

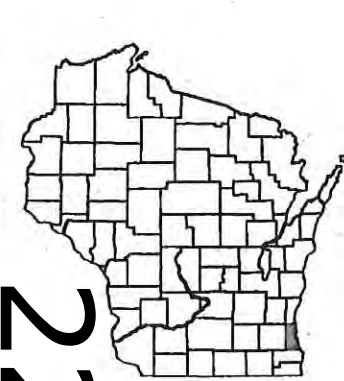
PROJECT ID 2025-01-72  
WITH: N/A

COUNTY MILWAUKEE

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: 60

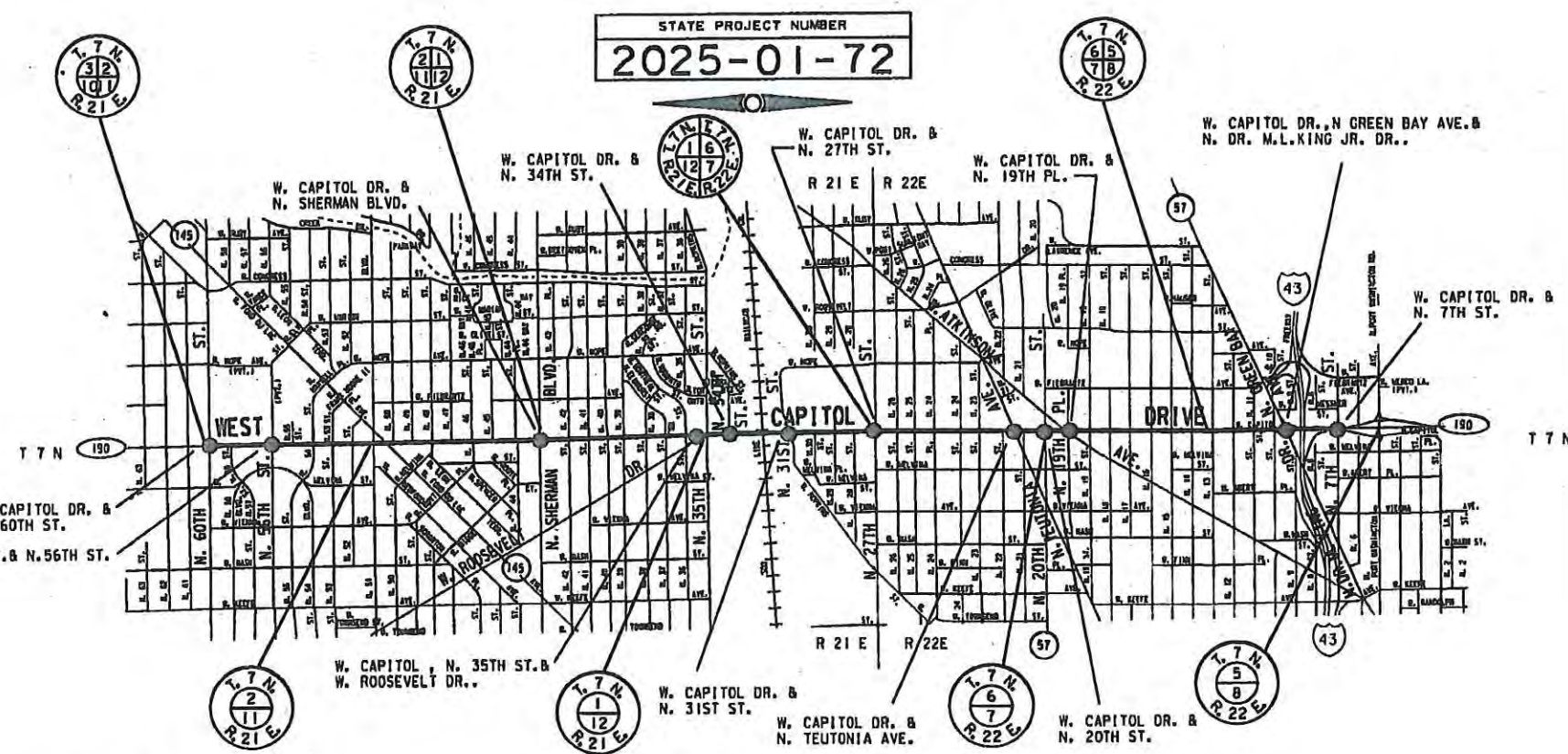


DESIGN DESIGNATION

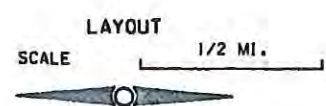
A.D.T. (CURRENT)	= N/A
A.D.T. ( )	= N/A
D.H.V.	= N/A
D.	= N/A
T.	= N/A
DESIGN SPEED	= N/A
ESALS	= N/A

CONVENTIONAL SIGNS

COUNTY LINE	---
TOWNSHIP OR RANGE LINE	----
SECTION LINE	-----
CORPORATE OR CITY LIMITS	----- P.L. -----
PROPERTY LINE	-----
STANDARD BENCH MARK	⊙
EXISTING RIGHT OF WAY LINE	--- R/W ---
PROPOSED SEWER LATERAL	--- S/L ---
BASE OF SURVEY LINE	---
CONCRETE WALK/DWY. REMOVAL	XXXXXX
LIMITS OF CONCRETE PAVEMENT REMOVAL	XXXXXX
CATCH BASIN OR INLET	⊕
EXISTING	⊕
PROPOSED	⊕



STATE PROJECT NUMBER  
2025-01-72



TOTAL NET LENGTH OF CENTERLINE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

WEST CAPITOL DRIVE (S.T.H. 190)

12 CONNECTING HIGHWAY INTERSECTIONS

Various Highways  
MILWAUKEE COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
2025-01-72		

Accepted For  
City of Milwaukee

2/4/15 *Paul Ferguson*  
(Date) FOR Commissioner of Public Works

Original Plans Prepared By



2/3/15 *Christine Hanna*  
(Date) City Engineer

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
PREPARED BY	
Surveyor	City of Milwaukee
Designer	City of Milwaukee
Project Manager	Christine Hanna
Region Examiner	
Region Supervisor	XXXXX XXXXX
C.O. Examiner	

APPROVED FOR THE DEPARTMENT  
DATE: 2/3/15 *Christine Hanna*  
(Signature)

E



GENERAL NOTES

1. ALL DISTURBED AREAS, NOT SURFACED, ARE TO BE COVERED WITH 4" OF TOPSOIL, SODDED AND FERTILIZED UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. NO TREES OR SHRUBS SHALL BE REMOVED UNLESS DESIGNATED FOR REMOVAL BY THE ENGINEER.
3. TRANSVERSE JOINTS IN THE SIDEWALK SHALL BE CONSTRUCTED AT INTERVALS EQUAL TO THE WIDTH OF THE CONCRETE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLAN ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA WHICH ARE NOT SHOWN.
5. FOR VERTICAL INSTALLATION OF MONOTUBE BASES, POLES, OR DIRECT BURY POLES, THE CONTRACTOR SHALL CONTACT BOB BROOKS AT (414) 286-3241 OR NANCY ALVARADO AT (414) 286-2013 AT LEAST 3 DAYS PRIOR TO ANY EXCAVATION.
7. FOR ANY EXCAVATION OF SIX FEET OR MORE IN THE CITY OF MILWAUKEE, THE CONTRACTOR, WHEN REQUESTING A UTILITY LOCATE TICKET FROM DIGGER'S HOTLINE, SHALL SPECIFICALLY ASK FOR THE LOCATION TICKET TO INCLUDE THE MARKING OF ALL EXISTING SEWER FACILITIES WITHIN THE LIMITS REQUESTED.

STANDARD ABBREVIATIONS

- ASPH. - ASPHALT
- B.M. - BENCH MARK
- CTR. - CENTER
- C/L - CENTER LINE
- COMB. - COMBINED
- CONC. - CONCRETE
- C.W. - CONCRETE WALK
- COR. - CORNER
- C - CURB
- ELEV. - ELEVATION
- ENT. - ENTRANCE
- EXIST. - EXISTING
- F - FLANGE
- G - GUTTER, OR GAS
- HYD. - HYDRANT
- LT. - LEFT
- MMSD - MILWAUKEE METROPOLITAN SEWERAGE DISTRICT
- P/L. - PROPERTY LINE
- R OR RAD. - RADIUS
- RET. - RETAINING
- RT. - RIGHT
- R/W - RIGHT OF WAY
- TEL - AMERITECH
- TES - TRAFFIC ENGINEERING, AND ELECTRICAL SERVICES
- T/L - TRANSIT LINE
- WEP - WISCONSIN ELECTRIC POWER

ORDER OF SECTION 2 SHEETS

- GENERAL NOTES
- UTILITY CONTACTS
- PROJECT OVERVIEW
- DRAINAGE DETAILS
- TRAFFIC CONTROL
- TRAFFIC SIGNAL CONDUIT DETAILS
- TRAFFIC SIGNAL PLANS
- 
- 
-

UTILITY CONTACTS

CITY OF MILWAUKEE, UTILITY COORDINATOR  
MUSA ABU-KHADER  
841 N. BROADWAY, RM 710  
MILWAUKEE, WI 53202  
PHONE: 414-286-2432  
mkhade@milwaukee.gov

WE ENERGIES - GAS  
MITCH BRAVERMAN  
500 S. 116TH ST.  
WEST ALLIS, WI 53214  
PHONE: 414-540-5709  
LATROY BRUMFIELD  
333 W. EVERETT ST. A299  
MILWAUKEE, WI 53203

WE ENERGIES - ELECTRIC  
LEONARD WILSON  
500 S. 116TH ST.  
WEST ALLIS, WI 53214  
PHONE: 414-944-5690  
leonard.wilson@we-energies.com  
LATROY BRUMFIELD  
333 W. EVERETT ST. A299  
MILWAUKEE, WI 53203

TIME WARNER CABLE  
STEVE CRAMER  
1320 N. DR. MARTIN LUTHER KING JR. DR.  
MILWAUKEE, WI 53212  
PHONE: 414-277-4045  
steve.cramer@twcable.com

AT & T WISCONSIN  
JAY BULANEK  
2005 PEWAUKEE DR.  
WAUKESHA, WI 53188  
PHONE: 414-535-7407  
jb5715@att.com

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
DEBRA JENSEN  
260 W. SEEBOTH ST.  
MILWAUKEE, WI 53204  
PHONE: 414-225-2143  
djensen@mmsd.com

AMERICAN TRANSMISSION COMPANY  
KIM HACKELBERG  
920-338-6556

OTHER CONTACTS

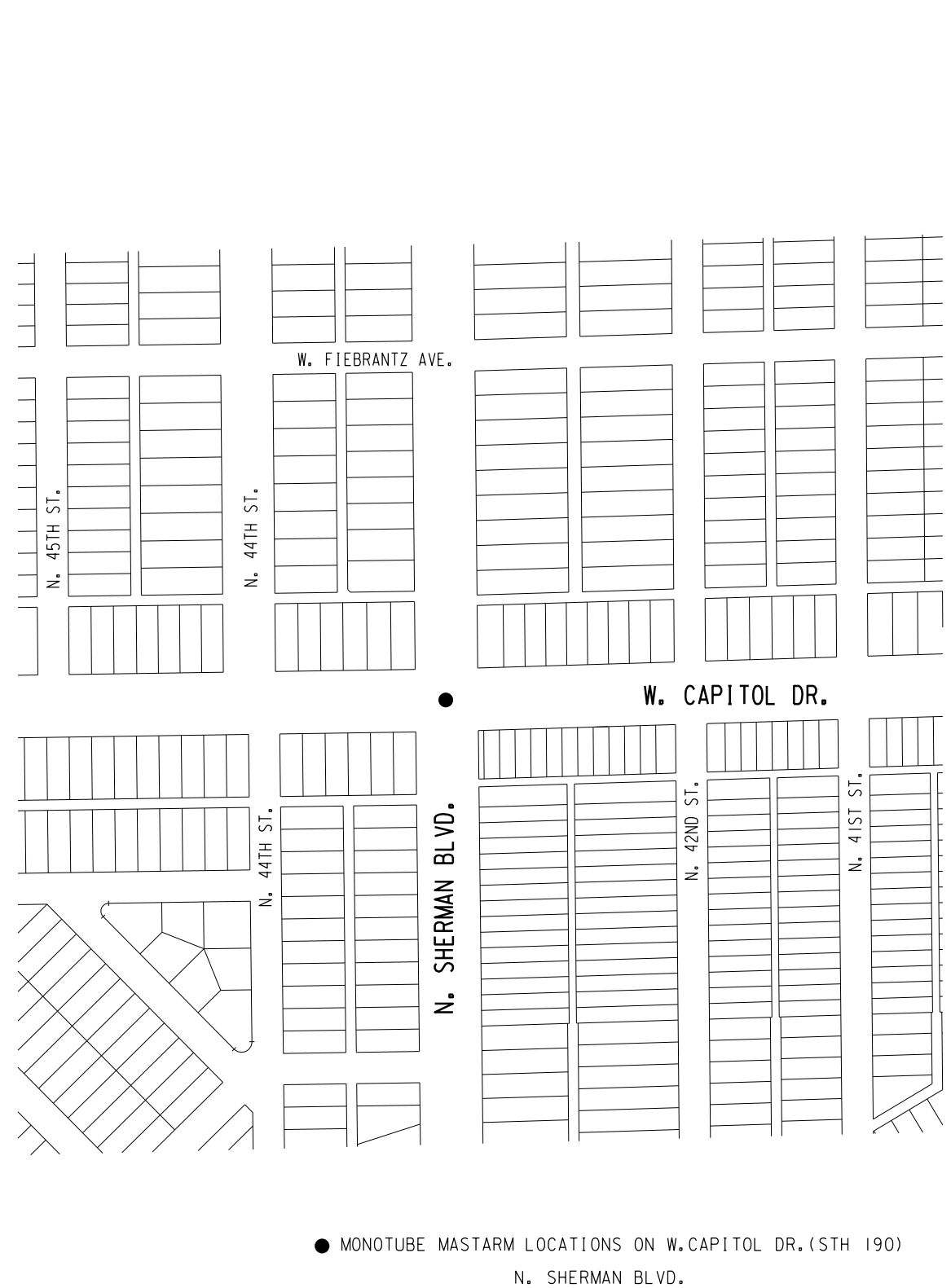
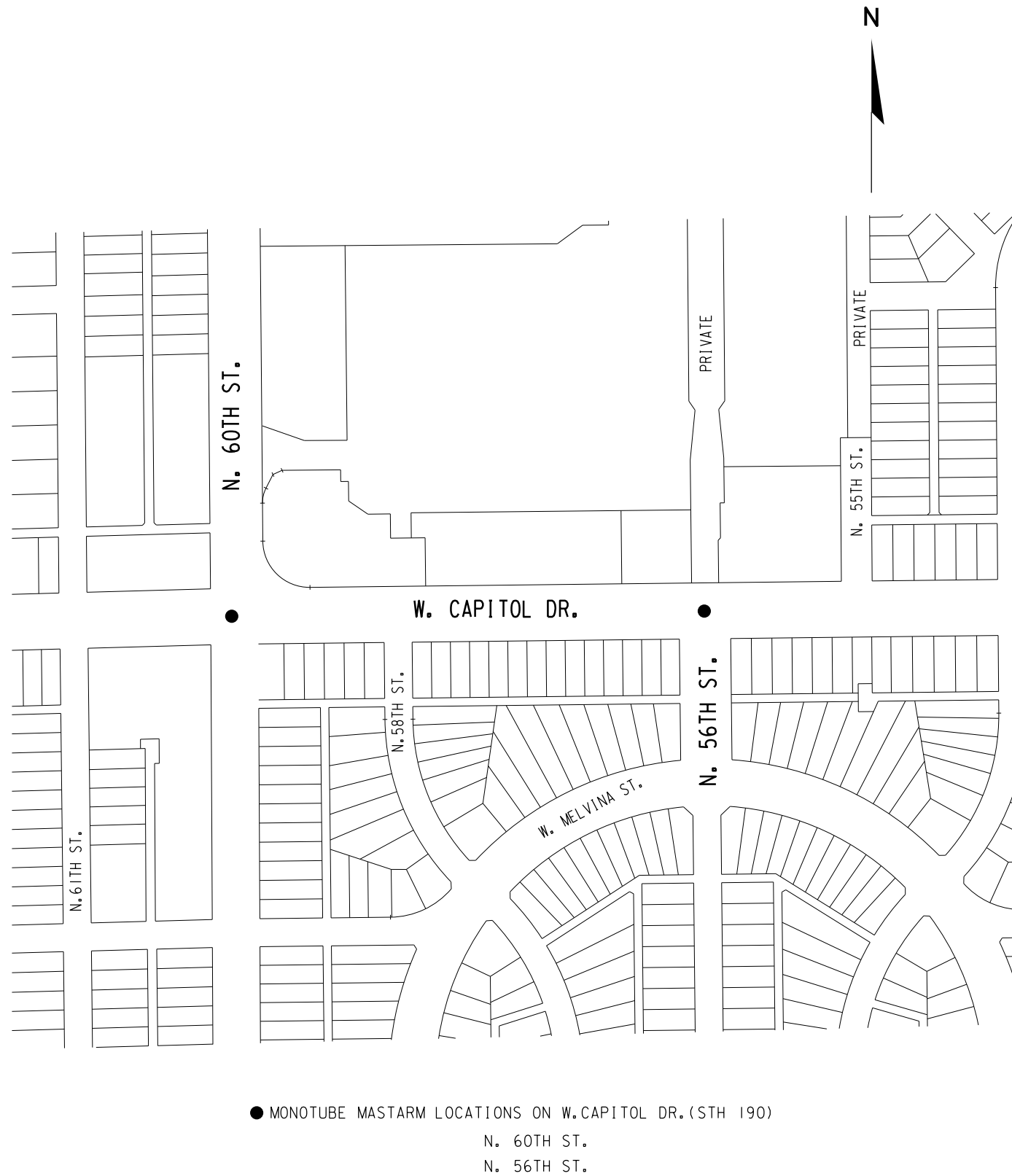
WISCONSIN DEPT. OF NATURAL RESOURCES  
KRISTINA BETZOLD  
2300 N. DR. MARTIN LUTHER KING JR. DR.  
MILWAUKEE, WI 53212-0436  
PHONE: 414-263-8517  
kristina.betzold@wisconsin.gov

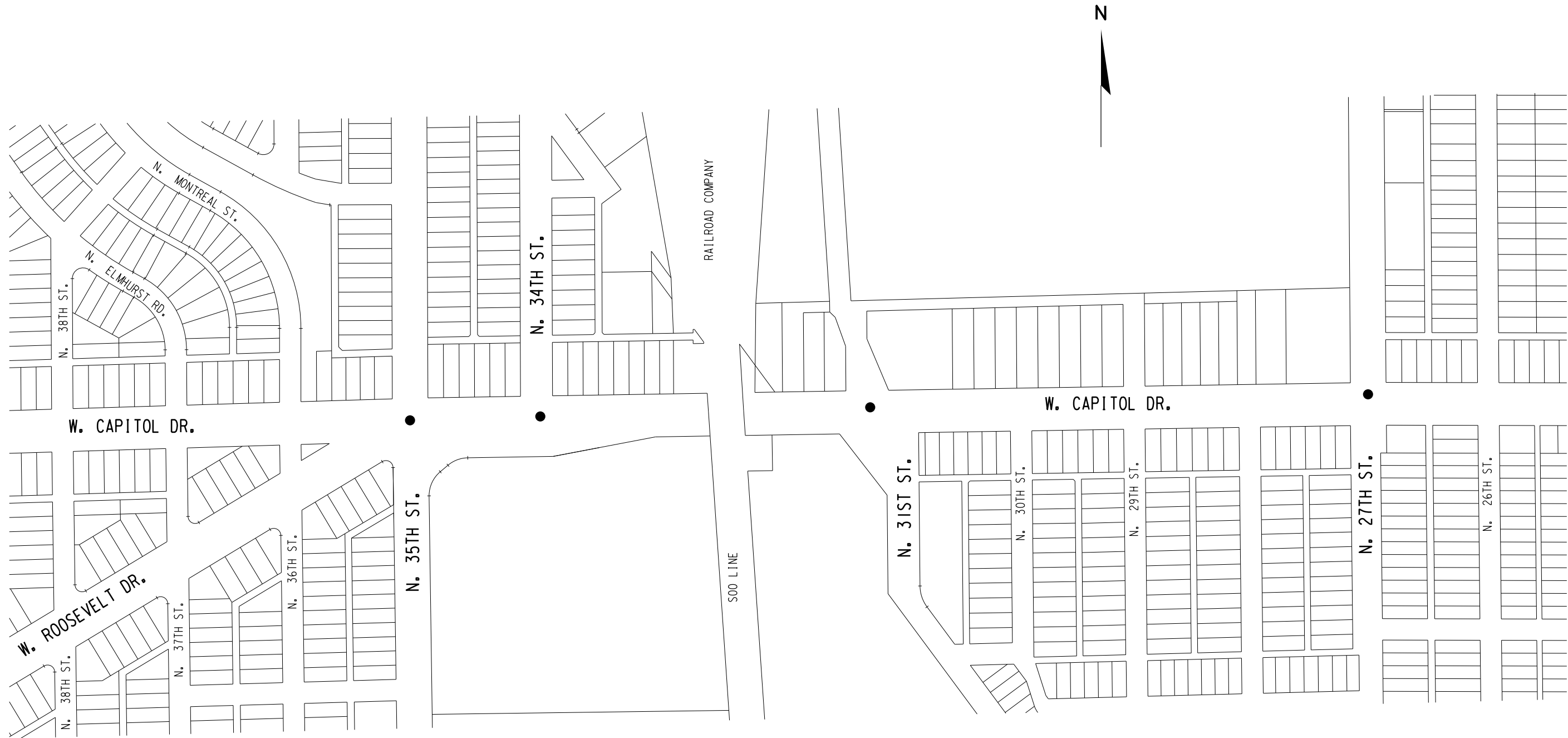
MILWAUKEE COUNTY TRANSIT SYSTEM  
MELANIE MACARTHUR  
1942 N. 17TH ST.  
MILWAUKEE, WI 53205  
PHONE: 414-343-1764  
mmacarthur@mcts.org

DESIGN CONSULTANT  
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PHONE: 414-286-0474  
samuel.medhin@milwaukee.gov

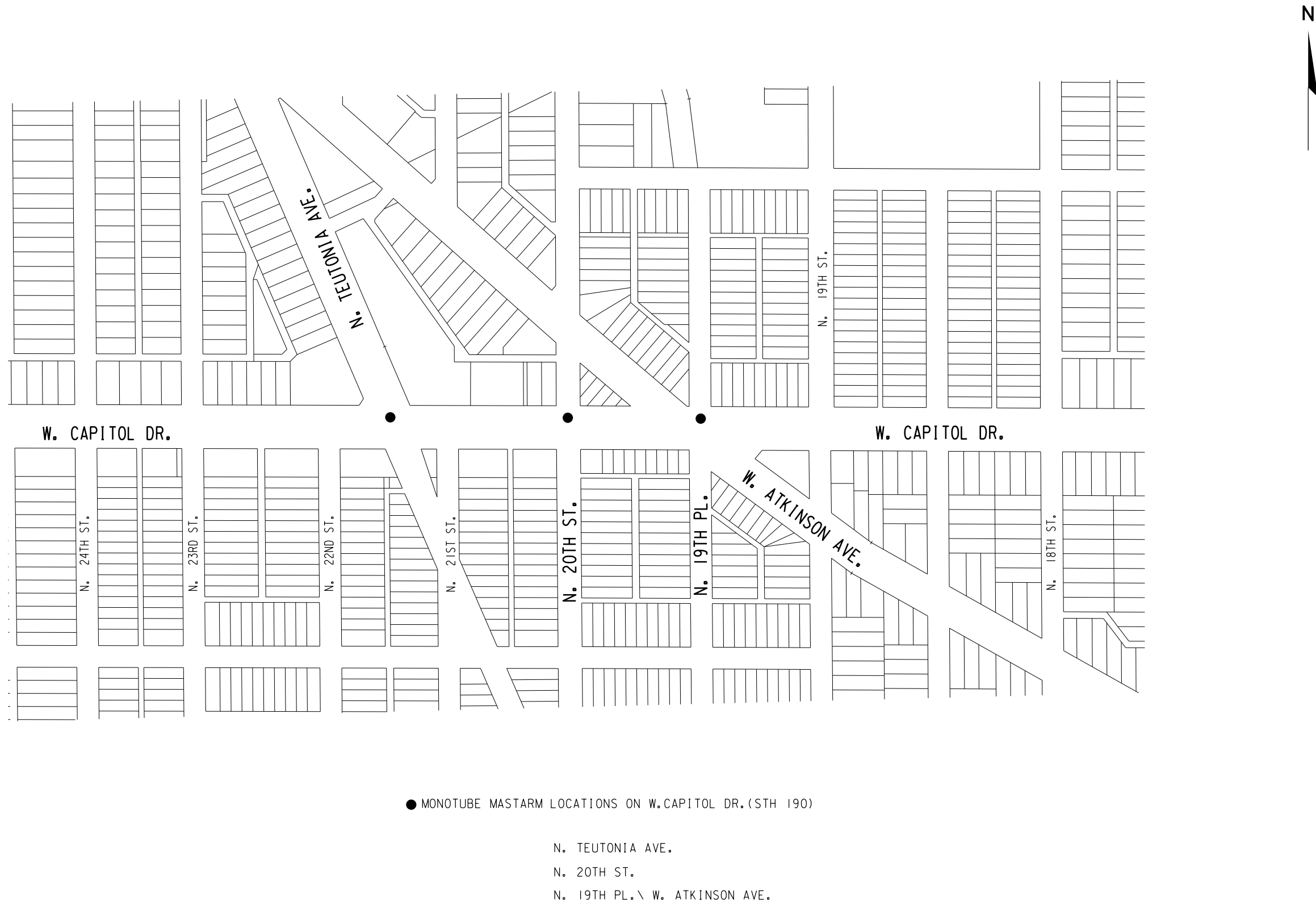
WISDOT PROJECT MANAGER  
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141 NW BARSTOW STREET  
WAUKESHA, WI 53187  
PHONE: 262-548-8809  
christine.hanna@dot.wi.gov

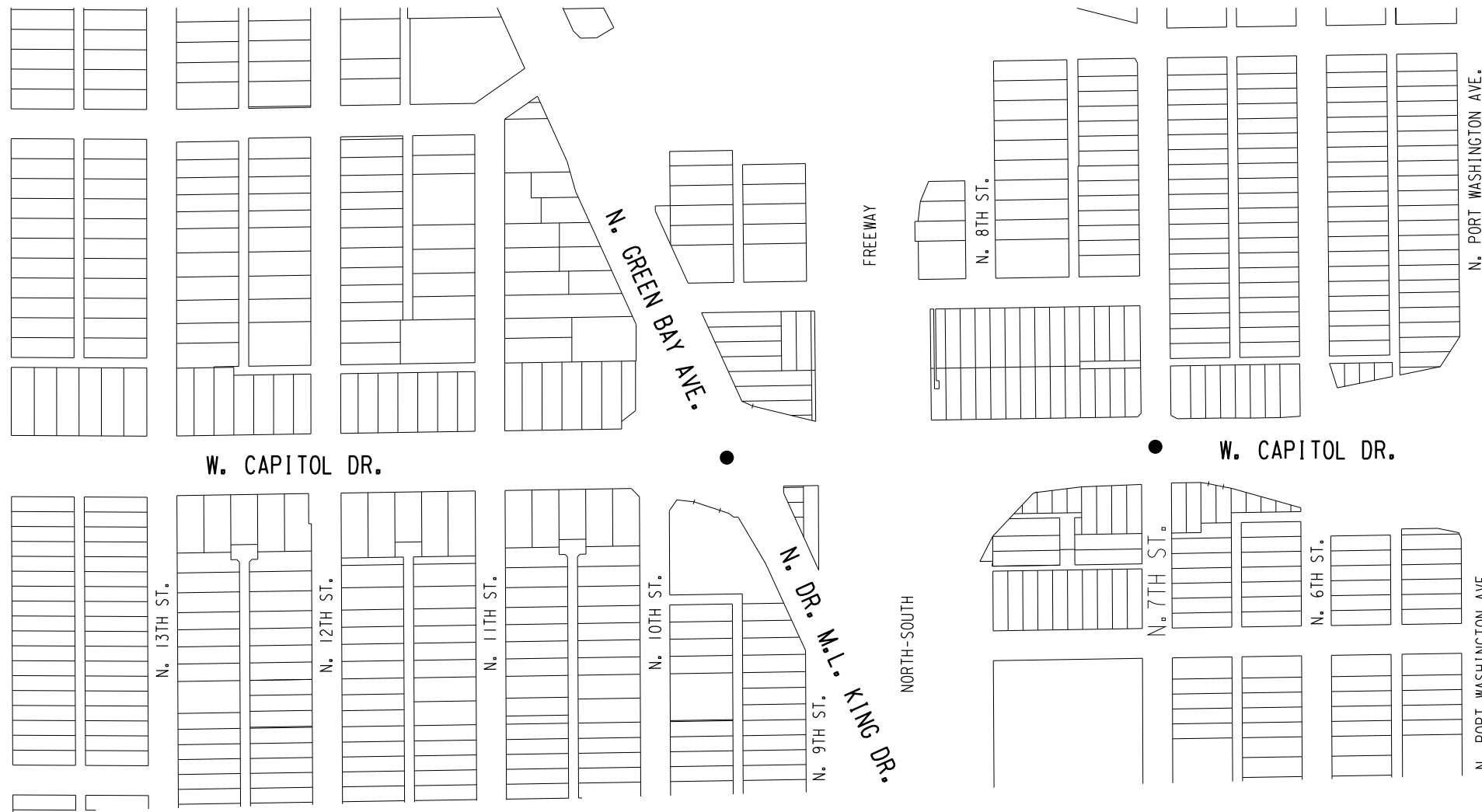






- MONOTUBE MASTARM LOCATIONS ON W. CAPITOL DR. (STH 190)
- N. 35TH ST. / W. ROOSEVELT DR.
- N. 34TH ST.
- N. 31ST ST.
- N. 27TH ST.





● MONOTUBE MASTARM LOCATIONS ON W. CAPITOL DR. (STH 190)

N. GREEN BAY AVE. / N. DR. L.M. KING JR. DR.  
N. 7TH ST.

TRAFFIC & STREET LIGHTING GENERAL NOTES:

PRIOR TO CONSTRUCTION, THE LOCATION OF UNDERGROUND UTILITIES SHALL BE DETERMINED IN THE FIELD BY CONTACTING "DIGGERS HOTLINE."

STREET LIGHTING & TRAFFIC SIGNALS SHALL BE INSTALLED IN COMPLIANCE WITH WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS SECTION 652 EXCEPT:

THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS INCLUDING REPAIRS, REPLACEMENT OR RELOCATION ETC. OF STREET LIGHTING OR TRAFFIC SIGNAL FACILITIES IF THE CONTRACTOR DOES ANY DEVIATION FROM THE STREET LIGHTING OR TRAFFIC SIGNAL DESIGN WITHOUT THE STREET LIGHTING ENGINEERS SIGNED PERMISSION.

- 1
- DETAILS OF CONSTRUCTION MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.
- 2
- LOCATIONS OF THE PVC CONDUITS WHERE THEY ARE REQUIRED ARE IDENTIFIED IN THE PRINTS. HOWEVER, INSTALLATION MAY REQUIRE INTEGRATION WITH EXISTING FIELD CONDITIONS. APPROPRIATE ADJUSTMENT ON CONDUIT LOCATIONS MAY BE MADE IF THE FIELD CONDITIONS ARE SUCH THAT THE CONDUIT CANNOT BE INSTALLED AT THE SPECIFIED LOCATIONS. ANY RELOCATIONS MUST BE APPROVED BY THE ENGINEER. FIELD MARK EACH CONDUIT LOCATION BY STAMPING AND PAINTING WITH RED PAINT ON TOP AND BACKSIDE OF CURB.
- 3
- TYPICAL CONDUIT INSTALLED UP TO DIRECT BURIED STREET LIGHT POLES IS AS FOLLOWS 3-INCH OR 2.5-INCH (AS NOTED) SCHEDULE 40 RIGID PVC TO STREET LIGHTING METAL HOUSING (PEDESTAL), THE 1.5-INCH SCHEDULE 40 RIGID PVC TO STREET LIGHT POLE CABLE SLOT, AND THE 2-INCH SCHEDULE 40 RIGID PVC TO SIGNAL STANDARD BASE AND RISER FOR TRAFFIC SIGNAL ON STREET LIGHT POLE.
- 4
- DEPTH OF CONDUIT INSTALLED BELOW THE STREETS, HIGHWAYS, ROADS, AND ALLEYS SHALL BE 24-INCHES MINIMUM AND 36-INCHES MAXIMUM. (MEASURED FROM FINISHED FLANGE LINE)
- 5
- CONDUIT INSTALLED BEHIND CURB, AND UNDER DRIVEWAYS SHALL BE INSTALLED AT THE BASE OF THE BACKSIDE OF THE CURB/GUTTER SECTION.
- 6
- WHEN THERE IS MORE THAN ONE CONDUIT TO BE LAID BEHIND THE CURB, PLACE ALL CONDUITS IN THE SAME TRENCH.
- 7
- ANY EXCEPTION TO THE MINIMUM OR MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.
- 8
- THE CONTRACTOR OR HIS SUBCONTRACTOR MUST MAKE SURE THE AREA BEHIND CURB AND/OR WITHIN TRENCH SHALL BE FREE OF DEBRIS AND OVERPOUR AND SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.
- 9
- BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.
- 10
- ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON ALL CONDUITS. (SEE NEC 352.28 2008 CODE)
- 11
- PRIOR TO CONDUIT ACCEPTANCE, ALL CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND BE CAPPED IMMEDIATELY AFTER INSTALLATION WITH THE APPROPRIATE CAST PLASTIC CAP WHICH FITS SNUGGLY ON THE CONDUIT, BUT EASILY REMOVED IN THE FUTURE. DUCT TAPE OR ANY OTHER CAPPING METHOD IS NOT ACCEPTABLE.
- 12
- ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.
- 13
- CONDUIT RUNS SHALL BE THE SAME SIZE PIPE FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX OR JUNCTION BOX OR BASE TO BASE, ETC.).
- 14
- PULL ROPE (3/8-INCH NYLON) SHALL BE INSTALLED IN ALL NEW CONDUIT.
- 15
- ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS UNLESS OTHERWISE APPROVED BY THE STREET LIGHTING ENGINEER.
- 16
- WHEN ENDS OF CONDUIT DO NOT CONNECT TO A VAULT AND WILL END UP UNDER CONCRETE WALK. THE CONTRACTOR IS REQUIRED TO LEAVE A 24" X 24" BOX FORM CENTERED OVER THE END OF CONDUIT AND FILL THE BOXFORM WITH CRUSHED GRAVEL. (PER WISDOT SPEC 209.2.1(I) GRANULAR BACKFILL)
- 17
- ALL PIPE CROSSINGS AND VAULTS SHALL BE AT LEAST SIX (6) FEET AWAY FROM FIRE HYDRANTS, UNLESS NOTED OTHERWISE, OR APPROVED BY THE STREET LIGHTING ENGINEER.
- 18
- ALL POLES AND TRAFFIC STANDARDS IN CONCRETE ARE REQUIRED TO HAVE A 30"X30" BOX SHAPED JOINT PLACED AROUND THEM USING AN EXPANSION JOINT FILLER. UNLESS NOTED OTHERWISE (SEE DETAIL 122)
- 19
- TYPICAL RECTANGULAR VAULTS SHOULD BE INSTALLED AS SHOWN ON PLANS, BUT WHEN IT IS NOT POSSIBLE, A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS AND FIRE HYDRANTS SHOULD BE USED, OTHERWISE APPROVED BY THE STREET LIGHTING ENGINEER.

TRAFFIC & STREET LIGHTING GENERAL NOTES:

- 20
- COORDINATE NEW CONDUIT CONNECTIONS WITH EXISTING CONDUIT, DUCT PACKAGES, AND VAULTS/ MANHOLES WITH CITY OF MILWAUKEE STREET LIGHTING. THE CITY REQUIRES THREE WORKING DAYS ADVANCED NOTICE. CONTACT ELECTRICAL SUPERVISOR STREET LIGHTING - DENNIS MILLER (OFFICE) 414-286-5942 (CELL) 414-708-4251 OR DISPATCHER @ 414-286-5944 TRAFFIC SIGNALS - AL NICHOLS (OFFICE) 414-286-3687 (CELL) 414-708-5148 OR DISPATCHER @ 414-286-3687
- 21
- IMMEDIATELY AFTER THE CONTRACTOR HAS COMPLETED ALL THE ELECTRICAL VAULT, CONDUIT AND CONDUIT CONNECTIONS, AND JUST BEFORE ELECTRICAL WORK IS COVERED UP WITH CONCRETE, SOIL, OR ETC. THE CONTRACTOR IS REQUIRED TO CONTACT THE CITY OF MILWAUKEE ELECTRICAL SHOP SUPERVISORS FOR FINAL INSPECTION AND APPROVAL OF ALL WORK. STREET LIGHTING - DENNIS MILLER (OFFICE) 414-286-5942 (CELL) 414-708-4251 STREET LIGHTING - GEORGE BERDINE (OFFICE) 414-286-5943 (CELL) 414-708-4245 STREET LIGHTING - THOMAS HUGHES (OFFICE) 414-286-3457 (CELL) 414-708-3175 STREET LIGHTING - DISPATCHER @ 414-286-5944 TRAFFIC SIGNALS - AL NICHOLS (OFFICE) 414-286-3687 (CELL) 414-708-5148 TRAFFIC SIGNALS - DISPATCHER @ 414-286-3687
- 22
- CONDUIT WILL ONLY BE INSTALLED AFTER THE CURB IS POURED, UNLESS APPROVED BY BOTH THE ENGINEER & STREET LIGHTING SHOP SUPERVISOR.

UTILITY LINE CODE

- *SAN*

————

SANITARY SEWER
- *STO*

————

STORM SEWER
- *W*

————

WATER
- *G*

————

GAS
- *E*

————

ELECTRIC
- *TE&ES*

————

CITY TRAFFIC, LIGHTING, COMM. & UNDERGROUND CONDUIT
- *OL*

————

OVERHEAD LINE
- *T*

————

TELEPHONE
- *TV*

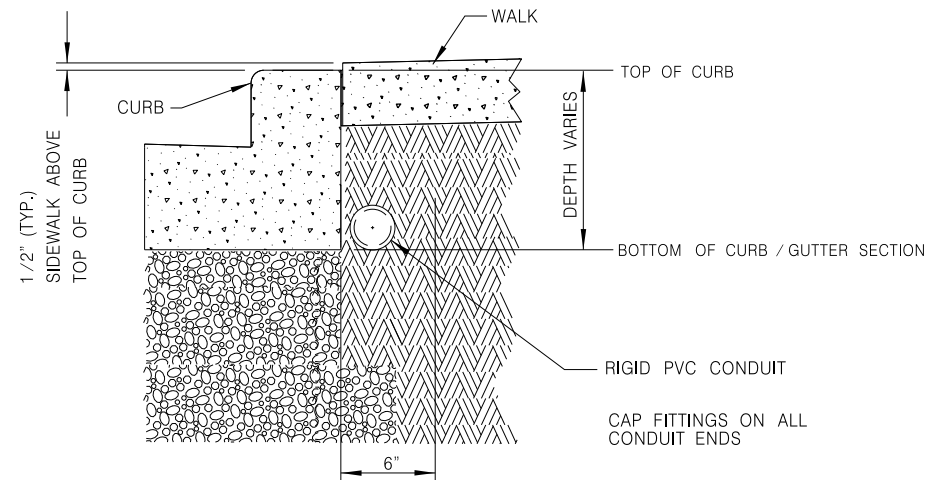
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CABLE

OTHER UTILITIES AS NOTED



NOTE: 1.) KEEP AREA BEHIND CURB FREE OF DEBRIS AND CONCRETE OVERPOUR.  
2.) CONDUIT TO BE PLACED WITHIN A 6" AREA DIRECTLY BEHIND CURB, UNLESS NOTED OR APPROVED BY ENGINEER.



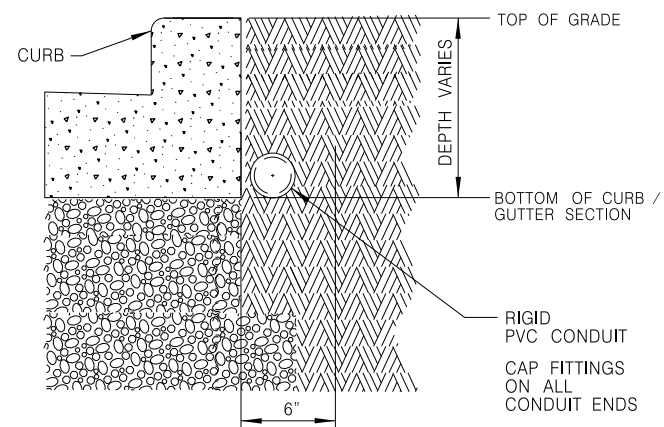
100 DETAIL "A"  
TYPICAL CONDUIT INSTALLATION  
BEHIND CURB NOT TO SCALE

ANY DEVIATIONS FROM DETAIL WILL REQUIRE PERMISSION FROM STREET LIGHTING FORCES.  
CONTACT DISPATCHER AT (414) 286-5944 FOR THE APPROPRIATE SHOP SUPERVISOR.

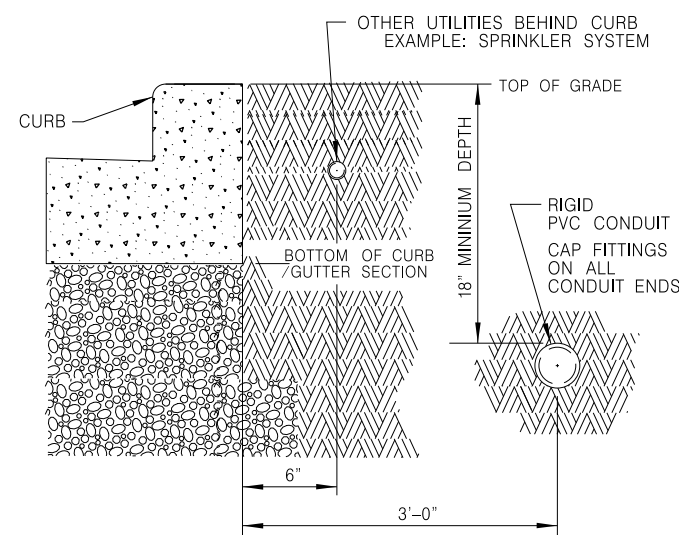
NOTE: 1.) KEEP AREA BEHIND CURB FREE OF DEBRIS AND CONCRETE OVERPOUR.

DETAIL "B"

CONDUIT TO BE PLACED WITHIN A 6" AREA DIRECTLY BEHIND CURB, UNLESS NOTED OR APPROVED BY ENGINEER.

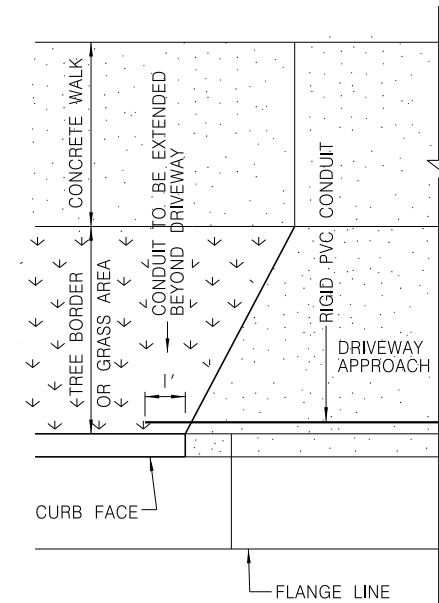


DETAIL "C"

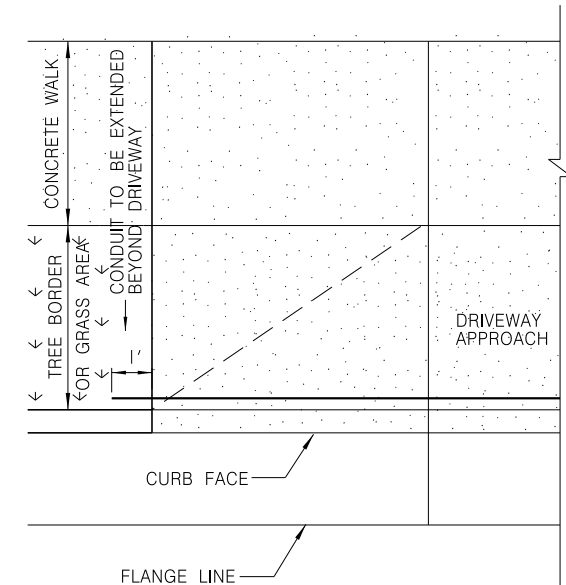


100 DETAIL "B" & "C"  
TYPICAL CONDUIT INSTALLATION  
BEHIND CURB NOT TO SCALE

ANY DEVIATIONS FROM DETAIL WILL REQUIRE PERMISSION FROM STREET LIGHTING FORCES.  
CONTACT DISPATCHER AT (414) 286-5944 FOR THE APPROPRIATE SHOP SUPERVISOR.

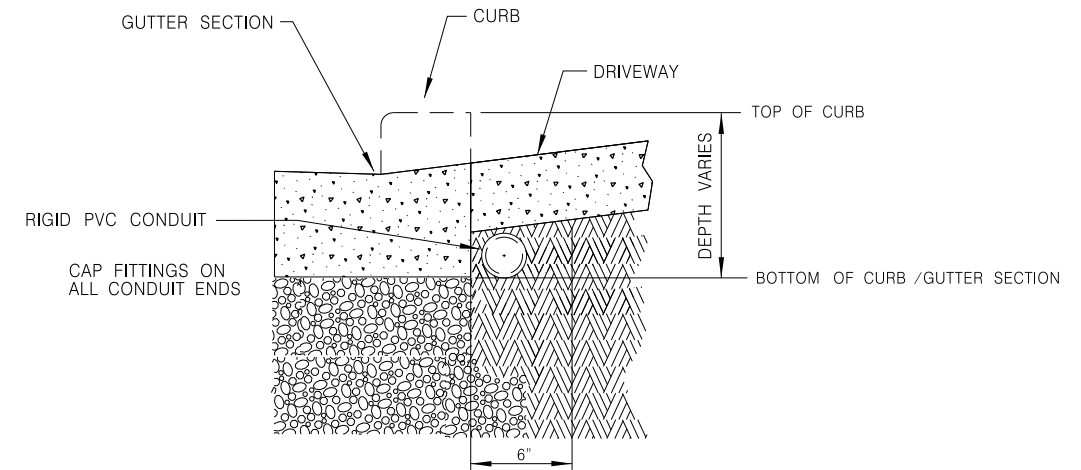


TYPICAL PLAN VIEW FOR  
FLARED DRIVEWAY



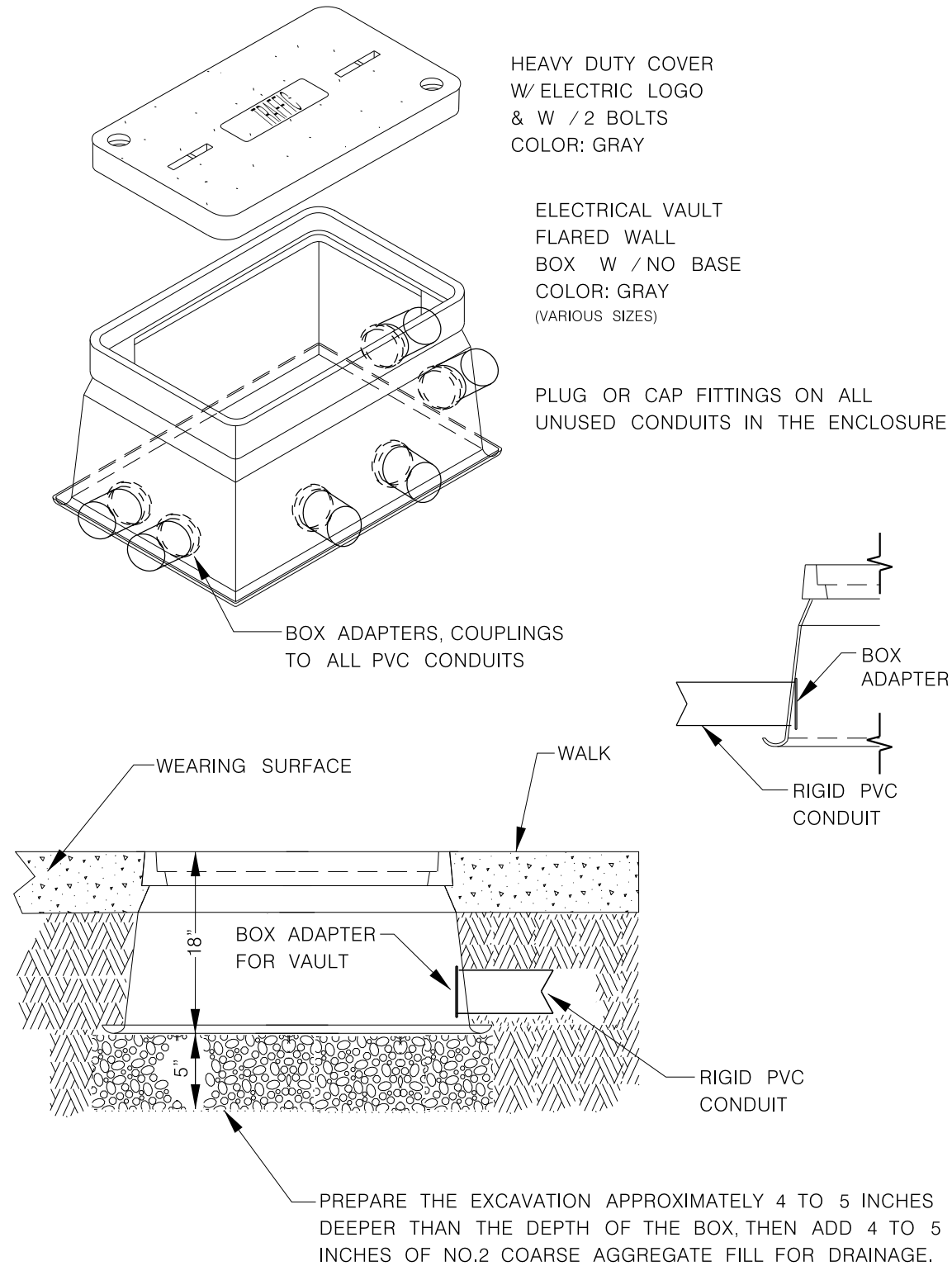
TYPICAL PLAN VIEW FOR  
DEPRESSED DRIVEWAY

NOTE: 1.) KEEP AREA BEHIND CURB FREE OF DEBRIS AND CONCRETE OVERPOUR.  
2.) CONDUIT TO BE PLACED WITHIN A 6" AREA DIRECTLY BEHIND CURB, UNLESS NOTED OR APPROVED BY ENGINEER.



101 DETAIL  
TYPICAL CONDUIT INSTALLATION  
UNDER DRIVEWAYS OR PEDESTRIAN RAMPS NOT TO SCALE

ANY DEVIATIONS FROM DETAIL WILL REQUIRE PERMISSION FROM STREET LIGHTING FORCES.  
CONTACT DISPATCHER AT (414) 286-5944 FOR THE APPROPRIATE SHOP SUPERVISOR.



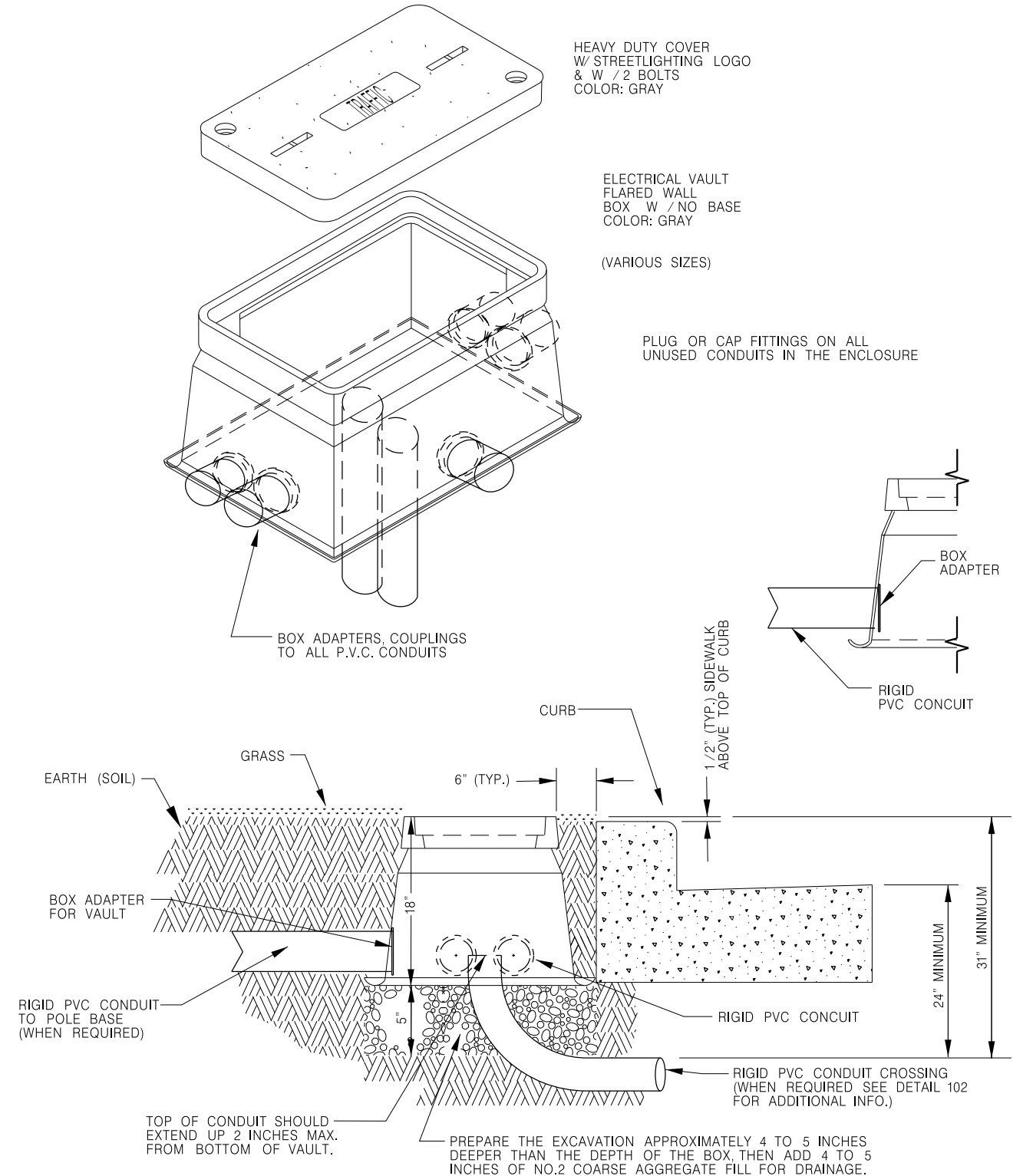
113

## DETAIL

TYPICAL VAULT INSTALLATION  
IN SIDEWALK

NOT TO SCALE

ANY DEVIATIONS FROM DETAIL WILL REQUIRE PERMISSION FROM STREET LIGHTING FORCES.  
CONTACT DISPATCHER AT (414) 286-5944 FOR THE APPROPRIATE SHOP SUPERVISOR.



121

## DETAIL

## TYPICAL VAULT INSTALLATION IN GRASS AREA

NOT TO SCALE

ANY DEVIATIONS FROM DETAIL WILL REQUIRE PERMISSION FROM STREET LIGHTING FORCES.  
CONTACT DISPATCHER AT (414) 286-5944 FOR THE APPROPRIATE SHOP SUPERVISOR.

SHEET 3 OF 6

## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

TOP SURFACES OF CONCRETE BASES SHALL BE TROWEL FINISHED AND LEVEL.

CONDUIT SIZES AND LOCATIONS SHALL BE AS SHOWN ON THE PLANS.

THE FINAL OR TERMINATING CONCRETE BASE IN A CONDUIT RUN SHALL HAVE A 6" EXIT STUB INSTALLED FOR FUTURE CABLING USE. THE EXIT STUB SHALL BE SIZED AS USED THROUGHOUT THE CONDUIT RUN AS SHOWN AT THE ENTRANCE OF THE BASE.

MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6 X THE DIAMETER. CONDUIT HEIGHT ABOVE CONCRETE BASES SHALL BE 4 INCHES. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED. NONMETALLIC CONDUIT SHALL HAVE BELL END INSTALLED. ALL CONDUIT SHALL BE SLOPED TO PULL BOX.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUIT IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION OF CABLE OR WIRE.

ENDS OF CONDUIT INSTALLED BELOW GRADE FOR FUTURE USE SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

A NO. 4 AWG, STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD).

THE EQUIPMENT GROUNDING CONDUCTOR SHALL ENTER THE BASE THROUGH A 1 INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4 FOOT COIL OF WIRE ABOVE THE CONCRETE BASE. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

WELDING OF THE ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TEMPLATES SHALL BE USED.

BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

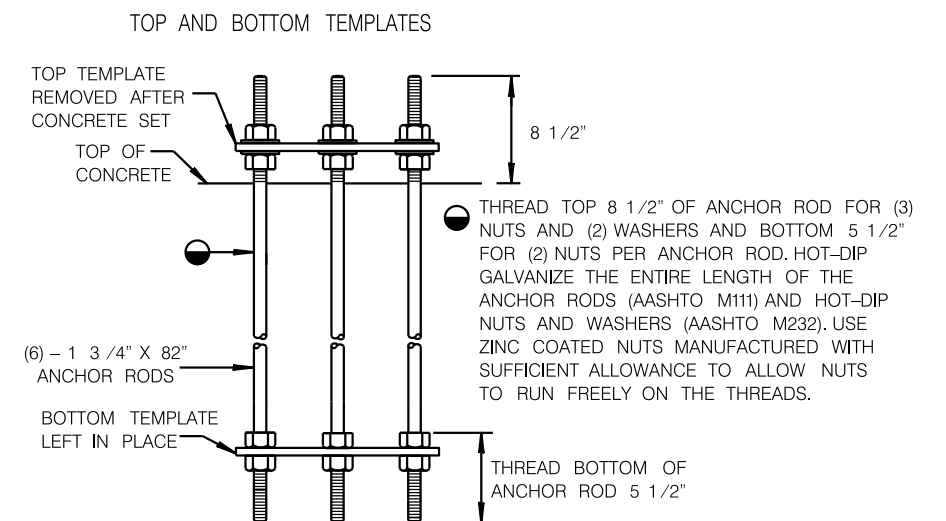
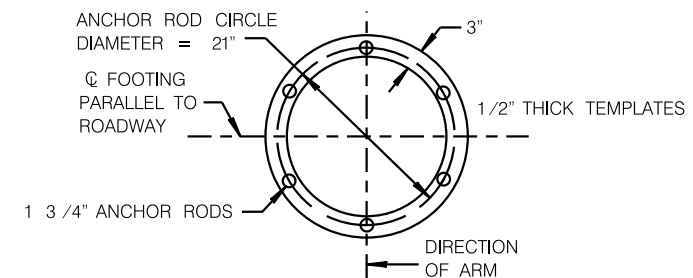
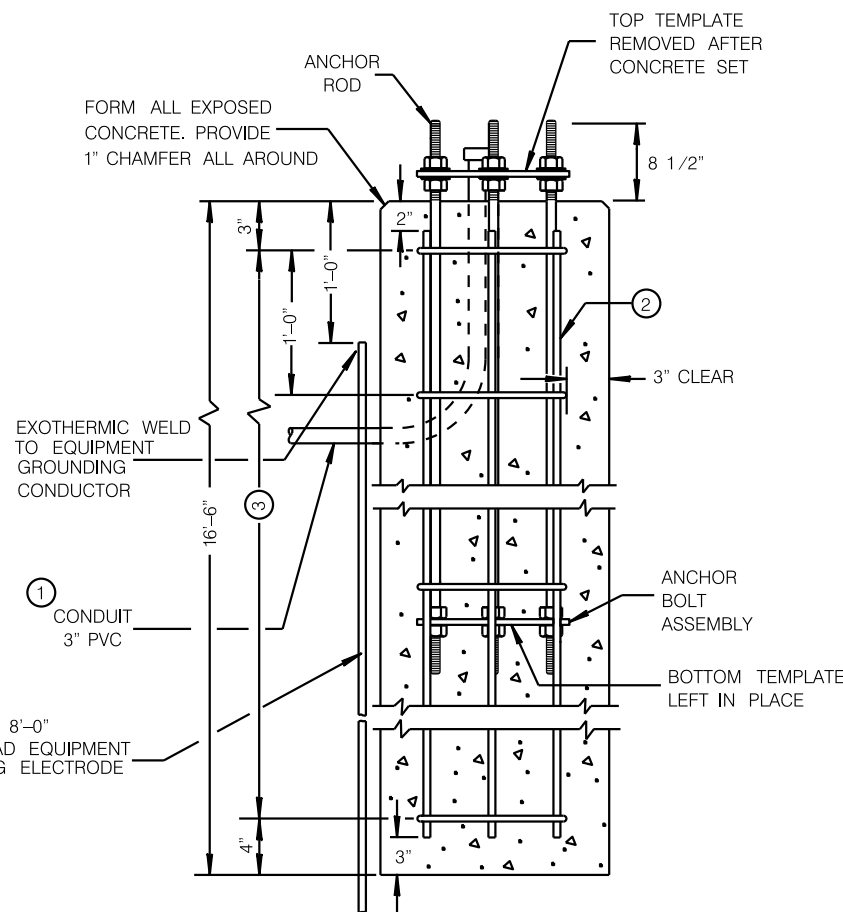
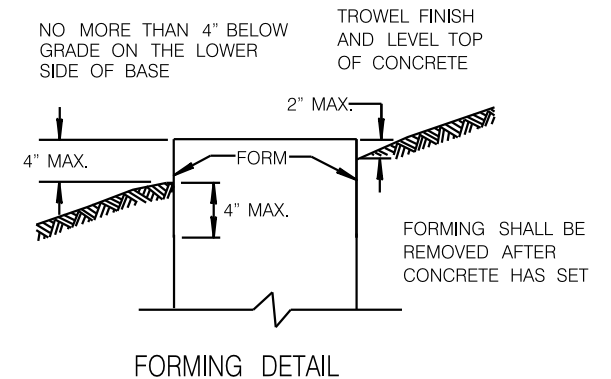
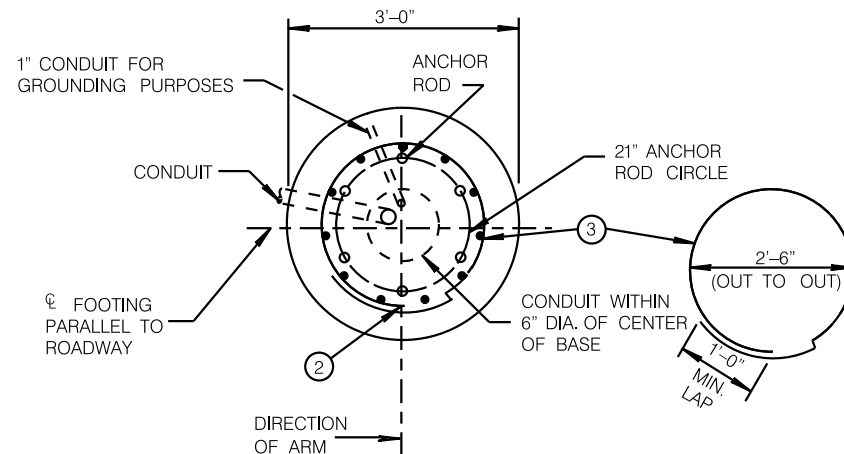
ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

- ① THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES, (GREATER THAN 36 INCHES IF INSTALLED IN BREAKER-RUN), EXCEPT WITH WRITTEN APPROVAL BY THE ENGINEER.

- ② (11) NO. 8 X 16'-1" BAR STEEL REINFORCEMENT.

- ③ (17) NO. 4 X 9'-0" BAR STEEL REINFORCEMENT @ 1'-0" C-C.

CONCRETE MASONRY \_\_\_\_\_  $f_c = 3,500$  p.s.i.  
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 \_\_\_\_\_  $f_y = 60,000$  p.s.i.  
ANCHOR RODS, AASHTO M314 GRADE 55 \_\_\_\_\_  $f_y = 55,000$  p.s.i.  
TEMPLATES, ASTM, A709 GRADE 36 \_\_\_\_\_  $f_y = 36,000$  p.s.i.



CONCRETE BASE TYPE 10 SPECIAL  
ANCHOR ASSEMBLY

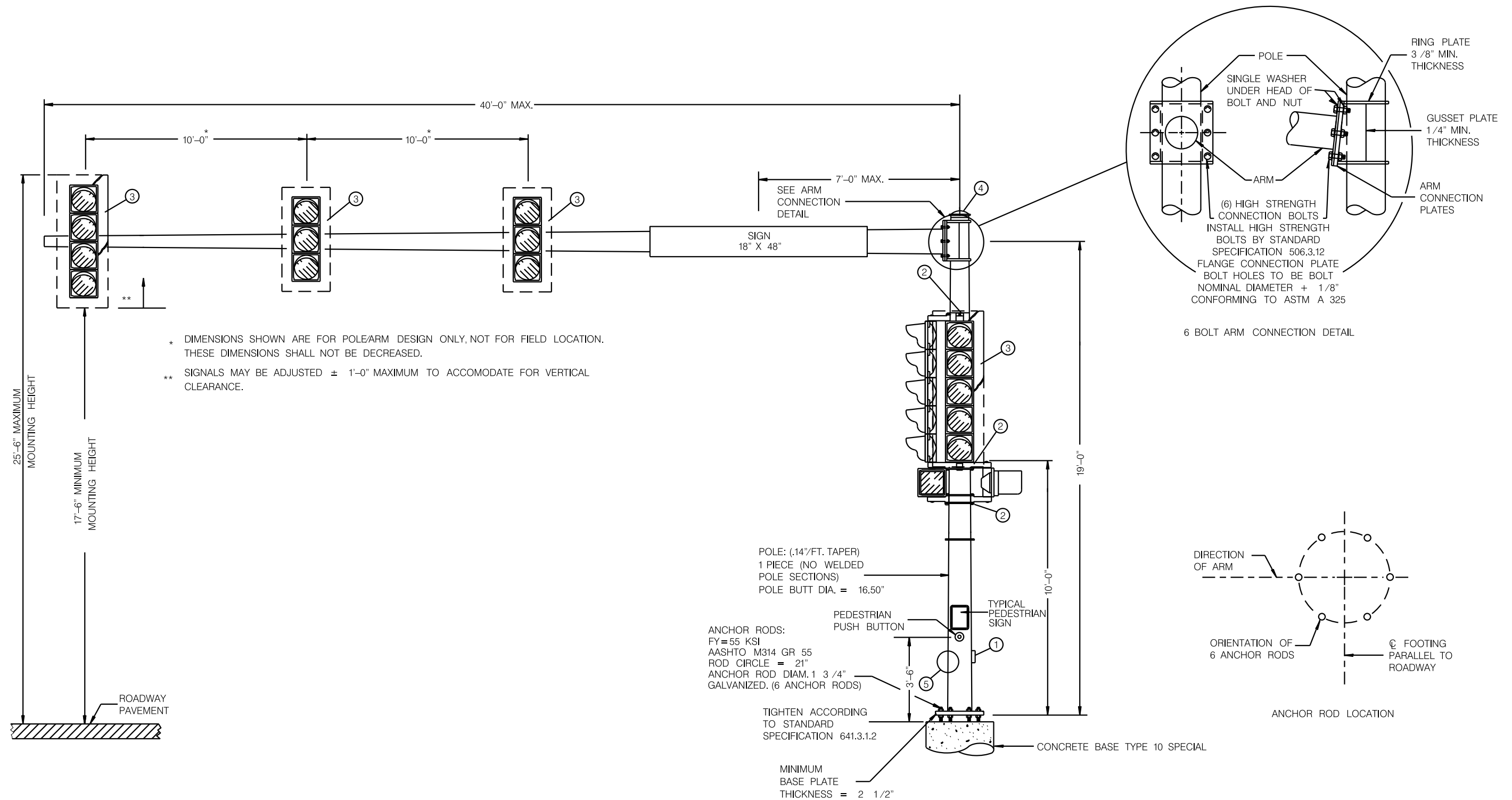
QUANTITY REQUIREMENTS	
APPROX. CUBIC YARDS OF CONCRETE	4.32
LBS. OF HOOP BAR STEEL	103
LBS. OF VERTICAL BAR STEEL	473

CONCRETE BASE TYPE 10 SPECIAL

CITY OF MILWAUKEE  
DEPARTMENT OF PUBLIC WORKS

REVISED: DECEMBER 2014 2013 AASHTO  
DATE REVISION

SHEET: 4 OF 6



(MAXIMUM LOAD)  
TYPE 12 POLE SPECIAL  
35'- 40' MONOTUBE ARM

SHEET: 5 OF 6

TYPE 12 POLE SPECIAL  
35'- 40' MONOTUBE ARM

CITY OF MILWAUKEE  
DEPARTMENT OF PUBLIC WORKS

REVISED: DECEMBER 2014 2013 AASHTO  
DATE REVISION





PROJECT ID 2025-01-72  
WITH: N/A

COUNTY MILWAUKEE

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

DESIGN DESIGNATION

A.D.T. (CURRENT)	= N/A
A.D.T. ( )	= N/A
D.H.V.	= N/A
D.	= N/A
T.	= N/A
DESIGN SPEED	= N/A
ESALS	= N/A

CONVENTIONAL SIGNS

COUNTY LINE	---
TOWNSHIP OR RANGE LINE	----
SECTION LINE	-----
CORPORATE OR CITY LIMITS	-----
PROPERTY LINE	-----
STANDARD BENCH MARK	⊙
EXISTING RIGHT OF WAY LINE	---
PROPOSED SEWER LATERAL	---
BASE OF SURVEY LINE	---
CONCRETE WALK/DWY. REMOVAL	XXXXXX
LIMITS OF CONCRETE PAVEMENT REMOVAL	XXXXXX
CATCH BASIN OR INLET	⊕
EXISTING	⊕
PROPOSED	⊕
COMBUSTIBLE FLUIDS UNDER PRESSURE	⚠
RAILROADS	+
FENCE	---
FIRE & POLICE CALL BOX	⊕
LIGHT POLE	⊕
POWER POLE	⊕
TELEPHONE OR TELEGRAPH POLE	⊕
TRAFFIC SIGNAL	⊕
TRAFFIC SIGNAL CONTROL BOX	⊕
HYDRANT	⊕
GAS OR WATER GATE VALVE	⊕
MANHOLES - SEWER	⊕
MANHOLES - UTILITY (TYPE)	⊕
TREES - EXISTING	⊕
TREES - TO BE REMOVED	⊕

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

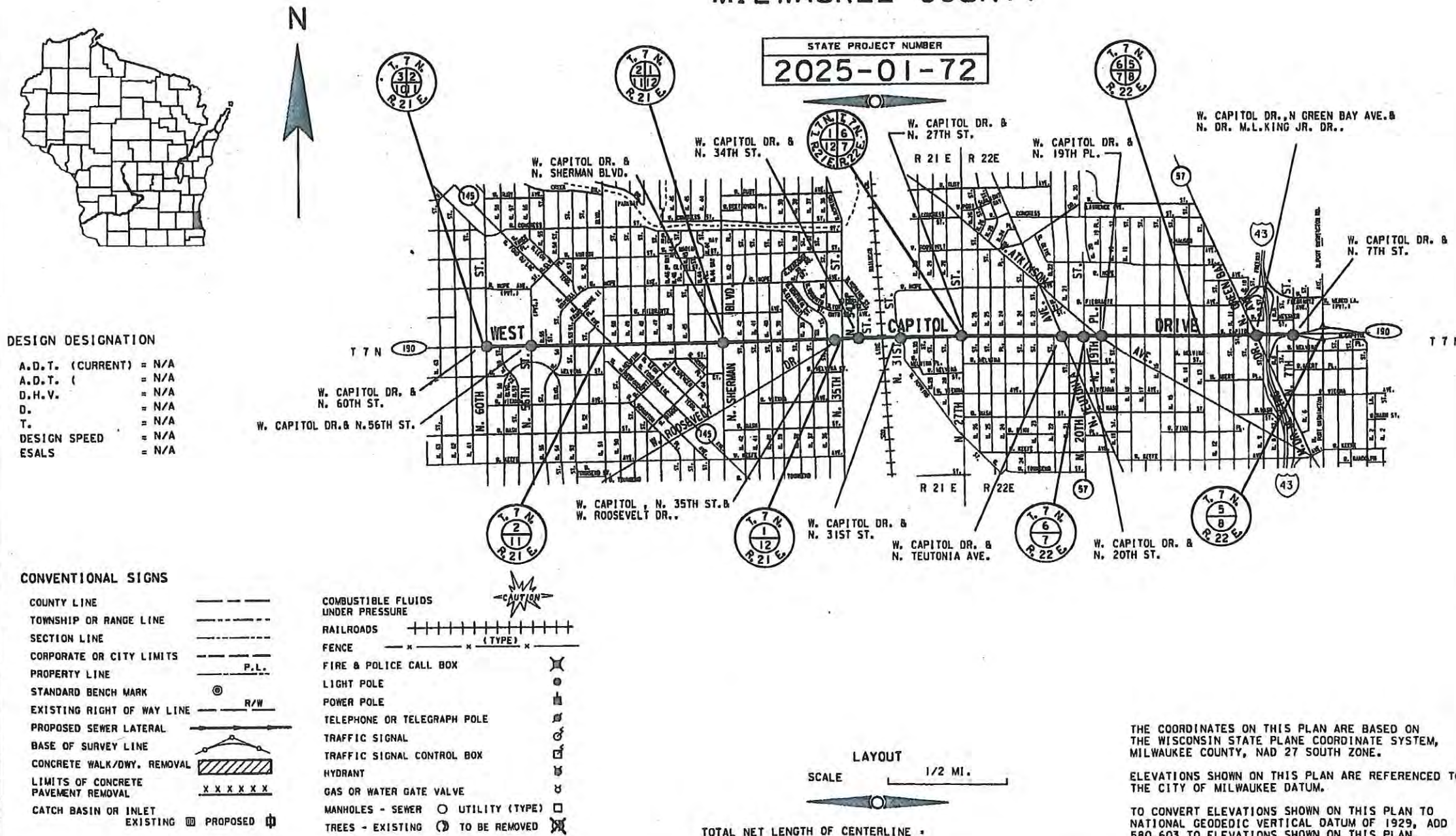
PLAN OF PROPOSED IMPROVEMENT

WEST CAPITOL DRIVE (S.T.H. 190)

12 CONNECTING HIGHWAY INTERSECTIONS

Various Highways

MILWAUKEE COUNTY



STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
2025-01-72		1

Accepted For  
City of Milwaukee

2/4/15 *Paul J. Jorgensen*  
(Date) FOR Commissioner of Public Works

Original Plans Prepared By



2/3/15 *Christine Hanna*  
(Date) City Engineer

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
PREPARED BY	
Surveyor	City of Milwaukee
Designer	City of Milwaukee
Project Manager	Christine Hanna
Region Examiner	
Region Supervisor	XXXXX XXXXX
C.O. Examiner	

APPROVED FOR THE DEPARTMENT  
DATE: 2/3/15 *Christine Hanna*  
(Signature)



**NOTE:**

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.

CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.

PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.

ALL POLES WILL BE RELOCATED BY CITY FORCES.

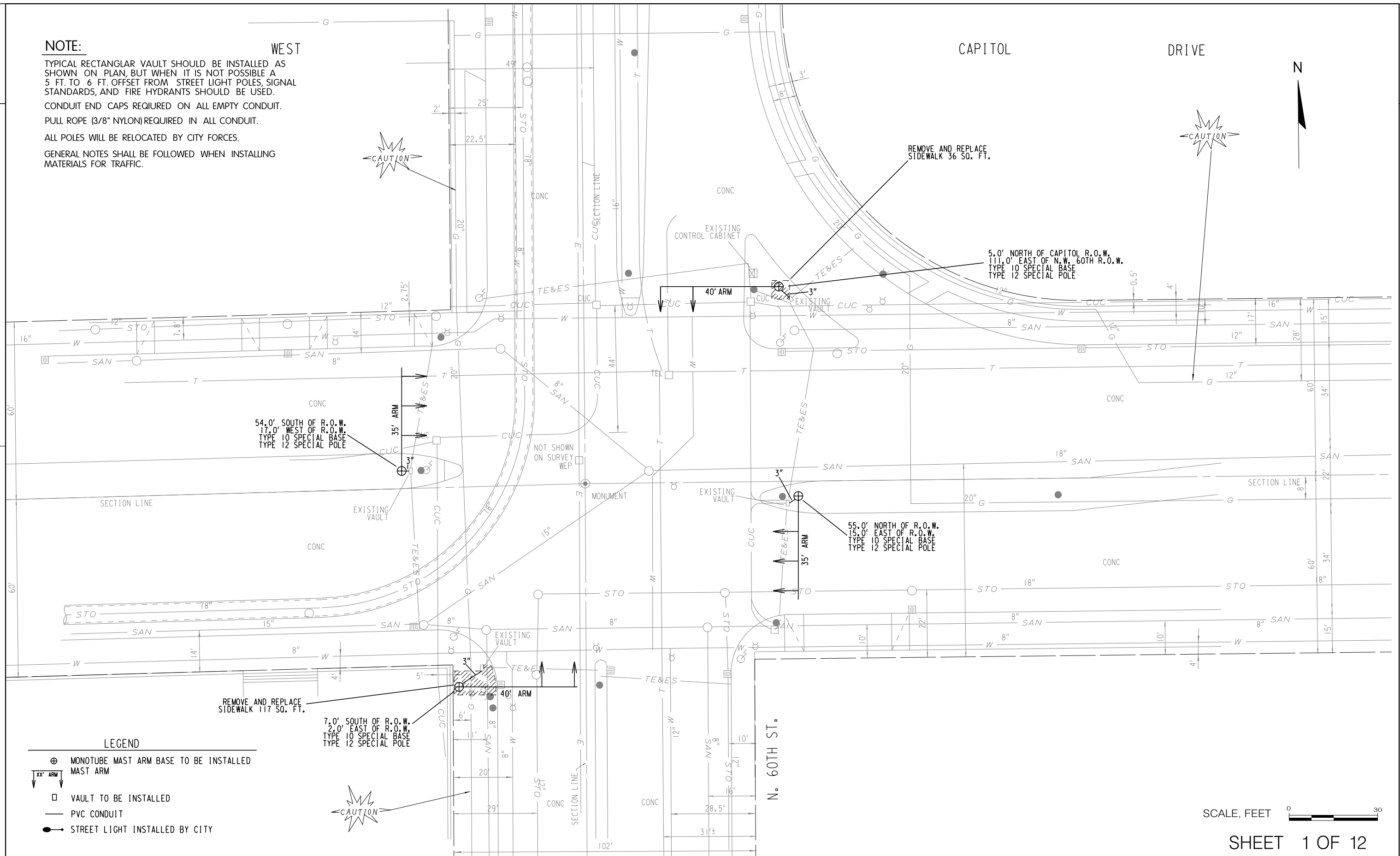
GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING MATERIALS FOR TRAFFIC.

WEST

CAPITOL

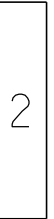
DRIVE

N



2

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS  
 SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A  
 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL  
 STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.  
 CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.  
 PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.  
 ALL POLES WILL BE RELOCATED BY CITY FORCES.  
 GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING  
 MATERIALS FOR TRAFFIC.



E

**NOTE:**

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.

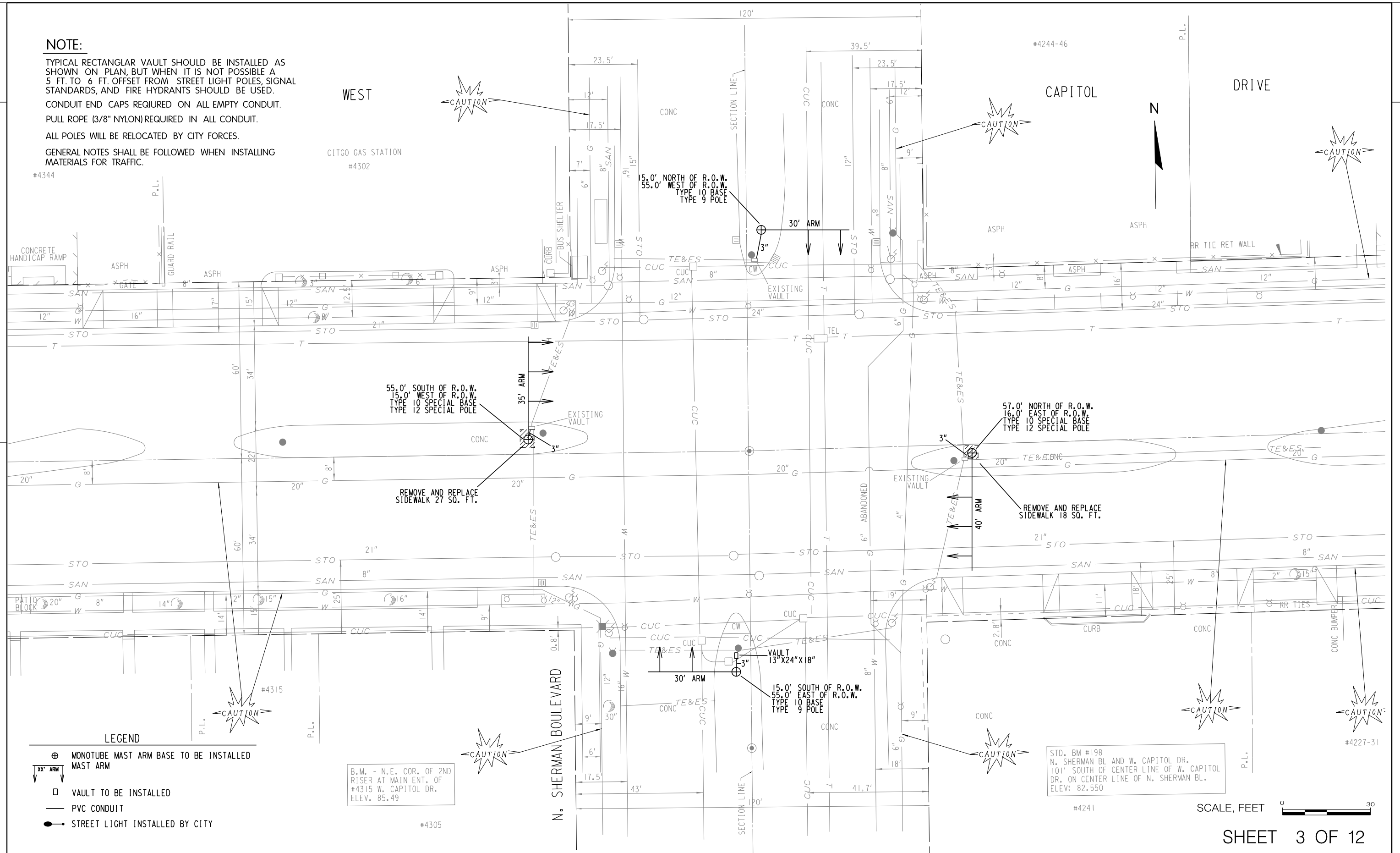
CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.

PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.

ALL POLES WILL BE RELOCATED BY CITY FORCES.

GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING MATERIALS FOR TRAFFIC.

#4344



2

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS  
 SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A  
 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL  
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 CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.  
 PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.  
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 GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING  
 MATERIALS FOR TRAFFIC.

WEST

B.M. - HYDRANT  
NW COR N. 35TH  
ELEV: 69.42

STREET

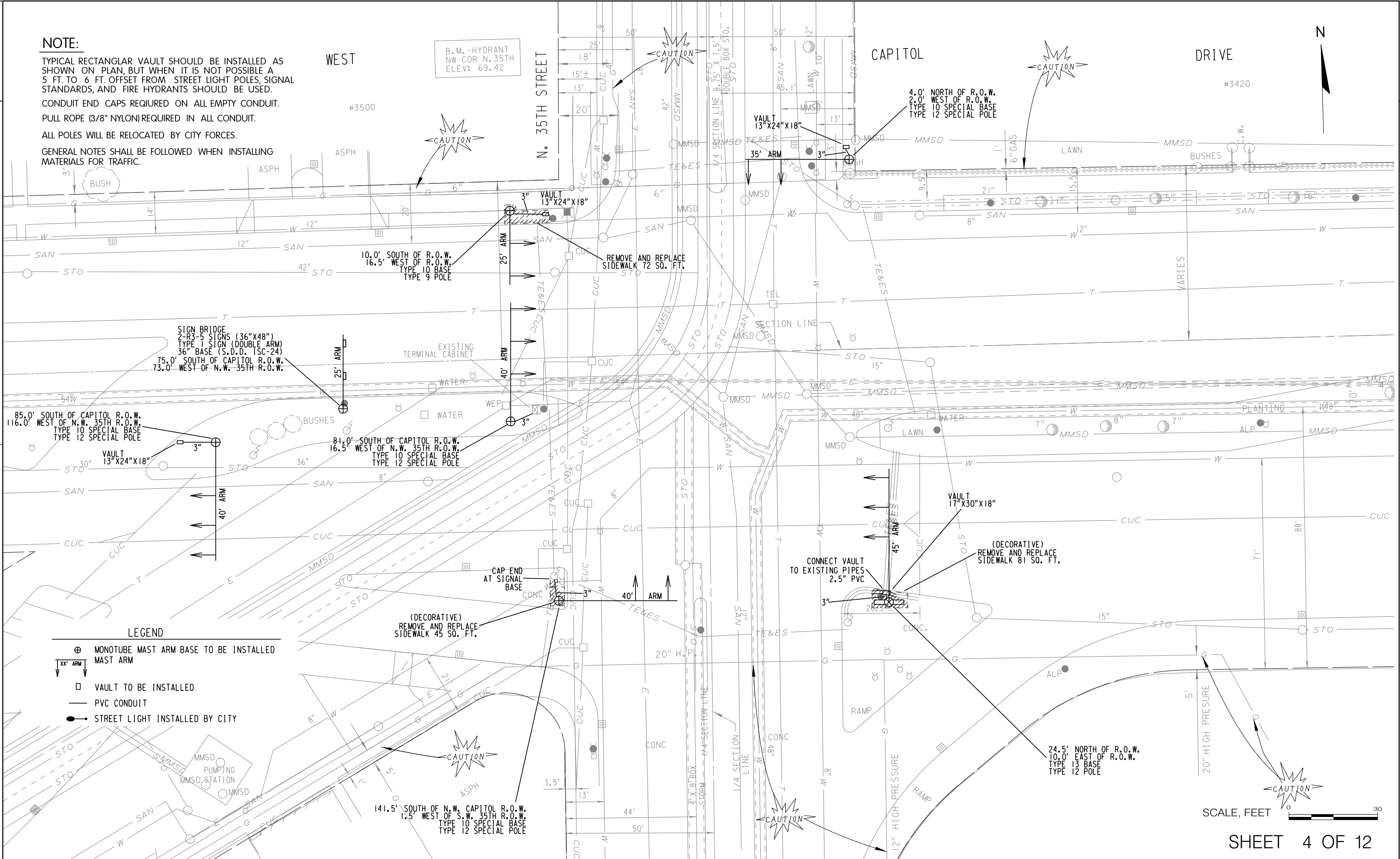
CAPITOL

4.0'  
2.0'

DRIVE

#34

2



PROJECT NO: 2025-01-72

HWY: S.T.H. 190

COUNTY: MILWAUKEE

# TRAFFIC SIGNAL PLAN

SHEET

E



**NOTE:**

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.

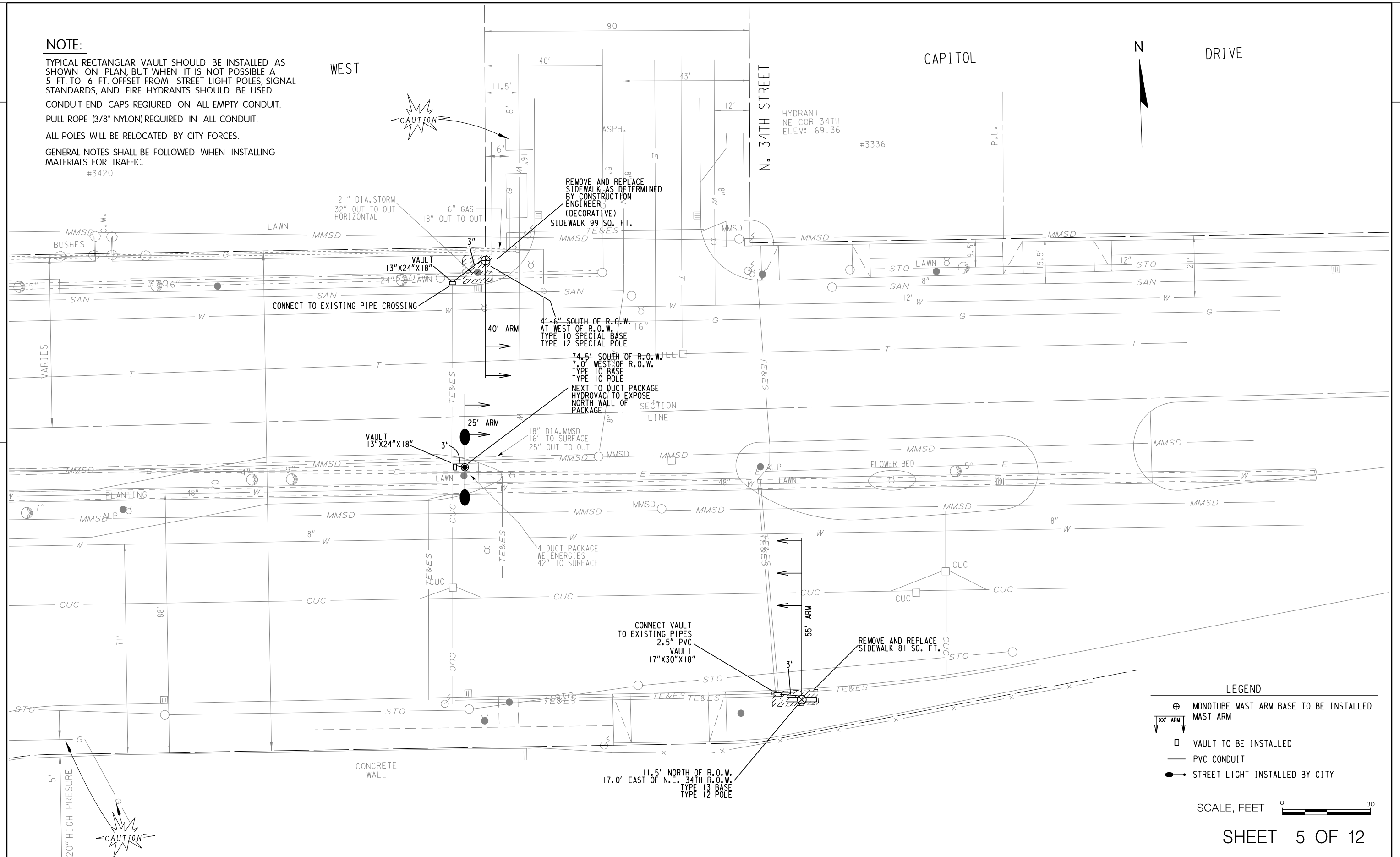
CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.

PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.

ALL POLES WILL BE RELOCATED BY CITY FORCES.

GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING MATERIALS FOR TRAFFIC.

#3420



2

NOTE:

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.

CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.

PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.

ALL POLES WILL BE RELOCATED BY CITY FORCES.

GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING  
MATERIALS FOR TRAFFIC.

#3 | 00

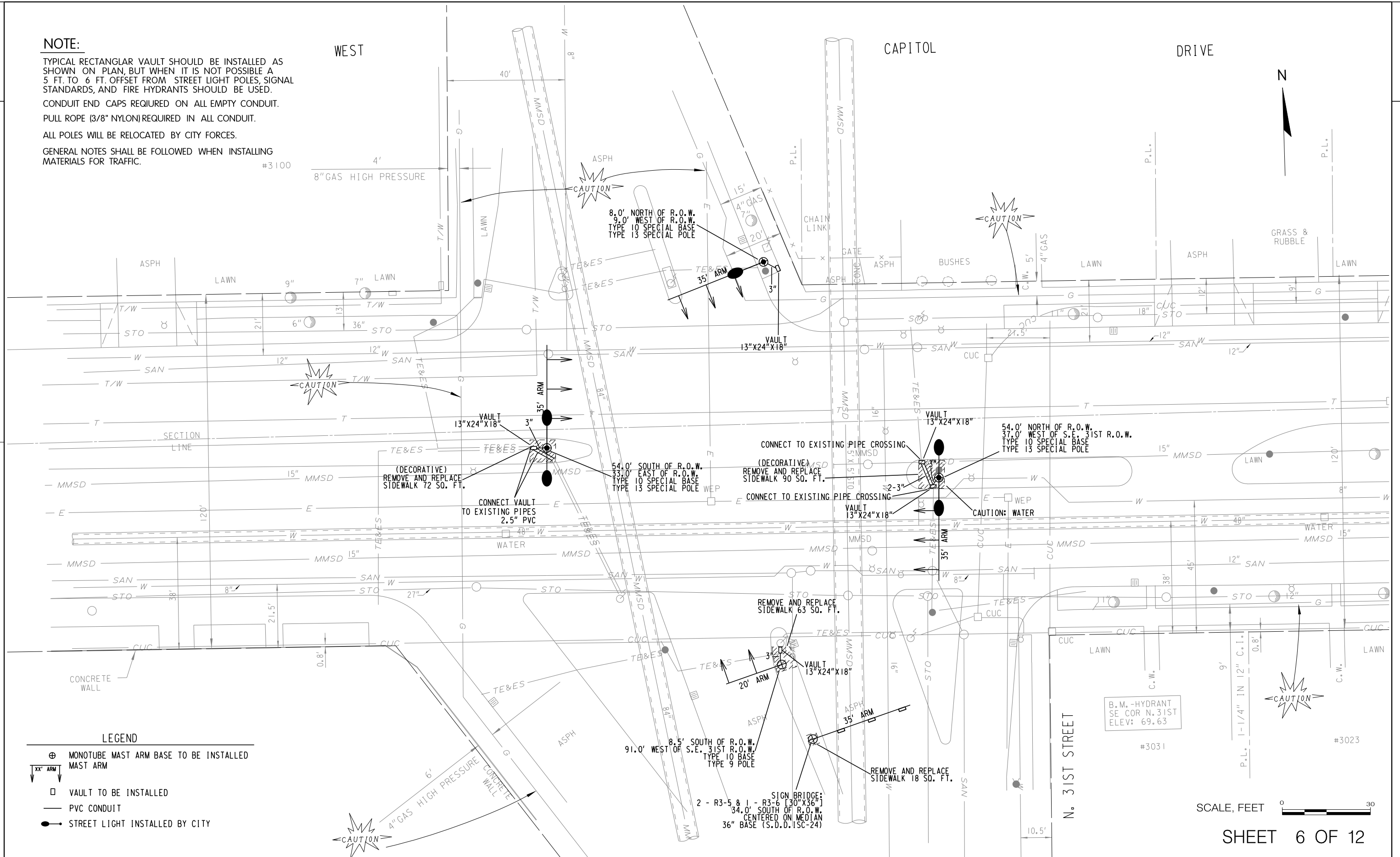
WEST

CAPITOL

DRIVE

2

N



PROJECT NO: 2025-01-72

HWY: S.T.H. 190

COUNTY: MILWAUKEE

## TRAFFIC SIGNAL PLAN

SHEET

# E

**NOTE:**

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.

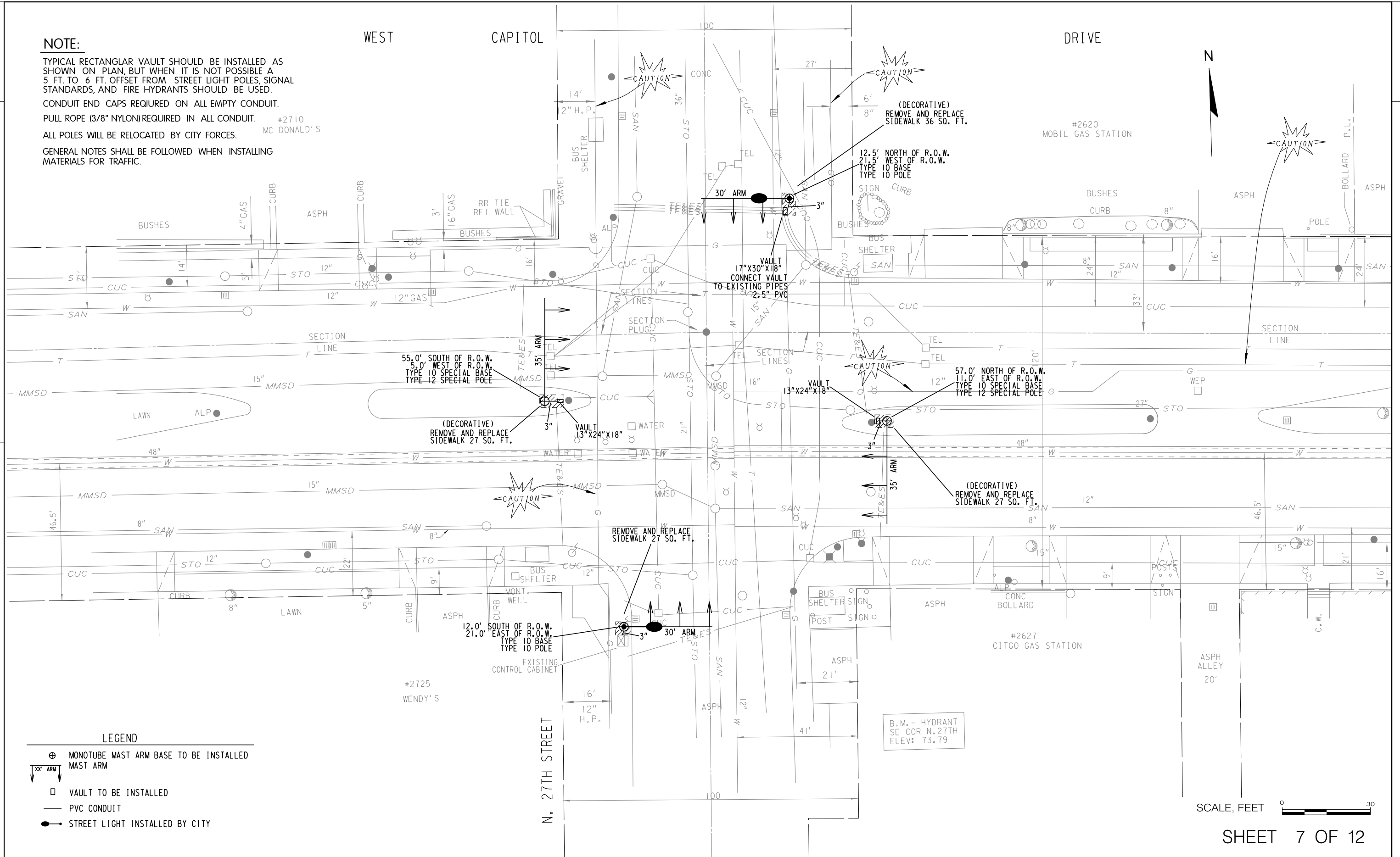
CONDUIT END CAPS REQUIRED ON ALL EMPTY CONDUIT.

PULL ROPE (3/8" NYLON) REQUIRED IN ALL CONDUIT.

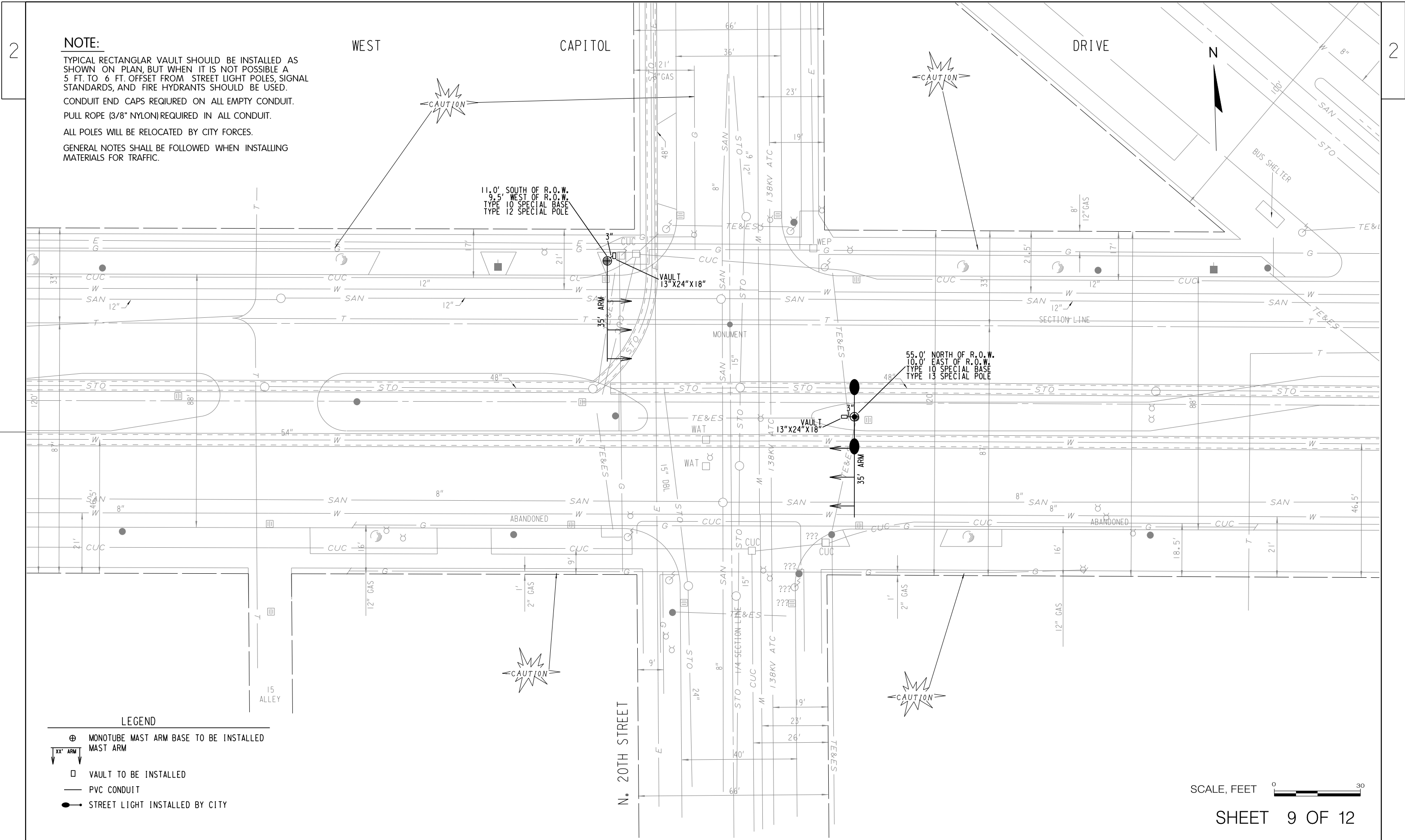
ALL POLES WILL BE RELOCATED BY CITY FORCES.

GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING MATERIALS FOR TRAFFIC.

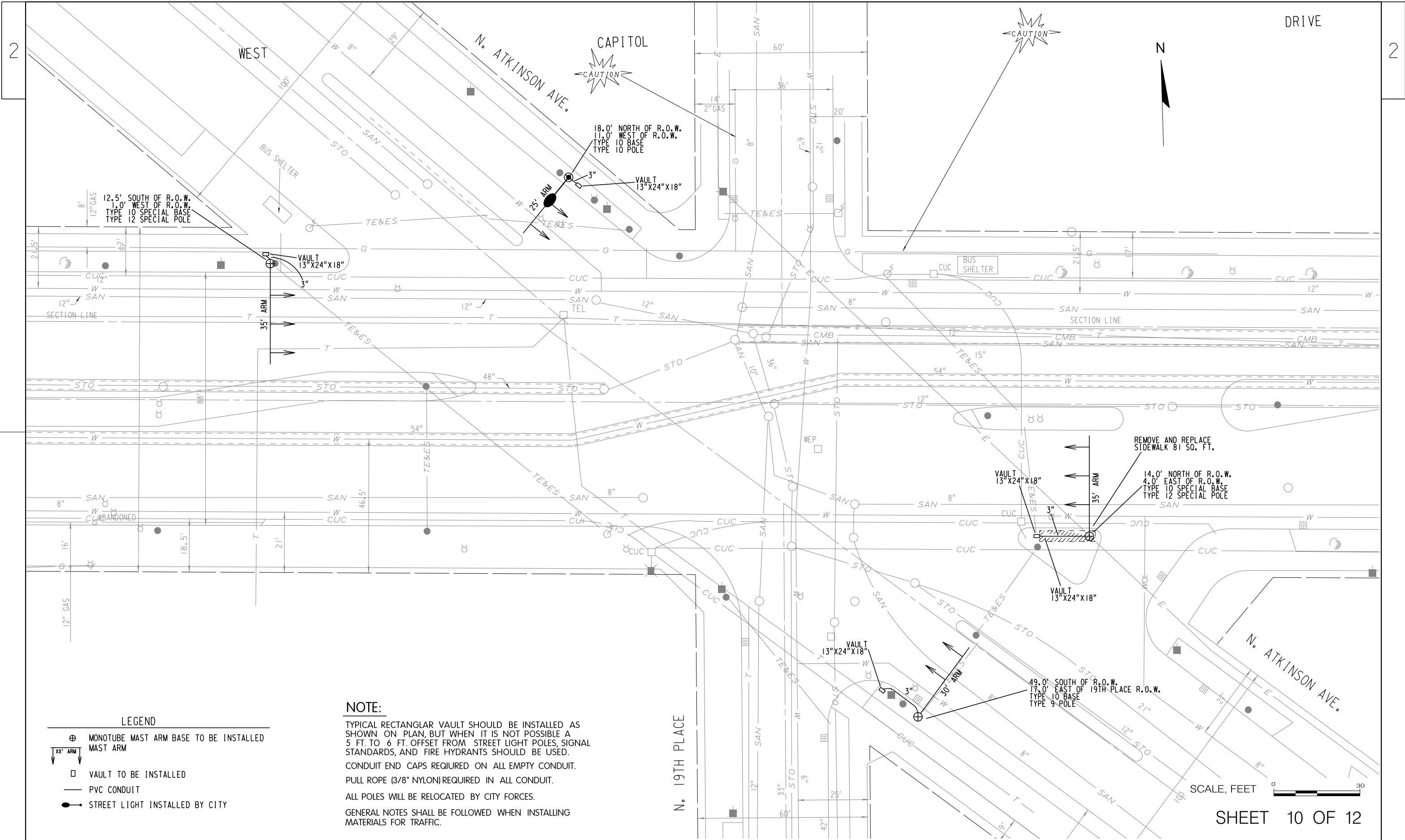
#2710  
MC DONALD'S

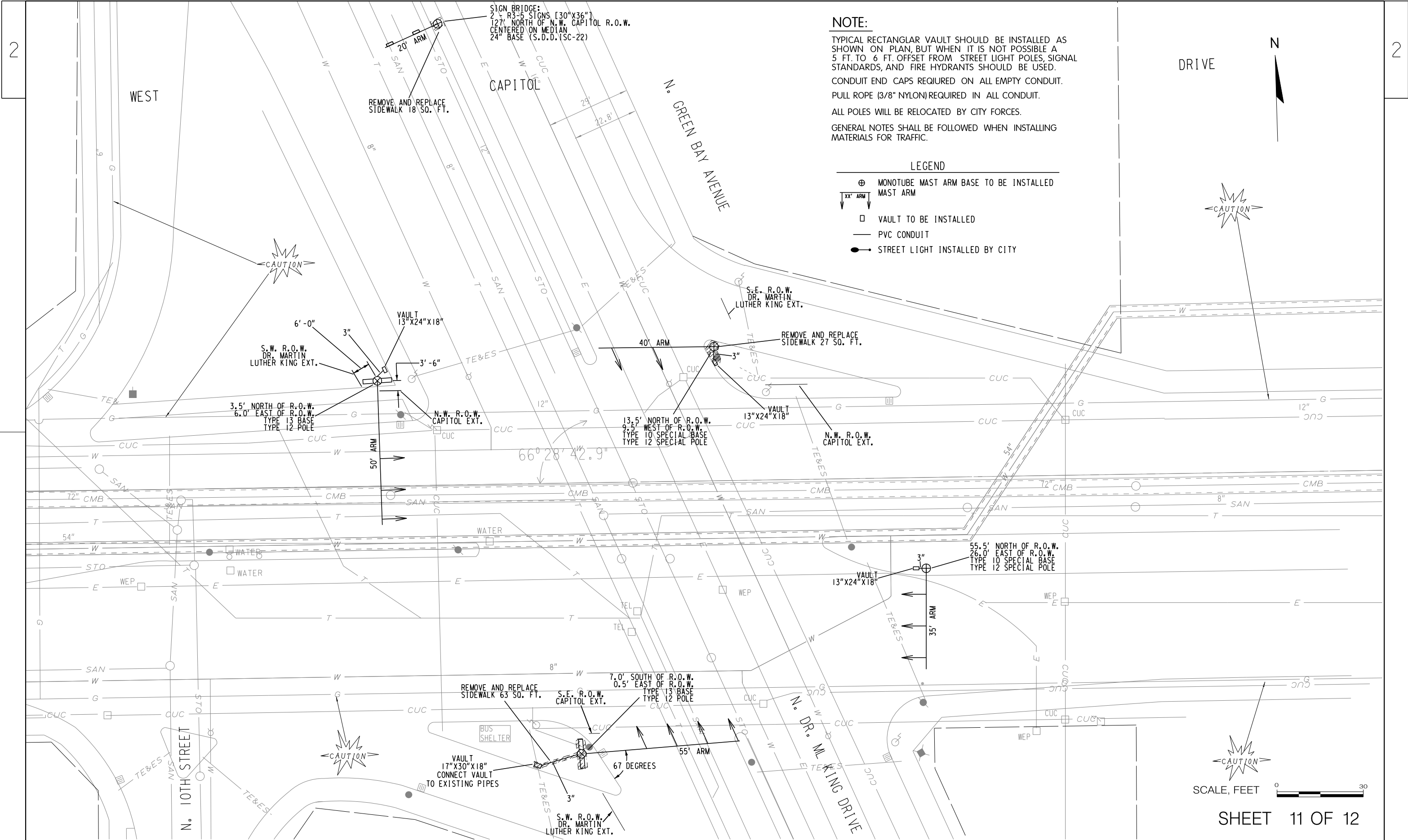












**NOTE:**

TYPICAL RECTANGULAR VAULT SHOULD BE INSTALLED AS SHOWN ON PLAN, BUT WHEN IT IS NOT POSSIBLE A 5 FT. TO 6 FT. OFFSET FROM STREET LIGHT POLES, SIGNAL STANDARDS, AND FIRE HYDRANTS SHOULD BE USED.

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GENERAL NOTES SHALL BE FOLLOWED WHEN INSTALLING MATERIALS FOR TRAFFIC.

WEST

CAPITOL

DRIVE

N

16.5' SOUTH OF R.O.W.  
19.0' WEST OF R.O.W.  
TYPE 10 SPECIAL BASE  
TYPE 12 SPECIAL POLE

VAULT  
13"X24"X18"

8.5' NORTH OF R.O.W.  
17.0' EAST OF R.O.W.  
TYPE 10 SPECIAL BASE  
TYPE 12 SPECIAL POLE

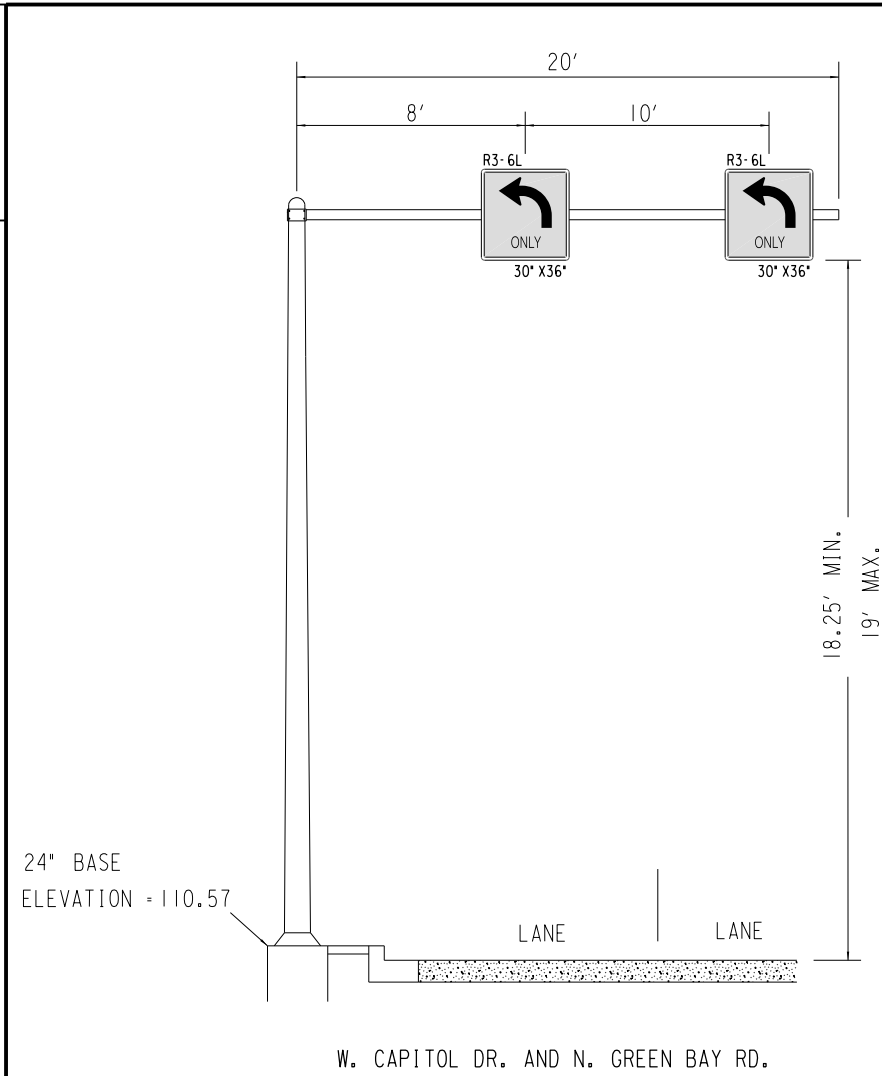
VAULT  
13"X24"X18"

**LEGEND**

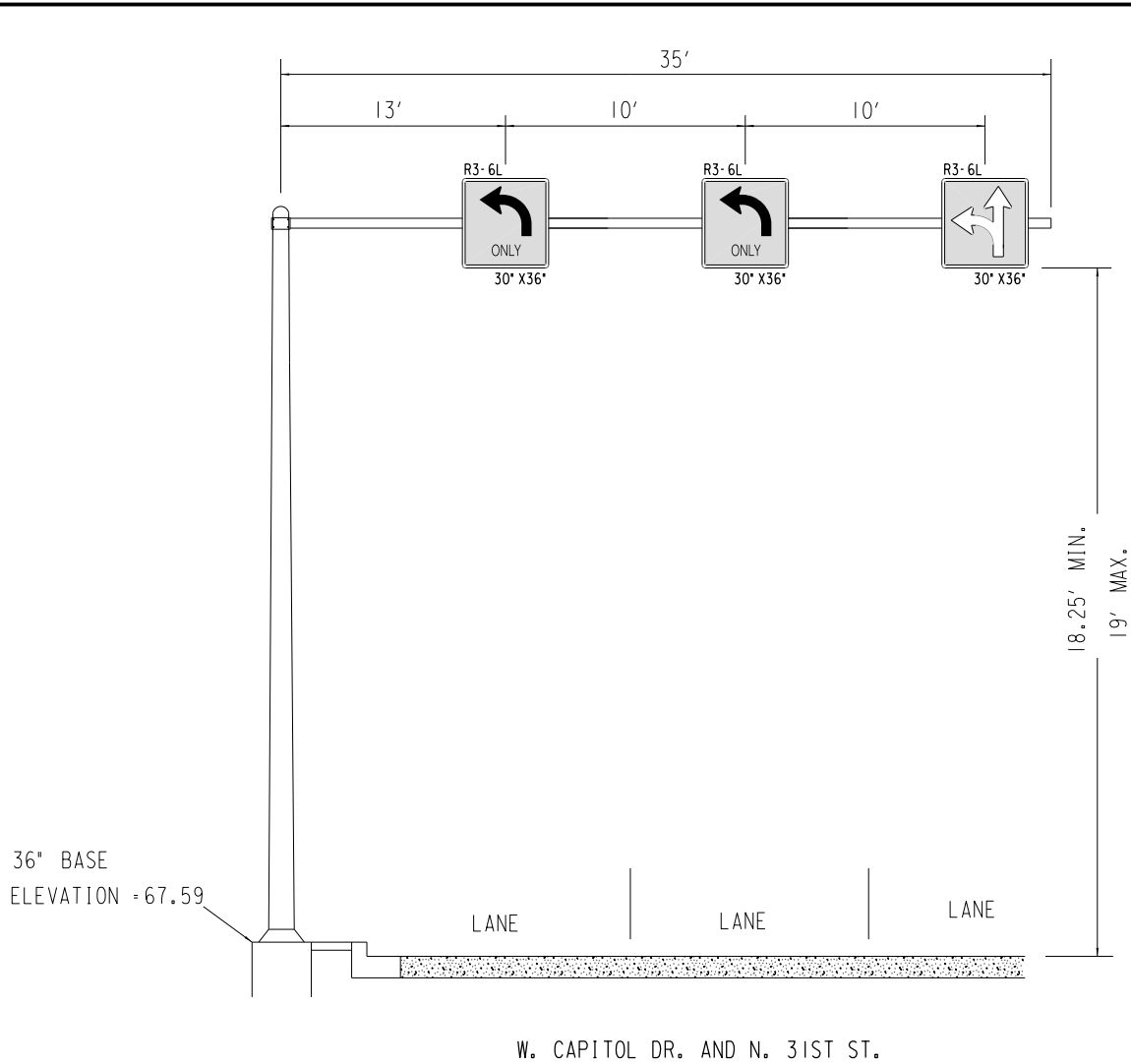
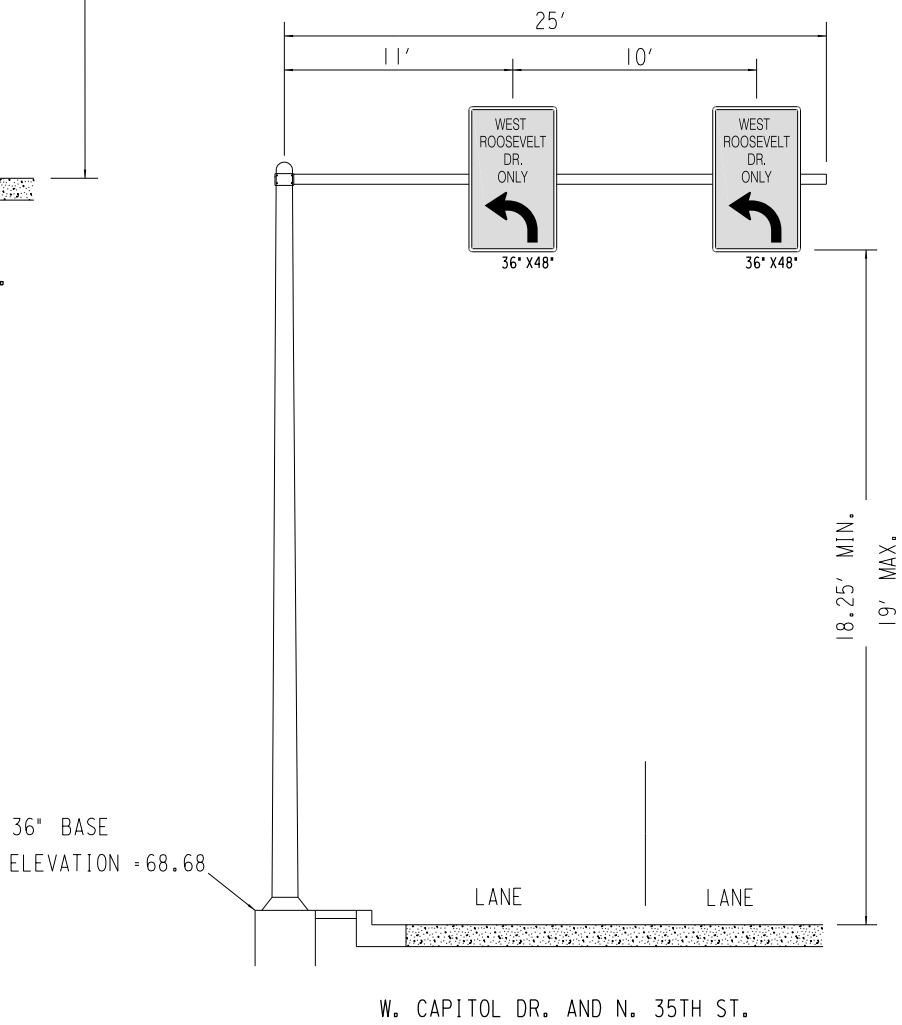
- ⊕ MONOTUBE MAST ARM BASE TO BE INSTALLED
- xx' ARM MAST ARM
- VAULT TO BE INSTALLED
- PVC CONDUIT
- STREET LIGHT INSTALLED BY CITY

SCALE, FEET 0 30

SHEET 12 OF 12



SIGN DETAILS



GENERAL NOTES:

FOR 24" BASE, REFER TO 24" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE S.D.D.(S.D.D.15C22-02)

FOR 36" BASE, REFER TO 36" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE S.D.D.(S.D.D.15C24-02)

MOUNTING BRACKETS FOR SIGNS TO BE APPROVED FROM PRODUCT LIST FOR TYPE II SIGNS.

CONTRACTOR SHALL:

SUBMIT SHOP DRAWINGS OF OVERHEAD SIGN SUPPORT, FOOTING IS INCIDENTAL TO OVERHEAD SIGN SUPPORT.

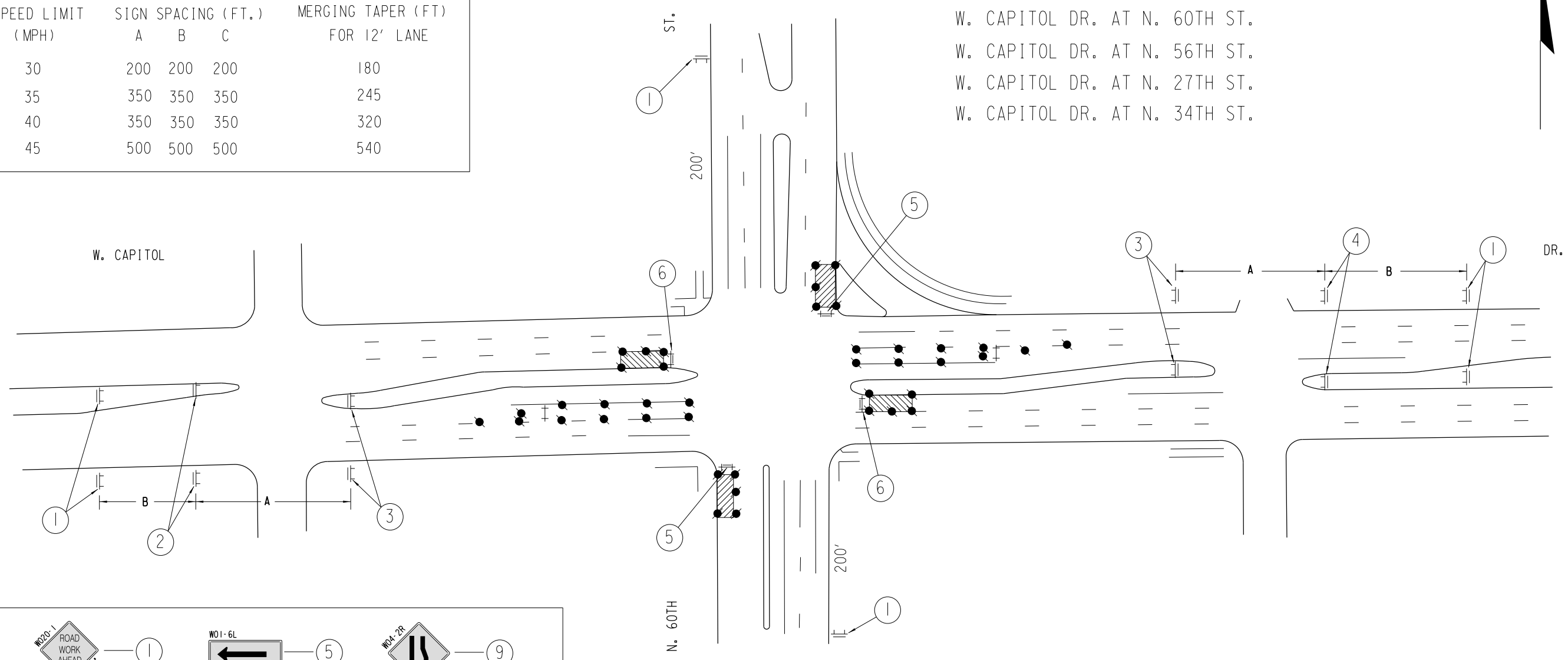
PROVIDE DESIGN CALCULATION.

SHOW SIGNS ON SHOP DRAWINGS.

ID PLAQUE INCIDENTAL TO SIGN SUPPORT.

SIX ANCHOR RODS SHALL BE USED PER S.D.D.S 15C22-02 AND 15C24-02.

SPEED LIMIT (MPH)	SIGN SPACING (FT.)			MERGING TAPER (FT.) FOR 12' LANE
	A	B	C	
30	200	200	200	180
35	350	350	350	245
40	350	350	350	320
45	500	500	500	540



W20-1  
ROAD  
WORK  
AHEAD  
48" X 48"

1

W3-2R  
LANE ENDS  
MERGE  
RIGHT  
36" X 36"

2

R3-7L  
LEFT LANE  
MUST  
TURN LEFT  
30" X 30"

3

R3-7R  
RIGHT LANE  
MUST  
TURN RIGHT  
30" X 30"

4

W01-6L  
24" X 12"

5

W01-6R  
24" X 12"

6

W20-3  
ROAD  
CLOSED  
AHEAD  
48" X 48"

7

W20-5R  
RIGHT LANE  
CLOSED  
AHEAD  
36" X 36"

8

W04-2R  
50" X 30"

9

R10-MOD  
LEFT  
TURN  
LANE  
W016-7P

10

W04-2L  
50" X 30"

11

R10-MOD  
RIGHT  
TURN  
LANE  
W016-7P

12

- DRUMS W/LIGHTS, 30' SPACING  
10' SPACING AROUND WORK SITE
- ++ TYPE III BARRICADES
- ≡ TYPE III BARRICADES W/ SIGN
- ≡ SIGN FRAME W/ SIGN
- ▨ WORK AREA



SPEED LIMIT (MPH)	SIGN SPACING (FT.)			MERGING TAPER (FT.) FOR 12' LANE
	A	B	C	
30	200	200	200	180
35	350	350	350	245
40	350	350	350	320
45	500	500	500	540

W. CAPITOL

ST.

N. 44TH

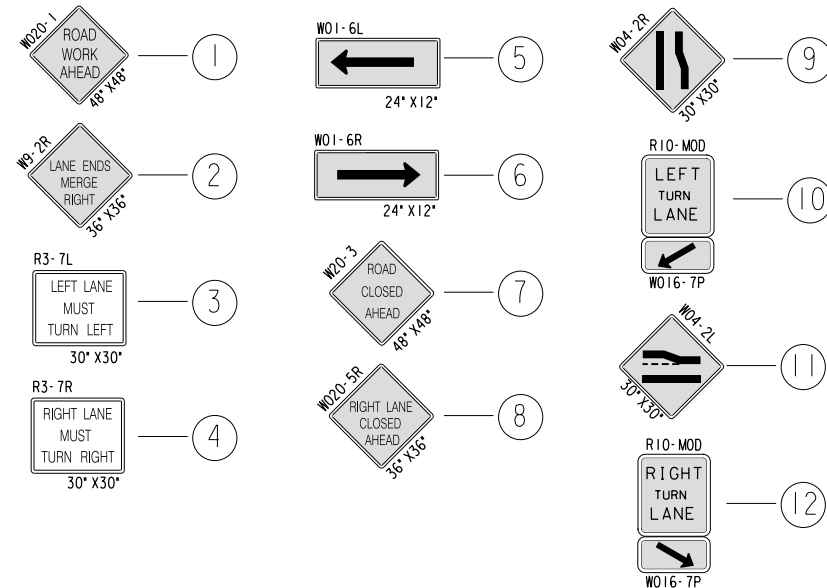
BLVD.

N. SHERMAN

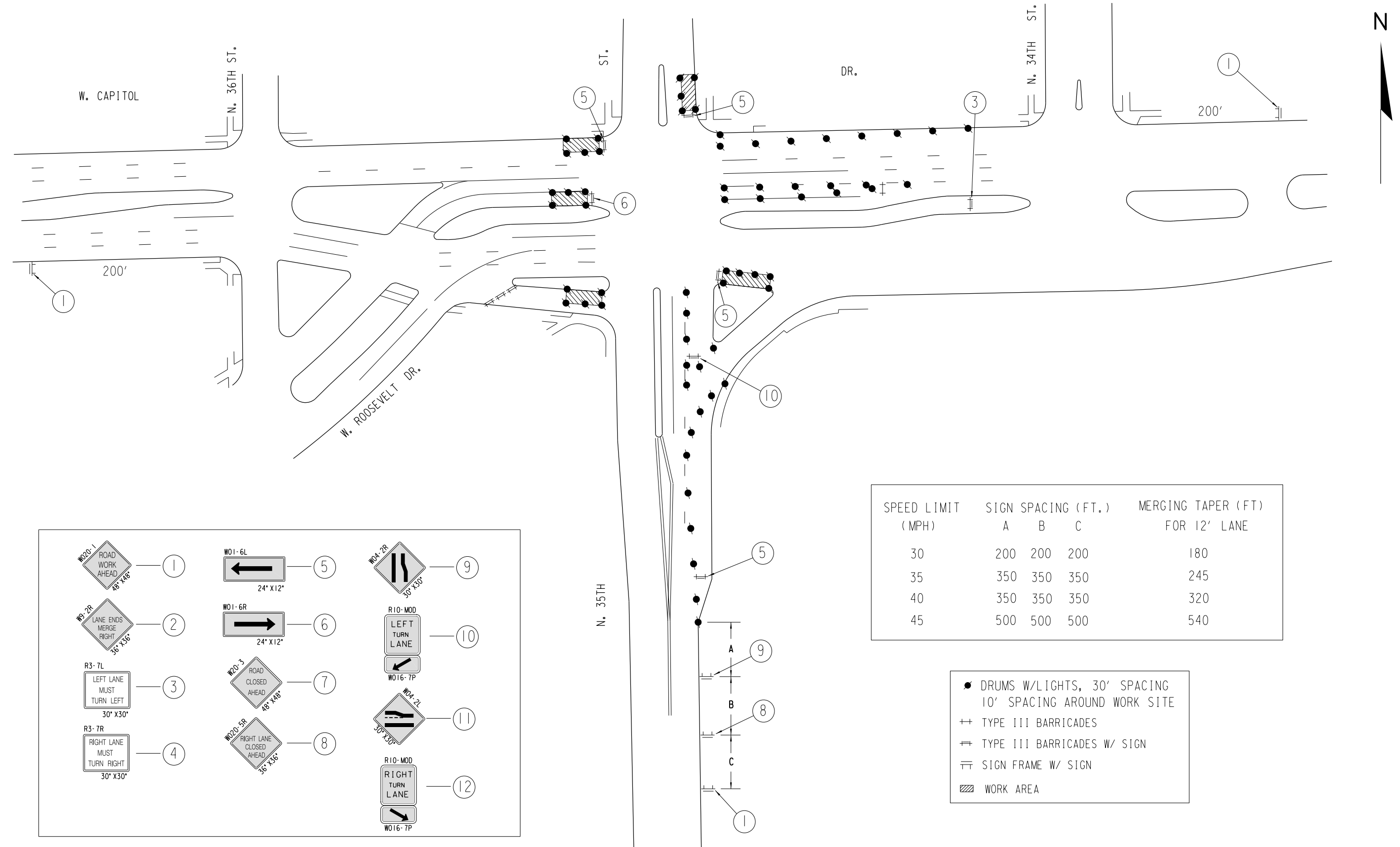
DR.

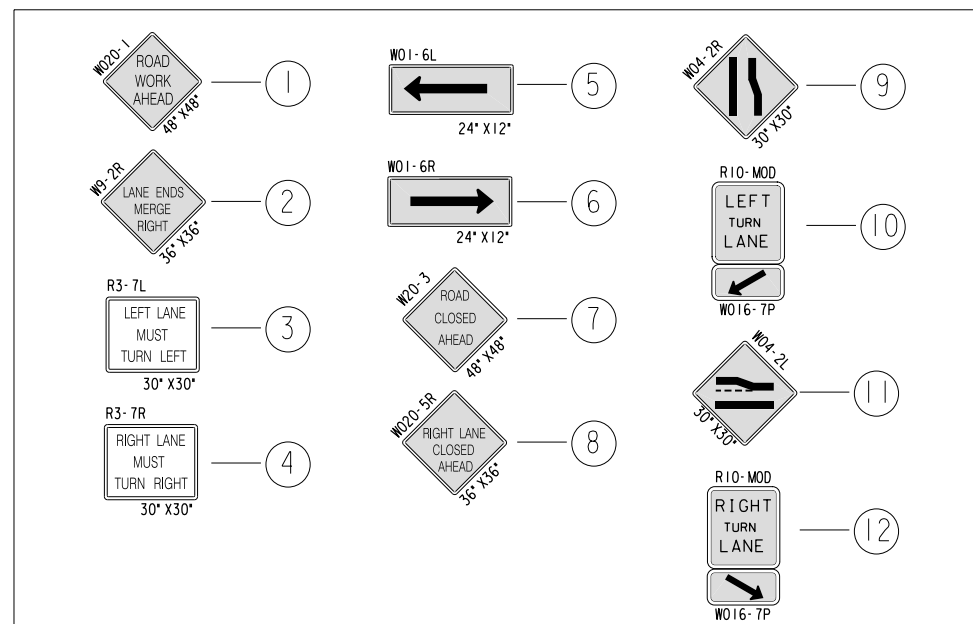
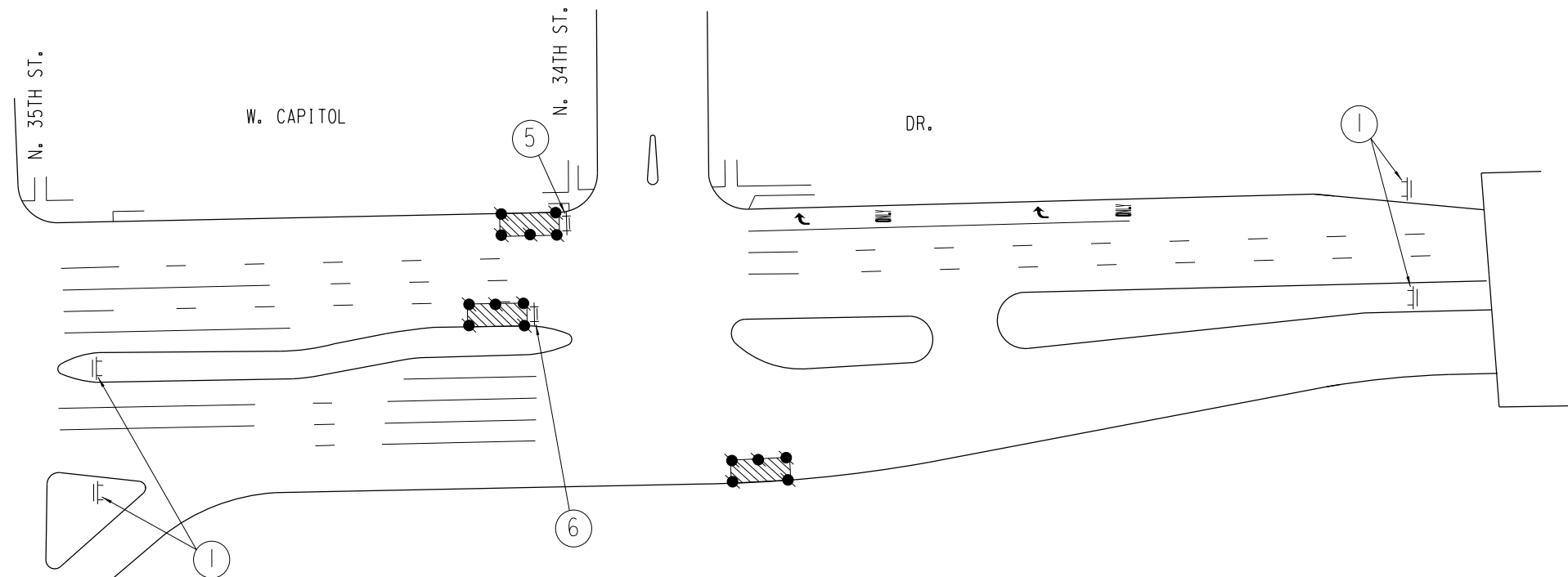
N

N. 42ND

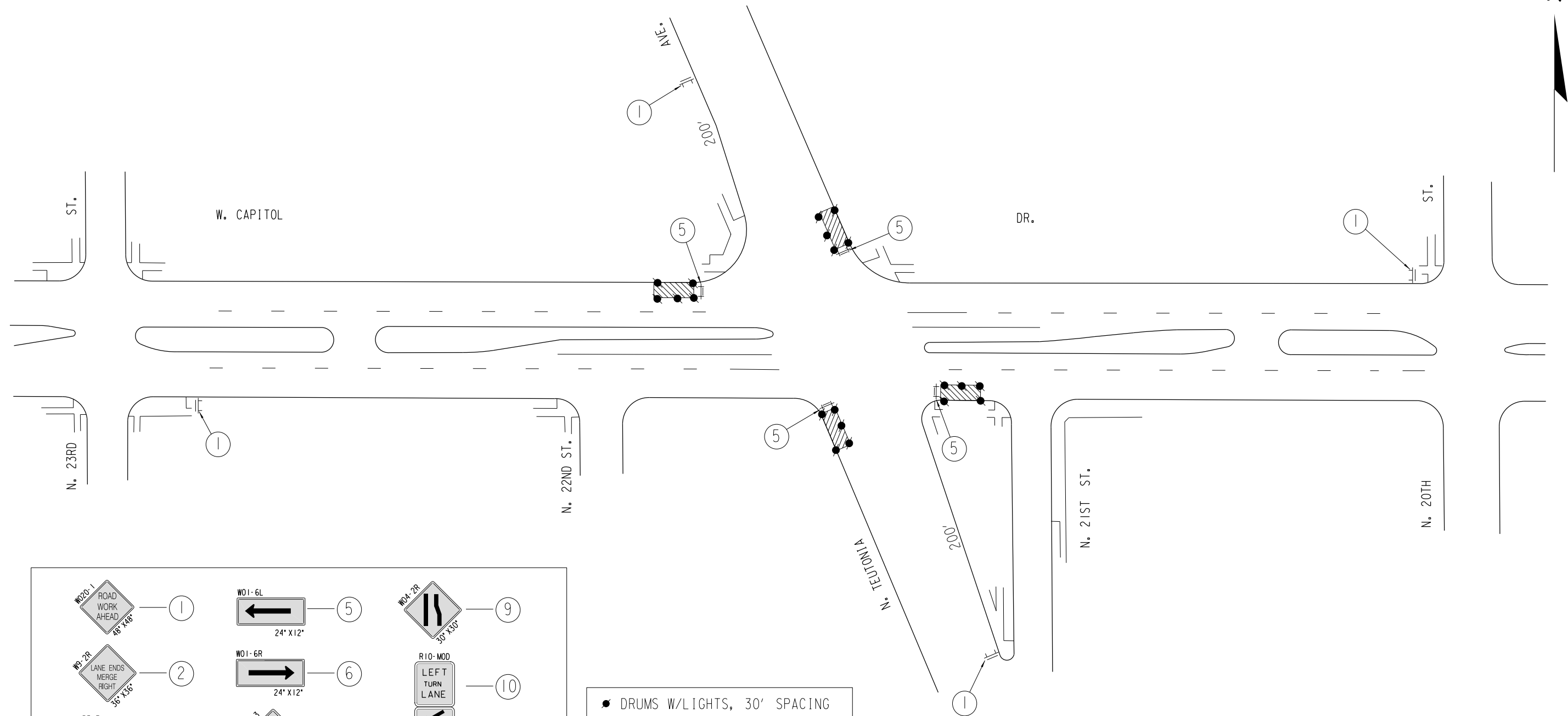


- DRUMS W/LIGHTS, 30' SPACING  
10' SPACING AROUND WORK SITE
- ++ TYPE III BARRICADES
- ≡ SIGN FRAME W/ SIGN
- ▨ WORK AREA

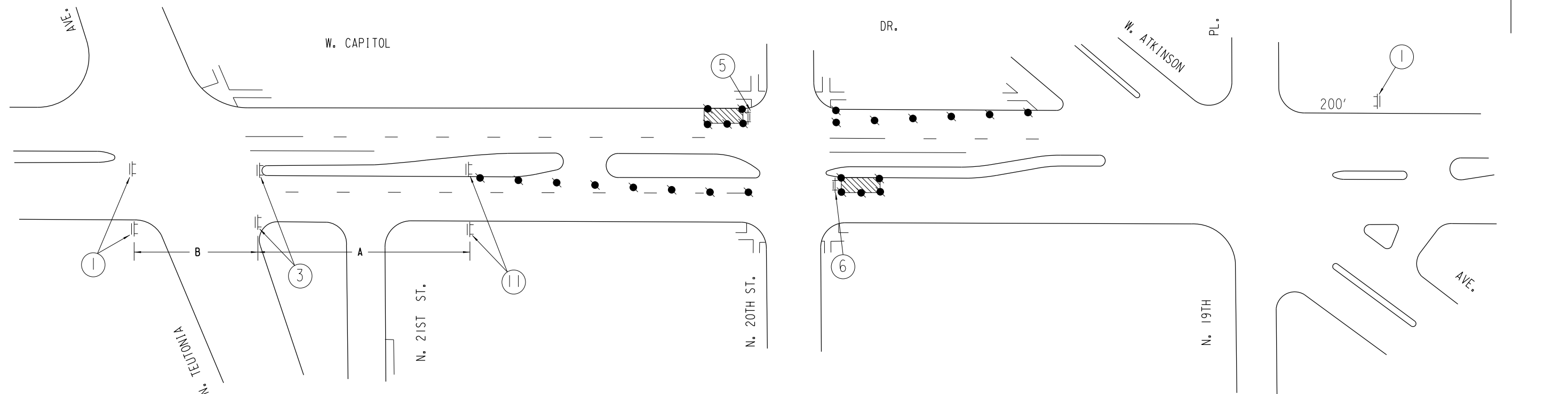




- DRUMS W/LIGHTS, 30' SPACING  
10' SPACING AROUND WORK SITE
- ++ TYPE III BARRICADES
- ⇄ TYPE III BARRICADES W/ SIGN
- ≡ SIGN FRAME W/ SIGN
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SPEED LIMIT (MPH)	SIGN SPACING (FT.)			MERGING TAPER (FT) FOR 12' LANE
	A	B	C	
30	200	200	200	180
35	350	350	350	245
40	350	350	350	320
45	500	500	500	540



W20-1  
ROAD  
WORK  
AHEAD  
48" X 48"

1

W3-2R  
LANE ENDS  
MERGE  
RIGHT  
36" X 36"

2

R3-7L  
LEFT LANE  
MUST  
TURN LEFT  
30" X 30"

3

R3-7R  
RIGHT LANE  
MUST  
TURN RIGHT  
30" X 30"

4

W01-6L  
←  
24" X 12"

5

W01-6R  
→  
24" X 12"

6

W20-3  
ROAD  
CLOSED  
AHEAD  
48" X 48"

7

W20-5R  
RIGHT LANE  
CLOSED  
AHEAD  
36" X 36"

8

W04-2R  
||  
30" X 30"

9

R10-MOD  
LEFT  
TURN  
LANE  
W016-7P

10

W04-2L  
||  
30" X 30"

11

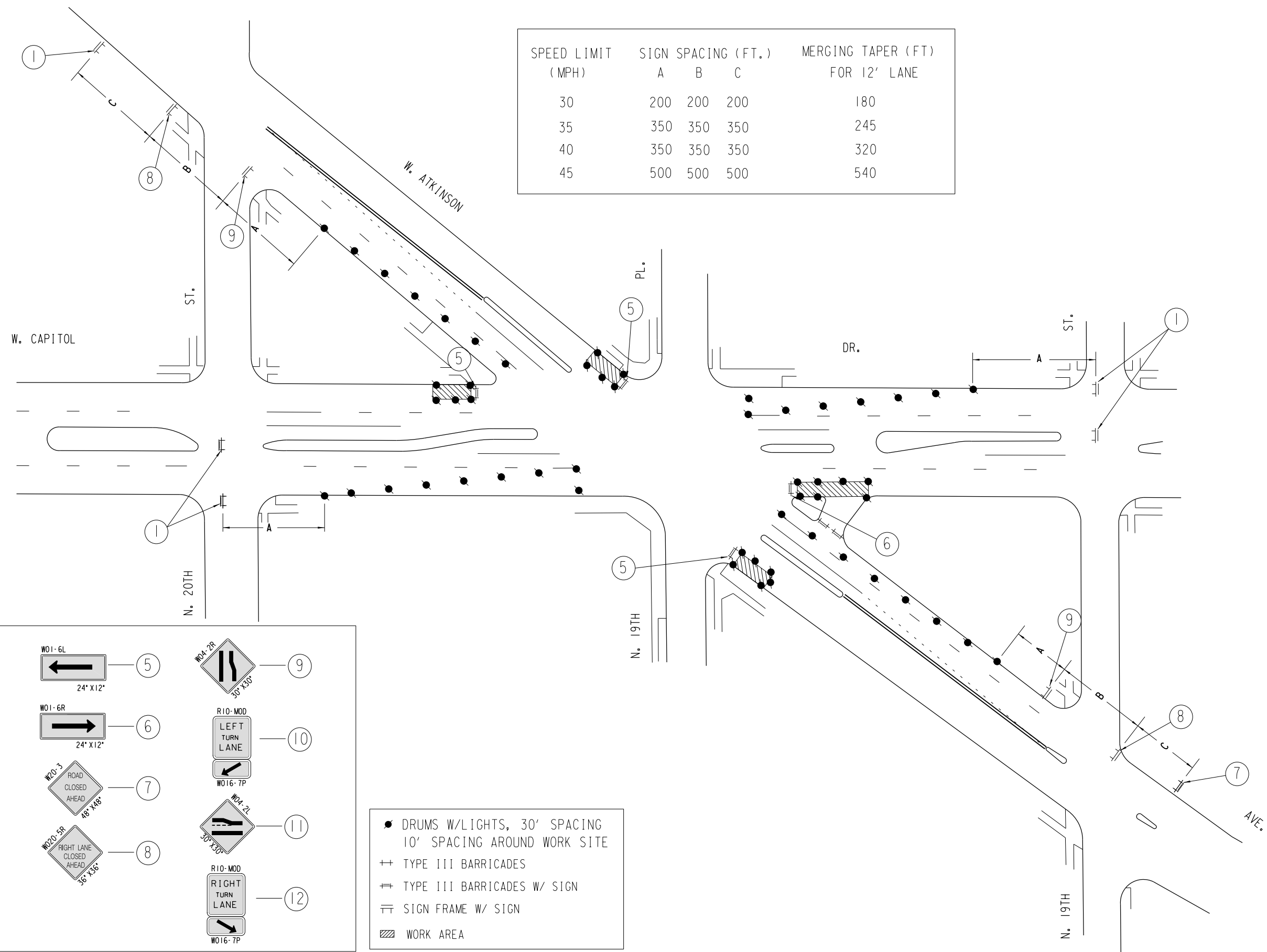
R10-MOD  
RIGHT  
TURN  
LANE  
W016-7P

12

- DRUMS W/LIGHTS, 30' SPACING  
10' SPACING AROUND WORK SITE
- ⇄ TYPE III BARRICADES
- ⇄ TYPE III BARRICADES W/ SIGN
- ≡ SIGN FRAME W/ SIGN
- ▨ WORK AREA

SPEED LIMIT (MPH)	SIGN SPACING (FT.)			MERGING TAPER (FT) FOR 12' LANE
	A	B	C	
30	200	200	200	180
35	350	350	350	245
40	350	350	350	320
45	500	500	500	540

N



W020-1  
ROAD  
WORK  
AHEAD  
48" X 48"  
①

W03-2R  
LANE ENDS  
MERGE  
RIGHT  
36" X 36"  
②

R3-7L  
LEFT LANE  
MUST  
TURN LEFT  
30" X 30"  
③

R3-7R  
RIGHT LANE  
MUST  
TURN RIGHT  
30" X 30"  
④

W01-6L  
←  
24" X 12"  
⑤

W01-6R  
→  
24" X 12"  
⑥

W020-3  
ROAD  
CLOSED  
AHEAD  
48" X 48"  
⑦

W020-5R  
RIGHT LANE  
CLOSED  
AHEAD  
36" X 36"  
⑧

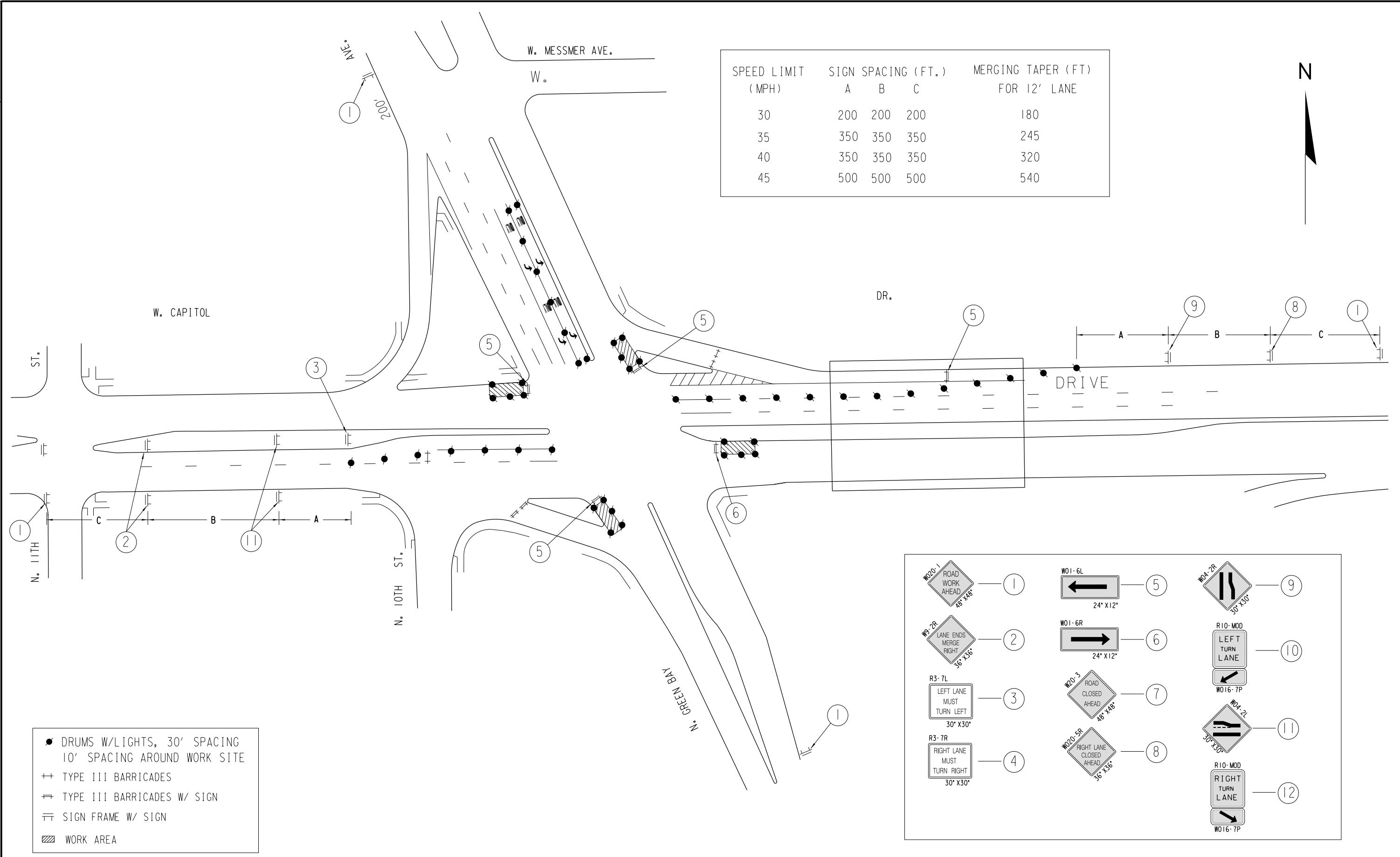
W04-2R  
||  
50" X 30"  
⑨

R10-MOD  
LEFT  
TURN  
LANE  
⑩

W016-7P  
⑪

R10-MOD  
RIGHT  
TURN  
LANE  
⑫

- DRUMS W/LIGHTS, 30' SPACING  
10' SPACING AROUND WORK SITE
- ++ TYPE III BARRICADES
- ⇄ TYPE III BARRICADES W/ SIGN
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SPEED LIMIT (MPH)	SIGN SPACING (FT.)			MERGING TAPER (FT) FOR 12' LANE
	A	B	C	
30	200	200	200	180
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- ⇄ TYPE III BARRICADES W/ SIGN
- ≡ SIGN FRAME W/ SIGN
- ▨ WORK AREA

W20-1  
ROAD  
WORK  
AHEAD  
48" X 48"

1

W20-2R  
LANE ENDS  
MERGE  
RIGHT  
36" X 36"

2

R3-7L  
LEFT LANE  
MUST  
TURN LEFT  
30" X 30"

3

R3-7R  
RIGHT LANE  
MUST  
TURN RIGHT  
30" X 30"

4

W01-6L  
←  
24" X 12"

5

W01-6R  
→  
24" X 12"

6

W20-3  
ROAD  
CLOSED  
AHEAD  
48" X 48"

7

W20-5R  
RIGHT LANE  
CLOSED  
AHEAD  
36" X 36"

8

W04-2R  
30" X 30"

9

R10-MOD  
LEFT  
TURN  
LANE  
W016-7P  
30" X 30"

10

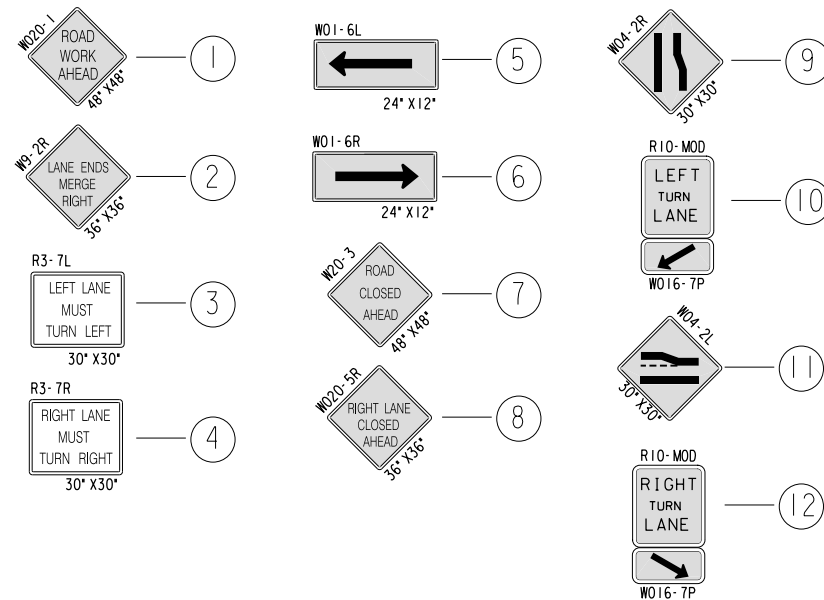
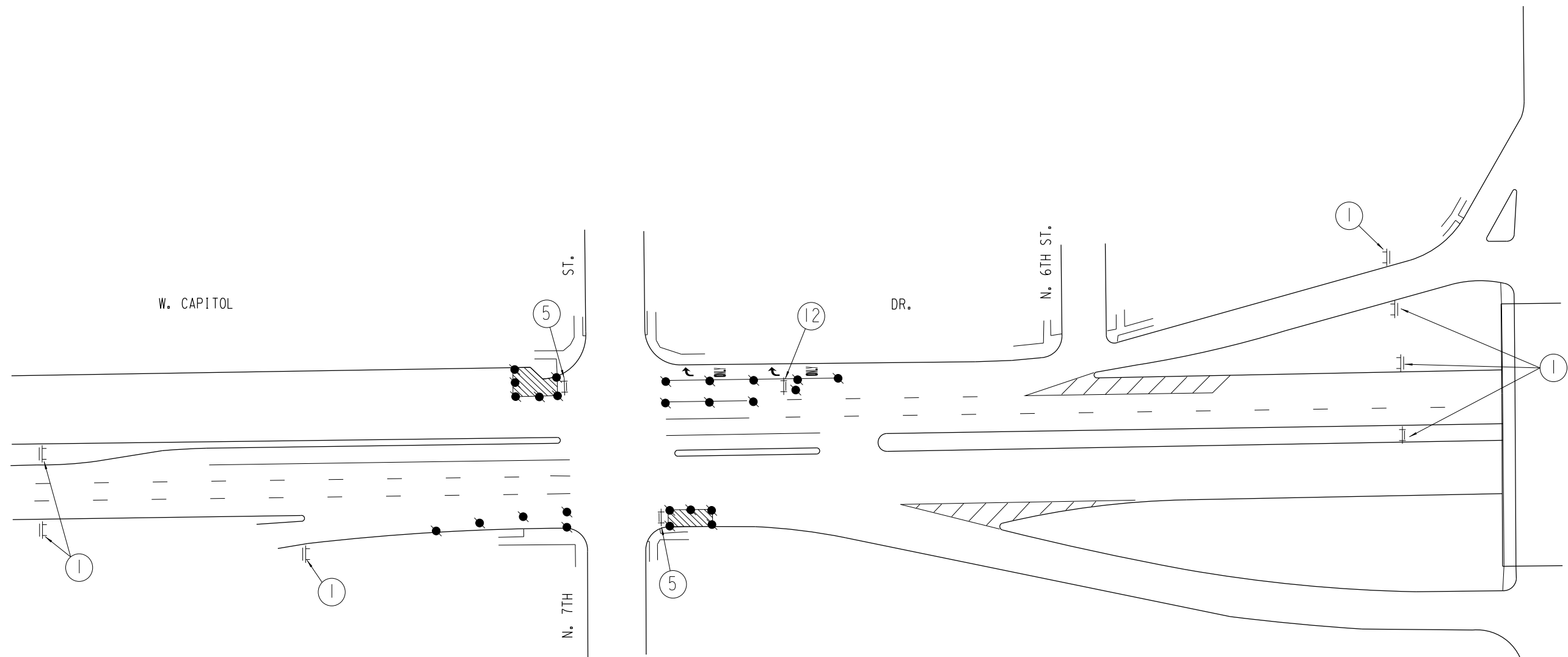
W04-2L  
30" X 30"

11

R10-MOD  
RIGHT  
TURN  
LANE  
W016-7P  
30" X 30"

12





- DRUMS W/LIGHTS, 30' SPACING
- 10' SPACING AROUND WORK SITE
- ++ TYPE III BARRICADES
- ≡ TYPE III BARRICADES W/ SIGN
- ≡ SIGN FRAME W/ SIGN
- ▨ WORK AREA

DATE 19MAR15		E S T I M A T E O F Q U A N T I T I E S			
LINE				2025-01-72	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0010	201.0120	Clearing	ID	14.000	14.000
0020	201.0220	Grubbing	ID	14.000	14.000
0030	204.0155	Removing Concrete Sidewalk	SY	170.000	170.000
0040	205.0501.S	Excavation, Hauling, and Disposal of Petroleum Contaminated Soil	TON	68.000	68.000
0050	213.0100	Finishing Roadway (project) 01. 2025-01-72	EACH	1.000	1.000
0060	602.0410	Concrete Sidewalk 5-Inch	SF	738.000	738.000
0070	619.1000	Mobilization	EACH	1.000	1.000
0080	625.0100	Topsoil	SY	100.000	100.000
0090	631.1000	Sod Lawn	SY	100.000	100.000
0100	641.8100	Overhead Sign Support (structure) 01. W Capitol Dr & N 35th St / Roosevelt Dr	LS	1.000	1.000
0110	641.8100	Overhead Sign Support (structure) 02. W Capitol Dr & N 31st St	LS	1.000	1.000
0120	641.8100	Overhead Sign Support (structure) 03. W Capitol Dr & N Green Bay Ave	LS	1.000	1.000
0130	643.0100	Traffic Control (project) 01. 2025-01-72	EACH	1.000	1.000
0140	643.0300	Traffic Control Drums	DAY	22,513.000	22,513.000
0150	643.0420	Traffic Control Barricades Type III	DAY	9,353.000	9,353.000
0160	643.0705	Traffic Control Warning Lights Type A	DAY	22,513.000	22,513.000
0170	643.0715	Traffic Control Warning Lights Type C	DAY	14,006.000	14,006.000
0180	643.0900	Traffic Control Signs	DAY	8,319.000	8,319.000
0190	650.8500	Construction Staking Electrical Installations (project) 01. 2025-01-72	LS	1.000	1.000
0200	650.9910	Construction Staking Supplemental Control (project) 01. 2025-01-72	LS	1.000	1.000
0210	652.0230	Conduit Rigid Nonmetallic Schedule 40 2 1/2-Inch	LF	80.000	80.000
0220	652.0235	Conduit Rigid Nonmetallic Schedule 40 3-Inch	LF	400.000	400.000
0230	654.0110	Concrete Bases Type 10	EACH	10.000	10.000
0240	654.0113	Concrete Bases Type 13	EACH	6.000	6.000
0250	SPV.0060	Special 01. Concrete Bases Type 10 Special	EACH	29.000	29.000
0260	SPV.0060	Special 02. Monotube Arms 20-Ft	EACH	1.000	1.000
0270	SPV.0060	Special 03. Monotube Arms 25-Ft	EACH	3.000	3.000
0280	SPV.0060	Special 04. Monotube Arms 30-Ft	EACH	6.000	6.000
0290	SPV.0060	Special 05. Monotube Arms 35-Ft	EACH	19.000	19.000
0300	SPV.0060	Special 06. Monotube Arms 40-Ft	EACH	10.000	10.000
0310	SPV.0060	Special 07. Monotube Arms 45-Ft	EACH	1.000	1.000
0320	SPV.0060	Special 08. Monotube Arms 50-Ft	EACH	2.000	2.000
0330	SPV.0060	Special 09. Monotube Arms 55-Ft	EACH	2.000	2.000
0340	SPV.0060	Special 10. Poles Type 9	EACH	6.000	6.000
0350	SPV.0060	Special 11. Poles Type 10	EACH	4.000	4.000
0360	SPV.0060	Special 12. Poles Type 12	EACH	5.000	5.000
0370	SPV.0060	Special 13. Poles Type 12 Special	EACH	23.000	23.000
0380	SPV.0060	Special 14. Poles Type 13 Special	EACH	6.000	6.000
0390	SPV.0060	Special 15. Rectangular Polymer Concrete Vault 13"X 24"X 18"	EACH	29.000	29.000
0400	SPV.0060	Special 16. Rectangular Polymer Concrete Vault 17"X 30"X 18"	EACH	5.000	5.000
0410	SPV.0060	Special 17. Utility Line Opening (UI o)	EACH	4.000	4.000
0420	SPV.0165	Special 01. Colored Concrete Sidewalk 5-Inch	SF	792.000	792.000

CONSTRUCTION ITEMS										
CATEGORY 0010										
	CLEARING 201.0120 ID	GRUBBING 201.0220 ID	REMOVING CONCRETE SIDEWALK 204.0155 SY	EXCAVATION HAULING AND DISPOSAL OF PETROLEUM CONTAMINATED SOIL 205.0501.S TON	FINISHING ROADWAY (PROJECT) 213.0100 EA	CONCRETE SIDEWALK 5-INCH 602.0410 SF	MOBILIZATION 619.1000 EA	TOPSOIL 625.0100 SY	SOD LAWN 631.1000 SY	OVERHEAD SIGN SUPPORT 641.8100 LS
LOCATION										
W. Capitol Dr. & N. 60th St.			17			153				
W. Capitol Dr. & N. 56th St.										
W. Capitol Dr. & N. Sherman Blvd.			5			45				
W. Capitol Dr. & N. 35th St./ W. Roosevelt Dr.			35	68		90				1
W. Capitol Dr. & N. 34th St.			30			99				
W. Capitol Dr. & N. 31st St.			35			99				1
W. Capitol Dr. & N. 27th St.			15			45				
W. Capitol Dr. & N. Teutonia Ave.			10							
W. Capitol Dr. & N. 20th St.										
W. Capitol Dr. & W. Atkinson Ave./ N. 19th Pl.			13			117				
W. Capitol Dr. & N. Green Bay Ave.			10			90				1
W. Capitol Dr. & N. 7th St.	14	14								
GRAND TOTALS	14	14	170	68	1	738	1	100	100	3

SIGNALS

CATEGORY 0010

CONSTRUCTION STAKING ELECTRICAL INSTALLATIONS 650.8500 LS	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-1/2 INCH 652.0230 LF	CONDUIT RIGID NONMETALLIC SCHEDULE 40 3 INCH 652.0235 LF	CONCRETE BASES TYPE 10 654.0110 EA	CONCRETE BASES TYPE 13 654.0113 EA
--	--	--	--	--

LOCATION

W. Capitol Dr. & N. 60th St.			35		
W. Capitol Dr. & N. 56th St.			20	1	
W. Capitol Dr. & N. Sherman Blvd.			25	2	
W. Capitol Dr. & N. 35th St./ W. Roosevelt Dr.		30	35	1	1
W. Capitol Dr. & N. 34th St.			30	1	1
W. Capitol Dr. & N. 31st St.		30	40	1	
W. Capitol Dr. & N. 27th St.		20	20	2	
W. Capitol Dr. & N. Teutonia Ave.			30		
W. Capitol Dr. & N. 20th St.			10		
W. Capitol Dr. & W. Atkinson Ave./ N. 19th Pl.			25	2	
W. Capitol Dr. & N. Green Bay Ave.			30		2
W. Capitol Dr. & N. 7th St.			10		1
GRAND TOTALS	1	80	400	10	6

ALL ITEMS ARE CATEGORY 0010

3

# 3

[illegible]

W. Capitol Dr. & N. 60th St.	4			2	2					
W. Capitol Dr. & N. 56th St.	2			1		2				
W. Capitol Dr. & N. Sherman Blvd.	2			2	1	1				
W. Capitol Dr. & N. 35th St./ W. Roosevelt Dr.	4		1		3	1	1			
W. Capitol Dr. & N. 34th St.	1		1			1				1
W. Capitol Dr. & N. 31st St.	3	1			3					
W. Capitol Dr. & N. 27th St.	2			2	2					
W. Capitol Dr. & N. Teutonia Ave.	4				3	1				
W. Capitol Dr. & N. 20th St.	2				2					
W. Capitol Dr. & W. Atkinson Ave./ N. 19th	2		1	1	2					
W. Capitol Dr. & N. Green Bay Ave.	2				1	1		1		1
W. Capitol Dr. & N. 7th St.	1					1		1		

PLOT DATE : \_\_\_\_\_ PLOT BY : \_\_\_\_\_ PLOT NAME : \_\_\_\_\_ PLOT SCALE : 1:1

# 3

## E

SPV ITEMS (Continued)

CATEGORY 0010

	POLES TYPE 9 SPV.0060.10 EA	POLES TYPE 10 SPV.0060.11 EA	POLES TYPE 12 SPV.0060.12 EA	POLES TYPE 12 SPECIAL SPV.0060.13 EA	POLES TYPE 13 SPECIAL SPV.0060.14 EA	RECTANGULAR POLYMER CONCRETE VAULT 13" x 24" x 18" SPV.0060.15 EA	RECTANGULAR POLYMER CONCRETE VAULT 17" x 30" x 18" SPV.0060.16 EA	UTILITY LINE OPENING (ULO) SPV.0060.17 EA	CONCRETE SIDEWALK (DECORATIVE) 5-INCH SPV.0165.01 SF
LOCATION									
W. Capitol Dr. & N. 60th St.				4					
W. Capitol Dr. & N. 56th St.	1			2		1			
W. Capitol Dr. & N. Sherman Blvd.	2			2		1			
W. Capitol Dr. & N. 35th St./ W. Roosevelt Dr.	1		1	4		3	1		225
W. Capitol Dr. & N. 34th St.		1	1	1		2	1		171
W. Capitol Dr. & N. 31st St.	1				3	5			216
W. Capitol Dr. & N. 27th St.		2		2		2	1		90
W. Capitol Dr. & N. Teutonia Ave.				2	2	4			90
W. Capitol Dr. & N. 20th St.				1	1	2	1		
W. Capitol Dr. & W. Atkinson Ave./ N. 19th Pl.	1	1		2		4			
W. Capitol Dr. & N. Green Bay Ave.			2	2		3	1		
W. Capitol Dr. & N. 7th St.			1	1		2			
GRAND TOTALS	6	4	5	23	6	29	5	4	792

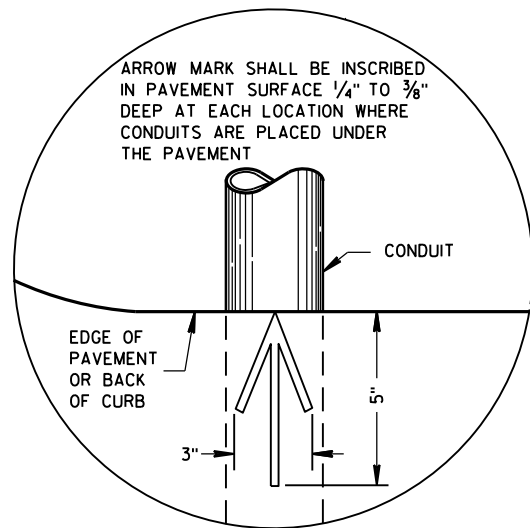
ALL ITEMS ARE CATEGORY 0010

Estimate of Traffic Control Items Required (0010 Participating)					
Items			Stage 1 (Each) (Days)		Total
(1)643.0300 Traffic Control Drums			479	22,513	22,513
(2)643.0420 Traffic Control Barricades Type III			199	9,353	9,353
643.0705 Traffic Control Warning Lights Type A			479	22,513	22,513
643.0715 Traffic Control Warning Lights Type C			298	14,006	14,006
643.0900 Traffic Control Signs			177	8,319	8,319
643.0100 Traffic Control (Project)					1
<div>NOTES:</div> <div><div>- THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.</div><div>- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.</div><div>- ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" WILL BE COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.</div><div>- THIS WORK WILL BE INCIDENTAL TO THE ITEM OF TRAFFIC CONTROL.</div><div>- CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVELLED LANE WHEN WORK IS NOT IN PROGRESS.</div><div>- WARNING SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.</div></div>					
<div>(1) All Drums have one steady burning yellow light</div> <div>(2) All Type III Barricades have 2 flashing yellow lights</div>					
Items			Left Lane		Total
(1) W020-1			62		62
(2) W9-2R			18		18
(3) R3-7L			30		30
(4) R3-7R			8		8
(5) W01-6L			27		27
(6) W01-6R			17		17
(7) W20-3			1		1
(8) W020-5R			4		4
(9) W04-2R			4		4
(10) R-10-Mod			1		1
(11) W04-2L			4		4
(12) R-10-Mod			1		1
Total			177		177

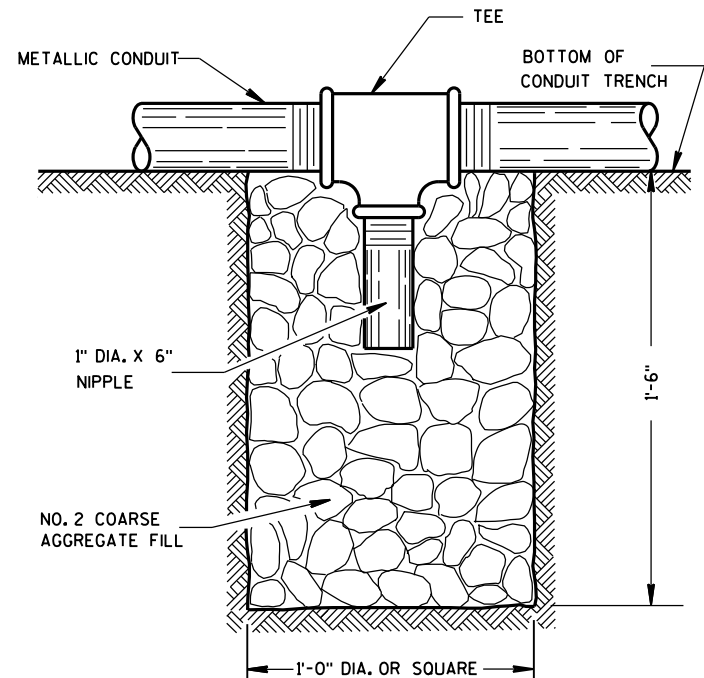
Standard Detail Drawing List

09B02-08	CONDUIT UNDER PAVED HIGHWAYS
09C11-05	CONCRETE BASE TYPE 10
09C12-05A	CONCRETE BASE TYPE 13
09C12-05B	CONCRETE BASE TYPE 13
09E08-06A	TYPE 9 POLE 15' -30' MONOTUBE ARM
09E08-06B	TYPE 10 POLE 15' -30' MONOTUBE ARM
09E08-06C	TYPE 12 POLE 35' -55' MONOTUBE ARM
09E08-06D	TYPE 13 POLE 35' -55' MONOTBE ARM
09E08-06E	GENERAL NOTES AND HARDWARE DETAILS FOR TYPE 9, 10, 12 & 13 POLES WITH MONOTUBE ARMS
15C22-02	24" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE
15C24-02	36" DIAMETER CANTILEVER OVERHEAD SIGN SUPPORT BASE
15D21-02	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D21-03	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D27-02	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH
15D28-02	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY



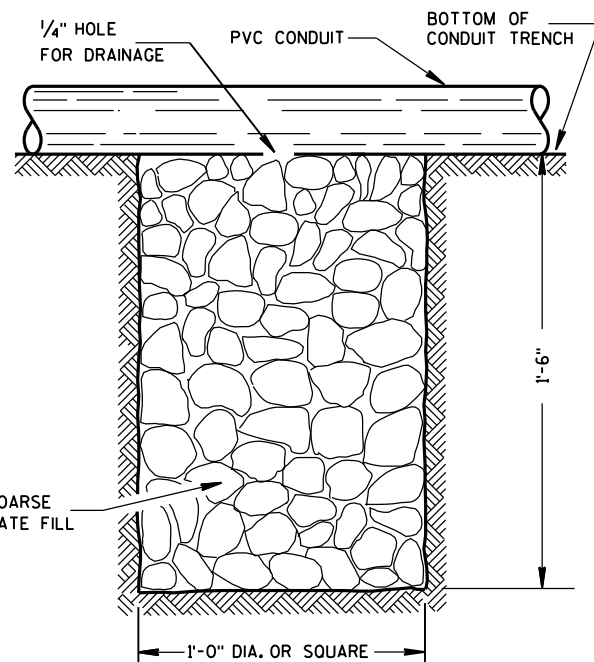


PLAN VIEW  
ARROW MARK



NOTE: INSTALL AT LOCATIONS WHERE METALLIC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR METALLIC CONDUIT



NOTE: INSTALL AT LOCATIONS WHERE PVC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR PVC CONDUIT

## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

METALLIC (STANDARD SPECIFICATION 652.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 652.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

ALL METALLIC CONDUIT IN WHICH WIRE OR CABLE IS TO BE INSTALLED SHALL BE BUSHED WITH APPROVED THREADED BUSHINGS BEFORE INSTALLATION OF THE WIRE OR CABLE.

ALL METALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT TO BE INSTALLED SHALL BE CAPPED WITH THREADED PROTECTIVE CAPS, AS APPROVED BY THE ENGINEER.

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION AND SHALL REMAIN CAPPED OR PLUGGED UNTIL WIRE/CABLES ARE INSTALLED.

NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON NONMETALLIC CONDUIT. (SEE NEC 347.5)

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY U.L. LISTED ADAPTER FITTINGS SHALL BE USED.

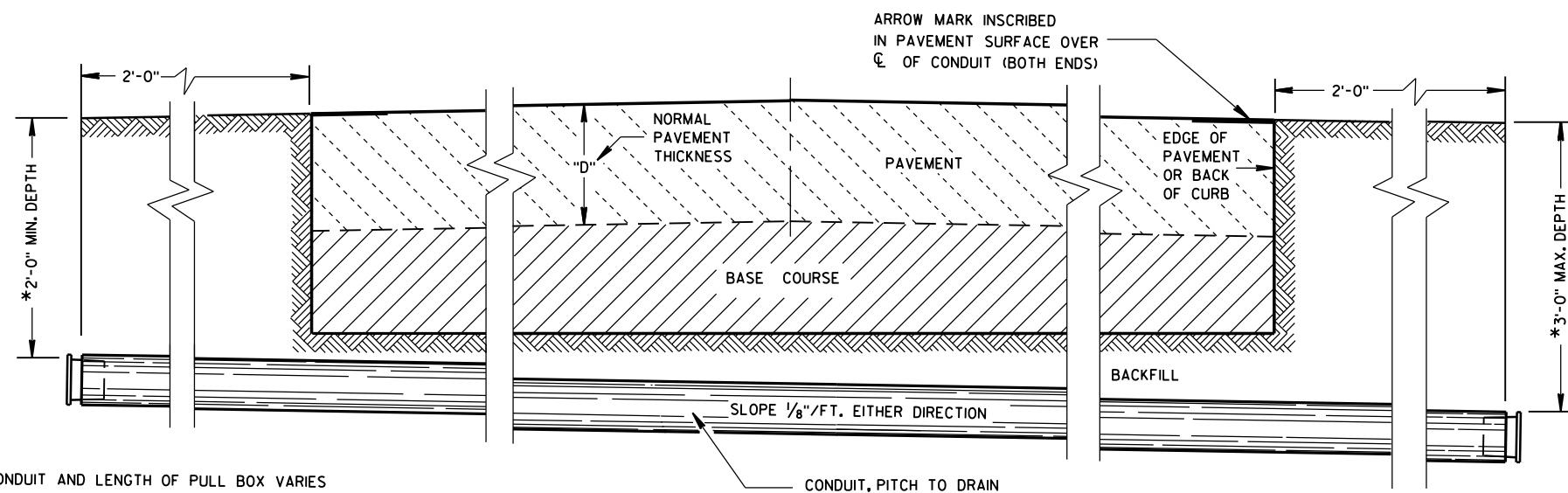
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.

CONDUIT RUNS SHALL BE THE SAME SIZE OF CONDUIT FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX-OR-JUNCTION BOX TO JUNCTION BOX-OR-BASE TO BASE, ETC.).

POLY ROPE OR A PULL WIRE SHALL BE INSTALLED AS STATED IN THE STANDARD SPECIFICATION, ITEM 652.3.1.1.

ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS.



\*DEPTH OF CONDUIT AND LENGTH OF PULL BOX VARIES WITH HEIGHT OF CURB USED. ALSO SEE PULL BOX S.D.D. 9B4

SIDE ELEVATION  
DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

CONDUIT  
UNDER PAVED HIGHWAYS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2014  
DATE

/S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER

FHWA

## 6

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**

**S.D.D. 9 C 11-5**



TO BE USED WHEN GROUND ELEVATION AT BASE EQUALS OR IS GREATER THAN HIGH POINT OF ROADWAY ELEVATION. SEE S.D.D. 9C13-2 WHEN GROUND ELEVATION AT BASE IS LOWER THAN HIGH POINT OF ROADWAY ELEVATION.



Diagram illustrating the components and dimensions of a circular footing template:

- ANCHOR ROD CIRCLE DIAMETER = 15"
- FOOTING PARALLEL TO ROADWAY
- 3"
- 1/2" THICK TEMPLATES
- 1 1/2" ANCHOR RODS
- DIRECTION OF ARM

Diagram illustrating the assembly of three anchor rods (AASHTO M31) with nuts and washers (AASHTO M232) for concrete placement.

Labels and Dimensions:

- TOP TEMPLATE REMOVED AFTER CONCRETE SET
- TOP OF CONCRETE
- 8 1/2"
- THREAD TOP 8 1/2" OF ANCHOR ROD FOR 3 NUTS AND 2 WASHERS AND BOTTOM 5 1/2" FOR 2 NUTS PER ANCHOR ROD. HOT-DIP GALVANIZE THE ENTIRE LENGTH OF THE ANCHOR RODS (AASHTO M31) AND HOT-DIP NUTS AND WASHERS (AASHTO M232). USE ZINC COATED NUTS MANUFACTURED WITH SUFFICIENT ALLOWANCE TO ALLOW NUTS TO RUN FREELY ON THE THREADS.
- (6) - 1 1/2" X 50" ANCHOR RODS
- BOTTOM TEMPLATE LEFT IN PLACE
- THREAD BOTTOM OF ANCHOR ROD 5 1/2"

## CONCRETE BASE TYPE 10 ANCHOR ASSEMBLY

CONCRETE BASE TYPE 10

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

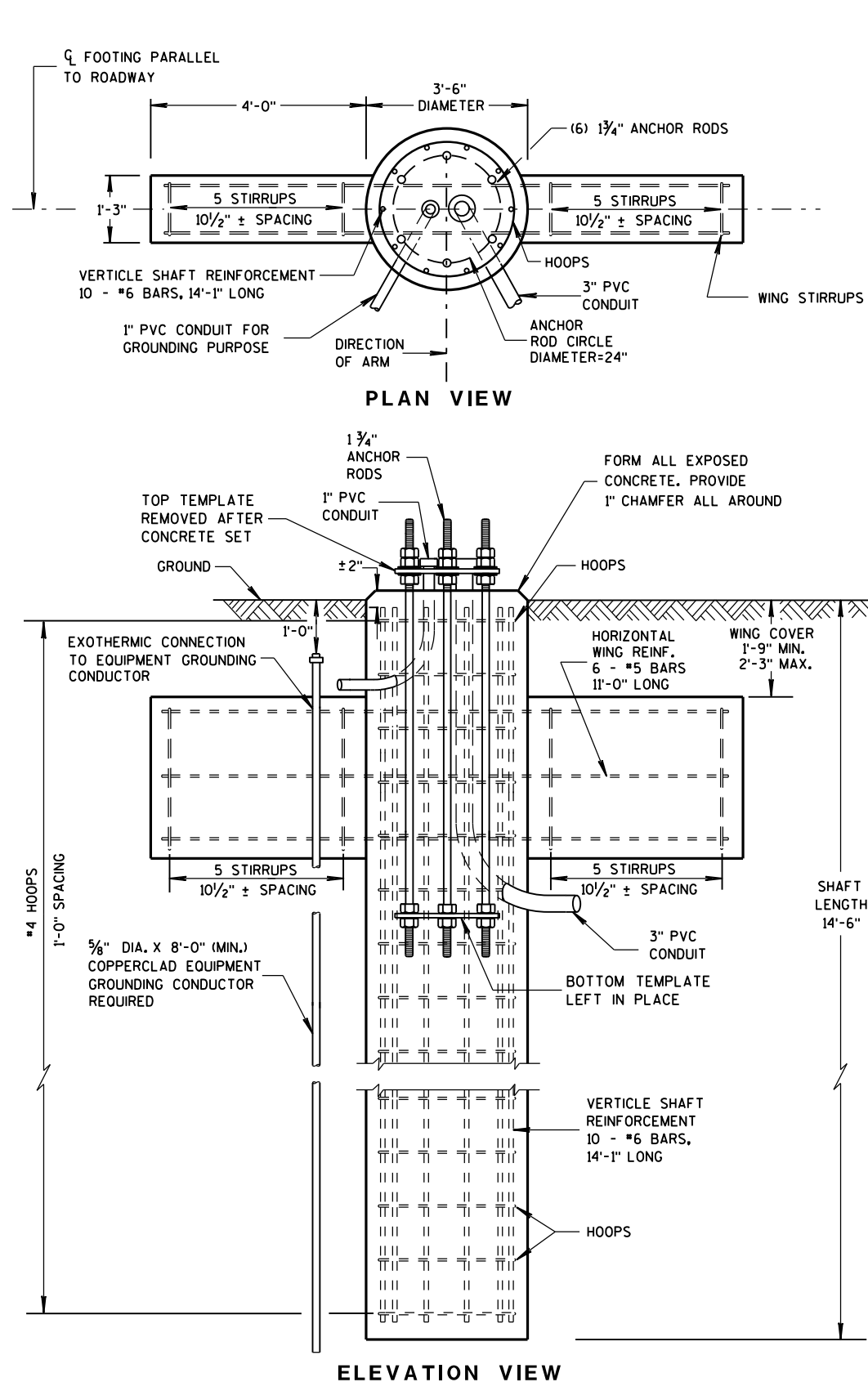
APPROVED  
Sept. 2014  
DATE

/S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER

FHWA

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Sept. 2014 /S/ Ahmet Demirbilek  
DATE STATE ELECTRICAL ENGINEER  
FHWA

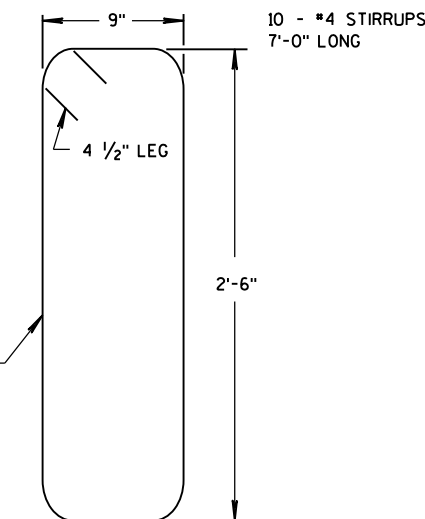


ELEVATION VIEW

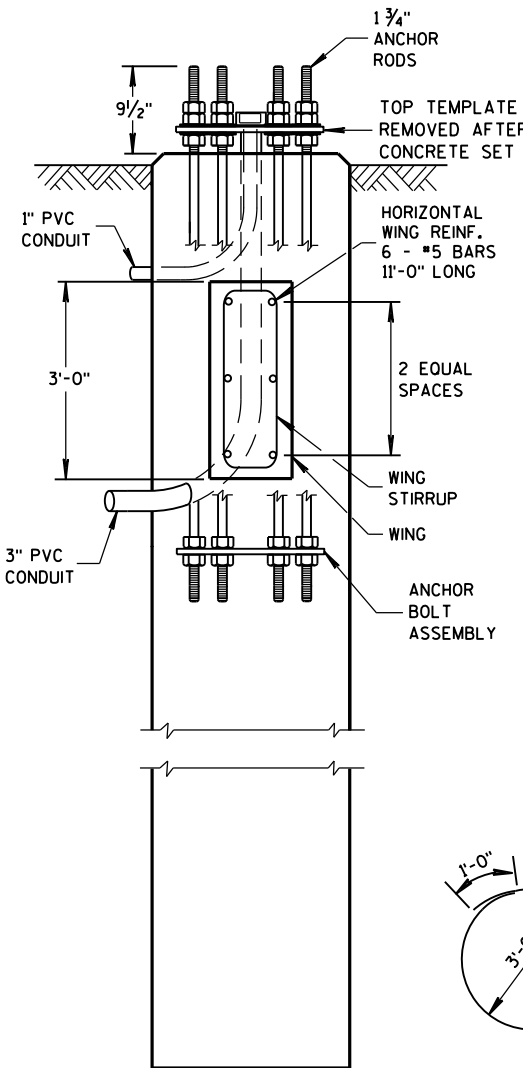
(FOR TYPE 12 & 13 POLES)

CONCRETE = 6.3 C.Y.  
H.S. REINFORCEMENT = 433 LBS.

TO BE USED WHEN GROUND ELEVATION AT BASE EQUALS OR IS GREATER THAN HIGH POINT OF ROADWAY ELEVATION.  
SEE S.D.D. 9C13-2 WHEN GROUND ELEVATION AT BASE IS LOWER THAN HIGH POINT OF ROADWAY ELEVATION.

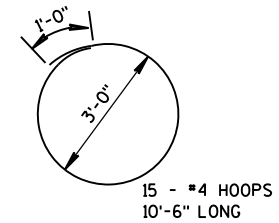


WING STIRRUP



SIDE VIEW

DOES NOT SHOW HOOPS OR  
VERTICAL SHAFT REINFORCEMENT



HOOP DETAIL

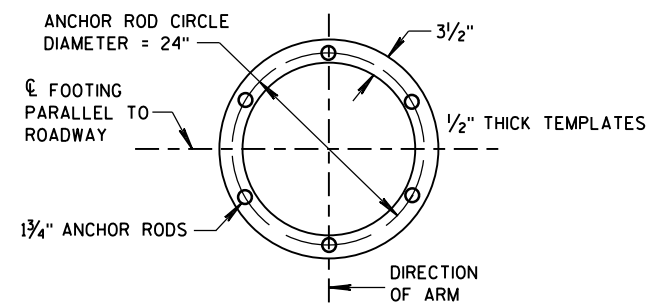
### GENERAL NOTES

- DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.
- ORIENT ANCHOR RODS IN FOOTING AND PROVIDE ANCHOR ROD PROJECTION ABOVE TOP OF CONCRETE FOOTING BASE PER THIS SHEET.
- BENDING DIMENSIONS FOR REINFORCING BARS ARE OUT TO OUT.
- USE 3" CLEAR FOR ALL REINFORCEMENT UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF THE UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
- WELDING OF ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TEMPLATES SHALL BE USED.
- BASES (SHAFT), BELOW THE WING, SHALL BE EXCAVATED BY THE USE OF A CIRCULAR AUGER. IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE SOIL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.
- TOP SURFACE OF THE CONCRETE BASE SHALL BE TROWEL FINISHED AND LEVEL.
- CONDUIT SIZE AND LOCATIONS SHALL BE AS SHOWN ON THE PLANS.
- MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6 X THE DIAMETER.
- CONDUIT HEIGHT ABOVE CONCRETE BASE SHALL BE 4 1/2" INCHES. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED. NONMETALLIC CONDUIT SHALL HAVE BELL ENDS INSTALLED. ALL CONDUIT SHALL SLOPE TO PULL BOX.
- ALL CONDUIT ENDS AT THE TOP OF THE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.
- BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION OF CABLE OR WIRE.
- WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTOR FITTINGS, UL LISTED FOR ELECTRICAL USE, SHALL BE USED.
- A NO. 4 AWG, STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD).
- THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED TO ENTER THE BASE THROUGH A 1-INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4-FOOT COIL OF WIRE ABOVE THE CONCRETE BASE, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.
- BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS.
- THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVEL WAY SHALL BE 24-INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18-INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36-INCHES, (GREATER THAN 36-INCHES IF INSTALLED IN BREAKER-RUN), EXCEPT WITH THE WRITTEN APPROVAL OF THE ENGINEER.
- ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

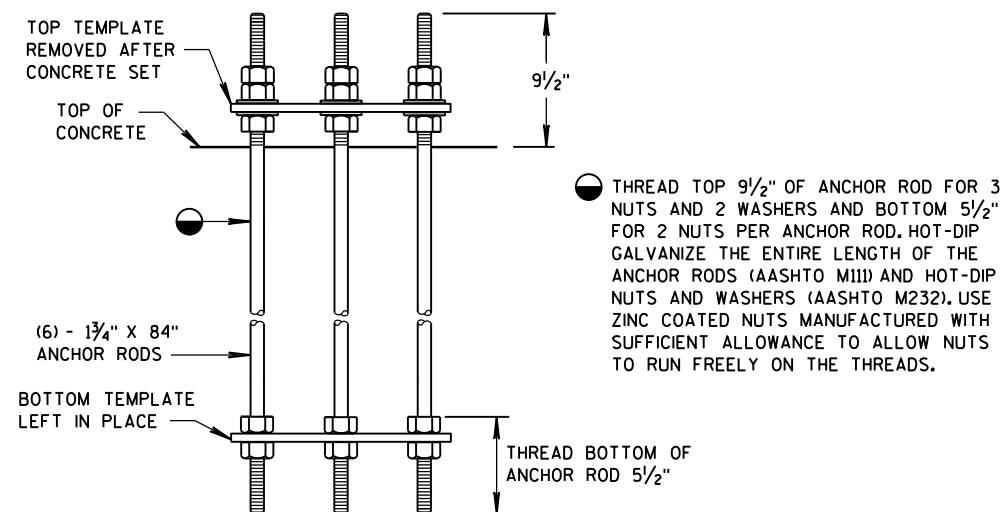
CONCRETE MASONRY	fc=3,500 p.s.i.
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60	fy=60,000 p.s.i.
ANCHOR RODS, AASHTO M314 GRADE 55	fy=55,000 p.s.i.
TEMPLATES, ASTM A709 GRADE 36	fy=36,000 p.s.i.

CONCRETE BASE TYPE 13

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

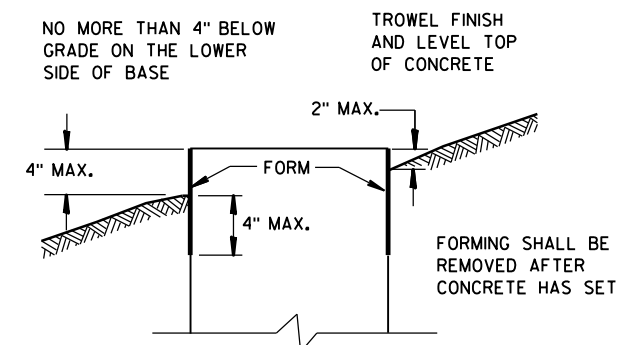


TOP AND BOTTOM TEMPLATES



ANCHOR BOLT ASSEMBLY DETAIL

## CONCRETE BASE TYPE 13 ANCHOR ASSEMBLY



FORMING DETAIL

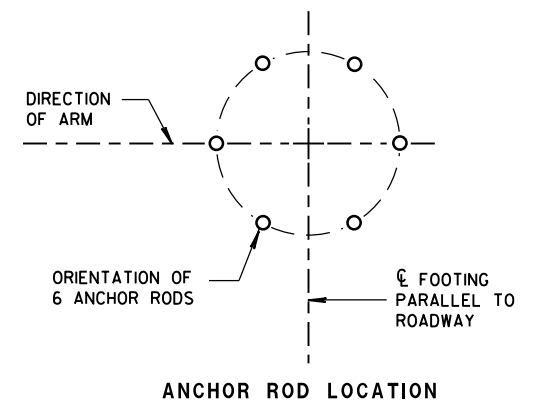
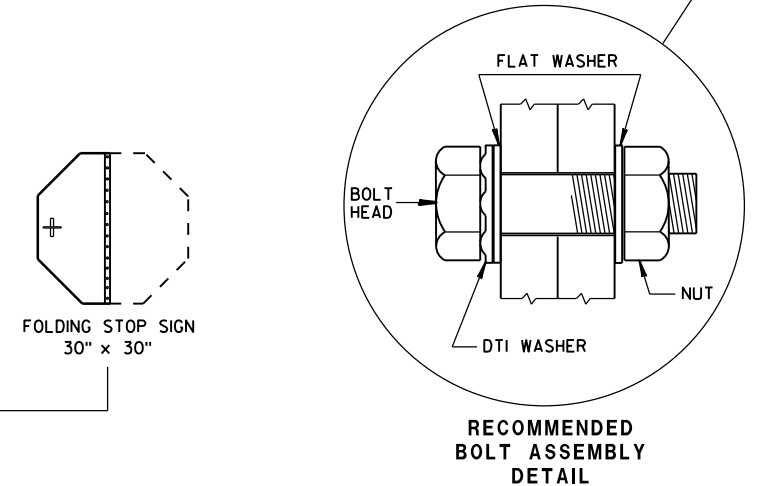
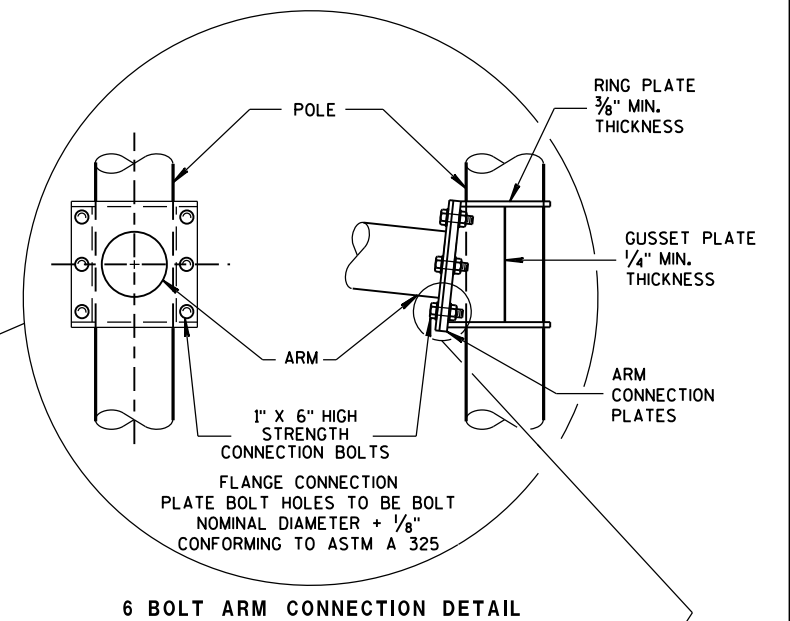
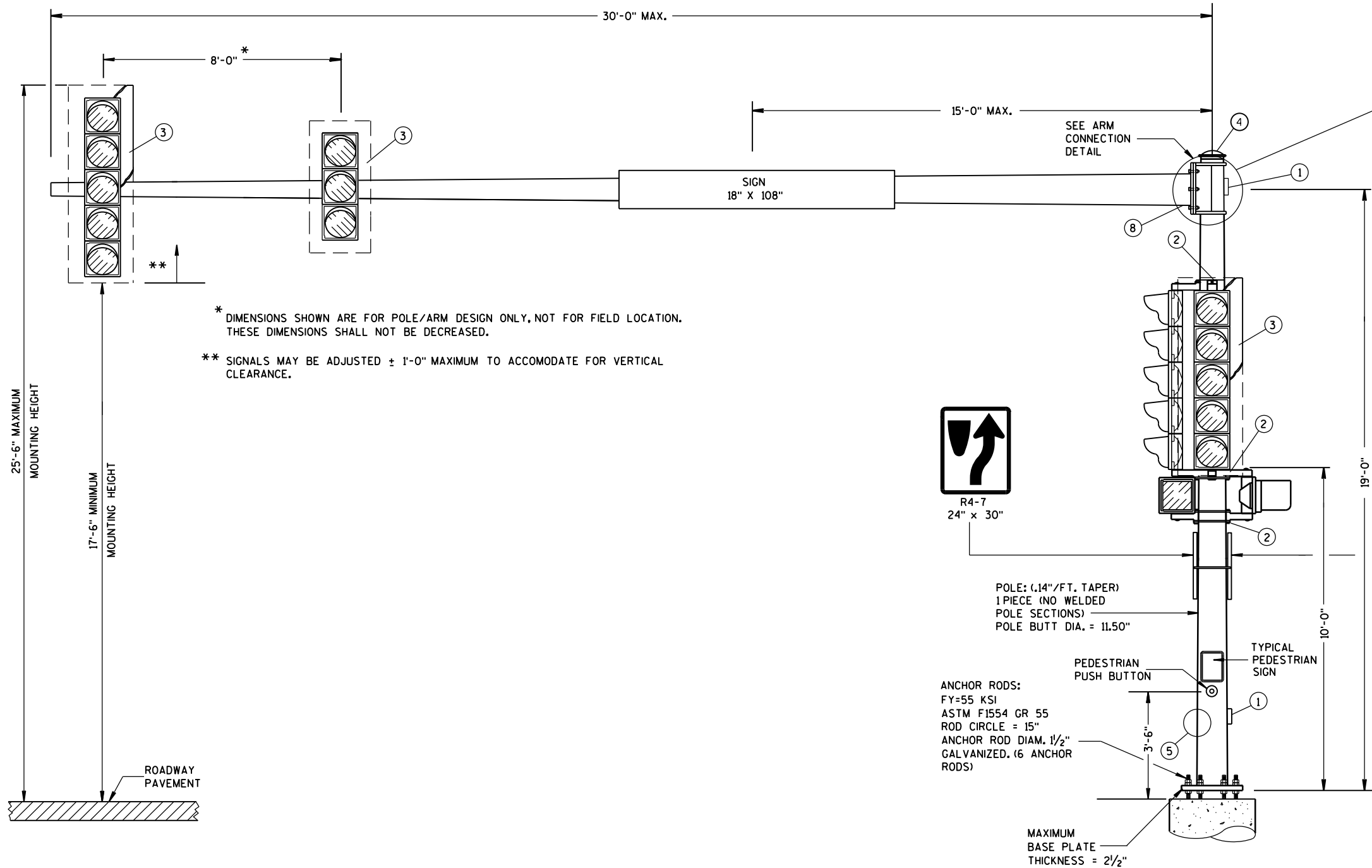
CONCRETE BASE TYPE 13

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2014  
DATE/S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER

FHWA



(MAXIMUM LOAD)

## TYPE 9 POLE 15' - 30' MONOTUBE ARM

TYPE 9 POLE  
15' - 30' MONOTUBE ARMSTATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

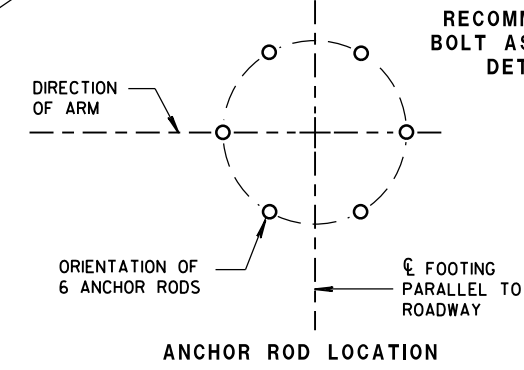
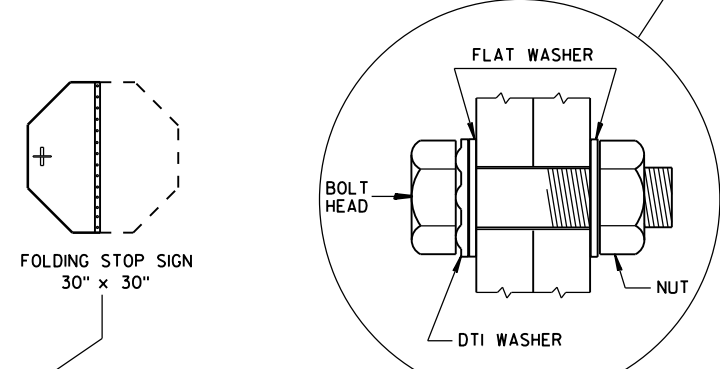
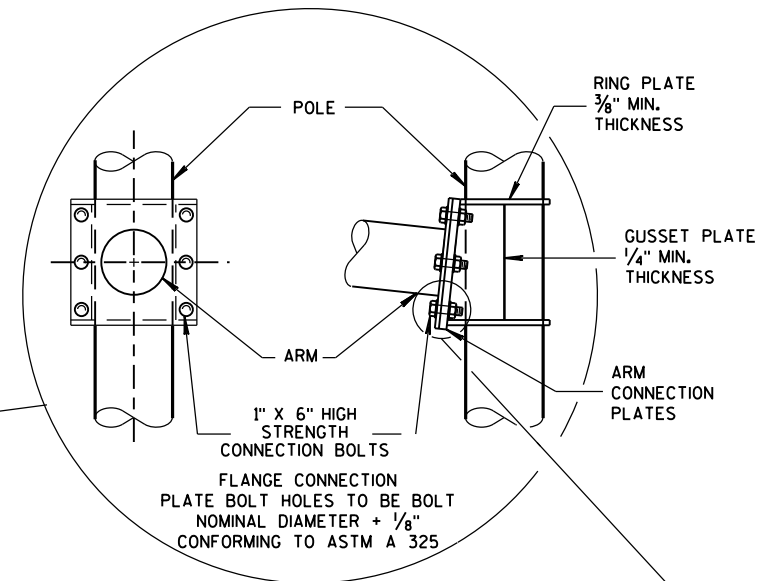
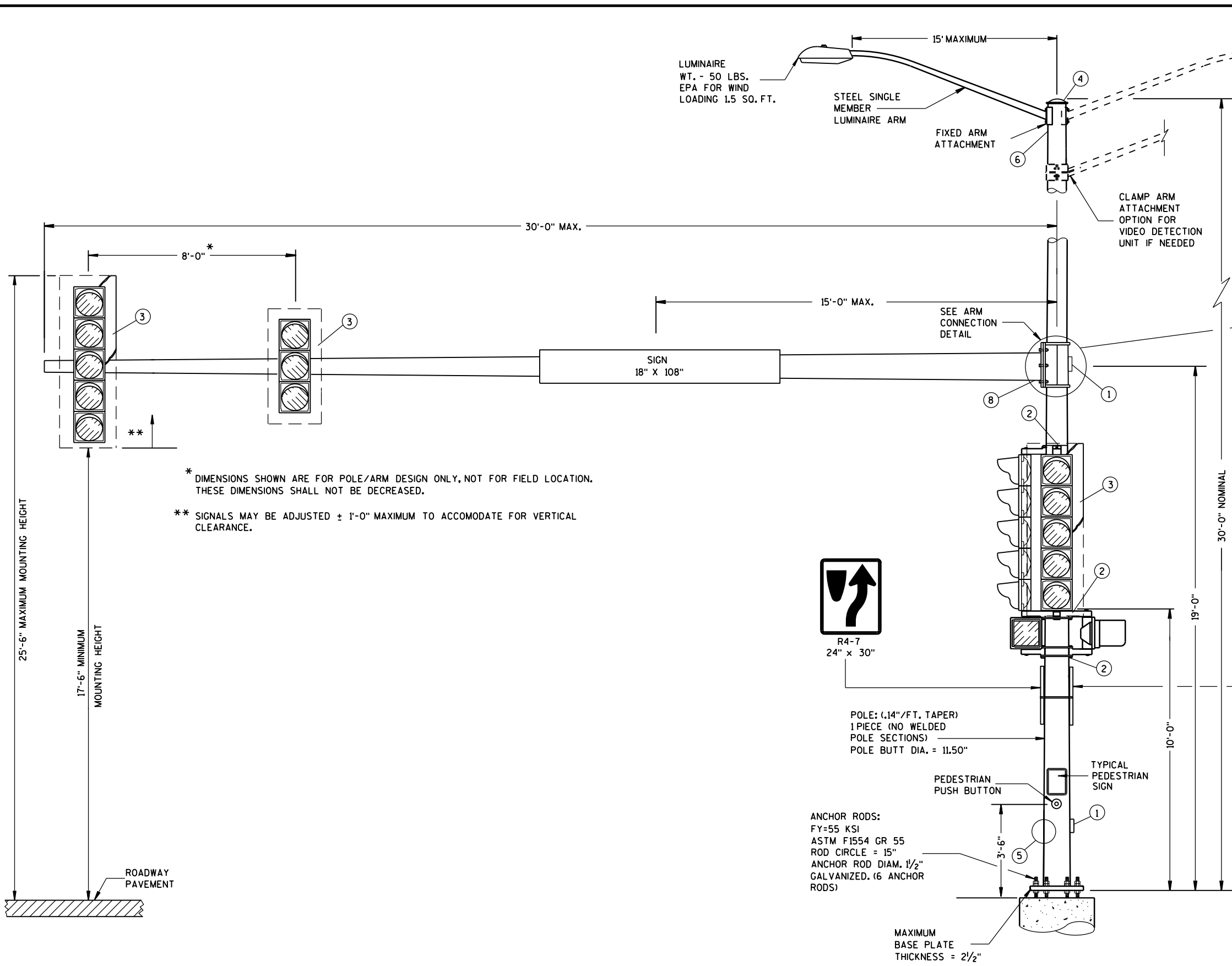
Sept. 2014

DATE

FHWA

/S/ Ahmet Demireblek

STATE ELECTRICAL ENGINEER



(MAXIMUM LOAD)  
**TYPE 10 POLE  
15'- 30' MONOTUBE ARM**

<b>TYPE 10 POLE 15' - 30' MONOTUBE ARM</b>	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED Sept. 2014 DATE	/S/ Ahmet Demirbilek STATE ELECTRICAL ENGINEER
FHWA	



<b>TYPE 12 POLE</b>	
<b>35' - 55' MONOTUBE ARM</b>	
<b>STATE OF WISCONSIN</b>	
<b>DEPARTMENT OF TRANSPORTATION</b>	
<b>APPROVED</b> <u>Sept., 2014</u> DATE	<u>/S/ Ahmet Demirbilek</u> STATE ELECTRICAL ENGINEER
FHWA	



/S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

POLE TYPES 9 AND 10 ARE FOR ARM LENGTHS 15-FOOT TO 30-FOOT.

POLE TYPES 12 AND 13 ARE FOR ARM LENGTHS 35-FOOT TO 55-FOOT.

MONOTUBE POLE AND ARM SHALL BE GALVANIZED STEEL.

RING-STIFFENED BUILT-UP BOX TYPE OF ATTACHMENT FOR TRAFFIC SIGNAL ARM.

ONE (1) PIECE POLE CONSTRUCTION (NO WELDED POLE SECTIONS).

STANDARD STRAIGHT ARM DESIGN (3 ½ ± RISE).

SECTION 657, POLES OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

PROVIDE WIREWAY THRU POLE WALL AND ARM CONNECTION PLATES. PROVIDE ROUND, SMOOTH INSIDE SURFACE.

MANUFACTURER'S SUBMITTED POLE DESIGNS AND DRAWINGS SHALL BE SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER AND CERTIFIED AS BEING IN COMPLIANCE WITH THE AASHTO 2013 6TH EDITION AND ALL PERTINENT WISDOT SPECIFICATIONS AND DRAWINGS FOR TRAFFIC AND LIGHTING STRUCTURES AND AS FOLLOWS:

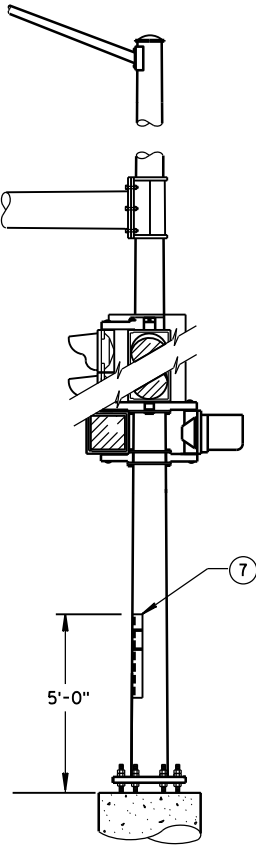
- CATEGORY III FATIGUE LOADS OF GALLOPING, TRUCK GUSTS (AT 45 MPH VEHICLE VELOCITY) AND NATURAL WIND GUSTS FOR DESIGN OF TYPE 9 AND TYPE 10 STRUCTURES.
- CATEGORY II FATIGUE LOADS OF GALLOPING, TRUCK GUSTS (AT 45 MPH VEHICLE VELOCITY) AND NATURAL WIND GUSTS FOR DESIGN OF TYPE 12 AND TYPE 13 STRUCTURES.
- 90 MPH (3-SECOND GUST) WIND SPEED AND A 50 YEAR DESIGN LIFE.

SECURE THE OPENING BELOW THE BASE PLATE WITH STAINLESS STEEL OR GALVANIZED STEEL MESH AND SECURE THE MESH WITH ¾" S.S. BANDING AROUND THE LEVELING NUTS.

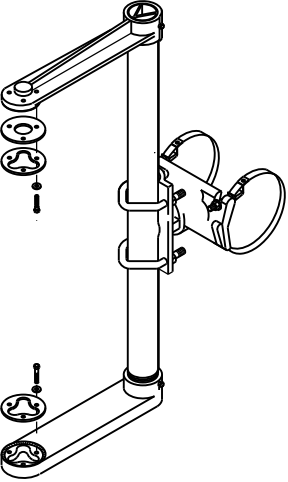
INDENT PRINT (NOMINAL ½" HIGH) THE POLE LENGTH AND FIRST TWO LETTERS OF THE MANUFACTURERS NAME ON TWO SIDES OF THE BASE PLATE 180 DEGREES APART, BEFORE GALVANIZING. THE ARM SHALL BE IDENTIFIED WITH THE SAME INFORMATION BY INDENT PRINT.

SIGNAL FACE SHALL BE MOUNTED 6 INCHES (NOMINAL) FROM THE END OF THE MONOTUBE ARM OR AS SHOWN ON THE PLAN CONSTRUCTION DETAIL OR AS DIRECTED BY THE PROJECT ENGINEER/ELECTRICAL OPERATIONS PERSONNEL. MOUNT ALL LIKE HEADS AT SAME ELEVATION.

SIGN MOUNTING BRACKETS SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 637 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.

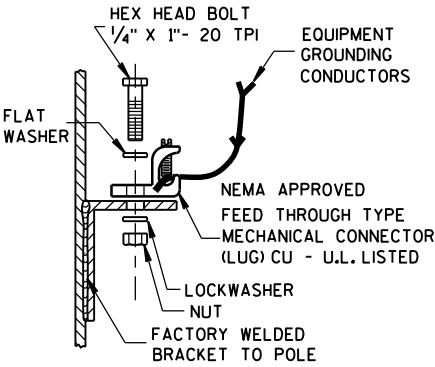


STRUCTURAL IDENTIFICATION  
PLAQUE PLACEMENT



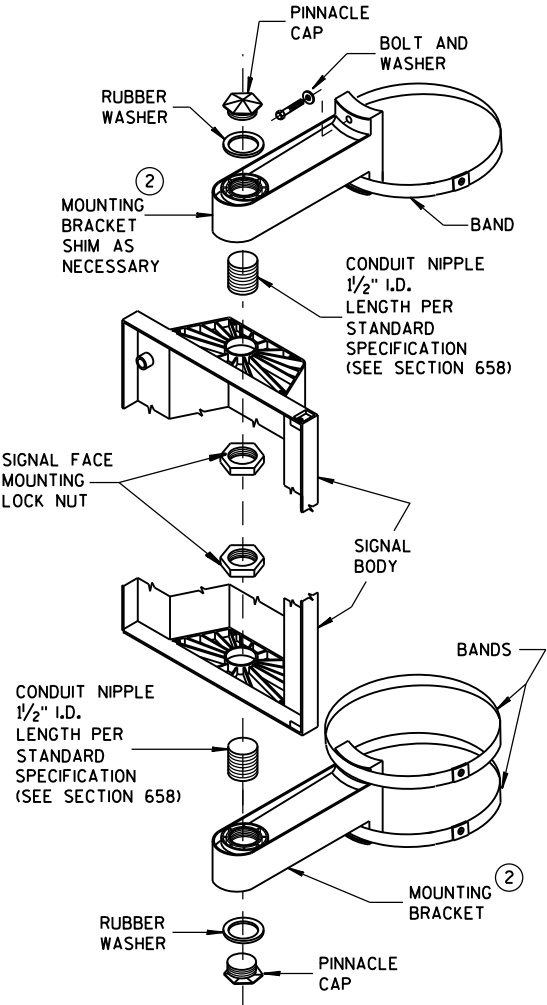
SIGNAL FACE MOUNTING BRACKET  
DETAIL FOR MONOTUBE ARM

(MOUNT PER MANUFACTURER'S RECOMMENDATION)

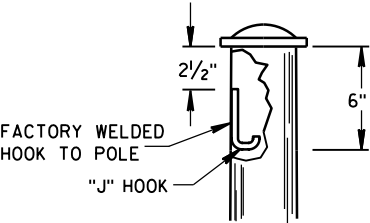


TYPICAL GROUNDING CONNECTIONS

NUT, BOLT AND WASHERS SHALL  
BE STAINLESS STEEL



SIGNAL FACE  
VERTICAL MOUNTING DETAIL



"J" HOOK WIRE SUPPORT

- DESIGN FOR MAXIMUM ALLOWABLE HANDHOLE WITH COVER ASSEMBLY WITH TWO ¼" x ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLTS.
- SIGNAL MOUNTING BRACKETS FOR POLE MOUNTING, MOUNT WITH CAP SCREW AND BANDING, (SEE SPECIFICATIONS SEC. 658).
- SECURELY MOUNT BACKPLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING, PER MANUFACTURERS RECOMMENDATIONS.
- THE TOP OF THE POLE SHAFT AND THE END OF THE MONOTUBE ARM SHALL BE EQUIPPED WITH A REMOVABLE, VENTILATED CAP HELD SECURELY IN PLACE WITH SET SCREWS.
- FACTORY-WELDED BRACKET FOR GROUNDING LUG, OPPOSITE HANDHOLE, (LUG AND HARDWARE PAID UNDER SEPARATE ITEM). PROVIDE HOLE IN BRACKET FOR ¼" x ¾" - 20 TPI STAINLESS STEEL HEX HEAD BOLT.
- FACTORY-WELDED "J" HOOK FOR STRAIN RELIEF FOR POLE LUMINAIRE WIRE.
- INSTALL DEPARTMENT PROVIDED STRUCTURAL IDENTIFICATION PLAQUES.

STRUCTURAL IDENTIFICATION PLAQUES SHALL BE PLACED ON THE POLES IN THE SAME DIRECTION AS THE ARM.

MOUNTING HEIGHT SHALL BE 5'-0" ABOVE THE CURB OR SHOULDER . ADJUST IF IT IS KNOWN THAT REQUIRED TRAFFIC SIGNS WILL BE OBSTRUCTED.

- FACTORY DRILLED ½" DRAIN HOLE 2" FROM FLANGE CONNECTION PLATE.

GENERAL NOTES AND HARDWARE  
DETAILS FOR TYPE 9, 10, 12 & 13  
POLES WITH MONOTUBE ARMS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2014

DATE

FHWA

/S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER

GENERAL NOTES

ORIENT ANCHOR BOLTS IN FOOTING AND PROVIDE ANCHOR BOLT STICK OUT ABOVE TOP OF CONCRETE FOOTING BASE PER FABRICATION DRAWING.

BENDING DIMENSIONS FOR REINFORCING BARS ARE OUT TO OUT.

USE 3" CLEAR FOR ALL REINFORCEMENT UNLESS NOTED OTHERWISE.

SIGN SUPPORTS SHALL BE LOCATED NORMAL TO ROADWAY.

THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

WELDING OF ANCHOR BOLTS TO THE CAGE IS UNACCEPTABLE. TEMPLATES SHALL BE USED.

BAR CAGE TO BE ASSEMBLED USING TIE WIRES ONLY, NO WELDING.

BASES (SHAFT) SHALL BE EXCAVATED BY THE USE OF A CIRCULAR AUGER. IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE SOIL, THE FORM SHALL BE REMOVED BEFORE BACK FILLING AROUND THE BASE. ANY REQUIRED BACKFILL SHALL BE WELL COMPACTED IN LAYERS OF 1 FOOT OR LESS. COMPACTION SHALL BE BY MECHANICAL MEANS. CARE SHALL BE TAKEN SO NO DAMAGE OCCURS TO THE CONCRETE BASE DURING COMPACTION.

EXCAVATION OF MATERIALS NOT OCCUPIED BY CONCRETE SHALL BE MINIMIZED TO REDUCE DISTURBANCE OF THE SURROUNDING SOILS.

THE BOTTOM OF THE DRILLED HOLE SHALL BE FIRM AND THOROUGHLY CLEANED SO NO LOOSE OR COMPRESSIBLE MATERIALS ARE PRESENT AT THE TIME OF THE CONCRETE PLACEMENT.

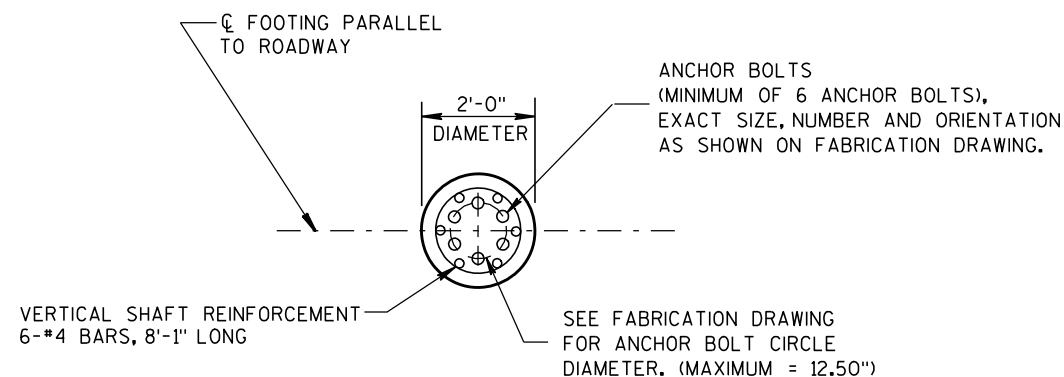
IF THE DRILLED HOLE CONTAINS STANDING WATER, THE CONCRETE SHALL BE PLACED USING A TREMIE TO DISPLACE THE WATER.

THE REINFORCEMENT AND ANCHOR BOLTS SHALL BE ADEQUATELY SUPPORTED IN THE PROPER POSITIONS SO NO MOVEMENT OCCURS DURING CONCRETE PLACEMENT.

ANY DAMAGE TO THE CONCRETE BASE DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED AT THE ENGINEER'S DIRECTION, AT THE EXPENSE OF THE CONTRACTOR.

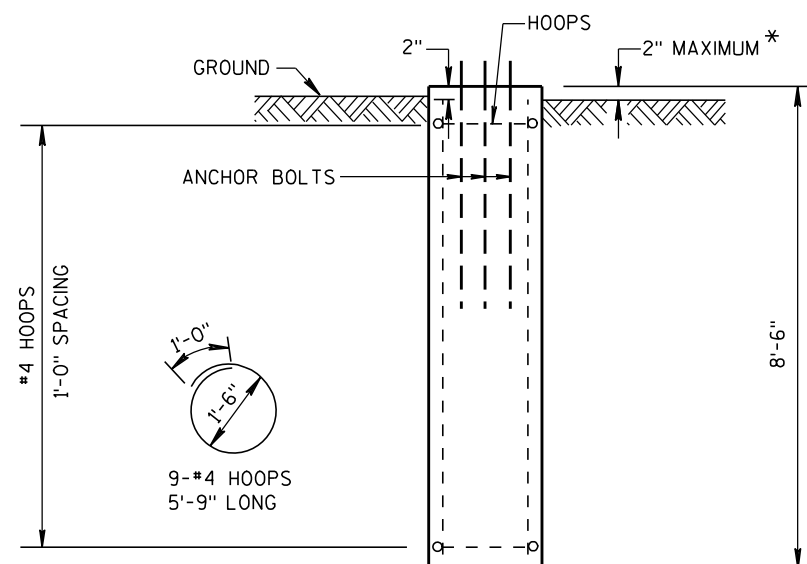
CONCRETE MASONRY -----  $f_c=3,500$  p.s.i.  
HIGH STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 -----  $f_y=60,000$  p.s.i.  
ANCHOR BOLTS ----- AASHTO M314 GRADE 55

THIS FOOTING HAS BEEN DESIGNED FOR SITES WHERE SOILS EXHIBIT A PHI-ANGLE GREATER THAN OR EQUAL TO 20 DEGREES (GRANULAR SOILS), OR A COHESION VALUE GREATER THAN OR EQUAL TO 350 PSF (COHESIVE SOILS).



PLAN VIEW

\* FOR OVERHEAD SIGN SUPPORTS THAT ARE INSTALLED ADJACENT TO SIDEWALKS, THE TOP OF THE BASE SHALL BE POURED FLUSH WITH THE GROUND.



ELEVATION VIEW

CONCRETE - 1.0 C.Y. PER FOOTING  
H.S. REINFORCEMENT - 67 LBS. PER FOOTING

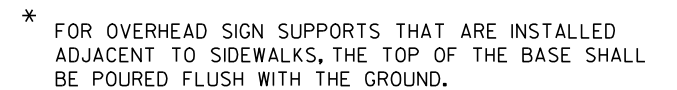
24" DIAMETER CANTILEVER  
OVERHEAD SIGN SUPPORT BASE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
4-17-09 /S/ Thomas N. Notbohm  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA

## 6

**S.D.D. 15 C 24-2**



GROUND

2"

HOOPS

2" MAXIMUM \*

ANCHOR BOLTS

#4 HOOPS

1'-0" SPACING

13'-0"

1'-0"

2'-6"

14-#4 HOOPS

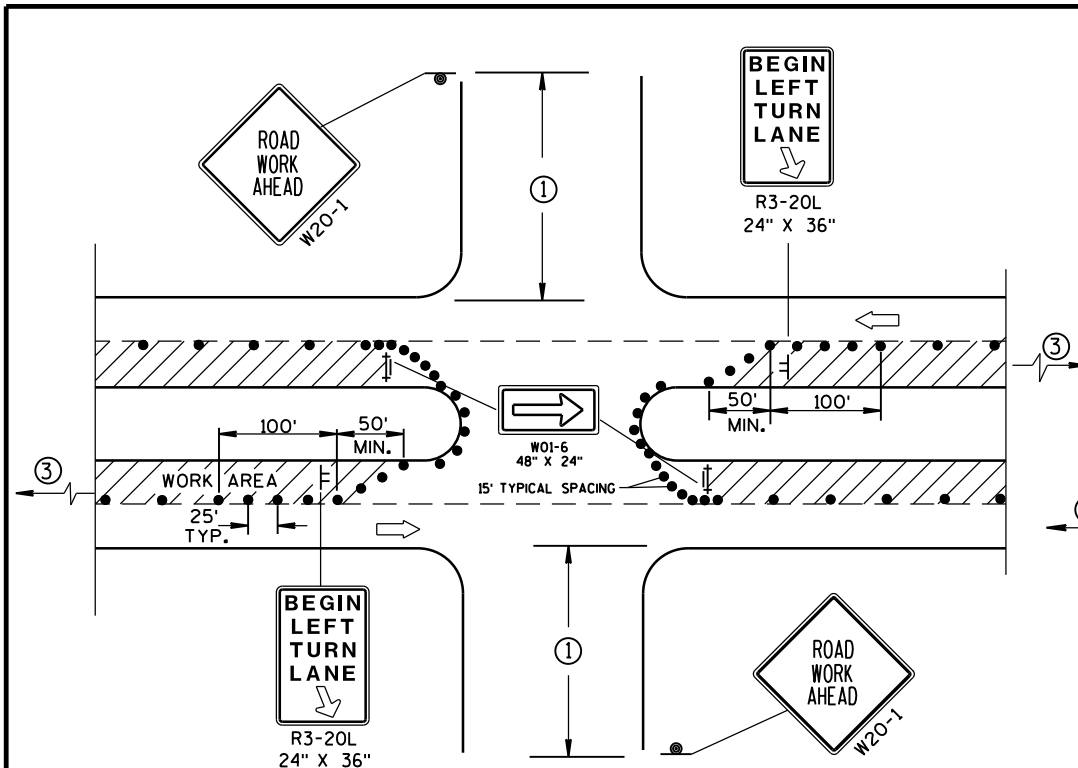
8'-11" LONG

1'-0"

2'-6"

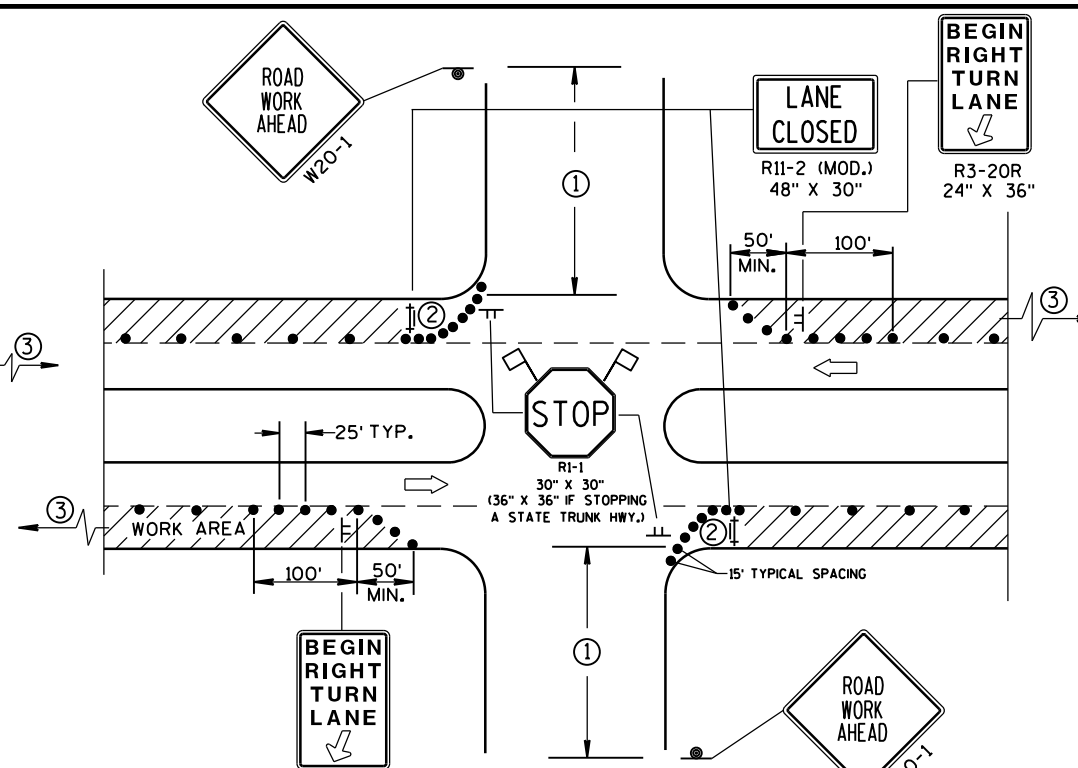
14-#4 HOOPS  
8'-11" LONG

APPROVED  
4/17/2009 /S/ Thomas N. Notbohm  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



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.

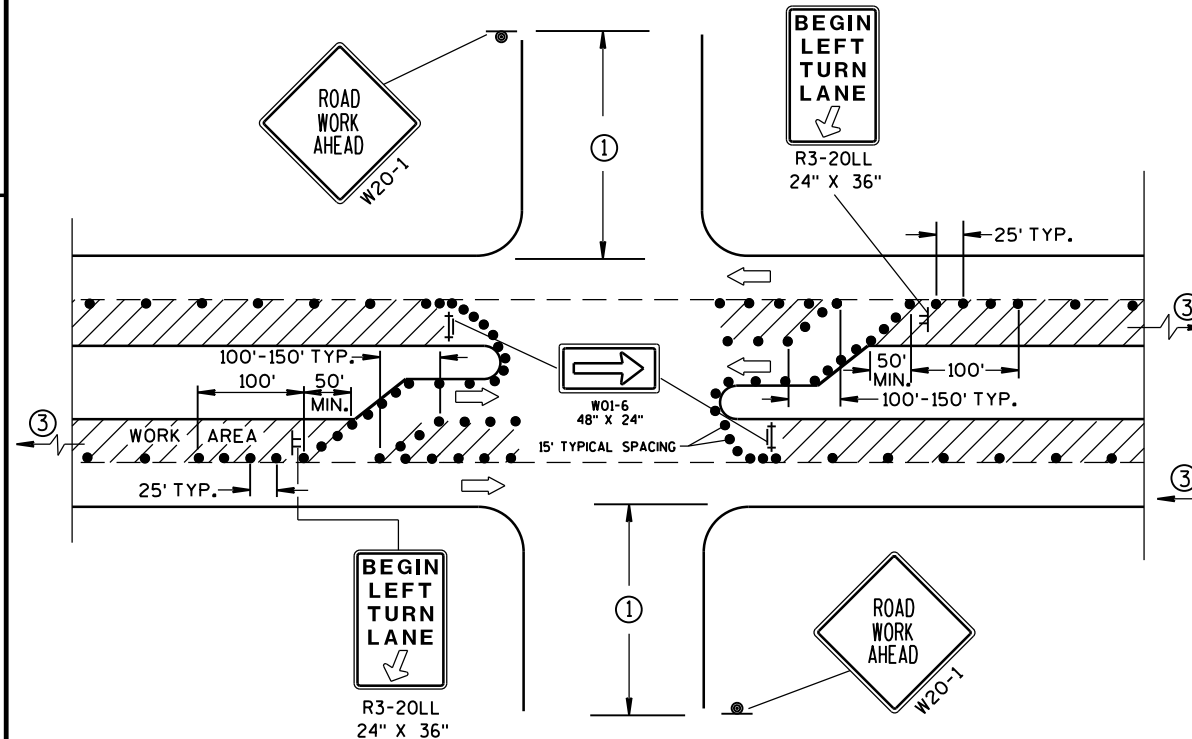
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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.

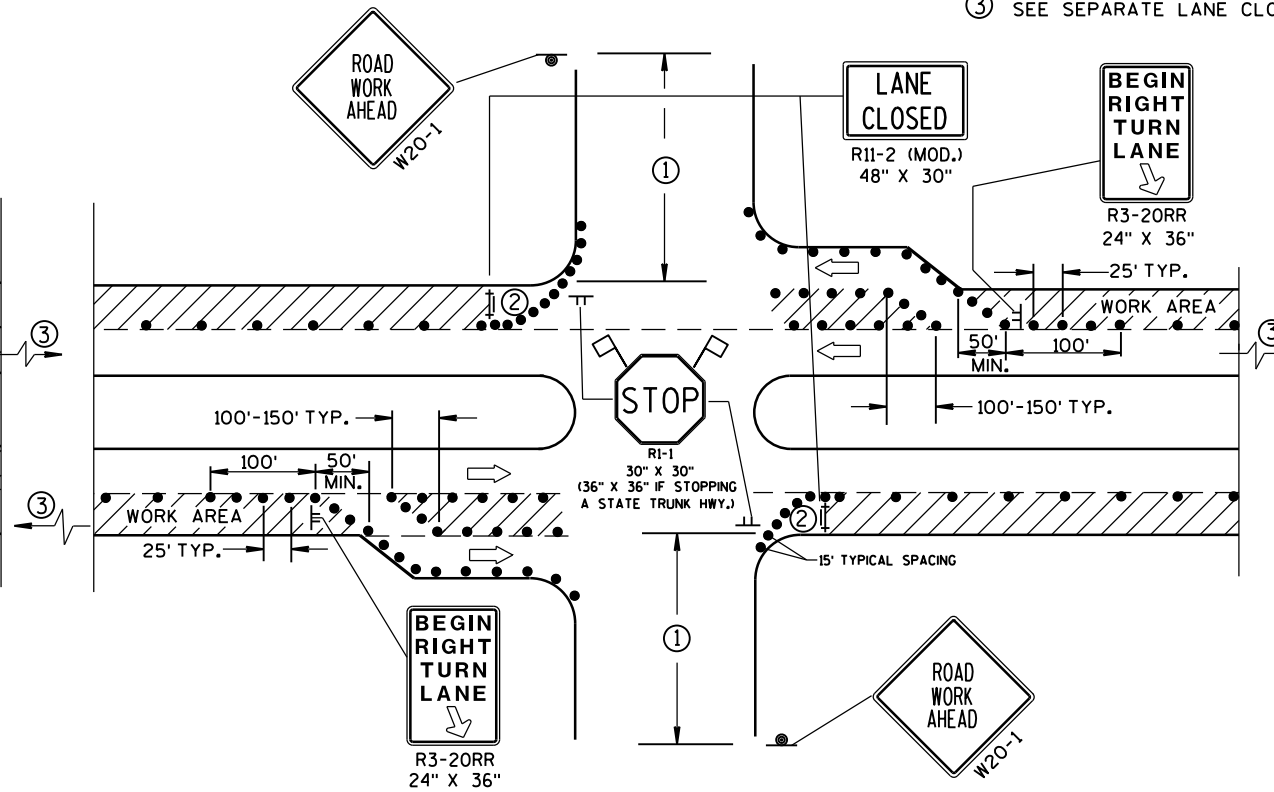
- ① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.  
350' IF 35-40 MPH.  
200' IF 25-30 MPH.
- ② ALSO USE BARRICADE AND 15-FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS.
- ③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.

### 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



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

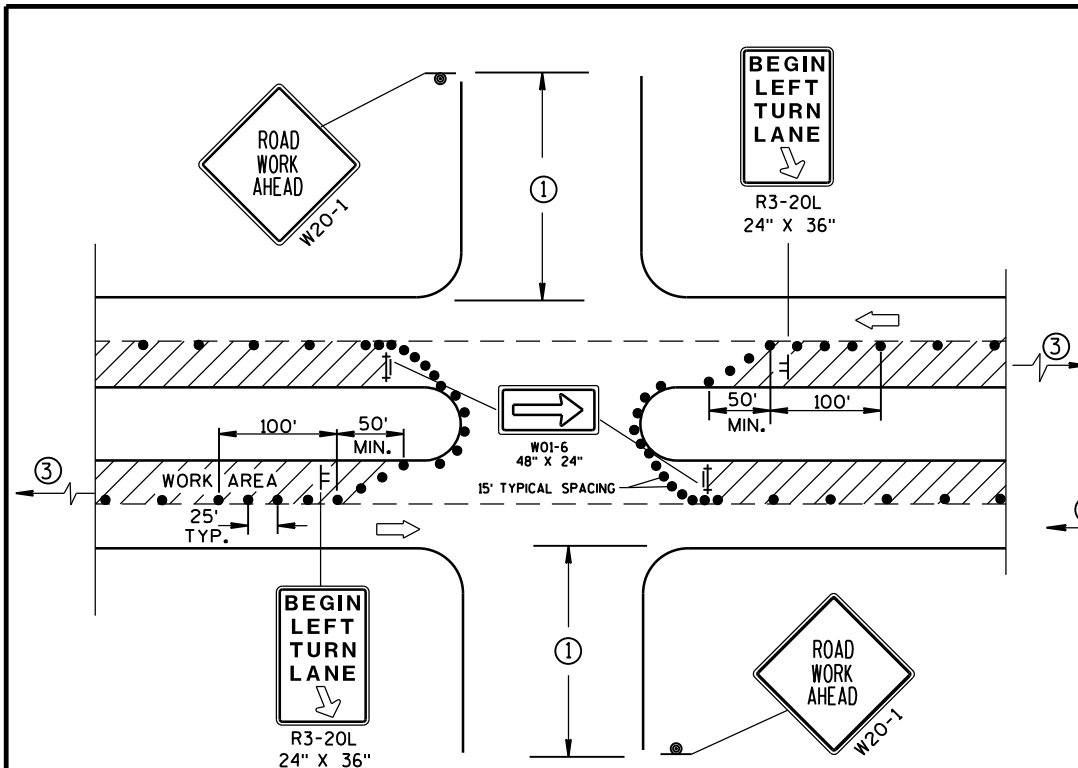


DETAIL D  
FOR RIGHT LANE CLOSURE AT INTERSECTION  
(WITH RIGHT TURN BAY OPEN)

### TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE

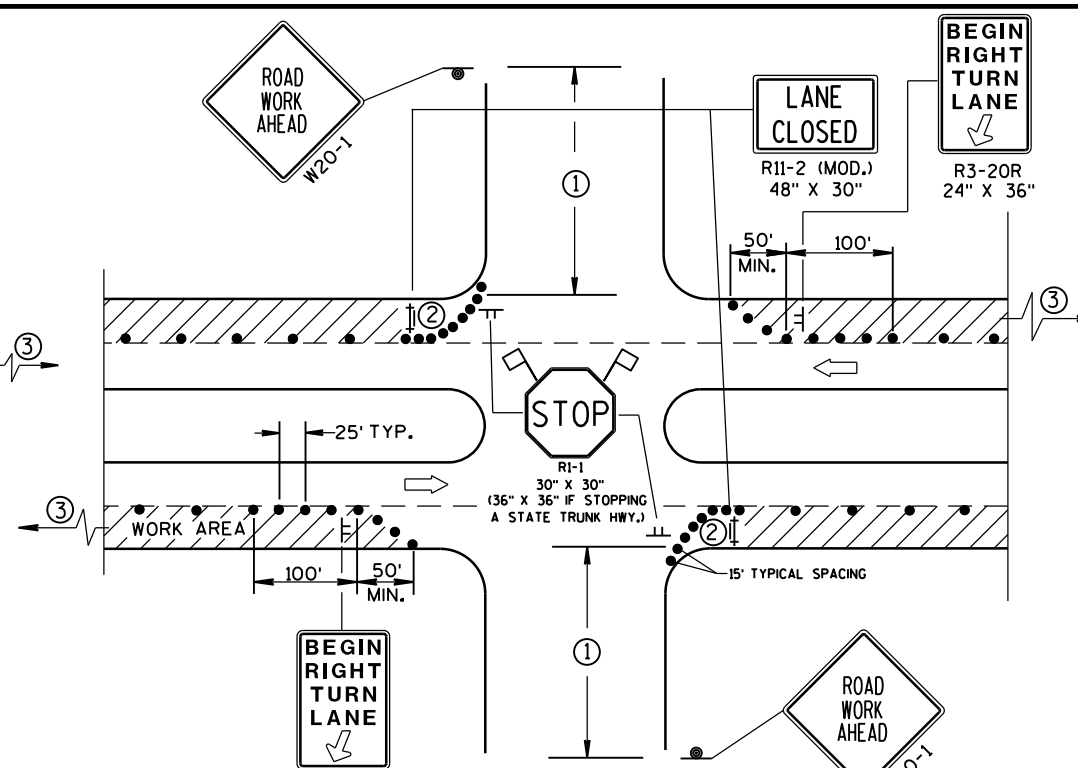
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/2013 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



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.

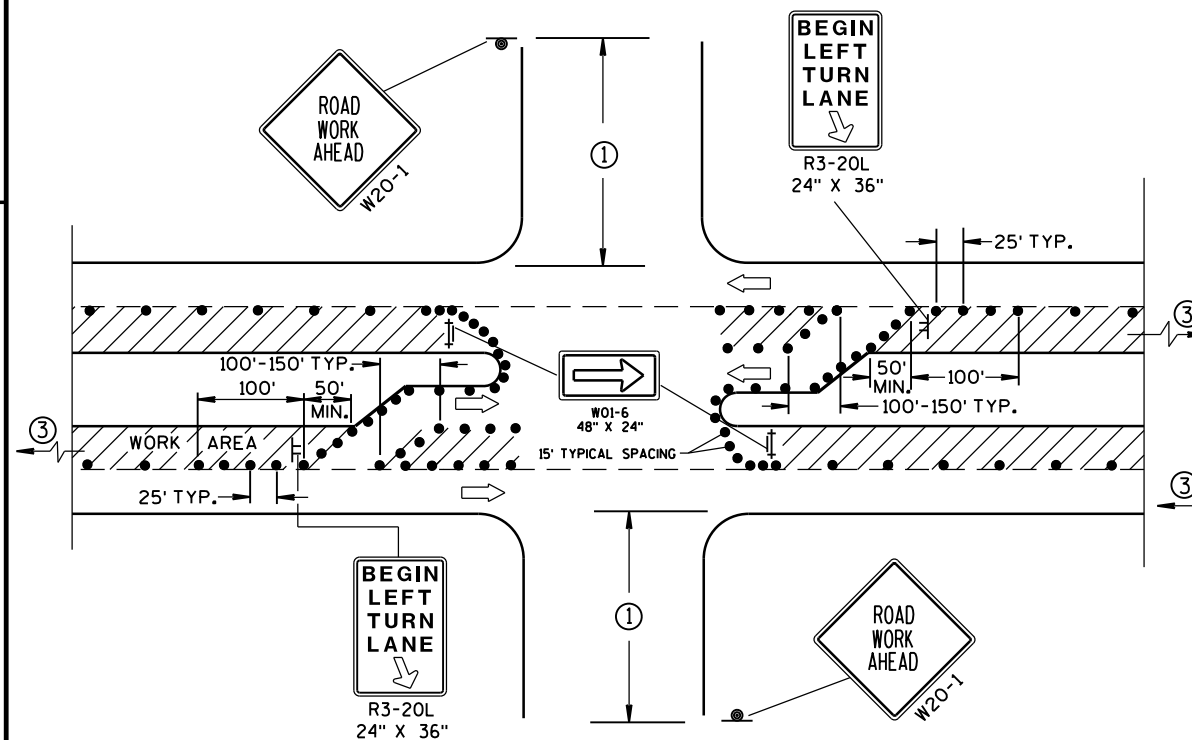
CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

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.

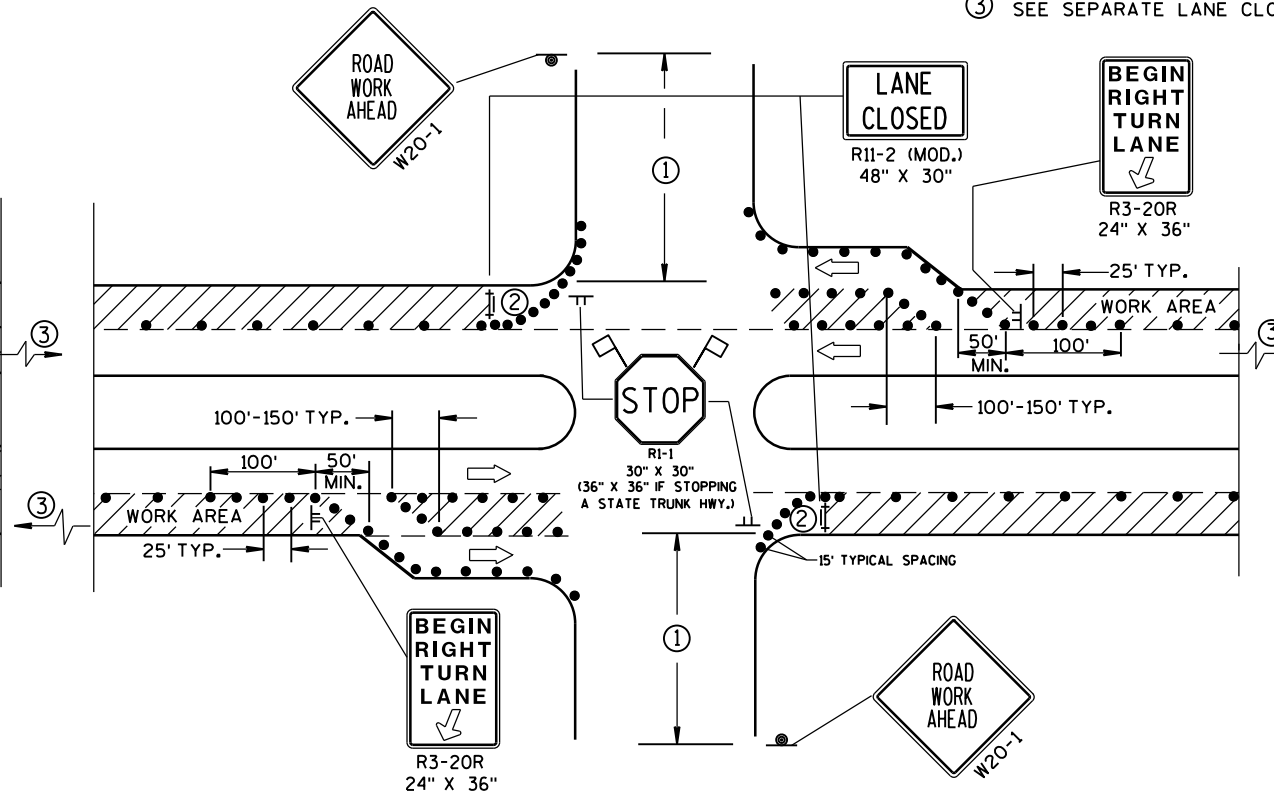
- 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.  
350' IF 35-40 MPH.  
200' IF 25-30 MPH.
- ALSO USE BARRICADE AND 15-FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS.
- SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.

### 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



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)

### TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

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

LEGEND

- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ⚡➡ FLASHING ARROW BOARD
- ▨ WORK AREA

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT SHOULDER. FOR CLOSING THE LEFT SHOULDER, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR DIVIDED ROADWAYS WITH ANY NUMBER OF TRAVEL LANES.

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.

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

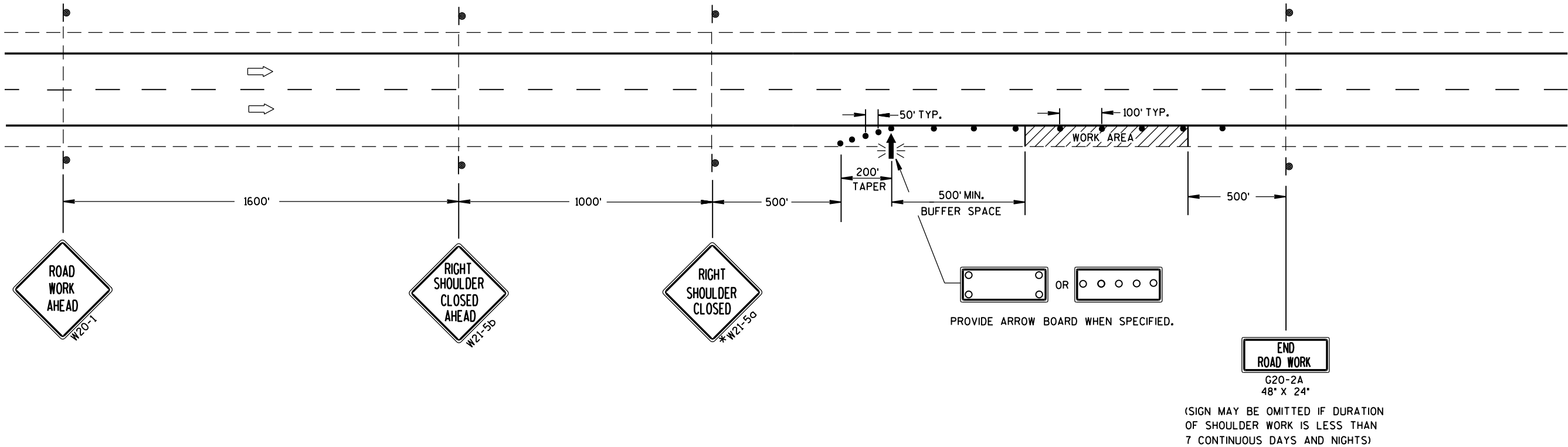
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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 THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

\*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-5a SIGN MAY BE OMITTED.



TRAFFIC CONTROL  
SHOULDER CLOSURE ON DIVIDED  
ROADWAY, SPEEDS GREATER  
THAN 40 MPH

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/2013 /S/ Travis Feltz  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



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.

W20-1 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.

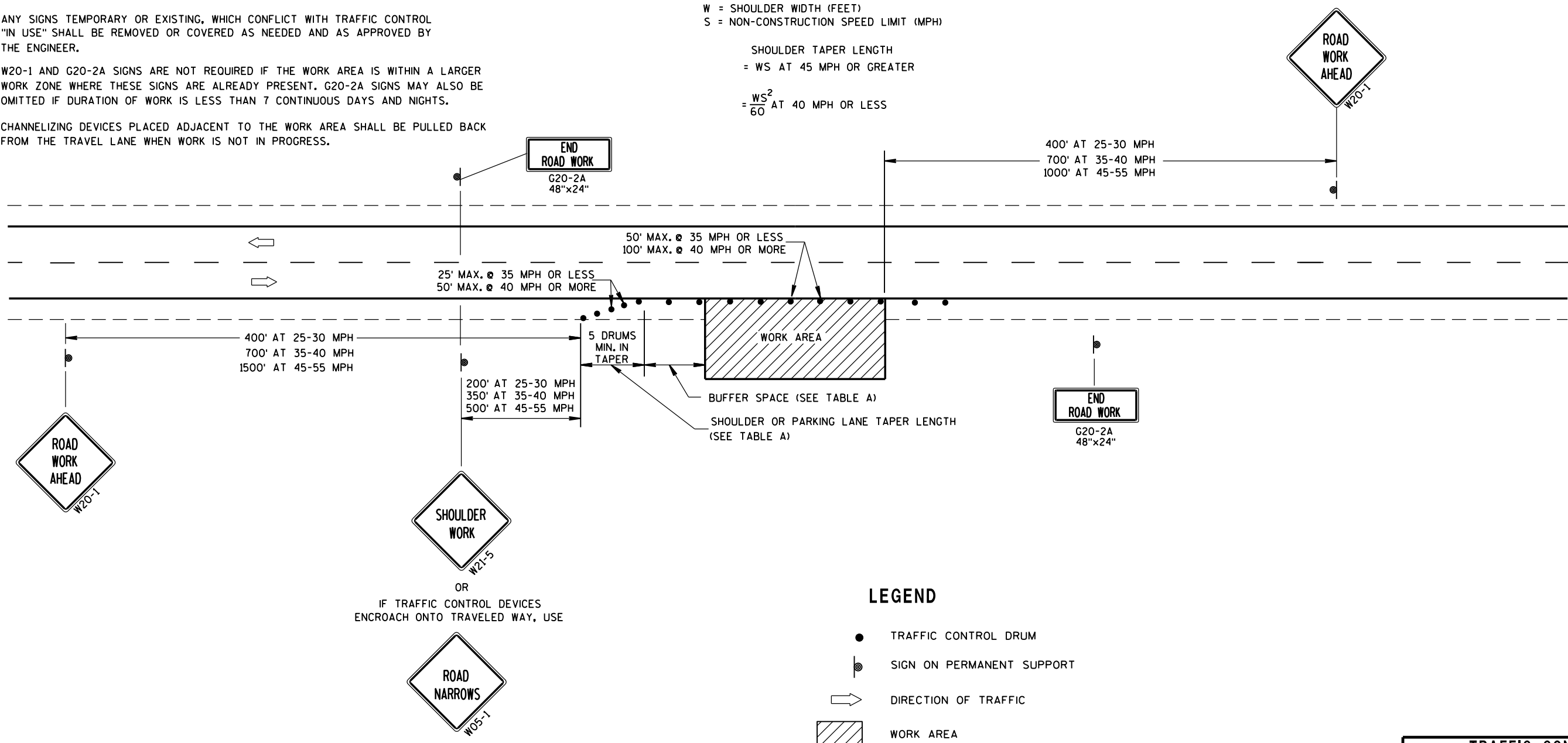
CHANNELIZING DEVICES PLACED ADJACENT TO THE WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

TABLE A

SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S \ W	4	6	8	10	
30	20	30	40	50	85
35	30	45	55	70	120
40	40	55	75	90	170
45	60	90	120	150	220
50	70	100	135	170	280
55	75	110	150	185	335

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

SHOULDER TAPER LENGTH  
= WS AT 45 MPH OR GREATER  
  
=  $\frac{WS^2}{60}$  AT 40 MPH OR LESS



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 8/2013 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	

## Notes



## *Wisconsin Department of Transportation*

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