DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2008	Pass: 1255	Trucks: 210	Total: 1465	150
Forecast 2028	Pass: 1385	Trucks: 260	Total: 1645	165
Clear Zone Distance: 42'		Design Speed: 65		
Minimum Sight Dist. for Stopping: 645'		Bridges: HS25 Loading		
Minimum Sight Dist. for Safe Passing: 2285				
Sight Dist. for No Passing Zone: 1100				
Pavement Design Life 20 (years)				

JOB# 9

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

ND Proj # AC-HPP-TIP-SS-6-066(012)137
MN Proj # SP 3501-13

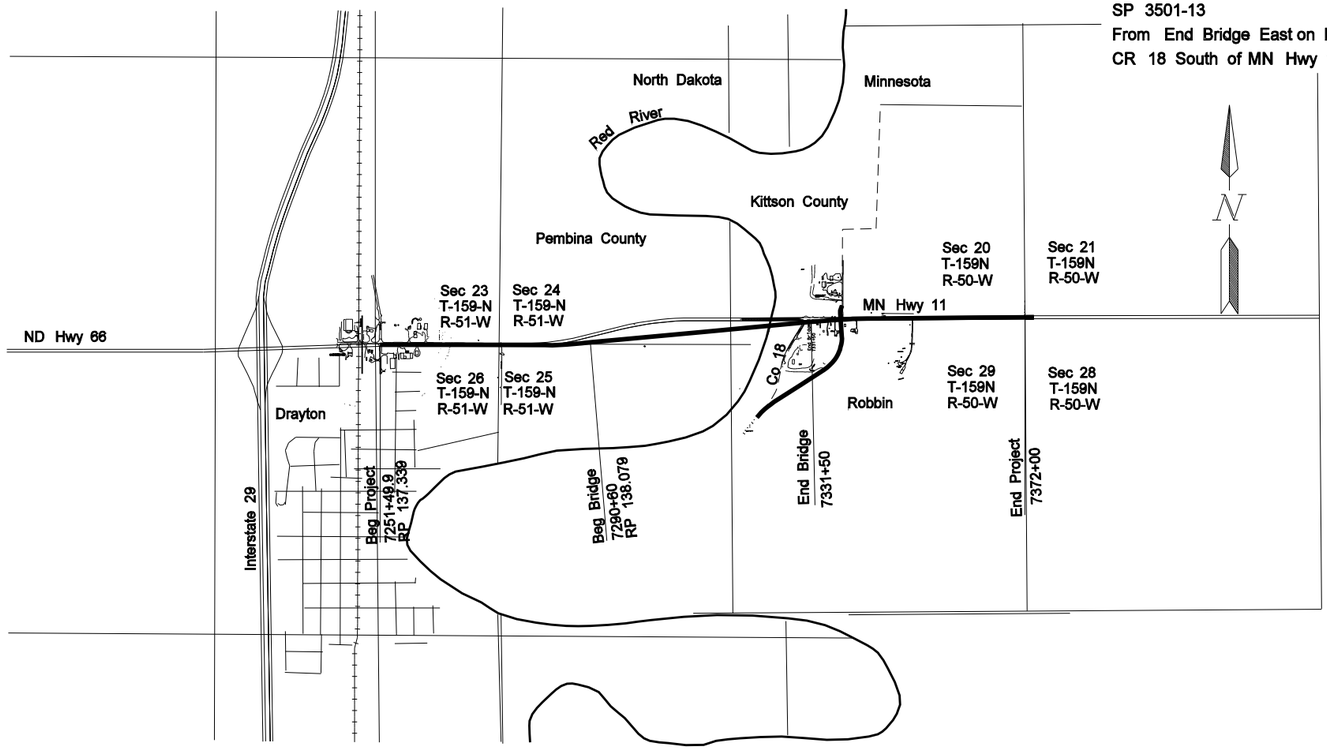
Pembina County ND
Kittson County MN

Grade, Surfacing, Structure, and Misc

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	12154	1	1
MN	SP 3501-13			

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota Department of Transportation October 2008; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
AC-HPP-TIP-SS-6-066(012)137		
JCT 44 - Drayton East to Beg Bridge	0.740	0.740
Bridge	0.774	0.774
SP 3501-13		
From End Bridge East on MN Hwy 11	0.767	0.767
CR 18 South of MN Hwy 11	0.578	0.578



I here certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

James Douglas Rath /s/
James Douglas Rath

DATE 9/3/2008 REG. NO. 45101

DESIGNERS
Bill Ehrman
Derek Pfeifer
Doug Schumaker

DATE 9/5/2008
Lynn C. Eaton /s/
DISTRICT TRANSPORTATION ENGINEER
MN DEPARTMENT OF TRANSPORTATION

DATE 9/12/2008
Timothy P. Quinn /s/
STATE PRE-LETTING ENGINEER
MN DEPARTMENT OF TRANSPORTATION

DATE 9/4/2008
Edward Pavlish /s/
DE or ASSISTANT DE OR PROJ ENG
ND DEPARTMENT OF TRANSPORTATION

DATE 9/15/2008
Mike Stensberg /s/
FOR DIRECTOR OF LAND MANAGEMENT
MN DEPARTMENT OF TRANSPORTATION

DATE 9/15/2008
Mukhtar Thakur /s/
STATE DESIGN ENGINEER
MN DEPARTMENT OF TRANSPORTATION

APPROVED DATE 9/16/2008
Ronald Jason Henke /s/
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached 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 ND & MN.

APPROVED DATE 9/3/2008
James Douglas Rath /s/
NDDOT DIV-DIST OR CONSULTANT FIRM

This document was originally issued and sealed by James Douglas Rath /s/ Registration Number PE- 4288 , on 9/3/2008 and the original document is stored at the North Dakota Department of Transportation

NDDOT ABBREVIATIONS

D-20-1

Abn	abandoned
Abut	abutment
Ac	acres
Adj	adjusted
Aggr	aggregate
Ahd	ahead
ARV	air release valve
Align	alignment
Al	alley
Alt	alternate
Alum	aluminum
A	ampere
&	and
Appr	approach
Approx	approximate
ACP	asbestos cement pipe
Asph	asphalt
AC	asphalt cement
Assmd	assumed
@	at
Atten	attenuation
Ave	Avenue
Avg	average
ADT	average daily traffic
Az	azimuth
Bk	back
BF	back face
Bs	backsight
Balc	balcony
B Wire	barbed wire
Barr	barricade
Btry	battery
Brg	bearing
BI	beehive inlet
Beg	begin
BM	bench mark
Bkwy	bikeway
Bit	bituminous
Blk	block
Bd Ft	board feet
BH	bore hole
BS	both sides
Bot	bottom
Blvd	Boulevard
Bndry	boundary
BC	brass cap
Brkwy	breakaway
Br	bridge
Bldg	building
BLM	Bureau of Land Management
BV	butterfly valve
Byp	bypass
C Gdrl	cable guardrail
Calc	calculate
Cd	candela
CIP	cast iron pipe
CB	catch basin
CRS	cationic rapid setting
C Gd	cattle guard
C To C	center to center
Cl or ℄	centerline
Cm	centimeter
Ch	chain
Chnlk	chain-link
Ch Blk	channel block
Ch Ch	channel change
Chk	check
Chsld	chiseled
Cir	circle
Cl	class
Cl	clay
Cl F	clay fill
Cl Hvy	clay heavy
Cl Lm	clay loam
Clnt	clean-out
Clr	clear
Cl&gr	clearing & grubbing
Co S	coal slack
Comb.	combination
Coml	commercial
Compr	compression
CADD	computer aided drafting & design
Conc	concrete
Cond	conductor
Const	construction
Cont	continuous
CSB	continuous split barrel sample
Contr	contraction
Contr	contractor
CP	control point
Coord	coordinate
Cor	corner
Corr	corrected
CAES	corrugated aluminum end section
CAP	corrugated aluminum pipe
CMES	corrugated metal end section
CMP	corrugated metal pipe
CPVCP	corrugated poly-vinyl chloride pipe
CSES	corrugated steel end section
CSP	corrugated steel pipe
C	coulomb
Co	County
Crse	course
C Gr	course gravel
CS	course sand
Ct	Court
Xarm	cross arm
Xbuck	cross buck
Xsec	cross sections
Xing	crossing
Crn	crown
CF	cubic feet
M3	cubic meter
M3/s	cubic meters per second
CY	cubic yard
Cy/mi	cubic yards per mile
Culv	culvert
C&G	curb & gutter
CI	curb inlet
CR	curb ramp
CS	curve to spiral
C	cut
Dd Ld	dead load
Defl	deflection
Defm	deformed
Deg or D	degree
Dlnt	delineate
Dlntr	delineator
Depr	depression
Desc	description
Det	detail
Dtr	detour
Dia	diameter
Dir	direction
Dist	distance
DM	disturbed material
DB	ditch block
DG	ditch grade
Dbl	double
Dn	down
Dwg	drawing
Dr	drive
Drwy	driveway
DI	drop inlet
D	dry density
Ea	each
Esmt	easement
E	East
Elast	elastomeric
EL	electric locker
E Mtr	electric meter
Elec	electric/al
EDM	electronic distance meter
Elev or El	elevation
Ellipt	elliptical
Emb	embankment
Emuls	emulsion/emulsified
ES	end section
Engr	engineer
Eq	equal
Eq	equation
Evgr	evergreen
Exc	excavation
Exst	existing
Exp	expansion
Expy	Expressway
E	external of curve
Extru	extruded
FOS	factor of safety
F	Fahrenheit
FS	far side
F	farad
Fed	Federal
FHWA	Federal Highway Administration
FP	feed point
Ft	feet/foot
Fn	fence
Fn P	fence post
FO	fiber optic
FB	field book
FD	field drive
F	fill
FS	fine sand
FH	fire hydrant
Fl	flange
Flrd	flared
FES	flared end section
F Bcn	flashing beacon
FA	flight auger sample
FL	flow line
Ftg	footing
FM	force main
Fs	foresight
Fnd	found
Fdn	foundation
Frac	fractional
Frwy	freeway
Frt	front
FF	front face
F Disp	fuel dispenser
FFP	fuel filler pipes
FLS	fuel leak sensor
Furn	furnish/ed
Gal	gallon
Galv	galvanized
Gar	garage
Gs L	gas line
G Reg	gas line regulator
GMV	gas main valve
G Mtr	gas meter
GSV	gas service valve
GVP	gas vent pipe

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-01-96	
REVISIONS	
DATE	CHANGE
01-27-97	Cont and CPVCP
05-05-97	Added items
12-01-04	PE stamp added
03-04-08	General revisions & standard # change (pages added)

This document was originally issued and sealed by Roger Weigel, Registration Number PE- 2930 , on 03/07/08 and the original document is stored at the North Dakota Department of Transportation

NDDOT ABBREVIATIONS

D-20-2

GV	gate valve
Ga	gauge
Geod	geodetic
GIS	Geographical Information System
G	giga
GPS	Global Positioning System
Gov	government
Grd	graded/grade
Gr	gravel
Grnd	ground
GWM	ground water monitor
Gdrl	guardrail
Gtr	gutter
H Plg	H piling
Hdwl	headwall
Ha	hectare
Ht	height
HI	height of instrument
Hel	helical
H	henry
Hz	hertz
HM	high mast
HP	high pressure
HPS	high pressure sodium
Hwy	highway
Hor	horizontal
Hr	hour(s)
Hyd	hydrant
Ph	hydrogen ion content
Id	identification
In or "	inch
Incl	inclinometer tube
IMH	inlet manhole
ID	inside diameter
Inst	instrument
Intchg	interchange
Intmdt	intermediate
Intscn	intersection
Inv	invert
IM	iron monument
I Pn	Iron Pin
IP	iron Pipe
Jt	joint
J	joule
Jct	junction
K	kelvin
Kn	kilo newton
Kpa	kilo pascal
Kg	kilogram
Kg/m3	kilogram per cubic meter
Km	kilometer
K	Kip(s)
LS	Land Surveyor (licensed)
LSIT	Land Surveyor In Training
Ln	lane
Lg	large
Lat	latitude
Lt	left
L	length of curve
Lens	lenses
Lvl	level
LB	level book
Lvlng	leveling
Lht	light
LP	light pole
Ltg	lighting
Lig Co	lignite coal
Lig Sl	lignite slack
LF	linear foot
Liq	liquid
LL	liquid limit
L	litre
Lm	loam
Loc	location
LC	long chord
Long.	longitude
Lp	loop
LD	loop detector
Lm	lumen
Lum	luminaire
L Sum	lump sum
Lx	lux
ML	main line
M Hr	man hour
MH	manhole
Mkd	marked
Mkr	marker
Mkg	marking
MA	mast arm
Matl	material
Max	maximum
MC	meander corner
Meas	measure
Mdn	median
MD	median drain
MC	medium curing
M	mega
Mer	meridian
M	meter
M/s	meters per second
M	mid ordinate of curve
Mi	mile
MM	mile marker
MP	mile post
Ml	milliliter
Mm	millimeter
Mm/hr	millimeters per hour
Min	minimum
Misc	miscellaneous
Mon	monument
Mnd	mound
Mtbl	mountable
Mtd	mounted
Mtg	mounting
Mk	muck
Mun	municipal
N	nano
NGS	National Geodetic Survey
NS	near side
Neop	neoprene
Ntwk	network
N	newton
N	North
NDDOT	North Dakota Department of Transportation
NE	North East
NW	North West
No. or #	number
Obsc	obscure(d)
Obsn	observation
Ocpd	occupied
Ocpy	occupy
Off Loc	office location
O/s	offset
OC	on center
C	one dimensional consolidation
OC	organic content
Orig	original
O To O	out to out
OD	outside diameter
OH	overhead
PMT	pad mounted transformer
Pg	pages
Pntd	painted
Pr	pair
Pnl	panel
Pk	park
PK	Parker-Kalon nail
Pa	pascal
PSD	passing sight distance
Pvmt	pavement
Ped	pedestal
Ped	pedestrian
PPP	pedestrian pushbutton post
Pen.	penetration
Perf	perforated
Per.	perimeter
PL	pipeline
Pl	place
P&P	plan & profile
PL	plastic limit
Pl	plate
Pt	point
PCC	point of compound curve
PC	point of curve
PI	point of intersection
PRC	point of reverse curvature
PT	point of tangent
POC	point on curve
POT	point on tangent
PE	polyethylene
PVC	polyvinyl chloride
PCC	Portland Cement concrete
Lb or #	pounds
PP	power pole
Preempt	preemption
Prefab	prefabricated
Prfmd	preformed
Prep	preperation
Press.	pressure
PRV	pressure relief valve
Prestr	prestressed
Pvt	private
PD	private drive
Prod.	production/produce
Prog	programmed
Prop.	property
Prop Ln	property line
Ppsd	proposed
PB	pull box
Qty	quantity
Qtr	quarter
Rad or R	radius
RR	railroad
Rlwy	railway
Rsd	raised
RTP	random traverse point
Rge or R	range
RC	rapid curing
Rec	record
Rcy	recycle
RPCC	recycled Portland cement concrete
Ref	reference
R Mkr	reference marker
RM	reference monument
Refl	reflectorized
RCB	reinforced concrete box
RCES	reinforced concrete end section
RCP	reinforced concrete pipe
RCPS	reinforced concrete pipe sewer
Reinf	reinforcement
Res	reservation
Ret	retaining

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
01-27-97	Cont and CPVCP
05-05-97	Added items
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NDDOT ABBREVIATIONS

D-20-3

Rev	reverse
Rt	right
R/W	right of way
Riv	river
Rd	road
Rdbd	road bed
Rdwy	roadway
Rk	rock
Rt	route
Salv	salvage(d)
Sd	sand
Sdy Cl	sandy clay
Sdy Cl Lm	sandy clay loam
Sdy Fl	sandy fill
Sdy Lm	sandy loam
San	sanitary sewer line
Sc	scoria
Sec	seconds
Sec	section
SL	section line
Sep	separation
Seq	sequence
Serv	service
Sh	shale
Sht	sheet
Shtng	sheeting
Shldr	shoulder
Sw	sidewalk
S	siemens
SD	sight distance
Sig	signal
Si Cl	silt clay
Si Cl Lm	silty clay loam
Si Lm	silty loam
Sgl	single
SC	slow curing
SS	slow setting
Sm	small
S	South
SE	South East
SW	South West
Sp	spaces
Spcl	special
SP	special provisions
G	specific gravity
Spk	spike
SC	spiral to curve
ST	spiral to tangent
SB	split barrel sample
SH	sprinkler head
SV	sprinkler valve
Sq	square
SF	square feet
Km2	square kilometer
M2	square meter
SY	square yard
Stk	stake
Std	standard
N	standard penetration test
Std Specs	Standard Specifications
Sta	station
Sta Yd	station yards
Stm L	steam line
SEC	steel encased concrete
SSD	stopping sight distance
SD	storm drain
St	street
SPP	structural plate pipe
SPPA	structural plate pipe arch
Str	structure
Subd	subdivision
Sub	subgrade
Sub Prep	subgrade preperation
Ss	subsoil
SE	superelevation
SS	supplement specification
Supp	supplemental
Surf	surfacing
Surv	survey
Sym	symmetrical
SI	Systems International
Tan	tangent
T	tangent (semi)
TS	tangent to spiral
Tel	telephone
Tel P	telephone pole
Tv	television
Temp	temperature
Temp	temporary
TBM	temporary bench mark
T	tesla
T	thinwall tube sample
T/mi	tons per mile
Ts	topsoil
Twp or T	township
Traf	traffic
TSCB	traffic signal control box
Tr	trail
Transf	transformer
TB	transit book
Trans	transition
TT	transmission tower
Trans	transverse
Trav	traverse
TP	traverse point
Trtd	treated
Trmt	treatment
Qc	triaxial compression
Tpl	triple
TP	turning point
Typ	typical
Qu	unconfined compressive strength
Ugrnd	underground
USC&G	US Coast & Geodetic Survey
USGS	US Geologic Survey
Util	utility
VG	valley gutter
Vap	vapor
Vert	vertical
VC	vertical curve
VCP	vitrified clay pipe
V	volt
Vol	volume
Wkwy	walkway
W	water content
WGV	water gate valve
WL	water line
WM	water main
WMV	water main valve
W Mtr	water meter
WSV	water service valve
WW	water well
W	watt
Wrng	wearing
Wb	weber
W	West
Wrng	wiring
W/	with
W/o	without
WC	witness corner
WGS	World Geodetic System
Z	zenith

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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NDDOT UTILITY COMPANY ABBREVIATIONS

D-20-10

702COM	702 Communications
Accent	Accent Communications
AGASSIZ WU	Agassiz Water Users Incorporated
ALL SEAS WU	All Seasons Water Users Association
All Pl	Alliance Pipeline
AMRDA HESS	Amerada Hess Corporation
AMOCO Pl	Amoco Pipeline Company
AT&T	AT&T Corporation
BRNS RWD	Barnes Rural Water District
BASIN ELEC	Basin Electric Cooperative Incorporated
B Paw	Bear Paw Energy Incorporated
BEK TEL	Bek Communications Cooperative
Belle P L	Belle Fourche Pipeline Company
BOEING	Boeing
BURK-DIV ELEC	Burke-Divide Electric Cooperative
BURL WU	Burleigh Water Users
Cable One	Cable One
CABLE SERV	Cable Services
CBLCOM	Cablecom Of Fargo
CAP ELEC	Capital Electric Cooperative Incorporat
CASS CO ELEC	Cass County Electric Cooperative
CASS RWU	Cass Rural Water Users Incorporated
CAV ELEC	Cavalier Rural Electric Cooperative
CENEX PL	Cenex Pipeline
CENT PWR ELEC	Central Power Electric Cooperative
MUNICIPAL	City Of '.....'
MUNICIPAL	City Water And Sewer
CONS TEL	Consolidated Telephone
Dak Carr	Dakota Carrier Network
DAK CENT TEL	Dakota Central Telephone
DGC	Dakota Gasification Company
DAK RWD	Dakota Rural Water District
DVELEC	Dakota Valley Electric Cooperative
D O E	Department Of Energy
DICKEY R NET	Dickey Rural Networks
Dickey RWU	Dickey Rural Water Users Association
DICKEY TEL	Dickey Telephone
DOME PL	Dome Pipeline Company
ENBRDG	Enbridge Pipelines Incorporated
FALK MNG	Falkirk Mining Company
GETTY TRD & TRAN	Getty Trading & Transportation
GLDN W ELEC	Golden West Electric Cooperative
G FKS-TRL WD	Grand Forks-traill Water District
GT PLNS NAT GAS	Great Plains Natural Gas Company
GRGS CO TEL	Griggs County Telephone
HALS TEL	Halstad Telephone Company
INT-COMM TEL	Inter-Community Telephone Company
KANEB PL	Kaneb Pipeline Company
KEM ELEC	Kem Electric Cooperative Incorporated
KOCH GATH SYS	Koch Gathering Systems Incorporated
LKHD PL	Lakehead Pipeline Company
LNGDN RWU	Langdon Rural Water Users Incorporated
LWR YELL R ELEC	Lower Yellowstone Rural Electric
Mcknz Con	Mckenzie Consolidated Telcom
MCKNZ ELEC	Mckenzie Electric Cooperative
MCLN ELEC	Mclean Electric Cooperative
MCLN-SHRDN R WAT	Mclean-Sheridan Rural Water
McLeod	Mcleod USA
MID-CONT CABLE	Mid-Continent Cable
MIDSTATE TEL	Midstate Telephone Company
MNKOTA PWR	Minnkota Power
MINOT CABLE	Minot Cable Television
MINOT TEL	Minot Telephone Company
MISS W W S	Missouri West Water System
MDU	Montana-dakota Utilities
MOR-GRAN-SOU ELEC	Mor-gran-sou Electric Cooperative
MOUNT-WILLI ELEC	Mountrail-williams Electric Cooperative
NDSU SOIL SCI DEPT	Ndsu Soil Science Department
NEMONT TEL	Nemont Telephone
NODAK R ELEC	Nodak Rural Electric Cooperative
NOON FRMS TEL	Noonan Farmers Telephone Company
N CENT ELEC	North Central Electric Cooperative
ND PKS & REC	North Dakota Parks And Recreation
ND TEL	North Dakota Telephone Company
N VALL W DIST	North Valley Water District
NTHN BRDR PL	Northern Border Pipeline
NTHN PLNS ELEC	Northern Plains Electric Cooperative Incorporated
NTH PRAIR RW	Northern Prairie Rural Water Association
NSP	Northern States Power
NW COMM	Northwest Communication Cooperation
NTHWSTRN REF	Northwestern Refinery Company
OLVR-MERC ELEC	Oliver-Mercer Electric Cooperative
OTTR TL PWR	Otter Tail Power Company
Polar Com	Polar Communications
P L E M	Prairielands Energy Marketing
Qwest	Qwest Communications
R&T W SUPPLY	R & T Water Supply Association
RSR ELEC	R.S.R. Electric Cooperative
Ramsey Util	Ramsey County Rural Utilities
RAMSEY R SEW	Ramsey Rural Sewer Association
RAMSEY RW	Ramsey Rural Water Association
RED RIV TEL	Red River Rural Telephone
RESVTN TEL	Reservation Telephone
ROBRTS TEL	Roberts Company Telephone
SCOTT CABLE	Scott Cable Television Dickinson
SHERDN ELEC	Sheridan Electric Cooperative
SHEYN VLY ELEC	Sheyenne Valley Electric Cooperative
SKYTECH	Skyland Technologies Incorporated
SLOPE ELEC	Slope Electric Cooperative
SLOPE ELEC	Slope Electric Cooperative Incorporated
SOURIS RIV TELCOM	Souris River Telecommunications
S E W U	South East Water Users Incorporated
STATE LN WATER	State Line Water Cooperative
ST WAT COMM	State Water Commission
STUT RWU	Stutsman Rural Water Users
TCI	TCI of North Dakota
TRL CO RWU	Traill County Rural Water Users
TRI-CNTY WU	Tri-County Water Users Incorporated
T M C	Turtle Mountain Communications
US SPRINT	U.S. Sprint
USW COMM	U.S. West Communications
USAF MSL CABLE	U.S.A.F. Missile Cable
UNTD TEL	United Telephone
UPPR SOUR WUA	Upper Souris Water Users Association
VRNDRY ELEC	Verendrye Electric Cooperative
WEB	W. E. B. Water Development Association
WLSH RWD	Walsh Water Rural Water District
W RIV TEL	West River Telephone Incorporated
WILLI RWA	Williams Rural Water Association
WILSTN BAS PL	Williston Basin Interstate Pipeline Company
WOLVRTN TEL	Wolverton Telephone
XLENER	Xcel Energy

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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03-15-01	General revisions
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LINESTYLES

D-20-20

- Sight Distance Triangle Line
- Bale Check
- Rock Check
- Small Hidden Object
- Dimension Leader
- Existing Ground
- Existing Topsoil (Cross Section View)
- Existing Profile
- Large Hidden Object
- Edge Drain
- D — D — Geotextile Fabric Type D
- E — Existing Electrical
- FO — Existing Fiber Optic Line
- FO — Existing TV Fiber Optic
- G — Existing Gas Pipe
- Geo — Geo — Geogrid
- OH — Existing Overhead Utility Line
- P — Existing Power
- PL — Existing Fuel Pipeline
- PL — Existing Undefined Above Ground Pipe Line
- R — R — Geotextile Fabric Type R
- R — R — Geotextile Fabric Type R1
- REMOVE — REMOVE — Remove Line
- RR — RR — Geotextile Fabric Type RR
- S — S — Geotextile Fabric Type S
- S — S — Floating Silt Curtain
- T — Existing Telephone Line
- TV — Existing TV Line
- Void — Void — Void — V Existing Assumed Ground (Not Surveyed)
- Void — Void — Void — V Tentative Ground Line
- W — Existing Water or Steam Line
- Existing Under Drain
- Under Drain
- Wall
- Existing Slotted Drain
- + — + — Existing Cemetary Boundary
- Centerline Pavement Marking
- Barrier with Centerline Pavement Marking
- Barrier Pavement Marking
- Stripe 4 IN Dotted Extension White
- Stripe 8 IN Dotted Extension White
- Wetland Mitigated Established
- Wetland Mitigation Proposed
- Existing Box Culvert Bridge
- Existing Concrete Surface
- Existing Drainage Structure
- Easement
- Existing Concrete
- Existing Easement
- Existing Gravel Surface
- Existing Aggregate (Cross Section View)
- Existing Curb and Gutter (Cross Section View)
- Existing Riprap
- Existing Underground Vault or Lift Station
- Tangent Line
- Hidden Object
- Existing Dirt Surface
- Existing Conduit
- Topsoil Profile
- Existing Conductor
- Conductor
- Fiber Optic
- Existing Loop Detector
- Subgrade, Subcut or Ditch Grade
- Existing Asphalt Surface
- Existing Asphalt (Cross Section View)
- Existing Reinforcement Rebar
- Existing Tie Point Line
- Existing State or International Line
- Existing Quarter Section Line
- Existing County
- Existing Section Line
- Existing Township
- Existing Railroad Centerline
- Centerline
- Existing Centerline
- Supplemental Contour
- Right of Way
- Existing Right of Way
- Existing Right of Way Railroad
- Failure Line
- Existing Conditions
- Existing Ground (Details)
- Existing Sixteenth Section Line
- Existing Right of Way Not State Owned
- Phantom Object
- Centerline Main
- Existing Guardrail Cable
- Existing Guardrail Metal
- Existing Edge of Water
- Excavation Limits
- Existing Government Lot Line
- Existing Adjacent Block Lines
- Existing Adjacent Lot Lines
- Existing Adjacent Property Line

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
06-20-96	General revisions
08-15-96	Add tie bars & guardrail
03-14-01	General revisions
12-01-04	PE stamp added
03-04-08	General revisions & standard # change

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LINESTYLES

D-20-21

- Existing Adjacent Subdivision Lines
- Subgrade Reinforcement
- Existing Down Guy Wire Down Guy
- Existing Fence
- Existing Railroad
- Existing SanitarySewer
- Existing Sanitary Force Main
- Existing Storm Drain
- Existing Storm Drain Force Main
- Fence
- Silt Fence
- Existing Field Line
- Flow
- Existing Culvert
- Existing Curb
- Existing Valley Gutter
- Existing Driveway Gutter
- Existing Curb and Gutter
- Existing Mountable Curb and Gutter
- Existing Double Micro Loop Detector
- Micro Loop Detector Double
- Existing Overhead Sign Structure
- Existing Micro Loop Detector
- Micro Loop Detector
- Existing Overhead Sign Structure Cantilever
- Existing Railroad Switch
- Overhead Sign Structure Cantilever
- 24 Inch Pipe
- Reinforced Concrete Pipe
- Signal Head with Mast Arm
- Existing Signal Head with Mast Arm
- Tie Bar at Random Spacing
- Site Boundary
- Fiber Rolls
- Doweled Joint
- Tie Bar 30 Inch 4 Foot Center to Center
- Tie Bar 18 Inch 3 Foot Center to Center
- Existing Berm, Dike, Pit, or Earth Dam
- Existing Ditch Block
- Depression Contours
- Existing City Corporate Limits or Reservation Boundary
- Existing Tree Boundary
- Existing Brush or Shrub Boundary
- Existing Retaining Wall
- Existing Planter or Wall
- Retaining Wall (Plan View)
- Sheet Piling
- Existing Wetland Marsh Slough Non-Delineated
- Existing Wetland Delineated

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SYMBOLS

D-20-30

North Arrow (Half Scale)
Truck Mounted Attenuator
Type I Barricade
Type II Barricade
Type III Barricade
Catch Basin
Cairn or Stone Circle
Video Detection Camera
Storm Drain Cap or Stub
Corrugated Metal End Section 18 Inch
Corrugated Metal End Section 24 Inch
Corrugated Metal End Section 30 Inch
Corrugated Metal End Section 36 Inch
Corrugated Metal End Section 42 Inch
Corrugated Metal End Section 48 Inch
Concrete Foundation
Ground Connection Conductor
Neutral Connection Conductor
Phase 1 Connection Conductor
Phase 2 Connection Conductor
Traffic Cone
Signal Controller
Pad Mounted Signal Controller
Alignment Data Point
Emergency Vehicle Detector

Attenuation Device
Diamond Grade Delineator Type A
Diamond Grade Delineator Type B
Diamond Grade Delineator Type C
Diamond Grade Delineator Type D
Diamond Grade Delineator Type E
Flexible Delineator
Flexible Delineator Type A
Flexible Delineator Type B
Flexible Delineator Type C
Flexible Delineator Type D
Flexible Delineator Type E
Delineator Type A
Delineator Type A Reset
Delineator Type B
Delineator Type B Reset
Delineator Type C
Delineator Type D
Delineator Type E
Delineator Drums
Spot Elevation
Existing Access Control Arrow
Existing Artifact
Existing Flashing Beacon
Existing Benchmark

Existing Railroad Battery Box
Existing Bush or Shrub
Existing Gas Cap or Stub
Existing SanitaryCap or Stub
Existing Storm Drain Cap or Stub
Existing Water Cap or Stub
Existing Sanitary Cleanout
Existing Concrete Foundation
Existing Traffic Signal Controller
Existing Pad Mounted Signal Controller
Existing Sixteenth Section Corner
Existing Quarter Section Corner
Existing Section Corner
Existing Railroad Crossbuck
Existing Satellite Dish
Existing Fuel Dispensers
Existing Flexible Delineator Type A
Existing Flexible Delineator Type B
Existing Flexible Delineator Type C
Existing Flexible Delineator Type D
Existing Flexible Delineator Type E
Existing Delineator Type A
Existing Delineator Type B
Existing Delineator Type C
Existing Delineator Type D

Existing Delineator Type E
Existing EFB Misc
Existing Flashing Beacon
Existing Pipe Mounted Flasher
Existing Pad Mounted Feed Point
Existing Pipe Mounted Feed Point with Pad
Existing Pole Mounted Feed Point
Existing Railroad Frog
Existing Snow Gate 18
Existing Snow Gate 28
Existing Snow Gate 40
Existing Headwall
Existing Pedestrian Head with Number
Existing Signal Head
Existing Sprinkler Head
Existing Fire Hydrant
Existing Catch Basin Drop Inlet
Existing Curb Inlet
Existing Manhole Inlet
Existing Junction Box

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SYMBOLS

D-20-31

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

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SYMBOLS

D-20-32

- Sanitary Force Main with Valve
- Pad Mounted Feed Point
- Pipe Mounted Feed Point with Pad
- Pole Mounted Feed Point
- Headwall
- Double Headwall with Vegitation Barrier
- Single Headwall with Vegitation Barrier
- Pole Mounted Head
- Sprinkler Head
- Fire Hydrant
- Inlet Type 1
- Inlet Type 2
- Double Inlet Type 2
- Inlet Grate Type 2
- Junction Box
- High Mast Light Standard 10 Luminaire
- High Mast Light Standard 3 Luminaire
- High Mast Light Standard 4 Luminaire
- High Mast Light Standard 5 Luminaire
- High Mast Light Standard 6 Luminaire
- High Mast Light Standard 7 Luminaire
- High Mast Light Standard 8 Luminaire
- High Mast Light Standard 9 Luminaire
- Relocate Light Standard
- Overhead Sign Structure Load Center
- Light Standard 100 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 150 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 175 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 200 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 250 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 310 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 35 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 400 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 50 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 70 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 700 Watt High Pressure Sodium Vapor Luminaire
- Manhole
- Manhole 48 Inch
- Sanitary Force Main Manhole
- Sanitary Sewer Manhole
- Storm Drain Manhole
- Storm Drain Manhole with Inlet
- Reset Mile Post
- Mile Post Type A
- Mile Post Type B
- Mile Post Type C
- Right of Way Marker
- Tubular Marker
- Concrete Monument to Be Set
- RW Property Monument to Be Set
- Object Marker Type I
- Object Marker Type II
- Object Marker Type III
- Caution Mode Arrow Panel
- Back to Back Vertical Panel Sign
- Double Direction Arrow Panel
- Left Directional Arrow Panel
- Right Directional Arrow Panel
- Sequencing Arrow Panel
- Truck Mounted Arrow Panel
- Power Pole
- Wood Pole
- Pedestrian Push Button Post
- Property Corner
- Pull Box
- Intelligent Transportation Pull Box
- Sanitary Pump
- Storm Drain Pump
- Reinforced Pavement
- Reinforced Concrete End Section 15 Inch
- Reinforced Concrete End Section 18 Inch
- Reinforced Concrete End Section 24 Inch
- Reinforced Concrete End Section 30 Inch
- Reinforced Concrete End Section 36 Inch
- Reinforced Concrete End Section 42 Inch
- Reinforced Concrete End Section 48 Inch
- Reinforced Concrete End Section 54 Inch
- Reinforced Concrete End Section 60 Inch
- Reset Right of Way Marker
- Reset USGS Marker
- Right of Way Markers
- Riser 30 Inch
- Continuous Split Barrel Sample (CSB)
- Flight Auger Sample (FA)
- Split Barrel Sample (SB)
- Thinwall Tube Sample (T)
- Highway Sign
- Standard Penetration Test (N)
- Transformer
- Inclinometer Tube (Incl)
- Underdrain Cleanout
- Excavation Unit
- Water Valve

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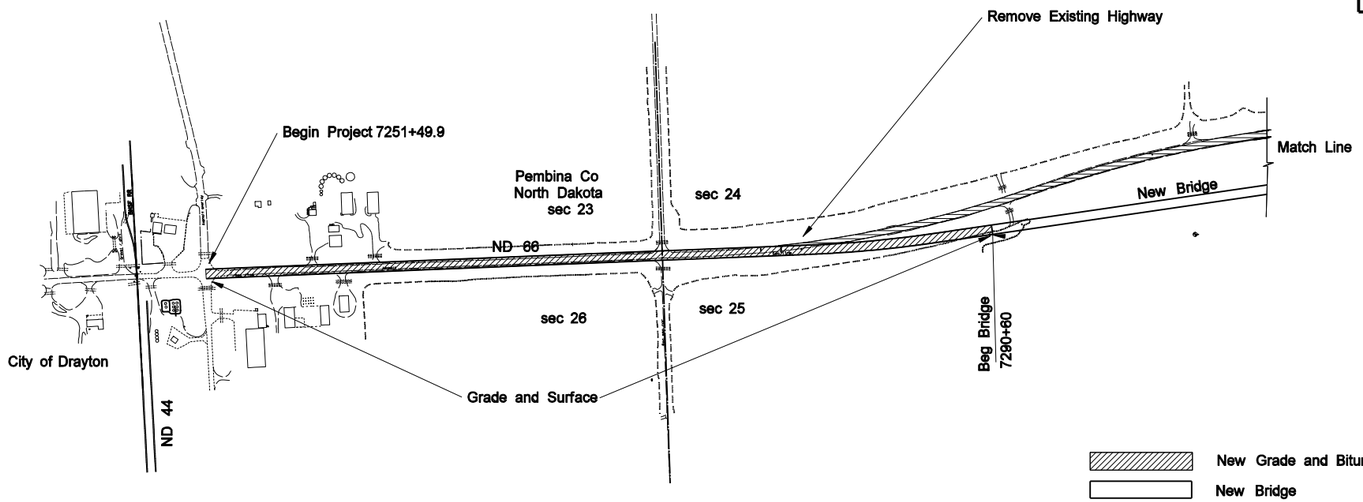
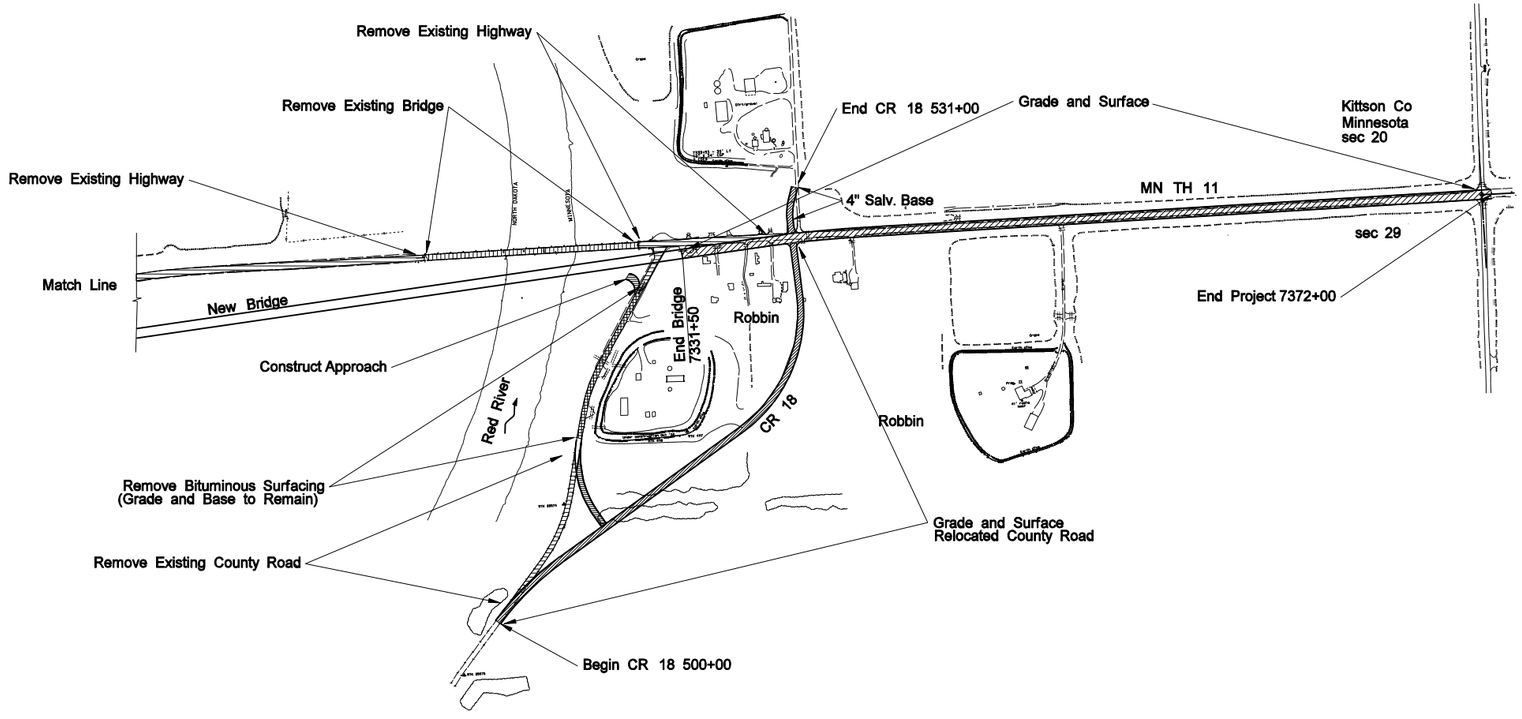


New Grade and Bituminous Surfacing
New Bridge
Remove Existing Bridge
Remove Existing Road
Remove Bituminous Surfacing (Grade and Base to Remain)



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Scope Of Work

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GENERAL NOTES

100-011 GENERAL: The engineer will attend to the removal of existing fences to the highway right of way line and to the relocation or adjustment of utility facilities as shown on the plans. Equipment shall work around utility poles, within the area, that are not to be disturbed.

100-021 WEEKLY PLANNING/REPORTING MEETING:

A. Purpose of Weekly Meeting.
   1. The contractor shall organize the weekly meeting to coordinate the efforts between subcontractors, utilities, local authorities, and others.

B. Contractor's Project Manager/Superintendent: Planning and Reporting.
   1. The contractor will be responsible for sending a knowledgeable representative to conduct a weekly Reporting/Planning meeting. It will be the contractor's responsibility to prepare minutes for each meeting and to make the appropriate distribution of the minutes.
   2. The contractor will be required to provide a written schedule of the next week's work and a tentative schedule of the following week.
   3. Reporting/Planning meeting will include discussion of problems encountered during the current week; information of interest to local authorities, subcontractors, utilities, and next week's prospective schedule.
   4. The contractor shall organize the weekly meeting contacting interested agencies. These agencies include, but are not limited to, the following:
      a. North Dakota and Minnesota Departments of Transportation
      b. City Engineer's representative.
      c. Police department.
      d. Fire department.
      e. Ambulance service.
      f. Telephone Co.
      g. Power Co.
      h. Cable T.V.
      i. Gas Co.
      j. Railroad Co.
      k. Subcontractors.
      l. Chamber of Commerce.
      m. FHWA

100-P01 SOIL INVESTIGATION: A linear soil survey was performed along the proposed alignment. This information is available at the North Dakota Department of Transportation FTP site.

100-P02 PAVEMENT PROTECTION: The contractor shall exercise care in his construction operations to ensure that no damage is done to the existing facilities that are to remain in place. All cost to repair any damage shall be at the contractor's expense.

107-P01 HAUL ROADS: The contractor shall obtain approval from the local government agency before using any off system road as a haul road.

107-P02 CONSTRUCTION SEQUENCE: The construction sequence was developed to minimize disturbance to traffic. The contractor may adjust this sequence if he obtains approval from the engineer. Through the winter months a paved surface must be provided on ND Hwy 66 and MN Trk Hwy 11. On Co road 18 the contractor may maintain traffic on a minimum of 12" aggregate for one winter season.

Phase 1) Relocate County Highway 18. This will require excavating approximately 17,780 CY from the ditches of Minnesota Hwy 11. This material will be needed to complete the County Highway 18 embankment. When the grading is complete traffic on the county highway may be maintained on aggregate surface.

Install the wick drains sta 7282+00 to 7291+10 west abutment and sta 7331+48 to 7335+00 east abutment.

Construct the embankment and surcharge at the west end of the bridge. To construct the surcharge approximately 68,816 CY of excavation from the ditches of ND Highway 66 and the excavation area will be needed.

Place embankment at the east bridge abutment. Approximately 4,402 CY of excavation from the ditches of Minnesota Hwy 11 will be needed to construct this embankment.

The embankment required to be place on phase one is indicated on the cross sections by cross hatching. The contractor will be required to drive sheet pile to keep the embankment off the existing highway see the cross section for areas where sheet pile is required. Additional embankment that does not disturb the existing surfacing or create a hazard may also be place during this phase

Jersey barriers have been provided to re-direct errant vehicles away from the surcharge embankment and the east abutment embankment. Attenuation devices have been provided for the ends of the jersey barriers.

It is the intent that during non working periods traffic can be maintained on the state highways at a speed of 45 MPH and that there is minimal disturbance to the existing surfacing

Construct bridge.

Phase 2) During the second construction season and prior to the bridge completion surfacing removal may begin on the

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existing state highways. Vertical panels and tubular markers have been provided for delineation during the period traffic is routed on aggregate surfacing.

It is the intent that during this phase traffic be maintained on the state highways at a speed of 25 MPH

Those portions of the highway that are completed may be surfaced. It is suggested that the surfacing operation be complete or near completion prior to the completion of the bridge.

Attenuation devices used at the ends of the jersey barrier will be placed at the ends of the bridge if traffic is routed before guardrail is placed.

Phase 3) After the bridge is complete and traffic routed over the bridge, restore the old roadbed in North Dakota to the original contours shown on the cross sections. This will require filling in the existing ditches, excavation area and removing approximately 21363 CY of embankment from the project site. This excess material may be hauled and placed at the NDDOT maintenance yard at Drayton. If hauled to this site the material will be placed as directed by the engineer.

Finish all remaining work. And remove old bridge

107-P03 MAINTENANCE OF TRAFFIC: The contractor will be responsible for maintaining traffic on the existing state and county highways during the roadway construction season, the contractor will be responsible for all traffic control devices for the entire duration of the project.

The state departments of transportation will be responsible for maintaining the existing bituminous surfacing on the state highways. The contractor will be responsible for maintaining the aggregate surfacing on the relocated county highway.

Snow removal will be done by the state departments of transportation and the county.

107-P04 RIPARIAN FOREST: The contractors activities will not disturb any areas outside those designated for tree removal within the riparian forest area located between station 7311+00 to 7331+00.

110-P01 STAGING AREA: The contractor's staging area for material and equipment on the east bank shall be east of station 7333+00 in an area approved by the engineer.

200-010 SHRINKAGE: 30 percent additional volume is included for shrinkage in earth embankment.

200-050 SUBGRADE PREPARATION: The subgrade shall be completed for a sufficient distance ahead of the placement of subsequent courses to allow adequate opportunity for inspection. At the time the first lift of hot mix is placed, the subgrade shall have adequate stability to support the hauling, laydown, and compaction equipment, without significant rutting or displacement. The sequence of paving operations shall be such that the possibility of damage to the initial lift from the contractor's vehicles or public traffic is minimized. No payment will be made for hot mix or bitumen used to repair the subgrade or subsequent lifts of hot mix.

201-P01 CLEARING & GRUBBING: Clearing and grubbing includes the removal and disposal of trees (all sizes including those 8 inches and larger), shrubs, stumps, roots, brush, and other surface objects from the excavation and embankment areas along this project. There are numerous trees within the construction limits the contractor is advised to inspect the site before submitting a bid on "Clearing & Grubbing".

All trees and shrubs will be removed from the entire right of way between station 7290+60 to 7316+00. From 7316+00 to the end of the new bridge all trees and shrub within 50' of the new centerline will be removed. In other areas on Hwy 66, Hwy 11 and county Hwy 18 trees and shrub will be removed within the construction limits. Disposal of trees and shrub will be the responsibility of the contractor.

The cleanup and disposal of flood debris within the project limits will also be included in the price bid for Clearing & Grubbing".

202-P01 REMOVAL & SALVAGE BITUMINOUS SURFACING: The contractor will remove the bituminous surfacing and the salvageable aggregate base from existing ND Hwy 66 and MN Trunk Hwy 11within the project limits. The contractor will make full depth saw cuts at the ends of the removal areas. These saw cuts will be included in the price bid for "Remove and Salvage Bituminous Surfacing".

From station 500+00 Lt to 510+00 Lt on the existing portion of Kittson Co Hwy 18 the contractor will remove the bituminous surfacing and the salvageable aggregate base From station 510+00 north to the new Hwy 11 the contractor will just remove the bituminous surfacing from Co Hwy 18. After removal of the bituminous surfacing the contractor will reshape the existing aggregate base and aggregate shoulder material. The reshaping will consist of removing ruts and establishing a crown no additional aggregate will be required.

If there is excess material that can not be incorporated into the salvaged aggregate base the excess will become the property of the contractor and the contractor has the following options for disposal.

Opion1.) Place the material in the Drayton maintenance yard as directed by the engineer. If placed in the yard it will become the property of the NDDOT.

Option 2.) Contractor obtained disposal site.

All costs to remove the bituminous surfacing and aggregate base, disposal of excess material, saw cuts and reshape the county highway will be included in the price bid for "Remove and Salvage Bituminous Surfacing".

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202-P02 REMOVE & SALV BITUMINOUS SURFACING: The tonnage of "Remove and Salvage Bituminous Surfacing" was based on the typical sections shown on section 30 page 1. The tonnage includes the entire bituminous surfacing, the entire emulsified base and half the aggregate and sand base.

202-P03 BUILDING REMOVAL: The Right of Way will be cleared by others of all buildings, basements, septic tanks and wells prior to May 1, 2009.

203-360 COMPACTION AND DENSITY CONTROL: Moisture and density controls shall be in accordance with Section 203.02G of the Standard Specifications and compacted to 95% of the maximum dry density as determined by AASHTO T-99.

203-P01 SURCHARGE: Embankment shall be placed on top of the strip drains in a manner that does not damage strip drains or wick drains. Embankment shall be placed in 4' stages spaced a minimum of 10 days apart. Prior to placement of the next stage, pore water pressures, settlement and horizontal deformation will be monitored by the engineer. The contractor shall not proceed with the next 4' stage until receiving written authorization from the engineer.

The finished surcharge will remain in place 170 days unless otherwise approved by the engineer. A portion of the material removed from the surcharge will be used to finish the embankment back of the surcharge area. Approximately 14,445 CY of earth will need to be removed from the surcharge area. The material removed from the surcharge will be paid for as "Common Excavation Type A".

203-P02 EAST ABUTMENT EMBANKMENT: This embankment does not require a surcharge but needs to be in place 170 days before construction of the east abutment can begin.

203-P03 EXCAVATION AND FILL ELEVATIONS: All ditch grades and fill elevations are given at the top of the finished topsoil.

203 P04 EXCAVATION: All excavation except for the excavation from the removal of old Hwy ND 66 will be paid for as "Common Excavation Type A". The excavation from the removal of the old Hwy ND 66 will be paid for as "Common Excavation-Waste".

203-P05 COMMON EXCAVATION WASTE: The contractor may place all or a portion of the waste excavation in the Drayton maintenance yard. The material will be placed as directed by the engineer.

203-P06 TOPSOIL: All topsoil will be paid for as "Topsoil" except for the topsoil removed from the area designated as "excavation area". The topsoil removed from the "excavation area" will be paid for as "Topsoil-Wetland".

203-P07 TOPSOIL-WETLAND: The topsoil removed from the area designated as the "excavation area" will be kept in a separate stockpile site. When the "excavation area" has been backfilled this topsoil will be spread over the area. The volume of topsoil removed from the "excavation area" was based on a 2' depth.

230-P01 SUBGRADE PREPARATION TYPE C 18": Subgrade preparation has been provided between stations 7252+00 to 7282+00.

302-P02 TRAFFIC SURFACE GRAVEL: 6500 tons of Salvaged Base Course has been provided for maintaining traffic. The aggregate shall be used as directed by the engineer in the field. Enough aggregate has been provided for two lifts each lift being 26' wide and 2" thick.

410-PO1 HOT BITUMINOUS PAVEMENT: The 5 ½" and the 5" hot bituminous pavement sections shall be laid in 3 lifts with the top lift having a minimum depth of 2 inches. PG 58-28 Asphalt Cement shall be used in the first and second lifts and PG 58-34 Asphalt Cement in the third lift.

410-P02 ASPHALT CEMENT: Acceptance of PG asphalt shall be according to the Combined State Binder Test Group procedures. The acceptance procedure is available upon request from the Materials and Research Division of the NDDOT.

410- P03 SUPERPAVE PROPERTIES: The following aggregate and mix design properties are required.

Test	Criteria	Reference
Coarse Aggregate Angularity %	75% min	NDDOT Field Sampling and Testing Manual
Fine Aggregate Angularity %	43% min	AASHTO T 304
Gyratory Effort, # Gyrations	Nini=7, N des=75, Nmax=115	AASHTO R 35

This document was originally issued and sealed by William S. Ehrman, Registration Number PE-1718, on 9/9/2008 and the original document is stored at the North Dakota Department of Transportation.

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NOTES

Voids Filled with Asphalt %	65-78%	AASHTO M 323, T166
%Gmm @ Nini	89% max	AASHTO M 323, T166

410-P04 HOT BITUMINOUS PAVEMENT: The contractor will provide the Superpave mix design.

704-200 PRECAST CONCRETE MEDIAN BARRIERS - STATE FURNISHED: The number of precast concrete median barriers required on the project shall be 95 ten foot units. The contractor shall obtain 75 barriers from the Grand Forks storage yard and 20 from the Casselton storage yard. Upon completion of the project, all barriers shall remain the property of the state and the contractor shall return 75 barriers to the Grand Forks storage yard and 20 to the Casselton storage yard. Upon final storage, one barrier connecting bolt with two washers shall be placed through the barrier loops at one end of each segment, and the nut shall be installed sufficiently threaded to the bolt to retain this hardware during transportation. Any barrier segments that become damaged during handling, transportation, placing, or use, or any missing connecting bolts, nuts or washers, shall be replaced at the contractor's expense. The contractor shall contact the District Office prior to picking up the barriers and contact the District Office prior to returning them.

The barriers shall be counted prior to removal from the storage area and after placement on the roadway and the number agreed to by the Engineer and the Contractor. Another count shall be made once the barriers have been returned to the storage area and agreed to by the Engineer and the Contractor. Both agreements shall be made in writing and signed by all parties.

Upon final storage, the state furnished barriers shall be stacked a maximum of two high and shall be placed on 4" x 4" boards separating the barrier from the ground and separating the barriers between stacked rows. 4" x 4" boards are available from the Grand Forks storage yard.-

The cost of obtaining, transporting, installing, moving, and maintaining the portable precast concrete median barriers shall be included in the price bid for the item "Precast Concrete Median Barriers - State Furnished."

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.

704-P01 TRAFFIC CONTROL DEVICES: The traffic control devices list has been developed using the layouts shown in the plans and the following layouts shown on the Standard Drawings.

D-704-15 Layout Type A Temporary Road Closure.

D-704-20 Layout Type H Intersecting Routes.

D-704-22 and D-704-26, Layouts Type K, Type L, and Type Y for Construction Truck Hauling Material.

D-704-24 Layouts Type U, Type R, and Type S for Shoulder Work.

D-704-26 Layouts Type BB, CC, EE, and GG as needed.

D-704-30 Windrow Marking

704-P02 TRAFFIC CONTROL SUPERVISOR: The contractor shall provide a traffic control supervisor for this project.

706-P01 FIELD OFFICE: The old maintenance building at the Drayton maintenance yard will be used for a field office.

The contractor will provide the following items.

1. Air conditioner (20,000 BTU minimum)
2. Minimum of 3 phone jacks (NDDOT to pay for phone service)
3. Fax Machine
4. Photocopy machine capable of 11x17 photo copies and toner to last the duration of the project. NDDOT will provide paper.

These items will be available at the start of the project and remain available to project completion. Payment for the above items shall be under the bid item "Field Office."

920-PO1 WICK DRAINS: Surface preparation done prior to installing wick drains shall be included in price bid for the item “Prefabricated Vertical Wick Drains”.

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NOTES

SECTION 110

754-050 SIGN SUPPORTS: The sign supports "Steel Galvanized Posts - Telescoping Perforated Tube" were designed using a minimum yield strength of 55,000 psi and the design requirements of the "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals." The wind speed of 85 mph was used. The "Steel Galvanized Post – Telescoping Perforated Tube" posts shall have all holes punched completely. All metal shall be removed from the punched holes.

754-P01 BREAKAWAY BASES FOR SIGN SUPPORTS: The plans show two types of breakaway bases and the contractor may choose either system. Standard Drawing D-754-24 shows the breakaway base requirements for perforated tube supports. Breakaway coupler system details for perforated tube supports have been provided in the plans. The contractor may choose either system but the system chosen shall be used throughout the project. Breakaway bases shall not be paid for separately, but shall be included in the prices bid for the items "Steel Galv Post – Telescoping Perforated Tube."

754-P02 STATE FURNISHED SIGNS: The state will furnish the sign at station 7287+00 Lt. The contractor shall obtain the sign from the Grand Forks district sign shop and install at the location shown on the plans. The contractor shall furnish the necessary stringers and hardware required to attach the sign to the supports as required by the plans. The cost of obtaining the sign, furnishing the stringers and hardware and installing the signs will be paid for at the price bid for "Flat Sheet for Signs – Type 3A Refl Sheeting."

SECTION 130

100-100 ORDER OF OPERATION - GUARDRAIL SURFACING: At the locations where guardrail is to be installed, the hot bituminous pavement shall be placed before the guardrail posts are installed. The guardrail post holes will be drilled through the asphalt. The diameter of the drilled hole in the asphalt shall be sufficient so that when the posts are driven, and the soil around the post heaves up, the remaining asphalt will not move. The contractor will then asphalt around the guardrail posts after the posts are set.

All cost for drilling through the asphalt, and for replacement of bituminous surfacing around the posts shall be included in the price bid for the appropriate guardrail installation items.

748-P01 CURB & GUTTER – TYPE 1 SPECIAL: At the Red River Bridge, 20 lineal feet of curb and gutter is required at each bridge corner. The curb and gutter shall be Type 1 as shown on Standard Drawing D-748-1 except that the curb shall have a maximum height of 3 inches.

All costs for constructing the curb and gutter as described above shall be included in the price bid for the item “Curb & Gutter – Type 1 Special.”

764-800 REMOVE END TREATMENT & TRANSITION: The removed end treatment and transition shall become the property of the contractor and shall be disposed of outside the highway right of way.

The item "Remove End Treatment & Transition" shall be measured by the number removed.

The cost of removing the end treatment and transition, and disposing of the material shall be included in the price bid for the item "Remove End Treatment and Transition."

764-810 REMOVE BOX-BEAM GUARDRAIL: The removed box-beam guardrail shall become the property of the contractor and shall be disposed of outside the highway right of way.

The item "Remove Box-Beam Guardrail" shall be measured by the linear foot of guardrail removed.

The cost of removing the box-beam guardrail and disposing of this material shall be included in the price bid for the item "Remove Box-Beam Guardrail."

764-850 REMOVE W-BEAM GUARDRAIL & POSTS: The removed W-beam guardrail and posts that are not reset shall become the property of the contractor and shall be disposed of outside the highway right of way.

The item "Remove W-Beam Guardrail & Posts" shall be measured by the linear foot of guardrail removed.

The cost of removing the guardrail and posts, and disposing of these materials shall be included in the price bid for the item "Remove W-Beam Guardrail & Posts."

SECTION 140

770-P01 LIGHT STANDARD: Ottertail power company will relocate the light standard located at Sta 7252+00 Lt.

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 9/15/2008 and the original document is stored at the North Dakota Department

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: North Dakota and Minnesota Departments of Transportation, and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

Commitment No. 1: Unavoidable impacts to wetlands will be mitigated on-site, adjacent to the project, or at an approved location.

Action taken/required: NDDOT will mitigate emergent wetlands primarily on site. Forested Wetlands will be mitigated off site with forested wetlands on the Red River system.

Commitment No. 2: Trees impacted during construction will be mitigated at a 2:1 ratio.

Action taken/required: Trees will be mitigated at a 2:1 ratio off site.

Commitment No. 3: All disturbed areas will be seeded with a native grass mixture.

Action taken/required: The contractor will mulch and seed all disturbed areas as shown in the plans.

Commitment No. 4: No construction or demolition activities are to take place in the Red River Channel from March 15 to June 30 unless the DNR and NDG&F area fisheries supervisor waves the exclusion dates.

Action taken/required: The supervisor will be contacted if work needs to be done in the channel during the exclusion dates. Flotation silt curtains will be installed if fill is placed in the channel or near the banks.

Commitment No. 5: Erosion and sedimentation into the Red River and its adjacent habitat will be minimized.

Action taken/required: The contractor shall install and maintain erosion control devices as shown in the plans.

Commitment No. 6: No river channel alterations or changes in drainage patterns will be made.

Action taken/required: The project has been designed to avoid alterations to the channel and drainage patters.

Commitment No. 7: If this project results in an *Adverse Effect* to historic properties, NDDOT, and FHWA will work with the State Historical Society of North Dakota and Minnesota to develop a Memorandum of Agreement.

Action taken/required: The Robbin Camp building and the existing bridge are National Register eligible. The right of way has been reduced by the Robbin Camp building and it has been determined this project will have no adverse effects on it. The project will have a adverse effect on the existing bridge. Photos and documentation will be done in accordance with the memorandum of agreements with North Dakota and Minnesota SHPO.

Commitment No. 8: Coordination will take place with the affected utility companies during project design.

Action taken required: Utility companies have been made aware of those utilities that need to be moved.

Commitment No. 9: Aggregate sources will have a cultural and environmental review.

Action taken/required: This will be done.

Commitment No. 10: A US Army Corps of Engineers Section 404 Permit is required.

Action taken/required: NDDOT has obtained the Section 404 Permit.

Commitment No. 11: An NPDES permit is required.

Action taken/required: The contractor shall obtain an NPDES (National Pollutant Discharge Elimination System) Permit from the North Dakota Department of Health and the Minnesota Pollution Control Agency and shall comply with all requirements contained in the permit.

Commitment No. 12: Measures will be taken to limit construction noise, control dust, and maintain reasonable accessibility during construction.

Action taken required: All necessary measures will be taken by the contractor to minimize fugitive dust emissions increased during construction activities. Noise levels will be minimized by ensuring that all construction equipment is equipped with a recommended muffler in good working order. All complaints will be dealt with in an efficient and effective manner.

Commitment No. 13: All waste material associated with the project must be disposed of properly and not placed in identified environmental resource areas.

Action taken/required: The contractor will have to properly dispose of any construction/demolition material in accordance with the waste disposal note contained in the North Dakota Standard Specifications for Road and Bridge Construction. Caution is to be exercised during construction to prevent oil or fuel spills from entering waterways.

Commitment No. 13: There will be no increase in the 100 year flooding risk.

Action taken/required: The US Army Corps of Engineers study concluded that the bridge and roadway design does not increase the headwater for the 100 year flood.

MN STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
MN	SP 3501-13	6	7

PROJECT DESCRIPTION

SP 3501-13 is a reconstruction project on MN Hwy 11 and CR 18 which includes structure, realignment, grading and base, and bituminous surfacing. The project location is on MN Hwy 11 from the Red River East 0.885 miles and CR 18 from intersection of MN Hwy 11 south 0.578 miles. Total project length is 1.463 miles. Receiving waters for storm water from this project is the Red River.

Construction activities include; 1.331 miles of realignment to new structure with replacement of centerline and approach pipes, .132 miles of new structure across Red River and removal of old structure.

PROJECT ENGINEER

The project engineer and the contractor are responsible for implementation of the SWPPP and the installation, inspection, and maintenance of the erosion prevention and sediment control BMPs before and during construction. The contractor will have an erosion control supervisor who is responsible for coordinating the erosion prevention and sediment control BMPs. NDDOT District staff and MN/DOT's Office of Environmental Service are available for assistance. MN/DOT District Maintenance is responsible for long term operation and maintenance of the permanent storm water management system.

TIMING OF BMP INSTALLATION

The erosion prevention and sediment control BMPs shall be installed as necessary to minimize erosion from disturbed surfaces and capture sediment on site.

1. Topsoil and temporary erosion control BMPs shall be placed within 14 days of completion of embankment.

2. Temporary seeding Type B-CL IV and mulch will be included in the plan and kept on site for application as needed.

3. The **Permittee(s)** must amend the **SWPPP** as necessary to include additional requirements, such as additional or modified **BMPs**, designed to correct problems identified or address situations whenever:

   a. There is a change in design, construction, operation, maintenance, weather or seasonal conditions that has a significant effect on the discharge of pollutants to **surface waters** or **underground waters**;

   b. Inspections or investigations by site **operators**, local, state or federal officials indicate the **SWPPP** is not effective in eliminating or significantly minimizing the discharge of pollutants to **surface waters** or **underground waters** or that the discharges are causing water quality standard exceedances; or

   c. The **SWPPP** is not achieving the general objectives of minimizing pollutants in **stormwater** discharges associated with **construction activity**, or the **SWPPP** is not consistent with the terms and conditions of this permit.

   d. At any time after permit coverage is effective, the MPCA may determine that the project's **stormwater** discharges may cause, have reasonable potential to cause, or contribute to non-attainment of any applicable water quality standard, or that the **SWPPP** does not incorporate the applicable requirements in Part III.A.9, Discharges to Impaired Waters and TMDLs. If MPCA makes such determination(s) or any of the determinations in Parts III.A.5.a.-.c., MPCA will notify the **Permittee(s)** in writing. In response, the **Permittee(s)** must develop a supplemental **BMP** action plan or appropriate **SWPPP** amendments describing **SWPPP** modifications to address the identified concerns and submit information requested by MPCA, which may include an individual permit application. If MPCA's written notification requires a response, failure to respond within the specified timeframe constitutes a permit violation.

4. The **SWPPP** must factor in any findings of and include any **stormwater** mitigation measures required as the result of any environmental, archeological or other required local, state or federal review conducted for the project. For the purposes of this permit provision, mitigation measures mean avoiding, minimizing, rectifying (e.g., repairing, rehabilitating, restoring), reducing, eliminating or compensating for impacts related to: (1) **stormwater** discharges associated with the project's **construction activity**; and (2) **erosion prevention**, **sediment control** and the Permanent **Stormwater** Management System for the project.

5. The **SWPPP** must provide additional measures as necessary to assure compliance with **surface and ground water** standards in Minn. R. chs. 7050 and 7060 in karst areas and to ensure protection of drinking water supply management areas (see Minn. R. 4725.4450).

CALCULATIONS

Water Quality Volume

New Impervious Area = 464,039 SQ. FT. – 319,681 SQ.FT. = 144,358 SQ. FT.

Water Quality Volume = 144,358 SQ. FT. * 1 IN = 12,030 CU. FT.

Storm Water Treatment Pond Volume

Volume of Pond is = 16,000 CU. FT. (LT Ditch) 1.0 FT. Sump 7333+50-7336+00

The volume of storm water treatment pond is more than the total volume needed.

Location of SWPPP Requirements in Project Plan		
Description	Title	Location
Summary of Pervious and Impervious	Notes	Section 6 Sheet 6
Direction of Flow	Plan and Profile	Section 60 sheets 1-10
Receiving Surface Waters	Title Sheet	Section 1 Sheet 1
Final Stabilization	Plan and Profile Erosion	Section 60 Sheets 11-20
Drainage Tabulation	Plan and Profile and Quantities	Section 60 Sheets 1-10 Section 8 Sheets 1-2
Erosion Control Tabulation	Plan and Profile Erosion and Quantities	Section 60 Sheets 11-20 Section 8 Sheets 1-2
Erosion Control Sheets	Plan and Profile Erosion	Section 60 Sheets 11-20
Erosion Control Details	Details and Standard Drawings	Section 20 sheets 3,4,9,10 D-708-2,5,7
Location of Ponds	Details	Section 20 Sheet 3 Section 200

MN STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
MN	SP 3501-13	6	8

CONSTRUCTION NOTES

The contractor shall maintain a quantity of Fiber Rolls, included in the estimated quantities, which shall be used for temporary sediment control as determined by the engineer in the field.

Temporary Sediment Basins are to be installed with a 1' sump by 40' in length at the 5 designated locations on plans with a rock check at the outlet.

Permanent storm water treatment pond at station 7333+50 to 7336+00 shall be excavated to within 1' of final elevation if adjacent soils are not stabilized. Once adjacent soils are stabilized the pond can be completed.

Floating silt curtain has been provided for work along the river bank.

The contractor shall keep the inspection and maintenance log.

INSPECTIONS AND MAINTENANCE

1. The **Permittee(s)** (either the **owner** or **operator**, whoever is identified in the **SWPPP**) must routinely inspect the entire construction site once every seven (7) days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.

2. All inspections and maintenance conducted during construction must be recorded in writing and these records must be retained with the **SWPPP** in accordance with Part III.D. Records of each inspection and maintenance activity shall include:

a. Date and time of inspections;
b. Name of person(s) conducting inspections;
c. Findings of inspections, including recommendations for corrective actions;
d. Corrective actions taken (including dates, times, and party completing maintenance activities);
e. Date and amount of all rainfall events greater than 1/2 inch (0.5 inches) in 24 hours;
f. Documentation of changes made to the **SWPPP** as required in Part III.A.4; and
g. A site map clearly marking which areas of the site are under active construction and have land disturbing activities taking place. The site map must also clearly show those areas where construction activity has temporarily or permanently ceased.

3. Where parts of the construction site have **permanent cover**, but work remains on other parts of the site, inspections of the areas with **permanent cover** may be reduced to once per month. Where construction sites have **permanent cover** on all exposed soil areas and no construction activity is occurring anywhere on the site, the site must be inspected for a period of twelve (12) months (the inspections may be ceased during frozen ground conditions). Following the twelfth month of **permanent cover** and no **construction activity**, inspections may be terminated until construction activity is once again initiated or sooner if notified in writing by the MPCA. Where work has been suspended due to frozen ground conditions, the required inspections and maintenance schedule must begin within 24 hours after runoff occurs at the site or prior to resuming construction, whichever comes first.

4. All **erosion prevention** and **sediment control BMPs** must be inspected to ensure integrity and effectiveness. All nonfunctional **BMPs** must be repaired, replaced, or supplemented with functional **BMPs** within 24 hours after discovery, or as soon as field conditions allow access unless another time frame is specified below. The **Permittee(s)** must investigate and comply with the following inspection and maintenance requirements:

a. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access.

b. Temporary and permanent sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access (see Part IV.D.).

c. **Surface waters**, including drainage ditches and conveyance systems, must be inspected for evidence of erosion and sediment deposition. The **Permittee(s)** must remove all deltas and sediment deposited in **surface waters**, including drainage ways, catch basins, and other drainage systems, and restabilize the areas where sediment removal results in exposed soil. The removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. The **Permittee** shall use all reasonable efforts to obtain access. If precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access. The **Permittee** is responsible for contacting all local, regional, state and federal authorities and receiving any applicable permits, prior to conducting any work.

d. Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all paved surfaces, within 24 hours of discovery, or if applicable, within a shorter time to comply with Part IV.C.6.

e. The **Permittee(s)** are responsible for the operation and maintenance of temporary and permanent water quality management **BMPs**, as well as all **erosion prevention** and **sediment control BMPs**, for the duration of the construction work at the site. The **Permittee(s)** are responsible until another **Permittee** has assumed control according to Part II.B.5 over all areas of the site that have not been finally **stabilized** or the site has undergone **Final Stabilization**, and a **NOT** has been submitted to the MPCA.

f. If sediment escapes the construction site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).

5. All infiltration areas must be inspected to ensure that no sediment from ongoing **construction activity** is reaching the infiltration area and these areas are protected from compaction due to construction equipment driving across the infiltration area.

Impaired Waters: Red River

For work on linear projects where the lack of right of way precludes the installation of any of the permanent stormwater management practices outlined in Appendix A, other treatment such as grassed swales, smaller ponds, or grit chambers is required prior to discharge to surface waters.

1. During construction.

a. All exposed soil areas must be stabilized as soon as possible to limit soil erosion but in no case later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased.
b. Temporary sediment basin requirements described in Part III.B.1-5 must be used for common drainage locations that serve an area with five (5) or more acres disturbed at one time.

2. Buffer zone. An undisturbed buffer zone of not less than 100 linear feet from the special water (not including tributaries) shall be maintained at all times. Exceptions from this requirement for areas, such as water crossings, limited water access and restoration of the buffer are allowed if the Permittee fully documents in the SWPPP the circumstances and reasons that the buffer encroachment is necessary. Replacement of existing impervious surface within the buffer is allowed under this permit. All potential water quality, scenic and other environmental impacts of these exceptions must be minimized by the use of additional or redundant BMPs and documented in the SWPPP for the project.

ESTIMATE OF QUANTITIES

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ND MN	AC-HPP-TIP-SS-6-066(012)137 SP 3501-13	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	BRIDGE	ND	MN	CR 18	TOTAL
103	0100	CONTRACT BOND	L SUM	1				1
108	0001	CRITICAL PATH METHOD SCHEDULE	L SUM	1				1
201	0330	CLEARING & GRUBBING	L SUM		0.5	0.5		1
202	0105	REMOVAL OF STRUCTURE	L SUM	1				1
202	0121	REMOVE & SALVAGE BITUMINOUS SURFACING	TON		13,510	12,890	3,534	29,934
203	0101	COMMON EXCAVATION-TYPE A	CY		102,512	57,181	16,473	176,166
203	0109	TOPSOIL	CY		19,302	12,102	8,690	40,094
203	0113	COMMON EXCAVATION-WASTE	CY		41,101			41,101
203	0121	TOPSOIL-WETLAND	CY		10,000			10,000
210	0101	CLASS I EXCAVATION	L SUM	1				1
210	0110	CLASS 2 EXCAVATION	CY	8,800				8,800
210	0201	FOUNDATION PREPARATION	EA	1				1
216	0100	WATER	M GAL		918	719	536	2,173
230	0330	SUBGRADE PREPARATION-TYPE C-18IN	STA		30			30
302	0100	SALVAGED BASE COURSE	TON		21,168	21,913	8,572	51,653
302	0115	AGGREGATE BASE COURSE CL 4	TON		984	1,083	329	2,396
302	0120	AGGREGATE BASE COURSE CL 5	TON			260	139	399
401	0100	MC70 OR 250 LIQUID ASPHALT	GAL		4,219	4,830	2,657	11,706
401	0150	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL		2,813	3,088	2,008	7,909
401	0160	BLOTTER MATERIAL CL 44	TON		76	80	61	217
410	0213	SUPERPAVE FAA 43	TON		4,482	5,079	2,783	12,344
410	0445	PG 58-28 ASPHALT CEMENT	TON		187	215	106	508
410	0450	PG 58-34 ASPHALT CEMENT	TON		92	101	67	260
410	0910	CORED SAMPLE	EA		13	13	13	39
602	0130	CLASS AAE-3 CONCRETE	CY	5,427.5				5,427.5
602	1130	CLASS AE-3 CONCRETE	CY	5,695.9				5,695.9
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	18,133				18,133
604	9915	PRESTRESSED I-BEAM-54IN	LF	11,000				11,000
612	0115	REINFORCING STEEL-GRADE 60	LBS	733,519				733,519
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	1,520,199				1,520,199
616	5890	STRUCTURAL STEEL	L SUM	1				1
622	0060	STEEL PILING HP 14 X 73	LF	33,130				33,130
622	0070	STEEL PILING HP 14 X 102	LF	46,860				46,860

ESTIMATE NUMBER: 11032 RUN DATE: 09/12/2008 TIME: 12:02:21

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND MN	AC-HPP-TIP-SS-6-066(012)137 SP 3501-13	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	BRIDGE	ND	MN	CR 18	TOTAL
622	6760	STEEL SHEET PILING	SF		4,200	3,240		7,440
624	0128	TRAFFIC RAIL-STEEL	LF	8,182				8,182
626	0120	PIER COFFERDAM	EA	3				3
702	0100	MOBILIZATION	L SUM	1				1
704	0100	FLAGGING	MHR		750	750		1,500
704	1000	TRAFFIC CONTROL SIGNS	UNIT		1,248.5	1,248.5		2,497
704	1043	ATTENUATION DEVICE-TYPE B-65	EA		2	2		4
704	1060	DELINEATOR DRUMS	EA		25	25		50
704	1067	TUBULAR MARKERS	EA		55	55		110
704	1081	VERTICAL PANELS-BACK TO BACK	EA		78	82	60	220
704	1185	PILOT CAR	HR		175	175		350
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA		61	34		95
706	0200	FIELD LABORATORY-TYPE B	EA		0.5	0.5		1
706	0300	FIELD LABORATORY-TYPE C	EA		1	1		2
706	0400	FIELD OFFICE	EA		0.5	0.5		1
708	1020	RIPRAP-LOOSE ROCK	CY	1,750		61	11	1,822
708	1310	EROSION CHECKS	LF			110	55	165
708	1325	SILT FENCE SUPPORTED	LF		690	415	475	1,580
708	1375	FLOTATION SILT CURTAIN	LF		225	225		450
708	1430	FIBER ROLLS 12IN	LF		220	535	470	1,225
708	2240	SEEDING-TYPE B-CL II	ACRE		41	16	8	65
708	2260	SEEDING-TYPE B-CL IV	ACRE		41	16	8	65
708	5500	MULCHING	ACRE		41	16	8	65
708	5652	ECB TYPE 3	SY		10,500	10,976	2,519	23,995
708	8500	STABILIZED CONSTRUCTION ACCESS	EA		1	2		3
709	0600	GEOTEXTILE FABRIC-TYPE RR	SY	2,600		132	22	2,754
709	0701	GEOTEXTILE FABRIC-TYPE R1	SY			26,215	13,661	39,876
714	0615	PIPE CONC REINF 24IN CL III	LF			100	88	188
714	3020	END SECT-CONC REINF 24IN	EA			2	2	4
714	4110	PIPE CONDUIT 30IN	LF		416			416
714	4115	PIPE CONDUIT 36IN	LF		440			440
714	5035	PIPE CORR STEEL .064IN 24IN	LF			508	236	744
714	5820	END SECT CORR STEEL .064IN 24IN	EA			12	8	20

ESTIMATE NUMBER: 11032 RUN DATE: 09/12/2008 TIME: 12:02:21

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND MN	AC-HPP-TIP-SS-6-066(012)137 SP 3501-13	8	3

SPEC	CODE	ITEM DESCRIPTION	UNIT	BRIDGE	ND	MN	CR 18	TOTAL
714	9916	FLAP GATE 36IN	EA		2			2
720	0100	MONUMENTS	EA		3	4	3	10
720	0110	RIGHT OF WAY MARKERS	EA		20	10	12	42
748	0141	CURB & GUTTER-TYPE 1 SPECIAL	LF		40	40		80
754	0117	FLAT SHEET FOR SIGNS-TYPE 3A REFL SHEETING	SF		231.1	23.5		254.6
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF		452.8	155.7		608.5
754	0594	RESET SIGN	EA			14		14
762	0113	EPOXY PVMT MK 4IN LINE	LF		17,480	12,174	7,200	36,854
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF		9,160	10,560	3,200	22,920
764	0131	W-BEAM GUARDRAIL	LF		128.8	128.8		257.6
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA		2	2		4
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF		12.5	37.5		50
764	2081	REMOVE END TREATMENT & TRANSITION	EA		1	2		3
766	0100	MAILBOX-ALL TYPES	EA		1	2	1	4
900	0100	SETTLEMENT PLATE	EA		1	1		2
920	1300	PREFABRICATED VERTICAL WICK DRAINS	LF		172,800	46,980		219,780
920	1305	PREFABRICATED HORIZONTAL STRIP DRAINS	LF		34,430	9,000		43,430
920	1310	VIBRATING WIRE SETTLEMENT CELL	EA		1	1		2
920	1315	MULTI-LEVEL VIBRATING WIRE PIEZOMETER	EA		1	1		2
920	1318	VIBRATING WIRE PIEZOMETER	EA		1	1		2
920	1320	VIBRATING WIRE DATA LOGGER	EA		6	6		12
930	3000	BRIDGE BENCH MARKS	SET	1				1
930	8600	ELASTOMERIC BEARING PAD	SF	62.4				62.4
930	8665	3IN EXPANSION JOINT STRIP SEAL	LF	82				82
930	8666	4IN EXPANSION JOINT STRIP SEAL	LF	41				41
930	8667	5IN EXPANSION JOINT STRIP SEAL	LF	82				82
930	8681	FINGER EXPANSION JOINT	LF	86.4				86.4
930	9536	ABUTMENT UNDERDRAIN SYSTEM	L SUM	1				1

ESTIMATE NUMBER: 11032 RUN DATE: 09/12/2008 TIME: 12:02:21

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND MN	AC-HPP-TIP-SS-6-066(012)137 SP 3501-13	10	1

BASIS OF ESTIMATE

		Mainline Hwy 66 & 11				Co Highway 18				Approaches		Intersections	
		7252+75.4 (Begin Surfacing) to 7290+60 (Begin Bridge) 7331+50 (End Bridge) to 7372+00 (End Project) ND 30.54 Stations MN 32.85 Stations		ND 8.00 Stations MN 6.94 Stations		500+00 to 527+15.8 (South of Hwy 11) 527+55.8 TO 530+72.5 (North of Hwy 11) 15.03 Stations		15.30 Stations		2 - Sec Line ND 3 - Sec Line MN 4 - Private Drive ND 7 - Private Drive MN		Additional for Intersections And turn lane	
		Tangent		Curve		Tangent		Curve				Tangent	
Material	**Unit**	Width (ft)	Quantity per Station	Width (ft)	Quantity per Station	Width (ft)	Quantity per Station	Width (ft)	Quantity per Station	Sec Line Quan /Appr	Private Dr Quan /Appr	Additional TL & Co 18 Ints	Additonal Hwy 44 Int
Salvage Base Course @ 1.875 Ton/CY	Ton	44	442.63	44	441.49	36	281.68	36	283.53	88	68	187-132	130
Aggregate Cl 4 @ 1.875 Ton/CY	Ton	6/6	32.98	--	--	4/4	21.91	--	--	--	--	--	--
MC70 or 250 Liquid Asphalt @ 0.25 Gal/SY	Gal	34	94.44	44	122.22	27	75.00	36	100.00	72	59	190-60	43
Blotter Material Cl 44 @ 15 lbs/SY	Ton	24	2.00	24	2.00	24	2.0	24	2.00	--	--	--	
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY (bottom Lift)	Gal	31.5	17.50	44	24.44	27.7	15.39	36	20.00	15	12	114-36	26
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY (middle Lift)	Gal	30	16.67	42.5	23.61	25.9	14.39	34.1	18.94	--	--	--	--
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY (top Lift)	Gal	29	16.11	41.1	22.83	25.1	13.94	33.3	18.50	--	--	--	--
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY (fog coat)		28	15.56	40.0	22.22	24	13.33	32	17.78				
Superpave FAA 43 @ 2 Ton/CY	Ton	28	100.59	40	142.09	24	78.20	32	105.08	56	46	232-67	48
PG 58-28 Asphalt Cement @ 6.2% (bottom and middle Lift)	Ton		4.0410		5.6951		2.9696		4.0002	3.47	2.85	5.22-2.64	1.8938
PG 58-34 Asphalt Cement @ 6.2% (top Lift)	Ton		2.1956		3.1145		1.8787		2.5145			9.16-1.51	1.0822
Geotextile Fabric Type R1	SY	58	645 *	58	645 *	45	503*	45	503*				

* MN Mainline Hwy 11 & Co Rd 18 (South of Hwy 11)

Temporary Pavement Marking

Short Term 4 IN Broken Line Paint Tape or Raised Marker		
Location	Basis	Quantity
Centerline – Top of Primed Surface	Centerline Skips 1,320 LF/mile ** Barrier Stripe 1200 LF (600' ND 600' MN)	*ND 66-2420' *MN 11-1775' CO 18-800'
Centerline – Top of 1st Lift	Centerline Skips 1,320 LF/mile Barrier Stripe 1200 LF (600' ND 600' MN)	ND 66-1580' MN 11- 1595' CO 18- 800'
Centerline – Top of 2nd Lift	Centerline Skips 1,320 LF/mile Barrier Stripe 1200 LF (600' ND 600' MN)	ND 66-1580' MN 11 -1595' CO 18- 800'
Centerline – Top of 3rd Lift	Centerline Skips 1,320 LF/mile Barrier Stripe 1200 LF (600' ND 600' MN)	ND 66-1580' MN 11-1595' CO 18-800'
Hwy 44 & CO 18 Intersection (Intersections)	Barrier Stripe 4 applications	ND 66 & ND 44 -2000' MN 11& CO 18-4000'
TOTAL *		ND-9160' MN-10555' CO 18-3200'

* Includes Bridge
** Passing Barriers 7316+00 RT to 7322+00 Rt – 7327+50 LT to 7333+50 LT

Permanent Pavement Marking

Permanent Pavement Marking		
Location - Type	Basis	Quantity
Centerline – Epoxy Pvmt MK 4 IN Line	Centerline Skips 1,320 LF/mile Barrier Stripe 1200	ND -2420' MN- 1775' CO 18-800'
Edge Lines – Epoxy Pvmt MK 4 IN Line	10,560 LF/mile	ND-14560' MN-9399' CO 18- 6400'
ND 66 & ND 44 Intersection		
Epoxy Pvmt MK 4 IN Line	Barrier Stripe	500'
MN 11 & CO 18 Intersection		
Epoxy Pvmt MK 4 IN Line	Barrier Stripe	1000'
TOTAL *	Epoxy Pvmt MK	ND –17480 MN –12174 CO 18 - 7200

Water

25 MGal/Mile for Dust Palliative
20 Gal/Ton for Aggregates
10 Gal/CY for Embankment

Mailboxes

ND	1 single
MN	3 single

Remove& Salvage Bituminous surfacing

Hwy 66	5" Bit Surf = 2533 CY X 2 Ton/CY	= 5066 Ton
Hwy 66	6" Emuls Base = 4222 CY X 2 Ton/CY	= 8444 Ton
Hwy 11	10" Bit Surf = 3453 CY X 2 Ton/CY	= 6906 Ton
Hwy 11	10" Aggr Base = 6383 CY X 1.875 Ton/CY X.5	= 5984 Ton
Co 18	5.5" Bit Surf = 900 CY X 2 Ton/CY	= 1800 Ton
Co 18	12" Aggr Base = 1850 CY X 1.875 Ton/CY X.5	= 1734 Ton
		Total =29934Ton

Special Provisions

SP 023(08)	Prefabricated Vertical Wick Drains & Horizontal Strip Drains
SP 024(08)	Geotechnical Instrumentation
SP 032(08)	Dispute Review Board
SP 033(08)	Critical Path Method
SP 034(08)	Quality Control/Quality Assurance
SP 035(08)	Construction Survey
SP 036(08)	Prebid Questions and Answers
SP 037(08)	Permits

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	011	001
MN	SP 3501-13		

EARTHWORK SUMMARY

HIGHWAY 66

Phase 1 Embankment = 68,816 CY

Phase 1 Excavation
Excavation from mainline ditches beginning to 7278+00 = 17908 CY
Excavation from right ditch from 7278+00 to 7291+00 = 13,384 CY
Excavation from excavation area = 37,524 CY
Total excavation = 68,818 Cy
(use 68,816 CY in west abutment surcharge)

Phase 2 Embankement = 7376 CY

Phase 2 Excavation
Remaining excavation from mainline ditches = 19251 CY
Excavation from removal of surcharge = 14,445 CY
Total Excavation = 33,696 CY

(use 7376 CY in mainline embankment place 26,320 CY back in excavation area)

Phase 3 Excavation

Excavation from removal of old highway subgrade = 41,101 CY (Common Exc.-Waste)

(use 8534 CY to fill in old highway ditches, place 11,204 CY
in excavation area and waste 21,363 CY off project site)

Topsoil from construction of new highway = 13,562 CY
Topsoil from removal of old highway = 5,740 CY
Topsoil from excavation area = 10,000 CY (Topsoil-Wetland)

HIGHWAY 11

Phase 1 Embankment = 4,402 CY

Phase 1 Excavation
Excavation from mainline ditches = 22,182 CY
(use 4,402 CY in east abutment embankment use
17,780 CY to construct Co Hwy 18)

Phase 2 Embankment = 26,454CY

Phase 2 Excavation
Excavation from Mainline ditches and sediment pond = 34,999 CY
(use 26,454 CY to construct mainline, waste 8545 CY
in backslopes of mainline ditches)

Topsoil from mainline and sediment pond = 12102 CY

COUNTY HIGHWAY 18

Phase 1 Embankment = 34,253 CY

Phase 1 Excavation = 16,473 CY
(obtain 17,780 CY excavation from Hwy 11 ditches)

Topsoil = 8690 CY

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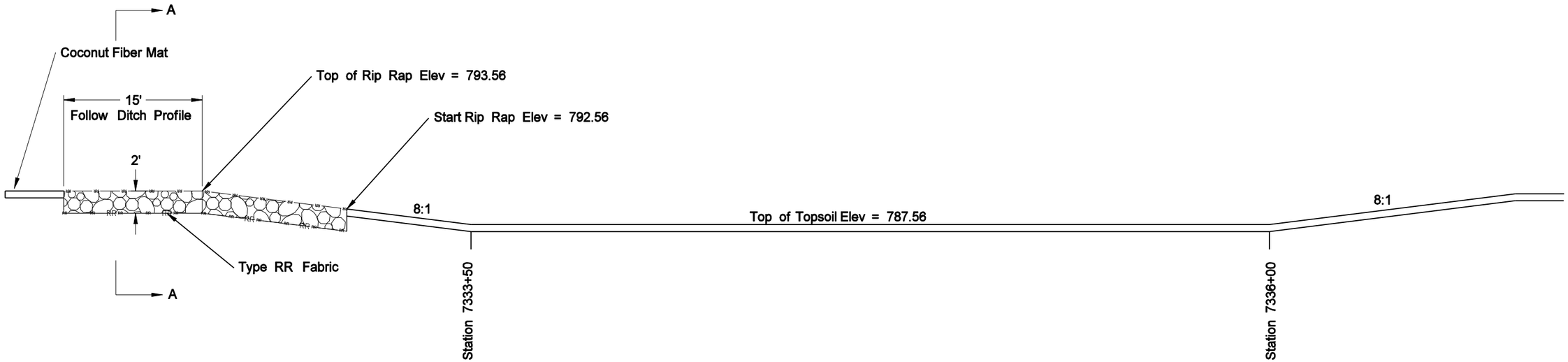
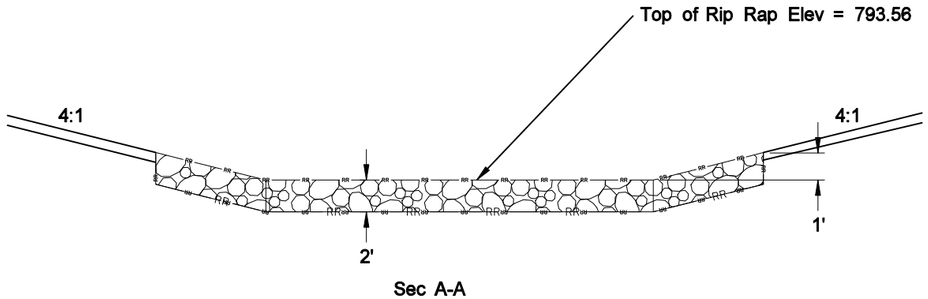
Earth Summary

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	003
MN	SP 3501-13		





Sec A-A

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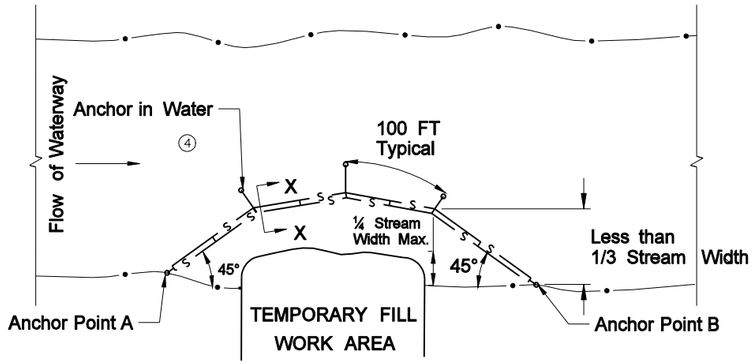
Storm Water Treatment Pond Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	004
MN	SP 3501-13		

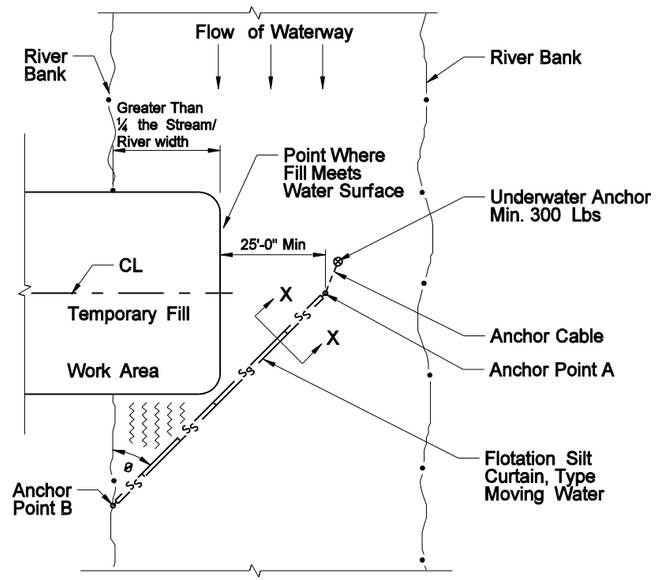


PLAN VIEW

FLOTATION SILT CURTAIN - TYPE WORK AREA

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:
WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WATER DEPTH: 11 FT.



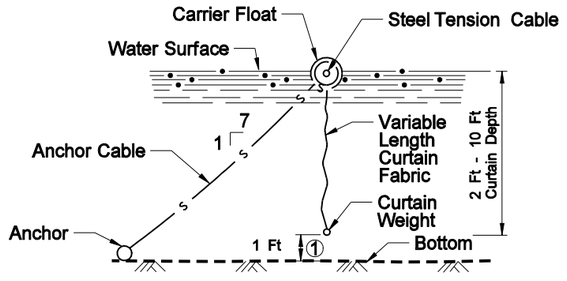
∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

PLAN VIEW

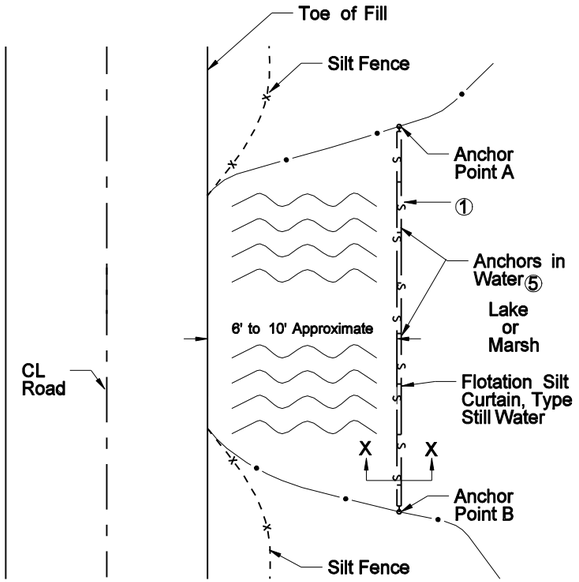
FLOTATION SILT CURTAIN - TYPE MOVING WATER

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.
MAXIMUM WATER DEPTH: 11 FT. ①
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.



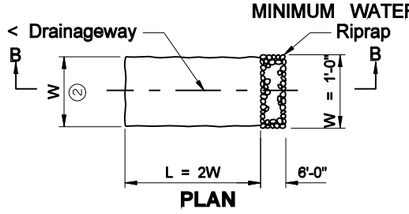
SECTION X-X
FLOTATION SILT CURTAINS



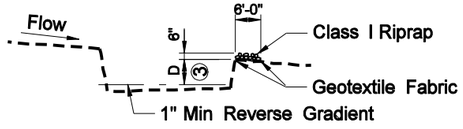
PLAN VIEW

FLOTATION SILT CURTAIN - TYPE STILL WATER

DESIGN GUIDELINES:
MAXIMUM WATER DEPTH: 11 FT. ①
MINIMUM WATER DEPTH: 3 FT.



PLAN



SECTION B-B
SEDIMENT TRAP DETAIL

Notes:
① Curtain 1 FT from Bottom
② W = 10 FT Min, 20 FT Max
③ D = 2 FT
④ 100 FT Max Spacing Between Anchors, Min 40 LBS
⑤ Use enough Anchors to Hold Silt Curtain in Place

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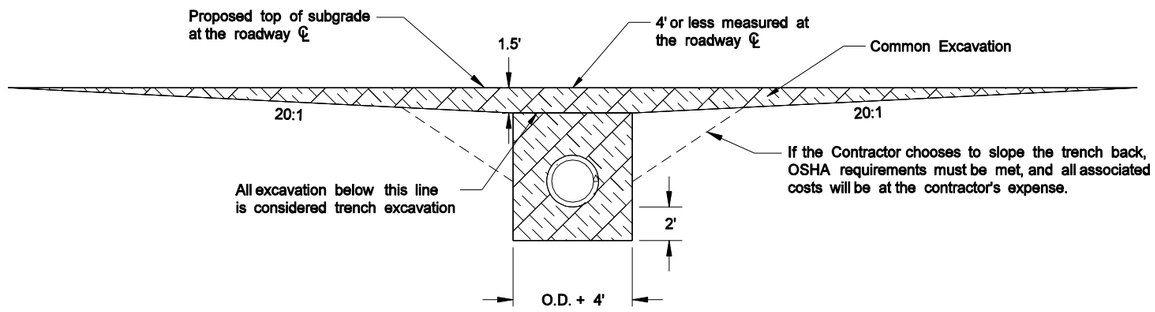
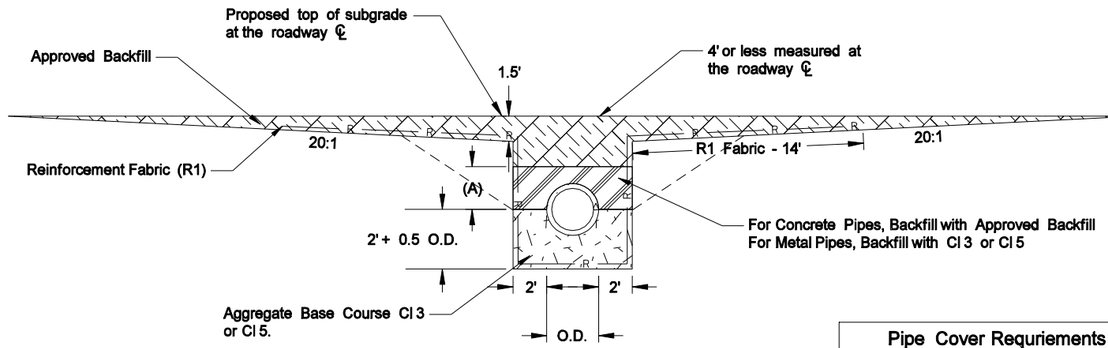
Floating Silt Curtain

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	005
MN	SP 3501-13		



Removal Detail



Backfill Detail

Pipe Cover Requriements	
Pipe Materials	Dimension (A)
Concrete	0
Metal	0.5 O.D. + 1'

Included in Pipe Pay Item
1) Pipe
2) Trench excavation
3) Disposal of unsuitable excavated material and placement of suitable excavated material on inslope.
4) Approved Backfill

Pay Items
1) Pipe
2) All Reinforcement Fabric - Type R1
3) Surfacing Removal
4) Common Excavation
5) Aggregate Base Course CL 3 or CL 5

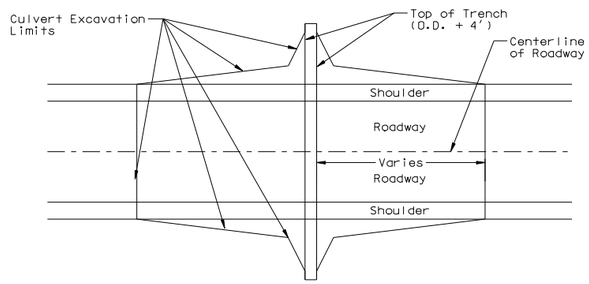
NOTES:

(1) The reinforcement fabric shall be rolled out parallel to the centerline of the road and shall be placed as shown in the details. The fabric shall be placed so that it is taut and the fabric shall be pinned on the 20:1 transition using 6" minimum pins. The pins shall be placed at a 15' spacing along all edges and at all corners prior to placing fill on the fabric. The reinforcement fabric shall be measured by the actual surface area covered to the nearest square yard. No allowance will be made for overlaps.

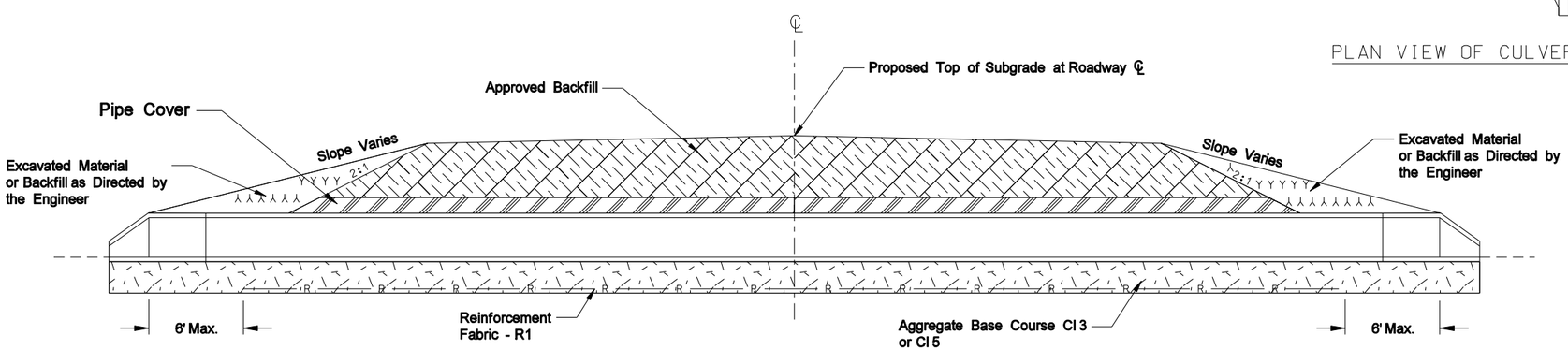
(2) This detail corresponds to new/replaced mainline and paved intersection roadway pipes only (including ramps). It does not include pipes in approaches.

(3) Compaction requirements for all materials associated with the trench installation shall meet 90% of AASHTO T-180. Maximum thickness of any one lift shall not exceed 6 inches.

(4) Approved Backfill shall meet the requirements of AASHTO M 145 for A-1, A-2, and A-3 soils.



PLAN VIEW OF CULVERT (NOT TO SCALE)



Cross Section View - Proposed Section

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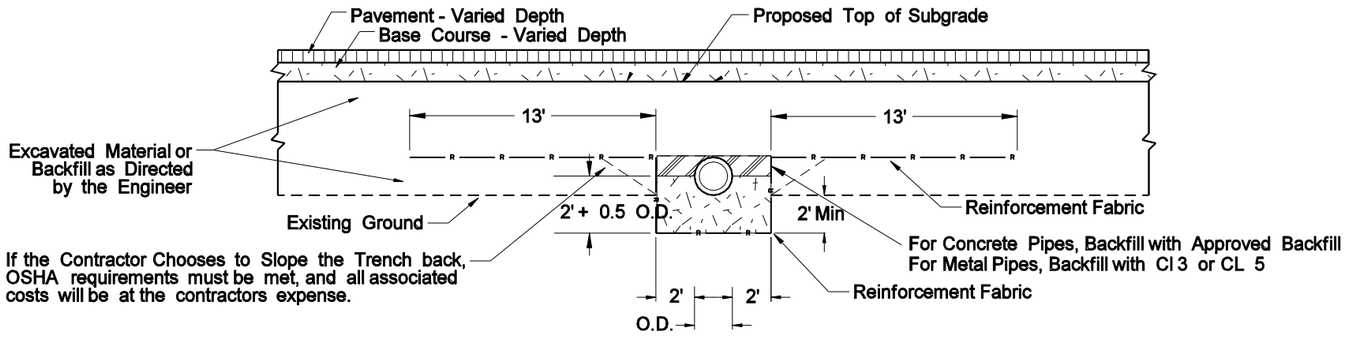
Transverse Centerline Pipe Backfill Detail for Pipes 4' and Less Below the Proposed Base

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-SS-TIP-6-066(012)137	020	006
MN	SP 3501-13		



Backfill Detail

Included in Pipe Pay Item
1) Pipe
2) Trench excavation
3) Disposal of unsuitable excavated material and placement of suitable excavated material on inslope.
4) Approved Backfill

Pay Items
1) Pipe
2) All Reinforcement Fabric - Type R1
3) Surfacing Removal
4) Common Excavation
5) Aggregate Base Course CL 3 or CL 5

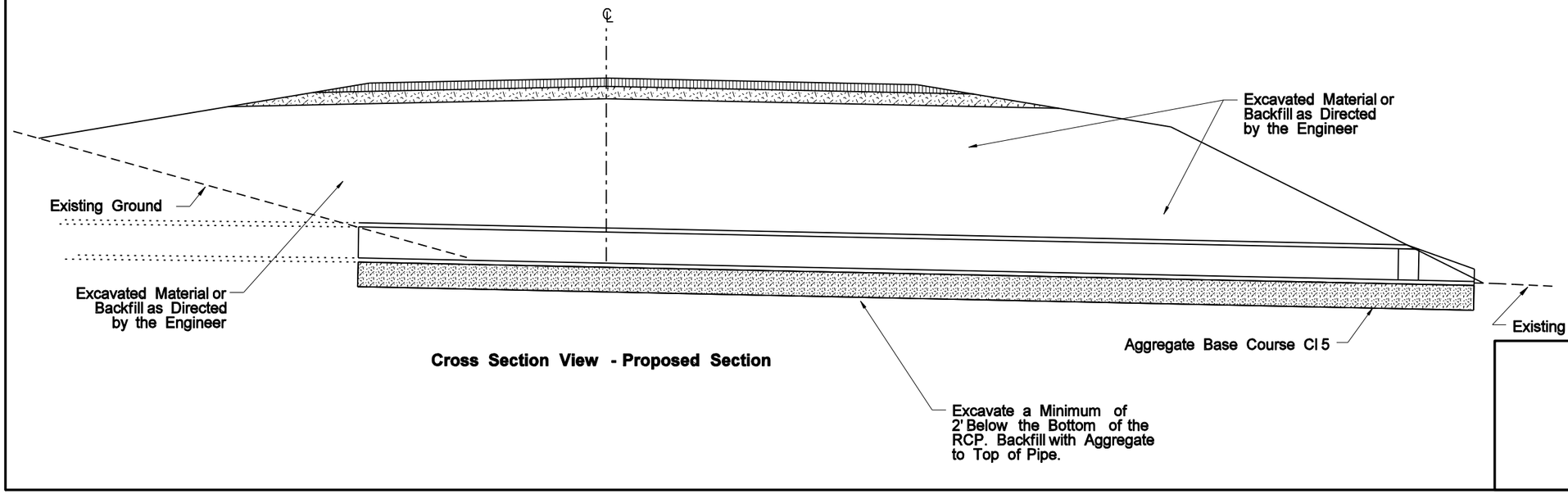
NOTES:

(1) The reinforcement fabric shall be rolled out parallel to the centerline of the road and shall be placed as shown in the details. The fabric shall be placed so that it is taut and the fabric shall be pinned on the 20:1 transition using 6" minimum pins. The pins shall be placed at a 15' spacing along all edges and at all corners prior to placing fill on the fabric. The reinforcement fabric shall be measured by the actual surface area covered to the nearest square yard. No allowance will be made for overlaps.

(2) This detail corresponds to new/replaced mainline and paved intersection roadway pipes only (including ramps). It does not include pipes in approaches.

(3) Compaction requirements for all materials associated with the trench installation shall meet 90% of AASHTO T-180. Maximum thickness of any one lift shall not exceed 6 inches.

(4) Approved Backfill shall meet the requirements of AASHTO M 145 for A-1, A-2, and A-3 soils.



Cross Section View - Proposed Section

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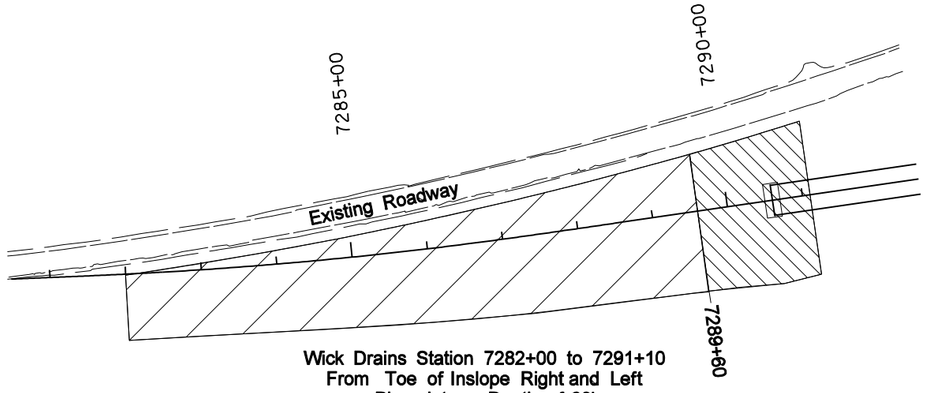
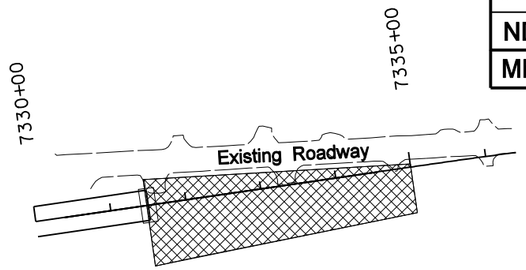
Transverse Centerline Pipe Backfill Detail for New Pipe Placed on Existing Ground In Embankment Areas

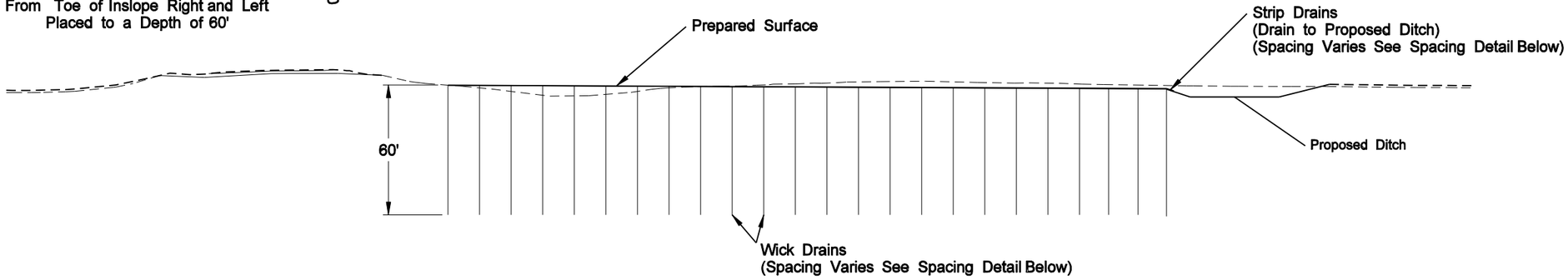
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	007
MN	SP 3501-13		

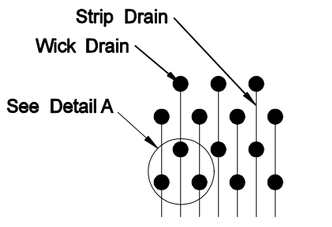


Wick Drains Station 7282+00 to 7291+10
From Toe of Inslope Right and Left
Placed to a Depth of 60'

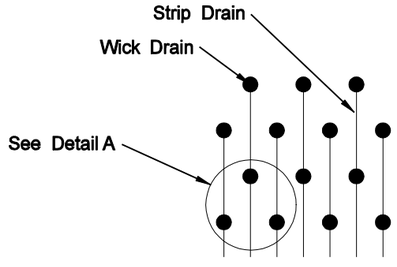


Wick Drains Station 7331+48 to 7335+00
From Toe of Inslope Right and Left
Placed to a Depth of 60'

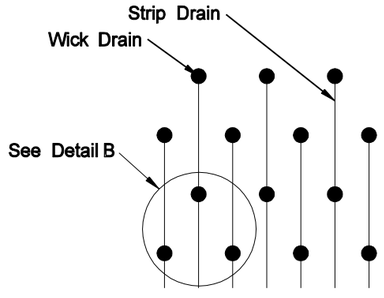




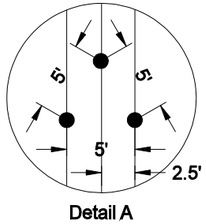
5 Ft. Triangular Spacing



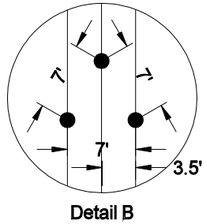
7 Ft. Triangular Spacing



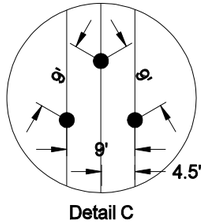
9 Ft. Triangular Spacing



Detail A



Detail B



Detail C

Wick Drains 5 Ft. Triangular Spacing
With Surface Strip Drains

Wick Drains 7 Ft. Triangular Spacing
With Surface Strip Drains

Wick Drains 9 Ft. Triangular Spacing
With Surface Strip Drains

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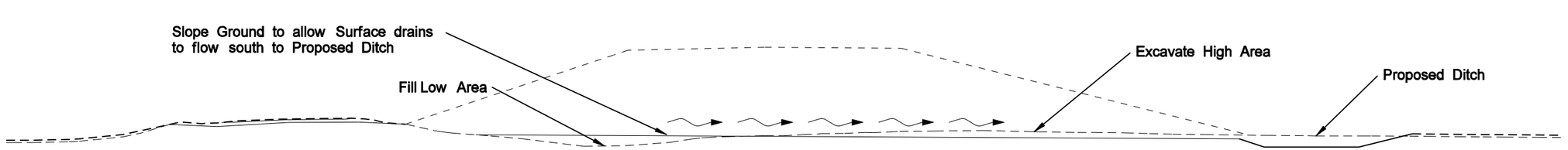
Wick Drain Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	008
MN	SP 3501-13		



* All surfaces that require wick drains shall be graded prior to installing wick drains. Drainage from surface drains shall flow south into proposed ditch.

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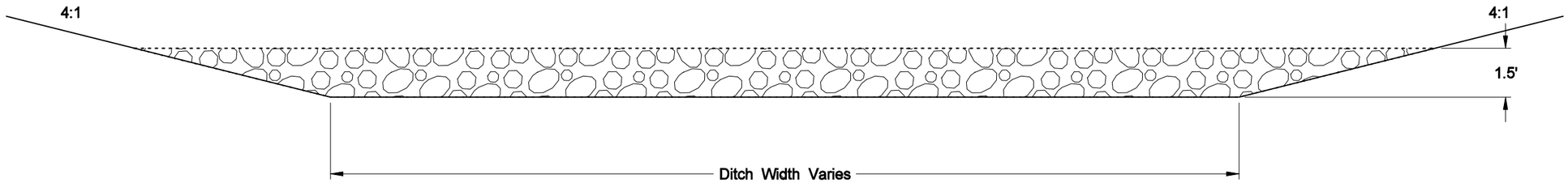
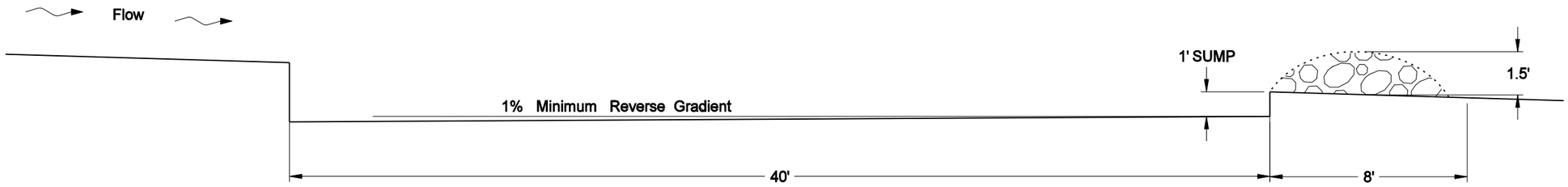
Wick Drain and Surface Preparation Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	009
MN	SP 3501-13		





Note: The cost of installing rock check, excavating sump, maintaining temporary sediment basin, and removal of temporary sediment basin for each location shall be included in the price bid for the item "Erosion Check".

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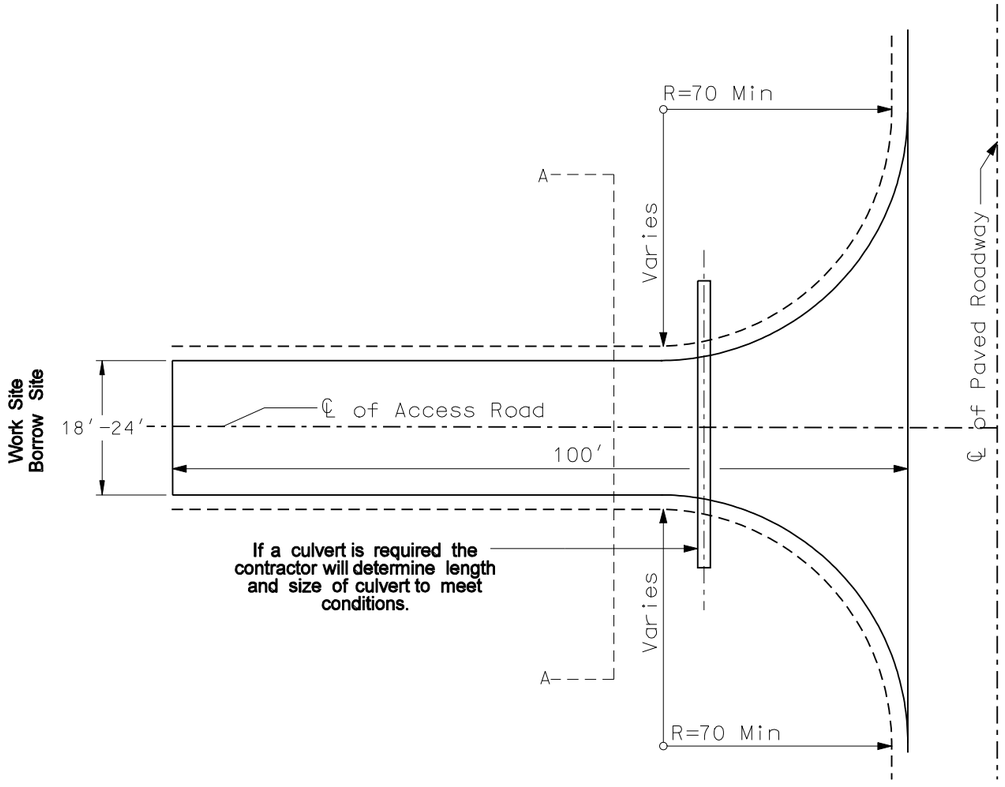
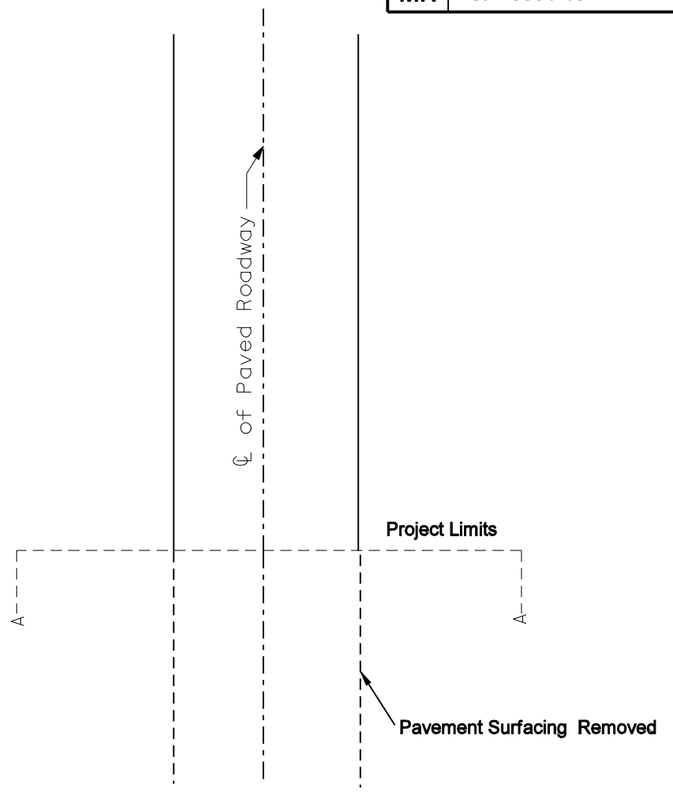
Temporary Sediment Basin Detail

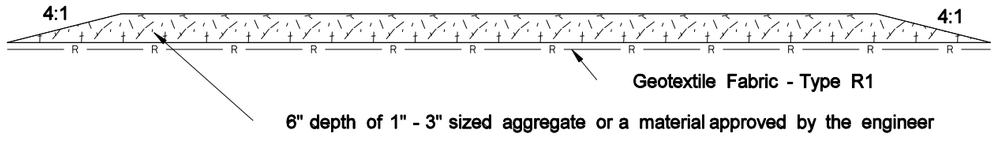
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	010
MN	SP 3501-13		



PLAN VIEW



PLAN VIEW



A - A Cross Section

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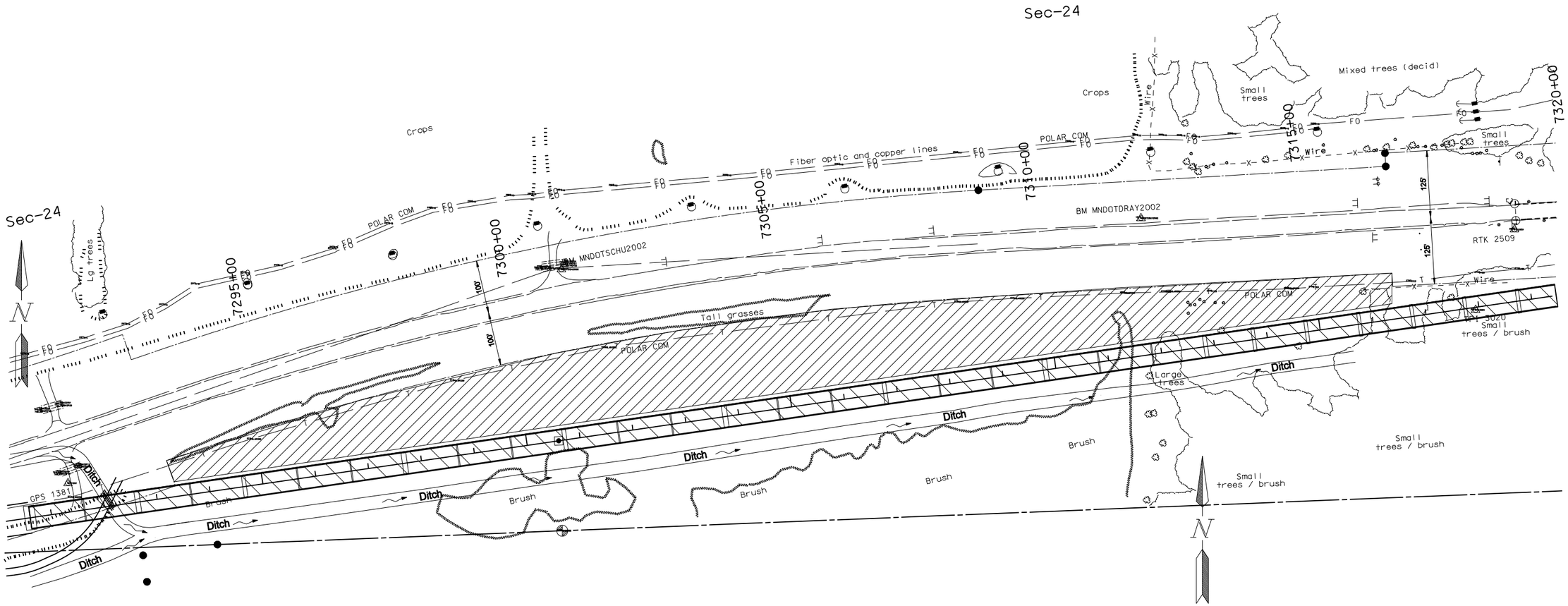
Stabilized Construction Access

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	020	011



Excavation Area

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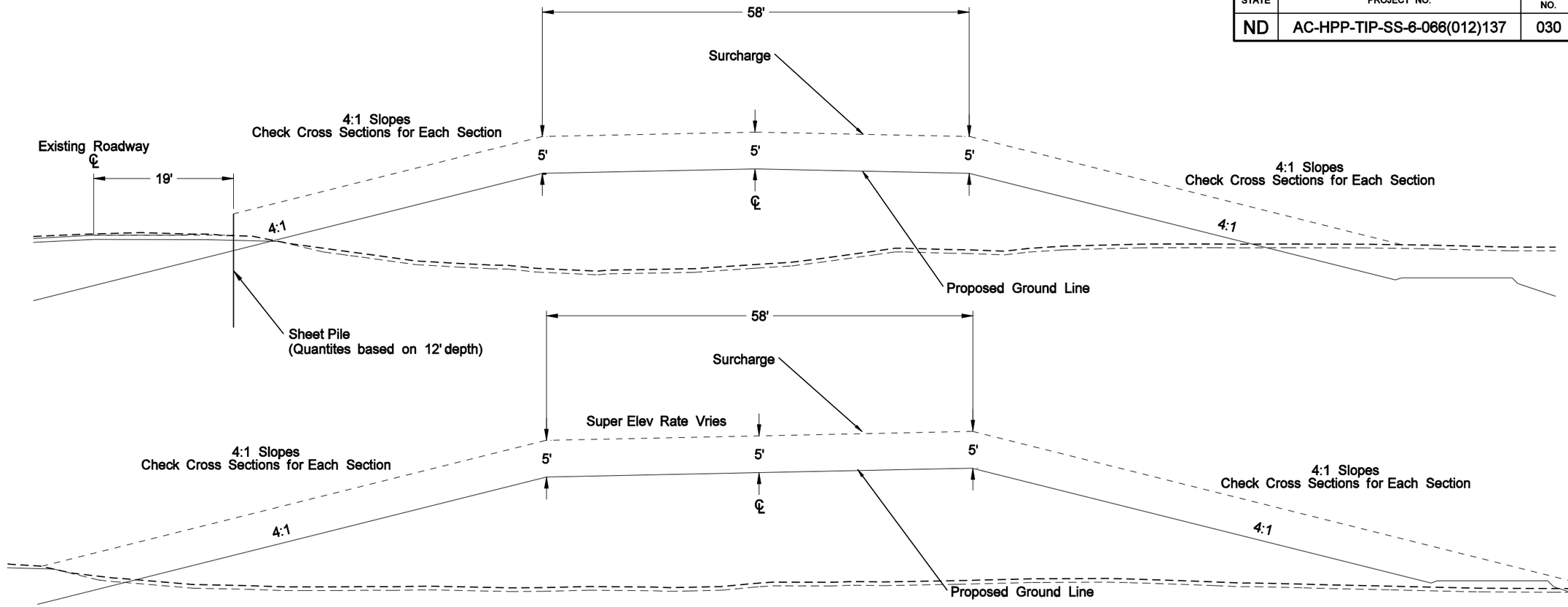
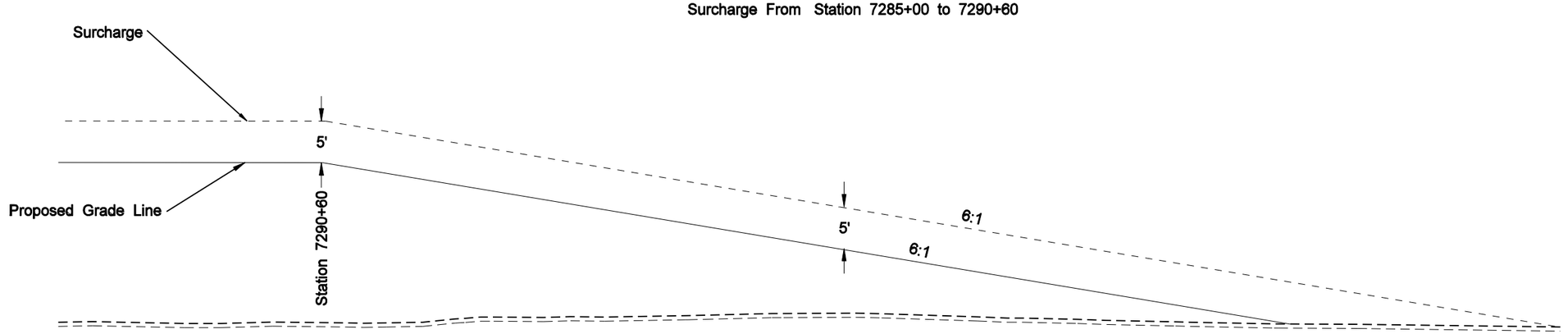
Excavation Area

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	030	006



Surcharge From Station 7285+00 to 7290+60



Profile View

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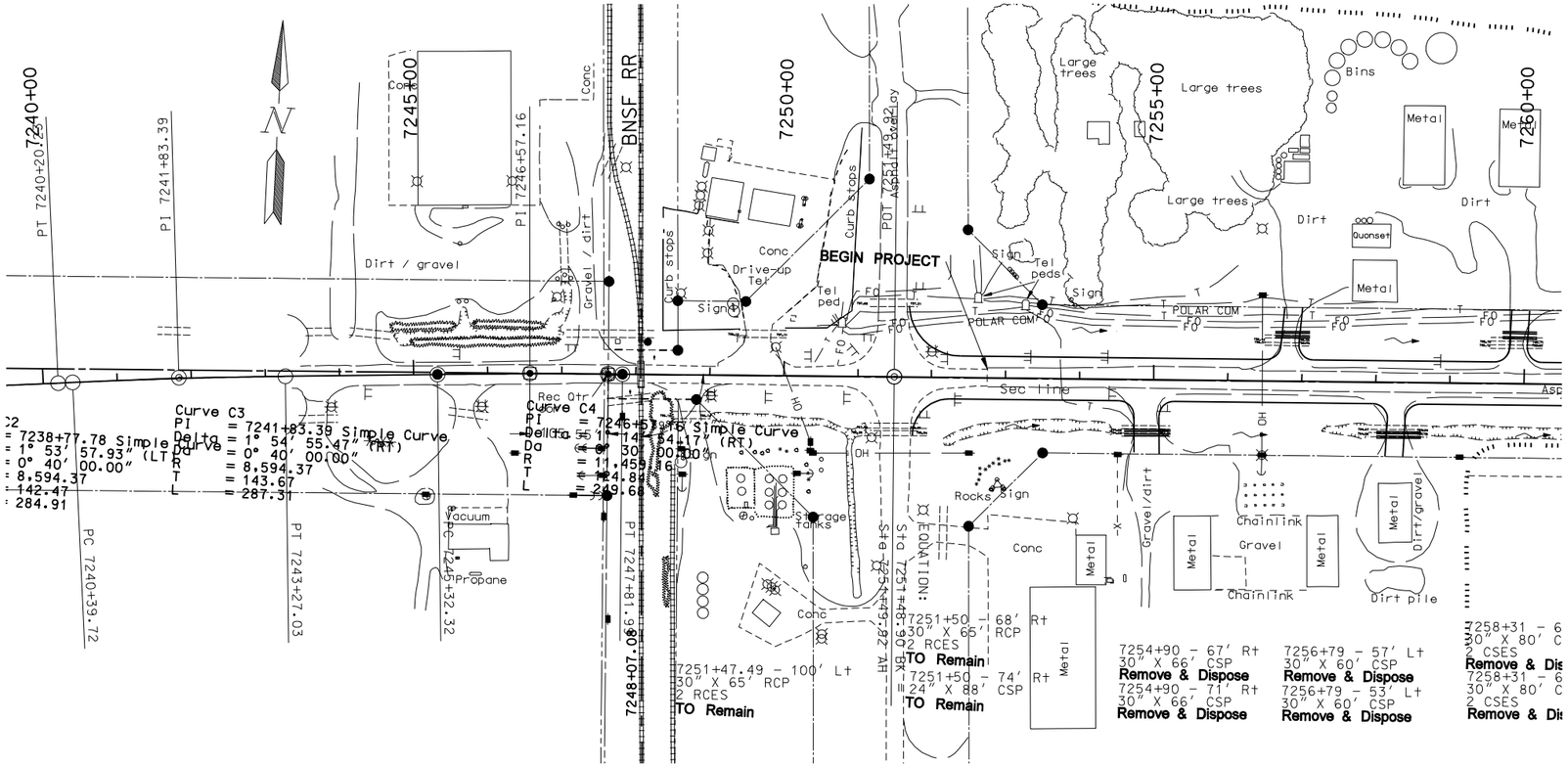
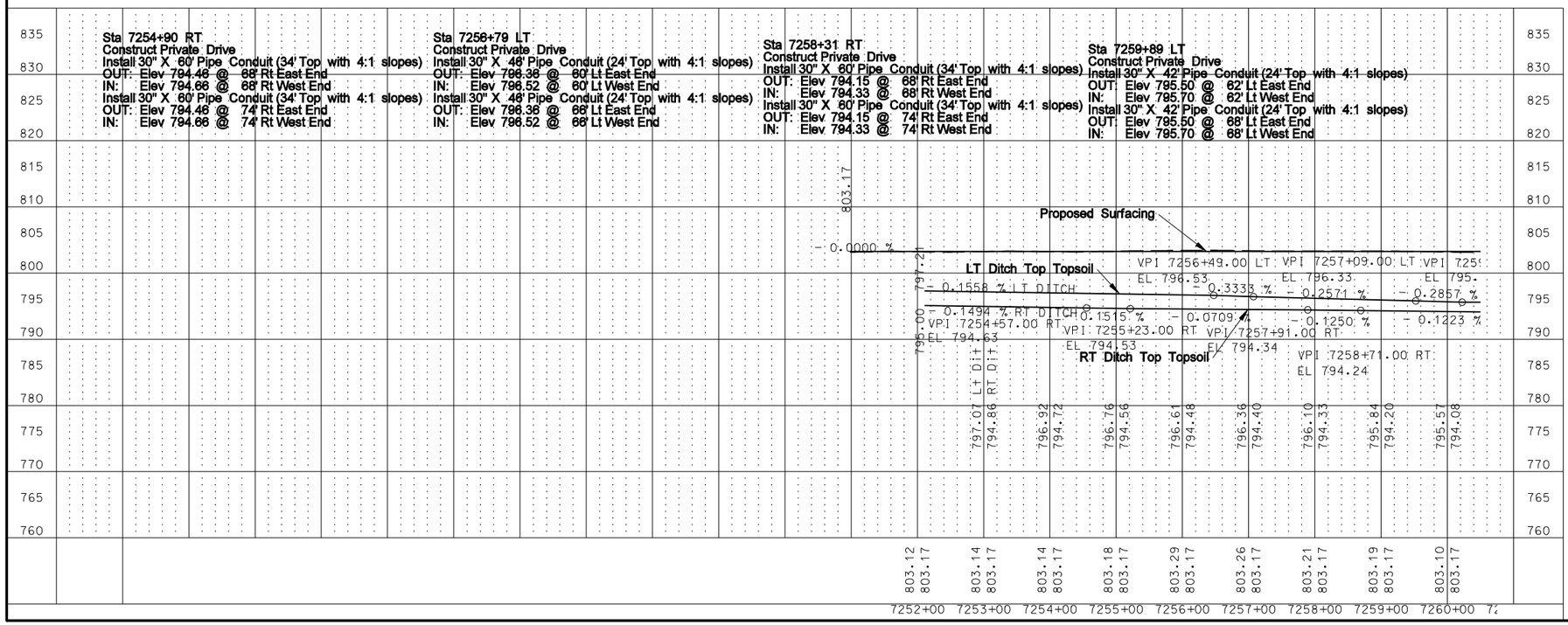
Surcharge Typical

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	001

30" Pipe Conduit

Station 7254+90 RT	120 LF
Station 7256+79 LT	92 LF
Station 7258+31 RT	120 LF
Station 7259+89 LT	84 LF





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Plan and Profile

Station 7240+00 to 7260+00

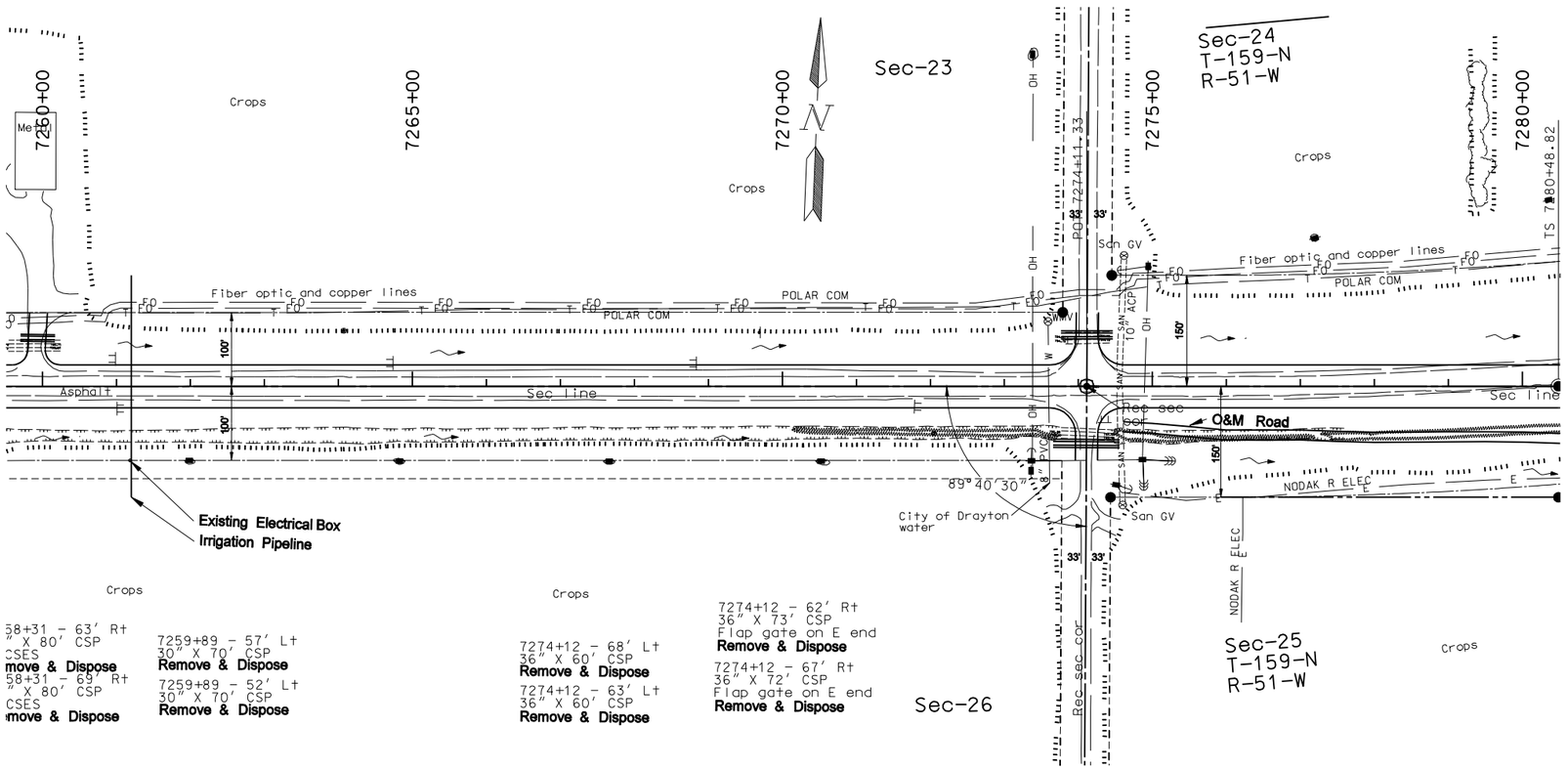
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS6-066(012)137	060	002

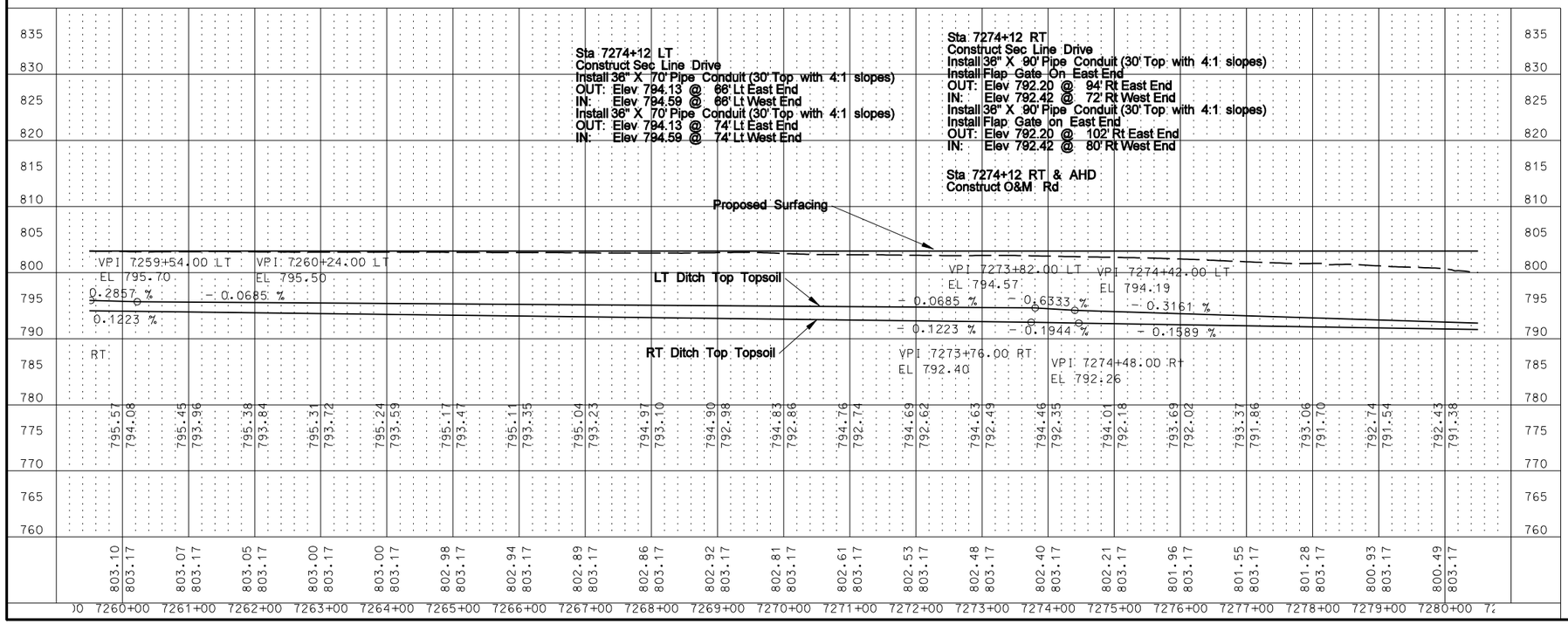
36" Pipe Conduit

Station 7274+12 LT	140 LF
Station 7274+12 RT	180 LF

Flap Gate 36"

Station 7274+12 RT	2 EA





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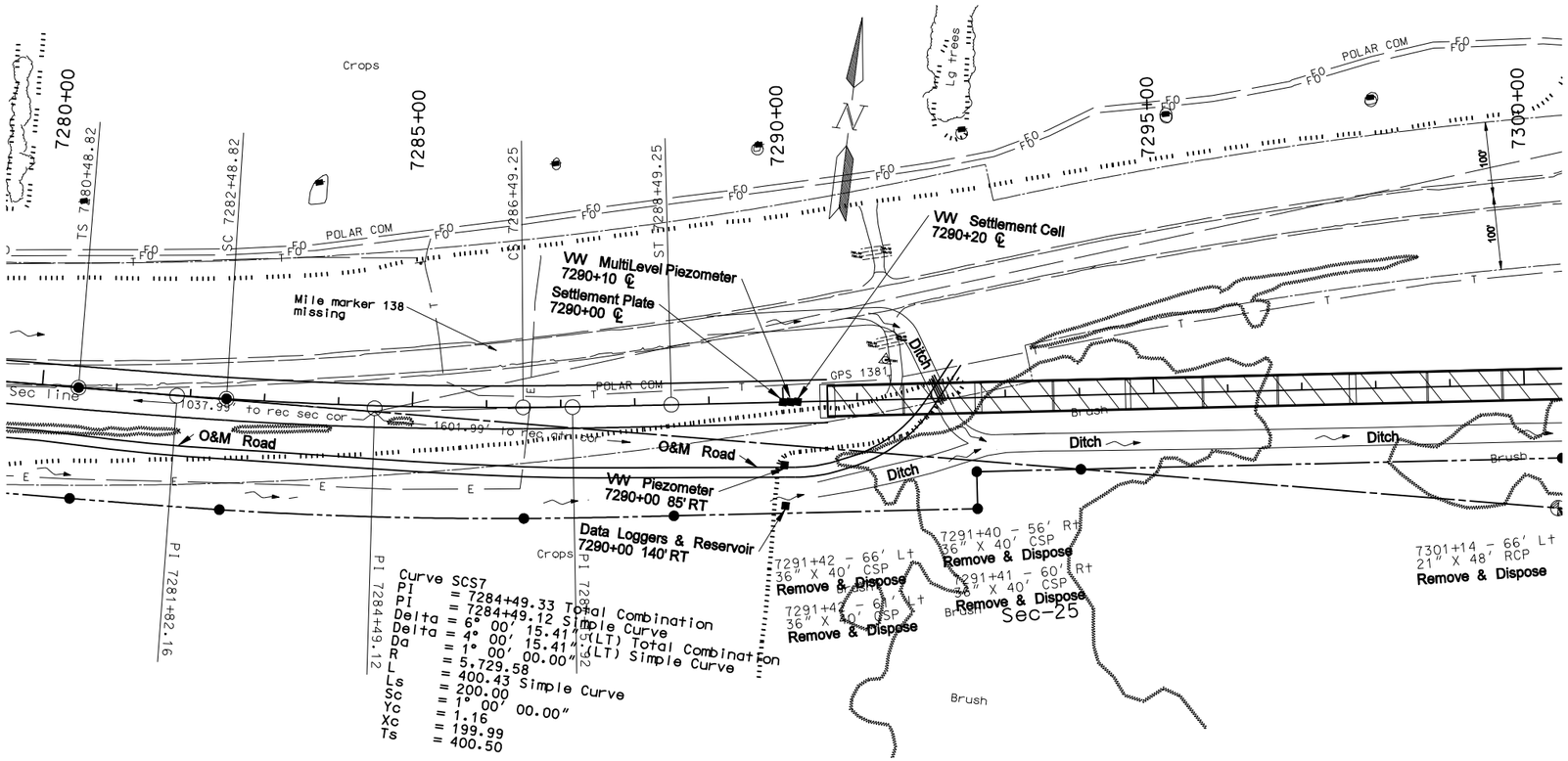
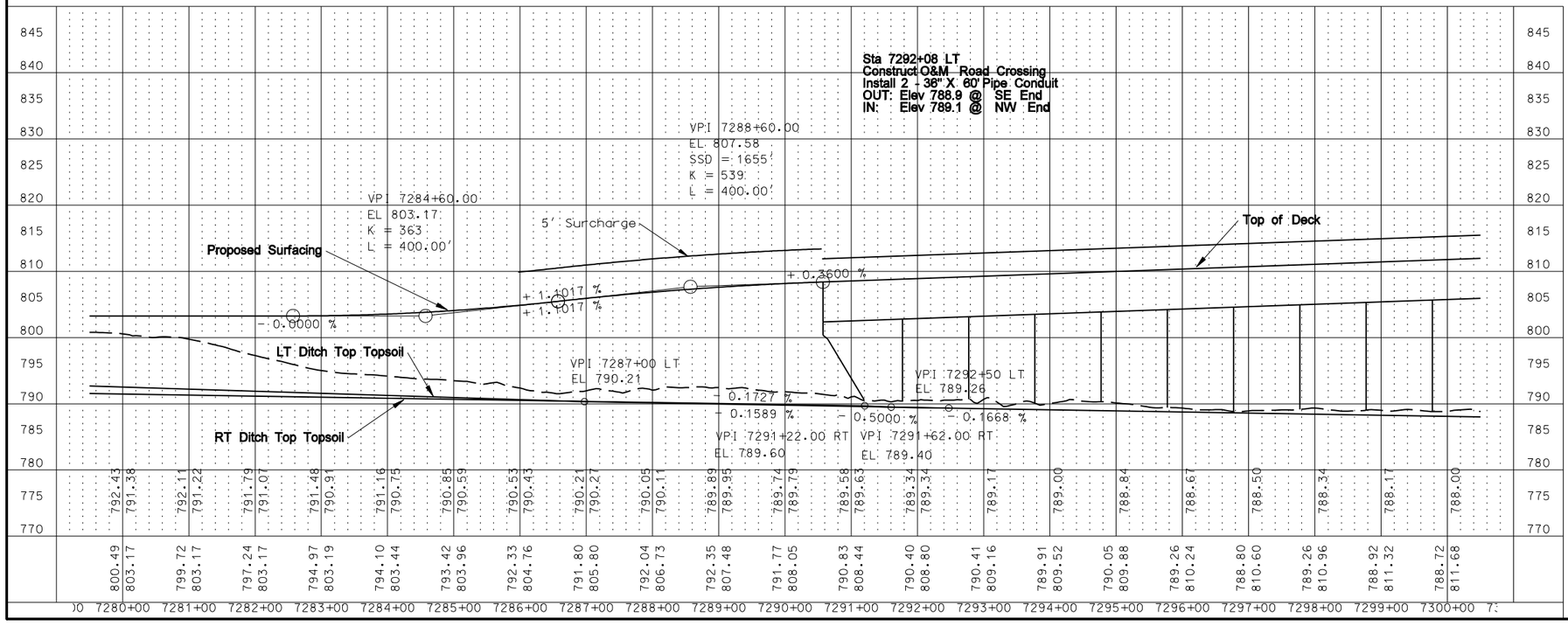
Plan and Profile

Station 7260+00 to 7280+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	003





36" Pipe Conduit
Station 7292+08 LT — 120 LF

Settlement Plate
Station 7290+00 ℄ — 1 EA

Vibrating Wire Settlement Cell
Station 7290+20 ℄ — 1 EA

Multi-Level Vibrating Wire Piezometer
Station 7290+10 ℄ — 1 EA

Vibrating Wire Piezometer
Station 7290+00 , 85' RT — 1 EA

Vibrating Wire Data Logger
Station 7290+00 , 140' RT — 6 EA

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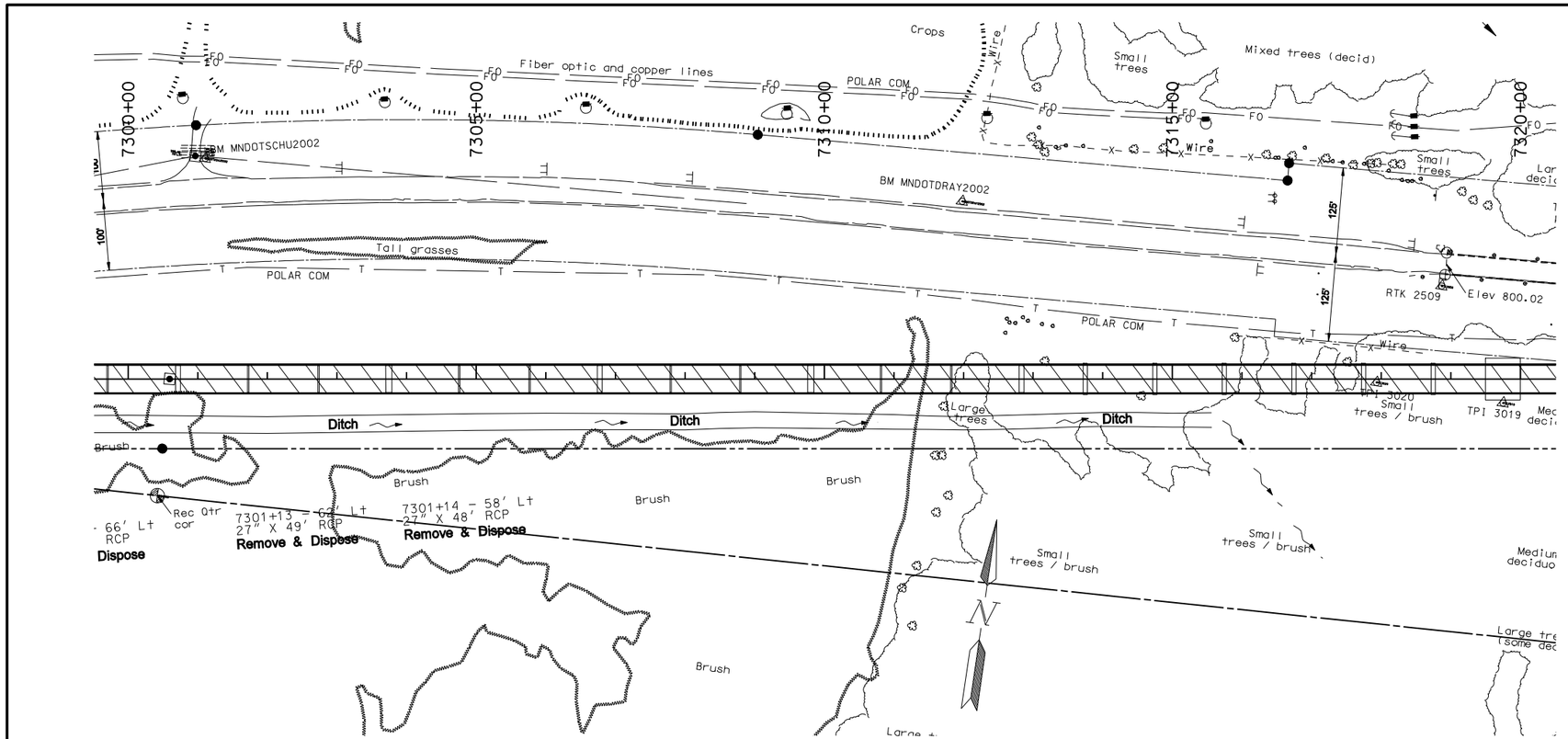
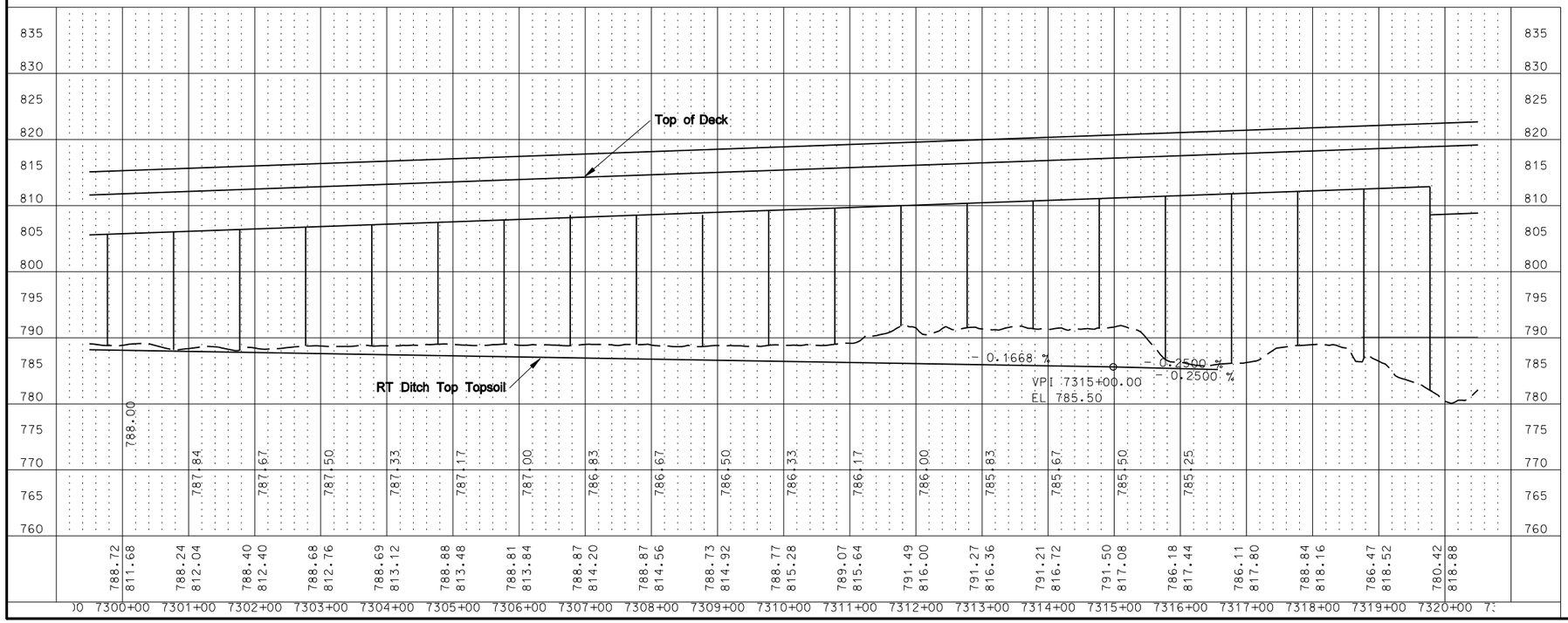
Station 7280+00 to 7300+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	004





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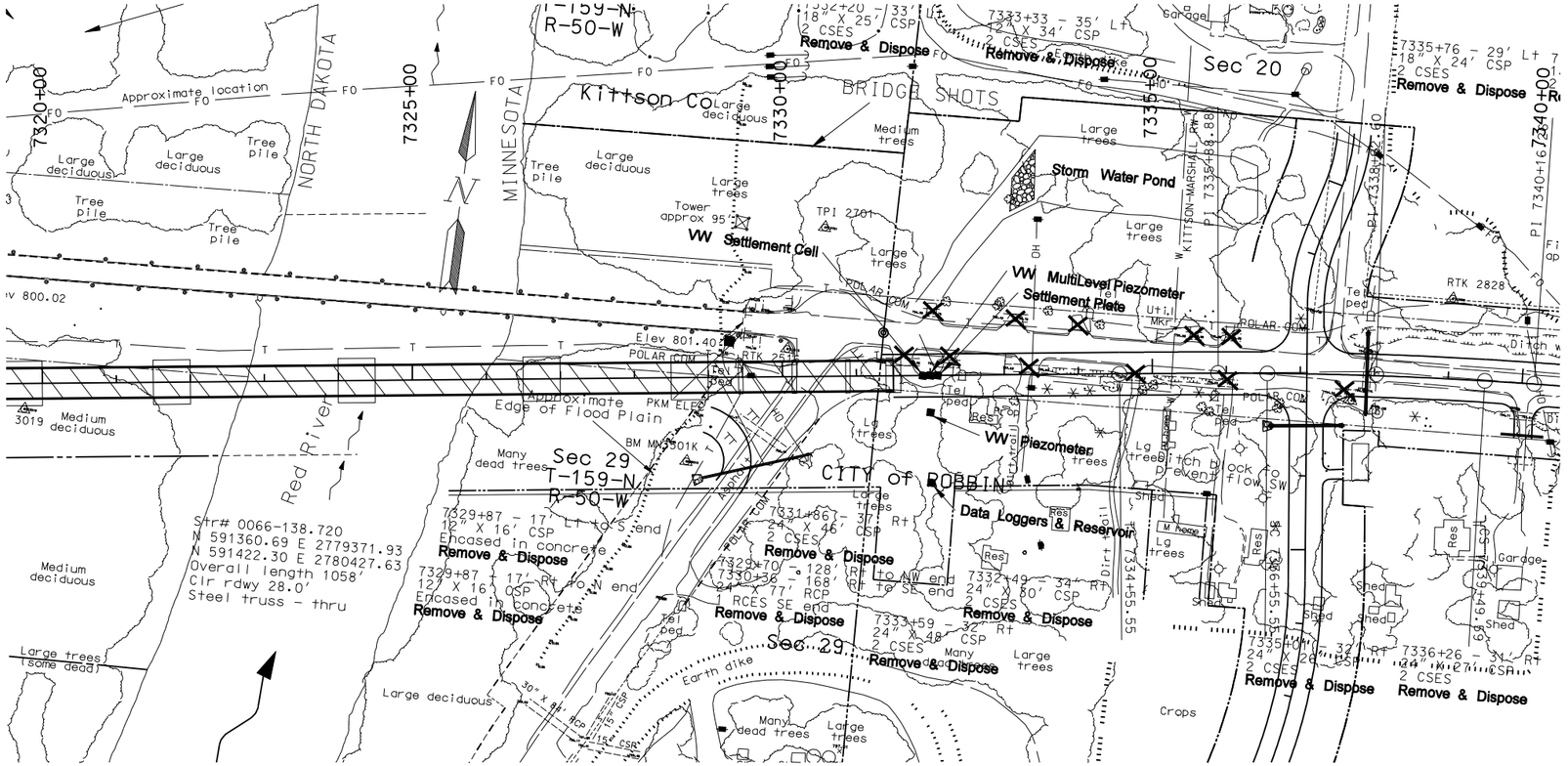
Plan and Profile

Station 7300+00 to 7320+00

9/10/2008 12:24:38 PM R:\project\60066137.012\design\Design\060PP_004_pp.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	005
MN	SP 3501-13		

Pipe Corr Steel .064" 24 IN	
Station 7329+64 RT (Skewed)	152 LF
End Sect Corr Steel .064" 24 IN	
Station 7329+64 RT (Skewed)	2 EA
Pipe Conc Reinf 24" CL III	
Station 7337+90 ℄	100 LF
End Sect-Conc Reinf 24"	
Station 7337+90 ℄	2 EA
Geotextile Fabric - Type R1	
Station 7337+90 ℄	550 SY
Aggregate Base Course CL 5	
Station 7337+90 ℄	260 TON
RipRap - Loose Rock	
Station 7333+20 LT	50 CY
Station 7328+85 RT	11 CY
Geotextile Fabric - Type RR	
Station 7333+20 LT	110 SY
Station 7328+85 RT	22 SY
Settlement Plate	
Station 7332+10 ℄	1 EA
Vibrating Wire Settlement Cell	
Station 7331+90 ℄	1 EA
Multi-Level Vibrating Wire Piezometer	
Station 7332+00 ℄	1 EA
Vibrating Wire Piezometer	
Station 7332+00 , 50' RT	1 EA
Vibrating Wire Data Logger	
Station 7332+00 , 145' RT	6 EA



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Plan and Profile

Station 7320+00 to 7340+00

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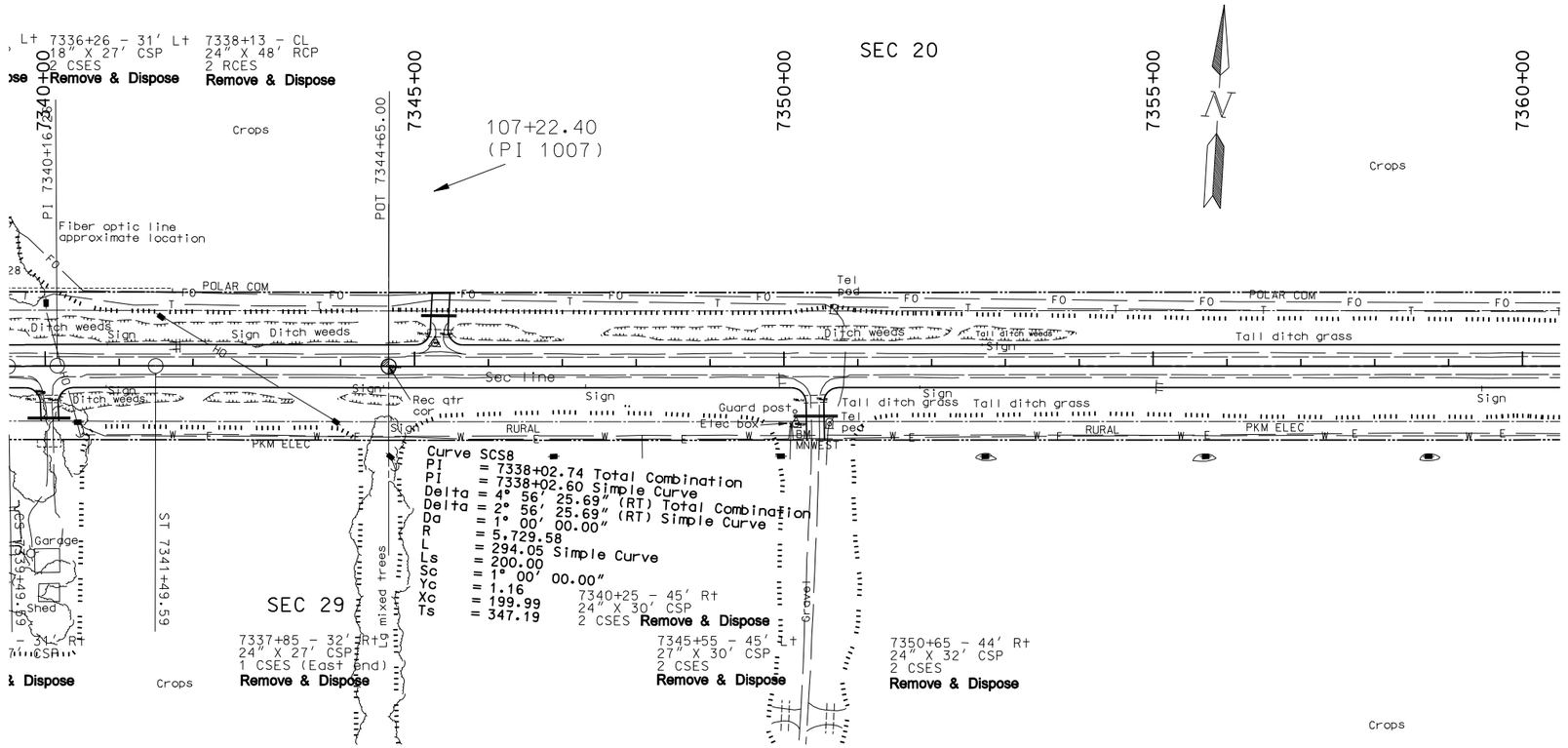
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	006
MN	SP 3501-13		

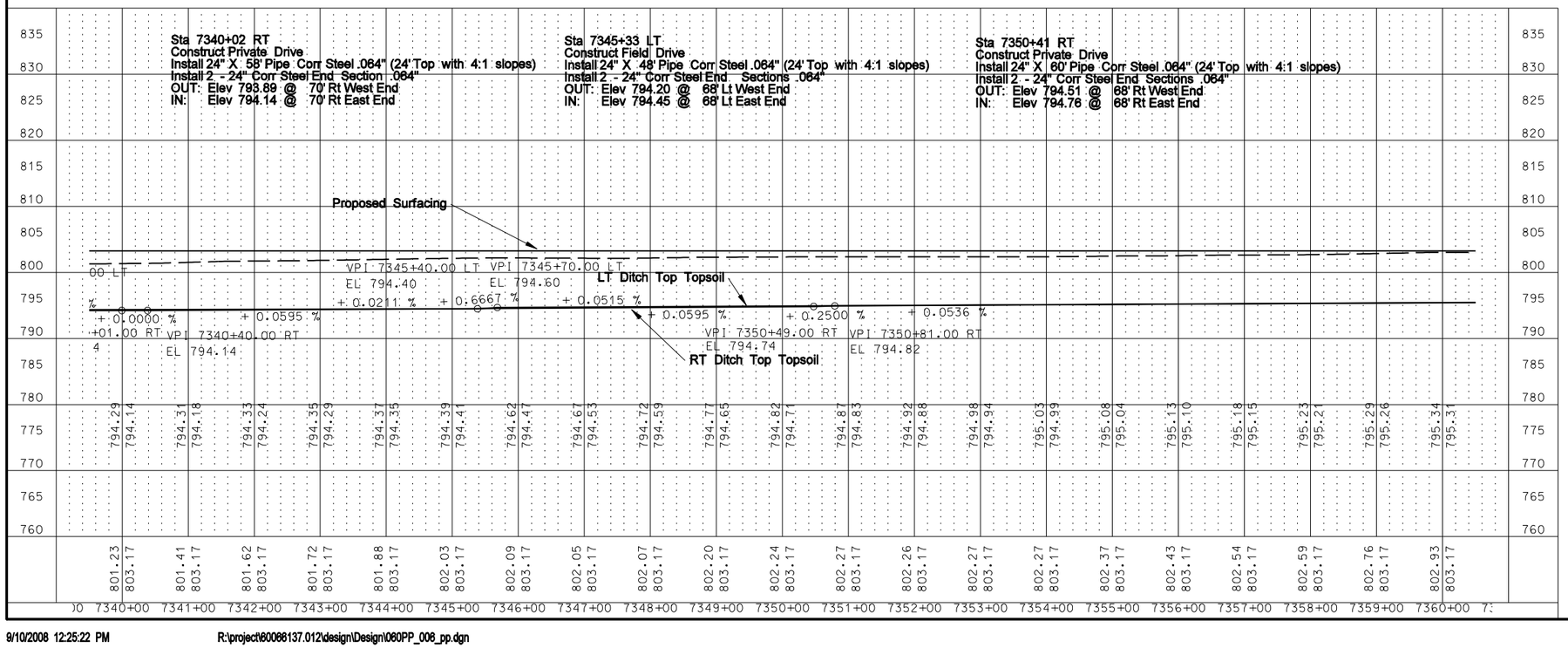
Pipe Corr Steel .064" 24 IN

Station 7340+02 RT	58 LF
Station 7345+33 LT	48 LF
Station 7350+41 RT	60 LF

End Sect Corr Steel .064" 24 IN

Station 7340+02 RT	2 EA
Station 7345+33 LT	2 EA
Station 7350+41 RT	2 EA





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Station 7340+00 to 7360+00

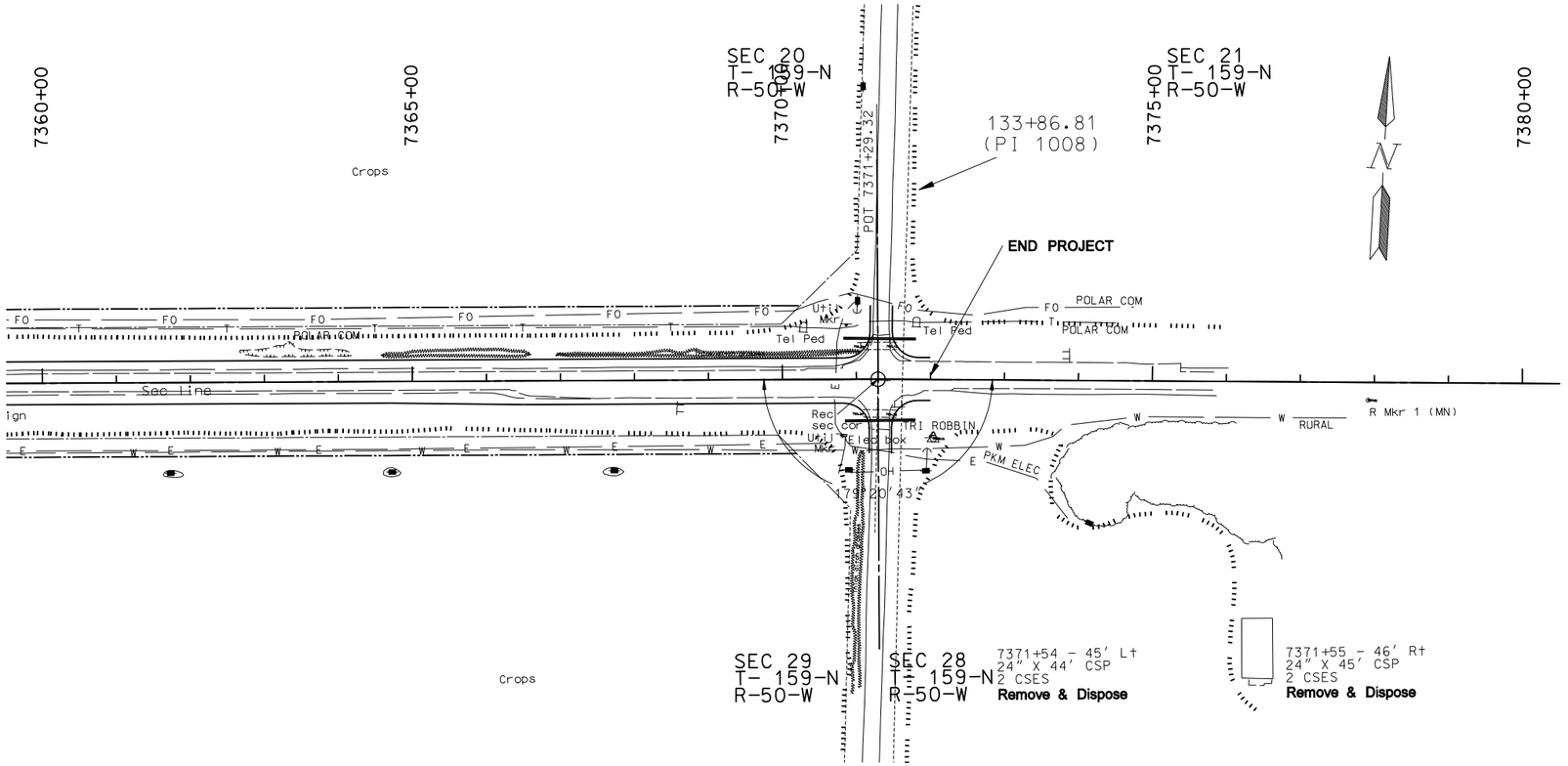
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	007
MN	SP 3501-13		

Pipe Corr Steel .064" 24 IN

Station 7371+29 LT	98 LF
Station 7371+29 RT	92 LF

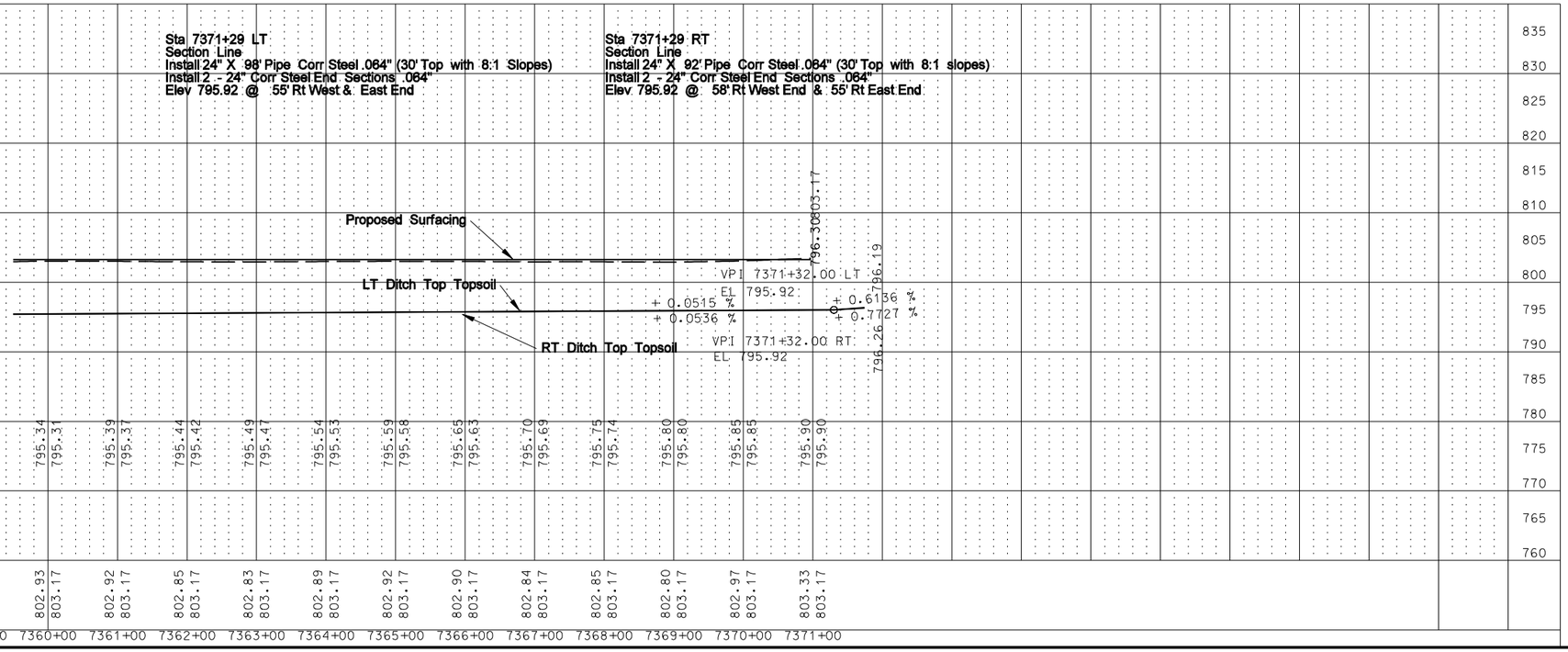
End Sect Corr Steel .064" 24 IN

Station 7371+29 LT	2 EA
Station 7371+29 RT	2 EA



Sta 7371+29 LT
Section Line
Install 24" X 98' Pipe Corr Steel .064" (30' Top with 8:1 Slopes)
Install 2 - 24" Corr Steel End Sections .064"
Elev 795.92 @ 55' Rt West & East End

Sta 7371+29 RT
Section Line
Install 24" X 92' Pipe Corr Steel .084" (30' Top with 8:1 slopes)
Install 2 - 24" Corr Steel End Sections .064"
Elev 795.92 @ 58' Rt West End & 55' Rt East End



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Station 7360+00 to 7380+00

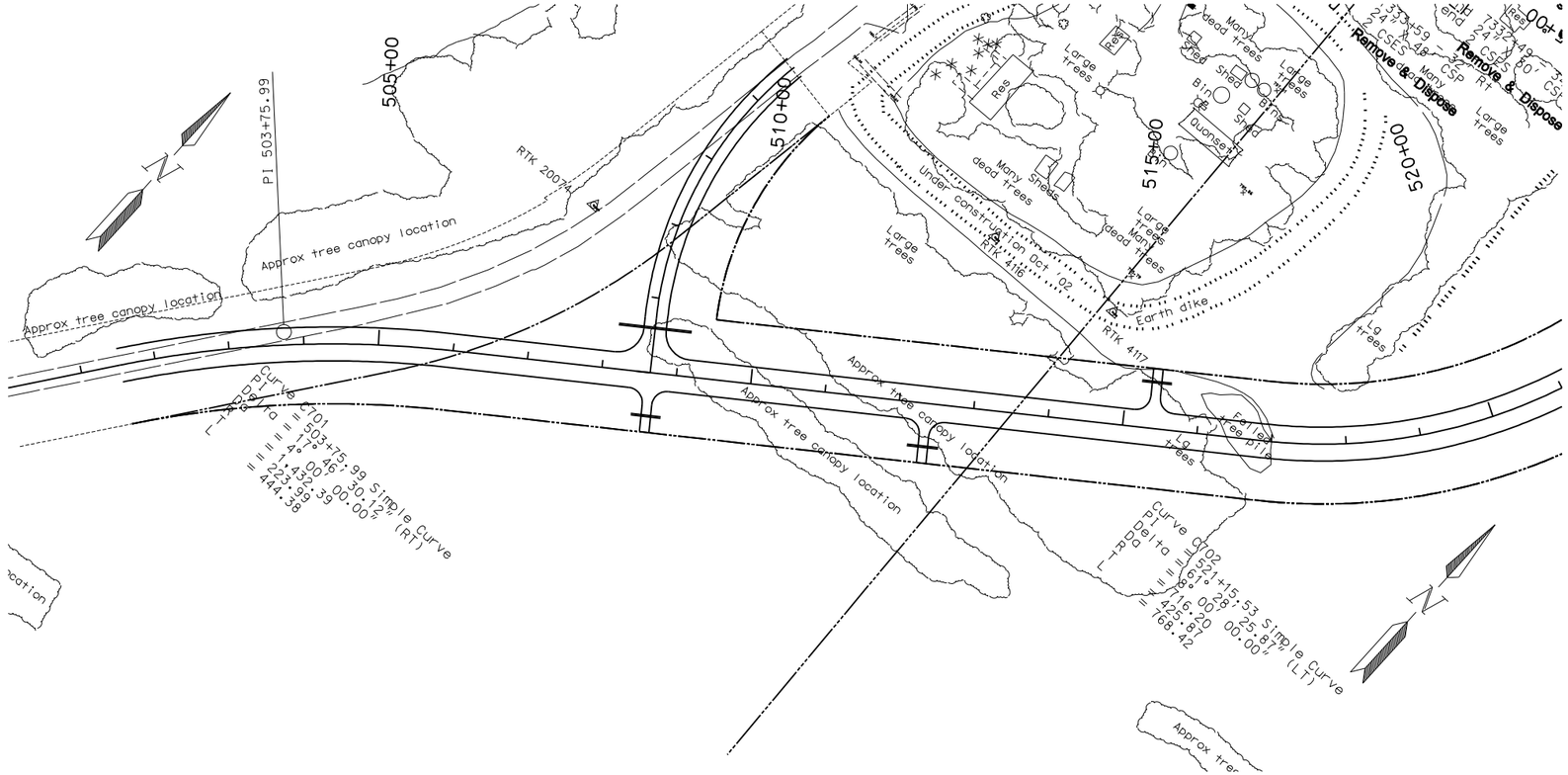
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	008
MN	SP 3501-13		

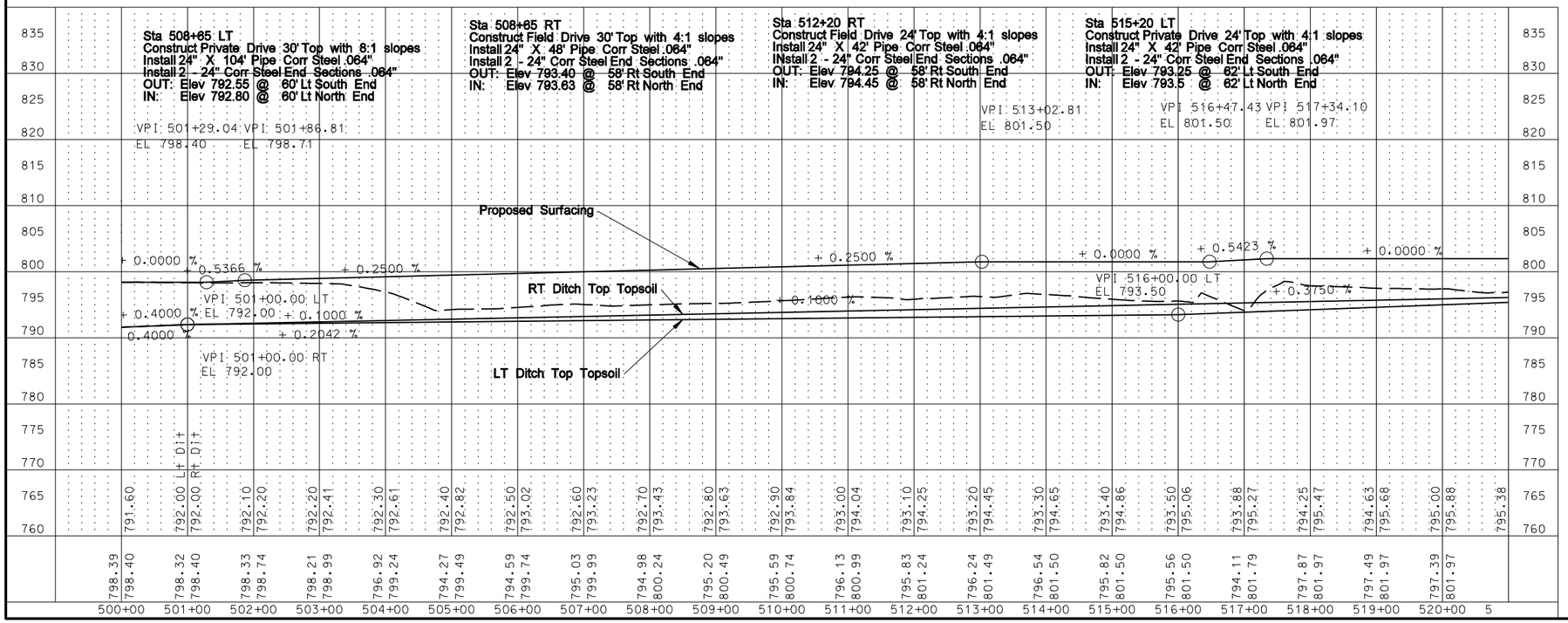
Pipe Corr Steel .064" 24 IN

Station 508+65 LT	104 LF
Station 508+65 RT	48 LF
Station 512+20 RT	42 LF
Station 515+20 LT	42 LF

End Sect Pipe Corr Steel .064" 24 IN

Station 508+65 LT	2 EA
Station 508+65 RT	2 EA
Station 512+20 RT	2 EA
Station 515+20 LT	2 EA





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Station 500+00 to 520+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	009
MN	SP 3501-13		

Pipe Conc Reinf 24" CL III
Station 526+67 ℄ 88 LF

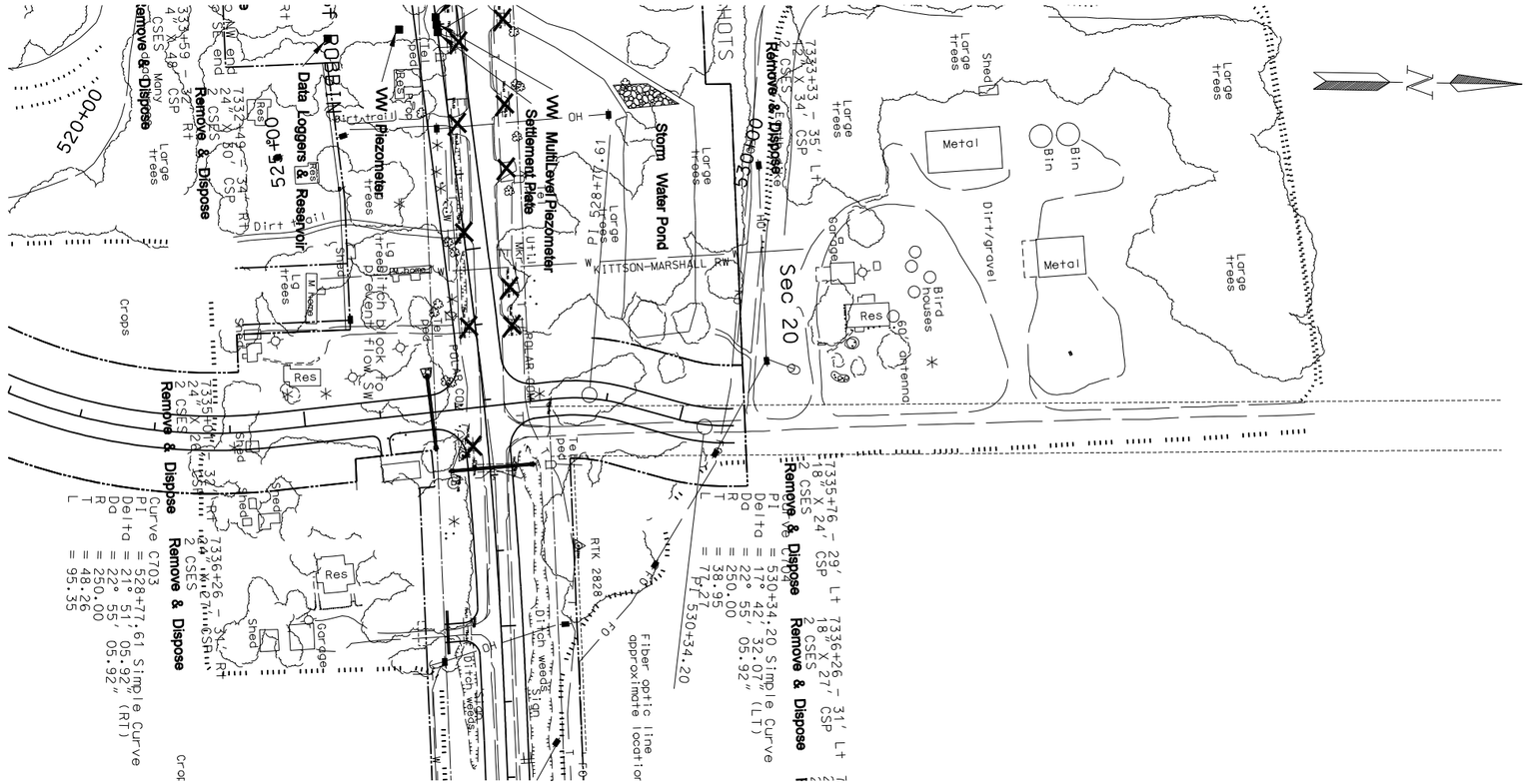
End Sect-Conc Reinf 24"
Station 526+67 ℄ 2 EA

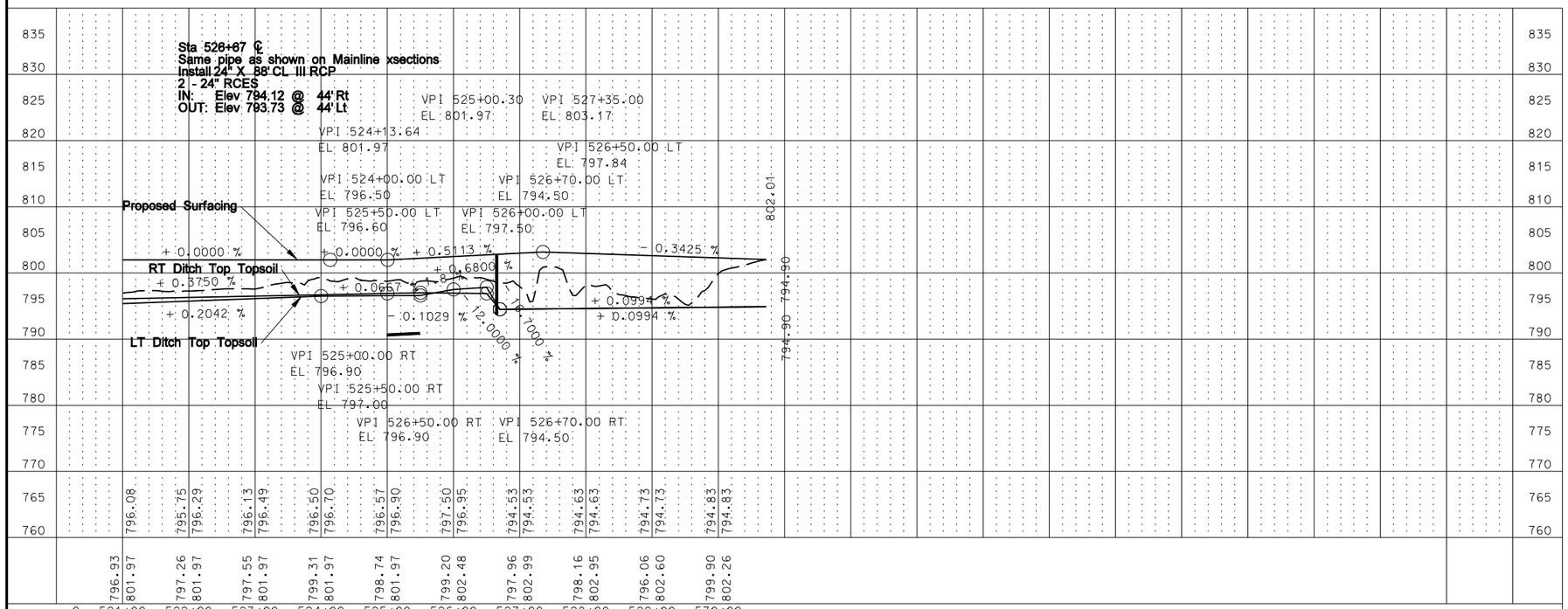
Geotextile Fabric - Type R1
Station 526+67 ℄ 406 SY

Aggregate Base Course CL 5
Station 526+67 ℄ 139 TON

RipRap-Loose Rock
Station 526+67 LT 11 CY

Geotextile Fabric-Type RR
Station 526+67 LT 22 SY





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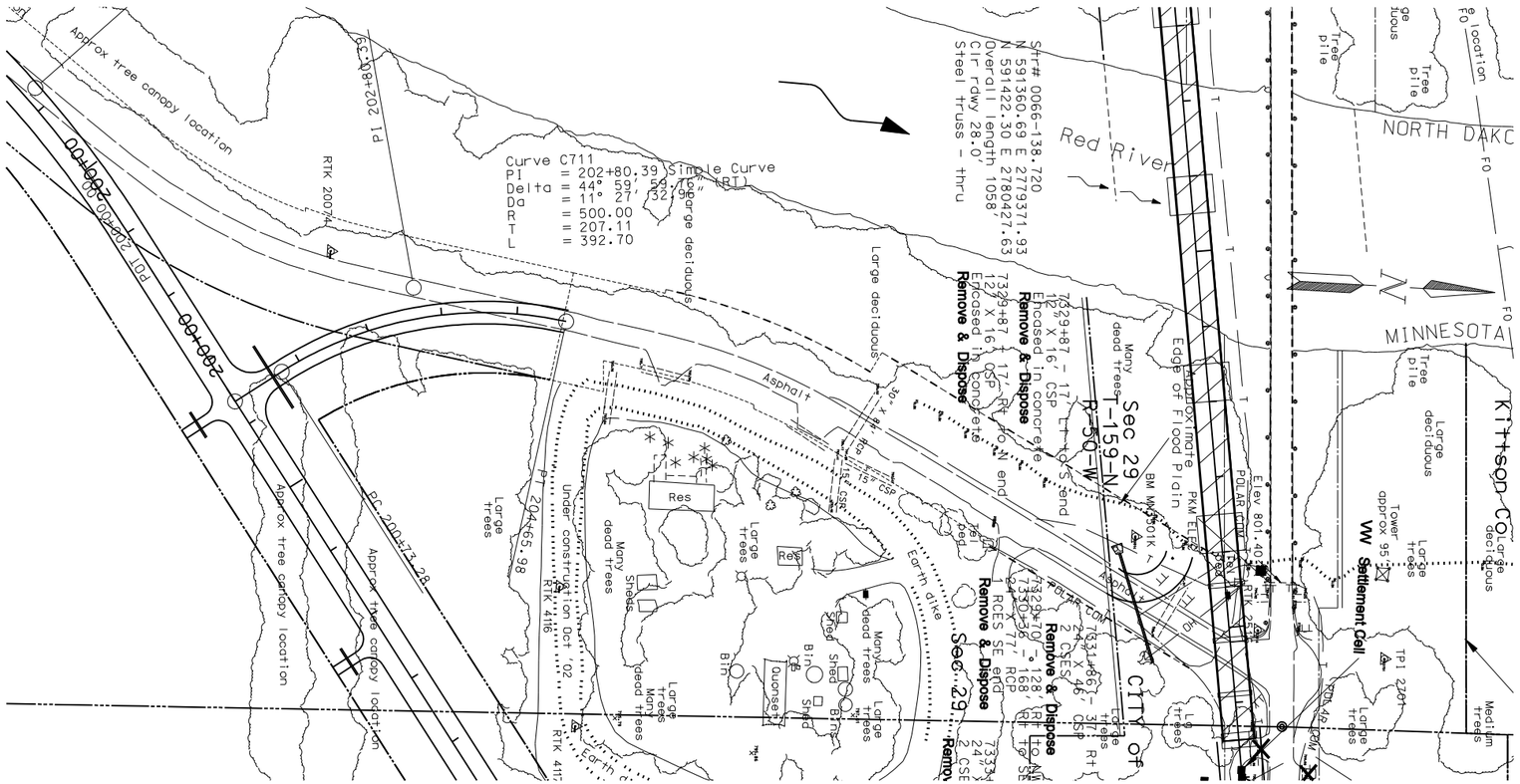
Plan and Profile

Station 520+00 to 530+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	010
MN	SP 3501-13		



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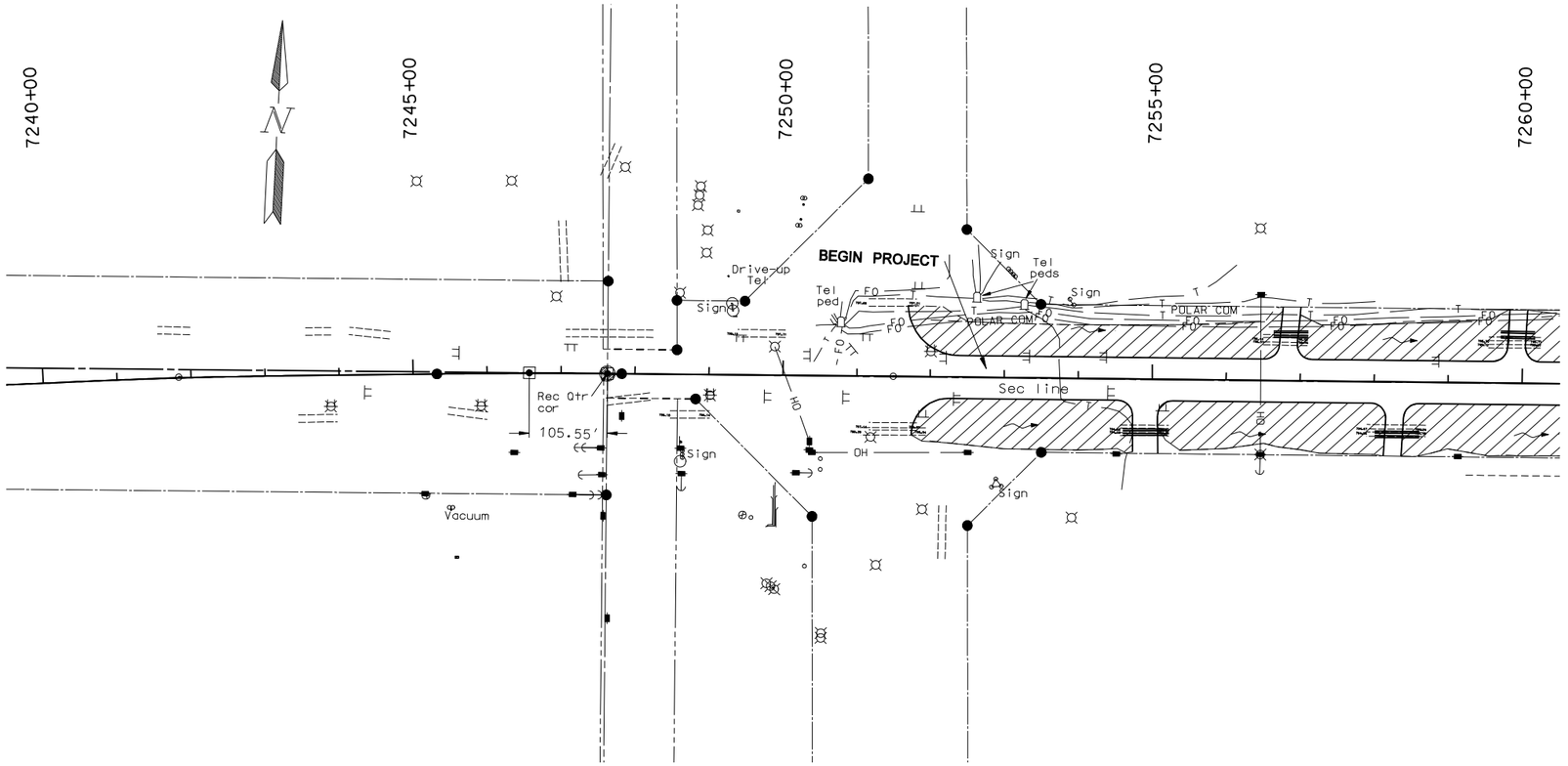
Plan and Profile

Station 200+00 to 204+65

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	011



Straw Mulch

Seeding

ECB Type 3

12" Fiber Rolls

Silt Fence Supported

Floating Silt Curtain

ND Total Estimated Quantities Station 7252+00 to 7324+00

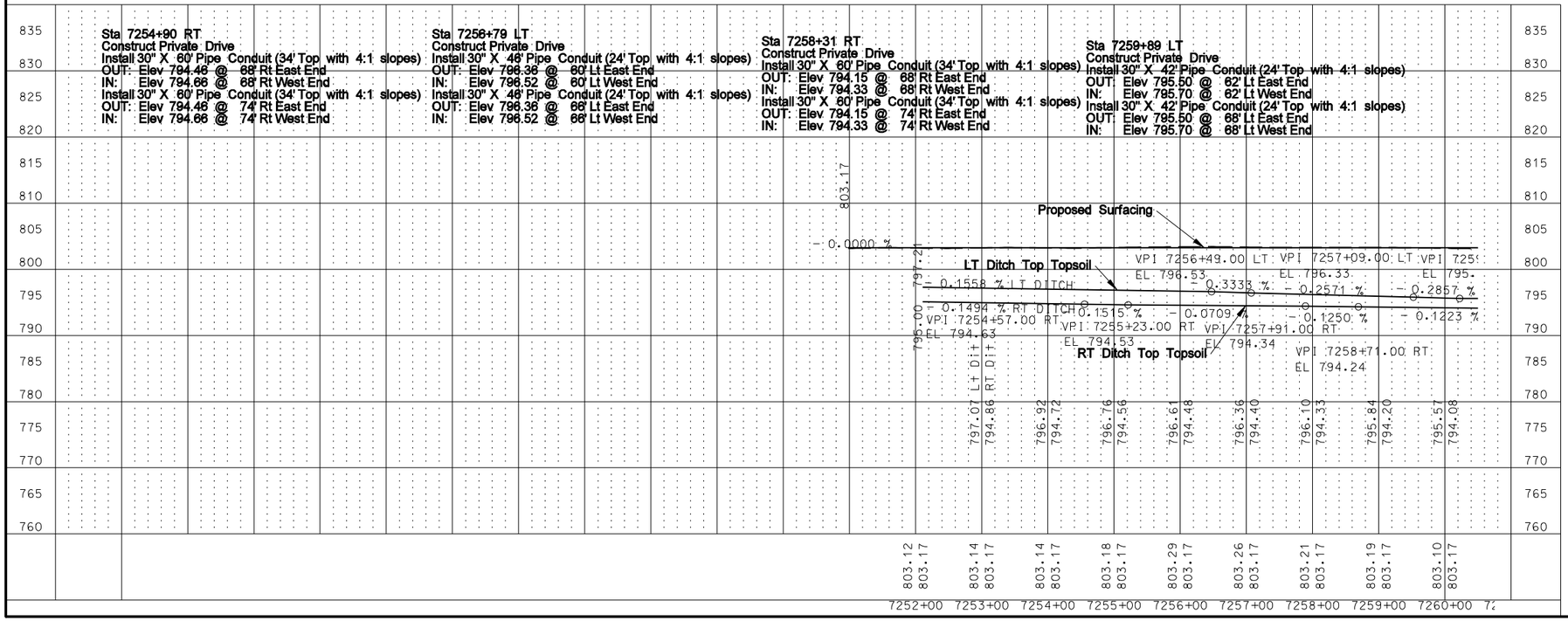
Straw Mulch	41 Acre
Seeding	41 Acre
ECB Type 3	10500 SY
12" Fiber Rolls	220 LF
Silt Fence Supported	690 LF
Floating Silt Curtain	225 LF

Sta 7254+90 RT
Construct Private Drive
Install 30" X 60' Pipe Conduit (34' Top with 4:1 slopes)
OUT: Elev 794.46 @ 68' Rt East End
IN: Elev 794.66 @ 68' Rt West End
Install 30" X 60' Pipe Conduit (34' Top with 4:1 slopes)
OUT: Elev 794.46 @ 74' Rt East End
IN: Elev 794.66 @ 74' Rt West End

Sta 7256+79 LT
Construct Private Drive
Install 30" X 46' Pipe Conduit (24' Top with 4:1 slopes)
OUT: Elev 796.36 @ 60' Lt East End
IN: Elev 796.52 @ 60' Lt West End
Install 30" X 46' Pipe Conduit (24' Top with 4:1 slopes)
OUT: Elev 796.36 @ 66' Lt East End
IN: Elev 796.52 @ 66' Lt West End

Sta 7258+31 RT
Construct Private Drive
Install 30" X 60' Pipe Conduit (34' Top with 4:1 slopes)
OUT: Elev 794.15 @ 68' Rt East End
IN: Elev 794.33 @ 68' Rt West End
Install 30" X 60' Pipe Conduit (34' Top with 4:1 slopes)
OUT: Elev 794.15 @ 74' Rt East End
IN: Elev 794.33 @ 74' Rt West End

Sta 7259+89 LT
Construct Private Drive
Install 30" X 42' Pipe Conduit (24' Top with 4:1 slopes)
OUT: Elev 795.50 @ 62' Lt East End
IN: Elev 795.70 @ 62' Lt West End
Install 30" X 42' Pipe Conduit (24' Top with 4:1 slopes)
OUT: Elev 795.50 @ 68' Lt East End
IN: Elev 795.70 @ 68' Lt West End



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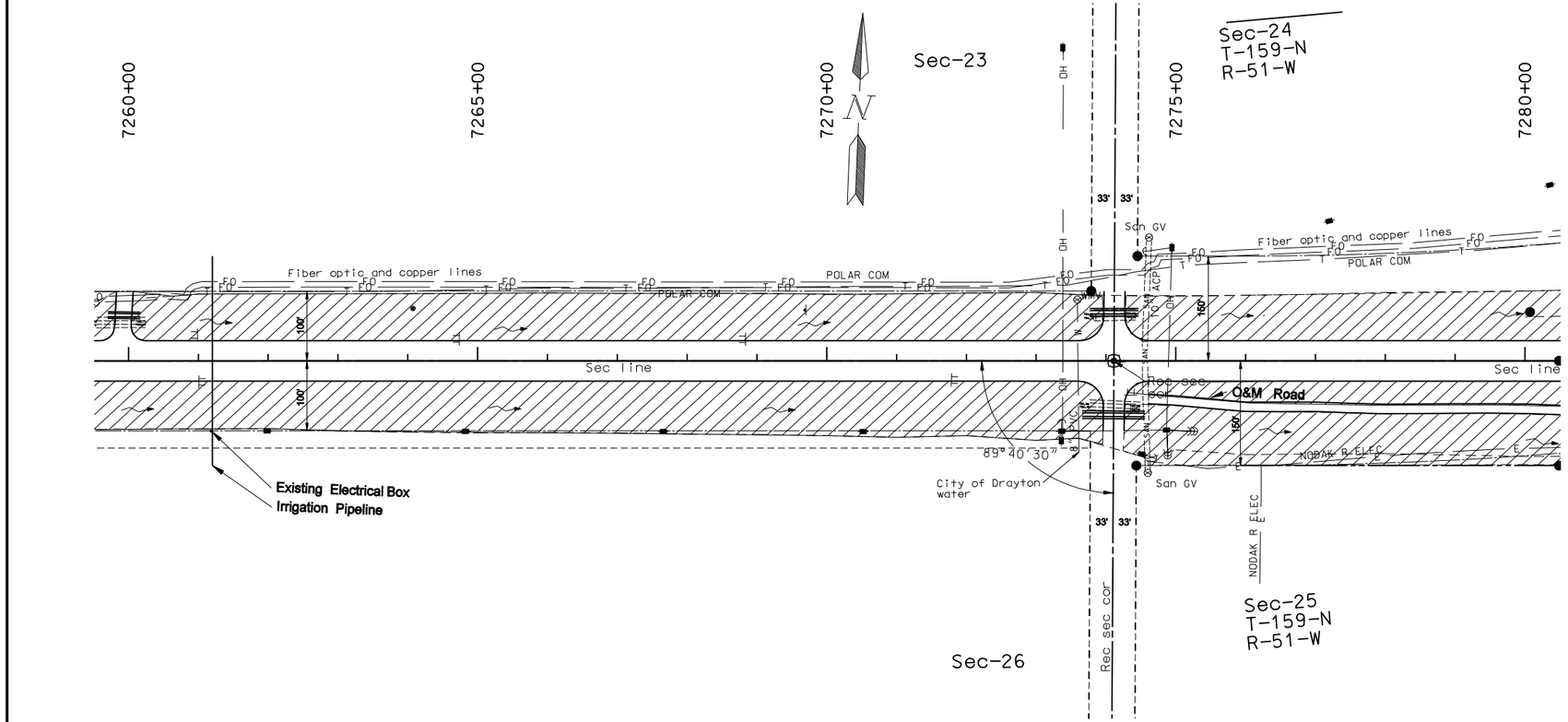
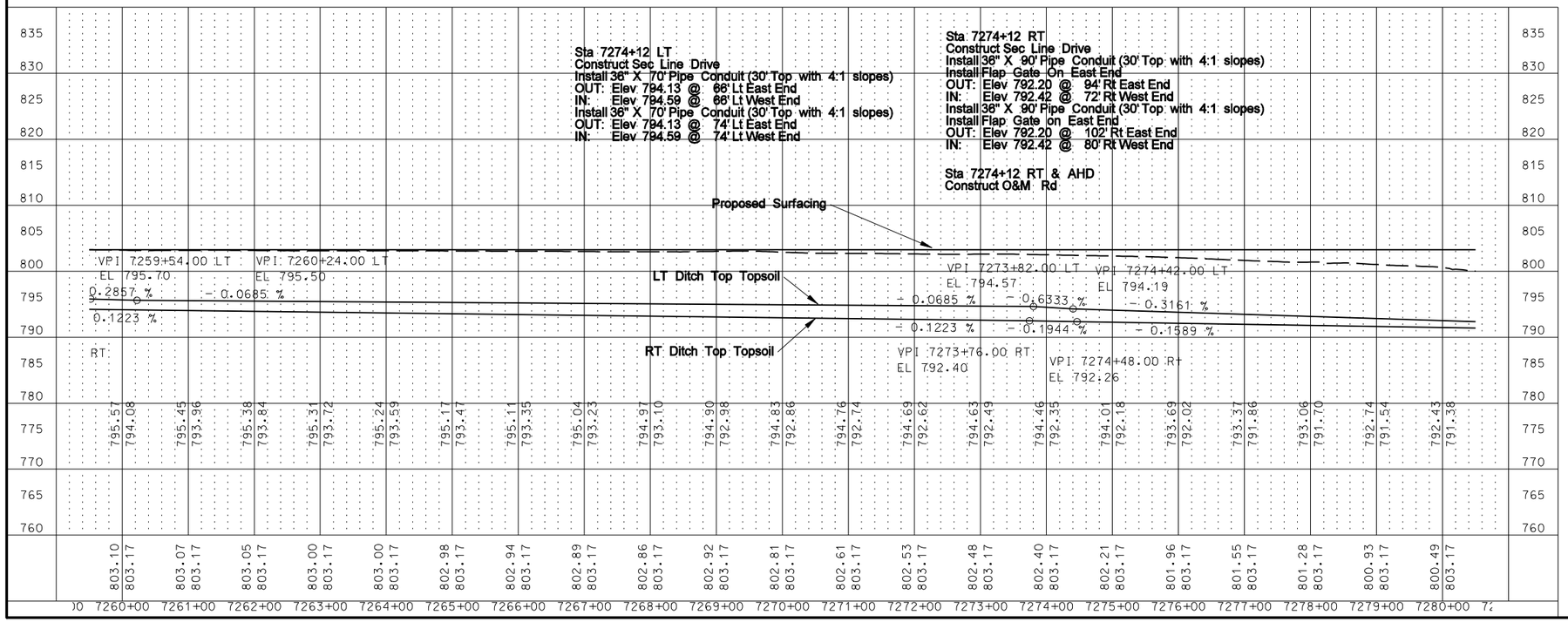
Erosion Control

Station 7240+00 to 7260+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	012





- Straw Mulch
- Seeding
- ECB Type 3
- 12" Fiber Rolls
- Silt Fence Supported
- Floating Silt Curtain

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Erosion Control

Station 7260+00 to 7280+00

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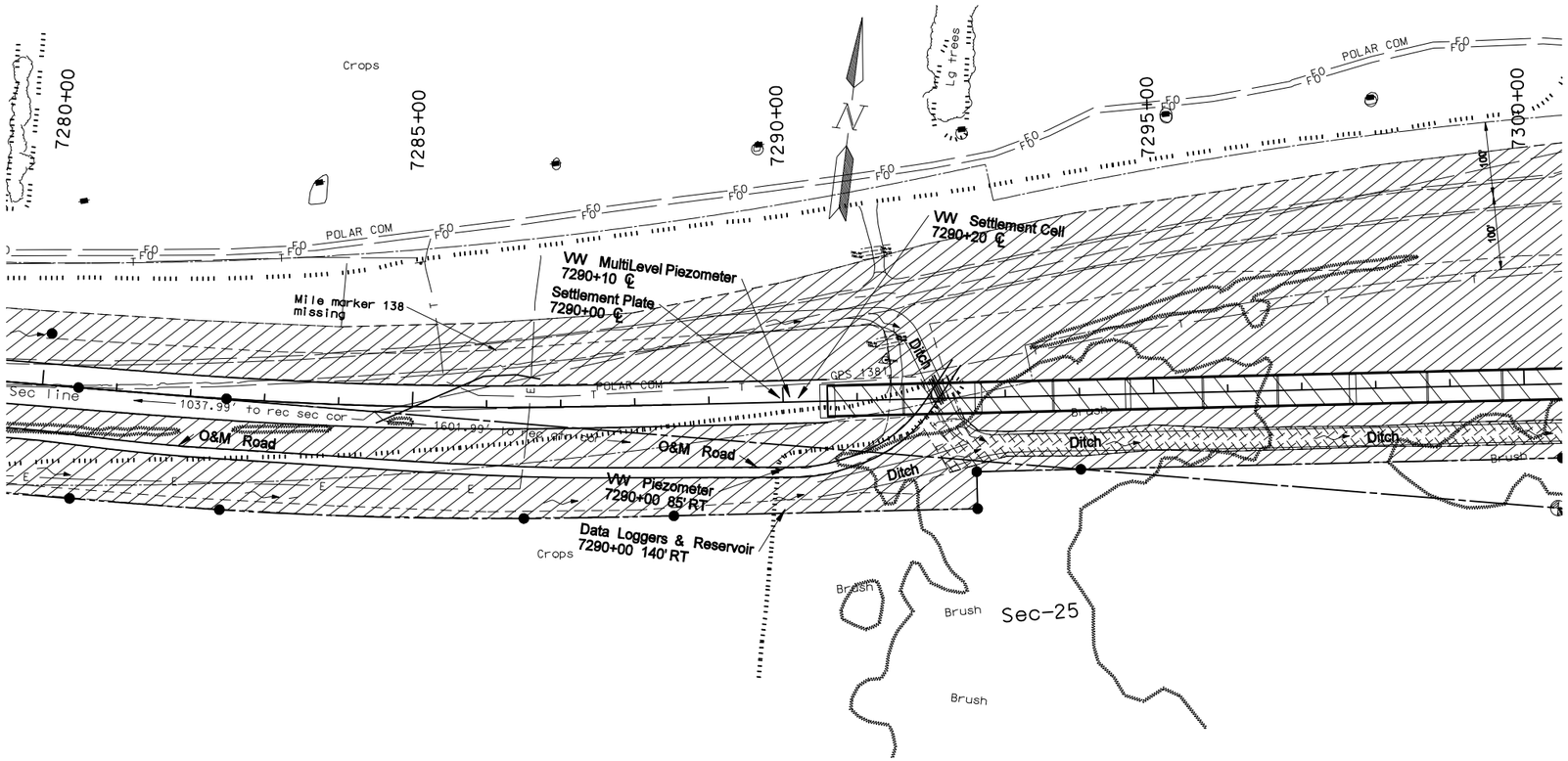
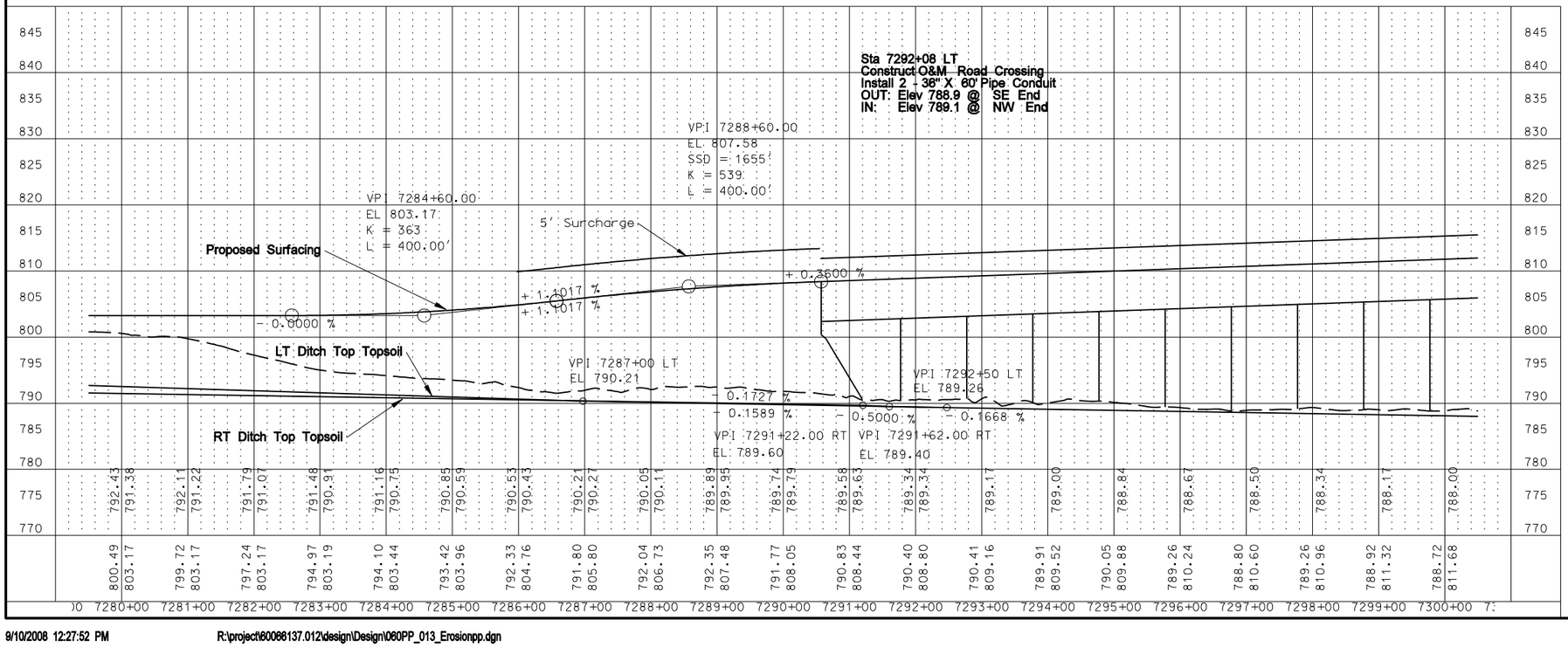
ND	AC-HPP-TIP-SS-6-066(012)137	060	013





Straw Mulch

Seeding

ECB Type 3

12" Fiber Rolls

Silt Fence Supported

Floating Silt Curtain

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Erosion Control

Station 7280+00 to 7300+00

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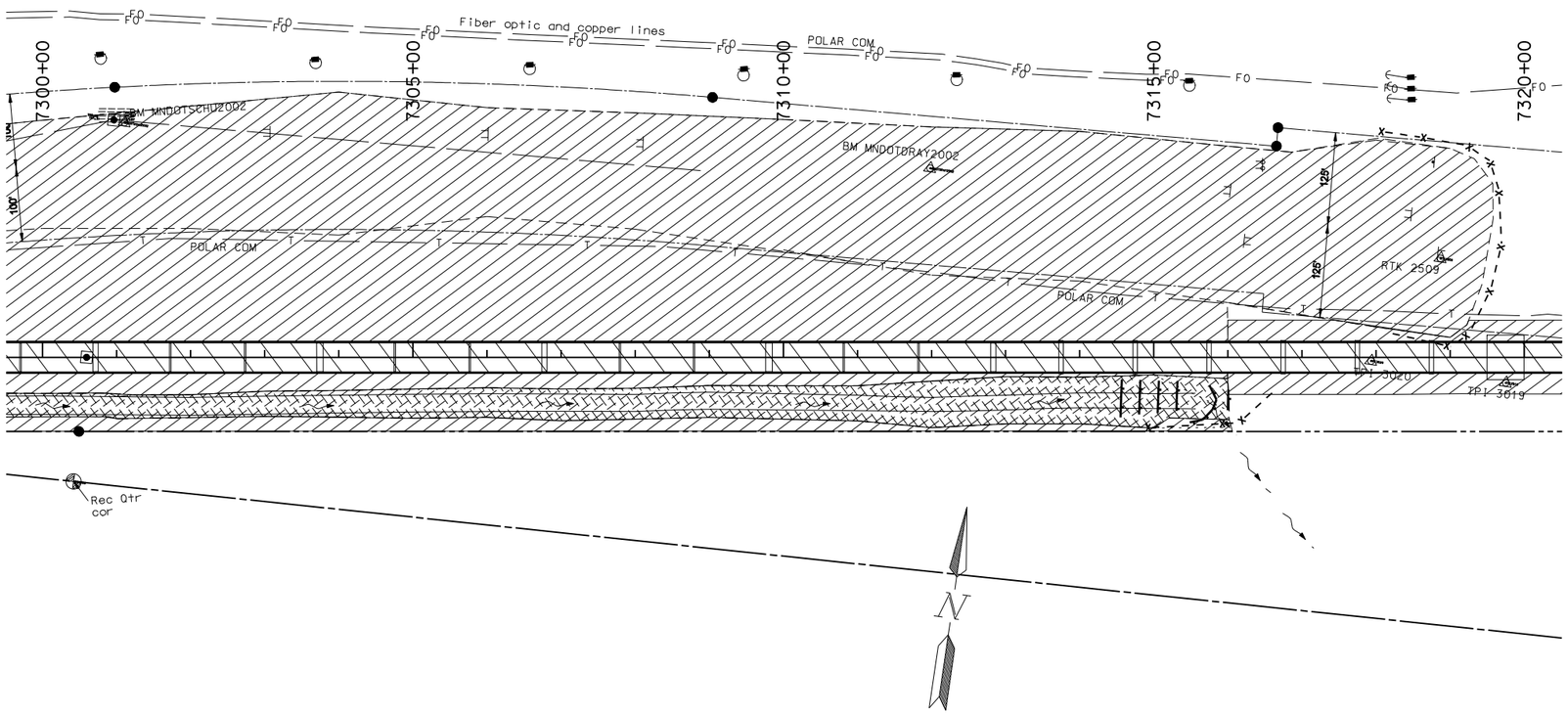
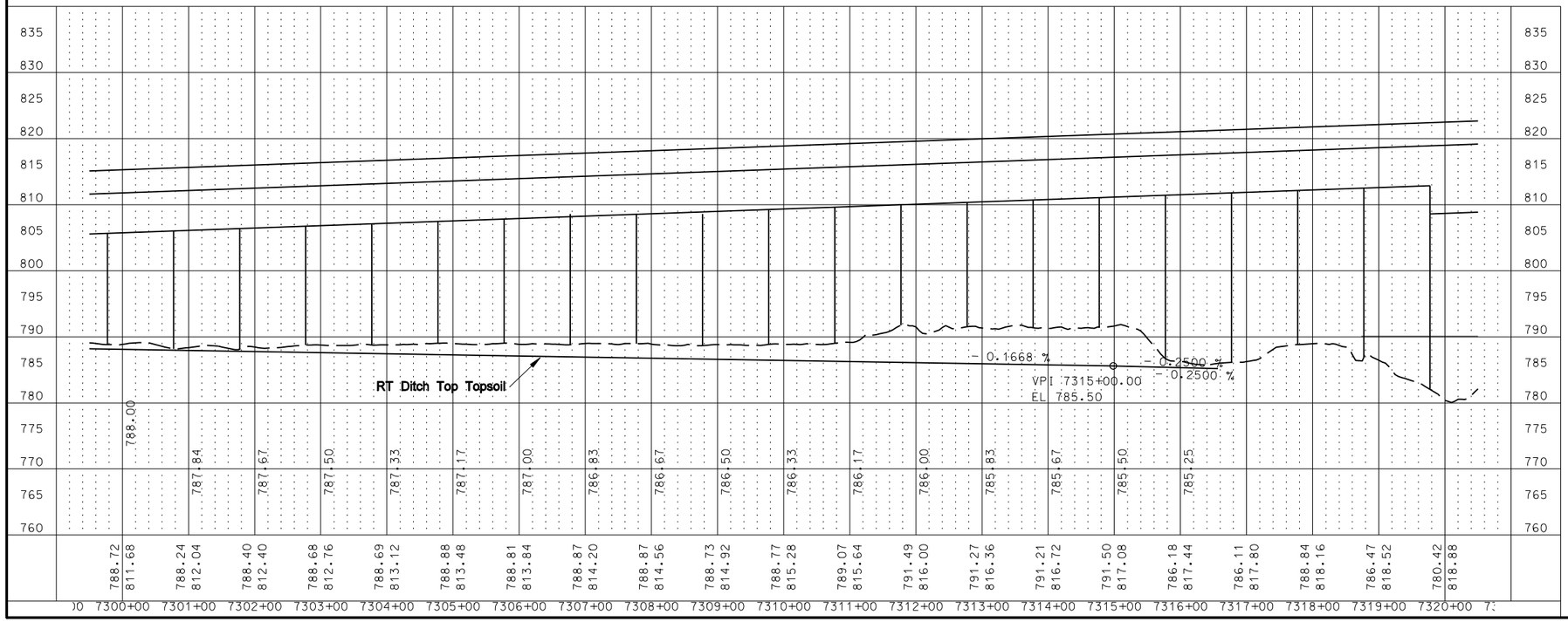
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	014





- Straw Mulch
- Seeding
- ECB Type 3
- 12" Fiber Rolls
- Silt Fence Supported
- Floating Silt Curtain

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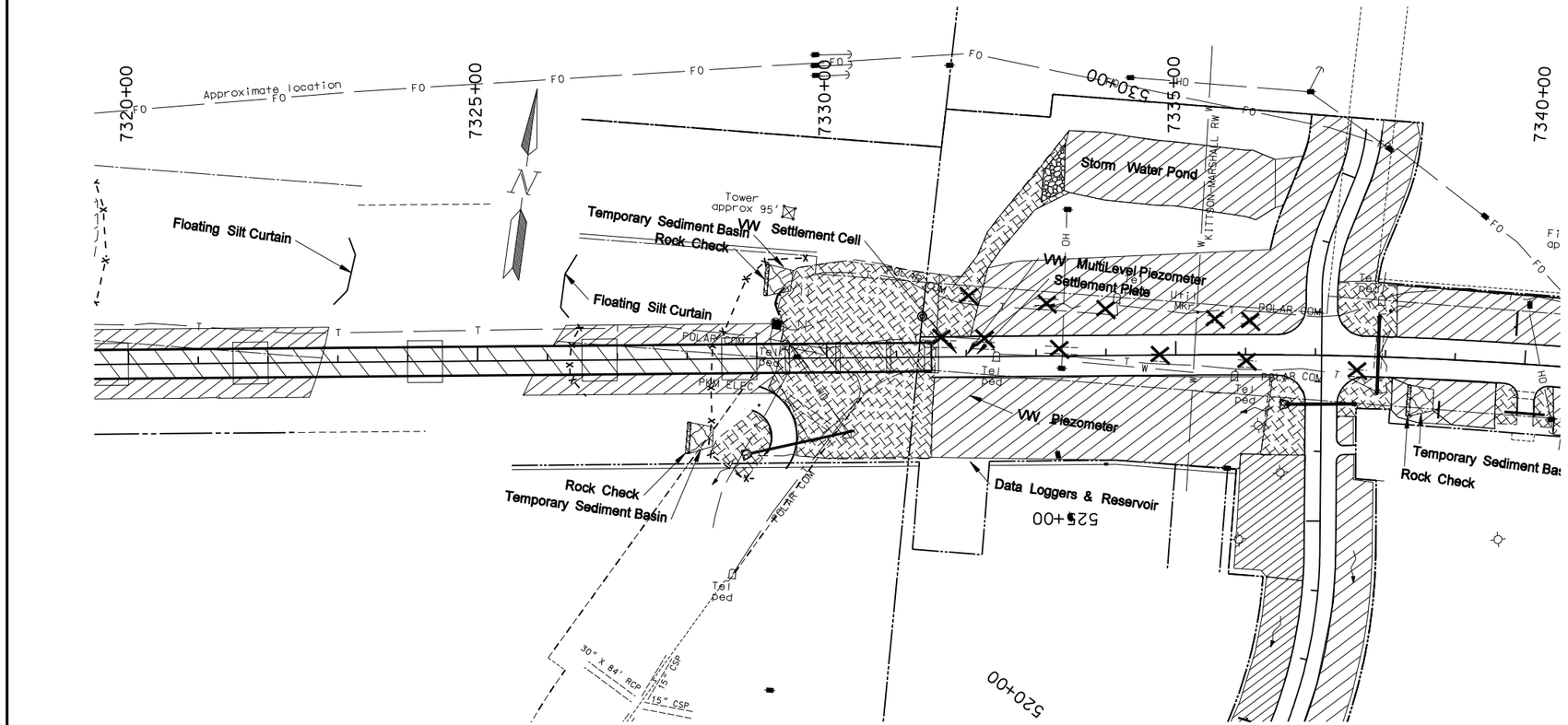
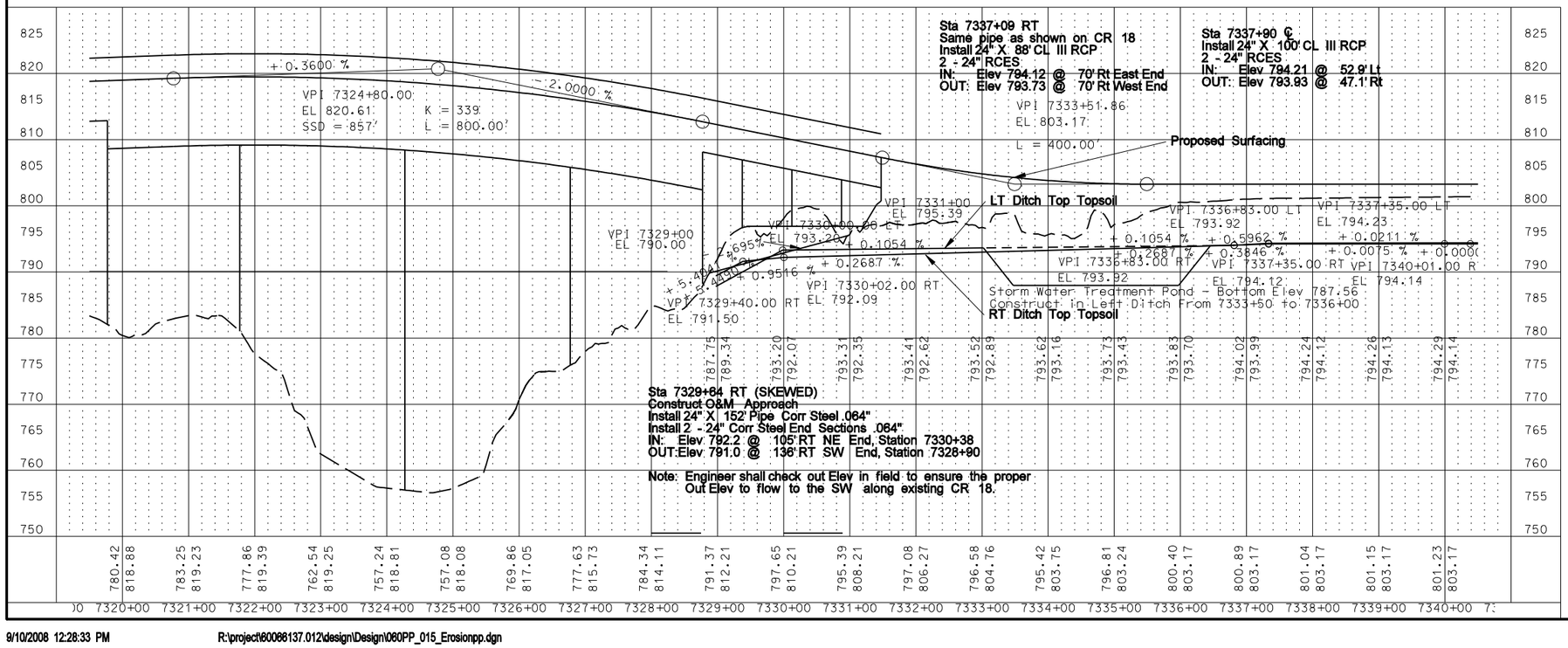
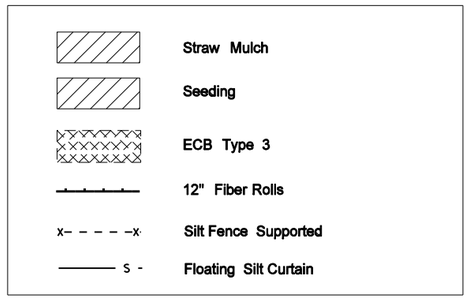
Erosion Control

Station 7300+00 7320+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	015
MN	SP 3501-13		







MN Total Estimated Quantities Station 7324+00 to 7372+00

Straw Mulch	16 Acre
Seeding	16 Acre
ECB Type 3	10976 SY
12" Fiber Rolls	535 LF
Silt Fence Supported	415 LF
Floating Silt Curtain	225 LF
Erosion Check (3 locations)	110 LF

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Erosion Control

Station 7320+00 to 7340+00

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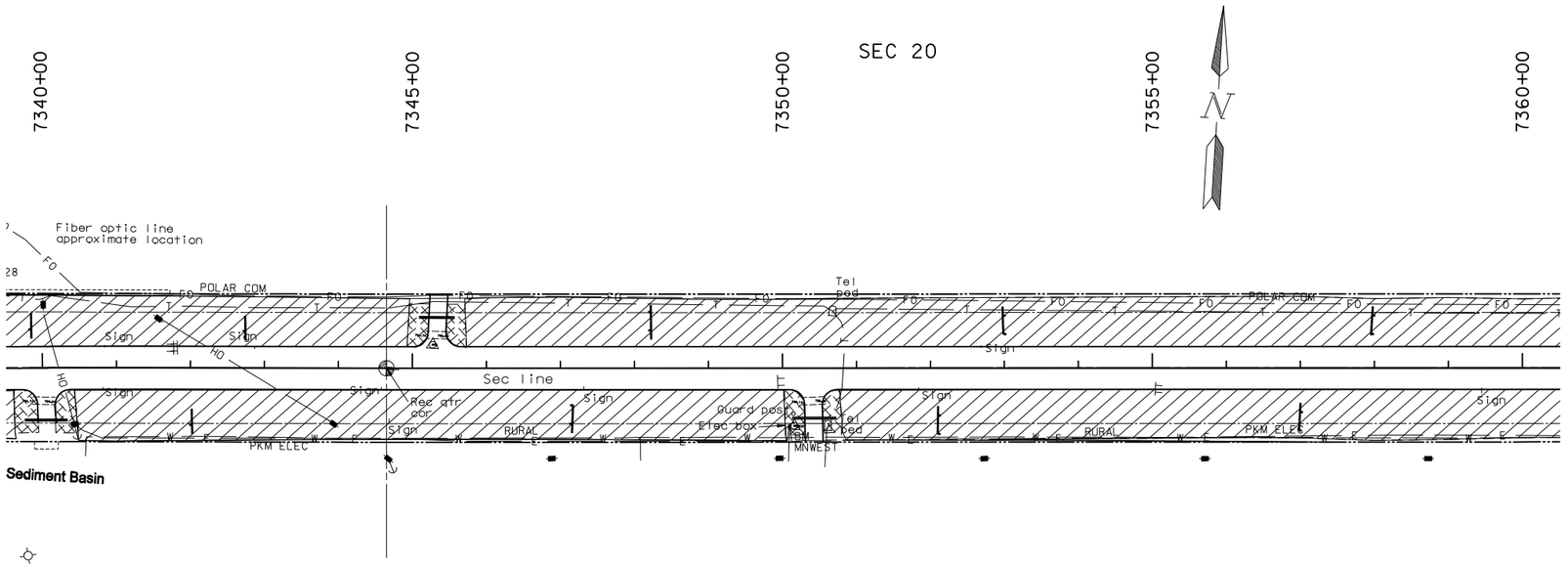
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	016
MN	SP 3501-13		



Straw Mulch

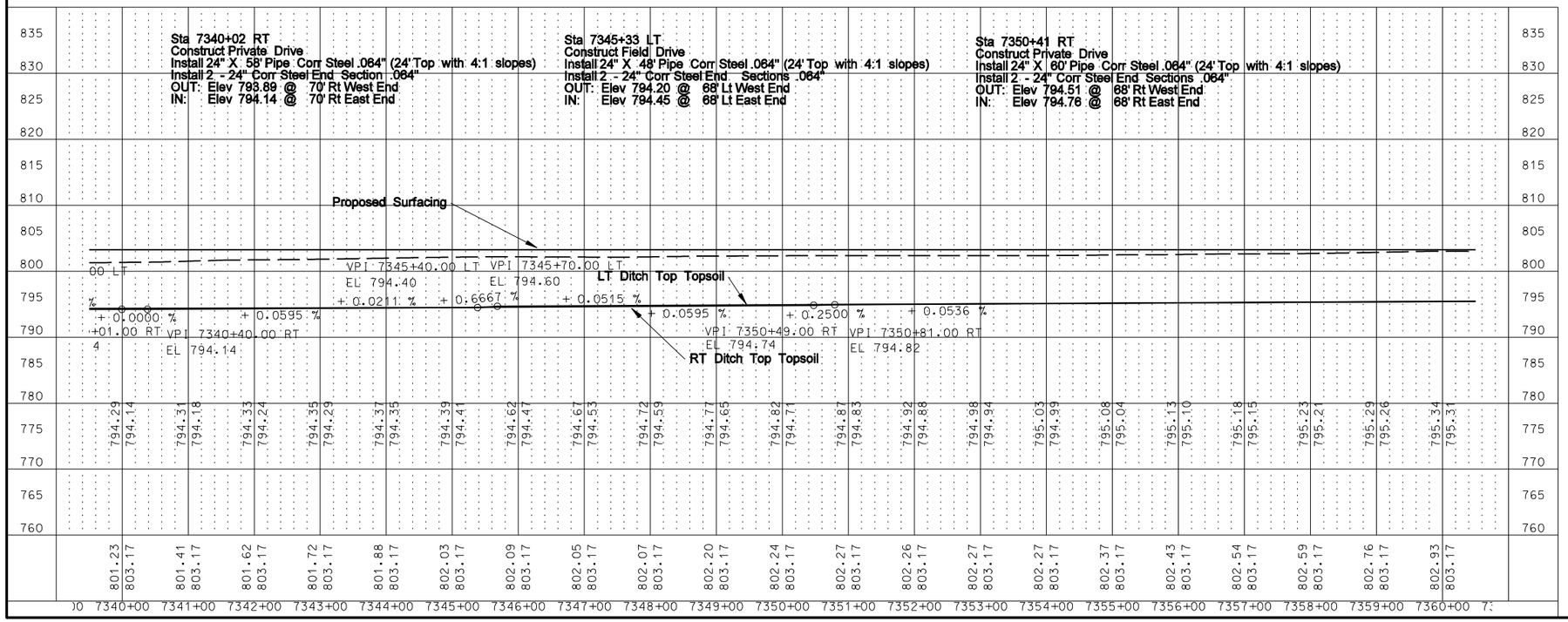
Seeding

ECB Type 3

12" Fiber Rolls

Silt Fence Supported

Floating Silt Curtain



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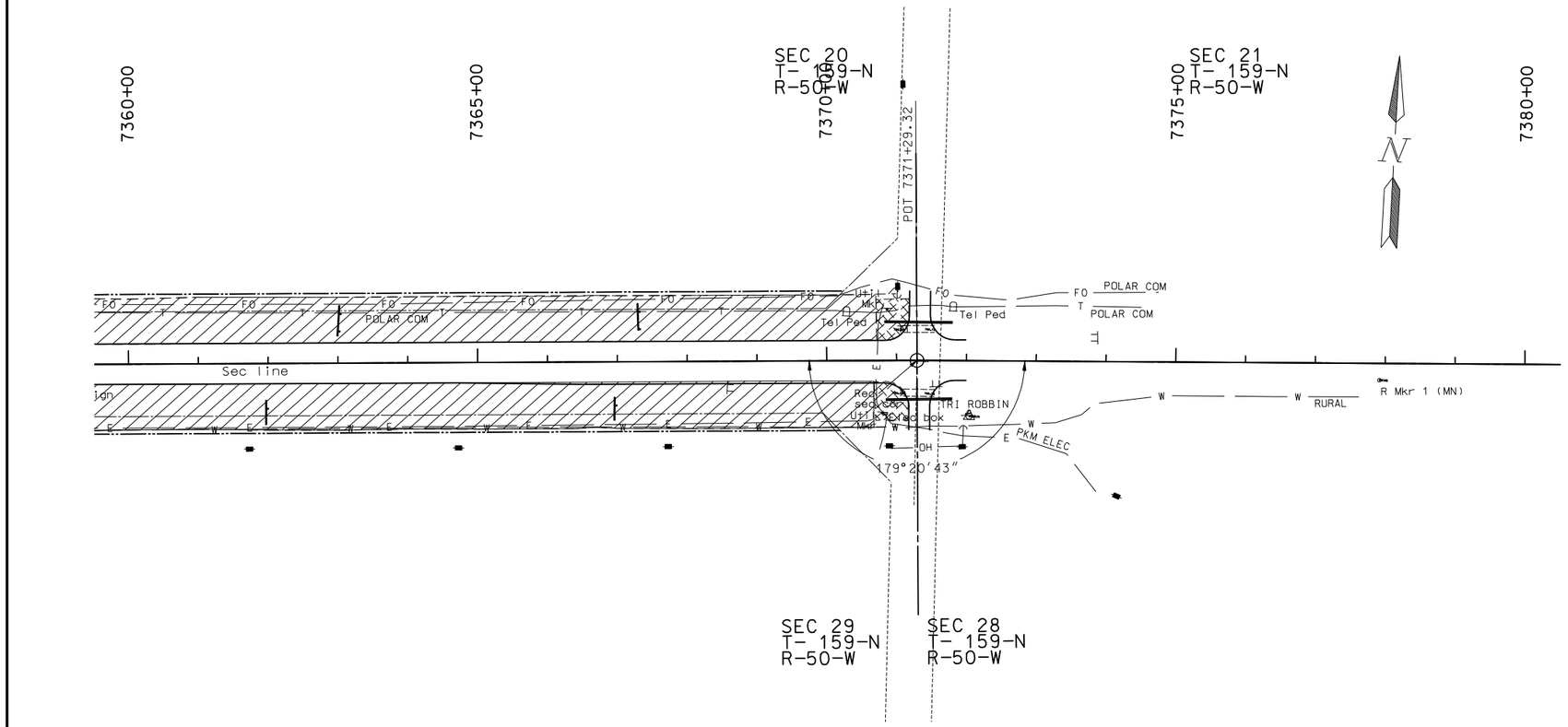
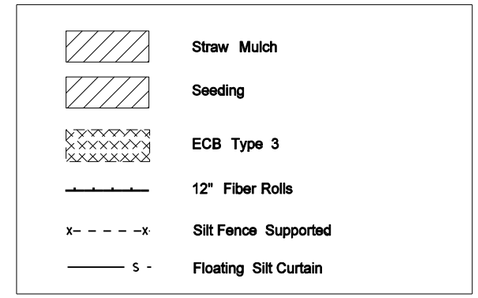
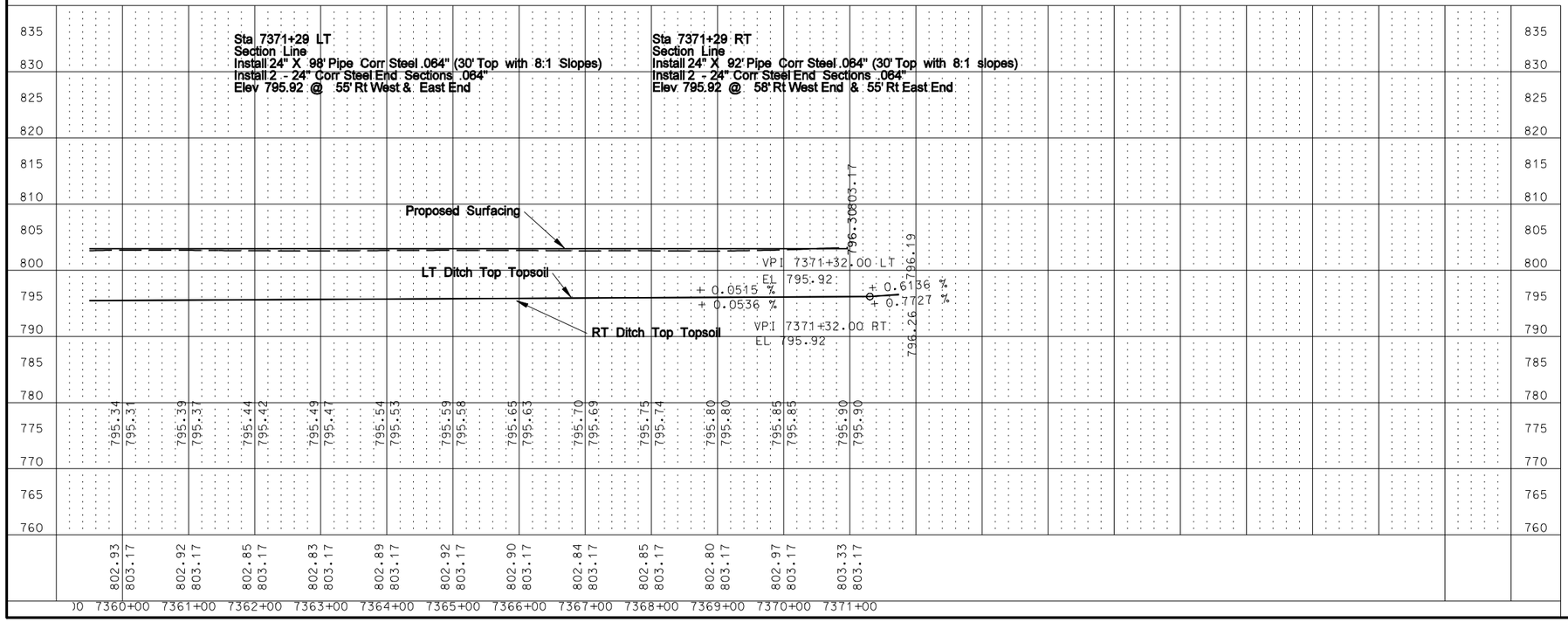
Erosion Control

Station 7340+00 to 7360+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	017
MN	SP 3501-13		







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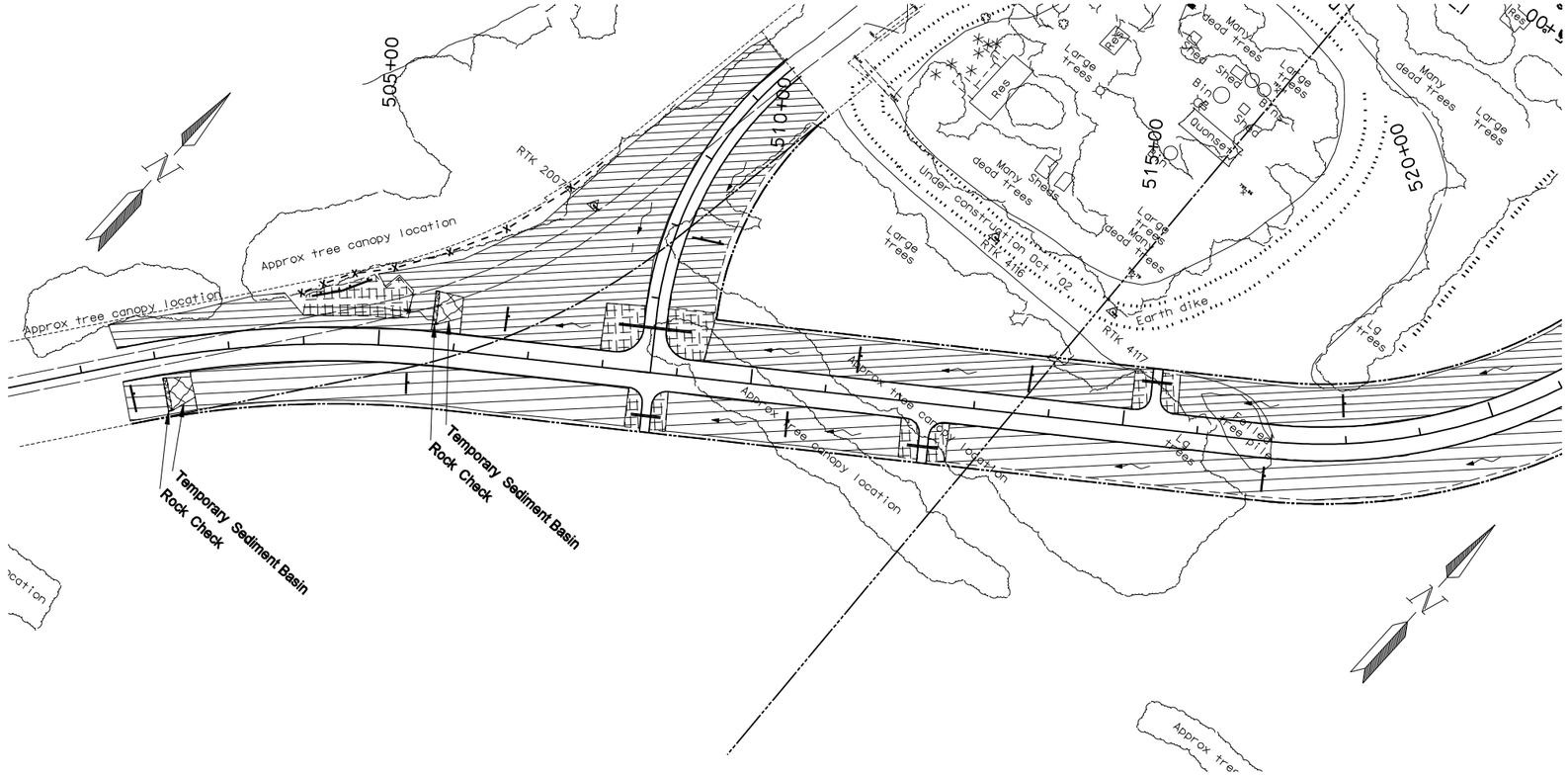
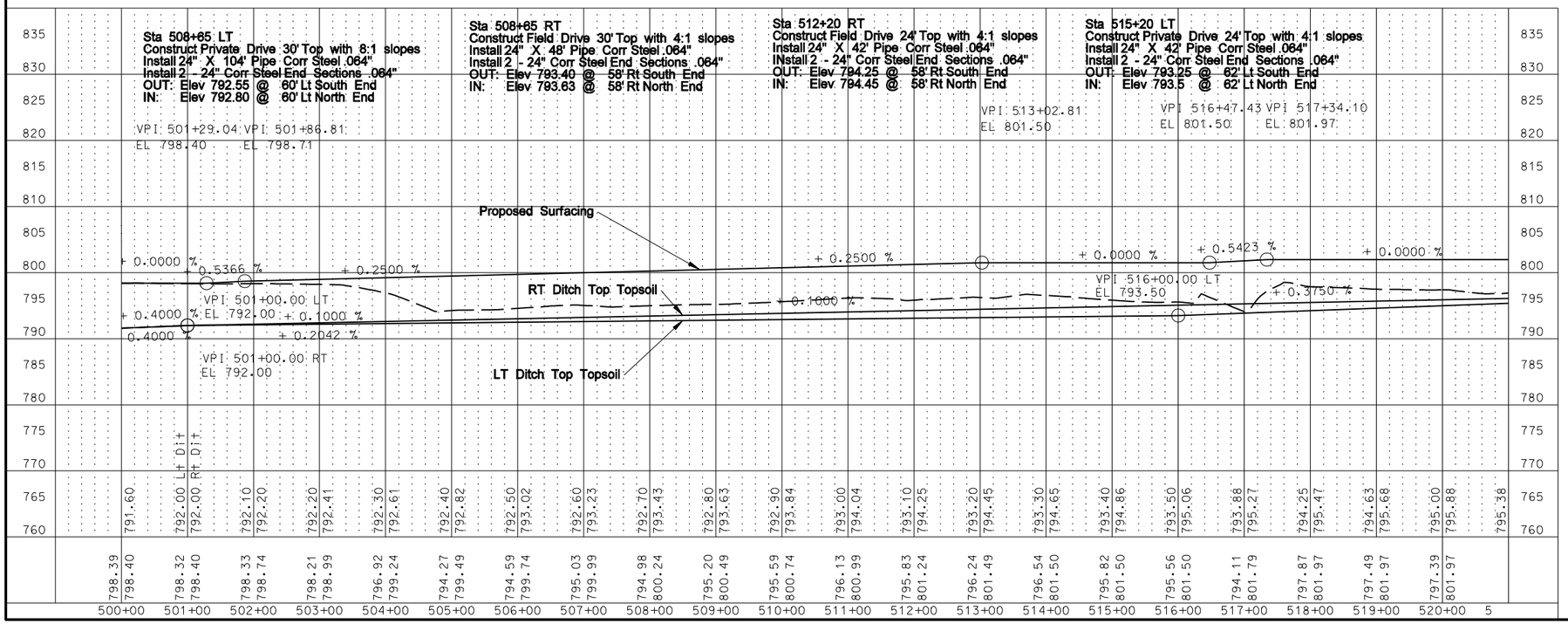
Erosion Control

Staion 7360+00 to 7380+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	018
MN	SP 3501-13		





- Straw Mulch
- Seeding
- ECB Type 3
- 12" Fiber Rolls
- Silt Fence Supported
- Floating Silt Curtain

CR 18 Total Estimated Quantities Station 501+50 tp 530+50

Straw Mulch	8 Acre
Seeding	8 Acre
ECB Type 3	2519 SY
12" Fiber Rolls	470 LF
Silt Fence Supported	475 LF
Erosion Check (2 Locations)	55 LF

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Erosion Control

Station 500+00 to 520+00

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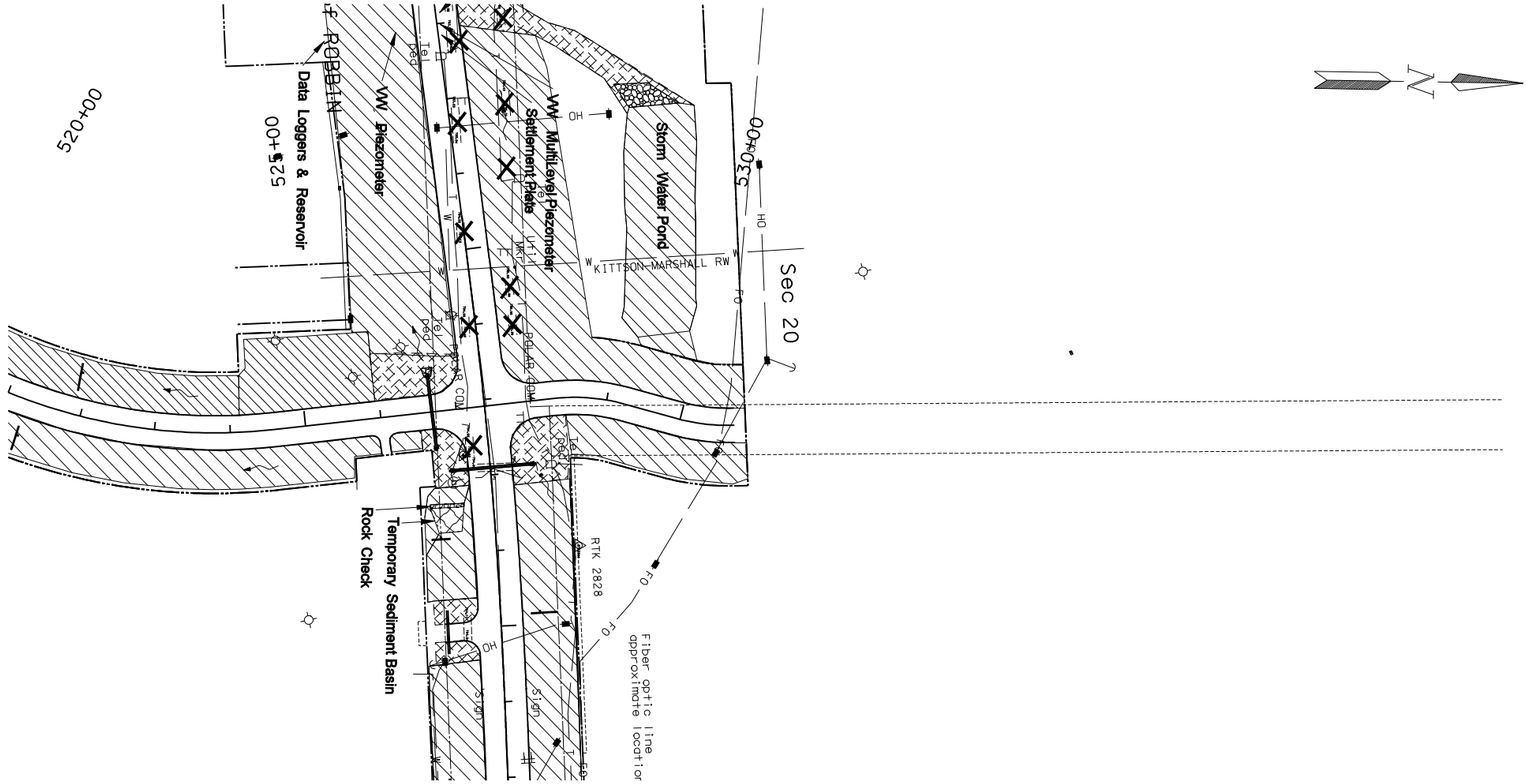
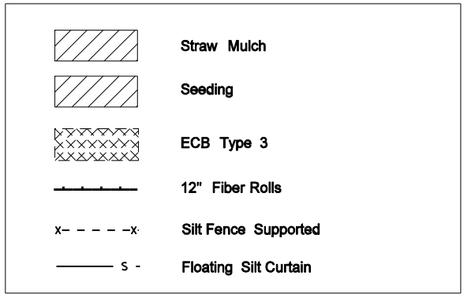
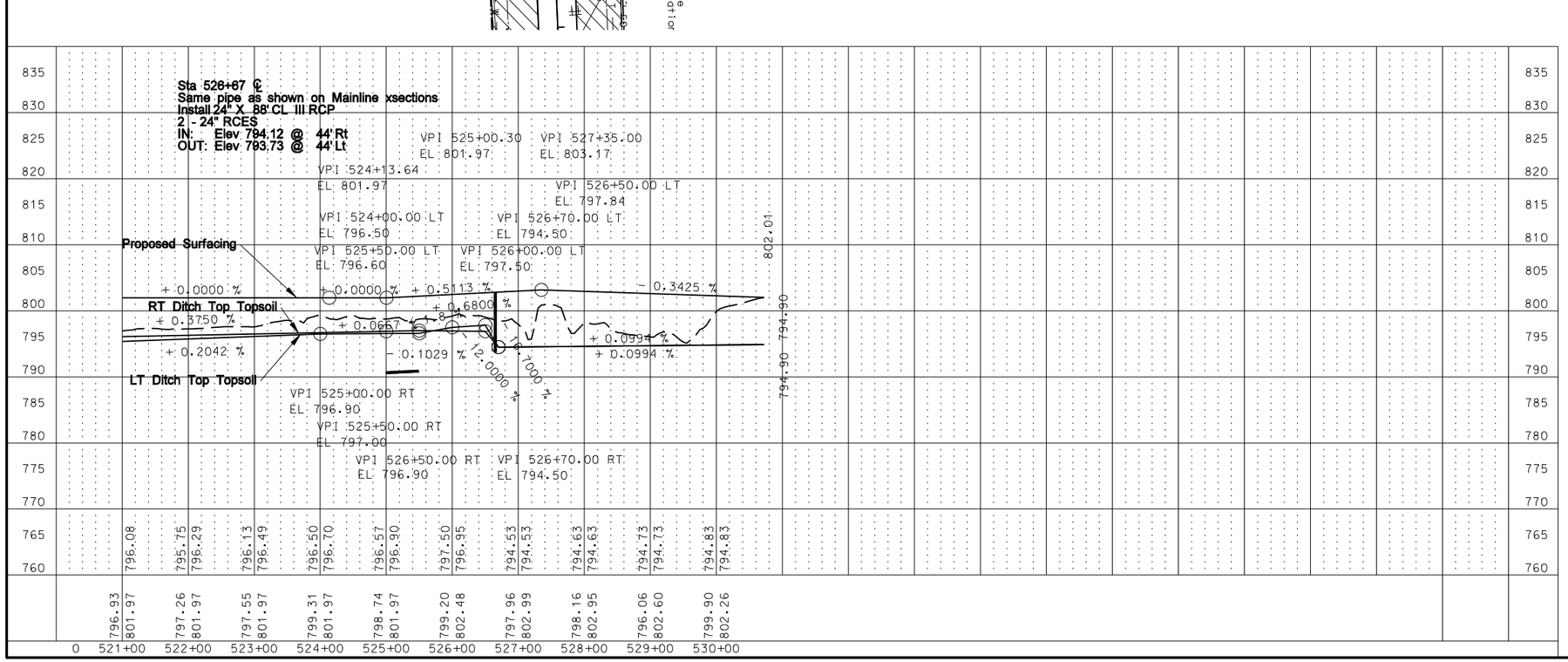
ND	AC-HPP-TIP-SS-6-066(012)137	060	019
MN	SP 3501-13		







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Erosion Control

Station 520+00 to 530+00

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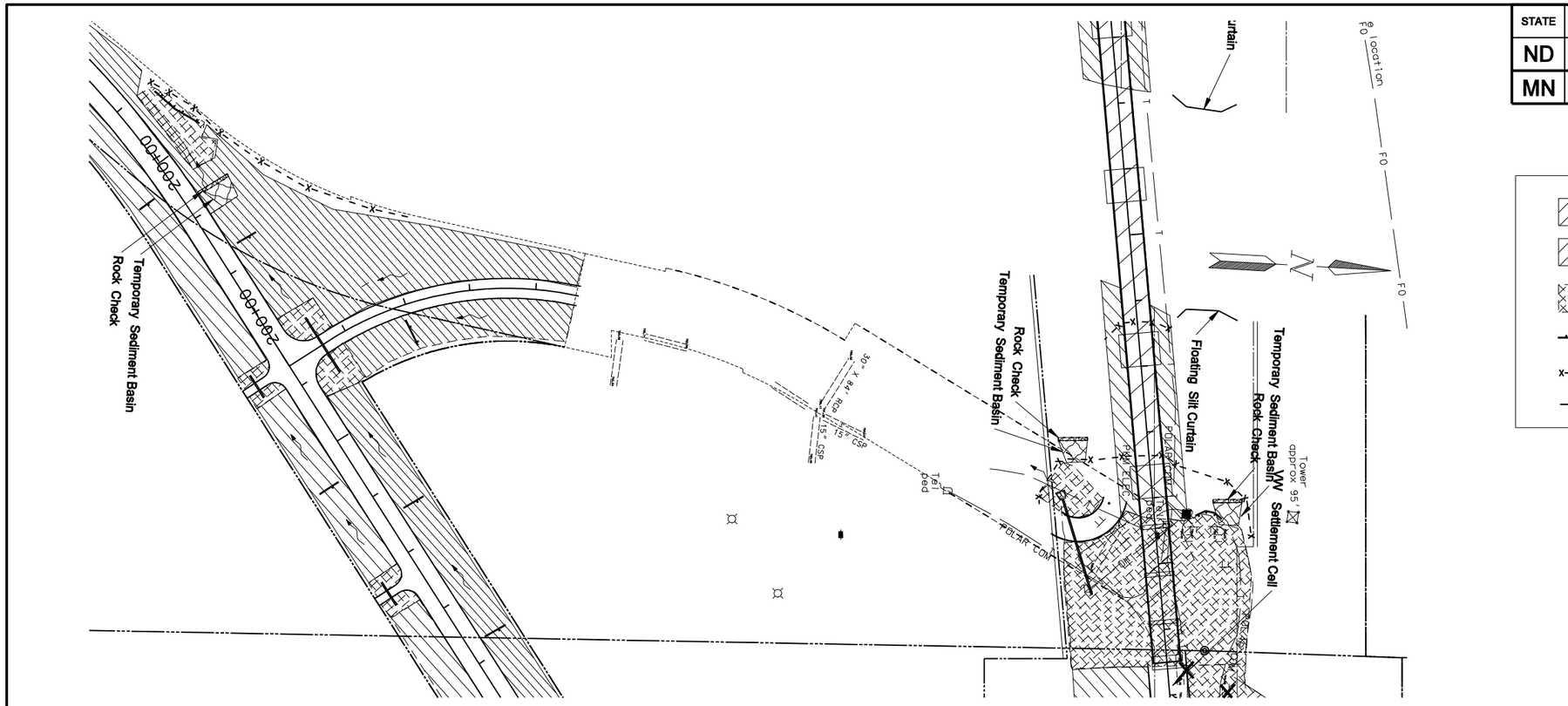
ND	AC-HPP-TIP-SS-6-066(012)137	060	020
MN	SP 3501-13		



- Straw Mulch
- Seeding
- ECB Type 3
- 12" Fiber Rolls
- Silt Fence Supported
- Floating Silt Curtain

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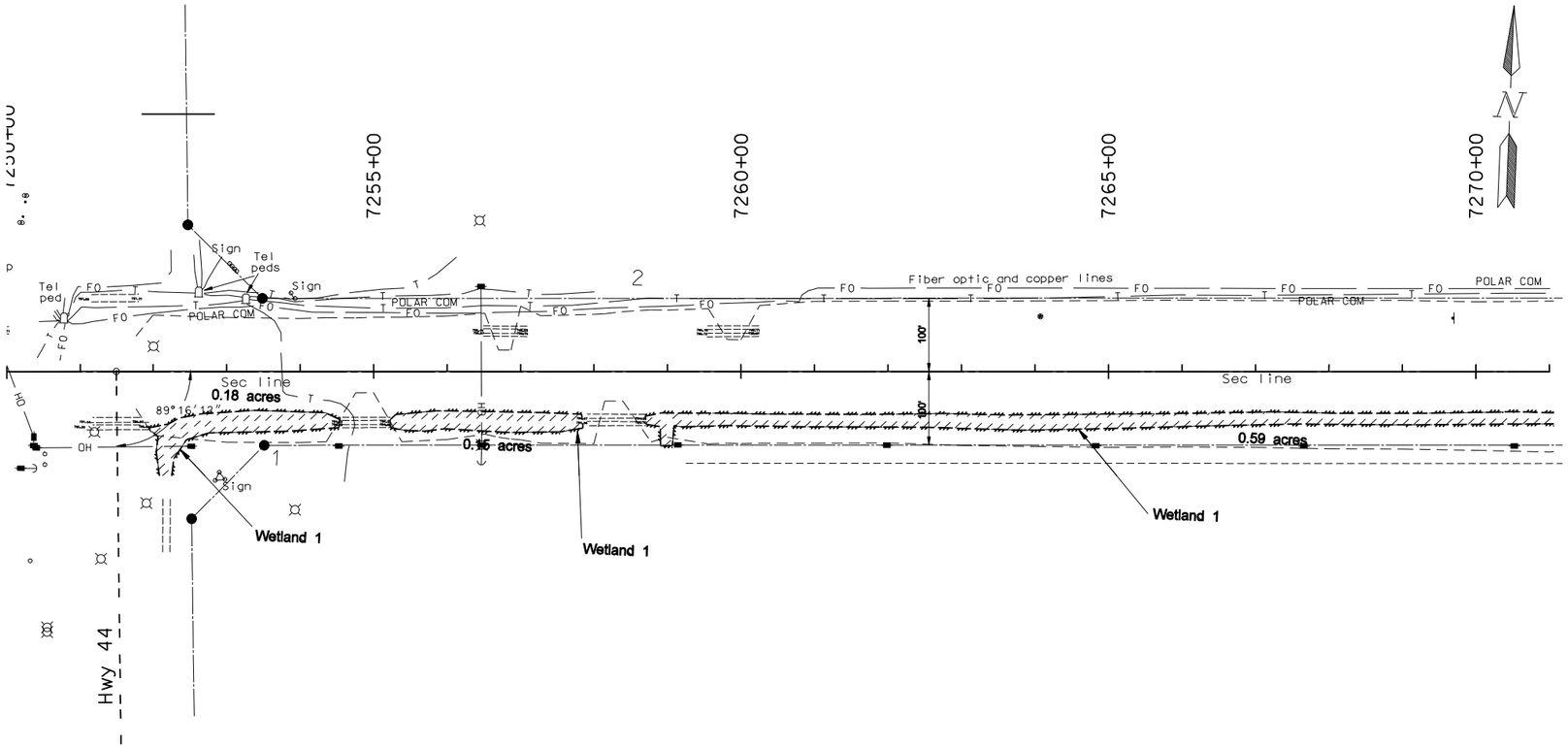
Erosion Control

Station 200+00 to 204+65

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	021
MN	SP 3501-13		



Wetlands
- Temporary Impacts
- Permanent Impacts
- Mitigation (PFO/EMA)

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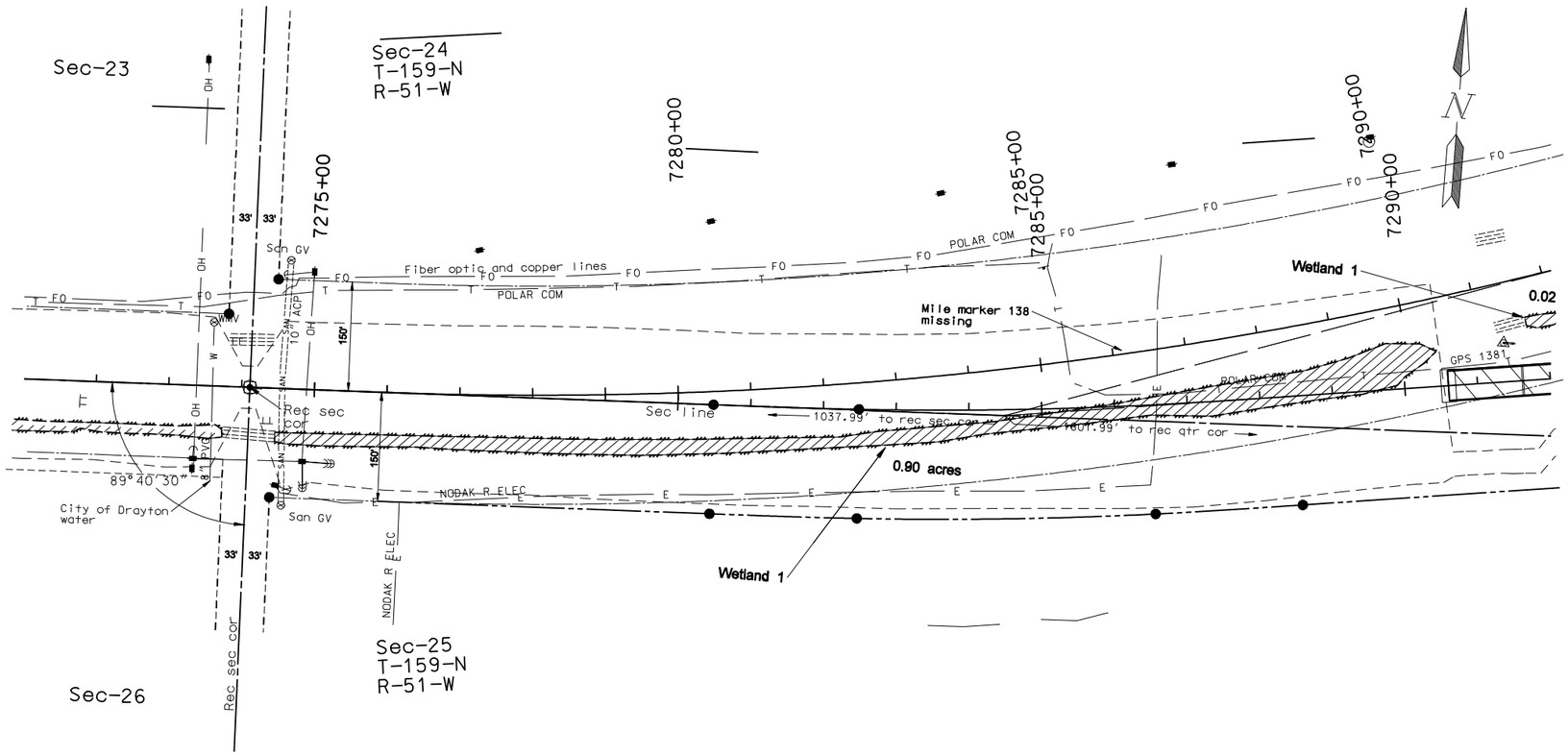
Wetlands

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	022
MN	SP 3501-13		



Wetlands
- Temporary Impacts
- Permanent Impacts
- Mitigation (PFO/EMA)

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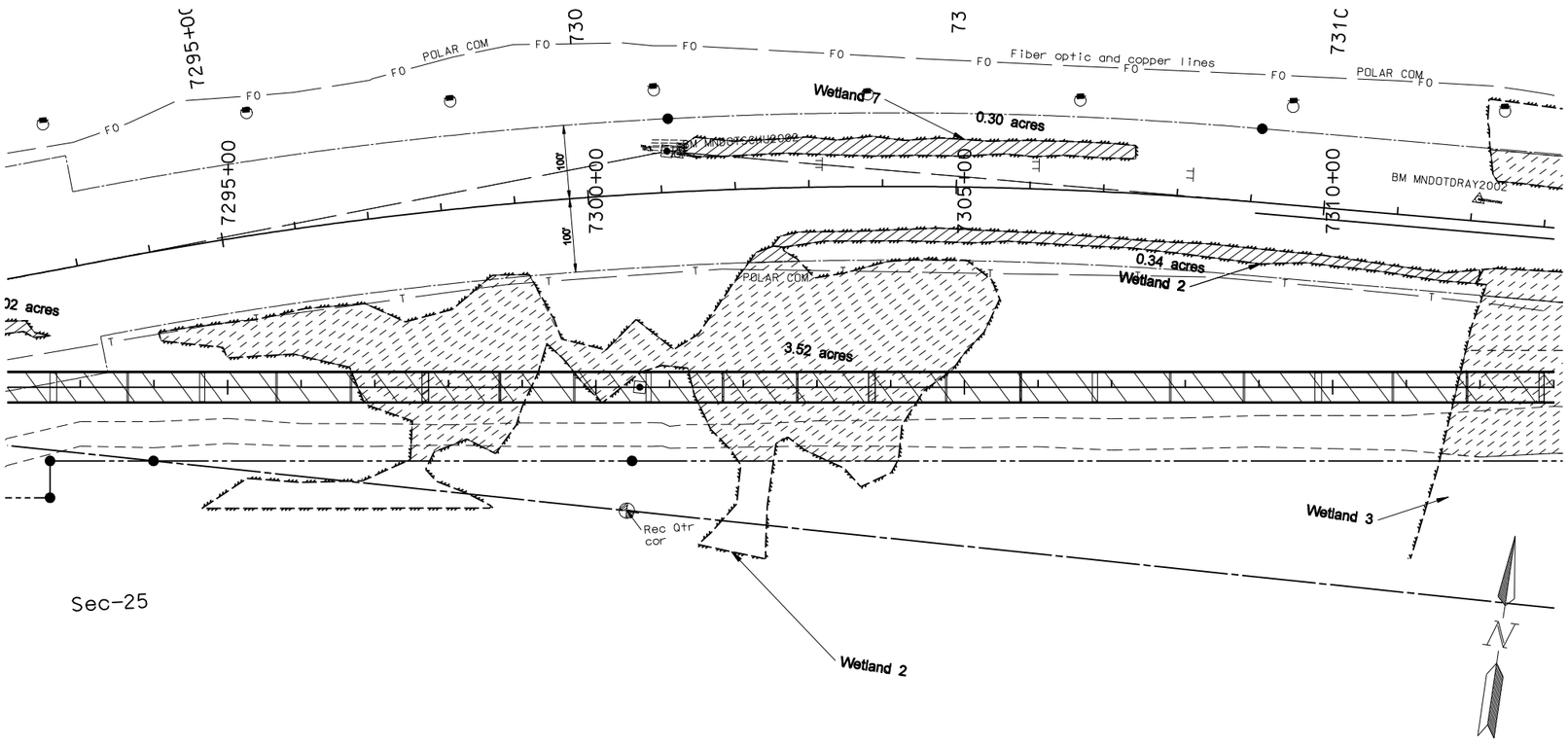
Wetlands

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	023
MN	SP 3501-13		



Wetlands
Temporary Impacts
Permanent Impacts
Mitigation (PFO/EMA)

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Wetlands

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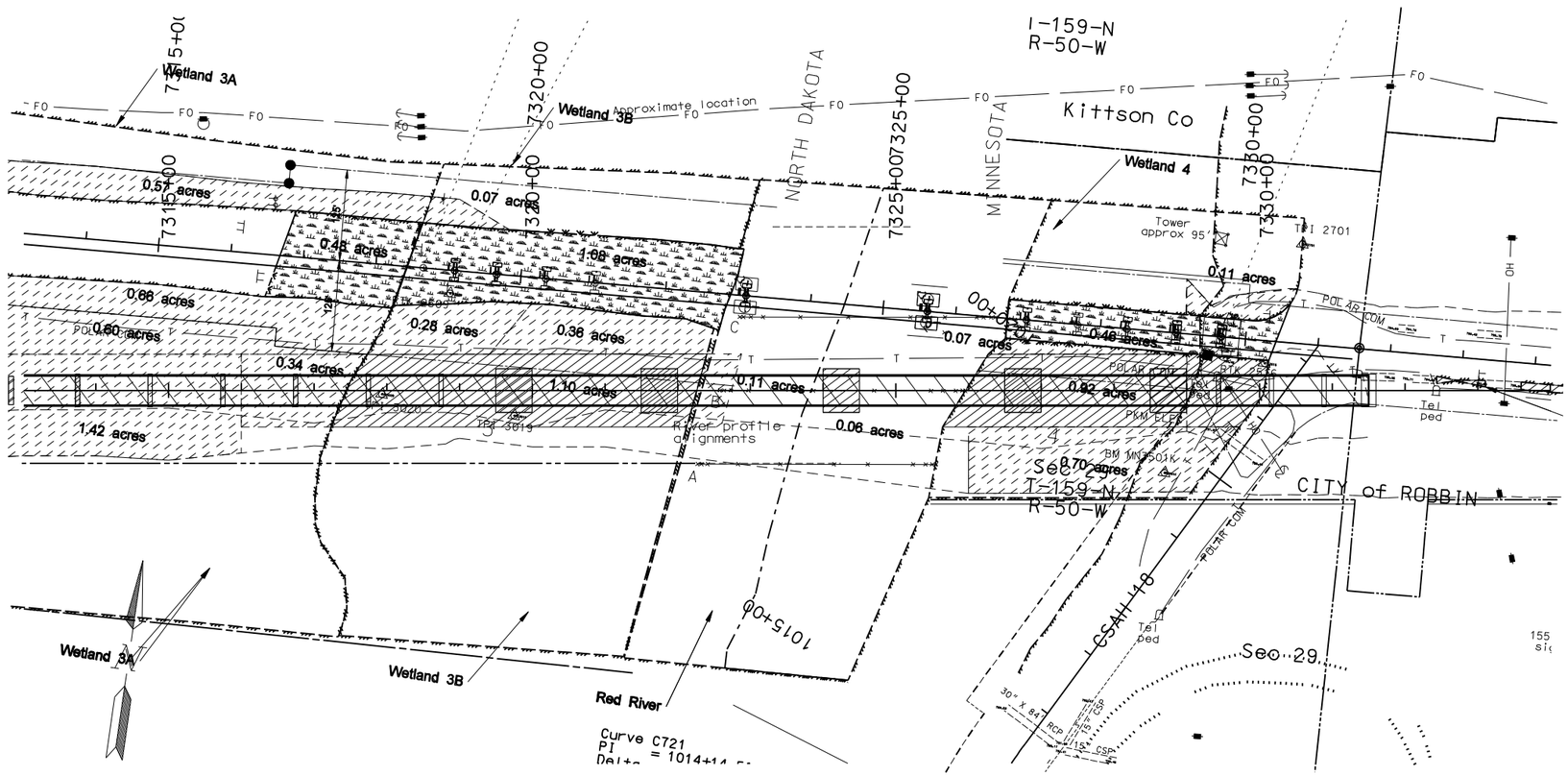
MN	SP 3501-13		



Wetlands
- Temporary Impacts
- Permanent Impacts
- Mitigation (PFO/EMA)

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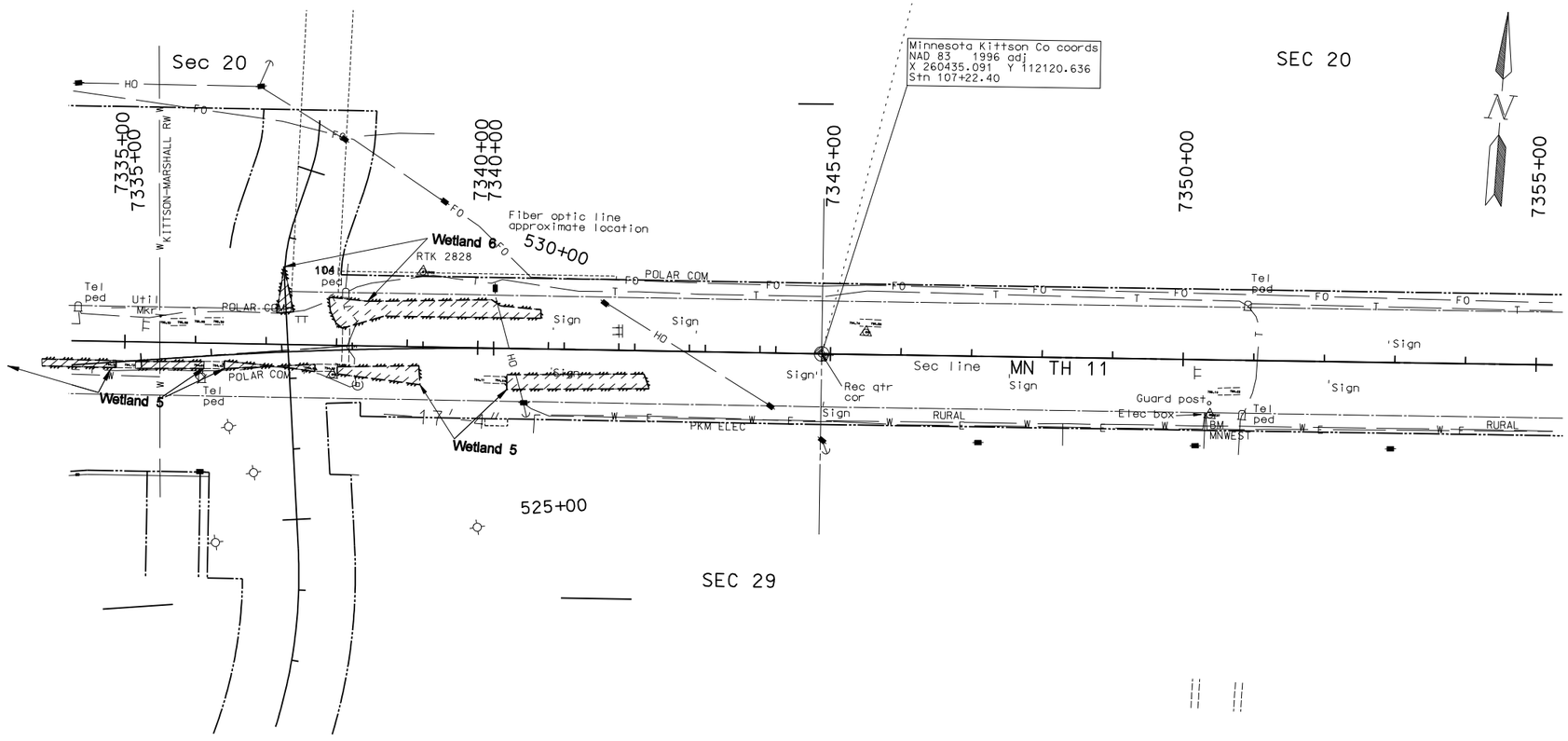
Wetlands

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	060	025
MN	SP 3501-13		



Wetlands
- Temporary Impacts
- Permanent Impacts
- Mitigation (PFO/EMA)

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Wetlands

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	3

NOTES

100 SCOPE OF WORK: This project consists of building a new 37-span bridge over the Red River near Drayton, North Dakota, with an overall bridge length of 4090'-0" and a clear roadway width of 40'-0". The first unit (Unit 1) is a 22-span, prestressed concrete I-beam bridge unit with an overall length of 2223'-6". The remaining units (Units 2, 3 & 4) are steel girder bridge units.

100 GENERAL: The cost of furnishing and placing preformed expansion joint filler, concrete inserts, rebar couplers, conduit and other miscellaneous items shall be included in the price bid for Class AE-3 and AAE-3 concrete.

107 HAZARDOUS MATERIAL: The existing structural steel is painted with lead-based paint. Certain Contractor operations could expose employees to hazardous levels of lead. The Contractor shall plan accordingly and shall inform employees of the hazards of lead-based paint.

202 REMOVAL OF STRUCTURE: The existing structure is a 9-span steel girder bridge, 1028'-0" long with a clear roadway width of 28'-0". The main river spans consist of a 550'-0" cantilevered truss. The lump sum bid item, "Removal of Structure" shall include all work required to remove the bridge. Plans for the existing bridge are available at the NDDOT Grand Forks District office or at the Bridge Division in the Central Office.

203 EMBANKMENT: The Contractor will be required to bore pilot holes for the piling through the constructed embankment at Abutment 1 to an elevation of 791', and Abutment 38 to an elevation of 796' before driving piling. The embankment and surcharge at Abutment 1 and the embankment at Abutment 38 must be in place for 170 days before holes can be bored. All pilot holes shall have a diameter of 24 inches. Prior to pile driving, the pilot holes shall be backfilled with polymer free sodium bentonite slurry, designed for sealing wells and bored holes. The bentonite slurry shall be made by thoroughly mixing bentonite with water, according to the manufacturer's recommendations. In no case shall more than 100 gallons (500 L) of water be used per 80 pounds (50 kg) of bentonite. Slurry materials shall be placed by pumping or other applicable methods which assure that the pilot holes are completely filled. All costs associated with boring pilot holes and backfilling with bentonite slurry shall be included in the price bid for Steel Piling HP 14 x 73.

210 EXCAVATION: Class 1 excavation at Abutment 1, Piers 2 through 29, Piers 35 through 37 and Abutment 38 shall extend from the bottom of the footing to the existing ground line. This quantity shall be included in the lump sum bid item "Class 1 Excavation."

210 EXCAVATION: Class 2 excavation at Piers 30 through 34 shall extend from the bottom of the footing to the existing ground line.

Class 2 excavation shall include any excavation taken out of the pier cofferdams or taken out of the river. The contractor shall not allow any of the excavated material to enter the river. All excavated material shall be wasted at an upland site that is not exposed to the river water. The contractor shall take special care that there is no excavated material spillage into the river when excavating or transporting.

602 BATCHING AND WEIGHING EQUIPMENT: Automatic batching shall be required for the Class AE-3 and AAE-3 concrete. The automatic batching and weighing equipment shall conform to the requirements of Section 153.01 B.

602 FALSEWORK: Exterior steel girders in Units 2 & 4 shall be braced at a maximum of 10'-0" spacing to prevent rotation. The strength of the bracing shall be dependent on the forces induced by the weight of the concrete, forms, equipment, and workers. The design shall be based on the assumption that diaphragms will not carry any of the load. The Contractor's bracing plan and design, stamped by a Professional Engineer, shall be submitted to the Engineer for review.

602 DIAPHRAGMS, ENDBEAMS AND ENDWALL: The intermediate diaphragms and end beams in Unit 1, and the endwall concrete at Abutment 38 shall be placed before the deck concrete and shall cure for at least 72 hours before deck placement. The pier diaphragm concrete shall be placed at the same time as the deck concrete.

602 SURFACE FINISH "D": Surface Finish "D" shall be required on the inside and top surfaces of the curb.

602 DECK CONCRETE: Beams have slight variations in the anticipated camber. To build the deck to the designated thickness will require slight adjustments in deck elevation and/or riser dimensions. These adjustments result in minor concrete quantity discrepancies. The Contractor shall consider this quantity discrepancy when he bids the unit price for Class AAE-3 concrete. The Department will pay plan quantity of Class AAE-3 concrete.

602 PENETRATING WATER REPELLENT TREATMENT: Penetrating water repellent shall be applied to the driving surface of the concrete deck.

602 DECK CURING: The curing period for the deck concrete shall be 7 days. If pozzolans in excess of 10% by weight is used in the mix, the wet cure time shall be increased from 7 to 10 days.

No work shall be done on the deck while the wet cure is in progress. No vehicles or equipment not required in the curing process shall be on the deck. Vehicles shall not be permitted on any span until the concrete has attained at least 90% of its design strength.

602 DECK PLACEMENT: The deck concrete shall be placed at a minimum rate of 75 CY per hour. The contractor will be required to pour Unit 3 before Units 2 and 4. Steel girders shall be set for all units and elevations shall be calculated for riser heights prior to pouring Unit 3. See Dwg. 66-138.720-82 for the Unit 3 deck pour sequence. A minimum of 72 hours is required between adjacent pours.

612 REINFORCING STEEL: The bar fabricator shall add a prefix to all bar designations to differentiate between the different bridge units on this project.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	4

NOTES

616 STRUCTURAL STEEL: The following structural steel shall be AASHTO M 270 Grade 50WT3 (2,722,000 pounds):

1. Main girder flanges, webs, and splice plates
2. Bearing stiffeners, transverse stiffeners and connection plates
3. Abutment and pier bearings
4. Bent top and bottom bearings and wide flange columns
5. Diaphragms and gussets
6. Bearing guides
7. Jacking blocks
8. Safety cable brackets

The Charpy V-notch test is waived for the bearing stiffeners, transverse stiffeners, connection plates, diaphragms, bearings and columns.

The contractor has the option to substitute AASHTO M 270 Grade 50 for the Grade 50WT3 for the abutment and pier bearings and the bent top and bottom bearings and wide flange columns.

The welded bearings for the abutments, piers, and bents shall be stress relieved in accordance with Section 4.4 of the current AASHTO/AWS D1.5 Bridge Welding Code. The bent bearings may be stress relieved before they are welded to the columns.

The following structural steel may be AASHTO M 270 Grade 36 or 50 (30,000 pounds):

1. Abutment backwall angles
2. Ice noses
3. Bent gussets and bracing angles
4. Deck drain connection material

The deck drain pipe shall be ASTM A 500. The pintles, swedge bolts, and cap screws shall meet ASTM A 449. The bearing pins and nuts shall meet ASTM A 276 UNS S21800. Shear studs shall meet ASTM A 108 Grades 1015, 1018, or 1020 with a minimum yield strength of 50 ksi.

All of the above structural steel shall be paid for by the lump sum bid item “Structural Steel.” There are approximately 2,774,000 total pounds of all types of structural steel.

The following structural steel items shall be galvanized:
1. Abutment backwall angles
2. Ice noses
3. Deck drain pipe and connection material

Field and shop connections shall be made with 7/8 inch diameter, AASHTO M 164 high-strength bolts unless otherwise shown.

Shop-welded connections of diaphragm angles to gusset plates may be used in place of the bolted connections shown. Details shall be shown on the shop drawings.

Shear connectors on splice plates shall be moved to clear bolt holes.

The cost of swedge bolts shall be included in the total cost of structural steel.

Temporary or permanent attachments or devices that are not shown on the plans as part of the structure shall not be welded to the structural steel members during the fabrication and construction process.

616 STAIN PREVENTION: Before the steel beams are set on the substructures, a 3/4” bead of silicone caulking shall be placed around the beams, excluding the top flange. The caulking shall be located 6 feet east of the centerline bearing of Pier 23 through Pier 31, and 6 feet west of the centerline bearing of Pier 32 through Abutment 38. If the caulking is damaged, it shall be repaired. All costs shall be incidental to the bid item, “Structural Steel.”

Care shall be taken so that the substructures are not stained by the weathering steel during construction. If staining occurs, the contractor shall remove the stain.

622 PILING: The piling shall meet AASHTO M 270 Grade 50.

622 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 291,836 foot-pound-tons, as computed by the formula W(E–26,057) + 2.240E, where W is the weight of the ram in tons and E is the rated hammer energy. In no case shall the ram weight be less than 7,900 pounds.

626 COFFERDAMS: Piers 31, 32, and 33 shall require cofferdams.

630 PAINT AND PAINTING: The following items shall be painted brown, color No. 30045 and shall meet Federal Standard 595B:

1. All bearings
2. The exposed flanges of bent columns
3. The girder ends for a distance of 10 feet each side of the expansion joints
4. Finger expansion joint support beam
5. Bearing guides
6. Jacking blocks
7. Safety cable brackets
8. Deck drain pipes in Unit 2 (6 EA) and connection material

The shop paint system for the deck drains shall be an aluminum filled epoxy mastic primer and a compatible high-build, aliphatic polyurethane finish coat in accordance with NDDOT Specifications 630.02B and 630.02C. Surface preparation shall be in accordance with manufacturer’s recommendations.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	5

NOTES

708 RIPRAP – LOOSE ROCK: A three foot thick layer of riprap is required at Piers 31, 32, and 33. The riprap shall be placed before the cofferdam has been removed. The riprap limits shall be the same as the area of the cofferdam. Two feet of backfill shall be placed on top of the footing, next the riprap shall be placed on top of the backfill, and finally backfill shall be placed on top of the riprap up to the existing channel bottom.

930 FINGER EXPANSION JOINT: All metal pieces of the finger joint assembly and the curb expansion plates shall be AASHTO M 270 Grade 50. The finger joint support beams shall be AASHTO M 270 Grade 50WT3.

All M 270 Grade 50 steel shall be hot-dip galvanized after fabrication according to AASHTO M 111. All hardware shall be galvanized according to AASHTO M 232.

The fingers shall be parallel to grade.

The nylon reinforced neoprene sheets shall meet the following requirements:

1. Textile Strength = 1100 psi
2. Elongation = 300%
3. Durometer hardness = 50

The cost of the finger plates, finger support beams, curb plates, neoprene trough, studs, reinforcing steel, nuts, bolts, washers, and all labor and material required for the construction of these joints shall be included in the cost for “Finger Expansion Joint” per linear foot.

SHOP DRAWINGS: The Contractor shall submit the following shop drawings to the Engineer for review:

1. Prestressed I-Beams
2. Structural Steel
3. Bearings
4. Joints
5. Railing

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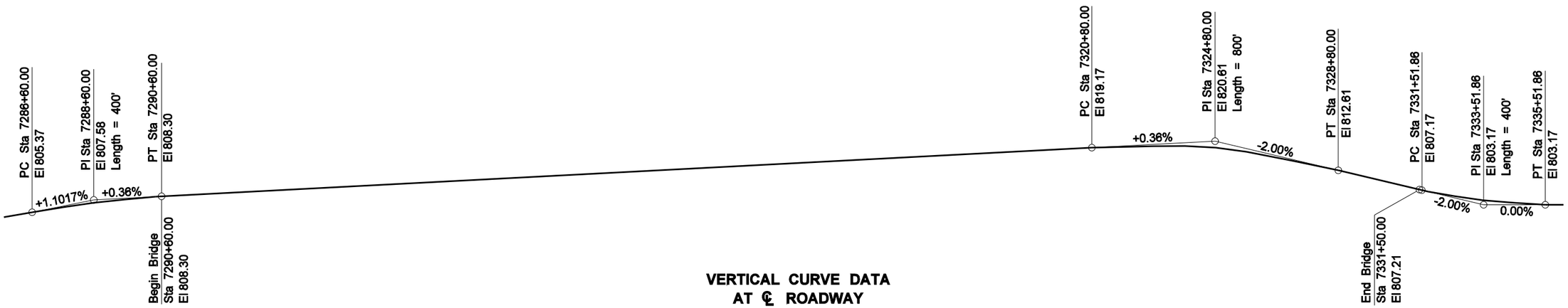
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	6



VERTICAL CURVE DATA
AT ℄ ROADWAY

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0105	REMOVAL OF STRUCTURE	L SUM	1
210	0101	CLASS 1 EXCAVATION	L SUM	1
210	0110	CLASS 2 EXCAVATION	CY	8800
210	0201	FOUNDATION PREPARATION	EA	1
602	0130	CLASS AAE-3 CONCRETE	CY	5,427.5
602	1130	CLASS AE-3 CONCRETE	CY	5,695.9
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	18,133
604	9915	PRESTRESSED I-BEAM-54 IN	LF	11,000.0
612	0115	REINFORCING STEEL-GRADE 60	LBS	733,519
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	1,520,199
616	5890	STRUCTURAL STEEL	L SUM	1
622	0060	STEEL PILING HP 14 X 73	LF	33,130
622	0070	STEEL PILING HP 14 X 102	LF	46,860
624	0128	TRAFFIC RAIL-STEEL	LF	8,182.0
626	0120	PIER COFFERDAM	EA	3
708	1020	RIPRAP-LOOSE ROCK	CY	1750
709	0600	GEOTEXTILE FABRIC-TYPE RR	SY	2600
930	3000	BRIDGE BENCH MARKS	SET	1
930	8600	ELASTOMERIC BEARING PAD	SF	62.4
930	8665	3IN EXPANSION JOINT STRIP SEAL	LF	82
930	8666	4IN EXPANSION JOINT STRIP SEAL	LF	41
930	8667	5IN EXPANSION JOINT STRIP SEAL	LF	82
930	8681	FINGER EXPANSION JOINT	LF	86.4
930	9536	ABUTMENT UNDERDRAIN SYSTEM	L SUM	1

HYDRAULIC DATA:

Drainage Area	26,085	sq mi
Stream Gradient	0.0000427	ft/ft
Design Frequency	100	yr
Design Discharge	112,000	cfs
Design Headwater Stage	801.26	ft
Design Tailwater Stage	801.24	ft
Velocity Through Bridge	1.8	fps
100-Year Frequency Discharge	112,000	cfs
100-Year Frequency Headwater	801.26	ft
Overtopping Stage	803.17	ft (Approach Roadway)
Overtopping Discharge	151,000 ±	cfs

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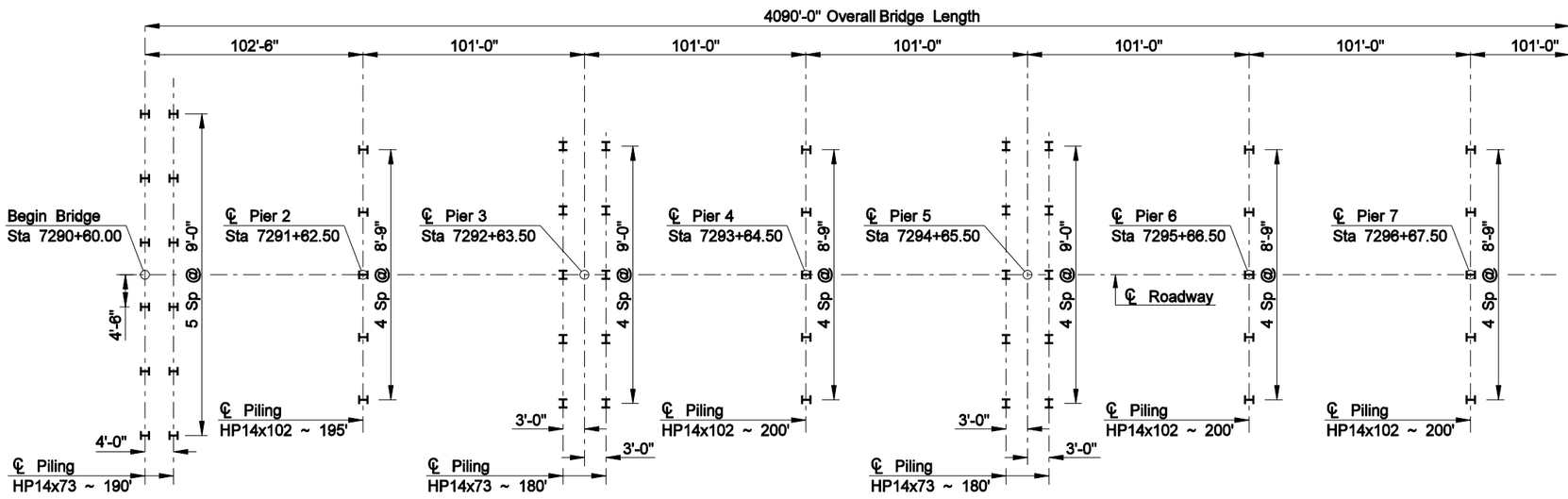
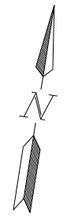
RED RIVER BRIDGE
NEAR DRAYTON

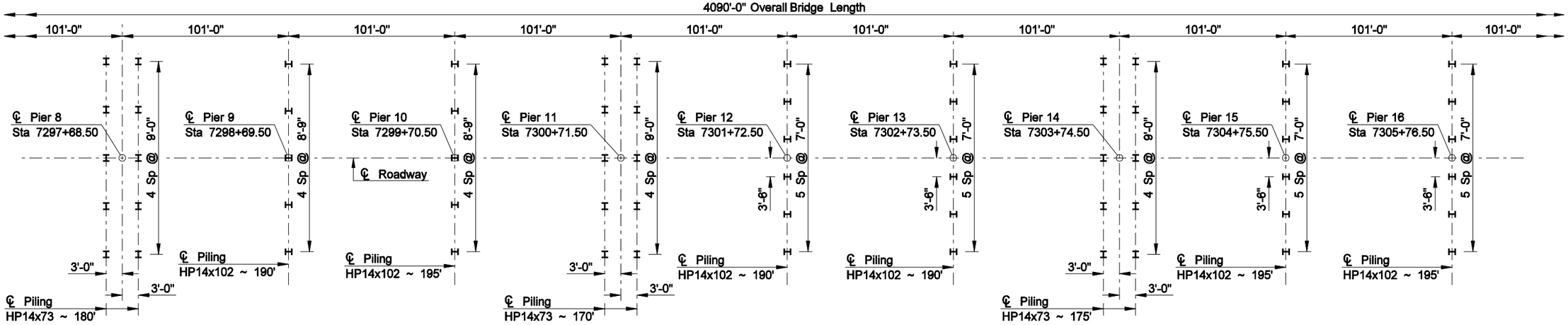
VERTICAL CURVE DATA, HYDRAULIC DATA & QUANTITIES

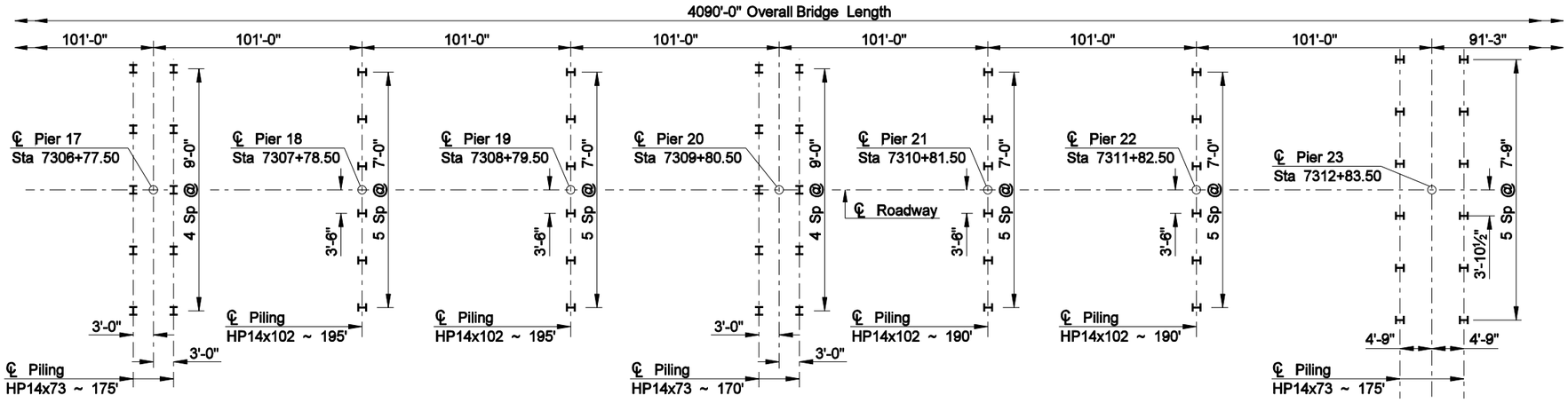
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	7





NOTE:
HP14x73 Pile shall be driven to 134 tons.
HP14x102 Pile shall be driven to 188 tons.





PILING LAYOUT

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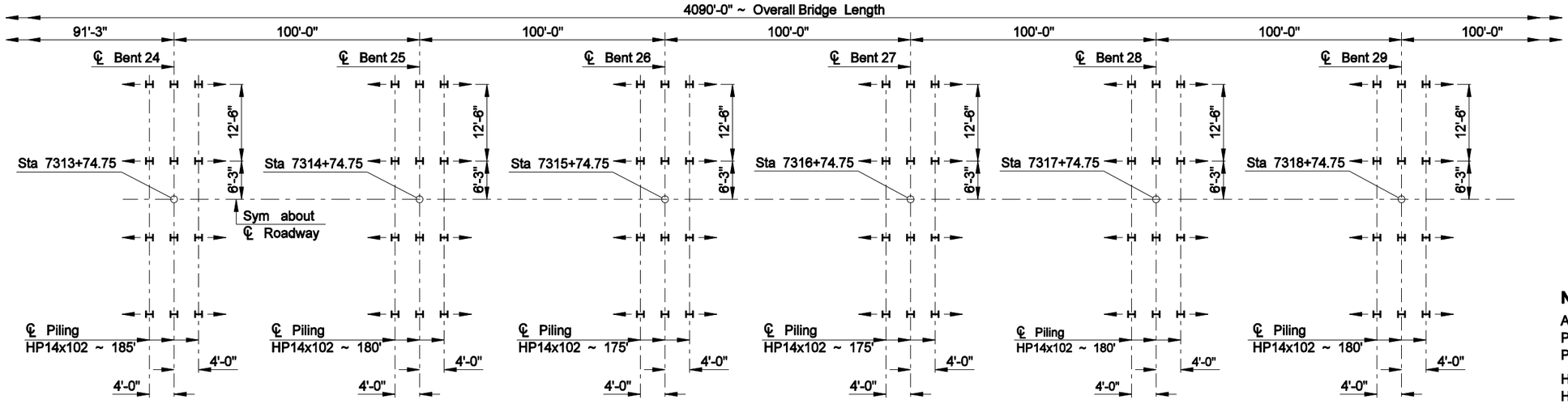
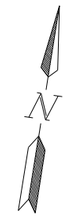
RED RIVER BRIDGE
NEAR DRAYTON

PILING LAYOUT

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	8

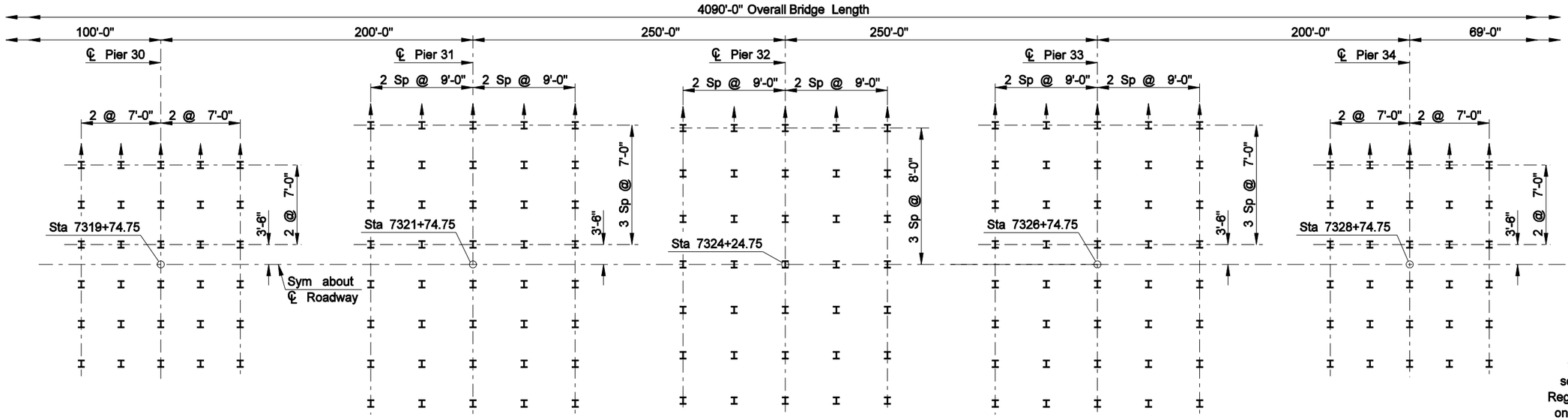




NOTES:

Arrows indicate direction of pile batter.
Pile batter is 1½:12 for Bents 24-29
Pile batter is 2:12 for Piers 30-34

HP14x73 pile shall be driven to 134 Ton
HP14x102 pile shall be driven to 188 Ton



PILING @ PIER 30
HP14x73 ~ 150'

PILING @ PIER 31
HP14x102 ~ 145'

PILING @ PIER 32
HP14x73 ~ 150'

PILING @ PIER 33
HP14x102 ~ 150'

PILING @ PIER 34
HP14x73 ~ 165'

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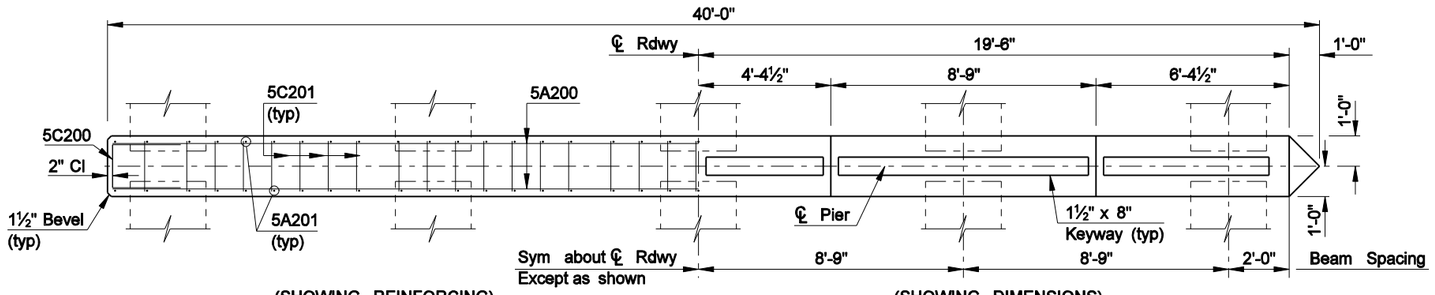
PILING LAYOUT

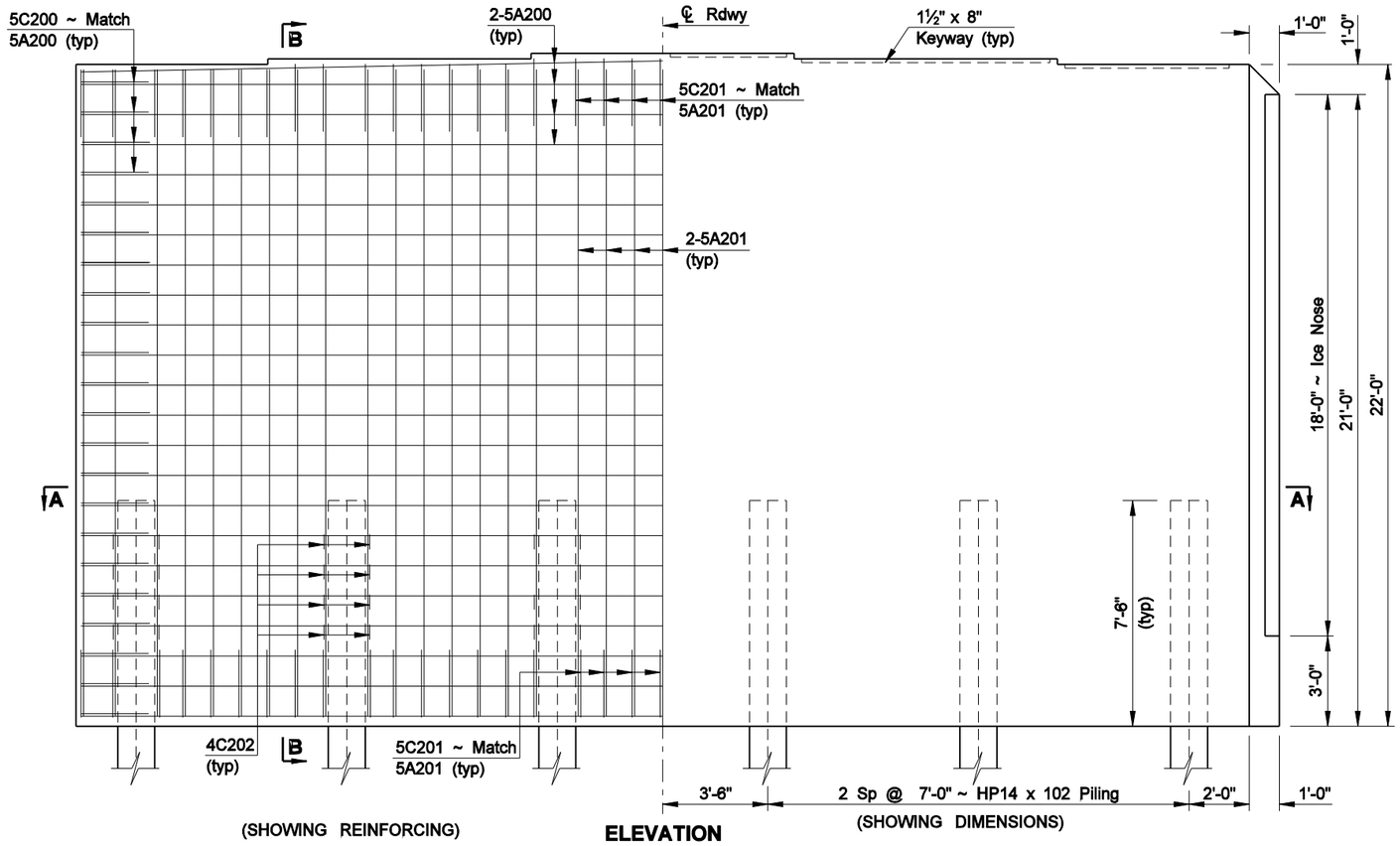
RED RIVER BRIDGE
NEAR DRAYTON

PILING LAYOUT

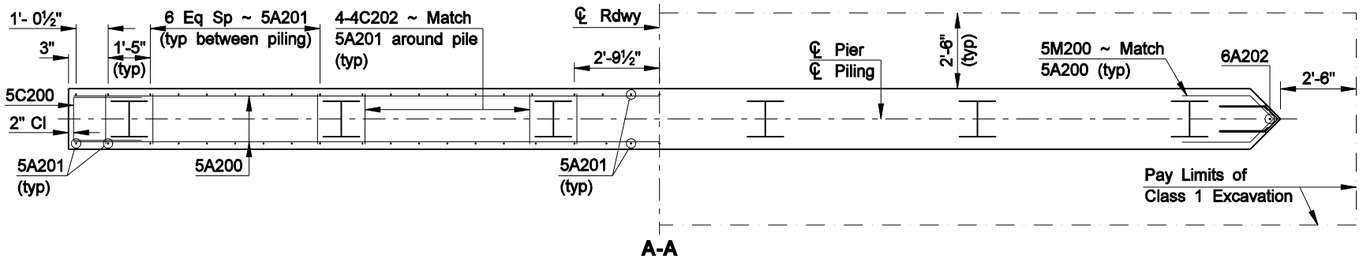
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	25



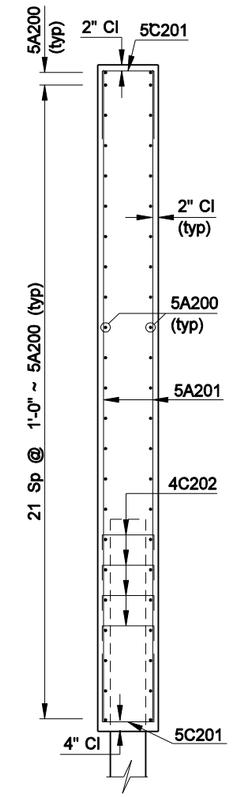
(SHOWING REINFORCING) **PLAN** (SHOWING DIMENSIONS)



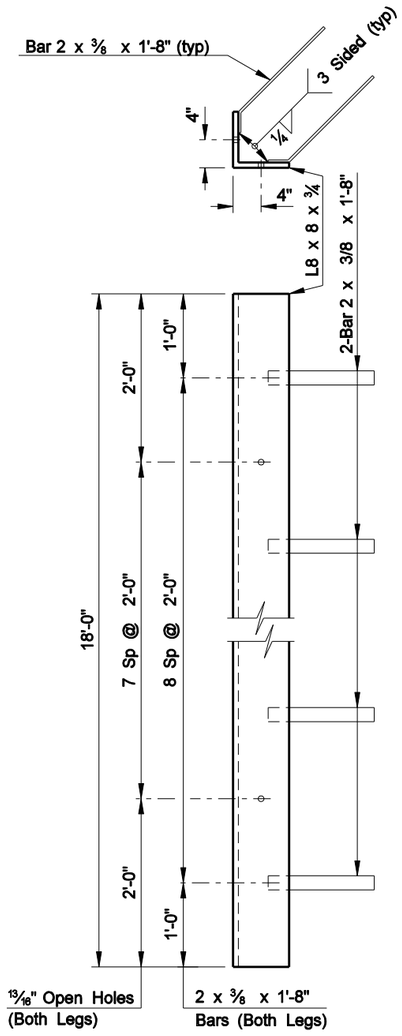
(SHOWING REINFORCING) **ELEVATION** (SHOWING DIMENSIONS)



A-A



B-B



Galvanize in accordance with AASHTO M 111 after fabrication.

ICE NOSE DETAILS

QUANTITIES	(ONE PIER)
CLASS AE-3 CONCRETE	64.8 CY
REINFORCING STEEL	4,257 LBS

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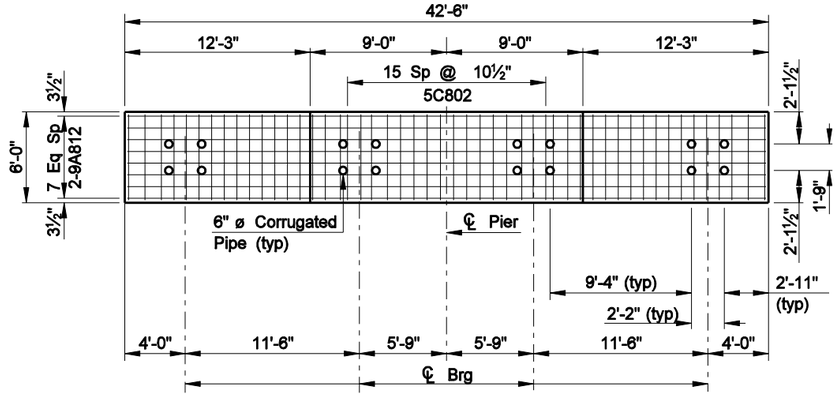
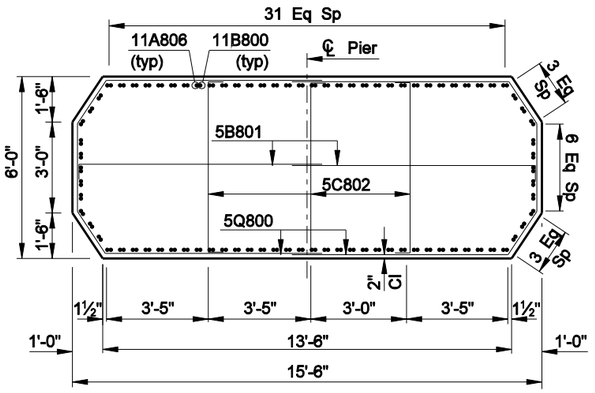
RED RIVER BRIDGE NEAR DRAYTON

PIER 12, 13, 15 & 16 DETAILS

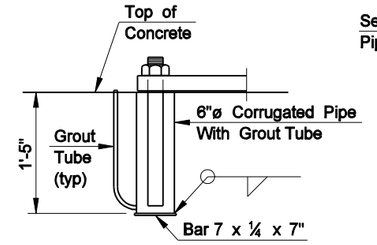
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	36



PLAN

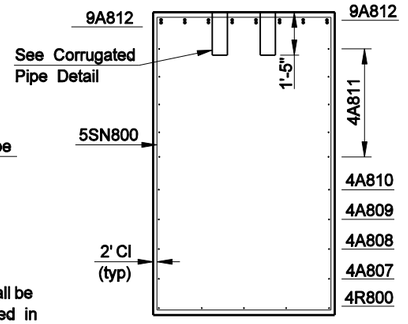


A-A

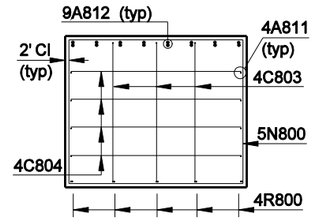


After the beams are set, the anchor bolts shall be suspended in the corrugated pipe and grouted in using a non-shrink grout. All materials and labor required to install corrugated pipe shall be included in the price bid for Class AE-3 Concrete.

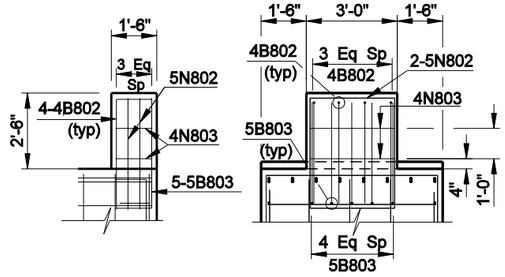
CORRUGATED PIPE DETAIL



B-B



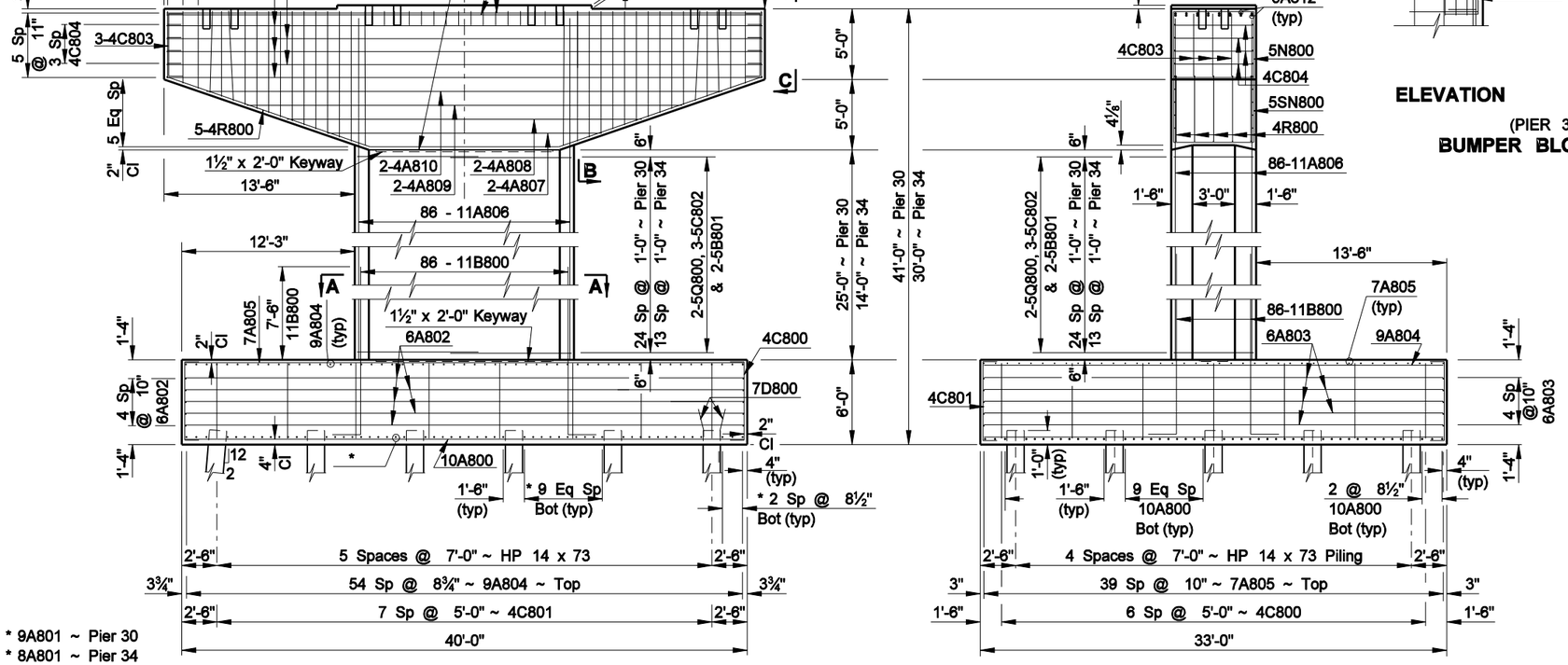
C-C



ELEVATION END VIEW

(PIER 34 ONLY)

BUMPER BLOCK DETAILS



ELEVATION VIEW

ELEVATION VIEW

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NOTES:

The top and bottom layers of the 9A812 bars shall be bundled in contact with each other. Bundled bars shall be tied or wired to ensure that they remain fastened together and in their relative position.

The 11A806 bars shall be spliced to the 11B800 bars.

QUANTITIES

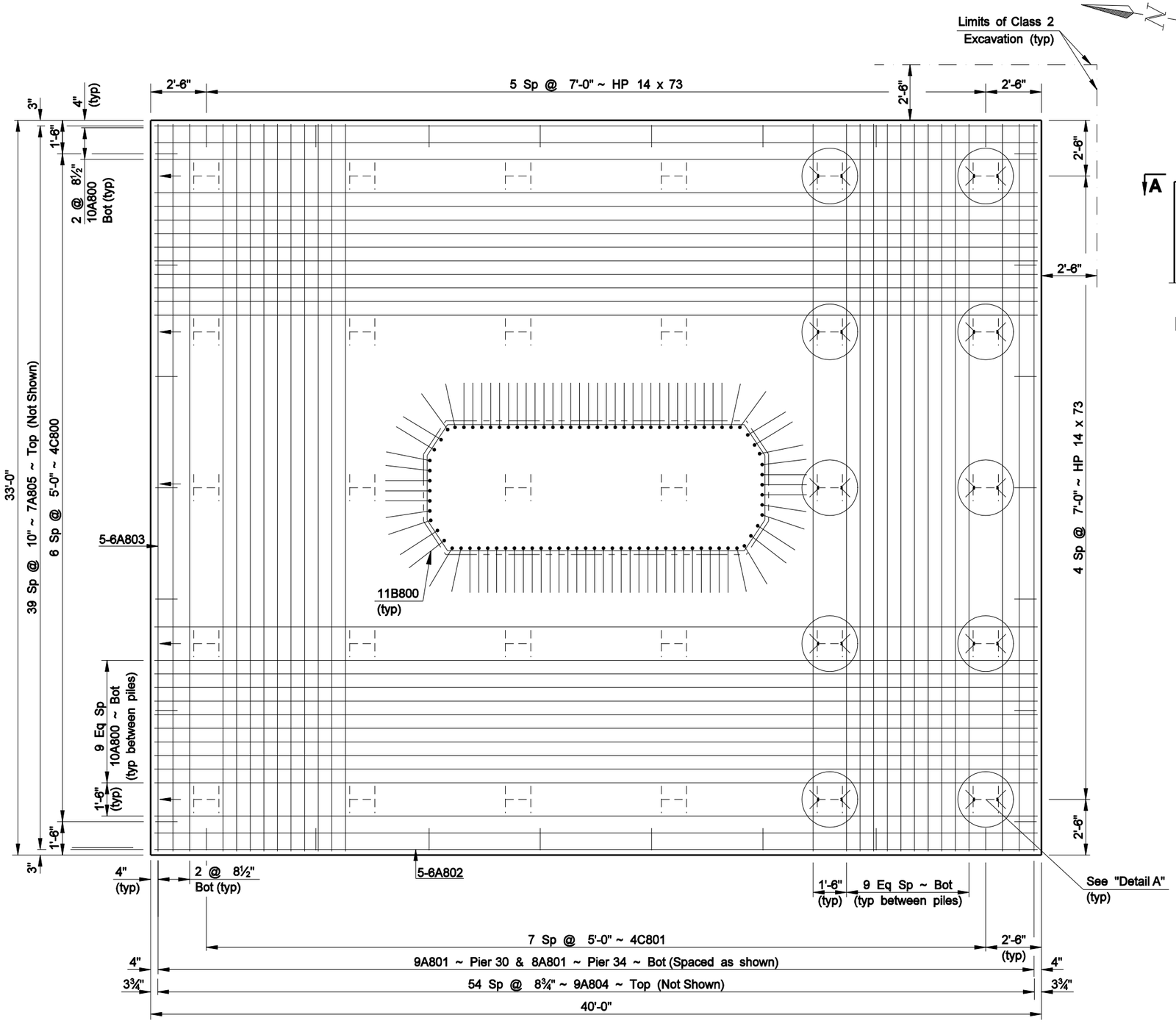
SEE DWG 66-138.720-37

RED RIVER BRIDGE
NEAR DRAYTON

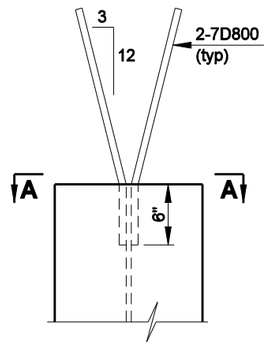
(SHOWING DIMENSIONS & REINFORCING)

PIER 30 & PIER 34

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	170	37

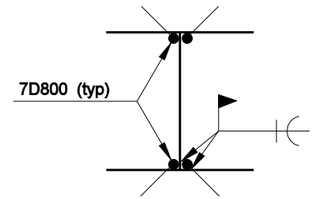


SHOWING DIMENSIONS & REINFORCING
PLAN



DETAIL "A"

NOTE:
The cost of welding the "D" bars to the piling shall be included in the bid price for "Steel Piling HP 14 x 73".



A-A

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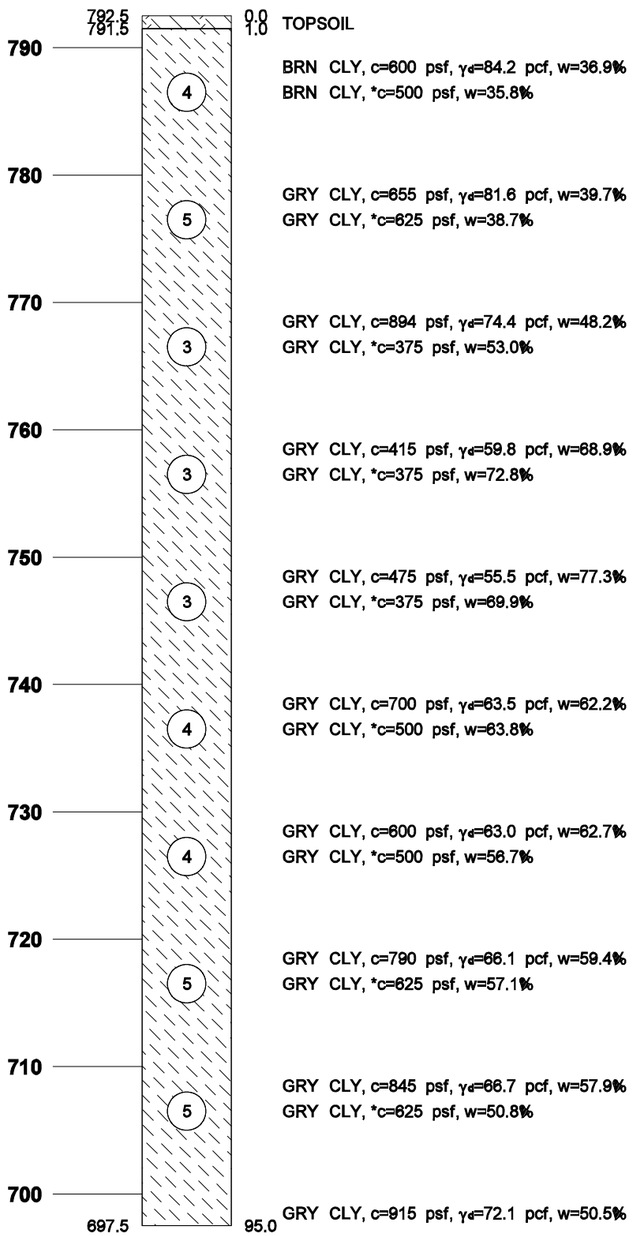
	QUANTITIES	
PIER 30	CLASS AE-3 CONCRETE	456.0 CY
	REINF STEEL GRADE 60	53,664 LBS
PIER 34	CLASS AE-3 CONCRETE	419.8 CY
	REINF STEEL GRADE 60	46,396 LBS

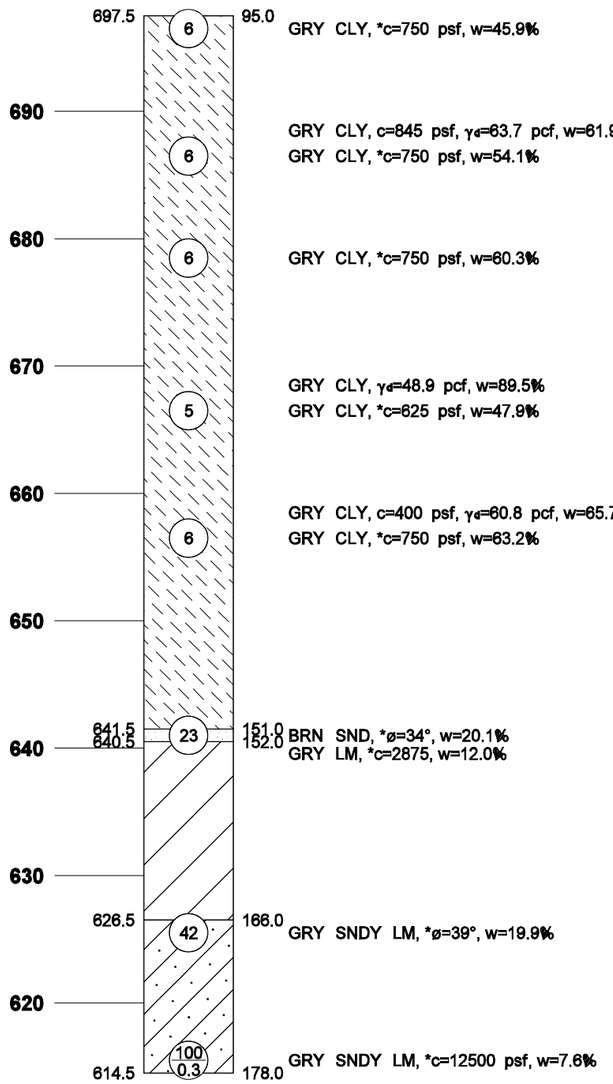
RED RIVER BRIDGE
NEAR DRAYTON

(SHOWING DIMENSIONS & REINFORCING)

FOOTING DETAILS
PIER 30 & PIER 34

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	1





NOTES:

THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

THE BORING DATA SHOWN IS FOR NORTH DAKOTA DEPARTMENT OF TRANSPORTATION'S (NDDOT) DESIGN AND ESTIMATING PURPOSES ONLY. THE BORING LOGS ARE ONLY REPRESENTATIVE OF THE EXACT LOCATION FROM WHICH THE SAMPLES WERE TAKEN AND INTERPRETATION BETWEEN THE SAMPLE LOCATIONS IS DISCOURAGED. THE NDDOT ASSUMES NO RESPONSIBILITY IF THE SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN. FURTHER SOIL INFORMATION MAY BE AVAILABLE AT:

NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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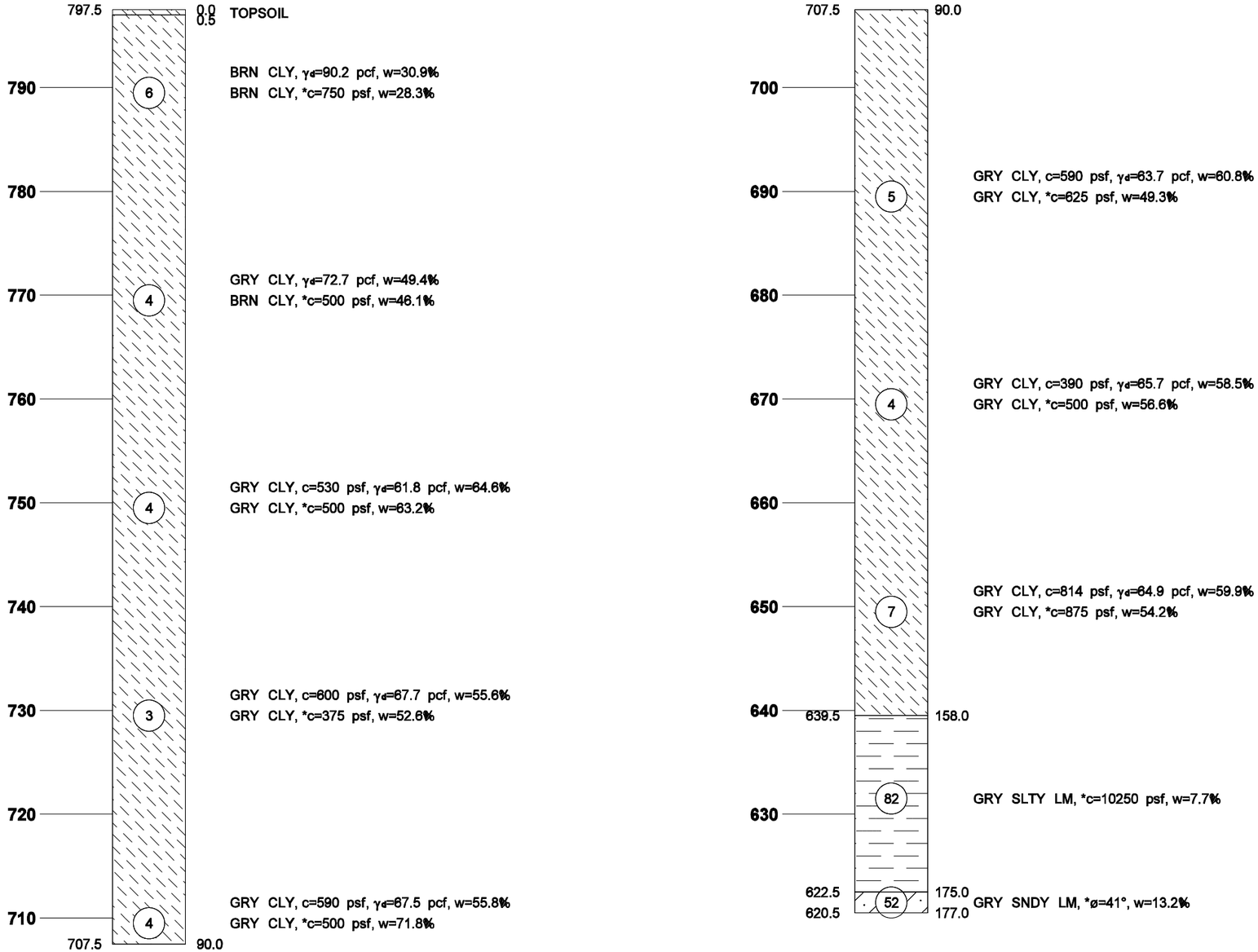
BORING NO. 1

EXISTING CENTERLINE STA 7283+38 41 ft rt
DRILLED ON 07/01/03 TO 07/10/03

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	2



NOTES:

THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

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NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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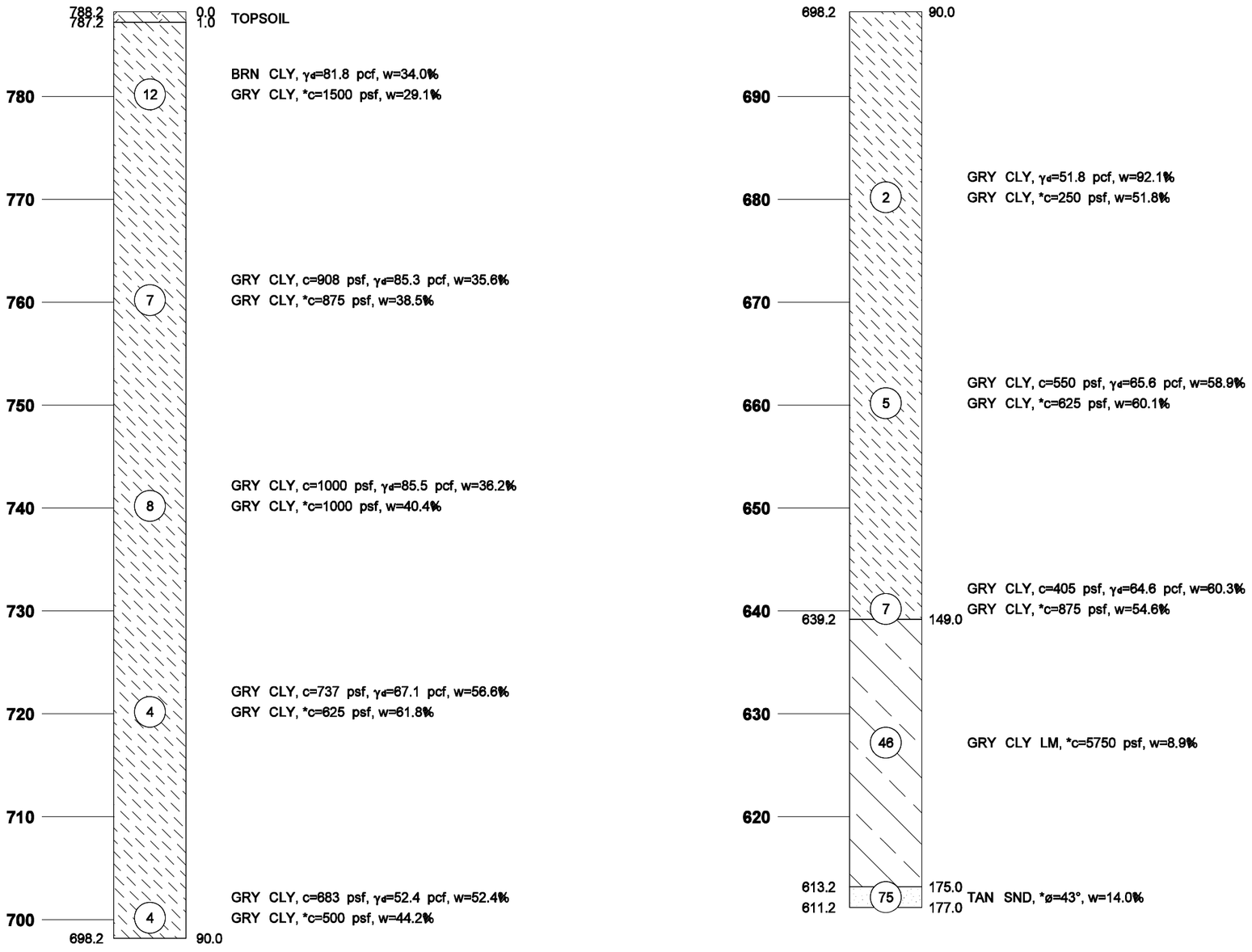
BORING NO. 2

EXISTING CENTERLINE STA 7330+12 43 ft rt
DRILLED ON 07/14/03 TO 07/16/03

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	3



NOTES:

THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

THE BORING DATA SHOWN IS FOR NORTH DAKOTA DEPARTMENT OF TRANSPORTATION'S (NDDOT) DESIGN AND ESTIMATING PURPOSES ONLY. THE BORING LOGS ARE ONLY REPRESENTATIVE OF THE EXACT LOCATION FROM WHICH THE SAMPLES WERE TAKEN AND INTERPRETATION BETWEEN THE SAMPLE LOCATIONS IS DISCOURAGED. THE NDDOT ASSUMES NO RESPONSIBILITY IF THE SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN. FURTHER SOIL INFORMATION MAY BE AVAILABLE AT:

NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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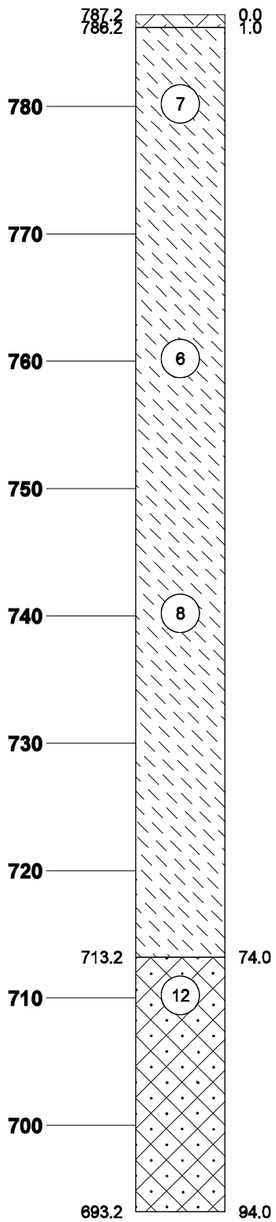
BORING NO. 3

EXISTING CENTERLINE STA 7311+60 179 ft rt
DRILLED ON 07/17/03 TO 07/24/03

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	4



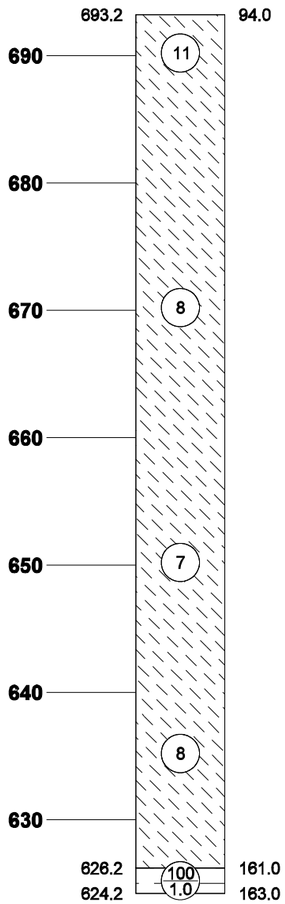
TOPSOIL

BRN CLY, c=158 psf, γ_d=79.6 pcf, w=39.7%
BRN CLY, *c=875 psf, w=39.7%

GRY CLY, c=1700 psf, γ_d=87.4 pcf, w=32.7%
GRY CLY, *c=750 psf, w=31.1%

GRY CLY, c=1460 psf, γ_d=90.6 pcf, w=31.6%
GRY CLY, *c=1000 psf, w=35.9%

GRY/BRN SLTY CLY, c=1580 psf, γ_d=88.6 pcf, w=31.3%
GRY/BRN SLTY CLY, *c=1500 psf, w=36.9%



GRY CLY, c=1000 psf, γ_d=85.0 pcf, w=35.9%
GRY CLY, *c=1375 psf, w=49.4%

GRY CLY, c=1000 psf, γ_d=76.2 pcf, w=45.4%
GRY CLY, *c=1000 psf, w=49.7%

GRY CLY, c=1010 psf, γ_d=64.3 pcf, w=60.4%
GRY CLY, *c=875 psf, w=54.8%

GRY CLY, *c=1000 psf, w=51.2%

GRY SLTY LM, *c=12500 psf, w=14.4%

NOTES:

THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

THE BORING DATA SHOWN IS FOR NORTH DAKOTA DEPARTMENT OF TRANSPORTATION'S (NDDOT) DESIGN AND ESTIMATING PURPOSES ONLY. THE BORING LOGS ARE ONLY REPRESENTATIVE OF THE EXACT LOCATION FROM WHICH THE SAMPLES WERE TAKEN AND INTERPRETATION BETWEEN THE SAMPLE LOCATIONS IS DISCOURAGED. THE NDDOT ASSUMES NO RESPONSIBILITY IF THE SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN. FURTHER SOIL INFORMATION MAY BE AVAILABLE AT:

NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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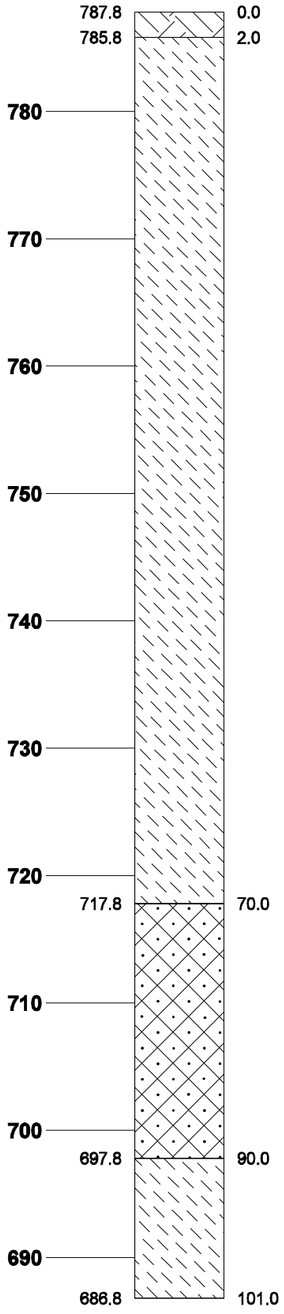
BORING NO. 4

EXISTING CENTERLINE STA 7300+44 253 ft rt
DRILLED ON 07/28/03 TO 07/31/03

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	5



TOPSOIL, BLK CLY, γ_d=72.0 pcf, w=46.5%

GRY CLY, γ_d=88.1 pcf, w=33.5%

GRY CLY, γ_d=86.9 pcf, w=32.5%

GRY CLY, γ_d=88.4 pcf, w=30.8%

GRY SLTY CLY, γ_d=86.0 pcf, w=32.1%

GRY CLY, γ_d=87.2 pcf, w=32.7%

NOTES:

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300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

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w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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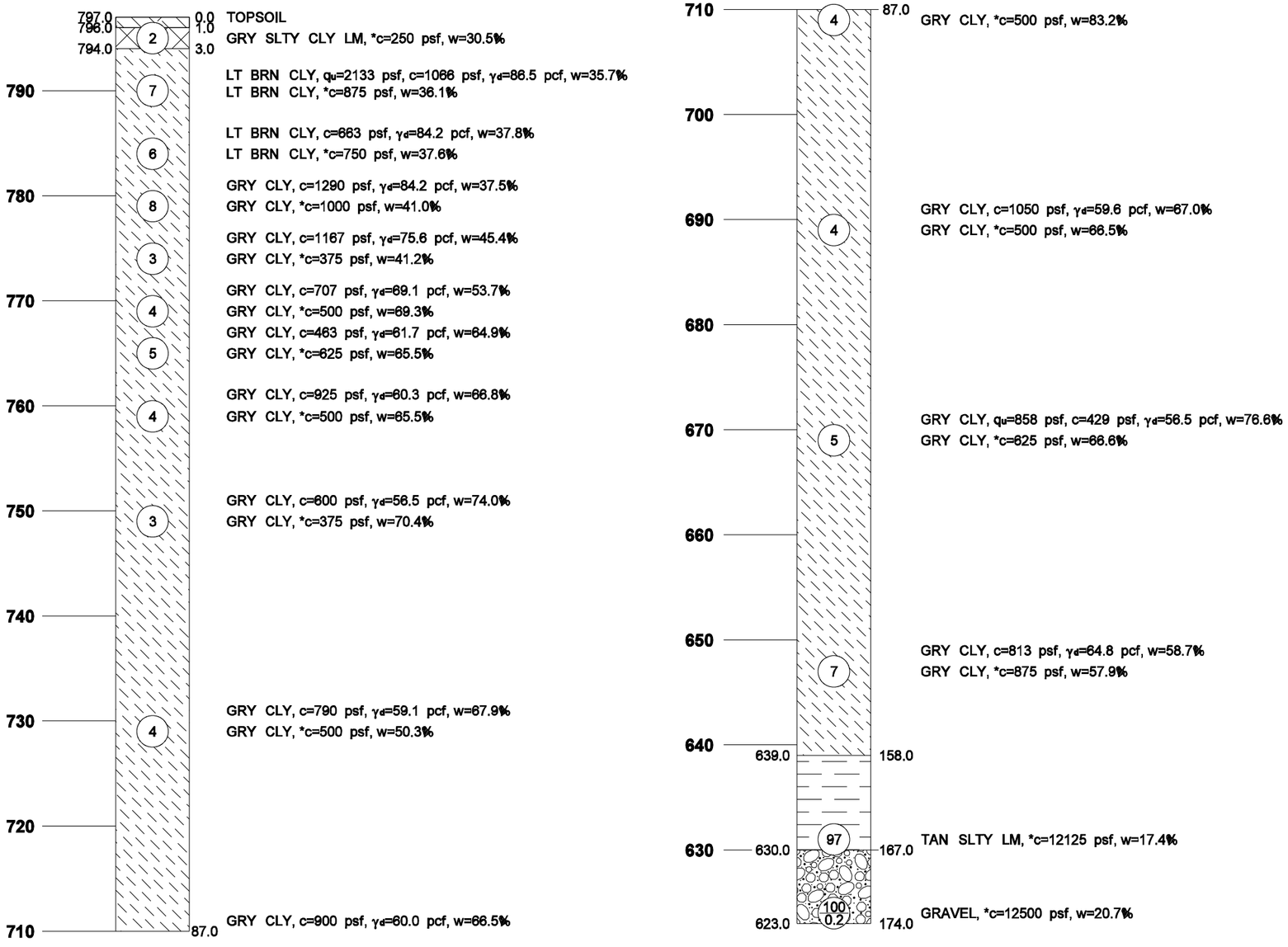
BORING NO. 5

EXISTING CENTERLINE STA 7300+51 253 ft rt
DRILLED ON 10/21/03 TO 10/22/03

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	6



NOTES:

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300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
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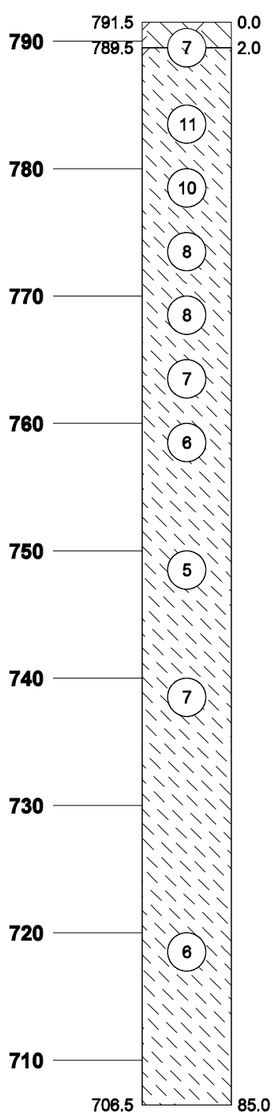
BORING NO. 6

EXISTING CENTERLINE STA 7332+25 55 ft rt
DRILLED ON 8/20/2007 TO 8/22/2007

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	7



TOPSOIL, BLK/GRY CLY, γ_d=84.4 pcf, w=34.4%
GRY CLY, *c=875 psf, w=30.3%

GRY CLY, c=350 psf, γ_d=87.3 pcf, w=32.9%
GRY CLY, *c=1375 psf, w=28.9%

GRY CLY, c=766 psf, γ_d=92.0 pcf, w=30.9%
GRY CLY, *c=1250 psf, w=30.2%

GRY CLY, c=458 psf, γ_d=89.6 pcf, w=31.3%
GRY CLY, *c=1000 psf, w=32.9%

GRY CLY, c=857 psf, γ_d=92.0 pcf, w=31.7%
GRY CLY, *c=1000 psf, w=34.2%

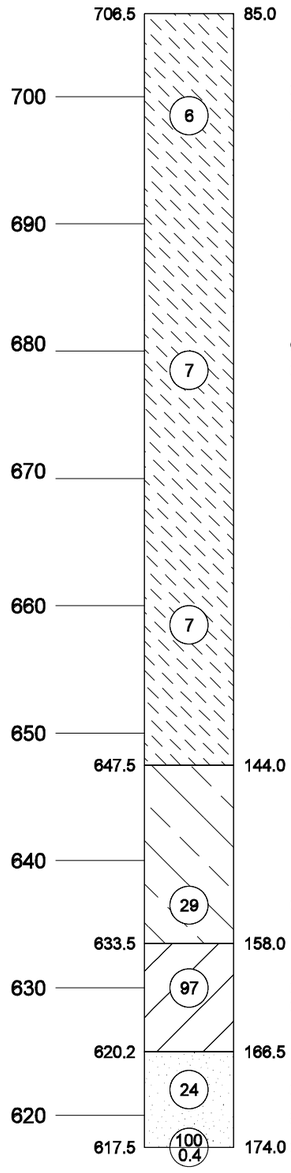
GRY CLY, c=585 psf, γ_d=88.0 pcf, w=34.4%
GRY CLY, *c=875 psf, w=35.3%

GRY CLY, c=876 psf, γ_d=85.8 pcf, w=35.7%
GRY CLY, *c=750 psf, w=29.0%

GRY CLY, c=533 psf, γ_d=91.2 pcf, w=32.5%
GRY CLY, *c=625 psf, w=32.7%

GRY CLY, c=475 psf, γ_d=76.9 pcf, w=45.0%
GRY CLY, *c=875 psf, w=29.3%

GRY CLY, c=790 psf, γ_d=66.7 pcf, w=58.1%
GRY CLY, *c=750 psf, w=56.2%



GRY CLY, c=1070 psf, γ_d=72.8 pcf, w=49.1%
GRY CLY, *c=750 psf, w=50.5%

GRY CLY, c=1150 psf, γ_d=68.9 pcf, w=54.5%
GRY CLY, *c=875 psf, w=54.2%

GRY CLY, c=877 psf, γ_d=64.4 pcf, w=61.7%
GRY CLY, *c=875 psf, w=56.7%

GRY CLY LM, *c=3625 psf, w=12.2%

GRY LM, *c=12125 psf, w=8.7%
GRY LM, w=16.2%

GRY SND, *ø=34°, w=34.4%
GRY SND, w=14.0%
GRY SND, *ø=43°, w=13.8%

NOTES:

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NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
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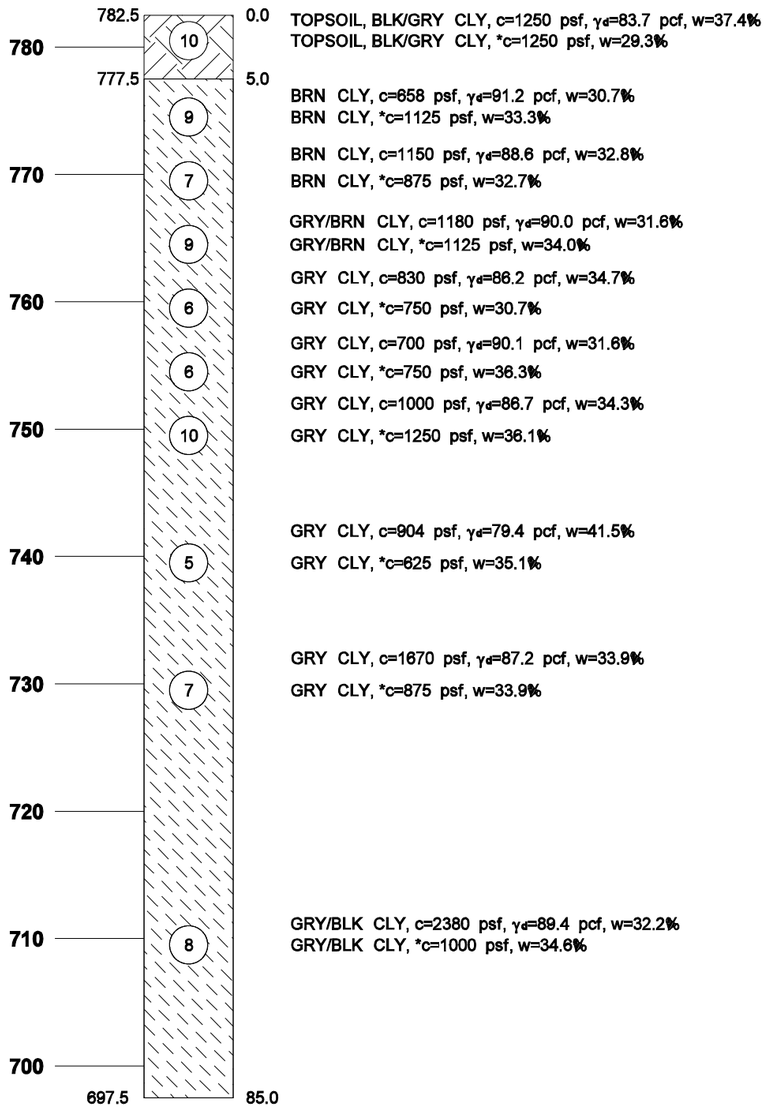
BORING NO. 7

EXISTING CENTERLINE STA 7315+35 150 ft rt
DRILLED ON 8/27/07 TO 8/29/07

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	8



TOPSOIL, BLK/GRY CLY, c=1250 psf, γ_d=83.7 pcf, w=37.4%
TOPSOIL, BLK/GRY CLY, *c=1250 psf, w=29.3%

BRN CLY, c=658 psf, γ_d=91.2 pcf, w=30.7%
BRN CLY, *c=1125 psf, w=33.3%

BRN CLY, c=1150 psf, γ_d=88.6 pcf, w=32.8%
BRN CLY, *c=875 psf, w=32.7%

GRY/BRN CLY, c=1180 psf, γ_d=90.0 pcf, w=31.6%
GRY/BRN CLY, *c=1125 psf, w=34.0%

GRY CLY, c=830 psf, γ_d=86.2 pcf, w=34.7%
GRY CLY, *c=750 psf, w=30.7%

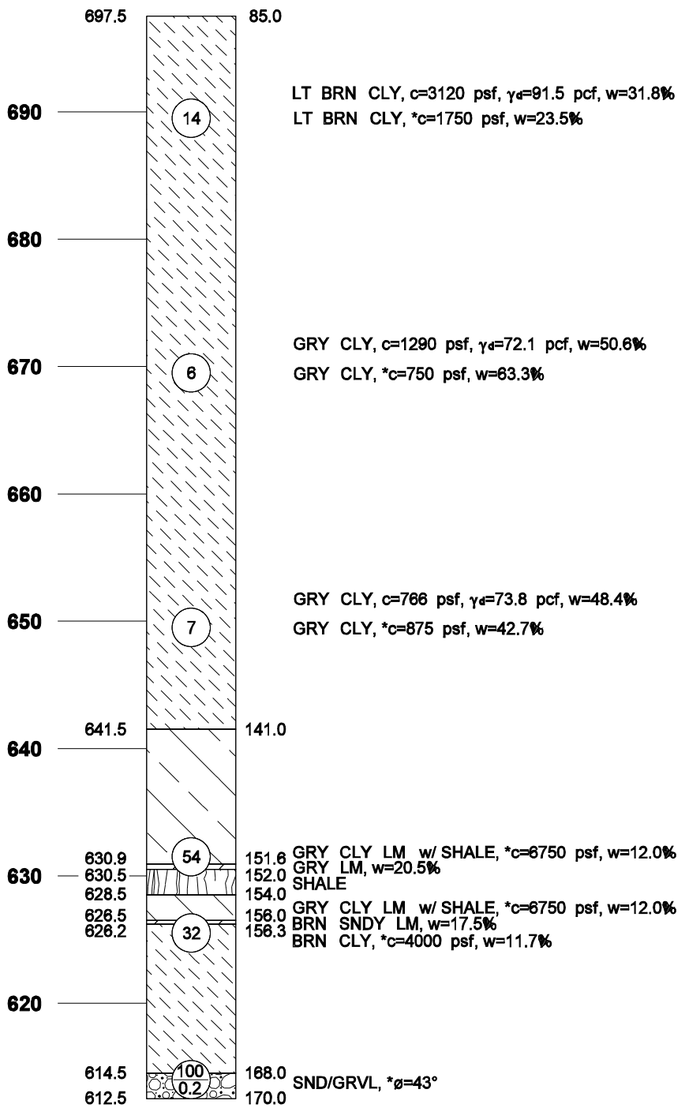
GRY CLY, c=700 psf, γ_d=90.1 pcf, w=31.6%
GRY CLY, *c=750 psf, w=36.3%

GRY CLY, c=1000 psf, γ_d=86.7 pcf, w=34.3%
GRY CLY, *c=1250 psf, w=36.1%

GRY CLY, c=904 psf, γ_d=79.4 pcf, w=41.5%
GRY CLY, *c=625 psf, w=35.1%

GRY CLY, c=1670 psf, γ_d=87.2 pcf, w=33.9%
GRY CLY, *c=875 psf, w=33.9%

GRY/BLK CLY, c=2380 psf, γ_d=89.4 pcf, w=32.2%
GRY/BLK CLY, *c=1000 psf, w=34.6%



LT BRN CLY, c=3120 psf, γ_d=91.5 pcf, w=31.8%
LT BRN CLY, *c=1750 psf, w=23.5%

GRY CLY, c=1290 psf, γ_d=72.1 pcf, w=50.6%
GRY CLY, *c=750 psf, w=63.3%

GRY CLY, c=766 psf, γ_d=73.8 pcf, w=48.4%
GRY CLY, *c=875 psf, w=42.7%

GRY CLY LM w/ SHALE, *c=6750 psf, w=12.0%
GRY LM, w=20.5%
SHALE
GRY CLY LM w/ SHALE, *c=6750 psf, w=12.0%
BRN SNDY LM, w=17.5%
BRN CLY, *c=4000 psf, w=11.7%

SND/GRVL, *ø=43°

NOTES:

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NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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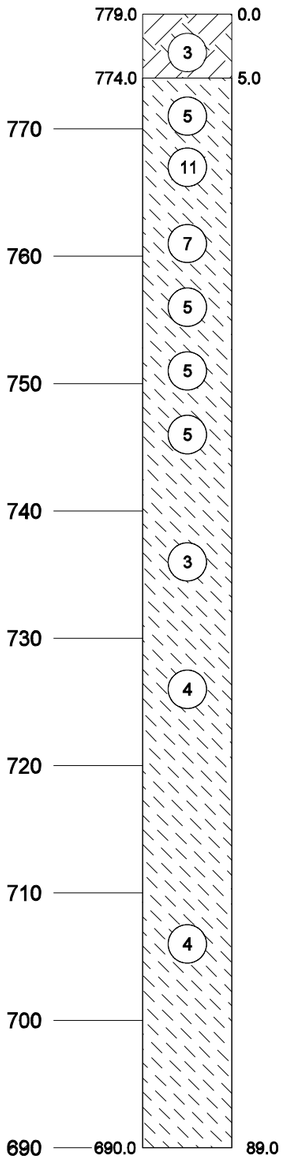
BORING NO. 8

EXISTING CENTERLINE STA 7321+00 150 ft rt
DRILLED ON 09/04/07 TO 09/06/07

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	9



TOPSOIL, BLK CLY, q_u=6405 psf, c=3203 psf, γ_d=90.6 pcf, w=28.17%
TOPSOIL, BLK CLY, *c=375 psf, w=29.7%

BLK CLY, c=925 psf, γ_d=78.3 pcf, w=43.8%
BLK CLY, *c=625 psf, w=37.3%
BLK CLY, c=1120 psf, γ_d=82.8 pcf, w=37.7%
BLK CLY, *c=1375 psf, w=26.8%

BLK CLY, c=1000 psf, γ_d=89.2 pcf, w=33.4%
BLK CLY, *c=875 psf, w=33.3%

TAN/GRY CLY, c=1183 psf, γ_d=85.6 pcf, w=36.8%
TAN/GRY CLY, *c=625 psf, w=39.9%

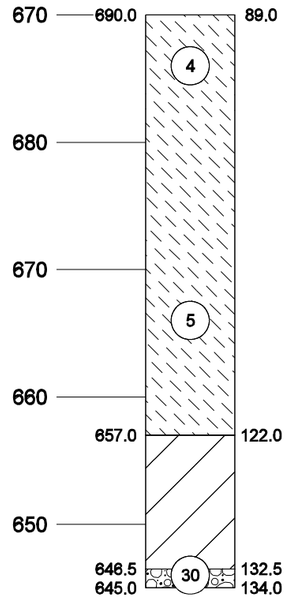
GRY CLY, c=514 psf, γ_d=85.6 pcf, w=36.2%
GRY CLY, *c=625 psf, w=37.3%

GRY CLY, c=1200 psf, γ_d=81.1 pcf, w=40.4%
GRY CLY, *c=625 psf, w=40.2%

GRY CLY, c=752 psf, γ_d=72.0 pcf, w=49.6%
GRY CLY, *c=375 psf, w=61.2%

GRY CLY, c=588 psf, γ_d=67.8 pcf, w=57.0%
GRY CLY, *c=500 psf, w=49.5%

GRY CLY, c=1222 psf, γ_d=69.1 pcf, w=54.9%
GRY CLY, *c=500 psf, w=51.7%



GRY CLY, c=1110 psf, γ_d=65.8 pcf, w=59.0%
GRY CLY, *c=500 psf, w=51.7%

GRY CLY, c=854 psf, γ_d=67.8 pcf, w=57.1%
GRY CLY, *c=625 psf, w=58.3%

GRY LM, q_u=428 psf, c=214 psf, γ_d=111.0 pcf, w=14.2%
GRY LM, *c=3750 psf, w=15.2%
SND AND GRVL, w=14.0%

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

NOTES:

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NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

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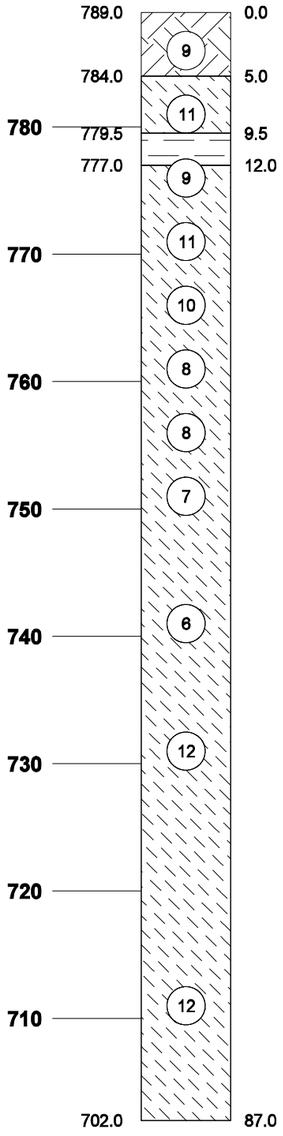
BORING NO. 9

EXISTING CENTERLINE STA 7326+48 100 ft rt
DRILLED ON 9/24/07 TO 9/26/07

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	10



TOPSOIL, BRN CLY, c=140 psf, γ_d=80.4 pcf, w=37.6%
TOPSOIL, BRN CLY, *c=1125 psf, w=36.5%

LT BRN CLY, c=504 psf, γ_d=82.4 pcf, w=38.1%
LT BRN CLY, *c=1375 psf, w=33.8%

GRY SLTY LM, c=1100 psf, γ_d=85.4 pcf, w=34.7%
GRY CLY, *c=1125 psf, w=31.3%

GRY CLY, c=1400 psf, γ_d=87.8 pcf, w=33.3%
GRY CLY, *c=1375 psf, w=38.1%

GRY CLY, c=1310 psf, γ_d=88.6 pcf, w=33.4%
GRY CLY, *c=1250 psf, w=34.0%

GRY CLY, c=1200 psf, γ_d=89.4 pcf, w=34.0%
GRY CLY, *c=1000 psf, w=30.1%

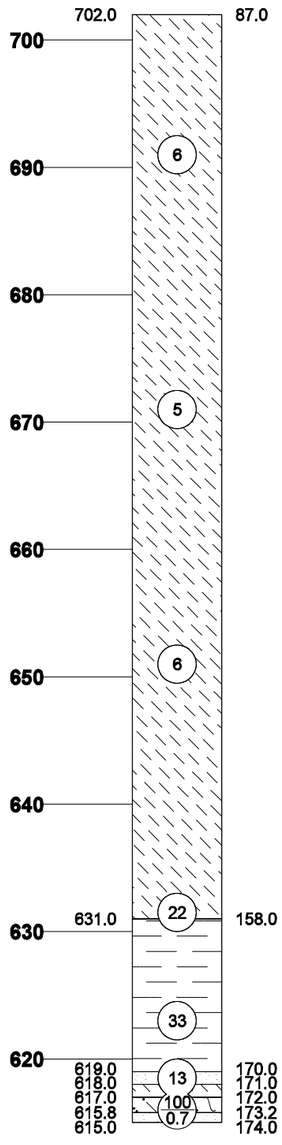
GRY CLY, c=1160 psf, γ_d=89.2 pcf, w=31.9%
GRY CLY, *c=1000 psf, w=32.9%

GRY/BLK CLY, c=627 psf, γ_d=87.8 pcf, w=34.0%
GRY/BLK CLY, *c=875 psf, w=31.0%

GRY/BLK CLY, c=600 psf, γ_d=87.5 pcf, w=34.7%
GRY/BLK CLY, *c=750 psf, w=31.1%

GRY/BLK CLY, c=2190 psf, γ_d=92.7 pcf, w=30.0%
GRY/BLK CLY, *c=1500 psf, w=32.2%

GRY CLY, c=1540 psf, γ_d=82.9 pcf, w=37.6%
GRY CLY, *c=1500 psf, w=37.6%



GRY CLY, c=767 psf, γ_d=67.9 pcf, w=55.8%
GRY CLY, *c=750 psf, w=53.8%

GRY CLY, c=975 psf, γ_d=70.5 pcf, w=51.1%
GRY CLY, *c=625 psf, w=62.6%

GRY CLY, c=925 psf, γ_d=73.2 pcf, w=49.5%
GRY CLY, *c=750 psf, w=46.2%

GRY CLY, c=1040 psf, γ_d=68.5 pcf, w=57.3%
GRY CLY, *c=2750 psf, w=61.0%
GRY/BRN SLTY LM, w=16.3%

BRN/GRY SLTY LM, *c=4125 psf, w=16.8%

BRN/GRY SND, *ø=31.5°, w=33.1%
BRN/GRY CLY, w=8.9%
BRN/GRY SNDY CLY LM, *c=12500 psf, w=6.6%
BRN SND

NOTES:

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MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

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w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
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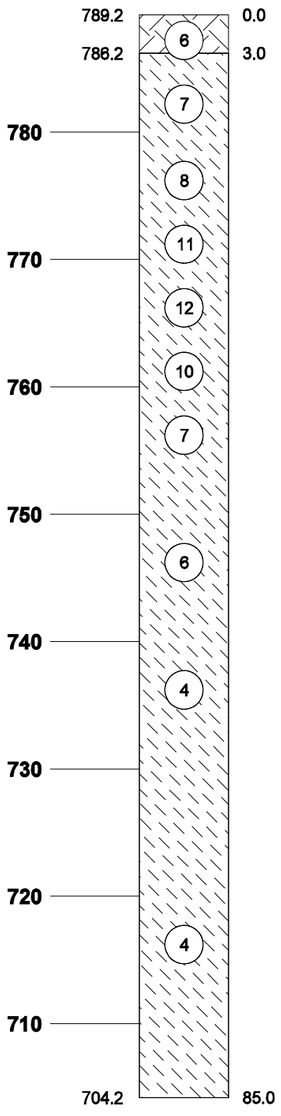
BORING NO. 10

EXISTING CENTERLINE STA 7306+80 264 ft rt
DRILLED ON 09/26/07 TO 10/02/07

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	11



TOPSOIL, BLK CLY, q_u=2844 psf, c=1422 psf, γ_d=79.7 pcf, M=39.4%
TOPSOIL, BLK CLY, *c=750 psf, M=40.1%

GRY CLY, c=594 psf, γ_d=80.4 pcf, M=40.3%
GRY CLY, *c=875 psf, M=32.9%

GRY CLY, c=492 psf, γ_d=79.4 pcf, M=39.6%
GRY CLY, *c=1000 psf, M=33.3%

GRY CLY, c=1400 psf, γ_d=86.9 pcf, M=34.4%
GRY CLY, *c=1375 psf, M=33.6%

GRY CLY, c=1500 psf, γ_d=91.5 pcf, M=30.3%
GRY CLY, *c=1500 psf, M=27.7%

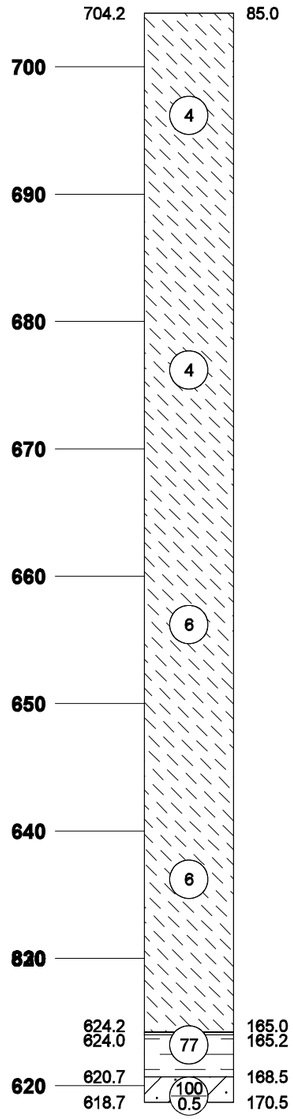
GRY CLY, c=1860 psf, γ_d=94.0 pcf, M=29.2%
GRY CLY, *c=1250 psf, M=33.0%

GRY CLY, c=621 psf, γ_d=93.8 pcf, M=30.1%
GRY CLY, *c=875 psf, M=32.8%

GRY CLY, c=618 psf, γ_d=78.9 pcf, M=42.7%
GRY CLY, *c=500 psf, M=43.2%

GRY CLY, c=700 psf, γ_d=60.6 pcf, M=66.7%
GRY CLY, *c=500 psf, M=69.0%

GRY CLY, c=783 psf, γ_d=64.6 pcf, M=61.3%
GRY CLY, *c=500 psf, M=65.1%



GRY CLY, c=692 psf, γ_d=59.7 pcf, M=67.7%
GRY CLY, *c=500 psf, M=62.6%

GRY CLY, c=797 psf, γ_d=69.6 pcf, M=53.9%
GRY CLY, *c=500 psf, M=53.1%

GRY CLY, c=285 psf, γ_d=64.3 pcf, M=60.9%
GRY CLY, *c=750 psf, M=58.2%

GRY CLY, c=763 psf, γ_d=70.2 pcf, M=50.6%
GRY CLY, *c=750 psf, M=56.2%

SND
GRY SLTY LM, *c=9625 psf, M=18.6%

GRY SNDY LM, *c=12500 psf, M=8.4%

NOTES:
THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

THE BORING DATA SHOWN IS FOR NORTH DAKOTA DEPARTMENT OF TRANSPORTATION'S (NDDOT) DESIGN AND ESTIMATING PURPOSES ONLY. THE BORING LOGS ARE ONLY REPRESENTATIVE OF THE EXACT LOCATION FROM WHICH THE SAMPLES WERE TAKEN AND INTERPRETATION BETWEEN THE SAMPLE LOCATIONS IS DISCOURAGED. THE NDDOT ASSUMES NO RESPONSIBILITY IF THE SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN. FURTHER SOIL INFORMATION MAY BE AVAILABLE AT:

NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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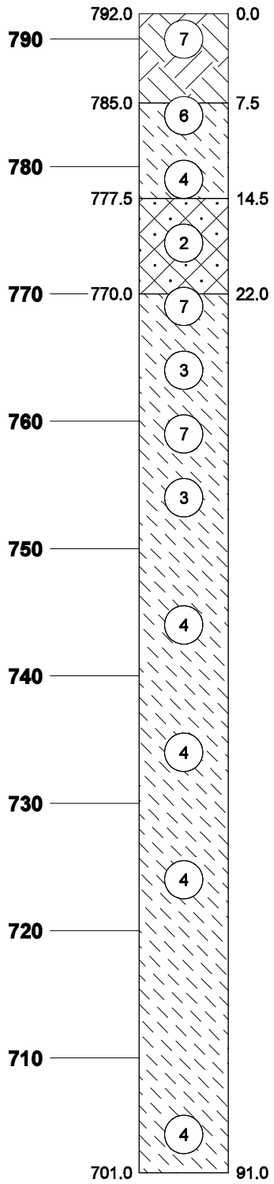
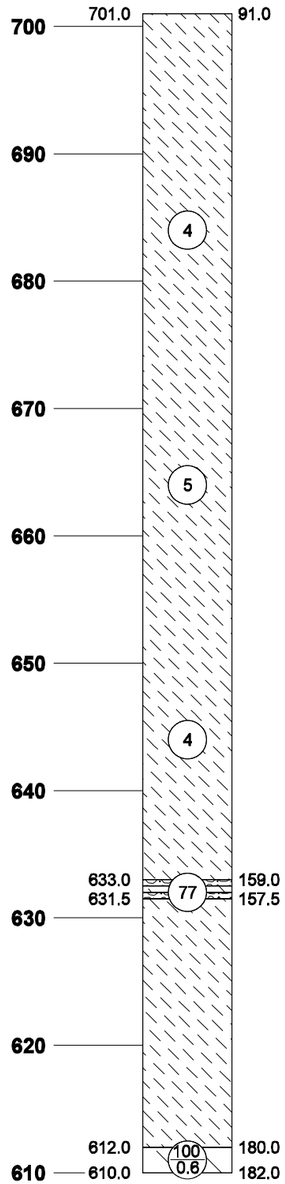
BORING NO. 11

EXISTING CENTERLINE STA 7295+80 213 ft rt
DRILLED ON 10/03/07 TO 10/09/07

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	12





NOTES:

THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

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MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

q_u=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γ_d=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

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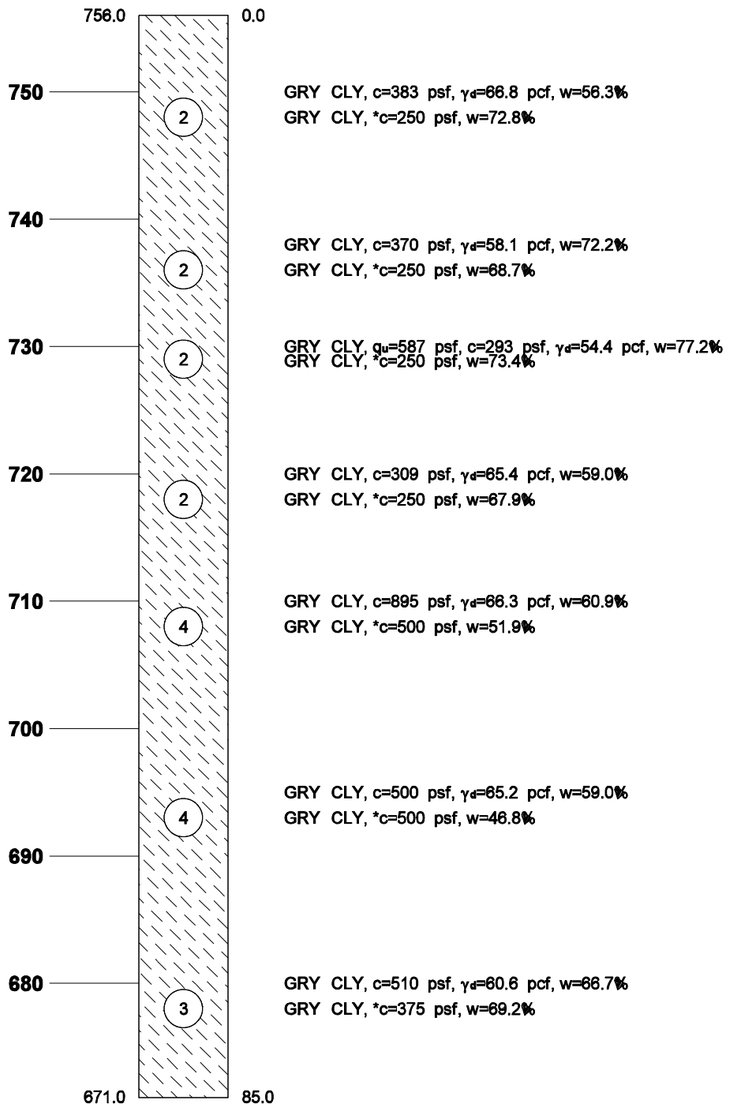
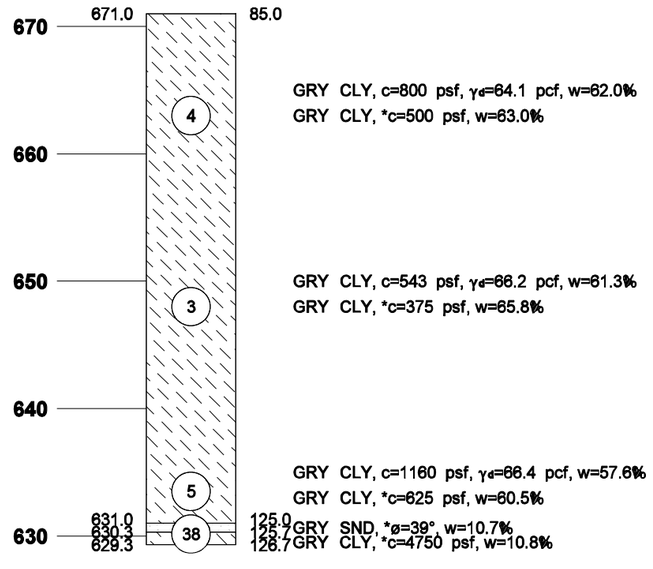
BORING NO. 12

EXISTING CENTERLINE STA 7290+00 115 ft rt
DRILLED ON 10/15/07 TO 10/18/07

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HPP-6-066(012)137	175	13





qu=Unconfined Compressive Strength (psf)
w=Moisture Content (%)
ø=Friction Angle (deg)
c=Cohesion (psf)
γd=Dry Density (pcf)
*=These cohesive values and friction angles are estimated from blow counts

NOTES:

THE ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 POUND AUTOMATIC HAMMER FROM A HEIGHT OF 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-BARREL SAMPLER 1 FOOT.

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NDDOT
MATERIALS & RESEARCH DIVISION
300 AIRPORT ROAD
BISMARCK, NORTH DAKOTA 58504-6005
PHONE (701)328-6900

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BORING NO. 13

EXISTING CENTERLINE STA 7324+75 125 ft rt
DRILLED ON 03/13/08 TO 03/14/08

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	AC-HPP-TIP-SS-6-066(012)137	180	001
MN	SP 3501-13		

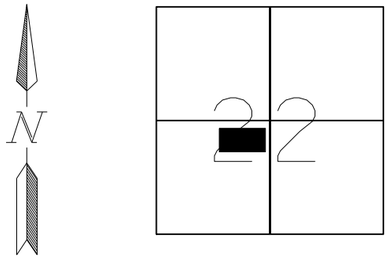
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

TEST HOLE PLAT

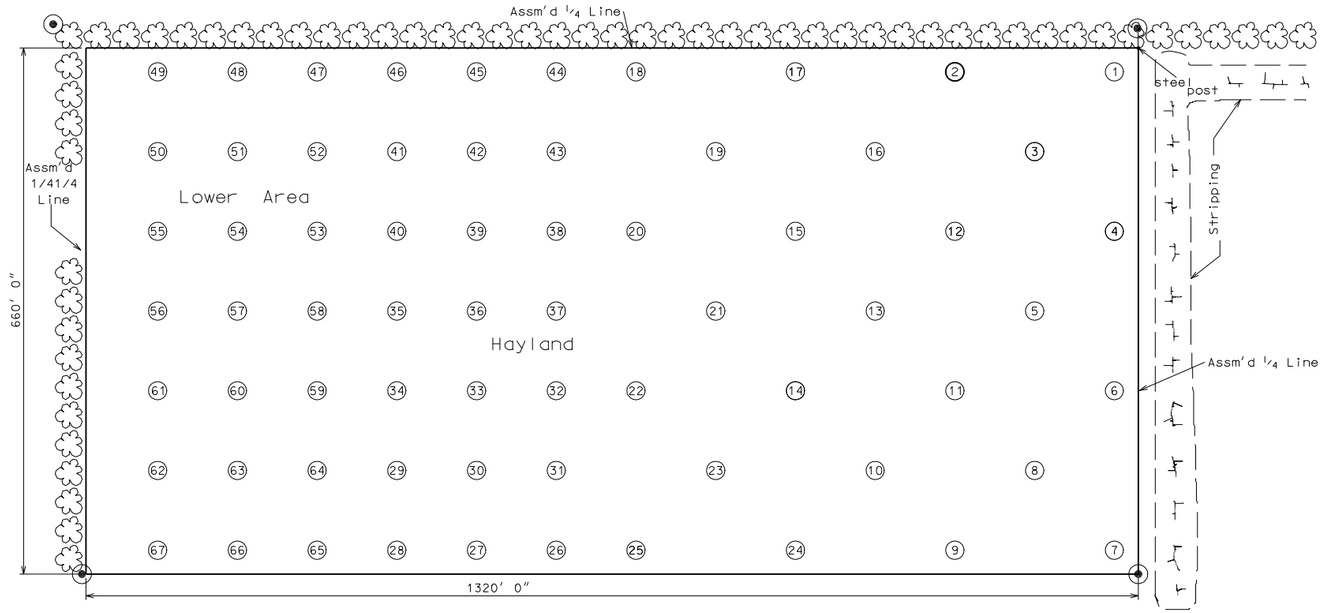
Location: N1/2NE1/4SW1/4 22-156-56 **County:** Walsh

Ownership: Don Dvorak, Lankin, ND

LOCATION OF PIT IN SECTION



Area "A" consists of Test Holes 1- 5
Area "B" consists of Test Holes 6-10
Area "C" consists of Test Holes 11-15
Area "D" consists of Test Holes 16-20
Area "E" consists of Test Holes 21-25
Area "F" consists of Test Holes 26-34
Area "G" consists of Test Holes 35-46
Area "H" consists of Test Holes 47-58
Area "I" consists of Test Holes 59-67

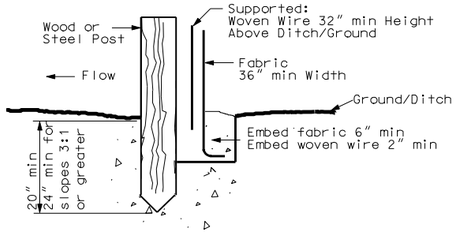


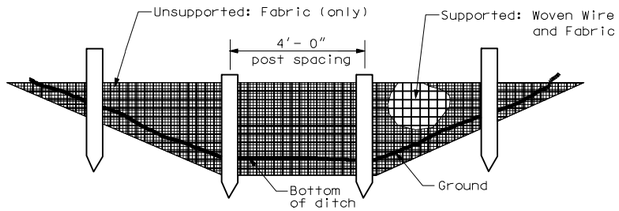
Legend:
gr = gravel
sd = sand
sh = shale
gr sh = gravel shale
CS = coarse sand
Fgr = fine gravel
Si Cl = silt clay
WL = water line

Scale 1" = 200'

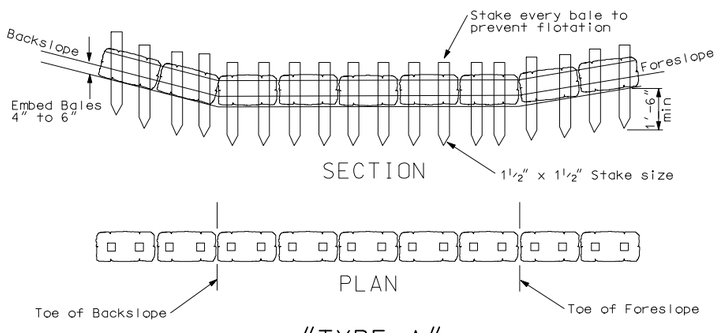
EROSION AND SILTATION CONTROLS

D-708-2

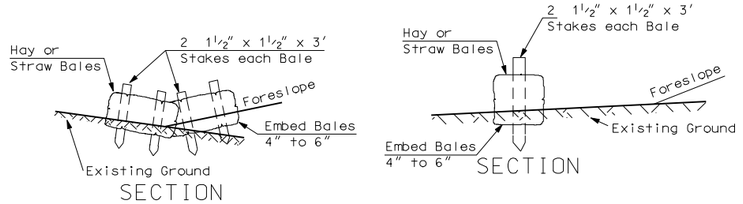


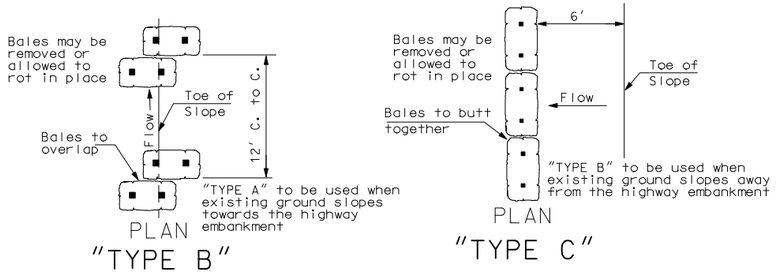


SILT FENCE
Supported and Unsupported



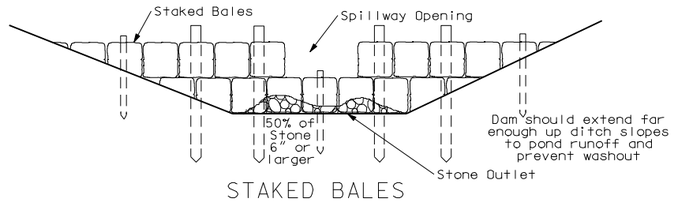
"TYPE A"



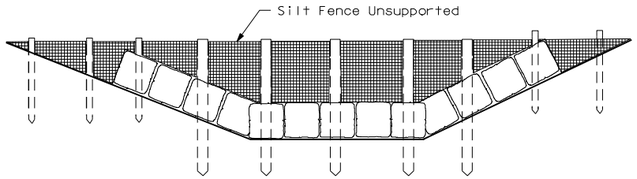


"TYPE B"
"TYPE C"

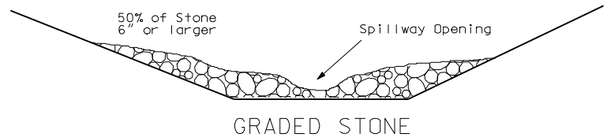
BALED HAY OR STRAW EROSION CHECKS



STAKED BALES

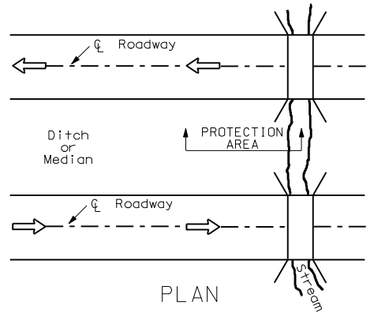


FENCE-BACKED BALES

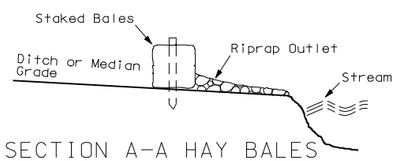


GRADED STONE

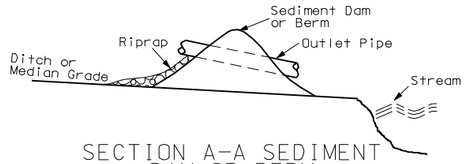
DITCH EROSION DAMS



PLAN

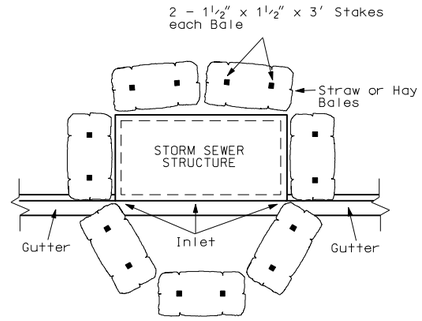


SECTION A-A HAY BALES

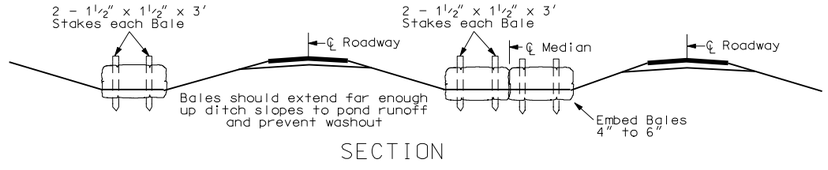


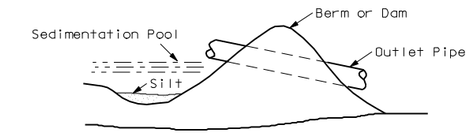
SECTION A-A SEDIMENT DAM OR BERM

MEDIAN OR DITCH PROTECTION AT STREAM CROSSING

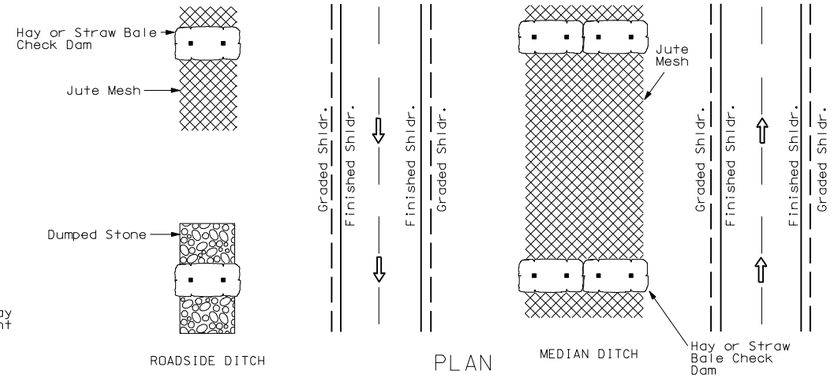


STORM SEWER INLET EROSION & SILTATION BARRIER





SMALL SEDIMENT DAM OR BERM



STONE, JUTE, MESH, OR SOD
DITCH & MEDIAN EROSION CONTROL

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
10-1-86

REVISIONS

DATE	CHANGE
09-04-92	Ditch check
09-16-92	Sediment cont. fencing
01-31-95	General revisions
10-09-02	Sediment fence
01-24-04	Silt fence
02-06-04	Rev silt fence details
12-01-04	PE Stamp added

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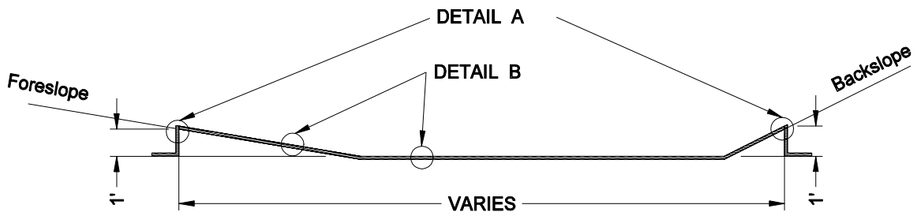
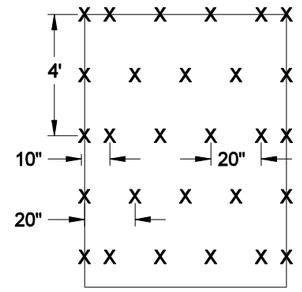
EROSION AND SILTATION CONTROL
BLANKET INSTALLATION

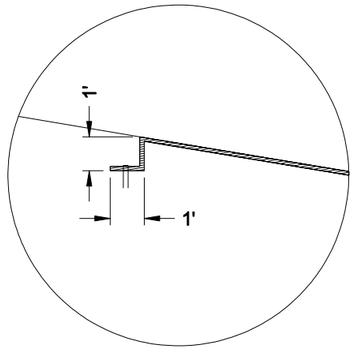
D-708-5



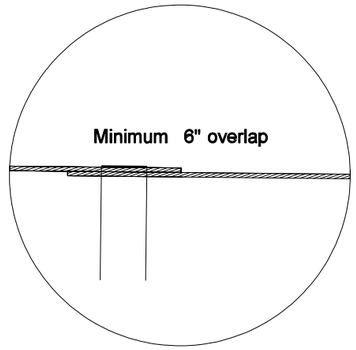
DITCH



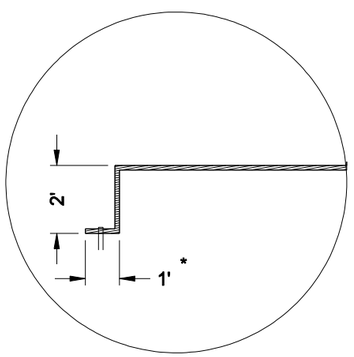
STAPLE PATTERN: 3.8 staples per square yard using 8-inch 11 gauge wire "u" staples.



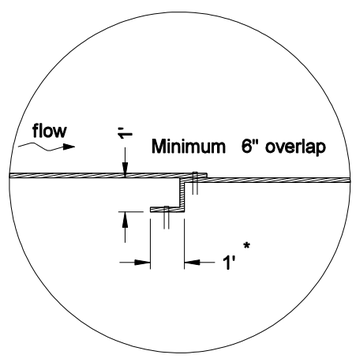
DETAIL A



DETAIL B

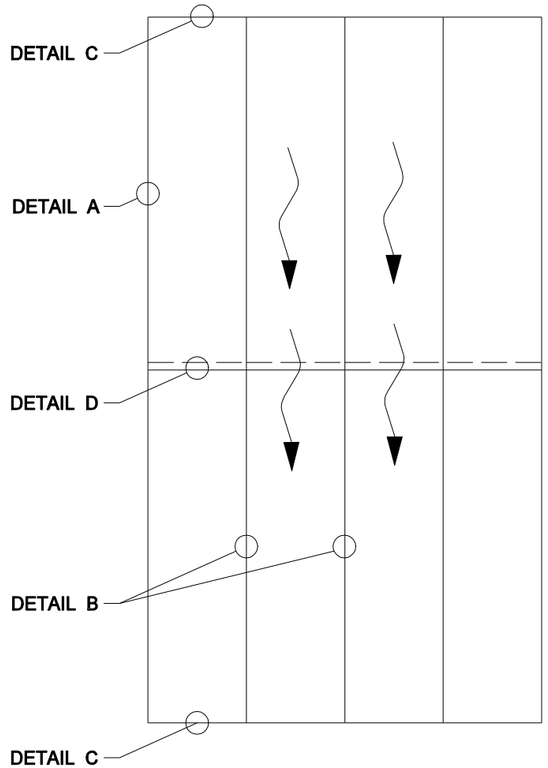


DETAIL C



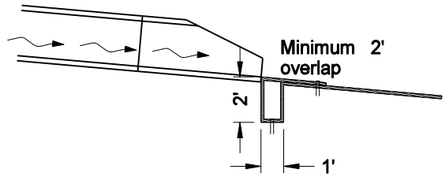
DETAIL D

* This tie may be placed ahead or back.

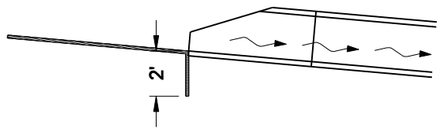


BLANKET LAYOUT

Note: Beginning and ending of erosion control blanket areas shall be installed as DETAIL C.



PIPE OUTLETS



PIPE INLETS

INSTALLATION AT PIPE ENDS

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-13-06	
REVISIONS	
DATE	CHANGE

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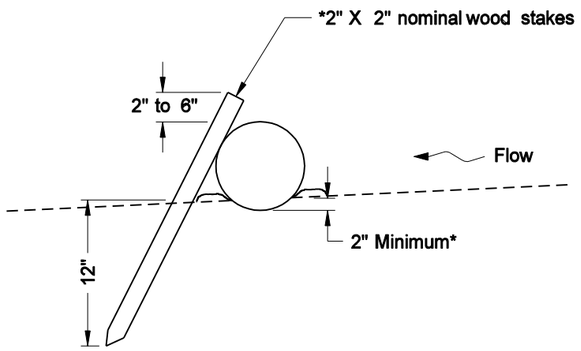
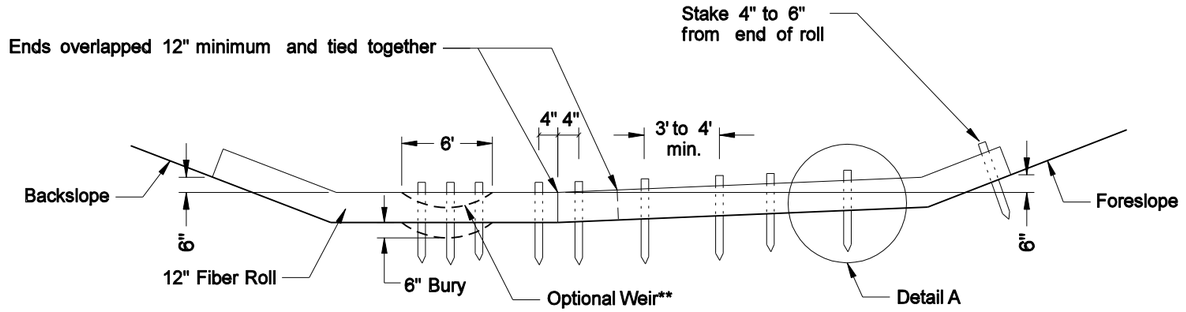
EROSION CONTROL
FIBER ROLL STAKING DETAILS

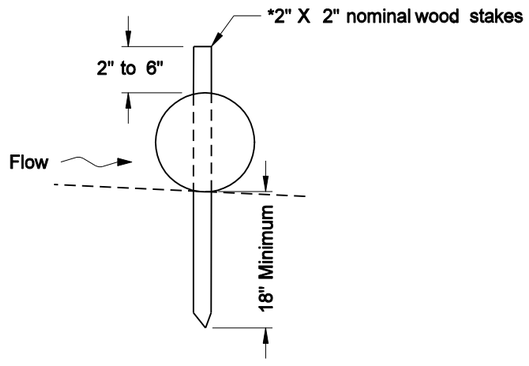


DETAIL A
6", or 12" Fiber Roll
Staking Detail

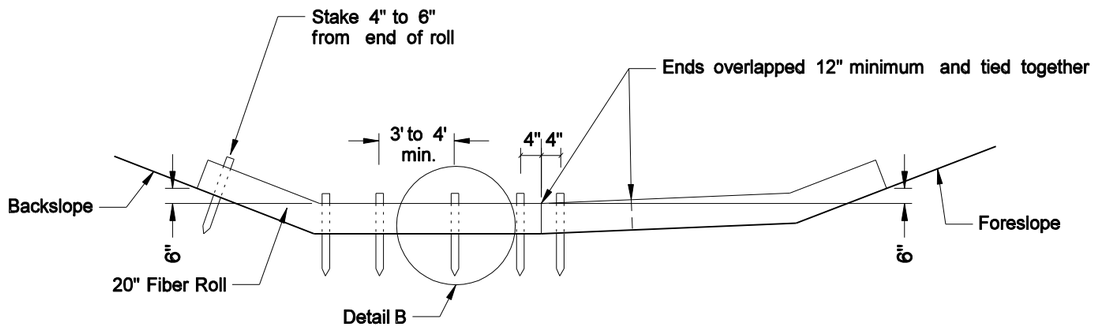


**Optional Weir- Use in flat areas, such as the Red River Valley, where there is potential for water to be backed up on adjacent property.

12" FIBER ROLL - DITCH BOTTOM



DETAIL B
20" Fiber Roll
Staking Detail



20" FIBER ROLL - DITCH BOTTOM

* Stakes spaced every 3-4 feet. Manufacturer may require stake through center of fiber roll.

The fiber roll manufacturer's staking details supersede this staking detail.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-13-06	
REVISIONS	
DATE	CHANGE
07-31-07	Revised staking details and notes and overlap requirement
12-14-07	Revised fiber roll overlap to 12"

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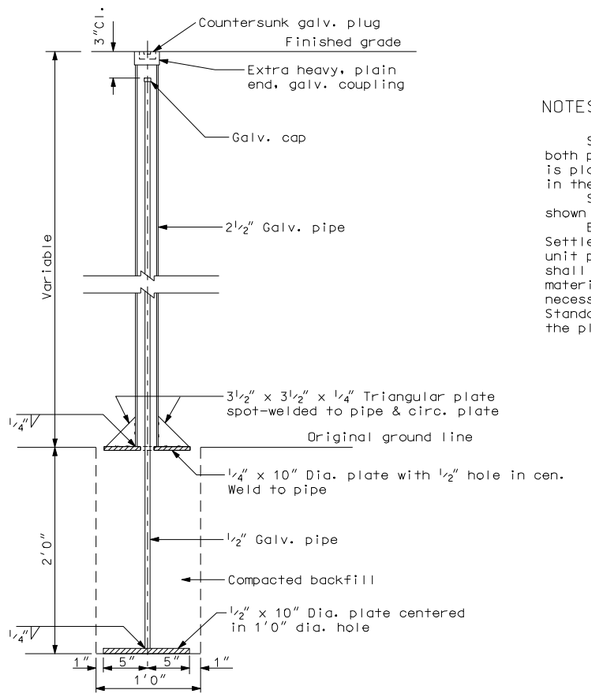
SETTLEMENT PLATE



Settlement Plate

NOTES:

Settlement Plate shall be installed in position and both pipes extended in sections as the embankment is placed. Satisfactory compaction shall be provided in the area around the pipes.

Settlement Plate shall be installed in the locations shown on the plans or as directed by the Engineer.

Basis of payment and method of measurement: Settlement Plate shall be paid for at the contract unit price per each, complete in place, which price shall be payment in full for all excavation, backfilling, materials, labor, tools, equipment, and incidentals necessary to install this unit as shown on this Standard Drawing at the locations designated on the plans.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
06-18-03	General layout
12-01-04	PE Stamp added

This document was originally issued and sealed by MARK S GAYDOS, Registration Number PE-4518, on 12/01/04 and the original document is stored at the North Dakota Department of Transportation