GRE

APR 2016

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details
Section No.	3	Estimate of Quantities
~~Section No.~~	~~3~~	~~Miscellaneous Quantities~~
~~Section No.~~	~~4~~	~~Right of Way Plat~~
~~Section No.~~	~~5~~	~~Plan and Profile~~
Section No.	6	Standard Detail Drawings
~~Section No.~~	~~7~~	~~Sign Plates~~
Section No.	8	Structure Plans
~~Section No.~~	~~9~~	~~Computer Earthwork Data~~
~~Section No.~~	~~9~~	~~Cross Sections~~

TOTAL SHEETS = 28

PROJECT ID: 4987-07-71
WITH: 4987-07-72

COUNTY: BROWN

32

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CITY OF GREEN BAY

GREEN BAY LIFT STRUCTURES

STH 29

BROWN COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4987-07-71	WISC 2016123	1

STATE PROJECT NUMBER
4987-07-71

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES

- ELECTRIC (E)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

LAYOUT
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.0 MI.

ORIGINAL PLANS PREPARED BY

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

WISCONSIN PROFESSIONAL ENGINEER
ALEXANDER H. NOBLE
E-44564-6
NEW YORK
NY

1-05-2016

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	N/A
Designer	EMCS, INC.
Project Manager	ANDREW FULCER
Regional Examiner	
Regional Supervisor	DAN SEGERSTROM

APPROVED FOR THE DEPARTMENT

DATE: 1/5/2016 Andrew D. Fulcer (Signature)

E

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GENERAL NOTES

THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA. NOT ALL UTILITIES ARE MEMBERS OF DIGGERS HOTLINE.

DESIGNER NOTES

TITLE SHEET, GENERAL NOTES, AND UTILITY COORDINATION COMPLETED BY EMCS, INC.
STRUCTURE PLANS COMPLETED BY HARDESTY AND HANOVER, LLP

OTHER CONTACTS

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MOBILE: 920-619-4917
RREINHART@GBMSD.ORG

GREEN BAY WATER UTILITY

(WATER)
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631 SOUTH ADAMS STREET
GREEN BAY, WI 54305
PHONE: 920-448-3480
MOBILE: 920-621-8071
JEFFWO@GREENBAYWI.GOV

TIME WARNER CABLE, A DELAWARE LIMITED PARNTERSHIP

(COMMUNICATIONS)
VINCE ALBIN
3520 DESTINATION DRIVE
APPLETON, WI 54915
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MOBILE: 920-378-0444
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WINDSTREAM KDL, INC.

(COMMUNICATIONS)
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MOBILE: 608-512-5587

WISCONSIN PUBLIC SERVICE

(ELECTRIC - DISTRIBUTION & GAS)
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GREEN BAY, WI 54307-9001
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FAX: 920-433-1360
LABUTRY@INTEGRYSGROUP.COM

ELECTRIC FIELD CONTACT:
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PO BOX 19001
GREEN BAY, WI 54307-9001
PHONE: 920-617-5167
MOBILE: 920-655-1596
RDSTEIER@WISCONSINPUBLICSERVICE.COM

GAS FIELD CONTACT:
DAVID RETZLAFF
2850 SOUTH ASHLAND AVENUE
PO BOX 19001
GREEN BAY, WI 54307-9001
PHONE: 920-617-5237

DIGGERS HOTLINE
Dial 811 or (800) 242-8511
www.DiggersHotline.com

PROJECT NO: 4987-07-71	HWY: STH 29	COUNTY: BROWN	PROJECT OVERVIEW	SHEET 3	E

FILE NAME : P:\48xx\4859.DP.14.STH29.BRO\CADDS\Plan\4987-07-71 Phase 1\020201_po.dgn PLOT DATE : 9/17/2015 PLOT BY : sgc PLOT NAME : PLOT SCALE : 1:800

WISDOT/CADDS SHEET 42

DATE 18FEB16 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4987-07-71 QUANTITY
0010	619.1000	Mobilization	EACH	0.200	0.200
0030	643.0100	Traffic Control (project) 01. 4987-07-71	EACH	1.000	1.000
0040	ASP.1T0A	On-the-Job Training Apprentice at $5. 00/HR	HRS	300.000	300.000
0050	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	600.000	600.000
0060	SPV.0105	Special 01. Mason Street Bridge Remote Operations Work, B-05-0134	LS	1.000	1.000
0070	SPV.0105	Special 02. Mason Street Bridge CCTV System, B-05-0134	LS	1.000	1.000

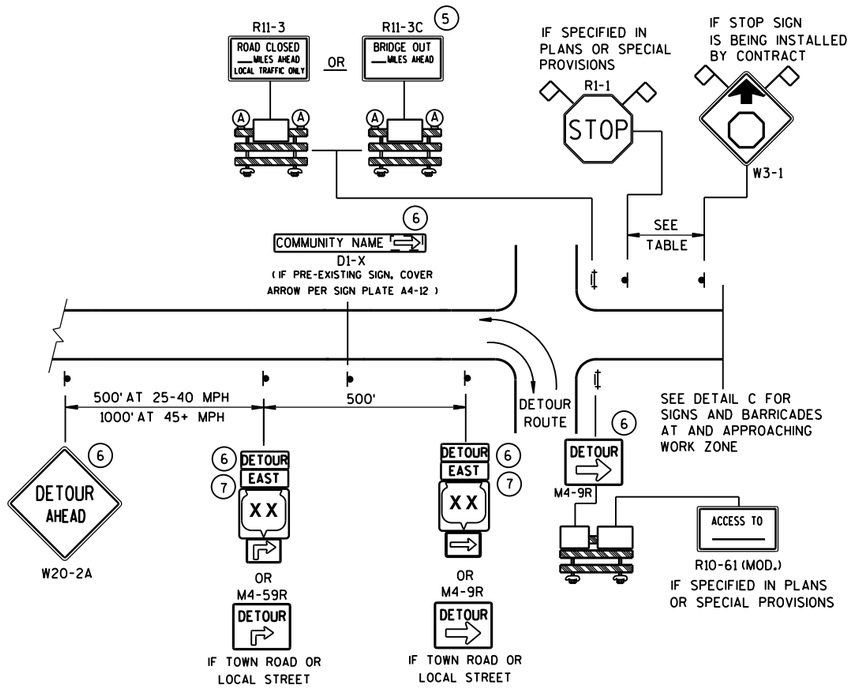
3

Standard Detail Drawing List

15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C05-02	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS
15D20-03	TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY
15D21-03	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D29-03	TRAFFIC CONTROL, VEHICLE ENTRANCE/EXIT OR HAUL ROAD

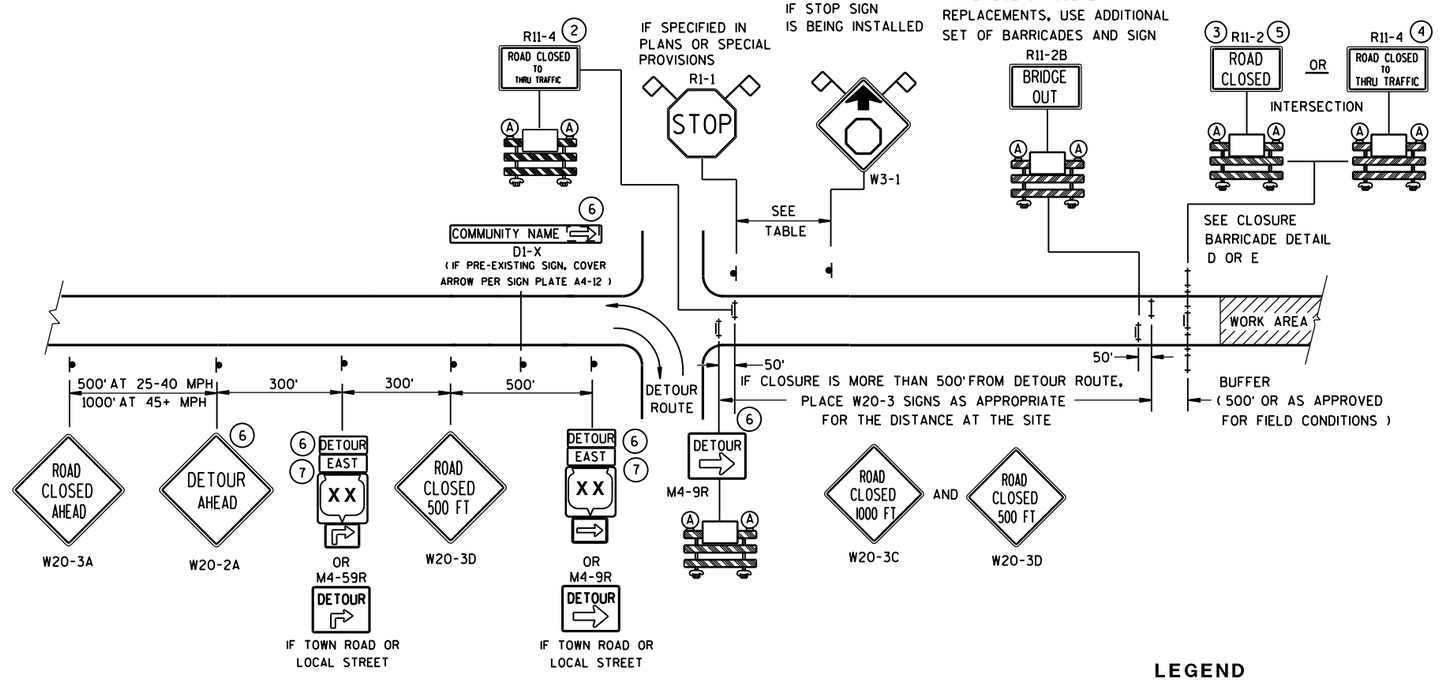
6

6



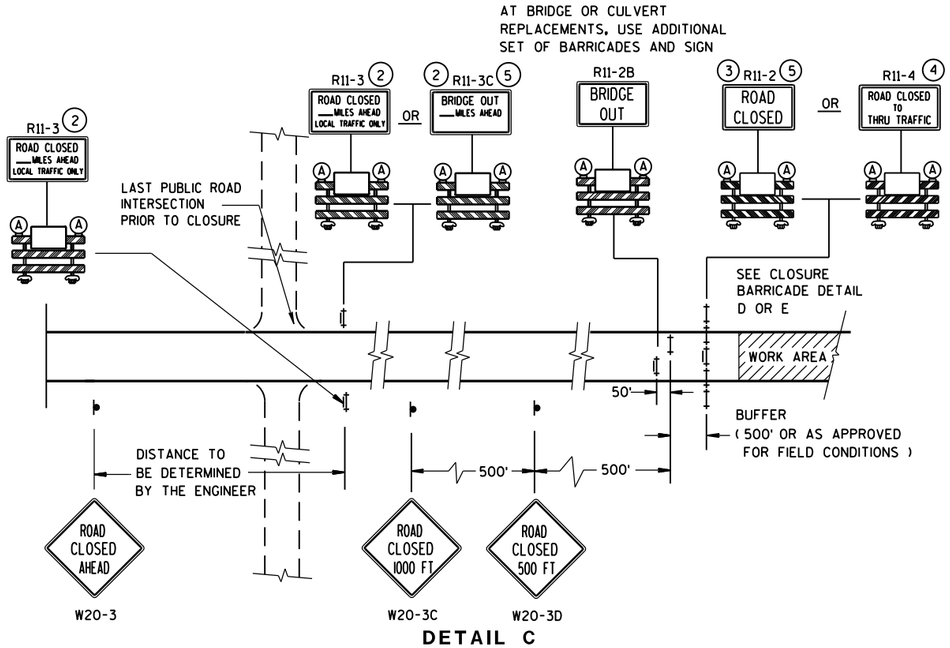
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

SEE SDD 15C2-SHEET "**b**" FOR GENERAL NOTES AND FOOTNOTES (1) THROUGH (7)

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1 OR M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

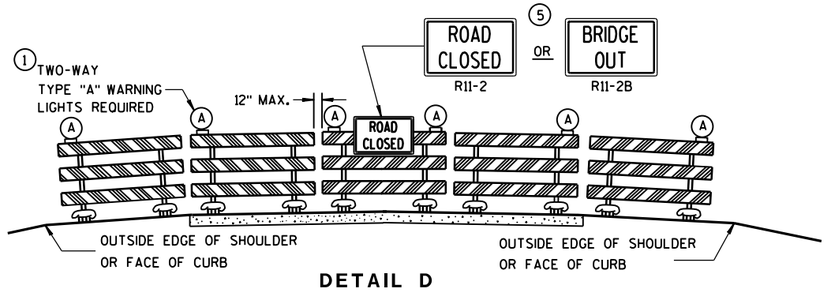
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

6

S.D.D. 15 C 2-6a

6

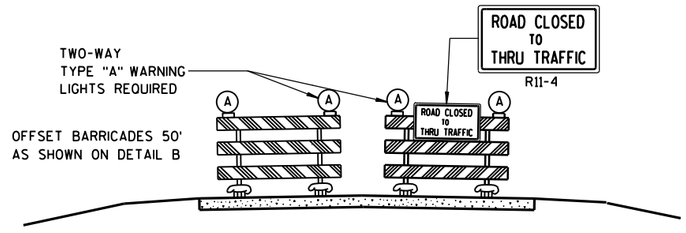
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-SHEET "**a**" FOR LEGEND

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND BARRICADES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL D FOR FULL ROAD CLOSURES.

TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11-2, R11-3, M4-9, R11-4 AND R10-61 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

"WO AND "MO" SIGNS ARE THE SAME AS "W" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO 7 FIC
SAFETY ENGI
FHWA

THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.

GENERAL NOTES

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

THE SPACING BETWEEN TRAFFIC CONTROL AND DETOUR SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE", SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

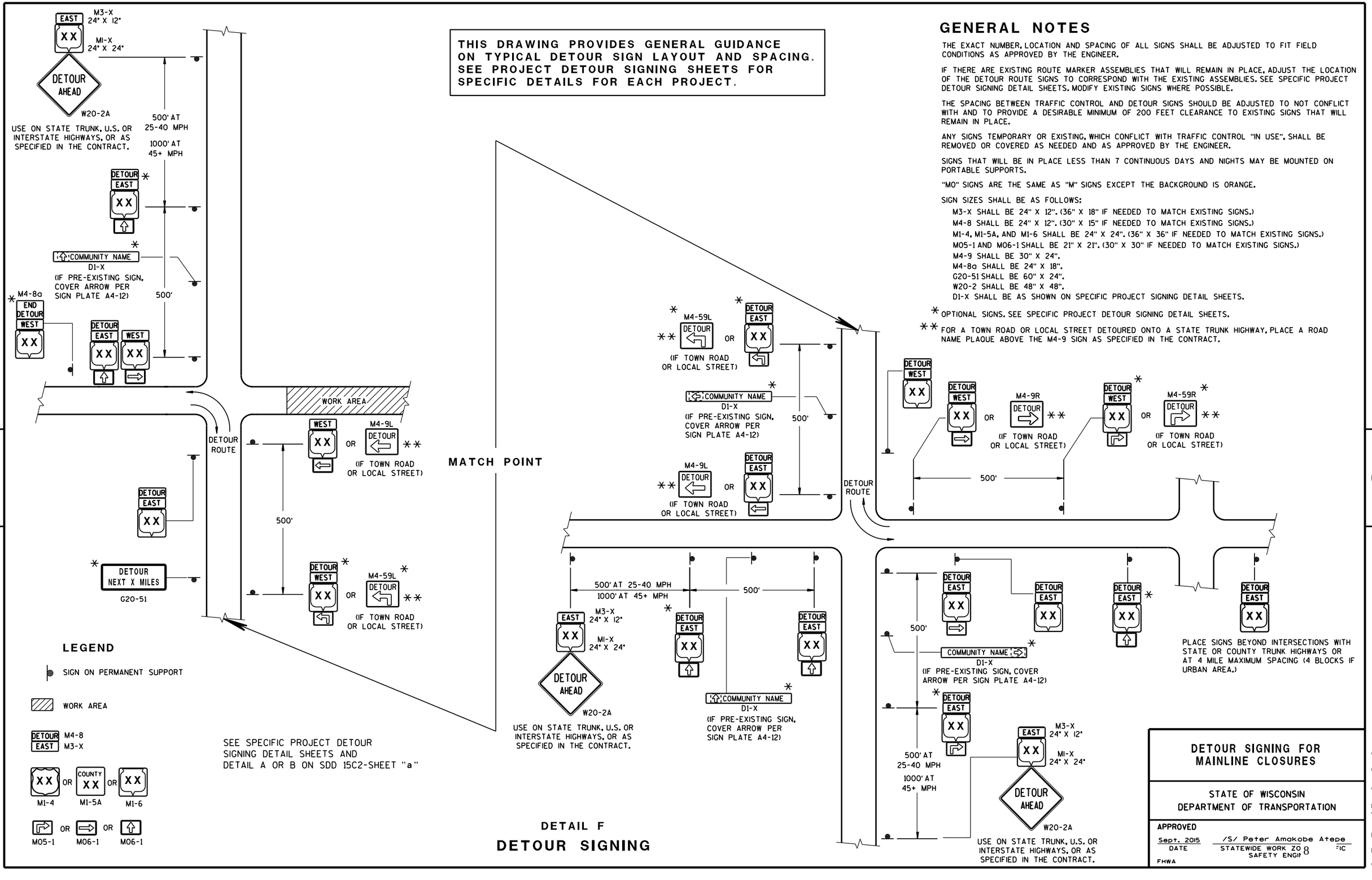
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- MO5-1 AND MO6-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-9 SHALL BE 30" X 24".
- M4-8a SHALL BE 24" X 18".
- G20-51 SHALL BE 60" X 24".
- W20-2 SHALL BE 48" X 48".
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.



DETAIL F

DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

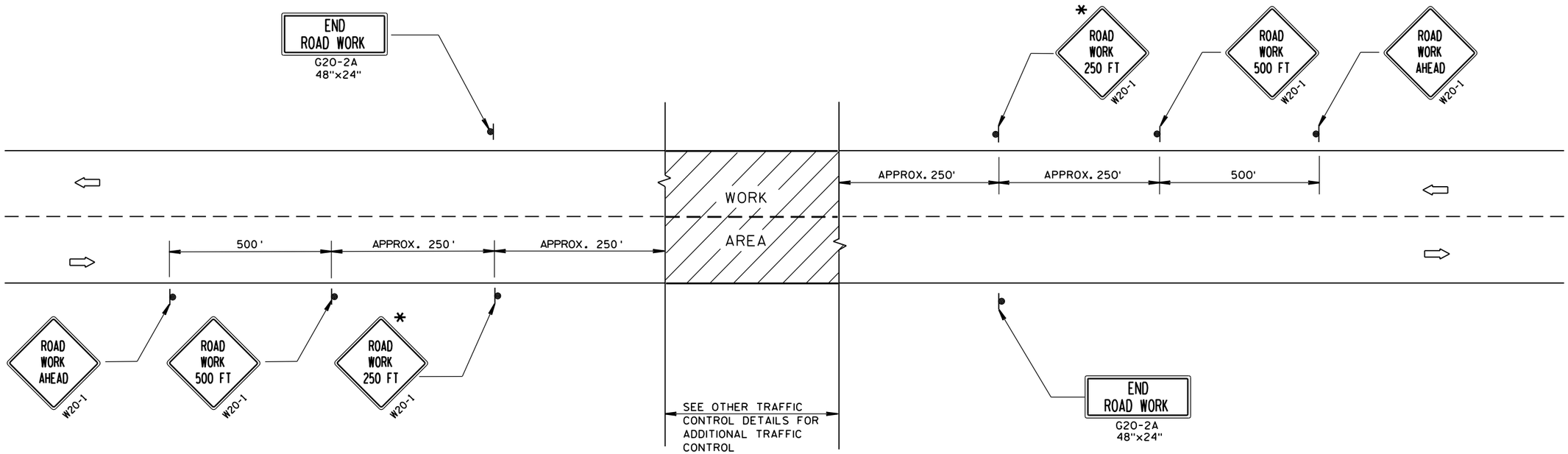
Sept. 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZONE SAFETY ENGINEER

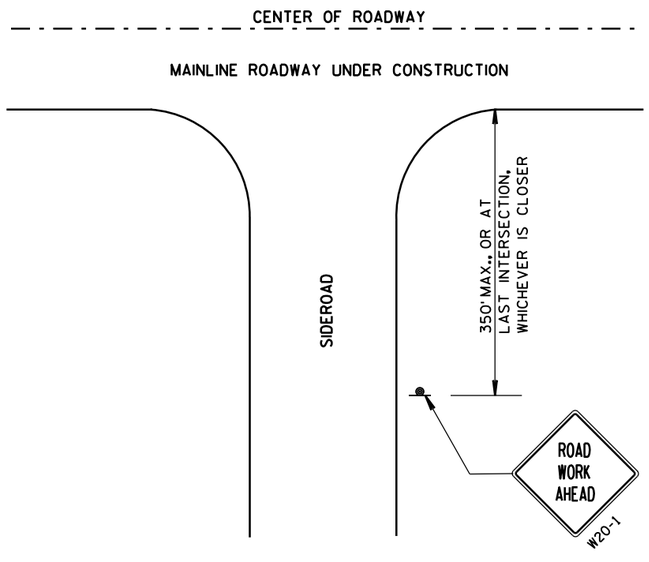
FHWA

6

S.D.D. 15 C 2-6c



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL



GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"x36" SIGNS MAY BE USED INSTEAD OF 48"x48" SIGNS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FT" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.

LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

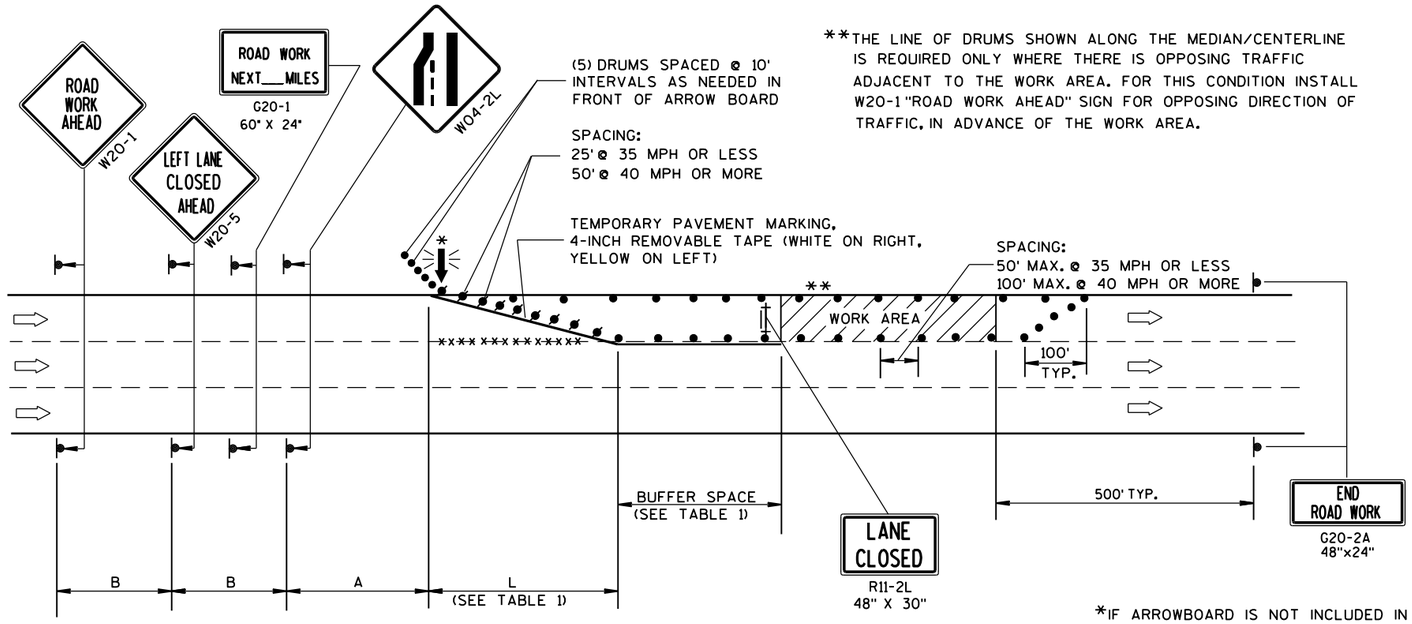
APPROVED

8/2013 (DATE) — /S/ Travis Feltes (STATE TRAFFIC ENGINEER) — (SIGN)

FHWA

6

S.D.D. 15 C 5-2



**THE LINE OF DRUMS SHOWN ALONG THE MEDIAN/CENTERLINE IS REQUIRED ONLY WHERE THERE IS OPPOSING TRAFFIC ADJACENT TO THE WORK AREA. FOR THIS CONDITION INSTALL W20-1 "ROAD WORK AHEAD" SIGN FOR OPPOSING DIRECTION OF TRAFFIC, IN ADVANCE OF THE WORK AREA.

B=400' AT 25-30 MPH
700' AT 35-40 MPH
1000' AT 45-55 MPH

A=200' AT 25-30 MPH
350' AT 35-40 MPH
500' AT 45-55 MPH

(PLACE BARRICADE AND SIGN APPROX. EVERY 1000' ACROSS THE CLOSED LANE)

*IF ARROWBOARD IS NOT INCLUDED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE A TYPE III BARRICADE WITH W01-6 SIGN IN THE LANE CLOSURE TAPER.

W01-6
48"x24"

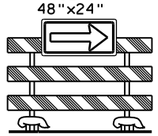


TABLE 1
TAPER AND BUFFER SPACE FOR 12' LANE WIDTH

S	L	BUFFER SPACE
25	125'	55'
30	180'	85'
35	245'	120'
40	320'	170'
45	540'	220'
50	600'	280'
55	660'	335'

FOR LANE WIDTH OTHER THAN 12':

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

L = TAPER LENGTH IN FEET

S = NON-CONSTRUCTION SPEED LIMIT (MPH)

W = WIDTH OF LANE CLOSURE

LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- DIRECTION OF TRAFFIC
- REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- WORK AREA

GENERAL NOTES

THIS LANE CLOSURE DETAIL IS TYPICAL FOR CLOSING THE LEFT LANE. FOR A RIGHT LANE CLOSURE, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR ROADWAYS WITH EITHER TWO OR THREE LANES IN EACH DIRECTION.

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

ON UNDIVIDED ROADWAYS, OMIT THE SIGNS SHOWN ON LEFT SIDE OF ROAD.

W20-1, G20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE APPROACHING DRIVER HAS A CLEAR VIEW OF THE ARROWBOARDS AND LANE CLOSURE DRUMS.

PLACE THE ARROWBOARD AS CLOSE AS POSSIBLE TO THE BEGINNING OF THE LANE CLOSURE TAPER, PREFERABLY ON THE SHOULDER OR TERRACE.

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Feb. 2015 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 D 20-3

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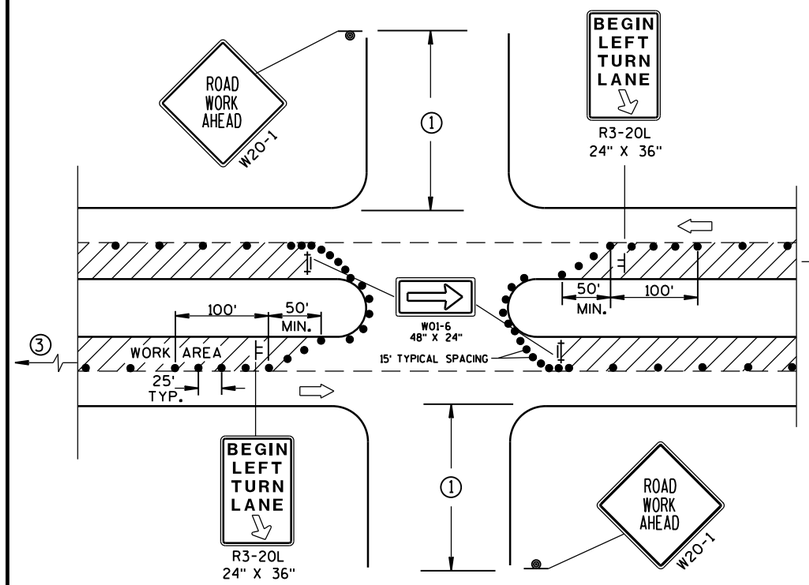
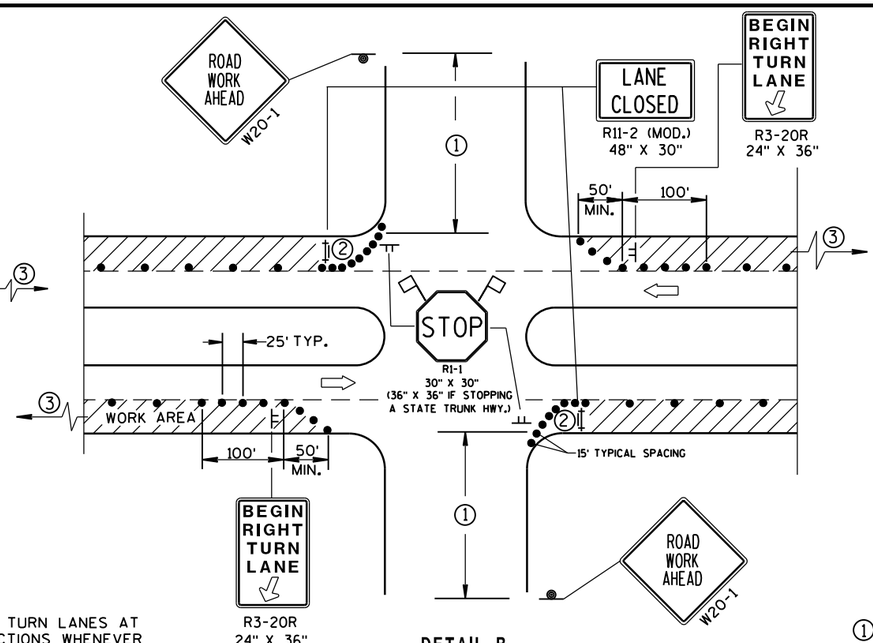
S.D.D. 15 D 20-3



DETAIL A

FOR LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING

PROVIDE TURN LANES AT INTERSECTIONS WHENEVER STAGING OF WORK ALLOWS. TAPER AND TURN LANE LENGTHS BASED ON FIELD CONDITIONS AS APPROVED BY THE ENGINEER.



DETAIL B

FOR RIGHT LANE CLOSURE AT INTERSECTION

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

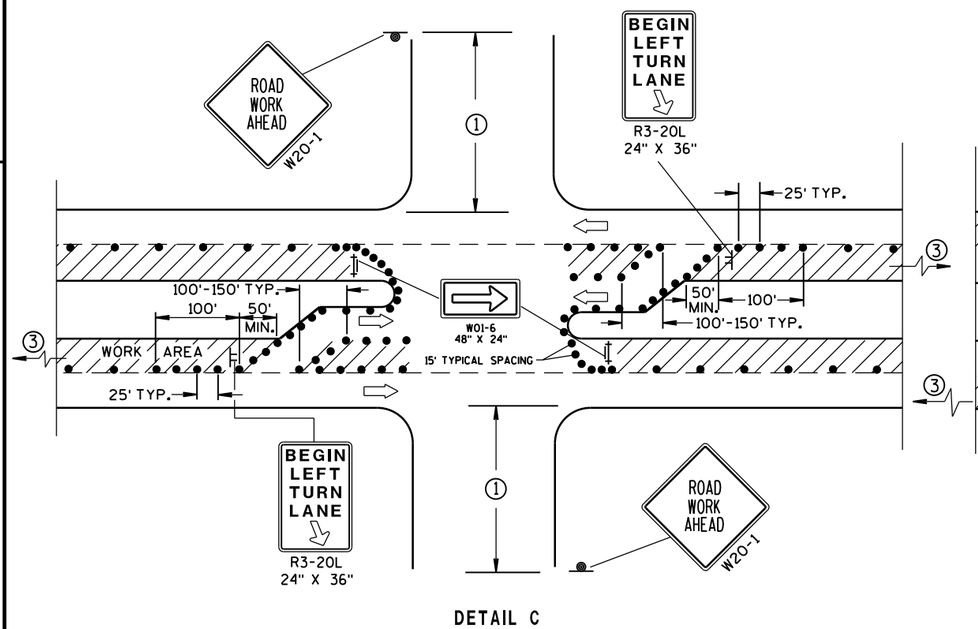
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.
350' IF 35-40 MPH.
200' IF 25-30 MPH.

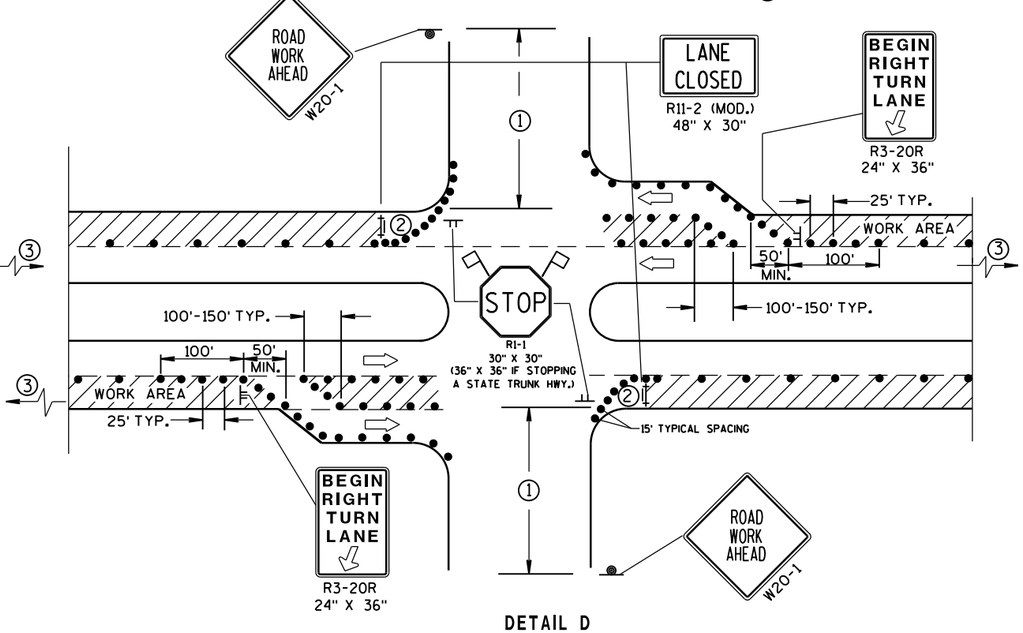
② ALSO USE BARRICADE AND 15-FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS.

③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.



DETAIL C

FOR LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING (WITH LEFT TURN BAY OPEN)



DETAIL D

FOR RIGHT LANE CLOSURE AT INTERSECTION (WITH RIGHT TURN BAY OPEN)

LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- SIGN ON TEMPORARY SUPPORT (5' MIN. MOUNTING HEIGHT)
- TYPE III BARRICADE WITH ATTACHED SIGN AND TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- FLAGS, 16" X 16" MIN., (ORANGE)
- WORK AREA

TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Nov. 2014 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 D 21-3

GENERAL NOTES

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

TABLE A

SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S \ W	4	6	8	10	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

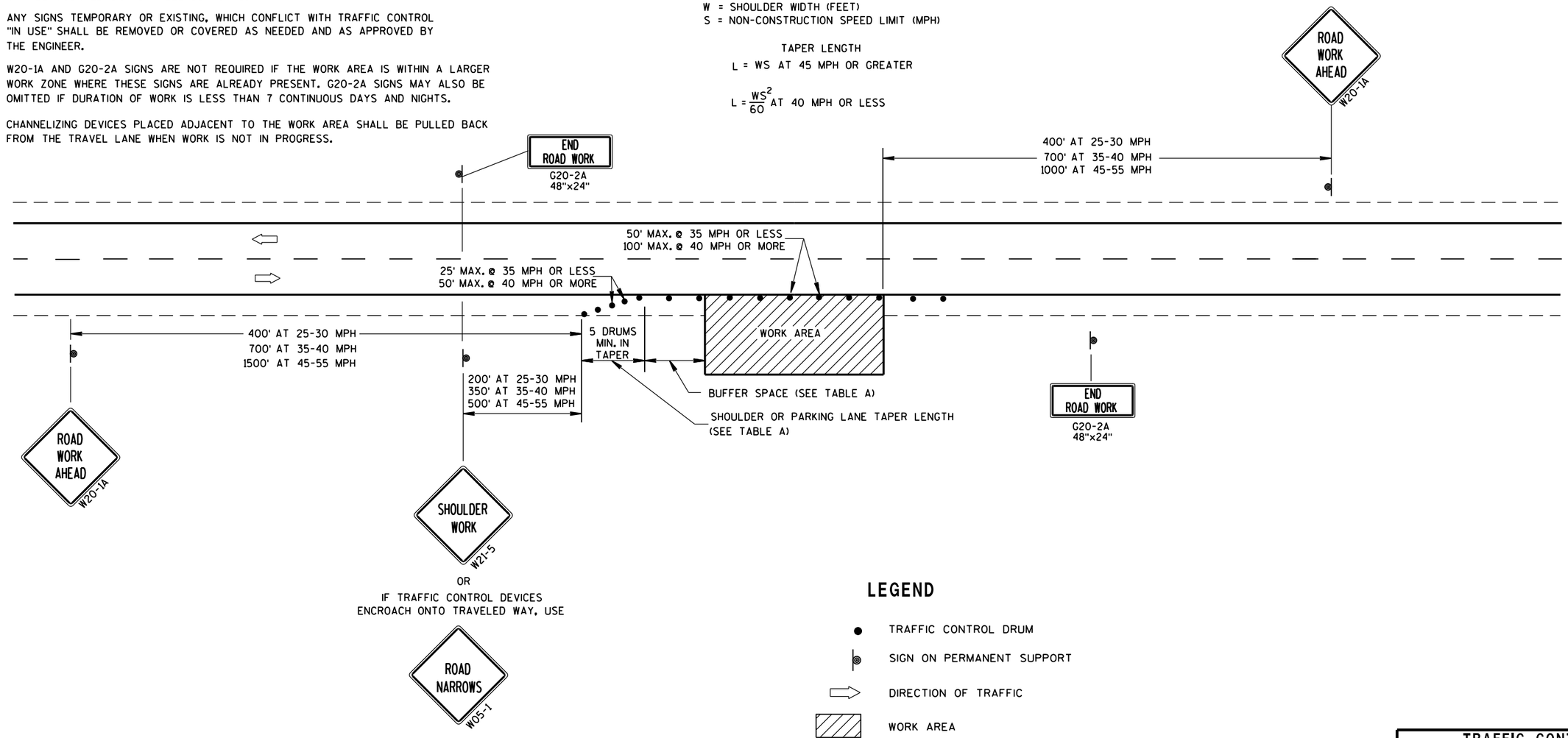
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

July 14, 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZO SAFETY ENGI FIC

FHWA

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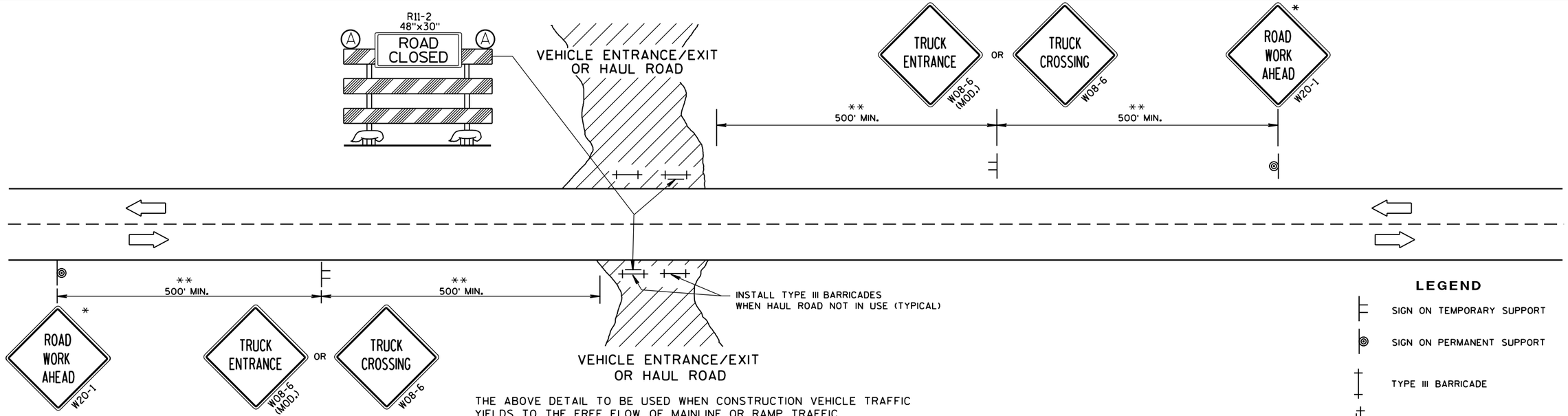
S.D.D. 15 D 28-3



THE ABOVE DETAIL TO BE USED WHEN CONSTRUCTION VEHICLE TRAFFIC YIELDS TO THE FREE FLOW OF MAINLINE OR RAMP TRAFFIC

LEGEND

- SIGN ON TEMPORARY SUPPORT
- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS, DEVICES AND FLAGGERS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

WHEN ACTIVITY REFLECTED BY THE SIGN IS NOT CURRENTLY TAKING PLACE, THE HIGHWAY SHALL BE RESTORED TO NORMAL CONDITION AND THE SIGNS SHALL BE REMOVED, COVERED OR TURNED AWAY FROM TRAFFIC.

WHEN A SIDE ROAD OR RAMP INTERSECTS WITHIN THE ADVANCE SIGNING AREA, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

* THESE SIGNS ARE TO BE USED ONLY WHEN VEHICLE ENTRANCE/EXIT CONDITIONS ARE SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA OR SIGNING OR AS DIRECTED BY THE ENGINEER.

** 500 FEET SHOWN IS FOR ROADWAYS WITH A NON-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FEET. FOR 25-30 MPH, USE 200 FEET. USE 1000 FEET/1500 FEET FOR EXPRESSWAY/FREEWAY.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

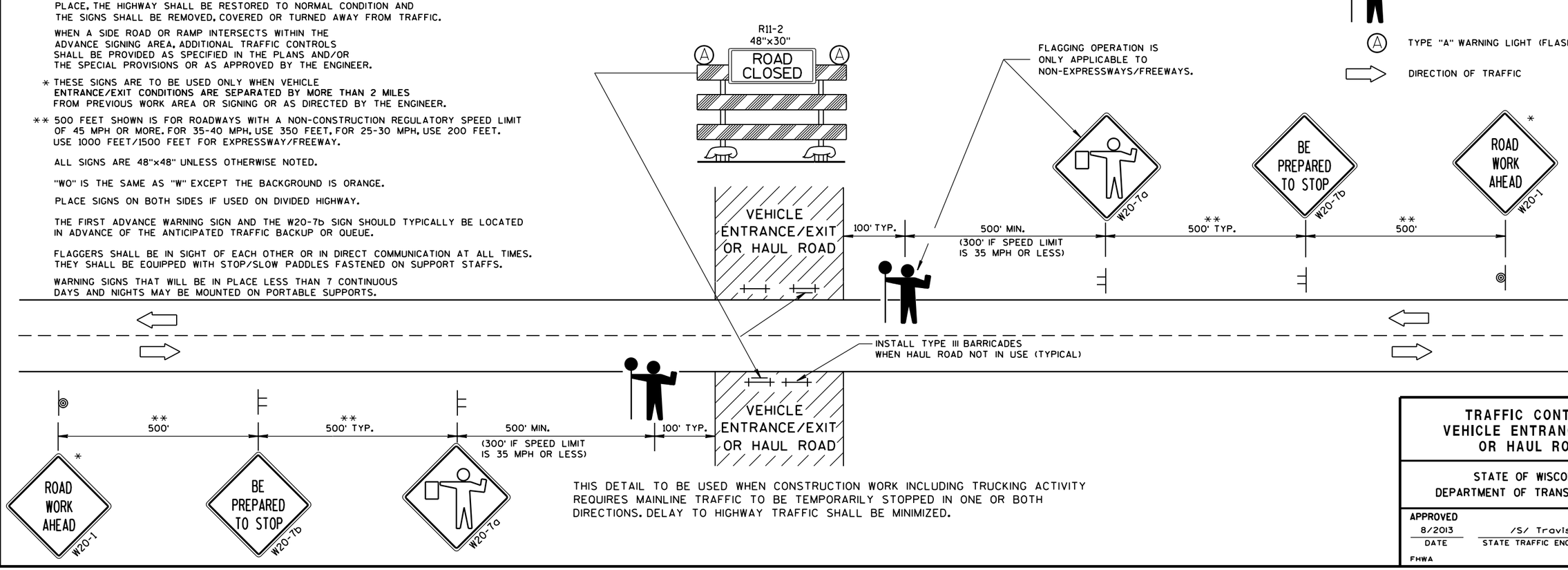
"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

PLACE SIGNS ON BOTH SIDES IF USED ON DIVIDED HIGHWAY.

THE FIRST ADVANCE WARNING SIGN AND THE W20-7b SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS.

WARNING SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.



THIS DETAIL TO BE USED WHEN CONSTRUCTION WORK INCLUDING TRUCKING ACTIVITY REQUIRES MAINLINE TRAFFIC TO BE TEMPORARILY STOPPED IN ONE OR BOTH DIRECTIONS. DELAY TO HIGHWAY TRAFFIC SHALL BE MINIMIZED.

TRAFFIC CONTROL, VEHICLE ENTRANCE/EXIT OR HAUL ROAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/2013	/S/ Travis Feltes	
DATE	STATE TRAFFIC ENGINEER	IGN

FHWA

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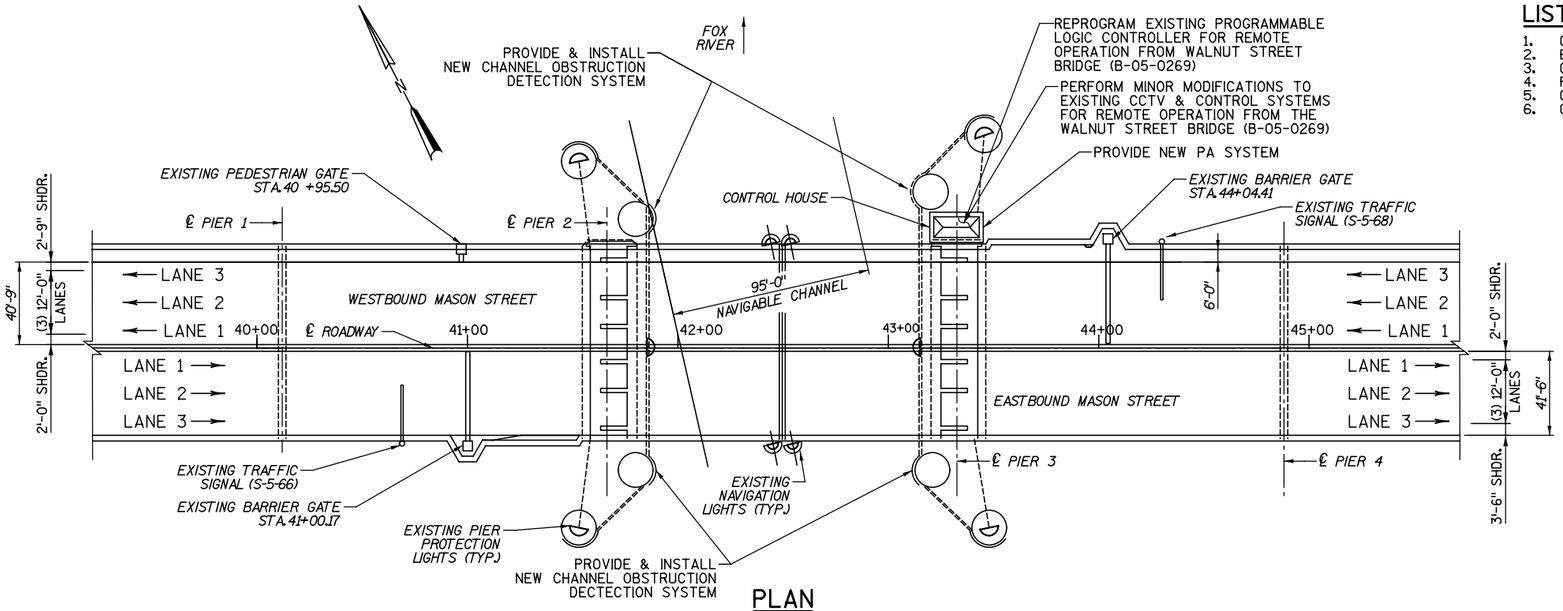
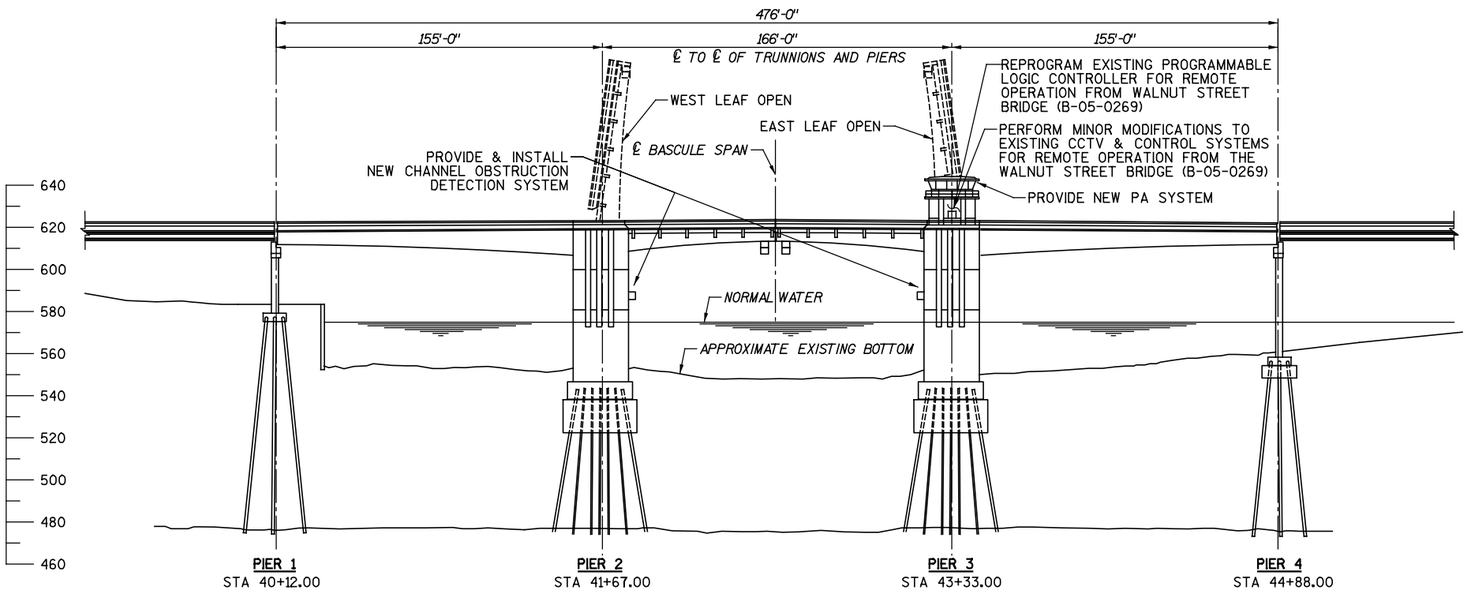
S.D.D. 15 D 29-3



PLAN



ELEVATION

TOTAL ESTIMATED QUANTITIES

NO.	BID ITEMS	UNIT	TOTAL
SPV.0105	MASON STREET BRIDGE REMOTE OPERATIONS WORK, B-05-0134	LS	1
SPV.0105	MASON STREET BRIDGE CCTV SYSTEM, B-05-0134	LS	1

LIST OF DRAWINGS

STATE PROJECT NUMBER

4987-07-71

HARDESTY & HANOVER, LLC

WISCONSIN
ALEXANDER H. NOBLE
E-44564-6
NEW YORK
NY
PROFESSIONAL ENGINEER

12-1-2015 (DATE)

(SIGNATURE)

TRAFFIC DATA

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. DIMENSIONS SHOWN ARE BASED ON ORIGINAL STRUCTURE PLANS.
3. ATTACHMENTS TO EXISTING CONCRETE NOT SHOWN ON THE PLANS SHALL UTILIZE GALVANIZED BRACKETS AND STAINLESS STEEL ANCHORS.
4. ATTACHMENTS OR MODIFICATIONS TO EXISTING STRUCTURAL STEEL NOT SHOWN ON THE PLANS REQUIRE THE WRITTEN APPROVAL OF THE CHIEF STRUCTURES DESIGN ENGINEER.

NO.	DATE	REVISION	BY

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 02/16/16
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-05-0134

STH 54 (MASON ST.) OVER FOX RIVER

COUNTY: BROWN | ~~TOWN~~/CITY/~~VILLAGE~~: GREEN BAY

DESIGN SPEC.: REHABILITATION N/A

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
DH	AHN	DH	AHN

GENERAL PLAN AND ELEVATION AND QUANTITIES

SHEET 1 OF 6

STRUCTURES DESIGN CONTACTS:

BUREAU OF STRUCTURES:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
JOHN GIMBLETTE (212) 944-1150

STATE PROJECT NUMBER
4987-Ø7-71

DESCRIPTION OF ELECTRICAL FACILITIES: SCOPE OF WORK SUMMARY

COMMUNICATION WITH WALNUT STREET BRIDGE

ELECTRIC CONTROL SIGNALS SHALL BE CARRIED FROM THE MASON STREET BRIDGE TO THE WALNUT STREET BRIDGE BY MEANS OF REDUNDANT WIRELESS RADIO ANTENNAS.

EXISTING PROGRAMMABLE LOGIC CONTROLLER

THE EXISTING PLC PROGRAMMING SHALL BE MODIFIED TO ALLOW FOR REMOTE OPERATION FROM THE WALNUT STREET BRIDGE. A SET OF REDUNDANT WIRELESS RADIO ANTENNAS SHALL BE CONNECTED TO THE PLC VIA ETHERNET NETWORKING.

CHANNEL OBSTRUCTION DETECTION SYSTEM

NEW CHANNEL OBSTRUCTION DETECTION DEVICES SHALL BE BUILT INTO THE ELECTRICAL CONTROL SYSTEM. THESE DEVICES SHALL PREVENT SPAN LOWERING WHEN A NAUTICAL VESSEL IS DETECTED WITHIN THE NAVIGABLE CHANNEL.

CCTV AND PA SYSTEM

PROVIDE AND INSTALL A NEW PA SPEAKER SYSTEM. THE PA SYSTEM WILL TRANSMIT DATA VIA ETHERNET PROTOCOL ON THE CCTV NETWORK. COMMUNICATION BETWEEN THE MASON STREET BRIDGE AND THE WALNUT STREET BRIDGE SHALL BE VIA REDUNDANT ANTENNAS AND BE ON A FULLY SEPERATE NETWORK FROM THE CONTROL SYSTEM UTILIZING SEPARATE COMMUNICATION HARDWARE.

DEMOLITION

ALL EXISTING ELECTRICAL MACHINERY AND CONTROL EQUIPMENT NOT TO BE REUSED OR INTENTIONALLY ABANDONED SHALL BE REMOVED AND PROPERLY DISPOSED OF.

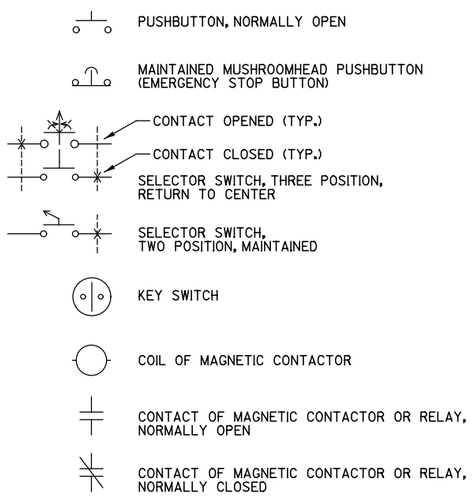
GENERAL ELECTRICAL NOTES

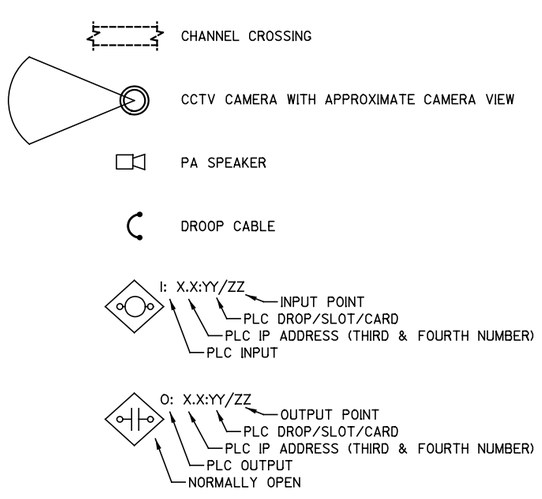
1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH STATE STANDARD SPECIFICATIONS, THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC), AND THE ELECTRICAL REQUIREMENTS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS.
2. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES AND SHALL BE SCHEDULED CONSISTENT WITH THE OVERALL CONSTRUCTION STAGING SEQUENCE.
3. THE PLANS ARE DIAGRAMMATIC AND ARE NOT TO BE SCALED. THE LOCATIONS OF EQUIPMENT AND ROUTING OF CONDUITS SHOWN ON THE CONTRACT DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD AND PREPARING SCALED SHOP DRAWING.
4. ALL ELECTRICAL COMPONENTS AND MATERIAL SHOWN ON THE CONTRACT DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE REMOVAL AND INSTALLATION OF ELECTRICAL COMPONENTS, HANGERS, SUPPORTS, ETC. ALL PATCHING SHALL BE DONE SO AS TO LEAVE THE AREA IN ITS ORIGINAL CONDITION AS A MINIMUM OR AS OTHERWISE REQUIRED BY THE ENGINEER.
6. EXISTING ELECTRICAL CABLE, WIRES, CONDUIT, CONDUIT HANGERS, SUPPORTS, CLAMPS, ETC, WHICH ARE BEING REPLACED SHALL NOT BE REUSED. ALL SUCH PARTS SHALL BE REMOVED AND PROPERLY DISPOSED OF.
7. ALL NEW CONDUIT AND FITTINGS SHALL BE ¾" MINIMUM PVC COATED HOT DIPPED GALVANIZED RIGID STEEL UNLESS OTHERWISE NOTED, AND SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION, AND INSTALLATION CONTAINED IN THE SPECIFICATION.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED BOXES, CONDUIT FITTINGS, ELBOWS, AND HARDWARE FOR A COMPLETE INSTALLATION, WHETHER OR NOT THEY ARE EXPLICITLY SHOWN OR INDICATED ON THE CONTRACT DRAWINGS.
9. NEW ELECTRICAL CONDUCTORS SHALL BE MINIMUM SIZE NO. 12 AWG STRANDED TYPE XHHW, EXCEPT FOR INTERNAL WIRING IN CONTROL CABINETS AND CONTROL DESK WHICH SHALL BE MINIMUM SIZE NO. 14 AWG TYPE SIS. ALL WIRES AND CABLES SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION AND INSTALLATION CONTAINED IN THE RELEVANT SPECIFICATIONS.
10. ALL SWITCHES, RELAYS, CONTACTORS AND STARTERS ARE SHOWN ON THE DRAWINGS AS DE-ENERGIZED AND WITH THE SPAN FULLY CLOSED, GATES RAISED, AND TRAFFIC SIGNALS GREEN, OPEN TO VEHICULAR TRAFFIC.
11. ALL NEW CONDUCTORS INSTALLED IN CONDUIT SHALL BE INSTALLED WITH GROUND CONDUCTORS. GROUND CONDUCTORS SHALL BE PROVIDED IN ALL NEW FLEXIBLE CABLES. MINIMUM SIZE GROUND CONDUCTOR SHALL BE NO. 12 AWG. ALL CABINETS, TERMINAL AND JUNCTION BOXES SHALL BE GROUNDED IN ACCORDANCE WITH THE NEC.
12. ALL CONDUCTORS SHALL BE CONNECTED TO TERMINAL BLOCKS OR DEVICES. SPLICES SHALL NOT BE PERMITTED WITHIN EQUIPMENT ENCLOSURES, BOXES, OR CONDUIT FITTINGS.
13. THIS CONTRACT REFERS TO THE DESIGN DRAWINGS FROM THE 2013 HARDESTY & HANOVER DESIGN CONTRACT. ONLY SELECTED DETAILS ARE PROVIDED IN THIS PLAN SET. THE FULL AS-BUILT DRAWINGS ARE AVAILABLE FROM WISDOT UPON REQUEST. CONTRACTOR IS TO VERIFY ALL AS-BUILT DRAWINGS ARE ACCURATE BEFORE COMMENCING WORK.

ABBREVIATIONS

AH	AIR HORN
BG	BARRIER GATE
CB	CIRCUIT BREAKER
CCTV	CLOSED-CIRCUIT TELEVISION
CPU	CENTRAL PROCESSING UNIT
CR	CONTROL RELAY
D	DRIVE
ESTOP	EMERGENCY STOP
F	FAR SIDE
GR	GROUP GATE RAISE
GS	GROUP GATE STOP
HMI	HUMAN MACHINE INTERFACE
HPU	HYDRAULIC POWER UNIT
IN	PLC INPUT
I/O	PLC INPUT / OUTPUT
IP	INTERNET PROTOCOL
KS	KEY SWITCH
L	LOWER
MCC	MOTOR CONTROL CENTER
N	NEAR SIDE, NEUTRAL
NE	NORTH EAST
NW	NORTH WEST
OUT	PLC OUTPUT
P	PULL
PA	PUBLIC ADDRESS SYSTEM
PB	PUSHBUTTON
PC	PERSONAL COMPUTER
PG	PEDESTRIAN GATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PWR	POWER
R	RAISE
REM	REMOTE
SC	SAFETY CONTACTOR
SE	SOUTH EAST
SL	SPAN LOCK
SR	SAFETY RELAY
SS	SELECTOR SWITCH
SW	SOUTH WEST
TS	TRAFFIC SIGNALS
TYP	TYPICAL
VAC	VOLTAGE ALTERNATING CURRENT

SYMBOLS





NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø134

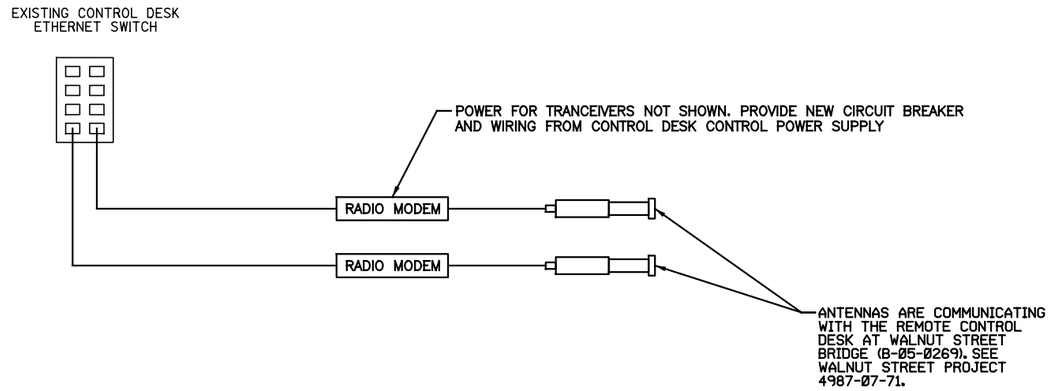
DRAWN BY DH | PLANS CK'D. AHN

ELECTRICAL SCOPE OF WORK AND NOTES

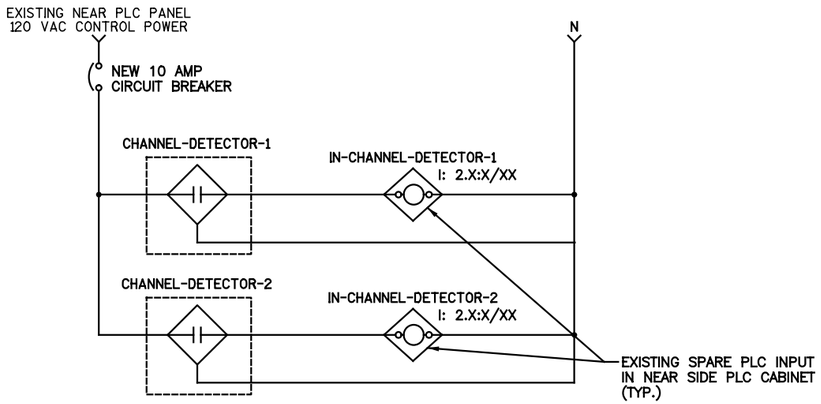
SHEET 2 OF 6

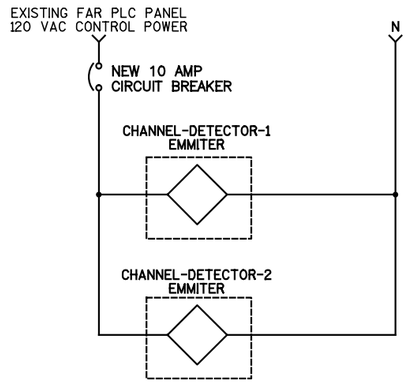
STATE PROJECT NUMBER

4987-07-71



NEW MASON REMOTE CONTROL
LOCAL WIRELESS TRANCEIVERS AND ANTENNAE





NEW CHANNEL DETECTOR SCHEMATICS

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

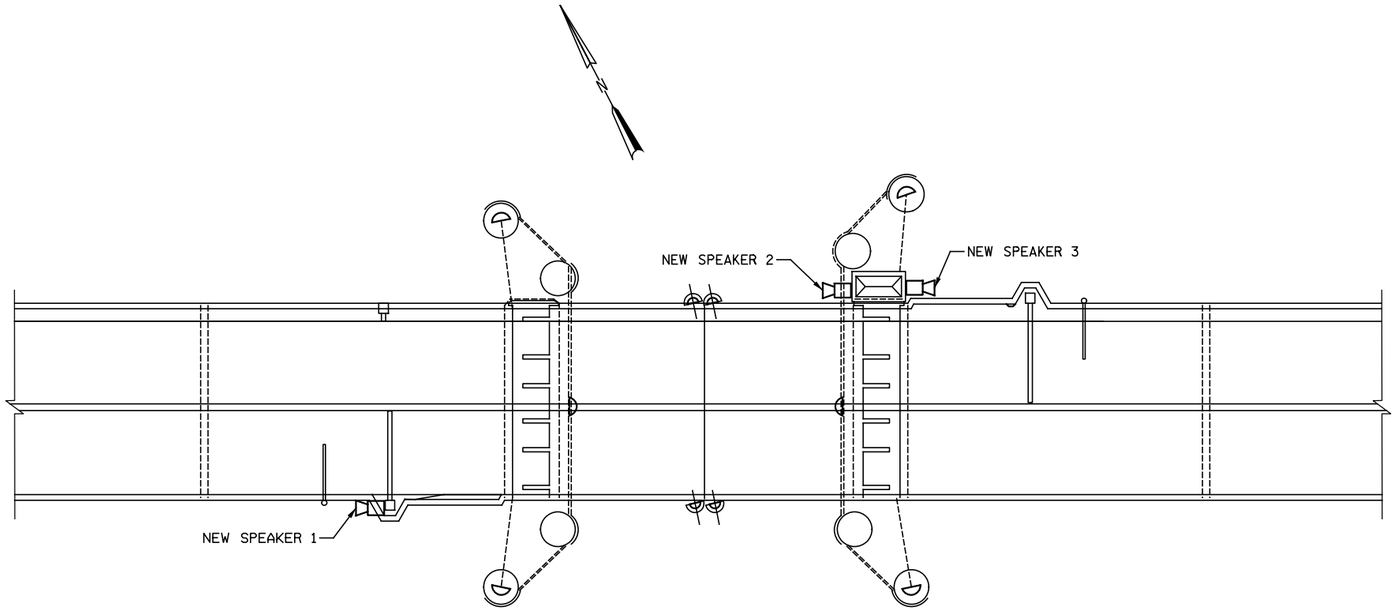
STRUCTURE B-05-0134

DRAWN BY DH | PLANS CK'D. AHN

CONTROL SYSTEM MODIFICATIONS

SHEET 3 OF 6

STATE PROJECT NUMBER
4987-Ø7-71



PA PLAN VIEW

PA SPEAKER PURPOSE:

1. FAR SIDE ROADWAY (MOUNTED TO GATE)
2. CHANNEL (MOUNTED TO NEAR PIER)
3. NEAR SIDE ROADWAY (MOUNTED TO OPERATOR HOUSE)

NOTES:

1. PA SUPPLIER SHALL PROVIDE ALL HARDWARE AND MOUNTING BRACKETS FOR OUTDOOR USE ONLY (HEAVY DUTY NEMA 4X).
2. PA SUPPLIER SHALL PROVIDE ALL HARDWARE FOR MASTER UNIT AND ALL ASSOCIATED EQUIPMENT.
3. SEE FOLLOWING SHEET FOR PA SCHEMATIC.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø134

DRAWN BY	DH	PLANS CK'D.	AHN

PA SYSTEM PLAN VIEW

SHEET 4 OF 6

8

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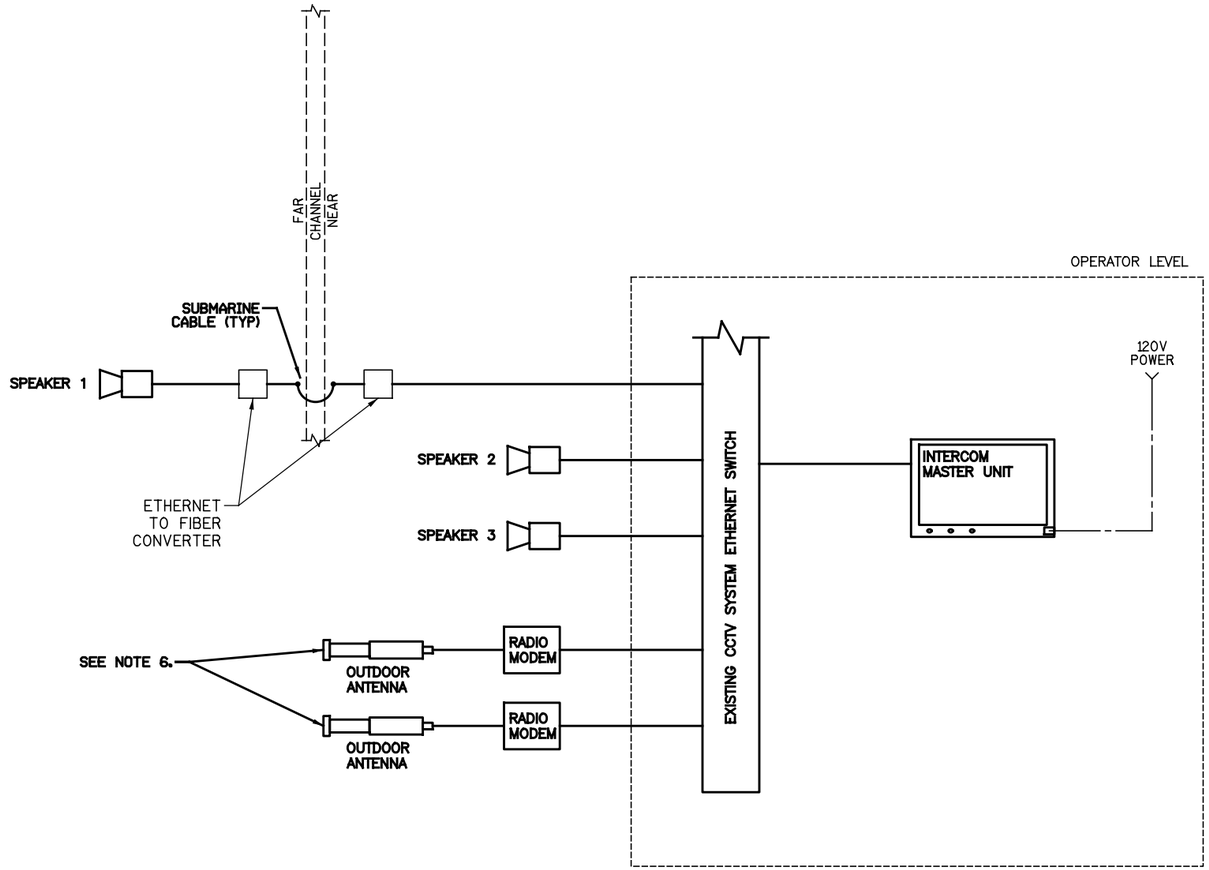
STATE PROJECT NUMBER
4987-07-71



NOTES:

1. ALL ETHERNET CABLING SHALL BE CATEGORY 6 AND OUTDOOR RATED WHERE APPLICABLE.
2. ALL OUTDOOR EQUIPMENT SHALL BE RATED NEMA 4X.
3. PA SPEAKERS SHALL BE POWER OVER ETHERNET NETWORK IP TYPE SPEAKERS.
4. POWER THE NEW PA SYSTEM FROM A SPARE CIRCUIT ON THE EXISTING MASON STREET LIGHTING PANEL.
5. THE CCTV CAMERA/PA SPEAKER NETWORK SHALL BE SEPARATE FROM THE PLC NETWORK AND USE SEPARATE ETHERNET SWITCHES AND WIRELESS EQUIPMENT.
6. A SET OF ANTENNAS ARE TO BE DIRECTED AT WALNUT STREET BRIDGE FOR REMOTE OPERATION.
7. SEE PREVIOUS SHEET FOR PA LAYOUT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

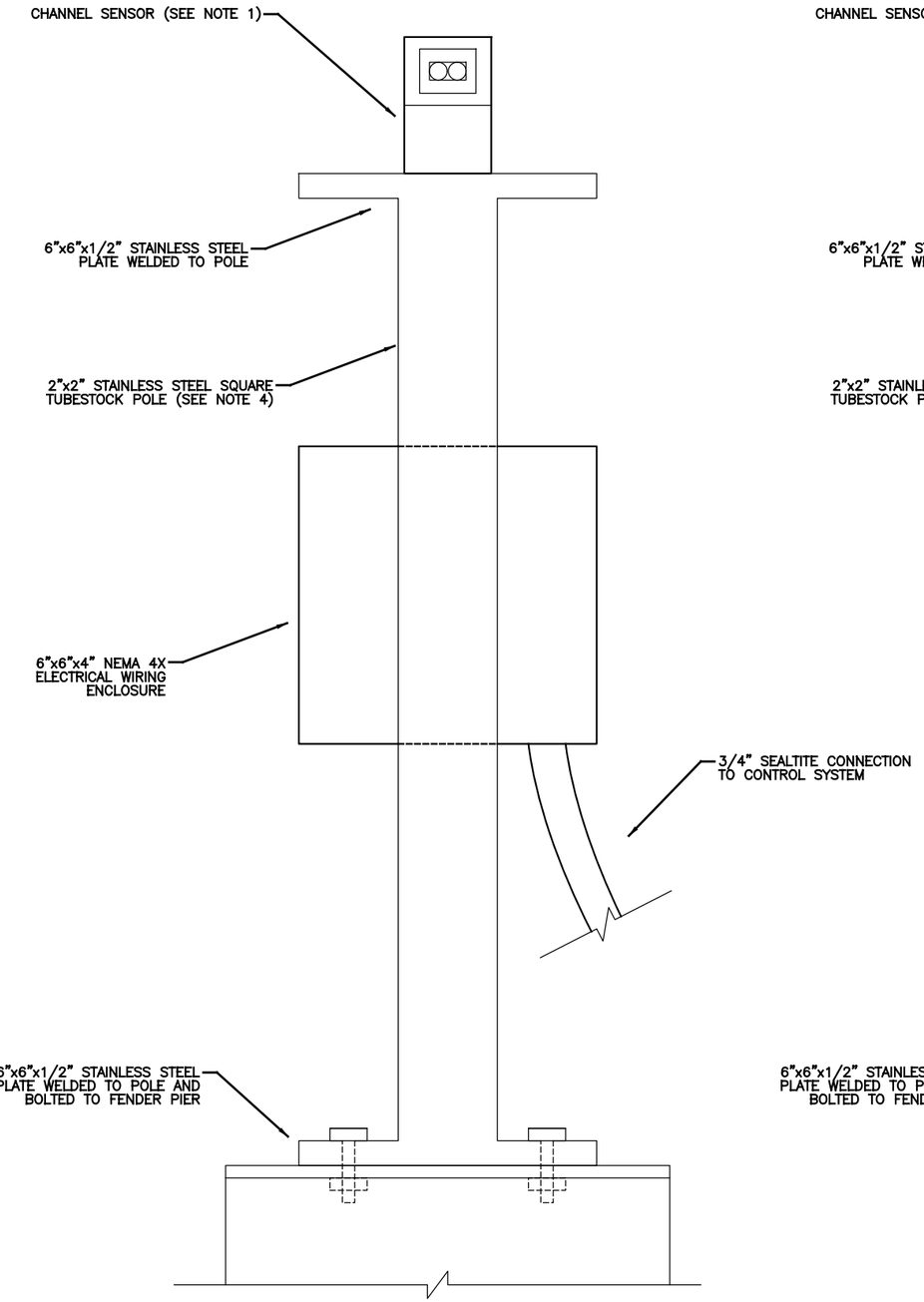
STRUCTURE B-05-0134

DRAWN BY	DH	PLANS CK'D.	AHN

CCTV AND PA SCHEMATIC

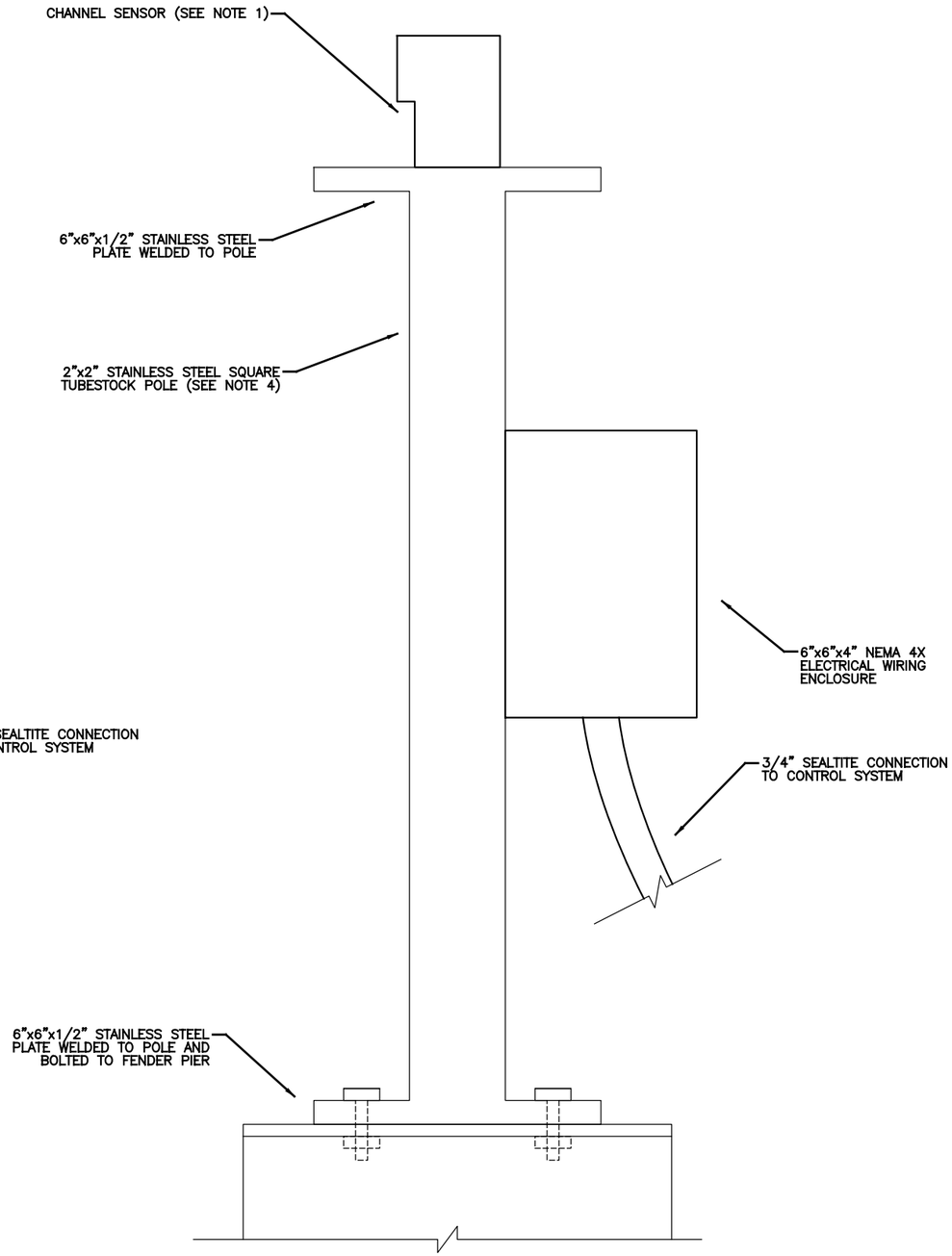
SHEET 5 OF 6

STATE PROJECT NUMBER
4987-Ø7-71



NAVIGABLE CHANNEL OBSTRUCTION FRONT VIEW

(NOT TO SCALE)



NAVIGABLE CHANNEL OBSTRUCTION SIDE VIEW

(NOT TO SCALE)

NOTES:

1. SENSOR IS TO BE MODEL Q45VR2 SERIES BY BANNER OR APPROVED EQUAL.
2. SENSORS SHALL BE INSTALLED IN OPPOSED MODE.
3. TWO PAIRS OF TWO SENSORS SHALL BE INSTALLED ON THE FENDER PIERS. ONE PAIR MONITORING THE NORTH SIDE OF THE NAVIGABLE CHANNEL, ONE PAIR MONITORING THE SOUTH SIDE OF THE NAVIGABLE CHANNEL. SEE SHEET 1 FOR LOCATIONS.
4. MOUNTING POLE SHALL BE APPROXIMATELY 2 FEET HIGH. PRECISE HIGHT TO BE FIELD DETERMINED.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø134

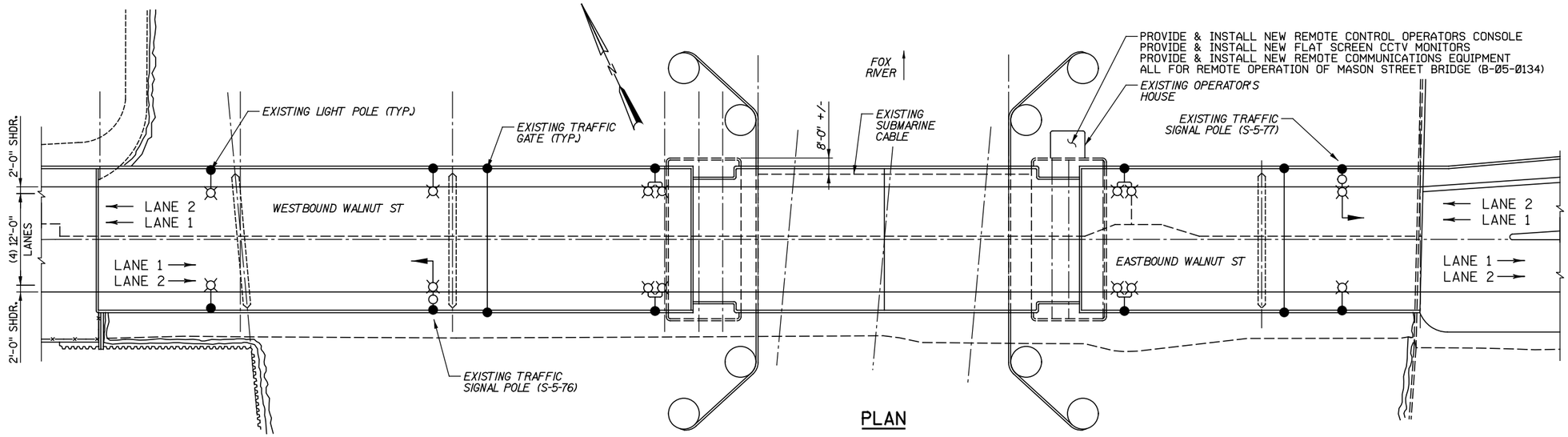
DRAWN BY	DH	PLANS CK'D.	AHN

CHANNEL SENSOR DETAILS

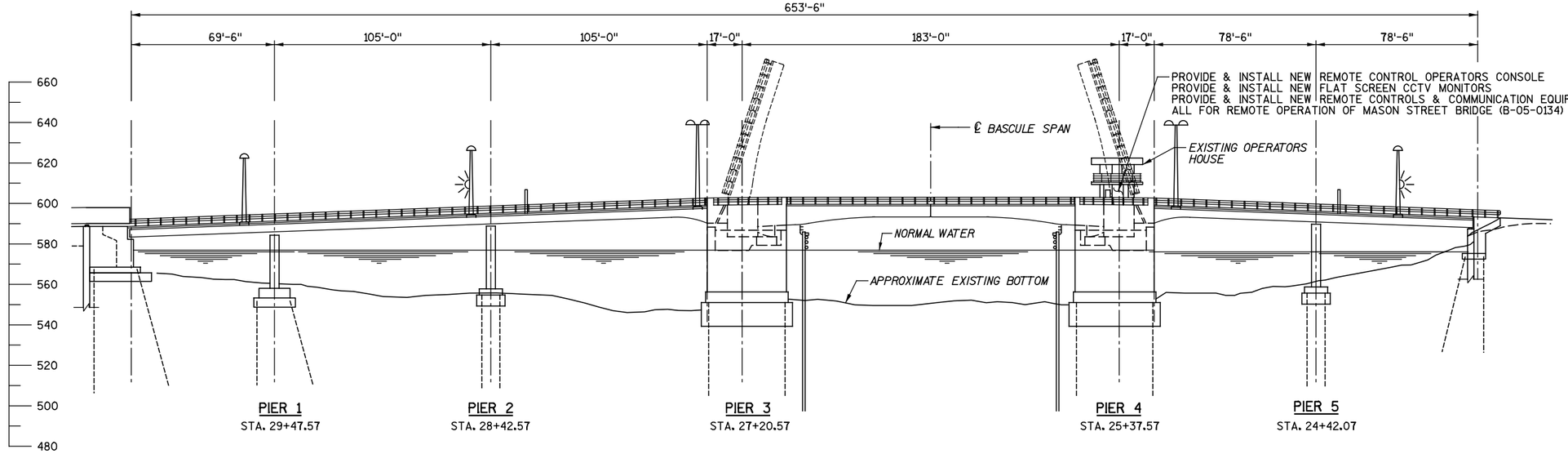
SHEET 6 OF 6

8

8



PLAN



ELEVATION

LIST OF DRAWINGS

1. GENERAL PLAN AND ELEVATION
2. ELECTRICAL SCOPE OF WORK AND NOTES
3. PLC ARCHITECTURE
4. REMOTE CONTROL DESK LAYOUT
5. OPERATORS ROOM LAYOUT PLAN
6. PLC SCHEMATIC
7. CCTV AND PA SCHEMATIC

STRUCTURES DESIGN CONTACTS:

BUREAU OF STRUCTURES:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
JOHN GIMBLETTE (212) 944-1150

STATE PROJECT NUMBER

4987-07-71

HARDESTY & HANOVER, LLC

WISCONSIN
ALEXANDER H. NOBLE
E-44564-6
NEW YORK
NY
PROFESSIONAL ENGINEER

12-1-2015 (DATE)

(SIGNATURE)

TRAFFIC DATA

ADT= 13,340 (ESTIMATED, 2016)
RDS= 25 M.P.H.

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. DIMENSIONS SHOWN ARE BASED ON ORIGINAL STRUCTURE PLANS.
3. THE PLANS SHALL UTILIZE GALVANIZED BRACKETS AND STAINLESS STEEL ANCHORS.
4. ATTACHMENTS TO EXISTING CONCRETE NOT SHOWN ON THE PLANS.
5. ATTACHMENTS OR MODIFICATIONS TO EXISTING STRUCTURAL STEEL NOT SHOWN ON THE PLANS REQUIRE THE WRITTEN APPROVAL OF THE CHIEF STRUCTURES DESIGN ENGINEER.
6. ALL WORK PERFORMED AT THE WALNUT STREET BRIDGE SHALL BE PAID UNDER MASON STREET BRIDGE (B-05-0134) PAY ITEMS.

NO.	DATE	REVISION	BY

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 02/16/16
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-05-0269

STH 29 (WALNUT ST.) OVER FOX RIVER

COUNTY	TOWN/CITY/~~VILLAGE~~
BROWN	GREEN BAY

DESIGN SPEC. REHABILITATION N/A

DESIGNED BY	DH	DESIGN CK'D.	AHN	DRAWN BY	RKP	PLANS CK'D.	AHN

GENERAL PLAN AND ELEVATION

SHEET 1 OF 7

STATE PROJECT NUMBER
4987-07-71

DESCRIPTION OF ELECTRICAL FACILITIES: SCOPE OF WORK SUMMARY

COMMUNICATION WITH MASON STREET BRIDGE

ELECTRIC CONTROL SIGNALS SHALL BE CARRIED FROM THE WALNUT STREET BRIDGE TO THE MASON STREET BRIDGE BY MEANS OF REDUNDANT WIRELESS RADIO ANTENNAS.

NEW REMOTE CONTROL DESK

A NEW PLC OPERATED CONTROL DESK FOR REMOTE OPERATION OF THE MASON STREET BRIDGE SHALL BE INSTALLED ON THE OPERATOR LEVEL. THE NEW CONTROL DESK SHALL BE POWERED FROM THE EXISTING WALNUT STREET BRIDGE LIGHTING PANEL.

CCTV AND PA SYSTEM

THE CCTV AND PA SYSTEM WILL TRANSMIT DATA VIA ETHERNET PROTOCOL. COMMUNICATION BETWEEN THE WALNUT STREET BRIDGE AND THE MASON STREET BRIDGE SHALL BE VIA REDUNDANT ANTENNAS AND BE ON A FULLY SEPERATE NETWORK FROM THE CONTROL SYSTEM UTILIZING SEPARATE COMMUNICATION HARDWARE. A RACK WITH COMPUTER TERMINAL SHALL BE INSTALLED ON THE OPERATOR LEVEL FOR ACCESS TO THE MASON STREET CCTV/PA SYSTEM. THE CCTV/PA EQUIPMENT SHALL BE POWERED FROM THE EXISTING WALNUT STREET BRIDGE LIGHTING PANEL.

DEMOLITION

ALL EXISTING ELECTRICAL MACHINERY AND CONTROL EQUIPMENT NOT TO BE REUSED OR INTENTIONALLY ABANDONED SHALL BE REMOVED AND PROPERLY DISPOSED OF.

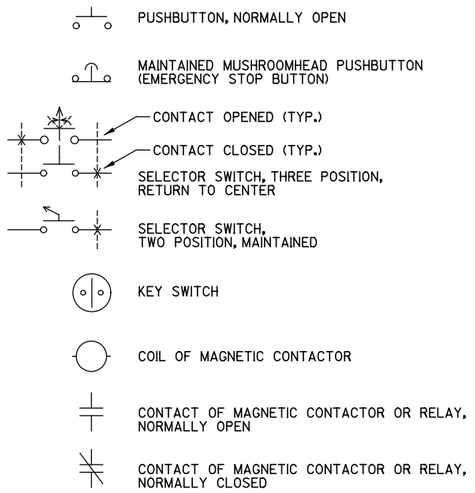
GENERAL ELECTRICAL NOTES

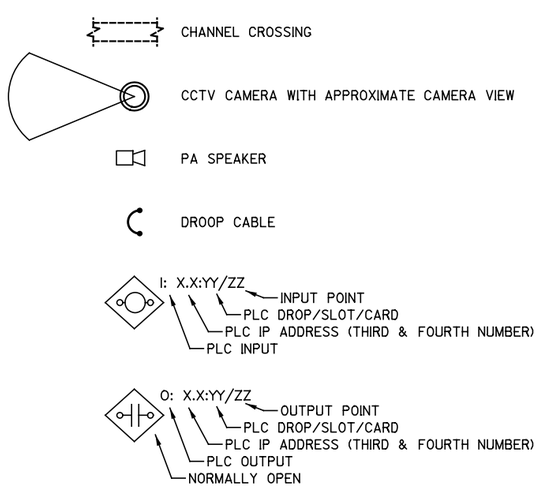
1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH STATE STANDARD SPECIFICATIONS, THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC), AND THE ELECTRICAL REQUIREMENTS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS.
2. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES AND SHALL BE SCHEDULED CONSISTENT WITH THE OVERALL CONSTRUCTION STAGING SEQUENCE.
3. THE PLANS ARE DIAGRAMMATIC AND ARE NOT TO BE SCALED. THE LOCATIONS OF EQUIPMENT AND ROUTING OF CONDUITS SHOWN ON THE CONTRACT DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD AND PREPARING SCALED SHOP DRAWING.
4. ALL ELECTRICAL COMPONENTS AND MATERIAL SHOWN ON THE CONTRACT DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE REMOVAL AND INSTALLATION OF ELECTRICAL COMPONENTS, HANGERS, SUPPORTS, ETC. ALL PATCHING SHALL BE DONE SO AS TO LEAVE THE AREA IN ITS ORIGINAL CONDITION AS A MINIMUM OR AS OTHERWISE REQUIRED BY THE ENGINEER.
6. EXISTING ELECTRICAL CABLE, WIRES, CONDUIT, CONDUIT HANGERS, SUPPORTS, CLAMPS, ETC, WHICH ARE BEING REPLACED SHALL NOT BE REUSED. ALL SUCH PARTS SHALL BE REMOVED AND PROPERLY DISPOSED OF.
7. ALL NEW CONDUIT AND FITTINGS SHALL BE ¾" MINIMUM PVC COATED HOT DIPPED GALVANIZED RIGID STEEL UNLESS OTHERWISE NOTED, AND SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION, AND INSTALLATION CONTAINED IN THE SPECIFICATION.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED BOXES, CONDUIT FITTINGS, ELBOWS, AND HARDWARE FOR A COMPLETE INSTALLATION, WHETHER OR NOT THEY ARE EXPLICITLY SHOWN OR INDICATED ON THE CONTRACT DRAWINGS.
9. NEW ELECTRICAL CONDUCTORS SHALL BE MINIMUM SIZE NO. 12 AWG STRANDED TYPE XHHW, EXCEPT FOR INTERNAL WIRING IN CONTROL CABINETS AND CONTROL DESK WHICH SHALL BE MINIMUM SIZE NO. 14 AWG TYPE SIS. ALL WIRES AND CABLES SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION AND INSTALLATION CONTAINED IN THE RELEVANT SPECIFICATIONS.
10. ALL SWITCHES, RELAYS, CONTACTORS AND STARTERS ARE SHOWN ON THE DRAWINGS AS DE-ENERGIZED AND WITH THE SPAN FULLY CLOSED, GATES RAISED, AND TRAFFIC SIGNALS GREEN, OPEN TO VEHICULAR TRAFFIC.
11. ALL NEW CONDUCTORS INSTALLED IN CONDUIT SHALL BE INSTALLED WITH GROUND CONDUCTORS. GROUND CONDUCTORS SHALL BE PROVIDED IN ALL NEW FLEXIBLE CABLES. MINIMUM SIZE GROUND CONDUCTOR SHALL BE NO. 12 AWG. ALL CABINETS, TERMINAL AND JUNCTION BOXES SHALL BE GROUNDED IN ACCORDANCE WITH THE NEC.
12. ALL CONDUCTORS SHALL BE CONNECTED TO TERMINAL BLOCKS OR DEVICES. SPLICES SHALL NOT BE PERMITTED WITHIN EQUIPMENT ENCLOSURES, BOXES, OR CONDUIT FITTINGS.
13. CONTRACTOR IS TO VERIFY ALL AS-BUILT CONDITIONS ARE ACCURATE BEFORE COMMENCING WORK.

ABBREVIATIONS

AH	AIR HORN
BG	BARRIER GATE
CB	CIRCUIT BREAKER
CCTV	CLOSED-CIRCUIT TELEVISION
CPU	CENTRAL PROCESSING UNIT
CR	CONTROL RELAY
D	DRIVE
ESTOP	EMERGENCY STOP
F	FAR SIDE
GR	GROUP GATE RAISE
GS	GROUP GATE STOP
HMI	HUMAN MACHINE INTERFACE
HPU	HYDRAULIC POWER UNIT
IN	PLC INPUT
I/O	PLC INPUT / OUTPUT
IP	INTERNET PROTOCOL
KS	KEY SWITCH
L	LOWER
MCC	MOTOR CONTROL CENTER
N	NEAR SIDE, NEUTRAL
NE	NORTH EAST
NW	NORTH WEST
OUT	PLC OUTPUT
P	PULL
PA	PUBLIC ADDRESS SYSTEM
PB	PUSHBUTTON
PC	PERSONAL COMPUTER
PG	PEDESTRIAN GATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PWR	POWER
R	RAISE
REM	REMOTE
SC	SAFETY CONTACTOR
SE	SOUTH EAST
SL	SPAN LOCK
SR	SAFETY RELAY
SS	SELECTOR SWITCH
SW	SOUTH WEST
TS	TRAFFIC SIGNALS
TYP	TYPICAL
VAC	VOLTAGE ALTERNATING CURRENT

SYMBOLS





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NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

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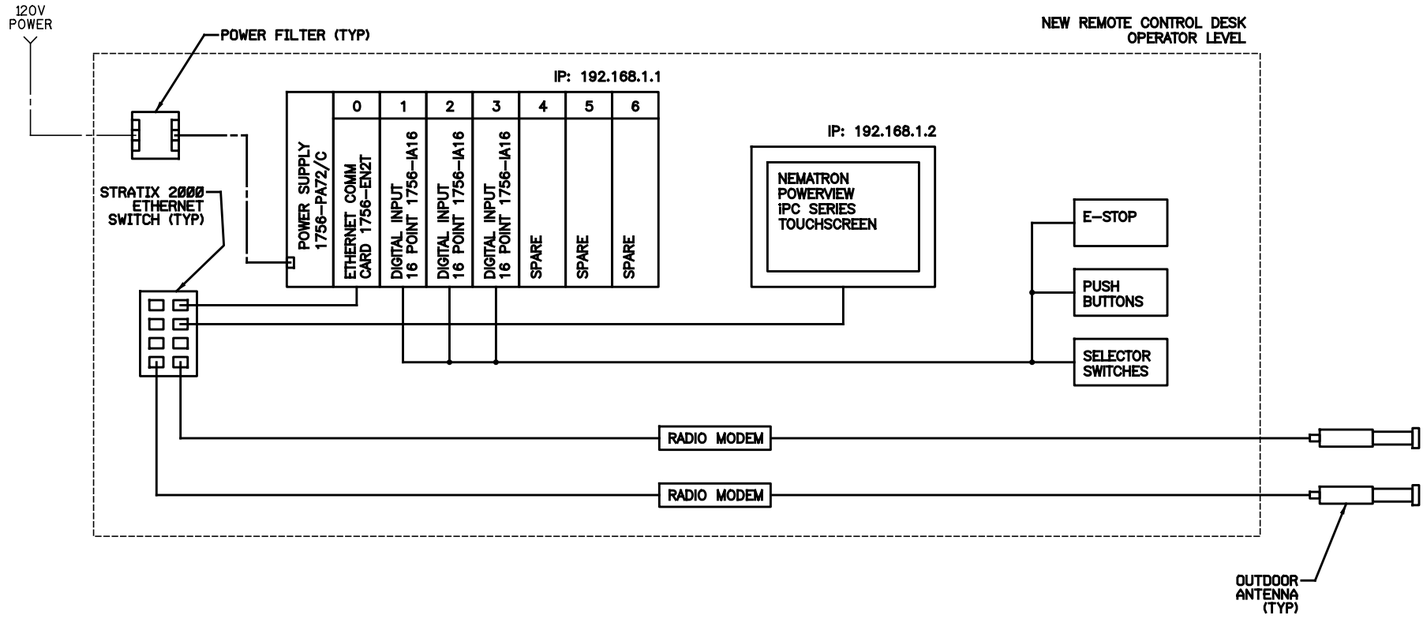
ELECTRICAL SCOPE OF WORK AND NOTES

SHEET 2 OF 7

STATE PROJECT NUMBER
4987-07-71



NOTES:

1. PLC ARCHITECTURE WAS DESIGNED USING THE ALLEN BRADLEY CONTROLOGIX SYSTEM.
2. PLC TERMINAL DESIGNATIONS (DETAILED ON WIRING DIAGRAMS) IN THIS DESIGN SET ARE TO BE REVIEWED BY THE CONTRACTOR AND MODIFIED AS REQUIRED.
3. POWER THE PLC EQUIPMENT FROM A SPARE CIRCUIT ON THE EXISTING WALNUT STREET LIGHTING PANEL.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

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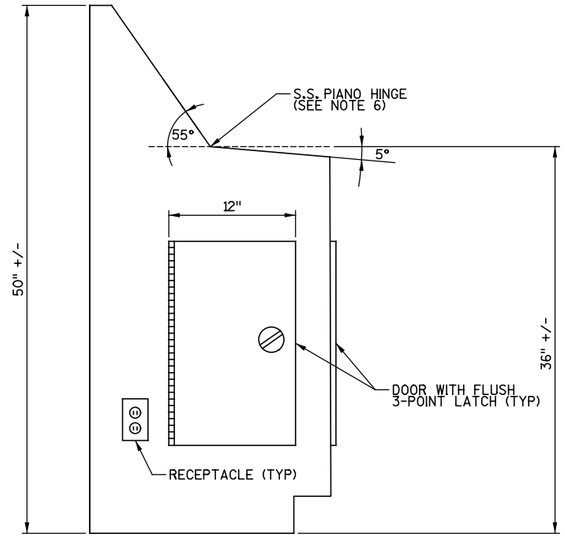
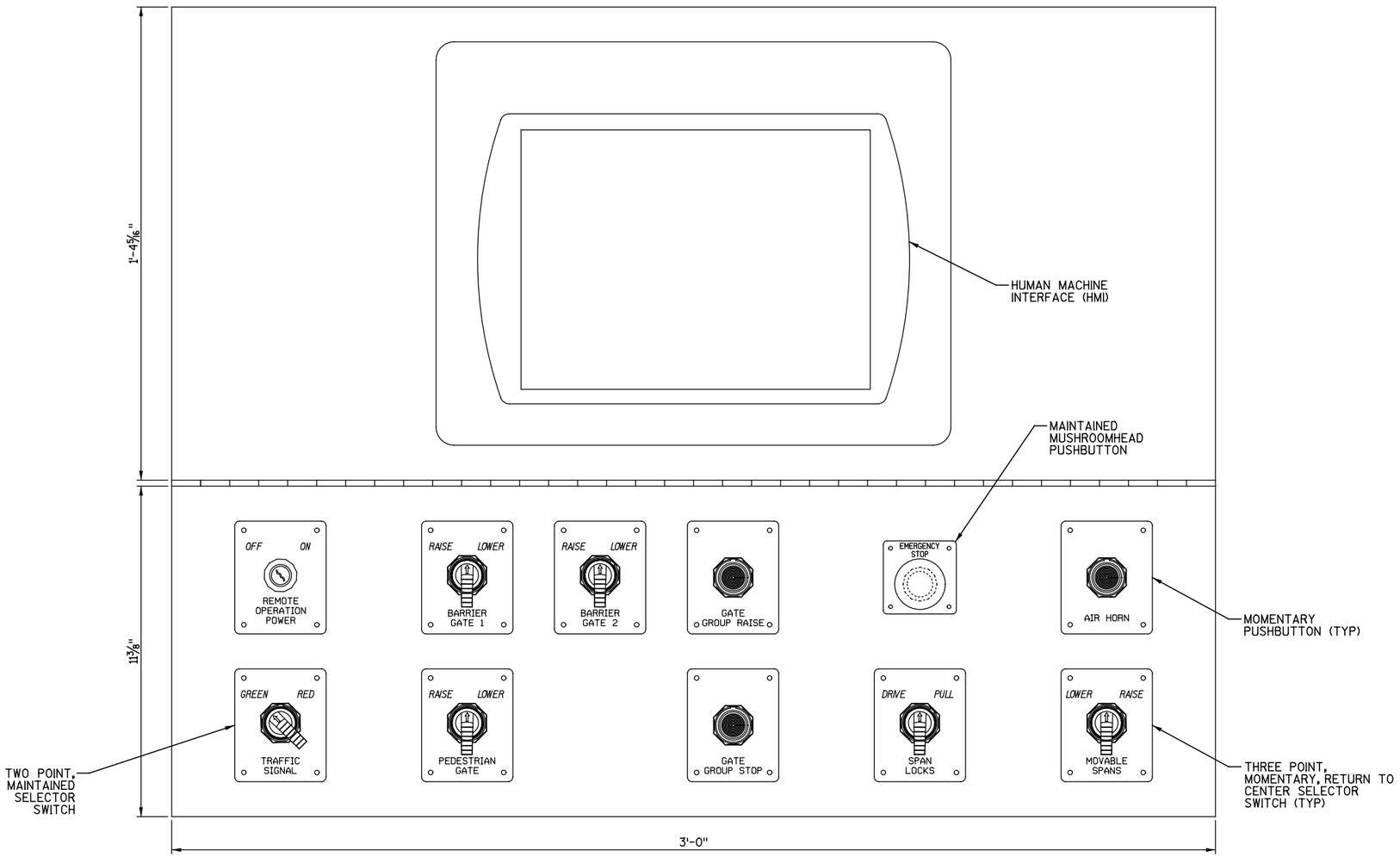
PLC ARCHITECTURE

SHEET 3 OF 7

STATE PROJECT NUMBER
4987-Ø7-71



CONTROL DESK SIDE VIEW



CONTROL DESK LAYOUT

NOTES:

1. ALL MOMENTARY, RETURN TO CENTER SELECTOR SWITCHES MUST BE HELD BY THE OPERATOR FOR CONTINUOUS OPERATION. IF THE OPERATOR RELEASES THE SELECTOR SWITCH, THE OPERATION SHALL STOP.
2. THE AIR HORN PUSHBUTTON SHALL OPERATE THE AIR HORN ONLY WHILE DEPRESSED.
3. WHEN THE GATE GROUP RAISE PUSHBUTTON IS MOMENTARILY DEPRESSED, THE PLC SHALL CONTINUOUSLY RAISE THE GATES. GATE OPERATION WILL STOP ONCE ALL FOUR GATES ARE RAISED, OR IF THE OPERATOR DEPRESSES THE GATE GROUP STOP PUSHBUTTON.
4. PUSHBUTTONS, SELECTOR SWITCHES, MUSHROOM HEAD BUTTONS, AND KEY SWITCHES SHALL BE OF HEAVY DUTY, OILTIGHT CONSTRUCTION FURNISHED WITH NAMEPLATE PER CONTRACT DOCUMENTS. SWITCHES AND PUSHBUTTONS SHALL BE SIMILAR TO CUTLER HAMMER 125OT OR APPROVED EQUAL.
5. DESK HMI SHALL BE NEMATRON POWERVIEW IPC SERIES MODEL OR APPROVED EQUAL.
6. CONTROL DESK DOORS SHALL BE SECURED BY FLUSH HANDLES AND A 3-POINT LOCKING BAR MECHANISM.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø269

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REMOTE CONTROL DESK LAYOUT

SHEET 4 OF 7

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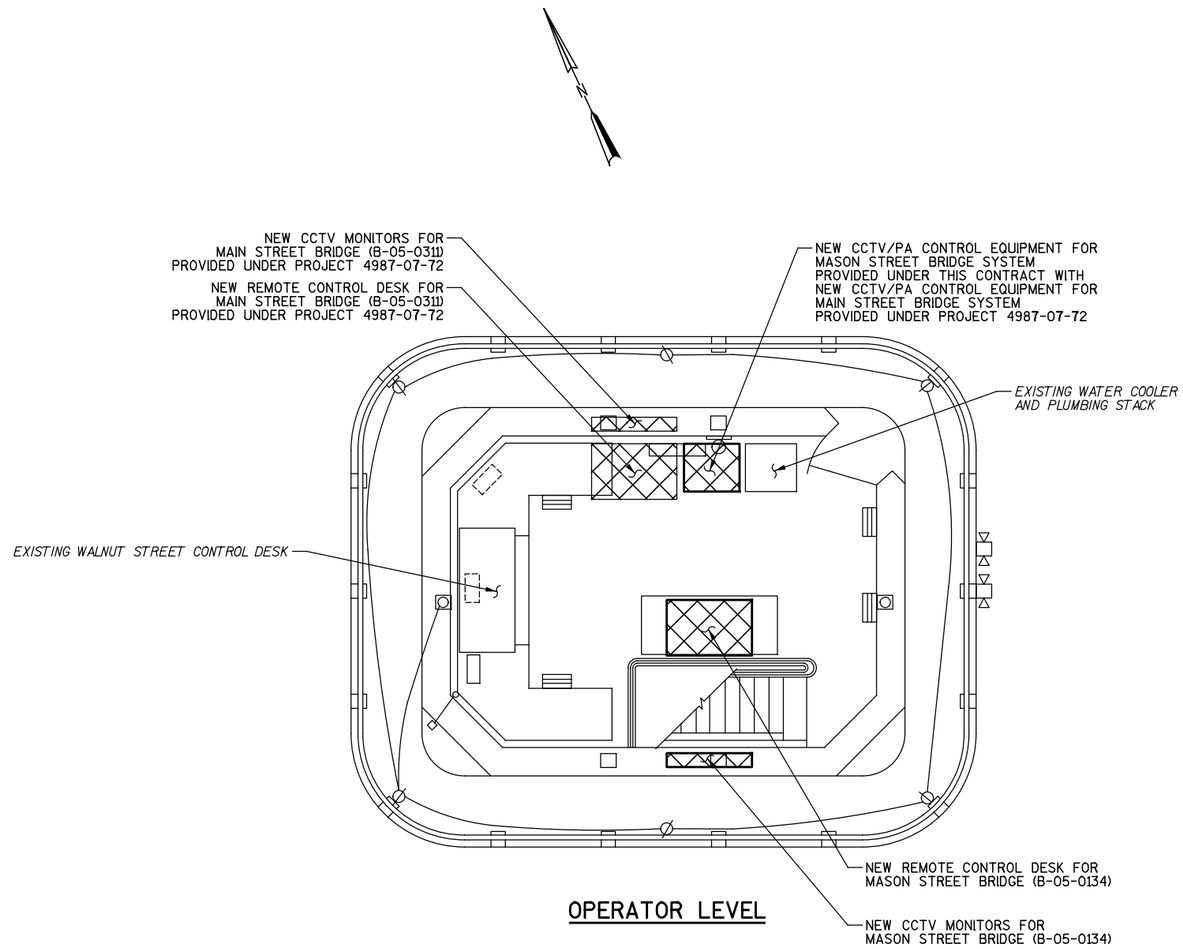
STATE PROJECT NUMBER
4987-07-71



OPERATOR LEVEL

NOTES:

1. EXISTING FURNITURE SHALL BE SHIFTED OR MODIFIED TO FIT NEW REMOTE CONTROL EQUIPMENT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

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OPERATORS ROOM LAYOUT PLAN

SHEET 5 OF 7

STATE PROJECT NUMBER
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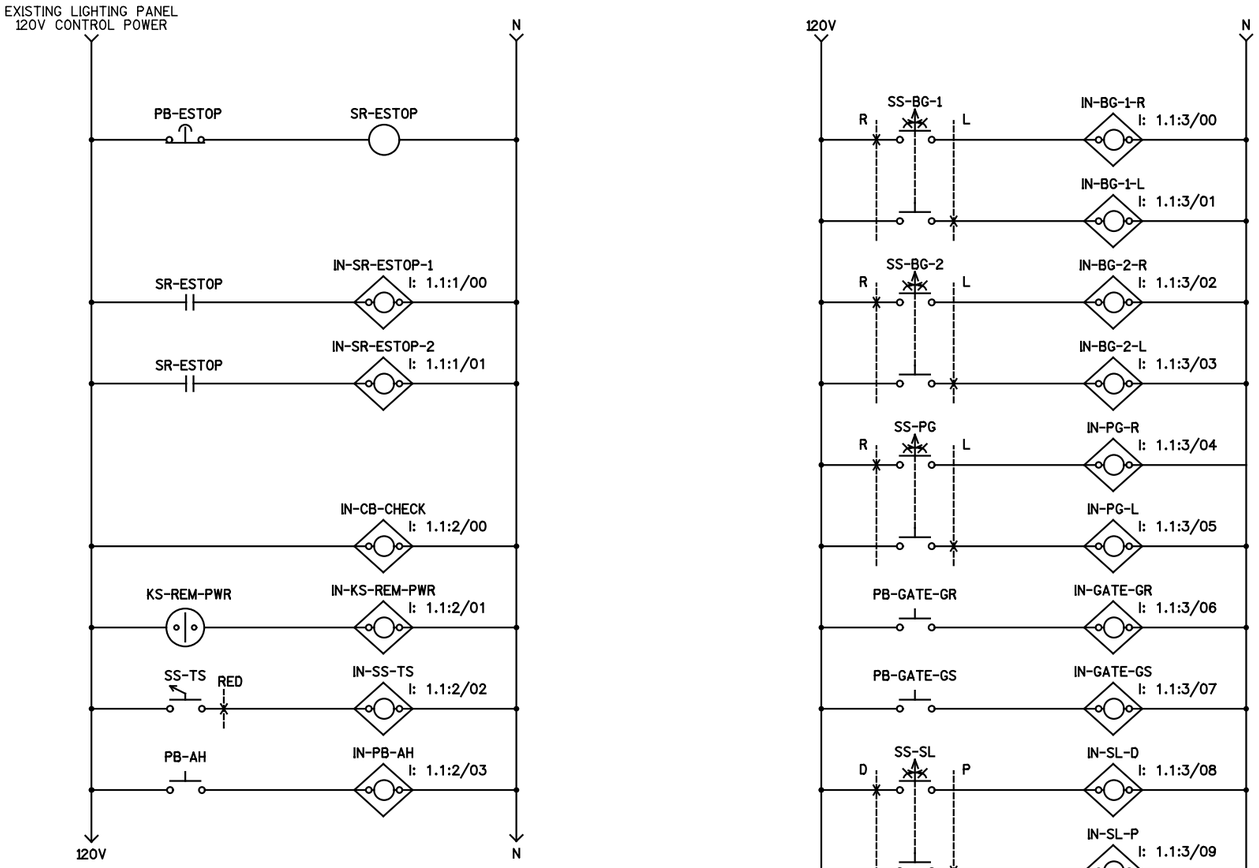

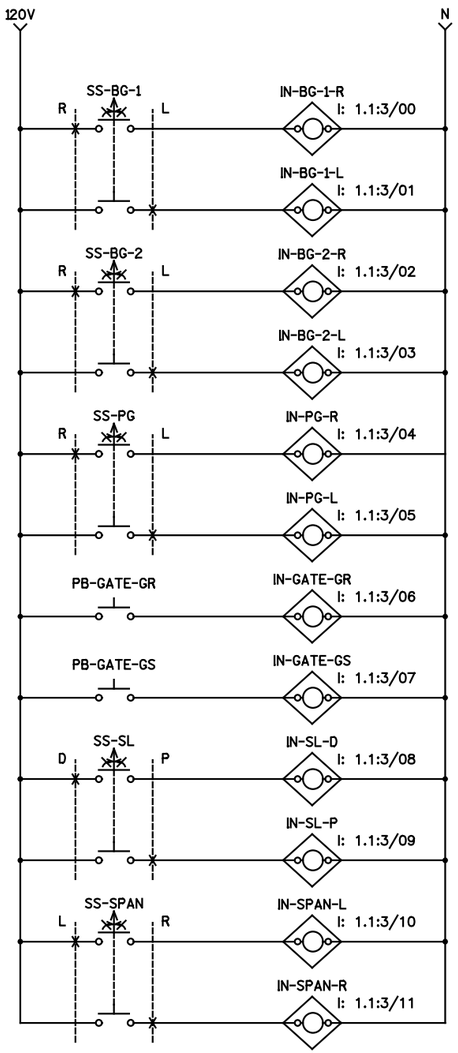

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PLC SCHEMATICS

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø269

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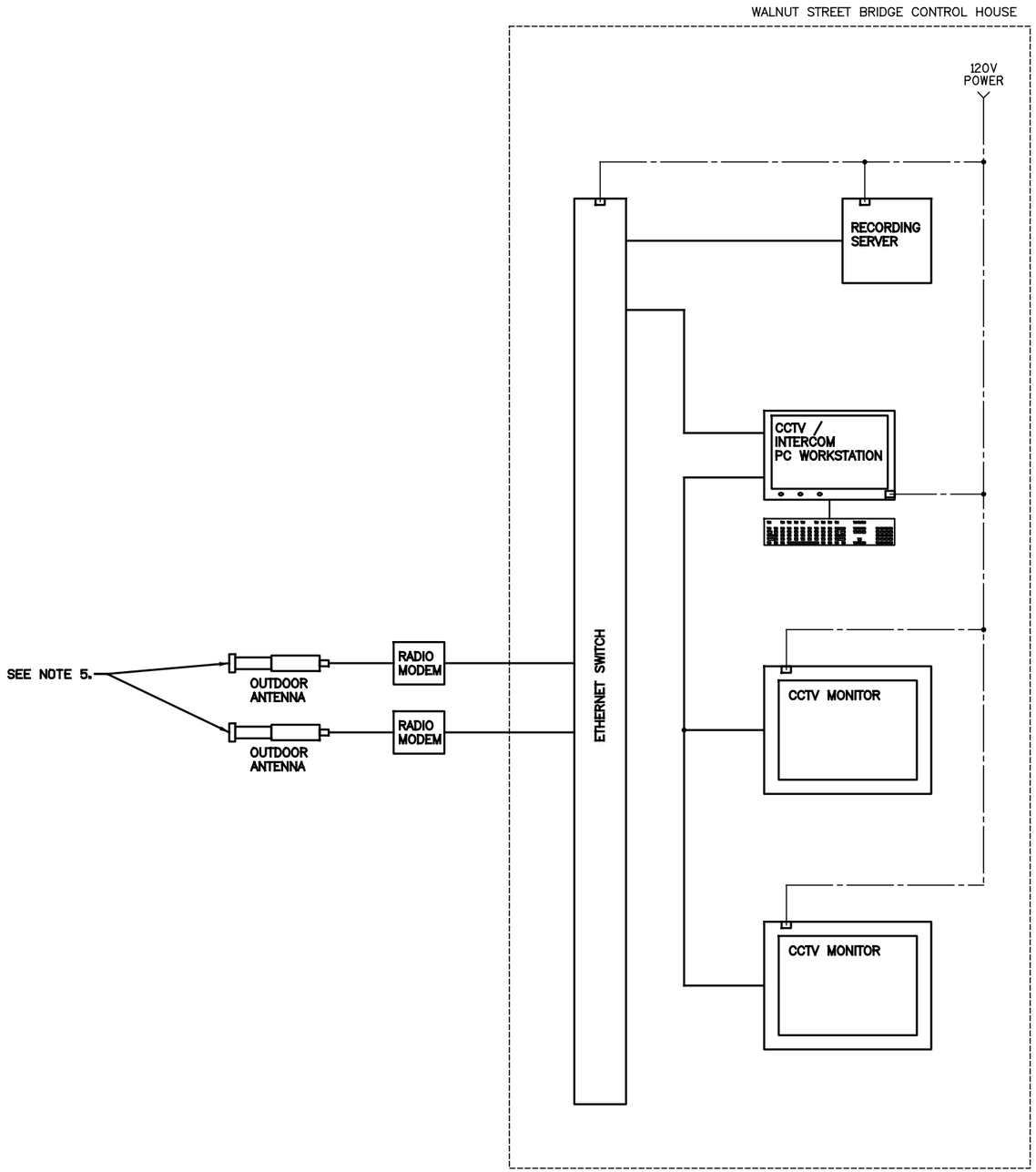
PLC SCHEMATIC

SHEET 6 OF 7

STATE PROJECT NUMBER
4987-07-71



NOTES:

1. ALL ETHERNET CABLING SHALL BE CATEGORY 6 AND OUTDOOR RATED WHERE APPLICABLE.
2. ALL OUTDOOR EQUIPMENT SHALL BE RATED NEMA 4X.
3. CCTV CABINET AND RACK LAYOUT TO BE VERIFIED BY MANUFACTURER.
4. THE CCTV CAMERA/PA SPEAKER NETWORK SHALL BE SEPARATE FROM THE PLC NETWORK AND USE SEPARATE ETHERNET SWITCHES AND WIRELESS EQUIPMENT.
5. A SET OF ANTENNAS ARE TO BE DIRECTED AT MASON STREET BRIDGE FOR REMOTE OPERATION.
6. CCTV MONITORS SHALL BE LOCATED ABOVE THE REMOTE CONTROL DESK AND DISPLAY VIDEO FEEDS IN QUAD SPLIT SCREEN.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

DRAWN BY	DH	PLANS CK'D.	AHN

CCTV AND PA SCHEMATIC

SHEET 7 OF 7

8

8

Notes

Wisconsin Department of Transportation

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http://www.dot.wisconsin.gov

GRE

APR 2016

PROJECT ID: 4987-07-72
WITH: 4987-07-71

COUNTY: BROWN

ORDER OF SHEETS

TOTAL SHEETS = 48

32

N

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CITY OF GREEN BAY

GREEN BAY LIFT STRUCTURES

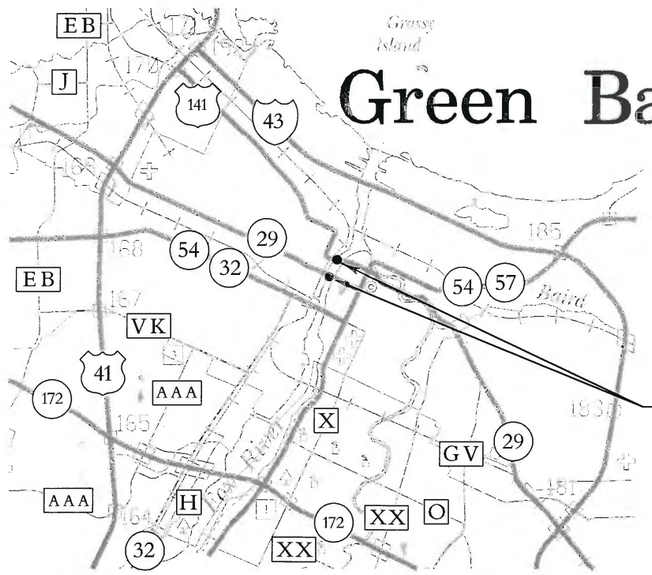
STH 29

BROWN COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4987-07-72	WISC 2016124	1

STATE PROJECT NUMBER
4987-07-72

R-20-E | R-21-E



CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS — CAUTION
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) — ROCK
- SPECIAL DITCH — LABEL
- GRADE ELEVATION — 95.36
- CULVERT (Profile View)

UTILITIES

- ELECTRIC — E
- FIBER OPTIC — FO
- GAS — G
- SANITARY SEWER — SAN
- STORM SEWER — SS
- TELEPHONE — T
- WATER — W
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

LAYOUT

SCALE 0 ½ 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.0 MI.

ORIGINAL PLANS PREPARED BY

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

WISCONSIN
ALEXANDER H. NOBLE
E-44564-6
NEW YORK
NY
PROFESSIONAL ENGINEER

1-05-2016

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	N/A
Designer	EMCS, INC.
Project Manager	ANDREW FULCER
Regional Examiner	
Regional Supervisor	DAN SEGERSTROM

APPROVED FOR THE DEPARTMENT

DATE: 1/5/2016 Andrew D. Fulcer (Signature)

E

GENERAL NOTES

THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA. NOT ALL UTILITIES ARE MEMBERS OF DIGGERS HOTLINE.

DESIGNER NOTES

TITLE SHEET, GENERAL NOTES, AND UTILITY COORDINATION COMPLETED BY EMCS, INC.
STRUCTURE PLANS COMPLETED BY HARDESTY AND HANOVER, LLP

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COMMANDER (DPB)
NINTH COAST GUARD DISTRICT
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CLEVELAND, OH 44199-2060
OFFICE: (216) 902-6085
FAX: (216) 902-6088
LEE.D.SOULE@USCG.MIL

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DVOSBERG@ATCLLC.COM

AT&T WISCONSIN

(TELECOMMUNICATIONS)
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JK582K@ATT.COM

CITY OF GREEN BAY

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MOBILE: 920-680-3529
KRISTINRO@CI.GREEN-BAY.WI.US

GREEN BAY METROPOLITAN SEWERAGE DISTRICT

(SANITARY SEWER)
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PHONE: 920-438-1035
MOBILE: 920-619-4917
RREINHART@GBMSD.ORG

GREEN BAY WATER UTILITY

(WATER)
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631 SOUTH ADAMS STREET
GREEN BAY, WI 54305
PHONE: 920-448-3480
MOBILE: 920-621-8071
JEFFWO@GREENBAYWI.GOV

TIME WARNER CABLE, A DELAWARE LIMITED PARNTERSHIP

(COMMUNICATIONS)
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3520 DESTINATION DRIVE
APPLETON, WI 54915
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MOBILE: 920-378-0444
VINCE.ALBIN@TWCABLE.COM

WINDSTREAM KDL, INC.

(COMMUNICATIONS)
DENNIS RUESS
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MADISON, WI 53704
PHONE: 812-456-1249
MOBILE: 608-512-5587

WISCONSIN PUBLIC SERVICE

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GREEN BAY, WI 54307-9001
PHONE: 920-433-1703
FAX: 920-433-1360
LABUTRY@INTEGRYSGROUP.COM

ELECTRIC FIELD CONTACT:
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GREEN BAY, WI 54307-9001
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MOBILE: 920-655-1596
RDSTEIER@WISCONSINPUBLICSERVICE.COM

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2850 SOUTH ASHLAND AVENUE
PO BOX 19001
GREEN BAY, WI 54307-9001
PHONE: 920-617-5237

DIGGERS HOTLINE
Dial 811 or (800) 242-8511
www.DiggersHotline.com

PROJECT NO: 4987-07-72	HWY: STH 29	COUNTY: BROWN	PROJECT OVERVIEW	SHEET 3	E

FILE NAME : P:\48xx\4859.DP.14.STH29.BRO\CADDS\Plan\4987-07-72 Phase 2\020201_po.dgn PLOT DATE : 9/17/2015 PLOT BY : sgc PLOT NAME : PLOT SCALE : 1:800

WISDOT/CADDS SHEET 42

DATE 18FEB16 E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4987-07-72 QUANTITY
0010	619.1000	Mobilization	EACH	0.800	0.800
0020	643.0100	Traffic Control (project) 02. 4987-07-72	EACH	1.000	1.000
0080	SPV.0105	Special 03. Main Street Bridge Electrical and Remote Operations Work, B-05-0311	LS	1.000	1.000
0090	SPV.0105	Special 04. Main Street Bridge CCTV System, B-05-0311	LS	1.000	1.000

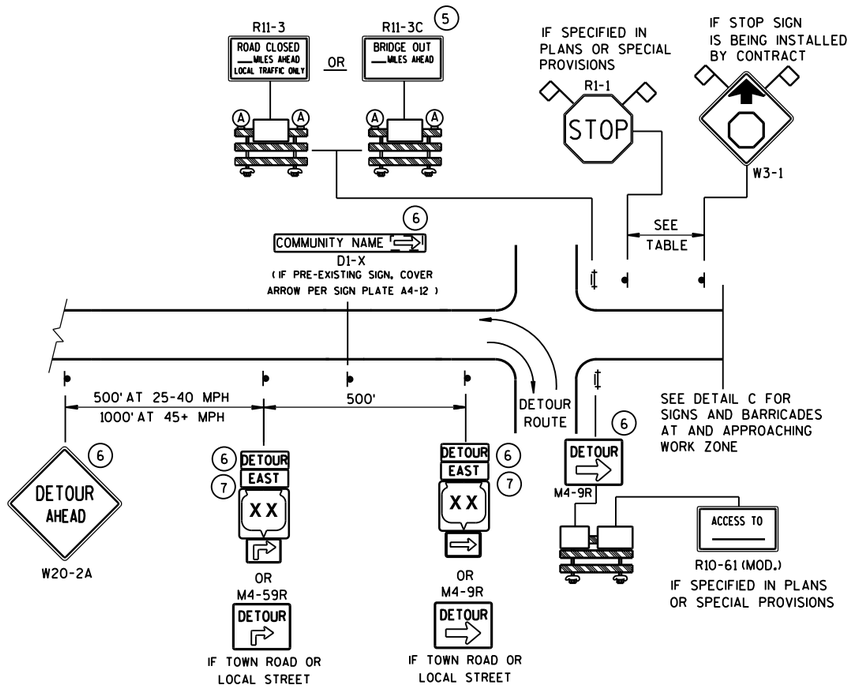
3

Standard Detail Drawing List

15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C05-02	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS
15D20-03	TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY
15D21-03	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D29-03	TRAFFIC CONTROL, VEHICLE ENTRANCE/EXIT OR HAUL ROAD

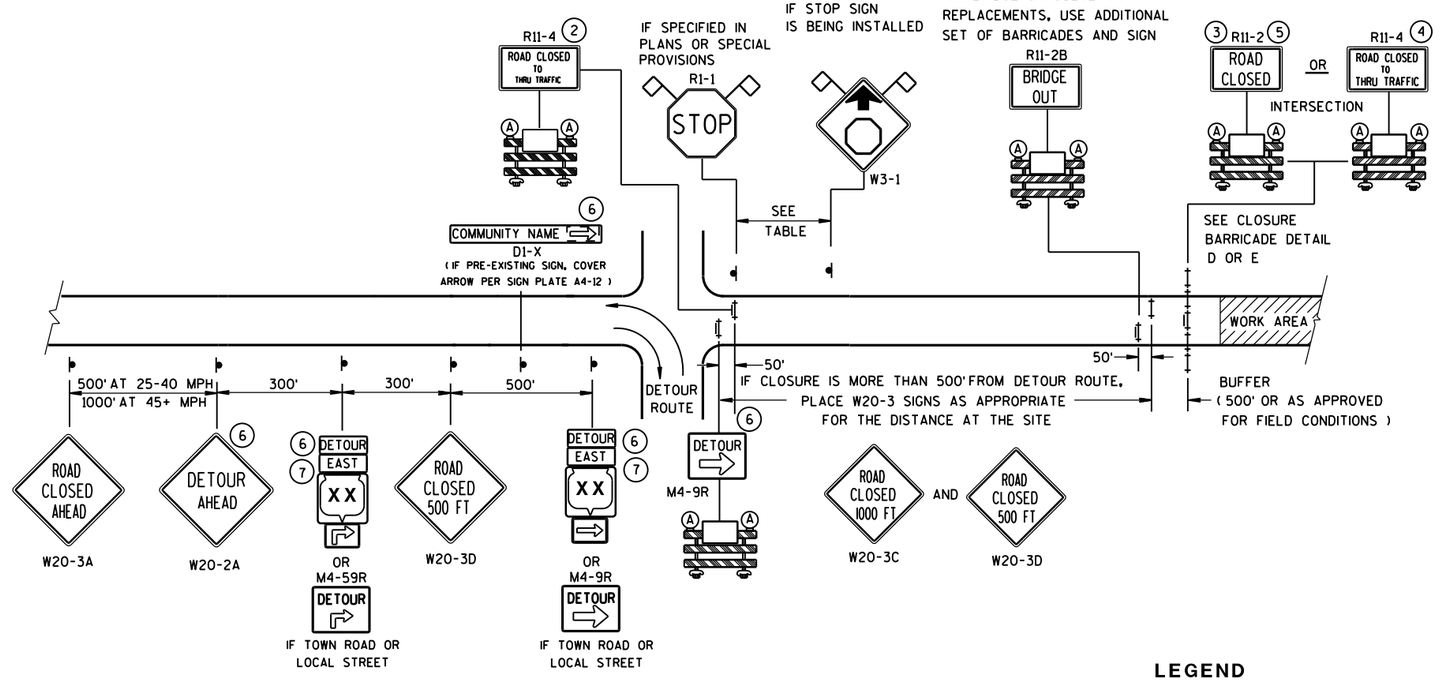
6

6



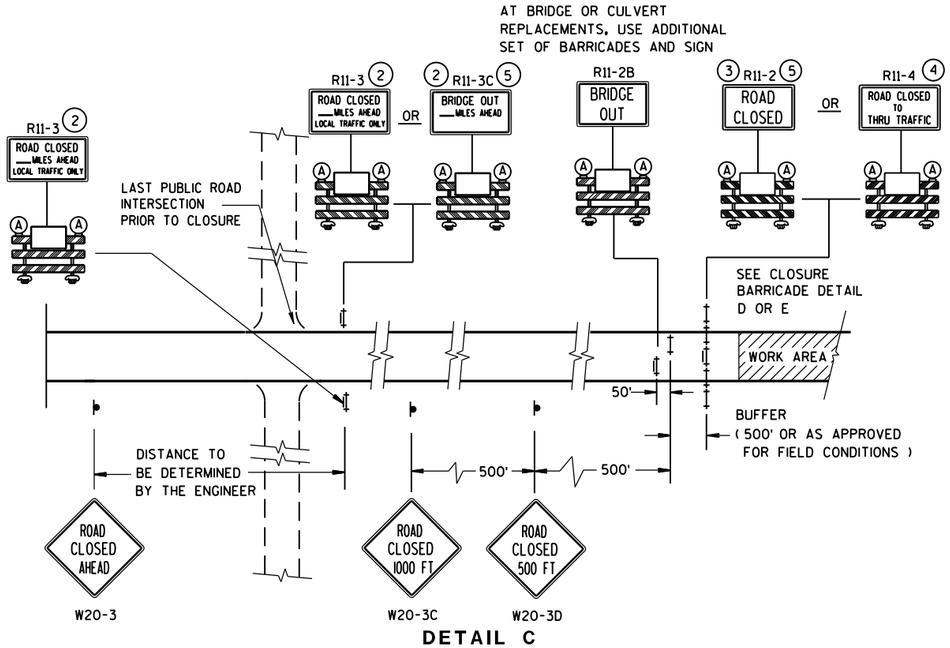
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750

SEE SDD 15C2-SHEET "**b**" FOR GENERAL NOTES AND FOOTNOTES (1) THROUGH (7)

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1 OR M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

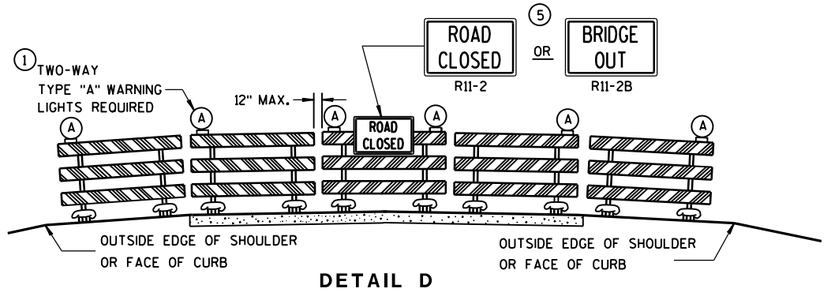
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA

6

S.D.D. 15 C 2-6a

6

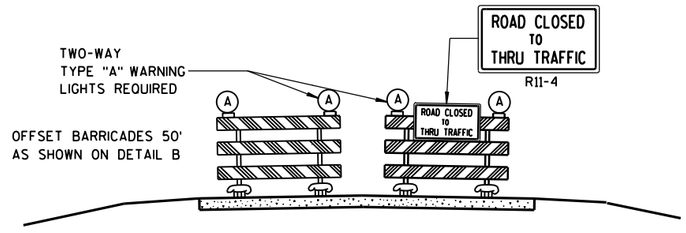
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-SHEET "**a**" FOR LEGEND

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND BARRICADES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL D FOR FULL ROAD CLOSURES.

TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11-2, R11-3, M4-9, R11-4 AND R10-61 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

"WO AND "MO" SIGNS ARE THE SAME AS "W" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO 7 FIC
SAFETY ENGI
FHWA

THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.

GENERAL NOTES

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

THE SPACING BETWEEN TRAFFIC CONTROL AND DETOUR SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE", SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

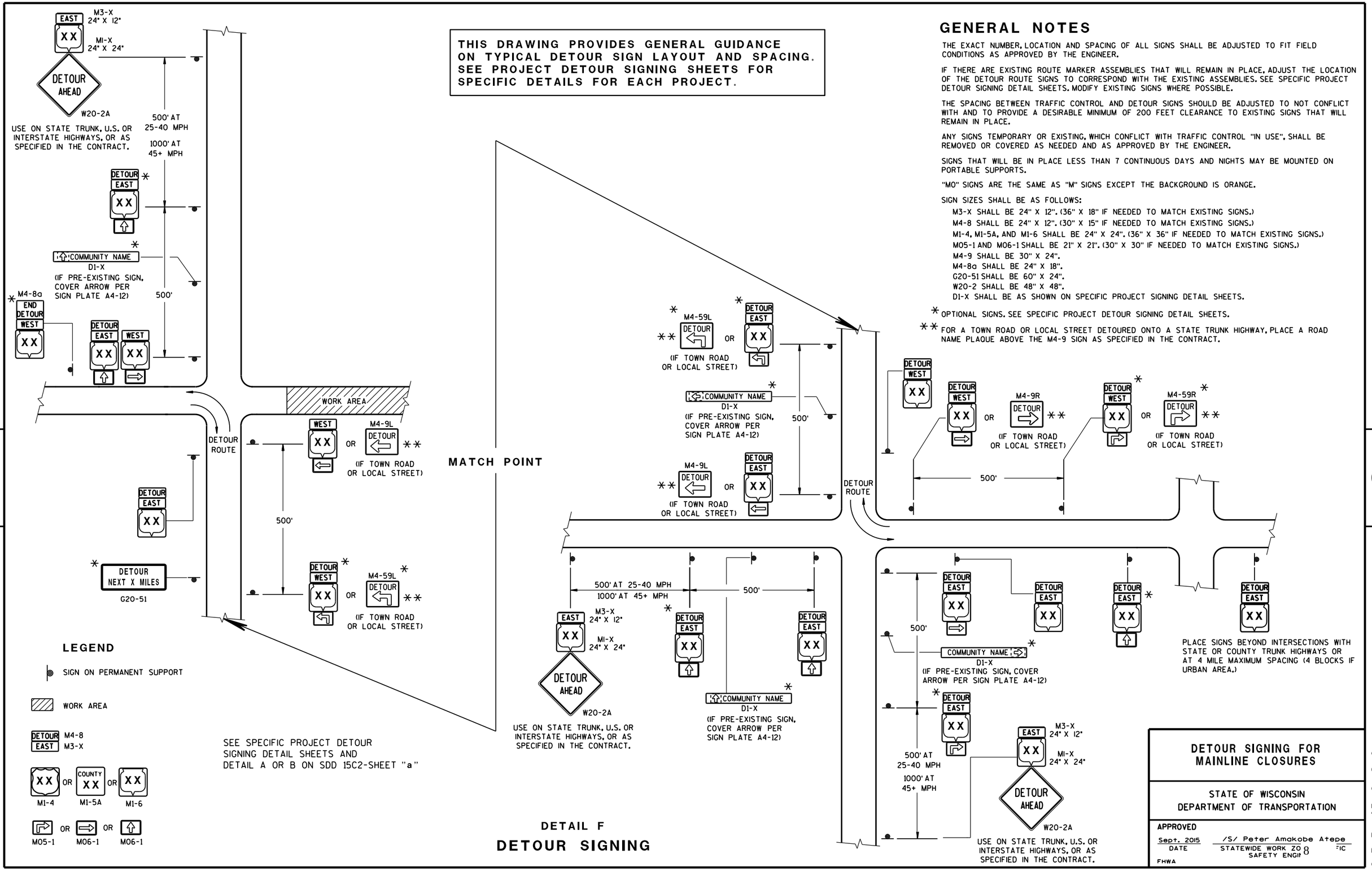
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- MO5-1 AND MO6-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-9 SHALL BE 30" X 24".
- M4-8a SHALL BE 24" X 18".
- G20-51 SHALL BE 60" X 24".
- W20-2 SHALL BE 48" X 48".
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.



DETAIL F

DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

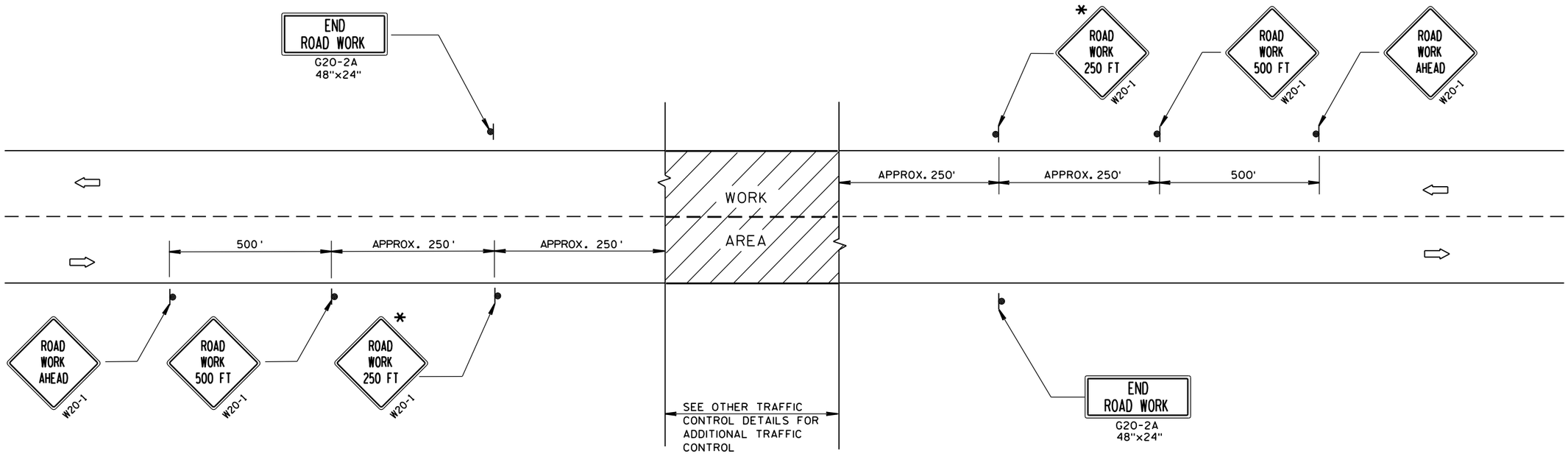
Sept. 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZONE SAFETY ENGINEER

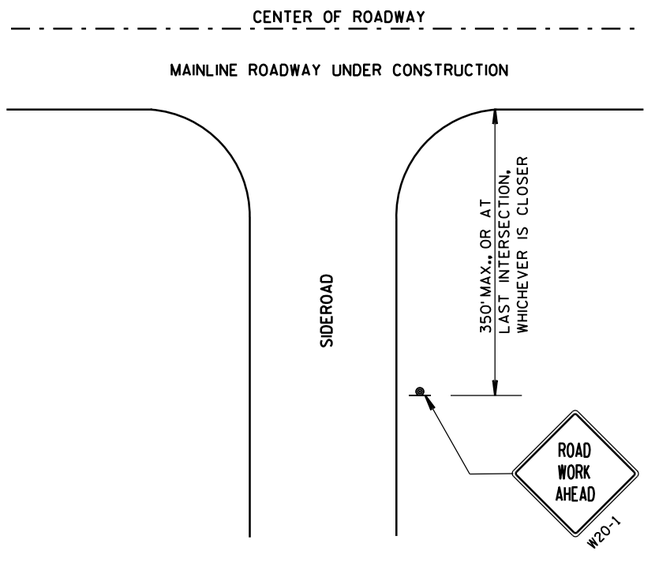
FHWA

6

S.D.D. 15 C 2-6c



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL



GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"x36" SIGNS MAY BE USED INSTEAD OF 48"x48" SIGNS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FT" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.

LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

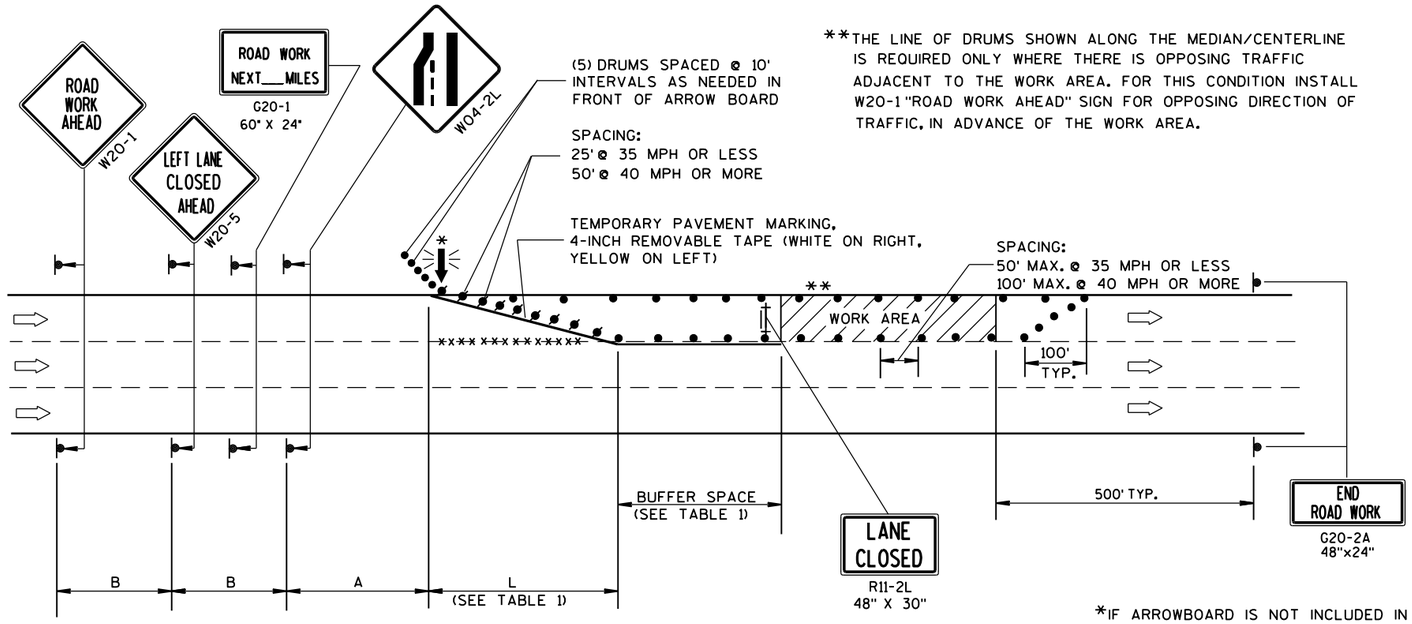
APPROVED

8/2013 (DATE) — /S/ Travis Feltes (STATE TRAFFIC ENGINEER) — (SIGN)

FHWA

6

S.D.D. 15 C 5-2



**THE LINE OF DRUMS SHOWN ALONG THE MEDIAN/CENTERLINE IS REQUIRED ONLY WHERE THERE IS OPPOSING TRAFFIC ADJACENT TO THE WORK AREA. FOR THIS CONDITION INSTALL W20-1 "ROAD WORK AHEAD" SIGN FOR OPPOSING DIRECTION OF TRAFFIC, IN ADVANCE OF THE WORK AREA.

B=400' AT 25-30 MPH
700' AT 35-40 MPH
1000' AT 45-55 MPH

A=200' AT 25-30 MPH
350' AT 35-40 MPH
500' AT 45-55 MPH

(PLACE BARRICADE AND SIGN APPROX. EVERY 1000' ACROSS THE CLOSED LANE)

*IF ARROWBOARD IS NOT INCLUDED IN MISCELLANEOUS QUANTITIES, SUBSTITUTE A TYPE III BARRICADE WITH W01-6 SIGN IN THE LANE CLOSURE TAPER.

W01-6
48"x24"

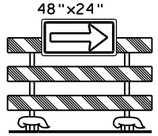


TABLE 1
TAPER AND BUFFER SPACE FOR 12' LANE WIDTH

S	L	BUFFER SPACE
25	125'	55'
30	180'	85'
35	245'	120'
40	320'	170'
45	540'	220'
50	600'	280'
55	660'	335'

FOR LANE WIDTH OTHER THAN 12':

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

L = TAPER LENGTH IN FEET

S = NON-CONSTRUCTION SPEED LIMIT (MPH)

W = WIDTH OF LANE CLOSURE

LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- DIRECTION OF TRAFFIC
- REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- WORK AREA

GENERAL NOTES

THIS LANE CLOSURE DETAIL IS TYPICAL FOR CLOSING THE LEFT LANE. FOR A RIGHT LANE CLOSURE, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR ROADWAYS WITH EITHER TWO OR THREE LANES IN EACH DIRECTION.

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

ON UNDIVIDED ROADWAYS, OMIT THE SIGNS SHOWN ON LEFT SIDE OF ROAD.

W20-1, G20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE APPROACHING DRIVER HAS A CLEAR VIEW OF THE ARROWBOARDS AND LANE CLOSURE DRUMS.

PLACE THE ARROWBOARD AS CLOSE AS POSSIBLE TO THE BEGINNING OF THE LANE CLOSURE TAPER, PREFERABLY ON THE SHOULDER OR TERRACE.

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Feb. 2015 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 D 20-3

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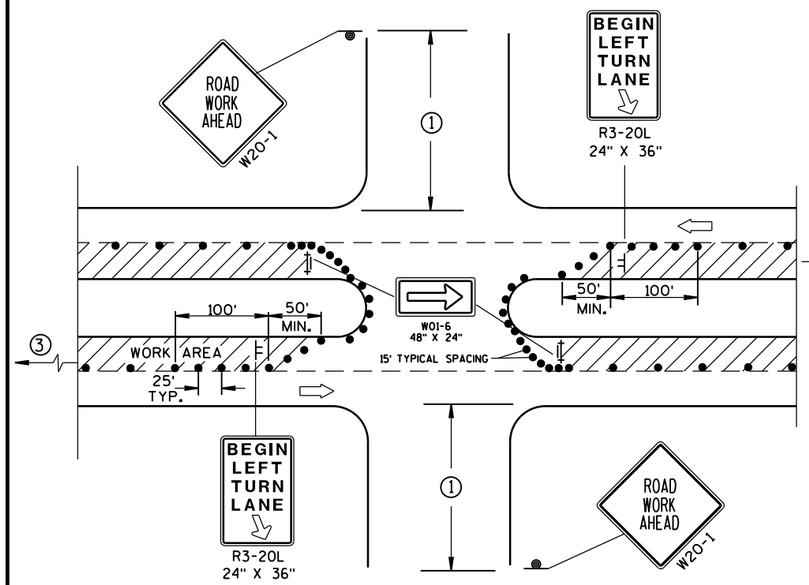
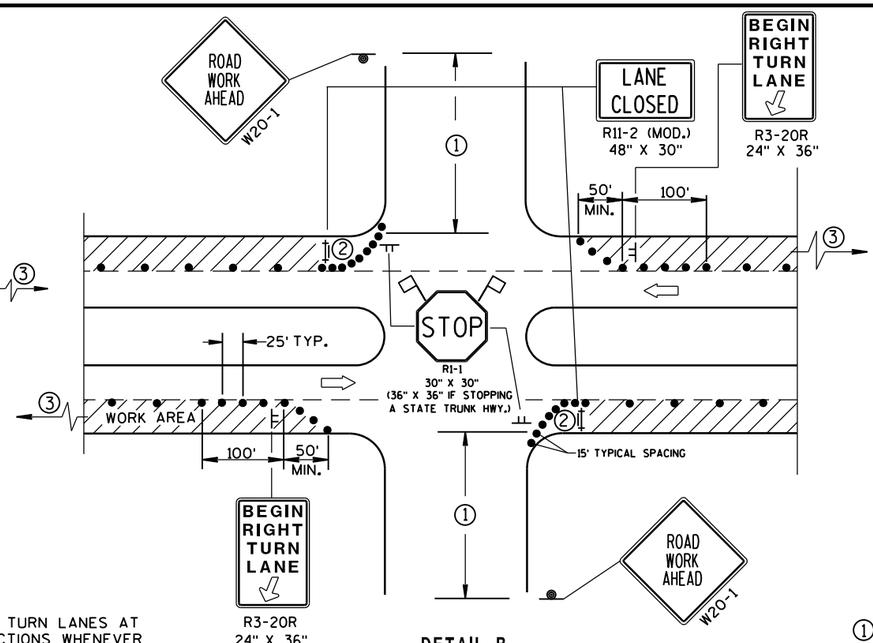
S.D.D. 15 D 20-3



DETAIL A

FOR LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING

PROVIDE TURN LANES AT INTERSECTIONS WHENEVER STAGING OF WORK ALLOWS. TAPER AND TURN LANE LENGTHS BASED ON FIELD CONDITIONS AS APPROVED BY THE ENGINEER.



DETAIL B

FOR RIGHT LANE CLOSURE AT INTERSECTION

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

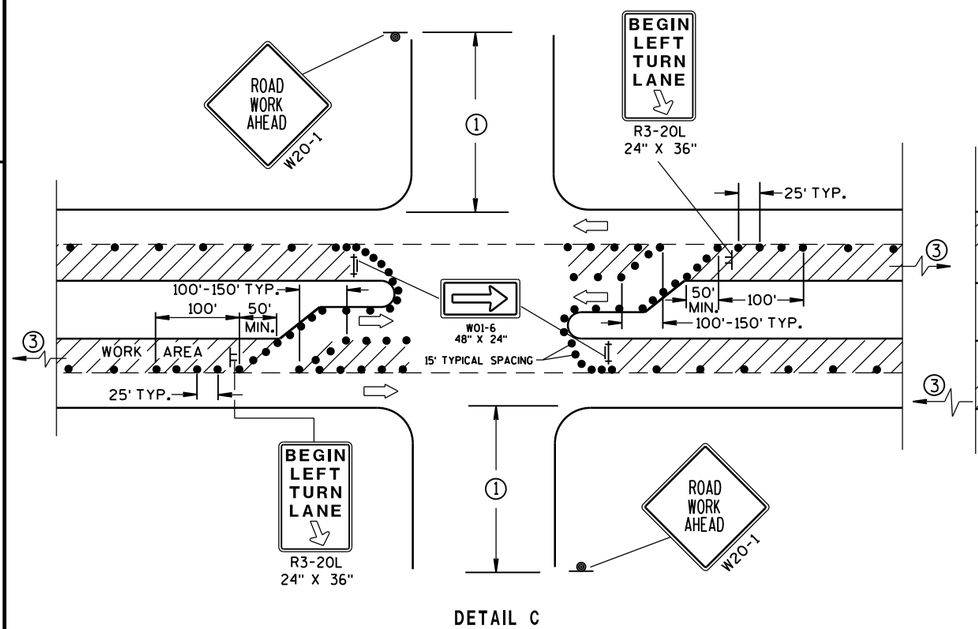
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.
350' IF 35-40 MPH.
200' IF 25-30 MPH.

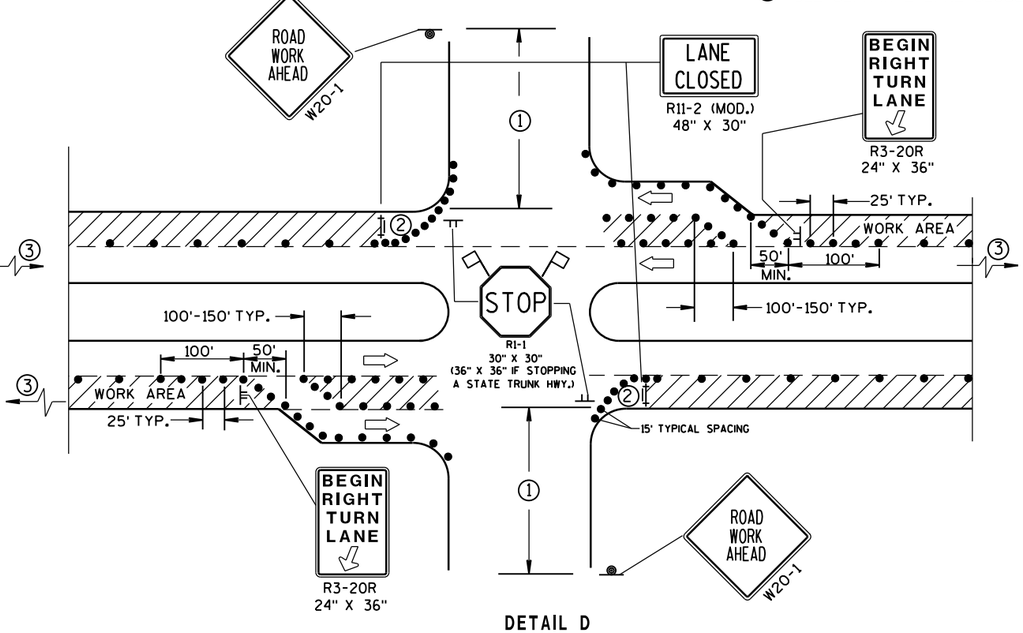
② ALSO USE BARRICADE AND 15-FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS.

③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.



DETAIL C

FOR LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING (WITH LEFT TURN BAY OPEN)



DETAIL D

FOR RIGHT LANE CLOSURE AT INTERSECTION (WITH RIGHT TURN BAY OPEN)

LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- SIGN ON TEMPORARY SUPPORT (5' MIN. MOUNTING HEIGHT)
- TYPE III BARRICADE WITH ATTACHED SIGN AND TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- FLAGS, 16" X 16" MIN., (ORANGE)
- WORK AREA

TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Nov. 2014 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

6

S.D.D. 15 D 21-3

GENERAL NOTES

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

TABLE A

SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S \ W	4	6	8	10	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

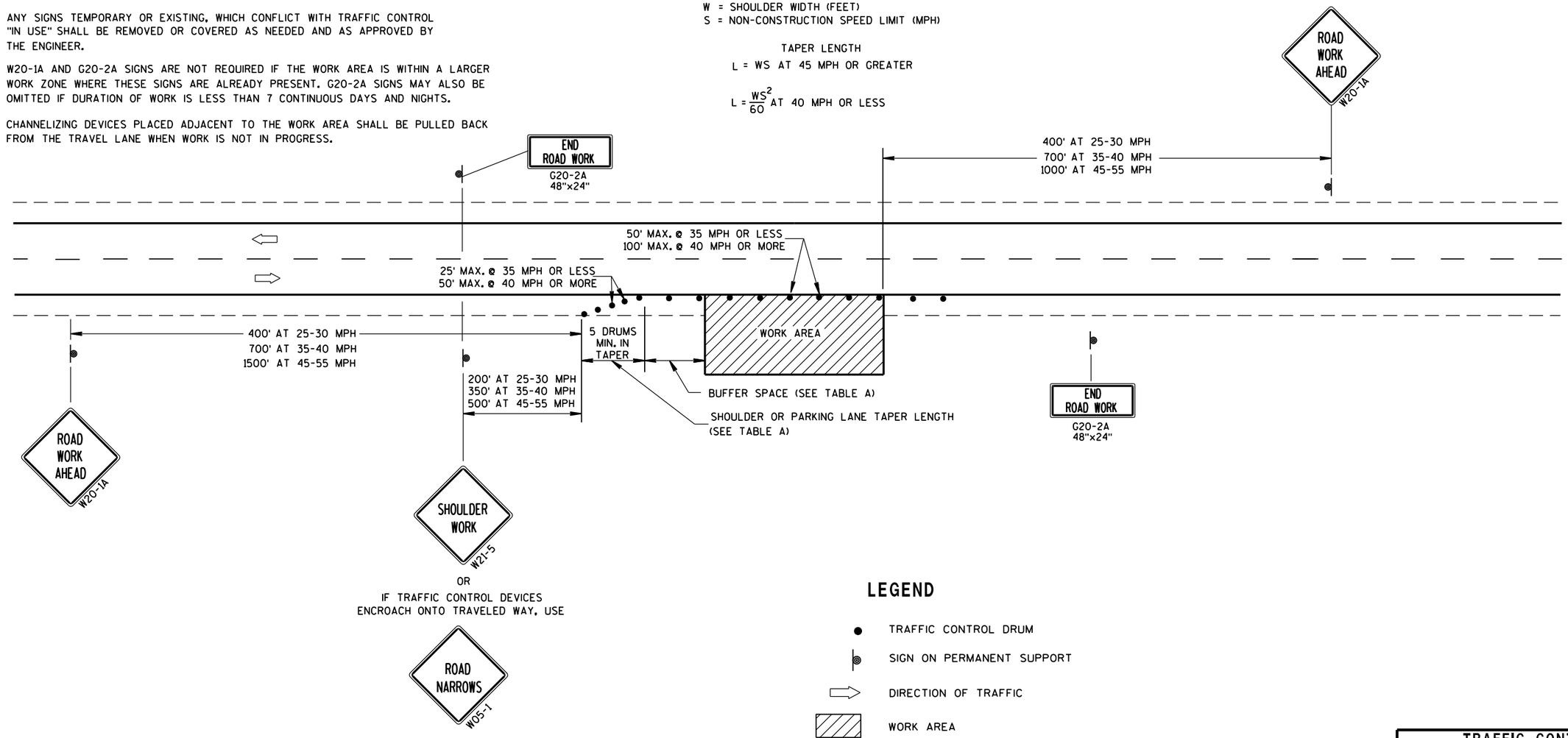
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$ AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

July 14, 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZO SAFETY ENGI FIC

FHWA

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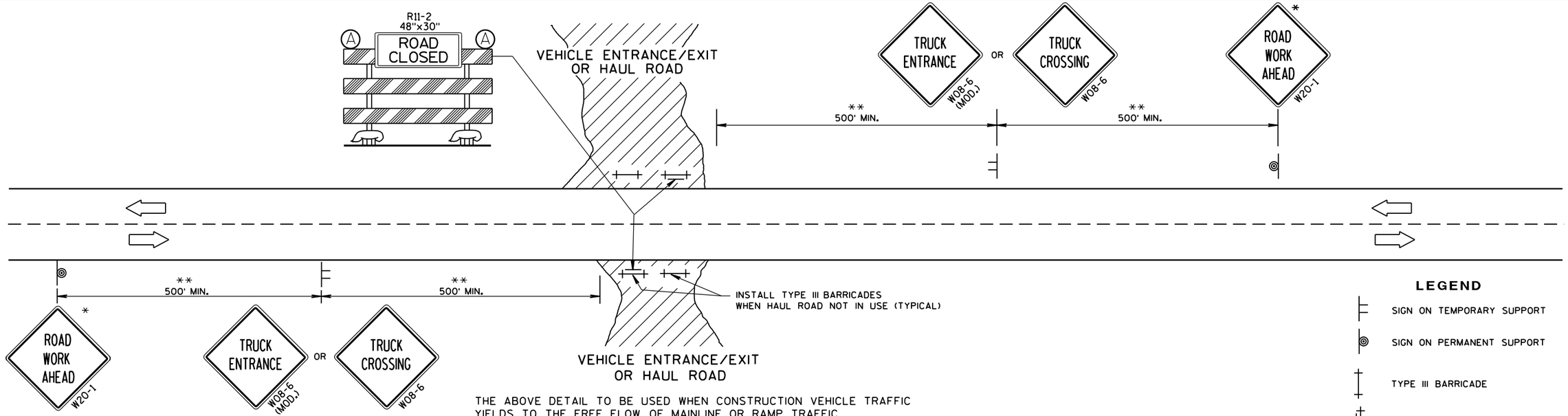
S.D.D. 15 D 28-3



THE ABOVE DETAIL TO BE USED WHEN CONSTRUCTION VEHICLE TRAFFIC YIELDS TO THE FREE FLOW OF MAINLINE OR RAMP TRAFFIC

LEGEND

- SIGN ON TEMPORARY SUPPORT
- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC

GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS, DEVICES AND FLAGGERS SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

WHEN ACTIVITY REFLECTED BY THE SIGN IS NOT CURRENTLY TAKING PLACE, THE HIGHWAY SHALL BE RESTORED TO NORMAL CONDITION AND THE SIGNS SHALL BE REMOVED, COVERED OR TURNED AWAY FROM TRAFFIC.

WHEN A SIDE ROAD OR RAMP INTERSECTS WITHIN THE ADVANCE SIGNING AREA, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

* THESE SIGNS ARE TO BE USED ONLY WHEN VEHICLE ENTRANCE/EXIT CONDITIONS ARE SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA OR SIGNING OR AS DIRECTED BY THE ENGINEER.

** 500 FEET SHOWN IS FOR ROADWAYS WITH A NON-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FEET. FOR 25-30 MPH, USE 200 FEET. USE 1000 FEET/1500 FEET FOR EXPRESSWAY/FREEWAY.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

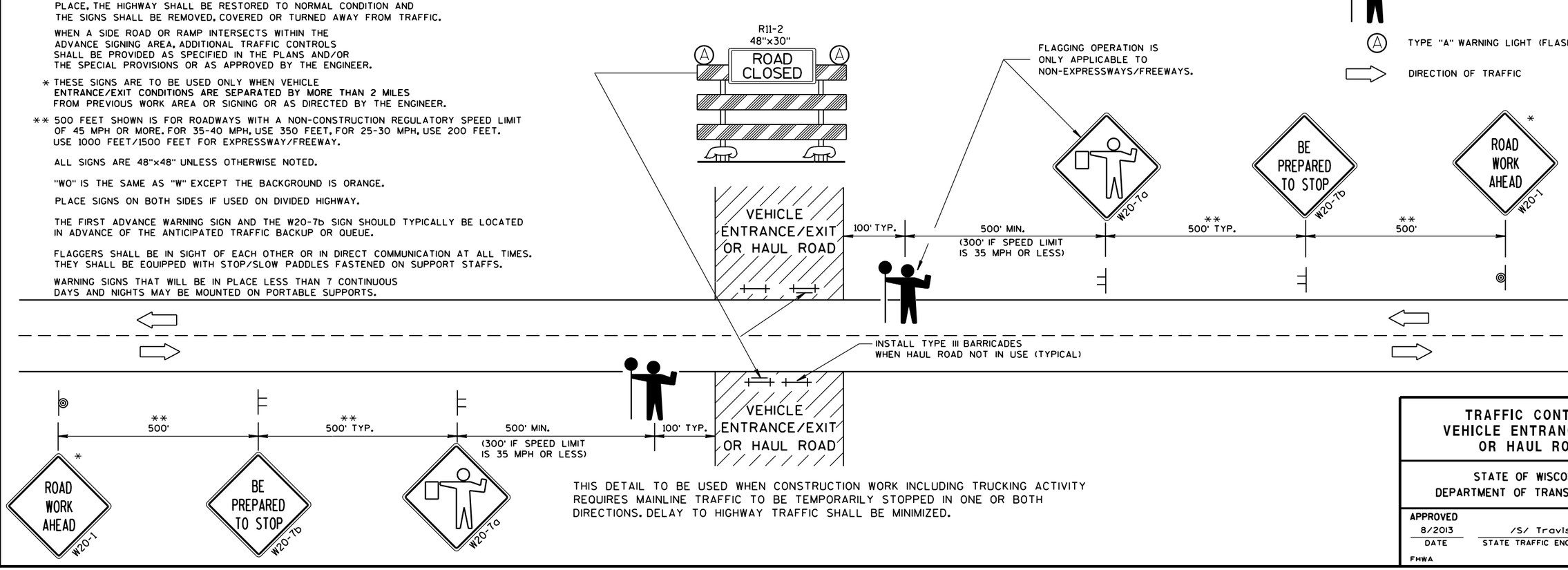
"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

PLACE SIGNS ON BOTH SIDES IF USED ON DIVIDED HIGHWAY.

THE FIRST ADVANCE WARNING SIGN AND THE W20-7b SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS.

WARNING SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.



THIS DETAIL TO BE USED WHEN CONSTRUCTION WORK INCLUDING TRUCKING ACTIVITY REQUIRES MAINLINE TRAFFIC TO BE TEMPORARILY STOPPED IN ONE OR BOTH DIRECTIONS. DELAY TO HIGHWAY TRAFFIC SHALL BE MINIMIZED.

TRAFFIC CONTROL, VEHICLE ENTRANCE/EXIT OR HAUL ROAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

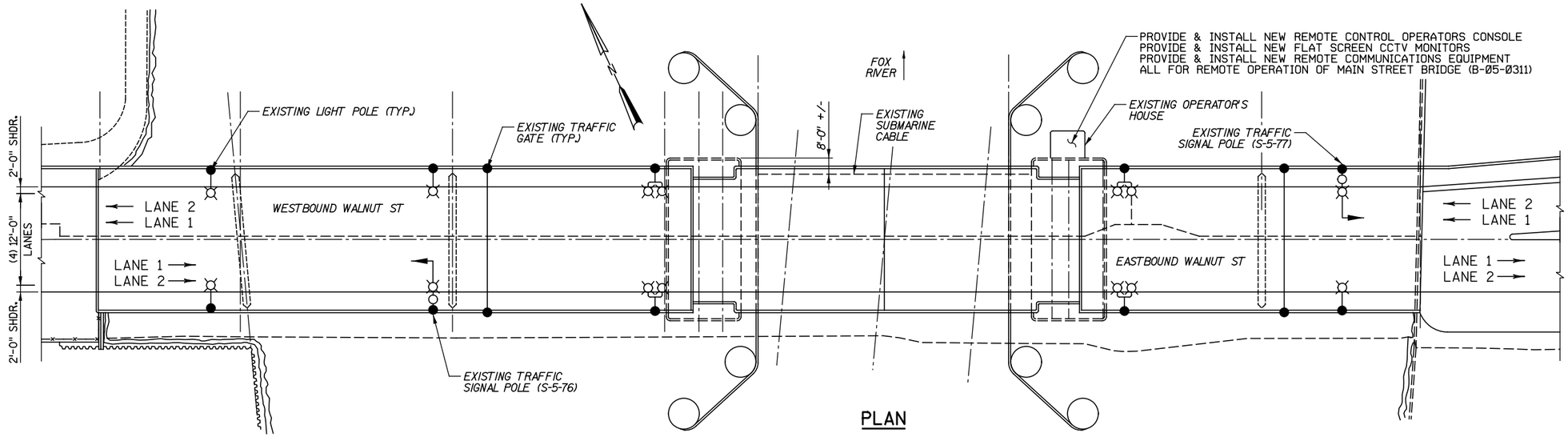
APPROVED

8/2013	/S/ Travis Feltes	
DATE	STATE TRAFFIC ENGINEER	IGN

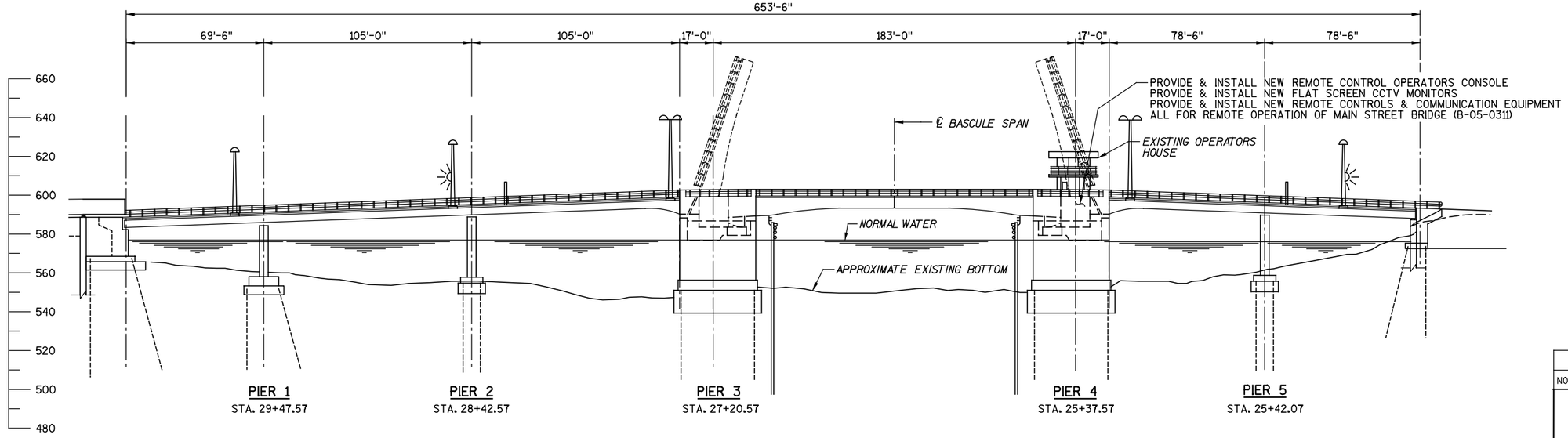
FHWA

6

S.D.D. 15 D 29-3



PLAN



ELEVATION

LIST OF DRAWINGS

1. GENERAL PLAN AND ELEVATION
2. ELECTRICAL SCOPE OF WORK AND NOTES
3. PLC ARCHITECTURE
4. REMOTE CONTROL DESK LAYOUT
5. OPERATORS ROOM LAYOUT PLAN
6. PLC SCHEMATIC
7. CCTV AND PA SCHEMATIC

STRUCTURES DESIGN CONTACTS:

BUREAU OF STRUCTURES:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
JOHN GIMBLETTE (212) 944-1150

STATE PROJECT NUMBER

4987-07-72

HARDESTY & HANOVER, LLC

WISCONSIN
ALEXANDER H. NOBLE
E-44564-6
NEW YORK
NY
PROFESSIONAL ENGINEER

12-1-2015 (DATE)

(SIGNATURE)

TRAFFIC DATA

ADT= 13,340 (ESTIMATED, 2016)
RDS= 25 M.P.H.

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. DIMENSIONS SHOWN ARE BASED ON ORIGINAL STRUCTURE PLANS.
3. ATTACHMENTS TO EXISTING CONCRETE NOT SHOWN ON THE PLANS SHALL UTILIZE GALVANIZED BRACKETS AND STAINLESS STEEL ANCHORS.
4. ATTACHMENTS OR MODIFICATIONS TO EXISTING STRUCTURAL STEEL NOT SHOWN ON THE PLANS REQUIRE THE WRITTEN APPROVAL OF THE CHIEF STRUCTURES DESIGN ENGINEER.
5. ALL WORK PERFORMED AT THE WALNUT STREET BRIDGE SHALL BE PAID UNDER MAIN STREET BRIDGE (B-05-0311) PAY ITEMS.

NO.	DATE	REVISION	BY

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 02/16/16
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-05-0269

STH 29 (WALNUT ST.) OVER FOX RIVER

COUNTY	~~TOWN~~/CITY/~~VILLAGE~~
BROWN	GREEN BAY

DESIGN SPEC. REHABILITATION N/A

DESIGNED BY	DH	DESIGN CK'D.	AHN	DRAWN BY	RKP	PLANS CK'D.	AHN

GENERAL PLAN AND ELEVATION

SHEET 1 OF 7

STATE PROJECT NUMBER
4987-07-72

DESCRIPTION OF ELECTRICAL FACILITIES: SCOPE OF WORK SUMMARY

COMMUNICATION WITH MAIN STREET BRIDGE

ELECTRIC CONTROL SIGNALS SHALL BE CARRIED FROM THE WALNUT STREET BRIDGE TO THE MAIN STREET BRIDGE BY MEANS OF REDUNDANT WIRELESS RADIO ANTENNAS.

NEW REMOTE CONTROL DESK

A NEW PLC OPERATED CONTROL DESK FOR REMOTE OPERATION OF THE MAIN STREET BRIDGE SHALL BE INSTALLED ON THE OPERATOR LEVEL. THE NEW CONTROL DESK SHALL BE POWERED FROM THE EXISTING WALNUT STREET BRIDGE LIGHTING PANEL.

CCTV AND PA SYSTEM

THE CCTV AND PA SYSTEM WILL TRANSMIT DATA VIA ETHERNET PROTOCOL. COMMUNICATION BETWEEN THE WALNUT STREET BRIDGE AND THE MAIN STREET BRIDGE SHALL BE VIA REDUNDANT ANTENNAS AND BE ON A FULLY SEPERATE NETWORK FROM THE CONTROL SYSTEM UTILIZING SEPARATE COMMUNICATION HARDWARE. A RACK WITH COMPUTER TERMINAL SHALL BE INSTALLED ON THE OPERATOR LEVEL FOR ACCESS TO THE MASON STREET CCTV/PA SYSTEM. THE CCTV/PA EQUIPMENT SHALL BE POWERED FROM THE EXISTING WALNUT STREET BRIDGE LIGHTING PANEL.

DEMOLITION

ALL EXISTING ELECTRICAL MACHINERY AND CONTROL EQUIPMENT NOT TO BE REUSED OR INTENTIONALLY ABANDONED SHALL BE REMOVED AND PROPERLY DISPOSED OF.

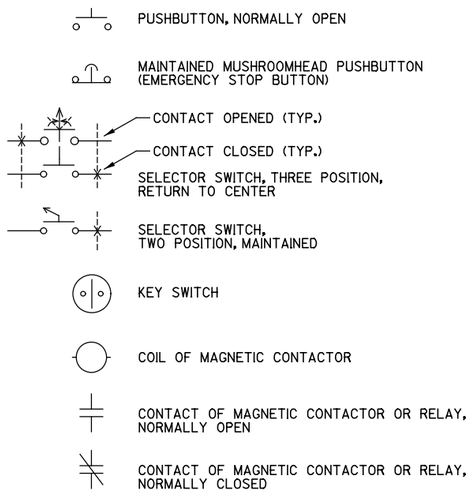
GENERAL ELECTRICAL NOTES

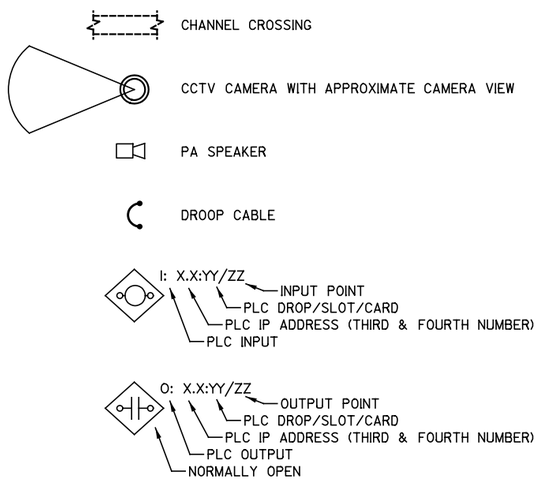
1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH STATE STANDARD SPECIFICATIONS, THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC), AND THE ELECTRICAL REQUIREMENTS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS.
2. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES AND SHALL BE SCHEDULED CONSISTENT WITH THE OVERALL CONSTRUCTION STAGING SEQUENCE.
3. THE PLANS ARE DIAGRAMMATIC AND ARE NOT TO BE SCALED. THE LOCATIONS OF EQUIPMENT AND ROUTING OF CONDUITS SHOWN ON THE CONTRACT DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD AND PREPARING SCALED SHOP DRAWING.
4. ALL ELECTRICAL COMPONENTS AND MATERIAL SHOWN ON THE CONTRACT DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE REMOVAL AND INSTALLATION OF ELECTRICAL COMPONENTS, HANGERS, SUPPORTS, ETC. ALL PATCHING SHALL BE DONE SO AS TO LEAVE THE AREA IN ITS ORIGINAL CONDITION AS A MINIMUM OR AS OTHERWISE REQUIRED BY THE ENGINEER.
6. EXISTING ELECTRICAL CABLE, WIRES, CONDUIT, CONDUIT HANGERS, SUPPORTS, CLAMPS, ETC, WHICH ARE BEING REPLACED SHALL NOT BE REUSED. ALL SUCH PARTS SHALL BE REMOVED AND PROPERLY DISPOSED OF.
7. ALL NEW CONDUIT AND FITTINGS SHALL BE ¾" MINIMUM PVC COATED HOT DIPPED GALVANIZED RIGID STEEL UNLESS OTHERWISE NOTED, AND SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION, AND INSTALLATION CONTAINED IN THE SPECIFICATION.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED BOXES, CONDUIT FITTINGS, ELBOWS, AND HARDWARE FOR A COMPLETE INSTALLATION, WHETHER OR NOT THEY ARE EXPLICITLY SHOWN OR INDICATED ON THE CONTRACT DRAWINGS.
9. NEW ELECTRICAL CONDUCTORS SHALL BE MINIMUM SIZE NO. 12 AWG STRANDED TYPE XHHW, EXCEPT FOR INTERNAL WIRING IN CONTROL CABINETS AND CONTROL DESK WHICH SHALL BE MINIMUM SIZE NO. 14 AWG TYPE SIS. ALL WIRES AND CABLES SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION AND INSTALLATION CONTAINED IN THE RELEVANT SPECIFICATIONS.
10. ALL SWITCHES, RELAYS, CONTACTORS AND STARTERS ARE SHOWN ON THE DRAWINGS AS DE-ENERGIZED AND WITH THE SPAN FULLY CLOSED, GATES RAISED, AND TRAFFIC SIGNALS GREEN, OPEN TO VEHICULAR TRAFFIC.
11. ALL NEW CONDUCTORS INSTALLED IN CONDUIT SHALL BE INSTALLED WITH GROUND CONDUCTORS. GROUND CONDUCTORS SHALL BE PROVIDED IN ALL NEW FLEXIBLE CABLES. MINIMUM SIZE GROUND CONDUCTOR SHALL BE NO. 12 AWG. ALL CABINETS, TERMINAL AND JUNCTION BOXES SHALL BE GROUNDED IN ACCORDANCE WITH THE NEC.
12. ALL CONDUCTORS SHALL BE CONNECTED TO TERMINAL BLOCKS OR DEVICES. SPLICES SHALL NOT BE PERMITTED WITHIN EQUIPMENT ENCLOSURES, BOXES, OR CONDUIT FITTINGS.
13. CONTRACTOR IS TO VERIFY ALL AS-BUILT CONDITIONS ARE ACCURATE BEFORE COMMENCING WORK.

ABBREVIATIONS

AH	AIR HORN
BG	BARRIER GATE
CB	CIRCUIT BREAKER
CCTV	CLOSED-CIRCUIT TELEVISION
CPU	CENTRAL PROCESSING UNIT
CR	CONTROL RELAY
D	DRIVE
ESTOP	EMERGENCY STOP
F	FAR SIDE
GR	GROUP GATE RAISE
GS	GROUP GATE STOP
HMI	HUMAN MACHINE INTERFACE
HPU	HYDRAULIC POWER UNIT
IN	PLC INPUT
I/O	PLC INPUT / OUTPUT
IP	INTERNET PROTOCOL
KS	KEY SWITCH
L	LOWER
MCC	MOTOR CONTROL CENTER
N	NEAR SIDE, NEUTRAL
NE	NORTH EAST
NW	NORTH WEST
OUT	PLC OUTPUT
P	PULL
PA	PUBLIC ADDRESS SYSTEM
PB	PUSHBUTTON
PC	PERSONAL COMPUTER
PG	PEDESTRIAN GATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PWR	POWER
R	RAISE
REM	REMOTE
SC	SAFETY CONTACTOR
SE	SOUTH EAST
SL	SPAN LOCK
SR	SAFETY RELAY
SS	SELECTOR SWITCH
SW	SOUTH WEST
TS	TRAFFIC SIGNALS
TYP	TYPICAL
VAC	VOLTAGE ALTERNATING CURRENT

SYMBOLS





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NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

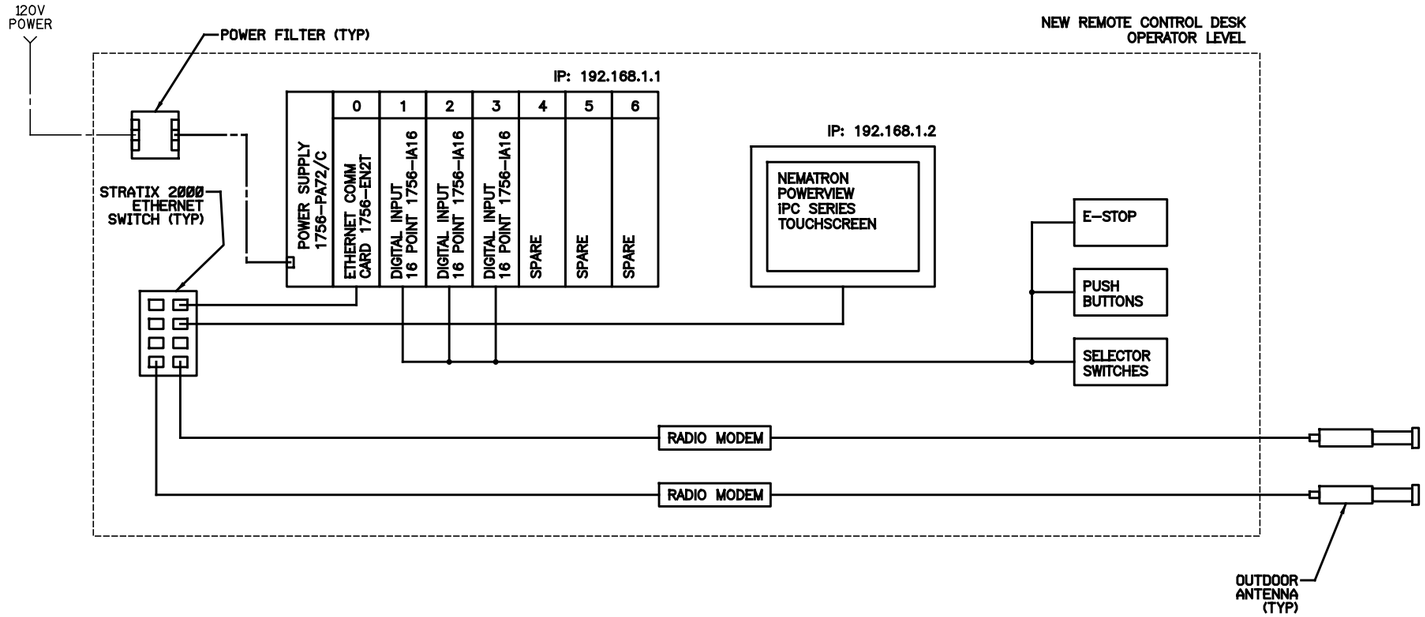
STRUCTURE B-05-0269

DRAWN BY DH | PLANS CK'D. AHN

ELECTRICAL SCOPE OF WORK AND NOTES

SHEET 2 OF 7

STATE PROJECT NUMBER
4987-07-72



NOTES:

1. PLC ARCHITECTURE WAS DESIGNED USING THE ALLEN BRADLEY CONTROLOGIX SYSTEM.
2. PLC TERMINAL DESIGNATIONS (DETAILED ON WIRING DIAGRAMS) IN THIS DESIGN SET ARE TO BE REVIEWED BY THE CONTRACTOR AND MODIFIED AS REQUIRED.
3. POWER THE PLC EQUIPMENT FROM A SPARE CIRCUIT ON THE EXISTING WALNUT STREET LIGHTING PANEL.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

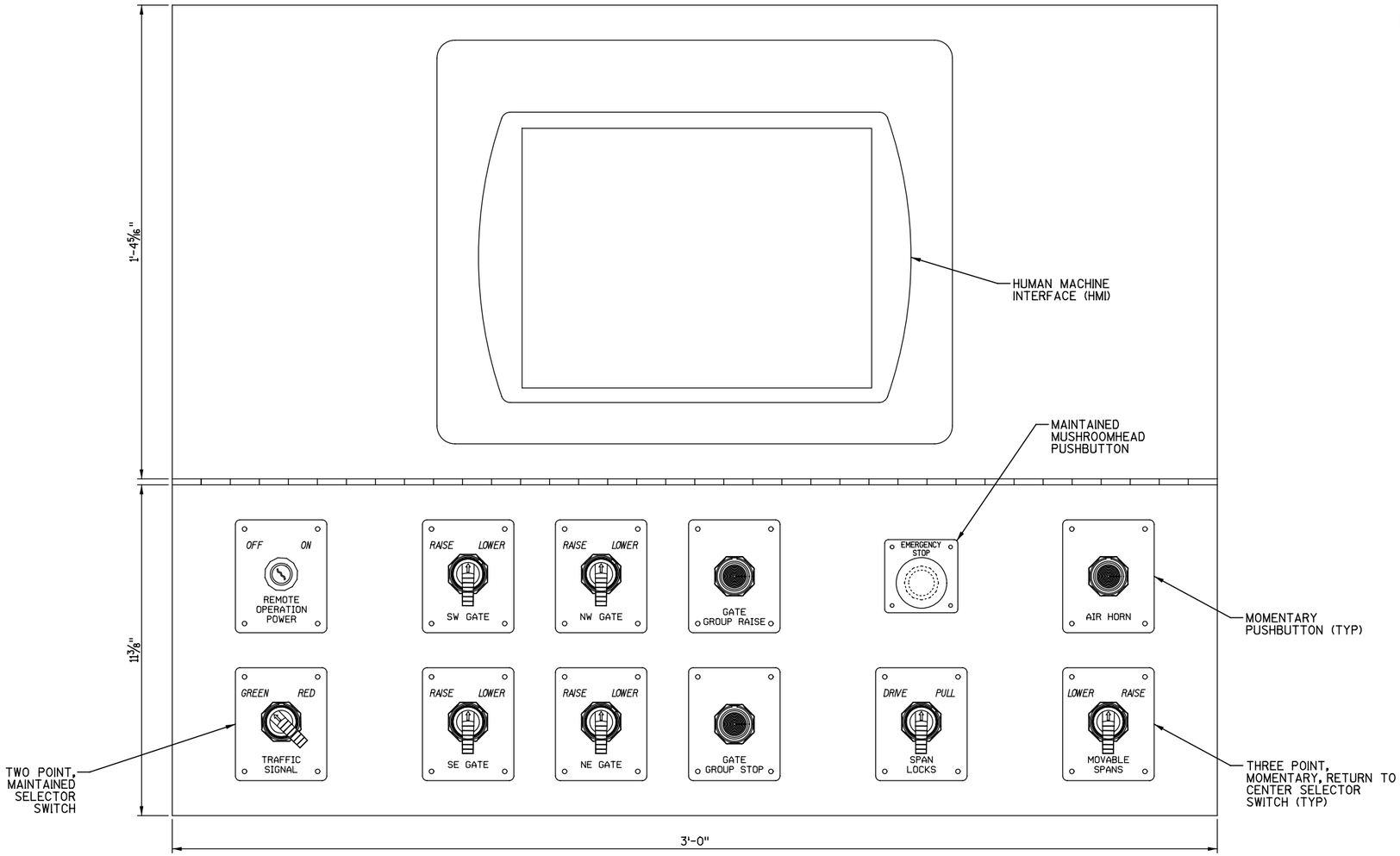
STRUCTURE B-05-0269

DRAWN BY DH | PLANS CK'D. AHN

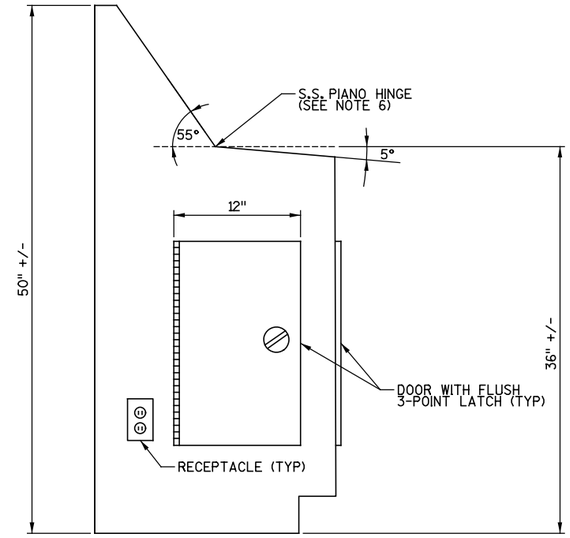
PLC ARCHITECTURE

SHEET 3 OF 7

STATE PROJECT NUMBER
4987-07-72



CONTROL DESK LAYOUT



CONTROL DESK SIDE VIEW

NOTES:

1. ALL MOMENTARY, RETURN TO CENTER SELECTOR SWITCHES MUST BE HELD BY THE OPERATOR FOR CONTINUOUS OPERATION. IF THE OPERATOR RELEASES THE SELECTOR SWITCH, THE OPERATION SHALL STOP.
2. THE AIR HORN PUSHBUTTON SHALL OPERATE THE AIR HORN ONLY WHILE DEPRESSED.
3. WHEN THE GATE GROUP RAISE PUSHBUTTON IS MOMENTARILY DEPRESSED, THE PLC SHALL CONTINUOUSLY RAISE THE GATES. GATE OPERATION WILL STOP ONCE ALL FOUR GATES ARE RAISED, OR IF THE OPERATOR DEPRESSES THE GATE GROUP STOP PUSHBUTTON.
4. PUSHBUTTONS, SELECTOR SWITCHES, MUSHROOM HEAD BUTTONS, AND KEY SWITCHES SHALL BE OF HEAVY DUTY, OILTIGHT CONSTRUCTION FURNISHED WITH NAMEPLATE PER CONTRACT DOCUMENTS. SWITCHES AND PUSHBUTTONS SHALL BE SIMILAR TO CUTLER HAMMER 1250T OR APPROVED EQUAL.
5. DESK HMI SHALL BE NEMATRON POWERVIEW IPC SERIES MODEL OR APPROVED EQUAL.
6. CONTROL DESK DOORS SHALL BE SECURED BY FLUSH HANDLES AND A 3-POINT LOCKING BAR MECHANISM.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

DRAWN BY DH | PLANS CK'D. AHN

REMOTE CONTROL DESK LAYOUT

SHEET 4 OF 7

8

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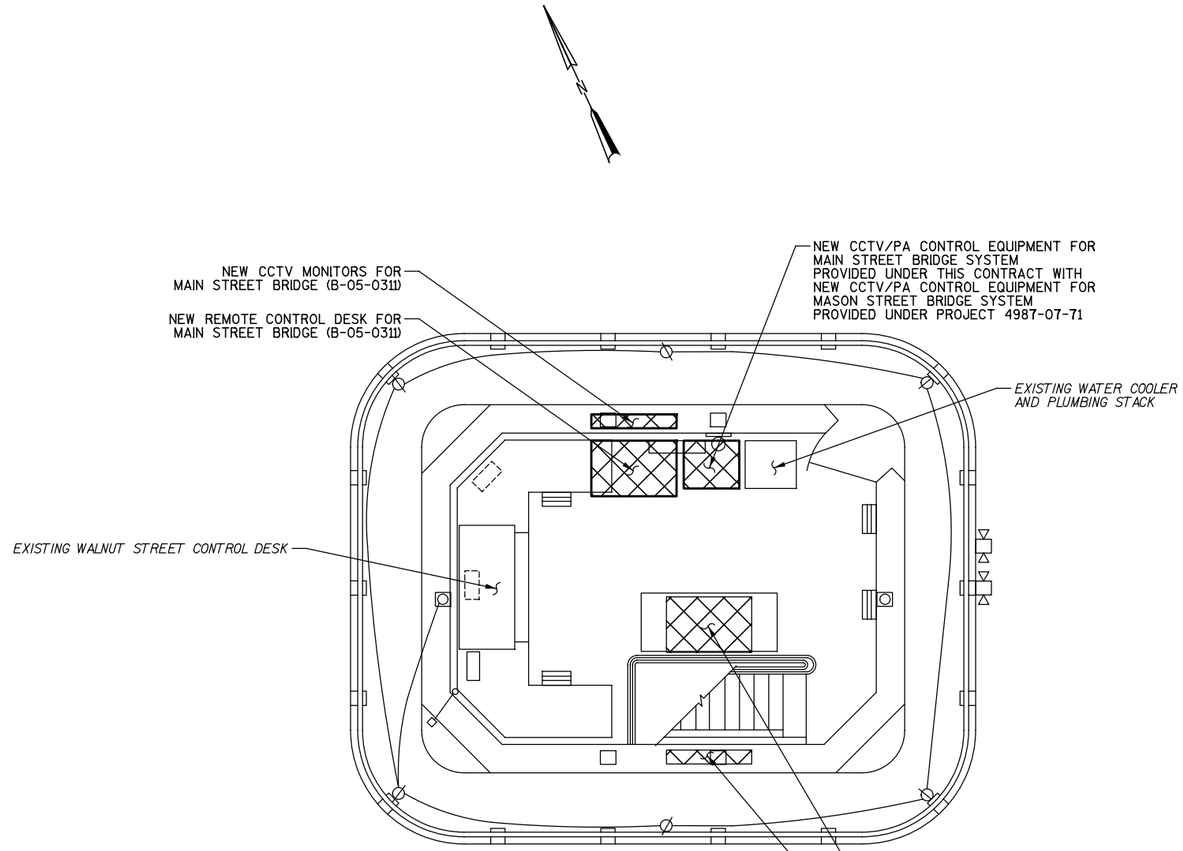
STATE PROJECT NUMBER
4987-07-72



OPERATOR LEVEL

NOTES:

1. EXISTING FURNITURE SHALL BE SHIFTED OR MODIFIED TO FIT NEW REMOTE CONTROL EQUIPMENT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

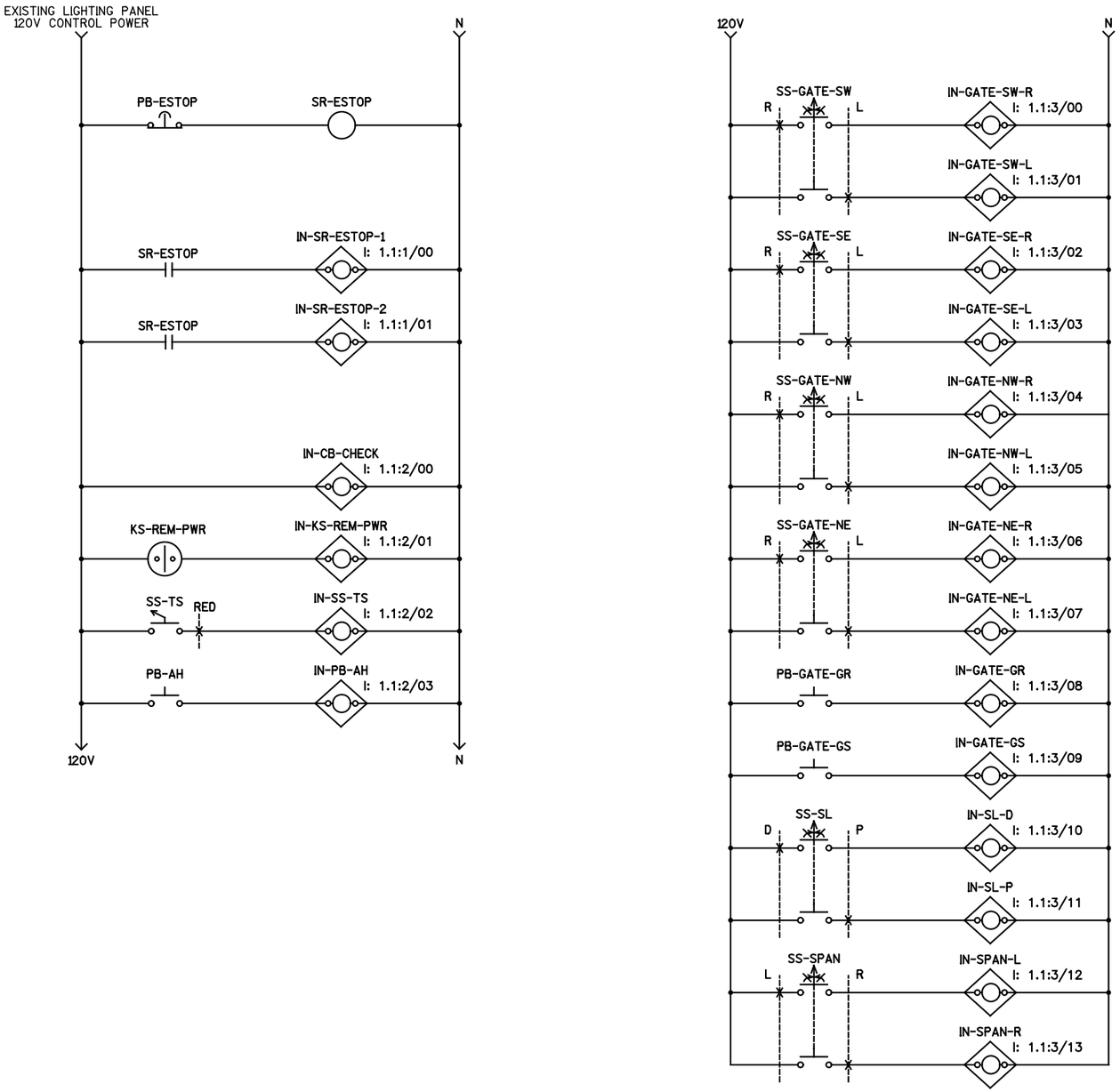
DRAWN BY	DH	PLANS CK'D.	AHN

OPERATORS ROOM LAYOUT PLAN

SHEET 5 OF 7

STATE PROJECT NUMBER

4987-Ø7-72



PLC SCHEMATICS

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

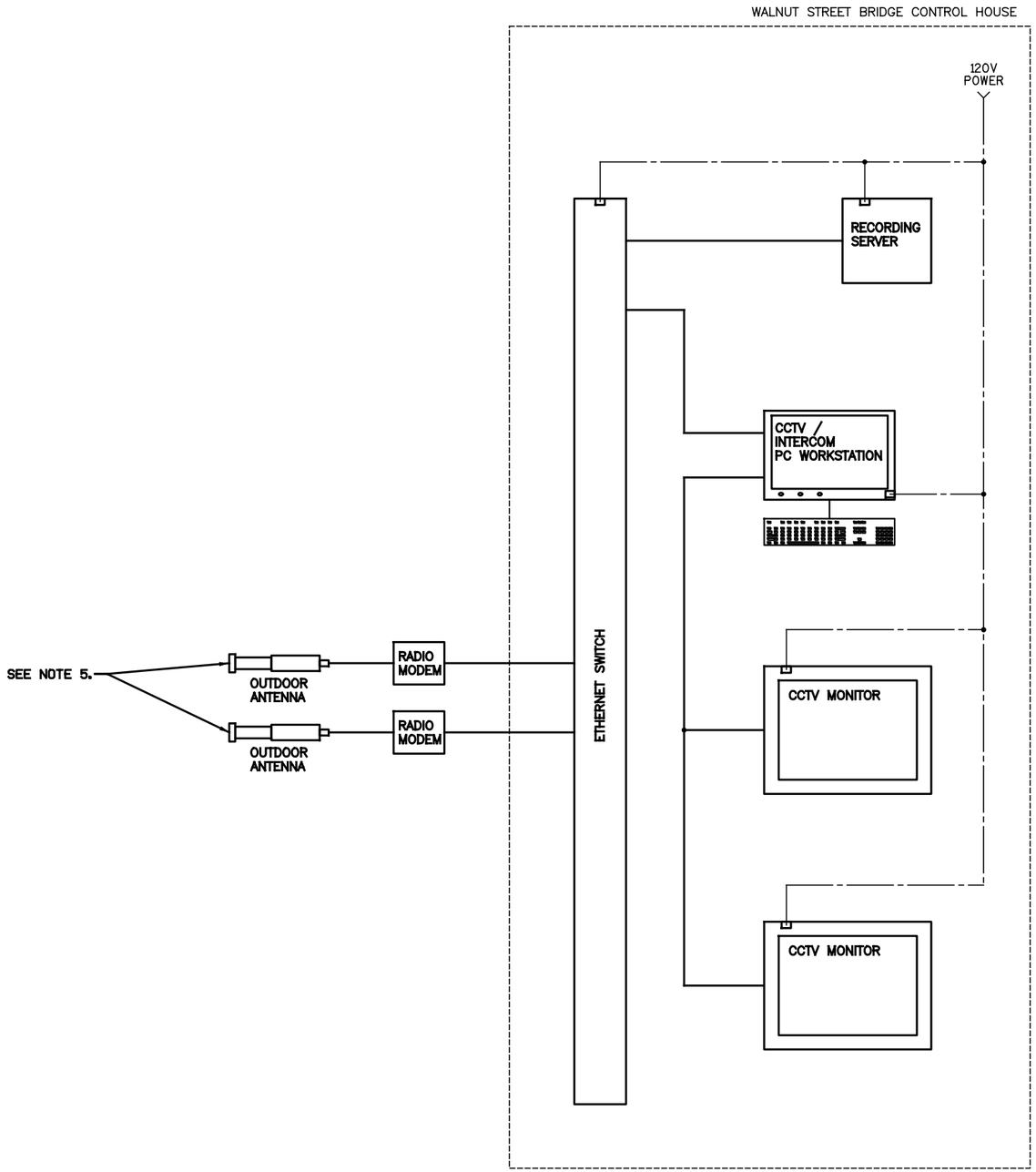
STRUCTURE B-Ø5-Ø269

DRAWN BY DH | PLANS CK'D. AHN

PLC SCHEMATIC

SHEET 6 OF 7

STATE PROJECT NUMBER
4987-07-72



NOTES:

1. ALL ETHERNET CABLING SHALL BE CATEGORY 6 AND OUTDOOR RATED WHERE APPLICABLE.
2. ALL OUTDOOR EQUIPMENT SHALL BE RATED NEMA 4X.
3. CCTV CABINET AND RACK LAYOUT TO BE VERIFIED BY MANUFACTURER.
4. THE CCTV CAMERA/PA SPEAKER NETWORK SHALL BE SEPARATE FROM THE PLC NETWORK AND USE SEPARATE ETHERNET SWITCHES AND WIRELESS EQUIPMENT.
5. A SET OF ANTENNAS ARE TO BE DIRECTED AT MAIN STREET BRIDGE FOR REMOTE OPERATION.
6. CCTV MONITORS SHALL BE LOCATED ABOVE THE REMOTE CONTROL DESK AND DISPLAY VIDEO FEEDS IN QUAD SPLIT SCREEN.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0269

DRAWN BY	DH	PLANS CK'D.	AHN

CCTV AND PA SCHEMATIC

SHEET 7 OF 7

8

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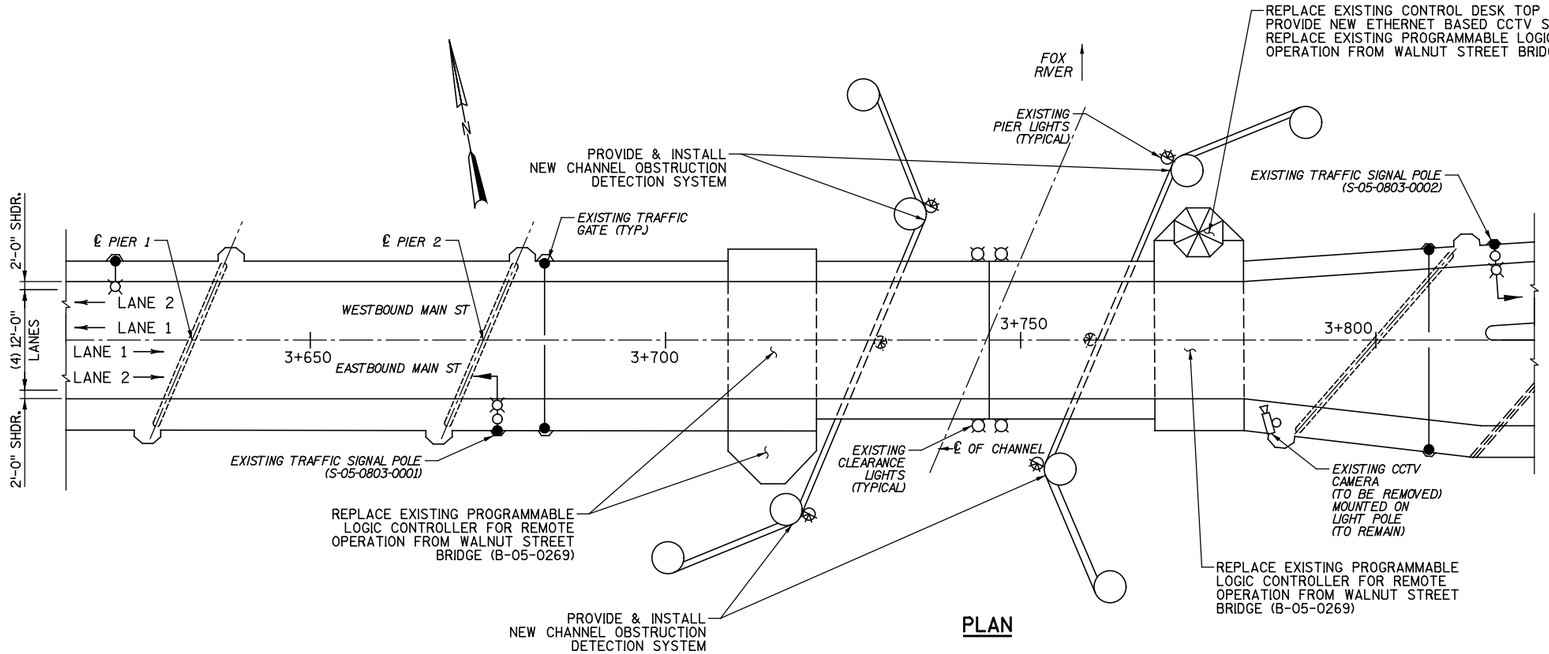
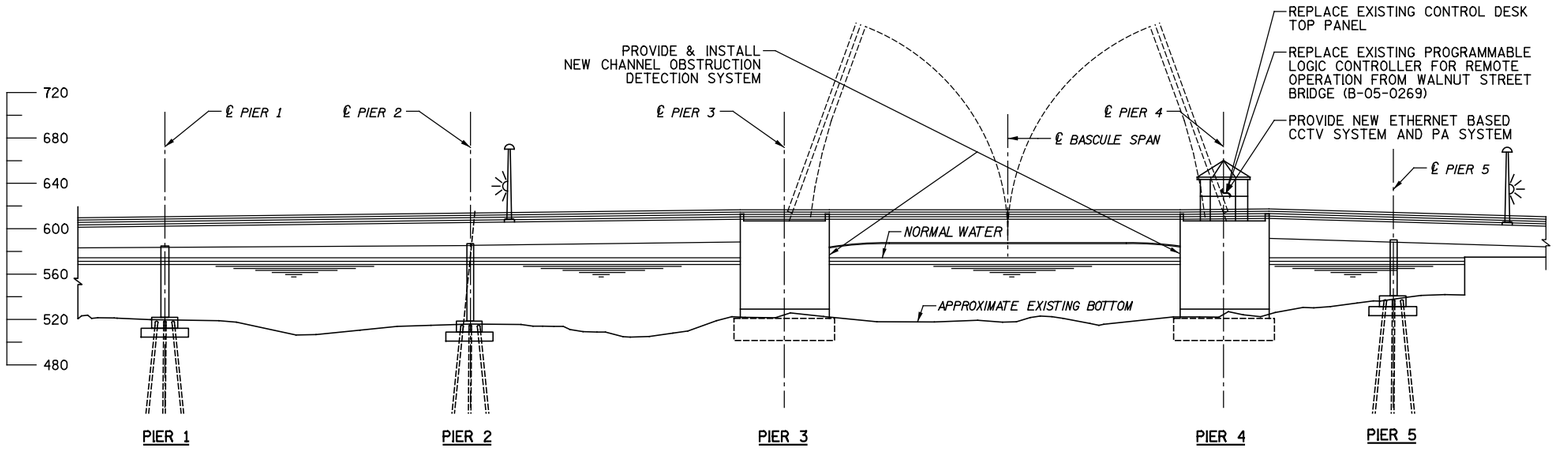


PLAN



ELEVATION

TOTAL ESTIMATED QUANTITIES

NO.	BID ITEMS	UNIT	TOTAL
SPV.0105	MAIN STREET BRIDGE ELECTRICAL AND REMOTE OPERATIONS WORK, B-05-0311	LS	1
SPV.0105	MAIN STREET BRIDGE CCTV SYSTEM, B-05-0311	LS	1

LIST OF DRAWINGS

TRAFFIC DATA

ADT= 22,150 (ESTIMATED, 2016)
RDS= 25 M.P.H.

GENERAL NOTES

1. DRAWINGS SHALL NOT BE SCALED.
2. DIMENSIONS SHOWN ARE BASED ON ORIGINAL STRUCTURE PLANS.
3. ATTACHMENTS TO EXISTING CONCRETE NOT SHOWN ON THE PLANS SHALL UTILIZE GALVANIZED BRACKETS AND STAINLESS STEEL ANCHORS.
4. ATTACHMENTS OR MODIFICATIONS TO EXISTING STRUCTURAL STEEL NOT SHOWN ON THE PLANS REQUIRE THE WRITTEN APPROVAL OF THE CHIEF STRUCTURES DESIGN ENGINEER.

STATE PROJECT NUMBER

4987-07-72

HARDESTY & HANOVER, LLC

WISCONSIN
ALEXANDER H. NOBLE
E-44564-6
NEW YORK
NY
PROFESSIONAL ENGINEER

12-1-2015 (DATE)

(SIGNATURE)

NO.	DATE	REVISION	BY

Hardesty & Hanover
1501 BROADWAY
NEW YORK, NY 10036
(212) 944-1150

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 02/16/16
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-05-0311

USH 141 (MAIN STREET) OVER FOX RIVER

COUNTY	~~TOWN~~/CITY/~~VILLAGE~~
BROWN	GREEN BAY

DESIGN SPEC. REHABILITATION N/A

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
DH	AHN	RKP	AHN

GENERAL PLAN AND ELEVATION AND QUANTITIES

SHEET 1 OF 26

STRUCTURES DESIGN CONTACTS:

BUREAU OF STRUCTURES:
WILLIAM DREHER (608) 266-8489

CONSULTANT CONTACT:
JOHN GIMBLETTE (212) 944-1150

STATE PROJECT NUMBER
4987-07-72

DESCRIPTION OF ELECTRICAL FACILITIES: SCOPE OF WORK SUMMARY

COMMUNICATION ACROSS CHANNEL

ELECTRIC CONTROL SIGNALS SHALL BE CARRIED ACROSS THE NAVIGABLE CHANNEL BY MEANS OF WIRELESS RADIO ANTENNAS.

NEW PROGRAMMABLE LOGIC CONTROLLER

THE EXISTING CONTROL SYSTEM SHALL BE REMOVED AND REPLACED IN KIND WITH NEW HARDWARE. THE NEW SYSTEM SHALL HAVE THE SAME CAPABILITIES AS THE EXISTING SYSTEM, PLUS THE ADDITIONAL CAPABILITY OF BEING REMOTELY OPERATED FROM THE WALUNT STREET BRIDGE. LOGIC, CONTROL, AND INTERLOCKING SHALL BE BY MEANS OF AN ETHERNET INTERCONNECTED PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEM WITH REDUNDANT PROCESSORS IN COLD BACKUP AND AN HMI SCREEN FOR DIAGNOSTICS. BOTH MACHINERY AREAS SHALL BE PROVIDED WITH I/O DROPS, ETHERNET HUBS, AND ADDITIONAL DROOP CABLE CONDUCTORS WHERE NECESSARY. COMMUNICATION BETWEEN NEAR AND FAR SIDES SHALL BE VIA REDUNDANT ANTENNAS.

CONTROL DESK

THE EXISTING CONTROL DESK SHALL BE MODIFIED TO INCLUDE A NEW PLC RACK AND NEW CONTROL SWITCHES AND HMI. THE CONTROL DESK TOP PANEL SHALL BE REPLACED AS SHOWN ON THE PLANS.

CHANNEL OBSTRUCTION DETECTION SYSTEM

NEW CHANNEL OBSTRUCTION DETECTION DEVICES SHALL BE BUILT INTO THE ELECTRICAL CONTROL SYSTEM. THESE DEVICES SHALL PREVENT SPAN LOWERING WHEN A NAUTICAL VESSEL IS DETECTED WITHIN THE NAVIGABLE CHANNEL.

CCTV AND PA SYSTEM

PROVIDE AND INSTALL A NEW CCTV SYSTEM AND PA SPEAKER SYSTEM. THE CCTV AND PA SYSTEM WILL TRANSMIT DATA VIA ETHERNET PROTOCOL. COMMUNICATION BETWEEN NEAR AND FAR SIDES SHALL BE VIA REDUNDANT ANTENNAS AND BE ON A FULLY SEPERATE NETWORK FROM THE CONTROL SYSTEM UTILIZING SEPARATE COMMUNICATION HARDWARE.

DEMOLITION

ALL EXISTING ELECTRICAL MACHINERY AND CONTROL EQUIPMENT NOT TO BE REUSED OR INTENTIONALLY ABANDONED SHALL BE REMOVED AND PROPERLY DISPOSED OF.

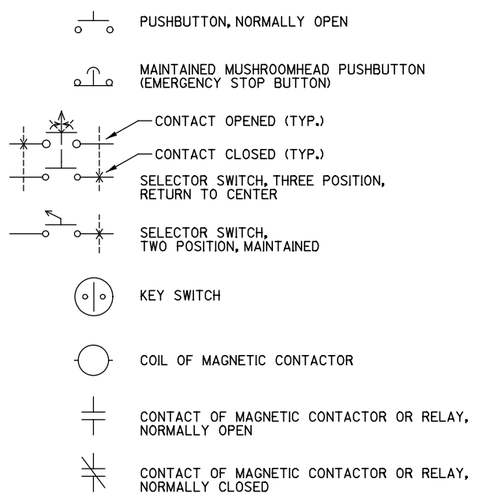
GENERAL ELECTRICAL NOTES

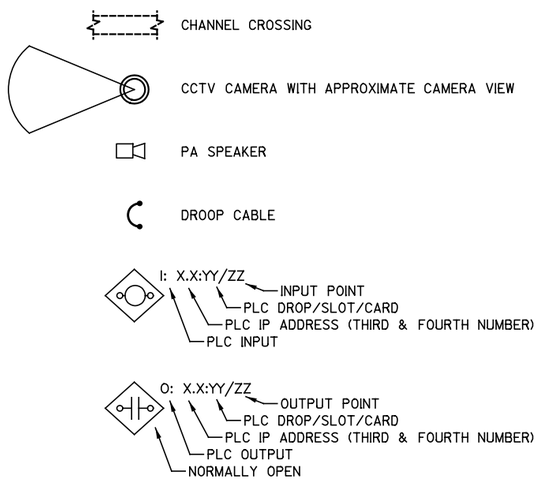
1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH STATE STANDARD SPECIFICATIONS, THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC), AND THE ELECTRICAL REQUIREMENTS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS.
2. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES AND SHALL BE SCHEDULED CONSISTENT WITH THE OVERALL CONSTRUCTION STAGING SEQUENCE.
3. THE PLANS ARE DIAGRAMMATIC AND ARE NOT TO BE SCALED. THE LOCATIONS OF EQUIPMENT AND ROUTING OF CONDUITS SHOWN ON THE CONTRACT DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD AND PREPARING SCALED SHOP DRAWING.
4. ALL ELECTRICAL COMPONENTS AND MATERIAL SHOWN ON THE CONTRACT DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE REMOVAL AND INSTALLATION OF ELECTRICAL COMPONENTS, HANGERS, SUPPORTS, ETC. ALL PATCHING SHALL BE DONE SO AS TO LEAVE THE AREA IN ITS ORIGINAL CONDITION AS A MINIMUM OR AS OTHERWISE REQUIRED BY THE ENGINEER.
6. EXISTING ELECTRICAL CABLE, WIRES, CONDUIT, CONDUIT HANGERS, SUPPORTS, CLAMPS, ETC, WHICH ARE BEING REPLACED SHALL NOT BE REUSED. ALL SUCH PARTS SHALL BE REMOVED AND PROPERLY DISPOSED OF.
7. ALL NEW CONDUIT AND FITTINGS SHALL BE ¾" MINIMUM PVC COATED HOT DIPPED GALVANIZED RIGID STEEL UNLESS OTHERWISE NOTED, AND SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION, AND INSTALLATION CONTAINED IN THE SPECIFICATION.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED BOXES, CONDUIT FITTINGS, ELBOWS, AND HARDWARE FOR A COMPLETE INSTALLATION, WHETHER OR NOT THEY ARE EXPLICITLY SHOWN OR INDICATED ON THE CONTRACT DRAWINGS.
9. NEW ELECTRICAL CONDUCTORS SHALL BE MINIMUM SIZE NO. 12 AWG STRANDED TYPE XHHW, EXCEPT FOR INTERNAL WIRING IN CONTROL CABINETS AND CONTROL DESK WHICH SHALL BE MINIMUM SIZE NO. 14 AWG TYPE SIS. ALL WIRES AND CABLES SHALL MEET ALL THE ADDITIONAL REQUIREMENTS FOR MATERIAL, CONSTRUCTION AND INSTALLATION CONTAINED IN THE RELEVANT SPECIFICATIONS.
10. ALL SWITCHES, RELAYS, CONTACTORS AND STARTERS ARE SHOWN ON THE DRAWINGS AS DE-ENERGIZED AND WITH THE SPAN FULLY CLOSED, GATES RAISED, AND TRAFFIC SIGNALS GREEN, OPEN TO VEHICULAR TRAFFIC.
11. ALL NEW CONDUCTORS INSTALLED IN CONDUIT SHALL BE INSTALLED WITH GROUND CONDUCTORS. GROUND CONDUCTORS SHALL BE PROVIDED IN ALL NEW FLEXIBLE CABLES. MINIMUM SIZE GROUND CONDUCTOR SHALL BE NO. 12 AWG. ALL CABINETS, TERMINAL AND JUNCTION BOXES SHALL BE GROUNDED IN ACCORDANCE WITH THE NEC.
12. ALL CONDUCTORS SHALL BE CONNECTED TO TERMINAL BLOCKS OR DEVICES. SPLICES SHALL NOT BE PERMITTED WITHIN EQUIPMENT ENCLOSURES, BOXES, OR CONDUIT FITTINGS.
13. THIS CONTRACT REFERS TO THE AS-BUILT DRAWINGS FROM THE 1997 LUNDA/OILGEAR CONSTRUCTION CONTRACT. ONLY SELECTED DETAILS ARE PROVIDED IN THIS PLAN SET. THE FULL AS-BUILT DRAWINGS ARE AVAILABLE FROM WISDOT UPON REQUEST. CONTRACTOR IS TO VERIFY ALL AS-BUILT DRAWINGS ARE ACCURATE BEFORE COMMENCING WORK.

ABBREVIATIONS

AH	AIR HORN
BG	BARRIER GATE
CB	CIRCUIT BREAKER
CCTV	CLOSED-CIRCUIT TELEVISION
CPU	CENTRAL PROCESSING UNIT
CR	CONTROL RELAY
D	DRIVE
ESTOP	EMERGENCY STOP
F	FAR SIDE
GR	GROUP GATE RAISE
GS	GROUP GATE STOP
HMI	HUMAN MACHINE INTERFACE
HPU	HYDRAULIC POWER UNIT
IN	PLC INPUT
I/O	PLC INPUT / OUTPUT
IP	INTERNET PROTOCOL
KS	KEY SWITCH
L	LOWER
MCC	MOTOR CONTROL CENTER
N	NEAR SIDE, NEUTRAL
NE	NORTH EAST
NW	NORTH WEST
OUT	PLC OUTPUT
P	PULL
PA	PUBLIC ADDRESS SYSTEM
PB	PUSHBUTTON
PC	PERSONAL COMPUTER
PG	PEDESTRIAN GATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PWR	POWER
R	RAISE
REM	REMOTE
SC	SAFETY CONTACTOR
SE	SOUTH EAST
SL	SPAN LOCK
SR	SAFETY RELAY
SS	SELECTOR SWITCH
SW	SOUTH WEST
TS	TRAFFIC SIGNALS
TYP	TYPICAL
VAC	VOLTAGE ALTERNATING CURRENT

SYMBOLS





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NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

DRAWN BY DH | PLANS CK'D. AHN

ELECTRICAL SCOPE OF WORK AND NOTES

SHEET 2 OF 26

STATE PROJECT NUMBER
4987-07-72

120V POWER

POWER FILTER (TYP)

STRATIX 2000 ETHERNET SWITCH (TYP)

CP 1 – CONTROL DESK OPERATOR LEVEL

"5N" IP: 192.168.0.1

0	1	2	3	4	5	6	7	8	9
POWER SUPPLY 1756–PA72/C	ETHERNET COMM CARD 1756–EN2T	DIGITAL INPUT 16 POINT 1756–IA16	DIGITAL INPUT 16 POINT 1756–IA16	DIGITAL INPUT 16 POINT 1756–IA16	DIGITAL OUTPUT 16 POINT 1756–OA16	SPARE	SPARE	SPARE	SPARE	SPARE

IP: 192.168.0.2

NEMATRON POWERVIEW iPC SERIES TOUCHSCREEN

EXISTING WATCHDOG TIMER

- WATCHDOG TIMER
- E–STOP
- PUSH BUTTONS
- SELECTOR SWITCHES

NEW REMOTE OPERATION PANEL NEAR ELECTRICAL LEVEL

- RADIO MODEM
- RADIO MODEM

MAIN ST. BRIDGE CHANNEL WALNUT ST. BRIDGE

SEE NOTE 4.

CP 2 – MAIN CONTROL PANEL NEAR ELECTRICAL LEVEL

"1N" IP: 192.168.0.0

0	1	2	3
POWER SUPPLY 1756–PA72/C	ETHERNET COMM CARD 1756–EN2T	PLC PROCESSOR 1756–L72	SPARE	SPARE

CR–CPU

EXISTING RELAY CIRCUIT (TYP)

"2N" IP: 192.168.0.0

0	1	2	3
POWER SUPPLY 1756–PA72/C	ETHERNET COMM CARD 1756–EN2T	PLC PROCESSOR 1756–L72	SPARE	SPARE

CR–CPU

"3N" IP: 192.168.0.3

0	1	2	3	4	5	6	7	8	9
POWER SUPPLY 1756–PA72/C	ETHERNET COMM CARD 1756–EN2T	DIGITAL INPUT 16 POINT 1756–IA16	DIGITAL INPUT 16 POINT 1756–IA16	ANALOG INPUT 6 POINT 1756–IF6I	DIGITAL OUTPUT 8 POINT 1756–OX8I	DIGITAL OUTPUT 8 POINT 1756–OX8I	SPARE	SPARE	SPARE	SPARE

- SAFETY CONTACTOR
- SMOKE DETECTORS
- MCC
- LIMIT SWITCHES
- LIGHTS
- NAVIGATION LIGHTS
- ALARM HORN
- CHANNEL SENSORS

NEAR CHANNEL FAR

RADIO MODEM

RADIO MODEM

DROOP CABLE (TYP)

CP 3 – SPAN CONTROL PANEL NEAR SPAN MACHINERY AREA

"4N" IP: 192.168.0.4

0	1	2	3	4	5	6
POWER SUPPLY 1756–PA72/C	ETHERNET COMM CARD 1756–EN2T	DIGITAL INPUT 16 POINT 1756–IA16	ANALOG INPUT 6 POINT 1756–IF6I	DIGITAL OUTPUT 8 POINT 1756–OX8I	SPARE	SPARE	SPARE

- SAFETY CONTACTOR
- SMOKE DETECTORS
- HPU
- LIMIT SWITCHES

PUMP A

PUMP B

MINI RACK AN

MINI RACK BN

SEE NOTE 3.

NEW OUTDOOR ANTENNA (TYP)

NEAR CHANNEL FAR

NOTES:

1. PLC ARCHITECTURE WAS DESIGNED USING THE ALLEN BRADLEY CONTROLOGIX SYSTEM.
2. PLC TERMINAL DESIGNATIONS (DETAILED ON WIRING DIAGRAMS) IN THIS DESIGN SET ARE TO BE REVIEWED BY THE CONTRACTOR AND MODIFIED AS REQUIRED.
3. ANTENNAS WIRED FROM THE MAIN CONTROL PANEL "CP2" ARE COMMUNICATING WITH THE FAR SIDE OF THE BRIDGE. SEE SHEET 4.
4. ANTENNAS WIRED FROM THE REMOTE OPERATION PANEL ARE COMMUNICATING WITH THE REMOTE CONTROL DESK AT WALNUT STREET BRIDGE. SEE WALNUT STREET PROJECT B-05-0269 72.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC ARCHITECTURE 1

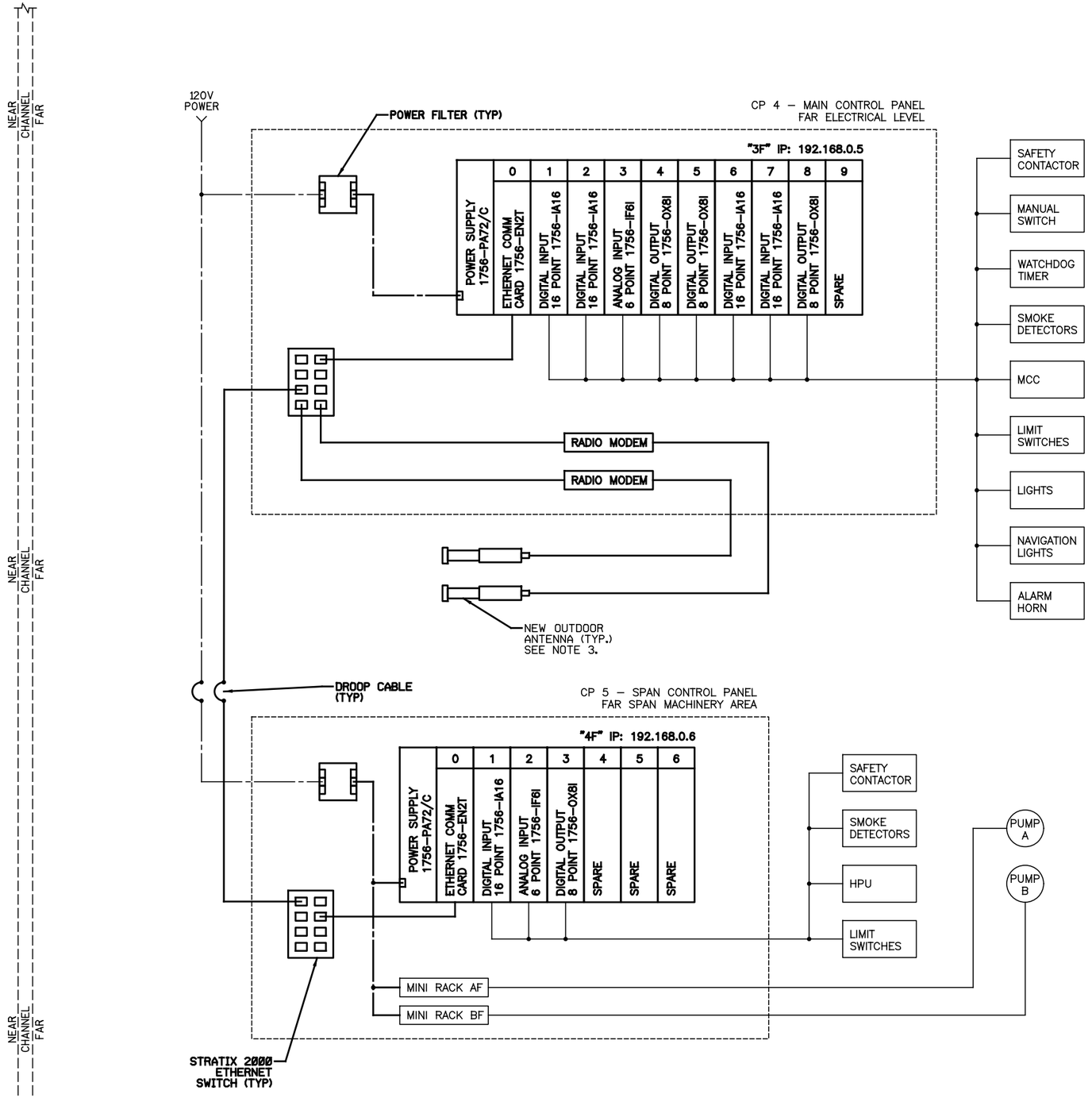
SHEET 3 OF 26

8

8

STATE PROJECT NUMBER

4987-07-72



NOTES:

1. PLC ARCHITECTURE WAS DESIGNED USING THE ALLEN BRADLEY CONTROLOGIX SYSTEM.
2. PLC TERMINAL DESIGNATIONS (DETAILED ON WIRING DIAGRAMS) IN THIS DESIGN SET ARE TO BE REVIEWED BY THE CONTRACTOR AND MODIFIED AS REQUIRED.
3. FAR SIDE ANTENNAS ARE COMMUNICATING WITH NEAR SIDE ANTENNAS. SEE SHEET 3.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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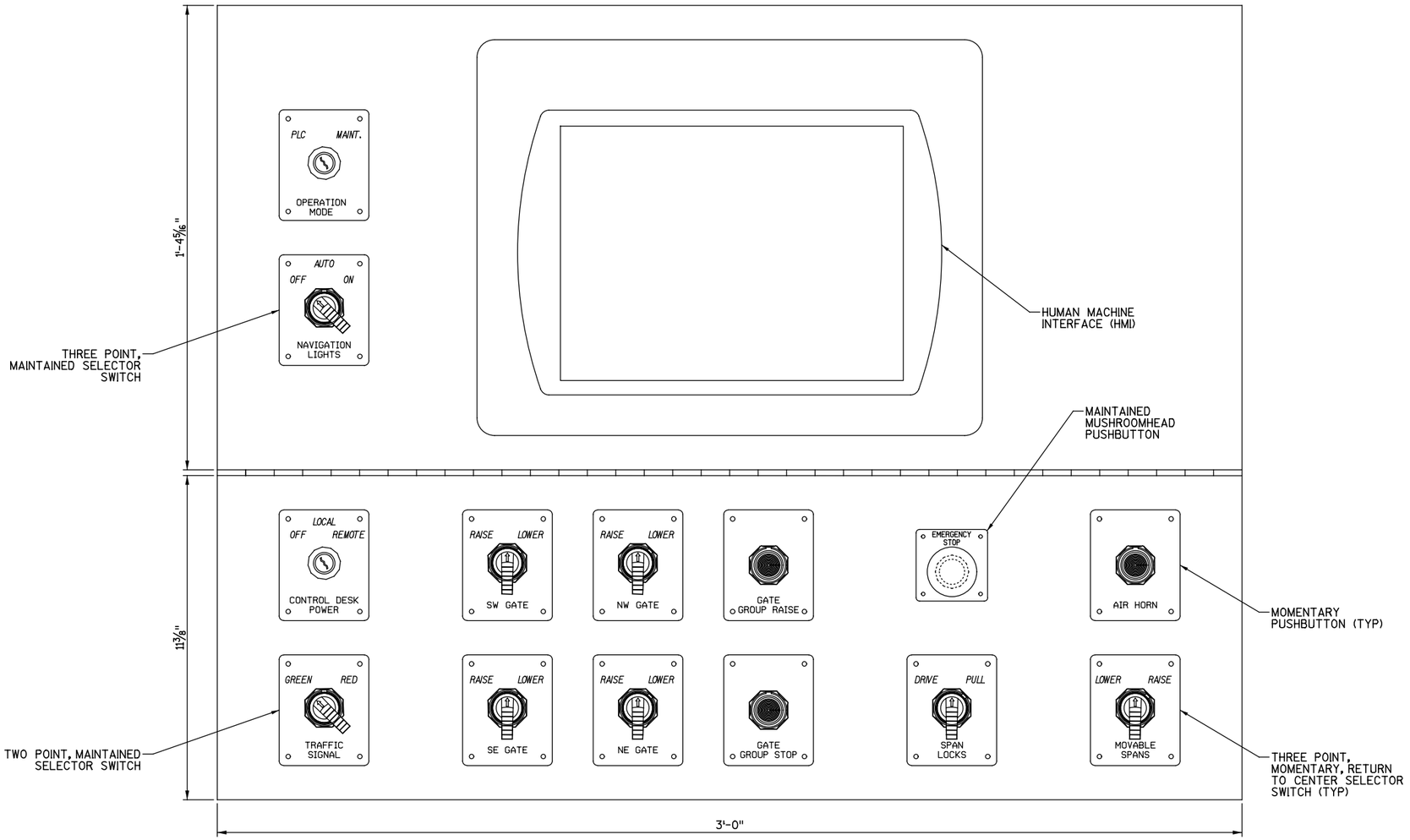
PLC ARCHITECTURE 2

SHEET 4 OF 26

STATE PROJECT NUMBER
4987-07-72



CONTROL DESK LAYOUT

NOTES:

1. ALL MOMENTARY, RETURN TO CENTER SELECTOR SWITCHES MUST BE HELD BY THE OPERATOR FOR CONTINUOUS OPERATION. IF THE OPERATOR RELEASES THE SELECTOR SWITCH, THE OPERATION SHALL STOP.
2. THE AIR HORN PUSHBUTTON SHALL OPERATE THE AIR HORN ONLY WHILE DEPRESSED.
3. WHEN THE GATE GROUP RAISE PUSHBUTTON IS MOMENTARILY DEPRESSED, THE PLC SHALL CONTINUOUSLY RAISE THE GATES. GATE OPERATION WILL STOP ONCE ALL FOUR GATES ARE RAISED, OR IF THE OPERATOR DEPRESSES THE GATE GROUP STOP PUSHBUTTON.
4. PUSHBUTTONS, SELECTOR SWITCHES, MUSHROOM HEAD BUTTONS, AND KEY SWITCHES SHALL BE OF HEAVY DUTY, OILTIGHT CONSTRUCTION FURNISHED WITH NAMEPLATE PER CONTRACT DOCUMENTS. SWITCHES AND PUSHBUTTONS SHALL BE SIMILAR TO CUTLER HAMMER 10250T OR APPROVED EQUAL.
5. DESK HMI SHALL BE NEMATRON POWERVIEW IPC SERIES MODEL OR APPROVED EQUAL.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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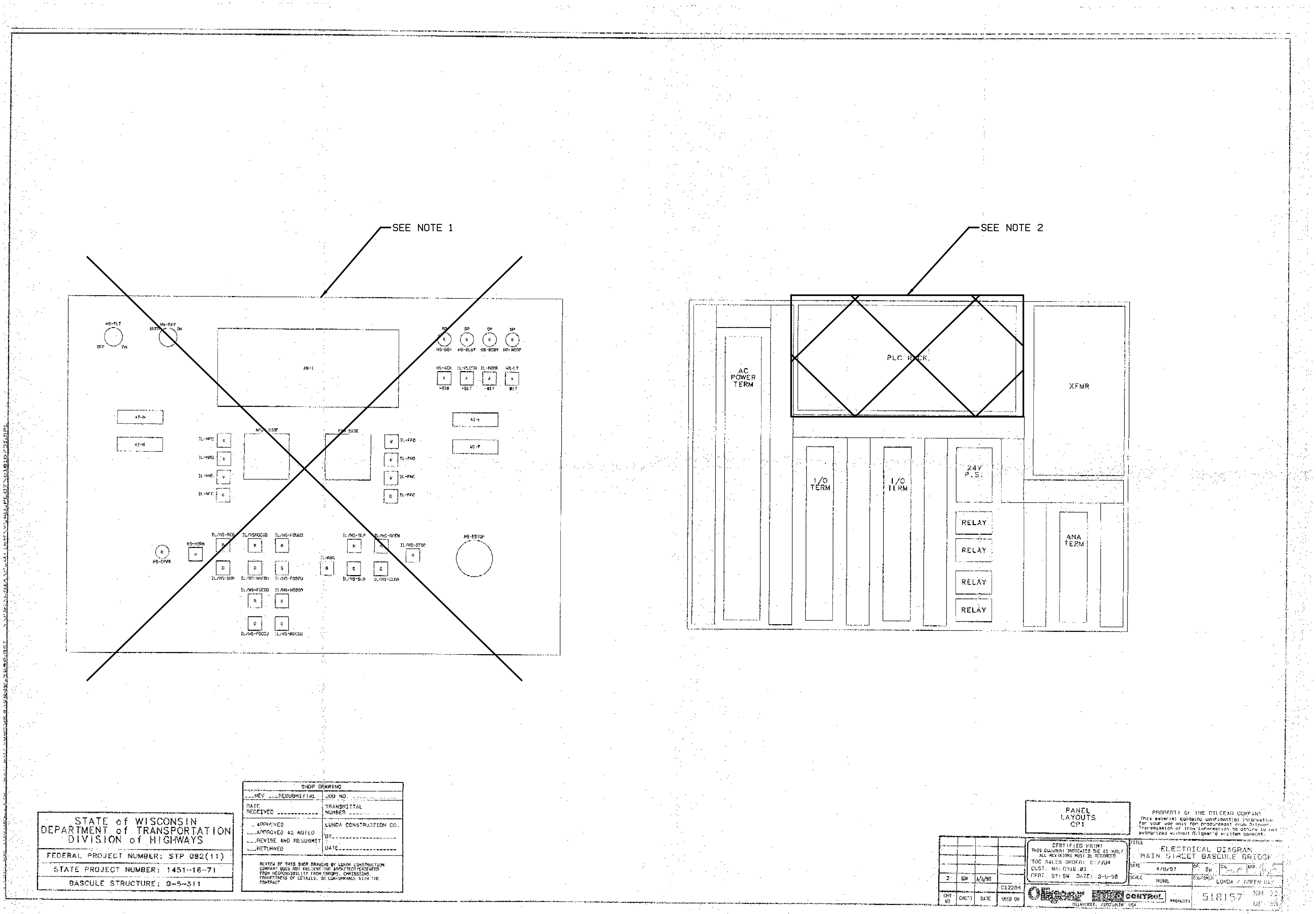
NEW CONTROL DESK LAYOUT

SHEET 5 OF 26

STATE PROJECT NUMBER

4987-07-72



REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 31 OF 33

NOTES:

1. EXISTING CONTROL DESK "CP1" TOP PANEL SHALL BE REPLACED WITH A NEW TOP PANEL AS DETAILED ON SHEET 5.
2. REMOVE EXISTING PLC CHASSIS "5N". REPLACE REMOVED PLC ITEMS WITH NEW ITEMS AS DIRECTED WITHIN THE OTHER SHEETS OF THIS SET.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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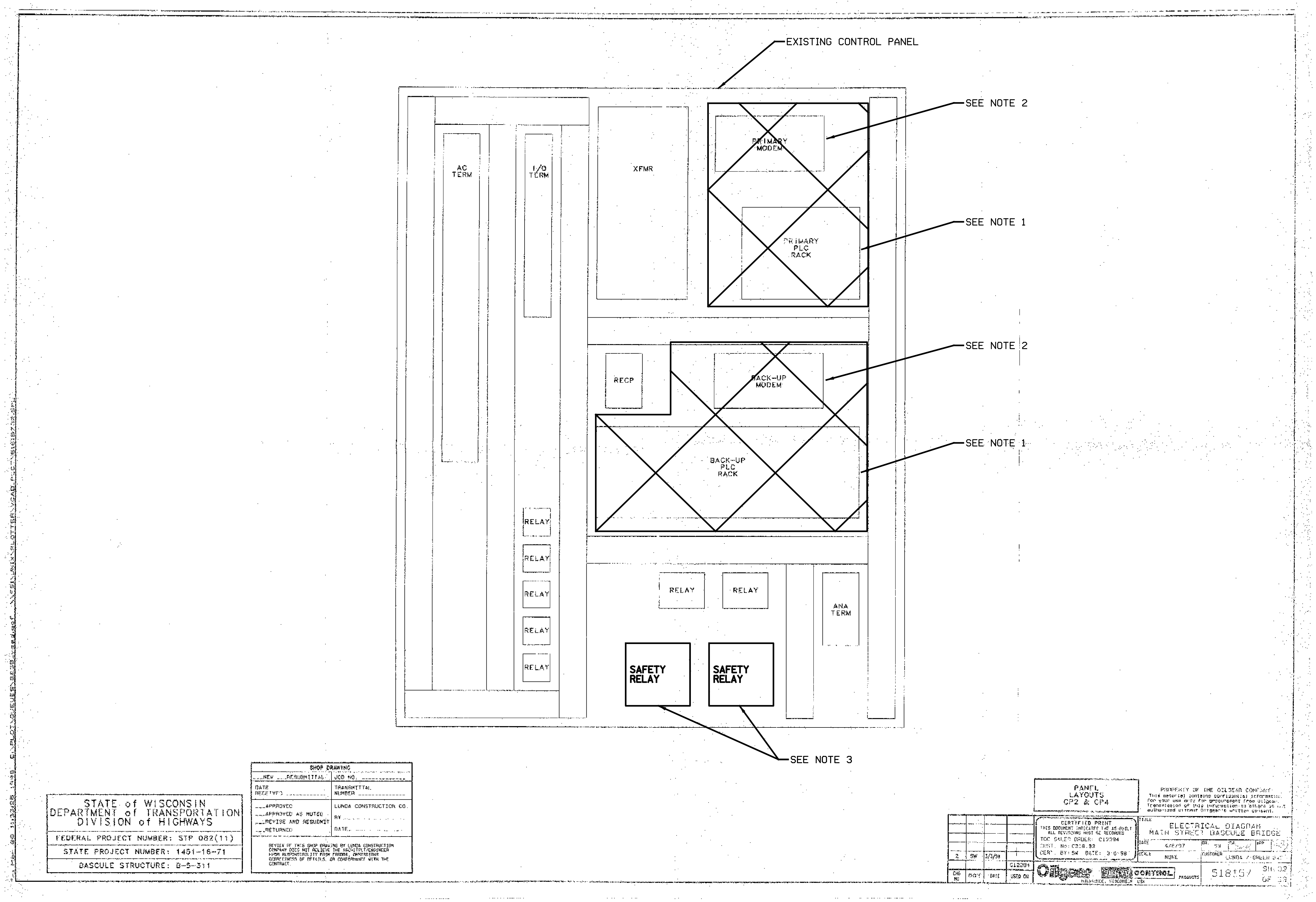
EXISTING PLC PANELS 1

SHEET 6 OF 26

8

STATE PROJECT NUMBER

4987-07-72



EXISTING CONTROL PANEL
SEE NOTE 2
SEE NOTE 1
SEE NOTE 2
SEE NOTE 1
SEE NOTE 3
AC TERM
I/O TERM
XFMR
PRIMARY MODEM
PRIMARY PLC RACK
RECP
BACK-UP MODEM
BACK-UP PLC RACK
RELAY
RELAY
RELAY
RELAY
RELAY
RELAY
RELAY
ANA TERM
SAFETY RELAY
SAFETY RELAY
STATE of WISCONSIN
DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
FEDERAL PROJECT NUMBER: STP 082(11)
STATE PROJECT NUMBER: 1451-16-71
BASCULE STRUCTURE: B-5-311
SHOP DRAWING
PANEL LAYOUTS CP2 & CP4
ELECTRICAL DIAGRAM
MAIN STREET BASCULE BRIDGE
518157

REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 32 OF 33

NOTES:

1. IN CONTROL PANEL "CP2":
   REMOVE EXISTING PLC CHASSIS "1N", "2N", AND "3N".

   IN CONTROL PANEL "CP4":
   REMOVE EXISTING PLC CHASSIS "1F", "2F", AND "3F".

   REPLACE REMOVED PLC ITEMS WITH NEW ITEMS AS DIRECTED WITHIN THE OTHER SHEETS OF THIS SET.

2. IN CONTROL PANELS "CP2" AND "CP4":
   REMOVE EXISTING RADIO MODEMS AND REPLACE WITH NEW ITEMS AS DIRECTED WITHIN THE OTHER SHEETS OF THIS SET.

3. IN CONTROL PANEL "CP2":
   ADD NEW SAFETY RELAYS "SR-ESTOP1" AND "SR-ESTOP2"

   IN CONTROL PANEL "CP4":
   ADD NEW SAFETY RELAYS "SR-ESTOP3" AND "SR-ESTOP4".

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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EXISTING PLC PANELS 2 & 4

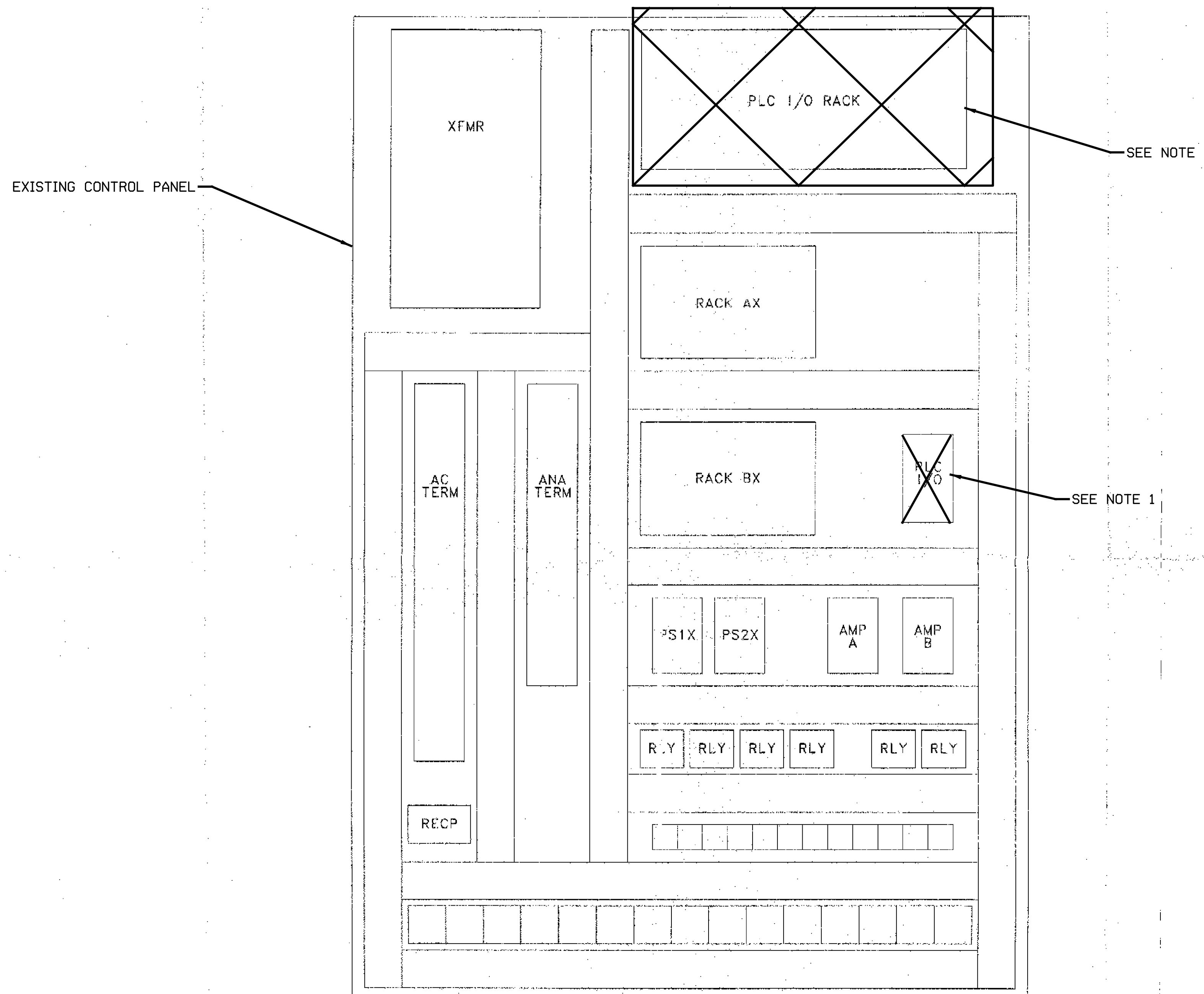
SHEET 7 OF 26

8

8

STATE PROJECT NUMBER

4987-07-72



STATE of WISCONSIN
DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS

FEDERAL PROJECT NUMBER: STP 082(11)

STATE PROJECT NUMBER: 1451-10-71

BASCULE STRUCTURE: B-5-311

SHOP DRAWING	
___NEW ___RESUBMITTAL	JOB NO. ______
DATE RECEIVED ______	TRANSMITTAL NUMBER ______
___APPROVED ___APPROVED AS NOTED ___REVISE AND RESUBMIT ___RETURNED	LUNDA CONSTRUCTION CO BY______ DATE______

REVIEW OF THIS SHOP DRAWING BY LUNDA CONSTRUCTION COMPANY DOES NOT RELIEVE THE ARCHITECT/ENGINEER FROM RESPONSIBILITY FROM ERRORS, OMMISSIONS, CORRECTNESS OF DETAILS, OR CONFORMANCE WITH THE CONTRACT.

PANEL LAYOUTS CP3 & CP5

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CUST. No: C310.03
CERT. BY: SW DATE: 3-6-98

CHG NO	CHG'D	DATE	USED ON
2	SW	3/3/98	
			C12284

TITLE ELECTRICAL DIAGRAM MAIN STREET BASCULE BRIDGE

DATE 4/8/97 DR. SW

SCALE NONE CUSTOMER LUNDA / GREEN BAY

Oilgear CONTROL MILWAUKEE, WISCONSIN USA

518157 SH 33 OF 33

REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 33 OF 33

NOTES:

1. IN CONTROL PANEL "CP3": REMOVE EXISTING PLC CHASSIS "4N".

   IN CONTROL PANEL "CP5": REMOVE EXISTING PLC CHASSIS "4F".

   REPLACE REMOVED PLC ITEMS WITH NEW ITEMS AS DIRECTED WITHIN THE OTHER SHEETS OF THIS SET.

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

DRAWN BY DH PLANS CK'D. AHN

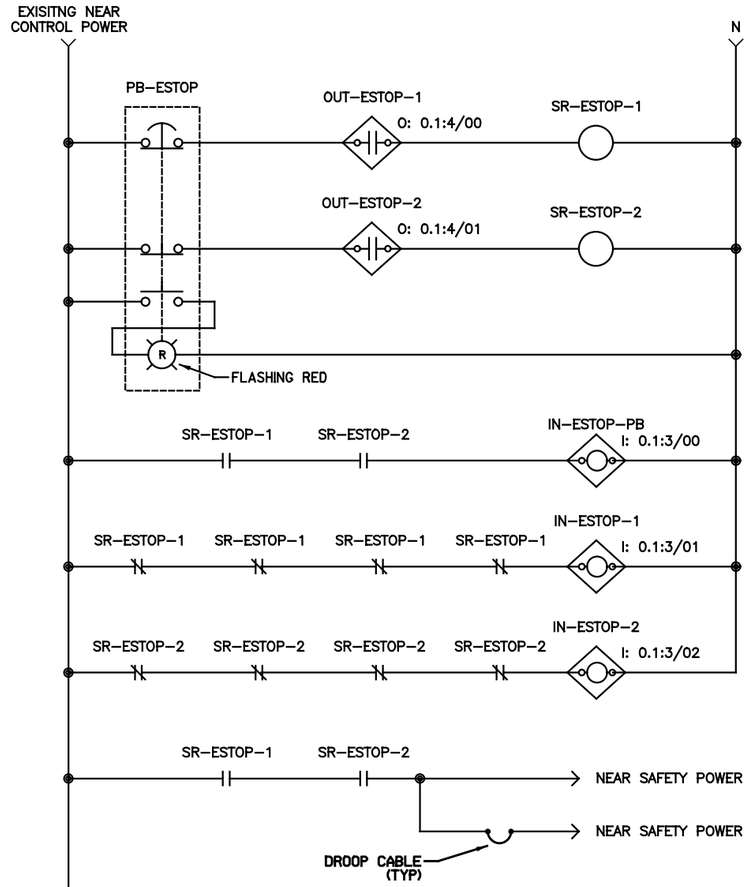
EXISTING PLC PANELS 3 & 5

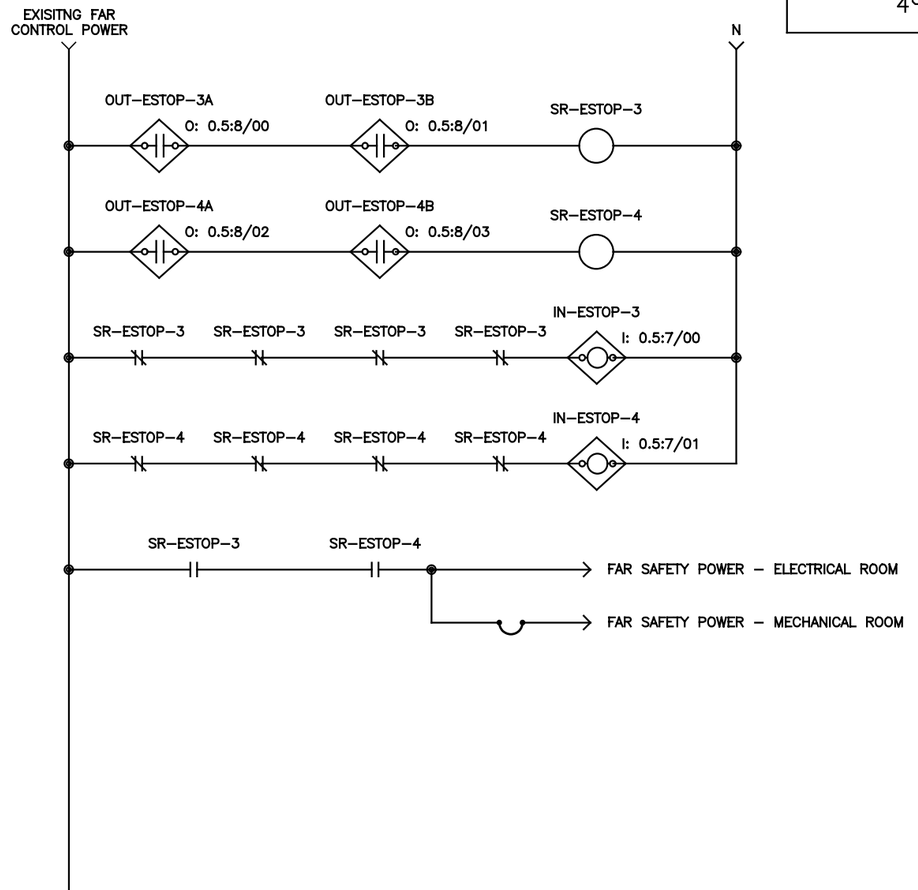
SHEET 8 OF 26

8

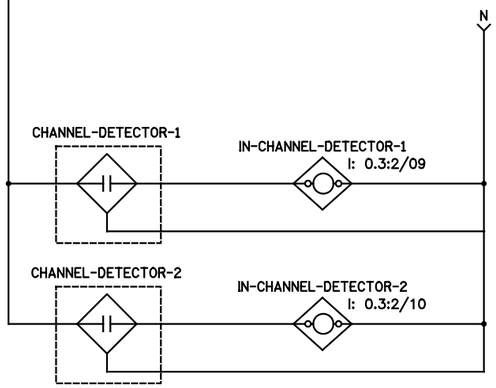
STATE PROJECT NUMBER

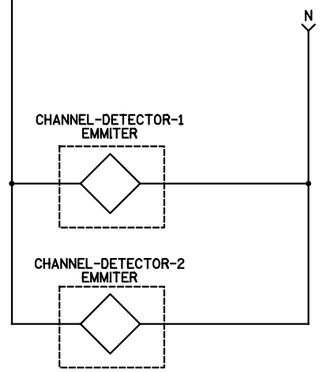
4987-07-72





NEW EMERGENCY STOP CIRCUITS





NEW CHANNEL DETECTOR SCHEMATICS

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

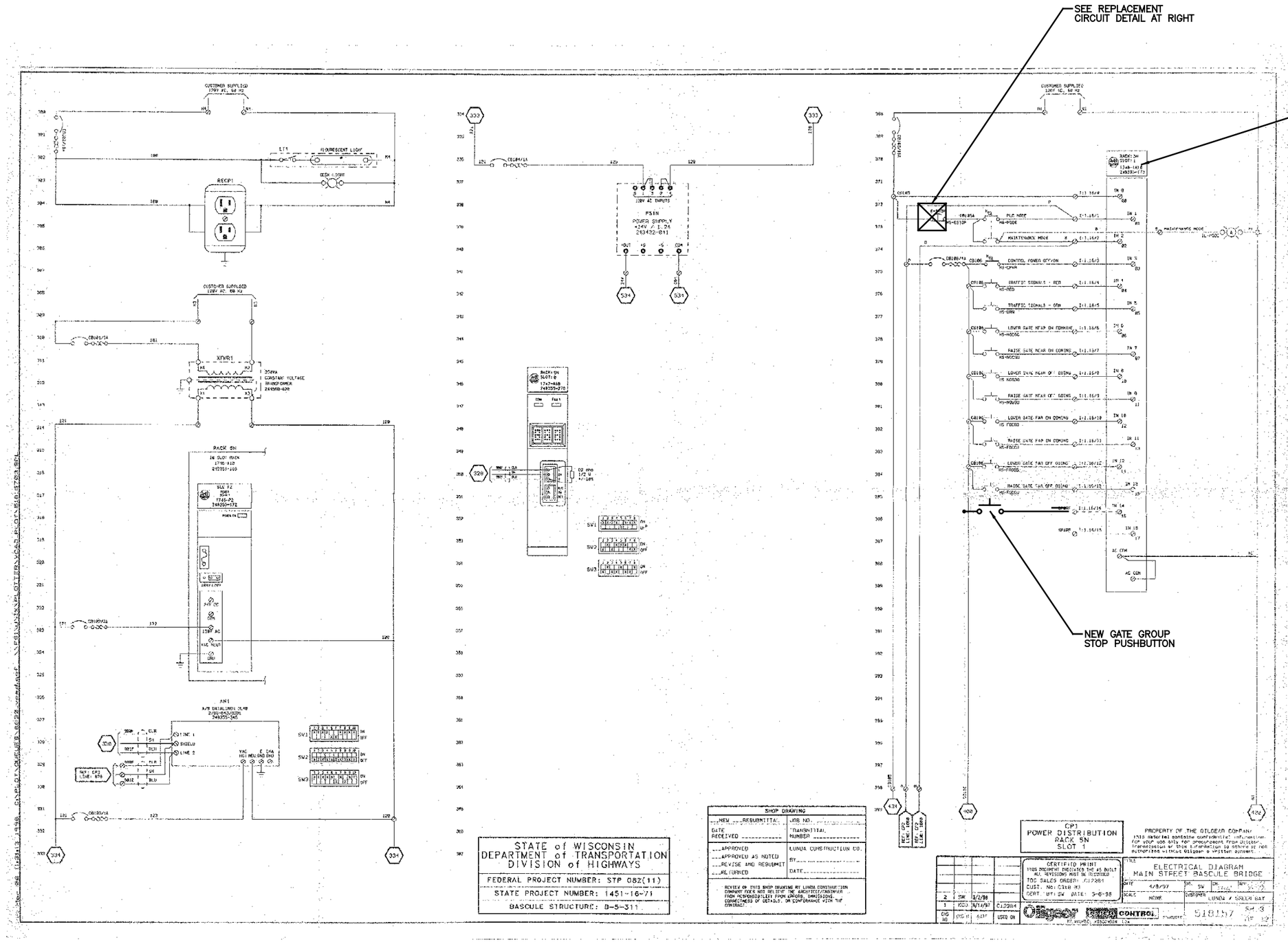
STRUCTURE B-05-0311

DRAWN BY DH | PLANS CK'D. AHN

PLC SCHEMATICS 1

SHEET 9 OF 26

STATE PROJECT NUMBER
4987-07-72



REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 3 OF 33

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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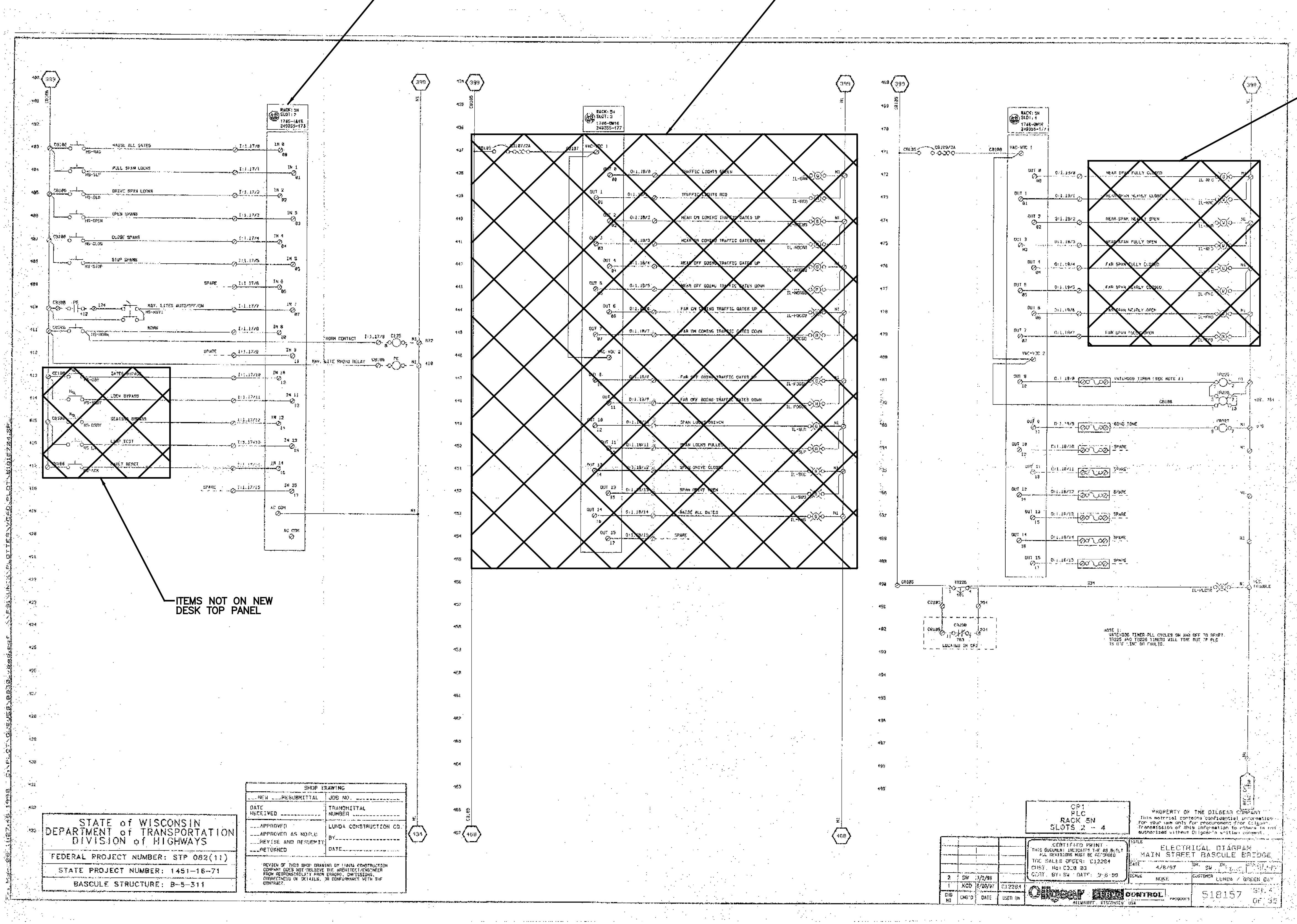
PLC SCHEMATICS 2

SHEET 10 OF 26

ALL PLC CARDS AND EQUIPMENT TO BE REPLACED AS PER CONTRACT REQUIREMENTS (TYP)

ITEMS NOT ON DESK TOP PANEL. SEE REPLACEMENT CIRCUIT DETAIL AT RIGHT.

ITEMS NOT ON NEW DESK TOP PANEL.



REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 4 OF 33

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

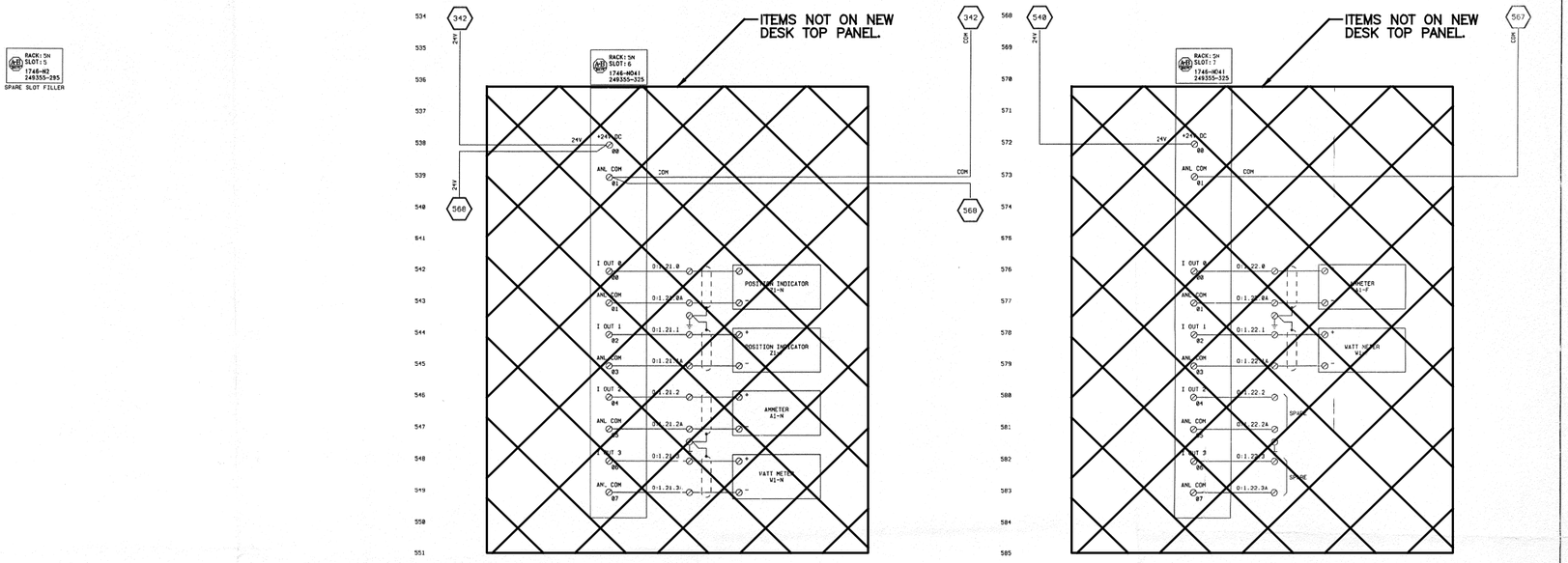
DRAWN BY DH — PLANS CK'D. AHN

PLC
SCHEMATICS 3

SHEET 11 OF 26

STATE PROJECT NUMBER

4987-07-72



SHOP DRAWING	
___NEW ___RESUBMITTAL	JOB NO. _____
DATE RECEIVED _____	TRANSMITTAL NUMBER _____
___APPROVED ___APPROVED AS NOTED ___REVISE AND RESUBMIT ___RETURNED	LUNDA CONSTRUCTION CO. BY_____ DATE_____
REVIEW OF THIS SHOP DRAWING BY LUNDA CONSTRUCTION COMPANY DOES NOT RELIEVE THE ARCHITECT/ENGINEER FROM RESPONSIBILITY FROM ERRORS, OMISSIONS, CORRECTNESS OF DETAILS, OR CONFORMANCE WITH THE CONTRACT.	

STATE of WISCONSIN
DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS

FEDERAL PROJECT NUMBER: STP 082(11)

STATE PROJECT NUMBER: 1451-16-71

BASCULE STRUCTURE: B-5-311

CP1
PLC
RACK 5N
SLOTS 5 - 7

CHG NO	CHG'D	DATE	USED ON
2	SW	1/2/98	
1	KCD	9/15/97	C12284

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TOC SALES ORDER: C12284
CUST. No: C310.03
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Oilgear SERVO CONTROL PRODUCTS
MILWAUKEE, WISCONSIN USA

TITLE: ELECTRICAL DIAGRAM
MAIN STREET BASCULE BRIDGE

DATE 4/8/97 | DR. SW | CH. | APP.
SCALE NONE | CUSTOMER LUNDA / GREEN BAY

518157 SH. 5 OF 33

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

DRAWN BY DH | PLANS CK'D. AHN

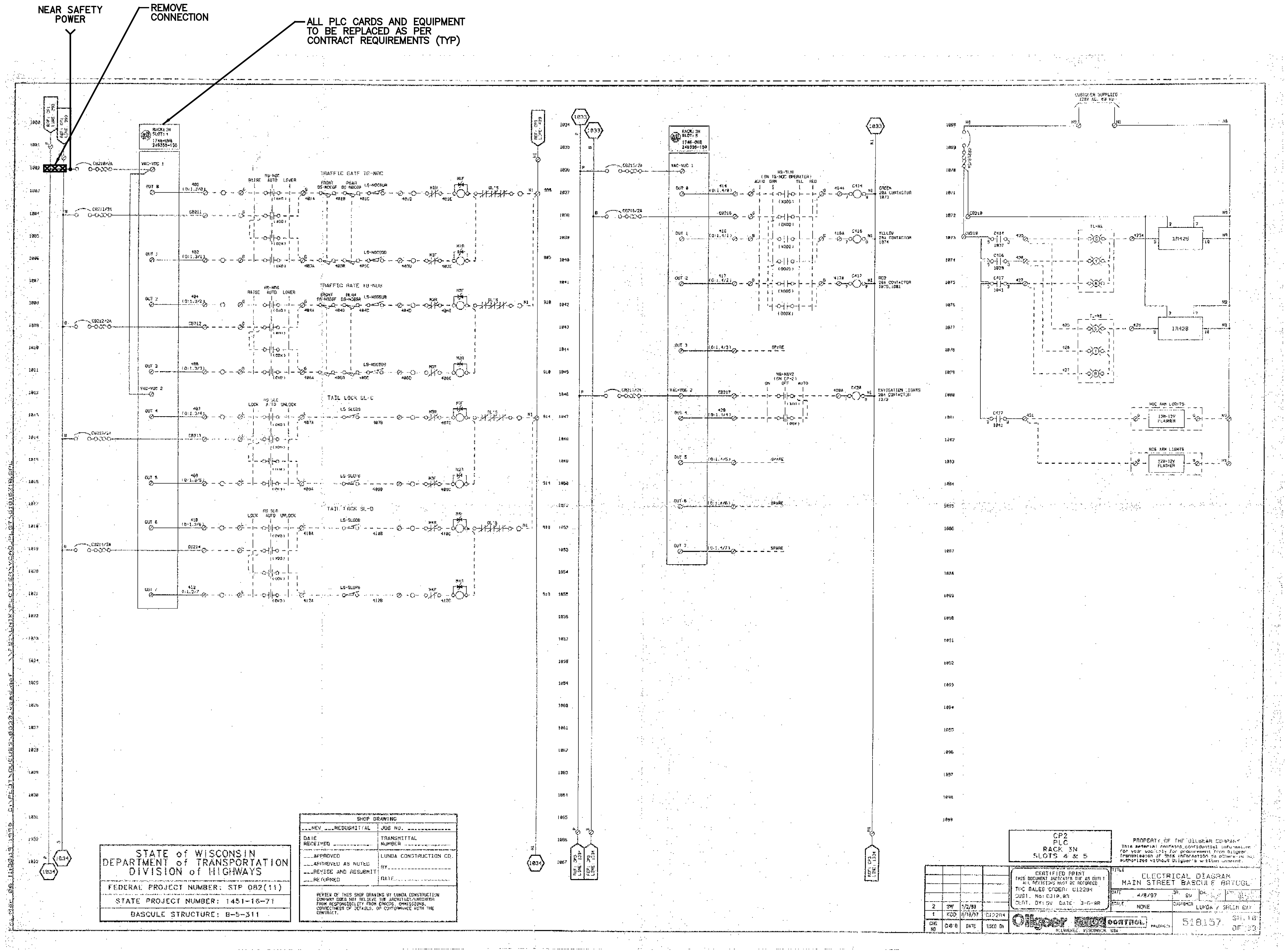
PLC SCHEMATICS 4

SHEET 12 OF 26

REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 5 OF 33

STATE PROJECT NUMBER

4987-Ø7-72



REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 10 OF 33

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø311

DRAWN BY DH | PLANS CK'D. AHN

PLC SCHEMATICS 5

SHEET 13 OF 26

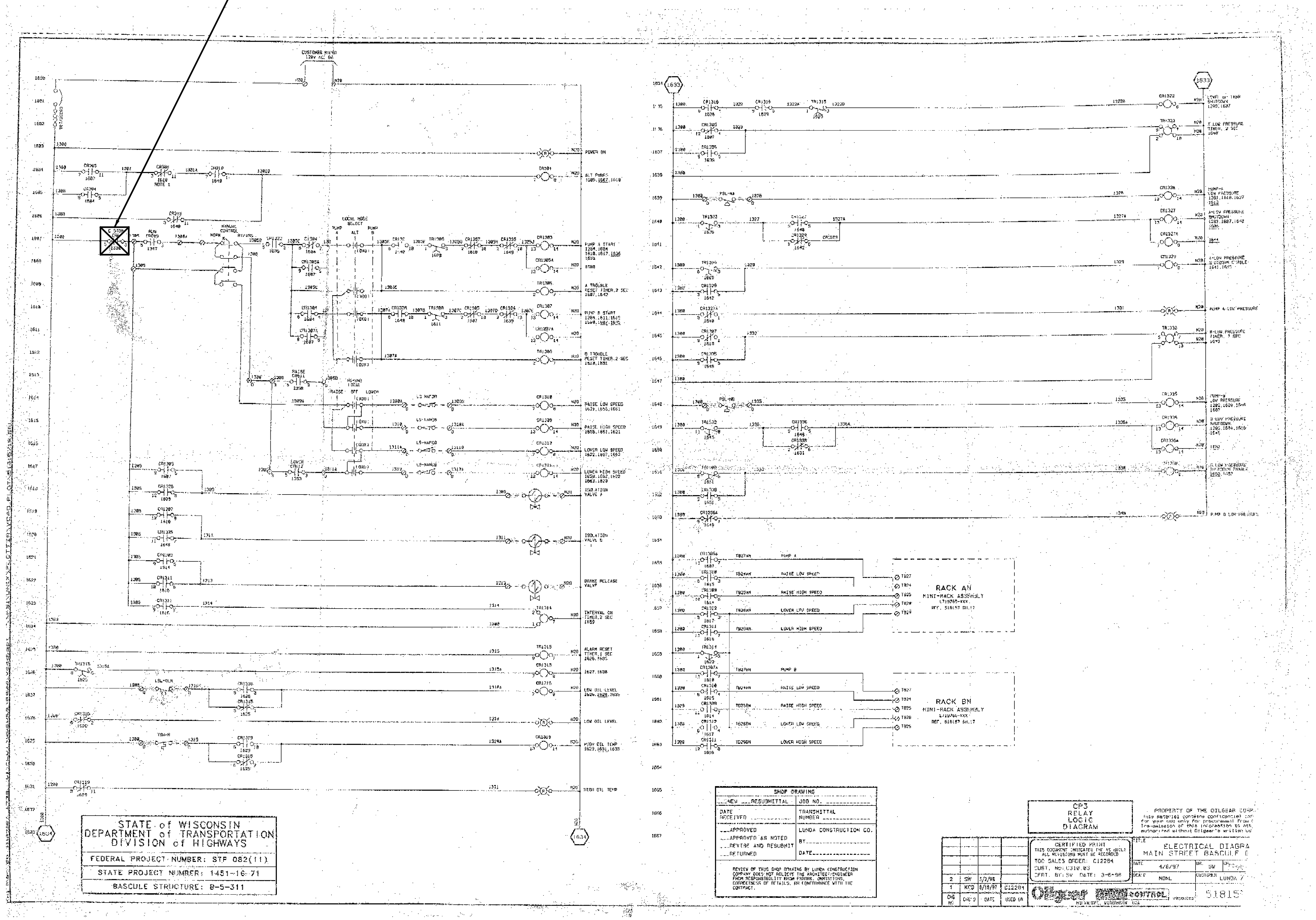
8

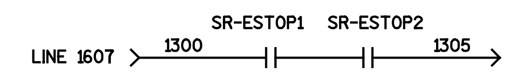
8

STATE PROJECT NUMBER

4987-07-72

SEE REPLACEMENT CIRCUIT DETAIL AT RIGHT





REPLACEMENT CIRCUIT DETAIL

REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 16 OF 33

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

DRAWN BY DH | PLANS CK'D. AHN

PLC SCHEMATICS 6

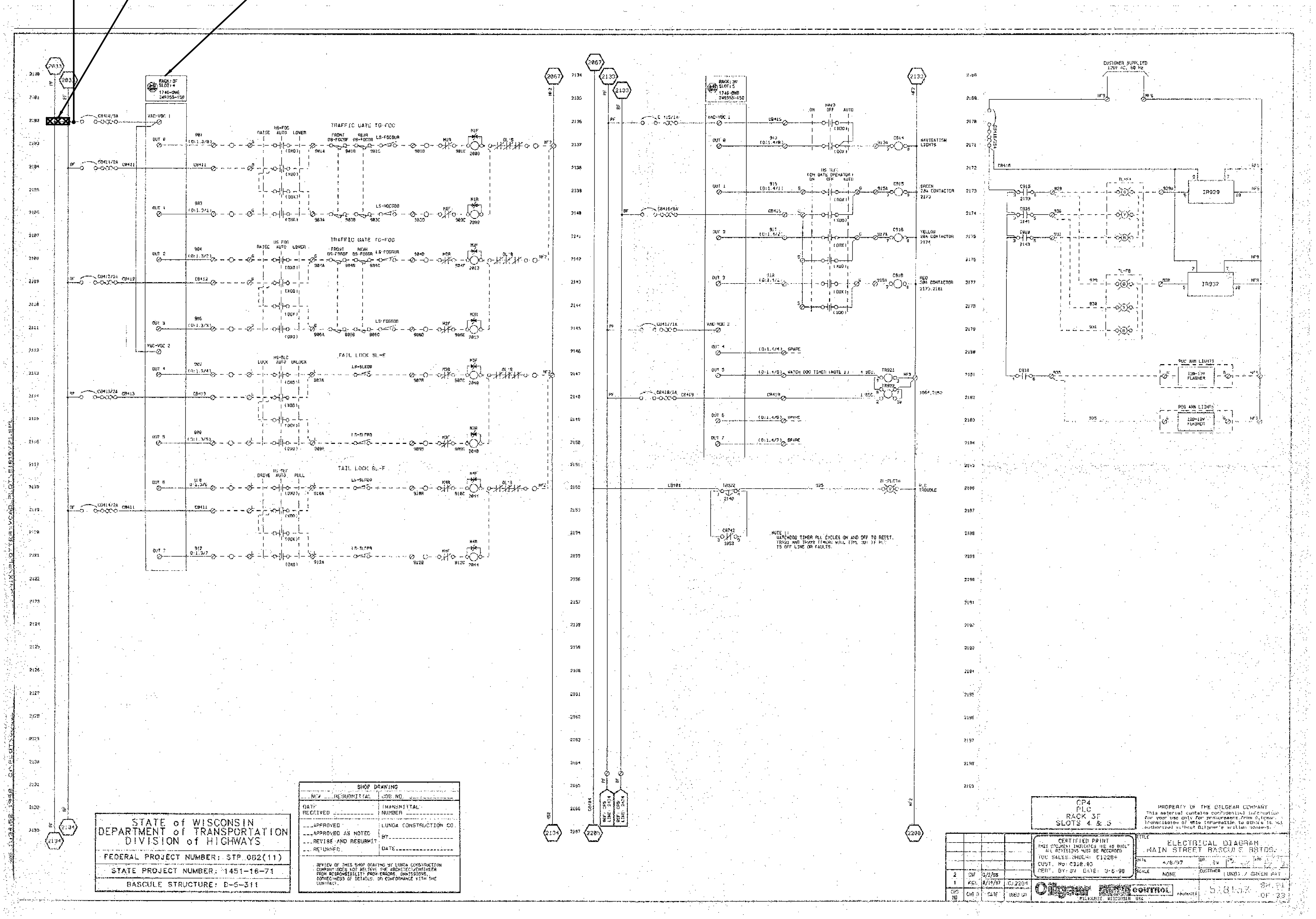
SHEET 14 OF 26

STATE PROJECT NUMBER
4987-07-72

FAR SAFETY POWER

REMOVE CONNECTION

ALL PLC CARDS AND EQUIPMENT TO BE REPLACED AS PER CONTRACT REQUIREMENTS (TYP)



STATE of WISCONSIN
DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS

FEDERAL PROJECT NUMBER: STP 082(11)

STATE PROJECT NUMBER: 1451-16-71

BASCULE STRUCTURE: B-5-311

REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 21 OF 33

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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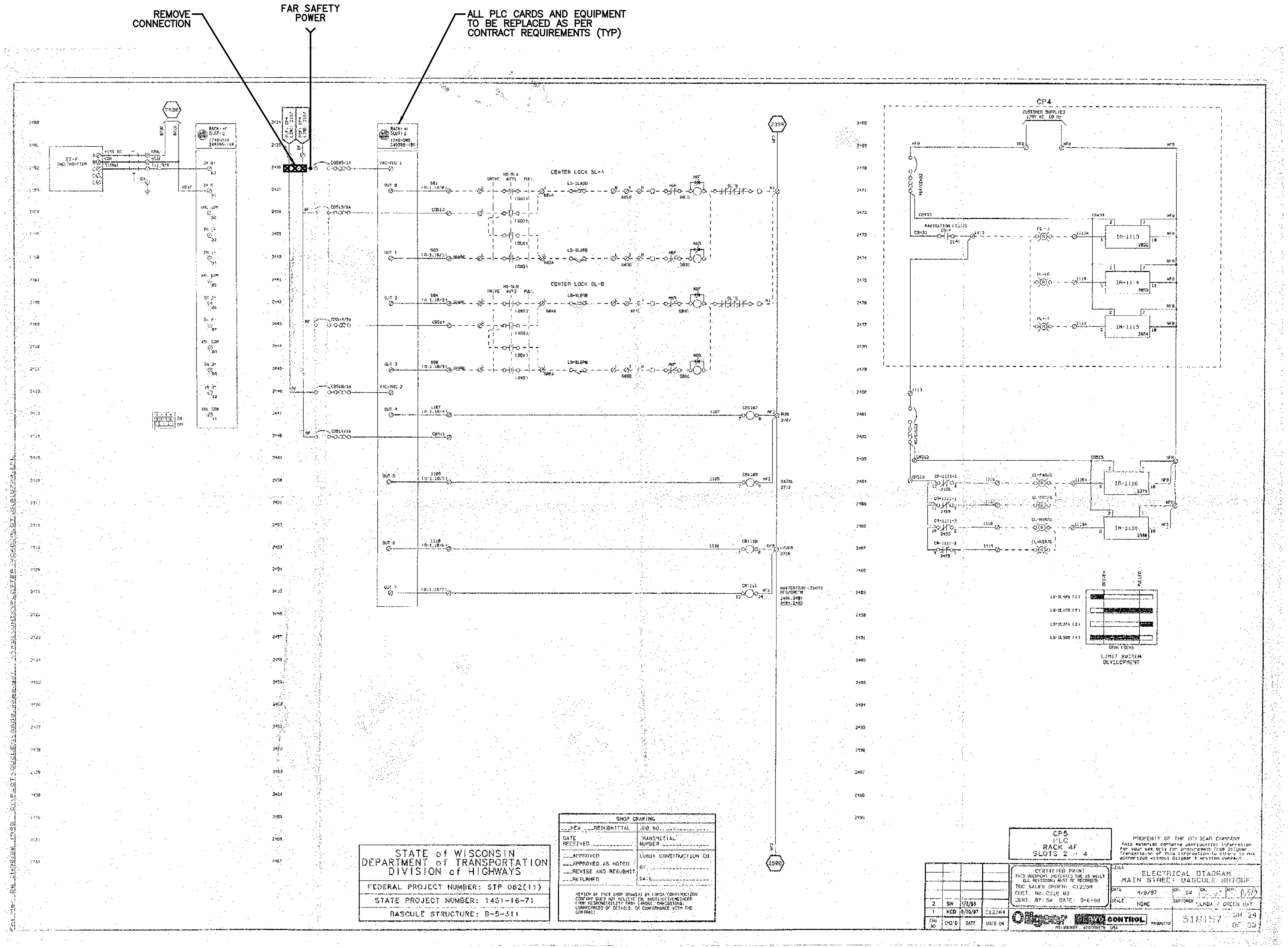
PLC SCHEMATICS 7

SHEET 15 OF 26



REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 24 OF 33

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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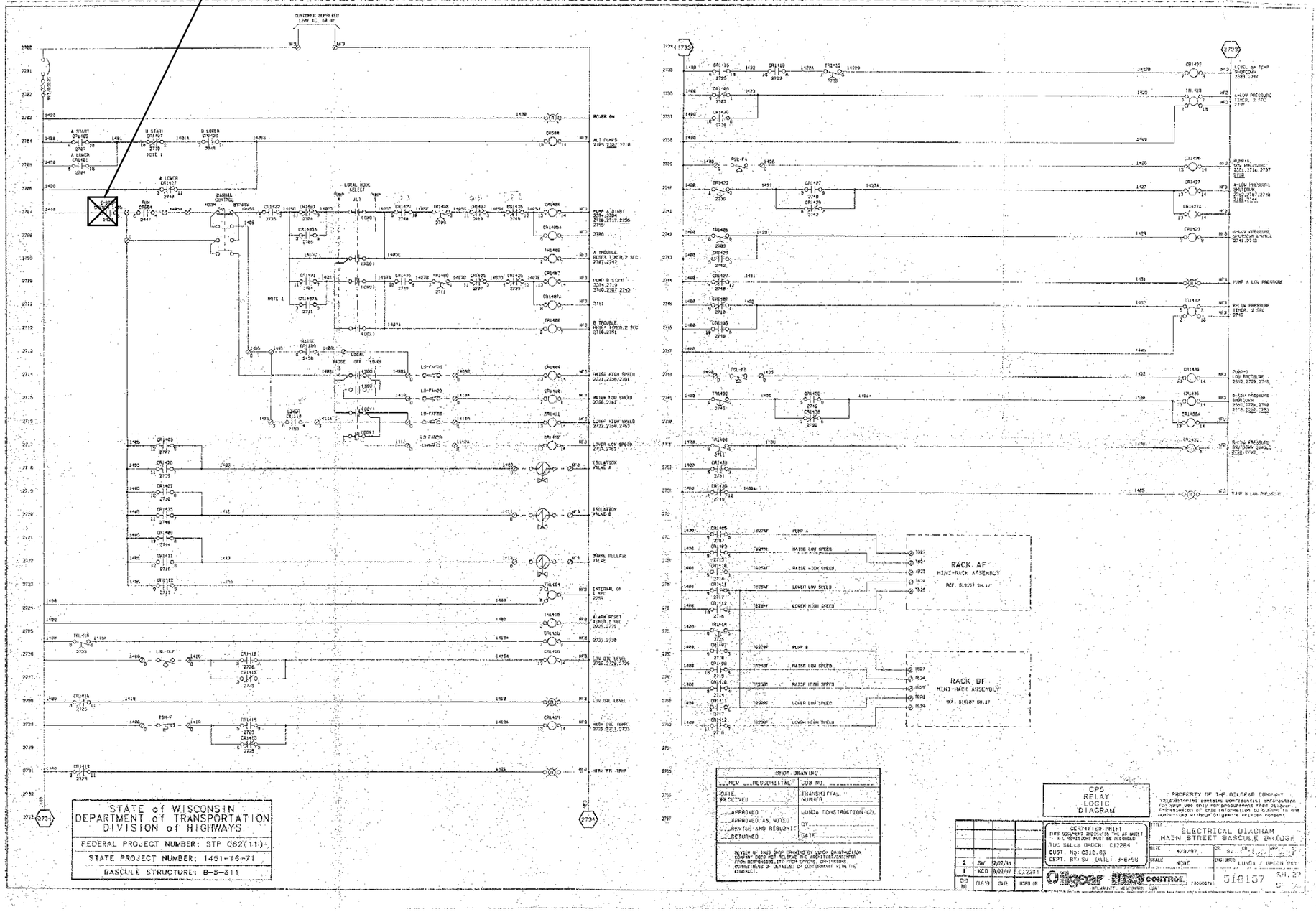
PLC SCHEMATICS 8

SHEET 16 OF 26

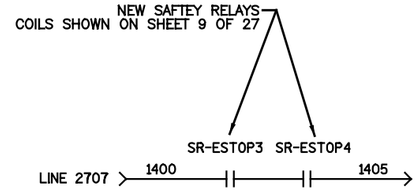
STATE PROJECT NUMBER

4987-07-72

SEE REPLACEMENT CIRCUIT DETAIL AT RIGHT



NEW SAFTEY RELAYS
COILS SHOWN ON SHEET 9 OF 27



REPLACEMENT CIRCUIT DETAIL

REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157 SHEET 27 OF 33

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC SCHEMATICS 9

SHEET 17 OF 26

STATE PROJECT NUMBER

4987-07-72

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.1			
SLOT: 1			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
371	5N:1/0	CB CHECK	00
372	5N:1/1	PLC MODE	01
373	5N:1/2	MAINTENANCE MODE	02
374	5N:1/3	CONTROL POWER OFF/ON	03
375	5N:1/4	TRAFFIC SIGNALS – RED	04
376	5N:1/5	TRAFFIC SIGNALS – GREEN	05
377	5N:1/6	LOWER GATE NEAR ON COMING	06
378	5N:1/7	RAISE GATE NEAR ON COMING	07
379	5N:1/8	LOWER GATE NEAR OFF GOING	08
380	5N:1/9	RAISE GATE NEAR OFF GOING	09
381	5N:1/10	LOWER GATE FAR ON COMING	10
382	5N:1/11	RASE GATE FAR ON COMING	11
383	5N:1/12	LOWER GATE FAR OFF GOING	12
384	5N:1/13	RAISE GATE FAR OFF GOING	13
–	–	GATE GROUP STOP	14
386	5N:1/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–3			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.1			
SLOT: 3			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
–	–	EMERGENCY STOP SAFETY RELAY "PB" (NEW)	00
–	–	EMERGENCY STOP SAFETY RELAY "1" (NEW)	01
–	–	EMERGENCY STOP SAFETY RELAY "2" (NEW)	02
–	–	SPARE	03
–	–	SPARE	04
–	–	SPARE	05
–	–	SPARE	06
–	–	SPARE	07
–	–	SPARE	08
–	–	SPARE	09
–	–	SPARE	10
–	–	SPARE	11
–	–	SPARE	12
–	–	SPARE	13
–	–	SPARE	14
–	–	SPARE	15
REFERENCED SHEET: N/A			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.1			
SLOT: 2			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
403	5N:2/0	RAISE ALL GATES	00
404	5N:2/1	PULL SPAN LOCKS	01
405	5N:2/2	DRIVE SPAN LOCKS	02
406	5N:2/3	OPEN SPANS	03
407	5N:2/4	CLOSE SPANS	04
408	5N:2/5	STOP SPANS	05
409	5N:2/6	SPARE	06
410	5N:2/7	NAVIGATION LIGHTS AUTO/OFF/ON	07
411	5N:2/8	AIR HORN	08
412	5N:2/9	SPARE	09
–	–	SPARE	10
–	–	SPARE	11
–	–	SPARE	12
–	–	SPARE	13
–	–	SPARE	14
418	5N:2/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–4			

1756–IO16			
DIGITAL OUTPUT, 16 POINT			
IP ADDRESS: 192.168.0.1			
SLOT: 4			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
471	5N:4/VAC–1	CONTROL POWER	VAC–1
–	–	EMERGENCY STOP SAFETY OUTPUT "1" (NEW)	00
–	–	EMERGENCY STOP SAFETY OUTPUT "2" (NEW)	01
–	–	SPARE	02
–	–	SPARE	03
–	–	SPARE	04
–	–	SPARE	05
–	–	SPARE	06
–	–	SPARE	07
480	5N:4/VAC–2	CONTROL POWER	VAC–2
481	5N:4/8	WATCHDOG TIMER	08
483	5N:4/9	GONG TONE	09
484	5N:4/10	SPARE	10
485	5N:4/11	SPARE	11
486	5N:4/12	SPARE	12
487	5N:4/13	SPARE	13
488	5N:4/14	SPARE	14
489	5N:4/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–4			

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC I/O 1

SHEET 18 OF 26

STATE PROJECT NUMBER

4987-07-72

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.3			
SLOT: 1			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
903	3N:1/0	TRAFFIC GATE – LS–TG–NOC (UP)	00
904	3N:1/1	TRAFFIC GATE – LS–TG–NOC (DOWN)	01
905	3N:1/2	TRAFFIC GATE – M–NOC (ENERGIZED)	02
907	3N:1/3	TRAFFIC GATE – M–NOC (OVERLOAD)	03
908	3N:1/4	TRAFFIC GATE – LS–TG–NOG (UP)	04
909	3N:1/5	TRAFFIC GATE – LS–TG–NOG (DOWN)	05
910	3N:1/6	TRAFFIC GATE – M–NOG (ENERGIZED)	06
911	3N:1/7	TRAFFIC GATE – M–NOG (OVERLOAD)	07
912	3N:1/8	SPAN LOCK – LS–SLC (DRIVEN)	08
913	3N:1/9	SPAN LOCK – LS–SLC (PULLED)	09
914	3N:1/10	SPAN LOCK – M–SLC (ENERGIZED)	10
915	3N:1/11	SPAN LOCK – M–SLC (OVERLOAD)	11
916	3N:1/12	SPAN LOCK – LS–SLD (DRIVEN)	12
917	3N:1/13	SPAN LOCK – LS–SLD (PULLED)	13
918	3N:1/14	SPAN LOCK – M–SLD (ENERGIZED)	14
920	3N:1/15	SPAN LOCK – M–SLD (OVERLOAD)	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–9			

1756–IF6I			
ANALOG INPUT, 6 POINT			
IP ADDRESS: 192.168.0.3			
SLOT: 3			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
971	3N:3/0	WATT TRANSDUCER P–NA	00
974	3N:3/1	WATT TRANSDUCER P–NB	01
977	3N:3/2	CURRENT TRANSFORMER P–NA	02
980	3N:3/3	CURRENT TRANSFORMER P–NB	03
–	–	SPARE	04
–	–	SPARE	05
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–9			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.3			
SLOT: 2			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
937	3N:2/0	TRAFFIC LIGHT NA "IR–425" UNIT	00
938	3N:2/1	TRAFFIC LIGHT NB "IR–428" UNIT	01
939	3N:2/2	PIER LIGHT NA "IR–614" UNIT	02
940	3N:2/3	PIER LIGHT NB "IR–615" UNIT	03
941	3N:2/4	PIER LIGHT NC "IR–616" UNIT	04
942	3N:2/5	PHASE REVERSAL RELAY	05
943	3N:2/6	SMOKE ALARM	06
947	3N:2/7	"DOOR SWITCHES" DR–NB, –NC, –ND	07
949	3N:2/8	SUMP LEVEL HIGH	08
–	–	CHANNEL SENSOR (NEW)	09
–	–	CHANNEL SENSOR (NEW)	10
952	3N:2/11	SPARE	11
953	3N:2/12	SPARE	12
954	3N:2/13	SPARE	13
955	3N:2/14	SPARE	14
956	3N:2/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–9			

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.3			
SLOT: 4			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
1002	3N:4/VAC–1	NEAR SAFETY POWER (NEW)	VAC–1
1003	3N:4/0	TRAFFIC GATE NOC RAISE	00
1006	3N:4/1	TRAFFIC GATE NOC LOWER	01
1008	3N:4/2	TRAFFIC GATE NOG RAISE	02
1011	3N:4/3	TRAFFIC GATE NOG LOWER	03
1012	3N:4/VAC–2	NEAR SAFETY POWER (NEW)	VAC–2
1013	3N:4/4	SPAN LOCK C DRIVE	04
1016	3N:4/5	SPAN LOCK C PULL	05
1018	3N:4/6	SPAN LOCK D DRIVE	06
1021	3N:4/7	SPAN LOCK D PULL	07
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–10			

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC I/O 2

SHEET 19 OF 26

STATE PROJECT NUMBER
4987-07-72

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.3			
SLOT: 5			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
1036	3N:5/VAC–1	CONTROL POWER	VAC–1
1037	3N:5/0	NEAR TRAFFIC LIGHT	00
1039	3N:5/1	NEAR TRAFFIC LIGHT	01
1041	3N:5/2	NEAR TRAFFIC LIGHT	02
1044	3N:5/3	SPARE	03
1046	3N:5/VAC–2	CONTROL POWER	VAC–2
1047	3N:5/4	NAVIGATION LIGHTS	04
1049	3N:5/5	SPARE	05
1051	3N:5/6	SPARE	06
1053	3N:5/7	SPARE	07
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–10			

1756–IA16			
ANALOG INPUT, 6 POINT			
IP ADDRESS: 192.168.0.4			
SLOT: 2			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
1302	4N:2/0	INCLINOMETER	00
–	4N:2/1	SPARE	01
–	4N:2/2	SPARE	02
–	4N:2/3	SPARE	03
–	–	SPARE	04
–	–	SPARE	05
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–13			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.4			
SLOT: 1			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
1271	4N:1/0	LS–NNCA	00
1272	4N:1/1	LS–NNDA	01
1273	4N:1/2	LS–NFDA	02
1274	4N:1/3	LS–NFCA	03
1275	4N:1/4	SPARE	04
1276	4N:1/5	SPARE	05
1277	4N:1/6	SPARE	06
1278	4N:1/7	SPARE	07
1279	4N:1/8	"CL–MAR/G" IR–617	08
1280	4N:1/9	"CL–MBR/G" IR–619	09
1281	4N:1/10	PUMP A/B LOW PRESSURE	10
1283	4N:1/11	LOW PRESSURE, LEVEL, TEMP SHUTDOWN	11
1285	4N:1/12	SMOKE DETECTOR	12
1286	4N:1/13	SMOKE DETECTOR	13
1287	4N:1/14	SMOKE DETECTOR	14
1288	4N:1/15	DA–NA	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–12			

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.4			
SLOT: 3			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
1336	4N:3/VAC–1	CONTROL POWER	VAC–1
–	–	SPARE	00
1340	4N:3/1	SPARE	01
1342	4N:3/2	SPARE	02
1345	4N:3/3	SPARE	03
1346	4N:3/VAC–2	CONTROL POWER	VAC–2
1347	4N:3/4	CR609 "RUN"	04
1350	4N:3/5	CR611 "RAISE"	05
1353	4N:3/6	CR612 "LOWER"	06
1355	4N:3/7	NAVIGATION LIGHTS RED/GREEN	07
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–13			

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC I/O 3

SHEET 20 OF 26

STATE PROJECT NUMBER
4987-07-72

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 1			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2004	3F:1/0	CB CHECK	00
2005	3F:1/1	PLC MODE	01
2006	3F:1/2	MAINTENANCE MODE	02
2007	3F:1/3	"HS–ESMF"	03
2008	3F:1/4	TRAFFIC GATE – LS–TG–FOC (UP)	04
2009	3F:1/5	TRAFFIC GATE – LS–TG–FOC (DOWN)	05
2010	3F:1/6	TRAFFIC GATE – M–FOC (ENERGIZED)	06
2011	3F:1/7	TRAFFIC GATE – M–FOC (OVERLOAD)	07
2012	3F:1/8	TRAFFIC GATE – LS–TG–FOG (UP)	08
2013	3F:1/9	TRAFFIC GATE – LS–TG–FOG (DOWN)	09
2014	3F:1/10	TRAFFIC GATE – M–FOG (ENERGIZED)	10
2015	3F:1/11	TRAFFIC GATE – M–FOC (OVERLOAD)	11
2016	3F:1/12	TAIL LOCK PHASE DELAY	12
2017	3F:1/13	SMOKE DETECTOR	13
2020	3F:1/14	SPARE	14
2021	3F:1/15	SUMP LEVEL HIGH	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–20			

1756–IF6I			
ANALOG INPUT, 6 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 3			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2071	3F:3/0	WATT TRANSDUCER P–FA	00
2073	3F:3/1	WATT TRANSDUCER P–FB	01
2075	3F:3/2	CURRENT TRANSFORMER P–FA	02
2077	3F:3/3	CURRENT TRANSFORMER P–FB	03
–	–	SPARE	04
–	–	SPARE	05
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–20			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 2			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2038	3F:2/0	SPAN LOCK – LS–SLE (DRIVEN)	00
2039	3F:2/1	SPAN LOCK – LS–SLE (PULLED)	01
2040	3F:2/2	SPAN LOCK – M–SLE (ENERGIZED)	02
2041	3F:2/3	SPAN LOCK – M–SLE (OVERLOAD)	03
2042	3F:2/4	SPAN LOCK – LS–SLF (DRIVEN)	04
2043	3F:2/5	SPAN LOCK – LS–SLF (PULLED)	05
2044	3F:2/6	SPAN LOCK – M–SLF (ENERGIZED)	06
2045	3F:2/7	SPAN LOCK – M–SLF (OVERLOAD)	07
2048	3F:2/8	SPARE	08
2049	3F:2/9	TRAFFIC LIGHT FA "IR–929" UNIT	09
2050	3F:2/10	TRAFFIC LIGHT FB "IR–932" UNIT	10
2051	3F:2/11	PEIR LIGHT FA "IR–1113" UNIT	11
2052	3F:2/12	PEIR LIGHT FB "IR–1114" UNIT	12
2053	3F:2/13	PEIR LIGHT FC "IR–1115" UNIT	13
2054	3F:2/14	"DOOR SWITCHES" DR–FB, –FC	14
2055	3F:2/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–20			

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 4			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2102	3F:4/VAC–1	FAR SAFETY POWER (NEW)	VAC–1
2103	3F:4/0	TRAFFIC GATE FOC RAISE	00
2106	3F:4/1	TRAFFIC GATE FOC LOWER	01
2108	3F:4/2	TRAFFIC GATE FOG RAISE	02
2111	3F:4/3	TRAFFIC GATE FOG LOWER	03
2112	3F:4/VAC–2	FAR SAFETY POWER (NEW)	VAC–2
2113	3F:4/4	SPAN LOCK E DRIVE	04
2115	3F:4/5	SPAN LOCK E PULL	05
2118	3F:4/6	SPAN LOCK F DRIVE	06
2121	3F:4/7	SPAN LOCK F PULL	07
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–21			

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC I/O 4

SHEET 21 OF 26

STATE PROJECT NUMBER
4987-07-72

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 5			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2136	3F:5/VAC–1	CONTROL POWER	VAC–1
2137	3F:5/0	NAVIGATION LIGHTS	00
2139	3F:5/1	FAR TRAFFIC LIGHT	01
2141	3F:5/2	FAR TRAFFIC LIGHT	02
2143	3F:5/3	FAR TRAFFIC LIGHT	03
2145	3F:5/VAC–2	CONTROL POWER	VAC–2
2146	3F:5/4	SPARE	04
2147	3F:5/5	WATCHDOG TIMER	05
2149	3F:5/6	SPARE	06
2150	3F:5/7	SPARE	07
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–21			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 7			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
–	–	EMERGENCY STOP SAFETY RELAY "3" (NEW)	00
–	–	EMERGENCY STOP SAFETY RELAY "4" (NEW)	01
–	–	SPARE	02
–	–	SPARE	03
–	–	SPARE	04
–	–	SPARE	05
–	–	SPARE	06
–	–	SPARE	07
–	–	SPARE	08
–	–	SPARE	09
–	–	SPARE	10
–	–	SPARE	11
–	–	SPARE	12
–	–	SPARE	13
–	–	SPARE	14
–	–	SPARE	15
REFERENCED SHEET: N/A			

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 6			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2202	3F:6/0	SPAN LOCK – M–SLA (ENERGIZED)	00
2203	3F:6/1	SPAN LOCK – M–SLA (OVERLOAD)	01
2204	3F:6/2	SPAN LOCK – M–SLB (ENERGIZED)	02
2205	3F:6/3	SPAN LOCK – M–SLB (OVERLOAD)	03
2207	3F:6/4	SPARE	04
2208	3F:6/5	SPARE	05
2209	3F:6/6	SPARE	06
2210	3F:6/7	SPARE	07
2211	3F:6/8	SPARE	08
2212	3F:6/9	SPARE	09
2213	3F:6/10	SPARE	10
2214	3F:6/11	SPARE	11
2215	3F:6/12	SPARE	12
2216	3F:6/13	SPARE	13
2217	3F:6/14	SPARE	14
2218	3F:6/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–22			

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.5			
SLOT: 8			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
–	–	CONTROL POWER	VAC–1
–	–	EMERGENCY STOP SAFETY OUTPUT "3A" (NEW)	00
–	–	EMERGENCY STOP SAFETY OUTPUT "3B" (NEW)	01
–	–	EMERGENCY STOP SAFETY OUTPUT "4A" (NEW)	02
–	–	EMERGENCY STOP SAFETY OUTPUT "4B" (NEW)	03
–	–	CONTROL POWER	VAC–2
–	–	SPARE	04
–	–	SPARE	05
–	–	SPARE	06
–	–	SPARE	07
REFERENCED SHEET: N/A			

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8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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PLC I/O 5

SHEET 22 OF 26

STATE PROJECT NUMBER

4987-07-72

1756–IA16			
DIGITAL INPUT, 16 POINT			
IP ADDRESS: 192.168.0.6			
SLOT: 1			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2371	4F:1/0	LS–FNCA	00
2372	4F:1/1	LS–FNDA	01
2373	4F:1/2	LS–FFDA	02
2374	4F:1/3	LS–FFCA	03
2375	4F:1/4	SPAN LOCK – LS–SLA (DRIVEN)	04
2376	4F:1/5	SPAN LOCK – LS–SLA (PULLED)	05
2377	4F:1/6	SPAN LOCK – LS–SLB (DRIVEN)	06
2378	4F:1/7	SPAN LOCK – LS–SLB (PULLED)	07
2379	4F:1/8	"CL–FAR/G" IR–1116	08
2380	4F:1/9	"CL–FBR/G" IR–1118	09
2381	4F:1/10	PUMP A/B LOW PRESSURE	10
2383	4F:1/11	LOW PRESSURE, LEVEL, TEMP SHUTDOWN	11
2385	4F:1/12	SMOKE DETECTOR	12
2387	4F:1/13	SMOKE DETECTOR	13
2388	4F:1/14	SPARE	14
2389	4F:1/15	SPARE	15
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–23			

1756–OX8I			
DIGITAL OUTPUT, 8 POINT			
IP ADDRESS: 192.168.0.6			
SLOT: 3			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2436	4F:3/VAC–1	FAR SAFETY POWER (NEW)	VAC–1
2437	4F:3/0	SPAN LOCK A DRIVE	00
2440	4F:3/1	SPAN LOCK A PULL	01
2442	4F:3/2	SPAN LOCK B DRIVE	02
2445	4F:3/3	SPAN LOCK B PULL	03
2446	4F:3/VAC–2	CONTROL POWER	VAC–2
2447	4F:3/4	CR1107 "RUN"	04
2450	4F:3/5	CR1109 "RAISE"	05
2453	4F:3/6	CR1110 "LOWER"	06
2455	4F:3/7	NAVIGATION LIGHTS RED/GREEN	07
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–24			

1756–IF6I			
ANALOG INPUT, 6 POINT			
IP ADDRESS: 192.168.0.6			
SLOT: 2			
OILGEAR LINE NO.	EXISTING RACK:SLOT/POINT	DESCRIPTION	NEW CARD POINT
2402	4F:2/0	INCLINOMETER	00
2405	4F:2/1	SPARE	01
2407	4F:2/2	SPARE	02
2409	4F:2/3	SPARE	03
–	–	SPARE	04
–	–	SPARE	05
REFERENCED SHEET: LUNDA CONSTRUCTION/OILGEAR 518157–24			

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8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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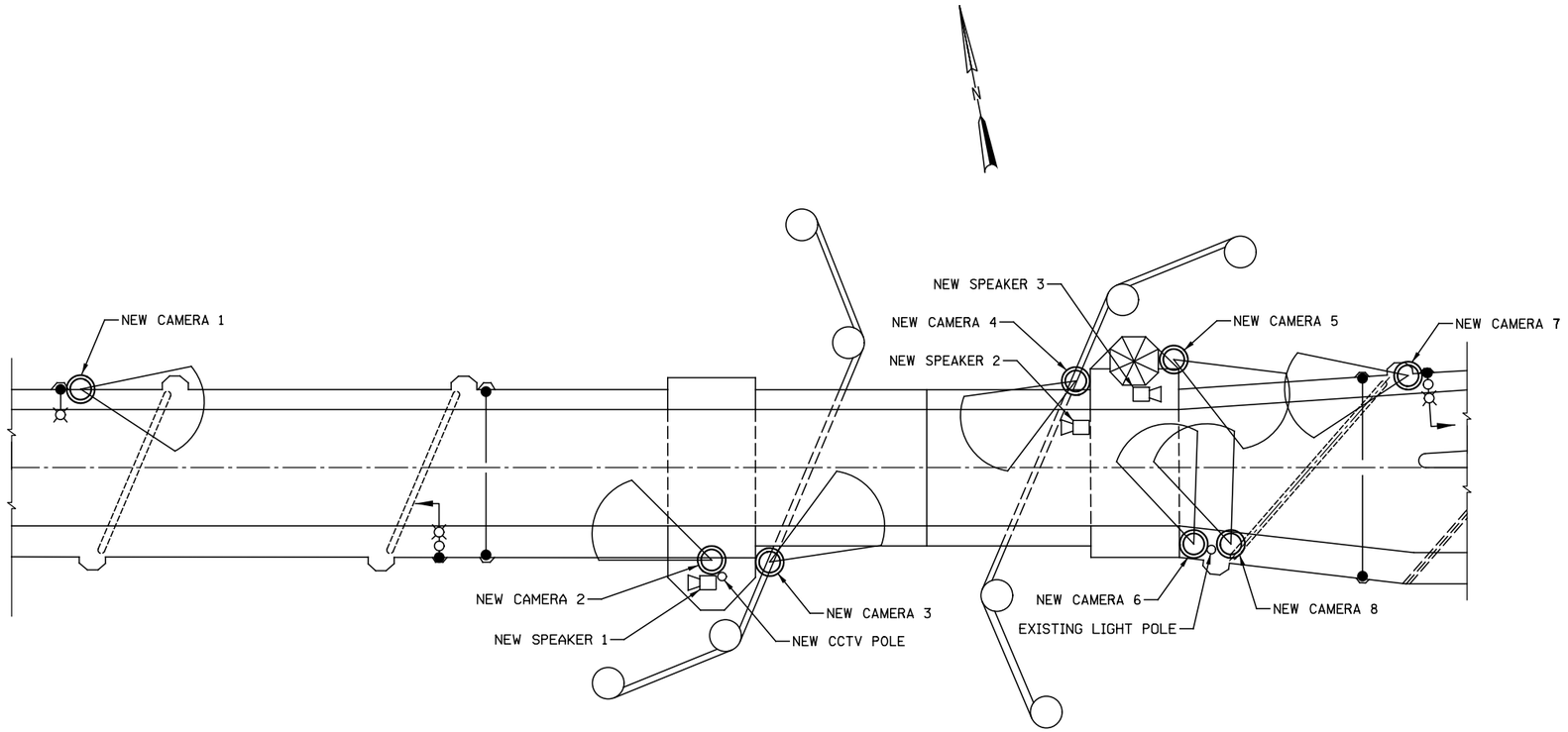
PLC I/O 6

SHEET 23 OF 26

STATE PROJECT NUMBER
4987-Ø7-72



CCTV AND PA PLAN VIEW

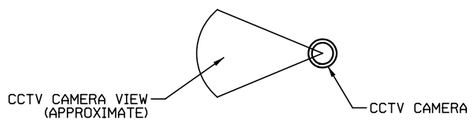
CCTV CAMERA PURPOSE:

1. VIEW OF FAR GATES AND FAR SPAN APPROACH (MOUNTED TO LIGHT POLE)
2. VIEW OF FAR GATES AND APPROACH ROADWAY (MOUNTED TO NEW CCTV POLE)
3. VIEW OF WATERWAY (MOUNTED TO FAR PIER)
4. VIEW OF WATERWAY (MOUNTED TO NEAR PIER)
5. VIEW OF NEW GATES AND APPROACH ROADWAY (MOUNTED TO OPERATOR HOUSE)
6. VIEW OF OPERATOR ENTRANCE (MOUNTED TO EXISTING LIGHT POLE)
7. VIEW OF NEAR SPAN APPROACH (MOUNTED TO EXISTING LIGHT POLE)
8. THERMAL CAMERA VIEW OF OPERATOR ENTRANCE (MOUNTED TO EXISTING LIGHT POLE)

PA SPEAKER PURPOSE:

1. FAR SIDE ROADWAY (MOUNTED TO NEW CCTV POLE)
2. CHANNEL (MOUNTED TO NEAR PIER)
3. NEAR SIDE ROADWAY (MOUNTED TO OPERATOR HOUSE)

LEGEND



NOTES:

1. CCTV SUPPLIER SHALL PROVIDE ALL HARDWARE AND MOUNTING BRACKETS FOR OUTDOOR USE ONLY (HEAVY DUTY NEMA 4X).
2. CCTV SUPPLIER SHALL PROVIDE ALL HARDWARE AND RACK MOUNT FOR VIDEO SERVER, UPS, FLAT PANEL SCREENS, AND ALL ASSOCIATED EQUIPMENT.
3. FIELD OF VIEW ANGLE MUST BE LARGE ENOUGH SO THAT THE OPERATOR CAN SEE THE ENTIRE AREA CAMERA IS TO COVER WITHOUT HAVING TO MAKE MANUAL ADJUSTMENTS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING POSITIONING OF CCTV CAMERAS, WITH THE APPROVAL OF THE ENGINEER.
5. SEE FOLLOWING SHEET FOR CCTV AND PA SCHEMATIC.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-Ø5-Ø311

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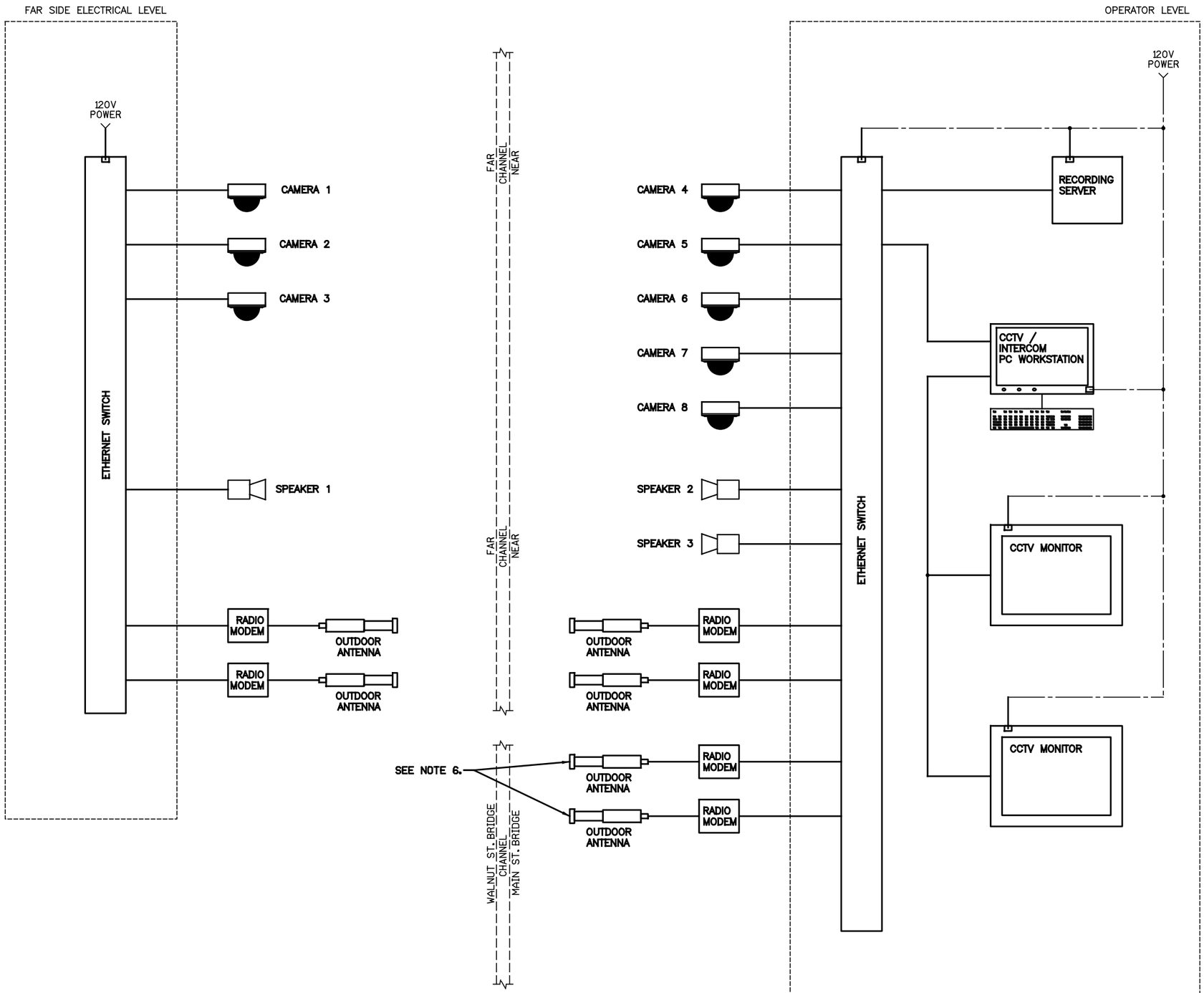
CCTV AND PA PLAN VIEW

SHEET 24 OF 26

STATE PROJECT NUMBER

4987-07-72



NOTES:

1. ALL ETHERNET CABLING SHALL BE CATEGORY 6 AND OUTDOOR RATED WHERE APPLICABLE.
2. ALL CAMERAS, SPEAKERS, AND OUTDOOR EQUIPMENT SHALL BE RATED NEMA 4X.
3. CCTV CAMERAS AND PA SPEAKERS SHALL BE POWER OVER ETHERNET NETWORK IP TYPE CAMERAS.
4. CCTV CABINET AND RACK LAYOUT TO BE VERIFIED BY MANUFACTURER.
5. THE CCTV CAMERA/PA SPEAKER NETWORK SHALL BE SEPARATE FROM THE PLC NETWORK AND USE SEPARATE ETHERNET SWITCHES AND WIRELESS EQUIPMENT.
6. A SEPARATE SET OF ANTENNAS ARE TO BE DIRECTED AT WALNUT STREET BRIDGE FOR REMOTE OPERATION.
7. SEE PREVIOUS SHEET FOR CCTV AND PA LAYOUT.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-05-0311

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CCTV AND PA SCHEMATIC

SHEET 25 OF 26

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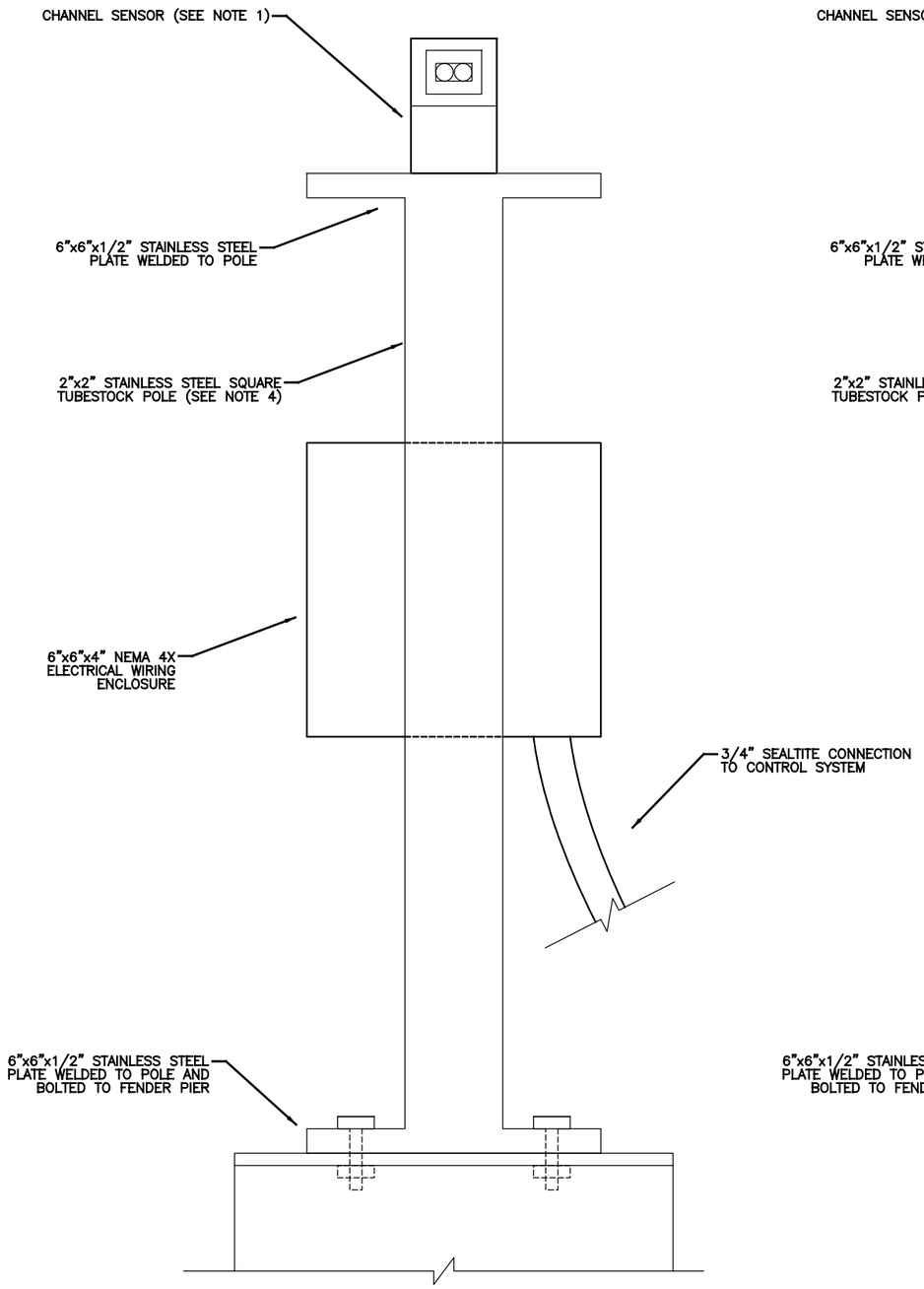
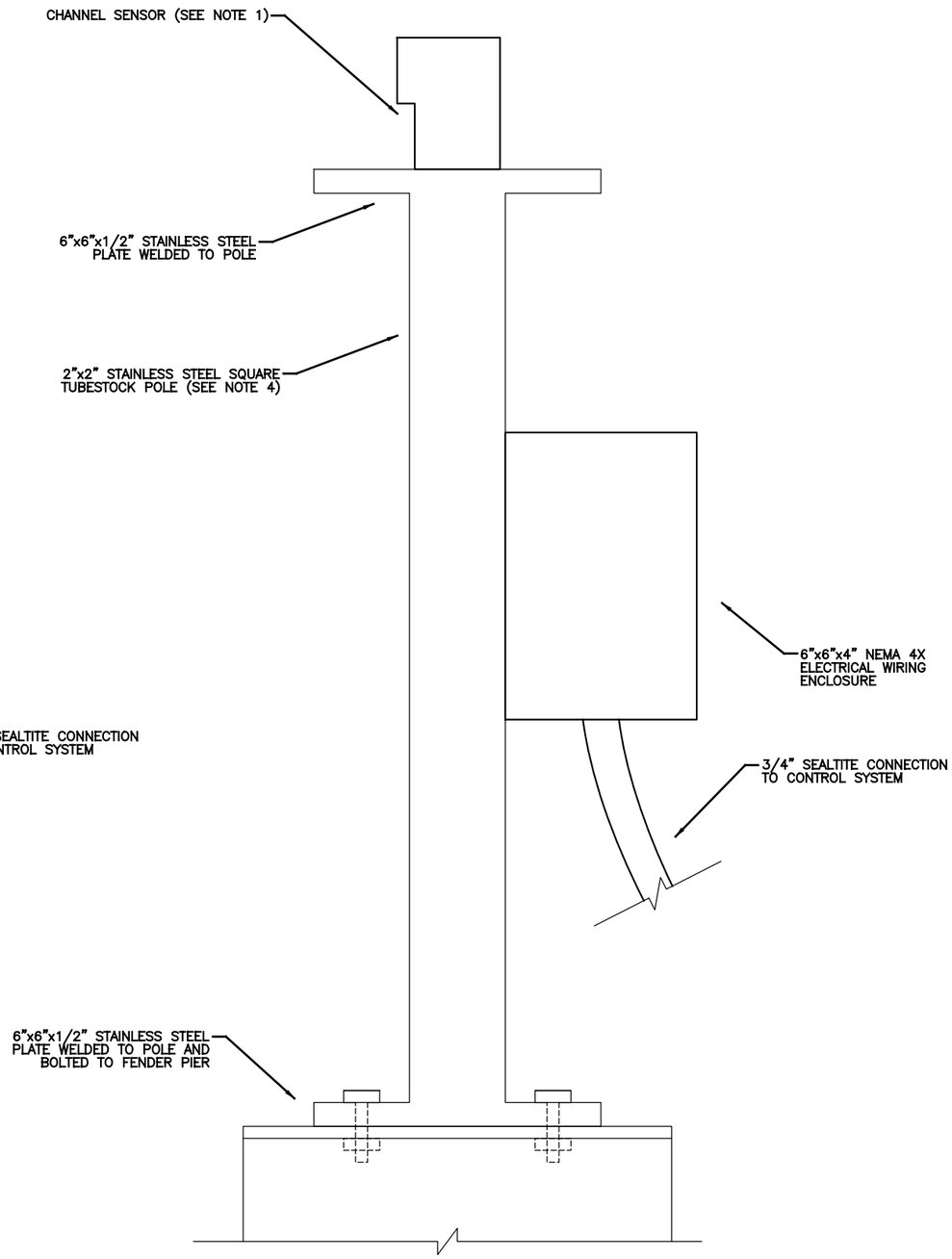
STATE PROJECT NUMBER
4987-07-72



NAVIGABLE CHANNEL OBSTRUCTION FRONT VIEW

(NOT TO SCALE)



NAVIGABLE CHANNEL OBSTRUCTION SIDE VIEW

(NOT TO SCALE)

NOTES:

1. SENSOR IS TO BE MODEL Q45VR2 SERIES BY BANNER OR APPROVED EQUAL.
2. SENSORS SHALL BE INSTALLED IN OPPOSED MODE.
3. TWO PAIRS OF TWO SENSORS SHALL BE INSTALLED ON THE FENDER PIERS. ONE PAIR MONITORING THE NORTH SIDE OF THE NAVIGABLE CHANNEL, ONE PAIR MONITORING THE SOUTH SIDE OF THE NAVIGABLE CHANNEL. SEE SHEET 1 FOR LOCATIONS.
4. MOUNTING POLE SHALL BE APPROXIMATELY 2 FEET HIGH. PRECISE HIGHT TO BE FIELD DETERMINED.

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STRUCTURE B-05-0311

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CHANNEL SENSOR DETAILS

SHEET 26 OF 26

8

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Notes

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