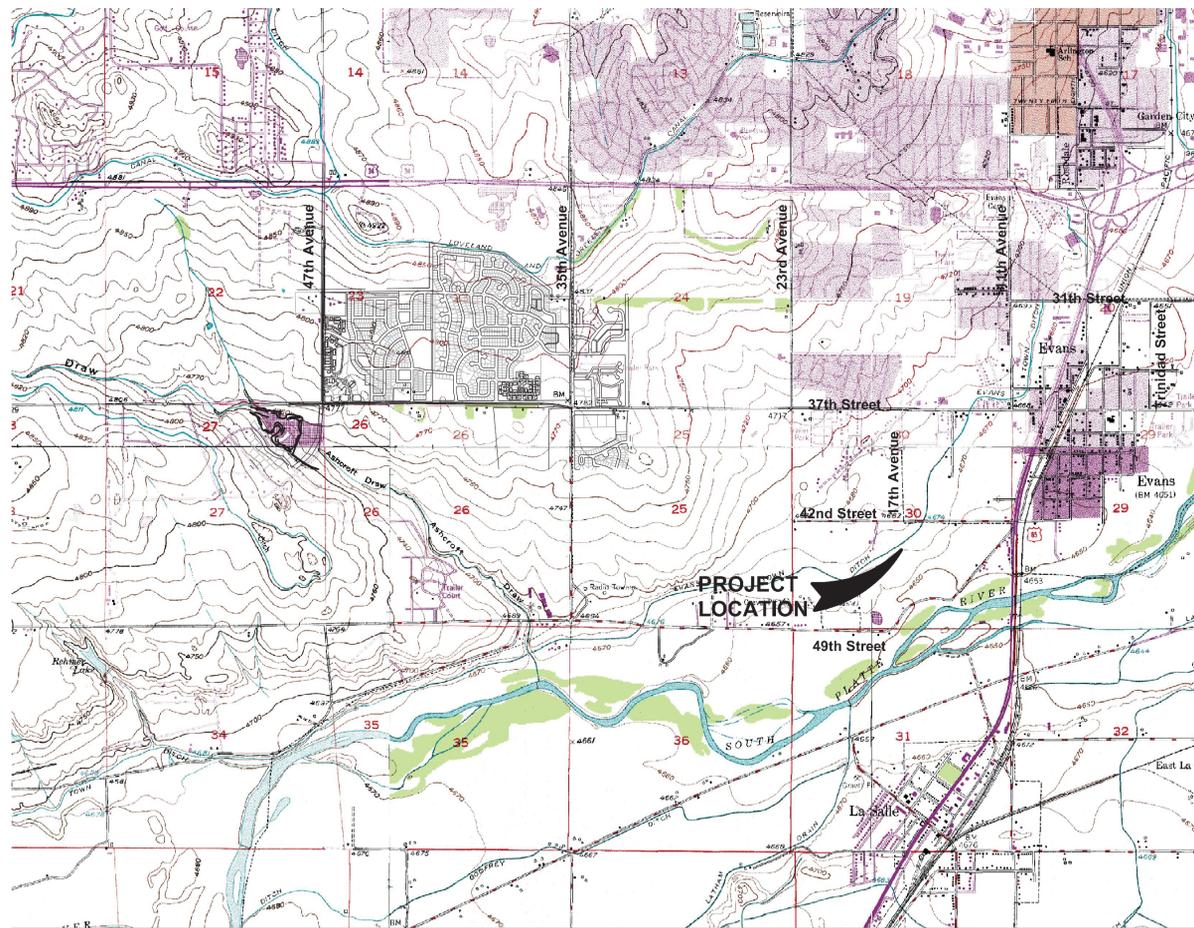




Agency	Contact	Phone
<b>Comcast</b> 3737 W. 10th Street Greeley, CO 80634	Justin Van Patten	970-336-6013
<b>Atmos Energy</b> 1200 11th Avenue Greeley, CO 80631	Jerry Adams	970-304-2075
<b>Duke Energy</b> 1324 N. 7th Avenue Greeley, CO 80631	Lew Hagenlock	303-572-8002
<b>Evans Fire Department</b> 1100 37th Street Evans, CO 80620	Warren Jones	970-475-1117
<b>Qwest</b> 12680 Weld County Road 58 Greeley, CO 80634	Carson Ortega	970-350-2941
<b>Xcel Energy</b> 1500 6th Avenue Greeley, CO 80631	Terry Stencil	800-328-8226
<b>Synergetic Design</b> 200 E Seventh St., Ste 300 Loveland, CO 80537	Sam De La Rosa	970-663-9973 X 225
<b>Poudre Valley REA</b> PO Box 272550 Fort Collins, CO 80527	Jim Byrne	970-226-1234



VICINITY MAP  
SCALE: 1"=2000'

Contract Drawings For  
**17th Avenue  
 Drop Structure  
 Replacement**

HDR Project No.  
00000000055454

City of Evans, Colorado  
March, 2008



INDEX OF DRAWINGS

INDEX NO.	SHEET TITLE
00G-01	COVER SHEET
00G-02	LEGEND, ABBREVIATIONS, SYMBOLS AND GENERAL NOTES
01C-01	DEMOLITION AND EROSION CONTROL PLAN
01C-02	SITE PLAN
01C-03	HYDRAULIC PROFILE AND CIVIL DETAILS
01S-01	STRUCTURAL FOUNDATION PLAN
01S-02	STRUCTURAL SECTIONS
01S-03	STRUCTURAL DETAILS
01S-04	GUARDRAIL DETAILS

**Owner/Developer**  
City of Evans  
1100 37th Street  
Evans, CO 80620-2036  
970-339-5344  
Attn: Earl Smith

**Engineer**  
HDR Engineering, Inc.  
303 E. 17th Ave., Suite 700  
Denver, CO 80203-1256  
303-764-1520  
Attn: Rich Thornton

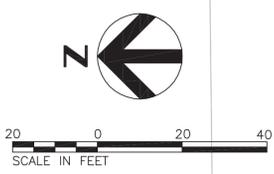
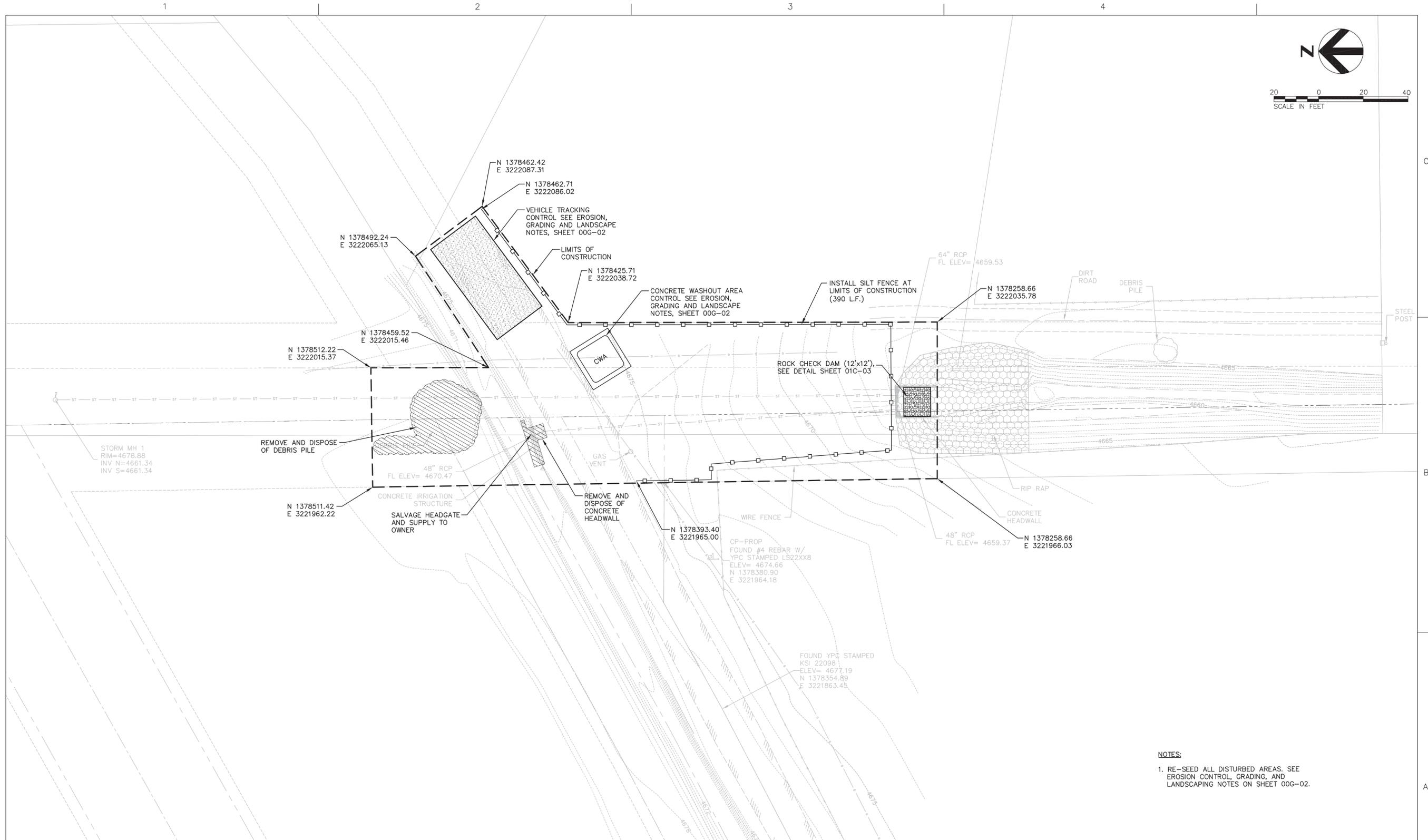
**Surveyor**  
King Surveyors, Inc.  
9299 Eastman Park Drive  
970-686-5011  
Windsor, CO 80550

All work shall be constructed to the City of Evans Standards and Specifications

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
Director of Public Works



2/25/2008 8:42:38 AM



**NOTES:**  
 1. RE-SEED ALL DISTURBED AREAS. SEE EROSION CONTROL, GRADING, AND LANDSCAPING NOTES ON SHEET 00G-02.



ISSUE	DATE	DESCRIPTION

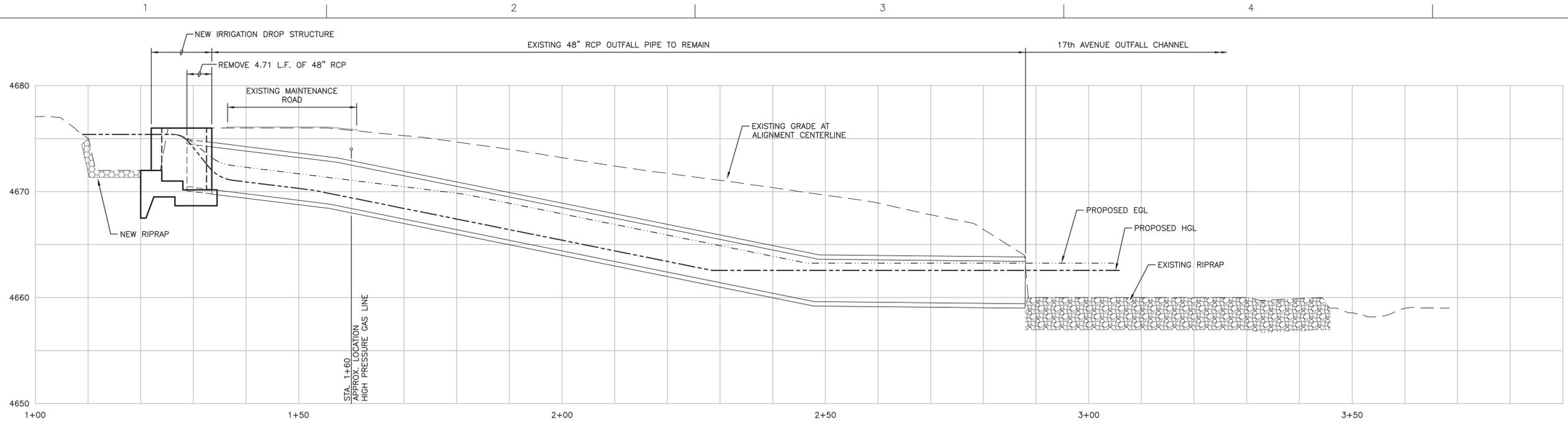
PROJECT MANAGER	RICH THORNTON
PROJECT ENGINEER	BRANDON LUSTER
DRAWN BY	E. OLSON
PROJECT NUMBER	00000000055454



**17th Avenue  
Drop Structure Replacement**

<b>Demolition and Erosion Control Plan</b>	
FILENAME	01C-01.dwg
SCALE	1" = 20'
SHEET	<b>01C-01</b>

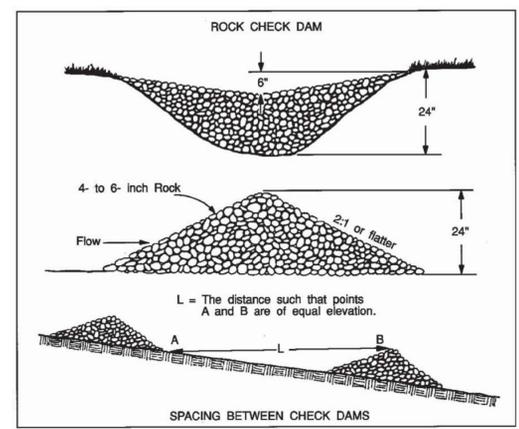
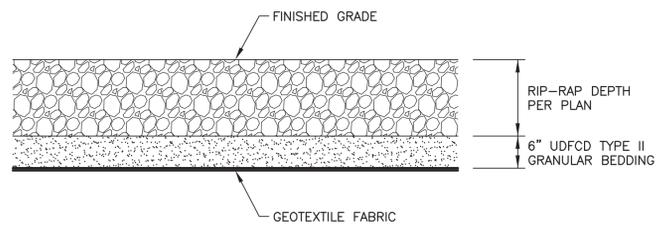




**HYDRAULIC PROFILE**

SCALE HORIZ: 1" = 10'  
VERT: 1" = 5'

UDFCD TYPE II BEDDING GRADATION	
U.S. STANDARD SIEVE SIZE	% WEIGHT PASSING SQUARE MESH SIEVES
3"	90-100
1-1/2"	-
3/4"	20-90
3/8"	-
#4	0-20
#16	-
#50	-
#100	-
#200	0-3



**ROCK CHECK DAM**

NO SCALE 3  
01C-03

NOTE:  
A SINGLE ROCK CHECK DAM IS TO BE PLACED IN THE 17TH OUTFALL CHANNEL AS SHOWN ON SHEET 01C-01.

**TYPICAL RIP-RAP PLACEMENT**

NO SCALE 1  
01C-03



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	RICH THORNTON
PROJECT ENGINEER	BRANDON LUSTER
DRAWN BY	E. OLSON
PROJECT NUMBER	00000000055454



**17th Avenue Drop Structure Replacement**



**Hydraulic Profile and Civil Details**

FILENAME	01C-03.dwg	SHEET	<b>01C-03</b>
SCALE	AS NOTED		

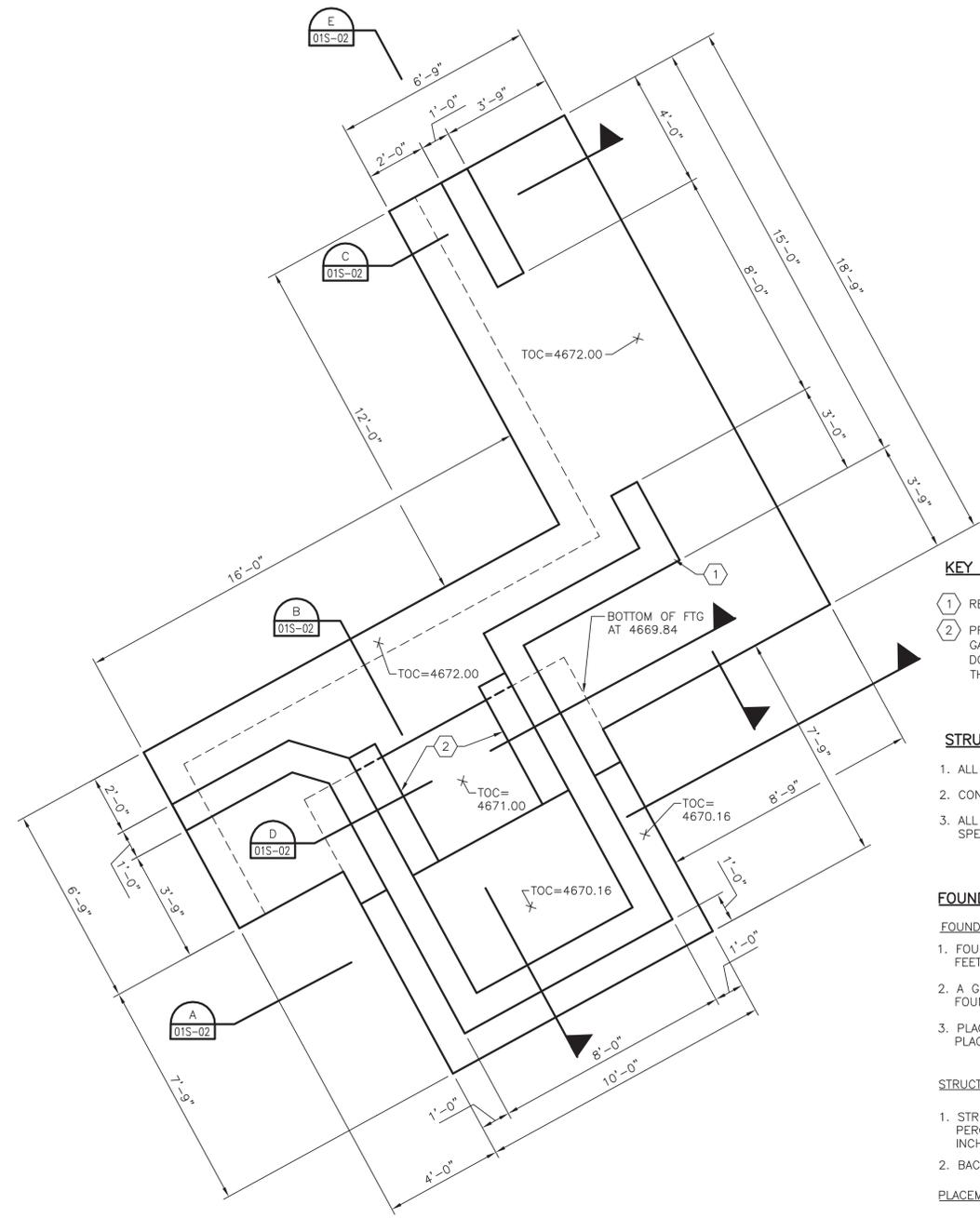
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1

2

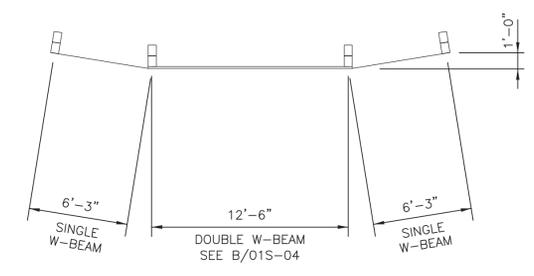
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4



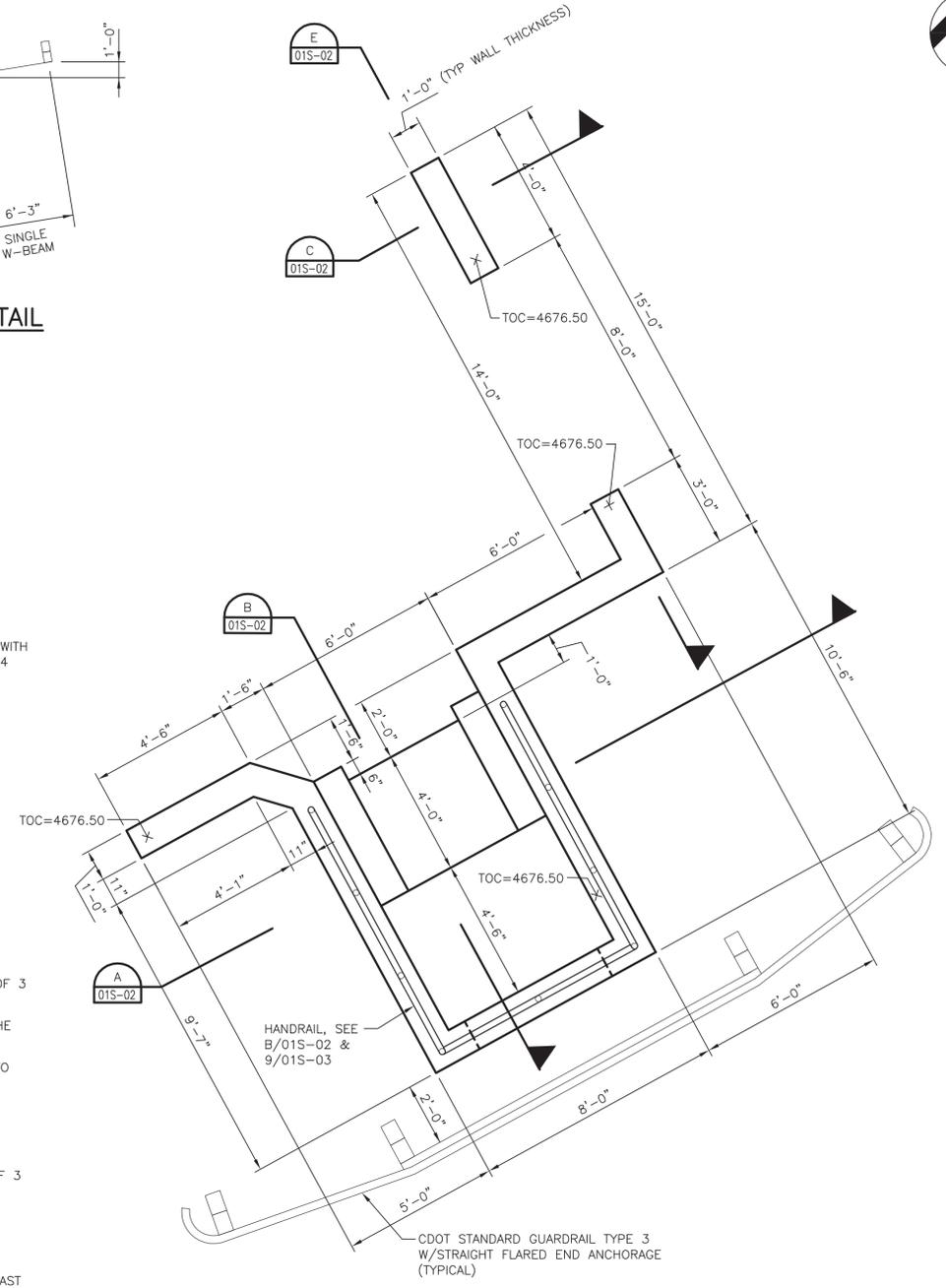
**FOUNDATION PLAN**

3/8" = 1'-0"



**GUARDRAIL LAYOUT DETAIL**

NTS



**UPPER PLAN**

3/8" = 1'-0"

**KEY NOTES:**

- 1 REF. 2/01S-03 FOR CORNER BAR DETAILS.
- 2 PROVIDE CONCRETE INFILL AT WALL AREAS ADJACENT TO GATE IN ACCORDANCE WITH GATE MFG'S RECOMMENDATIONS. AS A MIN. PROVIDE #4@12"O.C.E.W. PROVIDE #4 DOWELS INTO THE FOOTING AND WALL AT A 2'-0" SPACING EACH WAY. INFILL THICKNESS TO BE IN ACCORDANCE WITH GATE MFG'S RECOMMENDATIONS.

**STRUCTURAL NOTES:**

- 1. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".
- 2. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL REBAR WORK.
- 3. ALL CONCRETE SHALL BE CLASS D AS SPECIFIED IN CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

**FOUNDATION NOTES**

**FOUNDATION PREPARATION**

- 1. FOUNDATION SUBGRADE SHALL BE PREPARED BY OVER EXCAVATING TO A DEPTH OF 3 FEET BELOW THE BASE OF THE STRUCTURE.
- 2. A GEOTECHNICAL ENGINEER SHALL APPROVE THE SUBGRADE PRIOR TO PLACING THE FOUNDATION.
- 3. PLACE A 2 INCHES MUD MAT ON THE SUBGRADE AFTER FINAL APPROVAL PRIOR TO PLACING REINFORCING STEEL.

**STRUCTURAL BACKFILL**

- 1. STRUCTURAL FILL IS DEFINED AS ON-SITE GRANULAR MATERIAL (LESS THAN 30 PERCENT FINES) OR IMPORTED GRANULAR FILL WITH A MAXIMUM PARTICLE SIZE OF 3 INCHES AND LESS THAN 30 PERCENT FINES.
- 2. BACKFILL MATERIAL BEHIND ALL CONCRETE WALLS SHALL BE STRUCTURAL FILL.

**PLACEMENT**

- 1. STRUCTURAL FILL SHOULD BE PLACED IN HORIZONTAL LIFTS, COMPACTED TO A LEAST 92 PERCENT OF ITS MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D 1557), AND BE DEEMED TO BE IN A DENSE AND UNYIELDING CONDITION.
- 2. THE MOISTURE CONTENT FOR STRUCTURAL FILL SHOULD BE FROM MINUS 2 TO PLUS 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.
- 3. THE THICKNESS OF LOOSE LIFTS SHOULD NOT EXCEED 12 INCHES FOR HEAVY EQUIPMENT COMPACTORS, AND 6 INCHES FOR HAND-OPERATED COMPACTORS, BUT MAY BE LESS DEPENDING ON THAT REQUIRED TO OBTAIN THE ABOVE RELATIVE COMPACTION.
- 4. BACKFILL MATERIAL PLACED WITHIN 4 FEET OF WALLS SHOULD BE COMPACTED USING HAND OPERATED EQUIPMENT TO PREVENT COMPACTION-INDUCED EARTH PRESSURES FROM DEVELOPING AGAINST THE WALLS.



ISSUE	DATE	DESCRIPTION

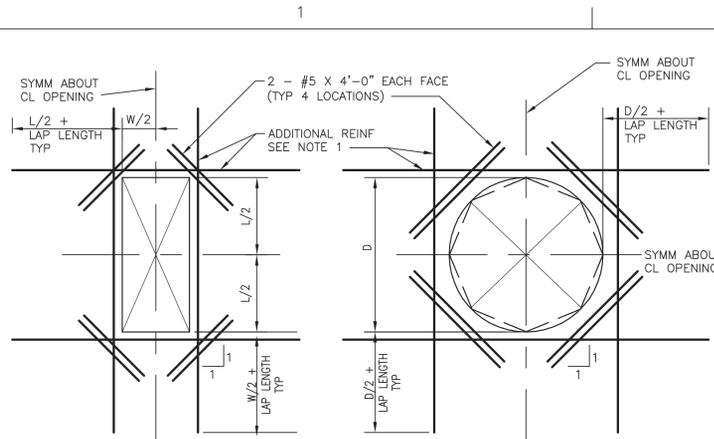
PROJECT MANAGER	RICH THORNTON
PROJECT ENGINEER	BRANDON LUSTER
DRAWN BY	E. OLSON
PROJECT NUMBER	00000000055454

**17th Avenue  
Drop Structure Replacement**

The City of  
**EVAN**  
COLORADO

<b>Structural Foundation Plan</b>		
FILENAME	01S-01.dwg	SHEET
SCALE	AS NOTED	<b>01S-01</b>

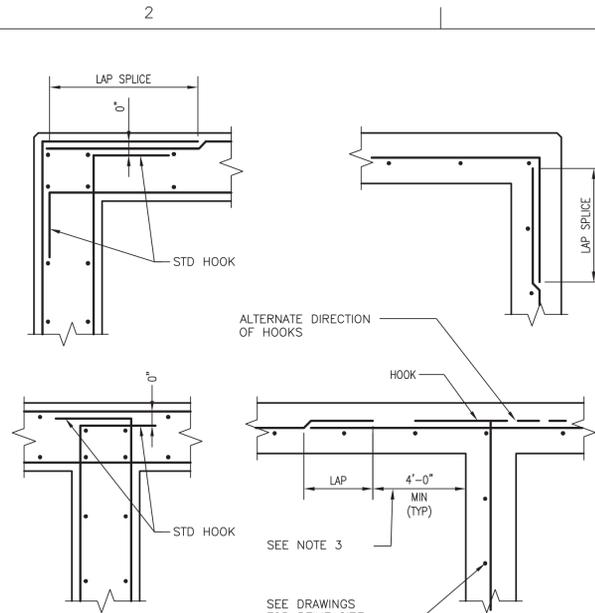




DETAIL SHOWING RECTANGULAR OPENING

DETAIL SHOWING CIRCULAR AND OCTAGONAL OPENING

- NOTES:
1. PROVIDE ADDITIONAL REINFORCING THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING. QUANTITY OF REINFORCING IN EACH DIRECTION SHALL BE EQUAL TO OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS. PLACE 1/2 OF ADDITIONAL REINFORCING BARS EACH SIDE OF OPENING. PLACE ADDITIONAL REINFORCEMENT AT 3" OC (TYPICAL BOTH DIRECTIONS AND ALL LAYERS OF REINFORCEMENT). START FIRST BAR 2" CLEAR TO OPENING. EXTEND ADDITIONAL REINFORCING BEYOND EDGE OF OPENING AS SHOWN ABOVE. ADDITIONAL BARS MAY TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK WHERE THE LENGTH OF THE WALL WILL NOT PERMIT BARS TO EXTEND AS SHOWN ABOVE.
  2. TYPICAL WALL OR SLAB REINFORCING NOT SHOWN FOR CLARITY. TERMINATE TYPICAL REINFORCING 2" CLEAR TO OPENING.
  3. OPENINGS 12" OR LESS IN SLABS AND OPENINGS 18" OR LESS IN WALLS, NO EXTRA REBARS ARE REQUIRED UNLESS SHOWN OTHERWISE. TYPICAL REINFORCING SHALL BE RESPAVED (NOT CUT) TO ALLOW FOR OPENINGS TO BE MADE.
  4. UNLESS SHOWN OTHERWISE ON DRAWINGS, PROVIDE EXTRA REINFORCING AROUND OPENINGS AS SHOWN AND INDICATED ABOVE.
  5. PROVIDE ADDITIONAL DOWELS PER NOTE 1 ABOVE FOR ALL OPENINGS NEAR THE FLOOR SLAB, BASE SLAB, OR CORNERS



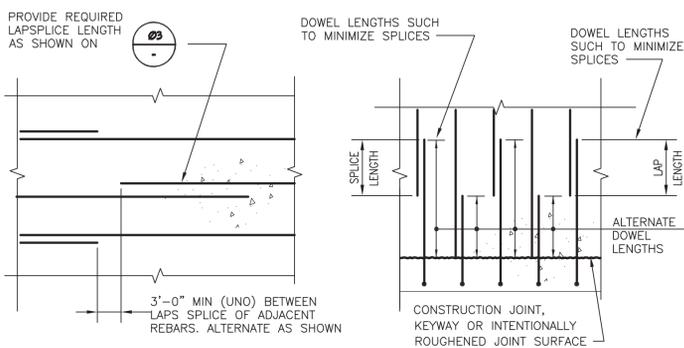
- NOTE:
1. ALL HOOKS SHALL BE STD 90 DEGREE HOOKS.
  2. SEE DRAWINGS FOR ADDITIONAL HORIZONTAL BARS. STAGGER BETWEEN TYPICAL REINF SPACING, EXTEND TO 1/5 OF DISTANCE TO NEAREST ADJACENT WALL IN EACH DIRECTION, UNO.
  3. APPLIES TO BOTH DOUBLE AND SINGLE LAYER CONDITIONS TYP.

TYP WALL REINF AT CORNERS & INTERSECTIONS

NOT TO SCALE

EXTRA REBARS AROUND OPENINGS

NOT TO SCALE



SLABS & WALLS

WALL DOWELS

- NOTES:
1. APPLIES TO SLABS, WALLS (BOTH HORIZONTAL AND VERTICAL)
  2. REFERENCE DETAIL 8 ON THIS SHEET FOR LAP REQUIREMENTS

REINFORCING SPLICE STAGGER

NOT TO SCALE

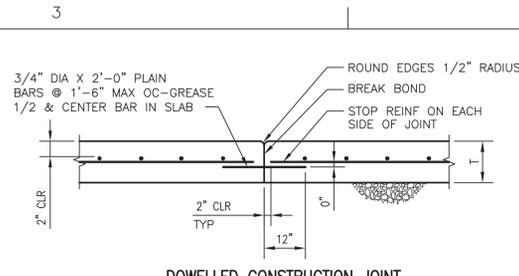
REINFORCING HOOK SCHEDULE

NOT TO SCALE

90° STD HOOK 180° STD HOOK

BAR SIZE GRADE 60	f'c=4500 psi			
	L <sub>dh</sub> *	HL	HW	TL
#3	6"	6"	3"	3"
#4	8"	8"	4"	4 1/2"
#5	10"	10"	5"	5"
#6	12"	1'-0"	6"	6"
#7	1'-2"	1'-2"	7"	7"
#8	1'-4"	1'-4"	8"	8"
#9	1'-6"	1'-7"	11 3/4"	10 1/2"
#10	1'-8"	1'-10"	1'-1 1/4"	11 1/2"
#11	1'-10"	2'-0"	1'-2 3/4"	1'-1"

\* COMPLYING WITH MINIMUM COVER REQUIREMENTS OF ACI 318, 12.5.3.2. OTHERWISE L<sub>dh</sub> MUST BE RE-CALCULATED.

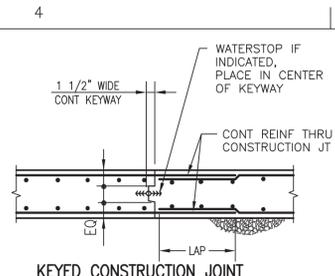


DOWELLED CONSTRUCTION JOINT

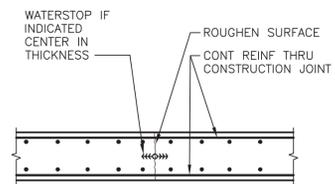
- NOTES:
1. ANY ONE OF THE DETAILS ABOVE MAY BE USED AT LOCATIONS INDICATED ON DRAWINGS AS "CLJ," AT CONTRACTOR'S OPTION.
  2. REF ARCH. FOR ADDITIONAL SAW JOINTS AND PATTERNS.

CONTROL JOINT (CLJ)

NOT TO SCALE



KEYED CONSTRUCTION JOINT



ROUGHEN CONSTRUCTION JOINT

- NOTES:
1. FURNISH CONSTRUCTION JOINTS SHOWN HERE AT ALL CONSTRUCTION JOINTS.
  2. REF SPECIFICATIONS FOR REQUIREMENT TO TIE WATERSTOPS IN PLACE TO PREVENT MOVEMENT OR FOLDING OVER.

CONSTRUCTION JOINT (CJ)

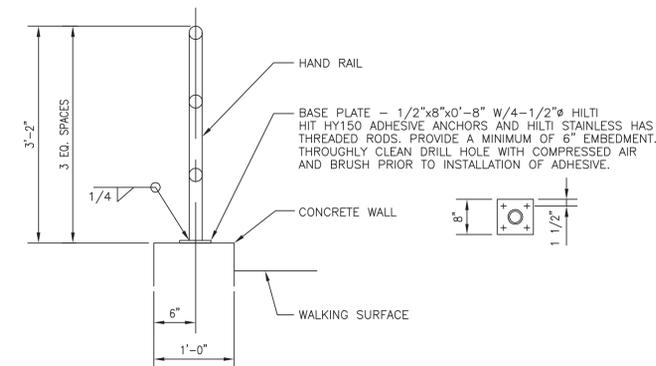
NOT TO SCALE

BAR SIZE GRADE 60	f'c = 4500 psi			
	LAP LENGTH (IN)		EMBEDMENT LENGTH (IN)	
	TOP	OTHER	TOP	OTHER
#3	16	16	12	12
#4	19	16	15	12
#5	24	19	19	15
#6	29	22	23	18
#7	48	37	37	29
#8	60	46	46	36
#9	74	57	57	44
#10	91	70	70	54
#11	109	84	84	65

- NOTES:
1. LAP LENGTHS SHOWN ARE FOR CLASS "B" TENSION SPLICES.
  2. LAP LENGTHS AND EMBEDMENTS SHOWN ARE FOR BARS SPACED LATERALLY AT GREATER FIVE TIMES THE BAR DIAMETER AND FOR MINIMUM COVER IN ACCORDANCE WITH ACI 318-02.
  3. IF SPACING IS < 5 TIMES BAR DIAMETER, INCREASE LAP LENGTH AND EMBEDMENT SHOWN BY 25%.
  4. TOP REINFORCING IS HORIZONTAL STEEL SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCING.

REINFORCING LAP AND EMBEDMENT SCHEDULE

NOT TO SCALE



- NOTES:
1. BOTH VERTICAL POSTS AND HORIZONTAL RAILS SHALL BE 2" DIAMETER STD. STEEL PIPE
  2. VERTICAL POSTS SHALL HAVE A MAXIMUM SPACING OF 6'-0" O.C.
  3. HORIZONTAL RAILS SHALL BE SPACED SUCH THAT A SPHERE 12" IN DIAMETER WILL NOT BE ALLOWED TO PASS
  4. ALL HANDRAILS TO BE PROVIDED WITH A HOT DIPPED GALVANIZED FINISH.

HAND RAIL

NOT TO SCALE

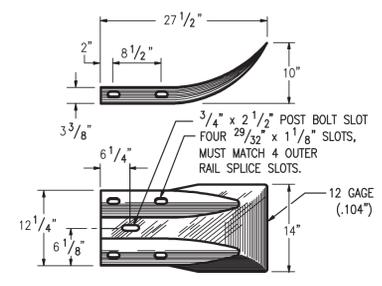
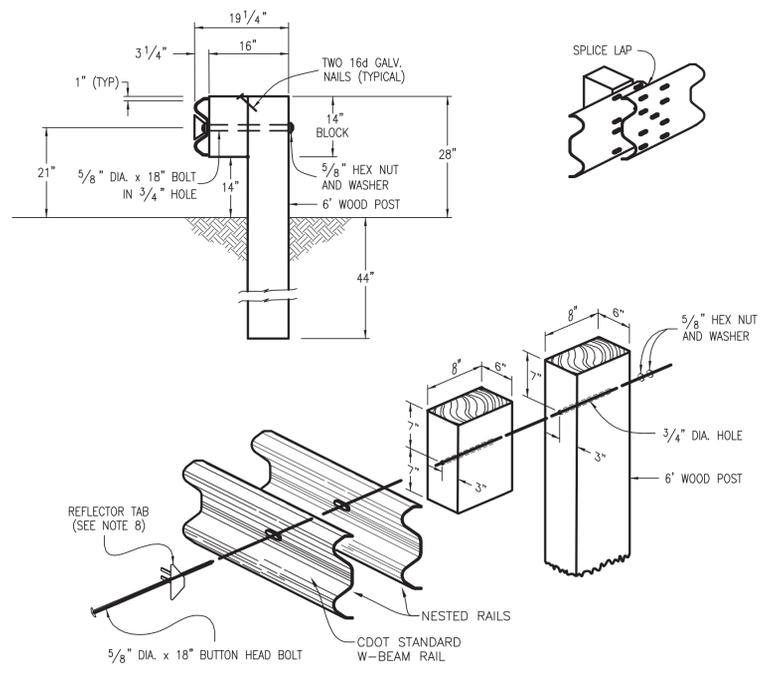
	<table border="1"> <tr> <th>ISSUE</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	ISSUE	DATE	DESCRIPTION				PROJECT MANAGER RICH THORNTON PROJECT ENGINEER BRANDON LUSTER  DRAWN BY E. OLSON PROJECT NUMBER 0000000055454	17th Avenue Drop Structure Replacement  	Structural Details  <table border="1"> <tr> <td>FILENAME</td> <td>01S-03.dwg</td> <td>SHEET</td> </tr> <tr> <td>SCALE</td> <td>NO SCALE</td> <td>01S-03</td> </tr> </table>	FILENAME	01S-03.dwg	SHEET	SCALE	NO SCALE	01S-03
		ISSUE	DATE	DESCRIPTION												
FILENAME	01S-03.dwg	SHEET														
SCALE	NO SCALE	01S-03														

1

2

3

4



**TERMINAL SECTION (FLARED)**  
NO SCALE

(DIMENSIONS SHOWN ARE FOR NOMINAL 6" x 8" POSTS & BLOCKS)

**GENERAL NOTES:**

- STANDARD GALVANIZED ROUND STEEL WASHERS SHALL BE USED UNDER ALL NUTS IN CONTACT WITH WOOD POSTS.
- RETROREFLECTOR TABS SHALL BE INSTALLED AT EACH WOOD POST. RETROREFLECTOR TABS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK. THE TABS SHALL BE MOUNTED SO THE BOLT SLOT FACES AWAY FROM TRAFFIC, AND THE RETROREFLECTOR SURFACE FACES THE APPROACHING TRAFFIC FOR ONE-WAY ROADS. FOR TWO-WAY ROADS, BOTH SIDES OF THE TABS SHALL BE RETROREFLECTIVE, SO THAT DELINEATION IS PROVIDED FOR BOTH DIRECTIONS OF TRAVEL. THE RETROREFLECTIVE SHEETING COLOR SHALL MATCH THE COLOR OF THE ADJACENT TRAVEL WAY EDGE LINE.
- AT THE TIME OF INSTALLATION, WOOD POSTS OR BLOCKS WITH SEASONING CHECKS GREATER THAN 1/4 IN. SHALL NOT BE USED WHEN THE CHECK EXTENDS THE FULL LENGTH OF THE PIECE.
- WOOD BLOCKS SHALL BE CUT FROM THE SAME CROSS-SECTION, SPECIES, AND GRADE, AND SHALL RECEIVE THE SAME PRESERVATIVE TREATMENT AS THE POSTS WHEN WOOD POSTS ARE USED.
- WOOD POSTS SHALL BE MADE OF TIMBER WITH AN EXTREME FIBER STRESS IN BENDING OF 1200 PSI. STRESS GRADING AND POST DIMENSIONS SHALL CONFORM WITH THE RULES OF THE WEST INSPECTION BUREAU, OR THE SOUTHERN PINE BUREAU, OR THE WESTERN WOOD PRODUCTS ASSOCIATION. TIMBER FOR POSTS SHALL BE EITHER ROUGH SAWN (UNPLANED) OR S4S (SURFACE FOUR SIDES) WITH NOMINAL DIMENSIONS INDICATED. ONLY ONE TYPE OF SURFACE FINISH SHALL BE USED FOR POSTS AND BLOCKS IN ANY ONE CONTINUOUS LENGTH OF GUARDRAIL.
- FIELD MODIFICATION TO RAIL ELEMENTS IS ALLOWED ONLY BY SAWING AND DRILLING OF HOLES. FLAME CUTTING IS NOT PERMITTED. POSTS SHALL NOT BE MODIFIED. COMPONENTS ON WHICH THE SHELTER COATING HAS BEEN DAMAGED SHALL BE EITHER REGALVANIZED OR RECOATED IN CONFORMANCE WITH AASHTO M 36, OR PAINTED WITH ONE FULL BRUSH COAT OF ZINC RICH PAINT CONFORMING TO MILITARY SPECIFICATION DOD-P-21035A.

**WOOD POST & BLOCK**  
NO SCALE



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	RICH THORNTON
PROJECT ENGINEER	BRANDON LUSTER
DRAWN BY	E. OLSON
PROJECT NUMBER	00000000055454

**17th Avenue  
Drop Structure Replacement**

<b>Guardrail Details</b>		
FILENAME	01S-04.dwg	SHEET
SCALE	NO SCALE	<b>01S-04</b>