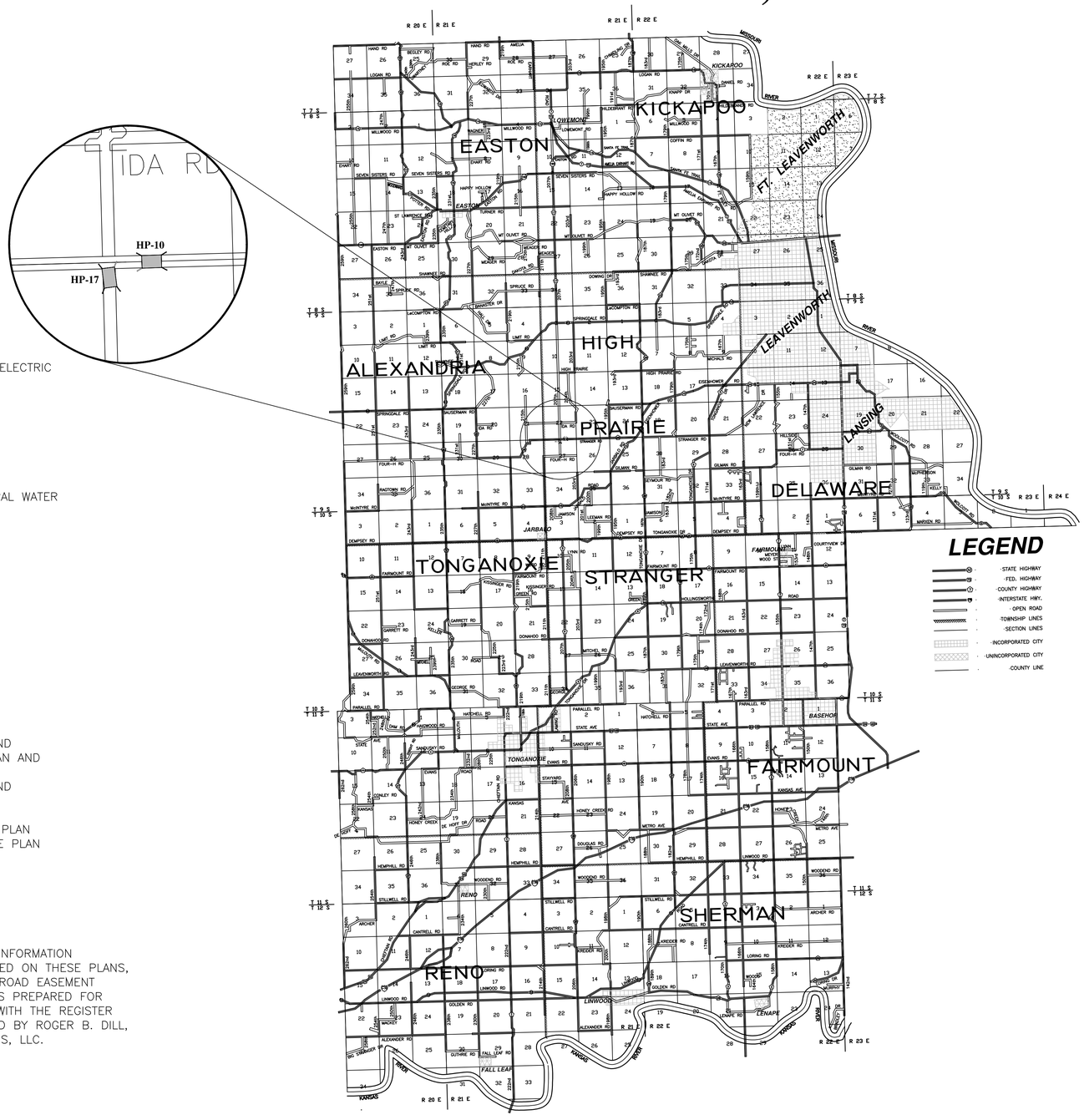
LEAVENWORTH COUNTY BRIDGE HP-10

Bridge Replacement and Minor Road Realignment

LEAVENWORTH COUNTY, KANSAS



UTILITIES

POWER
LEAVENWORTH–JEFFERSON ELECTRIC COOPERATIVE
913–486–5018

TELEPHONE
AT&T
866–861–7678

WATER
LEAVENWORTH COUNTY RURAL WATER DISTRICT NO. 5
913–758–0488

FIBER / COMMUNICATIONS
LEVEL 3 COMMUNICATIONS
877–366–8344

KANSAS ONE-CALL (DIG SAFE)
800–344–7233

PLAN INDEX

1. COVER SHEET
2–4. STRANGER ROAD AND BRIDGE HP–10 PLAN AND PROFILE SHEETS
5–11. STRANGER ROAD AND BRIDGE HP–10 CROSS–SECTIONS
12. EROSION CONTROL PLAN
13. ENGINEERED BRIDGE PLAN

REFERENCES

1. ALL SURVEY DATA AND INFORMATION ILLUSTRATED OR REFERENCED ON THESE PLANS, AND ALL THE PERMANENT ROAD EASEMENT DESCRIPTIONS AND EXHIBITS PREPARED FOR THIS PROJECT AND FILED WITH THE REGISTER OF DEEDS, WERE PREPARED BY ROGER B. DILL, LS–1408, ATLAS SURVEYORS, LLC.

LEGEND

- CENTERLINE
- OVERHEAD POWERLINE
- UNDERGROUND POWER
- WATER LINE
- EXISTING FENCE LINE
- TREE LINE
- TREE (VARIES)
- SIGN
- TELEPHONE PEDESTAL
- WATER VALVE
- MAILBOX
- WATER METER
- FIRE HYDRANT
- POWER POLE AND GUY WIRE
- EXISTING GRAVEL ROAD SURFACE TO BE OBLITERATED
- PROPOSED ROAD SURFACE
- EXISTING GRAVEL ROAD SURFACE TO REMAIN

APPROVED BY: _____ MICHAEL SPICKELMIER, COUNTY ENGINEER _____ DATE

LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH DEPARTMENT OF PUBLIC WORKS COUNTY

No.	Date	Revisions	By	App.
1				
2				
3				
4				
5				
6				

LEAVENWORTH COUNTY BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Cover Sheet

Date:	07/28/08
Designed:	MGS
Drawn:	MGS
Checked:	N/A
Approved:	MWS
Project No.:	N/A
Sheet No.:	1

(BM 1) N: 345535.4300 E: 2145306.4100 EL 893.90
2" ALUMINUM DISK @ NW SECTION COR.
1) 57.17 ENE TO 3/8" @ Base
2) 34.90 SW TO RR SPK IN E FACE PP
3) 33.80 SE TO PK NL TOP COR FNC POST

Owner: Dunn Cattle Company

(BM 14) N:345555.1022 E:2145360.0852 EL: 893.4965
3/8" FOR CONTROL (GPS BASE)
1) 57.17 WSW TO 2" ALUMINUM DISK AT NW COR SEC
2) 21.50 S TO CENTERLINE E-W STRANGER ROAD
3) 52.00 W TO CENTERLINE N-S 207TH STREET.

STRANGER ROAD DATA:

DESIGN SPEED: 35 mph
2012 ADT: 291 vpd
MIN. EXISTING HORIZONTAL RADIUS: 142 FT (ESTIMATED)
MIN. ALLOWABLE HORIZONTAL RADIUS: 275 FT (MODERATE)
REPORTED ACCIDENTS (2003–PRESENT): NONE.

REALIGN APPROXIMATELY 400 FEET OF STRANGER ROAD WEST OF HP–10, AND 300 FEET EAST OF HP–10 TO IMPROVE HORIZONTAL GEOMETRY AND SIGHT DISTANCE. WIDEN STRANGER ROAD WITHIN THE DEFINED LIMITS TO A 24 FT WIDE STANDARD LEAVENWORTH COUNTY LOCAL GRAVEL ROAD TO BETTER ACCOMMODATE MODERN VEHICLES AND EQUIPMENT.

REFERENCE:
AASHTO GUIDELINES FOR GEOMETRIC DESIGN OF VERY LOW–VOLUME LOCAL ROADS (ADT <= 400)

Owner: Georgia F. Domann

STA. 13+00.00, BEGIN CONSTRUCTION OF STRANGER ROAD REALIGNMENT. MATCH EXISTING. REALIGN ROAD ALONG SECTION LINE. TAPER ROAD CONSISTENTLY OUTWARD TO ACHIEVE 24' WIDE GRAVEL ROAD AT STA. 13+50.00.

STA. 13+50.00, BEGIN CONSTRUCTION OF 24' WIDE GRAVEL ROAD TO LEAVENWORTH COUNTY STANDARDS.

CONST. LIMITS

PROP. EX. 40' R/W

EX. 20' R/W

STRANGER ROAD
(GRAVEL ROAD)

10+00 11+00 12+00 13+00 14+00 15+00

BM 1

BM 14

Gravel Drive

24"CMP

Tele Riser

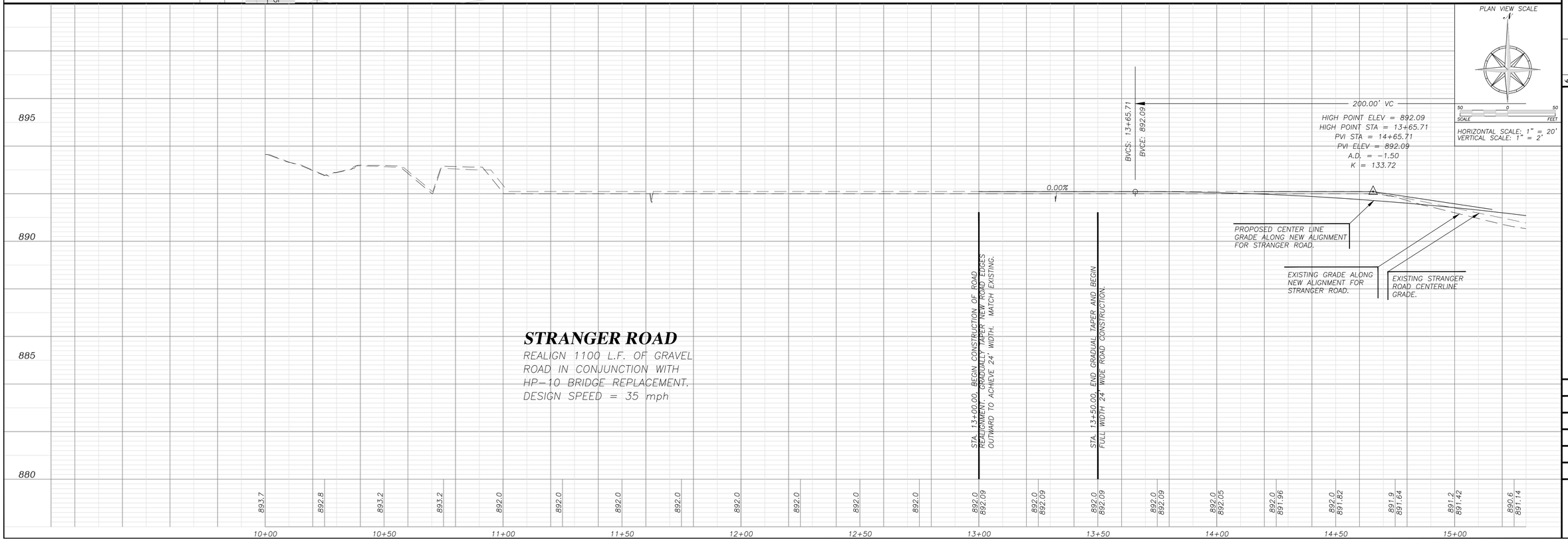
PP w/ UE

Sign

207th STREET
(GRAVEL ROAD)

Owner: Herbert T. & Susan P. Schwinn

Owner: Louis G. & Martha C. Zinser



STRANGER ROAD

REALIGN 1100 L.F. OF GRAVEL ROAD IN CONJUNCTION WITH HP–10 BRIDGE REPLACEMENT.
DESIGN SPEED = 35 mph

PLAN VIEW SCALE

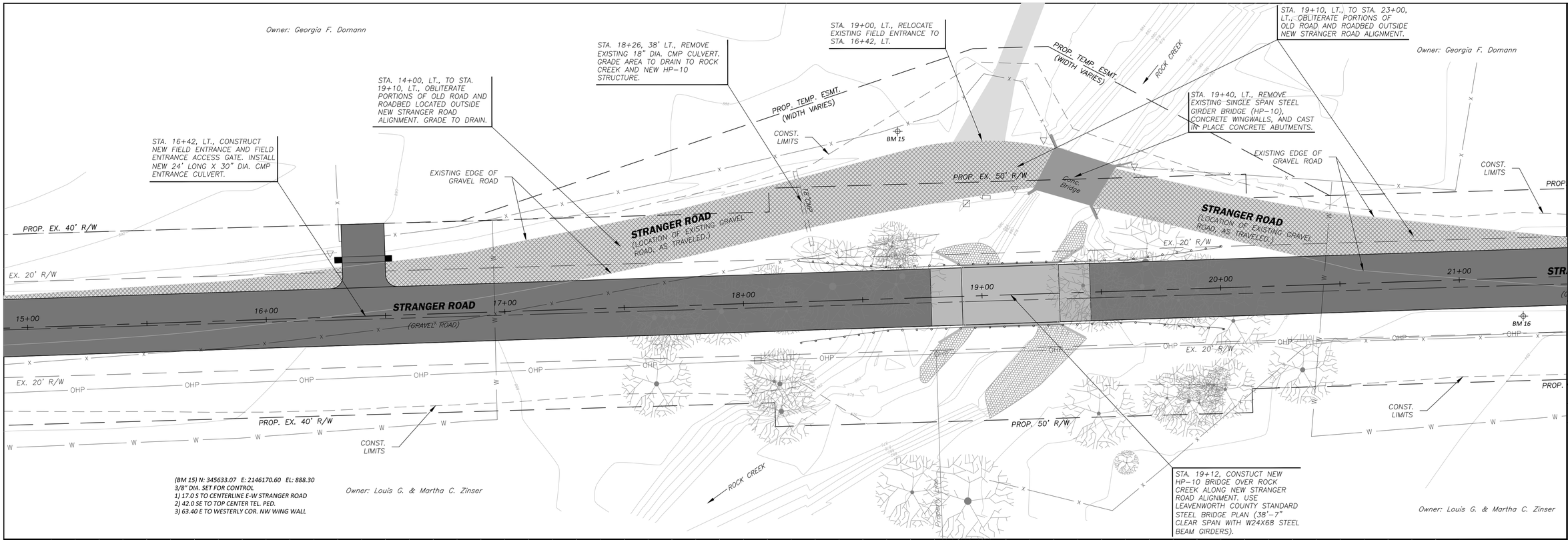
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

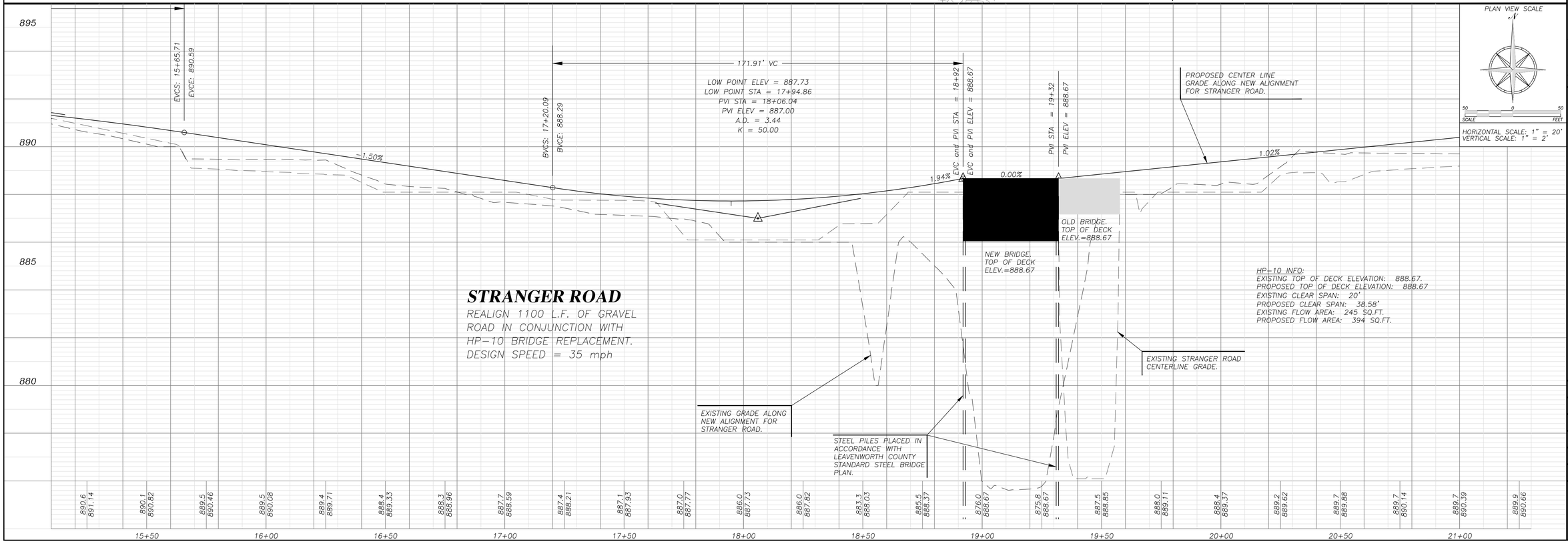
LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Plan and Profile

No.	Date	Revisions	By	App.
6				
5.				
4				
3.				
2				
1				

Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	2





LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH DEPARTMENT OF PUBLIC WORKS COUNTY

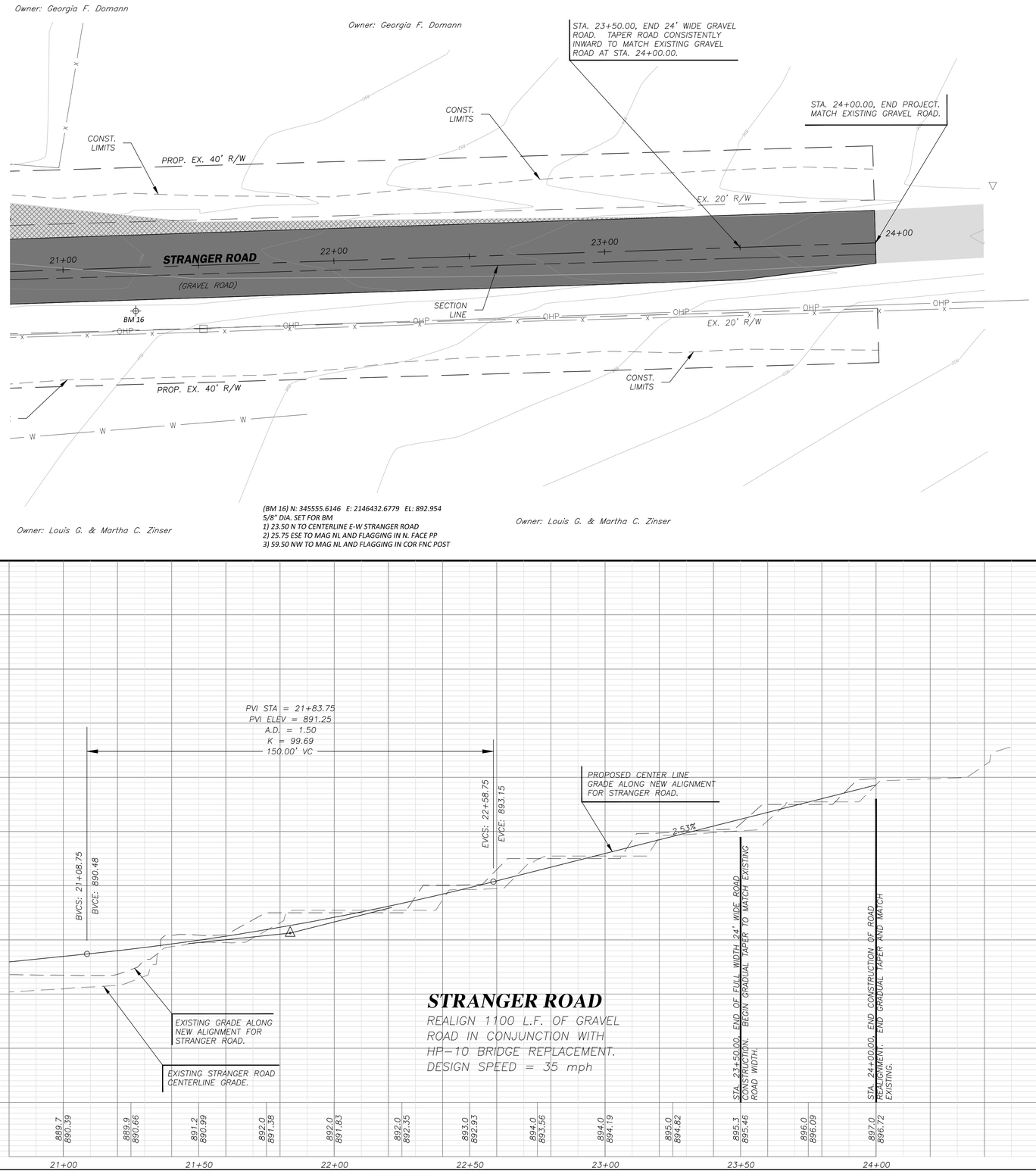
No.	Date	Revisions	By	App.
1	06/16/2015	Updated waterline location from RWD5 info.	MGS	
2				
3.				
4				
5.				
6				

LEAVENWORTH COUNTY BRIDGE HP-10

Bridge Replacement and Minor Road Realignment

Stranger Road Plan and Profile

Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	3



STRANGER ROAD

REALIGN 1100 L.F. OF GRAVEL ROAD IN CONJUNCTION WITH HP-10 BRIDGE REPLACEMENT. DESIGN SPEED = 35 mph

LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

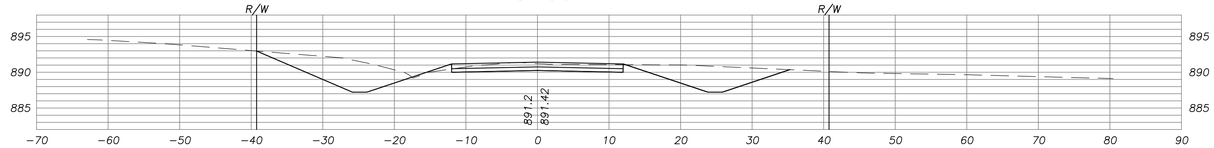
No.	Date	Revisions	By	App.
1				
2				
3.				
4				
5.				
6				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Plan and Profile

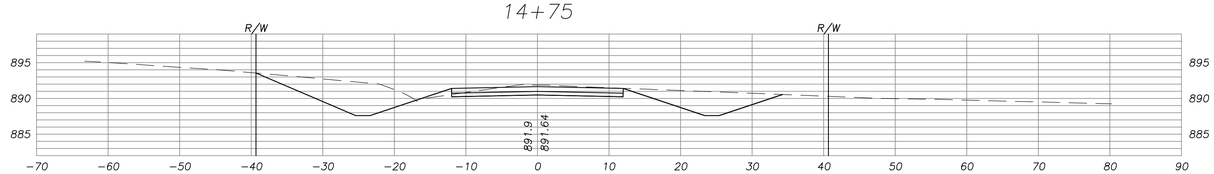
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	4

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

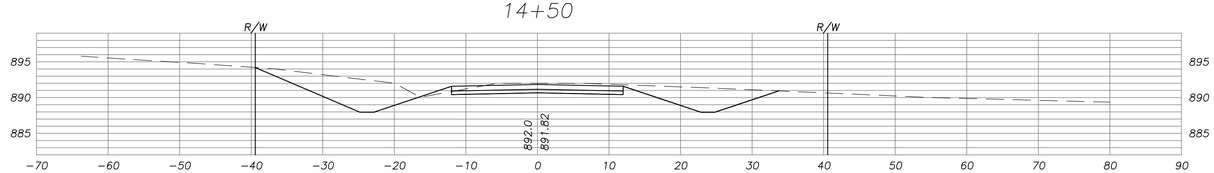
15+00



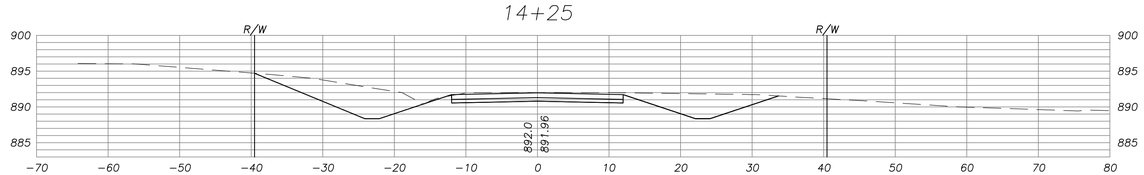
14+75



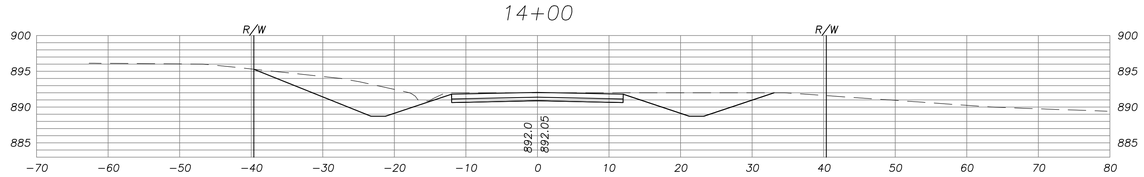
14+50



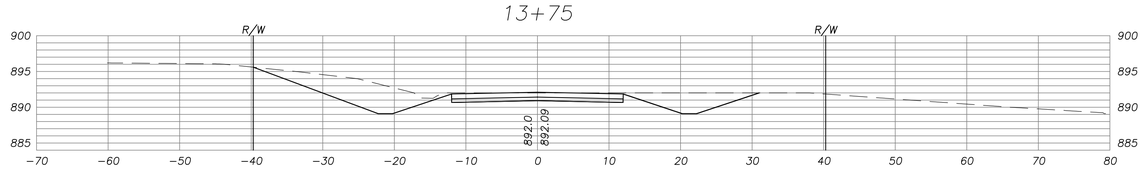
14+25



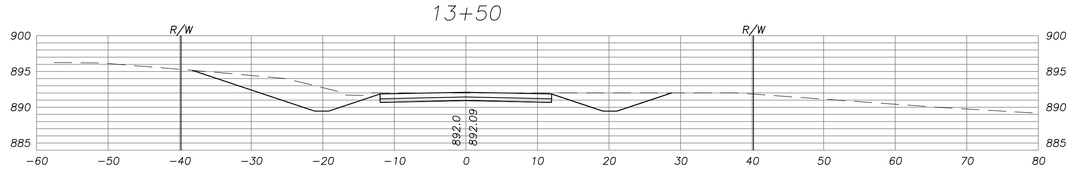
14+00



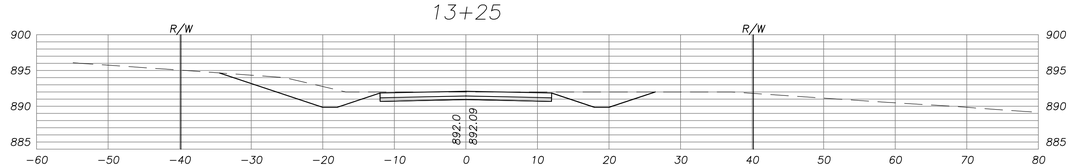
13+75



13+50



13+25



LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH DEPARTMENT OF PUBLIC WORKS COUNTY

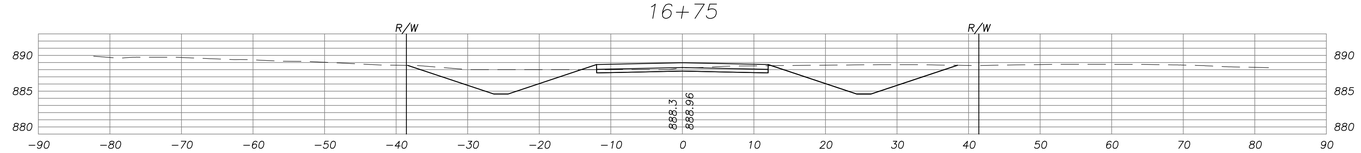
No.	Date	Revisions	By	App.
1				
2				
3				
4				
5				
6				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 13+25.00 to Sta. 15+00.00

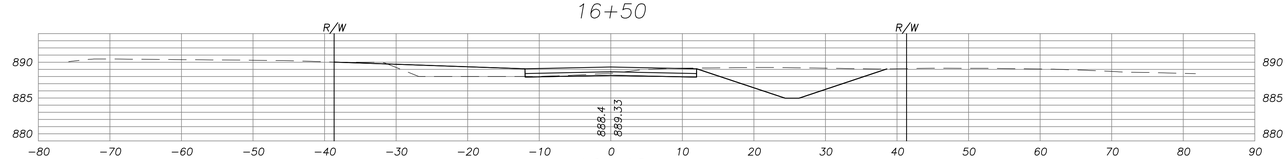
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	5

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

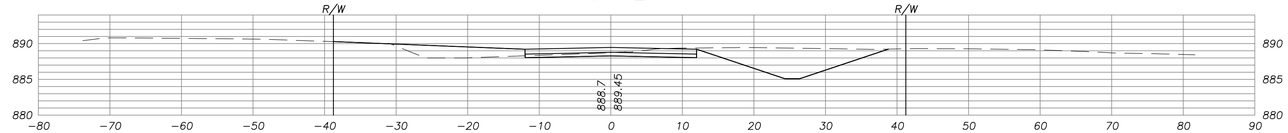
16+75



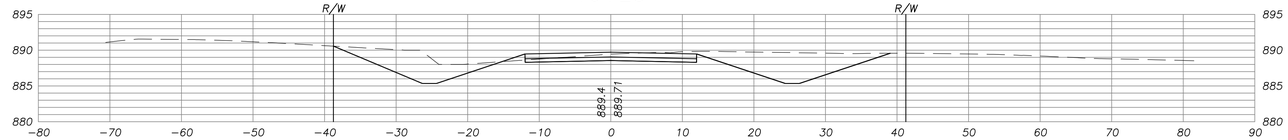
16+50



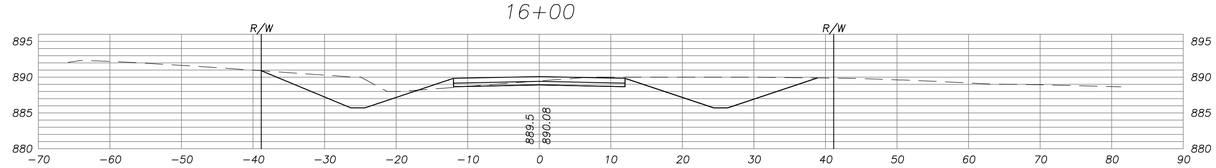
16+42



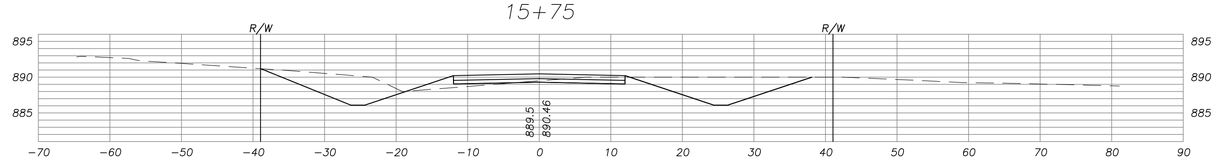
16+25



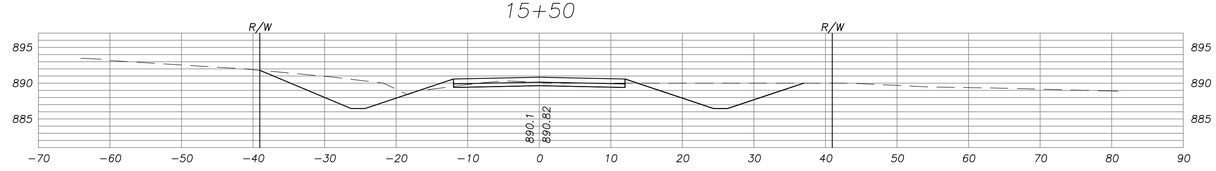
16+00



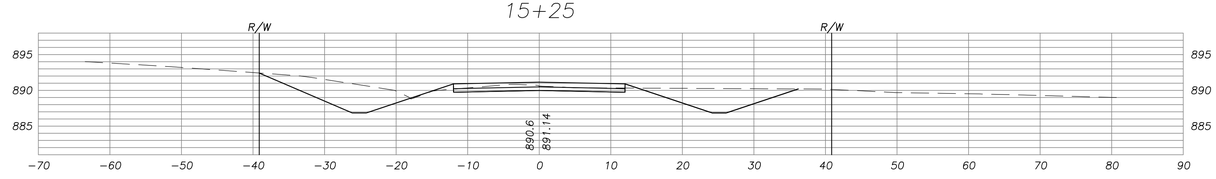
15+75



15+50



15+25



LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH DEPARTMENT OF PUBLIC WORKS COUNTY

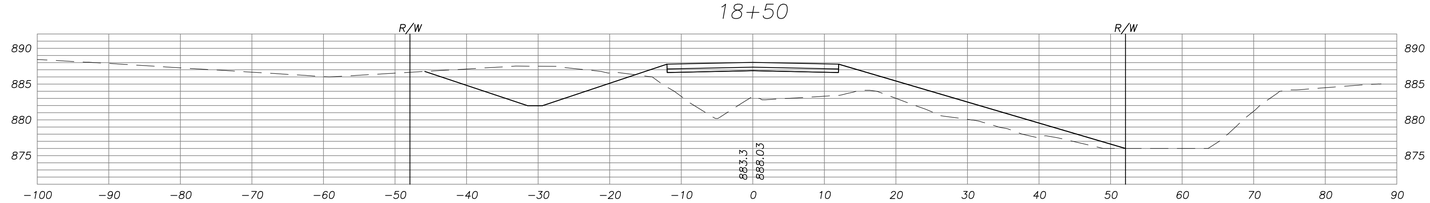
No.	Date	Revisions	By	App.
6				
5				
4				
3				
2				
1				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 15+25.00 to Sta. 16+75.00

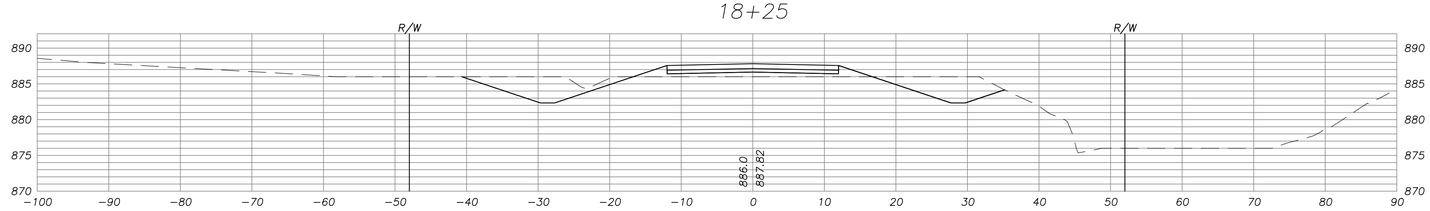
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	6

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

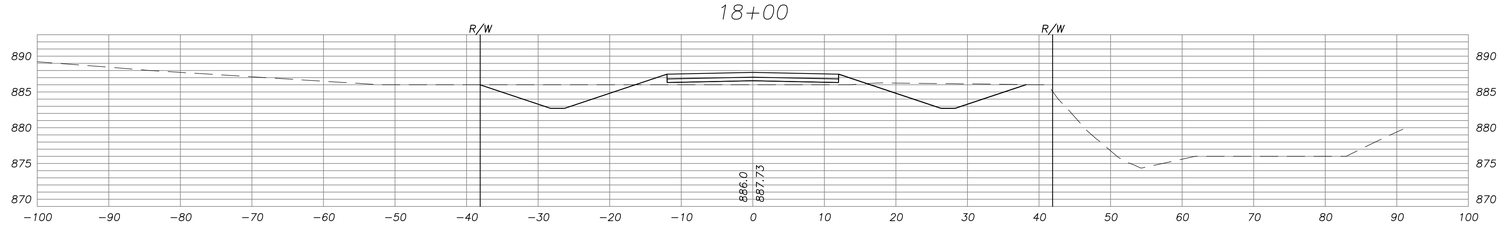
18+50



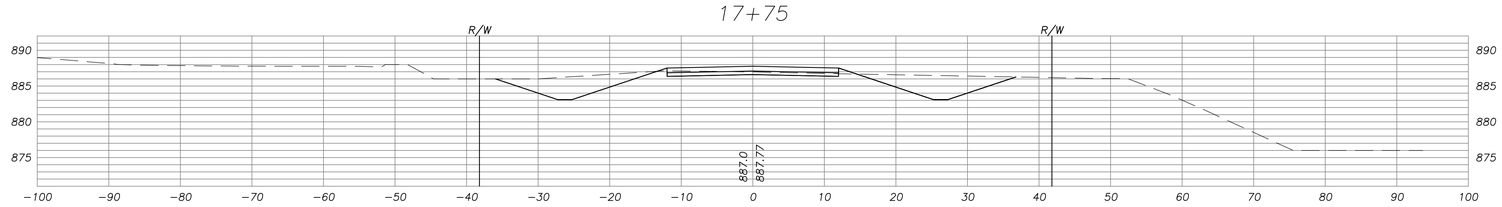
18+25



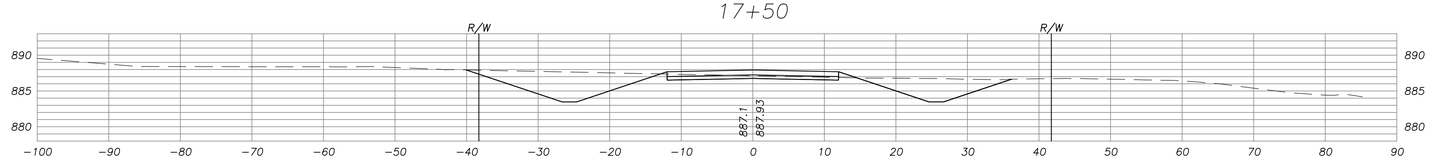
18+00



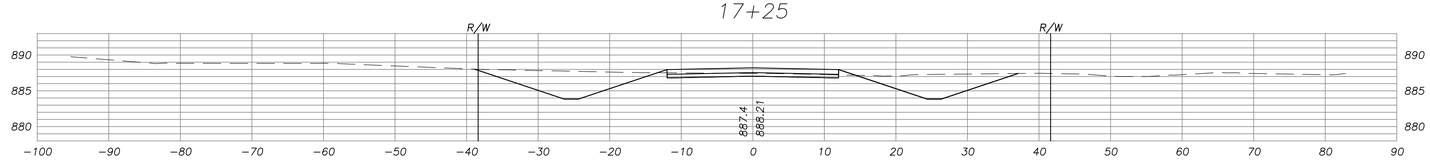
17+75



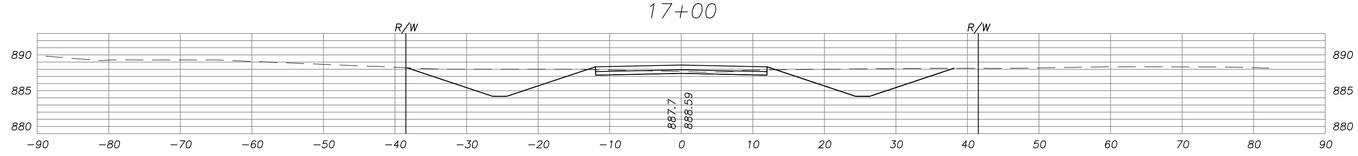
17+50



17+25



17+00



LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

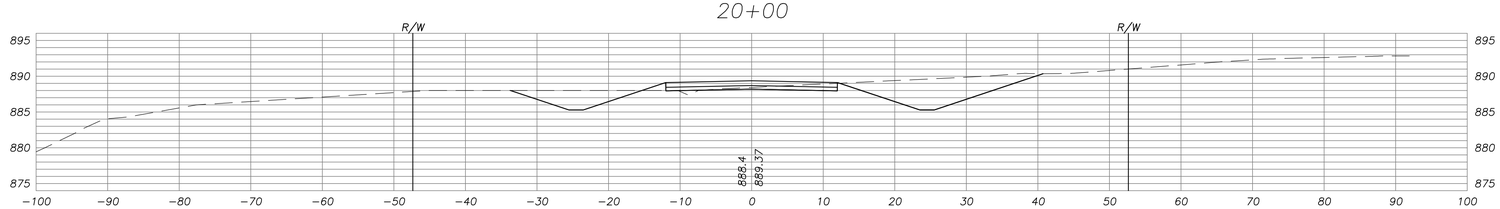
No.	Date	Revisions	By	App.
6				
5				
4				
3				
2				
1				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 17+00.00 to Sta. 18+50.00

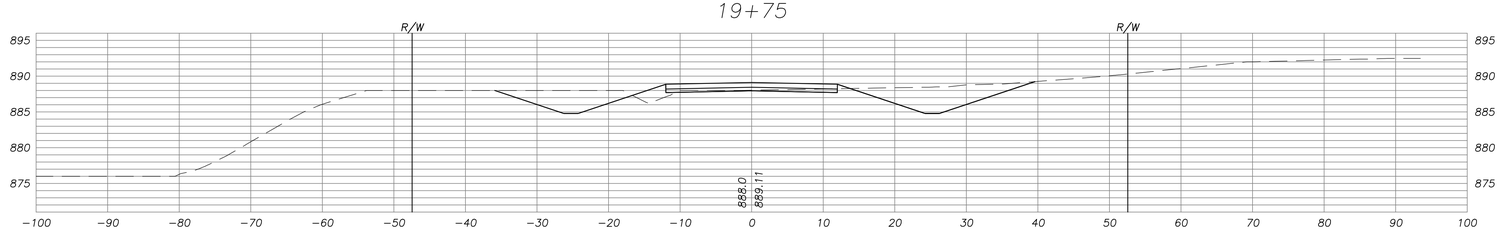
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	7

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

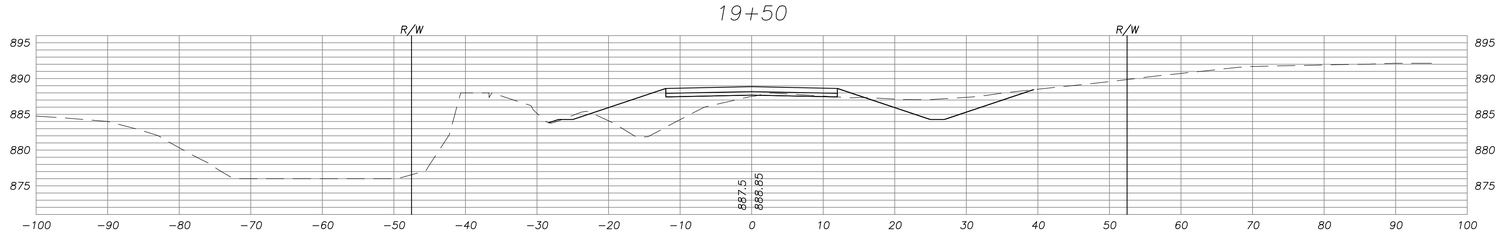
20+00



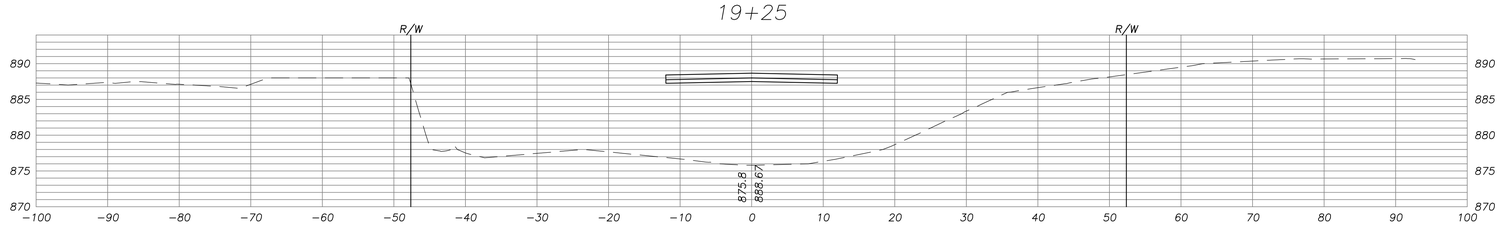
19+75



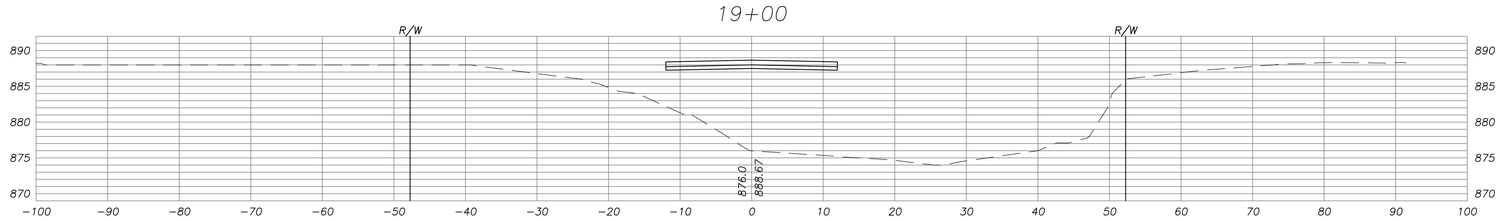
19+50



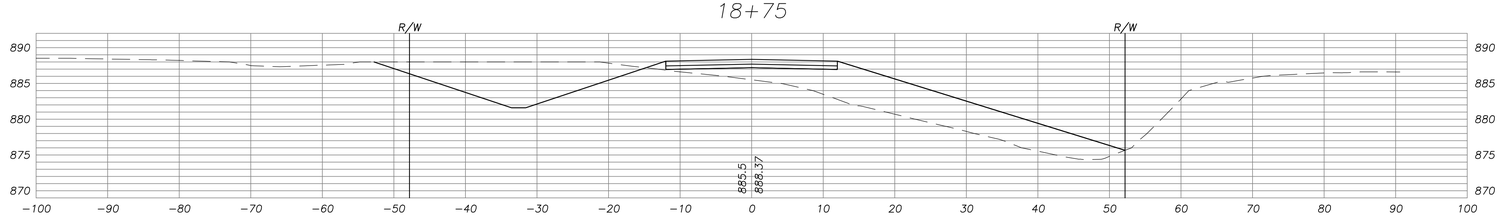
19+25



19+00



18+75



LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

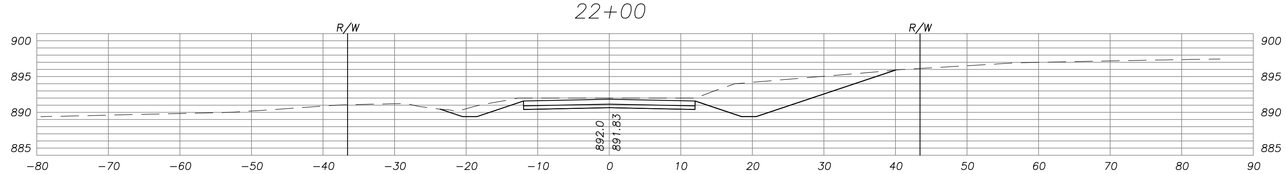
No.	Date	Revisions	By	App.
1				
2				
3				
4				
5				
6				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 18+75.00 to Sta. 20+00.00

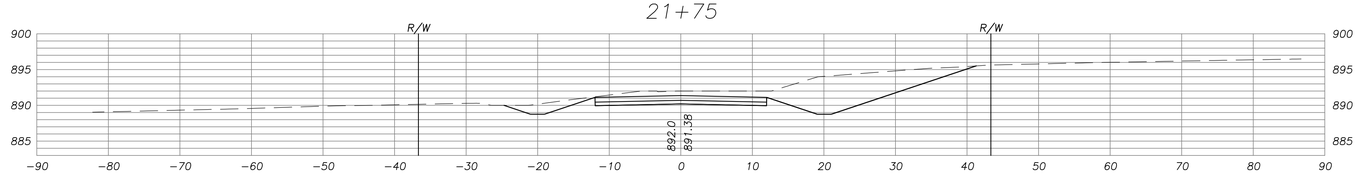
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	8

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

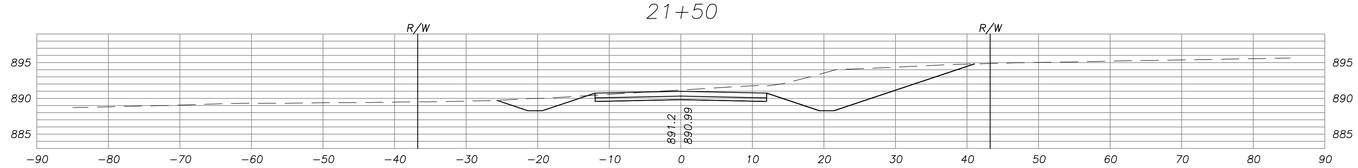
22+00



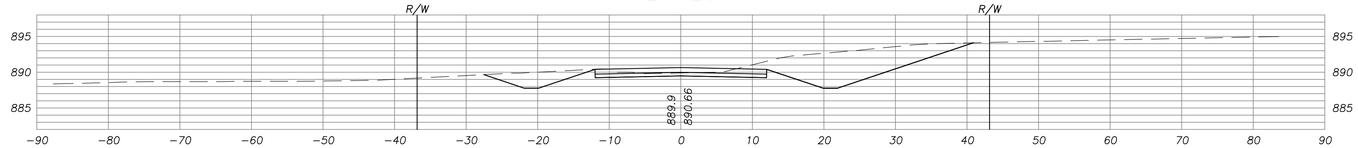
21+75



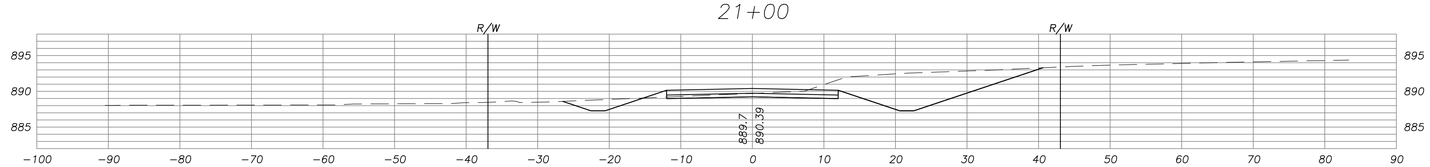
21+50



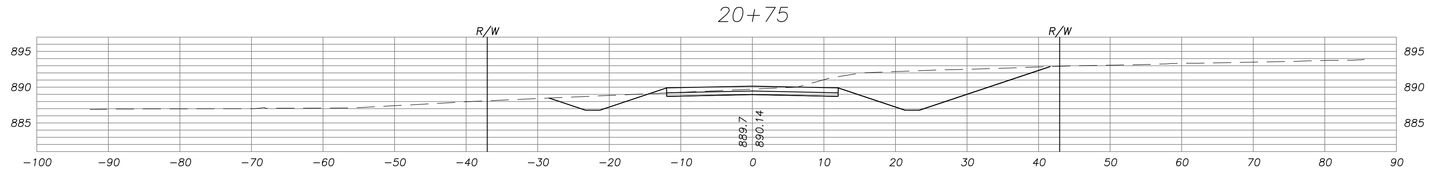
21+25



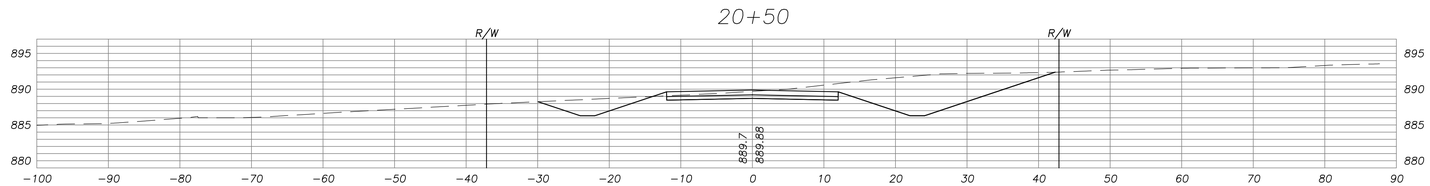
21+00



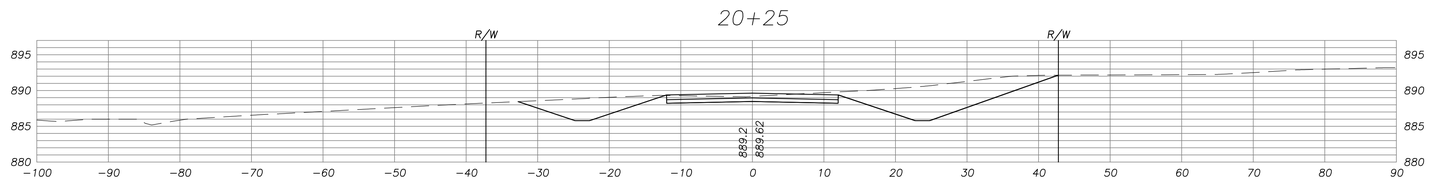
20+75



20+50



20+25



LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH DEPARTMENT OF PUBLIC WORKS COUNTY

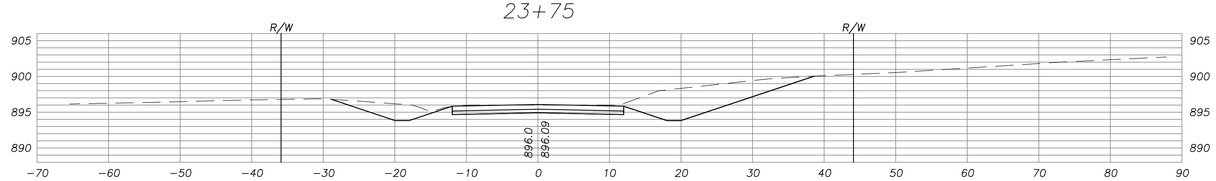
No.	Date	Revisions	By	App.
1				
2				
3				
4				
5				
6				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 20+25.00 to Sta. 22+00.00

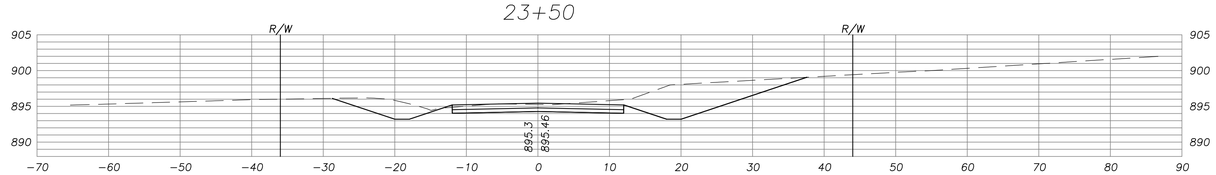
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	9

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

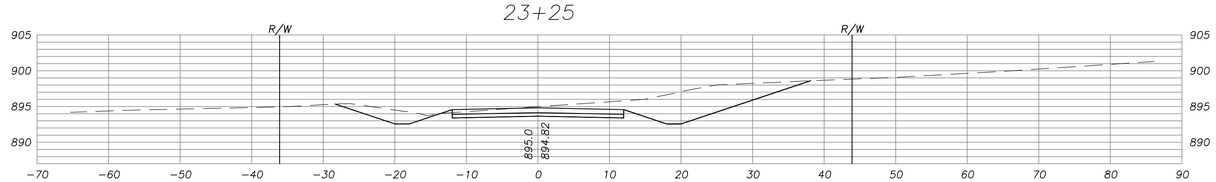
23+75



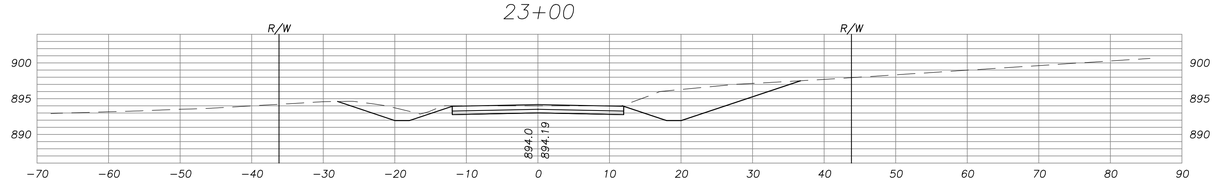
23+50



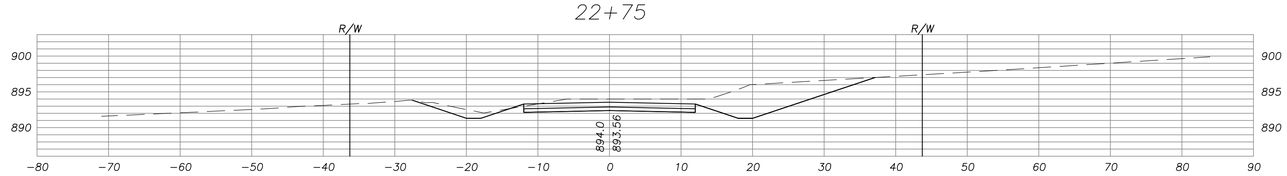
23+25



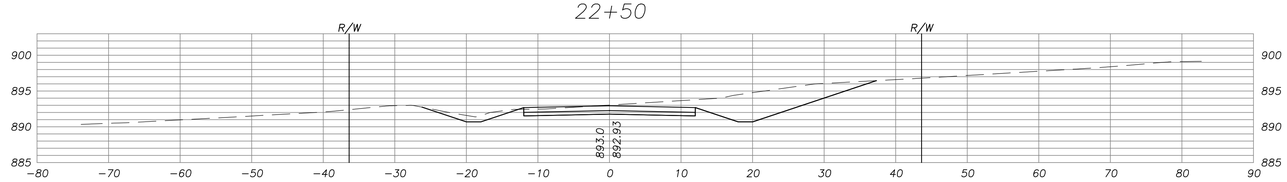
23+00



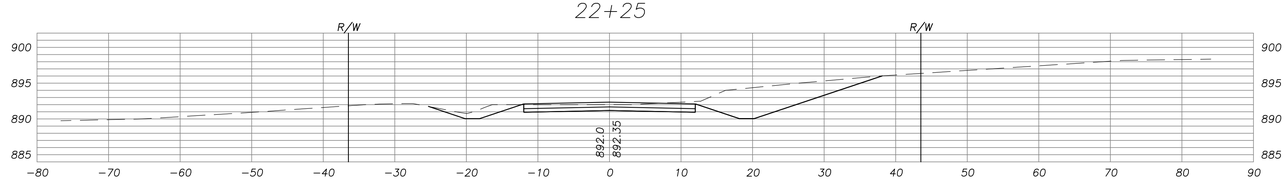
22+75



22+50



22+25



LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

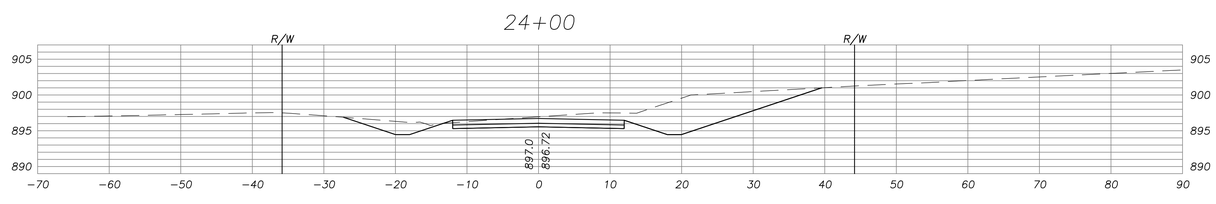
No.	Date	Revisions	By	App.
1				
2				
3				
4				
5				
6				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 22+25.00 to Sta. 23+75.00

Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	10

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 3:1.
3. USE STANDARD DITCH BACKSLOPE OF 3:1.
4. MATCH BACKSLOPE TO EXISTING GRADE AT R/W LINE WHEN 3:1 SLOPE EXTENDS BEYOND R/W.

STATION	AREAS Square Feet		VOLUMES Cubic Yards		CUMULATIVE VOLUMES Cubic Yards	
	CUT	FILL	CUT	FILL	CUT	FILL
13+25	84.57	0.00				
			87.07	0.00	87.07	0.00
13+50	103.51	0.00				
			103.22	0.00	190.30	0.00
13+75	119.45	0.00				
			115.51	0.00	305.81	0.00
14+00	130.06	0.00				
			122.54	0.03	428.35	0.03
14+25	134.64	0.06				
			123.39	0.84	551.74	0.87
14+50	131.87	1.76				
			119.89	1.78	671.63	2.65
14+75	127.08	2.09				
			115.45	1.75	787.07	4.40
15+00	122.28	1.69				
			105.79	1.64	892.86	6.04
15+25	106.22	1.87				
			97.30	2.32	990.16	8.36
15+50	103.94	3.15				
			98.50	5.00	1088.66	13.36
15+75	108.82	7.65				
			108.06	5.06	1196.72	18.42
16+00	124.59	3.27				
			119.58	2.15	1316.30	20.57
16+25	133.70	1.36				
			66.84	7.90	1383.14	28.47
16+42	78.63	23.73				
			22.74	6.99	1405.89	35.46
16+50	74.88	23.45				
			87.84	11.23	1493.72	46.68
16+75	114.85	0.80				
			105.71	0.61	1599.44	47.29
17+00	113.49	0.51				
			102.13	0.78	1701.57	48.07
17+25	107.12	1.18				
			100.83	1.08	1802.40	49.15
17+50	110.67	1.15				
			93.14	1.12	1895.54	50.27
17+75	90.51	1.26				
			79.49	8.34	1975.03	58.61
18+00	81.18	16.75				
			75.04	16.98	2050.06	75.59
18+25	80.91	19.92				
			78.37	97.02	2128.43	172.61
18+50	88.36	189.65				
			102.02	182.84	2230.45	355.46
18+75	132.01	205.29				
			61.12	95.04	2291.57	450.50
19+00	0.00	0.00				
			0.00	0.00	2291.57	450.50
19+25	0.00	0.00				
			17.94	29.35	2309.51	479.84
19+50	38.75	63.39				
			61.05	32.83	2370.55	512.68
19+75	93.11	7.53				
			90.82	4.83	2461.37	517.51
20+00	103.05	2.90				
			114.23	1.35	2575.60	518.86
20+25	143.69	0.01				
			134.31	0.26	2709.91	519.12
20+50	146.42	0.55				
			130.79	0.65	2840.70	519.77
20+75	136.09	0.84				
			116.37	1.11	2957.07	520.87
21+00	115.27	1.55				
			111.16	0.72	3068.24	521.59
21+25	124.85	0.00				
			121.16	0.07	3189.40	521.66
21+50	136.87	0.15				
			128.39	0.07	3317.79	521.73
21+75	140.45	0.00				
			120.22	0.00	3438.01	521.73
22+00	119.23	0.00				
			99.61	0.01	3537.62	521.74
22+25	95.93	0.02				
			91.60	0.05	3629.22	521.78
22+50	101.92	0.09				
			97.62	0.19	3726.84	521.97
22+75	108.93	0.32				
			97.04	0.15	3823.88	522.12
23+00	100.68	0.00				
			102.05	0.16	3925.93	522.28
23+25	119.75	0.35				
			110.28	0.27	4036.22	522.55
23+50	118.46	0.24				
			108.19	0.11	4144.41	522.66
23+75	115.23	0.01				
			112.52	0.10	4256.92	522.76
24+00	127.80	0.21				
			0.00	0.00	4256.92	522.76



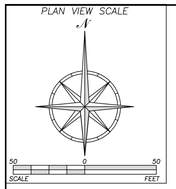
LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

LEAVENWORTH DEPARTMENT OF PUBLIC WORKS COUNTY

No.	Date	Revisions	By	App.
1				
2				
3				
4				
5				
6				

LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Stranger Road Cross Sections
Sta. 22+25.00 to Sta. 23+75.00

Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	11

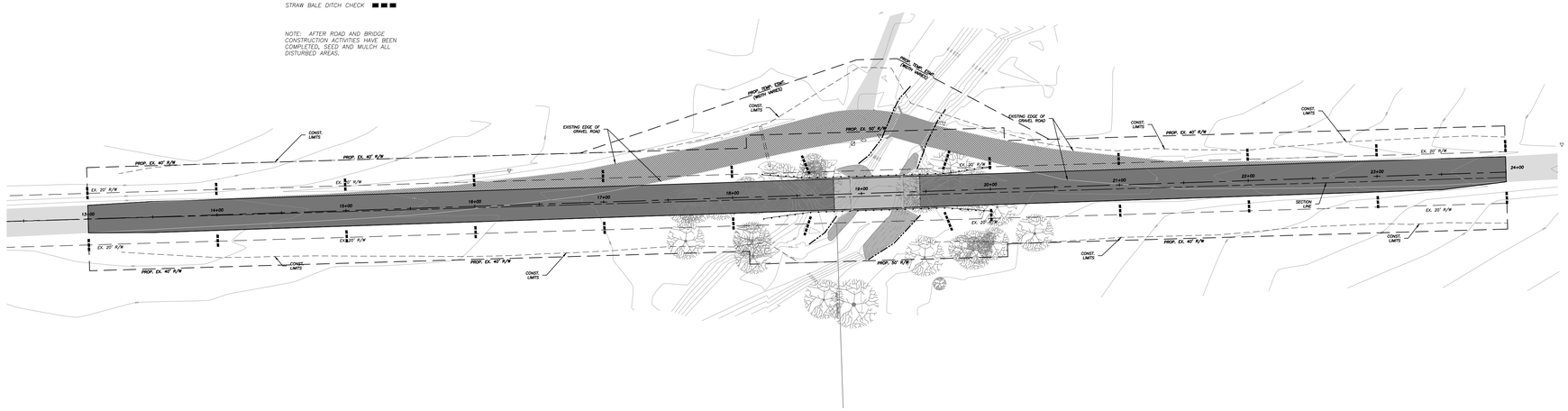


LEGEND:

SILT FENCE

STRAW BALE DITCH CHECK

NOTE: AFTER ROAD AND BRIDGE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED, SEED AND MULCH ALL DISTURBED AREAS.



STRANGER ROAD
and
BRIDGE HP-10

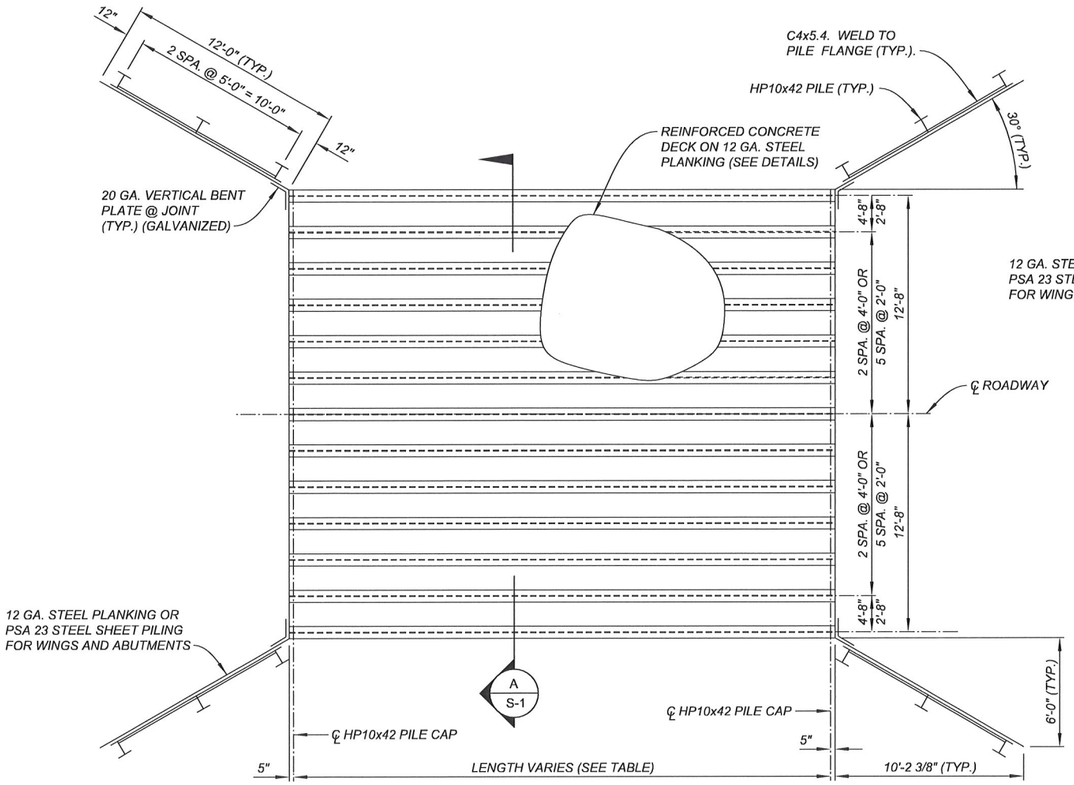
Temporary Ditch Check Spacing	
Ditch ℄ Slope (%)	Spacing Interval (feet)
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	33

LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

No.	Date	Revisions	By	App.
6				
5				
4				
3				
2	01/22/2014	Created per request from Larry Hook, DWR.	MGS	MWS
1				

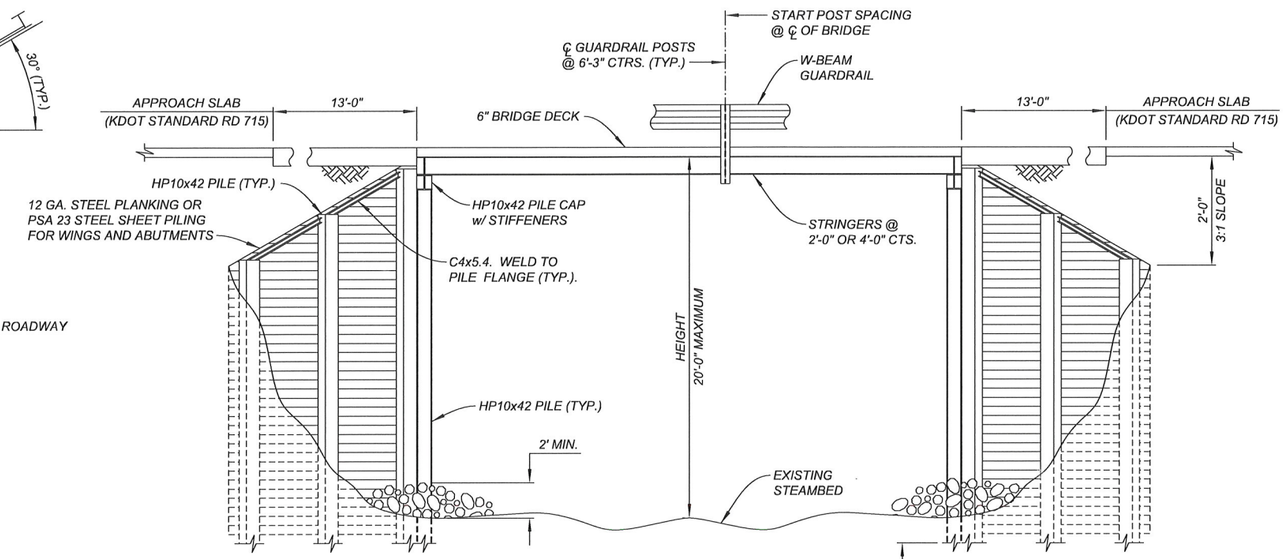
LEAVENWORTH COUNTY
BRIDGE HP-10
Bridge Replacement and Minor Road Realignment
Erosion Control Plan

Date:	01/22/14
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	12



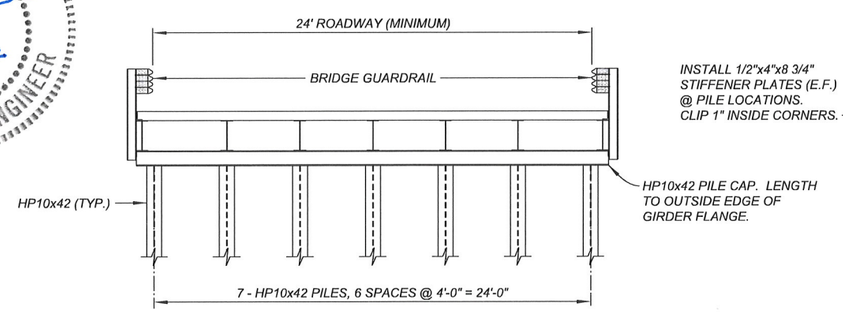
PLAN

SCALE: 1/4" = 1' -0"AT FULL SIZE



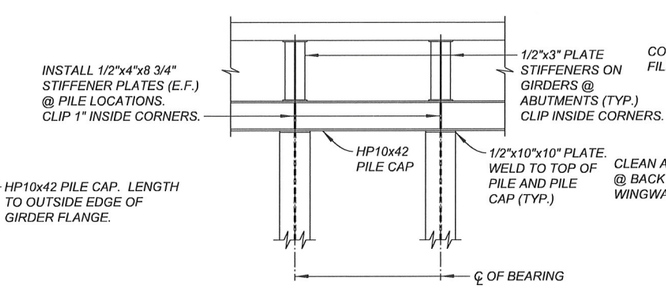
ELEVATION

SCALE: 1/4" = 1' -0"AT FULL SIZE



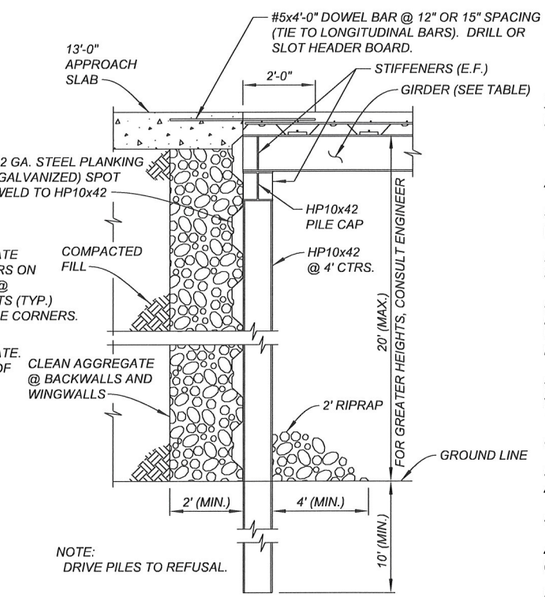
SECTION A

SCALE: 1/4" = 1' -0"AT FULL SIZE



STIFFENER DETAIL

SCALE: 1/2" = 1' -0"AT FULL SIZE



ABUTMENT DETAIL

SCALE: 1/2" = 1' -0"AT FULL SIZE

GENERAL NOTES:

DESIGN LOADING: LFD HS20 IR
LFD HS25 OR &
ONE TRUCK LOADING.

ALL STEEL USED SHALL BE ASTM A36 (MINIMUM).

STEEL STIFFENERS SHALL USE A 1/4" FILLET WELD (ALL AROUND).

STEEL DECKING SHALL BE PLUG WELDED OR SCREWED TO STEEL GIRDERS (SEE NOTE (11)).

STEEL ABUTMENT PILING SHALL BE DRIVEN TO REFUSAL OR TO TWICE THE REQUIRED BEARING VALUE, BUT NOT LESS THAN 10'-0". DRIVE WING PILES TO 10' BELOW FLOWLINE.

STEEL WINGWALL PILES SHALL BE HP10x42 AT 5'-0' CENTERS AS SHOWN. FOR HEIGHTS GREATER THAN 20'-0", CONSULT ENGINEER.

CONCRETE DECK AS SHOWN. 4,000 PSI MIN. (AE).

STEEL DIAPHRAGMS C4x5.4 SHALL BE INSTALLED AT VERTICAL POSTS SPACED AT 6'-3" CENTERS.

STEEL GUARDRAIL POST TO BE W6x16.

ALL REINFORCING STEEL TO BE GRADE 60 (EPOXY COATED).

PAINT: PAINT ALL STRUCTURAL STEEL. EXISTING STEEL GIRDERS AND HP10X42 SECTIONS SHALL BE SANDBLAST CLEANED TO MEET SSPC-SP10. APPLY INORGANIC ZINC PRIMER COAT FOLLOWED WITH A WATER BORNE ACRYLIC FINISH COAT (BROWN). SEE KDOT SPECIFICATIONS.

CARL B. REED
LICENSE
6190
1-6-14
KANSAS
PROFESSIONAL ENGINEER

NOTE:

STRUCTURE SHALL NOT BE SKEWED, LENGTHEN BRIDGE TO ACCOMMODATE CHANNEL SKEWS. E.F. = EACH FACE. STEEL PILES SHALL BE FIELD SPLICED AS REQUIRED PER KDOT STANDARDS.

Rev	Date	By	Chk'd	Description

Copyright 2013, of Alfred Benesch & Company. All rights reserved. This plan and design content is the property of Alfred Benesch & Company. Use, reuse, reproduction or modification of this plan or design information, or any part thereof, is strictly prohibited, except by written permission of this firm.

benesch
engineers · scientists · planners
Alfred Benesch & Company
913 Sheidley, Suite 110
Bonner Springs, Kansas 66012
913-441-1100

LEAVENWORTH COUNTY
STANDARD STEEL BRIDGE DETAILS
PLAN AND ELEVATION

Drawn: DBR	Designed: CBR/JMD	Checked: CBR	Scale: AS NOTED	Date: 1/3/2014	Project No.: 00130174	Sheet No.: 1 OF 2

Y:\BONNER SPRINGS\00130174.00\DRAWINGS 1/6/2014 1:26:44 PM SHEET 1.DGN

GIRDER SIZE TABLE

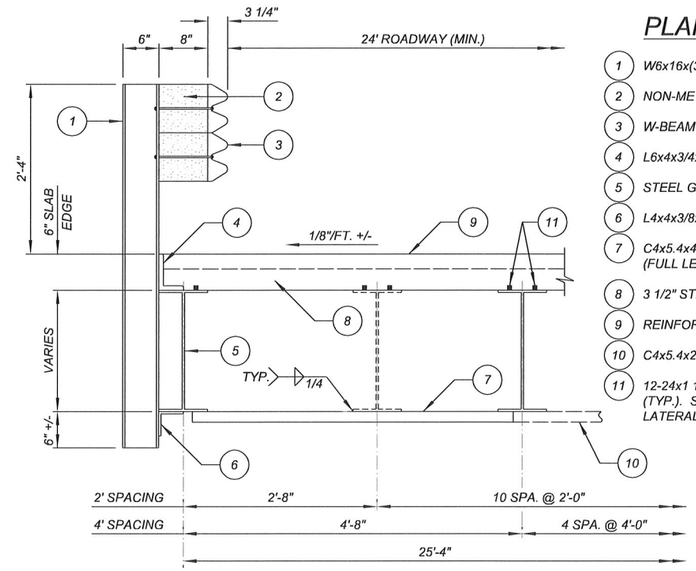
SPANS	2' GIRDER SPACING			4' GIRDER SPACING		
20 FEET	$ØM_X$ = 93.8 ' k	Z_X = 40.2	HP10x42	$ØM_X$ = 186.8 ' k	Z_X = 73.0	W12x53
	$Ø_V$ = 61.1 k			$Ø_V$ = 63.2 k		
	Δ = 0.300"	I_X = 245		Δ = 0.300"	I_X = 518	
BEST	W14x26			BEST	W16x40	
25 FEET	$ØM_X$ = 123.0 ' k	Z_X = 47.3	HP12x53	$ØM_X$ = 244.5 ' k	Z_X = 95.4	W18x50
	$Ø_V$ = 68.0 k			$Ø_V$ = 70.8 k		
	Δ = 0.375"	I_X = 291		Δ = 0.375"	I_X = 843	
BEST	W14x30			BEST	W21x44	
30 FEET	$ØM_X$ = 171.0 ' k	Z_X = 66.5	S15x42.9	$ØM_X$ = 339.9 ' k	Z_X = 135	W36x160
	$Ø_V$ = 73.7 k		W12x53	$Ø_V$ = 77.1 k		
	Δ = 0.450"	I_X = 510		Δ = 0.450"	I_X = 1360	
BEST	W18x35			BEST	W24x55	
35 FEET	$ØM_X$ = 221.7 ' k	Z_X = 95.4	W18x50	$ØM_X$ = 439.7 ' k	Z_X = 177	W24x68
	$Ø_V$ = 79.0 k			$Ø_V$ = 83.1 k		S24x80
	Δ = 0.525"	I_X = 843		Δ = 0.525"	I_X = 1830	W36x160
BEST	W21x44			BEST	W24x68	
40 FEET	$ØM_X$ = 279.1 ' k	Z_X = 110	W24x68	$ØM_X$ = 554.2 ' k	Z_X = 224	
	$Ø_V$ = 83.2 k		S24x80	$Ø_V$ = 88.1 k		
	Δ = 0.600"	I_X = 984		Δ = 0.600"	I_X = 2370	
BEST	W21x50			BEST	W24x84	

Δ = L/800

BEST: LIGHTEST BEAM THAT MEETS INVENTORY RATING (IR) OF HS20 TRUCK AND OPERATING RATING (OR) OF HS25 TRUCK.

GIRDER SIZE: ANY COMPACT BEAM WITH LARGER Z_X THAN BEST BEAM MAY BE USED FOR SPAN/GIRDER SPACING SHOWN. NON-COMPACT BEAMS MUST BE CHECKED FOR ADEQUACY.

SPANS: MAXIMUM SPAN FOR GIRDER SIZE SHOWN.



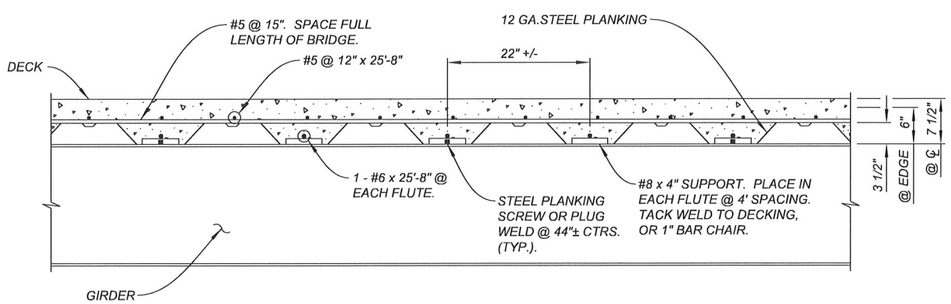
GUARDRAIL DETAIL

SCALE: 1" = 1' -0"AT FULL SIZE

PLAN KEY NOTES:

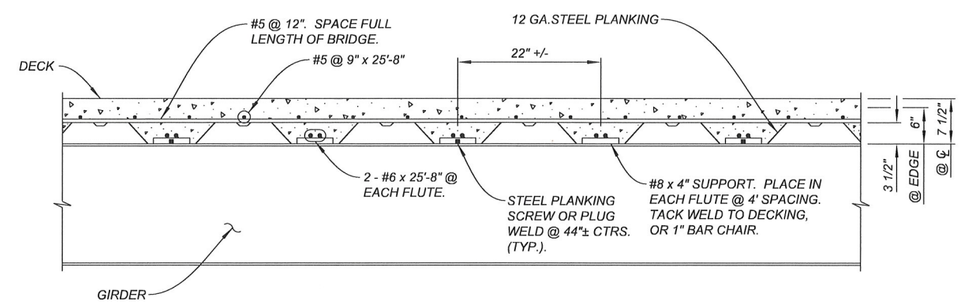
1. W6x16x(3'-4" + GIRDER DEPTH) @ 6'-3" SPACING (GALV.).
2. NON-METALIC (POLYMER BLOCK) 6"x8"x1'-2" (KDOT RD 611).
3. W-BEAM GUARDRAIL
4. L6x4x3/4x6" @ POST (WELD TO BEAM & POST).
5. STEEL GIRDER (SEE TABLE).
6. L4x4x3/8x6" (WELD TO BEAM AND POST).
7. C4x5.4x4'-5" @ ℄ POST (WELD TO GIRDERS). (FULL LENGTH @ ℄ BRIDGE SPAN).
8. 3 1/2" STEEL PLANKS
9. REINFORCED CONCRETE SLAB (6" @ EDGE, 7 1/2" @ ℄).
10. C4x5.4x25'-2" FULL LENGTH @ POST @ ℄ BRIDGE SPAN.
11. 12-24x1 1/4" TEKS 5 SELF TAPPING SCREW AT 44"± CTRS. (TYP.). SCREW DECK TO BEAM FLANGE FOR TOP FLANGE LATERAL BRACING (5/8" DIA. PLUG WELD OPTIONAL).

NOTE:
ALL STEEL WELDS TO BE 1/4" FILLETS (WELD ALL AROUND EXCEPT AS NOTED).



SLAB SECTION PARALLEL TO GIRDER (2' GIRDER SPACING)

SCALE: 1" = 1' -0"AT FULL SIZE



SLAB SECTION PARALLEL TO GIRDER (4' GIRDER SPACING)

SCALE: 1" = 1' -0"AT FULL SIZE

CARL B. REED
LICENSED
6190
1-6-14
KANSAS
PROFESSIONAL ENGINEER

Rev	Date	By	Chk'd	Description

Copyright 2013, of Alfred Benesch & Company. All rights reserved. This plan and design content is the property of Alfred Benesch & Company. Use, reuse, reproduction or modification of this plan or design information, or any part thereof, is strictly prohibited, except by written permission of this firm.

benesch
engineers · scientists · planners
Alfred Benesch & Company
913 Sheidley, Suite 110
Bonner Springs, Kansas 66012
913-441-1100

LEAVENWORTH COUNTY
STANDARD STEEL BRIDGE DETAILS
GIRDER SIZE TABLE AND DETAILS

Drawn:	DBR	Designed:	CBR/JMD	Checked:	CBR

Scale:	AS NOTED	Date:	10/01/2013	Project No.:	00130174	Sheet No.:	2 OF 2

Y:\BONNER SPRINGS\00130174.00\DRAWINGS 1/3/2014 4:00:02 PM SHEET 2.DGN