STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C1	C28

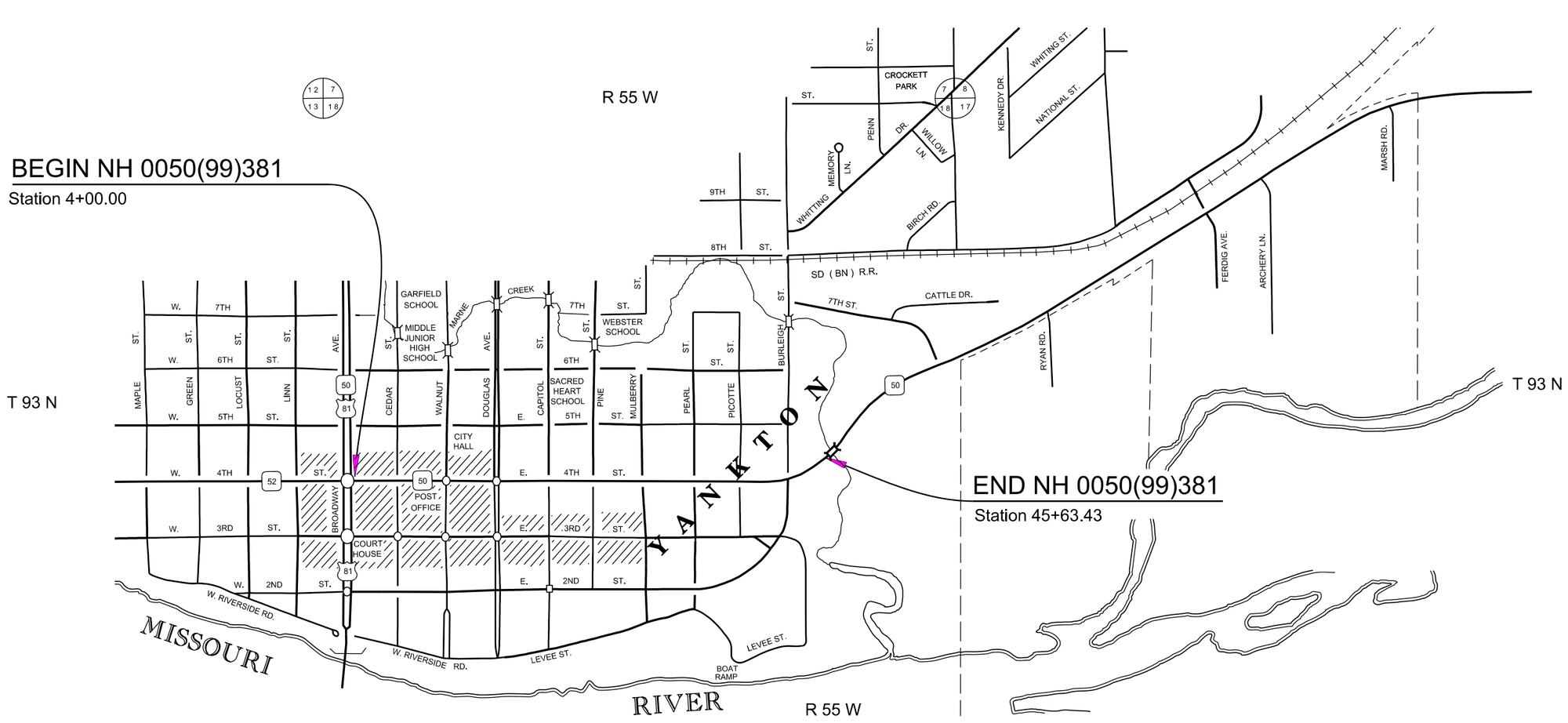
FOR BIDDING PURPOSES ONLY

Section C: Traffic Control

Plotting Date: 06/30/2015

INDEX OF SHEETS

C1	General Layout W/Index
C2 to C3	Estimate with General Notes
C4 to C14	Traffic Control Layouts
C15 to C21	Temporary Signal Notes & Layout
C22	Sign Tables
C23 to C28	Standard Plates



SECTION C-ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
260E2010	Gravel Cushion	142.0	Ton
320E1200	Asphalt Concrete Composite	13.0	Ton
634E0010	Flagging	200.0	Hour
634E0110	Traffic Control Signs	2,129	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	60	Each
634E0330	Temporary Raised Pavement Markers	16,992	Ft
634E0380	Tubular Marker	140	Each
634E0390	Replace Tubular Marker	70	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	3,770	Ft
634E0600	4" Temporary Pavement Marking Tape Type I	1,152	Ft
634E0640	Temporary Pavement Marking	10,486	Ft
634E0915	Short Term Temporary Traffic Control Signal	1	Site
634E1002	Detour Signing	252.9	SqFt
634E2000	Longitudinal Pedestrian Barricade	400	Ft
634E2010	Temporary Pedestrian Facility(s)	Lump Sum	LS
634E2020	Temporary Curb Ramp	16	Each
634E2025	Longitudinal Pedestrian Channelizer	400	Ft
634E2030	Audible Message Device	10	Each
635E7600	Maintenance of Traffic Signal(s)	64	Hour
900E1080	Orange Plastic Safety Fence	800	Ft

SEQUENCE OF OPERATIONS

The Contractor shall follow the following Sequence of Operations unless an alternate Sequence of Operations is submitted in writing two weeks prior to the pre-construction meeting and approved by the Engineer prior to the start of work.

No work will be allowed on Friday, Saturday and Sunday during Riverboat Days which is typically the third weekend in August.

1. Detailed description of sequence of operation is as follows:
    1. Install fixed location signs.
    2. Close Burleigh Street on the south side of SD HWY 50.
    3. Grade, install storm sewer, curb & gutter and surface Burleigh Street.
    4. Open Burleigh Street to traffic.
    5. Install a 4-Way Stop at the intersection of SD HWY 50 & Burleigh Street. Cover existing traffic signal heads.
    6. Move two way traffic to the westbound lanes.
    7. Grade, install storm sewer, curb & gutter, sidewalk and surface the eastbound lanes with PCC Pavement.
    8. Move traffic back to the eastbound and westbound lanes, and close the turn lane from Sta. 4+00 to Sta. 5+50 and from Sta. 37+12 to Sta. 38+62.03.
    9. Grade and surface the turn lane from Sta. 4+00 to Sta. 5+50 and from Sta. 37+12 to Sta. 38+62.03.
    10. Move two way traffic to the eastbound lanes.
    11. Grade, install storm sewer, curb & gutter, sidewalk and surface the westbound lanes with PCC Pavement.
    12. Install permanent signing and pavement marking.
2. The placement of the new storm sewer from Marne Creek to just west of Burleigh Street and set up for the temporary traffic control signals can be completed in 2015. All other work must be completed in 2016.
3. Construction shall be completed one-half roadway width at a time, with traffic being maintained at all times.

SEQUENCE OF OPERATIONS cont:

4. Closure time of all intersecting streets along the project shall be kept to a minimum and shall not exceed 2 consecutive intersections closed at any time.
5. Left & Right turns will be prohibited as directed by the Engineer.
6. Mail service and emergency vehicle access shall be maintained at all times.
7. Existing street lighting shall be maintained as much as practical. The Contractor shall supply a plan for approval on how street lighting shall be maintained.
8. The Contractor shall hold weekly public meetings. Also, prior to the start of any work on the project, the Contractor shall hold an initial public meeting to discuss project sequences, traffic control, goals, etc. The Contractor will be responsible for securing a time and location for these meetings.
9. When work begins on the project, the Contractor shall be responsible for maintaining the entire project. This shall include, but is not limited to, all surface maintenance, drainage, weed control and traffic signs.
10. Overwidth vehicles and trucks shall be detoured around work areas as detailed in the Traffic Control Plans.

MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. It is anticipated that numerous route markers, directional arrows and other signs will require covering for the detour. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall provide documentation that all breakaway sign supports comply with NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Existing STOP signs that are temporarily removed shall be reset prior to the end of each day's work. A stop sign on portable supports must be used whenever a permanent ground mounted stop sign is removed. Cost for this work shall be incidental to the contract unit price per square foot for Traffic Control Signs.

The Contractor will be required to maintain drainage on the project during the course of construction. This work will include the installation of Contractor

MAINTENANCE OF TRAFFIC cont:

furnished pipe to temporarily connect the old storm sewer to the new storm sewer system, performing the necessary shaping, and all other needed miscellaneous work. No separate payment will be made for this work. All costs of maintaining the drainage shall be incidental to the contract unit prices for the various items.

Where phased construction of the intersections is indicated it should be understood that the pouring sequence shall correspond with the joint details shown on the pavement layout. Each phase may require two or more individual pours.

The Contractor shall notify the County Dispatcher and the Yankton Police Department prior to the closure of and upon reopening of any intersection.

Throughout the project, the Contractor must maintain local traffic and access to businesses and residences at all times. Adequate passage and ramping shall be provided. The Contractor shall keep businesses and residents informed of construction sequences in areas which have a direct effect on their access.

Construction signs shall not obscure existing signs and be a minimum of 50' to 100' from any existing signs.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas. Portable sign supports may be used as long as the duration is less than 3 days. If duration is more than 3 days, the signs shall be mounted on fixed location, ground mounted, breakaway supports.

Placement of temporary R1-1 STOP signs, as directed by the Engineer, will also be required where major business approaches enter the project. R1-1 STOP signs will be measured and paid for by the square foot.

PEDESTRIAN TRAFFIC

The Contractor shall accommodate pedestrian traffic, including those with disabilities. Bicycle traffic shall also be accommodated.

The Contractor shall submit a detailed plan to the Engineer on how pedestrian and bicycle traffic will be accommodated during the various phases of the work at the affected locations. This plan should be in conformance with the details contained in these plans for pedestrian accommodation. The plan may be submitted at the Preconstruction Meeting, but shall be submitted no later than two weeks prior to the start of work.

Some options for consideration to accommodate the pedestrian traffic include:

The use of various approved traffic control devices to maintain the pedestrians through or past the immediate work area.

Detouring pedestrians and bicycles to the opposite side of the street, alternate route(s) or around a city block.

Manned crossing assistance (crossing guards) combined with an accessible path.

Orange safety fence shall be used to protect pedestrian traffic from open excavations. A detectable edging shall be used with the safety fence to protect pedestrian traffic . This edging shall protrude at least 6 inches above the surface of the sidewalk or pathway, with the bottom of the edging a maximum of 2.5 inches above the surface. Examples of detectable edging for pedestrians are given in Section 6F.74 of the MUTCD. All costs to

PEDESTRIAN TRAFFIC cont.:

furnish, install, maintain and remove the safety fence shall be incidental to the contract price per foot for Orange Plastic Safety Fence.

Cost to furnish, install, relocate, maintain and remove all devices necessary to accommodate pedestrian traffic such as barricades with detectable edges, longitudinal channelizers (water or sand filled plastic barrier) with detectable edges, temporary ramps with detectable warnings shall be paid for with the respective bid items.

Cost to furnish, install, relocate, maintain and remove the temporary boardwalks and temporary crosswalks shall be paid for with the contract lump sum price for Temporary Pedestrian Facility(s).

Cost to furnish, install , relocate, maintain and remove Longitudinal Pedestrian Barricade, Sidewalk Work Ahead signs, Sidewalk Closed signs, Sidewalk Closed Ahead Cross Here signs, Pedestrian Crossing warning signs shall be paid for with the contract price per square foot for Traffic Control Signs.

EXISTING MAILBOXES AND NEWSPAPER CONTAINERS

The Contractor will be required to relocate on temporary supports existing mailboxes and newspaper containers affected by the project as necessary in order to provide continuous mail service to the local residents and businesses throughout the project. It is anticipated that the Contractor will be required to relocate these mailboxes at least twice during construction. All mailboxes shall be located off of SD HWY 50 at the end of the project, the final location shall be coordinated with the Yankton Postmaster. The Engineer will approve the material used for temporary supports. Cost of this work shall be incidental to various contract items. The Contractor shall coordinate this work with the Yankton Postmaster at (605)665-0597.

INCIDENTS

An incident is an emergency road user occurrence or unplanned event that impedes the flow of traffic such as an accident, hazardous materials spill or similar event.

The Contractor shall set up a meeting prior to start of work to plan and coordinate the response to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, City of Yankton representatives and local emergency response entities to the meeting.

The Contractor will be required to flag traffic, relocate signs, and adjust traffic control devices as required to warn approaching motorists of the incident and resulting queued traffic.

The Contractor shall provide adequate personnel to accomplish the necessary traffic control work in the event of an incident.

Flagging for incidents shall be paid for at contract unit price per hour. No additional payment will be made for the other work. Costs for necessary signing shall be incidental to the contract unit price per square foot for Traffic Control Signs.

DETOUR SIGNING

The Contractor will be required to install, maintain and remove the detour traffic signing in accordance with the Specifications, the MUTCD and as detailed in these plans. Detour signing shall be installed on breakaway ground mounted supports. All costs for furnishing, installing, maintaining and removing detour signs, posts and mounting hardware shall be incidental to the contract unit price per square foot for Detour Signing.

TEMPORARY RAISED PAVEMENT MARKERS

Raised Pavement Markers shall be used as temporary pavement marking on existing concrete, new concrete and asphalt concrete areas that will not be removed. Also, Raised Pavement Markers shall be used on all traffic control tapers.

The raised pavement markers shall be attached to the roadway surface with a bituminous adhesive capable of being removed from the roadway.

Cost for furnishing, installing, maintaining (including cleaning and replacing, if necessary), removing markers and bituminous adhesive shall be included in the contract unit price per foot for Temporary Raised Pavement Markers.

TEMPORARY STOP BARS

White Temporary Pavement Marking Tape – Type I shall be used for the stop bars as detailed in these plans and paid for at the contract unit price per foot for 4” Temporary Pavement Marking Tape – Type I.

REMOVE PAVEMENT MARKING

Existing pavement marking which conflicts with the desired traffic patterns detailed in traffic control layouts in the plans shall be removed by the Contractor unless otherwise shown. Removal of pavement marking shall be paid for at the contract unit price per foot for Remove Pavement Marking, 4” or Equivalent.

GRAVEL CUSHION

The Contractor may elect to use Gravel Cushion in place of Base Course for the temporary surfacing. In the event that Gravel Cushion is used for the temporary surfacing compaction will be to the satisfaction of the Engineer and it will be paid for at the contract unit price per ton for Gravel Cushion.

142 tons of Gravel Cushion have been provided for traffic control purposes to maintain traffic during construction. When directed by the Engineer, the Gravel Cushion shall be salvaged and used for the final shaping of the base.

Cost for removal, disposal and/or reuse of this material shall be incidental to the contract unit prices for the various bid items

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite for temporary surfacing shall be furnished by the Contractor.

Mineral aggregate for Asphalt Concrete Composite shall conform to the requirements of the Specifications for Class E or G, Type 1 or 2 or the Asphalt Concrete as required in the surfacing section.

The asphalt binder used in the mixture shall be PG 58-28 Asphalt Binder. The asphalt binder content may be adjusted by the Engineer.

The Contractor shall provide a Job-Mix Formula to the Engineer with supporting mix design data prior to production.

TABLE OF TEMPORARY SURFACING QUANTITIES

Location	Gravel Cushion (Ton)	Asphalt Concrete Composite (Ton)
Maintenance of Traffic	142	13
Totals	**142**	**13**

TRAFFIC CONTROL, MISCELLANEOUS

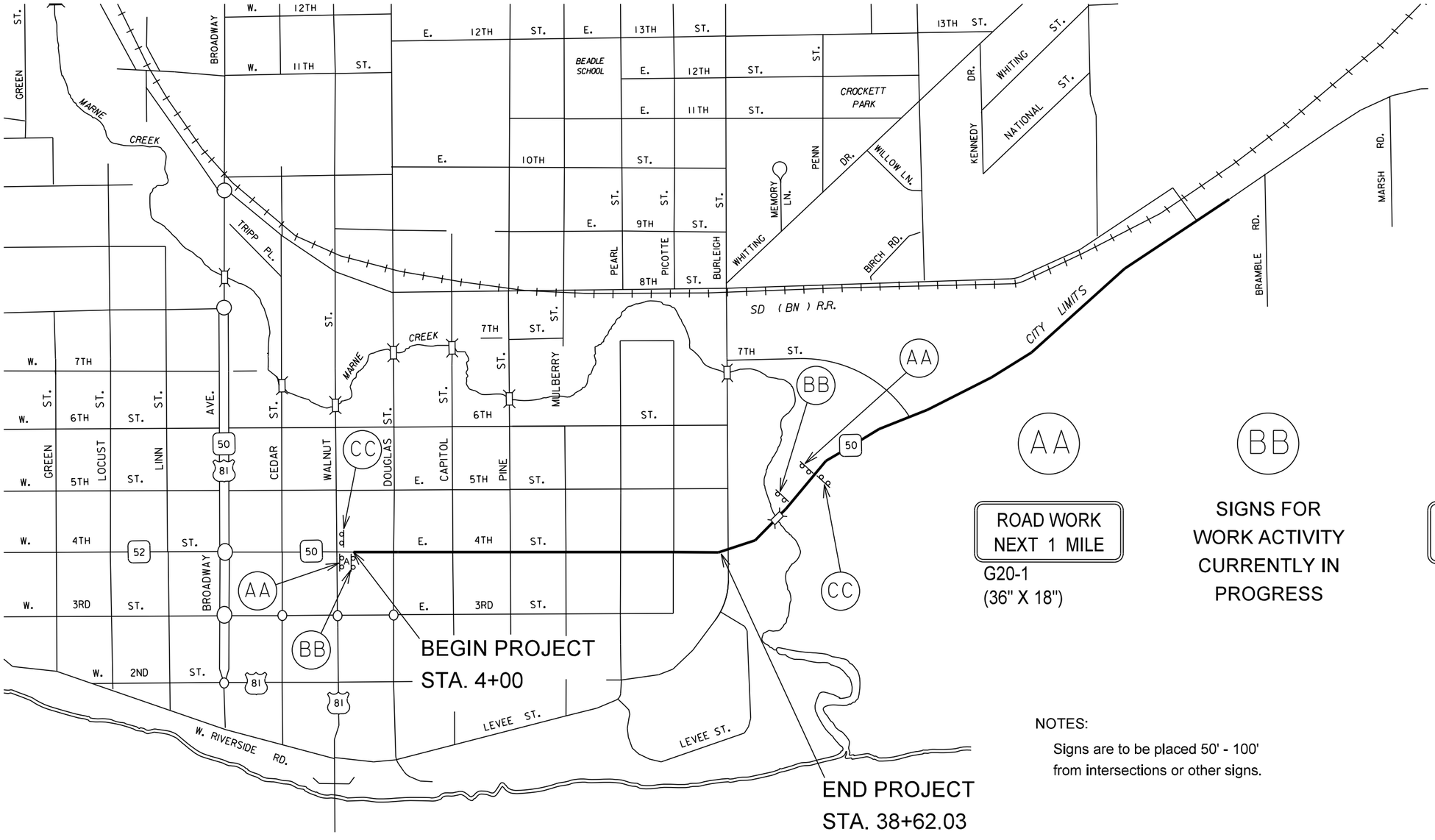
All necessary traffic control devices to separate and maintain traffic shall be included in the contract lump sum price for Traffic Control, Miscellaneous.

The Contractor will be required to install and maintain "trailblazing" signs to businesses along the project that have their access affected by construction activities. A maximum of 2 signs with a maximum size of 3' wide by 2' high may be furnished by an individual business. The Contractor will be required to install the signs on temporary supports, maintain and relocate them as necessary, and remove and return the signs to the owners at the completion of the work. Cost of this work shall be included in the contract lump sum price for Traffic Control, Miscellaneous. It is estimated that 40 signs will be furnished to the Contractor. If the number actually installed deviates from this number, the Traffic Control, Miscellaneous item will be adjusted either up or down at the rate of $75 per sign for the total deviation from 40.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C4	C28

TRAFFIC CONTROL
FIXED LOCATION SIGNS
GROUND MOUNTED SUPPORT



AA

ROAD WORK
NEXT 1 MILE

G20-1
(36" X 18")

BB

SIGNS FOR
WORK ACTIVITY
CURRENTLY IN
PROGRESS

CC

END
ROAD WORK

G20-2
(36" X 18")

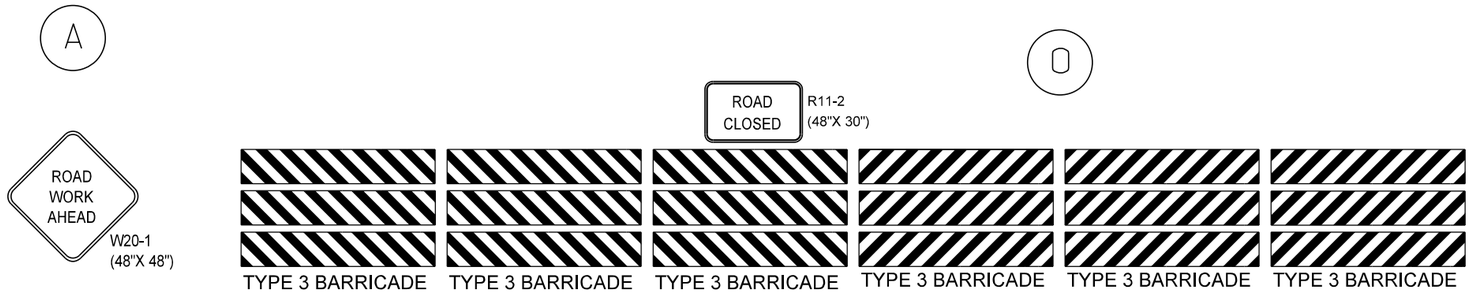
NOTES:

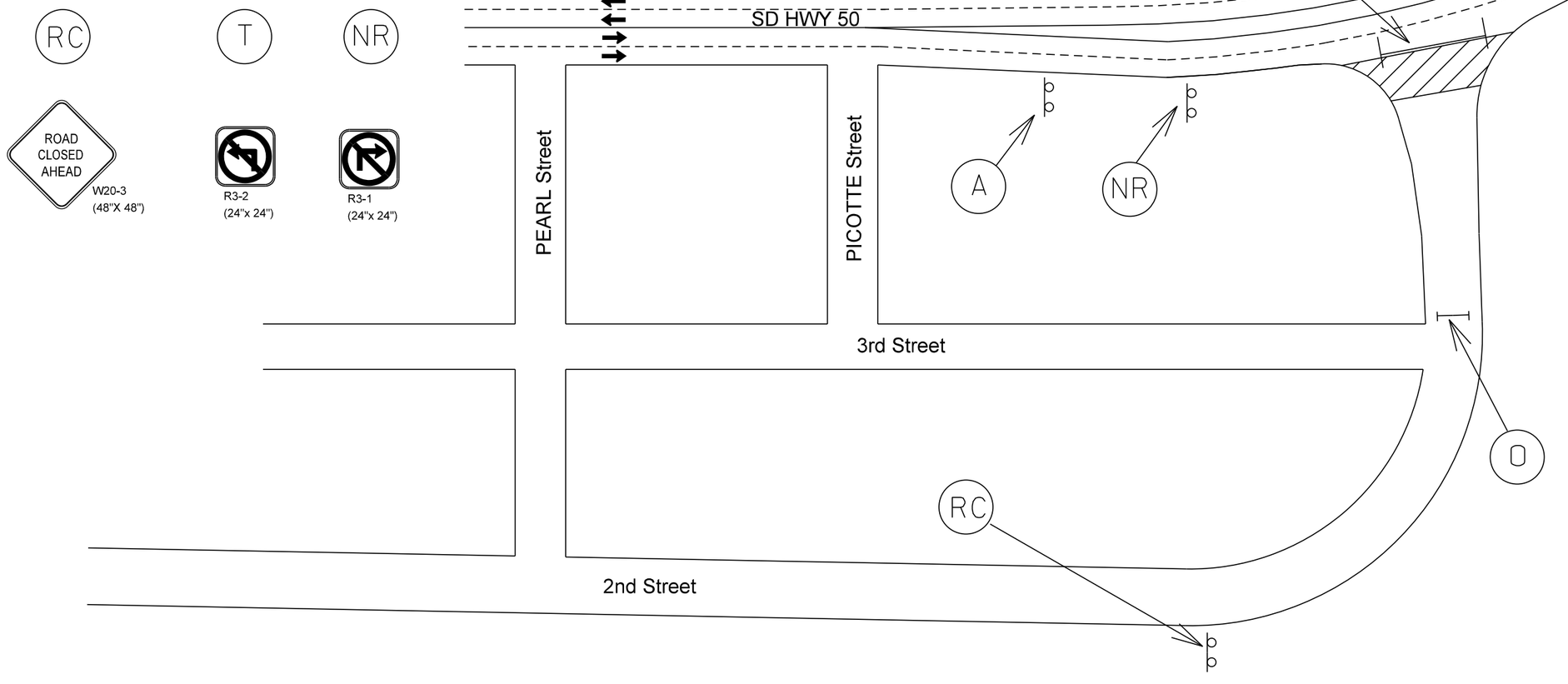
Signs are to be placed 50' - 100'
from intersections or other signs.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C5	C28

TRAFFIC CONTROL
BURLEIGH STREET CLOSURE





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

WORK ZONE

NOTES:

Signs are to be placed 50' - 100' from intersections and other signs.

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes.

● REFLECTORIZED DRUMS

▪ ▪ ▪ TUBULAR MARKER - SPACING (TYP. 50')

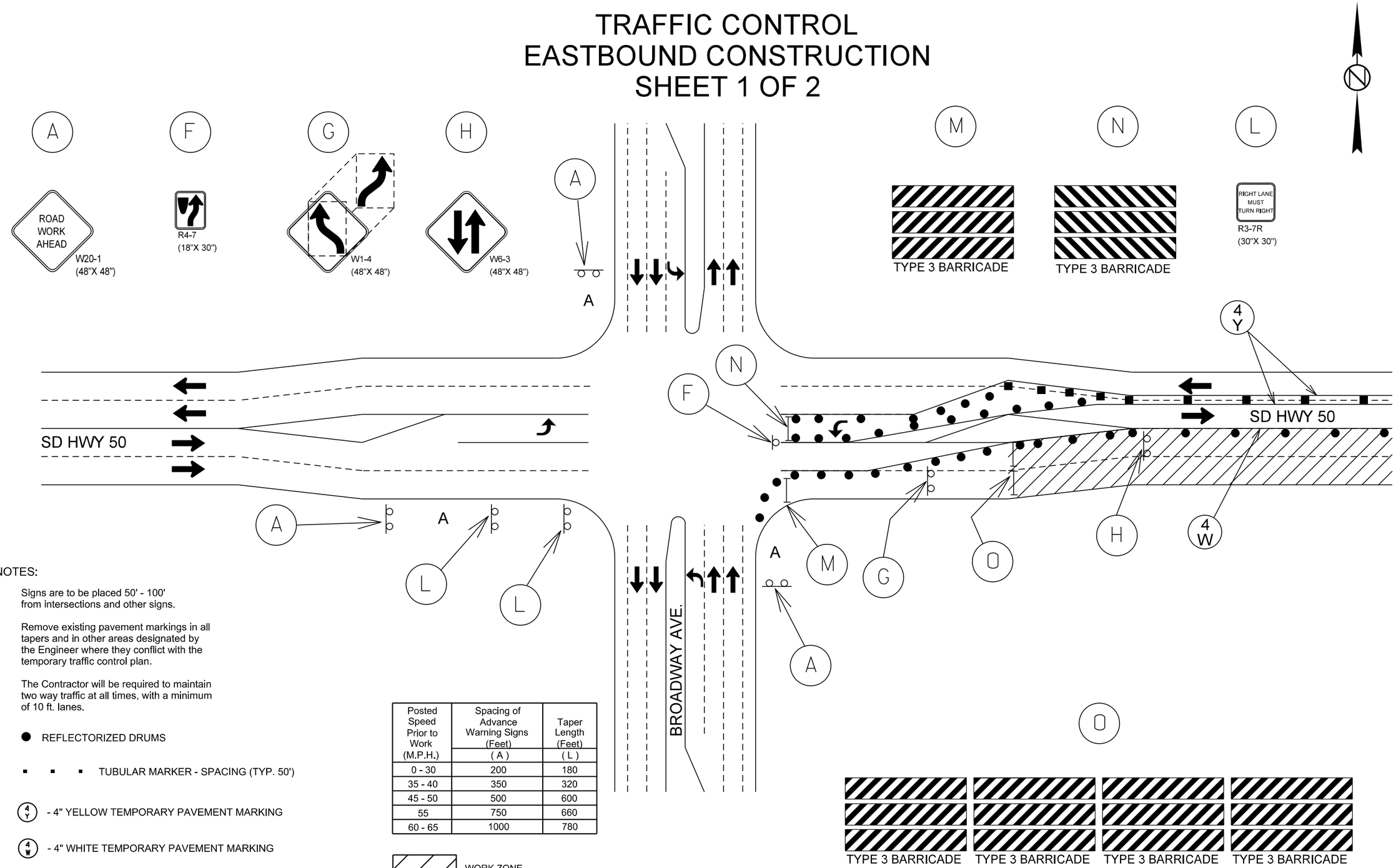
4 Y - 4" YELLOW TEMPORARY PAVEMENT MARKING

4 W - 4" WHITE TEMPORARY PAVEMENT MARKING

◄●●● - ADVANCE WARNING ARROW BOARD

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C6	C28

TRAFFIC CONTROL
EASTBOUND CONSTRUCTION
SHEET 1 OF 2



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The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes.

● REFLECTORIZED DRUMS

▪ ▪ ▪ TUBULAR MARKER - SPACING (TYP. 50')

(4 Y) - 4" YELLOW TEMPORARY PAVEMENT MARKING

(4 W) - 4" WHITE TEMPORARY PAVEMENT MARKING

←●●●● - ADVANCE WARNING ARROW BOARD

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

WORK ZONE

FOR BIDDING PURPOSES ONLY

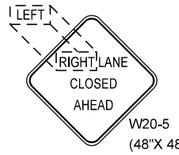
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C7	C28

TRAFFIC CONTROL
EASTBOUND CONSTRUCTION
SHEET 2 OF 2

A

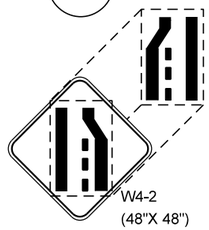
W20-1
(48"X 48")

B



W20-5
(48"X 48")

C

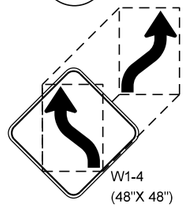


W4-2
(48"X 48")

F

R4-7
(18"X 30")

G



W1-4
(48"X 48")

H

W6-3
(48"X 48")

P

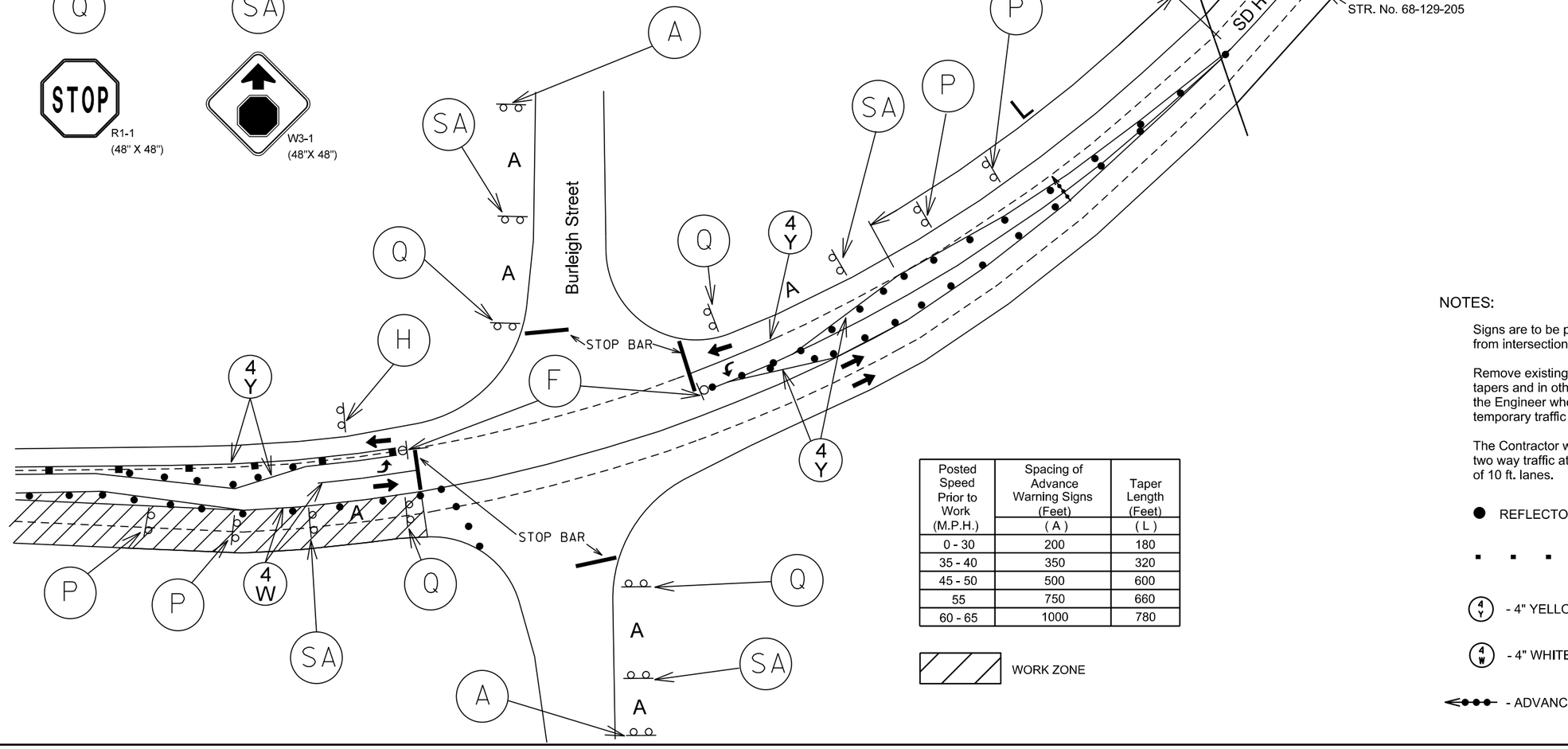
R3-7L
(30"X 30")

Q

R1-1
(48" X 48")

SA

W3-1
(48"X 48")



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

WORK ZONE

NOTES:

Signs are to be placed 50' - 100' from intersections and other signs.

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes.

● REFLECTORIZED DRUMS

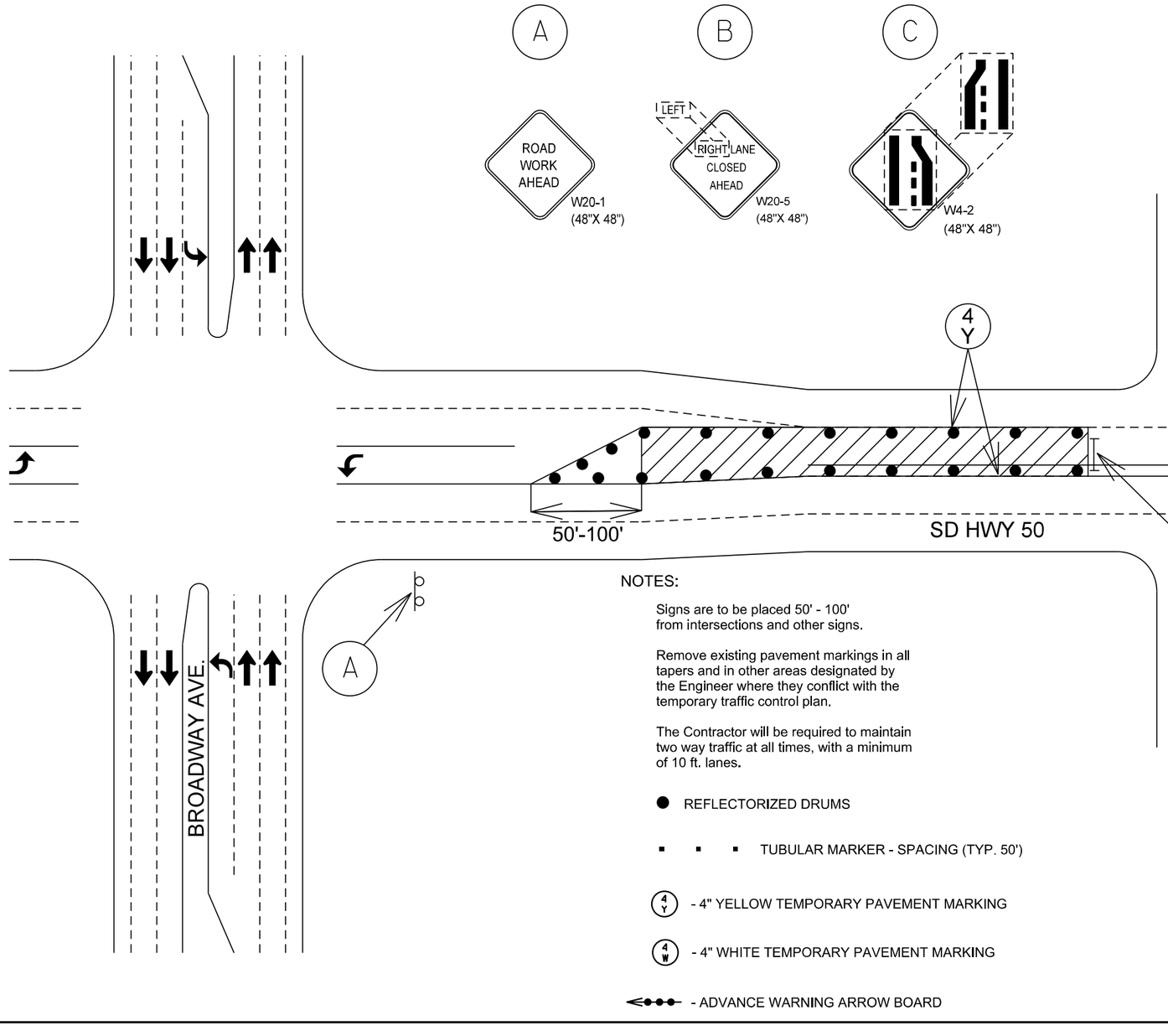
▪ ▪ ▪ TUBULAR MARKER - SPACING (TYP. 50')

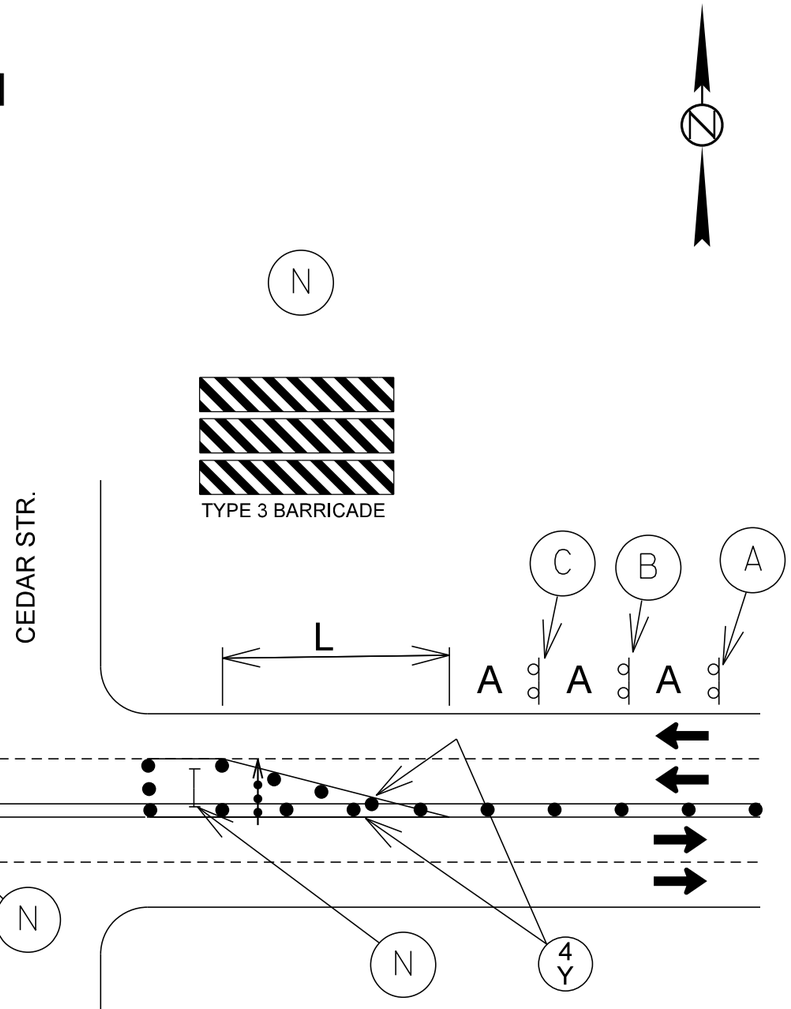
(4 Y) - 4" YELLOW TEMPORARY PAVEMENT MARKING

(4 W) - 4" WHITE TEMPORARY PAVEMENT MARKING

- ADVANCE WARNING ARROW BOARD

TRAFFIC CONTROL
TURN LANE CONSTRUCTION
STA. 4+00 to STA. 5+50





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● REFLECTORIZED DRUMS

▪ ▪ ▪ TUBULAR MARKER - SPACING (TYP. 50')

(4 Y) - 4" YELLOW TEMPORARY PAVEMENT MARKING

(4 W) - 4" WHITE TEMPORARY PAVEMENT MARKING

- ADVANCE WARNING ARROW BOARD

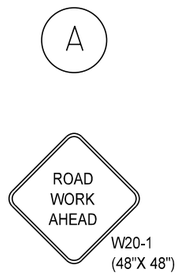
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780

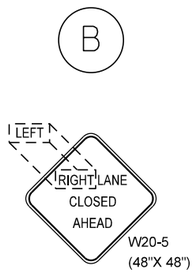
WORK ZONE

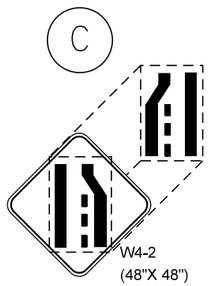
FOR BIDDING PURPOSES ONLY

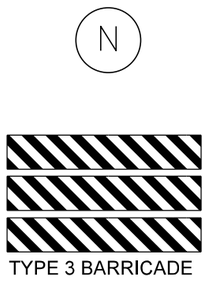
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C9	C28

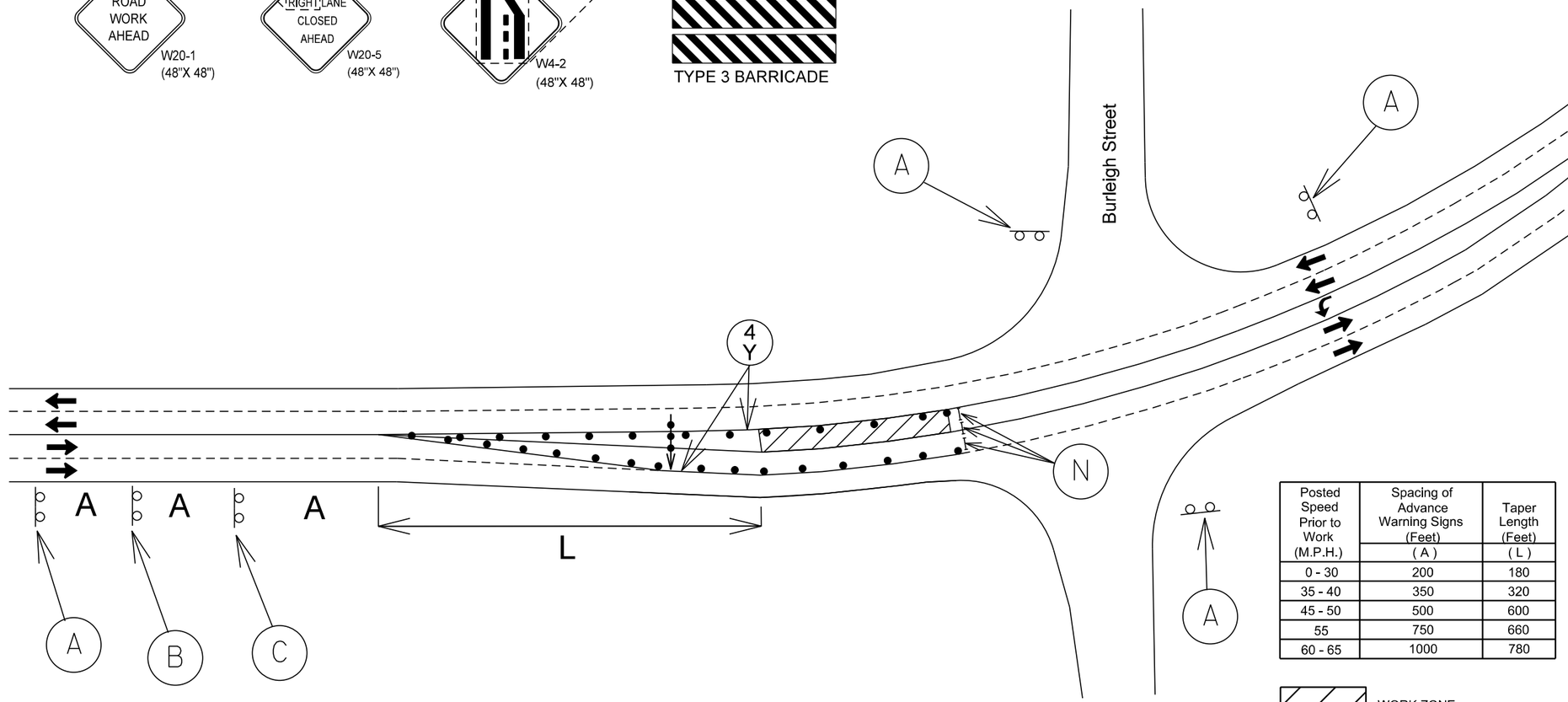
TRAFFIC CONTROL
TURN LANE CONSTRUCTION
STA. 37+12 to STA. 38+62.03

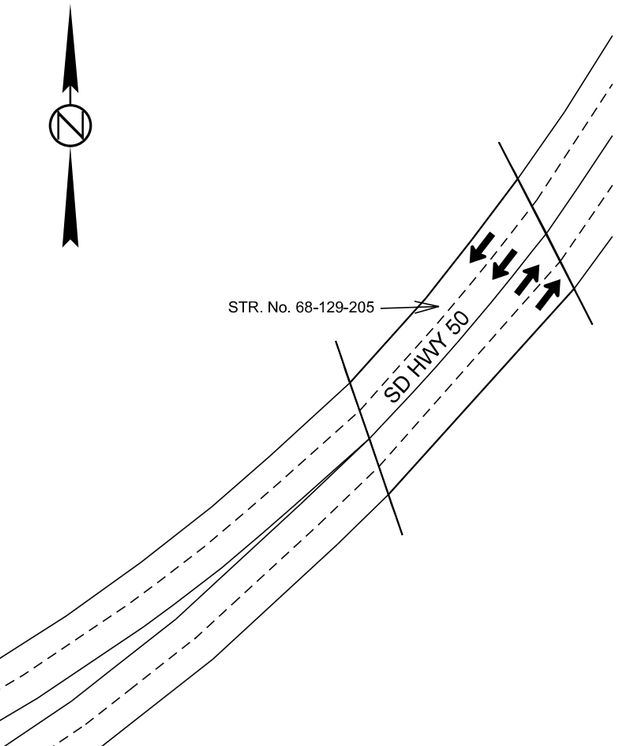












Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)
0 - 30	200	180
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60 - 65	1000	780

WORK ZONE

NOTES:

Signs are to be placed 50' - 100' from intersections and other signs.

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

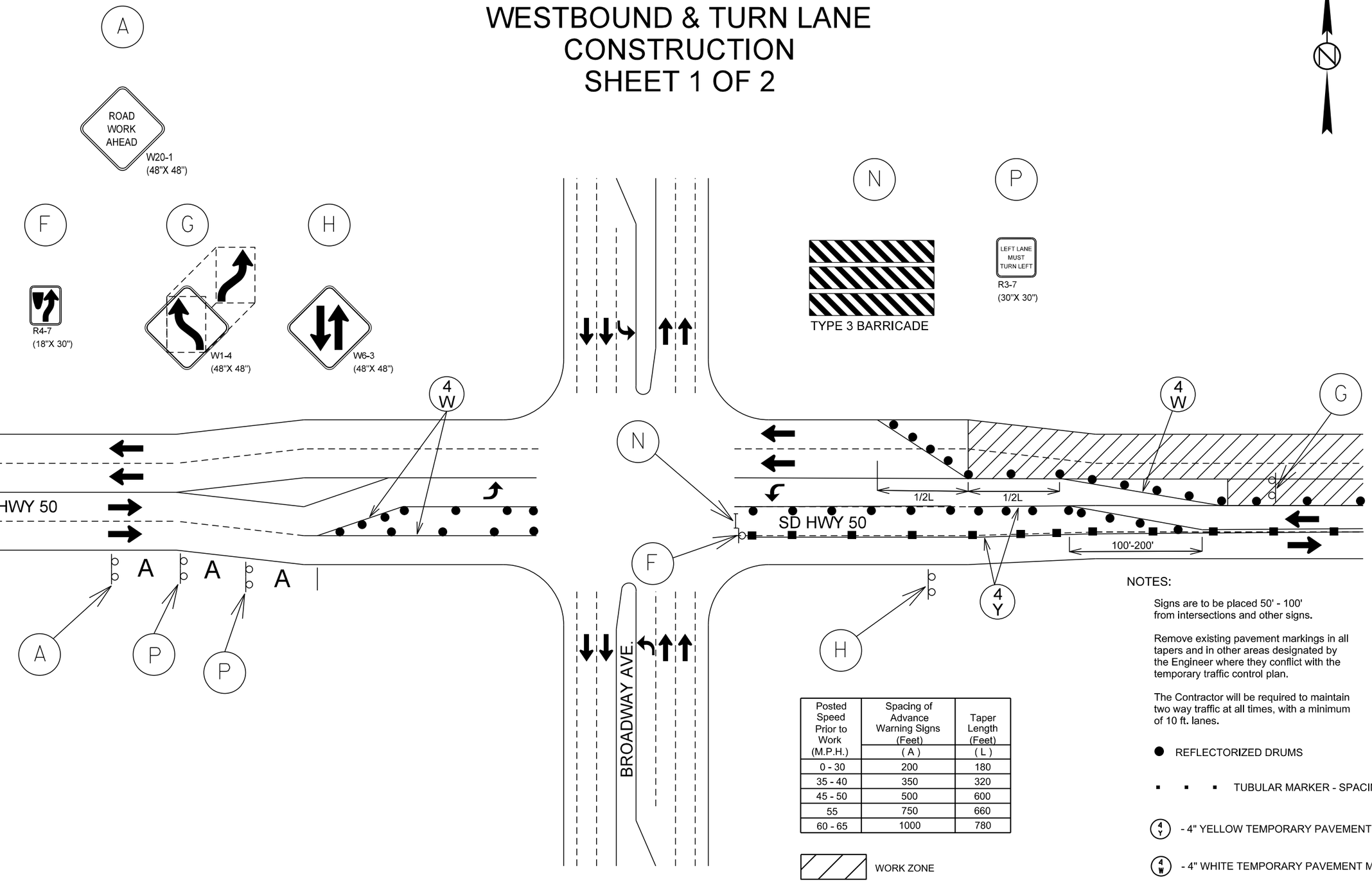
The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes.

- REFLECTORIZED DRUMS
- TUBULAR MARKER - SPACING (TYP. 50')
- 4 Y - 4" YELLOW TEMPORARY PAVEMENT MARKING
- 4 W - 4" WHITE TEMPORARY PAVEMENT MARKING
- ADVANCE WARNING ARROW BOARD

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C10	C28

TRAFFIC CONTROL
WESTBOUND & TURN LANE
CONSTRUCTION
SHEET 1 OF 2



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Signs are to be placed 50' - 100' from intersections and other signs.

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes.

● REFLECTORIZED DRUMS

▪ ▪ ▪ TUBULAR MARKER - SPACING (TYP. 50')

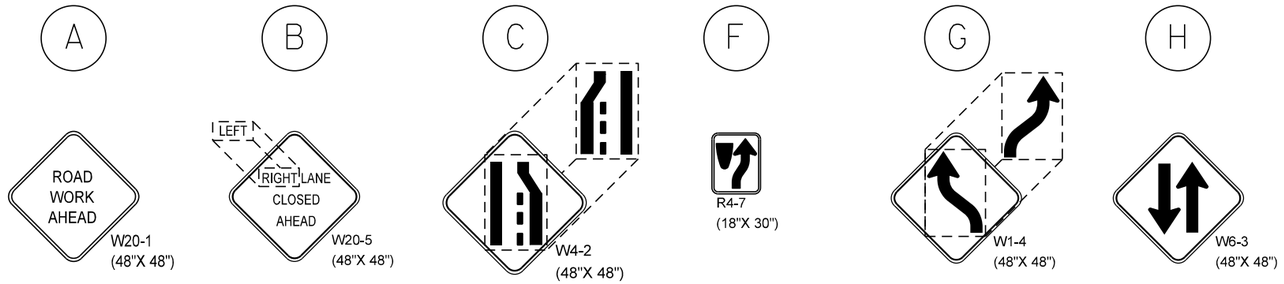
(4 Y) - 4" YELLOW TEMPORARY PAVEMENT MARKING

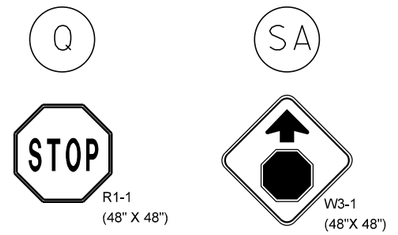
(4 W) - 4" WHITE TEMPORARY PAVEMENT MARKING

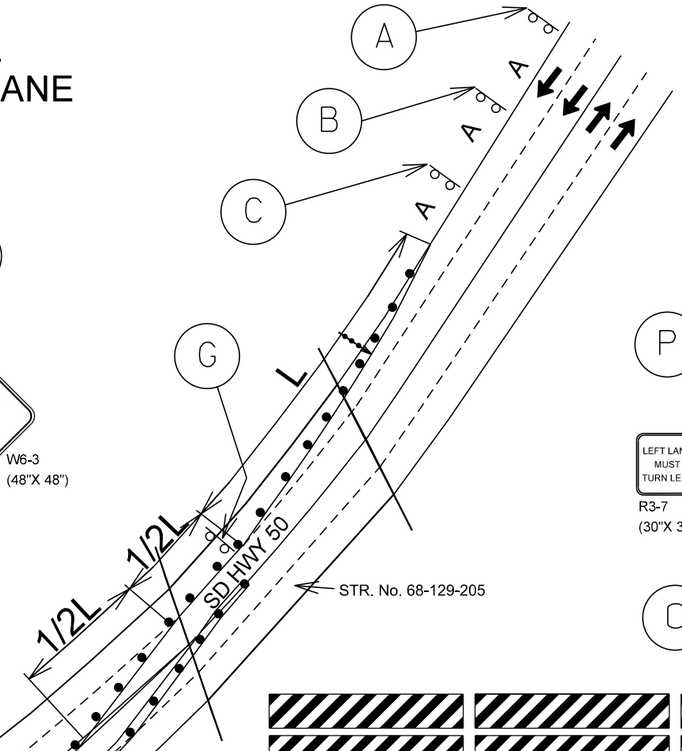
- ADVANCE WARNING ARROW BOARD

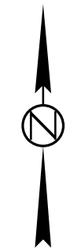
FOR BIDDING PURPOSES ONLY

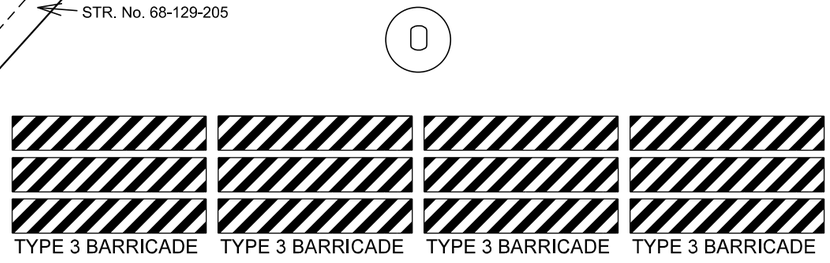
TRAFFIC CONTROL
WESTBOUND & TURN LANE
CONSTRUCTION
SHEET 2 OF 2











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

WORK ZONE

NOTES:

Signs are to be placed 50' - 100' from intersections and other signs.

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes.

● REFLECTORIZED DRUMS

▪ ▪ ▪ TUBULAR MARKER - SPACING (TYP. 50')

(4 Y) - 4" YELLOW TEMPORARY PAVEMENT MARKING

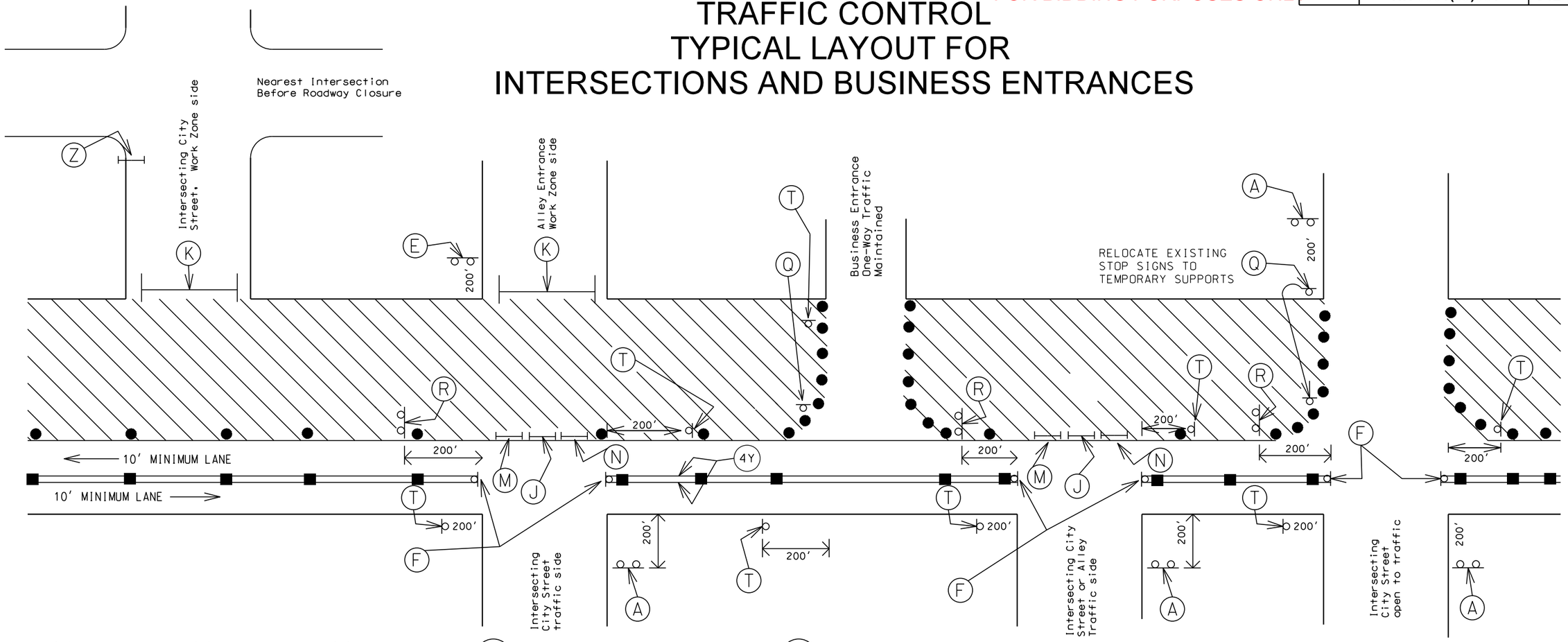
(4 W) - 4" WHITE TEMPORARY PAVEMENT MARKING

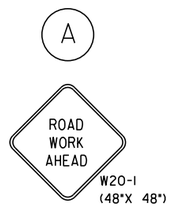
- ADVANCE WARNING ARROW BOARD

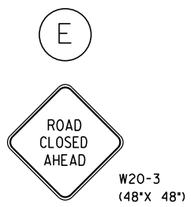
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C12	C28

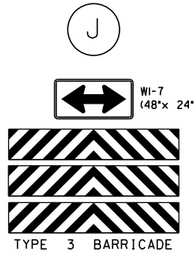
FOR BIDDING PURPOSES ONLY

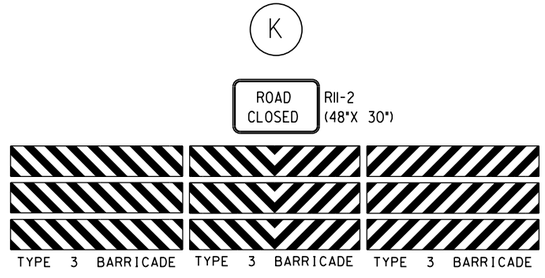
TRAFFIC CONTROL
TYPICAL LAYOUT FOR
INTERSECTIONS AND BUSINESS ENTRANCES

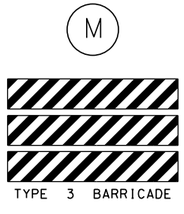


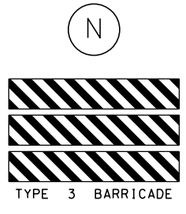


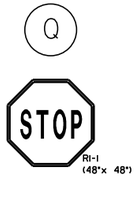


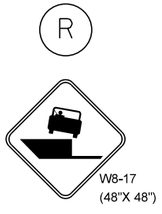


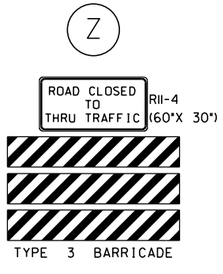












WORK ZONE

REFLECTORIZED DRUMS - 30' SPACING ON TAPERS & 60' MAXIMUM SPACING ON TANGENT, UNLESS OTHERWISE SHOWN.

Tubular Markers

4Y - 4" YELLOW RAISED PAVEMENT MARKERS

NOTES:

Signs are to be placed 50' -100' from intersections or other signs.

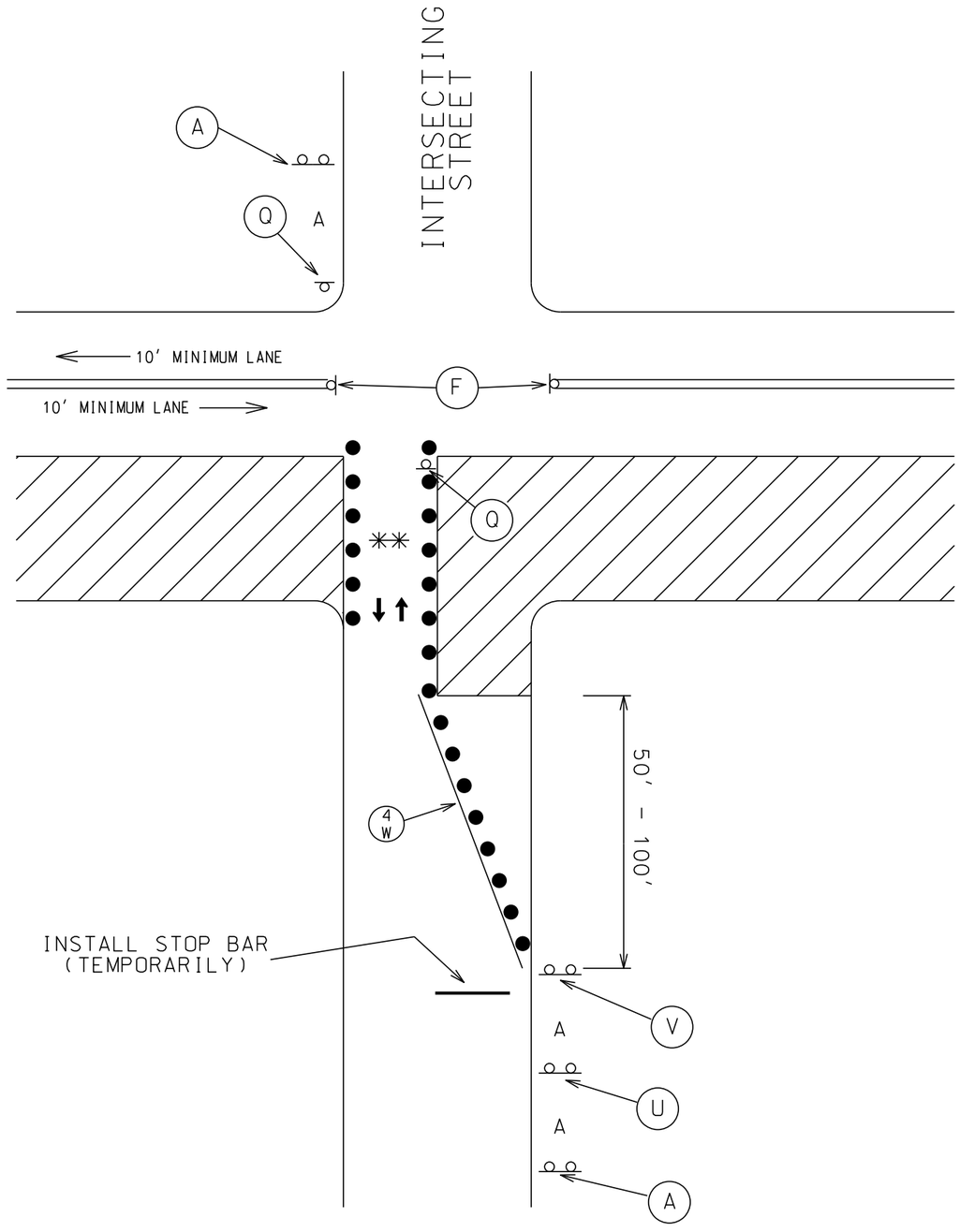
USE W8-17 SHOULDER DROP-OFF SYMBOL, ADJACENT TO FULL DEPTH CONCRETE PAVEMENT REMOVAL AREAS. INSTALL SIGNS AT 300'-400' SPACING THROUGHOUT THE PROJECT WHEN APPLICABLE.

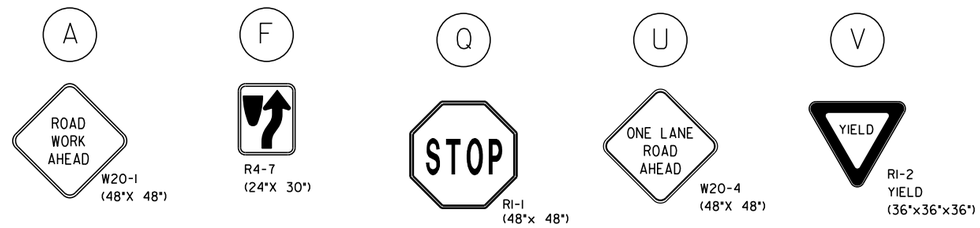
INSTALL R3-2 NO LEFT TURNS SIGNS SIGNS AT 300'-400' SPACING THROUGHOUT THE PROJECT AS DIRECTED BY THE ENGINEER.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C13	C28

FOR BIDDING PURPOSES ONLY

TRAFFIC CONTROL
INTERSECTION CONSTRUCTION
(TYPICAL)





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

NOTES:

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes on Cherry Street.

● REFLECTORIZED DRUMS

(4 Y) - 4" YELLOW TEMPORARY PAVEMENT MARKING

(4 W) - 4" WHITE TEMPORARY PAVEMENT MARKING

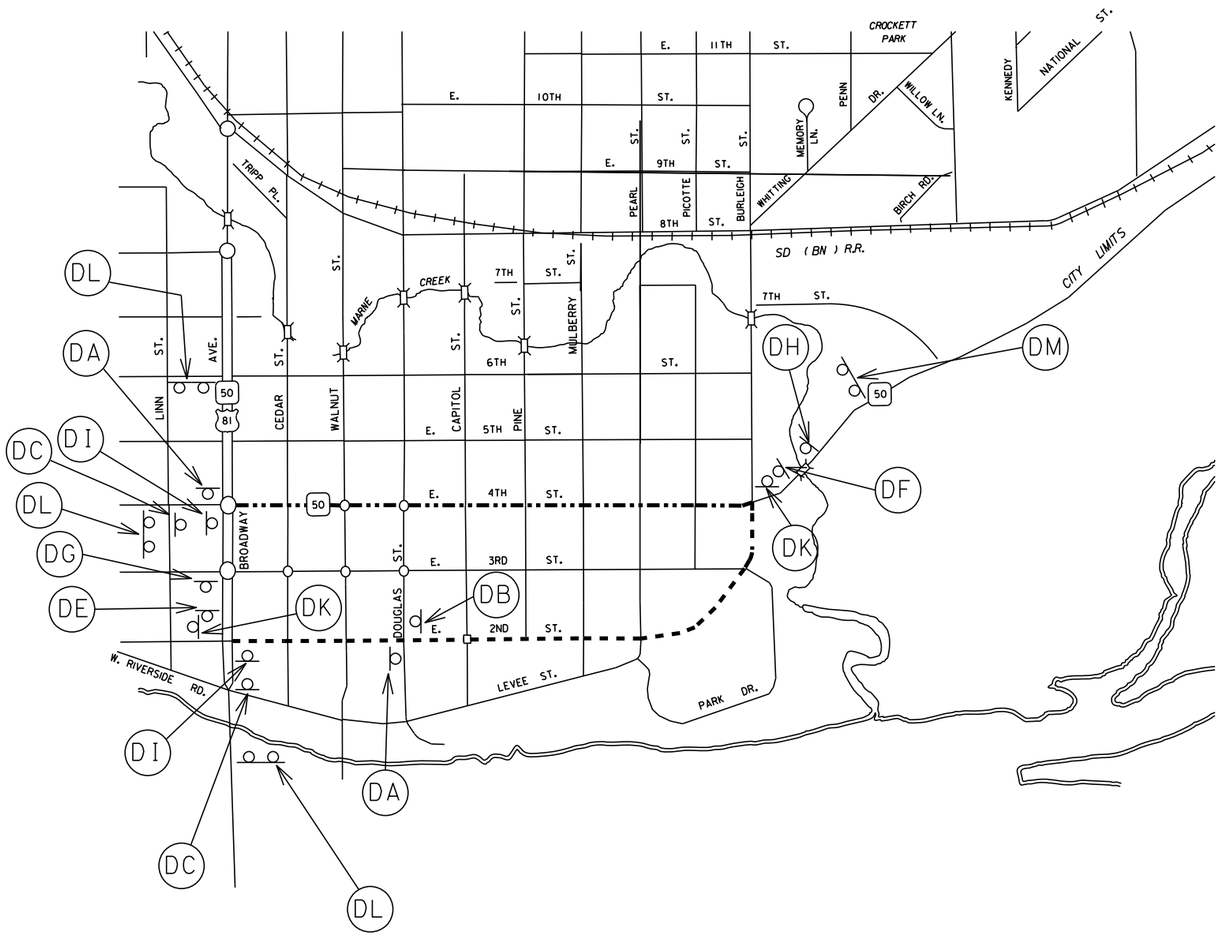
** - 10' MINIMUM LANE WIDTH

WORK ZONE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C14	C28

FOR BIDDING PURPOSES ONLY

TRAFFIC CONTROL
TRUCK DETOUR
SD HWY 50



PROJECT - -·-·-·-·-·-·-·-·-·-·-·-·-

DETOUR ROUTE - - - - - - - - - - -

DETOUR SIGNS SHALL BE SPACED 100 - 150' FROM OTHER SIGNS.
DETOUR SIGNS SHALL NOT OBSCURE EXISTING SIGNS.

DA

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
EAST	M3-2 (24"X 12")
50	M1-5 (24"X 24")
↑	M6-3 (21"X 15")

DB

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
WEST	M3-4 (24"X 12")
50	M1-5 (24"X 24")
↑	M6-3 (21"X 15")

DC

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
EAST	M3-2 (24"X 12")
50	M1-5 (24"X 24")
↱	M5-1 (21"X 15")

DE

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
EAST	M3-2 (24"X 12")
50	M1-5 (24"X 24")
←	M6-1 (21"X 15")

DF

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
WEST	M3-4 (24"X 12")
50	M1-5 (24"X 24")
←	M6-1 (21"X 15")

DG

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
EAST	M3-2 (24"X 12")
50	M1-5 (24"X 24")
↰	M5-1 (21"X 15")

DH

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
WEST	M3-4 (24"X 12")
50	M1-5 (24"X 24")
↰	M5-1 (21"X 15")

DI

TRUCK	M4-4 (24"X 12")
DETOUR	M4-8 (24"X 12")
EAST	M3-2 (24"X 12")
50	M1-5 (24"X 24")
→	M6-1 (21"X 15")

DK

END DETOUR M4-8a (24"X 18")

DL

TRUCK	M4-4 (24"X 12")
EAST	M3-2 (24"X 12")
50	M1-5 (24"X 24")
DETOUR AHEAD	W20-2 (48"X 48")

DM

TRUCK	M4-4 (24"X 12")
WEST	M3-4 (24"X 12")
50	M1-5 (24"X 24")
DETOUR AHEAD	W20-2 (48"X 48")

SHORT TERM TEMPORARY TRAFFIC SIGNAL SYSTEM

The Contractor shall furnish, install, program and maintain a Short Term Temporary Traffic Signal System at the intersection of US 81 and 2nd Street.

The short term temporary traffic signal system shall reliably and continuously control traffic for all approaches of the four legged intersection with multi-lane approaches on the divided highway.

The Short Term Temporary Traffic Signal System shall meet the requirements of the Federal Manual on Uniform Traffic Control Devices (MUTCD), the Specifications and all national and local electrical codes.

The Contractor shall install the short term temporary traffic signal system as necessary to meet Federal Manual on Uniform Traffic Control Devices (MUTCD) criteria for sight distances and sight triangles.

TRAFFIC SIGNAL EQUIPMENT

The Contractor shall furnish all materials necessary to install the short term temporary traffic signal system. All materials furnished by the Contractor shall remain the property of the Contractor upon completion of the project.

POWER

The Contractor shall contact Northwestern Public Service for power connection. See Conductor/Conduit Layout sheet.

The Contractor shall be responsible for providing power and backup power if the main power source fails. In the event of a power outage, the Contractor shall furnish and install a portable generator to provide power for the operation of the traffic signals until the power is restored.
The backup power supply shall be able to operate the traffic signals for a minimum of 48 hours.

The monthly fee for power used by the traffic signal at US 81 and 2nd Street will be paid by the South Dakota Department of Transportation.

SHORT TERM TEMPORARY TRAFFIC SIGNAL SYSTEM OPERATION AND MAINTENANCE

Continuous operation of the traffic signals shall be maintained at all times.

The Contractor shall be responsible for the operation and maintenance required of the short term temporary traffic signal system. The operation and maintenance work is the act of keeping the systems operating to adequately and safely control traffic as intended to operate per the Federal Manual on Uniform Traffic Control Devices and any details in these plans. The operation includes signal programming. The maintenance includes adjustment and replacement of traffic signal appurtenances, repair and all work to keep the traffic signals in satisfactory condition. The Contractor's operation and maintenance responsibility will end upon the removal of the Short Term Temporary Traffic Signal System.

Traffic signal operation or maintenance work is required to be performed by the Contractor when conditions dictate, a potential risk to the public exists, or when equipment breaks down or malfunctions. The more serious situations require a high priority response and are to be reacted to as quickly as circumstances allow.

The Contractor should plan for sufficient staff for operation, maintenance, adjustment, repair, materials, and replacement of the Short Term Temporary Traffic Signal System as necessary to keep the traffic signals operational. The individual responsible for installation, operations and maintenance of traffic signals shall be experienced, knowledgeable, and trained with respect to installation, setup, operation, and maintenance of traffic signals.

In the event of complete failure of a traffic signal, the Contractor shall furnish necessary flaggers to safely control traffic until the traffic signal is operational. On nights and weekends, the Contractor shall furnish the flaggers within one hour of notice of the traffic signal failure by the Department or the City of Yankton.

The signal indications shall be covered or removed during shut down or periods of discontinued use.

The Contractor shall furnish a replacement traffic signal controller, management malfunction unit, load switch(s), buss interface unit(s), detector unit(s), or any other appurtenance necessary in the event of failure. The Contractor shall secure traffic signal heads in the proper positions and provide a replacement support system should traffic signal poles, mast arms or traffic signal heads become damaged by vehicle impact or weather event.

Costs to program and make adjustments to the traffic signal controllers shall be incidental to the contact unit price per Hour for Maintenance of Traffic Signal(s).

The DOT Region Traffic Engineer shall be notified, review and provide concurrence to any revision of the signal programming to include signal phasing or timing.

Costs for the operation, adjustment, replacement and maintenance (labor, materials and equipment) of the Short Term Temporary Traffic Signal System shall be incidental to the contract unit price per hour for Maintenance of Traffic Signal(s).

METER SOCKET

The meter sockets provided for traffic signals by the Contractor shall be a 200 amp, positive by-pass.

CONTROLLER CABINET

The controller cabinet is to be attached to pole S4. The controller cabinet door shall face southeast.

POLE MOUNTED JUNCTION BOXES

The Contractor shall furnish and install pole mounted junction boxes as necessary. Pole mounted junction boxes shall be NEMA Type 3R with screw covers. Upper pole mounted junction boxes shall be 18"H x 12"W x 8"D min. in size, lower pole mounted junction boxes shall be 6"H x 6"W x 4"D min. in size. The Contractor shall determine the appropriate size and may increase the size if necessary.

Cost for pole mounted junction boxes and miscellaneous hardware shall be incidental to the contract unit price per site for Short Term Temporary Traffic Signal System.

SPAN WIRE AND SUPPORTS

The Contractor shall furnish and install wood utility pole span wire supports. Guy wire anchors shall be used as design requires.

The Contractor shall provide design and check design calculations for the span wire and support system (span wire, tether wire, poles, arms, connections, guy wires and anchors, footings, anchor bolts, etc.), signed and sealed by a SD Registered Professional Engineer. The design and check design calculations shall be submitted with shop drawings in accordance with Section 985.1.I.3 of the Standard Specifications.

The span wire and support system, with traffic signal heads and luminaires located as shown in these plans, shall be designed in accordance with the current Edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

A minimum clear zone distance of 6' shall be maintained from the edge of the traveled way to the location of traffic signal support poles or guy wire anchors unless otherwise detailed or approved by the Engineer.

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

The height of the span wire support poles and the sag in the span wire shall be designed to provide the minimum 17' clearance from the bottom of the traffic signal indications to the roadway and a minimum clearance of 4' between the span wire and the neutral overhead power conductor.

The Contractor shall field verify post lengths required prior to installation.

A 6' length of rubber insulating line hose shall be installed to cover the span wire and traffic signal conductors directly below the neutral overhead power conductor. It is anticipated two 6' lengths of rubber insulating line hose will be required.

Cost for the span wire and support system, including span wire, tether wire, poles, arms, pole mounted rigid conduit, connections, guy wires and anchors, anchor bolts, rubber insulating line hose(s) and miscellaneous items, shall be incidental to the contract unit price per site for Short Term Temporary Traffic Signal System.

After the poles are removed, the Contractor shall restore and seed disturbed areas to the satisfaction of the Engineer. Cost for restoration of disturbed areas shall be incidental to the contract unit price per site for Short Term Temporary Traffic Signal System.

SIGNAL HEADS AND BACKPLATES

All signal heads must meet or exceed all current Institute of Transportation Engineers (ITE) standards for "Vehicle Traffic Control Signal Heads".

Backplates and tunnel visors shall be installed and maintained on all signal indications.

The traffic signal heads shall be installed above their respective driving lanes and centered to be adequately visible. The bottom of the overhead traffic signal heads shall be mounted a minimum of 17' and a maximum of 19' above the roadway. The top of the traffic signal head shall not be more than 22' above the roadway surface.

Signal heads shall be polycarbonate. Signal backplates shall extend not less than 5 inches at the top, bottom, and sides. All backplates shall have a dull black finish.

SIGNAL HEADS AND BACKPLATES (Continued)

3-section polycarbonate signal heads and 5 section polycarbonate signal heads ("dog house" style configuration), all with 12" diameter signal indications shall be provided as detailed.

LED indications shall be provided.

VEHICLE DETECTION

Detector loops and twisted shielded pair conductor exist in the southbound left turn lane and on the approach lanes on 2nd Street.

The Contractor shall furnish and install any additional twisted shielded pair conductor, vehicle detector units in the controller cabinet, and other necessary materials or work to make the in place detector loops operational. A field review of the existing junction boxes and conductor is recommended.

Cost for labor and materials to make the existing detector loops operational shall be incidental to the contract unit price per site for Short Term Temporary Traffic Signal System.

MULTICONDUCTOR CONTROL CABLE FOR SIGNAL CIRCUITS

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

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

2. General Purpose Control Cable, with standard copper conductors, Aerial and Duct, IMSA 20-1, 600 volts.

The Conductor Jackets for the above cables shall be color coded in accordance with ICEA S-61-402 Appendix K, Table K-1 or IMSA 19-1 Table II.

TRAFFIC SIGNAL CONTROLLER

1. The controller shall be a solid state, digital, NEMA TS2.
2. The controller shall be two through twelve phase controller.
3. Vehicle detectors shall operate in the presence (non-locking) mode and shall have call delay timing capability. The call delay feature shall be inhibited by the controller. Set the detectors for the northbound and southbound lefts to 6 second delay, and the remaining detectors to 3 seconds delay.
4. The controller cabinet door shall be hinged on the right side and open to the southeast.
5. Digital timing shall be provided.
6. The controller shall be a solid state, digital, NEMA TS2.
7. The controller shall be two through twelve phase controller.
8. The controller shall alternate the red on US 81 and on 2nd Street when flashing.
9. The interface panels shall be capable of inserting up to twelve load switches.
10. The controller shall be capable of programming by manual entry via the front panel keyboard, data downloading from a portable PC computer via null-modem cable, and data downloading from one controller to another using a serial port on each controller.
11. The controller shall be capable of operating coordinated by time-based, hardwire, and telemetry.
12. The controller shall have a copy function to copy all timing data from one phase to another. The controller shall also permit copying all coordination pattern data from one pattern to another.
13. A Malfunction Management Unit shall be installed in the cabinet and shall conform to the requirements of NEMA Standard TS-2 Section 4.
14. The controller shall have internal signal dimming.
15. The controller solid state flasher shall have dimming capability.
16. The controller shall dwell on US 81, northbound and southbound.
17. The controller cabinet shall be NEMA Type P-44.
18. A sufficient quantity of BUS Interface Units shall be installed in the cabinet to provide communication between detectors, load switches, controller unit, etc. Each BUS Interface Unit shall conform to NEMA Standard TS-2, Section 8.

TRAFFIC SIGNAL PROGRAMMING

The Contractor shall initially program the controllers with the traffic signal programming provided in these plans.

As project conditions or traffic needs change, the Contractor will adjust the traffic signal splits and offsets as directed by the Engineer after consultation with the Department of Transportation Region Traffic Engineer.

The minimum yellow time shall be 3.5 seconds and the all red time shall be a minimum of two (2) seconds unless the Department approves of an alternate.

Traffic signal interconnect will not be required.

Costs to program and make adjustments to the traffic signal controllers shall be incidental to the contract unit price per Hour for Maintenance of Traffic Signal(s).

SIGNAL AIMING

Signals shall be aimed and trees shall be trimmed such that all the signals for each approach shall be continuously visible for a distance of 390 feet.

Tree trimming shall be done in accordance with good tree trimming practices.

Cost for signal aiming shall be incidental to the contract unit price per site for Short Term Temporary Traffic Signal System.

ON-SITE INSPECTION

Once the Short Term Temporary Traffic Signal System is complete and operational, an on-site inspection of the traffic signals shall be conducted. The Contractor, Region Traffic Engineer, City Engineer, City traffic signal maintenance person and the Project Engineer will conduct the on-site inspection.

UTILITIES

The following minimum clearances to the overhead power lines shall be maintained:

4 foot clearance to the neutral,
10 foot clearance to worker,
20 foot clearance to equipment.

Underground utilities exist and will likely conflict with some pole and guy wire locations. The locations of traffic signal poles, guy anchors, and other traffic signal appurtenances are to be expected by the Contractor. Field adjustment shall be approved by the Engineer. The Contractor shall be responsible for locating underground utilities. Any damage to utilities shall be the responsibility of the Contractor.

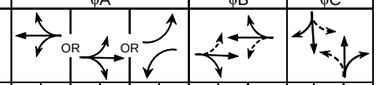
SHORT TERM TEMPORARY TRAFFIC SIGNAL

US 81 and 2nd Street, Yankton, SD

PHASING AND SEQUENCING

INTERVAL / SIGNAL HEAD	1	2	3	4	5	6	7	9	10	17	19	20	FLASH DISPLAY
12	G/<G	G/<Y			R/<G	R/<Y	G	Y					Y
13,14,1	G	G					G	Y					Y
5			G/<G	G/<Y	R/<G	R/<Y	G	Y					Y
6,7,8			G	G			G	Y					Y
3,4,2										G	Y		R
9,10,11										G	Y		R

CYCLE	TIME	CYCLE LENGTH	OFFSET = 0	FLASH TIME
1	6:00 AM to 11:00	90		11:00 PM to 6:00 AM

PHASES	ϕA						ϕB			ϕC		
MOVEMENTS												
MINIMUM INITIAL	12		12		7		30			12		
PASSAGE	3		3		3					3		
MAXIMUM	30		30		20					25		
VEHICLE CLEARANCES		4		4		3		4	2		4	2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C17	C28

Plotting Date: 11/06/2014

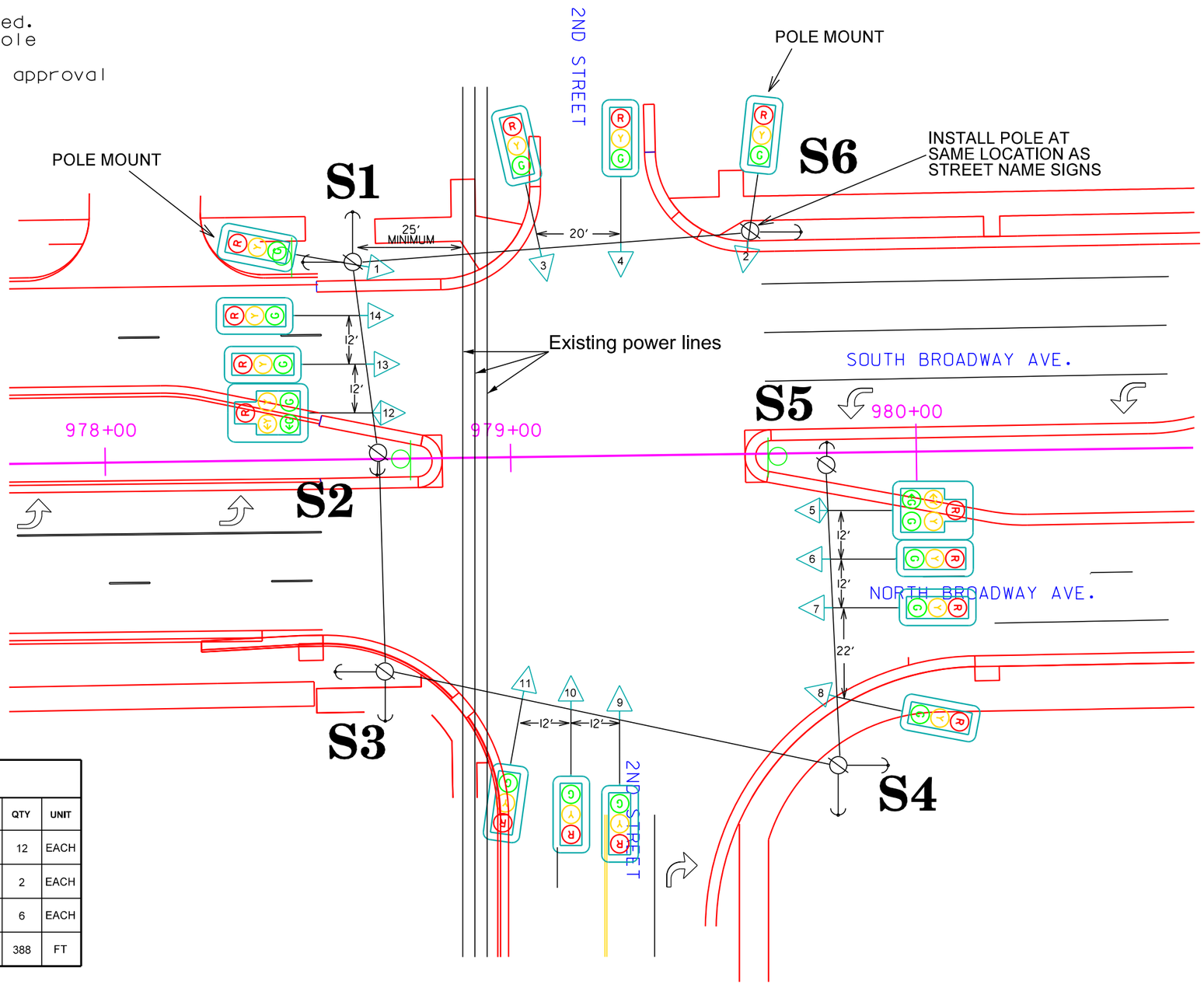
TEMPORARY SIGNAL LAYOUT

US 81 & 2ND STREET

(TYPICAL)

NOTE:

Pole locations are proposed. Minor adjustment of the pole location for underground utilities may be made per approval of the Engineer.



ESTIMATE OF QUANTITIES

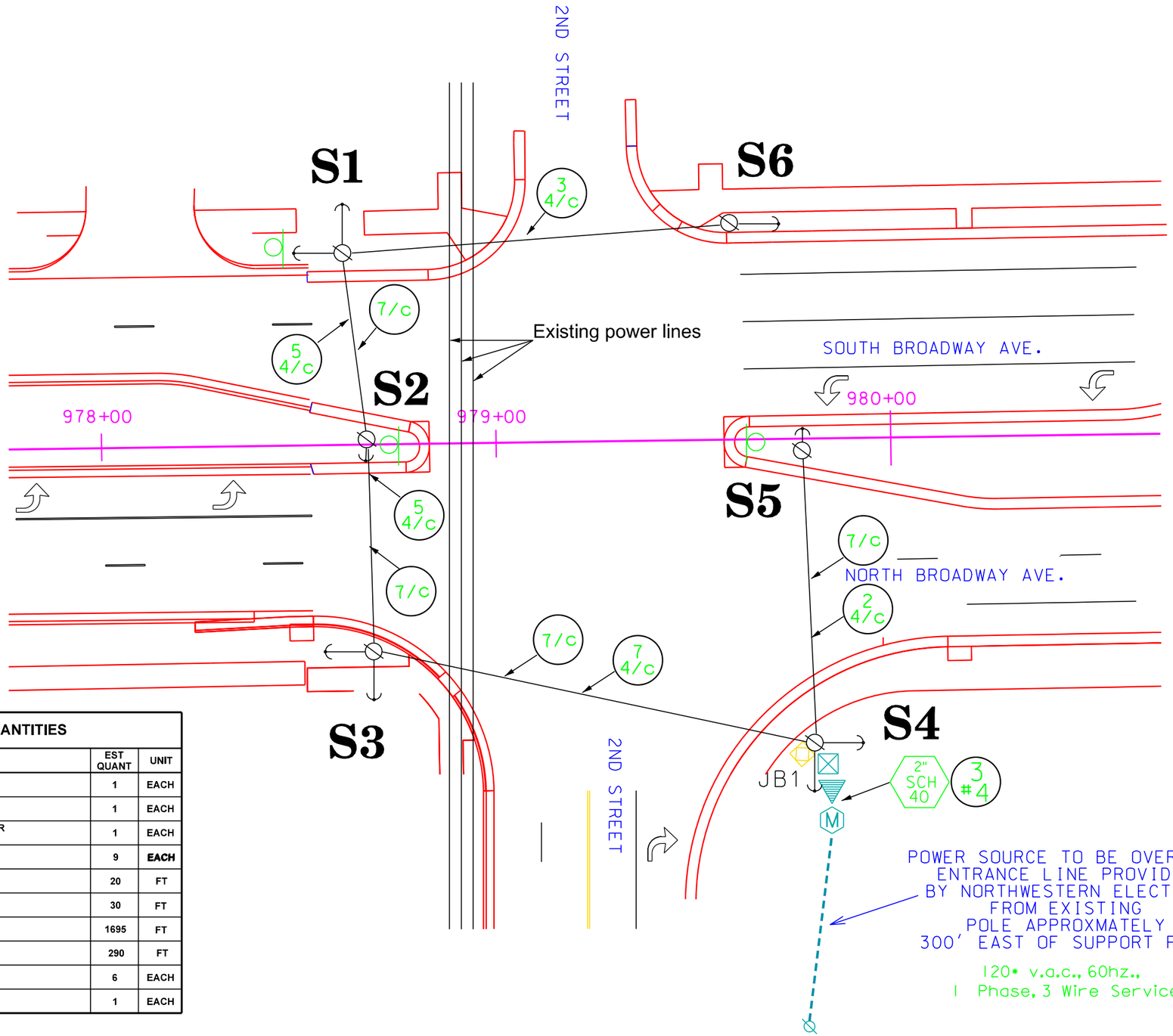
KEY	ITEM	QTY	UNIT
▷	3-SECTION VEHICLE SIGNAL HEAD (1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13 and 14)	12	EACH
◁▷	5-SECTION VEHICLE SIGNAL HEAD (5 and 12)	2	EACH
⊘	WOOD UTILITY POLE (S1, S2, S3, S4, S5 and S6)	6	EACH
—	SPAN WIRE (FOR INFORMATION ONLY)	388	FT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C18	C28

Plotting Date: 11/06/2014

CONDUIT / CONDUCTOR LAYOUT

US 81 & 2ND STREET



ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
	POLE MOUNTED JUNCTION BOX (JB1)	1	EACH
	ELECTRICAL SERVICE CABINET	1	EACH
	INSTALL TRAFFIC SIGNAL CONTROLLER (STATE FURNISHED)	1	EACH
	POLE ANCHOR	9	EACH
2" SCH 40	2" RIGID CONDUIT, SCHEDULE 40	20	FT
#4	1/C #4 AWG COPPER WIRE	30	FT
4/C	4/C #12 AWG IMSA COPPER WIRE (K1)	1695	FT
7/C	7/C #12 AWG IMSA COPPER WIRE (K1)	290	FT
	WOOD UTILITY POLE	6	EACH
M	METER SOCKET	1	EACH

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(99)381	C19	C28

Plotting Date: 11/06/2014

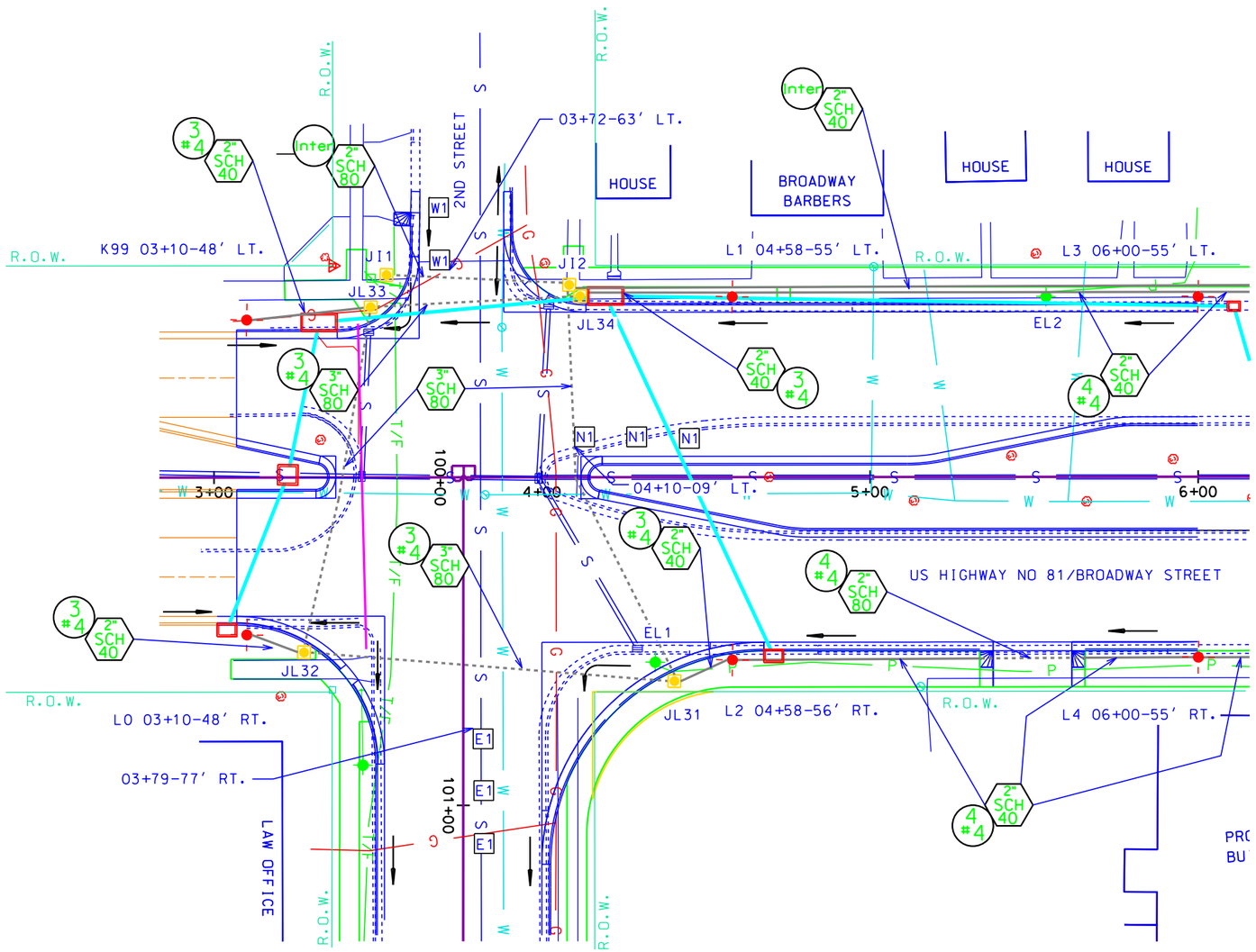
CONDUIT LAYOUT

US HIGHWAY NO 81/BROADWAY STREET

ORIGINAL CONSTRUCTION PLAN - FOR INFORMATION ONLY

SCALE
1" = 40'

TABLE OF EXISTING ITEMS			
KEY	ITEM	UNIT	EST QUANT
	FOOTING - 2.0' DIAMETER (K99,L0-L104)	FT	595
	LUMINAIRE POLE W/8' ARM, 40' MT HT (L48-L104)	EACH	57
	DECORATIVE LUMINAIRE POLE W/14' MT HT (K99,L0-L47)	EACH	49
M	METER SOCKET	EACH	4
	18 INCH DIAMETER JUNCTION BOX (JG1-JG4,JI1-JI38,JL1-JL34,JS1-JS12)	EACH	88
	SERVICE CABINET	EACH	4
SCH 40	2" RIGID CONDUIT, SCHEDULE 40	FT	19 250
SCH 80	2" RIGID CONDUIT, SCHEDULE 80	FT	7 850
SCH 80	2" RIGID GALVANIZED STEEL CONDUIT	FT	110
SCH 40	3" RIGID CONDUIT, SCHEDULE 40	FT	200
SCH 80	3" RIGID CONDUIT, SCHEDULE 80	FT	710
SCH 40	4" RIGID CONDUIT, SCHEDULE 40	FT	400
#2	1/C #2 AWG COPPER CABLE	FT	29 140
#4	1/C #4 AWG COPPER CABLE	FT	35 385
#6	1/C #6 AWG COPPER CABLE	FT	10 675
fiber	48 STRAND FIBER OPTIC CABLE	FT	10 300
	2/C #10 AWG COPPER POLE & BKT CABLE	FT	4 525
	RDY LUMINAIRE 250W WITH P.E.	EACH	57
	RDY LUMINAIRE 400W WITH P.E.	EACH	49
	REMOVE LIGHT FOOTING (EL1-EL49)	EACH	49
	REMOVE & RESET LUMINAIRE POLE (EL48 & EL49)	EACH	2
	PREFORMED DETECTOR LOOPS (N1,E1,W1)	EACH	8

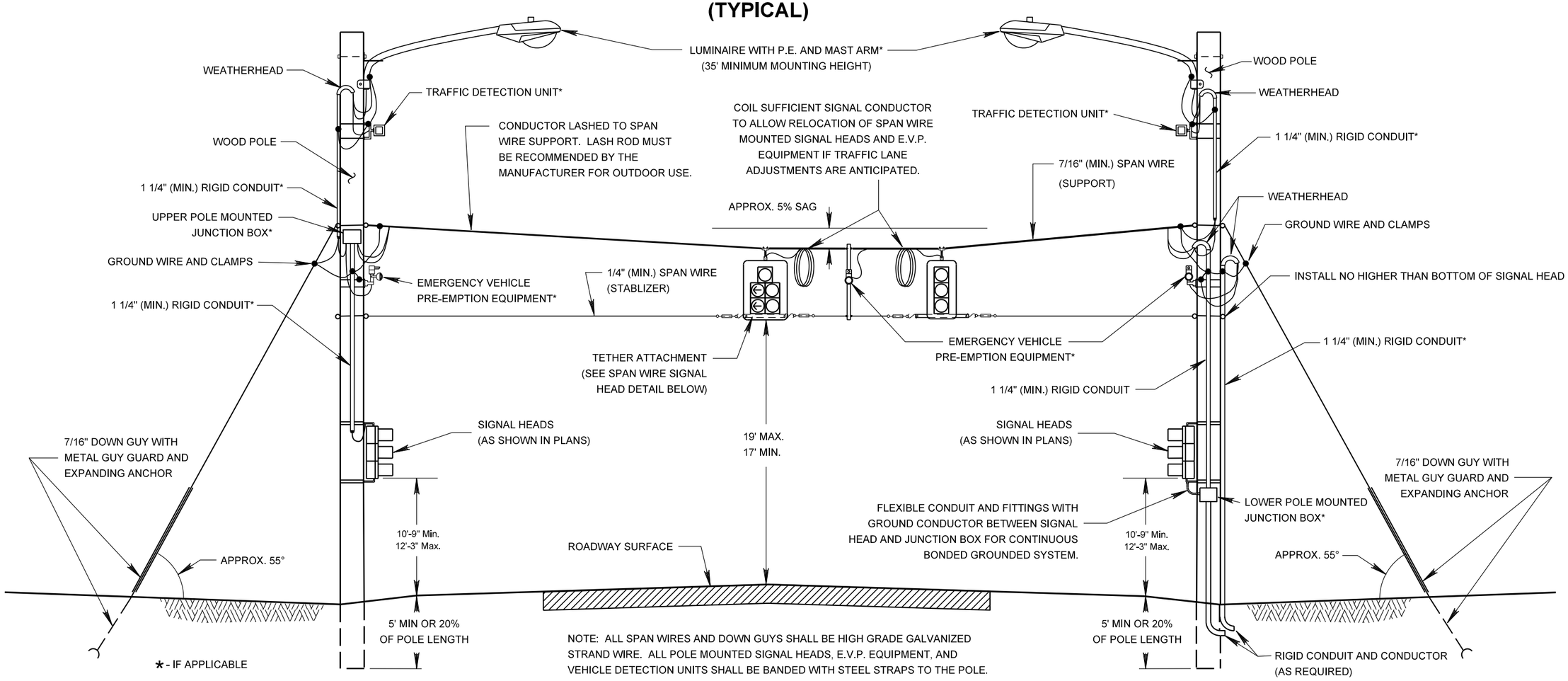


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(99)381	C20	C28

Plotting Date: 09/23/2014

WOOD POLE AND SPAN WIRE MOUNTED TRAFFIC SIGNALS

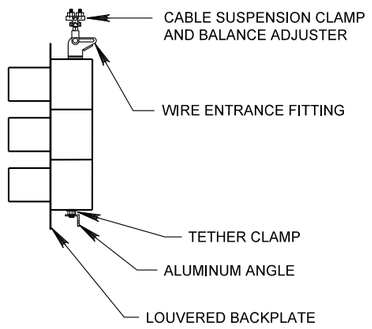
(TYPICAL)

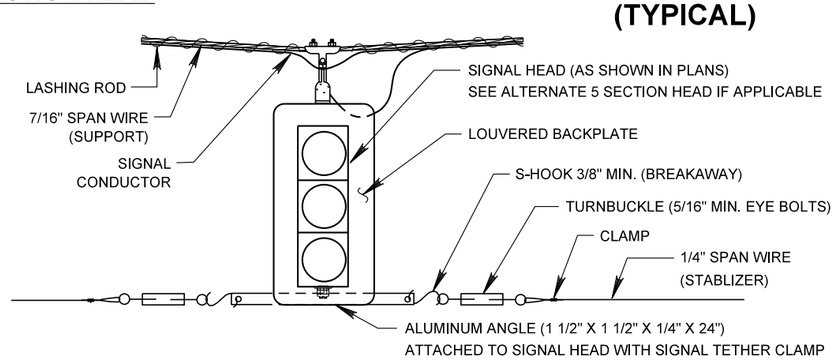


NOTE: ALL SPAN WIRES AND DOWN GUYS SHALL BE HIGH GRADE GALVANIZED STRAND WIRE. ALL POLE MOUNTED SIGNAL HEADS, E.V.P. EQUIPMENT, AND VEHICLE DETECTION UNITS SHALL BE BANDED WITH STEEL STRAPS TO THE POLE.

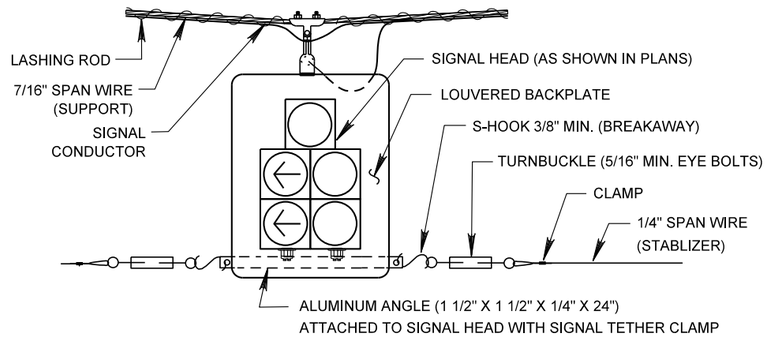
SPAN WIRE SIGNAL HEAD DETAILS (TYPICAL)

3-SECTION HEAD





5-SECTION HEAD



PLOT SCALE - 1:42.4

PLOT NAME - 1

PLOTTED FROM - TRM111119

FILE - ...\WOODPOLE.DGN

WIRING DIAGRAM

US 81 & 2nd Street

FOR BIDDING PURPOSES ONLY

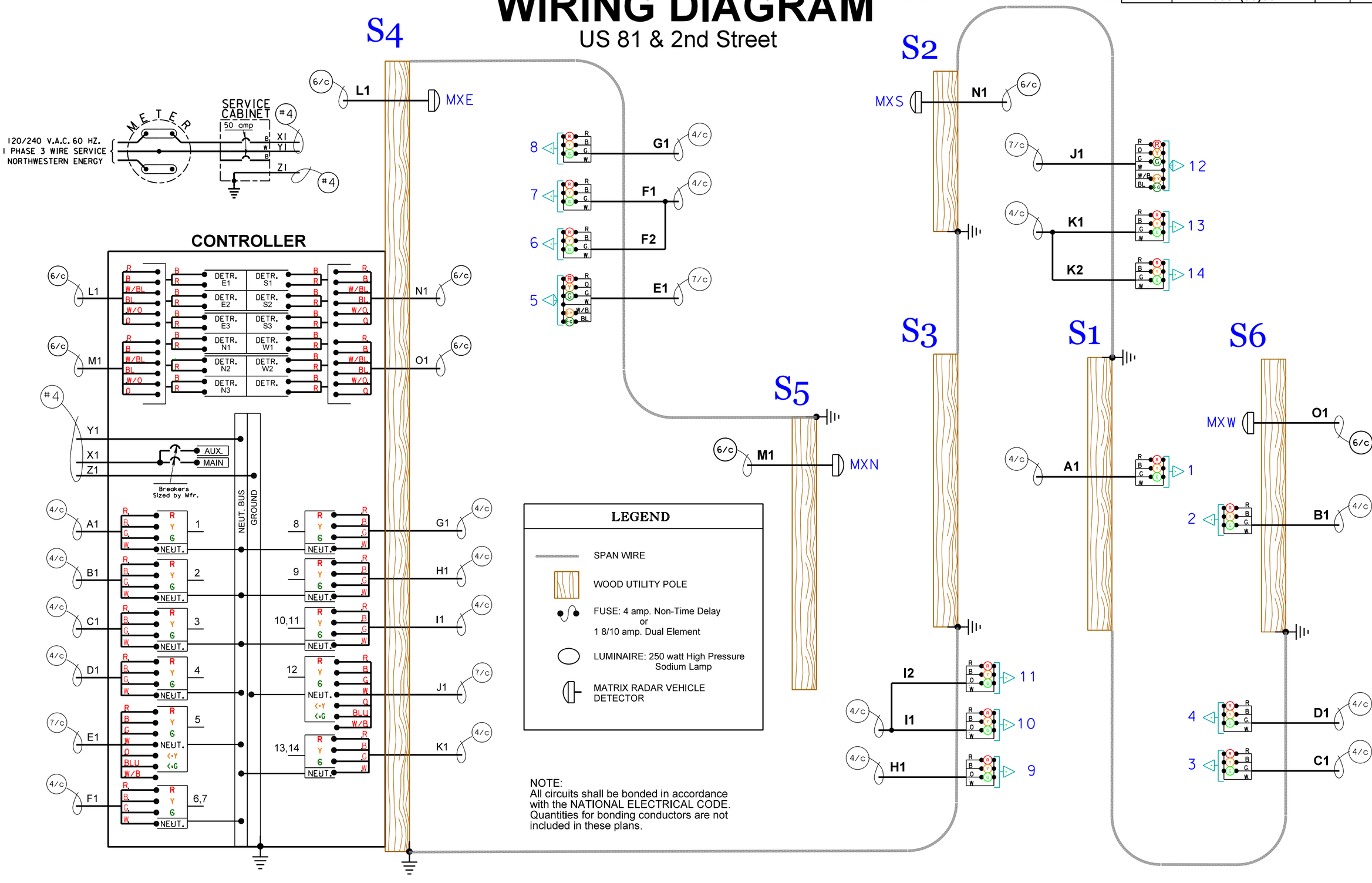
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C21	C28

PLOT SCALE - $$SCALE$$

PLOT NAME - $$PLOTNAME$$

PLOTTED FROM - $$USERNAME$$

FILE - $$FILENAME$$



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0081(99)381	C22	C28

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	16	30" x 30"	6	96
R1-2	YIELD	6	36" x 36"	9	54
R3-2	NO LEFT TURN (symbol)	10	24" x 24"	4	40
R3-7R	RIGHT LANE MUST TURN RIGHT	4	30" x 30"	6	24
R3-7L	LEFT LANE MUST TURN LEFT	2	30" x 30"	6	12
R4-7	KEEP RIGHT (symbol)	16	18" x 30"	4	64
R4-8	KEEP LEFT (symbol)	1	24" x 30"	5	5
R9-8	PEDESTRIAN CROSSWALK	10	36" x 18"	5	50
R9-9	SIDEWALK CLOSED	10	24" x 12"	2	20
R9-10	SIDEWALK CLOSED with ARROW (L or R) USE OTHER SIDE	10	24" x 12"	2	20
R9-11	SIDEWALK CLOSED AHEAD with ARROW (L or R) CROSS HERE	10	24" x 18"	3	30
R9-11a	SIDEWALK CLOSED with ARROW (L or R) CROSS HERE	10	24" x 12"	2	20
R11-2	ROAD CLOSED	14	48" x 30"	10	140
R11-4	ROAD CLOSED TO THRU TRAFFIC	6	60" x 30"	13	78
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16	32
W1-7	LARGE ARROW (two directions)	6	48" x 24"	8	48
W3-1	STOP AHEAD (symbol)	4	48" x 48"	16	64
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16	32
W6-3	TWO WAY TRAFFIC (symbol)	2	48" x 48"	16	32
W8-17	SHOULDER DROP-OFF (symbol)	4	48" x 48"	16	64
W9-3	CENTER LANE CLOSED AHEAD	1	48" x 48"	16	16
W11-2	PEDESTRIAN (symbol)	40	36" x 36"	9	360
W16-7P	DOWNWARD DIAGONAL ARROW (plaque)	20	24" x 12"	2	40
W16-9P	AHEAD (plaque)	20	30" x 18"	4	80
W20-1	ROAD WORK AHEAD	22	48" x 48"	16	352
W20-3	ROAD CLOSED AHEAD	7	48" x 48"	16	112
W20-4	ONE LANE ROAD AHEAD	6	48" x 48"	16	96
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	2	48" x 48"	16	32
W21-5	SHOULDER WORK	2	48" x 48"	16	32
W21-6	SURVEY CREW	2	48" x 48"	16	32
G20-1	ROAD WORK NEXT __ MILES	2	36" x 18"	5	10
G20-2	END ROAD WORK	2	36" x 18"	5	10
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			2129

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	60 Each

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Arrow Board	2 Each

ITEMIZED LIST FOR DETOUR SIGNING

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	SQ. FT. PER SIGN	SQ. FT.
M1-5	24" x 24"	SD ROUTE MARKER	15	4	60
M3-2	24" x 12"	DIRECTION MARKER - EAST	10	2	20
M3-4	24" x 12"	DIRECTION MARKER - WEST	5	2	10
M4-4	24" x 12"	TRUCK	15	2	30
M4-8	24" x 12"	DETOUR	15	2	30
M4-8a	24" x 18"	END DETOUR	2	3	6
M5-1	21" x 15"	ADVANCE TURN 90 DEGREE (LEFT OR RIGHT)	5	2.19	10.95
M6-1	21" x 15"	DIRECTION ARROW - HORIZONTAL SINGLE HEAD	5	2.19	10.95
M6-3	21" x 15"	DIRECTION ARROW - VERTICAL SINGLE HEAD	5	2.19	10.95
W20-2	48" x 48"	DETOUR AHEAD	4	16	64
				TOTAL SQ. FT.	252.85

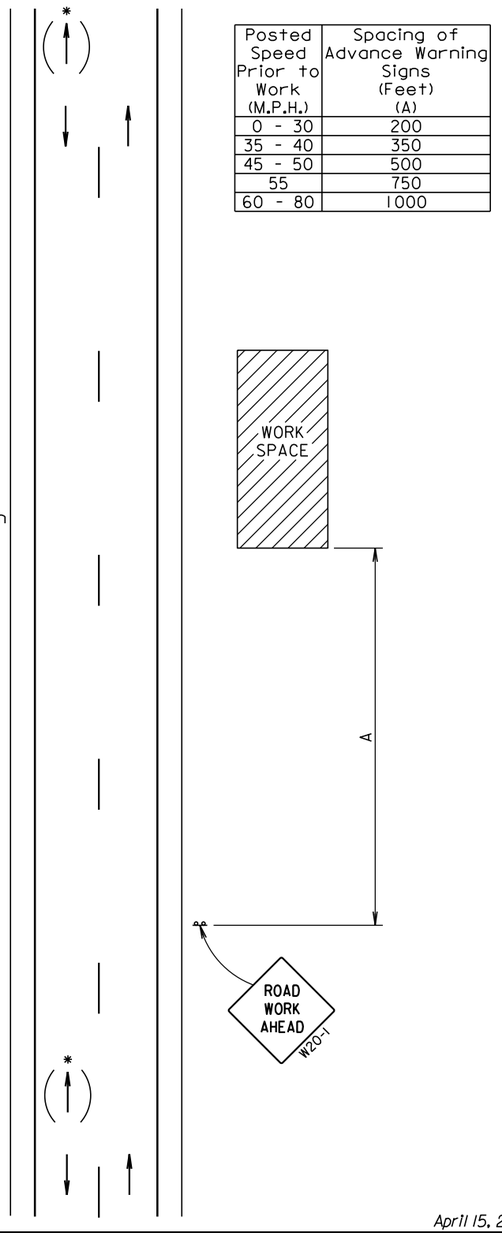
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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

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

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

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



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

April 15, 2015

Published Date: 2nd Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

PLATE NUMBER 634.01

Sheet 1 Of 1

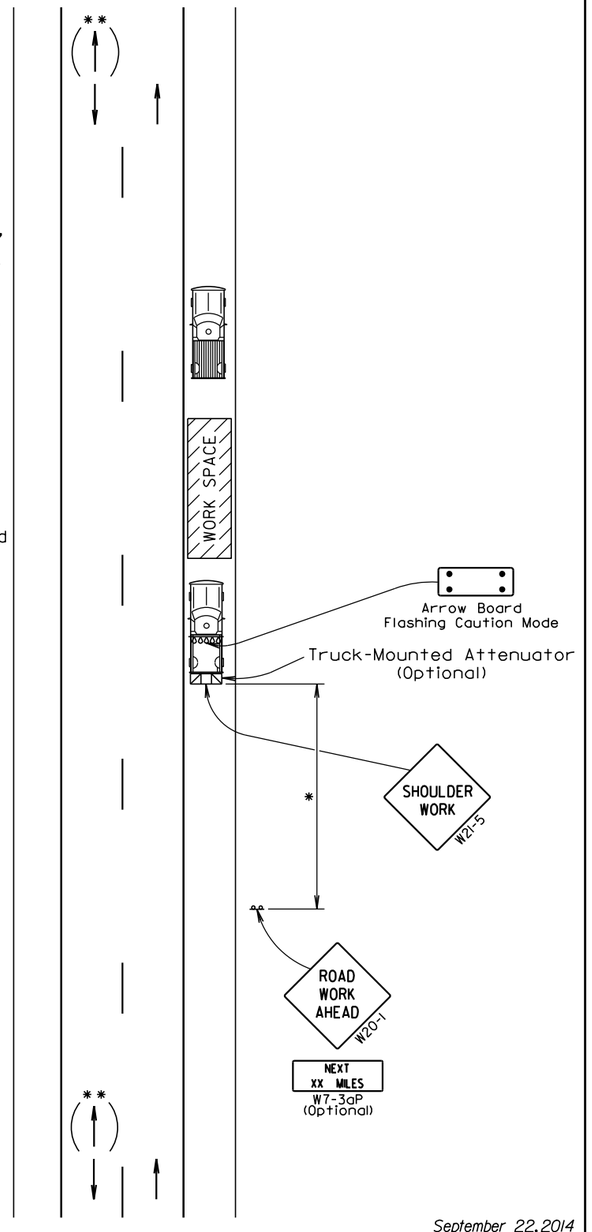
* In situations where multiple work locations in a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

The ROAD WORK NEXT xx MILES sign may be used instead of the ROAD WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.

Arrow board is required for intermittently and continuously moving mobile operations when work exceeds 1 hour.

** 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.

In situations where the distance between the advance warning signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign.



September 22, 2014

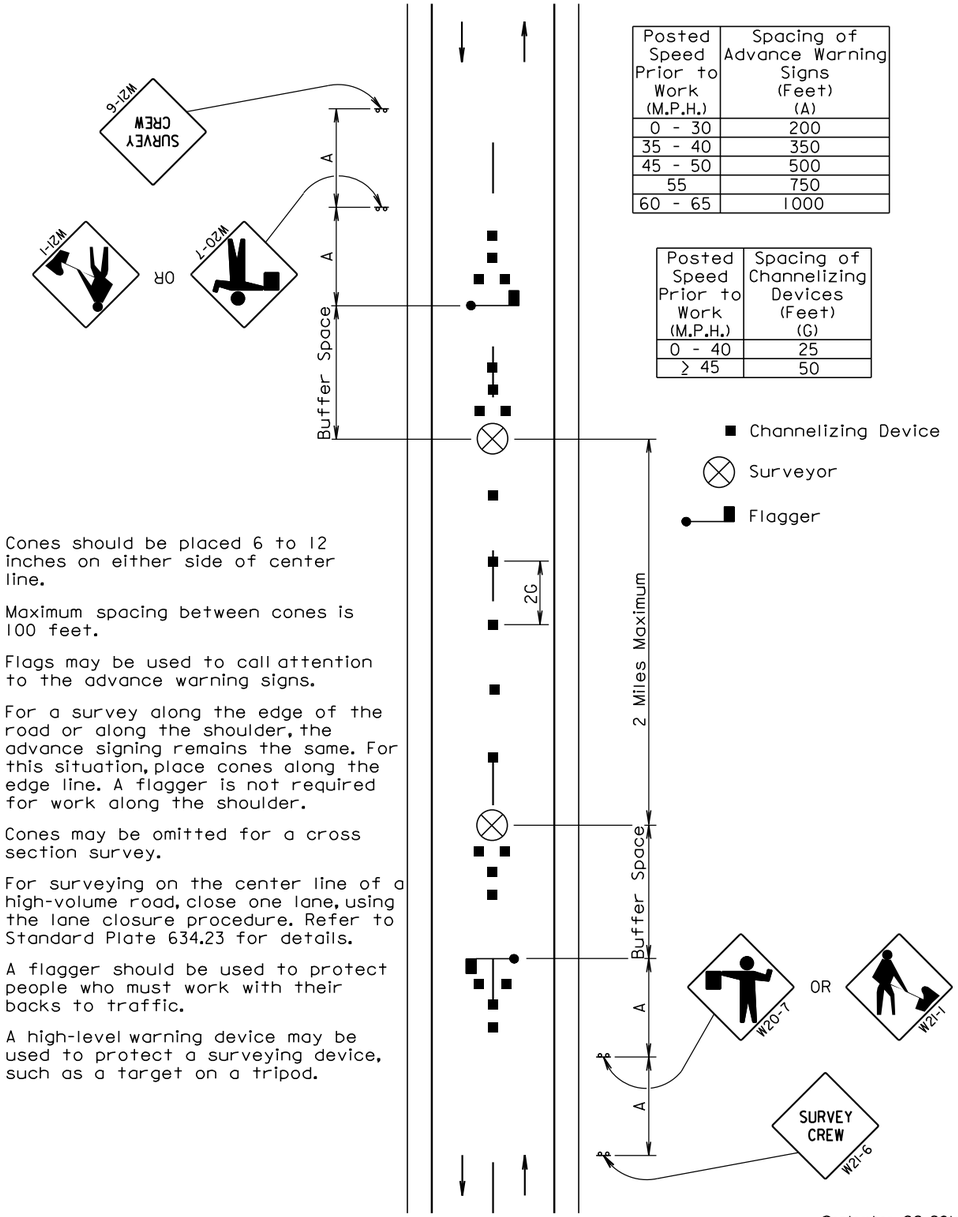
Published Date: 2nd Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
MOBILE OPERATIONS ON SHOULDER

PLATE NUMBER 634.04

Sheet 1 of 1



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 - 65	1000

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 40	25
≥ 45	50

■ Channelizing Device

⊗ Surveyor

■ Flagger

Cones should be placed 6 to 12 inches on either side of center line.

Maximum spacing between cones is 100 feet.

Flags may be used to call attention to the advance warning signs.

For a survey along the edge of the road or along the shoulder, the advance signing remains the same. For this situation, place cones along the edge line. A flagger is not required for work along the shoulder.

Cones may be omitted for a cross section survey.

For surveying on the center line of a high-volume road, close one lane, using the lane closure procedure. Refer to Standard Plate 634.23 for details.

A flagger should be used to protect people who must work with their backs to traffic.

A high-level warning device may be used to protect a surveying device, such as a target on a tripod.

September 22, 2014

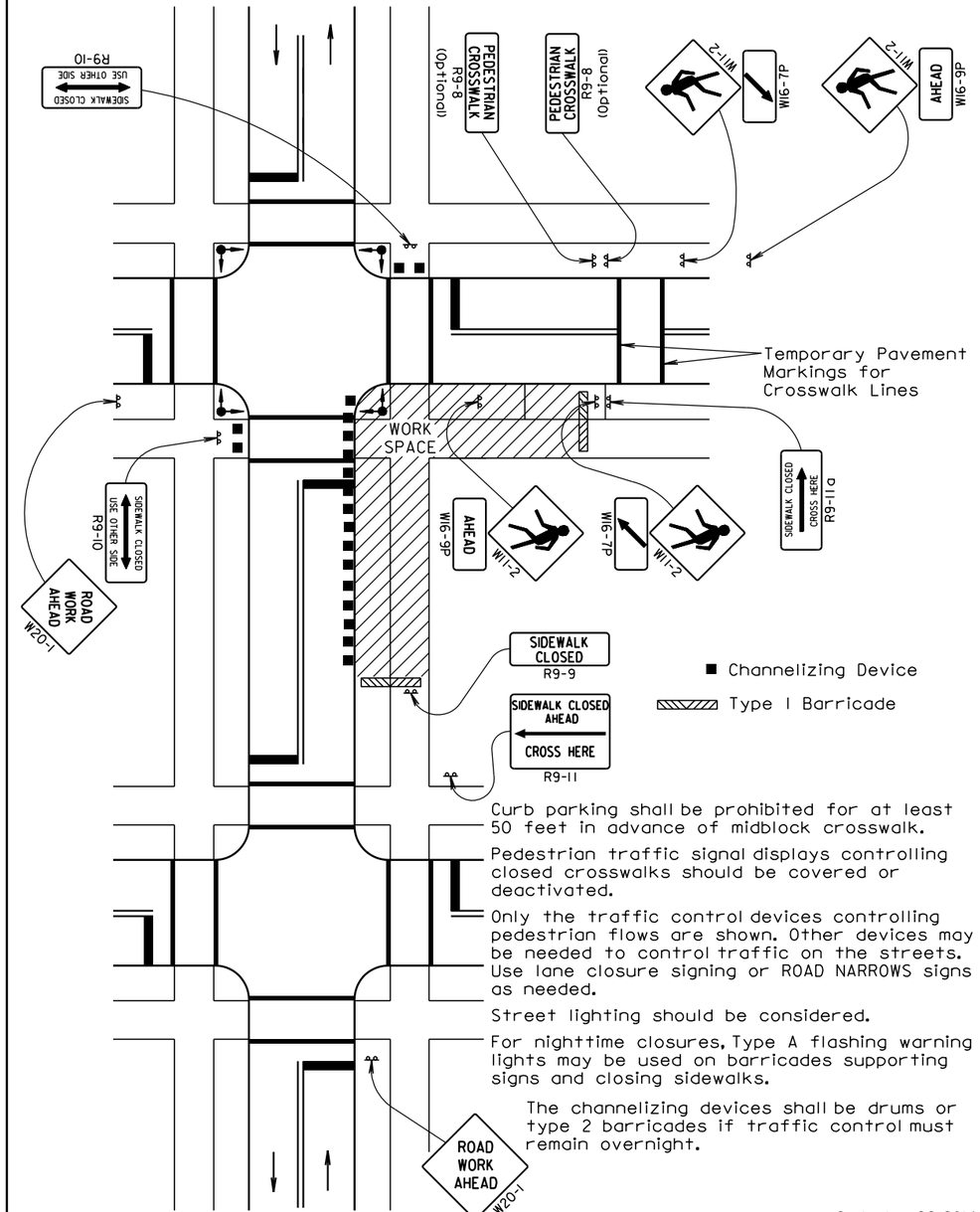
Published Date: 2nd Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
SURVEYING ALONG CENTER LINE

PLATE NUMBER 634.21

Sheet 1 of 1



Curb parking shall be prohibited for at least 50 feet in advance of midblock crosswalk.

Pedestrian traffic signal displays controlling closed crosswalks should be covered or deactivated.

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs as needed.

Street lighting should be considered.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks.

The channelizing devices shall be drums or type 2 barricades if traffic control must remain overnight.

September 22, 2014

Published Date: 2nd Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
SIDEWALK CLOSURES AND PEDESTRIAN DETOURS

PLATE NUMBER 634.33

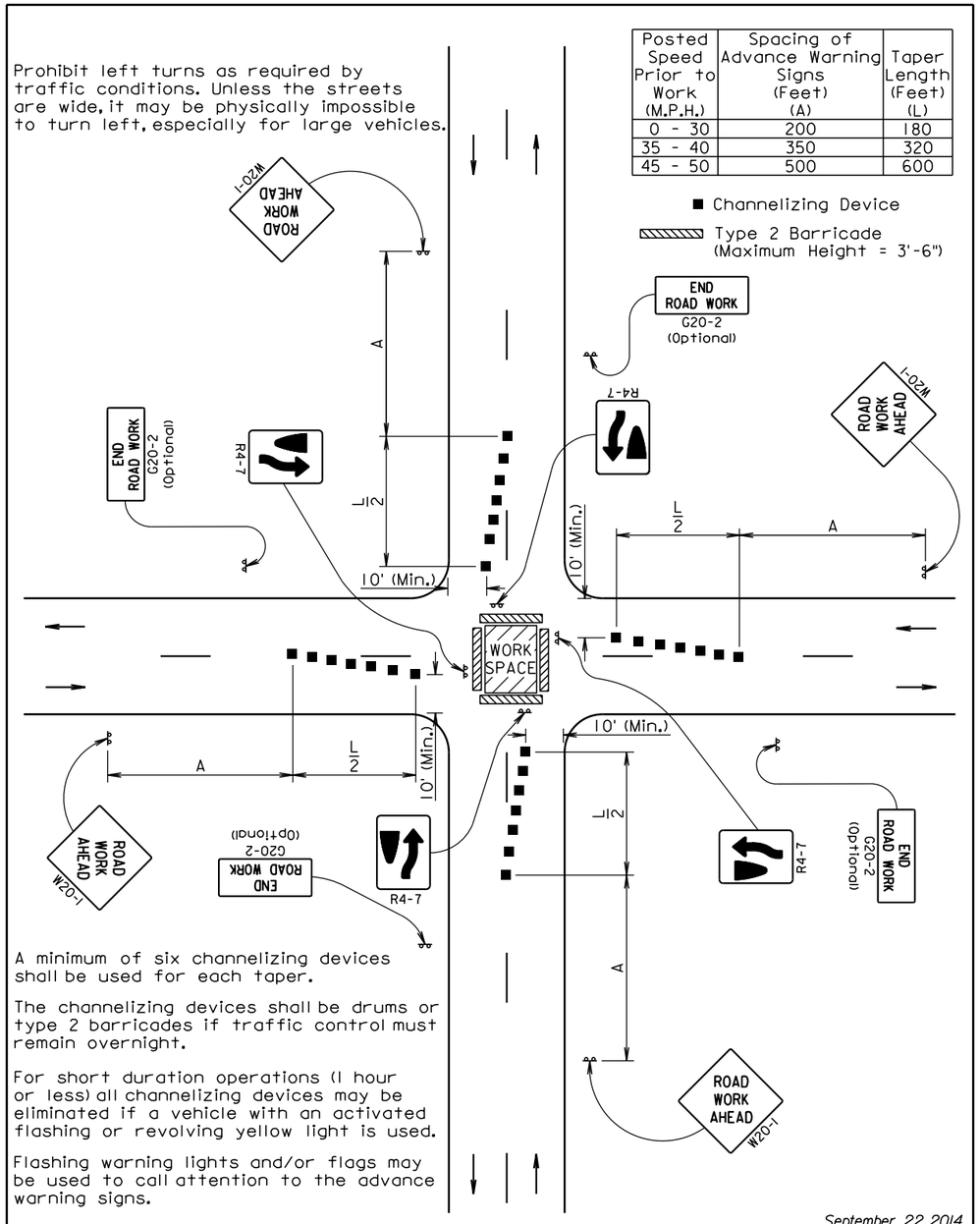
Sheet 1 of 1

Prohibit left turns as required by traffic conditions. Unless the streets are wide, it may be physically impossible to turn left, especially for large vehicles.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600

■ Channelizing Device

▨ Type 2 Barricade (Maximum Height = 3'-6")



A minimum of six channelizing devices shall be used for each taper.

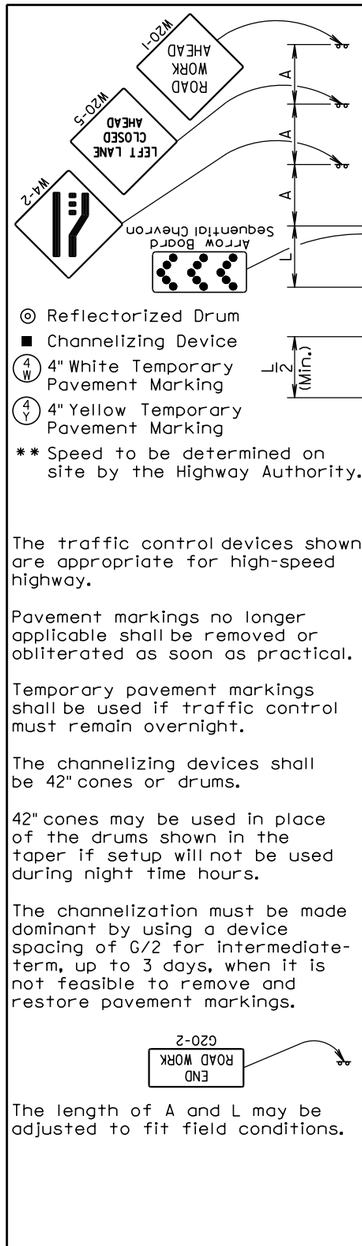
The channelizing devices shall be drums or type 2 barricades if traffic control must remain overnight.

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.

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

September 22, 2014

Published Date: 2nd Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES CLOSURE IN CENTER OF INTERSECTION	PLATE NUMBER 634.35
			Sheet 1 of 1



◎ Reflectorized Drum

■ Channelizing Device

(4 W) 4" White Temporary Pavement Marking

(4 Y) 4" Yellow Temporary Pavement Marking

** Speed to be determined on site by the Highway Authority.

The traffic control devices shown are appropriate for high-speed highway.

Pavement markings no longer applicable shall be removed or obliterated as soon as practical.

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

The channelizing devices shall 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.

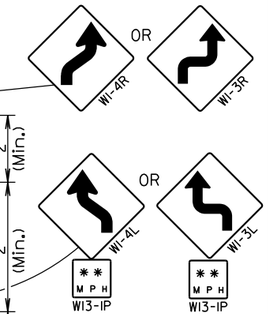
The channelization must be made dominant by using a device spacing of G/2 for intermediate-term, up to 3 days, when it is not feasible to remove and restore pavement markings.

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

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

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 40	25
45 - 50	50 *
55	50 *
60 - 65	50 *

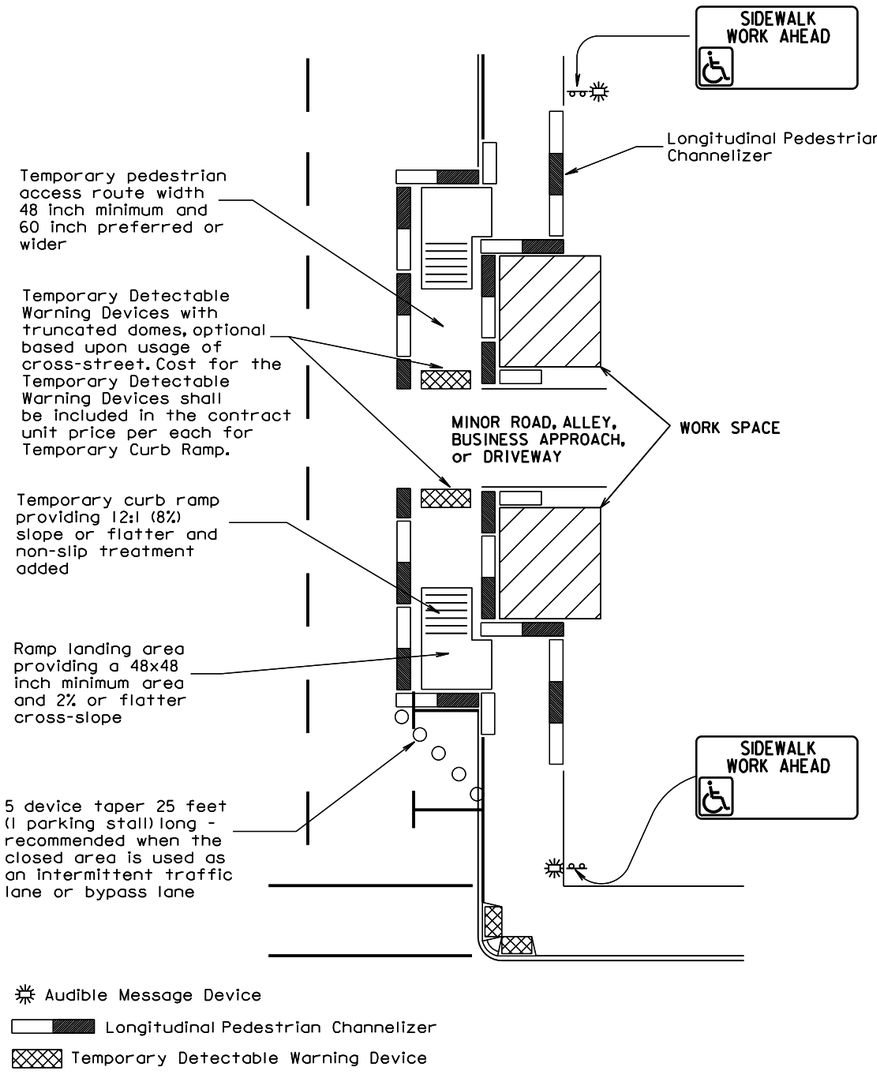
* Spacing is 40' for 42" cones.



September 22, 2014

Published Date: 2nd Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES HALF ROAD CLOSURE ON MULTILANE HIGHWAY	PLATE NUMBER 634.46
			Sheet 1 of 1

LOW-SPEED ROADWAY



GUIDES FOR PEDESTRIAN TRAFFIC CONTROL DEVICES
SIDEWALK BY-PASS FOR LOW SPEED ROADWAY

Temporary Curb Ramps shall be 48" minimum width with a firm, stable and non-slip surface.

Protective edging with a 2" minimum height shall be installed when the curb ramp or landing platform has a vertical drop of 6" or greater or has a side apron slope steeper than 1:3 (33%). Protective edging should be considered when curb ramps or landing platforms have a vertical drop of 3" or more.

Detectable edging with 6" minimum height and contrasting color shall be installed on all curb ramp landings where the walkway changes direction (turns).

Curb ramps and landings should have a 1:50 (2%) max cross-slope.

Clear space of 48"x48" minimum shall be provided above and below the curb ramp.

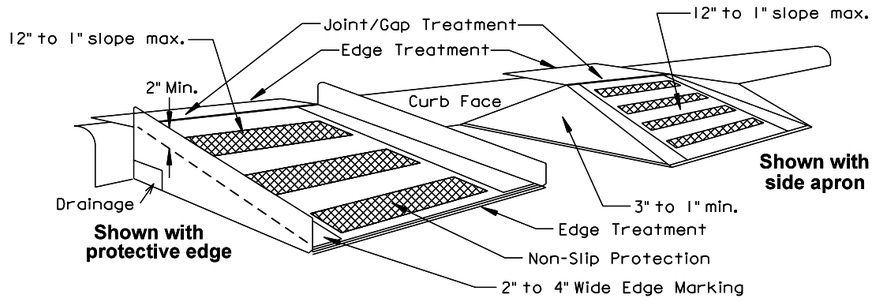
The curb ramp walkway edge shall be marked with a contrasting color 2" to 4" wide marking. The marking is optional where color contrasting edging is used.

Water flow in the gutter system shall have minimal restriction.

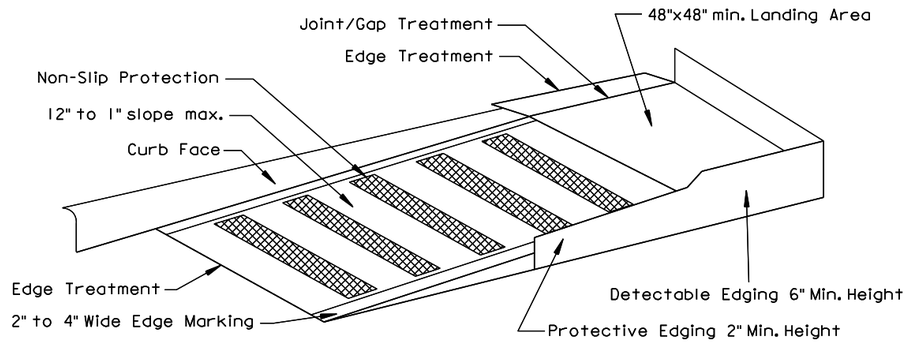
Lateral joints or gaps between surfaces shall be less than 0.5 inches wide.

Changes between surface heights should not exceed 0.5 inches. Lateral edges should be vertical up to 0.25 inches high and beveled at 1:2 between 0.25 in. and 0.5 in height.

All costs for the Temporary Curb Ramps, including labor, materials, equipment to install, maintain and remove the ramp, landing area, edge treatment, temporary detectable warning devices and detectable edging shall be included in the unit cost per Each for Temporary Curb Ramp.



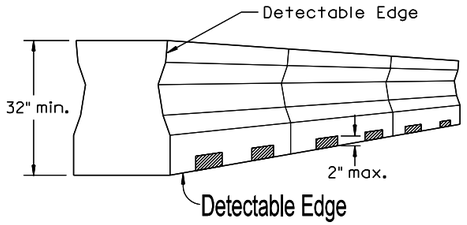
Temporary Curb Ramp - Perpendicular to Curb



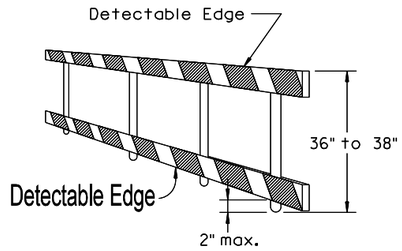
Temporary Curb Ramp - Parallel to Curb

GUIDES FOR PEDESTRIAN TRAFFIC CONTROL DEVICES
PEDESTRIAN DETOURS
{Sheet 1 of 3}

Longitudinal Pedestrian Barricade
(used to seperate pedestrians and vehicles)



Longitudinal Pedestrian Channelizer
(used to guide pedestrians in areas where no vehicles)



To prevent any tripping hazard to pedestrians, ballast shall be located behind or internal to the device. Any support on the front of the device shall not extend into the 48 inch minimum walkway clear space and shall have 0.5 inch maximum height above the walkway surface with approved beveling.

Detectable edges for long canes shall be continuous and 6 inches minimum high above the walkway surface and have color or markings contrasting with the walkway surface.

Devices shall not block water drainage from the walkway. A gap height or opening from the walkway surface up to 2 inches maximum height is allowed for drainage purposes.

Railings or other objects may protrude a maximum of 4 inches into the walkway clear space when located 27 inches minimum above the walkway surface.

Longitudinal channelizing devices for pedestrians shall be 32 inches high or greater. They shall not block sight distance for motorists.

When hand guidance is required, the top rail or top surface shall:
- be in a vertical plane perpendicular to the walkway above the detectable edge
- be continuous at a height of 36 to 38 inches above the walkway surface, and
- be supported with minimal interference to the pedestrians hands or fingers.

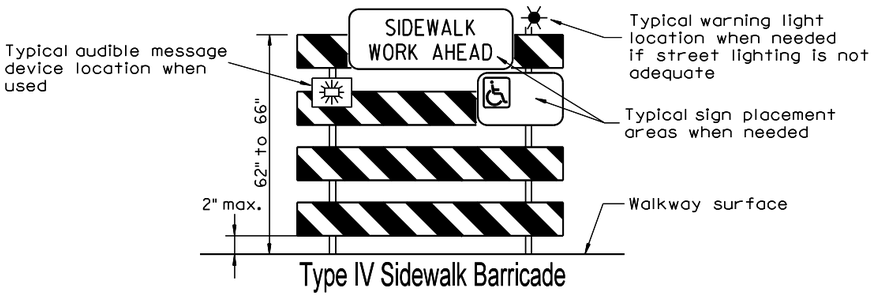
All devices shall be free of sharp or rough edges, and fasteners (bolts) shall be rounded to prevent harm to hands, arms or clothing of pedestrians.

All devices used to channelize pedestrian flow should interlock such that gaps do not allow pedestrians to stray from the channelized path.

Any pedestrian devices used to provide positive protection (traffic or hazard) for pedestrians or workers shall meet crashworthy requirements appropriate for the barriers application.

All costs for furnishing and installing the Longitudinal Pedestrian Barricade shall be incidental to the contract unit price per linear foot for Longitudinal Pedestrian Barricade.

All costs for furnishing and installing the Longitudinal Pedestrian Channelizer shall be incidental to the contract unit price per linear foot for Longitudinal Pedestrian Channelizer.



Type IV Sidewalk Barricade

All costs for furnishing and installing the Type IV Sidewalk Barricade shall be incidental to the contract unit price per unit for Type IV Sidewalk Barricade .

GUIDES FOR PEDESTRIAN TRAFFIC CONTROL DEVICES
PEDESTRIAN DETOURS
{Sheet 2 of 3}

When crosswalks, sidewalks or other pedestrian facilities are blocked, closed or relocated, temporary facilities shall include accessibility features.

An approved audible message device or tactile message should be provided for sight-impaired pedestrians. When used, a message device should provide a complete physical description of the temporary pedestrian detour including duration, length of (and/or distance to) the by-pass, any restrictions or hazards and project information. The number and locations of devices should be determined for each project prior to starting work. The Audible Message Device shall be paid for on a per each basis.

No vehicles, equipment or materials shall block sidewalks, pedestrian ramps or other pedestrian infrastructure without approval of the engineer.

The International Symbol of Accessibility should be displayed when any walkway through a work zone has been determined to be ADA compliant. The Symbol of Accessibility shall not be displayed if persons with disabilities should not use the primary temporary pedestrian detour. The reason for the non-compliance should be posted and an alternate route should be posted when the primary temporary pedestrian detour is non-compliant to ADA standards.

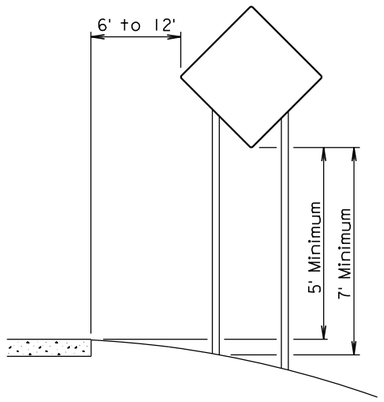
Conditions that are beyond recommended standards should be documented. A walkway is non-compliant if it is missing key ADA elements such as curb ramp(s) truncated domes and detectable edging. Other restrictions or hazards may include insufficient width or pinch-point widths, traffic conflicts, steep grades, non-continuous railings, tripping hazards, or uneven/rough/soft surface conditions, etc.

Pedestrian traffic signal displays controlling closed crosswalks shall be covered.

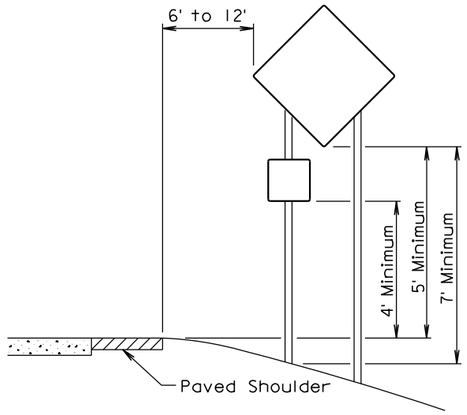
When a sidewalk is closed but workers are present who will provide assistance or directions to pedestrians, then the devices as shown are not required.

When both sides of a temporary pedestrian bypass require channelizing devices, then the devices should be a similar type (railing system, barricade, or fencing system), excluding when TTC barrier (such as concrete barrier) is used to protect pedestrians from an open traffic lane.

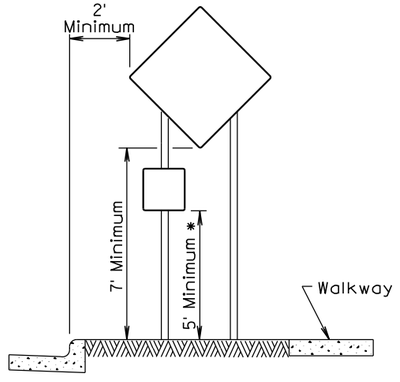
GUIDES FOR PEDESTRIAN TRAFFIC CONTROL DEVICES
PEDESTRIAN DETOURS
{Sheet 3 of 3}



RURAL DISTRICT

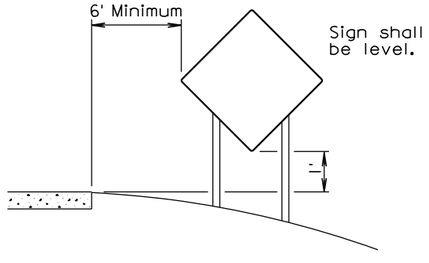


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

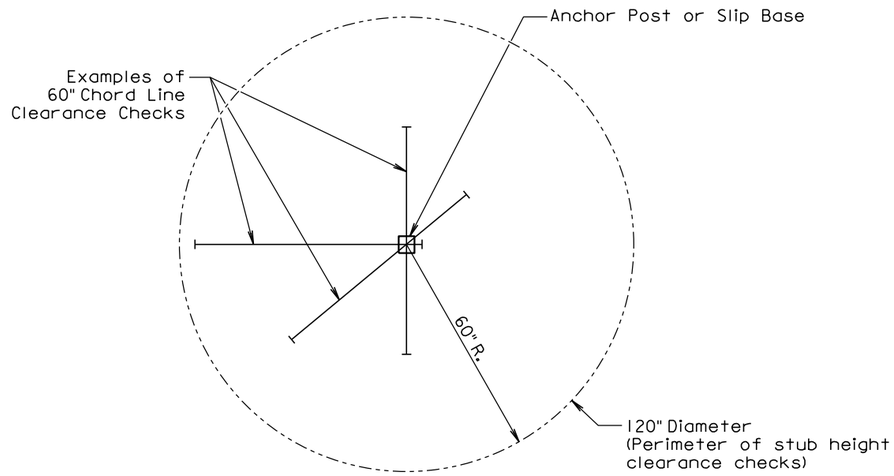
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



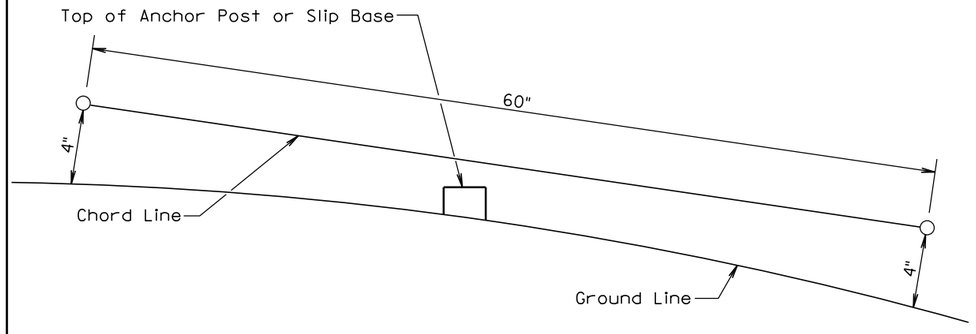
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22,2014

Published Date: 2nd Qtr. 2015	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 2nd Qtr. 2015	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1