

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	1	36

Plotting Date: 08/05/2016

PLANS FOR PROPOSED  
**PROJECT NH 0115(59)78**  
**SD HIGHWAY 115**  
**LINCOLN COUNTY**

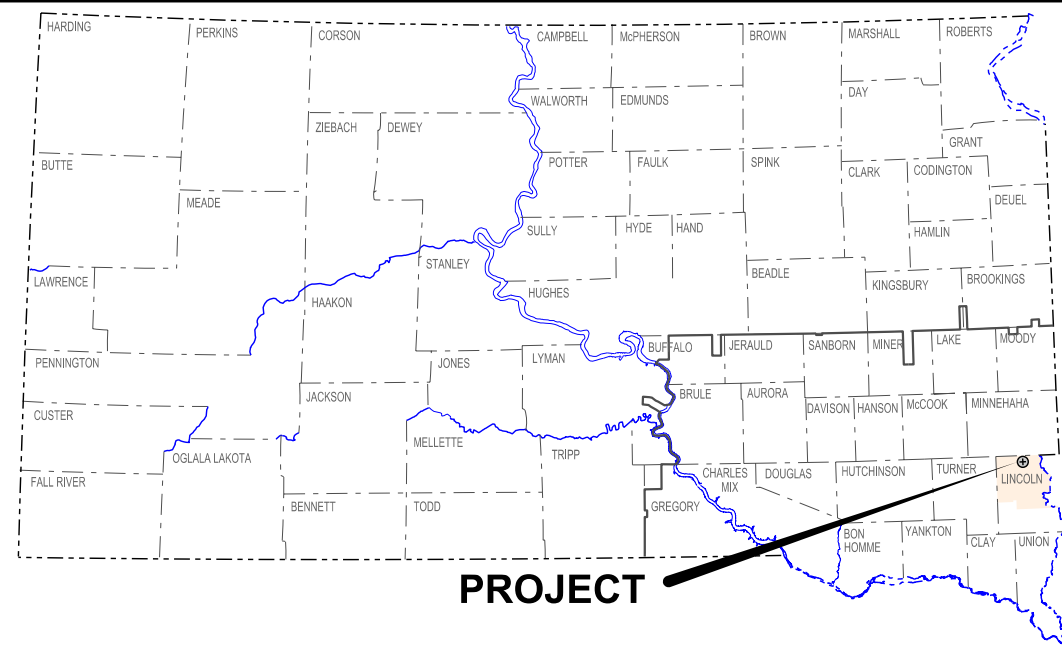
INTERSECTION IMPROVEMENT (LEFT TURN LANES) -  
MINOR WIDENING & ASPHALT CONCRETE SURFACING (CR106),  
ASPHALT SURFACE TREATMENT - FLUSH SEAL (SD115 & CR 106),  
LIGHTING, TEMPORARY SIGNALS, PAVEMENT MARKING & SIGNING

PCN 05XG

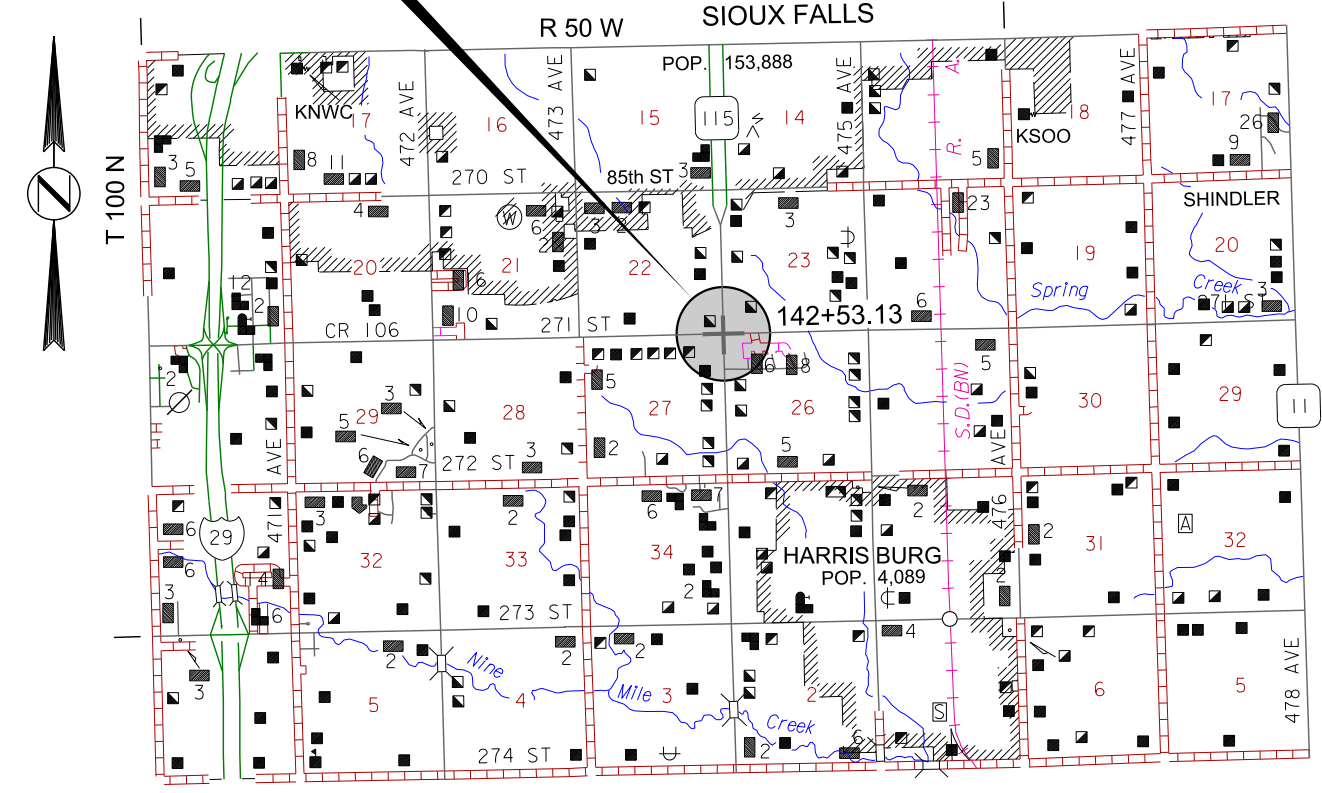
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PLOT SCALE - 1"=7000'



**SD115 (MRM 78.34) at Jct CR106 (271st St)**  
Sta. 137+93 to Sta. 147+13  
MRM 78.00 +0.248 to MRM 78.34 +0.087  
**County Road 106 (271st St)**  
Sta. 0+00 to Sta. 8+64



**DESIGN DESIGNATION**

ADT(2015)	6,280
ADT(2035)	12,146
DHV	1,506
D	52%
T DHV	2.3%
T ADT	5.1%
V	55 MPH

**STORM WATER PERMIT**  
(None required)

**PROJECT LENGTH**

SD115 Length:	920'	0.174 Mile
CR106 Length:	864'	0.164 Mile
Total Length:	1,784'	0.338 Mile

PLOTTED FROM - TRMLINT15

PLOT NAME - I  
FILE - ... \LINC05XG\TTL05XG.DGN

# ESTIMATE OF QUANTITIES

REV 8/04/16 pm

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	2	36

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	255.0	SqYd
110E5020	Salvage Traffic Sign	8	Each
110E7150	Remove Sign for Reset	2	Each
120E0010	Unclassified Excavation	550	CuYd
120E0600	Contractor Furnished Borrow Excavation	242	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	708.0	Ton
320E1200	Asphalt Concrete Composite	184.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	1.3	Ton
330E2000	Sand for Flush Seal	24.0	Ton
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
632E1320	2.0"x2.0" Perforated Tube Post	37.2	Ft
632E1330	2.25"x2.25" Perforated Tube Post	46.0	Ft
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	30.0	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	52.4	SqFt
632E3500	Reset Sign	2	Each
633E1300	Pavement Marking Paint, White	20	Gal
633E1305	Pavement Marking Paint, Yellow	35	Gal
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	298.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0570	Remove Pavement Marking, Message	6	Word
634E0630	Temporary Pavement Marking	0.4	Mile
635E2400	Span Wire System	1	Site
635E3330	Roadway Luminaire, 250 Watt with Photoelectric Cell	4	Each
635E3999	Luminaire Arm	4	Each
635E4030	3 Section Vehicle Signal Head	8	Each
635E4040	4 Section Vehicle Signal Head	8	Each
635E5400	Electrical Service Cabinet	1	Each
635E5430	Traffic Signal Controller	1	Each
635E5500	Meter Socket	1	Each
635E8120	2" Rigid Conduit, Schedule 40	110	Ft
635E9014	1/C #4 AWG Copper Wire	348	Ft
635E9016	1/C #6 AWG Copper Wire	1,010	Ft
635E9504	4/C #14 AWG Copper Tray Cable, K2	785	Ft
635E9505	5/C #14 AWG Copper Tray Cable, K2	781	Ft
734E0010	Erosion Control	Lump Sum	LS

## SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

# ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	3	36

## ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

### COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

#### Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

### COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

#### Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

## COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

#### Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating No Dumping Allowed.
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

Cost associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

## COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

#### Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

**UTILITIES**

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

**SURFACING THICKNESS DIMENSIONS**

Plans quantities will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans quantities may be varied to achieve the required elevation.

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor shall provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer. The plans quantity for Contractor Furnished Borrow Excavation as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site shall be the responsibility of the Contractor.

**REMOVE AND REPLACE TOPSOIL**

Topsoil shall also be salvaged and stockpiled or bladed off the inslope prior to constructing the following: Widening for Turn Lane Construction. Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Topsoil must not be bladed outside of the Right-Of-Way. Removal of topsoil shall not expand past the limits of work shown on the plan sheet. Following completion of construction, topsoil shall be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 233 CuYd.

Cost for removing and replacing the topsoil along areas to be resurfaced shall be incidental to the contract lump sum price for Remove and Replace Topsoil.

**UNCLASSIFIED EXCAVATION.**

Compaction of the material reused from Unclassified Excavation shall be to the satisfaction of the Engineer.

**WATER FOR COMPACTION**

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 8 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of Unclassified Excavation or Contractor Furnished Borrow Excavation.

Cost for water for compaction of the Base Course shall be incidental to the contract unit prices for the various contract items. The moisture required at the time of compaction will be 6%± unless otherwise directed by the Engineer.

**FLUSH SEAL**

Application of the flush seal shall be completed within 10 working days following completion of the asphalt concrete surfacing.

The flush seal shall be done on the existing pavement on SD115 from 138+08 to 147+00 and also Lincoln County Road 106 from 0+00 to 8+63.5 including the entire intersection. The Contractor shall perform this to cover up existing pavement marking before new marking is placed and after new surfacing is placed on Lincoln County Road 106.

**TABLE FOR MAINLINE CULVERT WORK**

Station	CULVERT	Comments	RC FLARED ENDS	
			18"	
			EACH	
			L	R
2+64	18" x 56' RCP			1
4+02	24" x 74' RCP 2 Safety Ends	No Work		
5+63	18" x 70' RCP	No Work		
<b>TOTALS:</b>				<b>1</b>

**EROSION CONTROL**

The estimated area requiring erosion control is 0.5 acres. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching shall be incidental to the contract lump sum price for Erosion Control.

The limits of erosion control work will be determined by the Engineer during construction.

**PERMANENT SEEDING**

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways.

Type C Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
<b>Total:</b>		<b>18</b>

**SPAN WIRE AND SUPPORTS**

The Contractor shall furnish and install Class 3 wood utility poles or steel pole span wire supports. Guy wire anchors shall be used as indicated in the plans. The Contractor may provide an alternate design if approved by the Engineer.

The span wire and support system, with traffic signal heads and luminaires shall be located as shown in these plans. Locations may be altered if approved by the Engineer and design allows.

The design wind velocity shall be 90 mph with a gust factor taken as 1.14.

The pole lengths required (including embedment) for each span wire support pole are estimated to be a minimum of 50 ft. in length, but shall be determined by the Contractor.

Final design and check design calculations for the span wire and support system (span wire, tether wire, poles, arms, connections, guy wires and anchors, footings, anchor bolts, etc.), signed and sealed by a SD Registered Professional Engineer, shall be submitted with shop drawings in accordance with Section 985.1.1.3 of the Specifications.

The Contractor shall coordinate with the utility company when installing and activating the traffic signal system.

Cost for the span wire and support system, including design, span wire, tether wire, poles, arms, pole mounted rigid conduit, connections, guy wires and anchors, anchor bolts, span wire sign mounting hardware, etc., shall be incidental to the contract unit price per site for Span Wire System.

Cost for span wire mounted signs shall be incidental to the contract unit price per square foot for Flat Aluminum Sign, Nonremovable Copy High Intensity.

**POLE MOUNTED TRAFFIC SIGNAL CONTROLLER**

The controller will operate pre-timed.

The controller cabinet shall be a NEMA Type M enclosure capable of pole mounting with cable conduit opening(s) in the center bottom.

The controller cabinet shall be mounted on the wood utility pole S1.

Battery backup is not required.

The controller shall be capable of programming by manual entry via the front panel keyboard, data downloading from a portable PC computer via null-modem cable, and data downloading from one controller to another using a serial port on each controller.

The controller shall be capable of operating coordinated by time-based, hardware, and telemetry.

USB port on controller is optional.

The Contractor is responsible for programming the controller with the signal timings provided in these plans.

All costs for furnishing and installing the controller cabinet shall be incidental to the contract unit price per each for "Traffic Signal Controller".

**TRAFFIC SIGNAL CONTROL CABLE LABELS**

Traffic signal cable shall be identified in the controller cabinet as indicated on the Wiring Diagram. Labels shall be wrapped around traffic signal cable to indicate the signal head that it is connected.

**SPAN WIRE SIGNAL HEADS AND BACKPLATES**

Signal backplates for 3-section and 4-section heads shall be fabricated from aluminum with a dull black finish, and shall be louvered. Signal backplates shall extend not less than 5 inches at the top, bottom, and sides.

**LUMINAIRES**

Luminaires shall be High Pressure Sodium, medium, semi-cutoff, Type III.

Single Tube, Truss, or Davit types of mast arms are all acceptable. The Contractor is to determine the method to adequately attach the luminaires to the support poles.

Mounting Height: 35 Ft.- 40 Ft.  
Lamp: 250W HPS  
Luminaire Extension: 6 Ft.

**METER SOCKET**

The Contractor shall furnish and install a 200 amp, positive by-pass meter socket for the traffic signal. The meter will be provided by Xcel Energy and installed by the Contractor.

Cost for materials and labor on the secondary side of the transformer, and installation of the utility furnished meter, shall be incidental to the contract unit price per each for Electrical Service Cabinet.

**UTILITY COMPANY INFORMATION**

Xcel Energy  
P.O. Box 988  
Sioux Falls, SD 57101-0988  
ph. 605-339-8341  
1-800-781-7474

**MULTICONDUCTOR CONTROL CABLE FOR SIGNAL CIRCUITS**

The cable furnished for signal circuits shall be furnished with the number and size of the conductors shown in the plans and shall meet the specifications for either of the two types specified below.

1. General Purpose Control Cable with stranded copper conductors, ICEA S-61-402, PE-PV Insulated (20-10), 600 volts.
2. General Purpose Control Cable, with standard copper conductors, Aerial and Duct., IMSA 20-1, 600 volts.

The Conductor Jackets for the above cables shall be color coded in accordance with ICEA 73-532, Table E2.

Sufficient cable is included in the estimate of quantities to coil cable for overhead signal heads to allow the signal heads to be relocated one lane width.

**SIGN LEGEND, BORDER AND BACKGROUND**

All sign materials shall comply with Section 982 of the Specifications. All flat aluminum signs shall be 0.100" sheet aluminum.

All sign legend, border and background sheeting material shall meet or exceed standards for ASTM D 4956 classified Type IV high intensity (HI) sheeting or Type XI super/very high intensity (VHI) sheeting, as indicated in the plans. Sheeting material on all warning signs designated FVHI shall be fluorescent yellow in color and meet or exceed standards for ASTM D 4956 classified Type XI super/very high intensity sheeting.

R3-5 Left Turn Only signs shall be mounted with top and bottom span wire and tether connections, as recommended by the manufacturer. Sign mounting assemblies shall have stainless steel fasteners and galvanized clamping hardware.

**SIGN POSTS**

The plan post lengths are estimated and shall be field verified by the Contractor prior to installation. The Contractor shall adjust posts to the proper sign height where necessary.

Square perforated tube post shall be fabricated from 12 gauge galvanized steel, as indicated in the plans. Anchor posts shall be 4 ft in length. Two-piece anchor post systems are required 2" and 2 1/4" square steel perforated tube post anchor stub posts. Anchor wings are required on all anchor stub posts.

All breakaway sign supports shall comply with the NCHRP 350 or MASH crash-worthy requirements.

Costs for sign supports shall be included in the respective contract unit price per foot for the post size indicated. Costs for anchor stub posts, anchor wings, and adjustments to post lengths shall be incidental to the respective contract unit price per foot for the post size indicated, and are not included in the Estimate of Quantities.

**DATE DECALS**

The Contractor shall affix State furnished date decals on each new sign installed.

The decals are 2" x 2" colored, pressure sensitive labels with removable paper backing.

The Contractor shall allow the State a minimum of three weeks to fabricate and provide the decals. The Contractor shall indicate the date the decals are requested.

Date decals shall not be obstructed by sign support components upon completion of the sign.

One date decal shall be placed in the extreme lower left corner of the back of flat aluminum signs.

Costs to install date decals on new signs shall be incidental to the contract unit price per square foot for the various aluminum sign items.

**ON-SITE INSPECTION**

An on-site inspection of the traffic signals shall be conducted before acceptance of the project, once the traffic signals are completed and operational. The on-site inspection shall be conducted by the Project Engineer or Region Traffic Engineer with the Contractor, City Traffic Engineer, and the Traffic Design Engineer present.

**SHOP DRAWING AND CATALOG CUTS SUBMITTALS**

The Contractor shall submit shop drawings and catalog cuts in accordance with Section 985 of the Standard Specifications or in Adobe PDF format.

Adobe PDF submittals shall be sent to the following email addresses:

[Pete.Longman@state.sd.us](mailto:Pete.Longman@state.sd.us)

[John.Less@state.sd.us](mailto:John.Less@state.sd.us)

**TABLE OF CONDUIT AND CABLE QUANTITIES**

Location to Location		Sch 40	Copper Wire		IMSA Copper Cable, K2 #14 AWG	
		2" Ft	1/C #4 AWG Ft	1/C #6 AWG Ft	4/C Ft	5/C Ft
<b>SD HWY 115/LINCOLN CO RD 106</b>						
METER	CONTROLLER	110	348	348		
CONTROLLER	S1			60	140	140
CONTROLLER	SIGNAL HEAD 1					16
S1	SIGNAL HEAD 2			111	148	153
SIGNAL HEAD 2	SIGNAL HEAD 3			33	49	33
SIGNAL HEAD 3	S2			63	63	63
S2	SIGNAL HEAD 4				25	
S2	SIGNAL HEAD 5					25
S2	SIGNAL HEAD 6			95	63	68
SIGNAL HEAD 6	SIGNAL HEAD 7			32	26	11
SIGNAL HEAD 7	S3			66	22	22
S3	SIGNAL HEAD 8				25	
S3	SIGNAL HEAD 9					25
CONTROLLER	SIGNAL HEAD 16				16	
S1	SIGNAL HEAD 15			62	67	62
SIGNAL HEAD 15	SIGNAL HEAD 14			32	21	37
SIGNAL HEAD 14	S4			108	72	72
S4	SIGNAL HEAD 13					25
S4	SIGNAL HEAD 12				25	
S4	SIGNAL HEAD 11				23	18
SIGNAL HEAD 11	SIGNAL HEAD 10					11
<b>Totals:</b>		110	348	1,010	785	781

**MAINTENANCE OF TRAFFIC**

Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted, breakaway supports.

Sufficient traffic control devices have been included in these plans to sign one workspace. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

**HOURS OF WORK**

The Contractor shall not encroach into the traveled way at SD Hwy 115 & Lincoln Co Rd 106 during the peak traffic volume hours- 7:00 AM to 8:30 AM and 4:30 PM to 6:00 PM.

**TEMPORARY PAVEMENT MARKING**

One application of temporary pavement marking is included in the estimate of quantities for completion of the asphalt widening and uncovering the temporary flexible vertical markers (tabs) after application of the seal.

The Contractor shall remove and dispose of temporary flexible vertical markers (tabs) after Permanent Pavement Marking is applied. Removal shall be accomplished within one week of completion of the Permanent Pavement Marking.

Cost for the traffic control to install and remove the temporary flexible vertical markers (tabs) shall be incidental to the contract unit price per mile for Temporary Pavement Marking.

**PERMANENT PAVEMENT MARKING**

The Contractor shall apply permanent pavement marking, as detailed in these plans.

The Contractor shall remove existing STOP and STOP AHEAD messages from pavement prior to pavement flush seal.

Application of permanent pavement marking shall be completed within 14 days following completion of the final surfacing.

**COLD WEATHER WATERBORNE PAINT**

Waterborne paint applied after October 15 shall be formulated as cold-weather waterborne paint and shall be applied in accordance with the manufacturer's recommendations, including minimum temperature requirements.

Cold weather waterborne paint shall conform to Section 980 of the Specifications except for the following:

980.1: Resin Binder shall be FASTRACK™ XSRTM manufactured by Dow, or an approved equal.

980.1 A. Quantitative Requirements:

Pigment, percent by weight: 60.0 to 63.0 for white and 58.5 to 61.5 for yellow.

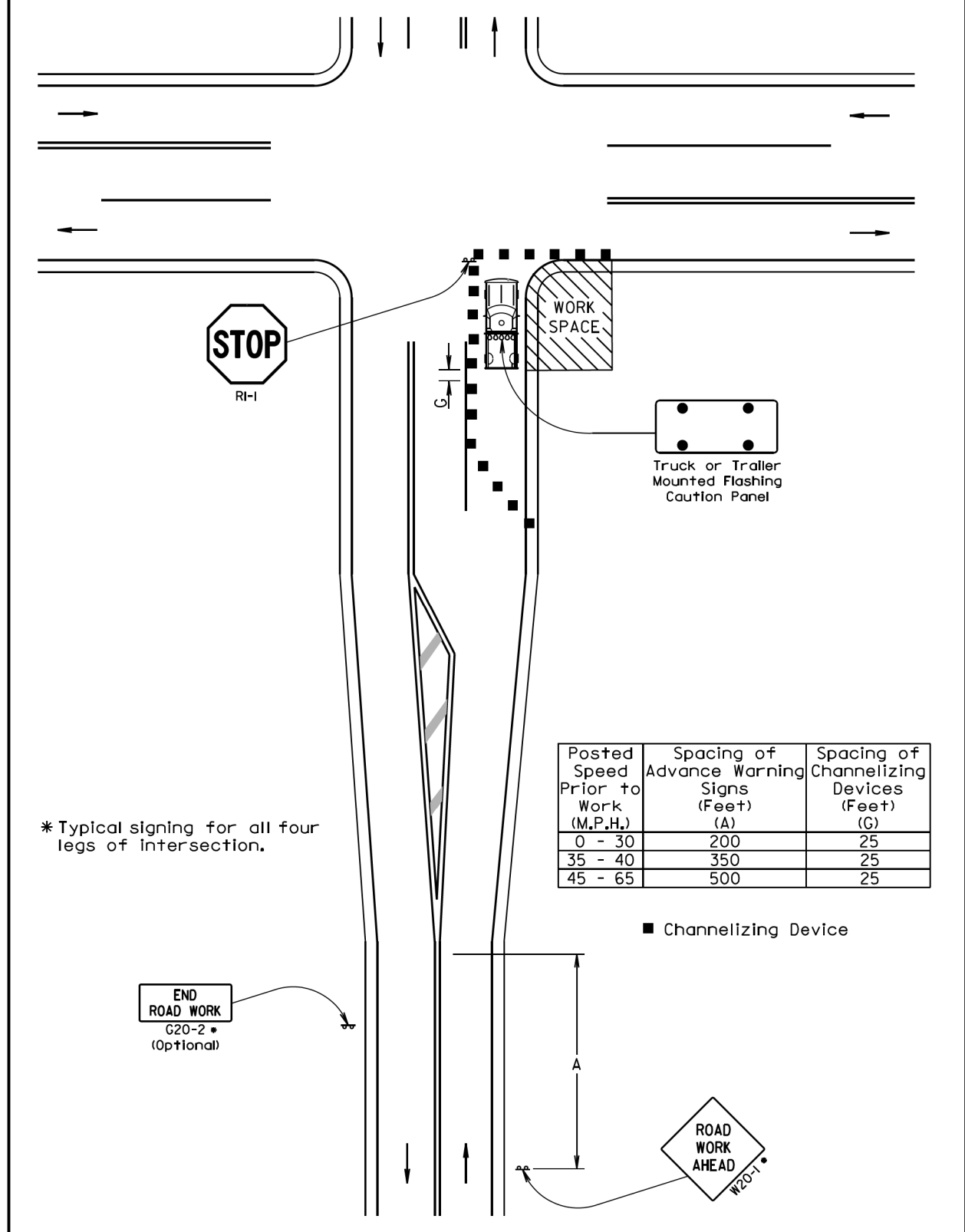
Pigment, percent by weight; tested in accordance with ASTM D3723: 60.0 to 63.0 for white and 56.1 to 59.2 for yellow.

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 41.5 minimum for yellow.

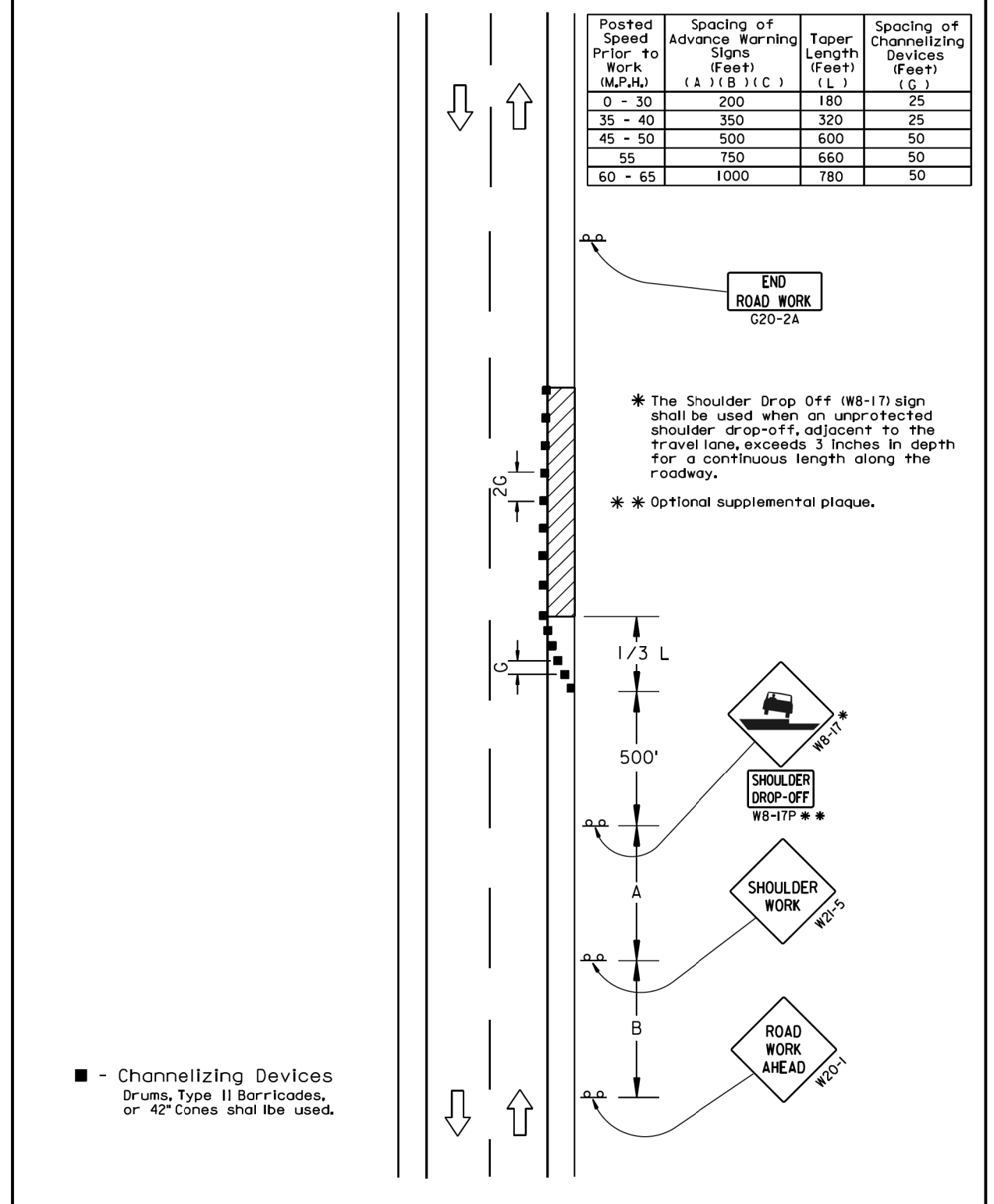
**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	1	30" x 30"	6	6
W3-4	BE PREPARED TO STOP	2	48" x 48"	16	32
W8-17	SHOULDER DROP-OFF (symbol)	1	48" x 48"	16	16
W20-1	ROAD WORK AHEAD	4	48" x 48"	16	64
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
W21-2	FRESH OIL	2	48" x 48"	16	32
W21-5	SHOULDER WORK	2	48" x 48"	16	32
G20-2	END ROAD WORK	4	36" x 18"	5	20
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>298</b>

### TEMPORARY CORNER WORK SPACE

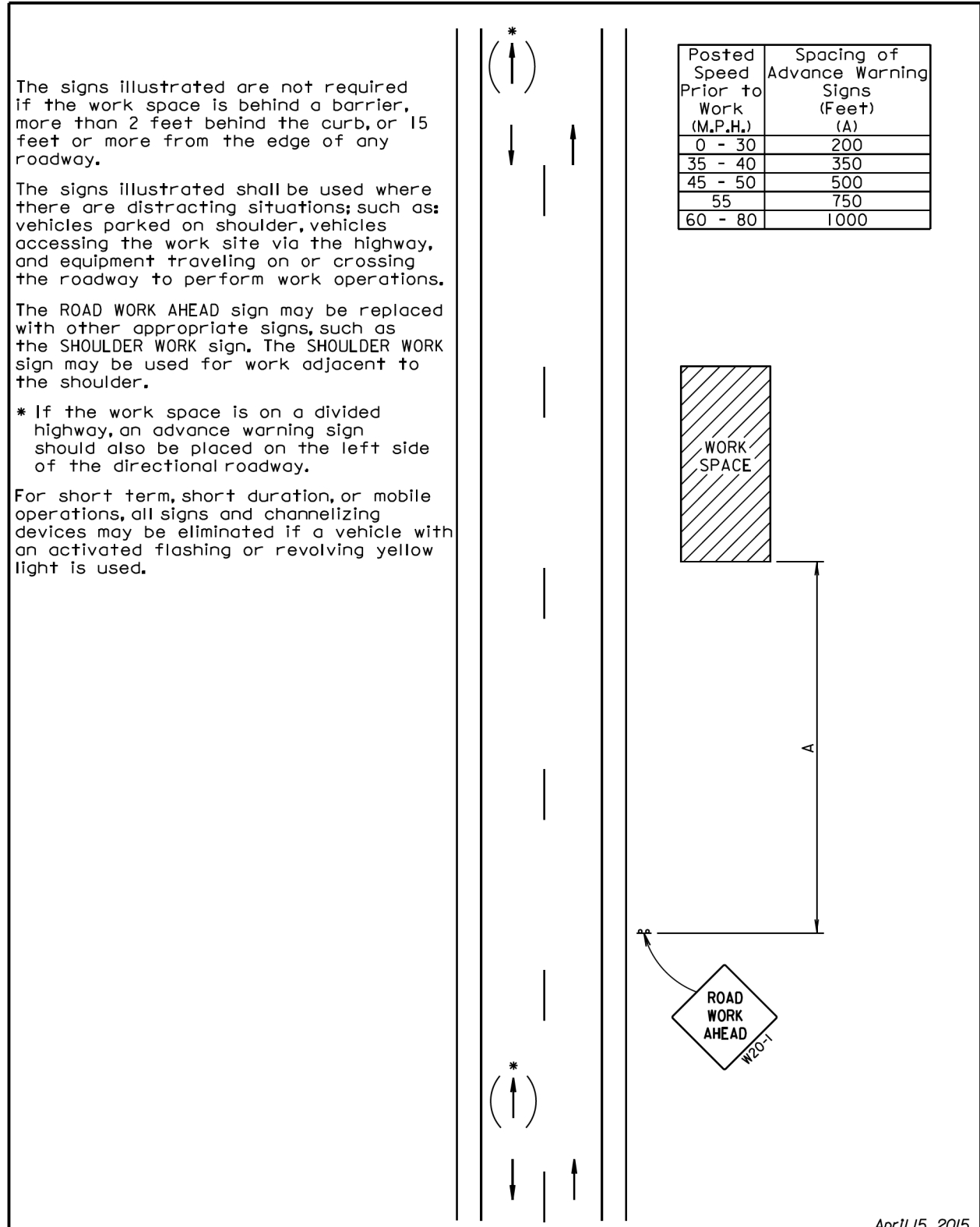


### INTERMEDIATE-TERM SHOULDER CLOSURE





Plotting Date: mmm-ddd-yyy



The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

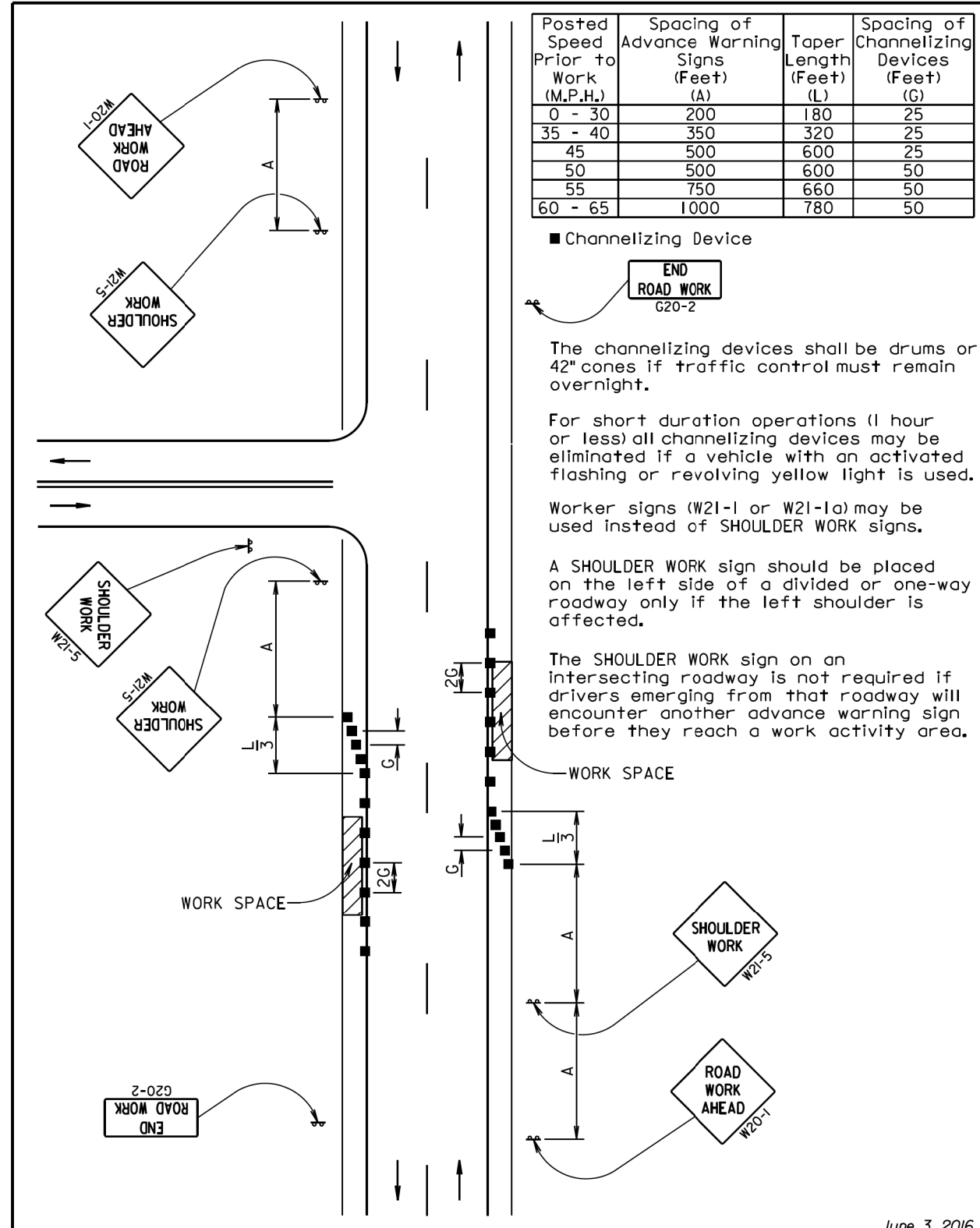
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

April 15, 2015

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK BEYOND THE SHOULDER</b>	PLATE NUMBER <b>634.01</b>
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1



■ Channelizing Device

**END ROAD WORK**  
G20-2

The channelizing devices shall be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

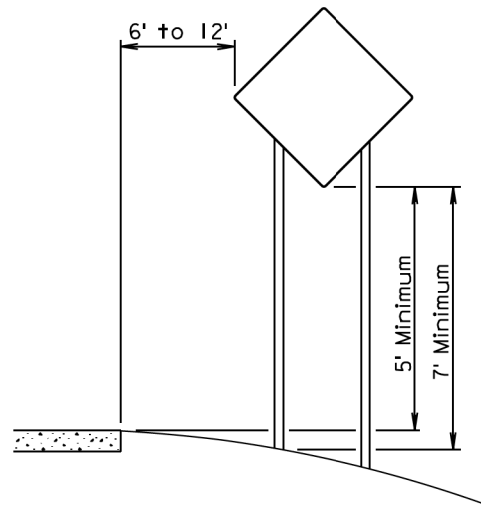
A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

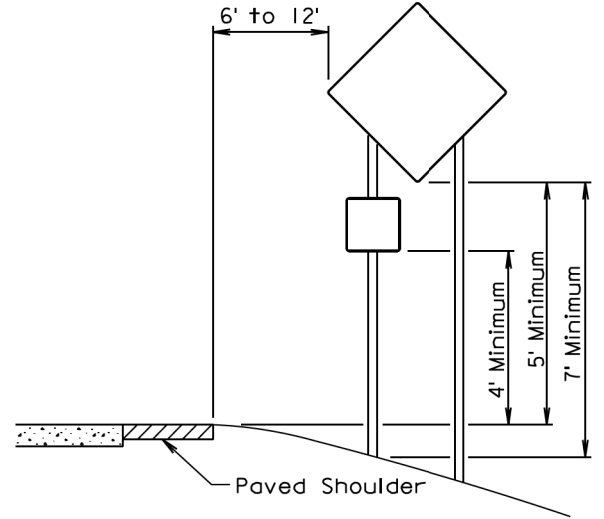
June 3, 2016

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS</b>	PLATE NUMBER <b>634.03</b>
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

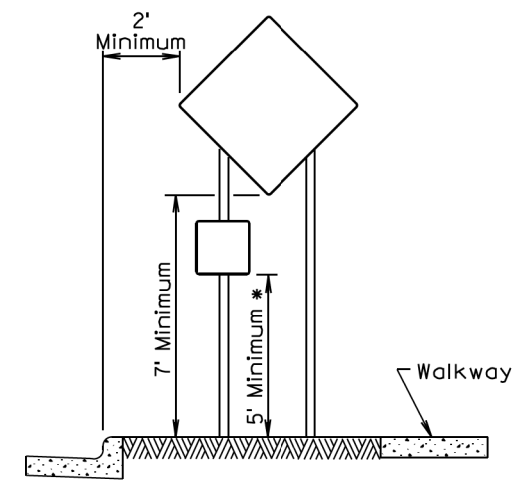




RURAL DISTRICT

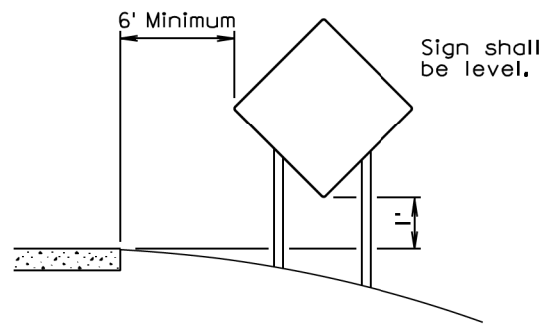


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

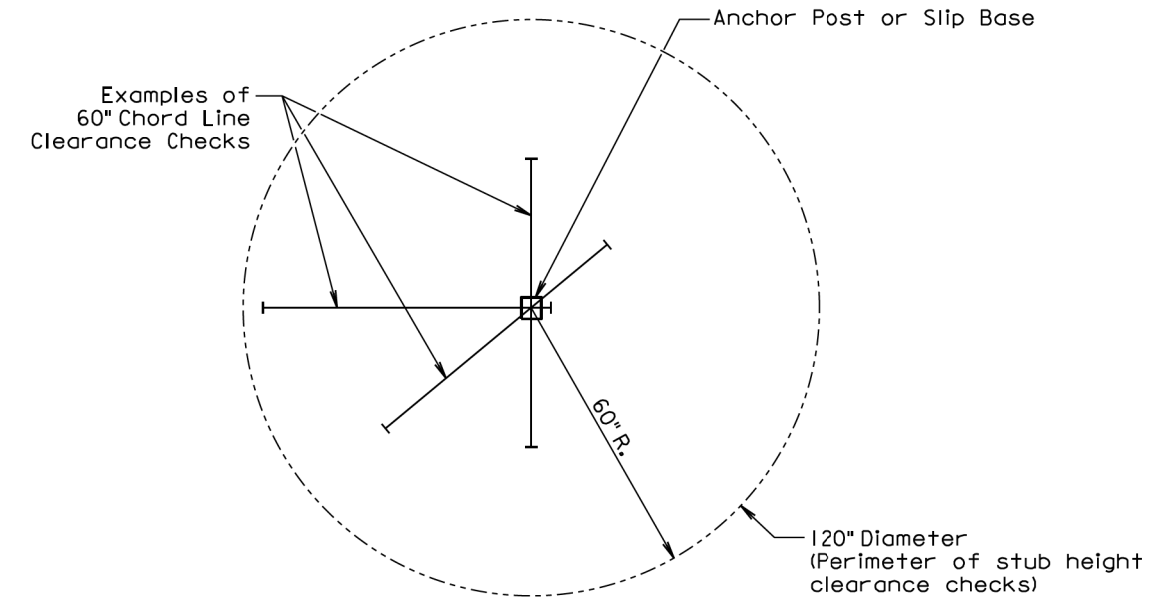
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



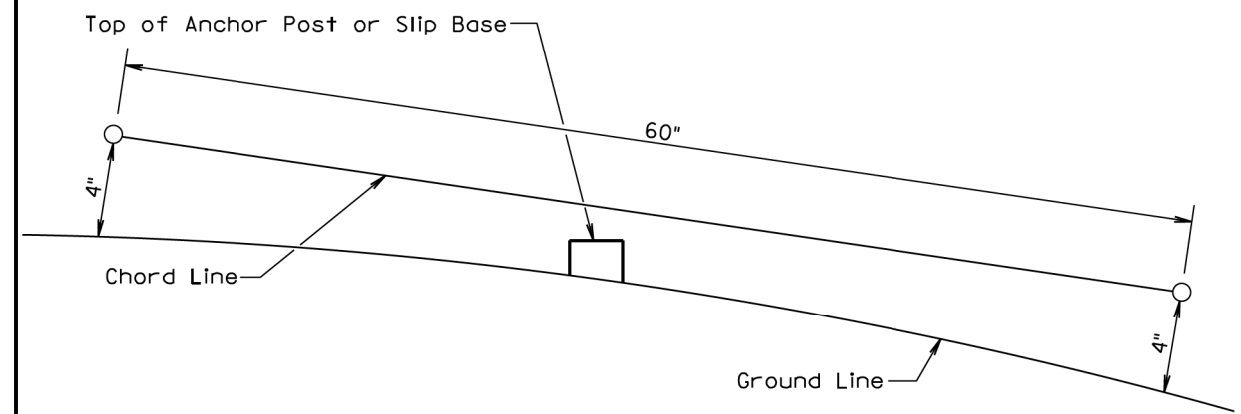
RURAL DISTRICT 3 DAY MAXIMUM  
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 3rd Qtr. 2016	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW  
(Examples of stub height clearance checks)



ELEVATION VIEW

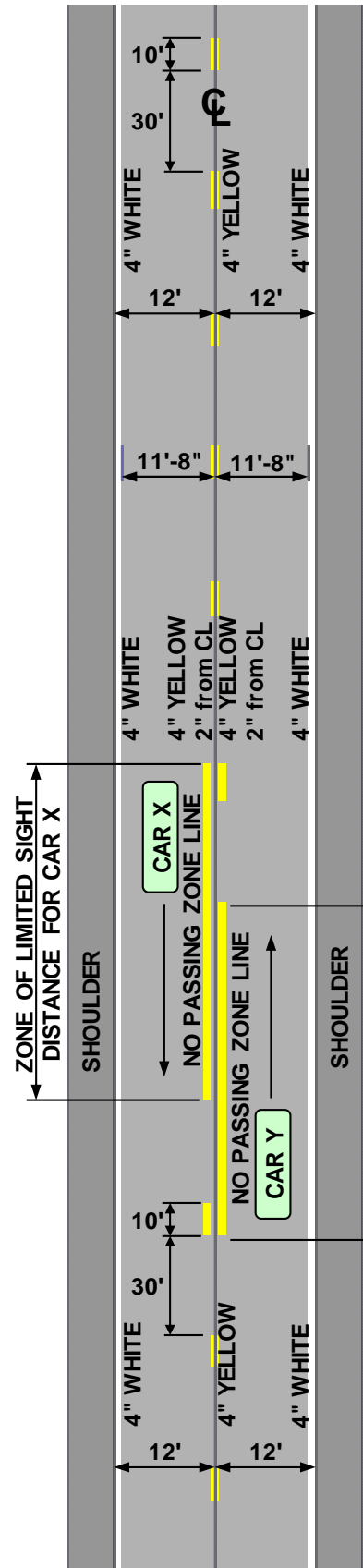
GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.  
 At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.  
 The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 3rd Qtr. 2016	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

**TWO LANE ROADWAY**



**PAVEMENT MARKING**

Typical pavement marking as shown on this sheet shall be applied throughout the entire length of two lane roadway.

Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights and advance warning arrow board.

Application rates shall be as follows:

Two Lane Roadway (Rates for one line)	
Dashed Yellow Centerline	Rate = 4.6 Gals./Pass-Mile
Solid Yellow Centerline	Rate = 16.9 Gals./Pass-Mile
Solid White Edgeline	Rate = 16.9 Gals./Pass-Mile

ESTIMATED QUANTITIES	
PAINT	QUANTITY
WHITE	20 GALLONS
YELLOW	35 GALLONS

Included in the above quantities are:			
Additional White		Additional Yellow	
Description	Gallons	Description	Gallons
4" Lines	430' 2	Transitions	-
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks	-	12" Lines	-
24" Stop Lines	94' 4	24" Hatches	140' 6
24" Hatches	-	Solid Areas	200sf 6
Solid Areas	-	Additional Yellow:	12
<u>Arrows</u>			
Left Arrows	8 Ea 4	Additional Quantities	
Right Arrows	-	<u>Rates of Coverage: SqFt/Gal</u>	
Straight Arrows	-	4", 8" and 12" Lines - 80	
Combo Arrows	-	24" Lines and Bars - 50	
Lane Drop Arrows	-	Arrows, Messages and Solid Areas - 30	
<u>Messages</u>			
STOP	-		
STOP AHEAD	-		
R X R with Bars	-		
SCHOOL X-ING	-		
Additional White:	10		

**NOTE:** All pavement marking dimensions are based on 12' driving lanes.

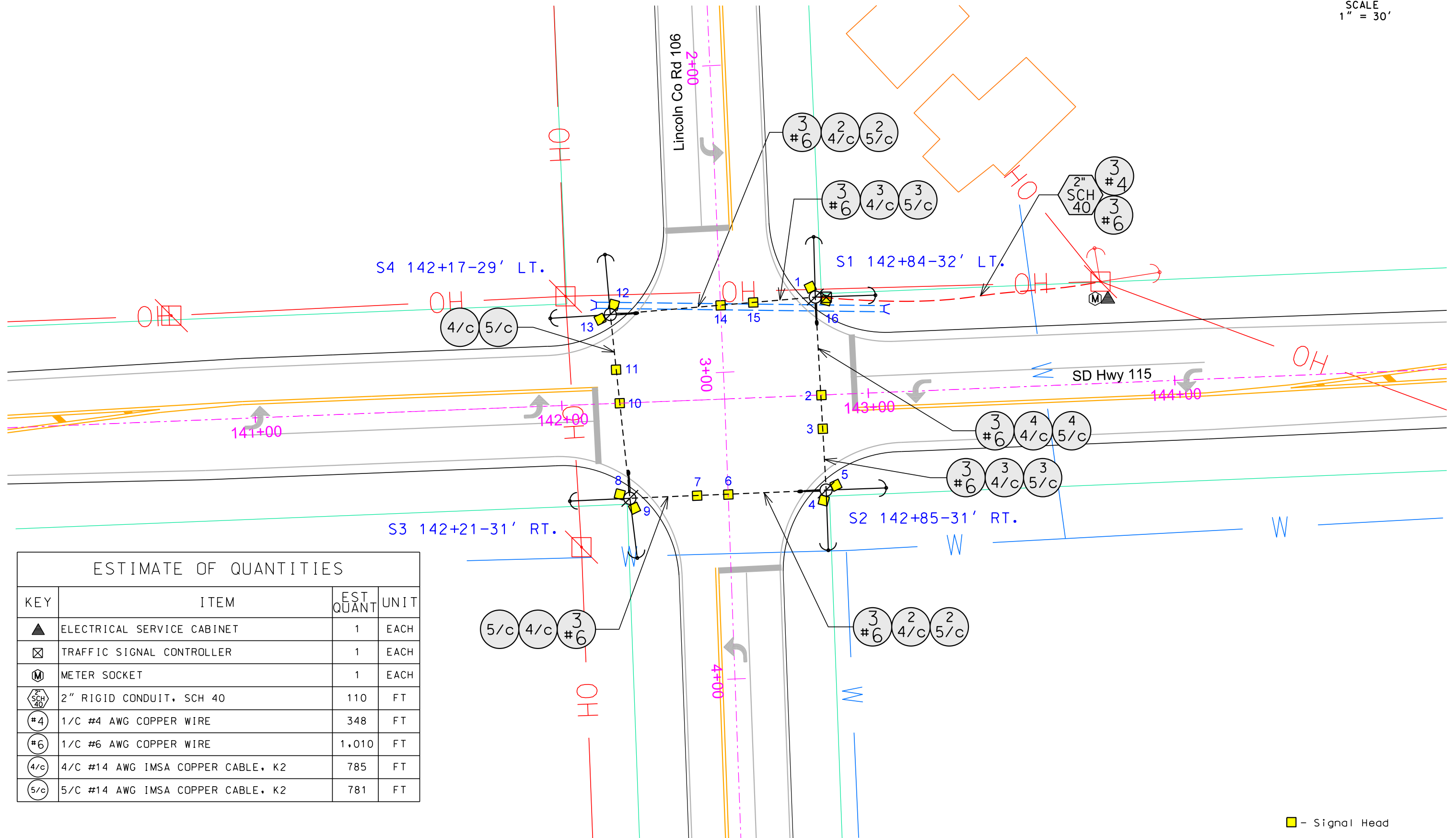


# CONDUIT LAYOUT

## SD 115 & Lincoln Co Rd 106



SCALE  
1" = 30'



ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
▲	ELECTRICAL SERVICE CABINET	1	EACH
⊠	TRAFFIC SIGNAL CONTROLLER	1	EACH
Ⓜ	METER SOCKET	1	EACH
2" SCH 40	2" RIGID CONDUIT, SCH 40	110	FT
#4	1/C #4 AWG COPPER WIRE	348	FT
#6	1/C #6 AWG COPPER WIRE	1,010	FT
4/c	4/C #14 AWG IMSA COPPER CABLE, K2	785	FT
5/c	5/C #14 AWG IMSA COPPER CABLE, K2	781	FT

■ - Signal Head

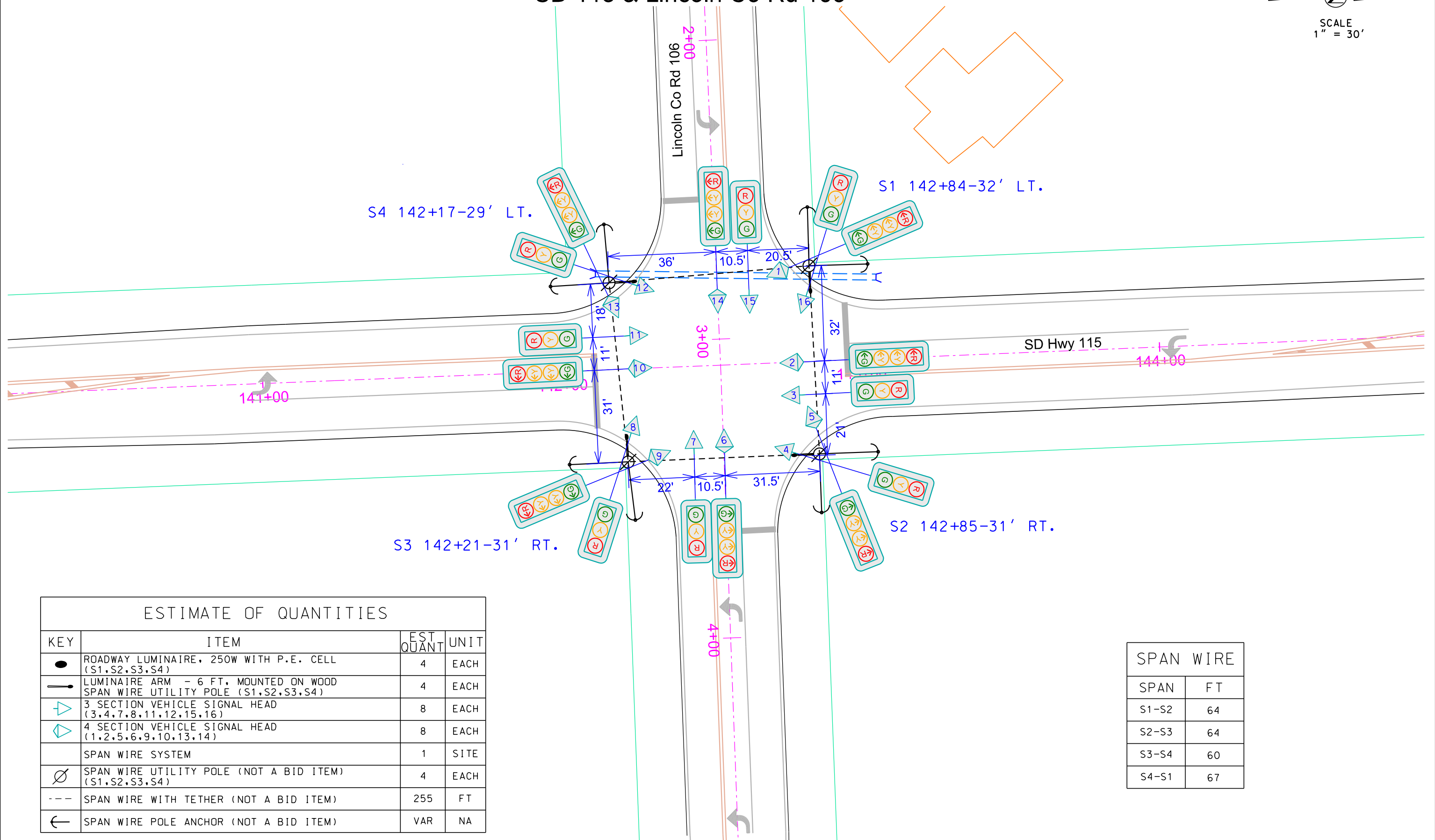
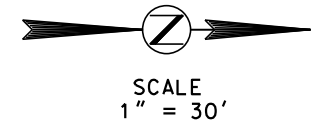
PLOT SCALE - \$\$SCALE\$\$

PLOTTED FROM - \$\$USERNAME\$\$

PLOT NAME - \$\$PLOTNAME\$\$ FILE - \$\$FILENAME\$\$

# SIGNAL LAYOUT

## SD 115 & Lincoln Co Rd 106



### ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
●	ROADWAY LUMINAIRE, 250W WITH P.E. CELL (S1,S2,S3,S4)	4	EACH
—	LUMINAIRE ARM - 6 FT, MOUNTED ON WOOD SPAN WIRE UTILITY POLE (S1,S2,S3,S4)	4	EACH
▷	3 SECTION VEHICLE SIGNAL HEAD (3,4,7,8,11,12,15,16)	8	EACH
◁	4 SECTION VEHICLE SIGNAL HEAD (1,2,5,6,9,10,13,14)	8	EACH
	SPAN WIRE SYSTEM	1	SITE
∅	SPAN WIRE UTILITY POLE (NOT A BID ITEM) (S1,S2,S3,S4)	4	EACH
---	SPAN WIRE WITH TETHER (NOT A BID ITEM)	255	FT
←	SPAN WIRE POLE ANCHOR (NOT A BID ITEM)	VAR	NA

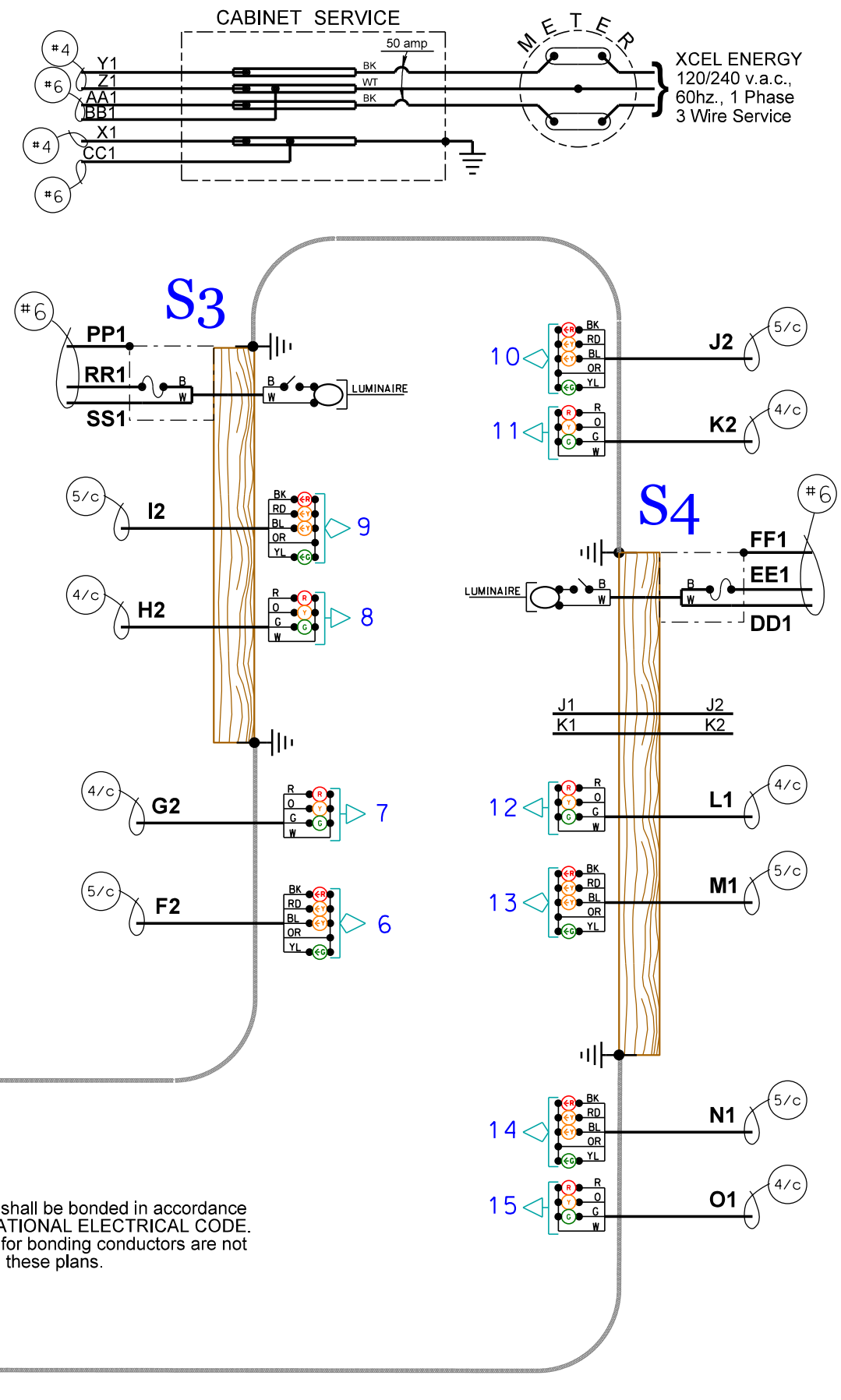
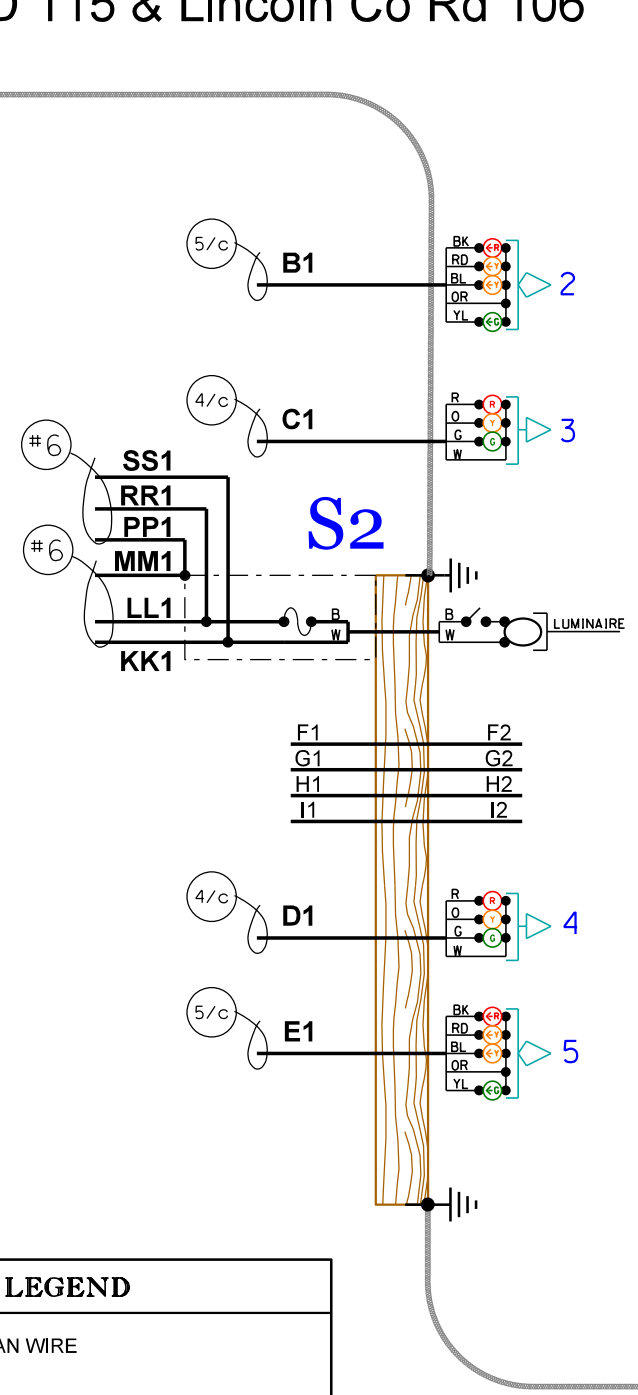
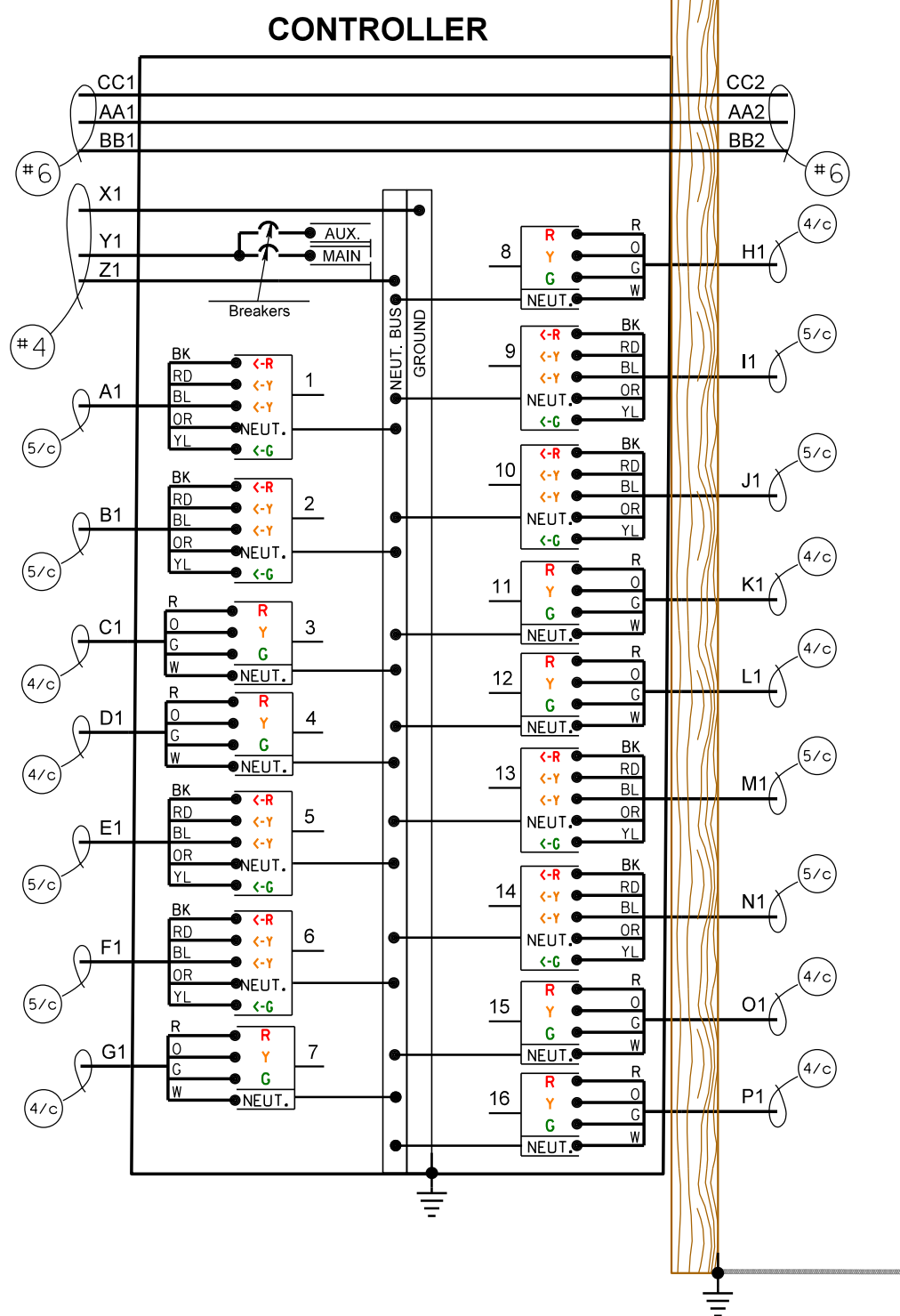
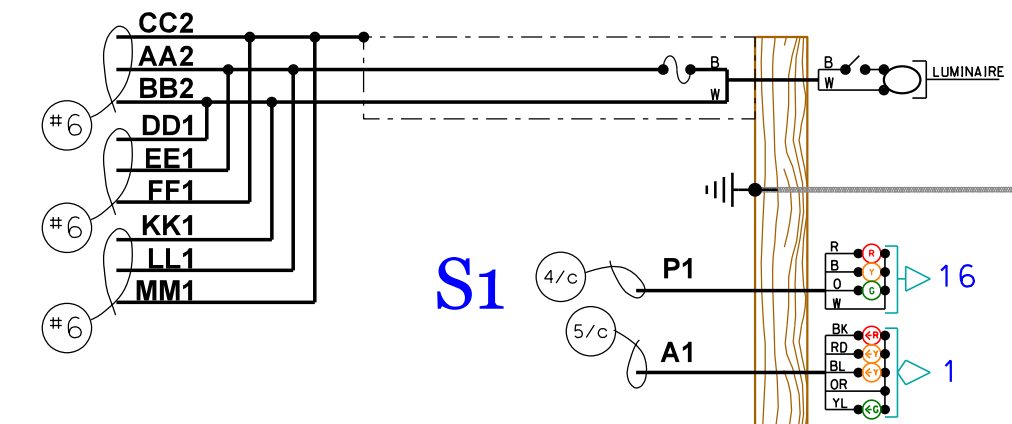
SPAN WIRE	
SPAN	FT
S1-S2	64
S2-S3	64
S3-S4	60
S4-S1	67

# WIRING DIAGRAM

## SD 115 & Lincoln Co Rd 106

PLOT SCALE - \$\$SCALE\$\$

PLOT NAME - \$\$PLOTNAME\$\$



### LEGEND

- SPAN WIRE
- CONDUCTOR
- WOOD UTILITY POLE
- FUSE: 6 amp. Non-Time Delay  
or  
2 8/10 amp. Dual Element
- LUMINAIRE: 250 watt High Pressure Sodium Lamp

**NOTE:**  
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

PLOTTED FROM - \$\$USERNAME\$\$

FILE - \$\$FILENAME\$\$



# SIGNAL TIMING

SD HWY 115 & LINCOLN CO RD 106

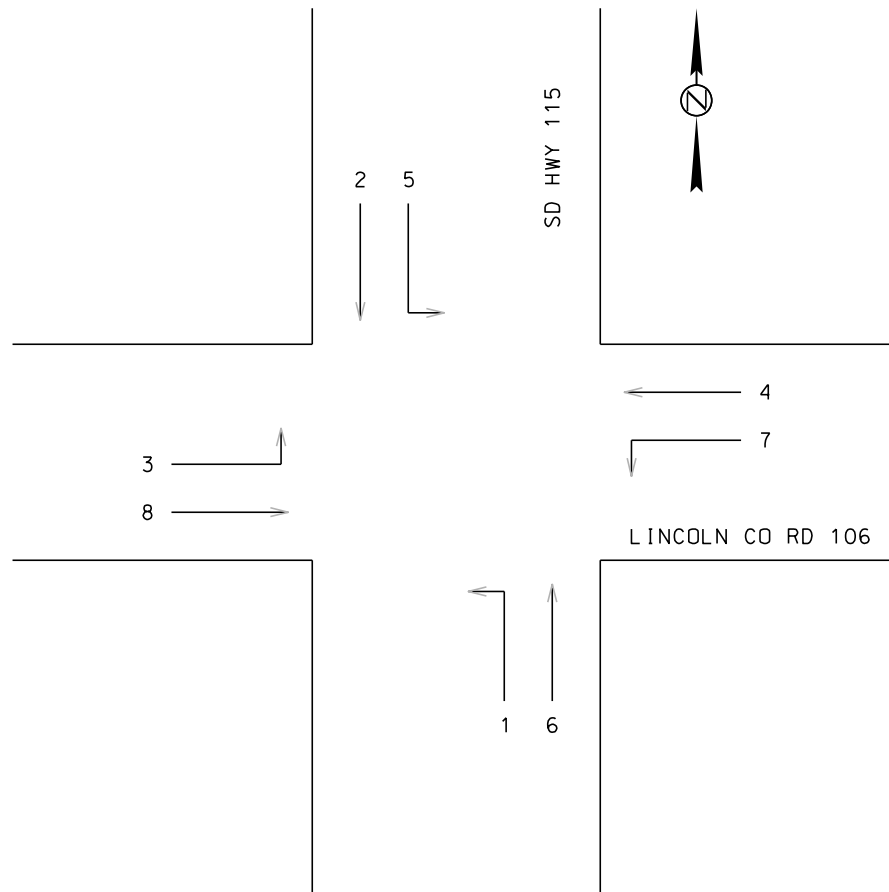
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	17	36

REV: 8-3-16 SAH

PHASING AND SEQUENCING													
INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	FLASH DISPLAY
1,2	<G	<Y	<FY	<Y									<R
3,4			G	Y									R
9,10	<G	<Y	<FY	<Y									<R
11,12			G	Y									R
5,6						<G	<Y	<FY	<Y				<R
7,8								G	Y				R
13,14						<G	<Y	<FY	<Y				<R
15,16								G	Y				R
PHASES	1&5		2&6		3&7		4&8						
MOVEMENTS													

PHASE TIMING								
PHASE	1	2	3	4	5	6	7	8
MOVEMENT								
YELLOW CHANGE	5	6	5	6	5	6	5	6
RED CLEARANCE	1	1	1	1	1	1	1	1
CYCLE 1 = 90 SEC								OFFSET = 0 SEC
TIME PLAN 1	14	31	14	31	14	31	14	31
CYCLE 2 = 110 SEC								OFFSET = 0 SEC
TIME PLAN 2	14	43	14	39	14	43	14	39

DAY OF WEEK PLAN							
	SUN	MON	TUE	WED	THU	FRI	SAT
SCHEDULE 1		X	X	X	X	X	
SCHEDULE 2	X						X



TOD SCHEDULE 1	
TIME OF DAY (TOD)	TIME PLAN
6:00 - 7:30	1
7:30 - 8:30	2
8:30 - 3:00	1
3:00 - 19:00	2
19:00 - 23:00	1
23:00 - 6:00	FLASH

TOD SCHEDULE 2	
TIME OF DAY (TOD)	TIME PLAN
6:00 - 23:00	1
23:00 - 6:00	FLASH

PLOT SCALE - \$\$SCALE\$\$

PLOTTED FROM - \$\$USERNAME\$\$

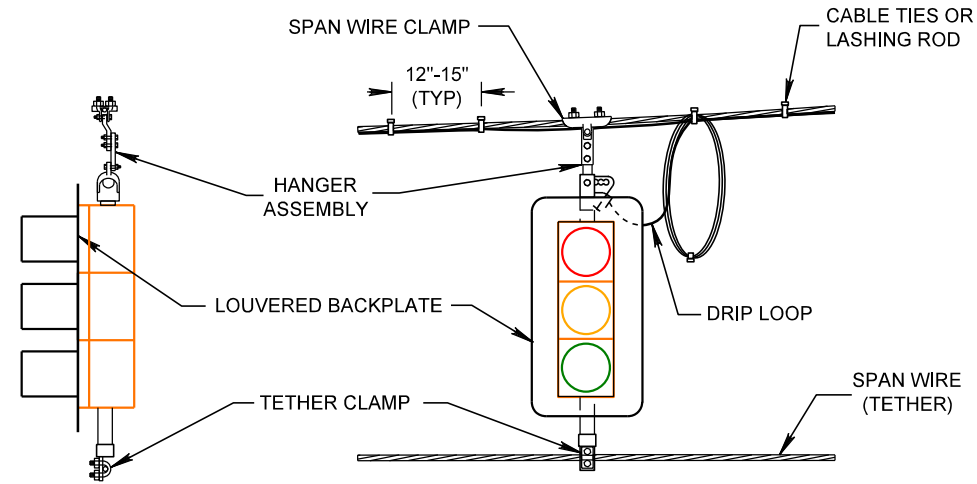
PLOT NAME - \$\$PLOTNAME\$\$

FILE - \$\$FILENAME\$\$

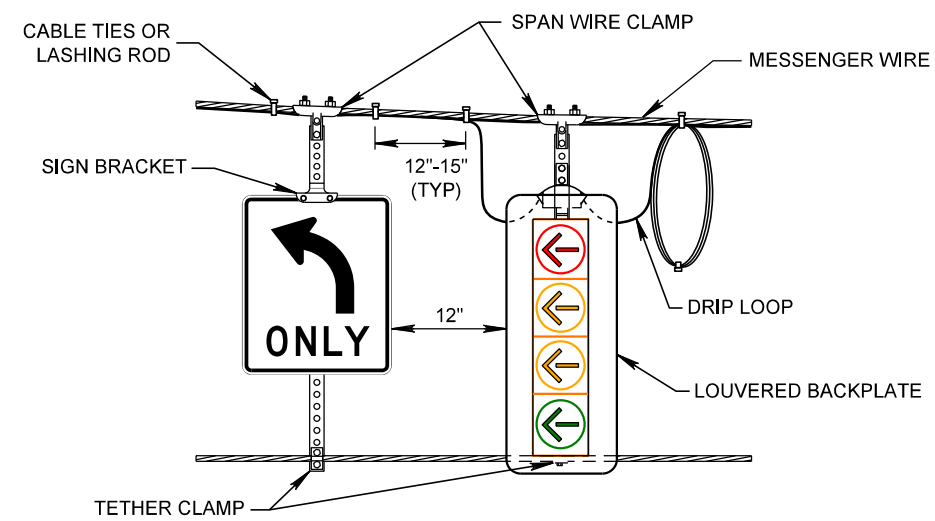
# WOOD POLE AND SPAN WIRE MOUNTED TRAFFIC SIGNALS (TYPICAL)

STATE OF SOUTH DAKOTA	PROJECT NH 0115(59)78	SHEET 18	TOTAL SHEETS 36
-----------------------	--------------------------	-------------	--------------------

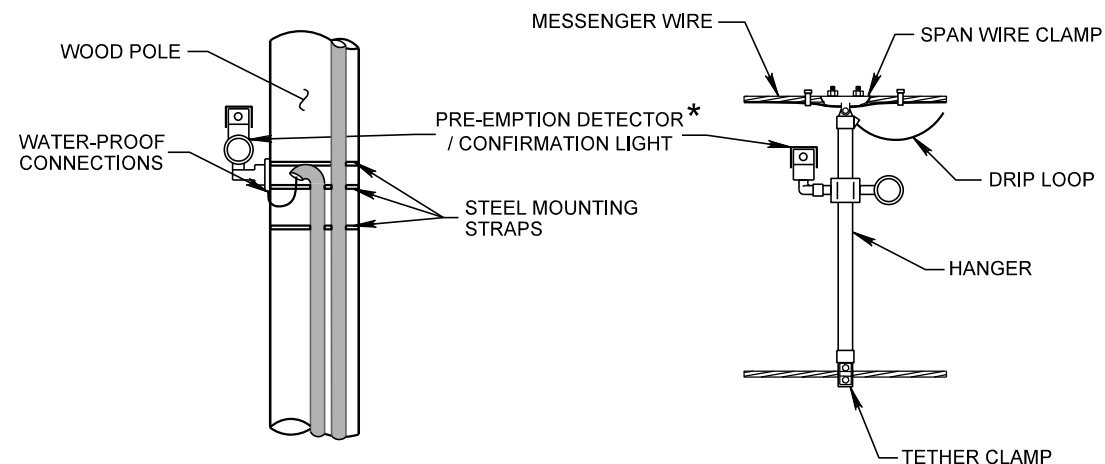
## 3-SECTION HEAD



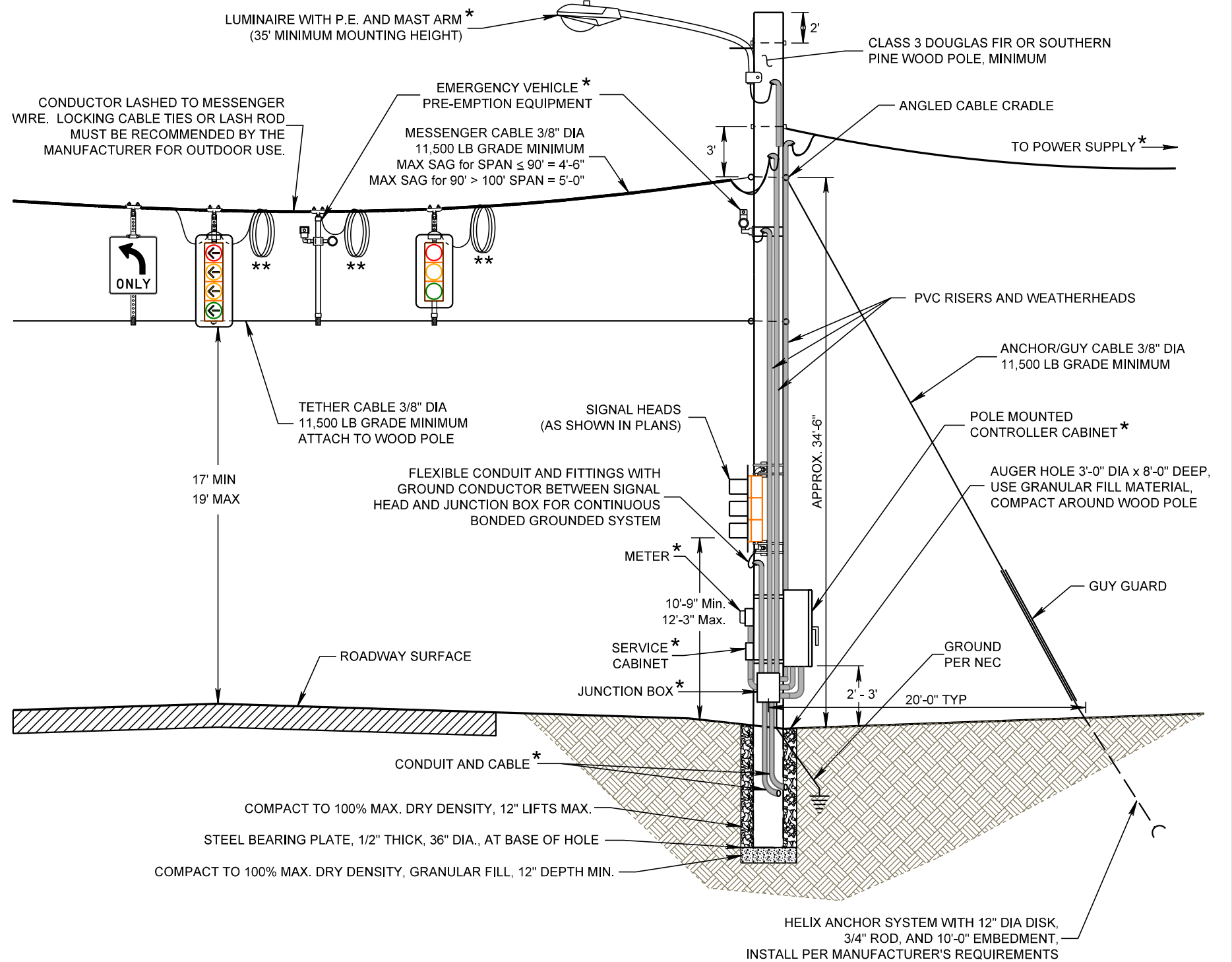
## 4-SECTION HEAD & SIGN



## EMERGENCY VEHICLE PRE-EMPTION AND VEHICLE DETECTOR



## WOOD POLE AND SPAN WIRE MOUNTED TRAFFIC SIGNALS



NOTE: ALL SPAN WIRES AND DOWN GUYS SHALL BE HIGH GRADE GALVANIZED STRAND WIRE. ALL POLE MOUNTED SIGNAL HEADS, E.V.P. EQUIPMENT, AND VEHICLE DETECTION UNITS SHALL BE BANDED WITH STEEL STRAPS TO THE POLE. DESIGN SHOWN IS FOR WIRE SPANS OF 100 FT OR LESS.

- \* - AS APPLICABLE. INSTALL IN ACCORDANCE WITH THE PLANS AND MANUFACTURER REQUIREMENTS
- \*\* - COIL SUFFICIENT SIGNAL CONDUCTOR TO ALLOW RELOCATION OF SPAN WIRE MOUNTED SIGNAL HEADS AND E.V.P. EQUIPMENT IF TRAFFIC LANE ADJUSTMENTS ARE ANTICIPATED.

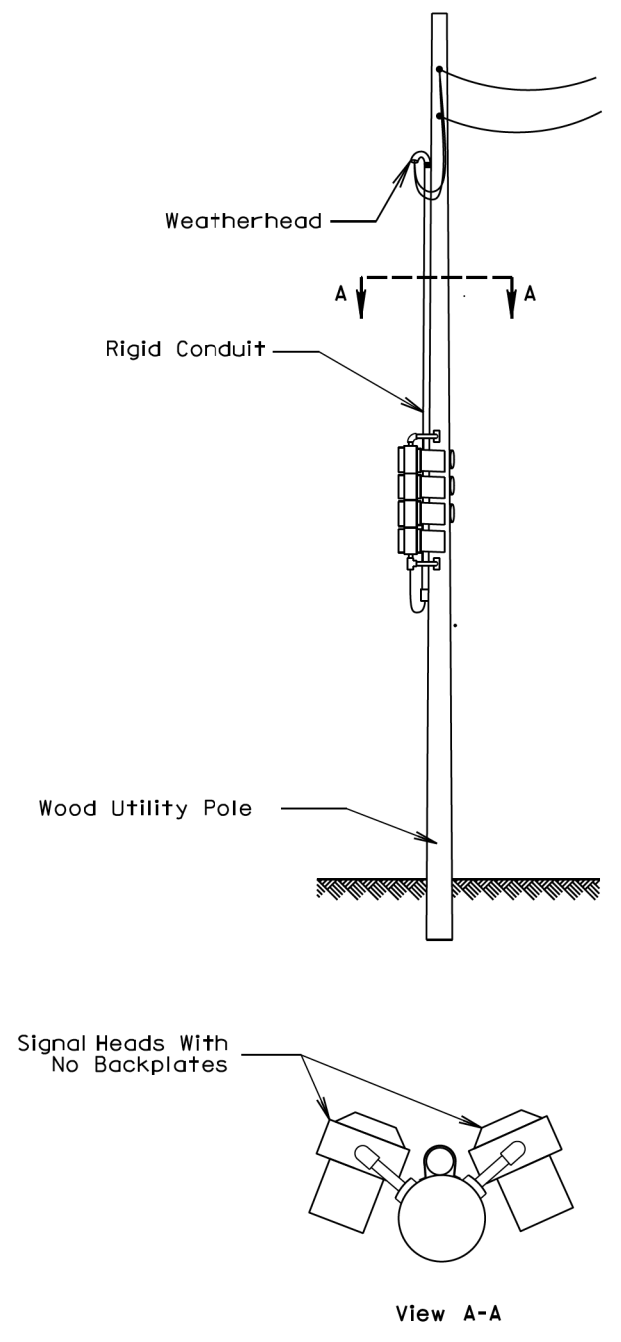
PLOT SCALE - \$\$SCALE\$\$

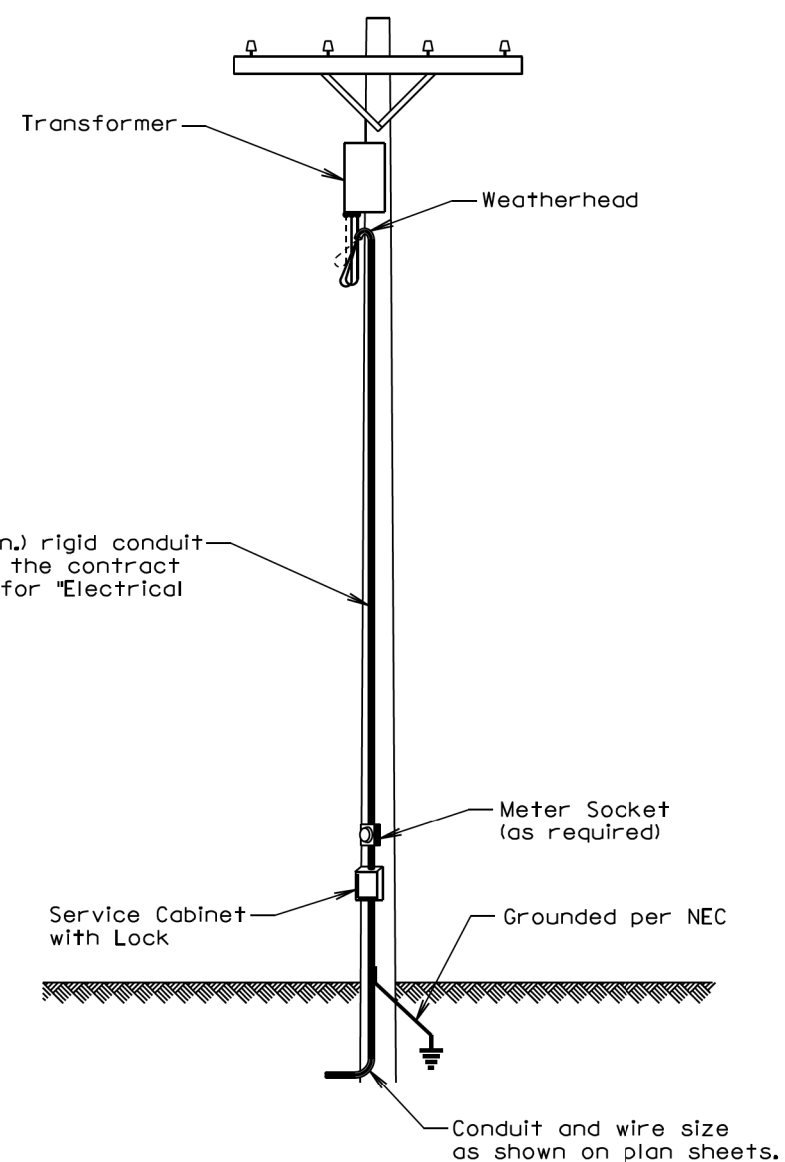
PLOTTED FROM - \$\$USERNAME\$\$

PLOT NAME - \$\$PLOTNAME\$\$

FILE - \$\$FILENAME\$\$

**SIGNAL HEAD INSTALLATION  
ON WOOD SPAN WIRE POLE**





Cost for the 1/4" (Min.) rigid conduit shall be incidental to the contract unit price per each for "Electrical Service Cabinet".

**ELEVATION VIEW**

**GENERAL NOTE:**

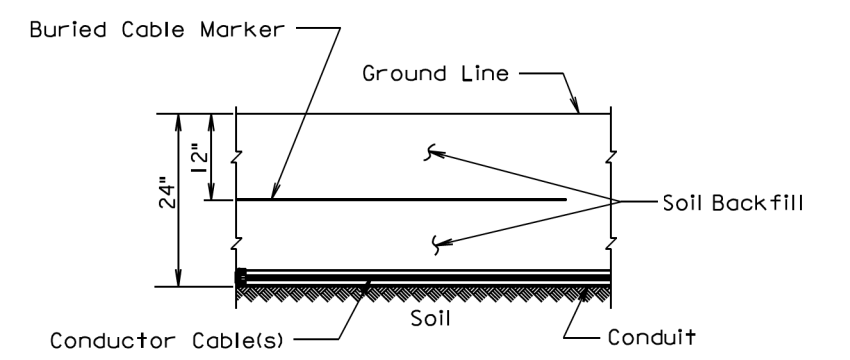
The service cabinet shall include an externally mounted 15A receptacle outlet. The receptacle shall be housed in a lockable NEMA 3R enclosure. The Contractor shall furnish a lock and keys to the Engineer as directed.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, wire, equipment, hookup fees, all items within the cabinet, lockable enclosure with receptacle outlet, lock and keys, meter socket if required, conduit and incidentals shall be incidental to the contract unit price per each for "Electrical Service Cabinet."

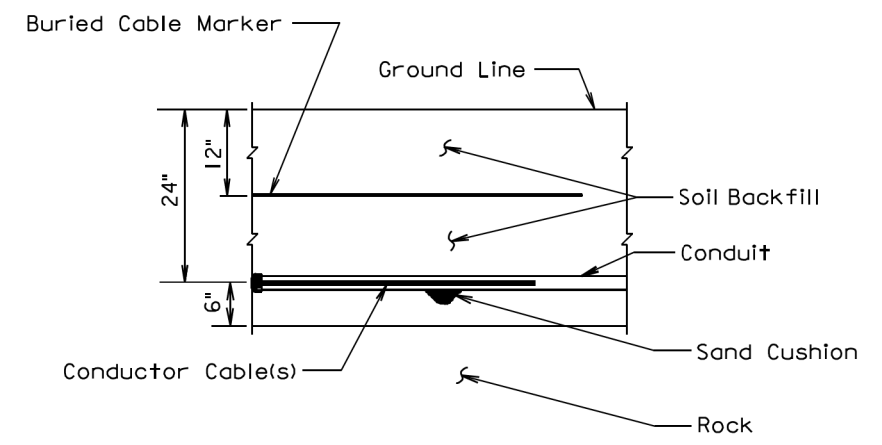
June 26, 2016

<b>S D D O T</b>	<b>SERVICE CABINET ON OVERHEAD UTILITY POLE</b>	PLATE NUMBER <b>635.40</b>
		Sheet 1 of 1

Published Date: 3rd Qtr. 2016



**SECTION VIEW**



**SECTION VIEW**

**GENERAL NOTE:**



















The Buried Cable Marker shall be plastic, approximately 6" wide, and shall be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker shall have a life expectancy approximately equal to that of the conductor(s) beneath it. A phrase indicating the presence of a buried electric circuit below shall be printed in a contrasting color on the cable marker. The Buried Cable Marker shall be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker shall be incidental to the contract unit price per Foot for the bid item used for the electrical conductor.

March 31, 2000

<b>S D D O T</b>	<b>CONDUIT INSTALLATION</b>	PLATE NUMBER <b>635.76</b>
		Sheet 1 of 1

Published Date: 3rd Qtr. 2016

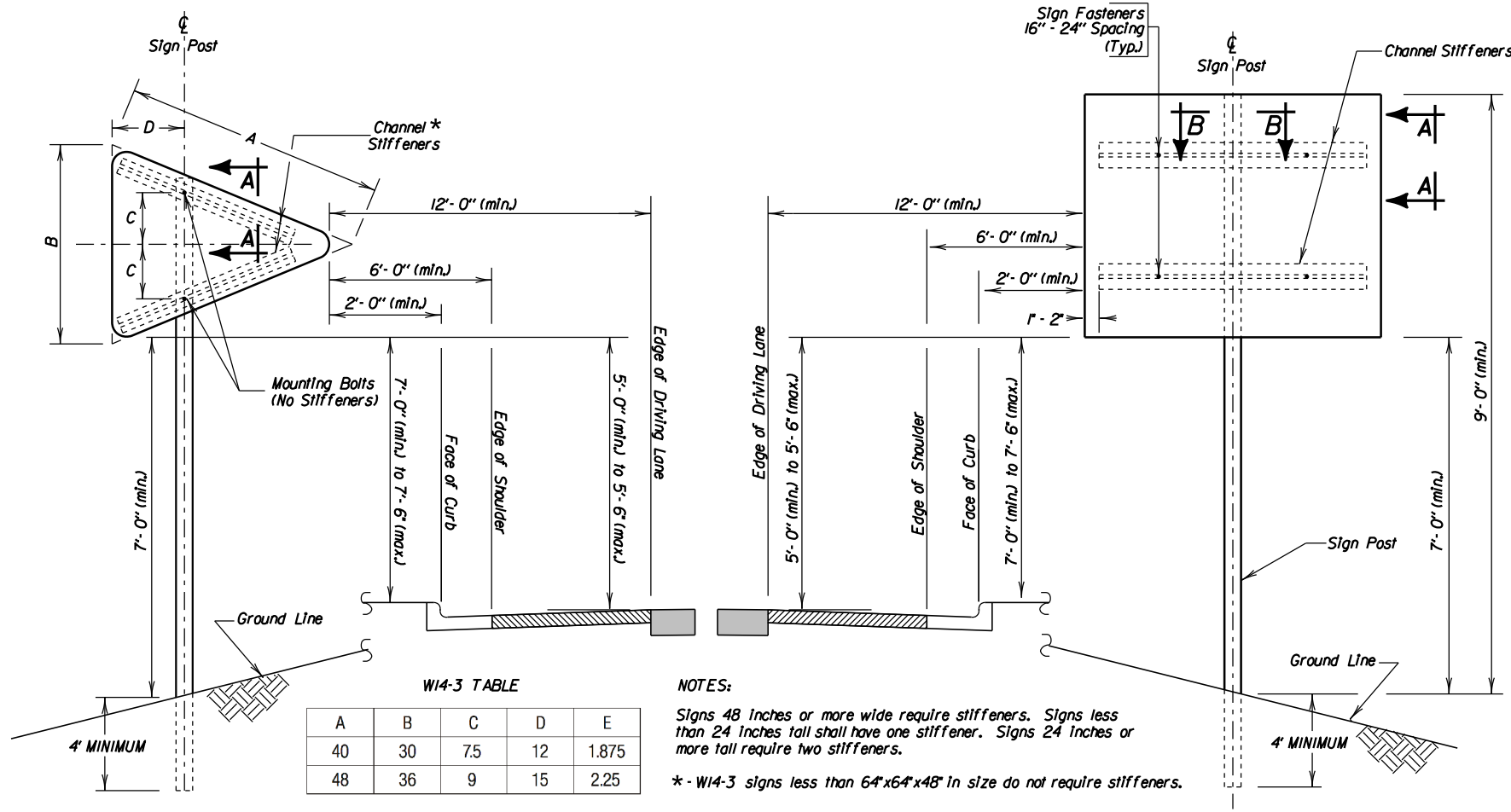
## PERMANENT SIGNING TABLE

SIGN DATA										POST DATA						REMOVAL DATA			COMMENTS
SIGN #	STATION	DESCRIPTION	SIGN CODE	SIGN SIZE (FT)	SIGN AREA (SQ FT)			DIR FAC-ING	OFFSET* RIGHT/LEFT OVERHEAD	POST LENGTHS		FIXED or BREAK-AWAY**	(N)EW or (R)EUSE POST	SIZE AND QTY (FT)		SALVAGE SIGN & POST	REMOVE SIGN FOR RESET	RESET SIGN	
					HI	VHI	FVHI			INSIDE	OUTSIDE			2" SQ. STEEL	2 1/4" SQ. STEEL				
<b>SD 115</b>					632E3203	632E3205													
SD - 101	129+28 L ***		W14-3	4 X 4 X 3			5.6	S	12' L	9'-3"	A	N	9.3		1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT. INSTALL NEW SIGN AND SUPPORT ASSEMBLY.	
SD - 102	139+95 R		R3-8	3 X 2.5	7.5			S	12' R		A	N		11.5				INSTALL NEW SIGN AND SIGN SUPPORT ASSEMBLY.	
SD - 103	142+00 R		R1-1	4 X 4				S	6' R						1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT.	
SD - 104	142+00 R		R3-5L	2.5 X 3		7.5		S	OVER HEAD									INSTALL NEW SIGN ON SPAN WIRE SIGNAL SUPPORT WITH APPROPRIATE MOUNTING HARDWARE.	
SD - 105	142+00 R		R3-5L	2.5 X 3		7.5		E	OVER HEAD									INSTALL NEW SIGN ON SPAN WIRE SIGNAL SUPPORT WITH APPROPRIATE MOUNTING HARDWARE.	
SD - 106	142+00 R		R3-5L	2.5 X 3		7.5		W	OVER HEAD									INSTALL NEW SIGN ON SPAN WIRE SIGNAL SUPPORT WITH APPROPRIATE MOUNTING HARDWARE.	
SD - 107	142+00 R		R3-5L	2.5 X 3		7.5		N	OVER HEAD									INSTALL NEW SIGN ON SPAN WIRE SIGNAL SUPPORT WITH APPROPRIATE MOUNTING HARDWARE.	
SD - 108	143+05 L		R1-1	4 X 4				N	6' R						1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT.	
SD - 109	145+10 L		R3-8	3 X 2.5	7.5			N	12' R		A	N		11.5				INSTALL NEW SIGN AND SIGN SUPPORT ASSEMBLY.	
SD - 110	154+63 R ***		W14-3	4 X 4 X 3			5.6	N	12' L	9'-3"	A	N	9.3		1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT. INSTALL NEW SIGN AND SUPPORT ASSEMBLY.	
<b>LINCOLN CO RD 106</b>																			
CR - 201	-7+50 L ***		W14-3	4 X 4 X 3			5.6	W	12' L	9'-3"	A	N	9.3		1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT AT STA -2+22 L. INSTALL NEW SIGN AND SUPPORT ASSEMBLY.	
CR - 202	1+85 R		R3-8	3 X 2.5	7.5			W	12' R		A	N		11.5				INSTALL NEW SIGN AND SIGN SUPPORT ASSEMBLY.	
CR - 203	2+70 L		M1-6	2 X 2	RESET			E	12' R			R				1	1	REMOVE AND SALVAGE EXISTING SIGN AND U-CHANNEL SUPPORT. RESET SIGN AND SUPPORT ASSEMBLY.	
CR - 204	3+80 R		R1-1	4 X 4				W	6' R						1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT.	
CR - 205	4+82 L		R1-1	4 X 4				E	6' R						1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT.	
CR - 206	5+60 R		M1-6	2 X 2	RESET			W	12' R			R				1	1	REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT. RESET SIGN AND SUPPORT ASSEMBLY.	
CR - 207	6+80 L		R3-8	3 X 2.5	7.5			E	12' R		A	N		11.5				INSTALL NEW SIGN AND SIGN SUPPORT ASSEMBLY.	
CR - 208	16+14 R ***		W14-3	4 X 4 X 3			5.6	E	12' L	9'-3"	A	N	9.3		1			REMOVE AND SALVAGE EXISTING SIGN AND WOOD SUPPORT AT STA 10+75 R. INSTALL NEW SIGN AND SUPPORT ASSEMBLY.	
<b>TOTALS</b>					30.0	52.4								37.2	46.0	8	2	2	

\* - Distance from White or Yellow Edgeline, or Back of Curb, to Edge of Sign.      VHI = Flat Aluminum Signs w/Nonremovable Copy - Super/Very High Intensity Sheeting      HI = Flat Aluminum Signs w/Non-Removable Copy - High Intensity Sheeting  
 \*\* - (F)ixed Base, or Breakaway (S)lip Base, (A)nchor Stub Post, (D)irect drive, or (W)ood Post.      FVHI = Flat Aluminum Signs w/Nonremovable Copy - Fluorescent Yellow Super/Very High Intensity Sheeting  
 \*\*\* - W14-3 No Passing Zone pennant locations may be adjusted to match pavement marking, as approved by the Engineer.      Δ - Install new sign at the same location of existing sign prior to removal, 6 ft offset from edge of shoulder.

# TYPICAL SIGN AND STIFFENER DETAILS

## SINGLE POST BREAKAWAY SIGN SUPPORT

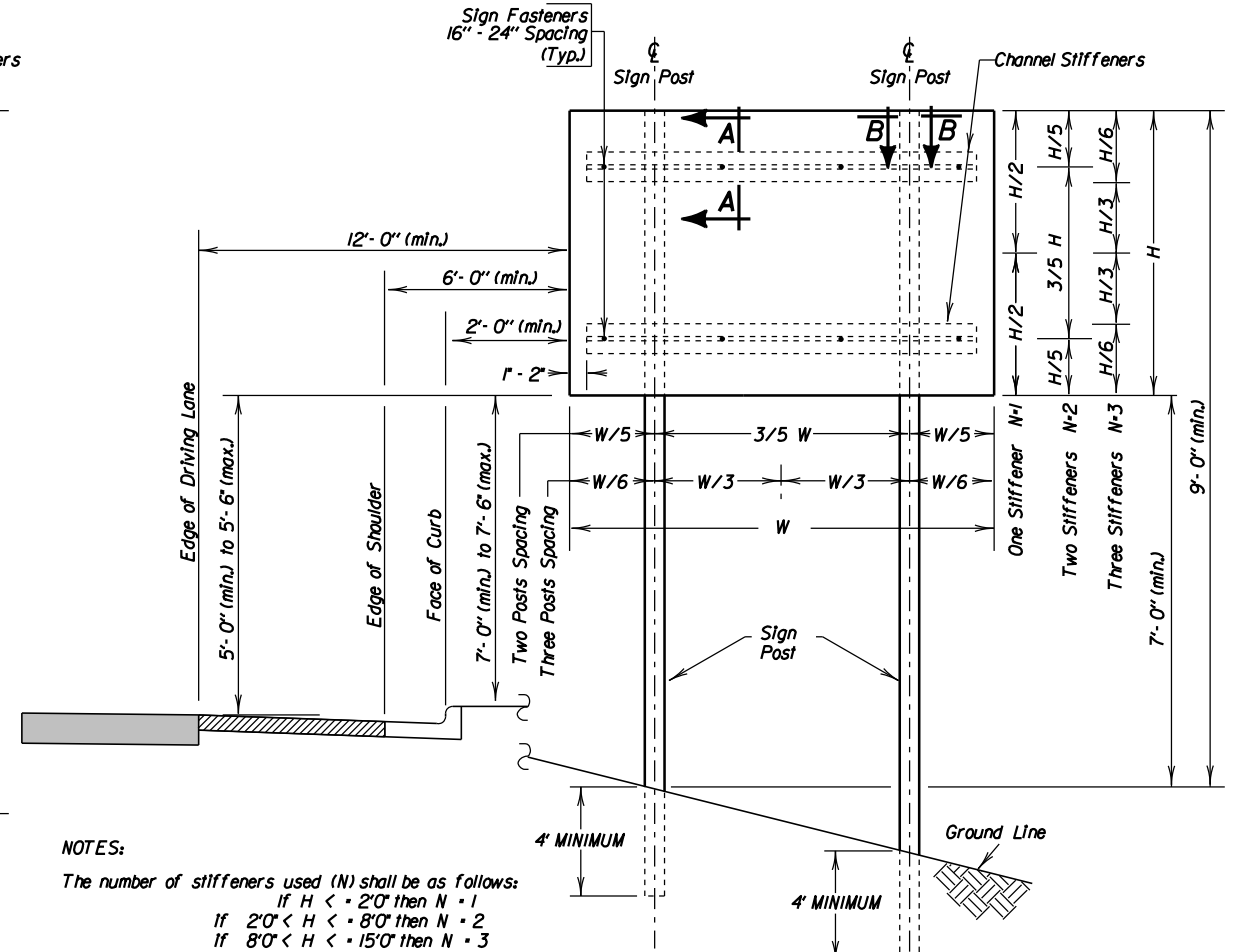


W14-3 TABLE

A	B	C	D	E
40	30	7.5	12	1.875
48	36	9	15	2.25

NOTES:  
 Signs 48 inches or more wide require stiffeners. Signs less than 24 inches tall shall have one stiffener. Signs 24 inches or more tall require two stiffeners.  
 \* - W14-3 signs less than 6'x6'x4'x8' in size do not require stiffeners.

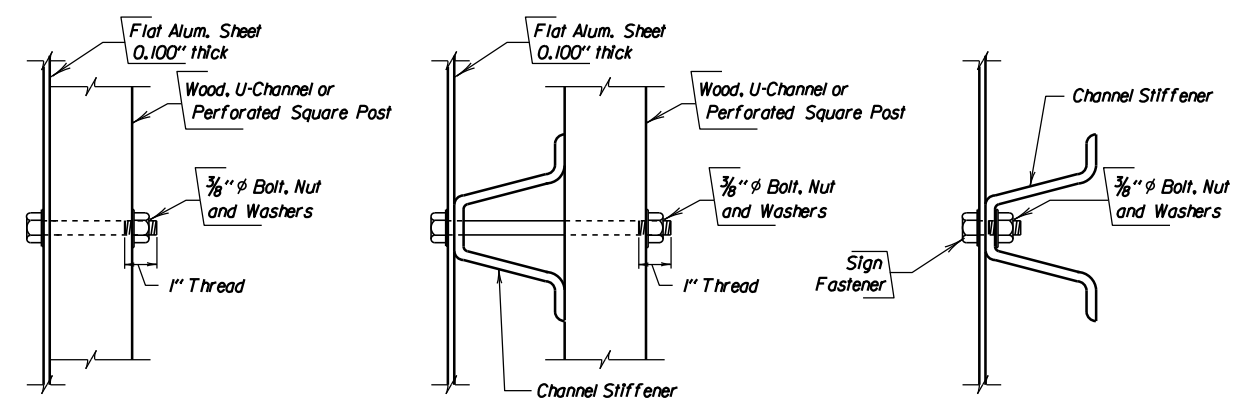
## TWO POST BREAKAWAY SIGN SUPPORTS



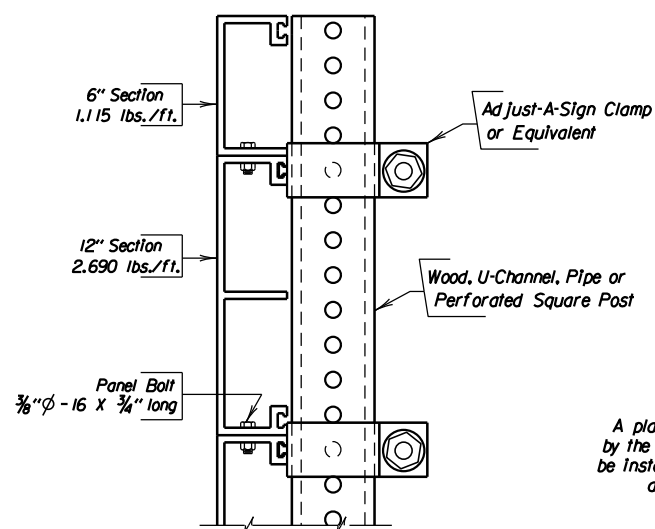
NOTES:  
 The number of stiffeners used (N) shall be as follows:  
 If  $H < 2'0"$  then  $N = 1$   
 If  $2'0" < H < 8'0"$  then  $N = 2$   
 If  $8'0" < H < 15'0"$  then  $N = 3$   
 where H is the vertical dimension of the sign.  
 A minimum of two bolts shall be required to fasten the sign to each post.

W14-3\*

### DIRECT DRIVE OR ANCHOR STUB POST

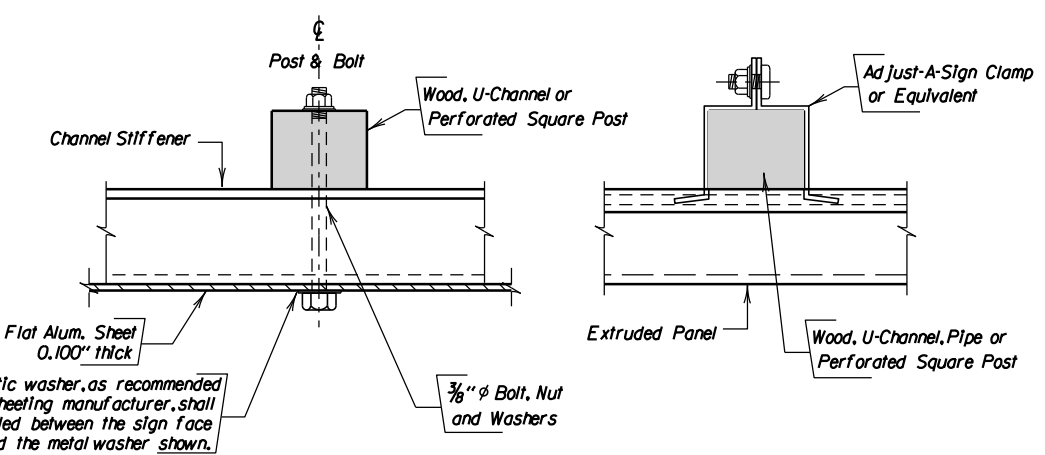


FLAT ALUMINUM



EXTRUDED PANEL

### DIRECT DRIVE OR ANCHOR STUB POST



FLAT ALUMINUM

EXTRUDED PANEL

Alternate sign connection methods may be used if approved by the Engineer.  
 Sign Installations must meet or exceed NCHRP 350 breakaway requirements and be FHWA approved.

### SEC. A-A

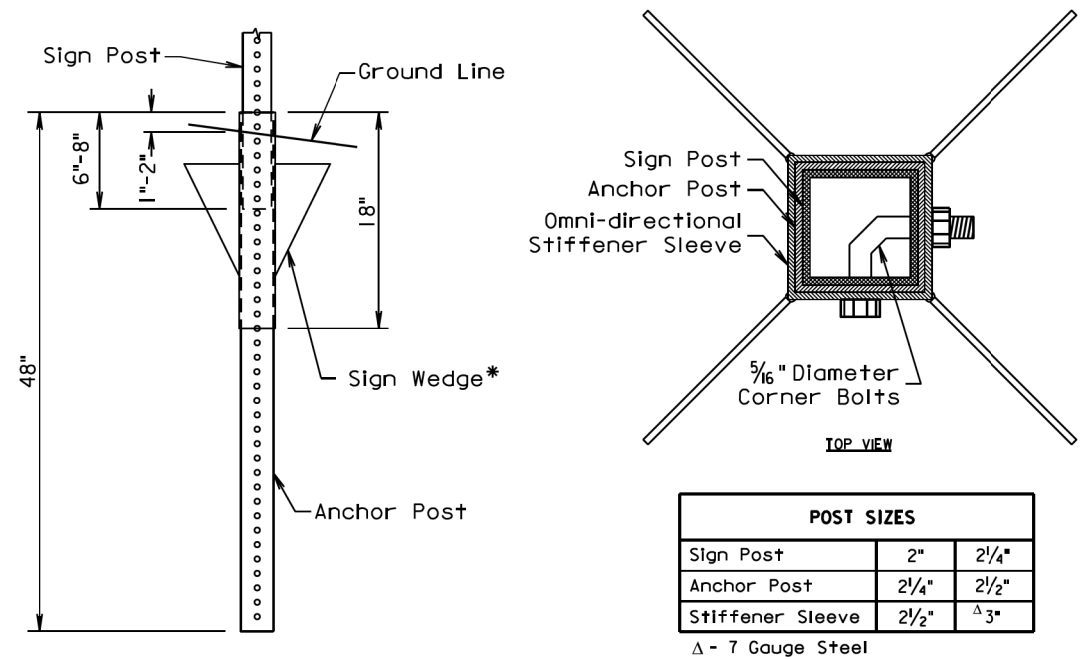
### SEC. B-B

PLOT SCALE - \$\$SCALE\$\$

PLOT NAME - \$\$PLOTNAME\$\$

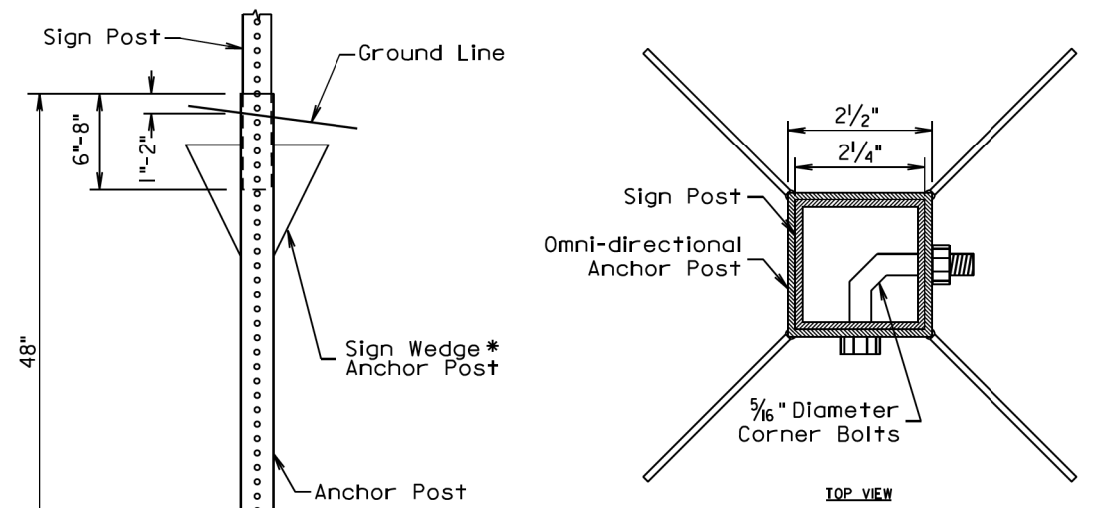
FILE - \$\$FILENAME\$\$

**2" and 2 1/4" SQUARE STEEL PERFORATED TUBE POST  
BREAKAWAY WINGED ANCHOR BASE DETAILS  
(Typical)**



\* - 18" Omni-directional Sleeve w/4 Blades, or Equivalent.  
Manufacturer Recommended Dimensions and Installation.

**TWO-PIECE SIGN BASE DETAILS FOR 2" AND 2 1/4" SIGN POSTS**

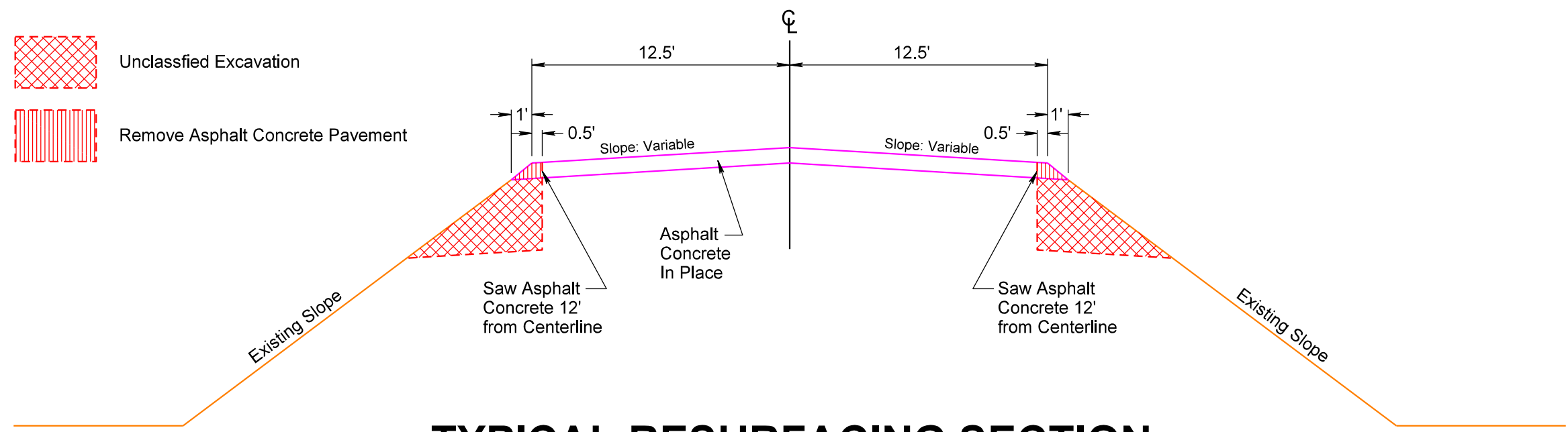


\* - 48" Omni-directional Sleeve w/4 Blades, or Equivalent.  
Manufacturer Recommended Dimensions and Installation.

**ONE-PIECE SIGN BASE DETAILS FOR A 2 1/4" SIGN POST**

# TYPICAL REMOVAL SECTION

Lincoln County Road 106  
0+00 to 3+78  
4+78 to 8+63.5

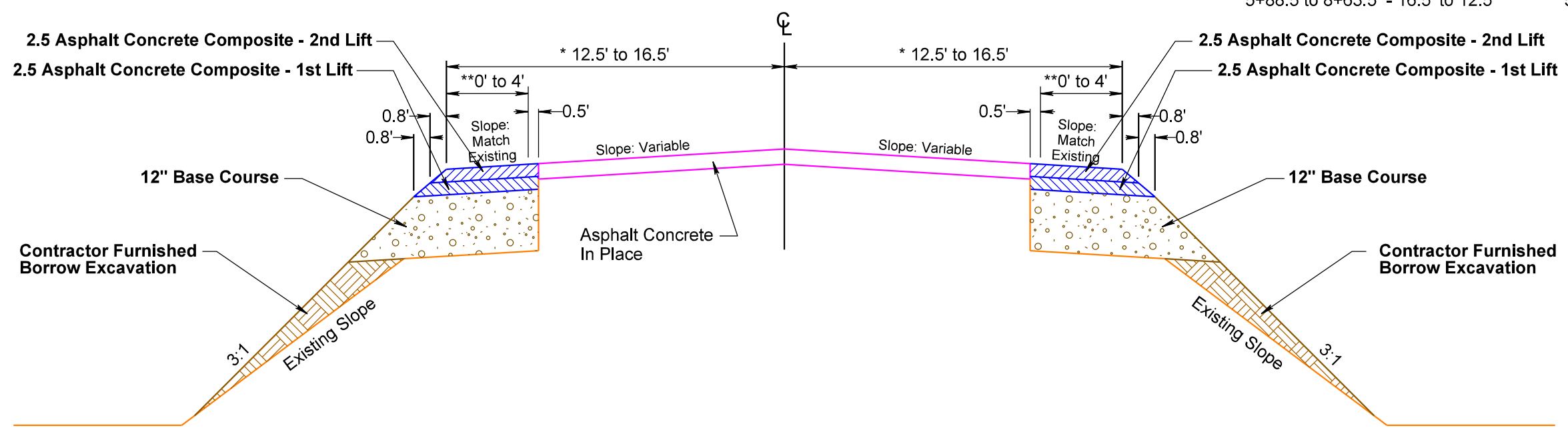


# TYPICAL RESURFACING SECTION

Lincoln County Road 106  
0+00 to 3+78  
4+78 to 8+63.5

## TRANSITIONS

- |                                   |                             |
|-----------------------------------|-----------------------------|
| * 0+00 to 2+75 - 12.5' to 16.5'   | ** 0+00 to 2+75 - 0' to 4'  |
| 2+75 to 3+78 - 16.5'              | 2+75 to 3+78 - 4'           |
| 4+78 to 5+88.5 - 16.5'            | 4+78 to 5+88.5 - 4'         |
| 5+88.5 to 8+63.5 - 16.5' to 12.5' | 5+88.5 to 8+63.5 - 4' to 0' |



PLOT SCALE - 1:6.25

PLOTTED FROM - TRMLINT16

PLOT NAME - 2

FILE - ... \L\INC05XG\TSEC05XG.DGN



## CONTROL DATA

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP1	NA	NA	MRM 75.83 - 14' LT. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - MIDDLE OF 2 POST PANEL - WEST SIDE OF HWY 115 - SOUTH OF DRIVEWAY TO ABANDONED FARM	418246.984	2926069.685	1408.54
CP2	NA	NA	MRM 76.12 - 14' RT. - DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" - EAST SHOULDER	419766.755	2926045.375	1423.85
CP3	NA	NA	MRM 76.39 - 81' Rt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - NE COR OF 115 & HARRISBURG RD (273RD ST) - 72' NORTH OF 273RD ST. - 0.5' SW OF CONC CHUNK	421166.663	2926048.795	1442.66
CP4	NA	NA	MRM 76.63 - 13' Rt. - DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" - IN RUMBLE BAR EAST SIDE OF HWY 115 ACROSS FROM HOUSE @ ADDRESS 27275	422447.882	2925920.884	1443.27
CP5	NA	NA	MRM 76.85 - 67' Lt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - 19' SOUTH OF CL OF ENTRANCE ROAD TO COUNTRY APPLE ORCHARD - 67' WEST OF 115 CL	423716.300	2925783.608	1444.35
CP6	NA	NA	MRM 77.10 - 13' Rt. - DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" - EAST SIDE 115 - 1ST RUMBLEBAR SOUTH OF FIELD APR ON EAST SIDE 115	425036.073	2925806.233	1452.82
CP7	NA	NA	MRM 77.34 - 180' Lt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - 20' SOUTH OF CL OF GRAVEL RD 180' WEST OF 115 - EAST EDGE OF APPROACH	426331.848	2925554.073	1456.69
CP8	NA	NA	MRM 77.59 - 13' Rt. - DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" IN RUMBLE EAST SIDE OF HWY 115 ACROSS FROM MAILBOX FOR HOUSE @ ADDRESS 27177	427626.303	2925694.563	1451.86
CP9	NA	NA	MRM 77.85 - 77' Rt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - NORTH SIDE OF TREE LINE AT EDGE OF PLOWED FIELD (UNDER OVERHEAD WIRES) - 77' EAST OF 115 CL	429007.295	2925700.839	1461.22
CP10	5+28.36 CR 106	53.94 RT. CR 106	MRM 78.10 - 13' Rt. - DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" 1ST RUMBLE BAR NORTH OF APPROACH ON EAST SIDE 115	430338.200	2925582.427	1468.62
CP11	NA	NA	MRM 78.34 - 96' RT. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - SE QUAD OF 115 & 271ST ST - 96' EAST OF 115 CL - 54' S OF 271ST ST CL	431601.858	2925615.438	1451.95
CP12	NA	NA	MRM 78.61 - 13' Rt. - DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" IN FIRST RUMBLE BAR SOUTH OF FIELD APPROACH - EAST SIDE 115	433066.440	2925471.247	1458.61
CP13	NA	NA	MRM 78.85 - 112' Lt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - IN LINE WITH FENCE 112' WEST OF HWY 115 CL	434281.285	2925295.522	1474.25
CP14	NA	NA	CP14 - MRM 79.08 - 136' Rt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - EAST SIDE - SOUTH EDGE OF DAKOTA HARDSCAPES PROPERTY - 136' EAST OF HWY 115	435427.433	2925493.207	1478.33
CP15	NA	NA	MRM 79.36 - 115' Lt. - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - SW QUAD 85TH ST & HWY 115 - 66' SOUTH OF 85TH ST CL - 117' WEST 115 CL	436834.828	2925176.795	1495.99
CP16	NA	NA	MRM 79.48 Rt.- DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" IN SE CORNER OF TOP OF DROP INLET LID - EAST SIDE MINNESOTA AVE	437519.807	2925328.635	1503.04

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System.  
South Zone (NAD 83/2007) SF = 0.9998456279

## HORIZONTAL ALIGNMENT DATA

### COUNTY ROAD 106 (271<sup>ST</sup> STREET)

Type	Station			Northing	Easting
POB	0+00.00			431632.952	2925085.572
		TL= 431.74	N 87°26'51" E		
PI	4+31.74			431652.180	2925516.880
		TL= 440.00	N 87°52'40" E		
POE	8+71.74			431668.474	2925956.578

### SD115

Type	Station			Northing	Easting
POB	0+00.00			417412.900	2926143.940
		TL= 1000.00	N 2°44'17" W		
PI	10+00.00			418411.760	2926096.170
		TL= 2686.03	N 2°44'18" W		
PI	36+86.03			421094.720	2925967.840
		TL= 2635.14	N 2°33'20" W		
PI	63+21.17			423727.240	2925850.340
		TL= 2636.63	N 2°31'13" W		
PI	89+57.80			426361.320	2925734.400
		TL= 2645.01	N 2°24'47" W		
PI	116+02.81			429003.980	2925623.040
		TL= 2650.33	N 2°17'44" W		
PI	142+53.13			431652.180	2925516.880
		TL= 2632.32	N 2°22'28" W		
PI	168+85.45			434282.240	2925407.820
		TL= 2296.67	N 2°36'24" W		
PC	191+82.12			436576.533	2925303.372
PI	195+09.80	R = 22918.00	Delta = 1°38'18" R	436903.870	2925288.470
PT	198+37.43			437231.499	2925282.932
		TL= 337.92	N 0°58'06" W		
PC	201+75.35			437569.370	2925277.222
PI	207+00.33	R = 22918.00	Delta = 2°37'28" L	438094.280	2925268.350
PT	212+25.13			438618.233	2925235.452
		TL= 711.19	N 3°35'34" W		
PC	219+36.33			439328.027	2925190.885
PI	221+56.14	R = 22918.00	Delta = 1°05'57" R	439547.410	2925177.110
PT	223+75.94			439767.016	2925167.546
		TL= 2426.08	N 2°29'38" W		
POE	248+02.02			442190.799	2925061.986

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System.  
South Zone (NAD 83/2007) SF = 0.9998456279

# EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND

PLOT SCALE - 1:200

PLOTTED FROM - IRMLINT16

PLOT NAME - 3

FILE - ... \LINC05XG\TOPOSYMB.DGN

Anchor		Information Sign One Post		Satellite Dish	
Antenna		Information Sign Two Post		Septic Tank	
Approach		Interstate Close Gate		Shrub Tree	
Assumed Corner		Iron Pin		Sidewalk	
Azimuth Marker		Irrigation Ditch		Sign Face	
Bbq Grill/ Fireplace		Lake Edge		Sign Post	
Bearing Tree		Lawn Sprinkler		Slough Or Marsh	
Bench Mark		Mailbox		Spring	
Box Culvert		Manhole Electric		Stream Gauge	
Bridge		Manhole Gas		Street Marker	
Brush		Manhole Misc		Telephone Fiber Optics	
Buildings		Manhole Sanitary Sewer		Telephone Junction Box	
Bulk Tank		Manhole Storm Sewer		Telephone Pole	
Cattle Guard		Manhole Telephone		Television Cable Jct Box	
Cemetery		Manhole Water		Television Tower	
Centerline		Merry-Go-Round		Test Wells/Bore Holes	
Cistern		Microwave Radio Tower		Traffic Signal	
Clothes Line		Misc. Property Corner		Trash Barrel	
Commercial Sign Double Face		Misc. Post		Tree Belt	
Commercial Sign One Post		Overhang Or Encroachment		Tree Coniferous	
Commercial Sign Overhead		Overhead Utility Line		Tree Deciduous	
Commercial Sign Two Post		Parking Meter		Tree Stumps	
Concrete Symbol		Pipe With End Section		Triangulation Station	
Creek Edge		Pipe With Headwall		Underground Electric Line	
Curb/Gutter		Pipe Without End Section		Underground Gas Line	
Curb		Playground Slide		Underground Sanitary Sewer	
Dam Grade/Dike/Levee		Playground Swing		Underground Storm Sewer	
Ditch Block		Power And Light Pole		Underground Tank	
Drainage Profile		Power And Telephone Pole		Underground Telephone Line	
Drop Inlet		Power Meter		Underground Television Cable	
Edge Of Asphalt		Power Pole		Underground Water Line	
Edge Of Concrete		Power Pole And Transformer		Warning Sign One Post	
Edge Of Gravel		Power Tower Structure		Warning Sign Two Post	
Edge Of Other		Propane Tank		Water Fountain	
Edge Of Shoulder		Property Pipe		Water Hydrant	
Elec. Trans./Power Jct. Box		Property Pipe With Cap		Water Meter	
Fence Barbwire		Property Stone		Water Tower	
Fence Chainlink		Public Telephone		Water Valve	
Fence Electric		Railroad Crossing Signal		Water Well	
Fence Misc.		Railroad Milepost Marker		Weir Rock	
Fence Rock		Railroad Profile		Windmill	
Fence Snow		Railroad R.O.W. Marker		Wingwall	
Fence Wood		Railroad Signs		Witness Corner	
Fence Woven		Railroad Switch		State and National Line	
Fire Hydrant		Railroad Track		County Line	
Flag Pole		Railroad Trestle		Section Line	
Flower Bed		Rebar		Quarter Line	
Gas Valve Or Meter		Rebar With Cap		Sixteenth Line	
Gas Pump Island		Reference Mark		Property Line	
Grain Bin		Retaining Wall		Construction Line	
Guardrail		Riprap		R. O. W. Line	
Gutter		River Edge		New R. O. W. Line	
Guy Pole		Rock And Wire Baskets		Cut and Fill Limits	
Haystack		Rockpiles		Control of Access	
Hedge		Route Sign One Post		New Control of Access	
Highway R.O.W. Marker		Route Sign Two Post		Proposed ROW (After Property Disposal)	

Plotting Date: 08/01/2016

PLOT SCALE - 1:160



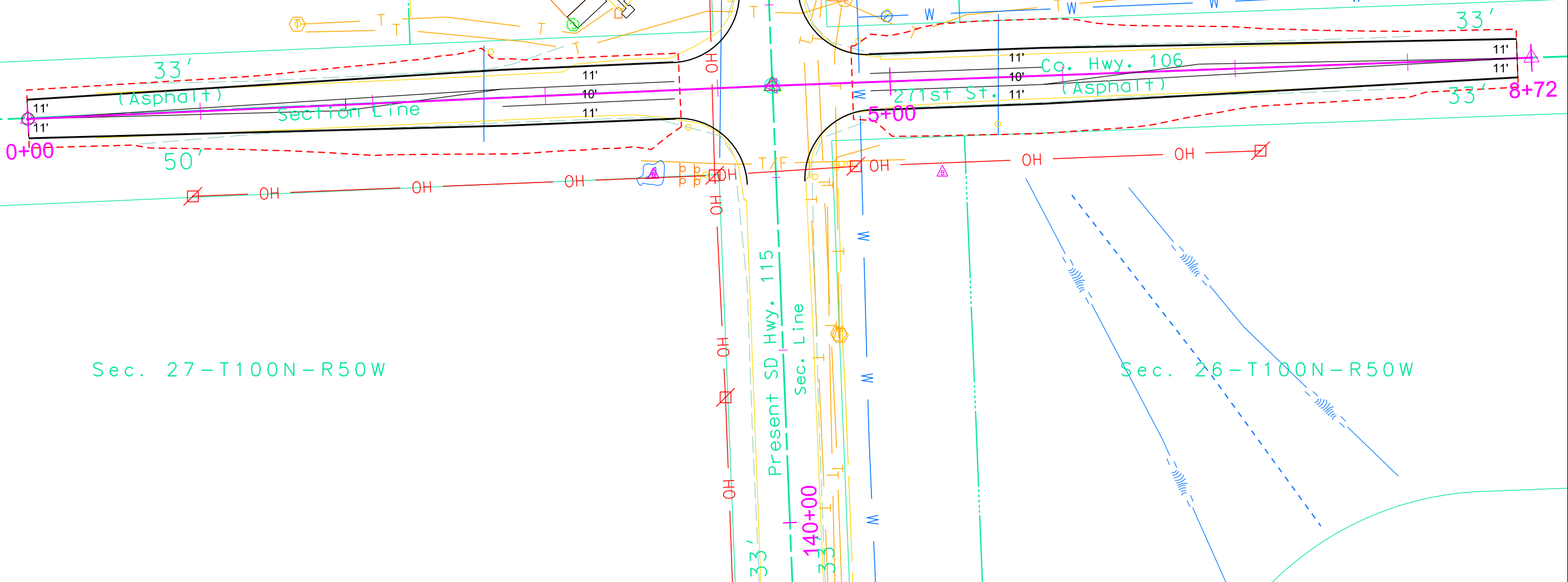
Sec. 22-T100N-R50W

Sec. 23-T100N-R50W

2+64  
18" x 56' RCP In Place  
Install 1 Flared End Right

4+02  
24" x 74' RCP  
& 2 Safety Ends In Place  
Do not disturb

5+63  
18" x 70' RCP In Place  
Do not disturb



Sec. 27-T100N-R50W

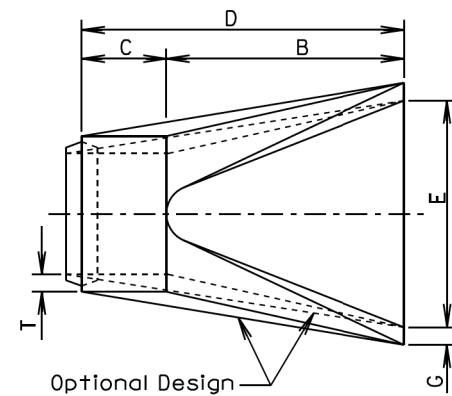
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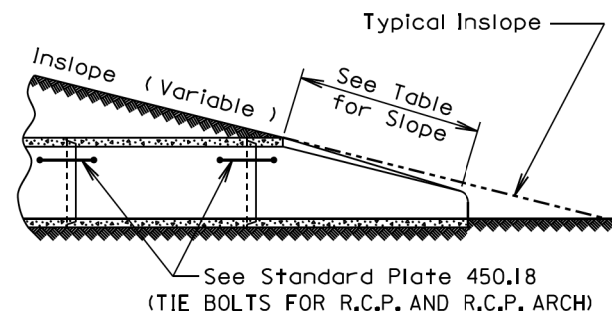
PLOT NAME - 4

FILE - ...TURN LANES\LINC05XG\05XG.DGN

Plotting Date: 08/01/2016



TOP VIEW

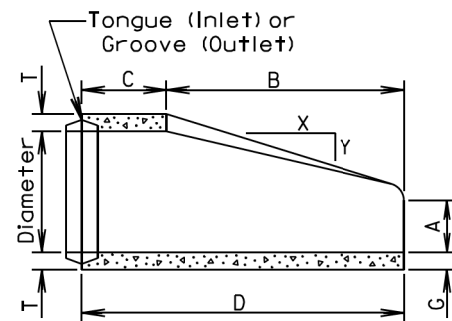


SLOPE DETAIL

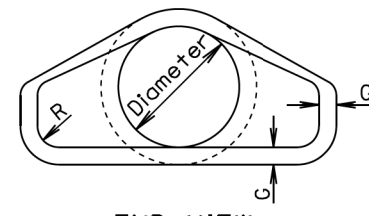
GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



LONGITUDINAL SECTION



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4: 1	2	4	24	48 1/8	72 7/8	24	2	1 1/2
15	740	2.4: 1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3: 1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4: 1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5: 1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5: 1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5: 1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5: 1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5: 1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5: 1	5	24	72	26	98	84	5	1 1/2
54	8240	2: 1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9: 1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7: 1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8: 1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8: 1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6: 1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5: 1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

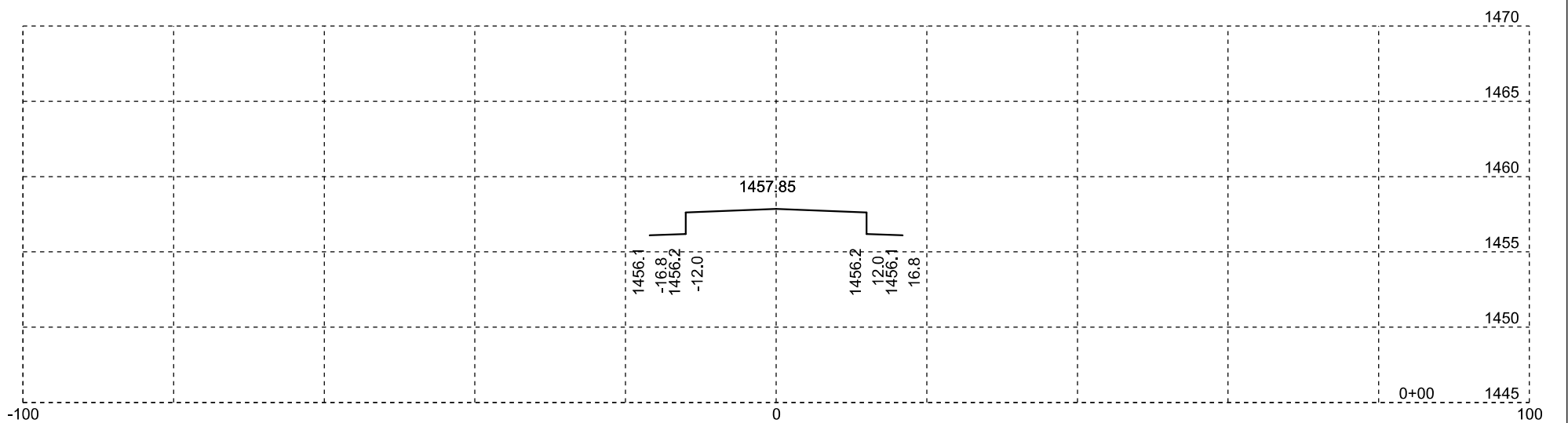
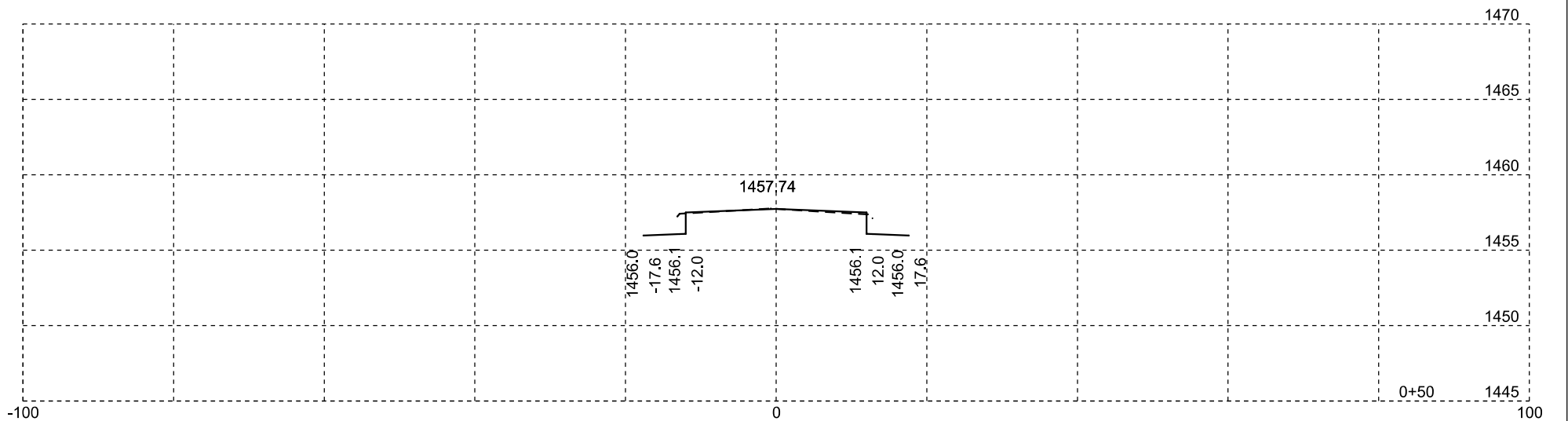
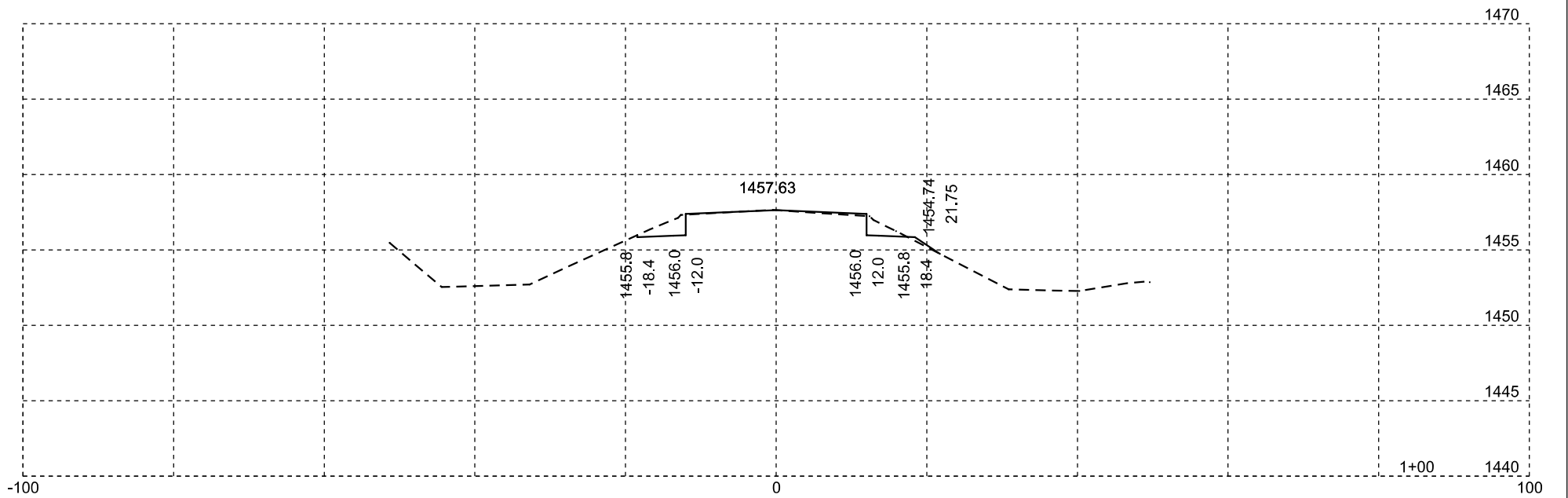
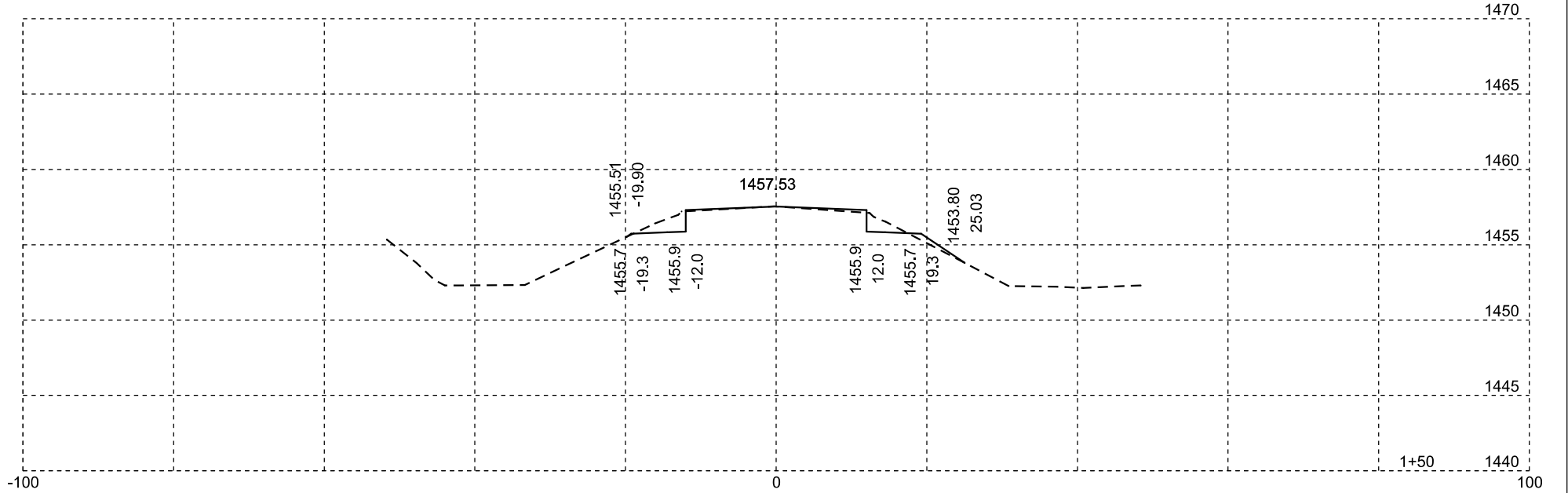
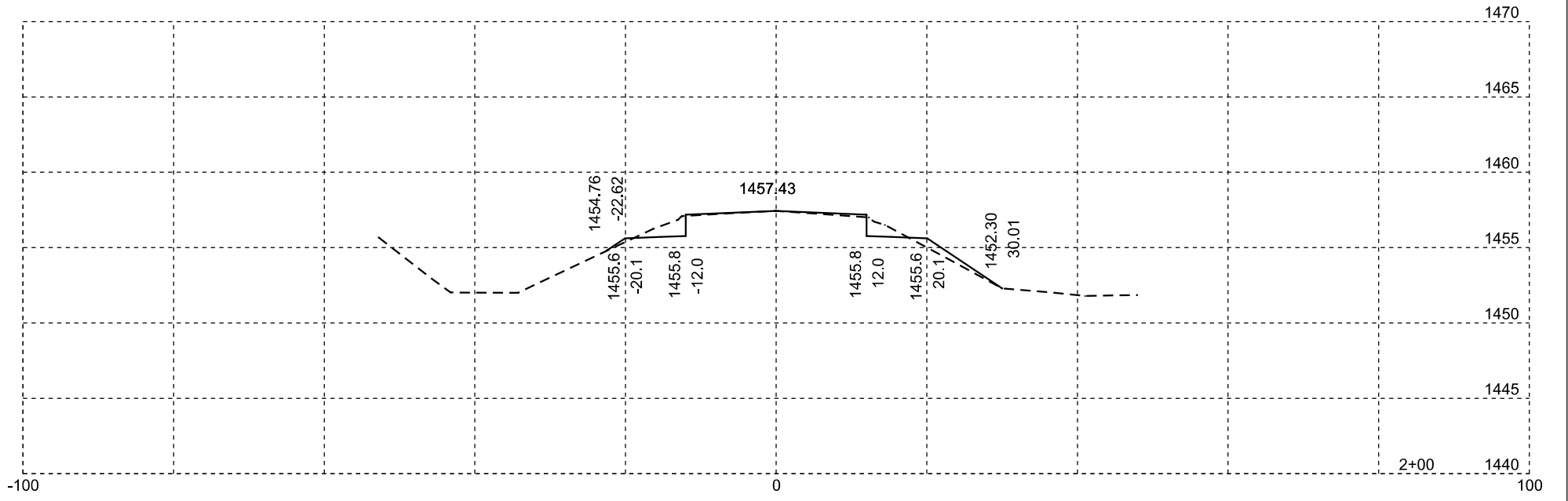
<b>S D D O T</b>	<b>R. C. P. FLARED ENDS</b>	PLATE NUMBER <b>450.10</b>
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - IRMLINT16

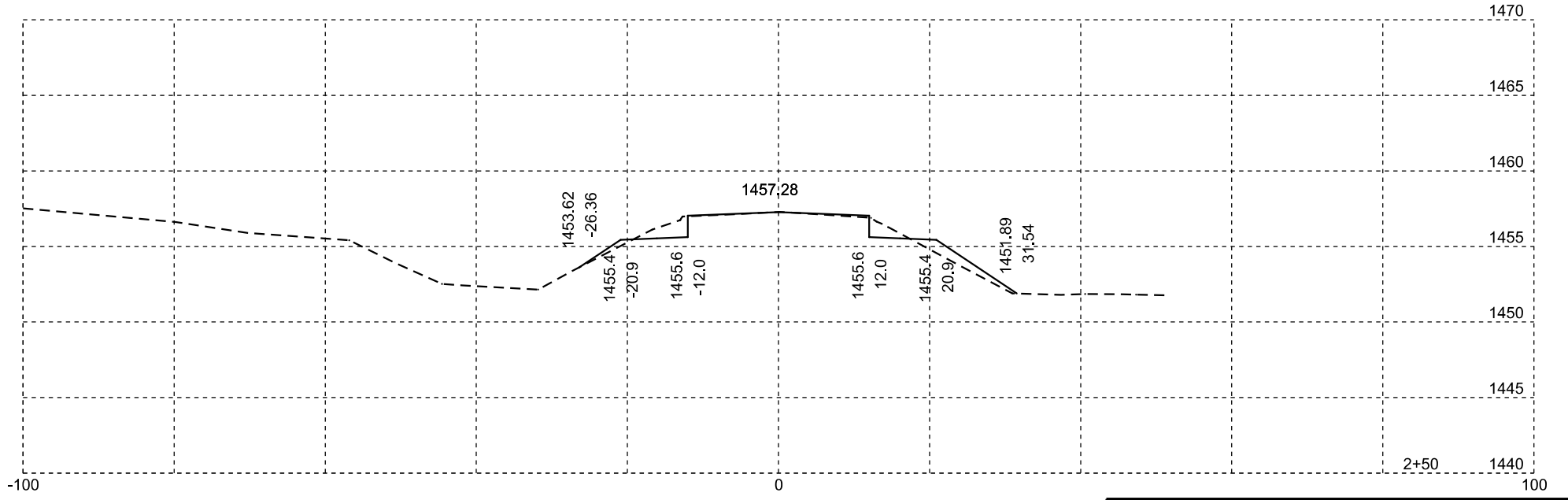
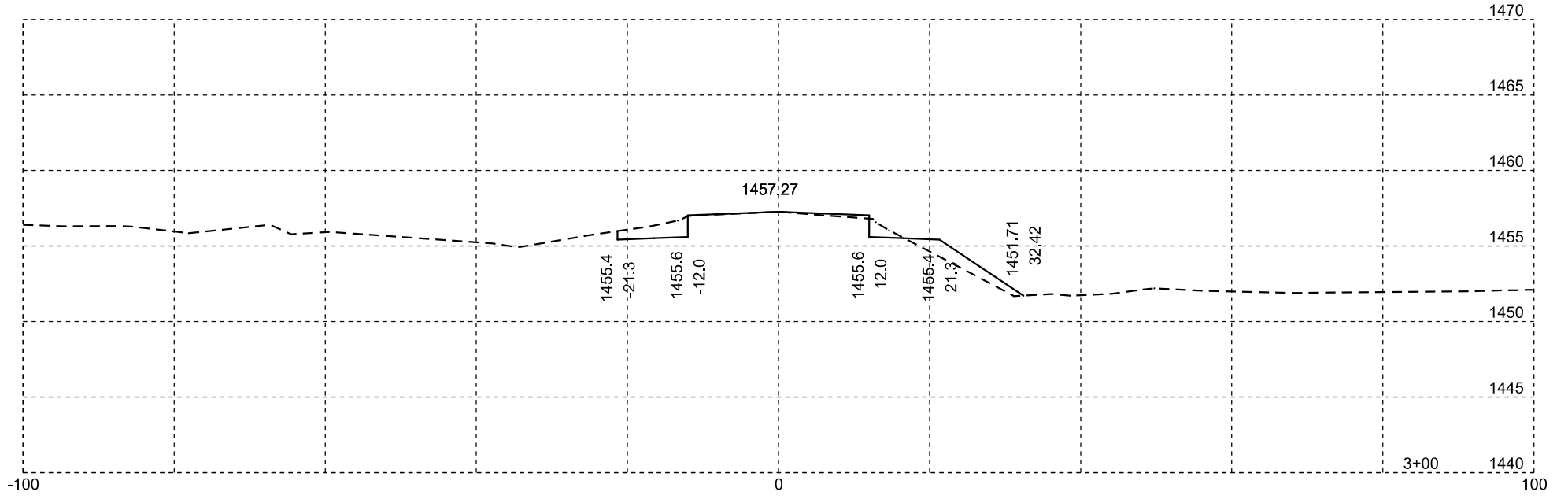
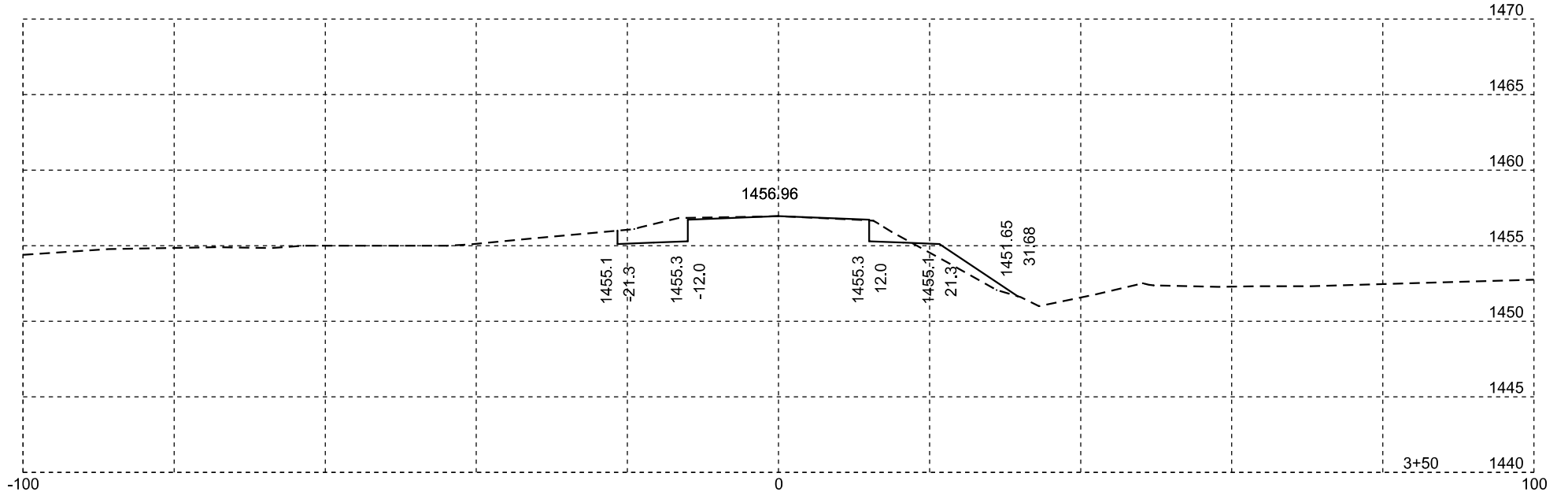
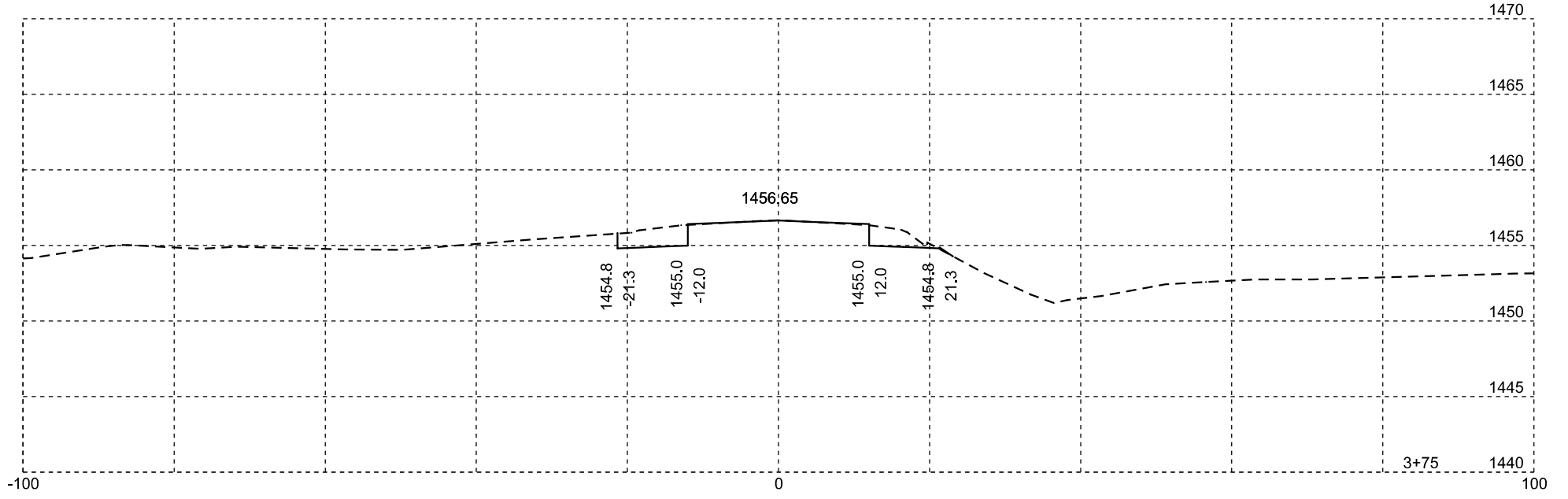
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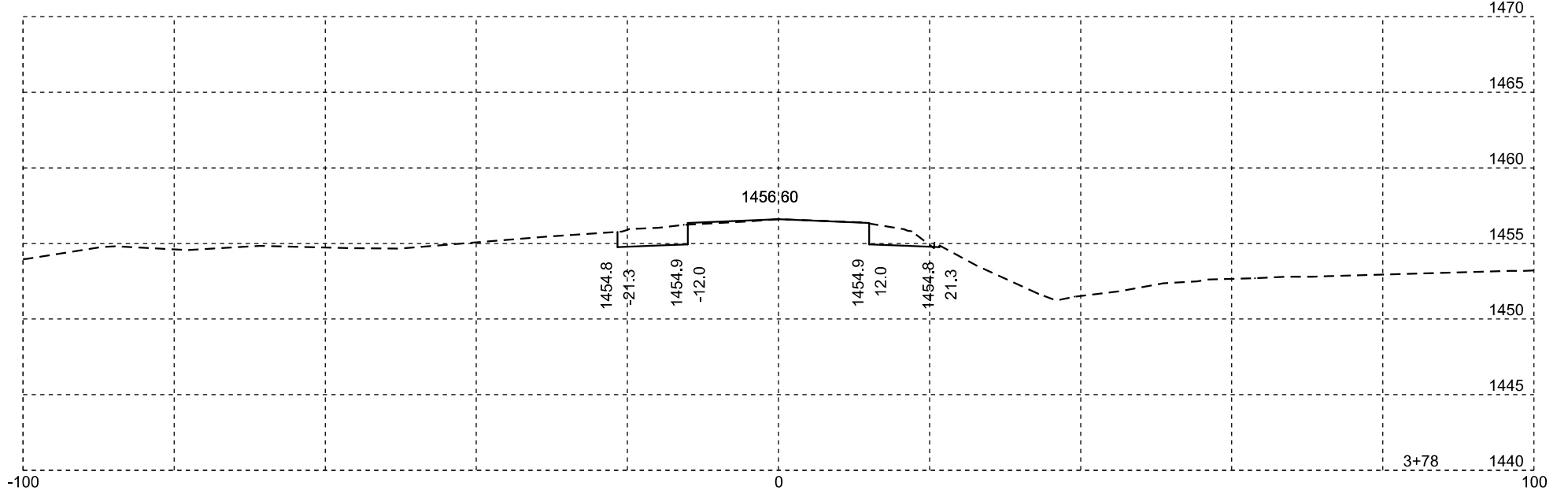
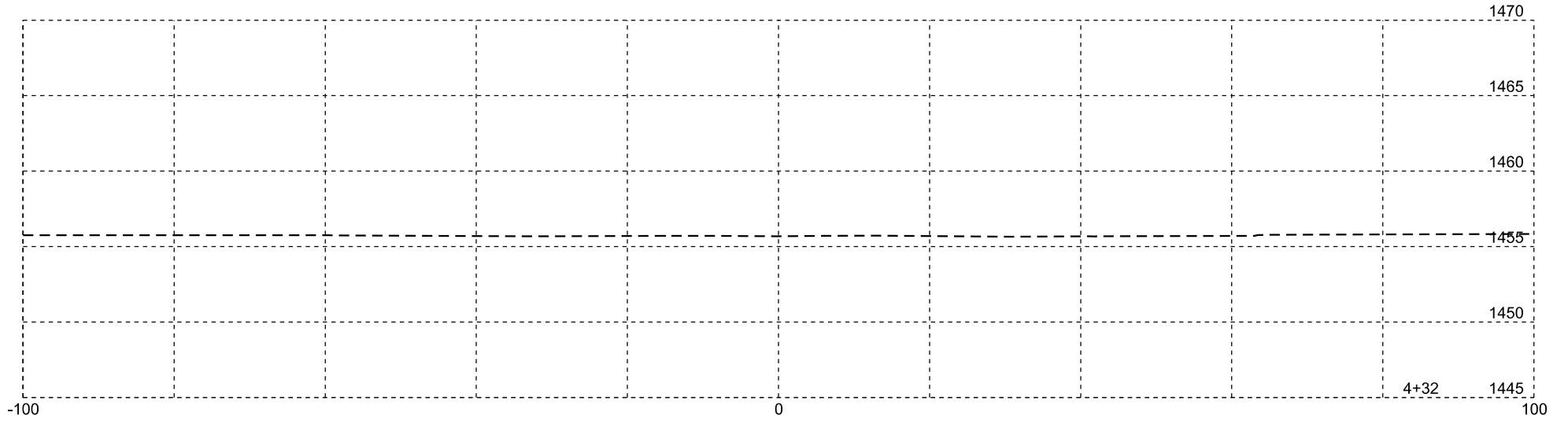
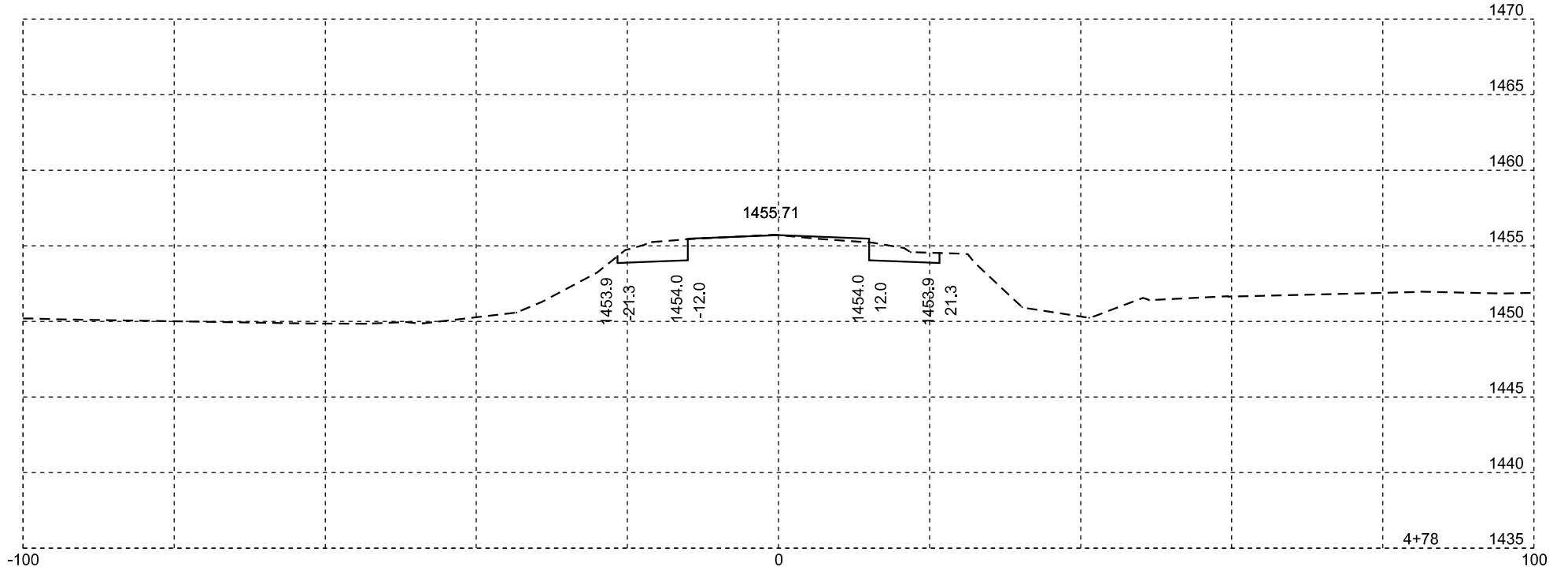
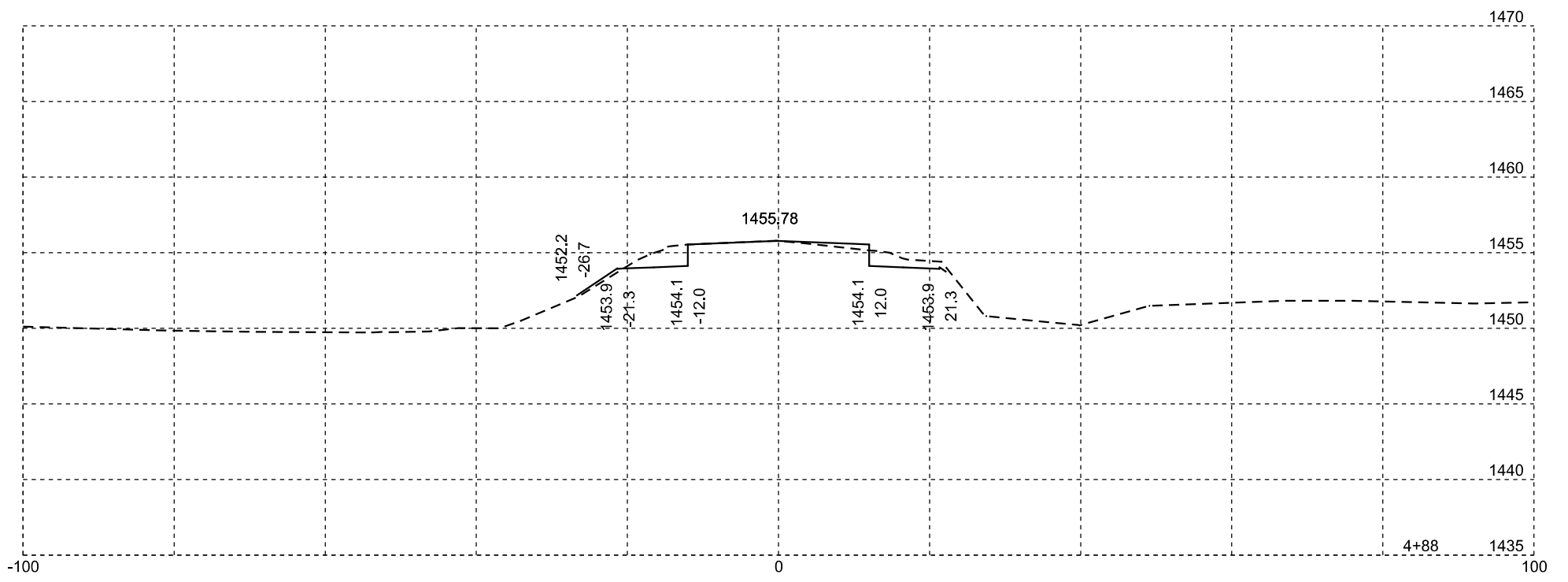
Plotting Date: 08/01/2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78		



Plotting Date: 08/01/2016

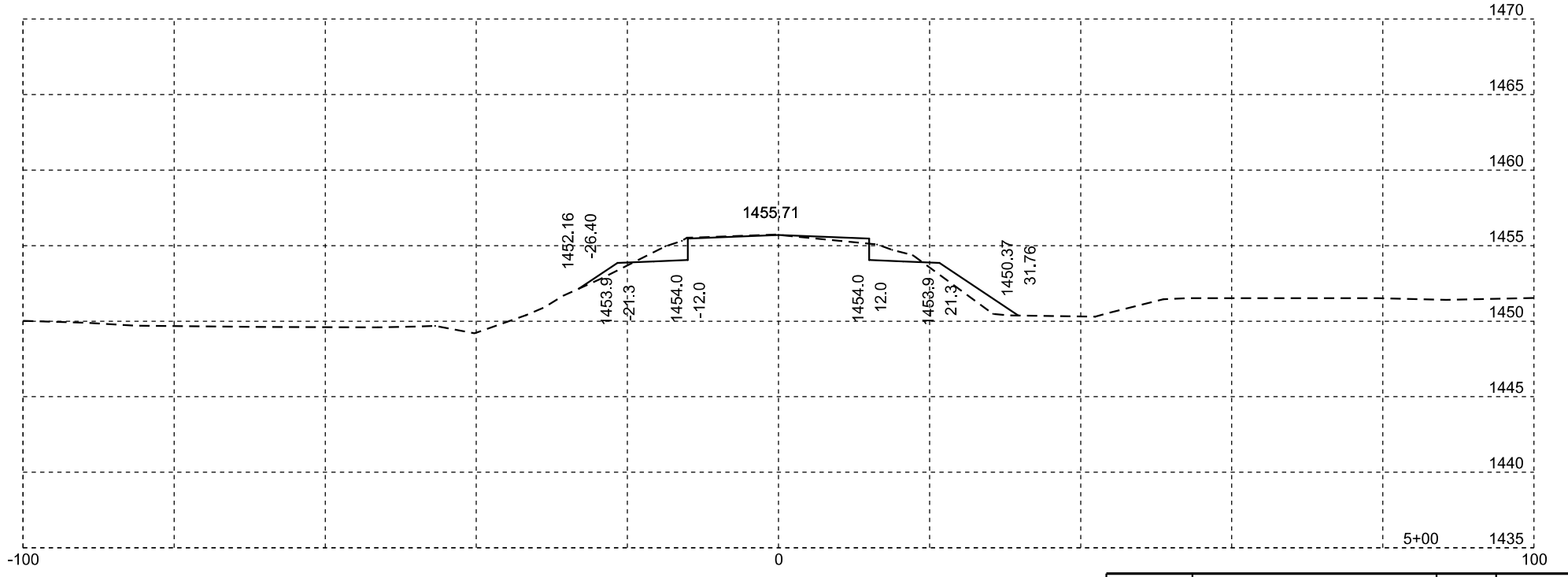
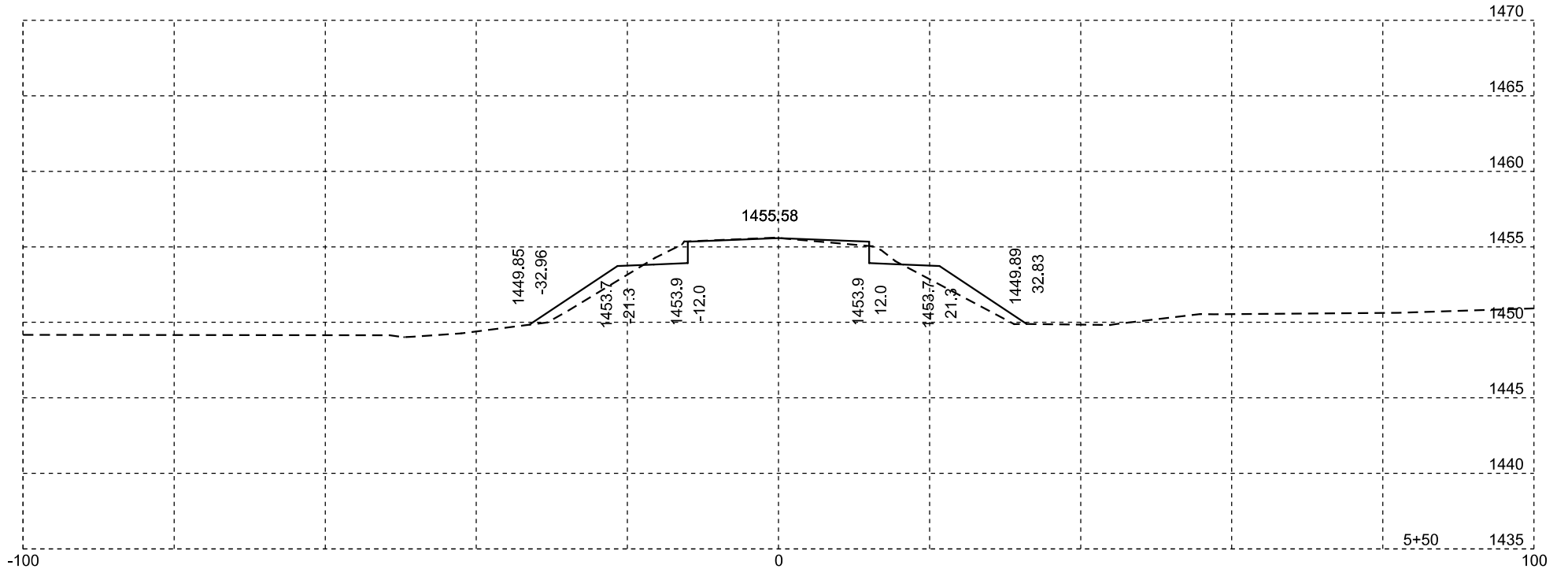
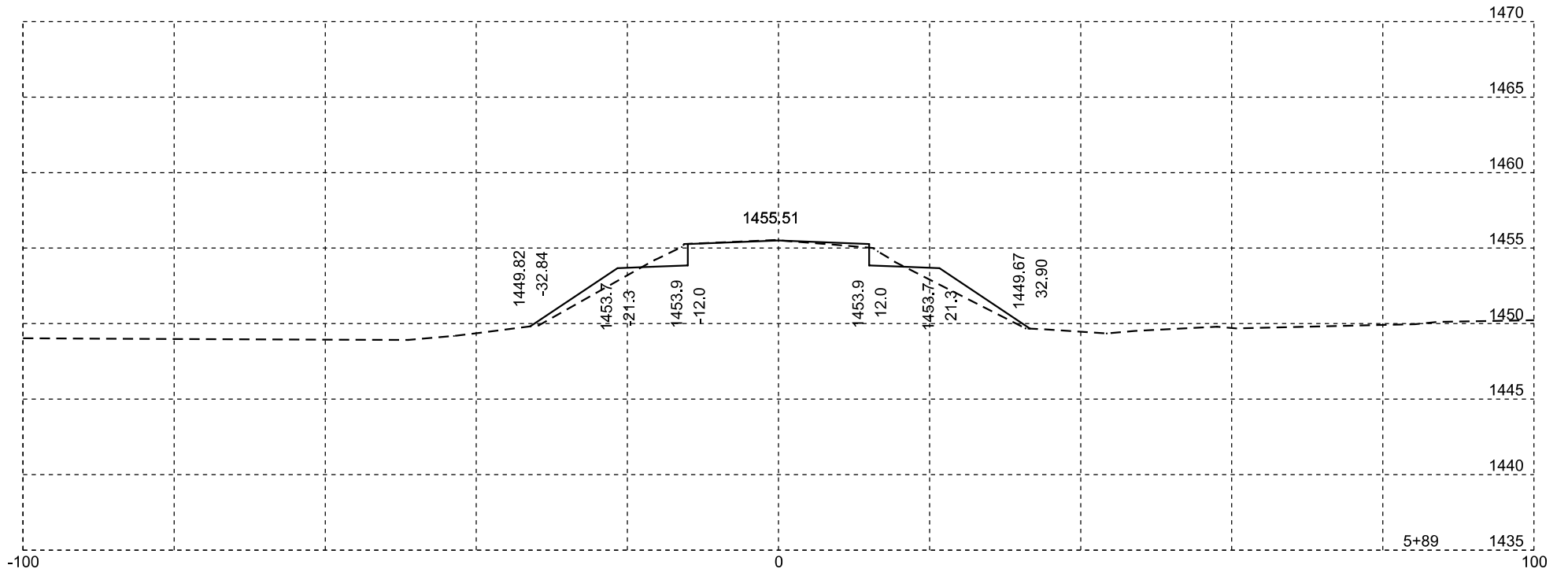
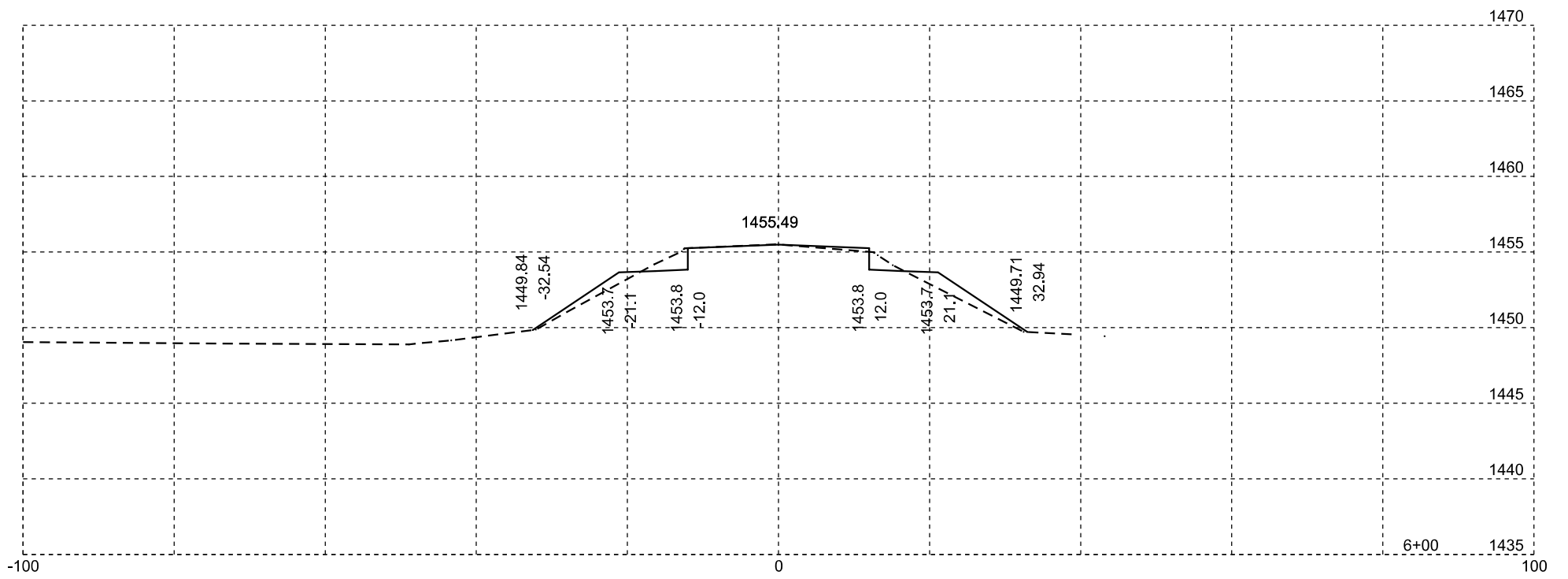
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	31	36



Plotting Date: 08/01/2016

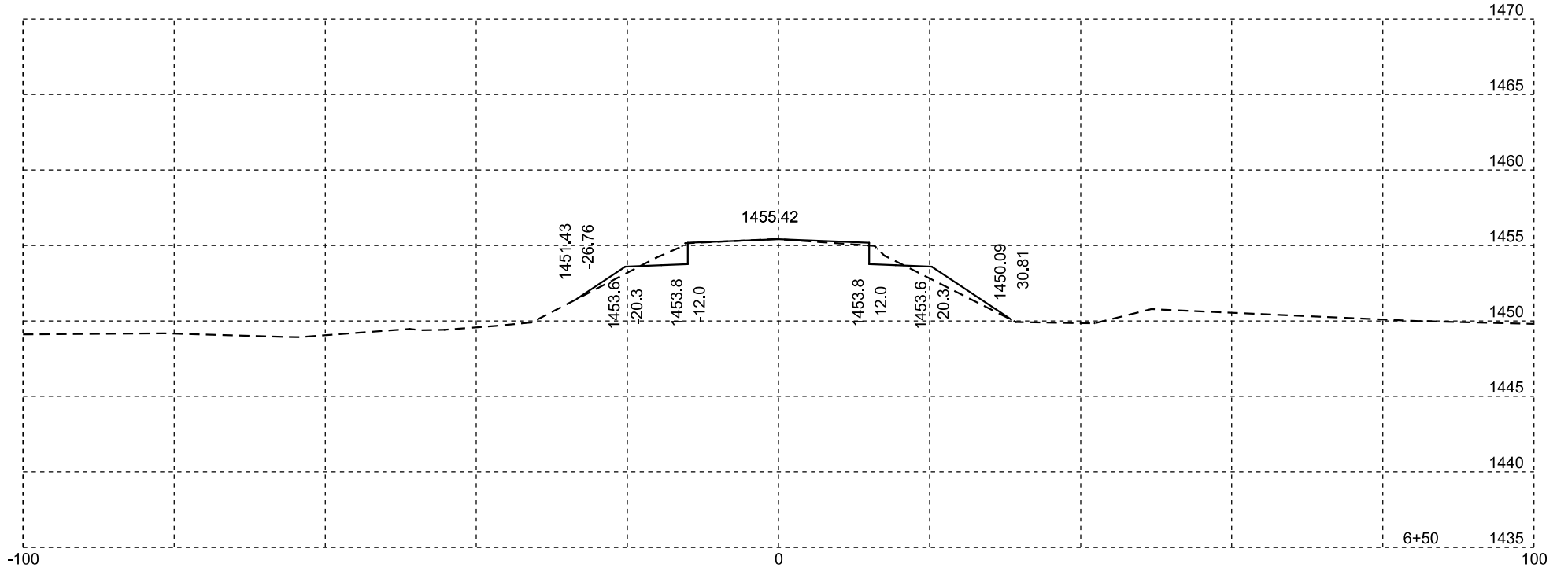
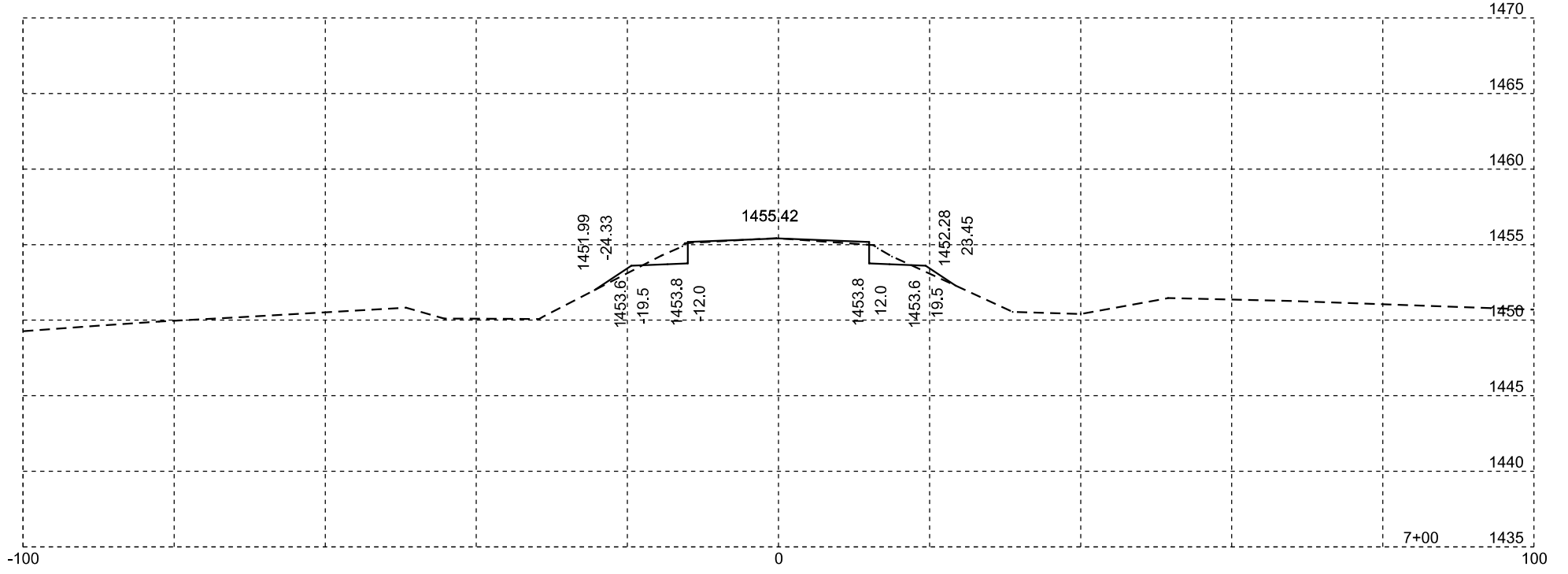
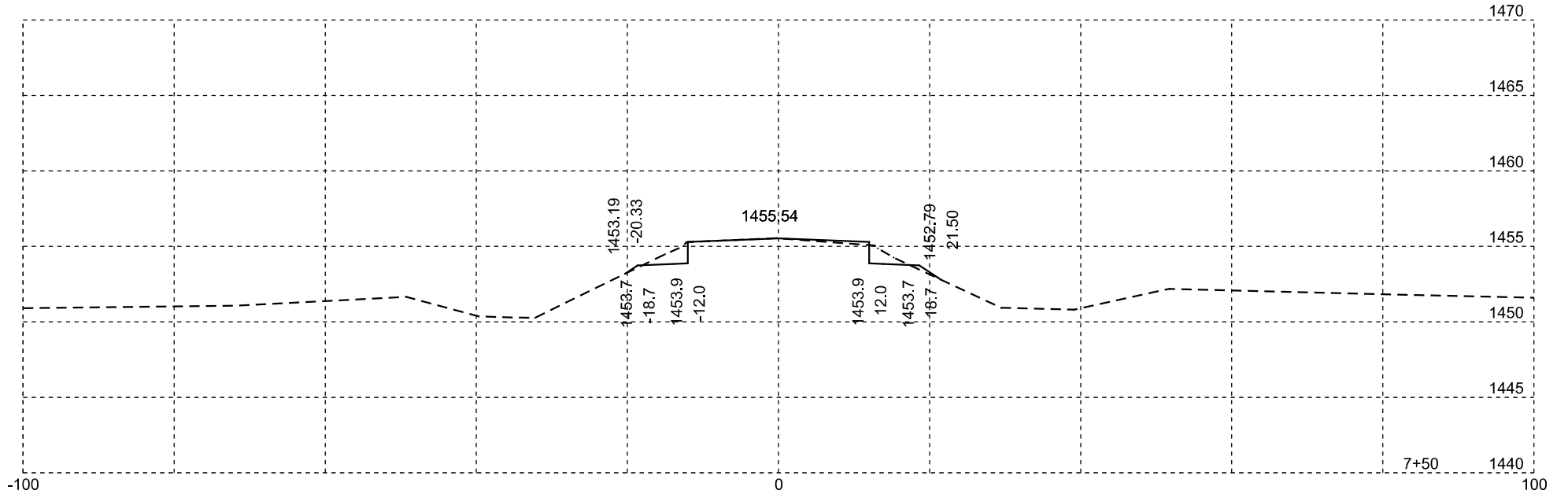
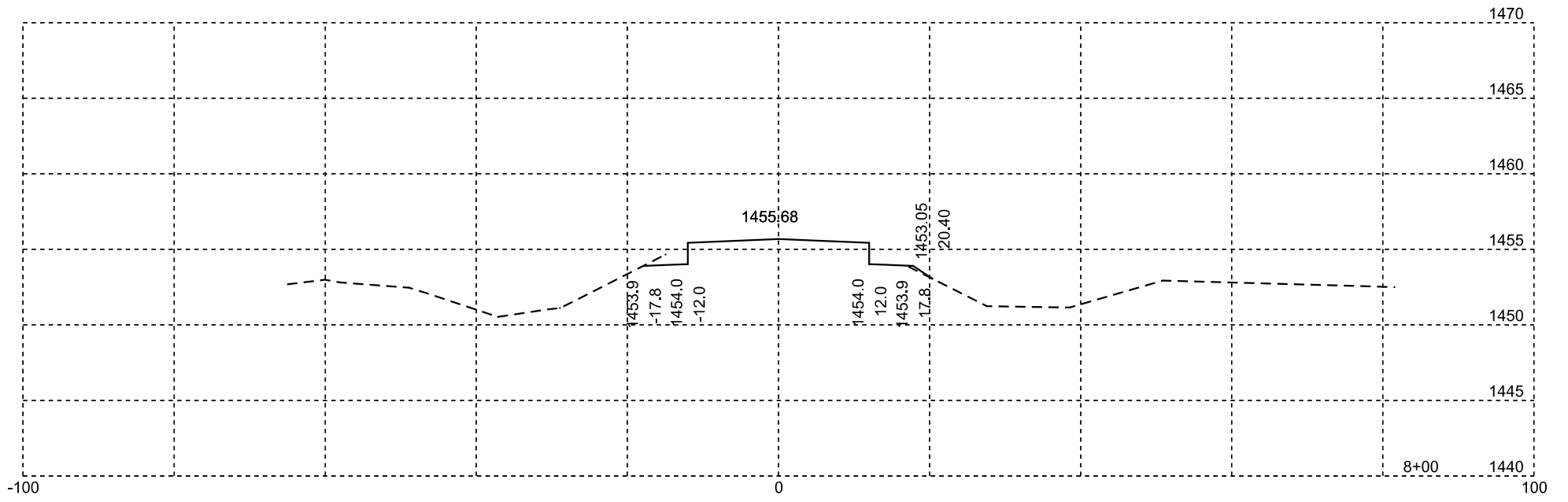
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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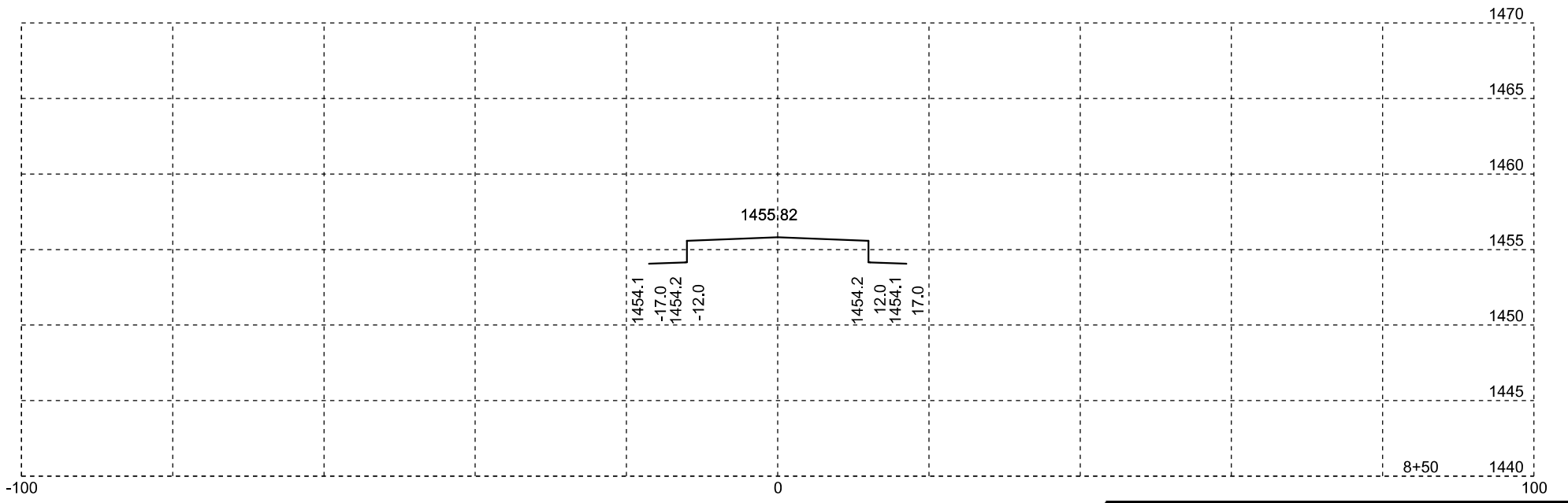
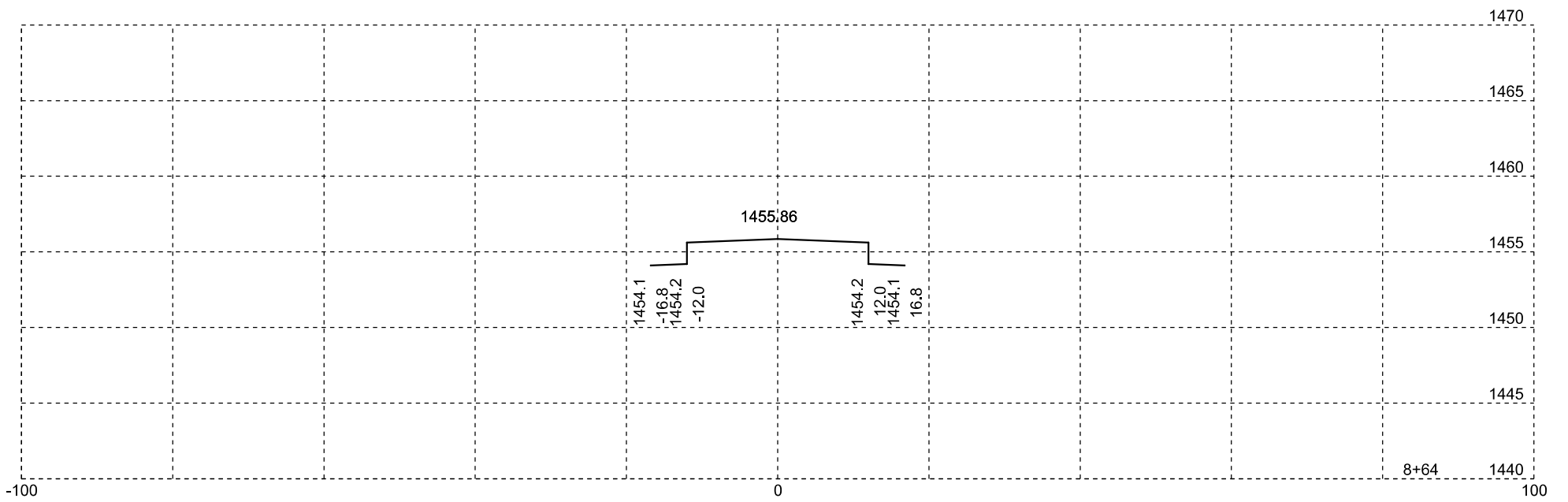
Plotting Date: 08/01/2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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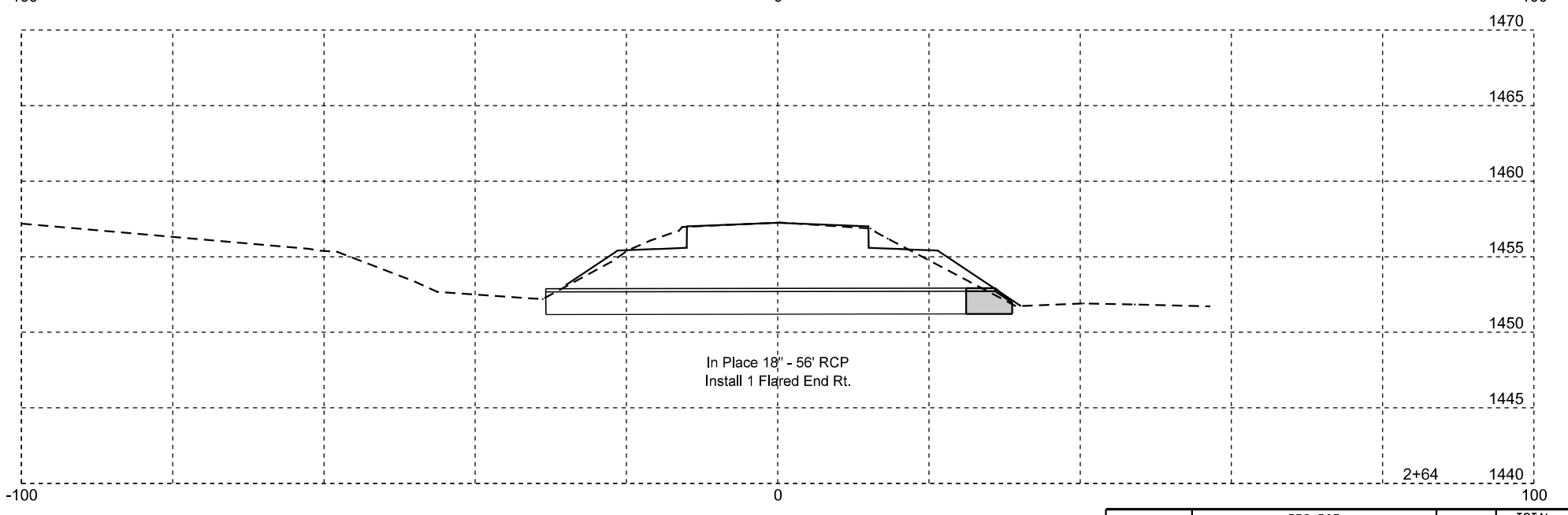
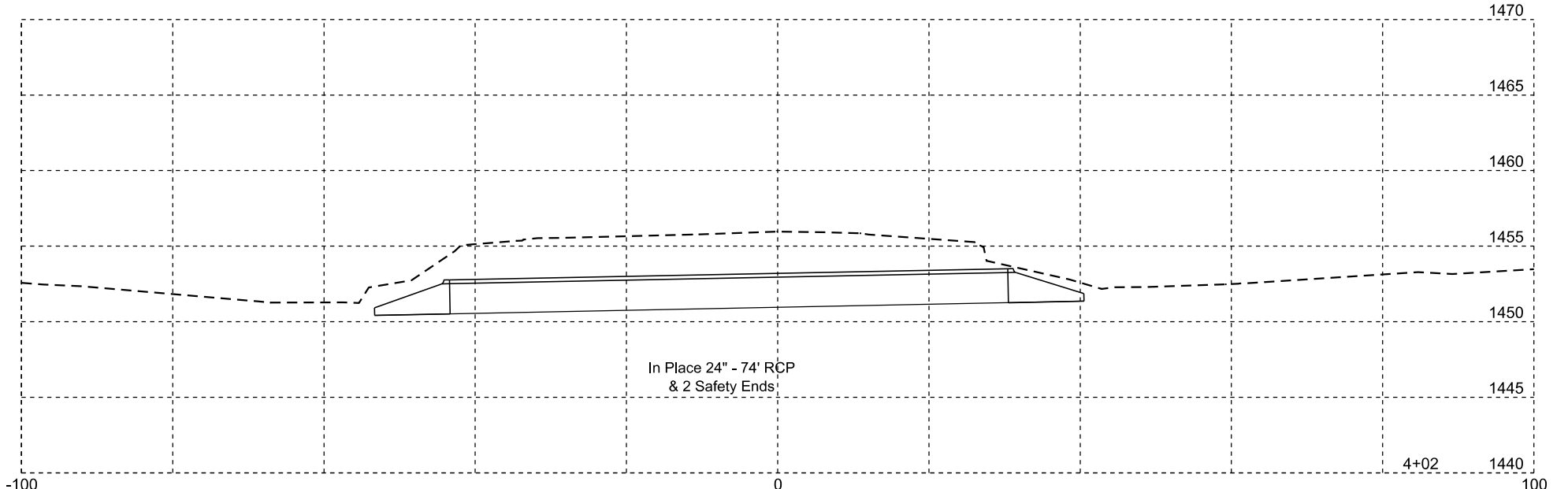
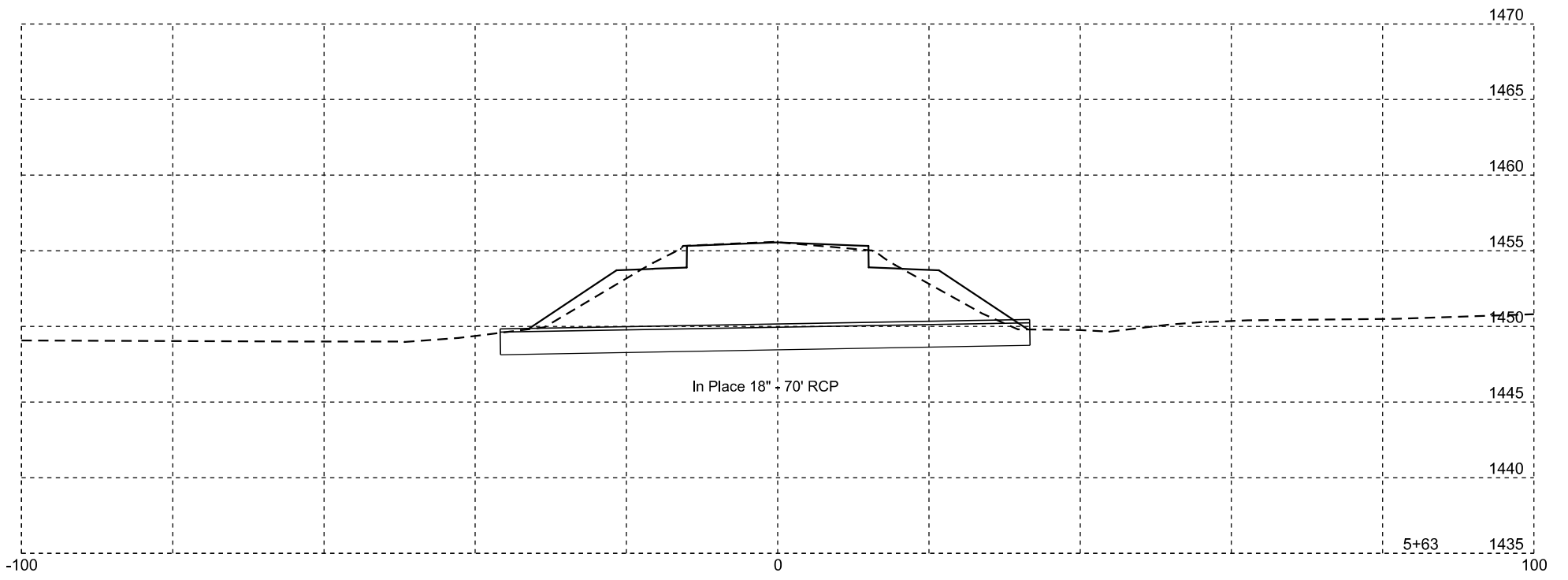
Plotting Date: 08/01/2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78		



Plotting Date: 08/01/2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	35	36



Plotting Date: 08/01/2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0115(59)78	36	36