

May 8, 2024

ADDENDUM NO. 1

RE: Item #4, May 15, 2024 Letting - IM 2292(105)3, PCN 07CY, Minnehaha County - Temporary Grading, Asphalt Concrete Surfacing, Temporary Structure Installation & Large Block Concrete Retaining Walls, Crossovers

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: NO CHANGE

SDEBS BID PROPOSAL: *The electronic bid proposal for this contract has been revised to include the changes associated with this addendum. Bidders must log in to the SDEBS to retrieve and incorporate these changes into their bid.*

Bid Items were added:

Bid Item 628E1100 "Movable F Shape Concrete Barrier, Interior Section"

Quantities for Bid Items were changed:

Bid Item 634E0525 "Linear Delineation System Panel, Barrier Mounted" changed from 479 to 745 Each

Bid Item 634E0702 "Contractor Supplied Traffic Control Movable Concrete Barrier" changed from 479 to 335 Each

Bid Item 634E0705 "Remove and Reset Traffic Control Movable Concrete Barrier" changed from 3 to 304 Each

PLANS: Please destroy sheets A2, C2, C5-C7, C11, C52-C54 and replace with the enclosed sheets, dated 5/7/24.

Sheets A2 & C2: Bid Items were added:

Bid Item 628E1100 "Movable F Shape Concrete Barrier, Interior Section"

Quantities for Bid Items were changed:

Bid Item 634E0525 "Linear Delineation System Panel, Barrier Mounted" changed from 479 to 745 Each

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Bid Item 634E0705 "Remove and Reset Traffic Control Movable Concrete Barrier" changed from 3 to 304 Each

Sheet C5: CONTRACTOR SUPPLIED TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS notes were revised. Phase 4 notes were revised and note spacing was adjusted.

Sheets C6-C7: Note spacing was adjusted.

Sheet C11: OTHER TRAFFIC CONTROL QUANTITIES table was revised.

Sheets C52-C54: NOTE was revised.

Sheet C60: PEN AND INK STRIKE OUT Standard Plate 628.02 (Sheet 2 of 2).

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Travis Dressen, Mitchell Region Engineer
Harry Johnston, Sioux Falls Area Engineer

SECTION B – GRADING

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	1.824	Mile
009E3245	Final Cross Section Survey	1.824	Mile
009E3250	Miscellaneous Staking	1.824	Mile
009E3280	Slope Staking	1.824	Mile
009E3290	Structure Staking	4	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0650	Remove Crossover Closure	311	Ft
110E0700	Remove 3 Cable Guardrail	1,311	Ft
110E0730	Remove Beam Guardrail	79.5	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	7	Each
110E1100	Remove Concrete Pavement	4,016.5	SqYd
110E7510	Remove Pipe End Section for Reset	1	Each
120E0010	Unclassified Excavation	25,145	CuYd
120E0500	Option Borrow Excavation	56,838	CuYd
120E1000	Muck Excavation	761	CuYd
120E2000	Undercutting	15,903	CuYd
120E6100	Water for Embankment	560.0	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
450E0105	12" RCP Class 5, Furnish	182	Ft
450E0110	12" RCP, Install	182	Ft
450E0143	24" RCP Class 3, Furnish	20	Ft
450E0150	24" RCP, Install	20	Ft
450E4738	12" CMP 14 Gauge, Furnish	106	Ft
450E4740	12" CMP, Install	106	Ft
450E4758	18" CMP 14 Gauge, Furnish	94	Ft
450E4760	18" CMP, Install	94	Ft
450E5000	12" CMP Elbow, Furnish	6	Each
450E5001	12" CMP Elbow, Install	6	Each
450E5203	12" CMP Flared End, Furnish	3	Each
450E5204	12" CMP Flared End, Install	3	Each
450E5406	18" CMP Safety End, Furnish	1	Each
450E5407	18" CMP Safety End, Install	1	Each
450E7999	12" RCP to CMP Transition, Furnish	3	Each
450E8000	12" Pipe Transition, Install	3	Each
450E9001	Reset Pipe End Section	1	Each
462E0100	Class M6 Concrete	6.2	CuYd
480E0100	Reinforcing Steel	899	Lb
629E9000	Crossover Closure	530	Ft
629E9010	Interim Crossover Closure	530	Ft
630E0500	Type 1 MGS	1,512.5	Ft

SECTION B – GRADING (cont'd)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
630E0530	Type 3 MGS	150.0	Ft
630E1005	18'-9" Longspan MGS	1	Each
630E2017	MGS MASH Flared End Terminal	5	Each
630E2018	MGS MASH Tangent End Terminal	1	Each
630E2065	MGS Trailing End Terminal	2	Each
670E3300	Type E Frame and Grate	3	Each
670E5400	Precast Drop Inlet Collar	3	Each

SECTION C – TRAFFIC CONTROL

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
628E0200	Remove and Reset Crash Cushion	5	Each
628E1100	Movable F Shape Concrete Barrier, Interior Section	293	Each
628E1500	Concrete Barrier End Protection	4	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	60	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	6	Each
634E0110	Traffic Control Signs	2,240.7	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	15	Each
634E0380	Tubular Marker	194	Each
634E0390	Replace Tubular Marker	19	Each
634E0420	Type C Advance Warning Arrow Board	3	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	745	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	2,200	Ft
634E0565	Remove Pavement Marking, Arrow	8	Each
634E0575	Remove Pavement Marking, Area	200.0	SqFt
634E0640	Temporary Pavement Marking	22,343	Ft
634E0702	Contractor Supplied Traffic Control Movable Concrete Barrier	335	Each
634E0705	Remove and Reset Traffic Control Movable Concrete Barrier	304	Each
634E0750	Temporary Concrete Barrier End Protection	5	Each
634E0755	Remove and Reset Temporary Concrete Barrier End Protection	5	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
634E1235	Queue Detection System	9.0	Mth
634E1245	Maintenance of Queue Detection System	104	Hour
634E2000	Longitudinal Pedestrian Barricade	8	Ft
634E2020	Temporary Curb Ramp	2	Each
634E2025	Longitudinal Pedestrian Barrier	300	Ft

SECTION D – EROSION CONTROL

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1690	Remove Sediment	1.1	CuYd
110E1700	Remove Silt Fence	2,142	Ft
230E0010	Placing Topsoil	6,425	CuYd
730E0202	Type B Permanent Seed Mixture	216	Lb
731E0200	Fertilizing	5.97	Ton
732E0200	Fiber Mulching	23.3	Ton
734E0102	Type 2 Erosion Control Blanket	7,767	SqYd
734E0133	Type 3 Turf Reinforcement Mat	652.0	SqYd
734E0154	12" Diameter Erosion Control Wattle	380	Ft
734E0160	20" Diameter Erosion Control Wattle	265	Ft
734E0165	Remove and Reset Erosion Control Wattle	114	Ft
734E0510	Shaping for Erosion Control Blanket	4,312	Ft
734E0602	Low Flow Silt Fence	8,505	Ft
734E0610	Mucking Silt Fence	595	CuYd
734E0620	Repair Silt Fence	2,142	Ft
734E0845	Sediment Control at Inlet with Frame and Grate	3	Each
734E0847	Sediment Control at Type S Reinforced Concrete Drop Inlet	16	Ft
734E5010	Sweeping	32	Hour
900E1310	Concrete Washout Facility	2	Each
900E1320	Construction Entrance	6	Each

SECTION E – STRUCTURE

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0060	Temporary Detour Structure	1	Each
420E0100	Structure Excavation, Bridge	57	CuYd
420E0300	Structure Excavation, Retaining Wall	35	CuYd
421E1000	Footing Undercut	102	CuYd
460E0050	Class A45 Concrete, Bridge	64.6	CuYd
480E0100	Reinforcing Steel	4,638	Lb
510E3120	HP 10 Pile Tip Reinforcement	16	Each
510E3365	HP 10x42 Steel Bearing Pile, Furnish and Drive	920	Ft
530E0470	Gravity Large Concrete Block Wall	2,592	SqFt
530E0718	Granular Backfill for Gravity Large Concrete Block Wall	386.8	CuYd
680E0040	4" Underdrain Pipe	659	Ft
680E2500	Porous Backfill	29.6	Ton

INDEX OF SHEETS

- A2 to A3Estimate of Quantities for Sections B, C, D, E, F, M, and S
- A4 to A6Environmental Commitments



SECTION C ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
628E0200	Remove and Reset Crash Cushion	5	Each
628E1100	Movable F Shape Concrete Barrier, Interior Section	293	Each
628E1500	Concrete Barrier End Protection	4	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	60	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	6	Each
634E0110	Traffic Control Signs	2,240.7	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	15	Each
634E0380	Tubular Marker	194	Each
634E0390	Replace Tubular Marker	19	Each
634E0420	Type C Advance Warning Arrow Board	3	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	745	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	2,200	Ft
634E0565	Remove Pavement Marking, Arrow	8	Each
634E0575	Remove Pavement Marking, Area	200.0	SqFt
634E0640	Temporary Pavement Marking	22,343	Ft
634E0702	Contractor Supplied Traffic Control Movable Concrete Barrier	335	Each
634E0705	Remove and Reset Traffic Control Movable Concrete Barrier	304	Each
634E0750	Temporary Concrete Barrier End Protection	5	Each
634E0755	Remove and Reset Temporary Concrete Barrier End Protection	5	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
634E1235	Queue Detection System	9.0	Mth
634E1245	Maintenance of Queue Detection System	104	Hour
634E2000	Longitudinal Pedestrian Barricade	8	Ft
634E2020	Temporary Curb Ramp	2	Each
634E2025	Longitudinal Pedestrian Barrier	300	Ft

SEQUENCE OF OPERATIONS

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

- **Phase 1a (NB I-229 Inside Widening)**
 - Closure of inside lane on NB I-229
 - Remove waste material
 - Grading to widen inside shoulder
- **Phase 1b (Exit 3 – Exit 4 Milling and Widening)**
 - Closure of inside lane on NB I-229 and inside lane on SB I-229
 - Mill existing crossover asphalt
 - Crossover grading and widening

- Crossover repavement
- Extend crossover pipe culvert
- **Phase 1c (Exit 4 – Exit 5 Widening)**
 - Close inside lane on NB I-229
 - Grading and widening of crossover
 - Paving crossover
- **Phase 2a (I-229 Widening and Diversion)**
 - Close outside lane on NB I-229
 - Remove waste material
 - Install guardrail
- **Phase 2b (Ramp B)**
 - Close outside lane on NB I-229
 - Ramp closure
 - Grading and surfacing
 - Install ramp retaining wall
- **Phase 2c (Ramp C)**
 - Close outside lane on NB I-229
 - Ramp closure
 - Grading and surfacing
- **Phase 3a**
 - Close existing southbound Cliff Ave traffic
 - Install temporary retaining wall
 - Grade embankment and install abutment
 - Install drainage pipe extensions
- **Phase 3b**
 - Close existing northbound Cliff Ave traffic
 - Install sidewalk detour
 - Grade embankment and install abutment
 - Install drainage pipe extensions
- **Phase 3c**
 - Close Cliff Ave
 - Install temporary bridge structure
- **Phase 4**
 - Installation of concrete barrier

Notes:

- Installation of temporary bridge structure during Phase 3c is anticipated to be (1) overnight road closure of Cliff Ave.
- Refer to Section S for permanent signage on temporary diversion closure.

COORDINATION BETWEEN CONTRACTORS

A separate contract for PCN 07CV has been awarded and will be constructed in 2024 to another Contractor for work at I-229 and 26th Street. The involved

work will be approach slab repair, polymer chip seal, and crash wall construction adjacent to this project (PCN 07CY).

Conflicting traffic control devices between projects may need to be temporarily adjusted or removed as directed by the Engineer and at no additional cost to the contract.

GENERAL TRAFFIC CONTROL

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.

All temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

All construction operations will be conducted in the general direction of traffic movement.

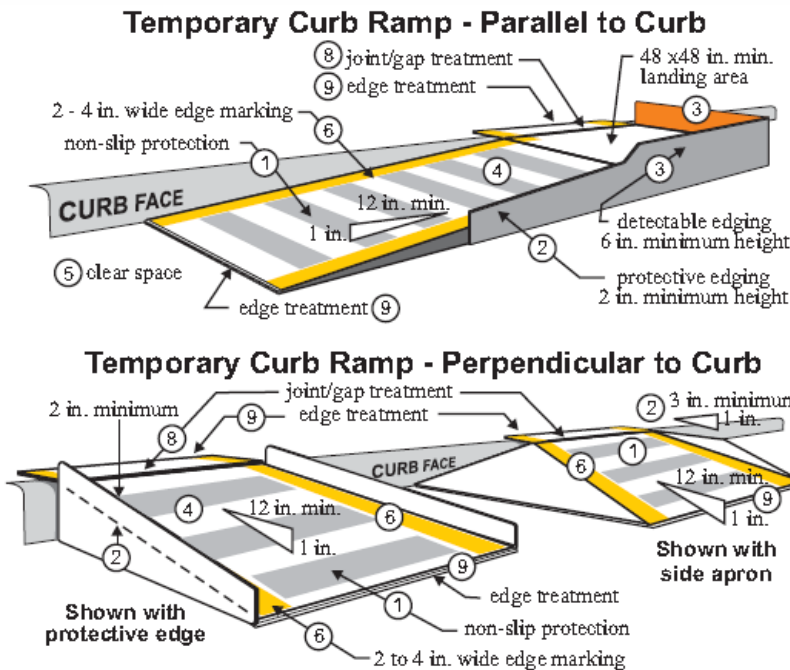
If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

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 fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.



TEMPORARY CURB RAMP DETAILS



- Curb ramps will be 48-inch minimum width with a firm, stable, and non-slip surface.
- Protective edging with a 2-inch minimum height will be installed when the curb ramp or landing platform has a vertical drop of 6 inches or greater or has a side apron slope steeper than 33:1 (33%). Protective edging should be considered when curb ramps or landing platforms have a vertical drop of 3 inches or more.
- Detectable edging with 6 inches minimum height and contrasting color will be installed on all curb ramp landings where the walkway changes direction (turns).
- Curb ramps and landings should have a 50:1 (2%) maximum cross slope.
- A minimum clear space of 48 inch x 48 inch minimum will be provided above and below the curb ramp, with a 60 inch x 60 inch clear space preferred.
- The curb ramp walkway edge will be marked with a contrasting color 2 to 4 inch wide marking. The marking is optional where color contrasting edging is used.
- Water flow in the gutter system will have minimal restriction.
- Lateral joints or gaps between surfaces will be less than 0.5 inches in width.
- Changes between surface heights should not exceed 0.5 inches. Lateral edges between 0.25 inches and 0.5 inches in height, should

be vertical up to 0.25 inches in height and beveled at 2:1 between 0.25 inches and 0.5 inches in height.

CONTRACTOR SUPPLIED TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS

The Contractor will be required to furnish and install Moveable F Shape Concrete Barriers as noted on the plans. Concrete barrier sections will be placed as depicted on the plans, with the exact location of the barriers being determined by the Engineer upon construction. The Contractor will be responsible for the requirements of Traffic Control Moveable Concrete Barriers per SD DOT standard plate 628.01.

Phase 1

- Concrete barrier will be required on the shoulder closure for both the Northbound and Southbound direction of traffic on I-229.
- Concrete barrier will be required on the inside shoulder for Northbound traffic on I-229

Phase 2a

- Concrete barrier will be required on the outside shoulder closure for Northbound traffic on I-229

Phase 2b

- Concrete barrier will be required on the outside shoulder closure for Northbound traffic and the Ramp B closure of I-229.

Phase 2c

- Concrete barrier will be required on the outside shoulder closure for Northbound traffic and the Ramp C closure of I-229.

Phase 3a

- Concrete barrier will be required on the lane closure for Southbound traffic on Cliff Ave.

Phase 3b

- Concrete barrier will be required on the lane closure for Northbound traffic on Cliff Ave.

Phase 3c

- Concrete barrier will be required Cliff Ave for the installation of the Temporary Bridge structure.

Phase 4

- Moveable F Shape Concrete Barrier, Interior Section, in like new condition or better, will be procured by the Contractor for this project, PCN 07CY. The Contractor will furnish, deliver, and stockpile the Movable F Shape Concrete Barrier and connecting pins to the SD DOT yard located in the NW quadrant of the

intersection of W. 69th Street and Solberg Avenue. They will become the property of the SD DOT for placement and installation on project PCN 05HN by the Contractor on the 05HN project. The Contractor will be required to coordinate with the Area Engineer for delivery timing and stockpiling location.

All costs associated with furnishing, maintaining, transporting, and stockpiling Movable F Shape Concrete Barriers and connecting pins to the SD DOT yard will be incidental to the contract unit price per each for "Moveable F Shape Concrete Barrier, Interior Section". Concrete Barriers damaged by the Contractor will be replaced at no cost to the Department.

All costs associated with furnishing, installing, and maintaining the connecting pins and contractor supplied traffic control moveable concrete barriers will be incidental to the contract unit price per each for "Contractor Supplied Traffic Control Movable Concrete Barrier".

After the initial placement, the concrete barriers may need to be adjusted. Adjustment of the barriers, where they do not need to be loaded on a truck for transport, will be incidental to the contract unit price per each for "Contractor Supplied Traffic Control Movable Concrete Barrier". All costs associated with removing, loading, unloading, and resetting of the barriers at a new site, will be incidental to the contract unit price per each for "Remove and Reset Traffic Control Movable Concrete Barrier". No additional payment will be made for barriers that are not immediately reset at a new location on the project and stored on-site until they are reset.

TEMPORARY CONCRETE BARRIER END PROTECTION

Crash attenuators meeting the requirements of NCHRP 350 or MASH TL-3 will be furnished and installed by the Contractor. Attachment of the attenuators to the concrete barriers will be by approved methods.

All costs associated with furnishing, transporting, initial setup, connecting, maintaining, and removing the crash attenuators will be incidental to the contract unit price per each for Temporary Concrete Barrier End Protection.

All costs associated with moving and resetting crash attenuators to accommodate traffic flows after initial set-up will be paid for at the contract unit price per each for Remove & Reset Temporary Concrete Barrier End Protection. All costs associated with removing from initial placement and resetting at a new location will be incidental to the contract unit price per each. No additional payment will be made for crash attenuators that are not



TEMPORARY CONCRETE BARRIER END PROTECTION (cont'd)

immediately reset at a new location on the project and stored on-site until they are either reset or removed from the project as determined by the Engineer. No additional payment will be made for minor adjustments. The Contractor will have replacement hardware available so that in the event the crash attenuator is hit and made unusable, the crash attenuator can be made functional within 24 hours. The cost of replacement will be incidental to the contract unit price per each for "Temporary Concrete Barrier Module Set or Repair Kit". No payment will be made for the Temporary Concrete Barrier Module Set or Repair Kit if no repairs are necessary. Upon completion of the project, crash attenuators will remain the property of the Contractor.

BARRIER MOUNTED LINEAR DELINEATION SYSTEM PANELS

A linear delineation system (LDS) panel will be attached to each barrier section. The color will be the same as the nearest pavement marking, white along outside edgelines or yellow for the left side on one way traffic sections. The LDS will be 34 inches long and 6 inches in height and be constructed of aluminum formed into a shape to provide retroreflective properties across a wide range of angles. It will be sheeted with sheeting meeting the requirements of ASTM D4956 Type XI. The panels will be evenly spaced, with the top of the panel 4 inches below the top of the barrier. Installation will be as per the manufacturer's recommendations. This will allow for easy removal for replacement of damaged panels or to replace with an alternate color. The Contractor will furnish and install one panel along each side of the barrier if any panels are missing from the barriers. Replacement of damaged linear delineation system panels will be furnished and replaced by the Contractor. All costs associated with furnishing, installing, and replacing, if needed, will be incidental to the contract unit price per each for Linear Delineation System Panel, Barrier Mounted.

All LDS panels will remain attached to the barrier sections and will become the property of the State of South Dakota upon completion of the project.

The Contractor will verify the number of LDS panels that will need to be installed or replaced on the Traffic Control Movable Concrete Barriers. The contract amount of LDS panels is an estimate and the full contract amount may not be needed.

Maintaining the linear delineation system, including moving LDS panels from one side of the barrier to the other side of the barrier to match the applicable color of the nearest pavement marking will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

PERMANENT CONCRETE BARRIER END PROTECTION

The Contractor will provide a permanent concrete barrier end protection crash cushion from the Approved Products List (APL). The Contractor will be responsible for selecting a crash cushion from the APL that is an appropriate width to protect the concrete barrier (or other hazard). If the crash cushion selected requires system specified transition panels to obtain the appropriate width, no additional payment will be made for the transition panels. Only one type of crash cushion will be used on a project; however, if conditions warrant a need for using more than one type of crash cushion on a project, then the Contractor will submit a proposal to the Engineer for

approval. The approved products list may be viewed at the following internet site:

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

The anchoring pad for the crash cushion will at a minimum be an 8-inch-thick PCC pavement that meets the requirements of Class M6 concrete. The pad will be in accordance with the Manufacturer's recommendations if the pad needs to have thicker pavement and/or a footing.

Documentation on the crash cushion, which includes the drawing details of the crash cushion, details for the transition to the concrete barrier, and details for the concrete anchoring pad, will be provided to the Project Engineer at the pre-construction meeting.

The crash cushion will be attached to the concrete barrier with a transition that meets test level 3 requirements of MASH at locations shown below in the Table of Permanent Concrete Barrier End Protection. For bidirectional traffic, the transition will be placed on both sides of the crash cushion and barrier.

The Contractor will certify that the crash cushion was installed according to the Manufacturer's installation instructions.

All costs for furnishing and installing the crash cushion including the anchoring pad, anchors for connection to the pad, transitions to the concrete barrier (if required), strut backup, materials, labor, equipment, and incidental items will be paid for at the contract unit price per each for "Concrete Barrier End Protection".

TABLE OF PERMANENT CONCRETE BARRIER END PROTECTION

Station	Location	Unidirectional/ Bidirectional	Quantity (Each)
204+50	R	Unidirectional	1
214+22	R	Unidirectional	1
217+00	R	Unidirectional	1
242+00	R	Unidirectional	1
Total			4

QUEUE WARNING SYSTEM

The Contractor will furnish and install a queue warning system. This system will be capable of detecting slowed and stopped traffic within all detection zones. The changeable message signs (CMS) will be placed halfway between interstate exits in each zone. CMS locations may need to be adjusted pending traffic movement within zones.

Requirements for all zones:

- Capable of detecting mainline queues anywhere within a detection zone and displaying warning messages within the affected detection zone and one zone preceding the detection zone.

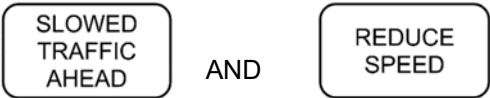
- Capable of detecting mainline queues exceeding ¾ the length of a queue detection zone and displaying messages two zones preceding the detection zone.
- Capable of detecting queues on the exit ramp within 200 ft of the exit gore and displaying messages within the affected detection zone and one zone preceding the detection zone.

The system will display the following messages depending on the traffic conditions detected:

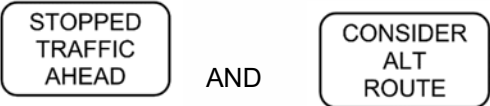
NB Zone 1:

During times of free-flowing traffic on mainline the CMS will be blank when not required for end of queue detection or incident management.

During times of moderate congestion and slow speeds (30mph to 40mph) CMS boards in zone 1 and 2 will display:



During times of major congestion, very slow speeds, or stopped traffic conditions (below 30mph) CMS boards in zones 1 and 2 will display:



If the end of queue exceeds ¾ the length of zone 1, the same messages above will be displayed in zone 3 in addition to zones 1 and 2.

During times of congestion, very slow ramp speeds, or stopped traffic conditions (below 30mph) on the ramp within 200 feet of the exit gore at Cliff Avenue, the CMS boards in zones 1 and 2 will display:



CMS messages warning drivers about slow or stopped traffic on mainline will be given priority over exit ramp conditions.



QUEUE WARNING SYSTEM (cont'd)

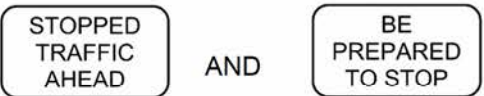
NB zone 2

During times of free-flowing traffic on mainline the CMS will be blank when not required for end of queue detection or incident management.

During times of moderate congestion and slow speeds (30mph to 40mph) CMS boards in zones 2 and 3 will display:

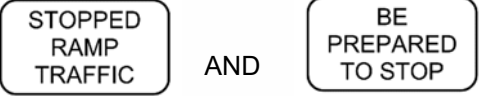


During times of major congestion, very slow speeds, or stopped traffic conditions (below 30mph) CMS boards in zones 2 and 3 will display:



If the end of queue exceeds ¾ the length of zone 2, the same messages above will be displayed in zone 4 in addition to zones 2 and 3.

During times of ramp congestion, very slow ramp speeds, or stopped traffic conditions (below 30mph) within 200 feet of the exit gore in zone 2, the CMS boards in zones 2 and 3 will display:



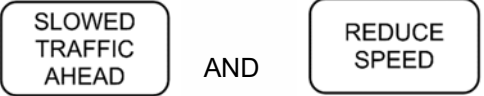
CMS messages about ramp conditions within zone 2 will be given priority over messages relative to slowed traffic from Zone 1.

CMS messages warning drivers about stopped traffic on mainline in zone 2 will be given priority over exit ramp conditions and zone 1 slowed traffic conditions.

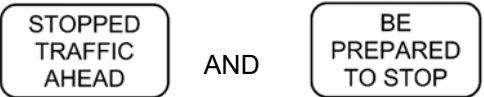
NB zone 3

During times of free-flowing traffic on mainline the CMS will be blank when not required for end of queue detection or incident management.

During times of moderate congestion and slow speeds (30mph to 40mph) CMS boards in zones 3 and 4 will display:



During times of major congestion, very slow speeds, or stopped traffic conditions (below 30mph) CMS boards in zones 3 and 4 will display:



During times of ramp congestion, very slow ramp speeds, or stopped traffic conditions (below 30mph) within 200 feet of the exit gore in zone 3, the CMS boards in zone 3 and 4 will display:



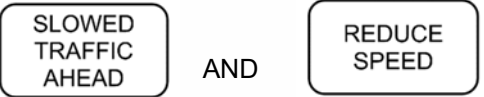
CMS messages about ramp conditions within zone 3 will be given priority over messages relative to slowed traffic from zones 1 and 2.

CMS messages warning drivers about stopped traffic on mainline in zone 3 will be given priority over exit ramp conditions and zones 2 and 3 slowed traffic conditions.

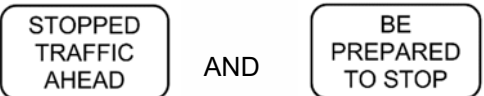
NB zone 4

During times of free-flowing traffic on mainline the CMS will be blank when not required for end of queue detection or incident management.

During times of moderate congestion and slow speeds (30mph to 40mph) CMS boards in zone 4 will display:



During times of major congestion, very slow speeds, or stopped traffic conditions (below 30mph) CMS boards in zone 4 will display:



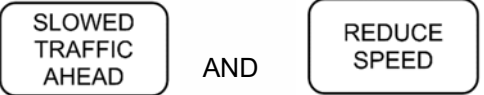
During times of ramp congestion, very slow ramp speeds, or stopped traffic conditions (below 30mph) within 200 feet of the exit gore in zone 4, the same messages above will be displayed in zone 4.

CMS messages warning drivers about stopped traffic on mainline in zone 4 will be given priority over exit ramp conditions and zones 3 and 4 slowed traffic conditions.

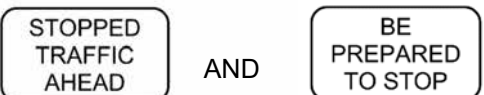
SB zone 5

During times of free-flowing traffic on mainline the CMS will be blank when not required for end of queue detection or incident management.

During times of moderate congestion and slow speeds (30mph to 40mph) CMS boards in zones 5 and 6 will display:

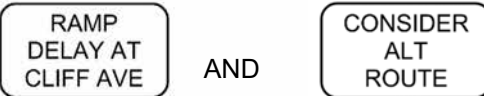


During times of major congestion, very slow speeds, or stopped traffic conditions (below 30mph) CMS boards in zones 5 and 6 will display:



If the end of queue exceeds ¾ the length of zone 5, the same messages above will be displayed in zone 7 in addition to zones 5 and 6.

During times of congestion, very slow ramp speeds, or stopped traffic conditions (below 30mph) on the ramp within 200 feet of the exit gore at Cliff Avenue, the CMS boards in zones 1 and 6 will display:

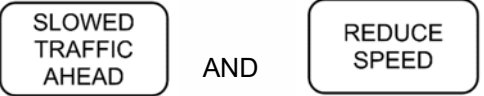


CMS messages warning drivers about slow or stopped traffic on mainline will be given priority over exit ramp conditions.

SB zone 6

During times of free-flowing traffic on mainline the CMS will be blank when not required for end of queue detection or incident management.

During times of moderate congestion and slow speeds (30mph to 40mph) CMS boards in zones 6 and 7 will display:



During times of major congestion, very slow speeds, or stopped traffic conditions (below 30mph) CMS boards in zones 6 and 7 will display:



Plotted From Infrastructure Design Group

OTHER TRAFFIC CONTROL QUANTITIES											
Item	Unit	Phase 1	Phase 2a	Phase 2b	Phase 2c	Phase 3a	Phase 3b	Phase 3c	Phase 4	Field Determined	Payment Quantity
PCN 07CY											
Tubular Marker	Each				21	162	153			32	194
Replace Tubular Marker	Each				2	16	15			3	19
Type C Advance Warning Arrow Board	Each			1	1					2	3
Linear Delineation System Panel, Barrier Mounted	Each	304	435	91	63	31	32		266	44	745
Remove Pavement Marking, 4" or Equivalent	Ft					2000				200	2,200
Remove Pavement Marking, Arrow	Each					7				1	8
Remove Pavement Marking, Area	SqFt					200					200
Concrete Barrier End Protection	Each								4		4
Contractor Supplied Traffic Control Movable Concrete Barrier	Each	304	131							31	335
Moveable F Shape Concrete Barrier, Interior Section	Each								266	27	293
Temporary Concrete Barrier End Protection	Each	5	5		2						5
Remove and Reset Traffic Control Moveable Concrete Barrier	Each		304	91	63	31	32				304
Remove and Reset Temporary Concrete Barrier End Protection	Each	5	5		2						5
Temporary Concrete Barrier End Protection Module Set or Repair Kit	Each	1									1
Contractor Furnished Portable Changeable Message Sign	Each	2									2
Maintenance of Queue Detection System	Hour	24	24	24	24					8	104
Longitudinal Pedestrian Barricade	Ft						8				8
Temporary Curb Ramp	Each					2	2				2
Longitudinal Pedestrian Barrier	Ft						300				300

TYPE 3 BARRICADES, 8' DOUBLE SIDED									
Description	Unit	PHASE							Payment Quantity
		1	2a	2b	2c	3a	3b	3c	
Lane Closure	Each				1	4	3		
Shoulder Closure	Each	2	3						
Ramp Closure	Each			3	3				
Road Closure	Each							10	
Field Determined	Each	5	5	5	5	5	5	5	
Total :		7	8	8	9	9	8	15	15

Temporary Pavement Marking							
Phase	Location	634E0640				633E0030	633E0040
		Continuous (White)	Continuous (Yellow)	2' Skip (White)	2' Skip (Yellow)	24" (White)	Arrow (White)
		(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)
1	208+08 to 233+22	5066	2520				
2a	217+00 to 234+26	4982					
2b	209+00 to 234+50	2928	1454				
2c	192+50 to 206+00	2700	1350				
3a	Cliff Ave	92	380	358	988	36	3
3b	Cliff Ave	100	100	320	774	24	3
Field Determined		1587	580	68	176		
				186	485		
Total :		15868	5804	186	485	60	6



TRAFFIC CONTROL

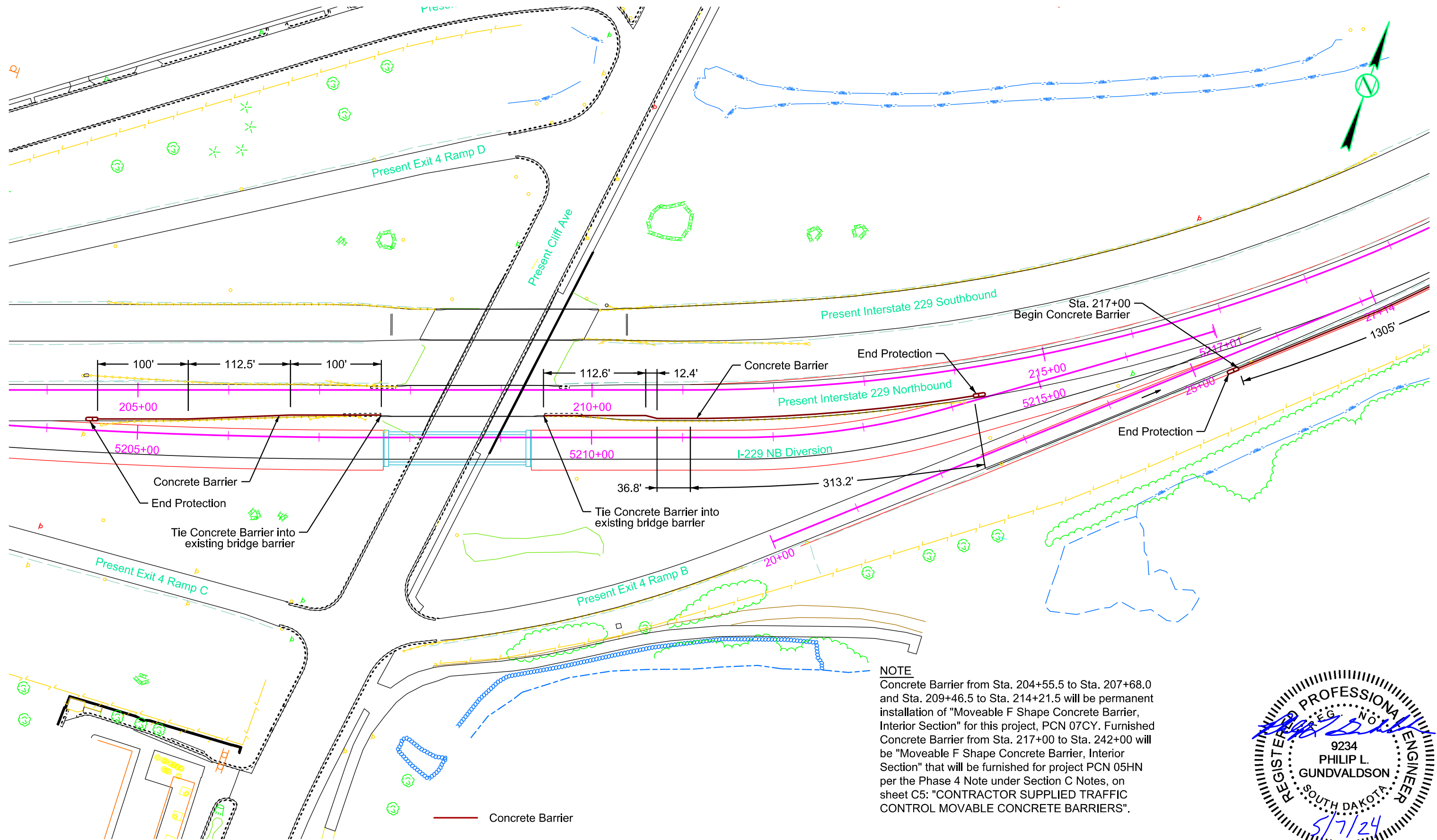
Phase 4

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. C52	TOTAL SHEETS C66
Plotting Date: 05/07/2024		Rev 05/07/2024	PLG

Plot Scale - 1:100

InfrastructureDesignGroup

Plotted From -



NOTE
Concrete Barrier from Sta. 204+55.5 to Sta. 207+68.0 and Sta. 209+46.5 to Sta. 214+21.5 will be permanent installation of "Moveable F Shape Concrete Barrier, Interior Section" for this project, PCN 07CY. Furnished Concrete Barrier from Sta. 217+00 to Sta. 242+00 will be "Moveable F Shape Concrete Barrier, Interior Section" that will be furnished for project PCN 05HN per the Phase 4 Note under Section C Notes, on sheet C5: "CONTRACTOR SUPPLIED TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS".



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TRAFFIC CONTROL

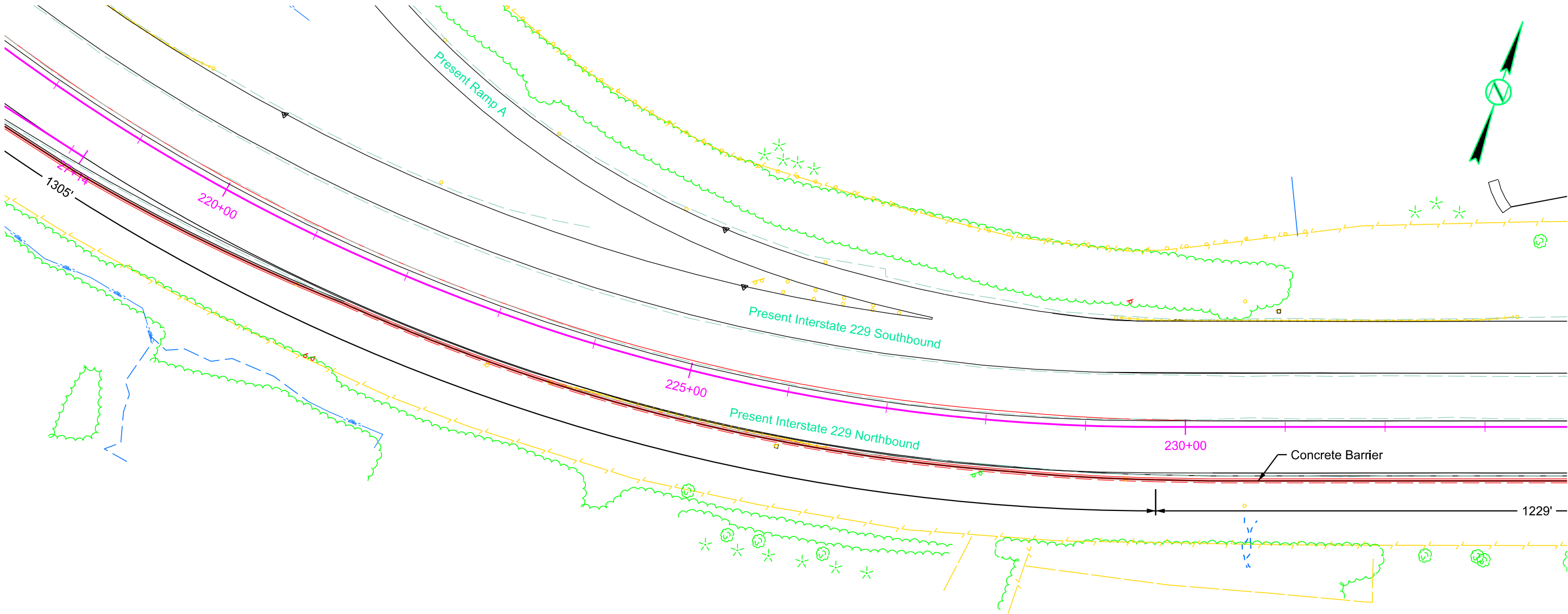
Phase 4

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. C53	TOTAL SHEETS C66
Plotting Date: 05/07/2024		Rev 05/07/2024	PLG

Plot Scale - 1:100

InfrastructureDesignGroup

Plotted From -



NOTE
Concrete Barrier from Sta. 217+00 to Sta. 242+00 will be per the Phase 4 note under Section C Notes, on sheet C5: "CONTRACTOR SUPPLIED TRAFFIC CONTROL MOVABLE CONCRETE BARRIER".

Concrete Barrier



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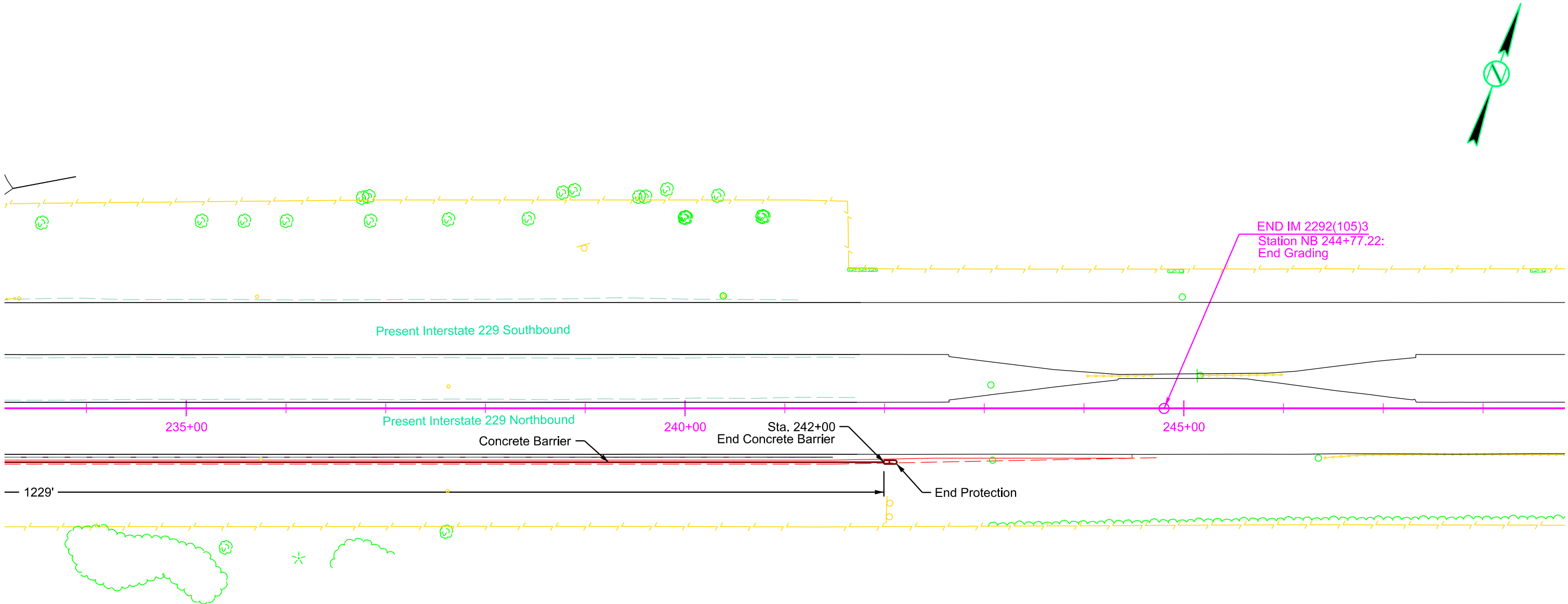
TRAFFIC CONTROL

Phase 4

STATE OF SOUTH DAKOTA	PROJECT IM 2292(105)3	SHEET NO. C54	TOTAL SHEETS C66
Plotting Date: 05/07/2024		Rev 05/07/2024	PLG

Plot Scale -
1:100

Plotted From -
InfrastructureDesignGroup



NOTE
Concrete Barrier from Sta. 217+00 to Sta. 242+00 will be per the Phase 4 note under Section C Notes, on sheet C5: "CONTRACTOR SUPPLIED TRAFFIC CONTROL MOVABLE CONCRETE BARRIER".

Concrete Barrier



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