

JOB # 46	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	20468	1	1



ADAMS COUNTY, NORTH DAKOTA

CNOA-0103(053) BITUMINOUS OVERLAY, SUB CUT, CURB AND GUTTER, CONCRETE SIDEWALK AND INCIDENTAL ITEMS ADAMS COUNTY 2ND STREET WEST

Project is located in Reeder on 2nd Street West
approximately 0.89 miles in Reeder, North Dakota.

GOVERNING SPECIFICATIONS
Standard Specifications for Road and Bridge Construction
adopted by the North Dakota Department of Transportation October 2014:
Standard Drawings currently in effect; and other Contract Provisions submitted
herein.

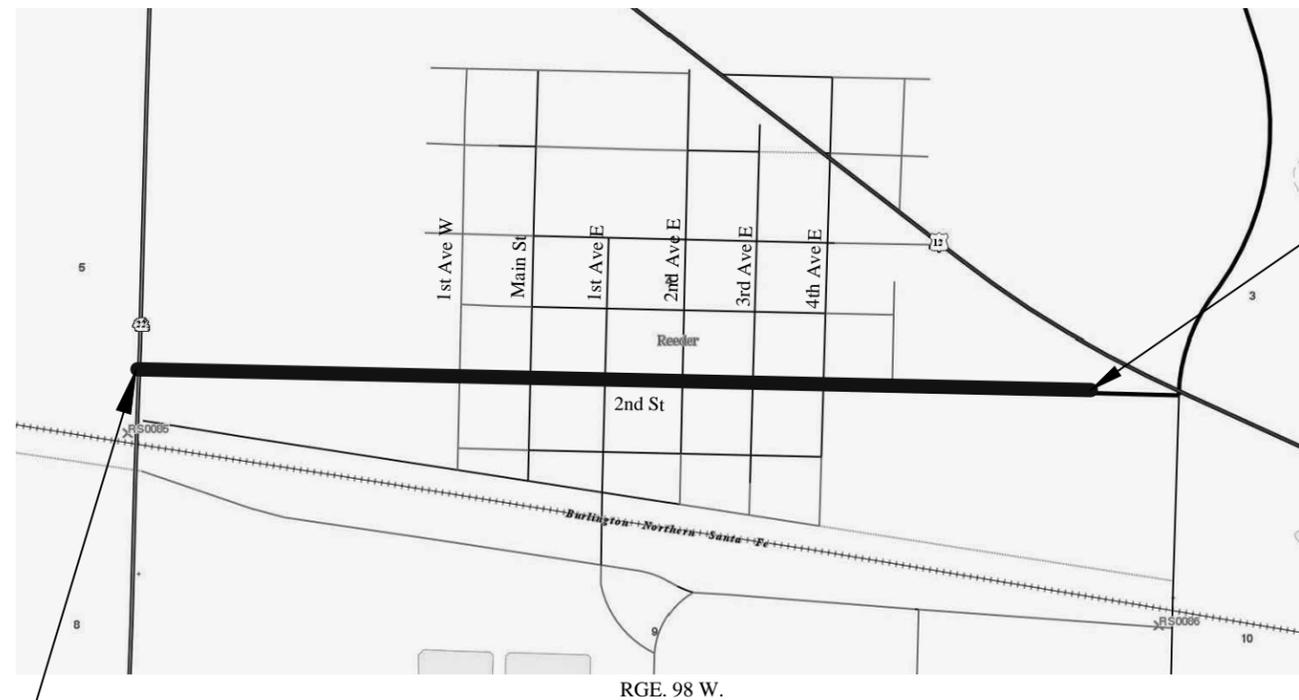
PROJECT LENGTH

Project	Gross Miles	Net Miles
CNOA-0103(053)	.890	.890

DESIGN DATA

Traffic ~ CNOA-0103(053)	Average Daily			Est. 30th Max Hr.
	Passenger	Trucks	Total	
Current Traffic 2013			125	
Forecast Traffic 2033				

Design Speed: 25 MPH
Minimum Sight Dist. for Stopping 155 FT



END PROJECT CNA-0103(053)
Sta. 47+00 = A Point Approximately 1,057 Feet
North and 563.66 Feet West of the Northeast
Corner of Sec. 9, Twp. 130 N., Rge 98 W. of the
5th P.M., Adams County, North Dakota

PS&E Corrections Made 4/3/2014
Surveyed & Designed Date 12/6/2013

BEGIN PROJECT CNOA-0103(053)
Sta. 0+00 = A Point Approximately 1,045 Feet North of
the Northwest Corner of Sec. 9, Twp. 130 N., Rge 98 W.
of the 5th P.M., Adams County, North Dakota

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<p>This document was originally issued and sealed by Charles Olsen, Registration Number PE-7500, on 8/29/2014 and the original document is stored at the office of Endeavor Engineering.</p>	<p>CERTIFICATION I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.</p> <p>_____ ENDEAVOR ENGINEERING</p> <p>DATE _____ REGISTRATION NUMBER _____</p>	<p>ENDEAVOR ENGINEERING</p>  <p>1462 194 Business Loop East Suite 2 PO BOX 1651 DICKINSON, ND 58602 (701) 483-1973, FAX (701) 483-1795</p>
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JOB # 46	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
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D-704-26	Miscellaneous Sign Layouts
D-704-27	Traffic Control Plan for Moving
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D-754-26, 27, 29	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
D-754-48	Sign Punching, Stringer and Support Location Details For Variable Length Signs
D-762-04, 06	Pavement Marking

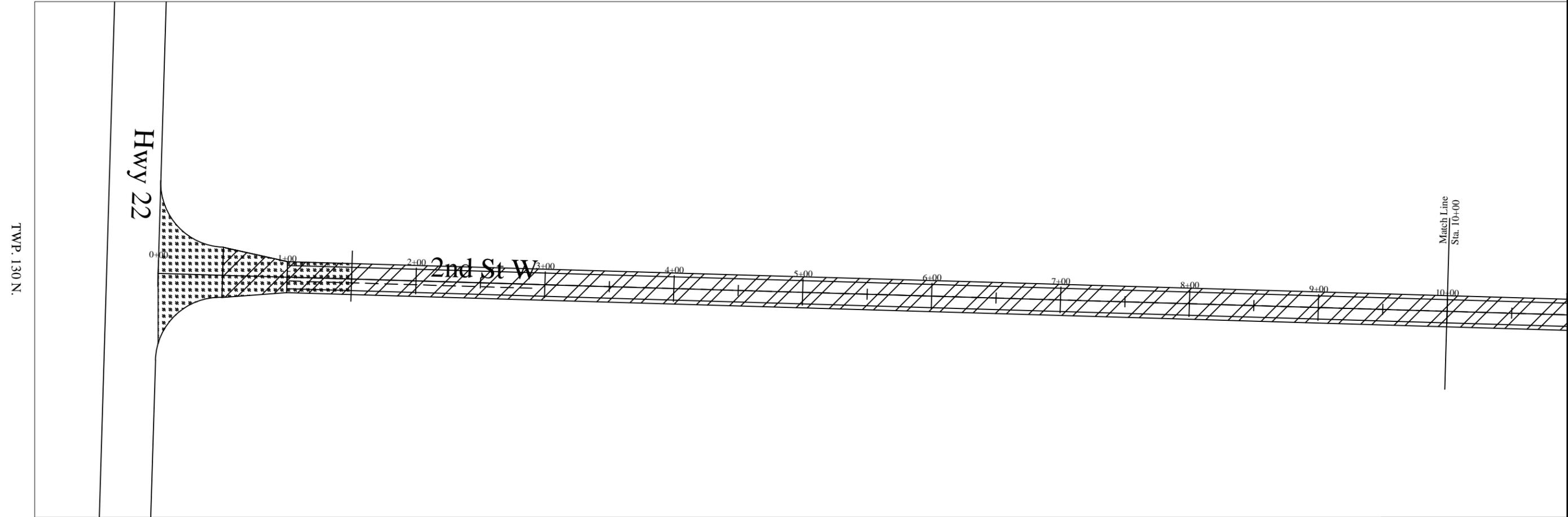
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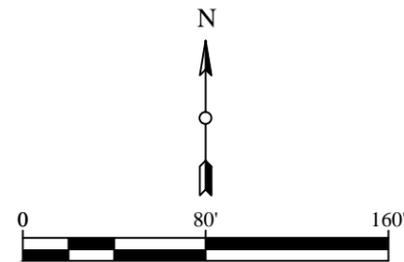
LEGEND

	2" Hot Bituminous Pavement Overlay
	Mill Area



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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
 ENDEAVOR ENGINEERING	SCOPE OF WORK	
	<small>DRAWN BY</small> JLD	<small>CHECKED BY</small> CAO

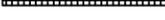
JOB # 46

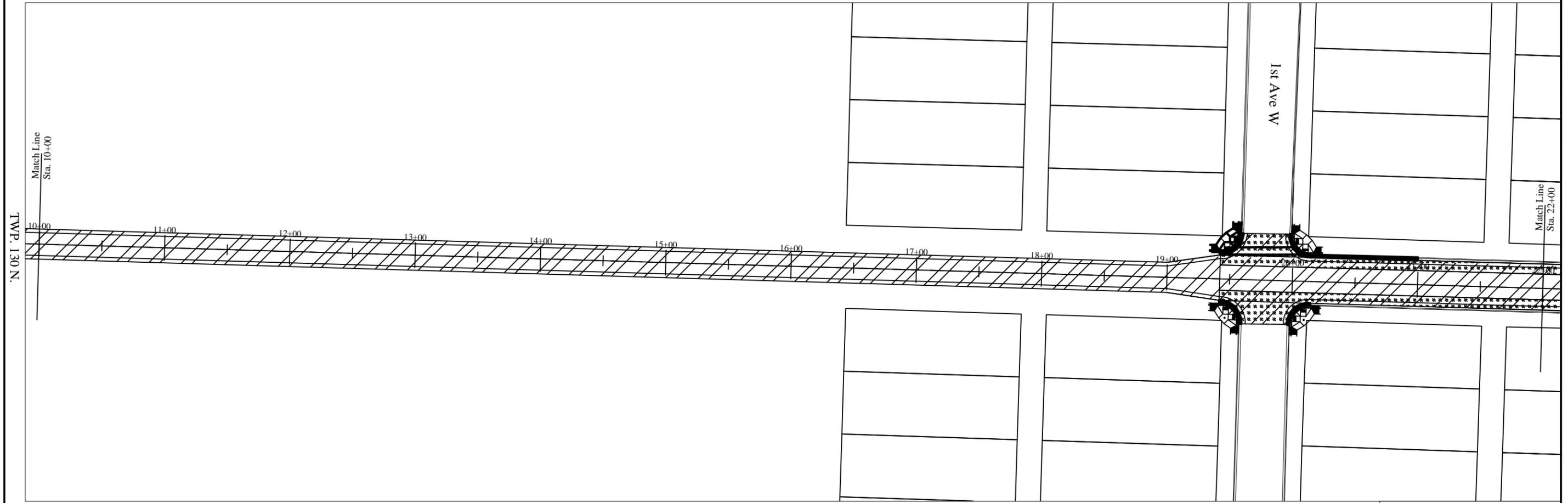
STATE
ND

PROJECT NO.
CNOA-0103(053)

SECTION NO.
4

SHEET NO.
2

- LEGEND**
-  2" Hot Bituminous Pavement Overlay
 -  Mill Area
 -  Curb & Gutter
 -  Concrete Work
 -  Removal of Valley Gutter



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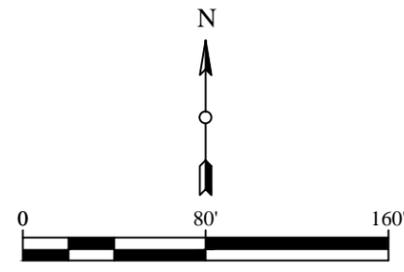
RGE. 98 W.

1st Ave W

Match Line
Sta. 10+00

Match Line
Sta. 22+00

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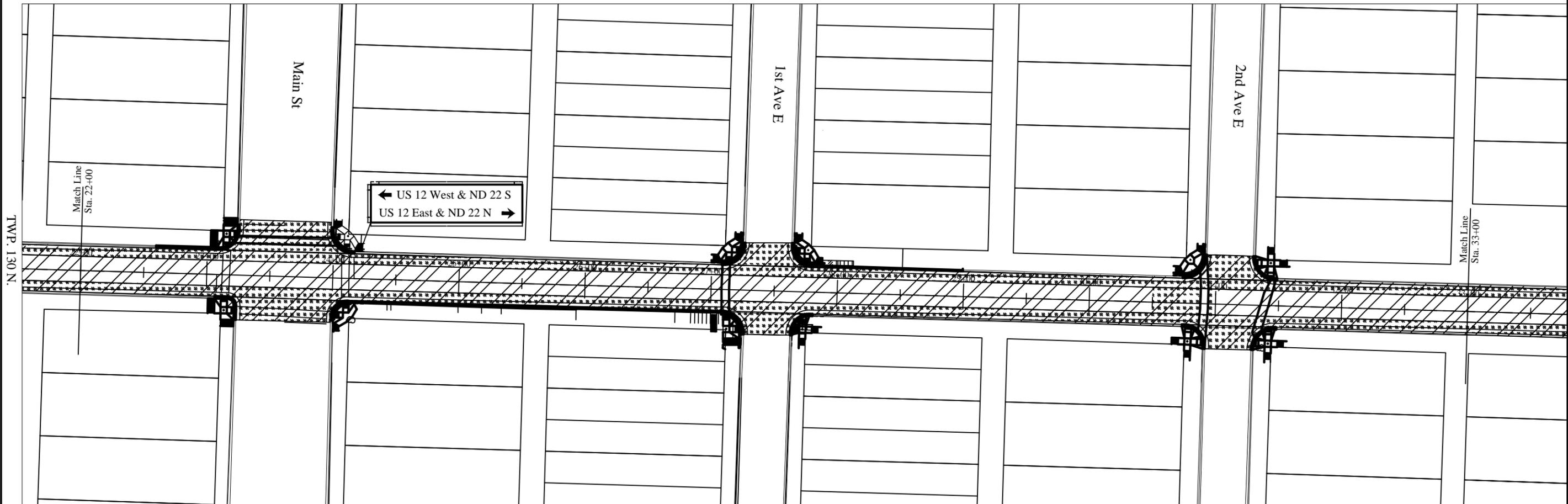


CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
 ENDEAVOR ENGINEERING	SCOPE OF WORK	
	DRAWN BY JLD	CHECKED BY CAO

JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	4	3

LEGEND

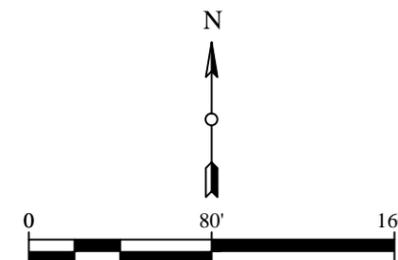
	2" Hot Bituminous Pavement Overlay
	Mill Area
	Curb & Gutter
	Concrete Work
	Removal of Valley Gutter



RGE. 98 W.

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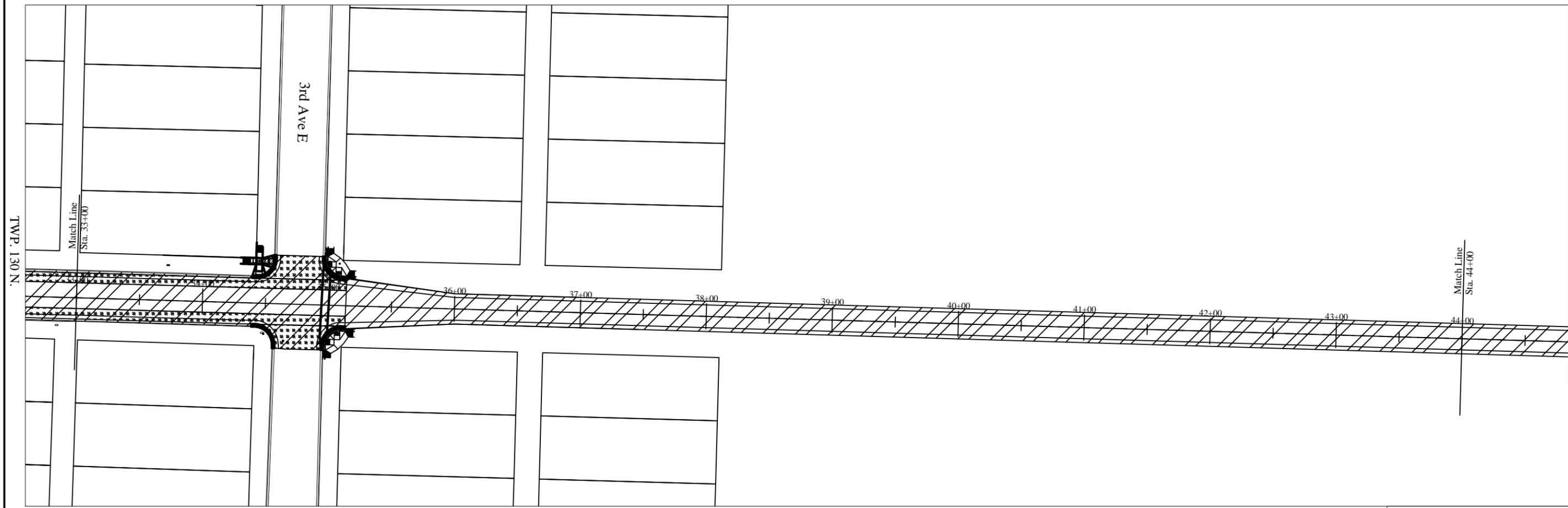
CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
	SCOPE OF WORK	
	<small>DRAWN BY</small> JLD	<small>CHECKED BY</small> CAO

JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	4	4

LEGEND

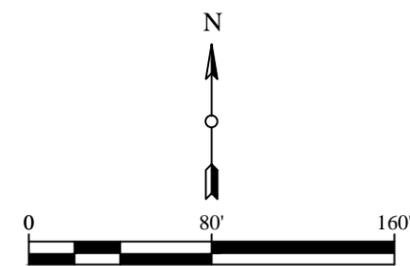
	2" Hot Bituminous Pavement Overlay
	Mill Area
	Curb & Gutter
	Concrete Work
	Removal of Valley Gutter



RGE. 98 W.

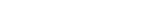
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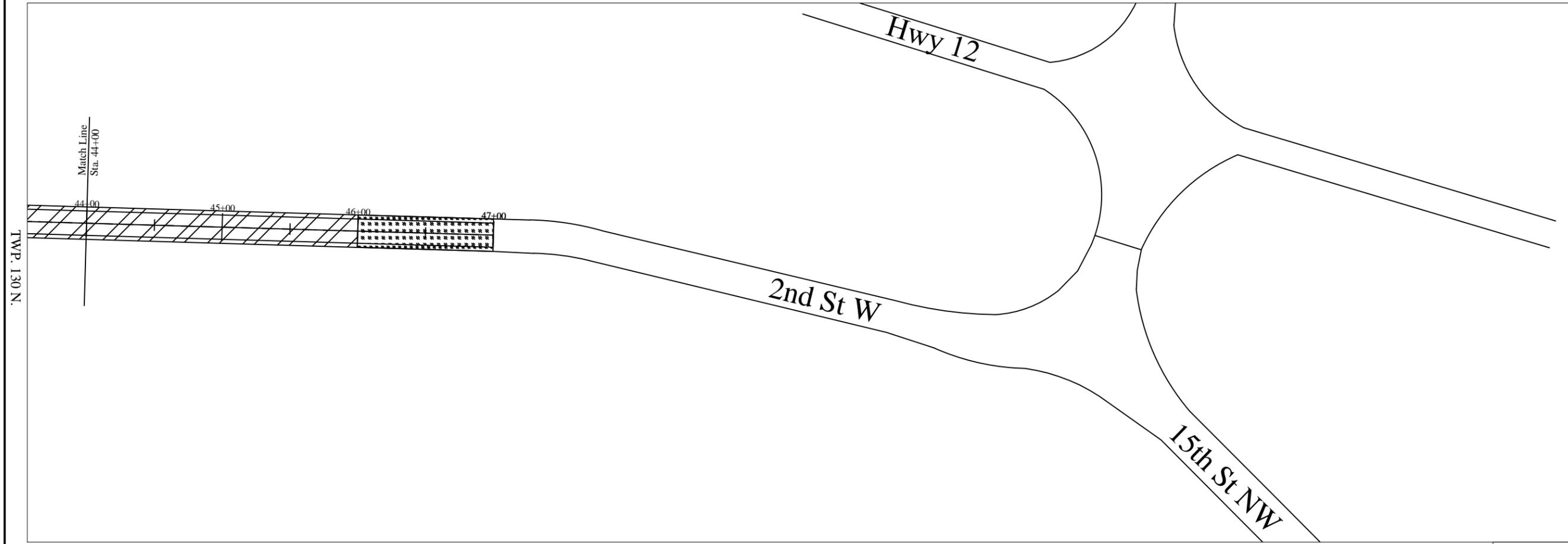
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	<small>DRAWN BY</small> JLD	<small>CHECKED BY</small> CAO

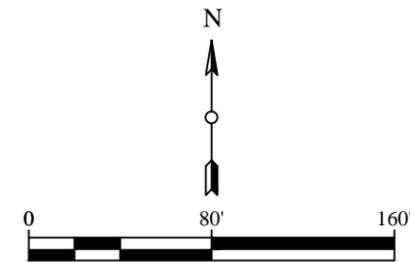
JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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	LEGEND
	2" Hot Bituminous Pavement Overlay
	Mill Area



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PLAN NOTES

- 100-P01 WEEKLY PLANNING SCHEDULE:** The Contractor will be required to provide a written schedule of the next week's work and a tentative schedule of the following week's work to the Engineer. All costs for the weekly schedule shall be included in the price bid for other items.
- 100-P02 CONSTRUCTION ACTIVITIES:** Work activities shall be conducted during daylight hours only and construction activities shall be scheduled to accommodate traffic before dark. Both lanes shall be opened during non-work hours and 1 lane open during working hours.
- 100-P03 CONSTRUCTION ACTIVITIES - INTERSECTION CLOSURES:** Intersections closed for valley gutter replacement shall abide by the following conditions:
 - 1. Two consecutive intersections shall not be closed at the same time
 - 2. Intersections shall not be closed for a period of more than seven (7) days
- 100-P04 DIMENSIONS:** Thicknesses shown on the typical sections for surfacing are approximate. It is intended that the plan tonnage provided by the basis of estimate will be used uniformly throughout the project unless otherwise authorized by the Engineer.
- 100-P05 COMPLETION DATE:** Project shall be complete by October 16, 2015.
- 107-P01 HAUL ROADS:** The Contractor shall contact the appropriate Tribal, State, County, Township or City officials to determine if there are any No Haul Routes or Restricted Routes prior to preparing a bid for this project. The gross vehicle weight on all county and township roads shall not exceed 105,500 pounds unless approved by the local agency.
- 202-P01 CURB AND GUTTER REMOVAL AND REMOVAL OF BITUMINOUS SURFACING:** The material Removed shall be stockpiled at the City Landfill. The Contractor shall coordinate with the City of Reeder at 701-853-2808 or Mayor Brad Hofland at 701-853-1456.
- 203-P01 COMMON EXCAVATION-WASTE:** Existing asphalt shall be cut leaving a vertical edge. The cost to cut a vertical edge and remove, haul, and dispose of the existing materials off the right of way in accordance with all requirements of the North Dakota Department of Health, shall be included in the price bid for "COMMON EXCAVATION-WASTE".
- 411-P01 MILLING PAVEMENT SURFACE:** Payment for milling shall be by the square yard, sloughs if present, will not be measured for payment but shall be incidental to the bid item "MILLING PAVEMENT SURFACE". The milled material shall be stockpiled within the City of Reeder. The Contractor shall coordinate with the City of Reeder at 701-853-2808 or the Mayor Brad Hofland at 701-853-1456.
- 411-P02 TEMPORARY ASPHALT WEDGES:** The Contractor shall place temporary asphalt or milled material wedges at the milled taper locations to allow for the smooth passage of vehicles. All costs for labor, materials, and equipment to install and remove the wedges shall be included in the unit price bid for "MILLING PAVEMENT SURFACE".
- 430-P01 HOT BITUMINOUS PAVEMENT CL 29 – PATCHING:** Within the mill and overlay segment, pavement surface areas showing signs of failure shall be repaired as per the Subgrade Repair Detail (see Sheet 1 Section 20). Existing irregularities in the roadway surface shall be cleaned, tacked, filled with hot bituminous pavement and compacted in a separate operation prior to placement of the next lift of pavement. A quantity of hot bituminous pavement has been provided for the patching and is included in the plan quantity. The patching shall be compacted with a minimum of one self-propelled pneumatic roller which shall meet NDDOT Standard Specification 151.01-A3. All hot bituminous mix and asphalt cement required for the patching shall be measured and paid for by the ton of "HMA" and "PG 58-28 ASPHALT CEMENT". This shall be considered full payment for performing this work. The location and actual quantity of Hot Bituminous Pavement used for subgrade repair and patching will be determined in the field by the Engineer.
- 430-P02 COMPACTION:** The compaction requirements for the HMA shall be in accordance with Section 430.04-13 (Ordinary Compaction). The compaction equipment used shall include not less than two vibratory rollers.

704-P01 TRAFFIC CONTROL FOR BITUMINOUS SURFACING: Traffic control for the thin lift overlay shall consist of a temporary road closure, flagging, and a pilot car. Traffic Control Devices shall comply with the following Standard Drawings:

1. Standard D-704-15, layout A: For temporary roadway closure during paving operations.
2. Standard D-704-20, layout G: For project terminal signing during paving operations. Sign G20-1b-60 will not be required. Signs R2-1-48 and R2-1a-24 are to be moved as the work area moves through the construction zone and should be placed a minimum of 500 ft in advance of flagging signs. Signing will be required at junctions: as indicated in the plans.
3. Standard D-704-22, layouts K and L: For trucks hauling material.
4. Standard D-704-26, layouts CC, EE, and GG: For paving operations.
5. Standard Drawings D-704-7, 8, 9, 10, 11, 12, 13, and 14 are applicable.

Quantities have been developed based on the entire project for the paving operations. The required traffic control signs and devices are included in the "Traffic Control Devices List" and will be measured and paid at the Contract Unit Price for each device. Additional devices required to accommodate the Contractor's operation shall be the Contractor's responsibility.

704-251 TRAFFIC CONTROL FOR UNEVEN PAVEMENT: The contractor has the option of making the paving lanes even at the end of each day's paving operation or signing for the uneven pavement and providing the following devices: Install "Uneven Lanes" signs (Sign No. W8-11-48) and a supplemental plate (Sign No. W20-52-54), identifying the distance, on the right shoulder (both directions) in advance of the beginning of the uneven pavement and at major intersections. A major intersection shall be defined as a CMC, state, U.S. highway, or Interstate ramp. Install "Do Not Pass" signs (Sign No. R4-1-48) on the right shoulder (both directions) between the uneven pavement sign and the beginning of the uneven pavement and at major intersections. If uneven pavement exists at any location longer than one night, tubular markers shall be installed. Tubular markers shall be spaced at two times the posted speed limit on the centerline where uneven pavement exists.

These traffic control devices shall be left in place until the lanes are even. These signs and tubular markers are included in the "Traffic Control Devices List" and will be measured and paid for at the contract unit price for each device. No extra compensation will be allowed for relocation due to work progression.

762-P01 SHORT TERM PAVEMENT MARKING: The quantity for short term striping is based on one application. Additional applications, shall be at the expense of the Contractor.

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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING 	PLAN NOTES	
DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101

ESTIMATE OF QUANTITIES

JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	TOTAL
103	0100	CONTRACT BOND	L SUM	1
202	0112	REMOVAL OF CONCRETE	SY	681
202	0130	REMOVAL CURB & GUTTER	LF	1120
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	2125
203	0113	COMMON EXCAVATION-WASTE	CY	500
216	0100	WATER	M GAL	20
261	0200	WEIGHTED FIBER ROLLS	LF	160
302	0113	AGGREGATE BASE COURSE CL 3	TON	450
401	0150	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	1800
411	0105	MILLING PAVEMENT SURFACE	SY	4200
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	2200
430	5828	PG 58-28 ASPHALT CEMENT	TON	150
570	0095	SAW CONCRETE	LF	275
702	0100	MOBILIZATION	L SUM	1
704	0100	FLAGGING	MHR	80
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1095
704	1050	TYPE I BARRICADE	EA	30
704	1052	TYPE III BARRICADE	EA	51
704	1067	TUBULAR MARKERS	EA	471
709	0701	GEOTEXTILE FABRIC - TYPE R1	SY	2200
748	0140	CURB & GUTTER - TYPE I	LF	1120
748	1030	VALLEY GUTTER 72IN	SY	275
750	0115	SIDEWALK CONCRETE 4IN	SY	720
750	1020	DRIVEWAY CONCRETE 8IN	SY	214
750	2115	DETECTABLE WARNING PANELS	SF	260
762	1104	PVMT MK PAINTED 4IN LINE	LF	7600
762	1106	PVMT MK PAINTED 6IN LINE	LF	1000
762	1124	PVMT MK PAINTED 24IN LINE	LF	600

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ESTIMATE OF QUANTITIES

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JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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BASIS OF ESTIMATE

Material	Unit	Stations		Stations	
		Sta. 0+00 to Sta. 19+35 Sta. 35+14 to Sta. 47+00		Sta. 19+35 to 35+14	
		Width (ft)	Quantity per Station	Width (ft)	Quantity per Station
Aggregate CL 3 @ 1.875 Ton/CY	Ton	24	---	37	91.36
SS-1h or CCS-1h Emuls Asphalt @ 0.05 Gal/SY	Gal	24	13.33	37	20.56
HMA @ 110Lbs/IN/SY	Ton	24	29.33	37	45.2
PG- 58-28 Asphalt Cement @ 6.0%	Ton	24	1.76	37	2.7

Water

25 MGal/Mile for Dust Palliative
20 Gal/Ton for Aggregates

Permanent Pavement Marking		
Location - Type	Basis	Quantity
Centerline – Preformed Patterned Pvmt MK 4 IN Line	Centerline Skips 1,320 LF/mile Barrier Stripe 990 LF/mile	1600 LF
Edge Lines – Epoxy Pvmt MK 4 IN Line	10,560 LF/mile	9400 LF

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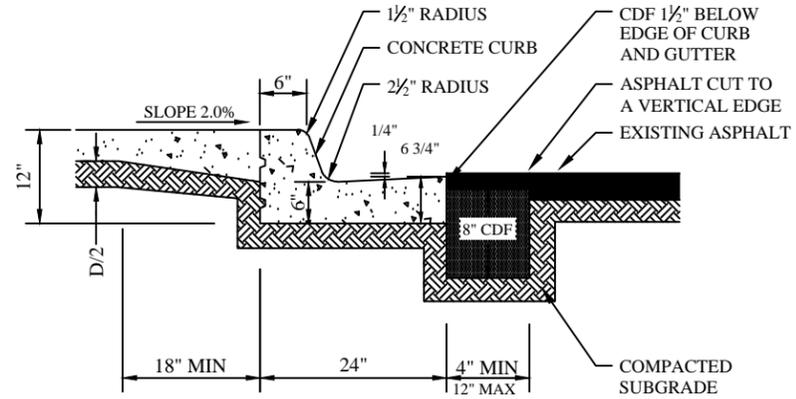
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ADAMS COUNTY, NORTH DAKOTA

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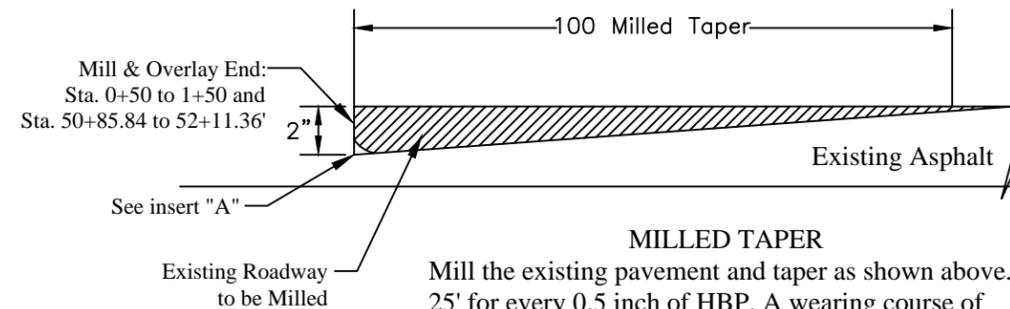
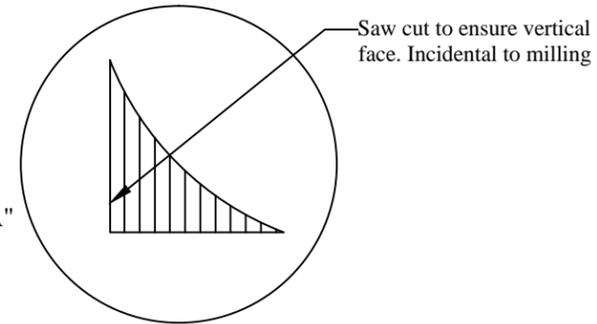
BASIS OF ESTIMATE

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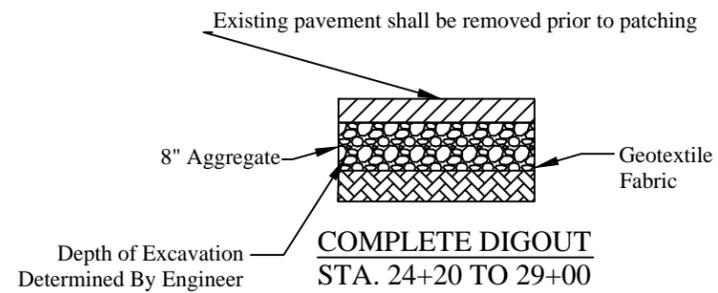


NOTE: EXISTING PAVEMENT TO BE CUT TO A NEAT VERTICAL EDGE WITH COSTS INCIDENTAL TO THE REMOVAL OF BITUMINOUS SURFACING. THE REMOVAL OF THE EXISTING ASPHALT SHALL BE PAID UNDER THE BID ITEM "REMOVAL OF BITUMINOUS SURFACING." THE CDF PATCH SHALL BE CAST IN-PLACE 1-3/4" BELOW THE TOP OF THE EXISTING ASPHALT AND THE NEW CURB AND GUTTER WITH COSTS INCIDENTAL TO THE INSTALLATION OF THE NEW CURB AND GUTTER.

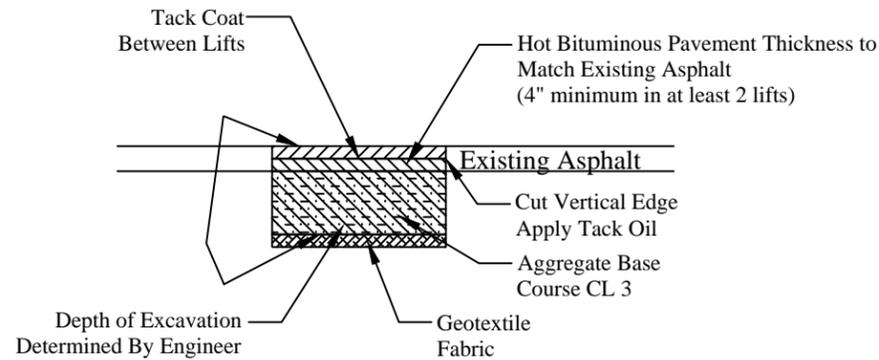
CURB AND GUTTER AND CDF PATCH DETAIL



MILLED TAPER
Mill the existing pavement and taper as shown above. 25' for every 0.5 inch of HBP. A wearing course of 2.0" shall be placed matching the roadway surface elevation at the ends of the overlay.

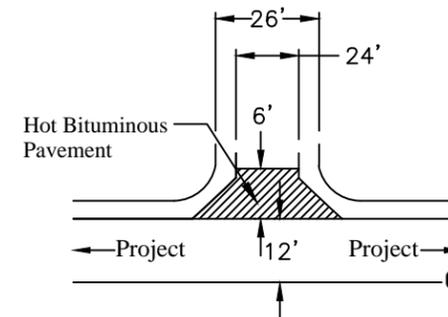


**COMPLETE DIGOUT
STA. 24+20 TO 29+00**



**SUBGRADE REPAIR
(MILL & OVERLAY PORTION ONLY)**

1. Subgrade Repair at depths of 1 foot or greater shall be excavated to the full width of the lane and tapered at a ratio of 20:1 on the ends.
2. Each lift of hot bituminous pavement shall cure overnight before installation of the next course.



FIELD AND PRIVATE DRIVES

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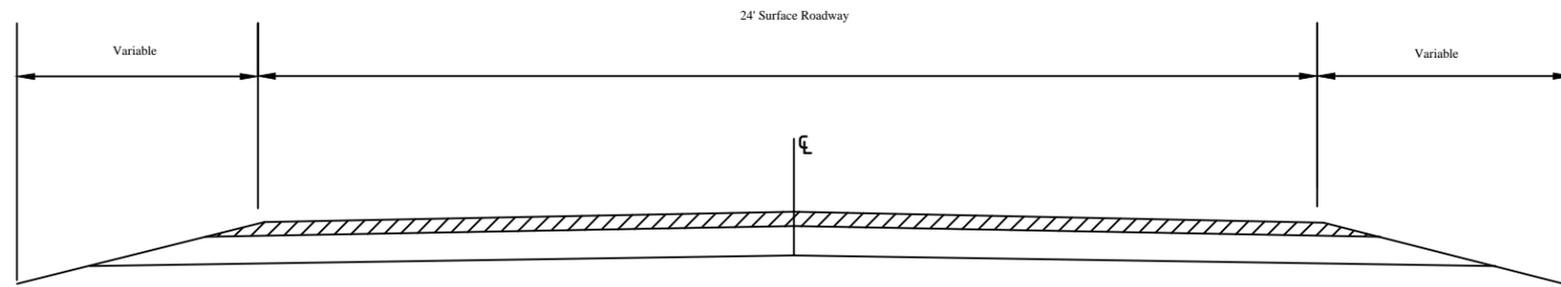
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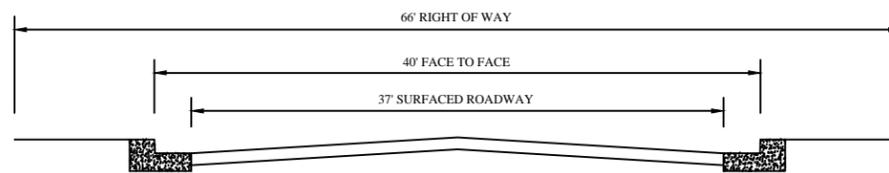
GENERAL DETAILS

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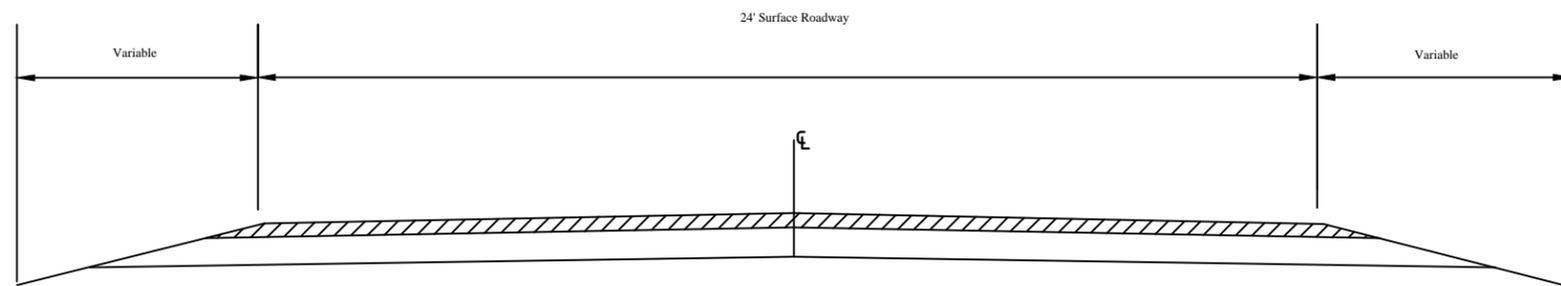
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TYPICAL SECTION 1
STA. 0+00 TO STA. 19+42



TYPICAL SECTION 2
STA. 19+42 TO STA. 35+14



TYPICAL SECTION 3
STA. 35+14 TO STA. 47+00

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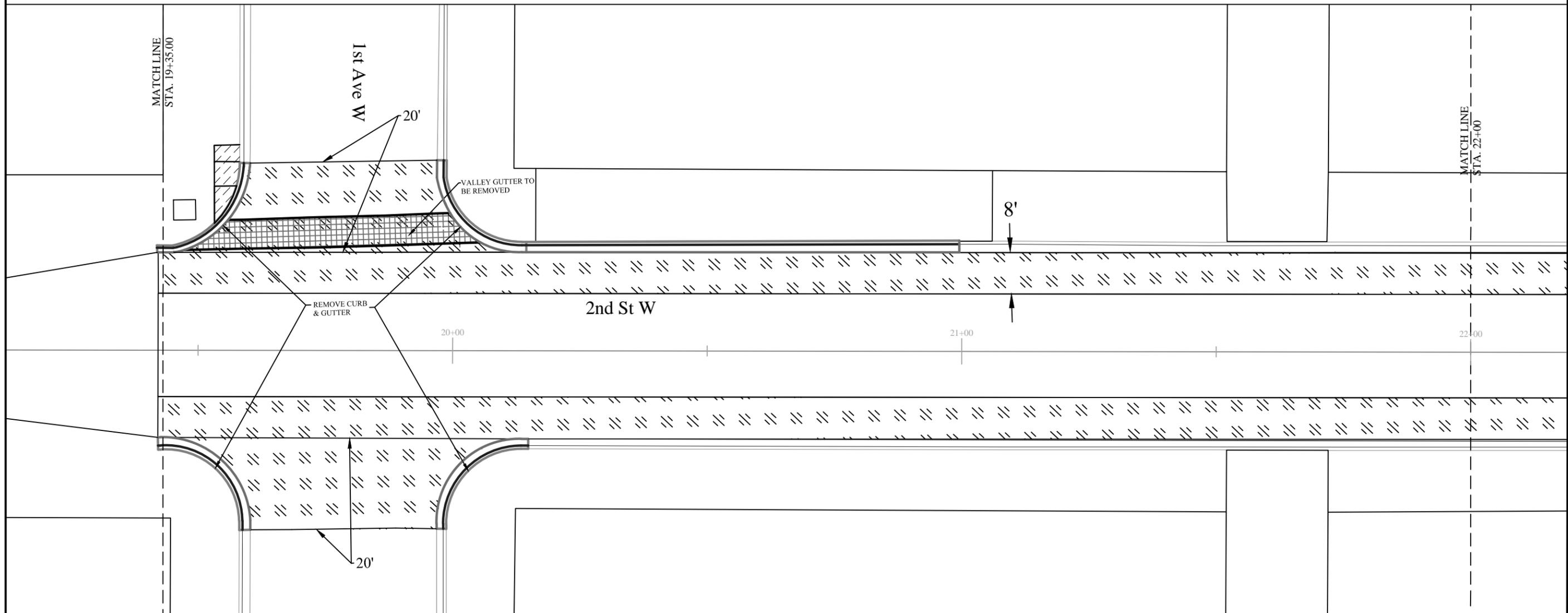
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TYPICAL SECTION

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REMOVAL OF BITUMINOUS SURFACING
 STA. 19+43 TO 20+17 22 S.Y.

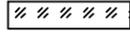
COMMON EXCAVATION-WASTE
 STA. 19+43 TO 20+17 5 C.Y.

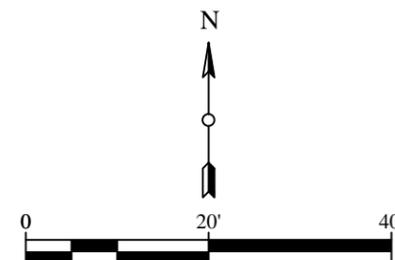
REMOVAL OF CURB & GUTTER
 STA. 19+42 TO 19+59 L.T. 27 L.F.
 STA. 19+42 TO 19+58 R.T. 27 L.F.
 STA. 19+98 TO 20+14 R.T. 27 L.F.
 STA. 19+98 TO 20+14 L.T. 27 L.F.
 STA. 20+15 TO 20+99 L.T. 84 L.F.
 192 L.F.

REMOVAL OF VALLEY GUTTER
 STA. 19+49 TO 20+05 L.T. 38 S.Y.

REMOVAL OF CONCRETE
 STA. 19+53 TO 19+58 L.T. 7 S.Y.

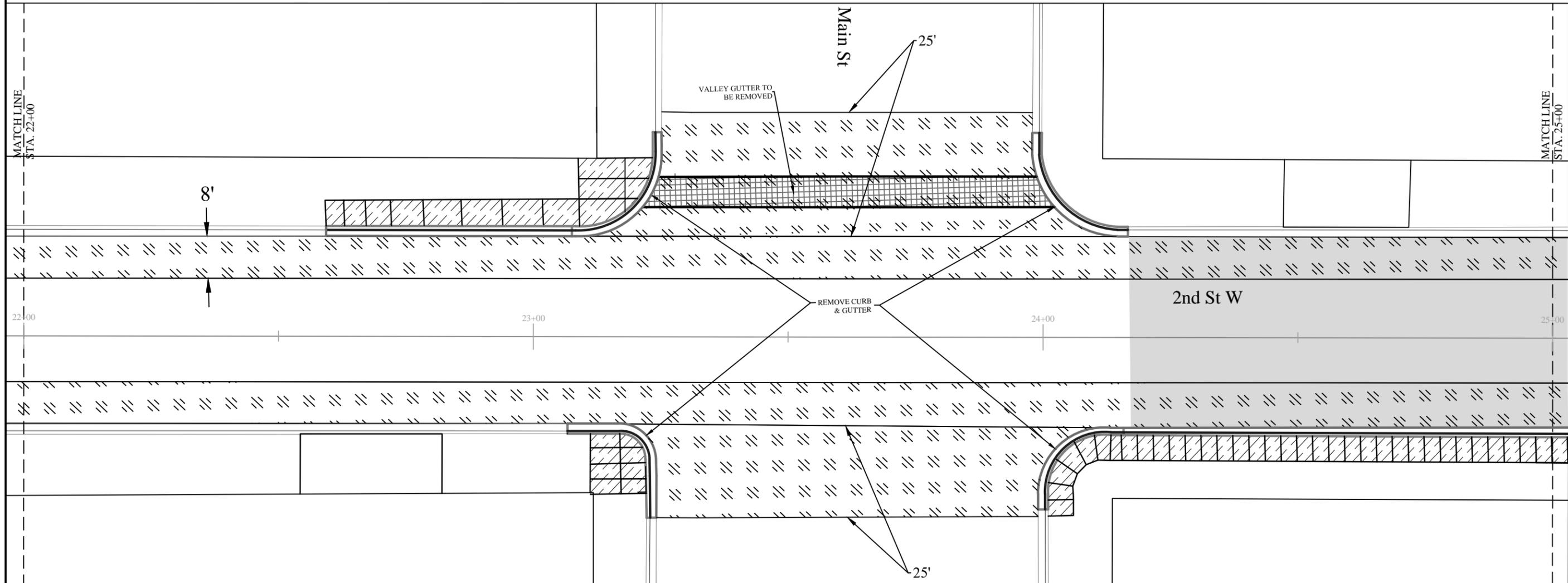
SAW CUT 20 L.F.

LEGEND
 Removal of Concrete
 Mill Area



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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	REMOVALS	
DRAWN BY JLD	CHKD BY CAO	PROJECT NO. 1314101



REMOVAL OF BITUMINOUS SURFACING

STA. 23+07 TO 24+23	78 S.Y.
STA. 24+20 TO 25+00	<u>329 S.Y.</u>
	407 S.Y.

COMMON EXCAVATION- WASTE

STA 23+07 TO 24+23	18 C.Y.
STA. 24+20 TO 25+00	<u>75 C.Y.</u>
	93 C.Y.

REMOVAL OF CURB & GUTTER

STA. 22+59 TO 23+08 L.T.	49 L.F.
STA. 23+08 TO 23+25 L.T.	27 L.F.
STA. 23+08 TO 23+25 R.T.	27 L.F.
STA. 23+98 TO 24+17 L.T.	30 L.F.
STA. 23+98 TO 24+17 R.T.	30 L.F.
STA. 24+17 TO 25+00 R.T.	<u>83 L.F.</u>
	246 L.F.

REMOVAL OF VALLEY GUTTER

STA. 23+21 TO 24+02 L.T.	54 S.Y.
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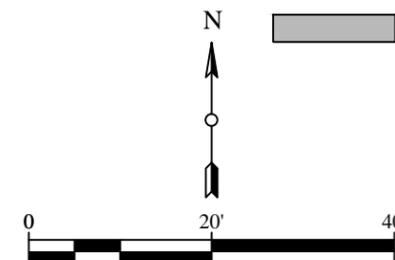
REMOVAL OF CONCRETE

STA. 22+59 TO 23+23 L.T.	46 S.Y.
STA. 23+11 TO 23+22 R.T.	14 S.Y.
STA. 24+01 TO 24+13 R.T.	6 S.Y.
STA. 24+13 TO 25+00 R.T.	<u>52 S.Y.</u>
	118 S.Y.

SAW CUT	67 L.F.
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LEGEND

	Removal of Concrete
	Mill Area
	Complete Digout



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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

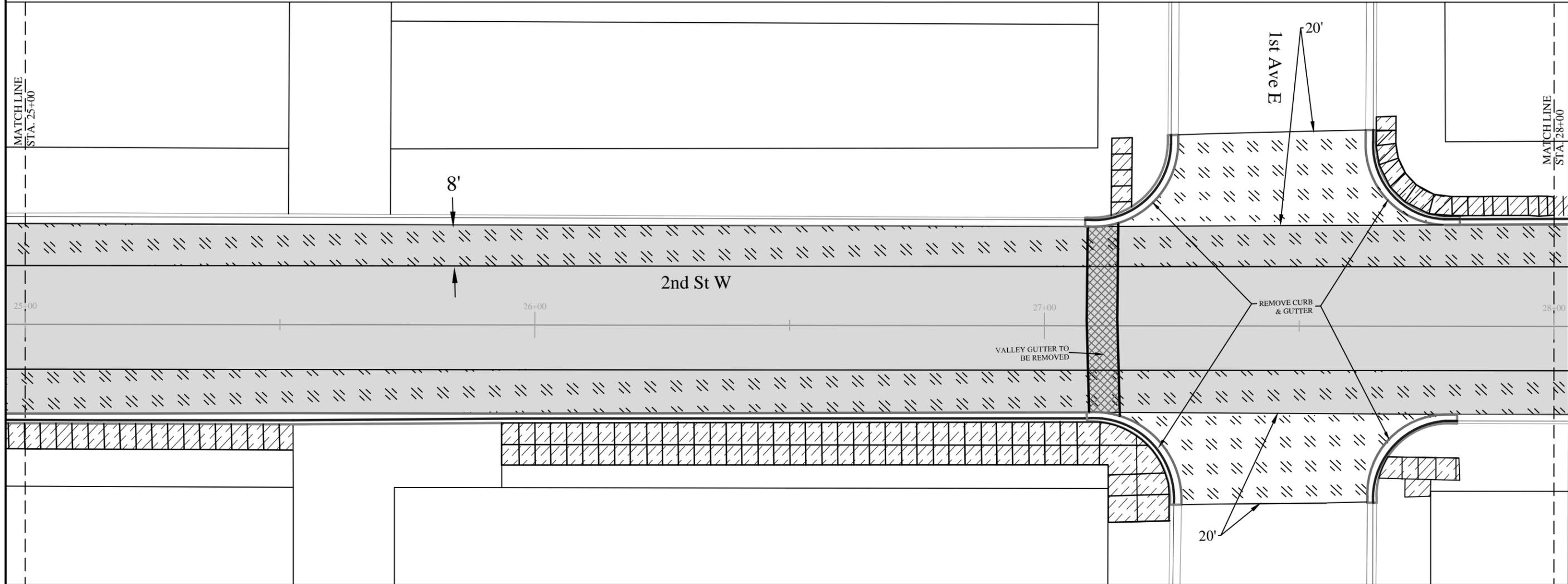
ENDEAVOR ENGINEERING



REMOVALS

DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101
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1314101.dwg



REMOVAL OF BITUMINOUS SURFACING
 STA. 25+00 TO 28+00 1234 S.Y.

COMMON EXCAVATION- WASTE
 STA. 25+00 TO 28+00 275 C.Y.

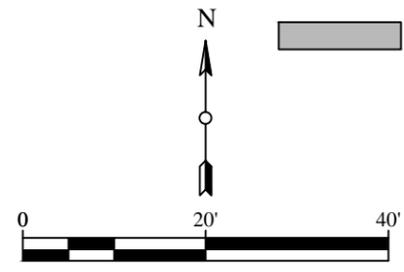
REMOVAL OF CURB & GUTTER
 STA. 25+00 TO 27+08 R.T. 208 L.F.
 STA. 27+08 TO 27+26 R.T. 29 L.F.
 STA. 27+08 TO 27+26 L.T. 29 L.F.
 STA. 27+63 TO 27+81 R.T. 29 L.F.
 STA. 27+63 TO 27+81 L.T. 29 L.F.
 STA. 27+81 TO 28+00 L.T. 19 L.F.
343 L.F.

REMOVAL OF CONCRETE
 STA. 25+00 TO 25+52 R.T. 31 S.Y.
 STA. 25+93 TO 27+25 R.T. 131 S.Y.
 STA. 27+13 TO 27+17 L.T. 7 S.Y.
 STA. 27+65 TO 28+00 L.T. 25 S.Y.
 STA. 27+66 TO 27+82 R.T. 9 S.Y.
203 S.Y.

REMOVAL OF VALLEY GUTTER
 STA. 27+09 TO 27+15 25 S.Y.
 SAW CUT 57 L.F.

LEGEND

- Removal of Concrete
- Mill Area
- Complete Digout



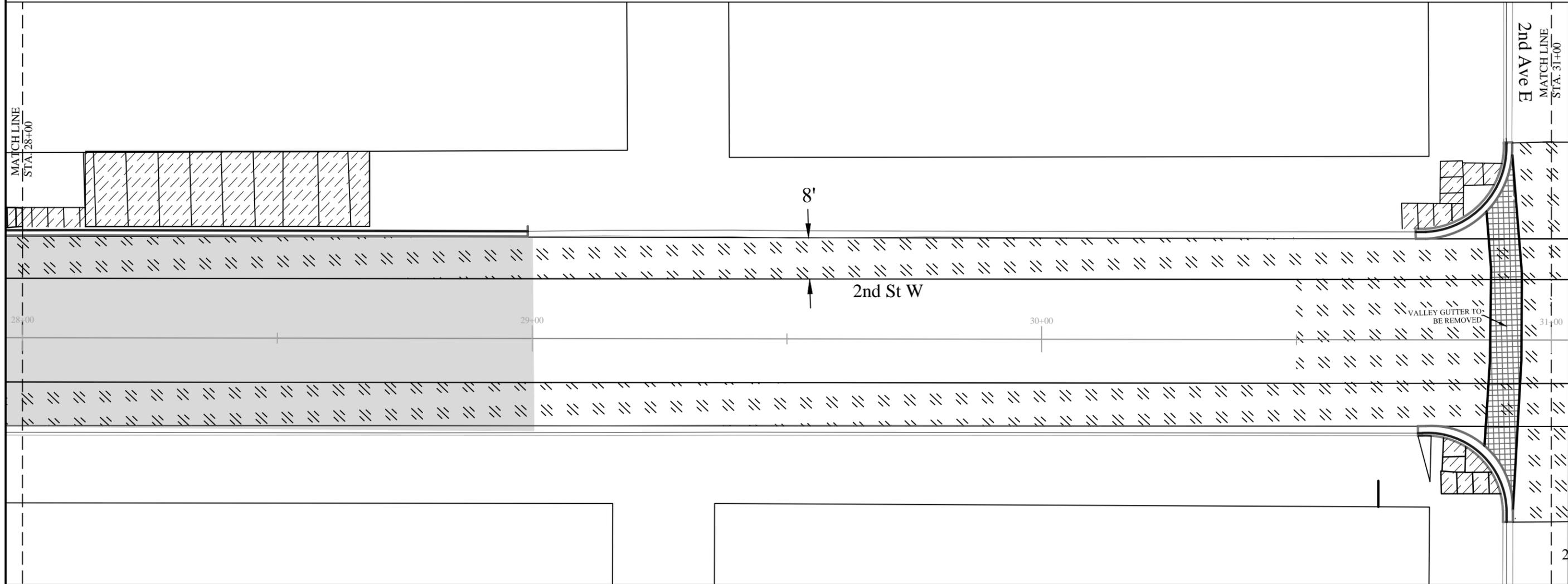
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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	REMOVALS	
DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101

1314101.dwg

JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	40	4



REMOVAL OF BITUMINOUS SURFACING

STA. 28+00 TO 29+00	412 S.Y.
STA. 30+88 TO 30+94	8 S.Y.
	<u>420 S.Y.</u>

COMMON EXCAVATION- WASTE

STA. 28+00 TO 29+00	92 C.Y.
STA. 30+88 TO 30+94	2 C.Y.
	<u>94 C.Y.</u>

REMOVAL OF CURB & GUTTER

STA. 28+00 TO 28+99 L.T.	99 L.F.
STA. 30+73 TO 30+92 L.T.	30 L.F.
STA. 30+73 TO 30+92 R.T.	30 L.F.
	<u>159 L.F.</u>

REMOVAL OF VALLEY GUTTER

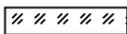
STA. 30+87 TO 30+93	36 S.Y.
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REMOVAL OF CONCRETE

STA. 28+00 TO 28+12 L.T.	6 S.Y.
STA. 28+12 TO 28+68 L.T.	214 S.Y.
STA. 30+71 TO 30+90 L.T.	14 S.Y.
STA. 30+78 TO 30+90 R.T.	10 S.Y.
	<u>244 S.Y.</u>

SAW CUT	23 L.F.
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LEGEND

	Removal of Concrete
	Mill Area
	Complete Digout

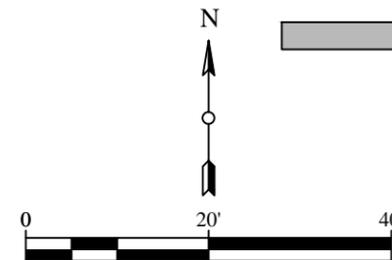
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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING

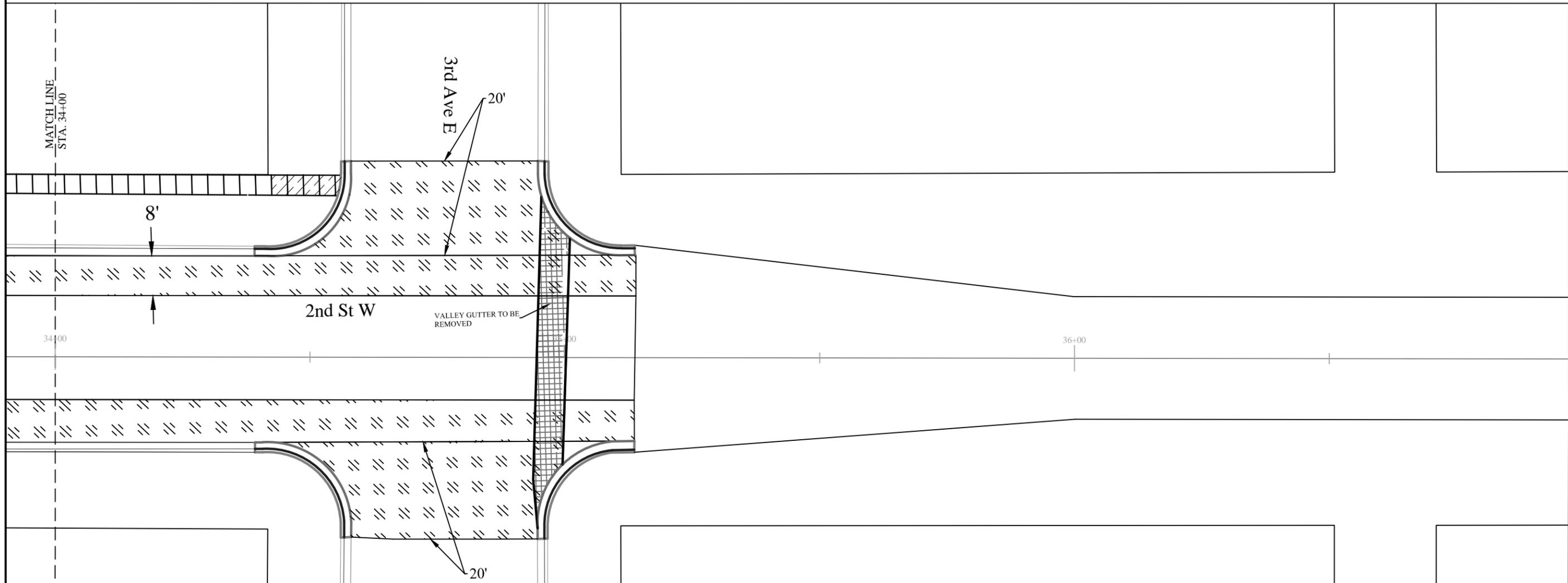


REMOVALS



DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101
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1314101.dwg



1314101.dwg

REMOVAL OF BITUMINOUS SARFACING
 STA. 34+93 TO 34+99 16 S.Y.

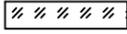
COMMON EXCAVATION-WASTE
 STA. 34+93 TO 34+99 4 C.Y.

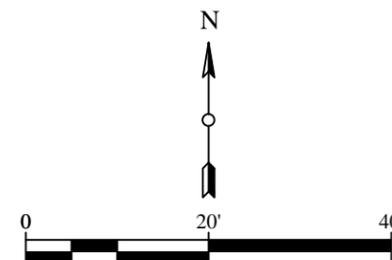
REMOVAL OF CURB & GUTTER
 STA. 34+39 TO 34+56 R.T. 30 L.F.
 STA. 34+40 TO 34+58 L.T. 30 L.F.
 STA. 34+95 TO 35+14 R.T. 30 L.F.
 STA. 34+95 TO 35+14 L.T. 30 L.F.
 120 L.F.

REMOVAL OF VALLEY GUTTER
 STA. 34+95 TO 35+01 38 S.Y.

REMOVAL OF CONCRETE
 STA. 34+42 TO 34+56 L.T. 6 S.Y.

SAW CUT 19 L.F.

LEGEND
 Removal of Concrete
 Mill Area

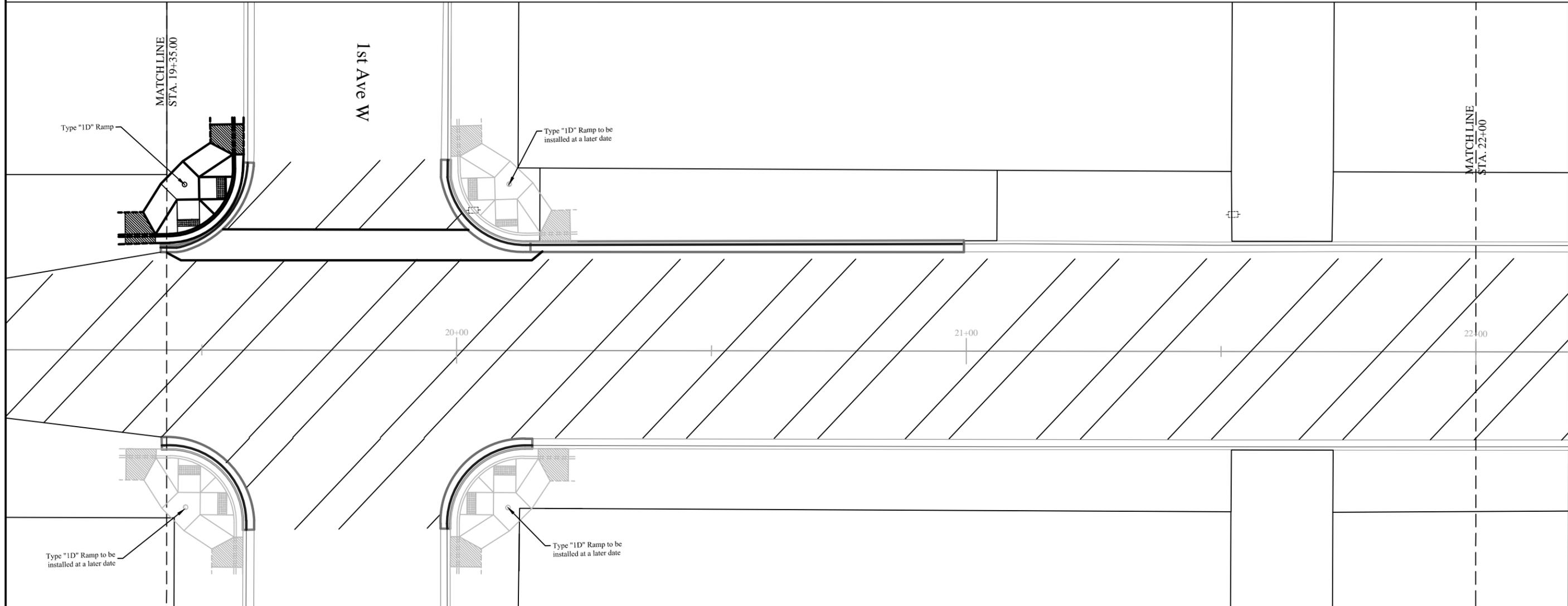


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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING		REMOVALS
DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101

JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	90	1



1314101.dwg

AGGREGATE BASE COURSE CL 3
 STA. 19+43 TO 20+17 5 C.Y.

CURB & GUTTER - TYPE 1
 STA. 19+42 TO 19+58 L.T. 27 L.F.
 STA. 19+42 TO 19+58 R.T. 27 L.F.
 STA. 19+98 TO 20+14 R.T. 27 L.F.
 STA. 19+98 TO 20+14 L.T. 27 L.F.
 STA. 20+15 TO 20+99 L.T. 84 L.F.
 192 L.F.

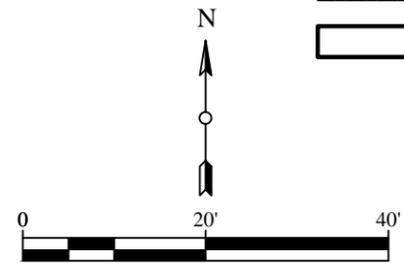
VALLEY GUTTER 72IN
 STA. 19+43 TO 20+17 38 S.Y.

DETECTABLE WARNING PANELS
 STA. 19+47 L.T. 10 S.F.
 STA. 19+54 L.T. 10 S.F.
 20 S.F.

SIDEWALK CONCRETE 4IN
 STA. 19+35 TO 19+58 L.T. 24 S.Y.

LEGEND

	Curb & Gutter Type I
	Paving Area
	Concrete to be Placed

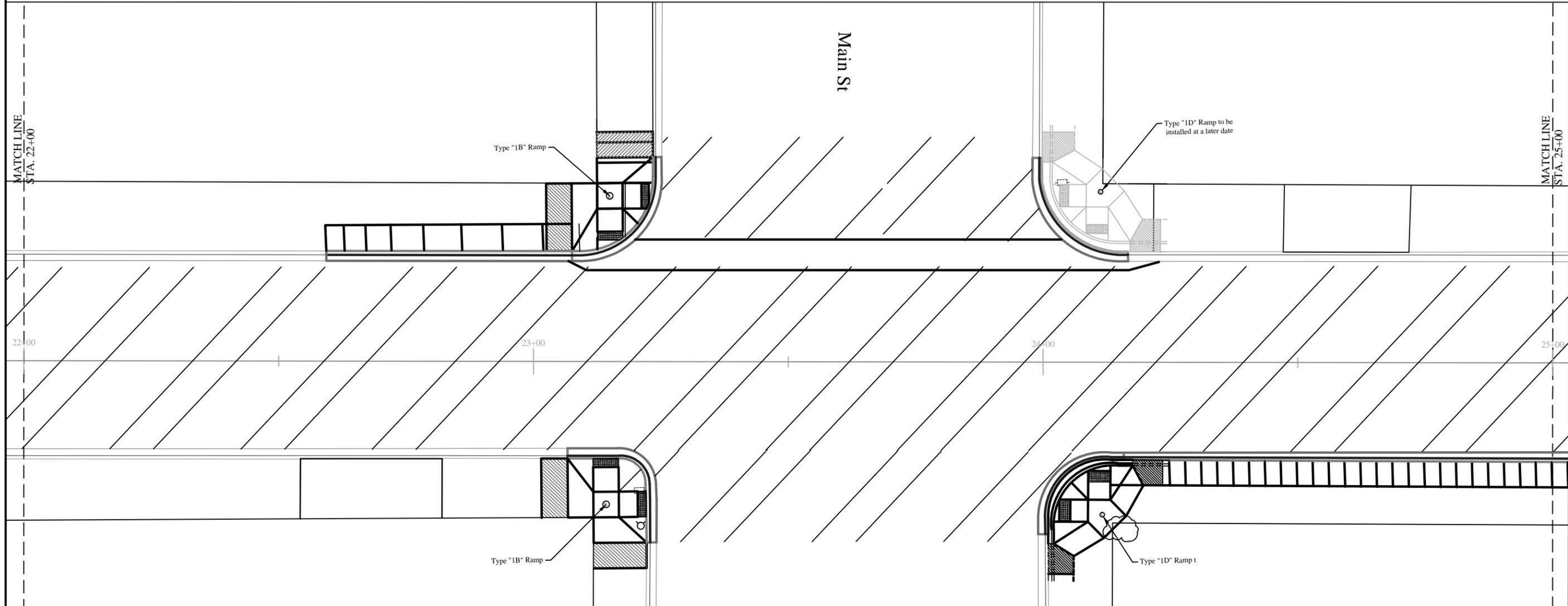


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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	PAVING LAYOUT	
DRAWN BY: JLD	CHECKED BY: CAO	PRODUCTION NO: 1314101

JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	90	2



1314101.dwg

AGGREGATE BASE COURSE CL 3
 STA. 23+07 TO 24+23 18 C.Y.

CURB & GUTTER-TYPE 1
 STA. 22+59 TO 23+08 L.T. 49 L.F.
 STA. 23+08 TO 23+25 L.T. 27 L.F.
 STA. 23+08 TO 23+25 R.T. 27 L.F.
 STA. 23+98 TO 24+17 L.T. 30 L.F.
 STA. 23+98 TO 24+17 R.T. 30 L.F.
 STA. 24+17 TO 25+00 R.T. 83 L.F.
246 L.F.

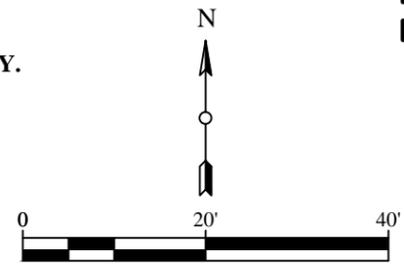
DETECTABLE WARNING PANELS
 STA. 23+14 R.T. 10 S.F.
 STA. 23+15 L.T. 10 S.F.
 STA. 23+21 R.T. 10 S.F.
 STA. 23+22 L.T. 10 S.F.
40 S.F.

SIDEWALK CONCRETE 4IN
 STA. 22+59 TO 23+02 L.T. 24 S.Y.
 STA. 23+02 TO 23+22 L.T. 38 S.Y.
 STA. 23+02 TO 23+22 R.T. 38 S.Y.
 STA. 24+01 TO 24+24 R.T. 24 S.Y.
124 S.Y.

VALLEY GUTTER 72IN
 STA. 23+07 TO 24+23 L.T. 62 S.Y.

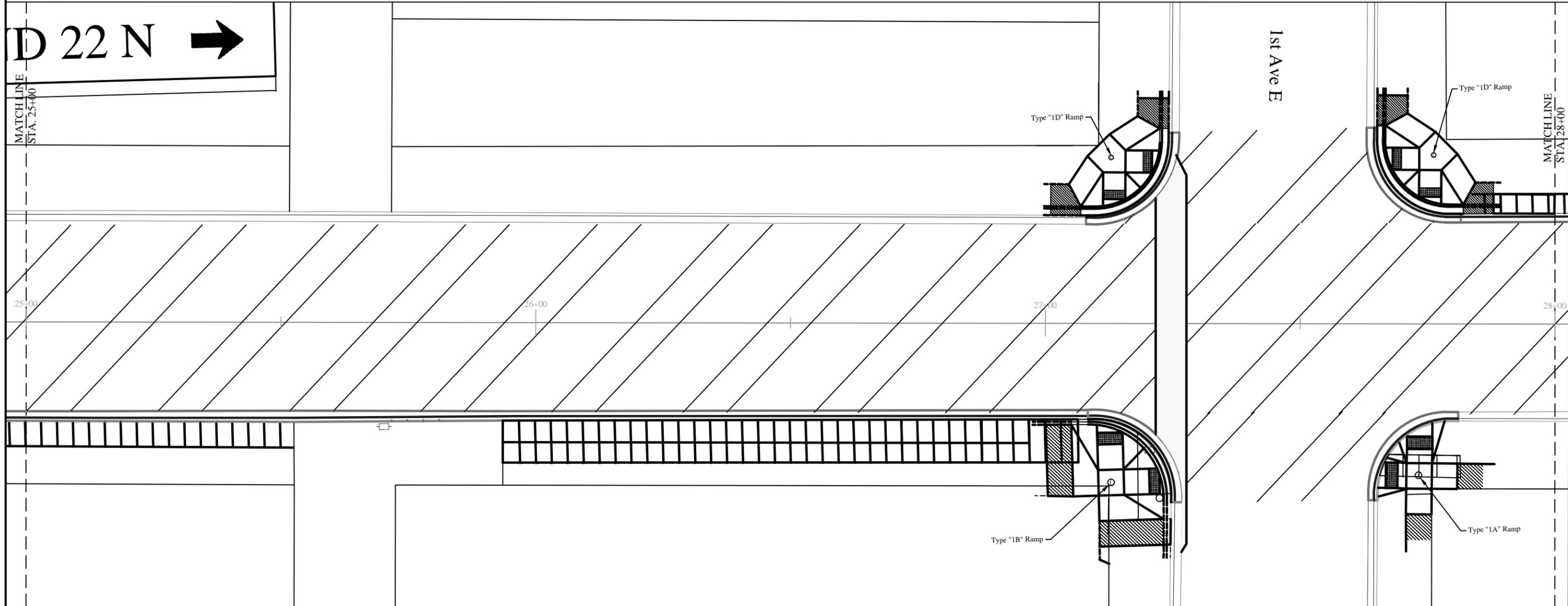
LEGEND

	Curb & Gutter Type 1
	Paving Area
	Sidewalk Concrete
	Concrete to be Placed



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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
	PAVING LAYOUT	
	DRAWN BY JLD	CHECKED BY CAO



1314101.dwg

CURB & GUTTER TYPE-1

STA. 25+00 TO 27+08 R.T.	208 L.F.
STA. 27+08 TO 27+26 R.T.	29 L.F.
STA. 27+08 TO 27+26 L.T.	29 L.F.
STA. 27+63 TO 27+81 R.T.	29 L.F.
STA. 27+63 TO 27+81 L.T.	29 L.F.
STA. 27+81 TO 28+00 L.T.	19 L.F.
343 L.F.	

DETECTABLE WARNING PANELS

STA. 27+13 L.T.	10 S.F.
STA. 27+13 R.T.	10 S.F.
STA. 27+15 R.T.	10 S.F.
STA. 27+20 L.T.	10 S.F.
STA. 27+69 L.T.	10 S.F.
STA. 27+76 L.T.	10 S.F.
60 S.F.	

SIDEWALK CONCRETE 4IN

STA. 25+00 TO 25+52 R.T.	31 S.Y.
STA. 25+93 TO 27+25 R.T.	131 S.Y.
STA. 27+88 TO 28+00 L.T.	5 S.Y.
167 S.Y.	

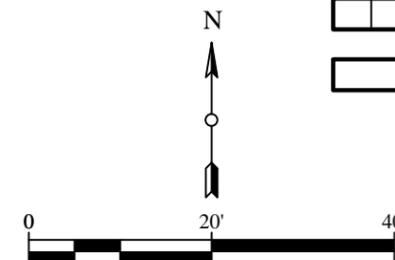
VALLEY GUTTER 72IN

STA. 27+22 TO 27+28	36 S.Y.
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LEGEND

- Curb & Gutter Type I
- Paving Area
- Sidewalk Concrete
- Concrete to be Placed

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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING

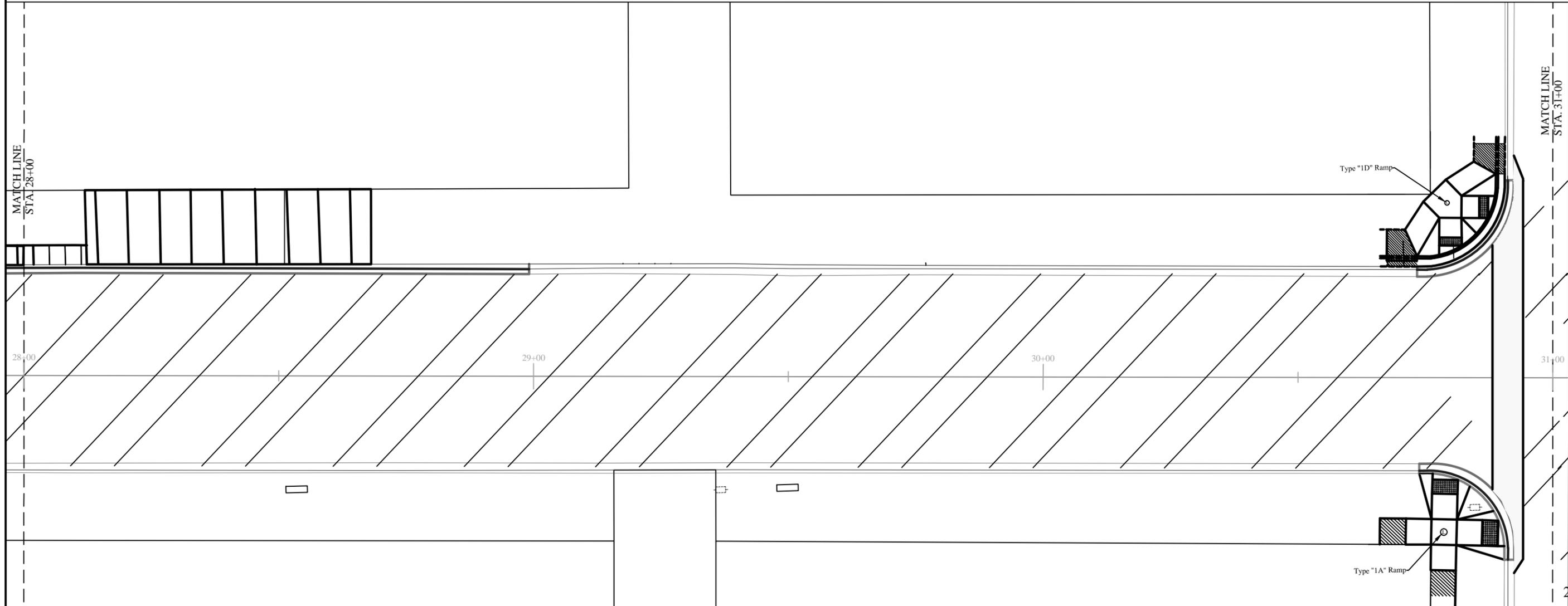


PAVING LAYOUT

DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101
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JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	90	4



1314101.dwg

AGGREGATE BASE COURSE CL 3
 STA. 30+88 TO 30+94 2 C.Y.

CURB & GUTTER-TYPE 1
 STA. 28+00 TO 28+99 LT. 99 L.F.
 STA. 30+73 TO 30+92 LT. 30 L.F.
 STA. 30+73 TO 30+92 RT. 30 L.F.
 159 L.F.

DETECTABLE WARNING PANELS
 STA. 30+79 R.T. 10 S.F.
 STA. 30+79 L.T. 10 S.F.
 STA. 30+88 R.T. 10 S.F.
 STA. 30+88 L.T. 10 S.F.
 40 S.F.

SIDEWALK CONCRETE 4IN
 STA. 28+00 TO 28+12 L.T. 6 S.Y.
 STA. 30+66 TO 30+90 R.T. 24 S.Y.
 STA. 30+67 TO 30+91 L.T. 24 S.Y.
 54 S.Y.

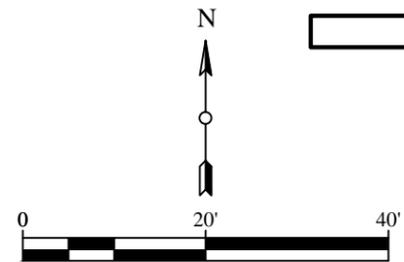
VALLEY GUTTER 72IN
 STA. 30+88 TO 30+94 38 S.Y.

DRIVEWAY CONCRETE 8IN
 STA. 28+12 TO 28+68 L.T. 214 S.Y.

LEGEND

	Curb & Gutter Type I
	Paving Area
	Sidewalk Concrete
	Concrete to be Placed

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CNOA-0103(053)
 ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING

PAVING LAYOUT

DRAWN BY JLD	CHECKED BY CAO	PRODUCTION NO. 1314101
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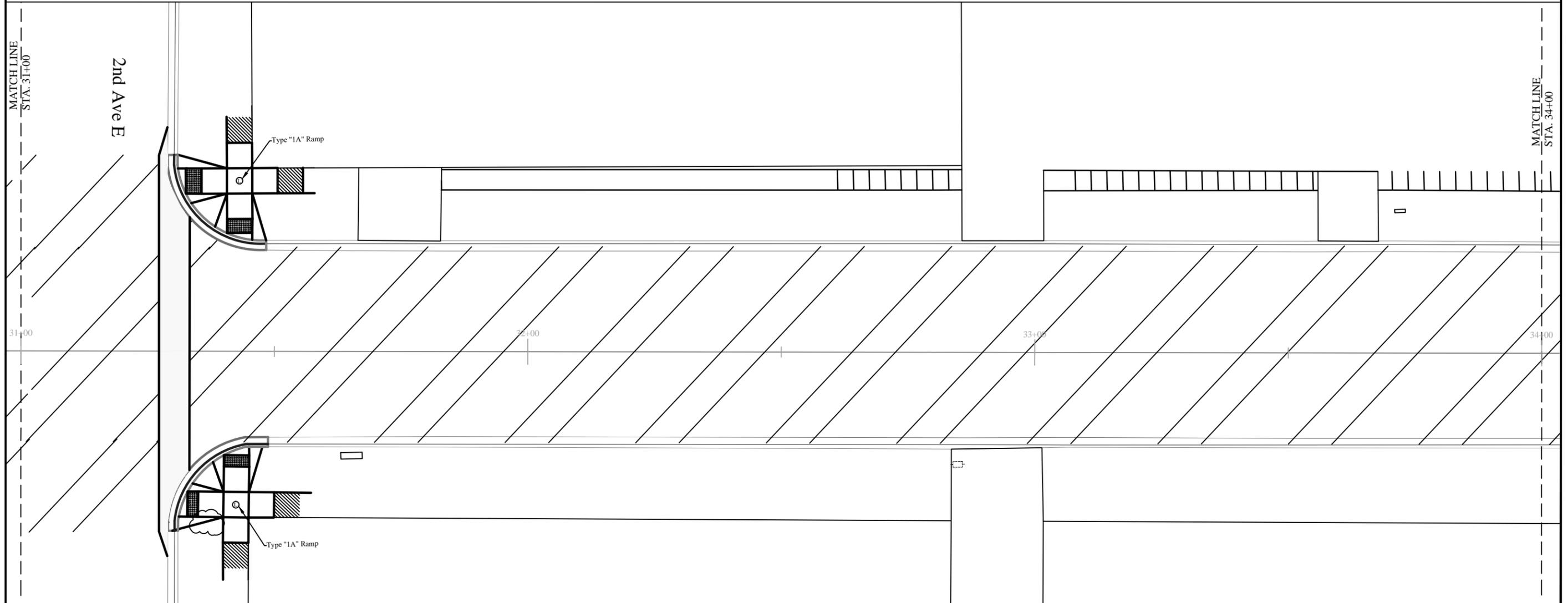
JOB # 46

STATE
ND

PROJECT NO.
CNOA-0103(053)

SECTION NO.
90

SHEET NO.
5



1314101.dwg

AGGREGATE BASE COURSE CL 3
STA. 30+27 TO 31+33 9 C.Y.

CURB & GUTTER-TYPE 1
STA. 31+29 TO 31+48 R.T. 30 L.F.
STA. 31+29 TO 31+48 L.T. 30 L.F.
60 L.F.

SIDEWALK CONCRETE 4IN
STA. 31+29 TO 30+91 L.T. 24 S.Y.
STA. 31+29 TO 30+91 R.T. 24 S.Y.
48 S.Y.

DETECTABLE WARNING PANELS
STA. 31+34 L.T. 10 S.F.
STA. 31+34 R.T. 10 S.F.
STA. 31+43 L.T. 10 S.F.
STA. 31+43 R.T. 10 S.F.
40 S.F.

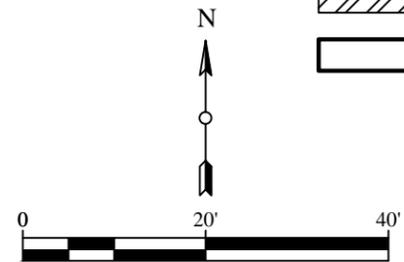
VALLEY GUTTER 72IN
STA. 31+27 TO 31+33 38 S.Y.

LEGEND

==== Curb & Gutter Type I

Paving Area

Concrete to be Placed



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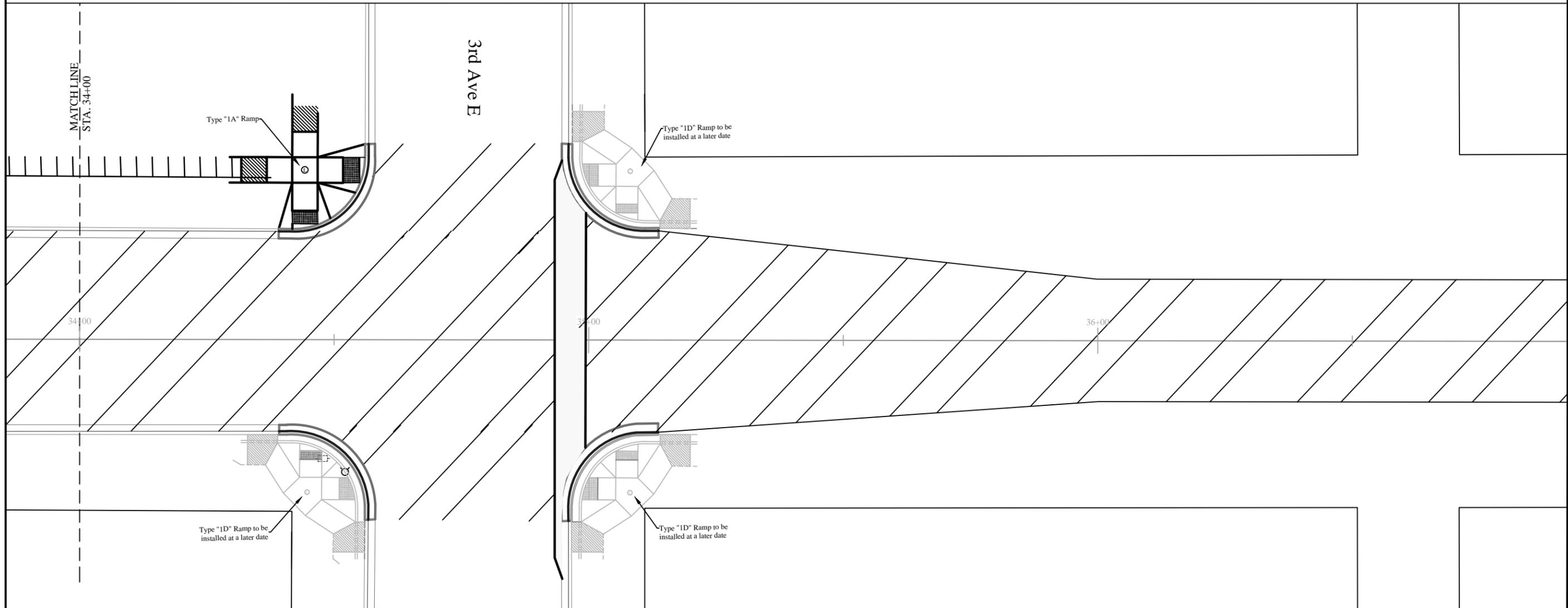
CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING



PAVING LAYOUT

DRAWN BY: JLD CHECKED BY: CAO PRODUCTION NO: 1314101



1314101.dwg

AGGREGATE BASE COURSE CL 3
 STA. 34+93 TO 34+99 4 C.Y.

CURB & GUTTER -TYPE I
 STA. 34+39 TO 34+56 R.T. 30 L.F.
 STA. 34+40 TO 34+58 L.T. 30 L.F.
 STA. 34+95 TO 35+14 R.T. 30 L.F.
 STA. 34+95 TO 35+14 L.T. 30 L.F.
 120 L.F.

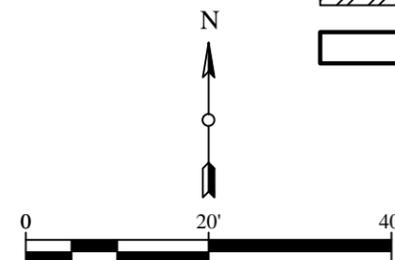
SIDEWALK CONCRETE 4IN
 STA. 34+29 TO 34+56 L.T. 24 S.Y.

DETECTABLE WARNING PANELS
 STA. 34+44 L.T. 10 S.F.
 STA. 34+53 L.T. 10 S.F.
 20 S.F.

VALLEY GUTTER 72IN
 STA. 34+93 TO 34+99 36 S.Y.

LEGEND

 Curb & Gutter Type I
 Paving Area
 Concrete to be Placed



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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	PAVING LAYOUT	
DRAWN BY: JLD	CHECKED BY: CAO	PRODUCTION NO: 1314101

Traffic Control Devices List

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)		6	
G20-1-60	60"x24"	ROAD WORK NEXT MILES		34	
G20-1b-60	60"x24"	WORK IN PROGRESS NO WORK IN PROGRESS (Sign and installation only)		26	
G20-2-48	48"x24"	END ROAD WORK	7	19	133
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)		18	
G20-10-108	108"x48"	CONTRACTOR SIGN		64	
G20-50a-72	72"x36"	ROAD WORK NEXT MILES RT & LT ARROWS		37	
G20-52a-72	72"x24"	ROAD WORK NEXT MILES RT or LT ARROW		30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT		59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)		10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)		10	
M2-1-24	24"x12"	NORTH (Mounted on route marker post)		7	
M2-2-24	24"x12"	EAST (Mounted on route marker post)		7	
M2-3-24	24"x12"	SOUTH (Mounted on route marker post)		7	
M2-4-24	24"x12"	WEST (Mounted on route marker post)		7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT AND RT or LT		15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT		23	
M6-1-21	21"x15"	ARROW AHEAD AND RT or LT (Mounted on route marker post)		7	
M6-2-21	21"x15"	ARROW AHEAD UP & RT or LT (Mounted on route marker post)		7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)		7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)		7	
M6-3-21	21"x15"	ARROW AHEAD (Mounted on route marker post)		7	
R1-1-48	48"x48"	STOP		32	
R1-1a-18	18"x18"	STOP and SLOW/PADDLE Back to Back		5	
R1-2-60	60"x60"	YIELD		29	
R2-1-48	48"x60"	SPEED LIMIT		39	
R2-1a-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)		10	
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT		35	
R4-1-48	48"x60"	DO NOT PASS		39	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL		39	
R5-1-48	48"x48"	DO NOT ENTER		35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT		13	
R7-1-12	12"x18"	NO PARKING		11	
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED		28	
R11-2a-48	48"x30"	STREET CLOSED	8	28	224
R11-3a-60	60"x30"	ROAD CLOSED MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-3c-60	60"x30"	STREET CLOSED MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC	8	31	248
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW		35	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-6-48	48"x24"	LARGE ARROW		26	
W3-1-48	48"x48"	STOP AHEAD SYMBOL		35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL		35	
W3-4-48	48"x48"	BE PREPARED TO STOP		35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	5	35	175
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL		35	
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE		35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW		35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL		35	
W8-1-48	48"x48"	BUMP		35	
W8-3-48	48"x48"	PAVEMENT ENDS		35	
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF		35	
W8-11-48	48"x48"	UNEVEN LANES		35	
W8-12-48	48"x48"	NO CENTER STRIPE		35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY		35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or FT.		35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or FT.		35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
W8-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL		35	
W13-1-24	24"x24"	MPH ADVISORY SPEED PLATE (Mounted on warning sign post)		11	
W13-4-48	48"x60"	RAMP ARROW		39	
W14-3-48	48"x36"	NO PASSING ZONE		23	
W20-1-48	48"x48"	ROAD WORK AHEAD or FT or MILE		35	
W20-2-48	48"x48"	DETOUR AHEAD or FT		35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or FT.		35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or FT.		35	
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or FT.		35	
W20-7a-48	48"x48"	FLAGGING SYMBOL	5	35	175
W20-7k-24	24"x18"	FEET (Mounted on warning sign post)		10	
W20-8-48	48"x48"	STREET CLOSED		35	
W20-51-48	48"x48"	EQUIPMENT WORKING		35	
W20-52-54	54"x12"	NEXT MILES (Mounted on warning sign post)		12	
W21-1a-48	48"x48"	WORKERS SYMBOL		35	
W21-2-48	48"x48"	FRESH OIL		35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or FT		35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-5-48	48"x48"	SHOULDER WORK		35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED		35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or FT.		35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD		35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or FT.		35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY		35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK		35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)		11	

SPECIAL SIGNS					
SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
R9-9-24	24"x24"	Sidewalk Closed	7	20	140

SPEC & CODE			TOTAL
704-1000	TRAFFIC CONTROL SIGNS		1095

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	FLAGGING	MHR	
704-1041	ATTENUATION DEVICE - TYPE B-55	EACH	
704-1043	ATTENUATION DEVICE - TYPE B-65	EACH	
704-1044	ATTENUATION DEVICE - TYPE B-70	EACH	
704-1050	TYPE I BARRICADES	EACH	30
704-1051	TYPE II BARRICADES	EACH	
704-1052	TYPE III BARRICADES	EACH	51
704-1060	DELINEATOR DRUMS	EACH	
704-1065	TRAFFIC CONES	EACH	
704-1067	TUBULAR MARKERS	EACH	471
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH	
704-1095	TYPE B FLASHERS	EACH	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4 IN LINE - TYPE R	LF	
762-0430	SHORT TERM 4 IN LINE - TYPE R	LF	
762-1500	DELETION OF PAVEMENT	SF	
772-2110	FLASHING BEACON - POST MOUNTED	EACH	

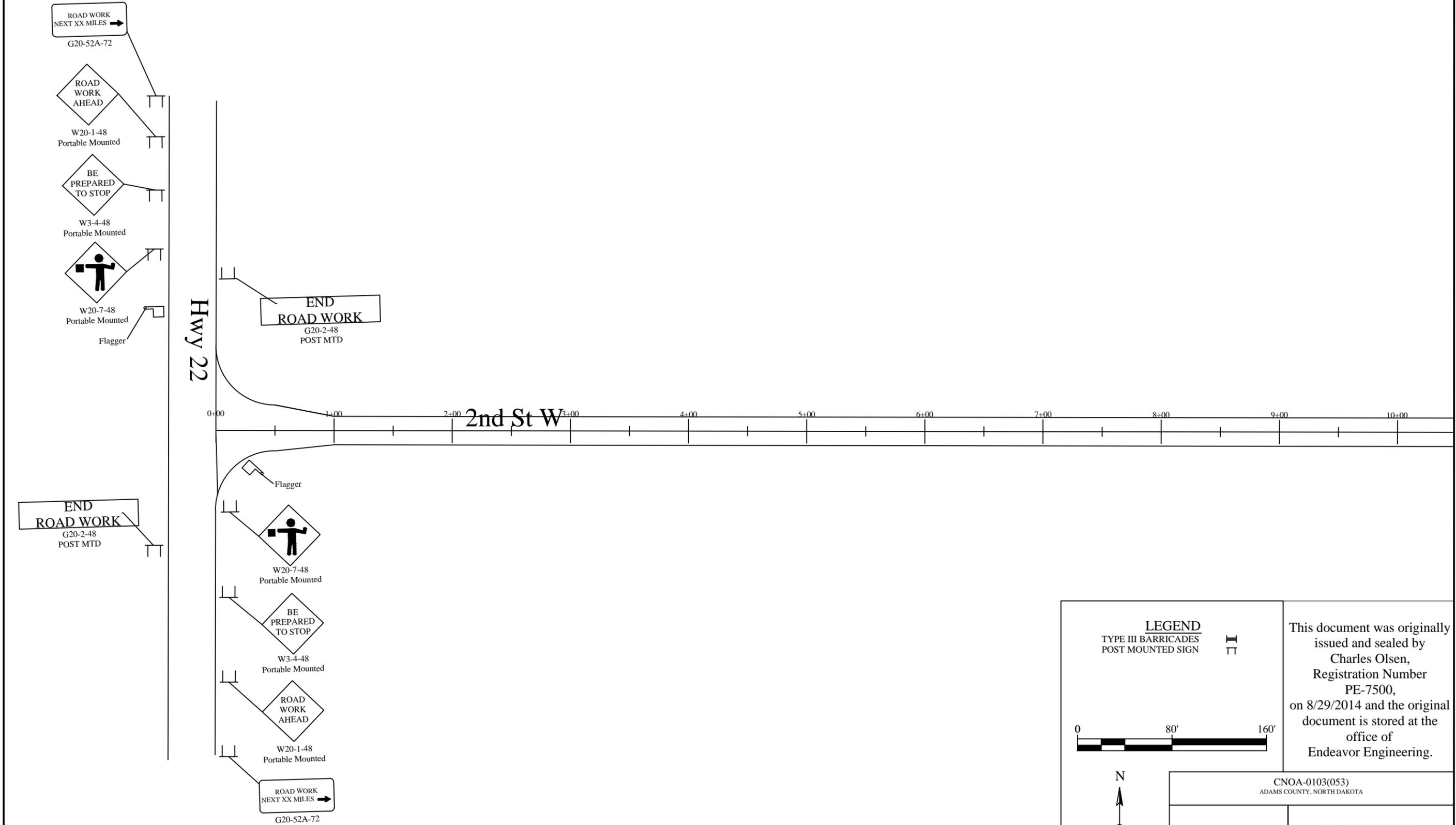
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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING		Traffic Control Devices List
DRAWN BY: JLD	CHECKED BY: CAO	PRODUCTION NO: 1314101

JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	100	2

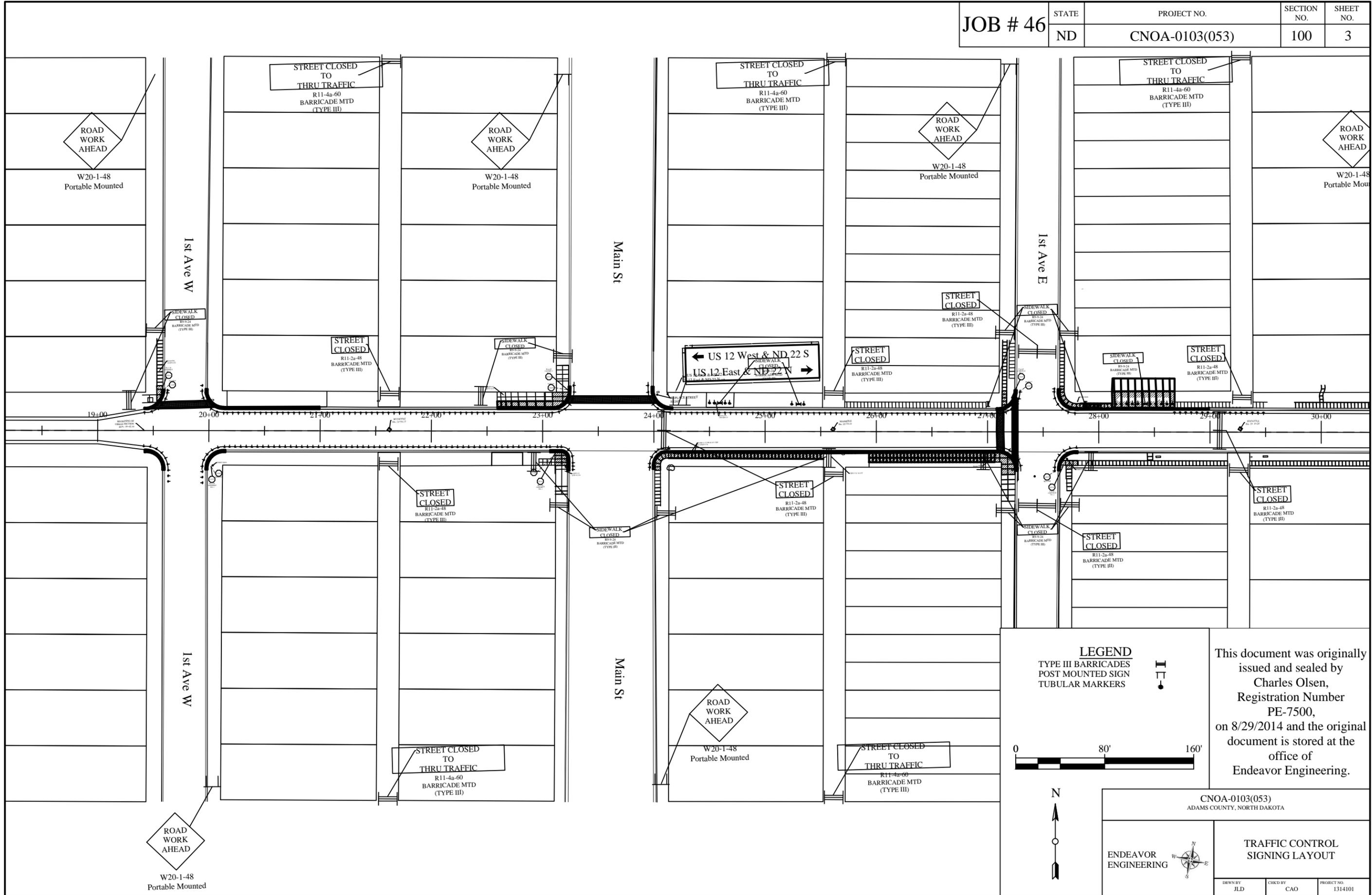
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<p>LEGEND</p> <p>TYPE III BARRICADES </p> <p>POST MOUNTED SIGN </p>	<p>This document was originally issued and sealed by Charles Olsen, Registration Number PE-7500, on 8/29/2014 and the original document is stored at the office of Endeavor Engineering.</p>
<p>CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA</p>	
<p>ENDEAVOR ENGINEERING </p>	<p>TRAFFIC CONTROL SIGNING LAYOUT</p>
<p>DRWN BY JLD</p>	<p>CHK'D BY CAO</p>
<p>PROJECT NO. 1314101</p>	

JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	100	3



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LEGEND

TYPE III BARRICADES

POST MOUNTED SIGN

TUBULAR MARKERS

0 80' 160'

N

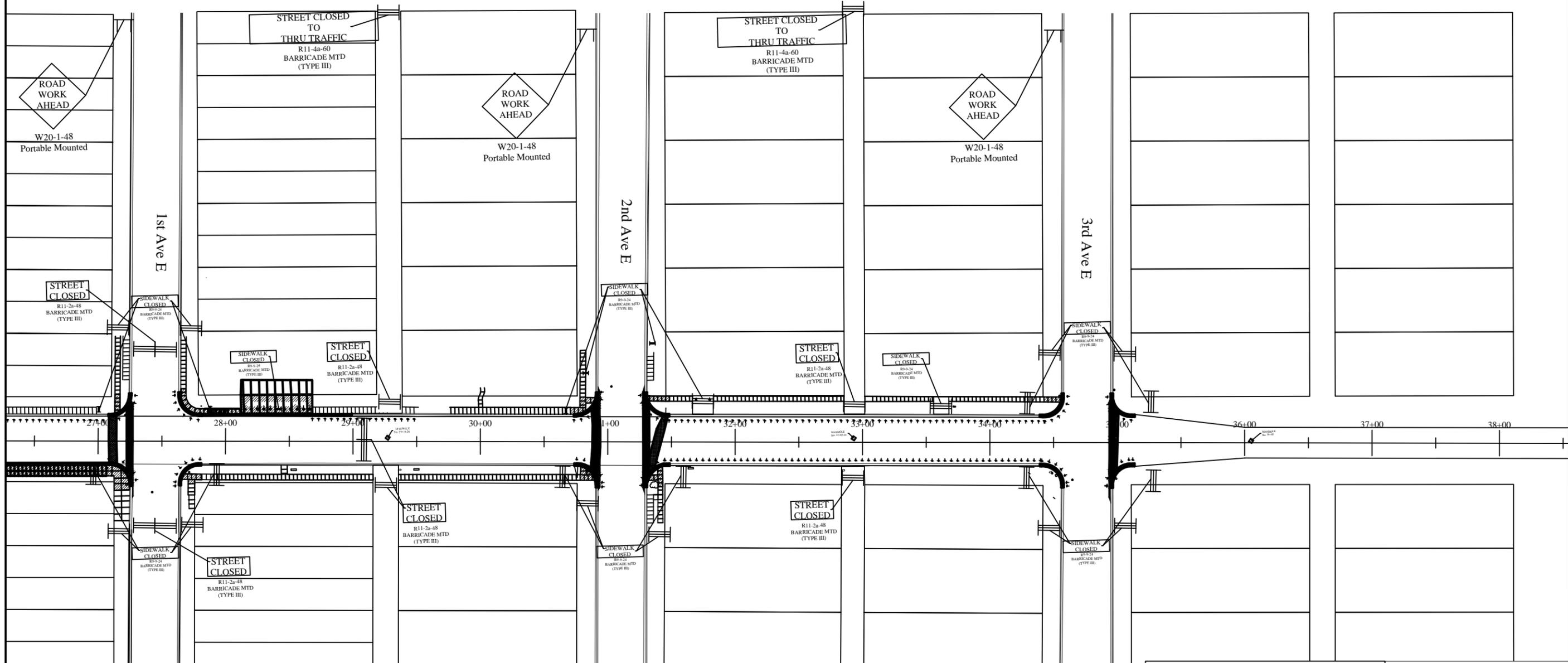
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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING

TRAFFIC CONTROL SIGNING LAYOUT

DRWN BY JLD	CHKD BY CAO	PROJECT NO. 1314101
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LEGEND

TYPE III BARRICADES

POST MOUNTED SIGN

TUBULAR MARKERS

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0 80' 160'

N

CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING

TRAFFIC CONTROL SIGNING LAYOUT

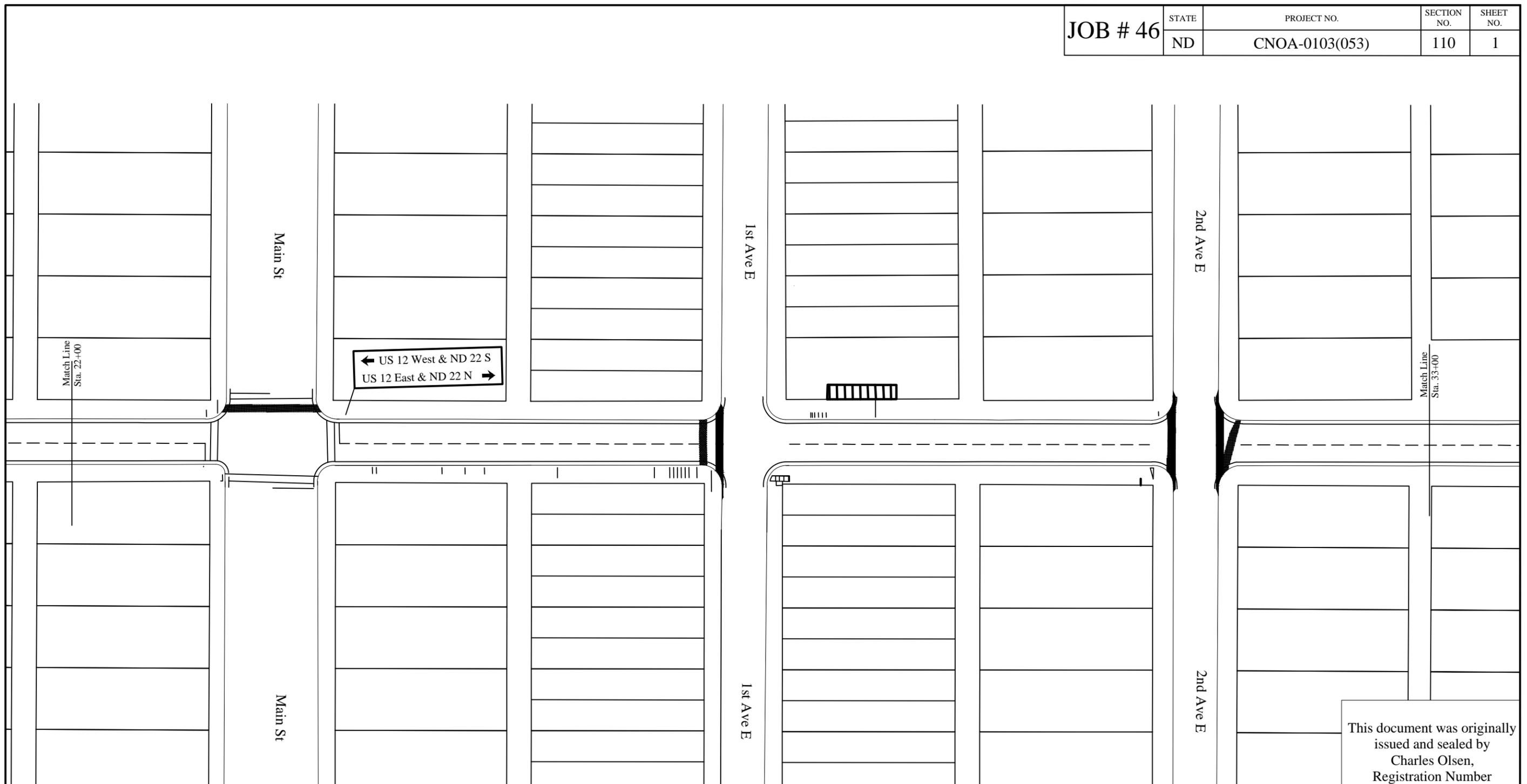
DRWN BY JLD	CHKD BY CAO	PROJECT NO. 1314101
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POST MOUNTED SIGN

ROAD WORK AHEAD
W20-1-48
Portable Mounted

JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	110	1



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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR
ENGINEERING



Signing

DRWN BY JLD	CHK'D BY CAO	PROJECT NO. 1314101
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JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	110	2

Sta. 24+22 LT

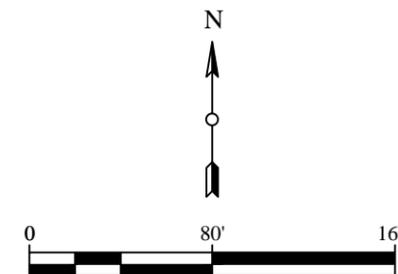
Area 25 sq. ft.



Dimensions are in inches.tenths

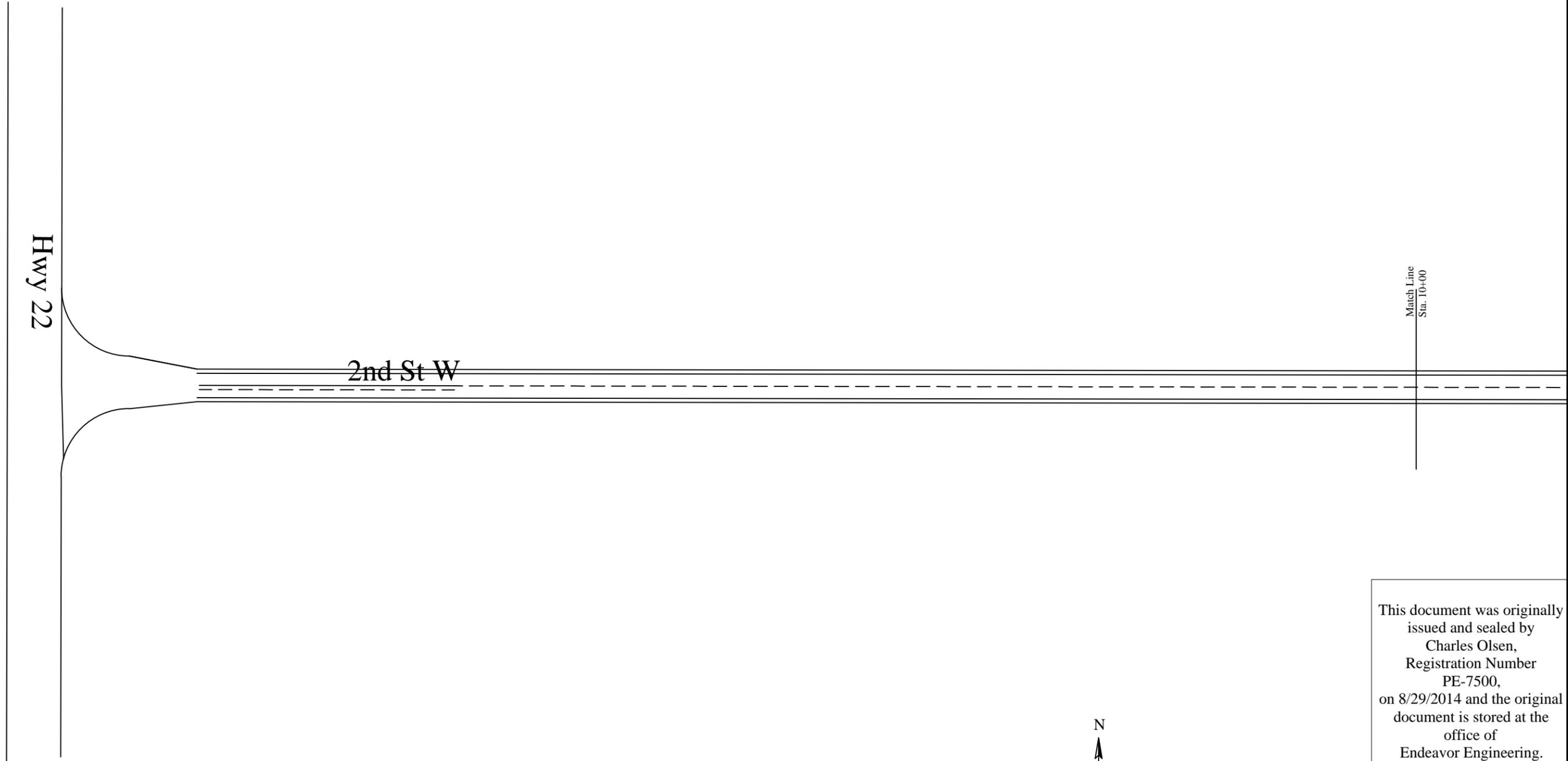
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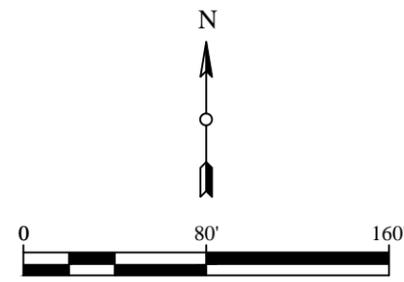
CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	Sign Detail	
DRWN BY JLD	CHKD BY CAO	PROJECT NO. 1314101

JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	120	1



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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	STRIPING	
<small>DRAWN BY</small> JLD	<small>CHECKED BY</small> CAO	<small>PROJECT NO.</small> 1314101

JOB # 46

STATE
ND

PROJECT NO.
CNOA-0103(053)

SECTION NO.
120

SHEET NO.
2

Match Line
Sta. 10+00

Match Line
Sta. 22+00

1st Ave W

1st Ave W

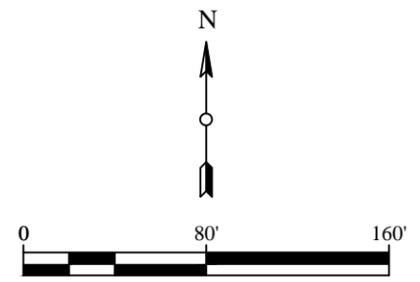
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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR ENGINEERING



STRIPING



DRWN BY: JLD
CHK'D BY: CAO
PROJECT NO.: 1314101

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JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	120	3



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CNOA-0103(053)
ADAMS COUNTY, NORTH DAKOTA

ENDEAVOR
ENGINEERING

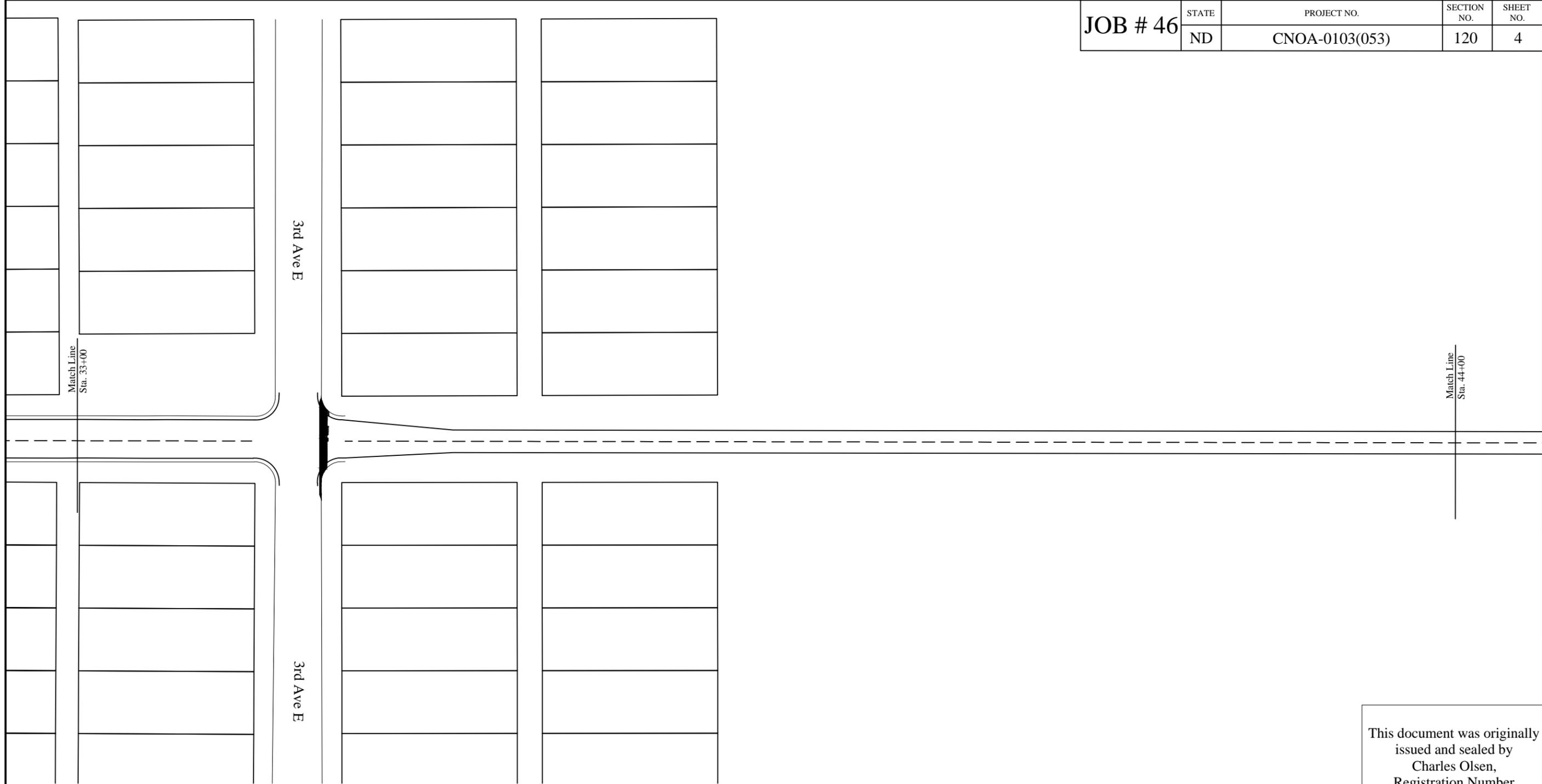


STRIPING

DRWN BY JLD	CHK'D BY CAO	PROJECT NO. 1314101
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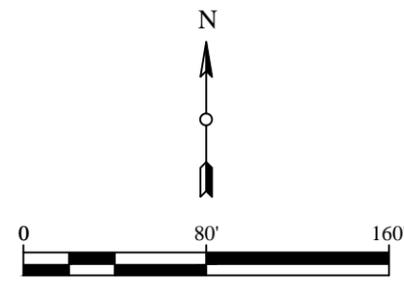
JOB # 46

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CNOA-0103(053)	120	4



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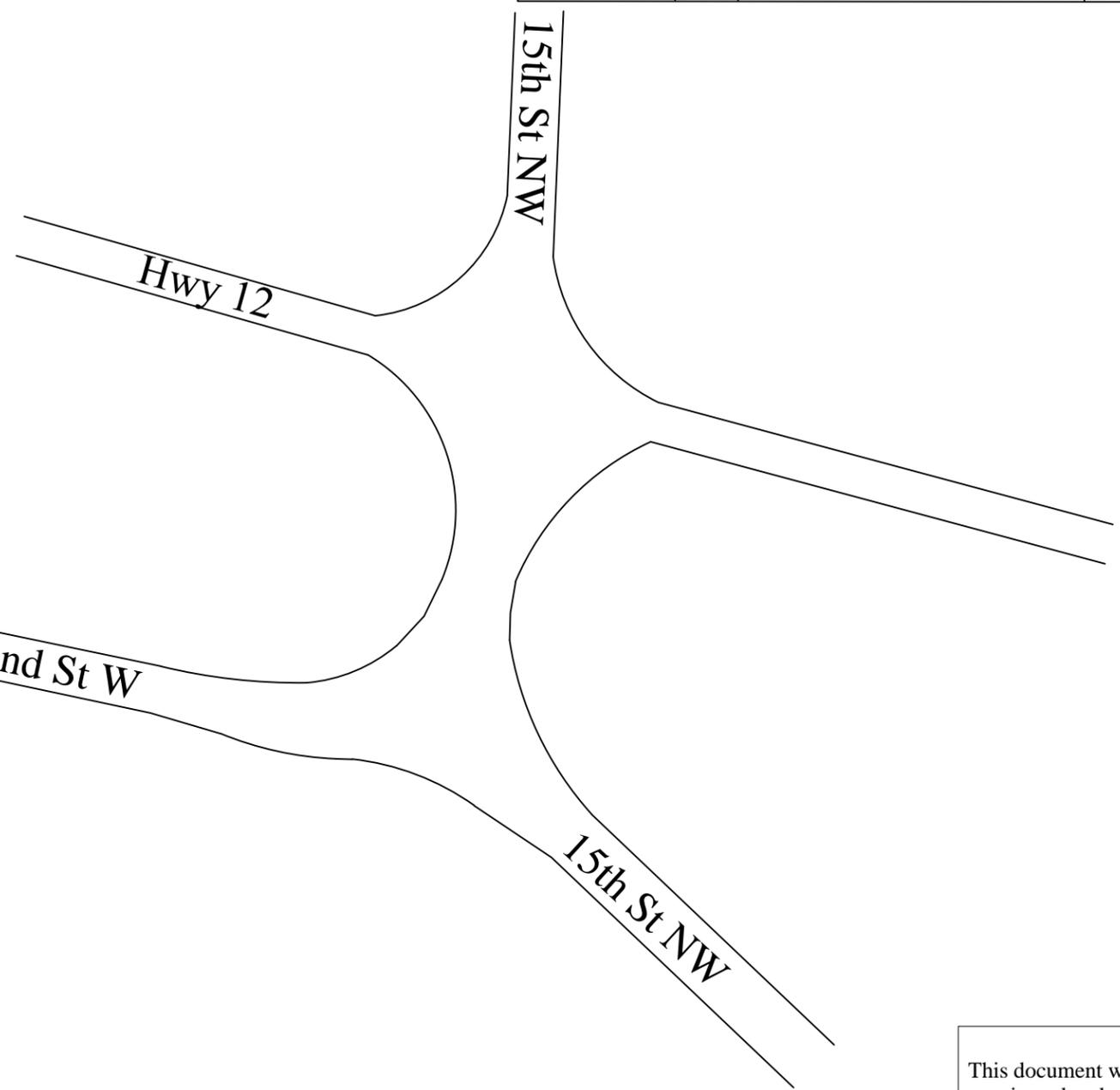
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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	STRIPING	
DRWN BY JLD	CHKD BY CAO	PROJECT NO. 1314101

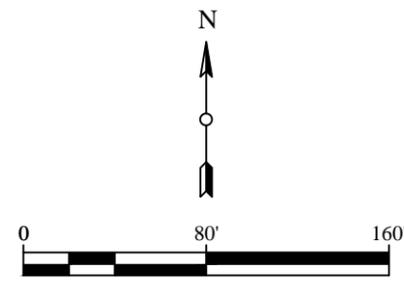
JOB # 46	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CNOA-0103(053)	120	5

Match Line
Sta. 44+00



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CNOA-0103(053) ADAMS COUNTY, NORTH DAKOTA		
ENDEAVOR ENGINEERING	STRIPING	
DRWN BY JLD	CHK'D BY CAO	PROJECT NO. 1314101

Symbols

	North Arrow (Half Scale)		Attenuation Device		Existing Railroad Battery Box		Existing Delineator Type E
	Truck Mounted Attenuator		Diamond Grade Delineator Type A		Existing Bush or Shrub		Existing EFB Misc
	Type I Barricade		Diamond Grade Delineator Type B		Existing Gas Cap or Stub		Existing Flashing Beacon
	Type II Barricade		Diamond Grade Delineator Type C		Existing Sanitary Cap or Stub		Existing Pipe Mounted Flasher
	Type III Barricade		Diamond Grade Delineator Type D		Existing Storm Drain Cap or Stub		Existing Pad Mounted Feed Point
	Catch Basin		Diamond Grade Delineator Type E		Existing Water Cap or Stub		Existing Pipe Mounted Feed Point with Pad
	Cairn or Stone Circle		Flexible Delineator		Existing Sanitary Cleanout		Existing Pole Mounted Feed Point
	Video Detection Camera		Flexible Delineator Type A		Existing Concrete Foundation		Existing Railroad Frog
	Storm Drain Cap or Stub		Flexible Delineator Type B		Existing Traffic Signal Controller		Existing Snow Gate 18
	Corrugated Metal End Section 18 Inch		Flexible Delineator Type C		Existing Pad Mounted Signal Controller		Existing Snow Gate 28
	Corrugated Metal End Section 24 Inch		Flexible Delineator Type D		Existing Sixteenth Section Corner		Existing Snow Gate 40
	Corrugated Metal End Section 30 Inch		Flexible Delineator Type E		Existing Quarter Section Corner		Existing Headwall
	Corrugated Metal End Section 36 Inch		Delineator Type A		Existing Section Corner		Existing Pedestrian Head with Number
	Corrugated Metal End Section 42 Inch		Delineator Type A Reset		Existing Railroad Crossbuck		Existing Signal Head
	Corrugated Metal End Section 48 Inch		Delineator Type B		Existing Satellite Dish		Existing Sprinkler Head
	Concrete Foundation		Delineator Type B Reset		Existing Fuel Dispensers		Existing Fire Hydrant
	Ground Connection Conductor		Delineator Type C		Existing Flexible Delineator Type A		Existing Catch Basin Drop Inlet
	Neutral Connection Conductor		Delineator Type D		Existing Flexible Delineator Type B		Existing Curb Inlet
	Phase 1 Connection Conductor		Delineator Type E		Existing Flexible Delineator Type C		Existing Manhole Inlet
	Phase 2 Connection Conductor		Delineator Drums		Existing Flexible Delineator Type D		Existing Junction Box
	Traffic Cone		Spot Elevation		Existing Flexible Delineator Type E		
	Signal Controller		Existing Access Control Arrow		Existing Delineator Type A		
	Pad Mounted Signal Controller		Existing Artifact		Existing Delineator Type B		
	Alignment Data Point		Existing Flashing Beacon		Existing Delineator Type C		
	Emergency Vehicle Detector		Existing Benchmark		Existing Delineator Type D		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

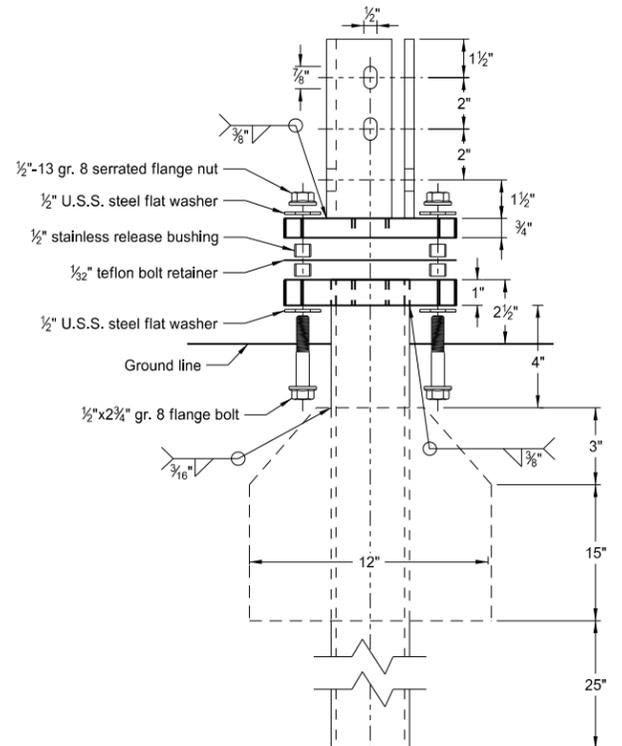
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Symbols

	Existing Light Standard		Existing Manhole with Valve Water		Existing Telephone Pole		Existing Undefined Manhole
	Existing High Mast Light Standard 10 Luminaire		Existing Water Manhole		Existing Wood Pole		Existing Undefined Pull Box
	Existing High Mast Light Standard 3 Luminaire		Existing Mile Post Type A		Existing Post		Existing Undefined Pedestal
	Existing High Mast Light Standard 4 Luminaire		Existing Mile Post Type B		Existing Pedestrian Push Button Post		Existing Undefined Valve
	Existing High Mast Light Standard 5 Luminaire		Existing Mile Post Type C		Existing Control Point CP		Existing Undefined Pipe Vent
	Existing High Mast Light Standard 6 Luminaire		Existing Reference Marker		Existing Control Point GPS-RTK		Existing Gas Valve
	Existing High Mast Light Standard 7 Luminaire		Existing RW Marker		Existing Control Point TRI		Existing Water Valve
	Existing High Mast Light Standard 8 Luminaire		Existing Utility Marker		Existing Reference Marker Point NGS		Existing Fuel Pipe Vent
	Existing High Mast Light Standard 9 Luminaire		Iron Monument Found		Existing Pull Box		Existing Gas Pipe Vent
	Existing Overhead Sign Structure Load Center		Iron Pin R/W Monument		Existing Intelligent Transportation Pull Box		Existing Sanitary Pipe Vent
	Existing Luminaire		Existing Object Marker Type I		Existing Water Pump		Existing Storm Drain Pipe Vent
	Existing Light Standard Luminaire		Existing Object Marker Type II		Existing Slotted Reinforced Concrete Pipe		Existing Water Pipe Vent
	Existing Federal Mailbox		Existing Object Marker Type III		Existing RR Profile Spot		Existing Weather Station
	Existing Private Mailbox		Existing Electrical Pedestal		Existing Fuel Leak Sensors		Existing Ground Water Well Bore Hole
	Existing Meander Section Corner		Existing Telephone Pedestal		Existing Highway Sign		Existing Windmill or Tower
	Existing Meter		Existing Fiber Optic Telephone Pedestal		Existing Miscellaneous Spot		Existing Witness Corner
	Existing Electrical Manhole		Existing TV Pedestal		Existing Lighting Standard Pole		Flashing Beacon
	Existing Gas Manhole		Existing Fiber Optic TV Pedestal		Existing Traffic Signal Standard		Flagger
	Existing Sanitary Manhole		Existing Fuel Filler Pipes		Existing Transformer		Pipe Mounted Flasher
	Existing Sanitary Force Main Manhole		Existing Traverse PI Aerial Panel		Existing Large Evergreen Tree		Sanitary Force Main with Valve
	Existing Sanitary Manhole with Valve		Existing Pole		Existing Small Evergreen Tree		
	Existing Storm Drain Manhole		Existing Power Pole		Existing Large Tree		
	Existing Force Main Storm Drain Manhole		Existing Power Pole with Transformer		Existing Small Tree		
	Existing Force Main Storm Drain Manhole with Valve				Existing Tree Trunk		
	Existing Telephone Manhole				Existing Pad Mounted Traffic Signal Control Box		

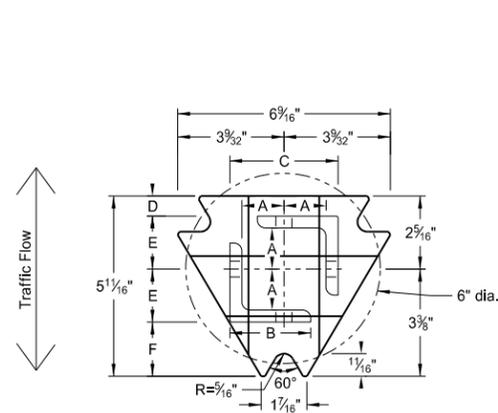
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

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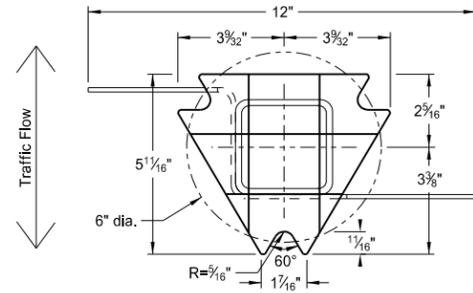


Multi-Directional Slip Base Assembly

Perforated Tube



Top Post Receiver
Plate - ASTM A572 grade 50
Angle Receiver - 2 1/2" x 2 1/2" x 3/8" ASTM A36 structural angle



Bottom Soil Stub
Tube - 3"x3"x7 gauge ASTM A500 grade B tube
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011
Plate - ASTM A572 grade 50

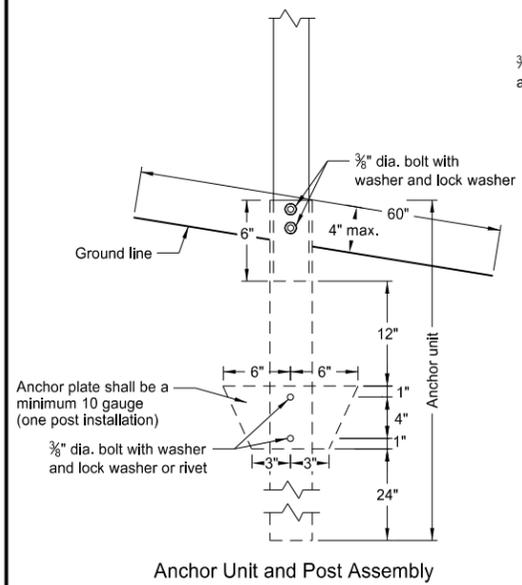
Notes:

1. Slip base bolts shall be torqued as specified by the manufacturer.
2. Anchor shall have a yield strength of 43.9 KSI and tensile strength of 59.3 KSI.
3. The 4" vertical clearance is required for the anchor or breakaway base. The 4"x60" measurement shall be made above and below post location and also back and ahead of the post.
4. When used in concrete sidewalk, anchor shall be same except without the wings.
5. Four post signs shall have over 7' between the first and the fourth posts.

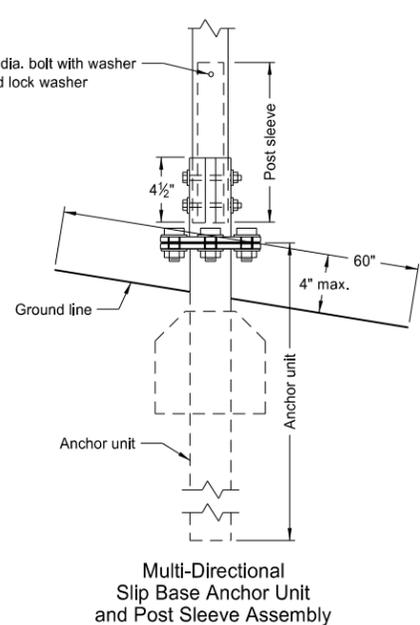
Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thickness Gauge	Sleeve Size in.	Wall Thickness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No	2 1/4
2	2 1/4	12			No	2 1/2
2	2 1/2	12			Yes	
2	2 1/2	12			Yes	
2	2 1/4	10	2	12	Yes	
2	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/2	12			Yes	
3 & 4	2 1/2	10			Yes	
3 & 4	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/4	12	2	12	Yes	
3 & 4	2 1/2	10	2 3/16	10	Yes	

Properties of Telescoping Perforated Tube						
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. ⁴	Cross Sec. Area in. ²	Section Modulus in. ³
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

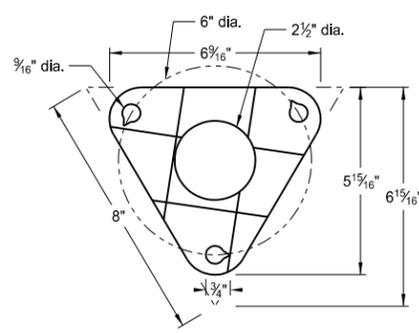
Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16" x 10 ga.	1 9/64"	2 1/2"	3 1/32"	2 5/32"	1 33/64"	1 1/8"
2 1/2" x 10 ga.	1 9/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"



Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly



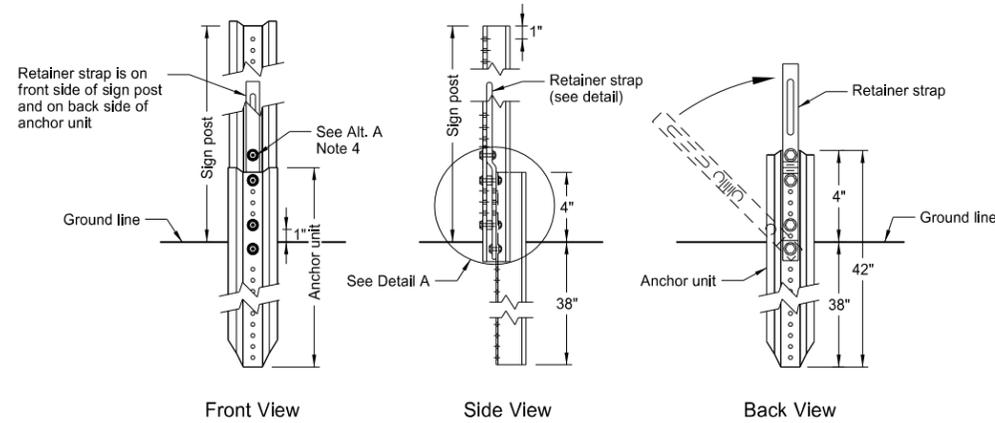
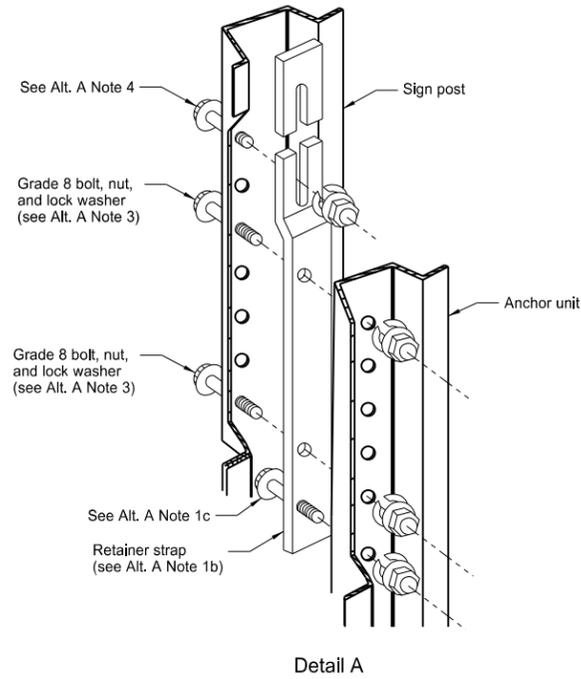
Bolt Retainer for Base Connection
Bolt Retainer - 1/32" Reprocessed Teflon

- (A) The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak.
- (B) The 2 3/16" x 10 ga. may be inserted into 2 1/2" x 10 ga. for additional wind load.

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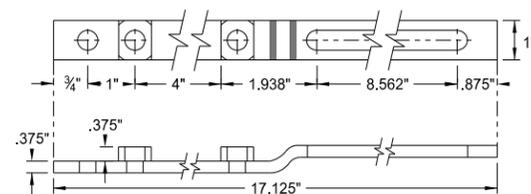
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U-Channel Post

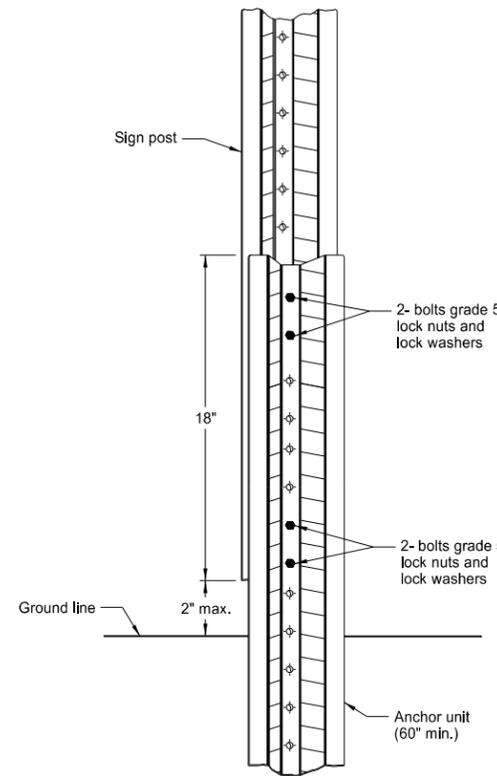


Breakaway U-Channel Detail Alternate A

A maximum of 2 posts shall be installed within 7'.

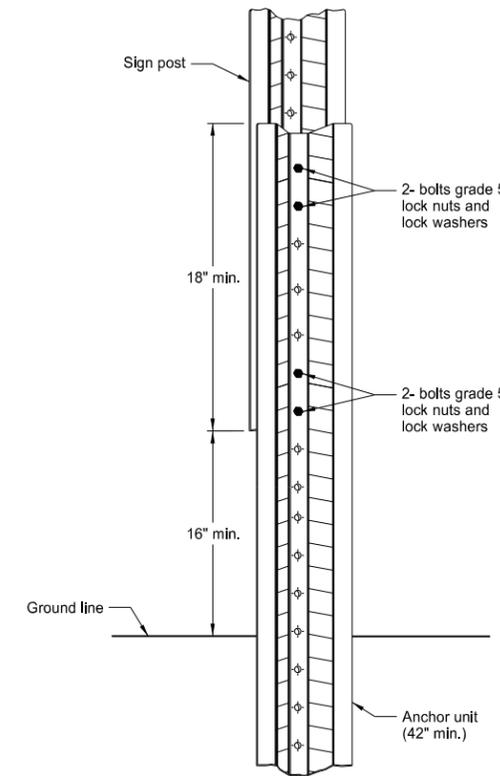


Retainer Strap Detail



Breakaway U-Channel Splice Detail Alternate B (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.



Breakaway U-Channel Splice Detail Alternate C (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.

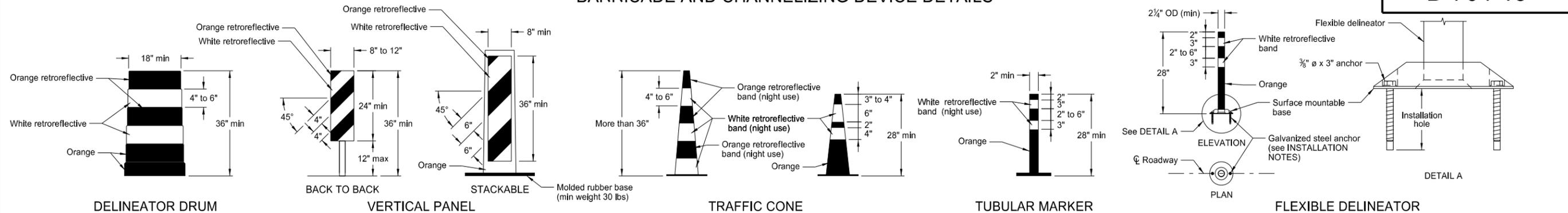
Alternate A Steps of Installation:

1. a) Drive anchor unit to within 12" of ground level.
b) Proper assembly established by lining up the bottom hole of retainer strap with the 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
2. a) Drive anchor unit to 4" above ground.
b) Rotate strap to vertical position.
3. a) Place 5/16"x2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.
b) Alternately tighten two connector bolts.
4. Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
5. The base post, strap and sign post shall be properly nested. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post at the bolts have full contact across the entire width.

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BARRICADE AND CHANNELIZING DEVICE DETAILS



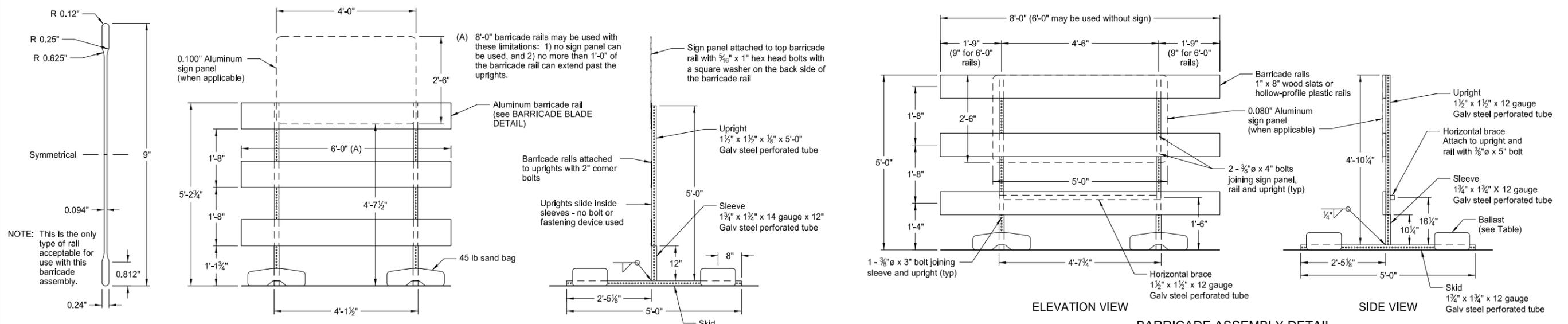
The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectORIZED spaces between the horizontal orange and white stripes shall not exceed 3" wide. Stripes shall not be placed on ribs or indentations in the drum. Drums shall have closed tops that will not allow collection of construction debris or other debris. Ballast shall not be placed on the top of a drum.

Markings for vertical panels shall be alternating orange and white retroreflective stripes, sloping downward in the direction vehicular traffic is to pass. Retroreflective sheeting shall be placed on both sides of panel and shall have a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective material on the vertical panel is 36 inches or more, a stripe width of 6 inches shall be used.

RetroreflectORIZATION of cones more than 36" in height shall be provided by alternating orange and white retroreflective stripes. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectORIZED space between the orange and white stripes shall not exceed 3" wide.

RetroreflectORIZATION of tubular markers more than 42" in height shall be provided by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.

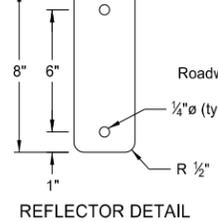
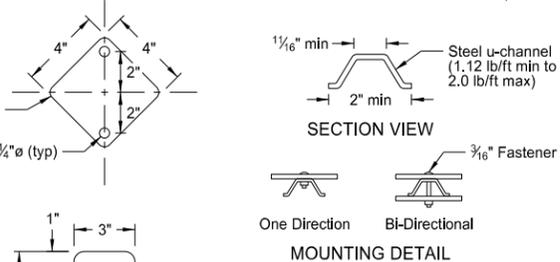
- INSTALLATION NOTES:
1. Drill installation holes to diameter and depth as required by manufacturer's specifications.
 2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
 3. In lieu of bolted down base, the contractor may use an 8" x 8" butyl pad or hot melt butyl. Butyl shall be removed as close as possible to pavement surface.



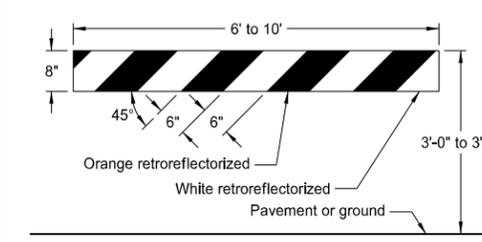
BARRICADE BLADE DETAIL

BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

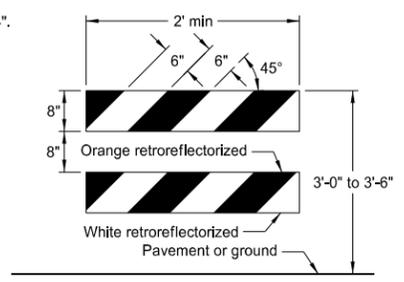
BARRICADE ASSEMBLY DETAIL (Wood or Plastic Rails)



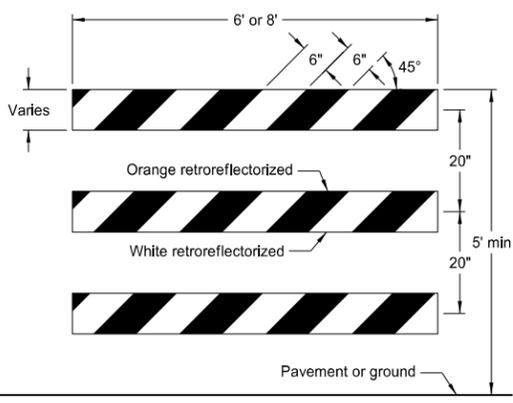
NOTE: Markings for barricades shall be alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Retroreflective sheeting shall be placed on both sides of the rails and shall have a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", the rail stripe width shall be 4".



TYPE I BARRICADE



TYPE II BARRICADE BARRICADE RAIL DETAILS



TYPE III BARRICADE

MINIMUM BALLAST (For each side of barricade support)

Without Sign	4 - 25 lb sandbags
With Sign	6 - 25 lb sandbags

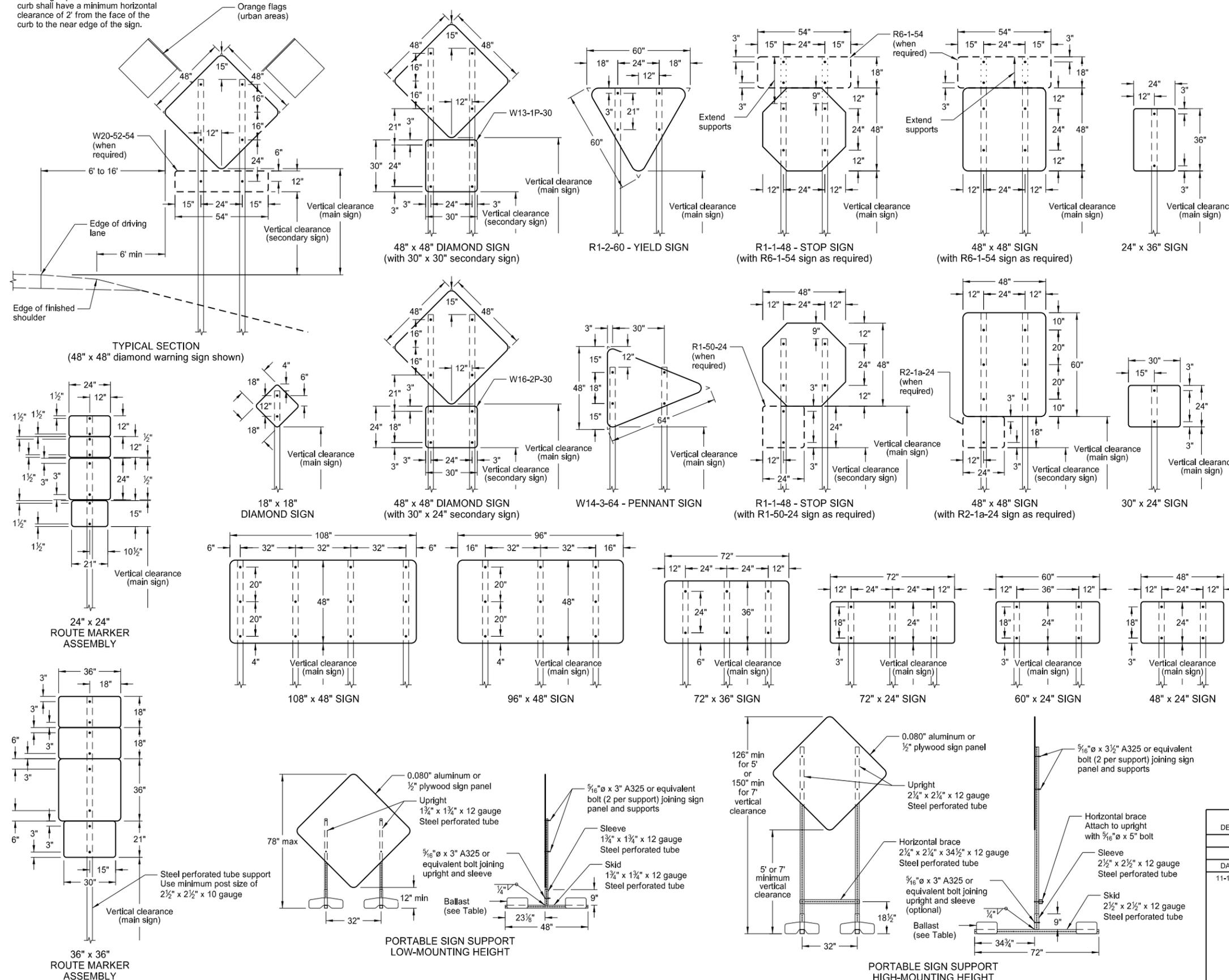
Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

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10-3-13	
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CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



- NOTES:
1. Sign Supports: Supports shall be galvanized or painted. Minimum post sizes are 2.5 lb/ft u-channel or 2" x 2" x 12 gauge steel perforated tube, except where noted. When installing signs on u-channel, the minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes are based on a wind speed of 55 MPH.

Signs over 50 square feet should be installed on 2 1/2" x 2 1/2" perforated tube supports as a minimum.

Guy wires shall not be attached to sign supports. Wind beams may be attached to u-posts behind the sign panels.

2. Sign Panels: Provide sign panels made of 0.100" aluminum, 1/2" plywood, or other approved material, except where noted. All holes to be punched round for 3/8" bolts.

3. Alternate Messages: The signs that have alternate messages may have these alternate messages placed on a reflectorized plate (without a border) and installed and removed as required. (i.e. "Left" and "Right" message on a lane closure sign)

4. Route Marker Auxiliary Signs: Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

Interstate - white legend on blue background
 Interstate Business Loop - white legend on green background
 US and State - black legend on white background
 County - yellow legend on blue background

5. Vertical Clearance: Install signs with a vertical clearance of 5'-0" (see TYPICAL SECTION.) In areas where parking or pedestrian movements are likely or the view of the sign may be obstructed, install signs with a vertical clearance of 7'-0" from the top of the curb or from the near edge of the driving lane in absence of a curb.

The vertical clearance to secondary signs is 1'-0" less than the vertical clearance as stated above.

Large signs having an area exceeding 50 square feet shall have a minimum clearance of 7'-0" from the ground at the post.

6. Portable Signs: Provide portable signs that meet the vertical clearance as stated above. Use portable signs when it is necessary to place signs within the pavement surface.

When portable signs are used for 5 days or less, low-mounting height (minimum 12" vertical clearance) sign supports may be used as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. The R9-8 through R9-11a series, W1-5 through W1-8 series, M4-10, and E5-1 may be used for longer than 5 days.

Signs mounted to the portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT Details shall have a maximum surface area of 16 square feet.

MINIMUM BALLAST
 (For each side of sign support base)

Sign Panel Mounting Height (ft)	Number of 25 lb sandbags for 4' x 4' sign panel
1'	6
5'	8
7'	10

Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

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11-14-13	Revised Note 6.

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ROAD CLOSURE LAYOUTS

Notes

- Variables
 - S = Numerical value of speed limit or 85th percentile.
 - W = The width of taper.
 - L = Minimum length of taper, or S x W for freeways, expressways, and all other roads with speeds of 45 mph or greater, or $W \times S^2/60$ for urban, residential, and other streets with speeds of 40 mph or less.
- Barricades placed on roadway shall be on a moveable assembly. Signs placed on roadway shall be placed on skid mounted assemblies.
- Delineator drums, barricades or cones used for tapering traffic shall be spaced at the dimension "S". Delineator drums or cones used for tangents shall be spaced at 2 times dimension "S".
- Sequencing Arrow Panels
 - Panels should normally be placed at the beginning of the taper. Where shoulder width does not provide sufficient room, the panel should be moved closer to the work area so that it can be placed on the roadway surface. See Shoulder Closure Standard Drawing.
 - Type A shall be used on roadways with slow moving traffic speeds and low volume (25 mph or less and 750 ADT or less).
 - Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph or less and 5000 ADT or less).
 - Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph or over 5000 ADT).
- The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
- The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
- Use when work area is 1 mile or longer.
- When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
- Existing speed limit signs within a reduced speed zone shall be covered.
- Where necessary, safe speed to be determined by the Engineer.
- The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
- G20-55-96 sign is not required if this standard is part of other traffic control layouts, or the work is less than 15 days.

Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

KEY

	Type III barricade		Work area
	Sign		Flagger
	Delineator drum		Sequencing arrow panel
	Tubular markers		Vertical panels back to back

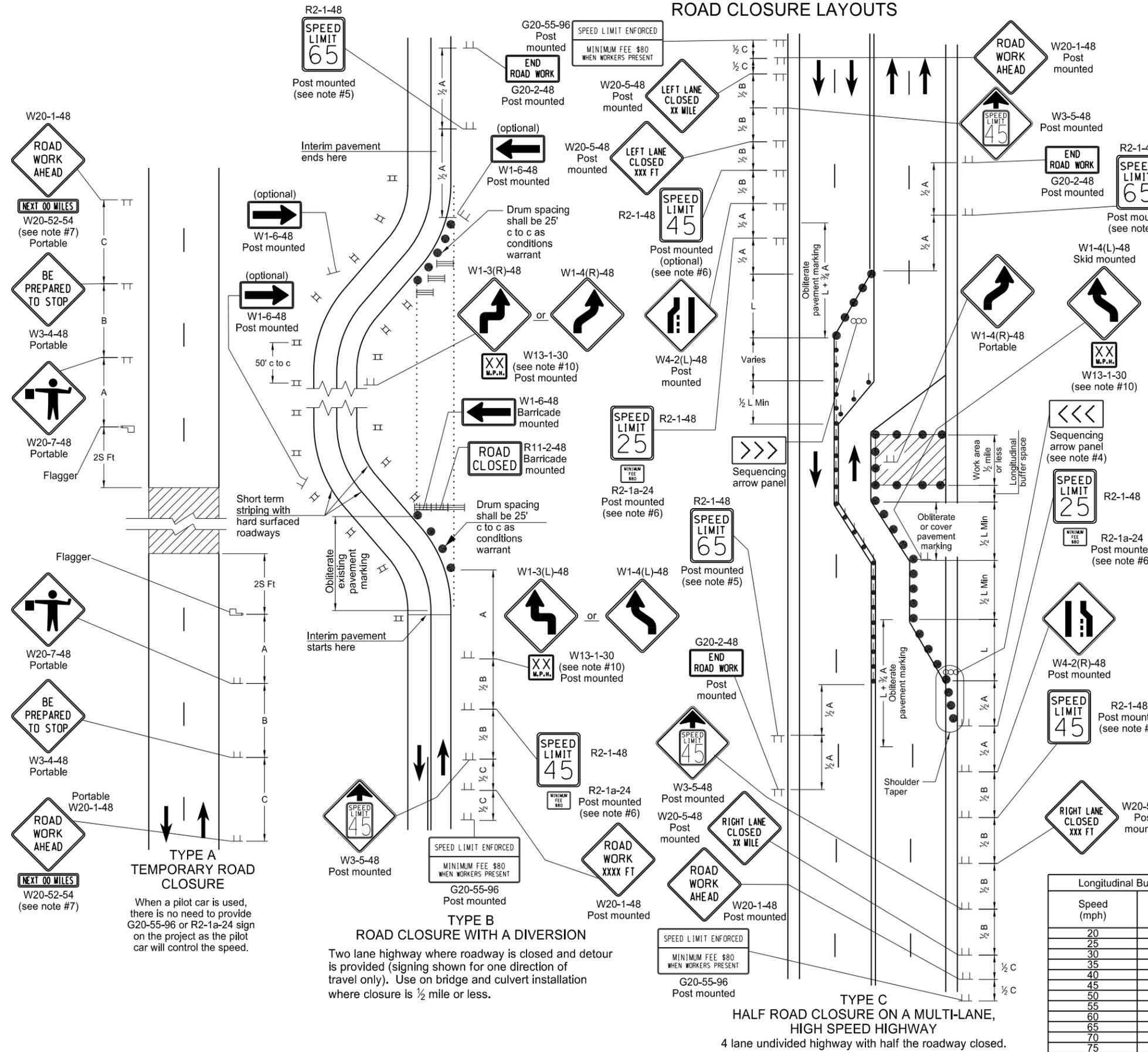
Longitudinal Buffer Space

Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

NORTH DAKOTA
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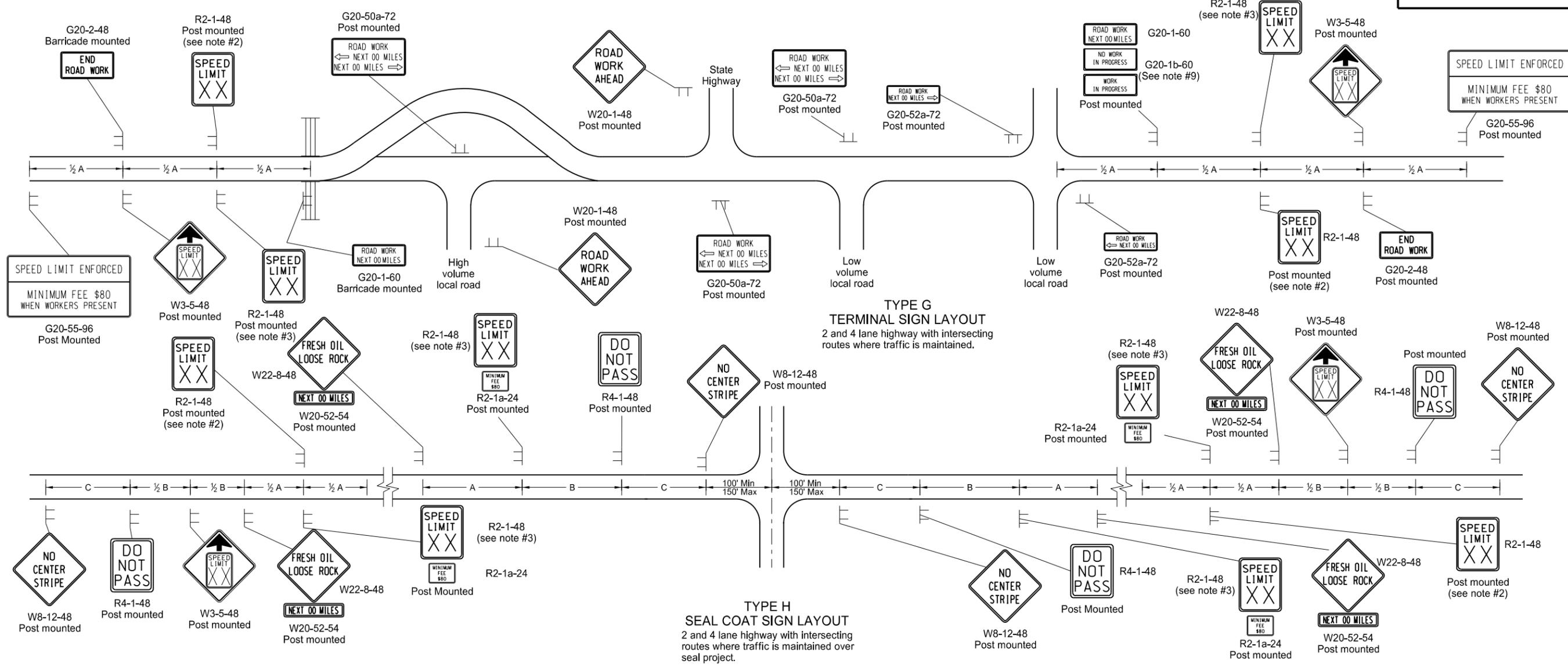
**TYPE A
TEMPORARY ROAD CLOSURE**
 When a pilot car is used, there is no need to provide G20-55-96 or R2-1a-24 sign on the project as the pilot car will control the speed.

**TYPE B
ROAD CLOSURE WITH A DIVERSION**
 Two lane highway where roadway is closed and detour is provided (signing shown for one direction of travel only). Use on bridge and culvert installation where closure is 1/2 mile or less.

**TYPE C
HALF ROAD CLOSURE ON A MULTI-LANE,
HIGH SPEED HIGHWAY**
 4 lane undivided highway with half the roadway closed.

TERMINAL AND SEAL COAT SIGN LAYOUTS

D-704-20



- Barricades placed on roadway shall be on a moveable assembly. Signs placed on the roadway shall be placed on skid mounted assemblies.
- The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
- The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 MPH below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 MPH. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
- When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
- Existing speed limit signs within a reduced speed zone shall be covered.
- On seal projects, signs R2-1-48, R2-1a-24, R4-1-48, W22-8-48 and W20-52-54 shall be placed just after all important intersections and at five mile intervals thereafter. Sign W8-12-48 shall be placed just after all important intersections and at 2 mile intervals thereafter until the short term center line pavement marking is in place. No short term pavement markings are placed when traffic volumes are 750 ADT or less.

- The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
- Type H construction sign traffic control shall have the speed limit signs covered or removed once the loose aggregate has been removed.
- The contractor shall install the G20-1b-60 sign when work is suspended for winter.
- Other traffic control layouts will be required in the immediate work areas. If the speed limit is reduced in the work area, speed limit signs shall have the R2-1a-24 sign placed below.
- G20-55-96 sign is not required if work is less than 15 days.

KEY

≡ Type III barricade

⊥ Sign

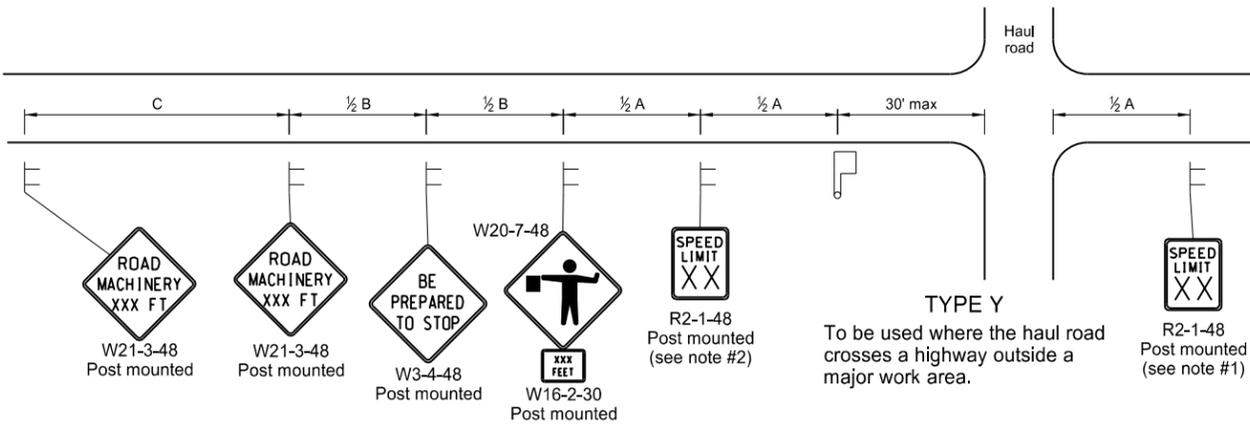
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

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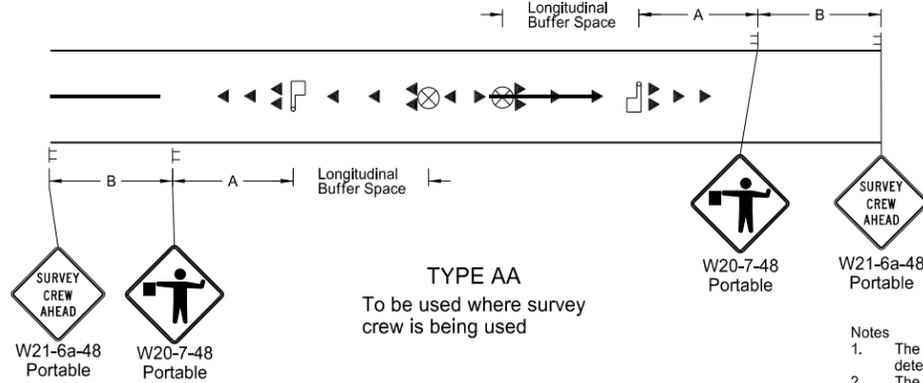
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MISCELLANEOUS SIGN LAYOUTS

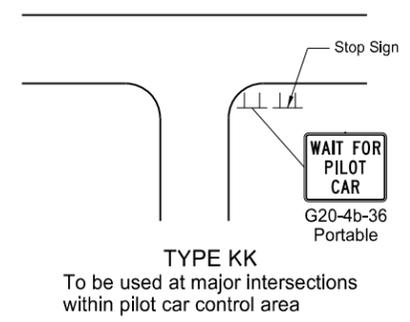
D-704-26



TYPE Y
To be used where the haul road crosses a highway outside a major work area.

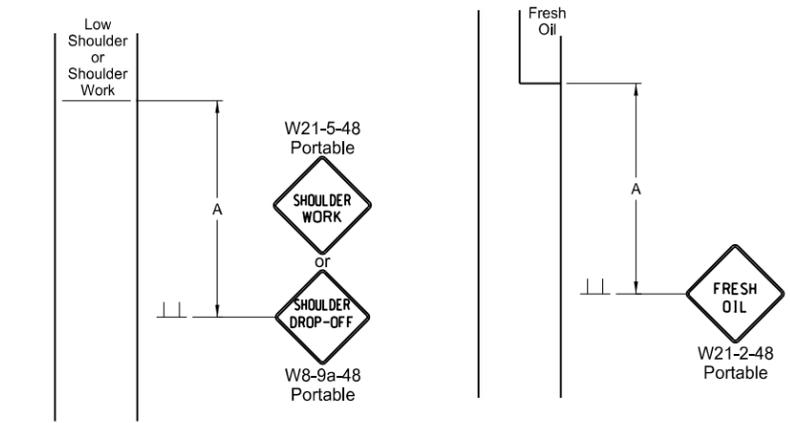


TYPE AA
To be used where survey crew is being used



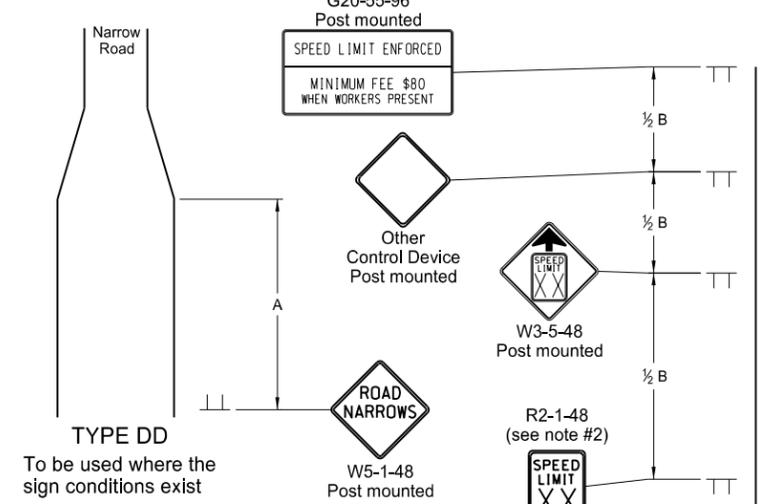
TYPE KK
To be used at major intersections within pilot car control area

- Notes
1. The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
 2. The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
 3. When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
 4. Existing speed limit signs within a reduced speed zone shall be covered.
 5. The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
 6. G20-55-96 signs are not required if this standard is part of other traffic control layouts, or the work is less than 15 days.
 7. When a pilot car operation is used, place a G20-4b-36 "Wait For Pilot Car" sign at major intersections within pilot car control area.

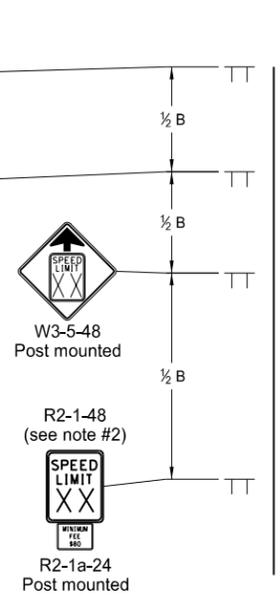


TYPE BB
To be used within a major work area where the sign conditions exist

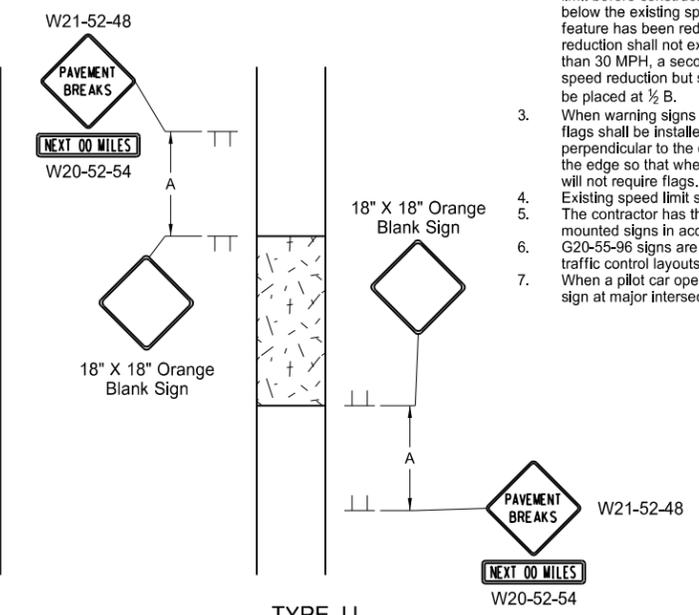
TYPE CC
To be used where the sign conditions exist



TYPE DD
To be used where the sign conditions exist



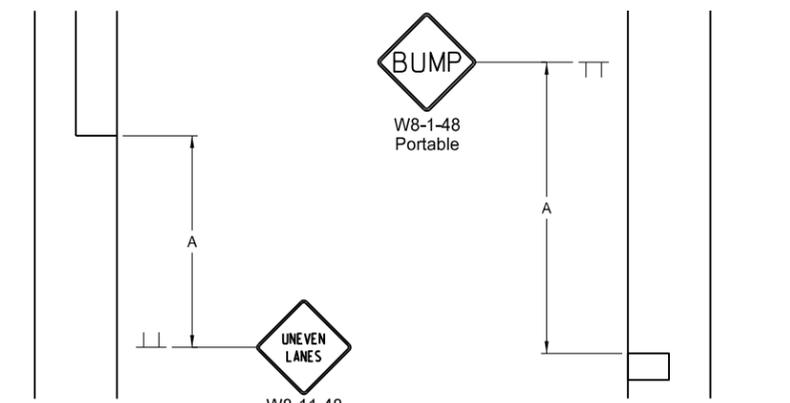
TYPE Z
To be used where speed zone is needed



TYPE JJ
To be used where there is a break in the pavement. These signs may be skid mounted or post mounted and shall be installed when conditions exist and removed when not applicable.

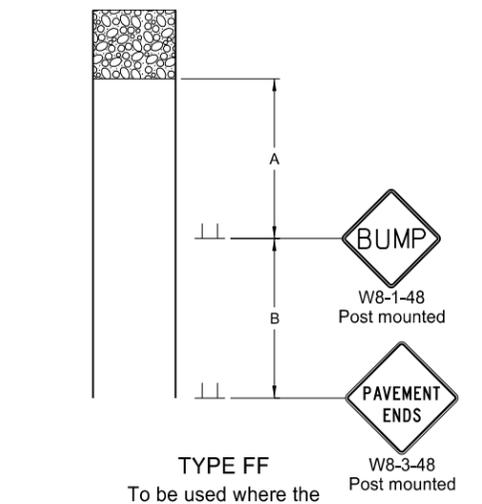
Longitudinal Buffer Space	
*Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

* Posted speed, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.



TYPE GG
To be used where a difference of elevation between lanes exist

TYPE EE
To be used where the sign conditions exist



TYPE FF
To be used where the sign conditions exist

Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

KEY

Sign (represented by a vertical line with a horizontal bar)

Flagger (represented by a square with a diagonal line)

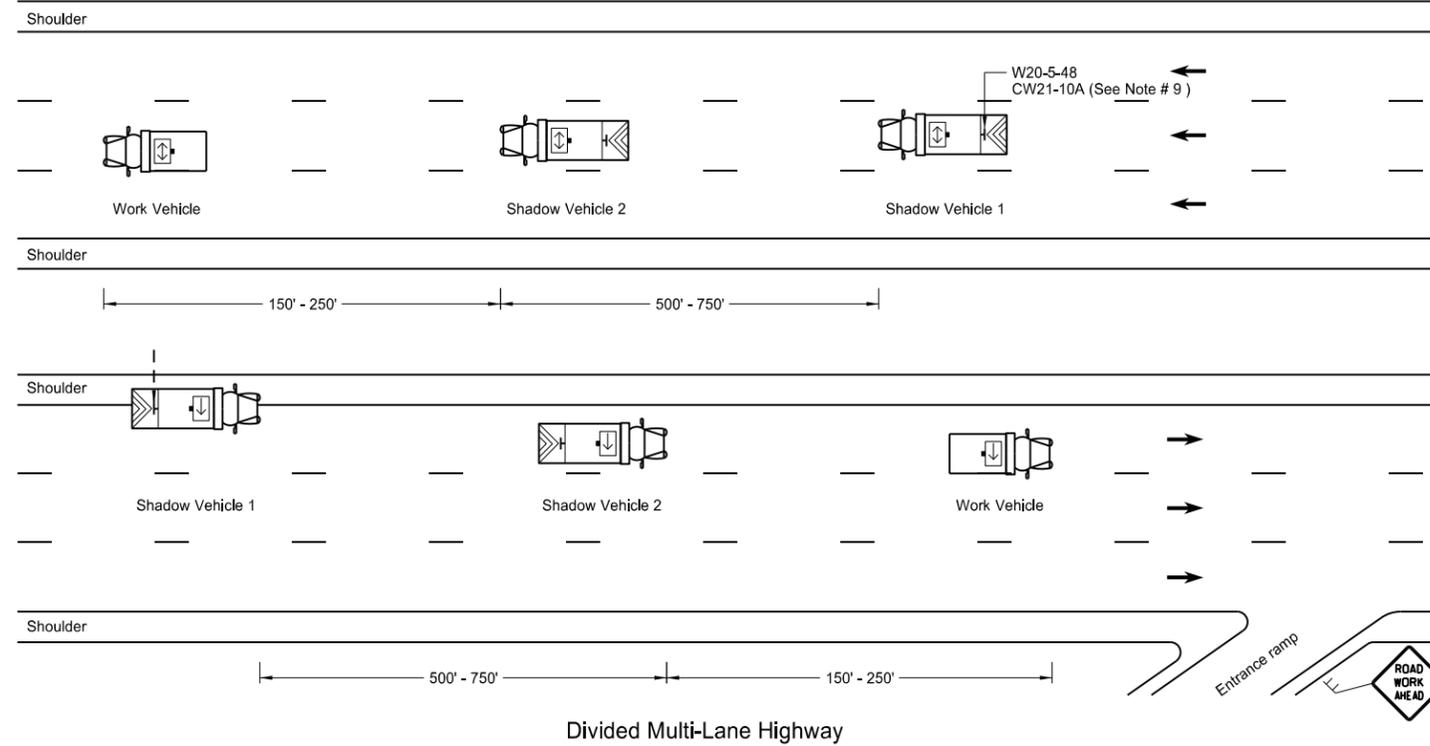
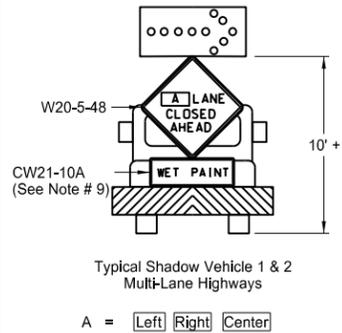
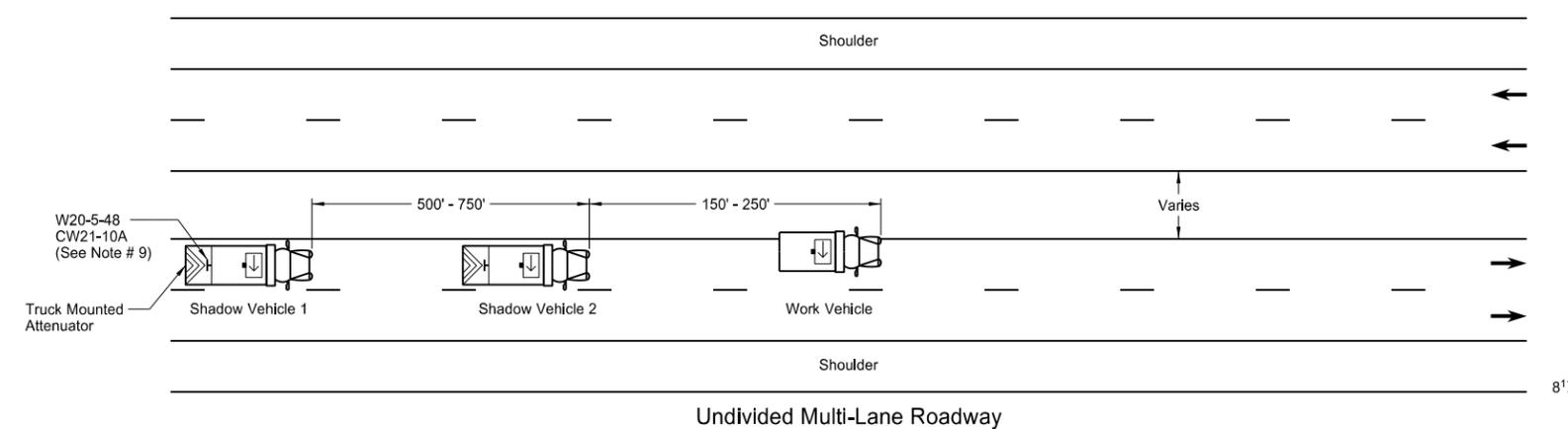
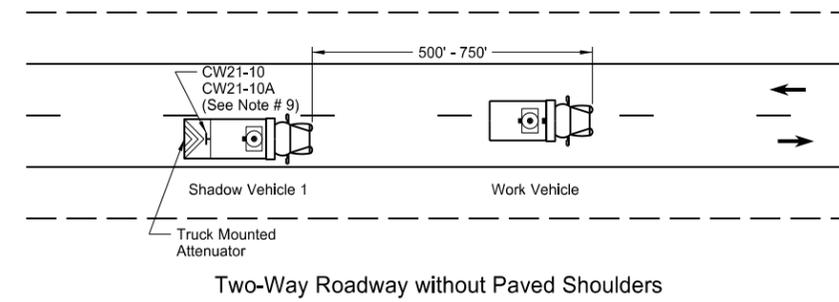
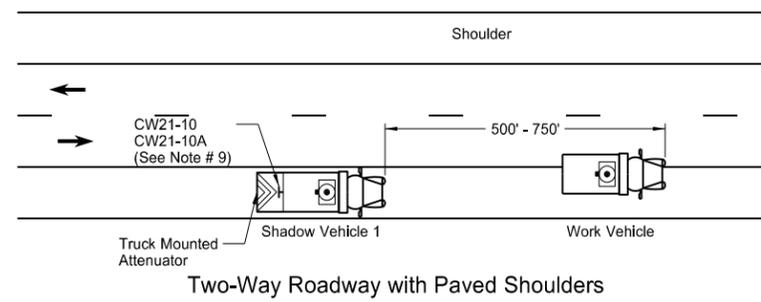
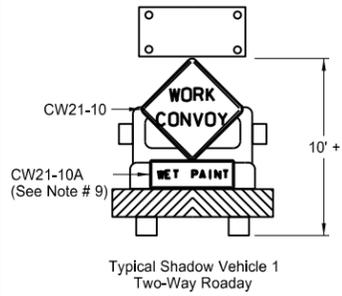
Cones (represented by a triangle)

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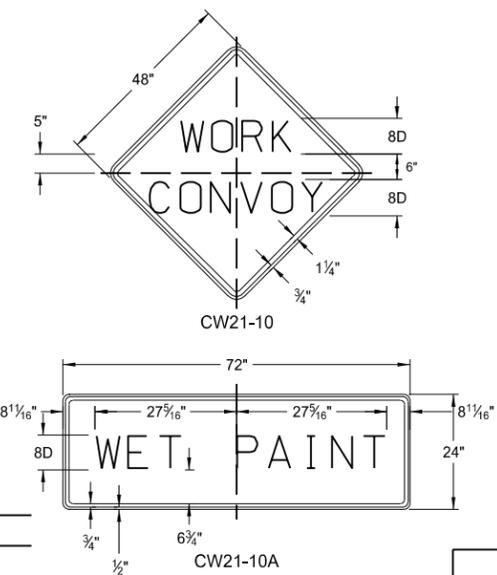
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TRAFFIC CONTROL PLAN FOR MOVING OPERATIONS

D-704-27



Sign Details



- Notes
- If the contractor chooses to place more vehicles in the convoy than are shown, these vehicles shall have the truck mounted attenuator and shall be at the contractor's expense.
 - Shadow and work vehicles shall display yellow rotating beacons or strobe lights unless otherwise stated elsewhere in the plans.
 - Flashing arrow panels shall be Type B or Type C. The panel operation shall be controlled from inside the vehicle.
 - Each vehicle shall have two-way electronic communication capability.
 - When work convoys must change lanes, shadow vehicle 1 should change lanes first to shadow other convoy vehicles.
 - Vehicle spacing between the shadow vehicle 1 and shadow vehicle 2 will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the trail vehicle in time to slow down and/or change lanes as they approach the shadow vehicle.
 - Sign Colors
Letters = Black
Border = Black
Background = Orange
 - Shadow vehicle 2 may be used as the paint tender vehicle.
 - Sign CW21-10A shall only be used during a painting operation.
 - On two lane - two way roadways, the work and shadow vehicles should pull over periodically to allow motor vehicle traffic to pass.

KEY	
	Sign
	Truck mounted attenuator
	Flashing arrow panels:
	Right directional
	Left directional
	Double arrow directional
	Caution Mode

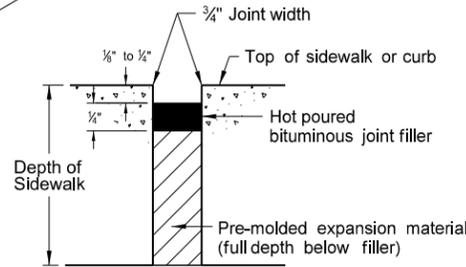
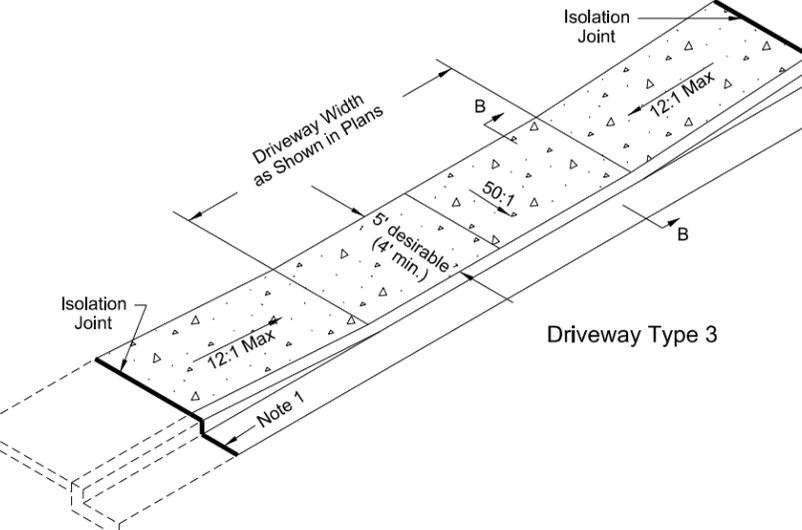
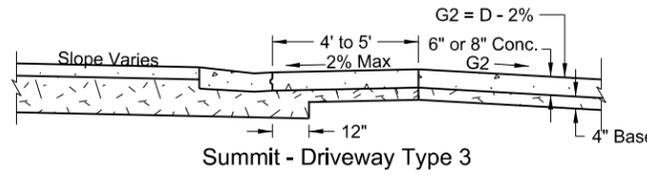
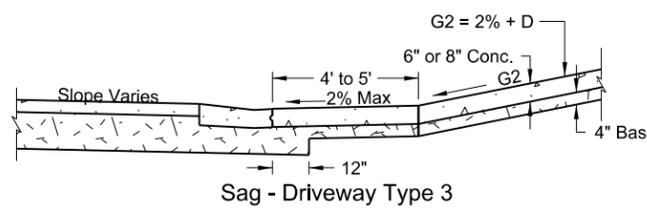
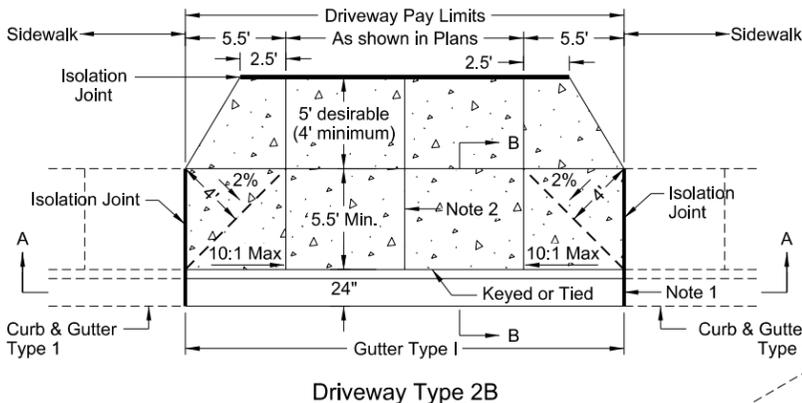
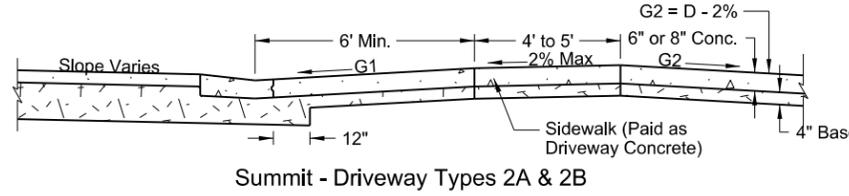
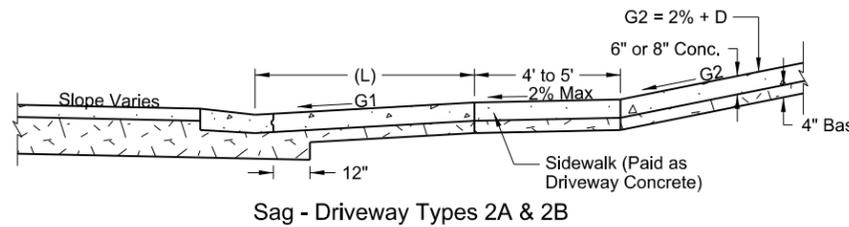
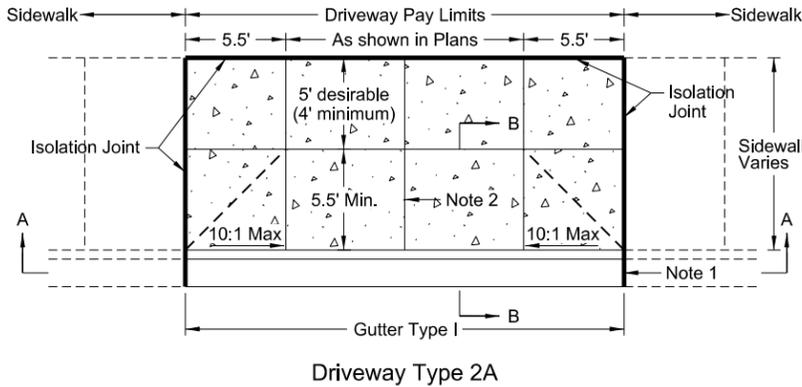
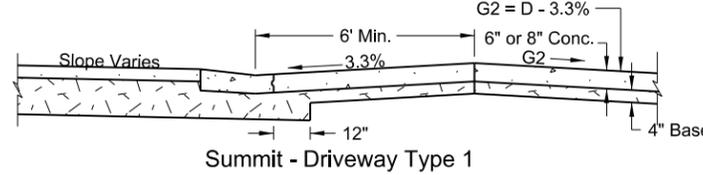
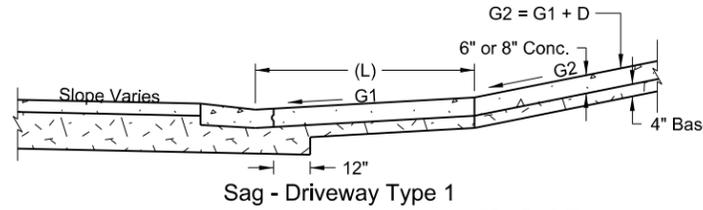
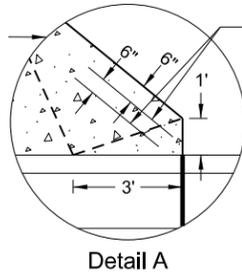
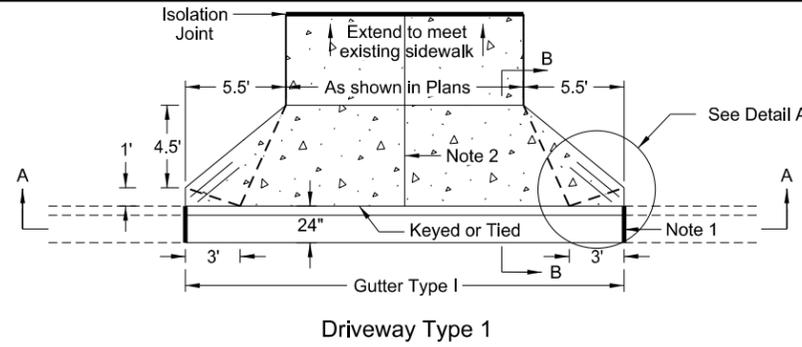
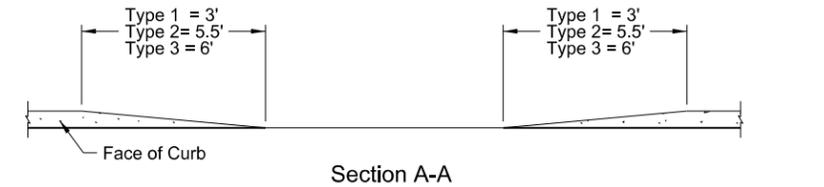
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
6-18-14	Removed shadow vehicle 2 on two lane roadways

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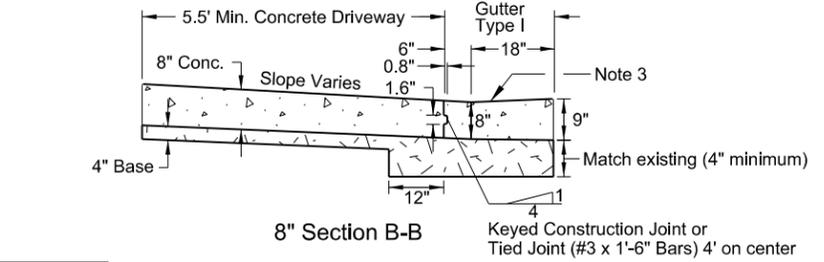
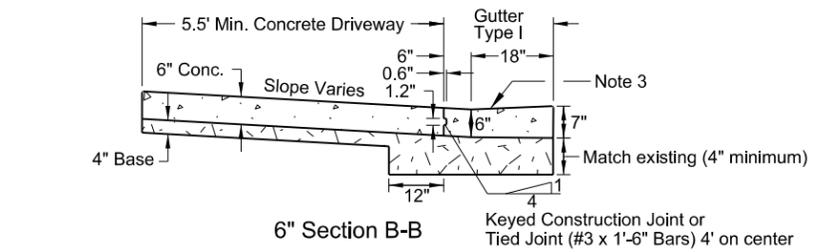
CONCRETE DRIVEWAY - URBAN

NOTES:

- See Standard D-748-1 for curb and gutter isolation joint detail. On PCC roadways, the curb and gutter joints should match those of the pavement as much as practical.
- Joint Spacing: 1 Center contraction joint to be used on all driveways 20' width or less, 2 center contraction joints for driveways > 20' to 30' width, and 3 center contraction joints for driveways greater than 30' width.
The contraction joints may be sawed or a grooved joint, and shall be a minimum of 1/3 the depth of the concrete.
Isolation joints should also be used between separately poured concretes, or between old and new concrete.
All joints shall be sealed with hot pour bituminous filler or low modulus silicone. The sealant shall be installed and tooled in accordance with the manufacturer's recommendations.
All costs for labor, equipment, and material necessary to construct and seal joints shall be included in the price bid for the driveway.
- Gutter-Type 1 shall be paid for at the unit price bid for "Curb and Gutter-Type 1".
- 6" Driveway to be used unless otherwise specified.
- 4" base material shall be placed under the concrete driveway. All labor and materials necessary to place the base material shall be included in the price bid for Salvage Base Course or Aggregate Base Course CL 5.
- Sidewalk that falls behind a driveway shall be constructed to the same thickness as the driveway and shall be paid for as driveway concrete.



Typical Isolation Joint Seal (longitudinal and transverse)



Driveway ADT	Grade G1		Dimension (L) ft.		Grade Changes (D)	
	Desirable	Maximum	Desirable	Maximum	Desirable	Maximum
(0-500)	5%	12% or controlled by vehicle clearance	12	6	6%	15% or controlled by vehicle clearance
(500-1500)	3%	8%	20	20	3%	6%
(> 1500)	2%	5%	40	40	0%	3%

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-13-2014	
REVISIONS	
DATE	CHANGE

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CURB RAMP DETAILS

D-750-3

+More Right of Way

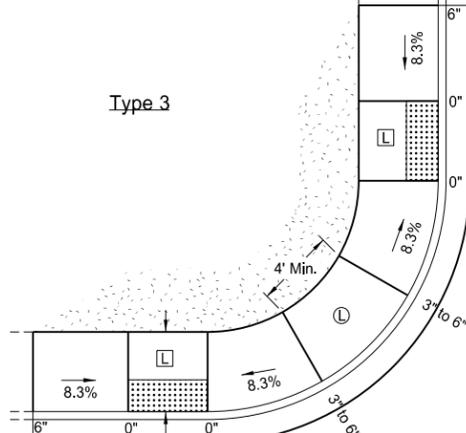
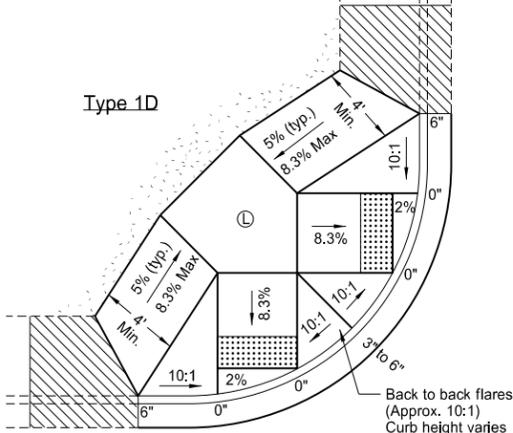
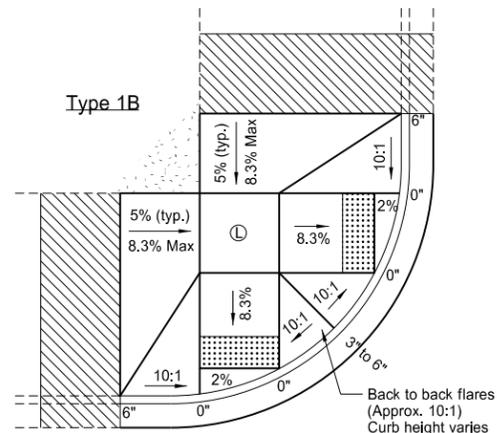
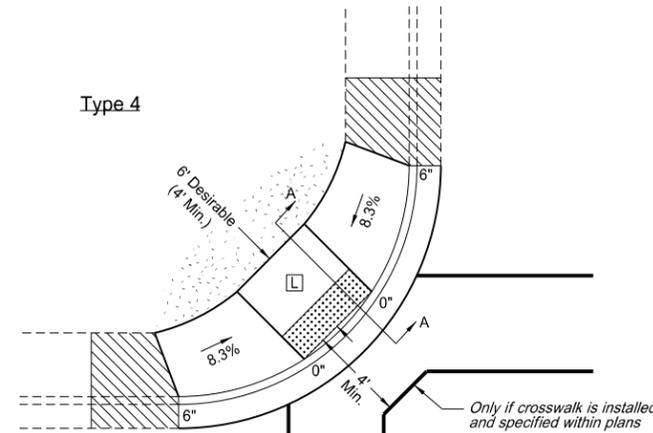
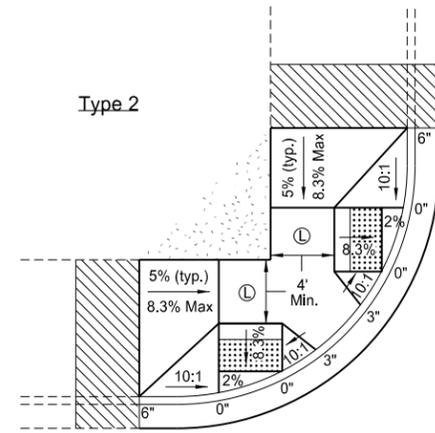
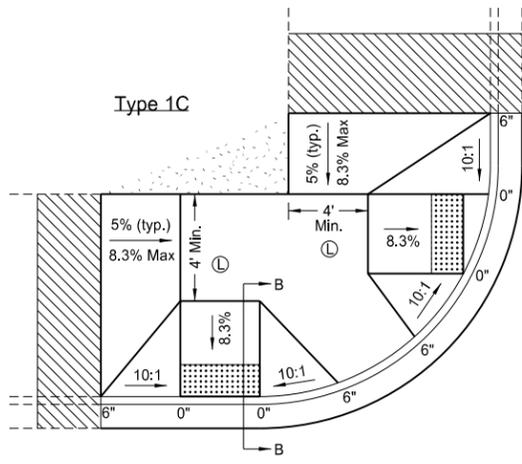
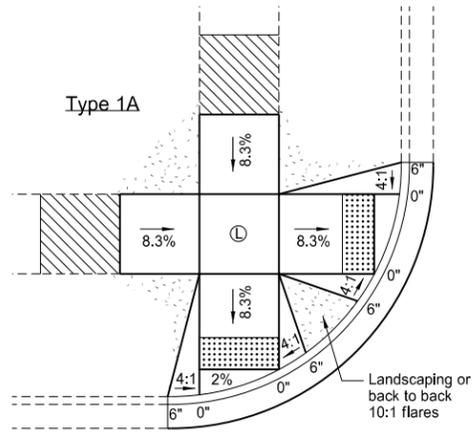
Less Right of Way

NOTES:

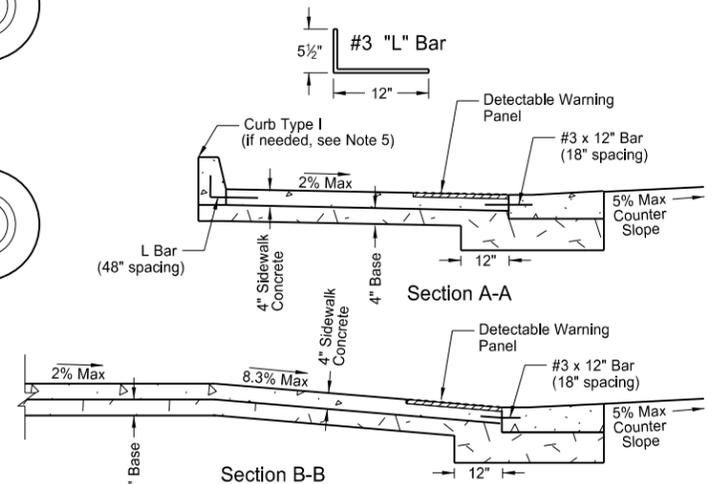
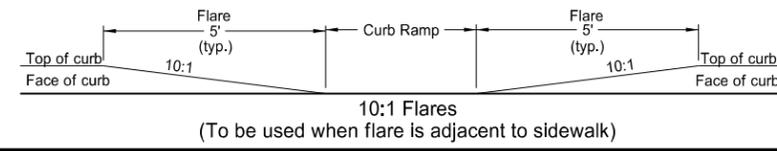
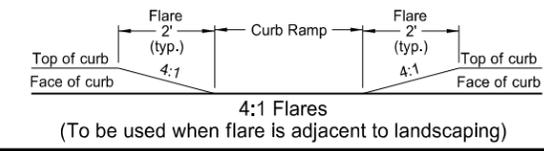
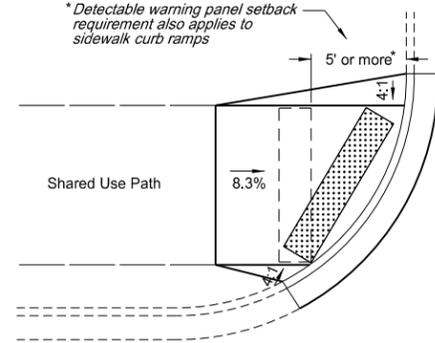
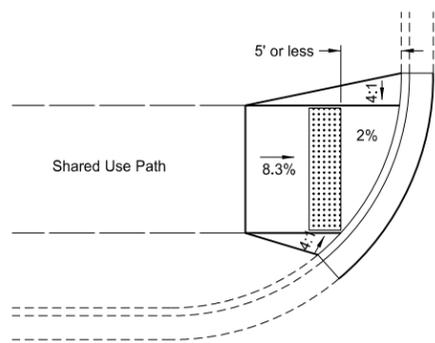
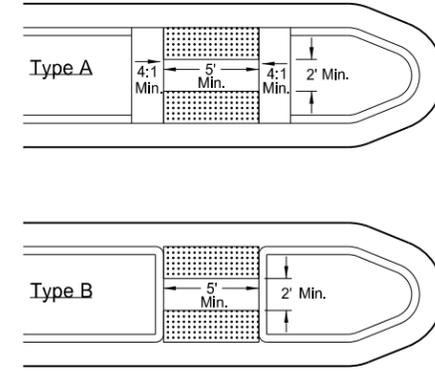
- Ramp width is defined as the useable portion of the ramp, excluding flares if used.
Curb ramp width should match the existing sidewalk width. 4' width minimum.
Ramp width for shared-use paths should match the existing shared use path width.
Ramp length shall be maximum of 15'.
- Landings shall be a minimum of 4' x 4' and shall have a max 2% slope in any direction. Landings are desirably 5' x 5' or larger.
- Detectable warning panels shall match the ramp width. Radial panels may also be used. The detectable warning panel may be located within the lower landing.
- The pedestrian access route shall be continuous 4' min. width. Max 2% cross slope applies to all concrete, excluding flares.
- Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

LEGEND:

- : Detectable Warning Panel
- : Landscaping
- : Transitional tie-in segment if needed for retrofits. Max grade slope 8.3%.
- : Upper Landing
- : Lower Landing
- 0", 3", or 6" : Curb Height
- 8.3% : All slopes shown are max grades. Flatter slopes may be used.



Median Refuge Islands (Cut-Through)



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE

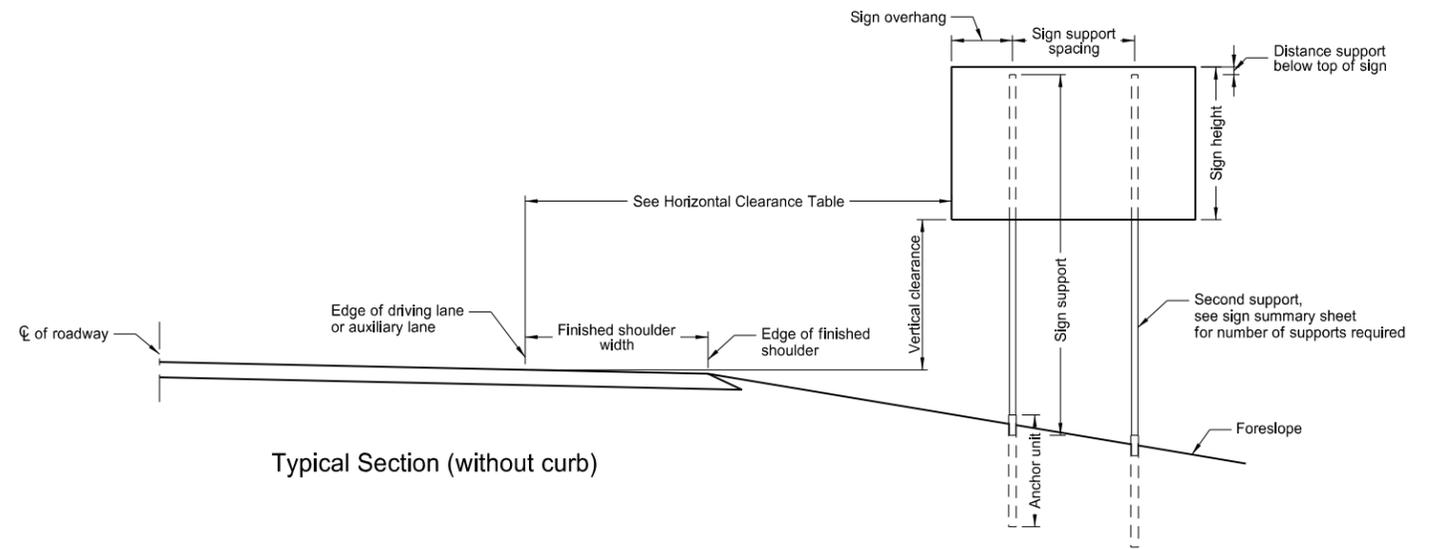
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PERFORATED TUBE ASSEMBLY DETAILS

D-754-23

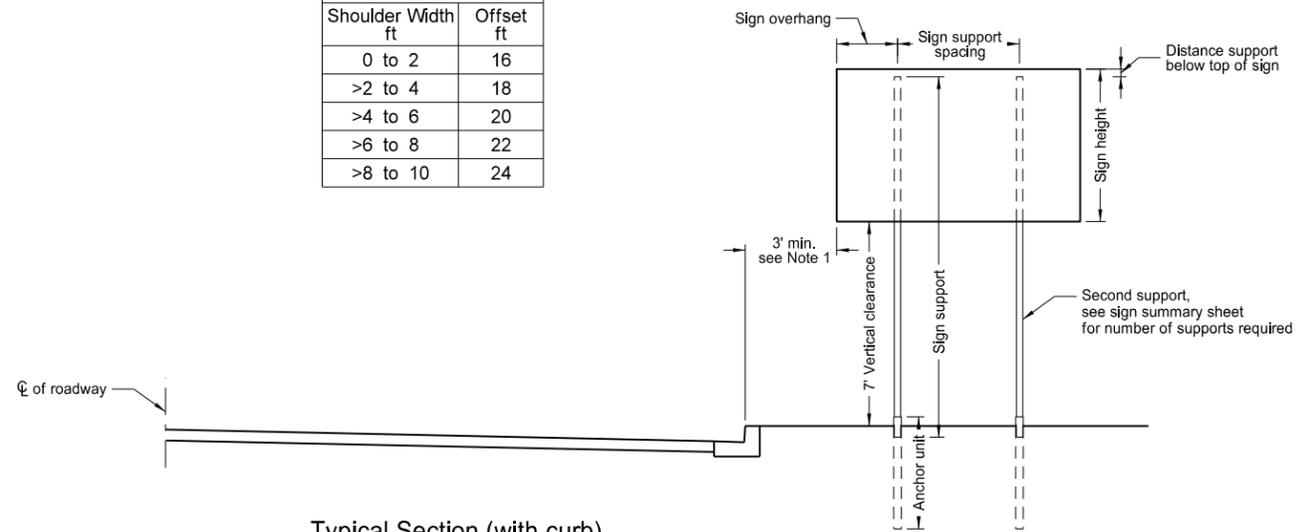
Notes:

1. Curbed Roadways: The clearance from the face of the curb should be 3' except where right of way or sidewalk width is limited, a minimum clearance of 2' shall be provided. The horizontal clearance may need to be increased to maintain a minimum sidewalk clear width of 4' from the sign support, not including any attached curb.
2. Minimum vertical clearance: Signs installed at the side of the road in rural districts shall be at least 5' measured from the bottom of the sign to the edge of the driving lane or auxiliary lane. Where parking or pedestrian movements occur, the clearance to the bottom of the sign shall be at least 7'.
- Signs on expressways shall be installed with a minimum height of 7'.
- Adopt-a-highway signs installed on Freeways shall be at least 7' above the edge of the driving lane.
- The vertical clearance shall have a maximum height of 6" above the vertical clearance specified above.
3. Offset signs: Where signs are placed at least 30 feet or more from the edge of the traveled way, the height to the bottom of such sign shall be 5' above the edge of the driving lane.
4. The clearance from edge of shared use path to edge of sign should be 3' except where width is limited, a minimum clearance of 2' shall be provided.

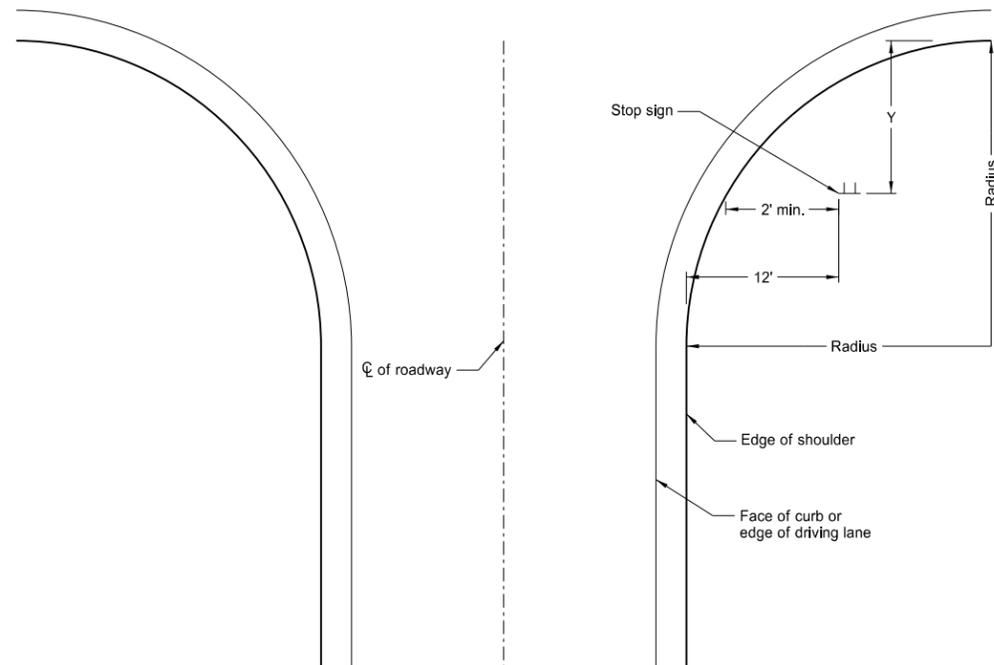


Typical Section (without curb)

Horizontal Clearance Table	
Shoulder Width ft	Offset ft
0 to 2	16
>2 to 4	18
>4 to 6	20
>6 to 8	22
>8 to 10	24



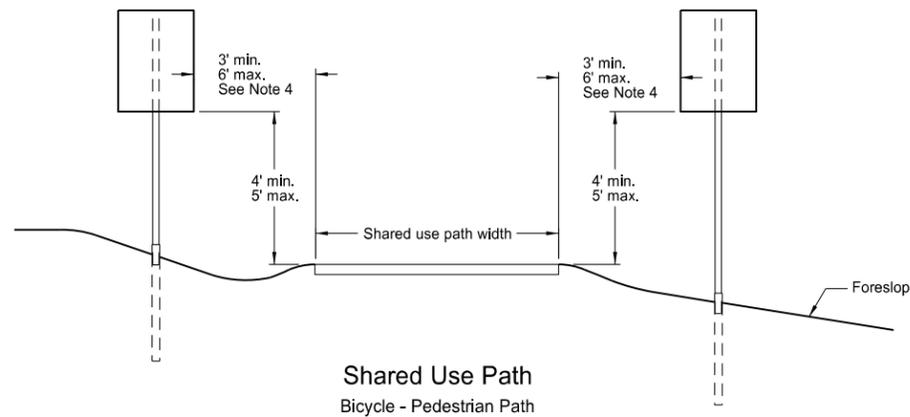
Typical Section (with curb)
Residential or Business District



Stop Sign Location
Wide Throat Intersection

This layout is to be used for the placement of "Stop" signs.

Radius ft.	Y-max. ft.	Y-min. ft.
40	50	15
45	50	18
50	50	21
55	50	25
60	50	28
65	50	32
70	50	35
75	50	39
80	50	43



Shared Use Path
Bicycle - Pedestrian Path

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
7-8-14	Revised note 2, added note 4.

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