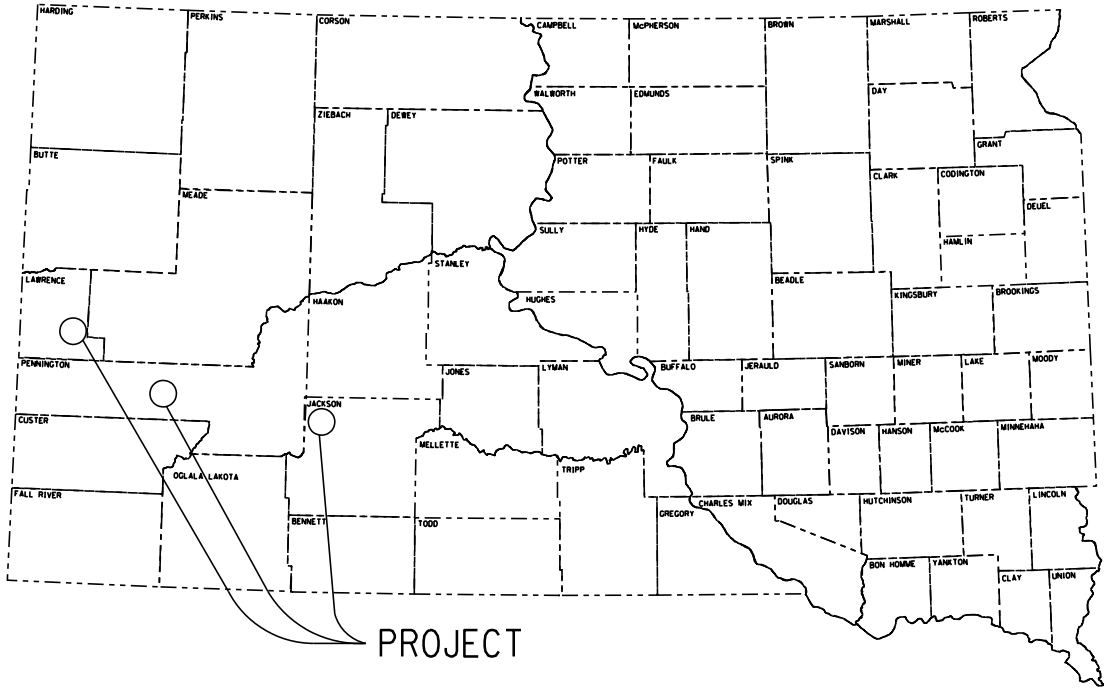


Plot Scale - 1:200

trc1nt19

Plotted From -



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
**PROJECTS 385-451, 016EB-452,
090W-452**
**US HIGHWAYS 16EB & 385
& INTERSTATE 90**

JACKSON, LAWRENCE,
AND PENNINGTON COUNTIES
EROSION CONTROL
PCN i6m0 & i6Lx & i6Ly

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451, 016EB-452, 090W-452	1	24

Plotting Date: 02/28/2022

INDEX OF SHEETS

- Sheets 1: Title Sheet
Sheet 2-6: Estimate of Quantities & Plan Notes
Sheet 7: i6m0, US385
Sheets 8-10: i6Lx, US16EB
Sheets 11: i6Ly, 090W
Sheets 12-19: Standard Plates
Sheets 20-24: Cross Section for i6Lx



- ① US385, MRM 117 (PCN i6m0)
② US16 & US16B, MRM 64.20 (PCN i6Lx)
③ US16B, MRM 64.70 (PCN i6Lx)
④ US16B, MRM 65.70 (PCN i6Lx)
⑤ I90 MRM 125.6 (PCN i6Ly)

US 016 EB DESIGN DESIGNATION

AADT (2021)	8876
AADT (2041)	12204
DHV	
D	50%
DHV T%	3.7%
AADT T%	8.1%
V	60 mph

US 016 E DESIGN DESIGNATION

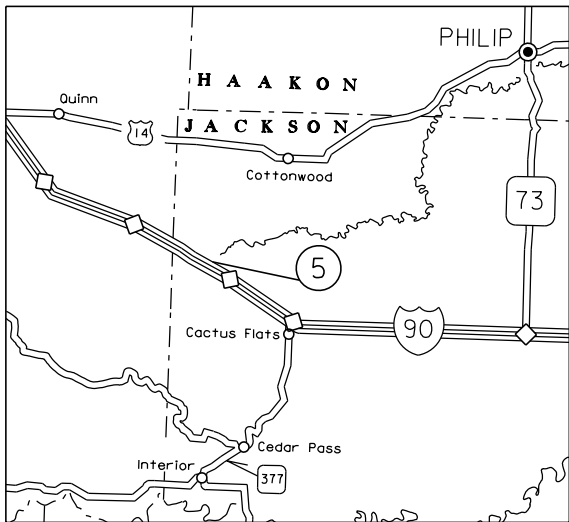
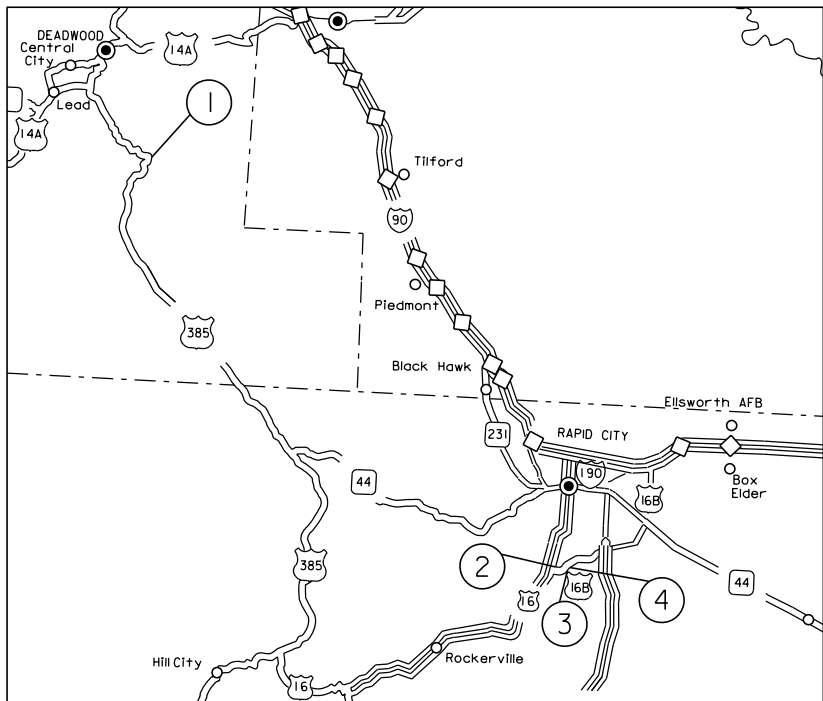
AADT (2021)	8112
AADT (2041)	12793
DHV	2096
D	51%
DHV T%	3.3%
AADT T%	7.2%
V	60 mph

SD 385 DESIGN DESIGNATION

AADT (2021)	2270
AADT (2041)	3289
DHV	539
D	51%
DHV T%	2.8%
AADT T%	6.2%
V	55 mph

090 W DESIGN DESIGNATION

AADT (2021)	3690
AADT (2041)	5177
DHV	957
D	51%
DHV T%	10.3%
AADT T%	22.6%
V	80 mph



Storm Water Permit
No Permit Required

ESTIMATE OF QUANTITIES

PCN: i6Lx (016EB-452)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E7152	Remove Delineator for Reset	2	Each
120E0010	Unclassified Excavation	50	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
632E2100	Reset Delineator	2	Each
634E0110	Traffic Control Signs	126.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Board	1	Each
700E0310	Class C Riprap	470.0	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0131	Type 1 Turf Reinforcement Mat	43.0	SqYd
831E0110	Type B Drainage Fabric	530	SqYd
900E5147	Articulated Concrete Mattress	43.0	SqYd

PCN: i6Ly (090W-452)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0600	Remove Fence	120	Ft
110E1700	Remove Silt Fence	140	Ft
120E0010	Unclassified Excavation	45	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
620E0020	Type 2 Right-of-Way Fence	120	Ft
634E0110	Traffic Control Signs	48.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0310	Class C Riprap	150.0	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0602	Low Flow Silt Fence	140	Ft
831E0110	Type B Drainage Fabric	90	SqYd

PCN: i6m0 (385-451)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	63.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0310	Class C Riprap	17.0	Ton
734E0010	Erosion Control	Lump Sum	LS
831E0110	Type B Drainage Fabric	8	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor’s primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

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

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at: <http://sdleastwanted.com/maps/default.aspx>

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: <https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04>

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, “No Dumping Allowed”.

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06. Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT K: RAPID CITY AREA AIR QUALITY CONTROL ZONE

Administrative Rule of South Dakota (ARSD) 74:36:18:03 states that "no state facility or state contractor may engage in any construction activity or continuous operation activity within the Rapid City air quality control zone which may cause fugitive emissions of particulate to be released into the ambient air without first obtaining a permit issued by the board or the secretary."

Construction activity is defined as any temporary activity which involves the removal or alteration of the natural or pre-existing cover of one acre or more of land. One acre of surface area is based on a cumulative area of disturbance to be completed for the entire project. Construction activity will include, but not be limited to, stripping of topsoil, drilling, blasting, excavation, dredging, ditching, grading, street maintenance and repair, or earth moving. It also includes stockpiles, access roads, and disposal areas. An off-site disposal area of excess material will require an additional permit.

Action Taken/Required:

To be considered eligible for authorization to conduct a construction activity under the terms and conditions of this permit, the owner operator must submit a Notice of Intent (NOI) form. The form must be submitted to the address below at least seven business days prior to the anticipated date of beginning the construction activity.

South Dakota Department of Environment and Natural Resources Air Quality Program, 523 East Capitol, Joe Foss Building, Pierre, SD 57501-3181, Phone: 605-773-3151.

The permit requires the Contractor to use reasonably available technology to control fugitive dust emissions. The Contractor is required to use control measures for track out, paved areas, unpaved roads, unpaved parking lots, disturbed areas, and for material handling and storage. The control measures that the Contractor is required to use are listed in the permit.

The Rapid City Air Quality Permit will need to be renewed annually by the Contractor until construction activities are completed.

The online form can be found at: <http://denr.sd.gov/des/aq/airpermits.aspx>

UTILITIES

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

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

HORIZONTAL ALIGNMENT DATA – PCN(i6Lx)

Type	Station	Northing	Easting
POB	0+00.00	631675.257	1207740.312
	TL= 29.99 S 17°30'53" W		
PI	0+29.99	631646.654	1207731.285
	TL= 28.07 S 25°43'33" E		
PI	0+58.07	631621.362	1207743.471
	TL= 20.73 S 5°49'51" W		
PI	0+78.80	631600.738	1207741.365
	TL= 60.14 S 14°55'52" W		
PI	1+38.94	631542.627	1207725.869
	TL= 87.36 S 20°52'46" W		
PI	2+26.31	631461.000	1207694.732
	TL= 20.97 S 40°18'51" W		
POE	2+47.27	631445.011	1207681.166

Staking will be provided by the State at the Contractor’s request.

UNCLASSIFIED EXCAVATION

Unclassified Excavation is provided on the project for removing excess material to shape the drainage channel in accordance with the typical sections. The excavated material will be used to fill the nearby eroded areas. The excess material not required to fill nearby eroded areas will be hauled off as waste.

Plans quantity will be the basis of payment for the Unclassified Excavation quantity. If changes are made in the field during construction, measurements will be taken and the quantity will be adjusted accordingly.

TABLE OF UNCLASSIFIED EXCAVATION

PCN: i6Ly

Location	Cut/Fill	Quantity (CuYd)
I90 MRM 125.6	Cut	45

PCN: i6Lx

Location	Cut/Fill	Quantity (CuYd)
16B MRM 65.7	Cut	50

REMOVE AND REPLACE TOPSOIL

Prior to beginning grading operations, a 4” depth of topsoil will be salvaged within the work limits where available. The Contractor will minimize the damage to existing vegetation. Following completion of grading operations, topsoil will be replaced over all disturbed areas. The exact limit will be determined by the Engineer during construction.

All costs associated with removing and replacing the topsoil on the project will be incidental to the lump sum price for “Remove and Replace Topsoil”.

EROSION CONTROL

All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, fertilizing, seeding, and fiber mulching will be incidental to the contract lump sum price for “Erosion Control”.

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

Mycorrhizal Inoculum

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

- 25% *Glomus intraradices*
- 25% *Glomus aggregatum or deserticola*
- 25% *Glomus mosseae*
- 25% *Glomus etunicatum*

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum will be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

Fertilizing

A commercial fertilizer with a minimum guaranteed analysis of 13-13-13, 18-46-0, 11-52-0, or an approved alternate fertilizer sold for use as a lawn starter fertilizer will be applied to all areas designated for permanent seeding. The application rate of fertilizer will be 3 pounds per 1,000 square feet.

Permanent Seeding

The areas to be seeded consist of below the articulated concrete mattress and newly disturbed areas within the project limits.

The disturbed areas will be seeded and fertilized prior to installation of the articulated concrete mattress and turf reinforcement mat.

Type F Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Green Needlegrass	Lodorm, AC Mallard Ecovar	4
Sideoats Grama	Butte, Pierre	3
Blue Grama	Bad River	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		56
Total:		72

Fiber Mulching

Fiber mulch will be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier will be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier will be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier will be synthetic.

Fiber mulch will be applied at the rate of 2,000 pounds per acre.

The Contractor will allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials will be incidental to the contract unit price for “Erosion Control”.

The fiber mulch provided will be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

TABLE OF RIPRAP AND DRAINAGE FABRIC

Class C riprap and Type B Drainage Fabric will be used according to Section 700. The excavated material for riprap placement will be used to fill the nearby eroded areas. The excess material not required to fill nearby eroded areas will be hauled off as waste. Riprap and Drainage Fabric will be installed at the locations shown in the tables below:

PCN: i6Lx

Station	Location	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
016E B-452 MRM 65.7	Channel Bed	470	530

PCN: i6Ly

Station	Location	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
I90 MRM 125.6	E. Edge of Creek	150	90

PCN: i6m0

Station	Location	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
385 MRM 117	Culvert Inlet	17	8

TURF REINFORCEMENT MAT

Turf Reinforcement Mat will be installed on both sides of the Articulated Concrete Mattress at locations shown in the table at the widths specified, and at locations determined by the Engineer during construction. The Contractor will use a turf reinforcement mat from the approved products list. The approved product list for turf reinforcement mat may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

Turf Reinforcement Mat will be installed in accordance with the manufacturer's installation instructions.

TABLE OF TURF REINFORCEMENT MAT

PCN: i6Lx

Station	Location	L/R	Width (Ft)	Type	Quantity (SqYd)
016E B-452 MRM 64.7	Ditch	L	4	1	9
016E B-452 MRM 64.7	Ditch	R	4	1	9
016E B-452 MRM 64.2	Ditch	L	4	1	12.5
016E B-452 MRM 64.2	Ditch	R	4	1	12.5
Total:					43

ARTICULATED CONCRETE MATTRESS

Articulated concrete mattress will be installed at locations as noted in the plans and at locations determined by the Engineer during construction.

Installation of the articulated concrete mattress will be in accordance with the manufacturer's installation instructions.

All cost for furnishing and installing the articulated concrete mattress including hauling, materials, equipment, labor, necessary excavation, and incidentals necessary will be paid for at the contract unit price per square yard for "Articulated Concrete Mattress".

The articulated concrete mattress will be as shown below or an approved equal:

Product	Manufacturer
Flexamat	Motz Enterprises, Inc. Cincinnati, OH Phone: 1-513-772-6689 http://www.flexamat.com/

TABLE OF ARTICULATED CONCRETE MATTRESS

PCN: i6Lx

Station	Width (Ft)	Location	Quantity (SqYd)
016E B-452 MRM 64.7	8	Edge of Ditch	18
016E B-452 MRM 64.2	8	Edge of Ditch	25
Total:			43

REMOVE FENCE

The Contractor will remove the existing right-of-way fence that is to be replaced as designated in the plans and/or as ordered by the Engineer. This includes all fencing, posts, brace panels, tubular gates or anything pertaining to the existing fence. Upon removal all items will become property of contractor.

The Contractor will replace the fence through the creek bed as Fencing at Wide Depression, refer to Standard Plate 620.10.

The Contractor may remove up to 40 feet of fence leading to the bridge abutment, on both sides of the creek, to allow for movement of equipment into the work zone.

Limited Access Security - All barbed wire fence removed during any one working day is to be replaced during the same day. Contractor is responsible for any and all livestock encountered anywhere along the fence being replaced. Control of livestock during the time that any fence is being replaced is the sole responsibility of the Contractor. All costs of this work and any temporary fencing will be incidental to the contract unit price for the various fence items.

The Contractor will coordinate with landowners to ensure cattle are contained on the landowner's property.

FENCE ALIGNMENT

Where fence is being removed and replaced, fence will be installed on the same alignment as existing. It will be the Contractor's responsibility to preserve the fence alignment.

TYPE 2 RIGHT-OF-WAY FENCE

Contractor will furnish all new treated posts, steel posts and barbed wire in fencing construction. Install alternating wood and steel posts at 16'-6" spacing for Type 2 Right-of-Way Fence.

This project replaces portions of ROW fence along I-90. Segments of I-90 ROW fencing will remain in place.

TABLE OF TYPE 2 RIGHT-OF-WAY FENCE

PCN: i6Ly

Station	Fence Type	Length (Ft)
I90 MRM 125.6	Type 2	105
I90 MRM 125.6	Type 2 Wide Depression	40
Total:		145

LOW FLOW SILT FENCE

The low flow silt fence fabric provided will be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

Low flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Silt fence will be used to divert creek away from work activities. Refer to Standard Plate 734.04 for details.

An additional quantity of Low Flow Silt Fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF LOW FLOW SILT FENCE

PCN: i6Ly

Station	Location	Quantity (Ft)
I90 MRM 125.6	Edge of Creek	70
Additional Quantity:		70
Total:		140

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting.

The following requirements/restrictions apply:

PCN:i6Lx
16EB-452 MRM 64.2: Daytime lane closures between 9:00 AM and 3:00 PM
16EB-452 MRM 64.7: Daytime lane closures between 9:00 AM and 3:00 PM
16EB-452 MRM 65.7: Entrance to the work zone will be from the approach that is South of Dan Cristy Ln. (North of the project).

PCN:i6m0
385-451 MRM 117: Highway to be open to both directions of travel at the end of the workday.

TRAFFIC CONTROL – GENERAL NOTES

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

A longitudinal buffer space will be provided at the beginning of the activity area in accordance with Table 6C-2 in Part 6 of the MUTCD.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All materials and equipment will be stored a minimum distance of 30’ from the traveled way during nonworking hours.

All haul trucks will be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract bid items.

INVENTORY OF TRAFFIC CONTROL DEVICES

PCN: i6m0

		CONVENTIONAL ROAD			
Sign Code	Sign Description	Number	Sign Size	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	2	36" x 36"	9.0	18.0
W20-4	ONE LANE ROAD AHEAD	2	36" x 36"	9.0	18.0
W20-7	FLAGGER (symbol)	2	36" x 36"	9.0	18.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS			63

PCN: i6Lx

		CONVENTIONAL ROAD			
Sign Code	Sign Description	Number	Sign Size	SQFT PER SIGN	SQFT
W4-2R	LEFT or RIGHT LANE ENDS (symbol)	2	36" x 36"	9	18
W20-1	ROAD WORK AHEAD	6	36" x 36"	9	54
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	36" x 36"	9	18
W21-5	SHOULDER WORK	3	36" x 36"	9	27
G20-2	END ROAD WORK	2	36" x 18"	4.5	9
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS			126

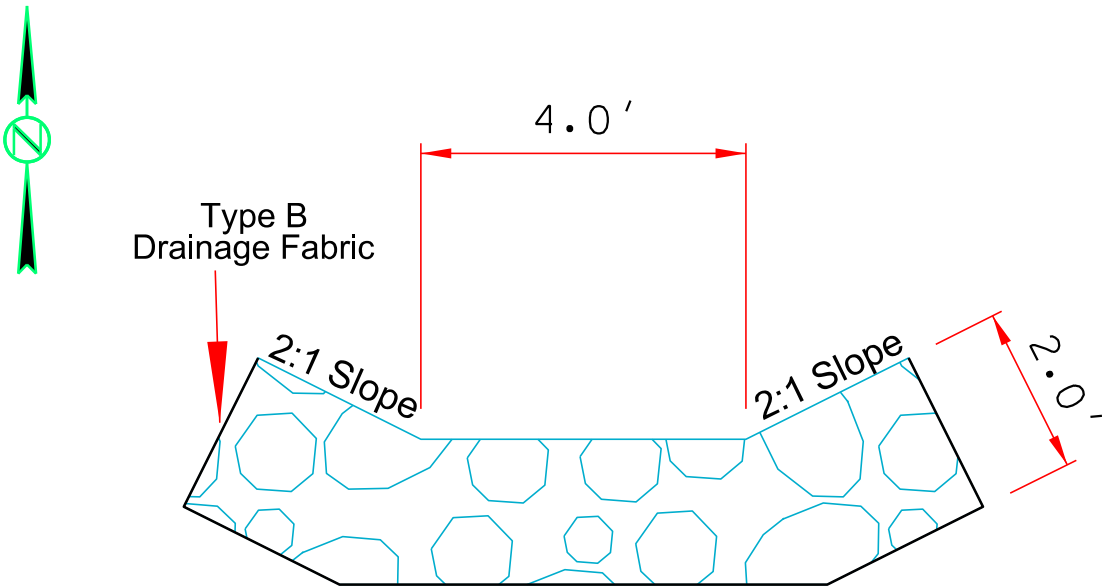
PCN: i6Ly

		CONVENTIONAL ROAD			
Sign Code	Sign Description	Number	Sign Size	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	2	48" x 48"	16	32
G20-2	END ROAD WORK	2	48" x 24"	8	16
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS			48



385-451 (PCN: i6m0) MRM 117

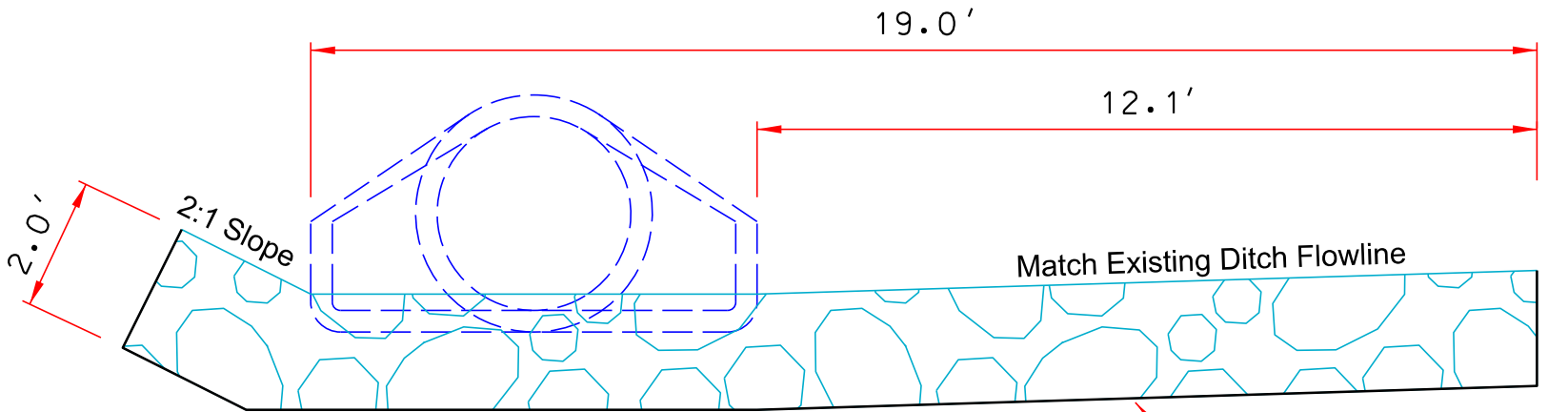
Plan View

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451, 016EB-452, 090W-452	7	24
Plotting Date:		02/28/2022	



Typical Cross Section

-  Class C Riprap
-  Type B Drainage Fabric



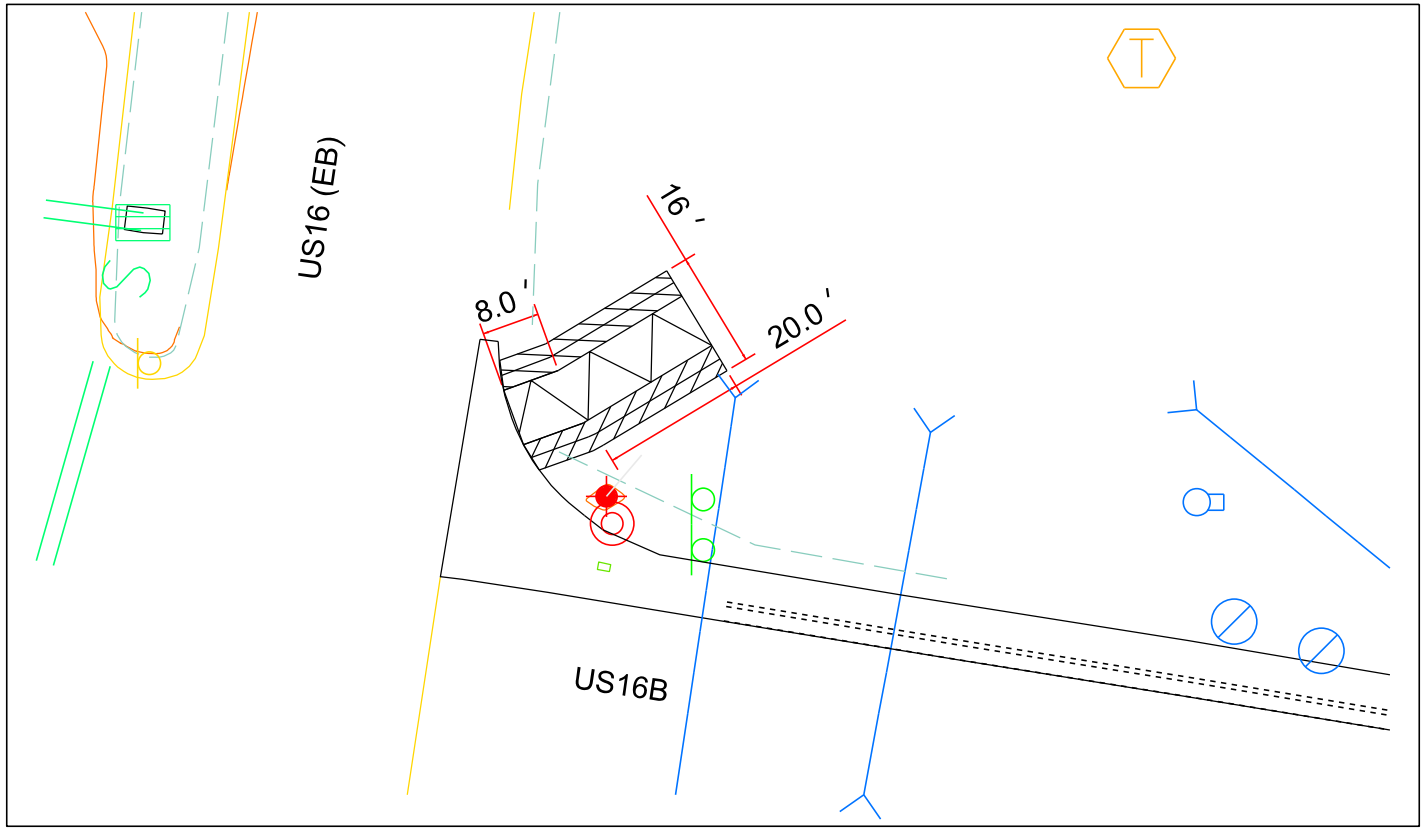
Profile View

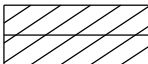
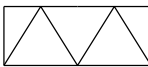
016EB-452 (PCN: i6Lx) MRM 64.2

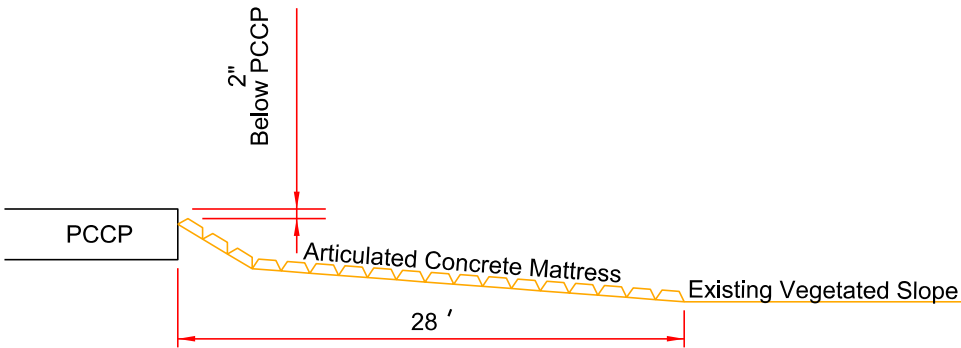
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451, 016EB-452, 090W-452	8	24

Plotting Date: 02/28/2022

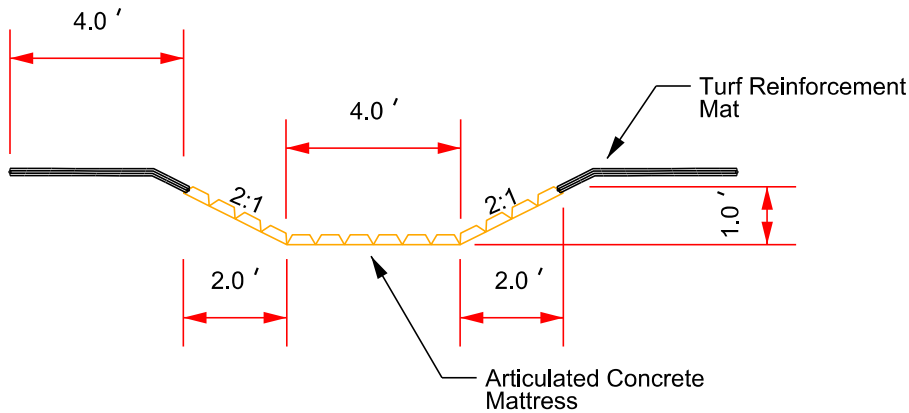
Plan View



-  Turf Reinforcement Mat
-  Articulated Concrete Mattress



Profile View



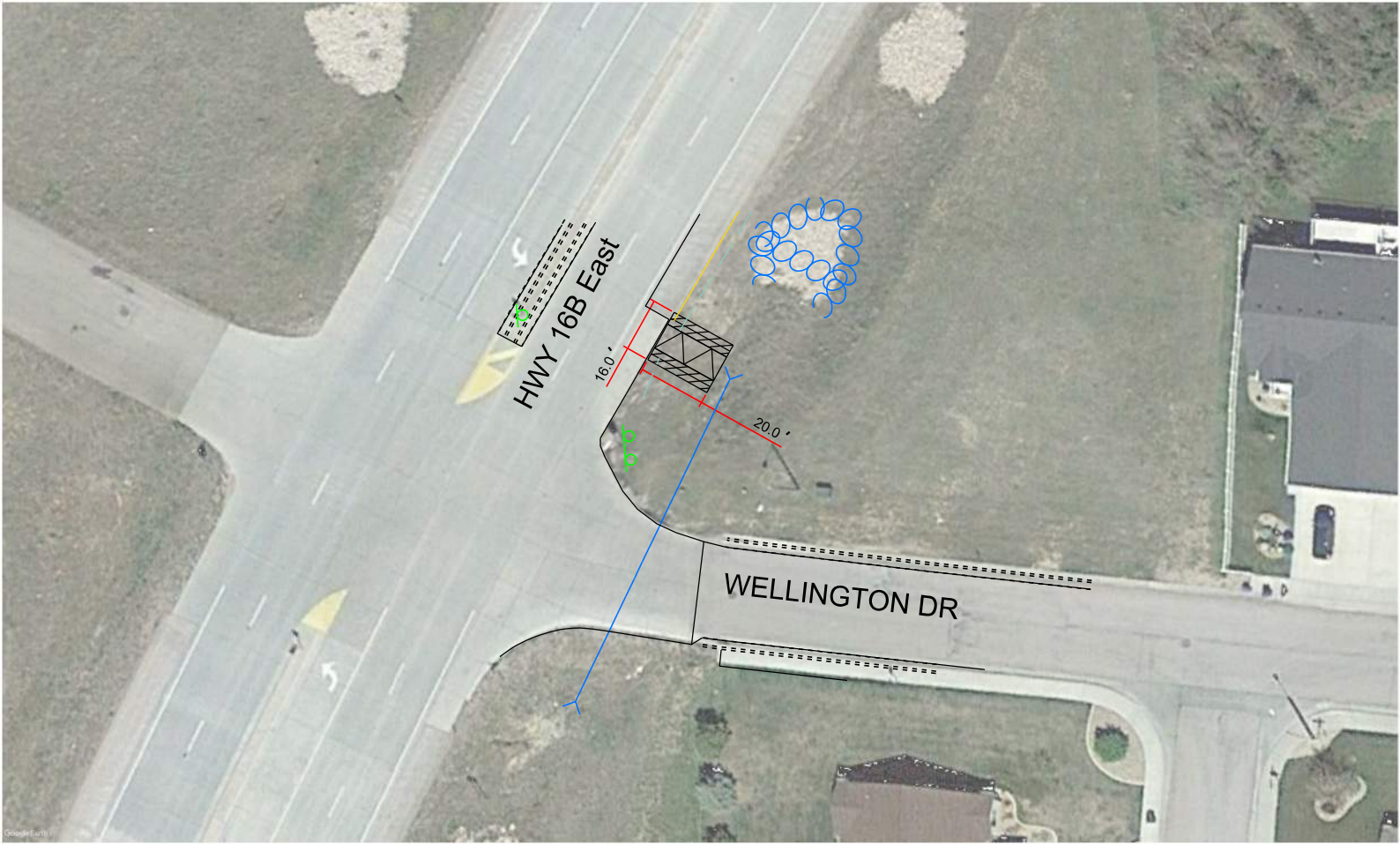
Typical Cross Section

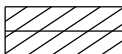
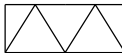
016EB-452 (PCN: i6Lx) MRM 64.7

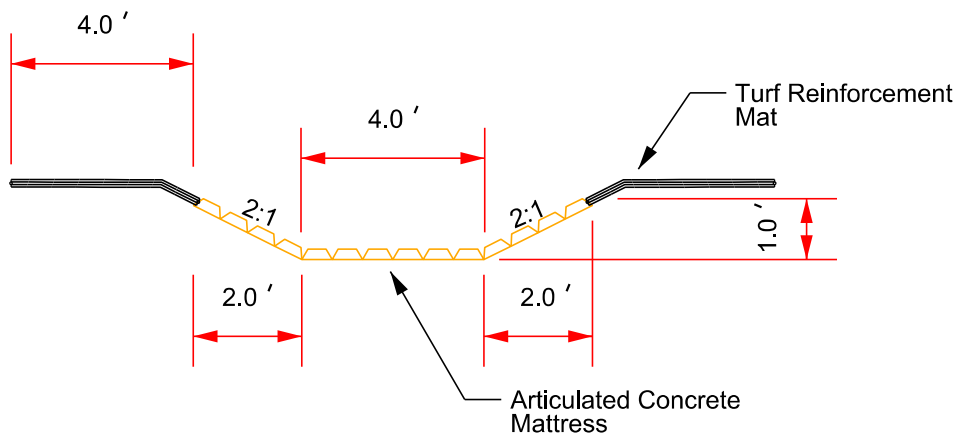
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451, 016EB-452, 090W-452	9	24

Plotting Date: 02/28/2022

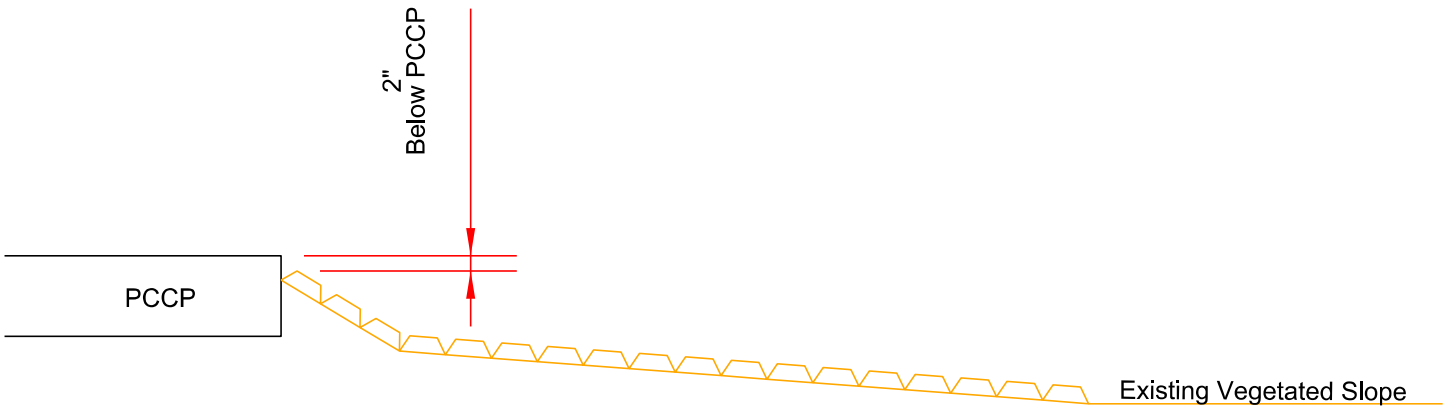
Plan View



-  Turf Reinforcement Mat
-  Articulated Concrete Mattress



Typical Cross Section

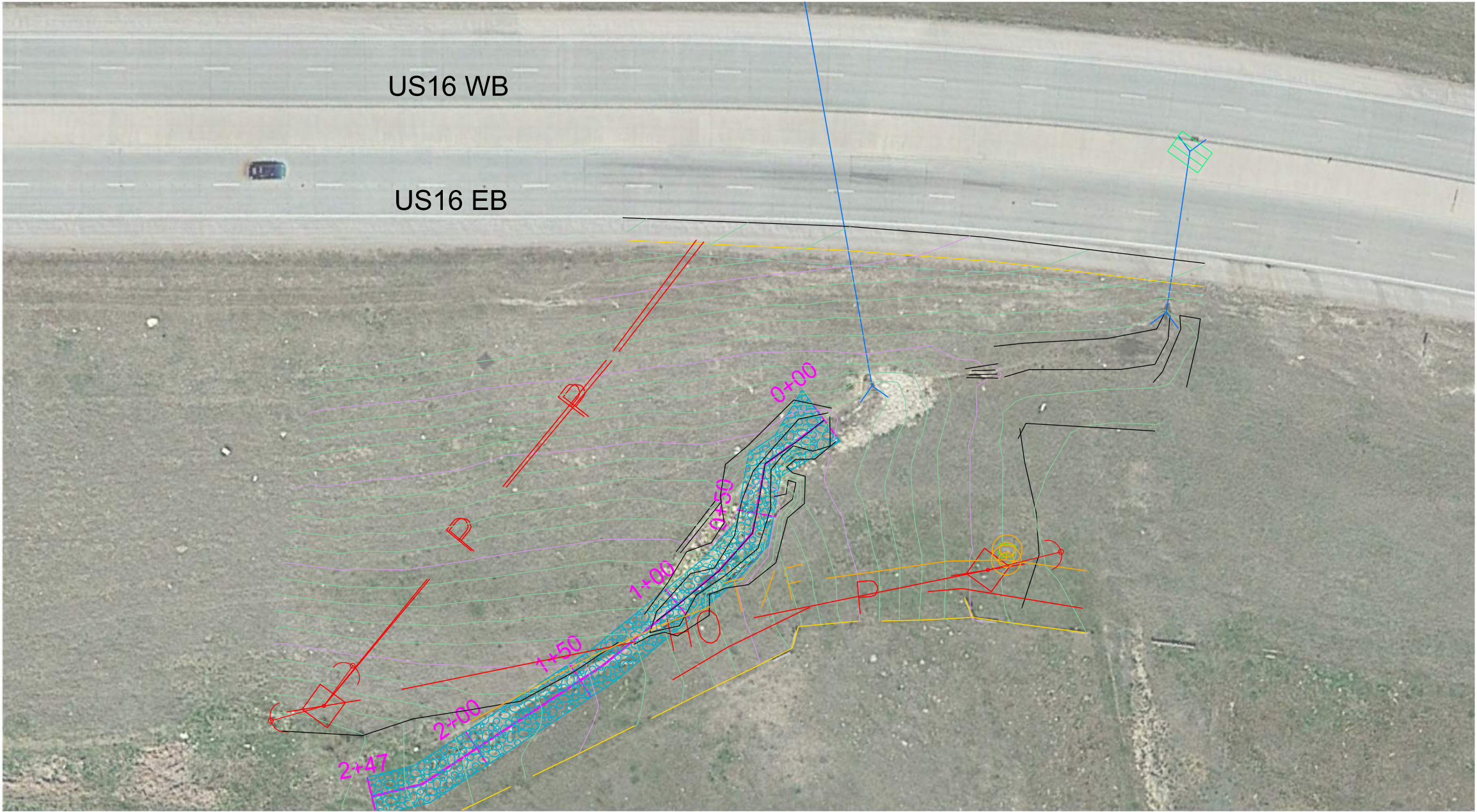



Profile View

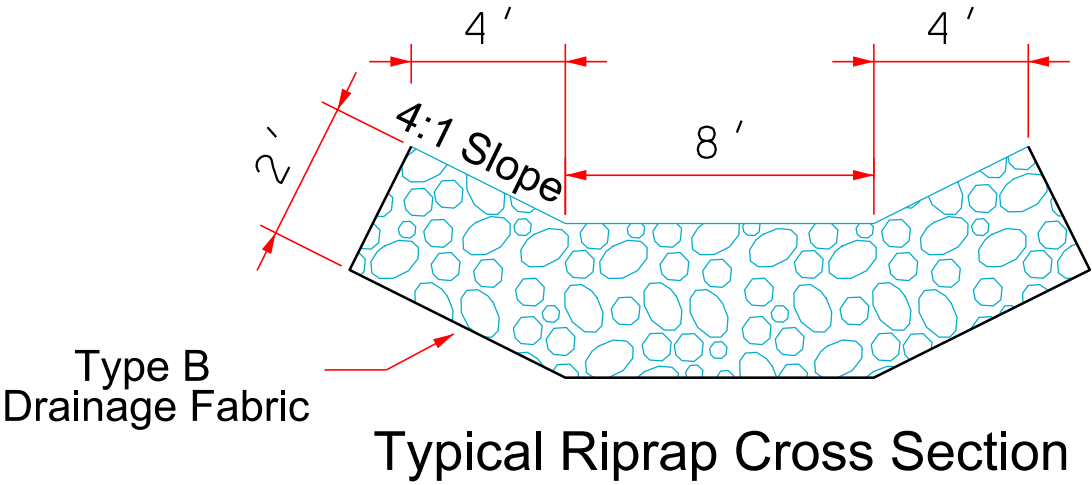
016EB-452 (PCN: i6Lx) MRM 65.7
Plan View

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451, 016EB-452, 090W-452	10	24

Plotting Date: 02/28/2022



 Class C Riprap



Plot Scale - 1:49.6125

Plotted From - Irr1Int19







File - ...Erosion Sheets\i6Lx_6570.dgn

090W-452 (PCN: i6Ly) MRM 125.6

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451, 016EB-452, 090W-452	11	24

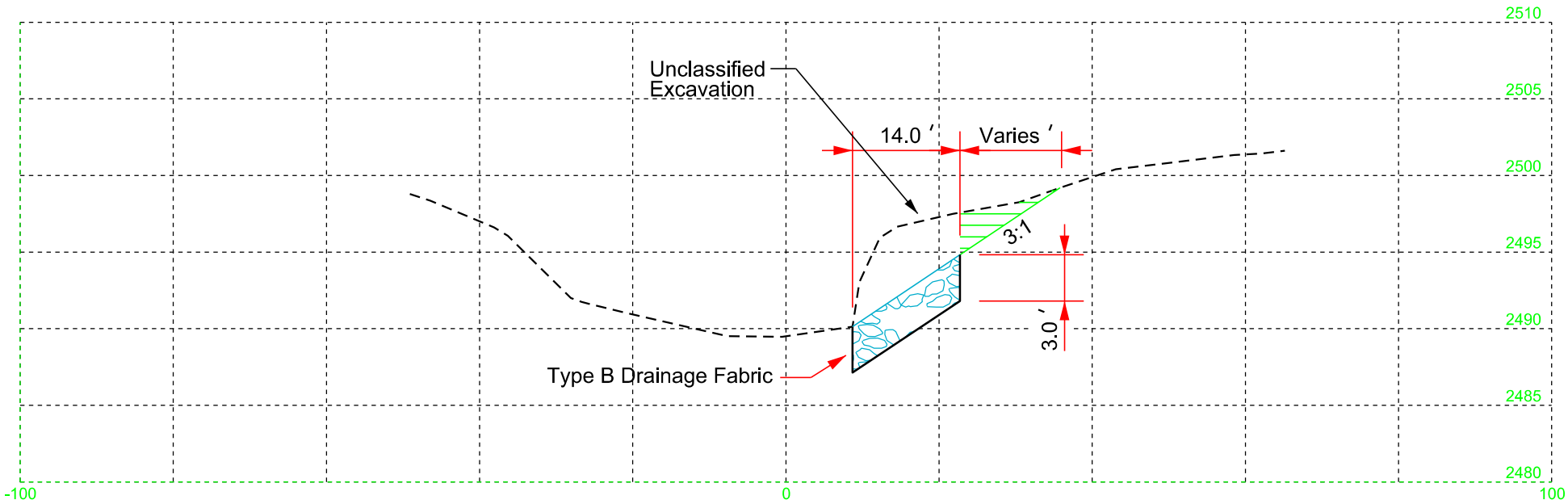
Plotting Date: 02/28/2022

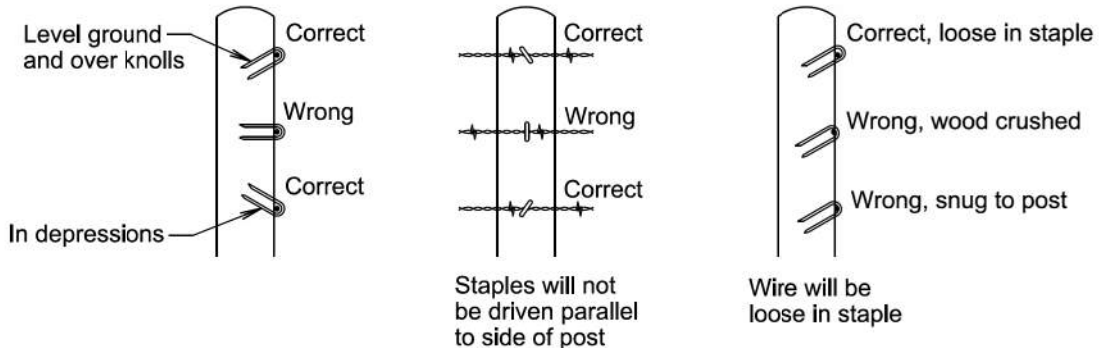
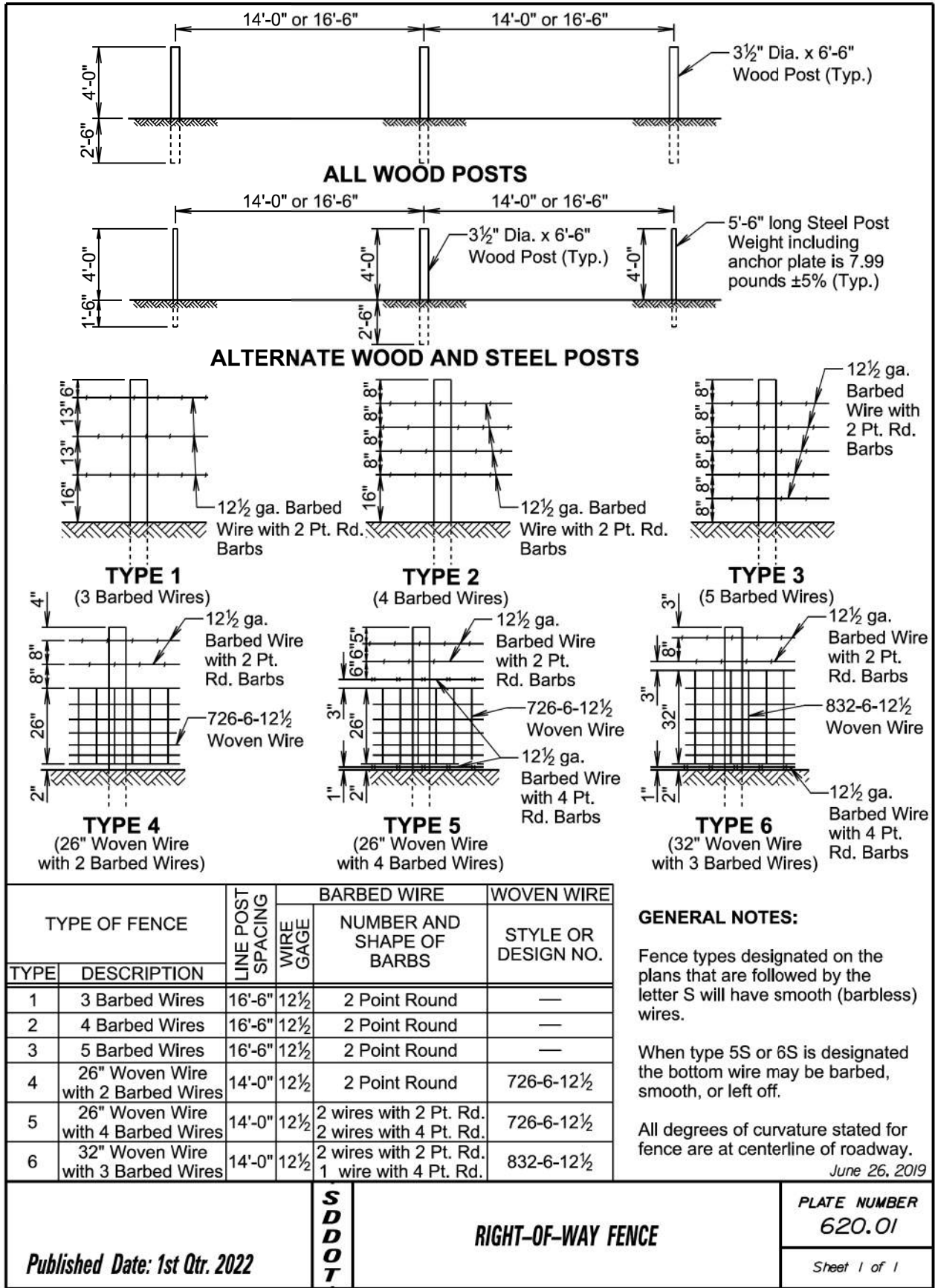


-  Class C Riprap
-  Grading at a 3:1 slope to match existing ground
-  Remove and Replace Fence
-  Fence Removal for getting equipment in the work zone
-  Fence Removal to be Replaced with Fencing at Wide Depression see Standard Plate 620.10
-  Fence Removal for Excavation

Plan View

Typical Cross Section





STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence will consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire will be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts will be used for brace panels. Gates will be of the type designated in the plans or as otherwise directed by the Engineer. Fence will be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

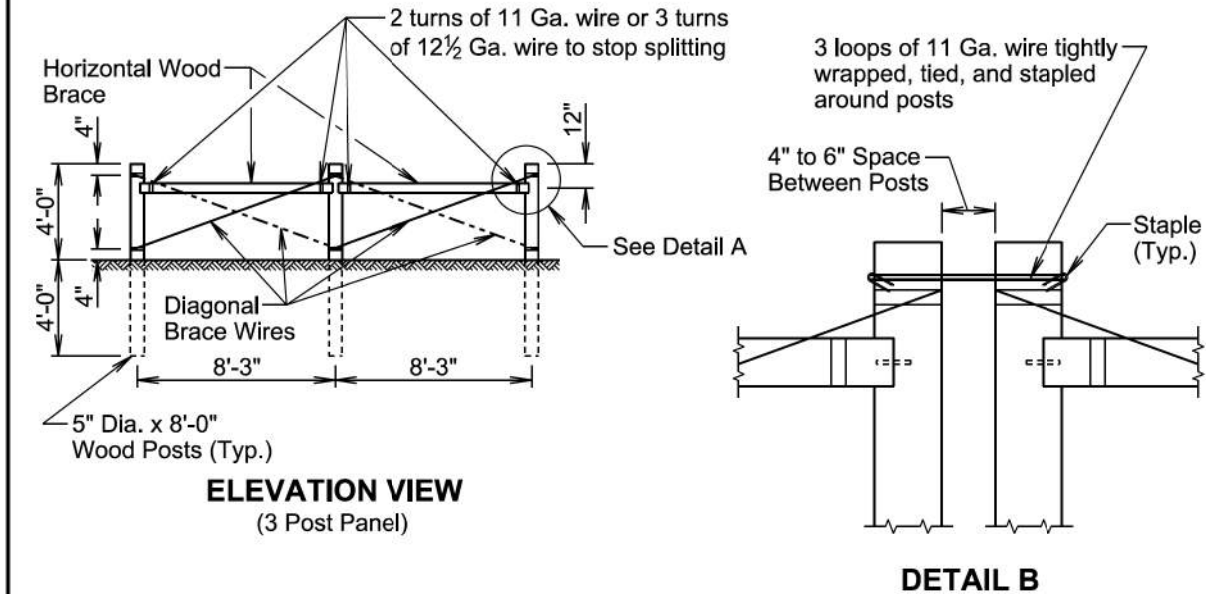
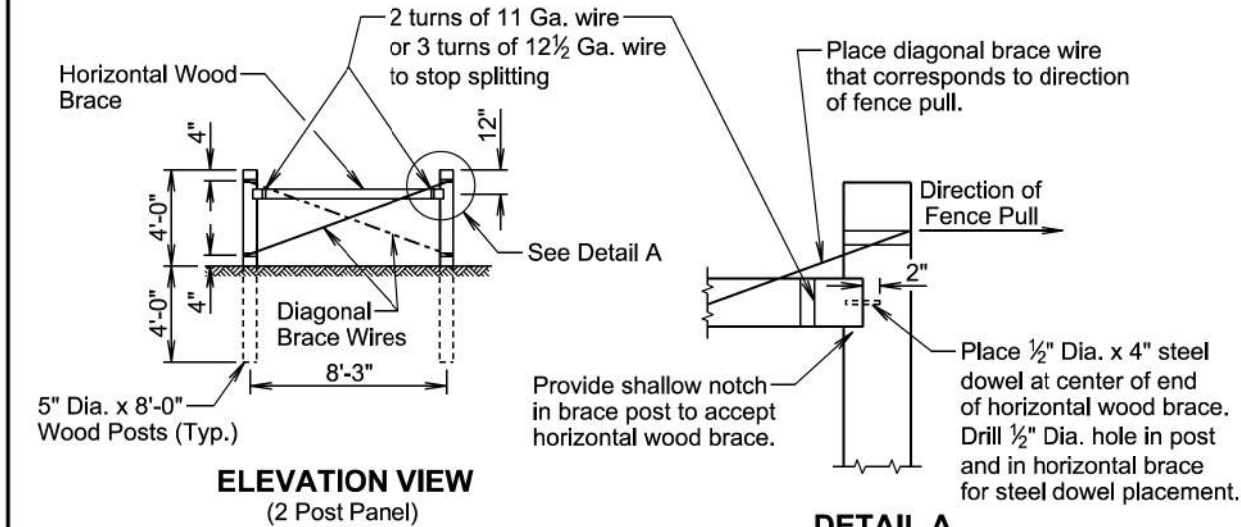
Right-of-Way fence on Interstate Projects will be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs will be fabricated from zinc coated 14 ga. wire. Two point barbs will be wrapped twice around one main strand at four-inch spacings and the four point barbs will be interlocked and wrapped around both main strands at five-inch spacings.

The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts will be as stated in AASHTO M281. Woven wire will conform to design and specifications of ASTM A116 and barbed wire will conform to ASTM A121.





GENERAL NOTES:

Two Post Panels will be installed at least every 1320' between corners.

Two Post Panels will be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces will consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires will be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires will be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

June 26, 2019

Published Date: 1st Qtr. 2022	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 1 of 3

DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	** At P.C., P.T., and at every 1320' between P.C. and P.T.

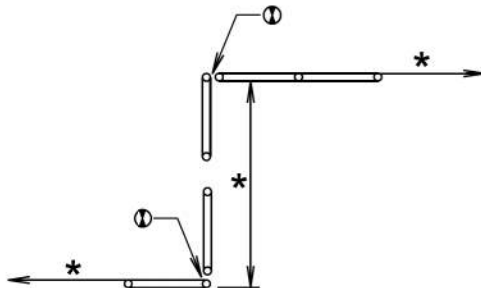
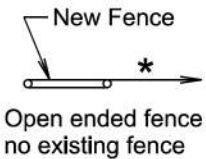
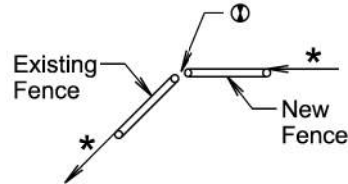
GENERAL NOTE:

All degrees of curvature stated for fence are at centerline of roadway.

- * If fence length is less than 600' to next corner use a 2 post panel.
- If fence length is greater than 600' to next corner use a 3 post panel.

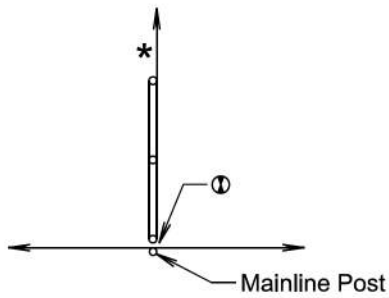
** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

① See Detail B on Sheet 1 of 3.

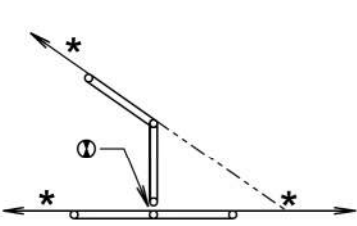
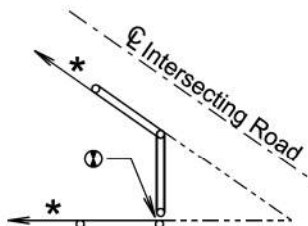
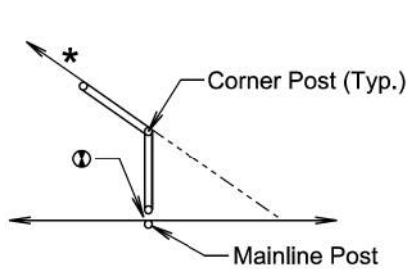


BEGIN OR END FENCE
(Where new fence ties into existing fence)

SHORT JOGS IN FENCE



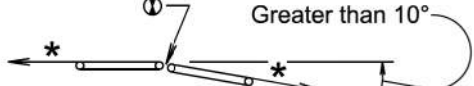
CROSS FENCE



SHARP ANGLES IN CROSS FENCE



Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

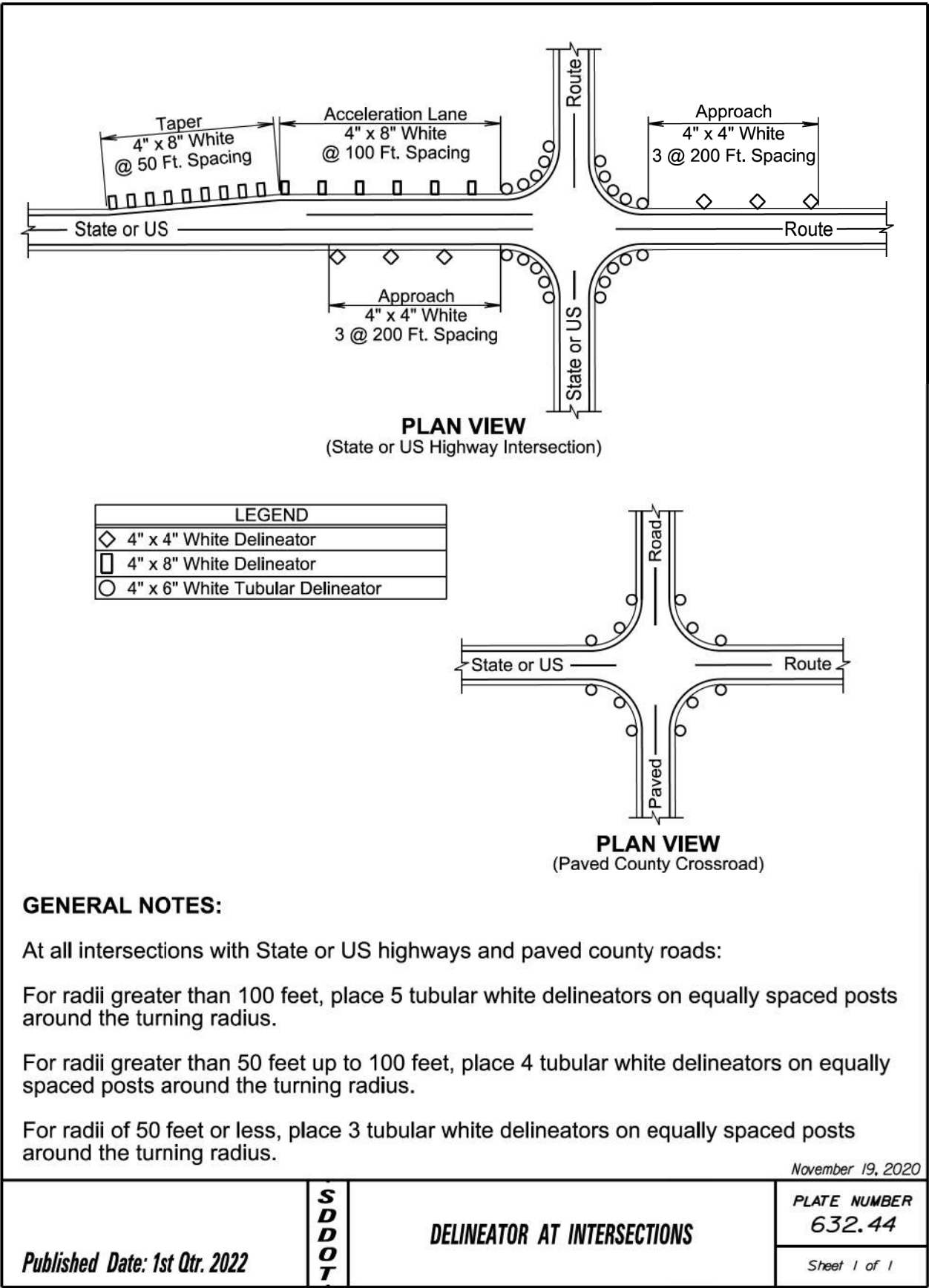
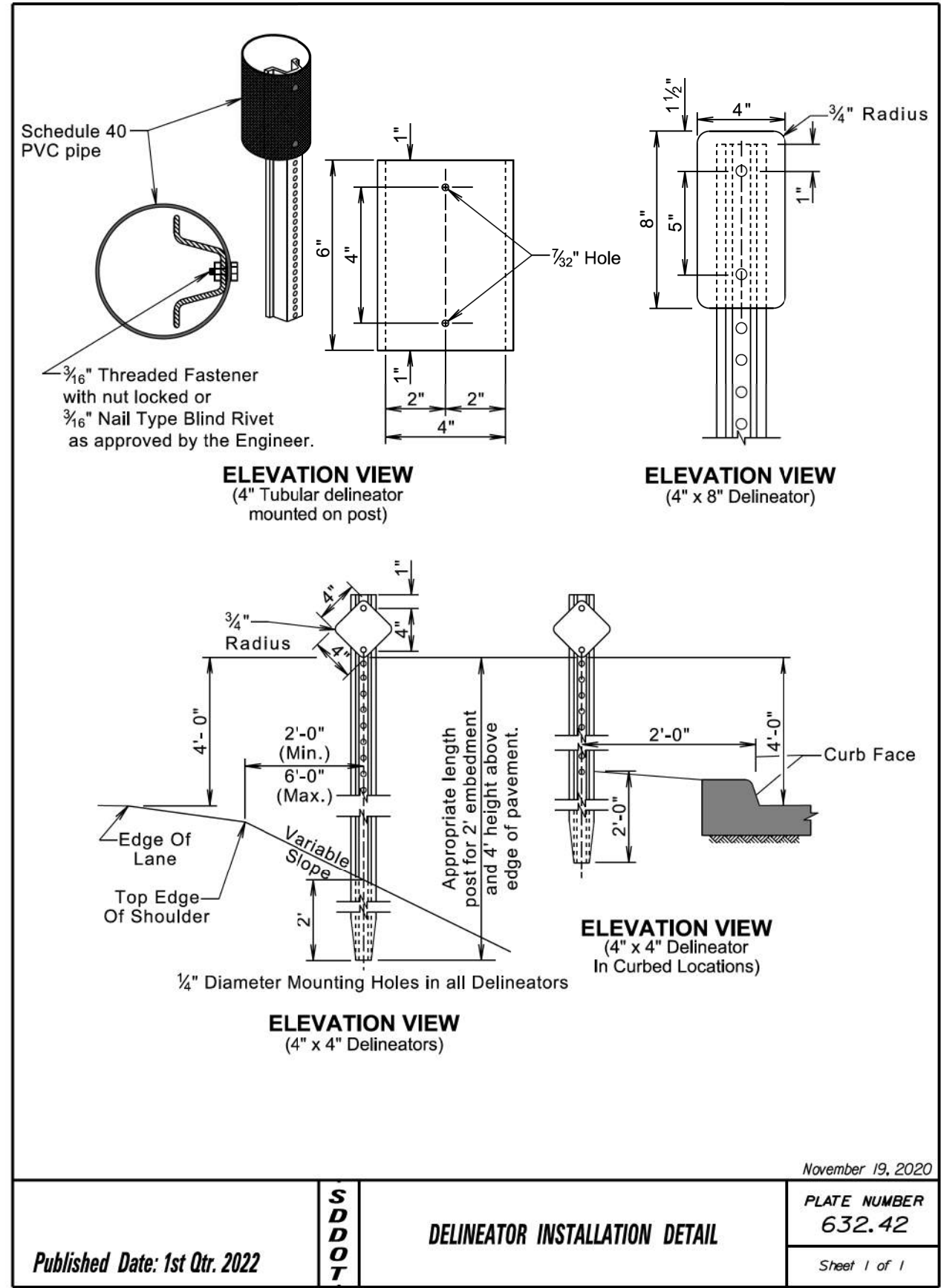


Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

June 26, 2019

Published Date: 1st Qtr. 2022	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3



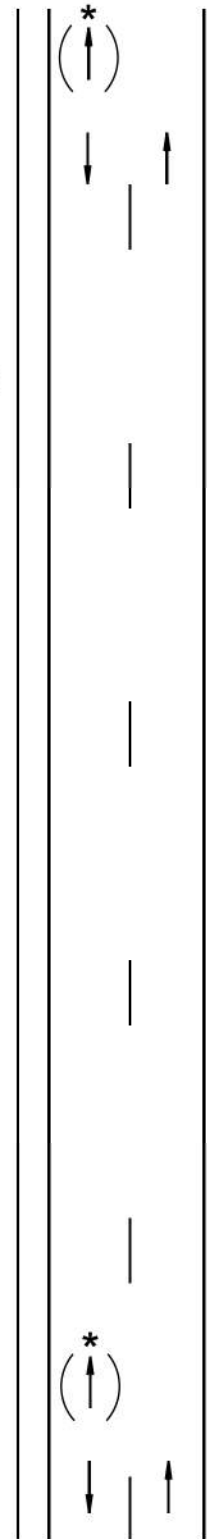
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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

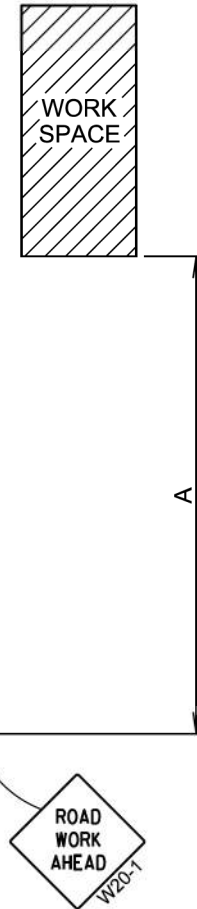
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

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

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

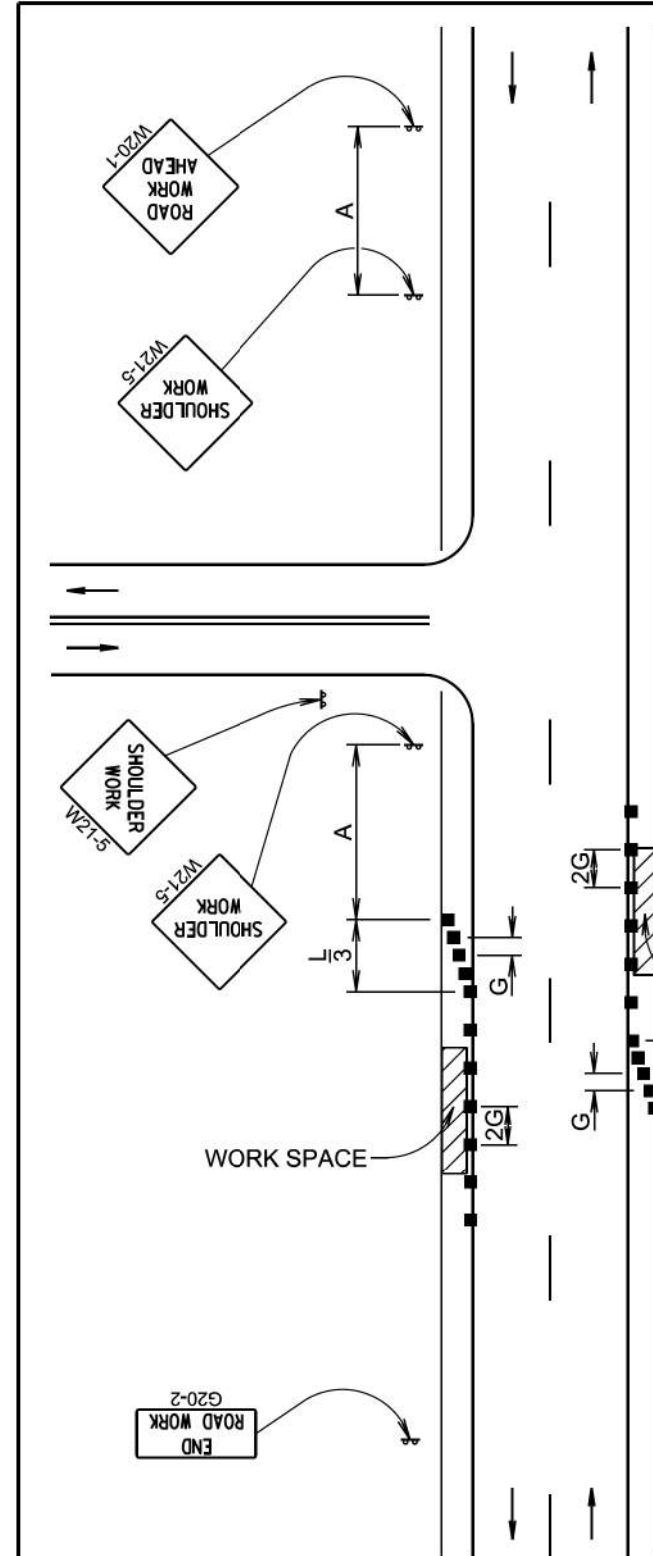


Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000



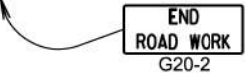
January 22, 2021

Published Date: 1st Qtr. 2022	S D D O T	WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

Channelizing Device



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

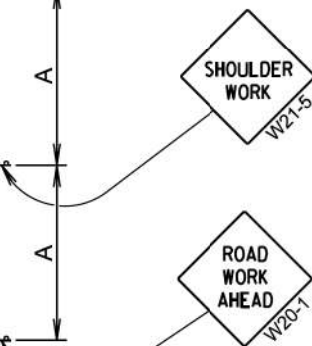
For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

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

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

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

WORK SPACE



January 22, 2021

Published Date: 1st Qtr. 2022	S D D O T	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

- Flagger
■ Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

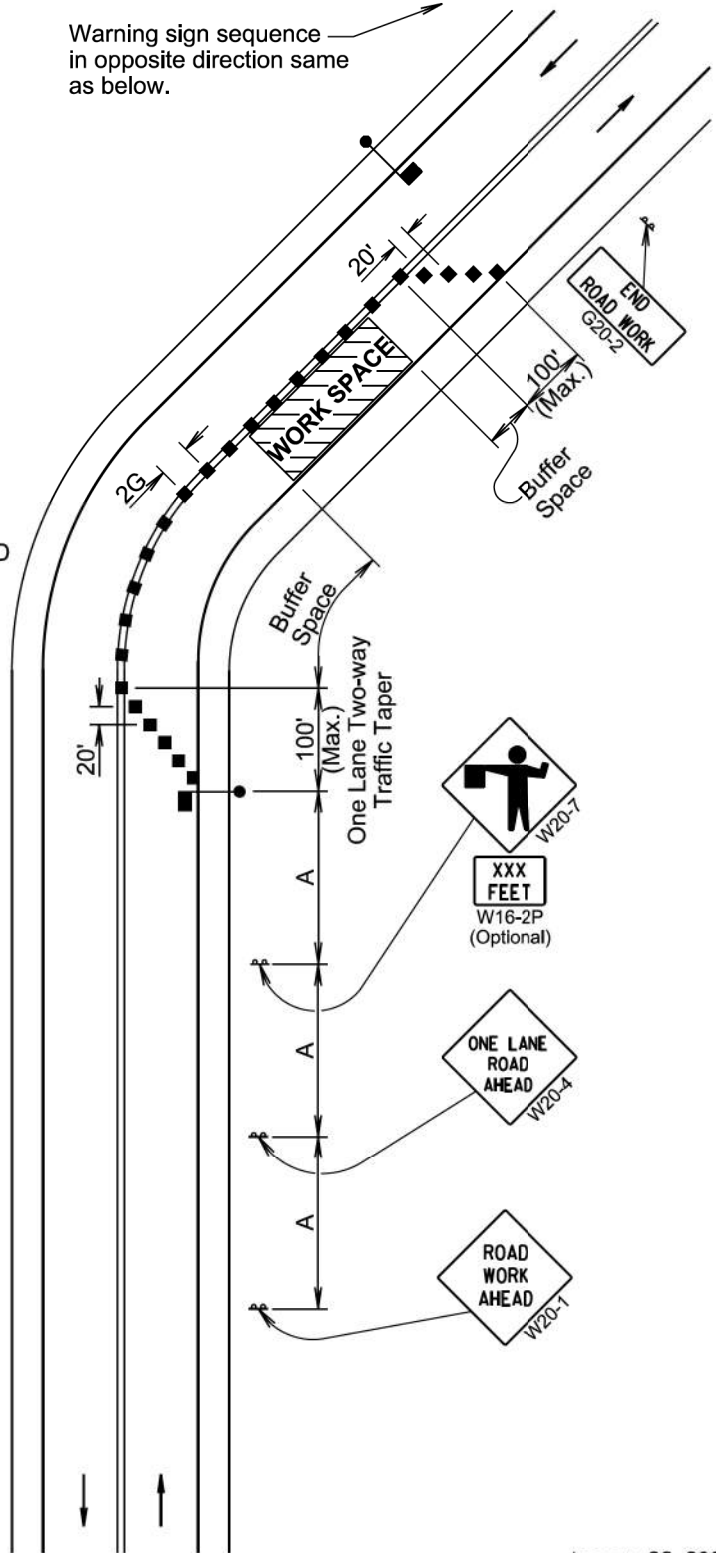
END ROAD WORK
G20-2

Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.



January 22, 2021

Published Date: 1st Qtr. 2022	S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER
			634.23
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

- ⊙ Reflectorized Drum
■ Channelizing Device

④ 4" White Temporary Pavement Marking

Temporary pavement markings will be used if traffic control must remain overnight.

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs will be used.

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

END ROAD WORK
G20-2 (Optional)

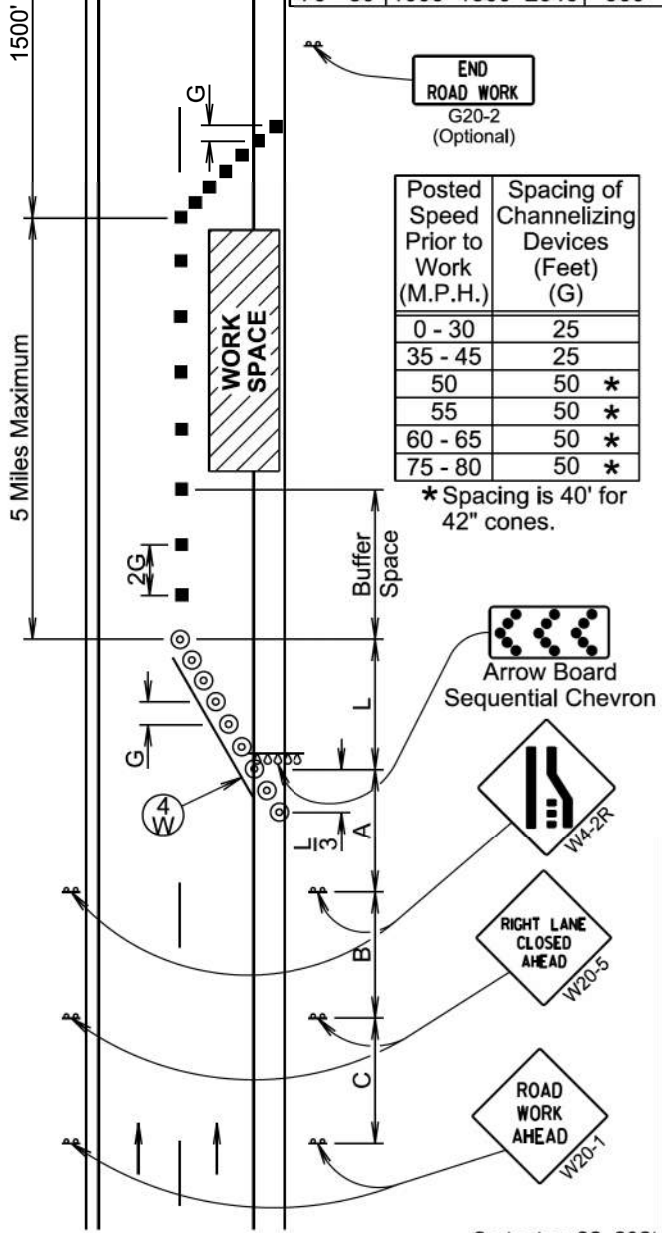
Published Date: 1st Qtr. 2022	S D D O T	LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER
			634.64
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	960

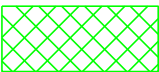
END ROAD WORK
G20-2 (Optional)

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
75 - 80	50 *

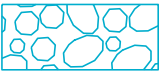
* Spacing is 40' for 42" cones.



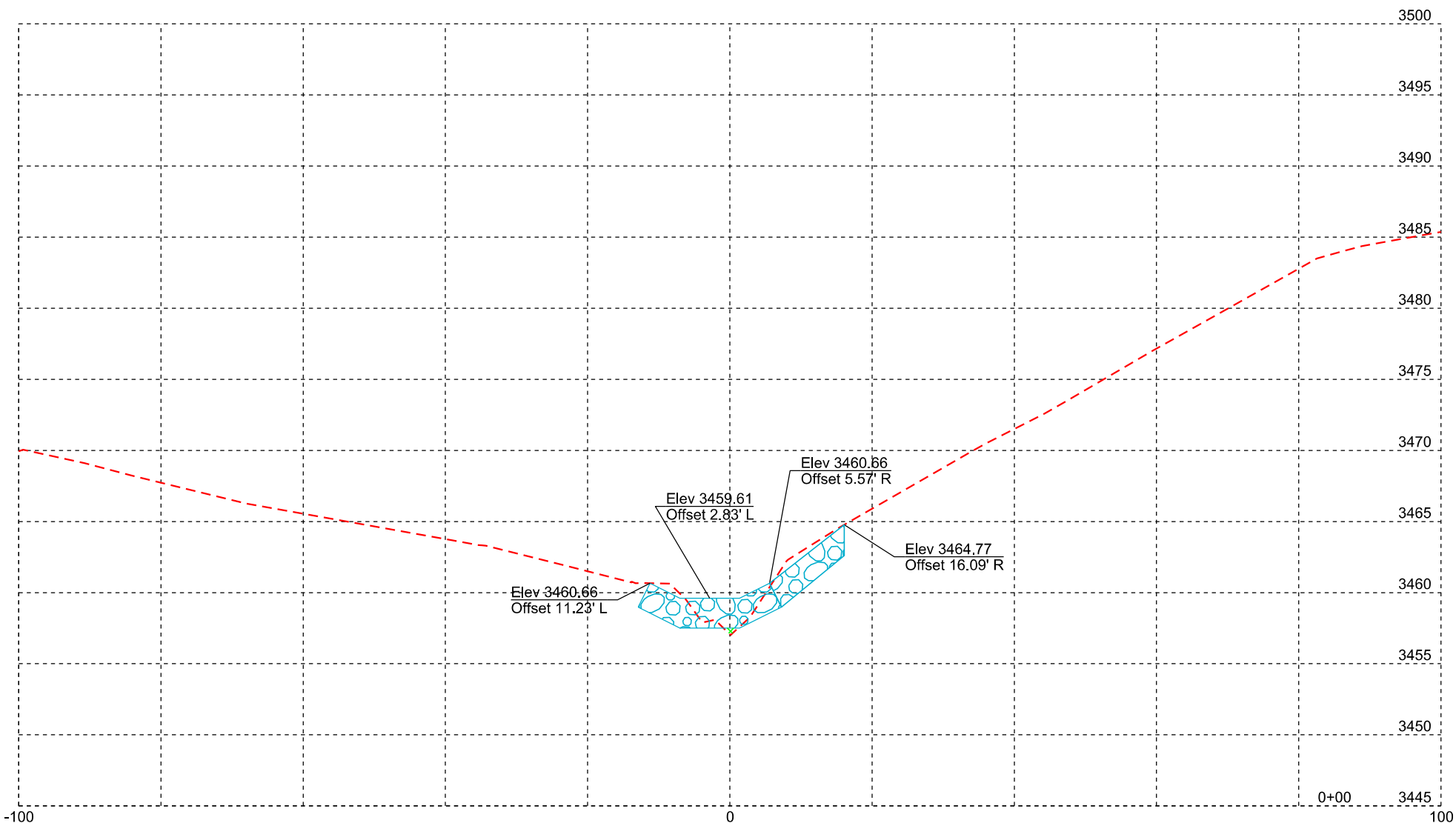
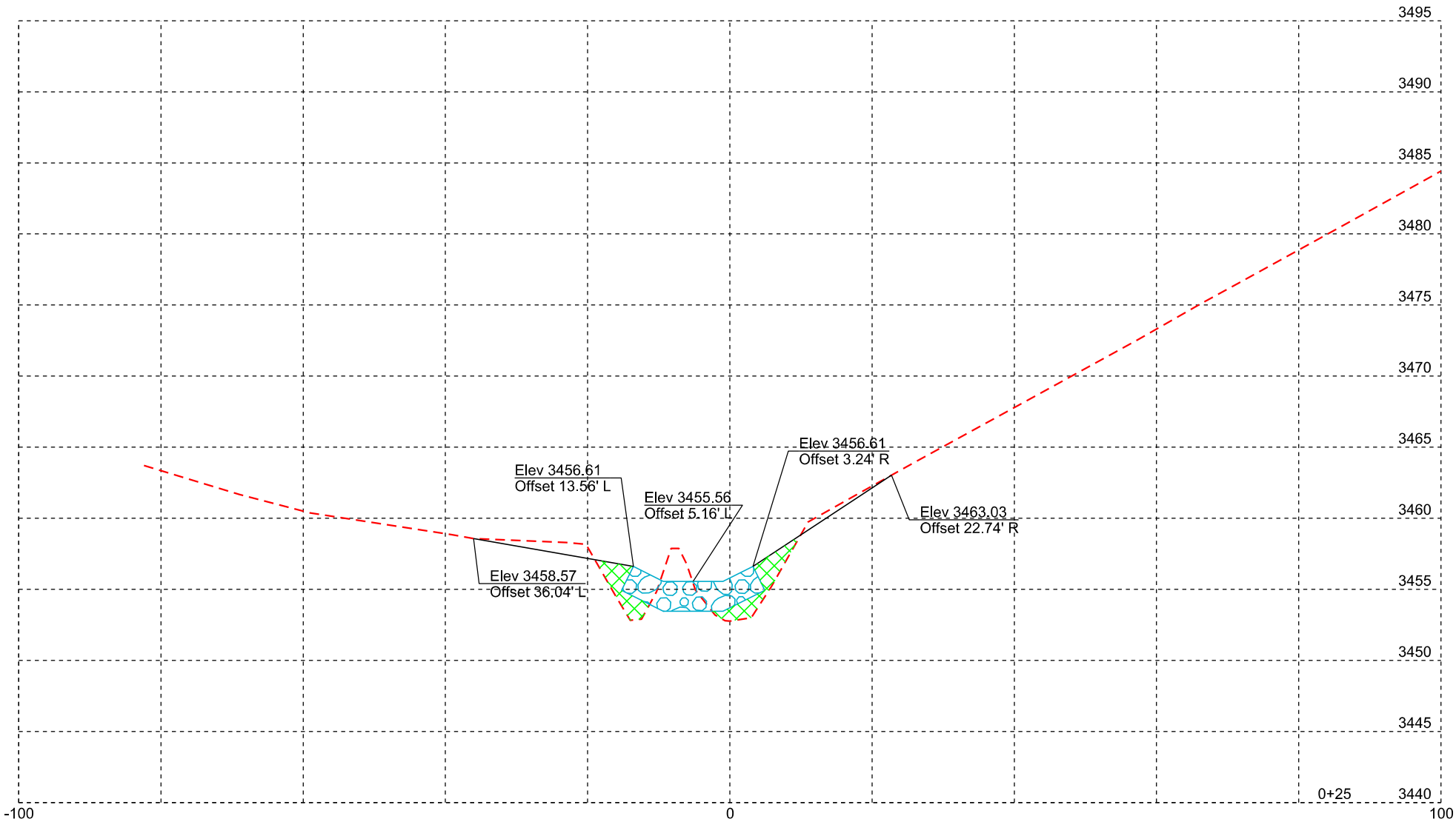
September 22, 2021

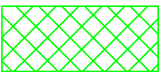


Fill Area

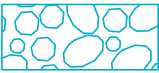


Class C Riprap

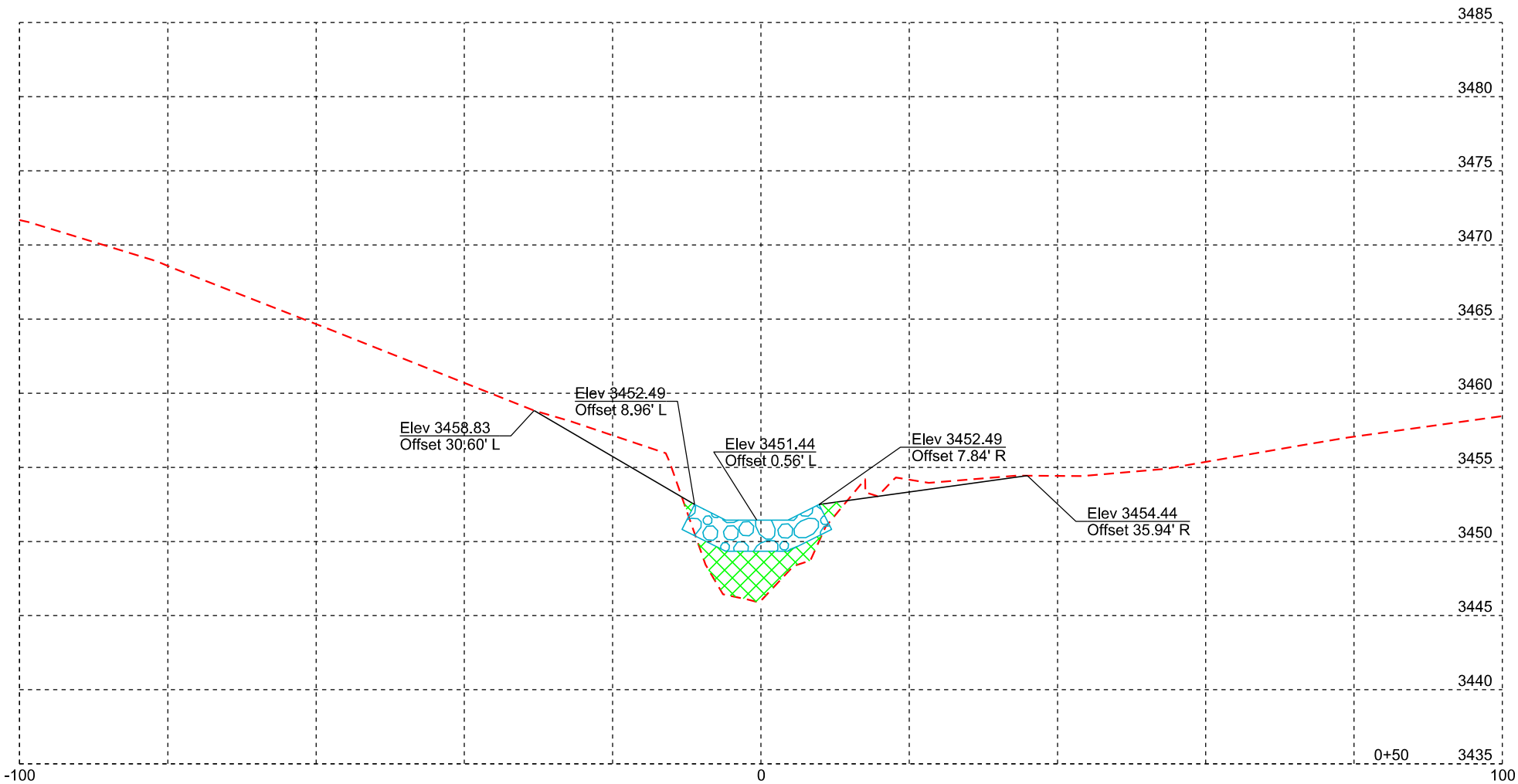
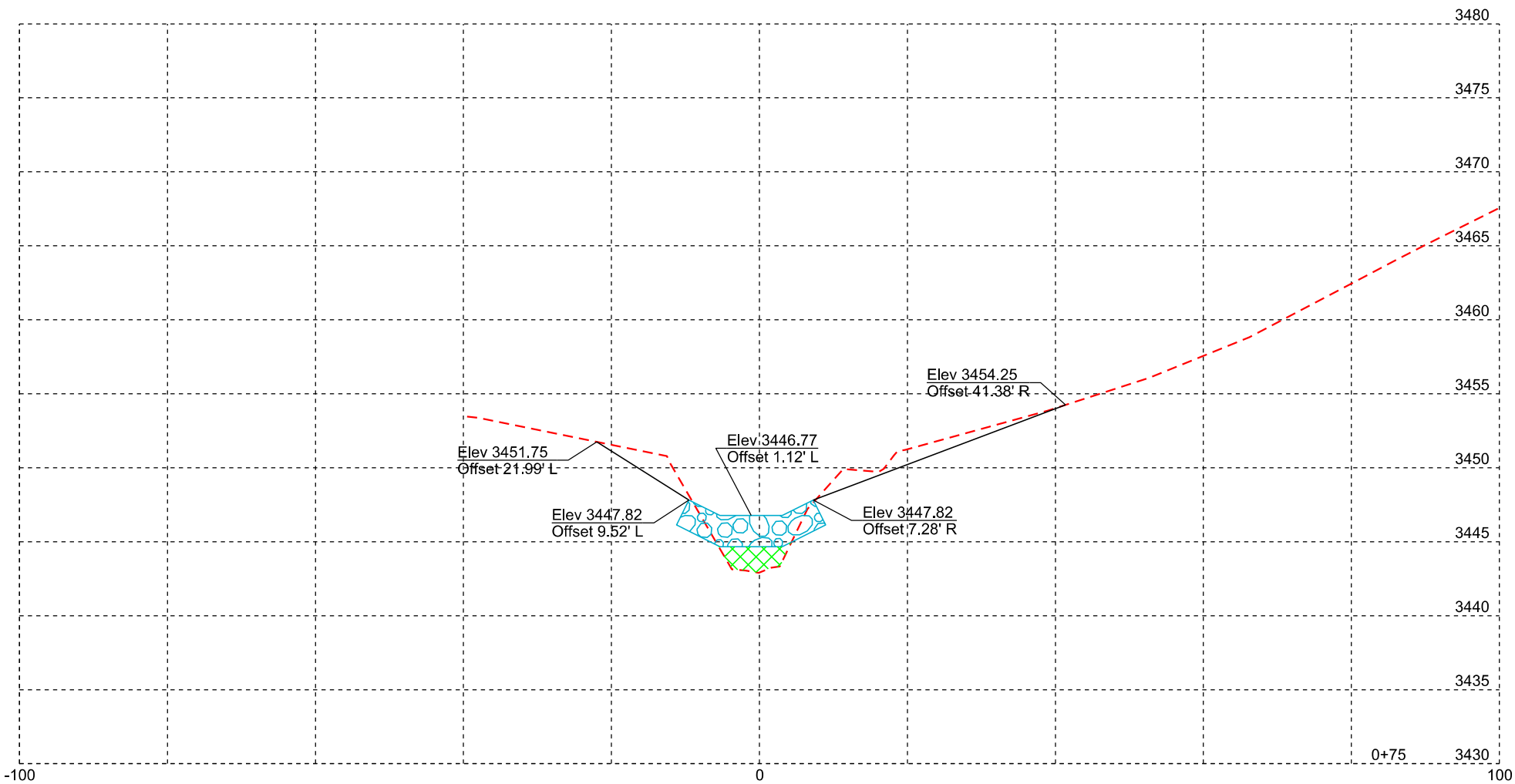


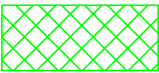


Fill Area



Class C Riprap

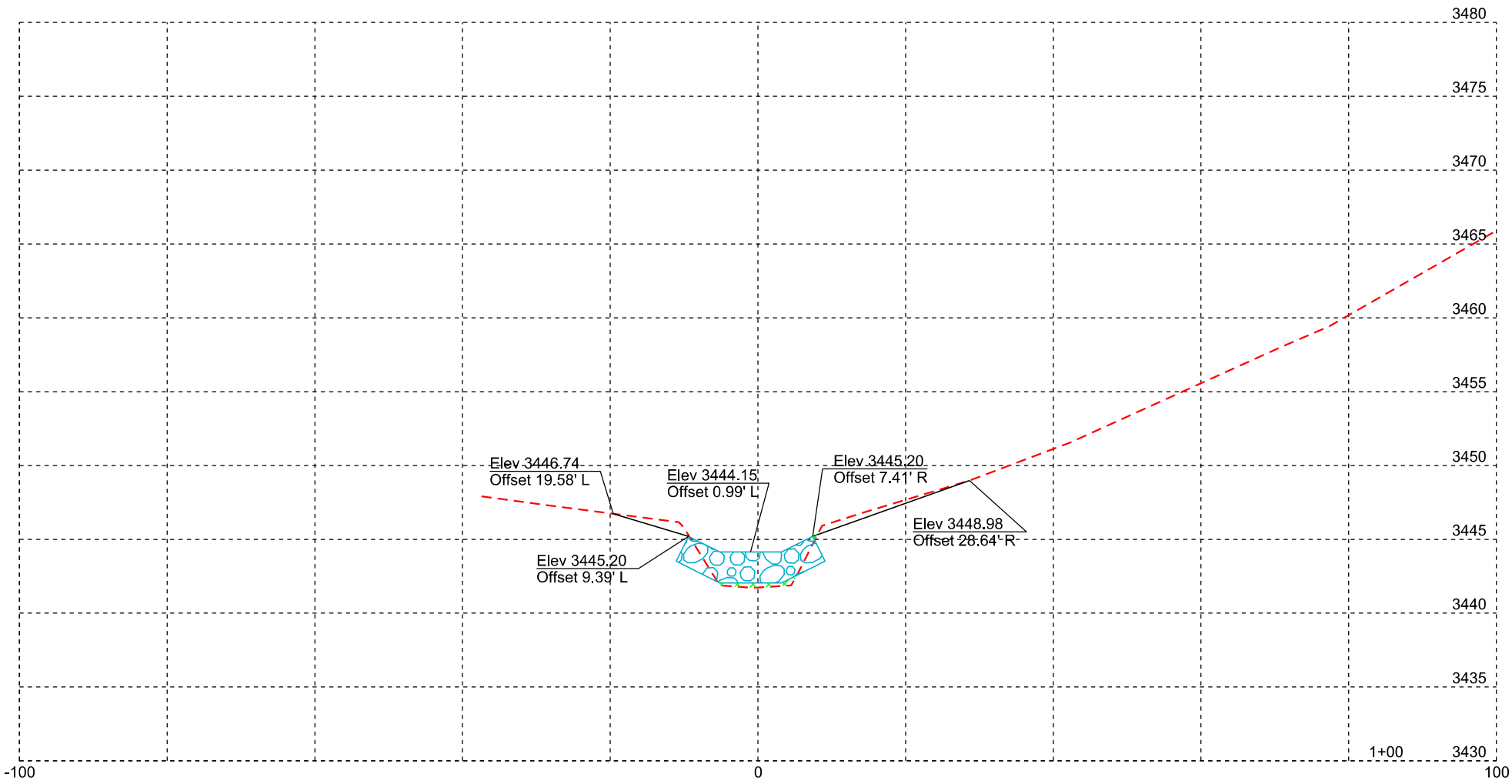
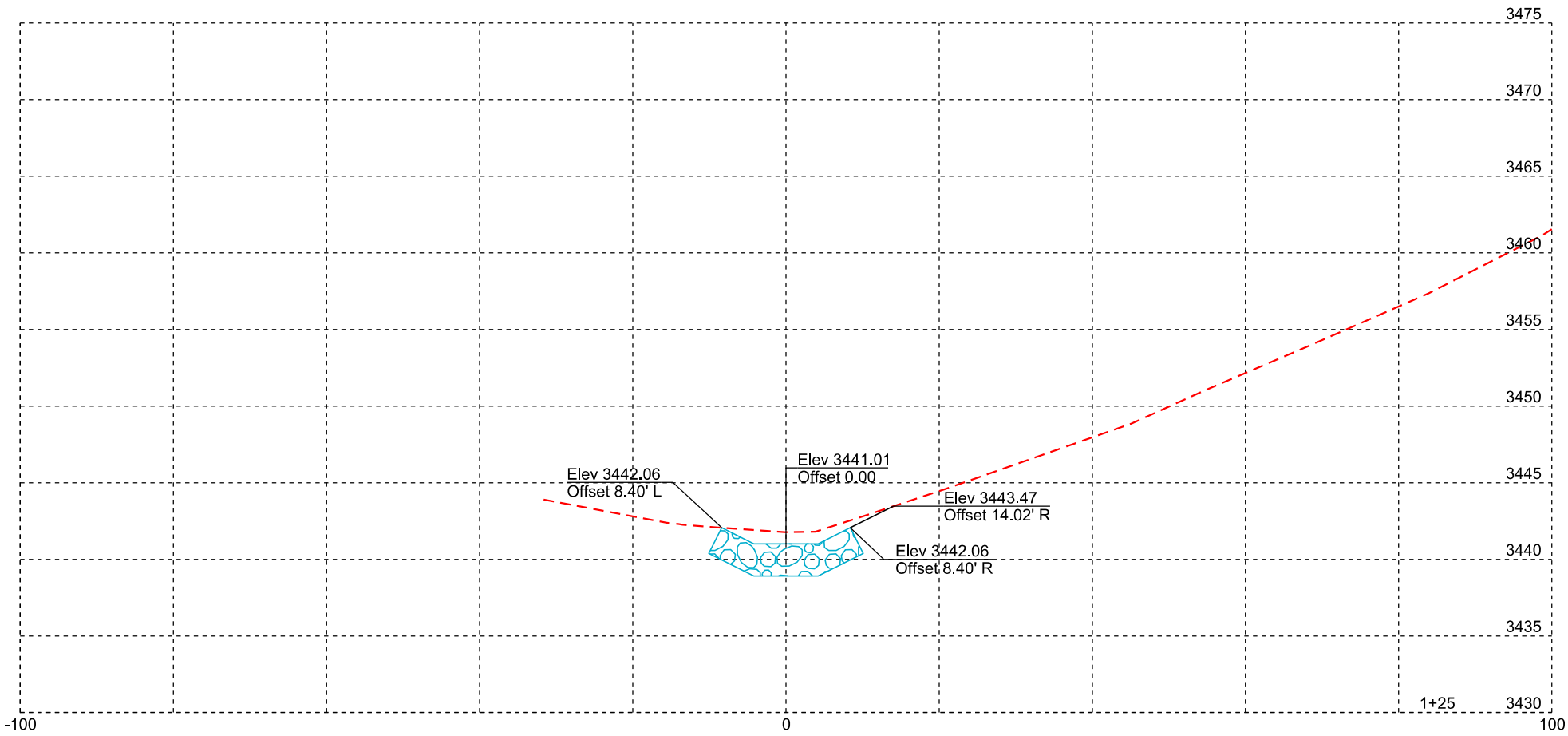
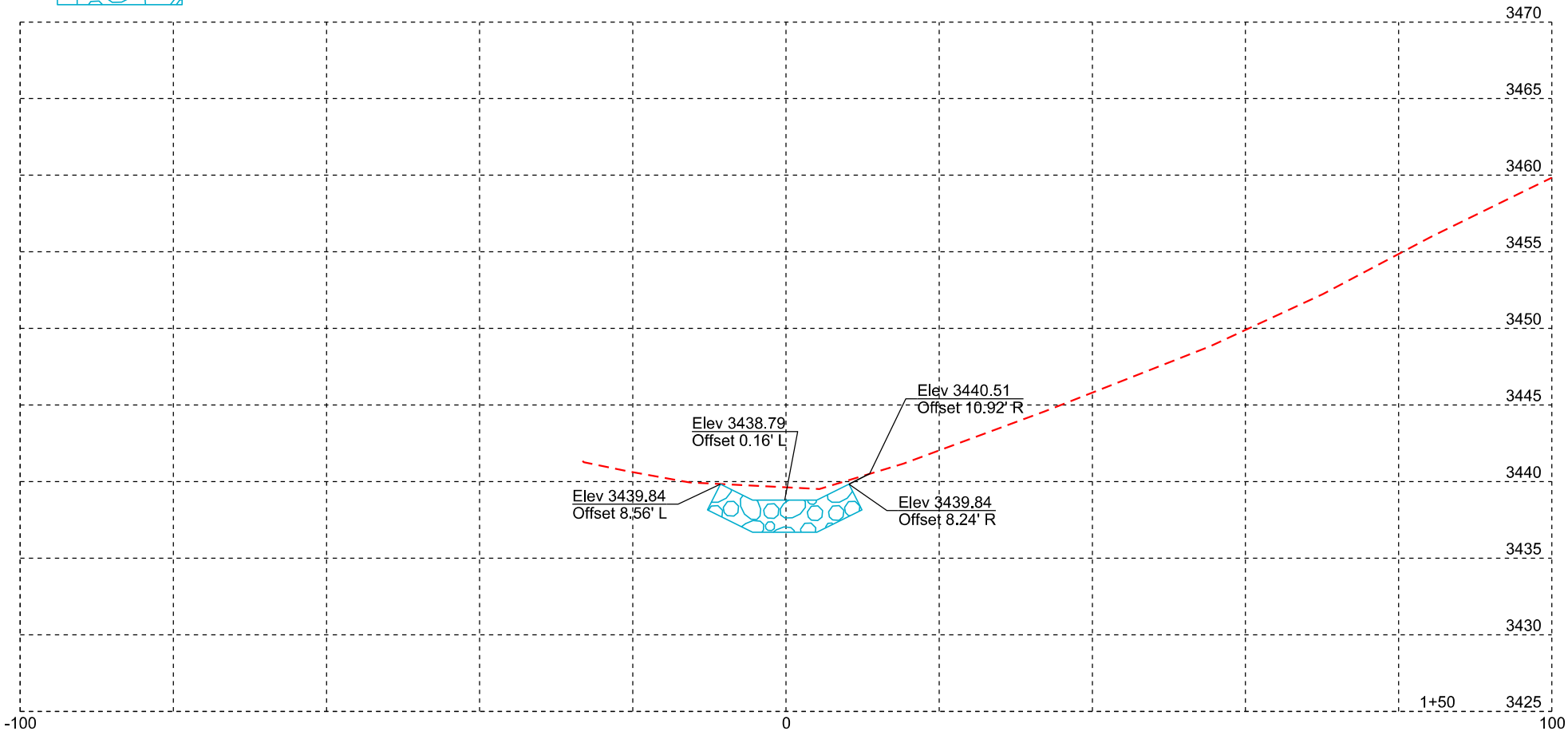


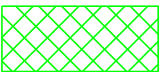


Fill Area

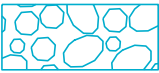


Class C Riprap

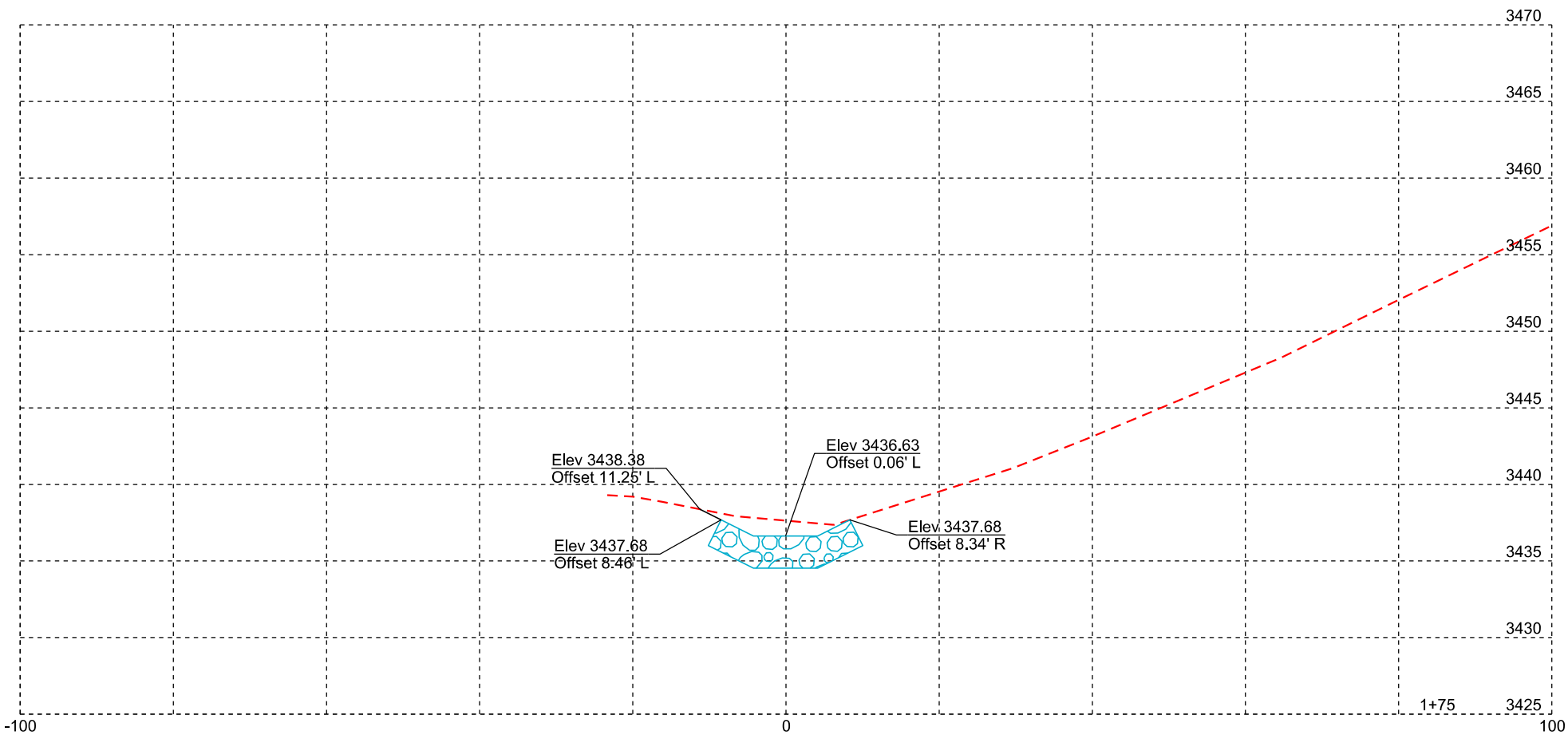
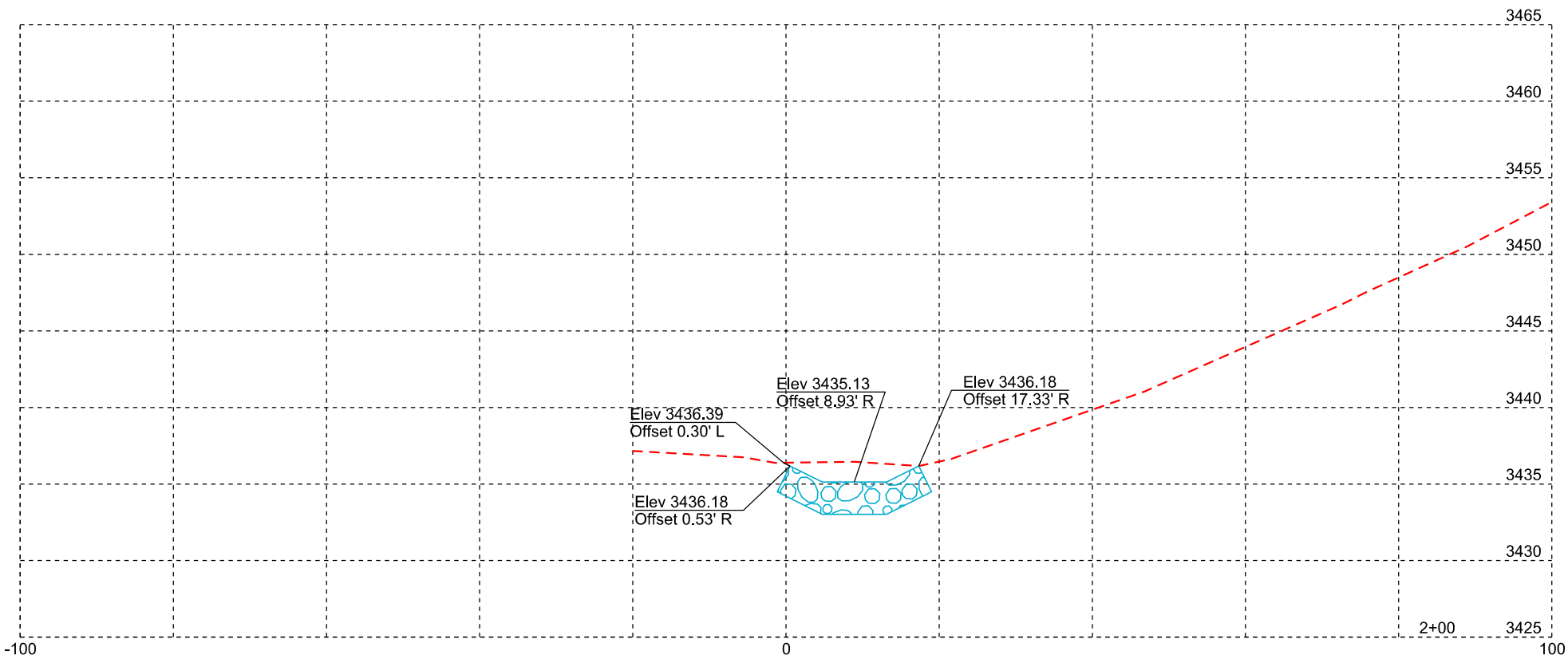
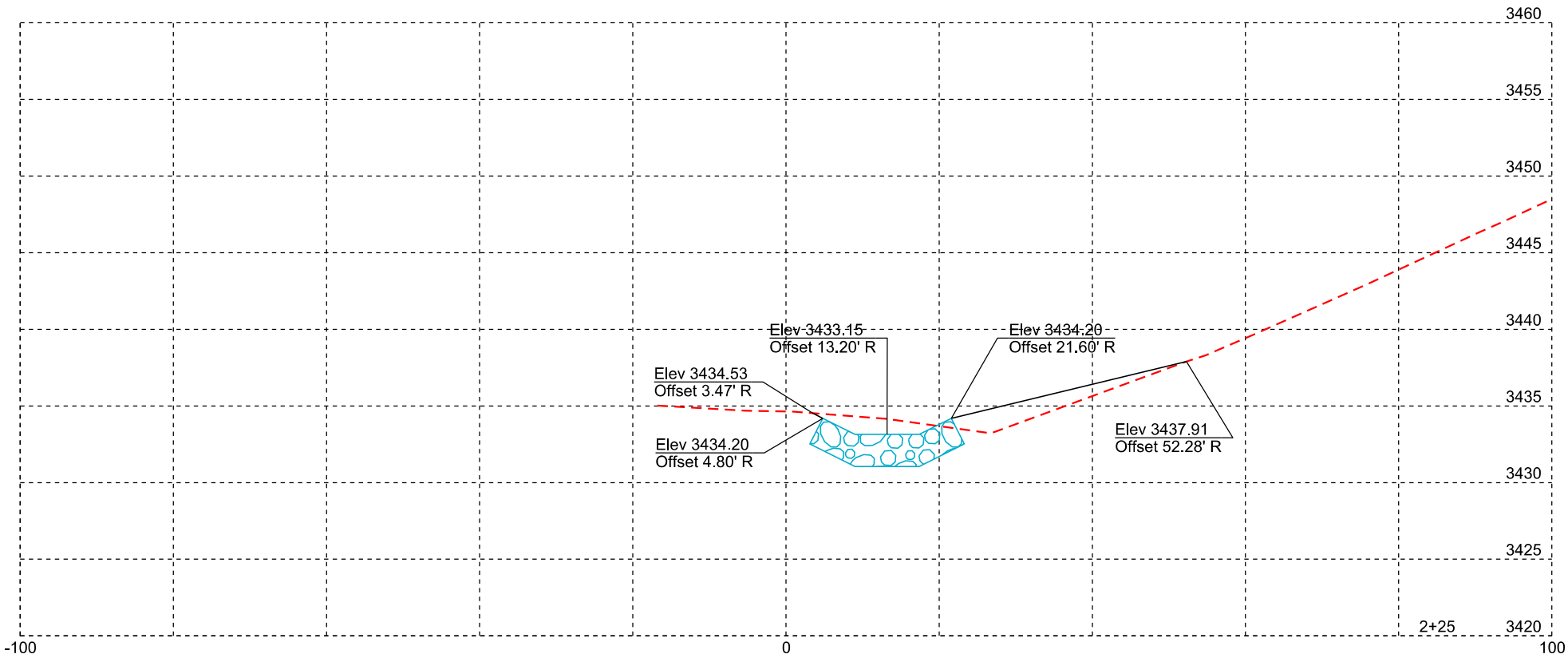


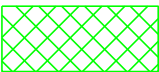


Fill Area

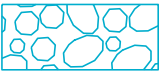


Class C Riprap





Fill Area



Class C Riprap

