STATE OF NEBRASKA
DEPARTMENT OF TRANSPORTATION
ADDENDUM NO. 3
PROJECT NO. ER-12-5(122)
CONTROL NO. 32320
CALL NO. 350
N-12, NIOBRARA WEST BRIDGES
LETTING DATE: MAY 21, 2019

On page 116 of the Special Provisions, in the provision titled **DRILLED SHAFTS** and in section **5.0 GENERAL METHODS AND EQUIPMENT**, the third paragraph in section **A. Drilling Equipment** is amended to include the following:

Sidewall over reaming shall be performed when the time for shaft excavation exceeds 24 hours (measured from the beginning of excavation below the casing when casing is used) before the start of concrete placement.

DEPARTMENT OF TRANSPORTATION

for James J. Knott, P.E.
Construction Engineer

Issued: May 20, 2019
JJK: 350AD305

NOTICE: Only the contractors issued bidding proposals receive this addendum and responsibility for notifying any potential subcontractors or suppliers remains with the contractor.

STATE OF NEBRASKA
DEPARTMENT OF TRANSPORTATION

LETTING DATE: MAY 21, 2019

ADDENDUM NO.	CALL ORDER	PROJECT NO.	CONTROL NO.	LOCATION
2	350	ER-12-5(122)	32320	N-12, NIOBRARA WEST BRIDGES
2	850	ER-281-4(130)	81039	US-281, NIOBRARA RIVER BRIDGE AT HOLT/BOYD C/L

The Special Provisions are amended to include the following:

The ER projects, and this project specifically, are being developed and built under the auspicious of a Presidential Disaster Declaration and consequently under emergency response statutes, rule and regulation. As such, these projects to restore essential services are exempt from the terms of the Migratory Bird Treaty Act. NDOT understands that removal of the structure may affect the nests currently on the bridge. NDOT will be coordinating the required environmental reviews for the project throughout the life of the project.

DEPARTMENT OF TRANSPORTATION

James J. Knott, P.E.
Construction Engineer

Issued: May 17, 2019
JJK: MULTICALLAD105

NOTICE: Only the contractors issued bidding proposals receive this addendum and responsibility for notifying any potential subcontractors or suppliers remains with the contractor.

STATE OF NEBRASKA
DEPARTMENT OF TRANSPORTATION
ADDENDUM NO. 1
AND
ELECTRONIC BIDDING SYSTEM
AMENDMENT NO. 1
PROJECT NO. ER-12-5(122)
CONTROL NO. 32320
CALL NO. 350
N-12, NIOBRARA WEST BRIDGES
LETTING DATE: MAY 21, 2019

The Schedule of Items is amended as follows:

1. In Group 1, the quantity for the bid item "Excavation (Established Quantity)" is incorrect and should read 89,880.000 CY.

2. In Group 1, the quantity for the bid item "Water" is incorrect and should read 161.000 MGAL.

3. In Group 1, the quantity for the bid item "Riprap Filter Fabric" is incorrect and should read 2,885.000 SY.

4. In Group 1, the quantity for the bid item "Rock Riprap, Type C" is incorrect and should read 2,762.000 TON.

5. In Group 3, the quantity for the bid item "8" Doweled Concrete Pavement, Class 47B-3500" is incorrect and should read 4,706.000 SY.

6. In Group 3, the quantity for the bid item "Foundation Course 4"" is incorrect and should read 4,706.000 SY.

7. In Group 3, the quantity for the bid item "Water" is incorrect and should read 19.000 MGAL.

8. In Group 3, the quantity for the bid item "Earth Shoulder Construction" is incorrect and should read 16.500 STA.

9. In Group 3, the quantity for the bid item "Subgrade Preparation" is incorrect and should read 4,706.000 SY.

10. In Group 3, the quantity for the bid item "Surfacing Under Guardrail" is incorrect and should read 1,518.000 SY.

11. In Group 4, the quantity for the bid item "15" Culvert Pipe, Type 3,4,5 or 6" is incorrect and should read 155.000 LF.

12. In Group 5, the quantity for the bid item "Erosion Control, Class 1D" is incorrect and should read 9,486.000 SY.

13. In Group 5, the quantity for the bid item "Fabric Silt Fence-Low Porosity" is incorrect and should read 5,432.000 LF.

14. In Group 6B, the quantity for the bid item "Riprap Filter Fabric" is incorrect and should read 552.000 SY.

15. In Group 6B, the quantity for the bid item "Concrete For Pavement Approaches Class 47BD-4000" is incorrect and should read 111.600 CY.

15. In Group 6B, the quantity for the bid item "Epoxy Coated Reinforcing Steel For Pavement Approaches" is incorrect and should read 26,255.000 LB.

16. In Group 6B, the bid item "Reset Girders At Bearing" has been eliminated.

17. In Group 6B, the quantity for the bid item "Class 47B-3000 Concrete For Bridge" is incorrect and should read 53.600 CY.

18. In Group 6B, the quantity for the bid item "Class 47BD-4000 Concrete For Bridge" is incorrect and should read 101.500 CY.

19. In Group 6B, the bid item "Preparation of Bridge At Station 500+94.36" has been eliminated.

20. In Group 6B, the bid item "Preparation of Bridge At Station 500+99.49" has been added with a quantity of 1.000 EACH.

21. In Group 6B, the quantity for the bid item "Structural Steel For Substructure" is incorrect and should read 4,385.000 LB.

22. In Group 6B, the quantity for the bid item "Structural Steel For Superstructure" is incorrect and should read 68,565.000 LB.

23. In Group 6B, the quantity for the bid item "Rock Riprap, Type A" is incorrect and should read 235.000 TON.

24. In Group 6B, the quantity for the bid item "Epoxy Coated Reinforcing Steel" is incorrect and should read 31,300.000 LB.

25. In Group 6B, the quantity for the bid item "HP 12 Inch X 53 Lb Steel Piling" is incorrect and should read 800.000 LF.

26. In Group 6B, the quantity for the bid item "Steel Sheet Piling" is incorrect and should read 1,314.000 SF.

27. In Group 6B, the quantity for the bid item "Granular Backfill" is incorrect and should read 1,175.000 CY.

28. In Group 6B, the bid item "Strip Seal" has been added with a quantity of 35.700 LF.

29. In Group 7, the quantity for the bid item "W-Beam Guardrail" is incorrect and should read 1,382.500 LF.

The EBSX generated bid items sheets must show these corrections or the bid will be void.

* * * * *

Plan sheet B1 is void and superseded by plan sheet B1A as depicted on the attached sheet.

* * * * *

Plan sheet E1 is void and superseded by plan sheet E1A as depicted on the attached sheet.

* * * * *

Plan sheet E2 is void and superseded by plan sheet E2A as depicted on the attached sheet.

* * * * *

Plan sheet G1 is void and superseded by plan sheet G1A as depicted on the attached sheet.

* * * * *

Plan sheet H1 is void and superseded by plan sheet H1A as depicted on the attached sheet.

* * * * *

Plan sheet J2 is void and superseded by plan sheet J2A as depicted on the attached sheet.

* * * * *

Plan sheet J3 is void and superseded by plan sheet J3A as depicted on the attached sheet.

* * * * *

Plan sheet L2 is void and superseded by plan sheet L2A as depicted on the attached sheet.

* * * * *

Plan sheet L3 is void and superseded by plan sheet L3A as depicted on the attached sheet.

* * * * *

Plan sheet L5 is void and superseded by plan sheet L5A as depicted on the attached sheet.

* * * * *

Plan sheet R2 is void and superseded by plan sheet R2A as depicted on the attached sheet.

* * * * *

Plan sheets S41 to S55 are void and superseded by plan sheets S41A to S55A as depicted on the attached sheets.

* * * * *

The plans are amended to include added sheets S56, S57, and S58 as depicted on the attached sheets.

* * * * *

Plan sheet U2 is void and superseded by plan sheet U2A as depicted on the attached sheet.

* * * * *

Plan sheet U5 is void and superseded by plan sheet U5A as depicted on the attached sheet.

* * * * *

Plan sheets X18 to X22 are void and superseded by plan sheets X18A to X22A as depicted on the attached sheets.

* * * * *

The plans are amended to include added sheets X22B, X22C, and X22D as depicted on the attached sheets.

* * * * *

On page 112 & 113 of the Special Provisions, the provision titled **RESET GIRDERS AT BEARING** is void.

* * * * *

On page 125 of the Special Provisions, the provision titled **PREPARATION OF BRIDGE AT STATION 500+94.36** is amended to read **PREPARATION OF BRIDGE AT STATION 500+99.49.**

* * * * *

Upon execution of the contract, the plans will be revised to reflect these changes.

DEPARTMENT OF TRANSPORTATION

James J. Knott, P.E.
Construction Engineer

Issued: May 17, 2019
JJK: 350AD105

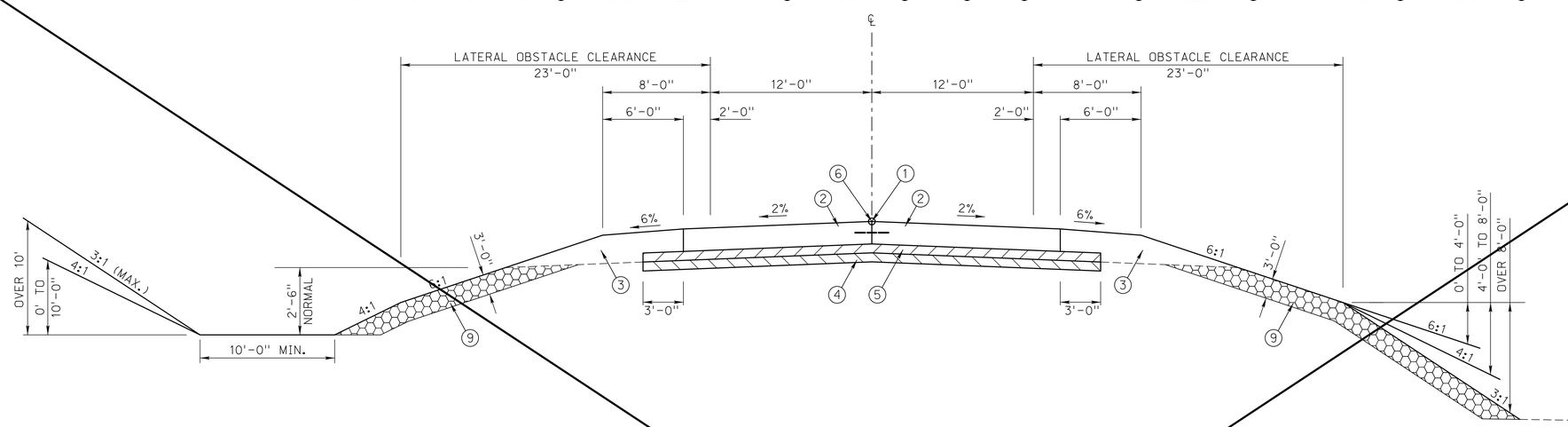
NOTICE: Only the contractors issued bidding proposals receive this addendum and responsibility for notifying any potential subcontractors or suppliers remains with the contractor.

Project No. ER-12-5(122)
Addendum No. 1
Pg. 5

PROJECT NO.	SHEET NO.
ER-12-5(122)	R1
C.N. 32320	

(R1) DELETED SHEET

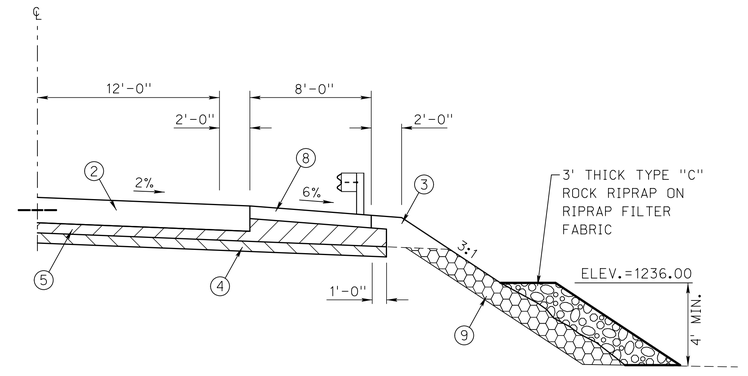
TYPICAL CROSS SECTIONS



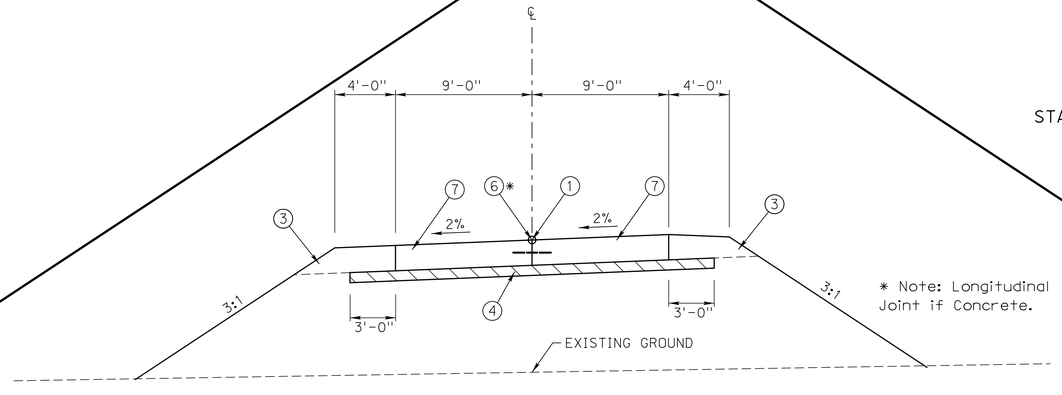
1. PROFILE GRADE POINT
2. 8" DOWELED CONCRETE PAVEMENT
3. EARTH SHOULDER CONSTRUCTION
4. SUBGRADE PREPARATION
5. 4" FOUNDATION COURSE
6. LONGITUDINAL JOINT
7. 8" TEMPORARY SURFACING
8. SURFACING UNDER GUARDRAIL
9. COHESIVE SOIL CAPPING

N-12

STA. 468+00.00 - STA. 495+39.87
BRIDGE EXCEPTION : STA. 473+10.39 - STA. 487+62.97



STA. 487+61.97 RT. - STA. 495+39.87 RT.



* Note: Longitudinal Joint if Concrete.

N-12 SHOOFLY

STA. 5469+27.95 - STA. 5492+41.03
BRIDGE EXCEPTION : STA. 5475+26.10 - STA. 5481+98.35

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888 5-8-19
STATE OF NEBRASKA

For Details Not Shown
See Plans 301 & 329

ROADWAY DESIGN DIVISION

Benesch

Date: 16-MAY-2019

Files: 323200cb01.dgn
Scale: 1:4.71429

Project No. ER-12-5(122)
Addendum No. 1
Pg. 6

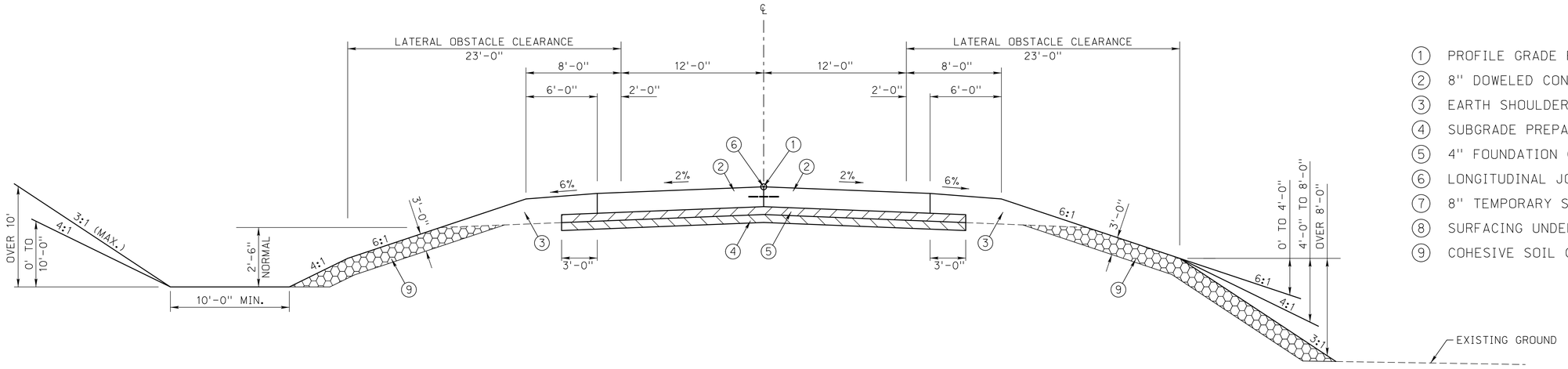
ROADWAY DESIGN DIVISION

PROJECT NO.	SHEET NO.
ER-12-5(122)	B1A

C.N. 32320

(R1) ADDED SHEET

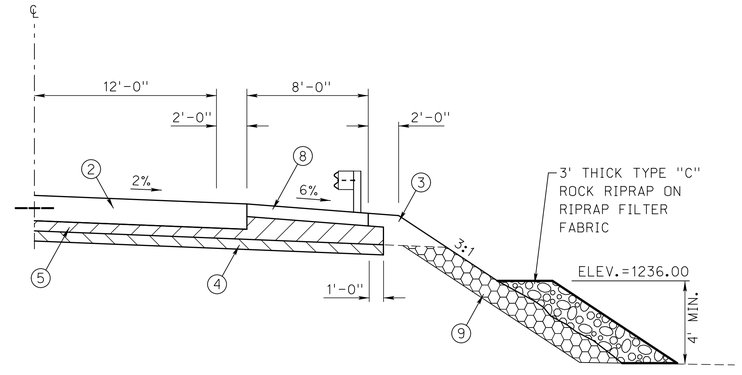
TYPICAL CROSS SECTIONS



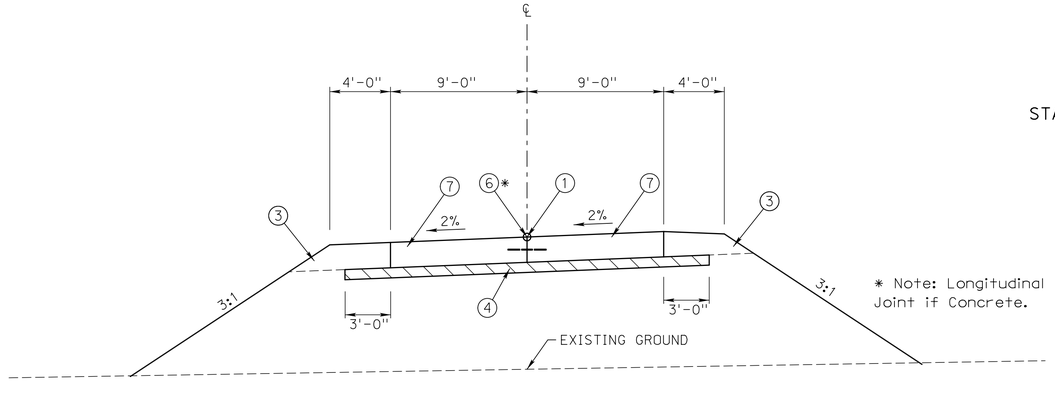
1. PROFILE GRADE POINT
2. 8" DOWELED CONCRETE PAVEMENT
3. EARTH SHOULDER CONSTRUCTION
4. SUBGRADE PREPARATION
5. 4" FOUNDATION COURSE
6. LONGITUDINAL JOINT
7. 8" TEMPORARY SURFACING
8. SURFACING UNDER GUARDRAIL
9. COHESIVE SOIL CAPPING

N-12

STA. 468+00.00 - STA. 497+64.83
BRIDGE EXCEPTION : STA. 473+10.39 - STA. 487+62.97



STA. 487+61.97 RT. - STA. 497+64.83 RT.



* Note: Longitudinal Joint if Concrete.

N-12 SHOOFLY

STA. 5469+27.95 - STA. 5492+41.03
BRIDGE EXCEPTION : STA. 5475+26.10 - STA. 5481+98.35

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

For Details Not Shown
See Plans 301 & 329

Files: 323200cb01a.dgn
Scale: 1:4.71429
Date: 17-MAY-2019
Benesch

R1 DELETED SHEET

PROJECT NO.	SHEET NO.
ER-12-5(122)	5
C.N. 32320	

ROADWAY DESIGN DIVISION

TEMPOARY L.O.C.

N-12 SHOOFLY

N-12

5466 5467 5468 5469 5470 5471 5472 5473 5474 5475 5476 5477 5478 5479 5480 5481 5482 5483 5484 5485 5486 5487 5488 5489 5490 5491 5492 5493 5494 5495 5496 5497

466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497

N-12
KNOX COUNTY

LEGEND

- LIMITS OF CONSTRUCTION
- WETLANDS - DO NOT DISTURB
- IMPACTED WETLANDS
- TEMPORARY IMPACTED WETLANDS

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

DATE:
FLIGHT:
SCALE:

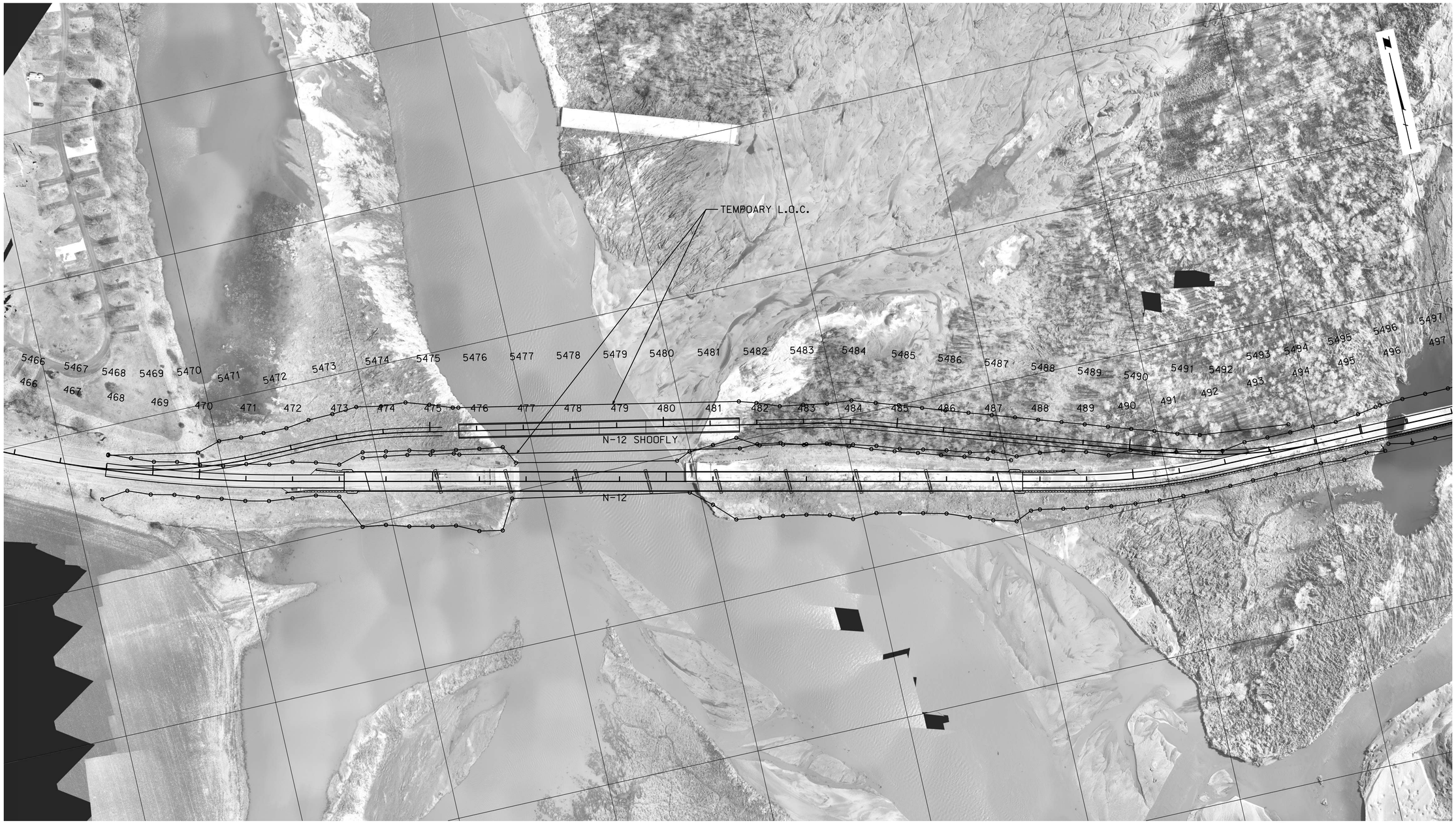
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PROJECT NO.	SHEET NO.
ER-12-5(122)	E1A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION



Benesch

Date: 17-MAY-2019

File: 323200ca01a.dgn
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N-12
KNOX COUNTY

LEGEND

- LIMITS OF CONSTRUCTION
- WETLANDS - DO NOT DISTURB
- IMPACTED WETLANDS
- TEMPORARY IMPACTED WETLANDS

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

DATE:
FLIGHT:
SCALE:

(R1) DELETED SHEET

PROJECT NO.	SHEET NO.
ER-12-5(122)	E2

C.N. 32320

ROADWAY DESIGN DIVISION



Benesch

Date: 16-MAY-2019

File: 323200cc02.dgn
Scale: 1:100

N-12
KNOX COUNTY

LEGEND

- LIMITS OF CONSTRUCTION
- WETLANDS - DO NOT DISTURB
- IMPACTED WETLANDS
- TEMPORARY IMPACTED WETLANDS

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

DATE:
FLIGHT:
SCALE:

PROJECT NO.	SHEET NO.
ER-12-5(122)	E2A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION



Benesch

Date: 17-MAY-2019

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N-12
KNOX COUNTY

LEGEND

- LIMITS OF CONSTRUCTION
- WETLANDS - DO NOT DISTURB
- IMPACTED WETLANDS
- TEMPORARY IMPACTED WETLANDS

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

DATE:
FLIGHT:
SCALE:

GENERAL INFORMATION

(R1) DELETED SHEET

PROJECT NO.	SHEET NO.
ER-12-5(122)	G1

C.N. 32320

ROADWAY DESIGN DIVISION

NOTES

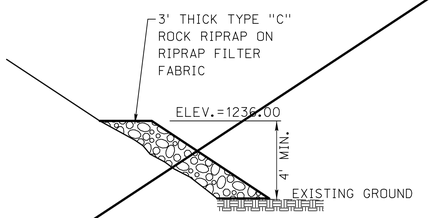
The locations of all aerial and underground utility facilities may not be indicated in these plans. Underground utilities, whether indicated or not will be located and flagged by the Utilities at the request of the Contractor.

No excavation will be permitted in the area of underground utility facilities until all such facilities have been located and identified to the satisfaction of all parties. The excavation must be accomplished with extreme care in order to avoid any possibility of damage to the utility facility.

FOR INFORMATION ONLY

- As indicated by the Cross-Sections, Earthwork Measured in Embankment will be required. This material will be furnished by the Contractor from sources other than State Right-of-Way.
- The Contractor will be required to furnish Cohesive Material for Shoulder Construction from sources other than State Right-of-Way.
- The Contractor will be required to furnish Waste Areas for Excess Excavation on this Project
- All existing Delineators on this Project shall be removed by State Forces.
- The Contractor will not be required to furnish Borrow on this Project.

CULVERT PIPE LEGEND		
TYPE		DESCRIPTION
1	RCSP	Reinforced Concrete Sewer Pipe
2	RCP	Reinforced Concrete Pipe
3	GCCMP	Galvanized (zinc) Coated Corrugated Metal Pipe
4	ACCMP	Aluminum Coated Corrugated Metal Pipe
5	PCCMP	Polymer Coated Corrugated Metal Pipe
6	HDPE-CI	High Density Polyethylene (corrugated Interior)
7	HDPE-SI	High Density Polyethylene (smooth Interior)
8	PVC	Polyvinyl Chloride Pipe



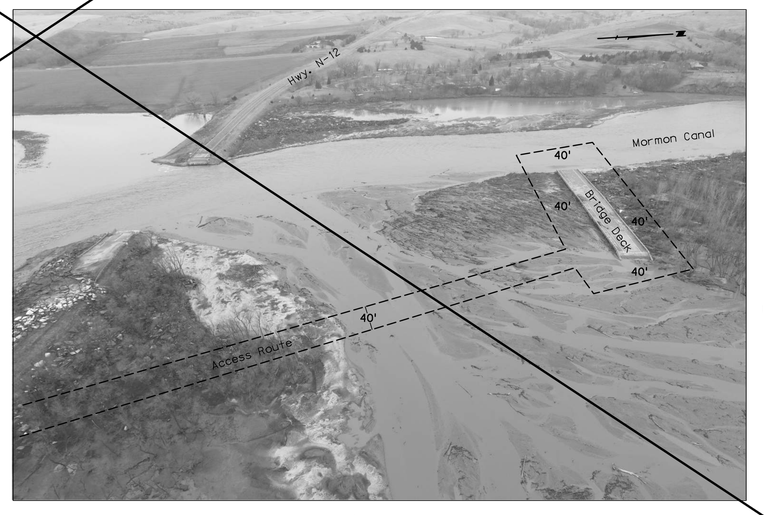
RIPRAP PLACEMENT AT TOE OF SLOPE

EARTHWORK QUANTITIES					
STATION TO STATION		EXCAVATION ESTABLISHED QUANTITY (CU. YDS.)	EMBANKMENT (CU. YDS.)	BALANCE FACTOR	(+) LONG (-) SHORT (CU. YDS.)
468+00.00	476+50.00	25408	468 *	1.4	+24753
480+50.00	495+40.00	35599	4391 *	1.4	+29452
5469+27.95	5475+50.00	31	10616	1.4	-14832
5481+71.60	5492+41.03	0	18370	1.4	-25718
TOTAL		61038	33845		+13655

* Includes 2200 CY for Cohesive Soil Cap

EARTHWORK QUANTITIES FOR TEMPORARY ROAD REMOVAL			
STATION TO STATION			EXCAVATION (ESTABLISHED QUANTITY) (CU. YDS.)
5469+27.95	-	5475+50.00	10616
5481+71.60	-	5492+41.03	18370
TOTAL			28986

BUILD FLEXIBLE POST DELINEATORS, PLAN 901							
STATION TO STATION		SIDE	TYPE	"S"	X (FT.)	EACH	CHEVRONS
456+43.82	471+78	RT	III	133	6	9	4
488+76	494+04	RT	III	103	6	5	2



REMOVE STRUCTURE at Station 478+52 - 750' Lt.

Removal of Bridge at Station 478+52 - 750' Lt. will require construction of an access route to the existing bridge deck (slab and girders) laying off of alignment of Hwy 12. The access route desired path and maintenance plan shall be submitted to the Engineer and approved. Access to the bridge deck location will be limited to a width of 40' to minimize impacts to the surrounding area. The work area for demolition of the bridge deck will be limited to 40' beyond the bridge deck. After removal of the slab and girders is completed, the existing ground will be restored and seeded to existing conditions as directed by the Engineer.

Removal of the existing bridge deck (slab and girders) and site restoration will be considered subsidiary to the bid item Remove Structure at At Station 478+52 - 750' Lt.

Removal of the existing pavement approaches, existing abutments, and piers shall be paid separately in the item "Remove Structure at Station 478+52".

LEGEND

- GAS LINE
- ELECTRICAL SERVICE
- POWER LINE
- OVERHEAD POWER LINE
- SANITARY SEWER
- STORM SEWER
- TELEPHONE LINE
- FIBER OPTIC TELE. LINE
- OVERHEAD TELEPHONE LINE
- CABLE TV LINE
- OVERHEAD CABLE TV LINE
- WATER LINE
- FENCE - CHAIN LINK
- FENCE - R.O.W. OR WIRE
- FENCE - WOOD
- FLOWLINE
- CENTER LINE DRIVE
- BENCH MARK
- CENTER PIVOT
- CONTROL POINT
- DIKE
- GAS METER
- GAS VALVE
- GRID TICK
- GUARDRAIL
- GUARD POST
- GUY POLE
- GUY WIRE
- LIGHT POLE
- MAILBOX
- MANHOLE
- MARSH
- OIL WELL
- PHOTO CODE POINT
- POWER BOX
- POWER POLE
- POWER PULL BOX
- PROPANE TANK
- R.O.W. MARKER
- ADVANCED R.R. WARNING SIGN
- RAILROAD WARNING
- RAILROAD TRACKS
- RETAINING WALL
- SATELLITE DISH
- SIGN
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL/ST. LIGHT
- TELEPHONE BOX
- TELE. FIBER OPTICS BOX
- TELEPHONE PULL BOX
- TELEPHONE POLE
- TELEVISION BOX
- TREE - CONIFEROUS
- TREE - DECIDUOUS
- TREE STUMP
- WATER (FIRE) HYDRANT
- WATER VALVE
- WATER METER
- WELL
- WINDMILL

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888 5-9-19
STATE OF NEBRASKA

Benesch
Date: 16-MAY-2019
File: 32320cn01.dgn
Scale: 1:100

GENERAL INFORMATION

PROJECT NO.	SHEET NO.
ER-12-5(122)	G1A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION

NOTES

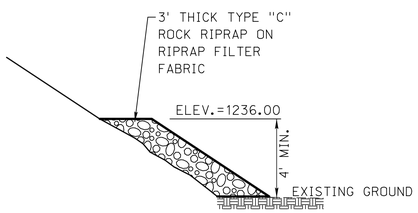
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No excavation will be permitted in the area of underground utility facilities until all such facilities have been located and identified to the satisfaction of all parties. The excavation must be accomplished with extreme care in order to avoid any possibility of damage to the utility facility.

FOR INFORMATION ONLY

- As indicated by the Cross-Sections, Earthwork Measured in Embankment will be required. This material will be furnished by the Contractor from sources other than State Right-of-Way.
- The Contractor will be required to furnish Cohesive Material for Shoulder Construction from sources other than State Right-of-Way.
- The Contractor will be required to furnish Waste Areas for Excess Excavation on this Project
- All existing Delineators on this Project shall be removed by State Forces.
- The Contractor will not be required to furnish Borrow on this Project.

CULVERT PIPE LEGEND		
TYPE		DESCRIPTION
1	RCSP	Reinforced Concrete Sewer Pipe
2	RCP	Reinforced Concrete Pipe
3	GCCMP	Galvanized (zinc) Coated Corrugated Metal Pipe
4	ACCMP	Aluminum Coated Corrugated Metal Pipe
5	PCCMP	Polymer Coated Corrugated Metal Pipe
6	HDPE-CI	High Density Polyethylene (corrugated Interior)
7	HDPE-SI	High Density Polyethylene (smooth Interior)
8	PVC	Polyvinyl Chloride Pipe



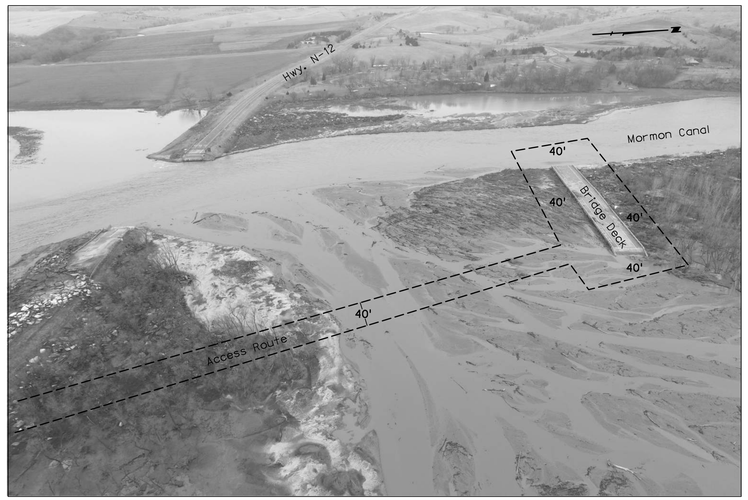
RIPRAP PLACEMENT AT TOE OF SLOPE

EARTHWORK QUANTITIES					
STATION TO STATION		EXCAVATION ESTABLISHED QUANTITY (CU. YDS.)	EMBANKMENT (CU. YDS.)	BALANCE FACTOR	(+) LONG (-) SHORT (CU. YDS.)
468+00.00 - 476+50.00		25408	468 *	1.4	+24753
480+50.00 - 498+55.00		35455	10776 *	1.4	+20369
5469+27.95 - 5475+50.00		31	10616	1.4	-14832
5481+71.60 - 5492+41.03		0	18370	1.4	-25718
TOTAL		60894	40230		+4572

* Includes 2200 CY for Cohesive Soil Cap

EARTHWORK QUANTITIES FOR TEMPORARY ROAD REMOVAL			
STATION	TO	STATION	EXCAVATION (ESTABLISHED QUANTITY) (CU. YDS.)
5469+27.95	-	5475+50.00	10616
5481+71.60	-	5492+41.03	18370
TOTAL			28986

BUILD FLEXIBLE POST DELINEATORS, PLAN 901						
STATION TO STATION	SIDE	TYPE	"S"	X (FT.)	EACH	CHEVRONS
456+43.82 - 471+78	RT	III	133	6	9	4
488+76 - 494+04	RT	III	103	6	5	2



REMOVE STRUCTURE at Station 478+52 - 750' Lt.

Removal of Bridge at Station 478+52 - 750' Lt. will require construction of an access route to the existing bridge deck (slab and girders) laying off of alignment of Hwy 12. The access route desired path and maintenance plan shall be submitted to the Engineer and approved. Access to the bridge deck location will be limited to a width of 40' to minimize impacts to the surrounding area. The work area for demolition of the bridge deck will be limited to 40' beyond the bridge deck. After removal of the slab and girders is completed, the existing ground will be restored and seeded to existing conditions as directed by the Engineer.

Removal of the existing bridge deck (slab and girders) and site restoration will be considered subsidiary to the bid item Remove Structure at At Station 478+52 - 750' Lt.

Removal of the existing pavement approaches, existing abutments, and piers shall be paid separately in the item "Remove Structure at Station 478+52".

LEGEND

- GAS LINE
- ELECTRICAL SERVICE
- POWER LINE
- OVERHEAD POWER LINE
- SANITARY SEWER
- STORM SEWER
- TELEPHONE LINE
- FIBER OPTIC TELE. LINE
- OVERHEAD TELEPHONE LINE
- CABLE TV LINE
- OVERHEAD CABLE TV LINE
- WATER LINE
- FENCE - CHAIN LINK
- FENCE - R.O.W. OR WIRE
- FENCE - WOOD
- FLOWLINE
- CENTER LINE DRIVE
- BENCH MARK
- CENTER PIVOT
- CONTROL POINT
- DIKE
- GAS METER
- GAS VALVE
- GRID TICK
- GUARDRAIL
- GUARD POST
- GUY POLE
- GUY WIRE
- LIGHT POLE
- MAILBOX
- MANHOLE
- MARSH
- OIL WELL
- PHOTO CODE POINT
- POWER BOX
- POWER POLE
- POWER PULL BOX
- PROPANE TANK
- R.O.W. MARKER
- ADVANCED R.R. WARNING SIGN
- RAILROAD WARNING
- RAILROAD TRACKS
- RETAINING WALL
- SATELLITE DISH
- SIGN
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL/ST. LIGHT
- TELEPHONE BOX
- TELE. FIBER OPTICS BOX
- TELEPHONE PULL BOX
- TELEPHONE POLE
- TELEVISION BOX
- TREE - CONIFEROUS
- TREE - DECIDUOUS
- TREE STUMP
- WATER (FIRE) HYDRANT
- WATER VALVE
- WATER METER
- WELL
- WINDMILL

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888
5-15-19
STATE OF NEBRASKA

Benesch
Date: 17-MAY-2019
File: 32320cn01a.dgn
Scale: 1:100

ROADWAY DESIGN DIVISION

(R1) DELETED SHEET

PROJECT NO.	SHEET NO.
ER-12-5(122)	H1

C.N. 32320



PAVEMENT MARKINGS	
DESCRIPTION	L.F.
5" WHITE PERMANENT PAVEMENT MARKING, PAINT	12938*
5" YELLOW PERMANENT PAVEMENT MARKING, PAINT	8000
24" WHITE TEMPORARY PAVEMENT MARKING, PAINT	24
PAVEMENT MARKING REMOVAL	3700

* INCLUDES QUANTITY FOR SHOOFLY

PHASING & BARRICADING NOTES

1. PHASE 1 : CONSTRUCT NIOBRARA RIVER BRIDGE ABUTMENT & APPROACH SLAB / CONSTRUCT SHOOFLY / CONSTRUCT MORMON CANAL TEMPORARY BRIDGE / CONSTRUCT NEW N-12 ROADWAY FROM STA. 468+00 TO STA. 471+00 AND FROM STA. 491+00 TO STA. 495+39.87 UNDER TOTAL CLOSURE OF N-12. PAVEMENT REPAIR FROM RP 152+20.25 TO RP 152+67.98 AS LISTED IN PLAN SHEET G. SINGLE LANE CLOSURE OF N-12 WILL BE ALLOWED DURING THIS WORK. SIGNING TO FOLLOW NDOT STANDARD PLANS 920 & 921.

2. PHASE 2 : WHEN NIOBRARA RIVER BRIDGE ABUTMENT & TEMP BRIDGE ARE BOTH CONSTRUCTED & READY FOR LIVE TRAFFIC, SUPPLY AND MAINTAIN TEMPORARY TRAFFIC SIGNALS ON EACH END OF PROJECT TO OPERATE ONE-LANE / TWO-WAY TRAFFIC. EASTBOUND & WESTBOUND TRAFFIC TO ALTERNATE CROSSING ENTIRE PROJECT AREA ON SINGLE LANE OF TRAFFIC END TO END. SIGNALS TO BE LOCATED AT APPROX. STATION 466+00 & 508+00. ANY ADJUSTMENTS TO TEMPORARY SIGNAL LOCATION OR OPERATION SHALL REQUIRE APPROVAL OF ENGINEER. CONSTRUCT MORMON CANAL BRIDGE AND REPAIR GIRDER "D" AS DESCRIBED.

3. PHASE 3 : REMOVE TEMPORARY BRIDGE AND ROAD.

4. TRAFFIC ENTERING OR EXITING THE WORK ZONE SHALL SHIFT INTO APPROPRIATE LANE OVER 100' LENGTH PER STANDARD PLAN 920.

5. ALL CONSTRUCTION BARRICADING & SIGNAGE SHALL FOLLOW M.U.T.C.D. & NDOT STANDARD PLANS 920 & 921 SPECIFICATIONS. ADDITIONAL BARRICADING, SIGNS, REFLECTORS, OR OTHER MAY BE ADDED AT DISCRETION OF ENGINEER.

6. SHOOFLY SHALL BE POSTED AT 25 MPH.

LEGEND

- POST MOUNTED SIGN
- TYPE III BARRICADE
- TYPE III BARRICADE WITH SIGN
- TYPE II BARRICADE (BARREL) WITH SIGN

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-9-19
STATE OF NEBRASKA

CONSTRUCTION SEQUENCING & BARRICADING

Benesch
Date: 16-MAY-2019
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Scale: 1:200

PROJECT NO.	SHEET NO.
ER-12-5(122)	H1A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION



PAVEMENT MARKINGS	
DESCRIPTION	L.F.
5" WHITE PERMANENT PAVEMENT MARKING, PAINT	12938*
5" YELLOW PERMANENT PAVEMENT MARKING, PAINT	8000
24" WHITE TEMPORARY PAVEMENT MARKING, PAINT	24
PAVEMENT MARKING REMOVAL	3700

* INCLUDES QUANTITY FOR SHOOFLY

PHASING & BARRICADING NOTES

1. PHASE 1 : CONSTRUCT NIOBRARA RIVER BRIDGE ABUTMENT & APPROACH SLAB / CONSTRUCT SHOOFLY / CONSTRUCT MORMON CANAL TEMPORARY BRIDGE / CONSTRUCT NEW N-12 ROADWAY FROM STA. 468+00 TO STA. 471+00 AND FROM STA. 491+00 TO STA. 495+39.87 UNDER TOTAL CLOSURE OF N-12. PAVEMENT REPAIR FROM RP 152+20.25 TO RP 152+67.98 AS LISTED IN PLAN SHEET G. SINGLE LANE CLOSURE OF N-12 WILL BE ALLOWED DURING THIS WORK. SIGNING TO FOLLOW NDOT STANDARD PLANS 920 & 921.

2. PHASE 2 : WHEN NIOBRARA RIVER BRIDGE ABUTMENT & TEMP BRIDGE ARE BOTH CONSTRUCTED & READY FOR LIVE TRAFFIC, SUPPLY AND MAINTAIN TEMPORARY TRAFFIC SIGNALS ON EACH END OF PROJECT TO OPERATE ONE-LANE / TWO-WAY TRAFFIC. EASTBOUND & WESTBOUND TRAFFIC TO ALTERNATE CROSSING ENTIRE PROJECT AREA ON SINGLE LANE OF TRAFFIC END TO END. SIGNALS TO BE LOCATED AT APPROX. STATION 466+00 & 508+00. ANY ADJUSTMENTS TO TEMPORARY SIGNAL LOCATION OR OPERATION SHALL REQUIRE APPROVAL OF ENGINEER. CONSTRUCT MORMON CANAL BRIDGE AND REPAIR GIRDER "D" AS DESCRIBED.

3. PHASE 3 : REMOVE TEMPORARY BRIDGE AND ROAD.

4. TRAFFIC ENTERING OR EXITING THE WORK ZONE SHALL SHIFT INTO APPROPRIATE LANE OVER 100' LENGTH PER STANDARD PLAN 920.

5. ALL CONSTRUCTION BARRICADING & SIGNAGE SHALL FOLLOW M.U.T.C.D. & NDOT STANDARD PLANS 920 & 921 SPECIFICATIONS. ADDITIONAL BARRICADING, SIGNS, REFLECTORS, OR OTHER MAY BE ADDED AT DISCRETION OF ENGINEER.

6. SHOOFLY SHALL BE POSTED AT 25 MPH.

LEGEND

- POST MOUNTED SIGN
- TYPE III BARRICADE
- TYPE III BARRICADE WITH SIGN
- TYPE II BARRICADE (BARREL) WITH SIGN

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

CONSTRUCTION SEQUENCING & BARRICADING

Benesch
Date: 17-MAY-2019
File: 32320cz01a.dgn
Scale: 1:200

Project No. ER-12-5(122)
Addendum No. 1
Pg. 15

R1 DELETED SHEET

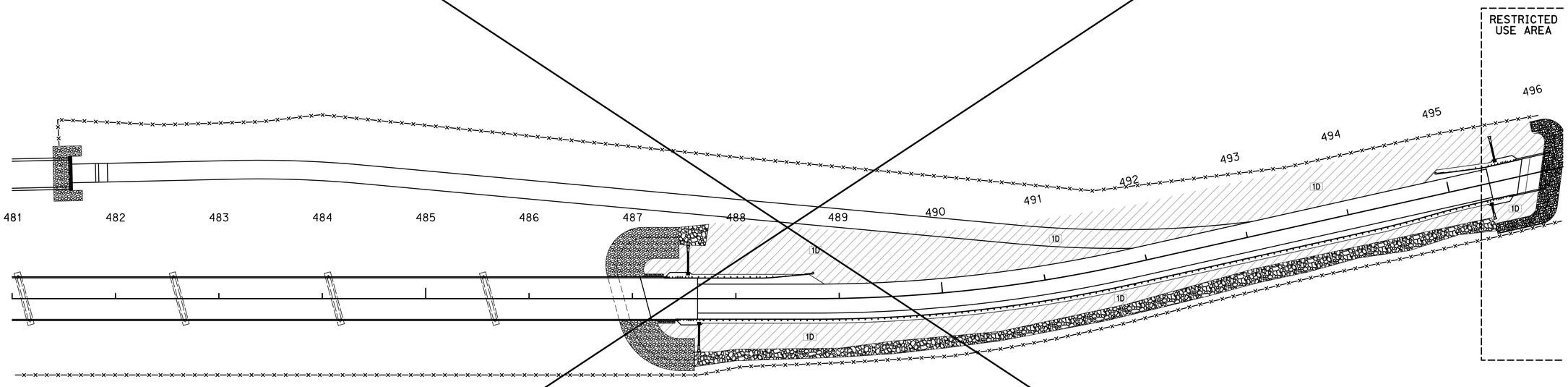
PROJECT NO.	SHEET NO.
ER-12-5(122)	12

C.N. 32320

ROADWAY DESIGN DIVISION

BUILD AREA INLET PROTECTION, SPECIAL PLAN 6C			
STATION	SIDE	DESCRIPTION	EACH
487+53.80	Lt.	5-BAR GRATE	1
487+64.51	Rt.	5-BAR GRATE	1
495+37.87	Rt.	5-BAR GRATE	1
495+49.52	Lt.	5-BAR GRATE	1

—x— BUILD FABRIC SILT FENCE-LOW POROSITY, PLAN 502				
STATION TO STATION	SIDE	BAY	DESCRIPTION	LIN. FT.
481+00.00 - 495+94.09	Rt.	-	-	1505
481+44.00 - 496+09.44	Lt.	-	-	1477



1D BUILD EROSION CONTROL-CLASS 1D, PLAN 501				
STATION TO STATION	SIDE	DESCRIPTION	WIDTH	SQ. YDS.
487+10.73 - 496+00.00	Lt.	-	Varies	3939
487+24.33 - 495+84.56	Rt.	-	Varies	1496

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

EROSION & SEDIMENT CONTROL

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File: 323200cx02.dgn
Scale: 1:50

PROJECT NO.	SHEET NO.
ER-12-5(122)	J2A

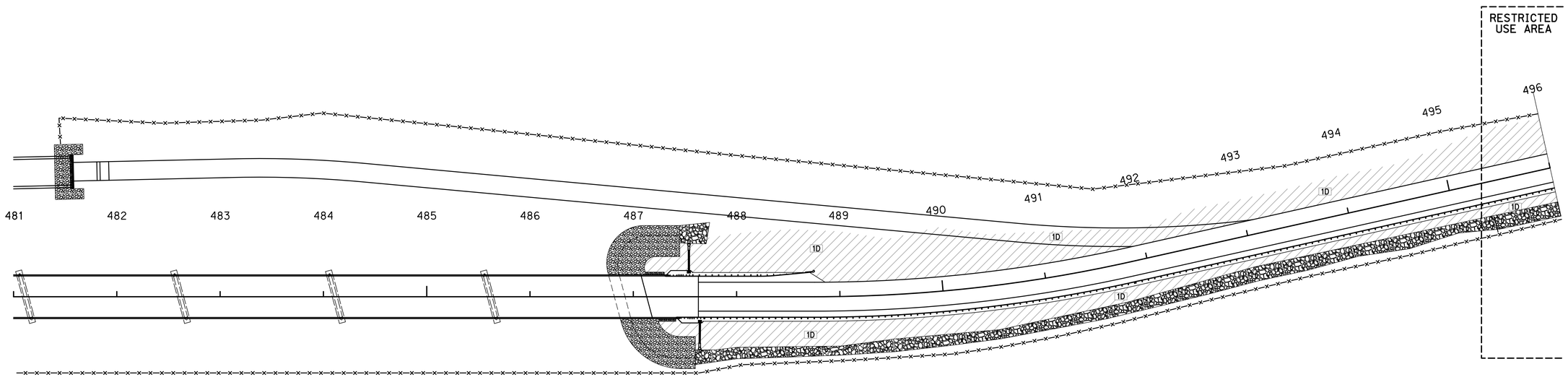
C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION

BUILD AREA INLET PROTECTION, SPECIAL PLAN 6C			
STATION	SIDE	DESCRIPTION	EACH
487+53.80	Lt.	5-BAR GRATE	1
487+64.51	Rt.	5-BAR GRATE	1
495+37.87	Rt.	5-BAR GRATE	1
495+49.52	Lt.	5-BAR GRATE	1

—x— BUILD FABRIC SILT FENCE-LOW POROSITY, PLAN 502					
STATION TO STATION	SIDE	BAY	DESCRIPTION	LIN. FT.	
481+00.00 - 496+00.00	Rt.	-	-	1511	
481+44.00 - 496+00.00	Lt.	-	-	1469	



1D BUILD EROSION CONTROL-CLASS 1D, PLAN 501				
STATION TO STATION	SIDE	DESCRIPTION	WIDTH	SQ. YDS.
487+10.73 - 496+00.00	Lt.	-	Varies	2983
487+24.33 - 496+00.00	Rt.	-	Varies	1436

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

EROSION & SEDIMENT CONTROL

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File: 32320cx02 Rev1.dgn
Scale: 1:50

(R1) DELETED SHEET

PROJECT NO.	SHEET NO.
ER-12-5(122)	13

C.N. 32320

ROADWAY DESIGN DIVISION

RESTRICTED USE AREA

496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

EROSION & SEDIMENT CONTROL

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File: 323200cx03.dgn
Scale: 1:50

PROJECT NO.	SHEET NO.
ER-12-5(122)	J3A

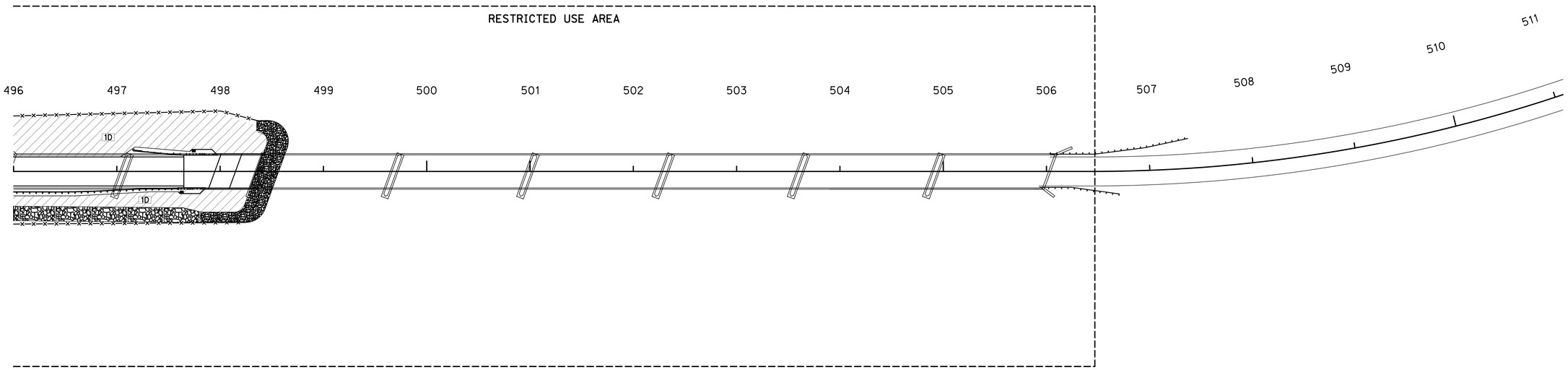
C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION

BUILD AREA INLET PROTECTION, SPECIAL PLAN 6C			
STATION	SIDE	DESCRIPTION	EACH
497+62.82	Rt.	5-BAR GRATE	1
497+74.47	Lt.	5-BAR GRATE	1

—x— BUILD FABRIC SILT FENCE-LOW POROSITY, PLAN 502					
STATION TO STATION	SIDE	BAY	DESCRIPTION	LIN. FT.
496+00.00 - 498+24.72	Rt.	-	-	225
496+00.00 - 498+35.43	Lt.	-	-	236



1D BUILD EROSION CONTROL-CLASS 1D, PLAN 501				
STATION TO STATION	SIDE	DESCRIPTION	WIDTH	SQ. YDS.
496+00.00 - 498+45.43	Lt.	-	Varies	957
496+00.00 - 498+29.11	Rt.	-	Varies	362

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

EROSION & SEDIMENT CONTROL

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ROADWAY DESIGN DIVISION

PROJECT NO.	SHEET NO.
ER-12-5(122)	12
C.N. 32320	

(R1) DELETED SHEET

SEC. 17-R6W-T32N

SEC. 18-R6W-T32N

Sta. 480+57 to Sta. 482+08 Lt. Remove 152 Lin. Ft. of Guardrail.

Sta. 480+57 to Sta. 481+36 Rt. Remove 80 Lin. Ft. of Guardrail.

Sta. 487+53.80, 24' Lt. Build 5-Bar Grate Inlet with Curb. Special Plan 1C & Sheet G. X = 5'-0"

Sta. 487+64.51, 24' Rt. Build 5-Bar Grate Inlet with Curb. Special Plan 1C & Sheet G. X = 5'-0"

Sta. 487+53.80 Lt. Build 15" x 21' Culvert Pipe, Type 3, 4, 5, or 6 w/ Metal Flared End Section. 1-23° Elbow. Plan 410. Fill= 4'. Exc.=25 Cu. Yds.

Sta. 487+64.51 Rt. Build 15" x 21' Culvert Pipe, Type 3, 4, 5, or 6 w/ Metal Flared End Section. 1-22° Elbow. Plan 410. Fill= 4.5'. Exc.=25 Cu. Yds.

Sta. 487+45.00 to Sta. 487+73.90 Lt. Build 77 Tons Rock Riprap, Type C, See Sheet G.

Sta. 487+43.33 Rt. to Sta. 495+59.05 Rt. Build 772 Lin. Ft. of W-Beam Guardrail. 2-Bridge Approach Sections. Plans 740 & 743. Special Plan 2C.

Sta. 487+32.61 Lt. Build 62.5 Lin. Ft. of W-Beam Guardrail. 1-Bridge Approach Section. Plans 740 & 743. 1-Guardrail End Treatment, Type II. Special Plan 2C.

P.I. STA. 490+30.20
Δ = 12°36'15.97" Lt.
T = 154.62
L = 307.98
R = 1400.00
P.C. STA. 488+75.58
P.T. STA. 491+83.57
e = 0.060 ft/ft

Sta. 481+00 to Sta. 495+45 Remove 4492 Sq. Yds. of Asphalt Surface.

Sta. 487+62.97 to Sta. 495+39.87 Build 2417 Sq. Yds. of 8" Doweled Concrete Pavement. Plan 329.

Sta. 494+48 to Sta. 495+83 Rt. Remove 160 Lin. Ft. of Guardrail.

Sta. 487+61.00 to Sta. 495+37.30 Rt. Build 1362 Tons Rock Riprap, Type C, See Sheet G.

Sta. 495+70.70 Lt. Build W-Beam Guardrail. 1-Bridge Approach Section. Plans 740 & 743. 1-Guardrail End Treatment, Type II. Special Plan 2C.

Sta. 495+49.52 Lt. Build 15" x 18' Culvert Pipe, Type 3, 4, 5, or 6 w/ Metal Flared End Section. 1-23° Elbow. Plan 410. Fill= 4.5'. Exc.=21 Cu. Yds.

Sta. 495+49.52, 20' Lt. Build 5-Bar Grate Inlet with Curb. Special Plan 1C & Sheet G. X = 5'-0"

Sta. 495+37.87, 20' Rt. Build 5-Bar Grate Inlet with Curb. Special Plan 1C & Sheet G. X = 5'-0"

Sta. 495+19 to Sta. 495+95 Lt. Remove 78 Lin. Ft. of Guardrail.

Sta. 495+37.87 Rt. Build 15" x 9' Culvert Pipe, Type 3, 4, 5, or 6 w/ Metal Flared End Section. Plan 410. Fill= 4'. Exc.=9 Cu. Yds.

P.C. STA. 488+75.58

P.T. STA. 491+83.57

HWY N-12

481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888
5-9-19
STATE OF NEBRASKA

N-12

STA 485+00.00
EL = 1,252.08
L = 600'
K = 284

+0.2737 %

-1.8366 %

-1.8366 %

STA 491+75.00
EL = 1,239.68
L = 600'
K = 240

+0.6641 %

+0.6449 %

1,260 1,250 1,240 1,230 1,220 1,210

1,250.99 1,251.12 1,251.26 1,251.35 1,251.36 1,251.28 1,251.10 1,250.85 1,250.50 1,250.06 1,249.54 1,248.93 1,248.23 1,247.45 1,246.57 1,245.65 1,244.75 1,243.93 1,243.22 1,242.62 1,242.12 1,241.72 1,241.43 1,241.24 1,241.15 1,241.17 1,241.30 1,241.52 1,241.84 1,242.18 1,242.51

1,247.48 1,247.56 1,247.40 1,246.64 1,246.59 1,246.66 1,246.88 1,247.06 1,247.24 1,247.45 1,247.65 1,246.88 1,246.56 1,246.27 1,246.04 1,246.09 1,245.52 1,245.36 1,244.60 1,245.69 1,244.98 1,244.99 1,245.77 1,245.51 1,245.79 1,246.26 1,246.85 1,246.46 1,246.99 1,239.91 1,247.28

Datum Elev. = 1,190.00 ft Above Sea Level U.S.C.& G.S.

Benesch
Date: 16-MAY-2019
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Scale: 1:50

PROJECT NO.	SHEET NO.
ER-12-5(122)	L2A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION

SEC. 17-R6W-T32N

SEC. 18-R6W-T32N

SEC. 18-R6W-T32N

SEC. 17-R6W-T32N

Sta. 480+57 to Sta. 482+08 Lt. Remove 152 Lin. Ft. of Guardrail.

Sta. 480+57 to Sta. 481+36 Rt. Remove 80 Lin. Ft. of Guardrail.

Sta. 487+53.80, 24" Lt. Build 5-Bar Grate Inlet with Curb. Special Plan 1C & Sheet G. X = 5'-0"

Sta. 487+64.51, 24' Rt. Build 5-Bar Grate Inlet with Curb. Special Plan 1C & Sheet G. X = 5'-0"

Sta. 487+53.80 Lt. Build 15" x 21' Culvert Pipe, Type 3, 4, 5, or 6 w/ Metal Flared End Section. 1-23° Elbow. Plan 410. Fill= 4'. Exc.=25 Cu. Yds.

Sta. 487+64.51 Rt. Build 15" x 21' Culvert Pipe, Type 3, 4, 5, or 6 w/ Metal Flared End Section. 1-22° Elbow. Plan 410. Fill= 4.5'. Exc.=25 Cu. Yds.

Sta. 487+45.00 to Sta. 487+73.90 Lt. Build 77 Tons Rock Riprap, Type C, See Sheet G.

Sta. 487+43.33 Rt. to Sta. 497+84.00 Rt. Build 995 Lin. Ft. of W-Beam Guardrail. 2-Bridge Approach Sections. Plans 740 & 743. Special Plan 2C.

Sta. 487+32.61 Lt. Build 62.5 Lin. Ft. of W-Beam Guardrail. 1-Bridge Approach Section. Plans 740 & 743. 1-Guardrail End Treatment, Type II. Special Plan 2C.

P.I. STA. 490+30.20
Δ = 12°36'15.97" Lt.
T = 154.62
L = 307.98
R = 1400.00
P.C. STA. 488+75.58
P.T. STA. 491+83.57
e = 0.060 ft/ft

Sta. 481+00 to Sta. 495+45 Remove 4492 Sq. Yds. of Asphalt Surface.

Sta. 487+62.97 to Sta. 496+00.00 Build 2604 Sq. Yds. of 8" Doweled Concrete Pavement. Plan 329.

Sta. 487+61.00 to Sta. 496+00.00 Rt. Build 1495 Tons Rock Riprap, Type C, See Sheet G.

Sta. 494+48 to Sta. 495+83 Rt. Remove 160 Lin. Ft. of Guardrail.

Sta. 495+19 to Sta. 495+95 Lt. Remove 78 Lin. Ft. of Guardrail.

P.C. STA. 488+75.58

P.T. STA. 491+83.57

HWY N-12

481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

N-12

STA 485+00.00
EL = 1,252.08
L = 600'
K = 284

STA 491+50.00
EL = 1,240.14
L = 600'
K = 253

+0.2737 %

-1.8366 %

-1.8366 %

+0.5377 %

+0.53

1,260 1,250 1,240 1,230 1,220 1,210

1,250.99 1,251.12 1,251.26 1,251.35 1,251.36 1,251.28 1,251.10 1,250.85 1,250.50 1,250.06 1,249.54 1,248.93 1,248.23 1,247.45 1,246.57 1,245.65 1,244.78 1,244.01 1,243.34 1,242.77 1,242.30 1,241.92 1,241.65 1,241.47 1,241.40 1,241.42 1,241.54 1,241.76 1,242.03 1,242.29 1,242.56

1,247.48 1,247.56 1,247.40 1,246.64 1,246.59 1,246.66 1,246.88 1,247.06 1,247.24 1,247.45 1,247.65 1,246.88 1,246.56 1,246.27 1,246.04 1,246.09 1,245.52 1,245.36 1,244.60 1,245.69 1,244.98 1,244.99 1,245.77 1,245.51 1,245.79 1,246.26 1,246.85 1,246.46 1,246.99 1,239.91 1,247.28

Datum Elev. = 1,190.00 ft Above Sea Level U.S.C.& G.S.

481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496

Benesch

Date: 16-MAY-2019

File: 323200cp02 Rev1.dgn
Scale: 1:50

PROJECT NO.	SHEET NO.
ER-12-5(122)	13
C.N. 32320	

(R1) DELETED SHEET

ROADWAY DESIGN DIVISION

496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511

P.C. STA. 506+44.66

HWY N-12

Sta. 500+94.36
Bridge #(SD12 16027)
1000' Multiple Span Deck
Steel Girder Bridge -
Continuous Composite Type
w/ 32" Roadway
Bridge Repair
Special Plan 3

P.I. STA. 510+40.39
Δ = 30°53'17.88"
T = 395.73
L = 772.21
R = 1432.39
P.C. STA. 506+44.66
P.T. STA. 514+16.87

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-9-19
STATE OF NEBRASKA

N-12

1260
1,250
1,240
1,230
1,220
1,210

+0.5420 % +0.4198 % +0.2977 % +0.1679 % +0.0458 % -0.0763 % +0.0458 % -0.0763 %

1,244.76

STA 495+89.90 EL = 1,242.44
STA 496+96.90 EL = 1,243.13
STA 498+27.90 EL = 1,243.84
STA 499+58.90 EL = 1,244.39
STA 500+89.90 EL = 1,244.78
STA 502+20.90 EL = 1,245.00
STA 503+51.90 EL = 1,245.06
STA 504+82.90 EL = 1,244.96

1,242.51 1,242.83 1,243.15 1,243.42 1,243.69 1,243.93 1,244.14 1,244.35 1,244.51 1,244.66 1,244.80 1,244.88 1,244.96 1,245.01 1,245.04 1,245.06 1,245.02 1,244.99 1,244.93 1,244.83

1,247.28 1,247.55 1,247.83 1,247.48 1,248.16 1,247.49 1,248.12 1,247.60 1,248.18 1,247.89 1,248.25 1,247.61 1,247.34 1,247.85 1,247.22 1,246.79 1,247.02 1,246.81 1,246.12 1,246.38 1,245.99 1,246.53 1,246.21 1,245.94 1,245.11 1,245.36 1,244.76 1,245.25 1,245.18 1,244.52 1,244.61

Datum Elev. = 1,190.00 ft Above Sea Level U.S.C.& G.S.

Benesch
Date: 16-MAY-2019
File: 32320cp03.dgn
Scale: 1:50

ROADWAY DESIGN DIVISION

PROJECT NO.	SHEET NO.
ER-12-5(122)	L3A

C.N. 32320

(R1) ADDED SHEET

Sta. 497+95.65 Lt.
Build W-Beam Guardrail.
1-Bridge Approach Section.
Plans 740 & 743.
1-Guardrail End Treatment,
Type 11.
Special Plan 2C.

Sta. 497+74.47 Lt.
Build 15" x 21' Culvert Pipe,
Type 3, 4, 5, or 6
w/ Metal Flared End Section.
1-23° Elbow.
Plan 410. Fill= 4.5'.
Exc.=21 Cu. Yds.

Sta. 497+74.47, 20' Lt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"

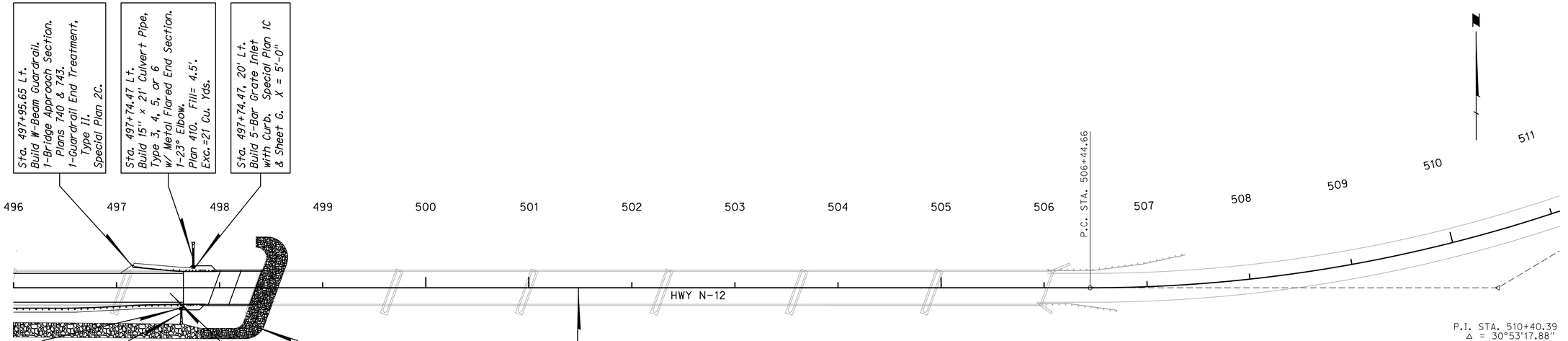
Sta. 497+62.82, 20' Rt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"

Sta. 497+62.82 Rt.
Build 15" x 11' Culvert Pipe,
Type 3, 4, 5, or 6
w/ Metal Flared End Section.
Plan 410. Fill= 4'.
Exc.=9 Cu. Yds.

Sta. 496+00.00 to
Sta. 497+64.83
Build 513 Sq. Yds. of 8"
Doweled Concrete Pavement.
Plan 329.

Sta. 496+00.00 to
Sta. 497+81.85 Rt.
Build 378 Tons Rock Riprap,
Type C, See Sheet G.

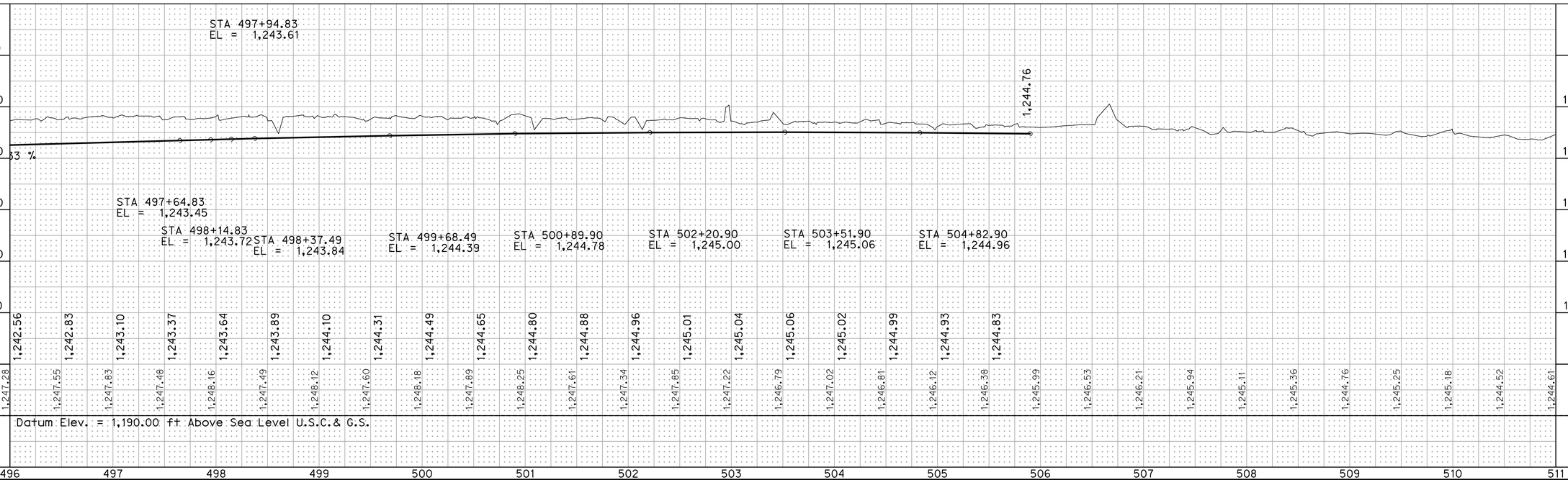
Sta. 500+94.36
Bridge #(S012 16027)
1000' Multiple Span Deck
Steel Girder Bridge -
Continuous Composite Type
w/ 32' Roadway
Bridge Repair
Special Plan 3



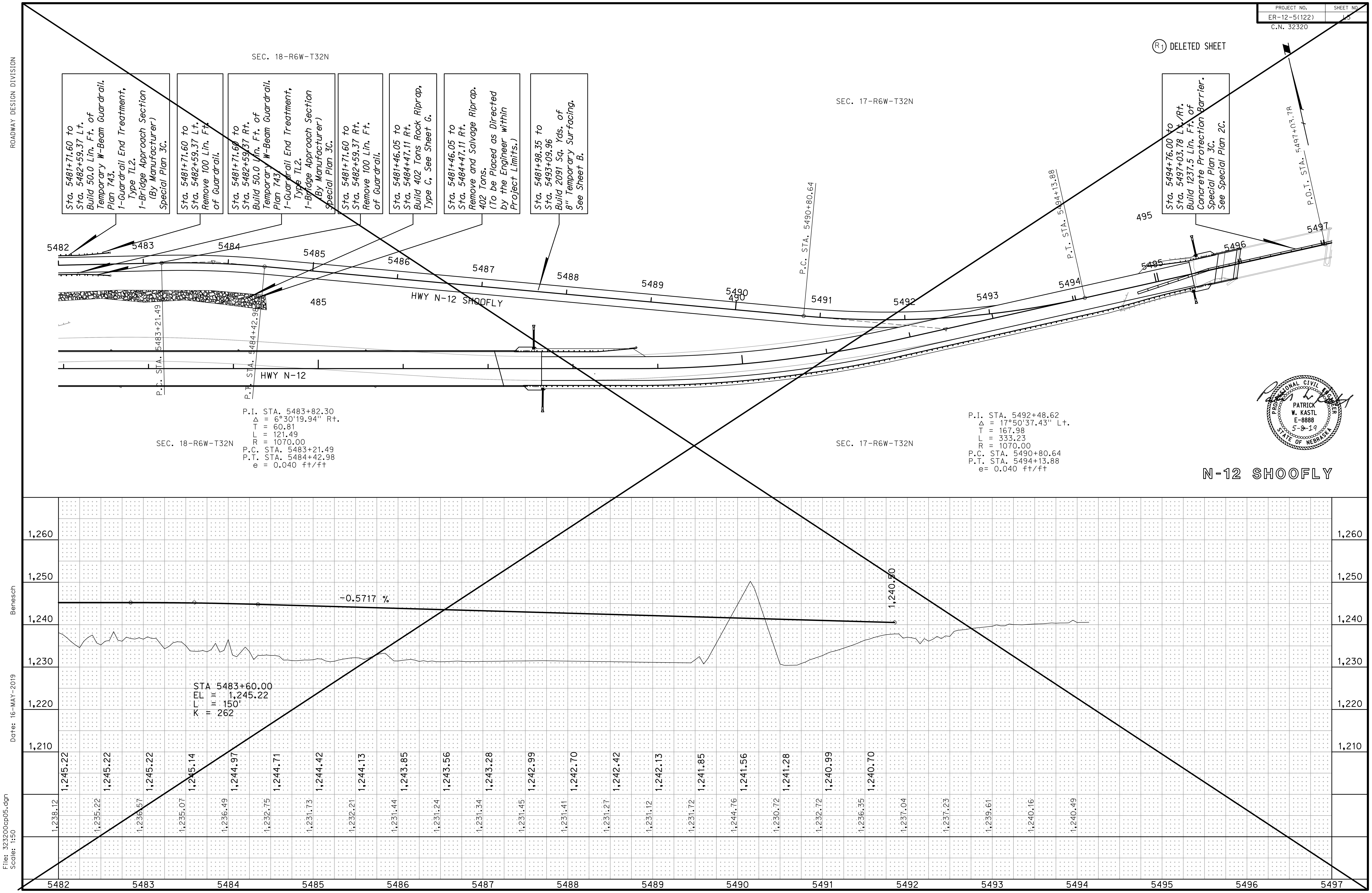
P.I. STA. 510+40.39
Δ = 30°53'17.88"
T = 395.73
L = 772.21
R = 1432.39
P.C. STA. 506+44.66
P.T. STA. 514+16.87

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

N-12



Benesch
Date: 16-MAY-2019
File: 323200cp03 Rev1.dgn
Scale: 1:50


PROJECT NO. ER-12-5(122)
SHEET NO. L3
C.N. 32320
R1 DELETED SHEET
ROADWAY DESIGN DIVISION
SEC. 18-R6W-T32N
SEC. 17-R6W-T32N
Sta. 5481+71.60 to Sta. 5482+59.37 Lt. Build 50.0 Lin. Ft. of Temporary W-Beam Guardrail. Plan 743. 1-Guardrail End Treatment, Type TL2. 1-Bridge Approach Section (By Manufacturer) Special Plan 3C.
Sta. 5481+71.60 to Sta. 5482+59.37 Lt. Remove 100 Lin. Ft. of Guardrail.
Sta. 5481+71.60 to Sta. 5482+59.37 Rt. Build 50.0 Lin. Ft. of Temporary W-Beam Guardrail. Plan 743. 1-Guardrail End Treatment, Type TL2. 1-Bridge Approach Section (By Manufacturer) Special Plan 3C.
Sta. 5481+71.60 to Sta. 5482+59.37 Rt. Remove 100 Lin. Ft. of Guardrail.
Sta. 5481+46.05 to Sta. 5484+47.11 Rt. Build 402 Tons Rock Riprap. Type C, See Sheet 6.
Sta. 5481+46.05 to Sta. 5484+47.11 Rt. Remove and Salvage Riprap. 402 Tons. (To be Placed as Directed by the Engineer within Project Limits.)
Sta. 5481+98.35 to Sta. 5493+09.96 Build 2091 Sq. Yds. of 8" Temporary Surfacing. See Sheet B.
Sta. 5494+76.00 to Sta. 5497+03.78 Lt./Rt. Build 1237.5 Lin. Ft. of Concrete Protection Barrier. Special Plan 3C. See Special Plan 2C.
HWY N-12 SHOOFLY
HWY N-12
P.C. STA. 5483+21.49
P.T. STA. 5484+42.98
P.C. STA. 5490+80.64
P.T. STA. 5494+13.88
P.O.T. STA. 5497+03.78
P.I. STA. 5483+82.30
Δ = 6°30'19.94" Rt.
T = 60.81
L = 121.49
R = 1070.00
P.C. STA. 5483+21.49
P.T. STA. 5484+42.98
e = 0.040 ft/ft
P.I. STA. 5492+48.62
Δ = 17°50'37.43" Lt.
T = 167.98
L = 333.23
R = 1070.00
P.C. STA. 5490+80.64
P.T. STA. 5494+13.88
e= 0.040 ft/ft
PROFESSIONAL CIVIL ENGINEER PATRICK W. KASTL E-8888 5-8-19 STATE OF NEBRASKA
N-12 SHOOFLY
-0.5717 %
1,240.50
STA 5483+60.00
EL = 1,245.22
L = 150'
K = 262
1,260
1,250
1,240
1,230
1,220
1,210
1,245.22 1,245.22 1,245.22 1,245.14 1,244.97 1,244.71 1,244.42 1,244.13 1,243.85 1,243.56 1,243.28 1,242.99 1,242.70 1,242.42 1,242.13 1,241.85 1,241.56 1,241.28 1,240.99 1,240.70
1,238.12 1,235.22 1,236.57 1,235.07 1,236.49 1,232.75 1,231.73 1,232.21 1,231.44 1,231.24 1,231.34 1,231.45 1,231.41 1,231.27 1,231.12 1,231.72 1,244.76 1,230.72 1,232.72 1,236.35 1,237.04 1,237.23 1,239.61 1,240.16 1,240.49
5482 5483 5484 5485 5486 5487 5488 5489 5490 5491 5492 5493 5494 5495 5496 5497
Benesch
Date: 16-MAY-2019
File: 32320Ocp05.dgn
Scale: 1:50

PROJECT NO.	SHEET NO.
ER-12-5(122)	L5A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION

SEC. 18-R6W-T32N

Sta. 5481+71.60 to Sta. 5482+59.37 Lt. Build 50.0 Lin. Ft. of Temporary W-Beam Guardrail. Plan 743. 1-Guardrail End Treatment, Type TL2. 1-Bridge Approach Section (By Manufacturer) Special Plan 3C.

Sta. 5481+71.60 to Sta. 5482+59.37 Lt. Remove 100 Lin. Ft. of Guardrail.

Sta. 5481+71.60 to Sta. 5482+59.37 Rt. Build 50.0 Lin. Ft. of Temporary W-Beam Guardrail. Plan 743. 1-Guardrail End Treatment, Type TL2. 1-Bridge Approach Section (By Manufacturer) Special Plan 3C.

Sta. 5481+71.60 to Sta. 5482+59.37 Rt. Remove 100 Lin. Ft. of Guardrail.

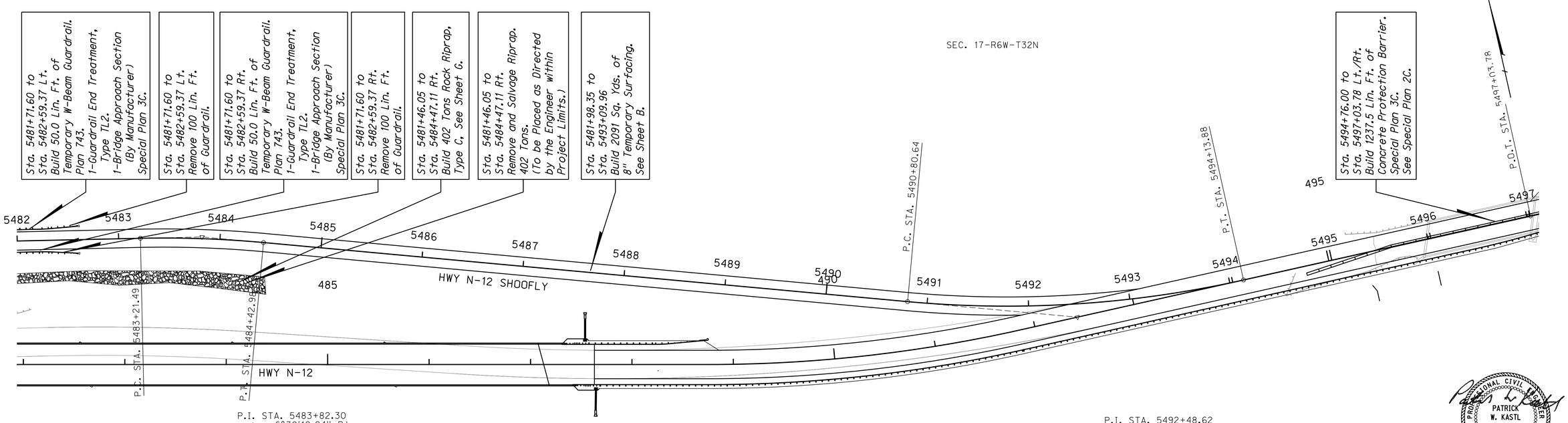
Sta. 5481+46.05 to Sta. 5484+47.11 Rt. Build 402 Tons Rock Riprap, Type C, See Sheet C.

Sta. 5481+46.05 to Sta. 5484+47.11 Rt. Remove and Salvage Riprap. 402 Tons. (To be Placed as Directed by the Engineer within Project Limits.)

Sta. 5481+98.35 to Sta. 5493+09.96 Build 2091 Sq. Yds. of 8" Temporary Surfacing. See Sheet B.

SEC. 17-R6W-T32N

Sta. 5494+76.00 to Sta. 5497+03.78 Lt./Rt. Build 1237.5 Lin. Ft. of Concrete Protection Barrier. Special Plan 3C. See Special Plan 2C.



P.I. STA. 5483+82.30
Δ = 6°30'19.94" Rt.
T = 60.81
L = 121.49
R = 1070.00
P.C. STA. 5483+21.49
P.T. STA. 5484+42.98
e = 0.040 ft/ft

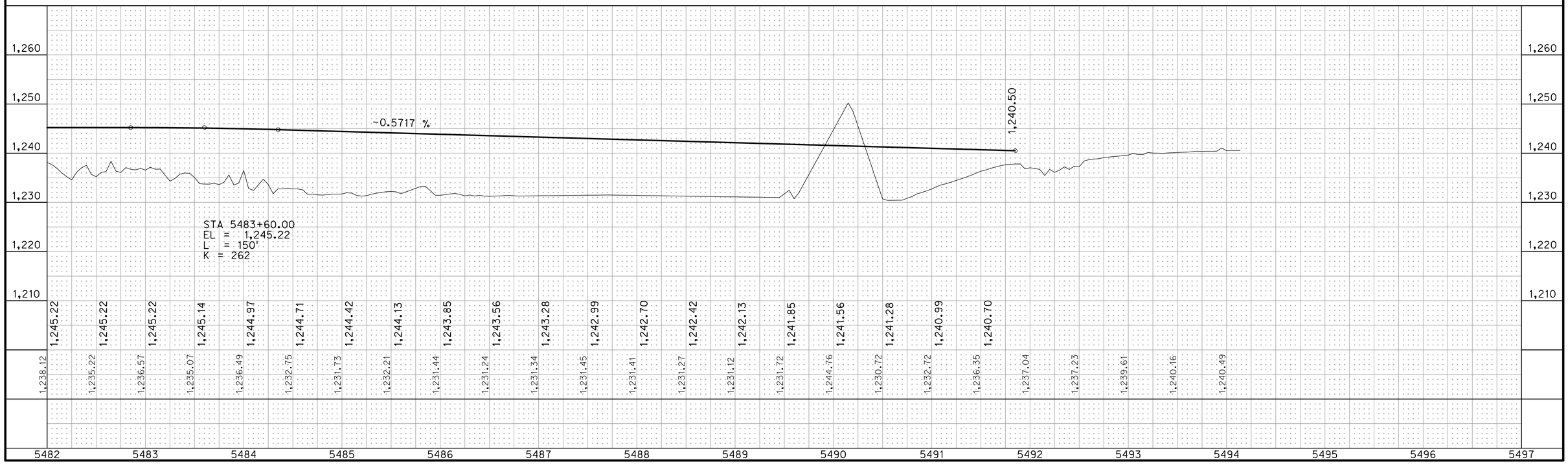
SEC. 18-R6W-T32N

SEC. 17-R6W-T32N

P.I. STA. 5492+48.62
Δ = 17°50'37.43" Lt.
T = 167.98
L = 333.23
R = 1070.00
P.C. STA. 5490+80.64
P.T. STA. 5494+13.88
e= 0.040 ft/ft

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888
5-8-19
STATE OF NEBRASKA

N-12 SHOOFLY



Benesch
Date: 16-MAY-2019
File: 323200cp05 Rev1.dgn
Scale: 1:47.1429

Horizontal Scale	1 : 10
Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	R2

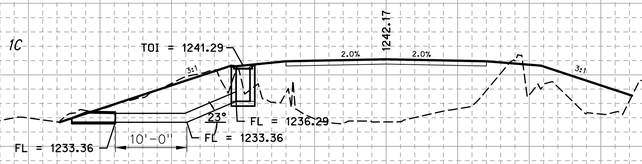
C.N. 32320

(R1) DELETED SHEET

ROADWAY DESIGN DIVISION

Sta. 495+49.52 Rt.
Build 15" x 18' Culvert Pipe,
Type 3, 4, 5 or 6
w/Metal Flared End Section.
1-23° Elbow.
Plan 410. Fill= 4.5'.
Exc.=21 Cu. Yds.

Sta. 495+49.52, 20' Lt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"



495+49.44

Sta. 495+37.87 Rt.
Build 15" x 9' Culvert Pipe,
Type 3, 4, 5 or 6
w/Metal Flared End Section.
Plan 410. Fill= 4'.
Exc.=10 Cu. Yds.

Sta. 495+37.87, 20' Rt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"

495+37.89

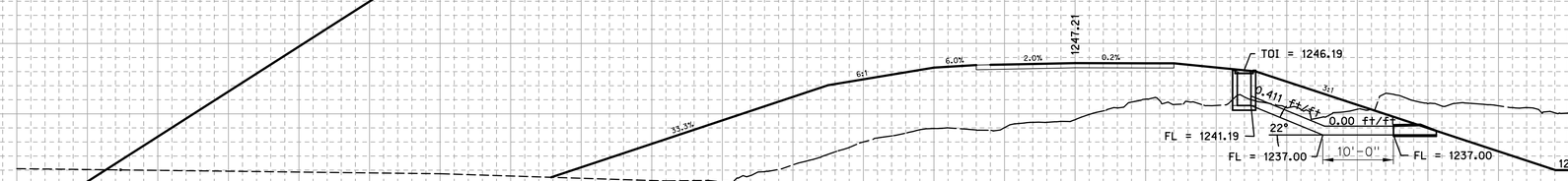


Sta. 487+64.51 Rt.
Build 15" x 21' Culvert Pipe,
Type 3, 4, 5 or 6
w/Metal Flared End Section.
1-22° Elbow.
Plan 410. Fill= 4.5'.
Exc.=25 Cu. Yds.



Sta. 487+64.51, 24' Rt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"

487+63.89



1250 1240 1230

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

Benesch
Date: 16-MAY-2019
File: 323200cr02.dgn

Horizontal Scale	1 : 10	PROJECT NO.	SHEET NO.
Vertical Scale	1 : 10	ER-12-5(122)	R2A

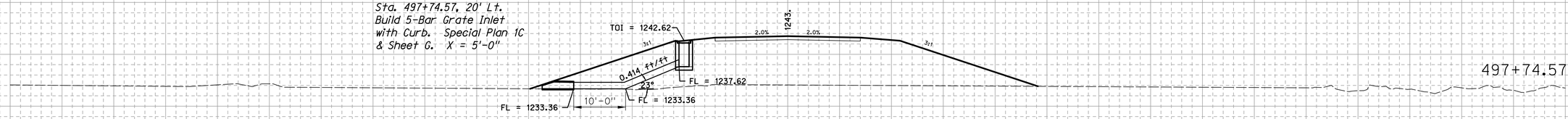
C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION

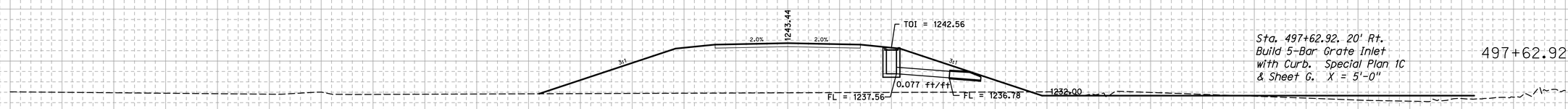
Sta. 497+74.57 Lt.
Build 15" x 21' Culvert Pipe,
Type 3, 4, 5 or 6
w/Metal Flared End Section.
1-23° Elbow.
Plan 410. Fill= 4.5'.
Exc.=21 Cu. Yds.

Sta. 497+74.57, 20' Lt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"



Sta. 497+62.92 Rt.
Build 15" x 11' Culvert Pipe,
Type 3, 4, 5 or 6
w/Metal Flared End Section.
Plan 410. Fill= 4'.
Exc.=10 Cu. Yds.

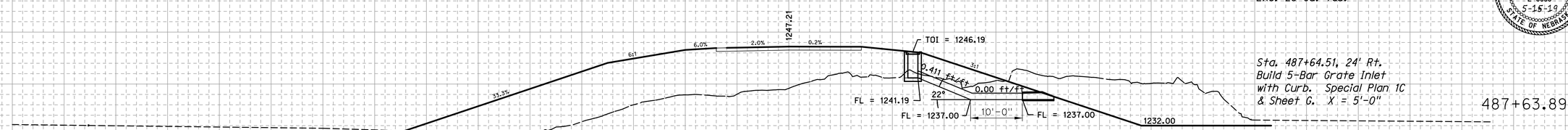
Sta. 497+62.92, 20' Rt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"



Sta. 487+64.51 Rt.
Build 15" x 21' Culvert Pipe,
Type 3, 4, 5 or 6
w/Metal Flared End Section.
1-22° Elbow.
Plan 410. Fill= 4.5'.
Exc.=25 Cu. Yds.

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888 5-15-19
STATE OF NEBRASKA

Sta. 487+64.51, 24' Rt.
Build 5-Bar Grate Inlet
with Curb. Special Plan 1C
& Sheet G. X = 5'-0"



160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

Benesch

Date: 17-MAY-2019

File: 323200cr02a.dgn

(R1) DELETED SHEET

- NIOBRARA WEST BRIDGES -

- NOTES -

Before ordering any materials, the Contractor shall make a detailed field inspection of the project site, verifying all dimensions and conditions, and reporting to the Engineer any discrepancies between their measurements and those shown on the plans.

The locations of all aerial and underground utility facilities may not be indicated in these plans. Underground utilities whether indicated or not will be located and flagged by the Utilities at the request of the contractor.

No excavation will be permitted in the area of underground facilities until all such facilities have been located and identified to the satisfaction of all parties. The excavation must be accomplished with extreme care in order to avoid any possibility of damage to the utility facility.

The contractor shall coordinate Traffic Control with the District 3 Engineer prior to start of work.

All dimensions shown are in horizontal plane only, No allowances have been made for vertical curve or roadway cross slope. The dimensions shown have been obtained from the existing As-Built plans.

The State does not guarantee that these drawings conform to the existing dimensions and shall not be liable for any differences between the existing conditions and the drawings.

Actual field conditions may require more or less repair than what is depicted in the plans. The final areas to be repaired shall be determined by the Engineer. The Engineer shall be notified when field conditions impede the implementation of these plans or vary significantly from what is shown.

Dimensions shown are based on the existing plans.

All material removed shall become the property of the Contrator and shall be removed from the project.

Concrete for slab repair, approach slabs and concrete rails shall be class "47BD", with a 28-day strength of 4000 psi.

All other cast-in-place concrete shall be Class "47B" concrete, with a 28-day strength of 3,000 psi.

The Contractor shall place a 1" deep saw cut at the limits of the removal to facilitate a clean smooth line when beaking back existing concrete.

All existing concrete surfaces to be in contact with the new construction shall be thoroughly roughened and cleaned before placing any new concrete.

Field bend and/or clip reinforcing bars to maintain minimum clearance. Epoxy coat clipped end.

Use an approved Bonding Agent prior to placing any new concrete on, against, or under any existing concrete. If any epoxy bonding agent is used, the epoxy must still be tacky at the time of concrete placement. If the epoxy is no longer tacky it must be completely removed and the existing concrete surface must be prepared again in accordance with the plan and specifications.

Chamfer all exposed edges of concrete.

All reinforcing steel shall be epoxy coated and conform to the requirements of ASTM A615/A615M, grade 60 steel.

The minimum clearance, measured from the face of the concrete to the surface of any reinforcing bar, shall be 2", except where otherwise noted.

The Contractor shall take all necessary precautions during the construction of this project to prevent any debris or rubble from falling into the water below the structure.

When breaking existing concrete and existing reinforcing steel is encountered that is broken or has section loss due to corosion greater than 20%, the contractor shall lap the existing bar with a new epoxy coated bar of the same size for a length indicated in the Special Provisions.

The Contractor shall take care not to damage the existing structure during construction. Any part damaged shall be repaired and/or replaced in its entirety at the Contractor's expense.

All preparation, equipment, materials, labor, tools, and incidentals necessary to complete the work that is not paid for directly, shall be considered subsidiary to associated pay items.

The pay item "STRUCTURAL STEEL FOR SUBSTRUCTURE" shall include the tie rods and wales at Abutment No. 1.

Tie Rods shall conform to ASTM A709/A709M, Grade 36 steel. Turnbuckles shall conform to ASTM A668/A668M, Class C.

Structural steel for all "H" piles shall conform to ASTM A709/A709M, Grade 36.

After fabrication, tie rods and all other hardware shall be galvanized according to ASTM A123/A123M.

These plans are being issued as part of an emergency repair project using incomplete field data. Field conditions encountered during construction may necessitate changes to items such as (but not limited to) pile lengths and structural steel for superstructure quantities.

Bills of bars in this plan set are believed to be accurate at the time of bid, but values need to be confirmed. Ordering reinforcing steel prior to recieving confirmed information will be at Contractor's risk.

- QUANTITIES -

GROUP 6B

PREPARATION OF BRIDGE AT STATION 500+94.36		1 EA
CLASS 47B-3000 CONCRETE FOR BRIDGE		33.4 CY
ABUTMENT	33.4 CY	
CLASS 47BD-4000 CONCRETE FOR BRIDGE		160.8 CY
SLAB	132.4 CY	
CONCRETE RAILS	28.4 CY	
EPOXY COATED REINFORCING STEEL		48,680 LB
SLAB	39,435 LB	
CONCRETE RAILS	6,045 LB	
ABUTMENT	3,200 LB	
STRUCTURAL STEEL FOR SUPERSTRUCTURE		122,100 LB
GIRDERS	84,310 LB	
SEPARATORS & MISC.	34,440 LB	
SHEAR CONNECTORS	640 LB	
BOLTS	2,710 LB	
RESET GIRDERS AT BEARING		1 LS
STRUCTURAL STEEL FOR SUBSTRUCTURE		4,550 LB
STEEL SHEET PILING		1,560 SF
HP 12 INCH X 53 LB STEEL PILING		400 LF
GRANULAR BACKFILL		1,385 CY
CONCRETE FOR PAVEMENT APPROACHES CLASS 47BD-4000		78.1 CY
SLAB	73.0 CY	
CONCRETE RAILS	5.1 CY	
EPOXY COATED REINFORCING STEEL FOR PAVEMENT APPROACHES		14,805 LB
SLAB	12,865 LB	
CONCRETE RAILS	1,940 LB	
ROCK RIPRAP, TYPE A		160 TON
ROCK RIPRAP, TYPE C		535 TON
RIPRAP FILTER FABRIC		460 SY
ACCESS CROSSING AT STATION 496+00		1 LS
ACCESS CROSSING AT STATION 506+00		1 LS

DESIGN HISTORY			
CONTROL NO.	PROJECT NO.	MONTH / YEAR	TYPE OF WORK
-	BRF-12-5(101)	MARCH 1978	1000'-0" MULTIPLE SPANS DECK STEEL GIRDER-CONTINUOUS COMPOSITE TYPE
31674A	12-5(1012)	MAY 2009	BRIDGE DECK REPAIR & RAIL REMODEL

- INDEX -

GENERAL NOTES, QUANTITIES & INDEX	1
GENERAL PLAN & REMOVALS	2
ABUTMENT NO. 1 REMODEL (1 OF 3)	3
ABUTMENT NO. 1 REMODEL (2 OF 3)	4
ABUTMENT NO. 1 REMODEL (3 OF 3)	5
STEEL GIRDER REPAIRS (1 OF 3)	6
STEEL GIRDER REPAIRS (2 OF 3)	7
STEEL GIRDER REPAIRS (3 OF 3)	8
SLAB REPAIR DETAILS	9
SLAB REPAIR DETAILS & BILL OF BARS	10
REMODEL CONCRETE RAIL ON BRIDGE	11
CONCRETE RAIL ON APPROACH SLAB	12
PLAN OF APPROACH SLAB	13
APPROACH SLAB DETAILS	14
APPROACH SLAB BILL OF BARS & BENDING DIAG.	15

SHOP PLANS REQUIRED FOR REVIEW:
Structural Steel for Superstructure
Structural Steel for Substructure
Steel Sheet Piling

SHOP PLANS FOR RECORD:
Stay-In-Place-Forms
Plans and Procedures for Vertically Jacking & Resetting Girders on Bearings

benesch

PROJECT NUMBER: ER-12-5(122) | SHEET NO. S41
C.N. 52320
STRUCTURE NUMBER: S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER
BRIDGE-CONTINUOUS COMPOSITE TYPE
GENERAL NOTES, QUANTITIES & INDEX

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY AMB | **DETAILED BY** NTF | **CHECKED BY** | **DATE** MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

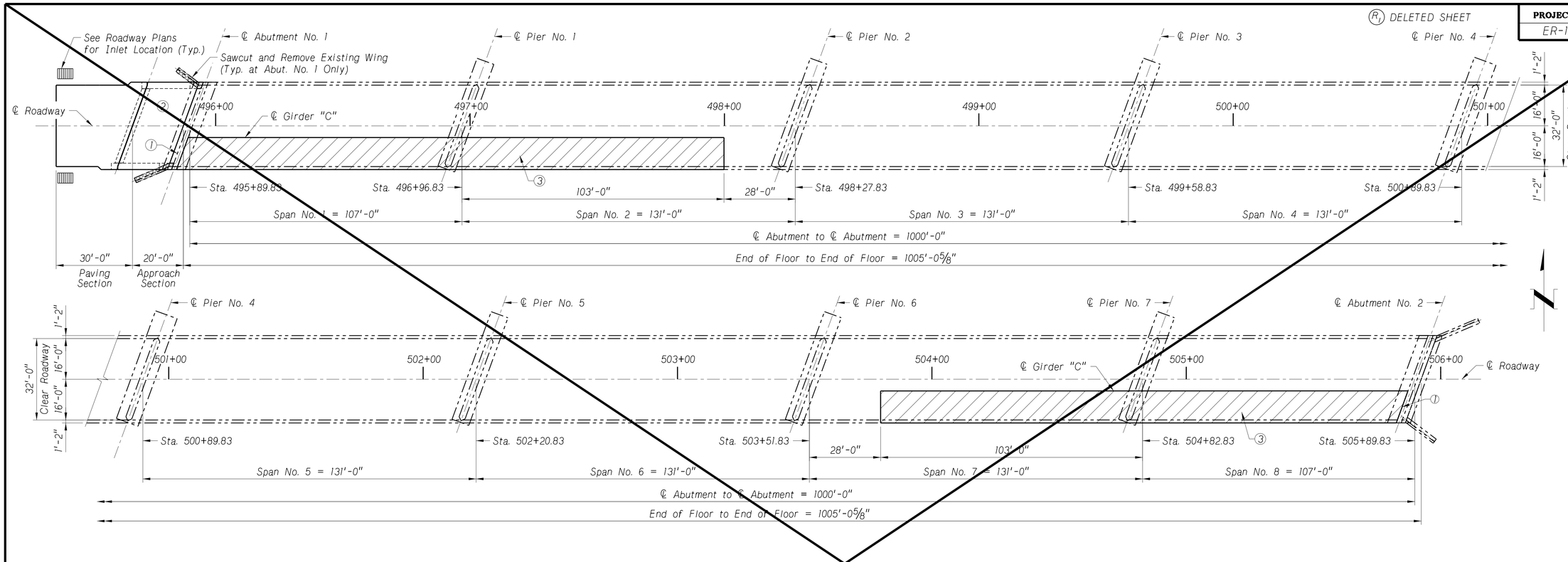
NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
ADAM M. BUETTNER
E-10646
STATE OF NEBRASKA

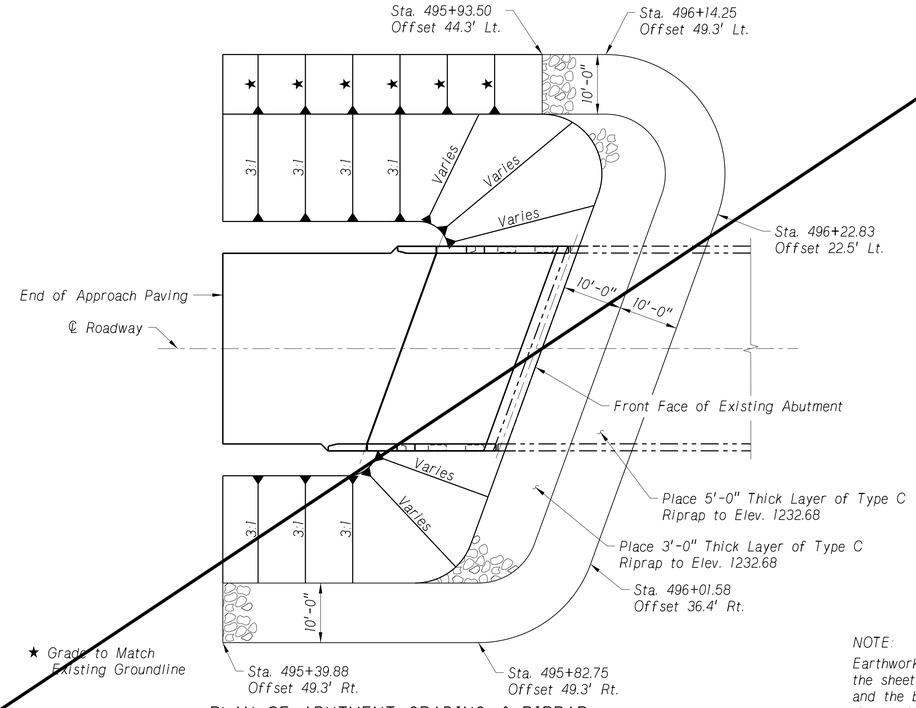
SPECIAL PLAN NO. 3 | 1 / 15

Y:\Omaha\1202005\001202227.01\Eng_Docs\Bridge\Sheets\S012_16027_Niobrara_River\Deleted_Sheets\S012_16027_01_DELETED_Cover_Sheet.dgn

(R1) DELETED SHEET



GENERAL PLAN
Scale: 1" = 20'-0"



PLAN OF ABUTMENT GRADING & RIPRAP
Not to Scale

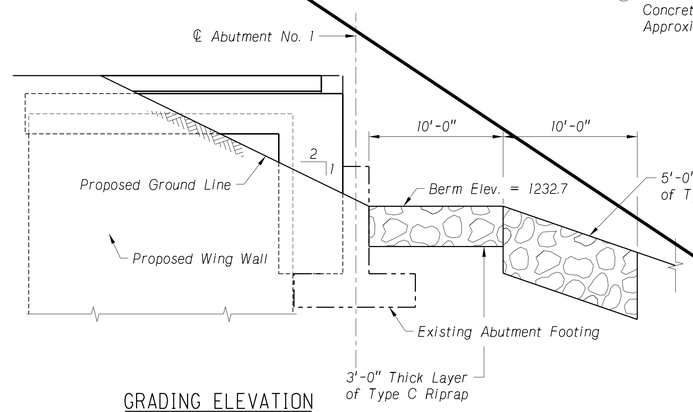
NOTE:
Earthwork volumes outside the box defined by the sheet piling, the face of the scour hole and the back of the abutment are included with the roadway quantities.

Approximate Limits of Deck and Concrete Rail Removal & Replacement.

① Use Care to Protect Existing Finger Joint at End of Floor and Incorporate into New Work. If Concrete is Removed Below the Finger Joint, the Minimum Depth Shall be 3" Clear Below the Bottom of the Steel Plates.

② Repair Scour Damage, Install Sheet Piling, Grade Beam on Piles and Approach Slab.

③ Remove and Replace Deck and Concrete Rail on Deck to the Approximate Limits Indicated.



GRADING ELEVATION
Not to Scale

PROJECT NUMBER	ER-12-5(122)
SHEET NO.	S42
C.N.	52320
STRUCTURE NUMBER	S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
GENERAL PLAN & REMOVALS

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
DESIGNED BY AMB
DETAILED BY NTF
CHECKED BY
DATE MAY, 2019
LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" AHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

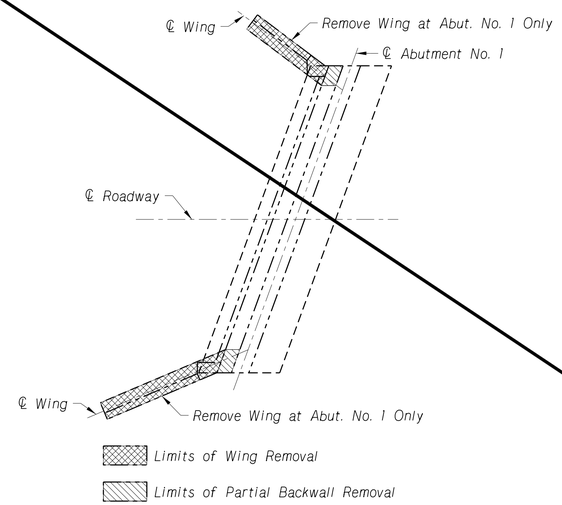
NEBRASKA
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
JASON M. BUETTNER
E-10644
27 Apr
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO.	
3	2 / 15

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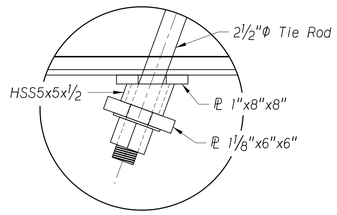


PLAN OF WING REMOVAL AT ABUTMENT NO. 1

Scale: 1/8" = 1'-0"

NOTE:

Existing wingwalls must be removed entirely. Existing backwall should be removed as needed to sound concrete. Care should be taken to protect any existing reinforcing in backwall to be incorporated into proposed cast-in-place wing and cap.



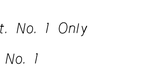
DETAIL A/3

Scale: 1½" = 1'-0"

SHEET PILE NOTES

As a minimum, all steel sheet piling shall conform to ASTM A572, Grade 50 steel and shall meet the following requirements:

Section Length	40.0 ft.
Maximum Section Depth	22.0 in.
Minimum Section Thickness	0.3125 in.
Elastic Section Modulus	50.0 in^3/ft

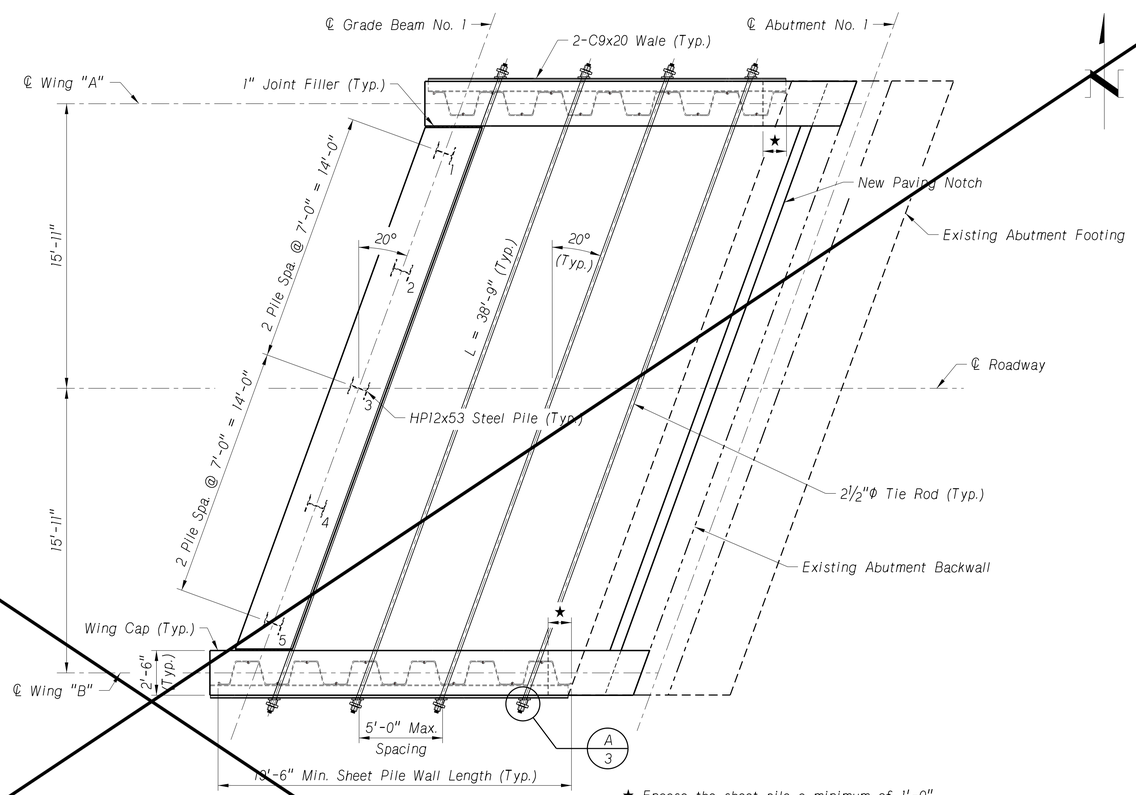


The Contractor shall submit for approval a shop plan of the sheet pile layout showing all pertinent dimensions, details, and section properties.

The pay quantity will be based on the sheet pile wall dimensions shown. The constructed wall length will be within ± 2'-0" of the sheet pile wall dimensions shown.

Top of sheet piling elevation = 1239.47 (Wing "A")
1239.55 (Wing "B")

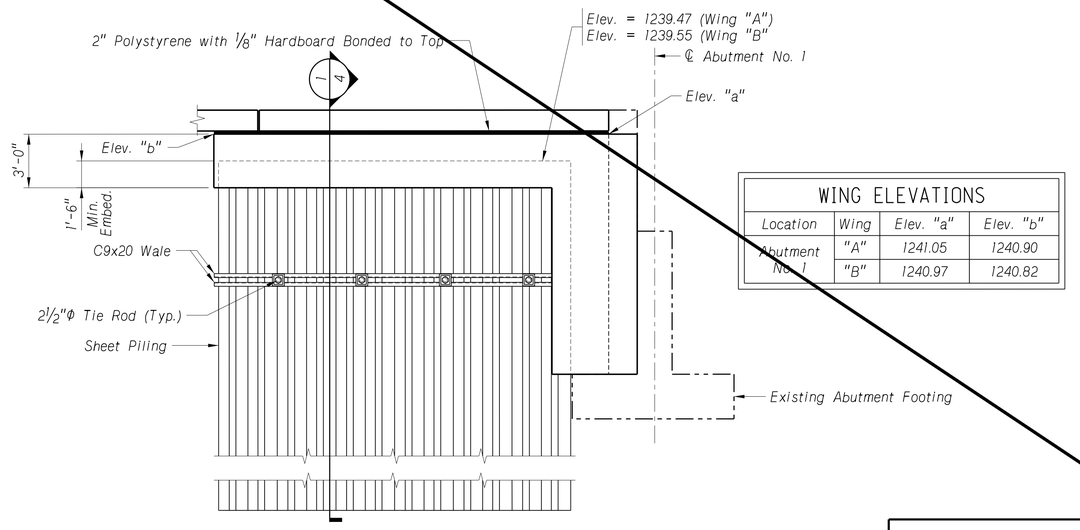
PILE DATA						
LOCATION	PILE NUMBER	CUT-OFF ELEVATION	MINIMUM PENETRATION BELOW CUT-OFF (feet)	PILE ORDER LENGTH (feet)	DESIGN PILE BEARING (kips/pile)	PILE TYPE
Grade Beam No. 1	1-5	1239.62	75	80	125	HP 12x53



★ *Encase the sheet pile a minimum of 1'-0" into proposed abutment repairs.*

PLAN OF ABUTMENT REMODEL

Scale: ¼" = 1'-0"



WING ELEVATIONS			
Location	Wing	Elev. "a"	Elev. "b"
Abutment No. 1	"A"	1241.05	1240.90
	"B"	1240.97	1240.82

ELEVATION OF ABUTMENT REMODEL

Scale: ¼" = 1'-0"

℞1 DELETED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S43

C.N. 52320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
ABUTMENT NO. 1 REMODEL (1 OF 3)

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF **DATE** MAY, 2019
CHECKED BY

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
DESIGNED BY CJC

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
JASON M. BUETTNER
E-10644
27 Apr
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3 — 3/15

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℄ Grade Beam No. 1 — ℄ Abutment No. 1

*Granular Backfill

**Granular Backfill

Granular backfill assumed to spill through from behind the abutment if placed while water is still in the channel. If channel is dry, use same placement and compaction methods as area directly behind the abutment.

Place 2' Thick Rock Riprap, Type A between the Sheet Piling

The pay limit quantity for Granular Backfill has been estimated as the volume between the sheet pile wings and extending from the back face of the abutment to the face of the scour hole.

* The Granular Backfill in this area shall be placed in 8 inch layers and compacted by a single pass of a walk-behind, lightweight (approx. 100 lbs.) mechanical tamper, roller, or vibratory compactor. There is no density requirement. Heavy compaction equipment shall not be used in this area. Flooding the granular backfill with water is not allowed.

** The Granular Backfill in this area shall be compacted in accordance with the Standard Specifications.

GRANULAR BACKFILL WITH SHEET PILE AND GRADE BEAM
Not to Scale

℄ 1"x8"x8"
3/8
HSS 5x5x1/2
℄ 1 1/8"x6"x6"
3/8
2-C9x20 Wale (Provide 3/4" Clear Btwn. Backs of Channels)

DETAIL A/4
Scale: 1 1/2" = 1'-0"

℄ Wing
2'-6"
1'-3" 1'-3"
A507 (Typ.)
A501
3'-0"
1'-6" Min. Embed.
8'-0"
2 1/2"ϕ Tie Rod
Sheet Pile
Elev. = 1233.0
A/4

SECTION 1/3
Scale: 1/2" = 1'-0"

7-A503
4-A507
A507
2'-6"
Existing Reinforcing (Incorporate into Cast-in-Place Wingwall)
℄ Grade Beam No. 1
6-A503
℄ Abutment No. 1
23-A501 @ 12" Ctrs. Max.
23'-8" (Rt. Wing)
24'-2" (Lt. Wing)

PLAN OF WING
(Showing Rt. Wing, Lt. Wing Similar)
Scale: 3/8" = 1'-0"

23-A501 @ 12" Ctrs. Max.
℄ Abutment No. 1
4-A507
2" Polystyrene with 1/8" Hardboard Bonded to Top
A502 (Match A507 Bars)
3'-0"
6"
2-A507
Optional Construction Joint
A503
2 1/2"ϕ Tie Rod (Typ.)
C9x20 Wale
5'-0" Max. (Typ.)
11-A502 @ 12" Ctrs. Max. (Each Face)
10'-5" ±
1'-0" Min.
1'-9" ±
19'-6" Min. Sheet Pile Wall Length

ELEVATION OF WING
Scale: 3/8" = 1'-0"

NOTES:

1. Field cut bars to fit against existing concrete. Incorporate existing bars into proposed cast-in-place wingwall.
2. If existing reinforcing is unable to be incorporated into proposed work, contact Engineer.

(R1) DELETED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S44

C.N. 52320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
ABUTMENT NO. 1 REMODEL (2 OF 3)

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF
CHECKED BY
DATE MAY, 2019

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
DESIGNED BY CJC

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
27 APR
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3 — 4/15

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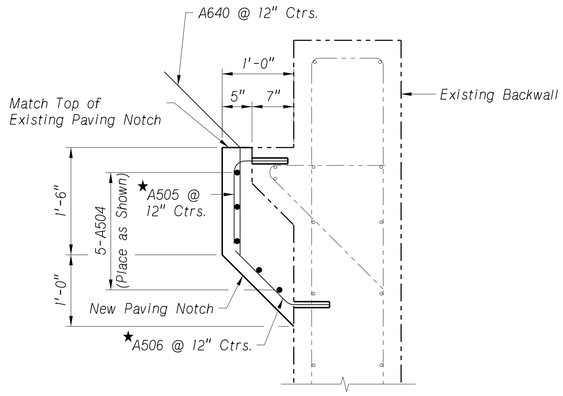
BILL OF BARS

ABUTMENT NO. 1

MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT Lbs.
A740	16	30'-6"	Str.									997
A640	60	3'-0"	105	1'-6"	1'-6"	1'-1"				4½"		270
A501	46	7'-0"	103	2'-6"	2'-0"	2'-6"				2½"		336
A502	64	4'-3"	Str.									301
A503	26	12'-11"	Str.									350
A504	5	30'-9"	Str.									160
A505	32	1'-11"	104	9"	1'-2"					2½"		64
A506	32	1'-7"	105	7"	1'-0"	0'-9"				2½"		53
A507	20	22'-0"	Str.									459
A440	30	9'-9"	107	2'-0"	2'-6"					2"	4½"	195
A441	2	10'-1"	107	2'-0"	2'-8"					2"	4½"	13
										SUBTOTAL =		3,198 LBS
										TOTAL =		3,198 LBS

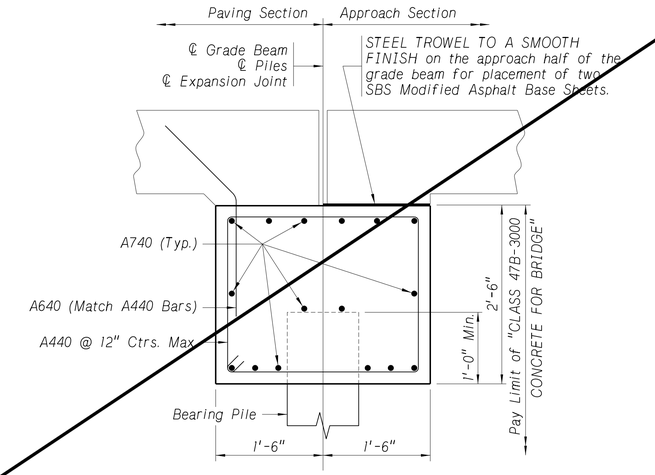
NOTE:
FOR PIN DIAMETERS, HOOK LENGTHS & BENDING DIAGRAMS SEE SHEET 15 OF 15.

(R1) DELETED SHEET

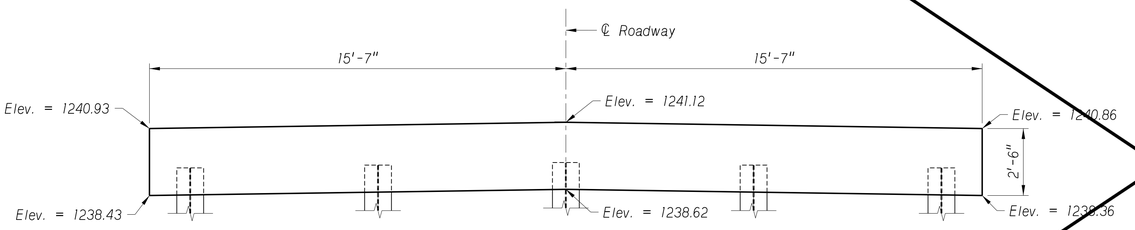


PAVING NOTCH MODIFICATION
Scale: 1" = 1'-0"

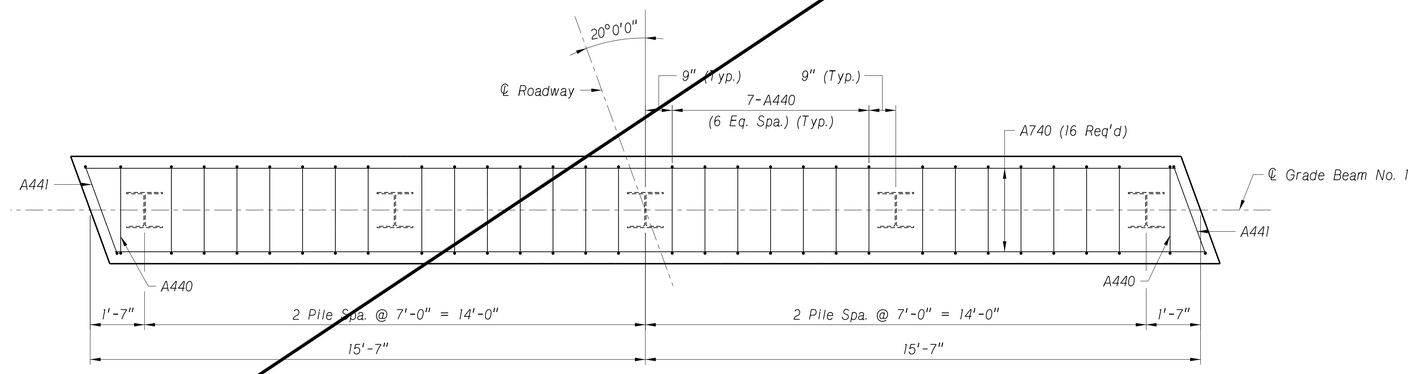
★ Drill a 6" deep hole and fill it with an Approved Resin Adhesive prior to inserting bar. Diameter of hole shall conform to Resin Adhesive Manufacturer Requirements.



GRADE BEAM SECTION
Not to Scale



GRADE BEAM ELEVATION
(Looking Ahead Station)
Not to Scale



GRADE BEAM PLAN
Scale: ½" = 1'-0"

PROJECT NUMBER: ER-12-5(122) | SHEET NO. S45
C.N. 52320
STRUCTURE NUMBER: S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
ABUTMENT NO. 1 REMODEL (3 OF 3)

COUNTY KNOX | LOCATION NIOBRARA WEST BRIDGES | DATE MAY, 2019
HWY. NO. N-12 | SKEW 20°00'00" RHB | CHECKED BY
REF. POST. 160.27 | ROADWAY 32'-0" | DESIGN LIVE LOAD HS20-44
STA. 500+99.49 | DESIGNED BY CJC | DETAILED BY NTF

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

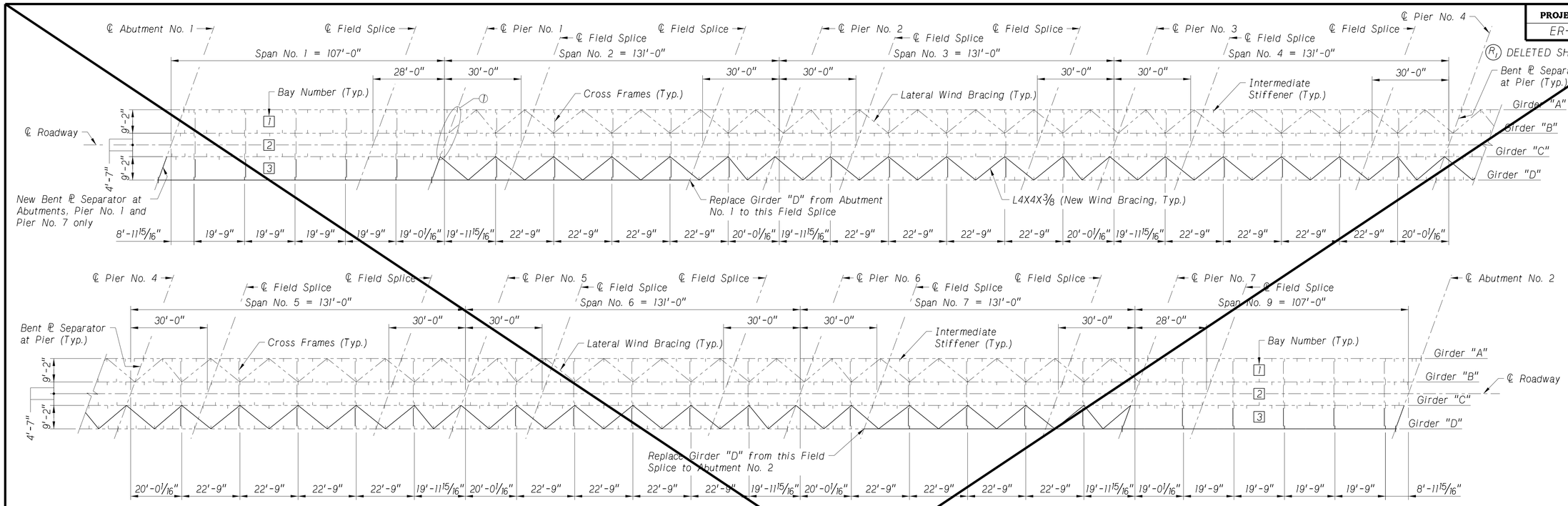
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PROFESSIONAL CIVIL ENGINEER — JASON M. BUETTNER E-10646 — 27 Apr — STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3 | 5 / 15

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FRAMING PLAN
Scale: 1" = 20'-0"

GIRDER REPAIR PHASING NOTES:

The following items of work for the superstructure must be completed in order to open the westbound lane to traffic.

1. *Reset girders at Pier No. 1 bearing.*
2. *Replace cross frames and lateral wind bracing removed to reset girders at Pier No. 1 bearing.*
3. *Replace deformed and broken lateral wind bracing in bay [1]. Estimate 25% of these elements will be replaced. The engineer will make a final determination on what elements are to be replaced and will field mark them.*
4. *Replace deformed and broken cross frame elements in bays [1] & [2]. Estimate 20% of these elements will be replaced. The engineer will make a final determination on what elements are to be replaced and will field mark them.*

The following items of work for the superstructure may be completed after the westbound lane is open to traffic.

1. *Replace sections of Girder "D" noted in the framing plan.*
2. *Replace all cross frames, bent plate separators and wind bracing in bay [3].*

RESET GIRDERS AT BEARING NOTES:

① Reset Girders "A", "B", & "C" at Pier No. 1 bearing.

The proposed repair approach is based on the assumption that the girders at Pier No. 1 are plumb in their current position. When access to this location is available, contact the Engineer to arrange a site visit to confirm this assumption.

The pay item "RESET GIRDERS AT BEARING" shall consist of the following.

1. *Construct temporary supports as necessary to facilitate resetting the noted girders on their bearings.*
2. *Remove cross frames and bent ℄ separators as necessary to facilitate the operations.*
3. *Vertically jack the noted girders and move them transversely to be recentered on their respective bearings.*
4. *Lower the girders and ensure full contact between the pins and upper/lower bearing elements.*
5. *Remove temporary supports.*
6. *All labor, preparation, equipment, materials, tools and incidentals necessary to complete the work as accepted by the engineer.*

STRUCTURAL STEEL NOTES FOR NEW ELEMENTS:

All structural steel for girder flanges, webs, stiffeners, separators, and all splice materials shall conform to the requirements of ASTM A709/A709M, Grade 50W weathering steel.

Nuts, bolts, and washers used in the assembly of weathering steel shall be Type 3.

Butt splices will be permitted for flange plates exceeding 60 feet in length. The locations of the splice shall be shown on the shop plans and will be subject to approval by the Engineer.

Butt splices will be permitted for web plates exceeding 60 feet in length. The location of the splice shall be shown on the shop plans and will be subject to approval by the Engineer.

During girder fabrication, the final camber tolerance shall not exceed those in Table 3.3 of A.W.S. "S" is the length of girder between splices.

All bearing stiffeners and girder ends, except at field splices, shall be vertical after final erection. All other stiffeners and all field splices shall be normal to the top flange.

During girder fabrication, the flanges at the splice must line up within 1/8" of parallel to the adjacent flanges without applying external force, before the splice is drilled.

All fasteners for field splices shall be 7/8" Φ high strength bolts, ASTM A325.

All other fasteners shall be 3/4"Φ high strength bolts, ASTM A325.

Field tack welding of form hangers or miscellaneous hardware to any part of the steel girder, with the exception of the shear connectors, shall be prohibited.

When assembling the girders, they shall be set according to the blocking diagram before any bolts are tightened to a snug-tight condition.

Field splices shall be clean and free of all foreign matter before field assembly. The plates shall be in full contact when the bolts are tightened to a snug-tight condition.

The girders for this bridge are not designed to resist any torsional or lateral forces due to temporary construction loads. The Contractor must provide any temporary bracing necessary to support the girder web and flanges against all torsional or lateral forces resulting from construction loads.

7/8" Φ x 0'-5" end welded studs have an in-place weight of 98.0 lb. /100 studs.

Steel (weight) quantities are based upon 490 pcf and 1 lb. per bolt.

The estimated weight of replacement wind bracing members is included with the subtotal for separators & misc.

Due to the possibility of racking and relative member displacement within the superstructure, plan dimensions may not be applicable. The contractor will need to discuss with their steel fabricator a strategy for mitigating these issues without adversely impacting schedule. Details shall be presented in the Structural Steel for Superstructure shop drawings.

GIRDER JACKING & RESETTING NOTES:

Plans and procedures for vertically jacking and then resetting Girders "A", "B", & "C" on their bearings at Pier No. 1 shall be prepared and sealed by a professional engineer registered in the State of Nebraska.

The vertical jacking load is approximately 175 kips per girder. The jacking load is based on a jacking location approximately 1 foot from the face of the Pier cap. Any alternative jacking location may require a different jacking load and shall be determined by the contractor.

The maximum allowable vertical jacking displacement shall be 1 inch.

Girders shall be jacked simultaneously and shall be raised the same amount and at the same rate. The hydraulic pressure of the jacks shall be adjusted as required to allow for equal movements.

It shall be the responsibility of the contractor performing the jacking to size and design the required jacking equipment and blocking and to establish the procedure for jacking and resetting the girders on their bearings. Jacks shall have a minimum safe load capacity of 125% of the jacking load.

The bridge shall be inspected prior to jacking to verify that items connected to the superstructure or substructure will not be damaged during the process of vertically jacking the girders and resetting them on their bearings.

Provisions shall be made to account for thermal movement during the period that the structure is resting on temporary supports.

Vertically jacking and resetting girders on their bearings shall not be paid for directly, but shall be considered subsidiary to the pay item "RESET GIRDERS AT BEARING".

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S46

C.N. 52320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
STEEL GIRDER REPAIRS (1 OF 3)

COUNTY KNOX **LOCATION** NIOBRARA WEST BRIDGES
HWY. NO. N-12 **SKEW** 20°00'00" RHB
REF. POST. 160.27 **ROADWAY** 32'-0"
STA. 500+99.49 **DESIGN LIVE LOAD** HS20-44
DESIGNED BY AMB **DETAILED BY** NTF **CHECKED BY** **DATE** MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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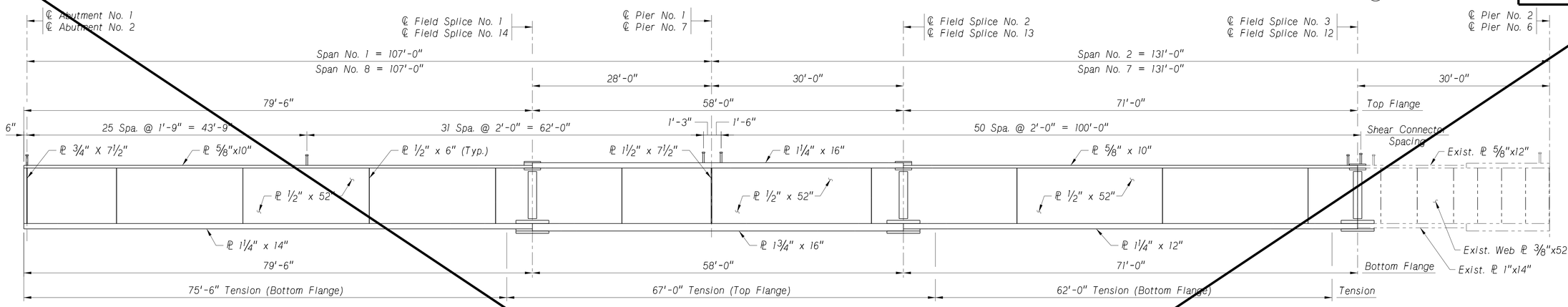
PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

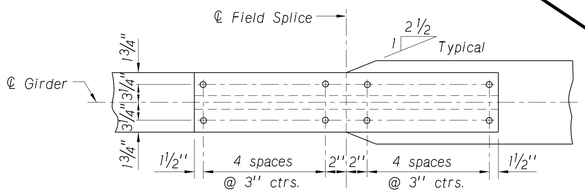
SPECIAL PLAN NO.	
3	6 / 15

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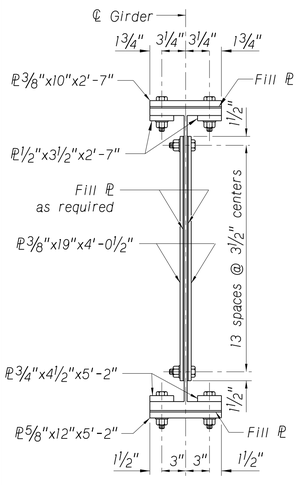
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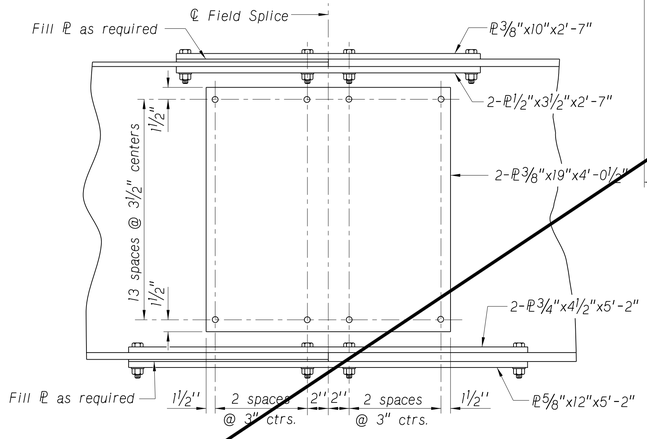
ELEVATION OF GIRDER "D" REPAIRS
(Showing New Girder Elements at Spans No. 1, 2, 7 & 8)
Not to Scale



PLAN OF TOP FLANGE



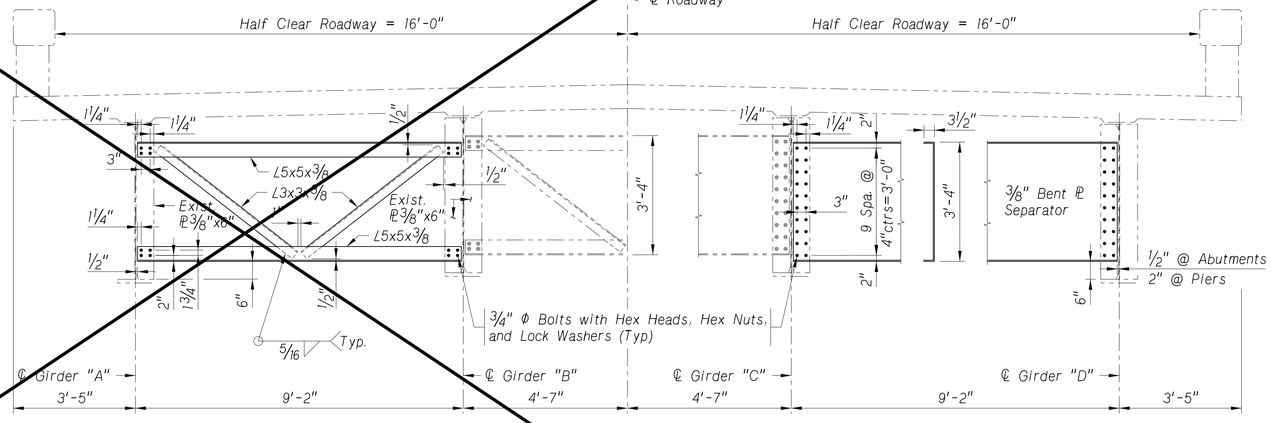
SECTION



ELEVATION

PLAN OF BOTTOM FLANGE

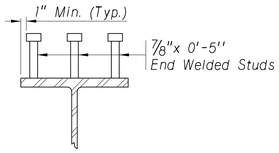
FIELD SPLICE DETAILS
Not to Scale



REPLACEMENT CROSS FRAME

REPLACEMENT BENT ℄ SEPARATOR

TYPICAL CROSS SECTION OF ROADWAY
(Showing Replacement Cross Frames & Bent ℄ Separator Details Only)
Not to Scale



SHEAR CONNECTOR DETAIL
Not to Scale

When Shear Connectors (Studs) are field applied, the following notes shall apply:

The Bridge Office shall be notified a minimum of one week prior to the application of the field welded studs.

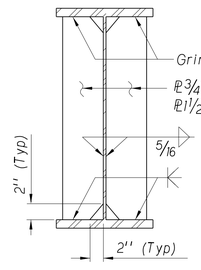
Stud welding shall be accomplished in accordance with the AWS D1.5 Standard Specifications, Section 7.

All stud welding shall be done by a certified stud welder. At the time of stud welding, the studs and base metal shall be free from rust, rust pits, scale, oil, moisture, falling rain or snow, and any other foreign material. Areas must be wire brushed or cleaned by grinding before any welding can occur.

Any studs that do not exhibit a 360° collar must be repaired by a SMAW fillet weld (E8018-C3 Electrode) and the repair shall extend 3/8" beyond each end of the missing collar.

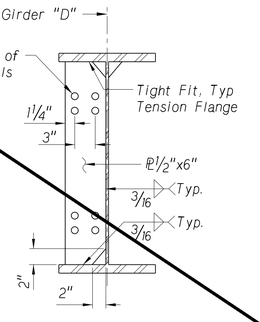
Mill Certification for the studs shall be submitted to the Engineer.

NOTE:
Provide holes in Bearing Stiffeners as necessary to accomodate Bent Plate Seprators



BEARING STIFFENERS AT ABUTMENTS AND PIERS
Not to Scale

See Cross Section of Roadway for Details of Bolt Holes



STIFFENER PLATES AT CROSS FRAMES
Not to Scale

benesch

PROJECT NUMBER	ER-12-5(122)
SHEET NO.	S47
C.N.	52320
STRUCTURE NUMBER	S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
STEEL GIRDER REPAIRS (2 OF 3)

DATE MAY, 2019
CHECKED BY HS20-44
DESIGN LIVE LOAD
ROADWAY 32'-0"
SKEW 20°00'00" RHB
LOCATION NIOBRARA WEST BRIDGES
DETAILED BY NTF
DESIGNED BY AMB

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER — AARON M. BUETTNER E-10646 — 23 Apr — STATE OF NEBRASKA

SPECIAL PLAN NO.	
3	7 / 15

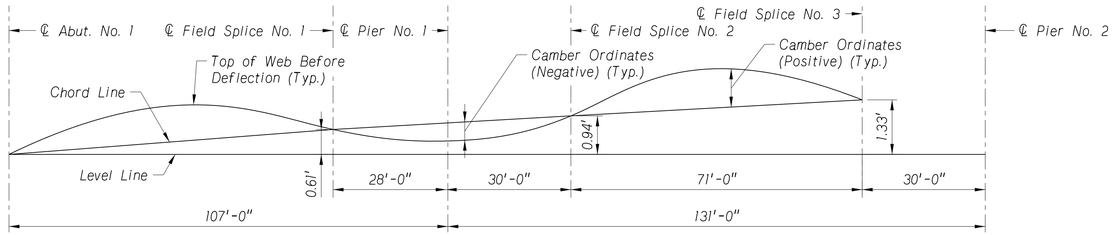
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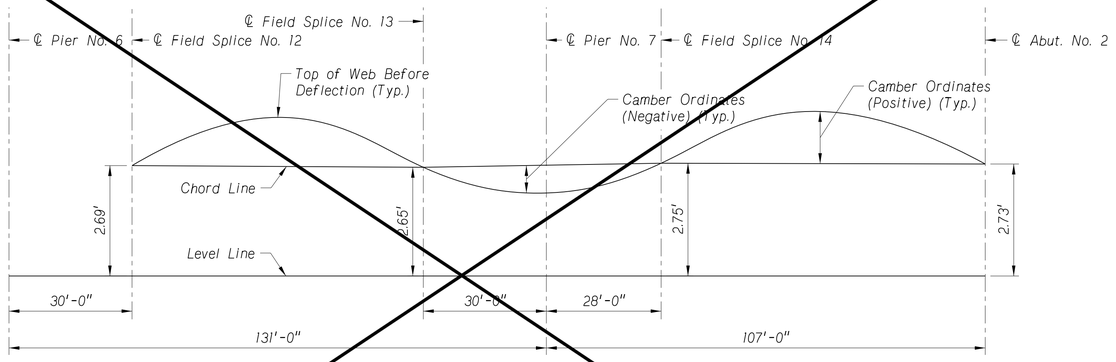
*GIRDER "D" CAMBER & DEFLECTION ORDINATES

LOCATION	DEFLECTION ORDINATE (in)	CAMBER ORDINATE (in)
Abut. No. 1	0.00	0.00
1.1	0.60	0.69
1.2	1.09	1.29
1.3	1.41	1.65
1.4	1.53	1.70
1.5	1.44	1.47
1.6	1.18	0.96
1.7	0.82	0.28
F.S. No. 1	0.67	0.00
1.8	0.44	-.031
1.9	0.14	-.068
Pier No. 1	0.00	-.088
2.1	0.14	-0.67
2.2	0.51	-0.18
F.S. No. 2	0.63	0.00
2.3	0.94	0.47
2.4	1.30	0.97
2.5	1.45	1.17
2.6	1.34	0.98
2.7	0.99	0.48
F.S. No. 3	0.66	0.00
F.S. No. 12	0.66	0.00
7.3	0.99	0.45
7.4	1.33	0.91
7.5	1.44	1.06
7.6	1.29	0.83
7.7	0.93	0.28
F.S. No. 13	0.63	0.00
7.8	0.50	-0.21
7.9	0.14	-0.70
Pier No. 7	0.00	-0.86
8.1	0.14	-0.70
8.2	0.44	-0.32
F.S. No. 14	0.67	0.00
8.3	0.82	0.29
8.4	1.19	0.97
8.5	1.45	1.49
8.6	1.54	1.74
8.7	1.42	1.68
8.8	1.09	1.33
8.9	0.60	0.75
Abut. No. 2	0.00	0.00

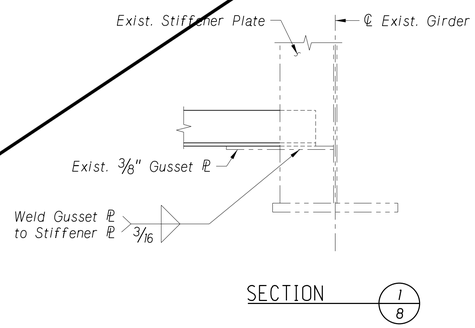
*Camber & Deflection Ordinates only apply to the Sections of Girder "D" being replaced.



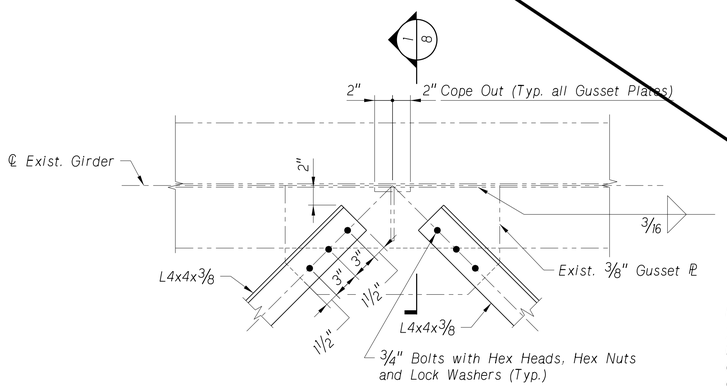
CAMBER & BLOCKING DIAGRAM AT GIRDER "D" (WEST END)
Not to Scale



CAMBER & BLOCKING DIAGRAM AT GIRDER "D" (EAST END)
Not to Scale



SECTION 1/8



NOTE:
It is anticipated that nearly all gusset plates will be used in place. These details depict connection of the wind bracing to the existing gussets. This detail also applies to any gussets that are marked for replacement in the field and to gussets for the new sections of girder "D"

LATERAL WIND BRACING DETAILS
Scale: 1½" = 1'-0"

(R1) DELETED SHEET

PROJECT NUMBER: ER-12-5(122) | SHEET NO. S48
C.N. 52320
STRUCTURE NUMBER: S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
STEEL GIRDER REPAIRS (3 OF 3)

COUNTY KNOX | LOCATION NIOBRARA WEST BRIDGES | CHECKED BY | DATE MAY, 2019
HWY. NO. N-12 | SKEW 20°00'00" RHB | DESIGN LIVE LOAD HS20-44
REF. POST. 160.27 | ROADWAY 32'-0"
STA. 500+99.49 | DESIGNED BY AMB | DETAILED BY NTF

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

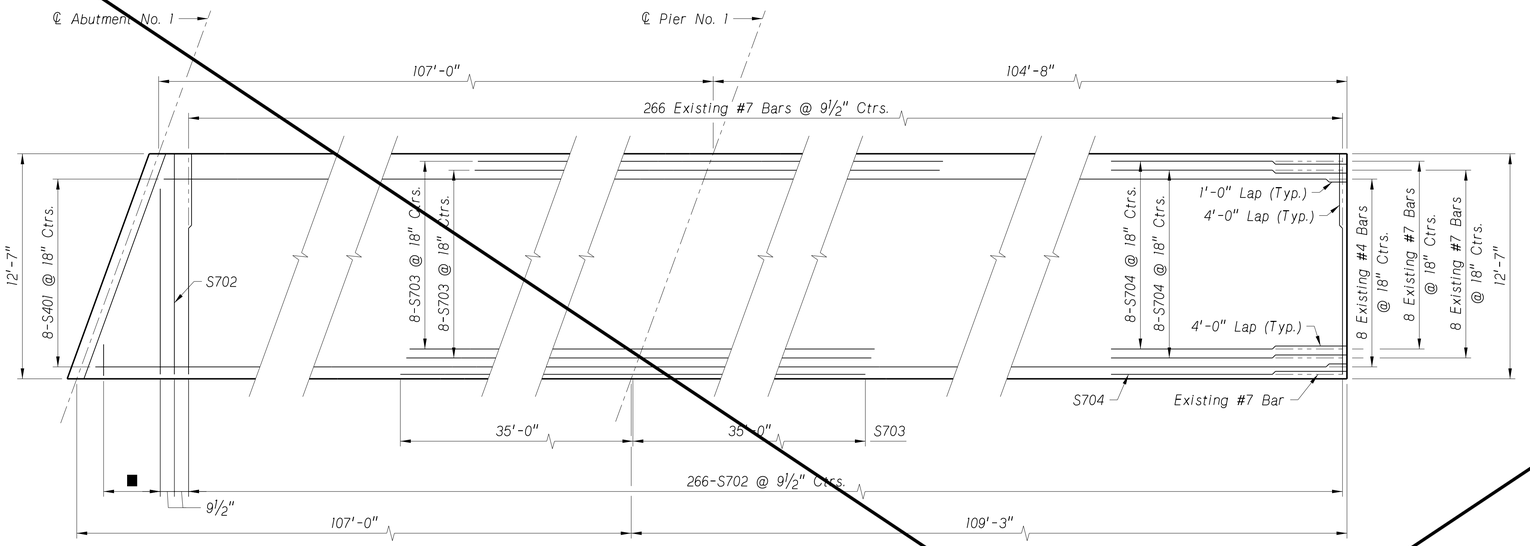
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER — AARON M. BUETTNER E-10646 — 23 APR — STATE OF NEBRASKA

benesch

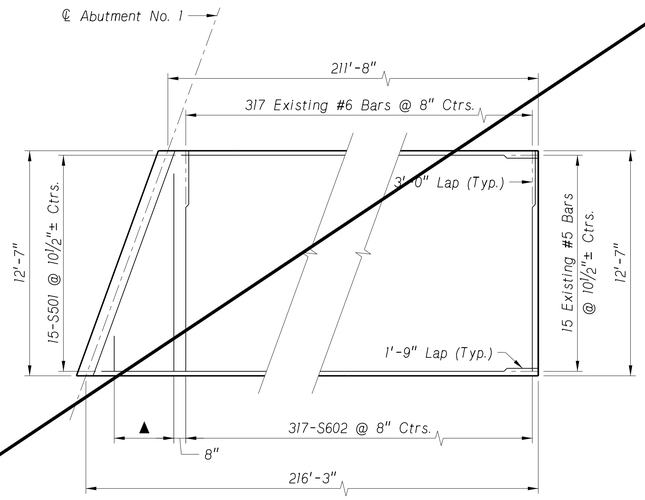
SPECIAL PLAN NO. 3 | 8/15

(R1) DELETED SHEET



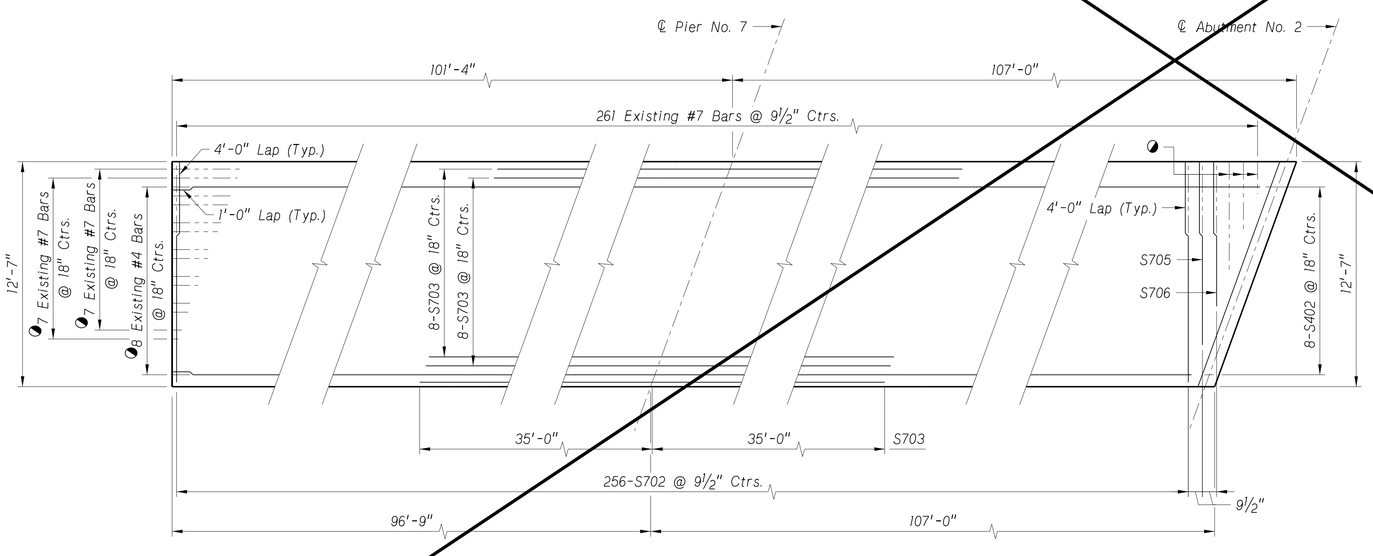
■ 5-S701 @ 9½" Ctrs.

SPAN 1 & 2 TOP OF SLAB REINFORCEMENT LAYOUT
Scale: ¼" = 1'-0"

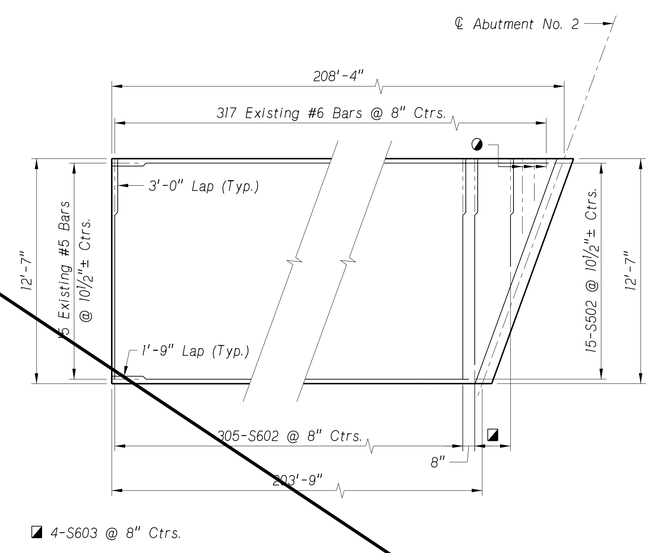


▲ 6-S601 @ 8" Ctrs.

SPAN 1 & 2 BOTTOM OF SLAB REINFORCEMENT LAYOUT
Scale: ¼" = 1'-0"



SPAN 7 & 8 TOP OF SLAB REINFORCEMENT LAYOUT
Scale: ¼" = 1'-0"



◪ 4-S603 @ 8" Ctrs.

SPAN 7 & 8 BOTTOM OF SLAB REINFORCEMENT LAYOUT
Scale: ¼" = 1'-0"

NOTES:

1. Existing Steel Reinforcement shall be cut to length indicated, cleaned, straightened and incorporated into new work.

2. Existing Steel Reinforcement damaged or deteriorated shall be replaced as directed by the Engineer. See Special Provisions for the minimum splice length required. Replacement of bars damaged by the Contractor shall be at the Contractor's expense.

◑ Do Not Cut These Bars

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S49
C.N. 82320	
STRUCTURE NUMBER	
S012 16027	

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
SLAB REPAIR DETAILS

COUNTY KNOX **LOCATION** NIOBRARA WEST BRIDGES
HWY. NO. N-12 **SKEW** 20°00'00" RHB
REF. POST. 160.27 **ROADWAY** 32'-0"
STA. 500+99.49 **DESIGN LIVE LOAD** HS20-44
DESIGNED BY MJK **DETAILED BY** MJK **CHECKED BY**
DATE MAY., 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION

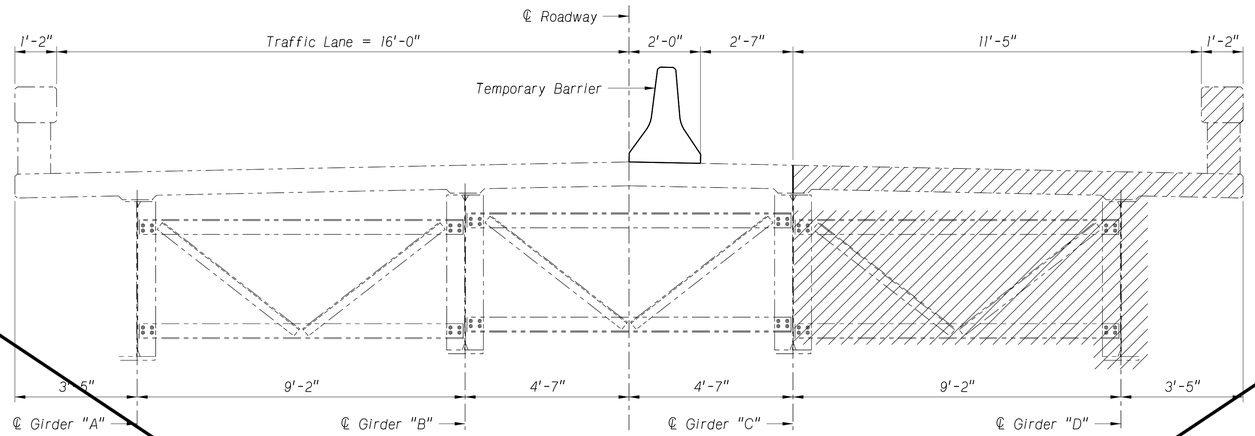
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

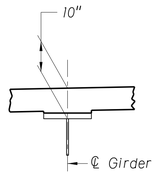
SPECIAL PLAN NO.	
3	9 / 15

Y:\Omaha\1202005\00120227.01\Eng_Docs\Bridge\Sheets\S012_16027_Niobrara_River\Deleted_Sheets\S012_16027_09_DELETED_Slab_Repair.dgn



LIMITS OF GIRDER AND SLAB REMOVAL
Scale ½" = 1'-0"

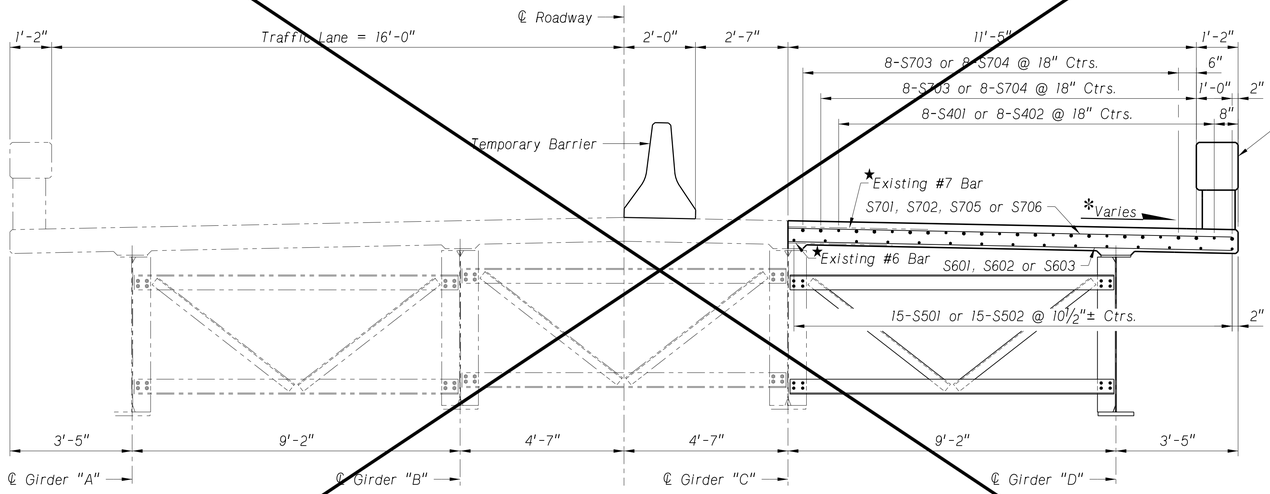
Limits of Removal



SHIM DETAIL
Not to Scale
(Welded Plate Girder)

*CROSS SLOPE INFORMATION

SLOPE	STATION RANGE
-1.5%	495+89.83 to 504+42.58
-1.5% to +1.5%	504+42.58 to 505+89.83
+1.5%	505+89.83 to 506+00.00



CROSS SECTION OF ROADWAY
Scale ½" = 1'-0"

REINFORCING STEEL CLEARANCES
TOP: 2½" ±¼"
BOTTOM: 1" +¼", -0

NOTE: 8" Minimum Uniform Slab Thickness

★ See Slab Layout details on sheet 9 of 15 for incorporation of existing reinforcement into new work

SLAB BILL OF BARS

SLAB

MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LBS
S701	5	6'-1" AV.	Str.									62
S702	523	12'-5"	Str.									13,274
S703	32	74'-0"	Str.		Includes 1 ~ 4'-0" Lap							4,840
S704	16	13'-3"	Str.									433
S705	1	10'-3"	Str.									21
S706	1	8'-1"	Str.									17
S601	6	6'-7" AV.	Str.									59
S602	622	12'-5"	Str.									11,600
S603	4	8'-9" AV.	Str.									53
S501	15	220'-8"	Str.		Includes 3 ~ 1'-9" Lap							3,452
S502	15	217'-9"	Str.		Includes 3 ~ 1'-9" Lap							3,328
S401	8	218'-5"	Str.		Includes 1 ~ 1'-0" Lap							1,167
S402	8	210'-6"	Str.		Includes 1 ~ 1'-0" Lap							1,125

SUBTOTAL = 39,431 LBS

SLAB BILL OF BARS

RAIL ON BRIDGE

MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LBS
S691	214	5'-10"	104	2'-8"	3'-2"					4½"		1,875
S591	4	222'-6"	Str.	Includes 3 ~ 2'-0" Lap								928
S592	2	219'-6"	Str.	Includes 3 ~ 2'-0" Lap								458
S593	4	5'-4"	101	2'-6"	2'-10"	0'-4"				2½"		22
S594	4	214'-3"	Str.	Includes 3 ~ 2'-0" Lap								894
S595	2	211'-3"	Str.	Includes 3 ~ 2'-0" Lap								441
S491	214	5'-4"	104	2'-8"	2'-8					3"		762
S391	212	4'-4"	107	1'-0"	0'-10"					1½"	4"	345
S392	6	7'-2"	107	2'-8"	0'-7"					1½"	4"	16
S393	153	5'-2"	107	1'-8"	0'-7"					1½"	4"	297
S394	2	4'-0"	107	0'-10"	0'-10"					1½"	4"	3
S395	2	3'-8"	107	0'-8"	0'-10"					1½"	4"	3

SUBTOTAL = 6,044 LBS
TOTAL = 45,475 LBS

NOTE: FOR PIN DIAMETERS, HOOK LENGTHS & BENDING DIAGRAMS SEE SHEET 15 OF 15.

BAR SETS-SLAB

MARK	MAX. LENGTH	MIN. LENGTH	NO. OF SETS	BARS PER SET
S701	10'-5"	1'-9"	1	5
S601	11'-2"	2'-0"	1	6
S603	11'-6"	6'-0"	1	4

THE NUMBER OF LAP SPLICES ARE CALCULATED BASED ON 60'-0" LENGTHS OF REINFORCING STEEL BARS. SPLICES ON BARS SHORTER THAN 60'-0" WILL REQUIRE ADDITIONAL LAP SPLICES AT NO ADDITIONAL EXPENSE TO NDOT.

benesch

PROJECT NUMBER ER-12-5(122) | SHEET NO. S50
C.N. 52320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
SLAB REPAIR DETAILS & BILL OF BARS

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY MJK | DETAILED BY MJK | CHECKED BY | DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
ANDREW M. BUETTNER
E-10646
STATE OF NEBRASKA

SPECIAL PLAN NO. 3 | 10/15

Y:\Omaha\202005\00220227.01\Eng_Docs\Bridge\Sheets\S012_16027_Niobrara_River\Deleted_Sheets\S012_16027_10_DELETED_Cross_Section_Bill_Bars.dgn

(R1) DELETED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S51

C.N. 52320

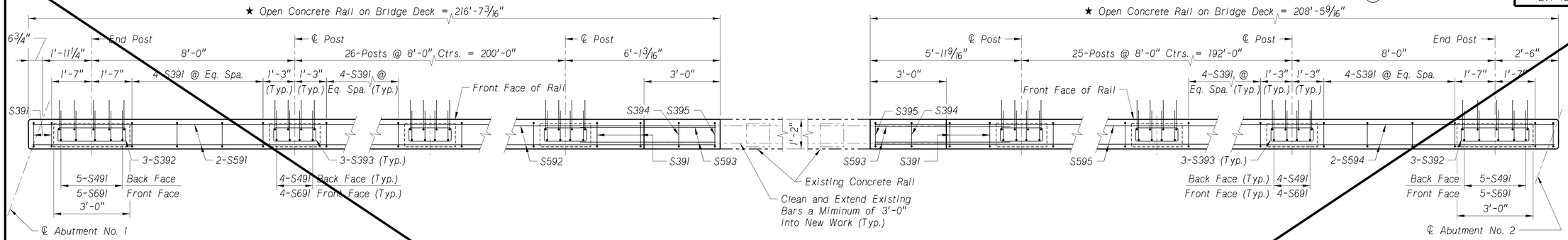
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA

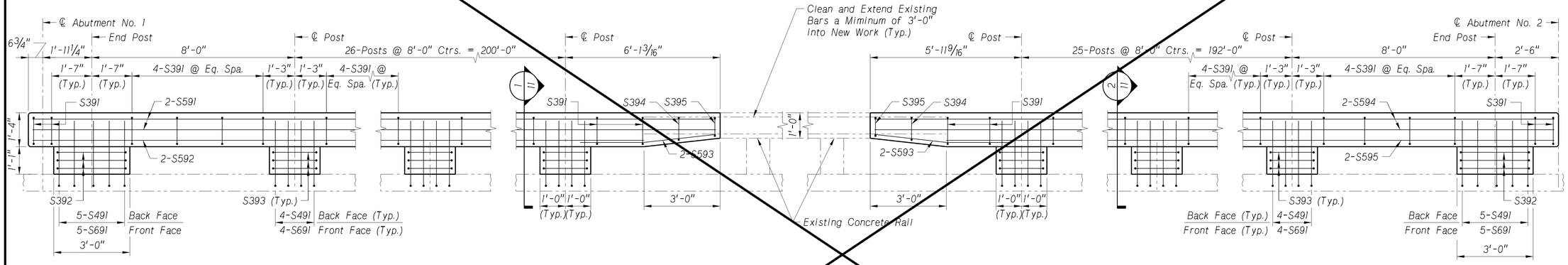
BRIDGE ENGINEER

★ Open Concrete Rail on Bridge Deck = 216'-7 3/16"

★ Open Concrete Rail on Bridge Deck = 208'-5 9/16"



PARTIAL PLAN OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale



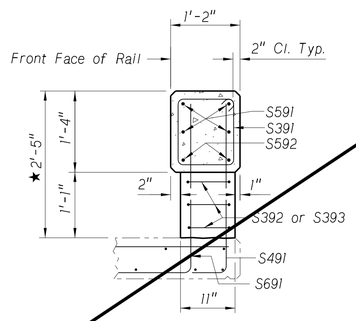
PARTIAL ELEVATION OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale

NOTES:

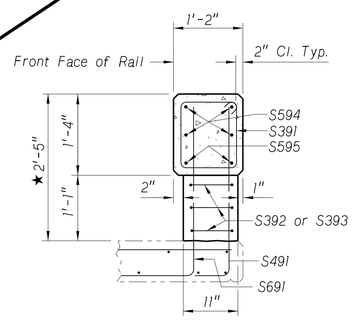
Posts must be plumb.

★ Measured at front face of rail

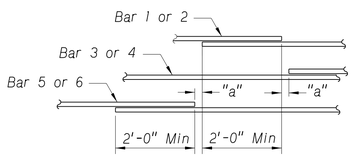
For Bill of Bars see sheet 10 of 15.



SECTION 1/11
Not to Scale

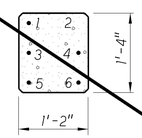


SECTION 2/11
Not to Scale



▲ LAP DETAIL
Not to Scale

▲ Laps for Bars 1 and 5 shall be staggered.
Laps for Bars 2 and 6 shall be staggered.
Bar 3 to be continuous through laps for Bars 1 and 5
Bar 4 to be continuous through laps for Bars 2 and 6
"a" ≥ Zero



RAIL SECTION
See Lap Detail
Not to Scale

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BRIDGE ENGINEER

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
REMODEL CONCRETE RAIL ON BRIDGE

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF
CHECKED BY ZZJ
DATE MAY, 2019

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
DESIGNED BY AMB

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

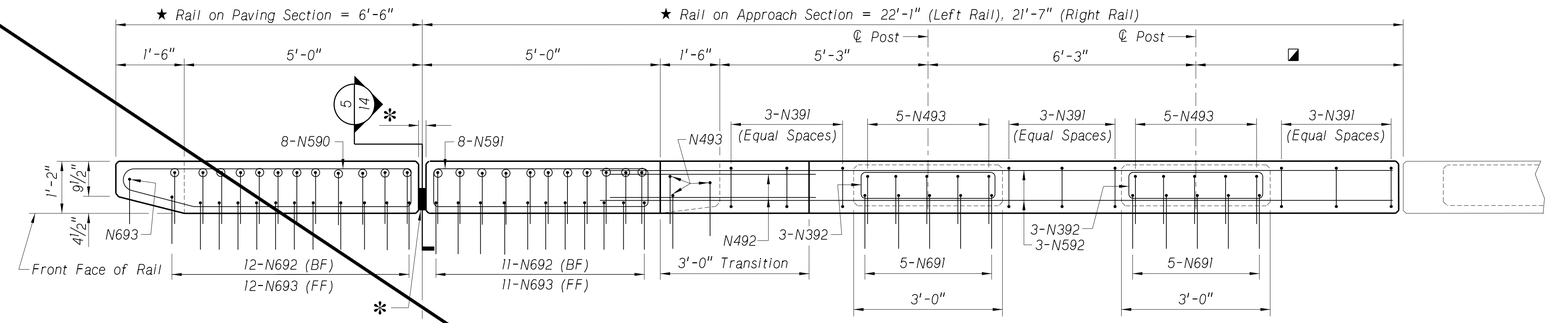
PROFESSIONAL CIVIL ENGINEER — AARON M. BUETTNER E-10646 — 23 Apr — STATE OF NEBRASKA

SPECIAL PLAN NO.	
3	11 / 15

Y:\Omaha\1202005\00120227.01\Eng_Docs\Bridge\Sheets\S012_16027_Niobrara_River\Deleted_Sheets\S012_16027_11_DELETED_Rail_Bridge.dgn

★ Rail on Paving Section = 6'-6"

★ Rail on Approach Section = 22'-1" (Left Rail), 21'-7" (Right Rail)



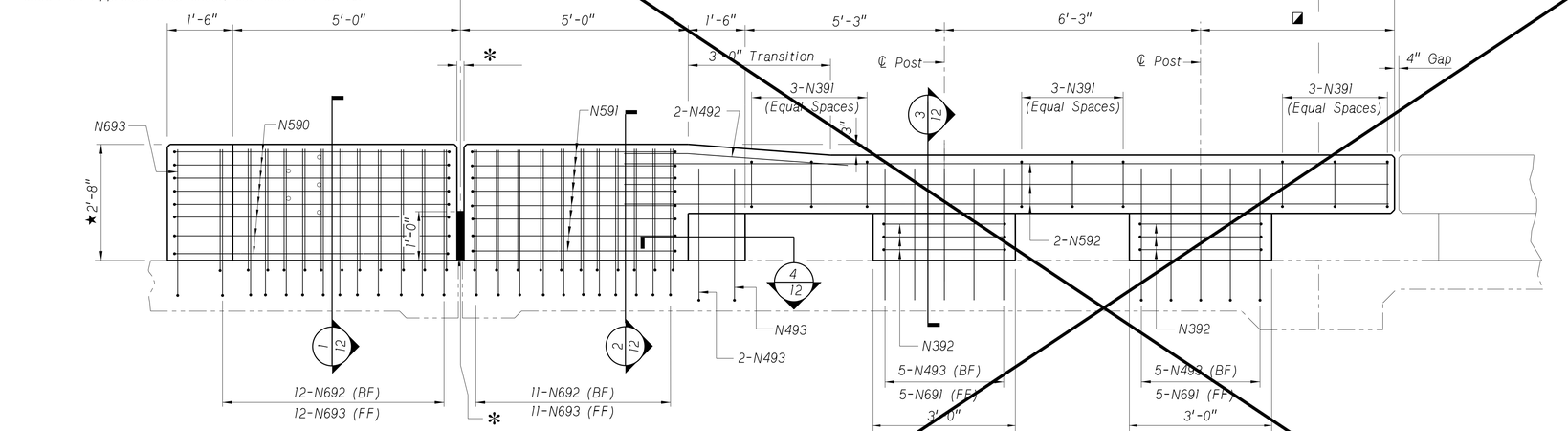
PLAN OF OPEN CONCRETE RAIL ON APPROACH SLAB

Not to Scale

℄ Grade Beam, Gap and Expansion Joint at Front Face of Rail

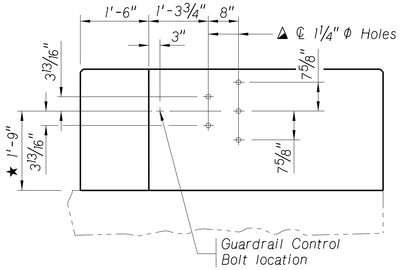
End of Floor at Front Face of Rail

✻ Joint material and opening width shall match what is shown on Approach Slab sheet, see sheet 14 of 15.



ELEVATION OF OPEN CONCRETE RAIL ON APPROACH SLAB

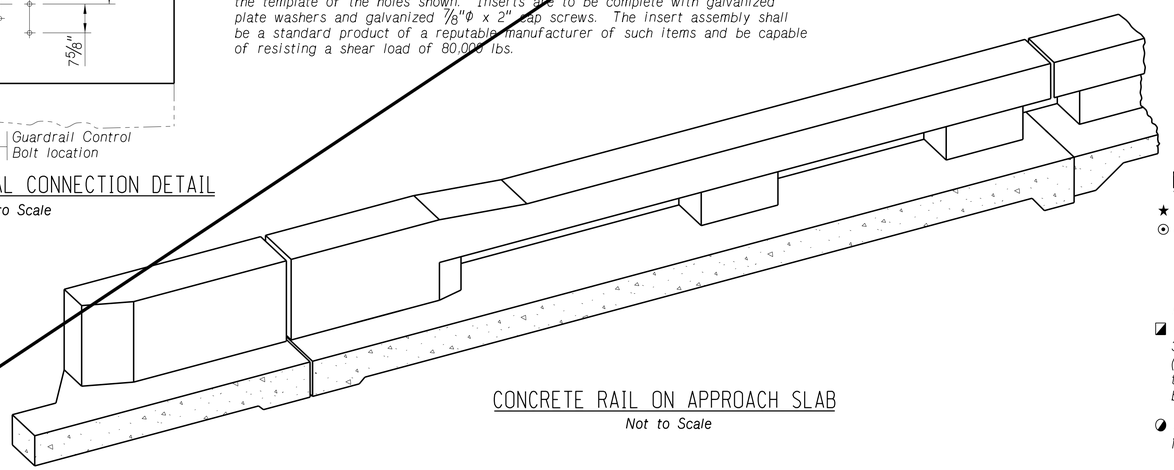
Not to Scale



THRIE BEAM TERMINAL CONNECTION DETAIL

Not to Scale

▲ As an alternate method, the contractor shall furnish and cast into the concrete an approved welded assembly consisting of threaded inserts, held accurately to the template of the holes shown. Inserts are to be complete with galvanized plate washers and galvanized ⅞"ϕ x 2" cap screws. The insert assembly shall be a standard product of a reputable manufacturer of such items and be capable of resisting a shear load of 80,000 lbs.



CONCRETE RAIL ON APPROACH SLAB

Not to Scale

NOTES:

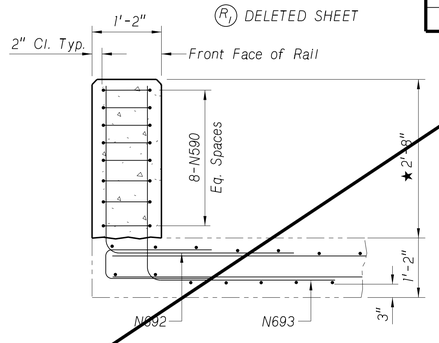
★ Measured at front face of rail.

⊙ Circled bars indicate placement in the top layer.
(BF) = Back Face
(FF) = Front Face
(EF) = Each Face
Rail must be plumb.

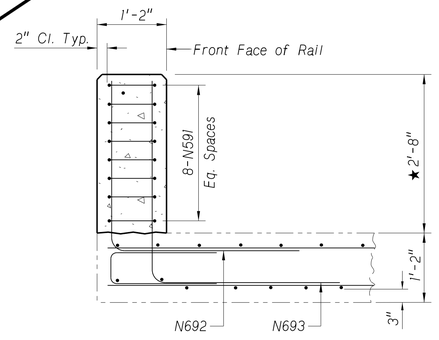
◪ 4'-1"± at Left Rail
3'-7"± at Right Rail
(Field verify 4" gap to existing rail on bridge)

◑ 2'-1¾"± at Front Face of Left Rail
1'-7¾"± at Front Face of Right Rail

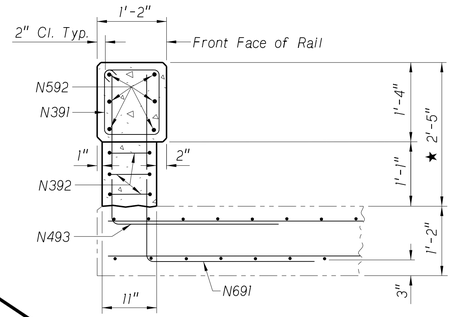
Ⓡ1 DELETED SHEET



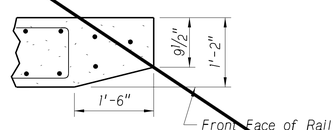
SECTION 1/12
Not to Scale



SECTION 2/12
Not to Scale



SECTION 3/12
Not to Scale



SECTION 4/12
Not to Scale

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S52

C.N. 52320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
CONCRETE RAIL ON APPROACH SLAB

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF
CHECKED BY ZZJ
DATE MAY, 2019
DESIGNED BY CJC

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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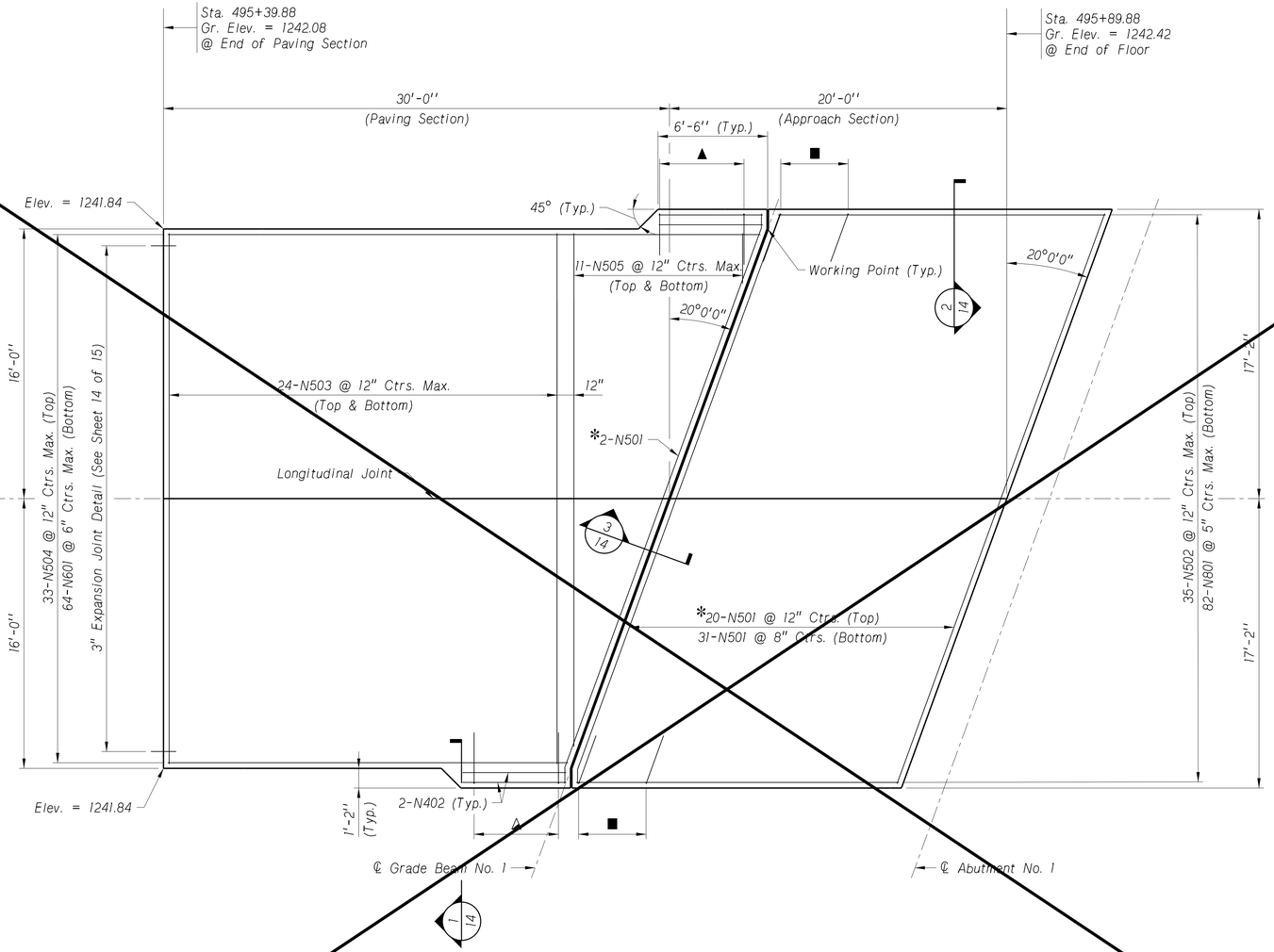
PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO.	
3	12/15

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(R1) DELETED SHEET



PLAN OF APPROACH SLAB

Scale: 1/4" = 1'-0"

▲ 6-N401 (Match N505)

◭ 6-N401 (Match N503)

■ 5-N401 @ 12" Ctrs.

* Field Bend Approach Slab Reinforcement as necessary at Corners

NOTE:

Working points are located at the intersection of the edge of the clear roadway and ℄ Grade Beam.

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S53
C.N. 52320	
STRUCTURE NUMBER	
S012 16027	

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE

PLAN OF APPROACH SLAB

COUNTY KNOX **LOCATION** NIOBRARA WEST BRIDGES **CHECKED BY** ZZJ **DATE** MAY, 2019
HWY. NO. N-12 **SKEW** 20°00'00" RHB
REF. POST. 160.27 **ROADWAY** 32'-0"
STA. 500+99.49 **DESIGN LIVE LOAD** HS20-44
DESIGNED BY CJC **DETAILED BY** NTF

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

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SPECIAL PLAN NO.	13 / 15
3	

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℄ Expansion Joint
℄ Grade Beam

Roadway Pavement | Paving Section = 30'-0" @ ℄ Roadway | Approach Section = 20'-0" @ ℄ Roadway

24-N503 @ 12" ctrs. Max. (Top & Bottom) | 12" | 11-N505 @ 12" ctrs. Max. (Top & Bottom) | 20-N501 @ 12" ctrs. (Top) | 31-N501 @ 8" ctrs. (Bottom)

See 3" Expansion Joint detail.

2½" Cl. (+¼"-0")

N504 @ 12" ctrs. Max.

2-N501

N502 at 12" ctrs. Max.

Joint Sealant

3/16" min.

1'-2"

½"

3"

N601 @ 6" ctrs. Max.

A640

2"

N801 at 5" ctrs. Max.

3"

3"

A640

LONGITUDINAL SECTION
Not to Scale

1" Preformed Joint Filler

1'-0"

SECTION 5/12
Not to Scale

N504 Top
N601 Bottom

N402

N401

1'-2"

3"

SECTION 1/13
Not to Scale
Typical

N401

1'-2"

Wing Wall

3"

Polystyrene

SECTION 2/13
Not to Scale

℄ Expansion Joint
℄ Grade Beam

Paving Section | Approach Section

4" Cl., Typ.

Joint Sealant

1" Preformed Joint Filler, see Section F-F

3"

2"

6"

Granular Backfill

A640

Place 3" x 6" of Polystyrene on top of the Granular Backfill prior to pouring the concrete slab.

Place 2 Layers of SBS Modified Asphalt Base Sheet on approach section half of the grade beam.

SECTION 3/13
Not to Scale

3/16"

Joint Sealant

1½"

LONGITUDINAL JOINT
Not to Scale

Expansion Tube

3"

Stop Lugs

19/16"

6"

Joint Sealant

1"

¼" R

D/2

D

3" Bituminous Preformed Joint Filler (Fiber Type)

1½"Φ x 18" smooth Tie Bars @ 12" ctrs. If concrete pavement is in place, drill and Epoxy Compound bars into concrete pavement.

Grease Tie Bar on Expansion Tube Side

Tie Bar Pins

3" EXPANSION JOINT
Not to Scale

Note:
Use D/2 of Roadway Pavement if less than D/2 of Paving Section.

NOTE:
If roadway pavement is asphalt, omit 3" Expansion Joint.

◪ To be used if Approach Slab and Paving Section is poured continuous.

℄ Grade Beam

Paving Section | Approach Section

◪ 8 ga. Galvanized bent plate. Extend from edge to edge of deck, tool, and seal. Stabilize plate during pour

¼"

Anchor

3"

Place 2 layers of SBS modified Asphalt Base Sheet on Approach Section half of the Grade Beam.

OPTIONAL GRADE BEAM JOINT DETAIL
Not to Scale

APPROACH SLAB NOTES:

Concrete Rail Width = 1'-2". See sheet 12 of 15 for placement of rail reinforcement.

See Standard Specifications for tining and finishing of approach slabs.

SBS Modified Asphalt base sheets and all other miscellaneous items shall be considered subsidiary to the Pay Item, CONCRETE FOR PAVEMENT APPROACHES CLASS 47BD-4000.

SBS Modified Asphalt base sheets shall be modified bitumen roofing material, with a minimum thickness of 0.090 inch and a minimum weight of 60 lbs. per 100 sq. feet.

Longitudinal Joints shall be 1½" deep and placed in the paving and approach slabs in accordance with section 603.03 paragraph 12 of the Standard Specifications. Contractor shall exercise care not to damage reinforcing steel placed in the top layer of the slabs.

The expansion gap between approach section and paving section shall be cleaned of all foreign matter before the installation of the expansion device or the filler material.

1" Preformed Joint Filler shall be be considered subsidiary to the Pay Item, CONCRETE FOR PAVEMENT APPPROACHES CLASS 47BD-4000.

℟1 DELETED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S54

C.N. 52320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
APPROACH SLAB DETAILS

COUNTY KNOX | LOCATION NIOBRARA WEST BRIDGES
HWY. NO. N-12 | SKEW 20°00'00" RHB
REF. POST. 160.27 | ROADWAY 32'-0"
STA. 500+99.49 | DESIGN LIVE LOAD HS20-44
DESIGNED BY CJC | DETAILED BY NTF | CHECKED BY ZZJ | DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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PROFESSIONAL CIVIL ENGINEER
JASON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3 | 14/15

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BILL OF BARS

MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LB
APPROACH SLAB NO. 1												
N801	82	19'-5"	Str.									4,251
N601	64	29'-4½" AV	Str.									2,824
N501	53	36'-0"	Str.									1,990
N502	35	19'-1"	Str.									697
N503	48	31'-6"	Str.									1,577
N504	33	29'-4½" AV	Str.									1,011
N505	22	16'-8" AV	Str.									382
N401	22	6'-7"	103	3'-0"	0'-7"	3'-0"				2"		97
N402	8	6'-0"	Str.									32
										SUBTOTAL =		12,861 LB
RAIL ON APPROACH SLAB NO. 1												
N691	20	6'-4"	104	3'-2"	3'-2"					4½"		190
N692	46	5'-10"	104	2'-11"	2'-11"					4½"		403
N693	48	6'-10"	104	3'-5"	3'-5"					4½"		493
N590	16	14'-5"	130	4'-8"	0'-10"	6'-1"	0'-5"	1'-6"	1'-5"	2½"	5½"	241
N591	16	11'-11"	107	0'-10"	4'-8"					2½"	5½"	109
N592	12	19'-2"	Str.									240
N492	4	6'-0"	101	2'-6"	3'-6"	0'-3½"						16
N493	26	5'-4"	104	2'-8"	2'-8"					3"		93
N391	18	4'-4"	107	1'-0"	0'-10"					1½"	4"	29
N392	12	7'-2"	107	2'-8"	0'-7"					1½"	4"	32
										SUBTOTAL =		1,936 LB
										TOTAL =		14,797 LB

BAR SETS-APPR. SLAB NO. 1

MARK	MAX. LENGTH	MIN. LENGTH	NO. OF SETS	BARS PER SET
N601	35'-1"	23'-8"	1	64
N504	35'-1"	23'-8"	1	33
N505	30'-5"	2'-11"	2	11

STANDARD HOOK LENGTH

PRIMARY STRESS BARS			STIRRUPS & TIES		
BAR SIZE	HOOK H 90°	HOOK H 180°	BAR SIZE	HOOK H 90°	HOOK H 135°
4	8"	6"	3	4"	4"
5	10"	7"	4	4½"	4½"
6	12"	8"	5	6"	5½"
7	15"	10"	6	12"	8"
8	17"	11"	7	14"	9"
9	19"	15"	8	16"	10½"
10	23"	17"	d = BAR SIZE Dp = PIN DIAMETER		
11	24"	19"			

PIN DIAMETER

PRIMARY STRESS		STIRRUPS & TIES	
BAR SIZE	Dp	BAR SIZE	Dp
4	3"	3	1½"
5	3¾"	4	2"
6	4½"	5	2½"
7	5¼"	6	4½"
8	6"	7	5¼"
9	9½"	8	6"
10	11"		
11	12"		

DETAILING DIMENSION H — Dp — 90°

DETAILING DIMENSION H — Dp — 135°

DETAILING DIMENSION H — Dp — 180°

BAR MARK

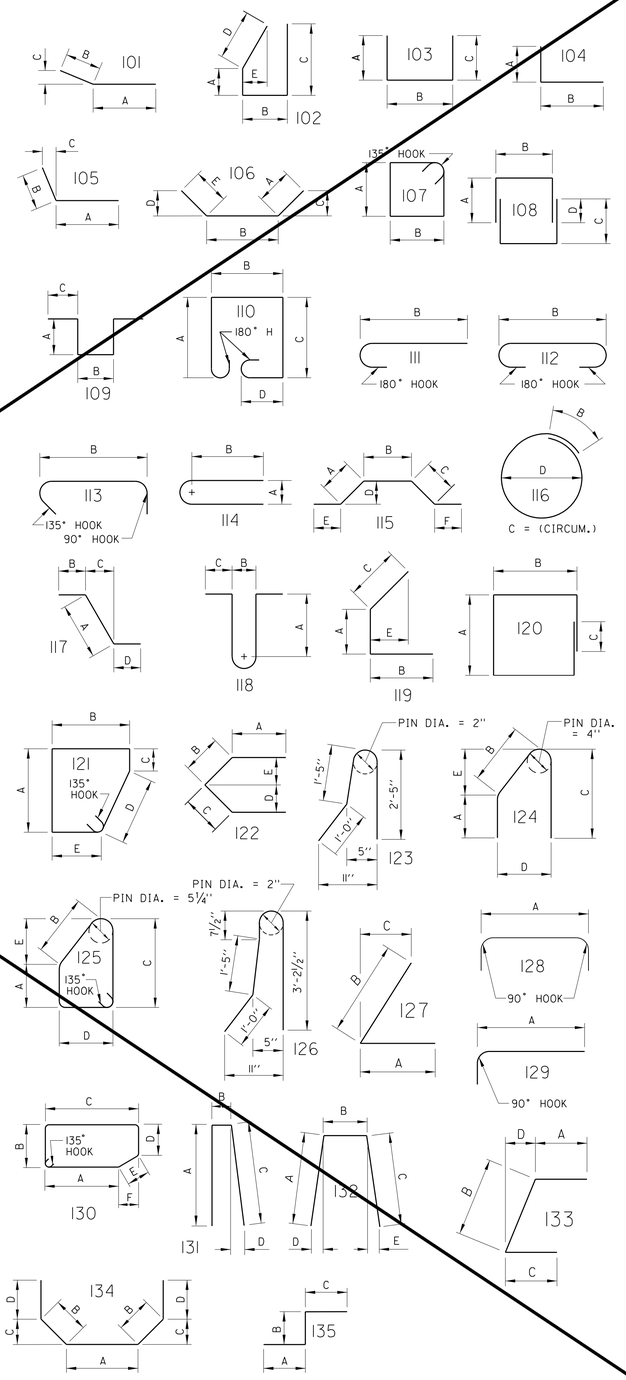
A413 — A 4 13

- 13 — BAR NUMBER:
  - 01 THRU 49, GENERAL REINFORCING
  - 70 THRU 79, LIGHT POLE REINFORCING
  - 90 THRU 99, CURB OR RAIL REINFORCING
- 4 — BAR SIZE
- A — TYPE OF BRIDGE ELEMENT- A=ABUTMENT (P=PIER, B=BENT, S=SLAB, N=APPROACH SLAB)

THE NUMBER OF LAP SPLICES ARE CALCULATED BASED ON 60'-0" LENGTHS OF REINFORCING STEEL BARS.
SPLICES ON BARS SHORTER THAN 60'-0" WILL REQUIRE ADDITIONAL LAP SPLICES AT NO ADDITIONAL EXPENSE TO NDOT.

BENDING DIAGRAMS

ALL DIMENSIONS ARE OUT TO OUT & NOT TO SCALE
ALL REINFORCING STEEL SHALL BE EPOXY COATED
(R1) DELETED SHEET



PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S55

C.N. 52320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
APPROACH SLAB BILL OF BARS & BENDING DIAG.

COUNTY KNOX — LOCATION NIOBRARA WEST
HWY. NO. N-12 — SKEW 20°00'00" AHB
REF. POST. 160.27 — ROADWAY 32'-0"
STA. 500+99.49 — DESIGN LIVE LOAD HS20-44
DESIGNED BY CJC — DETAILED BY NTF — CHECKED BY ZZJ — DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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PROFESSIONAL CIVIL ENGINEER — AARON M. BUETTNER E-10646 — 27 APR. — STATE OF NEBRASKA

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SPECIAL PLAN NO.	
3	15 / 15

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(R1) ADDED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S41A

C.N. 32320

STRUCTURE NUMBER
S012 16027

- NIOBRARA WEST BRIDGES -

- NOTES -

Before ordering any materials, the Contractor shall make a detailed field inspection of the project site, verifying all dimensions and conditions, and reporting to the Engineer any discrepancies between their measurements and those shown on the plans.

The locations of all aerial and underground utility facilities may not be indicated in these plans. Underground utilities whether indicated or not will be located and flagged by the Utilities at the request of the contractor.

No excavation will be permitted in the area of underground facilities until all such facilities have been located and identified to the satisfaction of all parties. The excavation must be accomplished with extreme care in order to avoid any possibility of damage to the utility facility.

The contractor shall coordinate Traffic Control with the District 3 Engineer prior to start of work.

All dimensions shown are in horizontal plane only, No allowances have been made for vertical curve or roadway cross slope. The dimensions shown have been obtained from the existing As-Built plans.

The State does not guarantee that these drawings conform to the existing dimensions and shall not be liable for any differences between the existing conditions and the drawings.

Actual field conditions may require more or less repair than what is depicted in the plans. The final areas to be repaired shall be determined by the Engineer. The Engineer shall be notified when field conditions impede the implementation of these plans or vary significantly from what is shown.

Dimensions shown are based on the existing plans.

All material removed shall become the property of the Contrator and shall be removed from the project.

Concrete for slab repair, approach slabs and concrete rails shall be class "47BD", with a 28-day strength of 4000 psi.

All other cast-in-place concrete shall be Class "47B" concrete, with a 28-day strength of 3,000 psi.

The Contractor shall place a 1" deep saw cut at the limits of the removal to facilitate a clean smooth line when beaking back existing concrete.

All existing concrete surfaces to be in contact with the new construction shall be thoroughly roughened and cleaned before placing any new concrete.

Field bend and/or clip reinforcing bars to maintain minimum clearance. Epoxy coat clipped end.

Use an approved Bonding Agent prior to placing any new concrete on, against, or under any existing concrete. If any epoxy bonding agent is used, the epoxy must still be tacky at the time of concrete placement. If the epoxy is no longer tacky it must be completely removed and the existing concrete surface must be prepared again in accordance with the plan and specifications.

Chamfer all exposed edges of concrete.

All reinforcing steel shall be epoxy coated and conform to the requirements of ASTM A615/A615M, grade 60 steel.

The minimum clearance, measured from the face of the concrete to the surface of any reinforcing bar, shall be 2", except where otherwise noted.

The Contractor shall take all necessary precautions during the construction of this project to prevent any debris or rubble from falling into the water below the structure.

When breaking existing concrete and existing reinforcing steel is encountered that is broken or has section loss due to corosion greater than 20%, the contractor shall lap the existing bar with a new epoxy coated bar of the same size for a length indicated in the Special Provisions.

The Contractor shall take care not to damage the existing structure during construction. Any part damaged shall be repaired and/or replaced in its entirety at the Contractor's expense.

All preparation, equipment, materials, labor, tools, and incidentals necessary to complete the work that is not paid for directly, shall be considered subsidiary to associated pay items.

The pay item "STRUCTURAL STEEL FOR SUBSTRUCTURE" shall include the tie rods and wales at Pier No. 2.

Tie Rods shall conform to ASTM A709/A709M, Grade 36 steel. Turnbuckles shall conform to ASTM A668/A668M, Class C.

Structural steel for all "H" piles shall conform to ASTM A709/A709M, Grade 36.

After fabrication, tie rods and all other hardware shall be galvanized according to ASTM A123/A123M.

These plans are being issued as part of an emergency repair project using incomplete field data. Field conditions encountered during construction may necessitate changes to items such as (but not limited to) pile lengths and structural steel for superstructure quantities.

The work in these plans includes remodeling Pier No. 2 into an Abutment. For clarity, the names for substructure elements remain unchanged. However, information related to concrete and reinforcing steel at this remodel is referenced as "Abutment."

- QUANTITIES -

GROUP 6B

PREPARATION OF BRIDGE AT STATION 500+99.49	1	EA
CLASS 47B-3000 CONCRETE FOR BRIDGE	53.6	CY
ABUTMENT (PIER NO. 2)	53.6	CY
CLASS 47BD-4000 CONCRETE FOR BRIDGE	101.5	CY
SLAB	86.7	CY
CONCRETE RAILS	14.8	CY
EPOXY COATED REINFORCING STEEL	31,300	LB
SLAB	21,950	LB
CONCRETE RAILS	3,200	LB
ABUTMENT (PIER NO. 2)	6,150	LB
STRUCTURAL STEEL FOR SUPERSTRUCTURE	68,565	LB
GIRDERS	42,295	LB
SEPARATORS & MISC.	24,290	LB
SHEAR CONNECTORS	320	LB
BOLTS	1,660	LB
STRUCTURAL STEEL FOR SUBSTRUCTURE	4,385	LB
STEEL SHEET PILING	1,314	SF
HP 12 INCH X 53 LB STEEL PILING	800	LF
GRANULAR BACKFILL	1,175	CY
CONCRETE FOR PAVEMENT APPROACHES CLASS 47BD-4000	111.6	CY
SLAB	103.4	CY
CONCRETE RAILS	8.2	CY
EPOXY COATED REINFORCING STEEL FOR PAVEMENT APPROACHES	26,255	LB
SLAB	23,250	LB
CONCRETE RAILS	3,005	LB
STRIP SEAL	35.7	LF
ROCK RIPRAP, TYPE A	235	TON
ROCK RIPRAP, TYPE C	535	TON
RIPRAP FILTER FABRIC	552	SY
ACCESS CROSSING AT STATION 496+00	1	LS
ACCESS CROSSING AT STATION 506+00	1	LS

DESIGN HISTORY

CONTROL NO.	PROJECT NO.	MONTH / YEAR	TYPE OF WORK
-	BRF-12-5(101)	MARCH 1978	1000'-0" MULTIPLE SPANS DECK STEEL GIRDER-CONTINUOUS COMPOSITE TYPE
31674A	12-5(1012)	MAY 2009	BRIDGE DECK REPAIR & RAIL REMODEL

- INDEX -

GENERAL NOTES, QUANTITIES & INDEX	1A
GENERAL PLAN & REMOVALS	2A
PIER NO. 2 REMODEL (1 OF 3)	3A
PIER NO. 2 REMODEL (2 OF 3)	4A
PIER NO. 2 REMODEL (3 OF 3)	5A
STEEL GIRDER REPAIRS (1 OF 3)	6A
STEEL GIRDER REPAIRS (2 OF 3)	7A
STEEL GIRDER REPAIRS (3 OF 3)	8A
PLAN & ELEVATION OF TURNDOWN	9A
SLAB REPAIR DETAILS	10A
SLAB REPAIR DETAILS & BILL OF BARS	11A
REMODEL CONCRETE RAIL ON BRIDGE (1 OF 2)	12A
REMODEL CONCRETE RAIL ON BRIDGE (2 OF 2)	13A
CONCRETE RAIL ON APPROACH SECTION NO. 1	14A
CONCRETE RAIL ON APPROACH SECTION NO. 2	15A
PLAN OF APPROACH SLAB	16
APPROACH SLAB DETAILS	17
APPROACH SLAB BILL OF BARS & BENDING DIAG.	18

Upon completion of the repair work depicted in these plans, the bridge will be posted as indicated below.

WEIGHT LIMIT
26T
27T
29T

SHOP PLANS REQUIRED FOR REVIEW:
Structural Steel for Superstructure
Structural Steel for Substructure
Strip Seals
Steel Sheet Piling

SHOP PLANS FOR RECORD:
Stay-In-Place-Forms

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER
BRIDGE-CONTINUOUS COMPOSITE TYPE
GENERAL NOTES, QUANTITIES & INDEX

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF
CHECKED BY MJK
DESIGNED BY AMB
DRAWN BY MJK
DATE MAY, 2019
COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3

1A / 18

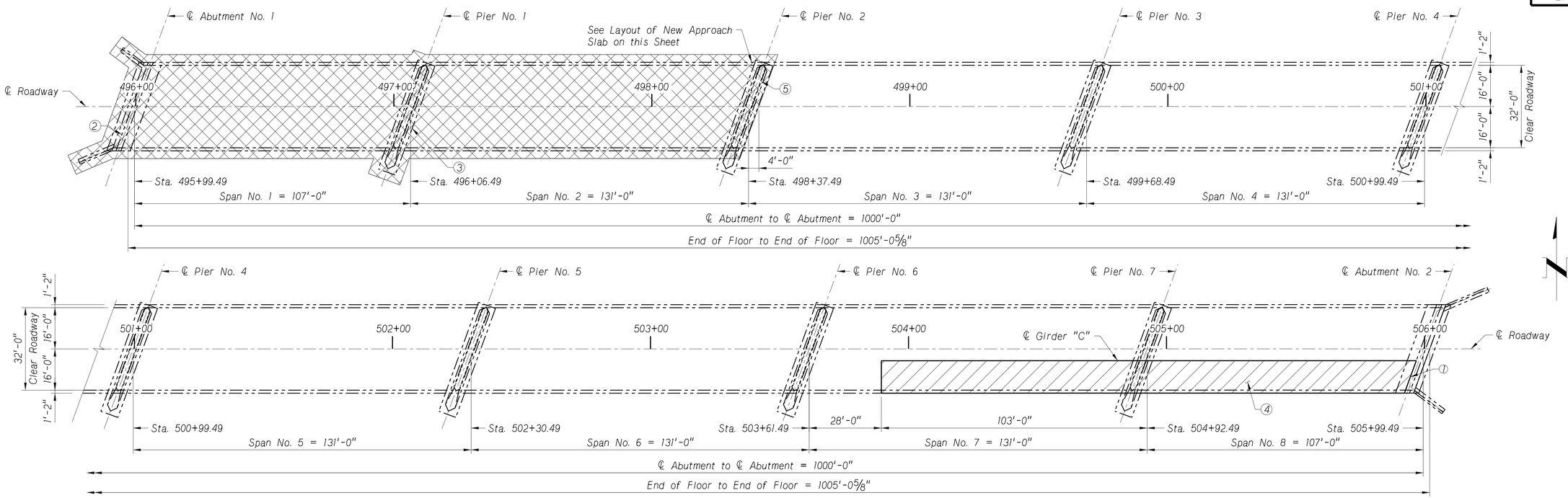
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(R1) ADDED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S42A

C.N. 32320

STRUCTURE NUMBER
S012 16027



GENERAL PLAN
Scale: 1" = 20'-0"

Remove Slab & Girders at Span No. 1 & 2. Remove Abutment No. 1 and Pier No. 1 as indicated in notes on this sheet. See sheet 6A of 18 for Girder Removal Limits.

Approximate Limits of Deck and Concrete Rail Removal & Replacement.

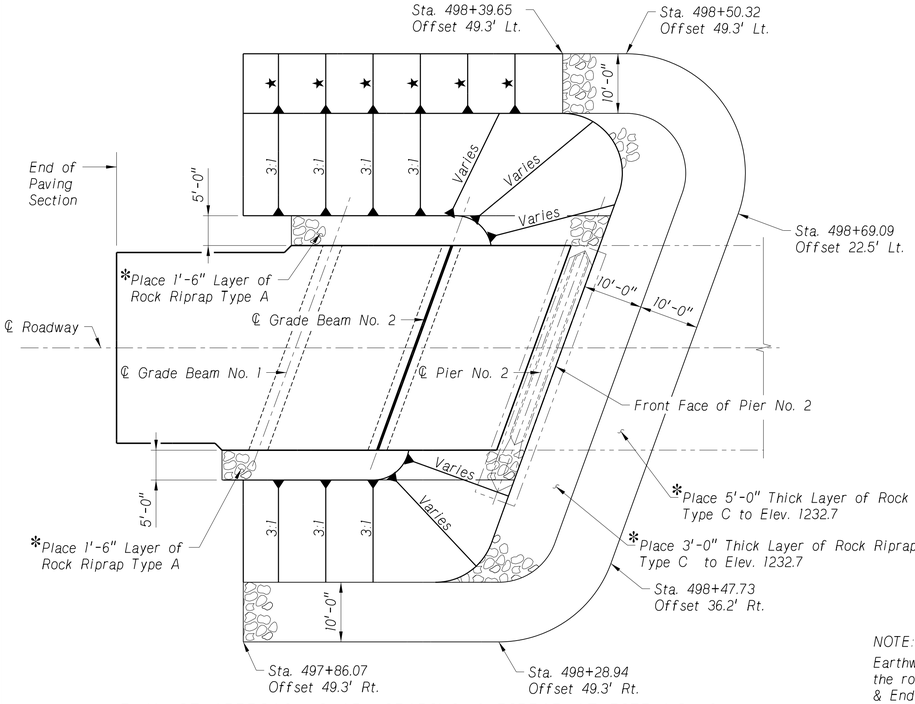
① Use Care to Protect Existing Finger Joint at End of Floor and Incorporate into New Work. If Concrete is Removed Below the Finger Joint, the Minimum Depth Shall be 3" Clear Below the Bottom of the Steel Plates.

② Remove all abutment concrete and cut off piles 2" below footing (Approx. Elev. 1222.2).

③ Remove concrete at Pier No. 1 to Elev. 1228.0 (Min.)

④ Remove and Replace Deck and Concrete Rail on Deck to the Approximate Limits Indicated.

⑤ Deck and Rail Removal extends 4'-0" beyond ℄ Pier No. 2. Protect, clean and extend existing deck steel into the new work.

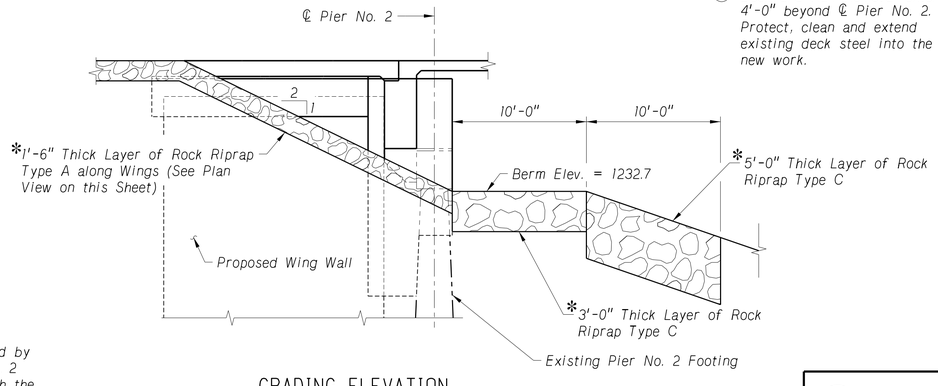


PLAN OF APPROACH SLAB, GRADING & RIPRAP AT PIER NO. 2
Not to Scale

★ Grade to Match Existing Groundline

* Place Riprap in Trench on Filter Fabric

NOTE:
Earthwork volumes outside the box defined by the roadway edges, back face of Pier No. 2 & End of Paving Section are included with the roadway quantities.



GRADING ELEVATION
Not to Scale

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES 1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY AMB
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

GENERAL PLAN & REMOVALS

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

BRIDGE ENGINEER

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

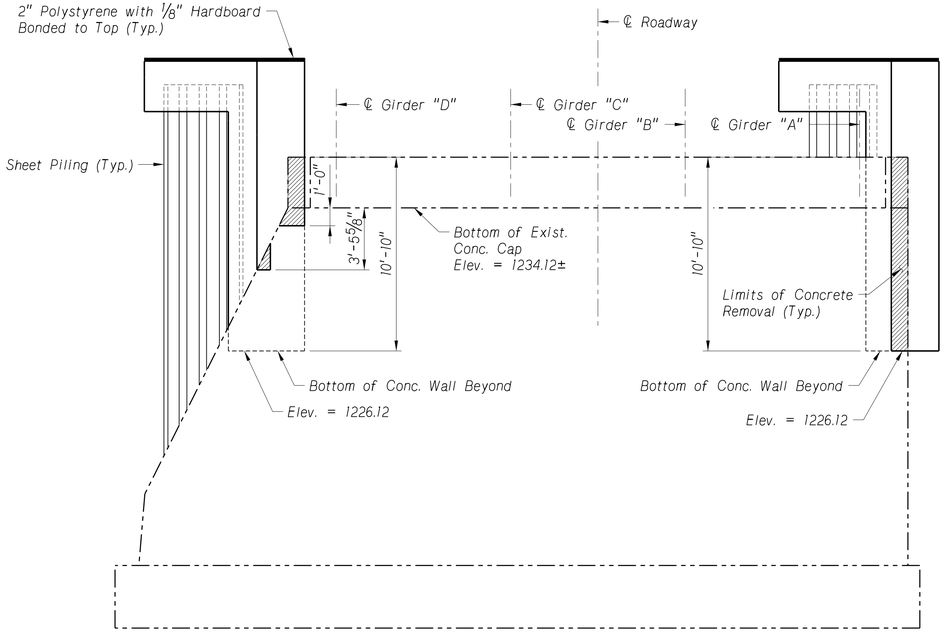
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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA
11th MAY 19

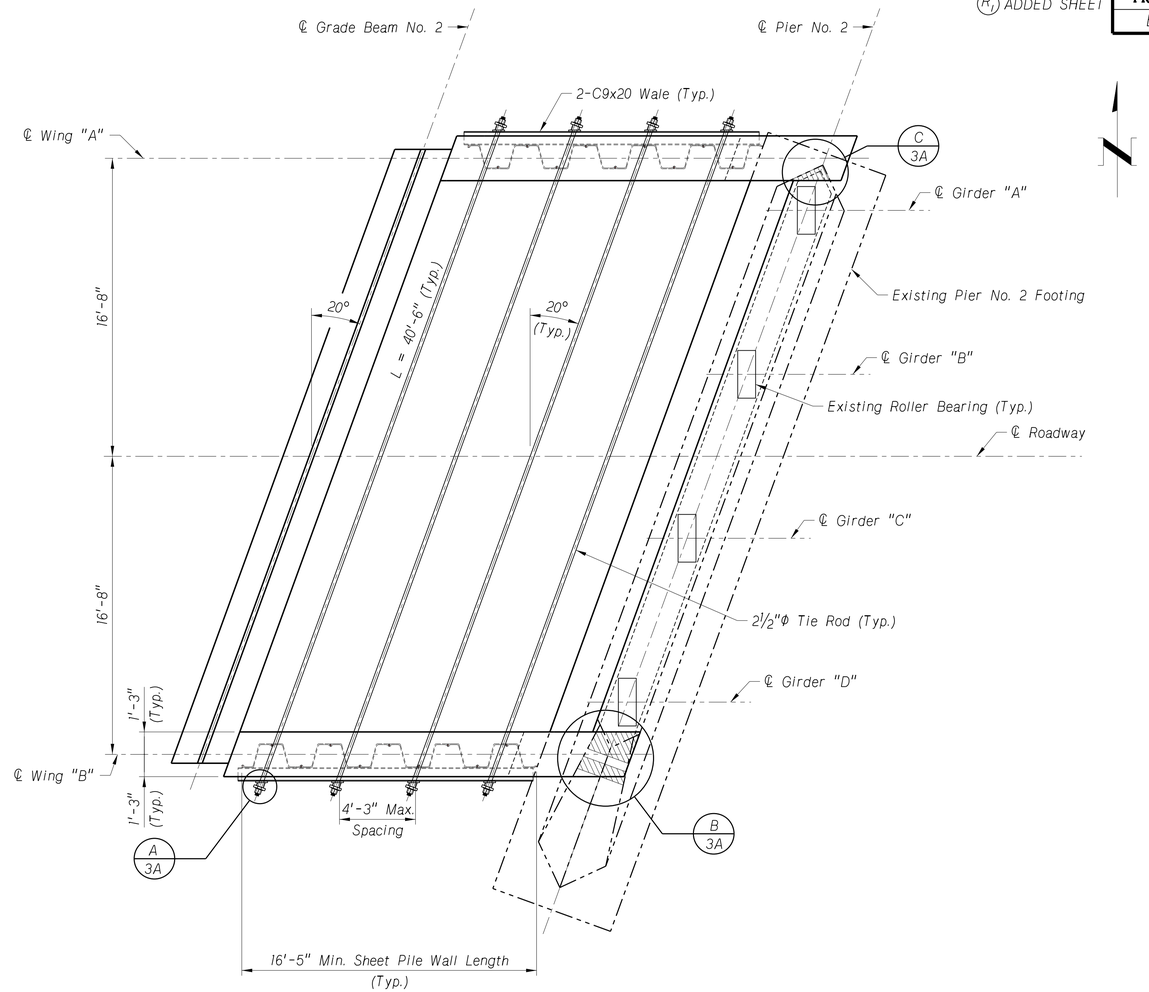
benesch

SPECIAL PLAN NO. 3 — 2A / 18

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ELEVATION OF PIER NO. 2 REMODEL
(Looking Back Station)
Scale: 1/4" = 1'-0"

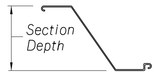


PLAN OF PIER NO. 2 REMODEL
Scale: 1/4" = 1'-0"

SHEET PILE NOTES

As a minimum, all steel sheet piling shall conform to ASTM A572, Grade 50 steel and shall meet the following requirements:

Section Length	40.0 ft.
Maximum Section Depth	22.0 in.
Minimum Section Thickness	0.3125 in.
Elastic Section Modulus	50.0 in^3/ft

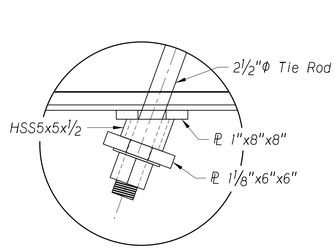


The Contractor shall submit for approval a shop plan of the sheet pile layout showing all pertinent dimensions, details, and section properties.

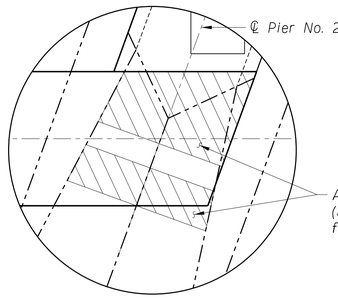
The pay quantity will be based on the sheet pile wall dimensions shown. The constructed wall length will be within ± 2'-0" of the sheet pile wall dimensions shown.

Top of sheet piling elevation = 1240.8 (Wing "A")
1240.7 (Wing "B")

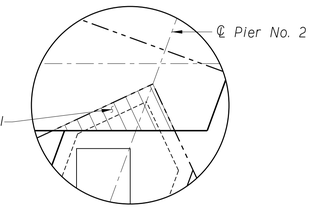
PILE DATA						
LOCATION	PILE NUMBER	CUT-OFF ELEVATION	MINIMUM PENETRATION BELOW CUT-OFF (feet)	PILE ORDER LENGTH (feet)	DESIGN PILE BEARING (kips/pile)	PILE TYPE
Grade Beam No. 1	1-5	1240.78	75	80	125	HP 12x53
Grade Beam No. 2	1-5	1240.88	75	80	125	HP 12x53



DETAIL A 3A
Scale: 1 1/2" = 1'-0"



DETAIL B 3A
Scale: 3/4" = 1'-0"



DETAIL C 3A
Scale: 3/4" = 1'-0"

(R1) ADDED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S43A

C.N. 32320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA
BRIDGE ENGINEER

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
PIER NO. 2 REMODEL (1 OF 3)

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" AHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DESIGNED BY AMB
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019
COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

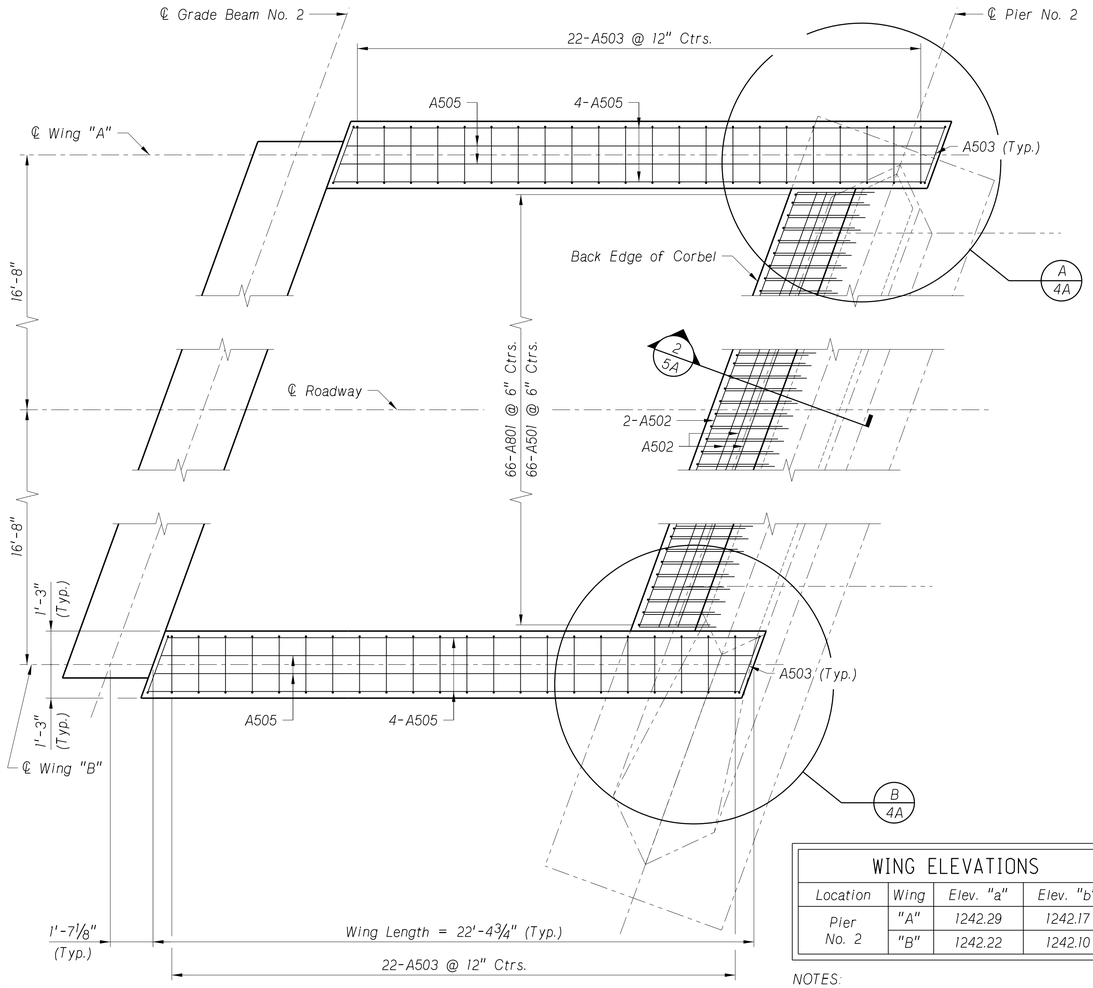
NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3
3A / 18

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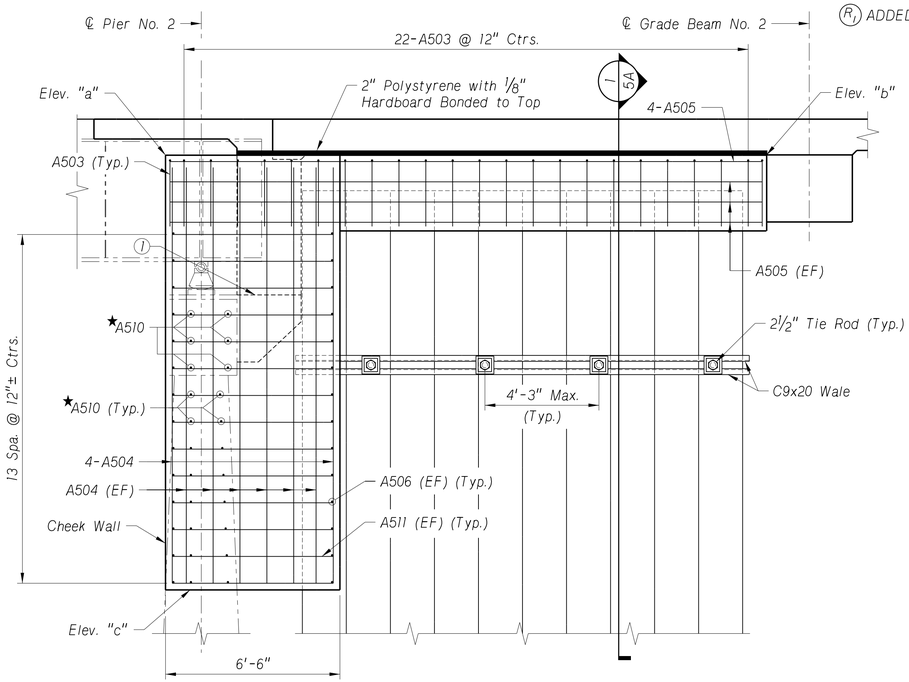


PLAN OF PIER NO. 2 REMODEL
Scale: ⅜" = 1'-0"

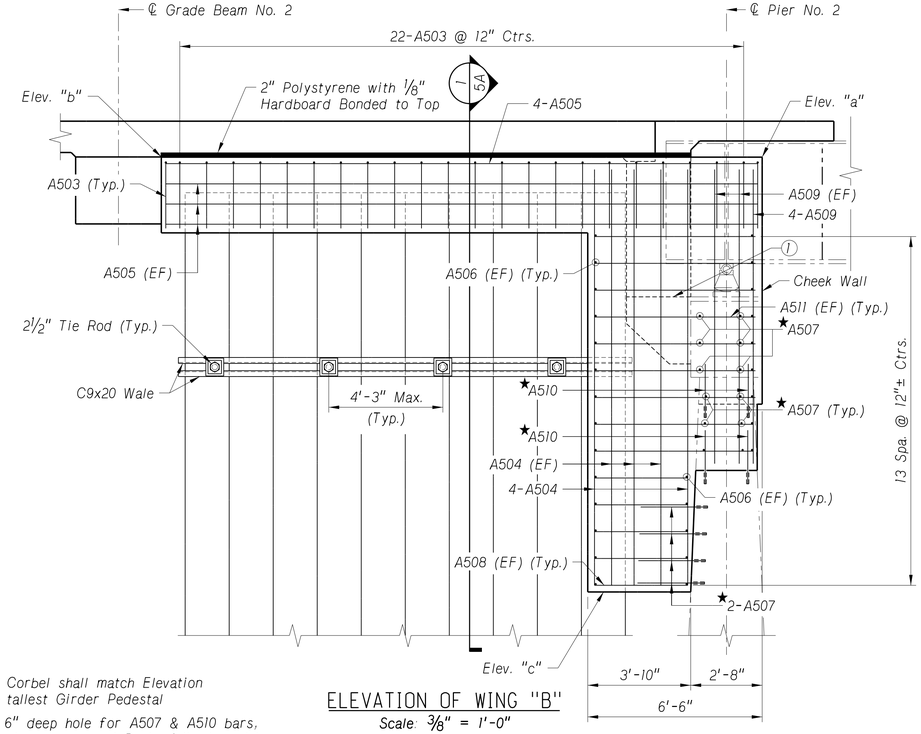
WING ELEVATIONS				
Location	Wing	Elev. "a"	Elev. "b"	Elev. "c"
Pier No. 2	"A"	1242.29	1242.17	1226.12
	"B"	1242.22	1242.10	1226.12

NOTES:

1. See sheet 5A of 18 for Grade Beam Details.
2. Cheek Wall Reinforcement not shown in Plan View for clarity. See Elevations and Details A & B on this sheet for Reinforcement.



ELEVATION OF WING "A"
Scale: ⅜" = 1'-0"

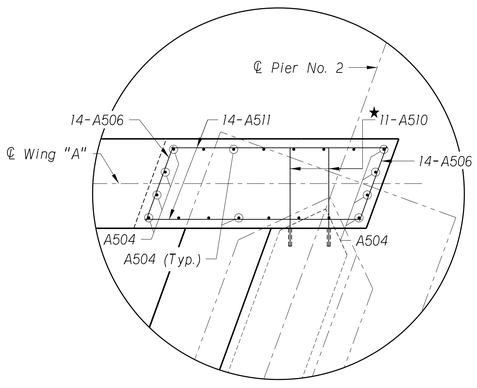


ELEVATION OF WING "B"
Scale: ⅜" = 1'-0"

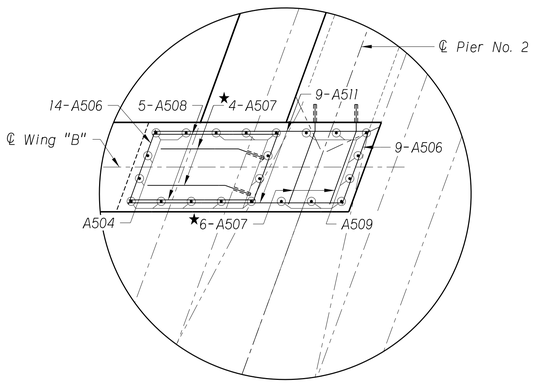
① Top of Corbel shall match Elevation of the tallest Girder Pedestal

★ Drill a 6" deep hole for A507 & A510 bars, set bar in an approved Resin Adhesive with hole diameter per manufacturer recommendation

(EF) Each Face



CHEEK WALL DETAIL (A 4A)
Scale: ½" = 1'-0"



CHEEK WALL DETAIL (B 4A)
Scale: ½" = 1'-0"

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S44A

C.N. 32320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
PIER NO. 2 REMODEL (2 OF 3)

COUNTY KNOX **LOCATION** NIOBRARA WEST BRIDGES
HWY. NO. N-12 **SKEW** 20°00'00" RHB
REF. POST. 160.27 **ROADWAY** 32'-0"
STA. 500+99.49 **DESIGN LIVE LOAD** HS20-44
DESIGNED BY AMB **DETAILED BY** NTF **CHECKED BY** MJK **DATE** MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION

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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

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SPECIAL PLAN NO.	4A / 18
3	

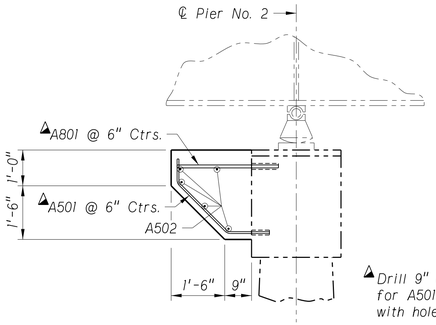
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BILL OF BARS

ABUTMENT (PIER NO. 2)

MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT Lbs.
A801	66	2'-10"	Str.									499
A701	32	36'-0"	Str.									2,355
A601	74	3'-0"	105	1'-6"	1'-6"	1'-1"				4½"		333
A501	66	3'-9"	106	1'-2"	1'-11"	0'-10"	0'-6"	0'-8"		2½"		258
A502	5	32'-6"	Str.									169
A503	48	7'-0"	104	2'-6"	2'-0"	2'-6"				2½"		350
A504	34	15'-6"	Str.									550
A505	20	22'-0"	Str.									459
A506	56	2'-3"	Str.									131
A507	20	2'-11"	101	2'-2"	0'-9"	0'-3"				2½"		61
A508	10	3'-4"	Str.									35
A509	8	10'-11"	Str.									91
A510	26	2'-9"	Str.									75
A511	46	6'-0"	Str.									288
A401	68	9'-9"	107	2'-0"	2'-6"					2"	4½"	443
A402	4	10'-1"	107	2'-0"	2'-8"					2"	4½"	27
A403	4	8'-9"	107	2'-0"	2'-0"					2"	4½"	23
										SUBTOTAL =		6,147 LBS
										TOTAL =		6,147 LBS

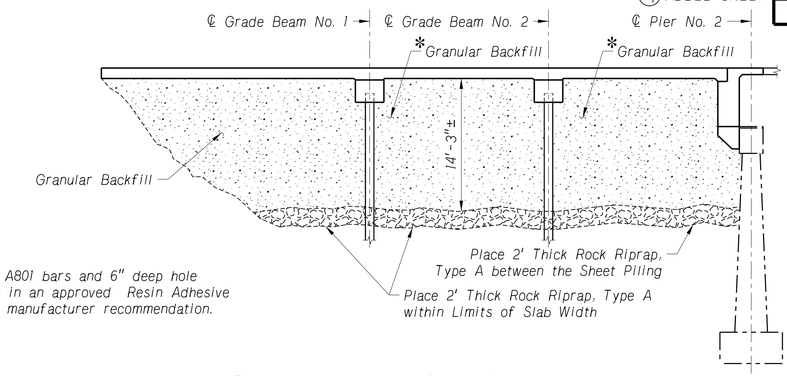
NOTE:
FOR PIN DIAMETERS, HOOK LENGTHS & BENDING DIAGRAMS SEE SHEET 18 OF 18.



SECTION AT CORBEL (2/4A)
Scale: ½" = 1'-0"

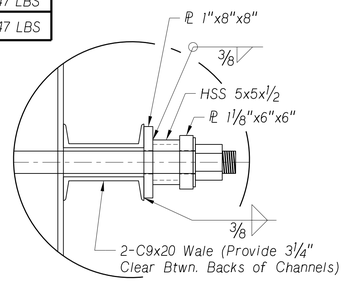
▲Drill 9" deep hole for A801 bars and 6" deep hole for A501 bars, set bar in an approved Resin Adhesive with hole diameter per manufacturer recommendation.

(R1) ADDED SHEET

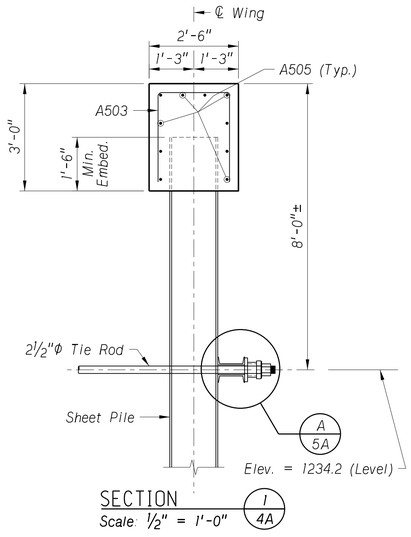


The pay limit quantity for Granular Backfill has been estimated as the volume between the edge of roadway and extending from the back face of Pier No. 2 wall to the End of Paving.

* The Granular Backfill in this area shall be placed in 8 inch layers and compacted by a single pass of a walk-behind, lightweight (approx. 100 lbs.) mechanical tamper, roller, or vibratory compactor. There is no density requirement. Heavy compaction equipment shall not be used in this area. Flooding the granular backfill with water is not allowed.

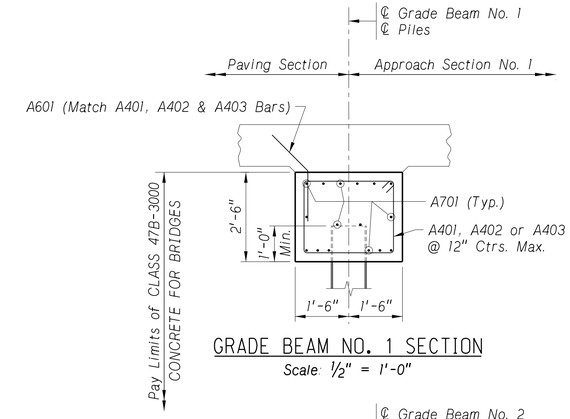


DETAIL (A/5A)
Scale: 1½" = 1'-0"

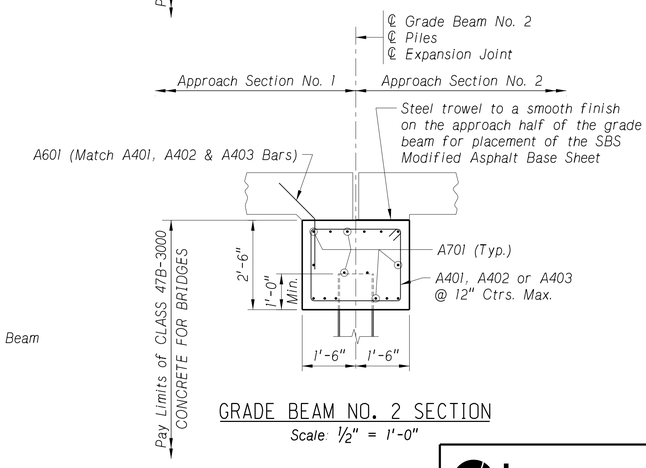


SECTION (1/4A)
Scale: ½" = 1'-0"

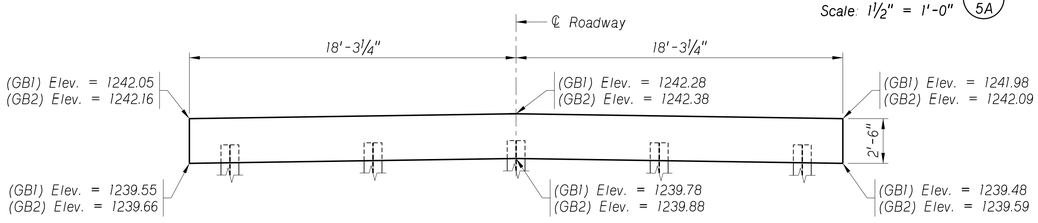
GRANULAR BACKFILL WITH SHEET PILE AND GRADE BEAM
Not to Scale



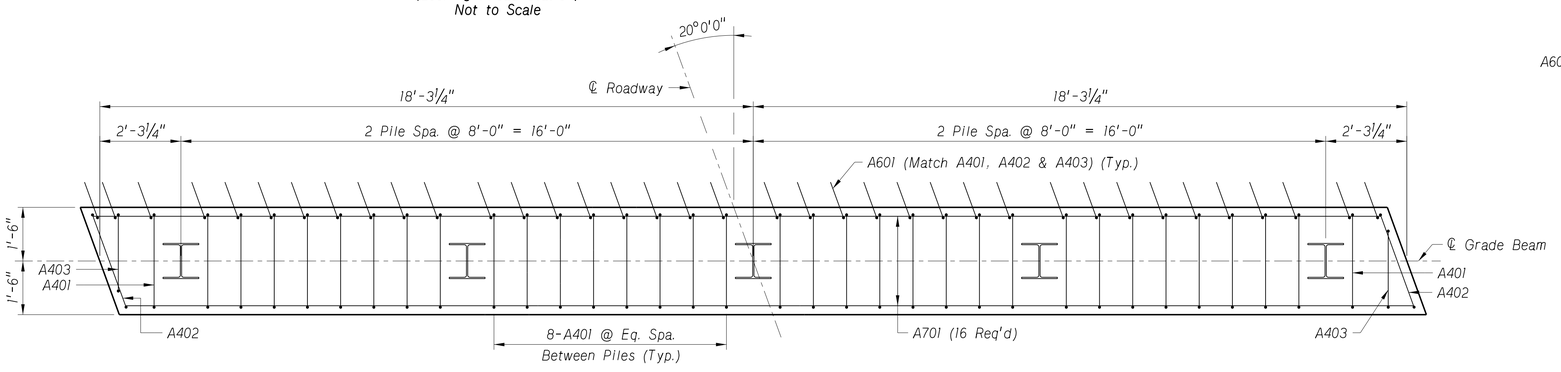
GRADE BEAM NO. 1 SECTION
Scale: ½" = 1'-0"



GRADE BEAM NO. 2 SECTION
Scale: ½" = 1'-0"



GRADE BEAM ELEVATION
(Looking Ahead Station)
Not to Scale



PLAN OF GRADE BEAM NO. 1 & 2
Scale: ½" = 1'-0"

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S45A

C.N. 32320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
PIER NO. 2 REMODEL (3 OF 3)

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" AHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
DESIGNED BY AMB

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

SPECIAL PLAN NO. 3 — 5A / 18

benesch

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(R1) ADDED SHEET

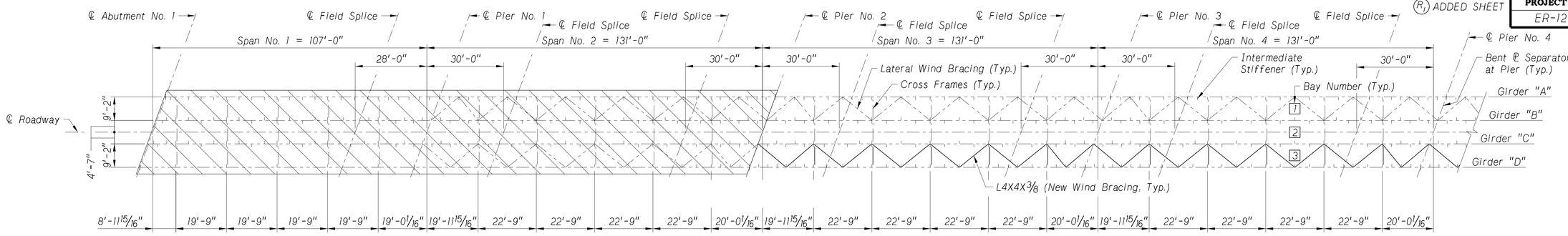
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S46A

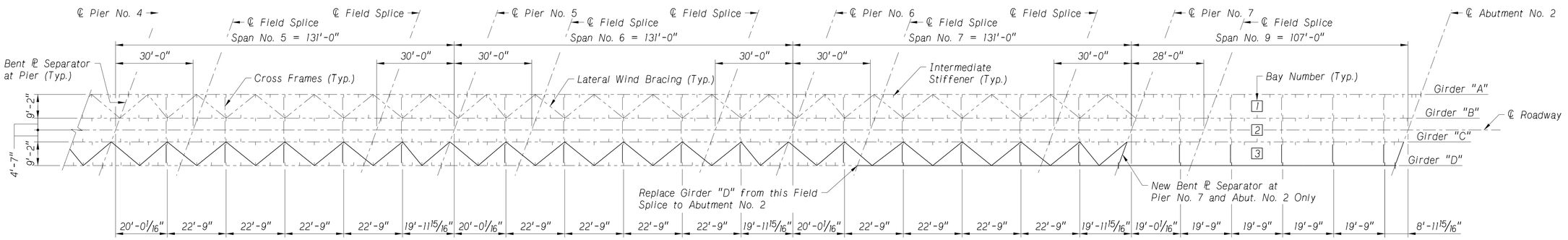
C.N. 32320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER





Remove Span No. 1 & 2
Remove Abut. No. 1 & Pier No. 1 per Notes on Sheet 2A of 18.

FRAMING PLAN
Scale: 1" = 20'-0"

PHASING NOTES:

The following items of work must be completed in order to open the westbound lane to traffic.

1. *Remove concrete deck and rails in Span No. 1 & 2 to limits shown on sheet 2A of 18.*
2. *Remove steel girders in Span No. 1 & 2 to limits shown on this sheet.*
3. *Remodel Pier No. 2 (At a minimum, the work at the left side of Pier No. 2 must be complete. See additional phasing note at the end of this section.)*
4. *Replace deformed and broken lateral wind bracing in bay [1]. Estimate 25% of these elements will be replaced. The engineer will make a final determination on what elements are to be replaced and will field mark them.*
3. *Replace deformed and broken cross frame elements in bays [1] & [2]. Estimate 20% of these elements will be replaced. The engineer will make a final determination on what elements are to be replaced and will field mark them.*

The following items of work for the superstructure may be completed after the westbound lane is open to traffic.

1. *Replace sections of Girder "D" noted in the framing plan.*
2. *Replace all cross frames, bent plate separators and wind bracing in bay [3].*

The contractor may choose to complete the removals at Span No. 1 & 2 as well as the remodel at Pier No. 2 in two phases if desired in order to reduce the time necessary to open the westbound lane to traffic. If the Contractor chooses this option and bridge shoring is needed, the Contractor shall design, locate and install the shoring. Design calculations for the shoring shall be prepared by a Professional Engineer Licensed in the State of Nebraska and shall be submitted to the Department before construction begins, for information only. No additional cost will be allowed for work associated with this additional phasing, but shall be considered subsidiary to other items for which payment is made.

STRUCTURAL STEEL NOTES FOR NEW ELEMENTS:

All structural steel for girder flanges, webs, stiffeners, separators, and all splice materials shall conform to the requirements of ASTM A709/A709M, Grade 50W weathering steel.

Nuts, bolts, and washers used in the assembly of weathering steel shall be Type 3.

Butt splices will be permitted for flange plates exceeding 60 feet in length. The locations of the splice shall be shown on the shop plans and will be subject to approval by the Engineer.

Butt splices will be permitted for web plates exceeding 60 feet in length. The location of the splice shall be shown on the shop plans and will be subject to approval by the Engineer.

During girder fabrication, the final camber tolerance shall not exceed those in Table 3.3 of A.W.S. "S" is the length of girder between splices.

All bearing stiffeners and girder ends, except at field splices, shall be vertical after final erection. All other stiffeners and all field splices shall be normal to the top flange.

During girder fabrication, the flanges at the splice must line up within 1/8" of parallel to the adjacent flanges without applying external force, before the splice is drilled.

All fasteners for field splices shall be 7/8" Φ high strength bolts, ASTM A325.

All other fasteners shall be 3/4"Φ high strength bolts, ASTM A325.

Field tack welding of form hangers or miscellaneous hardware to any part of the steel girder, with the exception of the shear connectors, shall be prohibited.

When assembling the girders, they shall be set according to the blocking diagram before any bolts are tightened to a snug-tight condition.

Field splices shall be clean and free of all foreign matter before field assembly. The plates shall be in full contact when the bolts are tightened to a snug-tight condition.

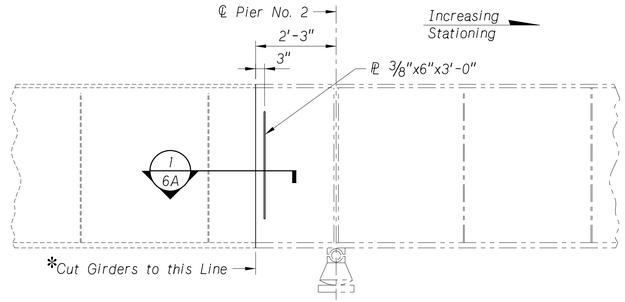
The girders for this bridge are not designed to resist any torsional or lateral forces due to temporary construction loads. The Contractor must provide any temporary bracing necessary to support the girder web and flanges against all torsional or lateral forces resulting from construction loads.

7/8" Φ x 0'-5" end welded studs have an in-place weight of 98.0 lb. /100 studs.

Steel (weight) quantities are based upon 490 pcf and 1 lb. per bolt.

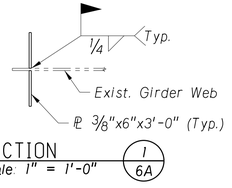
The estimated weight of replacement wind bracing members is included with the subtotal for separators & misc.

Due to the possibility of racking and relative member displacement within the superstructure, plan dimensions may not be applicable. The contractor will need to discuss with their steel fabricator a strategy for mitigating these issues without adversely impacting schedule. Details shall be presented in the Structural Steel for Superstructure shop drawings.



ELEVATION SHOWING GIRDER CUT
Scale: 1/2" = 1'-0"

*Flame cutting will be allowed, provided this process produces a smooth surface free from cracks and notches and a mechanical guide is used to provide an accurate profile.



SECTION 1/6A
Scale: 1" = 1'-0"

benesch

SPECIAL PLAN NO. 3 — 6A / 18

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
STEEL GIRDER REPAIRS (1 OF 3)

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DESIGNED BY AMB
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA
10 MAY 19

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(R1) ADDED SHEET

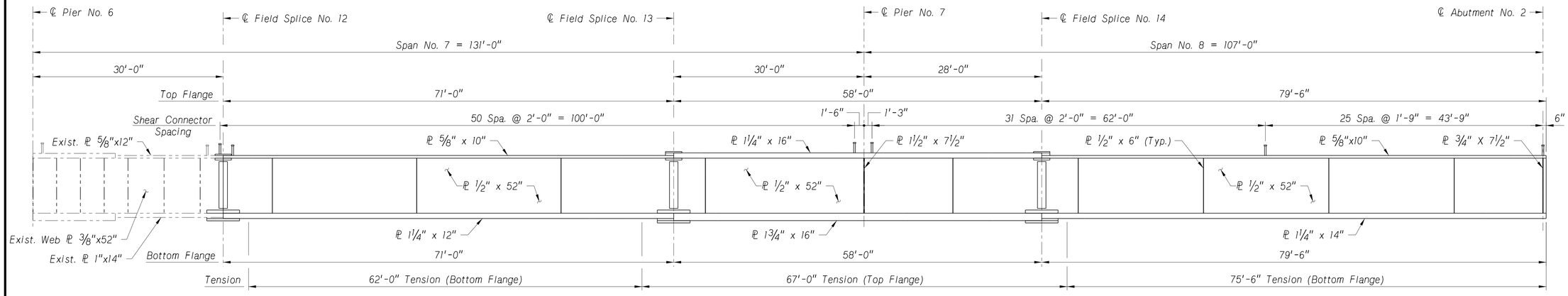
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S47A

C.N. 32320

STRUCTURE NUMBER
S012 16027

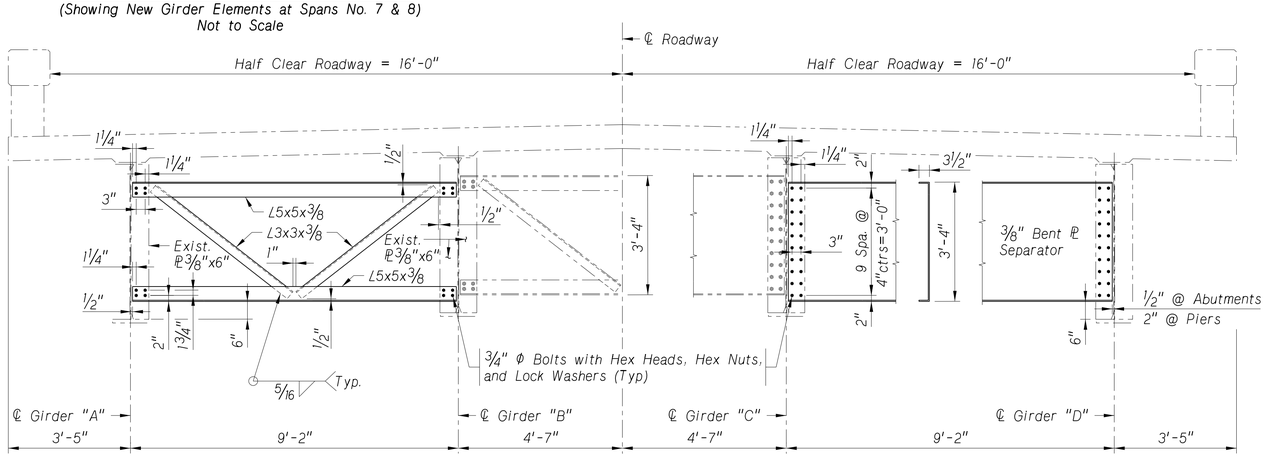
PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER



ELEVATION OF GIRDER "D" REPAIRS

(Showing New Girder Elements at Spans No. 7 & 8)
Not to Scale

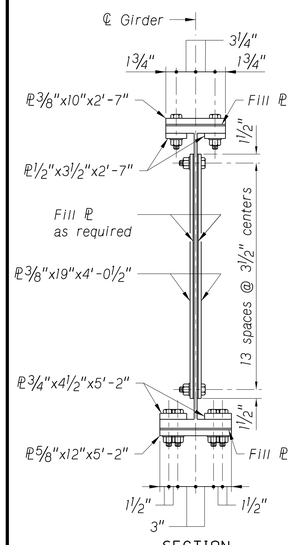


REPLACEMENT CROSS FRAME

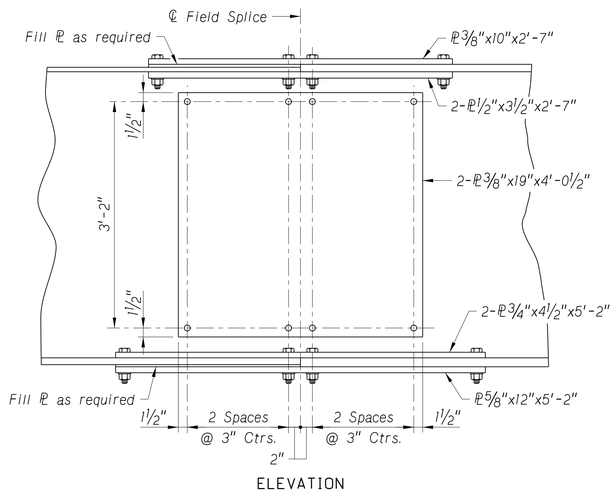
REPLACEMENT BENT ℙ SEPARATOR

TYPICAL CROSS SECTION OF ROADWAY

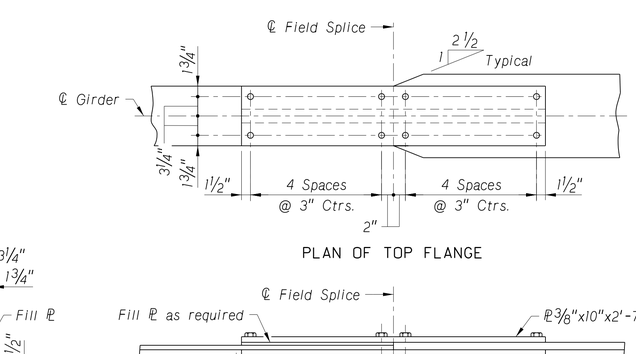
(Showing Replacement Cross Frames & Bent ℙ Separator Details Only)
Not to Scale



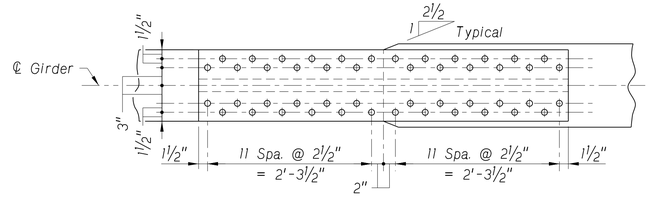
SECTION



ELEVATION



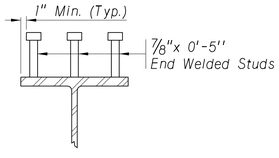
PLAN OF TOP FLANGE



PLAN OF BOTTOM FLANGE

FIELD SPLICE DETAILS

Not to Scale



SHEAR CONNECTOR DETAIL

Not to Scale

When Shear Connectors (Studs) are field applied, the following notes shall apply:

The Bridge Office shall be notified a minimum of one week prior to the application of the field welded studs.

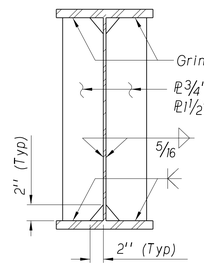
Stud welding shall be accomplished in accordance with the AWS D1.5 Standard Specifications, Section 7.

All stud welding shall be done by a certified stud welder. At the time of stud welding, the studs and base metal shall be free from rust, rust pits, scale, oil, moisture, falling rain or snow, and any other foreign material. Areas must be wire brushed or cleaned by grinding before any welding can occur.

Any studs that do not exhibit a 360° collar must be repaired by a SMAW fillet weld (E8018-C3 Electrode) and the repair shall extend 3/8" beyond each end of the missing collar.

Mill Certification for the studs shall be submitted to the Engineer.

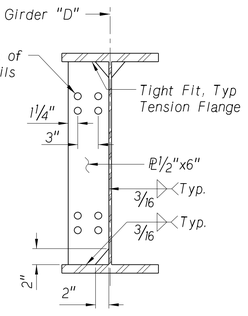
NOTE:
Provide holes in Bearing Stiffeners as necessary to accomodate Bent Plate Seprators



BEARING STIFFENERS AT ABUTMENTS AND PIERS

Not to Scale

See Cross Section of Roadway for Details of Bolt Holes



STIFFENER PLATES AT CROSS FRAMES

Not to Scale

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1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
STEEL GIRDER REPAIRS (2 OF 3)

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" AHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DETAILED BY NTF **CHECKED BY** MJK **DATE** MAY., 2019

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
DESIGNED BY AMB

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

SPECIAL PLAN NO.	7A / 18
3	

Y:\Omaha\2020005\00120227.01\Eng_Docs\Bridge\Sheets\S012_16027_Niobrara_River\S012_16027_07_Girder_Elevation.dgn

(R1) ADDED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S48A

C.N. 32320

STRUCTURE NUMBER
S012 16027

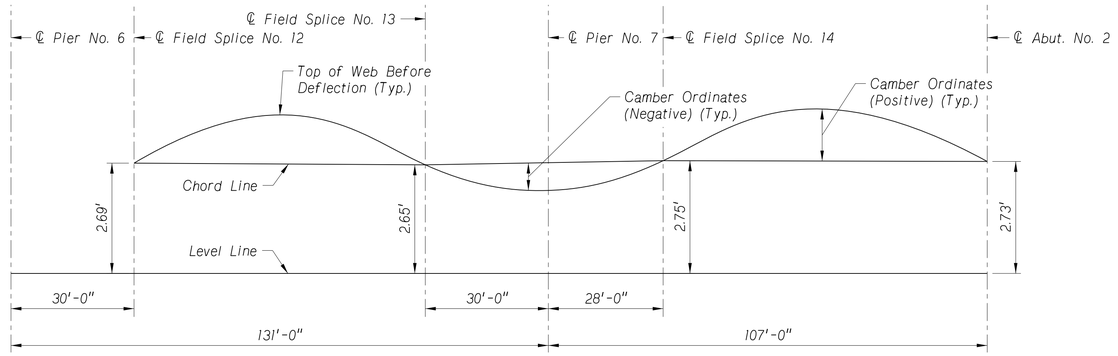


BRIDGE ENGINEER

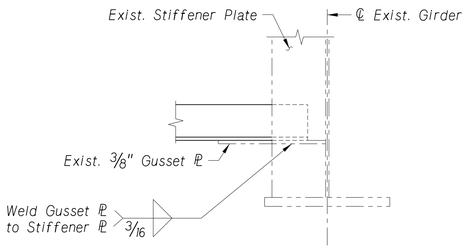
*GIRDER "D" CAMBER & DEFLECTION ORDINATES

LOCATION	DEFLECTION ORDINATE (in)	CAMBER ORDINATE (in)
F.S. No. 12	0.66	0.00
7.3	0.99	0.45
7.4	1.33	0.91
7.5	1.44	1.06
7.6	1.29	0.83
7.7	0.93	0.28
F.S. No. 13	0.63	0.00
7.8	0.50	-0.21
7.9	0.14	-0.70
Pier No. 7	0.00	-0.86
8.1	0.14	-0.70
8.2	0.44	-0.32
F.S. No. 14	0.67	0.00
8.3	0.82	0.29
8.4	1.19	0.97
8.5	1.45	1.49
8.6	1.54	1.74
8.7	1.42	1.68
8.8	1.09	1.33
8.9	0.60	0.75
Abut. No. 2	0.00	0.00

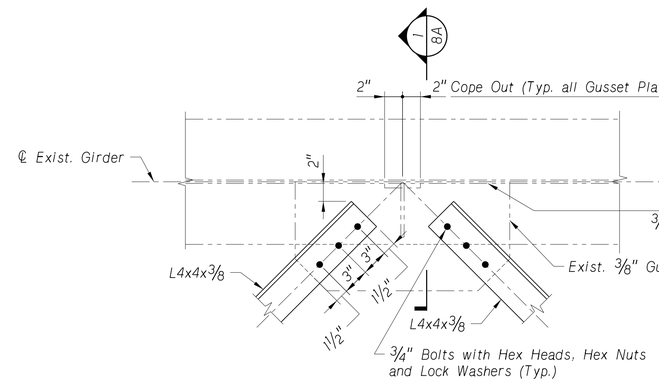
*Camber & Deflection Ordinates only apply to the Sections of Girder "D" being replaced.



CAMBER & BLOCKING DIAGRAM AT GIRDER "D" (EAST END)
Not to Scale



SECTION 1/8A



LATERAL WIND BRACING DETAILS
Scale: 1½" = 1'-0"

NOTE:
It is anticipated that nearly all gusset plates will be used in place. These details depict connection of the wind bracing to the existing gussets. This detail also applies to any gussets that are marked for replacement in the field and to gussets for the new sections of girder "D"

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
STEEL GIRDER REPAIRS (3 OF 3)

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" AHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY AMB **DETAILED BY** NTF **CHECKED BY** MJK **DATE** MAY., 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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SPECIAL PLAN NO. 3

8A / 18

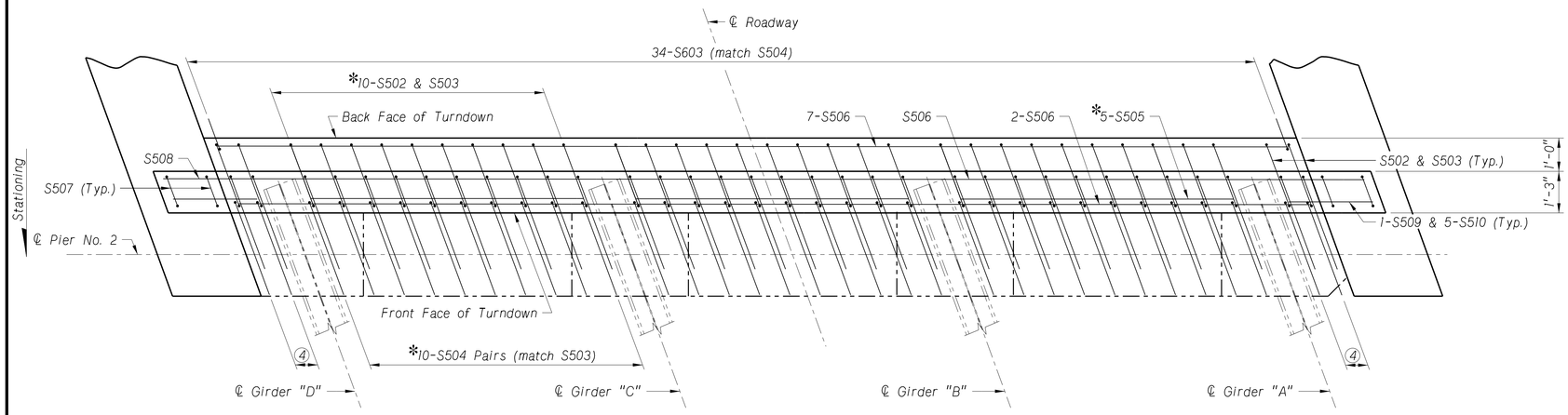
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(R1) ADDED SHEET

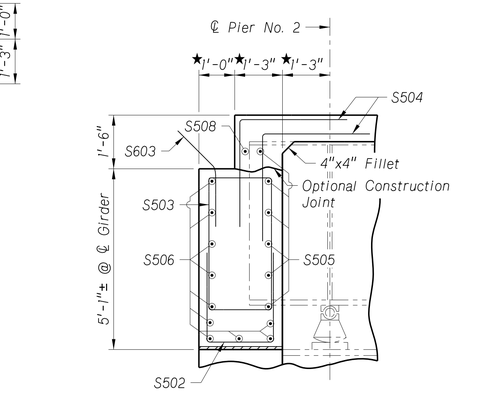
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S49A

C.N. 32320

STRUCTURE NUMBER
S012 16027

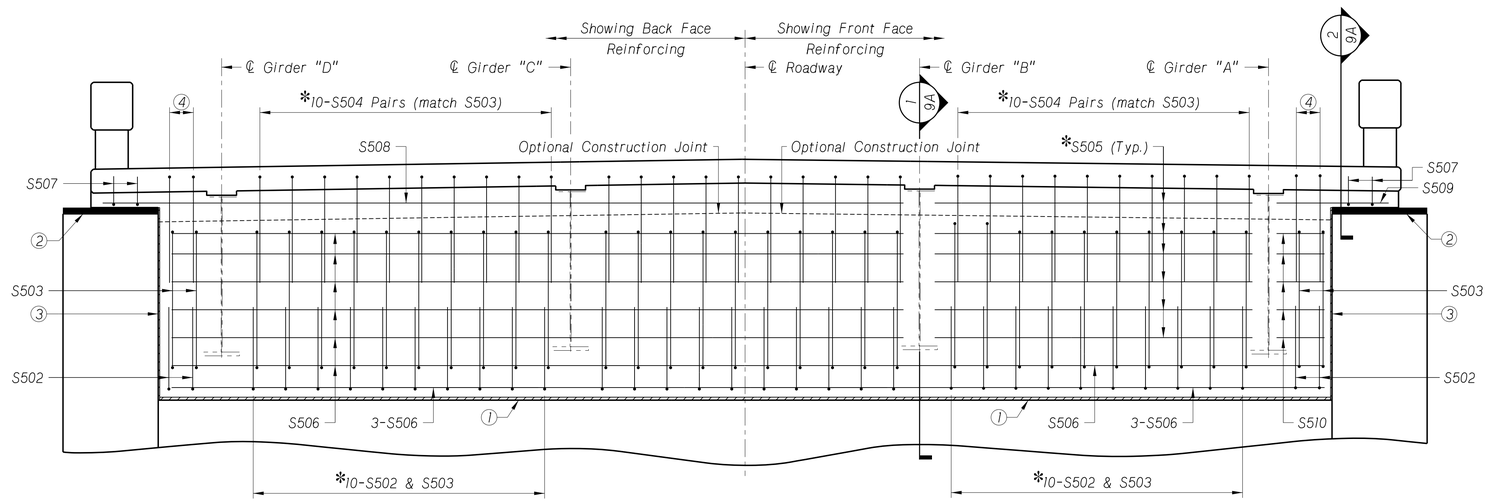


PLAN OF TURNDOWN AT PIER NO. 2
Scale: ½" = 1'-0"

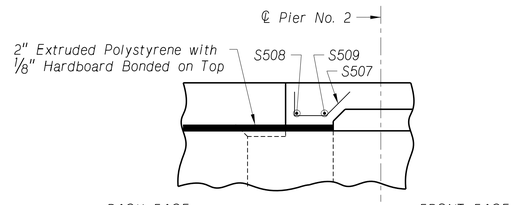


NOTE: For deck reinforcing see sheet 10A of 18.

SECTION (1 / 9A)
Not to Scale



ELEVATION OF TURNDOWN AT PIER NO. 2
(Looking Back Station)
Scale: ½" = 1'-0"



SECTION (2 / 9A)
Not to Scale

NOTES:

✻ Typical between Girders.

★ Measured perpendicular to ℄ Pier No. 2.

(1) 1" Preformed Joint Filler or Polystyrene (Typ.)

(2) 2" Extruded Polystyrene with 1/8" Hardboard Bonded to Top.

(3) 1" Preformed Joint Filler (Sponge Rubber Type) Typical on Vertical Faces.

(4) 2-S504 Pairs (match S503)

BRIDGE ENGINEER

MARK J. TRAYNOWICZ E-8119
PROFESSIONAL CIVIL ENGINEER — STATE OF NEBRASKA

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE

PLAN & ELEVATION OF TURNDOWN

LOCATION NIOBRARA WEST BRIDGES 1000'-0"
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

DESIGNED BY ZZJ
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

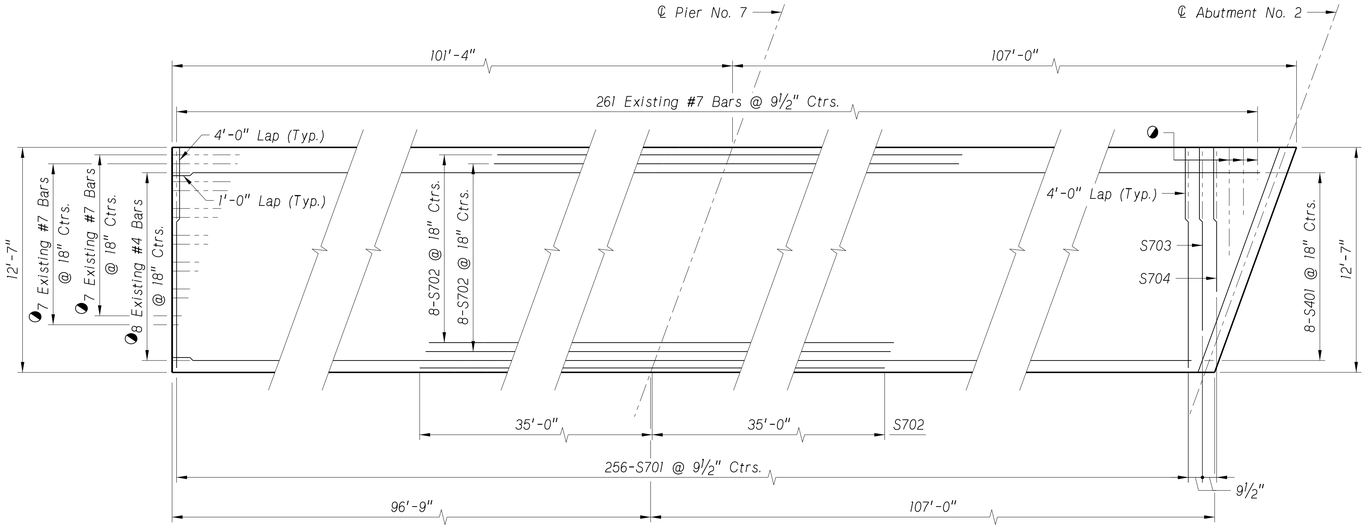
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DEPARTMENT OF TRANSPORTATION

AARON M. BUETTNER E-10646
PROFESSIONAL CIVIL ENGINEER — STATE OF NEBRASKA
11thMAY 19

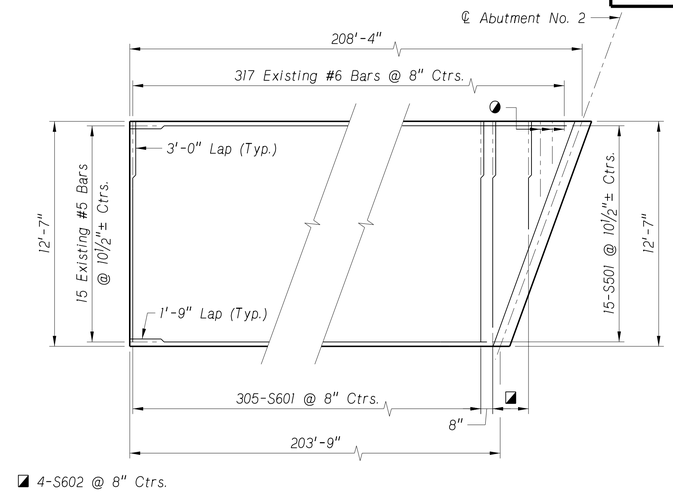
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SPECIAL PLAN NO. 3 — 9A / 18

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SPAN 7 & 8 TOP OF SLAB REINFORCEMENT LAYOUT
Scale: ¼" = 1'-0"



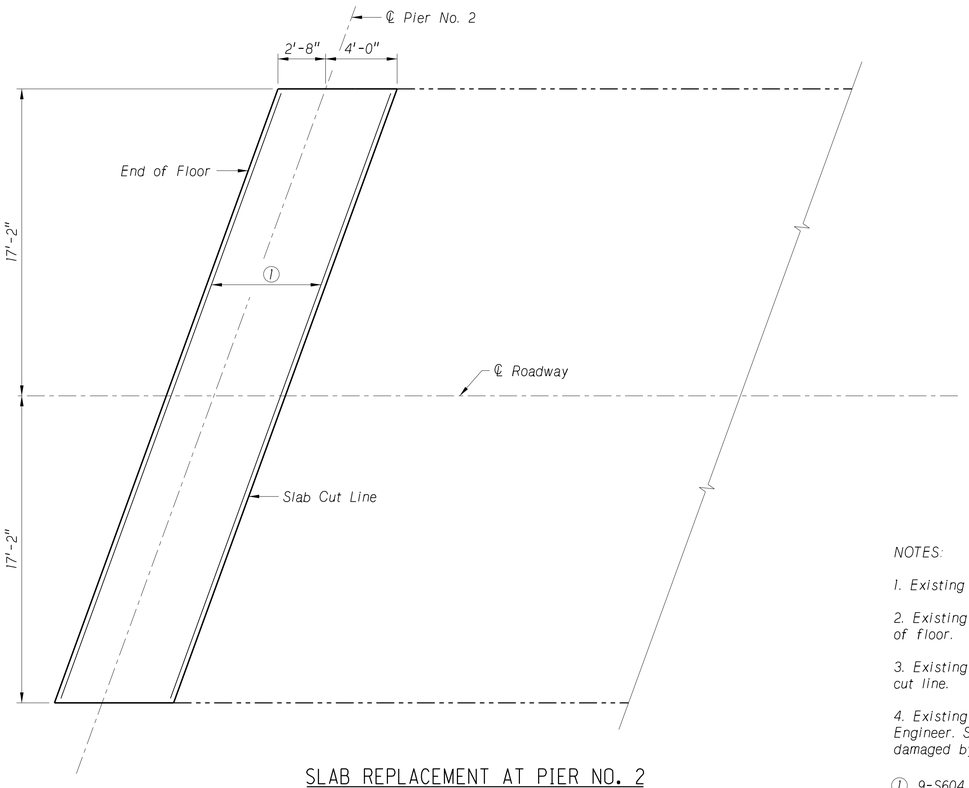
SPAN 7 & 8 BOTTOM OF SLAB REINFORCEMENT LAYOUT
Scale: ¼" = 1'-0"

NOTES:

1. Existing Steel Reinforcement shall be cut to length indicated, cleaned, straightened and incorporated into new work.

2. Existing Steel Reinforcement damaged or deteriorated shall be replaced as directed by the Engineer. See Special Provisions for the minimum splice length required. Replacement of bars damaged by the Contractor shall be at the Contractor's expense.

◑ Do Not Cut These Bars



SLAB REPLACEMENT AT PIER NO. 2
Scale: ¼" = 1'-0"

NOTES:

1. Existing Steel Reinforcement not shown for clarity.

2. Existing Longitudinal Steel Reinforcement shall be cut to maintain 2" clear cover at the new end of floor.

3. Existing Transverse Steel Reinforcement shall be cut and removed within 6" of the specified slab cut line.

4. Existing Steel Reinforcement damaged or deteriorated shall be replaced as directed by the Engineer. See Special Provisions for the minimum splice length required. Replacement of bars damaged by the Contractor shall be at the Contractor's expense.

① 9-S604 @ 9" Ctrs. (Top & Bottom)

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S50A

C.N. 32320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
SLAB REPAIR DETAILS

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY MJK | DETAILED BY MJK | CHECKED BY ZZJ | DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

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SPECIAL PLAN NO.	
3	10A / 18

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SLAB BILL OF BARS

	MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LBS
SLAB	S701	256	12'-5"	Str.									6,497
	S702	16	74'-0"	Str.		Includes 1 ~ 4'-0" Lap							2,420
	S703	1	10'-3"	Str.									21
	S704	1	8'-1"	Str.									17
	S601	305	12'-5"	Str.									5,688
	S602	4	8'-9" AV.	Str.									53
	S603	34	3'-0"	105	1'-6"	1'-6"	1'-1"				4½"		153
	S604	18	36'-0"	Str.									973
	S501	15	212'-9"	Str.		Includes 3 ~ 1'-9" Lap							3,328
	S502	34	6'-11"	103	2'-6"	1'-11"	2'-6"				2½"		245
	S503	34	12'-1"	107	3'-8"	1'-11"					2½"	5½"	428
	S504	68	6'-0"	104	3'-0"	3'-0"					2½"		426
	S505	18	9'-0"	Str.									169
	S506	10	32'-3"	Str.									336
	S507	4	2'-7"	119	0'-11"	0'-8"	1'-0"		0'-8"		2½"		11
	S508	1	36'-0"	Str.									38
	S509	2	3'-2"	Str.									7
	S510	10	1'-4"	Str.									14
	S401	8	210'-6"	Str.		Includes 1 ~ 1'-0" Lap							1,125
											SUBTOTAL =		21,949 LBS
RAIL ON BRIDGE	S691	115	5'-10"	104	2'-8"	3'-2"					4½"		1,008
	S591	8	7'-0"	Str.									58
	S592	4	3'-10"	Str.									16
	S593	2	4'-5"	101	2'-6"	1'-11"	0'-4"				2½"		9
	S594	4	211'-3"	Str.	Includes 3 ~ 2'-0" Lap								881
	S595	2	208'-3"	Str.	Includes 3 ~ 2'-0" Lap								434
	S596	4	5'-5"	101	2'-6"	2'-11"					2½"		23
	S491	115	5'-4"	104	2'-8"	2'-8					3"		410
	S391	109	4'-4"	107	1'-0"	0'-10"					1½"	4"	178
	S392	9	7'-2"	107	2'-8"	0'-7"					1½"	4"	24
	S393	75	5'-2"	107	1'-8"	0'-7"					1½"	4"	146
	S394	3	4'-0"	107	0'-10"	0'-10"					1½"	4"	5
	S395	3	3'-8"	107	0'-8"	0'-10"					1½"	4"	4
											SUBTOTAL =		3,196 LBS
											TOTAL =		25,145 LBS

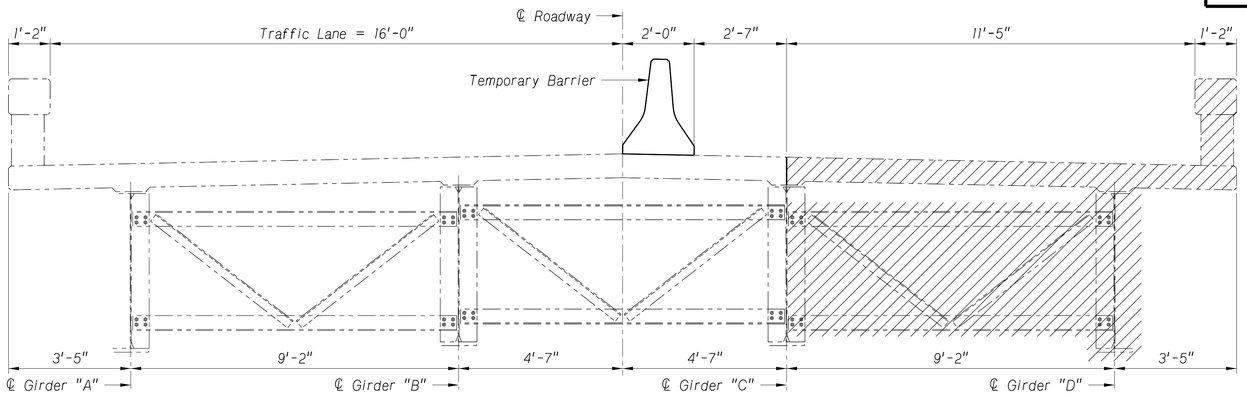
NOTE: FOR PIN DIAMETERS, HOOK LENGTHS & BENDING DIAGRAMS SEE SHEET 18 OF 18.

THE NUMBER OF LAP SPLICES ARE CALCULATED BASED ON 60'-0" LENGTHS OF REINFORCING STEEL BARS. SPLICES ON BARS SHORTER THAN 60'-0" WILL REQUIRE ADDITIONAL LAP SPLICES AT NO ADDITIONAL EXPENSE TO NDOT.

BAR SETS-SLAB

MARK	MAX. LENGTH	MIN. LENGTH	NO. OF SETS	BARS PER SET
S602	11'-6"	6'-0"	1	4

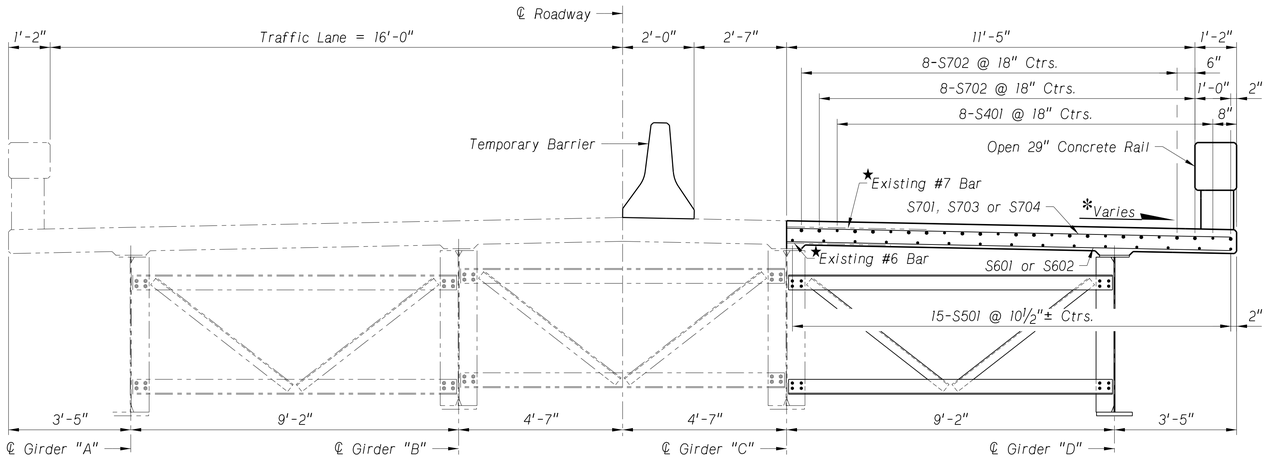
(R1) ADDED SHEET



LIMITS OF GIRDER AND SLAB REMOVAL

Scale: ½" = 1'-0"

Limits of Removal



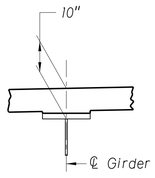
CROSS SECTION OF ROADWAY

Scale: ½" = 1'-0"

REINFORCING STEEL CLEARANCES
TOP: 2½" ±¼"
BOTTOM: 1" +¼", -0

NOTE: 8" Minimum Uniform Slab Thickness

★ See Slab Layout details on sheet 10A of 18 for incorporation of existing reinforcement into new work



SHIM DETAIL

Not to Scale
(Welded Plate Girder)

*CROSS SLOPE INFORMATION

SLOPE	STATION RANGE
-1.5%	495+89.83 to 504+42.58
-1.5% to +1.5%	504+42.58 to 505+89.83
+1.5%	505+89.83 to 506+00.00

benesch

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S51A

C.N. 32320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
SLAB REPAIR DETAILS & BILL OF BARS

LOCATION NIOBRARA WEST BRIDGES **DATE** MAY, 2019
SKEW 20°00'00" RHB **DRAWN BY** ZZJ
ROADWAY 32'-0" **CHECKED BY** ZZJ
DESIGN LIVE LOAD HS20-44 **DETAILED BY** MJK
DESIGNED BY MJK **CHECKED BY** ZZJ

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

NEBRASKA DEPARTMENT OF TRANSPORTATION

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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
16th MAY 19
STATE OF NEBRASKA

SPECIAL PLAN NO.	
3	11A / 18

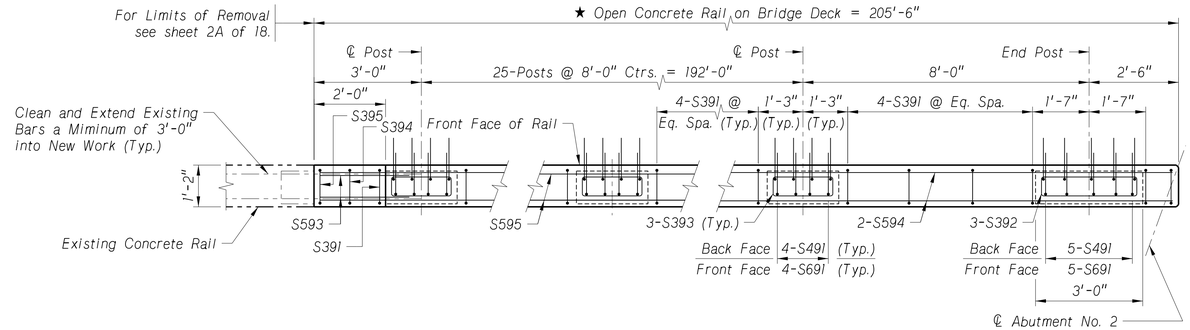
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(R1) ADDED SHEET

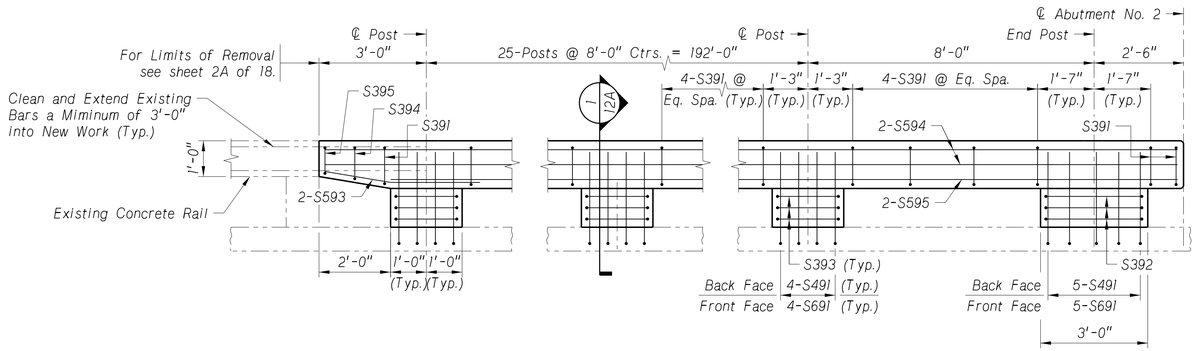
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S52A

C.N. 32320

STRUCTURE NUMBER
S012 16027



PARTIAL PLAN OF OPEN CONCRETE RAIL ON BRIDGE
(Span No. 7 & 8 Rt. Only)
Not to Scale



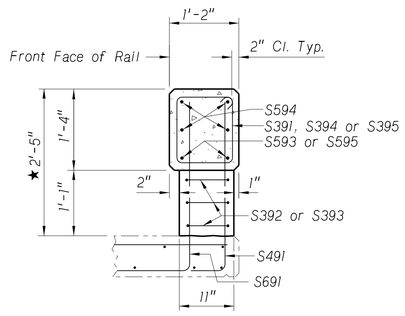
PARTIAL ELEVATION OF OPEN CONCRETE RAIL ON BRIDGE
(Span No. 7 & 8 Rt. Only)
Not to Scale

NOTES:

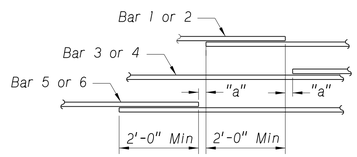
Posts must be plumb.

★ Measured at front face of rail

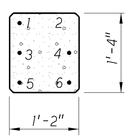
For Bill of Bars see sheet 11A of 18.



SECTION 1/12A
Not to Scale



▲ LAP DETAIL
Not to Scale



RAIL SECTION
See Lap Detail
Not to Scale

▲ Laps for Bars 1 and 5 shall be staggered.
Laps for Bars 2 and 6 shall be staggered.
Bar 3 to be continuous through laps for Bars 1 and 5
Bar 4 to be continuous through laps for Bars 2 and 6
"a" ≥ Zero

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
REMODEL CONCRETE RAIL ON BRIDGE (1 OF 2)

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY AMB
DETAILED BY NTF
CHECKED BY ZZJ
DATE MAY, 2019

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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3

12A / 18

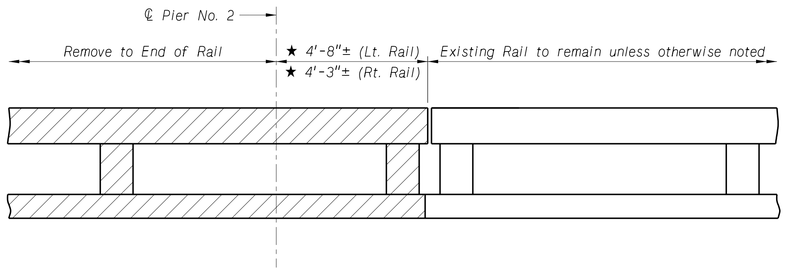
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(R1) ADDED SHEET

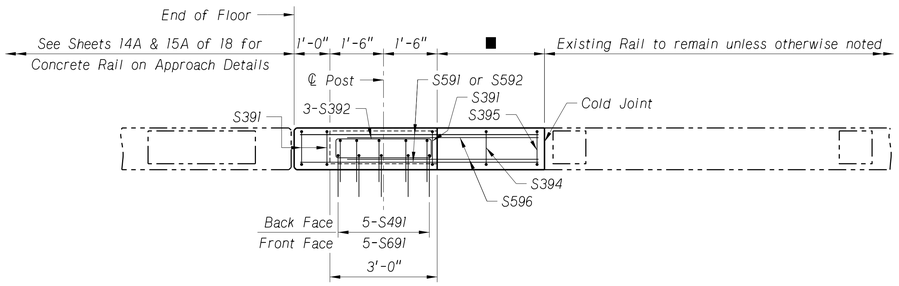
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S53A

C.N. 32320

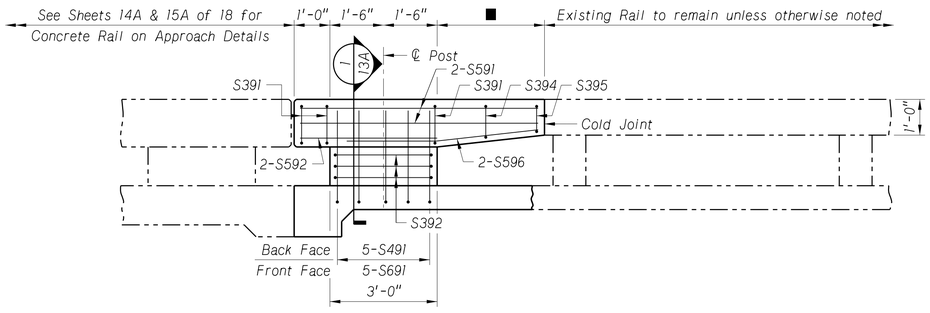
STRUCTURE NUMBER
S012 16027



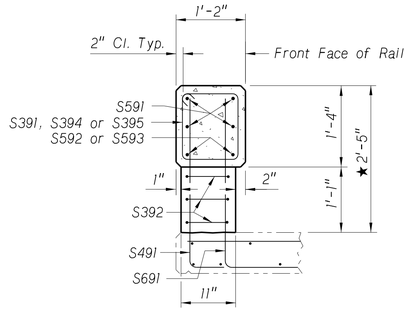
PARTIAL PLAN OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale



PLAN OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale



ELEVATION OF OPEN CONCRETE RAIL ON BRIDGE
Not to Scale



SECTION 1/13A
Not to Scale

NOTES:

1. Posts must be plumb.
2. For Bill of Bars see sheet 11A of 18.
3. Field clip S591 & S596 as required to maintain proper clearance.

■ 3'-5"± (Lt. Rail)
3'-0"± (Rt. Rail)

★ Measured at front face of rail

BRIDGE ENGINEER

MARK J. TRAYNOWICZ E-8119 — PROFESSIONAL CIVIL ENGINEER — STATE OF NEBRASKA

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
REMODEL CONCRETE RAIL ON BRIDGE (2 OF 2)

COUNTY KNOX — DATE MAY, 2019
HWY. NO. N-12 — CHECKED BY ZZJ
REF. POST. 160.27 — DESIGNED BY AMB — DETAILED BY NTF
STA. 500+99.49 — DESIGN LIVE LOAD HS20-44
SKEW 20°00'00" AHB
ROADWAY 32'-0"
LOCATION NIOBRARA WEST BRIDGES

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DEPARTMENT OF TRANSPORTATION

AARON M. BUETTNER E-10646 — PROFESSIONAL CIVIL ENGINEER — STATE OF NEBRASKA

benesch

SPECIAL PLAN NO. 3 — 13A / 18

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(R1) ADDED SHEET

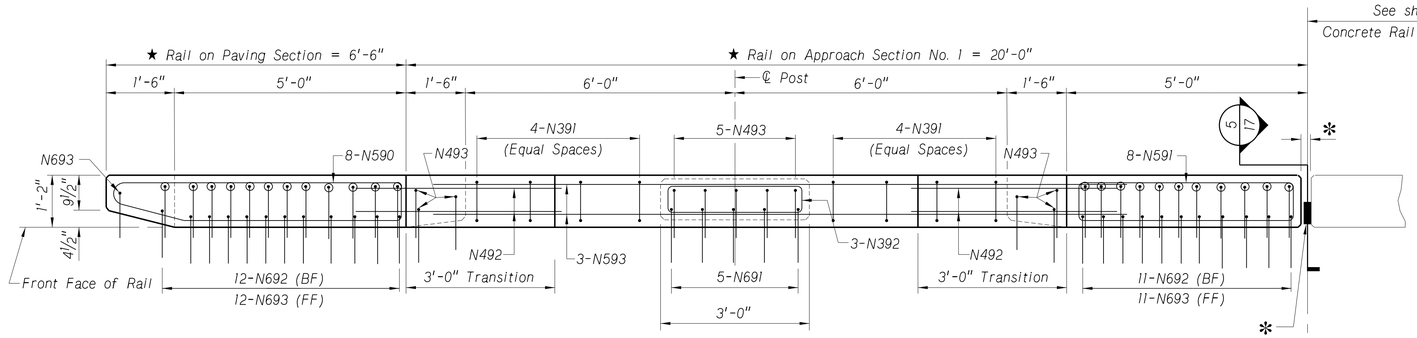
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S54A

C.N. 32320

STRUCTURE NUMBER
S012 16027

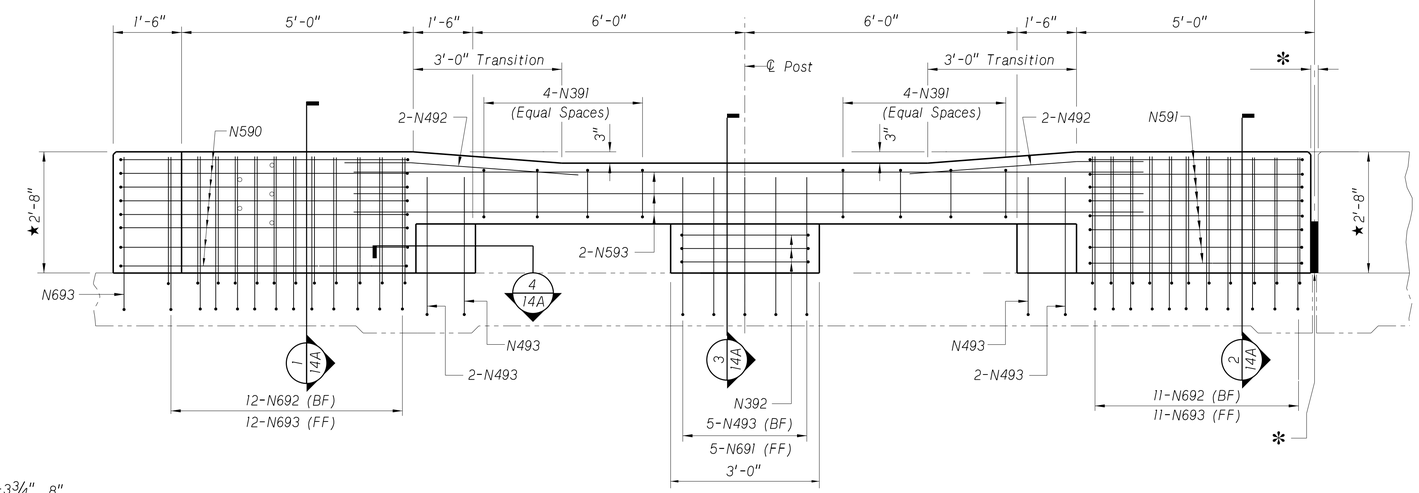
PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

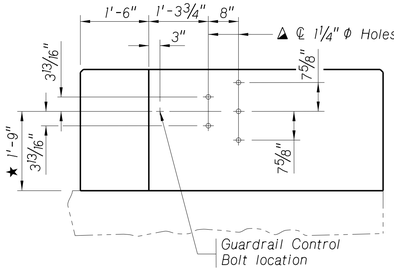


PLAN OF OPEN CONCRETE RAIL ON APPROACH SECTION NO. 1
Not to Scale

* Joint material and opening width shall match what is shown on Approach Slab sheet, see sheet 17 of 18.

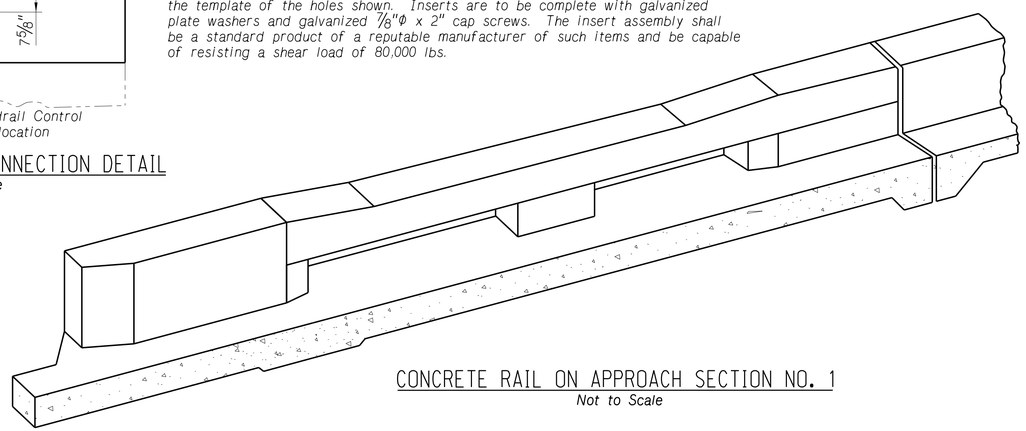


ELEVATION OF OPEN CONCRETE RAIL ON APPROACH SECTION NO. 1
Not to Scale

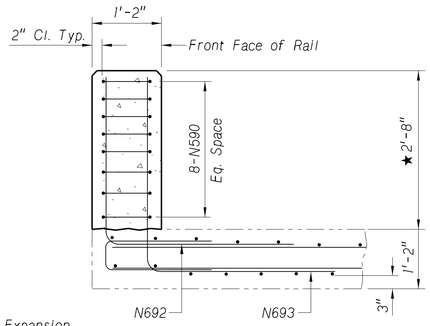


THRIE BEAM TERMINAL CONNECTION DETAIL
Not to Scale

▲ As an alternate method, the contractor shall furnish and cast into the concrete an approved welded assembly consisting of threaded inserts, held accurately to the template of the holes shown. Inserts are to be complete with galvanized plate washers and galvanized ⅞"ϕ x 2" cap screws. The insert assembly shall be a standard product of a reputable manufacturer of such items and be capable of resisting a shear load of 80,000 lbs.

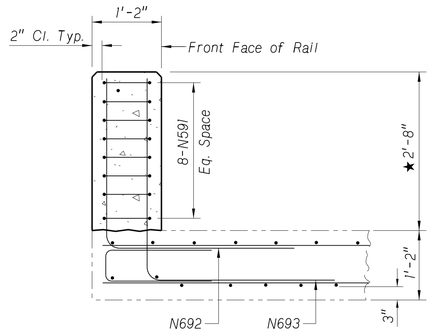


CONCRETE RAIL ON APPROACH SECTION NO. 1
Not to Scale

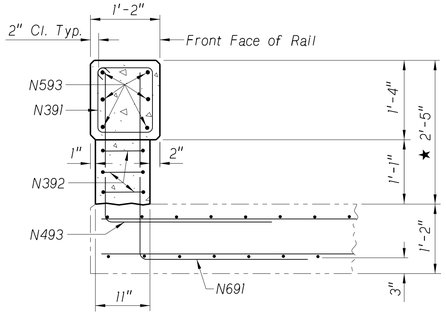


SECTION 1/14A
Not to Scale

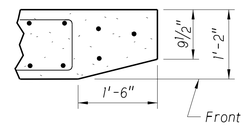
℄ Grade Beam, Gap and Expansion Joint at Front Face of Rail



SECTION 2/14A
Not to Scale



SECTION 3/14A
Not to Scale



SECTION 4/14A
Not to Scale

NOTES:

★ Measured at front face of rail.
⊙ Circled bars indicate placement in the top layer.
(BF) = Back Face
(FF) = Front Face
(EF) = Each Face
Rail must be plumb.
For Rail on Approach Slab Bill of Bars, see sheet 18 of 18.

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
CONCRETE RAIL ON APPROACH SECTION NO. 1

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY ZZJ
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

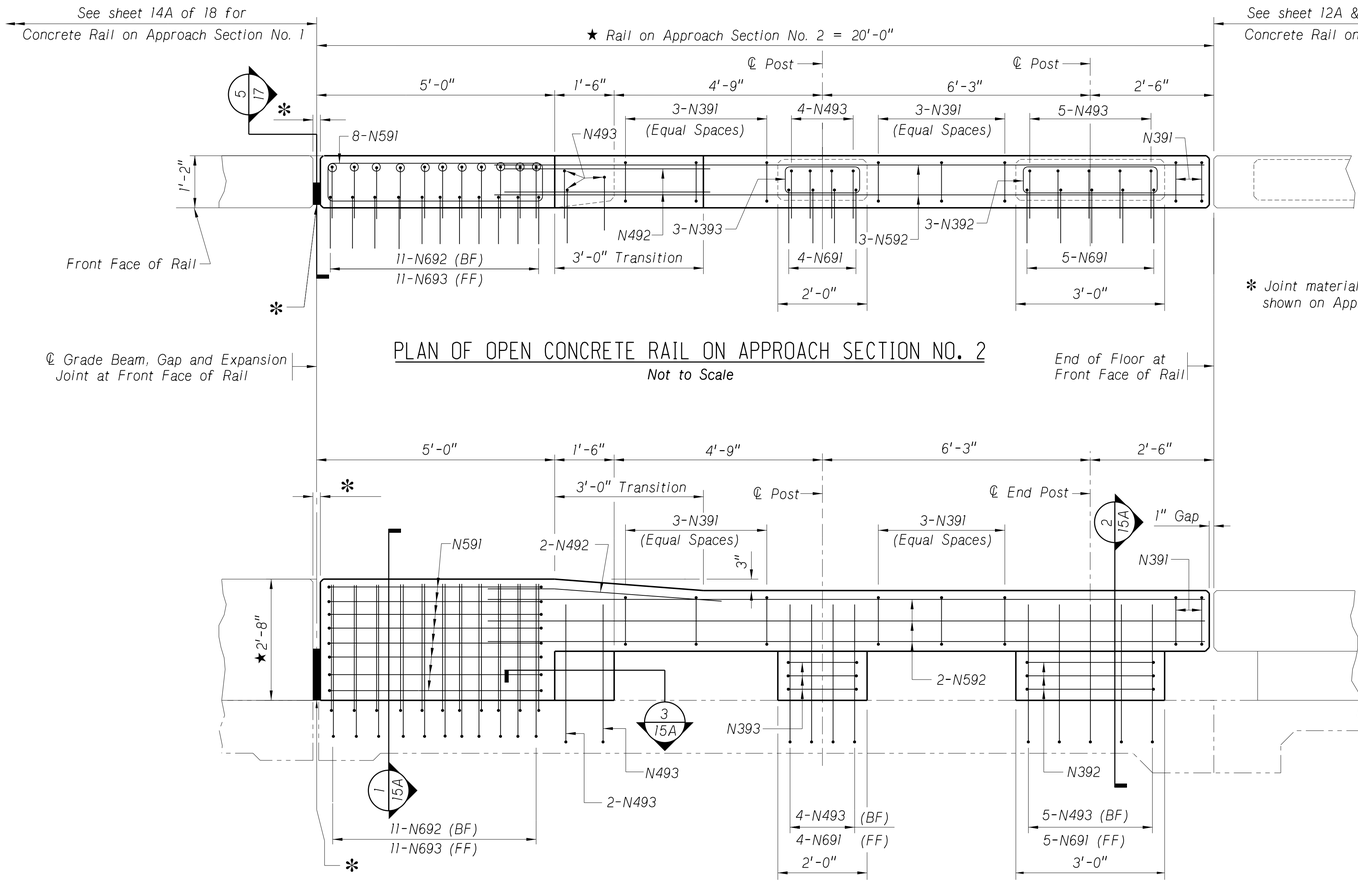
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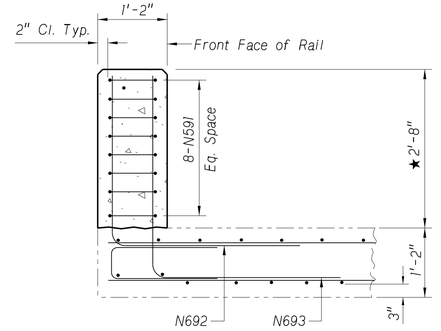
PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
16thMAY 19
STATE OF NEBRASKA

benesch

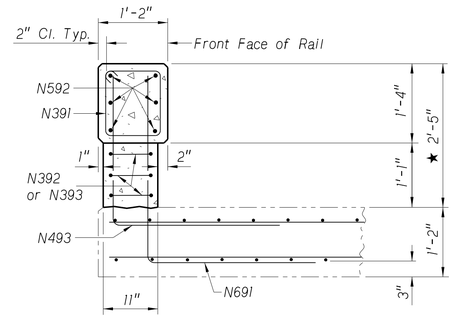
SPECIAL PLAN NO.	14A / 18
3	

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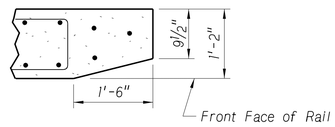




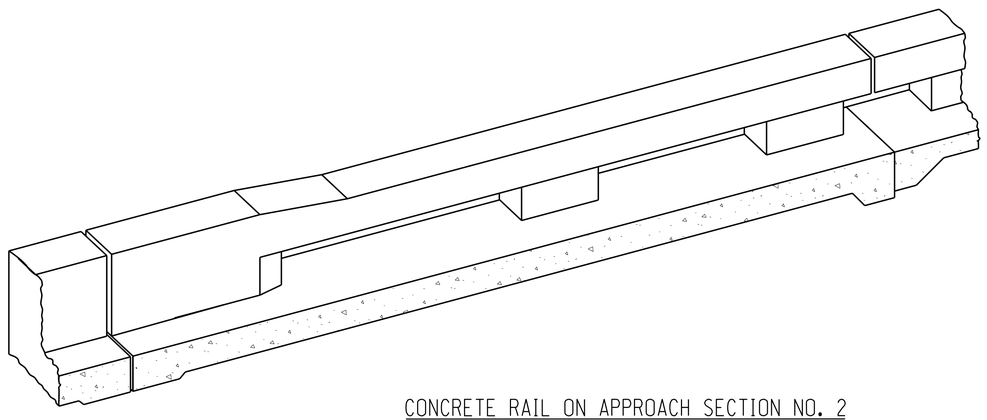
SECTION 1 / 15A
Not to Scale



SECTION 2 / 15A
Not to Scale



SECTION 3 / 15A
Not to Scale



CONCRETE RAIL ON APPROACH SECTION NO. 2
Not to Scale

NOTES:

★ Measured at front face of rail.
⊙ Circled bars indicate placement in the top layer.
(BF) = Back Face
(FF) = Front Face
(EF) = Each Face
Rail must be plumb.
For Rail on Approach Slab Bill of Bars, see sheet 18 of 18.

(R1) ADDED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S55A

C.N. 32320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
CONCRETE RAIL ON APPROACH SECTION NO. 2

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49
LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44
DESIGNED BY ZJJ
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

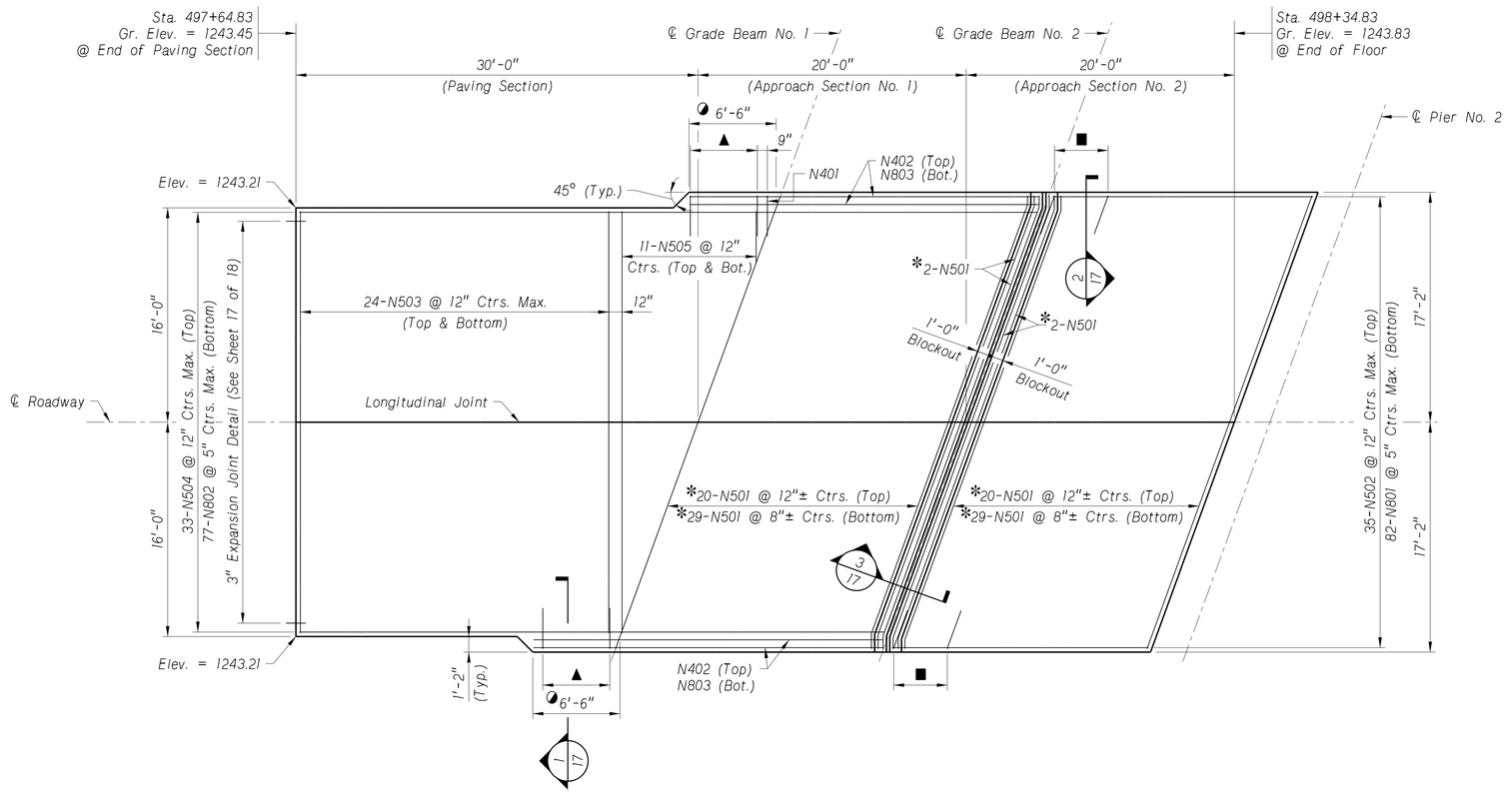
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PROFESSIONAL CIVIL ENGINEER
AARON M. BUETTNER
E-10646
STATE OF NEBRASKA

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SPECIAL PLAN NO.	15A / 18
3	

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PLAN OF APPROACH SLAB

Scale: 3/16" = 1'-0"

(R1) ADDED SHEET

■ 5-N401 @ 12" Ctrs.

▲ 6-N401 (Match N505 or N503)

* Field bend Approach Slab Reinforcement as necessary at corners

◑ Dimensions Measured at Edge of Roadway

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S56

C.N. 32320

STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER
MARK J. TRAYNOWICZ
E-8119
STATE OF NEBRASKA

BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE

PLAN OF APPROACH SLAB

DATE MAY, 2019

CHECKED BY MJK

LOCATION NIOBRARA WEST BRIDGES

SKEW 20°00'00" RHB

ROADWAY 32'-0"

DESIGN LIVE LOAD HS20-44

DETAILED BY NTF

DESIGNED BY ZJJ

COUNTY KNOX

HWY. NO. N-12

REF. POST. 160.27

STA. 500+99.49

TRANSPORTATION - BRIDGE DIVISION

NEBRASKA DEPARTMENT OF TRANSPORTATION

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PROFESSIONAL ENGINEER
AARON M. BUETTNER
E-10646
16th MAY 19
STATE OF NEBRASKA

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SPECIAL PLAN NO. 3

16/18

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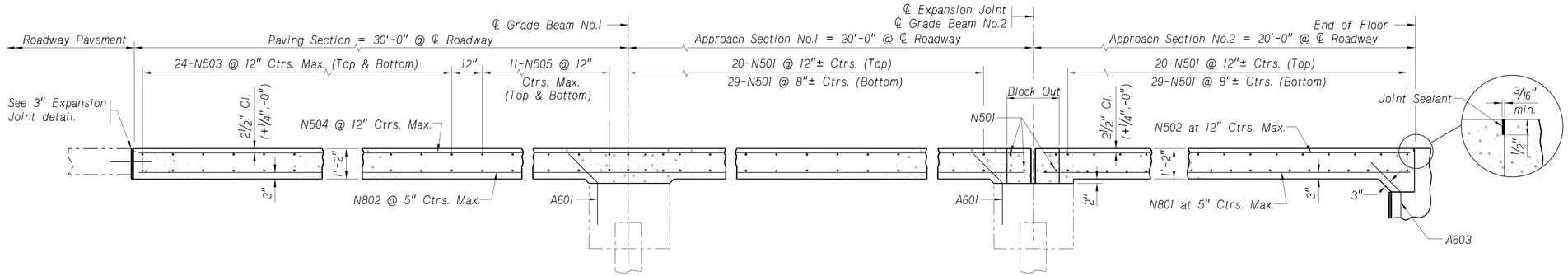
PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S57

C.N. 32320

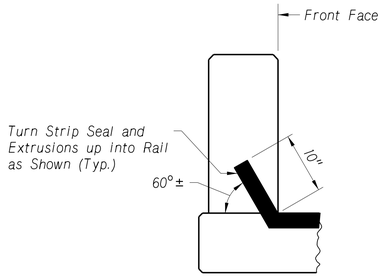
STRUCTURE NUMBER
S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA

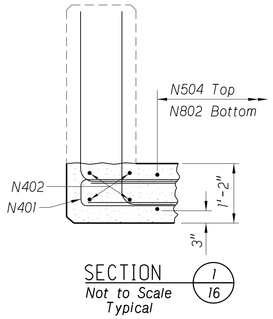
BRIDGE ENGINEER



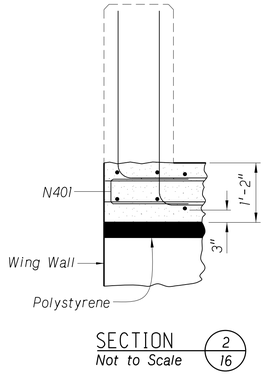
LONGITUDINAL SECTION
Not to Scale



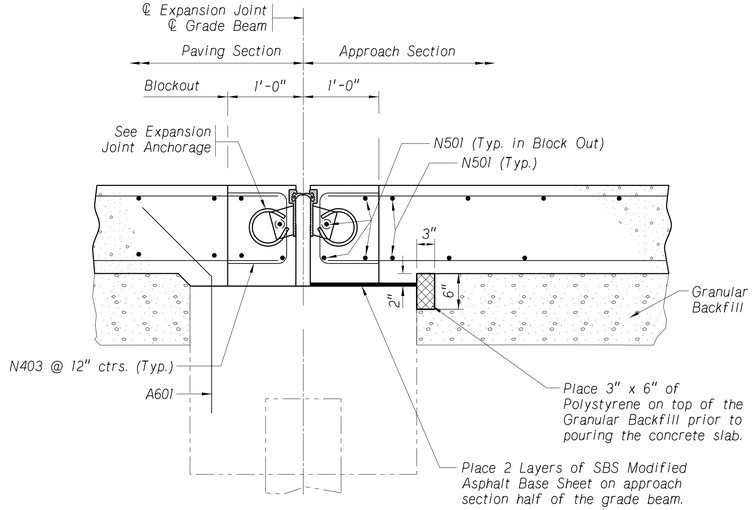
SECTION 5 / 14A,15A
Not to Scale



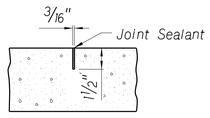
SECTION 1 / 16
Not to Scale
Typical



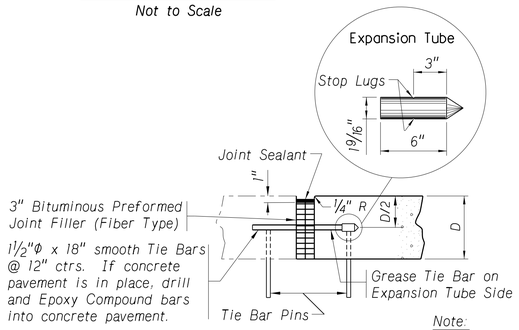
SECTION 2 / 16
Not to Scale



SECTION 3 / 16
Not to Scale



LONGITUDINAL JOINT
Not to Scale



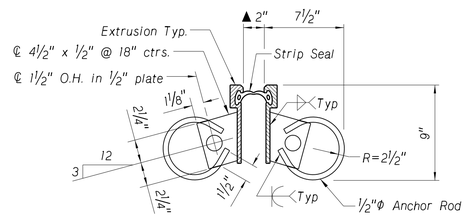
3" EXPANSION JOINT
Not to Scale

Note:
Use D/2 of Roadway Pavement if less than D/2 of Paving Section.

NOTE:
If roadway pavement is asphalt, omit 3" Expansion Joint.

4" STRIP SEALS		
MANUFACTURER	EXTRUSION	SEAL
D. S. Brown Co.	SSPA	L2
Watson Bowman	P	SE-400

Extrusions shall be set to grade and crown. Gap width at time of installation shall be based on ambient air temperature. Dimensions marked thus (▲) are measured at 50°F. Gap width shall be decreased ⅛" for every 5.7°F increase in temperature above 50°F. Gap width shall be increased ⅛" for every 5.7°F decrease in temperature below 50°F. The seal shall be installed within the gap limits recommended by the manufacturer.



EXPANSION JOINT ANCHORAGE
Not to Scale

APPROACH SLAB NOTES:

Concrete Rail Width = 1'-2". See sheet 14A & 15A of 18 for placement of rail reinforcement.

See Standard Specifications for tining and finishing of approach slabs.

SBS Modified Asphalt base sheets and all other miscellaneous items shall be considered subsidiary to the Pay Item, CONCRETE FOR PAVEMENT APPROACHES CLASS 47BD-4000.

SBS Modified Asphalt base sheets shall be modified bitumen roofing material, with a minimum thickness of 0.090 inch and a minimum weight of 60 lbs. per 100 sq. feet.

Longitudinal Joints shall be 1½" deep and placed in the paving and approach slabs in accordance with section 603.03 paragraph 12 of the Standard Specifications. Contractor shall exercise care not to damage reinforcing steel placed in the top layer of the slabs.

The expansion gap between approach section and paving section shall be cleaned of all foreign matter before the installation of the expansion device or the filler material.

Steel extrusions shall be galvanized in accordance with ASTM A123.

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGES
BRIDGE-CONTINUOUS COMPOSITE TYPE
APPROACH SLAB DETAILS

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGE
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY ZZJ
DETAILED BY NTF
CHECKED BY MJK
DATE MAY., 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER — AARON M. BUETTNER E-10646 — 16 MAY 19 — STATE OF NEBRASKA

benesch

SPECIAL PLAN NO.	
3	17/18

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BILL OF BARS

	MARK	NO.	LENGTH	TYPE	"A"	"B"	"C"	"D"	"E"	"F"	PIN	HOOK	WEIGHT LB
APPROACH SLAB	N801	82	19'-1"	Str.									4,178
	N802	77	49'-4½" AV	Str.									10,151
	N803	4	26'-1"	Str.									279
	N501	106	36'-0"	Str.									3,980
	N502	35	19'-1"	Str.									697
	N503	48	31'-6"	Str.									1,577
	N504	33	49'-4½" AV	Str.									1,699
	N505	22	17'-7" AV	Str.									403
	N401	23	6'-7"	103	3'-0"	0'-7"	3'-0"				2"		101
	N402	4	26'-1"	Str.									70
	N403	72	2'-4"	103	0'-10"	0'-8"	0'-10"				2"		112
											SUBTOTAL =		23,247 LB
RAIL ON APPROACH SLAB	N691	28	6'-4"	104	3'-2"	3'-2"					4½"		266
	N692	68	5'-10"	104	2'-11"	2'-11"					4½"		596
	N693	70	6'-10"	104	3'-5"	3'-5"					4½"		718
	N590	16	14'-5"	130	4'-8"	0'-10"	6'-1"	0'-5"	1'-6"	1'-5"	2½"	5½"	241
	N591	32	11'-11"	107	0'-10"	4'-8"					2½"	5½"	398
	N592	12	18'-0"	Str.									225
	N593	12	20'-6"	Str.									257
	N492	12	6'-0"	101	2'-6"	3'-6"	0'-3½"				3"		48
	N493	46	5'-4"	104	2'-8"	2'-8"					3"		164
	N391	28	4'-4"	107	1'-0"	0'-10"					1½"	4"	46
	N392	12	7'-4"	107	2'-8"	0'-8"					1½"	4"	33
	N393	6	5'-4"	107	1'-8"	0'-8"					1½"	4"	12
											SUBTOTAL =		3,004 LB
											TOTAL =		26,251 LB

BAR MARK

A413 — A (TYPE OF BRIDGE ELEMENT) — 4 (BAR SIZE) — 13 (BAR NUMBER)

BAR NUMBER:
- 01 THRU 49, GENERAL REINFORCING
- 70 THRU 79, LIGHT POLE REINFORCING
- 90 THRU 99, CURB OR RAIL REINFORCING

BAR SIZE

TYPE OF BRIDGE ELEMENT- A=ABUTMENT
(P=PIER, B=BENT, S=SLAB, N=APPROACH SLAB)

THE NUMBER OF LAP SPLICES ARE CALCULATED BASED ON 60'-0" LENGTHS OF REINFORCING STEEL BARS.
SPLICES ON BARS SHORTER THAN 60'-0" WILL REQUIRE ADDITIONAL LAP SPLICES AT NO ADDITIONAL EXPENSE TO NDOT.

BAR SETS-APPR. SLAB NO. 1

MARK	MAX. LENGTH	MIN. LENGTH	NO. OF SETS	BARS PER SET
N802	55'-1"	43'-8"	1	77
N504	55'-1"	43'-8"	1	33
N505	31'-4"	3'-10"	2	11

STANDARD HOOK LENGTH

PRIMARY STRESS BARS			STIRRUPS & TIES		
BAR SIZE	HOOK H 90°	HOOK H 180°	BAR SIZE	HOOK H 90°	HOOK H 135°
4	8"	6"	3	4"	4"
5	10"	7"	4	4½"	4½"
6	12"	8"	5	6"	5½"
7	15"	10"	6	12"	8"
8	17"	11"	7	14"	9"
9	19"	15"	8	16"	10½"
10	23"	17"			
11	24"	19"			

d = BAR SIZE
Dp = PIN DIAMETER

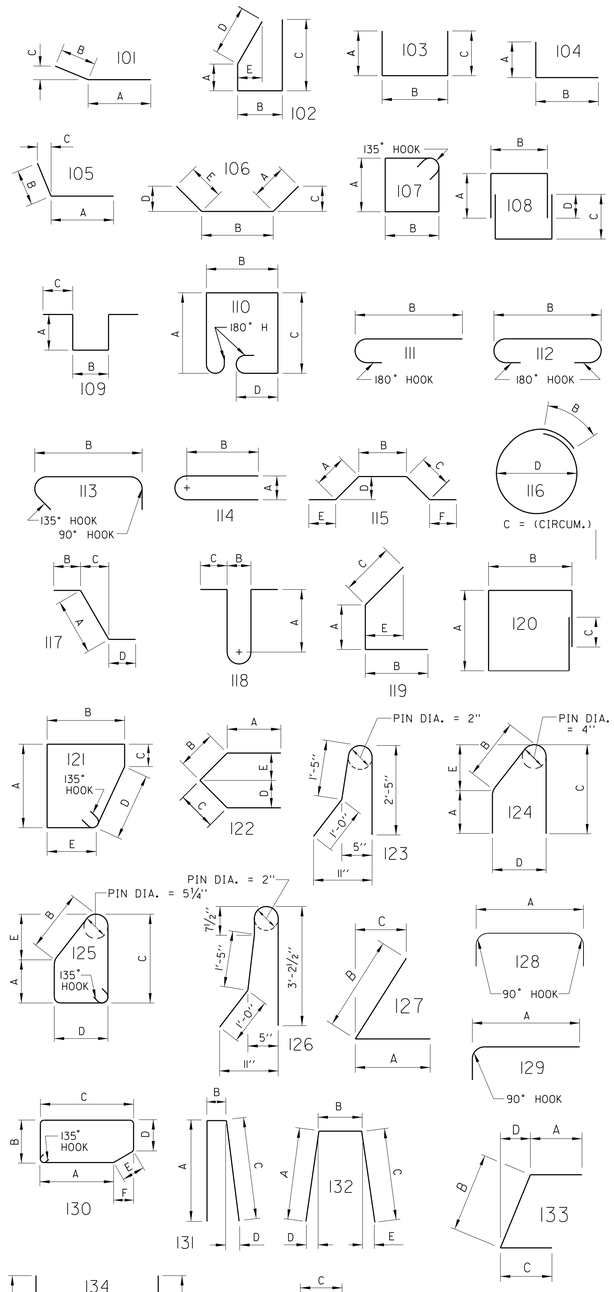
PIN DIAMETER

PRIMARY STRESS		STIRRUPS & TIES	
BAR SIZE	Dp	BAR SIZE	Dp
4	3"	3	1½"
5	3¾"	4	2"
6	4½"	5	2½"
7	5¼"	6	4½"
8	6"	7	5¼"
9	9½"	8	6"
10	11"		
11	12"		

DETAILING DIMENSION — HOOK H
d — Dp — 90°
DETAILING DIMENSION — HOOK H
d — Dp — 135°
DETAILING DIMENSION — HOOK H
d — Dp — 180°

BENDING DIAGRAMS

ALL DIMENSIONS ARE OUT TO OUT & NOT TO SCALE
ALL REINFORCING STEEL SHALL BE EPOXY COATED



benesch

R1 ADDED SHEET

PROJECT NUMBER	SHEET NO.
ER-12-5(122)	S58

C.N. 32320
STRUCTURE NUMBER S012 16027

PROFESSIONAL CIVIL ENGINEER — MARK J. TRAYNOWICZ E-8119 — STATE OF NEBRASKA
BRIDGE ENGINEER

1000'-0" MULTIPLE SPANS DECK STEEL GIRDER BRIDGE-CONTINUOUS COMPOSITE TYPE
APPROACH SLAB BILL OF BARS & BENDING DIAG.

COUNTY KNOX
HWY. NO. N-12
REF. POST. 160.27
STA. 500+99.49

LOCATION NIOBRARA WEST BRIDGES
SKEW 20°00'00" RHB
ROADWAY 32'-0"
DESIGN LIVE LOAD HS20-44

DESIGNED BY ZZJ
DETAILED BY NTF
CHECKED BY MJK
DATE MAY, 2019

NEBRASKA DEPARTMENT OF TRANSPORTATION - BRIDGE DIVISION

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

PROFESSIONAL CIVIL ENGINEER — AARON M. BUETTNER E-10646 — 16 MAY 19 — STATE OF NEBRASKA

SPECIAL PLAN NO.	
3	18 / 18

Y:\Omaha\202000S\00120227.01\Eng_Docs\Bridge\Sheets\S012_16027_Niobrara_River\S012_16027_18_Approach_Bill_Bars.dgn

Project No. ER-12-5(122)
Addendum No. 1
Pg. 60

PROJECT NO.	SHEET NO.
ER-12-5(122)	1/2
C.N. 32320	

(R1) DELETED SHEET

ROADWAY DESIGN DIVISION

487 488 489 490 491 492

62.5'

+57.34 23'/25'

+70.76 23'/25'

+85.86 14'/16'

STA. 492+00

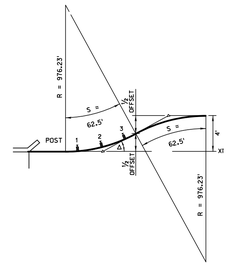
MATCH LINE

+83.26 X'/24'

+80.69 25'/23'

+80.69 25'/23'

437'



DETAILS OF REVERSED CURVE GUARDRAIL

492 493 494 495 496 497

STA. 492+00

MATCH LINE

+78.63 14'/16'

+92.61 24'/26'

+42.34 23'/25'

+34.00 26'/24'

+09.17 22'/20'

+34.39 22'/20'

335'

LEGEND

- (A) BRIDGE APPROACH SECTION (25'-0")
- (B) SURFACING UNDER GUARDRAIL
- (C) END TREATMENT, TYPE II (53'-1½")
- (D) BRIDGE APPROACH SECTION TL-2 (BY MANUFACTURER MASH TL-2 STANDARD)
- (E) CONCRETE PROTECTION BARRIER
- (F) END TREATMENT, TYPE TL-2
- (G) R = 187.77' (TABLE "D")
- (H) W-BEAM CONNECT TO CONCRETE PROTECTION BARRIER
- —— GRADING LINE

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-9-19
STATE OF NEBRASKA

GUARDRAIL INSTALLATION AT STA. 487+30.70 TO STA. 495+72.61

BRIDGES #(S012 16027) & #(S012 15983)

SHEET 2 OF 2

SPECIAL PLAN 2C

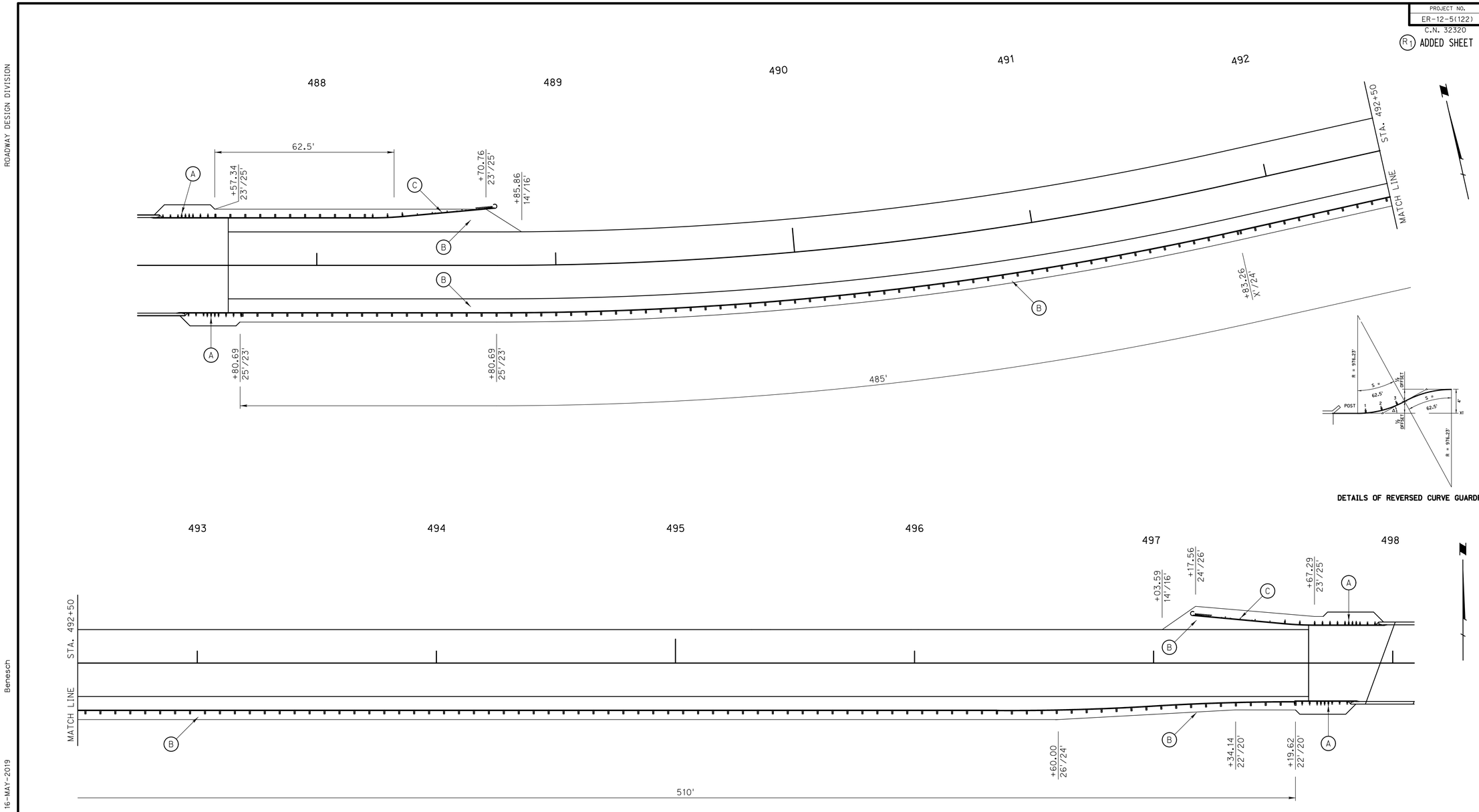
Benesch
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File: 323200cs02.dgn
Scale: 1:20

Project No. ER-12-5(122)
Addendum No. 1
Pg. 61

PROJECT NO.	SHEET NO.
ER-12-5(122)	U2A

C.N. 32320

(R1) ADDED SHEET



DETAILS OF REVERSED CURVE GUARDRAIL

LEGEND

- (A) BRIDGE APPROACH SECTION (25'-0")
- (B) SURFACING UNDER GUARDRAIL
- (C) END TREATMENT, TYPE II (53'-1½")
- (D) BRIDGE APPROACH SECTION TL-2 (BY MANUFACTURER MASH TL-2 STANDARD)
- (E) CONCRETE PROTECTION BARRIER
- (F) END TREATMENT, TYPE TL-2
- (G) R = 187.77' (TABLE "D")
- (H) W-BEAM CONNECT TO CONCRETE PROTECTION BARRIER
- —— GRADING LINE

GUARDRAIL INSTALLATION AT STA. 487+30.70 TO STA. 497+84.00

BRIDGES #(S012 16027) & #(S012 15983)

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-15-19
STATE OF NEBRASKA

SHEET 2 OF 2

SPECIAL PLAN 2C

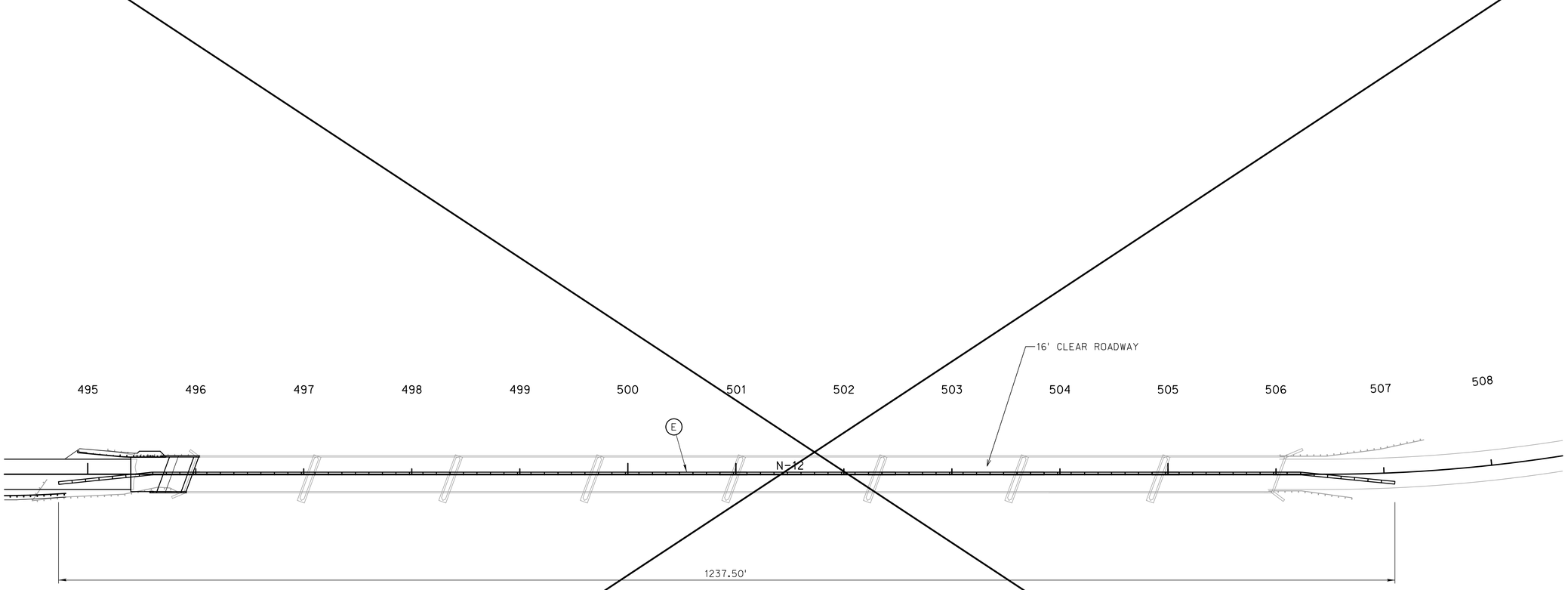
ROADWAY DESIGN DIVISION
Benesch
Date: 16-MAY-2019
File: 323200cs02 Rev1.dgn
Scale: 1:20

(R1) DELETED SHEET

PROJECT NO.	SHEET NO.
ER-12-5(122)	03

C.N. 32320

ROADWAY DESIGN DIVISION



TEMPORARY BARRIER

LEGEND

- (A) BRIDGE APPROACH SECTION (25'-0")
- (B) SURFACING UNDER GUARDRAIL
- (C) END TREATMENT, TYPE II (53'-1½")
- (D) BRIDGE APPROACH SECTION TL-2 (BY MANUFACTURER MASH TL-2 STANDARD)
- (E) CONCRETE PROTECTION BARRIER
- (F) END TREATMENT, TYPE TL-2
- (G) R = 187.77' (TABLE "D")
- (H) W-BEAM CONNECT TO CONCRETE PROTECTION BARRIER
- —— GRADING LINE

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-9-19
STATE OF NEBRASKA

SHEET 3 OF 3

SPECIAL PLAN 3C

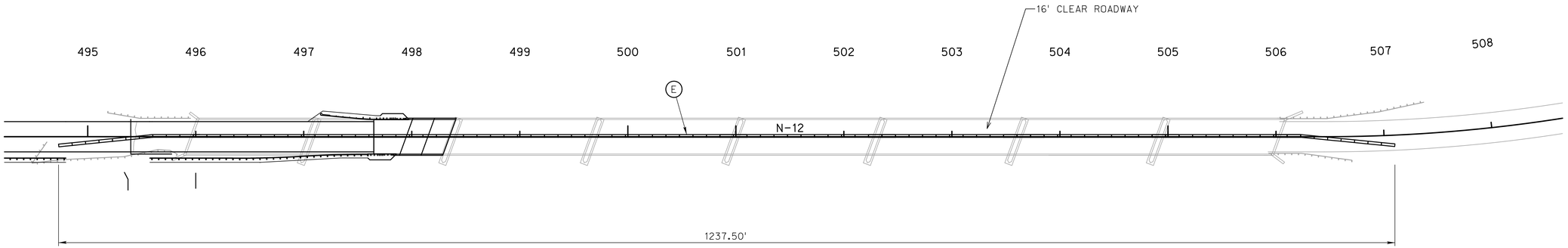
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PROJECT NO.	SHEET NO.
ER-12-5(122)	U5A

C.N. 32320

(R1) ADDED SHEET

ROADWAY DESIGN DIVISION



TEMPORARY BARRIER

LEGEND

- (A) BRIDGE APPROACH SECTION (25'-0")
- (B) SURFACING UNDER GUARDRAIL
- (C) END TREATMENT, TYPE II (53'-1½")
- (D) BRIDGE APPROACH SECTION TL-2 (BY MANUFACTURER MASH TL-2 STANDARD)
- (E) CONCRETE PROTECTION BARRIER
- (F) END TREATMENT, TYPE TL-2
- (G) R = 187.77' (TABLE "D")
- (H) W-BEAM CONNECT TO CONCRETE PROTECTION BARRIER
- —— GRADING LINE

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888
5-15-19
STATE OF NEBRASKA

SHEET 3 OF 3

SPECIAL PLAN 3C

Benesch
Date: 16-MAY-2019
File: 323200cs05 Revl.dgn
Scale: 1:50

Project No. ER-12-5(122)
Addendum No. 1
Pg. 64

Horizontal Scale 1 : 10
Vertical Scale 1 : 10

PROJECT NO. ER-12-5(122)

SHEET NO. X18

C.N. 32320

(R1) DELETED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888 4-30-19
STATE OF NEBRASKA

489+50.00

1243.93

3:1 6:1 6.0% 6.0% 6.0% 1.0% 3:1

489+00.00

1244.75

3:1 6:1 6.0% 4.9% 1.8% 2.4% 3:1

488+50.00

1245.55

3:1 6:1 6.0% 3.0% 3.0% 4.0% 3:1

1255 1250 1245 1240 1235 1230

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

ROADWAY DESIGN DIVISION

Benesch

File: N12 XS Sheets Rev 1 deleted sheet.dgn 16-MAY-2019

Project No. ER-12-5(122)
Addendum No. 1
Pg. 65

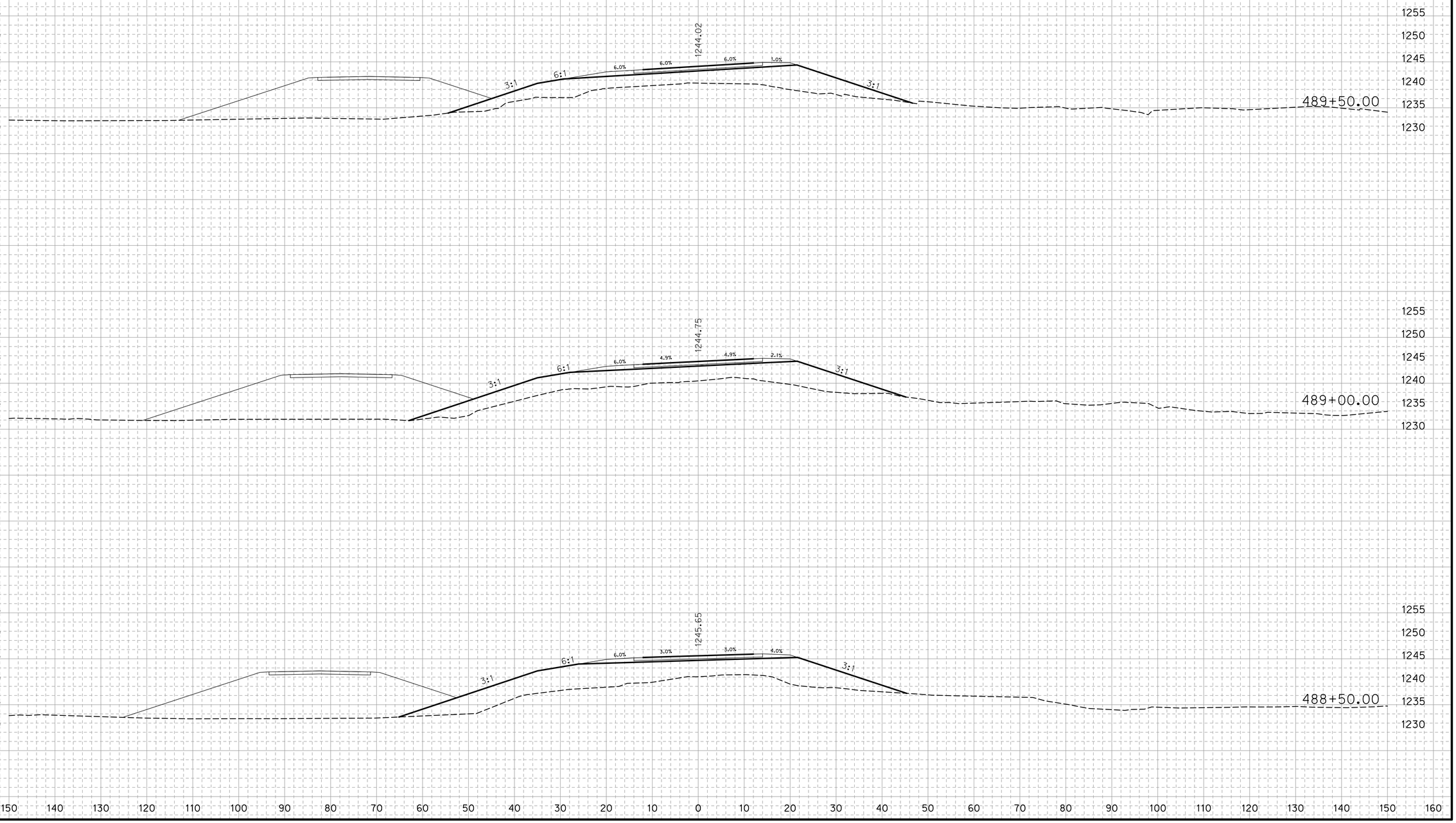
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Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	X18A

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-16-19
STATE OF NEBRASKA



ROADWAY DESIGN DIVISION
Benesch
Date: 16-MAY-2019
File: N12 XS Sheets Rev 1.dgn

Project No. ER-12-5(122)
Addendum No. 1
Pg. 66

Horizontal Scale 1 : 10	PROJECT NO.	SHEET NO.
Vertical Scale 1 : 10	ER-12-5(122)	X19
	C.N. 32320	

(R1) DELETED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

491+00.00

490+50.00

490+00.00

1242.12

1242.22

1243.22

6:1 6.0% 6.0% 6.0% 1.0% 3:1

ROADWAY DESIGN DIVISION

Benesch

File: N12 XS Sheets Rev 1 deleted sheet.dgn 16-MAY-2019

Horizontal Scale	1 : 10
Vertical Scale	1 : 10

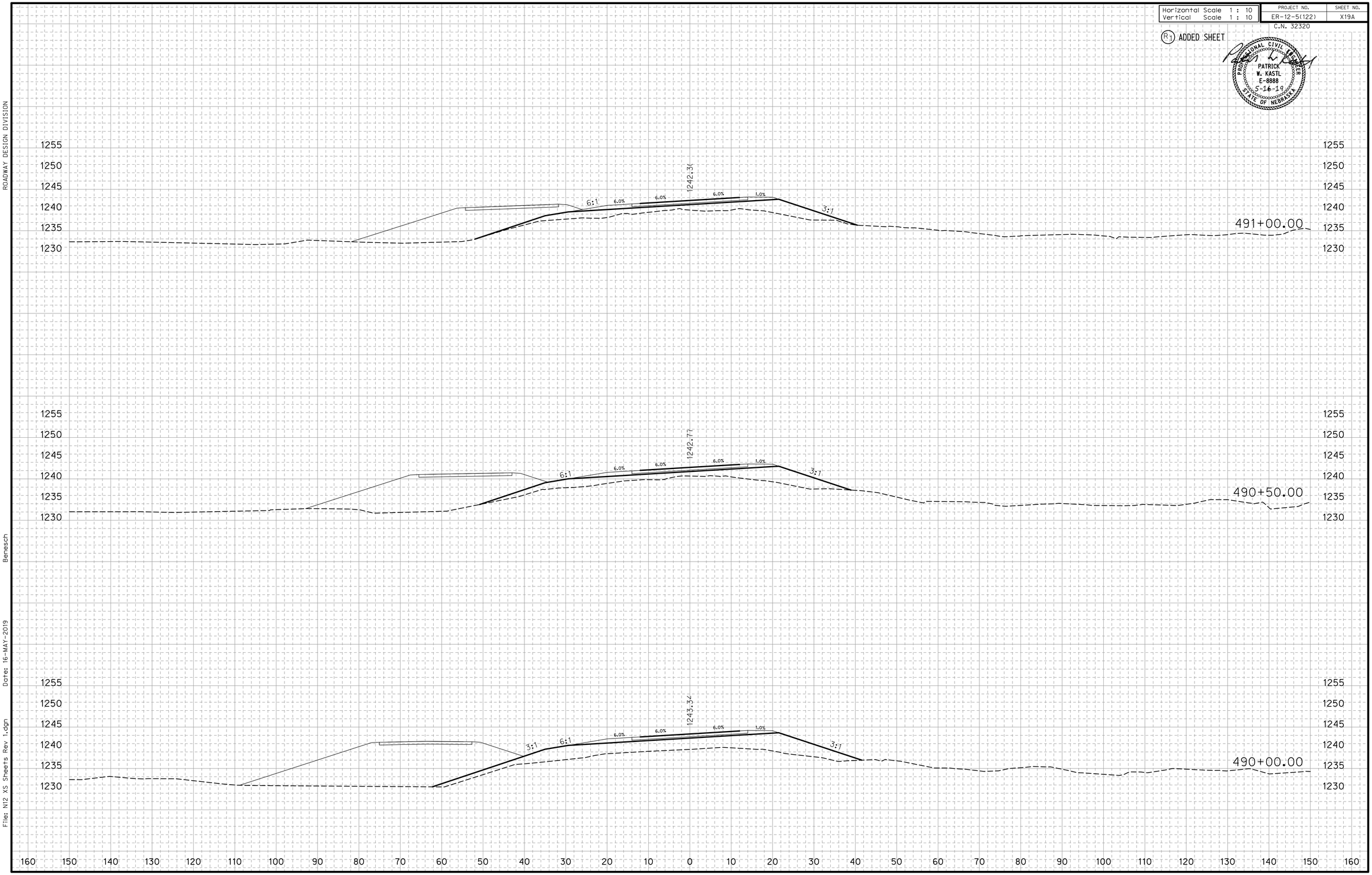
PROJECT NO.	SHEET NO.
ER-12-5(122)	X19A

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888 5-16-19
STATE OF NEBRASKA

ROADWAY DESIGN DIVISION



Benesch

Date: 16-MAY-2019

File: N12 XS Sheets Rev 1.dgn

Horizontal Scale	1 : 10
Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	X20

C.N. 32320

(R1) DELETED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888
4-30-19
STATE OF NEBRASKA

492+50.00

492+00.00

491+50.00

1241.24

1241.49

1241.72

6:1 6.0% 2.0% 1.5% 5.5%

6:1 6.0% 3.4% 3.4% 3.6%

5.3% 5.3% 4.7% 3:1

1255 1250 1245 1240 1235 1230

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

ROADWAY DESIGN DIVISION

Benesch

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Project No. ER-12-5(122)
Addendum No. 1
Pg. 69

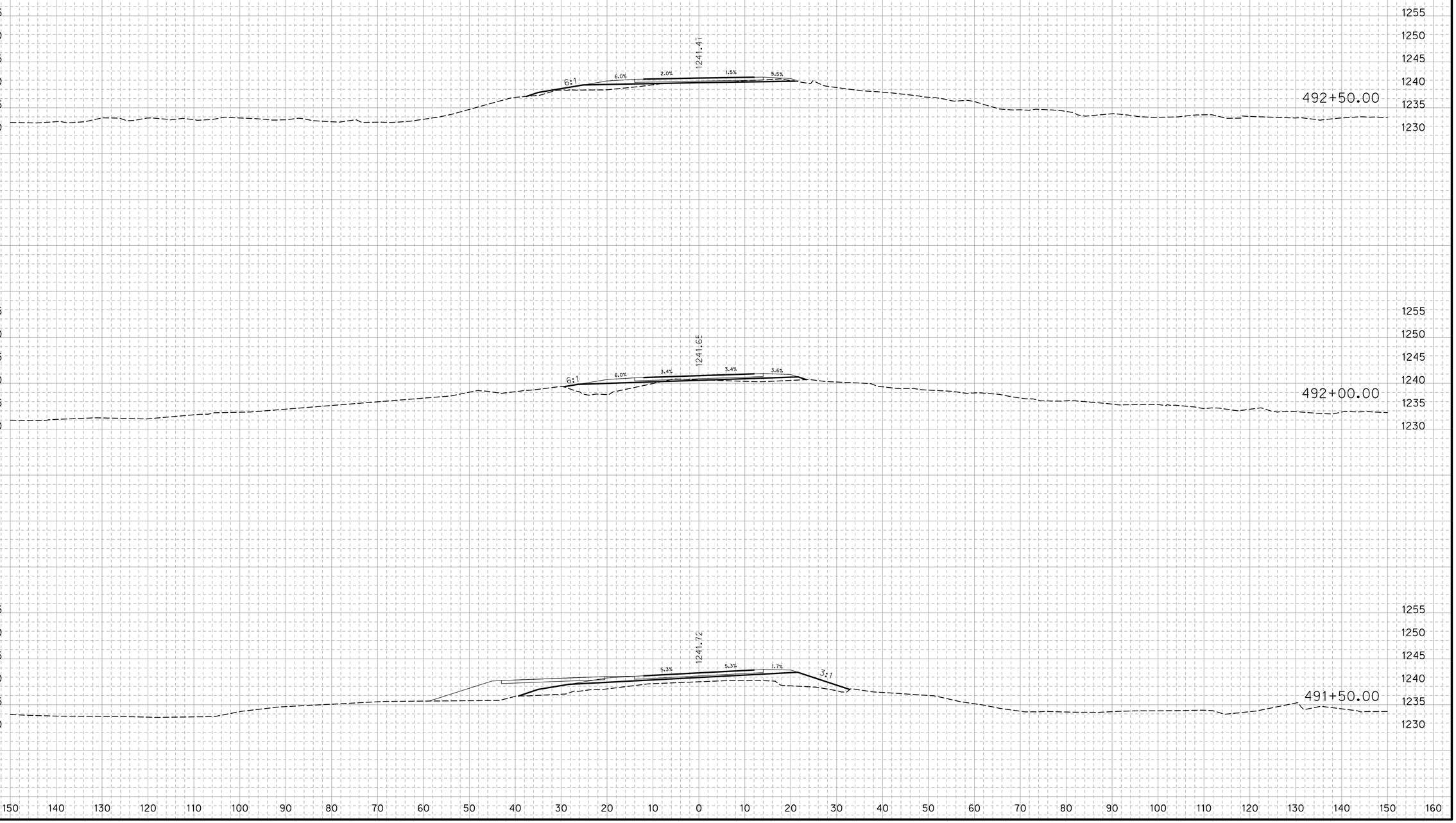
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Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	X20A

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-16-19
STATE OF NEBRASKA



ROADWAY DESIGN DIVISION
Benesch
Date: 16-MAY-2019
File: N12 XS Sheet's Rev 1.dgn

Project No. ER-12-5(122)
Addendum No. 1
Pg. 70

Horizontal Scale 1 : 10	PROJECT NO.	SHEET NO.
Vertical Scale 1 : 10	ER-12-5(122)	X21
	C.N. 32320	

(R1) DELETED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

ROADWAY DESIGN DIVISION

494+00.00

1241.30

6:1 6.0% 2.0% 2.0% 6.0%

1255
1250
1245
1240
1235
1230

493+50.00

1241.17

6:1 6.0% 2.0% 2.0% 6.0%

1250
1245
1240
1235
1230

493+00.00

1241.15

6:1 6.0% 2.0% 0.4% 6.0%

1250
1245
1240
1235
1230

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

Benesch

File: N12 XS Sheets Rev 1 deleted sheets.dgn 16-MAY-2019

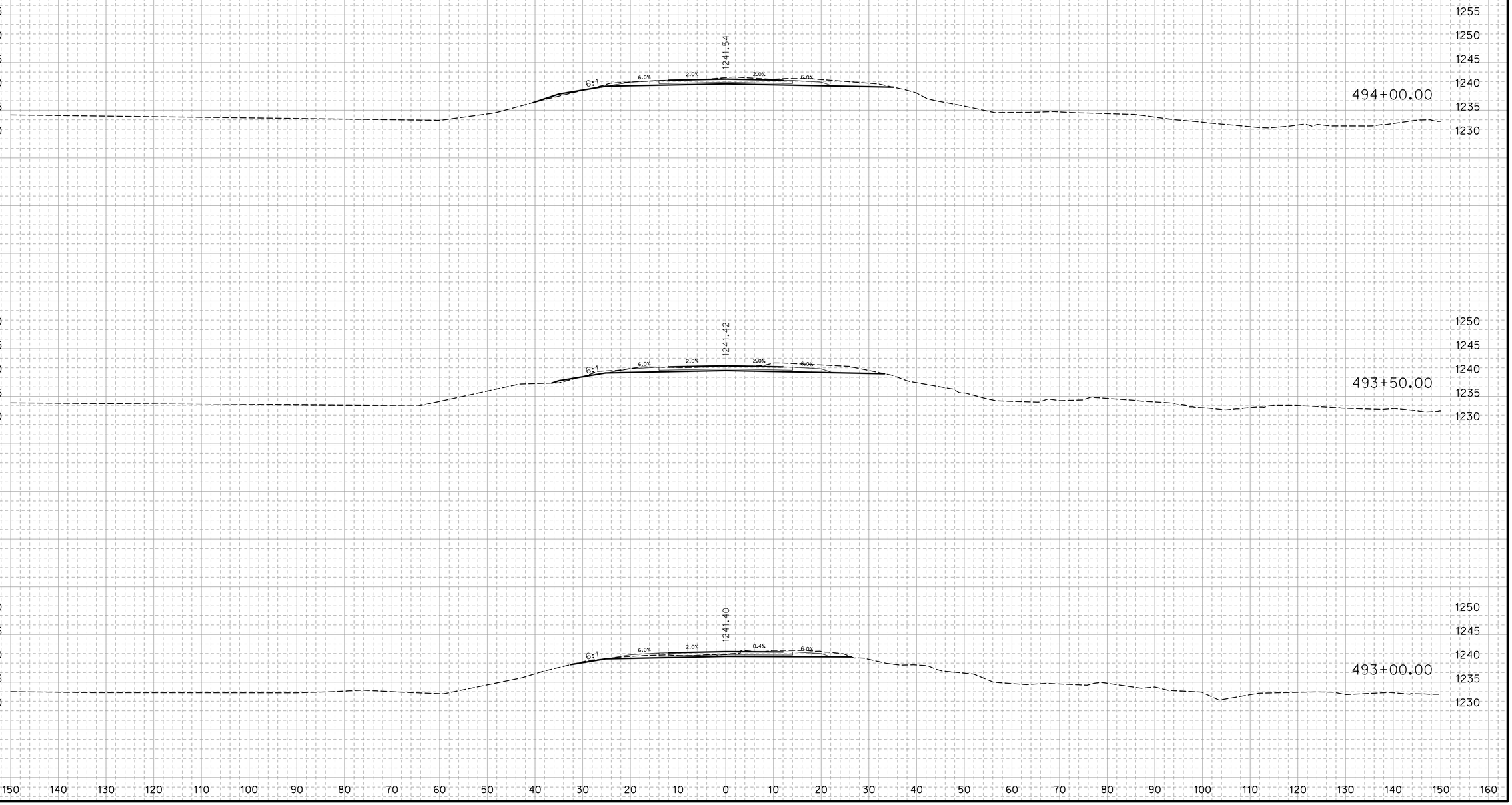
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Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	X21A

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL E-8888 5-16-19
STATE OF NEBRASKA



ROADWAY DESIGN DIVISION
Benesch
Date: 16-MAY-2019
File: N12 XS Sheets Rev 1.dgn

Horizontal Scale 1 : 10	PROJECT NO.	SHEET NO.
Vertical Scale 1 : 10	ER-12-5(122)	X22
	C.N. 32320	

R1 DELETED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
4-30-19
STATE OF NEBRASKA

495+39.87

3:1 6:1 6.0% 2.0% 2.0% 6.0% 1242.11

495+00.00

3:1 6:1 6.0% 2.0% 2.0% 6.0% 1241.94

494+50.00

6:1 6.0% 2.0% 2.0% 6.0% 1241.52

1255 1250 1245 1240 1235 1230

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

ROADWAY DESIGN DIVISION

Benesch

File: N12 XS Sheets Rev 1 deleted sheet.dgn 16-MAY-2019

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Vertical Scale	1 : 10

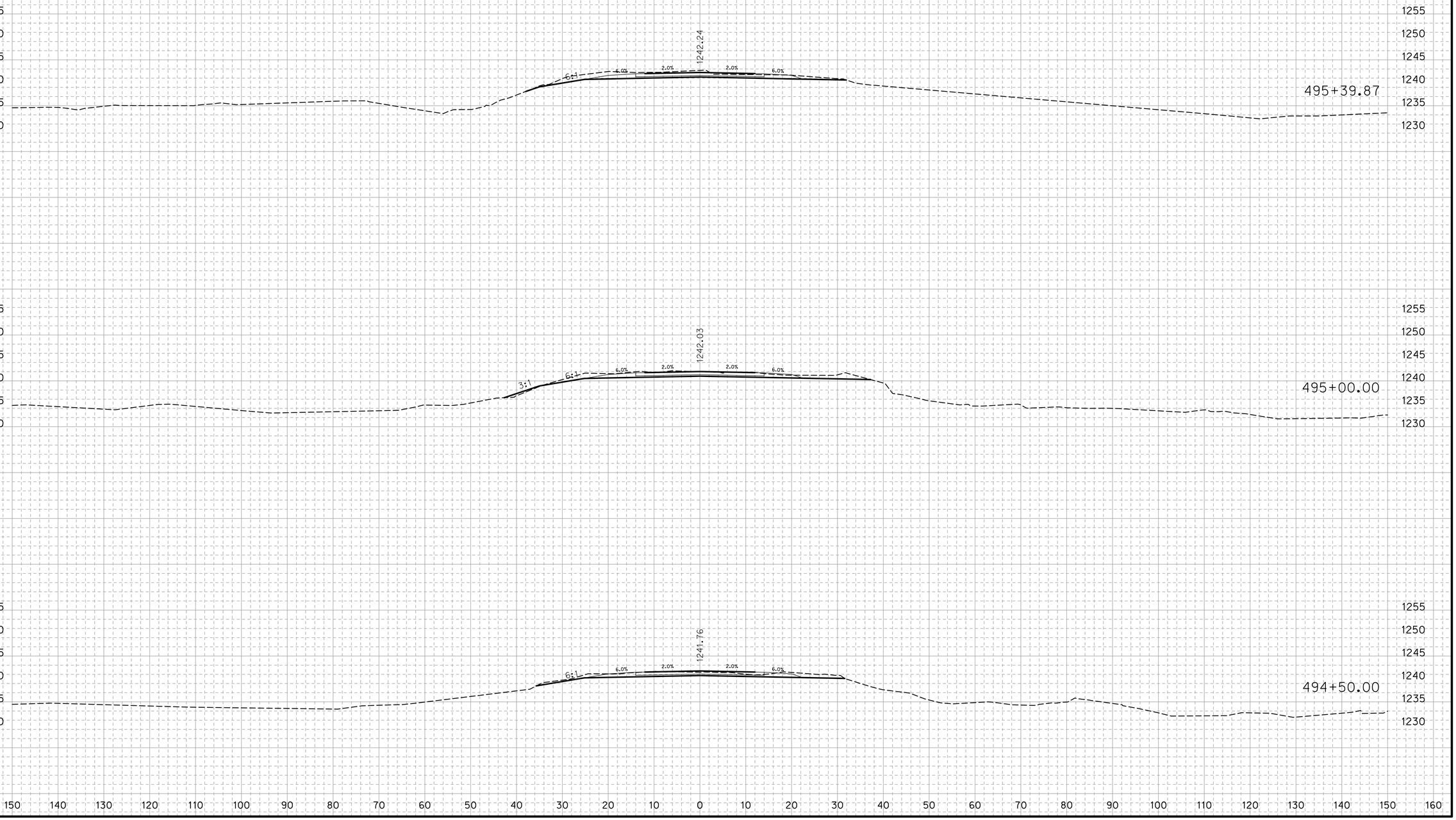
PROJECT NO.	SHEET NO.
ER-12-5(122)	X22A

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-16-19
STATE OF NEBRASKA

ROADWAY DESIGN DIVISION



Benesch

Date: 16-MAY-2019

File: N12 XS Sheets Rev 1.dgn

Project No. ER-12-5(122)
Addendum No. 1
Pg. 74

Horizontal Scale	1 : 10
Vertical Scale	1 : 10

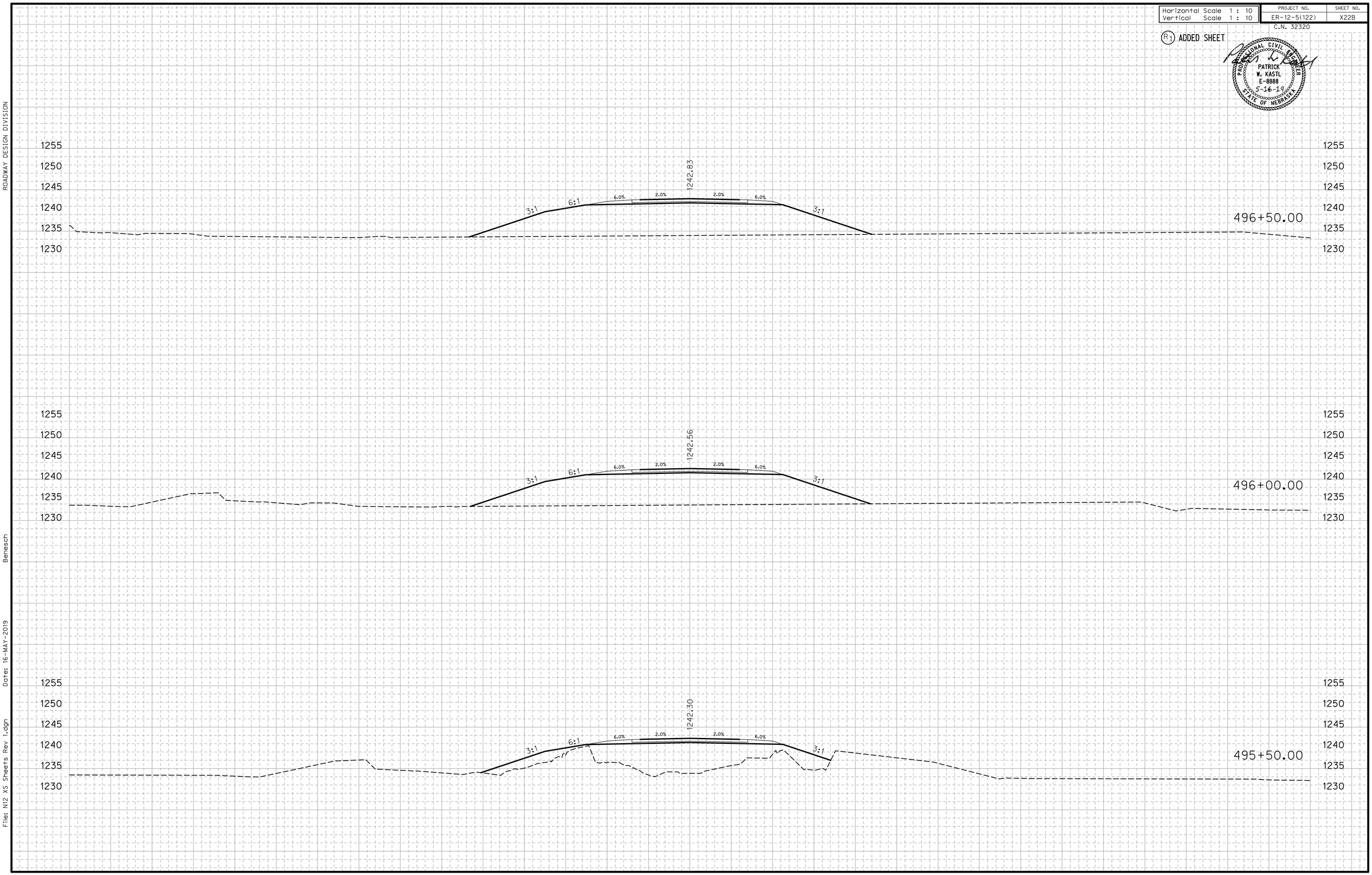
PROJECT NO.	SHEET NO.
ER-12-5(122)	X22B

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-16-19
STATE OF NEBRASKA

ROADWAY DESIGN DIVISION



Benesch

Date: 16-MAY-2019

File: N12 XS Sheets Rev 1.dgn

Project No. ER-12-5(122)
Addendum No. 1
Pg. 75

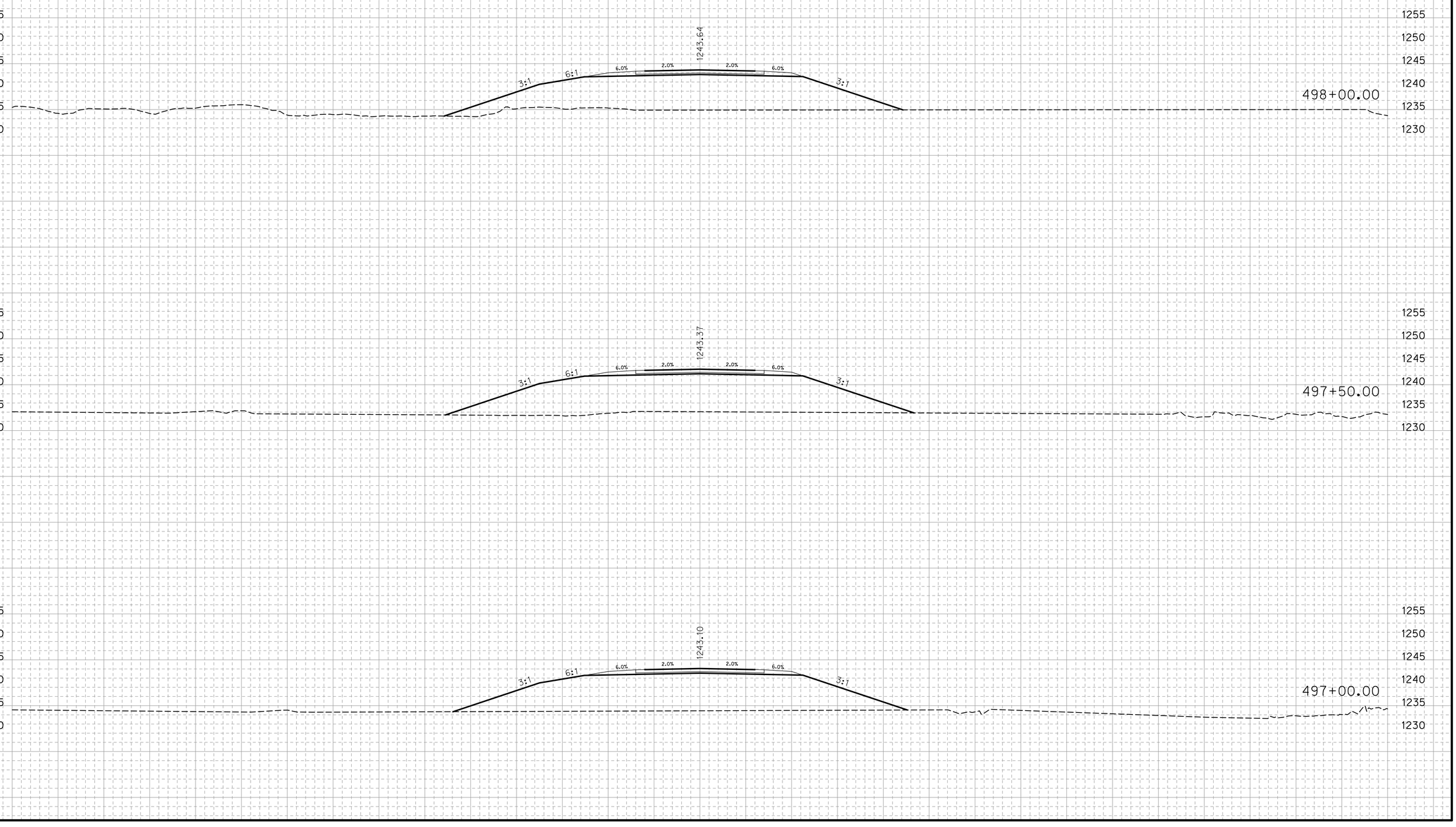
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Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	X22C

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-16-19
STATE OF NEBRASKA



ROADWAY DESIGN DIVISION
Benesch
Date: 16-MAY-2019
File: N12 XS Sheets Rev 1.dgn

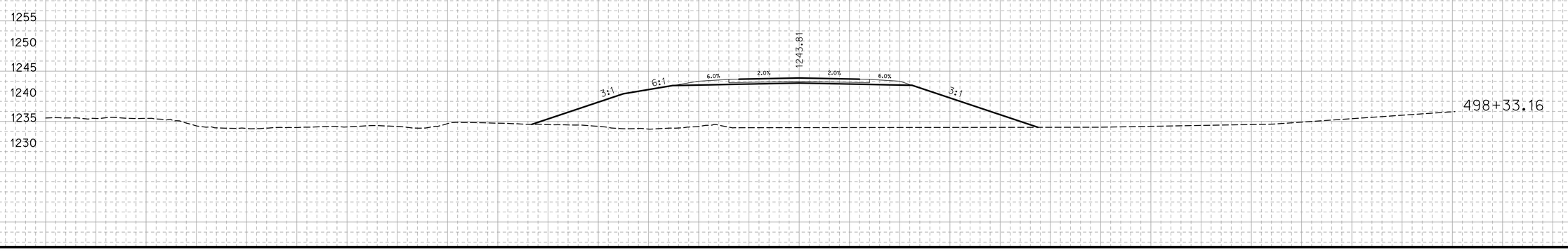
Horizontal Scale	1 : 10
Vertical Scale	1 : 10

PROJECT NO.	SHEET NO.
ER-12-5(122)	X22D

C.N. 32320

(R1) ADDED SHEET

PROFESSIONAL CIVIL ENGINEER
PATRICK W. KASTL
E-8888
5-16-19
STATE OF NEBRASKA



ROADWAY DESIGN DIVISION
Benesch
Date: 16-MAY-2019
File: N12 XS Sheets Rev 1.dgn