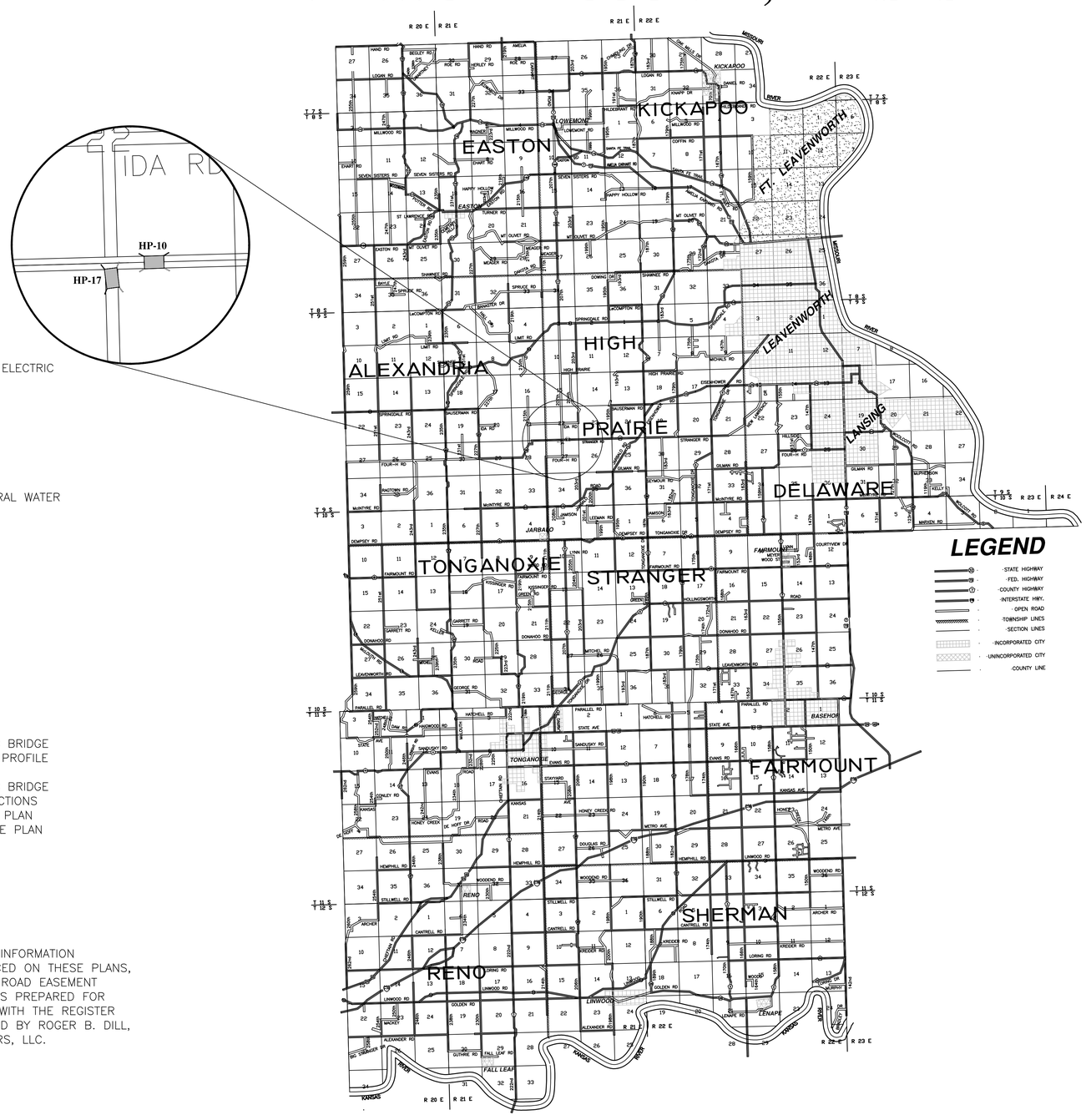
LEAVENWORTH COUNTY BRIDGE HP-17

Bridge Replacement and Minor Road Widening

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. 207th STREET AND BRIDGE HP–17 PLAN AND PROFILE SHEET
3–4. 207th STREET AND BRIDGE HP–17 CROSS–SECTIONS
5. EROSION CONTROL PLAN
6. 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

No.	Date	Revisions	By	App.
1	04/08/2014	Realignment modification per BOCC direction.	MGS	MWS
2				
3.				
4.				
5.				
6				

LEAVENWORTH COUNTY BRIDGE HP-17
Bridge Replacement and Minor Road Widening
Cover Sheet

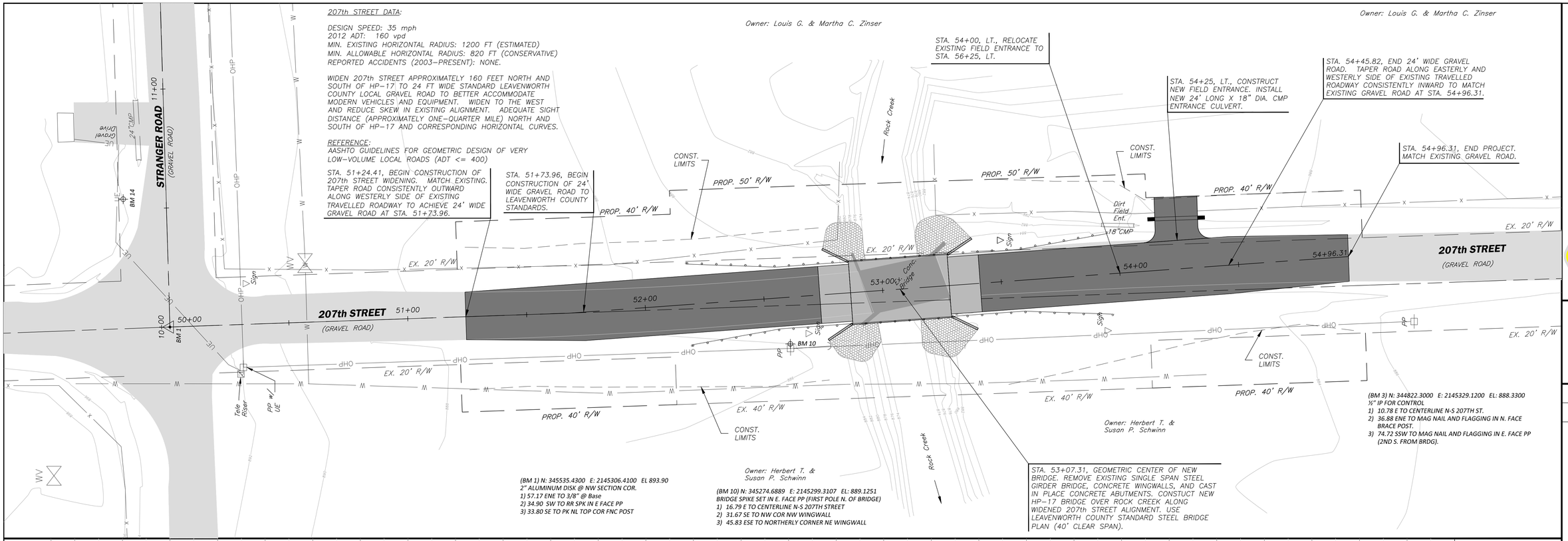
Date:	07/28/08
Designed:	MGS
Drawn:	MGS
Checked:	N/A
Approved:	MWS
Project No.:	N/A
Sheet No.:	1

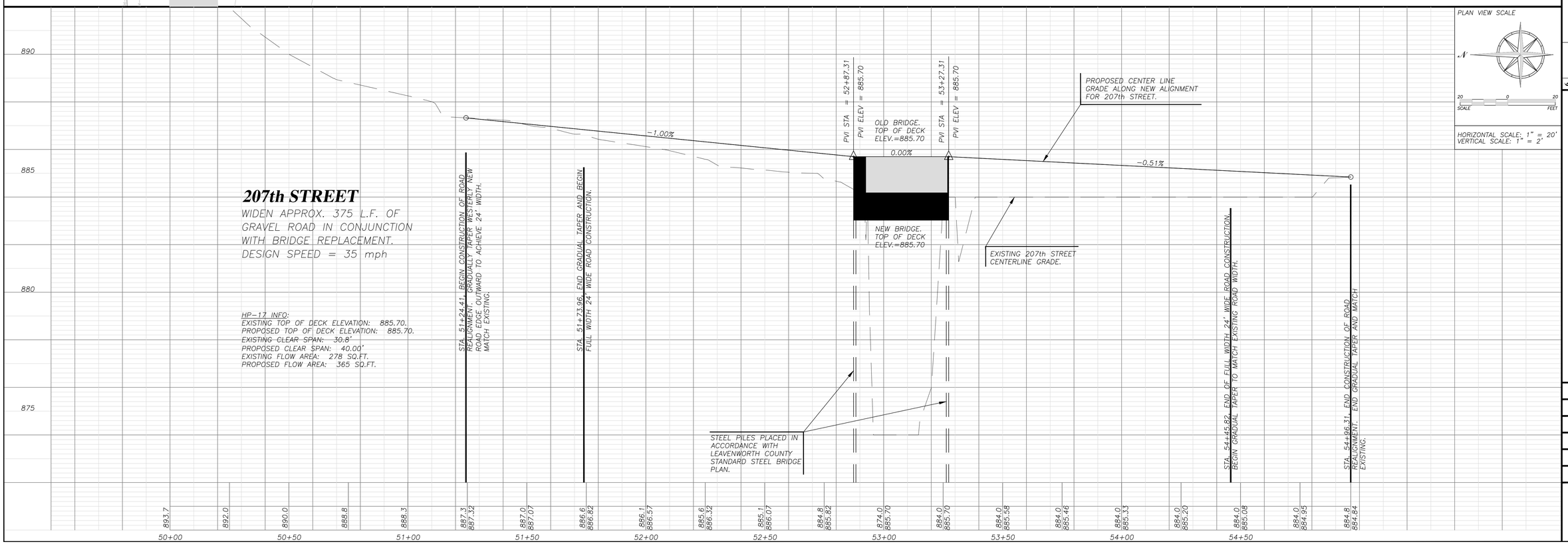
207th STREET DATA:

DESIGN SPEED: 35 mph
2012 ADT: 160 vpd
MIN. EXISTING HORIZONTAL RADIUS: 1200 FT (ESTIMATED)
MIN. ALLOWABLE HORIZONTAL RADIUS: 820 FT (CONSERVATIVE)
REPORTED ACCIDENTS (2003–PRESENT): NONE.

WIDEN 207th STREET APPROXIMATELY 160 FEET NORTH AND SOUTH OF HP–17 TO 24 FT WIDE STANDARD LEAVENWORTH COUNTY LOCAL GRAVEL ROAD TO BETTER ACCOMMODATE MODERN VEHICLES AND EQUIPMENT. WIDEN TO THE WEST AND REDUCE SKEW IN EXISTING ALIGNMENT. ADEQUATE SIGHT DISTANCE (APPROXIMATELY ONE–QUARTER MILE) NORTH AND SOUTH OF HP–17 AND CORRESPONDING HORIZONTAL CURVES.

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





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

No.	Date	Revisions	By	App.
1	04/08/2014	Realignment modification per BOCC direction.	MGS	MWS
2				
3				
4				
5				
6				

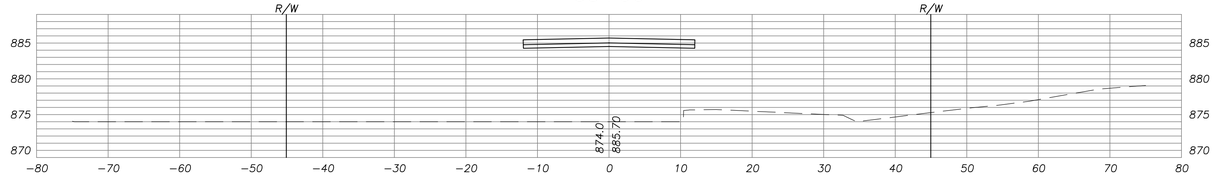
LEAVENWORTH COUNTY BRIDGE HP-17

Bridge Replacement and Minor Road Widening
207th Street Plan and Profile

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

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 4:1.
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.

53+00



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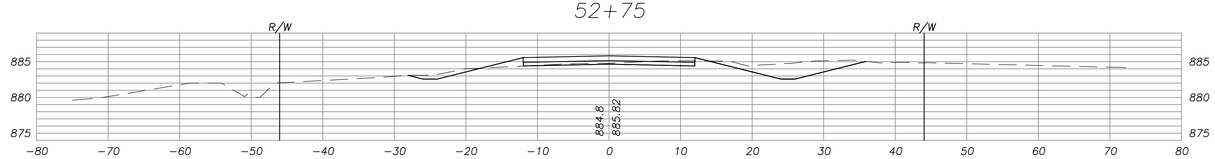

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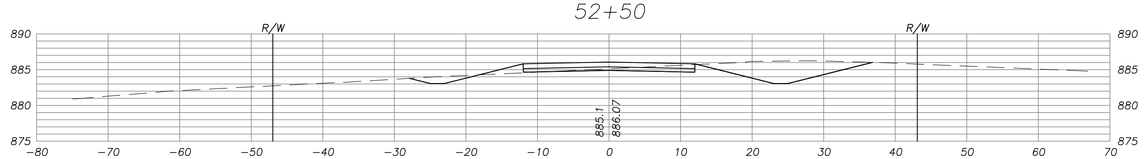

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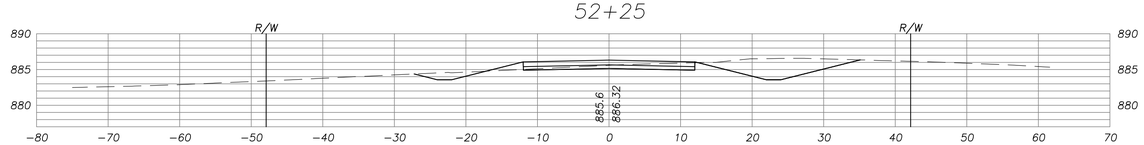

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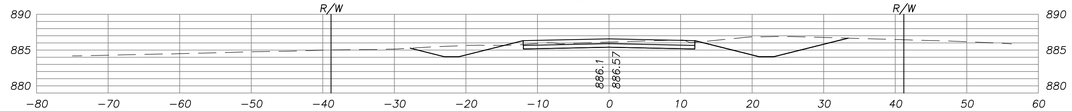

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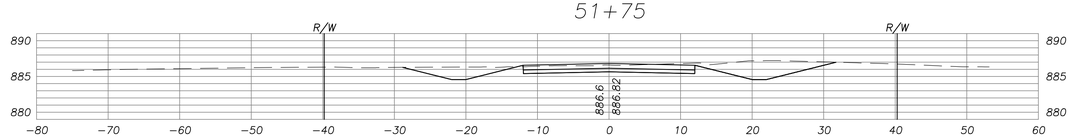

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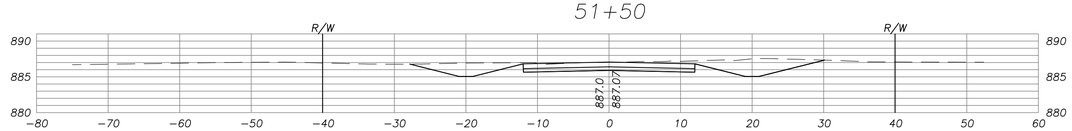

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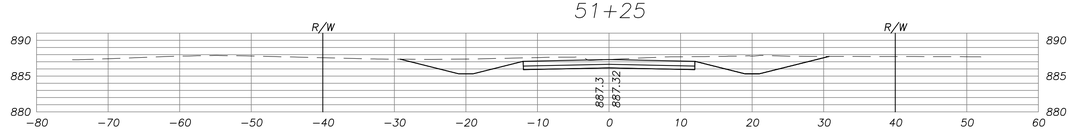
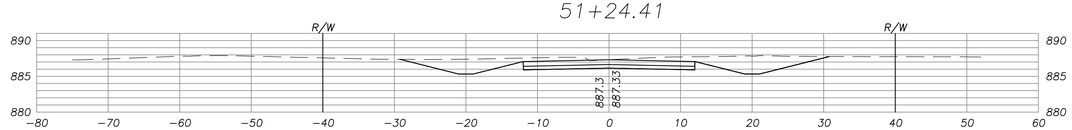


51+24.41



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	04/08/2014	Realignment modification per BOCC direction.	MGS	MWS

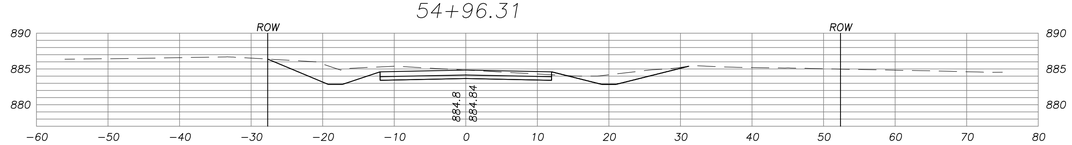
LEAVENWORTH COUNTY
BRIDGE HP-17
Bridge Replacement and Minor Road Widening
207th Street Cross Sections
Sta. 51+24.41 to Sta. 53+00.00

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

NOTES:
1. GRADE DITCHES TOWARDS ROCK CREEK AT −2%, OR AS CONDITIONS ALLOW, TO ENSURE PROPER DRAINAGE.
2. USE STANDARD DITCH FORESLOPE OF 4:1.
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
51+24.41	86.47	0.00				
51+25	86.11	0.00	1.89	0.00	1.89	0.00
51+50	73.10	0.00	73.71	0.00	75.60	0.00
51+75	70.04	0.09	66.27	0.04	141.86	0.04
52+00	64.26	0.84	62.17	0.43	204.04	0.47
52+25	55.43	2.76	55.41	1.67	259.45	2.14
52+50	56.54	4.05	51.84	3.15	311.29	5.29
52+75	38.06	3.87	43.80	3.67	355.09	8.96
53+00	0.00	0.00	17.62	1.79	372.71	10.75
53+25	0.00	0.00	0.00	0.00	372.71	10.75
53+50	52.40	15.57	24.26	7.21	396.97	17.96
53+75	44.15	12.54	44.70	13.01	441.67	30.97
54+00	48.86	6.54	43.06	8.83	484.73	39.80
54+25	16.95	16.25	30.47	10.55	515.20	50.35
54+50	28.90	2.70	21.23	8.77	536.43	59.12
54+75	32.31	1.72	28.34	2.04	564.77	61.17
54+96.31	68.48	0.41	39.78	0.84	604.55	62.01
			0.00	0.00	604.55	62.01

54+96.31



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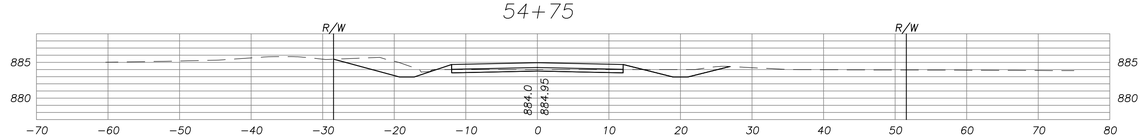

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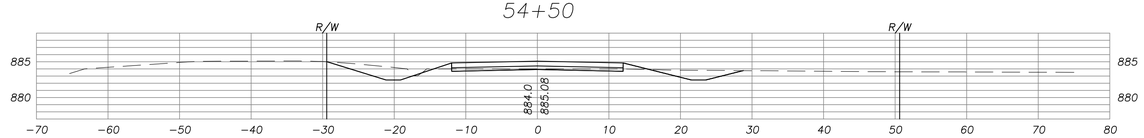

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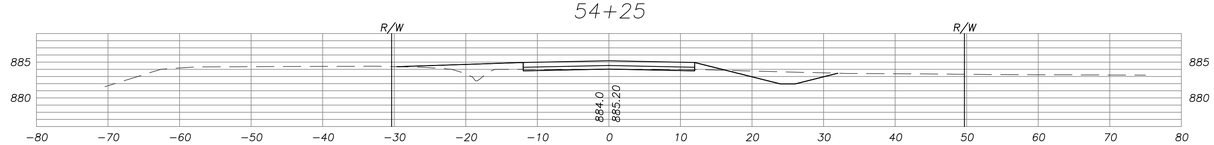

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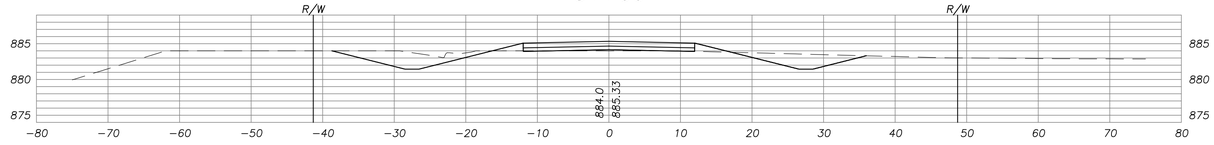

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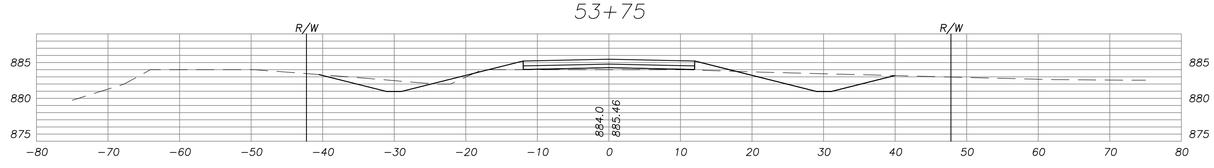

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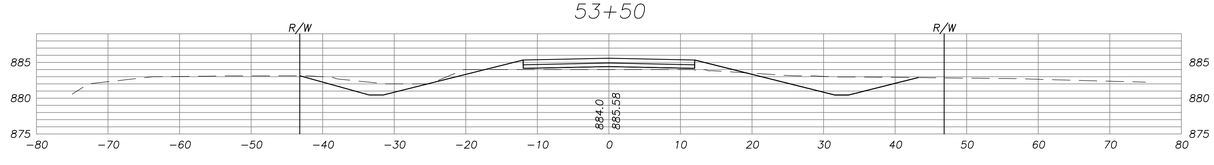

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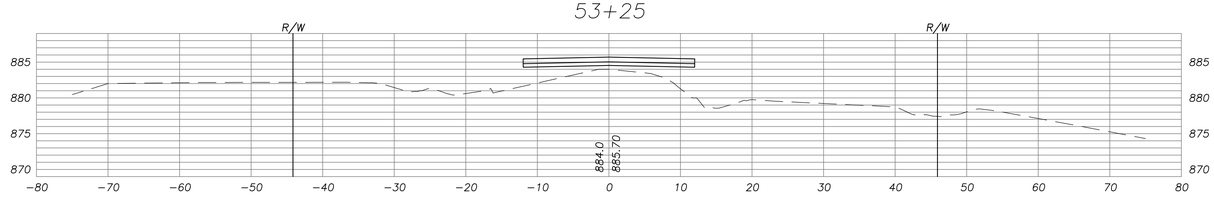


LEAVENWORTH COUNTY
Public Works Department
Leavenworth County Courthouse
300 Walnut, Suite No. 7
Leavenworth, KS 66048

No.	Date	Revisions	By	App.
6				
5				
4				
3				
2				
1	04/08/2014	Realignment modification per BOCC direction.	MGS	MWS

LEAVENWORTH COUNTY
BRIDGE HP-17
Bridge Replacement and Minor Road Widening
207th Street Cross Sections
Sta. 53+25.00 to Sta. 54+96.31

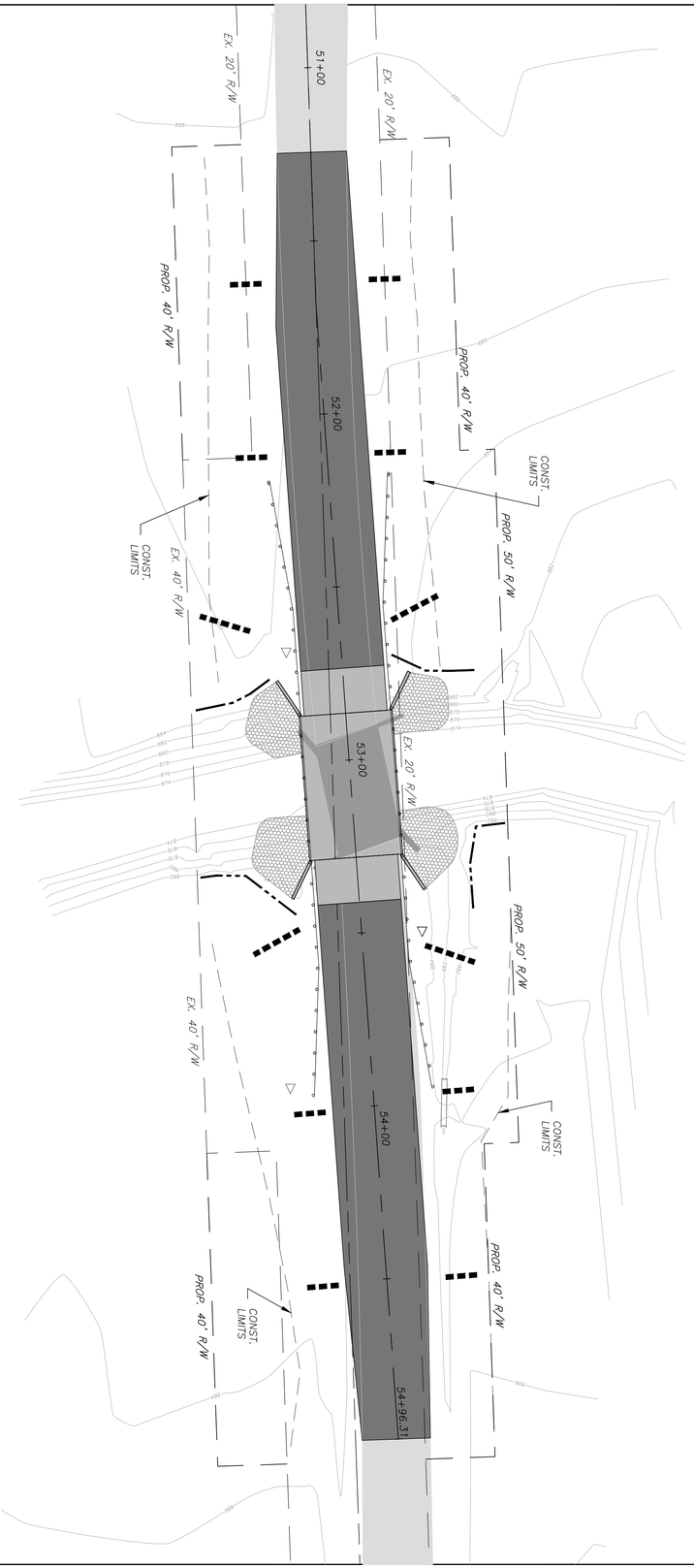
Date:	10/24/13
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	4

PLAN VIEW SCALE

N

20 0 20

SCALE FEET



LEGEND:

SILT FENCE

STRAW BALE DITCH CHECK

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

207th STREET
and
BRIDGE HP-17

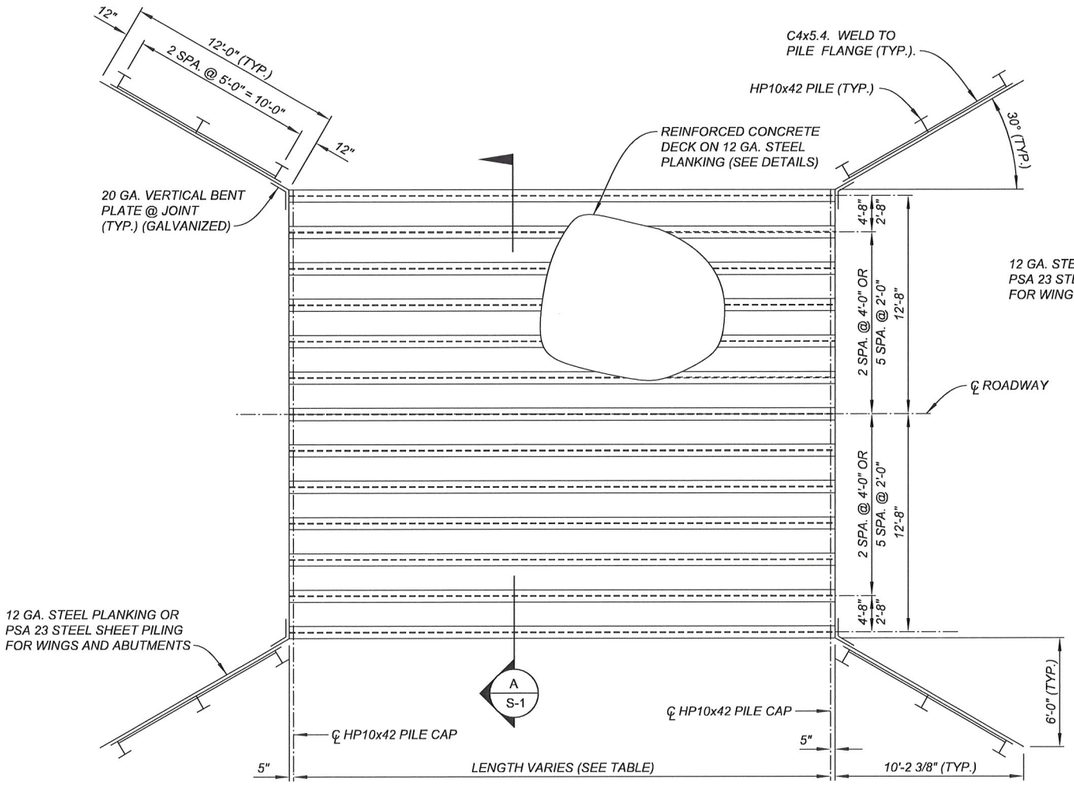
Temporary Ditch Check Spacing	
Ditch ℄ Slope (%)	Spacing Interval (feet)
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	33

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				

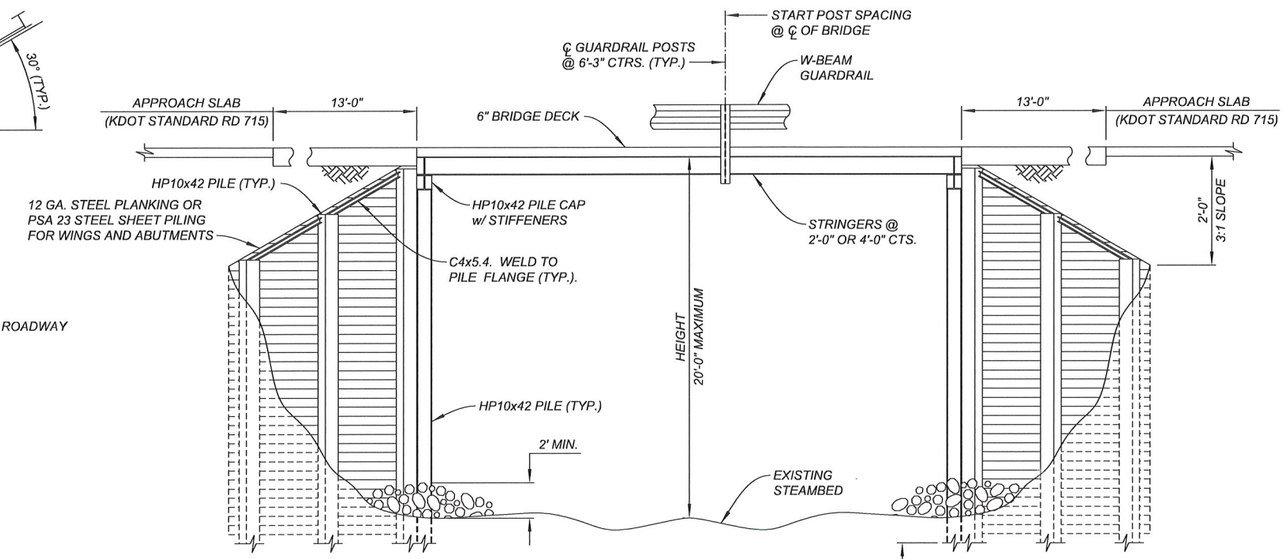
LEAVENWORTH COUNTY
BRIDGE HP-17
Bridge Replacement and Minor Road Widening
Erosion Control Plan

Date:	01/22/14
Designed:	MGS
Drawn:	MGS
Checked:	MWS
Approved:	MWS
Project No.:	N/A
Sheet No.:	5



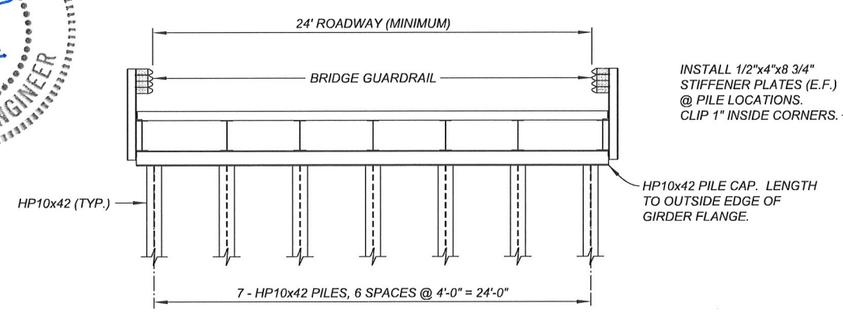
PLAN

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



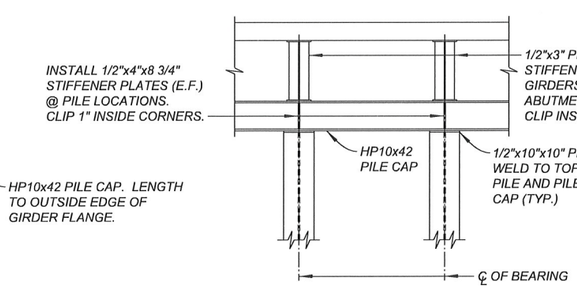
ELEVATION

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



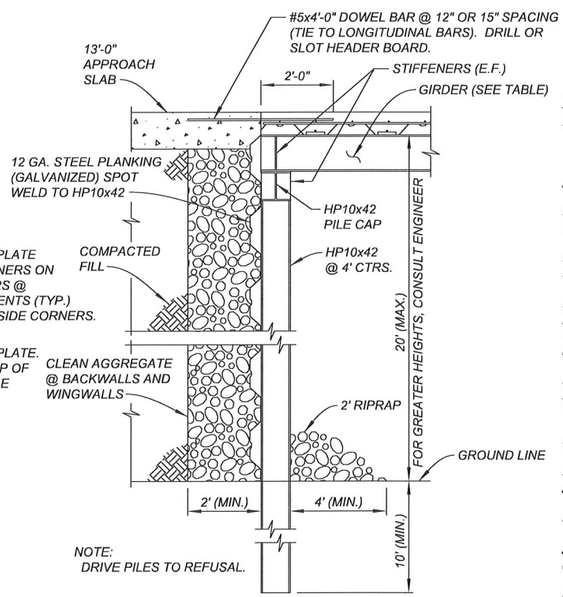
SECTION A

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

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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

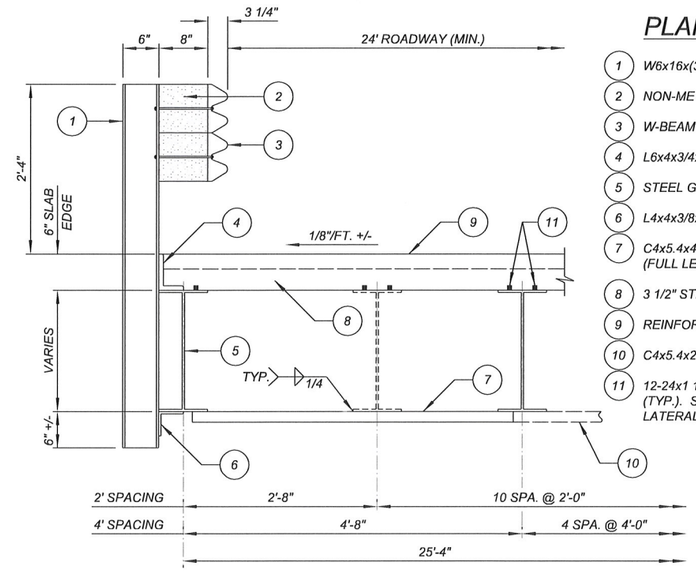
SPANS	2' GIRDER SPACING			4' GIRDER SPACING		
20 FEET	ϕM_x = 93.8 ' k	Z_x = 40.2	HP10x42	ϕM_x = 186.8 ' k	Z_x = 73.0	W12x53
	ϕ_V = 61.1 k			ϕ_V = 63.2 k		
	Δ = 0.300"	I_x = 245		Δ = 0.300"	I_x = 518	
BEST	W14x26			BEST	W16x40	
25 FEET	ϕM_x = 123.0 ' k	Z_x = 47.3	HP12x53	ϕM_x = 244.5 ' k	Z_x = 95.4	W18x50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



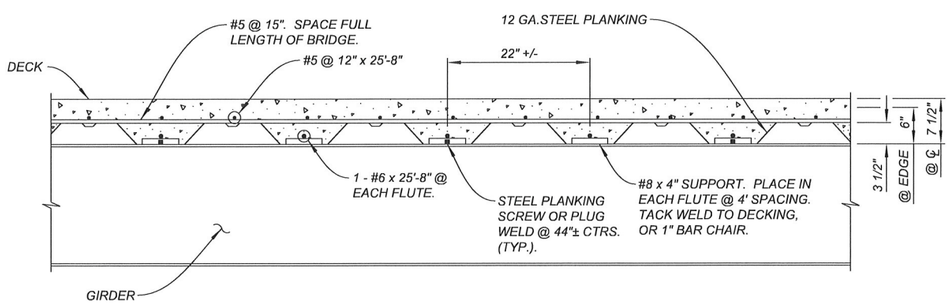
GUARDRAIL DETAIL

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

PLAN KEY NOTES:

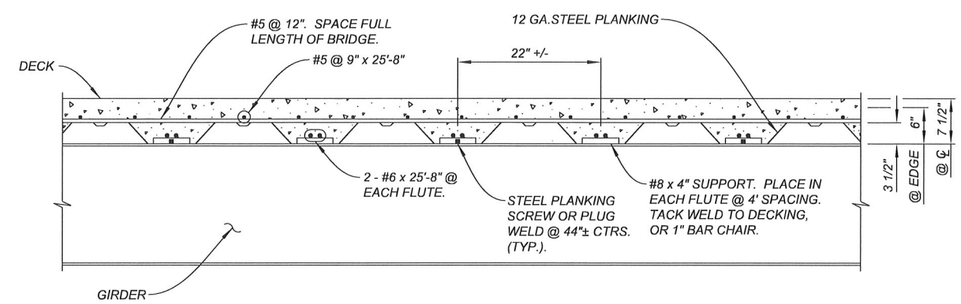
1. W6x16x(3'-4" + GIRDER DEPTH) @ 6'-3" SPACING (GALV.).
2. NON-METALIC (POLYMER BLOCK) 6"x8"x1'-2" (KDOT RD 611).
3. W-BEAM GUARDRAIL
4. L6x4x3/4x6" @ POST (WELD TO BEAM & POST).
5. STEEL GIRDER (SEE TABLE).
6. L4x4x3/8x6" (WELD TO BEAM AND POST).
7. C4x5.4x4'-5" @ ℄ POST (WELD TO GIRDERS). (FULL LENGTH @ ℄ 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

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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

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