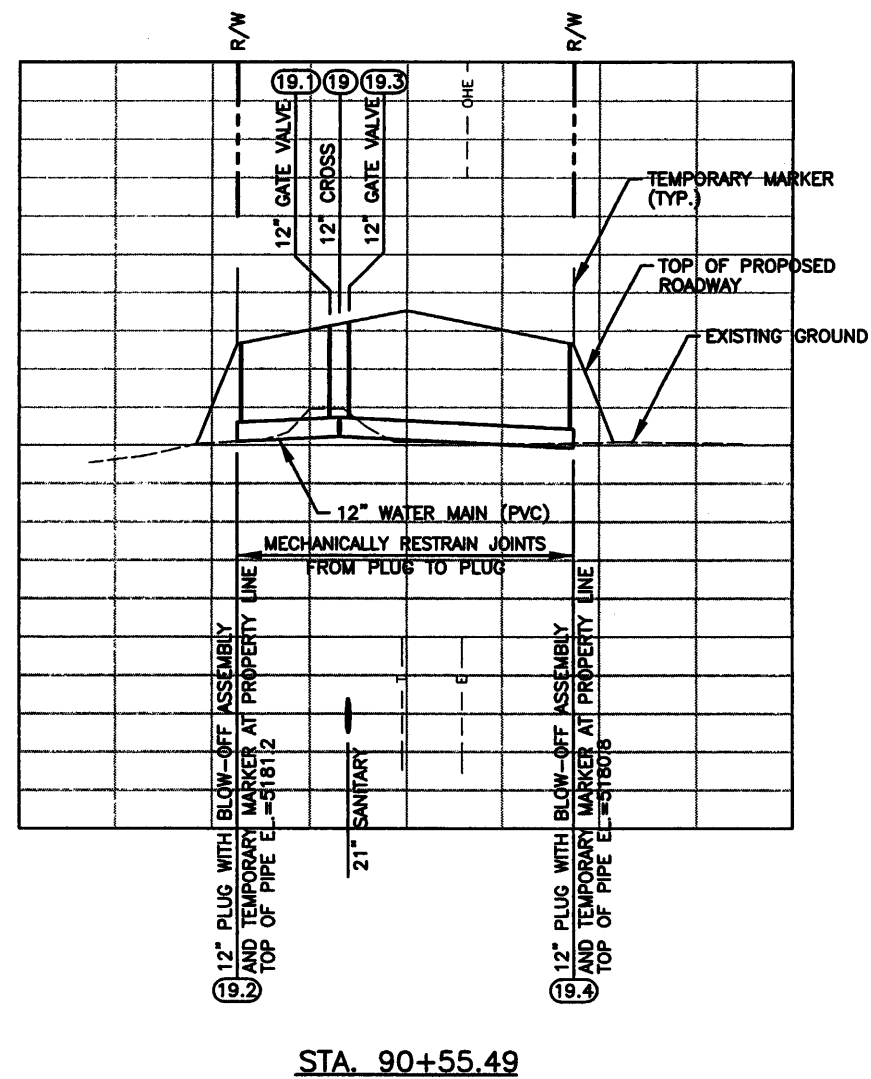
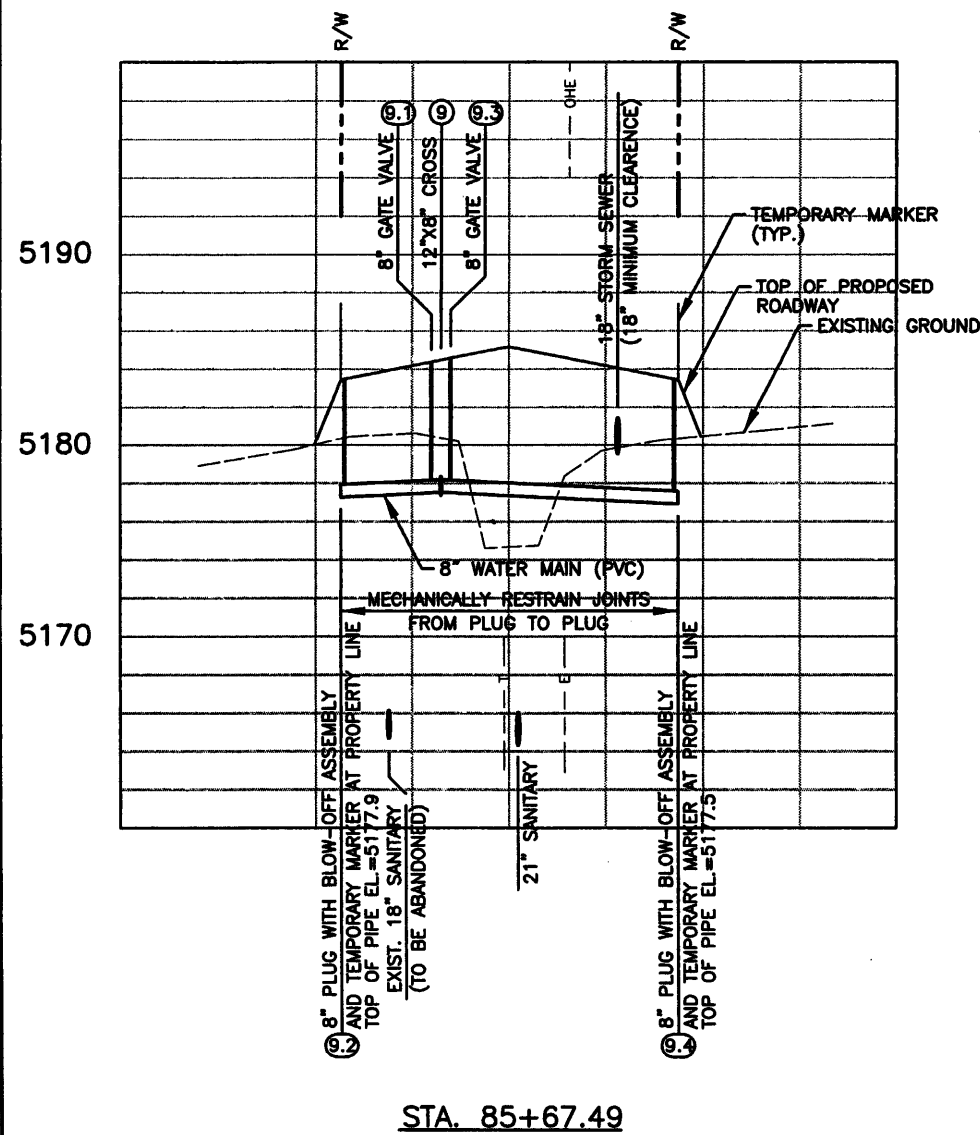
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

<b>As Constructed</b>
No Revisions:
Revised: X
Void:

136TH AVENUE AT I-25 INTERCHANGE 136TH AVE. WATER PLAN STA. 93+00 TO STA. 95+67.49	
Designer: SPG	Detailer: DCB
Sheet Subset: UTILWAT	Subset Sheets: WWS-4 of 17

Project No./Code	97-71
Sheet Number	308



**RECORD DOCUMENTS  
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HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



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Full Path:	J:\00033\AS-BUILT\
Drawing File Name:	U00033WAT03AB.dwg
Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	



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No Revisions: X

Revised:      

Void:           

**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVE. WATER PLAN  
WATER LINE SECTIONS**

Designer: SPG  
Detailer: DCB  
Sheet Subset: UTILWAT Subset Sheets: WWS-5 of 17

Project No./Code  
**97-71**

Sheet Number  
**309**

**WATER MAIN LAYOUT**

POINT	STATION	NORTHERLY	EASTERLY	DESCRIPTION
1	80+00	1222529.9875	3141112.1061	VERIFY LOCATION OF THE EXISTING 24" WATER MAIN. CONNECT 12" WATER MAIN TO EXISTING 24" WATER MAIN WITH 24"x12" TAPPING TEE. FINAL TAP LOCATION SHALL BE DETERMINED DURING CONSTRUCTION.
2	-----	-----	-----	12" GATE VALVE
3	80+80.25	1222529.9616	3141192.3539	12"x12"x6" TEE (TO FH)
3.1	-----	-----	-----	6" GATE VALVE
3.2	80+80.25 (25.00' LT)	1222554.9616	3141192.3620	FIRE HYDRANT ASSEMBLY
4	-----	-----	-----	12" GATE VALVE
5	82+87.98	1222529.8946	3141400.0829	12"x12"x6" TEE (TO FH)
5.1	-----	-----	-----	6" GATE VALVE
5.2	82+87.98 (99.00' RT)	1222430.8946	3141400.0509	FIRE HYDRANT ASSEMBLY
6	-----	-----	-----	12" GATE VALVE
7	85+19.99	1222529.8197	3141632.0925	12"x12"x6" TEE (TO FH)
7.1	-----	-----	-----	6" GATE VALVE
7.2	85+19.99 (25.00' LT)	1222554.8197	3141632.1006	FIRE HYDRANT ASSEMBLY
8	-----	-----	-----	12" GATE VALVE
9	85+67.49	1222529.8044	3141679.5925	12"x8"x12"x8" CROSS
9.1	-----	-----	-----	8" GATE VALVE
9.2	85+67.49 (52.00' LT)	1222581.8044	3141679.6093	8" PLUG WITH BLOW-OFF ASSEMBLY AT THE PROPERTY LINE, INSTALL TEMPORARY MARKER (SEE DETAIL)
9.3	-----	-----	-----	8" GATE VALVE
9.4	85+67.49 (122.00' RT)	1222407.8044	3141679.5531	8" PLUG WITH BLOW-OFF ASSEMBLY AT THE PROPERTY LINE, INSTALL TEMPORARY MARKER (SEE DETAIL)
10	-----	-----	-----	12" GATE VALVE
11	88+37.41	1222529.7173	3141949.5094	12"x12"x6" TEE (TO FH)
11.1	-----	-----	-----	6" GATE VALVE
11.2	88+37.41 (94.00' RT)	1222435.7173	3141949.4791	FIRE HYDRANT ASSEMBLY
12	-----	-----	-----	12" GATE VALVE
13	89+32.49	1222529.6866	3142044.5925	COMBINATION AIR/VACUUM VALVE (FIELD ADJUST LOCATION AS NECESSARY)
14	89+58.99	1222529.6780	3142071.0925	WEST END OF 22" O.D. STEEL CASING PIPE (SEE DETAILS)
15	89+93.99	1222529.6667	3142106.0925	EAST END OF 22" O.D. STEEL CASING PIPE (SEE DETAILS)
16	89+97.43	1222529.6656	3142109.5322	BLOW-OFF ASSEMBLY (FIELD ADJUST LOCATION AS NECESSARY)
17	90+20.49	1222529.6582	3142132.5925	COMBINATION AIR/VACUUM VALVE (FIELD ADJUST LOCATION AS NECESSARY)
18	-----	-----	-----	12" GATE VALVE

**WATER MAIN LAYOUT**

POINT	STATION	NORTHERLY	EASTERLY	DESCRIPTION
19	90+55.49	1222529.6469	3142167.5924	12"x12" CROSS
19.1	-----	-----	-----	12" GATE VALVE
19.2	90+55.49 (52.00' LT)	1222581.5844	3142167.6091	12" PLUG WITH BLOW-OFF ASSEMBLY AT THE PROPERTY LINE, INSTALL TEMPORARY MARKER (SEE DETAIL)
19.3	-----	-----	-----	12" GATE VALVE
19.4	90+55.49 (122.00' RT)	1222407.5809	3142167.5530	12" PLUG WITH BLOW-OFF ASSEMBLY AT THE PROPERTY LINE, INSTALL TEMPORARY MARKER (SEE DETAIL)
20	91+54.77	1222529.3136	3142266.8721	12"x12"x6" TEE (TO FH)
20.1	-----	-----	-----	6" GATE VALVE
20.2	91+54.77 (25.00' LT)	1222554.3030	2142266.9735	FIRE HYDRANT ASSEMBLY
21	-----	-----	-----	12" GATE VALVE
22	93+80.83	1222528.3969	3142492.9374	12"x4" TEE (IRRIGATION TAP--FIELD ADJUST LOCATION AS NECESSARY)
22.1	93+80.83 (99.83' RT)	1222428.5643	3142492.5643	3" METER AND VAULT (FIELD ADJUST LOCATION AS NECESSARY--SEE DETAILS AND NOTES)
23	94+00.83	1222528.3158	3142512.9372	12"x12"x6" TEE (TO FH)
23.1	-----	-----	-----	6" GATE VALVE
23.2	94+00.83 (94.00' RT)	1222434.3165	3142512.5560	FIRE HYDRANT ASSEMBLY
25	-----	-----	-----	12" GATE VALVE
26	95+67.49	1222527.6400	3142679.5919	12"x12"x12" TEE WITH TWO (2) - 12" TO 8" REDUCERS
26.1	-----	-----	-----	8" GATE VALVE
26.2	95+67.49 (34.74' LT)	1222562.3837	3142679.6031	8"x8"x6" TEE (TO FH)
26.21	-----	-----	-----	6" GATE VALVE
26.22	-----	1222552.3580	3142759.0624	FIRE HYDRANT ASSEMBLY
26.3	95+67.49 (52.00' LT)	1222579.6403	3142679.6086	8" PLUG WITH BLOW-OFF ASSEMBLY AT THE PROPERTY LINE, INSTALL TEMPORARY MARKER (SEE DETAIL)
26.4	-----	-----	-----	8" GATE VALVE
25.5	95+67.49 (122.00' RT)	1222405.6391	3142679.5525	8" PLUG WITH BLOW-OFF ASSEMBLY AT THE PROPERTY LINE, INSTALL TEMPORARY MARKER (SEE DETAIL)

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Acad Ver. 2000i	Scale: Units: English

Index of Revisions	
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fax 303.721.0832  
fhu@fhueng.com

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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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No Revisions: X

Revised:

Void:

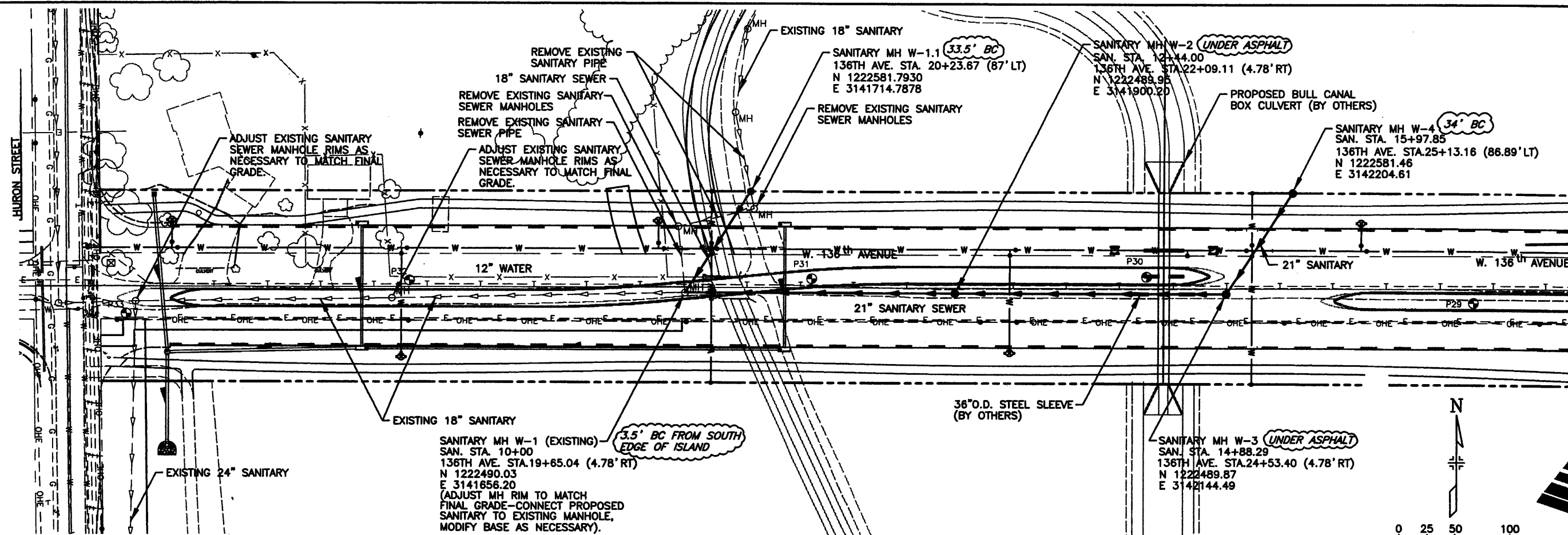
**136TH AVENUE AT I-25 INTERCHANGE  
WATER MAIN LAYOUT**

Designer: SPG  
Detailer: DCB

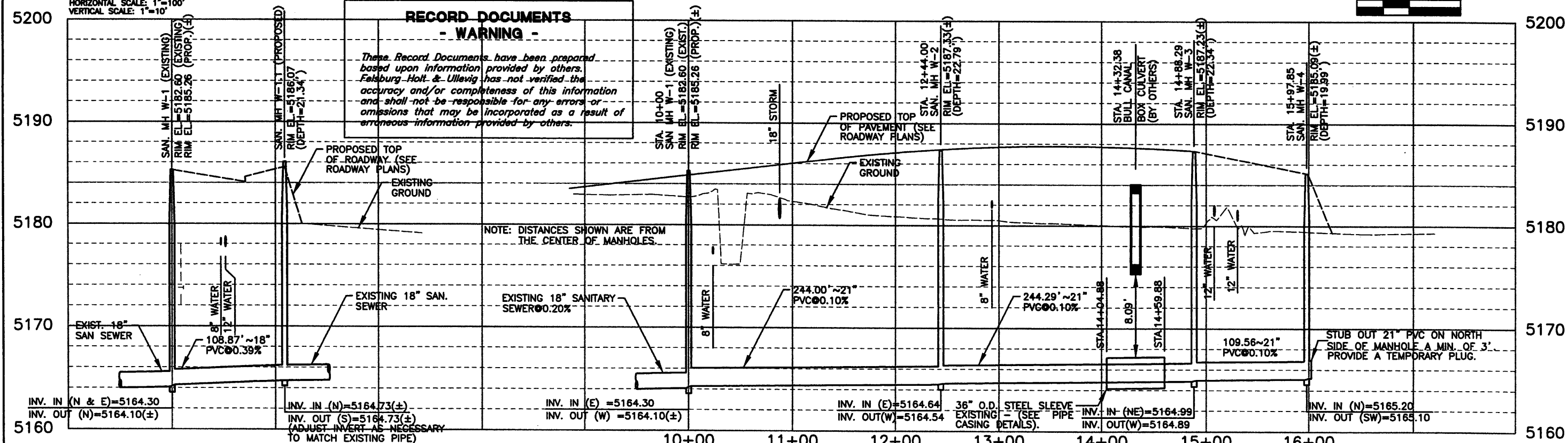
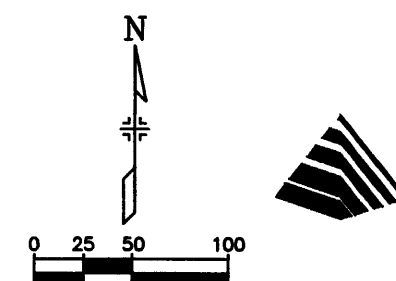
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Project No./Code  
**97-71**

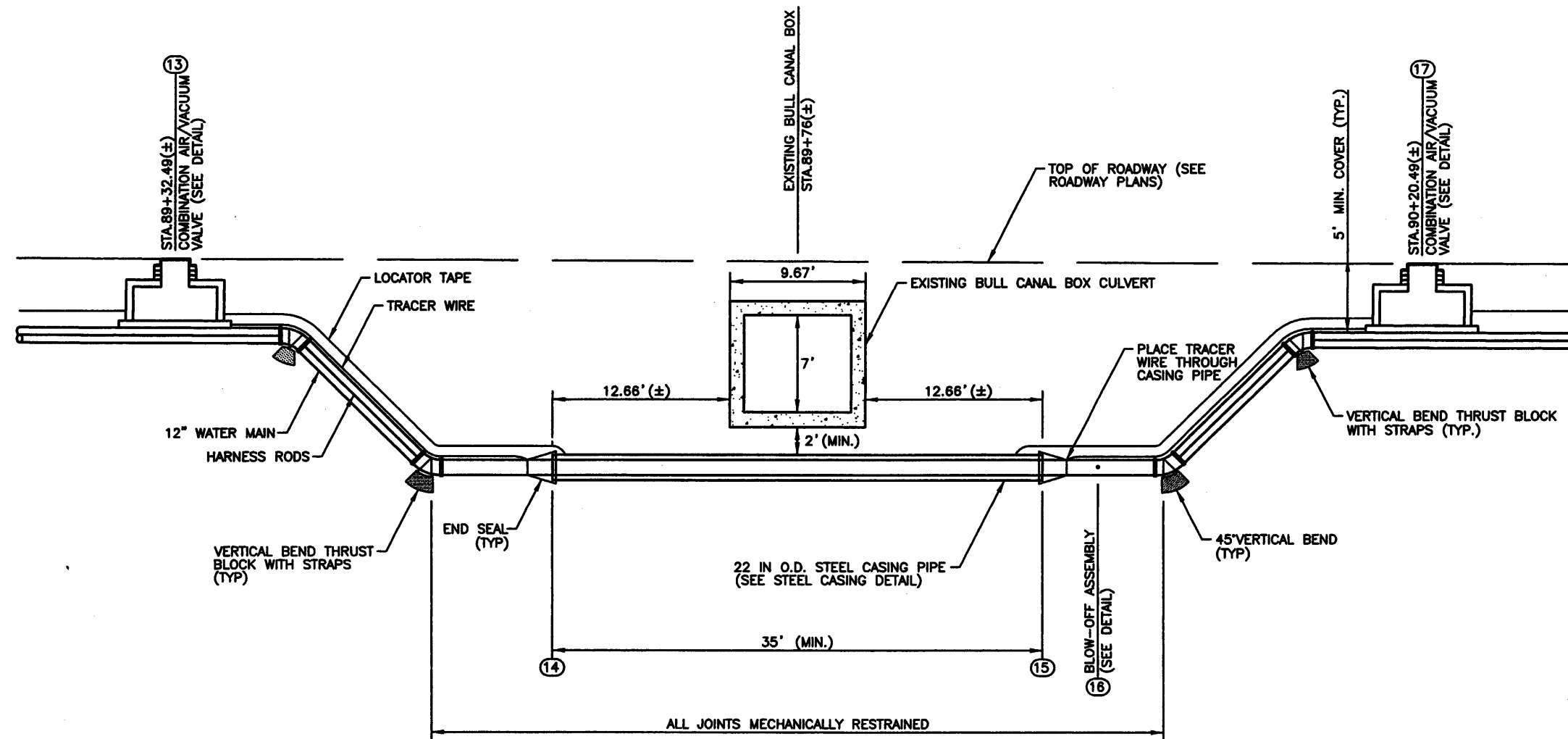
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HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>FELSBURG HOLT &amp; ULLEVIG</p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<p>(As Constructed)</p> <p>No Revisions:</p> <p>Revised: X</p> <p>Void:</p>	<p>136TH AVENUE AT I-25 INTERCHANGE SANITARY SEWER PLAN AND PROFILE</p> <p>Designer: SPG Detailer: DCB Sheet Subset:</p>	<p>Project No./Code 97-71</p> <p>Sheet Number 311</p>
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Last Modification Date:	10/13/03 Initials: PRH						
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Drawing File Name:	U00033SAN01AB.dwg						
Acad Ver. 2000i	Scale: Units: English					Subset Sheets: WWS-7 of 17	



**WATERLINE LOWERING DETAIL**  
SCALE=1"=10'

**WATERLINE LOWERING NOTES:**

1. ALL APPURTENANCES NECESSARY FOR THE WATERLINE LOWERING, INCLUDING BUT NOT LIMITED TO THRUST BLOCKS, HARNESS RODS, LOCATOR TAPE, TRACER WIRE, MECHANICAL JOINT RESTRAINTS, STRAPS, AND END SEALS, SHALL NOT BE PAID FOR SEPARATELY, BUT TO BE INCLUDED IN THE COST OF THE PIPE.
2. THE STEEL CASING PIPE SHALL BE JACKED UNDER THE EXISTING BULL CANAL BOX CULVERT. THE DEPTH OF THE STEEL CASING TO BE DETERMINED DURING CONSTRUCTION TO PROVIDE A MINIMUM OF TWO FEET OF CLEARANCE BETWEEN THE BOX CULVERT AND THE CASING PIPE.
3. THE WATERLINE CONTRACTOR SHALL PROVIDE ALL NECESSARY APPURTENANCES NECESSARY FOR THE WATERLINE TO BE PLACED WITHIN THE STEEL CASING PIPE, INCLUDING BUT NOT LIMITED TO RUNNERS, RISERS, JOINT RESTRAINTS, AND STEEL BANDS. (SEE THE STEEL CASING PIPE DETAIL). THE COST OF THESE APPURTENANCES SHALL BE INCLUDED IN THE COST OF THE CASING PIPE.
4. THE WATER MAIN SHALL BE CONTINUOUSLY RESTRAINED USING HARNESS RODS FROM THE TEE AT STA. 88+37.41 (POINT 11) TO THE CROSS AT STA. 90+55.49 (POINT 19). WITHIN THE CASING PIPE, ALL JOINTS SHALL BE MECHANICALLY RESTRAINED. (SEE THE STEEL CASING PIPE DETAILS AND NOTES).
5. THE TRACER WIRE SHALL BE CONTINUOUS PLACED ALONG AND ATTACHED TO THE WATERLINE PIPE. THE TRACER WIRE TO BE CONTINUOUSLY PLACED THROUGH THE STEEL CASING PIPE.

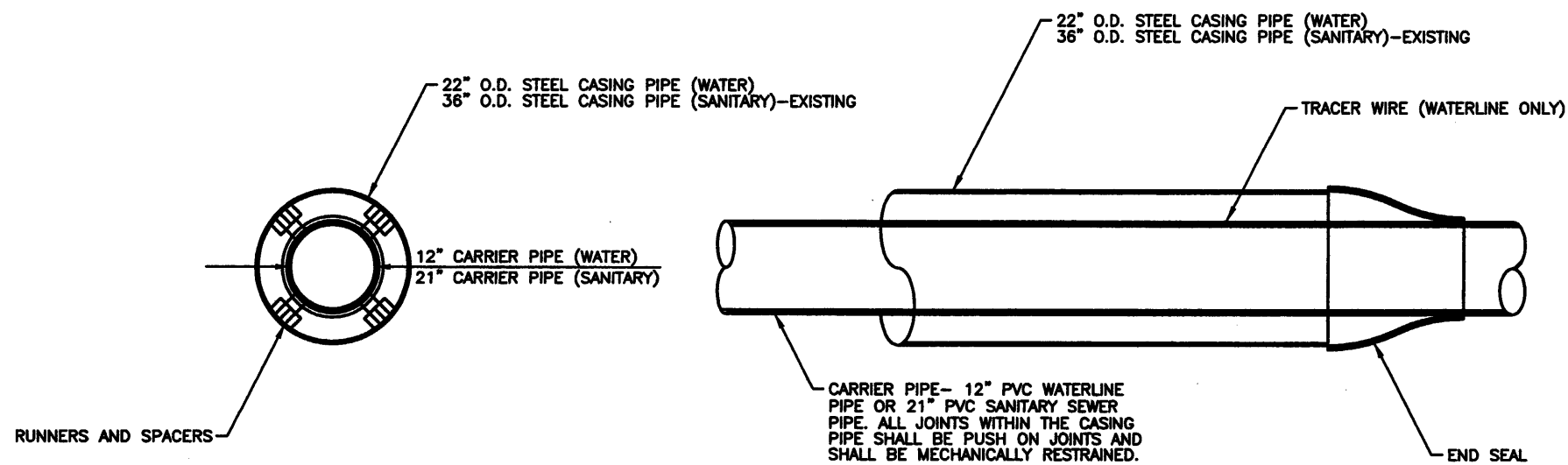
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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<p><b>As Constructed</b></p> <p>No Revisions: X</p> <p>Revised:</p> <p>Void:</p>	<p><b>136TH AVENUE AT I-25 INTERCHANGE WATERLINE LOWERING DETAIL</b></p> <p>Designer: SPG Detailer: DCB</p> <p>Sheet Subset:      Subset Sheets: WWS-8 of 17</p>		<p>Project No./Code <b>97-71</b></p> <p>Sheet Number <b>312</b></p>	
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Last Modification Date:	10/20/04	Initials:	DRS						
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Drawing File Name:	D00033DETO3AB.dwg								
Acad Ver.	2000i	Scale:		Units:	English				





PIPE CASING DETAIL

PIPE CASING SECTION

PIPE CASING

SCALE=1"=5'

WATERLINE CASING NOTES:

1. THE WATERLINE CASING PIPE SHALL BE 22 INCH OUTSIDE DIAMETER (O.D.) WITH A MINIMUM WALL THICKNESS OF 0.344 INCHES. THE WATERLINE CASING PIPE TO BE INSTALLED PRIOR TO THE WATERLINE CONSTRUCTION. THE EXTERIOR OF THE CASING PIPE SHALL HAVE A BITUMINOUS COATING.
2. THE WATERLINE CONTRACTOR SHALL PROVIDE ALL WATERLINE CASING APPURTENANCES, INCLUDING BUT NOT LIMITED TO, RUNNERS, RISERS, AND STEEL BANDS. THE LOCATION, SPACING, AND THE TYPE OF THE RUNNERS, RISERS, AND STEEL BANDS SHALL BE APPROVED BY THE CITY OF WESTMINSTER PRIOR TO CONSTRUCTION OF THE WATERLINE. THE RUNNERS, RISERS, STEEL BANDS, AND ANY OTHER NECESSARY APPURTANCES WITHIN THE CASING PIPES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATERLINE CASING PIPE.
3. END SEALS SHALL BE INSTALLED AT EACH END OF BOTH CASING PIPES, AND SHALL BE PROVIDED BY THE WATERLINE CONTRACTOR. THE TYPE OF END SEALS SHALL BE APPROVED BY THE CITY OF WESTMINSTER PRIOR TO THE WATERLINE CONSTRUCTION. THE END SEALS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATERLINE PIPE.
4. THE TRACER WIRE RUNNING ALONG AND ATTACHED TO THE WATERLINE PIPE SHALL BE CONTINUOUS AND SHALL BE PLACED WITHIN AND THROUGH THE WATERLINE CASING PIPE.
5. ALL WATERLINE CARRIER PIPE JOINTS WITHIN THE CASING PIPE SHALL BE MECHANICALLY RESTRAINED. THE TYPE OF MECHANICAL RESTRAINTS SHALL BE APPROVED BY THE CITY OF WESTMINSTER PRIOR TO THE WATERLINE CONSTRUCTION. THE MECHANICAL RESTRAINTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATERLINE PIPE.

SANITARY SEWER CASING NOTES:

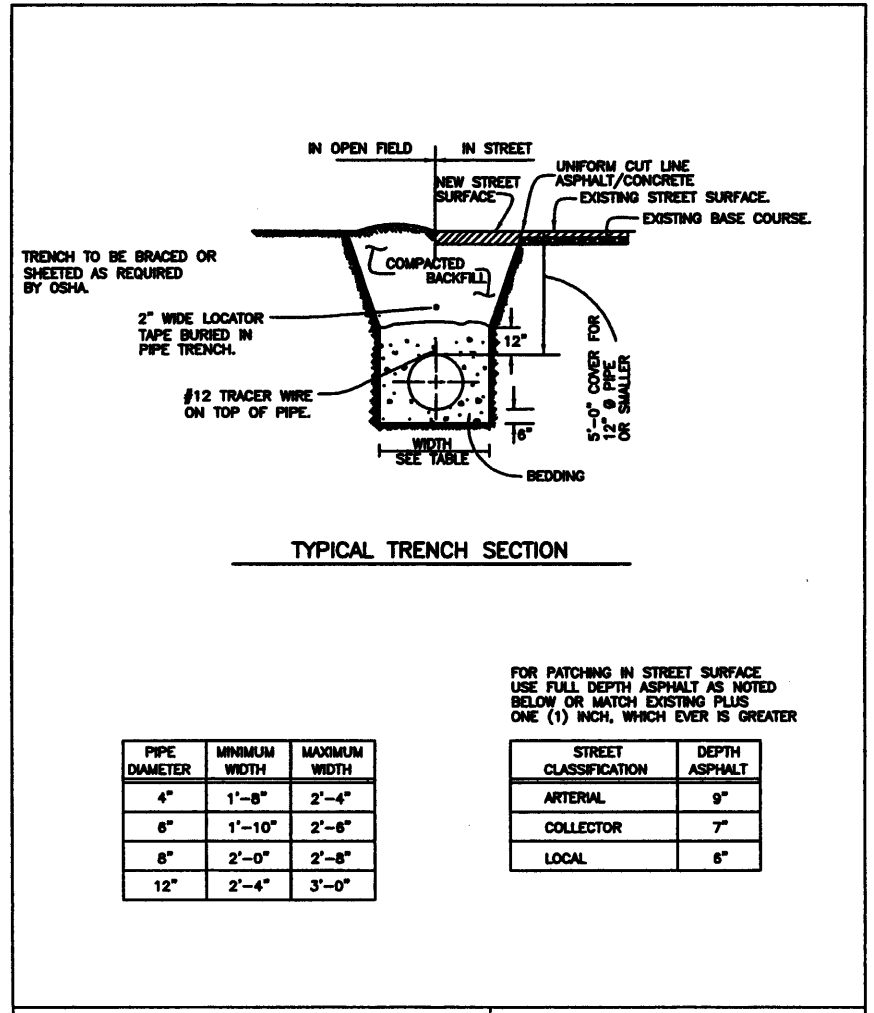
1. THE SANITARY SEWER CASING PIPE SHALL BE 36 INCH OUTSIDE DIAMETER (O.D.) WITH A MINIMUM WALL THICKNESS OF 0.554 INCHES HAVING A BITUMINOUS COATED EXTERIOR. THE SANITARY SEWER CASING PIPE TO BE PROVIDED AND INSTALLED BY OTHERS PRIOR TO THE SANITARY SEWER CONSTRUCTION.
2. THE SANITARY SEWER CONTRACTOR SHALL PROVIDE ALL SANITARY SEWER CASING APPURTENANCES, INCLUDING BUT NOT LIMITED TO, RUNNERS, RISERS, AND STEEL BANDS. THE LOCATION, SPACING, AND THE TYPE OF THE RUNNERS, RISERS, AND STEEL BANDS SHALL BE APPROVED BY THE CITY OF WESTMINSTER PRIOR TO CONSTRUCTION OF THE SANITARY SEWER. THE RUNNERS, RISERS, STEEL BANDS, AND ANY OTHER NECESSARY APPURTANCES WITHIN THE CASING PIPE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
3. END SEALS SHALL BE INSTALLED AT EACH END OF THE SANITARY SEWER CASING PIPE, AND TO BE PROVIDED BY THE SANITARY SEWER CONTRACTOR. THE TYPE OF END SEALS SHALL BE APPROVED BY THE CITY OF WESTMINSTER PRIOR TO THE SANITARY SEWER CONSTRUCTION. END SEALS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
4. ALL SANITARY SEWER CARRIER PIPE JOINTS WITHIN THE CASING PIPE SHALL BE MECHANICALLY RESTRAINED. THE TYPE OF MECHANICAL RESTRAINTS SHALL BE APPROVED BY THE CITY OF WESTMINSTER PRIOR TO THE SANITARY SEWER CONSTRUCTION. THE MECHANICAL RESTRAINTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.

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Computer File Information		Index of Revisions			303.721.1440 fax 303.721.0832 fhu@fhueng.com	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE		Project No./Code
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Last Modification Date:	10/20/04 Initials: DRS	<input type="checkbox"/>		Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	No Revisions:	Revised: X	Designer:	SPG	Sheet Number 313
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Drawing File Name:	D00033DET06AB.dwg	<input type="checkbox"/>					Sheet Subset:	Subset Sheets: WWS-9 of 17	
Acad Ver. 2000i	Scale: Units: English	<input type="checkbox"/>							



PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-8"	2'-4"
6"	1'-10"	2'-6"
8"	2'-0"	2'-8"
12"	2'-4"	3'-0"

FOR PATCHING IN STREET SURFACE USE FULL DEPTH ASPHALT AS NOTED BELOW OR MATCH EXISTING PLUS ONE (1) INCH, WHICH EVER IS GREATER

STREET CLASSIFICATION	DEPTH ASPHALT
ARTERIAL	9"
COLLECTOR	7"
LOCAL	6"

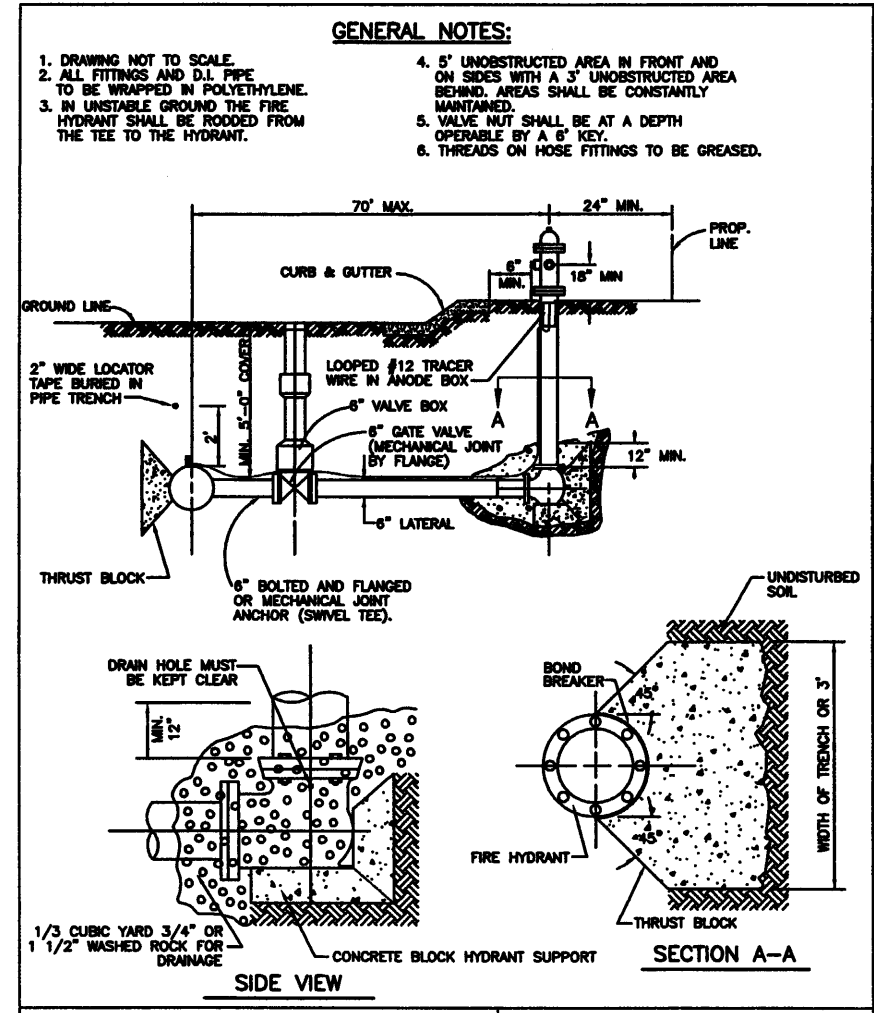
**CITY of WESTMINSTER**  
4800 WEST 92ND AVENUE  
WESTMINSTER, COLO. 80030

**TYPICAL TRENCH SECTION**  
PIPE PROTECTION

DATE: APR. 1999 SHEET W1 OF 23

**TYPICAL TRENCH SECTION**

NOTE: GRANULAR BEDDING MATERIAL PER TABLE 9.22.00 OF THE CITY OF WESTMINSTER STANDARDS SHALL BE PLACED TO THE LIMITS SHOWN.

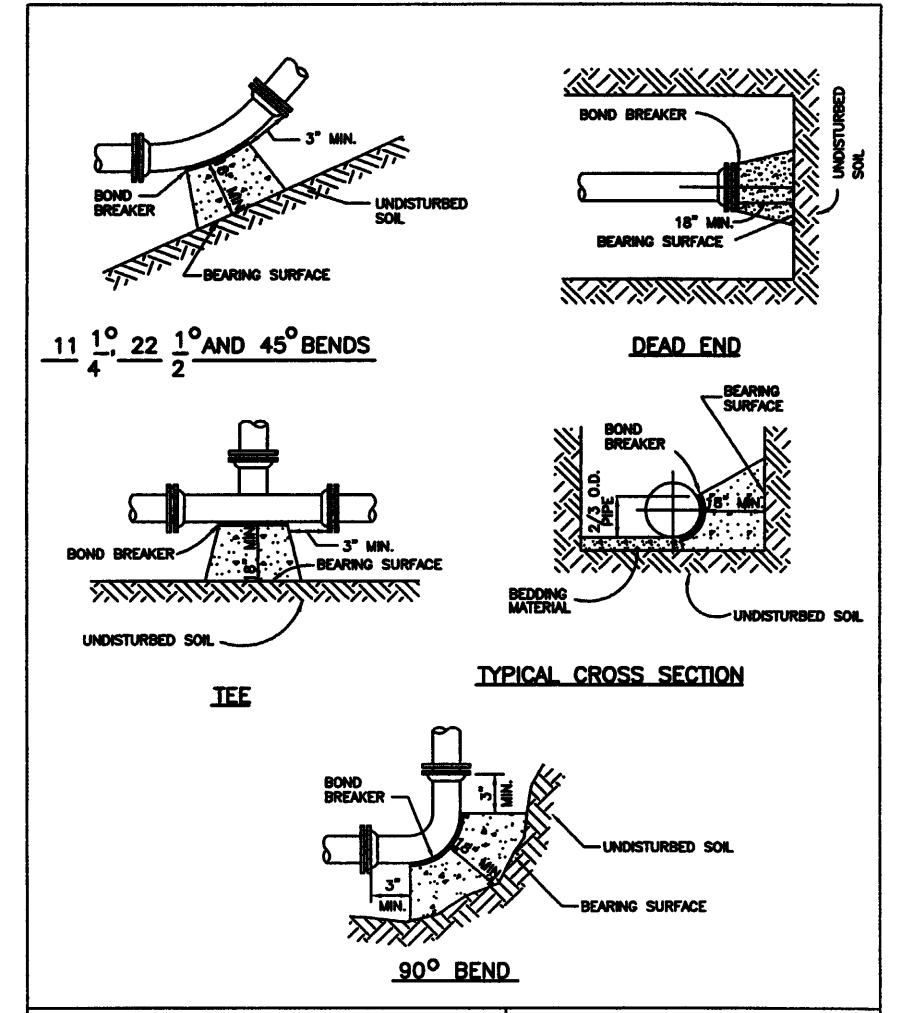


**CITY of WESTMINSTER**  
4800 WEST 92ND AVENUE  
WESTMINSTER, COLO. 80030

**FIRE HYDRANT**  
INSTALLATION DETAIL

DATE: APR. 1999 SHEET W2 OF 23

**FIRE HYDRANT ASSEMBLY**



**CITY of WESTMINSTER**  
4800 WEST 92ND AVENUE  
WESTMINSTER, COLO. 80030

**CONCRETE THRUST BLOCKS**  
BEARING SURFACES AND INSTALLATION

DATE: APR. 1999 SHEET W3 OF 23

**CONCRETE THRUST BLOCKS**

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Acad Ver. 2000i	Scale:	Units:	English

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**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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**136TH AVENUE AT I-25 INTERCHANGE**  
WATER LINE DETAILS

Designer:	SPG
Detailer:	DCB
Sheet Subset:	UTILITY
Subset Sheets:	WWS-10 of 17

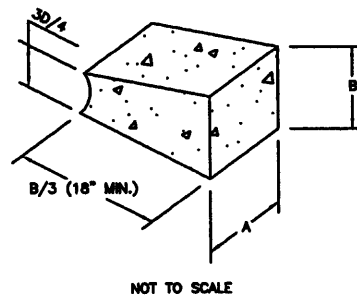
**Project No./Code**  
97-71

**Sheet Number**  
314

MINIMUM DIMENSIONS FOR THRUST BLOCKS

FITTING SIZE	TEES & PLUGS		90° BEND		45° BENDS & WYES	
	A	B	A	B	A	B
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"
10"	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"
14"	5'-5"	3'-10"	6'-8"	4'-11"	4'-9"	3'-5"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"

FITTING SIZE	REDUCERS & 22 1/2° BENDS		11 1/4° BENDS	
	A	B	A	B
4"	1'-7"	0'-8"	0'-8"	0'-8"
6"	1'-9"	0'-10"	1'-0"	0'-8"
8"	1'-9"	1'-8"	1'-0"	1'-0"
10"	2'-2"	1'-11"	1'-8"	1'-0"
12"	2'-7"	2'-3"	2'-0"	1'-0"
14"	3'-5"	2'-5"	2'-0"	1'-8"
20"	3'-8"	3'-0"	3'-0"	2'-0"
24"	4'-8"	3'-0"	3'-0"	3'-0"
30"	4'-9"	4'-8"	3'-3"	3'-3"



GENERAL NOTES:

1. BEARING SURFACE AREAS SHOWN IN CHART ARE MINIMUM.
2. BASED ON 150 P.S.I. INTERNAL PIPE PRESSURE.
3. SOIL BEARING CAPACITY = 2000 LB./SQ. FT.
4. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE (MINIMUM 8 MIL.).

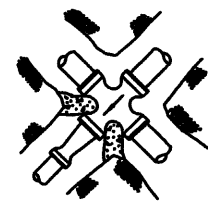


CITY of WESTMINSTER  
4800 WEST 92ND AVENUE  
WESTMINSTER, COLO. 80030

TYPICAL THRUST BLOCK DIMENSIONS

DATE: APR. 1999 SHEET W4 OF 23

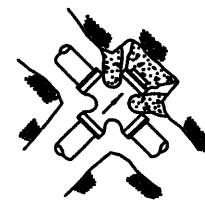
THRUST BLOCK DIMENSIONS



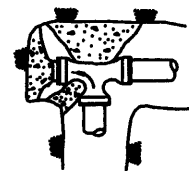
UNBALANCED CROSS



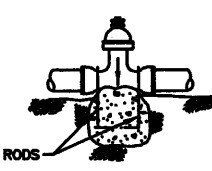
PLUGGED CROSS



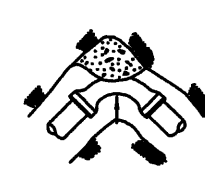
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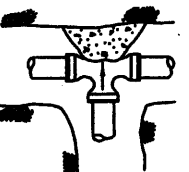
PLUGGED TEE



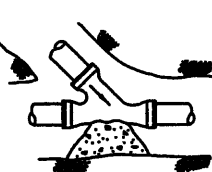
VALVE



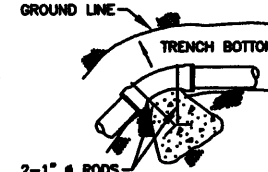
HORIZONTAL BEND



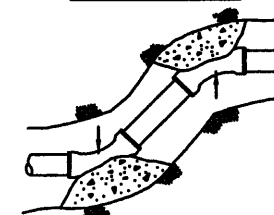
TEE



Y BRANCH



VERTICAL BEND



OFFSET

NOTES:

1. SIZE OF BLOCK TO BE A MINIMUM OF 18" THICK.
2. ALL BLOCKING TO BE ON UNDISTURBED MATERIAL.

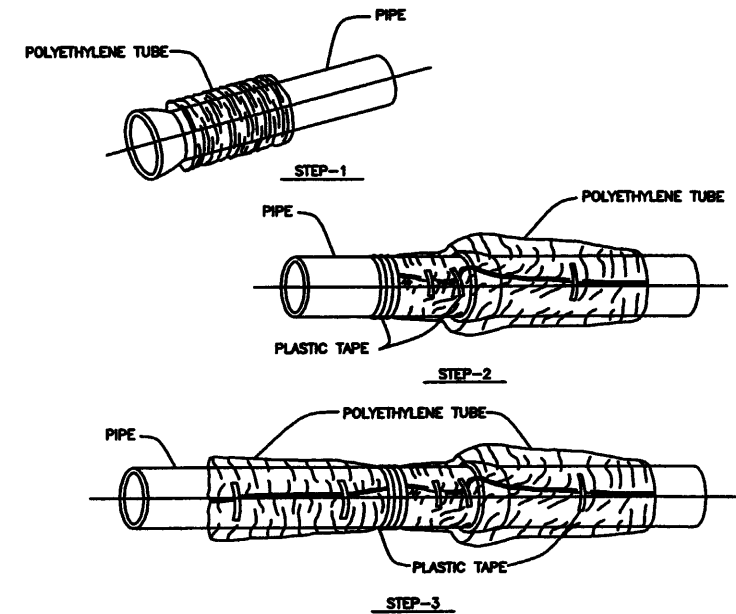


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CONCRETE THRUST BLOCKING FOR UNBALANCED FITTINGS

DATE: APR. 1999 SHEET W5 OF 23

UNBALANCED THRUST BLOCKS



FIELD INSTALLATION-POLYETHYLENE WRAP

- STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.
- STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.
- STEP-3 OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF THE PIPE AND TAPED IN PLACE.

NOTE: POLYETHYLENE SHALL BE MINIMUM 8-MIL THICKNESS



CITY of WESTMINSTER  
4800 WEST 92ND AVENUE  
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POLYETHYLENE WRAP FOR DUCTILE IRON PIPE

DATE: OCT. 1997 SHEET W6 OF 25

POLYETHYLENE WRAP

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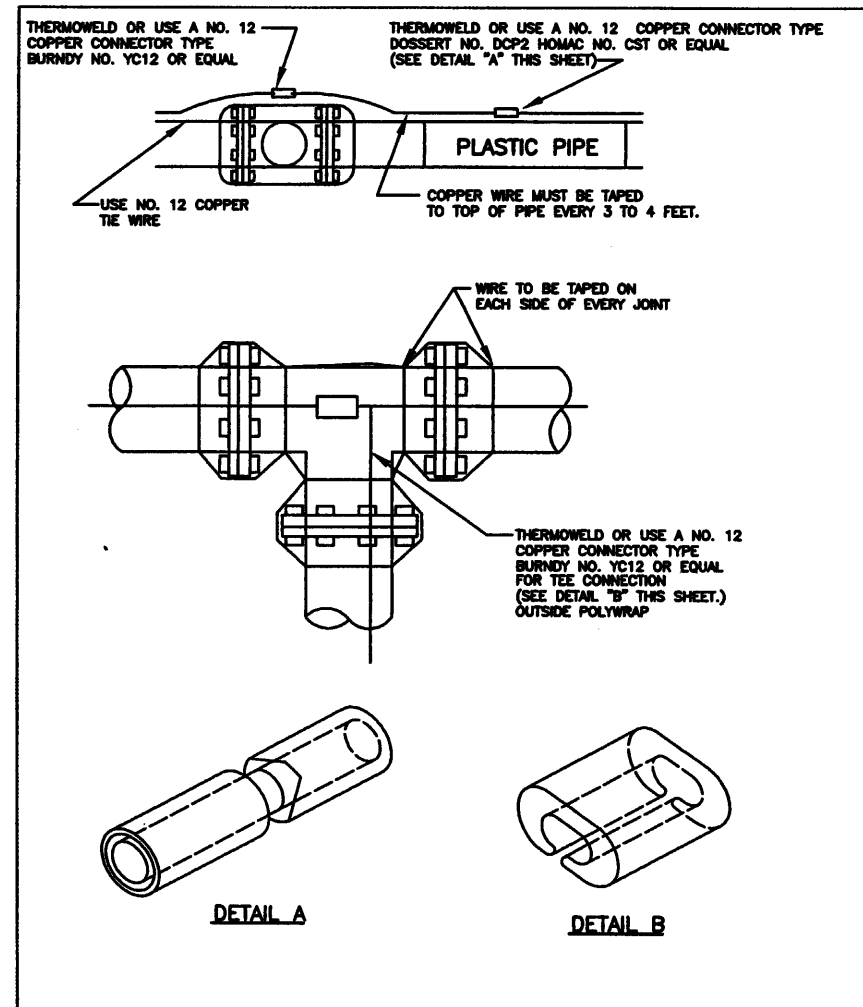
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136TH AVENUE AT I-25 INTERCHANGE WATER LINE DETAILS	
Designer: SPG	
Detailer: DCB	
Sheet Subset: UTILITY	Subset Sheets: WWS-11 of 17

Project No./Code	97-71
Sheet Number	315

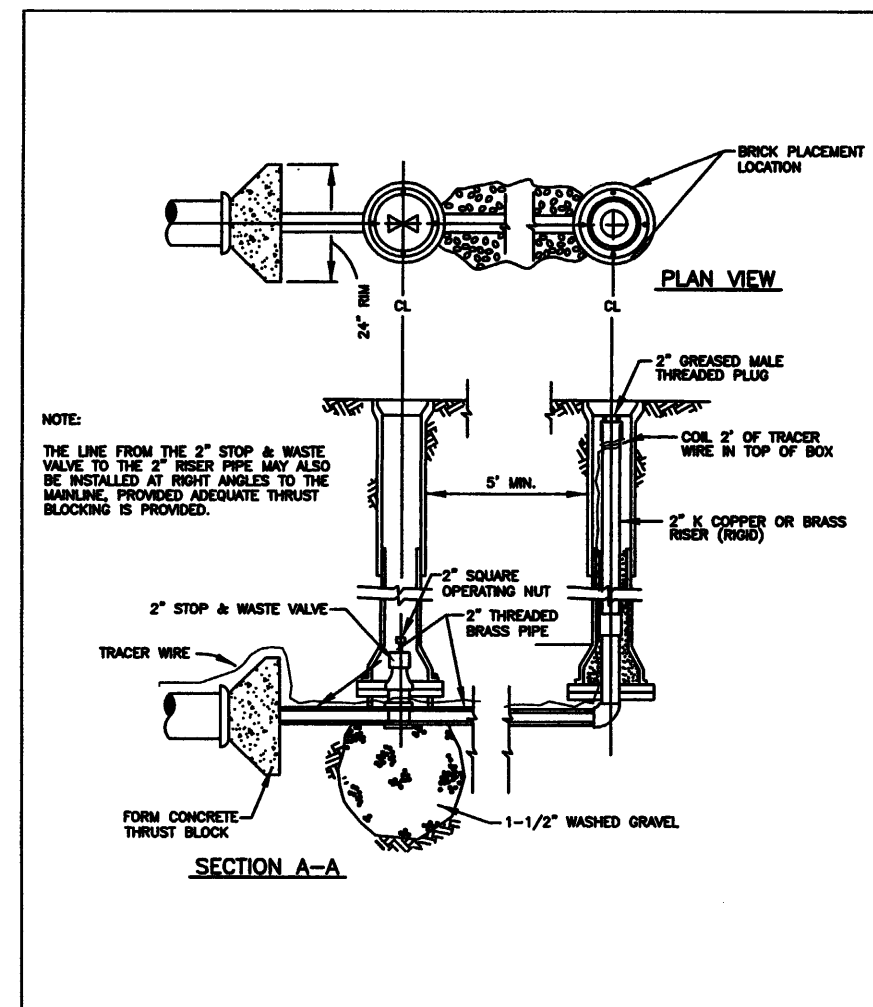


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4800 WEST 92ND AVENUE  
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**TRACER WIRE ON PLASTIC PIPE**

DATE: APR. 1999 SHEET W7 OF 23

**TRACER WIRE**



**CITY of WESTMINSTER**  
4800 WEST 92ND AVENUE  
WESTMINSTER, COLO. 80030

**STANDARD BLOW-OFF INSTALLATION**

DATE: APR. 1999 SHEET W16 OF 23

**BLOW-OFF ASSEMBLY**

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Acad Ver. 2000i Scale:	Units: English

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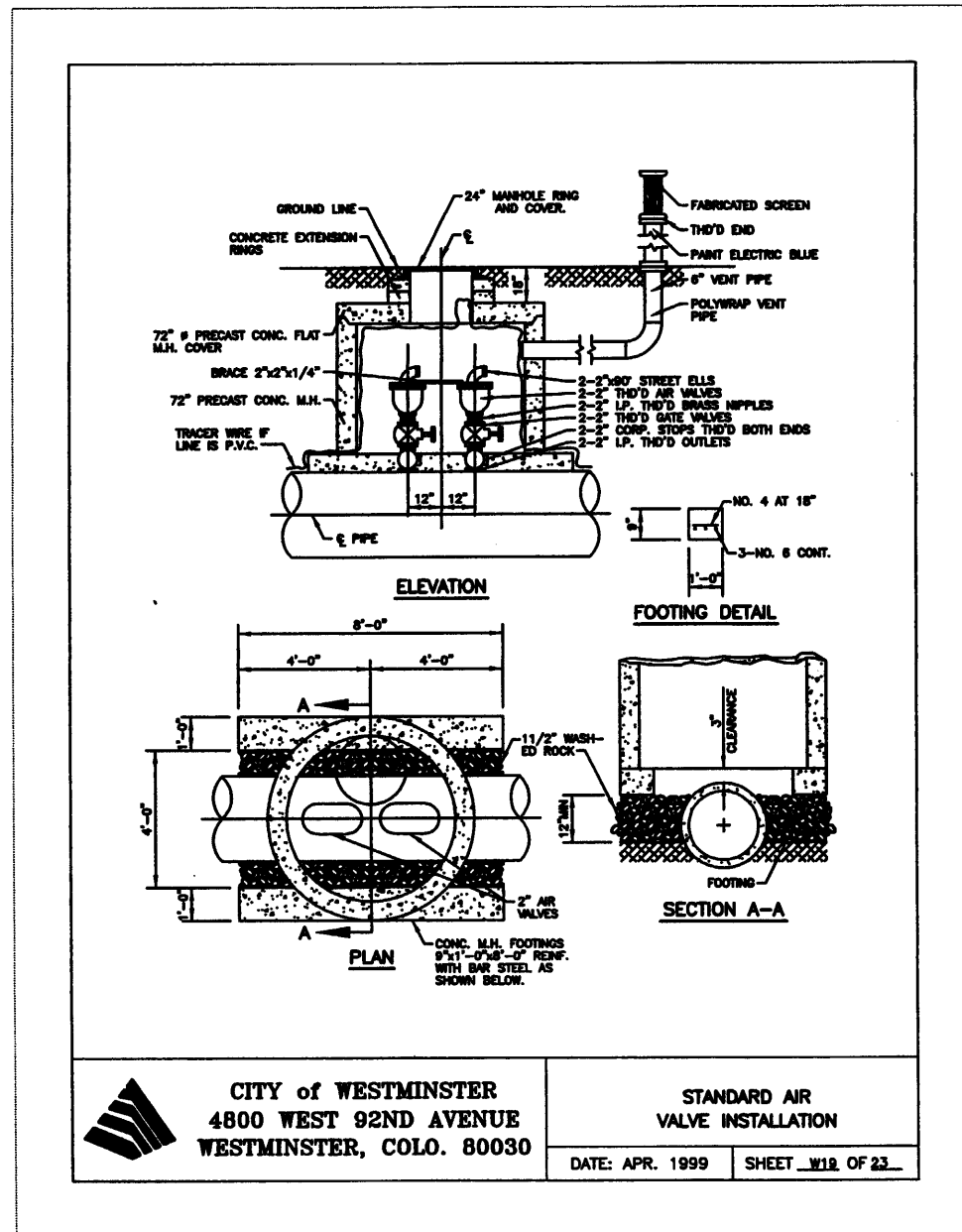
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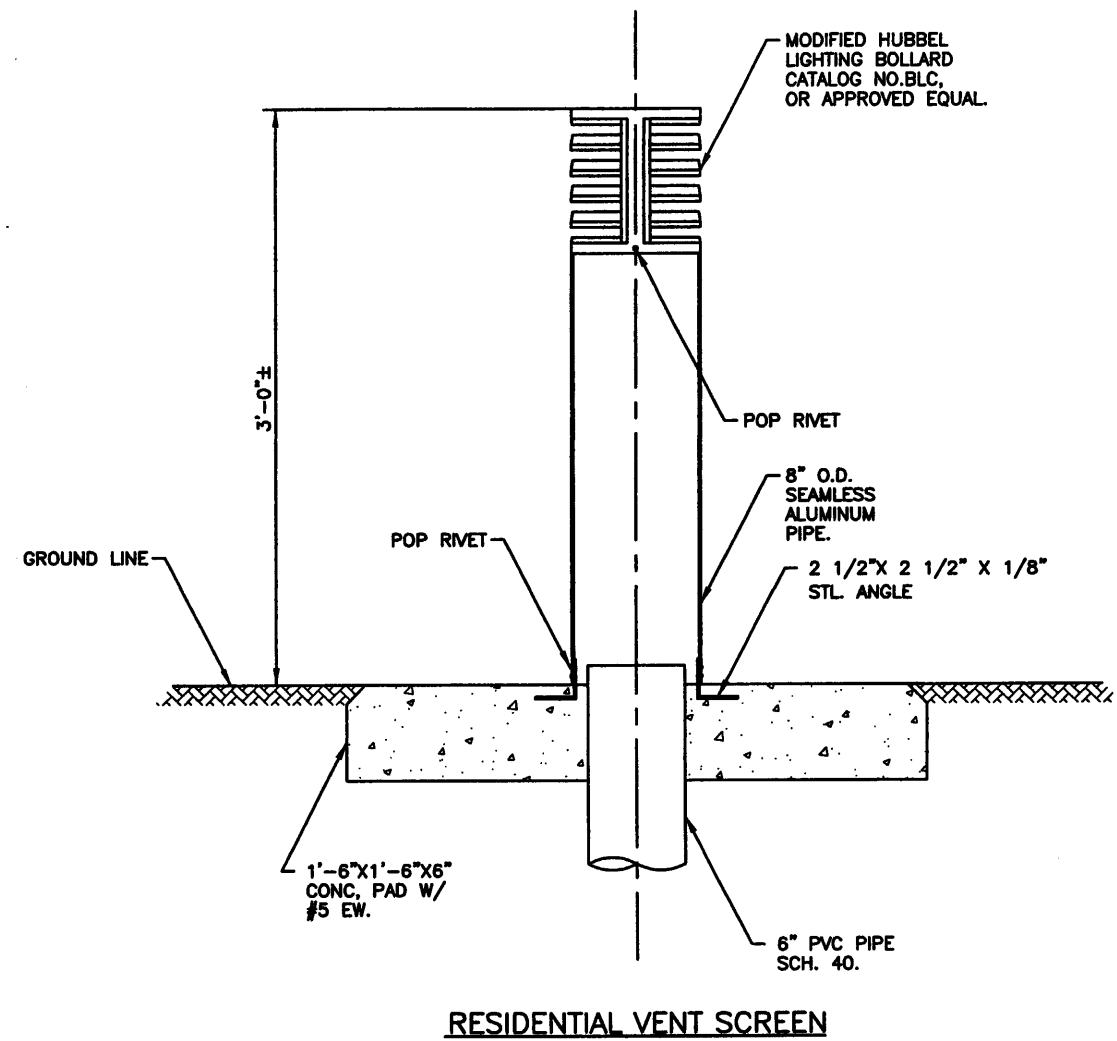
136TH AVENUE AT I-25 INTERCHANGE WATER LINE DETAILS	
Designer:	SPG
Detailer:	DCB
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**COMBINATION AIR/VACUUM VALVE INSTALLATION**

- NOTES:**
1. LOWER WATERLINE AS NECESSARY TO CONSTRUCT THE ACCESS MANHOLE AS SHOWN.
  2. THE AIR VALVE SHALL BE A COMBINATION AIR AND VACUUM VALVE AS APPROVED BY THE CITY OF WESTMINSTER. THE VALVE SHALL BE AN AIR TYPE VALVE OF THE BALL TYPE DESIGNED TO PERMIT THE ESCAPE OF AIR FROM THE PIPELINE WHEN THE LINE IS BEING FILLED AND TO PERMIT AIR TO ENTER THE PIPELINE WHEN THE LINE IS BEING EMPTIED.



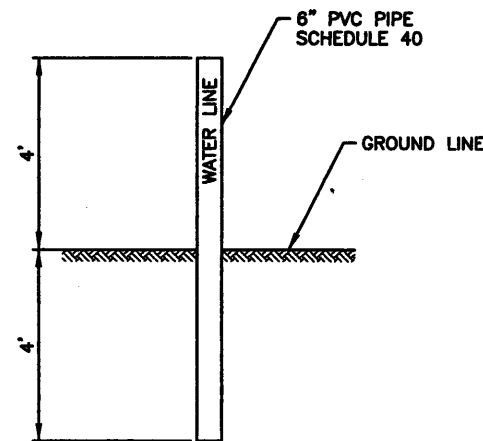
**AIR VALVE VENT NOTES:**

1. THE LOCATION OF THE VENT PIPE SHALL BE AS DIRECTED BY THE CITY OF WESTMINSTER DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE FINAL VENT LOCATION WITH THE CITY OF WESTMINSTER PRIOR TO THE WATERLINE CONSTRUCTION.
2. THE VENT PIPE SHALL BE 6" PVC PIPE, SCHEDULE 40.
3. THE VENT PIPE SCREEN SHALL BE THE "RESIDENTIAL" VENT SCREEN AS DETAILED ON THIS SHEET.

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Creation Date:	10/20/01 Initials: DCB				No Revisions: X			97-71
Last Modification Date:	10/20/04 Initials: DRS				Revised:	Designer: SPG		
Full Path:	J:\00033\AS-BUILT\				Void:	Detailer: DCB		
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Acad Ver. 2000i	Scale: Units: English							

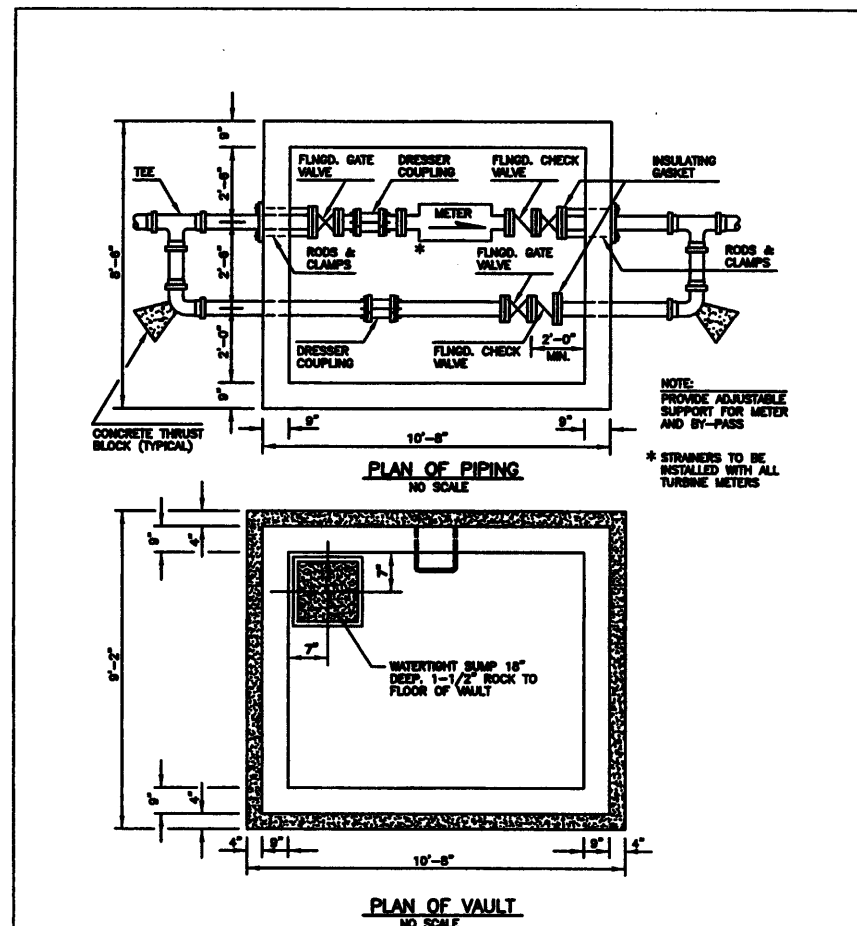


**TEMPORARY WATERLINE MARKER**

NOTE: 1.PLACE TEMPORARY WATERLINE MARKER AT THE ENDS OF THE WATERLINE ADJACENT TO THE PLUGS.  
2.LABEL "WATERLINE" ON TWO SIDES OF THE TOP OF THE MARKER PIPE.

**RECORD DOCUMENTS  
- WARNING -**

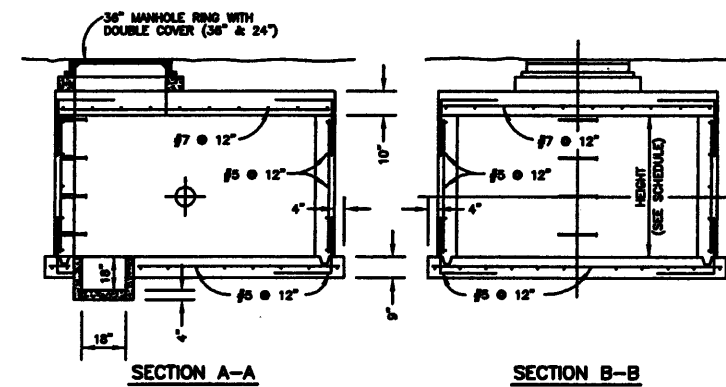
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**CITY of WESTMINSTER**  
4800 WEST 92ND AVENUE  
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STANDARD 3" & 4" METER  
SETTING DETAIL

DATE: NOV. 2000 SHEET W11 OF 23



**METER VAULT-INSIDE DIMENSION SCHEDULE**

METER SIZE	LENGTH	WIDTH	HEIGHT	WALL THICKNESS
3"	8'-0"	7'-0"	7'-0"	8"
4"	10'-0"	7'-0"	7'-0"	8"
6"	12'-0"	9'-0"	7'-0"	8"
8"	12'-0"	9'-0"	7'-0"	8"
12"	12'-0"	10'-0"	8'-0"	8"

**CITY of WESTMINSTER**  
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TYPICAL  
METER VAULT

DATE: NOV. 2000 SHEET W12 OF 23

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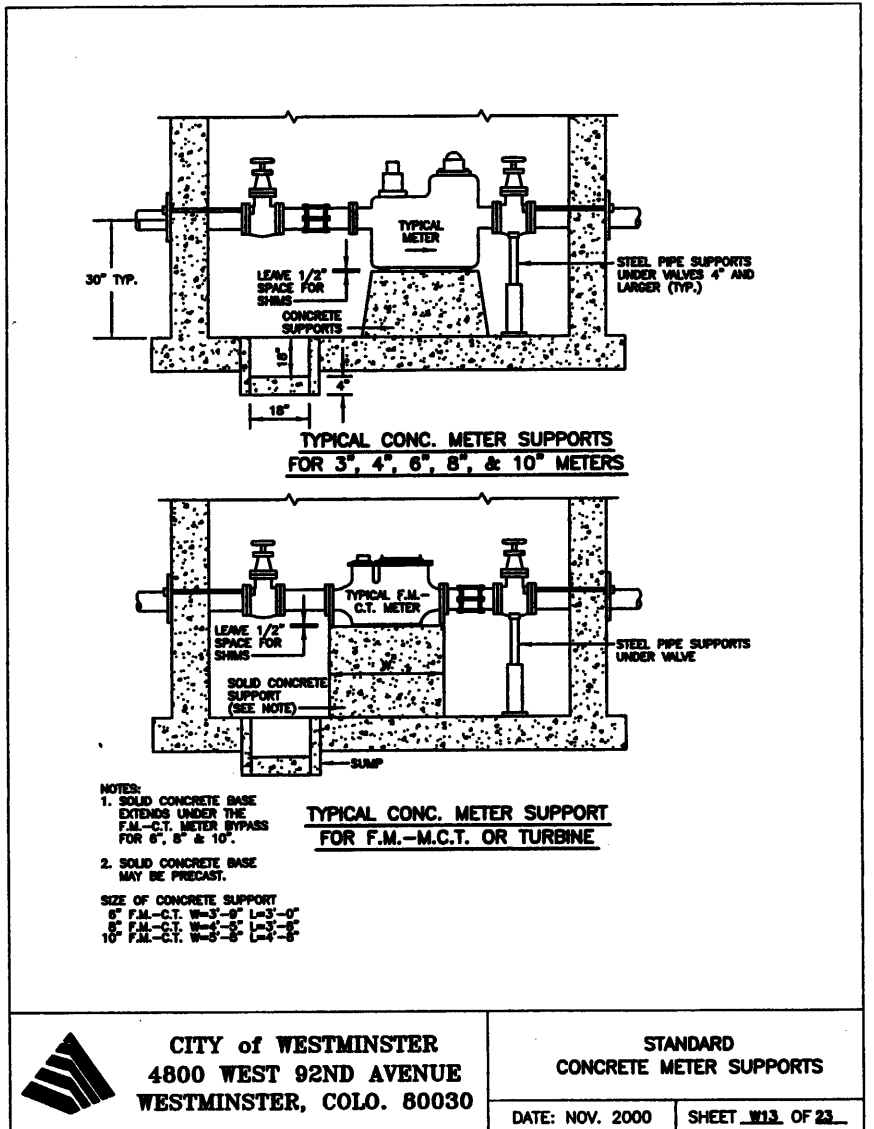
136TH AVENUE AT I-25 INTERCHANGE  
WATER LINE DETAILS

Designer: SPG  
Detailer: DCB  
Sheet Subset:

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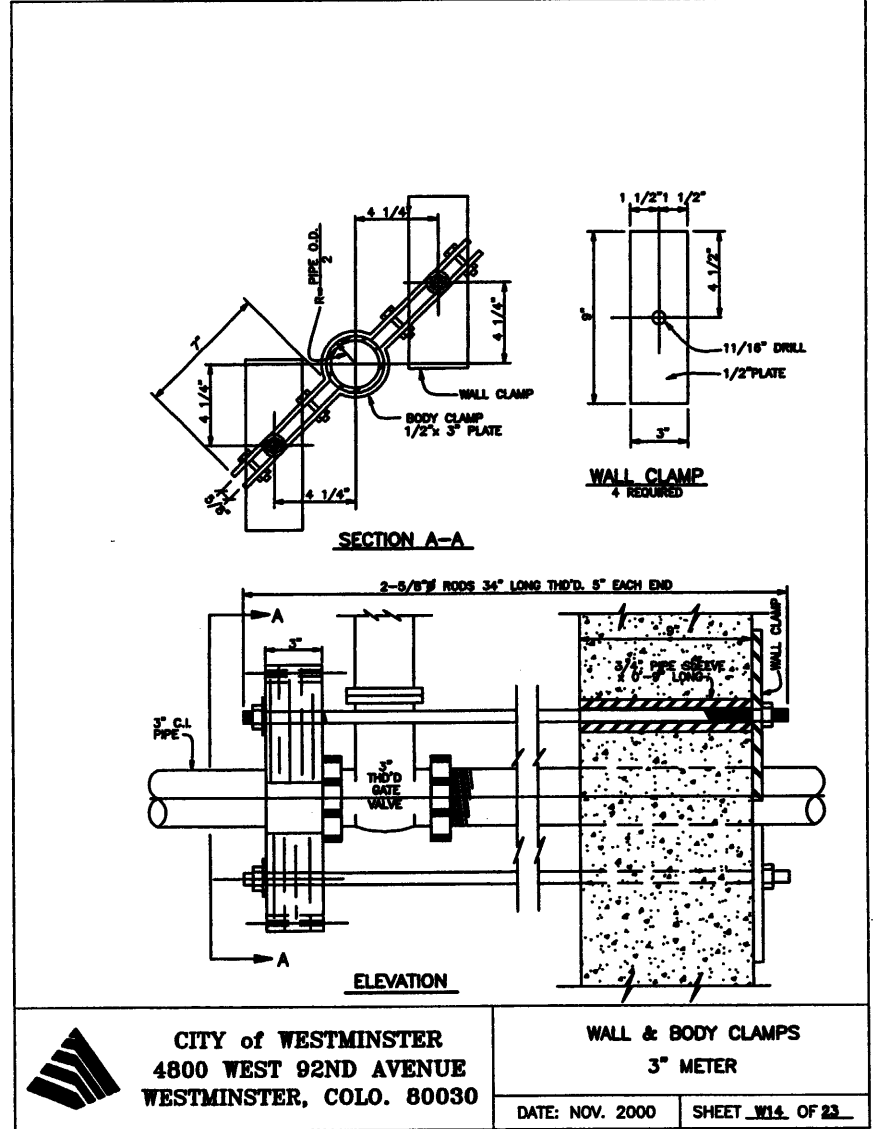
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**CITY of WESTMINSTER**  
 4800 WEST 92ND AVENUE  
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**STANDARD CONCRETE METER SUPPORTS**

DATE: NOV. 2000 SHEET W13 OF 22



**CITY of WESTMINSTER**  
 4800 WEST 92ND AVENUE  
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**WALL & BODY CLAMPS**  
 3" METER

DATE: NOV. 2000 SHEET W14 OF 22

**WATER METER AND VAULT NOTES:**

1. THE WATER METER SHALL BE A BADGER TURBO (3 INCH) WITH INTEGRAL STRAINER AND 2 INCH TEST PLUG, OR APPROVED EQUAL.
2. THE LATERAL FROM THE MAIN SHALL BE 4 INCH D.I.P.
3. THE PIPE, VALVES, FITTINGS, AND OTHER APPURTENANCES WITHIN AND ADJACENT TO THE METER VAULT MAY BE EITHER 3 INCH OR 4 INCH.
4. THE CONTRACTOR TO PROVIDE MEANS OF CONNECTING THE 4 INCH LATERAL PIPE FROM THE MAIN TO THE 3 INCH OR 4 INCH APPURTENANCES (EITHER 4"x3" REDUCERS OR OTHER MEANS).
5. THE CONTRACTOR TO ALSO PROVIDE MEANS OF CONNECTING THE METER TO THE IRRIGATION BACK FLOW PREVENTER (SEE IRRIGATION PLANS).
6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL DETAILING THE PROPOSED METHOD OF CONNECTING THE 4 INCH LATERAL PIPE FROM THE MAIN TO THE METER AND THE METER APPURTENANCES, AND FROM THE METER TO THE IRRIGATION SYSTEM BACK FLOW PREVENTER INCLUDING ALL VALVES, FITTINGS AND APPURTENANCES.

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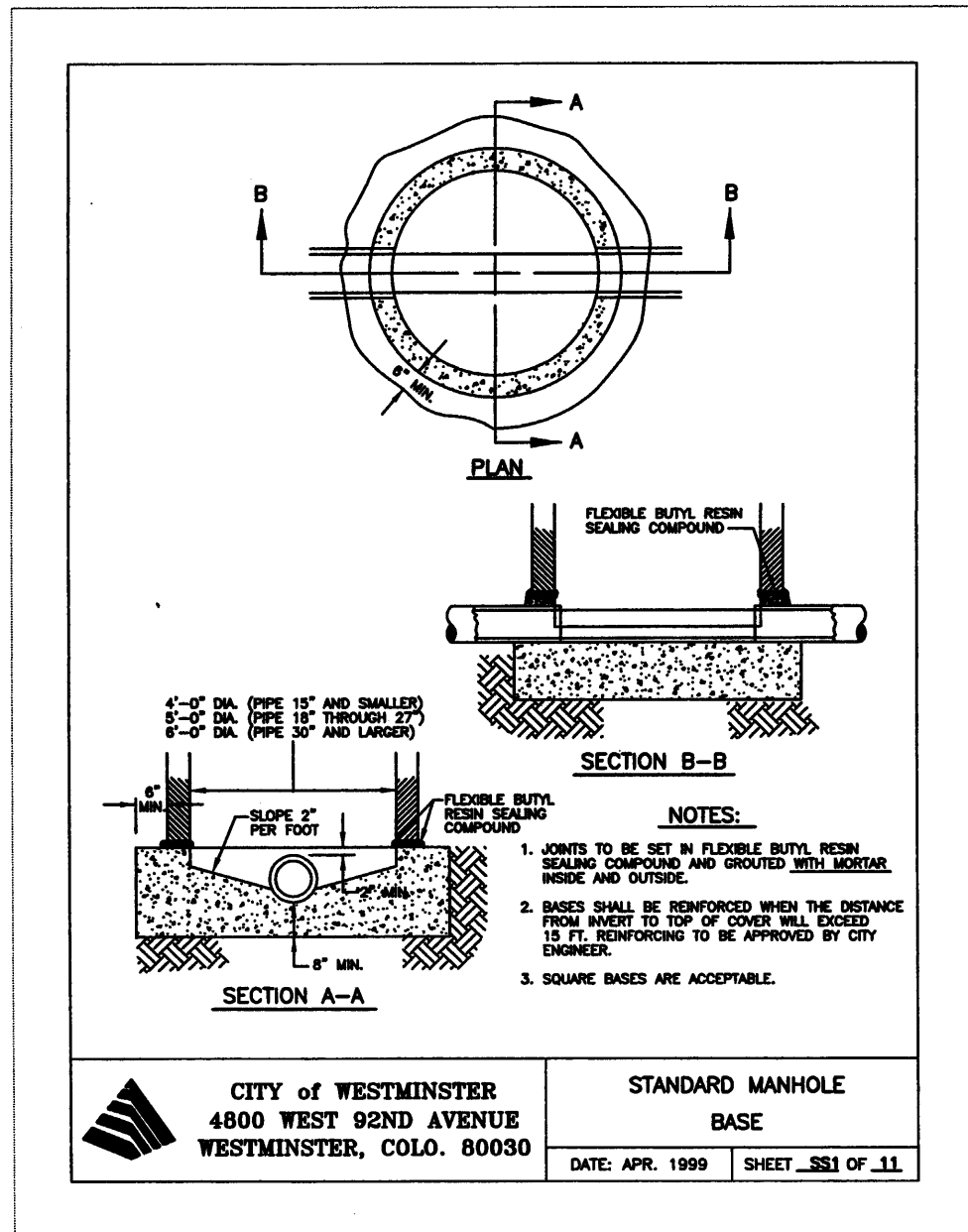
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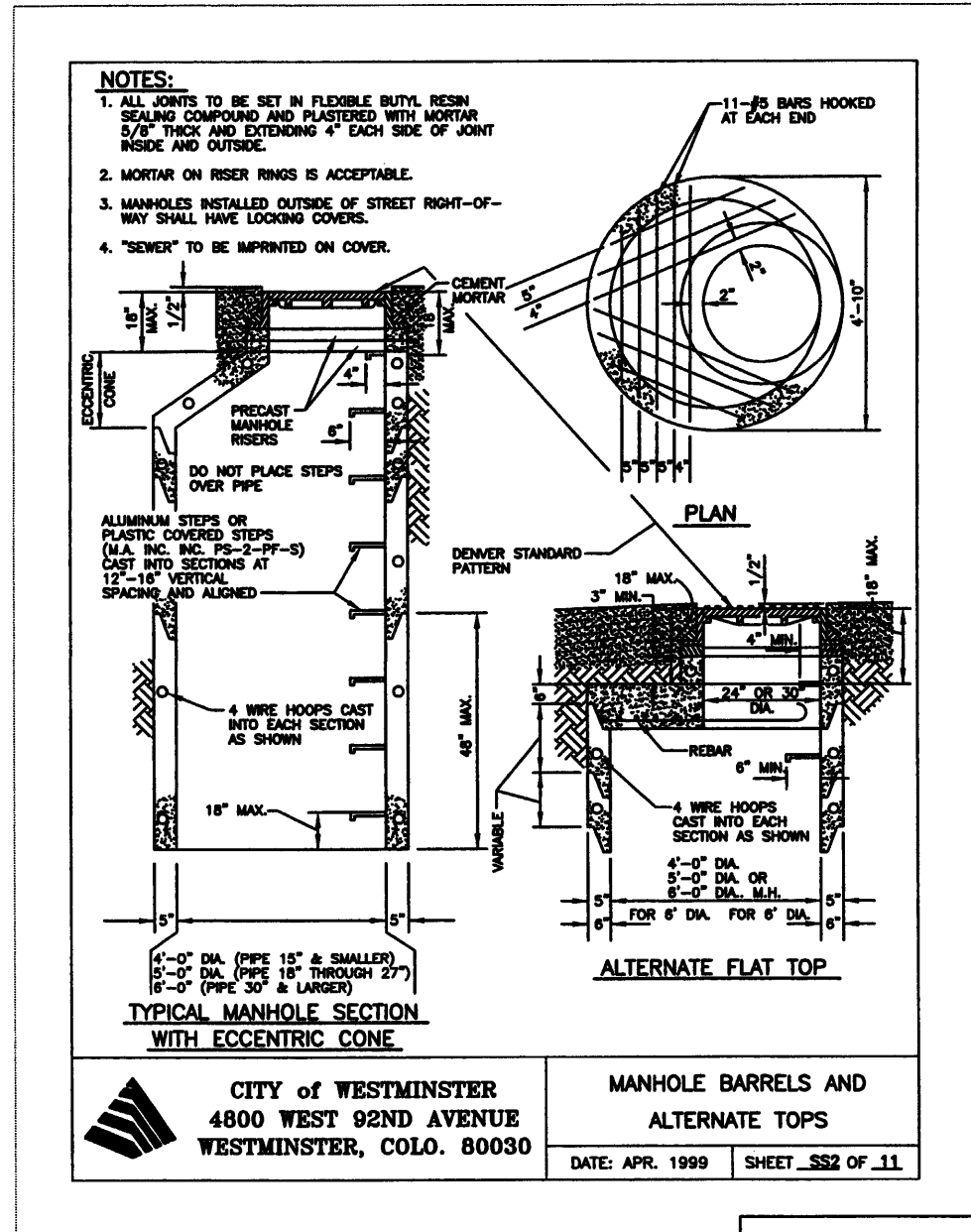
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136TH AVENUE AT I-25 INTERCHANGE	
WATER LINE DETAILS	
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SANITARY SEWER MANHOLE BASE



NOTE: FLAT TOP MANHOLES ARE NOT ALLOWED.

SANITARY SEWER MANHOLES

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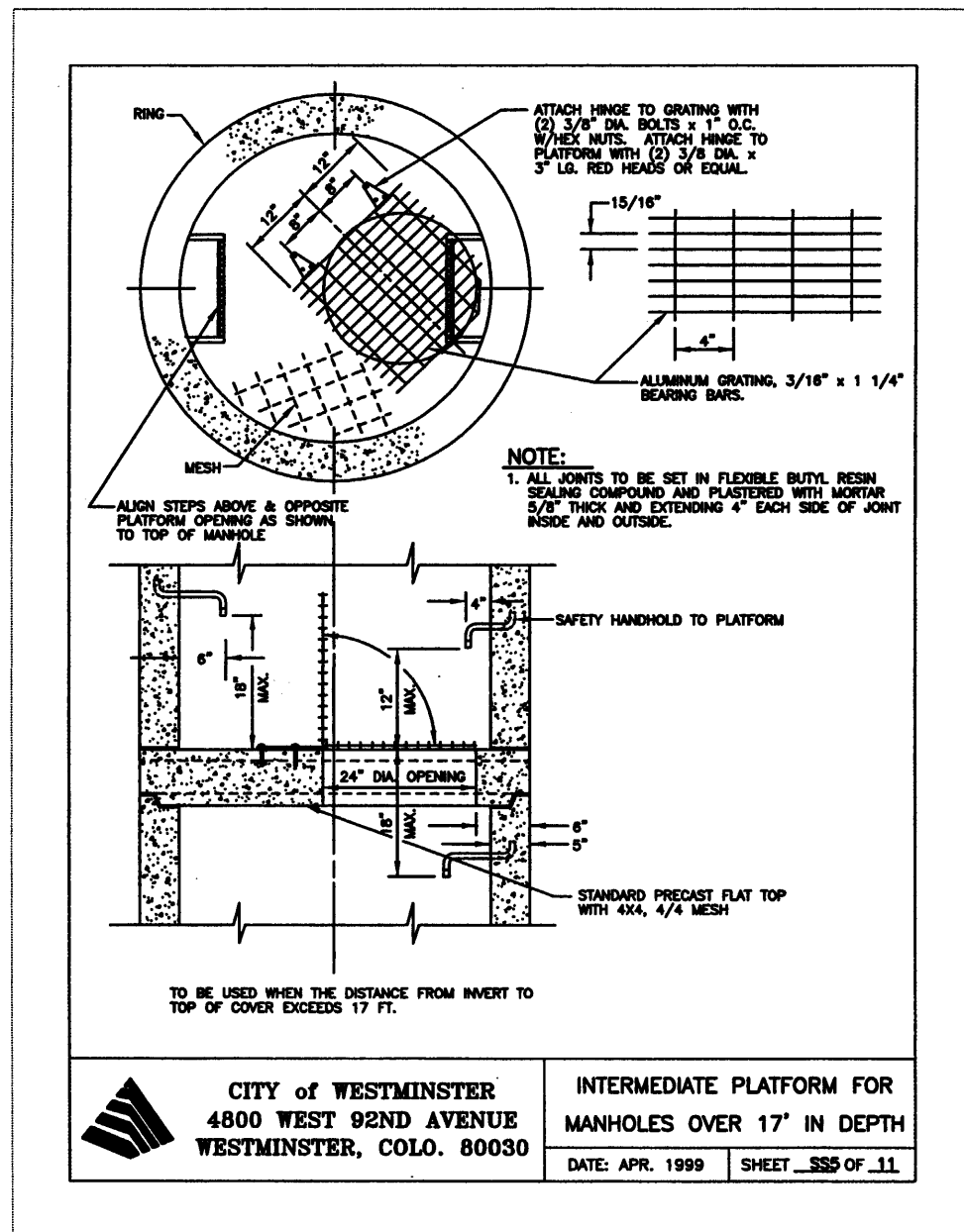
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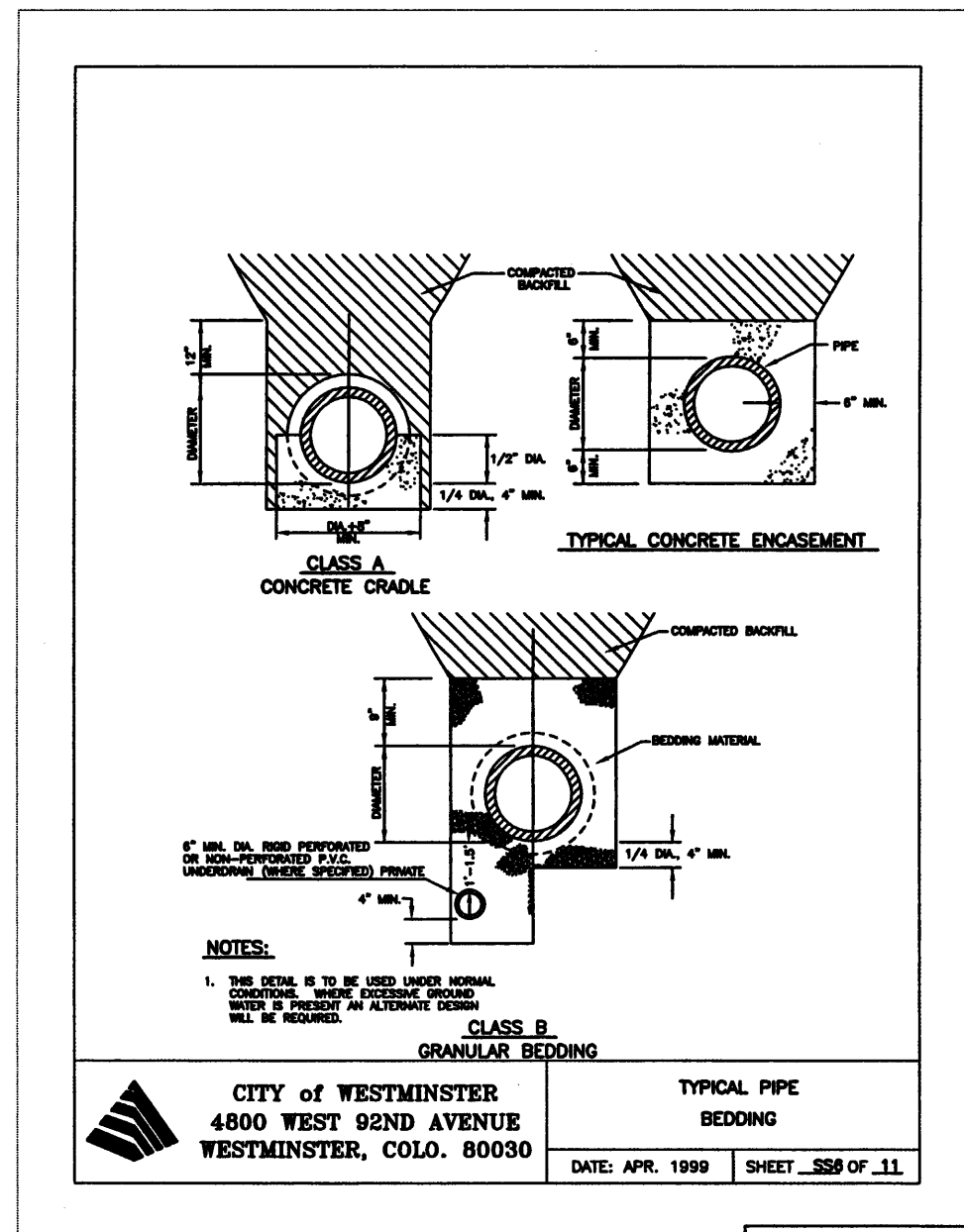
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SANITARY MANHOLE PLATFORM



SANITARY SEWER BEDDING

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Detailer:	DCB
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# 136TH AVENUE AT I-25 INTERCHANGE

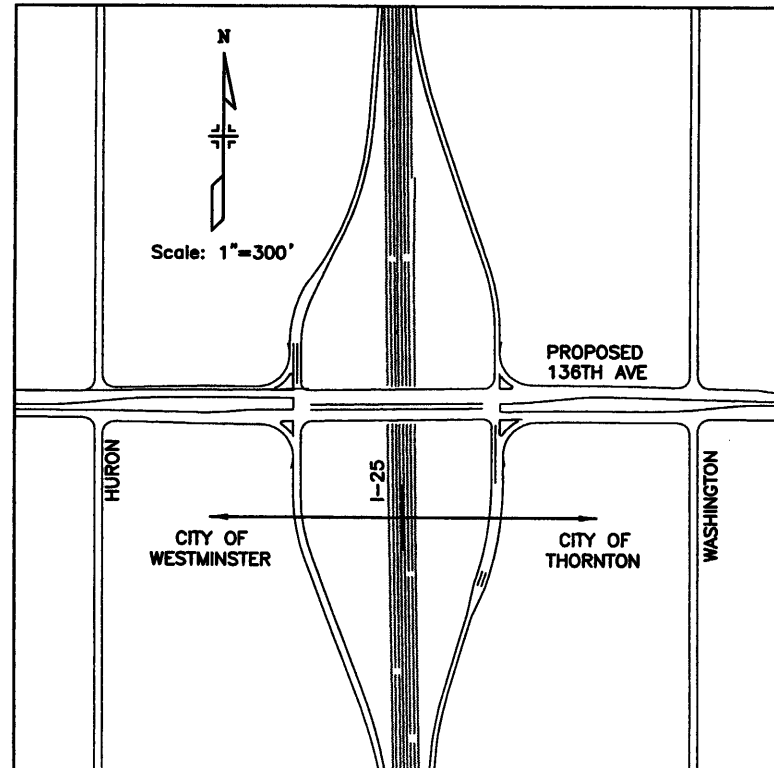
## WATER AND SANITARY SEWER PLANS

### (CITY OF THORNTON)

CITY OF THORNTON  
TABULATION OF WATERLINE AND SANITARY SEWER

ITEM NUMBER	ITEM	UNIT	QUANTITY
WATER			
210	ADJUST VALVE BOX (WATER)	EA	5
619	BENDS-22 1/2 DEG. (12 IN.)-VERTICAL	EA	4
619	BLOW-OFF ASSEMBLY	EA	4
619	FIRE HYDRANT ASSEMBLY	EA	2
619	GATE VALVE-12 INCH	EA	6
619	GATE VALVE-6 INCH	EA	2
619	PLASTIC PIPE (WATER)-12 INCH	LF	1560
619	PLASTIC PIPE (WATER)-6 INCH	LF	78
619	DUCTILE IRON PIPE (WATER)-4 INCH	LF	99
619	PLUG-12 INCH	EA	3
619	TAPPING TEE (12 IN. X 24 IN.)	EA	1
619	TEE-(12 IN. X 12 IN. X 12 IN.)	EA	2
619	TEE-(12 IN. X 12 IN. X 6 IN.)	EA	2
619	TEE-(12 IN. X 12 IN. X 4 IN.)	EA	1
619	WATER METER AND VAULT-3 INCH METER	EA	1
619	WELDED STEEL PIPE (JACKED)-22 INCH OD	LF	238
619	AIR AND VACUUM VALVE	EA	1

ITEM NUMBER	ITEM	UNIT	QUANTITY
SANITARY			
210	ADJUST MANHOLE (SANITARY)	EA	4
603	PLASTIC PIPE (SANITARY)-12 INCH	EA	1004
604	MANHOLE SLAB BASE (SANITARY)-20 FOOT	EA	2
604	MANHOLE SLAB BASE (SANITARY)-25 FOOT	EA	2
619	WELDED STEEL PIPE (JACKED)-22 INCH OD	EA	238



VICINITY MAP

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Creation Date:	09/21/01 Initials: DCB	○				No Revisions: X		97-71
Last Modification Date:	10/20/04 Initials: DRS	○				Revised:		Designer: SPG
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Drawing File Name:	D00033TTL02AB.dwg	○		Sheet Subset:	Subset Sheets: TWS-1 of 13	Sheet Number: 322		
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**THORNTON WATERLINE AND SANITARY SEWER GENERAL NOTES:**

1. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR THE CONDITIONS AT AND ADJACENT TO THE JOB SITE; INCLUDING SAFETY OF PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS ONLY. THE DUTY OF THE CITY OF THORNTON IS TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE, AND IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE.
2. ALL MATERIALS AND WORKMANSHIP FOR WATER AND SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF THORNTON SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS". ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY AUTHORIZED CITY OF THORNTON PERSONNEL.
3. ALL TESTING, AND PERMITS FOR THE WATER MAIN AND SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF THORNTON (EAST OF I-25) SHALL BE DONE IN ACCORDANCE WITH THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS". THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL REQUIRED PERMITS AND TESTING FOR THE WATER AND SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF THORNTON.
4. THE WATER AND SANITARY SEWER CONTRACTOR SHALL FURNISH THE ENGINEER WITH "AS CONSTRUCTED" LOCATIONS OF FACILITIES INSTALLED AND, THIS IN TURN, SHALL BE SUBMITTED TO THE CITY OF THORNTON ON "AS-BUILT" MYLARS AND COMPACT DISK PREPARED BY THE CONTRACTOR'S ENGINEER.
5. THE BEDDING AND BACKFILL MATERIALS FOR BOTH THE WATER AND SANITARY SEWER SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS".
6. A MEETING MUST BE HELD BETWEEN THE WATER AND SANITARY SEWER CONTRACTOR AND THE CITY OF THORNTON CONSTRUCTION MANAGEMENT SERVICES PERSONNEL PRIOR TO THE WATER AND SANITARY SEWER CONSTRUCTION WITHIN THE CITY OF THORNTON. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THIS MEETING.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING THE NEARBY PUBLIC STREETS WITHIN THE CITY OF THORNTON DUE TO THE WATER AND SANITARY SEWER CONSTRUCTION ACTIVITY. THE STREET CLEANING SHALL BE DONE ON A DAILY BASIS OR AS OTHERWISE DIRECTED BY AUTHORIZED CITY OF THORNTON PERSONNEL.
8. THE CONTRACTOR IS RESPONSIBLE FOR THE NOTIFICATION AND COORDINATION WITH ALL CUSTOMERS THAT COULD BE AFFECTED BY THE OUTAGE OF WATER DURING THE CONSTRUCTION. WORK SHALL BE SCHEDULED SUCH THAT NO CUSTOMERS ARE OUT OF SERVICE BETWEEN 8:00 AM AND 11:00 PM. NOTIFICATION SHALL BE DONE AT LEAST 48 HOURS PRIOR TO ANY OUTAGE. PRIOR TO ANY SHUT DOWN OF ANY PORTION OF THE CITY OF THORNTON WATER SYSTEM, A TRIAL SHUT DOWN SHALL BE PERFORMED UNDER THE DIRECTION AND OBSERVATION OF THE CITY OF THORNTON CONSTRUCTION MANAGEMENT SERVICES PERSONNEL. THE CONTRACTOR SHALL SCHEDULE THE TRIAL SHUT DOWN WITH THE CITY OF THORNTON.
9. THE CONTRACTOR SHALL COMPLY WITH ARTICLE 1.5 OF TITLE 9, CRS ("EXCAVATION REQUIREMENTS") WHEN EXCAVATION OR GRADING IS PLANNED IN THE AREA OF UNDERGROUND UTILITY FACILITIES. THE CONTRACTOR SHALL NOTIFY THE REPRESENTATIVES OF THE UTILITIES AT LEAST TWO BUSINESS DAYS PRIOR TO COMMENCING SUCH OPERATIONS. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES. CALLS ORIGINATING WITHIN THE DENVER METRO AREA USE PHONE NO. 303-534-6700. CALLS ORIGINATING OUTSIDE THE DENVER METRO AREA CALL 1-800-922-1987. ALL OTHER UNDERGROUND FACILITIES SHALL BE LOCATED BY CONTACTING THE RESPECTIVE OWNERS. UTILITY SERVICE LATERALS SHALL ALSO BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING. THE LOCATION OF UTILITY FACILITIES AS SHOWN ON THE PLAN AND PROFILE SHEETS, AND HEREON DESCRIBED, WAS OBTAINED FROM THE BEST AVAILABLE INFORMATION. ALL COST BEING INCIDENTAL TO THE FOREGOING REQUIREMENTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
10. ALL WATERLINE FITTINGS, VALVES, DUCTILE IRON PIPE, HARNESS RODS, AND OTHER MISCELLANEOUS APPURTENANCES AS REQUIRED BY THE CITY OF THORNTON, SHALL BE WRAPPED WITH EIGHT MILLIMETERS MINIMUM THICK POLYETHYLENE MATERIAL IN ACCORDANCE WITH AWWA STANDARD C105. POLYETHYLENE WRAP SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WATER LINE PIPE.
11. TESTING, FLUSHING, AND DISINFECTING OF THE WATER LINES SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" AND UNDER THE OBSERVATION OF THE CITY OF THORNTON'S INSPECTOR. THE CHLORINATING AGENT NECESSARY FOR DISINFECTING THE WATER MAINS TO BE PROVIDED BY THE CONTRACTOR. THE CHLORINATED WATER SHALL NOT BE DISCHARGED DIRECTLY INTO ANY STREAMS OR PONDS. TESTING, FLUSHING, AND DISINFECTING SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATER PIPE.
12. NO WATER LINE OR SANITARY SEWER PIPES SHALL BE BACKFILLED UNTIL THEY HAVE BEEN INSPECTED BY THE CITY OF THORNTON.
13. RANDOM PIPE LENGTHS WILL NOT BE ACCEPTED.
14. ALL WATER LINE APPURTENANCES INCLUDING, ADAPTERS, COUPLINGS, HARNESS RODS, MECHANICAL JOINT RESTRAINTS, POLYETHYLENE WRAP, AND THRUST BLOCKS, WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATER LINE PIPE.
15. IT IS ESTIMATED THAT FIVE WATER LINE VALVE BOXES WILL REQUIRE ADJUSTMENTS, AND ARE GENERALLY LOCATED AT THE NORTH WASHINGTON STREET AND EAST 136TH AVENUE INTERSECTION.
16. WHERE WATER MAINS CROSS UNDER STORM SEWERS, A MINIMUM OF 1.5 FOOT OF CLEARANCE SHALL BE MAINTAINED BETWEEN THE OUTSIDE OF THE PIPES. ALL STORM SEWERS CROSSING OVER THE WATER MAINS SHALL BE ENCASED A MINIMUM OF TEN FEET ON EACH SIDE OF THE WATERLINE, (SEE THE STORM SEWER PLANS). THE CONTRACTOR SHALL ADJUST THE WATER LINE ELEVATIONS AS NECESSARY TO MAINTAIN THE CITY OF THORNTON REQUIRED CLEARANCES.
17. DURING THE BACKFILLING OF THE WATERLINE, THE CONTRACTOR SHALL PLACE A 2-INCH WIDE METALLIC COATED LOCATOR TAPE LABELED "WATERLINE BURIED BELOW". THE TAPE SHALL BE CONTINUOUS ALONG THE LIMITS OF THE WATERLINE AND BE PLACED TWO FEET ABOVE AND DIRECTLY OVER THE PIPE. THE LOCATOR TAPE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATERLINE PIPE.
18. THE CONTRACTOR SHALL INSTALL TRACING WIRE TAPED TO THE WATER MAIN. THE TRACING WIRE SHALL BE INSTALLED ACCORDING TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" AND AS DIRECTED BY THE CITY OF THORNTON CONSTRUCTION MANAGEMENT SERVICES PERSONNEL. THE TRACER WIRE AND ALL NECESSARY TRACER WIRE APPURTENANCES, SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATER LINE PIPE.
19. ONLY THE CITY OF THORNTON PERSONNEL SHALL OPERATE EXISTING WATERLINE VALVES.
20. EXCAVATION, BACKFILL, BEDDING MATERIAL, MOISTURE CONTROL, COMPACTION, DISPOSAL OF EXCESS EXCAVATED MATERIAL, SHORING, AND TRENCH SUPPORTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
21. WHERE EXISTING CONCRETE OR ASPHALT MAT MUST BE REMOVED FOR EITHER WATER MAIN OR SANITARY SEWER MAIN CONSTRUCTION, THE MAT SHALL BE REMOVED BY SAW CUTTING ONLY. THE CONCRETE OR ASPHALT MAT SHALL BE REPLACED AS REQUIRED BY THE CITY OF THORNTON. SAW CUTTING OR MAT REPLACEMENT SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
22. IT IS ANTICIPATED THAT DEWATERING WILL BE NECESSARY FOR THE INSTALLATION OF THE WATER AND SANITARY SEWER MAINS. DEWATERING SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ANY NECESSARY DEWATERING PERMITS.
23. HARNESS RODS ARE REQUIRED TO BE INSTALLED AS IDENTIFIED ON THE PLANS OR AS SPECIFIED IN THE STANDARDS. AFTER THE HARNESS RODS HAVE BEEN INSTALLED AND ACCEPTED, THE HARNESS RODS AND HARNESS ROD APPURTENANCES SHALL HAVE APPLIED IN THE FIELD A 16-MILL-THICK COATING OF COAL TAR EPOXY. THE HARNESS RODS AND COATING SHALL NOT BE PAID FOR SEPARATELY, BUT TO BE INCLUDED IN THE COST OF THE WATER LINE PIPE. AFTER THE HARNESS RODS AND APPURTENANCES HAVE BEEN COATED, THE HARNESS RODS AND APPURTENANCES SHALL BE WRAPPED WITH 8 MIL POLYETHYLENE WRAP.
24. THRUST BLOCKS SHALL BE PLACED AT FITTINGS, TEES, BENDS (BOTH HORIZONTAL AND VERTICAL), CROSSES, PLUGS, ETC. ACCORDING TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS". WHERE HARNESS RODS ARE INSTALLED, THE WATER MAINS SHALL THUS BE CONSTRUCTED HAVING A "DOUBLE RESTRAINT SYSTEM" WHICH INCLUDES INSTALLING BOTH THRUST BLOCKS AND HARNESS RODS. THRUST BLOCKS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WATER LINE PIPE.
25. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO CONNECT THE SANITARY SEWER TO EXISTING SANITARY SEWER MANHOLE T-5. THIS SHALL INCLUDE EXCAVATION TO THE BASE OF THE MANHOLE, REMOVING A PORTION OF THE BARREL SECTION AS NECESSARY, SEALING AROUND THE NEWLY INSTALLED PIPE, RESHAPING OR REPLACING THE MANHOLE BASE, BACKFILL AND PATCHING THE STREET. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
26. THE CONTRACTOR SHALL PROVIDE TEMPORARY PLUGS AT THE ENDS OF THE SANITARY SEWER STUB-OUTS FROM SANITARY MANHOLES T-1 AND T-2. THESE TEMPORARY PLUGS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
27. AS DOCUMENTED IN THE REPORT TITLED SUBSURFACE EXPLORATION PROGRAM - GEOTECHNICAL RECOMMENDATIONS AND PAVEMENT DESIGN - 136TH AVENUE INTERCHANGE WITH INTERSTATE 25 - WESTMINSTER AND THORNTON, COLORADO, BY GROUND ENGINEERING CONSULTANTS, THE CONTRACTOR SHOULD ANTICIPATE EXCAVATION WITHIN VERY STIFF TO VERY HARD MATERIAL.

**RECORD DOCUMENTS  
- WARNING -**

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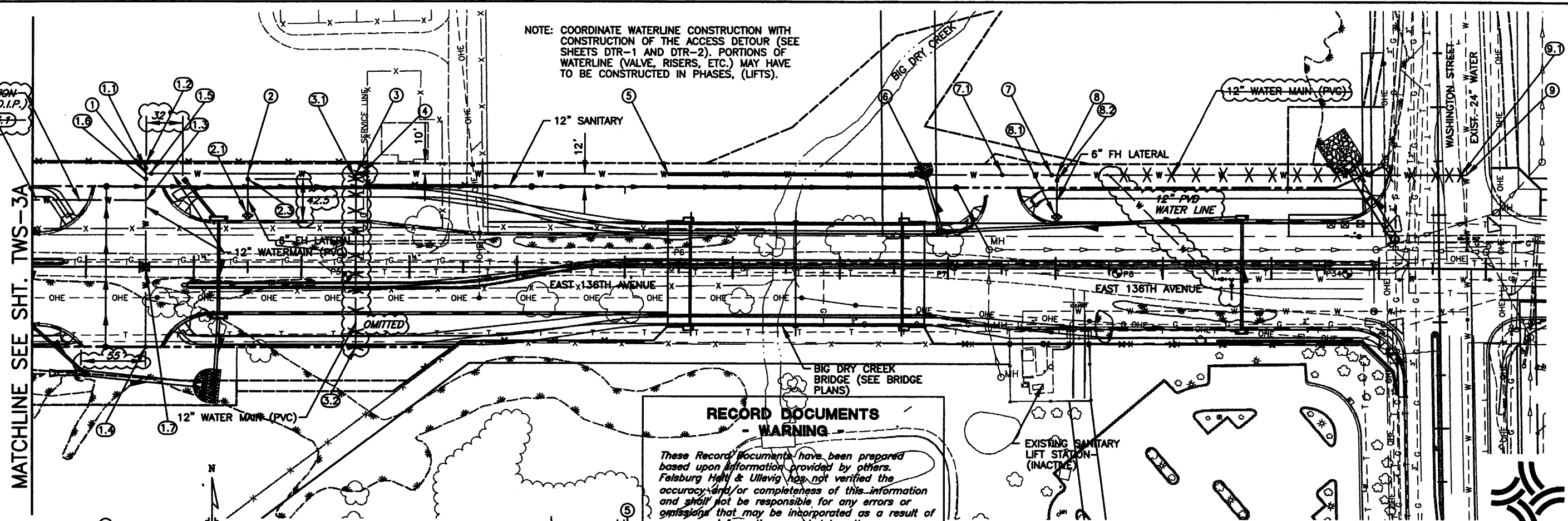
Computer File Information		Index of Revisions			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed		136TH AVENUE AT I-25 INTERCHANGE WATERLINE/SANITARY SEWER NOTES		Project No./Code			
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Last Modification Date:	10/20/04 Initials: DRS	<input type="checkbox"/>				Revised:		Designer:	SPG				
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Drawing File Name:	D00033GNR02AB.dwg	<input type="checkbox"/>											
Acad Ver.	2000i	Scale:											
Units:	English	<input type="checkbox"/>											

NOTE: COORDINATE WATERLINE CONSTRUCTION WITH CONSTRUCTION OF THE ACCESS DETOUR (SEE SHEETS DTR-1 AND DTR-2). PORTIONS OF WATERLINE (VALVE, RISERS, ETC.) MAY HAVE TO BE CONSTRUCTED IN PHASES, (LIFTS).

1" IRRIGATION LATERAL (D.I.P.)

NOTE: SHT. TWS-3A-WAS CREATED TO DELINEATE AS-BUILT INFORMATION.

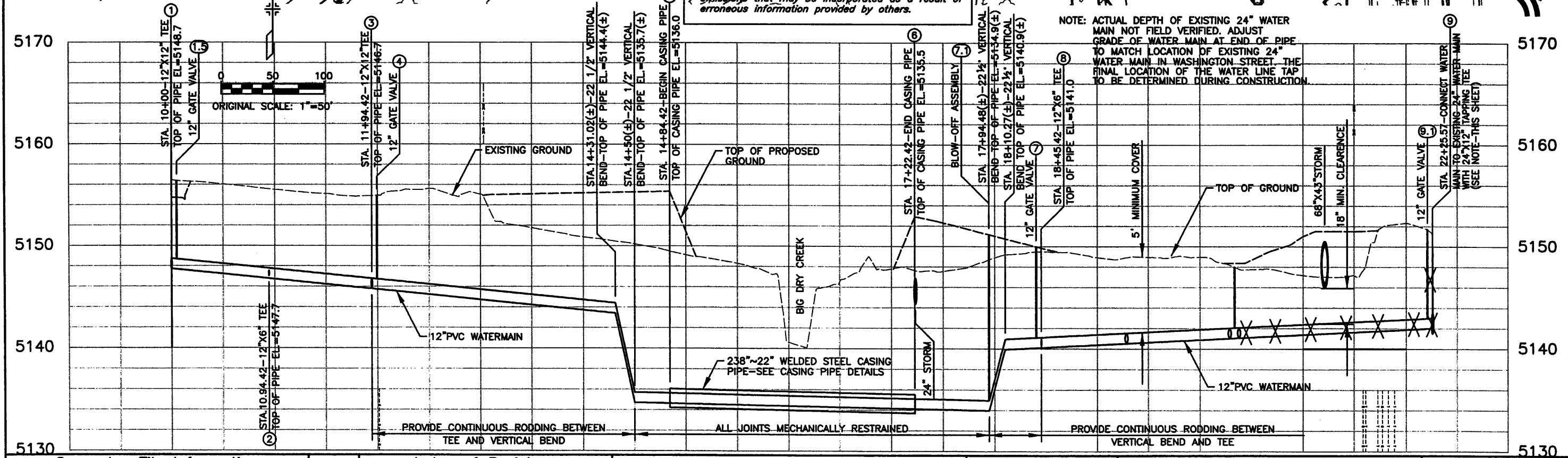
MATCHLINE SEE SHT. TWS-3A



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NOTE: ACTUAL DEPTH OF EXISTING 24" WATER MAIN NOT FIELD VERIFIED. ADJUST GRADE OF WATER MAIN AT END OF PIPE TO MATCH LOCATION OF EXISTING 24" WATER MAIN IN WASHINGTON STREET. THE FINAL LOCATION OF THE WATER LINE TAP TO BE DETERMINED DURING CONSTRUCTION.



**Computer File Information**

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Last Modification Date:	10/19/04	Initials:	DRS
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**Index of Revisions**




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**As Constructed**

No Revisions:   

Revised: X   

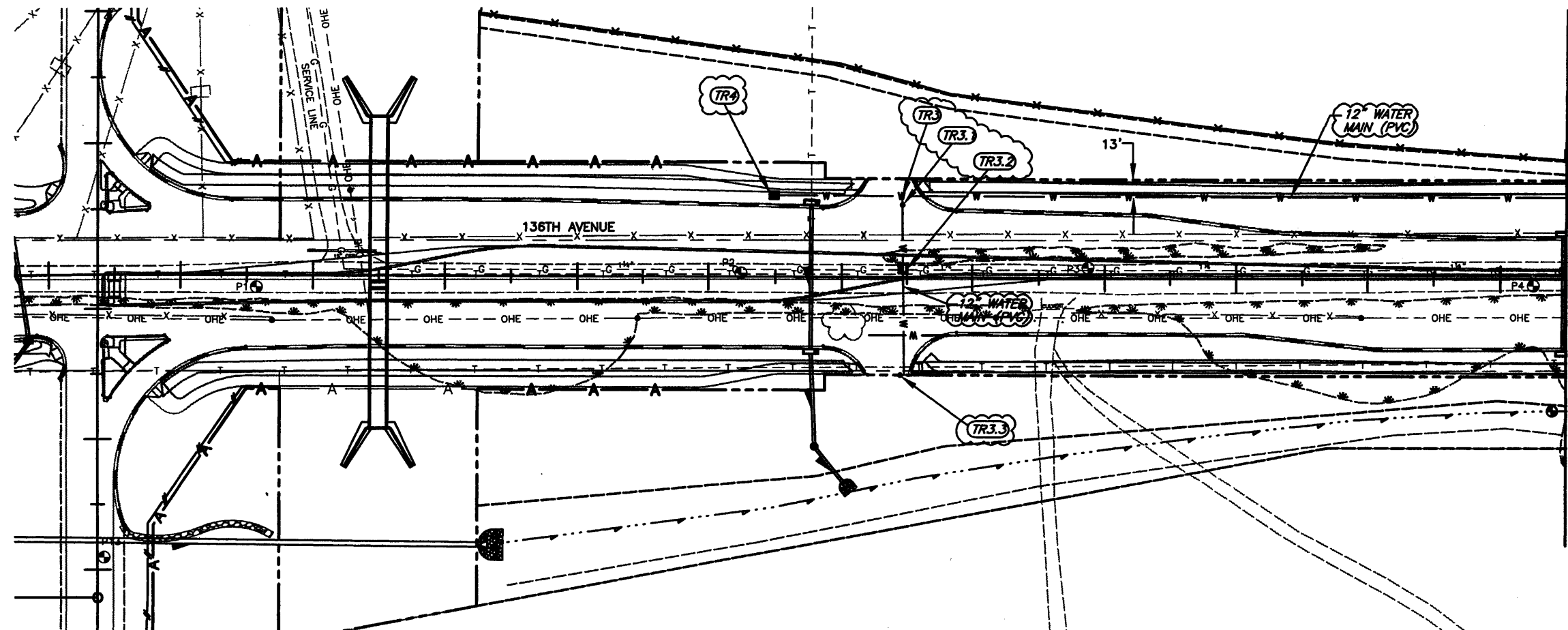
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**136TH AVENUE AT I-25 INTERCHANGE**  
**136TH AVE. WATER PLAN**

Designer: SPG  
 Detailer: DCB  
 Sheet Subset: UTILWAT    Subset Sheets: TWS-3 of 13

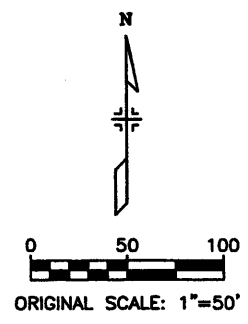
Project No./Code  
 97-71

Sheet Number  
 324



MATCHLINE SEE SHT. TWS-3

THIS IS ADDITIONAL WATER LINE ADDED TO THE PROJECT BUT NOT INCLUDED IN THE PLAN SET.



**NOTE:**  
 THIS SHEET WAS CREATED TO DELINEATE AS-BUILT INFORMATION AND IS NOT A PART OF THE ORIGINAL PLAN SET.

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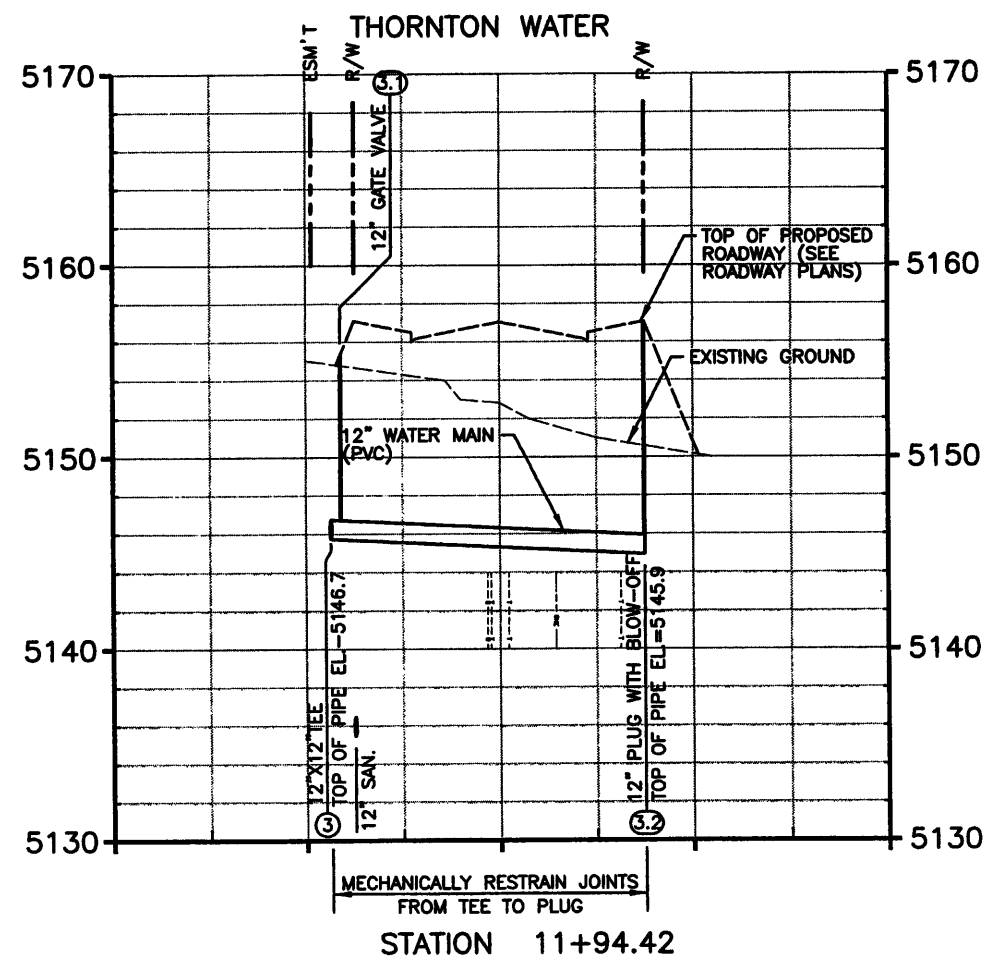
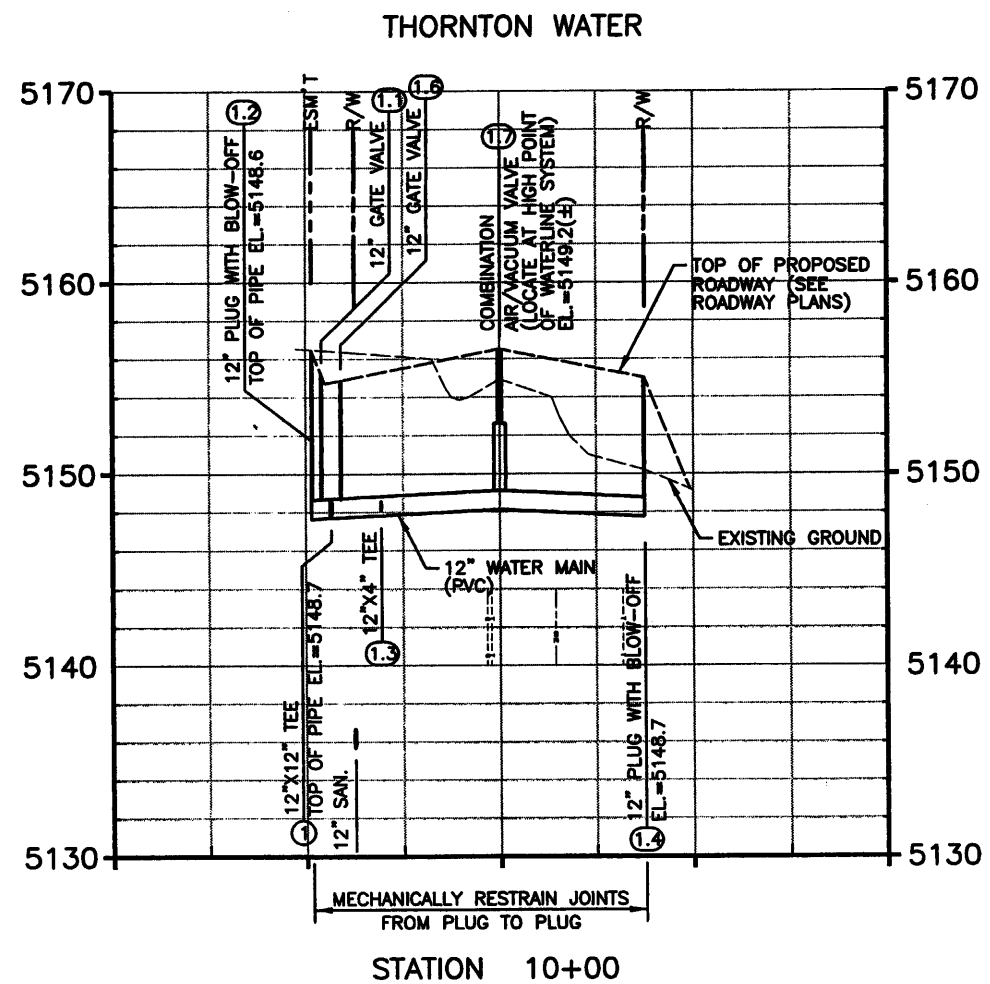
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No Revisions:
Revised: X
Void:

136TH AVENUE AT I-25 INTERCHANGE	
136TH AVE. WATER PLAN	
Designer: SPG	
Detailer: DCB	
Sheet Subset: UTILWAT	Subset Sheets: TWS-3A of 13

Project No./Code	97-71
Sheet Number	324A





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SCALE: 1"=100' HORIZONTAL  
1"=10' VERTICAL



Computer File Information	
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Last Modification Date:	10/20/04 Initials: DRS
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Index of Revisions	



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No Revisions: X
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE WATER LINE SECTIONS	
Designer:	SPG
Detailer:	DCB
Sheet Subset:	SECTIONS
Subset Sheets:	TWS-4 of 13

Project No./Code	97-71
Sheet Number	325

WATER MAIN LAYOUT

POINT	STATION	NORTHERLY	EASTERLY	DESCRIPTION
1	10+00	1222580.8044	3145146.6324	12"x12"x12" TEE
1.1	————	————	————	12 INCH GATE VALVE (RESTRAIN VALVE TO MAINLINE)
1.2	10+00 (10.00'LT)	1222590.8044	3145146.6348	12" PLUG WITH BLOW-OFF ASSEMBLY
1.3	10+00 (25.64'RT)	1222555.1681	3145146.6263	12"x4" TEE (IRRIGATION TAP—FIELD ADJUST LOCATION AS NECESSARY)
1.3.1	————	1222555.1925	3145044.3515	3 INCH METER AND VAULT (FIELD ADJUST LOCATION AS NECESSARY)
1.4	10+00 (162.00'RT)	1222418.8062	3145146.5937	12" PLUG WITH BLOW-OFF ASSEMBLY
1.5	————	————	————	12 INCH GATE VALVE (RESTRAIN VALVE TO MAINLINE)
1.6	————	————	————	12 INCH GATE VALVE (RESTRAIN VALVE TO MAINLINE)
1.7	10+00 (87.00'RT)	1222493.8048	3145146.6116	COMBINATION AIR/VACUUM VALVE (FIELD ADJUST LOCATION AS NECESSARY)—LOCATE VALVE AT HIGH POINT OF WATER LINE SYSTEM.
2	10+94.42	1222580.7819	3145241.0526	12"x12"x6" TEE
2.1	10+94.42 (38.50'RT)	1222542.2822	3145241.0434	FIRE HYDRANT ASSEMBLY
2.3	————	————	————	6 INCH GATE VALVE (RESTRAIN VALVE TO MAINLINE)
3	11+94.42	1222580.7581	3145341.0526	12"x12"x12" TEE
3.1	————	————	————	12 INCH GATE VALVE
3.2	11+94.42 (162.00'RT)	1222418.7583	3145341.0139	12" PLUG WITH BLOW-OFF ASSEMBLY
4	————	————	————	12 INCH GATE VALVE
5	14+84.42	1222580.6889	3145631.0526	WEST END OF CASING PIPE
6	17+22.42	1222580.6321	3145869.0526	EAST END OF CASING PIPE
7	————	————	————	12 INCH GATE VALVE
7.1	17+94.48	1222580.6149	3145941.1135	BLOW-OFF ASSEMBLY (LOCATE AT LOW POINT)
8	18+45.42	1222580.6027	3145992.0526	12"x12"x6" TEE
8.1	18+45.42 (36.50'RT)	1222544.1027	3145992.0439	FIRE HYDRANT ASSEMBLY
8.2	————	————	————	6 INCH GATE VALVE (RESTRAIN VALVE TO MAINLINE)
9	22+25.57	1222580.5120	3146372.2006	CONNECT 12 INCH WATER MAIN TO EXISTING 24 INCH WATER MAIN IN WASHINGTON STREET. VERIFY LOCATION OF EXISTING WATER MAIN. INSTALL 24"x12" TAPPING TEE. FINAL LOCATION OF TAPPING TEE TO BE DETERMINED IN THE FIELD DURING CONSTRUCTION.
9.1	————	————	————	12 INCH GATE VALVE (RESTRAIN VALVE TO MAINLINE)

**RECORD DOCUMENTS  
- WARNING -**

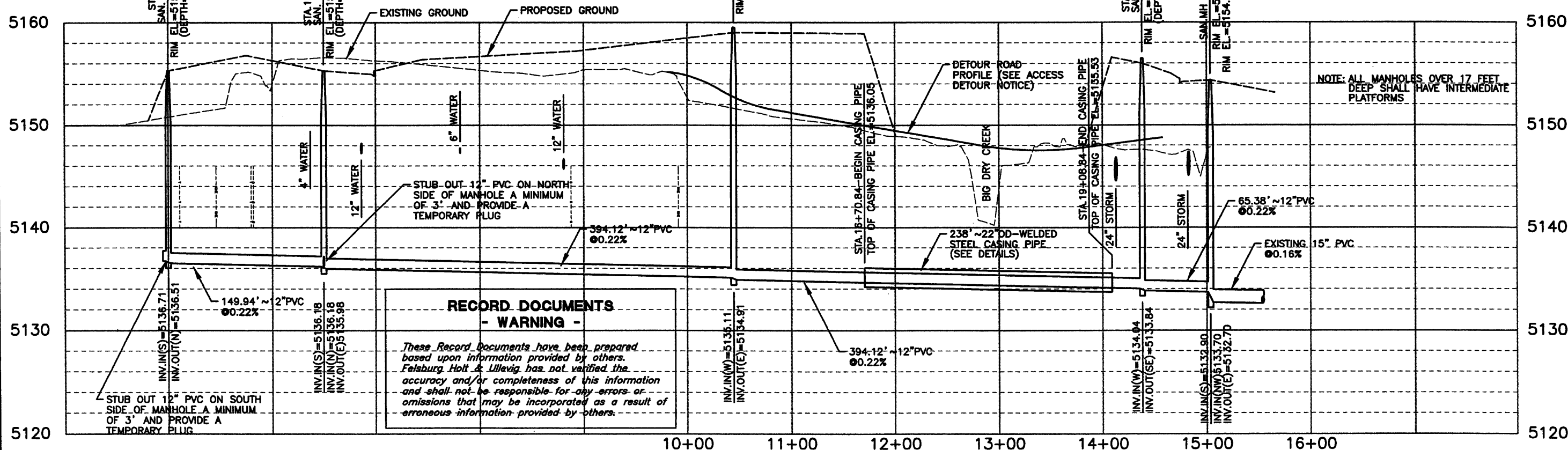
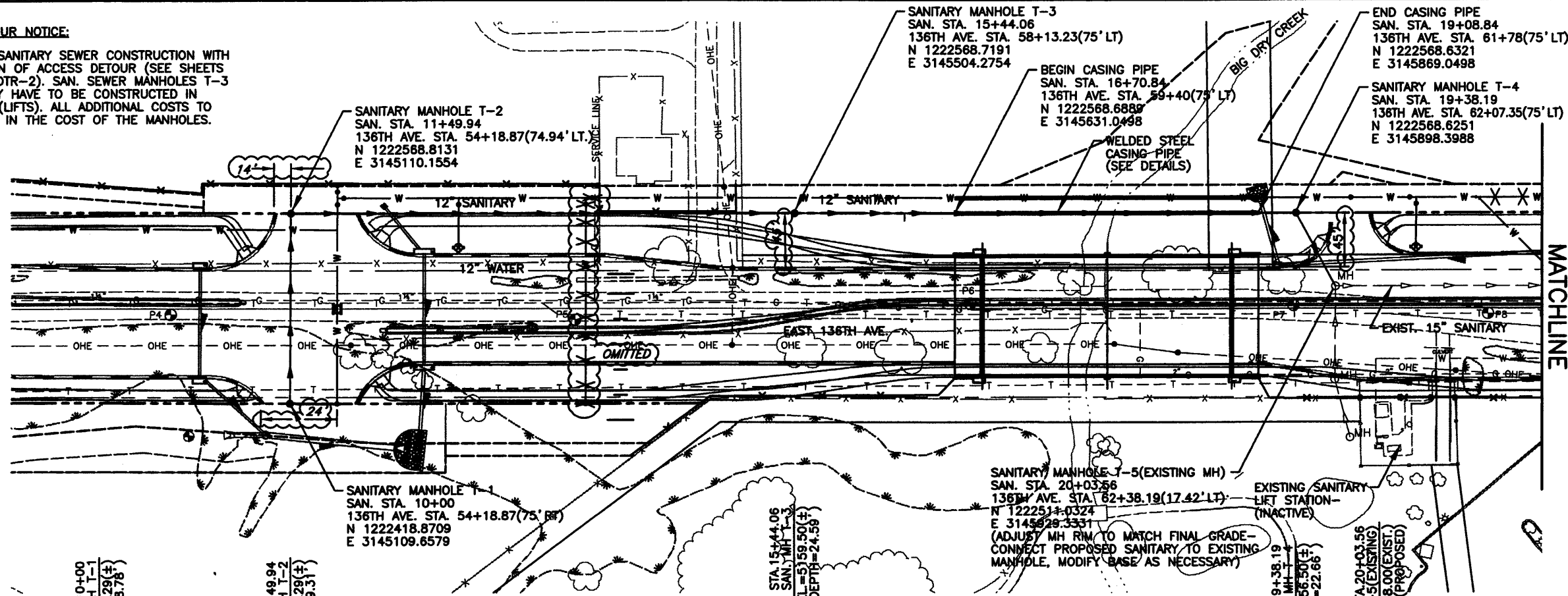
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Drawing File Name:	U00033WAT09AB.09.dwg	<input type="checkbox"/>	<input type="checkbox"/>						
Acad Ver. 2000i	Scale: Units: English	<input type="checkbox"/>	<input type="checkbox"/>						

**ACCESS DETOUR NOTICE:**

COORDINATE SANITARY SEWER CONSTRUCTION WITH CONSTRUCTION OF ACCESS DETOUR (SEE SHEETS DTR-1 AND DTR-2). SAN. SEWER MANHOLES T-3 AND T-4 MAY HAVE TO BE CONSTRUCTED IN INCREMENTS (LIFTS), ALL ADDITIONAL COSTS TO BE INCLUDED IN THE COST OF THE MANHOLES.



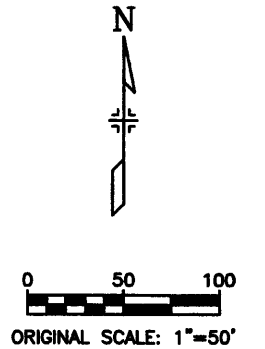
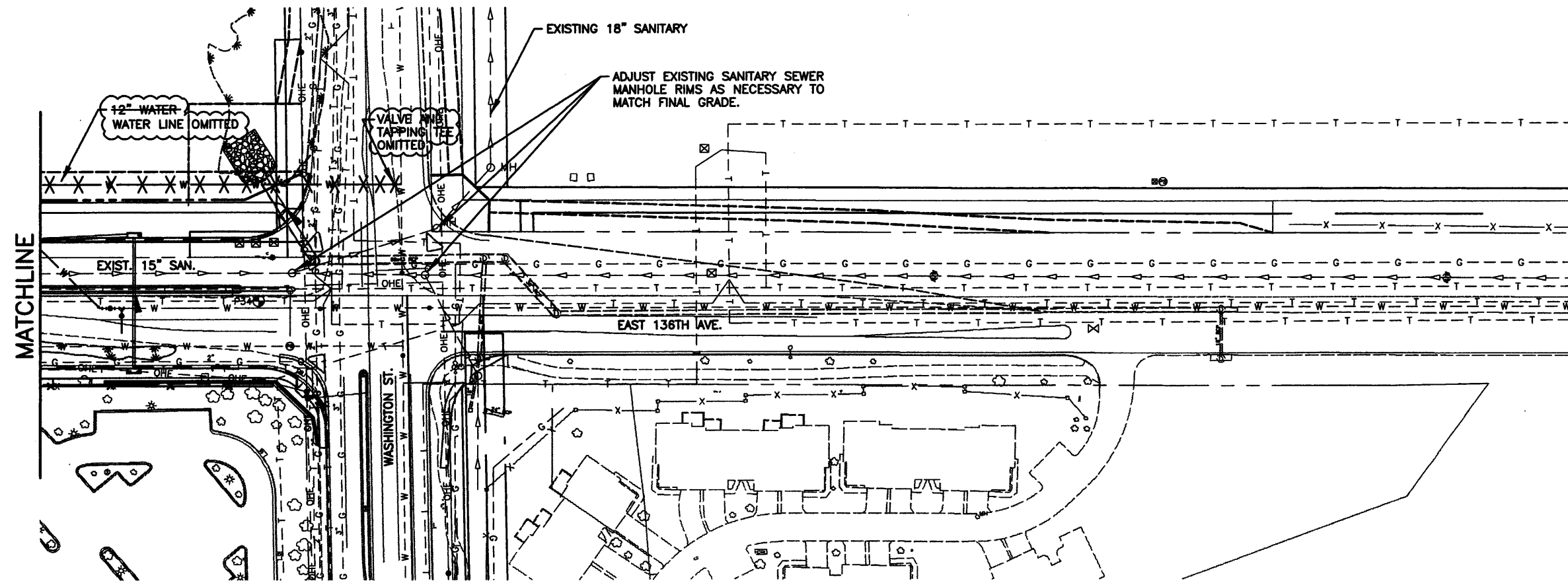
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NOTE: ALL MANHOLES OVER 17 FEET DEEP SHALL HAVE INTERMEDIATE PLATFORMS





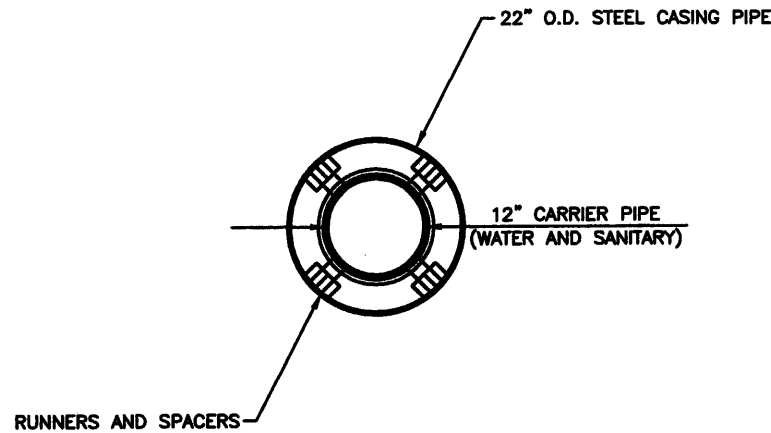
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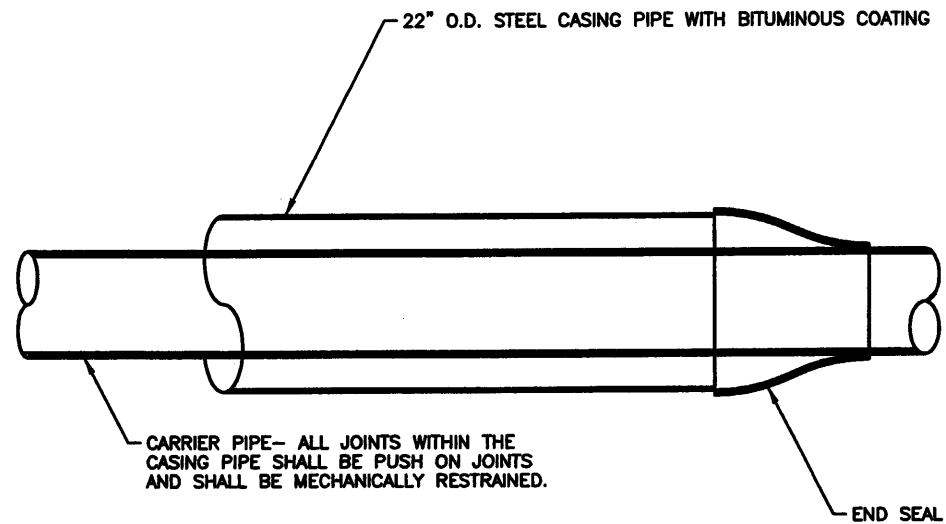
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Drawing File Name:	U00033SAN05AB.dwg									
Acad Ver. 2000i	Scale:	Units: English					Sheet Subst:		Subset Sheets: TWS-7 of 13	Sheet Number 328

**CASING NOTICE**

THE METHOD OF INSTALLING THE WATER LINE AND SANITARY SEWER CASING PIPE WITHIN THE CITY OF THORNTON IS AT THE OPTION OF THE CONTRACTOR, SUBJECT TO THE APPROVAL OF THE CITY OF THORNTON. THE CONTRACTOR IS RESPONSIBLE FOR ROUTING THE STREAM FLOWS DURING THE PLACEMENT OF THE CASING PIPES.



**PIPE CASING DETAIL**



**PIPE CASING SECTION**

**PIPE CASING**  
SCALE=1"=5'

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**WATERLINE CASING NOTES:**

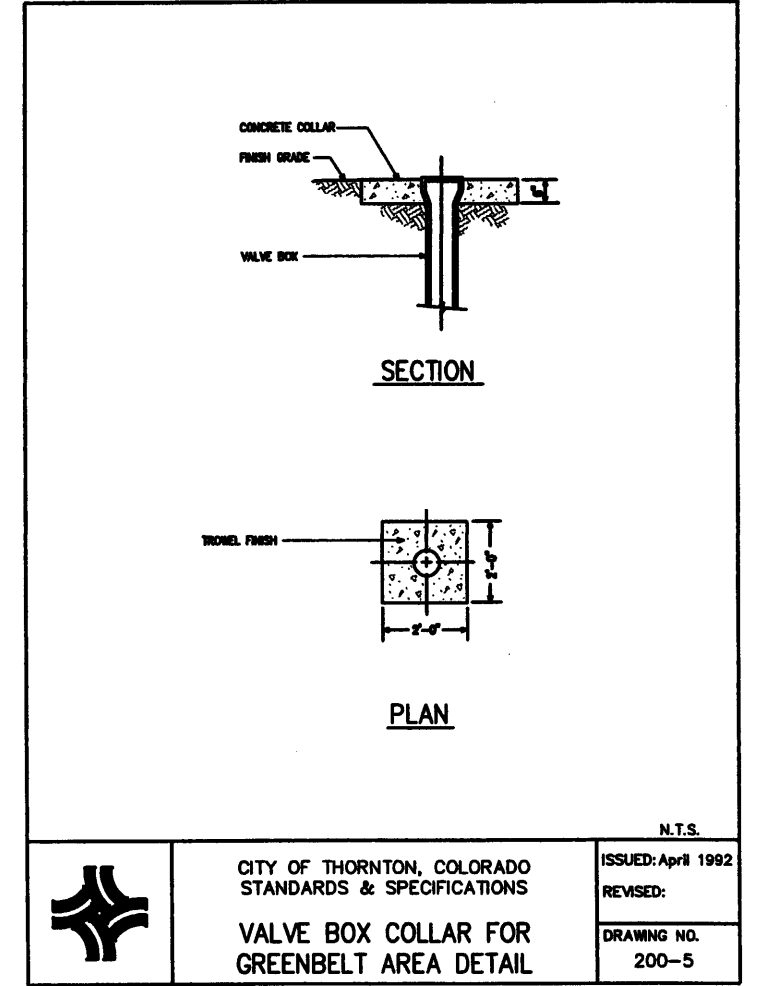
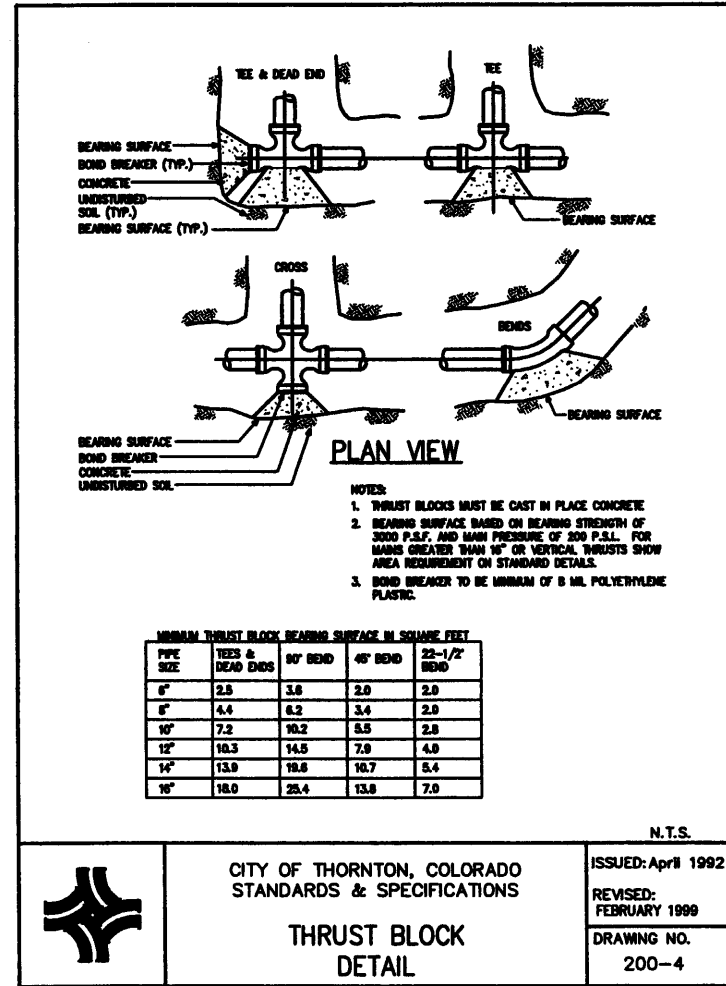
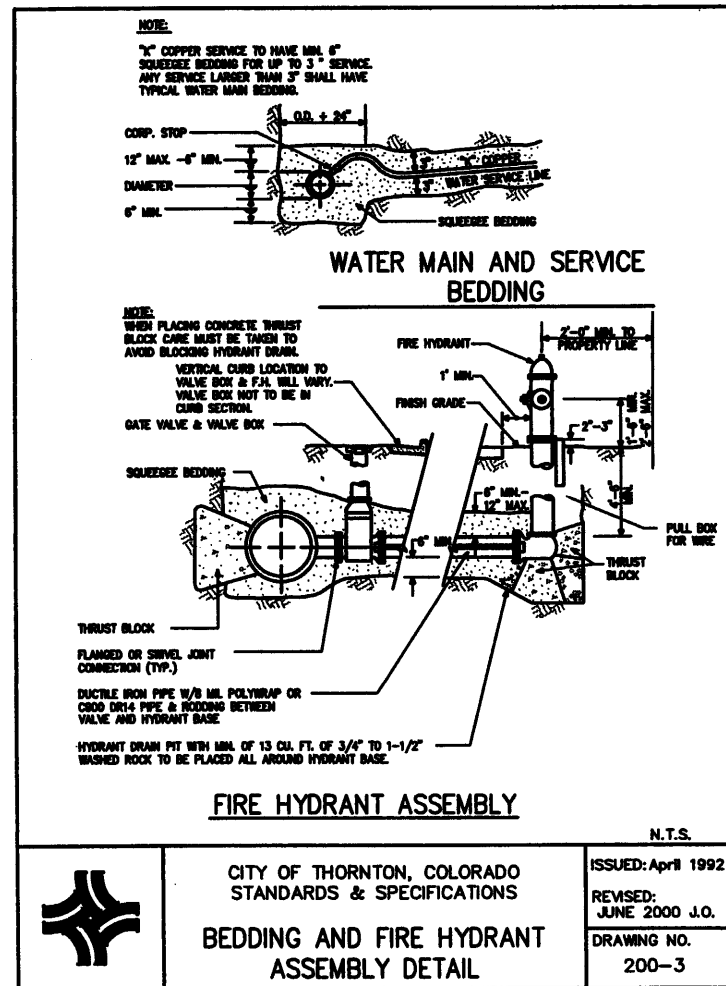
1. THE WATERLINE CASING PIPE SHALL BE 22 INCH OUTSIDE DIAMETER (O.D.) WELDED STEEL PIPE WITH A MINIMUM WALL THICKNESS OF 0.344 INCHES. THE EXTERIOR OF THE CASING PIPE SHALL HAVE A BITUMINOUS COATING.
2. THE WATERLINE CONTRACTOR SHALL PROVIDE ALL WATERLINE CASING APPURTENANCES, INCLUDING BUT NOT LIMITED TO, RUNNERS, RISERS, AND STEEL BANDS. THE LOCATION, SPACING, AND THE TYPE OF THE RUNNERS, RISERS, AND STEEL BANDS SHALL BE APPROVED BY THE CITY OF THORNTON PRIOR TO CONSTRUCTION OF THE WATERLINE. THE RUNNERS, RISERS, STEEL BANDS, AND ANY OTHER NECESSARY APPURTENANCES WITHIN THE CASING PIPE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATERLINE PIPE.
3. END SEALS SHALL BE INSTALLED AT EACH END OF THE CASING PIPE, AND SHALL BE PROVIDED BY THE WATERLINE CONTRACTOR. THE TYPE OF END SEALS SHALL BE APPROVED BY THE CITY OF THORNTON PRIOR TO THE WATERLINE CONSTRUCTION. THE END SEALS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE WATERLINE PIPE.
4. ALL WATERLINE CARRIER PIPE JOINTS BETWEEN THE VERTICAL BENDS INCLUDING WITHIN THE CASING PIPE SHALL BE MECHANICALLY RESTRAINED. THE TYPE OF MECHANICAL RESTRAINT SHALL BE APPROVED BY THE CITY OF THORNTON PRIOR TO THE WATERLINE CONSTRUCTION. THE MECHANICALLY RESTRAINTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COSTS OF THE WATERLINE PIPE.
5. THE WATERLINE CASING PIPE SHALL HAVE A BITUMINOUS COATING.

**SANITARY SEWER CASING NOTES:**

1. THE SANITARY SEWER CASING PIPE SHALL BE 22 INCH OUTSIDE DIAMETER (O.D.) WELDED STEEL PIPE WITH A MINIMUM WALL THICKNESS OF 0.344 INCHES. THE EXTERIOR OF THE SANITARY SEWER CASING PIPE SHALL HAVE A BITUMINOUS COATING.
2. THE SANITARY SEWER CONTRACTOR SHALL PROVIDE ALL SANITARY SEWER CASING APPURTENANCES, INCLUDING BUT NOT LIMITED TO, RUNNERS, RISERS, AND STEEL BANDS. THE LOCATION, SPACING, AND THE TYPE OF THE RUNNERS, RISERS, AND STEEL BANDS SHALL BE APPROVED BY THE CITY OF THORNTON PRIOR TO CONSTRUCTION OF THE SANITARY SEWER. THE RUNNERS, RISERS, STEEL BANDS, AND ANY OTHER NECESSARY APPURTENANCES WITHIN THE SANITARY SEWER CASING PIPE SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
3. END SEALS SHALL BE INSTALLED AT EACH END OF THE SANITARY SEWER CASING PIPE, AND TO BE PROVIDED BY THE SANITARY SEWER CONTRACTOR. THE TYPE OF END SEALS SHALL BE APPROVED BY THE CITY OF THORNTON PRIOR TO THE SANITARY SEWER CONSTRUCTION. END SEALS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
4. ALL SANITARY SEWER CARRIER PIPE JOINTS WITHIN THE CASING PIPE SHALL BE MECHANICALLY RESTRAINED. THE TYPE OF MECHANICAL RESTRAINTS SHALL BE APPROVED BY THE CITY OF THORNTON PRIOR TO THE SANITARY SEWER CONSTRUCTION. THE MECHANICAL RESTRAINTS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE UNIT COST OF THE SANITARY SEWER PIPE.
5. THE SANITARY SEWER CASING PIPE SHALL HAVE A BITUMINOUS COATING.



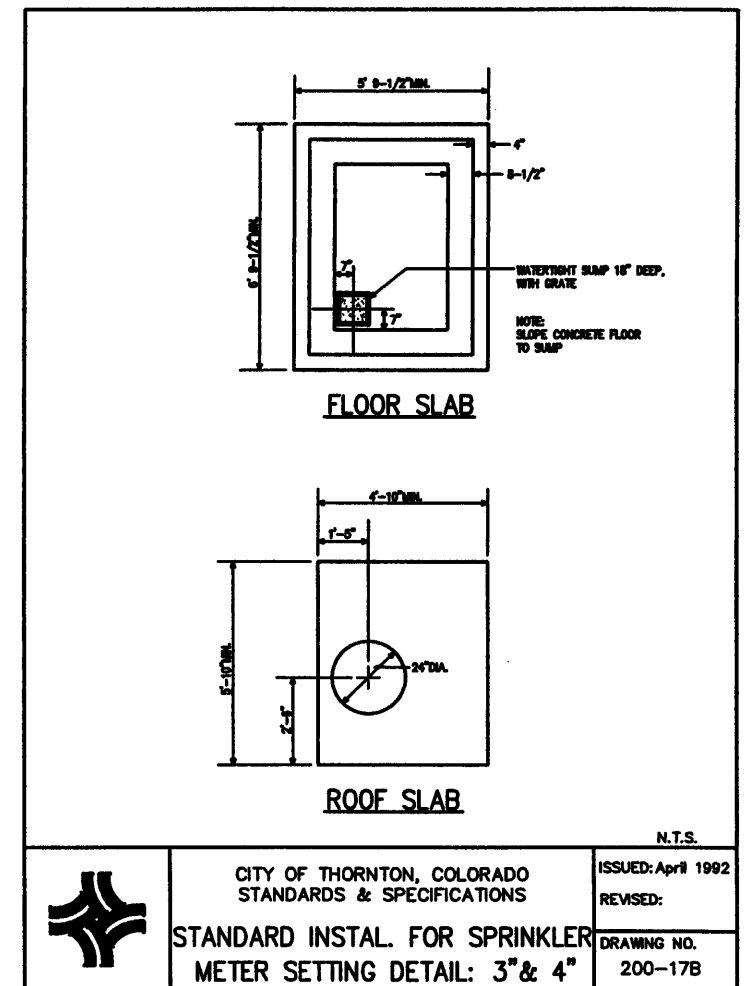
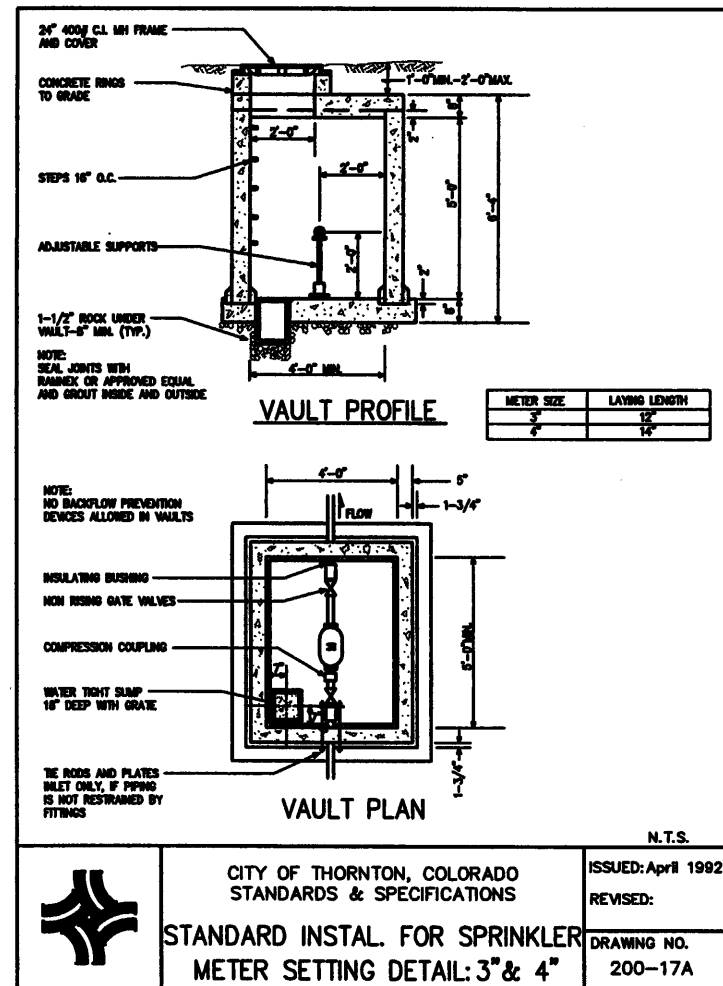
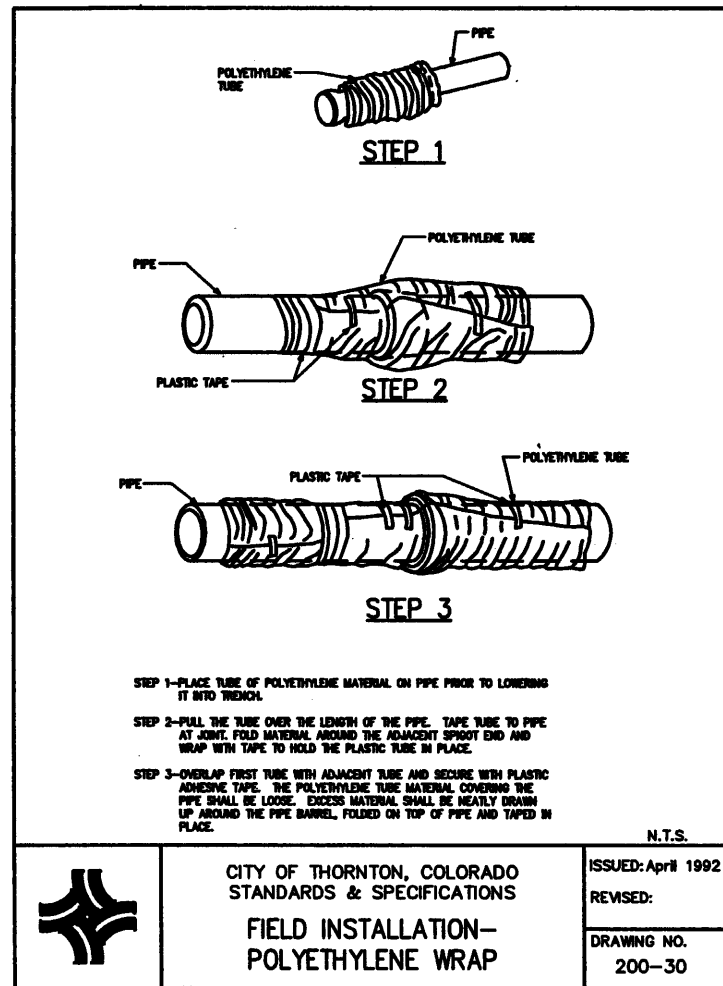
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Creation Date:	09/21/01 Initials: DCB	<input type="checkbox"/>			No Revisions: X	<b>PIPE CASING DETAILS</b>		97-71
Last Modification Date:	10/20/04 Initials: DRS	<input type="checkbox"/>			Revised:	Designer: SPG		
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Acad Ver. 2000i	Scale: Units: English	<input type="checkbox"/>						



**RECORD DOCUMENTS  
 - WARNING -**

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<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE		Project No./Code
Creation Date:	11/28/01 Initials: DCB						97-71		
Last Modification Date:	10/20/04 Initials: DRS								
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Acad Ver. 2000i	Scale: Units: English				Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	Designer: SPG	Detailer: DCB	Sheet Subset: TWS-9 of 13	Sheet Number 330



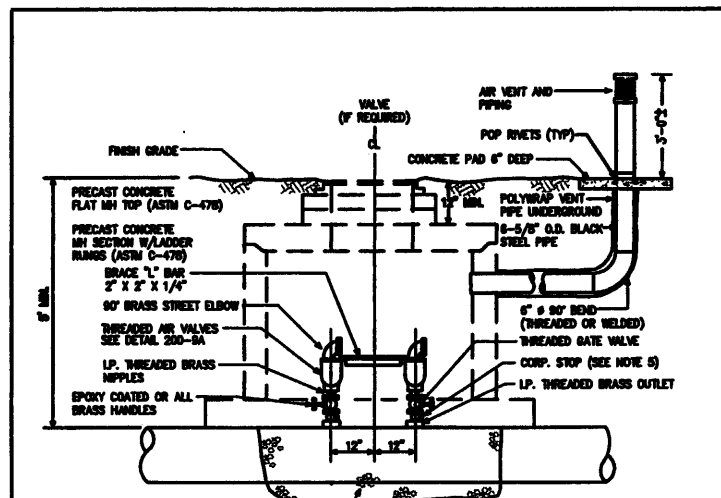
**WATER METER AND VAULT NOTES:**

1. THE WATER METER SHALL 3 INCH AND AS SPECIFIED BY THE CITY OF THORNTON.
2. THE LATERAL FROM THE MAIN TO THE VAULT SHALL BE 4 INCH D.I.P.
3. ALL PIPE, VALVES, FITTINGS, AND OTHER APPURTENANCES WITHIN THE VAULT MAY BE EITHER 3 INCH OR 4 INCH.
4. THE CONTRACTOR TO PROVIDE THE MEANS OF CONNECTING THE 4 INCH LATERAL TO THE 3 INCH METER, (EITHER 4"x3" REDUCER OR OTHER MEANS).
5. THE CONTRACTOR SHALL ALSO PROVIDE THE MEANS OF CONNECTING THE 3 INCH METER TO THE IRRIGATION BACK FLOW PREVENTER, (SEE IRRIGATION PLANS).
6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL DETAILING THE PROPOSED METHODS OF CONNECTING THE 4 INCH LATERAL TO THE METER AND THE METER TO THE IRRIGATION SYSTEM BACK FLOW PREVENTER, INCLUDING ALL VALVES, FITTINGS, AND APPURTENANCES.

**RECORD DOCUMENTS  
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<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE		Project No./Code	
Creation Date:	11/28/01 Initials: DCB						WATER LINE DETAILS		97-71	
Last Modification Date:	10/20/04 Initials: DRS						Designer:	SPG		
Full Path:	J:\00033\AS-BUILT\						Detailer:	DCB		
Drawing File Name:	U00033DET10AB.dwg			Void:		Sheet Subset:	Subset Sheets: TWS-10 of 13	Sheet Number	331	
Acad Ver. 2000i	Scale: Units: English									



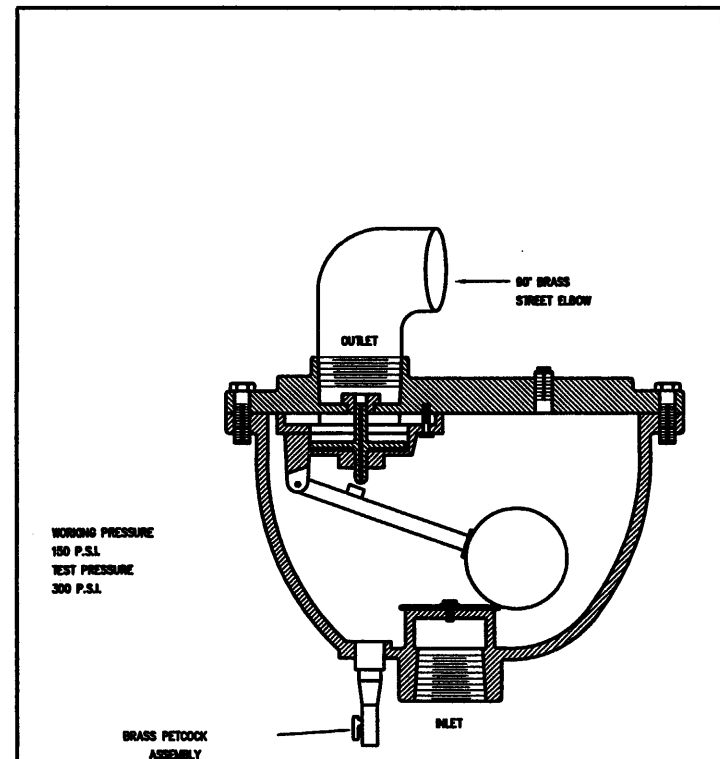
- 1 1/2" ROCK BEDDING INSIDE OF STRUCTURE
- NOTES:
- 1-1/2" ROCK SHALL BE PLACED IN BOTTOM OF MH TO CROWN OF PIPE ONLY.
  - PIPE AND FITTINGS SHALL BE BRASS.
  - PIPELINES 24" IN DIAMETER AND LARGER SHALL HAVE MH DIAMETERS OF 60" MINIMUM. MH DIAMETER SHALL BE DETERMINED BY ENGINEER.
  - ONLY ONE AIR VALVE IS NECESSARY IF NO MAIN VALVE IS PRESENT.
  - WITH LP. THREADED OUTLET, CORP. STOP SHALL BE LP. THREADED BOTH ENDS (MUELLER H-10012 OR APPROVED EQUAL). FOR DIRECT TAP ON PIPE, CORP. STOP SHALL BE MUELLER (CO) THREADED ONE END, LP. THREADED OTHER (H-10003 OR OTHER APPROVED BY CITY ENGINEER).

N.T.S.



CITY OF THORNTON, COLORADO  
STANDARDS & SPECIFICATIONS  
  
AIR RELIEF VALVE  
ASSEMBLY DETAIL

ISSUED: April 1992  
REVISED: June 2000 J.O.  
DRAWING NO. 200-9



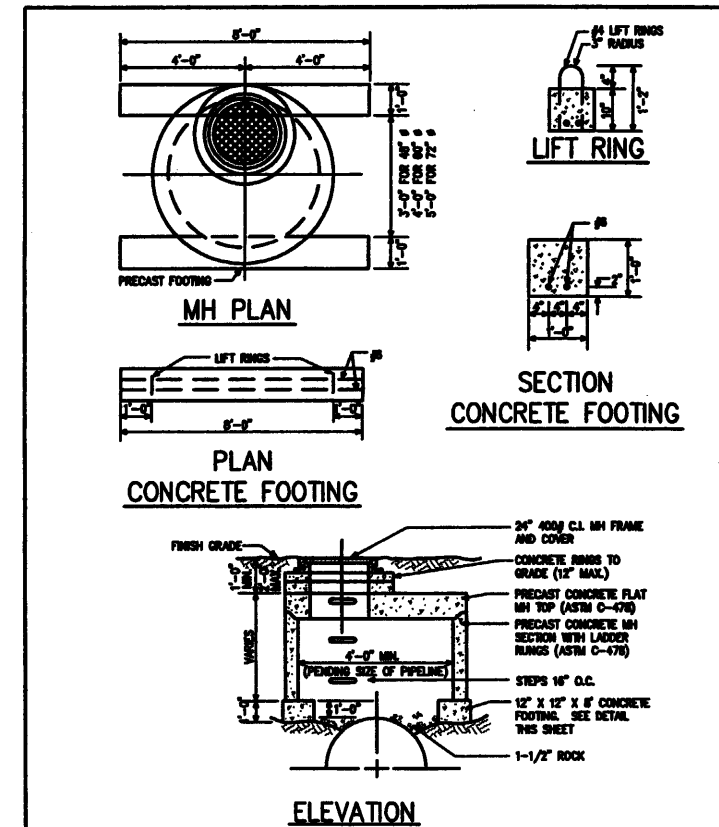
WORKING PRESSURE  
150 P.S.I.  
TEST PRESSURE  
300 P.S.I.

N.T.S.



CITY OF THORNTON, COLORADO  
STANDARDS & SPECIFICATIONS  
  
AIR RELEASE VALVE DETAIL

ISSUED: February 1996  
REVISED:  
DRAWING NO. 200-9A



N.T.S.



CITY OF THORNTON, COLORADO  
STANDARDS & SPECIFICATIONS  
  
AIR RELIEF VALVE ASSEMBLY  
MANHOLE DETAIL

ISSUED: April 1992  
REVISED: FEBRUARY, 1999  
DRAWING NO. 200-10

COMBINATION AIR/VACUUM VALVE

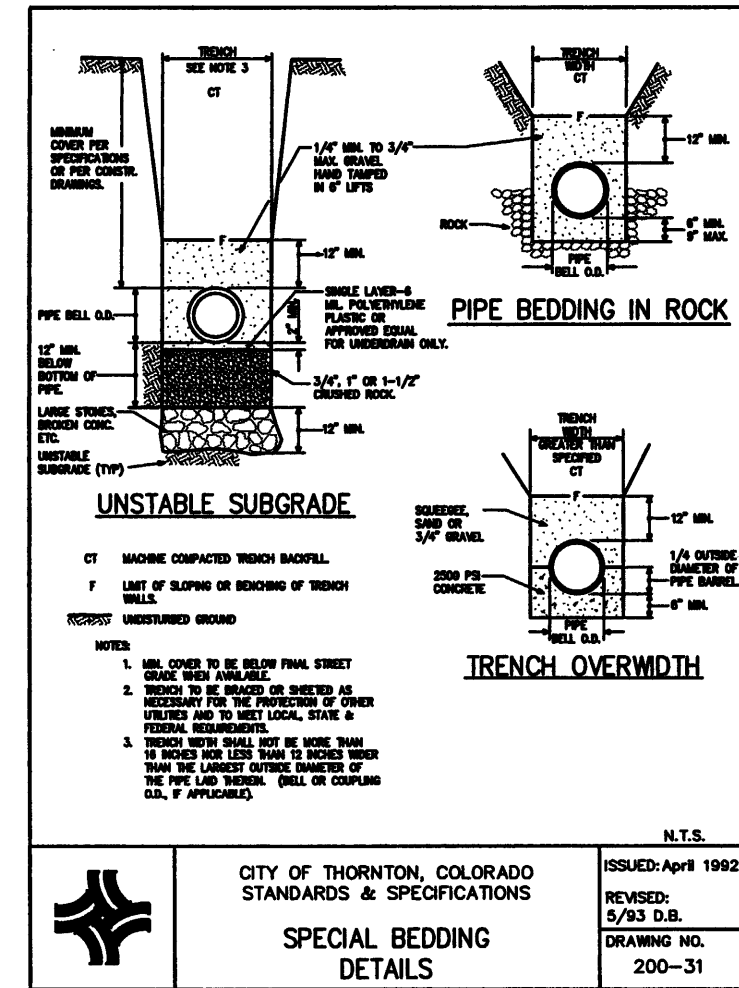
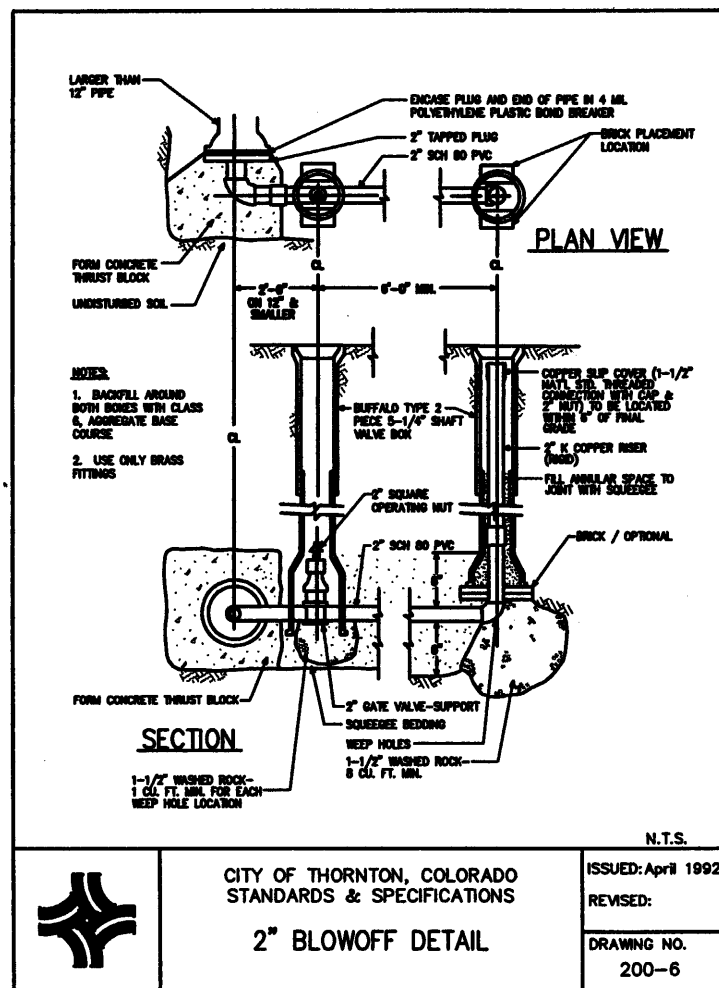
NOTE:

1. LOWER THE WATERLINE AS NECESSARY TO CONSTRUCT THE ACCESS MANHOLE AS SHOWN.
2. THE AIR VALVE SHALL BE A COMBINATION AIR AND VACUUM VALVE AS APPROVED BY THE CITY OF THORNTON. THE VALVE SHALL BE AN AIR TYPE VALVE OF THE BALL TYPE DESIGNED TO PERMIT THE ESCAPE OF AIR FROM THE PIPELINE WHEN THE LINE IS BEING FILLED AND TO PERMIT AIR TO ENTER THE PIPELINE WHEN THE LINE IS BEING EMPTIED.
3. THE LOCATION OF THE AIR VENT SHALL BE AS DIRECTED BY THE CITY OF THORNTON, (SEE DETAIL SHEET WWS-13).

**RECORD DOCUMENTS  
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Computer File Information		Index of Revisions		<p>303.721.1440 fax: 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<p><b>As Constructed</b></p> <p>No Revisions: X</p> <p>Revised:</p> <p>Void:</p>	<p>136TH AVENUE AT I-25 INTERCHANGE WATER LINE DETAILS</p>	Project No./Code	
Creation Date:	11/28/01 Initials: DCB						97-71	
Last Modification Date:	10/20/04 Initials: DRS						Designer:	SPG
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Drawing File Name:	U00033DET11AB.dwg			Sheet Subset:	Subset Sheets: TWS-11 of 13	Sheet Number	332	
Acad Ver. 2000i	Scale: Units: English							



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Drawing File Name:	U00033DET12AB.dwg
Acad Ver. 2000i	Scale: Units: English

Index of Revisions	



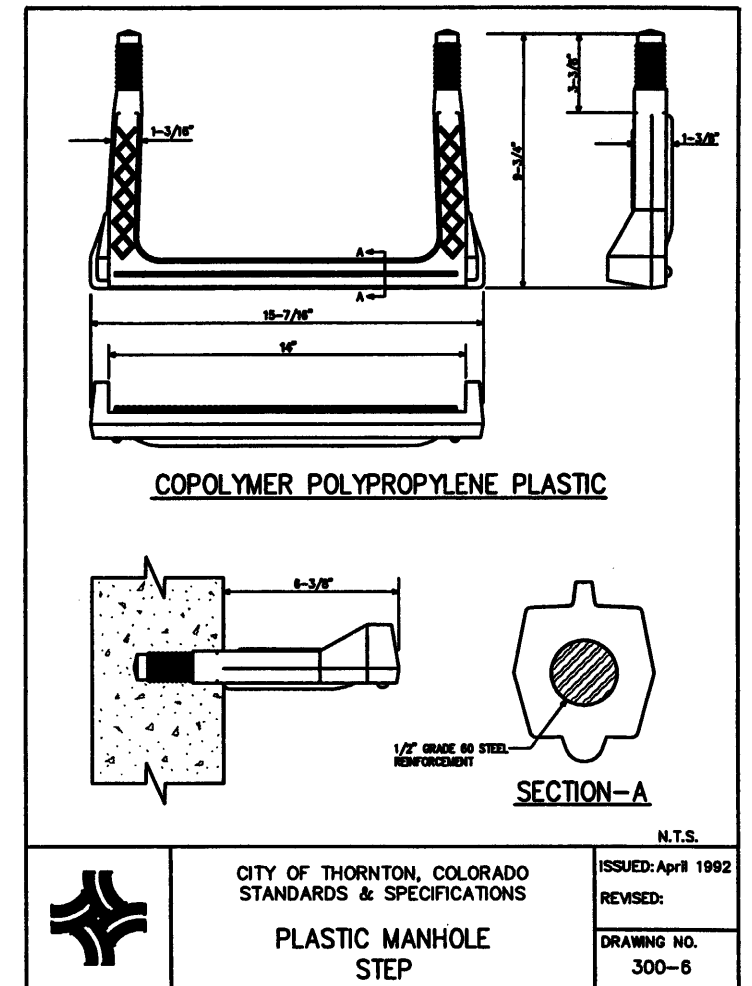
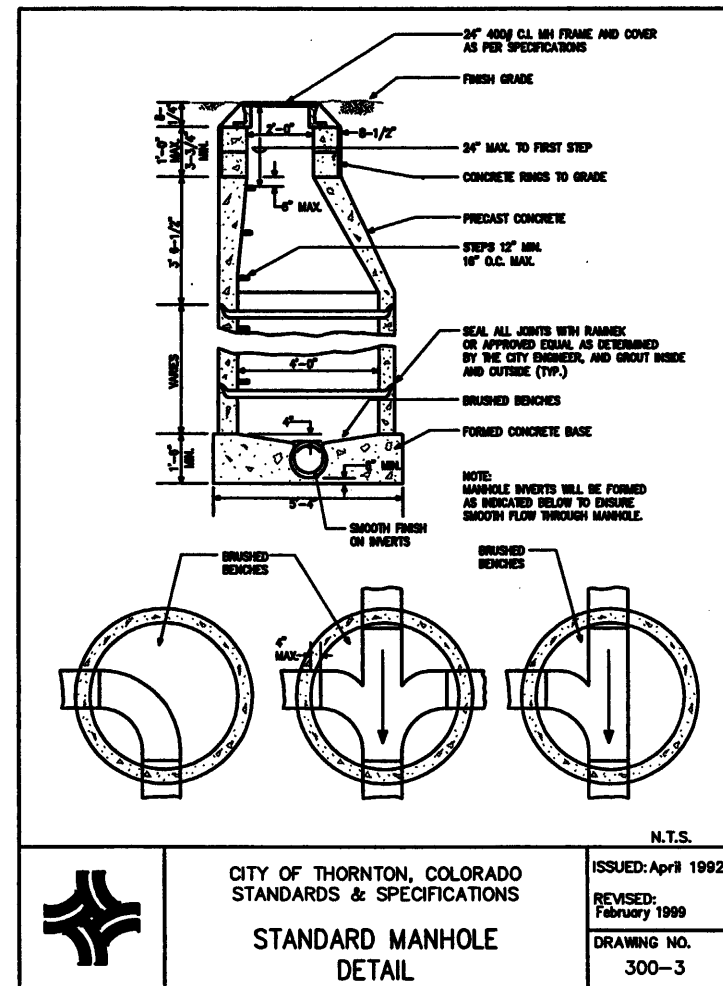
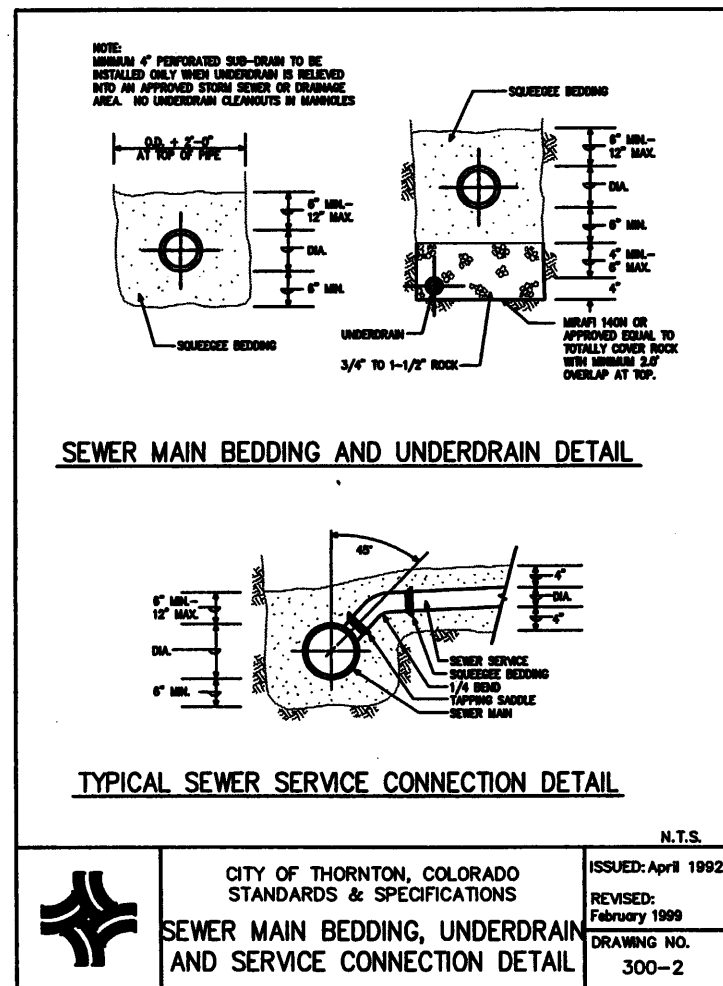
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed
No Revisions: X
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE SANITARY SEWER DETAILS	
Designer:	SPG
Detailer:	DCB
Sheet Subset:	Subset Sheets: TWS-12 of 13

Project No./Code	
97-71	
Sheet Number	333



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<b>Computer File Information</b>		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE SANITARY SEWER DETAILS</b>	Project No./Code	
Creation Date:	11/28/01 Initials: DCB					No Revisions: X		97-71	
Last Modification Date:	10/20/04 Initials: DRS					Revised:		Designer: SPG	
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Drawing File Name:	U00033DET13AB.dwg				Sheet Subset:	Subset Sheets: TWS-13 of 13	Sheet Number	333A	
Acad Ver. 2000i	Scale: Units: English								





TABULATION OF LIGHTING QUANTITIES - INTERCHANGE

STATION / LOCATION	LIGHT STANDARD		LIGHT STANDARD FOUNDATION *	LUMINAIRE HIGH PRESSURE SODIUM						COMPACT FLUORESCENT FLOODLIGHT 42 WATT EA.	RESET LIGHT STANDARD EA.	ELECTRICAL CONDUIT			GFCI RECEPTACLE EA.	METERED SERVICE PANEL EA.	ELECTRICAL WIRING L.S.
	ALUMINUM 40 FT *	DECORATIVE 25 FT *		WALLTYPE 250 WATT *	WALLTYPE 150 WATT *	WALLTYPE 100 WATT *	TYPE 3 250 WATT *	DECORATIVE 250 WATT *	SPECIAL 100 WATT *			1 INCH PVC FT	2 INCH PVC FT	3 INCH PVC FT			
	EA.	EA.		EA.	EA.	EA.	EA.	EA.	EA.								
136th AVENUE CL																	
STA 36+96, 66, R		1	1						1							200	
STA 37+02, 60.5, L		1	1						1							200	
STA 38+77, 29, R					1												
STA 39+88, 29, L					1												
STA 41+43, 56.5, L		1	1						1							200	
STA 41+43, 58, R		1	1						1							200	
ON RAMP NORTH CL																	
STA 402+84, 40, L																200	
STA 412+77, 22.5, R	1		1						1								
STA 415+00, 23, R	1		1						1								
STA 417+14, 22.5, R	1		1						1								
OFF RAMP SOUTH CL																	
STA 303+05, 40, R																220	
STA 308+63, 33, R	1		1						1								
STA 310+23, 23, L	1		1						1								
STA 312+34, 23.5, L	1		1						1								
STA 314+58, 26, L	1		1						1								
STA 315+20, L												80					
ON RAMP SOUTH CL																	
STA 104+13, 4, L																	
STA 106+64, 4, L																	
STA 109+09, 22, L	1		1						1			20					
STA 111+24, 19.5, L	1		1						1			20					
STA 121+86, 40, R																250	
OFF RAMP NORTH CL																	
STA 200+00, R																	
STA 200+50, 22, R	1		1						1				65				
STA 202+76, 23, R	1		1						1								
STA 205+08, 23, R	1		1						1								
STA 206+45, 32.5, L	1		1						1								
STA 213+28, 40, L																320	
136th AVENUE CL																	
STA 36+42, 111, R												35				1	
STA 36+47, 100, L												30				1	
STA 36+62, 90, R												35				1	
STA 36+67, 86, L												30				1	
STA 36+77, 106, R												60					
STA 36+77, 106, L												60					
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STA 36+90, 52.5, L													50			1	
STA 37+01, 115, R													275			1	
STA 37+16, 81, R																	
STA 37+16, 18, L												65				1	
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STA 37+27, 97, R												50				1	
STA 37+38, 78, R												30				1	
STA 37+39, 80, L												30				1	
STA 37+62, 76, R												30				1	
STA 37+62, 77, L												30				1	
STA 37+90, 137, R												90					
STA 37+91, 138, L												45					
STA 37+92, 108, R												30					
STA 37+92, 110, L												105					
INTERCHANGE SUBTOTAL	13	4	17	2	0	0	13	4	0	4	2	860	510	1790	12	2	0.45

NOTE: 1. ITEMS INDICATED WITH AN ASTERISK (\*) ARE TO BE PROVIDED AND INSTALLED BY XCEL ENERGY. QUANTITIES SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL SURVEY AND STAKE ALL LIGHT STANDARD LOCATIONS PER STATIONING INFORMATION.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



Computer File Information	
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Drawing File Name:	LTAA0200.DWG
Acad Ver.	R14 Scale: NO SCALE Units:

Index of Revisions	



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fax 303.721.0832  
fhu@fhueng.com

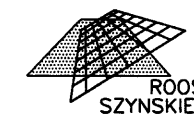
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As Constructed		136TH AVENUE AT I-25 INTERCHANGE LIGHTING TABULATIONS		Project No./Code	
No Revisions:				97-71	
Revised:		Designer: CAS/SEL	Structure Numbers		
Void:		Detailer: JGR	Subset Sheets:		
		Sheet Subset: Electrical	E2 of 19	Sheet Number 335	

TABULATION OF LIGHTING QUANTITIES - INTERCHANGE

STATION / LOCATION	LIGHT STANDARD		LIGHT STANDARD FOUNDATION *	LUMINAIRE HIGH PRESSURE SODIUM						COMPACT FLUORESCENT FLOODLIGHT 42 WATT	RESET LIGHT STANDARD	ELECTRICAL CONDUIT			GFCI RECEPTACLE	METERED SERVICE PANEL	ELECTRICAL WIRING
	ALUMINUM 40 FT *	DECORATIVE 25 FT *		WALLTYPE 250 WATT *	WALLTYPE 150 WATT *	WALLTYPE 100 WATT *	TYPE 3 250 WATT *	DECORATIVE 250 WATT *	SPECIAL 100 WATT *			1 INCH PVC	2 INCH PVC	3 INCH PVC			
	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	FT	FT	FT	EA.	EA.	L.S.
136th AVENUE CL																	
STA 38+00, 71, L										1		45					
STA 38+00, 70, R										1		45					
STA 38+14, 108, R										1		45					
STA 38+15, 110, L										1		30					
STA 38+30, 60, R											1	70					
STA 38+30, 60, L										1							
STA 39+00, 60, R										1							
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STA 39+65, 60, L										1							
STA 40+35, 60, R										1							
STA 40+35, 60, L										1		80					
STA 40+43, 75, L										1		50					
STA 40+49, 107, R										1		25					
STA 40+56, 120, L										1		30					
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STA 41+32, 81, L												45			1		
STA 41+40, 52, R													245			1	
STA 41+46, 53, L													20			1	
STA 41+53, 82, R												25			1		
STA 41+58, 83, L												45			1		
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STA 41+72, 107, L												45					
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STA 41+83, 92, L												30			1		
STA 41+93, 107, R												25			1		
STA 41+98, 127, R												20			1		
STA 42+02, 112, L												30			1		
OFF RAMP SOUTH CL																	
STA 302+94, 174, R										1		155					
STA 303+46, 126, R										1		65					
STA 304+16, 171, R										1		85					
STA 304+48, 109, R										1		100					
M.P. 223.83, NB I-25													1350 **				
M.P. 226.28, SB I-25													1350 **				
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INTERCHANGE SUBTOTAL (PREVIOUS SHEET)	13	4	17	2	0	0	13	4	0	4	2	860	510	1790	12	2	0.45
INTERCHANGE TOTAL	13	4	17	2	0	0	13	4	8	20	2	2420	3475	1790	23	4	0.9

NOTE: 1. ITEMS INDICATED WITH AN ASTERISK (\*) ARE TO BE PROVIDED AND INSTALLED BY XCEL ENERGY. QUANTITIES SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL SURVEY AND STAKE ALL LIGHT STANDARD LOCATIONS PER STATIONING INFORMATION.  
 2. CONDUIT INDICATED WITH A DOUBLE ASTERISK (\*\*) SHALL BE PROVIDED BY THE CONTRACTOR FROM THE GUIDE SIGN LOCATION TO THE POWER SOURCE PROVIDED BY XCEL ENERGY. REFER TO SHEET E19 FOR ADDITIONAL INFORMATION.



3045 S. Parker Road Suite 225  
 Aurora, Colorado 80014  
 Phone: 303-696-2602  
 FAX: 303-696-0812



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Acad Ver.	R14 Scale: NO SCALE Units:

Index of Revisions	



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 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

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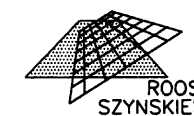
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Designer:	CAS/SEL	Structure	
Detailer:	JGR	Numbers	
Sheet Subset:	Electrical	Subset Sheets:	E3 of 19

Project No./Code	97-71
Sheet Number	336

TABULATION OF LIGHTING QUANTITIES - CITY OF THORNTON


STATION / LOCATION	LIGHT STANDARD		LIGHT STANDARD FOUNDATION *	LUMINAIRE HIGH PRESSURE SODIUM						COMPACT FLUORESCENT FLOODLIGHT 42 WATT	RESET LIGHT STANDARD	ELECTRICAL CONDUIT			GFCI RECEPTACLE	METERED SERVICE PANEL	ELECTRICAL WIRING
	ALUMINUM 40 FT *	DECORATIVE 25 FT *		WALLTYPE 250 WATT *	WALLTYPE 150 WATT *	WALLTYPE 100 WATT *	TYPE 3 250 WATT *	DECORATIVE 250 WATT *	SPECIAL 100 WATT *			1 INCH PVC FT	2 INCH PVC FT	3 INCH PVC FT			
	EA.	EA.		EA.	EA.	EA.	EA.	EA.	EA.			EA.	EA.	EA.			
136th AVENUE CL																	
STA 43+45, 61.5, L		1	1						1								
STA 43+92, 58, R		1	1						1								
STA 45+00, 64.5, L		1	1						1								
STA 45+26, 57.5, R		1	1						1								
+ STA 45+53, 4, L										1	420						
+ STA 45+53, 5, R										1	15						
STA 46+43, 60, L		1	1						1								
STA 46+43, 57.5, R		1	1						1								
STA 47+92, 58, L		1	1						1					120			
STA 47+92, 58.5, R		1	1						1					100			
STA 49+37, 54, L		1	1						1								
STA 49+41, 47, R		1	1						1								
STA 50+77, 46, L		1	1						1								
STA 50+77, 47, R		1	1						1								
STA 52+21, 36, L		1	1						1								
STA 52+21, 58, R		1	1						1								
STA 53+60, 35, L		1	1						1								
STA 53+60, 57.5, R		1	1						1					175			
STA 55+05, 48, L		1	1						1								
STA 55+05, 48, R		1	1						1								
STA 56+38, 45.5, L		1	1						1								
STA 56+38, 47, R		1	1						1								
STA 57+81, 47, R		1	1						1					50			
STA 57+82, 35, L		1	1						1					50			
STA 59+22, 43, L		1	1						1								
STA 59+22, 55, R		1	1						1								
STA 60+02, 36.5, R						1											
STA 60+02, 24, L						1											
STA 60+60, 44.5, L		1							1								
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STA 64+84, 47.5, L		1	1						1								
STA 64+84, 65, R		1	1						1								
THORNTON PEDESTRIAN UNDERPASS CL																	
STA 1+96, 6, L						1											
STA 2+31, 6, R						1											
STA 2+66, 6, L						1											
STA 3+01, 6, R						1											
STA 3+36, 6, L						1											
STA 3+71, 6, R						1											
STA 4+06, 6, L						1											
THORNTON TOTAL	0	32	30	0	2	7	0	32	0	2	0	435	0	1095	0	0.05	

- NOTE: 1. ITEMS INDICATED WITH AN ASTERISK (\*) ARE TO BE PROVIDED AND INSTALLED BY XCEL ENERGY. QUANTITIES SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL SURVEY AND STAKE ALL LIGHT STANDARD LOCATIONS PER STATIONING INFORMATION.  
 2. STATION INFORMATION FOR CITY SIGN FLOODLIGHT, NOTED WITH A CROSS (+), IS APPROXIMATE. ACTUAL LOCATION SHALL BE BASED ON FINAL SIGN LOCATION AND PER DETAIL ON SHEET E18 OF 18.



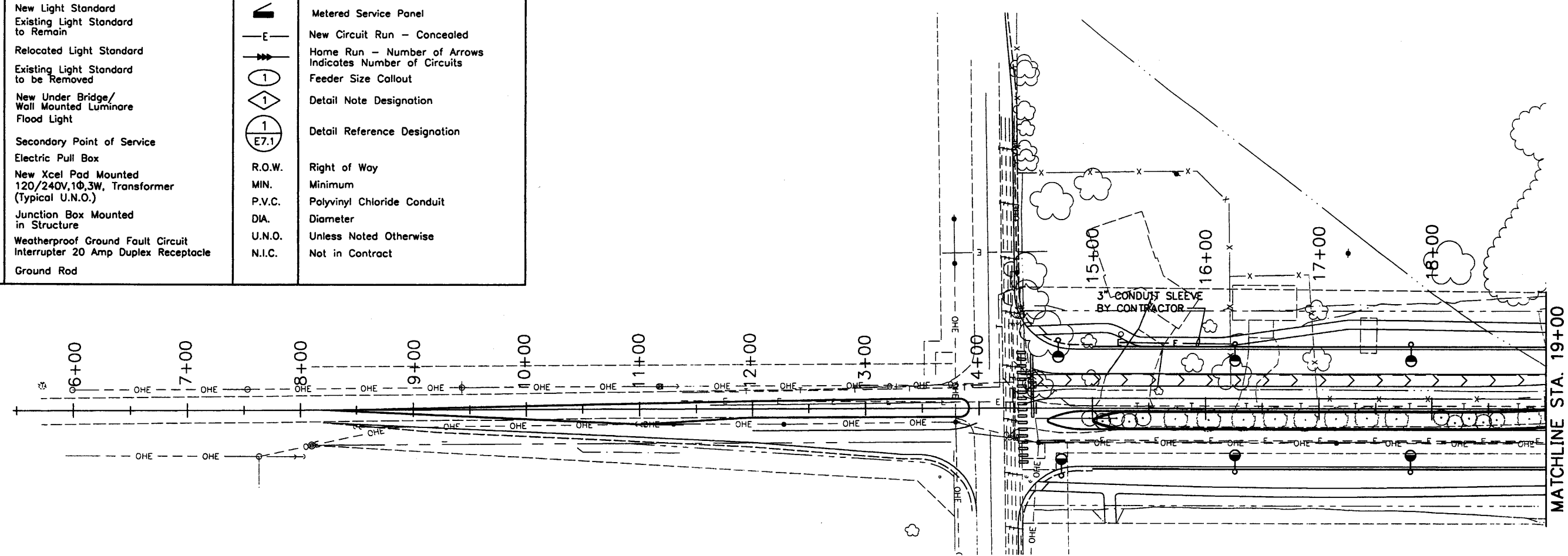
3045 S. Parker Road Suite 225  
 Aurora, Colorado 80014  
 Phone: 303-696-2602  
 FAX: 303-696-0812



Computer File Information		Index of Revisions		 <p>303.721.1440                  fax 303.721.0832                  fhu@fhueng.com</p> <p>Greenwood Corporate Plaza                  7951 E. Maplewood Ave. Ste. 200                  Englewood, CO 80111</p>	As Constructed	136TH AVENUE AT I-25 INTERCHANGE LIGHTING TABULATIONS CITY OF THORNTON		Project No./Code
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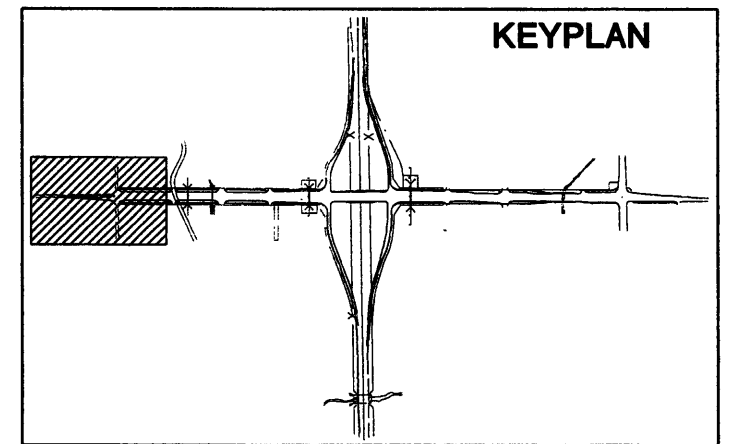
## LEGEND

<ul style="list-style-type: none"> <li> New Light Standard</li> <li> Existing Light Standard to Remain</li> <li> Relocated Light Standard</li> <li> Existing Light Standard to be Removed</li> <li> New Under Bridge/Wall Mounted Luminaire Flood Light</li> <li> Secondary Point of Service</li> <li> Electric Pull Box</li> <li> New Xcel Pad Mounted 120/240V, 10, 3W, Transformer (Typical U.N.O.)</li> <li> Junction Box Mounted in Structure</li> <li> Weatherproof Ground Fault Circuit Interrupter 20 Amp Duplex Receptacle</li> <li> Ground Rod</li> </ul>	<ul style="list-style-type: none"> <li> Metered Service Panel</li> <li> New Circuit Run - Concealed</li> <li> Home Run - Number of Arrows Indicates Number of Circuits</li> <li> Feeder Size Callout</li> <li> Detail Note Designation</li> <li> Detail Reference Designation</li> <li> R.O.W. Right of Way</li> <li> MIN. Minimum</li> <li> P.V.C. Polyvinyl Chloride Conduit</li> <li> DIA. Diameter</li> <li> U.N.O. Unless Noted Otherwise</li> <li> N.I.C. Not in Contract</li> </ul>	
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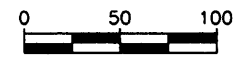
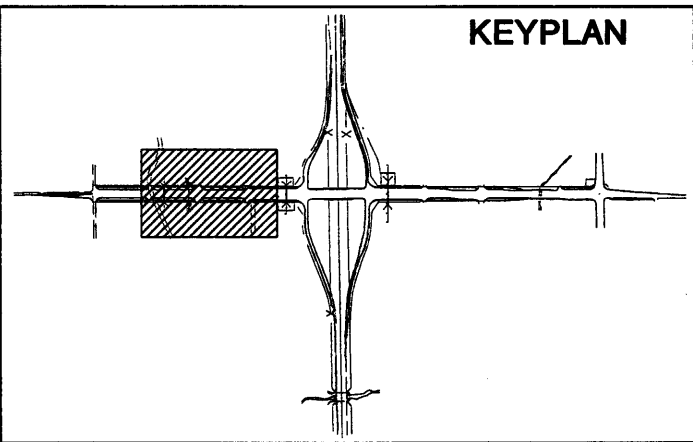
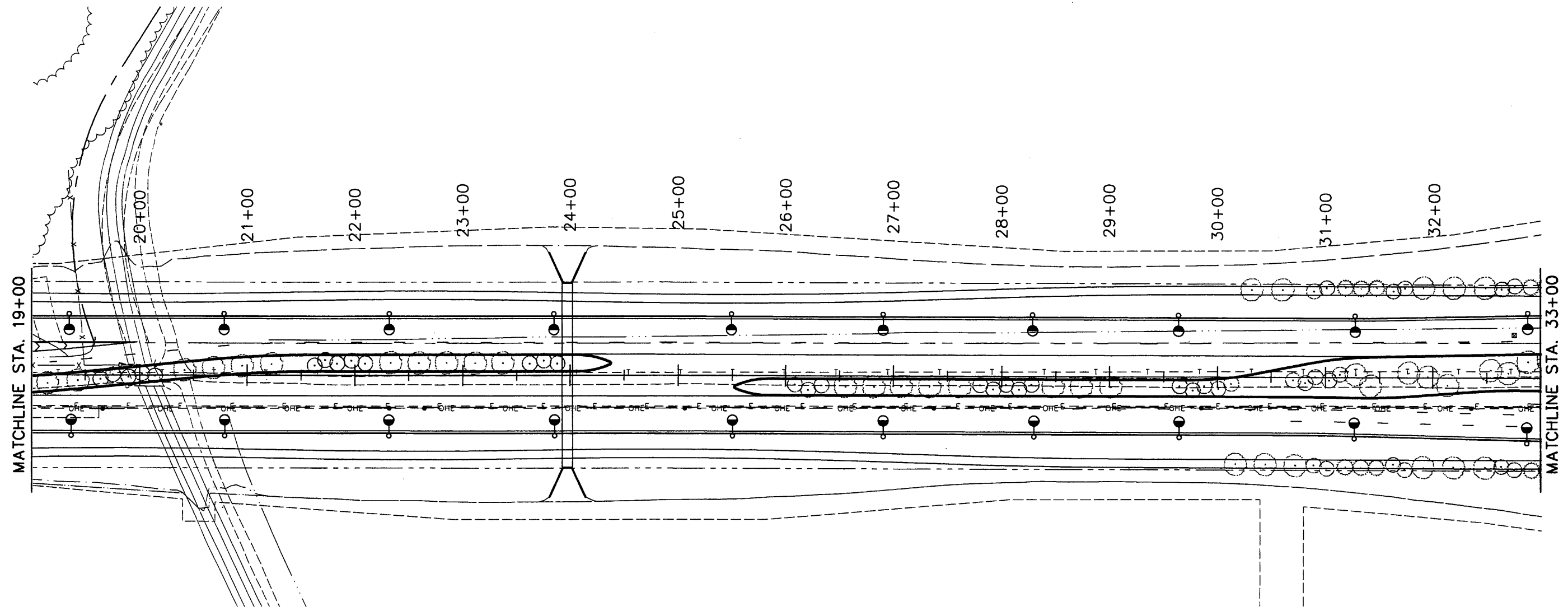
### PROJECT GENERAL NOTES

1. UTILITY LINES SHOWN FOR INFORMATION ONLY. SEE UTILITY AND DRAINAGE PLANS FOR COMPLETE INFORMATION.
2. LOCATION OF LANDSCAPE LIGHTING AND RECEPTACLES ARE APPROXIMATE. ALL FLOODLIGHT LUMINAIRES SHALL BE TEMPORARILY INSTALLED TO PROVIDE A MOCKUP OF THE FINAL INSTALLATION. ADJUSTMENTS TO THE LOCATIONS MAY BE MADE BY AT THAT TIME BY THE PROJECT MANAGER OR THE ENGINEER TO ACHIEVE DESIRED LIGHTING RESULTS. RECEPTACLES SHALL BE LOCATED BASED UPON SITE CONDITIONS AND FINAL TREE LOCATIONS.
3. EXISTING CONDITIONS SHALL BE VERIFIED AT THE SITE PRIOR TO SUBMITTING BIDS. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM WITH LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AASHTO AND COLORADO DEPARTMENT OF TRANSPORTATION REGULATIONS AND STANDARDS.
4. ALL WIRING SHALL BE COPPER. #10 AWG MINIMUM WITH #10 AWG GROUND WIRE, UNLESS OTHERWISE NOTED.
5. ALL CONDUIT SHALL BE RUN A MINIMUM OF 30" BELOW GRADE PRIOR TO PAVING. ALL CONDUIT RUN UNDER TRAVELED WAY AND ALL CONDUIT ELBOWS SHALL BE PVC COATED GRC. REMAINING CONDUIT SHALL BE SCHEDULE 40 PVC TYPE CONDUIT.
6. CONTRACTOR SHALL COORDINATE CONDUIT RUNS AND CONSTRUCTION SEQUENCE WITH ALL DISCIPLINES AND WITH XCEL ENERGY.
7. PROVIDE PULL BOXES AND JUNCTION BOXES, SIZED AS REQUIRED, TO PROVIDE WEATHER-TIGHT RACEWAY SYSTEM.
8. TRANSFORMER AND METERED SERVICE PANEL LOCATIONS ARE APPROXIMATE. METERED SERVICE PANELS SHALL BE LOCATED BASED UPON SITE CONDITIONS AND POWER SOURCE LOCATIONS. FINAL LOCATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
9. ALL ROADWAY LIGHTING SHALL BE PROVIDED AND INSTALLED BY XCEL ENERGY. LOCATIONS SHOWN HERE FOR INFORMATION ONLY. CONTRACTOR SHALL SURVEY AND STAKE ALL LIGHT STANDARD LOCATIONS FOR XCEL ENERGY, BASED ON THESE PLANS. ALL CONDUIT AND/OR DIRECT BURIED CABLE USED BY XCEL FOR THIS INSTALLATION SHALL BE ROUTED IN LINE WITH OR BEHIND (AWAY FROM THE TRAVELED WAY) THE LUMINAIRES. NO CONDUIT OR CABLES SHALL BE LOCATED BELOW THE PROPOSED ROADWAY OR CURB AND GUTTER, OR WITHIN 2'-0" OF THE CURB. ANY WIRING OR CONDUIT INSTALLED IN THIS AREA WILL NOT BE ACCEPTED AND WILL BE REQUIRED TO BE REWORKED.



3045 S. Parker Road Suite 225  
 Aurora, Colorado 80014  
 Phone: 303-696-2602  
 FAX: 303-696-0812

<b>Computer File Information</b>		<b>Index of Revisions</b>		 <b>FELSBURG HOLT &amp; ULLEVIG</b>	303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed	136TH AVENUE AT I-25 INTERCHANGE LIGHTING PLAN		Project No./Code		
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Last Modification Date:	12/12/02 Initials: SEL					Revised:	Designer:	CAS/SEL			
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Acad Ver.	R14 Scale: 1"=100'0" Units:										



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



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Acad Ver.	R14 Scale: 1"=100'0" Units:

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7951 E. Maplewood Ave. Ste. 200  
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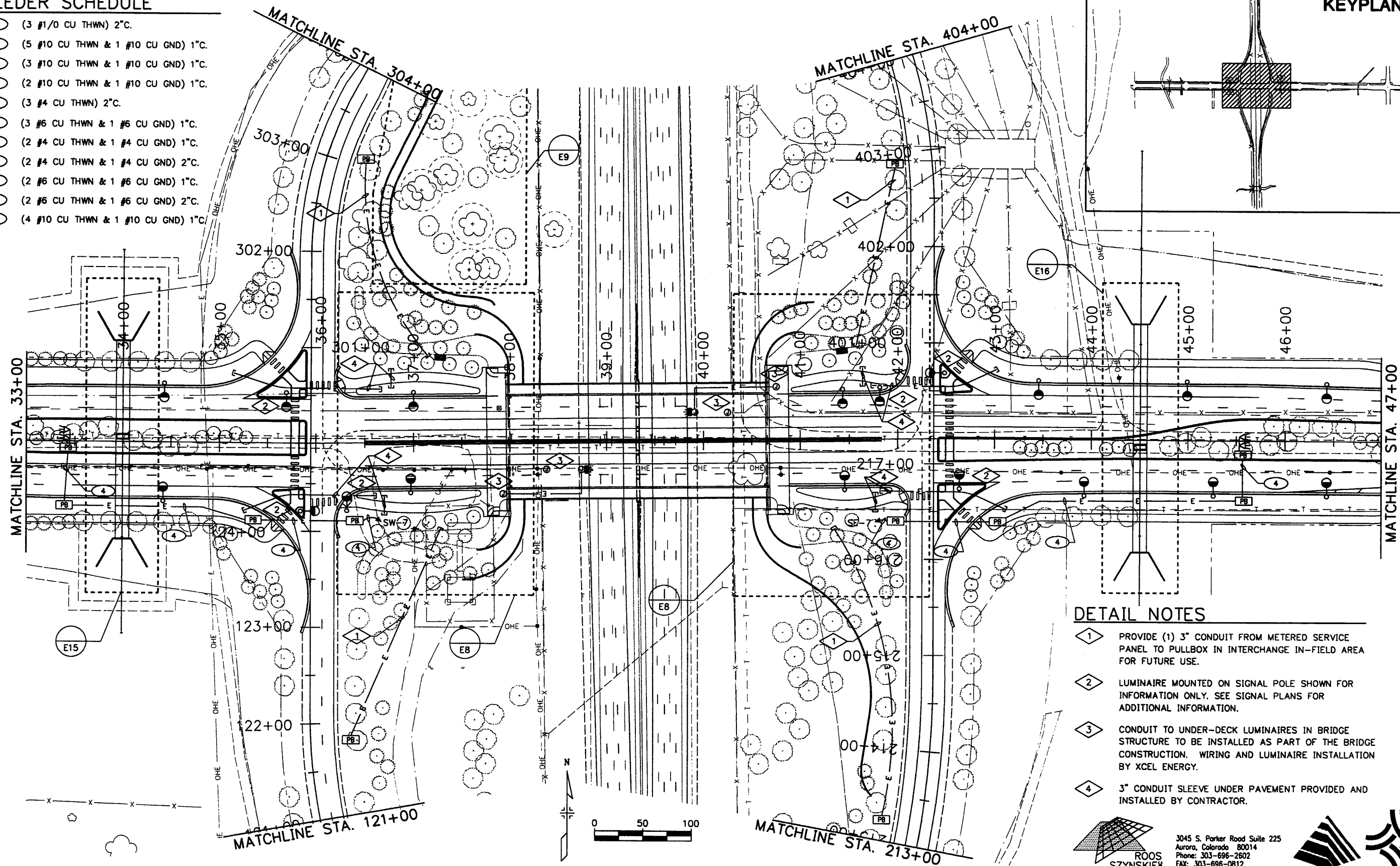
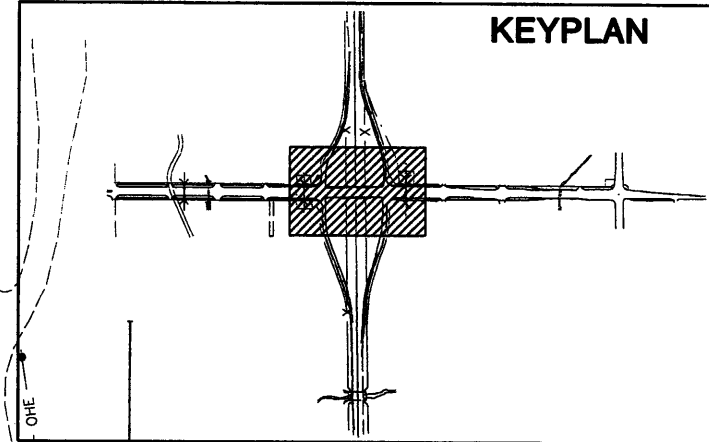
As Constructed
No Revisions:
Revised:
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136TH AVENUE AT I-25 INTERCHANGE LIGHTING PLAN STA. 19+00 TO STA. 33+00	
Designer:	CAS/SEL
Detailer:	JGR
Sheet Subset:	Electrical
Subset Sheets:	E6 of 19

Project No./Code	97-71
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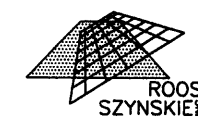
# FEEDER SCHEDULE

- ① (3 #1/0 CU THWN) 2°C.
- ② (5 #10 CU THWN & 1 #10 CU GND) 1°C.
- ③ (3 #10 CU THWN & 1 #10 CU GND) 1°C.
- ④ (2 #10 CU THWN & 1 #10 CU GND) 1°C.
- ⑤ (3 #4 CU THWN) 2°C.
- ⑥ (3 #6 CU THWN & 1 #6 CU GND) 1°C.
- ⑦ (2 #4 CU THWN & 1 #4 CU GND) 1°C.
- ⑧ (2 #4 CU THWN & 1 #4 CU GND) 2°C.
- ⑨ (2 #6 CU THWN & 1 #6 CU GND) 1°C.
- ⑩ (2 #6 CU THWN & 1 #6 CU GND) 2°C.
- ⑪ (4 #10 CU THWN & 1 #10 CU GND) 1°C.



## DETAIL NOTES

- ① PROVIDE (1) 3" CONDUIT FROM METERED SERVICE PANEL TO PULLBOX IN INTERCHANGE IN-FIELD AREA FOR FUTURE USE.
- ② LUMINAIRE MOUNTED ON SIGNAL POLE SHOWN FOR INFORMATION ONLY. SEE SIGNAL PLANS FOR ADDITIONAL INFORMATION.
- ③ CONDUIT TO UNDER-DECK LUMINAIRES IN BRIDGE STRUCTURE TO BE INSTALLED AS PART OF THE BRIDGE CONSTRUCTION. WIRING AND LUMINAIRE INSTALLATION BY XCEL ENERGY.
- ④ 3" CONDUIT SLEEVE UNDER PAVEMENT PROVIDED AND INSTALLED BY CONTRACTOR.


 3045 S. Parker Road Suite 225  
 Aurora, Colorado 80014  
 Phone: 303-696-2602  
 FAX: 303-696-0812

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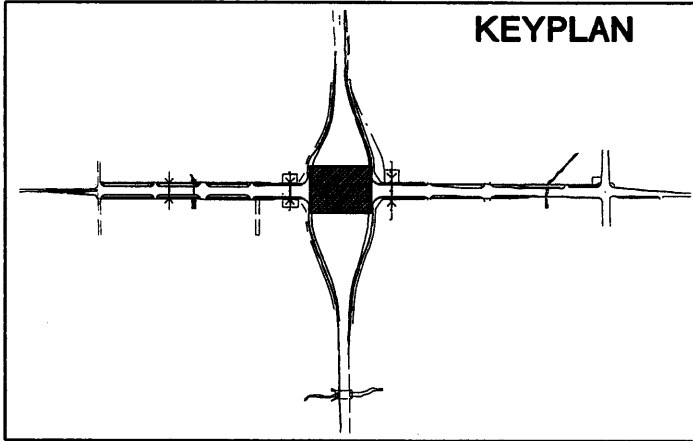
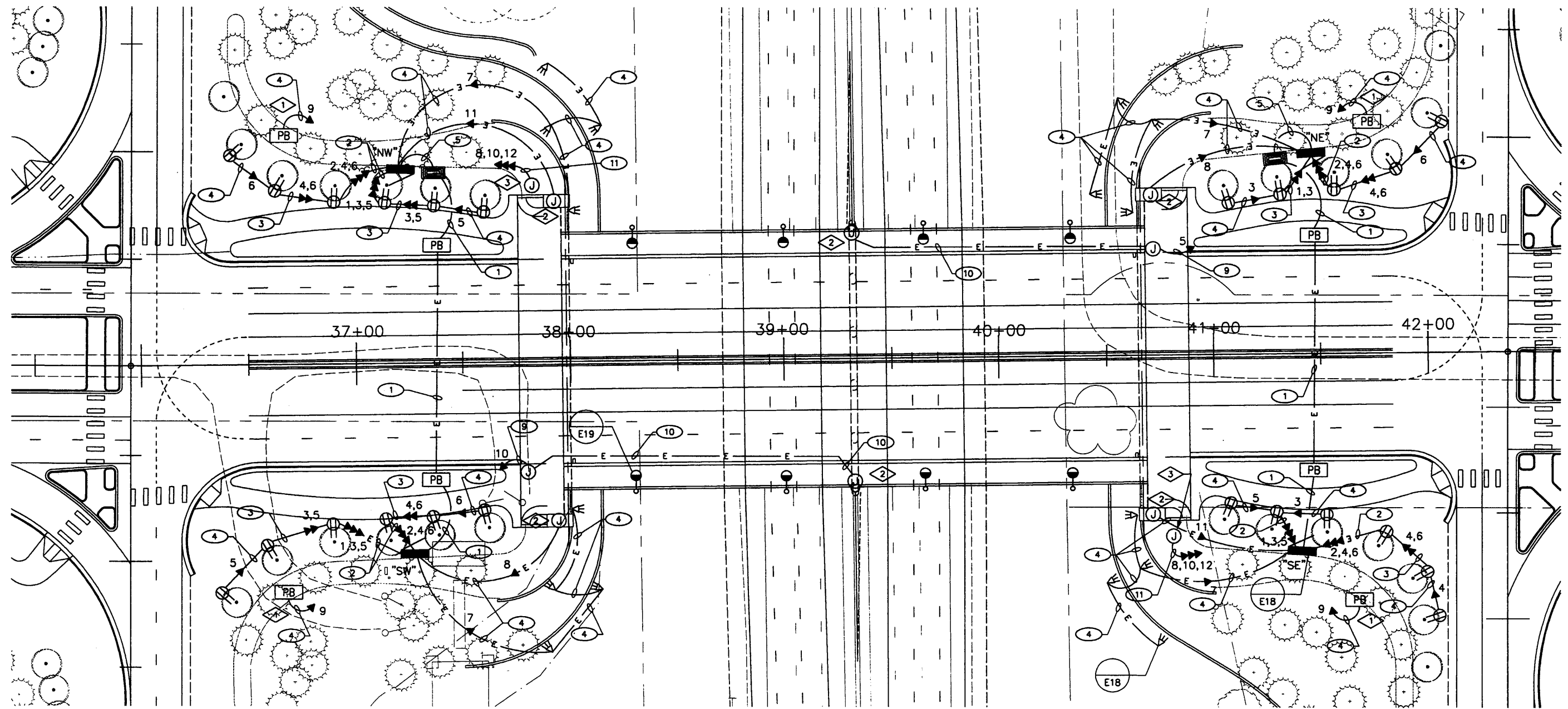


303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
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136TH AVENUE AT I-25 INTERCHANGE LIGHTING PLAN	
STA. 33+00 TO STA. 47+00	
Designer:	CAS/SEL
Detailer:	JGR
Sheet Subset:	Electrical
Subset Sheets:	E7 of 19

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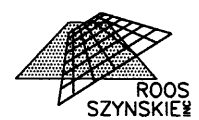


**FEEDER SCHEDULE**

- ① (3 #1/0 CU THWN) 2°C.
- ② (5 #10 CU THWN & 1 #10 CU GND) 1°C.
- ③ (3 #10 CU THWN & 1 #10 CU GND) 1°C.
- ④ (2 #10 CU THWN & 1 #10 CU GND) 1°C.
- ⑤ (3 #4 CU THWN) 2°C.
- ⑥ (3 #6 CU THWN & 1 #6 CU GND) 1°C.
- ⑦ (2 #4 CU THWN & 1 #4 CU GND) 1°C.
- ⑧ (2 #4 CU THWN & 1 #4 CU GND) 2°C.
- ⑨ (2 #6 CU THWN & 1 #6 CU GND) 1°C.
- ⑩ (2 #6 CU THWN & 1 #6 CU GND) 2°C.
- ⑪ (4 #10 CU THWN & 1 #10 CU GND) 1°C.

**DETAIL NOTES**

- ① PROVIDE 120 VOLT POWER CONNECTION TO IRRIGATION CONTROLLER. REFER TO IRRIGATION PLANS FOR EXACT CONTROLLER LOCATION.
- ② PROVIDE 120 VOLT POWER CONNECTION TO BRIDGE MOUNTED DECORATIVE LIGHTING MONUMENT. MAKE ALL ELECTRICAL CONNECTIONS AS REQUIRED. CONDUIT AND JUNCTION BOXES IN BRIDGE STRUCTURE TO BE INSTALLED AS PART OF THE BRIDGE CONSTRUCTION. REFER TO STRUCTURAL PLANS FOR MONUMENT DETAILS.
- ③ PROVIDE 120 VOLT CIRCUITS FOR NEON SIGNAGE ON THE BRIDGE WALL. COORDINATE EXACT CIRCUIT QUANTITY AND TERMINATION LOCATIONS WITH SIGNAGE DESIGN.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2502  
FAX: 303-696-0812



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Last Modification Date:	12/16/02	Initials:	SEL
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**Index of Revisions**




303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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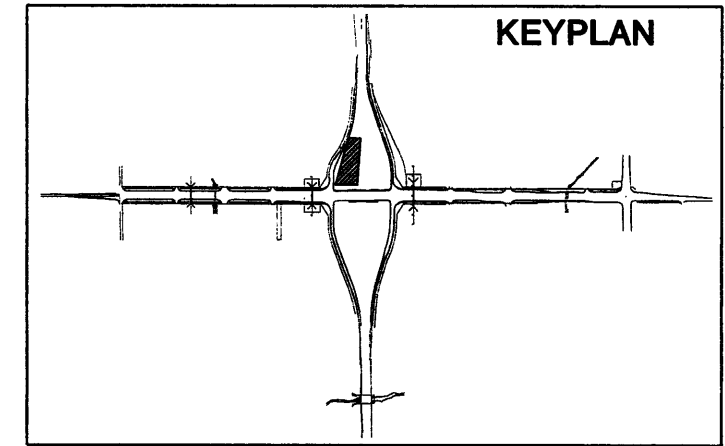
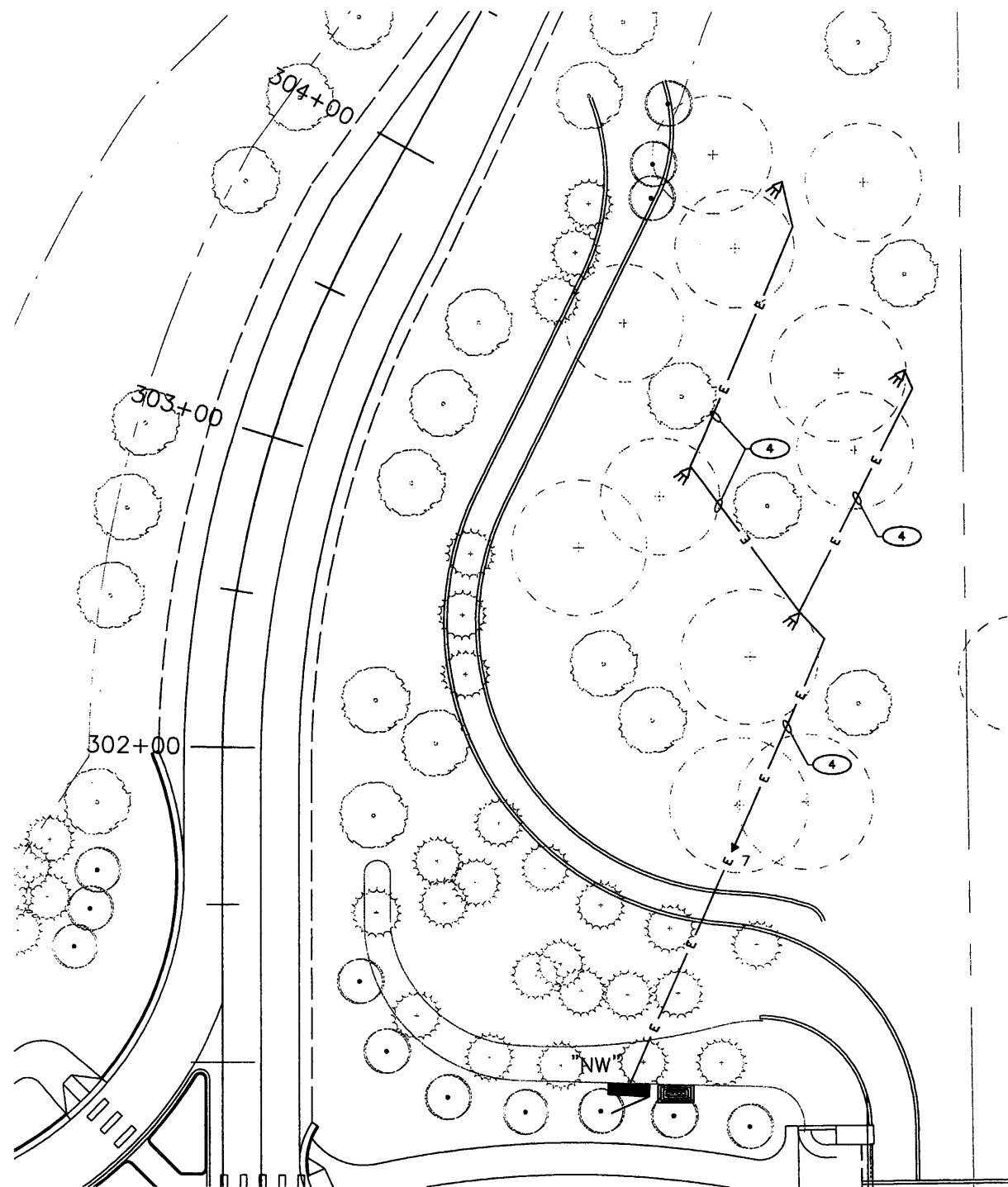
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**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVENUE PLAN  
LANDSCAPING LIGHTING PLAN**

Designer:	CAS/SEL
Detailer:	JGR
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Subset Sheets:	E8 of 19

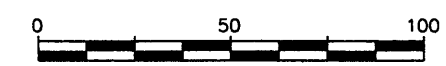
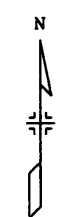
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Sheet Number	341

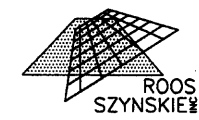


**FEEDER SCHEDULE**

1	(3 #1/0 CU THWN) 2°C.
2	(5 #10 CU THWN & 1 #10 CU GND) 1°C.
3	(3 #10 CU THWN & 1 #10 CU GND) 1°C.
4	(2 #10 CU THWN & 1 #10 CU GND) 1°C.
5	(3 #4 CU THWN) 2°C.
6	(3 #6 CU THWN & 1 #6 CU GND) 1°C.
7	(2 #4 CU THWN & 1 #4 CU GND) 1°C.
8	(2 #4 CU THWN & 1 #4 CU GND) 2°C.
9	(2 #6 CU THWN & 1 #6 CU GND) 1°C.
10	(2 #6 CU THWN & 1 #6 CU GND) 2°C.
11	(4 #10 CU THWN & 1 #10 CU GND) 1°C.



**SOUTHBOUND OFF RAMP TREE GROVE**



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



**Computer File Information**

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**Index of Revisions**




303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
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Englewood, CO 80111

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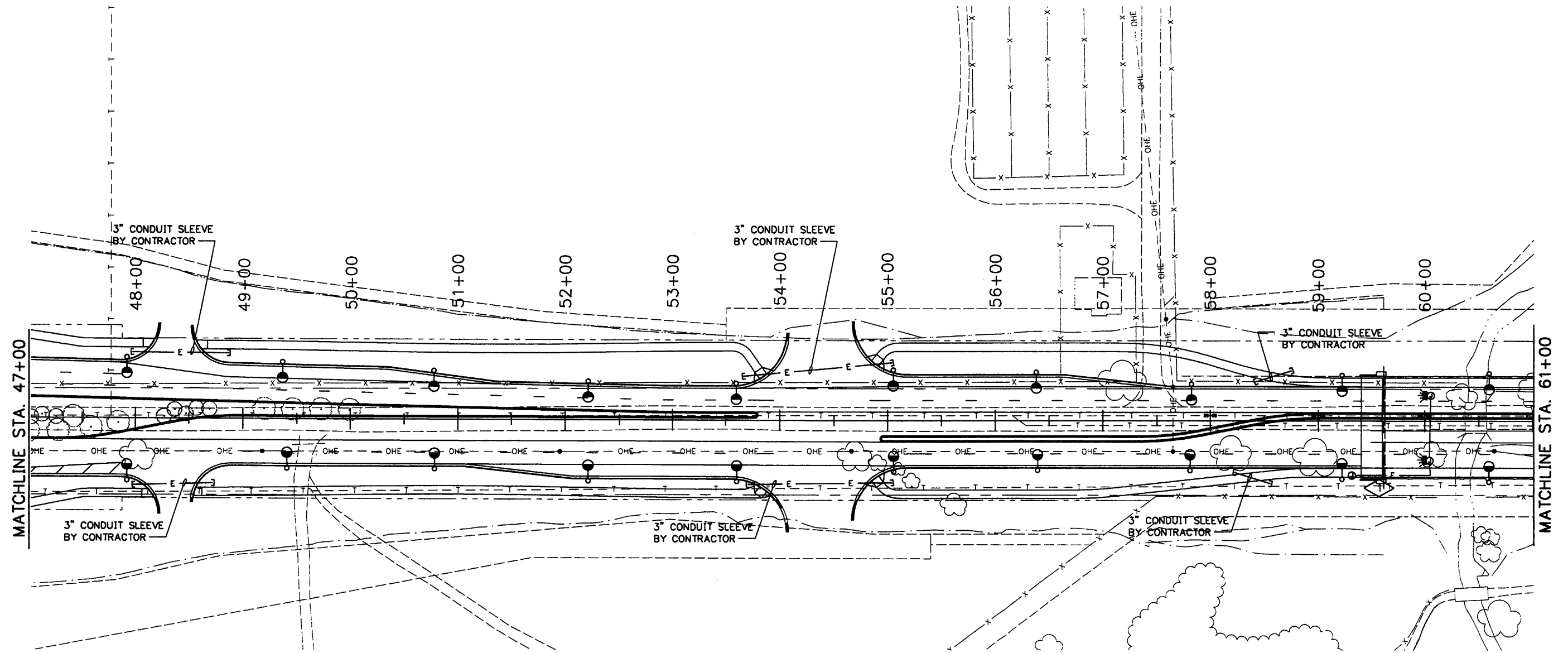
**136TH AVENUE AT I-25 INTERCHANGE  
136TH AVENUE PLAN  
LANDSCAPING LIGHTING PLAN**

Designer:	CAS/SEL
Detailer:	JGR
Sheet Subset:	Electrical
Subset Sheets:	E9 of 19

**Project No./Code**

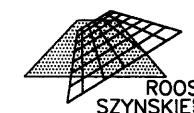
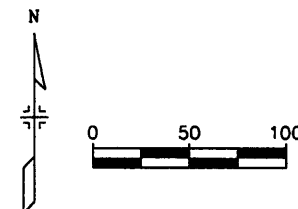
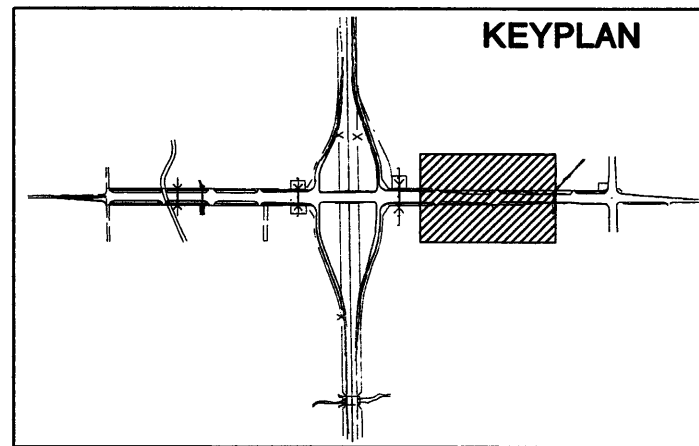
97-71
Sheet Number <b>342</b>





**DETAIL NOTES**

- 1 CONDUIT TO UNDER-DECK LUMINAIRES IN BRIDGE STRUCTURE TO BE INSTALLED AS PART OF THE BRIDGE CONSTRUCTION. WIRING AND LUMINAIRE INSTALLATION BY XCEL ENERGY.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



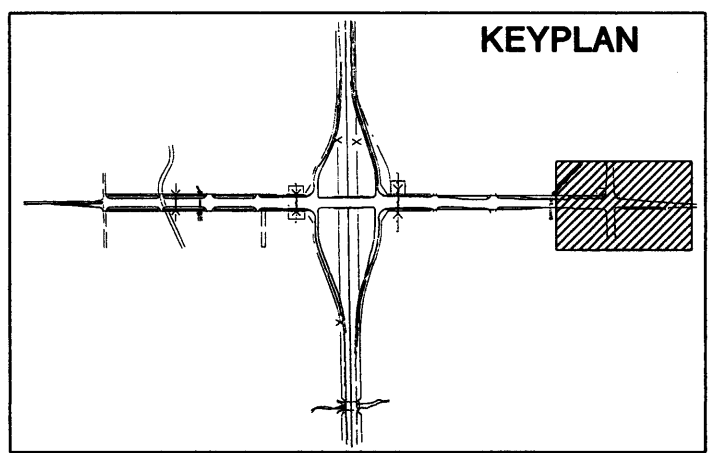
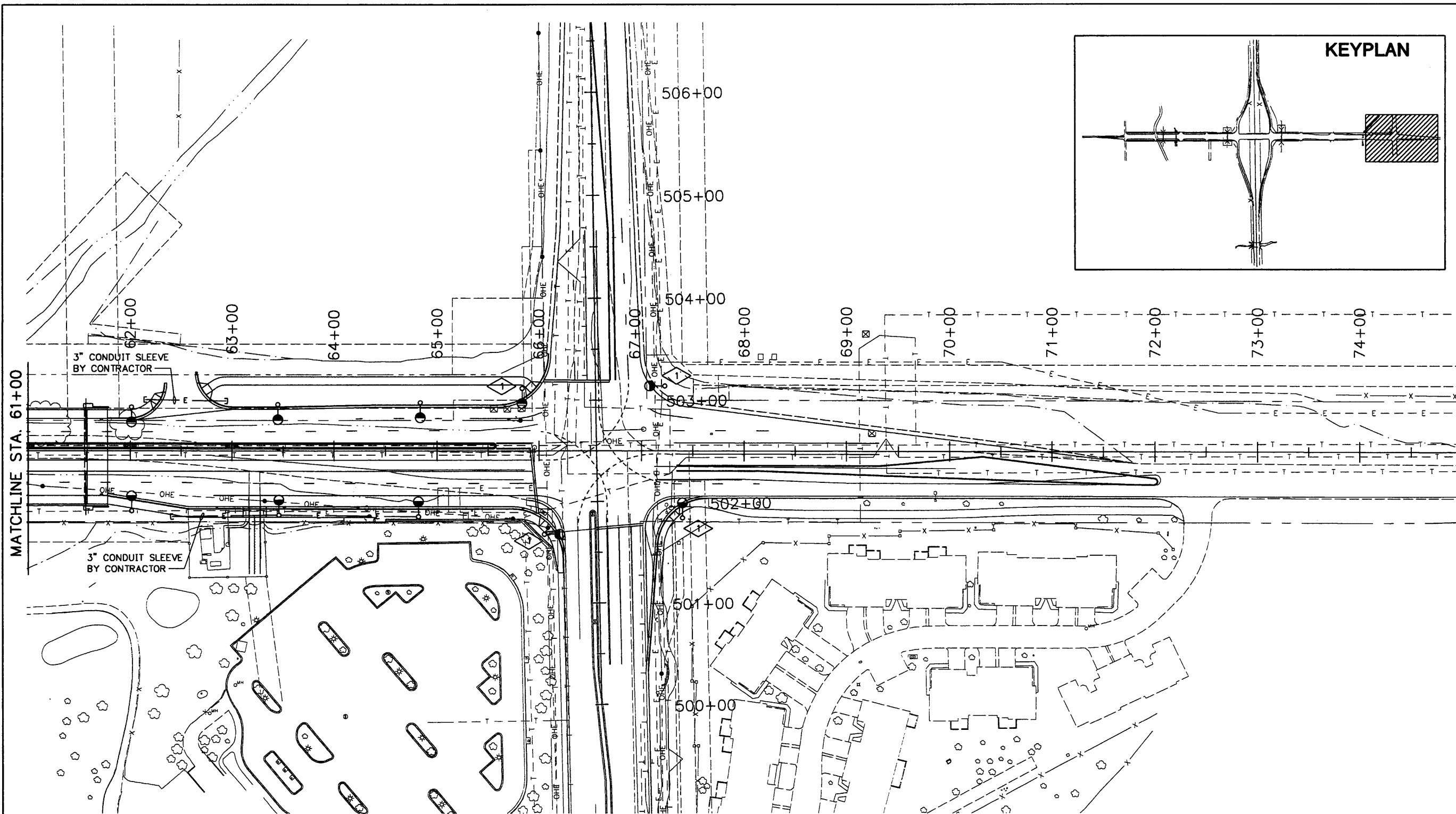
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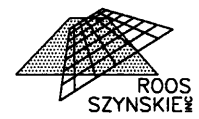
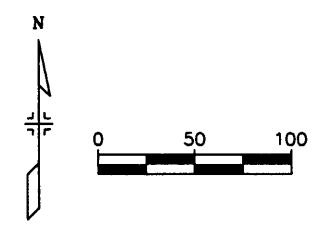
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed		136TH AVENUE AT I-25 INTERCHANGE LIGHTING PLAN STA. 47+00 TO STA. 61+00		Project No./Code	
No Revisions:				97-71	
Revised:		Designer: CAS/SEL			
Void:		Detailer: JGR			
		Sheet Subset: Electrical	Subset Sheets: E10 of 19		Sheet Number <b>343</b>



**DETAIL NOTES**

- 1 LUMINAIRE MOUNTED ON SIGNAL POLE SHOWN FOR INFORMATION ONLY. SEE SIGNAL PLANS FOR ADDITIONAL INFORMATION.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



Computer File Information	
Creation Date:	9/11/01 Initials: SEL
Last Modification Date:	01/16/03 Initials: SEL
Full Path:	N:\FELSBURG\136/1-25
Drawing File Name:	LTPL0700.DWG
Acad Ver.	R14 Scale: 1"=100'0" Units:

Index of Revisions	



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

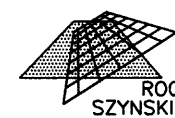
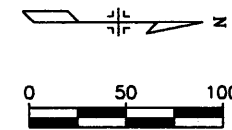
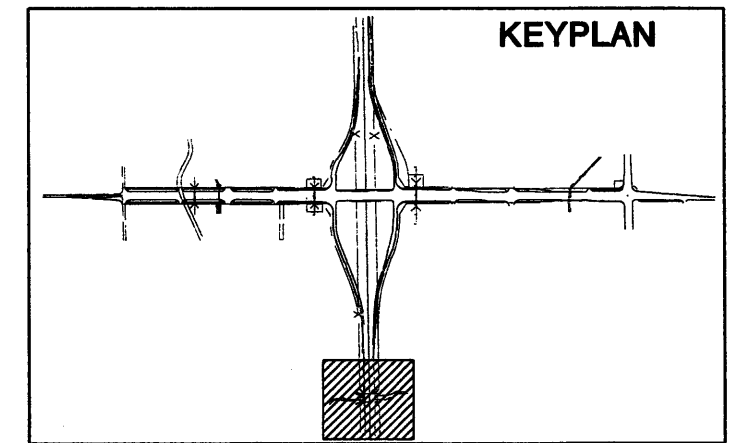
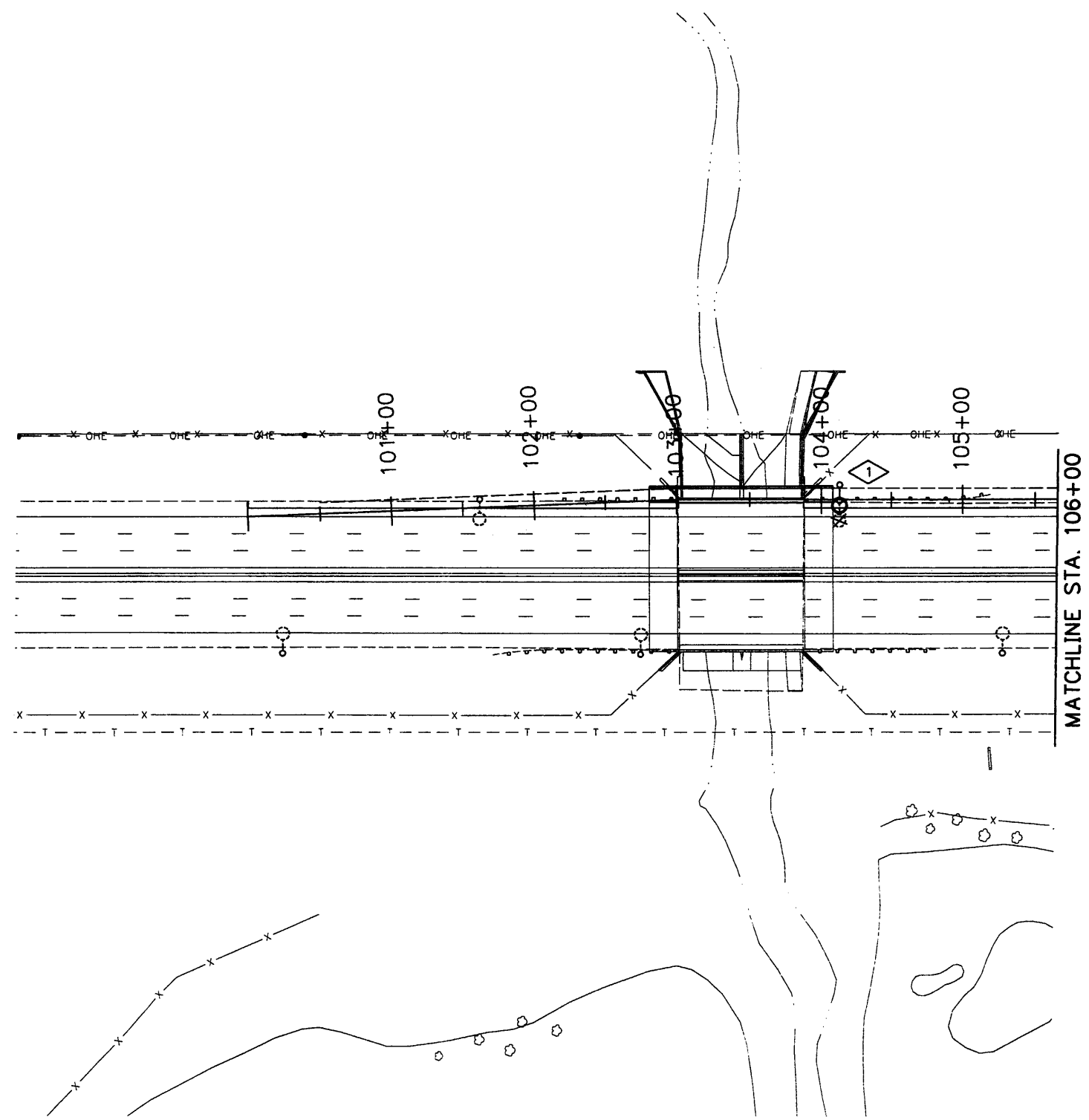
As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE LIGHTING PLAN STA. 61+00 TO STA. 75+00	
Designer:	CAS/SEL
Detailer:	JGR
Sheet Subset:	Electrical
Subset Sheets:	E11 of 19

Project No./Code	97-71
Sheet Number	344

**DETAIL NOTES**

1 EXISTING LUMINAIRE FOR LIGHTING IN FOG CONDITIONS TO BE RELOCATED AS SHOWN TO ACCOMODATE ROAD WIDENING. RECONNECT LIGHT TO EXISTING CIRCUIT SERVING THE LUMINAIRE, MATCH EXISTING CONDUIT AND WIRE IN SIZE AND TYPE. PROVIDE NEW MATCHING EXISTING.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



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Drawing File Name:	LTPLO800.DWG
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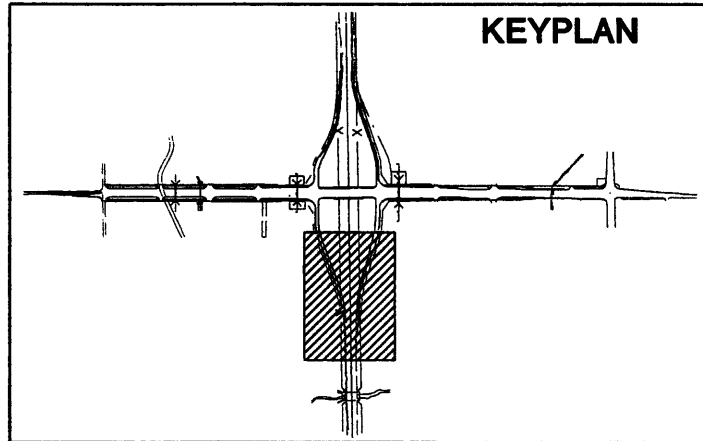
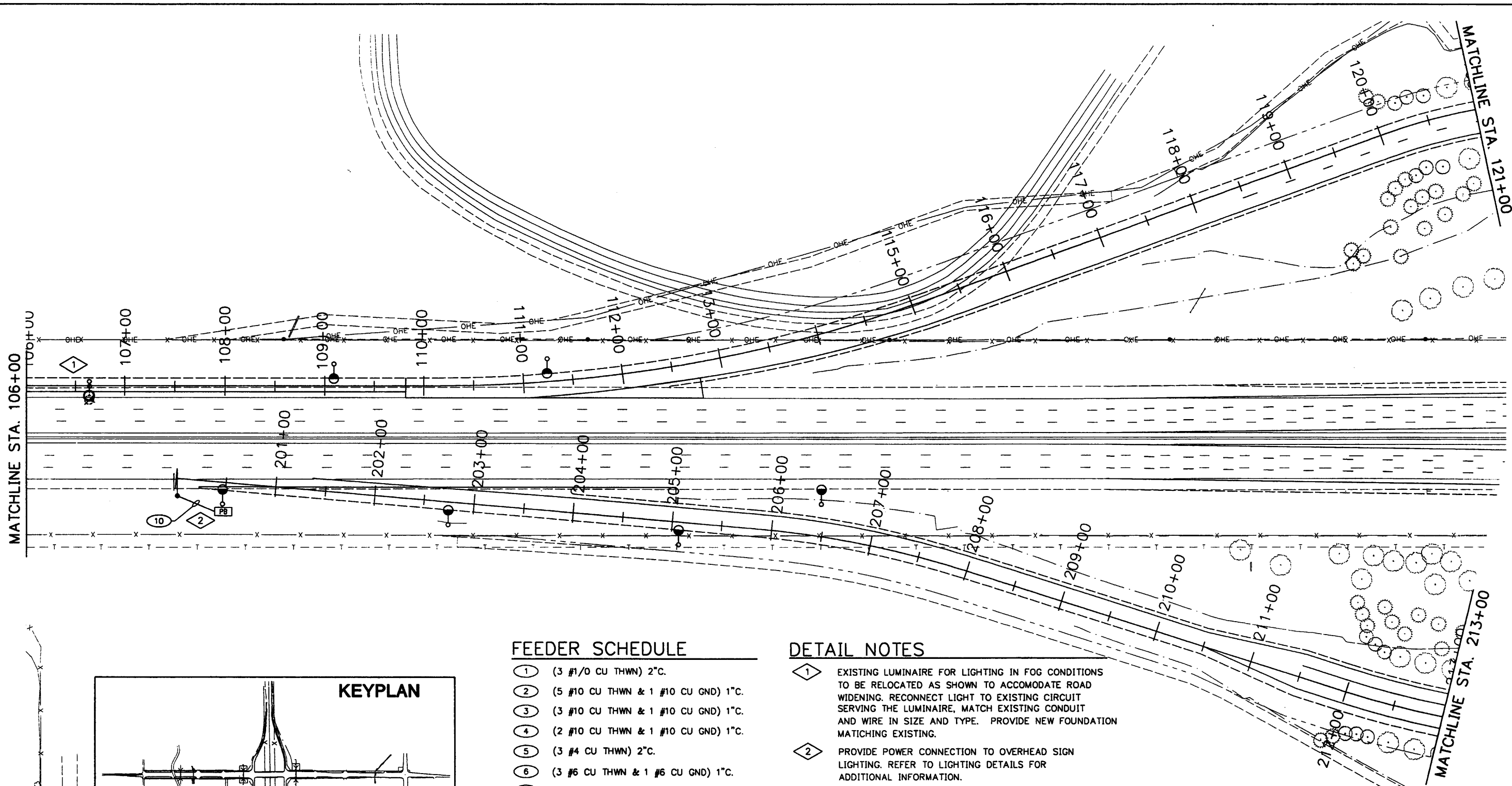
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fax 303.721.0832  
fhu@fhueng.com

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Englewood, CO 80111

As Constructed		136TH AVENUE AT I-25 INTERCHANGE I25 PLAN BRIDGE OVER BIG DRY CREEK		Project No./Code
No Revisions:		Designer: CAS/SEL		97-71
Revised:		Detailer: JGR		
Void:		Sheet Subset: Electrical	Subset Sheets: E12 of 19	Sheet Number <b>345</b>

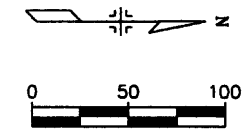


**FEEDER SCHEDULE**

- ① (3 #1/0 CU THWN) 2°C.
- ② (5 #10 CU THWN & 1 #10 CU GND) 1°C.
- ③ (3 #10 CU THWN & 1 #10 CU GND) 1°C.
- ④ (2 #10 CU THWN & 1 #10 CU GND) 1°C.
- ⑤ (3 #4 CU THWN) 2°C.
- ⑥ (3 #6 CU THWN & 1 #6 CU GND) 1°C.
- ⑦ (2 #4 CU THWN & 1 #4 CU GND) 1°C.
- ⑧ (2 #4 CU THWN & 1 #4 CU GND) 2°C.
- ⑨ (2 #6 CU THWN & 1 #6 CU GND) 1°C.
- ⑩ (2 #6 CU THWN & 1 #6 CU GND) 2°C.
- ⑪ (4 #10 CU THWN & 1 #10 CU GND) 1°C.

**DETAIL NOTES**

- ① EXISTING LUMINAIRE FOR LIGHTING IN FOG CONDITIONS TO BE RELOCATED AS SHOWN TO ACCOMMODATE ROAD WIDENING. RECONNECT LIGHT TO EXISTING CIRCUIT SERVING THE LUMINAIRE, MATCH EXISTING CONDUIT AND WIRE IN SIZE AND TYPE. PROVIDE NEW FOUNDATION MATCHING EXISTING.
- ② PROVIDE POWER CONNECTION TO OVERHEAD SIGN LIGHTING. REFER TO LIGHTING DETAILS FOR ADDITIONAL INFORMATION.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



Computer File Information	
Creation Date:	9/11/01 Initials: SEL
Last Modification Date:	12/13/02 Initials: SEL
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Drawing File Name:	LTPLO900.DWG
Acad Ver.	R14 Scale: 1"=100'0" Units:

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No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE	
SB ON RAMP 106+00 - 121+00	
NB OFF RAMP 200+00 - 213+00	
Designer:	CAS/SEL
Detailer:	JGR
Sheet Subset:	Electrical
Subset Sheets:	E13 of 19

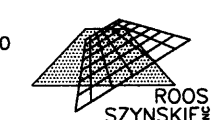
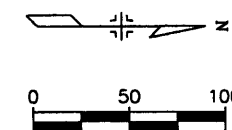
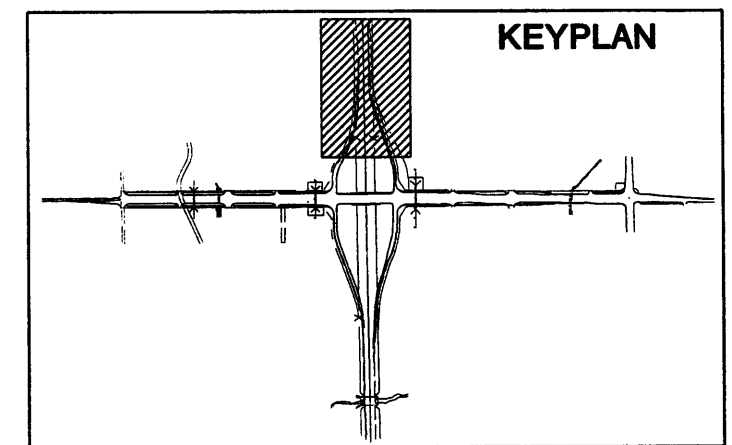
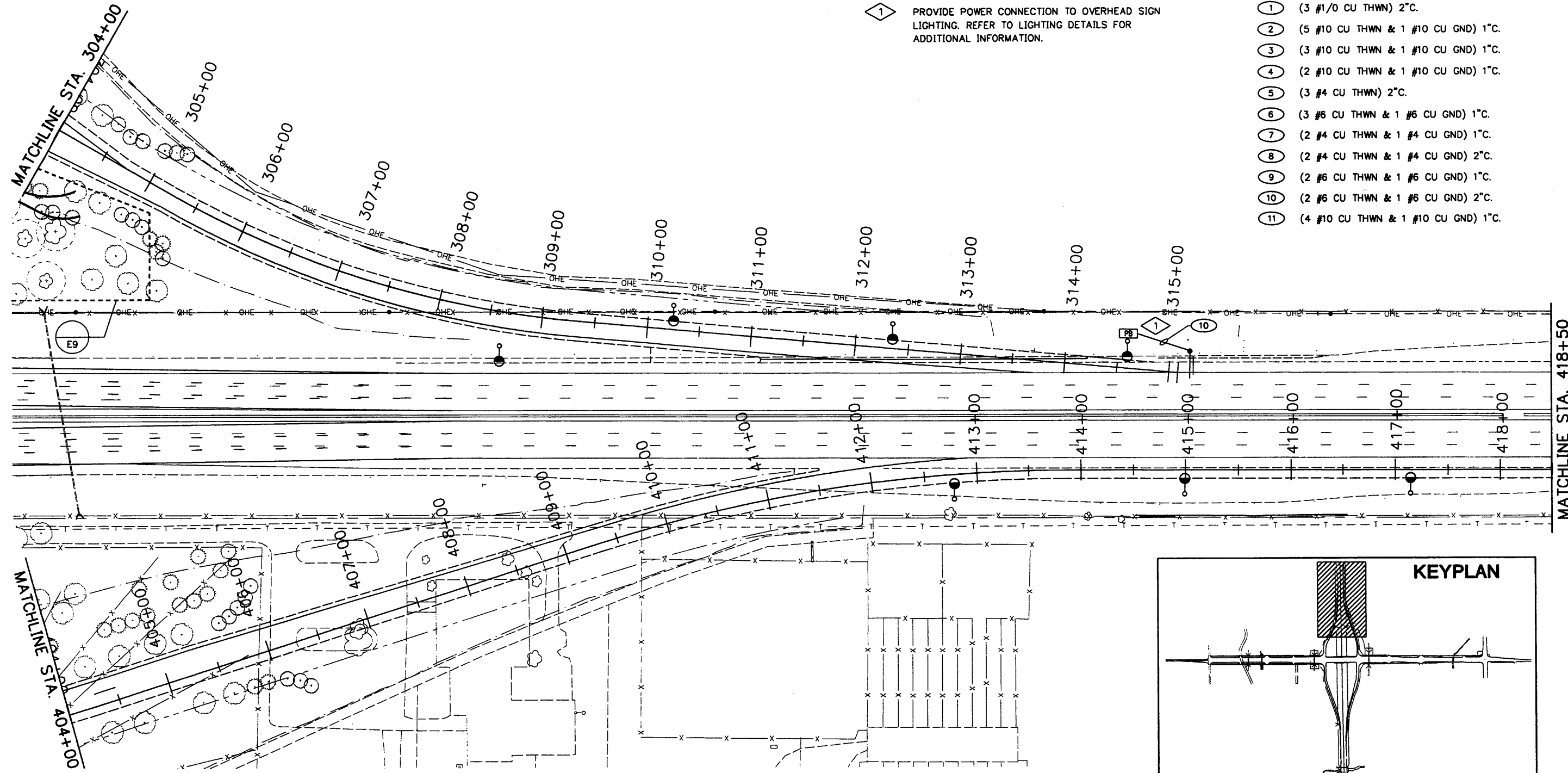
Project No./Code	97-71
Sheet Number	346

### DETAIL NOTES

- 1 PROVIDE POWER CONNECTION TO OVERHEAD SIGN LIGHTING. REFER TO LIGHTING DETAILS FOR ADDITIONAL INFORMATION.

### FEEDER SCHEDULE

- 1 (3 #1/0 CU THWN) 2"C.
- 2 (5 #10 CU THWN & 1 #10 CU GND) 1"C.
- 3 (3 #10 CU THWN & 1 #10 CU GND) 1"C.
- 4 (2 #10 CU THWN & 1 #10 CU GND) 1"C.
- 5 (3 #4 CU THWN) 2"C.
- 6 (3 #6 CU THWN & 1 #6 CU GND) 1"C.
- 7 (2 #4 CU THWN & 1 #4 CU GND) 1"C.
- 8 (2 #4 CU THWN & 1 #4 CU GND) 2"C.
- 9 (2 #6 CU THWN & 1 #6 CU GND) 1"C.
- 10 (2 #6 CU THWN & 1 #6 CU GND) 2"C.
- 11 (4 #10 CU THWN & 1 #10 CU GND) 1"C.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



Computer File Information	
Creation Date:	9/11/01 Initials: SEL
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Drawing File Name:	LTPL1000.DWG
Acad Ver.	R14 Scale: 1"=100'0" Units:

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fax 303.721.0832  
fhu@fhueng.com  
  
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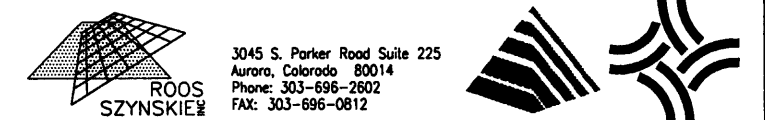
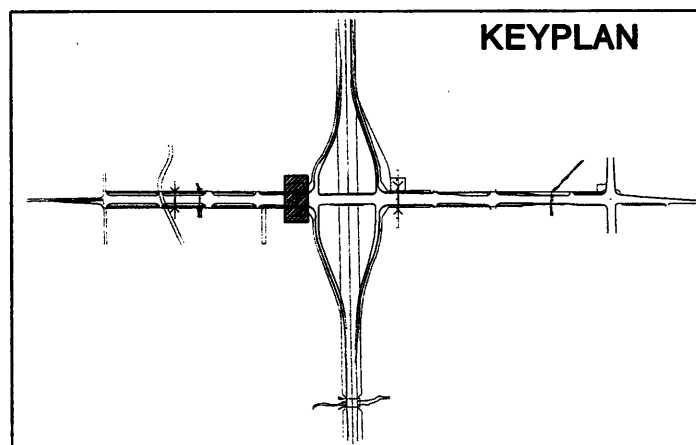
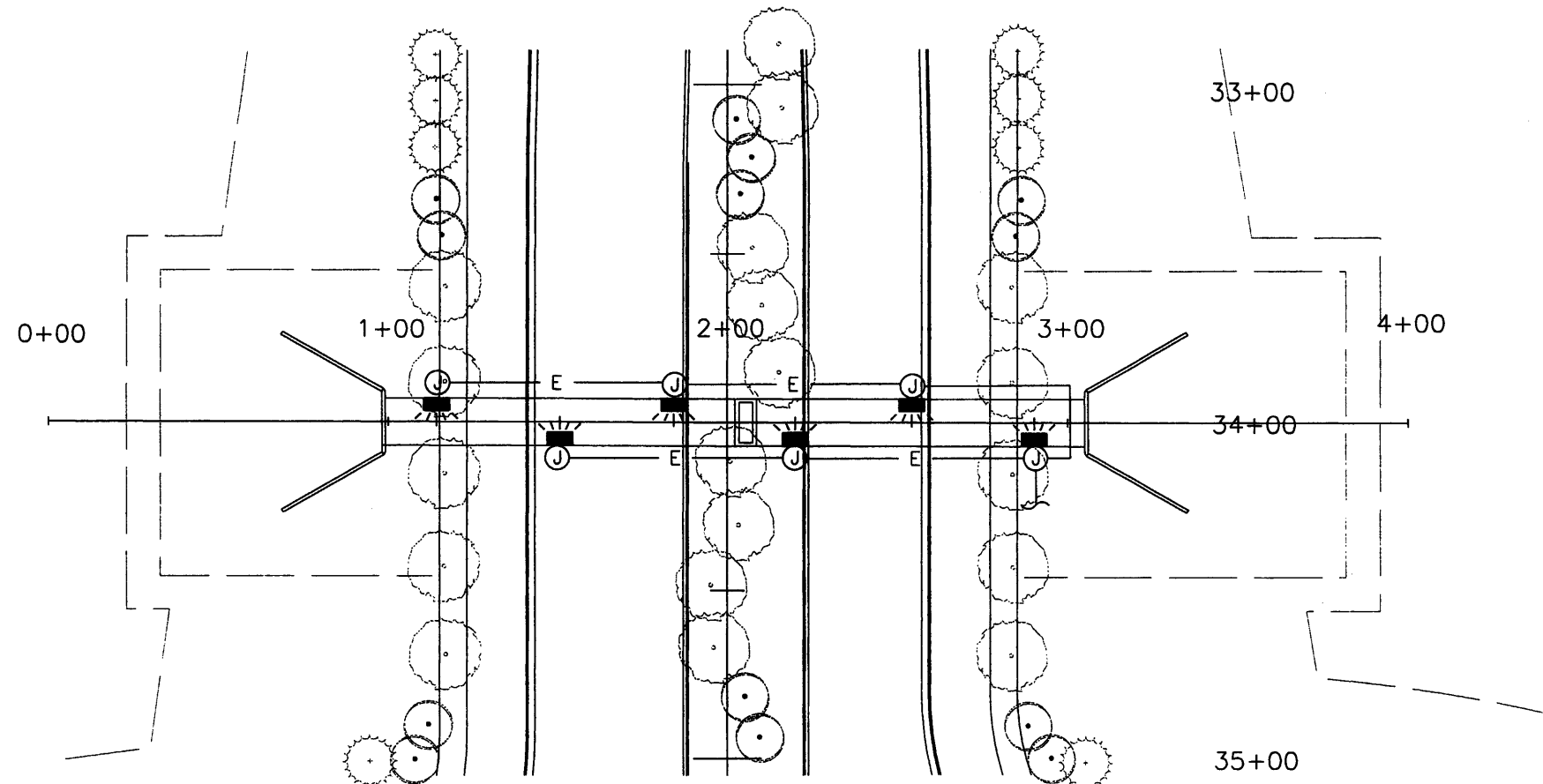
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No Revisions:	
Revised:	
Void:	

136TH AVENUE AT I-25 INTERCHANGE	
SB OFF RAMP 305+00 - 418+50	
NB ON RAMP 404+00 - 418+50	
Designer:	CAS/SEL
Detailer:	JGR
Sheet Subst:	Electrical
Subst Sheets:	E14 of 19

Project No./Code	
97-71	
Sheet Number <b>347</b>	

## PEDESTRIAN UNDERPASS GENERAL NOTES

1. ALL CONDUIT AND JUNCTION BOXES FOR LIGHTING SHALL BE INSTALLED IN PEDESTRIAN UNDERPASS AS PART OF THAT WORK. REFERENCE UNDERPASS STRUCTURAL PLANS AND DETAILS FOR CONDUIT ROUTING INFORMATION.
2. LUMINAIRES SHALL BE XCEL ENERGY STANDARD WITH (1) 100 WATT HPS LAMP. WIRING AND LUMINAIRE INSTALLATION BY XCEL ENERGY.



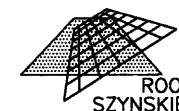
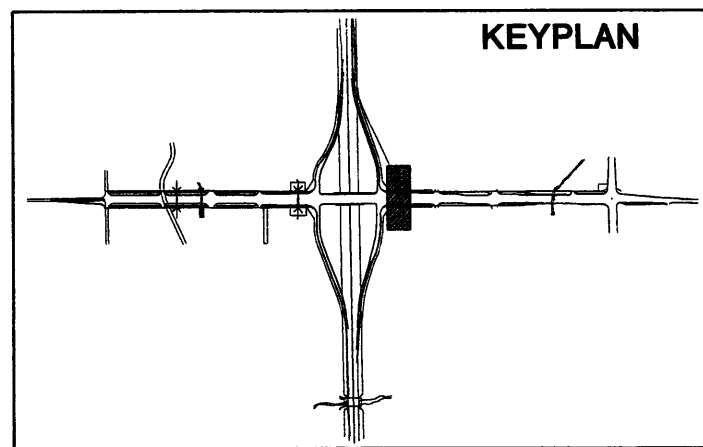
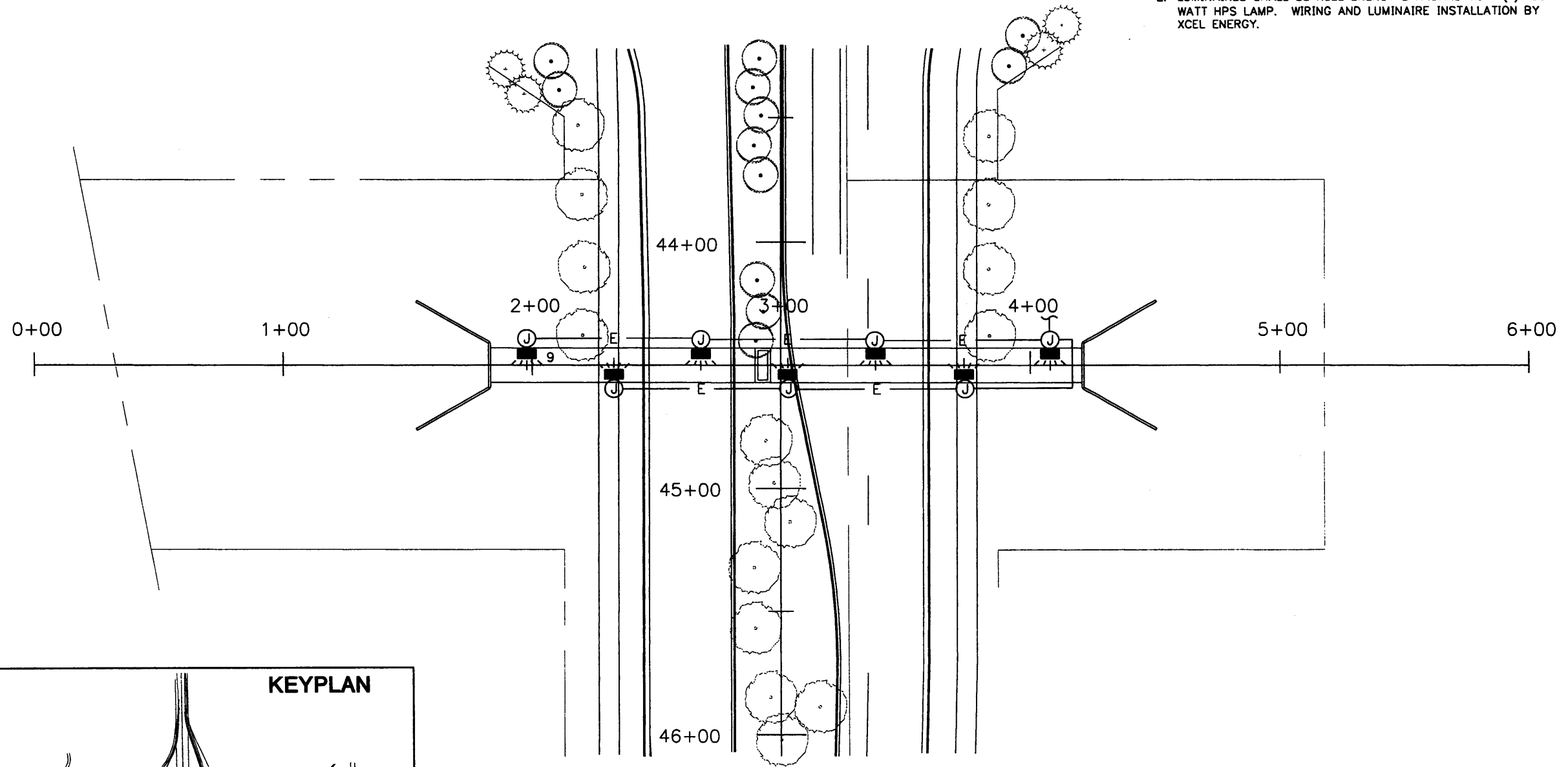
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Last Modification Date:	12/12/02 Initials: SEL			Revised:		Detailer:	JGR		
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Drawing File Name:	LTPL1100.DWG								Sheet Number <b>348</b>
Acad Ver.	R14 Scale: 1"=50'0" Units:								



303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111


# PEDESTRIAN UNDERPASS GENERAL NOTES

1. ALL CONDUIT AND JUNCTION BOXES FOR LIGHTING SHALL BE INSTALLED IN PEDESTRIAN UNDERPASS AS PART OF THAT WORK. REFERENCE UNDERPASS STRUCTURAL PLANS AND DETAILS FOR CONDUIT ROUTING INFORMATION.
2. LUMINAIRES SHALL BE XCEL ENERGY STANDARD WITH (1) 100 WATT HPS LAMP. WIRING AND LUMINAIRE INSTALLATION BY XCEL ENERGY.

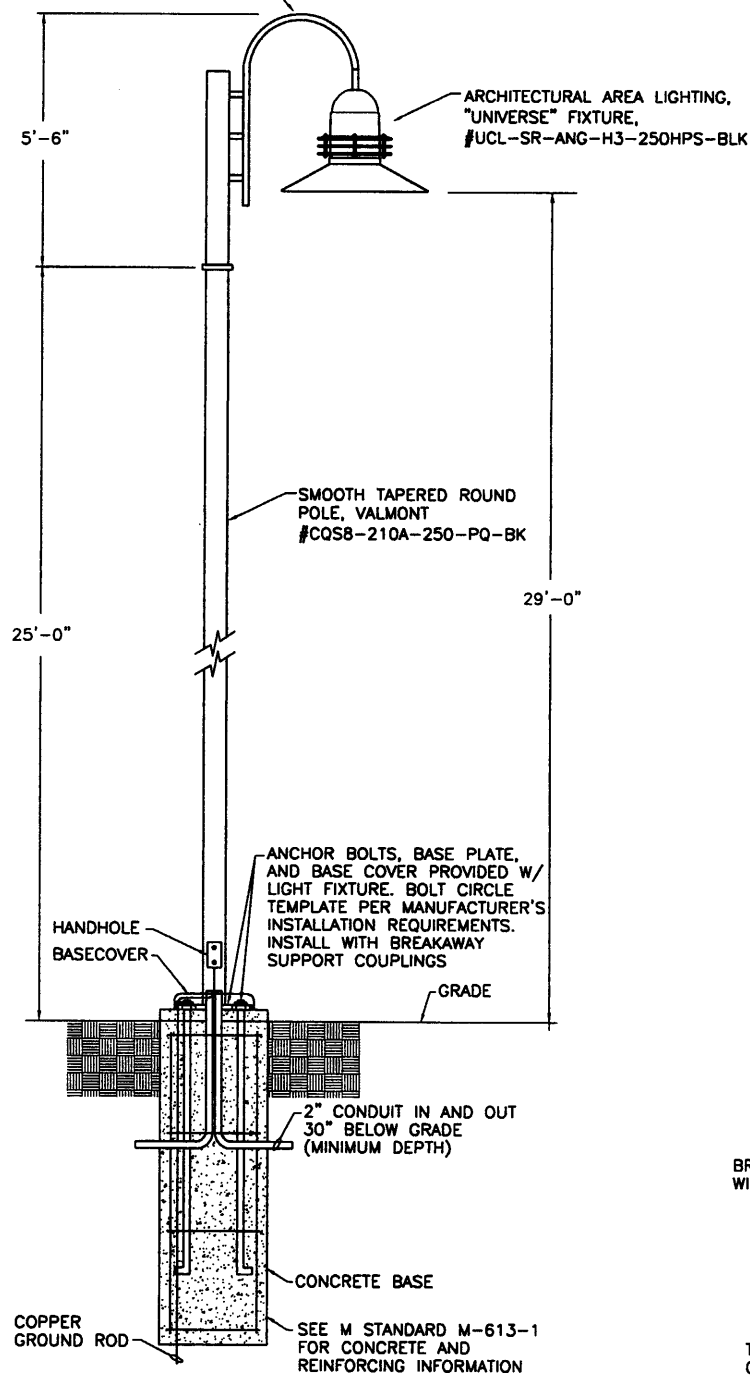


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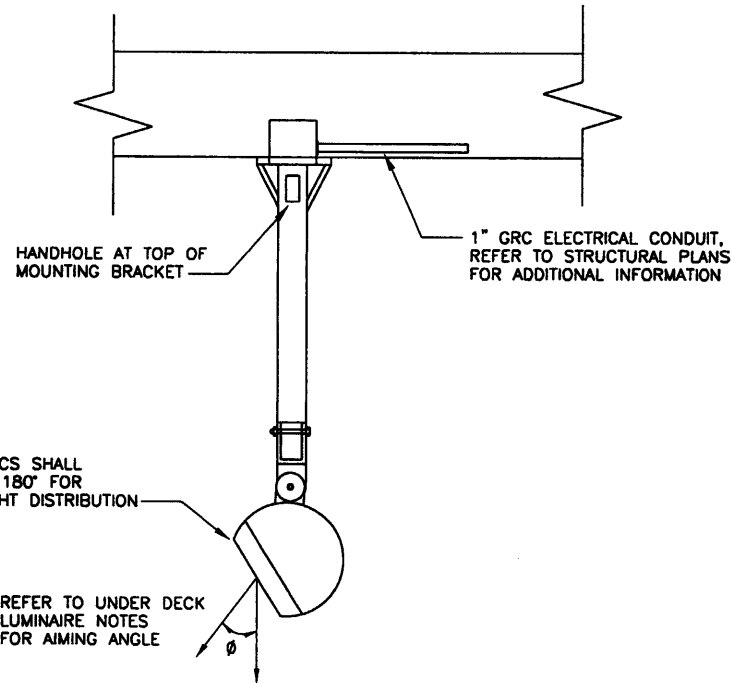
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VALMONT "CITY QUARTZ" STRADA POLE  
TOP ASSEMBLY #PTS-ST1-1-E2VBKABK-DBK



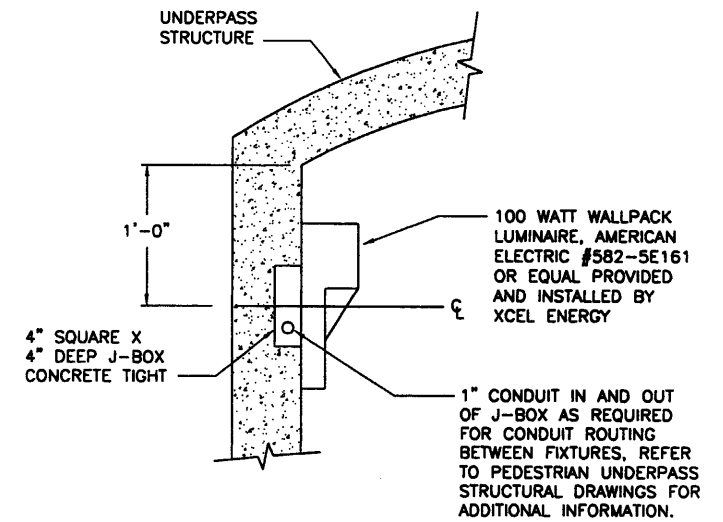
**CITY STEEL LIGHT STANDARD DETAIL**

NOTE: DETAIL SHOWN FOR INFORMATION ONLY. POLE, LUMINAIRE, BASE, BRANCH CIRCUIT AND WIRING SHALL BE FURNISHED AND INSTALLED BY XCEL ENERGY UNDER SEPARATE CONTRACT.



**UNDER BRIDGE LUMINAIRE MOUNTING DETAIL**

NOTE: DETAIL SHOWN FOR INFORMATION ONLY. MOUNTING BRACKET AND CONDUIT SHALL BE PROVIDED BY CONTRACTOR PER STRUCTURAL PLANS. LUMINAIRE AND WIRING BY XCEL ENERGY.



**PEDESTRIAN UNDERPASS LUMINAIRE DETAIL**

NOTE: DETAIL SHOWN FOR INFORMATION ONLY. CONDUIT AND JUNCTION BOXES SHALL BE PROVIDED BY CONTRACTOR PER STRUCTURAL PLANS. LUMINAIRE AND WIRING BY XCEL ENERGY.

**LUMINAIRES:** PENDANT TYPE LUMINAIRES WITH 250 WATT OR 150 WATT HIGH PRESSURE SODIUM LAMPS AS CALLED OUT BELOW. FIXTURE OPERATING VOLTAGE IS 120 VOLTS. LUMINAIRE TO BE FULLY GASKETED TO PREVENT DUST, MOISTURE, INSECTS AND AIR POLLUTION FROM ENTERING FIXTURES. PENDANT TYPE LUMINAIRE TO BE PROVIDED AND INSTALLED BY XCEL ENERGY.

**LUMINAIRE:** KIM #AFL21/250HPS120/LG-P AIMING ANGLE = 60°  
**LOCATIONS:** STA 38+77, 29 RT; STA 39+88, 29 LT

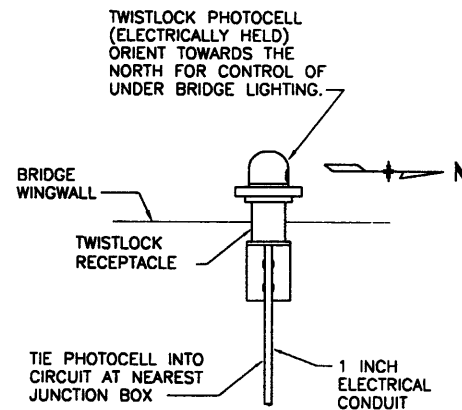
**LUMINAIRE:** KIM #AFL21/150HPS120/LG-P AIMING ANGLE = 30°  
**LOCATIONS:** STA 60+02, 36.5 RT; STA 60+02, 24 LT

**AIMING:** AIMING ANGLES DESIGNATED REPRESENT AN UPWARD TILT OF THE LUMINAIRE FROM A STRAIGHT DOWN AIMING (0° ANGLE). ALL LUMINAIRES SHALL BE AIMED PERPENDICULAR TO THE CENTERLINE OF TRAVELED WAY.

**MOUNTING:** SEE BRIDGE SET/STRUCTURAL DETAILS FOR MOUNTING OF PENDANT TYPE UNDER DECK LUMINAIRE.

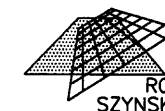
**PHOTO CONTROL:** XCEL ENERGY TO MOUNT ONE (1) THREE PRONG TWIST-LOCK 120V PHOTOCELL RECEPTACLE AND PHOTOCELL ON THE SIDE OF THE BRIDGE WING WALL FOR THE 250 WATT LUMINAIRES ON THE BRIDGE OVER I-25 ONLY. 150 WATT LUMINAIRES ON STRUCTURE OVER BIG DRY CREEK TO REMAIN ON 24 HOURS A DAY.

**SPLICE BOX:** PROVIDE FIBERGLASS SPLICE BOXES, SIZED AS REQUIRED, AT THE BRIDGE ABUTMENT WING WALLS TO TRANSITION CIRCUIT RUN OUT OF THE BRIDGE. MOUNT WITH TOP OF BOX FLUSH WITH GRADE. SPLICE BOX TO BE INCLUDED IN THE ITEMS FOR CONDUIT.



**PHOTOCELL DETAIL**

**UNDER BRIDGE LUMINAIRE NOTES**

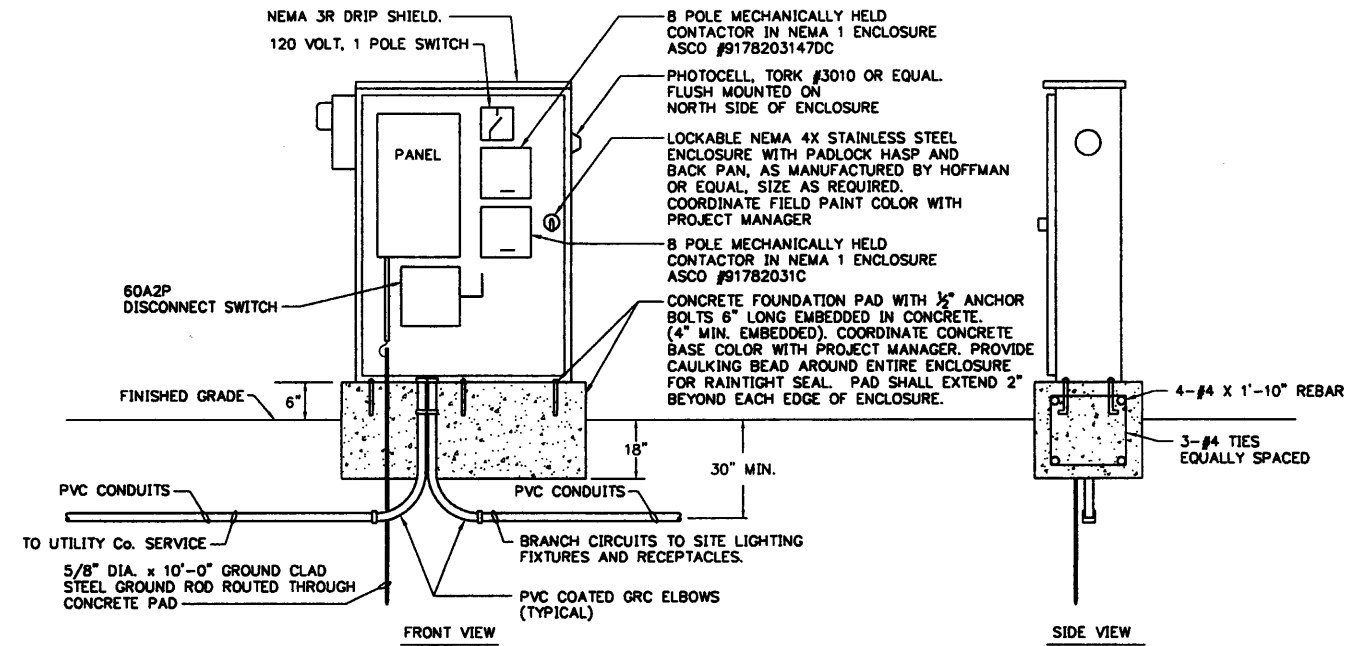


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Aurora, Colorado 80014  
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FAX: 303-696-0812

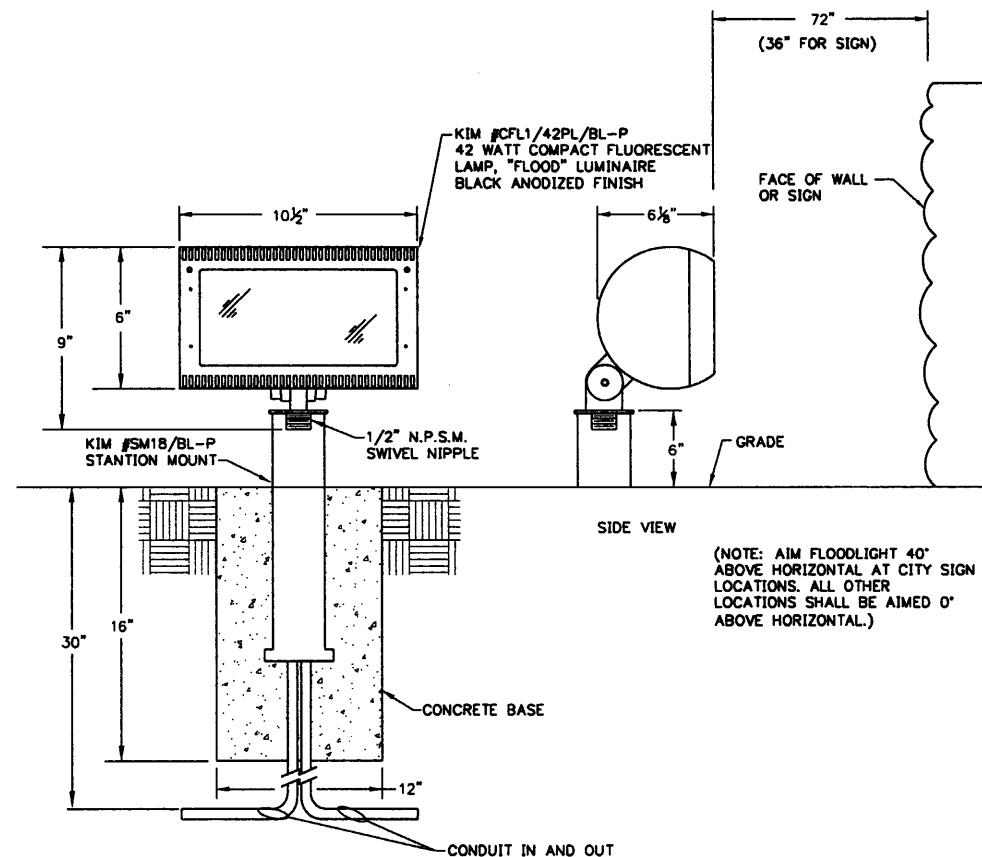


Computer File Information		Index of Revisions		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	136TH AVENUE AT I-25 INTERCHANGE LIGHTING DETAILS		Project No./Code
Creation Date:	01/08/02 Initials: SEL				No Revisions:			97-71
Last Modification Date:	12/13/02 Initials: SEL				Revised:	Designer: CAS/SEL	Structure	
Full Path:	N:\FELSBURG\136TH\1-25				Void:	Detailer: JGR	Numbers	
Drawing File Name:	LTD0100.DWG					Sheet Subset: Electrical	Subset Sheets: E17 of 19	Sheet Number 350
Acad Ver. R14	Scale: NO SCALE Units:							





METERED SERVICE PANEL ELEVATION



FLOOD LIGHT LUMINAIRE

LUMINAIRE TO BE PAID FOR AS 613-15000 FLOODLIGHT  
NOTE: (2) LUMINAIRES SHALL BE INSTALLED IN FRONT OF CITY SIGNS, 9'-0" ON CENTER.

**PANEL "NE"**

VOLTS: 240/120V,1PH,4W  
MAINS: 100A M.L.O.  
A.I.C.: 10KA

MTG: SURFACE NEMA 1  
MFR: SQD,ITE,GE,CH  
TYPE: LOADCENTER

DESCRIPTION	T	KVA	BKR	CKT#	BKR	KVA	T	DESCRIPTION
TREE RECEPTACLE	O	1.00	20A1P	1 + 2	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	3 + 4	20A1P	1.00	O	TREE RECEPTACLE
PIER MONUMENT	L	0.50	20A1P	5 + 6	20A1P	0.50	L	TREE RECEPTACLE
FLOOD LIGHTS	L	0.20	20A1P	7 + 8	20A1P	0.50	L	CORNER MONUMENT
IRRIGATION CONTRLR	O	0.18	20A1P	9 + 10				SPACE
SPACE				11 + 12				SPACE
SPACE				13 + 14				SPACE
SPACE				15 + 16				SPACE
SPACE				17 + 18				SPACE

LOAD KVA    LTG    OTHR    TOTAL  
CONNECTED    1.2    5.2    6.4  
NEC DEMAND    1.5    5.2    6.7  
AMPS                                    28

PHASE KVA                                    A = 3.7    B = 2.7  
PHASE IMBALANCE (%)                    A/B = 36.3

**PANEL "SE"**

VOLTS: 240/120V,1PH,4W  
MAINS: 100A M.L.O.  
A.I.C.: 10KA

MTG: SURFACE NEMA 1  
MFR: SQD,ITE,GE,CH  
TYPE: LOADCENTER

DESCRIPTION	T	KVA	BKR	CKT#	BKR	KVA	T	DESCRIPTION
TREE RECEPTACLE	O	1.00	20A1P	1 + 2	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	3 + 4	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	5 + 6	20A1P	1.00	O	TREE RECEPTACLE
FLOOD LIGHTS	L	0.25	20A1P	7 + 8	20A1P	1.00	L	BRIDGE SIGN
IRRIGATION CONTRLR	O	0.18	20A1P	9 + 10	20A1P	1.00	L	BRIDGE SIGN
CORNER MONUMENT	L	0.50	20A1P	11 + 12	20A1P	1.00	L	BRIDGE SIGN
SPACE				13 + 14				SPACE
SPACE				15 + 16				SPACE
SPACE				17 + 18				SPACE

LOAD KVA    LTG    OTHR    TOTAL  
CONNECTED    3.8    6.2    9.9  
NEC DEMAND    4.7    6.2    10.9  
AMPS                                    45

PHASE KVA                                    A = 5.2    B = 4.8  
PHASE IMBALANCE (%)                    A/B = 9.1

**PANEL "NW"**

VOLTS: 240/120V,1PH,4W  
MAINS: 100A M.L.O.  
A.I.C.: 10KA

MTG: SURFACE NEMA 1  
MFR: SQD,ITE,GE,CH  
TYPE: LOADCENTER

DESCRIPTION	T	KVA	BKR	CKT#	BKR	KVA	T	DESCRIPTION
TREE RECEPTACLE	O	1.00	20A1P	1 + 2	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	3 + 4	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	5 + 6	20A1P	1.00	O	TREE RECEPTACLE
FLOOD LIGHTS	L	0.40	20A1P	7 + 8	20A1P	1.00	L	BRIDGE SIGN
IRRIGATION CONTRLR	O	0.18	20A1P	9 + 10	20A1P	1.00	L	BRIDGE SIGN
CORNER MONUMENT	L	0.50	20A1P	11 + 12	20A1P	1.00	L	BRIDGE SIGN
SPACE				13 + 14				SPACE
SPACE				15 + 16				SPACE
SPACE				17 + 18				SPACE

LOAD KVA    LTG    OTHR    TOTAL  
CONNECTED    3.9    6.2    10.1  
NEC DEMAND    4.9    6.2    11.1  
AMPS                                    46

PHASE KVA                                    A = 5.2    B = 4.9  
PHASE IMBALANCE (%)                    A/B = 5.7

**PANEL "SW"**

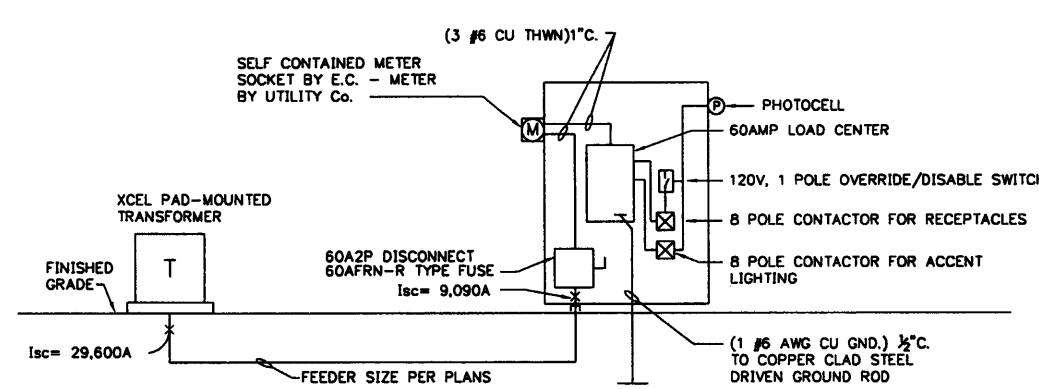
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MAINS: 100A M.L.O.  
A.I.C.: 10KA

MTG: SURFACE NEMA 1  
MFR: SQD,ITE,GE,CH  
TYPE: LOADCENTER

DESCRIPTION	T	KVA	BKR	CKT#	BKR	KVA	T	DESCRIPTION
TREE RECEPTACLE	O	1.00	20A1P	1 + 2	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	3 + 4	20A1P	1.00	O	TREE RECEPTACLE
TREE RECEPTACLE	O	1.00	20A1P	5 + 6	20A1P	1.00	O	TREE RECEPTACLE
FLOOD LIGHTS	L	0.25	20A1P	7 + 8	20A1P	0.50	L	CORNER MONUMENT
IRRIGATION CONTRLR	O	0.18	20A1P	9 + 10	20A1P	0.50	L	PIER MONUMENT
SPACE				11 + 12				SPACE
SPACE				13 + 14				SPACE
SPACE				15 + 16				SPACE
SPACE				17 + 18				SPACE

LOAD KVA    LTG    OTHR    TOTAL  
CONNECTED    1.2    6.2    7.4  
NEC DEMAND    1.6    6.2    7.7  
AMPS                                    32

PHASE KVA                                    A = 4.7    B = 2.8  
PHASE IMBALANCE (%)                    A/B = 70.2



METERED SERVICE ONE-LINE DIAGRAM

NOTE: FAULT CURRENT BASED ON WORST CASE CALCULATION OF #4 FEEDER, 35' MINIMUM DISTANCE FROM TRANSFORMER.

CONTROL SEQUENCE OF OPERATION  
FLOOD LIGHTS, BRIDGE SIGNS AND MONUMENTS LIGHTING SHALL BE CONTROLLED BY PHOTOCELL.

RECEPTACLES SHALL BE CONTROLLED VIA PHOTOCELL & DISABLE SWITCH. CONNECT SO THAT DISABLE SWITCH WILL DE-ENERGIZE RECEPTACLES.

IRRIGATION CONTROLLER POWER SHALL REMAIN ON AT ALL TIMES; DO NOT ROUTE CIRCUIT VIA CONTACTOR.



3045 S. Parker Road Suite 225  
Aurora, Colorado 80014  
Phone: 303-696-2602  
FAX: 303-696-0812



Computer File Information

Creation Date:	01/08/02	Initials:	SEL
Last Modification Date:	12/13/02	Initials:	SEL
Full Path:	N:\FELSBURG\136TH\1-25		
Drawing File Name:	LTD0200.DWG		
Acad Ver.	R14	Scale:	NO SCALE Units:

Index of Revisions




303.721.1440  
fax 303.721.0832  
fhu@fhueg.com

Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed

No Revisions:

Revised:

Void:

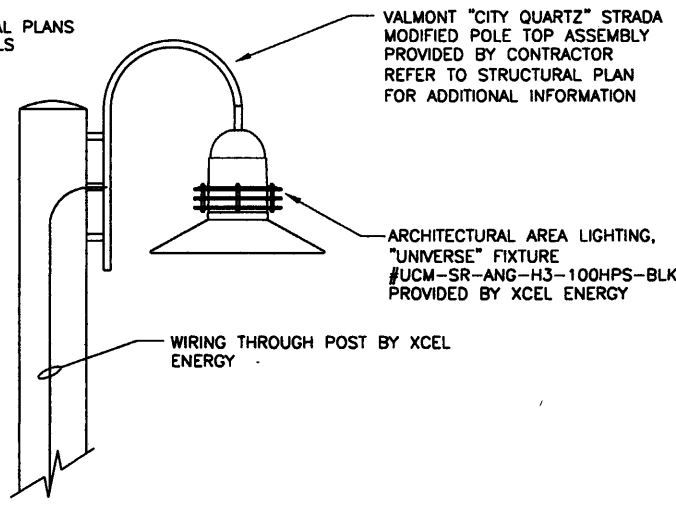
136TH AVENUE AT I-25 INTERCHANGE  
LIGHTING DETAILS

Designer:	CAS/SEL	Structure	
Detailer:	JGR	Numbers	
Sheet Subst:	Electrical	Subst Sheets:	E18 of 19

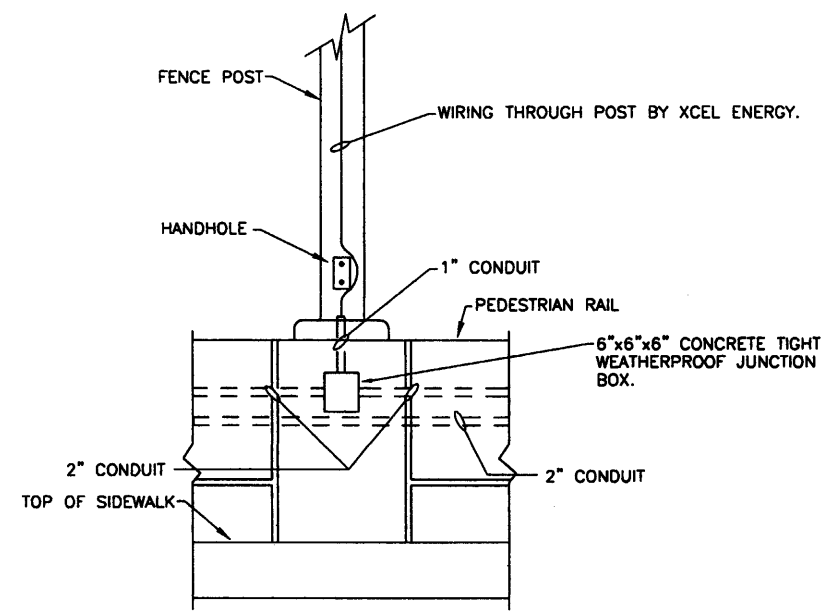
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97-71

Sheet Number **351**

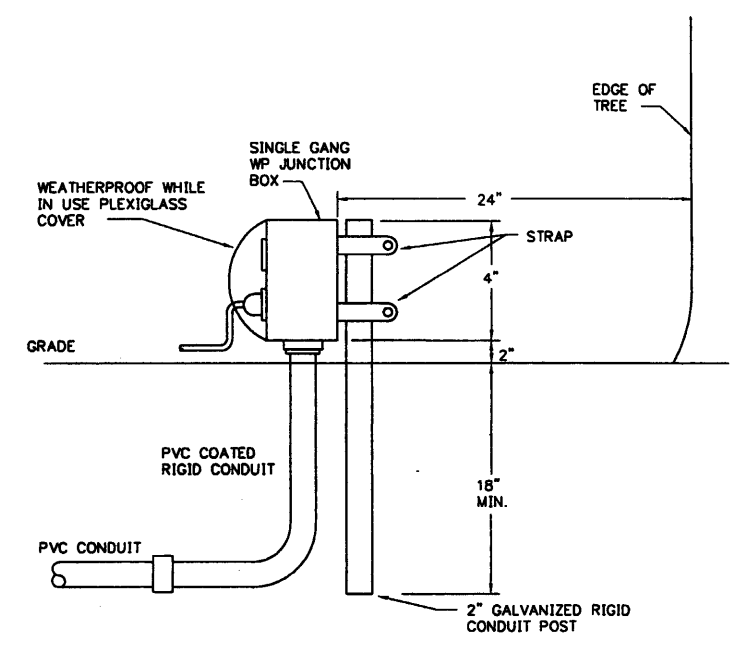
REFER TO STRUCTURAL PLANS FOR MOUNTING DETAILS



**FENCE POST MOUNTED LUMINAIRE**  
LUMINAIRE TO BE PROVIDED AND INSTALLED BY XCEL ENERGY.  
MOUNTING ARM TO BE PROVIDED AND INSTALLED BY CONTRACTOR  
WIRING AND FINAL TERMINATION TO LUMINAIRE BY XCEL ENERGY.



**FENCE POST BASE AT LUMINAIRE**  
NOTE: REFERENCE STRUCTURAL PLANS FOR ADDITIONAL CONDUIT ROUTING INFORMATION.

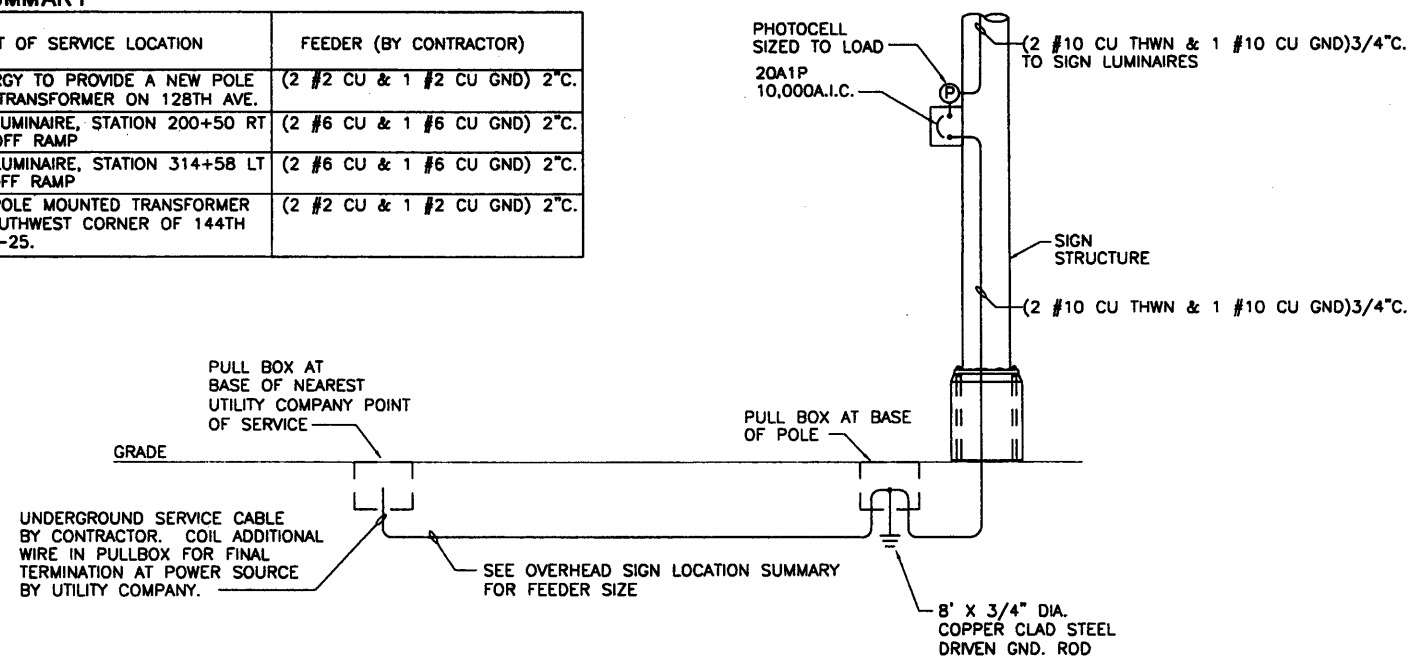


**TREE RECEPTACLE MOUNTING DETAIL**

**OVERHEAD SIGN - LOCATION SUMMARY**


STATION	POINT OF SERVICE LOCATION	FEEDER (BY CONTRACTOR)
M.P. 223.83 NB I-25	XCEL ENERGY TO PROVIDE A NEW POLE MOUNTED TRANSFORMER ON 128TH AVE.	(2 #2 CU & 1 #2 CU GND) 2\"/>

- LUMINAIRE: LUMINARIES SHALL BE SUPPLIED ACCORDING TO THE SIGN MANUFACTURER'S SPECIFICATION IN ACCORDANCE WITH CDOT STANDARD PLAN S-614-50.
- CIRCUIT BREAKER: MOUNT ONE (1) 20AMP SINGLE POLE CIRCUIT BREAKER IN A NEMA 3R ENCLOSURE ON THE NORTH SIDE OF SIGN STRUCTURE. COORDINATE EXACT MOUNTING LOCATION WITH SIGN CONTRACTOR.
- PHOTO CONTROL: MOUNT ONE (1) THREE PRONG TWIST-LOCK 120V PHOTOCELL RECEPTACLE AND ONE (1) 120V PHOTOCELL SIZED FOR CIRCUIT LOAD ON CIRCUIT BREAKER ENCLOSURE. ORIENT PHOTOCELL TO THE NORTH.
- PULL BOX: PROVIDE QUANTITY OF PULL BOXES AND JUNCTION BOXES, SIZED AS REQUIRED, TO PROVIDE A CONTINUOUS WATER TIGHT RACEWAY SYSTEM. MOUNT PULL BOX WITH TOP OF BOX FLUSH WITH GRADE. PULL BOXES AND JUNCTION BOXES TO BE INCLUDED IN THE ITEMS FOR CONDUIT.
- POINT OF SERVICE: ALL POINT OF SERVICE LOCATIONS TO BE COORDIATED WITH XCEL. FOR POINT OF CONNECTIONS AT LUMINAIRES LEAVE 20'-0" OF ADDITIONAL WIRE AT THE POLE BASE PULLBOX. FOR CONNECTIONS AT TRANSFORMERS LEAVE 40'-0" OF ADDITIONAL WIRE AT THE POLE BASE PULLBOX.



**TYPICAL ONE-LINE DIAGRAM - SIGN LIGHTING**


 3045 S. Parker Road Suite 225  
 Aurora, Colorado 80014  
 Phone: 303-696-2602  
 FAX: 303-696-0812

<b>Computer File Information</b> Creation Date: 01/08/02 Initials: SEL Last Modification Date: 12/16/02 Initials: SEL Full Path: N:\FELSBURG\136TH\1-25 Drawing File Name: LTDT0300.DWG Acad Ver. R14 Scale: NO SCALE Units:		<b>Index of Revisions</b>			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed	<b>136TH AVENUE AT I-25 INTERCHANGE LIGHTING DETAILS</b>		Project No./Code 97-71
						No Revisions:	Designer: CAS/SEL Detailer: JGR	Structure Numbers	Sheet Subst: Electrical Subst Sheets: E19 of 19









**TABULATION OF SIGNS  
(THORNTON QUANTITIES)**

SIGN NO.	SIGN CODE	STATION	SIGN PANEL SIZE	BACK-GROUND COLOR	REMOVE GROUND SIGN (EACH)	REMOVE SIGN STRUCTURE	ILLUMINATED SIGN	RESET GROUND SIGN	RESET SIGN PANEL	MODIFY LEGEND	NO. OF POSTS	LENGTH OF POST (FT)	POST TYPE (LINEAR FEET)				CONC. FOOTING TYPE (EACH)				SIGN PANEL (SF)			
													STEEL SIGN POST 1 3/4" x 2 3/4" TUBING*	P2							CLASS I	CLASS II	CLASS III	
37	R3-7R	44+45 LT., 136TH AVE.	30"x30"	WHITE							1	11.00	11.00									6.25		
38	SPECIAL	45+50 LT., 136TH AVE.	60"x72"	GREEN							2	15.00/15.00		30.00										30.00
52	SPECIAL	53+00 LT., 136TH AVE.	60"x84"	GREEN							2	18.00/16.00		32.00										35.00
53	R4-7	53+75 LT., 136TH AVE.	24"x30"	WHITE							1	11.00	11.00										5.00	
54	R4-7	54+27 RT., 136TH AVE.	24"x30"	WHITE							1	11.00	11.00										5.00	
60	W4-2	NB WASHINGTON N. OF 136TH	36"x36"	YELLOW							1	12.00	12.00										9.00	
61	R2-1	NB WASHINGTON N. OF 136TH						1																
62	R2-1	61+35 LT., 136TH AVE.	24"x30"	WHITE							1	11.00	11.00										5.00	
63	W14-1	65+10 LT., 136TH AVE.			1																			
64	R4-7	65+95 LT., 136TH AVE.	24"x30"	WHITE							1	11.00	11.00										5.00	
65A	M1-1	SB WASHINGTON @ 136TH AVE.	24"x30"	BLUE							1	12.25	12.25										4.00	
65B	M6-1		21"x15"	BLUE																			2.19	
66	R3-7R	67+75 LT., 136TH AVE.	30"x30"	WHITE							1	11.00	11.00										6.25	
67	SPECIAL	ON EXISTING MAST ARM							1															
68	SPECIAL	ON EXISTING MAST ARM							1															
69	SPECIAL	ON EXISTING MAST ARM							1															
70	SPECIAL	ON EXISTING MAST ARM							1															
71	R3-8F	MOUNT ON MAST ARM	36"x30"	WHITE																			7.50	
72	R3-5L	MOUNT ON MAST ARM	30"x36"	WHITE																			7.50	
73	R3-8F	MOUNT ON MAST ARM	36"x30"	WHITE																			7.50	
74	R3-8F	MOUNT ON MAST ARM	36"x30"	WHITE																			7.50	
75	R3-7R	62+95 RT., 136TH AVE.	30"x30"	WHITE							1	11.00	11.00										6.25	
76	R3-7R	65+68 RT., 136TH AVE.	30"x30"	WHITE							1	11.00	11.00										6.25	
77A	M1-1	NB WASHINGTON @ 136TH AVE.	24"x24"	BLUE							1	12.25	12.25										4.00	
77B	M6-3		21"x15"	BLUE																			2.19	
78	R3-7R	NB WASHINGTON S. OF 136TH						1																
79	R2-1(45)	SB WASHINGTON S. OF 136TH	24"x30"	WHITE							1	11.00	11.00										5.00	
130	R3-7	47+80 LT., 136TH AVE.	30"x30"	WHITE							1	11.00	11.00										6.25	
131A	M1-1	SB WASHINGTON S. OF 136TH	24"x24"	BLUE							1	12.25	12.25										4.00	
131B	M6-3		21"x15"	BLUE																			2.19	
132	W4-2	EB 136TH AVE. E. OF WASHINGTON	36"x36"	YELLOW							1	12.00	12.00										9.00	
SHEET TOTAL																							122.82	85.00

\*BLACK UNASTRUT POST - VLOC SYSTEM ( SEE THORNTON DETAILS)

**SIGNING NOTES**

- POST LENGTHS ARE PROVIDED FOR ESTIMATING PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT POST LENGTHS NECESSARY TO MEET LATEST WESTMINSTER STANDARDS.
- THE LOCATION OF THE SIGNS ARE APPROXIMATE. THE FINAL LOCATION OF THE SIGNS TO BE DETERMINED PER THE LATEST THORNTON AND MUTCD STANDARDS AND AS APPROVED BY THE ENGINEER.
- ANY DAMAGE DONE TO THE EXISTING UTILITIES DURING THE PLACEMENT OF SIGNS IS THE RESPONSIBILITY OF THE CONTRACTOR.
- "P2" POST PAID FOR AS STEEL SIGN POST (2.5 INCH ROUND) (SLIPBASE).
- "P2" SIGN POST IS 2.5 INCH ROUND, SCHEDULE 80 PIPE.
- SIGNS 38 AND 52 TO BE INSTALLED AS SHOWN ON THE TUBULAR SIGN POST DETAIL SHEETS INCLUDED IN THESE PLANS.
- CONTRACTOR TO DRILL 2 - 1" DIAMETER HOLES OPPOSITE EACH OTHER 24" FROM BOTTOM OF "P2" POST.



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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE TABULATION OF SIGNS	Project No./Code 97-71
Creation Date: 12\10\01 Initials: JGF					No Revisions:		
Last Modification Date: 12/18/02 Initials: DRS				Revised:	Designer: JGF	Sheet Subset: SIGNSTRP Subset Sheets: SS-4 of 16	
Full Path: J:\00033\Acad\Sheet\				Void:	Detailer: JGF		
Drawing File Name: T00033SSS11.DWG						Sheet Number <b>357</b>	
Acad Ver. 2000i Scale: NONE Units: English							

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**TABULATION OF PAVEMENT MARKINGS  
(WESTMINSTER QUANTITIES)**

STATION	LOCATION	PAVEMENT MARKING LINES (LINEAR FEET)												(SQUARE FEET)				
		EDGE WHITE SOLID 4 INCH		EDGE YELLOW SOLID 4 INCH		LANE WHITE SOLID 4 INCH	CENTER YELLOW SOLID 4 INCH		EXTENSION WHITE DOTTED 4 INCH		CHANNELIZING WHITE SOLID 8 INCH		CHANNELIZING WHITE SOLID 8 INCH		CROSSHATCH WHITE SOLID 8 INCH		PREFORMED PLASTIC (TYPE B)	
		EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	PREFORMED PLASTIC (TYPE A)	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	WORD - SYMBOL	XWALK - STOPLINE 24 INCH
HURON STREET		480					1580									62	110	
8+20 TO 18+00	136TH AVENUE	605		60	755		2540									93	580	
19+00 TO 33+00	136TH AVENUE				1428	2580										25	15.5	
33+00 TO 34+83.58 EB	136TH AVENUE					194											15.5	
33+00 TO 34+80.39 WB	136TH AVENUE					194											70	
TOTAL (LIN. FEET)		1085		1485	3703		4120											
TOTAL (SQ. FEET)		382		495	308		1373									186	690	
TOTAL (GALLONS)																		

**SUMMARY OF PAVEMENT MARKING QUANTITIES (WESTMINSTER)**

COLOR	PREFORMED PLASTIC (TYPE A)	THERMOPLASTIC PAVEMENT MARKING (SF)	PREFORMED PLASTIC (TYPE B)	
			(WORD-SYMBOL)	(XWALK-STOPLINE)
YELLOW	-	1888	-	-
WHITE	309	3788	186	690
TOTAL	309	5676	186	690

**TABULATION OF PAVEMENT MARKINGS  
(INTERCHANGE QUANTITIES)**

STATION	LOCATION	PAVEMENT MARKING LINES (LINEAR FEET)												(SQUARE FEET)				
		EDGE WHITE SOLID 4 INCH		EDGE YELLOW SOLID 4 INCH		LANE WHITE SOLID 4 INCH	CENTER YELLOW SOLID 4 INCH		EXTENSION WHITE DOTTED 4 INCH		EXTENSION YELLOW DOTTED 4 INCH		CHANNELIZING WHITE SOLID 8 INCH		CROSSHATCH WHITE SOLID 8 INCH		PREFORMED PLASTIC (TYPE B)	
		EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	PREFORMED PLASTIC (TYPE A)	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	WORD - SYMBOL	XWALK - STOPLINE 24 INCH
34+93.58 TO 43+49.54 EB	136TH AVENUE	108				788		1076		220				1043			153.5	160
34+80.39 TO 43+38.86 WB	136TH AVENUE	110				772		1076		220				1335			138.0	178
100+00 TO 124+50	SB ON RAMP	2388				812								140				128
200+00 TO 216+80	NB OFF RAMP	1818				1316								1584			173.5	112
300+80 TO 315+20	SB OFF RAMP	1382				995								1170			173.5	128
400+80 TO 422+55	NB ON RAMP	2130				1134		1005						174				128
MAINLINE I-25	SOUTHBOUND	1530				1530		3080										
MAINLINE I-25	NORTHBOUND	1530				1530		3080										
TOTAL (LIN. FEET)		10798				7715		9477		440				5448			638.5	832
TOTAL (SQ. FEET)		3598				2569		790		48				3631				
TOTAL (GALLONS)																		

**SUMMARY OF PAVEMENT MARKING QUANTITIES (INTERCHANGE)**

COLOR	PREFORMED PLASTIC (TYPE A)	THERMOPLASTIC PAVEMENT MARKING (SF)	PREFORMED PLASTIC (TYPE B)	
			(WORD-SYMBOL)	(XWALK-STOPLINE)
YELLOW	-	3288	-	-
WHITE	790	7278	638.5	832
TOTAL	790	10566	638.5	832

**TABULATION OF PAVEMENT MARKINGS  
(THORNTON QUANTITIES)**

STATION	LOCATION	PAVEMENT MARKING LINES (LINEAR FEET)												(SQUARE FEET)				
		EDGE WHITE SOLID 4 INCH		EDGE YELLOW SOLID 4 INCH		LANE WHITE SOLID 4 INCH	CENTER YELLOW SOLID 4 INCH		EXTENSION WHITE DOTTED 4 INCH		CHANNELIZING WHITE SOLID 8 INCH		CHANNELIZING WHITE SOLID 8 INCH		CROSSHATCH WHITE SOLID 8 INCH		PREFORMED PLASTIC (TYPE B)	
		EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	PREFORMED PLASTIC (TYPE A)	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	EPOXY	THERMO-PLASTIC	WORD - SYMBOL	XWALK - STOPLINE 24 INCH
43+49.54 TO 47+00 EB	136TH AVENUE					392												
43+38.86 TO 47+00 WB	136TH AVENUE					478								480			15.5	
47+00 TO 61+00	136TH AVENUE					1290		2680						1710		55	15.5	704
61+00 TO 72+00	136TH AVENUE					432		1270		1880		536		2485			170.5	864
-	WASHINGTON STREET					1806		508		3708				685			186	716
TOTAL (LIN. FEET)						2238		1290		5324		5588		5370		55		
TOTAL (SQ. FEET)						745		430		444		1862		3580		37	387.5	2284
TOTAL (GALLONS)																		

**SUMMARY OF PAVEMENT MARKING QUANTITIES (THORNTON)**

COLOR	PREFORMED PLASTIC (TYPE A)	THERMOPLASTIC PAVEMENT MARKING (SF)	PREFORMED PLASTIC (TYPE B)	
			(WORD-SYMBOL)	(XWALK-STOPLINE)
YELLOW	-	2292	-	-
WHITE	444	4422	387.5	2284
TOTAL	444	6714	387.5	2284

**NOTES:**

- FOR DETAILS OF PAVEMENT MARKING LINES AND LINE PLACEMENT, SEE STRIPING PLANS AND CDOT STANDARD S-827-1.

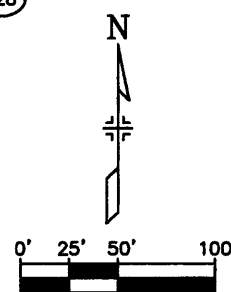
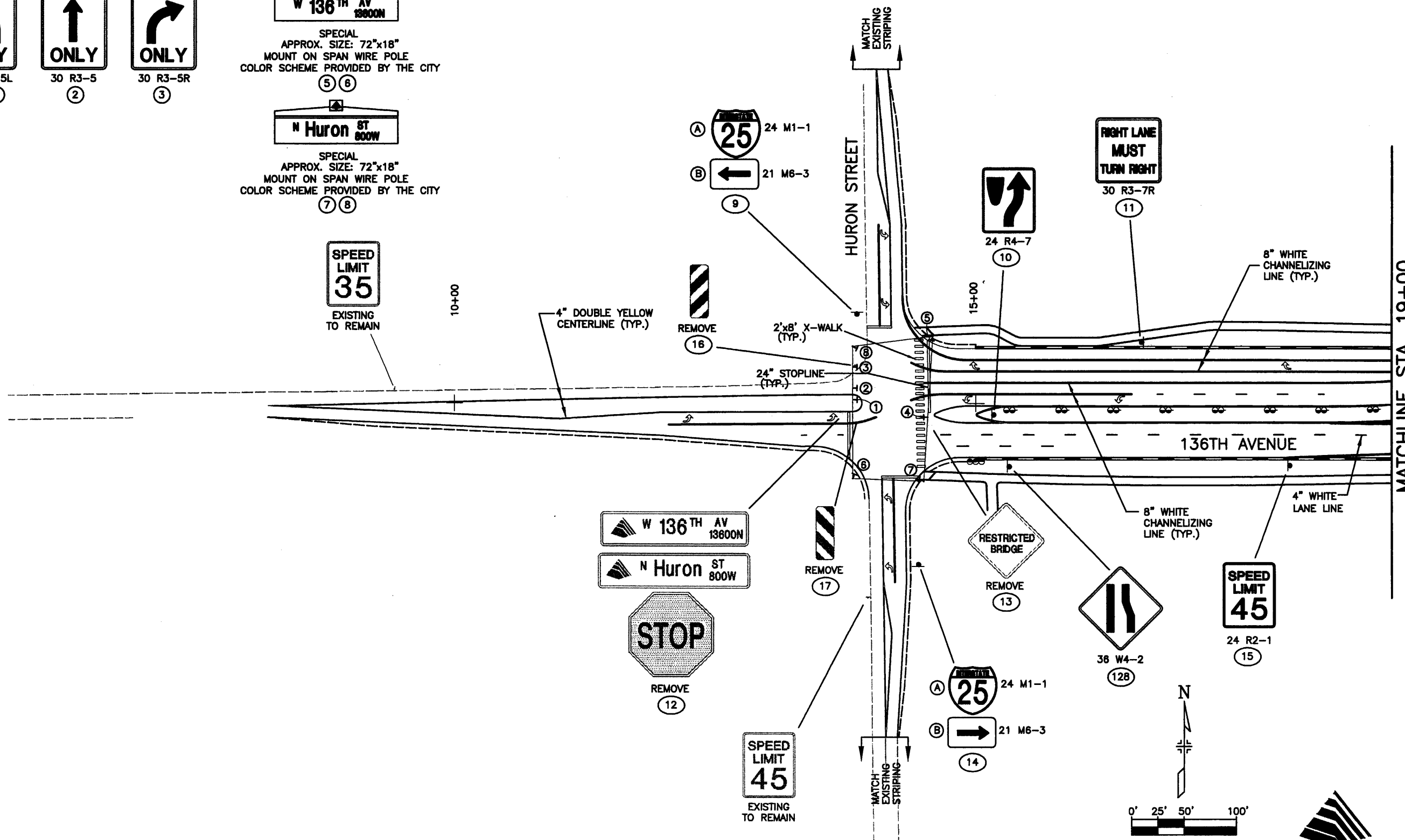
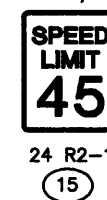
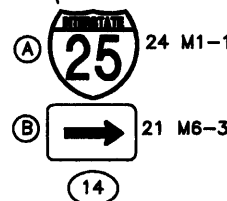
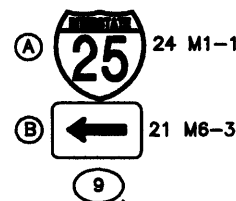
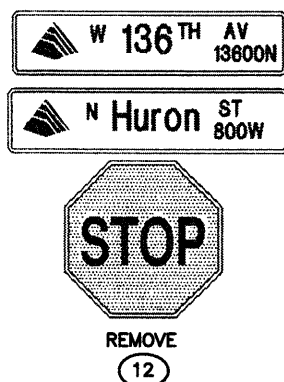
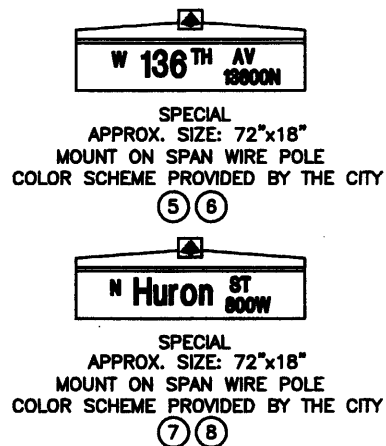
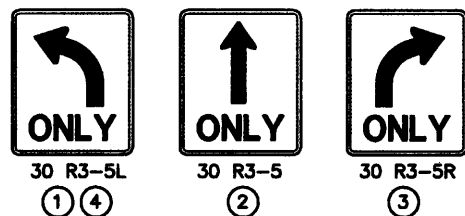


<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>FELSBURG HOLT &amp; ULLEVIG</p>	<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<p>As Constructed</p> <p>No Revisions:</p> <p>Revised:</p> <p>Void:</p>	<p>136TH AVENUE AT I-25 INTERCHANGE TAB OF PAVEMENT MARKING</p>	<p>Project No./Code 97-71</p>
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Last Modification Date:	12/18/02 Initials: JGF							
Full Path:	J:\00033\Acad\Sheet\							
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						<p>Designer: JGF</p> <p>Detailer: JGF</p> <p>Sheet Subset: SIGNSTRP Subset Sheets: SS-5 of 16</p>		<p>Sheet Number <b>358</b></p>





SPAN WIRE MOUNTED SIGNS



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**FELSBURG HOLT & ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

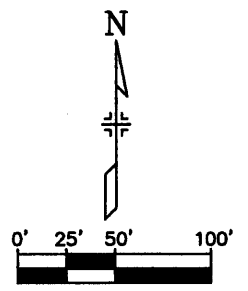
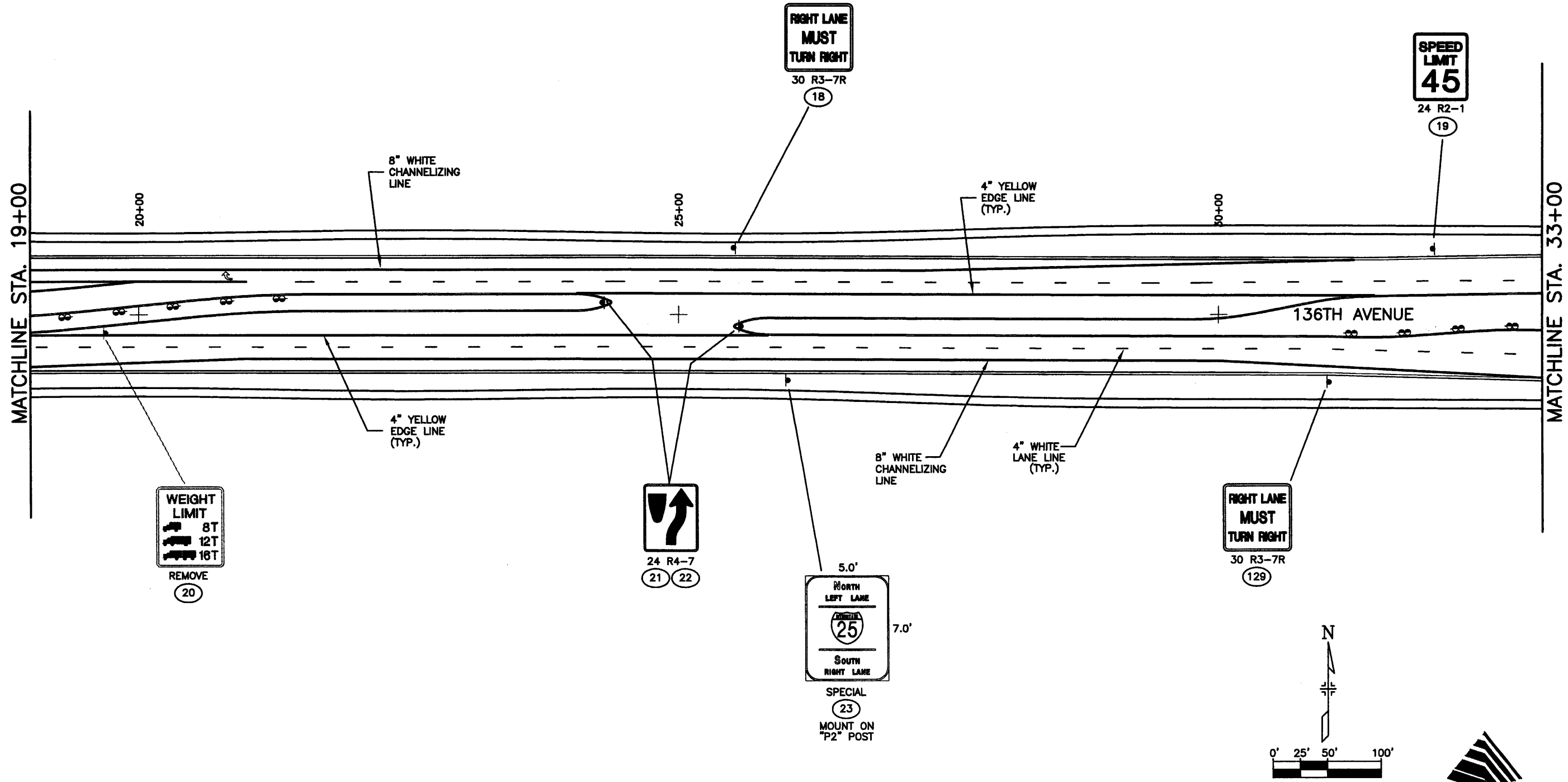
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

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No Revisions:
Revised:
Void:

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Designer:	JGF
Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	SS-7 of 16

Project No./Code	97-71
Sheet Number	360

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 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

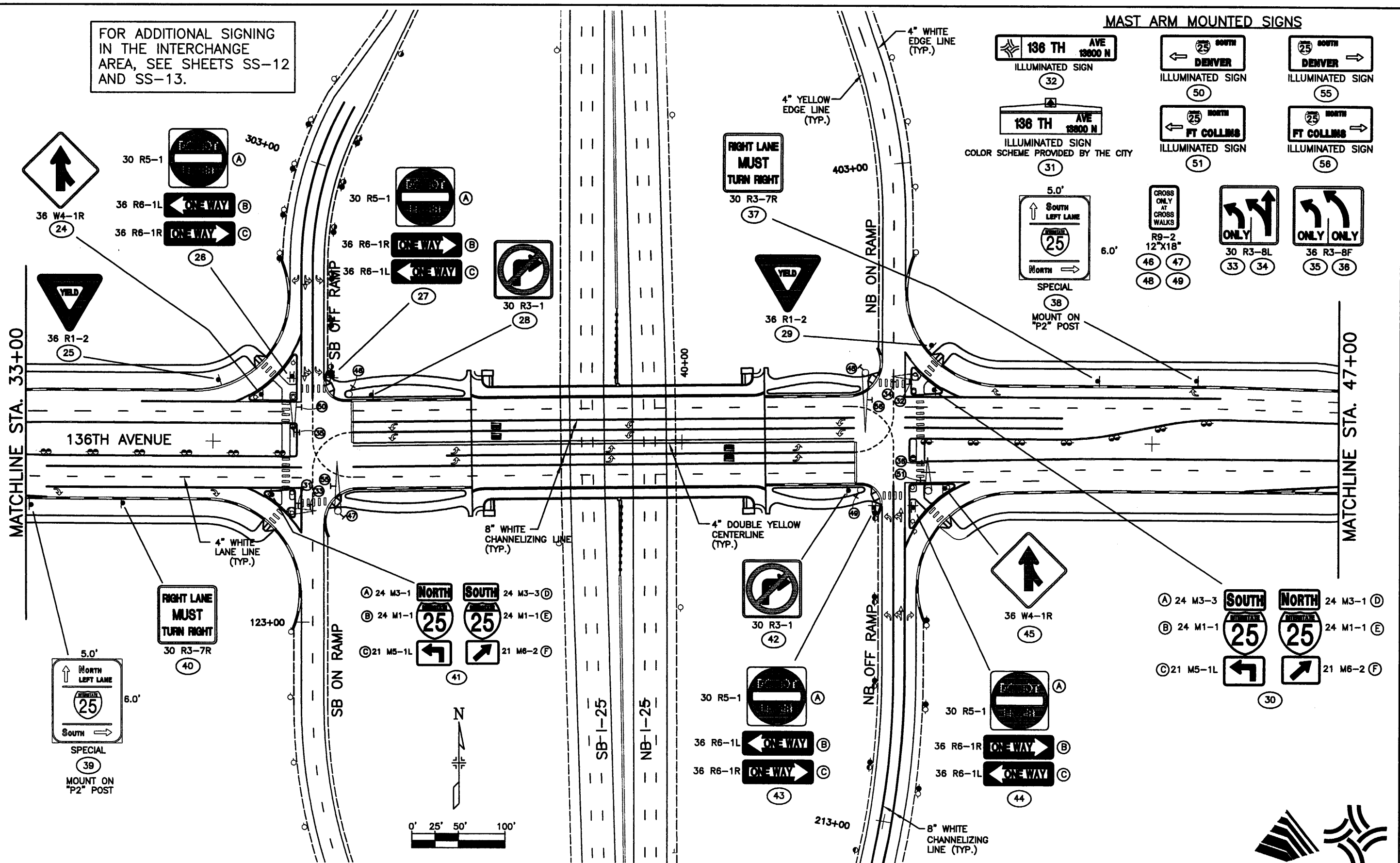
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No Revisions:
Revised:
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136TH AVENUE AT I-25 INTERCHANGE SIGNING & STRIPING PLAN	
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Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	SS-8 of 16

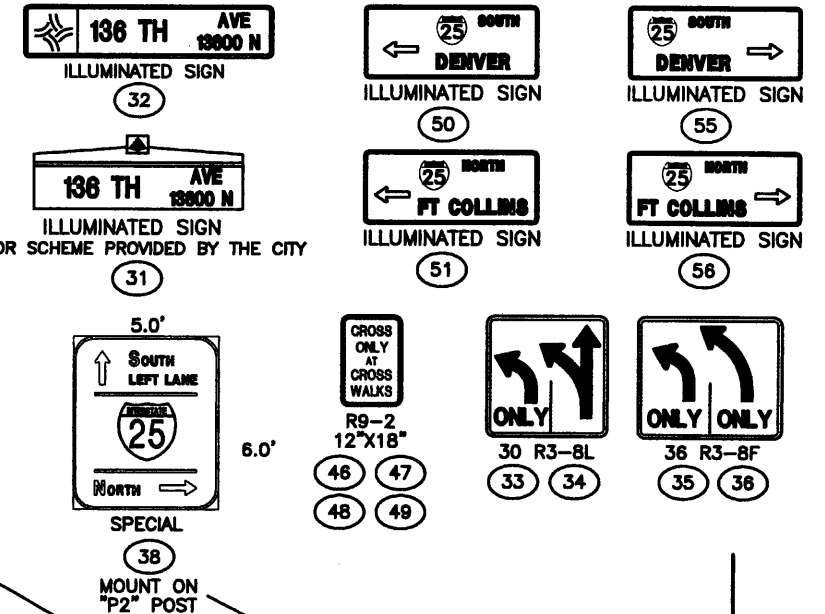
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97-71
Sheet Number <b>361</b>

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FOR ADDITIONAL SIGNING IN THE INTERCHANGE AREA, SEE SHEETS SS-12 AND SS-13.



**MAST ARM MOUNTED SIGNS**



Computer File Information	
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Last Modification Date:	12/18/02 Initials: JGF
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Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	



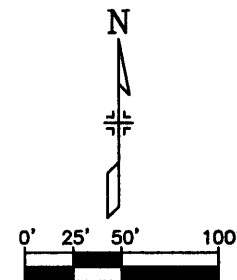
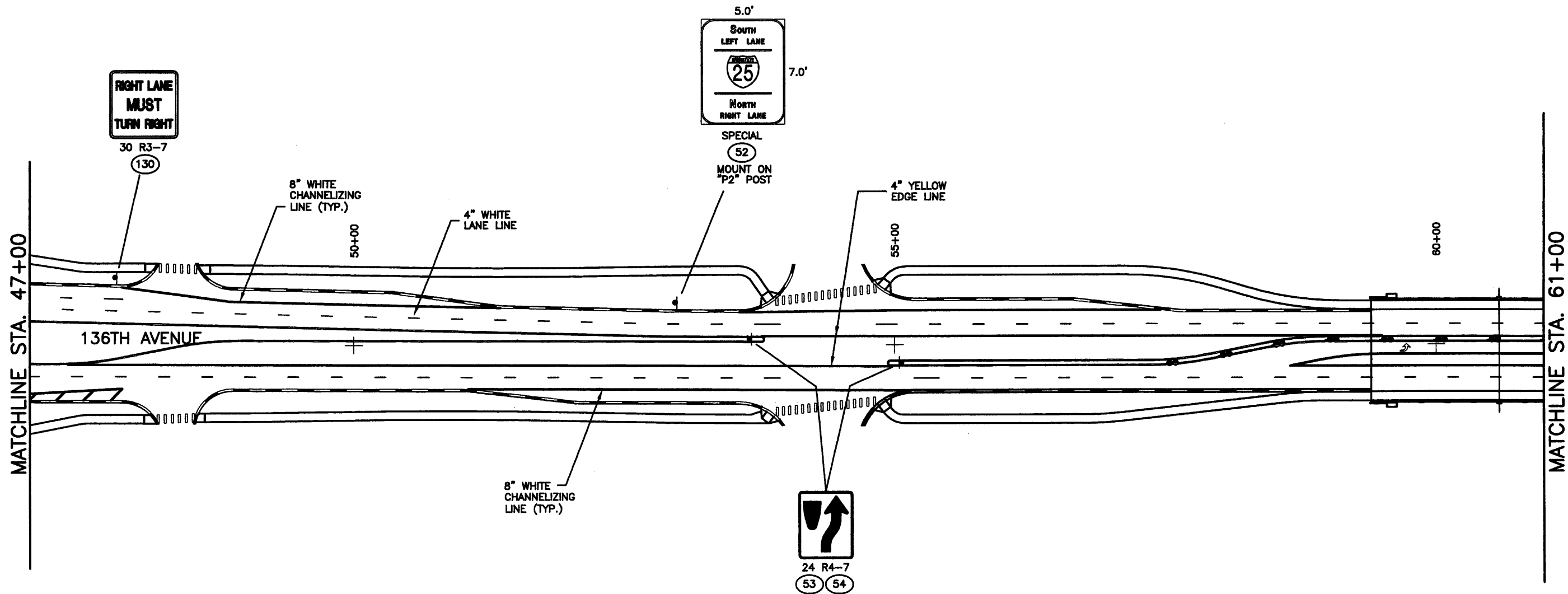
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111


As Constructed	
No Revisions:	
Revised:	
Void:	

136TH AVENUE AT I-25 INTERCHANGE SIGNING & STRIPING PLAN	
Designer:	JGF
Detailer:	JAC
Sheet Subset: SIGNSTRP	Subset Sheets: SS-9 of 16

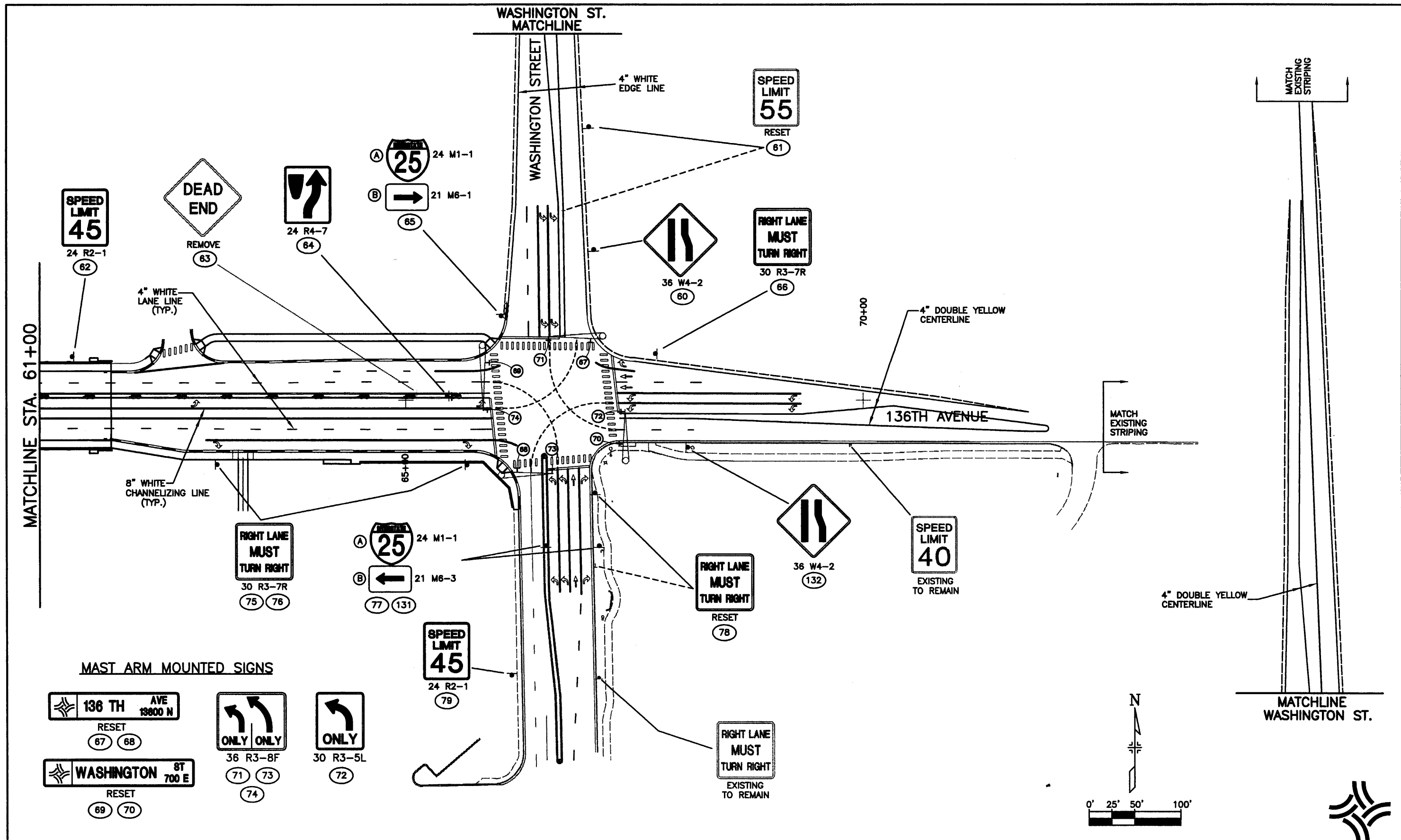
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97-71	
Sheet Number	362

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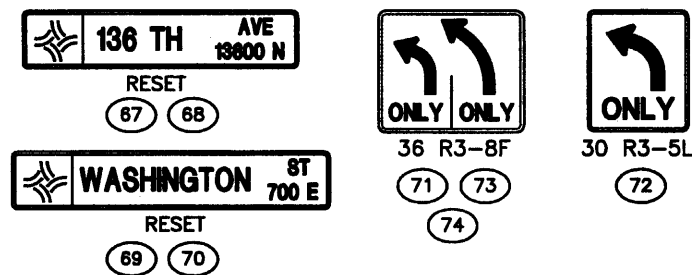


<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE SIGNING & STRIPING PLAN	Project No./Code
Creation Date: 12\11\00 Initials: JAC	00		No Revisions:		97-71		
Last Modification Date: 12/17/02 Initials: JGF	00		Revised:		Designer: JGF		
Full Path: J:\00033\Acad\Sheet\	00		Void:		Detailer: JAC		
Drawing File Name: T00033SSS04.DWG	00				Sheet Subset: SIGNSTRP		
Acad Ver. 2000i Scale: 1"=100' Units: English				Subset Sheets: SS-10 of 16	Sheet Number <b>363</b>		

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**MAST ARM MOUNTED SIGNS**



Computer File Information	
Creation Date:	12/11/00 Initials: JAC
Last Modification Date:	12/18/02 Initials: JGF
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Acad Ver.	2000i Scale: 1"=100' Units: English

Index of Revisions	

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HOLT &  
ULLEVIG**

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fhu@fhueng.com

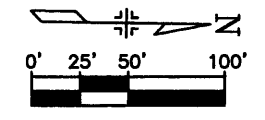
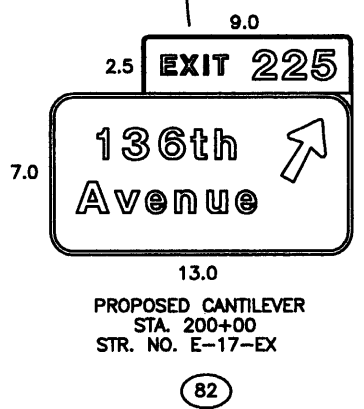
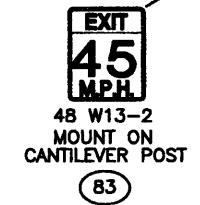
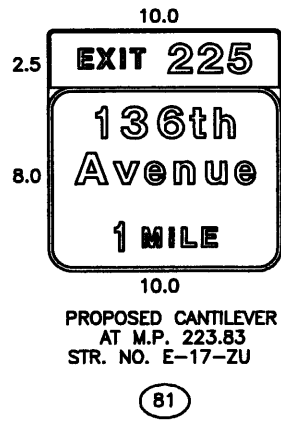
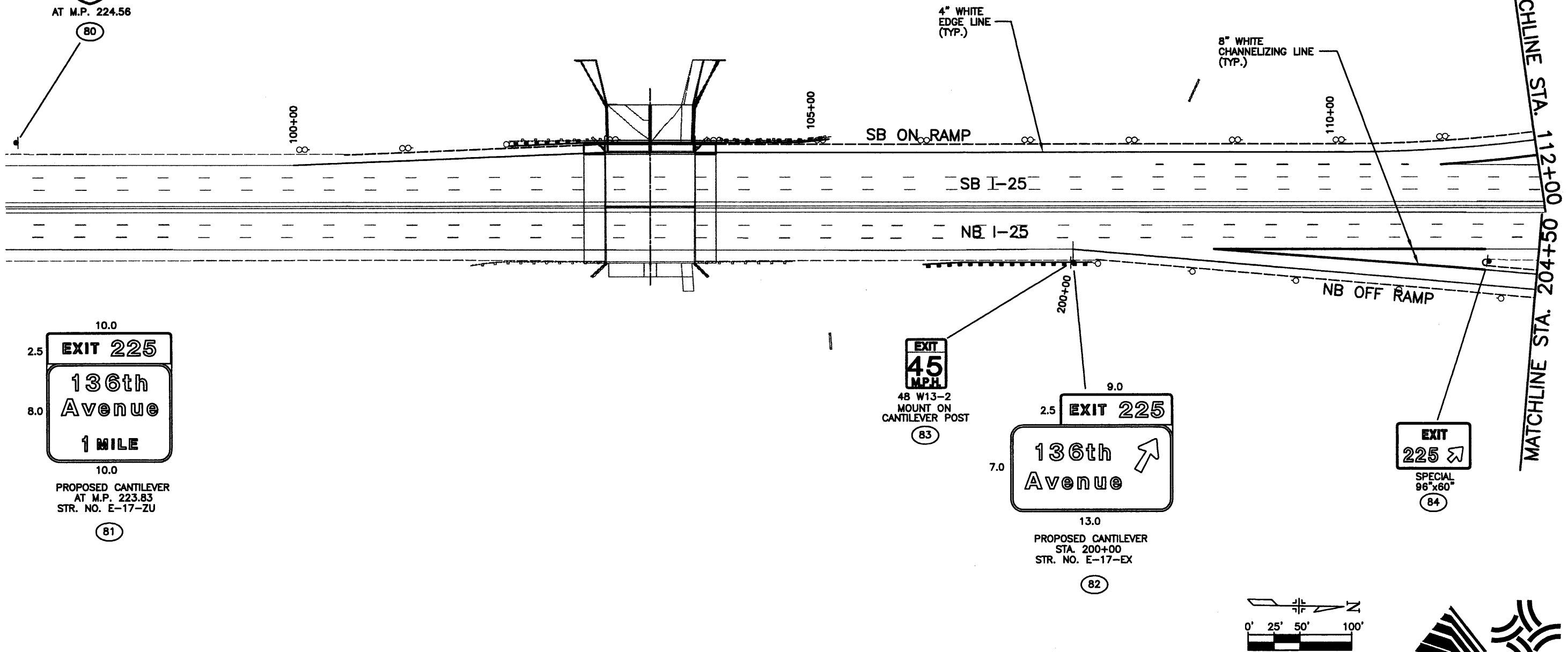
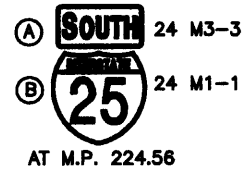
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Englewood, CO 80111

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No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE SIGNING & STRIPING PLAN	
Designer:	JGF
Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	SS-11 of 16


Project No./Code
97-71
Sheet Number <b>364</b>

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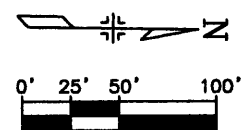
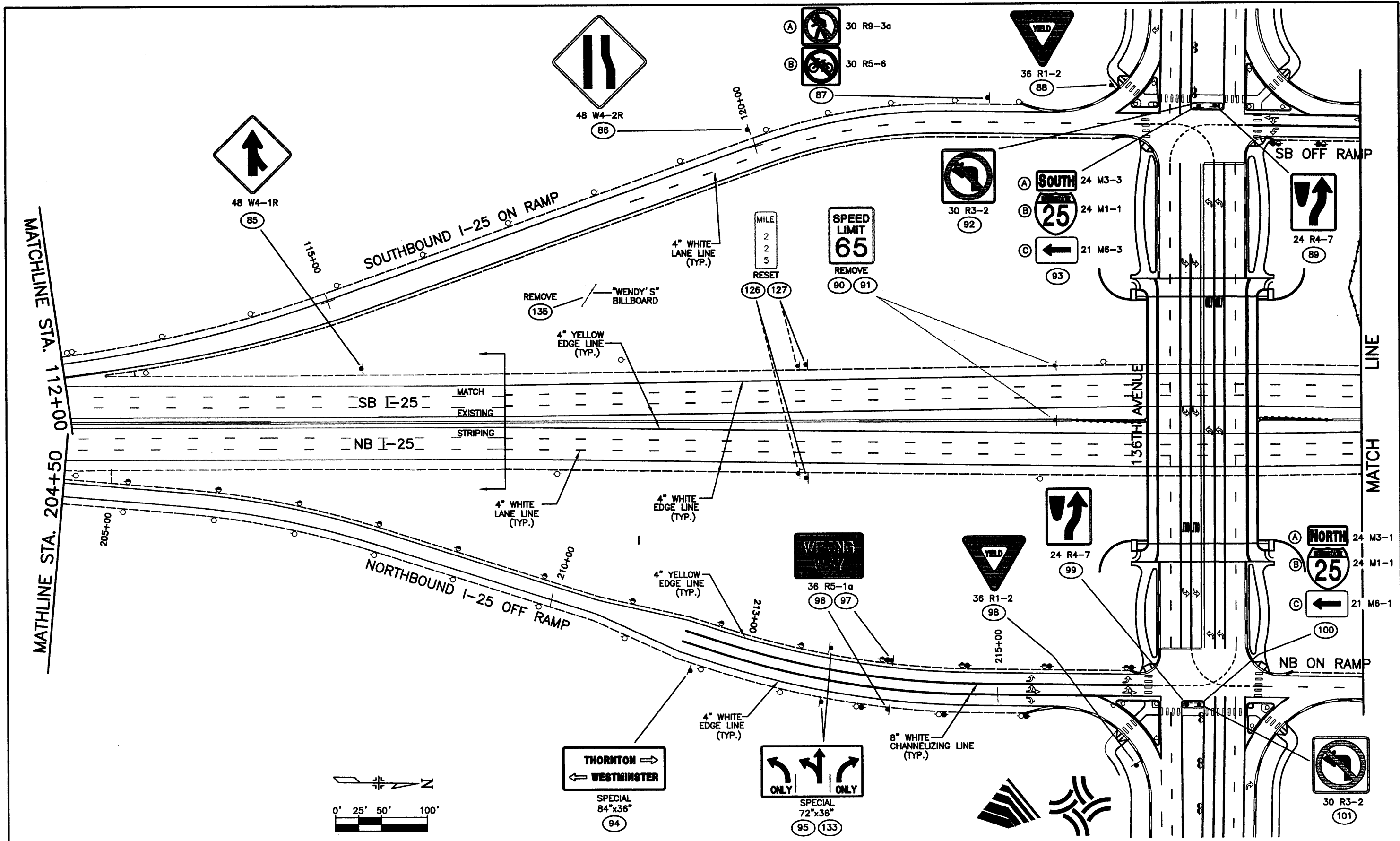


MATCHLINE STA. 112+00  
MATCHLINE STA. 202+50



Computer File Information		Index of Revisions			303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	As Constructed		136TH AVENUE AT I-25 INTERCHANGE SIGNING & STRIPING PLAN		Project No./Code	
Creation Date:	12\11\00 Initials: JAC						No Revisions:				
Last Modification Date:	12/18/02 Initials: JGF				Revised:			Designer:	JGF		
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Acad Ver. 2000i	Scale: 1"=100' Units: English										Sheet Number 365

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Full Path:	J:\00033\Acad\Sheet\
Drawing File Name:	T00033SSS07.DWG
Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	

**FELSBURG  
HOLT &  
ULLEVIG**

303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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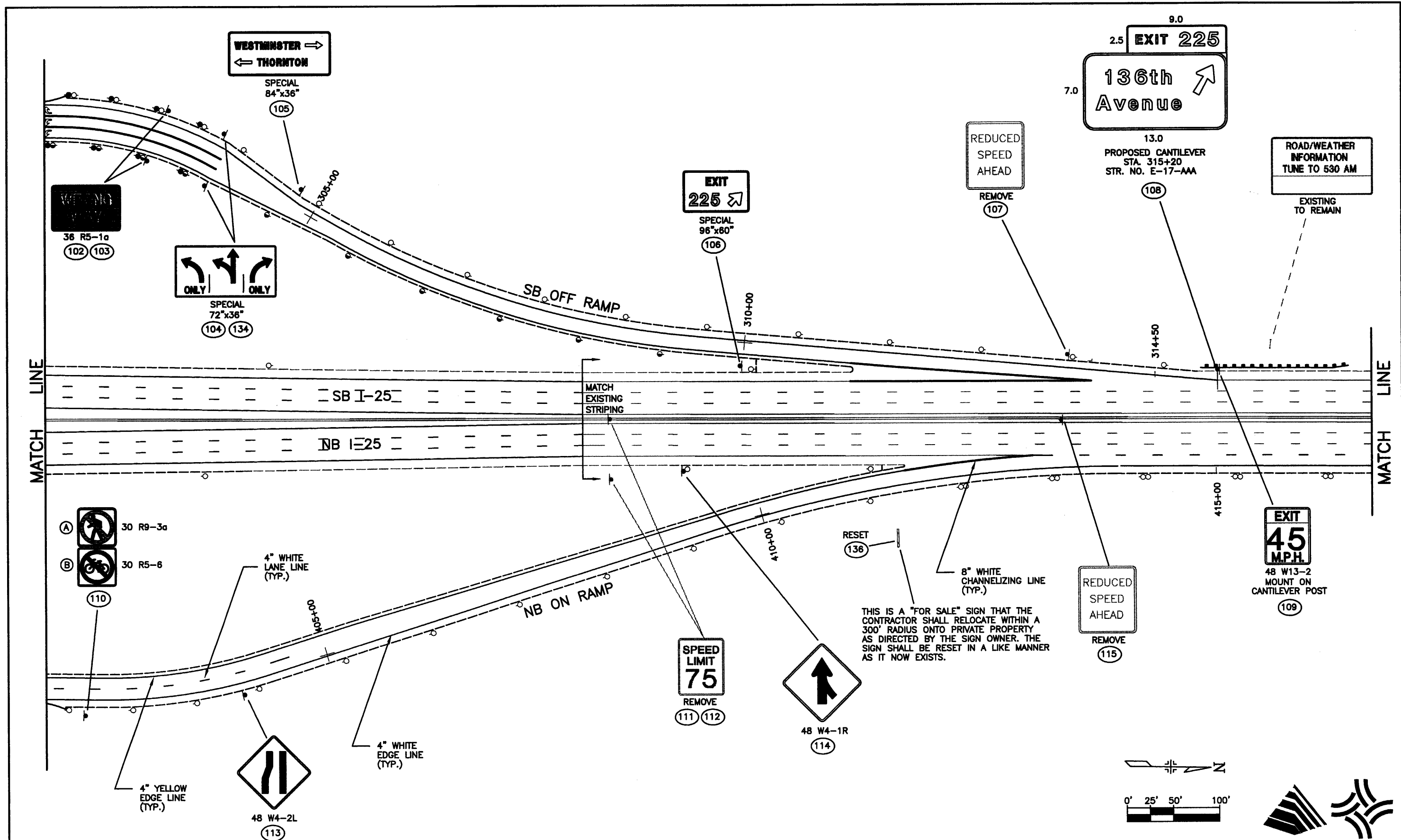
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No Revisions:
Revised:
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Designer:	JGF
Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	SS-13 of 16

Project No./Code	97-71
Sheet Number	366



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Computer File Information	
Creation Date:	12\11\00 Initials: JAC
Last Modification Date:	01/15/03 Initials: JGF
Full Path:	J:\00033\Acad\Sheet\
Drawing File Name:	T00033SSS08.DWG
Acad Ver.	2000i Scale: 1"=100' Units: English

Index of Revisions	

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fax 303.721.0832  
fhu@fhueng.com

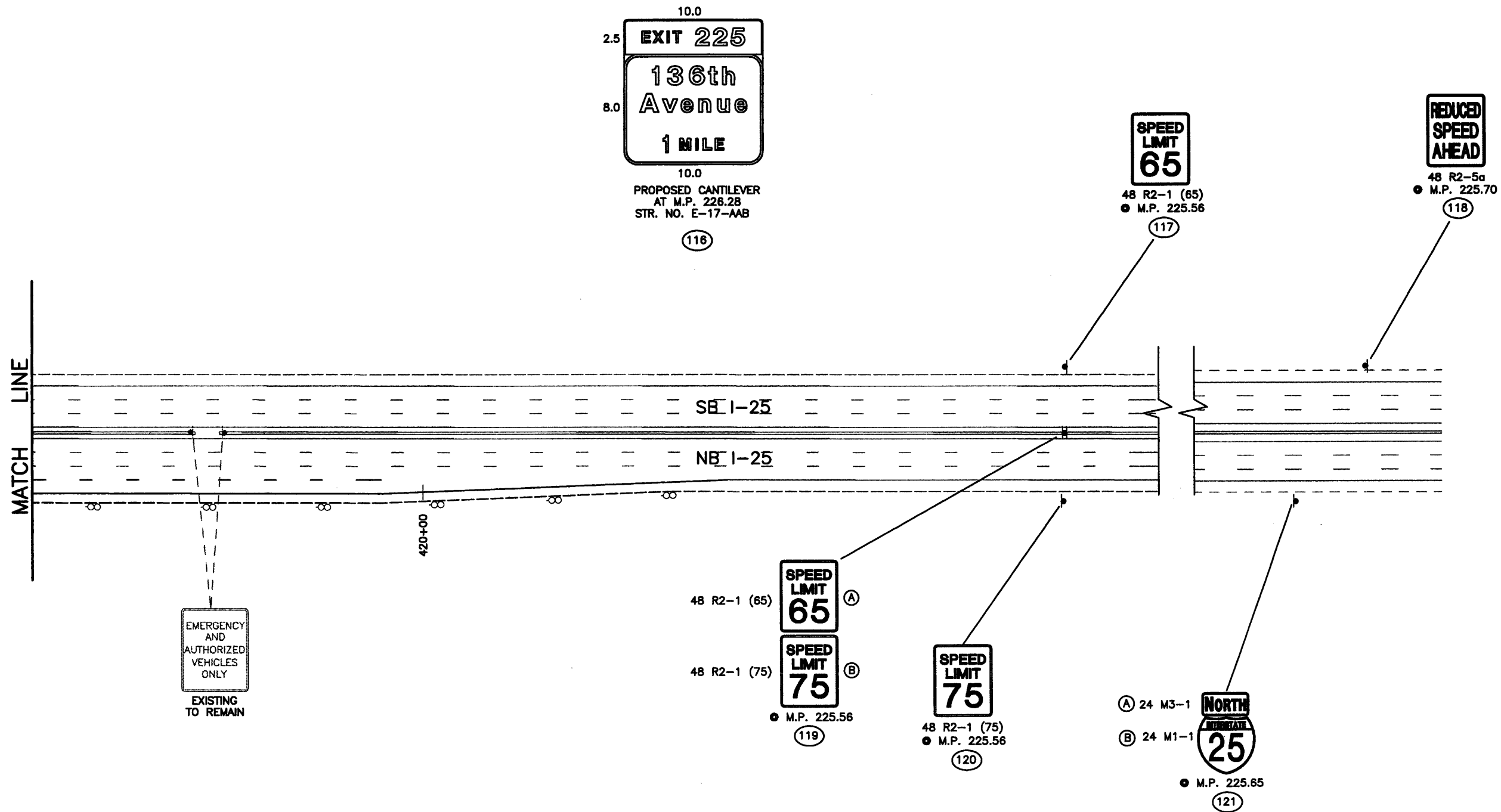
Greenwood Corporate Plaza  
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Englewood, CO 80111

As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE SIGNING & STRIPING PLAN	
Designer:	JGF
Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	SS-14 of 16

Project No./Code
97-71
Sheet Number <b>367</b>

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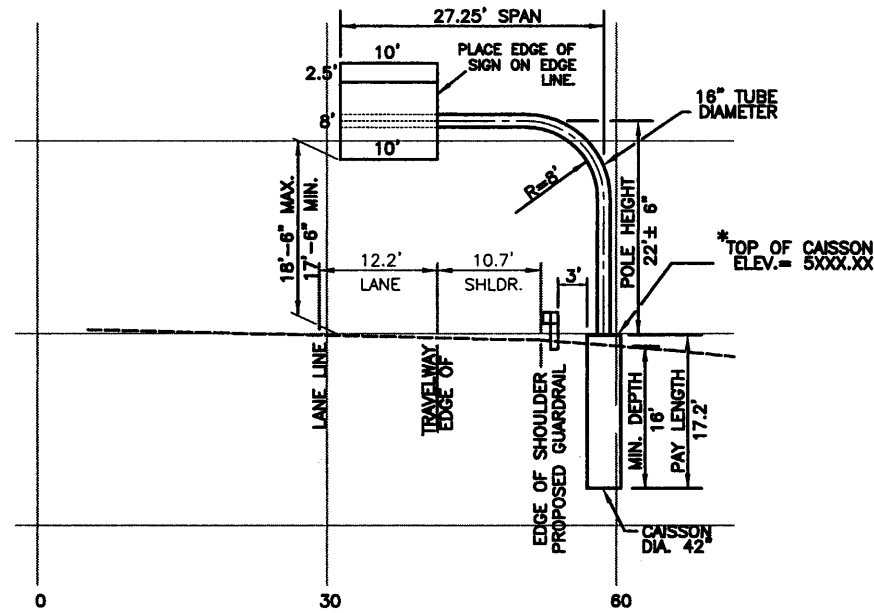
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Creation Date:	12\11\00 Initials: JAC			No Revisions:		Designer:	JGF	97-71	
Last Modification Date:	12/18/02 Initials: JGF			Revised:		Detailer:	JAC		
Full Path:	J:\00033\Acad\Sheet\			Void:		Sheet Subset:	SIGNSTRP	Subset Sheets:	SS-15 of 16
Drawing File Name:	T00033SSS09.DWG								Sheet Number
Acad Ver. 2000i	Scale: 1"=100' Units: English								368



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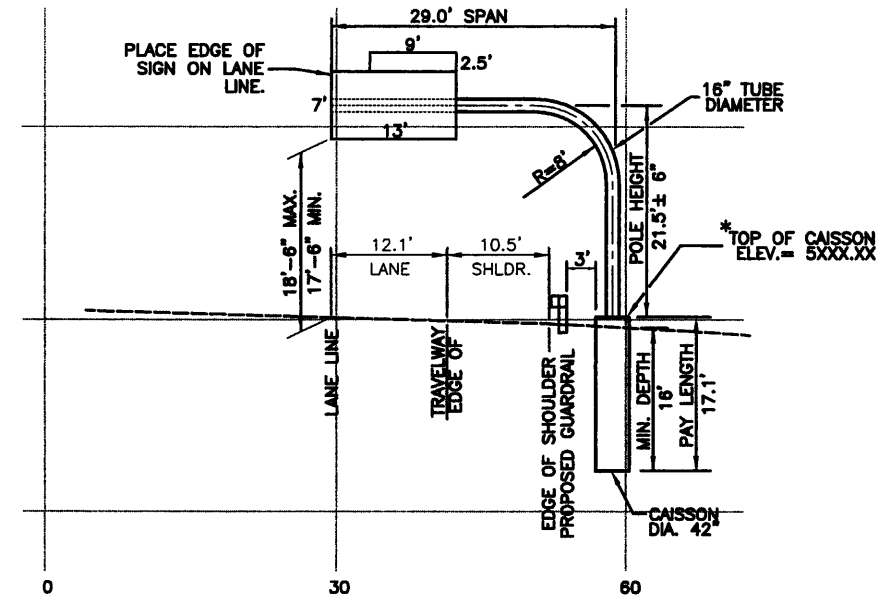


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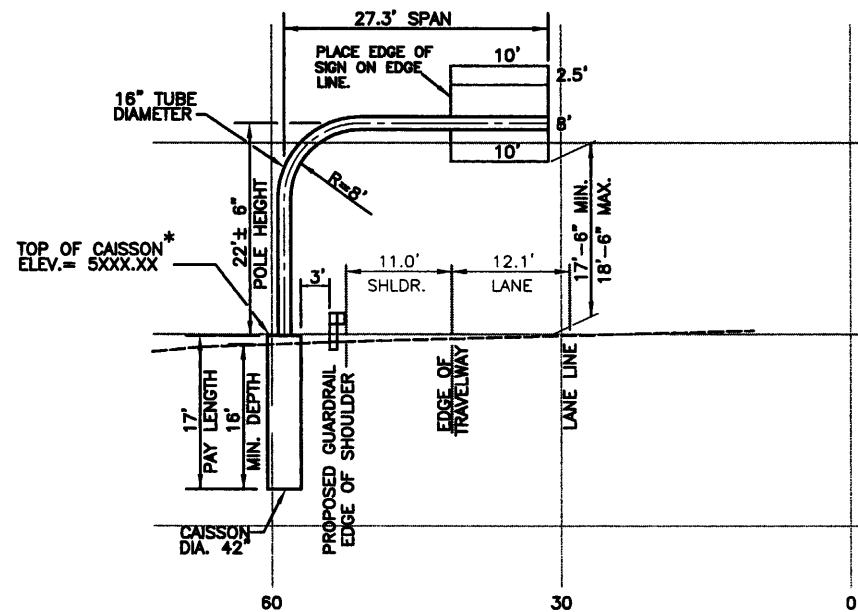


**SIGN #81**  
 NB I-25 AT M.P. 223.83  
 STR. NO. E-17-ZU

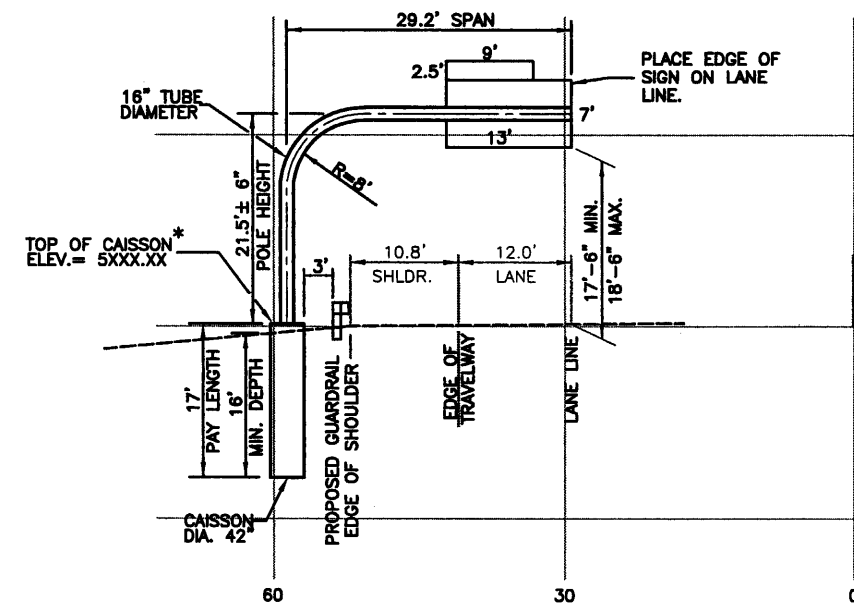
\* TOP OF CAISSON ELEVATION MAY HAVE TO BE ADJUSTED IN ORDER TO MAINTAIN THE SHOWN POLE HEIGHT WITH MINIMUM AND MAXIMUM CLEARANCES OF 17'-6" AND 18'-6" RESPECTIVELY BETWEEN THE HIGHPOINT OF THE PAVEMENT BENEATH THE SIGN PANEL AND THE WALKWAY. CONTRACTOR TO CONFIRM FINAL DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.



**SIGN #82**  
 NB I-25 OFF RAMP AT M.P. 224.76  
 STA. 200+00 RT.  
 STR. NO. E-17-ZX



**SIGN #106**  
 SB I-25 OFF RAMP AT M.P. 225.36  
 STA. 315+20 LT.  
 STR. NO. E-17-AAA



**SIGN #113**  
 SB I-25 AT M.P. 226.28  
 STR. NO. E-17-AAB



Computer File Information		Index of Revisions		As Constructed		136TH AVENUE AT I-25 INTERCHANGE SIGN CROSS SECTIONS		Project No./Code	
Creation Date:	12/19/01 Initials: JGF			No Revisions:				97-71	
Last Modification Date:	12/18/02 Initials: JGF			Revised:		Designer:	JGF		
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Acad Ver. 2000i	Scale: NONE Units: English							Sheet Number	369



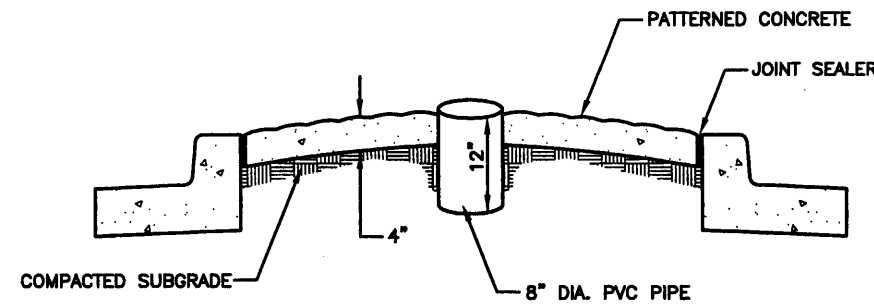
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 fax 303.721.0832  
 fhu@fhueng.com

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 Englewood, CO 80111

## SIGN LOCATIONS IN 136TH AVENUE MEDIAN

(SIGNS REQUIRING SLEEVE OR CORING - SEE  
DETAIL BELOW)

NO.	SIGN	STATION	SIDE	OFFSET
10	R4-7	15+20	RT.	10
21	R4-7	24+30	LT.	10
22	R4-7	25+60	RT.	10
53	R4-7	53+70	LT.	5
54	R4-7	55+07	RT.	17
64	R4-7	65+50	LT.	3
89	R4-7	35+87	LT.	15
93	M3-3	35+87	RT.	4
99	R4-7	42+45	RT.	20
100	M3-1	42+45	LT.	5



**NOTES:**

PRIOR TO PLACING PATTERNED CONCRETE,  
COORDINATE FINAL SIGN LOCATION WITH  
ENGINEER FOR LOCATION OF SLEEVES.

COST OF SLEEVES OR CORING TO BE  
INCLUDED IN COST OF SIGN POST, NOT  
TO BE PAID FOR SEPARATELY.

### SLEEVE DETAIL

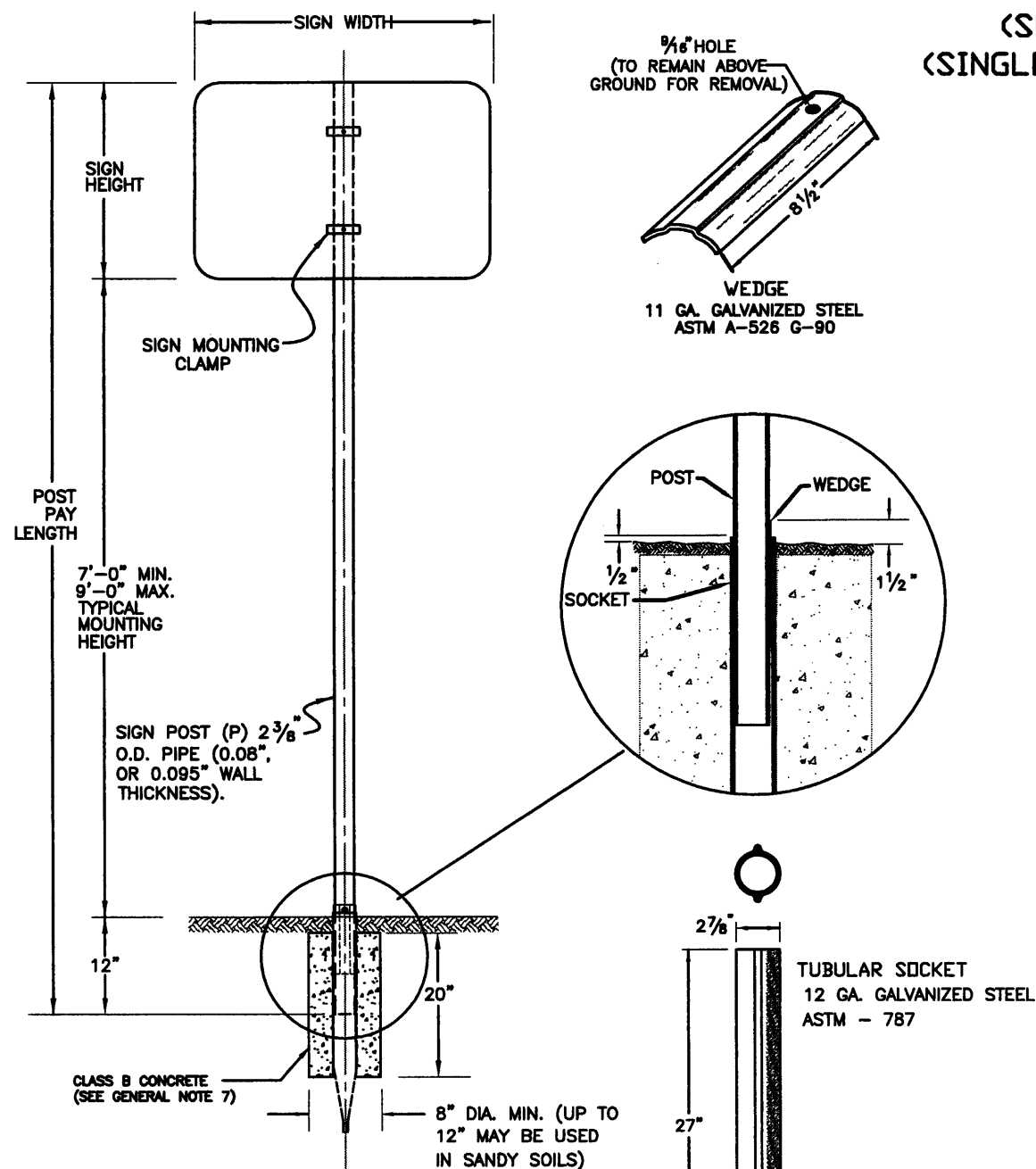
NOT TO SCALE

### DETAIL L-23

<b>Computer File Information</b>		<b>Index of Revisions</b>		<p style="font-size: small;">303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p style="font-size: x-small;">Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE SLEEVE DETAIL		Project No./Code 97-71	
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Drawing File Name:	T00033DET02.DWG								
Acad Ver. 2000i	Scale:      Units: English					Sheet Subset:	Subset Sheets: DET-01 of 01	Sheet Number <b>370</b>	

# TUBULAR STEEL POSTS (SOCKET SYSTEM) (SINGLE OR DOUBLE POST)

## SIGNPOST SELECTION GUIDE



SIGN HEIGHT (FT)	SIGN WIDTH (FT) / MOUNTING HEIGHT (FT)																																
	1			2			2.5			3			4			5			6			7			8			9					
	7	8	9	7	8	9	7	8	9	7	8	9	7	8	9	7	8	9	7	8	9	7	8	9	7	8	9	7	8	9			
1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	***											
2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2
2.5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2
3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2
4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2
5	***						P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2
6	***						P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2
7	***						P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	2	2	2	2	2	2	2	2	2	2	2	2

### GENERAL NOTES:

- SIGN POSTS SHALL BE COLD FORMED STEEL WITH A MINIMUM YIELD STRENGTH OF 55 KSI. POST COLOR SHALL BE UNPAINTED GALVANIZED STEEL OR AS DIRECTED BY THE ENGINEER. (IN NATIONAL FOREST, FEDERAL STD COLOR 595 No. 20059 BROWN OR EQUIVALENT MAY BE USED. IN HIGH IMPACT AREAS, FEDERAL COLOR STD 595a No. 13655 YELLOW MAY BE USED.)
- STEEL TUBE SIGN SUPPORTS SHALL BE INSTALLED UNDER THE SUPERVISION OF AN ON-SITE INDIVIDUAL TRAINED BY THE MANUFACTURER OF THE SUPPORTS. PRIOR TO INSTALLATION OF THE SIGN SUPPORTS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER WRITTEN CERTIFICATION FROM THE MANUFACTURER THAT THE INDIVIDUAL SUPERVISING THE INSTALLATION HAS BEEN TRAINED TO PROPERLY INSTALL THE SUPPORTS. UPON COMPLETION OF SIGN SUPPORT INSTALLATION, THE CONTRACTOR SHALL SUBMIT WRITTEN CERTIFICATION, SIGNED BY THE TRAINED INSTALLER, THAT THE SUPPORTS WERE INSTALLED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS.
- SIGNS AND POSTS SHALL INCLUDE THE FOOTING ALL HARDWARE NECESSARY FOR COMPLETE INSTALLATION. POST TYPE P SHALL BE PAID FOR AS 614 STEEL SIGN POST (2 INCH ROUND), LIN. FT.
- SIGNS BETWEEN 37" AND 60" WIDTH WITH ONE POST INSTALLATION REQUIRE T SIGN SUPPORT BRACKET IN ADDITION TO THE BACKING ZEE REQUIREMENTS.
- MULTIPLE SIGNS MAY USE THE U SIGN SUPPORT BRACKET.
- FOR BACKING ZEE REQUIREMENTS AND DETAILS, SEE COLORADO STANDARD PLANS S-614-3 AND S-614-4.
- CLASS B CONCRETE MAY BE SUBSTITUTED WITH A COMPARABLE PRODUCT THAT MEETS THE SPECIFICATIONS SHOWN IN TABLE 601-1 OF THE STANDARD SPECIFICATIONS.

\*\*\* SIZES NOT USED. REFER TO COLORADO STANDARD PLANS SECTION 614 FOR LARGER SIGN SUPPORTS.

MAXIMUM ALLOWABLE MOMENT PER POST:  
 P (2", 2.375" DD) 1.46 KIP FT  
 P2 (2 1/2", 2.875" DD, SCHEDULE 80) 4.68 KIP FT

### CHART NOTES:

- WIND LOAD DESIGN = 80 MPH.
- TYPICAL POST MOUNTING HEIGHTS FROM GROUND TO BOTTOM OF SIGN PANEL ARE 7, 8 OR 9 FEET.
- FOR SIGNS MOUNTED ON TWO POSTS, MINIMUM DISTANCE BETWEEN POSTS SHALL BE 2 FEET AND MAXIMUM DISTANCE SHALL BE 8 FEET. MAXIMUM DISTANCE FROM POST TO EDGE OF SIGN PANEL(S) SHALL BE 0 TO 4 INCHES. WHEN BACKING ZEES ARE USED, POSTS SHALL BE INSTALLED WITH A MINIMUM OF 2" FROM EDGE OF THE BACKING ZEE.

### POST NOTES:

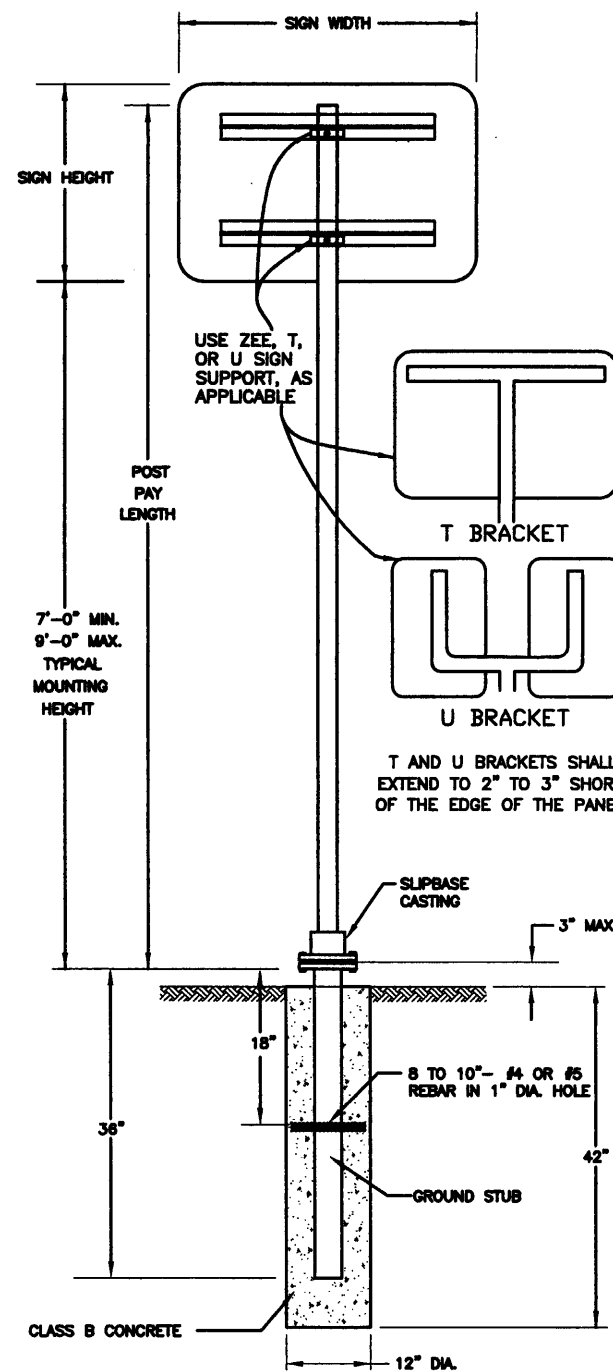
THE POST MAY BE PRE-PUNCHED WITH 3/8" HOLES AND THE SIGN MOUNTED DIRECTLY TO THE POST, OR AN APPROVED MOUNTING CLAMP MAY BE USED TO MOUNT THE SIGN TO THE POST. IF THE POST IS PRE-PUNCHED, THE HOLES SHALL BE SPACED THE FOLLOWING DISTANCES FROM THE TOP:

- 1", 3", 10", 16", 21", 23", 24", 27",  
 33", 37", 39", AND 45"

# TUBULAR STEEL POSTS (WITH SLIPBASE) (SINGLE OR DOUBLE POST)

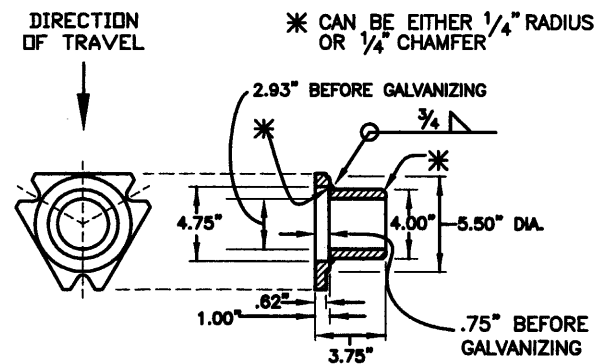
STANDARD PIPE SIZE	A	B	C	D	E	F	G	K	L	R <sub>1</sub>	R <sub>2</sub>
2	3 3/4	2 3/4	1 1/2	1 1/8	1/2	3/16	1	2 1/16	1 7/32	1 1/4	1 3/16
2 1/2	4 1/4	3 1/4	2	1 1/4	1/2	1/4	1	3 3/16	1 15/32	1 1/2	1 7/16

DIMENSIONS FOR MOUNTING CLAMP

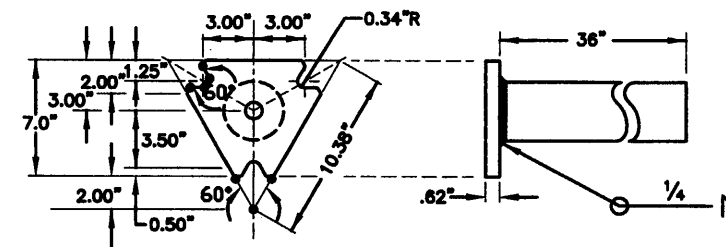


USE ZEE, T, OR U SIGN SUPPORT, AS APPLICABLE

T AND U BRACKETS SHALL EXTEND TO 2" TO 3" SHORT OF THE EDGE OF THE PANEL



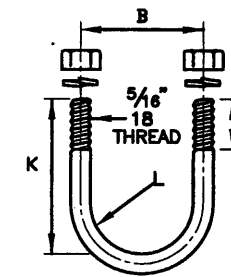
SLIPBASE CASTING



SLIPBASE STUB POST

## PIPE CLAMP CASTING

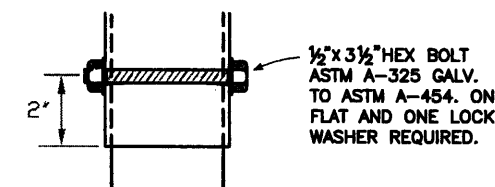
PIPE CLAMP CASTING SHALL BE ASTM B26 OR B108 ALUMINUM ALLOY A444.0-T4 OR 356.0-F. ALL SIGN MOUNTING CLAMP PARTS NOT MADE FROM ALUMINUM SHALL BE GALVANIZED STEEL IN CONFORMANCE WITH ASTM A153 OR STAINLESS STEEL.



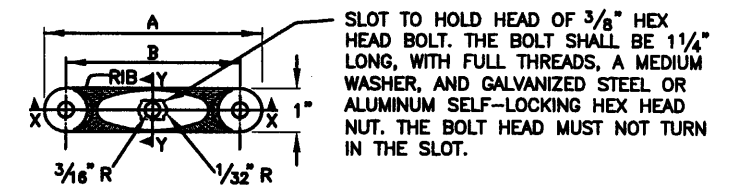
U-BOLT TO BE MADE IN ACCORDANCE WITH STANDARD MANUFACTURING PROCEDURE. 9/32" OR 5/16" DIAMETER STOCK IS PERMISSIBLE. AMERICAN STANDARD REGULAR SEMI-FINISHED HEX NUTS AND SPRING LOCKWASHERS.

U-BOLT

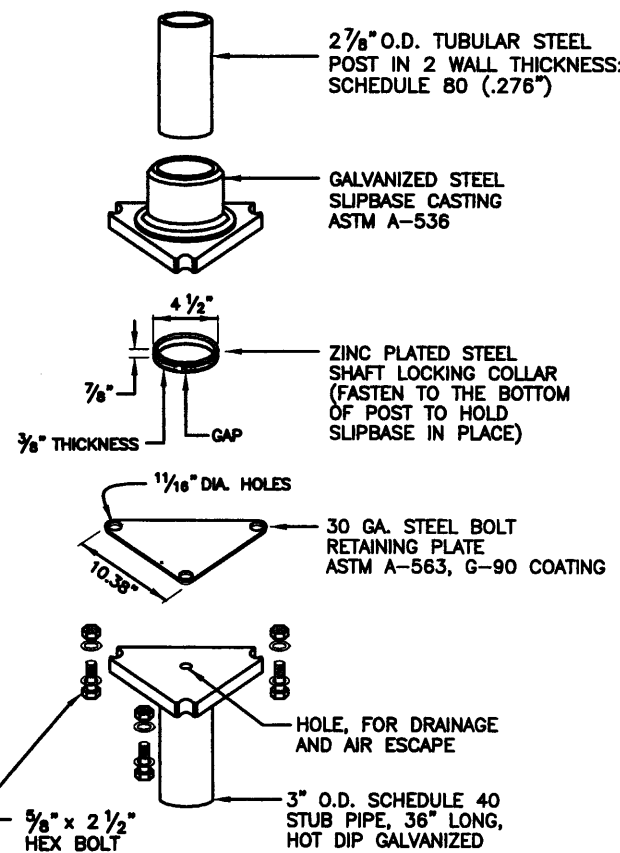
## T AND U BRACKET ATTACHMENT



DETAIL "A"

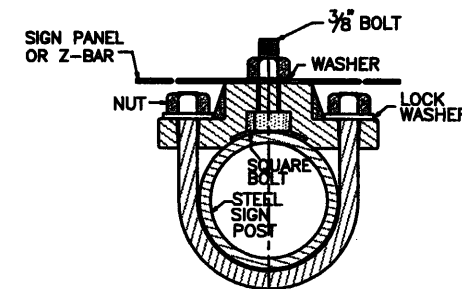


SECTION Y-Y

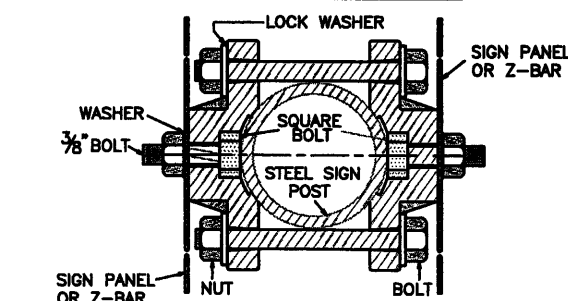


TYPICAL ASSEMBLY

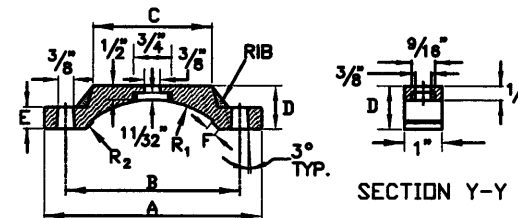
## TYPICAL SINGLE BRACKET



## TYPICAL BACK TO BACK



DETAILS FOR SIGN PANEL ATTACHMENT



SECTION X-X

## MOUNTING CLAMP FOR SOCKET OR SLIPBASE

### GENERAL NOTES:

- SIGNS AND POSTS SHALL INCLUDE THE FOOTING, SLIPBASE, AND ALL HARDWARE NECESSARY FOR COMPLETE INSTALLATION. POST TYPE P2, INCLUDING T AND U MOUNTINGS, SHALL BE PAID FOR AS 614 STEEL SIGN POST (2.5 INCH ROUND) (SLIPBASE SCH. 80), LIN. FT.
- ALSO SEE NOTES 1, 2, 4, 5, 6, AND CHART NOTES ON PAGE 1.
- CLASS B CONCRETE MAY BE SUBSTITUTED WITH A COMPARABLE PRODUCT THAT MEETS THE SPECIFICATIONS SHOWN IN TABLE 601-1 OF THE STANDARD SPECIFICATIONS.

Colorado Department of Transportation



4201 East Arkansas Avenue  
Denver, Colorado 80222  
Phone: (303) 757-9436 FAX: (303) 757-9219

Safety & Traffic Engineering Branch KA

### Computer File Information

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Acad Version: R2002 Scale: NA Units: English

### Standard Plan Revised

Date: \_\_\_\_\_ Comments: \_\_\_\_\_

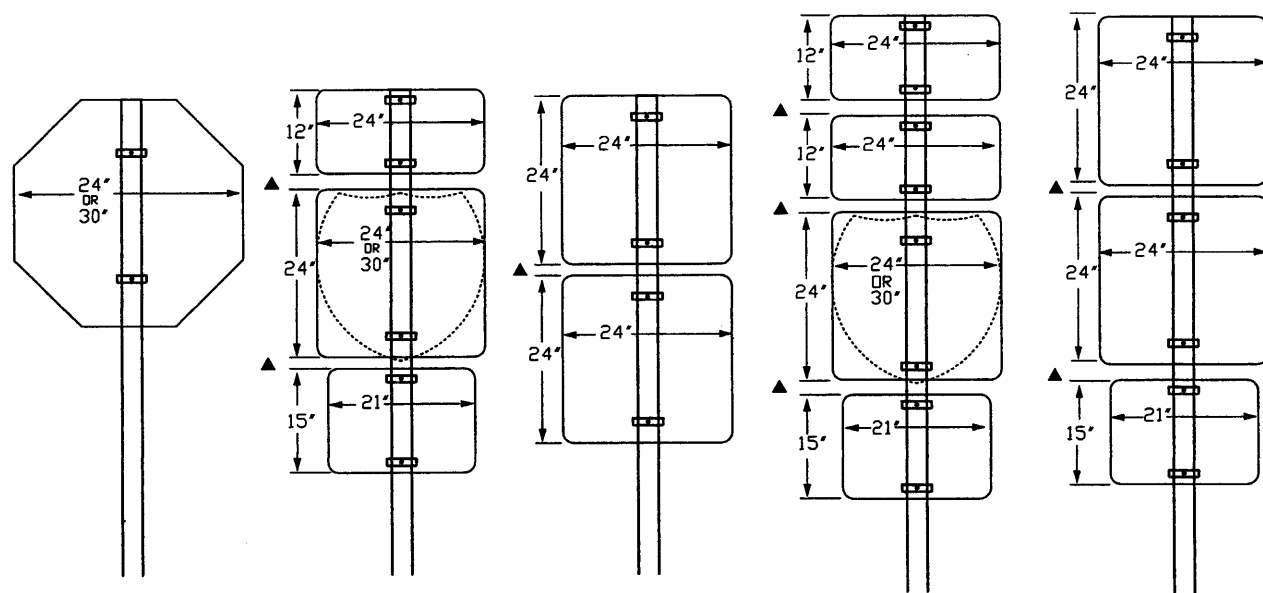
## GROUND MOUNTED SIGN SUPPORT DETAILS

Issued By: Traffic Engineering Unit October 28, 2002

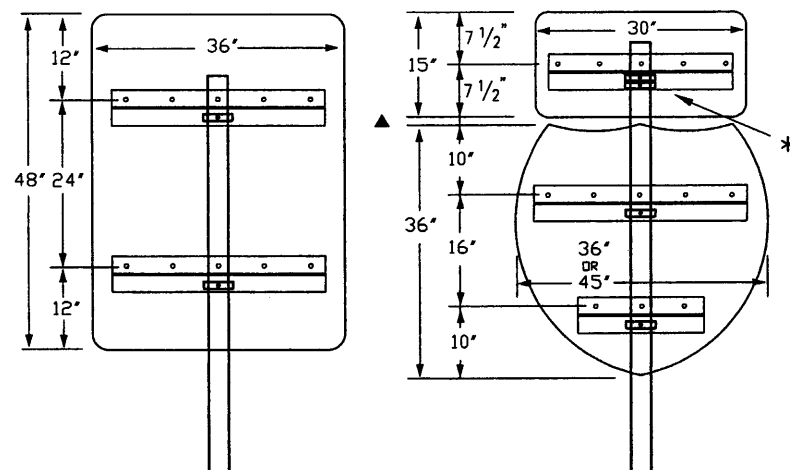
Project Detail No.

614-8 372

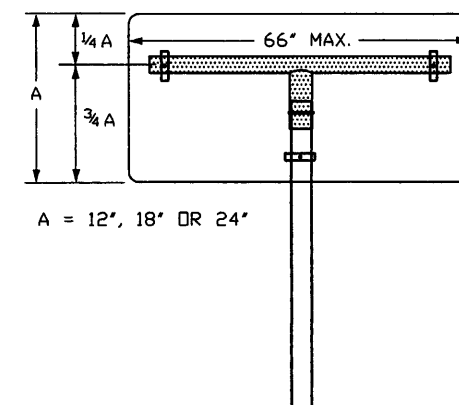
Sheet No. 2 of 4



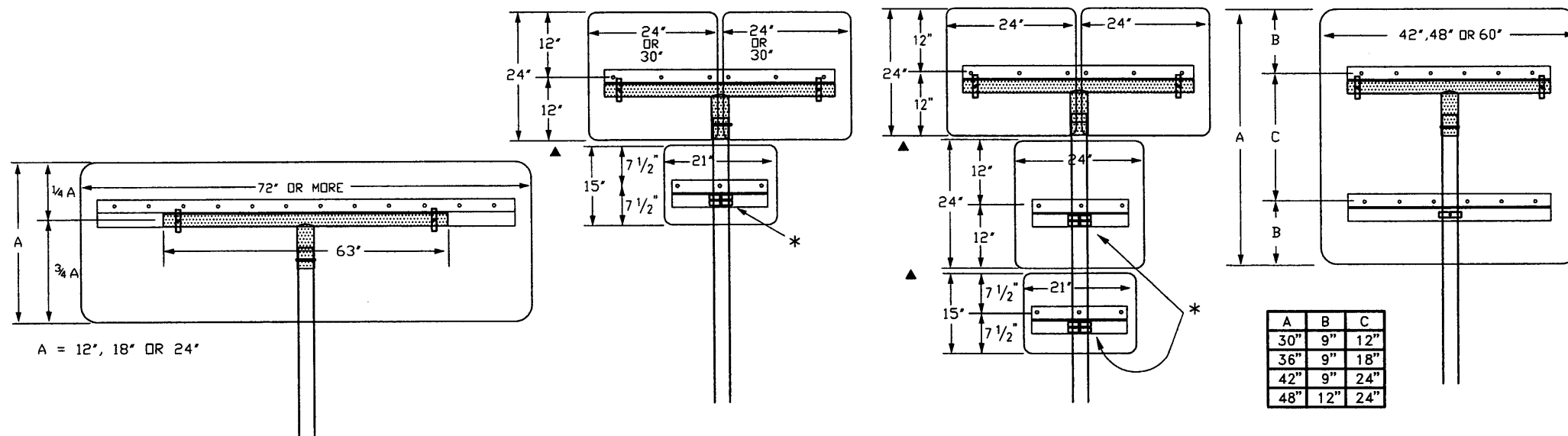
CLASS I SIGN COMBINATIONS (DIRECT ATTACHMENT)



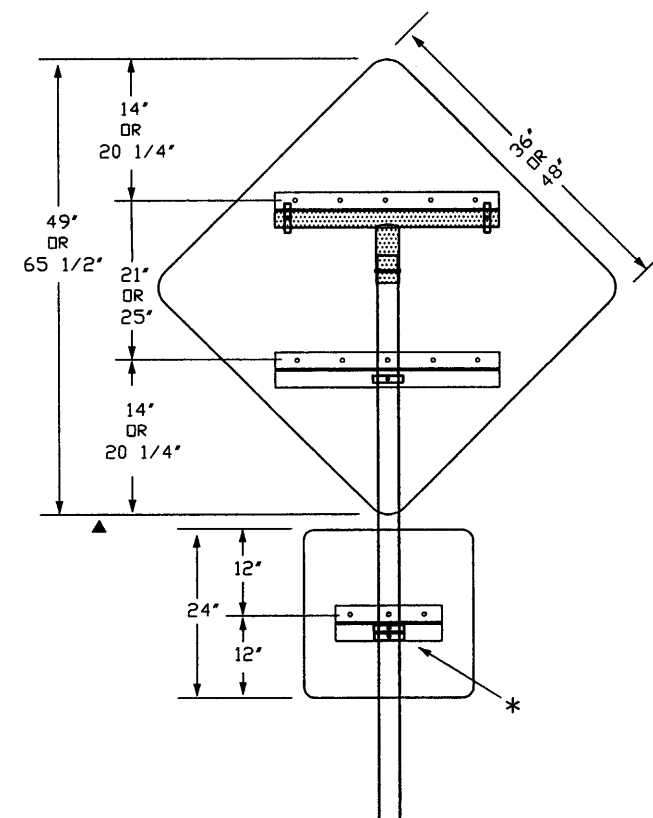
SINGLE POST CLASS II SIGNS USING Z-BAR



SIGNS USING T-BRACKET ONLY



SIGN COMBINATIONS USING T-BRACKETS WITH Z-BAR



\*SEE NOTE 4 ON SHEET 4

Colorado Department of Transportation



4201 East Arkansas Avenue  
Denver, Colorado 80222  
Phone: (303) 757-9436 FAX: (303) 757-9219

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Acad Version: R2002 Scale: NA Units: English

Standard Plan Revised

Date:

Comments:

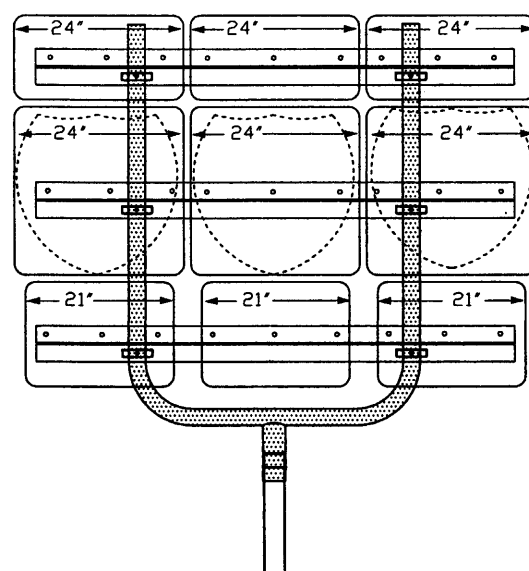
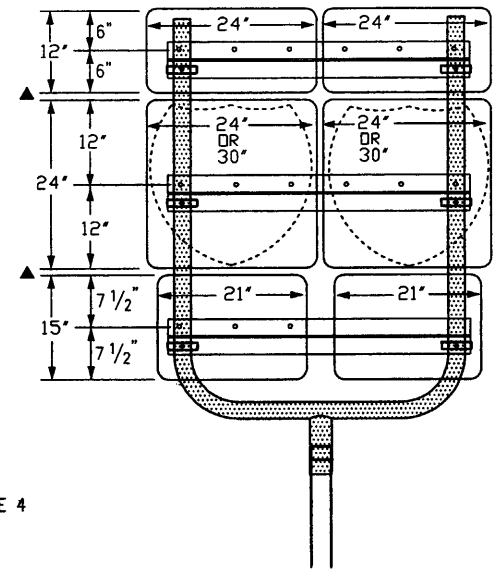
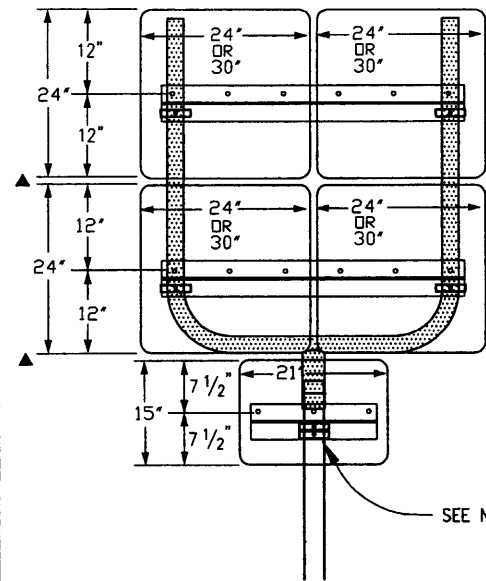
GROUND MOUNTED  
SIGN SUPPORT DETAILS

Issued By: Traffic Engineering Unit October 28, 2002

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614-8 372A

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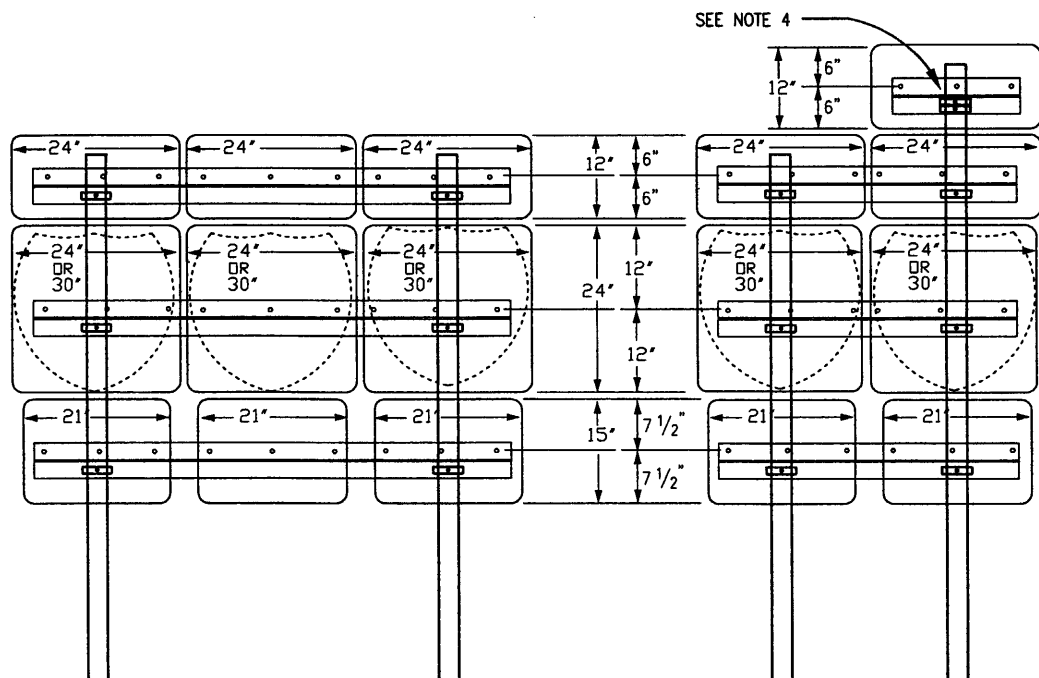
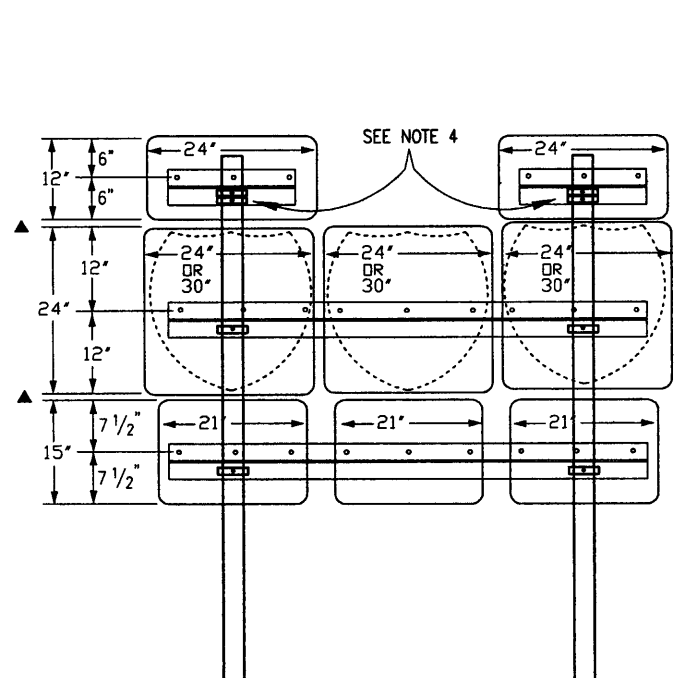


COMBINATIONS USING U-BRACKETS

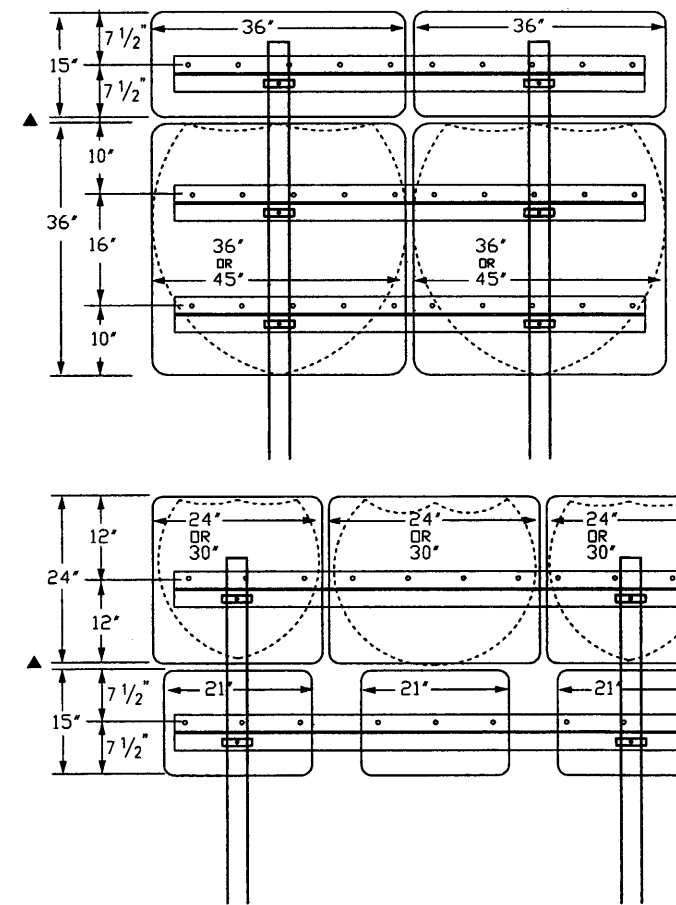
PANEL WIDTHS	ZEE LENGTH
21"	15"
24"	18"
30"	24"
36"	30"
42"	36"
45"	39"
48"	42"
54"	48"
60"	54"
36" DIAMOND	22"
48" DIAMOND	36"
24" & 24"	43"
24" & 30"	49"
30" & 30"	55"
36" & 36"	67"
45" & 36"	76"
24" & 24" & 24"	68"
24" & 24" & 30"	74"
24" & 30" & 24"	74"
30" & 24" & 30"	80"
24" & 30" & 30"	80"
30" & 30" & 30"	86"


NOTES:

- Z-BAR LENGTH SHALL BE 3" (+/- 1/2") SHORT OF THE EDGE OF THE SIGN OR ROW OF SIGNS ON BOTH SIDES. THE ACCOMPANYING TABLE GIVES THE Z-BAR LENGTH FOR MOST TYPICAL PANEL COMBINATIONS.
- FIRST AND LAST HOLES SHALL BE 2" FROM EDGE OF Z-BAR. THE HOLES IN BETWEEN SHALL BE 6" TO 8" APART.
- T AND U BRACKETS SHALL TERMINATE 2" TO 3" FROM EDGE OF SIGN PANEL. WHEN A ZEE IS CONNECTED TO A T-BRACKET, THEY SHALL BE THE SAME LENGTH EXCEPT WHEN THE ZEE MUST EXTEND BEYOND THE MAXIMUM LENGTH OF A T-BRACKET.
- TWO MOUNTING CLAMPS ARE REQUIRED ON ZEES WHERE THERE IS ONLY ONE ZEE FOR THE PANEL AND THE ZEE IS ATTACHED TO ONLY ONE POST.
- ZEES SHALL BE ATTACHED TO T-BRACKETS AND U-BRACKETS WITH U-BOLTS OR MOUNTING CLAMPS.
- VERTICAL SPACING BETWEEN SIGN PANELS SHALL BE 1" MINIMUM TO 1 1/2" MAXIMUM.
- IN SPECIAL CASES U-BRACKETS MAY BE USED TO MOUNT SIGNS THAT FACE DIFFERENT DIRECTIONS. THE ENGINEER SHALL DETERMINE THE ORIENTATION OF THE SIGN PANELS AND VERIFY THAT THE MAXIMUM ALLOWABLE WIND LOADS FOR THE POST ARE NOT EXCEEDED.



TWO-POST SIGN COMBINATIONS



Colorado Department of Transportation  
  
 4201 East Arkansas Avenue  
 Denver, Colorado 80222  
 Phone: (303) 757-9436 FAX: (303) 757-9219  
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Standard Plan Revised  
 Date: \_\_\_\_\_ Comments: \_\_\_\_\_

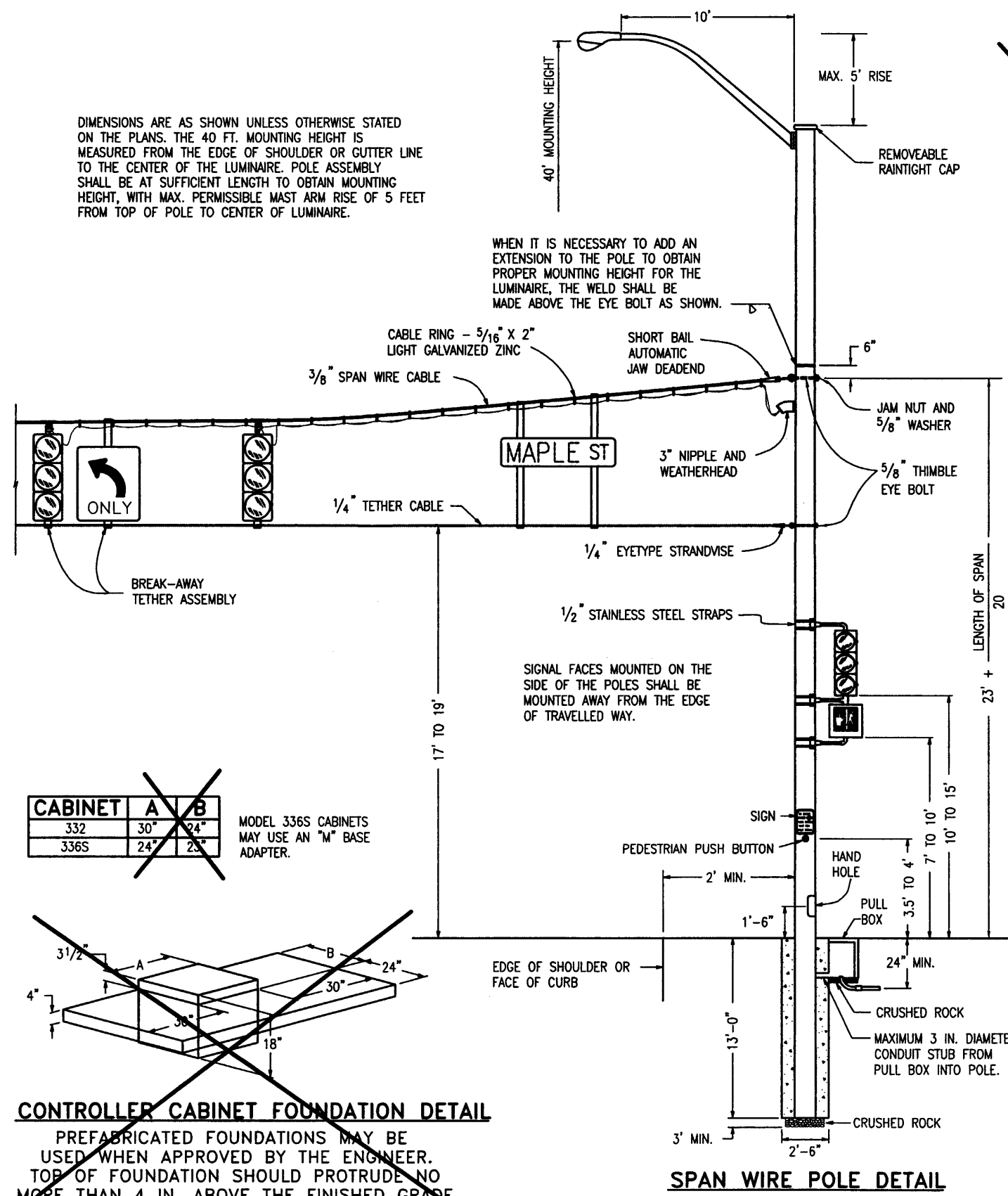
**GROUND MOUNTED  
 SIGN SUPPORT DETAILS**  
 Issued By: Traffic Engineering Unit October 28, 2002

Project Detail No.  
 614-8 **372B**  
 Sheet No. 4 of 4



~~—SPAN WIRE AND PEDESTAL DETAILS—~~

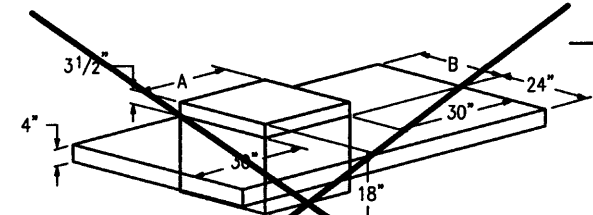
DIMENSIONS ARE AS SHOWN UNLESS OTHERWISE STATED ON THE PLANS. THE 40 FT. MOUNTING HEIGHT IS MEASURED FROM THE EDGE OF SHOULDER OR GUTTER LINE TO THE CENTER OF THE LUMINAIRE. POLE ASSEMBLY SHALL BE AT SUFFICIENT LENGTH TO OBTAIN MOUNTING HEIGHT, WITH MAX. PERMISSIBLE MAST ARM RISE OF 5 FEET FROM TOP OF POLE TO CENTER OF LUMINAIRE.



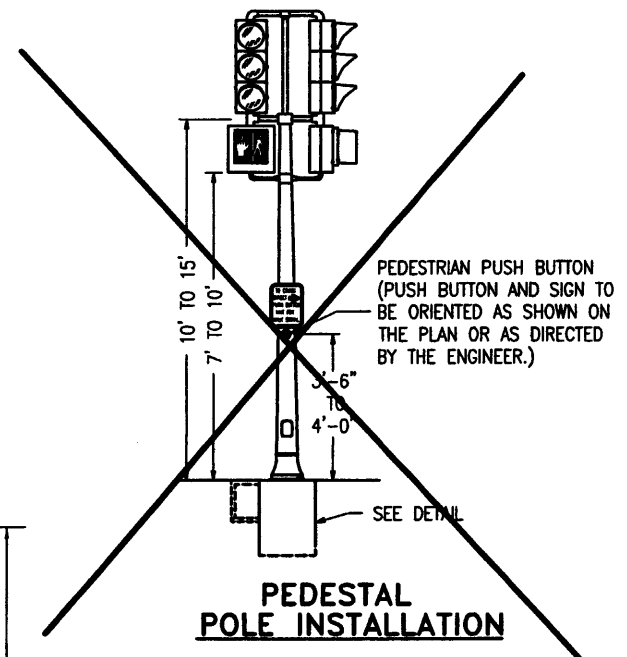
**SPAN WIRE POLE DETAIL**

CABINET	A	B
332	30"	24"
336S	24"	23"

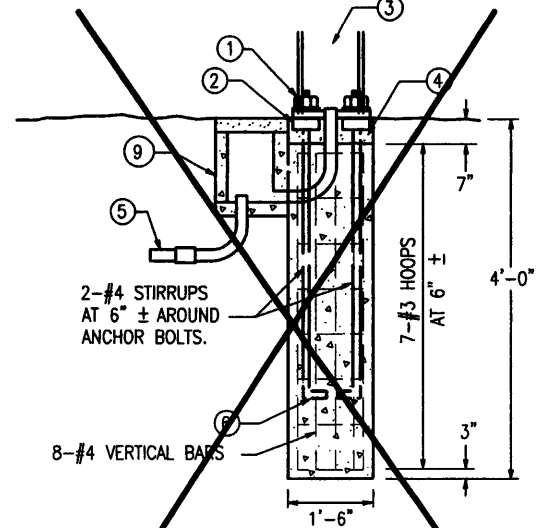
MODEL 336S CABINETS MAY USE AN "M" BASE ADAPTER.



**CONTROLLER CABINET FOUNDATION DETAIL**  
 PREFABRICATED FOUNDATIONS MAY BE USED WHEN APPROVED BY THE ENGINEER. TOP OF FOUNDATION SHOULD PROTRUDE NO MORE THAN 4 IN. ABOVE THE FINISHED GRADE.



**PEDESTAL POLE INSTALLATION**



**PEDESTAL POLE FOOTING**

**GENERAL NOTES**

1. TRAFFIC SIGNAL POLES SHALL BE DESIGNED TO MEET THE REQUIREMENTS OUTLINED IN THE "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", PUBLISHED BY AASHTO, FOR A WIND VELOCITY OF 90 MPH.
2. SPAN WIRE POLES SHALL BE FABRICATED OF STEEL WITH A MINIMUM DIAMETER OF 12", A MINIMUM YIELD STRENGTH OF 35 KSI AND A MINIMUM WEIGHT PER LINEAR FOOT OF 49.56 LBS. POLES SHALL BE INSTALLED SO THAT THEY WILL BE PLUMB WHEN DEFLECTED BY THE INSTALLED LOAD.
3. ALL STEEL PEDESTAL POLE MEMBERS SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A123 EQUIVALENT TO 2 OZ. PER SQUARE FOOT INSIDE AND OUT. STEEL SPAN WIRE POLES SHALL BE PAINTED AS DIRECTED.
4. SPAN WIRE SHALL BE STRUNG TAUT SO NO MORE THAN 5% SAG IS ENCOUNTERED WHEN SIGNAL HEADS ARE INSTALLED.
5. THE ITEM TRAFFIC SIGNAL-LIGHT SPAN WIRE POLE SHALL INCLUDE THE EXTENSION OF THE POLE AND THE ARM FOR THE MOUNTING OF THE LUMINAIRE.
6. SIGNAL FACES SUSPENDED OVER ROADWAY SHOULD BE APPROXIMATELY THE SAME LEVEL ABOVE ROADWAY GRADE.
7. MOUNTING HARDWARE FOR EACH TRAFFIC SIGNAL WILL BE FURNISHED BY THE MANUFACTURER, INCLUDING POLE PLATES FOR SIDE POLE MOUNTING.
8. SERVICE ENTRANCE FITTINGS SHALL BE 3 IN. GALVANIZED, THREADED NO. WRG.
9. LUMINAIRE ARMS SHALL BE EQUIPPED WITH A STANDARD 2 IN. SLIPFITTER.
10. PEDESTAL TYPE POLES FOR TOP MOUNTED SIGNAL OR CONTROL CABINET SHALL BE 4 IN. IN DIA. AND SHALL HAVE A FRANGIBLE BASE.
11. ALL POLES, PEDESTALS AND CABINETS SHALL BE PLACED A MINIMUM OF 2 FEET OFF THE ROADWAY MEASURED FROM THE EDGE OF SHOULDER OR FACE OF CURB.
12. CONCRETE SHALL BE CLASS BZ.

**FOOTING NOTES**

- |  |   |
|--|---|
| ① HEX NUTS   | ⑥ INSTALL ANCHOR BOLTS (FURNISHED WITH POLE) PER MANUFACTURER'S TEMPLATE PRINT (FURNISHED WITH ORDER)   |
| ② SQUARE NUTS  | ⑦ MINIMUM OVERLAP OF 12 IN.   |
| ③ HAND HOLE SHALL BE PROVIDED  | ⑧ 1-1/2 IN. CLEARANCE FOR HOOPS   |
| ④ 4 IN. MIN. NON-SHRINKABLE GROUT OVER ROUGH FOUNDATION  | ⑨ PULL BOX  |
| ⑤ RIGID CONDUIT (24 IN. MIN. DEPTH, 30 IN. MIN. DEPTH UNDER ROADWAY) CONDUIT STUB FROM PULL BOX TO POLE SHALL BE 3 IN. DIAMETER. | CAISSON DESIGNS REQUIRE THAT THE CAISSON BE FOUNDED IN COMPACT SAND, CLAY OR SANDY CLAY. IF, BY VISUAL INSPECTION OF THE HOLE, OTHER MATERIAL IS PRESENT, THE CAISSON DESIGN SHALL BE MODIFIED AS DETERMINED BY THE ENGINEER. |

Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9436 FAX: (303) 757-9219 Safety & Traffic Engineering Branch KA	Computer File Information Path: <a href="http://www.dot.state.co.us/DevelopProjects/DesignSupport/SSStandards">www.dot.state.co.us/DevelopProjects/DesignSupport/SSStandards</a> Drawing File Name: S614400107.dwg (Staff Bridge, RLO) Acad Version: R15.0 Scale: NA Units: English	Standard Plan Revised Date: _____ Comments: _____	<b>TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS</b>	STANDARD PLAN NO. S-614-40372C
	Issued By: Traffic Engineering Unit March 18, 2002			Sheet No. 1 of 7

**TABULATION OF TRAFFIC SIGNAL QUANTITIES**

ITEM NO.	ITEM DESCRIPTION	UNIT	CITY OF WESTMINSTER			INTERCHANGE			CITY OF THORNTON			TOTAL
			136TH AVE./ HURON ST.	136TH AVE. ACCESS ROAD WEST OF I-25	INTERCONNECT	136TH AVE./SB I-25 RAMPS	136TH AVE./NB I-25 RAMPS	INTERCONNECT	136TH AVE. ACCESS ROAD EAST OF I-25	136TH AVE. / WASHINGTON ST.	INTERCONNECT	
202	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	-	-	-	-	-	-	-	1	-	1
210	RESET FIRE PREEMPTION UNIT AND TIMER	EACH	-	-	-	-	-	-	-	2	-	2
613	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	115	415	2,085	110	105	345	150	-	1,990	5,315
613	3 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	25	160	-	670	635	-	830	950	-	3,270
614	PEDESTRIAN SIGNAL FACE (16) (COUNT DOWN TYPE)	EACH	2	-	-	8	6	-	-	8	-	22
614	TRAFFIC SIGNAL FACE (12-12-12)	EACH	-	-	-	13	13	-	-	23	-	49
614	TRAFFIC SIGNAL FACE (12-12-12)(L.E.D. TYPE)	EACH	12	-	-	-	-	-	-	-	-	12
614	TRAFFIC SIGNAL FACE (12-12-12-12)	EACH	4	-	-	-	-	-	-	-	-	4
614	TRAFFIC SIGNAL CONTROLLER CABINET (NEMA P TS2 TYPE 1)	EACH	1	-	-	-	-	-	-	-	-	1
614	TRAFFIC SIGNAL CONTROLLER CABINET (MODEL 333SD)	EACH	-	-	-	1	1	-	-	1	-	3
614	PEDESTRIAN PUSH BUTTON <sup>1</sup>	EACH	2	-	-	-	-	-	-	-	-	2
614	PEDESTRIAN PUSH BUTTON STATION <sup>2</sup>	EACH	-	-	-	6	6	-	-	8	-	20
614	FIRE PREEMPTION UNIT AND TIMER	EACH	2	-	-	1	1	-	-	-	-	4
614	INTERSECTION DETECTION SYSTEM (CAMERA)	EACH	4	-	-	3	3	-	-	4	-	14
614	TEST FIBER OPTIC CABLE	LS	0.25	-	-	0.25	0.25	-	-	0.25	-	1
614	FIBER OPTIC CABLE (SINGLE MODE) (12 STRAND)	LF	-	-	2,585	-	-	1,240	-	-	2,800	6,625
614	TERMINATE FIBER OPTIC CABLE	EACH	1	-	-	1	1	-	-	1	-	4
614	PEDESTRIAN PUSH BUTTON POLE (3 FEET 6 INCH)	EACH	-	-	-	-	-	-	-	1	-	1
614	TRAFFIC SIGNAL-SPAN WIRE POLE (12 INCH)	EACH	4	-	-	-	-	-	-	-	-	4
614	TRAFFIC SIGNAL-LIGHT POLE STEEL (1 MAST ARM)	EACH	-	-	-	3	3	-	-	4	-	10
614	TRAFFIC SIGNAL PEDESTAL POLE STEEL	EACH	-	-	-	1	1	-	-	-	-	2
614	TRAFFIC SIGNAL CONTROLLER (MASTER)	EACH	1	-	-	-	-	-	-	-	-	1
614	TRAFFIC SIGNAL CONTROLLER (NEMA) (ASC/2S-2100)	EACH	1	-	-	-	-	-	-	-	-	1
614	TRAFFIC SIGNAL CONTROLLER (8 PHASE) (170E)	EACH	-	-	-	1	1	-	-	1	-	3
614	TELEPHONE SERVICE CONDUIT AND CABLE	LS	0.33	0.33	0.34	-	-	-	-	-	-	1

ITEM 202, REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL NOT BE INCLUDED IN ITEM 202, REMOVAL OF STRUCTURES AND OBSTRUCTIONS BUT SHALL BE PAID FOR SEPARATELY.

<sup>1</sup>INCLUDES PEDESTRIAN PUSH BUTTON SIGN

<sup>2</sup>INCLUDES PEDESTRIAN PUSH BUTTON SIGN AND PEDESTRIAN PUSH BUTTON.

**GENERAL NOTES**

- CONDUIT, POLE, DETECTOR AND CONTROLLER LOCATIONS ARE APPROXIMATE. EXACT LOCATION SHALL BE DETERMINED BY EACH GOVERNING AGENCY IN THE FIELD. TRAFFIC SIGNAL POLES AND MAST ARMS SHALL NOT BE ORDERED UNTIL EXACT LOCATION OF POLE BASES IS FIELD VERIFIED.
- ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY DAMAGES WHICH MAY OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- PAYMENT SHALL BE MADE ONLY FOR ITEMS IN THE PAY ITEM LIST. ALL OTHER ITEMS SHALL BE CONSIDERED INCIDENTAL TO THE WORK.
- MAST ARM SIGNAL HEADS SHALL BE MOUNTED APPROXIMATELY LEVEL WITH ONE ANOTHER, WITH A 17 TO 19 FOOT CLEARANCE ABOVE PAVEMENT GRADE AT ITS HIGHEST ELEVATION.
- THE CONTRACTOR SHALL PROVIDE THE GOVERNING AGENCY WITH AT LEAST FOUR (4) SETS OF EQUIPMENT SPECIFICATIONS/ DESCRIPTIONS AND OBTAIN APPROVALS BEFORE ORDERING EQUIPMENT.
- THE CITY OF THORNTON TRAFFIC SIGNAL DESIGN STANDARDS SHALL APPLY TO THE FOLLOWING INTERSECTIONS:
  - 136TH AVENUE / I-25 SB RAMP TERMINAL
  - 136TH AVENUE / I-25 NB RAMP TERMINAL
  - 136TH AVENUE / ACCESS EAST OF I-25
  - 136TH AVENUE / WASHINGTON STREET
  - TRAFFIC SIGNAL INTERCONNECT FROM HURON ST. TO WASHINGTON ST.
- THE CITY OF WESTMINSTER TRAFFIC SIGNAL DESIGN STANDARDS SHALL APPLY TO THE FOLLOWING INTERSECTIONS:
  - 136TH AVENUE / HURON STREET
  - 136TH AVENUE / FUTURE ACCESS WEST OF I-25
- THE ITEMS TRAFFIC SIGNAL-SPAN WIRE POLE AND TRAFFIC SIGNAL-LIGHT POLE STEEL SHALL INCLUDE THE EXTENSION OF THE POLE AND THE ARM FOR MOUNTING OF THE LUMINAIRE. THE INSTALLATION OF THE LUMINAIRE WILL BE CONDUCTED BY XCEL ENERGY.
- ADDITIONAL PULL BOXES MAY BE PLACED ALONG THE INTERCONNECT CONDUIT TO FACILITATE PULLING OF FIBER OPTIC CABLE. PULL BOXES SHALL BE CONSIDERED INCIDENTAL TO THE WORK.
- ALL INTERCONNECT CONDUIT SHALL CONTAIN #10 TRACER WIRE AND PULL ROPE. TRACER WIRE AND PULL ROPE SHALL BE INCLUDED IN THE COST OF THE CONDUIT.

**THORNTON NOTES**

- EXCEPT AS MODIFIED IN THE PLANS, ALL WORK SHALL BE IN ACCORDANCE WITH CITY OF THORNTON DESIGN STANDARDS. CONTRACTOR TO CONTACT THE CITY (GEORGE STANLEY, 303-538-7833) A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO STARTING TRAFFIC SIGNAL CONSTRUCTION.
- ALL TRAFFIC SIGNAL HEADS SHALL BE POLYCARBONATE TYPE AND BLACK IN COLOR.
- THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR CONSTRUCTION TO THE CITY WITH THE PERMIT APPLICATION. A PUBLIC WAY WORK PERMIT WILL NOT BE ISSUED WITHOUT AN APPROVED TRAFFIC CONTROL PLAN FOR TRAFFIC CONTROL DURING CONSTRUCTION.
- ALL VEHICLE SIGNAL & PEDESTRIAN INDICATIONS SHALL BE APPROVED L.E.D. TYPE.
- ALL SIGNAL HEADS SHALL BE WIRED SEPARATELY FROM SIGNAL HEAD TO HANDHOLE ABOVE GRADE AT THE BASE OF EACH SIGNAL POLE WITH NO OVERHEAD SPLICES. A SEPARATE 19-CONDUCTOR CABLE SHALL RUN FROM THE CONTROLLER CABINET TO THE HANDHOLE AT EACH POLE.
- UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS, CORRECTED PLANS AND ANY ADDITIONAL DATA REQUIRED BY THE CITY SHOWING IN DETAIL ALL CONSTRUCTION CHANGES.
- ALL REMOVED SIGNS AND TRAFFIC SIGNAL EQUIPMENT SHALL BE SALVAGED AND DELIVERED TO THE CITY OF THORNTON AT 12450 N. WASHINGTON ST. (GEORGE STANLEY, 303-538-7833).
- ALL OVERHEAD TRAFFIC SIGNAL HEADS SHALL BE CENTERED OVER THE APPROACH THROUGH AND LEFT TURN LANES.
- PEDESTRIAN PUSH BUTTON SIGN (R10-3b) SHALL ACCOMPANY ALL PEDESTRIAN PUSH BUTTON STATIONS.
- MAST ARMS AND POLES AT THE WASHINGTON STREET/136TH AVENUE INTERSECTION SHALL BE MOCHA BROWN IN COLOR. MAST ARM AND POLES AT THE I-25 NORTHBOUND AND SOUTHBOUND RAMP INTERSECTIONS SHALL BE BLACK IN COLOR.

**WESTMINSTER NOTES**

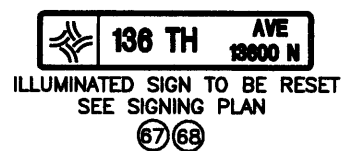
- TRAFFIC SIGNAL MATERIALS AND INSTALLATION SHALL COMPLY WITH THE "CITY OF WESTMINSTER TRAFFIC SIGNAL SPECIFICATIONS", LATEST EDITION, AS MODIFIED BY THE PLANS AND SPECIFICATIONS, AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION, PLUS ALL LOCAL ORDINANCES AND REGULATIONS. EXCEPT THE COLORADO DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" 1999 SHALL APPLY TO THE INSTALLATION OF SPAN WIRE POLES, FOUNDATIONS AND SPAN WIRE CABLE AT THE HURON STREET/136TH AVENUE INTERSECTION.
- ALL PUBLIC WAY WORK PERMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ALL WORK THAT IMPACTS TRAFFIC SHALL BE COMPLETED ON WEEKDAYS ONLY BETWEEN THE HOURS OF 8:30 AM AND 3:30 PM.
- FINAL LOCATION OF PULL BOXES TO BE APPROVED BY THE CITY. PULL BOXES NOT TO BE PLACED IN SIDEWALK OR CURB RAMPS.
- NEW 3" CONDUIT SHALL CARRY 120 V. LOAD WIRING ONLY. 2" CONDUIT SHALL CARRY LOW VOLTAGE DETECTOR AND LUMINAIRE WIRING IN SEPARATE CONDUITS.
- ALL TRAFFIC SIGNAL VEHICLE HEADS SHALL BE CENTERED OVER THE APPROACH, THROUGH AND LEFT TURN LANES.
- ALL NEW SIGNAL HEADS SHALL BE L.E.D. TYPE, POLYCARBONATE AND BLACK IN COLOR. MAST ARM SIGNAL HEADS SHALL UTILIZE ASTRO-BRAC'S. ALL VEHICLE SECTION HEADS SHALL BE 12" WITH TUNNEL VISORS.
- PAVEMENT TRENCHING FOR CONDUIT SHALL BE BACKFILLED WITH CONCRETE OR APPROVED FLOW FILL AND CAPPED WITH 6" OF GRADE "S" ASPHALTIC PAVEMENT.
- UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS, CORRECTED PLANS AND ANY ADDITIONAL DATA REQUIRED BY THE CITY SHOWING IN DETAIL ALL CONSTRUCTION CHANGES.
- CONTRACTOR TO CONTACT THE CITY OF WESTMINSTER (GREG OLSON, 430-2400, EXT. 2145) A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO STARTING TRAFFIC SIGNAL CONSTRUCTION.
- PEDESTRIAN PUSH BUTTON SIGN (R10-4b) (DECAL TYPE) SHALL ACCOMPANY ALL PEDESTRIAN PUSH BUTTONS.
- TRAFFIC SIGNAL SPAN WIRE POLES SHALL BE FEDERAL GREEN IN COLOR. ALSO, THE SPAN WIRE CABLE SHALL BE INCLUDED IN THE COST OF THE SPAN WIRE POLES.
- AN UNINTERRUPTED POWER SUPPLY (UPS) SYSTEM SHALL BE INCLUDED WITH THE TRAFFIC SIGNAL CONTROLLER CABINET (NEMA P TS2 TYPE1) AS SPECIFIED BY THE CABINET MANUFACTURER.



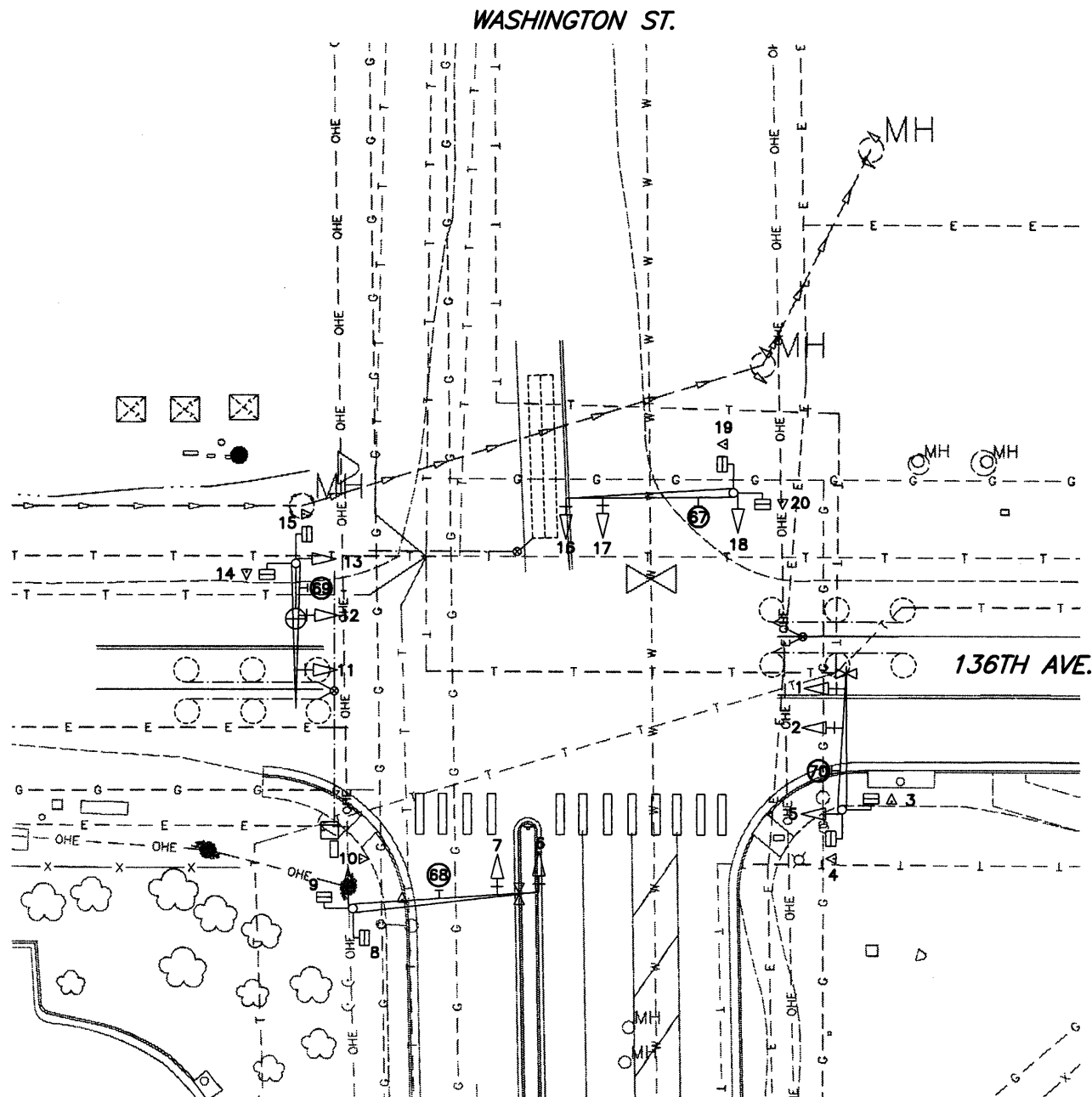
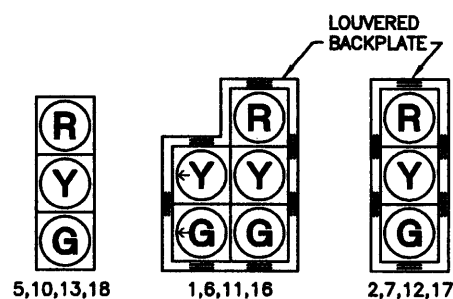
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<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b>		<b>Project No./Code</b>
Creation Date:	04/24/01 Initials: JGF	<input type="checkbox"/>			<b>No Revisions:</b>	<b>GENERAL NOTES</b>		97-71
Last Modification Date:	01/07/03 Initials: DRS	<input type="checkbox"/>			<b>Revised:</b>	Designer:	TSF	
Full Path:	J:\00033\Acad\Sheet\	<input type="checkbox"/>			<b>Void:</b>	Detailer:	LW	
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Acad Ver. 2000i	Scale: NONE Units: English	<input type="checkbox"/>					Sheet Number <b>373</b>	

SIGNS - FOR INFORMATION ONLY



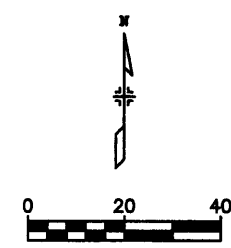
SIGNAL HEADS



FIRE PREEMPTION UNIT AND TIMER AND ILLUMINATED SIGNS TO BE RESET: ALL REMAINING TRAFFIC SIGNAL EQUIPMENT ON THIS SHEET IS TO BE REMOVED.

LEGEND

- | EXISTING | ITEM                                  |
|----------|---------------------------------------|
|          | TRAFFIC SIGNAL POLE WITH MAST ARM     |
|          | TRAFFIC SIGNAL FACE WITH BACKPLATE    |
|          | TRAFFIC SIGNAL FACE                   |
|          | PEDESTRIAN SIGNAL FACE                |
|          | PEDESTRIAN PUSH BUTTON AND SIGN       |
|          | TRAFFIC SIGNAL CONTROLLER AND CABINET |
|          | PULL BOX                              |
|          | PULL BOX - SPECIAL                    |
|          | CONDUIT - PVC SCHEDULE 80             |
|          | VEHICLE LOOP DETECTOR (6'X40')        |
|          | MAST ARM MOUNTED SIGN                 |
|          | FIRE PREEMPTION UNIT AND TIMER        |
|          | LUMINAIRE                             |

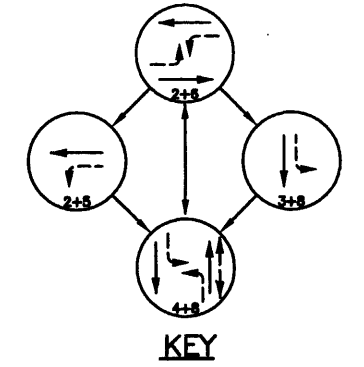


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Computer File Information		Index of Revisions		<p>FELSBURG HOLT &amp; ULLEVIG</p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	As Constructed	136TH AVENUE/ WASHINGTON STREET EXISTING SIGNALIZATION PLAN		Project No./Code
Creation Date:	03/06/01 Initials: JGF				No Revisions:			97-71
Last Modification Date:	11/21/02 Initials: DRS				Revised:	Designer: TSF		
Full Path:	J:\00033\Acad\Sheet\				Void:	Detailer: LW		
Drawing File Name:	T00033SSS27.DWG					Sheet Subset: SIGNAL	Subset Sheets: SG-02 of 10	Sheet Number 374
Acad Ver. 2000i	Scale: 1"=40' Units: English							

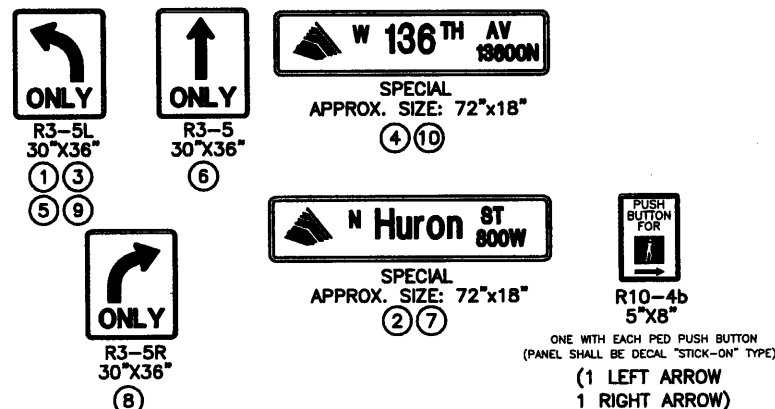
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**SIGNAL PHASING**

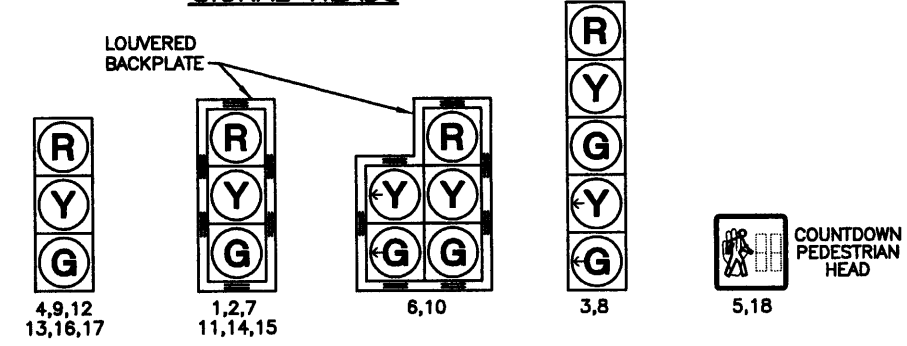


**KEY**  
 ← PROTECTED PHASE MOVEMENT  
 ↙ PERMISSIVE LEFT TURN  
 ⇄ PEDESTRIAN MOVEMENT

**SIGNS (FOR INFORMATION ONLY)**



**SIGNAL HEADS**

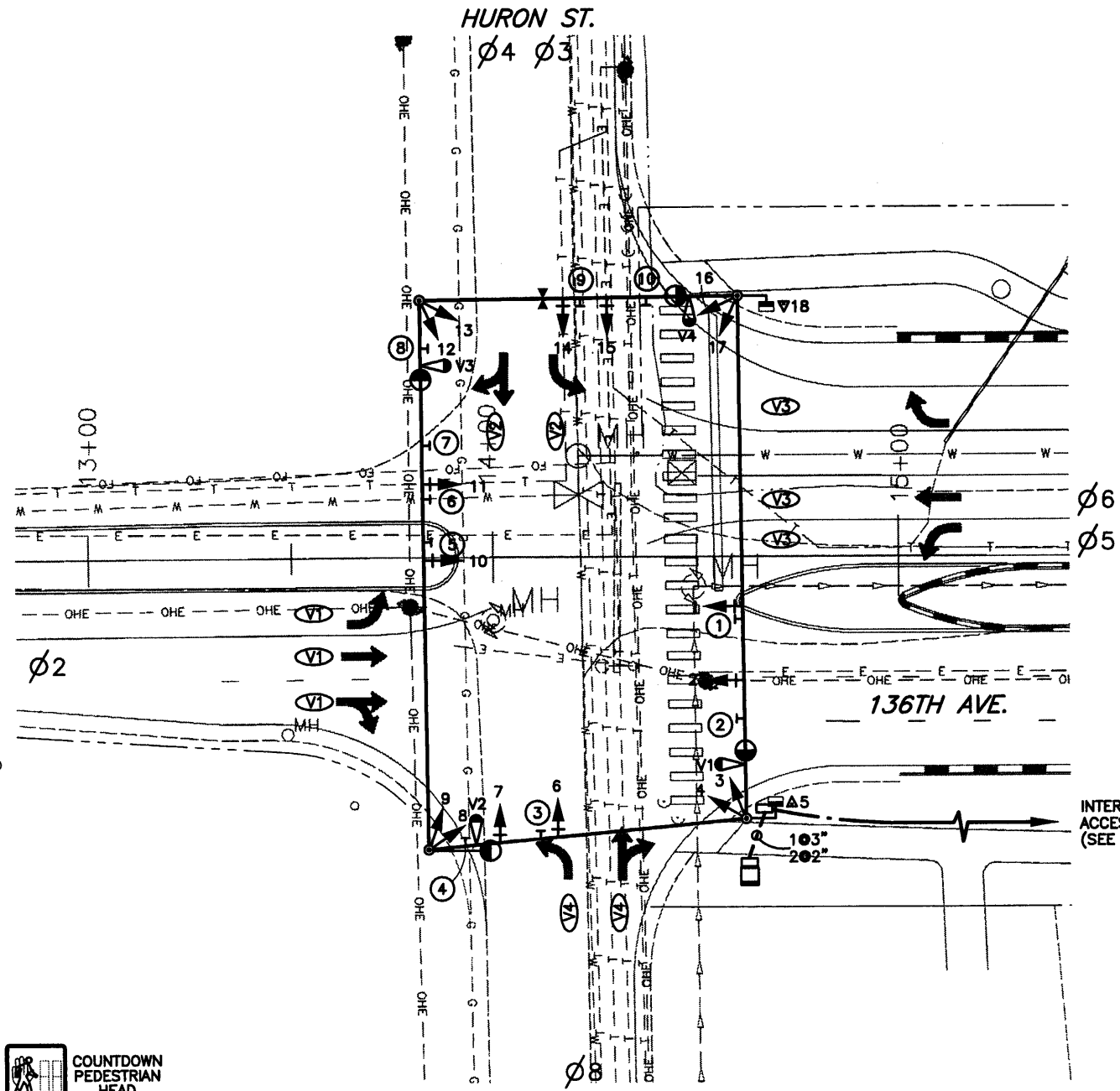


ALL VEHICLE SIGNAL HEADS SHALL BE POLYCARBONATE WITH 12" SECTIONS AND TUNNEL VISORS.  
 ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS SHALL BE BLACK IN COLOR.  
 ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE APPROVED L.E.D. TYPE  
 SPAN WIRE POLES SHALL BE FEDERAL GREEN IN COLOR.

**LEGEND**

- | PROPOSED | ITEM                                  |
|----------|---------------------------------------|
| ⊙        | TRAFFIC SIGNAL SPAN WIRE POLE         |
| →        | TRAFFIC SIGNAL FACE WITH BACKPLATE    |
| →        | TRAFFIC SIGNAL FACE                   |
| ⇄        | PEDESTRIAN SIGNAL FACE                |
| ▶        | PEDESTRIAN PUSH BUTTON AND SIGN       |
| □        | TRAFFIC SIGNAL CONTROLLER AND CABINET |
| □        | PULL BOX - TYPE I (30"x18")           |
| ---      | CONDUIT - PVC SCHEDULE 80             |
| ⊥        | SPAN WIRE MOUNTED SIGN                |
| ▶        | FIRE PREEMPTION UNIT AND TIMER        |
| ⊙        | LUMINAIRE (15 FOOT ARM EXTENSION)     |
| ◁ V1     | VIDEO IMAGE VEHICLE DETECTOR          |
| ○ V1     | VIDEO DETECTOR ZONE                   |

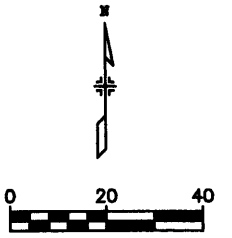
C.D.O.T. "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" 1999 SHALL APPLY TO INSTALLATION OF SPAN WIRE POLES AND SPAN WIRE CABLE (SEE SPAN WIRE INSTALLATION DETAILS). ALL OTHER TRAFFIC SIGNAL MATERIALS AND INSTALLATION SHALL COMPLY WITH "CITY OF WESTMINSTER TRAFFIC SIGNAL SPECIFICATIONS".



LANE ARROWS SHOWN FOR INFORMATION ONLY

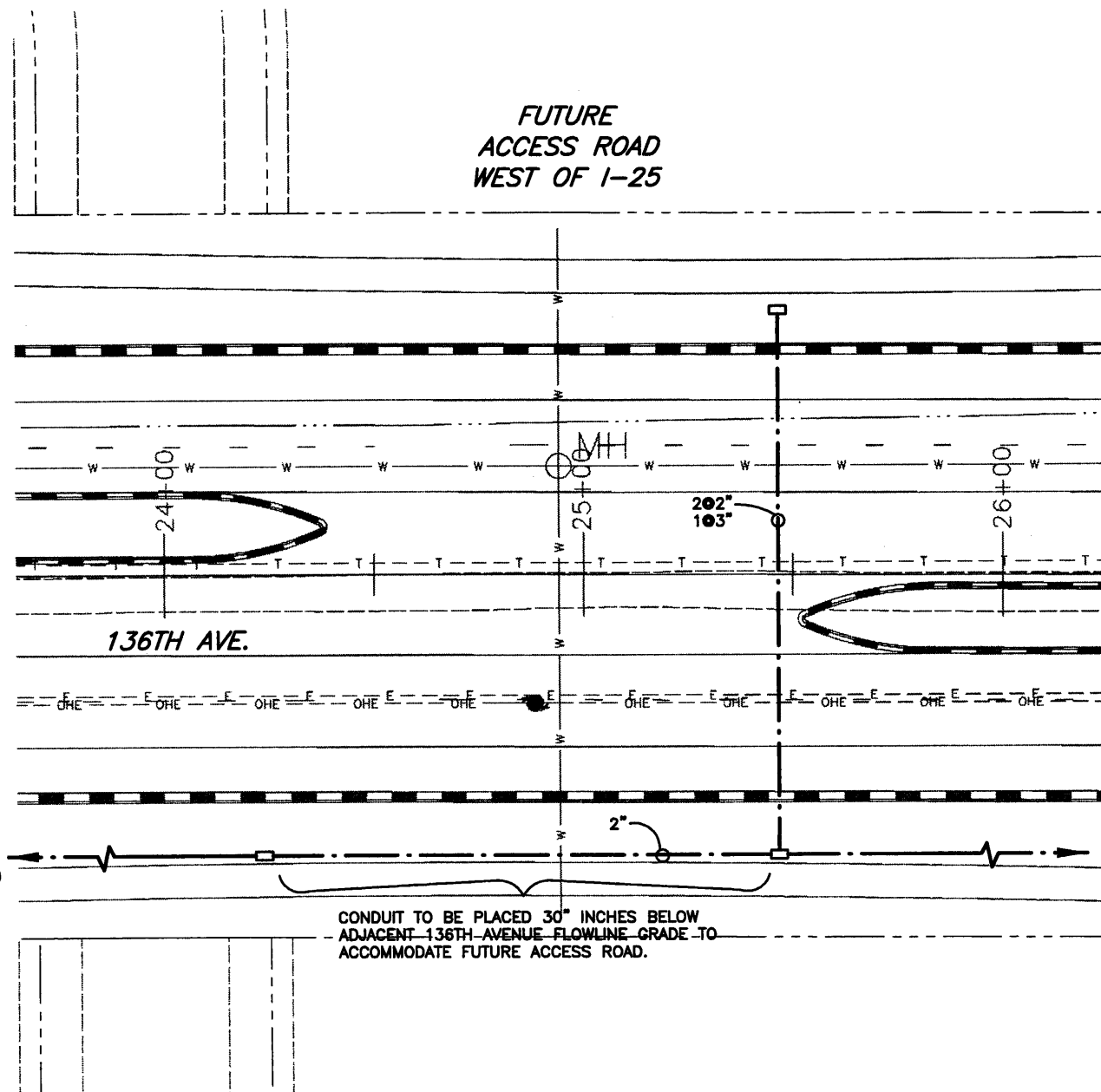
INTERCONNECT CONDUIT TO ACCESS WEST OF 1-25 (SEE SHEET SG-09 OF 10)

CALL UNCC  
 TWO WORKING DAYS  
 BEFORE YOU DIG  
 1-800-922-1987  
 METRO DENVER AREA  
 UTILITY NOTIFICATION CENTER OF COLORADO



<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440                  fax 303.721.0832                  fhu@fhueng.com</p> <p>Greenwood Corporate Plaza                  7951 E. Maplewood Ave. Ste. 200                  Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE / HURON STREET SIGNALIZATION PLAN</b>		<b>Project No./Code</b>
Creation Date:	03/06/01 Initials: JGF				No Revisions:			97-71
Last Modification Date:	12/16/02 Initials: JGF				Revised:	Designer: TSF		
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Acad Ver. 2000i	Scale: 1"=40' Units: English							

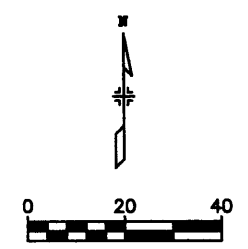
J:\00033\acad\sheet\T00033SSS22.dwg, 12/16/02 02:40:55 PM, James



**LEGEND**

PROPOSED	ITEM
□	LARGE PULL BOX - TYPE I (30"x18")
- - - - -	CONDUIT - PVC SCHEDULE 80

CITY OF WESTMINSTER  
STANDARDS & SPECIFICATIONS  
APPLY TO ALL TRAFFIC SIGNAL  
MATERIALS AND INSTALLATION.

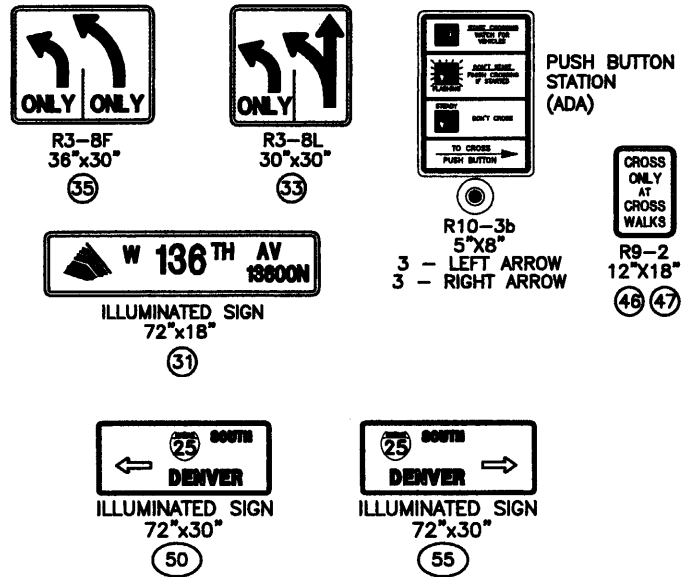


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METRO DENVER AREA  
UTILITY NOTIFICATION CENTER OF COLORADO

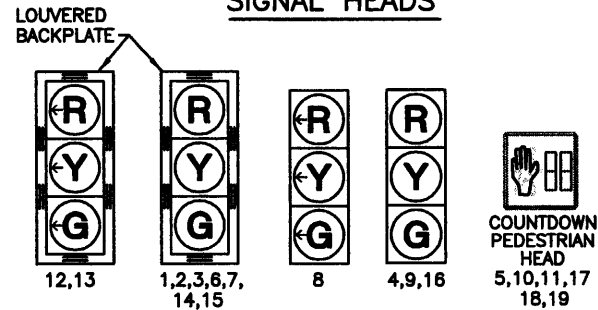
<b>Computer File Information</b>		<b>Index of Revisions</b>		<b>FELSBURG HOLT &amp; ULLEVIG</b>	303.721.1440 fax 303.721.0832 fhu@fhueng.com  Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	<b>136TH AVENUE/ACCESS ROAD WEST OF I-25 CONDUIT PLAN</b>		<b>Project No./Code</b>
Creation Date:	03/06/01 Initials: JGF	○				No Revisions:			97-71
Last Modification Date:	12/16/02 Initials: JGF	○				Revised:	Designer: TSF		
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Drawing File Name:	T00033SSS22.dwg	○				Sheet Subset:	SIGNAL	Subset Sheets:	SS-04 of 10
Acad Ver. 2000i	Scale: 1"=40' Units: English	○							

CONTACT GEORGE STANLEY (303-538-7633) AT THE CITY OF THORNTON FOR SIGNAL PHASING.

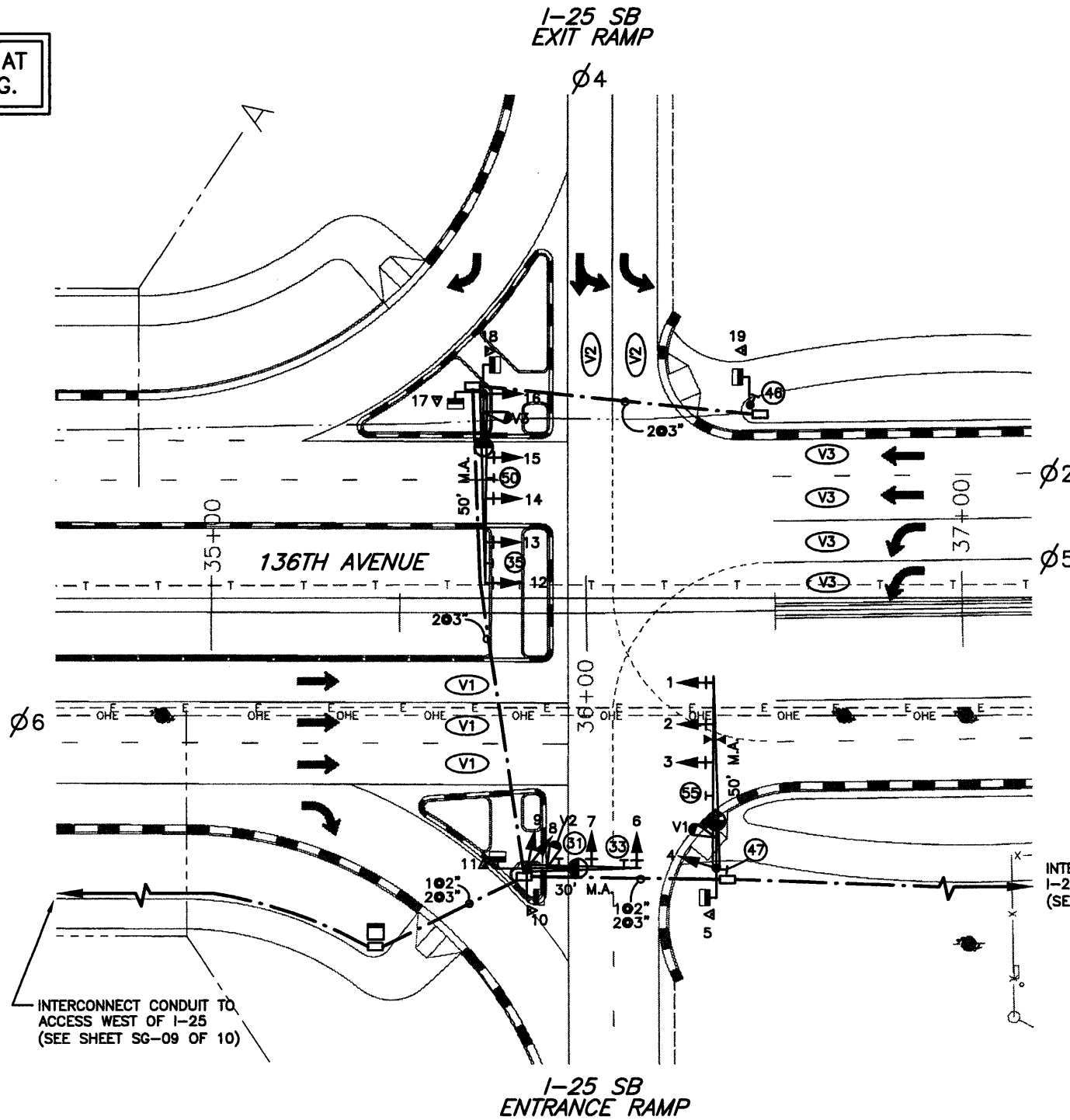
**SIGNS (FOR INFORMATION ONLY)**



**SIGNAL HEADS**



ALL VEHICLE SIGNAL HEADS SHALL BE POLYCARBONATE WITH 12" SECTIONS AND TUNNEL VISORS.  
 ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS AND ALL TRAFFIC SIGNAL AND PEDESTAL POLES SHALL BE BLACK IN COLOR.  
 ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE APPROVED L.E.D. TYPE.



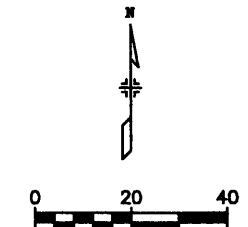
LANE ARROWS SHOWN FOR INFORMATION ONLY

**LEGEND**

- | PROPOSED | ITEM                                  |
|----------|---------------------------------------|
|          | TRAFFIC SIGNAL POLE WITH MAST ARM     |
|          | TRAFFIC SIGNAL PEDESTAL POLE          |
|          | TRAFFIC SIGNAL FACE WITH BACKPLATE    |
|          | TRAFFIC SIGNAL FACE                   |
|          | PEDESTRIAN SIGNAL FACE                |
|          | PEDESTRIAN PUSH BUTTON AND SIGN       |
|          | TRAFFIC SIGNAL CONTROLLER AND CABINET |
|          | PULL BOX (33"x20"x15"d)               |
|          | CONDUIT - PVC SCHEDULE 80             |
|          | MAST ARM OR POLE MOUNTED SIGN         |
|          | FIRE PREEMPTION UNIT AND TIMER        |
|          | LUMINAIRE (15 FOOT ARM EXTENSION)     |
|          | VIDEO IMAGE VEHICLE DETECTOR          |
|          | VIDEO DETECTOR ZONE                   |

CITY OF THORNTON TRAFFIC SIGNAL SPECIFICATIONS APPLY TO ALL TRAFFIC SIGNAL MATERIALS AND INSTALLATION.

INTERCONNECT CONDUIT TO I-25 NORTHBOUND RAMPS (SEE SHEET SG-09 OF 10)



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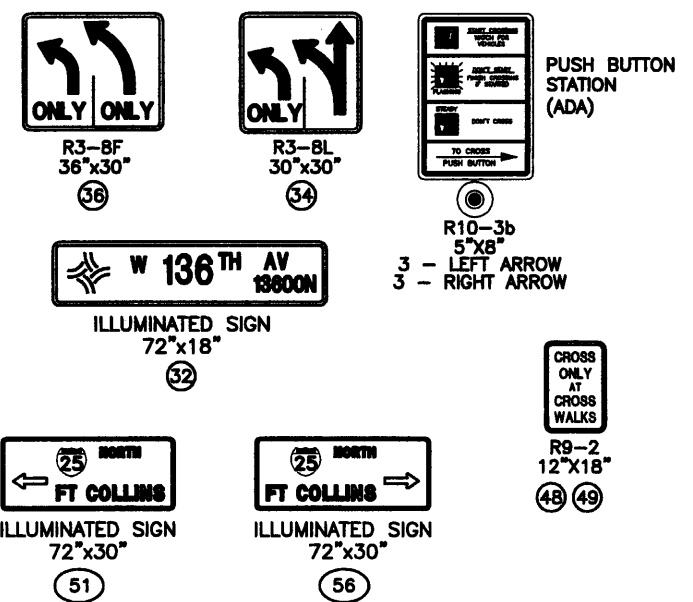


Computer File Information		Index of Revisions		As Constructed		136TH AVENUE / I-25 SB RAMPS SIGNALIZATION PLAN		Project No./Code	
Creation Date:	03/06/01 Initials: JGF			No Revisions:		Designer:	TSF	97-71	
Last Modification Date:	12/12/02 Initials: JGF			Revised:		Detailer:	LW		
Full Path:	J:\00033\Acad\Sheet\			Void:		Sheet Subset:	SIGNAL	Subset Sheets:	SG-05 of 10
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Acad Ver. 2000i	Scale: 1"=40' Units: English								

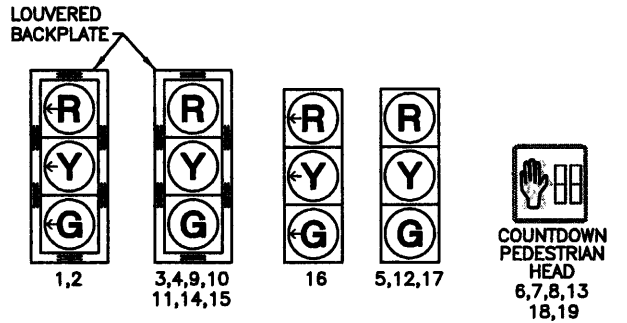
**FELSBURG HOLT & ULLEVIG**  
 303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com  
 Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

CONTACT GEORGE STANLEY (303-538-7633) AT THE CITY OF THORNTON FOR SIGNAL PHASING.

**SIGNS (FOR INFORMATION ONLY)**

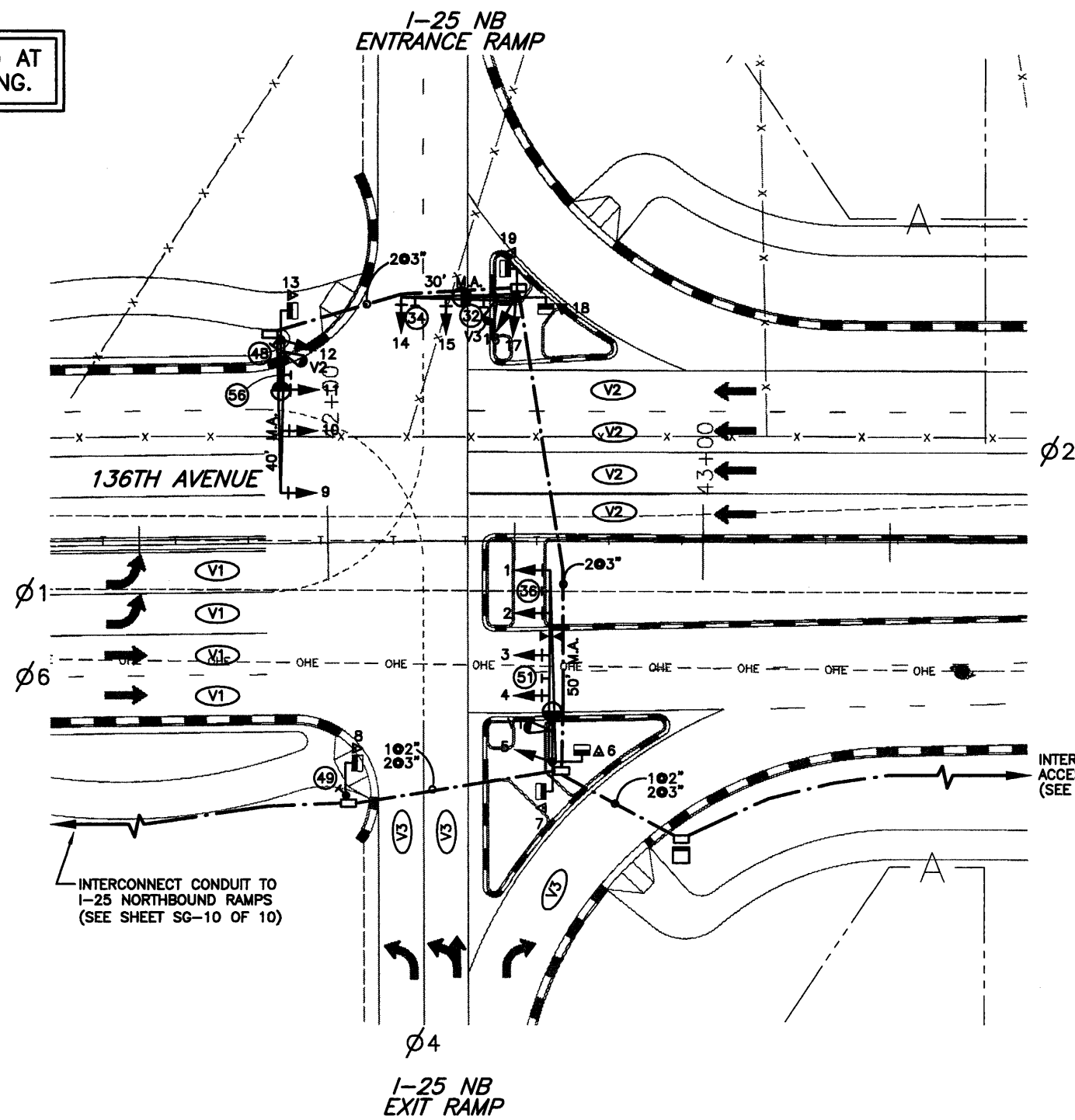


**SIGNAL HEADS**



ALL VEHICLE SIGNAL HEADS SHALL BE POLYCARBONATE WITH 12" SECTIONS AND TUNNEL VISORS.  
ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS AND ALL TRAFFIC SIGNAL AND PEDESTAL POLES SHALL BE BLACK IN COLOR.  
ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE APPROVED L.E.D. TYPE.

LANE ARROWS SHOWN FOR INFORMATION ONLY

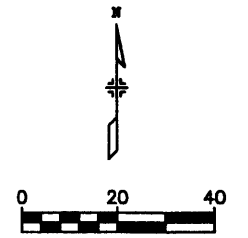


**LEGEND**

PROPOSED	ITEM
	TRAFFIC SIGNAL POLE WITH MAST ARM
	TRAFFIC SIGNAL PEDESTAL POLE
	TRAFFIC SIGNAL FACE WITH BACKPLATE
	TRAFFIC SIGNAL FACE
	PEDESTRIAN SIGNAL FACE
	PEDESTRIAN PUSH BUTTON AND SIGN
	TRAFFIC SIGNAL CONTROLLER AND CABINET
	PULL BOX (33"x20"x15"d)
	CONDUIT - PVC SCHEDULE 80
	MAST ARM OR POLE MOUNTED SIGN
	FIRE PREEMPTION UNIT AND TIMER
	LUMINAIRE (15 FOOT ARM EXTENSION)
	VIDEO IMAGE VEHICLE DETECTOR
	VIDEO DETECTION ZONE

CITY OF THORNTON TRAFFIC SIGNAL SPECIFICATIONS APPLY TO ALL TRAFFIC SIGNAL MATERIALS AND INSTALLATION.

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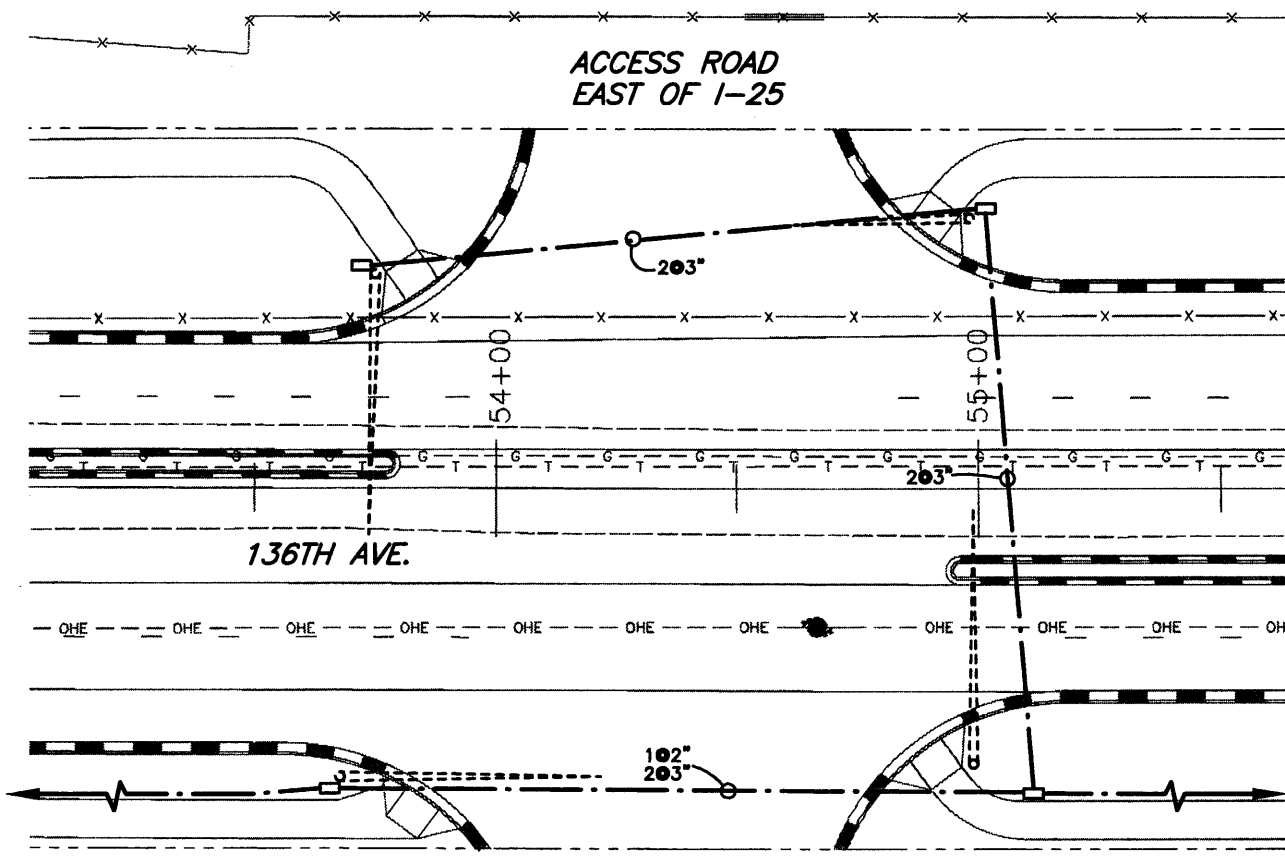
<b>Computer File Information</b>		<b>Index of Revisions</b>		 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	<b>136TH AVENUE/ I-25 NB RAMPS SIGNALIZATION PLAN</b>		<b>Project No./Code</b>
Creation Date:	03/06/01 Initials: LW				<b>No Revisions:</b>			97-71
Last Modification Date:	12/17/02 Initials: JGF				<b>Revised:</b>			
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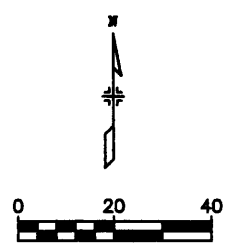
PROPOSED	ITEM
	FUTURE TRAFFIC SIGNAL POLE WITH MAST ARM
	PULL BOX (33"x20"x15"d)
	CONDUIT - PVC SCHEDULE 80

CITY OF THORNTON  
TRAFFIC SIGNAL SPECIFICATIONS  
APPLY TO ALL TRAFFIC SIGNAL  
MATERIALS AND INSTALLATION.



INTERCONNECT CONDUIT TO  
I-25 NORTHBOUND RAMPS  
(SEE SHEET SG-10 OF 10)

INTERCONNECT CONDUIT TO 136TH AVE. /  
WASHINGTON INTERSECTION  
(SEE SHEET SG-10 OF 10)



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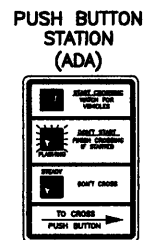
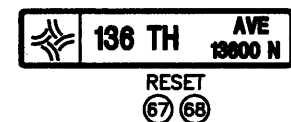
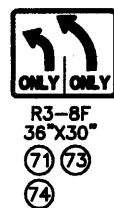


<b>Computer File Information</b>		<b>Index of Revisions</b>		<p><b>FELSBURG HOLT &amp; ULLEVIG</b></p> <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE/ ACCESS ROAD EAST OF I-25 CONDUIT PLAN</b>	<b>Project No./Code</b>	
Creation Date:	03/06/01 Initials: JGF				No Revisions:			97-71
Last Modification Date:	12/17/02 Initials: JGF				Revised:		Designer: TSF	
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Drawing File Name:	T00033SSS25.DWG						Sheet Subset: SIGNAL	Subset Sheets: SG-07 of 10
Acad Ver. 2000i	Scale: 1"=40' Units: English					Sheet Number <b>379</b>		

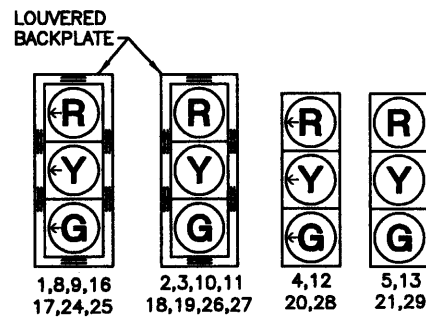


CONTACT GEORGE STANLEY (303-538-7633) AT THE CITY OF THORNTON FOR SIGNAL PHASING.

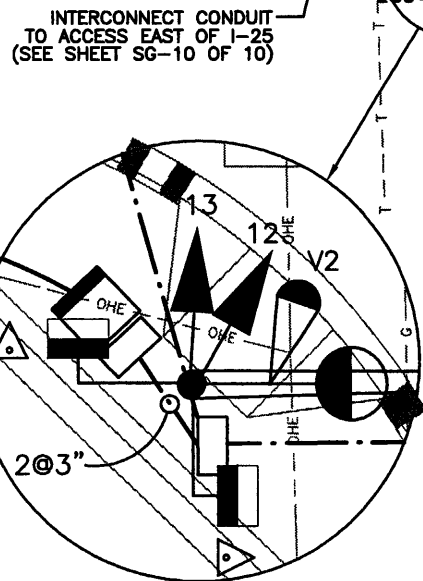
SIGNS (FOR INFORMATION ONLY)



SIGNAL HEADS



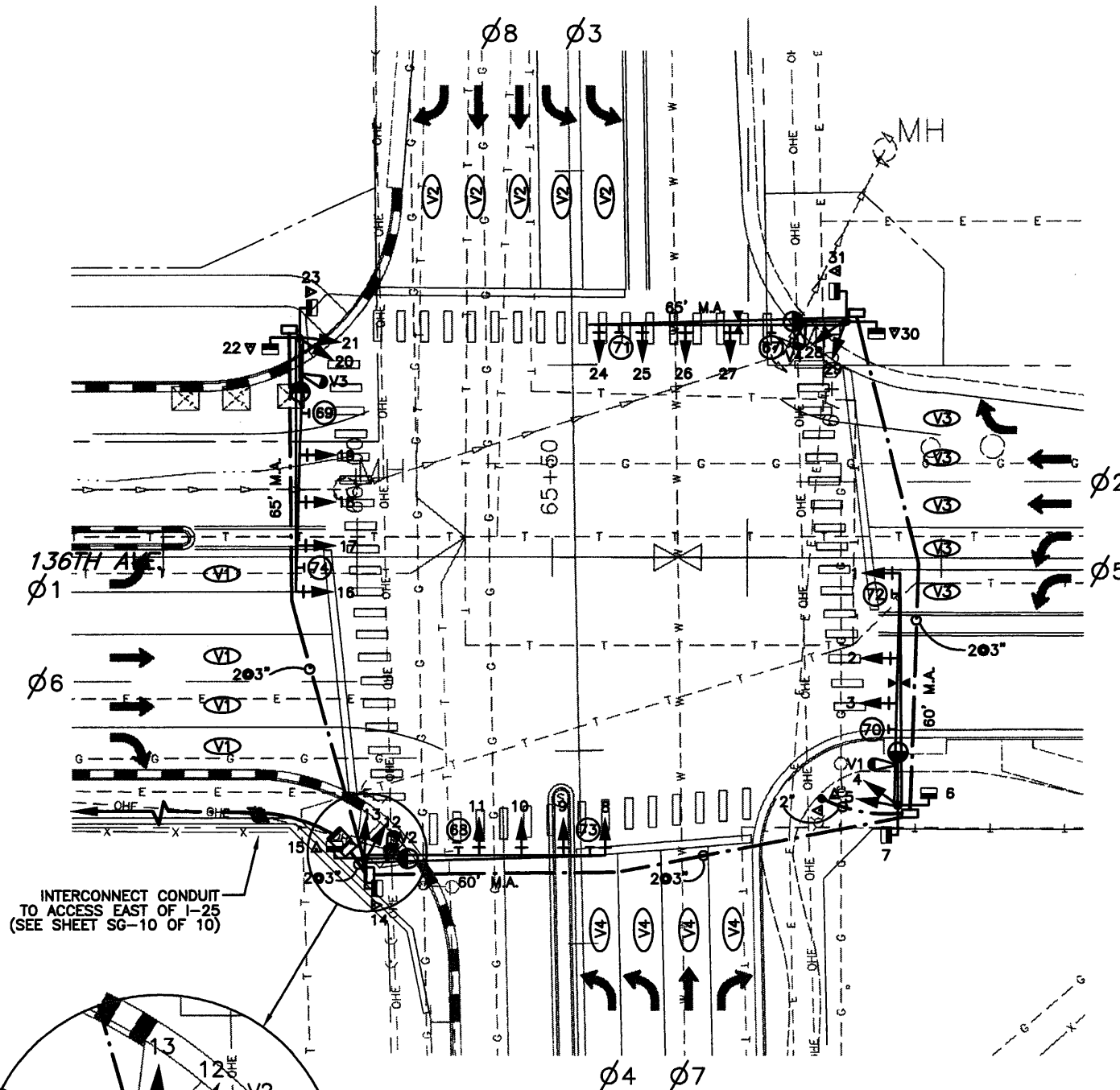
ALL VEHICLE SIGNAL HEADS SHALL BE POLYCARBONATE WITH 12" SECTIONS AND TUNNEL VISORS.  
ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS SHALL BE BLACK IN COLOR.  
ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE APPROVED L.E.D. TYPE.  
ALL TRAFFIC SIGNAL POLES AND PEDESTAL POLES SHALL BE MOCHA BROWN IN COLOR.



INTERCONNECT CONDUIT TO ACCESS EAST OF I-25 (SEE SHEET SG-10 OF 10)

LANE ARROWS SHOWN FOR INFORMATION ONLY

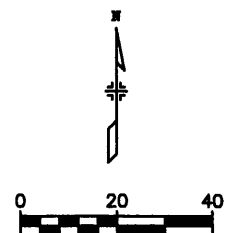
WASHINGTON ST.



LEGEND

- | PROPOSED | ITEM  |
|----------|---|
|          | TRAFFIC SIGNAL POLE WITH MAST ARM           |
|          | PEDESTRIAN PUSH BUTTON POLE (3 FOOT 6 INCH) |
|          | TRAFFIC SIGNAL FACE WITH BACKPLATE          |
|          | TRAFFIC SIGNAL FACE                         |
|          | PEDESTRIAN SIGNAL FACE                      |
|          | PEDESTRIAN PUSH BUTTON AND SIGN             |
|          | TRAFFIC SIGNAL CONTROLLER AND CABINET       |
|          | PULL BOX (33"x20"x15"d)                     |
|          | CONDUIT - PVC SCHEDULE 80                   |
|          | MAST ARM MOUNTED SIGN                       |
|          | FIRE PREEMPTION UNIT AND TIMER              |
|          | LUMINAIRE (15 FOOT ARM EXTENSION)           |
|          | VIDEO IMAGE VEHICLE DETECTOR                |
|          | VIDEO DETECTOR ZONE                         |

CITY OF THORNTON TRAFFIC SIGNAL SPECIFICATIONS APPLY TO ALL TRAFFIC SIGNAL MATERIALS AND INSTALLATION.



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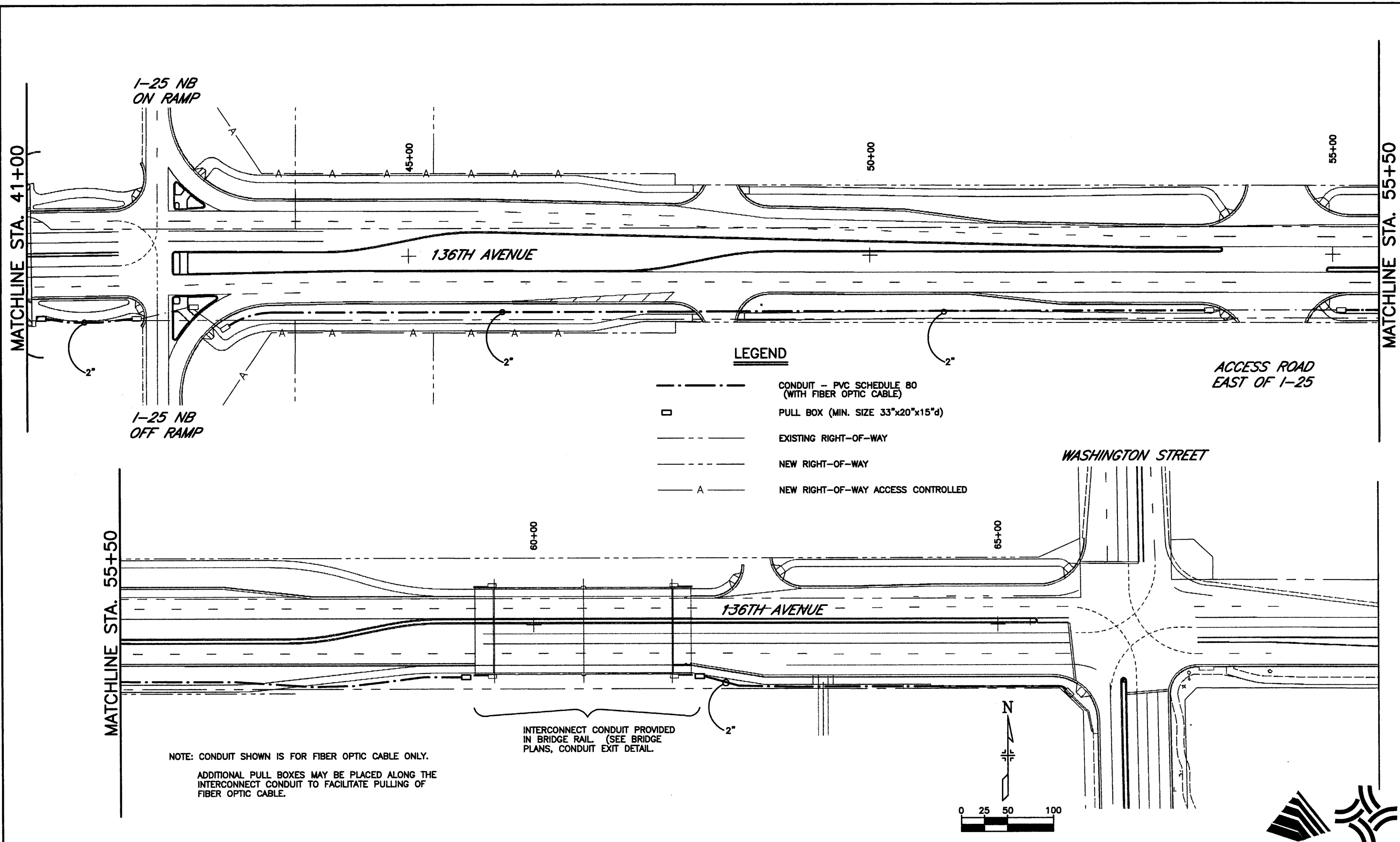
Computer File Information		Index of Revisions		As Constructed		136TH AVENUE / WASHINGTON ST. SIGNALIZATION PLAN		Project No./Code	
Creation Date:	03/06/01 Initials: JGF			No Revisions:		Designer: TSF		97-71	
Last Modification Date:	12/13/02 Initials: JGF			Revised:		Detailer: LW			
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Drawing File Name:	T00033SS26.DWG							Sheet Number 380	
Acad Ver. 2000i	Scale: 1"=40' Units: English								



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fax 303.721.0832  
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Englewood, CO 80111



J:\00033\acad\sheet\T00033SSS32.dwg, 12/17/02 01:05:29 PM, James



NOTE: CONDUIT SHOWN IS FOR FIBER OPTIC CABLE ONLY.  
 ADDITIONAL PULL BOXES MAY BE PLACED ALONG THE INTERCONNECT CONDUIT TO FACILITATE PULLING OF FIBER OPTIC CABLE.

INTERCONNECT CONDUIT PROVIDED IN BRIDGE RAIL (SEE BRIDGE PLANS, CONDUIT EXIT DETAIL.)

Computer File Information	
Creation Date:	12\11\00 Initials: LW
Last Modification Date:	11/21/02 Initials: DRS
Full Path:	J:\00033\Acad\Sheet\
Drawing File Name:	T00033SSS32.DWG
Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	

**FELSBURG HOLT & ULLEVIG**

303.721.1440  
 fax 303.721.0832  
 fhu@fhueng.com

Greenwood Corporate Plaza  
 7951 E. Maplewood Ave. Ste. 200  
 Englewood, CO 80111

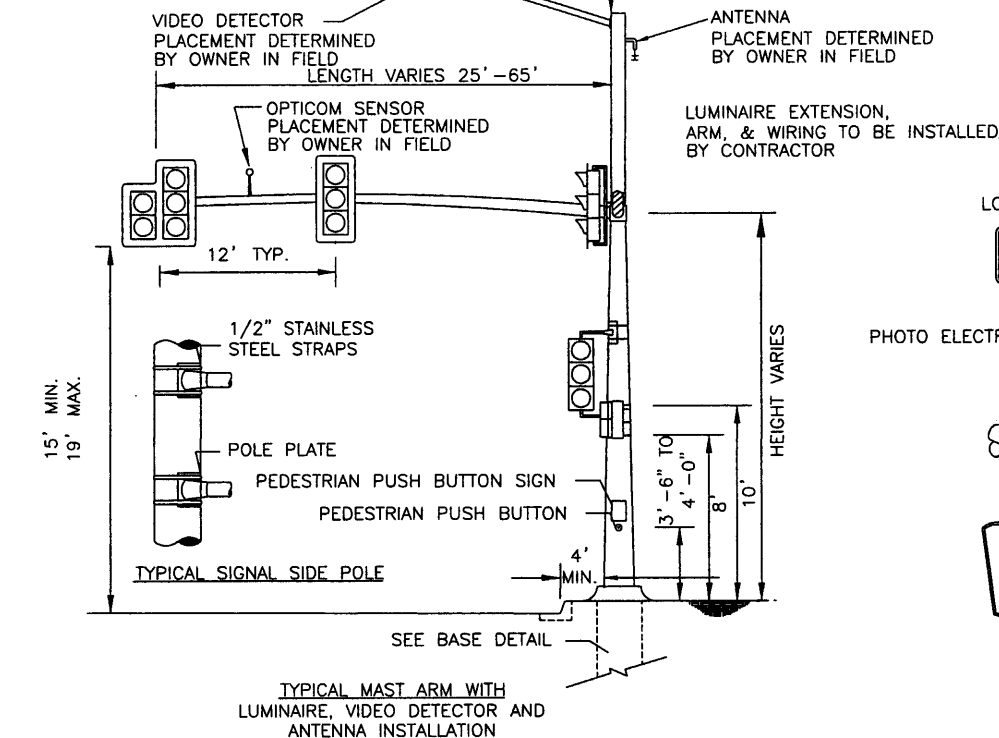
As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE INTERCONNECT	
Designer:	TSF
Detailer:	JAC
Sheet Subset:	SIGNAL
Subest Sheets:	SG-10 of 10

Project No./Code	97-71
Sheet Number	382

J:\00033\acad\sheet\TRAFDET1.dwg, 12/17/02 01:06:50 PM, James

LUMINAIRE LIGHT, HOUSING BULB, ETC. TO BE INSTALLED BY XCEL

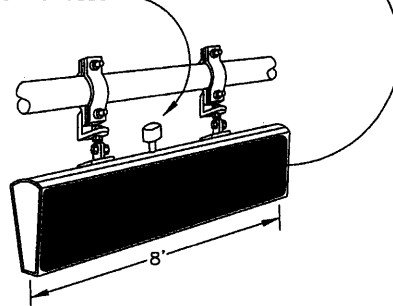


TYPICAL MAST ARM

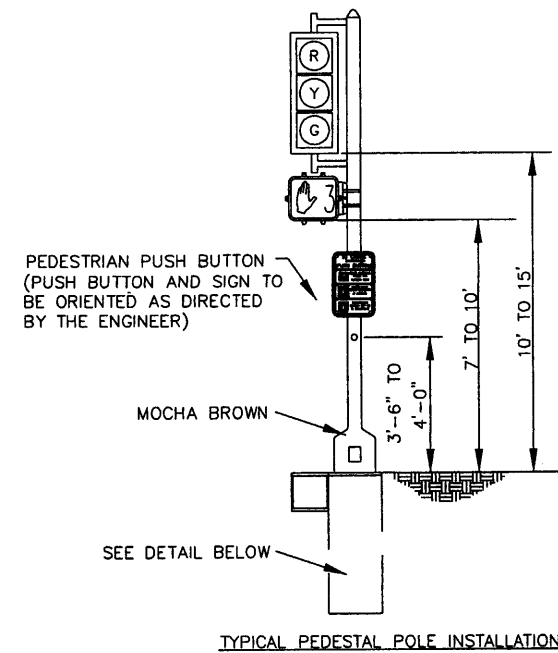
TYPICAL LAYOUT LOGO SPECIFICATION TO BE PROVIDED BY CITY



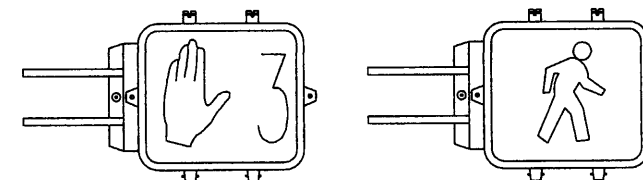
PHOTO ELECTRIC CELL



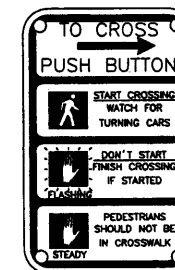
TYPICAL ILLUMINATED STREET SIGN INSTALLATION



TYPICAL PEDESTAL POLE INSTALLATION



ALL PEDESTRIAN SIGNAL HEADS (COUNTDOWN TYPE)



PUSH BUTTON PLATE (5" x 7-3/4")

TYPICAL PEDESTAL POLE INSTALLATION

CIRCUIT SCHEDULE NOTES:

- WHENEVER MULTIPLE CABLES FEED EQUIPMENT ON A SINGLE POLE, EACH CABLE SHALL CONTAIN A NEUTRAL WIRE.
- THE SIGNAL SYSTEM SHALL BE WIRED FOR AN 8-PHASE SYSTEM (SEE PHASING DIAGRAM/LAYOUT).

CONDUITS:

- WHEN EXISTING CONDUIT NEEDS TO BE REPLACED, THE CONTRACTOR SHALL VERIFY WITH THE OWNER AND PROVIDE A COST ESTIMATE FOR REPLACEMENT USING UNIT PRICES FROM THE SUPPLEMENTAL BID ITEMS.
- ALL CONDUITS SHALL HAVE A PULL ROPE LEFT IN THEM WHEN CONSTRUCTION IS COMPLETED.

COLOR CODING:

ALL CONDUCTORS SHALL BE COLOR-CODED AND PERMANENTLY TAGGED PER THE FOLLOWING SCHEDULE:

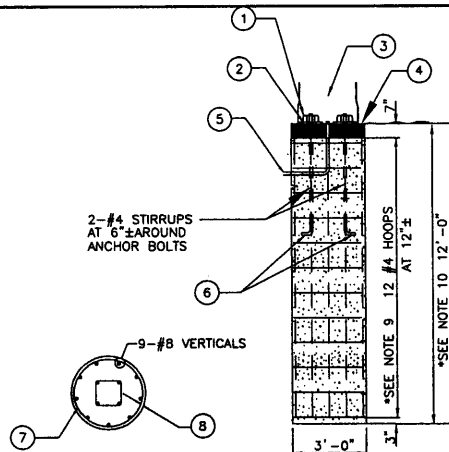
(X = PHASE NUMBER):

- NORTHBOUND LEFT TURN: RED/WHITE, "X-NBLT"
- NORTHBOUND: RED, "X-NB"
- SOUTHBOUND LEFT TURN: GREEN/WHITE, "X-SBLT"
- SOUTHBOUND: GREEN, "X-SB"
- EASTBOUND LEFT TURN: ORANGE/WHITE, "X-EBLT"
- EASTBOUND: ORANGE, "X-EB"
- WESTBOUND LEFT TURN: BLUE/WHITE, "X-WBLT"
- WESTBOUND: BLUE, "X-WB"
- PEDESTRIAN: YELLOW, "X-PED"

SIGNAL EQUIPMENT:

- ALL POLES SHALL BE INSTALLED A MINIMUM OF 3 FEET FROM THE EDGE OF THE POLE TO THE FACE OF THE CURB. IF THERE IS NO CURB, THE POLE SHALL BE INSTALLED A MINIMUM OF 10 FEET FROM THE EDGE OF THE TRAVELED LANE.
- ALL ELECTRICAL SYSTEMS SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH THE SPECIFICATIONS. A GROUND ROD SHALL BE INSTALLED FOR EACH POLE AND CONTROLLER CABINET FOUNDATION.
- MAST ARMS AND POLES SHALL BE MOCHA BROWN IN COLOR.

GENERAL NOTES



TYPICAL TRAFFIC SIGNAL POLE FOOTING (FOR GREATER THAN 20' SINGLE MAST ARM AND GREATER THAN 20' X 20' TWIN MAST ARM)

TYPICAL TRAFFIC SIGNAL POLE FOOTING

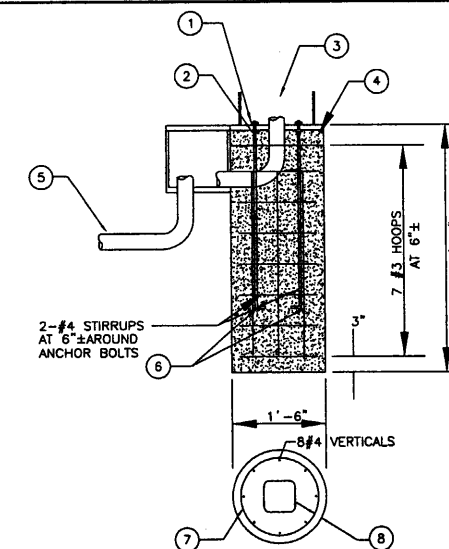


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- HEX NUTS
- SQUARE NUTS
- HAND HOLE SHALL BE PROVIDED
- 4" MIN. NON-SHRINKABLE GROUT OVER ROUGH FOUNDATION
- RIGID CONDUIT (24" MIN. DEPTH, 30" MIN. DEPTH UNDER ROADWAY) CONDUIT STUB FROM PULL BOX TO POLE SHALL BE 3" DIA.
- INSTALL ANCHOR BOLTS (FURNISHED WITH POLE) PER MANUFACTURER'S TEMPLATE PRINT (FURNISHED WITH ORDER)
- MINIMUM OVERLAP 12"
- 1-1/2" CLEARANCE FOR HOOPS
- 15 - #4 HOOPS AT +/- 12' FOR 15' FTG.
- 15' FOR 15' FTG. (USE FOR POLES W/ MAST ARMS GREATER THAN 45' IN LENGTH.)
- ALL INSTALLATIONS TO BE PROPERLY GROUNDED.

CAISSON DESIGNS REQUIRE THAT THE CAISSON BE FOUNDED IN COMPACT SAND, CLAY OR SANDY CLAY. IF BY VISUAL INSPECTION OF THE HOLE OTHER MATERIAL IS PRESENT, THE CAISSON DESIGN SHALL BE MODIFIED AS DETERMINED BY THE ENGINEER.

FOOTING NOTES



TYPICAL PEDESTAL POLE FOOTING

TYPICAL PEDESTAL POLE FOOTING

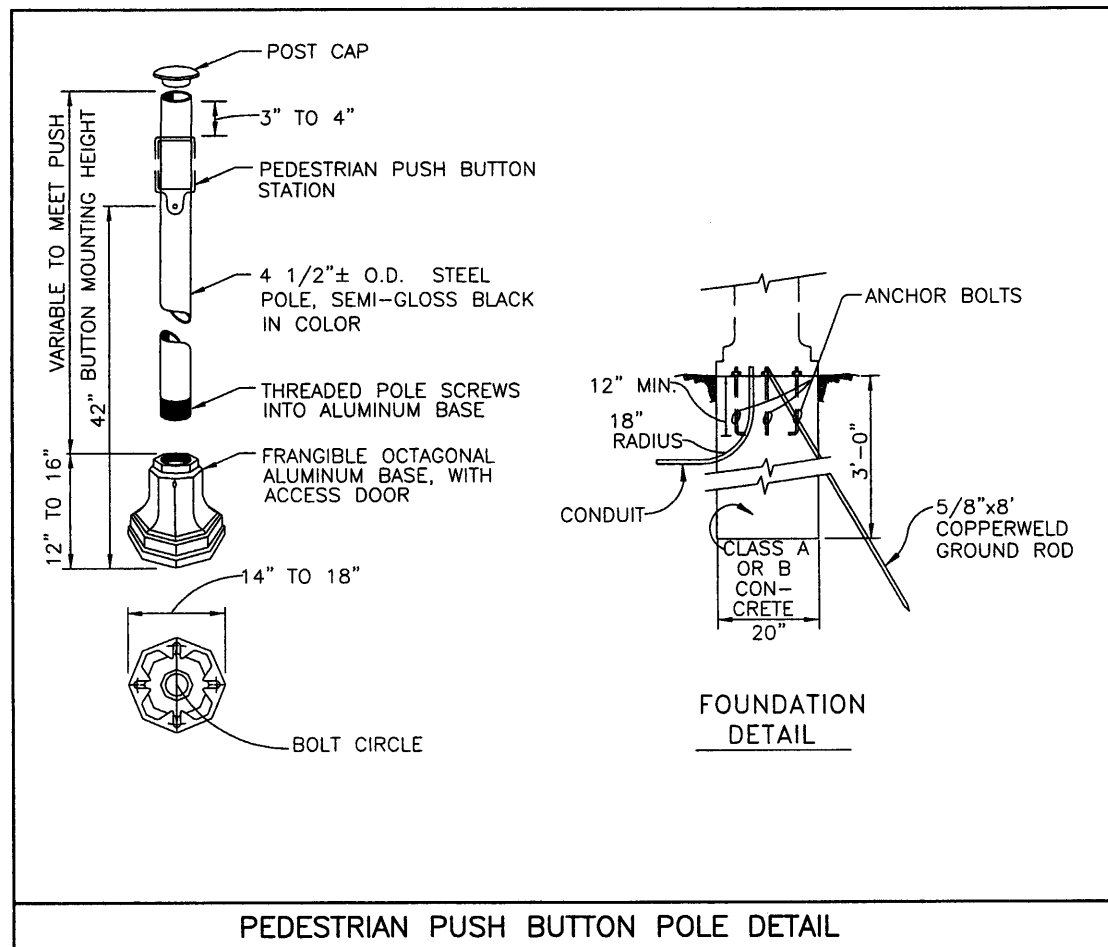
CITY OF THORNTON

136TH AVENUE AT I-25 INTERCHANGE

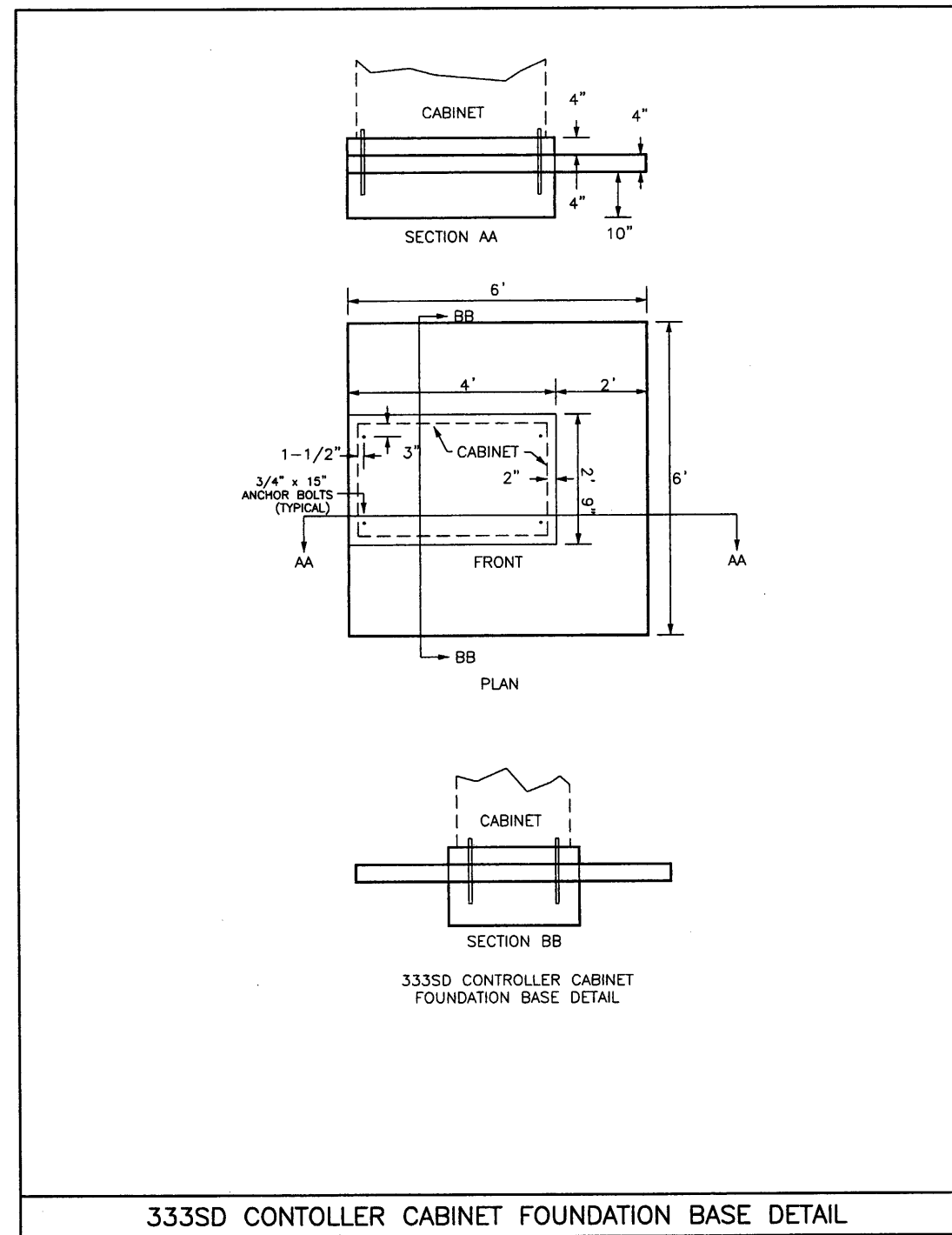
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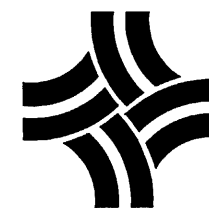
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PEDESTRIAN PUSH BUTTON POLE DETAIL



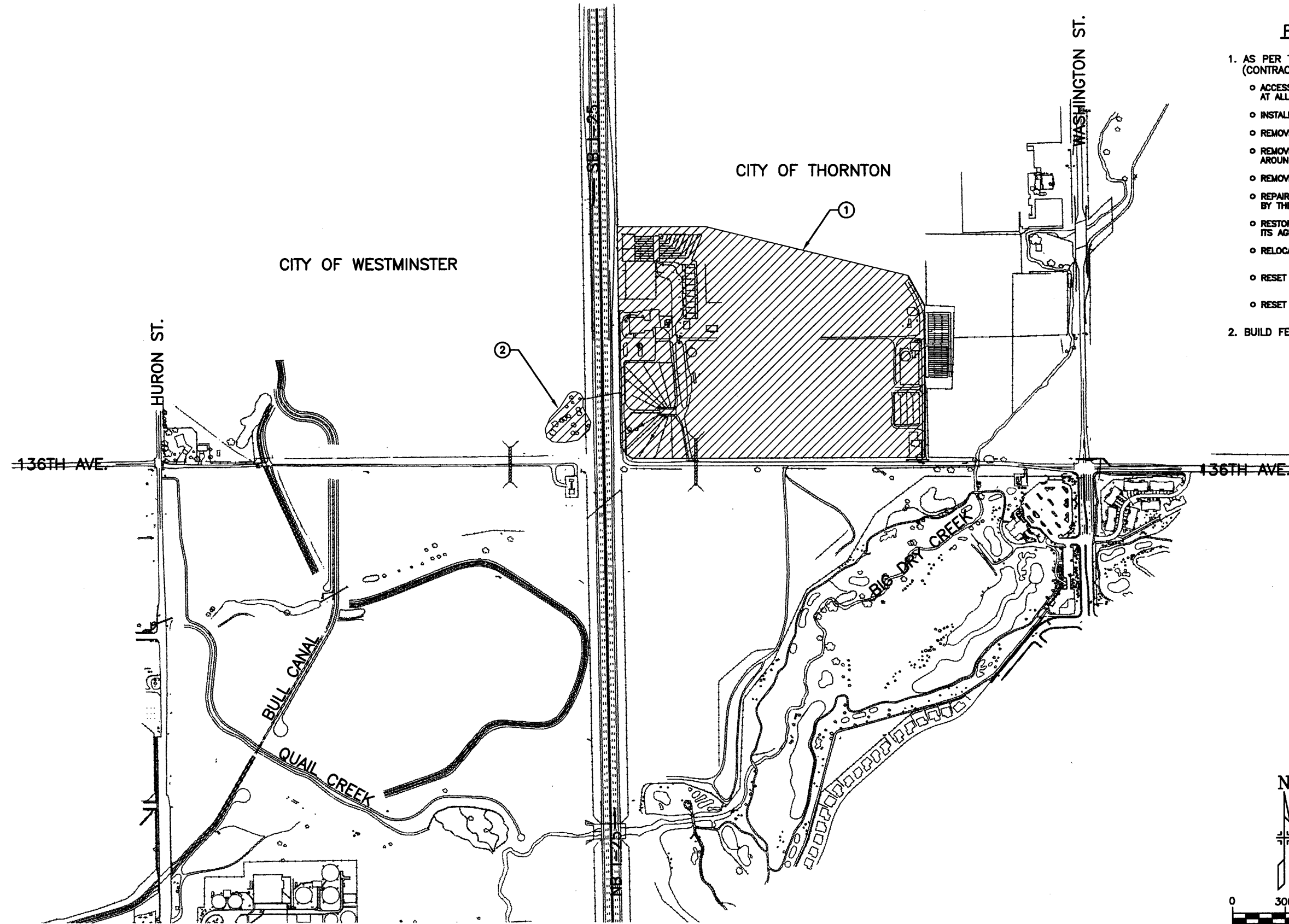
333SD CONTOLLER CABINET FOUNDATION BASE DETAIL



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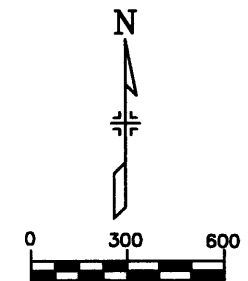
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136TH AVENUE AT I-25 INTERCHANGE				
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**PHASE 1 CONSTRUCTION**

1. AS PER THE CONSTRUCTION COORDINATION AGREEMENT: (CONTRACTOR TO OBTAIN AGREEMENT FROM THE CITY)
  - o ACCESS SHALL BE PROVIDED FOR ALL PROPERTIES AT ALL TIMES
  - o INSTALL NEW FENCES, GATES AND APPURTENANCES
  - o REMOVE SOUTH BARN
  - o REMOVE WIRE CORRALS, FENCES AND GATES AROUND THE SOUTH BARN
  - o REMOVE BLUE METAL BUILDING
  - o REPAIR PHYSICAL DAMAGE TO THE PROPERTY CAUSED BY THE CITY OR ITS AGENTS
  - o RESTORE UTILITIES INTERRUPTED BY THE CITY OR ITS AGENTS
  - o RELOCATE EXISTING COMMERCIAL SIGN
  - o RESET CORRAL FENCE
  - o RESET "FOR SALE" SIGN
2. BUILD FENCE AROUND EXISTING TREES.



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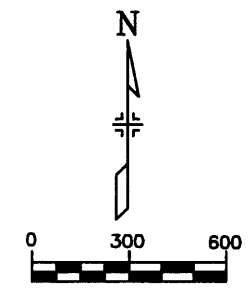
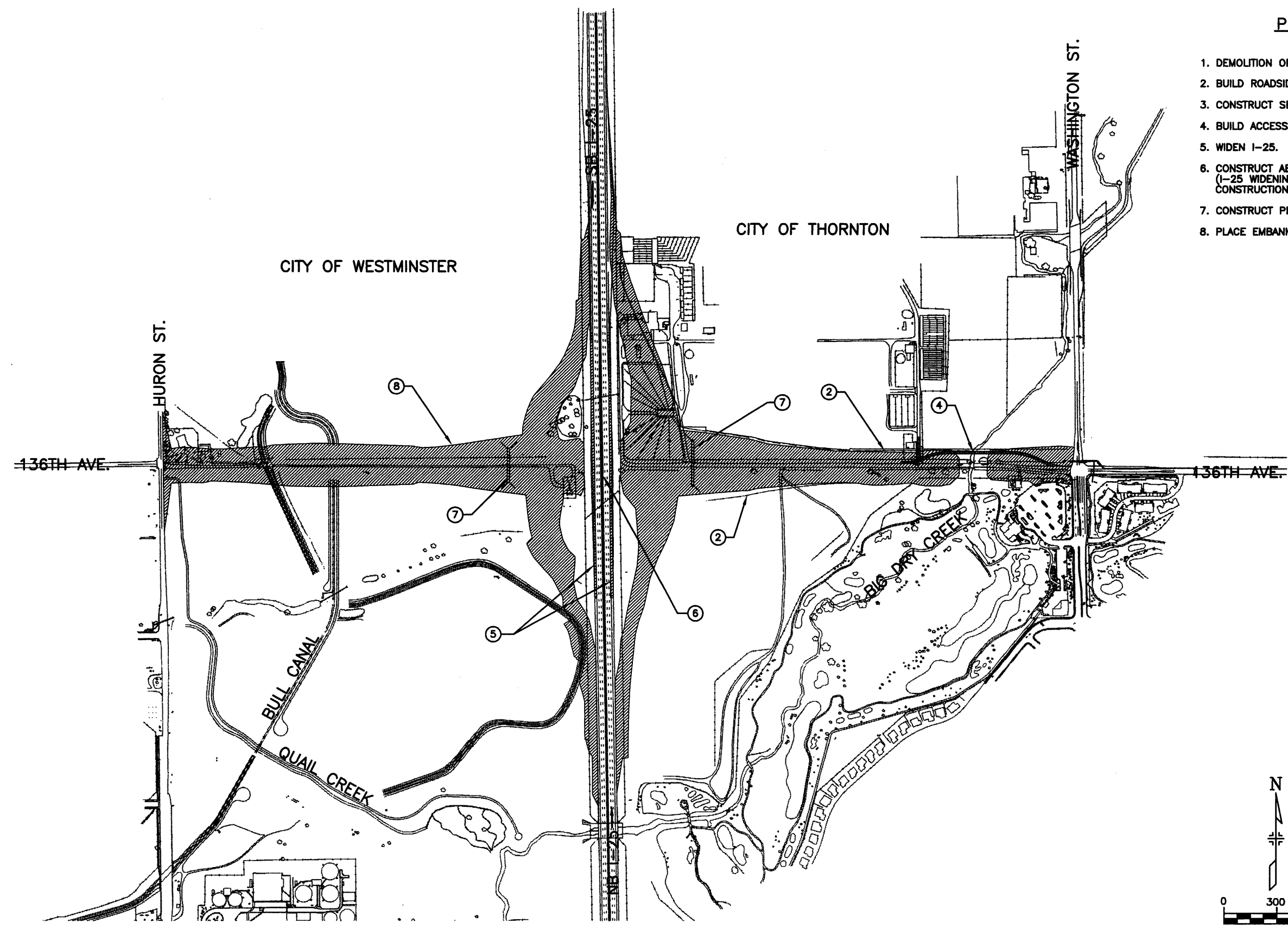
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Detailer:	JGF
Sheet Subset:	PHASING
Subset Sheets:	CPH-01 of 04

Project No./Code
97-71
Sheet Number <b>385</b>

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**PHASE 2 CONSTRUCTION**

1. DEMOLITION OF ALL STRUCTURES.
2. BUILD ROADSIDE DITCHES.
3. CONSTRUCT SEWER AND WATER LINES.
4. BUILD ACCESS ROAD.
5. WIDEN I-25.
6. CONSTRUCT ABUTMENTS AND PIER FOR I-25/136TH OVERPASS. (I-25 WIDENING MUST PRECEED PIER AND ABUTMENT CONSTRUCTION).
7. CONSTRUCT PEDESTRIAN BOXES.
8. PLACE EMBANKMENT.



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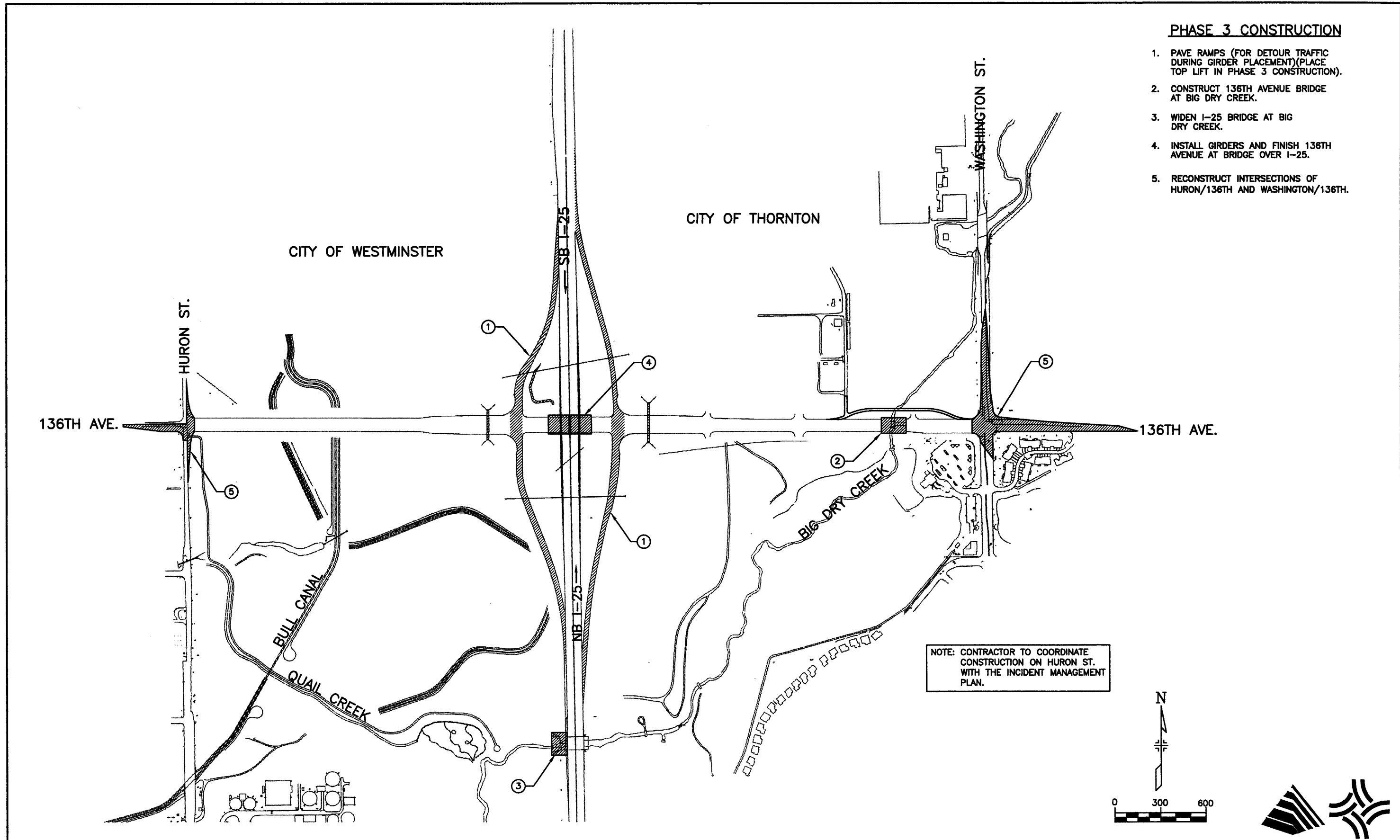
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 fax 303.721.0832  
 fhu@fhueng.com  
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Subset Sheets:	CPH-02 of 04

Project No./Code
97-71
Sheet Number <b>386</b>

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**PHASE 3 CONSTRUCTION**

1. PAVE RAMP (FOR DETOUR TRAFFIC DURING GIRDER PLACEMENT)(PLACE TOP LIFT IN PHASE 3 CONSTRUCTION).
2. CONSTRUCT 136TH AVENUE BRIDGE AT BIG DRY CREEK.
3. WIDEN I-25 BRIDGE AT BIG DRY CREEK.
4. INSTALL GIRDERS AND FINISH 136TH AVENUE AT BRIDGE OVER I-25.
5. RECONSTRUCT INTERSECTIONS OF HURON/136TH AND WASHINGTON/136TH.

NOTE: CONTRACTOR TO COORDINATE CONSTRUCTION ON HURON ST. WITH THE INCIDENT MANAGEMENT PLAN.

<b>Computer File Information</b>		<b>Index of Revisions</b>			<b>As Constructed</b>		<b>136TH AVENUE AT I-25 INTERCHANGE SUGGESTED CONSTRUCTION PHASING</b>		<b>Project No./Code</b>		
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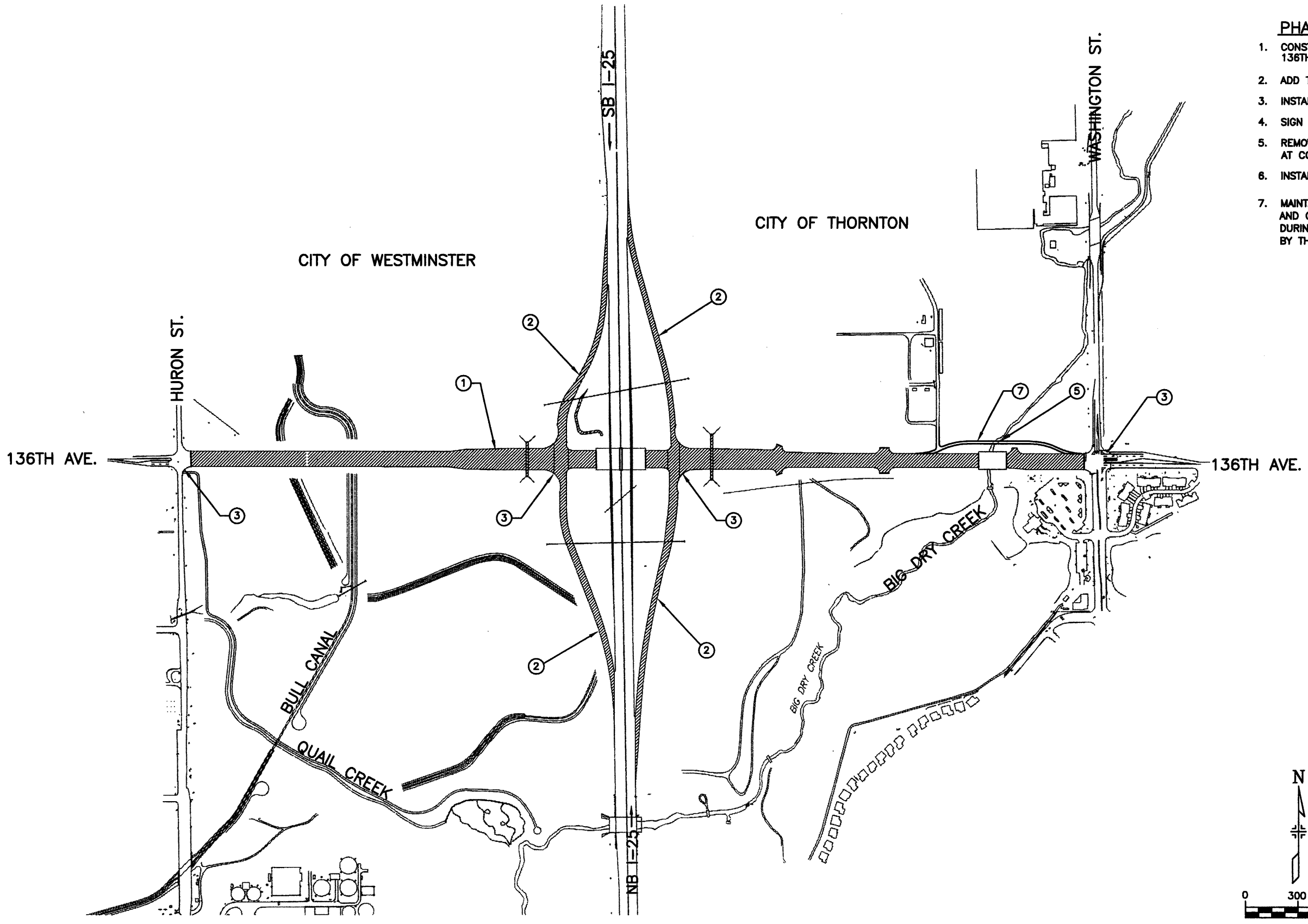
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 fax 303.721.0832  
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**PHASE 4 CONSTRUCTION**

1. CONSTRUCT CURB AND GUTTER, PAVE 136TH AVENUE.
2. ADD TOP LIFT OF PAVING TO RAMPS.
3. INSTALL SIGNALS AT INTERSECTIONS.
4. SIGN AND STRIPE.
5. REMOVE LOW WATER CROSSING AT CONCLUSION OF PROJECT.
6. INSTALL LANDSCAPING.
7. MAINTAIN BYPASS FOR EMERGENCY AND OWNER ACCESS AT ALL TIMES DURING CONSTRUCTION AS APPROVED BY THE ENGINEER.



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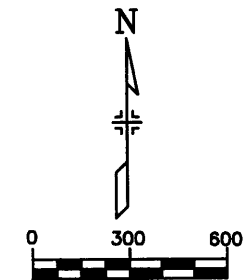
TABULATION OF CONSTRUCTION TRAFFIC CONTROL DEVICES

SIGN CODE	LEGEND	DIMENSIONS	WESTMINSTER				INTERCHANGE				THORNTON				PROJECT TOTAL			
			PANEL SIZE				PANEL SIZE				PANEL SIZE				PANEL SIZE			
			A	B	C	(SPECIAL)	A	B	C	(SPECIAL)	A	B	C	(SPECIAL)	A	B	C	(SPECIAL)
R2-1(45)	SPEED LIMIT 45	48" x 60"																
R2-1(60)	SPEED LIMIT 60	48" x 60"																
R2-1(65)	SPEED LIMIT 65	48" x 60"																
R3-7R	RIGHT LANE MUST TURN RIGHT	30" x 30"																
R4-1	DO NOT PASS	48" x 60"																
R4-7a	KEEP RIGHT	24" x 30"																
R11-2	ROAD CLOSED	48" x 24"	1				7								8			
R52-4	BEGIN FINES DOUBLED FOR SPEEDING	48" x 60"																2
R52-5	END FINES DOUBLED FOR SPEEDING	48" x 60"																2
W1-48cR	REVERSE CURVE	48" x 48"																2
W1-48cL	REVERSE CURVE	48" x 48"																2
W9-2R	LANE ENDS MERGE RIGHT	48" x 48"																2
W9-2L	LANE ENDS MERGE LEFT	48" x 48"																2
W12-1	DOUBLE ARROW	30" x 30"									1				1			
W20-1	ROAD WORK (DIST.)	48" x 48"																14
W20-1	ROAD WORK (DIST.)	36" x 36"	3	3							3	3			6			
W20-4	ONE LANE ROAD (DIST.)	48" x 48"																5
W20-5	LEFT (RIGHT) LANE/CLOSED/(DIST.)	48" x 48"																4
W20-7a	FLAGGER AHEAD (SYMBOL)	48" x 48"																6
W20-84	FINES DOUBLED	48" x 18"																6
W21-5b	SHOULDER WORK	48" x 48"																2
M4-10R	DETOUR ARROW	48" x 18"																2
G20-10	THANK YOU	48" x 48"																8
CONSTR. TRAFFIC SIGN SPECIAL	ROAD CLOSED LOCAL TRAFFIC ONLY	60" x 24"																10.00
CONSTR. TRAFFIC SIGN SPECIAL	DOUBLE TURN (W1-2)	48" x 48"																32.00
CONSTR. TRAFFIC SIGN SPECIAL	STAY IN LANE	36" x 48"																24.00
CONSTR. TRAFFIC SIGN SPECIAL	CONSTRUCTION INFORMATION SIGN	48" x 60"																60.00
CONSTR. TRAFFIC SIGN SPECIAL	CONSTRUCTION INFORMATION SIGN	10'x7'																140.00
CONSTR. TRAFFIC SIGN SPECIAL	LEFT LANE LOCAL TRAFFIC ONLY	36" x 36"																9.00
SIGN TOTALS			4	12		60.00	15	24	12	198.00	8	11		79.00	25	47	12	335.00

NOTES:

- BASED UPON SIGHT DISTANCE AND OTHER CONSIDERATIONS, THE FINAL LOCATION OF SIGNS AND TRAFFIC CONTROL IS SUBJECT TO THE APPROVAL BY THE PROJECT ENGINEER.
- \* TEMPORARY PAVEMENT MARKING PAINT INCLUDES 60 GAL. OF WHITE AND 25 GAL. OF YELLOW FOR RESTRIPIING EVERY TWO WEEKS OR AS NEEDED. TOTAL = 85 GALLONS.
- IT IS ESTIMATED THAT 1000 SQUARE FEET OF PAVEMENT MARKING REMOVAL WILL BE REQUIRED FOR THIS PROJECT. REMOVAL OF TEMPORARY PAVEMENT MARKINGS WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
- REMOVE ANY AND ALL CONFLICTING STRIPING. REMOVE OR MASK ANY AND ALL CONFLICTING SIGNING.
- AS DETERMINED BY THE ENGINEER, FINAL SIGNING AND STRIPING SHALL BE INSTALLED ON THOSE COMPLETED ROADWAY SECTIONS IN ORDER TO COMPLIMENT CONSTRUCTION TRAFFIC CONTROL SIGNING AND STRIPING.
- ALL CONSTRUCTION TRAFFIC SIGN SPECIALS ARE BLACK ON ORANGE.
- ACCESS MUST BE MAINTAINED TO ALL PROPERTIES AT ALL TIMES.
- WHEN CONSTRUCTION TRAFFIC CONTROL SIGNS ARE NOT IN USE, THEY SHALL BE EITHER MASKED, TURNED AWAY FROM TRAFFIC OR REMOVED.
- SEE CDOT STANDARD PLANS, S-630-1 FOR ADDITIONAL NOTES AND INFORMATION.

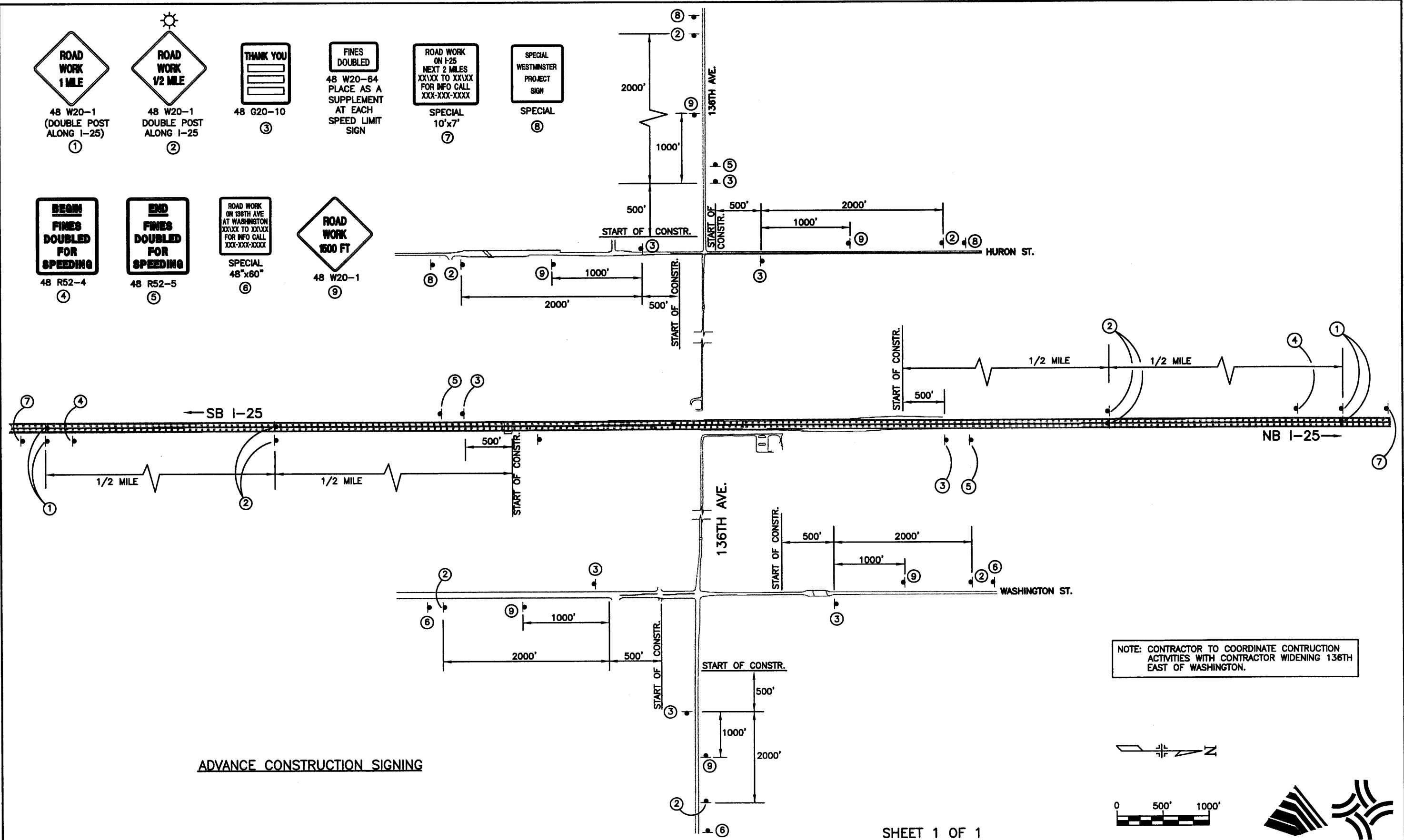
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		WESTMINSTER	INTERCHANGE	THORNTON	PROJECT TOTAL
REMOVAL OF PAVEMENT MARKING PAINT	SF	200	250	550	1000
PAVEMENT MARKING PAINT* (LOW VOC SOLVENT BASE)	GAL	15	20	50	85
FLAGGING	HOURS	60	-	180	240
TRAFFIC CONTROL MANAGEMENT	DAY	10	50	20	80
UNIFORM TRAFFIC CONTROL	HOURS	-	250	16	266
TRAFFIC CONTROL INSPECTION	DAY	50	250	100	400
FLASHING BEACON (PORTABLE)	EACH	-	4	-	4
BARRICADE (TYPE 3 M-B)(TEMP)	EACH	1	7	2	10
FLASH ARROW PANEL (C TY)	EACH	-	2	1	3
PORTABLE MESSAGE SIGN PANEL	DAY	-	28	-	28
DRUM CHANNELIZING DEVICE	EACH	50	60	90	200
CONCRETE BARRIER (TEMP.)	LF	-	4000	-	4000
TRAFFIC CONE	EACH	25	150	25	200
MOBILE PAVEMENT MARKING ZONE	LS	.33	.34	.33	1
IMPACT ATTENUATOR (TEMP)	EACH	-	6	-	6



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ADVANCE CONSTRUCTION SIGNING

SHEET 1 OF 1

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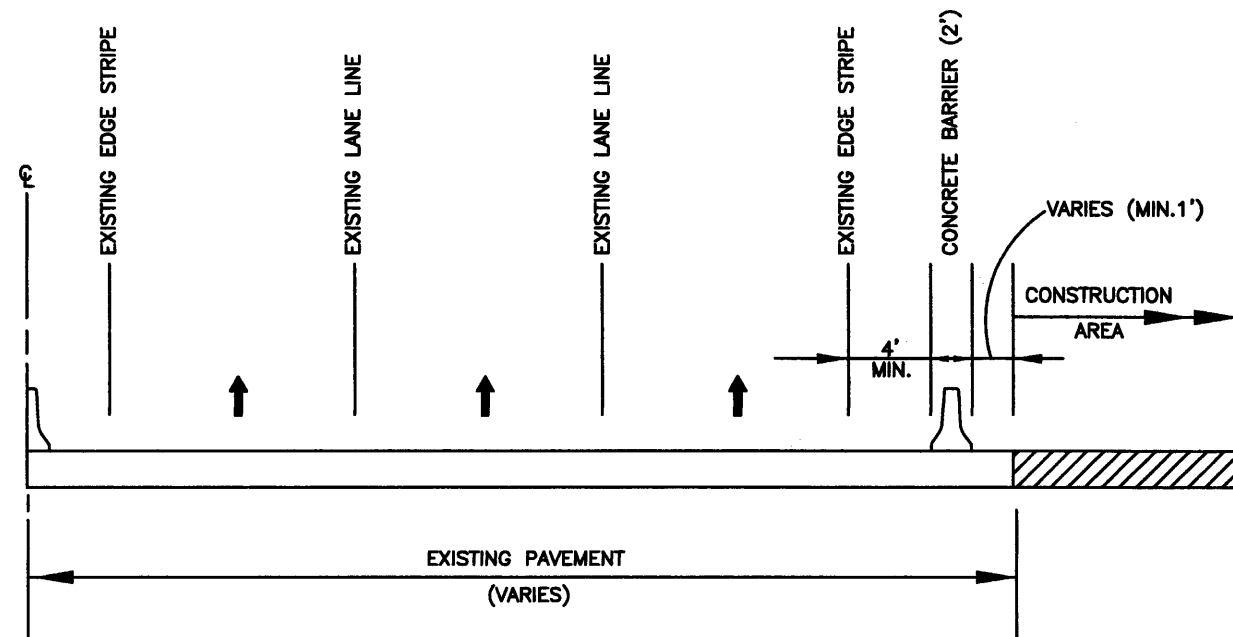
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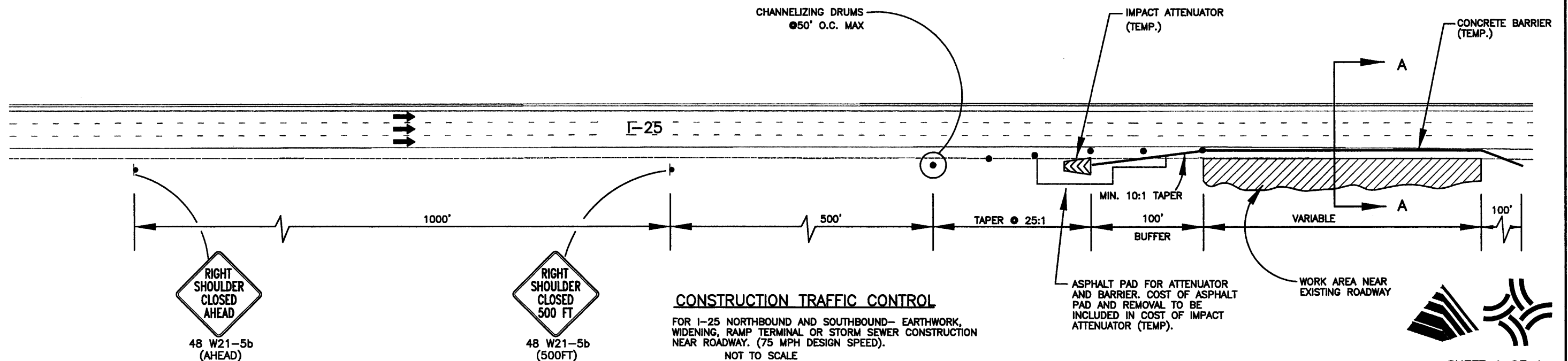
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		Subset Sheets:	CTC-2 of 18	

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SECTION A-A



**CONSTRUCTION TRAFFIC CONTROL**

FOR I-25 NORTHBOUND AND SOUTHBOUND- EARTHWORK, WIDENING, RAMP TERMINAL OR STORM SEWER CONSTRUCTION NEAR ROADWAY. (75 MPH DESIGN SPEED). NOT TO SCALE

ASPHALT PAD FOR ATTENUATOR AND BARRIER. COST OF ASPHALT PAD AND REMOVAL TO BE INCLUDED IN COST OF IMPACT ATTENUATOR (TEMP).

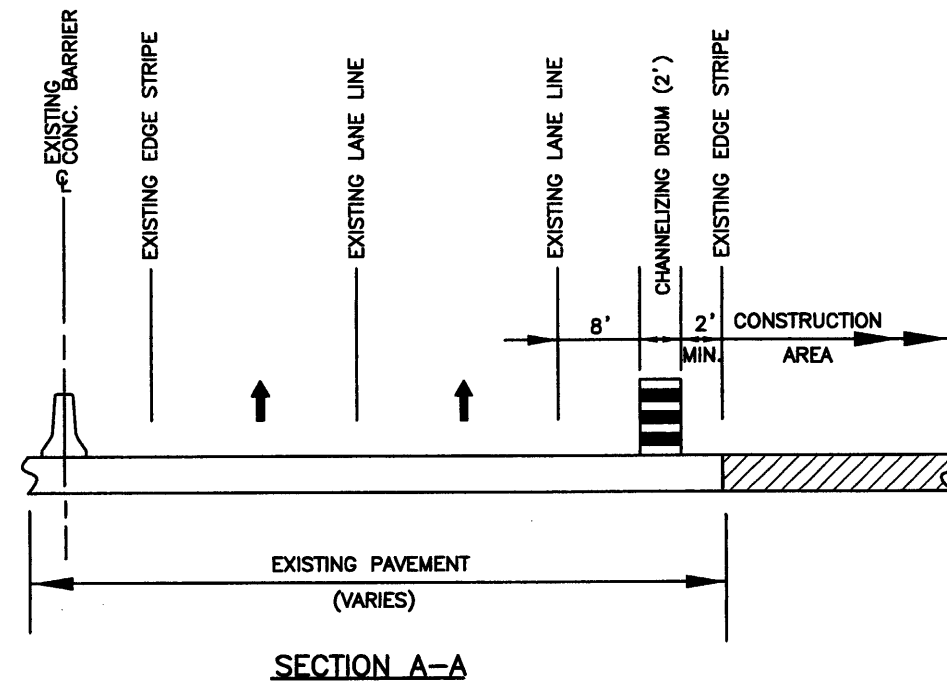
WORK AREA NEAR EXISTING ROADWAY



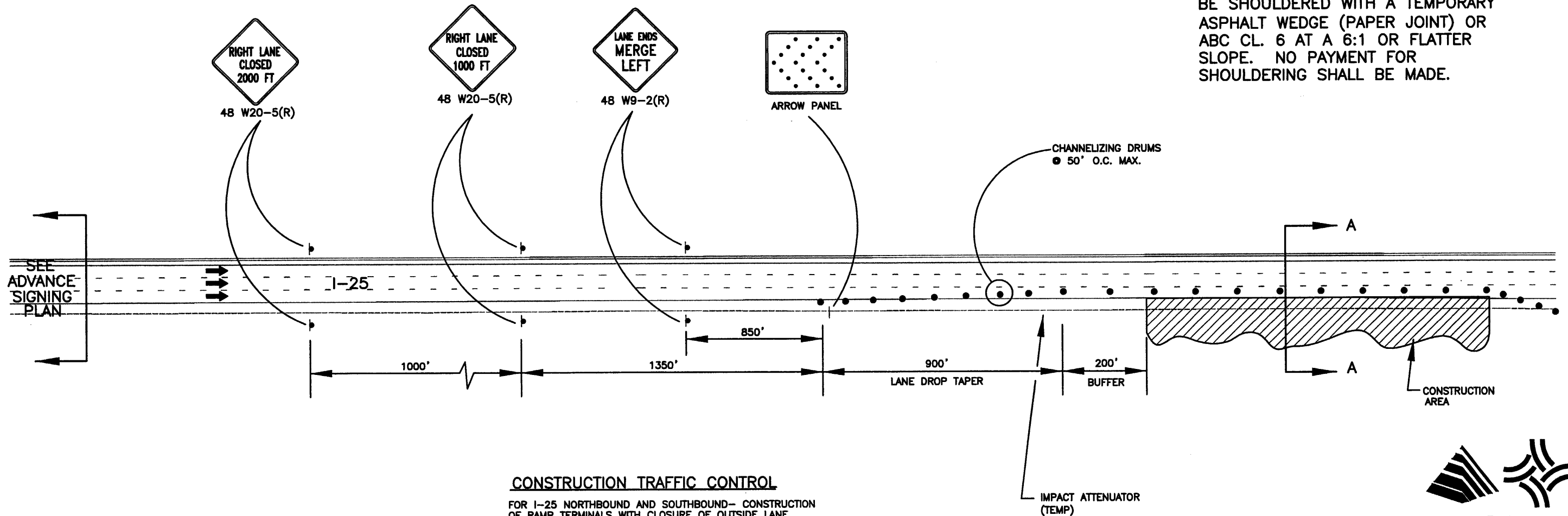
SHEET 1 OF 1

<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE</b>		<b>Project No./Code</b>
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Acad Ver. 2000i	Scale: NONE Units: English							

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**NOTE:**  
 ANY VERTICAL DROPOFF > 1½" FROM THE EXISTING PAVEMENT TO REMAIN AT THE END OF A WORK SHIFT SHALL BE SHOULDERED WITH A TEMPORARY ASPHALT WEDGE (PAPER JOINT) OR ABC CL. 6 AT A 6:1 OR FLATTER SLOPE. NO PAYMENT FOR SHOULDERING SHALL BE MADE.



**CONSTRUCTION TRAFFIC CONTROL**

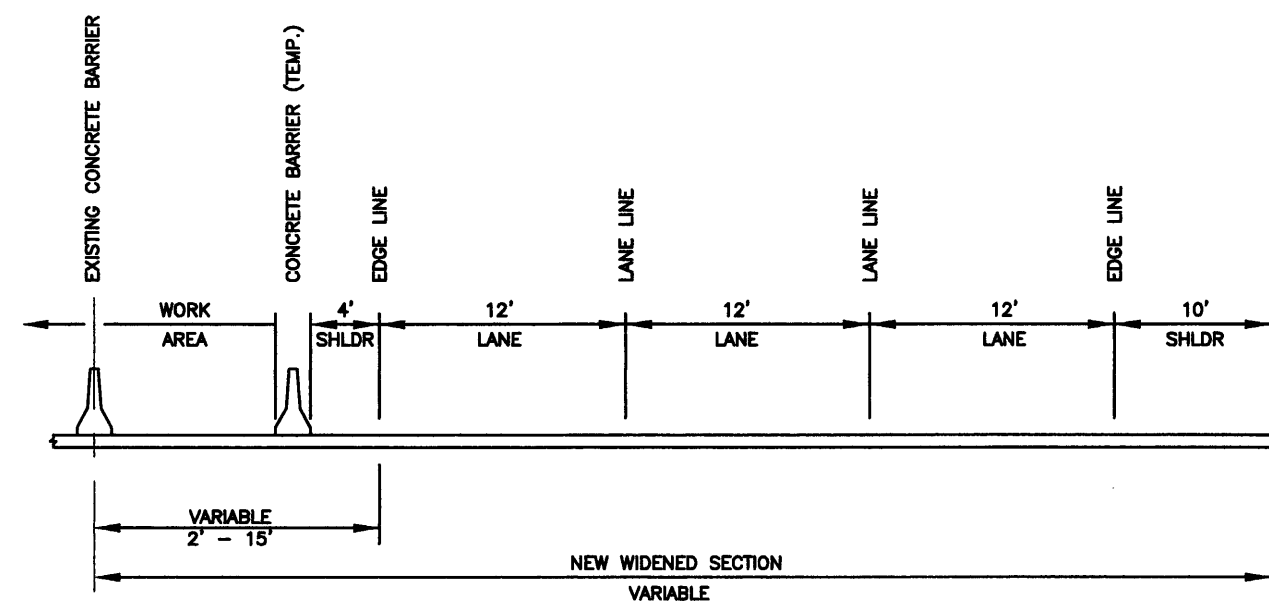
FOR I-25 NORTHBOUND AND SOUTHBOUND- CONSTRUCTION OF RAMP TERMINALS WITH CLOSURE OF OUTSIDE LANE. NIGHTIME/WEEKEND WORK ONLY, 10:00 PM TO 5:00 AM



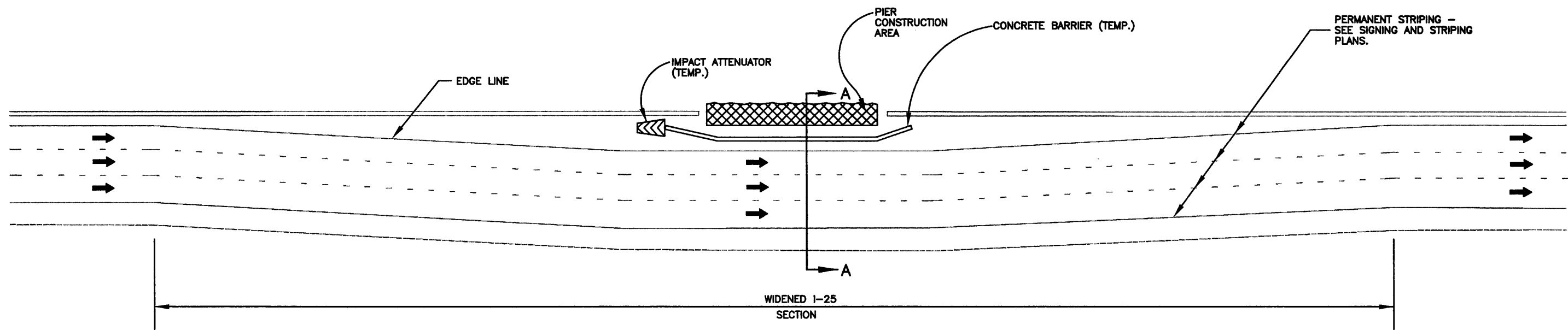
SHEET 1 OF 1

<b>Computer File Information</b>		<b>Index of Revisions</b>		 303.721.1440 fax 303.721.0832 fhu@fhueng.com Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL	Project No./Code			
Creation Date: 01/28/02	Initials: JGF				No Revisions:		Designer: JGF Detailer: JGF Sheet Subset:	97-71		
Last Modification Date: 01/07/03	Initials: DRS				Revised:			Subset Sheets: CTC-4 of 18		
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Drawing File Name: T00033CTC19.dwg										
Acad Ver. 2000i	Scale: NONE	Units: English								

J:\00033\acad\sheet\T00033CTC15A.dwg, 12/19/02 08:04:42 AM, James



SECTION A-A



**CONSTRUCTION TRAFFIC CONTROL**  
 FOR NORTHBOUND & SOUTHBOUND  
 TRAFFIC DURING PIER CONSTRUCTION  
 (SHEET 1 OF 1)

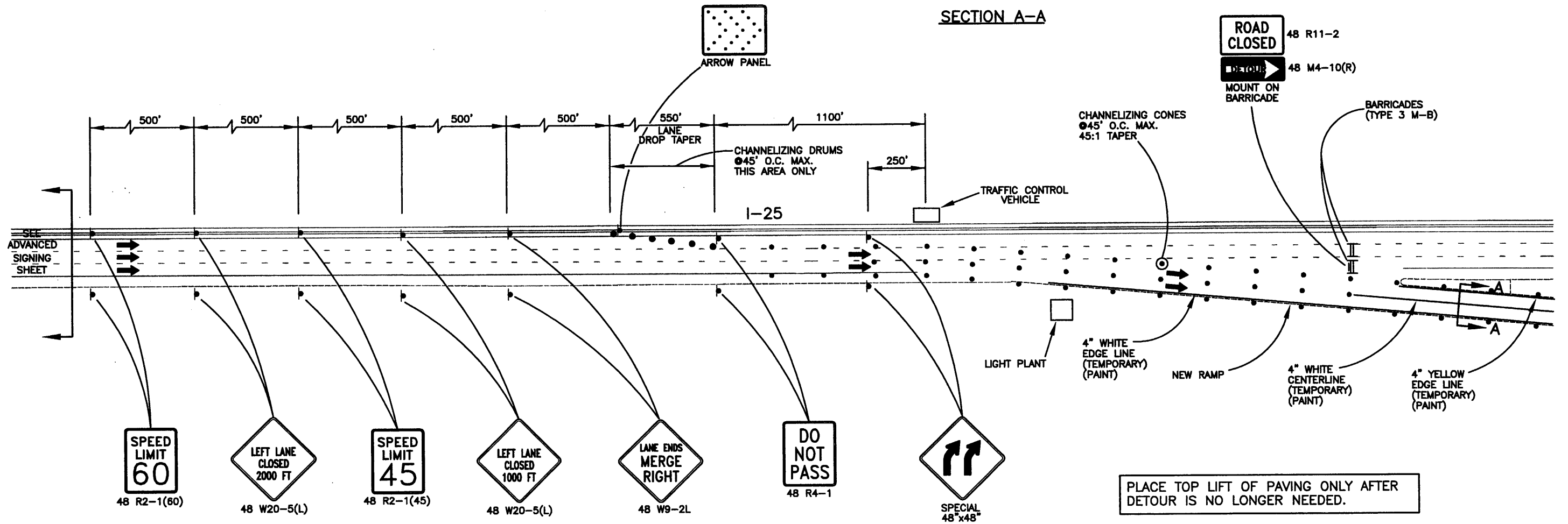
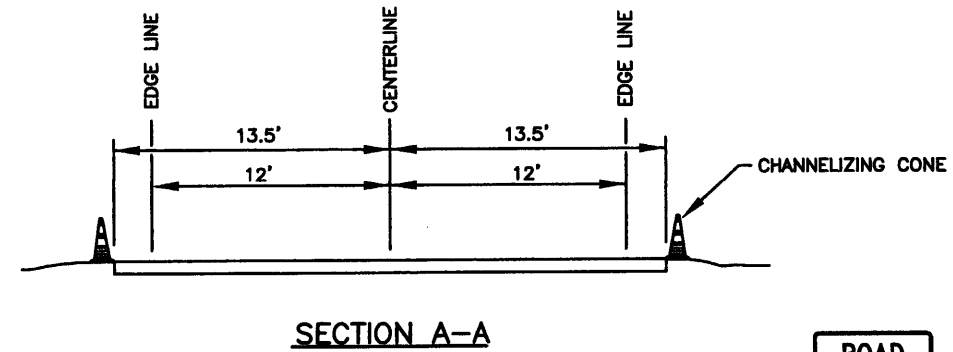


SHEET 1 OF 1

<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440          fax 303.721.0832          fhu@fhueng.com</p> <p>Greenwood Corporate Plaza          7951 E. Maplewood Ave. Ste. 200          Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL		Project No./Code
Creation Date:	01/28/02 Initials: JGF				No Revisions:			97-71
Last Modification Date:	12/19/02 Initials: JGF				Revised:	Designer: JGF		
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Acad Ver. 2000i	Scale: NONE Units: English							

J:\00033\acad\sheet\T00033CTC16.dwg, 01/08/03 08:43:45 AM, Dennis

**NOTE:**  
REMOVAL OF TEMPORARY PAVEMENT MARKINGS WILL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.



**CONSTRUCTION TRAFFIC CONTROL**

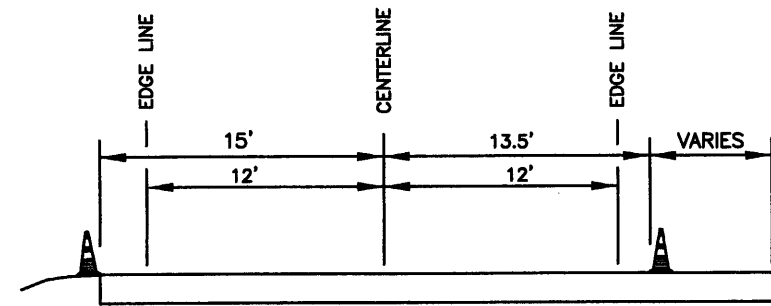
FOR I-25 NORTHBOUND AND SOUTHBOUND WHEN PLACING BRIDGE GIRDERS, DURING DECK POURS AND PEDESTRIAN RAIL INSTALLATION. WORK ONLY FROM 10:00PM TO 5:00 AM.



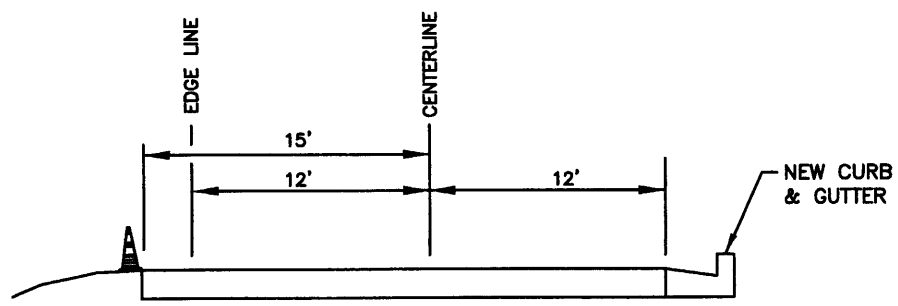
SHEET 1 OF 3

<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL</b>	<b>Project No./Code</b>	
Creation Date:	01/30/02 Initials: JGF				No Revisions:		Designer: JGF Detailer: JGF Sheet Subset:	Subset Sheets: CTC-6 of 18 Sheet Number <b>394</b>
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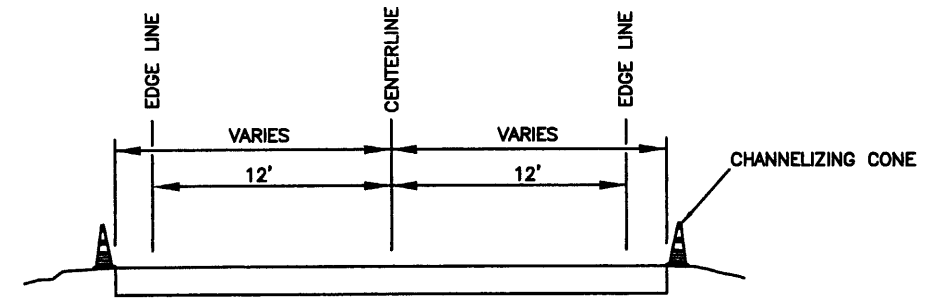
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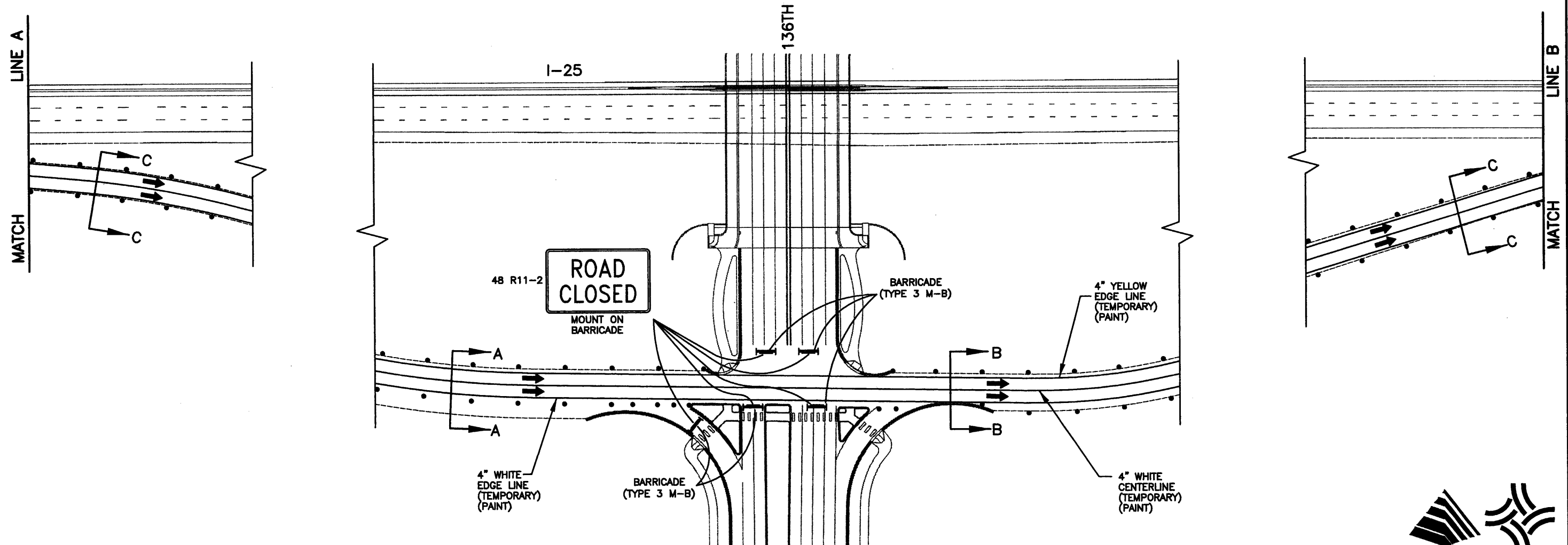
SECTION A-A



SECTION B-B



SECTION C-C



SHEET 2 OF 3

Computer File Information		Index of Revisions		As Constructed		136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL		Project No./Code	
Creation Date:	01/30/02 Initials: JGF			No Revisions:		Designer:	JGF		97-71
Last Modification Date:	01/08/03 Initials: DRS			Revised:		Detailer:	JGF		
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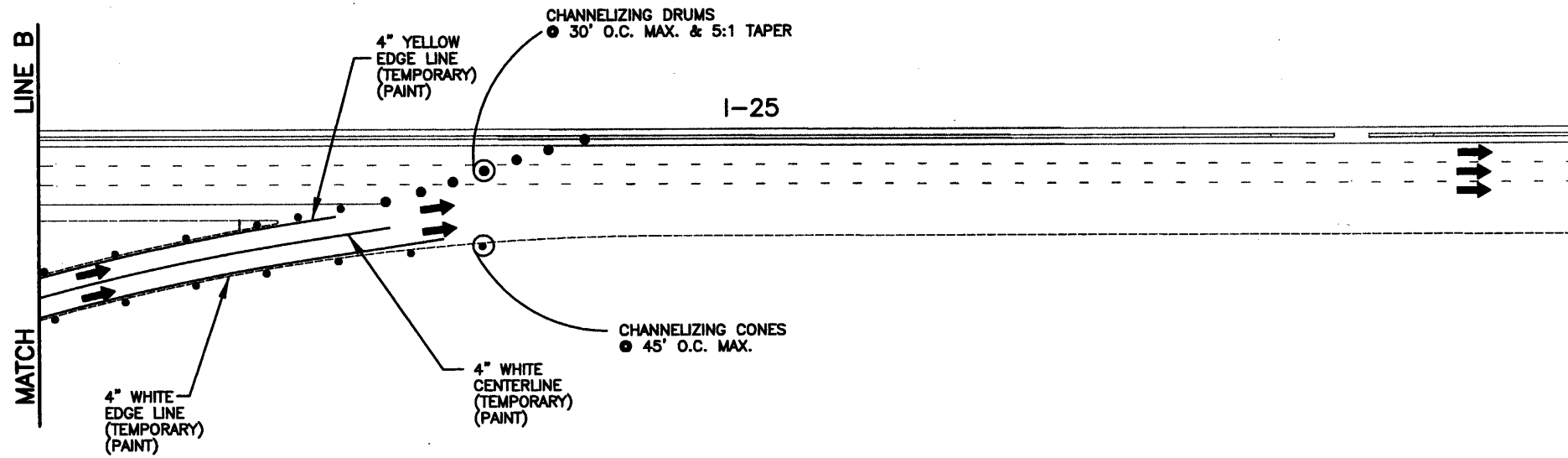


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fax 303.721.0832  
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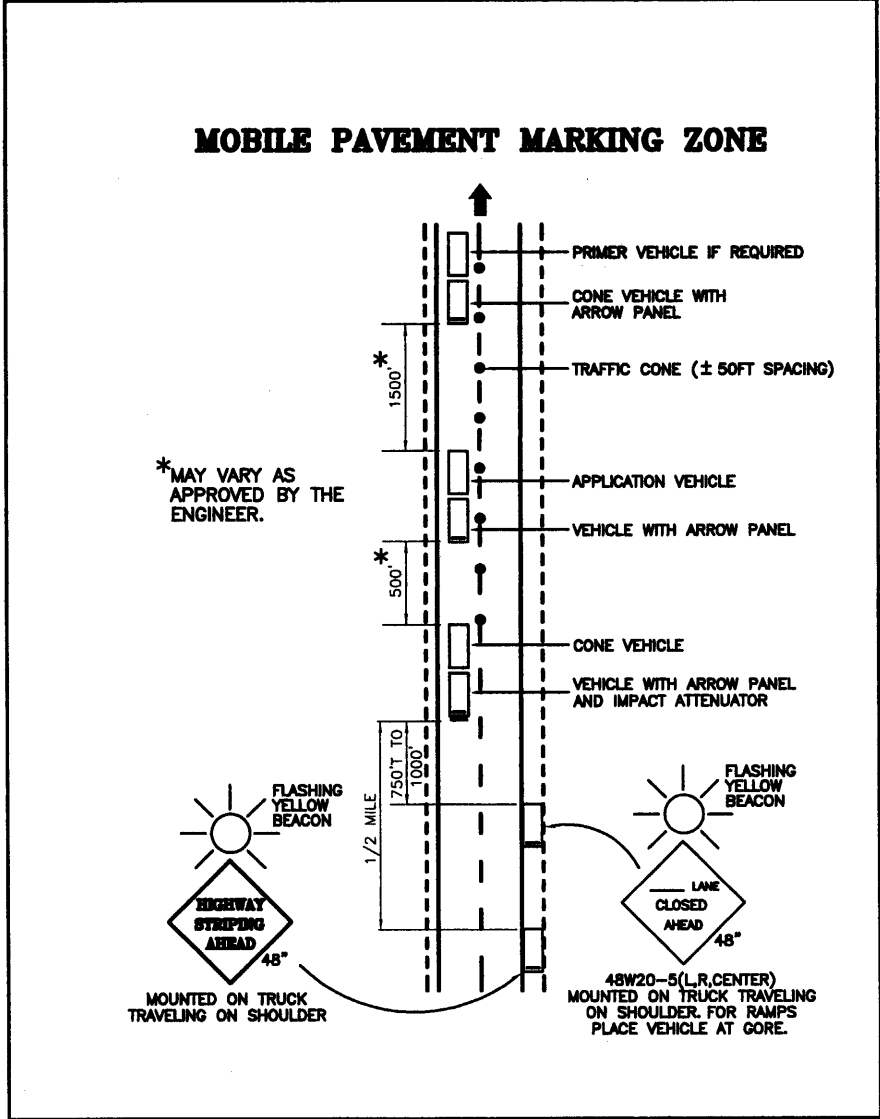
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SHEET 3 OF 3

<b>Computer File Information</b>		<b>Index of Revisions</b>		 <p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Mapewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL	Project No./Code
Creation Date: 01/30/02	Initials: JGF				No Revisions:		Designer: JGF Detailer: JGF
Last Modification Date: 01/08/03	Initials: DRS				Revised:	Sheet Subset:	
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### CONSTRUCTION TRAFFIC CONTROL DEVICES FOR MOBILE PAVEMENT MARKING ZONE

SIGN CODE	LEGEND	SIZE (sq ft)	PANEL SIZE			OTHER
			A	B	C	
48W20-5< >	-----LANE/CLOSED/(Distance)	48"x48"		1		
SPECIAL	HIGHWAY/STRIPING/AHEAD	48"x48"		1		
	SIGN TOTALS			## 2		
	FLASHING BEACON (PORTABLE)					##2 EA.
	FLASHING ARROW PANEL	(C TYPE)				##3 EA.
	TRAFFIC CONES	36"				##300 EA.
	MOBILE PAVEMENT MARKING ZONE					2 DAY

## THESE ITEMS SHALL BE INCLUDED IN THE PAY ITEM 'MOBILE PAVEMENT MARKING ZONE' AND WILL NOT BE PAID FOR SEPARATELY.

### CONSTRUCTION TRAFFIC CONTROL DEVICES FOR ADDITIONAL WORK WITHIN MOBILE PAVEMENT MARKING ZONE

SIGN CODE	LEGEND	SIZE (sq ft)	PANEL SIZE			OTHER
			A	B	C	
48W20-1	ROAD/WRK/AHEAD	48"x48"		8		
48W20-5< >	-----LANE/CLOSED/(Distance)	48"x48"		8		
48W4-2< >	Transition Symbol	48"x48"		8		
48W20-7a	Flagger Symbol	48"x48"		8		
48W20-7b	BE/PREPARED/TO STOP	48"x48"		8		
	SIGN TOTALS			40		
	FLASHING ARROW PANEL	(C TYPE)				2 EA.
	TRAFFIC CONES	36"				200 EA.

NOTE: ALL ITEMS IN THIS TABULATION SHALL BE INCLUDED IN THE PAY ITEM 'MOBILE PAVEMENT MARKING ZONE' AND WILL NOT BE PAID FOR SEPARATELY. ALL ITEMS IN THIS TABULATION ARE FOR THE INSTALLATION OF CROSSWALK STRIPES AND PAVEMENT MARKING SYMBOLS AND LEGENDS. LANE CLOSURES FOR THIS WORK SHALL CONFORM TO M&S STANDARD S-630-1 CASES V THROUGH IX.

Computer File Information	
Creation Date:	01/28/02 Initials: JGF
Last Modification Date:	09/13/02 Initials: JGF
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Acad Ver. 2000i	Scale: NONE Units: English

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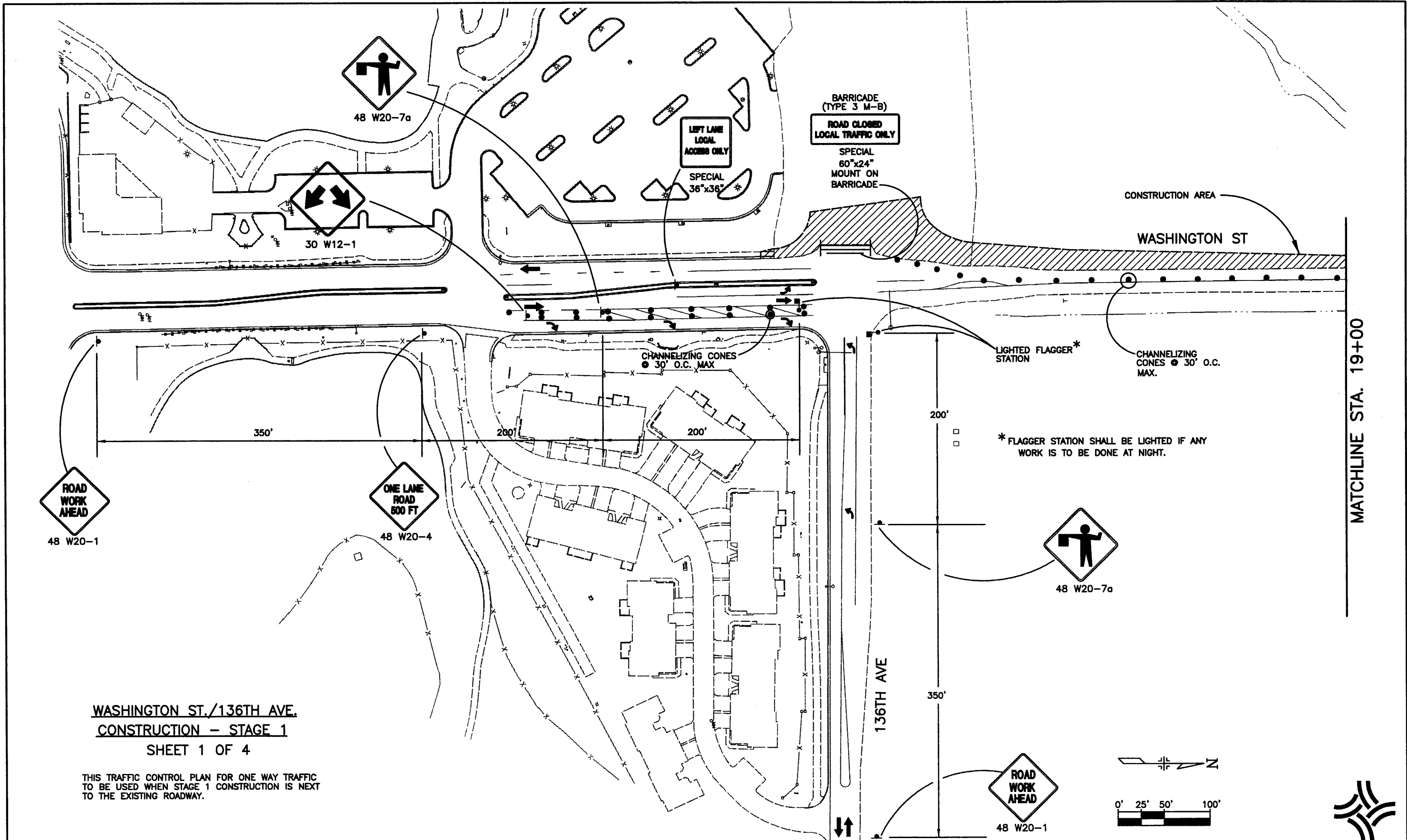


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 fax 303.721.0832  
 fhu@fhueng.com  
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 Englewood, CO 80111

As Constructed	136TH AVENUE AT I-25 INTERCHANGE
No Revisions:	CONSTRUCTION TRAFFIC CONTROL
Revised:	Designer: JGF
Void:	Detailer: JGF
	Sheet Subset: Subset Sheets: CTC-9 of 18

Project No./Code	97-71
Sheet Number	397

J:\00033\acad\sheet\T00033CTC08.dwg, 12/19/02 09:09:11 AM, James



**WASHINGTON ST./136TH AVE.  
CONSTRUCTION - STAGE 1  
SHEET 1 OF 4**

THIS TRAFFIC CONTROL PLAN FOR ONE WAY TRAFFIC TO BE USED WHEN STAGE 1 CONSTRUCTION IS NEXT TO THE EXISTING ROADWAY.

Computer File Information	
Creation Date:	12\11\00 Initials: JAC
Last Modification Date:	09/13/02 Initials: JGF
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Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	

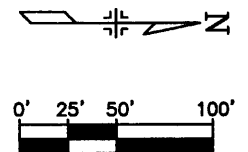


303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
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No Revisions:
Revised:
Void:

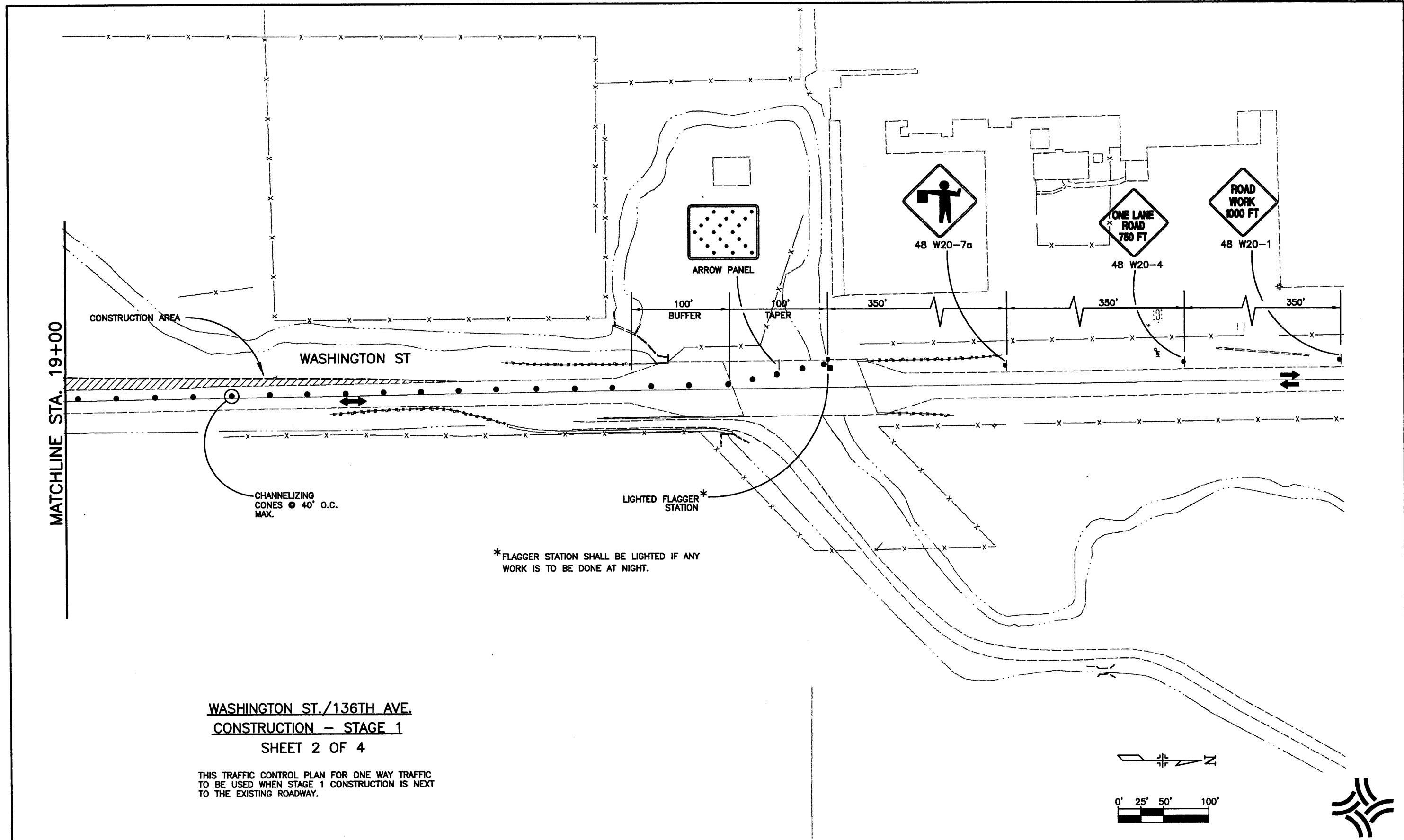
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Designer:	JGF
Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	CTC-10 of 18

Project No./Code
97-71
Sheet Number <b>398</b>



MATCHLINE STA. 19+00

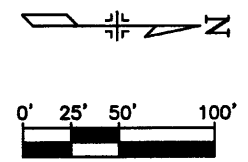
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\*FLAGGER STATION SHALL BE LIGHTED IF ANY WORK IS TO BE DONE AT NIGHT.

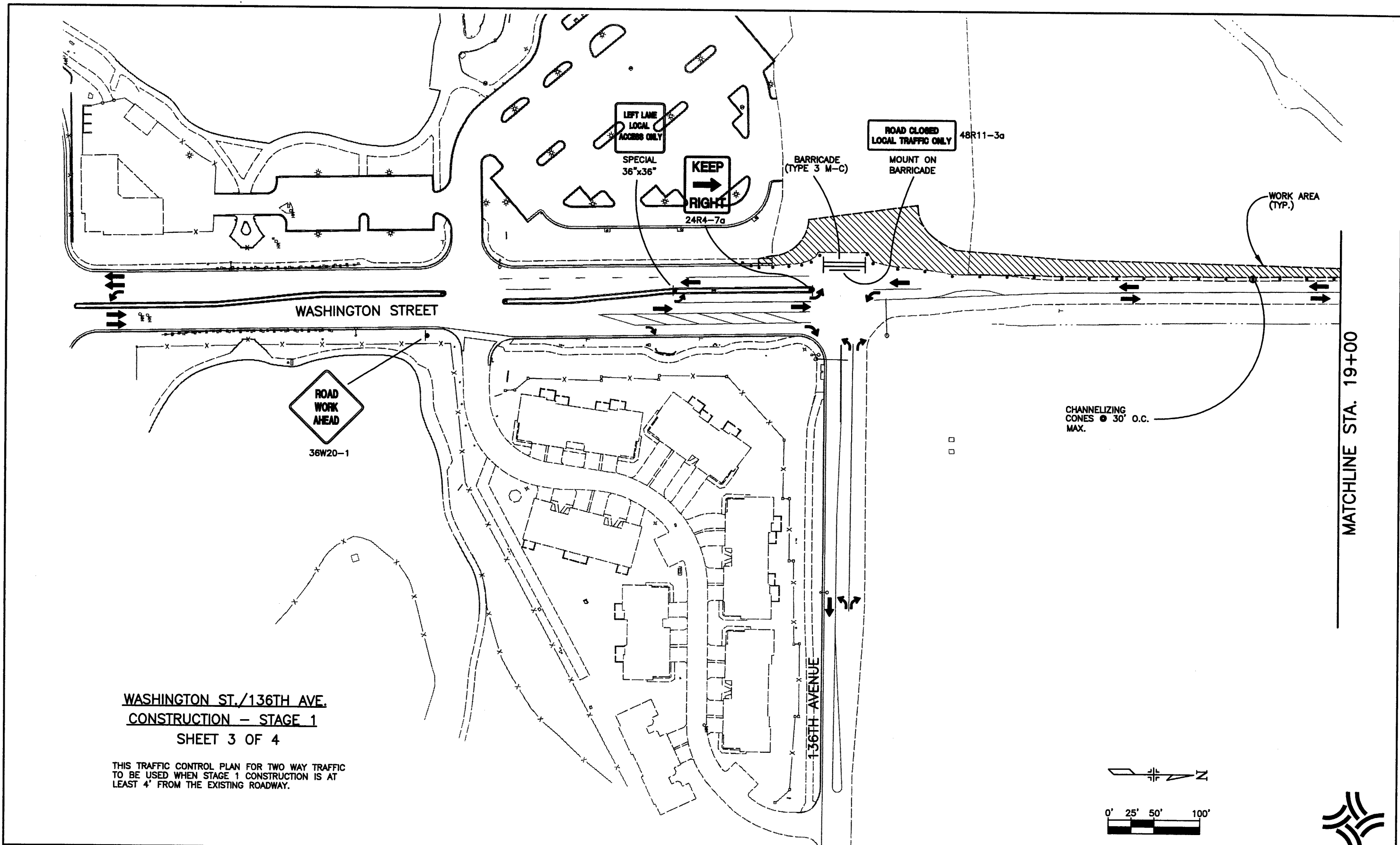
**WASHINGTON ST./136TH AVE.  
CONSTRUCTION - STAGE 1  
SHEET 2 OF 4**

THIS TRAFFIC CONTROL PLAN FOR ONE WAY TRAFFIC TO BE USED WHEN STAGE 1 CONSTRUCTION IS NEXT TO THE EXISTING ROADWAY.



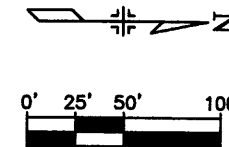
<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	<b>136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL</b>	Project No./Code
Creation Date:	12\11\00 Initials: JAC				No Revisions:		97-71
Last Modification Date:	12/19/02 Initials: JGF				Revised:		Designer: JGF
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Acad Ver. 2000i	Scale: 1"=100' Units: English					Sheet Number <b>399</b>	

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**WASHINGTON ST./136TH AVE.  
CONSTRUCTION - STAGE 1  
SHEET 3 OF 4**

THIS TRAFFIC CONTROL PLAN FOR TWO WAY TRAFFIC TO BE USED WHEN STAGE 1 CONSTRUCTION IS AT LEAST 4' FROM THE EXISTING ROADWAY.



Computer File Information	
Creation Date:	12\11\00 Initials: JAC
Last Modification Date:	09/13/02 Initials: JGF
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Drawing File Name:	T00033CTC12.DWG
Acad Ver. 2000i	Scale: 1"=100' Units: English

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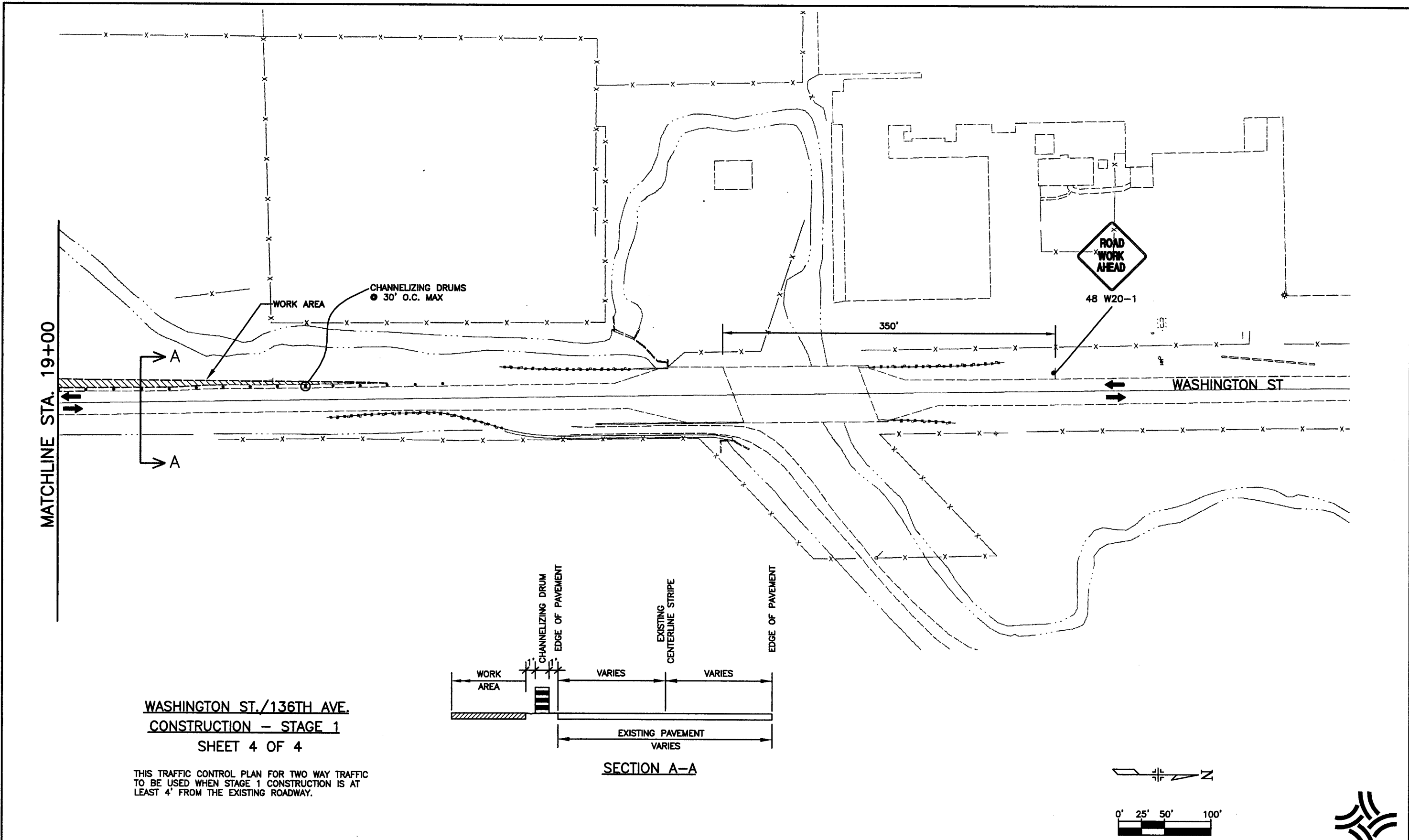
As Constructed
No Revisions:
Revised:
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Designer:	JGF
Detailer:	JAC
Sheet Subset:	SIGNSTRP
Subset Sheets:	CTC-12 of 18

Project No./Code	97-71
Sheet Number	400

MATCHLINE STA. 19+00

J:\00033\acad\sheet\T00033CTC13.dwg, 12/19/02 09:13:36 AM, James



**WASHINGTON ST./136TH AVE.  
CONSTRUCTION - STAGE 1  
SHEET 4 OF 4**

THIS TRAFFIC CONTROL PLAN FOR TWO WAY TRAFFIC  
TO BE USED WHEN STAGE 1 CONSTRUCTION IS AT  
LEAST 4' FROM THE EXISTING ROADWAY.

**SECTION A-A**

Computer File Information	
Creation Date:	12\11\00 Initials: JAC
Last Modification Date:	09/13/02 Initials: JGF
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Acad Ver. 2000i	Scale: 1"=100' Units: English

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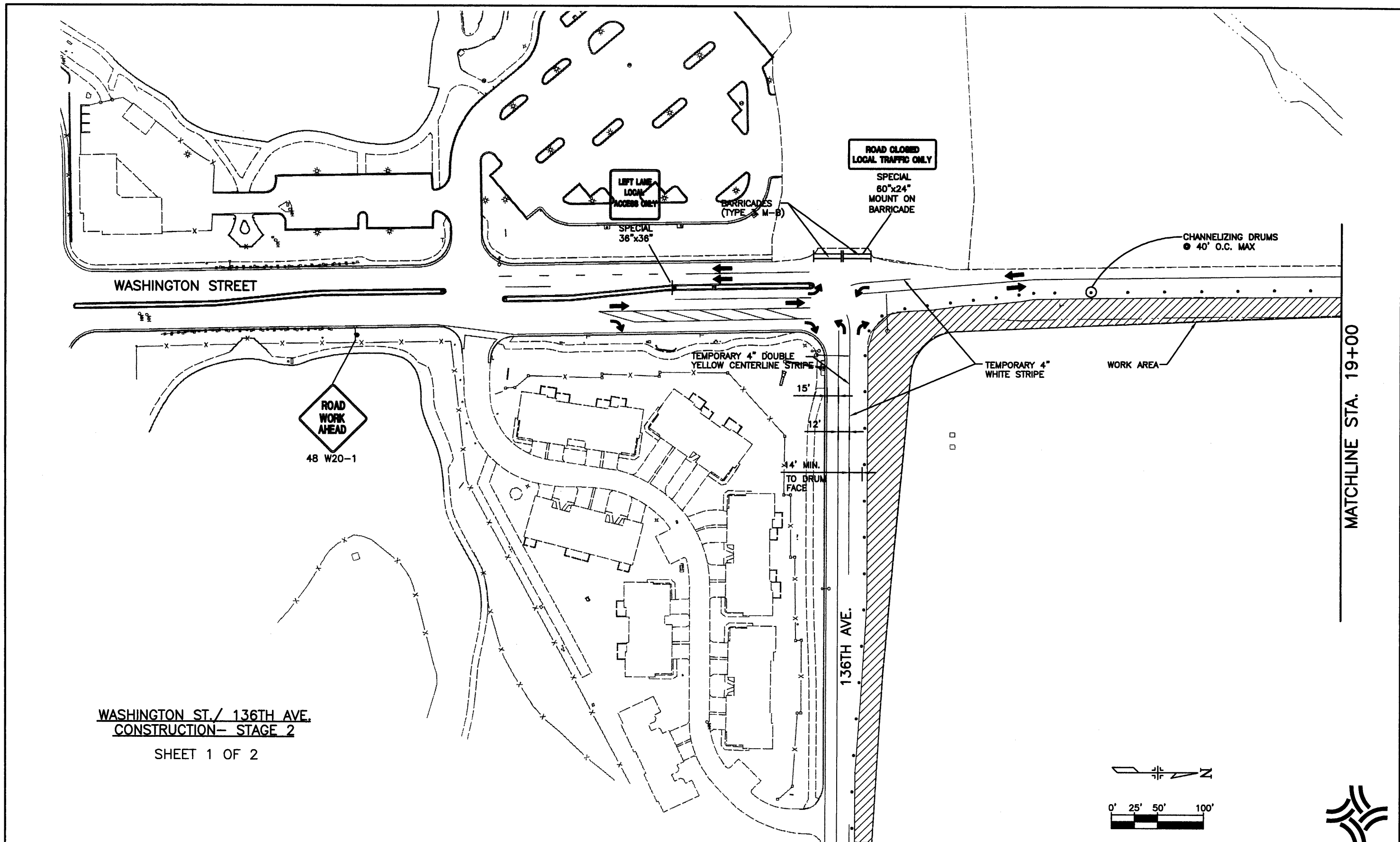
303.721.1440  
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Englewood, CO 80111

As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL	
Designer:	JGF
Detailer:	JAC
Sheet Subset:	Subset Sheets: CTC-13 of 18

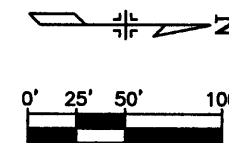
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97-71
Sheet Number <b>401</b>

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**WASHINGTON ST./ 136TH AVE.  
CONSTRUCTION- STAGE 2**

SHEET 1 OF 2



Computer File Information	
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Last Modification Date:	09/13/02 Initials: JGF
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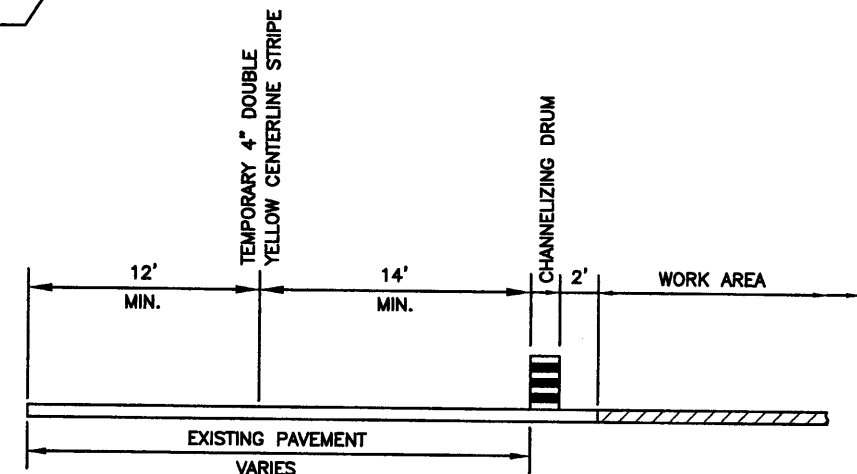
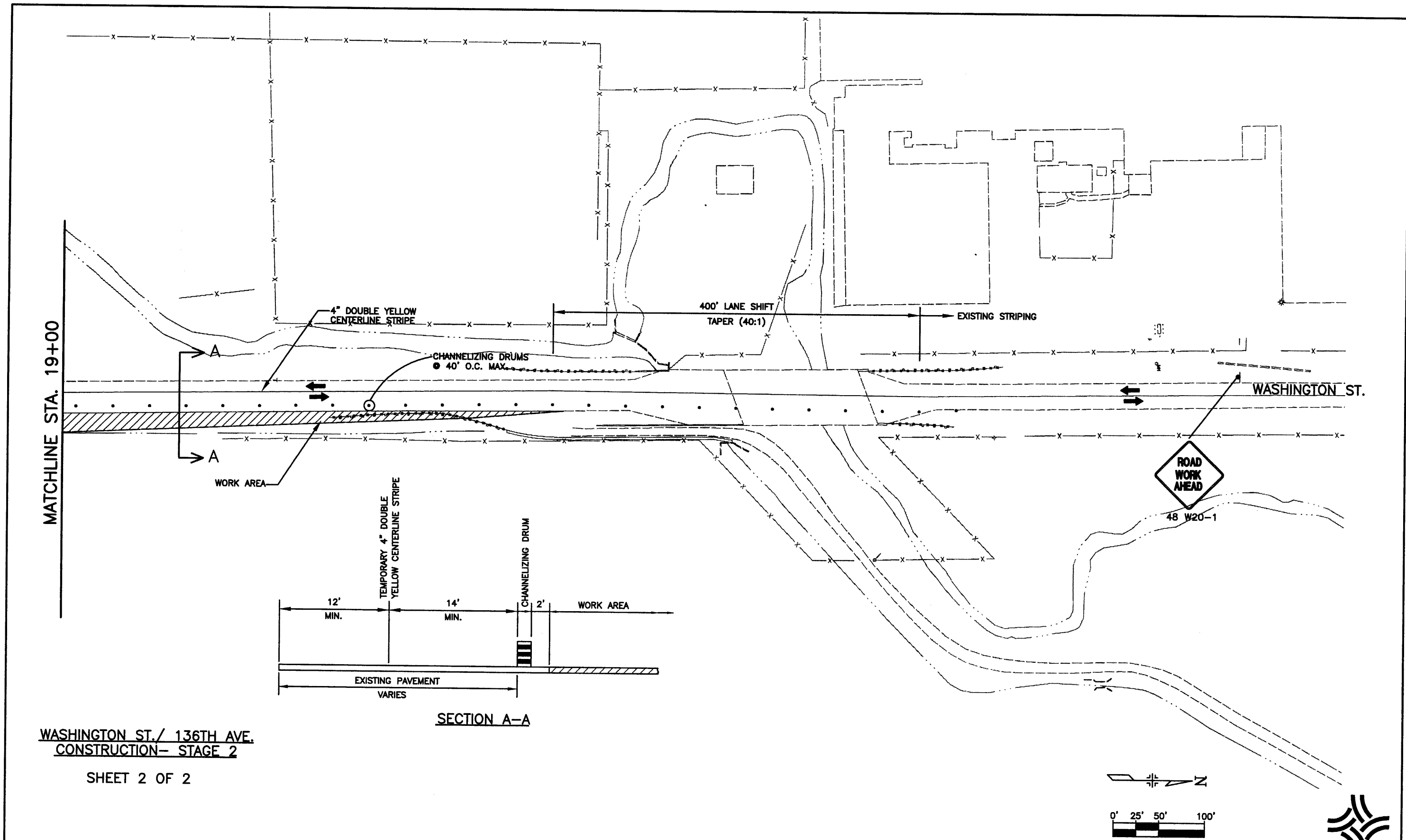
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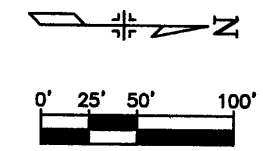
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Revised:		Detailer:	JAC	
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WASHINGTON ST./ 136TH AVE.  
CONSTRUCTION- STAGE 2

SHEET 2 OF 2



Computer File Information	
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Last Modification Date:	09/13/02 Initials: JGF
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Drawing File Name:	T00033CTC11.DWG
Acad Ver. 2000i	Scale: 1"=100' Units: English

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No Revisions:	
Revised:	
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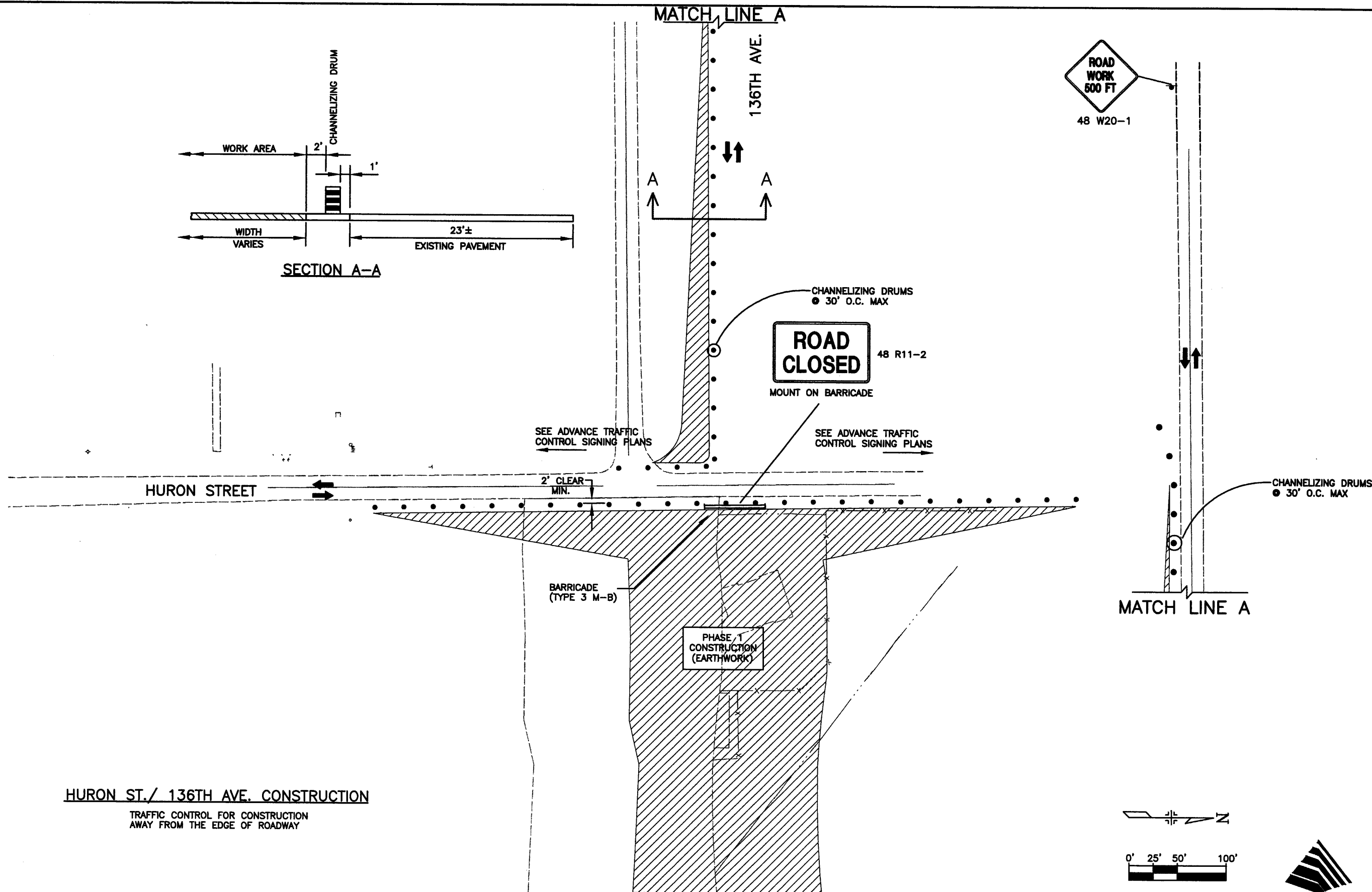
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Project No./Code	97-71
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**HURON ST./ 136TH AVE. CONSTRUCTION**

TRAFFIC CONTROL FOR CONSTRUCTION  
AWAY FROM THE EDGE OF ROADWAY

Computer File Information	
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Acad Ver.	2000i Scale: 1"=100' Units: English

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Englewood, CO 80111

As Constructed	
No Revisions:	
Revised:	
Void:	

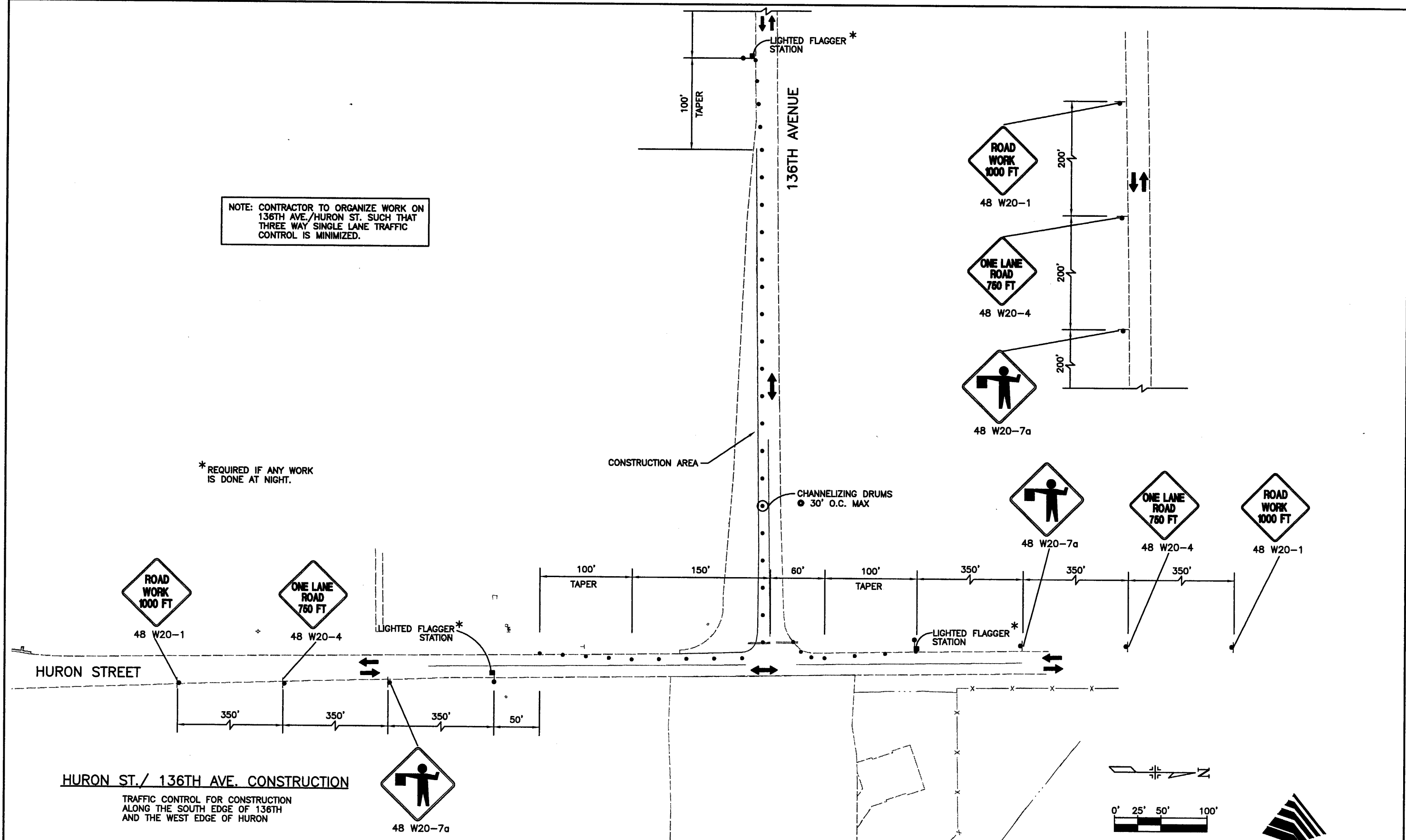
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Designer:	JGF
Detailer:	JAC
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Subset Sheets:	CTC-16 of 18

Project No./Code	97-71
Sheet Number	404

J:\00033\acad\sheet\T00033CTC03.dwg, 12/19/02 09:21:05 AM, James

NOTE: CONTRACTOR TO ORGANIZE WORK ON 136TH AVE./HURON ST. SUCH THAT THREE WAY SINGLE LANE TRAFFIC CONTROL IS MINIMIZED.

\* REQUIRED IF ANY WORK IS DONE AT NIGHT.



**HURON ST./ 136TH AVE. CONSTRUCTION**

TRAFFIC CONTROL FOR CONSTRUCTION  
ALONG THE SOUTH EDGE OF 136TH  
AND THE WEST EDGE OF HURON



48 W20-7a

Computer File Information		Index of Revisions		As Constructed		136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL		Project No./Code	
Creation Date:	01/31/02 Initials: JAC			No Revisions:		Designer: JGF		97-71	
Last Modification Date:	09/13/02 Initials: JGF			Revised:		Detailer: JAC			
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Drawing File Name:	T00033CTC03.DWG							Sheet Number 405	
Acad Ver. 2000i	Scale: 1"=100' Units: English								



**FELSBERG  
HOLT &  
ULLEVIG**

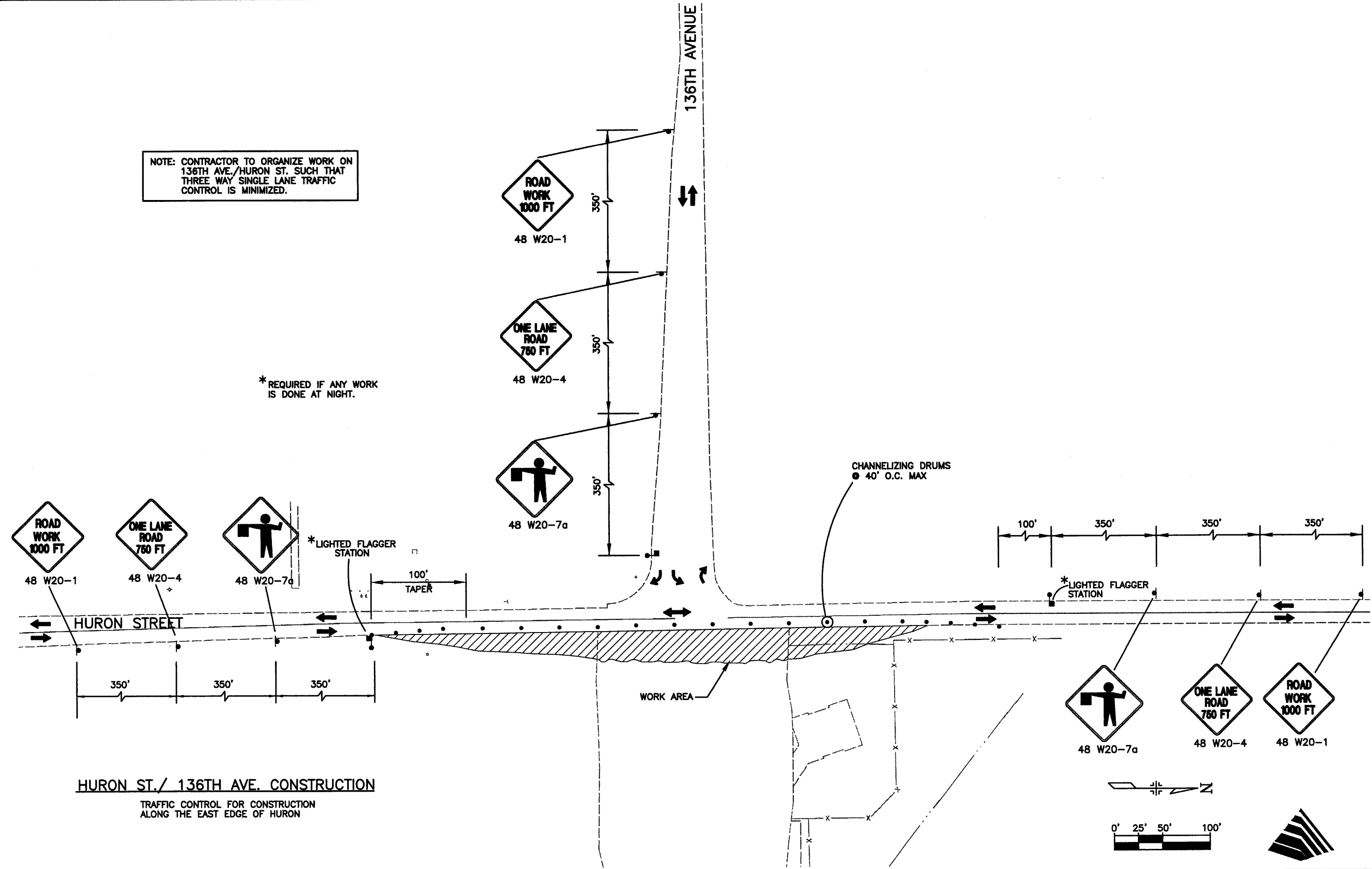
303.721.1440  
fax 303.721.0832  
fhu@fhueng.com

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7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

J:\00033\acad\sheet\T00033CTC04.dwg, 12/19/02 10:46:17 AM, James

NOTE: CONTRACTOR TO ORGANIZE WORK ON 136TH AVE./HURON ST. SUCH THAT THREE WAY SINGLE LANE TRAFFIC CONTROL IS MINIMIZED.

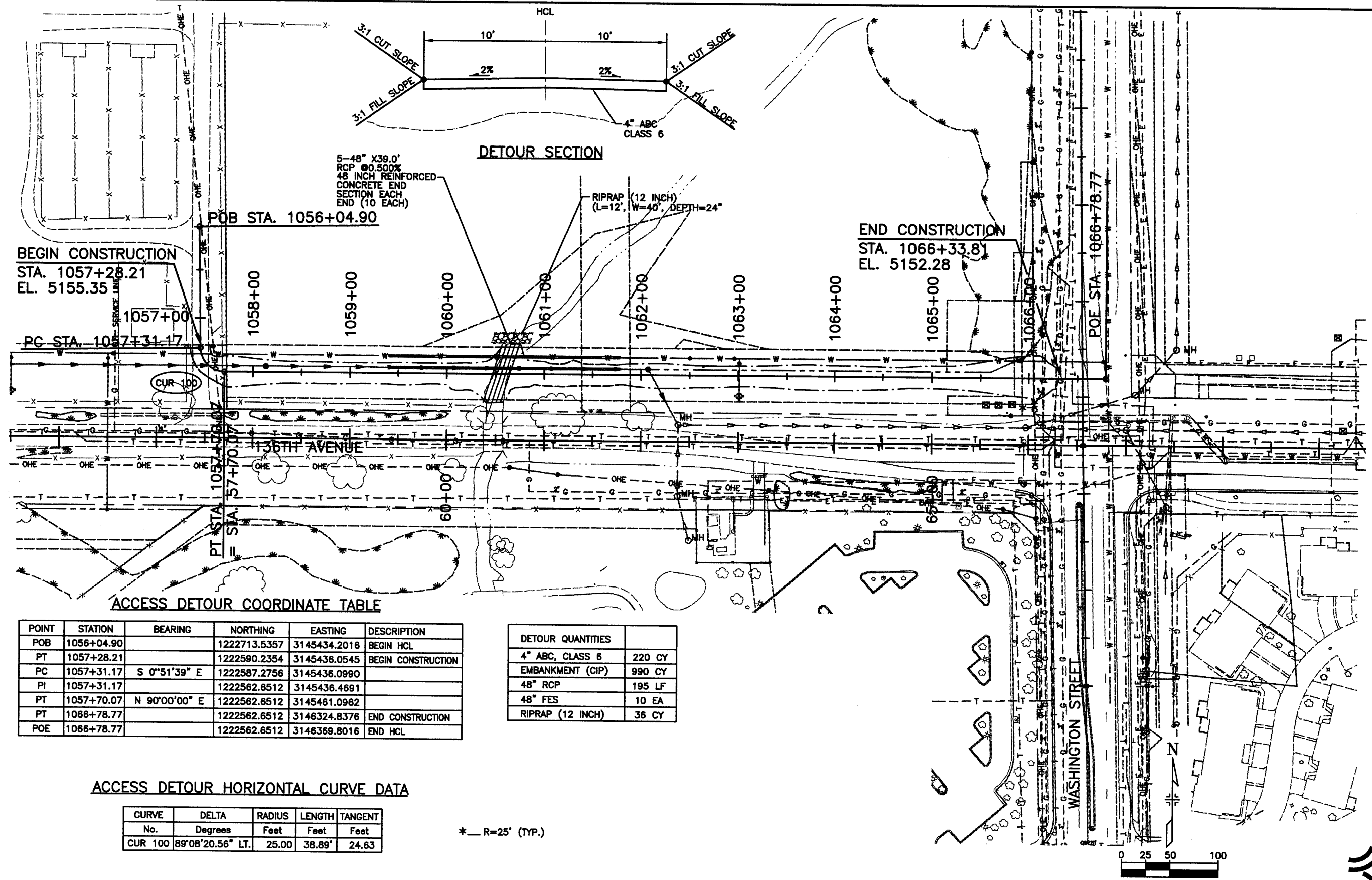
\*REQUIRED IF ANY WORK IS DONE AT NIGHT.



**HURON ST./ 136TH AVE. CONSTRUCTION**  
TRAFFIC CONTROL FOR CONSTRUCTION  
ALONG THE EAST EDGE OF HURON

<b>Computer File Information</b>		<b>Index of Revisions</b>		<p>303.721.1440 fax 303.721.0832 fhu@fhueng.com</p> <p>Greenwood Corporate Plaza 7951 E. Maplewood Ave. Ste. 200 Englewood, CO 80111</p>	<b>As Constructed</b>	136TH AVENUE AT I-25 INTERCHANGE CONSTRUCTION TRAFFIC CONTROL	Project No./Code
Creation Date: 01/31/02	Initials: JAC				No Revisions:		97-71
Last Modification Date: 12/19/02	Initials: JGF				Revised:	Designer: JGF	
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Acad Ver. 2000i	Scale: 1"=100'	Units: English					Sheet Number <b>406</b>

J:\00033\acad\sheet\R00033DTR01.dwg, 12/19/02 09:24:10 AM, James



**DETOUR SECTION**

5-48" X39.0'  
RCP @0.500%  
48 INCH REINFORCED  
CONCRETE END  
SECTION EACH  
END (10 EACH)

RIPRAP (12 INCH)  
(L=12', W=40', DEPTH=24")

END CONSTRUCTION  
STA. 1066+33.81  
EL. 5152.28

BEGIN CONSTRUCTION  
STA. 1057+28.21  
EL. 5155.35

PC STA. 1057+31.17

POB STA. 1056+04.90

POE STA. 1066+78.77

**ACCESS DETOUR COORDINATE TABLE**

POINT	STATION	BEARING	NORTHING	EASTING	DESCRIPTION
POB	1056+04.90		1222713.5357	3145434.2016	BEGIN HCL
PT	1057+28.21		1222590.2354	3145436.0545	BEGIN CONSTRUCTION
PC	1057+31.17	S 0°51'39" E	1222587.2756	3145436.0990	
PI	1057+31.17		1222562.6512	3145436.4691	
PT	1057+70.07	N 90°00'00" E	1222562.6512	3145461.0962	
PT	1066+78.77		1222562.6512	3146324.8378	END CONSTRUCTION
POE	1066+78.77		1222562.6512	3146369.8016	END HCL

DETOUR QUANTITIES	
4" ABC, CLASS 6	220 CY
EMBANKMENT (CIP)	990 CY
48" RCP	195 LF
48" FES	10 EA
RIPRAP (12 INCH)	36 CY

**ACCESS DETOUR HORIZONTAL CURVE DATA**

CURVE No.	DELTA Degrees	RADIUS Feet	LENGTH Feet	TANGENT Feet
CUR 100	89°08'20.56" LT.	25.00	38.89'	24.63

\*— R=25' (TYP.)

**Computer File Information**

Creation Date:	04\03\02	Initials:	ZV
Last Modification Date:	10\18\02	Initials:	DRS
Full Path:	J:\00033\Acad\Sheet\		
Drawing File Name:	R00033DTR01.dwg		
Acad Ver.	2000i	Scale:	1"=100' Units: English

**Index of Revisions**

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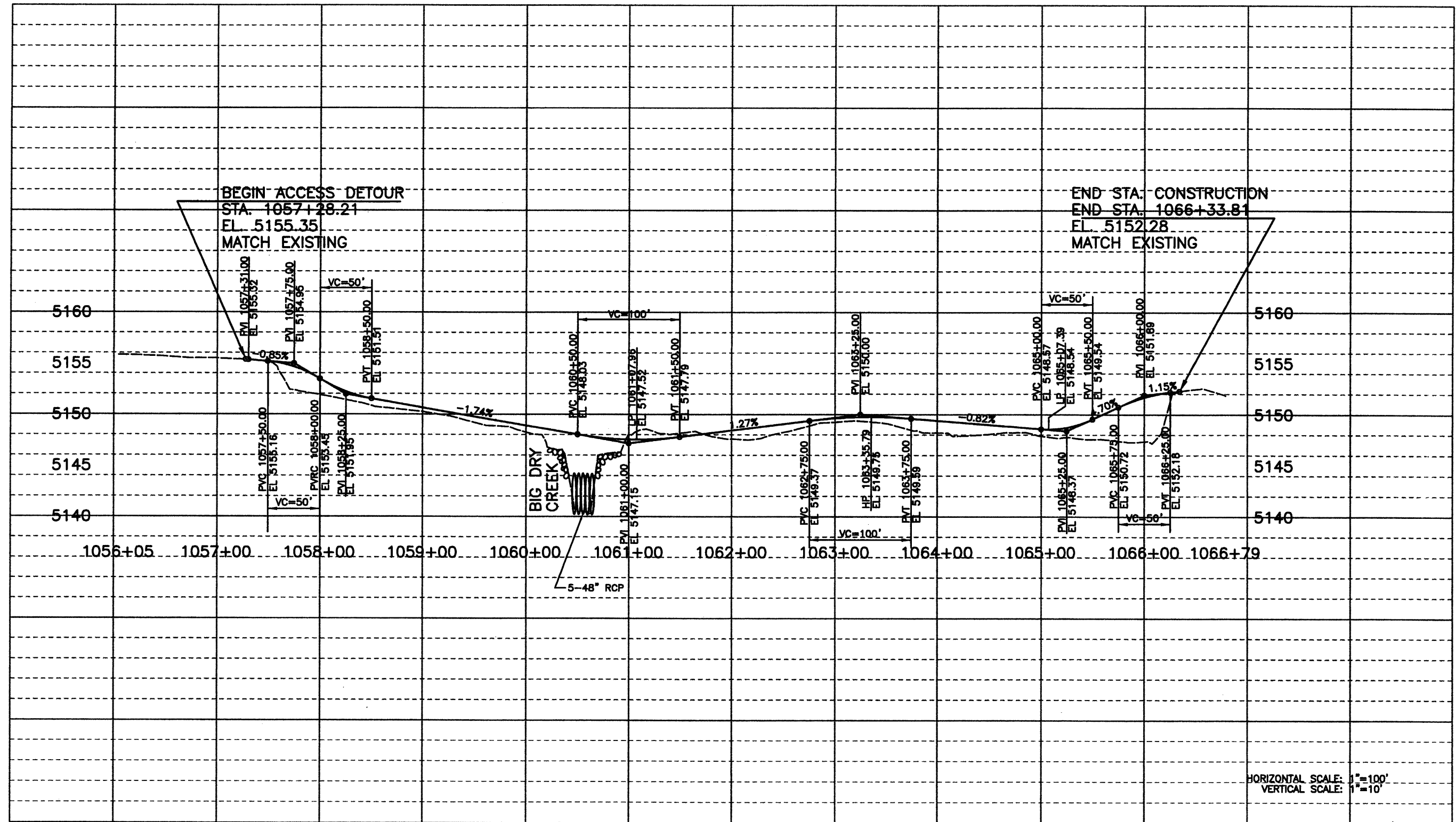


303.721.1440  
fax 303.721.0832  
fhu@fhueng.com  
  
Greenwood Corporate Plaza  
7951 E. Maplewood Ave. Ste. 200  
Englewood, CO 80111

As Constructed	136TH AVENUE AT I-25 INTERCHANGE	Project No./Code
No Revisions:	ACCESS DETOUR	97-71
Revised:	Designer: RKZ	
	Detailer: ZV	
Void:	Sheet Subset: ROADWAY	Subset Sheets: DTR-01 of 2
		Sheet Number 407



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HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



Computer File Information	
Creation Date:	04/03/02 Initials: ZV
Last Modification Date:	12/19/02 Initials: DRS
Full Path:	J:\00033\Acad\Sheet\
Drawing File Name:	R00033DTR02.dwg
Acad Ver. 2000i	Scale: 1"=100' Units: English

Index of Revisions	
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303.721.1440  
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Englewood, CO 80111

As Constructed
No Revisions:
Revised:
Void:

136TH AVENUE AT I-25 INTERCHANGE ACCESS DETOUR PROFILE	
Designer:	RKZ
Detailer:	ZV
Sheet Subset:	ROADWAY
Subset Sheets:	DTR-02 of 2

Project No./Code	97-71
Sheet Number	408



Sheet Revisions

02/02	Access Parcels AC-2, AC-3, AC-9 & AC-11 Added.	JWD
02/02	Sheets 2A, 2B, 4, 4A, 7, 9 & 10 Changed	JWD
	Due to Revision of Easements in Parcels 3 & 4	
07/02	Sheets 2A, 2D, 4, 4A & 5 - 10 Changed	JWD
	Due to Revision of Easements in Parcels 3 & 11	
11/02	Sheets 2B, 2D, 4, 4A, 5 & 10 Changed	JWD



Aztec CONSULTANTS, inc.

8000 South Lincoln Street, Unit 5  
Littleton, Colorado 80122  
Phone: (303)713-1898 Fax: (303)713-1897

RIGHT OF WAY

TITLE SHEET

PROJECT NO. 97-71 /CDOT 0253-175

136TH AVENUE AT I-25 INTERCHANGE

PROJECT CODE: 13918 SHEET NUMBER: 1

CITY OF THORNTON  
CITY OF WESTMINSTER  
STATE OF COLORADO

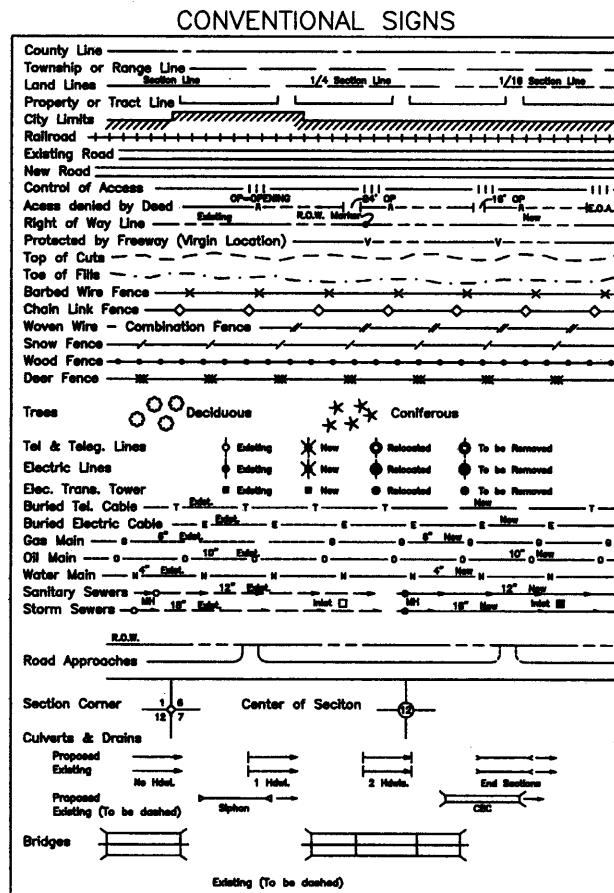
RIGHT-OF-WAY PLAN OF PROPOSED  
PROJECT NO. 97-71/CDOT 0253-175  
136TH AVENUE AT I-25 INTERCHANGE  
ADAMS COUNTY  
RIGHT-OF-WAY

INDEX OF SHEETS

1	Title Sheet
2, 2A, 2B, 2C, 2D	Tabulation of Properties
3, 3-A, 3-B	Control Diagram
4, 4A	Monumentation Sheet
5 - 10	Plan Sheet

SCALES OF ORIGINAL DRAWINGS

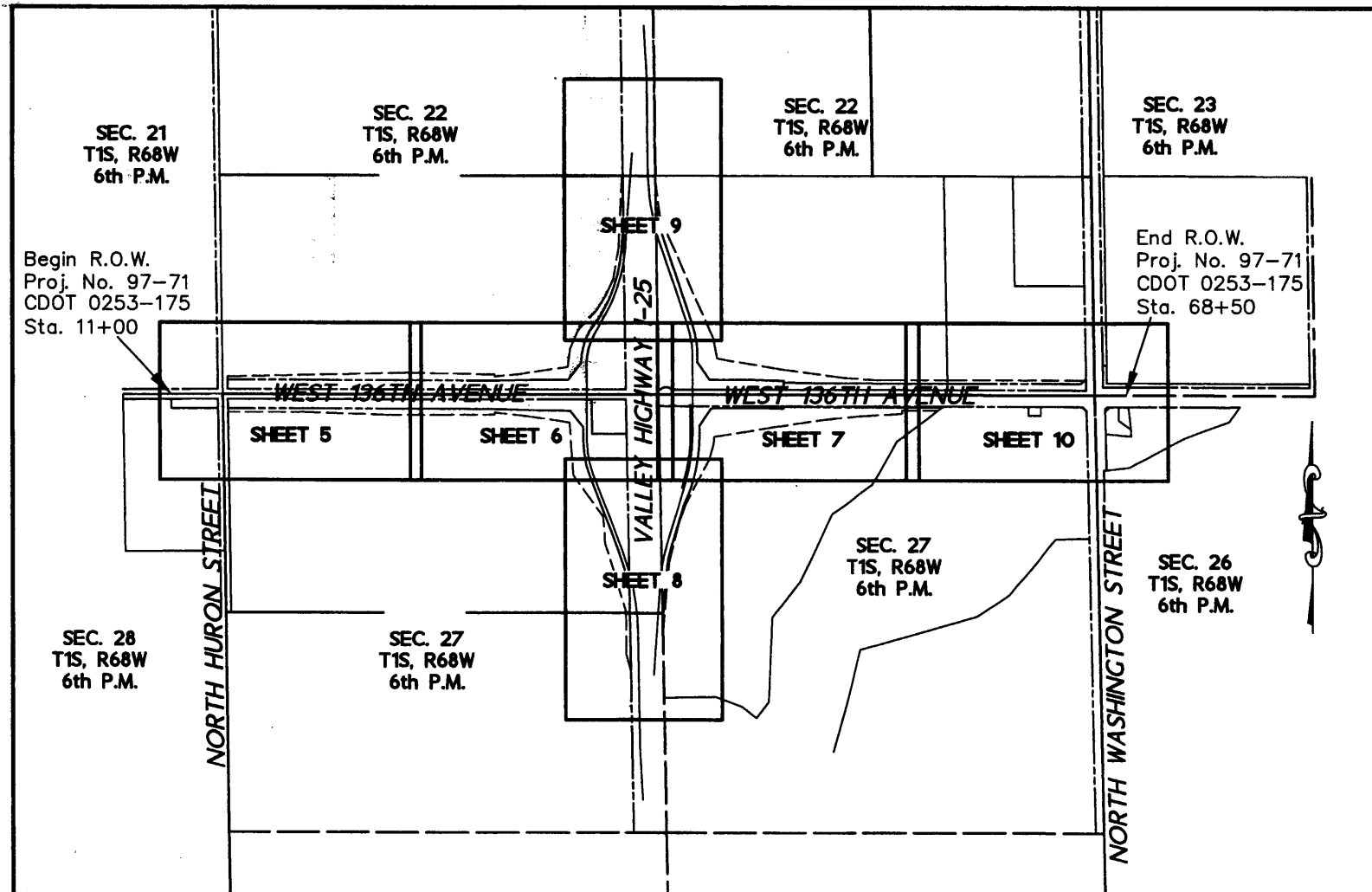
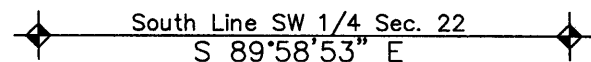
PLAN SHEETS 1" = 100'  
R.O.W. LENGTH OF PROJECT 1.10 MI



BASIS OF BEARINGS

For the purpose of this project the bearings are based on a line connecting the Southwest corner of Section 22, Township 1 South, Range 68 West of the 6th Principal Meridian (2" Alum. Cap stamped "LS 23904") and the South 1/4 corner of Section 22, Township 1 South, Range 68 West of the 6th Principal Meridian (3" Alum. Cap Stamped "PLS 13155") as bearing South 89°58'53" East.

SW CORNER SEC. 22 FOUND 2" ALUM CAP "LS 23904"  
S 1/4 CORNER SEC 22 FOUND 3" ALUM CAP "PLS 13155"



1 inch = 1000 ft.

DEPOSITED THIS DAY OF THE COUNTY LAND SURVEYS/RIGHT OF WAY SURVEYS AT PAGE RECEPTION NUMBER

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02/02	Access AC-2 Added.	JWD



RIGHT OF WAY	
TABULATION OF PROPERTIES	
PROJECT NO. 97-71 /CDOT 0253-175	
136TH AVENUE AT I-25 INTERCHANGE	
PROJECT CODE: 13918	SHEET NUMBER: 2

R.O.W. TABULATION OF PROPERTIES IN ADAMS COUNTY

PARCEL NO.	OWNER	ADDRESS	LOCATION	AREA IN SQUARE FEET				PARCEL NO.	REMARKS	
				PARCEL	TO BE ACQUIRED	NET AREA	REMAINDER			
							LEFT			RIGHT
			Sections 22, 23, 26, 27 & 28, T. 1 S, R. 68 W, 6th P.M. Adams County							
2	Charles E. Foster TO: City of Westminster	2888 East 100th Avenue Denver, CO 80643	SW 1/4 Sec. 22	114,715	114,715			2		
2A	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	1,135	1,135			2A		
2B	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	151,433	151,433		3,092,814	2B		
AC-2	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)					AC-2	No Point of Access.	
PE-2	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	8,645	8,645			PE-2	For Pedestrian Access.	
SE-2	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	21,517	21,517			SE-2	For Roadway Slope.	
SE-2A	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	22	22			SE-2A	For Roadway Slope.	
TE-2	(Same as Above) TO: City of Westminster	(Same as Above)	(Same as Above)	83,255	83,255			TE-2	For Construction Work Area.	
3	Eric S. White, 6.00000193% Interest, DJ Subtrust, 20.40000656% Interest, Gregory A. Cresswell, 1.27500041% Interest, Lincoln Trust Company, Custodian Of Barbara A. Medina Individual Retirement Account, 3.82500123% Interest, M. Jennet White, 2.26403934% Interest, EJW Limited Partnership, 10.56640726% Interest, Steven M. Booren, 4.52811087% Interest, CW Subtrust, 22.66404591% Interest, Marie S. Booren, 4.52811087% Interest, Douglas S. Dunkin, 3.01876203% Interest, Miller Family Trust, 3.00000097% Interest, Robert C. Roth Jr., 4.52811087% Interest, Laura Snortland Fairfield, 6.79301908% Interest, Robert B. Taylor, 1.50938102% Interest, Nancy I. Cresswell, 1.27500041% Interest, Jason White, 0.85020028% Interest, Daniel White, 0.85020028% Interest, Jane White, 1.27500041% Interest, Christopher D. White, 0.84960027% Interest.	7276 South Chapparral Cir. Aurora, CO 80016	SE 1/4 Sec. 22	172,086	172,086			3		

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

datestamp 11/25/02



Sheet Revisions

02/02	Access AC-3 Added.	JWD
03/02	Delete SE-4; Revise SE-4A	JWD
03/02	Rename UE-3 & UE-4 to PE-3 & PE-4A & Revise Areas	JWD
07/02	Rename TE-3 to PE-3A, TE-3A to PE-3B & TE-3B to TE-3.	JWD
07/02	Revise PE-3 & Revise Remark for PE-4	JWD



R.O.W. TABULATION OF PROPERTIES IN ADAMS COUNTY

PARCEL NO.	OWNER	ADDRESS	LOCATION	AREA IN SQUARE FEET				PARCEL NO.	REMARKS	
				PARCEL	TO BE ACQUIRED	NET AREA	REMAINDER			
							LEFT			RIGHT
			Sections 22, 23, 26, 27 & 28, T. 1 S, R. 68 W, 6th P.M. Adams County							
3A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	89,201	89,201		1,986,704	3A		
AC-3	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)					AC-3	No Point of Access.	
PE-3 REV	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	9,094	9,094			PE-3 REV	For Construction and Maintenance of Drainage, Roadway Slope & Utility Facilities.	
PE-3A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	10,258	10,258			PE-3A	For Construction and Maintenance of Drainage Facilities.	
PE-3B	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	8,358	8,358			PE-3B	For Construction and Maintenance of Drainage Facilities.	
SE-3	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	54,634	54,634			SE-3	For Roadway Slope.	
SE-3A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	40,106	40,106			SE-3A	For Roadway Slope.	
TE-3	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	25,885	25,885			TE-3	For Construction Work Area.	
4	Geneva/Pacific Thornton, LLC TO: City of Thornton	3540 S. Popular St. Suite 303 Denver, CO 80237	SE 1/4 Sec. 22	37,932	37,932		762,018	4		
PE-4	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	6,238	6,238			PE-4	For Construction and Maintenance of Drainage Facilities.	
PE-4A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	17,849	17,849			PE-4A	For Construction and Maintenance of Drainage, Roadway Slope & Utility Facilities.	
SE-4A Rev	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	250	250			SE-4A Rev	For Roadway Slope	
SE-4B	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	232	232			SE-4B	For Roadway Slope	

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datestamp 11/25/02





DATE	REVISION	BY
03/02	Revise TE-4	JWD
11/02	Delete Parcel 6	JWD



RIGHT OF WAY	
TABULATION OF PROPERTIES	
PROJECT NO. 97-71 / CDOT 0253-175	
136TH AVENUE AT I-25 INTERCHANGE	
PROJECT CODE: 13918	SHEET NUMBER: 2B

R.O.W. TABULATION OF PROPERTIES IN ADAMS COUNTY

PARCEL NO.	OWNER	ADDRESS	LOCATION	AREA IN ACRES				PARCEL NO.	REMARKS	
				PARCEL	TO BE ACQUIRED	NET AREA	REMAINDER			
							LEFT			RIGHT
			Sections 22, 23, 26, 27 & 28, T. 1 S, R. 68 W, 6th P.M.							
			Adams County							
TE-4 Rev	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	17,548	17,548			TE-4 Rev	For Construction Work Area.	
TE-4A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	1,369	1,369			TE-4A	For Construction Work Area.	
5	Robert D. & Ilona J. Olivier TO: City of Thornton	13748 Downing Street Brighton, CO 80601-6344	SW 1/4 Sec. 23	1,622	1,622		23,652	5		
SE-5	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	3,809	3,809			SE-5	For Roadway Slope.	
SE-5A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	1,776	1,776			SE-5A	For Roadway Slope.	
TE-5	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	5,793	5,793			TE-5	For Construction Work Area.	
TE-5A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	2,916	2,916			TE-5A	For Construction Work Area.	
7	Public Service Company of Colorado TO: City of Thornton	550 15th Street Denver, CO 80202	SW 1/4 Sec. 23	203	203		1,527,014	7		
9	136 Joint Venture TO: CDOT	7600 E. Arapahoe Road #211 Englewood, CO 80112	NE 1/4 Sec. 27	171,585	171,585			9		

DEPOSITED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_ 19\_\_\_\_ AT \_\_\_\_\_ M., FOR INFORMATION  
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 SURVEYS AT PAGE \_\_\_\_\_, RECEPTION NUMBER \_\_\_\_\_  
 SIGNED \_\_\_\_\_ DEPT. \_\_\_\_\_

datestamp 5/25/02



Region 6

RIGHT OF WAY PLANS

Sheet Revisions

02/02	Access AC-9 & AC-11 Added.	JWD



AZTEC CONSULTANTS, inc.

8000 South Lincoln Street, Unit 5  
Littleton, Colorado 80122  
Phone: (303)713-1898 Fax: (303)713-1897

RIGHT OF WAY	
TABULATION OF PROPERTIES	
PROJECT NO. 97-71 /CDOT 0253-175	
136TH AVENUE AT I-25 INTERCHANGE	
PROJECT CODE: 13918	SHEET NUMBER: 2C

R.O.W. TABULATION OF PROPERTIES IN ADAMS COUNTY

PARCEL NO.	OWNER	ADDRESS	LOCATION	AREA IN ACRES				PARCEL NO.	REMARKS	
				PARCEL	TO BE ACQUIRED	NET AREA	REMAINDER			
							LEFT			RIGHT
			Sections 22, 23, 26, 27 & 28, T. 1 S, R. 68 W, 6th P.M. Adams County							
9A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	37,120	37,120			1,564,095	9A	
AC-9	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)						AC-9 No Point of Access.	
PE-9	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	44,322	44,322				PE-9 For Construction and Maintenance of Drainage Facilities.	
SE-9	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	28,258	28,258				SE-9 For Roadway Slope.	
SE-9A	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	363	363				SE-9A For Roadway Slope.	
SE-9B	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	53,677	53,677				SE-9B For Roadway Slope.	
TE-9	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	11,909	11,909				TE-9 For Construction Work Area.	
TE-9A	(Same as Above) TO: City of Thornton	(Same as Above)	(Same as Above)	1,541	1,541				TE-9A For Construction Work Area.	
10	City of Westminster TO: CDOT	4800 West 92nd Avenue Westminster, CO 80031	NW 1/4 Sec. 27	43,561	43,561			0	10	
11	E. Suzanne Mowery 50% Int. Cindee Elizabeth Steele 50% Int. TO: City of Westminster	2888 WCR 61 Keenesburg, CO 80643	NW 1/4 Sec. 27	119,020	119,020				11	
11A	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	1,322	1,322				11A	
11B	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)	165,983	165,983			2,753,148	11B	
AC-11	(Same as Above) TO: CDOT	(Same as Above)	(Same as Above)						AC-11 No Point of Access.	

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 ONLY IN BOOK OF THE COUNTY LAND SURVEYS/RIGHT OF WAY  
 SURVEYS AT PAGE \_\_\_\_\_ RECEPTION NUMBER \_\_\_\_\_  
 SIGNED \_\_\_\_\_ DEPT. \_\_\_\_\_

datestamp 11/25/02








**SURVEY CONTROL DIAGRAM  
ALONG WEST 136TH AVENUE  
FROM HURON STREET TO WASHINGTON STREET**

PROJECT NUMBER 97-71 /CDOT 0253-175

LOCATED WITHIN SECTIONS 22, 23, 26 AND 27, TOWNSHIP 1 SOUTH, RANGE 68 WEST,  
OF THE SIXTH PRINCIPAL MERIDIAN

Field survey control precision computed to +/-  
0.10 ft. with 95% certainty

**GPS COORDINATE SUMMARY TABLE (METRIC)**

POINT #	LATITUDE	LONGITUDE	HEIGHT	MAPPING ANGLE	SCALE	NAD83 ZONE 0501		NAVD 1988 ELEV.
						NORTHING	EASTING	
101	39° 57' 01.08396" N	104° 59' 25.20436" W	1562.259	0° 19' 46"	0.9999705167	373427.531	957954.140	1579.556
102	39° 57' 00.76838" N	104° 59' 07.21092" W	1556.646	0° 19' 57"	0.9999705247	373420.265	958381.300	1573.962
103	39° 56' 42.58699" N	104° 59' 48.84797" W	1563.258	0° 19' 30"	0.9999709880	372853.856	957396.157	1580.522
104	39° 56' 42.28657" N	104° 59' 25.48882" W	1560.069	0° 19' 45"	0.9999709957	372847.757	957950.720	1577.359
105	39° 56' 42.28510" N	104° 59' 05.86770" W	1557.855	0° 19' 58"	0.9999709957	372850.402	958416.494	1575.166
106	39° 56' 42.22252" N	104° 58' 41.24963" W	1550.937	0° 20' 14"	0.9999709973	372851.889	959000.900	1568.275
107	39° 56' 34.70391" N	104° 59' 33.63452" W	1561.471	0° 19' 40"	0.9999711912	372612.789	957758.692	1578.750
108	39° 56' 34.58884" N	104° 59' 17.83866" W	1560.028	0° 19' 50"	0.9999711942	372611.395	958133.692	1577.324
109	39° 56' 34.99348" N	104° 58' 53.26022" W	1552.864	0° 20' 06"	0.9999711837	372627.264	958717.091	1570.187
110	39° 56' 31.08226" N	104° 59' 49.42817" W	1562.420	0° 19' 30"	0.9999712851	372498.957	957384.397	1579.679
111	39° 56' 28.71424" N	104° 59' 24.11197" W	1562.887	0° 19' 46"	0.9999713466	372429.357	957985.811	1580.174
112	39° 56' 29.13004" N	104° 59' 04.60728" W	1556.160	0° 19' 59"	0.9999713358	372444.858	958448.773	1573.469
113	39° 56' 26.90164" N	104° 58' 40.62055" W	1556.018	0° 20' 14"	0.9999713938	372379.462	959018.615	1573.352
114	39° 56' 08.81048" N	104° 59' 22.15676" W	1557.016	0° 19' 47"	0.9999718691	371815.768	958035.762	1574.297
115	39° 56' 09.03559" N	104° 59' 10.46474" W	1557.043	0° 19' 55"	0.9999718631	371824.313	958313.309	1574.338
116	39° 56' 55.46377" N	104° 58' 59.24794" W	1554.407	0° 20' 02"	0.9999706590	373257.763	958571.268	1571.730
117	39° 56' 55.11019" N	104° 58' 41.65076" W	1550.349	0° 20' 14"	0.9999706680	373249.305	958989.039	1567.691
118	39° 56' 55.10634" N	104° 58' 25.10825" W	1555.321	0° 20' 24"	0.9999706681	373251.507	959381.712	1572.681
119	39° 56' 42.42924" N	104° 58' 24.24096" W	1553.202	0° 20' 25"	0.9999709920	372860.652	959404.621	1570.558
120	39° 56' 34.89590" N	104° 59' 49.32447" W	1562.823	0° 19' 30"	0.9999711863	372616.589	957386.192	1580.084
122	39° 56' 35.02236" N	104° 58' 50.05826" W	1552.157	0° 20' 08"	0.9999711830	372628.600	958793.097	1569.483
123	39° 55' 54.98308" N	104° 59' 52.52683" W	1558.679	0° 19' 28"	0.9999722375	371385.196	957317.140	1575.922
124	39° 56' 06.45001" N	105° 00' 00.38120" W	1562.732	0° 19' 23"	0.9999719317	371737.797	957128.660	1579.970
220	39° 56' 32.17120" N	104° 58' 24.59313" W	1563.986	0° 20' 25"	0.9999712568	372544.232	959398.139	1581.338
221	39° 56' 03.05320" N	104° 59' 35.70957" W	1557.983	0° 19' 39"	0.9999720219	371636.360	957715.010	1575.248
222	39° 56' 14.32802" N	104° 59' 44.73275" W	1562.394	0° 19' 33"	0.9999717233	371982.869	957498.802	1579.652
901	39° 59' 22.40590" N	104° 56' 25.78065" W	1537.630	0° 21' 41"	0.9999671793	377811.747	962185.543	1555.156
902	39° 59' 59.70642" N	104° 58' 42.01013" W	1555.930	0° 20' 13"	0.9999663761	378942.444	958947.016	1573.330
903	39° 59' 36.53751" N	104° 59' 38.23789" W	1577.180	0° 19' 37"	0.9999668712	378220.154	957617.408	1594.513
904	39° 54' 33.42522" N	104° 59' 21.64886" W	1633.405	0° 19' 48"	0.9999745010	368874.041	958064.761	1650.654

**PROJECT COORDINATE SUMMARY TABLE (US FT)**

POINT #	PROJECT COORDINATES		NAVD 1988 ELEV.	DESCRIPTION
	NORTHING	EASTING		
101	1225123.549	3142927.117	5182.261	PP 1 PN SET #5 RB
102	1225099.704	3144328.942	5163.907	PP 2 PN SET #5 REBAR
103	1223240.900	3141095.967	5185.429	PP 3 PT SET PK NAIL
104	1223220.885	3142915.892	5175.054	PP 4 PN SET #5 RB
105	1223229.567	3144444.441	5167.858	PP 5 PN SET #5 RB
106	1223234.447	3146362.304	5145.248	PP 6 PN SET #5 RB
107	1222449.784	3142285.707	5179.614	PP 7 PP 6 BY OTHERS PN
108	1222445.208	3143516.360	5174.937	PP 8 PP 5 BY OTHERS PN
109	1222497.286	3145430.919	5151.520	PP 9 PT SET PK NAIL
110	1222076.217	3141057.371	5182.663	PP 10 PT SET PK NAIL
111	1221847.808	3143031.054	5184.287	PP 11 PN SET #5 RB
112	1221898.678	3144550.370	5162.428	PP 12 PN SET #5 RB
113	1221684.067	3146420.441	5161.904	PP 13 PN SET SPIKE
114	1219834.170	3143194.977	5165.008	PP 14 PN SET #5 RB
115	1219862.215	3144105.815	5165.142	PP 15 PN SET #5 RB
116	1224566.417	3144952.367	5156.585	PP 16 PN SET #5 RB
117	1224538.659	3146323.380	5143.331	PP 17 PT SET PK NAIL
118	1224545.885	3147612.028	5159.703	PP 18 PN SET #5 RB
119	1223263.203	3147687.209	5152.738	PP 19 PN SET #5 RB
120	1222462.252	3141063.261	5183.991	PP 1 BY OTHERS PN
122	1222501.669	3145680.352	5149.211	PP PT BY OTHERS
123	1218421.150	3140836.652	5170.337	PP 23 PN SET #5 RB
124	1219578.293	3140218.110	5183.617	PP 24 PN SET #5 RB
220	1222224.795	3147665.938	5188.105	PP 20 PT SET PK NAIL
221	1219245.403	3142142.355	5168.125	PP 21 PN SET #5 RB
222	1220382.551	3141432.819	5182.575	PP 22 PN SET #5 RB
901	1239511.383	3156813.457	5102.208	NGS Control Monument DRY CREEK
902	1243222.030	3146185.471	5161.834	NGS Control Monument BASELINE
903	1240851.665	3141822.051	5231.332	NGS Control Monument SLATER
904	1210180.205	3143290.146	5415.522	CDOT Control Monument 1.118004

Note: NGS control monuments are steel rods in sleeves. Aerial Targets are set 1-1/2" aluminum caps stamped with point number on 2' x 5/8" rebar, unless otherwise noted.

**FOUND ALIQUOT CORNERS - PROJECT COORDINATES (US FT)**

POINT #	PROJECT COORDINATES		DESCRIPTION
	NORTHING	EASTING	
301	1225139.514	3141065.525	W 1/4 SEC 22-3 1/2" ALUM CAP "LS 7276"
302	1226461.846	3141049.135	N 1/16 COR SEC 21/22-3 1/2" ALUM CAP "LS 7276"
303	1227784.292	3141032.638	NW COR SEC 22-2" ALUM CAP "LS 23904"
304	1222494.992	3141098.193	SW COR SEC 22-2" ALUM CAP "LS 23904"
305	1219851.234	3141129.942	W 1/4 COR SEC 27-3" BRASS CAP "LS 9133"
306	1217207.785	3141161.980	SW COR SEC 27-3 1/2" ALUM CAP "PLS 14142"
310	1217204.971	3146445.384	SE COR SEC 27-3 1/4" ALUM CAP "LS 10717"
311	1219849.026	3146396.310	E 1/4 COR SEC 27-3 1/4" BRASS CAP "PLS 13155"
312	1222493.518	3146347.023	NE COR SEC 27-3" ALUM CAP "LS 33020"
313	1223914.407	3146327.404	S 1/16 COR SEC 22/23-3 1/4" ALUM CAP MARKING ILLEGIBLE
314	1225135.435	3146310.542	E 1/4 SEC 22-3 1/4" ALUM CAP "LS 7276"
315	1227776.896	3146273.839	NE COR SEC 22-3 1/4" ALUM CAP "LS 7276"
322	1219850.088	3143763.184	CENTER 1/4 COR SEC 27-3 1/4" ALUM CAP "LS 7361"
323	1222494.145	3143722.671	N 1/4 COR SEC 27-3" ALUM CAP "PLS 13155"
324	1225137.425	3143688.026	CENTER 1/4 COR SEC 22-3" ALUM CAP "LS 25937"
325	1223815.722	3143705.330	S CENTER 1/16 COR SEC 22-#4 REBAR W/CAP "LS 18475"
326	1226458.908	3143670.407	N CENTER 1/16 COR SEC 22-#4 REBAR NO MARKING
327	1217206.369	3143803.816	S 1/4 COR SEC 22-INT OF MON REC TIES
328	1227780.230	3143653.599	N 1/4 COR SEC 22-INT OF MON REC TIES

**BASIS OF BEARINGS:** For the purpose of this project the bearings are based on a line connecting the South 1/4 corner of Section 22, Township 1 South, Range 68 West of the 6th Principal Meridian (3" Alum. Cap stamped "PLS 13155") and the Southwest corner of Section 22, Township 1 South, Range 68 West of the 6th Principal Meridian (2" Alum. Cap stamped "LS 23904") as bearing North 89°58'53" West.

**BASIS OF ELEVATIONS:** Vertical Datum for this project is based on the NAVD 88 elevation of National Geodetic Survey control monument BIG DRY (point no. 901) being 1555.156 meters (5102.21 feet).

**COORDINATE BASIS:** Horizontal control for this project is based on the published information for National Geodetic Survey control monument BIG DRY (point no. 901). Project coordinates are modified Colorado State Plane North Zone coordinates. The combined elevation/scale factor used to modify the coordinates is 0.999725436497. Project coordinates are derived from State Plane Coordinates using the following formulas:

Project Northing (m) = (SPC Northing/0.999725436497) - 111.684 meters

Project Easting (m) = (SPC Easting/0.999725436497) - 251.131 meters

Note: Project coordinates are published in US Survey Feet units.

DEPOSITED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 19\_\_\_\_, AT \_\_\_\_\_, FOR INFORMATION  
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 SURVEYS AT PAGE \_\_\_\_\_ RECEPTION NUMBER \_\_\_\_\_  
 SIGNED \_\_\_\_\_  
 DEPT. \_\_\_\_\_

datestamp 11/25/02



NO.	DATE	DESCRIPTION



**SURVEY CONTROL DIAGRAM  
ALONG WEST 136TH AVENUE  
FROM HURON STREET TO WASHINGTON STREET**

PROJECT NUMBER 97-71 /CDOT 0253-175

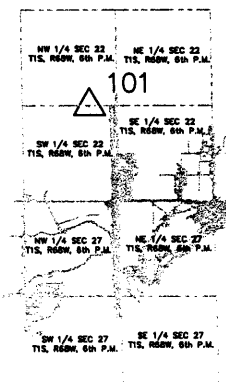
LOCATED WITHIN SECTIONS 22, 23, 26 AND 27, TOWNSHIP 1 SOUTH, RANGE 68 WEST,  
OF THE SIXTH PRINCIPAL MERIDIAN

**PRIMARY CONTROL POINTS**

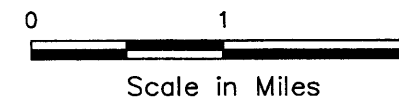
△902

△903

△901



△904



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ONLY IN BOOK \_\_\_ OF THE COUNTY LAND SURVEYS/RIGHT OF WAY  
SURVEYS AT PAGE \_\_\_ RECEPTION NUMBER \_\_\_

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

datestamp 11/25/02

416



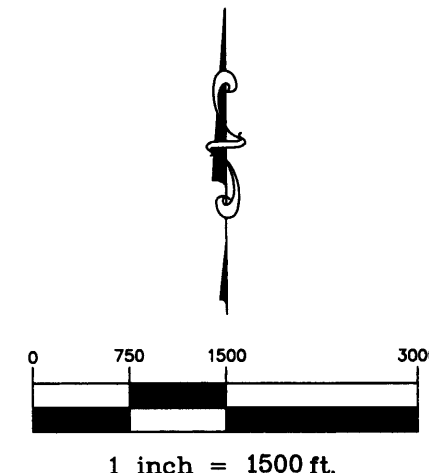
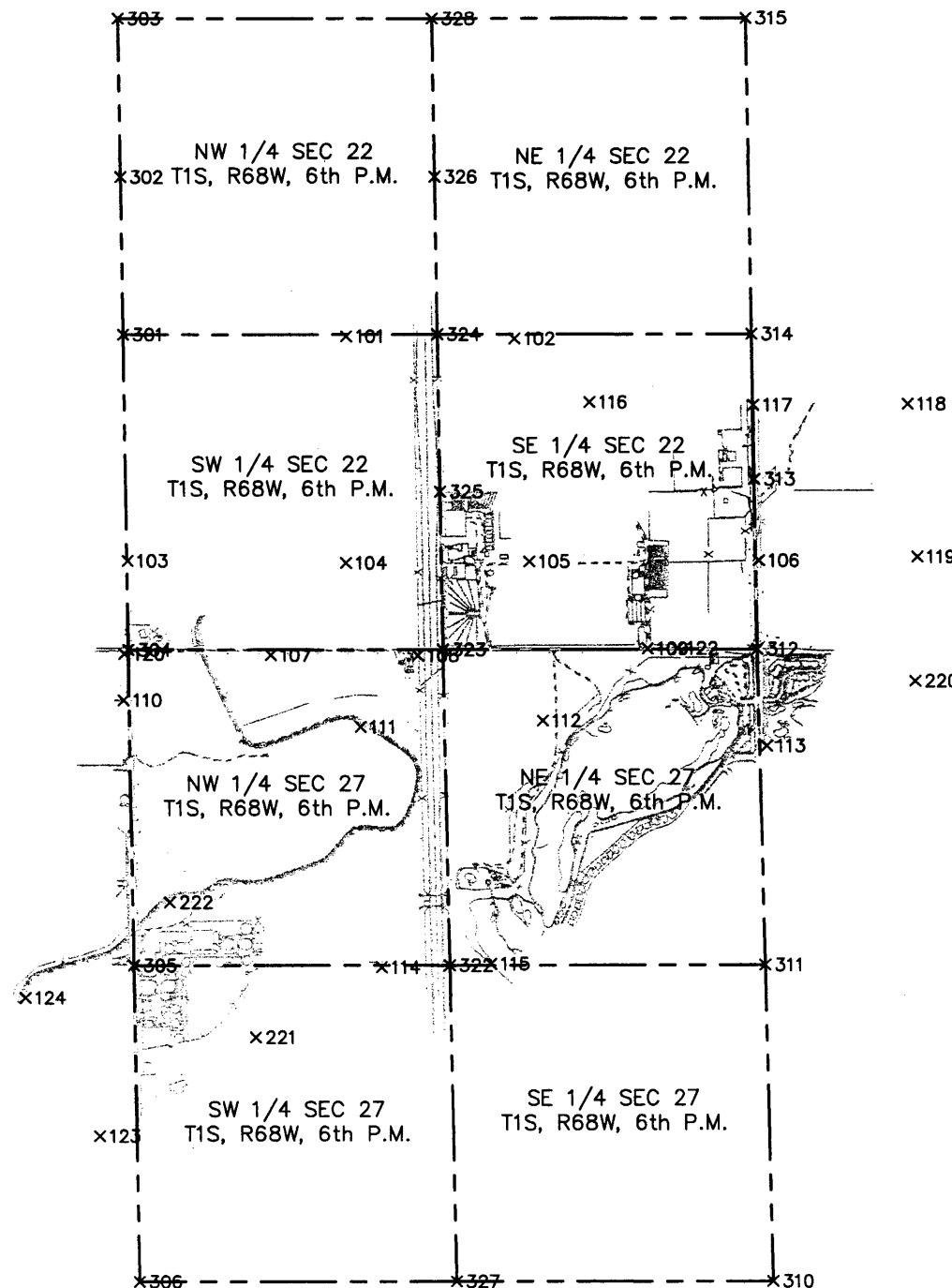
Sheet Revisions



COLORADO DEPARTMENT OF TRANSPORTATION  
SURVEY CONTROL DIAGRAM  
ALONG WEST 136TH AVENUE  
FROM HURON STREET TO WASHINGTON STREET  
PROJECT NUMBER 97-71 /CDOT 0253-175

LOCATED WITHIN SECTIONS 22, 23, 26 AND 27, TOWNSHIP 1 SOUTH, RANGE 68 WEST,  
OF THE SIXTH PRINCIPAL MERIDIAN

AERIAL TARGETS AND SUPPLEMENTAL CONTROL POINTS



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SURVEYS AT PAGE \_\_\_ RECEPTION NUMBER \_\_\_

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

datestamp 11/25/02

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Sheet Revisions

03/02	Change Point 529, Delete Points 531 & 532	JWD
07/02	Add Points 531-533	JWD
11/02	Delete Points 465 & 466	JWD



TABULATION OF R.O.W. MONUMENTS TO BE SET

TABULATION OF PROPERTY MONUMENTS TO BE SET

TABULATION OF SLOPE EASEMENTS AND PERMANENT EASEMENT POINTS TO BE STAKED

POINT	NORTHING	EASTING	STATION/OFFSET
401	1222577.644	3143171.832	34+80.39 -87.00
402	1222687.249	3143244.159	35+52.27 -196.90
403	1222879.620	3143295.481	36+09.01 -389.30
404	1222961.150	3143354.556	36+69.04 -470.13
405	1222999.853	3143376.083	36+91.03 -508.57
406	1223380.976	3143490.166	38+09.62 -888.32
407	1223619.689	3143507.885	38+30.16 -1126.80
408	1223632.365	3143706.736	40+29.15 -1137.12
409	1223409.979	3143762.628	40+82.40 -914.09
410	1222929.143	3143926.293	42+40.36 -431.35
411	1222734.670	3143958.452	42+66.62 -236.98
412	1222691.098	3143958.438	42+66.75 -193.41
413	1222584.454	3144030.183	43+38.85 -87.00
414	1222584.334	3144066.326	43+75.00 -87.00
415	1222410.335	3144065.749	43+75.00 87.00
416	1222410.418	3144040.516	43+49.76 87.00
417	1222306.035	3143970.356	42+79.95 191.62
418	1222250.260	3143970.343	42+80.12 247.39
419	1221958.998	3143926.773	42+29.35 538.74
420	1221914.248	3143913.091	42+15.13 583.32
421	1221822.127	3143872.375	41+73.33 674.95
422	1221582.929	3143799.238	40+97.36 913.27
423	1221379.321	3143761.233	40+56.95 1116.41
424	1221123.207	3143742.677	40+35.36 1372.29
425	1221272.979	3143541.359	38+35.83 1220.14
426	1221534.328	3143470.331	37+67.90 957.97
427	1221997.003	3143295.083	35+98.15 493.25
428	1222210.774	3143255.990	35+66.03 279.53
429	1222292.677	3143256.016	35+65.73 197.62
430	1222403.592	3143184.328	34+93.59 87.00

POINT	NORTHING	EASTING	STATION/OFFSET
451	1222581.983	3141127.121	14+36.00 -87.00
452	1222581.641	3142186.272	24+95.15 -87.00
453	1222715.233	3144066.761	43+75.00 -217.90
454	1222714.735	3144216.760	45+25.00 -217.90
455	1222583.836	3144216.326	45+25.00 -87.00
456	1222582.966	3144478.402	47+87.07 -87.00
457	1222570.966	3144478.399	47+87.11 -75.00
458	1222568.809	3145128.656	54+37.60 -75.00
459	1222568.541	3146250.697	65+59.64 -75.00
460	1222589.162	3146295.698	66+04.64 -95.63
461	1222587.599	3146395.729	67+04.41 -94.23
462	1222587.944	3146420.726	67+29.41 -94.65
463	1222568.234	3146441.664	67+50.40 -75.00
464	1222543.234	3146441.589	67+50.40 -50.00
467	1222423.735	3145439.955	57+48.94 70.00
468	1222418.736	3145433.379	57+42.36 75.00
469	1222418.809	3145128.273	54+37.25 75.00
470	1222420.966	3144478.363	47+87.57 75.00
471	1222408.966	3144478.360	47+87.61 87.00
472	1222409.837	3144215.748	45+25.00 87.00
473	1222243.822	3144215.197	45+25.00 253.02
474	1222215.656	3144065.103	43+75.00 281.68
475	1222407.641	3142185.891	24+95.15 87.00
476	1222407.982	3141129.240	14+38.17 87.00
477	1222433.825	3141068.925	13+77.56 61.04
478	1222446.651	3141039.847	13+48.53 48.08
479	1222462.915	3140780.690	10+89.45 30.66

POINT	NORTHING	EASTING	STATION/OFFSET
501	1222578.153	3143046.438	33+55.00 -87.00
502	1222673.152	3143046.824	33+55.00 -182.00
503	1222672.783	3143137.823	34+46.00 -182.00
504	1222577.784	3143137.438	34+46.00 -87.00
505	1222651.765	3143176.707	34+84.96 -161.14
506	1222900.229	3143263.968	35+71.22 -409.96
507	1222945.113	3143309.270	36+23.57 -454.63
508	1223214.940	3143458.716	37+76.20 -722.66
509	1223290.473	3143475.732	37+94.11 -797.99
510	1223362.266	3143487.293	38+06.52 -869.64
511	1223427.036	3143488.713	38+08.71 -934.39
512	1223701.385	3143506.813	38+30.06 -1208.51
513	1223651.532	3143706.484	40+29.13 -1156.29
514	1223651.545	3143707.484	40+30.13 -1156.29
515	1223625.919	3143707.820	40+30.16 -1130.66
516	1223651.660	3143716.255	40+38.90 -1156.30
517	1223558.650	3143725.309	40+46.85 -1063.19
518	1223454.346	3143763.397	40+83.70 -958.44
519	1223282.154	3143836.363	41+54.62 -785.40
520	1222979.299	3143979.254	42+86.61 -481.67
521	1222833.986	3144044.762	43+52.60 -336.58
522	1222703.817	3144066.723	43+7500 -206.48
523	1222685.059	3144216.661	45+25.00 -188.22
524	1222648.031	3144478.418	47+86.87 -152.06
525	1222624.350	3144571.481	48+80.01 -128.69
526	1222586.008	3144870.262	51+78.92 -91.34
527	1222573.550	3145041.296	53+50.00 -79.45
528	1222569.099	3145041.281	53+50.00 -75.00
529	1222591.099	3145041.354	53+50.00 -97.00
530	1222598.729	3145463.008	57+71.95 -105.00
531	1222590.309	3145128.691	54+37.63 -96.50
532	1222590.229	3145463.119	57+72.06 -96.50
533	1222583.574	3145041.329	53+50.00 -89.48
534	1222590.619	3145924.794	62+33.73 -97.00

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.

GENERAL NOTES

- This Right-of-Way plan is not a complete boundary survey of all adjoining owners and is prepared for Transportation Department purposes Only.
- Survey Control Points set with a higher degree of accuracy than ROW Markers.
- 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.
- All R.O.W. Markers set from survey control points.
- All centerline and offset stationing is theoretical only and may not represent the centerline as constructed in the field. All stationing is approximate.
- All coordinates listed are project coordinates only.
- Field survey control precision computed to +/- 0.10 ft. with 95% certainty
- Commitments for title insurance supplied by United General Title Insurance Company.

QUANTITY OF MONUMENTS TO BE SET PRIOR TO CONSTRUCTION, BY STATE FORCES

CAP TYPE	MONUMENT TYPE							
	1	1A	2	2A	3	3A	5	6
PROPERTY CORNER								29
RIGHT OF WAY	30							
CONTROL								
ALIQUOT CORNER	3							
WITNESS POST								

SURVEYOR CERTIFICATE (FIELD)

Control Survey and Monumentation was done under my supervision and checking.

NAME \_\_\_\_\_ P.L.S. NO. \_\_\_\_\_

DATE \_\_\_\_\_

SURVEYOR CERTIFICATE (OFFICE)

R.O.W. Plans and Legal Descriptions were prepared under my supervision and checking.

NAME \_\_\_\_\_ P.L.S. NO. \_\_\_\_\_

DATE \_\_\_\_\_

AZTEC CONSULTANTS, INC. SURVEYOR'S CERTIFICATE

Right of Way Plans, and Property Descriptions, and Survey Control Monuments were supervised and/or prepared under my direct supervision and review based on surveys, topography and proposed construction prepared by others; Ownership was relied on existing deeds, obtained from county records and plats.

NAME \_\_\_\_\_ P.L.S. NO. \_\_\_\_\_

DATE \_\_\_\_\_

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Sheet Revisions

03/02	Change Points 534-537 & 640-646; Delete Point 533	JWD
07/02	Added Points 588-589, Moved points 688-691	JWD
07/02	Delete Points 623-626, 631-636	JWD
11/02	Delete Points 549-551, 656-658	JWD



TABULATION OF SLOPE EASEMENTS AND PERMANENT EASEMENT POINTS TO BE STAKED

TABULATION OF TEMPORARY EASEMENT POINTS TO BE STAKED

POINT	NORTHING	EASTING	STATION/OFFSET
535	1222600.224	3145934.606	62+43.54 -106.61
536	1222590.606	3145976.935	62+85.88 -97.00
537	1222590.530	3146295.679	66+04.62 -97.00
538	1222568.552	3146206.050	65+15.00 -75.00
539	1222643.552	3146206.068	65+15.00 -150.00
540	1222643.533	3146285.408	65+94.34 -150.00
541	1222646.863	3146297.159	66+06.09 -153.33
542	1222692.216	3146294.275	66+03.19 -198.69
543	1222789.478	3146392.941	67+01.02 -296.10
544	1222708.670	3146403.143	67+11.46 -215.32
545	1222587.795	3146409.927	67+18.61 -94.47
546	1222558.379	3146441.635	67+50.40 -65.15
547	1222549.315	3146742.841	70+51.64 -56.98
548	1222541.921	3146879.164	71+87.98 -50.00
552	1222387.051	3145391.693	57+00.68 106.70
553	1222387.090	3145231.006	55+40.00 106.70
554	1222387.102	3145179.121	54+88.11 106.70
555	1222400.824	3144988.814	52+98.09 93.45
556	1222366.234	3144569.817	48+79.21 129.43
557	1222343.375	3144472.319	47+81.79 152.61
558	1222320.504	3144215.452	45+25.00 176.33
559	1222364.701	3144859.366	51+68.76 130.00
560	1222363.785	3145231.001	55+40.00 130.00
561	1222211.781	3144044.451	43+54.36 285.62
562	1222193.284	3144042.688	43+52.65 304.13
563	1222078.778	3144007.606	43+17.95 418.75
564	1221855.548	3143887.146	41+88.50 641.71
565	1221291.661	3143754.882	40+49.56 1203.99
566	1221081.882	3143744.310	40+36.50 1413.63
567	1221066.663	3143743.543	40+35.56 1428.84
568	1221134.601	3143743.502	40+36.32 1360.90
569	1220848.238	3143547.867	38+37.31 1644.93
570	1220947.041	3143530.892	38+21.50 1545.93
571	1221121.221	3143537.116	38+29.79 1371.84
572	1221172.196	3143533.337	38+26.62 1320.82
573	1221172.192	3143542.903	38+36.18 1320.94
574	1221433.494	3143464.851	37+61.23 1058.73
575	1221586.066	3143406.325	37+04.52 905.48
576	1221733.447	3143394.910	36+94.85 757.97
577	1221799.973	3143369.712	36+70.44 691.15
578	1221845.680	3143347.820	36+49.09 645.19
579	1221951.311	3143251.435	35+62.53 539.01
580	1222039.251	3143200.852	35+11.59 451.27
581	1222069.394	3143238.446	35+49.06 420.98
582	1222164.283	3143218.164	35+28.40 326.17
583	1222329.447	3143196.682	35+06.25 161.10
584	1222404.154	3143045.733	33+55.00 87.00
585	1222324.408	3143045.408	33+55.00 167.00
586	1222323.786	3143136.408	34+46.00 167.00
587	1222403.785	3143136.732	34+46.00 167.00
588	1223661.544	3143707.353	40+30.11 -1166.29
589	1223661.780	3143725.317	40+48.08 -1166.31
590	1223560.885	3143735.139	40+56.71 -1065.31
591	1223454.346	3143763.397	40+83.70 -958.44
592	1223286.240	3143845.492	41+63.80 -789.38
593	1222983.488	3143988.335	42+95.68 -485.89
594	1222836.921	3144054.408	43+62.24 -339.55
595	1222715.206	3144074.943	43+83.18 -217.90
596	1222695.154	3144216.695	45+25.00 -198.32
597	1222657.132	3144485.477	47+93.90 -161.19
598	1222634.188	3144573.387	48+81.89 -138.54
599	1222595.961	3144871.263	51+79.89 -101.30

POINT	NORTHING	EASTING	STATION/OFFSET
601	1222603.107	3141126.860	14+35.73 -108.13
602	1222598.502	3141614.225	19+23.09 -103.68
603	1222623.443	3141836.731	21+45.59 -128.69
604	1222632.824	3142071.272	23+80.13 -138.15
605	1222630.746	3142214.758	25+23.11 -136.22
606	1222609.883	3142551.099	28+59.53 -116.72
607	1222610.880	3142748.189	30+56.62 -118.52
608	1222625.408	3142911.842	32+20.21 -133.71
609	1222645.419	3143036.711	33+45.00 -154.23
610	1222683.193	3143036.864	33+45.00 -192.00
611	1222682.742	3143147.863	34+56.00 -192.00
612	1222661.172	3143147.776	34+56.00 -170.43
613	1222664.361	3143167.658	34+75.86 -173.70
614	1222906.700	3143256.292	35+63.51 -416.40
615	1222960.441	3143310.532	36+25.01 -469.94
616	1223205.739	3143446.392	37+63.77 -713.61
617	1223292.369	3143465.908	37+84.31 -800.00
618	1223363.175	3143477.310	37+96.55 -870.67
619	1223427.475	3143478.720	37+98.72 -934.95
620	1223702.044	3143496.835	38+20.09 -1209.28
621	1223771.087	3143501.028	38+25.10 -1278.27
622	1223771.151	3143505.898	38+29.97 -1278.28
627	1223409.592	3143793.223	41+12.99 -913.34
628	1223409.592	3143974.493	42+80.42 -911.95
629	1223227.642	3143974.493	42+81.03 -730.00
630	1223227.642	3143873.140	41+90.75 -730.46
639	1222583.574	3145041.329	53+50.00 -89.48
640	1222590.681	3145665.575	59+74.51 -97.00
641	1222624.082	3145745.933	60+54.87 -130.42
642	1222709.359	3145842.718	61+51.63 -215.72
643	1222735.031	3145941.271	62+50.15 -241.42
644	1222647.295	3145882.377	61+91.30 -153.67
645	1222625.411	3145868.889	61+77.82 -131.78
646	1222590.596	3146022.116	63+31.06 -97.00
647	1222643.535	3146275.923	65+84.85 -150.00
648	1222693.713	3146284.936	65+93.85 -200.18
649	1222884.667	3146291.617	66+00.49 -391.14
650	1222920.233	3146391.135	66+98.82 -426.85
651	1222709.577	3146413.108	67+21.42 -216.26
652	1222559.306	3146743.262	70+52.03 -66.98
653	1222552.007	3146877.849	71+86.63 -60.08
654	1222549.251	3147028.766	73+37.56 -57.78
655	1222541.393	3147054.986	73+63.80 -50.00

POINT	NORTHING	EASTING	STATION/OFFSET
659	1222377.055	3145378.540	56+87.53 116.70
660	1222377.090	3145231.004	55+40.00 116.70
661	1222214.640	3144059.690	43+69.59 282.71
662	1222074.902	3144016.877	43+27.24 422.59
663	1221851.145	3143896.134	41+97.43 646.22
664	1221818.631	3143881.763	41+82.68 678.56
665	1221580.005	3143808.801	41+06.89 916.31
666	1221378.598	3143771.207	40+66.91 1117.25
667	1221291.048	3143764.864	40+59.53 1204.72
668	1221081.378	3143754.297	40+46.48 1414.25
669	1221073.395	3143548.860	38+37.53 1709.78
670	1220946.366	3143520.862	38+11.47 1546.49
671	1221120.999	3143527.102	38+19.77 1371.94
672	1221172.200	3143522.998	38+16.28 1320.70
673	1221430.426	3143455.317	37+51.66 1061.69
674	1221583.843	3143396.467	36+94.63 907.58
675	1221732.674	3143384.940	36+84.87 758.62
676	1221795.654	3143360.693	36+61.37 695.36
677	1221840.029	3143339.438	36+40.64 650.74
678	1221945.378	3143243.311	35+54.43 544.97
679	1222041.693	3143187.911	34+98.64 448.88
680	1222073.337	3143227.377	35+37.98 417.08
681	1222162.590	3143208.300	35+18.54 327.90
682	1222320.613	3143187.747	34+97.35 169.97
683	1222326.468	3143146.419	34+56.00 164.28
684	1222313.745	3143146.367	34+56.00 177.00
685	1222314.196	3143035.368	33+45.00 177.00
686	1222342.183	3143035.481	33+45.00 149.01
687	1222356.265	3142936.079	32+45.54 135.33
688	1222369.958	3142785.592	30+95.00 122.25
689	1222022.212	3142784.182	30+95.00 470.00
690	1222022.496	3142714.182	30+25.00 470.00
691	1222377.773	3142715.623	30+25.00 114.72
692	1222377.773	3142496.278	28+05.65 115.61
693	1222359.492	3142270.961	25+80.41 134.80
694	1222359.492	3141982.935	22+91.88 135.22
695	1222375.884	3141761.054	20+70.00 118.89
696	1222357.778	3141761.048	20+70.00 137.00
697	1222357.788	3141731.048	20+40.00 137.00
698	1222378.684	3141731.055	20+40.00 116.10
699	1222392.023	3141582.337	18+91.27 102.81
700	1222392.023	3141129.432	14+38.37 102.96
701	1222398.025	3141069.355	13+77.83 96.84
702	1222430.235	3141036.492	13+45.11 64.48
703	1222461.088	3140501.412	8+10.17 31.24

DEPOSITED THIS DAY OF 19 AT THE COUNTY LAND SURVEYS/RIGHT OF WAY SURVEYS AT PAGE RECEPTION NUMBER DEPT.

datestamp 11/25/02



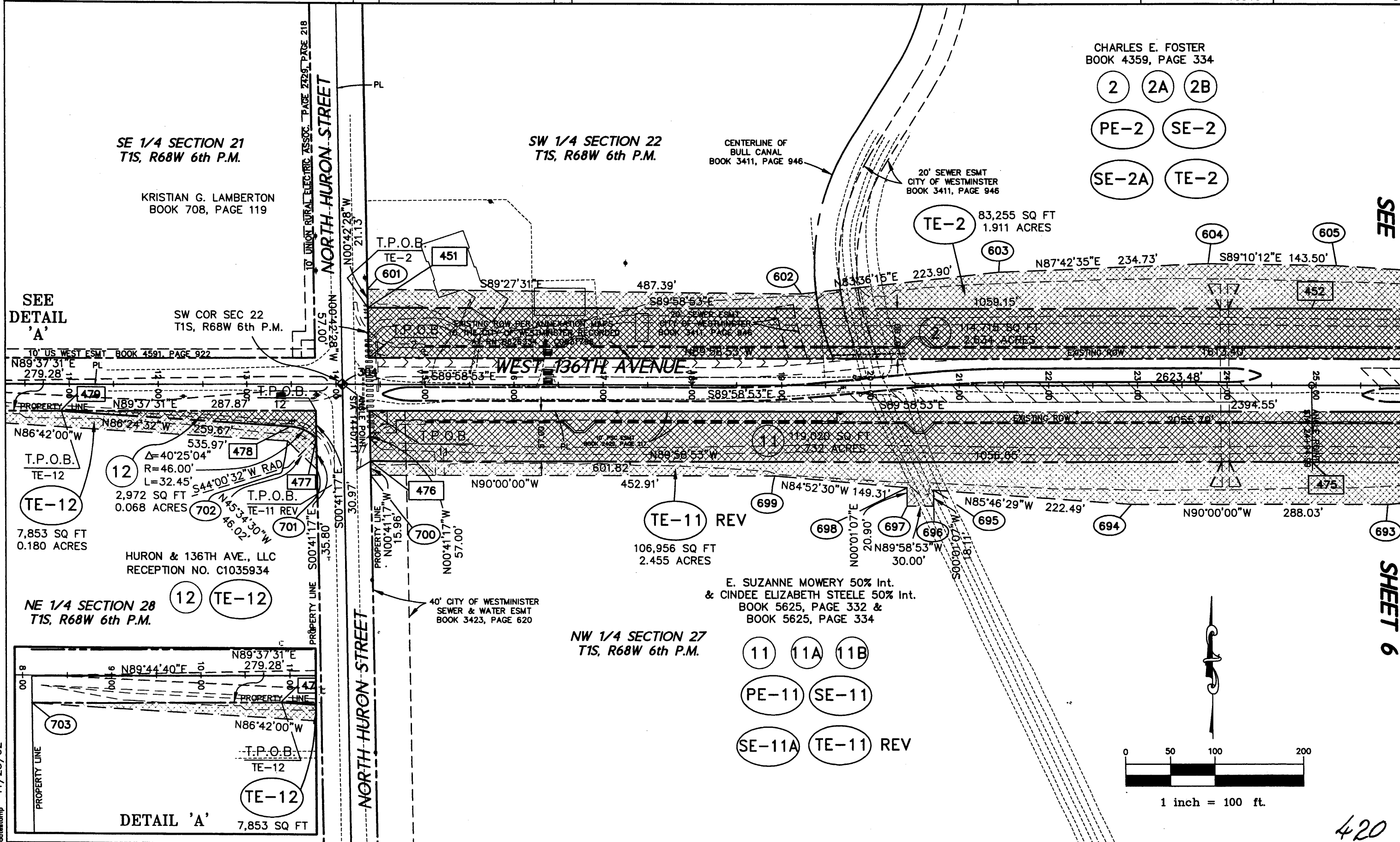


07/02	Parcel TE-11 Revised.	JWD
11/02	Ownership Change Parcel 12	JWD



CHARLES E. FOSTER  
BOOK 4359, PAGE 334

- (2)
- (2A)
- (2B)
- (PE-2)
- (SE-2)
- (SE-2A)
- (TE-2)

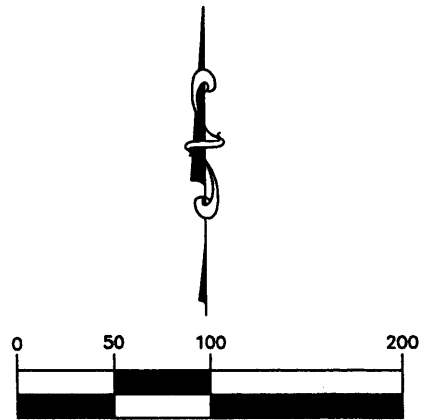


FILING CERTIFICATION: DEPOSITED THIS 18th DAY OF \_\_\_\_\_ AT \_\_\_\_\_ M., FOR INFORMATION ONLY IN BOOK \_\_\_\_\_ OF THE COUNTY LAND SURVEYS/RIGHT OF WAY SURVEYS AT PAGE \_\_\_\_\_ RECEPTION NUMBER \_\_\_\_\_ SHOWN DEPT. \_\_\_\_\_

datestamp 11/25/02

SEE

SEE SHEET 6



420





RIGHT OF WAY PLANS

Sheet Revisions

02/02	Access AC-3 & AC-9 Added.	JWD
03/02	Rename UE-3 to PE-3 & Revise Area	JWD
07/02	Rename TE-3 to PE-3A, TE-3A to PE-3B & TE-3B to TE-3	JWD
07/02	Revise PE-3	JWD



Aztec CONSULTANTS, Inc.

8000 South Lincoln Street, Unit 5  
Littleton, Colorado 80122  
Phone: (303)713-1898 Fax: (303)713-1897

RIGHT OF WAY

PLAN SHEET

PROJECT NO. 97-71 /CDOT 0253-175

136TH AVENUE AT I-25 INTERCHANGE

PROJECT CODE: 13918

SHEET NUMBER: 7

ERIC S. WHITE, 6.00000193% Int., D.J. SUBTRUST, 20.40000656% Int., GREGORY A. CRESSWELL 1.27500041% Int., LINCOLN TRUST COMPANY, CUSTODIAN OF BARBARA A. MEDINA IRA Account, 3.82500123% Int., M. JENNET WHITE, 2.26403934% Int., EJW LIMITED PARTNERSHIP, 10.56640726% Int., STEVEN M. BOOREN, 4.52811087% Int., CW SUBTRUST, 22.66404591% Int., MARIE S. BOOREN, 4.52811087% Int., DOUGLAS S. DUNKIN, 3.01876203% Int., MILLER FAMILY TRUST, 3.00000097% Int., ROBERT C. ROTH, 4.52811087% Int., LAURA SNORTLAND FAIRFIELD, 6.79301908% Int., ROBERT B. TAYLOR, 1.50938102% Int., NANCY I. CRESSWELL, 1.27500041% Int., JASON WHITE, 0.85020028% Int., DANIEL WHITE, 0.85020028% Int., JANE WHITE, 1.27500041% Int., CHRISTOPHER D. WHITE, 0.84960027% Int., RN C0763815-833

ANNEXED TO THE CITY OF THORNTON AND ZONED INDUSTRIAL (I-1) BOOK 3120, PAGE 849

SE 1/4 SECTION 22 T1S, R68W 6th P.M.

40,106 SQ FT 0.921 ACRES

8,358 SQ FT 0.192 ACRES

10,258 SQ FT 0.235 ACRES

3 3A SE-3

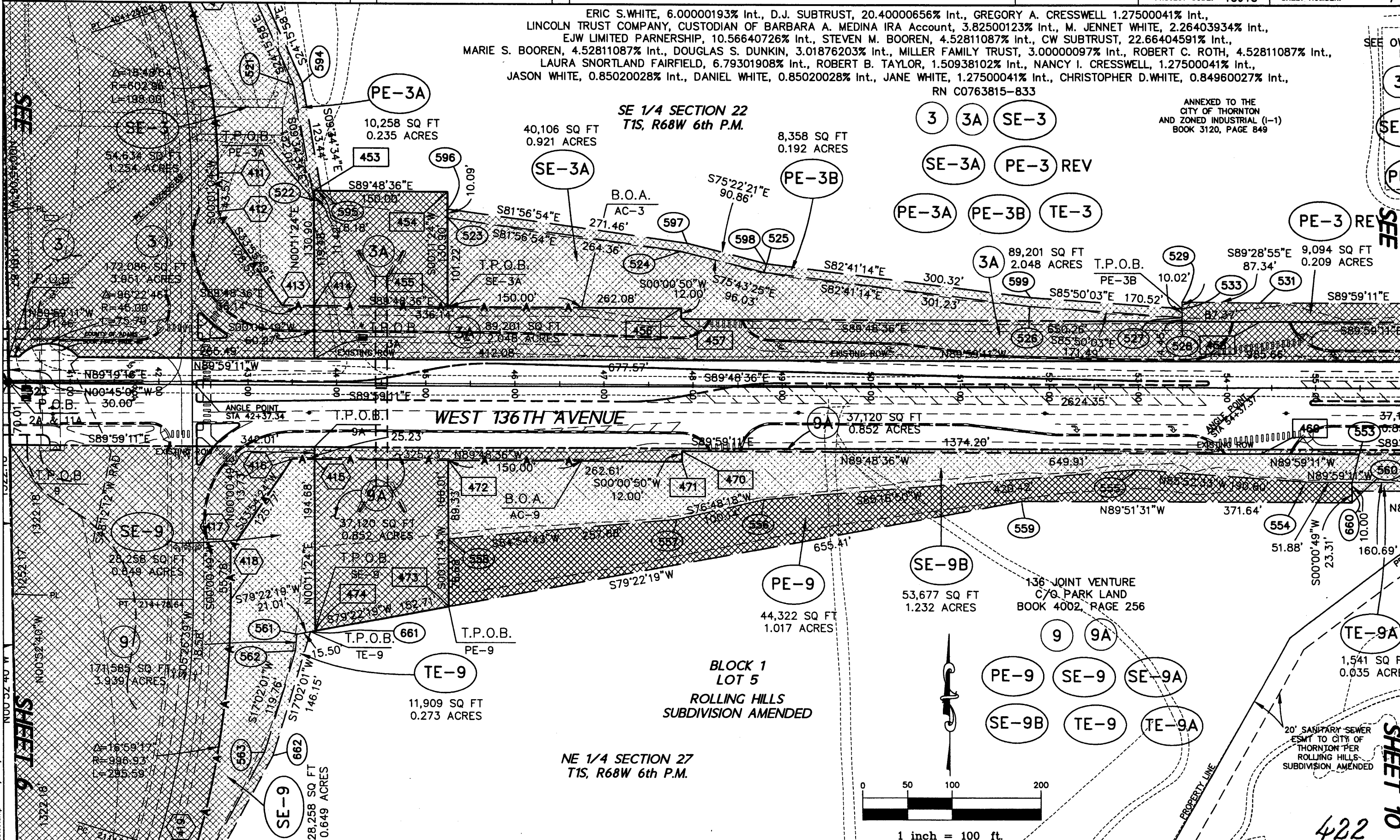
SE-3A PE-3 REV

PE-3A PE-3B TE-3

PE-3 RE

3A 89,201 SQ FT 2.048 ACRES T.P.O.B. PE-3B

9,094 SQ FT 0.209 ACRES



datestamp 11/25/02

SHEET 6

SHEET 10

422



02/02	Access AC-9 & AC-11 Added.	JWD
07/02	Parcel TE-11 Revised.	JWD



1 inch = 100 ft.



NW 1/4 SECTION 27  
T1S, R68W 6th P.M.

E. SUZANNE MOWERY 50% Int.  
& CINDEE ELIZABETH STEELE 50% Int.  
BOOK 5625, PAGE 332 &  
BOOK 5625, PAGE 334

CITY OF WESTMINSTER  
BOOK 4664, PAGE 57

11 11A 11B

SE-11 SE-11A

PE-11 TE-11 REV 106,956 SQ FT  
2.455 ACRES

TE-11 REV T.P.O.B.

TE-11 REV 678

95,801 SQ FT  
2.199 ACRES

14 SE-14

SE-14A TE-14

TE-14

3,594 SQ FT  
0.082 ACRES

N09°44'53"W  
165.36'

N09°44'53"W  
100.25'

S00°52'40"E  
64.85'

S00°52'40"E  
64.85'

3,093 SQ FT  
0.071 ACRES

I-25 ROW  
BOOK 473, PAGE 188

SE-14A SE-14

55 SQ FT  
0.001 ACRES

N00°52'40"W  
48.92'

N00°52'40"W  
56.55'

S04°08'39"W  
11.42'

N00°52'40"W  
52.73'

S02°53'06"W  
15.24'

S04°08'39"W  
37.52'

S02°53'06"W  
210.05'

S04°08'39"W  
245.36'

S02°53'06"W  
209.94'

S04°08'39"W  
87.78'

SE-9A

363 SQ FT  
0.008 ACRES

136 JOINT VENTURE  
C/O PARK LAND  
BOOK 4002, PAGE 256

9 9A

PE-9 SE-9 SE-9A

SE-9B TE-9 TE-9A

NE 1/4 SECTION 27  
T1S, R68W 6th P.M.

TE-9

11,909 SQ FT  
0.273 ACRES

VALLEY HIGHWAY I-25

E. SUZANNE MOWERY 50%  
& CINDEE ELIZABETH STEELE 50%  
BOOK 5625, PAGE 332 &  
BOOK 5625, PAGE 334

SEE SHEET 6  
BOOK 473, PAGE 188

11/25/02

28,258 SQ FT  
0.649 ACRES  
423



Sheet Revisions

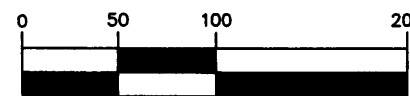
02/02	Access AC-2 & AC-3 Added.	JWD
03/02	Renome UE-3 to PE-3 & Revise Area	JWD
07/02	Renome TE-3 to PE-3A, TE-3A to PE-3B & TE-3B to TE-3	JWD
07/02	Revise PE-3	JWD



Aztec CONSULTANTS, Inc.

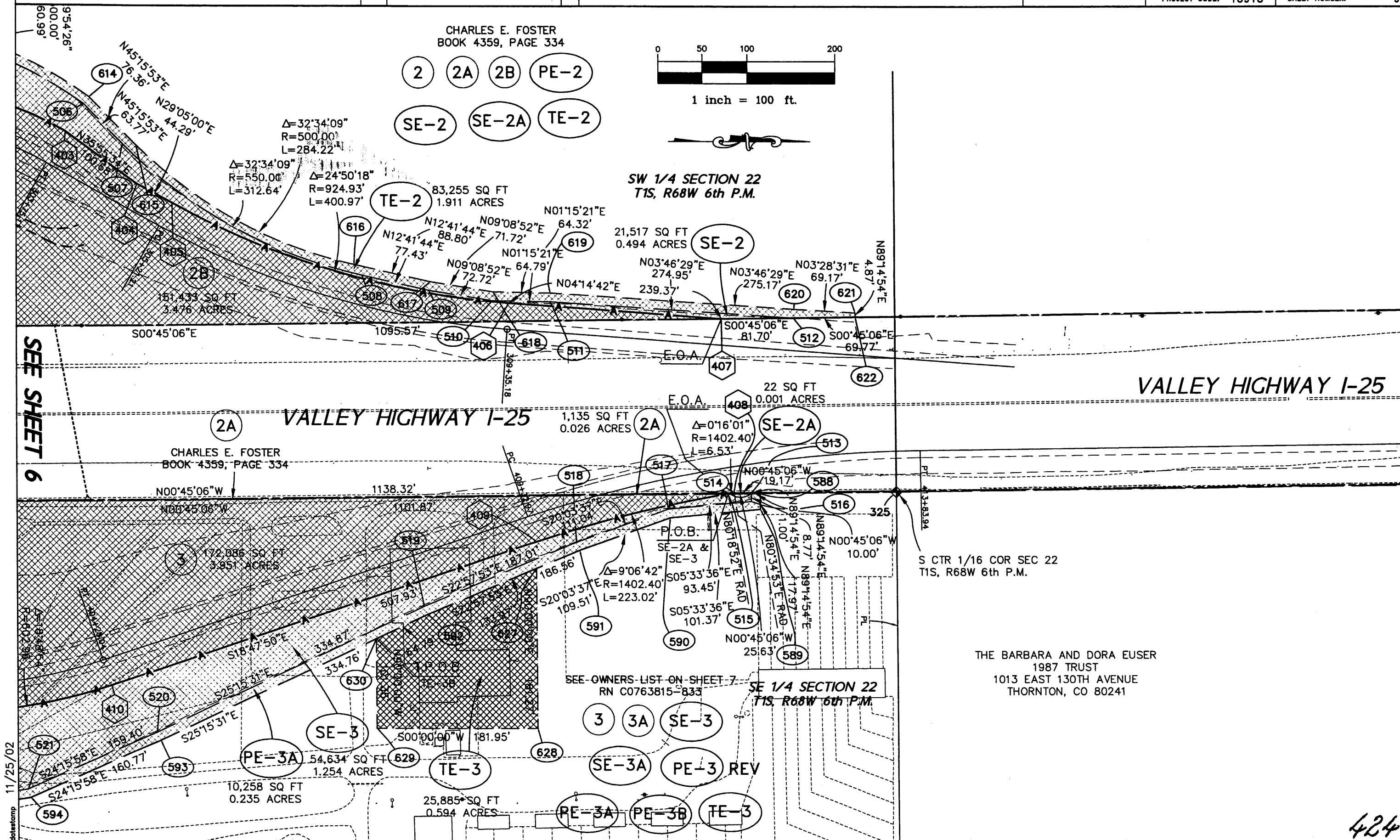
8000 South Lincoln Street, Unit 5  
Littleton, Colorado 80122  
Phone: (303)713-1898 Fax: (303)713-1897

CHARLES E. FOSTER  
BOOK 4359, PAGE 334



1 inch = 100 ft.

SW 1/4 SECTION 22  
T1S, R68W 6th P.M.



SEE SHEET 6

CHARLES E. FOSTER  
BOOK 4359, PAGE 334

S CTR 1/16 COR SEC 22  
T1S, R68W 6th P.M.

THE BARBARA AND DORA EUSER  
1987 TRUST  
1013 EAST 130TH AVENUE  
THORNTON, CO 80241

SEE OWNERS-LIST ON SHEET 7  
RN C0763815-833

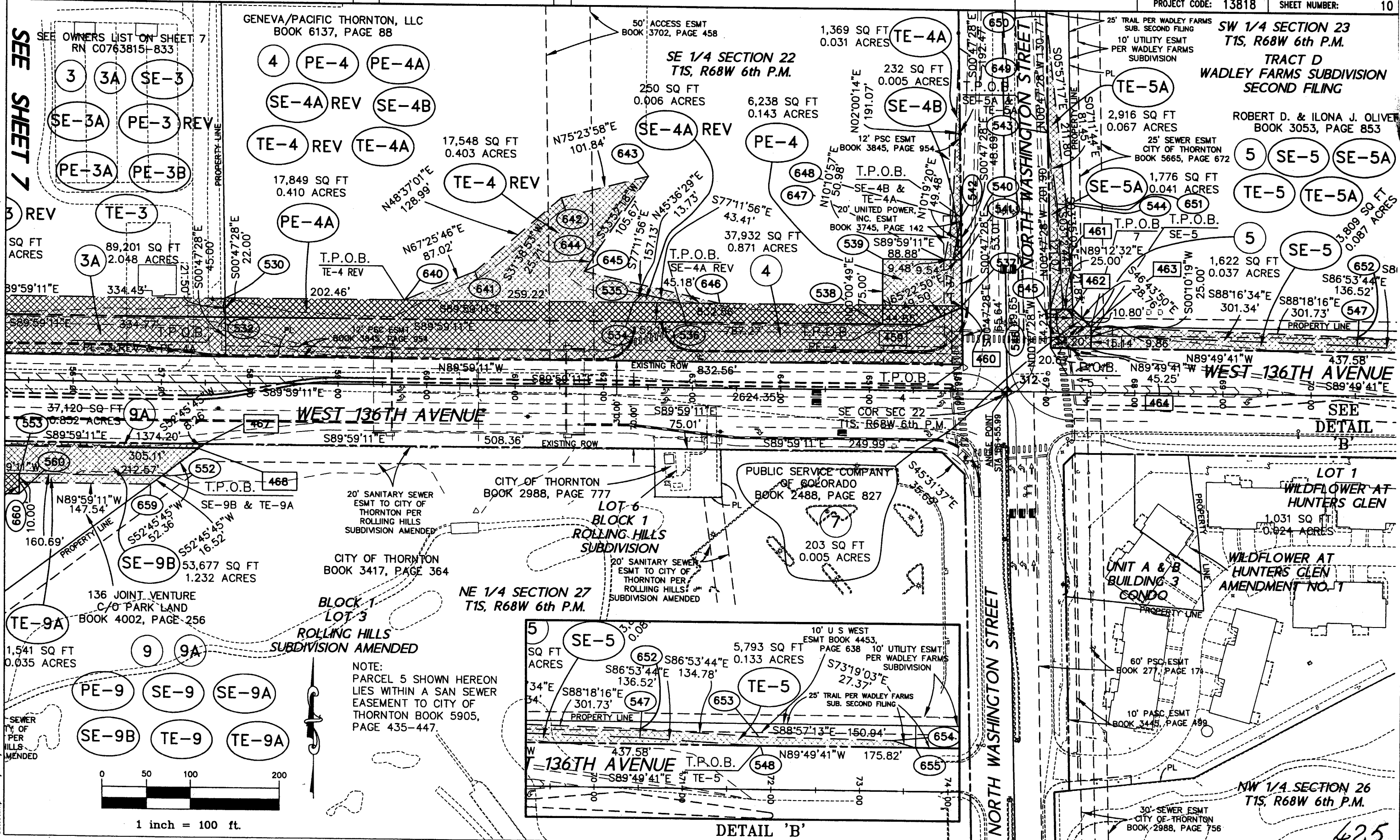
11/25/02  
datestamp

424



Sheet Revisions

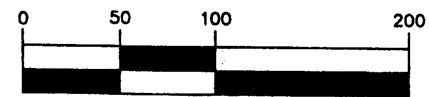
03/02	Delete SE-4, Revise SE-4 & TE-4	JWD
03/02	Rename UE-3 & UE-4 to PE-3 & PE-4 & Revise Areas	JWD
07/02	Rename TE-3 to PE-3A, TE-3A to PE-3B & TE-3B to TE-3	JWD
07/02	Revise PE-3	JWD
11/02	Delete Parcel 6	JWD



SEE SHEET 7

SEE DETAIL B

NOTE:  
PARCEL 5 SHOWN HEREON  
LIES WITHIN A SAN SEWER  
EASEMENT TO CITY OF  
THORNTON BOOK 5905,  
PAGE 435-447.



DETAIL 'B'

425

11/25/02