# MINNESOTA DEPARTMENT OF TRANSPORTATION
# ANOKA COUNTY

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING, DRAINAGE, BITUMINOUS PATH, SIGNAL SYSTEM, SIGNING, AND BRIDGE

LOCATED ON C.S.A.H. 116 BETWEEN CRANE ST. AND 610' EAST OF VAN BUREN ST. N.E.

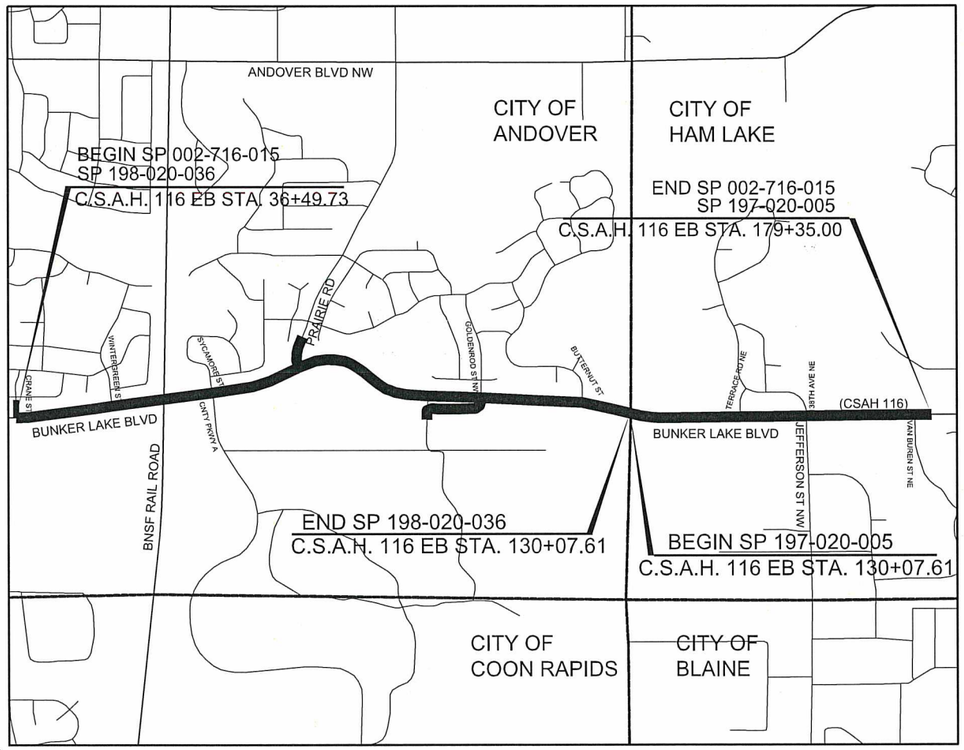
STATE PROJ. NO. SP 002-716-015

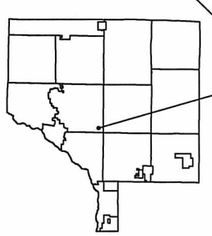
C.S.A.H. 116

| | | | | |
|---|---|---|---|---|
| GROSS LENGTH | 14,285.27 | FEET | 2.706 | MILES |
| BRIDGES-LENGTH | 0.00 | FEET | 0.00 | MILES |
| EXCEPTIONS-LENGTH | 0.00 | FEET | 0.00 | MILES |
| NET LENGTH | 14,285.27 | FEET | 2.706 | MILES |

EX-BRIDGE # -
NEW-BRIDGE # 02J48

UTILITY NOTE: THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTLITY DATA".





PROJECT LOCATION

CITIES OF ANDOVER
AND HAM LAKE
ANOKA COUNTY
MN/DOT TRANSPORTATION DISTRICT - METRO
SECTIONS 31, 35 & 36
TOWNSHIP 32 NORTH
RANGES 23 & 24 WEST

## PLAN SYMBOLS

COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
SLOPE EASEMENT
EXISTING RIGHT OF WAY
PROPERTY LINE
CORPORATE OR CITY LIMITS
RETAINING WALL
RAILROAD
RAILROAD RIGHT OF WAY
RIVER OR CREEK
DRAINAGE DITCH
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
WOOD FENCE
STONE WALL OR FENCE
HEDGE
LOWLAND
TIMBER
ORCHARD
BRUSH
NURSERY
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) 1-S-F
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
RAILROAD CROSSING BELL
RAILROAD CROSSING GATE
MANHOLE M.H.
CATCH BASIN C.B.
FIRE HYDRANT
CAST IRON MONUMENT
IRON PIN
GRAVEL PIT G
SAND PIT S
BORROW PIT B
ROCK QUARRY Q

## UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE & POWER ON POWER POLES
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (Cable Terminal)
GAS MAIN
WATERMAIN
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
T-AE
SEWER (Sanitary or Storm)
SEWER MANHOLE

## SCALES

PLAN 0' 100'
PROFILE HORIZONTAL 0' 100'
VERTICAL 0' 10'
X-SECTIONS HORIZONTAL 0' 10'
VERTICAL 0' 10'
INDEX MAP 0' 2200'

DESIGN DESIGNATION - BIKE/PED PATH

DESIGN SPEED (MPH) 20
BASED ON :
4.5 FT HEIGHT OF EYE
0.0 FT HEIGHT OF OBJECT

DESIGN SPEED NOT ACHIEVED AT:
TRAIL PARK STA 59+40.07 TO STA 59+66.18
TRAIL PARK STA 60+99.19 TO STA 61+37.06
TRAIL PARK STA 64+00.07 TO STA 65+10.01
TRAIL PARK STA 98+75.73 TO STA 99+30.11
TRAIL PARK STA 101+04.67 TO STA 101+42.08
(STOP CONDITION)
TRAIL NORTH STA 89+22.00 TO STA 89+49.86
(STOP CONDITION)

DESIGN DESIGNATION

| | |
|---|---|
| ESAL 20 | 2,055,476 |
| R VALUE | 40 |
| ADT (2016) | 14,873 |
| PROJ. ADT (2036) | 23,797 |
| PROJ. HCADT (2036) | 1,404 |
| SOIL FACTOR | NA |
| 10 TON DESIGN | |

FUNCTIONAL CLASSIFICATION MINOR ARTERIAL RELIEVER
NO. OF TRAFFIC LANES 4 NO. OF PARKING LANES 0
DESIGN SPEED 55 MPH
STOPPING SIGHT DISTANCE BASED ON :
HEIGHT OF EYE 3.5 HEIGHT OF OBJECT 2'
DESIGN SPEED NOT ACHIEVED AT:
STA. _____ TO STA. _____ MPH _____

MINN. PROJ. NO. STPM 0216(064)

GOVERNING SPECIFICATIONS

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX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THIS PLAN CONTAINS 482 SHEETS

Approved David O. Burt 5/3 ,20 16
CITY OF ANDOVER ENGINEER

Approved Thomas P. Colbert 5/4 ,20 16
CITY OF HAM LAKE ENGINEER

Approved _____ 5/3 ,20 16
ANOKA COUNTY ENGINEER

Approved Liam Ulrich 5/9 ,20 16
STATE BRIDGE ENGINEER

REVIEWED FOR COMPLIANCE WITH STATE AID AND FEDERAL AID RULES/POLICY Elisa Batts for 5/13 ,20 16
DISTRICT STATE AID ENGINEER

APPROVED FOR STATE AID AND FEDERAL AID FUNDING Elisa Batts for 5/13 ,20 16
STATE AID ENGINEER

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\1__Title.dgn 04/12/2016 1:56:20 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TITLE SHEET

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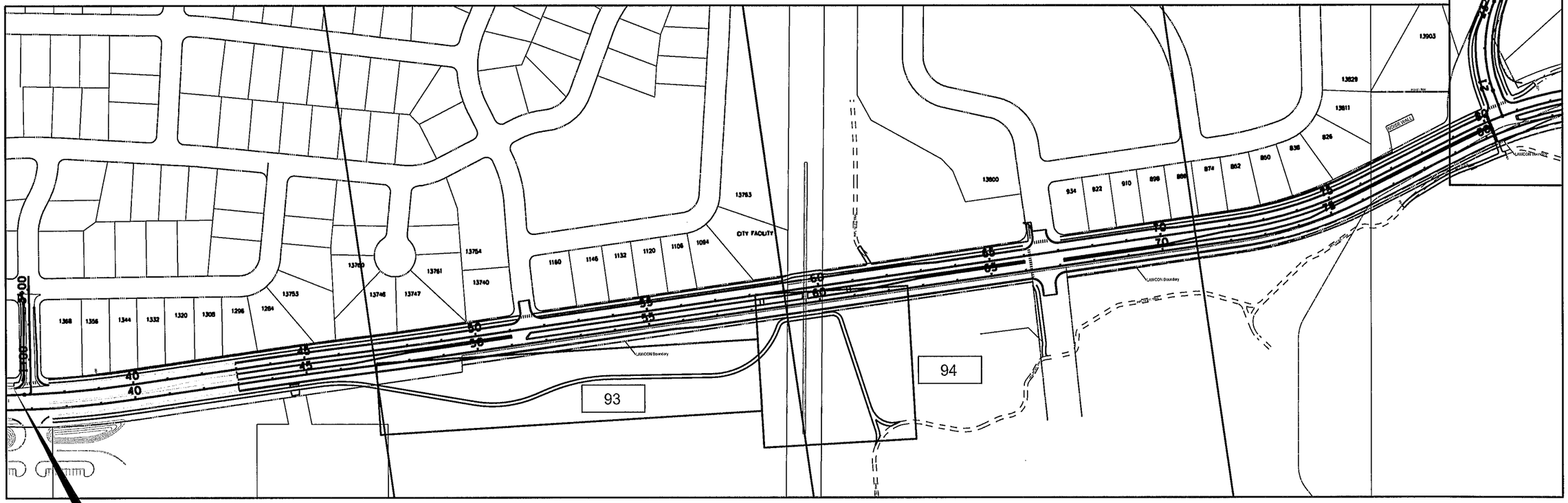


BEGIN S.P. 002-716-015
S.P. 198-020-036
C.S.A.H. 116 STA. 36+49.73
BEGIN CONSTRUCTION

## LEGEND

| | |
|---|---|
| XXX | INPLACE TOPOGRAPHY AND REMOVAL PLAN SHEET NUMBER |
| XXX | CONSTRUCTION PLAN SHEET NUMBER |
| XXX | STORM DRAINAGE PLAN SHEET NUMBER |

N

0 300
SCALE IN FEET

1 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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NAME: P:\02-716-15\Plan\0271615_GEN.dgn 04/12/2016 1:56:24 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

GENERAL LAYOUT

Sheet 2 of 482 Sheets

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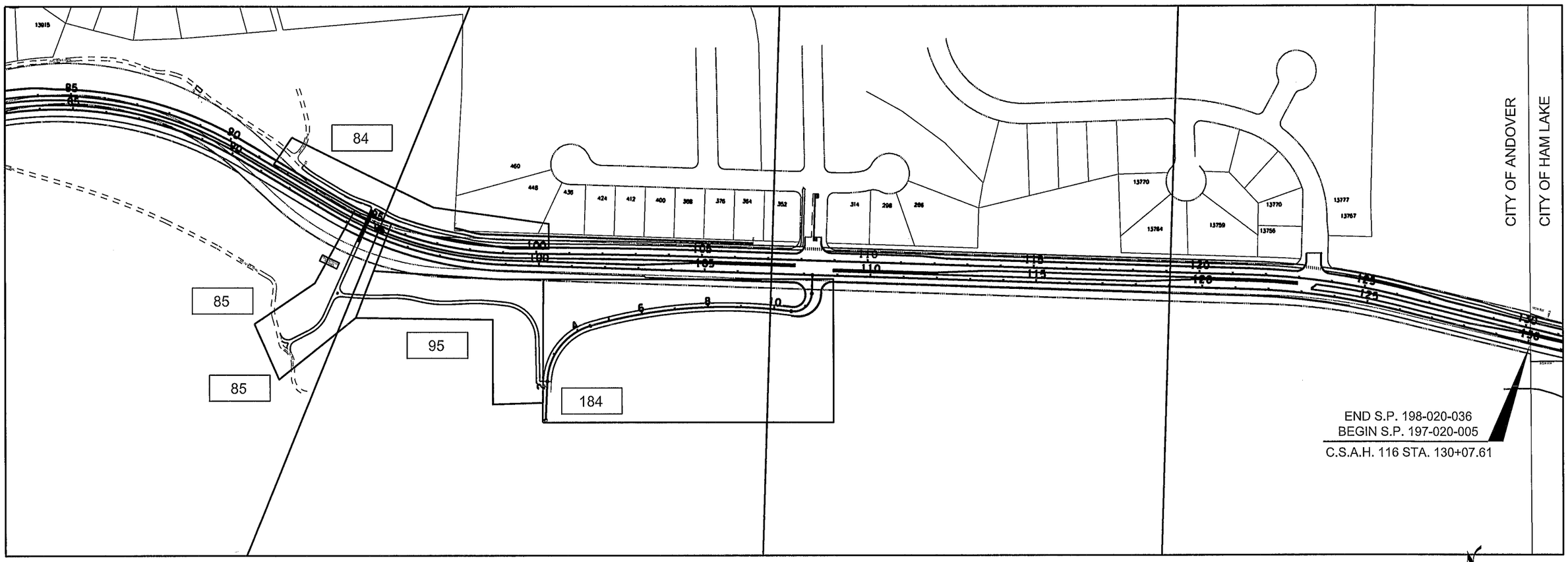


## LEGEND

XXX — INPLACE TOPOGRAPHY AND REMOVAL PLAN SHEET NUMBER

XXX — CONSTRUCTION PLAN SHEET NUMBER

XXX — STORM DRAINAGE PLAN SHEET NUMBER

0 300
SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_GEN2.dgn 04/12/2016 1:56:26 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

GENERAL LAYOUT

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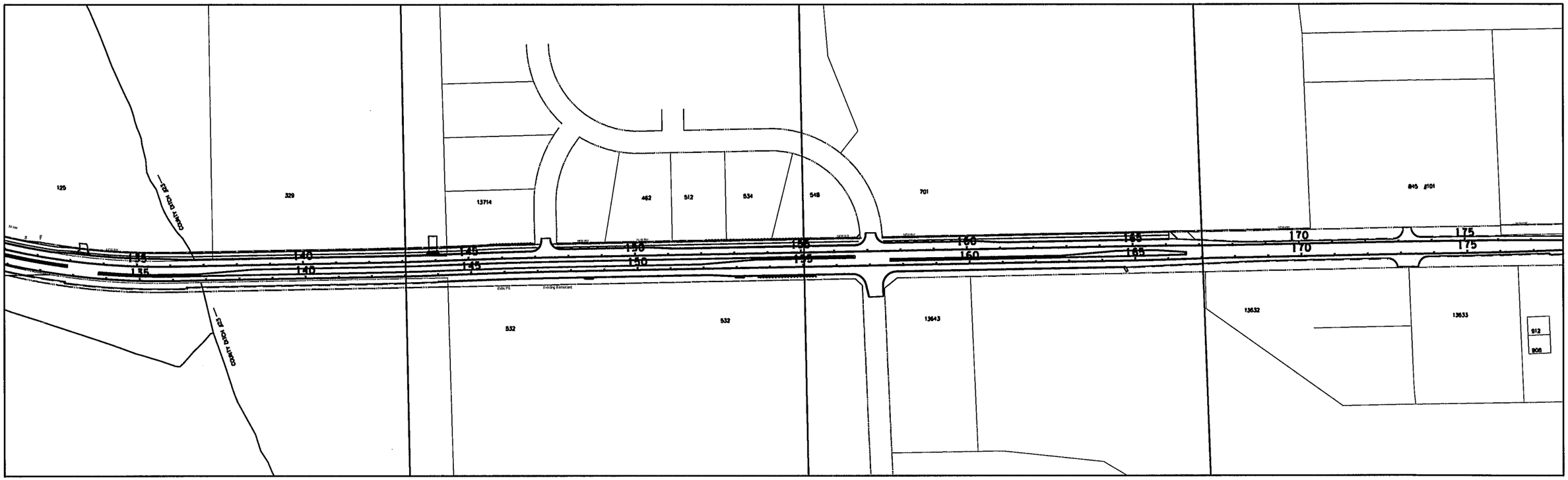


## LEGEND

| | |
|---|---|
| XXX | INPLACE TOPOGRAPHY AND REMOVAL PLAN SHEET NUMBER |
| XXX | CONSTRUCTION PLAN SHEET NUMBER |
| XXX | STORM DRAINAGE PLAN SHEET NUMBER |

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SCALE IN FEET

3 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

NAME: P:\02-716-15\Plan\0271615_GEN3.dgn 04/12/2016 1:56:28 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

GENERAL LAYOUT

Sheet 4 of 482 Sheets

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END S.P. 002-716-015
S.P 197-020-005
C.S.A.H. 116 STA. 179+35.00
END CONSTRUCTION

## LEGEND

| | |
|---|---|
| XXX | INPLACE TOPOGRAPHY AND REMOVAL PLAN SHEET NUMBER |
| XXX | CONSTRUCTION PLAN SHEET NUMBER |
| XXX | STORM DRAINAGE PLAN SHEET NUMBER |

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0 300
SCALE IN FEET

4 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_GEN4.dgn 04/12/2016 1:56:29 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

GENERAL LAYOUT

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# STATEMENT OF ESTIMATED QUANTITIES

| | NOTE | ITEM NO. | ITEM DESCRIPTION | UNIT | TOTAL PROJECT QUANTITY | FEDERAL PARTICIPATING | | | | NON-FEDERAL PARTICIPATING | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | LOCAL | |
| | | | | | | COUNTY OF ANOKA SP 002-716-015 | CITY OF ANDOVER SP 198-020-036 | CITY OF HAM LAKE SP 197-020-005 | STORM SEWER SP 002-716-015 SP 198-020-036 SP 197-020-005 | COUNTY OF ANOKA CP 00-00 | CITY OF ANDOVER CP 11-25 |
| | | 2021.501 | MOBILIZATION | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | | 2031.501 | FIELD OFFICE TYPE D | EACH | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | | 2041.610 | TRAINEES | HOUR | 750 | 750 | | | | | |
| A | (1),(2) | 2101.501 | CLEARING | ACRE | 3 | 2.65 | | | | | |
| A | (1),(2) | 2101.502 | CLEARING | TREE | 231 | 231 | | | | | |
| A | (1),(2) | 2101.506 | GRUBBING | ACRE | 3 | 2.65 | | | | | |
| A | (1),(2) | 2101.507 | GRUBBING | TREE | 210 | 210 | | | | | |
| | | | | | | | | | | | |
| | (19) | 2102.502 | PAVEMENT MARKING REMOVAL (4" BROKEN PAINT) | LIN FT | 110 | 110 | | | | | |
| | (19) | 2102.502 | PAVEMENT MARKING REMOVAL (8" BROKEN PAINT) | LIN FT | 200 | 200 | | | | | |
| | (19) | 2102.502 | PAVEMENT MARKING REMOVAL (4" SOLID PAINT) | LIN FT | 1,000 | 1000 | | | | | |
| | (19) | 2102.502 | PAVEMENT MARKING REMOVAL (4" DOUBLE SOLID PAINT) | LIN FT | 1,250 | 1250 | | | | | |
| | (19) | 2103.502 | PAVEMENT MARKING REMOVAL (24" REMOVABLE POLY PREFORM) | LIN FT | 74 | 74 | | | | | |
| C | (2),(3) | 2104.501 | REMOVE PIPE CULVERTS | LIN FT | 726 | 726 | | | | | |
| CC | (2) | 2104.501 | REMOVE WATER MAIN | LIN FT | 300 | | 300 | | | | |
| C | (2) | 2104.501 | REMOVE PIPE SEWERS | LIN FT | 951 | 951 | | | | | |
| B | (2) | 2104.501 | REMOVE CURB AND GUTTER | LIN FT | 10,158 | 10,158 | | | | | |
| Q | (2) | 2104.501 | REMOVE BITUMINOUS CURB | LIN FT | 124 | 124 | | | | | |
| L | (2) | 2104.501 | REMOVE RETAINING WALL | LIN FT | 349 | 349 | | | | | |
| E | (2) | 2104.501 | REMOVE FENCE | LIN FT | 50 | 50 | | | | | |
| B | (2) | 2104.503 | REMOVE BITUMINOUS WALK | SQ FT | 59,726 | 59,726 | | | | | |
| B | (2) | 2104.503 | REMOVE CONCRETE WALK | SQ FT | 914 | 914 | | | | | |
| B | (2) | 2104.503 | REMOVE CONCRETE MEDIAN | SQ FT | 16,603 | 16,603 | | | | | |
| D | (2) | 2104.505 | REMOVE CONCRETE DRIVEWAY PAVEMENT | SQ YD | 15 | 15 | | | | | |
| D | (2) | 2104.505 | REMOVE BITUMINOUS DRIVEWAY PAVEMENT | SQ YD | 352 | 352 | | | | | |
| B | (2) | 2104.505 | REMOVE BITUMINOUS PAVEMENT | SQ YD | 84,419 | 84,419 | | | | | |
| C | (2) | 2104.509 | REMOVE PIPE APRON | EACH | 9 | 9 | | | | | |
| C | (2) | 2104.509 | REMOVE MANHOLE OR CATCH BASIN | EACH | 10 | 10 | | | | | |
| R | (2) | 2104.509 | REMOVE BITUMINOUS FLUME | EACH | 3 | 3 | | | | | |
| R | (2) | 2104.509 | REMOVE CONCRETE FLUME | EACH | 2 | 2 | | | | | |
| | (2),(4),(5) | 2104.509 | REMOVE SIGNAL SYSTEM B | EACH | 1 | 1 | | | | | |
| | (2),(4),(5) | 2104.509 | REMOVE SIGNAL SYSTEM C | EACH | 1 | 1 | | | | | |
| B | (6) | 2104.511 | SAWING CONCRETE PAVEMENT (FULL DEPTH) | LIN FT | 157 | 157 | | | | | |
| B,D | (6) | 2104.513 | SAWING BITUMINOUS PAVEMENT (FULL DEPTH) | LIN FT | 3,294 | 3,294 | | | | | |
| CC | | 2104.523 | SALVAGE GATE VALVE & BOX | EACH | 1 | | | | | | 1 |
| CC | | 2104.523 | SALVAGE HYDRANT & VALVE | EACH | 4 | | | | | | 4 |
| C | | 2104.523 | SALVAGE PIPE APRON | EACH | 1 | 1 | | | | | |
| M | (4),(18) | 2104.523 | SALVAGE SIGN TYPE C | EACH | 156 | 15 | | | | 141 | |
| M | (4),(18) | 2104.523 | SALVAGE SIGN TYPE D | EACH | 7 | | | | | 7 | |
| M | (4),(18) | 2104.523 | SALVAGE SIGN TYPE SPECIAL | EACH | 21 | 7 | | | | 14 | |
| I | (4) | 2104.523 | SALVAGE MAIL BOX SUPPORT | EACH | 3 | 3 | | | | | |
| | (4) | 2104.601 | HAUL SALVAGED MATERIAL | LUMP SUM | 1 | | | | | 1 | |
| | | 2104.603 | ABANDON WATER MAIN | LIN FT | 22 | 22 | | | | | |
| | | | | | | | | | | | |
| | (7),(8) | 2105.501 | COMMON EXCAVATION (P) | CU YD | 112,524 | 106,882 | 5,642 | | | | |
| | (8) | 2105.505 | MUCK EXCAVATION | CU YD | 63,869 | 60,957 | | 2,912 | | | |
| | (8) | 2105.507 | SUBGRADE EXCAVATION (P) | CU YD | 32,961 | 32,961 | | | | | |
| | (8) | 2105.521 | GRANULAR BORROW (LV) | CU YD | 74,903 | 74,903 | | - | | | |
| | (11) | 2105.607 | COMMON BORROW SPECIAL (LV) | CU YD | 78 | 78 | | | | | |
| | (13) | 2106.607 | SELECT GRANULAR EMBANKMENT (LV) (TEMPORARY) | CU YD | 859 | 859 | | | | | |
| | | | | | | | | | | | |
| | (9) | 2123.509 | DOZER | HOUR | 10 | 10 | | | | | |
| | (12) | 2130.501 | WATER | M GALLON | 180 | 180 | | | | | |
| D | | 2211.501 | AGGREGATE BASE CLASS 5 (DRIVEWAYS) | TON | 99 | 99 | | | | | |
| K | | 2211.503 | AGGREGATE BASE (CV) CLASS 5 (BITUMINOUS PATH) | CU YD | 2,388 | 1,428 | 470 | 492 | | | |
| J,V | | 2211.503 | AGGREGATE BASE (CV) CLASS 5 (P) | CU YD | 27,714 | 27,714 | | | | | |
| J,V | | 2221.503 | SHOULDER BASE AGGREGATE (CV) CLASS 5 | CU YD | 1,582 | 1,582 | | | | | |
| B | | 2232.501 | MILL BITUMINOUS SURFACE | SQ YD | 964 | 964 | | | | | |
| | | | | | | | | | | | |
| J | | 2357.502 | BITUMINOUS MATERIAL FOR TACK COAT | GALLON | 10,796 | 10,796 | | | | | |
| K | | 2360.501 | TYPE SP 9.5 WEARING COURSE MIX (2,B) | TON | 2,633 | 1,572 | 518 | 543 | | | |
| K | (15) | 2360.501 | TYPE SP 9.5 WEARING COURSE MIX (2,B) PED TUNNEL | TON | 17 | 17 | | | | | |
| D | | 2360.501 | TYPE SP 12.5 WEARING COURSE MIX (2,B) | TON | 64 | 64 | | | | | |
| J | | 2360.501 | TYPE SP 12.5 WEARING COURSE MIX (3,F) | TON | 25,595 | 25,595 | | | | | |
| J,V | | 2360.502 | TYPE SP 12.5 NON WEAR COURSE MIX (3,B) | TON | 15,286 | 15,286 | | | | | |
| V | | 2360.505 | TYPE SP 12.5 BITUMINOUS MIXTURE FOR PATCHING | TON | 117 | 117 | | | | | |
| | | 2360.505 | TYPE SP 12.5 BITUMINOUS MIXTURE FOR PATCHING (TEMP CURB PROTECTION) | TON | 5 | 5 | | | | | |
| | | | | | | | | | | | |
| | (16) | 2401.501 | STRUCTURAL CONCRETE (1G52) | CU YD | 51 | | 51 | | | | |
| | (16) | 2401.501 | STRUCTURAL CONCRETE (3B52) | CU YD | 404 | | 404 | | | | |
| | (16) | 2401.501 | STRUCTURAL CONCRETE (3W82) | CU YD | 14 | | 14 | | | | |
| | (16) | 2401.513 | TYPE P-2 (TL-4) RAILING CONCRETE (3S52) | LIN FT | 528 | | 528 | | | | |
| | (16) | 2401.541 | REINFORCEMENT BARS | POUND | 6,100 | | 6,100 | | | | |
| | (16) | 2401.541 | REINFORCEMENT BARS (EPOXY COATED) | POUND | 55,800 | | 55,800 | | | | |
| | (16) | 2402.584 | STRUCTRUAL TUBE RAILING DESIGN T-1 | LIN FT | 522 | | 522 | | | | |
| | (16) | 2402.585 | PIPE RAILING | LIN FT | 62 | | 62 | | | | |
| | (16) | 2402.602 | SHEAR STUDS | EACH | 2,200 | | 2,200 | | | | |
| L | | 2411.618 | MODULAR BLOCK RETAINING WALL | SQ FT | 5,018 | 3,606 | 1,412 | | | | |
| | (16) | 2412.511 | 14 x 10 PRECAST CONCRETE BOX CULVERT | LIN FT | 93 | | 93 | | | | |
| G | | 2422.618 | WOOD NOISE BARRIER | SQ FT | 37,487 | 37,487 | | | | | |
| | | 2451.501 | STRUCTURE EXCAVATION CLASS U (P) | CU YD | 3,277 | | 3,277 | | | | |
| T | | 2451.509 | AGGREGATE BEDDING (CV) | CU YD | 62 | 62 | | | | | |
| T | | 2451.511 | COARSE FILTER AGGREGATE (CV) | CU YD | 77 | | 77 | | | | |
| U | (17) | 2451.513 | FINE FILTER AGGREGATE (LV) | CU YD | 242 | 85 | 157 | | | | |
| | (16) | 2452.618 | STEEL SHEET PILING (PERMANENT) | SQ FT | 14,240 | | 14,240 | | | | |
| | | | | | | | | | | | |
| N | | 2501.511 | 15" RC PIPE CULVERT CLASS III | LIN FT | 59 | 59 | | | | | |
| S | | 2501.515 | 15" CS PIPE APRON | EACH | 1 | 1 | | | | | |
| N,S | | 2501.515 | 15" RC PIPE APRON | EACH | 20 | 6 | | | 14 | | |
| S | | 2501.515 | 18" RC PIPE APRON | EACH | 7 | | | | 7 | | |
| S | | 2501.515 | 21" RC PIPE APRON | EACH | 1 | | | | 1 | | |
| S | | 2501.515 | 24" RC PIPE APRON | EACH | 4 | | | | 4 | | |
| S | | 2501.515 | 33" RC PIPE APRON | EACH | 1 | | | | 1 | | |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 06/02/2016 8:10:18 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 6/2/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STATEMENT OF ESTIMATED QUANTITIES

Sheet 6 of 482 Sheets

# STATEMENT OF ESTIMATED QUANTITIES

| | NOTE | ITEM NO. | ITEM DESCRIPTION | UNIT | TOTAL PROJECT QUANTITY | FEDERAL PARTICIPATING | | | | NON-FEDERAL PARTICIPATING | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | LOCAL | |
| | | | | | | COUNTY OF ANOKA SP 002-716-015 | CITY OF ANDOVER SP 198-020-036 | CITY OF HAM LAKE SP 197-020-005 | STORM SEWER SP 002-716-015 SP 198-020-036 SP 197-020-005 | COUNTY OF ANOKA CP 00-00 | CITY OF ANDOVER CP 11-25 |
| N | | 2501.521 | 28" SPAN RC PIPE-ARCH CULVERT CLASS IIA | LIN FT | 125 | 125 | | | | | |
| N | | 2501.521 | 44" SPAN RC PIPE-ARCH CULVERT CLASS IIA | LIN FT | 146 | 146 | | | | | |
| N,S | | 2501.525 | 28" SPAN RC PIPE-ARCH APRON | EACH | 4 | 2 | | | 2 | | |
| N | | 2501.525 | 44" SPAN RC PIPE-ARCH APRON | EACH | 2 | 2 | | | | | |
| S | | 2501.573 | INSTALL PIPE APRON | EACH | 1 | 1 | | | | | |
| N,S | | 2501.602 | TRASH GUARD FOR 16" PIPE APRON | EACH | 12 | 3 | | | 9 | | |
| S | | 2501.602 | TRASH GUARD FOR 18" PIPE APRON | EACH | 1 | | | | 1 | | |
| N | | 2501.602 | TRASH GUARD FOR 28" SPAN PIPE APRON | EACH | 2 | 2 | | | | | |
| N | | 2501.602 | TRASH GUARD FOR 44" SPAN PIPE APRON | EACH | 1 | 1 | | | | | |
| | | | | | | | | | | | |
| | | 2502.602 | DRAINAGE SYSTEM TYPE (8910) | LUMP SUM | 1 | | 1 | | | | |
| U | | 2502.541 | 4" PERF TP PIPE DRAIN (MOD) | LIN FT | 3,028 | 2,548 | | | 480 | | |
| | (14) | 2502.601 | DRAINAGE SYSTEM | LUMP SUM | 1 | | 1 | | | | |
| S | | 2503.511 | 15" CS PIPE SEWER | LIN FT | 6 | 6 | | | | | |
| S | | 2503.521 | 28" SPAN RC PIPE-ARCH SEWER CL IIA | LIN FT | 560 | | | | 560 | | |
| S | | 2503.541 | 15" RC PIPE SEWER DESIGN 3006 CL V | LIN FT | 7,188 | | | | 7,188 | | |
| S | | 2503.541 | 18" RC PIPE SEWER DESIGN 3006 CL III | LIN FT | 1,972 | | | | 1,972 | | |
| S | | 2503.541 | 21" RC PIPE SEWER DESIGN 3006 CL III | LIN FT | 664 | | | | 664 | | |
| S | | 2503.541 | 24" RC PIPE SEWER DESIGN 3006 CL III | LIN FT | 980 | | | | 980 | | |
| S | | 2503.541 | 30" RC PIPE SEWER DESIGN 3006 CL III | LIN FT | 580 | | | | 580 | | |
| S | | 2503.541 | 33" RC PIPE SEWER DESIGN 3006 CL III | LIN FT | 782 | | | | 782 | | |
| S | | 2503.602 | CONNECT TO EXISTING STORM SEWER | EACH | 2 | | | | 2 | | |
| C | | 2503.602 | PLUG AND ABANDON PIPE SEWER | EACH | 1 | | | | 1 | | |
| C | | 2503.603 | CLEAN PIPE SEWER | LIN FT | 122 | 122 | | | | | |
| | | | | | | | | | | | |
| CC | | 2504.602 | CONNECT TO EXISTING WATER MAIN | EACH | 2 | | 2 | | | | |
| CC | | 2504.602 | HYDRANT | EACH | 4 | | 4 | | | | |
| CC | | 2504.602 | ADJUST HYDRANT & GATE VALVE | EACH | 2 | | 2 | | | | |
| CC | | 2504.602 | ADJUST GATE VALVE & BOX | EACH | 2 | | 2 | | | | |
| CC | | 2504.602 | 12" BUTTERFLY VALVE & BOX | EACH | 2 | | 2 | | | | |
| CC | | 2504.602 | 6" GATE VALVE & BOX | EACH | 4 | | 4 | | | | |
| CC | | 2504.603 | 6" WATERMAIN DUCTILE IRON CL 52 | LIN FT | 15 | | 15 | | | | |
| CC | | 2504.603 | 12" WATERMAIN DUTILE IRON CL 52 | LIN FT | 300 | | 300 | | | | |
| CC | | 2504.604 | 4" POLYSTYRENE INSULATION | SQ YD | 21 | | 21 | | | | |
| CC | | 2504.608 | DUCTILE IRON FITTINGS | POUND | 900 | | 900 | | | | |
| | | | | | | | | | | | |
| S | | 2506.501 | CONST. DRAINAGE STRUCTURE DESIGN H | LIN FT | 142.01 | | | | 142.01 | | |
| S | | 2506.501 | CONST. DRAINAGE STRUCTURE DESIGN 48-4020 | LIN FT | 474.76 | | | | 474.76 | | |
| S | | 2506.501 | CONST. DRAINAGE STRUCTURE DESIGN 54-4020 | LIN FT | 30.12 | | | | 30.12 | | |
| S | | 2506.501 | CONST. DRAINAGE STRUCTURE DESIGN 60-4020 | LIN FT | 44.73 | | | | 44.73 | | |
| S | | 2506.501 | CONST. DRAINAGE STRUCTURE DESIGN 66-4020 | LIN FT | 5.75 | | | | 5.75 | | |
| S | | 2506.501 | CONST. DRAINAGE STRUCTURE DESIGN 72-4020 | LIN FT | 24.50 | | | | 24.50 | | |
| S | | 2506.516 | CASTING ASSEMBLY | EACH | 178 | | | | 178 | | |
| H | | 2506.522 | ADJUST FRAME & RING CASTING | EACH | 2 | 2 | | | | | |
| | | | | | | | | | | | |
| N,S,R | | 2511.501 | RANDOM RIPRAP CLASS II | CU YD | 841 | 841 | | | | | |
| N,S,R | | 2511.515 | GEOTEXTILE FILTER TYPE III | SQ YD | 2,082 | 2,082 | | | | | |
| | | | | | | | | | | | |
| O | | 2521.501 | 4" CONCRETE WALK | SQ FT | 95,136 | 92,361 | 2,775 | | | | |
| O | | 2521.501 | 8" CONCRETE WALK | SQ FT | 6,098 | 6,098 | | | | | |
| O | | 2531.501 | CONCRETE CURB & GUTTER DESIGN B512 | LIN FT | 424 | 424 | | | | | |
| O | (10) | 2531.501 | CONCRETE CURB & GUTTER DESIGN B418 (MOD) | LIN FT | 22,851 | 22,851 | | | | | |
| O | | 2531.501 | CONCRETE CURB & GUTTER DESIGN B424 | LIN FT | 20,780 | 11,753 | 6,994 | 2,033 | | | |
| O | | 2531.501 | CONCRETE CURB & GUTTER DESIGN B612 | LIN FT | 173 | 104.5 | 68.5 | | | | |
| O | | 2531.501 | CONCRETE CURB & GUTTER DESIGN B618 | LIN FT | 280 | 140 | 140 | - | | | |
| O | | 2531.501 | CONCRETE CURB & GUTTER DESIGN B618 (MOD) | LIN FT | 856 | 856 | | | | | |
| O | | 2531.501 | CONCRETE CURB & GUTTER DESIGN B624 | LIN FT | 496 | 248 | 248 | | | | |
| O | | 2531.503 | CONCRETE MEDIAN (NOSE) | SQ YD | 65 | 65 | | | | | |
| W | | 2531.603 | CONCRETE GUTTER DESIGN SPECIAL | LIN FT | 224 | | 224 | | | | |
| R | | 2531.604 | CONCRETE DRAINAGE FLUME | SQ YD | 102 | 102 | | | | | |
| O | | 2531.604 | 6" CONCRETE VALLEY GUTTER | SQ YD | 16 | | 16 | | | | |
| O | | 2531.618 | TRUNCATED DOMES | SQ FT | 676 | - | 516 | 160 | | | |
| | | 2533.507 | PORTABLE PRECAST CONC BARRIER DES 8337 | LIN FT | 1,560 | 1,560 | | | | | |
| Q | | 2535.501 | BITUMINOUS CURB | LIN FT | 26 | 26 | | | | | |
| | | | | | | | | | | | |
| I | | 2540.602 | INSTALL MAIL BOX SUPPORT | EACH | 3 | 3 | | | | | |
| | (16) | 2545.501 | LIGHTING SYSTEM | LUMP SUM | 1 | | 1 | | | | |
| | | | | | | | | | | | |
| L | | 2557.501 | WIRE FENCE DESIGN SPECIAL VINYL COATED | LIN FT | 350 | 220 | 130 | | | | |
| | | | | | | | | | | | |
| | | 2563.601 | TRAFFIC CONTROL SUPERVISOR | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 1) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 2) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 3) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (WINTER SUPSENSION) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 4) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 5) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 6) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (23) | 2563.601 | TRAFFIC CONTROL (STAGE 7) | LUMP SUM | 1 | 0.767 | 0.144 | 0.021 | 0.068 | - | - |
| | (19) | 2563.602 | RAISED PAVEMENT MARKER TEMPORARY | EACH | 300 | 300 | | | | | |
| | | 2563.610 | POLICE OFFICER | HOUR | 30 | 30 | | | | | |
| | | 2563.613 | PORTABLE CHANGEALE MESSAGE SIGN | UNIT DAY | 100 | 100 | | | | | |
| | | | | | | | | | | | |
| | (21) | 2564.531 | SIGN PANELS TYPE C | SQ FT | 1,082 | 1,082 | | | | | |
| | (18) | 2564.536 | INSTALL SIGN PANEL TYPE C | EACH | 33 | 15 | | | | 18 | |
| | (18) | 2564.536 | INSTALL SIGN PANEL TYPE SPECIAL | EACH | 7 | 7 | | | | | |
| | | | | | | | | | | | |
| | (22) | 2565.511 | TRAFFIC CONTROL SIGNAL SYSTEM A | SIG SYS | 1 | 0.375 | 0.625 | | | | |
| | (22) | 2565.511 | TRAFFIC CONTROL SIGNAL SYSTEM B | SIG SYS | 1 | 0.333 | 0.667 | | | | |
| | (22) | 2565.511 | TRAFFIC CONTROL SIGNAL SYSTEM C | SIG SYS | 1 | 0.250 | | 0.750 | | | |
| | (22) | 2565.601 | EMERGENCY VEHICLE PREEMPTION SYSTEM A | LUMP SUM | 1 | | 1.00 | | | | |
| | (22) | 2565.601 | EMERGENCY VEHICLE PREEMPTION SYSTEM B | LUMP SUM | 1 | | 1.00 | | | | |
| | (22) | 2565.601 | EMERGENCY VEHICLE PREEMPTION SYSTEM C | LUMP SUM | 1 | | | 1.00 | | | |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 06/02/2016 8:10:23 AM

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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 6/2/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STATEMENT OF ESTIMATED QUANTITIES

# STATEMENT OF ESTIMATED QUANTITIES

| | NOTE | ITEM NO. | ITEM DESCRIPTION | UNIT | TOTAL PROJECT QUANTITY | FEDERAL PARTICIPATING | | | | NON-FEDERAL PARTICIPATING | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | LOCAL | |
| | | | | | | COUNTY OF ANOKA SP 002-716-015 | CITY OF ANDOVER SP 198-020-036 | CITY OF HAM LAKE SP 197-020-005 | STORM SEWER SP 002-716-015 SP 198-020-036 SP 197-020-005 | COUNTY OF ANOKA CP 00-00 | CITY OF ANDOVER CP 11-25 |
| | (22) | 2565.601 | TRAFFIC CONTROL INTERCONNECTION A | LUMP SUM | 1 | 1 | | | | | |
| | (22) | 2565.601 | TRAFFIC CONTROL INTERCONNECTION B | LUMP SUM | 1 | 1 | | | | | |
| | (22) | 2565.602 | SIGNAL SERVICE CABINET TYPE SSB | EACH | 3 | 3 | | | | | |
| | (22) | 2565.603 | 4" NON-METALLIC CONDUIT | LIN FT | 260 | 260 | | | | | |
| | | | | | | | | | | | |
| P | | 2573.502 | SILT FENCE, TYPE MS | LIN FT | 29,594 | 29,594 | | | | | |
| P,S | | 2573.530 | STORM DRAIN INLET PROTECTION | EACH | 204 | 204 | | | | | |
| P | | 2573.533 | SEDIMENT CONTROL LOG TYPE WOOD FIBER | LIN FT | 736 | 736 | | | | | |
| | | 2573.550 | EROSION CONTROL SUPERVISOR | LUMP SUM | 1 | 1 | | | | | |
| | | | | | | | | | | | |
| P | | 2574.508 | FERTILIZER TYPE 3 | POUND | 2,966 | 2,966 | | | | | |
| P | | 2574.508 | FERTILIZER TYPE 4 | POUND | 736 | 736 | | | | | |
| P | | 2575.501 | SEEDING (P) | ACRE | 18 | 17.5 | | | | | |
| P | | 2575.502 | SEED MIXTURE 25-121 | POUND | 495 | 495 | | | | | |
| P | | 2575.502 | SEED MIXTURE 26-131 | POUND | 716 | 716 | | | | | |
| P | | 2575.502 | SEED MIXTURE 33-261 | POUND | 165 | 165 | | | | | |
| P | | 2575.502 | SEED MIXTURE 35-241 | POUND | 42 | 42 | | | | | |
| N,P,S | | 2575.505 | SODDING TYPE SALT TOLERANT | SQ YD | 14,928 | 14,928 | | | | | |
| P | | 2575.511 | MULCH MATERIAL TYPE 1 | TON | 16.3 | 16.3 | | | | | |
| P | | 2575.511 | MULCH MATERIAL TYPE 3 | TON | 2.2 | 2.2 | | | | | |
| P | | 2575.519 | DISK ANCHORING (P) | ACRE | 9.1 | 9.1 | | | | | |
| P | | 2575.523 | EROSION CONTROL BLANKETS CATEGORY 0 | SQ YD | 31,044 | 31,044 | | | | | |
| P | | 2575.571 | RAPID STABILIZATION METHOD 3 | M GALLON | 110.5 | 110.5 | | | | | |
| | | | | | | | | | | | |
| | (19) | 2581.501 | REMOVABLE PREFORM PLASTIC MARKING (YELLOW) | LIN FT | 7,970 | 7,970 | | | | | |
| | (19) | 2581.501 | REMOVABLE PREFORM PLASTIC MARKING (WHITE) | LIN FT | 8,690 | 8,690 | | | | | |
| | (19) | 2581.603 | REMOVABLE PREFORM PLASTIC MASK (BLACK) | LIN FT | 800 | 800 | | | | | |
| | (20) | 2582.501 | PAVEMENT MESSAGE (LT ARROW) PREFORMED THERMOPLASTIC | EACH | 11 | 11 | | | | | |
| | (20) | 2582.501 | PAVEMENT MESSAGE (RT ARROW) PREFORMED THERMOPLASTIC | EACH | 13 | 13 | | | | | |
| | (20) | 2582.501 | PAVEMENT MESSAGE (RR XING) PREFORMED THERMOPLASTIC | EACH | 4 | 4 | | | | | |
| | (20) | 2582.501 | PAVEMENT MESSAGE (TRAIL RR XING) PREFORMED THERMOPLASTIC | EACH | 4 | 4 | | | | | |
| | (20) | 2582.501 | PAVEMENT MESSAGE (ONLY) PREFORMED THERMOPLASTIC | EACH | 2 | 2 | | | | | |
| | (19) | 2582.502 | 4" SOLID LINE WHITE-PAINT | LIN FT | 61,770 | 61,770 | | | | | |
| | (19) | 2582.502 | 4" BROKEN LINE WHITE-PAINT | LIN FT | 1,200 | 1,200 | | | | | |
| | (19) | 2582.502 | 4" SOLID LINE YELLOW-PAINT | LIN FT | 29,760 | 29,760 | | | | | |
| | (19) | 2582.502 | 4" BROKEN LINE YELLOW-PAINT | LIN FT | 160 | 160 | | | | | |
| | (19) (24) | 2582.502 | 6" SOLID LINE WHITE-PAINT | LIN FT | 523 | 523 | | | | | |
| | (19) | 2582.502 | 8" BROKEN LINE WHITE-PAINT | LIN FT | 363 | 363 | | | | | |
| | (19) | 2582.502 | 12" SOLID LINE WHITE-PAINT | LIN FT | 191 | 191 | | | | | |
| | (19) | 2582.502 | 24" SOLID LINE WHITE-PAINT | LIN FT | 378 | 378 | | | | | |
| | (19) | 2582.502 | 4" DOUBLE SOLID LINE YELLOW-PAINT | LIN FT | 14,070 | 14,070 | | | | | |
| | (20) | 2582.502 | 24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC | LIN FT | 563 | 563 | | | | | |
| | (20) | 2582.502 | 24" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC | LIN FT | 484 | 484 | | | | | |
| | (20) | 2582.502 | 4" SOLID LINE WHITE-EPOXY | LIN FT | 40,345 | 40,345 | | | | | |
| | (20) | 2582.502 | 4" BROKEN LINE WHITE-EPOXY | LIN FT | 7,154 | 7,154 | | | | | |
| | (20) | 2582.502 | 8" BROKEN LINE WHITE-EPOXY | LIN FT | 162 | 162 | | | | | |
| | (20) | 2582.502 | 4" SOLID LINE YELLOW-EPOXY | LIN FT | 25,070 | 25,070 | | | | | |
| | (20) | 2582.502 | 4" DOUBLE SOLID LINE YELLOW-EPOXY | LIN FT | 5,060 | 5,060 | | | | | |
| | (20) | 2582.503 | ZEBRA CROSSWALK-WHITE PREFORMED THERMOPLASTIC | SQ FT | 1,818 | 1,818 | | | | | |
| | (19) (20) | 2582.618 | PAVEMENT MARKING SPECIAL | SQ FT | 248 | 248 | | | | | |
| | | | | | | | | | | | |

**NOTES:**

(1) CLEARING AND GRUBBING SHALL BE STAKED IN FIELD BY THE ENGINEER.

(2) ALL REMOVAL ITEMS SHALL BE DISPOSED OFF-SITE. NO DISPOSAL SHALL BE ALLOWED WITHIN THE ROADWAY RIGHT-OF-WAY OR EASEMENTS.

(3) REMOVAL INCLUDES ALL TYPES OF PIPES AND CMP APRONS.

(4) SALVAGE TO: ANOKA COUNTY HIGHWAY DEPT, 1440 BUNKER LAKES BLVD NW, ANDOVER, MN. SALVAGE MAIL BOX SUPPORT TO OWNER.

(5) THE EXISTING SIGNAL SYSTEM AT CSAH 116/JEFFERSON ST. REMAIN IN OPERATION DURING CONSTRUCTION. TIMING CHANGES NECESSARY DURING CONSTRUCTION SHALL BE PART OF THIS BID ITEM . POLES, MASTER ARMS, EMERGENCY VEHICLE PREEMPTION AND SIGNAL INDICATION SHALL BE SALVAGED TO THE COUNTY. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

(6) PAYMENT FOR SAWING BITUMINOUS WILL ONLY BE PAID WHEN THE CUT IS MADE WITH A SAW. NO PAYMENT SHALL BE MADE FOR CUTS MADE BY A MILLING MACHINE OR DECLAIMER.

(7) INCLUDES INPLACE TOPSOIL, COMMUN EXCAVATION (EV), BITUMINOUS PAVEMENT LESS THAN 6" THICK AND 5,501 CU.YD. (EV) FOR UNDERPASS TUNNEL. BITUMINOUS MATERIAL SHALL BE DISPOSED OUTSIDE THE ROADWAY RIGHT-OF-WAY.

(8) SEE SOILS AND CONSTRUCTION NOTES.

(9) SHALL BE USED FOR MISCELLANEOUS GRADING ACTIVITIES AS DIRECTED BY THE ENGINEER.

(10) SEE MISCELLANEOUS DETAILS FOR B4 MODIFIED CURB & GUTTER

(11) QUANTITY FOR POND 2 FOREBAY. PRICE TO INCLUDE MATERAIL AND PLACEMENT. SEE POND GRADING PLAN ON SHEET 247 FOR DETAILS.

(12) WATER TO BE USED ONLY FOR DUST CONTROL AS DIRECTED BY THE ENGINEER IN FIELD. WATER USED FOR COMPACTION AND TURF ESTABLISHMENT SHALL BE INCIDENTAL.

(13) QUANTITY FOR FILL DURING TEMPORARY WIDENING OF ROADWAY DURING CONSTRUCTION. PRICE INCLUDES MATERIAL, PLACEMENT, AND REMOVAL.

(14) SEE DRAINAGE DETAILS SHEETS 241 - 245 FOR ITEMS AND INFORMATION.

(15) QUANTITY FOR 2" BITUMINOUS OVERLAY IN THE PEDESTRIAN TUNNEL.

(16) SEE BRIDGE NO. 02J48 PLAN SHEETS FOR DETAILS. SHEETS 49 - 82.

(17) QUANTITY INCLUDES FINE FILTER AGGREGATE SHOWN IN UNDERPASS TUNNEL EXCAVATION TABLE ON SHEET 22. MATERIAL SHALL BE NON FROST SUSCEPTIBLE AND CONFORM TO MNDOT SPEC 3149-12 FOR FINE FILTER AGGREGATE.

(18) SEE TAB M ON SHEET 273 FOR MORE DETAILED INFORMATION.

(19) SEE TEMPORARY PAVEMENT MARKING TABULATION ON SHEET 328 FOR MORE INFORMATION.

(20) SEE PAVEMENT MARKING TABULATION ON SHEET 329 FOR MORE INFORMATION.

(21) SEE SIGN PANELS TYPE C ON SHEET 336 FOR MORE INFORMATION.

(22) SEE TRAFFIC SIGNAL PLAN SHEETS 342 - 373 FOR MORE INFORMATION.

(23) SEE TRAFFIC CONTROL STAGING SHEETS 277 - 328 FOR MORE INFORMATION.

(24) QUANTITY FOR TEMPORARY CROSSWALKS. SEE SHEET 328 FOR MORE INFORMATION

(25) QUANTITY FOR TEMPORARY RR XING MESSAGE. SEE SHEET 328 FOR MORE INFORMATION.

(P) PLAN QUANTITY.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\3_SEQ.dgn 06/02/2016 8:10:28 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 6/2/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

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ANOKA COUNTY

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S.P. 002-716-015
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C.P. 11-25

STATEMENT OF ESTIMATED QUANTITIES

Sheet 8 of 482 Sheets

THE FOLLOWING STANDARD PLATES AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

| PLATE NO. | STANDARD PLATES |
|---|---|
| 3000L | REINFORCED CONCRETE PIPE (5 SHEETS) |
| 3006G | GASKET JOINT FOR R.C. PIPE (2 SHEETS) |
| 3007E | SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES |
| 3014J | REINFORCED CONCRETE PIPE ARCH (2 SHEETS) |
| 3100G | CONCRETE APRON FOR REINFORCED CONCRETE PIPE |
| 3133D | RIPRAP AT RCP OUTLETS |
| 3145G | CONCRETE PIPE TIES |
| 4006L | MANHOLE OR CATCH BASIN PRECAST - DESIGNS G AND H |
| 4010H | CONCRETE SHORT CONE & ADJUSTING RING (SECTIONAL CONCRETE) |
| 4011E | PRECAST CONCRETE BASE |
| 4018B | MANHOLE OR CATCH BASIN COVER DESIGN D |
| 4020J | MANHOLE OR CATCH BASIN FOR USE WITH OR WITHOUT TRAFFIC LOADS (2 SHEETS) |
| 4026A | CONCRETE ENCASED CONCRETE ADJUSTING RINGS |
| 4101D | RING CASTING FOR MANHOLE OR CATCH BASIN |
| 4110F | COVER CASTING FOR MAHNOLE - CASTING NO. 715 AND 716 |
| 4125D | CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) - CASTING NO. 715 AND 716 |
| 4132F | CATCH BASIN FRAME CASTING - CASTING NO. 806 |
| 4134A | CURB BOX CASTING FOR CATCH BASIN - CASTING NO. 825 |
| 4140D | SPECIAL GRATE CASTING FOR CATCH BASIN - CASTING NO. 720 AND 721 |
| 4154B | CATCH BASIN GRATE CASTING - CASTING NO. 816 |
| 4180J | MANHOLE OR CATCH BASIN STEP |
| 7035N | CONCRETE WALK AND CURB RETURNS AT ENTRANCES |
| 7038A | DETECTABLE WARNING SURFACE TRUNCATED DOMES |
| 7100H | CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V) |
| 7109C | MEDIAN NOSE AND ISLAND |
| 7111J | INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER) |
| 7113A | CONCRETE APPROACH NOSE DETAIL |
| 8000J | CHANNELIZERS (3 SHEETS) |
| 8150C | INSTALLATION OF CULVERT MARKERS |
| 8338D | W-BEAM GUARDRAIL & END ANCHORAGES (4 SHEETS) |
| 9102E | TURF ESTABLISHMENT AREA ( AT PIPE CULVERT ENDS ) |
| 9350A | MAILBOX SUPPORT (SWING-AWAY TYPE) |

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GENERAL NOTES:

ALL UTILITY WORK SHOWN ON THIS SHEET SHALL BE DONE BY OTHERS UNLESS NOTED.

ALL RELOCATES AND ADJUSTMENTS SUBJECT TO ANOKA COUNTY, CITY OF ANDOVER AND/OR CITY OF ANOKA RIGHT OF WAY.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE GOPHER STATE ONE CALL EXCAVATION NOTICE SYSTEM REQUIRED BY MINNESOTA STATUTE, CHAPTER 216D FOR ALL UNDERGROUND UTILITY LOCATIONS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE REMARKS COLUMN IS BASED UPON THE BEST INFORMATION AVAILABLE AND MAY NOT REFLECT THE ACTUAL EFFECTS ON THE UTILITES BY CONSTRUCTION. ACTUAL DETERMINATIONS WILL BE MADE IN THE FIELD DURING CONSTRUCTION.

## BASIS OF QUANTITIES

| SPEC NO | DESCRIPTION | RATE |
|---|---|---|
| 2211 | AGGREGATE BASE CLASS 5 | 2 TONS / CU YD |
| 2357 | BITUMINOUS MATERIAL FOR TACK COAT | 0.05 GALLONS / SQ YD / LIFT |
| 2360 | TYPE SP12.5 WEARING COURSE MIXTURE | 115 POUNDS / SQ YD / IN |
| 2360 | TYPE SP12.5 NON-WEARING COURSE MIXTURE | 115 POUNDS / SQ YD / IN |
| 2575 | SEED MIXTURE 25-121 | 61.0 POUNDS / ACRE |
| 2575 | SEED MIXTURE 25-131 | 220.0 POUNDS / ACRE |
| 2575 | SEED MIXTURE 33-261 | 35.0 POUNDS / ACRE |
| 2575 | SEED MIXTURE 35-241 | 36.5 POUNDS / ACRE |
| 2575 | MULCH MATERIAL TYPE 1 | 2 TONS / ACRE |
| 2575 | FERTILIZER TYPE 3, 22-5-10 FOR SOD | 350 POUNDS / ACRE |
| 2575 | FERTILIZER TYPE 3, 22-5-10 FOR SEED MIX 25-121/131 | 350 POUNDS / ACRE |
| 2575 | FERTILIZER TYPE 4, 17-10-7 FOR SEED MIX 35-241 | 150 POUNDS / ACRE |
| 2575 | FERTILIZER TYPE 4, 17-10-7 FOR SEED MIX 33-261 | 150 POUNDS / ACRE |
| 2575 | RAPID STABILIZATION METHOD 3 | 6000 GALLONS / ACRE |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:56:51 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STANDARD PLATES
BASIS OF QUANTITIES

Sheet 9 of 482 Sheets

## CLEARING & GRUBBING SPEC (2101) — A

| ALIGNMENT | STATION TO STATION | | OFFSET LEFT LIN FT | OFFSET RIGHT LIN FT | CLEARING (TREE) | GRUBBING (TREE) | CLEARING (ACRE) | GRUBBING (ACRE) | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CSAH 116 EB | 43+47.19 | | | 55 | 1 | 1 | | | (1) |
| CSAH 116 EB | 45+06.36 | | | 46 | 1 | 1 | | | (1) |
| CSAH 116 EB | 45+93.46 | 45+99.67 | | 23 - 27 | 2 | 2 | | | (1) |
| CSAH 116 EB | 46+49.28 | | | 50 | 1 | 1 | | | (1) |
| CSAH 116 EB | 46+76.93 | | | 40 | 1 | 1 | | | (1) |
| CSAH 116 EB | 46+90.68 | | | 20 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+08.72 | | | 37 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+15.52 | | | 52 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+20.22 | | | 42 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+39.24 | 47+40.00 | | 21-27 | 2 | 2 | | | (1) |
| CSAH 116 EB | 47+43.14 | | | 38 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+52.06 | | | 64 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+64.95 | 47+84.28 | | 32-42 | 4 | 4 | | | (1) |
| CSAH 116 EB | 47+66.06 | | | 73 | 1 | 1 | | | (1) |
| CSAH 116 EB | 47+74.29 | | | 63 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+10.77 | | | 80 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+12.52 | | | 66 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+19.51 | | | 48 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+26.66 | | | 34 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+32.11 | | | 47 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+32.66 | | | 63 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+51.01 | | | 45 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+52.60 | | | 95 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+55.66 | | | 75 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+62.94 | | | 115 | 3 | 1 | | | Park Trail (1) |
| CSAH 116 EB | 48+64.24 | | | 46 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+65.51 | 48+67.48 | | 72 - 73 | 1 | 2 | | | (1) |
| CSAH 116 EB | 48+68.85 | | | 58 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+69.42 | | | 92 | 1 | 1 | | | (1) |
| CSAH 116 EB | 48+92.00 | 48+98.22 | | 71 | 2 | 2 | | | (1) |
| CSAH 116 EB | 49+01.56 | 49+22.59 | | 92 - 110 | 7 | 7 | | | (1) |
| CSAH 116 EB | 49+02.25 | 49+04.03 | | 120 - 127 | 2 | 2 | | | Park Trail (1) |
| CSAH 116 EB | 49+15.73 | | | 50 | 1 | 1 | | | (1) |
| CSAH 116 EB | 49+33.06 | | | 99 | 1 | 1 | | | (1) |
| CSAH 116 EB | 49+38.31 | | | 31 | 2 | 1 | | | (1) |
| CSAH 116 EB | 49+38.41 | | | 139 | 1 | 1 | | | (1) |
| CSAH 116 EB | 49+93.18 | | | 80 | 1 | 1 | | | (1) |
| CSAH 116 EB | 50+40.87 | 50+66.21 | | 91 - 131 | 7 | 7 | | | (1) |
| CSAH 116 EB | 50+87.12 | 51+42.69 | | 83 - 132 | 24 | 14 | | | (1) |
| CSAH 116 EB | 54+15.89 | | | 40 | 1 | 1 | | | (1) |
| CSAH 116 EB | 54+57.01 | | | 35 | 4 | 1 | | | (1) |
| CSAH 116 EB | 55+35.63 | 55+40.87 | | 33 - 35 | 3 | 2 | | | (1) |
| CSAH 116 EB | 55+55.22 | 58+71.85 | | 16 - 177 | | | 0.5 | 0.5 | (1) |
| CSAH 116 EB | 55+65.58 | | | 19 | 1 | 1 | | | (1) |
| CSAH 116 EB | 58+69.96 | | | 42 | 4 | 1 | | | (1) |
| CSAH 116 EB | 58+82.03 | | | 61 | 1 | 1 | | | (1) |
| CSAH 116 EB | 59+96.43 | 60+30.61 | | 50 - 70 | | | 0.05 | 0.05 | (1) |
| CSAH 116 EB | 62+10.98 | 63+31.53 | | 42 - 79 | | | 0.15 | 0.15 | (1) |
| CSAH 116 EB | 64+20.58 | | | 63 | 1 | 1 | | | (1) |
| CSAH 116 EB | 70+61.77 | 70+66.06 | | 21 - 26 | 3 | 3 | | | (1) |
| CSAH 116 EB | 70+91.74 | 70+93.74 | | 29 - 32 | 2 | 2 | | | (1) |
| CSAH 116 EB | 71+12.22 | | | 45 | 1 | 1 | | | (1) |
| CSAH 116 EB | 72+79.89 | | | 34 | 5 | 1 | | | (1) |
| CSAH 116 EB | 72+90.01 | | | 30 | 5 | 1 | | | (1) |
| CSAH 116 EB | 72+99.90 | | | 30 | 5 | 1 | | | (1) |
| CSAH 116 EB | 73+28.83 | 73+45.04 | | 31 - 33 | 3 | 3 | | | (1) |
| CSAH 116 EB | 74+70.28 | | | 38 | 1 | 1 | | | (1) |
| CSAH 116 EB | 74+88.03 | | | 38 | 1 | 1 | | | (1) |
| CSAH 116 EB | 75+09.27 | | | 36 | 2 | 1 | | | (1) |
| CSAH 116 EB | 75+21.25 | | | 30 | 1 | 1 | | | (1) |
| CSAH 116 EB | 75+29.11 | | | 32 | 1 | 1 | | | (1) |
| CSAH 116 EB | 75+65.33 | 75+68.97 | | 37 - 41 | 4 | 3 | | | (1) |
| CSAH 116 EB | 75+82.11 | | | 38 | 1 | 1 | | | (1) |
| CSAH 116 EB | 76+19.36 | | | 42 | 1 | 1 | | | (1) |
| CSAH 116 EB | 76+48.19 | | | 30 | 1 | 1 | | | (1) |
| CSAH 116 EB | 76+97.31 | 78+13.84 | | 58 - 81 | | | 0.1 | 0.1 | (1) |
| CSAH 116 EB | 78+10.85 | 78+32.83 | | 45 - 63 | 8 | 5 | | | (1) |
| CSAH 116 EB | 78+56.68 | 78+73.99 | | 52 - 60 | 5 | 3 | | | (1) |
| CSAH 116 EB | 79+17.89 | 79+39.61 | | 40 - 65 | 8 | 8 | | | (1) |

## CLEARING & GRUBBING SPEC (2101) — A

| ALIGNMENT | STATION TO STATION | | OFFSET LEFT LIN FT | OFFSET RIGHT LIN FT | CLEARING (TREE) | GRUBBING (TREE) | CLEARING (ACRE) | GRUBBING (ACRE) | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CSAH 116 EB | 80+08.79 | | | 43 | 1 | 1 | | | (1) |
| CSAH 116 EB | 80+22.31 | 80+29.40 | | 33 - 36 | 3 | 3 | | | (1) |
| CSAH 116 EB | 80+69.17 | | | 25 | 2 | 1 | | | (1) |
| CSAH 116 EB | 80+92.92 | | | 34 | 1 | 1 | | | (1) |
| CSAH 116 EB | 81+04.97 | | | 26 | 1 | 1 | | | (1) |
| CSAH 116 EB | 81+32.66 | 82+23.21 | | 13 - 41 | | | 0.1 | 0.1 | (1) |
| CSAH 116 EB | 82+49.76 | 85+62.62 | 10 | 43 | | | 0.45 | 0.45 | (1) |
| CSAH 116 EB | 85+68.08 | 87+14.10 | 27 | 26 | | | 0.2 | 0.2 | (1) |
| CSAH 116 EB | 90+17.90 | | | 20 | 1 | 1 | | | (1) |
| CSAH 116 EB | 90+43.95 | 95+57.38 | | 29 - 416 | | | 0.9 | 0.9 | Underpass (1) |
| CSAH 116 EB | 90+58.28 | | | 40 | 5 | 1 | | | (1) |
| CSAH 116 EB | 90+81.63 | | | 46 | 5 | 1 | | | (1) |
| CSAH 116 EB | 90+88.11 | - 90+89.24 | | 34 - 38 | 2 | 2 | | | (1) |
| CSAH 116 EB | 90+98.23 | | | 43 | 1 | 1 | | | (1) |
| CSAH 116 EB | 91+11.42 | | | 43 | 1 | 1 | | | (1) |
| CSAH 116 EB | 91+54.30 | | | 53 | 1 | 1 | | | (1) |
| CSAH 116 EB | 96+00.01 | | | 68 | 1 | 1 | | | (1) |
| CSAH 116 EB | 97+11.39 | 98+18.63 | | 107 - 130 | | | 0.05 | 0.05 | (1) |
| CSAH 116 EB | 97+14.27 | 99+52.13 | | 36 - 59 | | | 0.15 | 0.15 | Park Trail (1) |
| CSAH 116 EB | 98+91.10 | 99+42.47 | | 105 - 114 | | | 0.05 | 0.05 | Park Trail (1) |
| CSAH 116 EB | 100+90.87 | 101+79.23 | | 97 - 133 | | | 0.1 | 0.1 | Park Trail (1) |
| CSAH 116 EB | 100+91.23 | 101+92.98 | | 38 - 43 | | | 0.05 | 0.05 | (1) |
| CSAH 116 EB | 102+13.56 | | | 175 | 1 | 1 | | | Park Entrance (1) |
| CSAH 116 EB | 102+81.11 | | | 107 | 1 | 1 | | | Park Entrance (1) |
| CSAH 116 EB | 103+29.62 | | | 52 | 1 | 1 | | | (1) |
| CSAH 116 EB | 103+40.07 | | | 151 | 1 | 1 | | | Park Entrance (1) |
| CSAH 116 EB | 103+45.22 | 105+60.85 | | 127 - 161 | | | 0.2 | 0.2 | Park Entrance (1) |
| CSAH 116 EB | 103+67.50 | | | 70 | 1 | 1 | | | Park Trail (1) |
| CSAH 116 EB | 104+86.74 | | | 52 | 1 | 1 | | | (1) |
| CSAH 116 EB | 105+80.05 | 105+80.83 | | 138 - 140 | 4 | 2 | | | Park Entrance (1) |
| CSAH 116 EB | 105+98.48 | | | 47 | 1 | 1 | | | (1) |
| CSAH 116 EB | 106+20.91 | 108+01.96 | | 118 - 161 | | | 0.2 | 0.2 | Park Entrance (1) |
| CSAH 116 EB | 106+63.52 | | | 52 | 1 | 1 | | | (1) |
| CSAH 116 EB | 107+25.16 | | | 81 | 1 | 1 | | | Park Trail (1) |
| CSAH 116 EB | 107+56.57 | | | 93 | 1 | 1 | | | Park Entrance (1) |
| CSAH 116 EB | 108+42.95 | 108+57.76 | | 130 - 145 | | | 0.05 | 0.05 | Park Entrance (1) |
| CSAH 116 EB | 108+57.33 | | | 73 | 2 | 1 | | | (1) |
| CSAH 116 EB | 110+85.06 | | | 28 | 1 | 1 | | | (1) |
| CSAH 116 EB | 111+31.96 | 116+84.05 | | 26 - 50 | | | 0.45 | 0.45 | (1) |
| CSAH 116 EB | 116+98.85 | 117+52.76 | | 24 - 47 | | | 0.05 | 0.05 | (1) |
| CSAH 116 EB | 121+51.31 | | | 42 | 2 | 1 | | | (1) |
| CSAH 116 EB | 122+35.29 | | | 31 | 1 | 1 | | | (1) |
| CSAH 116 EB | 123+08.84 | | | 33 | 1 | 1 | | | (1) |
| CSAH 116 EB | 123+31.19 | | | 31 | 1 | 1 | | | (1) |
| CSAH 116 EB | 123+49.49 | | | 37 | 1 | 1 | | | (1) |
| CSAH 116 EB | 123+57.83 | | | 34 | 1 | 1 | | | (1) |
| CSAH 116 EB | 126+34.58 | 129+87.82 | | 22 - 36 | | | 0.25 | 0.25 | (1) |
| CSAH 116 EB | 130+23.41 | 135+75.01 | | 4 - 163 | | | 1.25 | 1.25 | (1) |
| CSAH 116 EB | 130+69.87 | | | 25 | 2 | 1 | | | (1) |
| CSAH 116 EB | 137+44.91 | | | 25 | 1 | 1 | | | |
| CSAH 116 EB | 138+98.22 | | | 36 | 1 | 1 | | | |
| CSAH 116 EB | 139+62.83 | 145+92.97 | | 19 - 44 | | | 0.55 | 0.55 | |
| CSAH 116 EB | 144+59.33 | | | 62 | 1 | 1 | | | |
| CSAH 116 EB | 159+81.75 | | | 34 | 1 | 1 | | | |
| CSAH 116 EB | 162+86.15 | 165+80.20 | | 34 - 190 | | | 0.7 | 0.7 | |
| CSAH 116 EB | 169+88.40 | 170+79.50 | | 36 - 47 | | | 0.05 | 0.05 | |
| CSAH 116 EB | 175+99.69 | | | 34 | 1 | 1 | 0.05 | 0.05 | |
| CSAH 116 EB | 176+40.83 | | | 37 | 1 | 1 | | | |
| CSAH 116 EB | 176+67.92 | 177+07.14 | | | | | | | |
| CSAH 116 EB | 177+23.87 | 177+30.06 | | 39 - 41 | 4 | 3 | | | |
| CSAH 116 EB | 177+55.23 | 177+65.77 | | 30 - 40 | 3 | 3 | | | |
| CSAH 116 EB | 177+94.18 | 178+00.19 | | 43 | 2 | 2 | | | |
| CSAH 116 EB | 177+95.74 | 179+52.36 | | 27 - 47 | | | 0.15 | 0.15 | |
| PROJECT SUBTOTAL | | | | | 15 | 14 | 1.5 | 1.5 | |

**CLEARING & GRUBBING GENERAL NOTES:**

(1) TREES TO BE PREVIOUSLY REMOVED BY OTHERS
- TREES WITHIN THE CONSTRUCTION LIMITS WILL BE DESIGNATED FOR REMOVAL BY THE ENGINEER.
- REMOVAL OF MISCELLANEOUS SHRUBS AND LANDSCAPING SHALL BE CONSIDERED INCIDENTAL
- AREA QUANTITIES ARE 110% OF THE MEASURED AREA



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:56:59 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 10 of 482 Sheets

## CLEARING & GRUBBING SPEC (2101)

A

| ALIGNMENT | STATION TO STATION | | OFFSET LEFT LIN FT | OFFSET RIGHT LIN FT | CLEARING (TREE) | GRUBBING (TREE) | CLEARING (ACRE) | GRUBBING (ACRE) | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CSAH 116 WB | 37+55.34 | | 46 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 37+90.60 | | 44 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 38+62.13 | 39+23.72 | 42 - 44 | | 7 | 7 | | | |
| CSAH 116 WB | 41+06.76 | | 46 | | 1 | 1 | | | |
| CSAH 116 WB | 41+47.68 | 41+71.14 | 44 - 49 | | 5 | 5 | | | |
| CSAH 116 WB | 42+75.32 | 43+73.79 | 43 - 47 | | 9 | 9 | | | (1) |
| CSAH 116 WB | 44+54.88 | 44+58.58 | 44 - 46 | | 4 | 3 | | | (1) |
| CSAH 116 WB | 44+73.09 | | 50 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 44+93.49 | | 45 | | 2 | 1 | | | (1) |
| CSAH 116 WB | 45+97.09 | 46+14.81 | 29 | | 5 | 3 | | | (1) |
| CSAH 116 WB | 46+29.87 | 46+31.80 | 39 | | 2 | 2 | | | (1) |
| CSAH 116 WB | 46+43.16 | 46+67.68 | 42 - 45 | | 5 | 5 | | | |
| CSAH 116 WB | 46+86.26 | | 43 | | 1 | 1 | | | |
| CSAH 116 WB | 46+91.90 | | 37 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 47+05.99 | 47+08.64 | 47 - 50 | | 3 | 3 | | | |
| CSAH 116 WB | 47+22.19 | 47+22.83 | 47 - 49 | | 2 | 2 | | | |
| CSAH 116 WB | 47+36.36 | | 50 | | 2 | 1 | | | |
| CSAH 116 WB | 47+53.31 | | 50 | | 1 | 1 | | | |
| CSAH 116 WB | 47+78.79 | | 43 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 48+09.40 | | 40 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 48+11.76 | | 53 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 48+19.47 | | 57 | | 2 | 1 | | | (1) |
| CSAH 116 WB | 48+22.05 | | 54 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 48+47.52 | | 51 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 48+59.96 | | 56 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 48+91.22 | 48+92.40 | 57 - 58 | | 2 | 2 | | | (1) |
| CSAH 116 WB | 49+59.69 | | 49 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 49+82.74 | 49+88.33 | 52 | | 2 | 2 | | | |
| CSAH 116 WB | 50+06.59 | | 52 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 50+19.51 | | 51 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 50+92.16 | 51+08.98 | 43 - 46 | | 5 | 3 | | | (1) |
| CSAH 116 WB | 53+06.46 | 53+67.04 | 27 - 29 | | 11 | 13 | | | (1) |
| CSAH 116 WB | 68+17.02 | | 52 | | 1 | 1 | | | |
| CSAH 116 WB | 68+32.03 | | 53 | | 1 | 1 | | | |
| CSAH 116 WB | 68+40.97 | | 51 | | 1 | 1 | | | |
| CSAH 116 WB | 68+55.91 | | 53 | | 1 | 1 | | | |
| CSAH 116 WB | 70+31.84 | | 54 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 75+09.51 | 75+19.26 | 56 - 57 | | 5 | 5 | | | (1) |
| CSAH 116 WB | 75+37.50 | | 51 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 75+55.60 | 75+59.96 | 60 - 64 | | 3 | 2 | | | (1) |
| CSAH 116 WB | 75+72.92 | | 63 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 75+76.30 | | 51 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 75+87.21 | | 52 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 76+02.62 | | 51 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 76+31.36 | | 59 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 76+87.42 | 77+11.16 | 71 - 124 | | | | 0.05 | 0.05 | (1) |
| CSAH 116 WB | 77+63.82 | 77+76.08 | 88 - 92 | | 4 | 4 | | | (1) |
| CSAH 116 WB | 77+82.55 | 78+67.97 | 80 - 213 | | | | 0.25 | 0.25 | (1) |
| CSAH 116 WB | 79+11.77 | | 143 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 79+66.05 | | 87 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 80+94.65 | 81+46.58 | 76 - 289 | | | | 0.2 | 0.2 | PRAIRIE (1) |
| CSAH 116 WB | 88+29.22 | 88+67.02 | 69 - 95 | | | | 0.05 | 0.05 | (1) |
| CSAH 116 WB | 88+51.36 | 88+77.49 | 104 - 140 | | | | 0.05 | 0.05 | (1) |
| CSAH 116 WB | 90+64.88 | 93+84.21 | 43 | 4 | | | 0.3 | 0.3 | (1) |
| CSAH 116 WB | 92+66.04 | 97+23.34 | 27 - 65 | | | | 0.45 | 0.45 | (1) |
| CSAH 116 WB | 94+13.74 | | | 2 | 1 | 1 | | | (1) |
| CSAH 116 WB | 94+46.93 | 104+33.62 | 44 | 14 | | | 0.8 | 0.8 | (1) |
| CSAH 116 WB | 98+27.37 | 99+95.00 | 51 - 62 | | | | 0.1 | 0.1 | |
| CSAH 116 WB | 100+91.96 | 102+23.56 | 55 - 59 | | | | 0.05 | 0.05 | |
| CSAH 116 WB | 103+33.40 | 104+10.65 | 49 - 55 | | | | 0.05 | 0.05 | |
| CSAH 116 WB | 104+40.52 | | 16 | | 2 | 1 | | | (1) |
| CSAH 116 WB | 104+79.18 | | 30 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 105+15.03 | | 29 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 105+25.21 | | 47 | | 1 | 1 | | | |
| CSAH 116 WB | 105+58.59 | | 48 | | 1 | 1 | | | |

## CLEARING & GRUBBING SPEC (2101)

A

| ALIGNMENT | STATION TO STATION | | OFFSET LEFT LIN FT | OFFSET RIGHT LIN FT | CLEARING (TREE) | GRUBBING (TREE) | CLEARING (ACRE) | GRUBBING (ACRE) | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CSAH 116 WB | 105+76.01 | | 48 | | 1 | 1 | | | |
| CSAH 116 WB | 105+94.19 | | 49 | | 1 | 1 | | | |
| CSAH 116 WB | 106+41.81 | 106+83.91 | 48 - 49 | | 8 | 8 | | | |
| CSAH 116 WB | 110+44.76 | 110+81.54 | 48 - 53 | | | | 0.05 | 0.05 | |
| CSAH 116 WB | 112+07.24 | | 55 | | 1 | 1 | | | |
| CSAH 116 WB | 112+24.63 | 114+34.23 | 49 - 83 | | | | 0.2 | 0.2 | |
| CSAH 116 WB | 112+49.48 | 114+70.41 | 15 - 42 | | | | 0.2 | 0.2 | (1) |
| CSAH 116 WB | 115+79.00 | | 21 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 116+23.31 | | 19 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 116+67.28 | | 19 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 117+48.47 | 117+66.36 | 26 - 34 | | 1 | 6 | | | (1) |
| CSAH 116 WB | 117+76.84 | | 22 | | 5 | 1 | | | (1) |
| CSAH 116 WB | 117+84.09 | | 34 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 118+73.91 | | 29 | | 5 | 1 | | | (1) |
| CSAH 116 WB | 119+22.86 | | 18 | | 5 | 1 | | | (1) |
| CSAH 116 WB | 119+71.91 | | 54 | | 1 | 1 | | | |
| CSAH 116 WB | 119+97.88 | | 57 | | 2 | 1 | | | |
| CSAH 116 WB | 120+48.56 | | 41 | | 5 | 1 | | | (1) |
| CSAH 116 WB | 120+92.26 | 121+49.89 | 32 - 55 | | | | 0.05 | 0.05 | (1) |
| CSAH 116 WB | 121+93.37 | 122+25.78 | 50 - 51 | | 5 | 5 | | | |
| CSAH 116 WB | 122+49.02 | | 50 | | 1 | 1 | | | |
| CSAH 116 WB | 124+12.61 | | 30 | | 2 | 1 | | | (1) |
| CSAH 116 WB | 125+32.75 | | 42 | | 1 | 1 | | | (1) |
| CSAH 116 WB | 130+11.22 | 130+38.83 | 36 - 40 | | 6 | 6 | | | |
| CSAH 116 WB | 131+00.16 | 131+33.91 | 33 - 35 | | 5 | 5 | | | |
| CSAH 116 WB | 132+01.93 | 132+13.16 | 39 | | 2 | 2 | | | |
| CSAH 116 WB | 132+37.02 | 132+82.93 | 41 - 42 | | 5 | 5 | | | |
| CSAH 116 WB | 141+44.19 | 143+71.17 | 33 - 55 | | 42 | 42 | | | |
| CSAH 116 WB | 143+65.72 | 143+69.30 | 77 - 90 | | 4 | 4 | | | |
| CSAH 116 WB | 144+88.98 | 146+69.15 | 18 - 55 | | 56 | 44 | | | |
| CSAH 116 WB | 148+09.57 | 148+31.63 | 29 - 41 | | 8 | 8 | | | |
| CSAH 116 WB | 148+55.54 | 148+73.15 | 29 - 34 | | 4 | 4 | | | |
| CSAH 116 WB | 149+16.13 | | 38 | | 2 | 1 | | | |
| CSAH 116 WB | 150+33.03 | 156+27.23 | 26 - 50 | | | | 0.45 | 0.45 | |
| CSAH 116 WB | 159+88.57 | 159+89.29 | 45 - 47 | | 2 | 2 | | | |
| CSAH 116 WB | 164+61.04 | 164+65.40 | 50 | | 2 | 2 | | | |
| CSAH 116 WB | 165+48.53 | 165+50.85 | 50 - 51 | | 4 | 2 | | | |
| CSAH 116 WB | 166+96.95 | | 42 | | 2 | 1 | | | |
| CSAH 116 WB | 169+66.12 | | 40 | | 1 | 1 | | | |
| CSAH 116 WB | 169+90.64 | 169+91.59 | 37 - 39 | | 2 | 2 | | | |
| CSAH 116 WB | 170+07.88 | | 39 | | 1 | 1 | | | |
| CSAH 116 WB | 171+10.00 | | 22 | | 2 | 1 | | | |
| CSAH 116 WB | 174+11.39 | | 43 | | 1 | 1 | | | |
| CSAH 116 WB | 174+40.46 | | 44 | | 1 | 1 | | | |
| CSAH 116 WB | 175+22.72 | | 19 | | 2 | 1 | | | |
| CSAH 116 WB | 175+41.39 | 177+55.61 | 23 - 48 | | | | 0.2 | 0.2 | |
| CSAH 116 WB | 177+75.25 | | 43 | | 1 | 1 | | | |
| CSAH 116 WB | 178+06.11 | | 41 | | 1 | 1 | | | |
| CSAH 116 WB | 178+26.15 | | 39 | | 1 | 1 | | | |
| CSAH 116 WB | 178+37.61 | 178+44.98 | 41 | | 2 | 2 | | | |
| CSAH 116 WB | 178+61.54 | | 41 | | 1 | 1 | | | |
| CSAH 116 WB | 178+82.23 | | 42 | | 1 | 1 | | | |
| CSAH 116 WB | 179+06.98 | | 47 | | 1 | 1 | | | |
| CSAH 116 WB | 179+19.34 | | 42 | | 1 | 1 | | | |
| CSAH 116 WB | 179+77.54 | 179+79.24 | 36 - 44 | | 2 | 2 | | | |
| CSAH 116 WB | 179+98.35 | 180+80.08 | 28 - 52 | | | | 0.05 | 0.05 | |
| CSAH 116 WB | 181+03.99 | 183+59.45 | 28 - 52 | | | | 0.25 | 0.25 | |
| PROJECT SUBTOTAL | | | | | 216 | 196 | 1.15 | 1.15 | |
| PROJECT TOTAL | | | | | 231 | 210 | 2.65 | 2.65 | |

**CLEARING & GRUBBING GENERAL NOTES:**

(1) TREES TO BE PREVIOUSLY REMOVED BY OTHERS
- TREES WITHIN THE CONSTRUCTION LIMITS WILL BE DESIGNATED FOR REMOVAL BY THE ENGINEER.
- REMOVAL OF MISCELLANEOUS SHRUBS AND LANDSCAPING SHALL BE CONSIDERED INCIDENTAL
- AREA QUANTITIES ARE 110% OF THE MEASURED AREA



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:57:08 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 11 of 482 Sheets

## REMOVALS, SAWING AND MILLING — B

| ALIGNMENT | STATION | | TO STATION | REMOVE (SPEC. 2104) BIT. PAVEMENT (SQ YD) | REMOVE (SPEC. 2104) CONC. MEDIAN (SQ FT) | REMOVE (SPEC. 2104) BIT. WALK (SQ FT) | REMOVE (SPEC. 2104) CONC. WALK (SQ FT) | REMOVE (SPEC. 2104) CURB & GUTTER (LIN FT) | SAWING (SPEC. 2104) BIT. PAVEMENT (LIN FT) | SAWING (SPEC. 2104) CONC. PAVEMENT (LIN FT) | MILLING (SPEC. 2232) BIT. SURFACE (2") MAINLINE (SQ YD) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CSAH 116 EB | 36+42.00 | - | 36+67.00 | 16 | | | 43 | 30 | 10 | 2 | | ACHD ENTRANCE |
| CSAH 116 EB | 37+24.00 | - | 37+58 | | | | | 30 | | 2 | | ACHD ENTRANCE |
| CSAH 116 WB | 36+54.80 | - | 37+56.11 | 169 | | | 66 | 542 | 625 | | 754 | CRANE ST |
| CSAH 116 EB | 43+00.00 | - | 58+37.27 | 8792 | 67 | | | 910 | 61 | 15 | | 116 |
| CSAH 116 EB | 58+37.27 | - | 59+57.85 | 356 | 466 | | | 470 | 44 | | | 116 |
| CSAH 116 EB | 59+61.51 | - | 60+78.01 | 316 | 458 | | | 421 | 45 | | | 116 |
| CSAH 116 EB | 60+78.01 | - | 65+00.00 | 2179 | | | | 31 | | | | 116 |
| CSAH 116 EB | 65+00.00 | - | 70+00.00 | 3120 | | | | | | | | 116 |
| CSAH 116 EB | 70+00.00 | - | 80+00.00 | 5632 | | | | | | | | 116 |
| CSAH 116 EB | 80+00.00 | - | 90+00.00 | 5401 | | | 103 | 426 | | | | 116 |
| CSAH 116 EB | 90+00.00 | - | 100+00.00 | 4751 | | | 133 | | | | | 116 |
| CSAH 116 EB | 100+00.00 | - | 110+00.00 | 4887 | | | | | | | | 116 |
| CSAH 116 EB | 100+22.00 | - | 107+72.50 | 915 | | | | | 1520 | | | TEMP MED SURF |
| CSAH 116 EB | 109+00.00 | - | 110+30.21 | 720 | | | | | 55 | | | STAGE 3 TEMP |
| CSAH 116 EB | 110+00.00 | - | 120+00.00 | 4576 | | | | | | | | 116 |
| CSAH 116 EB | 120+00.00 | - | 130+00.00 | 4978 | | | | | | | | 116 |
| CSAH 116 EB | 130+00.00 | - | 147+09.65 | 7613 | | | | | | | | 116 |
| CSAH 116 EB | 147+09.65 | - | 156+56.21 | 5132 | 8777 | | 12 | 2862 | | | | 116 |
| CSAH 116 EB | 156+56.21 | - | 157+58.02 | 766 | | | 557 | | | | | 116 |
| CSAH 116 EB | 157+58.02 | - | 166+80.37 | 5187 | 6128 | | | 2238 | | | | 116 |
| CSAH 116 EB | 166+16.20 | - | 166+36.16 | 126 | | | | | 116 | | | CULVERT XING |
| CSAH 116 EB | 166+80.37 | - | 170+54.48 | 1883 | | | | | | | | 116 |
| CSAH 116 EB | 170+54.48 | - | 172+78.64 | 1081 | | | | | | | | 116 |
| CSAH 116 EB | 172+78.64 | - | 173+69.04 | 408 | | | | | | | | 116 |
| CSAH 116 EB | 173+69.04 | - | 178+01.87 | 2811 | | | | | 44 | | | 116 |
| CSAH 116 WB | 51+16.48 | - | 51+86.50 | 261 | | | | 113 | 30 | | 13 | WINTERGREEN [2] |
| CSAH 116 WB | 65+99.50 | - | 66+92.99 | 305 | | | | 103 | 85 | | 38 | SYCAMORE [2] |
| CSAH 116 EB | 66+14.74 | - | 67+00.26 | 323 | | | | 149 | 37 | | 16 | CNTY PKWY A [2] |
| PRAIRIE RD | 20+06.97 | - | 23+59.25 | 1407 | | | | 740 | 32 | | 14 | PRAIRIE RD [2] |
| CSAH 116 EB | 100+00.90 | - | 100+83.82 | 1110 | | | | 383 | 24 | | 11 | EX PARK ENT [2] |
| CSAH 116 WB | 107+82.99 | - | 108+97.44 | 504 | 707 | | | 272 | 194 | 135 | 15 | GOLDENROD [2] |
| CSAH 116 WB | 110+39.32 | - | 122+98.10 | 1476 | | | | | | | | TEMP WIDENING |
| CSAH 116 WB | 122+78.35 | - | 123+92.90 | 455 | | | | 90 | 43 | 3 | 19 | BUTTERNUT [2] |
| CSAH 116 WB | 134+17.42 | - | 144+55.99 | 4065 | | | | | | | | STAGE I TEMP SURF |
| CSAH 116 WB | 146+83.86 | - | 147+74.79 | 220 | | | | | 29 | | 13 | TERRACE [2] |
| CSAH 116 WB | 147+14.45 | - | 156+64.13 | 781 | | | | | | | | TEMP MED SURF |
| CSAH 116 WB | 156+64.10 | - | 157+52.59 | 190 | | | | 115 | 29 | | 13 | 138TH [2] |
| CSAH 116 EB | 156+56.21 | - | 157+74.72 | 500 | | | | 194 | 46 | | 20 | JEFFERSON [2] |
| CSAH 116 WB | 164+14.34 | - | 166+87.84 | 311 | | | | | | | | TEMP MED SURF |
| CSAH 116 WB | 165+99.99 | - | 171+06.60 | 327 | | | | | | | | TEMP WIDENING |
| CSAH 116 EB | 172+65.76 | - | 173+82.17 | 261 | | | | | 62 | | 28 | VAN BUREN [2] |
| CSAH 116 WB | 172+93.06 | - | 173+59.68 | 108 | | | | 39 | 23 | | 10 | APART ENTR [2] |
| CSAH 116 WB | 61+27.84 | - | 66+31.41 | | | 5191 | | | 10 | | | BIT PATH |
| CSAH 116 WB | 66+72.92 | - | 79+81.33 | | | 12687 | | | 10 | | | BIT PATH |
| CSAH 116 EB | 76+94.08 | - | 80+26.28 | | | 4019 | | | 20 | | | BIT PATH |
| PRAIRIE RD | 20+30.89 | - | 23+50.00 | | | 6865 | | | 19 | | | BIT PATH |
| CSAH 116 WB | 80+55.29 | - | 81+74.75 | | | 1320 | | | 10 | | | BIT PATH |
| CSAH 116 WB | 88+47.20 | - | 88+68.46 | | | 200 | | | 20 | | | BIT PATH |
| CSAH 116 WB | 92+29.87 | - | 108+08.81 | | | 15057 | | | 10 | | | BIT PATH |
| CSAH 116 WB | 108+59.21 | - | 123+17.72 | | | 14387 | | | | | | BIT PATH |
| **PROJECT TOTAL** | | | | 84419 | 16603 | 59726 | 914 | 10158 | 3253 | 157 | 964 | |

**REMOVALS NOTES:**
[1] CONCRETE APPROACH NOSE REMOVAL INCIDENTAL
[2] MILLING WIDTH TO BE 4' AT MATCH POINT OF SIDE STREET

## REMOVE EXISTING STORM SEWER & CULVERTS — C

| ALIGNMENT | STATION | | TO STATION | OFFSET | | REMOVE (SPEC 2104) MANHOLE OR CATCH BASIN (EACH) | REMOVE (SPEC 2104) PIPE APRON (EACH) | REMOVE (SPEC 2104) PIPE SEWER (LIN FT) | REMOVE (SPEC 2104) PIPE CULVERTS (LIN FT) | SALVAGE PIPE APRON (EACH) | CLEAN PIPE SEWER (LIN FT) | PLUG & ABANDON PIPE SEWER (EACH) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CSAH 116 EB | 37+88.28 | | | 60.2 RT | | | | | | 1 | | | |
| CSAH 116 WB | 66+10.93 | - | 66+83.32 | 20.4 LT | 21.9 LT | | | | 72 | | | | |
| CSAH 116 EB | 77+89.74 | - | 77+92.79 | 33.9 RT | 55 RT | | | | 21 | | | | 10" PVC |
| CSAH 116 WB | 78+79.46 | - | 78+79.70 | 28.9 LT | 64.3 LT | 1 | 1 | 36 | | | | | |
| CSAH 116 WB | 78+79.46 | - | 79+90.83 | 28.9 LT | 27 LT | | | 113 | | | | | |
| CSAH 116 EB | 78+99.40 | - | 79+03.80 | 64.5 RT | 43.9 RT | | | | 21 | | | | 15" PVC |
| CSAH 116 WB | 79+90.83 | - | 80+42.28 | 27 LT | 30.9 LT | 2 | | 53 | | | | | |
| CSAH 116 EB | 100+00.66 | - | 100+80.59 | 15.7 RT | 15.7 RT | | | | 80 | | | | |
| CSAH 116 WB | 105+03.88 | - | 105+04.03 | 46.9 LT | 19.4 LT | | 1 | 28 | | | | 1 | |
| CSAH 116 WB | 116+87.47 | - | 116+88.11 | 12.9 LT | 56 LT | | 2 | | 43 | | | | |
| CSAH 116 WB | 123+17.56 | - | 123+59.98 | 51.6 LT | 53.5 LT | 2 | | 44 | | | | | |
| CSAH 116 WB | 123+59.98 | - | 124+13.51 | 53.5 LT | 27.1 LT | | 1 | 60 | | | | | |
| CSAH 116 WB | 133+27.80 | - | 133+86.13 | 16.5 LT | 18 LT | | | | 58 | | | | |
| CSAH 116 EB | 136+71.26 | - | 136+84.23 | 62.8 LT | 4.2 RT | | | | 68 | | | | |
| CSAH 116 WB | 143+64.27 | - | 144+22.74 | 20.8 LT | 19.8 LT | | | | 58 | | | | |
| CSAH 116 WB | 146+91.95 | - | 147+66.20 | 11.8 LT | 18.2 LT | | | | 75 | | | | |
| CSAH 116 EB | 148+24.02 | - | 148+92.84 | 20.2 RT | 22.2 RT | | | | 69 | | | | |
| CSAH 116 EB | 156+41.60 | - | 156+44.63 | 49.8 LT | 12.3 RT | 2 | | 62 | | | | | |
| CSAH 116 EB | 156+44.63 | - | 156+94.37 | 12.3 RT | 65.5 RT | 1 | | 73 | | | | | |
| CSAH 116 EB | 156+94.37 | - | 157+41.50 | 65.5 RT | 40.7 RT | 1 | | 53 | | | | | |
| CSAH 116 EB | 157+41.50 | - | 157+80.20 | 40.7 RT | 22.6 RT | 1 | | 43 | | | | | |
| CSAH 116 EB | 157+80.20 | - | 161+41.20 | 22.6 RT | 22.7 RT | | 1 | 360 | | | | | APPROX |
| CSAH 116 EB | 166+26.70 | - | 166+27.93 | 34.8 RT | 64.8 LT | | 2 | | 100 | | | | |
| CSAH 116 EB | 172+38.27 | - | 172+55.04 | 18.3 RT | 24.0 RT | | 1 | 26 | | | | | |
| CSAH 116 EB | 172+55.04 | - | 173+70.34 | 25.6 RT | 28.9 RT | | | | | | 122 | | |
| CSAH 116 WB | 172+97.22 | - | 173+58.30 | 16.8 LT | 18.1 LT | | | | 61 | | | | |
| | | | | | **PROJECT TOTAL** | 10 | 9 | 951 | 726 | 1 | 122 | 1 | |

## DRIVEWAY REMOVAL AND CONSTRUCTION — D

| STATION | LOCATION ALIGNMENT | LOCATION OFFSET FROM | LOCATION OFFSET TO | DESCRIPTION | SAWCUT BIT (LIN FT) | REMOVE BIT (SQ YD) | REMOVE CONC (SQ YD) | REMOVE CL 5 (4) (SQ YD) | CONSTRUCT WIDTH (LIN FT) | CONSTRUCT 3" BIT (1) TON (2)(3) | CONSTRUCT 5" AGG CL 5 TON (2)(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CSAH 116** | | | | | | | | | | | |
| 44+60 | CSAH 116 EB | 20 | 55 | REMOVE/REPLACE | 21 | 123 | | | 20 | 13 | 21 |
| 116+88.53 | CSAH 116 EB | 2 | 43 | REMOVE | | | | 73 | | | |
| 130+55.80 | CSAH 116 EB | 9 | 22 | REMOVE | | | | 74 | | | |
| 133+47.66 | CSAH 116 WB | 3 | 39 | REMOVE/REPLACE | | | | 200 | 24 | 16 | 17 |
| 143+89.33 | CSAH 116 WB | 2 | 75 | REMOVE/REPLACE | 20 | 229 | | | 24 | 26 | 44 |
| 148+53.39 | CSAH 116 EB | 6 | 38 | REMOVE/REPLACE | | | | 189 | 32 | 3 | 4 |
| 152+98.92 | CSAH 116 EB | 13 | 42 | REMOVE/REPLACE | | | 15 | 52 | 18 | 6 | 13 |
| | | | | | | | | | | | |
| **PROJECT TOTAL** | | | | | 41 | 352 | 15 | 588 | | 64 | 99 |

NOTE :
(1) TYPE SP 12.5 WEAR (SPWEB230B).
(2) SEE SHEET 9 FOR 'BASIS OF QUANTITIES'.
(3) COMMERCIAL DRIVEWAY: 3" OF BITUMINOUS AND 5" OF CLASS 5 AGGREGATE INCLUDED IN CONSTRUCTION QUANTITIES.
(4) THIS REMOVAL QUANTITY IS INCLUDED IN THE EARTHWORK CALCULATIONS, AND IS PAID FOR AS COMMON EXCAVATION.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:57:16 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 12 of 482 Sheets

## FENCING — E

| STATION | | STATION | ALIGNMENT | OFFSET | LWB | REMOVE (SPEC. 2104) CHAIN LINK FENCE (LIN FT) | REMOVE (SPEC. 2104) IRON FENCE (LIN FT) | REMOVE (SPEC. 2104) WOOD FENCE (LIN FT) | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 38+55.64 | - | 39+38.28 | 116 - WB | 46.32 | 44.45 | | | 86 | [1] |
| 39+39.47 | - | 40+98.57 | 116 - WB | 45.87 | 40.72 | | | | [1] |
| 40+99.26 | - | 41+84.31 | 116 - WB | 40.18 | 39.25 | | | 85 | [1] |
| 41+86.14 | - | 42+65.59 | 116 - WB | 43.42 | 38.83 | | | 80 | [1] |
| 42+66.37 | - | 43+68.33 | 116 - WB | 38.67 | 38.44 | | | 102 | [1] |
| 43+69.13 | - | 45+36.59 | 116 - WB | 38.73 | 38.39 | | | 167 | [1] |
| 46+03.00 | - | 47+78.85 | 116 - WB | 36.72 | 39.38 | 177 | | | [1] |
| 47+78.85 | - | 49+77.36 | 116 - WB | 39.38 | 39.6 | 199 | | | [1] |
| 49+78.08 | - | 50+98.00 | 116 - WB | 39.01 | 39.5 | | | 120 | [1] |
| 50+73.45 | - | 50+73.56 | 116 - WB | 40.86 | 44.88 | | | 4 | [1] |
| 52+04.83 | - | 52+04.85 | 116 - WB | 45.58 | 40.26 | | | 5 | [1] |
| 52+04.85 | - | 53+00.14 | 116 - WB | 40.26 | 40.5 | | | 95 | [1] |
| 53+00.47 | - | 53+94.65 | 116 - WB | 40.39 | 38.57 | | | 96 | [1] |
| 53+95.69 | - | 54+80.24 | 116 - WB | 38.74 | 38.75 | | | 85 | [1] |
| 54+80.90 | - | 55+66.99 | 116 - WB | 38.71 | 38.93 | | | 86 | [1] |
| 55+67.58 | - | 56+50.80 | 116 - WB | 38.87 | 38.58 | | | 83 | [1] |
| 56+53.98 | - | 58+17.13 | 116 - WB | 38.65 | 39.22 | 163 | | | [1] |
| 58+03.71 | - | 58+17.25 | 116 - WB | 60.9 | 39.6 | 25 | | | [1] |
| 62+30.86 | - | 65+06.48 | 116 - WB | 49 | 46.15 | 276 | | | [1] |
| 66+99.52 | - | 67+09.74 | 116 - WB | 46 | 39.12 | | | 12 | [1] |
| 67+09.74 | - | 76+30.74 | 116 - WB | 39.12 | 51.11 | | | 915 | [1] |
| 76+31.02 | - | 76+40.03 | 116 - WB | 51.24 | 60.36 | 13 | | | [1] |
| 21+76.83 | - | 22+65.27 | PRAIRIE RD | 77.16 LT | 39.74 LT | | | 133 | [1] |
| 102+33.62 | - | 103+19.13 | 116 - WB | 47.77 | 56.08 | | | 93 | [1] |
| 102+33.90 | - | 102+33.93 | 116 - WB | 54.23 | 48.39 | | | 6 | [1] |
| 104+10.99 | - | 104+11.05 | 116 - WB | 40.66 | 42.93 | | | 2 | [1] |
| 104+10.99 | - | 105+01.80 | 116 - WB | 40.66 | 40.23 | | | 91 | [1] |
| 105+01.80 | - | 105+01.83 | 116 - WB | 40.23 | 46.48 | | | 6 | [1] |
| 105+93.13 | - | 105+93.43 | 116 - WB | 51.01 | 47.7 | | | 3 | [1] |
| 105+93.43 | - | 107+66.30 | 116 - WB | 47.7 | 49.32 | | | 173 | [1] |
| 111+39.32 | - | 111+97.59 | 116 - WB | 48.63 | 51.63 | | | 58 | [1] |
| 117+63.85 | - | 119+62.84 | 116 - WB | 47.87 | 44.77 | | | 199 | [1] |
| 119+62.33 | - | 119+62.84 | 116 - WB | 54.71 | 44.77 | | | 10 | [1] |
| 121+69.10 | - | 121+70.42 | 116 - WB | 68.43 | 54.02 | | | 14 | [1] |
| 121+70.42 | - | 122+45.15 | 116 - WB | 54.02 | 52.68 | | | 77 | [1] |
| 129+87.55 | - | 137+31.45 | 116 - WB | 45.05 | 43.28 | | 736 | | [1] |
| 137+31.45 | - | 137+37.23 | 116 - WB | 43.28 | 80.05 | | 37 | | [1] |
| 141+25.06 | - | 143+56.09 | 116 - WB | 47.51 | 44.13 | 231 | | | [1] |
| 143+56.09 | - | 143+56.42 | 116 - WB | 44.13 | 48.96 | 5 | | | [1] |
| 153+26.50 | - | 155+34.67 | 116 - EB | 37.23 | 37.15 | 209 | | | [1] |
| 157+60.96 | - | 157+63.76 | 116 - WB | 48.24 | 38.36 | | | 10 | [1] |
| PROJECT TOTAL | | | | | | 1,298 | 773 | 2,896 | |

[1] FENCE REMOVAL TO BE COMPLETED BY OTHERS. INFORMATIONAL PURPOSES ONLY.

## SANITARY/STORM SEWER ADJUSTMENTS — H

| STATION | LOCATION ALIGN | LOCATION OFFSET | SANITARY EXISTING TOC ELEV. | SANITARY PROPOSED TOC ELEV. | SANITARY ADJUST FRAME & RING CASTING EACH | STORM EXISTING TOC ELEV. | STORM PROPOSED TOC ELEV. | NOTES |
|---|---|---|---|---|---|---|---|---|
| C.S.A.H 116 | | | | | | | | |
| 40+22 | 116 EB | 33' RT | 898.70 | 899.03 | 1 | | | |
| 43+00 | 116 EB | 17' LT | | | | 896.85 | 896.85 | (2),(1) |
| 43+00 | 116 WB | 15' RT | | | | 896.80 | 896.80 | (2),(1) |
| 43+01 | 116 WB | 18' LT | | | | - | | (2),(1) |
| 43+01 | 116 EB | 17' RT | | | | - | | (2),(1) |
| 44+35 | 116 EB | 37' RT | 895.34 | 895.77 | 1 | | | |
| 51+52 | 116 WB | 108' LT | 892.22 | 892.22 | | | | (2),(1) |
| 123+40 | 116 WB | 84' LT | 895.89 | 895.89 | | | | (2),(1) |
| TOTAL | | | | | 2 | | | |

NOTES:
(1) DONE BY OTHERS.
(2) TOC ELEVATION IS NOT AFFECTED BY THIS PROJECT

## CONSTRUCT BITUMINOUS TRAIL — K

| STATION TO STATION | | | ALIGNMENT | OFFSET FACE CURB | SURFACE AREA SQ YD | TYPE SP 9.5 2.5" WEAR (SPWEA230B) TON | 4" AGGREGATE BASE (1) CU YD | NOTES |
|---|---|---|---|---|---|---|---|---|
| 37+25 | - | 61+77 | PARK_TRL_CL | VARIES | 3,113 | 447 | 406 | PARK TRAIL |
| 76+94 | - | 80+32 | PARK_TRL_CL | VARIES | 371 | 53 | 48 | PARK TRAIL |
| 93+81 | - | 109+19 | PARK_TRL_CL | VARIES | 1,379 | 198 | 180 | PARK TRAIL |
| SUBTOTAL | | | | | | 698 | 634 | |
| CITY OF ANDOVER | | | | | | | | |
| 37+33 | - | 51+34 | 116 - WB | 5'-10' | 1,518 | 218 | 198 | |
| 51+72 | - | 66+29 | 116 - WB | 5'-10' | 1,639 | 236 | 214 | |
| 66+11 | - | 66+27 | 116 - EB | 25' - 249' | 234 | 34 | 30 | CNTY PKWY A |
| 66+78 | - | 80+25 | 116 - WB | 5'-10' | 1,443 | 207 | 188 | |
| 80+79 | - | 81+73 | 116 - WB | VARIES | 112 | 16 | 15 | |
| 88+47 | - | 88+86 | 116 - WB | VARIES | 22 | 3 | 3 | CULVERT |
| 92+28 | - | 107+99 | 116 - WB | VARIES | 1,733 | 249 | 226 | |
| 94+75 | - | 94+85 | 116 - WB | VARIES | 120 | 17 | | PED TUNNEL |
| 108+58 | - | 123+08 | 116 - WB | 5'-10' | 1,595 | 229 | 208 | |
| 123+75 | - | 130+07 | 116 - WB | 5'-10' | 706 | 101 | 92 | |
| 20+44 | - | 23+30 | PRAIRIE | VARIES | 350 | 50 | 46 | WEST SIDE |
| 20+48 | - | 23+60 | PRAIRIE | VARIES | 322 | 46 | 42 | EAST SIDE |
| | | | | | | | | |
| SUBTOTAL | | | | | | 1,406 | 1,262 | |
| CITY OF HAM LAKE | | | | | | | | |
| 130+07 | | 133+22 | 116 - WB | | 339 | 49 | 44 | |
| 133+48 | | 147+17 | 116 - WB | | 1,463 | 210 | 191 | |
| 147+51 | | 156+93 | 116 - WB | | 1,021 | 147 | 133 | |
| 157+31 | | 166+10 | 116 - WB | | 950 | 137 | 124 | |
| SUBTOTAL | | | | | | 543 | 492 | |
| TOTAL | | | | | | 2,647 | 2,388 | |

NOTES:
(1) PAID FOR AS AGGREGATE BASE (CV) CLASS 5 (BITUMINOUS PATH)

## MAILBOX — I

| ALIGNMENT | STATION | OFFSET LEFT | OFFSET RIGHT | SALVAGE MAIL BOX SUPPORT (SPEC 2104) (EACH) | INSTALL MAIL BOX SUPPORT (SPEC 2540) (EACH) |
|---|---|---|---|---|---|
| 116 EB | 44+85 | | 18 | 1 | 1 |
| 116 WB | 143+59 | 3 | 24 | 1 | 1 |
| 116 EB | 153+18 | | 17 | 1 | 1 |
| | | | TOTAL | 3 | 3 |

## WOOD NOISE BARRIER — G

| STATION START | STATION END | ALIGNMENT | CENTER POST LIN FT | HEIGHT LIN FT | WALL SQ FT |
|---|---|---|---|---|---|
| 38+96.00 | 49+78.00 | LWB LT | 43.25 | 14 | 16,181 |
| 68+77.00 | 77+23.00 | LWB LT | 43.25 | 10 | 9,296 |
| 97+42.00 | 106+54.00 | LWB LT | 59.19 - 47.00 | 14 | 12,010 |
| TOTAL | | | | | 37,487 |

NOTE: SQ FT INCLUDES OVERLAP AREA AT POSTS



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/28/2016 11:53:33 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

## BASE AND BITUMINOUS QUANTITIES — J

| ALIGNMENT | LOCATION STA. | TO STA. | DESCRIPTION | BITUMINOUS SURFACE | TYPE SP 12.5 WEAR (SPWEB340F) | TYPE SP 12.5 NON WEAR (SPNWB330B) | TACK COAT | SHOULDER BASE AGGREGATE CLASS 5 | AGGREGATE BASE (CV) CLASS 5 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | SQ YD | TON | TON (1) | GALLON | CU YD | CU YD |
| CSAH 116 | | | | | | | | | |
| CSAH 116 WB | 37+06.00 | - | CRANE ST | 771 | 66 | | 39 | | 180 |
| CSAH 116 WB | 43+00.00 | - 59+00.00 | 116 MAINLINE | 6064 | 1395 | 785 | 606 | | 1392 |
| CSAH 116 EB | 43+00.00 | - 59+52.00 | 116 MAINLINE | 6341 | 1458 | 820 | 634 | | 1450 |
| CSAH 116 EB | 59+56.00 | - 65+95.00 | 116 MAINLINE | 2976 | 684 | 385 | 298 | | 671 |
| CSAH 116 WB | 59+65.00 | - 65+95.00 | 116 MAINLINE | 2315 | 533 | 300 | 232 | | 546 |
| CSAH 116 EB | 65+95.00 | - 67+13.00 | 116 MAINLINE | 1105 | 254 | 143 | 110 | | 215 |
| CSAH 116 EB | 67+13.00 | - 80+12.00 | 116 MAINLINE | 5191 | 1194 | 672 | 520 | 24 | 1134 |
| CSAH 116 WB | 67+13.00 | - 80+01.00 | 116 MAINLINE | 5003 | 1151 | 647 | 500 | | 1142 |
| CSAH 116 EB | 80+12.00 | - 80+94.00 | 116 MAINLINE | 765 | 176 | 99 | 76 | 3 | 149 |
| CSAH 116 WB | 80+86.00 | - 107+78.00 | 116 MAINLINE | 9315 | 2142 | 1205 | 932 | | 2165 |
| CSAH 116 EB | 80+94.00 | - 107+70.00 | 116 MAINLINE | 10159 | 2337 | 1314 | 1016 | 67 | 2206 |
| CSAH 116 EB | 107+70.00 | - 108+88.00 | 116 MAINLINE | 1100 | 253 | 142 | 110 | | 214 |
| CSAH 116 EB | 108+88.00 | - 136+66.00 | 116 MAINLINE | 11023 | 2535 | 1426 | 1102 | 56 | 2401 |
| CSAH 116 WB | 108+97.00 | - 136+73.00 | 116 MAINLINE | 11073 | 2547 | 1433 | 1108 | | 2509 |
| CSAH 116 EB | 136+66.00 | - 137+71.00 | 116 MAINLINE | 1051 | 242 | 136 | 106 | 4 | 212 |
| CSAH 116 EB | 137+71.00 | - 156+56.00 | 116 MAINLINE | 7597 | 1747 | 983 | 760 | 27 | 1681 |
| CSAH 116 WB | 137+78.00 | - 156+63.00 | 116 MAINLINE | 7034 | 1618 | 910 | 704 | | 1610 |
| CSAH 116 EB | 156+56.00 | - 157+61.00 | 116 MAINLINE | 989 | 227 | 128 | 98 | | 192 |
| CSAH 116 EB | 157+61.00 | - 166+98.00 | 116 MAINLINE | 3168 | 729 | 410 | 316 | 8 | 721 |
| CSAH 116 WB | 157+68.00 | - 167+05.00 | 116 MAINLINE | 4173 | 960 | 540 | 418 | 4 | 929 |
| CSAH 116 EB | 166+98.00 | - 170+54.00 | 116 MAINLINE | 2368 | 545 | 306 | 236 | 26 | 460 |
| CSAH 116 EB | 170+54.00 | - 172+70.00 | 116 MAINLINE | 1365 | 314 | 177 | 136 | 16 | 265 |
| CSAH 116 EB | 172+70.00 | - 173+72.00 | 116 MAINLINE | 648 | 149 | 84 | 64 | | 126 |
| CSAH 116 EB | 173+72.00 | - 179+35.00 | 116 MAINLINE | 3315 | 762 | 429 | 332 | 41 | 645 |
| CSAH 116 WB | 51+52.00 | - | WINTERGREEN | 233 | 54 | 30 | 12 | | 56 |
| CSAH 116 WB | 66+53.00 | - | SYCAMORE | 249 | 57 | 32 | 12 | | 59 |
| CSAH 116 EB | 66+60.00 | - | SYCAMORE | 261 | 60 | 34 | 13 | | 60 |
| PRAIRIE | 20+17.00 | - 2360 | PRAIRIE | 1512 | 348 | | 76 | | 280 |
| CSAH 116 WB | 108+35.00 | - | GOLDENROD | 294 | 68 | 38 | 15 | | 74 |
| PARK (2) | 2+15.00 | - 1180 | PARK ENTRANCE | 2855 | 657 | | 143 | 84 | 421 |
| CSAH 116 WB | 123+36.00 | - | BUTTERNUT | 324 | 75 | 42 | 16 | | 73 |
| CSAH 116 WB | 147+33.00 | - | TERRACE | 163 | 37 | 21 | 8 | | 40 |
| CSAH 116 WB | 157+11.00 | - | 138TH | 138 | 32 | 18 | 7 | | 34 |
| CSAH 116 EB | 157+18.00 | - | JEFFERSON | 459 | 106 | 59 | 23 | | 89 |
| CSAH 116 EB | 173+23.00 | - | VAN BUREN | 236 | 54 | 31 | 12 | 3 | 46 |
| CSAH 116 WB | 173+27.00 | - | NORTH APART | 125 | 29 | 16 | 6 | 3 | 24 |
| TOTAL | | | | 25,595 | 13,795 | 10,796 | 366 | | 24,471 |

(1) INCLUDES QUANTITY FOR ADDITIONAL 1/4 INCH TO DESIGN PAVEMENT THICKNESS.

(2) INCLUDES AGGREGATE SHOULDER CL 5 QUANTITY FOR 2.5" THICK X 2' WIDE AGGREGATE SHOULDERING ON PATH FROM STA 90+71 TO 107+9

SEE SHEET 9 FOR 'BASIS OF QUANTITIES'.

## SHEET PILING & CONCRETE RETAINING WALL — LL

| STATIONING START | STATIONING END | ALIGNMENT | LOCATION OFFSET LIN FT | LENGTH LIN FT | HEIGHT LIN GT | SURFACE SQ FT | RAILING LIN FT | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 92+40.00 | 97+50.00 | LWB | 32 LT | 528 | 2.0 - 15.2 | 5,642 | 528.0 | RETAINING WALL K |
| | | | | | | | | |
| TOTAL | | | | | | 5,642 | 528.0 | |

## CULVERT TABULATION — N

| APRON NO. FROM | APRON NO. TO | STATION FROM | STATION TO | OFFSET FROM | OFFSET TO | ALIGNMENT | INVERT UPSTREAM | INVERT DOWNSTREAM | 15" RC CULVERT CL III | 15" RC PIPE APRON | TRASH GUARD FOR 15" PIPE APRON | 28" SPAN RC-ARCH CULV CL IIA | 28" SPAN RC-ARCH APRON | TRASH GUARD FOR 28" SPAN PIPE APRON | 44" SPAN RC-ARCH CULV CL IIA | 44" SPAN RC ARCH APRON | TRASH GUARD FOR 44" SPAN PIPE APRON | RIPRAP CL II | GEOTEXTILE FILTER TYPE III | SODDING TYPE SALT TOLERANT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | LIN FT | EACH | EACH | LIN FT | EACH | EACH | LIN FT | EACH | EACH | CU YD | SQ YD | SQ YD |
| CSAH 116 | | | | | | | | | | | | | | | | | | | | |
| 313 | 314 | 77+56.29 | 77+72.09 | 188 LT | 168 LT | WB | 885.50 | 884.00 | 14 | 2 | 1 | | | | | | | 3 | 17 | 8 |
| 450 | 451 | 88+46.50 | 88+64.70 | 68 LT | 122 LT | WB | 888.00 | 885.30 | 45 | 2 | 1 | | | | | | | 3 | 17 | 8 |
| 615 | 616 | 136+93.50 | 136+42.70 | 44 RT | 109 LT | EB | 881.95 | 880.85 | | | | | | | 146 | 2 | 1 | 20 | 92 | |
| 860 | 861 | 166+26.66 | 166+28.26 | 37 RT | 100 LT | EB | 888.34 | 888.26 | | | | 125 | 2 | 2 | | | | | | 28 |
| 881 | 880 | 173+56.99 | 172+88.59 | 28 LT | 24 LT | WB | 895.60 | 894.60 | 57 | 2 | 1 | | | | | | | 3 | 17 | 8 |
| TOTAL | | | | | | | | | 59 | 6 | 3 | 125 | 2 | 2 | 146 | 2 | 1 | 29 | 143 | 52 |

- OFFSETS ARE TO END OF APRON.
- PIPE LENGTH DOES NOT INCLUDE APRON.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:57:32 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 14 of 482 Sheets

# CONCRETE CURB AND GUTTER, MEDIAN, WALK

O

| STATIONING | | | LOCATION | 4" CONCRETE MEDIAN [2] | CONCRETE CURB & GUTTER DESIGN B424 | CONCRETE CURB & GUTTER DESIGN B418 (MOD) | CONCRETE CURB & GUTTER DESIGN B412 | CONCRETE CURB & GUTTER DESIGN B612 | CONCRETE CURB & GUTTER DESIGN B618 | CONCRETE CURB & GUTTER DESIGN B618 (MOD) | CONCRETE CURB & GUTTER DESIGN B624 | CONCRETE CURB & GUTTER DESIGN S512 | 6" CONCRETE VALLEY GUTTER | 4" CONCRETE WALK | 6" CONCRETE WALK [1] | PED RAMP TYPE [3] | TRUNCATED DOMES | CONC MEDIAN (NOSE) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START | END | | | SQ FT | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | SQ YD | SQ FT | SQ FT | | SQ FT | SQ YD |
| 36+42 | 36+67 | 116 - EB | ACHD ENTRANCE | | | 30 | | | | | | | | | 291 | FAN | 28 | |
| 36+55 | 36+93 | 116 -WB | CRANE ST | | 54 | | | | 31 | | | 207 | | 1480 | 348 | COMBINED DIRECTIONAL | 36 | |
| 37+24 | 37+58 | 116 - EB | ACHD ENTRANCE | | | 30 | | | | | | | | | 407 | COMBINED DIRECTIONAL | 24 | |
| 37+27 | 37+56 | 116 -WB | CRANE ST | | 49 | | | | | | | 193 | | | 452 | COMBINED DIRECTIONAL | 24 | |
| 43+00 | 59+46 | 116 - EB | SHOULDER | | 1530 | | | | | | 116 | | | | 20 | | 20 | |
| 43+00 | 51+02 | 116 - EB | MEDIAN | 7777 | | 1595 | | | | | | | | | | | | 4 |
| 43+00 | 51+06 | 116 -WB | SHOULDER | | 886 | | | | | | | | | | | | | |
| 51+44 | 59+50 | 116 - EB | MEDIAN | 11985 | | 1354 | | | | 243 | | | | | | | | 3 |
| 51+98 | 59+60 | 116 -WB | SHOULDER | | 632 | | | | | | 130 | | | | 20 | | 20 | |
| 59+56 | 66+11 | 116 - EB | SHOULDER | | 523 | | | | | | 132 | | | | 20 | | 20 | |
| 59+65 | 65+95 | 116 - EB | MEDIAN | 5198 | | 1004 | | | | 244 | | | | | | | | 3 |
| 59+70 | 66+01 | 116 -WB | SHOULDER | | 513 | | | | | | 118 | | | | 98 | | 40 | |
| 67+04 | 79+98 | 116 -WB | SHOULDER | | 1289 | | | | | | | | | | | | | |
| 67+10 | 73+50 | 116 - EB | SHOULDER | | 642 | | | | | | | | | | | | | |
| 67+13 | 80+09 | 116 - EB | MEDIAN | 9363 | | 2562 | | | | | | | | | | | | 6 |
| 80+11 | 80+24 | 116 - EB | SHOULDER | | | | | | | | | | | | 384 | | 20 | |
| 80+94 | 107+70 | 116 - EB | MEDIAN | 2556 | | 5349 | | | | | | | | | | | | 9 |
| 81+04 | 107+79 | 116 -WB | SHOULDER | | 2683 | | | | | | | | | | | | | |
| 94+00 | 100+30 | 116 - EB | SHOULDER | | 639 | | | | | | | | | | | | | |
| 94+75 | 98+08 | 116 -WB | BIT PATH | | | | 224 | | | | | | | | | | | |
| 105+00 | 107+70 | 116 - EB | SHOULDER | | 270 | | | | | | | | | | | | | |
| 108+85 | 118+50 | 116 - EB | SHOULDER | | 965 | | | | | | | | | | | | | |
| 108+88 | 122+85 | 116 - EB | MEDIAN | 12455 | | 2778 | | | | | | | | | | | | 6 |
| 108+89 | 122+87 | 116 -WB | SHOULDER | | 1399 | | | | | | | | | | | | | |
| 121+50 | 124+50 | 116 - EB | SHOULDER | | 297 | | | | | | | | | | | | | |
| 123+27 | 132+80 | 116 - EB | MEDIAN | 10172 | | 1873 | | | | | | | | | | | | 6 |
| 123+91 | 130+10 | 116 -WB | SHOULDER | | 622 | | | | | | | | | | | | | |
| 130+10 | 146+89 | 116 -WB | SHOULDER | | 2295 | | | | | | | | | | | | | |
| 133+75 | 156+56 | 116 - EB | MEDIAN | 25782 | | 4539 | | | | | | | | | | | | 6 |
| 144+00 | 156+47 | 116 - EB | SHOULDER | | 1248 | | | | | | | | | | | | | |
| 147+77 | 156+65 | 116 -WB | SHOULDER | | 888 | | | | | | | | | | | | | |
| 157+57 | 166+10 | 116 -WB | SHOULDER | | 853 | | | | | | | | | | 325 | | | |
| 157+61 | 166+55 | 116 - EB | MEDIAN | 6255 | | 1767 | | | | | | | | | | | | 6 |
| 157+79 | 164+64 | 116 - EB | SHOULDER | | 685 | | | | | | | | | | | | | |
| 51+06 | 51+36 | 116 -WB | WINTERGREEN SH | | 80 | | | | | | | | | | 68 | ONE-WAY DIRECTIONAL | 20 | |
| 51+68 | 51+98 | 116 -WB | WINTERGREEN SH | | 75 | | | | | | | | | | 71 | ONE-WAY DIRECTIONAL | 20 | |
| 66+01 | 66+31 | 116 -WB | SYCAMORE SH | | 64 | | | 36 | | | | | 16 | 266 | 497 | COMBINED DIRECTIONAL | 24 | |
| 66+08 | 66+40 | 116 - EB | CNTY PKWY A SH | | 67 | | | | | | | | | | 343 | COMBINED DIRECTIONAL | 24 | |
| 66+74 | 67+04 | 116 -WB | SYCAMORE SH | | 59 | | | | | | | | | | 439 | COMBINED DIRECTIONAL | 24 | |
| 66+80 | 67+10 | 116 - EB | CNTY PKWY A SH | | 46 | | | | | | | | | | 247 | FAN | 28 | |
| 20+19 | 23+60 | PRAIRIE RD | W SHOULDER | | 242 | | | | 135 | | | | | | 291 | FAN | 40 | |
| 20+24 | 23+60 | PRAIRIE RD | E SHOULDER | | 224 | | | | 114 | | | | | | 296 | ONE-WAY DIRECTIONAL | 20 | |
| 20+50 | 22+45 | PRAIRIE RD | MEDIAN | 738 | | | | | | 369 | | | | | | | | 6 |
| 2+00 | 2+15 | PARK-CL | W SHOULDER | | | | | | | | | | | | 251 | | | |
| 10+59 | 11+80 | PARK-CL | E/W SHOULDER | | 319 | | | | | | | | | | 73 | FAN | 20 | |
| 107+79 | 108+09 | 116 - WB | GOLDENROD SH | | 52 | | | | | | | 14 | | 1029 | 88 | 2 - ONE-WAY DIRECTIONAL | 32 | |
| 108+35 | 108+45 | 116 - WB | GOLDENROD MED | 80 | | | | 137 | | | | | | | | | | 10 |
| 108+59 | 108+89 | 116 - WB | GOLDENROD SH | | 52 | | | | | | | 10 | | | 71 | ONE-WAY DIRECTIONAL | 20 | |
| 122+87 | 123+14 | 116 - WB | BUTTERNUT SH | | 73 | | | | | | | | | | 68 | ONE-WAY DIRECTIONAL | 20 | |
| 123+59 | 123+91 | 116 - WB | BUTTERNUT SH | | 74 | | | | | | | | | | 71 | ONE-WAY DIRECTIONAL | 20 | |
| 146+89 | 147+19 | 116 - WB | TERRACE SH | | 54 | | | | | | | | | | 65 | ONE-WAY DIRECTIONAL | 20 | |
| 147+47 | 147+77 | 116 - WB | TERRACE SH | | 49 | | | | | | | | | | 71 | ONE-WAY DIRECTIONAL | 20 | |
| 156+47 | 156+95 | 116 - EB | JEFFERSON SH | | 93 | | | | | | | | | | 280 | FAN | 36 | |
| 156+65 | 156+95 | 116 - WB | 138TH AVE SH | | 52 | | | | | | | | | | 235 | FAN | 32 | |
| 157+27 | 157+57 | 116 - WB | 138TH AVE SH | | 47 | | | | | | | | | | 264 | FAN | 28 | |
| 157+40 | 157+79 | 116 - EB | JEFFERSON SH | | 96 | | | | | | | | | | 235 | FAN | 24 | |
| | | | PROJECT TOTAL | 92,361 | 20,780 | 22,851 | 224 | 173 | 280 | 856 | 496 | 424 | 16 | 2,775 | 6,098 | | 676 | 65 |

**CONCRETE NOTES:**

[1] 6" CONC WALK QUANTITY FOR PEDESTRIAN CURB RAMPS.

[2] PAID FOR AS 4" CONCRETE WALK IN SEQ

[3] SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON PAGES 114-118.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:57:37 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/03/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

# TURF ESTABLISHMENT & EROSION CONTROL

P

| LOCATION | | | SILT FENCE TYPE MS | STORM DRAIN INLET PROTECTION | SEDIMENT CONTROL LOG TYPE WOOD FIBER | SEEDING | SEED MIXTURE | | | | SODDING | MULCH MATERIAL TYPE 1 | MULCH MATERIAL TYPE 3 | DISK ANCHORING | EROSION CONTROL BLANKET (CAT. 0) | FERTILIZER TYPE 3 22-5-10 | FERTILIZER TYPE 4 18-1-8 | RAPID STABILIZATION METHOD 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 25-121 | 25-131 | 33-261 | 35-241 | TYPE SALT TOLERANT | | | | | | | |
| BEG. STA. | END STA. | ALI | LIN FT | EACH | SQ FT | ACRE | POUND | POUND | POUND | POUND | SQ YD | TON | TON | ACRE | SQ YD | POUND | POUND | M GAL |
| **C.S.A.H. 116** | | | | | | | | | | | | | | | | | | |
| 37+25 | 44+48 | EB | 747 | 5 | | 0.6 | 12 | 36 | | 8 | | 0.4 | 0.4 | 0.4 | 727 | 125 | 33 | 3.2 |
| 44+72 | 48+73 | EB | 345 | 2 | | 0.4 | 25 | | | | | 0.8 | | 0.4 | | 142 | | 2.2 |
| 48+56 | 52+51 | EB | 892 | 6 | | 0.9 | | | 25 | 8 | | | 0.4 | 0.2 | 1132 | | 120 | 5.1 |
| 52+50 | 59+49 | EB | 661 | 5 | | 0.3 | 19 | | | | | 0.6 | | 0.3 | | 109 | | 1.7 |
| 59+50 | 61+53 | EB | 121 | | | 0.1 | 9 | | | | | 0.3 | | 0.1 | | 50 | | 0.8 |
| 61+50 | 64+40 | EB | 755 | 1 | | 0.6 | | | 17 | 5 | | | 0.3 | 0.1 | 586 | | 78 | 3.4 |
| 64+40 | 66+40 | EB | 213 | 4 | | 0.1 | 3 | | | | | 0.1 | | 0.1 | | 19 | | 0.3 |
| 66+80 | 80+17 | EB | 1500 | 6 | | 0.8 | 43 | | 3 | | | 1.4 | | 0.7 | 344 | 246 | 9 | 4.3 |
| 80+22 | 94+50 | EB | 2454 | 5 | | 0.8 | 24 | | 13 | | | 0.8 | | 0.4 | 1645 | 136 | 45 | 4.2 |
| 94+64 | 108+05 | EB | 609 | 5 | | 0.8 | 50 | | | | | 1.7 | | 0.8 | | 290 | | 4.5 |
| 108+65 | 130+21 | EB | 2287 | 9 | | 1.0 | 52 | | 3 | | | 1.7 | | 0.9 | 439 | 298 | 12 | 5.2 |
| 130+18 | 134+57 | EB | 1273 | 3 | | 0.5 | | | 17 | | | | | | 2137 | | 58 | 2.6 |
| 134+50 | 144+37 | EB | 1964 | 5 | | 0.5 | | | 16 | | | | | | 2044 | | 56 | 2.5 |
| 144+29 | 145+43 | EB | 358 | 1 | | 0.4 | | | 13 | | | | | | 1666 | | 45 | 2.1 |
| 145+52 | 152+93 | EB | | 7 | | 0.2 | 11 | | 1 | | | 0.4 | | 0.2 | 101 | 64 | 3 | 1.1 |
| 153+15 | 156+84 | EB | | 3 | | | | | | | 681 | | | | | | | 0.8 |
| 157+43 | 163+40 | EB | 426 | 4 | | 0.2 | 8 | | 2 | | | 0.2 | | 0.1 | 204 | 43 | 6 | 0.9 |
| 163+33 | 165+81 | EB | 998 | 3 | | 0.3 | | | 9 | | | | | | 1183 | | 32 | 1.5 |
| 165+04 | 172+89 | EB | 891 | 6 | 32 | 0.2 | | | 6 | | 738 | | | | 703 | | 19 | 1.7 |
| 173+54 | 179+35 | EB | | 2 | 288 | | | | | | 1,465 | | | | | | | 1.7 |
| 36+55 | 36+82 | WB | | | | | | 2 | | | 141 | | | | 47 | 4 | | 0.2 |
| 37+41 | 51+36 | WB | 599 | 11 | | 0.3 | | 62 | | | 1,687 | | | | 1241 | 169 | | 3.4 |
| 51+69 | 59+66 | WB | 796 | 9 | | 0.1 | | 19 | | | 1,162 | | | | 388 | 79 | | 1.8 |
| 59+68 | 66+30 | WB | 309 | 5 | | 0.3 | | 69 | | | | | | | 1382 | 110 | | 1.7 |
| 66+75 | 76+86 | WB | 871 | 5 | | 0.2 | | 41 | | | 1,438 | | | | 829 | 125 | | 2.6 |
| 76+86 | 80+12 | WB | 332 | 7 | | 0.8 | | 16 | 6 | 21 | | | 1.1 | 0.6 | 1053 | 26 | 105 | 4.4 |
| 80+86 | 107+98 | WB | 1398 | 22 | | 2.1 | 76 | 171 | 2 | | | 2.5 | | 1.2 | 3629 | 272 | 6 | 11.3 |
| 108+60 | 123+14 | WB | 486 | 14 | | 0.4 | | 64 | 3 | | 2,327 | | | | 1634 | 198 | 10 | 4.6 |
| 123+60 | 133+24 | WB | 805 | 11 | | 0.4 | 15 | 31 | | | | 0.5 | | 0.2 | 611 | 49 | | 2.1 |
| 133+49 | 143+82 | WB | 1090 | 9 | | 0.5 | 2 | 37 | 11 | | | 0.1 | | | 2073 | 58 | 37 | 2.7 |
| 144+06 | 147+18 | WB | 210 | 4 | | 0.1 | | 15 | 3 | | 171 | | | | 272 | 31 | 10 | 1.0 |
| 147+48 | 156+96 | WB | 380 | 8 | | 0.2 | | 38 | | | 868 | | | | 757 | 96 | | 1.9 |
| 157+24 | 166+75 | WB | 777 | 9 | | 0.2 | | 35 | | | 1,808 | | | | 706 | 131 | | 2.9 |
| 166+75 | 173+13 | WB | 599 | | 64 | 0.1 | | | 3 | | 1,123 | | | | 389 | 46 | 11 | 1.7 |
| 173+41 | 179+42 | WB | 138 | 1 | 352 | | | | | | 1,216 | | | | | 50 | | 1.4 |
| 20+38 | 23+60 | PRAIRIE | | 3 | | 0.4 | | 80 | | | | | | | 1608 | | | 2.0 |
| **PARK TRAIL OUTSIDE CSAH 116 LIMITS / PARK ENTRANCE** | | | | | | | | | | | | | | | | | | |
| 48+03 | 58+82 | EB | 1758 | | | 0.2 | 14 | | | | | 0.5 | | 0.2 | | | | 1.3 |
| 60+32 | 61+77 | EB | 348 | | | 0.2 | 10 | | | | | 0.3 | | 0.2 | | | | 0.9 |
| 92+84 | 108+74 | EB | 2204 | 4 | | 2.3 | 122 | | 12 | | | 4.0 | | 2.0 | 1514 | | 41 | 12.8 |
| **TOTAL** | | | **29594** | **204** | **736** | **17.5** | **495** | **716** | **165** | **42** | **14825** | **16.3** | **2.2** | **9.1** | **31044** | **2966** | **736** | **110.5** |

- QUANTITIES ARE BASED ON 110% OF THE COMPUTED AREA.
- 16' LENGTHS USED FOR SEDIMENT CONTROL LOG TYPE WOOD FIBER CALCULATIONS.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/18/2016 2:01:16 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 16 of 482 Sheets

## DRAINAGE FLUME REMOVAL AND CONSTRUCTION — R

| STATION | ALIGNMENT | OFFSET | REMOVE | | CONSTRUCT | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | FLUME | RIPRAP CL II | GEOTEXTILE FILTER TYPE III |
| | | LIN FT | DESCRIPTION | EACH | DESCRIPTION | SQ YD | CU YD | SQ YD |
| 73+50 | EB | 20 RT | | | CONC FLUME | 11 | 12 | 53 |
| 94+00 | EB | 20 RT | | | CONC FLUME | 12 | 12 | 53 |
| 95+55 | WB | 56 LT | | | CONC FLUME | 12 | 12 | 53 |
| 100+22 | EB | 197 RT | CONC | 1 | | | | |
| 100+53 | EB | 198 RT | CONC | 1 | | | | |
| 100+55 | EB | 20 RT | | | CONC FLUME | 10 | 11 | 46 |
| 118+50 | EB | 20 RT | | | CONC FLUME | 10 | 11 | 46 |
| 124+50 | EB | 20 RT | | | CONC FLUME | 10 | 11 | 46 |
| 144+00 | EB | 20 RT | | | CONC FLUME | 9 | 11 | 46 |
| 150+70 | WB | 17 LT | BITUMINOUS | 1 | | | | |
| 157+88 | WB | 17 LT | BITUMINOUS | 1 | | | | |
| 161+36 | EB | 12 RT | BITUMINOUS | 1 | | | | |
| 164+64 | EB | 20 RT | | | CONC FLUME | 10 | 11 | 46 |
| 10+53.60 | PARK ACCESS | 12 RT | | | CONC FLUME | 9 | 11 | 46 |
| 10+54.40 | PARK ACCESS | 12 LT | | | CONC FLUME | 9 | 11 | 46 |
| | | | | | | | | |
| TOTAL | | | | 5 | | 102 | 113 | 481 |

NOTE: FOR DETAIL SEE DETAIL PLAN SHEET.

## AGGREGATE BEDDING — T

| STATION TO STATION | | ALIGNMENT | OFFSET | LENGTH | DESCRIPTION | AGGREGATE BEDDING | COARSE FILTER |
|---|---|---|---|---|---|---|---|
| | | | LIN FT | LIN FT | | CU YD | CU YD |
| 94+50.00 | 94+64.00 | EB | 40 - 75 LT RT | 115 | 18' W x 1' H | | 77 |
| 136+75.40 | 136+80.40 | EB | 44 -110 LT RT | 162 | 5' W x 1' H | 36 | |
| 166+25.00 | 166+29.00 | EB | 38 -100 LT RT | 138 | 4' W x 1' H | 26 | |
| | | | | | | | |
| TOTAL | | | | | | 62 | 77 |

## BITUMINOUS CURB REMOVAL AND CONSTRUCTION — Q

| STATION TO STATION | ALIGNMENT | OFFSET | REMOVE | CONSTRUCT |
|---|---|---|---|---|
| | | | LIN FT | LIN FT |
| 147+18.65 - 147+18.87 | CSAH 116 WB | 25 - 57 LT | 32 | |
| 147+47.18 - 147+54.95 | CSAH 116 WB | 20 - 57 LT | 39 | |
| 156+93.64 - 156+93.95 | CSAH 116 WB | 48 - 53 LT | 5 | |
| 157+23.01 - 157+23.08 | CSAH 116 WB | 51 - 53 LT | 2 | |
| 172+86.19 - 172+90.32 | CSAH 116 EB | 27 - 40 RT | | 14 |
| 172+91.23 - 172+91.88 | CSAH 116 EB | 16 - 39 RT | 25 | |
| 173+52.49 - 173+54.11 | CSAH 116 EB | 18 - 39 RT | 21 | |
| 173+52.57 - 173+55.05 | CSAH 116 EB | 26 -38 RT | | 12 |
| TOTAL | | | 124 | 26 |

## SUBSURFACE DRAINAGE — U

| STATION TO STATION | | LOCATION | | 4" PERF TP PIPE DRAIN | FINE FILTER AGGREGATE (LV) | DESCRIPTION |
|---|---|---|---|---|---|---|
| | | ALIGNMENT | OFFSET | | | |
| | | | LIN FT | LIN FT | CU YD | |
| 92+30.00 | 98+00.00 | WB | 22.6 LT | 570 | 19 | SHOULDER |
| 93+32.00 | 96+00.00 | EB | 17.0 LT | 268 | 9 | MEDIAN |
| 94+52.00 | 94+62.00 | EB | 75-175 LT RT | 480 | 16 | PRECAST CONCRETE BOX CULVERT |
| 129+50.00 | 140+00.00 | EB-WB | 27.5 LT RT | 1050 | 35 | SHOULDER |
| 134+00.00 | 138+50.00 | EB-WB | 28.5 LT RT | 450 | 15 | SHOULDER |
| 134+00.00 | 140+00.00 | EB | 23 RT | 210 | 7 | MEDIAN |
| | | | | | | |
| TOTAL | | | | 3,028 | 101 | |

NOTE: SEE DRAINAGE PLAN AND DETAILS FOR MORE INFORMATION.

## BITUMINOUS TEMPORARY WIDENING AND PATCHING — V

| ALIGNMENT | LOCATION | | DESCRIPTION | BITUMINOUS SURFACE | TYPE SP 12.5 NON WEAR (SPNWB330B) | PATCHING TYPE SP 12.5 WEAR (SPWEB230B) | TEMPORARY WIDENING FILL | AGGREGATE BASE CLASS 5 |
|---|---|---|---|---|---|---|---|---|
| | STA. | TO STA. | | SQ YD | TON | TON | CU YD (1) | CU YD |
| CSAH 116 | | | | | | | | |
| WB | 37+06 | | CRANE ST PATCHING | 266 | | 38 | | 30 |
| EB | 99+93 | 100+38 | PARK ENT WIDENING | | | | | 195 |
| EB | 100+22 | 107+72 | TEMP SURFACING | 915 | 158 | | | 153 |
| WB | 108+35 | | GOLDENROD PATCHING | 90 | | 13 | | 10 |
| WB | 109+09 | 110+39 | TEMP SURFACING | 710 | 122 | | | 118 |
| WB | 110+39.00 | 122+61.00 | TEMP WIDENING | 1476 | 255 | | 1181 | 1845 |
| WB | 110+69 | | PATCHING | 54 | | 8 | | 6 |
| WB | 118+20 | | PATCHING | 46 | | 7 | | 5 |
| WB | 122+84 | | PATCHING | 44 | | 6 | | 5 |
| WB | 123+96 | | PATCHING | 65 | | 9 | | 7 |
| WB | 128+49 | | PATCHING | 46 | | 7 | | 5 |
| WB | 130+32 | 130+82 | PATCHING | 132 | | 19 | | 15 |
| WB | 132+31 | 132-56 | PATCHING | 67 | | 10 | | 7 |
| WB | 134+11 | 144+54 | TEMP SURFACING | 4065 | 701 | | | 677 |
| WB | 147+14 | 156+64 | TEMP MED WIDENING | 781 | 135 | | | 87 |
| WB | 163+14 | 166+88 | TEMP MED WIDENING | 311 | 54 | | | 35 |
| WB | 165+56.00 | 171+06.00 | TEMP WIDENING | 385 | 66 | | 35 | 43 |
| | | | | | | | | |
| PROJECT TOTAL | | | | | 1,491 | 117 | 1,216 | 3,243 |

NOTES:
(1) SHOULDER BASE AGGREGATE (CV) CLASS 5 TO BE USED FOR TEMPORARY WIDENING FILL
- 2.5" PAVEMENT THICKNESS & 4" AGGREGATE BASE CLASS 5 USED FOR PATCHING/TEMP WIDENING
- 3" PAVEMENT THICKNESS & 5" AGGREGATE BASE CLASS 5 USED FOR TEMP SURFACING



| NO | DATE | BY | CKD | APPR | REVISION |
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 17 of 482 Sheets

## UTILITY CONTACTS — AA

CITY OF ANDOVER
1685 CROSSTOWN BLVD.
ANDOVER, MN 55304
CONTACT: BRIAN KRAABEL
TEL: 763-767-5180

CITY OF HAM LAKE
15544 CENTRAL AVE NE
HAM LAKE, MN 55304
CONTACT: TOM REINER
TEL 763-235-1672

CONNEXUS ENERGY
14601 RAMSEY BLVD
RAMSEY, MN 55303
CONTACT: MAT RAUSHENDORFER
TEL. 763-218-4655

COMCAST CABLE
2611 FAIRVIEW AVE
ROSEVILLE, MN 55113
CONTACT: DOUG ZAHN
TEL 651-493-5316

ACCESS COMMUNICATION TECH
5005 CHESHIRE LN N
PLYMOUTH, MN 55446
CONTACT: MIKE DAHLE
TEL 763-545-9998

GOPHER STATE ONE CALL
FIELD UTILITY LOCATE REQUEST
http://www.gopherstateonecall.org
TEL 651--454-0002 OR
TEL 1-800-252-1166

CENTERPOINT ENERGY
700 WEST LINDEN AVE
P.O. BOX 1165 MINNAPOLIS, MN 55440-1165
CONTACT: STEVE GUHANICK
TEL 763-427-3456

CENTURYLINK
425 MONROE ST
ANOKA, MN 55303
CONTACT: BRUCE HOLLOWAY
TEL. 763-712-5020

NORTHERN NATURAL GAS
1120 CENTER POINTE DR. SUITE 400
MENDOTA HEIGHTS, MN 55120
CONTACT: TOM DICKSON
TEL. 651-456-1777

## ACCESS COMMUNICATIONS — BB

| ALIGNMENT | STATION | OFFSET | INPLACE ITEM | REMARKS |
|---|---|---|---|---|
| CSAH 116 WB | 37+51 | 32' L | SBT | RELOCATE |
| CSAH 116 EB | 38+55 | 39' R | HANDHOLE | RELOCATE |
| CSAH 116 EB | 38+57 | 122' R | SBT | LEAVE |
| CSAH 116 EB | 43+88 | 19' R | HANDHOLE | RELOCATE |
| CSAH 116 EB | 44+88 | 24' R | SBT | RELOCATE |
| CSAH 116 EB | 47+95 | 9' R | HANDHOLE | RELOCATE |
| CSAH 116 WB | 51+20 | 35' L | MH TEL | ADJUST |
| CSAH 116 WB | 60+33 | 42' L | SBT | RELOCATE |
| CSAH 116 EB | 61+38 | 6' R | SBT | RELOCATE |
| CSAH 116 EB | 65+85 | 29' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 65+98 | 31' R | HANDHOLE | RELOCATE |
| CSAH 116 EB | 67+13 | 22' R | HANDHOLE | RELOCATE |
| CSAH 116 EB | 68+08 | 26' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 69+49 | 24' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 70+43 | 19' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 71+10 | 18' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 71+73 | 21' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 72+15 | 25' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 72+67 | 25' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 73+32 | 19' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 73+60 | 17' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 74+44 | 15' R | BURRIED CABLE | RELOCATE |
| CSAH 116 WB | 76+58 | 58' L | SBT | RELOCATE |
| CSAH 116 EB | 76+95 | 22' R | BURRIED CABLE | RELOCATE |
| CSAH 116 WB | 78+66 | 26' L | SBT | RELOCATE |
| CSAH 116 EB | 79+59 | 18' R | HANDHOLE | RELOCATE |
| CSAH 116 EB | 80+47 | 18' R | HANDHOLE | RELOCATE |
| CSAH 116 EB | 99+80 | 30' R | BURRIED CABLE | RELOCATE |
| CSAH 116 EB | 100+11 | 41' R | BURRIED CABLE | RELOCATE |

## PROJECT CONTACTS

| | | | |
|---|---|---|---|
| DNR | NOT REQUIRED | | |
| COE | NOT REQUIRED | | |
| ANOKA COUNTY DESIGN SWPPP PREPRATION | U OF M DESIGN OF SWPPP EXPIRES 5/17 | ZAC BORGERDING | 763-862-4263 |
| ANOKA COUNTY REPRESENTATIVE | U OF M SITE MANAGEMENT EXPIRES 5/17 | BRUCE LUIKART | 763-862-4242 |
| EROSION CONTROL SUPERVISOR (CONTRACTOR) | | | |

## CITY OF ANDOVER — CC

| STATION | LOCATION | | | INPLACE ITEM | ADJUST GATE VALVE & BOX EACH | SALVAGE GATE VALVE & BOX EACH | ADJUST HYDRANT & GATE VALVE EACH | REMOVE WATERMAIN LIN FT | SALVAGE HYDRANT & VALVE EACH | 6" DIP CL 52 WATERMAIN LIN FT | 12" DIP CL 52 WATERMAIN LIN FT | 6" GATE VALVE & BOX EACH | 12" BUTTERFLY VALVE & BOX EACH | HYDRANT EACH | 4" POLYSTYRENE INSULATION SY | DUCTILE IRON FITTINGS LB | CONNECT TO EXISTING WATERMAIN EACH | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CSAH 116** | | | | | | | | | | | | | | | | | | |
| 44+20 | 25 | RT | EB | HYD & GV | | | | | 1 | | | 1 | | 1 | | | | [5] |
| 51+27 | 58 | LT | WB | HYD & GV | | | 1 | | | | | | | | | | | |
| 51+52 | 103 | LT | WB | SAN MH | | | | | | | | | | | | | | LEAVE |
| 75+34 - 77+55 | 40 | LT | WB | WM | | | | 300 | | | | | | | | | | [2] |
| 75+34 - 77+55 | 28 | LT | WB | WM | | | | | | 15 | 300 | 1 | 2 | 1 | 21 | 900 | 2 | [3] |
| 76+25 | 38 | LT | WB | HYD & GV | | | | | 1 | | | | | | | | | [1][5] |
| 76+46 | 33 | LT | WB | GV | | 1 | | | | | | | | | | | | [5] |
| 80+41 | 250 | LT | WB | HYD & GV | | | 1 | | | | | | | | | | | |
| 113+48 | 24 | LT | WB | HYD & GV | | | | | 1 | | | 1 | | 1 | | | | [5] |
| 113+51 | 39 | LT | WB | GV | 1 | | | | | | | | | | | | | |
| 118+57 | 29 | LT | WB | HYDRANT | | | | | 1 | | | 1 | | 1 | | | | [5] |
| 119+49 | 42 | LT | WB | GV | 1 | | | | | | | | | | | | | |
| 27+60 - 130+00 | 23-28 | LT | WB | CITY LIGHT | | | | | | | | | | | | | | [4] BY OTHERS |
| | | | | | 2 | 1 | 2 | 300 | 4 | 15 | 300 | 4 | 2 | 4 | 21 | 900 | 2 | |

**NOTES:**

[1] TO BE RELOCATED TO BOULEVARD, 39.5' LEFT OF LWB @ STA 76+25
[2] REMOVE WATERMAIN AS DIRECTED BY ENGINEER IF INPLACE WATERMAIN LOCATION CONFLICTS WITH NOISE WALL.
[3] REPLACE NEW WATERMAIN DIRECTED BY ENGINEER 6' SOUTH OF NOISE WALL.
[4] UTILITY COMPANIES SHALL COORDINATE WITH CITY FOR STREET LIGHT LOCATIONS ALONG CSAH 116
[5] ALL SALVAGED CITY UTILITY MATERIAL TO BE HAULED TO CITY OF ANDOVER PUBLIC WORKS.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:58:02 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

| OVERHEAD POWER - XCEL ENERGY | | | | EE |
|---|---|---|---|---|
| ALIGNMENT | STATION | OFFSET | INPLACE ITEM | REMARKS |
| CSAH 116 WB | 48+17 | 10 LT | POWER POLE | |
| CSAH 116 WB | 49+36 | 9 LT | POWER POLE | |
| CSAH 116 WB | 51+01 | 10 LT | POWER POLE | |
| CSAH 116 WB | 51+27 | 25 LT | LIGHT POLE | |
| CSAH 116 WB | 53+80 | 10 LT | POWER POLE | |
| CSAH 116 WB | 53+81 | 9 LT | POWER POLE | |
| CSAH 116 WB | 56+64 | 10 LT | POWER POLE | |
| CSAH 116 WB | 59+15 | 26 LT | POWER POLE | |
| CSAH 116 WB | 60+39 | 10 LT | POWER POLE | |
| CSAH 116 WB | 62+64 | 10 LT | POWER POLE | |
| CSAH 116 WB | 64+87 | 11 LT | POWER POLE | |
| CSAH 116 WB | 67+03 | 11 LT | POWER POLE | |
| CSAH 116 WB | 70+50 | 11 LT | POWER POLE | |
| CSAH 116 WB | 73+87 | 18 LT | POWER POLE | |
| CSAH 116 WB | 76+43 | 50 LT | ELEC_CAB | |
| CSAH 116 WB | 76+61 | 50 LT | ELEC_CAB | |
| CSAH 116 WB | 76+65 | 57 LT | ELEC_METER | |
| CSAH 116 WB | 76+67 | 51 LT | ELEC_CAB | |
| CSAH 116 WB | 77+20 | 26 LT | POWER POLE | |
| CSAH 116 WB | 79+27 | 23 LT | POWER POLE | |
| CSAH 116 WB | 79+43 | 77 LT | ELEC_CAB | |
| CSAH 116 WB | 79+58 | 18 LT | SIG | |
| CSAH 116 WB | 79+59 | 47 LT | SIG_CAB | |
| CSAH 116 WB | 79+60 | 18 LT | HANHOLE | |
| CSAH 116 WB | 79+66 | 50 LT | HANHOLE | |
| CSAH 116 WB | 79+72 | 50 LT | ELEC_METER | |
| CSAH 116 WB | 79+77 | 61 LT | POWER POLE | |
| CSAH 116 WB | 79+78 | 30 LT | LIGHT POLE | |
| CSAH 116 WB | 79+83 | 33 LT | SIG | |
| CSAH 116 WB | 79+89 | 47 LT | HANHOLE | |
| CSAH 116 WB | 80+54 | 45 LT | HANHOLE | |
| CSAH 116 WB | 80+55 | 39 LT | SIG | |
| CSAH 116 WB | 82+72 | 48 LT | POWER POLE | |
| CSAH 116 WB | 82+80 | 50 LT | HANHOLE | |
| CSAH 116 WB | 85+24 | 58 LT | HANHOLE | |
| CSAH 116 WB | 85+27 | 59 LT | HANHOLE | |
| CSAH 116 WB | 85+59 | 64 LT | POWER POLE | |
| CSAH 116 WB | 87+30 | 54 LT | HANHOLE | |
| CSAH 116 WB | 87+41 | 54 LT | SIG | |
| CSAH 116 WB | 88+43 | 51 LT | POWER POLE | |
| CSAH 116 WB | 91+38 | 2 LT | POWER POLE | |
| CSAH 116 WB | 94+17 | 29 RT | POWER POLE | |
| CSAH 116 WB | 108+84 | 6 LT | LIGHT POLE | |
| CSAH 116 WB | 121+76 | 6 LT | POWER POLE | |
| CSAH 116 WB | 124+89 | 37 LT | SBE | |
| CSAH 116 WB | 124+93 | 25 LT | POWER POLE | |
| CSAH 116 WB | 144+07 | 33 LT | POWER POLE | |
| CSAH 116 WB | 156+41 | 25 LT | ELEC_METER | |
| CSAH 116 WB | 156+45 | 23 LT | HANHOLE | |
| CSAH 116 WB | 156+50 | 22 LT | SIG_CAB | |
| CSAH 116 WB | 156+50 | 13 LT | HANHOLE | |
| CSAH 116 WB | 156+60 | 29 LT | ELEC_CAB | |
| CSAH 116 WB | 156+70 | 18 LT | SIG | |

| OVERHEAD POWER - XCEL ENERGY | | | | EE |
|---|---|---|---|---|
| ALIGNMENT | STATION | OFFSET | INPLACE ITEM | REMARKS |
| CSAH 116 WB | 156+73 | 33 LT | ELEC_METER | |
| CSAH 116 WB | 156+77 | 34 LT | SBE | |
| CSAH 116 WB | 156+88 | 30 LT | HANHOLE | |
| CSAH 116 WB | 157+33 | 31 LT | HANHOLE | |
| CSAH 116 WB | 157+44 | 26 LT | SIG | |
| CSAH 116 WB | 157+77 | 17 LT | HANHOLE | |
| CSAH 116 WB | 161+53 | 20 LT | HANHOLE | |
| CSAH 116 WB | 170+25 | 174 LT | POWER POLE | |
| CSAH 116 EB | 39+66 | 179 RT | LIGHT POLE | |
| CSAH 116 EB | 44+47 | 90 RT | LIGHT POLE | |
| CSAH 116 EB | 66+99 | 25 RT | POWER POLE | |
| CSAH 116 EB | 68+79 | 14 RT | HANHOLE | |
| CSAH 116 EB | 70+51 | 25 RT | POWER POLE | |
| CSAH 116 EB | 70+51 | 27 RT | POWER POLE | |
| CSAH 116 EB | 70+88 | 13 RT | HANHOLE | |
| CSAH 116 EB | 72+95 | 8 RT | SIG | |
| CSAH 116 EB | 72+96 | 10 RT | SIG | |
| CSAH 116 EB | 73+02 | 9 RT | HANHOLE | |
| CSAH 116 EB | 74+01 | 20 RT | POWER POLE | |
| CSAH 116 EB | 75+17 | 10 RT | HANHOLE | |
| CSAH 116 EB | 77+49 | 12 RT | HANHOLE | |
| CSAH 116 EB | 79+72 | 10 RT | HANHOLE | |
| CSAH 116 EB | 79+85 | 10 RT | SIG | |
| CSAH 116 EB | 79+87 | 7 RT | SIG | |
| CSAH 116 EB | 80+38 | 7 RT | HANHOLE | |
| CSAH 116 EB | 80+49 | 6 RT | SIG | |
| CSAH 116 EB | 80+51 | 4 RT | SIG | |
| CSAH 116 EB | 93+85 | 79 RT | POWER POLE | |
| CSAH 116 EB | 96+81 | 85 RT | POWER POLE | |
| CSAH 116 EB | 96+82 | 39 RT | POWER POLE | |
| CSAH 116 EB | 96+84 | 40 RT | POWER POLE | |
| CSAH 116 EB | 99+86 | 19 RT | POWER POLE | |
| CSAH 116 EB | 100+17 | 57 RT | LIGHT POLE | |
| CSAH 116 EB | 100+69 | 58 RT | LIGHT POLE | |
| CSAH 116 EB | 102+87 | 18 RT | POWER POLE | |
| CSAH 116 EB | 102+89 | 19 RT | POWER POLE | |
| CSAH 116 EB | 105+99 | 17 RT | POWER POLE | |
| CSAH 116 EB | 107+73 | 17 RT | POWER POLE | |
| CSAH 116 EB | 107+74 | 18 RT | POWER POLE | |
| CSAH 116 EB | 109+09 | 19 RT | POWER POLE | |
| CSAH 116 EB | 109+10 | 17 RT | POWER POLE | |
| CSAH 116 EB | 112+16 | 18 RT | POWER POLE | |
| CSAH 116 EB | 112+17 | 17 RT | POWER POLE | |
| CSAH 116 EB | 115+25 | 16 RT | POWER POLE | |
| CSAH 116 EB | 115+27 | 18 RT | POWER POLE | |
| CSAH 116 EB | 118+38 | 17 RT | POWER POLE | |
| CSAH 116 EB | 118+39 | 18 RT | POWER POLE | |
| CSAH 116 EB | 121+57 | 19 RT | POWER POLE | |
| CSAH 116 EB | 121+59 | 17 RT | POWER POLE | |
| CSAH 116 EB | 124+87 | 8 RT | POWER POLE | |
| CSAH 116 EB | 124+88 | 9 RT | POWER POLE | |
| CSAH 116 EB | 131+32 | 5 RT | POWER POLE | |
| CSAH 116 EB | 131+33 | 7 RT | POWER POLE | |

| OVERHEAD POWER - XCEL ENERGY | | | | EE |
|---|---|---|---|---|
| ALIGNMENT | STATION | OFFSET | INPLACE ITEM | REMARKS |
| CSAH 116 EB | 137+64 | 11 RT | POWER POLE | |
| CSAH 116 EB | 140+81 | 8 RT | POWER POLE | |
| CSAH 116 EB | 144+00 | 7 RT | POWER POLE | |
| CSAH 116 EB | 145+96 | 33 RT | POWER POLE | |
| CSAH 116 EB | 146+44 | 38 RT | POWER POLE | |
| CSAH 116 EB | 146+66 | 39 RT | POWER POLE | |
| CSAH 116 EB | 146+91 | 38 RT | POWER POLE | |
| CSAH 116 EB | 147+16 | 39 RT | POWER POLE | |
| CSAH 116 EB | 147+40 | 40 RT | POWER POLE | |
| CSAH 116 EB | 147+65 | 40 RT | POWER POLE | |
| CSAH 116 EB | 147+89 | 41 RT | POWER POLE | |
| CSAH 116 EB | 148+13 | 40 RT | POWER POLE | |
| CSAH 116 EB | 148+33 | 41 RT | POWER POLE | |
| CSAH 116 EB | 148+41 | 41 RT | POWER POLE | |
| CSAH 116 EB | 152+28 | 38 RT | SBE | |
| CSAH 116 EB | 156+47 | 16 RT | POWER POLE | |
| CSAH 116 EB | 156+68 | 32 RT | SIG | |
| CSAH 116 EB | 156+77 | 72 RT | POWER POLE | |
| CSAH 116 EB | 156+78 | 79 RT | SBE | |
| CSAH 116 EB | 156+82 | 41 RT | HANHOLE | |
| CSAH 116 EB | 156+86 | 121 RT | POWER POLE | |
| CSAH 116 EB | 157+44 | 36 RT | HANHOLE | |
| CSAH 116 EB | 157+63 | 21 RT | SIG | |
| CSAH 116 EB | 157+70 | 56 RT | POWER POLE | |
| CSAH 116 EB | 160+04 | 30 RT | SBE | |
| CSAH 116 EB | 167+04 | 38 RT | POWER POLE | |
| CSAH 116 EB | 170+27 | 16 RT | POWER POLE | |

| CENTERPOINT / NNG | | | | | | | | FF |
|---|---|---|---|---|---|---|---|---|
| STATION | | OFFSET | | | | | INPLACE ITEM | REMARKS |
| BEGIN | END | | | | | | | |
| CSAH 116 | | | | | | | | |
| 36+66 | 36+83 | 44 | RT | EB | 299 | LT | BURIED GAS | |
| 36+66 | 38+04 | 44 | RT | EB | 52 | RT | BURIED GAS | |
| 38+04 | 39+21 | 52 | RT | EB | 54 | RT | BURIED GAS | |
| 39+21 | 44+34 | 54 | RT | EB | 54 | RT | BURIED GAS | |
| 44+34 | | 54 | RT | EB | | | TEE | |
| 44+34 | 44+47 | 54 | RT | EB | 306 | RT | BURIED SVC | |
| 44+34 | 47+71 | 54 | RT | EB | 45 | RT | BURIED GAS | |
| 47+71 | | 45 | RT | EB | | | BEND | |
| 47+71 | 47+64 | 45 | RT | EB | 3 | RT | BURIED GAS | |
| 47+64 | | 3 | RT | EB | | | BEND | |
| 47+64 | 51+32 | 3 | RT | EB | 2 | RT | BURIED GAS | |
| 51+32 | | 2 | RT | EB | | | TEE | |
| 51+32 | 51+36 | 2 | RT | EB | 246 | RT | BURIED GAS | |
| 51+32 | 66+28 | 2 | RT | EB | 0 | RT | BEND | |
| 60+42 | 60+72 | 63 | RT | EB | 130 | LT | BURIED GAS | |
| 60+74 | 60+81 | 102 | LT | EB | 113 | RT | BURIED GAS | |
| 66+28 | 66+29 | 0 | RT | EB | 251 | LT | BURIED GAS | |
| 100+14 | 100+16 | 404 | RT | EB | 25 | RT | BURIED GAS | |
| 100+16 | | 25 | RT | EB | | | BEND | |
| 100+16 | 107+88 | 25 | RT | EB | 34 | RT | BURIED GAS | |
| 107+88 | | 34 | RT | EB | | | BEND | |
| 107+88 | 107+88 | 34 | RT | EB | 254 | LT | BURIED GAS | |
| 123+62 | 123+97 | 132 | LT | WB | 37 | LT | BURIED GAS | |
| 123+97 | | 37 | LT | WB | | | BEND | |
| 123+97 | 130+18 | 32 | LT | WB | 46 | LT | BURIED GAS | |
| 130+18 | | 46 | LT | WB | | | BEND | |
| 130+18 | 130+45 | 46 | LT | WB | 183 | LT | BURIED GAS | |
| 144+17 | 144+22 | 423 | LT | WB | 22 | LT | BURIED GAS | |
| 144+22 | | 423 | LT | WB | | | BEND | |
| 144+22 | 147+13 | 22 | LT | WB | 18 | LT | BURIED GAS | |
| 147+13 | | 18 | LT | WB | | | BEND | |
| 147+13 | 147+13 | 18 | LT | WB | 155 | LT | BURIED GAS | |
| 153+97 | 156+87 | 7 | RT | EB | 5 | RT | BURIED GAS | |
| 156+87 | | 5 | RT | EB | | | TEE | |
| 156+87 | 156+85 | 5 | RT | EB | 121 | LT | BURIED GAS | |
| 156+87 | 157+29 | 5 | RT | EB | 5 | RT | BURIED GAS | |
| 157+29 | | 5 | RT | EB | | | TEE | |
| 157+29 | 157+26 | 5 | RT | EB | 145 | RT | BURIED GAS | |
| 157+29 | 160+65 | 5 | RT | EB | 2 | RT | BURIED GAS | |
| 160+65 | | 2 | RT | EB | | | BEND | |
| 160+65 | 160+65 | 2 | RT | EB | 15 | RT | BURIED GAS | |
| 160+65 | | 15 | RT | EB | | | BEND | |
| 160+65 | 167+98 | 15 | RT | EB | 14 | RT | BURIED GAS | |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\3_SEQ.dgn 04/12/2016 1:58:10 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TABULATIONS

Sheet 19 of 482 Sheets

## EARTHWORK SUMMARY

| | EXCAVATION (EV) | | | | | EMBANKMENT (CV) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | COMMON EX (CY) | SUBGRADE (CY) | TOPSOIL (CY) | MUCK (CY) | COMMON EX (POND) (CY) | SUITABLE (CY) | SUBGRADE (CY) | TOPSOIL (CY) | MUCK BACKFILL (CY) | POND (SUITABLE) (CY) |
| SP. 02-716-15 CSAH 116 | 64,995 | 32,342 | 11,675 | 63,868 | 26,120 | 38,660 | 40,060 | 5,106 | 53,499 | 742 |
| PRAIRIE ROAD | 2,048 | 489 | 260 | 1 | 2 | 33 | 491 | 105 | 3 | |
| PARK ENTRANCE & PATHS | 426 | 130 | 1,161 | | | 7,290 | 1,109 | 677 | | |
| PEDESTRIAN UNDERPASS | 5,642 | | 195 | | | 951 | 89 | 148 | | |
| TOTAL | 73,111 | 32,961 | 13,291 | 63,869 | 26,122 | 46,934 | 41,749 | 6,036 | 53,502 | 742 |

GENERAL NOTES:

A - TO THE EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER, WHERE THE ENGINEER DEEMS THE SUITABLE MATERIAL ACCEPTABLE, THE CONTRACTOR SHALL BE REQUIRED TO USE THE ON SITE EXCAVATED MATERIAL TO OFFSET THE SHORTAGE OF SELECT GRANULAR MATERIAL WITH NO ADDITIONAL COMPENSATION.

B - SEE SOILS AND CONSTRUCTION NOTES FOR MATERIAL DEFINITIONS AND ADDITIONAL INFORMATION. ALL MATERIAL NOT USED ON THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT LIMITS WITH NO DIRECT PAYMENT THEREFORE.
THE MATERIAL QUANTITY IS BASED ON ESTIMATED QUANTITIES. DISPOSAL SHALL BE IN ACCORDANCE WITH SPEC. 2105. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER BEFORE HAULING ANY MATERIAL OFF SITE.

CONSTRUCTION DEBRI AREAS

WB STA 126+00 - 128+50: 407 CY
WB STA 140+00 - 142+00: 275 CY
EB STA 144+40 - 145+20: 809 CY

## EARTHWORK BALANCE

### EXCAVATION (CU.YD.)

| | | | | | | |
|---|---|---|---|---|---|---|
| SUBGRADE (EV) (BID ITEM) | 32,961 | SUITABLE | 32,961 | (EV) 120% SHRINKAGE = (CV) | | 27,468 |
| | | TOPSOIL | 13,291 | (EV) 120% SHRINKAGE = (CV) | | 11,076 |
| COMMON EXCAVATION (EV) (BID ITEM) | 112,524 | SUITABLE | 72,706 | (EV) 120% SHRINKAGE = (CV) | | 60,588 |
| | | UNSUITABLE | 407 | (EV) | | |
| | | POND | 26,120 | (EV) | UNSUITABLE | 13318 (EV) |
| | | | | | SUITABLE | 12,802 (EV) |
| | | | | 120% SHRINKAGE = (CV) | | 10,668 |
| MUCK EXCAVATION (EV) (BID ITEM) | 63,869 | UNSUITABLE | 275 | (EV) | | |
| | | SUITABLE | 12,609 | (EV) 120% SHRINKAGE = (CV) | | 10,508 |
| | | MUCK | 50985 | (EV) 120% SHRINKAGE = (CV) | | 42,488 |

### EMBANKMENT (CU.YD.)

| | | | |
|---|---|---|---|
| TOPSOIL | | 6,036 | (CV) |
| MUCK DISPOSAL | (FOR FILL SLOPES OUTSIDE OF ROADWAY) | 8,503 | (CV) |
| GRANULAR | (FOR MUCK BACKFILL) | 53,502 | (CV) |
| SUITABLE | (46,400+41,749+742) | 89,425 | (CV) |

### (+) EXCESS or (-) SHORTAGE (CU.YD.)

| | | | | |
|---|---|---|---|---|
| TOPSOIL | (11,076 (CV) - 6,036 (CV)) x 1.4 | = | 7,056 | (LV) EXCESS |
| MUCK | (42,488 (CV) - 8,503 (CV)) x 1.4 | = | 47,579 | (LV) EXCESS |
| SUITABLE | ((60,588+10,668+27,468+10,508) (CV) - 88,970 (CV)) X1.4 | = | 27,729 | (LV) EXCESS |
| UNSUITABLE | (407 (EV)+13,318 (EV)+275(EV)) | = | 14,000 | (LV) EXCESS |
| GRANULAR | 53,502 (CV) x 1.4 | = | 74,903 | (LV) BORROW |

140% SWELL FACT.

AVAILABLE | NEEDS | BALANCE

## CONSTRUCTION NOTES

1. SUITABLE GRADING MATERIAL ON THIS PROJECT SHALL CONSIST OF ALL SOILS ENCOUNTERED WITH THE EXCEPTION OF SLOPE DRESSING, DEBRIS, ORGANIC MATERIAL, MUCK AND OTHER UNSUITABLE MATERIAL.
2. ITEMS REFERRED TO AS INCIDENTAL ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL WITH NO DIRECT COMPENSATION MADE THEREFORE.
3. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF SPEC. 3149.2B2, OR AS DIRECTED BY THE ENGINEER.
4. BITUMINOUS AND CONCRETE ITEMS REMOVED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL EITHER BE RECYCLED OR DISPOSED OF OFF THE PROJECT, IN ACCORDANCE WITH THE PROVISIONS OF SPEC. 2104.3C3 WITH NO DIRECT COMPENSATION MADE THEREFORE.
5. COMPACTION OF THE GRADING ITEMS OF THIS PROJECT, BOTH PERMANENT AND TEMPORARY, SHALL BE BY THE "SPECIFIED DENSITY METHOD", EXCEPT WHEN WITHIN 3 FEET OF THE WATER TABLE, THEN BY THE "QUALITY COMPACTION METHOD" OR AS DIRECTED BY THE ENGINEER.
6. COMPACTION OF THE AGGREGATE BASE ITEMS OF THIS PROJECT, BOTH PERMANENT AND TEMPORARY, SHALL BE BY THE "SPECIFIED DENSITY METHOD" EXCEPT WHEN THE CONTRACTOR ELECTS TO USE RECYCLED MATERIALS FOR THE AGGREGATE BASE ITEMS, THEN THE "QUALITY COMPACTION METHOD" SHALL BE UTILIZED.
7. WHERE WIDENING ADJACENT TO EXISTING PAVEMENT, CUT VERTICALLY TO THE BOTTOM OF THE CLASS 5 AGGREGATE BASE AND THEN AT A 1V:1/2H SLOPE TO THE BOTTOM OF THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION (AS SHOWN ON THE TYPICAL SECTIONS AND THE CROSS SECTIONS). BACKFILL PROMPTLY TO AVOID UNDERMINING THE EXISTING PAVEMENT.
8. PROVIDE 1:20 LONGITUDINAL TAPERS BETWEEN CHANGES IN SUBGRADE AND SUBCUT DEPTHS.
9. USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES AND WHERE CONCRETE CURBING ABUTS BITUMINOUS MIXTURES. THE BITUMINOUS TACK COAT MATERIAL SHALL BE APPLIED AT A UNIFORM RATE OF 0.05 GAL./SQ. YD. BETWEEN BITUMINOUS LAYERS. APPLICATION RATES ARE APPLICABLE FOR UNDILUTED EMULSIONS (AS SUPPLIED FROM THE REFINERY). ASPHALT EMULSIONS MAY BE FURTHER DILUTED IN THE FIELD IN ACCORDANCE WITH SPEC. 2357.
10. STRIP AND REUSE AS SLOPE DRESSING ALL EXISTING TOPSOIL, WHERE PRESENT, IN AREAS TO BE DISTURBED BY CONSTRUCTION. APPROXIMATE DIMENSIONS ENCOUNTERED ARE ASSUMED TO BE 0 INCHES TO 24 INCHES, AND AVERAGE IS 3 INCHES. (CONTRACTOR TO VERIFY PRIOR TO PLACING BID) NO WARRANTY MADE ON THIS INFORMATION.
11. PLACE A MINIMUM OF 4 INCHES OF SLOPE DRESSING ON ALL AREAS SCHEDULED FOR PERMANENT TURF ESTABLISHMENT. ALL EXCESS TOPSOIL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OUTSIDE THE RIGHT-OF-WAY.
12. DITCH GRADE ELEVATIONS ON THE CROSS SECTIONS AND PROFILE DRAWINGS ARE AT THE BOTTOM OF TOPSOIL. ON ALL DRAWINGS WITH CONTOURS, THE ELEVATIONS ARE AT THE TOP OF TOPSOIL.
13. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS, AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTION USED ON THE CROSS SECTION SHEETS.
14. SOIL BORINGS ALONG THE PROJECT INDICATE THE EXISTING CSAH 57 AND CSAH 116 BITUMINOUS PAVEMENT AVERAGES 6 INCHES THICK. FOR INFORMATION ONLY. NO WARRANTY ON THIS INFORMATION. CONTRACTOR SHALL VERIFY PRIOR TO PLACING BID.
15. ALL SILT FENCING AS SHOWN IN THE PLANS SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF GRADING OPERATIONS.
16. EXPECT WET CONDITIONS IN MUCK EXCAVATION AND POND EXCAVATION AREAS. CLEAN CRUSHED ROCK WILL LIKELY BE NECESSARY TO STABILIZE THE BOTTOM OF THE MUCK EXCAVATION FOR PLACEMENT OF FILL. DEWATERING WITH SUMP PUMPS CAN ALSO BE EXPECTED. THIS IS INCIDENTAL TO MUCK EXCAVATION AND BACKFILL, AND POND EXCAVATION.



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C.P. 11-25

EARTHWORK SUMMARY

Sheet 20 of 482 Sheets

## CSAH 116 FROM CRANE ST. TO JEFFERSON ST.

| STATION | EXCAVATION (EV) | | | | | EMBANKMENT (CV) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Topsoil Stripping | Common (No Bit) | Subgrade | MUCK EXC. | POND EXC. | Topsoil Dressing | Select (Suitable) | Subgrade( Granular) | MUCK FILL |
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 37+50.00 | | | | | | | | | |
| 38+00.00 | 32.1 | 38.1 | | | | 20.0 | 128.1 | | |
| 38+50.00 | 35.6 | 36.7 | | | | 22.9 | 207.9 | | |
| 39+00.00 | 37.9 | 13.1 | | | | 22.9 | 206.0 | | |
| 39+50.00 | 34.4 | 1.0 | | | | 20.3 | 127.5 | | |
| 40+00.00 | 39.6 | 6.5 | | | | 13.6 | 42.4 | | |
| 40+50.00 | 55.8 | 41.0 | | | | 14.4 | 41.1 | | |
| 41+00.00 | 49.6 | 58.4 | | | | 17.9 | 61.5 | | |
| 41+50.00 | 36.0 | 47.0 | 0.0 | 0.0 | | 18.9 | 78.1 | 0.0 | 0.0 |
| 42+00.00 | 37.6 | 100.8 | 70.6 | 0.0 | | 18.9 | 86.0 | 70.6 | 0.0 |
| 42+50.00 | 38.5 | 152.9 | 141.3 | 0.0 | | 18.7 | 86.8 | 141.3 | 0.0 |
| 43+00.00 | 38.3 | 151.4 | 140.5 | 0.0 | | 18.3 | 87.9 | 140.5 | 0.0 |
| 43+50.00 | 36.9 | 156.0 | 139.7 | 0.0 | | 20.0 | 100.5 | 139.7 | 0.0 |
| 44+00.00 | 34.4 | 164.6 | 139.7 | 0.0 | | 20.0 | 97.4 | 139.7 | 0.0 |
| 44+50.00 | 30.4 | 167.8 | 139.7 | 0.0 | | 15.1 | 42.5 | 139.7 | 0.0 |
| 45+00.00 | 27.9 | 195.9 | 139.7 | 0.0 | | 11.8 | 2.2 | 139.7 | 0.0 |
| 45+50.00 | 29.4 | 253.4 | 139.7 | 0.0 | | 12.4 | 0.0 | 139.7 | 0.0 |
| 46+00.00 | 32.3 | 314.4 | 139.7 | 0.0 | | 14.4 | 0.0 | 139.7 | 0.0 |
| 46+50.00 | 37.2 | 377.0 | 139.7 | 0.0 | | 18.5 | 0.0 | 139.7 | 0.0 |
| 47+00.00 | 41.6 | 348.8 | 143.8 | 0.0 | | 22.1 | 0.6 | 143.8 | 0.0 |
| 47+50.00 | 50.7 | 216.5 | 152.1 | 0.0 | | 18.2 | 107.3 | 154.4 | 0.0 |
| 48+00.00 | 65.7 | 128.0 | 139.5 | 0.0 | | 15.7 | 302.5 | 161.1 | 0.0 |
| 48+50.00 | 56.9 | 116.4 | 121.3 | 0.0 | | 18.0 | 314.1 | 160.8 | 0.0 |
| 49+00.00 | 40.9 | 124.6 | 122.0 | 0.0 | | 17.9 | 242.1 | 160.6 | 0.0 |
| 49+50.00 | 39.7 | 135.8 | 125.9 | 0.0 | | 16.8 | 226.3 | 160.7 | 0.0 |
| 50+00.00 | 37.7 | 150.3 | 133.7 | 0.0 | | 14.7 | 164.3 | 160.7 | 0.0 |
| 50+50.00 | 34.4 | 172.9 | 146.8 | 0.0 | 5,795 | 11.3 | 84.5 | 160.7 | 0.0 |
| 51+00.00 | 31.9 | 216.9 | 157.2 | 0.0 | | 9.0 | 28.2 | 160.7 | 0.0 |
| 51+50.00 | 50.0 | 379.8 | 187.1 | 0.0 | | 12.2 | 5.4 | 187.2 | 0.0 |
| 52+00.00 | 50.6 | 452.2 | 181.3 | 0.0 | | 12.3 | 0.0 | 181.3 | 0.0 |
| 52+50.00 | 33.3 | 400.6 | 148.9 | 0.0 | | 9.5 | 0.0 | 148.9 | 0.0 |
| 53+00.00 | 36.5 | 449.8 | 148.9 | 0.0 | | 12.6 | 0.0 | 148.9 | 0.0 |
| 53+50.00 | 39.1 | 451.5 | 148.9 | 0.0 | | 15.3 | 0.3 | 148.9 | 0.0 |
| 54+00.00 | 38.9 | 373.4 | 148.3 | 0.0 | | 15.2 | 7.4 | 148.9 | 0.0 |
| 54+50.00 | 37.4 | 289.7 | 141.8 | 0.0 | | 13.6 | 24.3 | 148.9 | 0.0 |
| 55+00.00 | 35.8 | 203.5 | 131.6 | 0.0 | | 10.9 | 42.0 | 148.9 | 0.0 |
| 55+50.00 | 35.3 | 144.6 | 124.2 | 0.0 | | 9.5 | 58.3 | 148.9 | 0.0 |
| 56+00.00 | 35.6 | 115.1 | 116.9 | 0.0 | | 9.5 | 78.2 | 150.7 | 0.0 |
| 56+50.00 | 38.1 | 91.7 | 104.1 | 0.0 | | 11.2 | 106.9 | 155.3 | 0.0 |
| 57+00.00 | 42.0 | 68.6 | 93.4 | 0.0 | | 14.3 | 163.3 | 158.2 | 0.0 |
| 57+50.00 | 45.9 | 46.7 | 95.3 | 0.0 | | 17.4 | 240.5 | 158.2 | 0.0 |
| 58+00.00 | 49.4 | 32.2 | 90.7 | 0.0 | | 20.0 | 326.6 | 158.2 | 0.0 |
| 58+50.00 | 72.9 | 30.0 | 79.3 | 0.0 | | 30.1 | 461.3 | 158.2 | 0.0 |
| 59+00.00 | 86.1 | 41.6 | 78.9 | 0.0 | | 31.7 | 542.6 | 158.2 | 0.0 |
| 59+50.00 | 74.1 | 130.3 | 130.1 | 0.0 | | 21.2 | 328.6 | 168.7 | 0.0 |
| 59+68.03 | 22.6 | 57.3 | 52.9 | 0.0 | | 6.5 | 61.9 | 60.8 | 0.0 |
| 60+00.00 | 43.3 | 43.0 | 58.7 | 0.0 | | 14.8 | 264.7 | 101.2 | 0.0 |
| 60+50.00 | 89.1 | 16.6 | 65.5 | 0.0 | | 25.2 | 766.0 | 158.2 | 0.0 |
| 61+00.00 | 72.8 | 8.5 | 72.4 | 0.0 | | 20.6 | 634.4 | 158.2 | 0.0 |
| 61+50.00 | 52.7 | 18.5 | 83.0 | 0.0 | | 19.7 | 386.6 | 158.5 | 0.0 |
| 62+00.00 | 48.5 | 37.3 | 90.0 | 0.0 | | 18.7 | 361.8 | 164.1 | 0.0 |
| 62+50.00 | 38.6 | 74.7 | 108.6 | 0.0 | 3,715 | 15.5 | 246.3 | 177.6 | 0.0 |
| 63+00.00 | 34.9 | 130.5 | 128.4 | 0.0 | | 12.2 | 141.5 | 184.5 | 0.0 |
| 63+50.00 | 30.1 | 197.1 | 143.9 | 0.0 | | 9.5 | 56.3 | 178.3 | 0.0 |
| 64+00.00 | 28.5 | 280.4 | 157.9 | 0.0 | | 10.4 | 26.8 | 171.7 | 0.0 |
| 64+50.00 | 29.0 | 361.5 | 167.4 | 0.0 | | 12.3 | 20.2 | 170.2 | 0.0 |
| 65+00.00 | 27.9 | 398.9 | 170.2 | 0.0 | | 12.1 | 13.8 | 170.2 | 0.0 |
| 65+50.00 | 25.8 | 387.0 | 170.2 | 0.0 | | 10.2 | 10.0 | 170.2 | 0.0 |
| 66+00.00 | 36.8 | 358.7 | 169.9 | 0.0 | | 8.3 | 9.4 | 170.0 | 0.0 |
| 66+50.00 | 67.1 | 531.0 | 229.8 | 0.0 | | 8.5 | 4.7 | 229.9 | 0.0 |
| 67+00.00 | 67.3 | 517.9 | 231.7 | 0.0 | | 8.3 | 0.0 | 231.7 | 0.0 |
| 67+50.00 | 36.8 | 321.9 | 171.8 | 0.0 | | 7.9 | 0.0 | 171.8 | 0.0 |
| 68+00.00 | 25.0 | 329.7 | 170.2 | 0.0 | | 9.3 | 0.0 | 170.2 | 0.0 |
| 68+50.00 | 25.3 | 315.5 | 170.2 | 0.0 | | 9.6 | 5.3 | 170.2 | 0.0 |
| 69+00.00 | 23.7 | 295.3 | 170.2 | 0.0 | | 8.0 | 5.3 | 170.2 | 0.0 |
| 69+50.00 | 22.9 | 296.3 | 170.2 | 0.0 | | 7.2 | 0.0 | 170.2 | 0.0 |
| 70+00.00 | 24.4 | 307.1 | 168.6 | 0.0 | | 9.1 | 0.1 | 168.6 | 0.0 |
| 70+50.00 | 26.9 | 353.7 | 164.0 | 0.0 | | 12.4 | 1.3 | 164.0 | 0.0 |
| 71+00.00 | 32.7 | 454.7 | 155.5 | 0.0 | | 17.8 | 1.2 | 155.5 | 0.0 |
| 71+50.00 | 41.1 | 588.8 | 146.9 | 0.0 | | 23.8 | 0.0 | 146.9 | 0.0 |

## CSAH 116 FROM CRANE ST. TO JEFFERSON ST.

| STATION | EXCAVATION (EV) | | | | | EMBANKMENT (CV) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Topsoil Stripping | Common (No Bit) | Subgrade | MUCK EXC. | POND EXC. | Topsoil Dressing | Select (Suitable) | Subgrade( Granular) | MUCK FILL |
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 72+00.00 | 46.1 | 726.2 | 141.7 | 0.0 | | 27.1 | 0.0 | 141.7 | 0.0 |
| 72+50.00 | 43.0 | 720.1 | 139.7 | 0.0 | | 25.1 | 0.0 | 139.7 | 0.0 |
| 73+00.00 | 35.0 | 552.9 | 139.6 | 0.0 | | 18.3 | 1.5 | 139.7 | 0.0 |
| 73+50.00 | 30.9 | 405.3 | 132.1 | 0.0 | | 13.9 | 48.0 | 139.7 | 0.0 |
| 74+00.00 | 31.7 | 338.9 | 121.4 | 0.0 | | 14.9 | 118.8 | 140.5 | 0.0 |
| 74+50.00 | 34.9 | 321.0 | 119.1 | 0.0 | | 18.7 | 176.7 | 142.9 | 0.0 |
| 75+00.00 | 37.2 | 315.5 | 128.8 | 0.0 | | 21.7 | 221.9 | 154.0 | 0.0 |
| 75+50.00 | 37.5 | 293.0 | 137.9 | 0.0 | | 22.5 | 253.2 | 163.3 | 0.0 |
| 76+00.00 | 40.4 | 255.2 | 137.0 | 0.0 | | 25.2 | 313.9 | 162.9 | 0.0 |
| 76+50.00 | 40.3 | 232.4 | 135.8 | 0.0 | | 25.0 | 302.6 | 162.7 | 0.0 |
| 77+00.00 | 43.0 | 238.4 | 138.6 | 0.0 | | 28.0 | 209.5 | 162.6 | 0.0 |
| 77+50.00 | 47.1 | 269.6 | 145.2 | 0.0 | 4,115 | 32.4 | 163.1 | 162.6 | 0.0 |
| 78+00.00 | 49.6 | 292.2 | 150.6 | 0.0 | | 34.7 | 174.1 | 162.6 | 0.0 |
| 78+50.00 | 49.9 | 290.9 | 153.3 | 0.0 | | 34.6 | 169.2 | 162.6 | 0.0 |
| 79+00.00 | 43.7 | 277.6 | 155.7 | 0.0 | | 28.2 | 114.0 | 162.6 | 0.0 |
| 79+50.00 | 40.7 | 266.2 | 159.1 | 0.0 | | 25.0 | 59.4 | 162.7 | 0.0 |
| 80+00.00 | 46.2 | 293.6 | 162.3 | 0.0 | | 35.2 | 34.0 | 162.8 | 0.0 |
| 80+50.00 | 51.4 | 270.3 | 180.7 | 26.9 | | 33.4 | 39.0 | 188.6 | 26.9 |
| 81+00.00 | 40.1 | 169.0 | 164.2 | 80.6 | | 16.4 | 58.0 | 188.3 | 80.6 |
| 81+50.00 | 33.0 | 107.4 | 115.8 | 127.8 | | 16.4 | 107.5 | 156.4 | 127.8 |
| 82+00.00 | 34.9 | 71.7 | 91.8 | 173.1 | | 19.7 | 176.2 | 150.6 | 173.1 |
| 82+50.00 | 37.7 | 41.9 | 80.5 | 210.2 | | 22.2 | 260.7 | 150.6 | 210.2 |
| 83+00.00 | 43.8 | 23.5 | 72.7 | 248.1 | | 27.2 | 344.8 | 150.6 | 248.1 |
| 83+50.00 | 45.8 | 10.0 | 55.9 | 284.3 | | 28.3 | 381.7 | 150.6 | 284.3 |
| 84+00.00 | 47.5 | 5.4 | 40.8 | 305.6 | | 29.3 | 398.4 | 149.5 | 305.6 |
| 84+50.00 | 50.3 | 1.8 | 27.6 | 315.7 | | 32.1 | 426.0 | 144.9 | 315.7 |
| 85+00.00 | 51.8 | 14.8 | 14.1 | 1,307.4 | | 33.4 | 434.7 | 141.3 | 1,307.4 |
| 85+50.00 | 53.0 | 41.1 | 6.4 | 2,822.2 | | 34.0 | 435.8 | 141.3 | 2,822.2 |
| 86+00.00 | 52.8 | 67.1 | 2.7 | 3,239.8 | | 33.7 | 438.9 | 141.3 | 3,239.8 |
| 86+50.00 | 51.8 | 84.9 | 1.7 | 3,052.8 | | 33.1 | 433.3 | 141.3 | 3,052.8 |
| 87+00.00 | 52.2 | 78.1 | 2.6 | 2,762.0 | | 34.0 | 452.4 | 141.3 | 2,762.0 |
| 87+50.00 | 51.1 | 65.6 | 4.5 | 2,532.4 | | 33.3 | 459.0 | 141.3 | 2,532.4 |
| 88+00.00 | 49.5 | 51.3 | 10.6 | 2,194.4 | | 32.0 | 412.4 | 141.3 | 2,194.4 |
| 88+50.00 | 47.8 | 23.2 | 24.3 | 1,855.6 | | 30.6 | 342.4 | 141.3 | 1,855.6 |
| 89+00.00 | 45.7 | 9.5 | 44.0 | 1,730.6 | | 28.7 | 275.6 | 145.8 | 1,730.6 |
| 89+50.00 | 41.8 | 15.2 | 63.5 | 1,538.9 | | 25.2 | 232.9 | 149.5 | 1,538.9 |
| 90+00.00 | 39.6 | 19.2 | 77.7 | 1,495.4 | | 21.3 | 261.6 | 147.9 | 1,495.4 |
| 90+50.00 | 38.7 | 15.3 | 86.8 | 1,371.3 | | 17.0 | 278.9 | 146.7 | 1,371.3 |
| 91+00.00 | 37.4 | 28.2 | 86.8 | 1,202.8 | | 18.3 | 212.4 | 146.2 | 1,202.8 |
| 91+50.00 | 34.1 | 102.8 | 95.9 | 1,086.1 | | 21.3 | 102.4 | 146.1 | 1,086.1 |
| 92+00.00 | 28.0 | 157.3 | 108.4 | 1,002.8 | | 14.4 | 26.4 | 146.1 | 1,002.8 |
| 92+50.00 | 31.7 | 116.0 | 74.5 | 518.5 | | 16.4 | 87.8 | 146.1 | 518.5 |
| 93+00.00 | 41.1 | 87.8 | 35.2 | 0.0 | | 28.0 | 425.9 | 146.1 | 0.0 |
| 93+24.31 | 22.0 | 50.4 | 14.8 | 0.0 | | 16.2 | 343.7 | 71.1 | 0.0 |
| 93+50.00 | 23.6 | 57.7 | 16.2 | 0.0 | | 17.9 | 375.0 | 75.2 | 0.0 |
| 94+00.00 | 43.9 | 73.5 | 31.6 | 0.0 | | 32.3 | 745.0 | 145.7 | 0.0 |
| 94+50.00 | 49.8 | 73.0 | 44.5 | 0.0 | | 39.2 | 657.1 | 144.8 | 0.0 |
| 94+64.01 | 18.3 | 34.6 | 17.0 | 0.0 | | 13.7 | 146.9 | 40.5 | 0.0 |
| 95+00.00 | 46.5 | 90.1 | 48.6 | 0.0 | | 25.7 | 291.2 | 104.1 | 0.0 |
| 95+50.00 | 46.9 | 229.3 | 94.2 | 0.0 | | 25.1 | 184.5 | 144.7 | 0.0 |
| 96+00.00 | 54.4 | 512.8 | 130.9 | 0.0 | | 26.6 | 41.6 | 144.7 | 0.0 |
| 96+50.00 | 52.3 | 769.1 | 146.5 | 0.0 | | 24.5 | 21.1 | 143.7 | 0.0 |
| 97+00.00 | 32.9 | 849.2 | 146.5 | 0.0 | | 20.8 | 4.1 | 142.3 | 0.0 |
| 97+50.00 | 30.1 | 770.3 | 150.4 | 0.0 | | 12.7 | 8.7 | 141.7 | 0.0 |
| 98+00.00 | 28.8 | 666.3 | 149.1 | 0.0 | | 11.5 | 7.3 | 141.8 | 0.0 |
| 98+50.00 | 30.1 | 671.1 | 142.5 | 0.0 | | 16.4 | 0.0 | 142.5 | 0.0 |
| 99+00.00 | 31.5 | 726.6 | 142.3 | 0.0 | | 18.0 | 0.0 | 142.3 | 0.0 |
| 99+50.00 | 32.9 | 739.2 | 142.6 | 0.0 | | 19.2 | 0.0 | 142.6 | 0.0 |
| 100+00.00 | 32.6 | 711.5 | 141.5 | 0.0 | | 18.4 | 0.0 | 141.5 | 0.0 |
| 100+50.00 | 42.1 | 660.5 | 140.5 | 0.0 | | 16.7 | 0.0 | 140.5 | 0.0 |
| 101+00.00 | 41.5 | 471.5 | 141.4 | 0.0 | | 15.1 | 14.5 | 141.4 | 0.0 |
| 101+50.00 | 32.1 | 287.8 | 139.0 | 0.0 | | 15.1 | 58.1 | 141.4 | 0.0 |
| 102+00.00 | 37.0 | 244.9 | 126.3 | 0.0 | | 19.7 | 125.1 | 141.4 | 0.0 |
| 102+50.00 | 42.4 | 216.4 | 109.3 | 0.0 | | 24.6 | 235.0 | 141.4 | 0.0 |
| 103+00.00 | 47.5 | 190.1 | 100.5 | 0.0 | | 28.7 | 350.9 | 141.4 | 0.0 |
| 103+50.00 | 51.6 | 176.5 | 101.9 | 0.0 | | 31.2 | 398.0 | 147.9 | 0.0 |
| 104+00.00 | 50.8 | 186.6 | 111.1 | 0.0 | | 29.5 | 317.3 | 157.5 | 0.0 |
| 104+50.00 | 44.8 | 207.1 | 129.3 | 0.0 | | 23.4 | 161.8 | 164.5 | 0.0 |
| 105+00.00 | 43.2 | 243.8 | 140.5 | 0.0 | | 21.2 | 110.0 | 168.3 | 0.0 |
| 105+50.00 | 46.9 | 320.5 | 151.0 | 0.0 | | 24.3 | 135.9 | 169.2 | 0.0 |
| 106+00.00 | 49.1 | 417.5 | 164.1 | 0.0 | | 26.8 | 152.6 | 170.2 | 0.0 |

## CSAH 116 FROM CRANE ST. TO JEFFERSON ST.

| STATION | EXCAVATION (EV) | | | | | EMBANKMENT (CV) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Topsoil Stripping | Common (No Bit) | Subgrade | MUCK EXC. | POND EXC. | Topsoil Dressing | Select (Suitable) | Subgrade( Granular) | MUCK FILL |
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 106+50.00 | 49.9 | 485.9 | 165.3 | 0.0 | | 28.3 | 156.0 | 169.3 | 0.0 |
| 107+00.00 | 48.3 | 511.4 | 166.0 | 0.0 | | 27.4 | 128.7 | 168.6 | 0.0 |
| 107+50.00 | 41.3 | 521.2 | 168.0 | 0.0 | | 21.4 | 297.5 | 168.8 | 0.0 |
| 108+00.00 | 53.6 | 569.5 | 189.3 | 0.0 | | 16.2 | 256.8 | 189.3 | 0.0 |
| 108+15.00 | 21.8 | 189.5 | 66.1 | 0.0 | | 4.2 | 8.4 | 66.1 | 0.0 |
| 108+40.00 | 47.3 | 348.7 | 120.9 | 0.0 | | 11.4 | 22.5 | 136.7 | 0.0 |
| 108+50.00 | 22.8 | 157.8 | 55.0 | 0.0 | | 4.5 | 13.8 | 64.7 | 0.0 |
| 109+00.00 | 71.1 | 752.2 | 233.9 | 0.0 | | 11.5 | 38.0 | 250.7 | 0.0 |
| 109+50.00 | 29.8 | 686.4 | 170.2 | 0.0 | | 10.1 | 0.0 | 170.2 | 0.0 |
| 110+00.00 | 31.1 | 690.4 | 170.2 | 0.0 | | 10.7 | 1.8 | 170.2 | 0.0 |
| 110+50.00 | 31.9 | 659.3 | 170.2 | 0.0 | | 11.2 | 1.8 | 170.2 | 0.0 |
| 111+00.00 | 32.7 | 598.8 | 170.2 | 0.0 | | 11.7 | 0.0 | 170.2 | 0.0 |
| 111+50.00 | 36.5 | 548.2 | 170.1 | 0.0 | | 15.3 | 23.1 | 170.1 | 0.0 |
| 112+00.00 | 41.9 | 547.2 | 166.0 | 0.0 | | 21.4 | 107.4 | 167.1 | 0.0 |
| 112+50.00 | 48.5 | 564.3 | 156.1 | 0.0 | | 29.0 | 262.1 | 162.7 | 0.0 |
| 113+00.00 | 51.6 | 589.2 | 140.8 | 0.0 | | 35.3 | 427.8 | 153.8 | 0.0 |
| 113+50.00 | 53.3 | 626.5 | 130.4 | 0.0 | | 38.1 | 480.6 | 143.1 | 0.0 |
| 114+00.00 | 63.5 | 693.0 | 134.7 | 0.0 | | 34.7 | 306.1 | 139.9 | 0.0 |
| 114+50.00 | 58.9 | 796.3 | 139.7 | 0.0 | | 27.1 | 78.7 | 139.7 | 0.0 |
| 115+00.00 | 46.8 | 882.4 | 139.7 | 0.0 | | 24.0 | 3.1 | 139.7 | 0.0 |
| 115+50.00 | 46.8 | 904.5 | 139.7 | 0.0 | | 24.9 | 0.1 | 139.7 | 0.0 |
| 116+00.00 | 46.7 | 863.1 | 139.7 | 0.0 | | 25.3 | 0.1 | 139.7 | 0.0 |
| 116+50.00 | 45.3 | 765.0 | 139.7 | 0.0 | | 23.9 | 0.1 | 139.7 | 0.0 |
| 117+00.00 | 42.7 | 665.3 | 139.7 | 0.0 | | 20.4 | 0.1 | 139.7 | 0.0 |
| 117+50.00 | 38.4 | 528.0 | 139.1 | 0.0 | | 15.0 | 0.3 | 139.7 | 0.0 |
| 118+00.00 | 33.8 | 367.2 | 129.7 | 0.0 | | 10.1 | 12.1 | 139.7 | 0.0 |
| 118+50.00 | 34.5 | 300.9 | 123.1 | 0.0 | | 11.6 | 51.6 | 141.9 | 0.0 |
| 119+00.00 | 36.6 | 328.9 | 131.5 | 0.0 | | 16.0 | 60.4 | 144.7 | 0.0 |
| 119+50.00 | 37.8 | 402.4 | 146.8 | 0.0 | | 19.3 | 36.1 | 150.9 | 0.0 |
| 120+00.00 | 40.9 | 496.8 | 156.1 | 0.0 | | 23.0 | 31.2 | 156.2 | 0.0 |
| 120+50.00 | 44.0 | 587.3 | 156.1 | 0.0 | | 26.6 | 37.3 | 156.1 | 0.0 |
| 121+00.00 | 45.0 | 623.6 | 156.1 | 0.0 | | 25.9 | 30.2 | 156.1 | 0.0 |
| 121+50.00 | 40.0 | 624.3 | 158.6 | 0.0 | | 20.3 | 14.4 | 158.6 | 0.0 |
| 122+00.00 | 34.4 | 603.4 | 161.1 | 0.0 | | 16.1 | 5.8 | 161.1 | 0.0 |
| 122+50.00 | 34.2 | 581.6 | 161.1 | 0.0 | | 15.8 | 0.0 | 161.1 | 0.0 |
| 123+00.00 | 38.1 | 551.8 | 163.0 | 0.0 | | 25.9 | 0.0 | 163.0 | 0.0 |
| 123+50.00 | 39.4 | 490.3 | 162.7 | 0.0 | | 20.3 | 0.0 | 162.7 | 0.0 |
| 124+00.00 | 33.5 | 350.8 | 147.9 | 0.0 | | 5.4 | 17.2 | 154.8 | 0.0 |
| 124+50.00 | 32.8 | 202.0 | 129.1 | 0.0 | | 8.9 | 45.1 | 149.0 | 0.0 |
| 125+00.00 | 39.7 | 186.0 | 116.1 | 0.0 | | 16.0 | 68.4 | 149.8 | 0.0 |
| 125+50.00 | 44.1 | 223.4 | 106.3 | 0.0 | | 20.4 | 102.4 | 150.6 | 0.0 |
| 126+00.00 | 42.6 | 228.3 | 98.6 | 0.0 | | 18.6 | 111.0 | 150.1 | 0.0 |
| 126+50.00 | 40.8 | 204.5 | 94.6 | 0.0 | | 16.4 | 113.3 | 149.3 | 0.0 |
| 127+00.00 | 42.5 | 208.8 | 96.6 | 0.0 | | 18.2 | 107.4 | 146.5 | 0.0 |
| 127+50.00 | 41.4 | 242.6 | 96.3 | 0.0 | | 17.7 | 68.2 | 142.7 | 0.0 |
| 128+00.00 | 38.2 | 222.1 | 95.9 | 0.0 | | 14.5 | 40.2 | 141.3 | 0.0 |
| 128+50.00 | 36.3 | 152.4 | 98.5 | 0.0 | | 12.1 | 25.1 | 141.3 | 0.0 |
| 129+00.00 | 33.9 | 110.6 | 103.6 | 0.0 | | 9.5 | 18.2 | 141.3 | 0.0 |
| 129+50.00 | 31.8 | 98.3 | 106.4 | 0.0 | | 7.2 | 18.9 | 141.3 | 0.0 |
| 130+00.00 | 31.1 | 92.7 | 104.9 | 0.0 | | 6.5 | 25.9 | 141.3 | 0.0 |
| 130+50.00 | 31.3 | 98.5 | 112.6 | 0.0 | | 6.8 | 20.2 | 141.3 | 0.0 |
| 131+00.00 | 33.5 | 98.8 | 107.7 | 0.0 | | 8.8 | 31.2 | 141.3 | 0.0 |
| 131+50.00 | 37.2 | 78.6 | 90.3 | 0.0 | | 12.2 | 84.4 | 141.3 | 0.0 |
| 132+00.00 | 37.6 | 57.0 | 84.1 | 0.0 | | 12.5 | 122.8 | 141.8 | 0.0 |
| 132+50.00 | 35.7 | 48.8 | 84.8 | 0.0 | 4,372 | 10.8 | 126.7 | 146.5 | 0.0 |
| 133+00.00 | 34.1 | 47.9 | 97.9 | 0.0 | | 9.2 | 175.3 | 157.0 | 0.0 |
| 133+50.00 | 33.0 | 56.2 | 112.5 | 0.0 | | 8.0 | 154.8 | 163.0 | 0.0 |
| 134+00.00 | 33.9 | 59.3 | 112.9 | 0.0 | | 9.1 | 92.1 | 162.8 | 0.0 |
| 134+50.00 | 35.5 | 58.1 | 105.8 | 60.2 | | 11.0 | 108.4 | 162.8 | 0.0 |
| 135+00.00 | 37.7 | 60.3 | 98.5 | 144.4 | | 12.1 | 170.5 | 167.3 | 0.0 |
| 135+50.00 | 40.8 | 51.1 | 93.6 | 152.8 | | 13.2 | 249.9 | 174.9 | 3.7 |
| 136+00.00 | 46.2 | 36.7 | 87.9 | 651.9 | | 17.4 | 331.7 | 178.7 | 449.1 |
| 136+32.95 | 34.5 | 18.6 | 53.5 | 875.0 | | 15.2 | 529.4 | 118.2 | 541.8 |
| 136+50.00 | 18.5 | 8.9 | 27.5 | 479.0 | | 8.5 | 306.8 | 61.1 | 290.8 |
| 136+86.00 | 38.0 | 20.0 | 58.7 | 1,076.7 | | 16.8 | 385.2 | 128.9 | 794.7 |
| 137+00.00 | 14.4 | 8.3 | 22.9 | 488.4 | | 6.2 | 136.2 | 50.1 | 365.3 |
| 137+30.00 | 32.0 | 17.3 | 49.0 | 1,119.4 | | 14.4 | 288.0 | 107.8 | 851.7 |
| 137+50.00 | 20.5 | 11.6 | 32.1 | 771.1 | | 8.6 | 178.0 | 71.9 | 607.4 |
| 138+00.00 | 47.3 | 26.2 | 80.4 | 1,774.1 | | 17.6 | 364.6 | 179.1 | 1,401.9 |
| 138+50.00 | 47.2 | 18.9 | 80.9 | 1,647.2 | | 17.5 | 288.9 | 179.2 | 1,316.7 |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_EW_SUM.dgn 04/12/2016 1:58:25 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EARTHWORK SUMMARY

Sheet 21 of 482 Sheets

## CSAH 116 FROM CRANE ST. TO JEFFERSON ST.

| STATION | EXCAVATION (EV) Topsoil Stripping | Common (No Bit) | Subgrade | MUCK EXC. | POND EXC. | EMBANKMENT (CV) Topsoil Dressing | Select (Suitable) | Subgrade( Granular) | MUCK FILL |
|---|---|---|---|---|---|---|---|---|---|
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 139+00.00 | 46.1 | 12.3 | 75.5 | 1,713.9 | | 16.3 | 255.1 | 179.2 | 1,383.3 |
| 139+50.00 | 44.7 | 6.6 | 69.0 | 1,802.8 | | 15.1 | 284.0 | 179.2 | 1,425.9 |
| 140+00.00 | 44.3 | 2.6 | 65.7 | 1,815.7 | | 14.8 | 313.8 | 179.2 | 1,373.1 |
| 140+50.00 | 44.1 | 4.0 | 69.6 | 1,782.4 | | 15.9 | 317.7 | 174.7 | 1,292.6 |
| 141+00.00 | 43.0 | 13.3 | 78.9 | 1,811.1 | | 16.8 | 336.3 | 167.2 | 1,312.0 |
| 141+50.00 | 43.3 | 18.7 | 76.1 | 1,826.9 | | 18.1 | 380.7 | 158.1 | 1,318.5 |
| 142+00.00 | 44.2 | 11.0 | 62.0 | 1,868.5 | | 19.2 | 416.1 | 148.8 | 1,350.9 |
| 142+50.00 | 44.4 | 4.0 | 52.6 | 1,936.1 | | 19.2 | 412.2 | 143.5 | 1,409.3 |
| 143+00.00 | 44.8 | 4.8 | 53.8 | 1,905.6 | | 19.6 | 414.9 | 141.3 | 1,369.4 |
| 143+50.00 | 44.8 | 7.9 | 61.7 | 1,878.7 | | 20.0 | 398.9 | 141.3 | 1,349.1 |
| 143+83.00 | 39.5 | 14.1 | 54.2 | 1,329.2 | | 17.1 | 209.6 | 93.3 | 971.7 |
| 144+00.00 | 20.5 | 8.7 | 33.6 | 714.6 | | 11.3 | 97.8 | 47.8 | 514.7 |
| 144+50.00 | 44.6 | 22.8 | 86.6 | 1,706.5 | | 27.1 | 366.3 | 139.7 | 1,072.2 |
| 145+00.00 | 44.0 | 41.4 | 78.7 | 856.5 | 4,163 | 19.6 | 341.8 | 139.7 | 161.1 |
| 145+50.00 | 40.1 | 60.9 | 84.6 | 194.4 | | 16.0 | 200.8 | 139.7 | -542.6 |
| 146+00.00 | 36.4 | 91.9 | 89.6 | 0.0 | | 12.9 | 87.6 | 139.7 | -370.4 |
| 146+50.00 | 37.1 | 173.2 | 97.9 | 0.0 | | 14.0 | 32.9 | 139.7 | 0.0 |
| 147+00.00 | 32.8 | 163.6 | 114.3 | 0.0 | | 12.4 | 16.3 | 139.7 | 0.0 |
| 147+28.00 | 21.8 | 62.0 | 72.3 | 0.0 | | 4.5 | 4.2 | 78.2 | 0.0 |
| 147+50.00 | 16.9 | 60.0 | 63.6 | 0.0 | | 3.9 | 2.5 | 66.7 | 0.0 |
| 148+00.00 | 31.4 | 187.2 | 149.5 | 0.0 | | 14.0 | 7.6 | 156.2 | 0.0 |
| 148+50.00 | 33.9 | 210.7 | 143.0 | 0.0 | | 14.6 | 5.7 | 148.9 | 0.0 |
| 149+00.00 | 29.3 | 167.6 | 143.4 | 0.0 | | 10.6 | 9.9 | 148.9 | 0.0 |
| 149+50.00 | 26.4 | 131.9 | 142.9 | 0.0 | | 8.1 | 18.7 | 148.9 | 0.0 |
| 150+00.00 | 25.7 | 133.9 | 144.2 | 0.0 | | 7.4 | 15.2 | 148.9 | 0.0 |
| 150+50.00 | 24.9 | 146.7 | 146.3 | 0.0 | | 6.5 | 6.9 | 148.3 | 0.0 |
| 151+00.00 | 39.9 | 198.5 | 144.6 | 0.0 | | 8.7 | 4.4 | 144.6 | 0.0 |
| 151+50.00 | 55.6 | 234.0 | 140.6 | 0.0 | | 11.8 | 6.9 | 140.6 | 0.0 |
| 152+00.00 | 55.7 | 208.2 | 140.2 | 0.0 | | 12.2 | 9.4 | 140.3 | 0.0 |
| 152+50.00 | 57.2 | 185.9 | 145.7 | 0.0 | | 13.2 | 8.3 | 145.9 | 0.0 |
| 153+00.00 | 59.5 | 193.1 | 160.6 | 0.0 | | 14.2 | 3.2 | 160.7 | 0.0 |
| 153+13.00 | 15.8 | 55.2 | 44.3 | 0.0 | | 3.8 | 0.1 | 44.3 | 0.0 |
| 153+50.00 | 44.7 | 178.2 | 125.5 | 0.0 | | 10.7 | 0.1 | 126.0 | 0.0 |
| 154+00.00 | 59.9 | 291.9 | 168.9 | 0.0 | | 14.0 | 0.1 | 170.2 | 0.0 |
| 154+50.00 | 59.9 | 324.1 | 168.4 | 0.0 | | 14.0 | 0.0 | 170.2 | 0.0 |
| 155+00.00 | 59.1 | 293.6 | 168.9 | 0.0 | | 13.2 | 0.0 | 170.2 | 0.0 |
| 155+50.00 | 58.4 | 213.7 | 169.9 | 0.0 | | 12.4 | 0.0 | 170.2 | 0.0 |
| 156+00.00 | 58.4 | 144.0 | 170.1 | 0.0 | | 12.4 | 3.6 | 170.2 | 0.0 |
| 156+50.00 | 57.7 | 105.5 | 170.2 | 0.0 | | 11.8 | 23.7 | 170.2 | 0.0 |
| 156+78.00 | 33.6 | 60.5 | 106.5 | 0.0 | | 5.1 | 17.1 | 106.5 | 0.0 |
| 157+00.00 | 29.1 | 59.4 | 98.1 | 0.0 | | 3.6 | 4.6 | 98.1 | 0.0 |
| 157+15.00 | 24.2 | 54.7 | 81.2 | 0.0 | | 3.7 | 3.1 | 81.2 | 0.0 |
| 157+50.00 | 52.6 | 111.9 | 174.5 | 0.0 | | 7.6 | 12.7 | 174.5 | 0.0 |
| 158+00.00 | 55.5 | 111.2 | 181.4 | 0.0 | | 6.6 | 8.6 | 181.9 | 0.0 |
| 158+50.00 | 52.0 | 106.5 | 169.2 | 0.0 | | 6.2 | 2.3 | 170.2 | 0.0 |
| 159+00.00 | 54.0 | 95.7 | 168.0 | 0.0 | | 8.1 | 26.3 | 170.2 | 0.0 |
| 159+50.00 | 57.9 | 99.7 | 166.2 | 0.0 | | 12.0 | 87.5 | 170.2 | 0.0 |
| 160+00.00 | 59.4 | 112.7 | 166.1 | 0.0 | | 13.5 | 106.8 | 170.2 | 0.0 |
| 160+50.00 | 58.3 | 117.7 | 166.2 | 0.0 | | 12.8 | 87.4 | 168.7 | 0.0 |
| 161+00.00 | 58.7 | 115.2 | 160.5 | 0.0 | | 14.3 | 119.8 | 164.0 | 0.0 |
| 161+50.00 | 47.0 | 109.3 | 156.5 | 0.0 | | 17.5 | 176.3 | 160.9 | 0.0 |
| 162+00.00 | 35.6 | 103.1 | 157.8 | 0.0 | | 19.8 | 216.2 | 160.9 | 0.0 |
| 162+50.00 | 37.9 | 104.6 | 157.9 | 0.0 | | 21.5 | 241.0 | 160.9 | 0.0 |
| 163+00.00 | 38.5 | 110.8 | 157.4 | 0.0 | | 21.7 | 243.6 | 161.0 | 0.0 |
| 163+50.00 | 37.7 | 116.5 | 152.4 | 0.0 | | 20.8 | 223.2 | 156.2 | 0.0 |
| 164+00.00 | 37.4 | 120.2 | 146.2 | 0.0 | | 20.4 | 198.9 | 148.2 | 0.0 |
| 164+50.00 | 37.3 | 122.5 | 142.1 | 0.0 | 3,960 | 20.3 | 158.4 | 142.4 | 0.0 |
| 164+64.15 | 10.6 | 35.1 | 39.5 | 0.0 | | 5.8 | 33.4 | 39.5 | 0.0 |
| 165+00.00 | 24.7 | 92.8 | 100.6 | 0.0 | | 12.7 | 68.3 | 100.6 | 0.0 |
| 165+50.00 | 30.9 | 128.5 | 140.6 | 0.0 | | 14.4 | 85.0 | 140.6 | 0.0 |
| 166+00.00 | 31.1 | 118.0 | 139.9 | 0.0 | | 14.5 | 100.5 | 140.6 | 0.0 |
| 166+50.00 | 26.1 | 112.5 | 138.3 | 0.0 | | 12.7 | 134.8 | 139.2 | 0.0 |
| 167+00.00 | 18.7 | 112.8 | 136.9 | 0.0 | | 9.2 | 79.7 | 137.2 | 0.0 |
| 167+50.00 | 16.5 | 102.5 | 133.9 | 0.0 | | 8.5 | 4.0 | 134.1 | 0.0 |
| 168+00.00 | 15.8 | 87.0 | 124.1 | 0.0 | | 9.4 | 6.7 | 124.6 | 0.0 |
| 168+50.00 | 14.1 | 76.7 | 112.5 | 0.0 | | 9.4 | 7.7 | 113.1 | 0.0 |
| 169+00.00 | 11.4 | 69.5 | 103.4 | 0.0 | | 8.2 | 5.3 | 104.0 | 0.0 |
| 169+50.00 | 9.4 | 68.0 | 97.7 | 0.0 | | 7.4 | 3.9 | 97.9 | 0.0 |
| 170+00.00 | 37.9 | 69.3 | 94.6 | 0.0 | | 7.5 | 32.6 | 94.6 | 0.0 |
| 170+50.00 | 66.3 | 73.5 | 92.0 | 0.0 | | 6.1 | 61.1 | 92.0 | 0.0 |

## CSAH 116 FROM CRANE ST. TO JEFFERSON ST.

| STATION | EXCAVATION (EV) Topsoil Stripping | Common (No Bit) | Subgrade | MUCK EXC. | POND EXC. | EMBANKMENT (CV) Topsoil Dressing | Select (Suitable) | Subgrade( Granular) | MUCK FILL |
|---|---|---|---|---|---|---|---|---|---|
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 170+50.00 | 66.3 | 73.5 | 92.0 | 0.0 | | 6.1 | 61.1 | 92.0 | 0.0 |
| 171+00.00 | 48.7 | 62.2 | 45.5 | 0.0 | | 17.2 | 46.7 | 45.5 | 0.0 |
| 171+50.00 | 33.1 | 68.2 | 0.0 | 0.0 | | 21.5 | 31.6 | 0.0 | 0.0 |
| 172+00.00 | 33.7 | 74.8 | 0.0 | 0.0 | | 21.8 | 27.5 | 0.0 | 0.0 |
| 172+50.00 | 29.2 | 37.2 | 0.0 | 0.0 | | 26.2 | 23.3 | 0.0 | 0.0 |
| 173+00.00 | 26.1 | 6.8 | 0.0 | 0.0 | | 11.0 | 11.1 | 0.0 | 0.0 |
| 173+17.94 | 9.1 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| 173+50.00 | 15.9 | 4.6 | 0.0 | 0.0 | | 3.7 | 0.0 | 0.0 | 0.0 |
| 174+00.00 | 26.3 | 9.4 | 0.0 | 0.0 | | 18.0 | 17.3 | 0.0 | 0.0 |
| 174+50.00 | 26.5 | 6.1 | 0.0 | 0.0 | | 23.4 | 29.3 | 0.0 | 0.0 |
| 175+00.00 | 24.9 | 14.9 | 0.0 | 0.0 | | 21.8 | 37.1 | 0.0 | 0.0 |
| 175+50.00 | 26.1 | 37.3 | 0.0 | 0.0 | | 23.7 | 34.8 | 0.0 | 0.0 |
| 176+00.00 | 20.1 | 38.3 | 0.0 | 0.0 | | 22.5 | 9.7 | 0.0 | 0.0 |
| 176+50.00 | 14.8 | 23.4 | 0.0 | 0.0 | | 17.1 | 0.4 | 0.0 | 0.0 |
| 177+00.00 | 17.5 | 22.0 | 0.0 | 0.0 | | 15.5 | 0.4 | 0.0 | 0.0 |
| 177+50.00 | 21.1 | 20.3 | 0.0 | 0.0 | | 20.7 | 0.0 | 0.0 | 0.0 |
| 178+00.00 | 18.0 | 9.8 | 0.0 | 0.0 | | 17.8 | 1.0 | 0.0 | 0.0 |
| 178+50.00 | 10.9 | 0.0 | 0.0 | 0.0 | | 10.4 | 1.0 | 0.0 | 0.0 |
| 179+00.00 | 6.6 | 0.0 | 0.0 | 0.0 | | 7.0 | 0.0 | 0.0 | 0.0 |
| 179+50.00 | 2.4 | 0.0 | 0.0 | 0.0 | | 3.1 | 0.0 | 0.0 | 0.0 |
| 180+00.00 | 0.8 | 0.0 | 0.0 | 0.0 | | 1.5 | 0.0 | 0.0 | 0.0 |
| SubTotal | 11,675 | 64,995 | 32,342 | 63,868 | 26,120 | 5,106 | 38,660 | 40,060 | 53,499 |

## PRAIRIE ROAD

| STATION | EXCAVATION (EV) Topsoil | Common (No Bit) | Subgrade | MUCK EXC. | POND EXC. | EMBANCKMENT (CV) Topsoil Dressing | Select (Suitable) | Subgrade (Granular) | MUCK FILL |
|---|---|---|---|---|---|---|---|---|---|
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 20+25.00 | | | | | | | | | |
| 20+50.00 | 20.2 | 40.3 | 61.7 | 0 | 0 | 6.4 | 6.2 | 64.0 | 0 |
| 21+00.00 | 33.1 | 199.8 | 50.5 | 0 | 0 | 14.1 | 9.6 | 50.5 | 0 |
| 21+20.00 | 38.2 | 348.0 | 49.8 | 0 | 0 | 17.9 | 7.5 | 49.8 | 0 |
| 21+50.00 | 34.2 | 332.5 | 49.4 | 0 | 0 | 14.0 | 3.0 | 49.4 | 0 |
| 21+88.00 | 31.1 | 298.1 | 49.4 | 0 | 0 | 12.5 | 0.1 | 49.4 | 0 |
| 22+00.00 | 29.7 | 273.5 | 49.5 | 0 | 0 | 12.7 | 0.0 | 49.5 | 0 |
| 22+40.00 | 26.5 | 226.1 | 49.6 | 0 | 0 | 9.3 | 0.0 | 49.6 | 0 |
| 22+50.00 | 24.2 | 173.0 | 49.1 | 0 | 0 | 7.2 | 0.0 | 49.1 | 0 |
| 23+00.00 | 16.1 | 114.0 | 43.6 | 1.0 | 2.0 | 6.5 | 1.5 | 43.6 | 3.0 |
| 23+50.00 | 6.6 | 43.1 | 36.6 | 0 | 0 | 4.7 | 5.2 | 36.6 | 0 |
| SubTotal | 260 | 2,048 | 489 | 1 | 2 | 105 | 33 | 491 | 3 |
| PARK NEW ACCESS | | | | | | | | | |
| 02+50.00 | | | | | | | | | 0 |
| 03+00.00 | 30.5 | 100.6 | 42.3 | 0 | 0 | 11.5 | 22.5 | 60.5 | 0 |
| 03+50.00 | 31.5 | 84.0 | 32.8 | 0 | 0 | 13.1 | 45.0 | 60.5 | 0 |
| 04+00.00 | 31.9 | 7 | 32.0 | 0 | 0 | 11.3 | 52.4 | 60.5 | 0 |
| 04+50.00 | 44.5 | 1 | 18.1 | 0 | 0 | 26.1 | 130.4 | 60.5 | 0 |
| 05+00.00 | 65.2 | 0 | 1.5 | 0 | 0 | 46.7 | 281.0 | 60.5 | 0 |
| 05+50.00 | 73.3 | 0 | 0.0 | 0 | 0 | 54.6 | 451.0 | 60.5 | 0 |
| 06+00.00 | 72.9 | 0 | 0.0 | 0 | 0 | 54.3 | 632.2 | 60.5 | 0 |
| 06+50.00 | 63.5 | 0 | 0.0 | 0 | 0 | 45.1 | 678.9 | 60.5 | 0 |
| 07+00.00 | 55.2 | 0 | 0.0 | 0 | 0 | 36.9 | 467.3 | 60.5 | 0 |
| 07+50.00 | 46.9 | 0.6 | 0.0 | 0 | 0 | 28.7 | 242.6 | 60.5 | 0 |
| 08+00.00 | 43.3 | 0.6 | 0.0 | 0 | 0 | 25.3 | 222.9 | 60.5 | 0 |
| 08+50.00 | 47.4 | 0 | 0.0 | 0 | 0 | 29.2 | 307.7 | 60.5 | 0 |
| 09+00.00 | 52.6 | 0 | 0.0 | 0 | 0 | 33.8 | 410.0 | 60.5 | 0 |
| 09+50.00 | 57.3 | 0 | 0.0 | 0 | 0 | 38.5 | 532.0 | 60.5 | 0 |
| 10+00.00 | 58.9 | 0 | 0.0 | 0 | 0 | 40.6 | 670.3 | 60.5 | 0 |
| 10+50.00 | 56.1 | 0 | 0.0 | 0 | 0 | 37.8 | 720.8 | 60.5 | 0 |
| 10+75.89 | 27.9 | 0 | 0.0 | 0 | 0 | 17.6 | 390.0 | 33.4 | 0 |
| 11+00.00 | 27.3 | 0 | 0.0 | 0 | 0 | 15.9 | 356.0 | 36.4 | 0 |
| 11+25.00 | 27.7 | 0 | 0.0 | 0 | 0 | 13.8 | 254.9 | 43.9 | 0 |
| 11+50.00 | 15.7 | 0.1 | 3.6 | 0 | 0 | 7.5 | 87.7 | 26.9 | 0 |
| SubTotal | 929 | 194 | 130 | - | - | 588 | 6,956 | 1,109 | - |
| Total | 12,864 | 67,237 | 32,961 | 63,869 | 26,122 | 5,799 | 45,649 | 41,660 | 53,502 |

## POND EXCAVATION

| POND LOCATIONS STATION | POND NO. | CUT CU.YD. | FILL CU.YD. | SUITABLE AREA S.Y. | SUITABLE DEPTH L.F. | SUITABLE CU.YD. |
|---|---|---|---|---|---|---|
| EB STA 49+00 - 51+00 RT. | A, (100) | 5,795 | 54 | | 0 | 5,243 |
| EB STA 61+50 - 64+00 RT. | B, (200) | 3,715 | 36 | | 2 | 3,519 |
| WB STA 77+00 - 79+00 LT. | C, (300) | 4,115 | 309 | | 2 | 1,798 |
| EB STA 130+50 - 134+50 RT. | D, (500) | 4,372 | 263 | | 0 | 0 |
| EB STA 144+50 - 145+50 RT. | E, (700) | 4,163 | 0 | | 2 | 2,242 |
| EB STA 163+50 - 165+50 RT. | F, (800) | 3,960 | 80 | | 0 | 0 |
| (CSAH 116) TOTAL | | 26,120 | 742 | | | 12,802 |

NOTE: ALL POND EXCAVATION PAID FOR AS COMMON EXCAVATION (EV) (PONDS)

| | | |
|---|---|---|
| UNSUITABLE MATERIAL | 12,576 | CUYD |
| SUITABLE MATERIAL | 12,802 | CUYD |

## UNDERPASS TUNNEL EXCAVATION

| STATION | EXCAVATION (EV) Topsoil | Common (No Bit) | EMBANKMENT (CV) Topsoil Dressing | Select (Suitable) | Subgrade (Granular) | Fine Filter Agg. |
|---|---|---|---|---|---|---|
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 99+00.00 | | | | | | |
| 100+00.00 | 28.6 | 114.5 | 19.6 | | | |
| 101+00.00 | 10.6 | 71.0 | 13.3 | | | |
| 102+00.00 | 62.4 | 969.6 | 42.6 | | | |
| 103+00.00 | 93.1 | 2,809.9 | 72.4 | 164.0 | 8.1 | |
| 103+20.00 | | 476.3 | | 317.4 | 16.2 | |
| 103+40.00 | | 436.2 | | 277.2 | 16.2 | |
| 103+60.00 | | 322.6 | | 163.6 | 16.2 | |
| 103+80.00 | | 187.5 | | 28.5 | 16.2 | |
| 104+00.00 | | 113.0 | | | 16.2 | |
| Footings | | 141.0 | | | | 141.0 |
| SubTotal | 195 | 5,642 | 148 | 951 | 89 | 141 |

NOTE: NON FROST SUSCEPTIBLE MATERIAL IS TO BE PLACED AROUND THE FOOTINGS. SEE DETAIL IN BRIDGE PLAN SHEETS. SHEETs 49 & 50

## PARK PATH

| STATION | EXCAVATION (EV) Topsoil | Common (No Bit) | EMBANCKMENT (CV) Topsoil Dressing | Select (Suitable) | Subgrade (Granular) |
|---|---|---|---|---|---|
| | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd | Cu.Yd |
| 48+00.00 | 2.0 | 0.0 | 1.3 | 7.0 | 0.0 |
| 49+00.00 | 4.1 | 0.6 | 1.2 | 3.0 | 0.0 |
| 50+00.00 | 3.8 | 0.5 | 1.0 | 1.0 | 0.0 |
| 51+00.00 | 4.3 | 3.6 | 1.4 | 0.5 | 0.0 |
| 52+00.00 | 6.1 | 0.0 | 2.8 | 22.0 | 0.0 |
| 53+00.00 | 4.6 | 0.2 | 1.6 | 7.2 | 0.0 |
| 54+00.00 | 3.5 | 1.6 | 0.8 | 0.3 | 0.0 |
| 55+00.00 | 3.5 | 1.7 | 0.8 | 0.2 | 0.0 |
| 56+00.00 | 4.4 | 5.9 | 1.5 | 0.0 | 0.0 |
| 57+00.00 | 4.3 | 0.6 | 1.4 | 1.9 | 0.0 |
| 58+00.00 | 4.4 | 1.2 | 1.5 | 2.8 | 0.0 |
| 59+00.00 | 6.6 | 0.0 | 3.1 | 24.2 | 0.0 |
| 61+50.00 | 4.4 | 0.0 | 2.4 | 27.0 | 0.0 |
| 62+00.00 | 8.2 | 0.0 | 4.4 | 45.6 | 0.0 |
| 63+00.00 | 4.8 | 9.2 | 1.8 | 0.3 | 0.0 |
| 64+00.00 | 6.4 | 17.2 | 3.0 | 0.0 | 0.0 |
| 65+00.00 | 3.7 | 1.9 | 0.9 | 0.4 | 0.0 |
| 101+00.00 | 3.6 | 14.7 | 2.1 | 2.1 | 0.0 |
| 102+00.00 | 6.6 | 8.6 | 2.9 | 0.4 | 0.0 |
| 103+00.00 | 6.3 | 1.0 | 1.8 | 4.7 | 0.0 |
| 104+00.00 | 4.8 | 6.1 | 1.4 | 6.1 | 0.0 |
| 105+00.00 | 4.3 | 0.0 | 1.7 | 0.2 | 0.0 |
| 106+00.00 | 4.6 | 1.7 | 1.1 | 5.6 | 0.0 |
| 107+00.00 | 3.9 | 9.3 | 1.7 | 0.8 | 0.0 |
| 108+00.00 | 4.9 | 29.3 | 2.2 | 14.3 | 0.0 |
| 109+00.00 | 7.0 | 1.3 | 3.3 | 35.4 | |



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_EW_SUM.dgn 04/12/2016 1:58:36 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

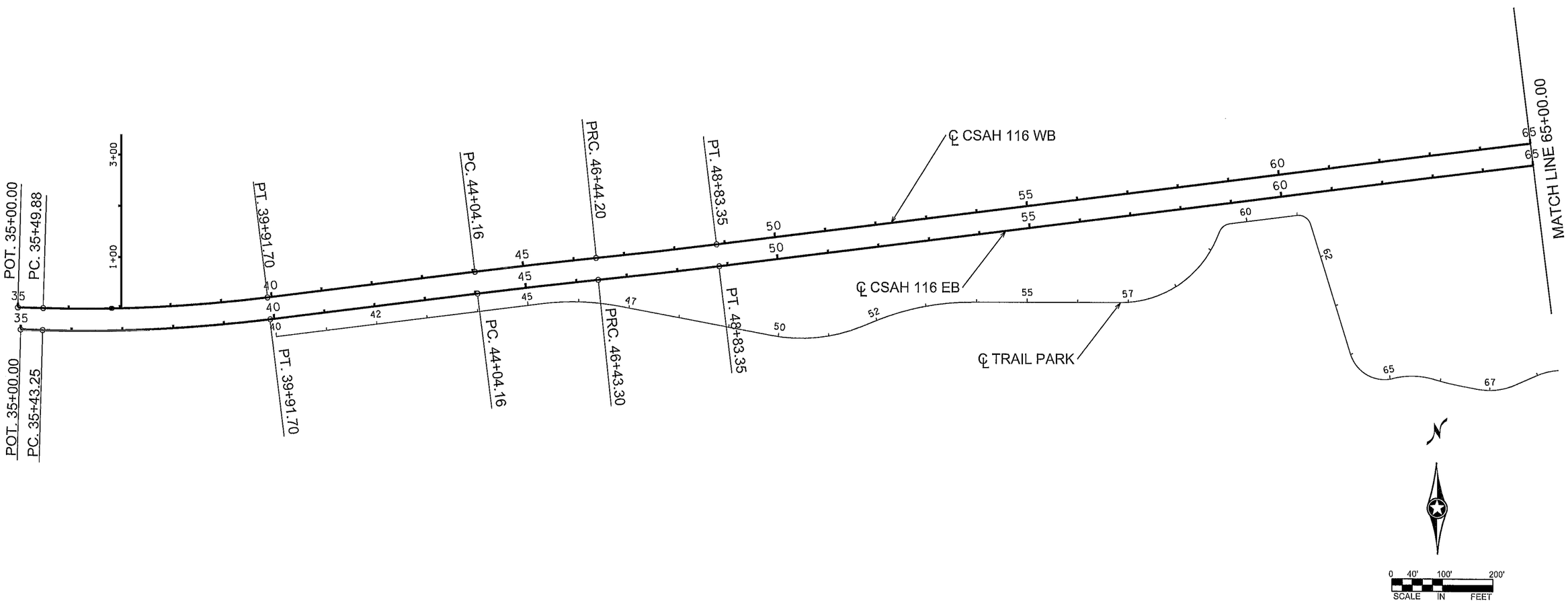
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EARTHWORK SUMMARY

Sheet 22 of 482 Sheets




1 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

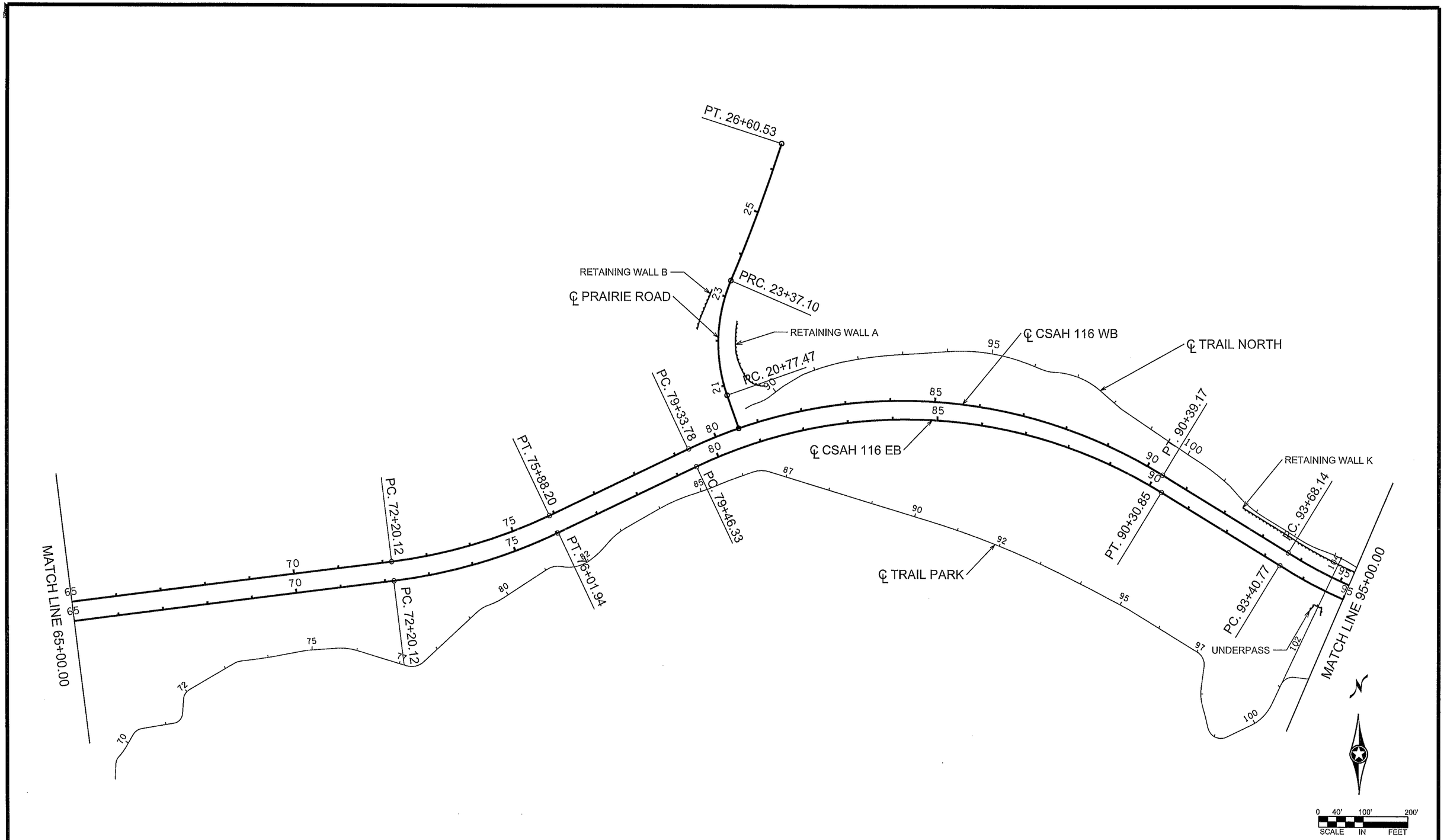
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT PLAN

Sheet 23 of 482 Sheets




2 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

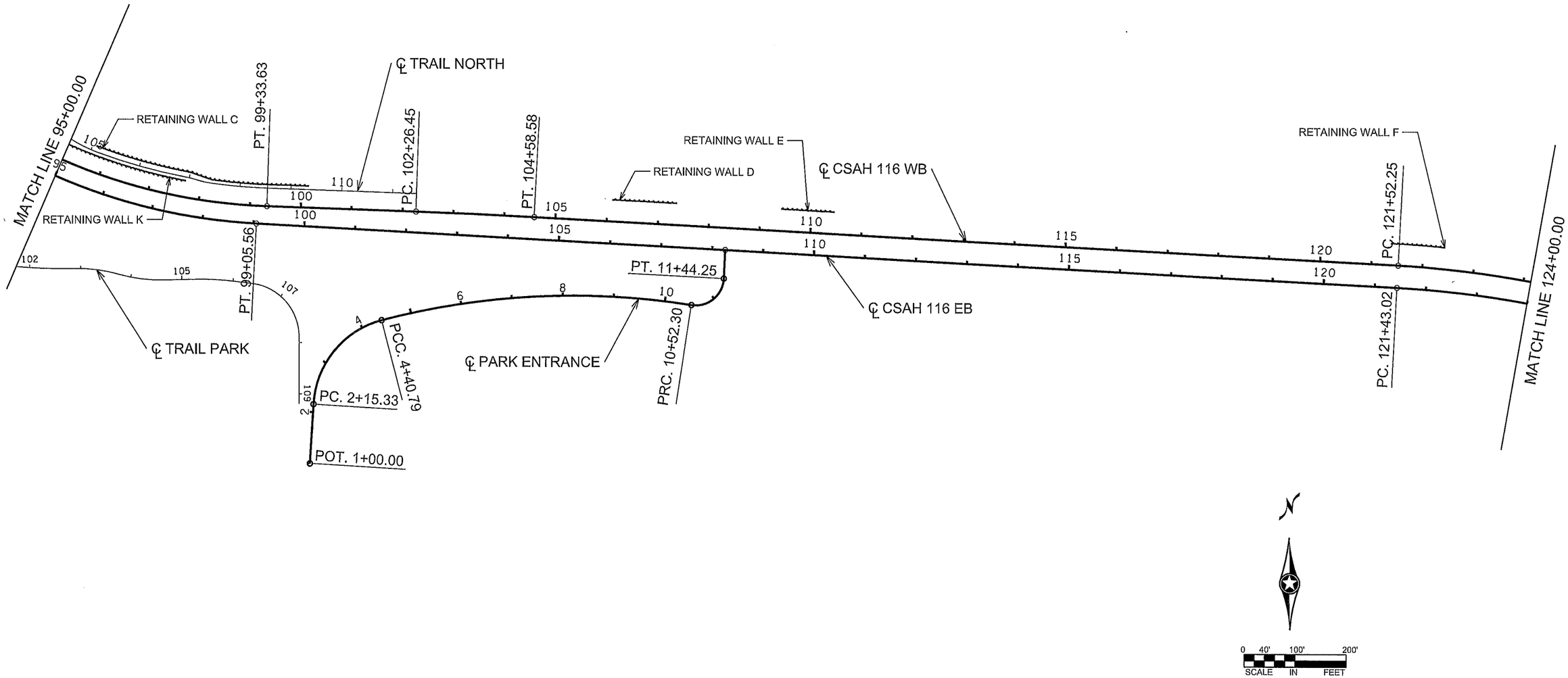
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT PLAN

Sheet 24 of 482 Sheets




3 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

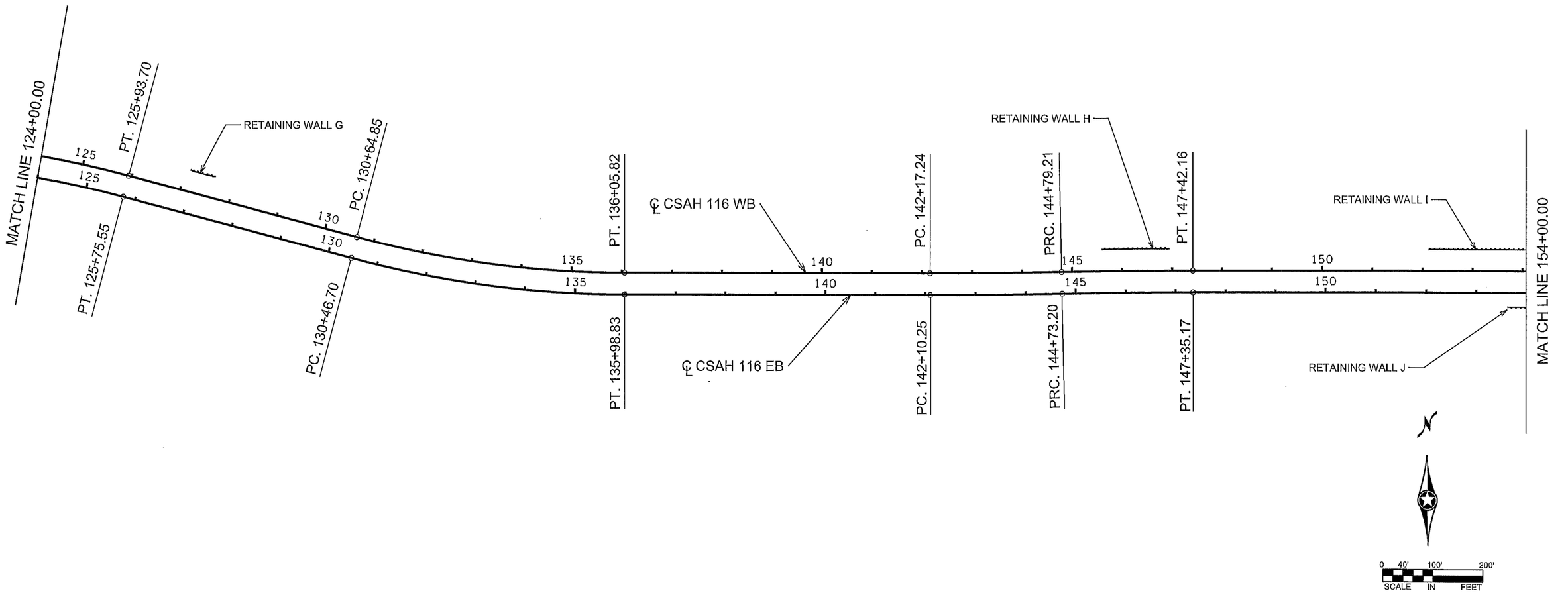
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT PLAN

Sheet 25 of 482 Sheets




4 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_ALPLAN4.dgn 04/12/2016 1:58:53 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

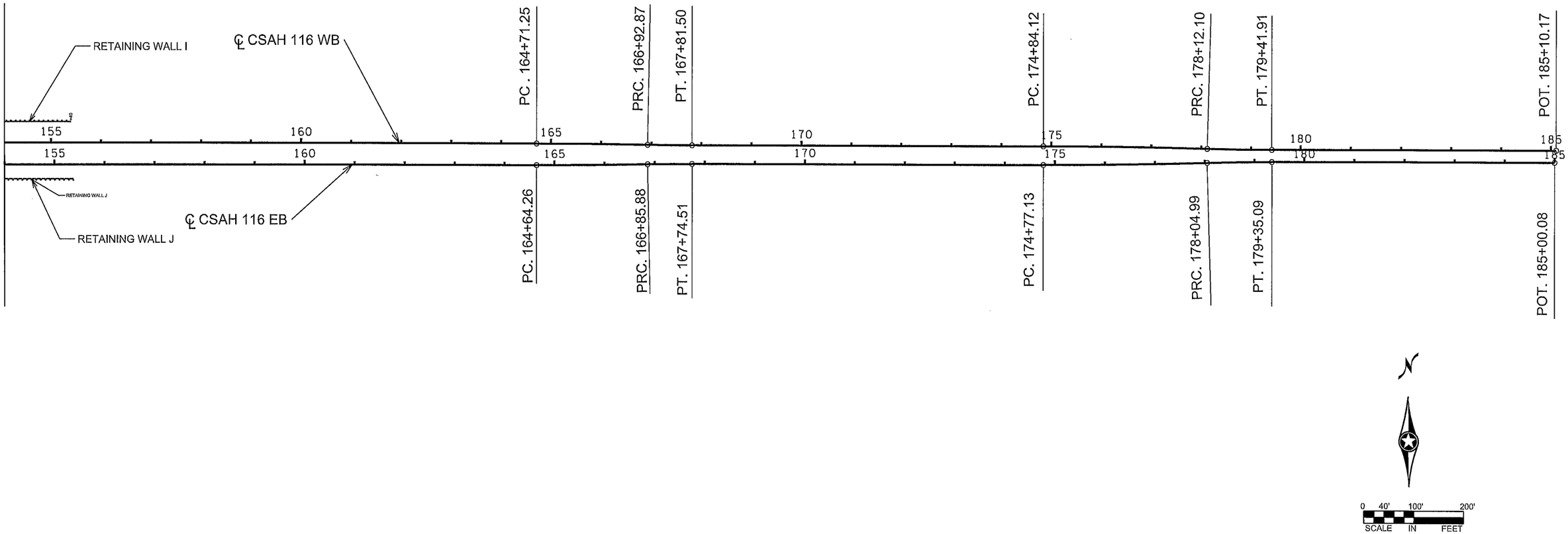
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT PLAN

Sheet 26 of 482 Sheets




5 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_ALPLAN5.dgn 04/12/2016 1:58:54 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT PLAN

Sheet 27 of 482 Sheets

# ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| **℄ C.S.A.H. 116 EB** | | | | | | | | | | |
| 1171 | POT | ℄ C.S.A.H. 116 35+00.000 | | | | | | 490,960.1686 | 167,002.7695 | |
| | PC | 35+43.247 | | | | | | 491,003.3987 | 167,001.4887 | S 88° 18' 10.32" E |
| EB-ALIG-1 | PI | 37+67.919 | 8° 50' 08.84" LT | 1° 58' 13.01" | 2,908.000' | 224.672' | 448.453' | 491,227.9702 | 166,994.8348 | PI |
| | CC | | | | | | | 491,089.5206 | 169,908.2131 | |
| | PT | 39+91.700 | | | | | | 491,450.9006 | 167,022.7550 | N 82° 51' 40.83" E |
| | PC | 44+04.160 | | | | | | 491,860.1635 | 167,074.0118 | N 82° 51' 40.83" E |
| EB-ALIG-2 | PI | 45+23.737 | 1° 11' 44.65" RT | 0° 30' 00.02" | 11,459.000' | 119.576' | 239.144' | 491,978.8128 | 167,088.8717 | PI |
| | CC | | | | | | | 493,284.1846 | 155,703.8383 | |
| | PRC | 46+43.304 | | | | | | 492,097.7464 | 167,101.2523 | N 84° 03' 25.48" E |
| | PRC | 46+43.304 | | | | | | 492,097.7464 | 167,101.2523 | N 84° 03' 25.48" E |
| EB-ALIG-3 | PI | 47+63.329 | 1° 11' 44.65" LT | 0° 29' 53.30" | 11,502.000' | 120.025' | 240.041' | 492,217.1263 | 167,113.6794 | PI |
| | CC | | | | | | | 490,906.8562 | 178,541.4352 | |
| | PT | 48+83.345 | | | | | | 492,336.2209 | 167,128.5950 | N 82° 51' 40.83" E |
| | PC | 72+20.124 | | | | | | 494,654.8854 | 167,418.9888 | N 82° 51' 40.83" E |
| EB-ALIG-4 | PI | 74+12.678 | 18° 19' 20.00" LT | 4° 47' 55.11" | 1,194.000' | 192.554' | 381.821' | 494,845.9470 | 167,442.9177 | PI |
| | CC | | | | | | | 494,506.5058 | 168,603.7333 | |
| | PT | 76+01.945 | | | | | | 495,019.8002 | 167,525.6957 | N 64° 32' 20.83" E |
| | PC | 79+46.329 | | | | | | 495,330.7376 | 167,673.7448 | N 64° 32' 20.83" E |
| EB-ALIG-5 | PI | 85+38.143 | 56° 57' 18.95" RT | 5° 15' 06.03" | 1,091.000' | 591.813' | 1,084.516' | 495,865.0734 | 167,928.1622 | PI |
| | CC | | | | | | | 495,799.7528 | 166,688.7038 | |
| | PT | 90+30.845 | | | | | | 496,369.7075 | 167,618.9901 | S 58° 30' 20.22" E |
| | PC | 93+40.766 | | | | | | 496,633.9743 | 167,457.0828 | S 58° 30' 20.22" E |
| EB-ALIG-6 | PI | 96+29.148 | 28° 32' 10.59" LT | 5° 03' 09.14" | 1,134.000' | 288.381' | 564.791' | 496,879.8748 | 167,306.4280 | PI |
| | CC | | | | | | | 497,226.3929 | 168,424.0348 | |
| | PT | 99+05.557 | | | | | | 497,167.8720 | 167,291.5459 | S 87° 02' 30.82" E |
| | PC | 121+43.024 | | | | | | 499,402.3575 | 167,176.0797 | S 87° 02' 30.82" E |
| EB-ALIG-7 | PI | 123+60.067 | 11° 53' 49.91" RT | 2° 45' 02.30" | 2,083.000' | 217.043' | 432.525' | 499,619.1112 | 167,164.8790 | PI |
| | CC | | | | | | | 499,294.8627 | 165,095.8552 | |
| | PT | 125+75.549 | | | | | | 499,828.8998 | 167,109.2338 | S 75° 08' 40.90" E |
| | PC | 130+46.695 | | | | | | 500,284.2983 | 166,988.4419 | S 75° 08' 40.90" E |
| EB-ALIG-8 | PI | 133+24.327 | 14° 52' 48.61" LT | 2° 41' 42.01" | 2,126.000' | 277.632' | 552.139' | 500,552.6506 | 166,917.2630 | PI |
| | CC | | | | | | | 500,829.3598 | 169,043.3833 | |
| | PT | 135+98.834 | | | | | | 500,830.2824 | 166,917.3835 | N 89° 58' 30.49" E |
| | PC | 142+10.248 | | | | | | 501,441.6961 | 166,917.6488 | N 89° 58' 30.49" E |
| EB-ALIG-9 | PI | 143+41.730 | 1° 18' 35.52" LT | 0° 29' 53.30" | 11,502.000' | 131.482' | 262.953' | 501,573.1783 | 166,917.7059 | PI |
| | CC | | | | | | | 501,436.7046 | 178,419.6478 | |
| | PRC | 144+73.201 | | | | | | 501,704.6248 | 166,920.7686 | N 88° 39' 54.97" E |
| | PRC | 144+73.201 | | | | | | 501,704.6248 | 166,920.7686 | N 88° 39' 54.97" E |
| EB-ALIG-10 | PI | 146+04.191 | 1° 18' 35.52" RT | 0° 30' 00.02" | 11,459.000' | 130.991' | 261.970' | 501,835.5799 | 166,923.8198 | PI |
| | CC | | | | | | | 501,971.5434 | 155,464.8777 | |

# ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| **℄ C.S.A.H. 116 EB** | | | | | | | | | | |
| | PT | ℄ C.S.A.H. 116 147+35.171 | | | | | | 501,966.5706 | 166,923.8766 | N 89° 58' 30.49" E |
| | PC | 164+64.262 | | | | | | 503,695.6620 | 166,924.6270 | N 89° 58' 30.49" E |
| EB-ALIG-11 | PI | 165+75.073 | 1° 06' 29.13" LT | 0° 30' 00.02" | 11,459.000' | 110.811' | 221.615' | 503,806.4732 | 166,924.6751 | PI |
| | CC | | | | | | | 503,690.6893 | 178,383.6259 | |
| | PRC | 166+85.878 | | | | | | 503,917.2626 | 166,926.8661 | N 88° 52' 01.36" E |
| | PRC | 166+85.878 | | | | | | 503,917.2626 | 166,926.8661 | N 88° 52' 01.36" E |
| EB-ALIG-12 | PI | 167+30.196 | 1° 06' 29.13" RT | 1° 15' 00.65" | 4,583.000' | 44.319' | 88.635' | 503,961.5726 | 166,927.7424 | PI |
| | CC | | | | | | | 504,007.8801 | 162,344.7620 | |
| | PT | 167+74.512 | | | | | | 504,005.8913 | 166,927.7616 | N 89° 58' 30.49" E |
| | PC | 174+77.129 | | | | | | 504,708.5078 | 166,928.0665 | N 89° 58' 30.49" E |
| EB-ALIG-13 | PI | 176+41.069 | 1° 37' 35.54" LT | 0° 29' 46.00" | 11,549.000' | 163.940' | 327.859' | 504,872.4480 | 166,928.1377 | PI |
| | CC | | | | | | | 504,703.4959 | 178,477.0654 | |
| | PRC | 178+04.987 | | | | | | 505,036.3202 | 166,932.8622 | N 88° 20' 54.94" E |
| | PRC | 178+04.987 | | | | | | 505,036.3202 | 166,932.8622 | N 88° 20' 54.94" E |
| EB-ALIG-14 | PI | 178+70.044 | 1° 37' 35.54" RT | 1° 15' 00.65" | 4,583.000' | 65.057' | 130.104' | 505,101.3498 | 166,934.7370 | PI |
| | CC | | | | | | | 505,168.3952 | 162,351.7657 | |
| | PT | 179+35.092 | | | | | | 505,166.4064 | 166,934.7652 | N 89° 58' 30.49" E |
| 1172 | POT | 185+00.081 | | | | | | 505,731.3954 | 166,935.0104 | |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_ALTAB1.dgn 04/12/2016 1:58:56 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT TABULATION

Sheet 28 of 482 Sheets

# ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| ℄ C.S.A.H. 116 WB | | | | | | | | | | |
| 1169 | POT | ℄ C.S.A.H. 116 35+00.000 | | | | | | 490,954.8121 | 167,045.9471 | |
| | PC | 35+49.880 | | | | | | 491,004.6702 | 167,044.4698 | S 88° 18' 10.32" E |
| WB-ALIG-1 | PI | 37+71.230 | 8° 50' 08.84" LT | 1° 59' 59.47" | 2,865.000' | 221.350' | 441.822' | 491,225.9229 | 167,037.9143 | PI |
| | CC | | | | | | | 491,089.5206 | 169,908.2131 | |
| | PT | 39+91.702 | | | | | | 491,445.5570 | 167,065.4217 | N 82° 51' 40.83" E |
| | PC | 44+04.162 | | | | | | 491,854.8198 | 167,116.6785 | N 82° 51' 40.83" E |
| WB-ALIG-2 | PI | 45+24.187 | 1° 11' 44.65" RT | 0° 29' 53.30" | 11,502.000' | 120.025' | 240.041' | 491,973.9144 | 167,131.5941 | PI |
| | CC | | | | | | | 493,284.1846 | 155,703.8383 | |
| | PRC | 46+44.203 | | | | | | 492,093.2943 | 167,144.0212 | N 84° 03' 25.48" E |
| | PRC | 46+44.203 | | | | | | 492,093.2943 | 167,144.0212 | N 84° 03' 25.48" E |
| WB-ALIG-3 | PI | 47+63.780 | 1° 11' 44.65" LT | 0° 30' 00.02" | 11,459.000' | 119.576' | 239.144' | 492,212.2279 | 167,156.4018 | PI |
| | CC | | | | | | | 490,906.8562 | 178,541.4352 | |
| | PT | 48+83.347 | | | | | | 492,330.8773 | 167,171.2617 | N 82° 51' 40.83" E |
| | PC | 72+20.126 | | | | | | 494,649.5417 | 167,461.6554 | N 82° 51' 40.83" E |
| WB-ALIG-4 | PI | 74+05.745 | 18° 19' 20.00" LT | 4° 58' 40.49" | 1,151.000' | 185.620' | 368.070' | 494,833.7226 | 167,484.7226 | PI |
| | CC | | | | | | | 494,506.5058 | 168,603.7333 | |
| | PT | 75+88.196 | | | | | | 495,001.3147 | 167,564.5195 | N 64° 32' 20.83" E |
| | PC | 79+33.778 | | | | | | 495,313.3331 | 167,713.0832 | N 64° 32' 20.83" E |
| WB-ALIG-5 | PI | 85+36.982 | 56° 57' 18.95" RT | 5° 09' 08.99" | 1,112.000' | 603.205' | 1,105.391' | 495,857.9540 | 167,972.3978 | PI |
| | CC | | | | | | | 495,791.3760 | 166,709.0818 | |
| | PT | 90+39.169 | | | | | | 496,372.3015 | 167,657.2746 | S 58° 30' 20.22" E |
| | PC | 93+68.142 | | | | | | 496,652.8143 | 167,485.4140 | S 58° 30' 20.22" E |
| WB-ALIG-6 | PI | 96+57.390 | 29° 41' 50.95" LT | 5° 15' 06.03" | 1,091.000' | 289.248' | 565.486' | 496,899.4534 | 167,334.3066 | PI |
| | CC | | | | | | | 497,222.7690 | 168,415.7003 | |
| | PT | 99+33.628 | | | | | | 497,188.5589 | 167,325.2368 | S 88° 12' 11.18" E |
| | PC | 102+26.447 | | | | | | 497,481.2337 | 167,316.0550 | S 88° 12' 11.18" E |
| WB-ALIG-7 | PI | 103+42.520 | 1° 09' 40.36" RT | 0° 30' 00.81" | 11,454.000' | 116.073' | 232.138' | 497,597.2494 | 167,312.4153 | PI |
| | CC | | | | | | | 497,122.0752 | 155,867.6873 | |
| | PT | 104+58.585 | | | | | | 497,713.1675 | 167,306.4253 | S 87° 02' 30.82" E |
| | PC | 121+52.250 | | | | | | 499,404.5765 | 167,219.0224 | S 87° 02' 30.82" E |
| WB-ALIG-8 | PI | 123+73.774 | 11° 53' 49.91" RT | 2° 41' 42.01" | 2,126.000' | 221.523' | 441.454' | 499,625.8048 | 167,207.5905 | PI |
| | CC | | | | | | | 499,294.8627 | 165,095.8552 | |
| | PT | 125+93.704 | | | | | | 499,839.9241 | 167,150.7966 | S 75° 08' 40.90" E |
| | PC | 130+64.850 | | | | | | 500,295.3226 | 167,030.0047 | S 75° 08' 40.90" E |
| WB-ALIG-9 | PI | 133+36.867 | 14° 52' 48.61" LT | 2° 45' 02.30" | 2,083.000' | 272.016' | 540.972' | 500,558.2473 | 166,960.2655 | PI |
| | CC | | | | | | | 500,829.3598 | 169,043.3833 | |
| | PT | 136+05.822 | | | | | | 500,830.2637 | 166,960.3835 | N 89° 58' 30.49" E |
| | PC | 142+17.236 | | | | | | 501,441.6774 | 166,960.6488 | N 89° 58' 30.49" E |
| WB-ALIG-10 | PI | 143+48.226 | 1° 18' 35.52" LT | 0° 30' 00.02" | 11,459.000' | 130.991' | 261.970' | 501,672.6681 | 166,960.7057 | PI |
| | CC | | | | | | | 501,436.7046 | 178,419.6478 | |

# ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| ℄ C.S.A.H. 116 WB | | | | | | | | | | |
| | PRC | ℄ C.S.A.H. 116 144+79.205 | | | | | | 501,703.6232 | 166,963.7569 | N 88° 39' 54.97" E |
| | PRC | 144+79.205 | | | | | | 501,703.6232 | 166,963.7569 | N 88° 39' 54.97" E |
| WB-ALIG-11 | PI | 146+10.688 | 1° 18' 35.52" RT | 0° 29' 53.30" | 11,502.000' | 131.482' | 262.953' | 501,835.0697 | 166,966.8196 | PI |
| | CC | | | | | | | 501,971.5434 | 155,464.8777 | |
| | PT | 147+42.158 | | | | | | 501,966.5519 | 166,966.8766 | N 89° 58' 30.49" E |
| | PC | 164+71.250 | | | | | | 503,695.6434 | 166,967.6270 | N 89° 58' 30.49" E |
| WB-ALIG-12 | PI | 165+82.061 | 1° 06' 29.13" RT | 0° 30' 00.02" | 11,459.000' | 110.811' | 221.615' | 503,806.4545 | 166,967.6751 | PI |
| | CC | | | | | | | 503,700.6162 | 155,508.6281 | |
| | PRC | 166+92.865 | | | | | | 503,917.2458 | 166,965.5802 | S 88° 55' 00.38" E |
| | PRC | 166+92.865 | | | | | | 503,917.2458 | 166,965.5802 | S 88° 55' 00.38" E |
| WB-ALIG-13 | PI | 167+37.184 | 1° 06' 29.13" LT | 1° 15' 00.65" | 4,583.000' | 44.319' | 88.635' | 503,961.5566 | 166,964.7424 | PI |
| | CC | | | | | | | 504,003.8864 | 171,547.7612 | |
| | PT | 167+81.500 | | | | | | 504,005.8752 | 166,964.7616 | N 89° 58' 30.49" E |
| | PC | 174+84.116 | | | | | | 504,708.4916 | 166,965.0665 | N 89° 58' 30.49" E |
| WB-ALIG-14 | PI | 176+48.118 | 1° 37' 37.74" RT | 0° 29' 46.00" | 11,549.000' | 164.002' | 327.982' | 504,872.4935 | 166,965.1377 | PI |
| | CC | | | | | | | 504,713.5035 | 155,416.0676 | |
| | PRC | 178+12.098 | | | | | | 505,036.4312 | 166,960.5519 | S 88° 23' 51.77" E |
| | PRC | 178+12.098 | | | | | | 505,036.4312 | 166,960.5519 | S 88° 23' 51.77" E |
| WB-ALIG-15 | PI | 178+77.009 | 1° 37' 37.77" LT | 1° 15' 12.47" | 4,571.000' | 64.911' | 129.813' | 505,101.3167 | 166,958.7369 | PI |
| | CC | | | | | | | 505,164.2434 | 171,529.7647 | |
| | PT | 179+41.911 | | | | | | 505,168.2276 | 166,958.7651 | N 89° 58' 30.46" E |
| 1170 | POT | 185+10.166 | | | | | | 505,734.4823 | 166,959.0118 | |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_ALTAB2.dgn 04/12/2016 1:59:57 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT TABULATION

Sheet 29 of 482 Sheets

# ALIGNMENT TABULATION

## ℄ TRAIL PARK

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA DELTA | DEGREE | RADIUS | TANGENT | LENGTH | COORDINATES E | N | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| 1195 | POT | ℄ TRAIL PARK 40+00.000 | | | | | | 491,463.5053 | 166,988.9216 | |
| | PC | 45+27.808 | | | | | | 491,967.2165 | 167,054.5533 | N 82° 51' 24.88" E |
| TRAIL_PARK-1 | PI | 46+05.000 | 17° 43' 37.33" RT | 11° 34' 29.66" | 495.000' | 77.192' | 153.151' | 492,063.8095 | 167,064.1519 | PI |
| | CC | | | | | | | 492,048.7687 | 166,563.3951 | |
| | PT | 46+80.958 | | | | | | 492,139.6883 | 167,049.9736 | S 79° 24' 57.79" E |
| | PC | 49+86.192 | | | | | | 492,439.7286 | 166,993.9096 | S 79° 24' 57.79" E |
| TRAIL_PARK-2 | PI | 50+79.498 | 32° 42' 18.13" LT | 18° 01' 03.15" | 318.000' | 93.306' | 181.518' | 492,531.4474 | 166,976.7715 | PI |
| | CC | | | | | | | 492,498.1376 | 167,306.4994 | |
| | PT | 51+67.709 | | | | | | 492,617.8853 | 167,011.9073 | N 67° 52' 44.09" E |
| | PC | 51+98.656 | | | | | | 492,646.5537 | 167,023.5606 | N 67° 52' 44.09" E |
| TRAIL_PARK-3 | PI | 52+95.417 | 22° 07' 15.91" RT | 11° 34' 29.66" | 495.000' | 96.761' | 191.112' | 492,736.1923 | 167,059.9975 | PI |
| | CC | | | | | | | 492,832.9535 | 166,564.9975 | |
| | PT | 53+89.768 | | | | | | 492,832.9535 | 167,059.9975 | Due East |
| | PC | 56+84.700 | | | | | | 493,127.8850 | 167,059.9975 | Due East |
| TRAIL_PARK-4 | PI | 58+20.269 | 66° 57' 43.34" LT | 27° 56' 56.98" | 205.000' | 135.569' | 239.585' | 493,263.4739 | 167,059.9975 | PI |
| | CC | | | | | | | 493,127.8850 | 167,264.9975 | |
| | PT | 59+24.285 | | | | | | 493,316.5354 | 167,184.7726 | N 23° 02' 16.66" E |
| | PC | 59+40.074 | | | | | | 493,322.7142 | 167,199.3023 | N 23° 02' 16.66" E |
| TRAIL_PARK-5 | PI | 59+54.456 | 59° 49' 24.17" RT | 229° 10' 59.22" | 25.000' | 14.382' | 26.103' | 493,328.3426 | 167,212.5377 | PI |
| | CC | | | | | | | 493,345.7203 | 167,189.5188 | |
| | PT | 59+66.177 | | | | | | 493,342.6136 | 167,214.3250 | N 82° 51' 40.83" E |
| | PC | 60+99.194 | | | | | | 493,474.6000 | 167,230.8552 | N 82° 51' 40.83" E |
| TRAIL_PARK-6 | PI | 61+20.133 | 79° 53' 48.66" RT | 229° 10' 59.22" | 25.000' | 20.939' | 34.862' | 493,495.3769 | 167,233.4573 | PI |
| | CC | | | | | | | 493,477.7068 | 167,206.0490 | |
| | PT | 61+34.056 | | | | | | 493,501.5834 | 167,213.4591 | S 17° 14' 30.50" E |
| | PC | 64+00.066 | | | | | | 493,580.4300 | 166,959.4032 | S 17° 14' 30.50" E |
| TRAIL_PARK-7 | PI | 64+70.050 | 89° 59' 14.62" LT | 81° 51' 04.01" | 70.000' | 69.985' | 109.940' | 493,601.1738 | 166,892.5636 | PI |
| | CC | | | | | | | 493,647.2843 | 166,980.1516 | |
| | PRC | 65+10.006 | | | | | | 493,668.0180 | 166,913.2926 | N 72° 46' 14.88" E |
| | PRC | 65+10.006 | | | | | | 493,668.0180 | 166,913.2926 | N 77° 17' 37.14" E |
| TRAIL_PARK-8 | PI | 65+48.708 | 28° 31' 19.13" RT | 37° 37' 40.81" | 152.269' | 38.702' | 75.800' | 493,705.7726 | 166,921.8054 | PI |
| TRAIL_PARK-26 | PI | EX TRAIL ALIGNMENT 81+73.198 | 47° 25' 42.76" LT | 70° 04' 03.02" | 81.772' | 35.920' | 67.690' | 495,064.3090 | 167,444.8317 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 495,044.2626 | 167,531.8667 | |
| | PCC | EX TRAIL ALIGNMENT 82+04.968 | | | | | | 495,093.1143 | 167,466.2906 | N 53° 18' 54.91" E |
| | PCC | EX TRAIL ALIGNMENT 82+04.968 | | | | | | 495,093.1143 | 167,466.2906 | N 53° 18' 54.91" E |
| TRAIL_PARK-27 | PI | EX TRAIL ALIGNMENT 82+33.365 | 15° 18' 49.78" LT | 27° 07' 31.99" | 211.224' | 28.397' | 56.455' | 495,115.8868 | 167,483.2553 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 494,966.9264 | 167,635.6788 | |
| | PRC | 82+61.423 | | | | | | 495,133.3703 | 167,505.6319 | N 38° 00' 05.13" E |
| | PRC | 82+61.423 | | | | | | 495,133.3703 | 167,505.6319 | N 41° 38' 35.70" E |
| TRAIL_PARK-28 | PI | 82+86.908 | 18° 41' 29.06" RT | 37° 00' 02.18" | 154.851' | 25.485' | 50.516' | 495,150.3046 | 167,524.6765 | PI |
| | CC | | | | | | | 495,249.0899 | 167,402.7350 | |
| | PT | 83+11.940 | | | | | | 495,172.4490 | 167,537.2897 | N 60° 20' 04.76" E |
| | PC | 83+95.361 | | | | | | 495,244.9359 | 167,578.5775 | N 60° 20' 04.76" E |
| TRAIL_PARK-29 | PI | 84+41.484 | 12° 42' 16.27" RT | 13° 49' 44.51" | 414.315' | 46.123' | 91.868' | 495,285.0139 | 167,601.4055 | PI |
| | CC | | | | | | | 495,449.9943 | 167,218.5661 | |
| | PRC | 84+87.229 | | | | | | 495,329.1311 | 167,614.8605 | N 73° 02' 21.02" E |
| | PRC | 84+87.229 | | | | | | 495,329.1311 | 167,614.8605 | N 73° 02' 21.02" E |
| TRAIL_PARK-30 | PI | 85+15.280 | 6° 21' 30.65" LT | 11° 20' 44.52" | 505.000' | 28.050' | 56.043' | 495,355.9616 | 167,623.0433 | PI |

# ALIGNMENT TABULATION

## ℄ TRAIL PARK

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA DELTA | DEGREE | RADIUS | TANGENT | LENGTH | COORDINATES E | N | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | CC | ℄ TRAIL PARK | | | | | | 495,181.8137 | 168,097.8952 | |
| | PRC | 85+43.272 | | | | | | 495,381.7207 | 167,634.1472 | N 66° 40' 50.38" E |
| | PRC | 85+43.272 | | | | | | 495,381.7207 | 167,634.1472 | N 66° 40' 50.38" E |
| TRAIL_PARK-31 | PI | 85+66.717 | 4° 11' 06.46" RT | 8° 55' 46.42" | 641.642' | 23.445' | 46.866' | 495,403.2501 | 167,643.4279 | PI |
| | CC | | | | | | | 495,635.7181 | 167,044.9195 | |
| | PT | 85+90.141 | | | | | | 495,425.3994 | 167,651.1126 | N 70° 51' 56.84" E |
| | PC | EX TRAIL ALIGNMENT 86+24.033 | | | | | | 495,457.4192 | 167,662.2218 | N 70° 51' 56.84" E |
| TRAIL_PARK-32 | PI | EX TRAIL ALIGNMENT 86+43.583 | 36° 05' 42.16" RT | 95° 29' 34.68" | 60.000' | 19.550' | 37.799' | 495,475.8893 | 167,668.8301 | PI |
| TRAIL_PARK-37 | PI | EX TRAIL ALIGNMENT 98+07.108 | 25° 22' 01.99" LT | 56° 10' 20.40" | 102.000' | 22.956' | 45.160' | 496,455.2720 | 167,166.3394 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 496,559.5287 | 167,174.1832 | |
| | PRC | EX TRAIL ALIGNMENT 98+29.312 | | | | | | 496,461.9784 | 167,144.3848 | S 16° 59' 10.25" E |
| | PRC | EX TRAIL ALIGNMENT 98+29.312 | | | | | | 496,461.9784 | 167,144.3848 | S 16° 59' 10.25" E |
| TRAIL_PARK-38 | PI | EX TRAIL ALIGNMENT 98+52.539 | 5° 16' 00.96" RT | 11° 20' 44.52" | 505.000' | 23.228' | 46.422' | 496,468.7641 | 167,122.1706 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 495,979.0089 | 166,996.8536 | |
| | PRC | EX TRAIL ALIGNMENT 98+75.734 | | | | | | 496,473.4820 | 167,099.4272 | S 11° 43' 09.26" E |
| | PRC | 98+75.734 | | | | | | 496,473.4820 | 167,099.4272 | S 11° 43' 09.26" E |
| TRAIL_PARK-39 | PI | 99+14.030 | 103° 51' 04.91" LT | 190° 59' 09.35" | 30.000' | 38.296' | 54.376' | 496,481.2605 | 167,061.9297 | PI |
| | CC | | | | | | | 496,502.9566 | 167,105.5207 | |
| | PT | 99+30.110 | | | | | | 496,515.8053 | 167,078.4591 | N 64° 25' 45.82" E |
| | PC | 99+88.749 | | | | | | 496,568.7002 | 167,103.7687 | N 64° 25' 45.82" E |
| TRAIL_PARK-40 | PI | 100+23.965 | 38° 48' 03.08" LT | 57° 17' 44.81" | 100.000' | 35.216' | 67.720' | 496,600.4673 | 167,118.9689 | PI |
| | CC | | | | | | | 496,525.5379 | 167,193.9741 | |
| | PT | 100+56.469 | | | | | | 496,615.6996 | 167,150.7206 | N 25° 37' 42.75" E |
| | PC | 101+04.668 | | | | | | 496,636.5474 | 167,194.1778 | N 25° 37' 42.75" E |
| TRAIL_PARK-41 | PI | 101+26.243 | 71° 26' 37.79" RT | 190° 59' 09.35" | 30.000' | 21.575' | 37.408' | 496,645.8792 | 167,213.6298 | PI |
| | CC | | | | | | | 496,663.5960 | 167,181.2017 | |
| | PRC | 101+42.076 | | | | | | 496,667.2897 | 167,210.9735 | S 82° 55' 39.46" E |
| | PRC | 101+42.076 | | | | | | 496,667.2897 | 167,210.9735 | S 82° 55' 39.46" E |
| TRAIL_PARK-42 | PI | 102+14.504 | 8° 26' 39.17" LT | 5° 50' 23.87" | 981.098' | 72.428' | 144.594' | 496,739.1665 | 167,202.0559 | PI |
| | CC | | | | | | | 496,788.0854 | 168,184.6070 | |
| | PRC | 102+86.670 | | | | | | 496,811.5737 | 167,203.7899 | N 88° 37' 41.37" E |
| | PRC | 102+86.670 | | | | | | 496,811.5737 | 167,203.7899 | N 88° 37' 41.37" E |
| TRAIL_PARK-43 | PI | 103+31.942 | 16° 53' 08.92" RT | 18° 47' 07.81" | 305.000' | 45.272' | 89.887' | 496,856.8326 | 167,204.8738 | PI |
| | CC | | | | | | | 496,818.8757 | 166,898.8773 | |
| | PRC | 103+76.557 | | | | | | 496,900.4551 | 167,192.7647 | S 74° 29' 09.71" E |
| | PRC | 103+76.557 | | | | | | 496,900.4551 | 167,192.7647 | S 74° 29' 09.71" E |
| TRAIL_PARK-44 | PI | 104+22.022 | 16° 57' 24.05" LT | 18° 47' 07.81" | 305.000' | 45.465' | 90.265' | 496,944.2632 | 167,180.6041 | PI |
| | CC | | | | | | | 496,982.0344 | 167,486.6521 | |
| | PT | 104+66.822 | | | | | | 496,989.7135 | 167,181.7488 | N 88° 33' 26.24" E |
| | PC | 105+26.840 | | | | | | 497,049.7130 | 167,183.2599 | N 88° 33' 26.24" E |
| TRAIL_PARK-45 | PI | 105+64.358 | 8° 29' 51.75" RT | 11° 20' 44.52" | 505.000' | 37.518' | 74.898' | 497,087.2190 | 167,184.2045 | PI |
| | CC | | | | | | | 497,062.4276 | 166,678.4200 | |
| | PT | 106+01.738 | | | | | | 497,124.4528 | 167,179.5965 | S 82° 56' 42.00" E |
| | PC | 106+38.098 | | | | | | 497,160.5371 | 167,175.1307 | S 82° 56' 42.00" E |
| TRAIL_PARK-46 | PI | 107+30.904 | 82° 56' 42.00" RT | 54° 34' 02.67" | 105.000' | 92.806' | 152.005' | 497,252.6408 | 167,163.7321 | PI |
| | CC | | | | | | | 497,147.6408 | 167,070.9257 | |
| | PT | 107+90.103 | | | | | | 497,252.6408 | 167,070.9257 | Due South |
| 1196 | POT | 109+18.800 | | | | | | 497,252.6408 | 166,942.2281 | |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_ALTAB3.dgn 04/12/2016 1:58:59 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT TABULATION

## ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| **℄ PARK ENTRANCE** | | | | | | | | | | |
| 1122 | POT | ℄ PARK ENTRANCE 1+00.000 | | | | | | 497,273.7242 | 166,826.2566 | |
| | PC | 2+15.333 | | | | | | 497,280.5796 | 166,941.3853 | N 3° 24' 27.80" E |
| CL-P_PARK-1 | PI | 3+45.550 | 71° 45' 58.54" RT | 31° 49' 51.56" | 180.000' | 130.218' | 225.460' | 497,288.3199 | 167,071.3726 | PI |
| | CC | | | | | | | 497,460.2614 | 166,930.6859 | |
| | PCC | 4+40.793 | | | | | | 497,414.2021 | 167,104.6933 | N 75° 10' 26.35" E |
| | PCC | 4+40.793 | | | | | | 497,414.2021 | 167,104.6933 | N 75° 10' 26.35" E |
| CL-P_PARK-2 | PI | 7+50.934 | 23° 34' 40.16" RT | 3° 51' 20.54" | 1,486.000' | 310.141' | 611.505' | 497,714.0181 | 167,184.0537 | PI |
| | CC | | | | | | | 497,794.4468 | 165,868.1662 | |
| | PRC | 10+52.298 | | | | | | 498,020.5485 | 167,136.8643 | S 81° 14' 53.60" E |
| | PRC | 10+52.298 | | | | | | 498,020.5485 | 167,136.8643 | S 81° 14' 53.60" E |
| CL-P_PARK-3 | PI | 11+13.161 | 95° 47' 37.32" LT | 104° 10' 26.92" | 55.000' | 60.863' | 91.955' | 498,080.7028 | 167,127.6037 | PI |
| | CC | | | | | | | 498,028.9170 | 167,191.2239 | |
| | PT | 11+44.253 | | | | | | 498,083.8437 | 167,188.3856 | N 2° 57' 29.18" E |
| 1123 | POT | 12+00.007 | | | | | | 498,086.7209 | 167,244.0647 | |

## ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| **℄ PRAIRIE ROAD** | | | | | | | | | | |
| 1143 | POT | ℄ PRAIRIE ROAD 20+00.000 | | | | | | 495,425.0799 | 167,759.0204 | |
| | PC | 20+77.469 | | | | | | 495,399.2888 | 167,832.0703 | N 19° 26' 46.30" W |
| CL-P_PRAIRIE-1 | PI | 22+13.583 | 42° 30' 06.21" RT | 16° 22' 12.80" | 350.000' | 136.114' | 259.628' | 495,353.9736 | 167,960.4192 | PI |
| | CC | | | | | | | 495,729.3229 | 167,948.5928 | |
| | PRC | 23+37.097 | | | | | | 495,407.2789 | 168,085.6609 | N 23° 03' 19.91" E |
| | PRC | 23+37.097 | | | | | | 495,407.2789 | 168,085.6609 | N 23° 03' 19.91" E |
| CL-P_PRAIRIE-2 | PI | 24+98.927 | 5° 16' 42.05" LT | 1° 37' 55.15" | 3,510.804' | 161.830' | 323.431' | 495,470.6552 | 168,234.5649 | PI |
| | CC | | | | | | | 492,176.8982 | 169,460.5727 | |
| | PT | 26+60.529 | | | | | | 495,520.0646 | 168,388.6677 | N 17° 46' 37.86" E |

## ALIGNMENT TABULATION

| POINT NUMBER | POINT | ALIGNMENT | CIRCULAR CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | E | N | |
| **℄ TRAIL NORTH** | | | | | | | | | | |
| | PC | ℄ TRAIL NORTH 89+22.000 | | | | | | 495,440.3007 | 167,802.6592 | N 55° 45' 28.76" E |
| TRAIL_NORTH-1 | PI | 89+36.031 | 16° 48' 11.99" RT | 60° 18' 40.85" | 95.000' | 14.031' | 27.861' | 495,451.8998 | 167,810.5544 | PI |
| | CC | | | | | | | 495,493.7562 | 167,724.1257 | |
| | PRC | 89+49.861 | | | | | | 495,465.2861 | 167,814.7594 | N 72° 33' 40.75" E |
| | PRC | 89+49.861 | | | | | | 495,465.2861 | 167,814.7594 | N 72° 33' 40.75" E |
| TRAIL_NORTH-2 | PI | 89+69.193 | 20° 51' 51.87" LT | 54° 34' 02.67" | 105.000' | 19.332' | 38.236' | 495,483.7297 | 167,820.5529 | PI |
| | CC | | | | | | | 495,433.8192 | 167,914.9334 | |
| | PT | 89+88.097 | | | | | | 495,498.9004 | 167,832.5354 | N 51° 41' 48.89" E |
| | PC | EX TRAIL ALIGNMENT 90+14.444 | | | | | | 495,519.5762 | 167,848.8659 | N 51° 41' 48.89" E |
| TRAIL_NORTH-3 | PI | EX TRAIL ALIGNMENT 90+17.700 | 8° 16' 39.05" RT | 127° 19' 26.24" | 45.000' | 3.256' | 6.501' | 495,522.1315 | 167,850.8842 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 495,547.4682 | 167,813.5525 | |
| | PRC | EX TRAIL ALIGNMENT 90+20.945 | | | | | | 495,524.9508 | 167,852.5136 | N 59° 58' 27.94" E |
| | PRC | EX TRAIL ALIGNMENT 90+20.945 | | | | | | 495,524.9508 | 167,852.5136 | N 59° 58' 27.94" E |
| TRAIL_NORTH-4 | PI | EX TRAIL ALIGNMENT 90+40.523 | 2° 39' 26.83" LT | 6° 47' 17.42" | 844.053' | 19.578' | 39.148' | 495,541.9011 | 167,862.3100 | PI |
| TRAIL_NORTH-14 | PI | EX TRAIL ALIGNMENT 100+61.682 | 10° 02' 06.57" RT | 11° 31' 03.17" | 497.465' | 43.676' | 87.129' | 496,480.8709 | 167,670.5380 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 496,182.3804 | 167,270.1849 | |
| | PCC | EX TRAIL ALIGNMENT 101+05.135 | | | | | | 496,513.4688 | 167,641.4691 | S 48° 16' 31.38" E |
| | PCC | EX TRAIL ALIGNMENT 101+05.135 | | | | | | 496,513.4688 | 167,641.4691 | S 48° 16' 31.38" E |
| TRAIL_NORTH-15 | PI | EX TRAIL ALIGNMENT 101+20.002 | 8° 30' 09.17" RT | 28° 38' 52.40" | 200.000' | 14.867' | 29.679' | 496,524.5849 | 167,631.5744 | PI |
| | CC | EX TRAIL ALIGNMENT | | | | | | 496,380.3686 | 167,492.1987 | |
| | PRC | EX TRAIL ALIGNMENT 101+34.814 | | | | | | 496,534.0760 | 167,620.1477 | S 39° 46' 22.21" E |
| | PRC | EX TRAIL ALIGNMENT 101+34.814 | | | | | | 496,534.0760 | 167,620.1477 | S 39° 46' 22.21" E |
| TRAIL_NORTH-16 | PI | 101+63.213 | 12° 00' 31.02" LT | 21° 13' 14.37" | 270.000' | 28.399' | 56.589' | 496,552.2439 | 167,598.3209 | PI |
| | CC | | | | | | | 496,741.5945 | 167,792.8790 | |
| | PCC | 101+91.403 | | | | | | 496,574.5555 | 167,580.7517 | S 51° 46' 53.23" E |
| | PCC | 101+91.403 | | | | | | 496,574.5555 | 167,580.7517 | S 51° 46' 53.23" E |
| TRAIL_NORTH-17 | PI | 102+03.471 | 6° 44' 16.99" LT | 27° 56' 57.41" | 204.999' | 12.068' | 24.108' | 496,584.0368 | 167,573.2857 | PI |
| | CC | | | | | | | 496,701.3809 | 167,741.8106 | |
| | PT | 102+15.511 | | | | | | 496,594.3286 | 167,566.9837 | S 58° 31' 10.22" E |
| | PC | 103+15.124 | | | | | | 496,679.2802 | 167,514.9651 | S 58° 53' 38.07" E |
| TRAIL_NORTH-18 | PI | 103+46.193 | 12° 39' 48.09" LT | 20° 27' 46.00" | 280.000' | 31.069' | 61.885' | 496,705.8818 | 167,498.9141 | PI |
| | CC | | | | | | | 496,823.9350 | 167,754.7045 | |
| | PRC | 103+77.009 | | | | | | 496,735.3551 | 167,489.0852 | S 71° 33' 26.16" E |
| | PRC | 103+77.009 | | | | | | 496,735.3551 | 167,489.0852 | S 71° 33' 26.16" E |
| TRAIL_NORTH-19 | PI | 104+14.100 | 14° 34' 37.51" RT | 19° 45' 25.80" | 290.000' | 37.091' | 73.781' | 496,770.5411 | 167,477.3512 | PI |
| | CC | | | | | | | 496,643.6117 | 167,213.9795 | |
| | PRC | 104+50.790 | | | | | | 496,801.6411 | 167,457.1393 | S 56° 58' 48.65" E |
| | PRC | 104+50.790 | | | | | | 496,801.6411 | 167,457.1393 | S 56° 58' 48.65" E |
| TRAIL_NORTH-20 | PI | 104+81.859 | 12° 39' 48.09" LT | 20° 27' 46.00" | 280.000' | 31.069' | 61.885' | 496,827.6919 | 167,440.2089 | PI |
| | CC | | | | | | | 496,954.2213 | 167,691.9143 | |
| | PCC | 105+12.675 | | | | | | 496,856.8206 | 167,429.4013 | S 69° 38' 36.74" E |
| | PCC | 105+12.675 | | | | | | 496,856.8206 | 167,429.4013 | S 69° 38' 36.74" E |
| TRAIL_NORTH-21 | PI | 106+01.638 | 9° 40' 02.87" LT | 5° 26' 46.92" | 1,052.000' | 88.963' | 177.503' | 496,940.2272 | 167,398.4547 | PI |
| | CC | | | | | | | 497,222.7690 | 168,415.7003 | |
| | PRC | 106+90.178 | | | | | | 497,027.6462 | 167,381.9541 | S 79° 18' 39.61" E |
| | PRC | 106+90.178 | | | | | | 497,027.6462 | 167,381.9541 | S 79° 18' 39.61" E |
| TRAIL_NORTH-22 | PI | 107+01.965 | 6° 34' 52.08" RT | 27° 56' 56.98" | 205.000' | 11.786' | 23.547' | 497,039.2281 | 167,379.7680 | PI |
| | CC | | | | | | | 496,989.6232 | 167,180.5112 | |
| | PRC | 107+13.725 | | | | | | 497,050.4830 | 167,376.2689 | S 72° 43' 47.53" E |
| | PRC | 107+13.725 | | | | | | 497,050.4830 | 167,376.2689 | S 72° 43' 47.53" E |
| TRAIL_NORTH-23 | PI | 107+31.203 | 9° 44' 47.31" LT | 27° 56' 56.98" | 205.000' | 17.478' | 34.872' | 497,067.1733 | 167,371.0800 | PI |
| | CC | | | | | | | 497,111.3428 | 167,572.0266 | |
| | PCC | 107+48.597 | | | | | | 497,084.5011 | 167,368.7915 | S 82° 28' 34.83" E |
| | PCC | 107+48.597 | | | | | | 497,084.5011 | 167,368.7915 | S 82° 28' 34.83" E |
| TRAIL_NORTH-24 | PI | 108+01.415 | 5° 43' 36.34" LT | 5° 25' 32.65" | 1,056.000' | 52.818' | 105.548' | 497,136.8644 | 167,361.8757 | PI |
| | CC | | | | | | | 497,222.7690 | 168,415.7003 | |
| | PT | 108+54.145 | | | | | | 497,189.6564 | 167,360.2196 | S 88° 12' 11.18" E |
| 1013 | POT | 111+46.964 | | | | | | 497,482.3311 | 167,351.0378 | |



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_ALTAB4.dgn 04/12/2016 1:59:01 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

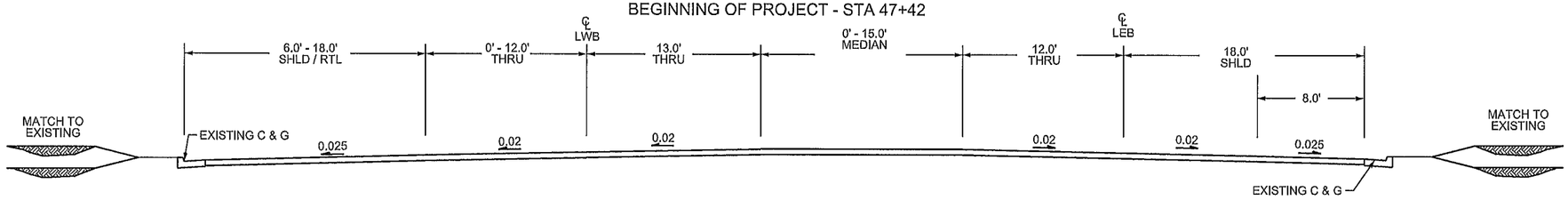
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ALIGNMENT TABULATION

Sheet 31 of 482 Sheets

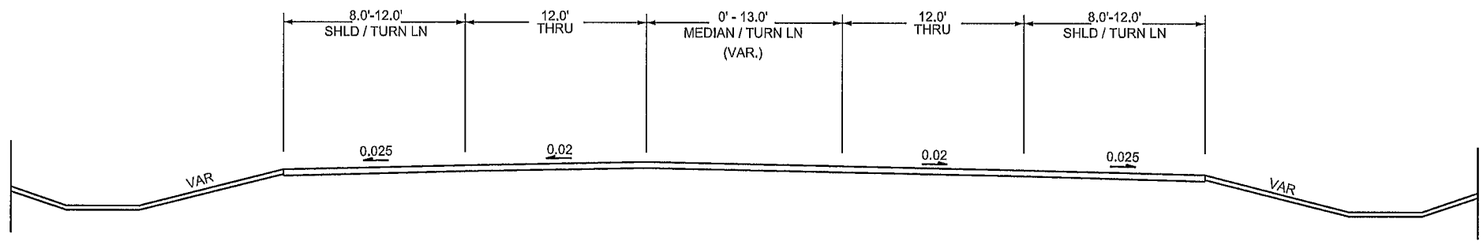
C.S.A.H. 116 (BUNKER LAKE BLVD)

BEGINNING OF PROJECT - STA 47+42



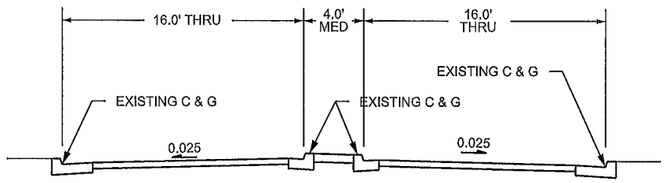

C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 47+42 - STA 58+28 STA 60+94 - STA 147+10
157+99 - EAST END OF PROJECT



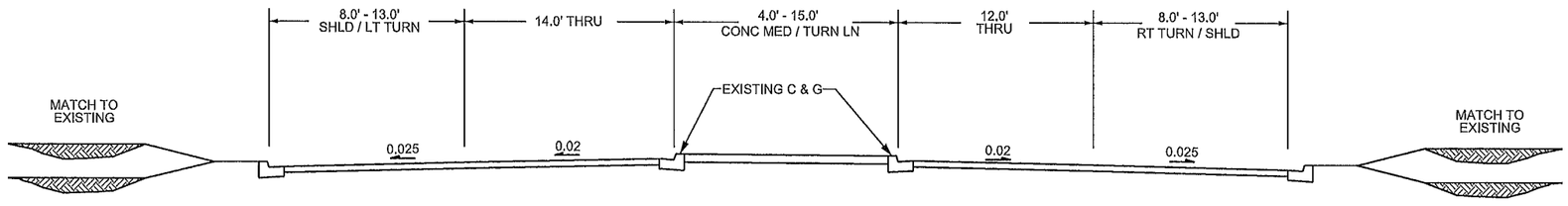

C.S.A.H. 116 (BUNKER LAKE BLVD)

INPLACE RAILWAY (BNSF) CROSSING (STA 58+28 - STA. 60+94)




C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 147+10 - STA 157+99

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NAME: P:\02-716-15\Plan\0271615_TS.dgn 04/12/2016 1:59:04 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CSAH 116
EXISTING SECTIONS

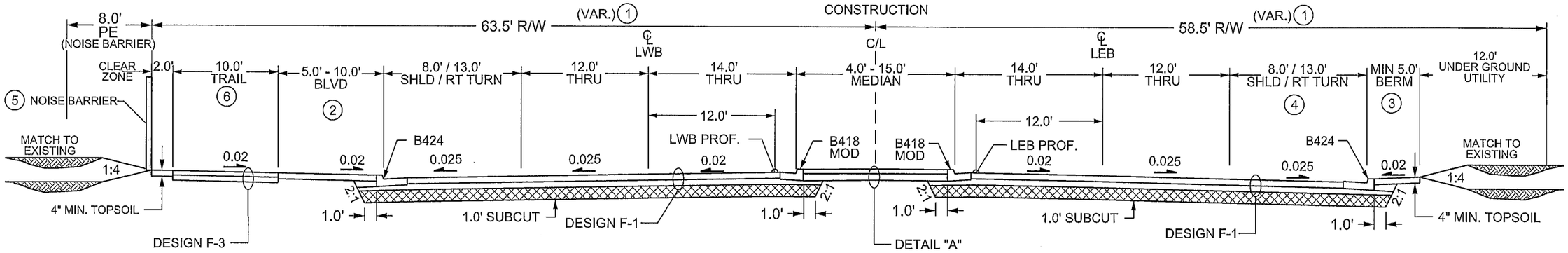
Sheet 32 of 482 Sheets

GENERAL NOTES:

1) ALL CROSS SLOPES ARE EXPRESSED IN FT/FT.
2) 1.0' SUBGRADE EXCAVATION SHALL BE THE BLENDING OF EXISTING SUBGRADE AS TO UNIFY THE SOILS AT LEAST ID FOR AS 2105.507 - ( SUBGRADE EXCAVATION )
3) ALL STATIONINGS ON CSAH 116 BASED ON EB ALIGNMENT.
4) SEE CONSTRUCTION PLAN SHEETS 171 -184 AND CHART ON SHEET 36 FOR TURN LANE LOCATIONS.
5) SEE CHART AT BOTTOM OF SHEET 33 FOR NOISE BARRIER STATIONING. SEE CROSS SECTIONS AND CONSTRUCTION PLAN FOR MORE DETAILS.
6) SEE SUPERELEVATION SHEETS FOR ACTUAL CROSS SLOPES.

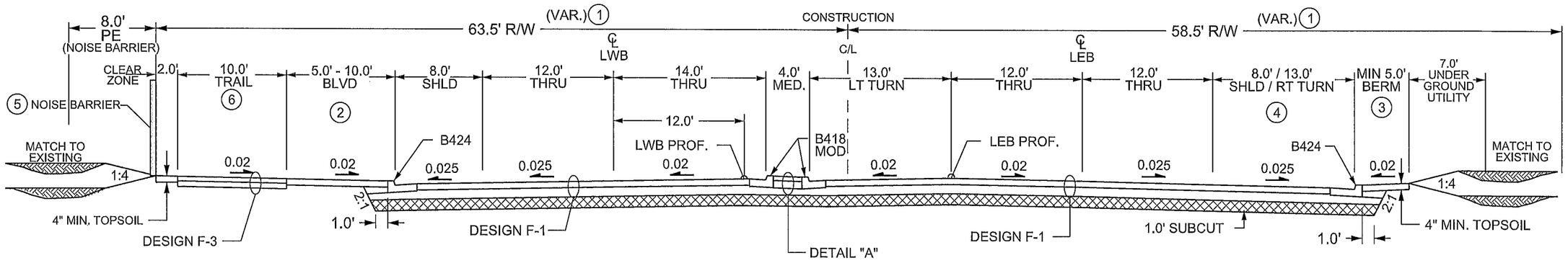
## C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 43+00 - STA 46+37 STA 51+44 - STA 61+29
STA 71+83 - STA 73+50 STA 94+00 - STA 100+50
STA 123+28 - STA 124+50 STA 144+00 - STA 151+91




## C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 46+37 - STA 51+44 STA 61+29 - STA 67+13
STA 105+00 - STA 108+88 STA 121+50 - STA 123+28
STA 151+91 - STA 157+61




NOTES:

1. SEE PLAN SHEETS FOR PROPOSED R/W
2. STA. 129+59.70 TO 132+35.40, 6' BLVD. WB STA 92+29 - STA 97+29, 12' BLVD FOR RETAINING WALL. SEE PLAN SHEETS FOR LOC.
3. STA 153+30 TO 155+75, BERM 2' @ 2% & 6' SLOPE @ 1:4 TO RETAINING WALL
4. SEE PLAN SHEETS FOR URBAN & RURAL SECTION
5. NOISE BARRIER LOCATIONS: STA 38+97+00 TO 49+78.00 STA 68+77.00 TO 77+23.00 AND STA 97+42.00 TO 106+23.00
6. MATCH TO INPLACE TRAIL. STA 81+73.00 TO 92+28.00 UNDERPASS TRAIL RAMP, WB STA 92+28 TO 98+25. (SEE PLAN & TRAIL RAMPSHEETS FOR LOCATIONS)

## NOISE BARRIER LOCATIONS

NOISE BARRIER D
LWB STA 38+97 - STA 49+78

NOISE BARRIER G
LWB STA 68+77 - STA 77+23

NOISE BARRIER I
LWB STA 97+42 - STA 106+54

SEE CROSS SECTIONS AND NOISE BARRIER PLAN SHEETS 191-201 FOR DETAILS.



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NAME: P:\02-716-15\Plan\0271615_TS.dgn 04/12/2016 1:59:04 PM

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PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CSAH 116
TYPICAL SECTIONS

Sheet 33 of 482 Sheets

GENERAL NOTES:

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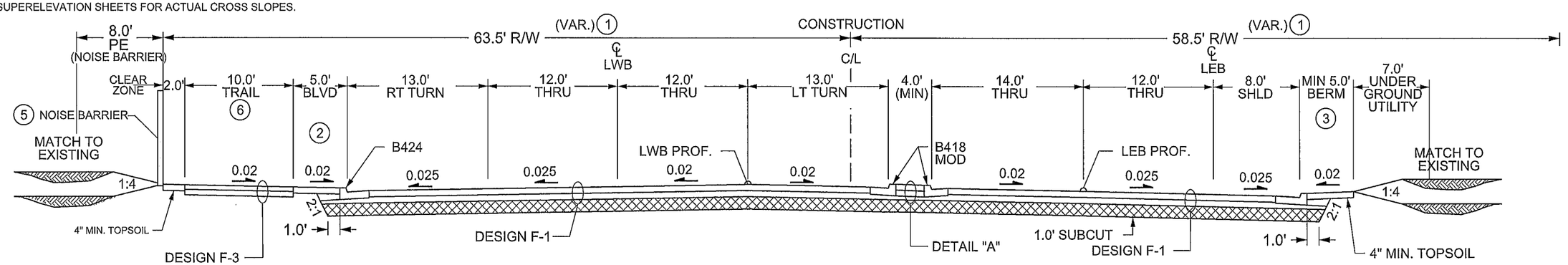
6) SEE SUPERELEVATION SHEETS FOR ACTUAL CROSS SLOPES.

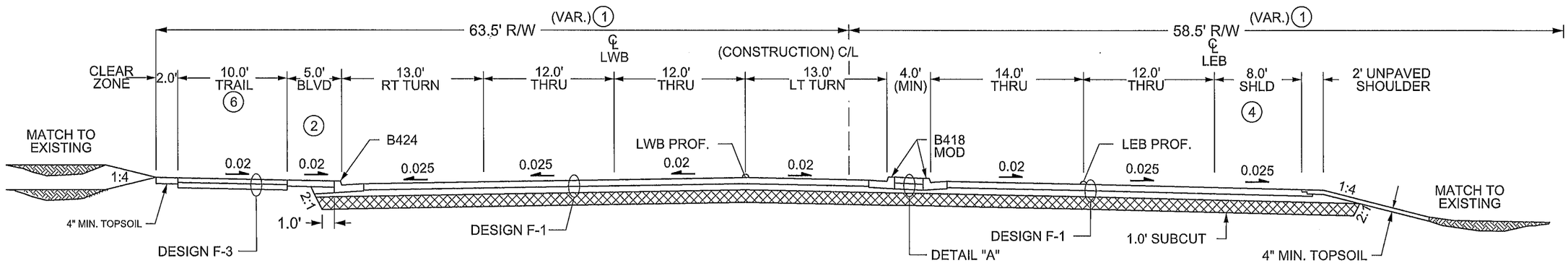
## C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 67+13 - STA 71+83  STA 108+88 - STA 113+53
STA 157+61 - STA 164+44



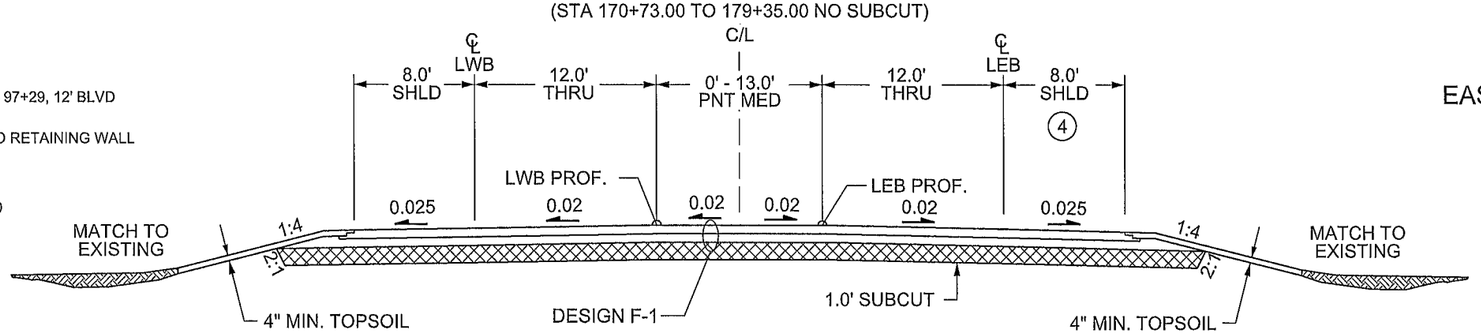

## C.S.A.H. 116 (BUNKER LAKE BLVD), LEB SHOULDER RURAL SECTION

STA 80+99 - STA 84+45  STA 133+75 - STA 138+44




## C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 166+55.00 TO 179+35.00
(STA 170+73.00 TO 179+35.00 NO SUBCUT)




NOTES:

1. SEE PLAN SHEETS FOR PROPOSED R/W
2. STA. 129+59.70 TO 132+35.40, 6' BLVD. WB STA 92+29 - STA 97+29, 12' BLVD FOR RETAINING WALL. SEE PLAN SHEETS FOR LOC.
3. STA 153+30 TO 155+75, BERM 2' @ 2% & 6' SLOPE @ 1:4 TO RETAINING WALL
4. SEE PLAN SHEETS FOR URBAN & RURAL SECTION
5. NOISE BARRIER LOCATIONS: STA 38+97+00 TO 49+78.00 STA 68+77.00 TO 77+23.00 AND STA 97+42.00 TO 106+23.00
6. MATCH TO INPLACE TRAIL. STA 81+73.00 TO 92+28.00 UNDERPASS TRAIL RAMP, WB STA 92+28 TO 98+25. (SEE PLAN & TRAIL RAMPSHEETS FOR LOCATIONS)

## EASTBOUND RURAL SECTIONS

STA 73+60 - STA 93+89
STA 100+38 - STA 105+00
STA 118+58 - STA 121+50
STA 124+58 - STA 143+92



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NAME: P:\02-716-15\Plan\0271615_TS.dgn  05/31/2016  12:52:32 PM

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SIGNATURE: Zac Borgerding
DATE: 5/31/16  LICENSE NO. 52598

DRAWN BY ZB  DATE 04-12-16
DESIGN BY MN  DATE 04-12-16
CHECKED BY GP  DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CSAH 116
TYPICAL SECTIONS

Sheet 34 of 482 Sheets

GENERAL NOTES:

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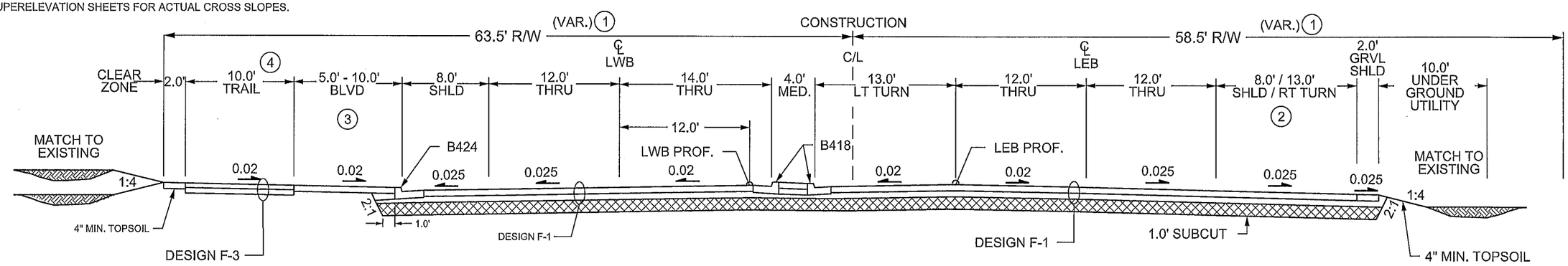
6) SEE SUPERELEVATION SHEETS FOR ACTUAL CROSS SLOPES.

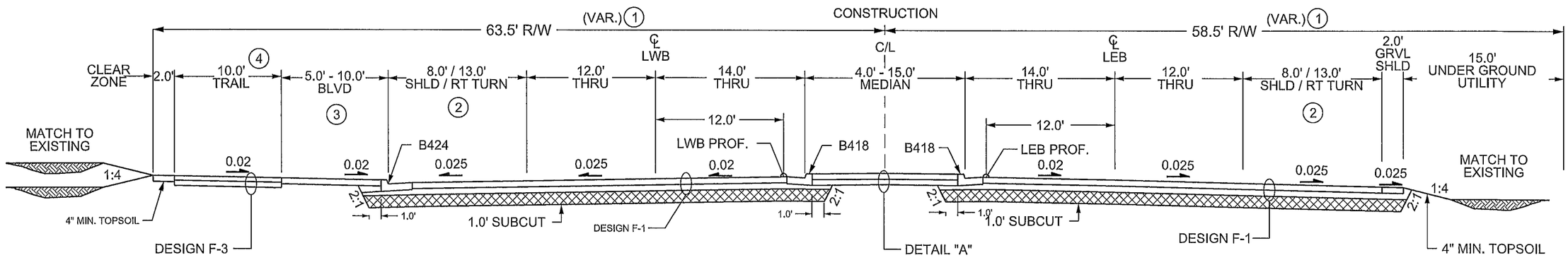
## C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 74+37 - STA 80+99
STA 103+05 - STA 105+00
STA 118+15 - STA 121+50
STA 128+15 - STA 133+75




## C.S.A.H. 116 (BUNKER LAKE BLVD)

STA 73+50 - STA 74+37
STA 84+45 - STA 94+00
STA 100+50 - STA 103+05
STA 124+50 - STA 128+15
STA 138+44 - STA 144+00
STA 164+44 - STA 166+55




NOTES:

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4. SEE PLAN SHEETS FOR URBAN & RURAL SECTION
5. NOISE BARRIER LOCATIONS: STA 38+97+00 TO 49+78.00 STA 68+77.00 TO 77+23.00 AND STA 97+42.00 TO 106+23.00
6. MATCH TO INPLACE TRAIL. STA 81+73.00 TO 92+28.00 UNDERPASS TRAIL RAMP, WB STA 92+28 TO 98+25. (SEE PLAN & TRAIL RAMPSHEETS FOR LOCATIONS)

## EASTBOUND RURAL SECTIONS

STA 73+60 - STA 93+89
STA 100+38 - STA 105+00
STA 118+58 - STA 121+50
STA 124+58 - STA 143+92



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_TS.dgn 04/12/2016 1:59:05 PM

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CSAH 116
TYPICAL SECTIONS

Sheet 35 of 482 Sheets

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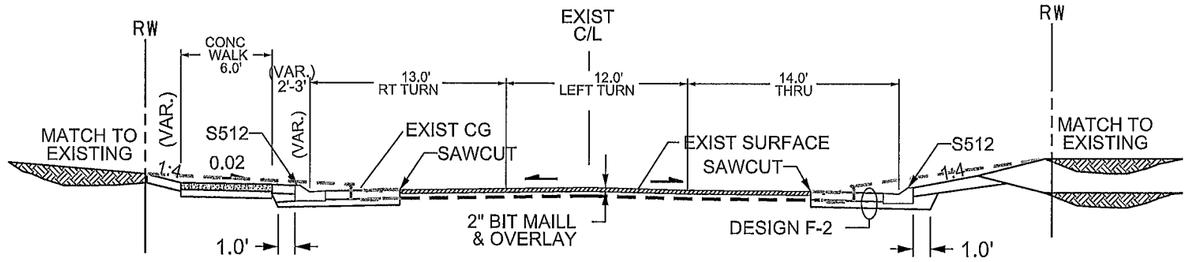
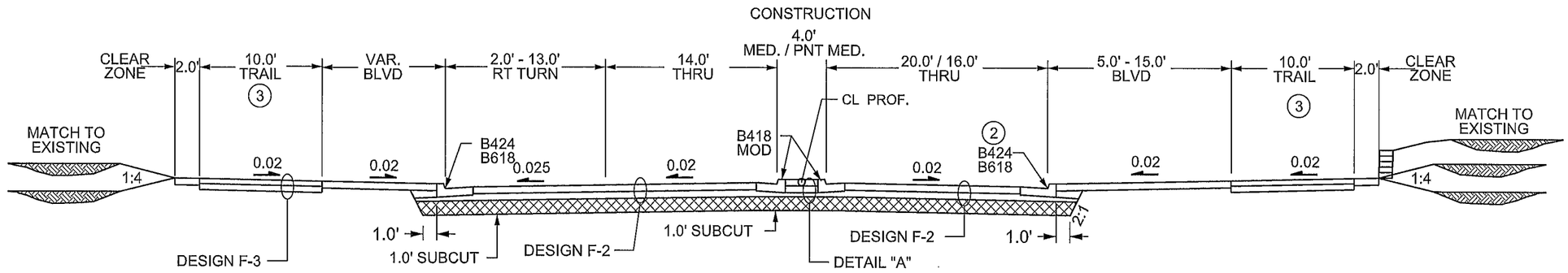
## CRANE ST. EXPANSION



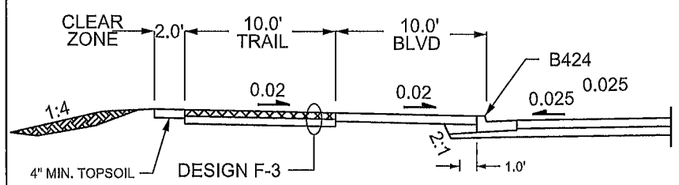

## PRAIRIE ROAD



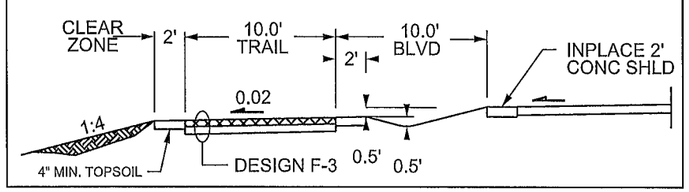

## STATION 66+20

10' BIT. TRAIL ADJACENT COUNTY PARKWAY A

TYPICAL SECTION TRAIL FROM CURB TO EB 70' RT

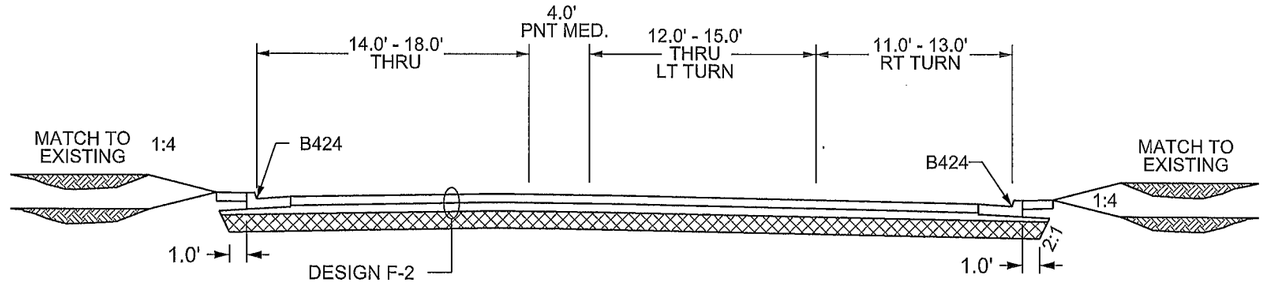



TYPICAL SECTION TRAIL FROM EB 80' RT TO EXISTING TRAIL



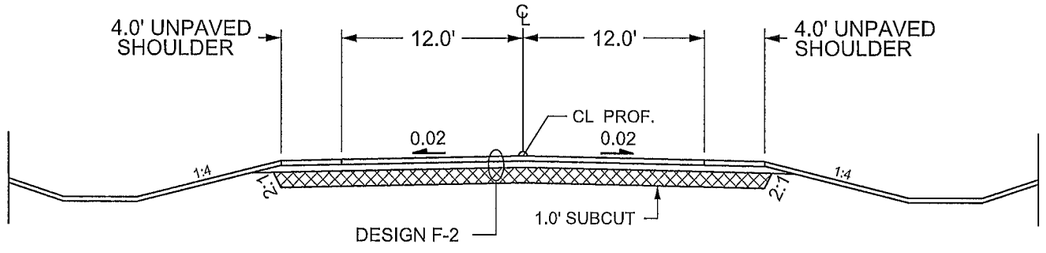

## PARK ENTRANCE

CONSTRUCTION




## PARK ENTRANCE

CONSTRUCTION




NOTES:

1. SEE PLAN SHEETS FOR PROPOSED R/W
2. SEE PLAN SHEETS FOR TRANSITION AND LOCATION
3. MATCH TO INPLACE TRAIL, CL RT STA 23+60.00 & LT STA 23+30.00 (SEE PLAN SHEETS FOR LOCATION)



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: P:\02-716-15\Plan\0271615_TS.dgn | | | | | 04/12/2016 1:59:05 PM |

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SIGNATURE:
DATE: 5/3/16 LICENSE NO. 52598

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CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

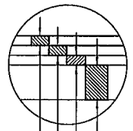
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CSAH 116
TYPICAL SECTIONS

Sheet 36 of 482 Sheets

## MAINLINE CSAH 116

### DESIGN F-1
### BITUMINOUS



2.0" TYPE SP 12.5 WEARING COURSE
MIXTURE (3,F) SPWEB340F

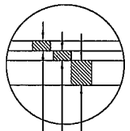
2.0" TYPE SP 12.5 WEARING COURSE
MIXTURE (3,F) SPWEB340F

2.0" TYPE SP 12.5 NON-WEARING COURSE
MIXTURE (3,B) SPNWB330B

7.0" AGGREGATE BASE, CLASS 5
(MNDOT SPEC. 2211) (CRUSHED)

## PARK / PRAIRIE ROAD

### DESIGN F-2
### BITUMINOUS



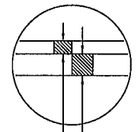
2.0" TYPE SP 12.5 WEARING COURSE
MIXTURE (3,F) SPWEB340F

2.0" TYPE SP 12.5 WEARING COURSE
MIXTURE (3,F) SPWEB340F

5.0" AGGREGATE BASE, CLASS 5
(MNDOT SPEC. 2211) (CRUSHED)

## BITUMINOUS PATH

### DESIGN F-3
### BITUMINOUS



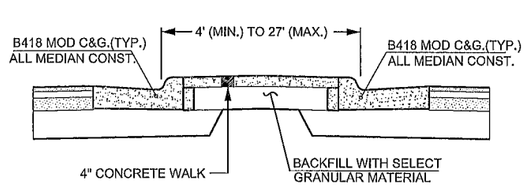
2.5" TYPE SP 9.5 WEARING COURSE
MIXTURE SPWEA230B

4.0" AGGREGATE BASE, CLASS 5
(MNDOT SPEC. 2211)
(CRUSHED)

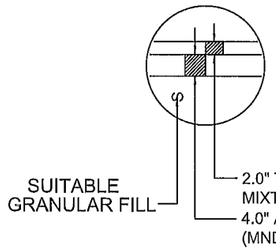
| TURN LANE LOCATIONS | | | | | |
|---|---|---|---|---|---|
| ALIGNMENT | STATION TO STATION* | | LOCATION | DESCRIPTION | TAPER |
| CSAH 116 EB | 46+37 | 51+02 | LT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 51+98 | 63+45 | LT. | BY PASS LN | 1:15 |
| CSAH 116 EB | 55+72 | 66+11 | RT. | BY PASS LN | 1:15 |
| CSAH 116 EB | 61+29 | 65+95 | LT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 67+04 | 70+49 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 67+13 | 71+83 | RT. | LEFT TURN | 1:15 |
| CSAH 116 EB | 74+37 | 80+09 | LT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 81+04 | 84+51 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 EB | 103+05 | 107+65 | LT. | LEFT TURN | 1:15 |
| CSAH 116 EB | 103+20 | 107+70 | RT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 108+89 | 112+34 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 108+97 | 113+62 | RT. | LEFT TURN | 1:15 |
| CSAH 116 EB | 118+15 | 122+84 | LT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 123+91 | 127+51 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 EB | 128+15 | 132+80 | LT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 133+67 | 136+45 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 133+91 | 138+51 | RT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 147+77 | 151+22 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 EB | 151+91 | 156+51 | LT. | LEFT TURN | 1:15 |
| CSAH 116 EB | 152+18 | 156+54 | RT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 157+56 | 161+07 | LT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 157+68 | 164+51 | RT. | LEFT TURN | 1:15 |
| CSAH 116 EB | 168+66 | 172+83 | LT. | LEFT TURN | 1:15 |
| CSAH 116 EB | 168+77 | 172+61 | RT. | RIGHT TURN | 1:15 |
| CSAH 116 WB | 173+60 | 176+16 | RT. | LEFT TURN | 1:15 |
| CSAH 116 WB | 173+69 | 178+20 | LT. | RIGHT TURN | 1:15 |

* STATION RANGE INCLUDES TAPER SECTION.

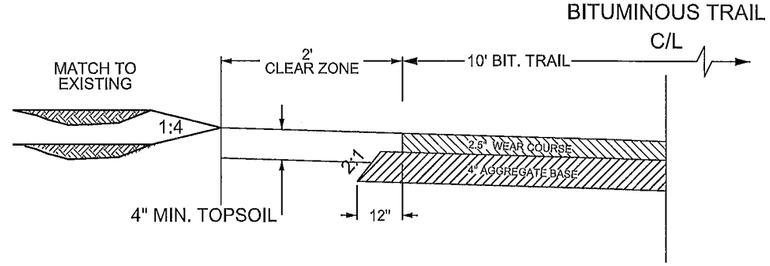
## MEDIAN
## DETAIL "A"



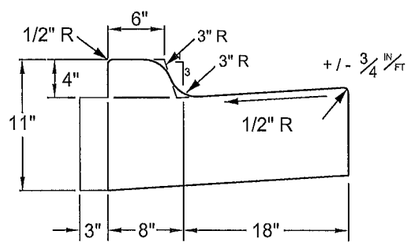

## TEMPORARY WIDENING



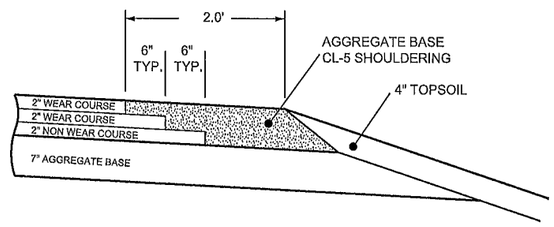

## DETAIL
## BITUMINOUS TRAIL



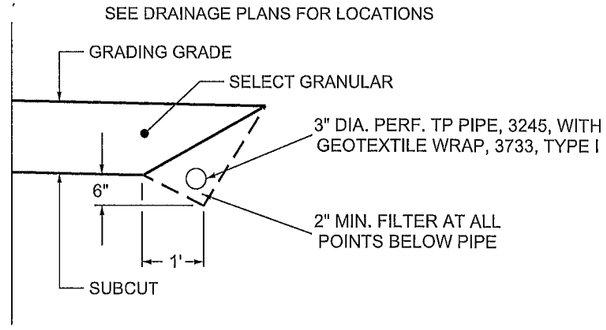

## MEDIAN
## B4 MODIFIED CURB & GUTTER
## ( NO VARIANCES ALLOWED )




## BITUMINOUS EDGE AND AGGREGATE
## SHOULDERING DETAIL




## SUBSURFACE DRAIN DETAIL
SEE DRAINAGE PLANS FOR LOCATIONS



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| | | | | | |

NAME: P:\02-716-15\Plan\0271615_TS.dgn 04/12/2016 1:59:05 PM

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ANOKA COUNTY

ANOKA COUNTY
HIGHWAY DEPT.

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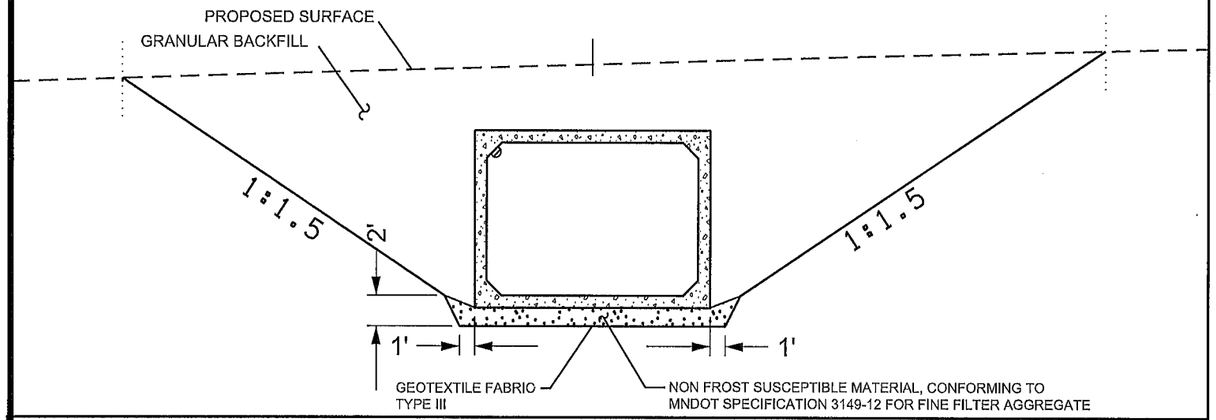
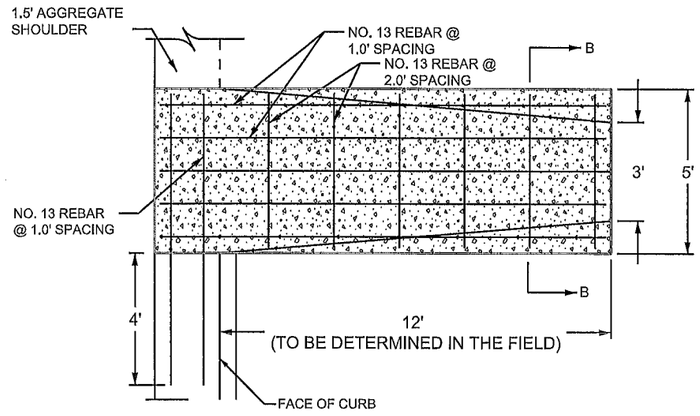
CSAH 116
TYPICAL SECTIONS

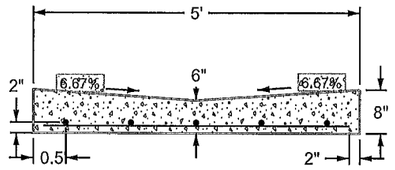
Sheet 37 of 482 Sheets

## CROSS SECTION OF BOX CULVERT AT OPENING
E.B. STA. 94+56+70



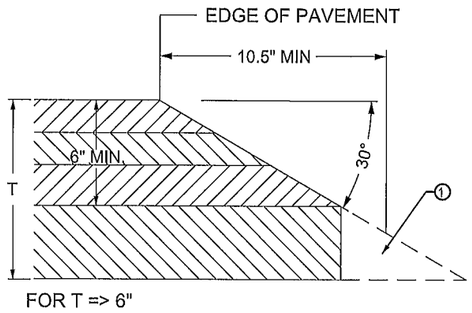

## CONCRETE DRAINAGE FLUME DETAIL



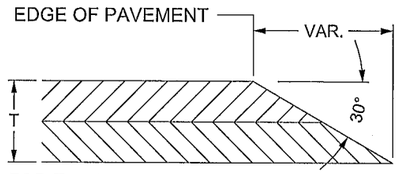




SECTION B-B

## SAFETY EDGE DETAIL
NOT TO SCALE

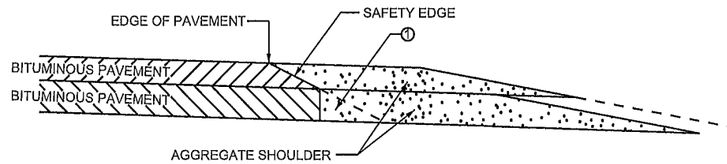



FOR T => 6"



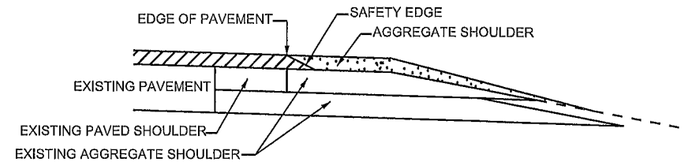

FOR T < 6"

BITUMINOUS PAVEMENT



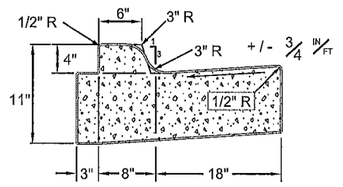

① OPTIONAL DESIGN EXTENDS SAFETY EDGE DEEPER THAN 6" AND WIDER THAN 10.5". SEE PLAN DESIGN DETAILS.

BITUMINOUS OVERLAY

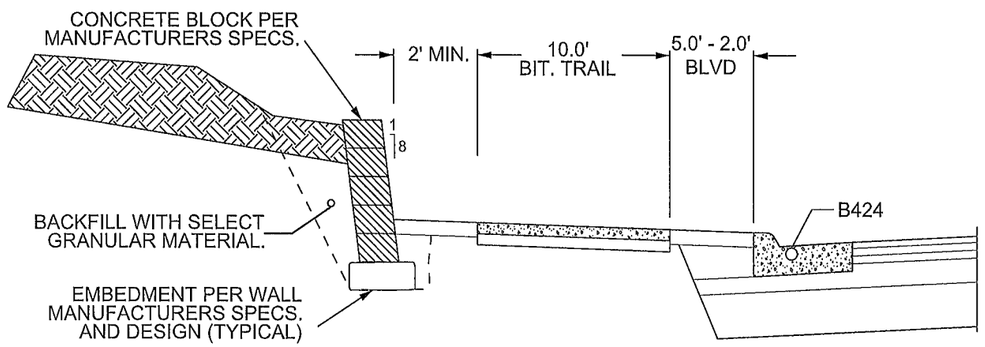



① OPTIONAL DESIGN EXTENDS SAFETY EDGE DEEPER THAN 6" AND WIDER THAN 10.5". SEE PLAN DESIGN DETAILS.

## B4 MODIFIED CURB & GUTTER




## BLOCK RETAINING WALL DETAILS




## RETAINING WALL LOCATIONS

PRAIRIE RT. STA 20+69.00 TO 22+50.00 - BLOCK
PRAIRIE LT. STA 22+22.00 TO 23+06.00 - BLOCK
WB STA 92+29.00 TO 97+69.00 - CONCRETE
WB STA 95+75.00 TO 100+15.00 - BLOCK
WB STA 106+09.00 TO 107+35.00 - BLOCK
WB STA 109+40.00 TO 110+45.00- BLOCK
WB STA 121+36.00 TO 122+40.00 - BLOCK
WB STA 127+10.00 TO 127+62.00 - BLOCK
WB STA 145+60.00 TO 146+95.00 - BLOCK
WB STA 152+12.00 TO 155+40.00 - BLOCK
EB STA 153+35.00 TO 155+75.00 - BLOCK

SEE SHEETS 49 - 82 FOR CONCRETE RETAINING WALL DETAILS

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_MISC_DET.dgn 04/12/2016 1:59:09 PM

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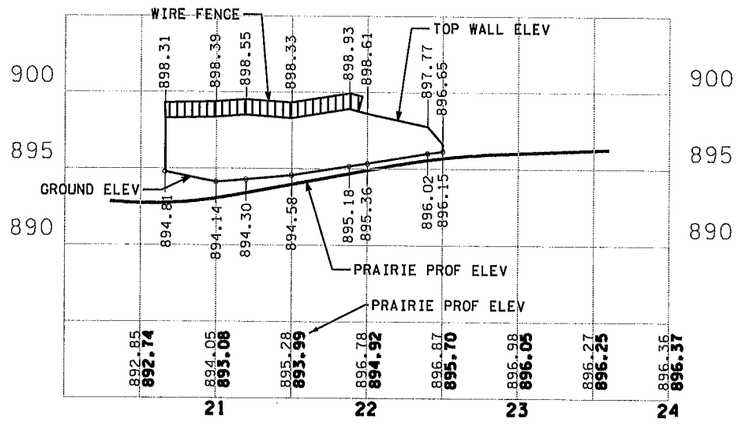
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

MISCELLANEOUS DETAILS

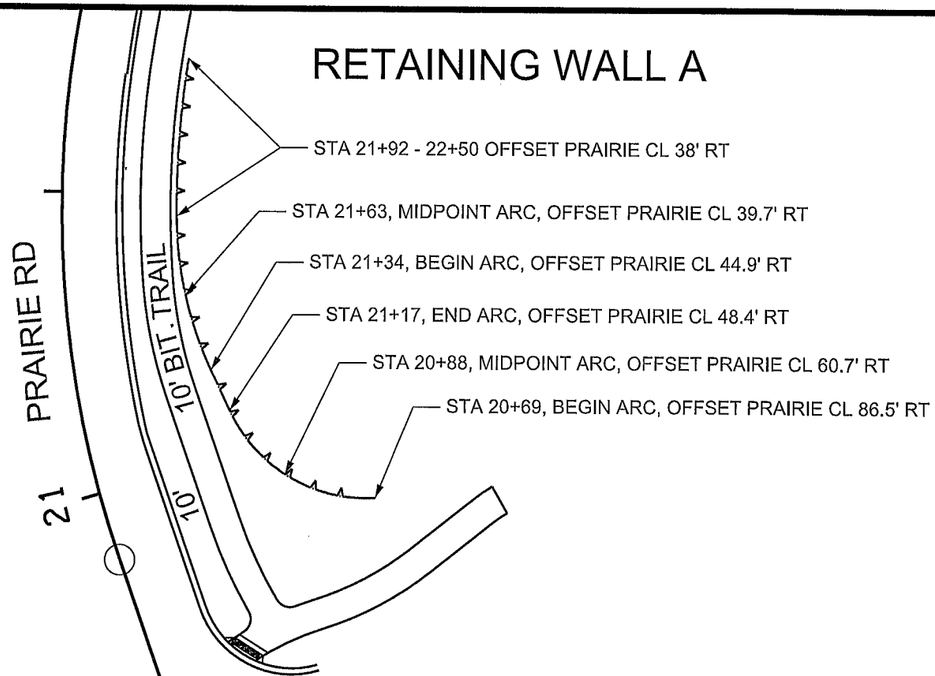
## MODULAR BLOCK RETAINING WALL A

STA 20+69.00 TO STA 22+50.00



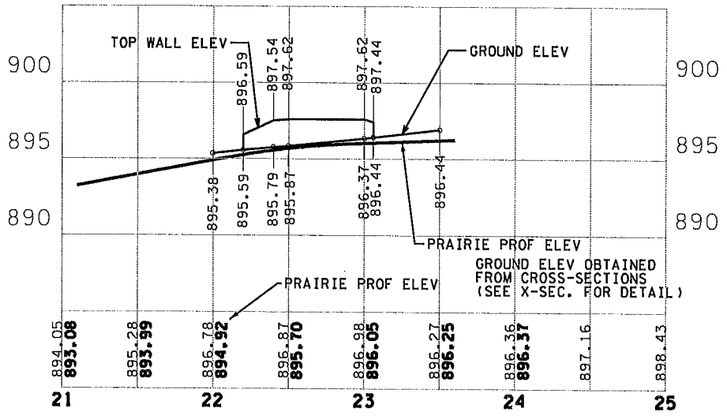

GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)

## RETAINING WALL A



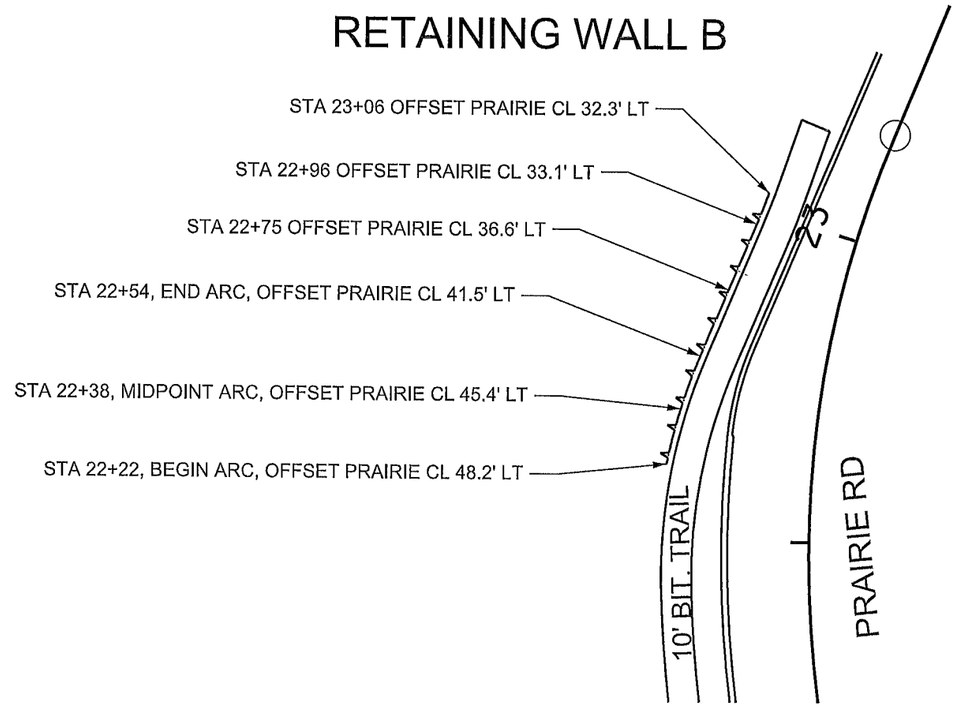

## MODULAR BLOCK RETAINING WALL B

STA 22+22.00 TO STA 23+06.00




GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)

## RETAINING WALL B



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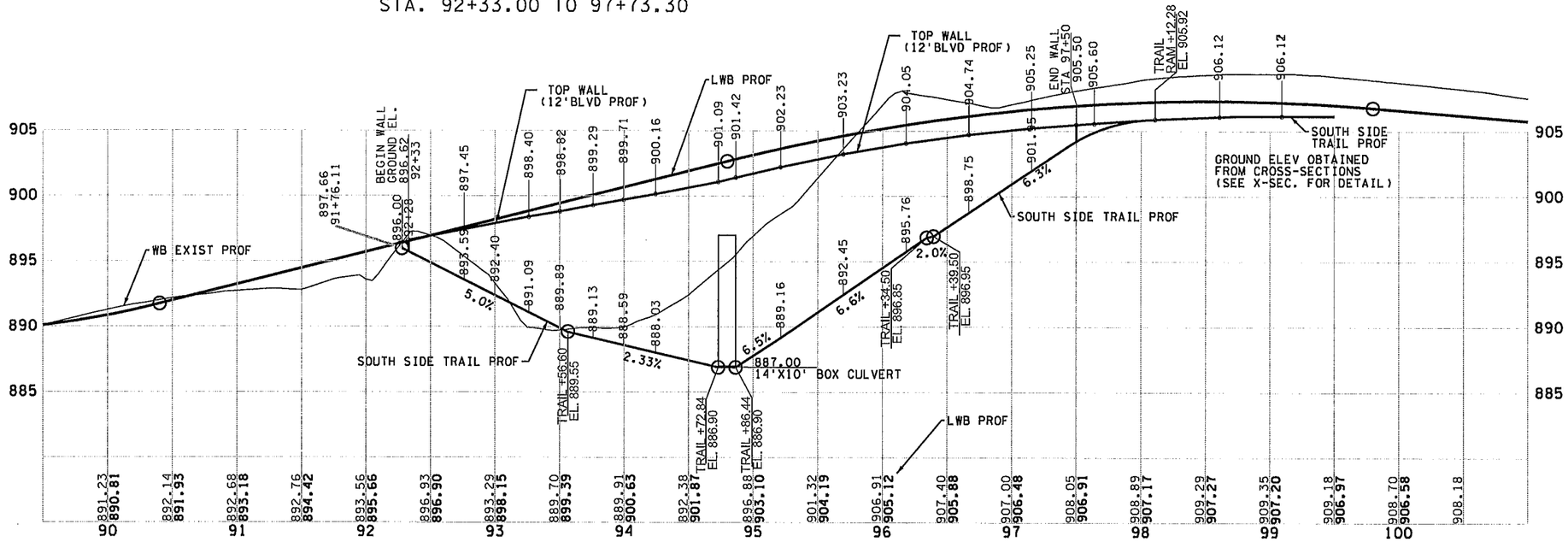
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

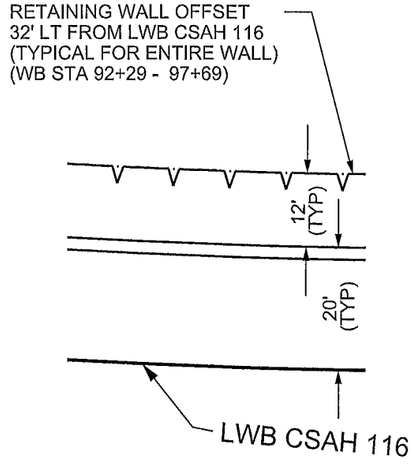
RETAINING WALL PROFILES

Sheet 39 of 482 Sheets

# CONCRETE RETAINING WALL K

## CONCRETE RETAINING WALL K AND TRAIL RAMP PROFILE
STA. 92+33.00 TO 97+73.30



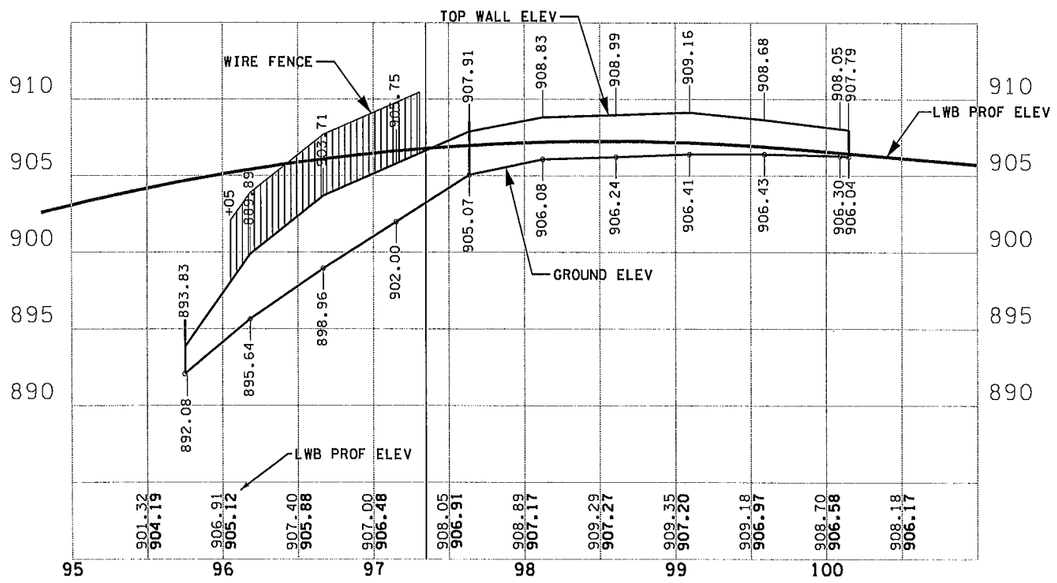



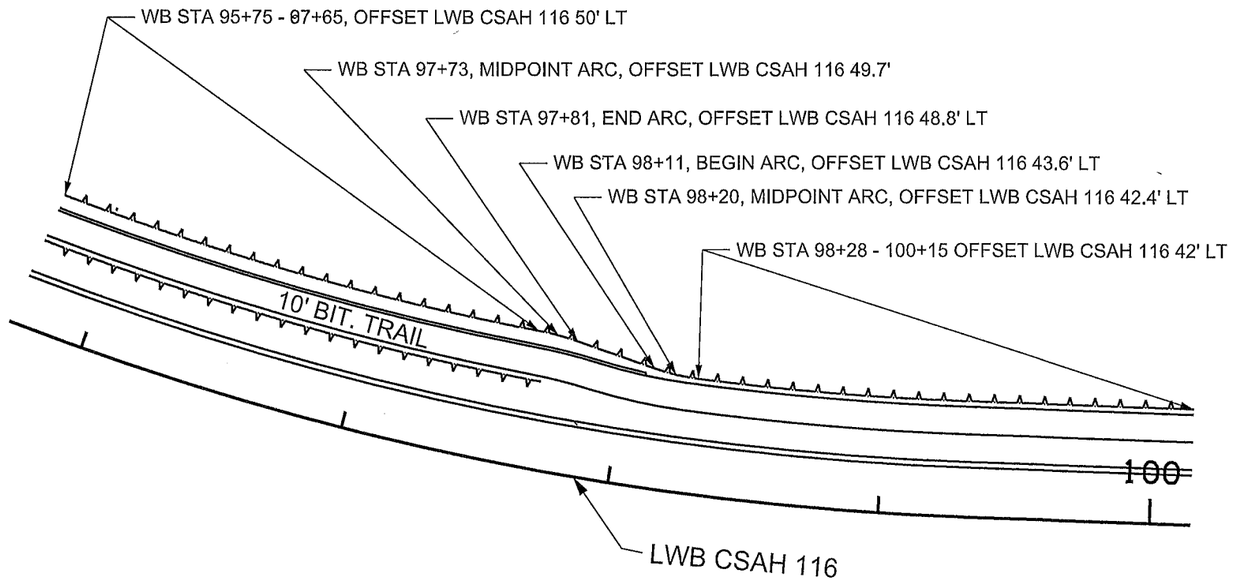

FOR MORE DETAILS AND INFORMATION ON WALL K, SEE PLAN SHEETS 49 - 82.

# RETAINING WALL C

## MODULAR BLOCK RETAINING WALL C
STA 95+75.00 TO 100+15.00

GROUND ELEV OBTAINED FROM CROSS-SECTIONS (SEE X-SEC. FOR DETAIL)



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|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_MISC_DET.dgn 04/12/2016 1:59:10 PM

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SIGNATURE: Zac Borgerding
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ANOKA COUNTY
HIGHWAY DEPT
Parcel 40

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

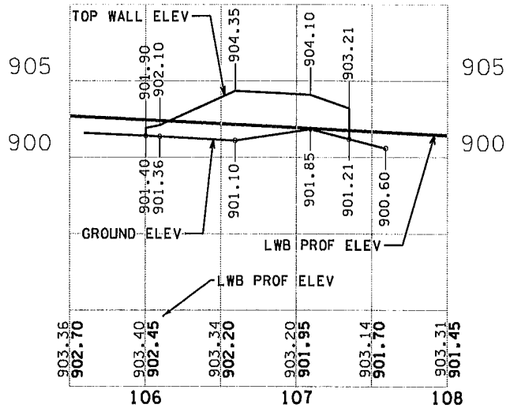
RETAINING WALL PROFILES

Sheet 40 of 482 Sheets

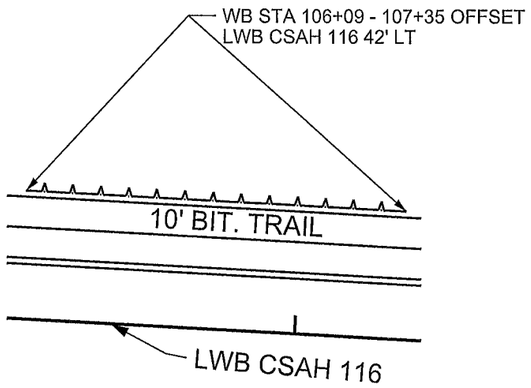
# RETAINING WALL D

MODULAR BLOCK RETAINING WALL D

STA 106+00.00 TO 107+35.00



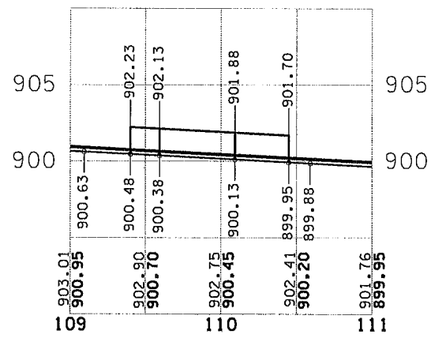

GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)

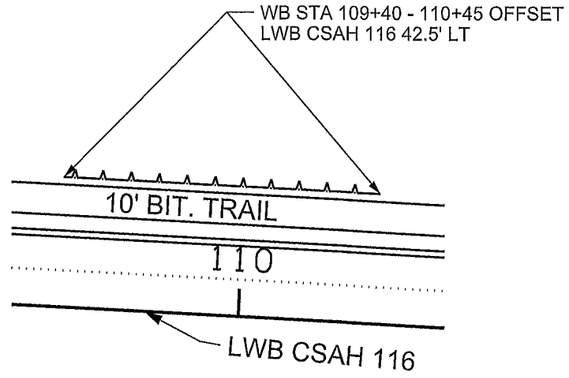



# RETAINING WALL E

MODULAR BLOCK RETAINING WALL E

STA 109+40.00 TO 110+45.00

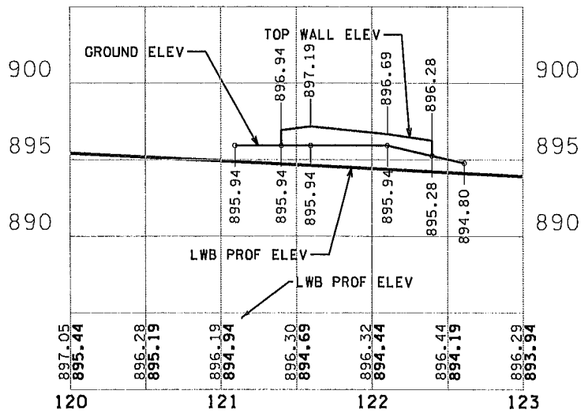


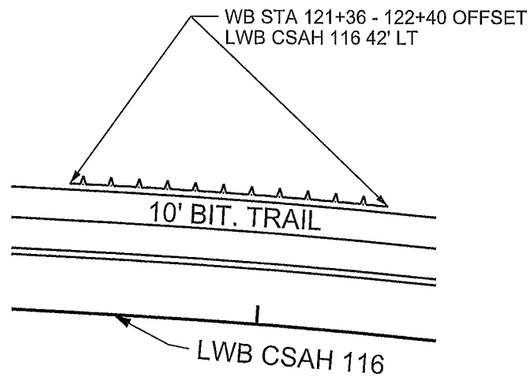

# RETAINING WALL F

MODULAR BLOCK RETAINING WALL F

STA 121+40.00 TO 122+40.00



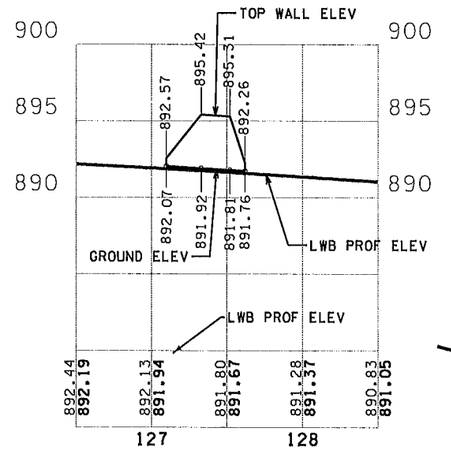

GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)



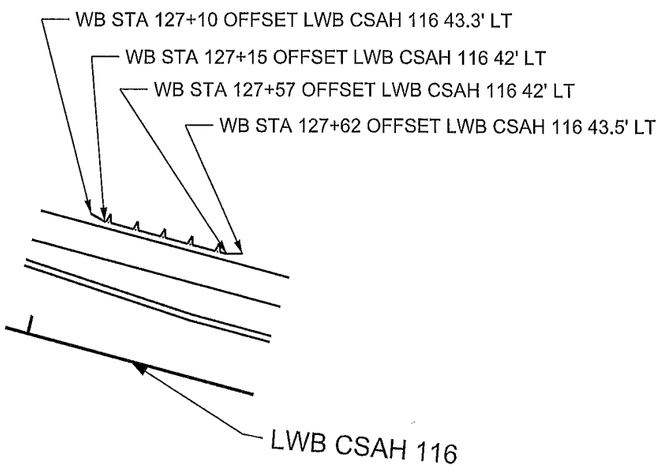

# RETAINING WALL G

MODULAR BLOCK RETAINING WALL G

STA 127+10.00 TO 127+62.00




GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_MISC_DET.dgn 04/12/2016 1:59:10 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

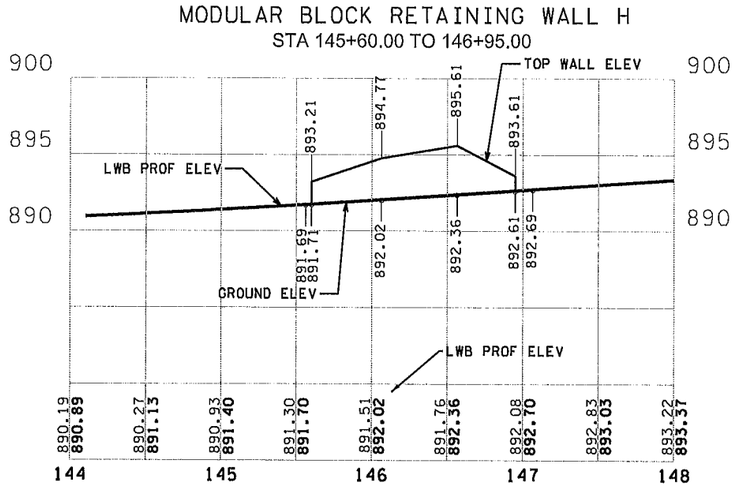
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

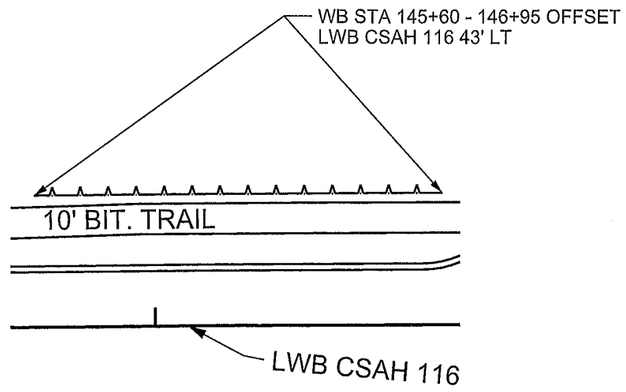
RETAINING WALL PROFILES

Sheet 41 of 482 Sheets

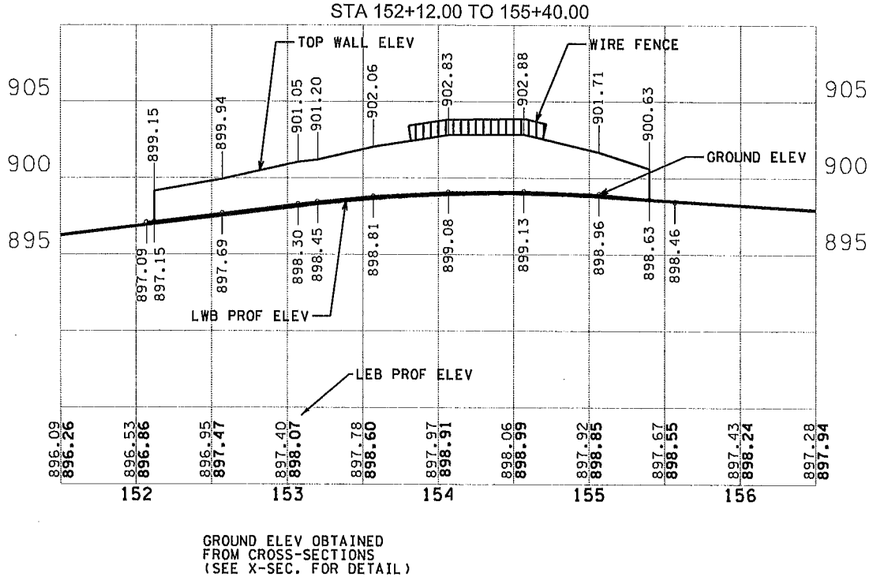
# RETAINING WALL H



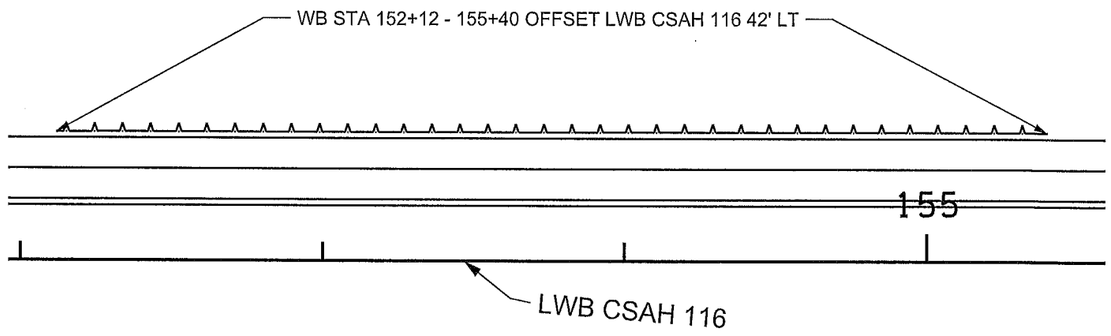

GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)




# RETAINING WALL I




GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_MISC_DET.dgn 04/12/2016 1:59:10 PM

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SIGNATURE: Zac Borgerding

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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

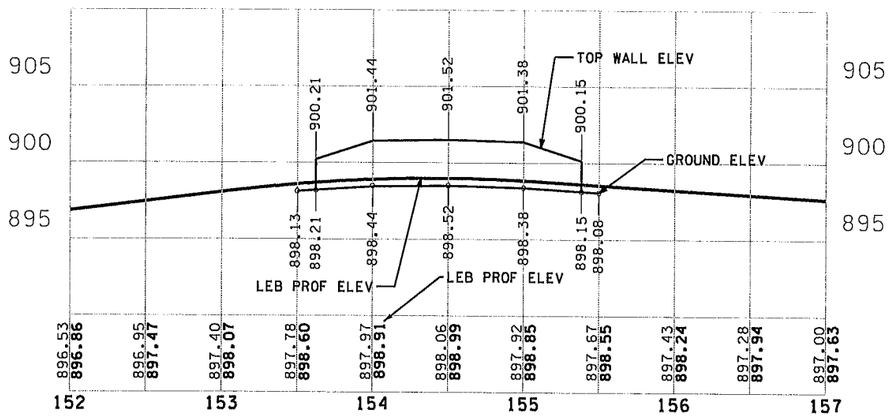
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

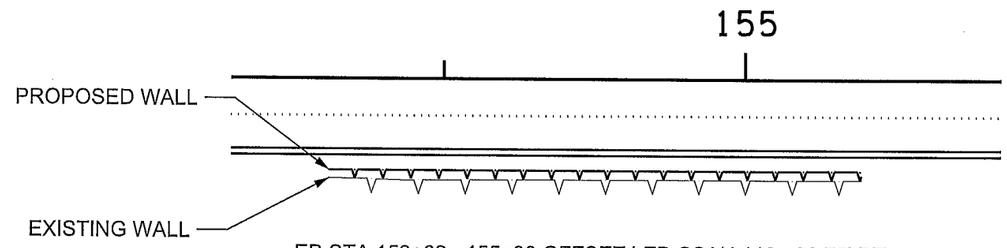
RETAINING WALL PROFILES

Sheet 42 of 482 Sheets

# RETAINING WALL J




GROUND ELEV OBTAINED
FROM CROSS-SECTIONS
(SEE X-SEC. FOR DETAIL)




EB STA 153+62 - 155+38 OFFSET LEB CSAH 116 - 28.75' RT

## BLOCK RETAINING WALL & WIRE FENCE VINYL COATED

L

| STATIONING START | STATIONING END | ALIGNMENT | LOCATION OFFSET LIN FT | | REMOVAL HEIGHT LIN FT | REMOVAL LENGTH LIN FT | CONSTRUCTION LENGTH LIN FT | CONSTRUCTION HEIGHT LIN FT | CONSTRUCTION BLOCK SQ. FT | CONSTRUCTION WIRE FENCE LIN FT | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 70+79.72 | 72+59.15 | LWB | 35 - 36 | LEFT LT | 2.5 | 178 | | | | | |
| 95+75.00 | 100+15.00 | LWB | 42 - 50 | LEFT LT | | | 440 | 2.0 - 5.0 | 1,412 | 130 | RETAINING WALL C |
| 106+00.00 | 107+35.00 | LWB | 42 | LT | | | 135 | | 402 | | RETAINING WALL D |
| 106+28.00 | 107+07.00 | LWB | 43 - 43 | LT | 3.0 | 80 | | | | | |
| 109+40.00 | 110+45.00 | LWB | 42 | LT | | | 105 | 0.5 - 2.0 | 191 | | RETAINING WALL E |
| 111+39.32 | 111+97.59 | LWB | 49 - 52 | LEFT LT | | | | | | | LEAVE |
| 121+40.00 | 122+40.00 | LWB | 52 - 82 | LT | | | 110 | 0.5 - 2.0 | 156 | | RETAINING WALL F |
| 127+10.00 | 127+62.00 | LWB | 42 | LT | | | 40 | 05 - 3.0 | 150 | | RETAINING WALL G |
| 145+60.00 | 146+95.00 | LWB | 42 | LT | | | 135 | 1.0 - 4.5 | 321 | | RETAINING WALL H |
| 152+12.00 | 155+40.00 | LWB | 43 | LT | | | 328 | 2.5 - 4.5 | 1,044 | 90 | RETAINING WALL I |
| 153+62.25 | 155+38.50 | LEB | 33 | RT | | | 176 | 2.0 - 3.0 | 577 | | RETAINING WALL J |
| 20+69.00 | 22+50.00 | PRAIRIE ROAD | 87 - 38 | RT | | | 178 | 0.5 - 4.5 | 123 | 130 | RETAINING WALL A |
| 20+60.00 | 21+33.00 | PRAIRIE ROAD | 68 - 16 | RT | 3.5 | 91 | | | | | |
| 22+22.00 | 23+06.00 | PRAIRIE ROAD | 48.2 - 32.3 | LT | | | 84 | 1.0 - 1.5 | 642 | | RETAINING WALL B |
| | | | | | | | | | | | |
| TOTAL | | | | | | 349 | 1,647 | | 5,018 | 350 | |

NOTE: ALL THE WALL HEIGHT AND SQUARE FOOTAGE ARE FROM GROUND ELEVATION TO THE TOP.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

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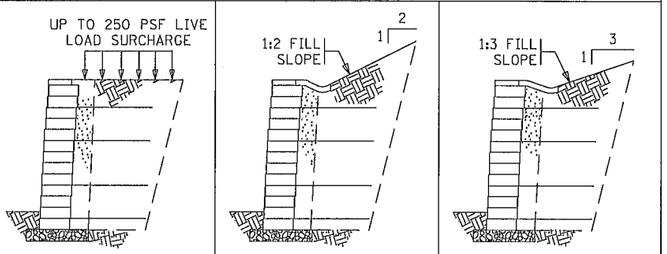
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

RETAINING WALL PROFILES

Sheet 43 of 482 Sheets

PLOTTED/REVISED:
$$$$@DATE@$$$$

## LOADING CASES




250 PSF - LL SURCHARGE
CASE 1

1:2 SLOPED FILL
CASE 3

1:3 SLOPED FILL
CASE 4

CASE 2 IS OMITTED INTENTIONALLY

## NOTES TO CONTRACTOR:

APPROVED COMBINATIONS OF MODULAR BLOCK UNIT AND SOIL REINFORCEMENT PRODUCTS LIST WITH MBW REINFORCEMENT CLASS NOTED ARE HELD AND MAINTAINED BY THE FOUNDATIONS UNIT, AND POSTED AT http://www.mrr.dot.state.mn.us/geotechnical/foundations/foundations.asp UNDER FOUNDATIONS UNIT. ONLY APPROVED PRODUCT COMBINATIONS, INCLUDING BLOCK PRODUCED FROM APPROVED SOURCES MEETING DURABILITY AND QUALITY CONTROL REQUIREMENTS, MAY BE USED IN STANDARD DESIGNS.

PROVIDE DETAILED DRAWINGS FOR CONSTRUCTION CONTAINING:

- ☐ SUBMIT, WITH THE DETAILED DRAWINGS, A COPY OF Mn/DOT STANDARD SHEETS FOR LOADING CASE(S) USED WITH OPTIONS USED MARKED IN THE TABLE.
- ☐ ELEVATION VIEW WITH REINFORCEMENT PLACEMENT REQUIREMENTS, WALL FACING LAYOUT, AND GEOMETRIC INFORMATION. TOP OF WALL MAY EXTEND UP TO 4" ABOVE PLAN TOP OF WALL ELEVATION.
- ☐ PLAN VIEW WITH BOTTOM AND TOP OF WALL ALIGNMENT, AND PLAN LIMITS OF WALL ALIGNMENT.
- ☐ CROSS SECTIONS DETAILING BATTER, REINFORCEMENT, VERTICAL SPACING, REINFORCEMENT LENGTHS, SUBSURFACE DRAINAGE, SURFACE DRAINAGE, AND WATER RUNOFF COLLECTION ABOVE WALL.
- ☐ REINFORCEMENT LAYOUT: REINFORCEMENT SHALL BE PLACED AT 100% COVERAGE RATIO. REINFORCEMENT ELEVATIONS SHALL BE CONSISTENT ACROSS LENGTH OF WALL STRUCTURE.
- ☐ NOTE BLOCK, REINFORCEMENT, AND FILL PLACEMENT METHODS AND REQUIREMENTS.
- ☐ DETAIL ALL WALL FILL PENETRATIONS AND WALL FACE PENETRATIONS. DETAIL REINFORCEMENT AND/OR WALL FACING UNIT PLACEMENT AROUND PENETRATIONS.
- ☐ DETAILS THAT ARE SPECIFIC TO VENDOR PRODUCTS AND THEIR INTERACTION WITH OTHER PROJECT COMPONENTS.
- ☐ LIST INFORMATION ON APPROVED COMBINATION OF MBW UNIT AND GEOSYNTHETIC REINFORCEMENT, INCLUDING Mn/DOT CLASSIFICATION CODE, NOMINAL BLOCK WIDTH, PROPERTIES FOR FIELD IDENTIFICATION, AND INSTALLATION INSTRUCTIONS.
- ☐ DETAILS OF CAP UNITS AND INSTALLATION/FASTENING INSTRUCTIONS FOR THE CAPS. CAP UNITS SHALL BE SET IN A BED OF ADHESIVE DESIGNED TO WITHSTAND MOISTURE AND TEMPERATURE EXTREMES, REMAIN FLEXIBLE, AND SHALL BE SPECIFICALLY FORMULATED FOR BONDING MASONRY TO MASONRY.
- ☐ CERTIFICATION BY PROFESSIONAL ENGINEER THAT THE CONSTRUCTION LAYOUT MEETS THE REQUIREMENTS OF PLANS AND Mn/DOT MSEW STANDARDS. DEVIATION FROM STANDARD DESIGN TABLES ARE PERMITTED BY VALUE ENGINEERING SUBMITTAL ONLY ON PROJECTS WITH OVER 5000 SQ. FT. OF WALL.

## DEFINITION OF TERMS

| | | |
|---|---|---|
| MBW | = | MODULAR BLOCK WALL |
| LL | = | LIVE LOAD |
| C.I.P. | = | CAST-IN-PLACE |
| H | = | WALL HEIGHT |
| S | = | VERTICAL REINFORCEMENT SPACING |
| REINFORCEMENT COVERAGE RATIO | = | WIDTH OF SOIL REINFORCEMENTS TO HORIZONTAL SPACING (100% COVERAGE RATIO REQUIRED) |

## DESIGN CRITERIA

DESIGN CRITERIA FOLLOWS THE AASHTO SPECIFICATION FOR HIGHWAY BRIDGES (16TH EDITION WITH 1998 INTERIMS) EXCEPT FOR THE DEVIATIONS NOTED BELOW. DESIGN CRITERIA ARE IN ACCORDANCE WITH Mn/DOT POLICY, AS RECORDED IN THE Mn/DOT ROAD DESIGN MANUAL.

A. THE MINIMUM REINFORCEMENT LENGTH IS 4 FT. OR 0.7H, WHICHEVER IS GREATER.
B. THE REINFORCEMENT FILL FRICTION ANGLE IS 35°.
C. THE ALLOWABLE CONNECTION LOAD, AT A GIVEN NORMAL LOAD, IS COMPUTED AS THE ULTIMATE CONNECTION STRENGTH REDUCED BY A SAFETY FACTOR EQUAL TO 2.0.
D. THE LATERAL EARTH PRESSURE COMPUTATION FOR EXTERNAL STABILITY CALCULATIONS USES AN INTERFACE ANGLE SET EQUAL TO THE RETAINED BACKFILL ANGLE.
E. THE LATERAL EARTH PRESSURE COMPUTATION FOR INTERNAL STABILITY CALCULATIONS INCORPORATES THE EFFECTS OF WALL FACE BATTER.

MINIMUM FACTORS OF SAFETY:
OVERTURNING: 2.0
SLIDING: 1.5
ECCENTRICITY: $e < L/6$
BEARING CAPACITY: 2.5
DEEP SEATED STABILITY: 1.3

BEARING:
A. SEE FOUNDATION REPORT FOR ALLOWABLE SOIL BEARING PRESSURE.
B. CASES 1 AND 4 - ALLOWABLE SOIL BEARING CAPACITY (ULTIMATE BEARING CAPACITY REDUCED BY A SAFETY FACTOR OF 2.5) OF 2000 PSF IS REQUIRED FOR WALLS UP TO 10 FT. IN HEIGHT. FOR WALLS GREATER THAN 10 FT. IN HEIGHT, THE REQUIRED ALLOWABLE BEARING CAPACITY IS EQUAL TO: 2000 PSF + (H-10)(625 PSF) WITH H IN FEET.
C. CASE 3 - ALLOWABLE SOIL BEARING CAPACITY (ULTIMATE BEARING CAPACITY REDUCED BY A SAFETY FACTOR OF 2.5) OF 2500 PSF IS REQUIRED FOR WALLS UP TO 10 FT. IN HEIGHT. FOR WALLS GREATER THAN 10 FT. IN HEIGHT, THE REQUIRED ALLOWABLE BEARING CAPACITY IS EQUAL TO: 2500 PSF + (H-10)(850 PSF) WITH H IN FEET.

REINFORCED WALL FILL CHARACTERISTICS:
A. SELECT GRANULAR MATERIAL MODIFIED FOLLOWING SPEC. 3149.2B.2. MODIFICATION: SELECT GRANULAR MATERIAL MODIFIED, FOR SPECIAL USE IN EMBANKMENT OR BACKFILL CONSTRUCTION OR OTHER SPECIFIED PURPOSES, MAY BE ANY PIT-RUN OR CRUSHER-RUN MATERIAL THAT IS GRADED FROM COARSE TO FINE, SUCH THAT 100% OF THE MATERIAL MUST PASS THE 2" SIEVE, AND THAT THE RATIO OF THE PORTION PASSING THE #200 SIEVE DIVIDED BY THE PORTION PASSING THE 1" SIEVE MAY NOT EXCEED 10% BY MASS (THAT IS: "200/1" RATIO)
B. INTERNAL ANGLE OF FRICTION ($\Phi_r$) = 35°
C. COHESION (C) = 0
D. MOIST UNIT WEIGHT ($\gamma_r$) = 125 PSF

COARSE FILTER AGGREGATE CHARACTERISTICS:
A. COARSE FILTER AGGREGATE TO MEET SPEC. 3149.2H. INCIDENTAL, NO DIRECT PAYMENT WILL BE MADE.

RETAINED BACKFILL CHARACTERISTICS:
A. INTERNAL ANGLE OF FRICTION ($\Phi_b$) = 30°
B. COHESION (C) = 0
C. MOIST UNIT WEIGHT ($\gamma_b$) = 120 PSF

FOUNDATION SOILS CHARACTERISTICS:
A. INTERNAL ANGLE OF FRICTION ($\Phi_f$) = 30°
B. COHESION (C) = 0
C. UNIT WEIGHT ($\gamma_f$) = 120 PSF

## SAMPLE ESTIMATED QUANTITIES FOR MODULAR BLOCK WALLS (3)

| | | UNIT | QUANTITY |
|---|---|---|---|
| | | | |
| | STRUCTURE EXCAVATION CLASS ___ | CU. YD. | |
| | SELECT GRANULAR MATERIAL MODIFIED (CV) | CU. YD. | |
| | STRUCTURAL CONCRETE (1A43) | CU. YD. | |
| (1)(2) | MODULAR BLOCK RETAINING WALL | SQ. FT. | |
| | TYPE I GEOTEXTILE FABRIC | SQ. YD. | |
| | | | |

(1) VERTICAL FACE AREA OF MODULAR BLOCK AS MEASURED FROM PLAN TOP OF WALL TO 2 FT. BELOW FINISHED GRADE AT BOTTOM OF WALL.

(2) PAY ITEM FOR MBW WALLS SHALL BE 2411.

(3) REFER TO TABULATIONS / ESTIMATE SHEETS FOR QUANTITIES.

## NOTES TO DESIGNER:

HEIGHT AND LOCATION RESTRICTIONS FOR ISSUES SUCH AS FREEZE-THAW DURABILITY ARE GOVERNED BY APPROPRIATE TECHNICAL MEMORANDUMS. CURRENT GOVERNING TECH. MEMO. NO.: 14-03-MAT-01.

IN ADDITION TO THE STANDARD SHEETS, PLAN AND FRONT ELEVATION VIEWS OF THE MODULAR BLOCK RETAINING WALLS SHALL BE INCLUDED IN THE PLANS. THE PLAN VIEW MUST SHOW ALIGNMENT BASELINE, LIMITS OF BOTTOM OF WALL ALIGNMENT, AND LIMITS OF TOP OF WALL ALIGNMENT AS ALIGNMENTS VARY WITH BATTER OF WALL SYSTEM ACTUALLY SUPPLIED. THE FRONT ELEVATION MUST IDENTIFY BOTTOM AND TOP OF WALL ELEVATIONS, EXISTING GRADES, AND FINISHED GRADES.

IF THE WALL IS CURVED, THE RADIUS AT THE BOTTOM AND THE TOP OF EACH WALL SEGMENT AND THE P.C. AND P.T. STATION POINTS OFF OF BASELINE AND LIMITS OF BOTTOM AND TOP OF WALL ALIGNMENT MUST BE SHOWN.

REFERENCE STANDARD PLATES AND PROVIDE DETAILS FOR TRAFFIC BARRIERS, CURB AND GUTTER, HANDRAILS AND FENCING AS REQUIRED BY PROJECT CONDITIONS. SEE AASHTO AND Mn/DOT DESIGN MANUALS, STANDARD PLATES AND DETAILS FOR REQUIREMENTS.

SURFACE DRAINAGE PATTERNS SHALL BE SHOWN IN THE PLAN VIEW. PROVIDE DIMENSIONS FOR WIDTH AND DEPTH OF THE DRAINAGE SWALE AS WELL AS THE TYPE OF IMPERVIOUS LINER MATERIAL. SURFACE WATER RUNOFF SHOULD BE COLLECTED ABOVE AND DIVERTED AROUND WALL FACE.

DETAIL LINES AND GRADES OF THE INTERNAL DRAINAGE COLLECTION PIPE. DETAIL OR NOTE THE DESTINATION OF INTERNAL WALL DRAINS AS WELL AS THE METHOD OF TERMINATION (DAYLIGHT END OF PIPE OR CONNECTION INTO HYDRAULIC STRUCTURE). THE SPACING FOR DRAIN PIPE OUTLET SHALL NOT BE MORE THAN 250 FT.

SOFT SOILS AND/OR HIGH WATER CONDITIONS (DEFINED AS GROUNDWATER WITHIN A DEPTH EQUAL TO THE WALL HEIGHT H) MAY NOT BE SUITABLE FOR APPLICATION OF STANDARD DESIGNS AND REQUIRE SPECIAL CONSIDERATION BY THE FOUNDATIONS UNIT.

STANDARD DESIGN CHARTS ARE NOT APPLICABLE TO:
- ☐ PROJECT/SITES WHERE FOUNDATION SOILS SHEAR STRENGTH AND/OR BEARING CAPACITY DO NOT MEET OR EXCEED VALUES USED IN THE DEVELOPMENT OF STANDARD DESIGN CHARTS.
- ☐ PROJECTS WITH A LARGE QUANTITY OF FACE AREA WHERE PROJECT SPECIFIC DESIGNS ARE RECOMMENDED, AS DEFINED IN Mn/DOT ROAD DESIGN MANUAL.
- ☐ WHERE SLOPES IN FRONT OF WALL ARE STEEPER THAN 1:3.
- ☐ WHERE MAXIMUM WALL HEIGHT EXCEEDS 12 FT.
- ☐ WHERE WALLS ARE TIERED.
- ☐ WALLS WITH NOISE WALLS.

IF USING CONCRETE RAILING, INCLUDE STANDARD BRIDGE DETAIL "CONCRETE RAILING (TYPE F)" IN PLAN SET.

PROVIDE PROJECT SPECIFIC AESTHETIC REQUIREMENTS INCLUDING COLOR AND FASCIA SURFACING IN THE SPECIAL PROVISIONS.

CHAPTER 9 OF THE Mn/DOT "ROAD DESIGN MANUAL" CONTAINS GUIDELINES, TRAFFIC SAFETY AND OTHER ASPECTS.

## GENERAL NOTES:

UTILITIES:

EXISTING AND PROPOSED UTILITIES ARE SHOWN IN THE GRADING PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING FACILITIES AND SHALL EXERCISE CARE IN ADJACENT CONSTRUCTION.

EXCAVATION AND EARTHWORK:

ALL EXCAVATION AND EMBANKMENT WORK SHALL CONFORM TO Mn/DOT 2451.

CAST-IN-PLACE CONCRETE:

ALL CONCRETE SHALL CONFORM TO Mn/DOT 2461, EXCEPT AS NOTED.

CONSTRUCTION:

CONSTRUCTION SHALL BE IN ACCORDANCE WITH Mn/DOT 2411, EXCEPT AS NOTED.

GEOMETRICS AND GRADES:

DATA FOR BASELINE GEOMETRY IS TABULATED FOR WALL ALIGNMENT, SEE LAYOUT SHEETS. WALL ALIGNMENT REFERENCE IS ALONG FRONT FACE OF WALL.

THE FILL SLOPE CONVENTION OF 1 VERTICAL TO HORIZONTAL IS USED IN THIS PLAN.

COMPACTION REQUIREMENTS:

COMPACT REINFORCED WALL FILL IN ACCORDANCE WITH Mn/DOT SPEC. 2105.3F1 UNLESS RECOMMENDED OTHERWISE BY THE SOILS ENGINEER.

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@

REVISION:

APPROVED: DECEMBER 1, 2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

REVISED:

APPROVED: 12-1-2014
STATE DESIGN ENGINEER

MODULAR BLOCK RETAINING WALL
GENERAL NOTES

STANDARD PLAN 5-297.640 | 44 OF 482

PLOTTED/REVISED:
$$$$@DATE@$$$$

## MODULAR BLOCK WALL REINFORCEMENT LAYOUT

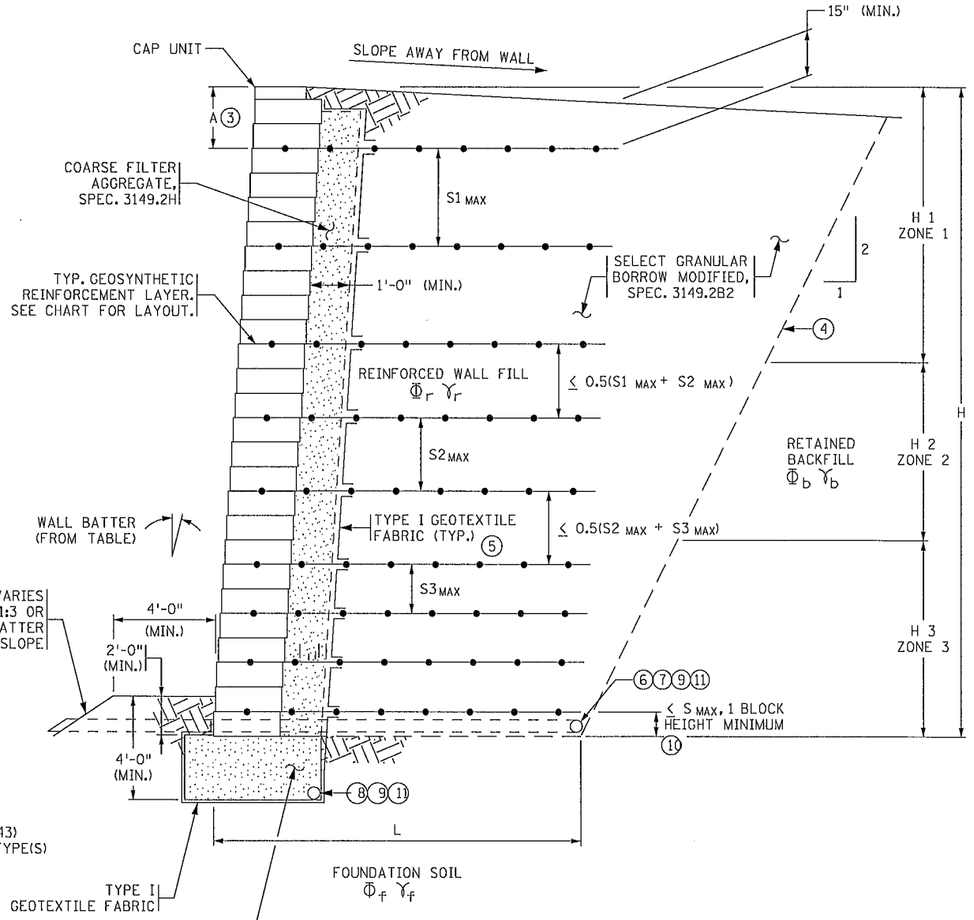
CASE 1 - LEVEL BACKFILL WITH 250 PSF SURCHARGE

| MBW REINFORCEMENT CLASS | STRENGTH OF SOIL REINF. (PLF) LG. TERM ($T_{al}$) | STRENGTH OF SOIL REINF. (PLF) DESIGN ($T_a$) | ① MINIMUM REINFORCEMENT LENGTH, L (FT.) | MAXIMUM WALL HEIGHT (FT.) | ② NOMINAL BLOCK WIDTH (IN.) | WALL BATTER RANGE (DEGREES) | | ③ MAXIMUM UNREINFORCED WALL HT, A (IN.) | ZONE 1 H1 (FT.) | ZONE 1 $S1_{MAX}$ (IN.) | ZONE 2 H2 (FT.) | ZONE 2 $S2_{MAX}$ (IN.) | ZONE 3 H3 (FT.) | ZONE 3 $S3_{MAX}$ (IN.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | < | | | | | | | |
| MBW-700 | 1050 | 700 | 0.7 H | 12.0 | 12 | 0 | 3 | 15 | 7.9 | 24 | 4.1 | 16 | | |
| | | | | | | 3 | 7 | 16 | 9.8 | 24 | 2.2 | 16 | | |
| | | | | | | 7 | 10 | 18 | 11.5 | 24 | 0.5 | 16 | | |
| | | | | | | 10 | 15 | 18 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 32 | 4.9 | 32 | 3.0 | 24 | 4.1 | 16 |
| | | | | | | 3 | 7 | 32 | 4.9 | 32 | 4.9 | 24 | 2.2 | 16 |
| | | | | | | 7 | 10 | 32 | 5.9 | 32 | 6.1 | 24 | | |
| | | | | | | 10 | 15 | 32 | 7.2 | 32 | 4.8 | 24 | | |
| MBW-1050 | 1575 | 1050 | 0.7 H | 12.0 | 12 | 0 | 3 | 15 | 12.0 | 24 | | | | |
| | | | | | | 3 | 7 | 16 | 12.0 | 24 | | | | |
| | | | | | | 7 | 10 | 18 | 12.0 | 24 | | | | |
| | | | | | | 10 | 15 | 18 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 36 | 5.9 | 42 | 4.9 | 32 | 1.2 | 24 |
| | | | | | | 3 | 7 | 40 | 8.5 | 42 | 3.5 | 32 | | |
| | | | | | | 7 | 10 | 42 | 9.8 | 42 | 2.2 | 32 | | |
| | | | | | | 10 | 15 | 42 | 9.8 | 42 | 2.2 | 32 | | |
| MBW-1400 | 2100 | 1400 | 0.7 H | 12.0 | 12 | 0 | 3 | 15 | 12.0 | 24 | | | | |
| | | | | | | 3 | 7 | 16 | 12.0 | 24 | | | | |
| | | | | | | 7 | 10 | 18 | 12.0 | 24 | | | | |
| | | | | | | 10 | 15 | 18 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 36 | 6.6 | 48 | 3.3 | 42 | 2.1 | 32 |
| | | | | | | 3 | 7 | 40 | 8.2 | 48 | 3.8 | 42 | | |
| | | | | | | 7 | 10 | 48 | 9.8 | 48 | 2.2 | 42 | | |
| | | | | | | 10 | 15 | 48 | 9.8 | 48 | 2.2 | 42 | | |

## INSTRUCTIONS TO CONTRACTOR:

USE AS MANY ZONES AS WALL HEIGHT REQUIRES, STARTING WITH ZONE 1 AND ADDING ADDITIONAL ZONES TO THE BOTTOM OF THE WALL AS NEEDED TO MAKE UP THE TOTAL WALL HEIGHT (H) NEEDED.

REINFORCEMENT CLASS, NOMINAL BLOCK WIDTH AND WALL BATTER ARE GENERALLY THE CONTRACTOR'S OPTION TO SELECT FROM Mn/DOT APPROVED PRODUCTS LISTS LOCATED AT www.mrr.dot.state.mn.us/geotechnical/foundations/foundations.asp.




TYPICAL SECTION

CASE 1

NOT TO SCALE

## NOTES TO CONTRACTOR:

① OR 4 FT. MINIMUM, WHICHEVER IS GREATER.

② WIDTH - AS MEASURED FROM FRONT TO BACK FACE OF BLOCK UNIT.

③ MAXIMUM DISTANCE FROM TOP OF WALL TO FIRST REINFORCEMENT LAYER. UNREINFORCED WALLS ARE NOT INCLUDED IN THIS STANDARD BUT MAY BE CONSTRUCTED UP TO AT LEAST THE HEIGHT GIVEN IN THE TABLE FOR A GIVEN NOMINAL BLOCK WIDTH AND THE SPECIFIED FILL MATERIALS CONTAINED IN THIS STANDARD.

④ PAY LIMITS OF STRUCTURAL EXCAVATION. ACTUAL EXCAVATION SLOPE IS DETERMINED BY OSHA REGULATIONS AND IN-SITU SOILS; EXCAVATION BEYOND "LIMITS OF STRUCTURAL EXCAVATION" AT CONTRACTOR'S EXPENSE.

⑤ THE WRAP LENGTH FOR GEOTEXTILE FABRIC SHALL NOT BE MORE THAN 6".

⑥ INSPECT EXCAVATION SLOPES FOR ACTIVE SEEPAGE AND PLACE ADDITIONAL DRAINS WHERE SEEPAGE OCCURS AS DIRECTED BY THE ENGINEER.

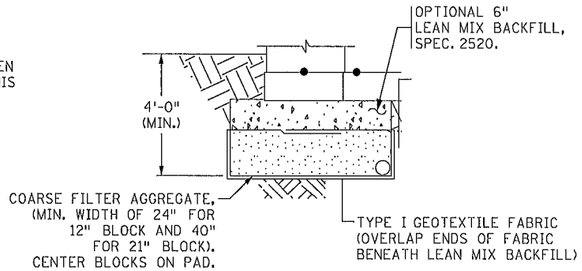
⑦ PLACE DRAIN AT BOTTOM OF REINFORCED SOIL IF PIPE CAN BE SLOPED TO OUTLET. DO NOT OUTLET ONTO A SIDEWALK.

⑧ IF PIPE AT THIS ELEVATION CANNOT BE SLOPED TO DRAIN, OMIT DRAIN AND USE "CONCRETE PAD WITHOUT DRAIN" DETAIL.

⑨ 4" THERMOPLASTIC PERFORATED PIPE, SPEC. 3245, WRAP WITH TYPE I GEOTEXTILE, SPEC. 3733 (TYP.) INSTALLATION AS PER SPEC. 2502, WITH PRECAST CONCRETE HEAD WALL AT OUTLET.

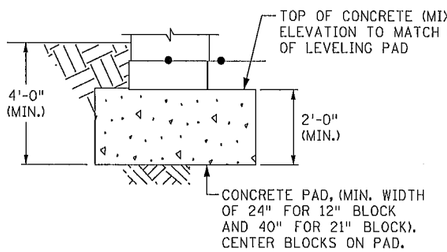
⑩ $S_{MAX}$ = 0.5 $S1_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 1.
$S_{MAX}$ = 0.5 $S2_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 2.
$S_{MAX}$ = 0.5 $S3_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 3.

⑪ THE REINFORCED WALL FILL DRAIN MAY BE CONNECTED INTO FOOTING DRAIN, INSTEAD OF OUT LETTING THROUGH THE WALL, IF CAPACITY IS ADEQUATE TO TRANSMIT THE FLOW.




OPTIONAL CONCRETE LEVELING PAD

NOT TO SCALE




CONCRETE PAD WITHOUT DRAIN

NOT TO SCALE

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@

REVISION:

APPROVED: 8-6-2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

REVISED:

APPROVED: 8-6-2014
STATE DESIGN ENGINEER

MODULAR BLOCK RETAINING WALL
SOIL REINFORCEMENT FOR LEVEL FILL, CASE 1

STANDARD PLAN 5-297.641

PLOTTED/REVISED: $$$$@DATE@$$$$

## MODULAR BLOCK WALL REINFORCEMENT LAYOUT

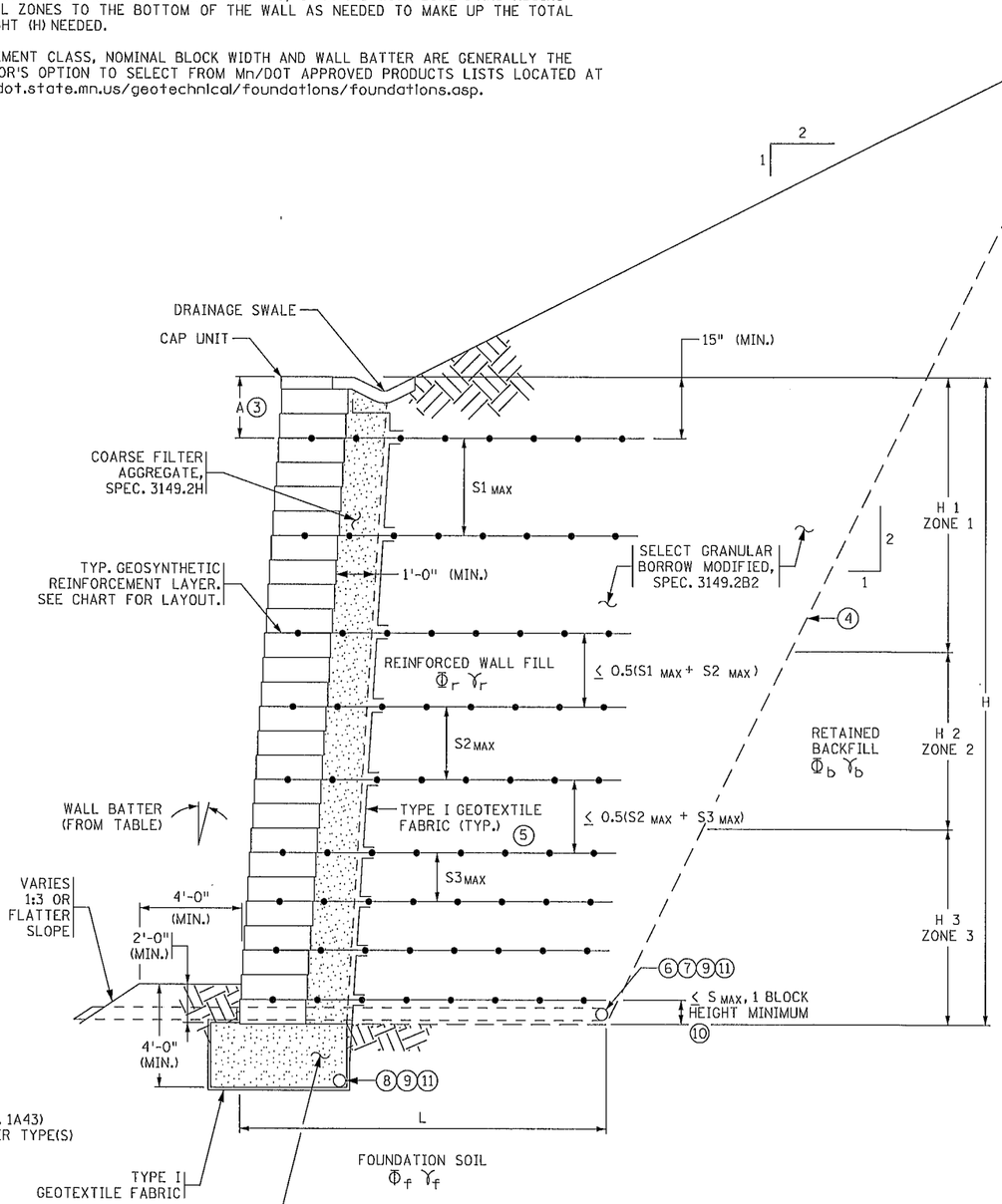
CASE 3 - 1:2 FILL SLOPE

| MBW REINFORCEMENT CLASS | STRENGTH OF SOIL REINF. (PLF) LG. TERM ($T_{al}$) | STRENGTH OF SOIL REINF. (PLF) DESIGN ($T_d$) | ① MINIMUM REINFORCEMENT LENGTH, L (FT.) | MAXIMUM WALL HEIGHT (FT.) | ② NOMINAL BLOCK WIDTH (IN.) | WALL BATTER RANGE (DEGREES) ≥ | WALL BATTER RANGE (DEGREES) < | ③ MAXIMUM UNREINFORCED WALL HT, A (IN.) | ZONE 1 H1 (FT.) | ZONE 1 $S1_{MAX}$ (IN.) | ZONE 2 H2 (FT.) | ZONE 2 $S2_{MAX}$ (IN.) | ZONE 3 H3 (FT.) | ZONE 3 $S3_{MAX}$ (IN.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MBW-700 | 1050 | 700 | 0.7 H | 12.0 | 12 | 0 | 3 | 24 | 4.9 | 24 | 5.6 | 16 | 1.5 | 8 |
| | | | | | | 3 | 7 | 24 | 5.9 | 24 | 6.1 | 16 | | |
| | | | | | | 7 | 10 | 24 | 9.2 | 24 | 2.8 | 16 | | |
| | | | | | | 10 | 15 | 24 | 9.8 | 24 | 2.2 | 16 | | |
| | | | | | 21 | 0 | 3 | 24 | 4.9 | 24 | 5.6 | 16 | 1.5 | 8 |
| | | | | | | 3 | 7 | 24 | 5.9 | 24 | 6.1 | 16 | | |
| | | | | | | 7 | 10 | 32 | 4.6 | 32 | 5.2 | 24 | 2.2 | 16 |
| | | | | | | 10 | 15 | 32 | 7.2 | 32 | 4.3 | 24 | 0.5 | 16 |
| MBW-1050 | 1575 | 1050 | 0.7 H | 12.0 | 12 | 0 | 3 | 24 | 10.8 | 24 | 1.2 | 18 | | |
| | | | | | | 3 | 7 | 24 | 12.0 | 24 | | | | |
| | | | | | | 7 | 10 | 24 | 12.0 | 24 | | | | |
| | | | | | | 10 | 15 | 24 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 32 | 6.9 | 32 | 3.9 | 24 | 1.2 | 18 |
| | | | | | | 3 | 7 | 36 | 5.6 | 42 | 3.3 | 32 | 3.1 | 24 |
| | | | | | | 7 | 10 | 42 | 6.6 | 42 | 3.9 | 32 | 1.5 | 24 |
| | | | | | | 10 | 15 | 42 | 8.5 | 42 | 3.0 | 32 | 0.5 | 24 |
| MBW-1400 | 2100 | 1400 | 0.7 H | 12.0 | 12 | 0 | 3 | 24 | 12.0 | 24 | | | | |
| | | | | | | 3 | 7 | 24 | 12.0 | 24 | | | | |
| | | | | | | 7 | 10 | 24 | 12.0 | 24 | | | | |
| | | | | | | 10 | 15 | 24 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 42 | 8.9 | 42 | 3.1 | 32 | | |
| | | | | | | 3 | 7 | 42 | 10.8 | 42 | 1.2 | 32 | | |
| | | | | | | 7 | 10 | 42 | 12.0 | 42 | | | | |
| | | | | | | 10 | 15 | 42 | 11.5 | 42 | 0.5 | 32 | | |

## INSTRUCTIONS TO CONTRACTOR:

USE AS MANY ZONES AS WALL HEIGHT REQUIRES, STARTING WITH ZONE 1 AND ADDING ADDITIONAL ZONES TO THE BOTTOM OF THE WALL AS NEEDED TO MAKE UP THE TOTAL WALL HEIGHT (H) NEEDED.

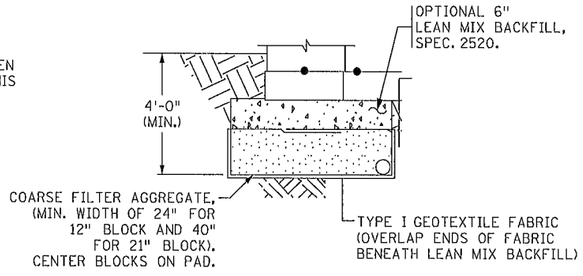
REINFORCEMENT CLASS, NOMINAL BLOCK WIDTH AND WALL BATTER ARE GENERALLY THE CONTRACTOR'S OPTION TO SELECT FROM Mn/DOT APPROVED PRODUCTS LISTS LOCATED AT www.mrr.dot.state.mn.us/geotechnical/foundations/foundations.asp.




TYPICAL SECTION

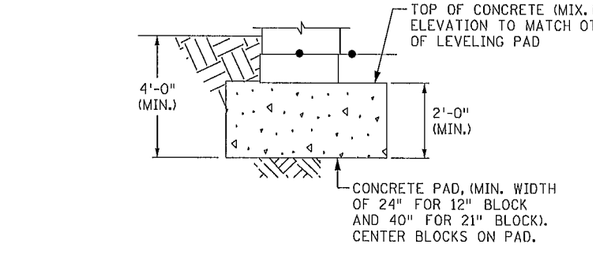
CASE 3

NOT TO SCALE




OPTIONAL CONCRETE LEVELING PAD

NOT TO SCALE




CONCRETE PAD WITHOUT DRAIN

NOT TO SCALE

## NOTES TO CONTRACTOR:

① OR 4 FT. MINIMUM, WHICHEVER IS GREATER.

② WIDTH - AS MEASURED FROM FRONT TO BACK FACE OF BLOCK UNIT.

③ MAXIMUM DISTANCE FROM TOP OF WALL TO FIRST REINFORCEMENT LAYER. UNREINFORCED WALLS ARE NOT INCLUDED IN THIS STANDARD BUT MAY BE CONSTRUCTED UP TO AT LEAST THE HEIGHT GIVEN IN THE TABLE FOR A GIVEN NOMINAL BLOCK WIDTH AND THE SPECIFIED FILL MATERIALS CONTAINED IN THIS STANDARD.

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⑤ THE WRAP LENGTH FOR GEOTEXTILE FABRIC SHALL NOT BE MORE THAN 6".

⑥ INSPECT EXCAVATION SLOPES FOR ACTIVE SEEPAGE AND PLACE ADDITIONAL DRAINS WHERE SEEPAGE OCCURS AS DIRECTED BY THE ENGINEER.

⑦ PLACE DRAIN AT BOTTOM OF REINFORCED SOIL IF PIPE CAN BE SLOPED TO OUTLET. DO NOT OUTLET ONTO A SIDEWALK.

⑧ IF PIPE AT THIS ELEVATION CANNOT BE SLOPED TO DRAIN, OMIT DRAIN AND USE "CONCRETE PAD WITHOUT DRAIN" DETAIL.

⑨ 4" THERMOPLASTIC PERFORATED PIPE, SPEC. 3245, WRAP WITH TYPE I GEOTEXTILE, SPEC. 3733 (TYP.) INSTALLATION AS PER SPEC. 2502, WITH PRECAST CONCRETE HEAD WALL AT OUTLET.

⑩ $S_{MAX}$ = 0.5 $S1_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 1.
$S_{MAX}$ = 0.5 $S2_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 2.
$S_{MAX}$ = 0.5 $S3_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 3.

⑪ THE REINFORCED WALL FILL DRAIN MAY BE CONNECTED INTO FOOTING DRAIN, INSTEAD OF OUT LETTING THROUGH THE WALL, IF CAPACITY IS ADEQUATE TO TRANSMIT THE FLOW.

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$

FILE NAME: @FILENAME@

REVISION:

APPROVED: 8-6-2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

REVISED:

APPROVED: 8-6-2014
STATE DESIGN ENGINEER

MODULAR BLOCK RETAINING WALL
SOIL REINFORCEMENT FOR 1:2 FILL SLOPE, CASE 3

STANDARD PLAN 5-297.643 | 460F482

PLOTTED/REVISED: $$$$@DATE@$$$$

# MODULAR BLOCK WALL REINFORCEMENT LAYOUT

CASE 4 - 1:3 FILL SLOPE

| MBW REINFORCEMENT CLASS | STRENGTH OF SOIL REINF. (PLF) LG. TERM ($T_{al}$) | STRENGTH OF SOIL REINF. (PLF) DESIGN ($T_a$) | ① MINIMUM REINFORCEMENT LENGTH, L (FT.) | MAXIMUM WALL HEIGHT (FT.) | ② NOMINAL BLOCK WIDTH (IN.) | WALL BATTER RANGE (DEGREES) ≥ | WALL BATTER RANGE (DEGREES) < | ③ MAXIMUM UNREINFORCED WALL HT, A (IN.) | ZONE 1 H1 (FT.) | ZONE 1 $S1_{MAX}$ (IN.) | ZONE 2 H2 (FT.) | ZONE 2 $S2_{MAX}$ (IN.) | ZONE 3 H3 (FT.) | ZONE 3 $S3_{MAX}$ (IN.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MBW-700 | 1050 | 700 | 0.7 H | 12.0 | 12 | 0 | 3 | 24 | 8.5 | 24 | 3.5 | 16 | | |
| | | | | | | 3 | 7 | 24 | 9.2 | 24 | 2.8 | 16 | | |
| | | | | | | 7 | 10 | 24 | 11.2 | 24 | 0.8 | 16 | | |
| | | | | | | 10 | 15 | 24 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 32 | 4.6 | 32 | 3.9 | 24 | 3.5 | 16 |
| | | | | | | 3 | 7 | 32 | 5.2 | 32 | 3.9 | 24 | 2.9 | 16 |
| | | | | | | 7 | 10 | 32 | 5.2 | 32 | 5.9 | 24 | 0.9 | 16 |
| | | | | | | 10 | 15 | 32 | 5.9 | 32 | 6.1 | 24 | | |
| MBW-1050 | 1575 | 1050 | 0.7 H | 12.0 | 12 | 0 | 3 | 24 | 12.0 | 24 | | | | |
| | | | | | | 3 | 7 | 24 | 12.0 | 24 | | | | |
| | | | | | | 7 | 10 | 24 | 12.0 | 24 | | | | |
| | | | | | | 10 | 15 | 24 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 42 | 5.6 | 42 | 3.3 | 32 | 3.1 | 24 |
| | | | | | | 3 | 7 | 42 | 8.2 | 42 | 2.6 | 32 | 1.2 | 24 |
| | | | | | | 7 | 10 | 42 | 8.5 | 42 | 3.5 | 32 | | |
| | | | | | | 10 | 15 | 42 | 9.8 | 42 | 2.2 | 32 | | |
| MBW-1400 | 2100 | 1400 | 0.7 H | 12.0 | 12 | 0 | 3 | 24 | 12.0 | 24 | | | | |
| | | | | | | 3 | 7 | 24 | 12.0 | 24 | | | | |
| | | | | | | 7 | 10 | 24 | 12.0 | 24 | | | | |
| | | | | | | 10 | 15 | 24 | 12.0 | 24 | | | | |
| | | | | | 21 | 0 | 3 | 42 | 8.9 | 42 | 3.1 | 32 | | |
| | | | | | | 3 | 7 | 42 | 10.8 | 42 | 1.2 | 32 | | |
| | | | | | | 7 | 10 | 42 | 12.0 | 42 | | | | |
| | | | | | | 10 | 15 | 42 | 12.0 | 42 | | | | |

## NOTES TO CONTRACTOR:

① OR 4 FT. MINIMUM, WHICHEVER IS GREATER.

② WIDTH - AS MEASURED FROM FRONT TO BACK FACE OF BLOCK UNIT.

③ MAXIMUM DISTANCE FROM TOP OF WALL TO FIRST REINFORCEMENT LAYER. UNREINFORCED WALLS ARE NOT INCLUDED IN THIS STANDARD BUT MAY BE CONSTRUCTED UP TO AT LEAST THE HEIGHT GIVEN IN THE TABLE FOR A GIVEN NOMINAL BLOCK WIDTH AND THE SPECIFIED FILL MATERIALS CONTAINED IN THIS STANDARD.

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⑦ PLACE DRAIN AT BOTTOM OF REINFORCED SOIL IF PIPE CAN BE SLOPED TO OUTLET. DO NOT OUTLET ONTO A SIDEWALK.

⑧ IF PIPE AT THIS ELEVATION CANNOT BE SLOPED TO DRAIN, OMIT DRAIN AND USE "CONCRETE PAD WITHOUT DRAIN" DETAIL.

⑨ 4" THERMOPLASTIC PERFORATED PIPE, SPEC. 3245, WRAP WITH TYPE I GEOTEXTILE, SPEC. 3733 (TYP.) INSTALLATION AS PER SPEC. 2502, WITH PRECAST CONCRETE HEAD WALL AT OUTLET.

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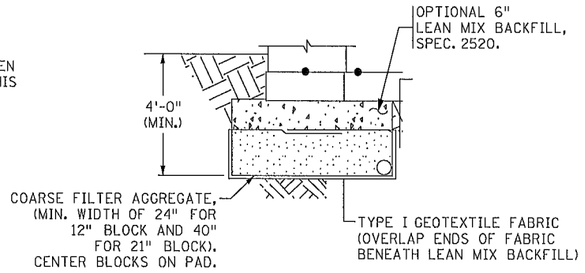
$S_{MAX}$ = 0.5 $S3_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 3.

⑪ THE REINFORCED WALL FILL DRAIN MAY BE CONNECTED INTO FOOTING DRAIN, INSTEAD OF OUT LETTING THROUGH THE WALL, IF CAPACITY IS ADEQUATE TO TRANSMIT THE FLOW.

## INSTRUCTIONS TO CONTRACTOR:

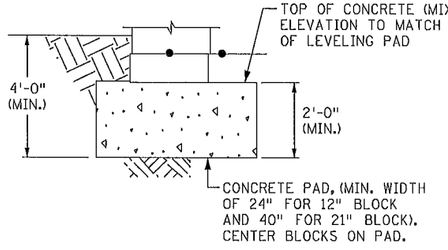
USE AS MANY ZONES AS WALL HEIGHT REQUIRES, STARTING WITH ZONE 1 AND ADDING ADDITIONAL ZONES TO THE BOTTOM OF THE WALL AS NEEDED TO MAKE UP THE TOTAL WALL HEIGHT (H) NEEDED.

REINFORCEMENT CLASS, NOMINAL BLOCK WIDTH AND WALL BATTER ARE GENERALLY THE CONTRACTOR'S OPTION TO SELECT FROM Mn/DOT APPROVED PRODUCTS LISTS LOCATED AT www.mrr.dot.state.mn.us/geotechnical/foundations/foundations.asp.



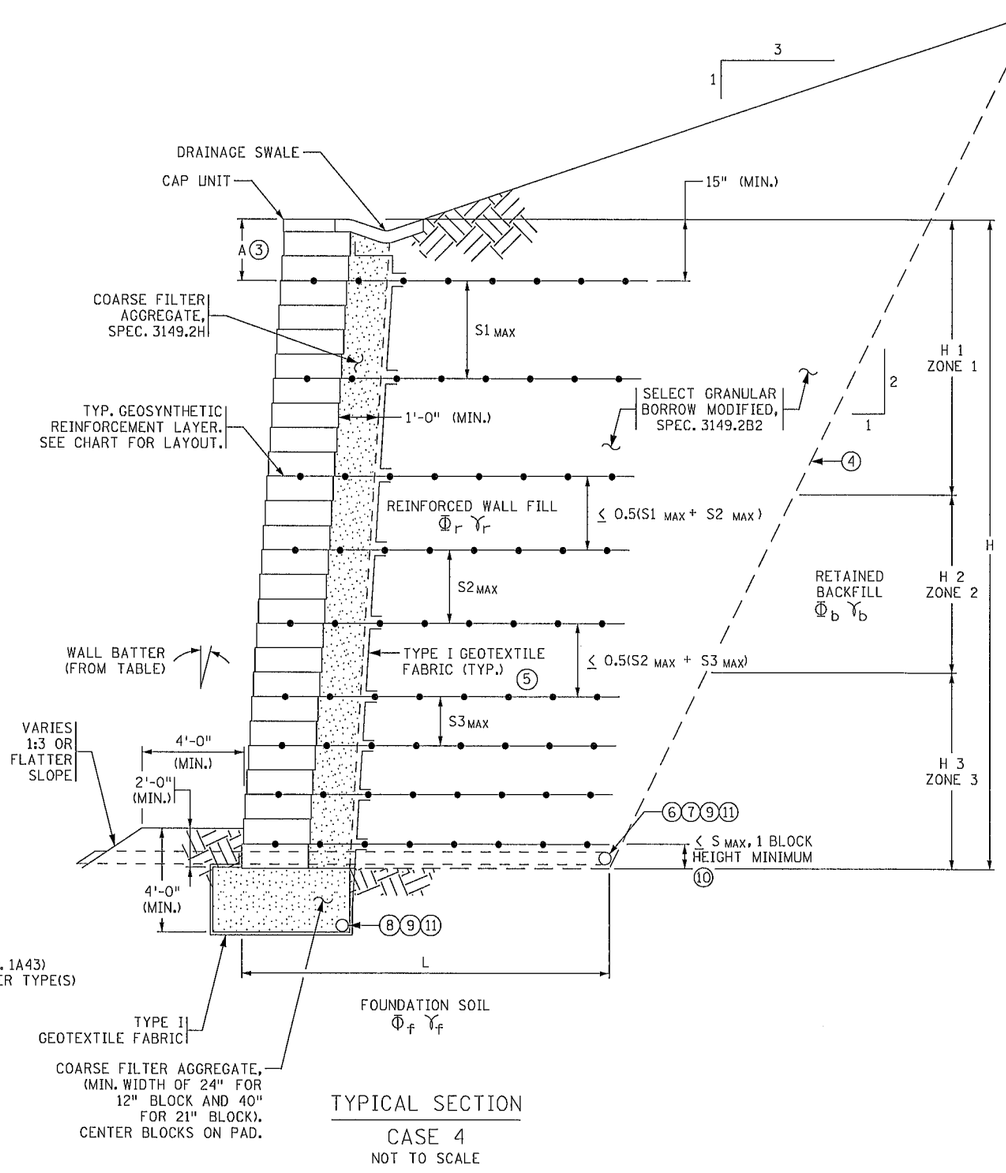

OPTIONAL CONCRETE LEVELING PAD

NOT TO SCALE




CONCRETE PAD WITHOUT DRAIN

NOT TO SCALE




TYPICAL SECTION

CASE 4

NOT TO SCALE

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$@NAME@$$$
PATH & FILENAME: $$$@PATHFILENAME@$$$

FILE NAME: @FILENAME@

REVISION:

APPROVED: 8-6-2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

REVISED:

APPROVED: 8-6-2014
STATE DESIGN ENGINEER

MODULAR BLOCK RETAINING WALL
SOIL REINFORCEMENT FOR 1:3 FILL SLOPE, CASE 4

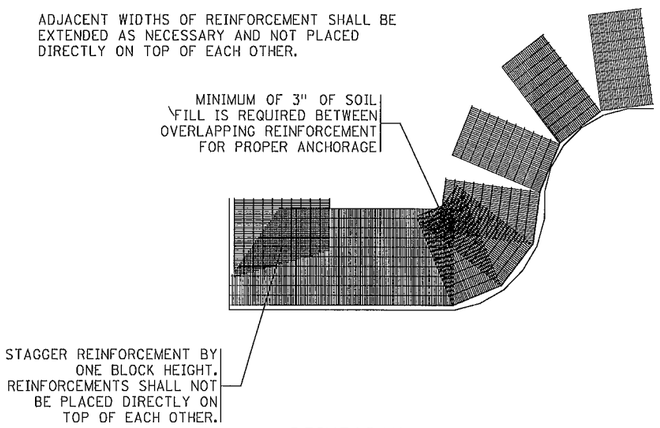
STANDARD PLAN 5-297.644 | 47 OF 482

PLOTTED/REVISED:
$$$$@DATE@$$$$

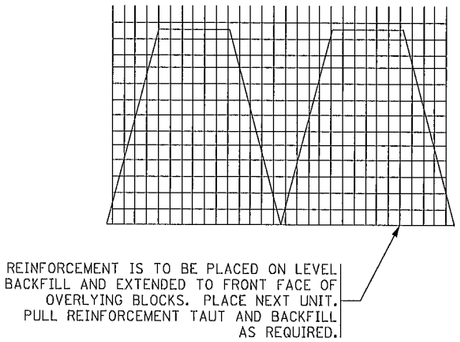
NOTES:

CORRECT ORIENTATION OF GEOSYNTHETIC TO OBTAIN PROPER STRENGTH SHALL BE DETAILED ON CONTRACTOR DRAWINGS.

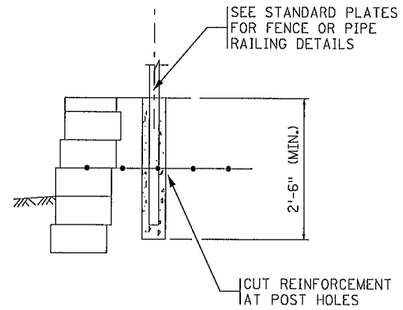
ADJACENT WIDTHS OF REINFORCEMENT SHALL BE EXTENDED AS NECESSARY AND NOT PLACED DIRECTLY ON TOP OF EACH OTHER.




REINFORCEMENT PLACEMENT AROUND CURVES AND CORNERS

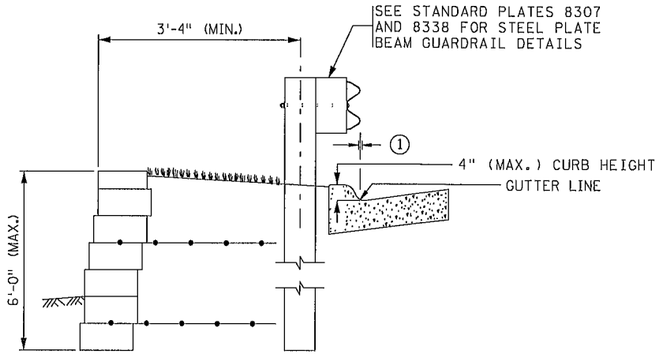



REINFORCEMENT PLACEMENT BETWEEN BLOCK UNITS

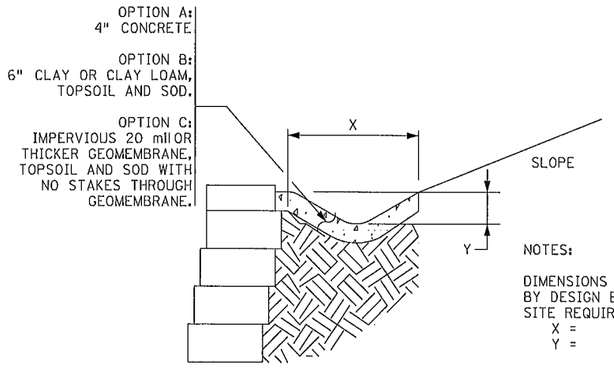



POST DETAIL

TYPICAL HANDRAIL AND/OR FENCE POST




STEEL PLATE BEAM GUARDRAIL DETAIL 1

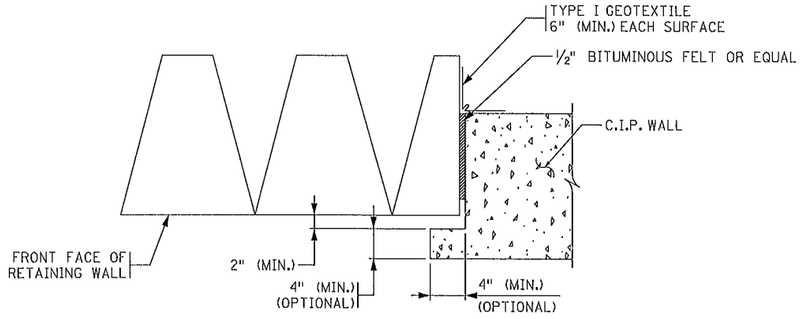



NOTES:

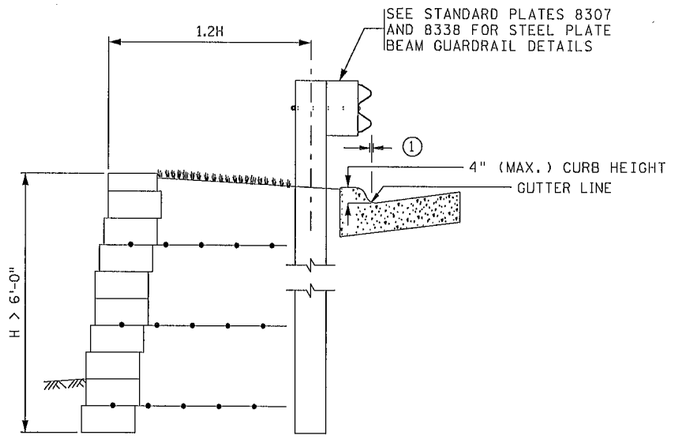
DIMENSIONS TO BE DETERMINED BY DESIGN ENGINEER BASED ON SITE REQUIREMENTS.
X =
Y =

SEE PLAN VIEW FOR SURFACE DRAINAGE PATTERNS.

TYPICAL DRAIN SWALE DETAIL




CONNECTION DETAIL AT JUNCTURE OF MSEW AND C.I.P. STRUCTURE




STEEL PLATE BEAM GUARDRAIL DETAIL 2

(AADT SHALL BE LESS THAN 5000)
STEEL PLATE BEAM GUARDRAIL SHOWN.

NOTES:

(1) USE CAUTION WHEN PLACING CURB WITH GUARDRAIL. CURBS ADVERSELY AFFECT THE PERFORMANCE OF THE GUARDRAIL. GENERALLY PLACE CURB DIRECTLY BELOW GUARDRAIL. SEE PLANS OR REFER TO STANDARD PLAN 5-297.601(2). FOR CURB LOCATIONS ON NCHRP REPORT NO. 350 APPROVED BRIDGE TRANSITIONS, SEE STANDARD PLANS 5-297.603, .605, .606 ETC..

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@

REVISION:

APPROVED: 8-6-2014

DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

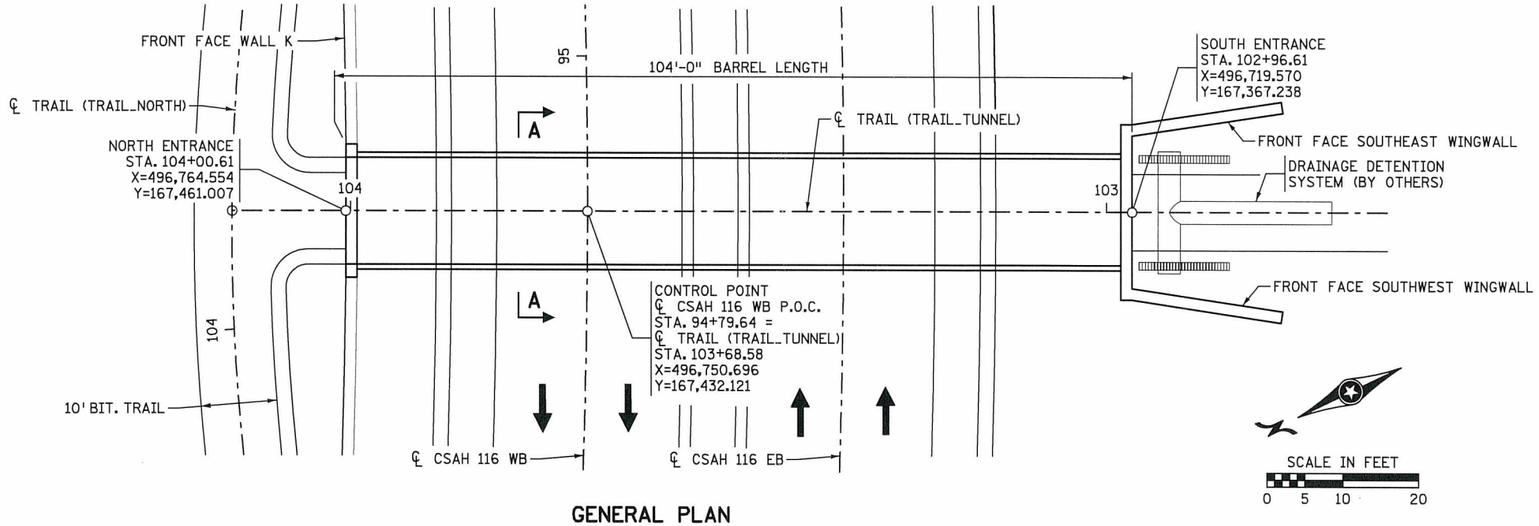
REVISED:

APPROVED: 8-6-2014

STATE DESIGN ENGINEER

MODULAR BLOCK RETAINING WALL
DETAILS

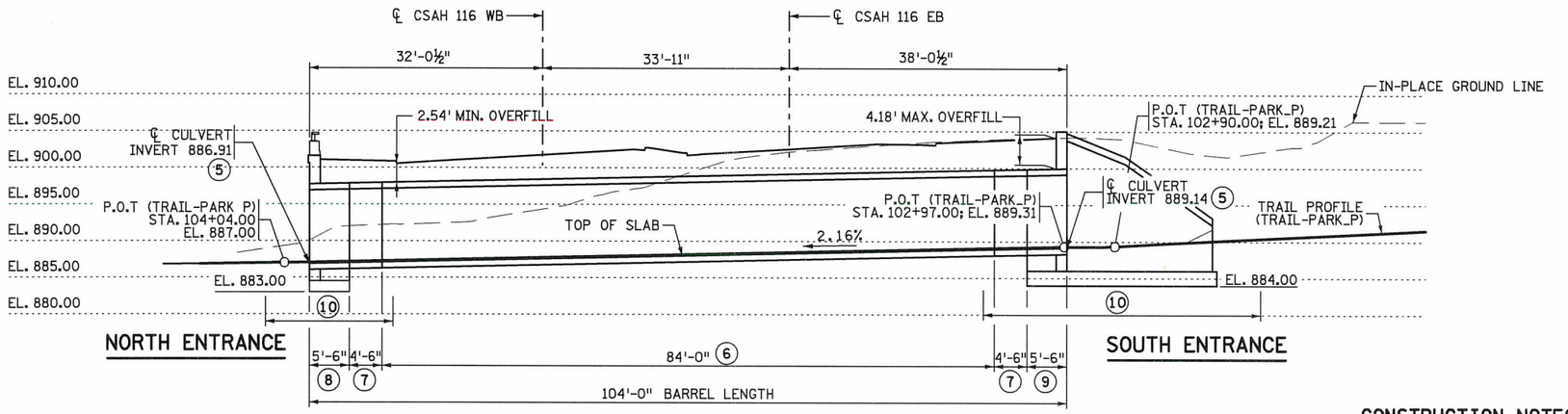
STANDARD PLAN 5-297.645







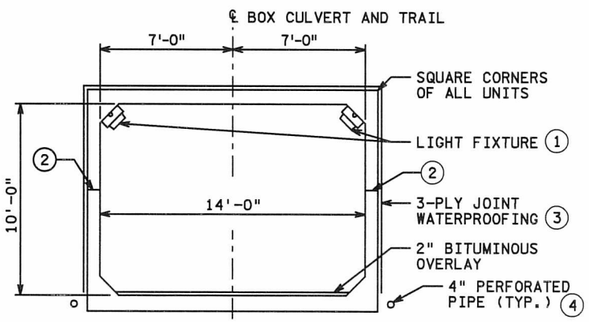
## GENERAL PLAN




## GENERAL ELEVATION

## SPECIFIC NOTES

1. SEE SHEET "LIGHTING PLAN" SHEET FOR BOX CULVERT LIGHTING.
2. HIDEAWAY TIE RODS REQUIRED. SEE STANDARD PLATE 3145. (INCIDENTAL)
3. WRAP TOP AND SIDES OF CULVERT JOINTS WITH 3-PLY JOINT WATERPROOFING PER Mn/DOT 2481. (INCIDENTAL)
4. SEE "DRAINAGE PLAN" SHEET FOR DETAILS.
5. CULVERT INVERT 2" BELOW TRAIL PROFILE TO ACCOMODATE 2" BITUMINOUS OVERLAY.
6. SEE "PRECAST CONCRETE BARREL DETAILS" SHEET FOR DETAILS. TO BE INCLUDED UNDER PAY ITEM "14x10 PRECAST BOX CULVERT".
7. SEE "SPECIAL PRECAST CONCRETE BARREL DETAILS" SHEET FOR DETAILS. TO BE INCLUDED UNDER PAY ITEM "14x10 PRECAST BOX CULVERT".
8. SEE "NORTH CAST-IN-PLACE BOX CULVERT DETAIL" SHEET AND CAST-IN-PLACE PANEL I SHEETS FOR DETAILS.
9. SEE "SOUTH CAST-IN-PLACE BOX CULVERT DETAIL" SHEET AND SOUTH WALL SHEETS FOR DETAILS.
10. PLACE NON-FROST SUSCEPTIBLE MATERIAL CONFORMING TO MnDOT SPECIFICATION 3149-12 FOR FINE AGGREGATE. LIMITS PER 12-9-2015 BRAUN INTERTEC GEOTECHNICAL REPORT (SECTION D.2.F AND FIGURE 1).




## TYPICAL SECTION

## CONSTRUCTION NOTES

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

CONCRETE SHALL BE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED UNLESS OTHERWISE NOTED.

ALL EXPOSED CONCRETE EDGES SHALL BE FORMED WITH A ½" OR ¾" CHAMFER UNLESS OTHERWISE NOTED.

CONSTRUCTION TO BE IN ACCORDANCE WITH SPEC. 2412, EXCEPT AS NOTED.

FOR STRUCTURE EXCAVATION AND BACKFILL SEE SPEC. 2451.

SEE SPECIAL PROVISIONS FOR ALL XXXX.6XX SERIES PAY ITEMS FOR ADDITIONAL REQUIREMENTS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

1 1/4" CORD DIA. PREFORMED BUTYL RUBBER MASTIC JOINT SEALANT SHALL BE PLACED AROUND THE ENTIRE JOINT (TOP, BOTTOM, AND SIDES) AT ALL JOINT LOCATIONS AND IS INCIDENTAL TO BOX CULVERT.

## DESIGN DATA:

2014 AND CURRENT INTERIM A.A.S.H.T.O. DESIGN SPECIFICATIONS. LOADING: HL-93 LIVE LOAD
LOAD RESISTENCE FACTOR DESIGN METHOD:

| | |
|---|---|
| INSIDE HEIGHT = | 10'-0" |
| INSIDE WIDTH = | 14'-0" |
| BARREL LENGTH= | 104'-0" |
| HEIGHT OF WINGWALL AT END = | 0 |
| DEPTH OF KNEE WALL = | 4'-0" |
| SKEW ANGLE = | 0° |
| MINIMUM DESIGN FILL DEPTH = | 2.54' |
| MAXIMUM DESIGN FILL DEPTH = | 4.18' |
| UNIT WEIGHT FILL = | 120 LBS./CU.FT. |
| ANGLE INTERNAL FRICTION | 30° |

MAXIMUM ALLOWABLE DESIGN STRESSES:
PRECAST CONCRETE
fy = 60,000 p.s.i REINFORCEMENT BARS
fy = 65,000 p.s.i. STEEL FABRIC
f'c = 5,000 p.s.i. CONCRETE

REINFORCED CONCRETE (C.I.P. BOX CULVERT)
fy = 60,000 p.s.i. REINFORCMENT BARS
f'c = 5,000 p.s.i. CONCRETE n = 7

REINFORCED CONCRETE (WINGWALL)
fy = 60,000 p.s.i. REINFORCMENT BARS
f'c = 4,000 p.s.i. CONCRETE n = 8

## LIST OF SHEETS


| NO. | DESCRIPTION |
|---|---|
| 49 | GENERAL PLAN AND ELEVATION |
| 50 | TYPICAL DETAILS, AESTHETIC DETAILS, & QUANTS. |
| 51 | PRECAST CONCRETE BARREL DETAILS |
| 52 | SPECIAL PRECAST CONCRETE BARREL DETAILS |
| 53 | NORTH C.I.P. BOX CULVERT DETAILS |
| 54-57 | C.I.P. PANEL I DETAILS |
| 58 | SOUTH C.I.P. BOX CULVERT DETAILS |
| 59-67 | SOUTH WALL DETAILS |
| 68-75 | RETAINING WALL K DETAILS |
| 76-79 | BARRIER DETAILS |
| 80 | PIPE RAILING DETAILS |
| 81 | DRAINAGE PLAN |
| 82 | LIGHTING PLAN |


ANOKA COUNTY
TRAIL
MINNESOTA DEPARTMENT OF TRANSPORTATION

# BRIDGE NO. 02J48

14' X 10' BOX CULVERT
PEDESTRIAN TUNNEL UNDER CSAH 116
CSAH 116 WB STATION 94+80

CONCRETE BOX CULVERT
IDENTIFICATION NO. 113

## GENERAL PLAN AND ELEVATION

SEC. 36 T 32 N R 24 W
CITY OF ANDOVER ANOKA COUNTY

APPROVED _____ ANOKA COUNTY ENGINEER DATE: 5/6/16
APPROVED _____ STATE BRIDGE ENGINEER DATE: 5/9/16

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067


TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com


ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
PEDESTRIAN BOX CULVERT
GENERAL PLAN AND ELEVATION

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 49 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:35:53 PM
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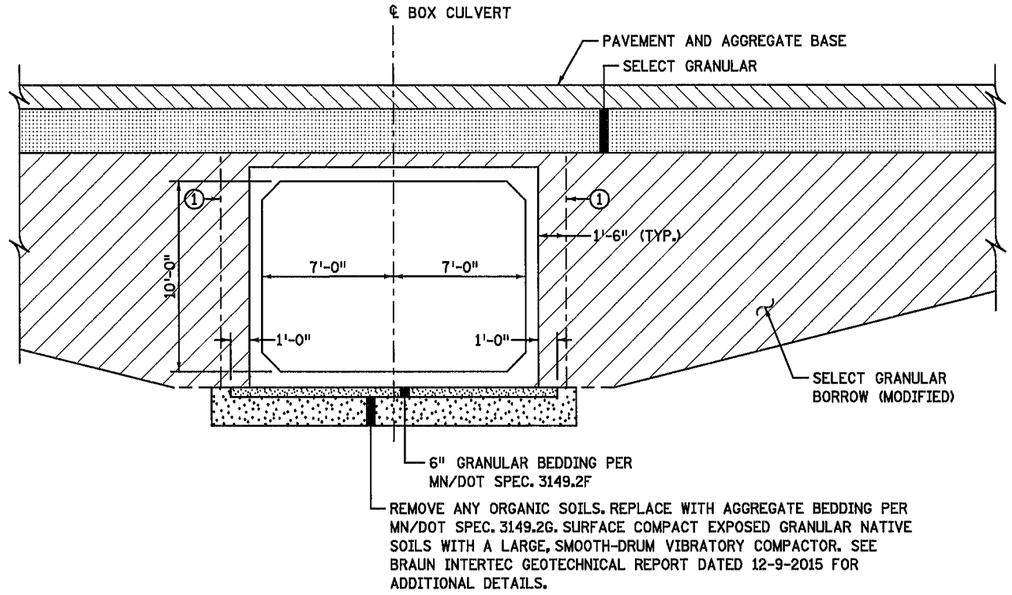



## SECTION A-A

(FROM GENERAL PLAN AND ELEVATION SHEET)

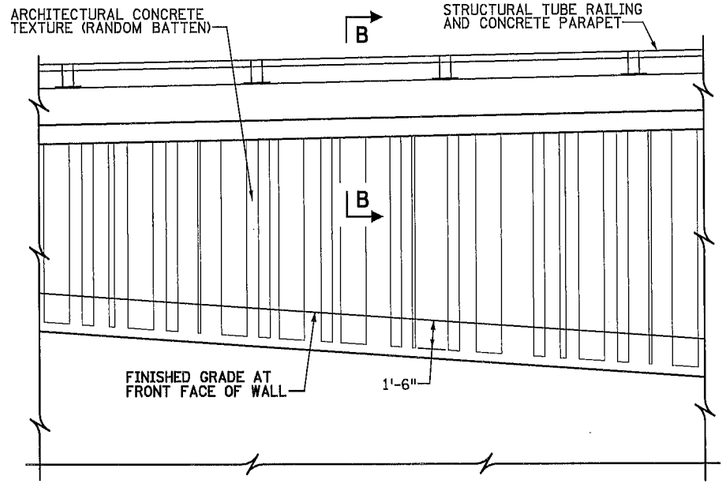
① PAY LIMITS OF STRUCTURE EXCAVATION AND BACKFILL MATERIAL. ACTUAL EXCAVATION SLOPE IS DETERMINED BY OSHA REGULATIONS AND IN-SITU SOILS. EXCAVATION AND BACKFILL BEYOND LIMITS OF STRUCTURE EXCAVATION IS AT CONTRACTORS EXPENSE.

② ALL EARTHWORK QUANTITIES REQUIRED FOR THE CONSTRUCTION OF BR. 02J48 ARE TABULATED IN THE ROADWAY PLANS.

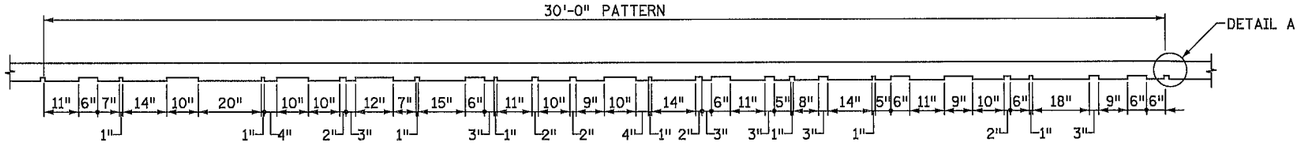
## SCHEDULE OF QUANTITIES ②

| ITEM DESCRIPTION | UNIT | QUANTITY | |
|---|---|---|---|
| STRUCTURAL CONCRETE (1G52) | CU YD | 51 | (P) |
| STRUCTURAL CONCRETE (3B52) | CU YD | 404 | (P) |
| STRUCTURAL CONCRETE (3W82) | CU YD | 14 | (P) |
| TYPE P-2 (TL-4) RAILING CONCRETE (3S52) | LIN FT | 528 | (P) |
| REINFORCEMENT BARS | POUND | 6,100 | (P) |
| REINFORCEMENT BARS (EPOXY COATED) | POUND | 54,180 | (P) |
| STRUCTURAL TUBE RAILING DESIGN T-1 | LIN FT | 522 | (P) |
| PIPE RAILING | LIN FT | 62 | (P) |
| SHEAR STUDS | EACH | 2,200 | (P) |
| 14X10 PRECAST BOX CULVERT | LF | 93 | (P) |
| STEEL SHEET PILING (PERMANENT) | SQ FT | 14,240 | |
| DRAINAGE SYSTEM TYPE (B910) | LUMP SUM | 1 | |
| CONDUIT SYSTEM (LIGHTING) | LUMP SUM | 1 | |

(P) DENOTES PLAN QUANTITY PAY ITEM AS PER SPEC. 1901.

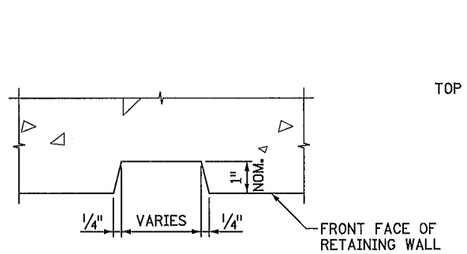



## TYPICAL WALL PANEL ELEVATION

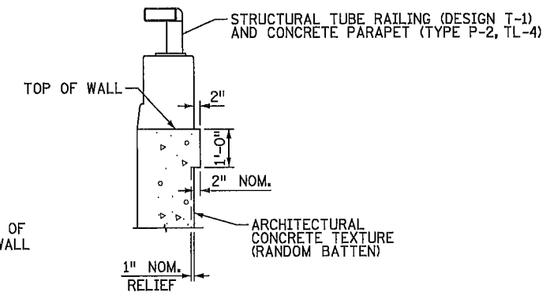



## RANDOM BATTEN RUSTICATION

(ARCHITECTURAL CONCRETE TEXTURE (RANDOM BATTEN) INCIDENTAL)




## DETAIL A




## SECTION B-B

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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED _____
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

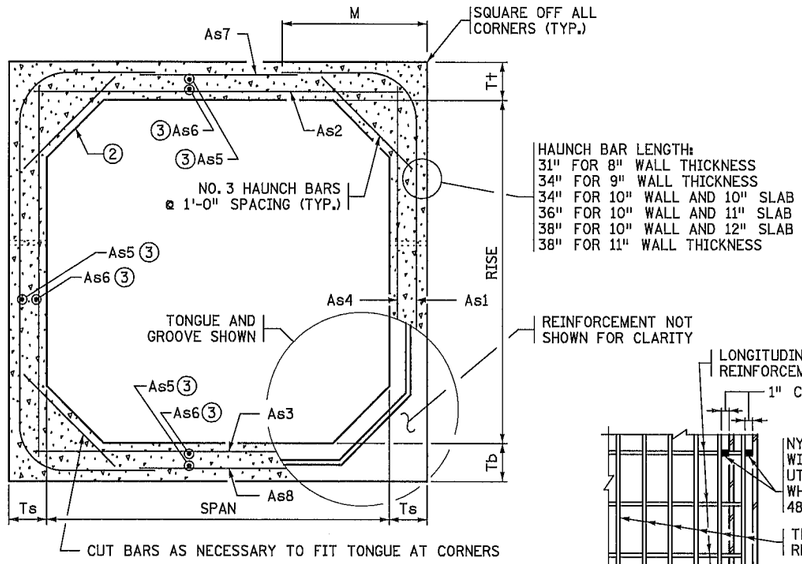
ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: TYPICAL DETAILS, AESTHETIC DETAILS & QUANTITIES

DES: MAV DR: MAV CHK: MJC CHK: MJC APPROVED

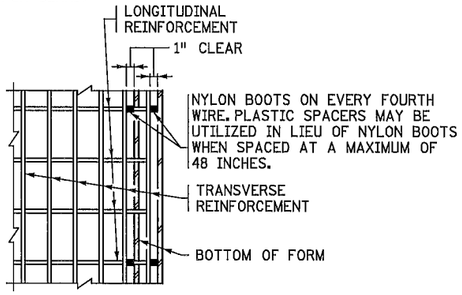
Sheet No. 50 of 482 Sheets

Bridge No. 02J48

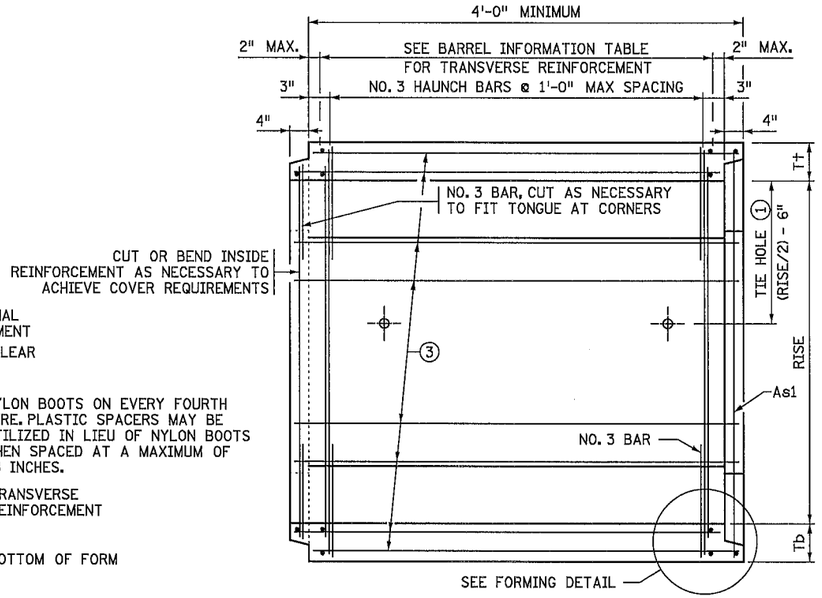



## TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

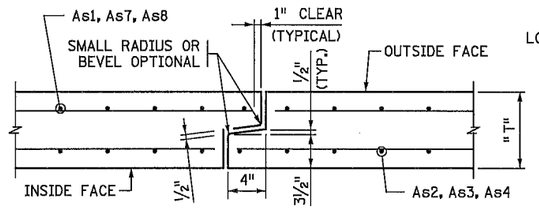



## PLAN

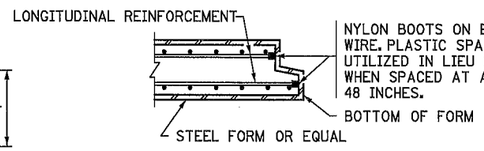



## LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

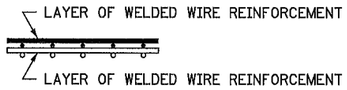



## TONGUE AND GROOVE JOINT DETAIL




## SECTION

## FORMING DETAIL




## REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN

## CONSTRUCTION NOTES

CONSTRUCT CULVERTS PER SPEC. 2412 EXCEPT AS NOTED.

REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

PROVIDE WELDED WIRE REINFORCEMENT, SHEAR REINFORCEMENT AND REINFORCEMENT BARS PER THE APPLICABLE REQUIREMENTS OF AASHTO M259.

1½" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
- (a) 1 OR 2 LAYERS OF WELDED WIRE REINFORCEMENT OR
- (b) 1 LAYER OF WELDED WIRE REINFORCEMENT AND 1 LAYER OF REINFORCEMENT BARS OR
- (c) 1 LAYER OF REINFORCEMENT BARS.

DEVELOP REINFORCEMENT IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WELDED WIRE REINFORCEMENT, INCREASE THE AREA OF REINFORCEMENT BY 8%, AND SUBMIT DESIGN CALCULATIONS VERIFYING COMPLIANCE WITH AASHTO 5.7.3.4. "CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT".

MAXIMUM SIZE OF REINFORCEMENT BARS IS NO. 6. THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE IS W23 PER LAYER (MAXIMUM OF 2 LAYERS).

SPACE CENTER TO CENTER OF TRANSVERSE WIRES NOT LESS THAN 2" NOR MORE THAN 4". SPACE CENTER TO CENTER OF LONGITUDINAL WIRES NOT MORE THAN 8".

WELDING IS NOT PERMITTED ON REINFORCEMENT BARS OR WELDED WIRE REINFORCEMENT, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE REINFORCEMENT IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, PLACE ADDITIONAL REINFORCEMENT ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER SPEC. 3238.2.A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN. LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.

(1) USE 1" DIAMETER CULVERT TIES. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.

(2) USE 12" VERTICAL, 12" HORIZONTAL HAUNCHES ON ALL BOX SIZES.

(3) PLACE LONGITUDINAL REINFORCEMENT DENOTED AS As5 AND As6 IN ALL SLABS AND WALLS WITH A MINIMUM OF 0.06 SQ. IN./FT.

## BARREL INFORMATION TABLE ***

| LOCATION | SIZE | CLASS | f'c (P.S.I.) | FILL HEIGHT RANGE (FT.) | DISTRIBUTION SLAB REQUIRED * | RECESSED TIE RODS REQUIRED ** | DIMENSIONS | | | | | WEIGHT (LBS./FT.) | WELDED WIRE REINFORCEMENT | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | As1 | | | As2 | | As3 | | As4 | | As7 | | As8 | |
| | | | | | | | SPAN (FT.) | RISE (FT.) | T+ (IN.) | Tb (IN.) | Ts (IN.) | | AREA (IN.²/FT.) | LENGTH (FT.) | M (FT.) | AREA (IN.²/FT.) | LENGTH (FT.) | AREA (IN.²/FT.) | LENGTH (FT.) | AREA (IN.²/FT.) | LENGTH (FT.) | AREA (IN.²/FT.) | LENGTH (FT.) | AREA (IN.²/FT.) | LENGTH (FT.) |
| STA. 94+79.64 WB | 14'x10' | 1 | 5000 | < 3 | NO | YES | 14 | 10 | 10 | 10 | 8 | 6150 | 0.68 | 18'-1" | 3'-6" | 1.12 | 14'-6" | 1.09 | 14'-6" | 0.20 | 10'-6" | 0.24 | 10'-11" | 0.24 | 10'-11" |
| | | | | | | | | | | | | | | | | | | | | | | | | |

* ALL CLASS 1 CULVERTS WITH FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. IF A DISTRIBUTION SLAB IS NOT REQUIRED, INDICATE "NO" IN THIS BOX.

** FOR PEDESTRIAN CULVERT APPLICATIONS HIDE-AWAY OR RECESSED TIE CONNECTIONS ARE REQUIRED, SEE STANDARD PLATE 3145. IF REQUIRED, INDICATE "YES" IN THIS BOX.

*** BOX CULVERTS WITH SPANS FROM 6 TO 14 FT. ARE DESIGNED FOR HL-93 LIVE LOADS (AASHTO LRFD 3.6.2.1) NOT INCLUDING THE DESIGN LANE LOAD. BOXES WITH SPANS OF 16 FT. ARE DESIGNED FOR HL-93 LIVE LOADS INCLUDING THE DESIGN LANE LOAD.

REVISION: 10-09-2015

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

MODIFICATIONS:
-REMOVED DISTRIBUTION SLAB NOTES AND DETAILS.
-SQUARE OFF ALL CORNERS.

STATE PROJ. NO 002-716-015 (CSAH 116 WB) STA. 94+79.64

FIG. 5-395.101(A) MOD.

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: PRECAST CONCRETE BARREL DETAILS

DES: MAV DR: MAV APPROVED
CHK: MJC CHK: MJC

Sheet No. 51 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:35:55 PM
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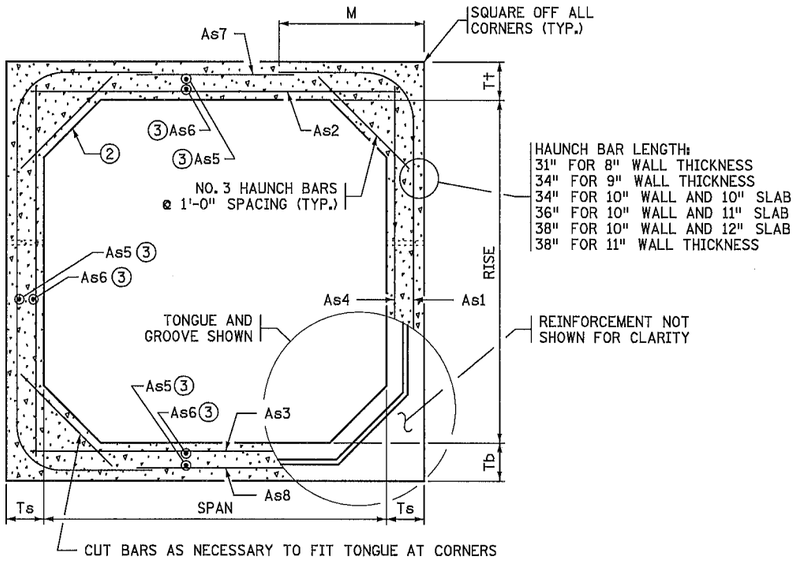
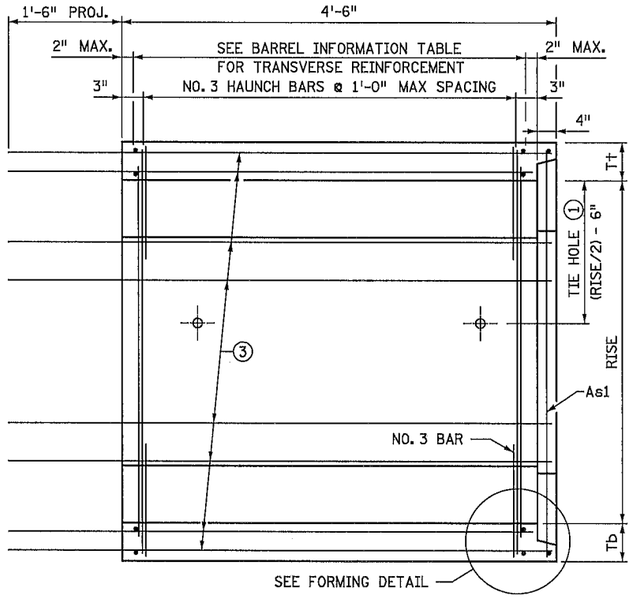



## TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN



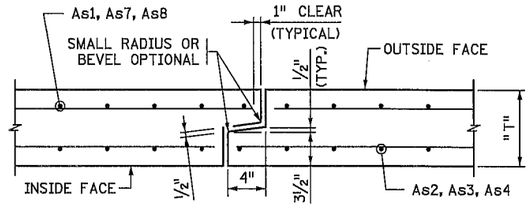

## TYPE II LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN
(1 THUS)

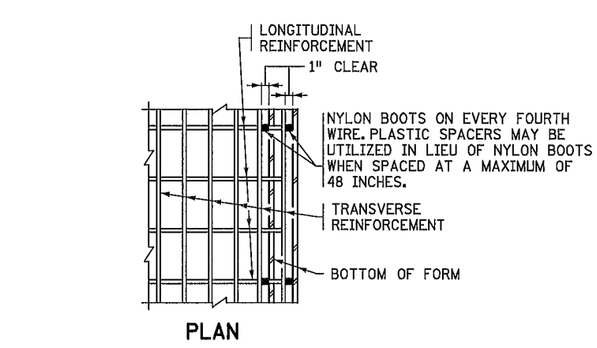
## CONSTRUCTION NOTES

SEE SHEET 51 FOR PRECAST BOX CULVERT STANDARD CONSTRUCTION NOTES AND BARREL INFORMATION TABLE.

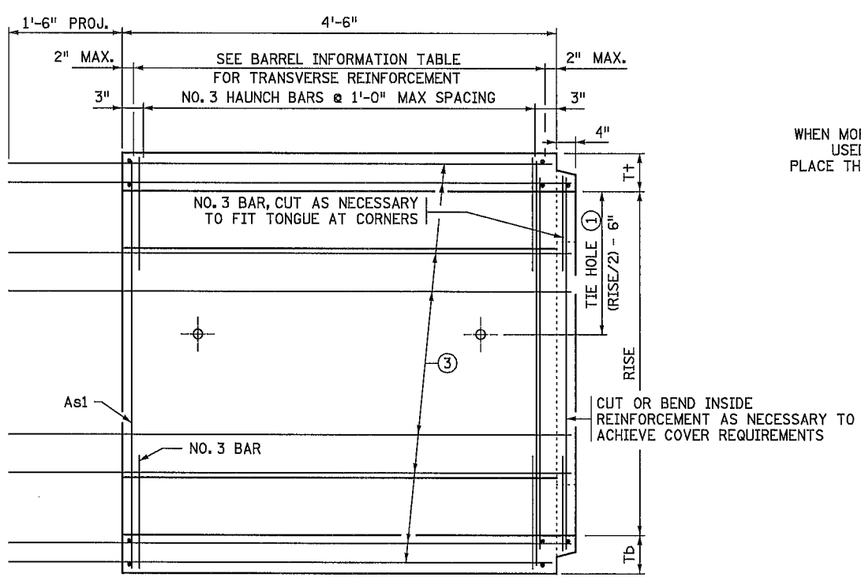
1. USE 1" DIAMETER CULVERT TIES. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.
2. USE 12" VERTICAL, 12" HORIZONTAL HAUNCHES ON ALL BOX SIZES.
3. PLACE LONGITUDINAL REINFORCEMENT DENOTED AS As5 AND As6 IN ALL SLABS AND WALLS WITH A MINIMUM OF 0.06 SQ. IN./FT.




## TONGUE AND GROOVE JOINT DETAIL

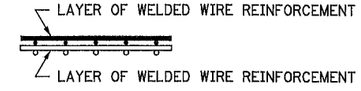



## FORMING DETAIL




## TYPE III LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN
(1 THUS)




## REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN

MODIFICATIONS:
-REMOVED DISTRIBUTION SLAB NOTES AND DETAILS.
-MODIFED BARREL SECTION TO INCLUDE PROJECTING BARS.
-SQUARE OFF ALL CORNERS

REVISION: 10-09-2015

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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Saint Paul, MN 55101
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tkda.com

ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: SPECIAL PRECAST CONCRETE BARREL DETAILS

STATE PROJ. NO 002-716-015 (CSAH 116 WB) STA. 94+79.64

FIG. 5-395.101(A) MOD.

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 52 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:35:56 PM
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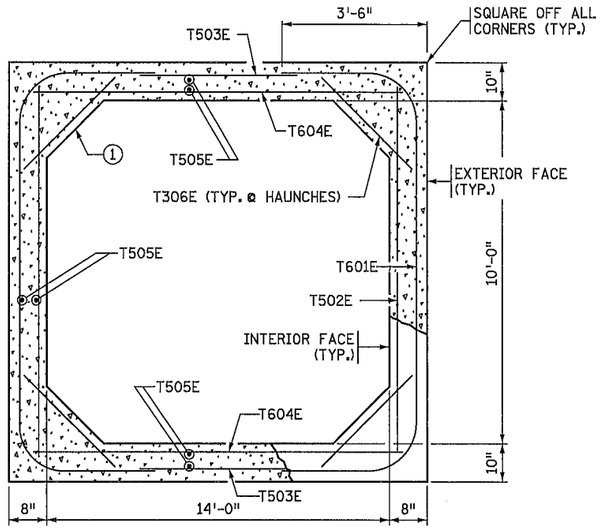
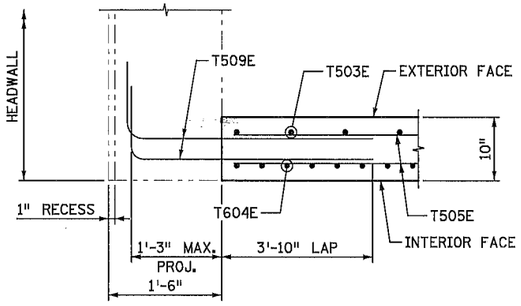


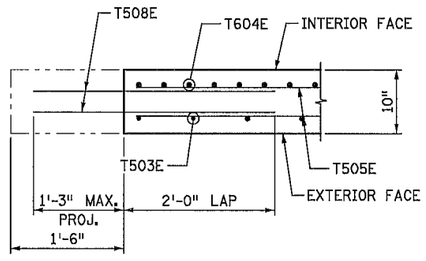

## TRANSVERSE BARREL SECTION

(NOT TO SCALE)



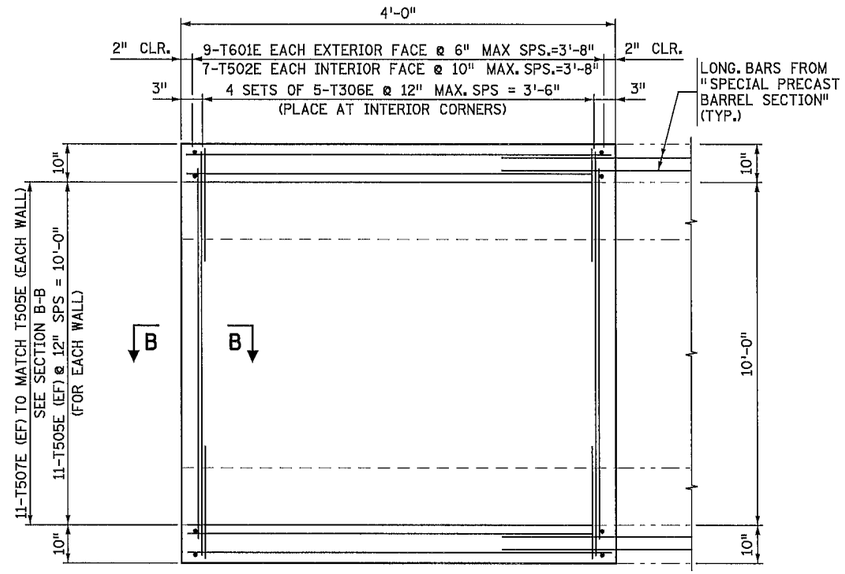

## SECTION A-A

(TOP SLAB)



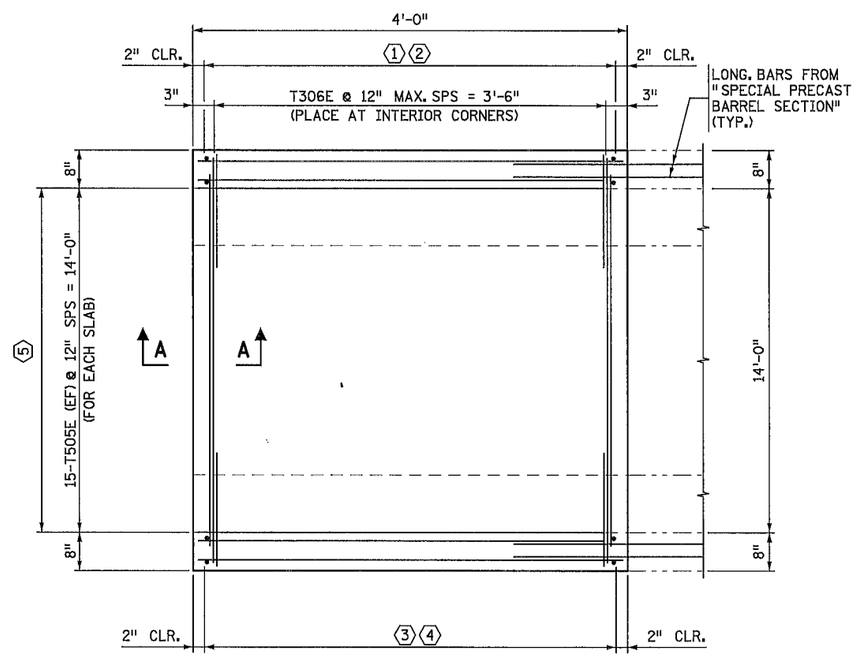

## SECTION A-A

(BOTTOM SLAB)




## ELEVATION

(NOT TO SCALE)




## PLAN

(NOT TO SCALE)

## CONSTRUCTION NOTES

CONSTRUCT CULVERTS PER SPEC. 2412 EXCEPT AS NOTED.

REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

PROVIDE WELDED WIRE REINFORCEMENT, SHEAR REINFORCEMENT AND REINFORCEMENT BARS PER THE APPLICABLE REQUIREMENTS OF AASHTO M259.

1½" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT.

WELDING IS NOT PERMITTED ON REINFORCEMENT BARS.

USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED. CONCRETE MIX TO HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 5,000 psi.

SHOP DRAWING APPROVAL PER SPEC. 3238.2.A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN. LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.

(1) 12" VERTICAL AND 12" HORIZONTAL HAUNCH SIZE.

## BAR CALL-OUTS:

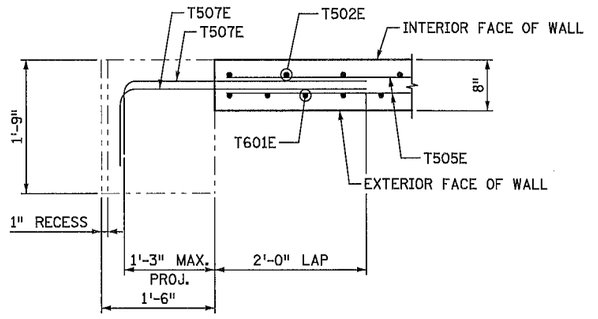
(1) 6-T503E (T) @ 9" MAX. SPS. = 3'-8" (TOP SLAB).

(2) 12-T604E (B) @ 4" SPS. = 3'-8" (TOP SLAB).

(3) 12-T604E (T) @ 4" SPS. = 3'-8" (BOTTOM SLAB).

(4) 6-T503E (B) @ 9" MAX. SPS. = 3'-8" (BOTTOM SLAB).

(5) 43-T509E (EF) @ 4" SPS. = 14'-0" (TOP SLAB).
15-T508E (EF) TO MATCH T505E (BOTTOM SLAB).




## SECTION B-B

(EACH WALL)

MODIFICATIONS:
-REMOVED DISTRIBUTION SLAB NOTES AND DETAILS.
-MODIFED BARREL SECTION TO INCLUDE PROJECTING BARS.
-ADDED BAR CALL OUTS.
-CHANGED TO C.I.P. BOX SECTION

DATE: 5/4/2016 TIME: 1:35:57 PM
FILENAME: K:\a-f\Anoka Cty\V5344000\hwy-brdg\hwy\pln-sht\Nbox01.dgn

REVISION: 10-09-2015

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE PROJ. NO 002-716-015 (CSAH 116 WB) STA. 94+80

FIG. 5-395.101(A) MOD.

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED Matthew A. Volz
MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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tkda.com

ANOKA COUNTY

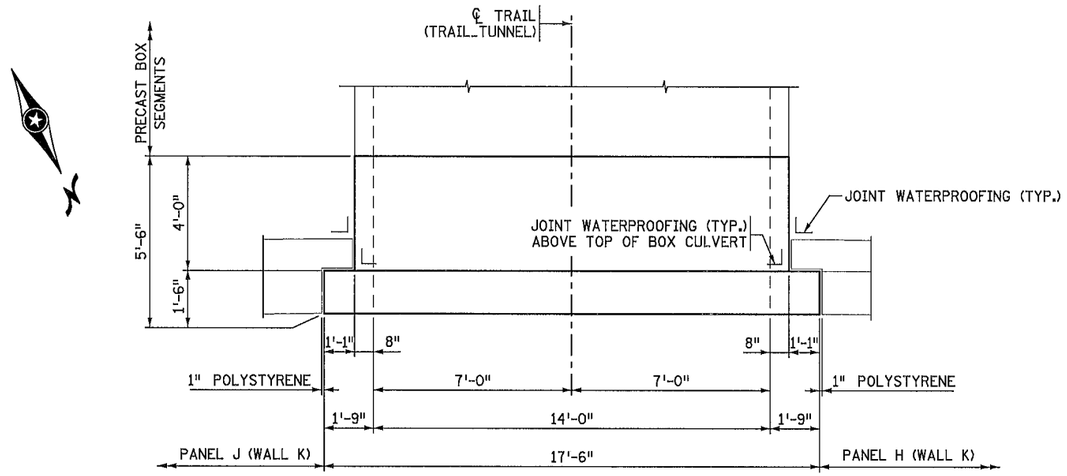
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
NORTH CAST-IN-PLACE BOX CULVERT DETAILS

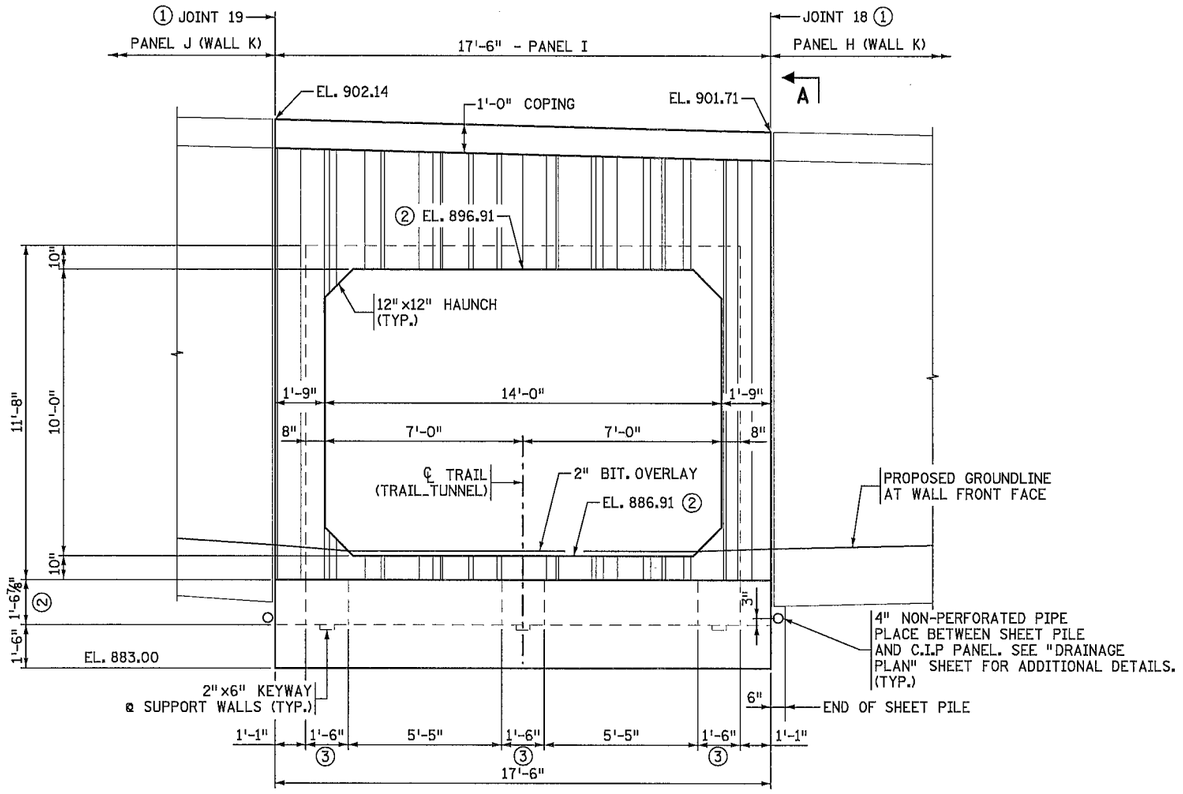
| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 53 of 482 Sheets

Bridge No. 02J48




## C.I.P. PANEL I PLAN



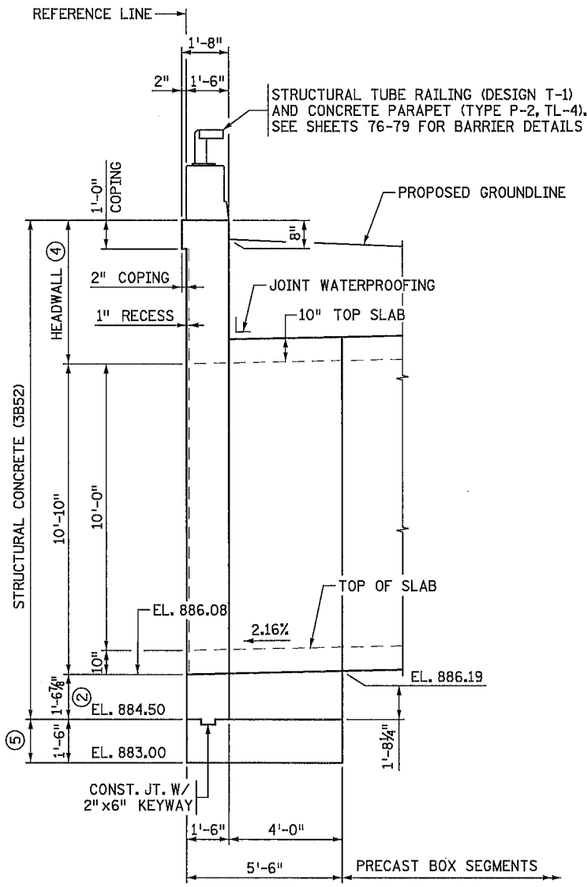

## C.I.P. PANEL I ELEVATION

(BARRIER NOT SHOWN FOR CLARITY)

### NOTES:

1. SEE "RETAINING WALL K GEOMETRIC DATA" SHEET FOR ADDITIONAL INFORMATION.
2. ELEVATIONS GIVEN ARE AT NORTH ENTRANCE OF BOX CULVERT.
3. CAST-IN-PLACE BOX SEGMENT SUPPORT WALL.
4. VARIES (4.81' MIN; 5.24' MAX.)
5. STRUCTURAL CONCRETE (1G52).

   APPLY ARCHITECTURAL CONCRETE TEXTURE (RANDOM BATTEN) TO C.I.P. PANEL I.




## TYPICAL SECTION

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

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SIGNED Matthew A. Volz

MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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Saint Paul, MN 55101
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ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: CAST-IN-PLACE PANEL I PLAN AND ELEVATION

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 54 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:35:58 PM
FILENAME: K:\cr-f\Anoka\Cty\5344000\hwy-brdg\hwy\pln-sht\Nbox02.dgn

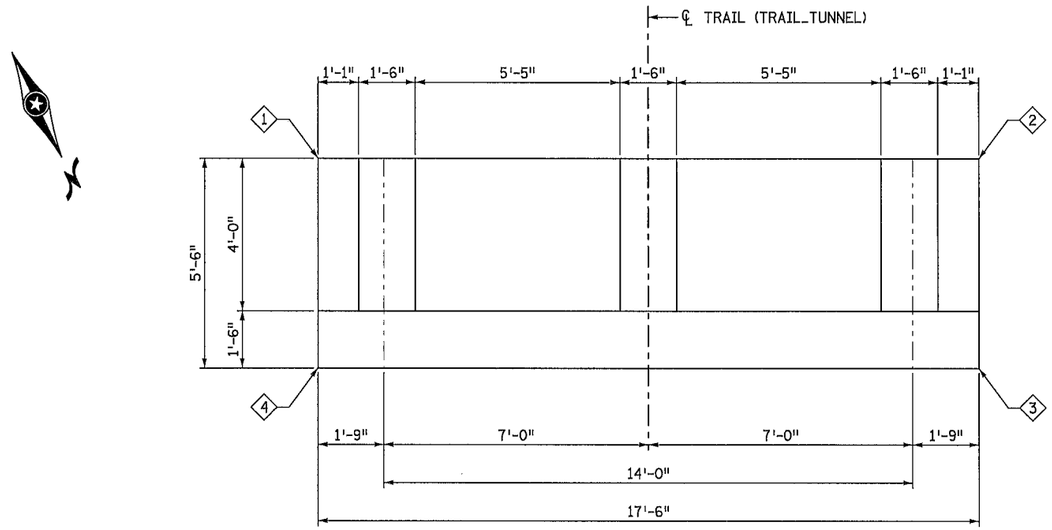
## GENERAL NOTES:

CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

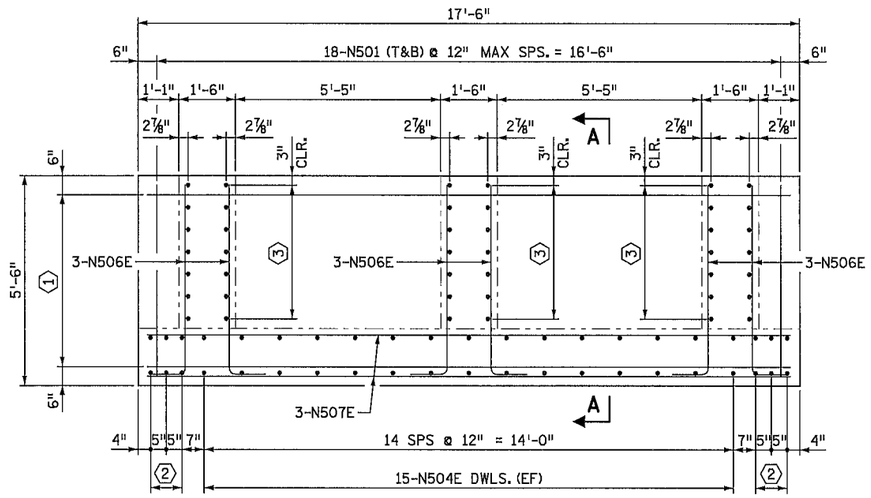
## BAR CALL-OUTS:

1. 6-N502 (T&B) @ 12" MAX SPS. = 4'-6".
2. 3-N503E DWLS. (EF) SPACE AS SHOWN.
3. 7-N505E DWLS. (EF) @ 7" SPS. = 3'-6"

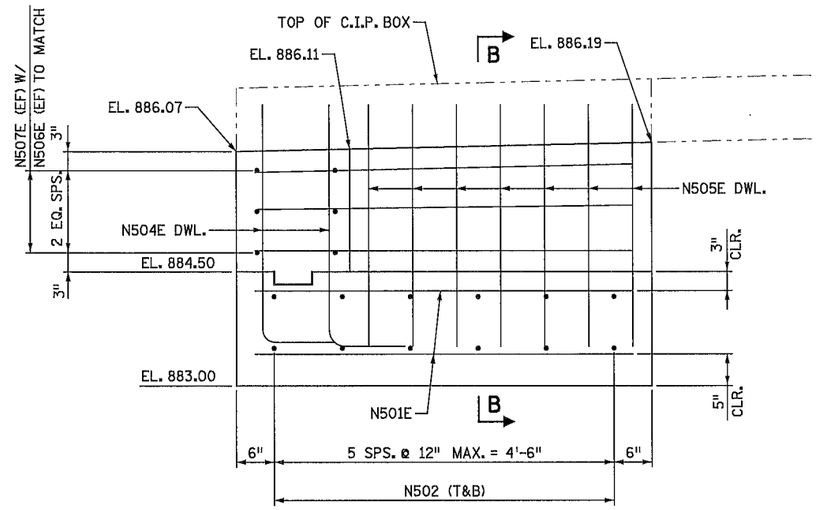
| POINT | FOOTING COORDINATES | | | |
|---|---|---|---|---|
| | STATION (TRAIL_TUNNEL) | OFFSET | "X" COORDINATE | "Y" COORDINATE |
| 1 | 103+95.11 | 8'-9" | 496,770.064 | 167,452.263 |
| 2 | 103+95.11 | -8'-9" | 496,754.286 | 167,459.832 |
| 3 | 104+00.61 | -8'-9" | 496,756.665 | 167,464.791 |
| 4 | 104+00.61 | 8'-9" | 496,772.443 | 167,457.222 |



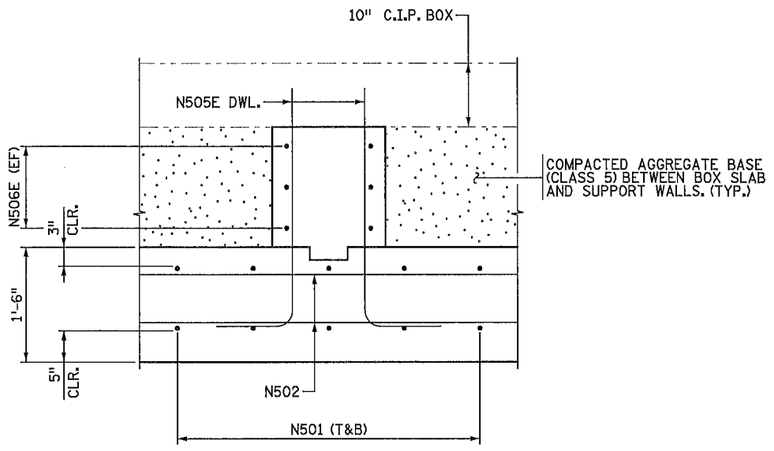

C.I.P. PANEL I SUPPORT WALL PLAN




C.I.P. PANEL I SUPPORT REINFORCEMENT




SECTION A-A




SECTION B-B

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SIGNED Matt A. Volz
MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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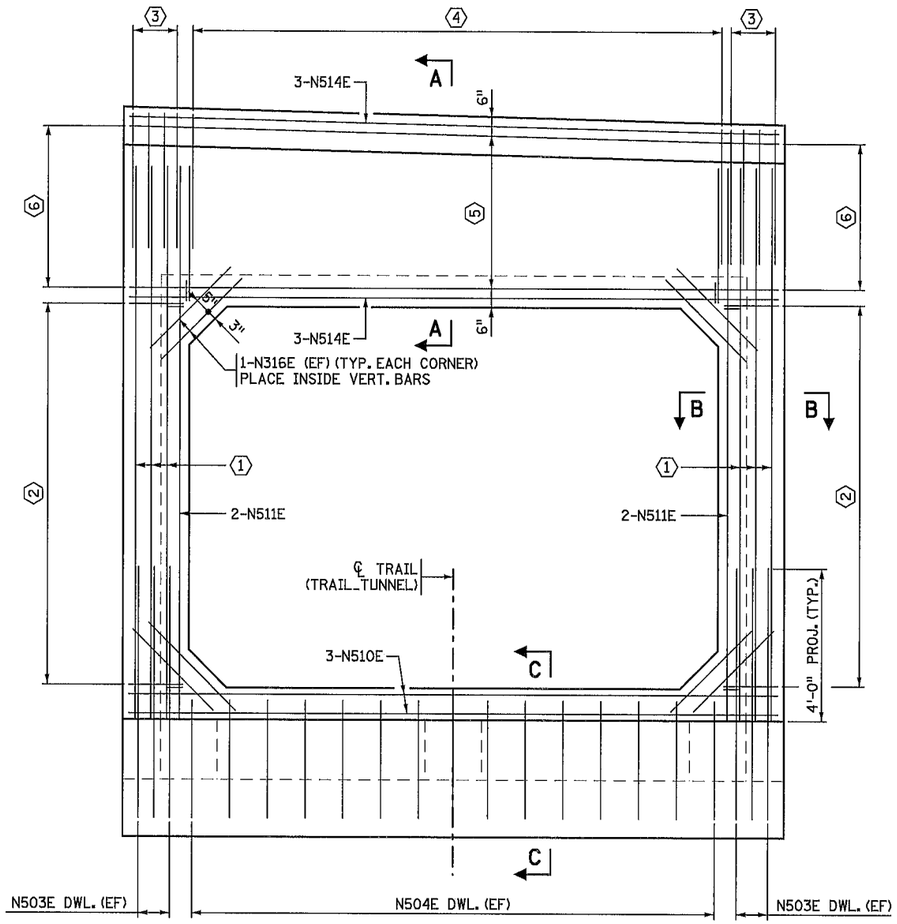
ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: C.I.P PANEL I SUPPORT FOOTING DETAILS

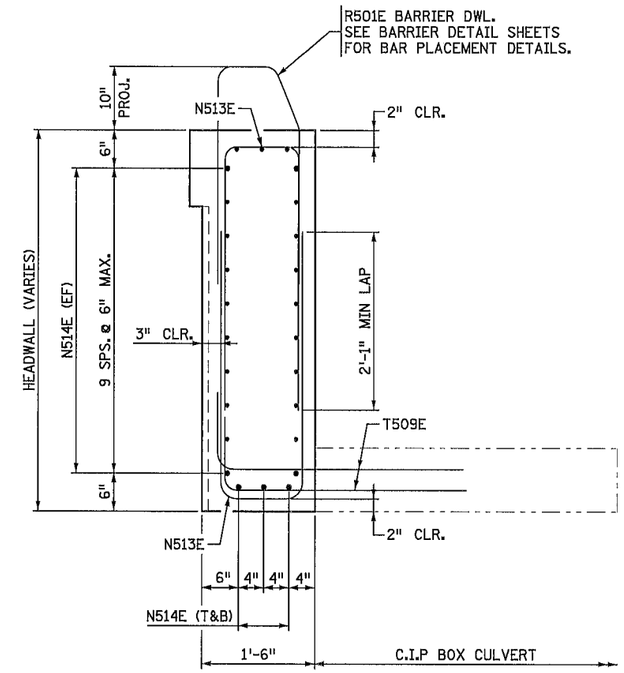
DES: MAV DR: MAV APPROVED
CHK: MJC CHK: MJC

Sheet No. 55 of 482 Sheets

Bridge No. 02J48




## C.I.P. PANEL I REINFORCEMENT




## SECTION A-A

(BARRIER NOT SHOWN FOR CLARITY)

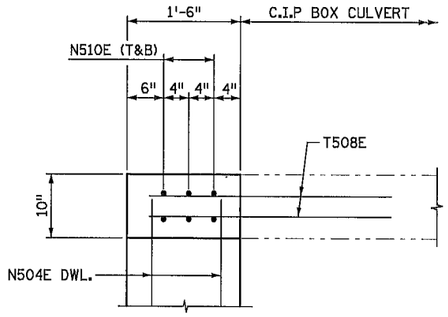
## NOTES:

CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

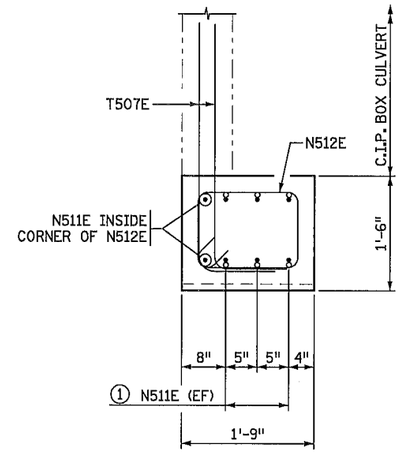
1. PLACE N511E BARS INSIDE OF N503E DWLS. AS SHOWN.

## BAR CALL-OUTS:

1. 1-N511E (EF) SPACED TO MATCH N503E DWLS.
2. 11-N512E SPACED TO MATCH T507E BOX CULVERT DWLS.
3. 4-N513E SPACED TO MATCH N511E VERTICAL BARS.
4. 29-N513E (T&B) @ 6" SPS. = 14'-0"
5. 10-N514E (EF) SPACED AS SHOWN IN SECTION A-A.
6. 10-N515E SPACED TO MATCH N514E.




## SECTION C-C




## SECTION B-B

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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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SIGNED Matt A. Volz
MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: C.I.P PANEL I REINFORCEMENT

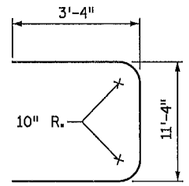
DES: MAV DR: MAV APPROVED
CHK: MJC CHK: MJC

Sheet No. 56 of 482 Sheets

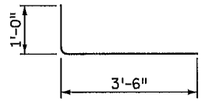
Bridge No. 02J48

| BILL OF REINFORCEMENT - NORTH C.I.P. BOX | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| T601E | 18 | 17'-4" | ⌐¬ | EXTERIOR WALL VERTICAL |
| T502E | 14 | 10'-6" | ——— | INTERIOR WALL VERTICAL |
| T503E | 12 | 13'-0" | ——— | TOP & BOTTOM SLAB TOP BAR |
| T604E | 24 | 14'-6" | ——— | TOP & BOTTOM SLAB BOTTOM BAR |
| T505E | 104 | 3'-8" | ——— | BOX LONGITUDINAL |
| T306E | 20 | 2'-7" | ——— | INTERIOR CORNER DIAGANOL |
| T507E | 44 | 4'-6" | L | WALL & TOP SLAB DOWEL |
| T508E | 30 | 3'-6" | ——— | BOTTOM SLAB DOWEL |
| T509E | 86 | 6'-4" | L | WALL & TOP SLAB DOWEL |

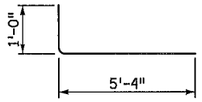
## BAR BENDING DIAGRAMS




T601E




T507E




T509E

| BILL OF REINFORCEMENT - C.I.P. PANEL I | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| N501 | 36 | 5'-0" | ——— | SUPPORT FOOTING TRANS. |
| N502 | 12 | 17'-0" | ——— | SUPPORT FOOTING LONG. |
| N503E | 12 | 7'-8" | L | FRONT SUPPORT WALL DOWEL |
| N504E | 30 | 4'-2" | L | FRONT SUPPORT WALL DOWEL |
| N505E | 42 | 4'-3" | L | SUPPORT WALL DOWEL |
| N506E | 18 | 6'-0" | L | SUPPORT WALL HORIZONTAL |
| N507E | 6 | 17'-0" | ——— | SUPPORT WALL HORIZONTAL |
| | | | | |
| N510E | 6 | 17'-0" | ——— | BOTTOM PANEL HORIZONTAL |
| N511E | 16 | 14'-6" | ——— | PANEL VERTICAL |
| N512E | 22 | 5'-11" | ▭ | PANEL HORIZONTAL TIE |
| N513E | 66 | 8'-9" | ⊏ | HEADWALL VERTICAL |
| N514E | 26 | 17'-0" | ——— | HEADWALL HORIZONTAL |
| N515E | 20 | 2'-11" | ⊏ | HEADWALL END TIE |
| N316E | 16 | 3'-6" | ——— | HAUNCH DIAGONAL BAR |

## BAR BENDING DIAGRAMS




N503E, N504E, N505E & N506E




N512E




N513E & N515E

| SUMMARY OF QUANTITIES FOR C.I.P. PANEL I | | |
|---|---|---|
| ITEM DESCRIPTION | UNIT | TOTAL |
| STRUCTURAL CONCRETE (1G52) | CU YD | 5 |
| STRUCTURAL CONCRETE (3B52) | CU YD | 10 |
| STRUCTURAL CONCRETE (3W82) | CU YD | 7 |
| REINFORCEMENT BARS | POUND | 410 |
| REINFORCEMENT BARS (EPOXY COATED) | POUND | 4,880 |

**NOTE:**

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

DATE: 5/4/2016 TIME: 1:36:00 PM
FILENAME: K:\Cr-f\Anoka Cty\N5344000\hwy-brdg\hwy\pln-sht\Nbox05.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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SIGNED Matthew A. Volz
MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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ANOKA COUNTY

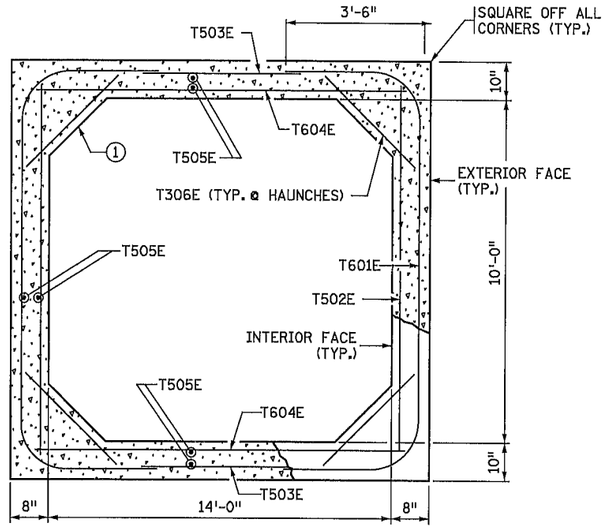
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
C.I.P PANEL I
BARLIST & QUANTITIES

DES: MAV | DR: MAV | APPROVED
CHK: MJC | CHK: MJC

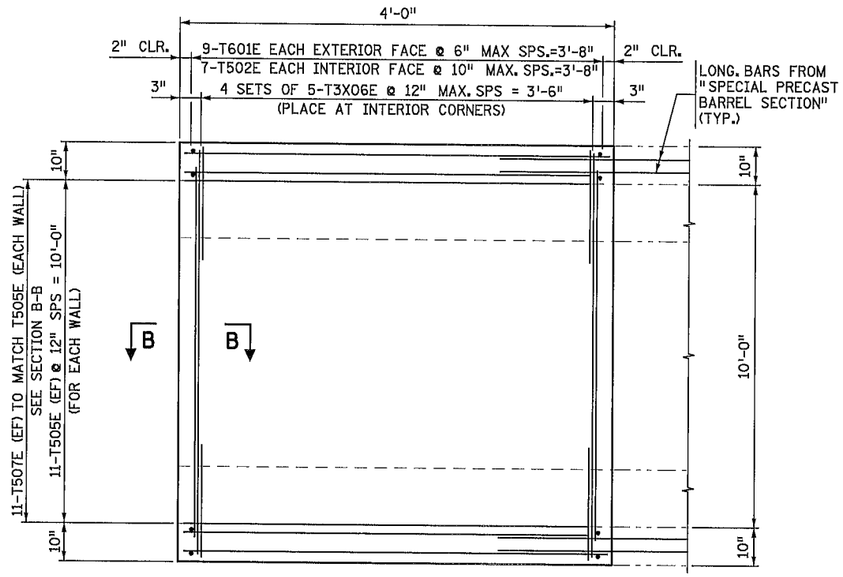
Sheet No. 57 of 482 Sheets

Bridge No.
02J48



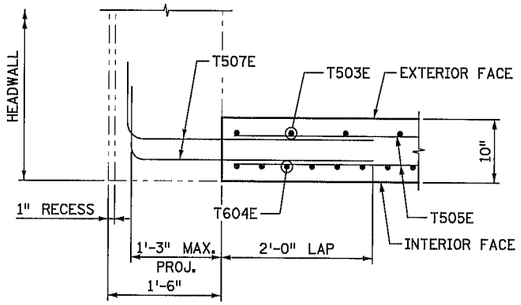

## TRANSVERSE BARREL SECTION

(NOT TO SCALE)



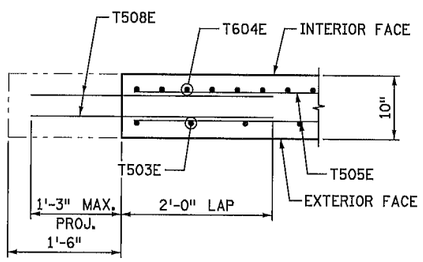

## ELEVATION

(NOT TO SCALE)



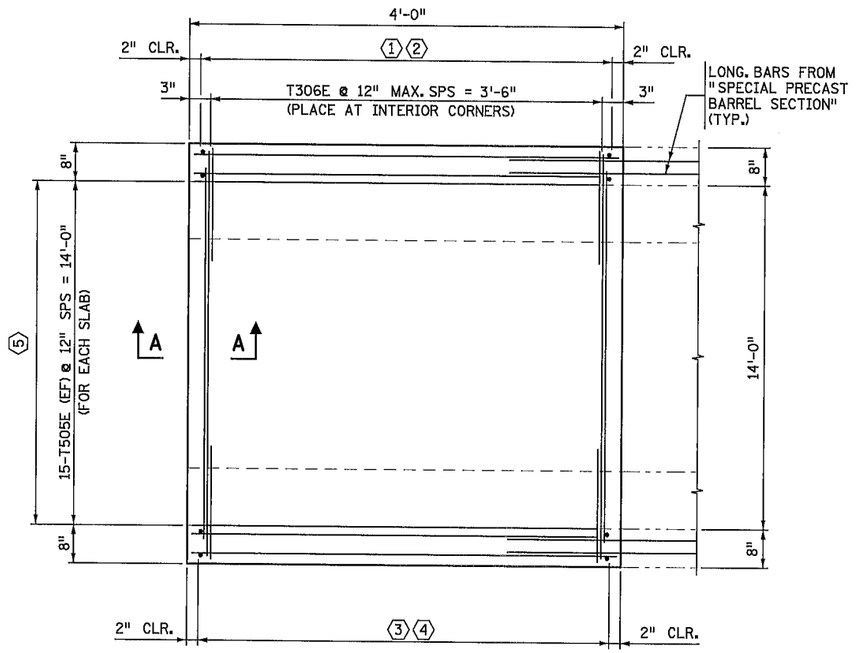

## SECTION A-A

(TOP SLAB)




## SECTION A-A

(BOTTOM SLAB)




## PLAN

(NOT TO SCALE)

## CONSTRUCTION NOTES

CONSTRUCT CULVERTS PER SPEC. 2412 EXCEPT AS NOTED.

REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

PROVIDE WELDED WIRE REINFORCEMENT, SHEAR REINFORCEMENT AND REINFORCEMENT BARS PER THE APPLICABLE REQUIREMENTS OF AASHTO M259.

1½" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT.

WELDING IS NOT PERMITTED ON REINFORCEMENT BARS.

USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED. CONCRETE MIX TO HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 5,000 psi.

SHOP DRAWING APPROVAL PER SPEC. 3238.2.A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN. LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.

(1) 12" VERTICAL AND 12" HORIZONTAL HAUNCH SIZE.

## BAR CALL-OUTS:

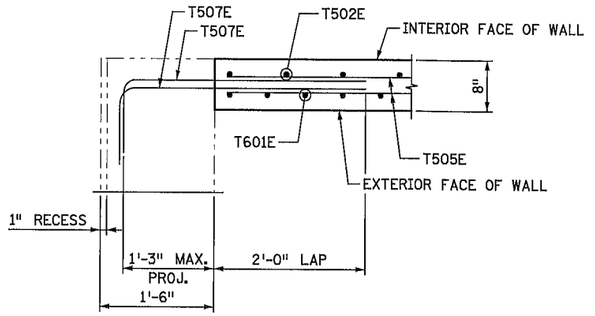
(1) 6-T503E (T) @ 9" MAX. SPS. = 3'-8" (TOP SLAB).

(2) 12-T604E (B) @ 4" SPS. = 3'-8" (TOP SLAB).

(3) 12-T604E (T) @ 4" SPS. = 3'-8" (BOTTOM SLAB).

(4) 6-T503E (B) @ 9" MAX. SPS. = 3'-8" (BOTTOM SLAB).

(5) 15-T507E (EF) TO MATCH T505E (TOP SLAB).
15-T508E (EF) TO MATCH T505E (BOTTOM SLAB).




## SECTION B-B

(EACH WALL)

MODIFICATIONS:
-REMOVED DISTRIBUTION SLAB NOTES AND DETAILS.
-MODIFED BARREL SECTION TO INCLUDE PROJECTING BARS.
-ADDED BAR CALL OUTS.
-CHANGED TO C.I.P. BOX SECTION

DATE: 5/4/2016 TIME: 1:36:01 PM
FILENAME: K:\a-f\Anoka\Cty\S344000\hwy-brdg\hwy\plr-sht\Sbox01.dgn

REVISION: 10-09-2015

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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Saint Paul, MN 55101
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STATE PROJ. NO 002-716-015 (CSAH 116 WB) STA. 94+80

FIG. 5-395.101(A) MOD.

ANOKA COUNTY

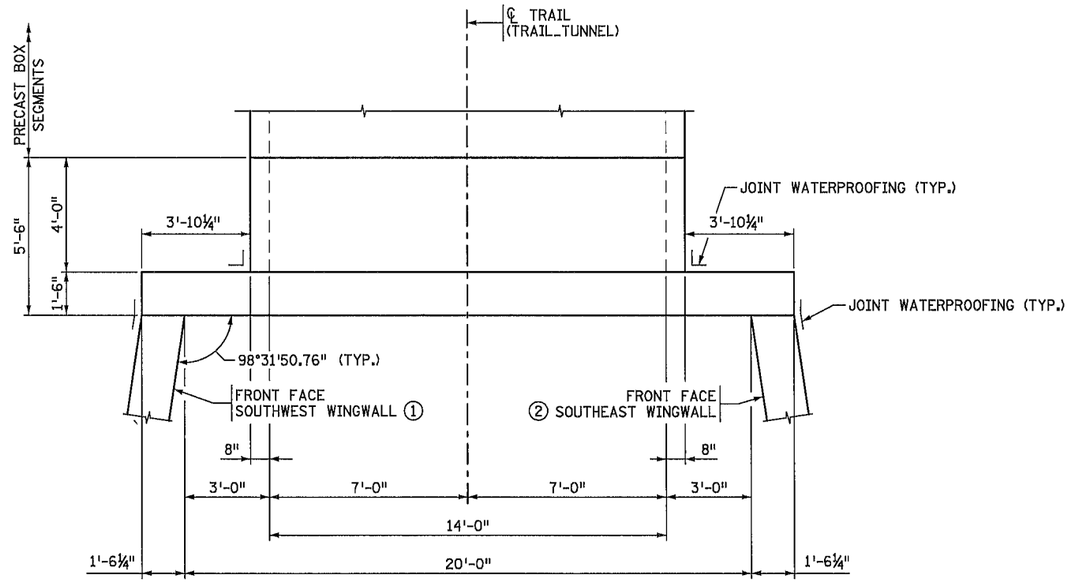
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
SOUTH CAST-IN-PLACE BOX CULVERT DETAILS

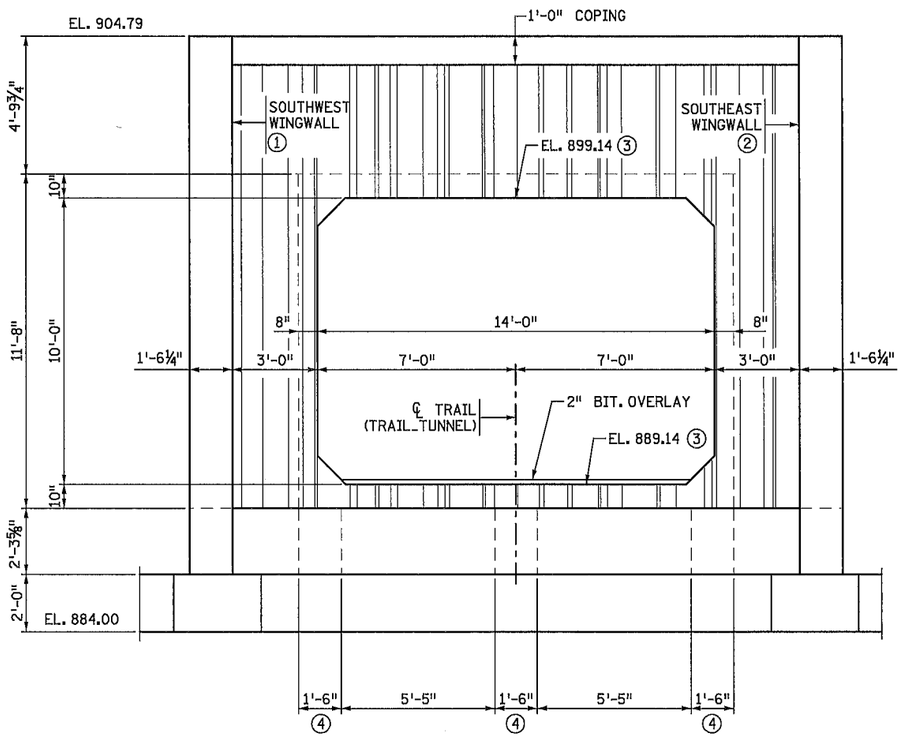
| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 58 of 482 Sheets

Bridge No. 02J48




## SOUTH WALL PLAN




## SOUTH WALL ELEVATION

(WINGWALLS NOT SHOWN FOR CLARITY)

### NOTES:

① SEE "SOUTHWEST WINGWALL PLAN & ELEVATION" SHEET FOR ADDTIONAL DETAILS.

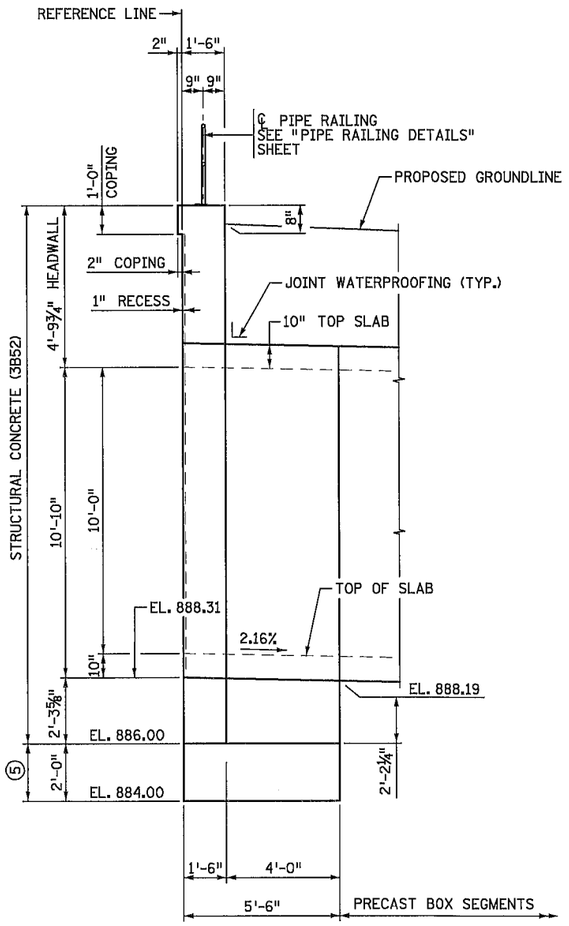
② SEE "SOUTHEAST WINGWALL PLAN & ELEVATION" SHEET FOR ADDTIONAL DETAILS.

③ ELEVATIONS GIVEN ARE AT SOUTH ENTRANCE OF BOX CULVERT.

④ CAST-IN-PLACE BOX SEGMENT SUPPORT WALL.

⑤ STRUCTURAL CONCRETE (1G52).

APPLY ARCHITECTURAL CONCRETE TEXTURE (RANDOM BATTEN) TO SOUTH WALL, SOUTHWEST WINGWALL & SOUTHEAST WINGWALL.




## TYPICAL SECTION

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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067


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ANOKA COUNTY

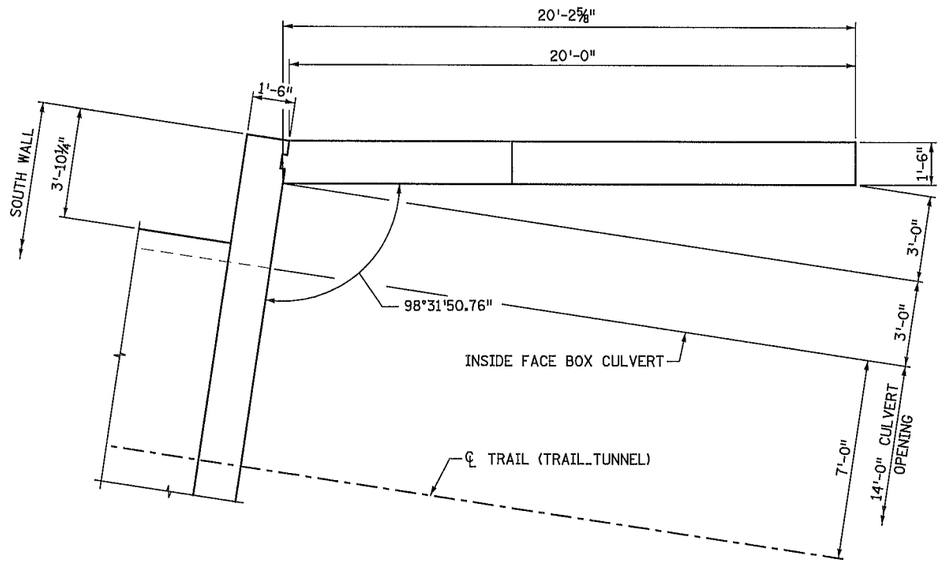
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
SOUTH WALL
PLAN & ELEVATION

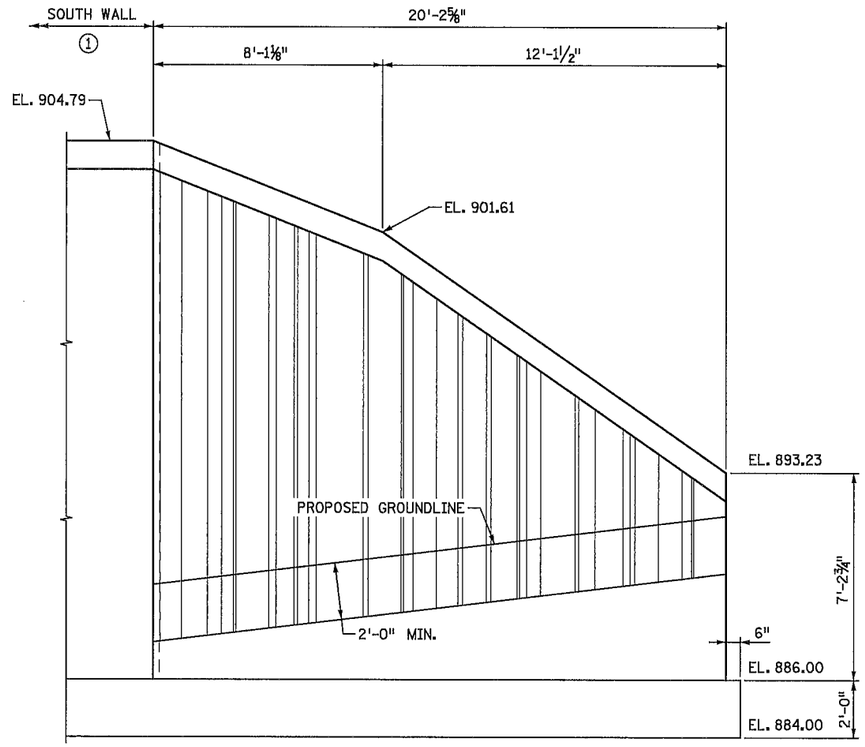
| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 59 of 482 Sheets

Bridge No. 02J48




## SOUTHEAST WINGWALL PLAN

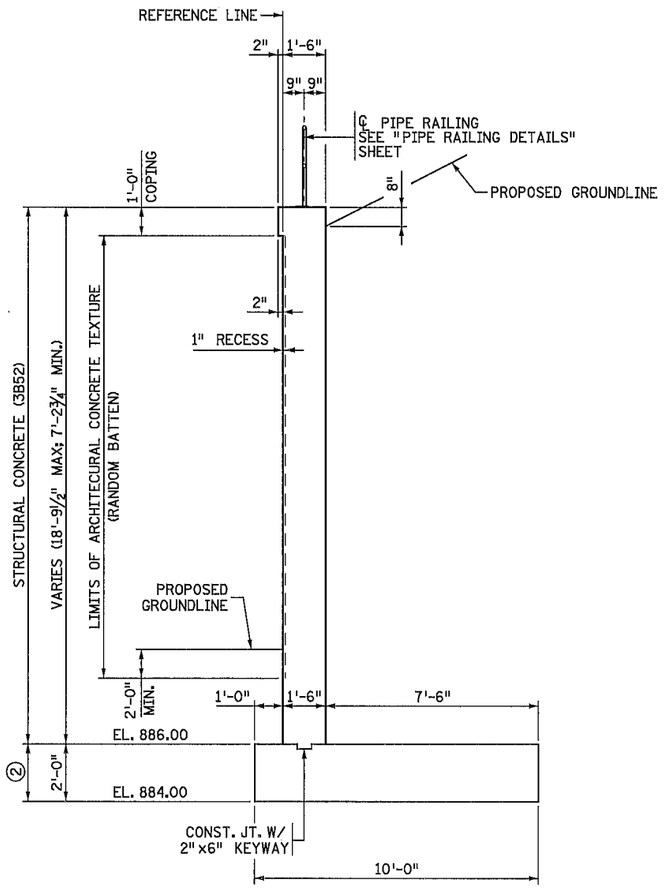



## SOUTHEAST WINGWALL ELEVATION

### NOTES:

① SEE "SOUTH WALL PLAN & ELEVATION" SHEET FOR ADDTIONAL DETAILS.

② STRUCTURAL CONCRETE (1G52).




## TYPICAL SECTION

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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

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SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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ANOKA COUNTY

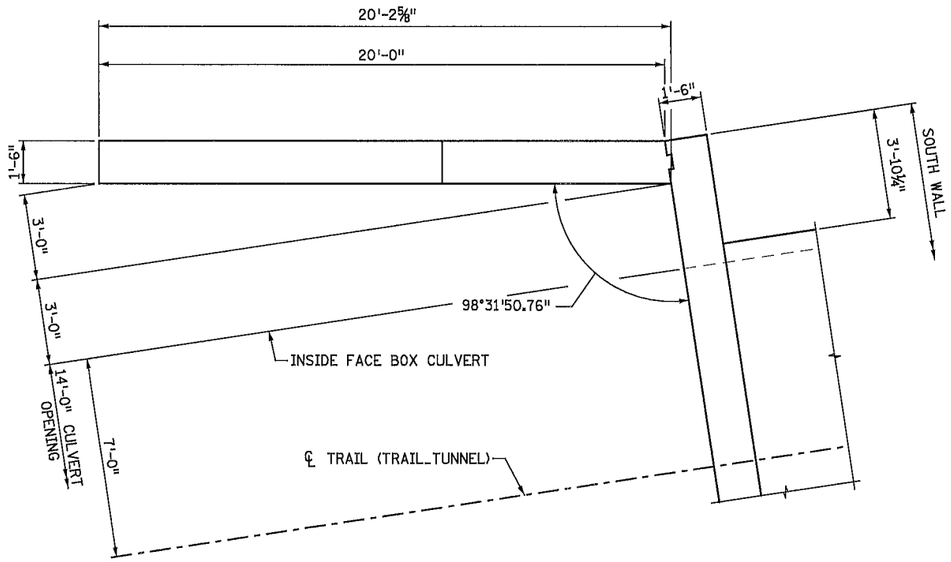
**C.S.A.H. 116 RECONSTRUCTION**
**S.P. 002-716-015**

TITLE:
SOUTHEAST WINGWALL PLAN & ELEVATION

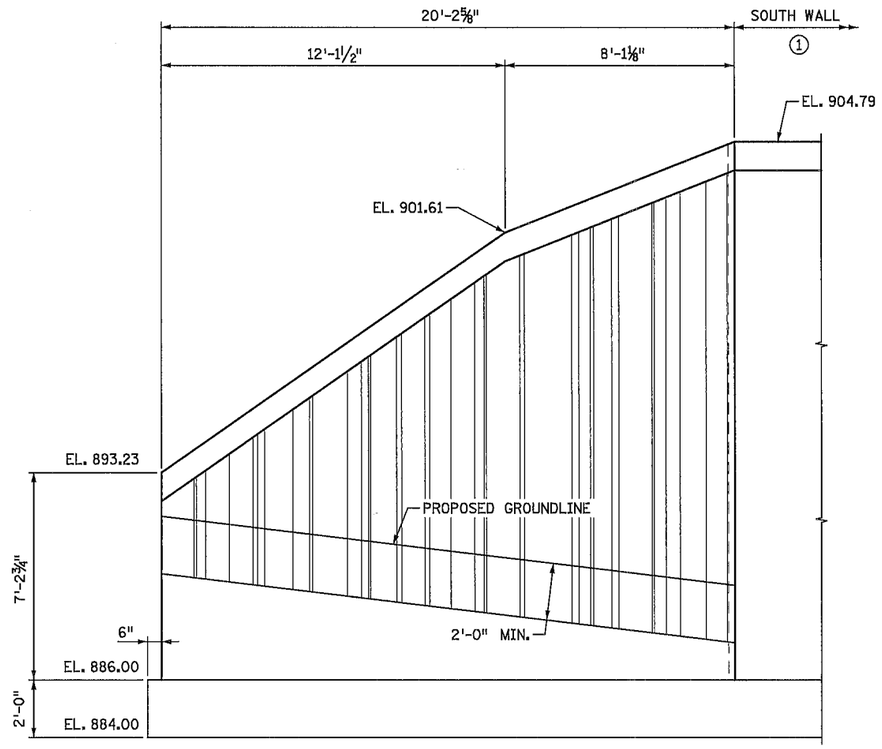
| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 60 of 482 Sheets

Bridge No. 02J48




## SOUTHWEST WINGWALL PLAN

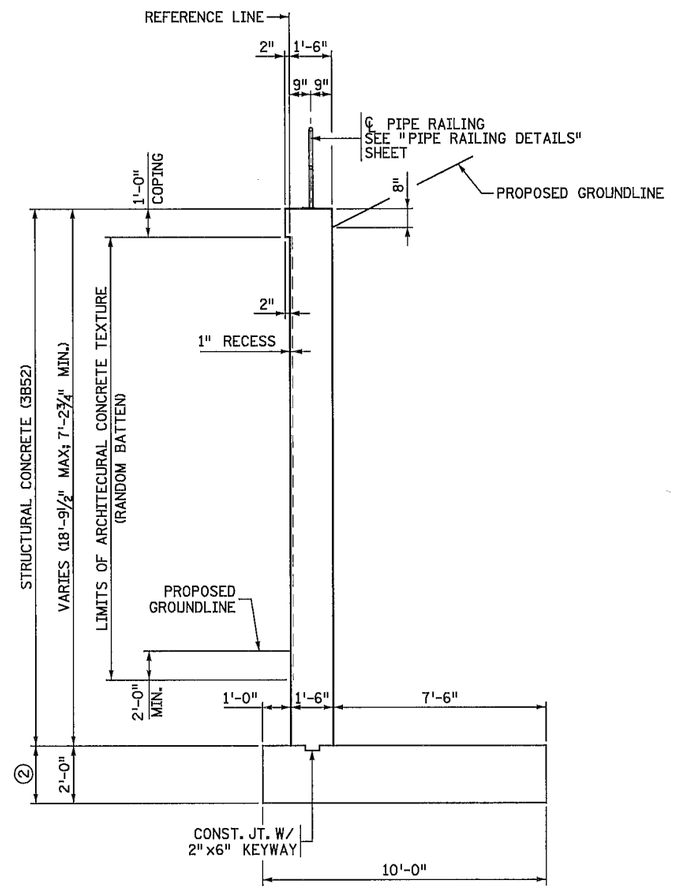



## SOUTHWEST WINGWALL ELEVATION

### NOTES:

① SEE "SOUTH WALL PLAN & ELEVATION" SHEET FOR ADDTIONAL DETAILS.

② STRUCTURAL CONCRETE (1G52).

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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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DATE: 5/4/2016 LIC. NO.: 53067

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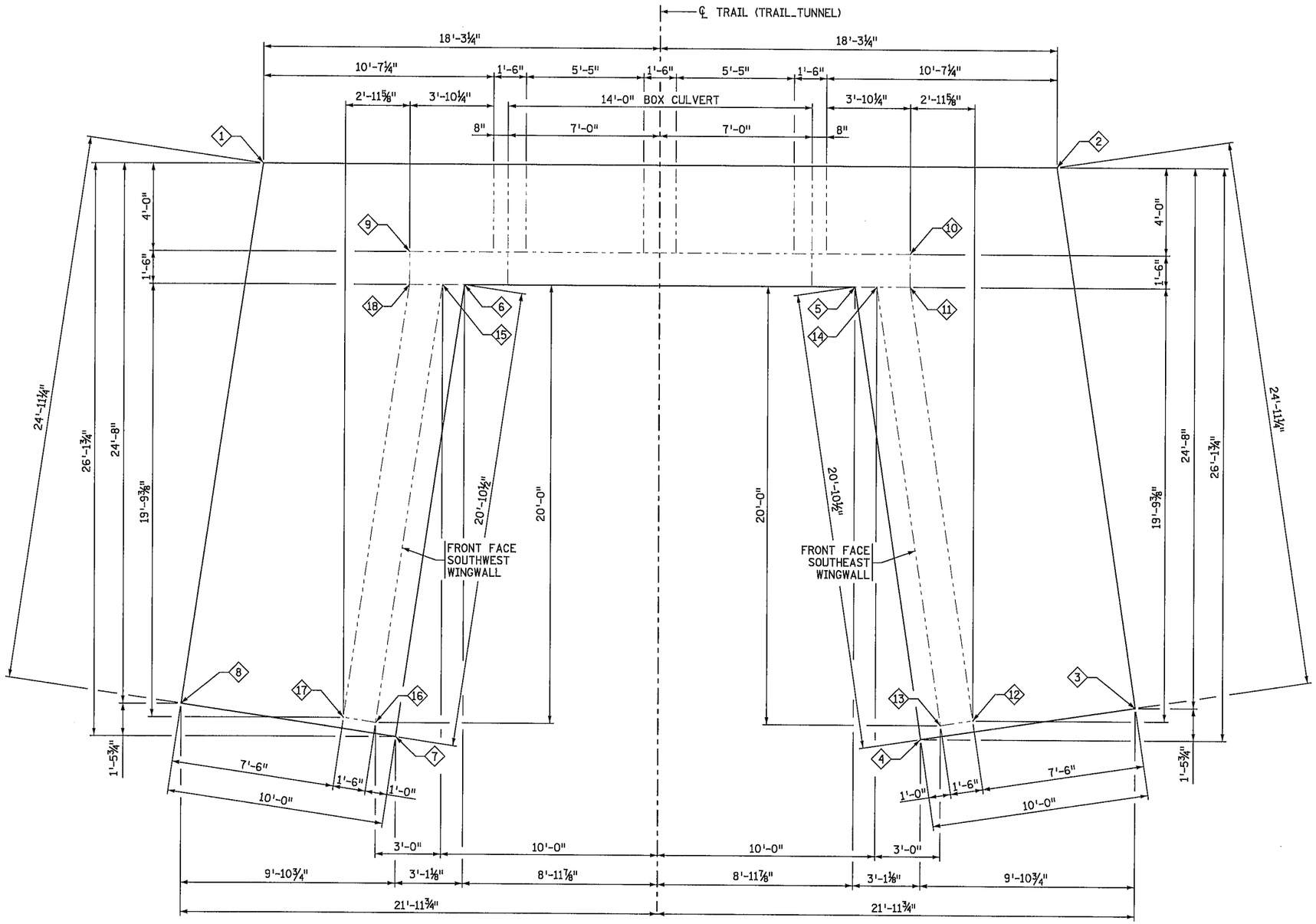
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: SOUTHWEST WINGWALL PLAN & ELEVATION

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 61 of 482 Sheets

Bridge No. 02J48




## SOUTH WALL FOOTING PLAN

| POINT | FOOTING COORDINATES | | | |
|---|---|---|---|---|
| | STATION (TRAIL_TUNNEL) | OFFSET | "X" COORDINATE | "Y" COORDINATE |
| 1 | 103+02.11 | -18'-3¼" | 496,705.472 | 167,380.102 |
| 2 | 103+02.11 | 18'-3¼" | 496,738.427 | 167,364.292 |
| 3 | 102+77.45 | 21'-11¾" | 496,731.096 | 167,340.459 |
| 4 | 102+75.97 | 12'-1" | 496,721.538 | 167,343.399 |
| 5 | 102+96.61 | 8'-11⅞" | 496,727.675 | 167,363.350 |
| 6 | 102+96.61 | -8'-11⅞" | 496,711.466 | 167,371.126 |
| 7 | 102+75.97 | -12'-1" | 496,699.745 | 167,353.854 |
| 8 | 102+77.45 | -21'-11¾" | 496,691.471 | 167,359.469 |

| POINT | WALL COORDINATES | | | |
|---|---|---|---|---|
| | STATION (TRAIL_TUNNEL) | OFFSET | "X" COORDINATE | "Y" COORDINATE |
| 9 | 102+98.11 | -11'-6¼" | 496,709.836 | 167,373.572 |
| 10 | 102+98.11 | 11'-6¼" | 496,730.603 | 167,363.609 |
| 11 | 102+96.61 | 11'-6¼" | 496,729.954 | 167,362.257 |
| 12 | 102+76.84 | 14'-5¾" | 496,724.074 | 167,343.142 |
| 13 | 102+76.61 | 13'-0" | 496,722.641 | 167,343.583 |
| 14 | 102+96.61 | 10'-0" | 496,728.587 | 167,362.913 |
| 15 | 102+96.61 | -10'-0" | 496,710.554 | 167,371.564 |
| 16 | 102+76.61 | -13'-0" | 496,699.199 | 167,354.829 |
| 17 | 102+76.84 | -14'-5¾" | 496,697.958 | 167,355.671 |
| 18 | 102+96.61 | -11'-6¼" | 496,709.187 | 167,372.220 |

DATE: 5/4/2016 TIME: 1:36:05 PM
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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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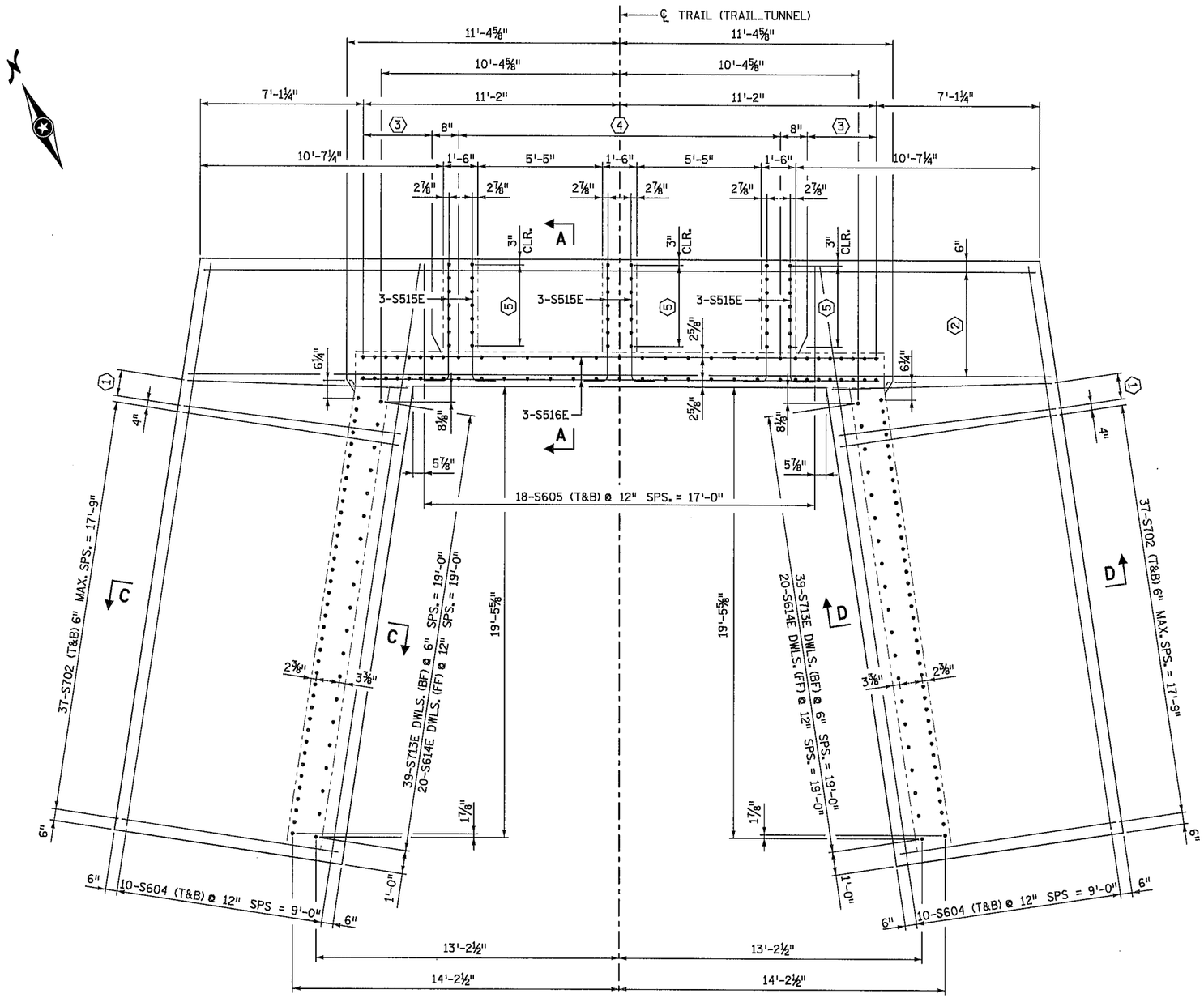
**C.S.A.H. 116 RECONSTRUCTION**
**S.P. 002-716-015**

TITLE: SOUTH WALL FOOTING PLAN

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 62 of 482 Sheets

Bridge No. 02J48



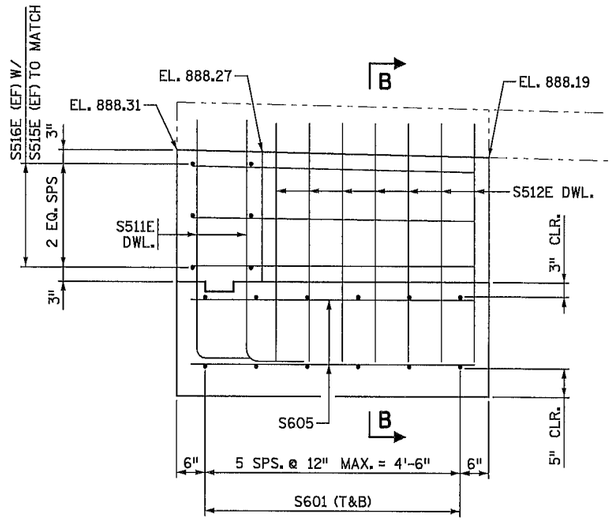

SOUTH WALL FOOTING REINFORCEMENT

## GENERAL NOTES:

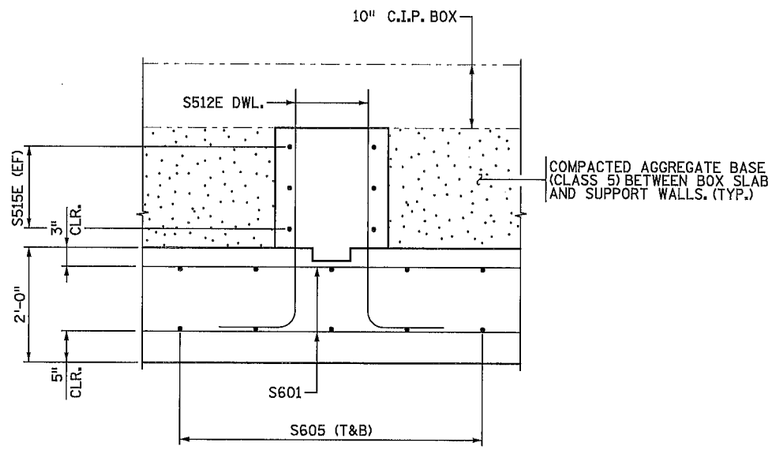
CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

SEE "SOUTHWEST WINGWALL REINFORCEMENT" SHEET FOR SECTION C-C.

SEE "SOUTHEAST WINGWALL REINFORCEMENT" SHEET FOR SECTION D-D.




SECTION A-A




SECTION B-B

## BAR CALL-OUTS:

1. 5-S703 (T&B) @ 6" MAX. SPS., 3⅛" MIN. SPS. (FLARE BARS AS SHOWN)
2. 6-S601 (T&B) @ 12" MAX. SPS. = 4'-6".
3. 8-S510E DWLS. (EF) @ 6" SPS. = 3'-6".
4. 15-S511E DWLS. (EF) @ 12" SPS. = 14'-0".
5. 7-S512E DWLS. (EF) @ 7" SPS. = 3'-8".

DATE: 5/4/2016 TIME: 1:36:06 PM
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SIGNED Matt A. Volz
MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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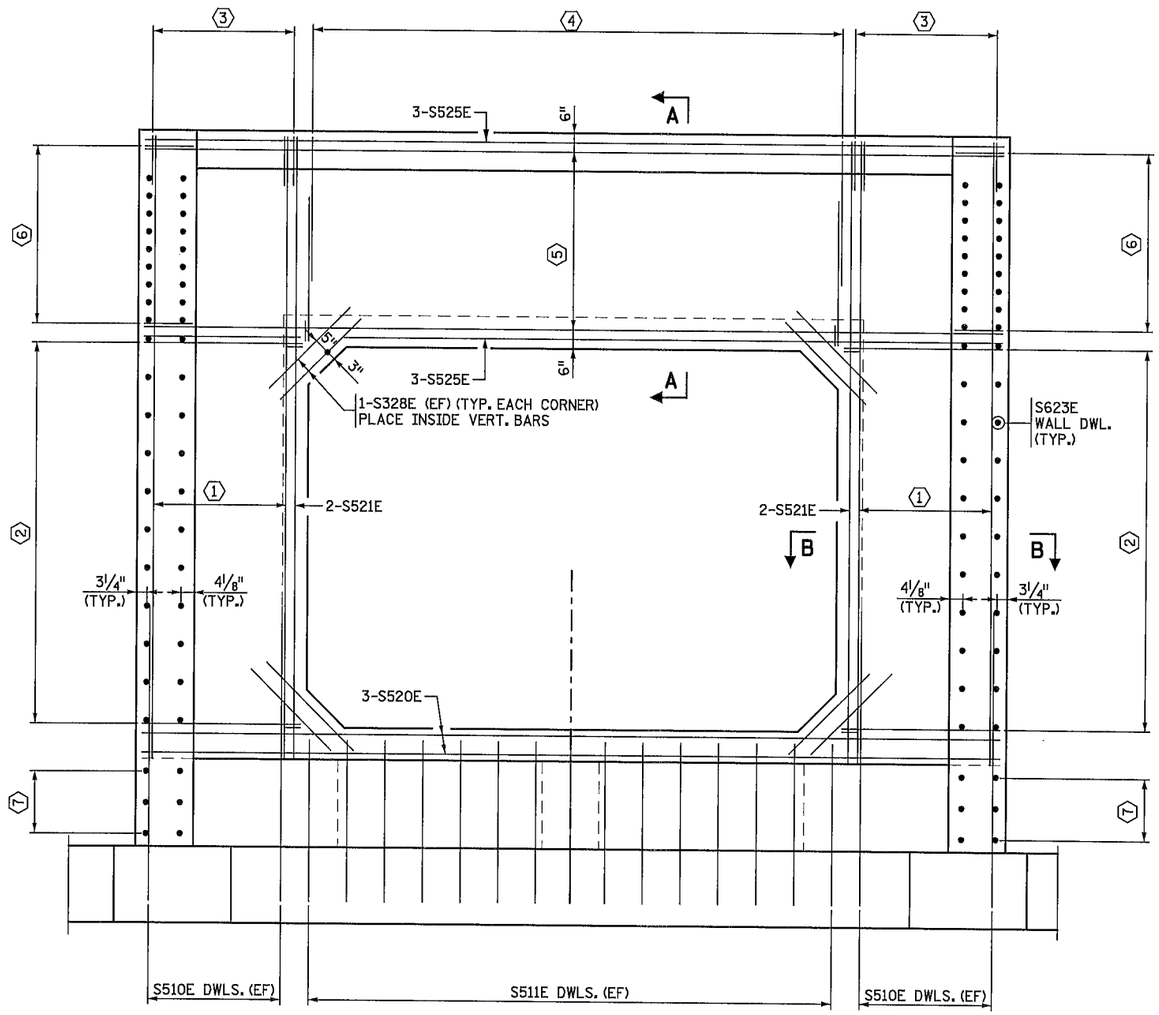
S.P. 002-716-015

TITLE: SOUTH WALL FOOTING REINFORCEMENT

DES: MAV DR: MAV APPROVED
CHK: MJC CHK: MJC

Sheet No. 63 of 482 Sheets

Bridge No. 02J48




## SOUTH WALL REINFORCEMENT

### GENERAL NOTES:

CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

(1) PLACE S521E BARS INSIDE OF S510E DWLS. AS SHOWN.

### BAR CALL-OUTS:

(1) 8-S521E (EF) SPACED TO MATCH S510E DWLS.

(2) 11-S622E (EF) SPACED TO MATCH T507E BOX CULVERT DWLS.
11-S623E WALL DWLS. (EF) SPACED TO MATCH S622E. SEE SECTION B-B FOR PLACEMENT DETAILS.

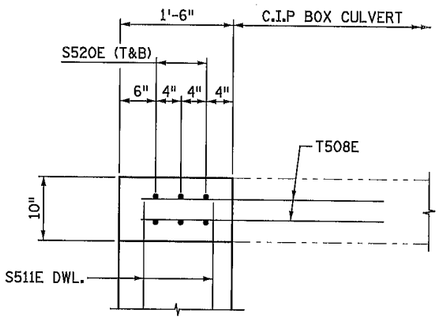
(3) 9-S526E SPACED TO MATCH S521E VERTICAL BARS.

(4) 15-S524E (T&B) SPACED TO MATCH T507E BOX CULVET DWLS.

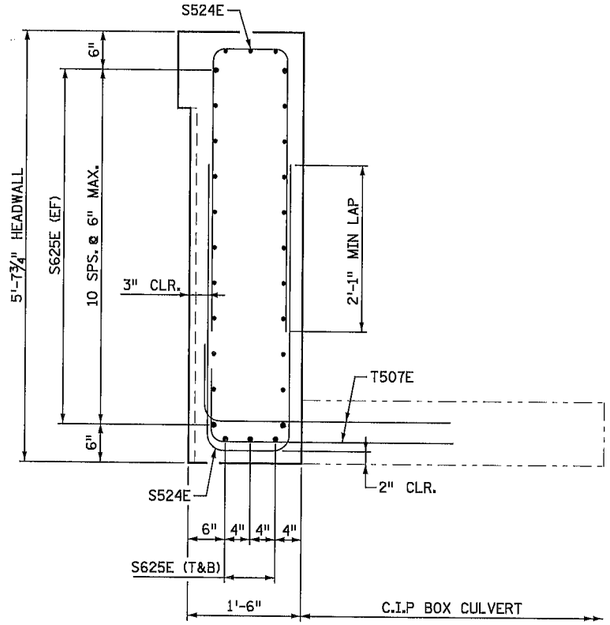
(5) 11-S625E (EF) SPACED AS SHOWN IN SECTION A-A.

(6) 11-S527E SPACED TO MATCH S625E.
9-S623E WALL DWLS. (EF) SPACED TO MATCH S625E (OMIT AT TOP TWO S6225E). SEE SECTION B-B FOR PLACEMENT DETAILS.

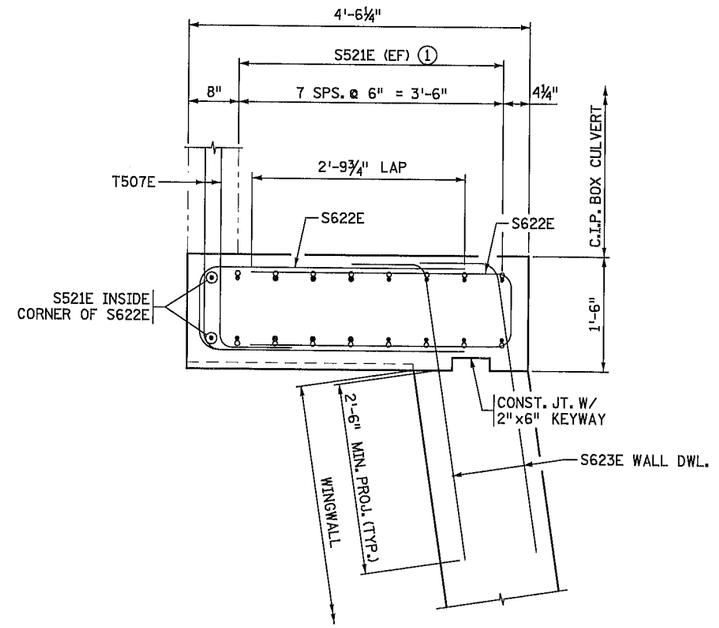
(7) 3-S623E WALL DWLS. (EF) SPACED TO MATCH S516E. PLACEMENT OF BARS SIMILAR TO SECTION B-B.




## SECTION C-C




## SECTION A-A




## SECTION B-B

(SOUTHEAST WINGWALL SHOWN; SOUTHWEST WINGWALL SIMILAR)

DATE: 5/4/2016 TIME: 1:36:06 PM
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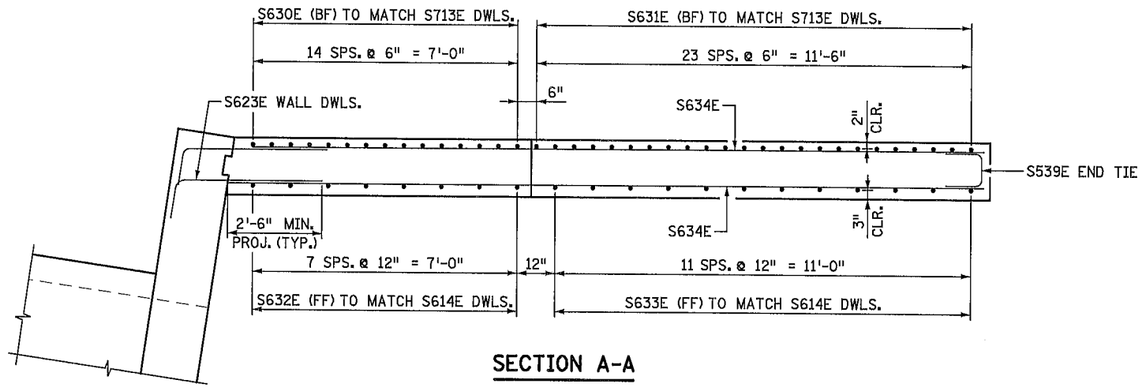
S.P. 002-716-015

TITLE: SOUTH WALL REINFORCEMENT

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 64 of 482 Sheets

Bridge No. 02J48




## SECTION A-A

## GENERAL NOTES:

CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

## BAR CALL-OUTS:

(1) 8-S632E (FF) SPACED TO MATCH S614E DWLS.
15-S630E (BF) SPACED TO MATCH S713E DWLS.

(2) 12-S633E (FF) SPACED TO MATCH S614E DWLS.
24-S631E (BF) SPACED TO MATCH S713E DWLS.

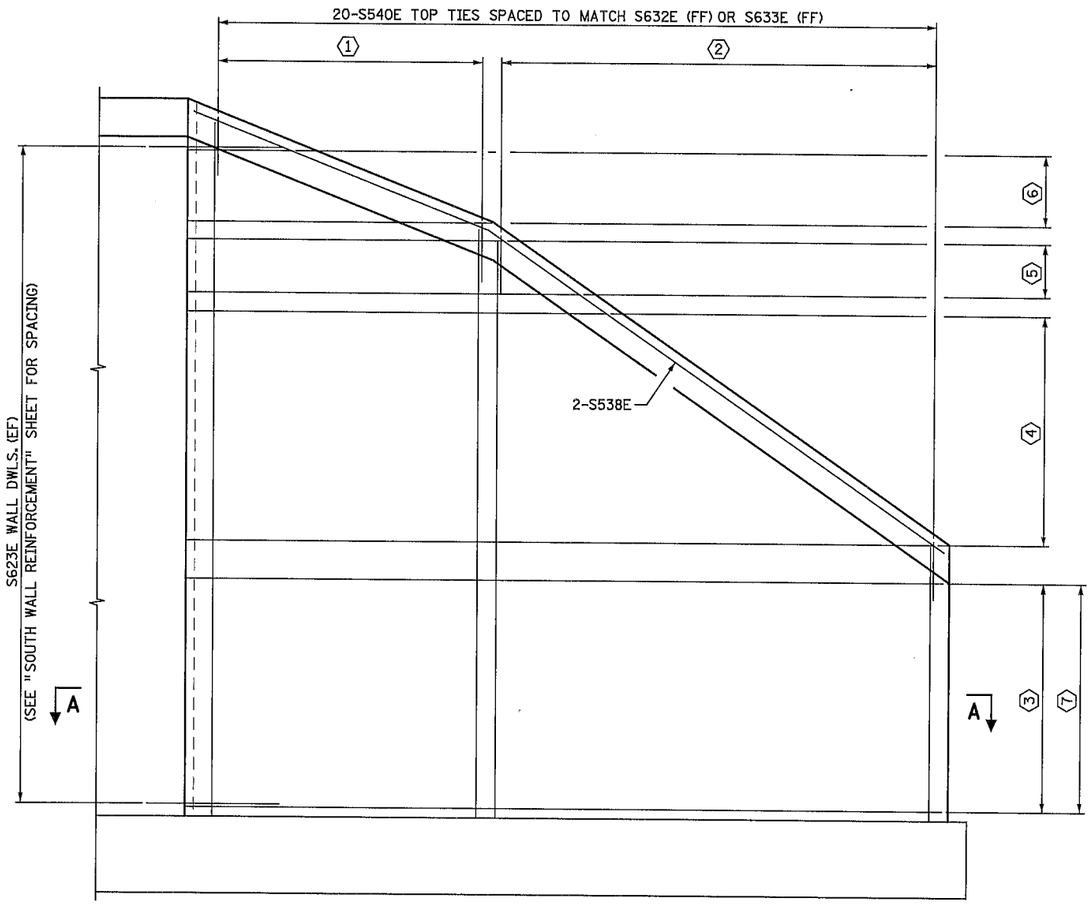
(3) 7-S634E (EF) SPACED TO MATCH S623E WALL DWLS.

(4) 7-S635E (EF) SPACED TO MATCH S623E WALL DWLS.

(5) 4-S636E (EF) SPACED TO MATCH S623E WALL DWLS.

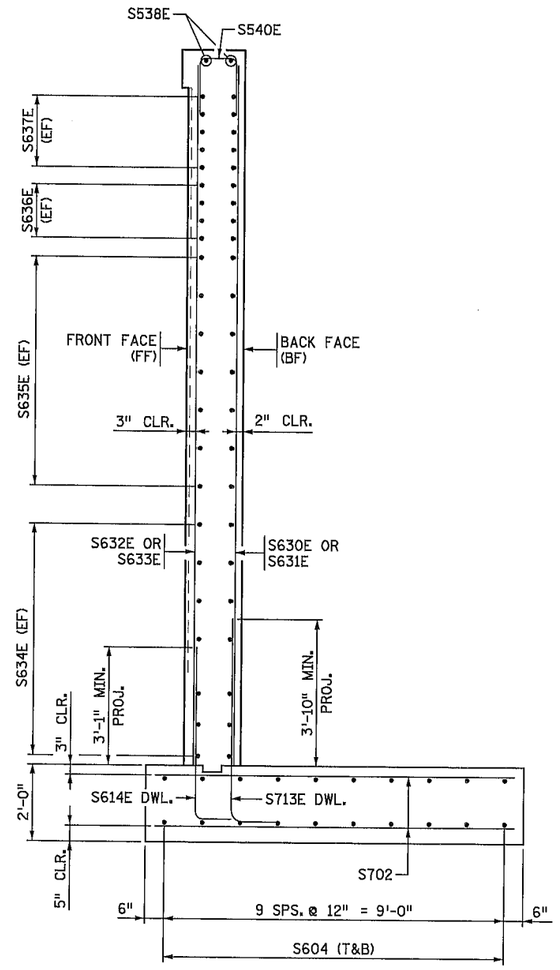
(6) 5-S637E (EF) SPACED TO MATCH S623E WALL DWLS.

(7) 7-S539E END TIES SPACED TO MATCH S634E.




## SOUTHEAST WINGWALL REINFORCEMENT

(FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY)




## SECTION D-D

DATE: 5/4/2016 TIME: 1:36:07 PM
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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

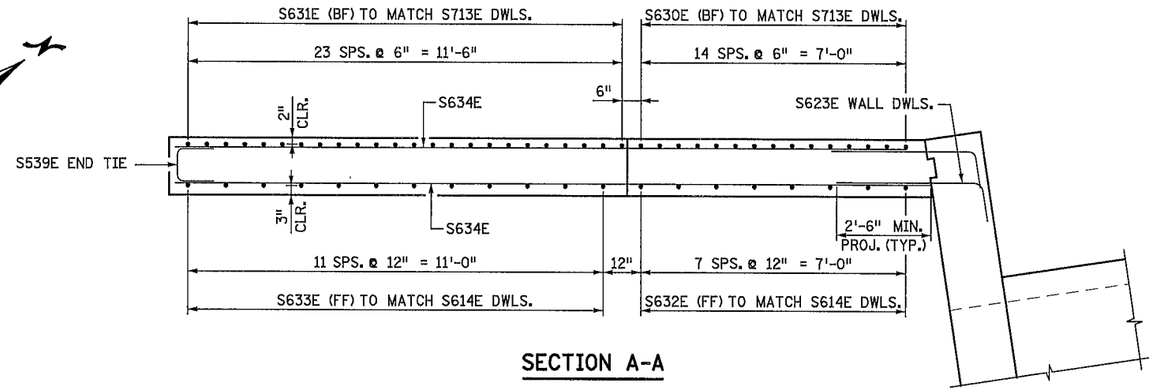
ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
SOUTHEAST WINGWALL REINFORCEMENT

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 65 of 482 Sheets

Bridge No. 02J48



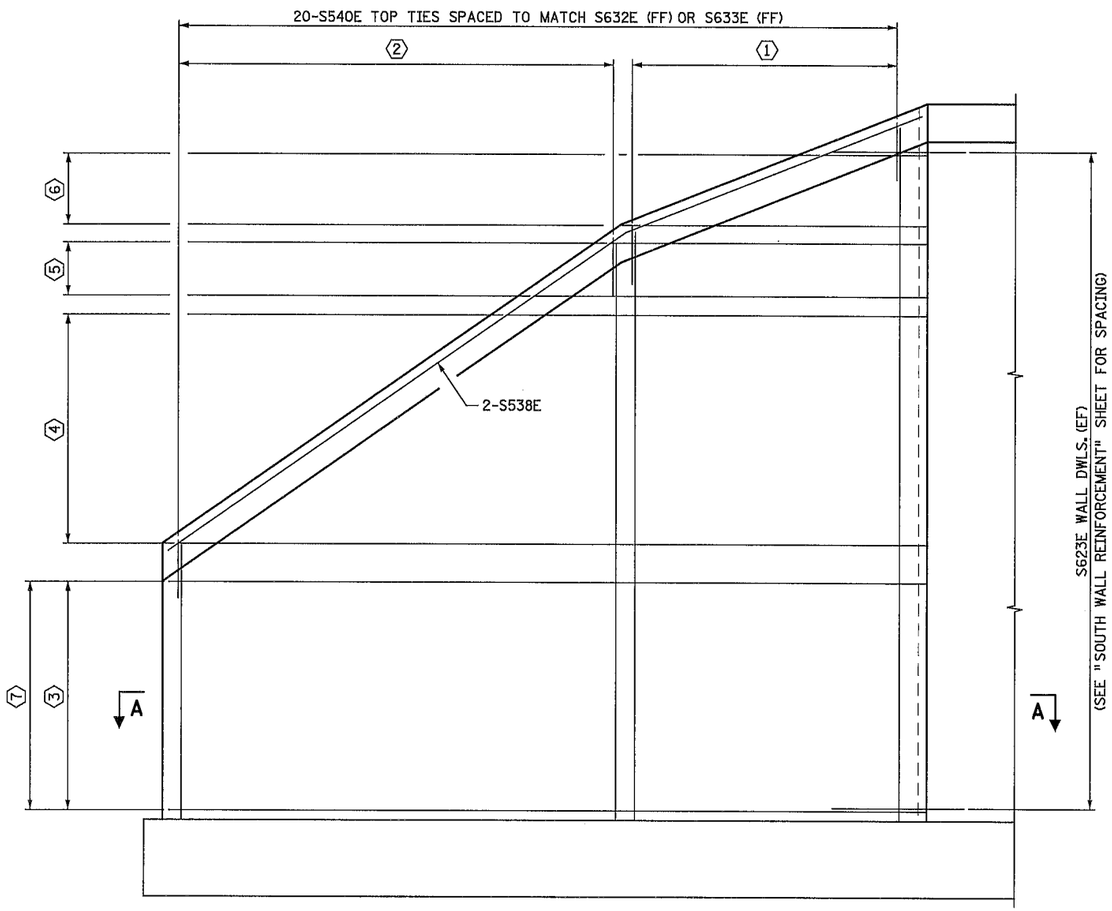

## SECTION A-A

## GENERAL NOTES:

CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

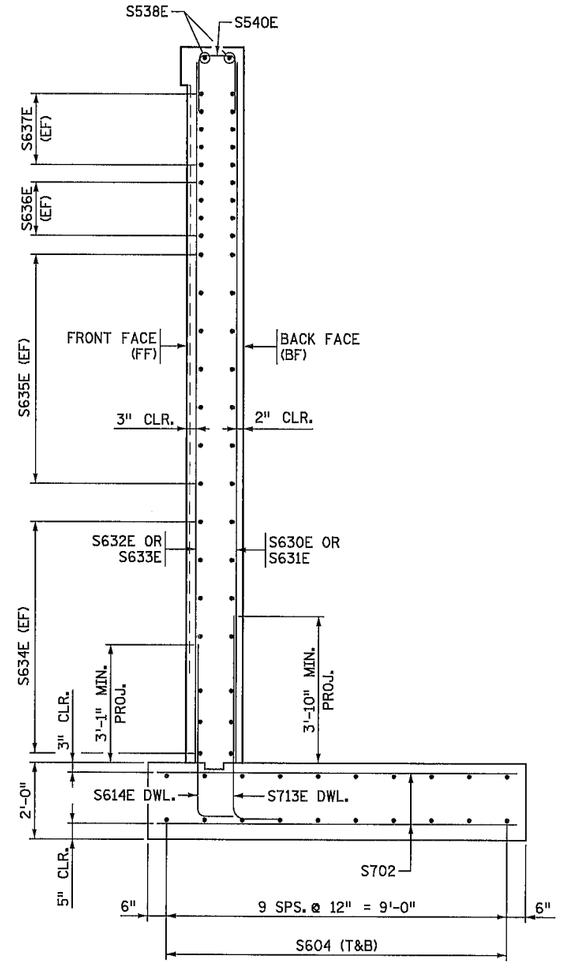
## BAR CALL-OUTS:

1. 8-S632E (FF) SPACED TO MATCH S614E DWLS.
   15-S630E (BF) SPACED TO MATCH S713E DWLS.
2. 12-S633E (FF) SPACED TO MATCH S614E DWLS.
   24-S631E (BF) SPACED TO MATCH S713E DWLS.
3. 7-S634E (EF) SPACED TO MATCH S623E WALL DWLS.
4. 7-S635E (EF) SPACED TO MATCH S623E WALL DWLS.
5. 4-S636E (EF) SPACED TO MATCH S623E WALL DWLS.
6. 5-S637E (EF) SPACED TO MATCH S623E WALL DWLS.
7. 7-S539E END TIES SPACED TO MATCH S634E.




## SOUTHWEST WINGWALL REINFORCEMENT

(FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY)




## SECTION C-C

DATE: 5/4/2016 TIME: 1:36:08 PM
FILENAME: K:\ar\Anoka\Ch\V5344000\hwy-brdg\hwy\pln-sht\Sbox08.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

ANOKA COUNTY

**C.S.A.H. 116 RECONSTRUCTION**
**S.P. 002-716-015**

TITLE:
SOUTHWEST WINGWALL REINFORCEMENT

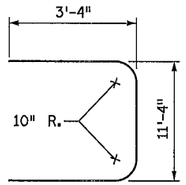
| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 66 of 482 Sheets

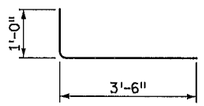
Bridge No. 02J48

| BILL OF REINFORCEMENT - SOUTH C.I.P. BOX | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| T601E | 18 | 17'-4" | ⌐¬ | EXTERIOR WALL VERTICAL |
| T502E | 14 | 10'-6" | ——— | INTERIOR WALL VERTICAL |
| T503E | 12 | 13'-0" | ——— | TOP & BOTTOM SLAB TOP BAR |
| T604E | 24 | 14'-6" | ——— | TOP & BOTTOM SLAB BOTTOM BAR |
| T505E | 104 | 3'-8" | ——— | BOX LONGITUDINAL |
| T306E | 20 | 2'-7" | ——— | INTERIOR CORNER DIAGANOL |
| T507E | 74 | 4'-6" | L_ | WALL & TOP SLAB DOWEL |
| T508E | 30 | 3'-6" | ——— | BOTTOM SLAB DOWEL |
| | | | | |

## BAR BENDING DIAGRAMS




T601E

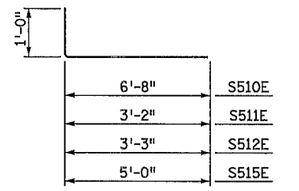



T507E

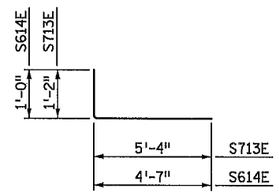
| BILL OF REINFORCEMENT - SOUTH WALL | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| S601 | 12 | SER. 1 | ——— | SUPPORT FOOTING LONG. |
| S702 | 148 | 9'-6" | ——— | WINGWALL FOOTING TRANS. |
| S703 | 20 | 9'-6" | ——— | WINGWALL FOOTING FLARED |
| S604 | 40 | SER. 2 | ——— | WINGWALL FOOTING LONG. |
| S605 | 36 | 4'-6" | ——— | SUPPORT FOOTING TRANS. |
| | | | | |
| S510E | 32 | 7'-8" | L_ | SUPPORT WALL DOWEL |
| S511E | 30 | 4'-2" | L_ | SUPPORT WALL DOWEL |
| S512E | 42 | 4'-3" | L_ | SUPPORT WALL DOWEL |
| S713E | 78 | 6'-6" | L_ | WINGWALL DOWEL (BF) |
| S614E | 40 | 5'-7" | L_ | WINGWALL DOWEL (FF) |
| S515E | 18 | 6'-0" | L_ | SUPPORT WALL HORIZ. |
| S516E | 6 | 22'-6" | ——— | FRONT SUPPORT WALL HORIZ. |
| | | | | |
| S520E | 6 | 22'-6" | ——— | BOTTOM PANEL HORIZONTAL |
| S521E | 36 | 16'-3" | ——— | PANEL VERTICAL |
| S622E | 44 | 8'-1" | ⊏ | PANEL HORIZONTAL TIE |
| S623E | 92 | 4'-11" | ⟋ | WALL DOWEL |
| S524E | 30 | 8'-7" | ⊏ | HEADWALL VERTICAL |
| S625E | 28 | 22'-8" | ——— | HEADWALL HORIZONTAL |
| S526E | 18 | 3'-7" | ⊏ | HEADWALL TOP TIE |
| S527E | 22 | 3'-5" | ⊏ | HEADWALL END TIE |
| S328E | 16 | 3'-6" | ——— | HAUNCH DIAGONAL BAR |
| | | | | |
| S630E | 30 | SER. 3 | ——— | WINGWALL VERTICAL (BF) |
| S631E | 48 | SER. 4 | ——— | WINGWALL VERTICAL (BF) |
| S632E | 16 | SER.5 | ——— | WINGWALL VERTICAL (FF) |
| S633E | 24 | SER.6 | ——— | WINGWALL VERTICAL (FF) |
| S634E | 28 | 19'-10" | ——— | WINGWALL HORIZONTAL (EF) |
| S635E | 28 | SER. 7 | ——— | WINGWALL HORIZONTAL (EF) |
| S536E | 16 | SER. 8 | ——— | WINGWALL HORIZONTAL (EF) |
| S637E | 20 | SER. 9 | ——— | WINGWALL HORIZONTAL (EF) |
| S538E | 4 | 23'-0" | ⟋ | WINGWALL TOP |
| S539E | 14 | 3'-11" | ⌐¬ | WINGWALL END TIE |
| S540E | 40 | 4'-1" | ⌐¬ | WINGWALL TOP TIE |

SERIES 1 = 2 SERIES OF 6 BARS (36'-2" TO 37'-6")
SERIES 2 = 4 SERIES OF 10 BARS (24'-6" TO 25'-10")
SERIES 3 = 2 SERIES OF 15 BARS (15'-4" TO 18'-1")
SERIES 4 = 2 SERIES OF 24 BARS (7'-2" TO 15'-1")
SERIES 5 = 2 SERIES OF 8 BARS (15'-4" TO 18'-1")
SERIES 6 = 2 SERIES OF 12 BARS (7'-2" TO 14'-9")
SERIES 7 = 4 SERIES OF 7 BARS (11'-0" TO 19'-7")
SERIES 8 = 4 SERIES OF 4 BARS (8'-2" TO 10'-2")
SERIES 9 = 4 SERIES OF 5 BARS (2'-7" TO 7'-2")

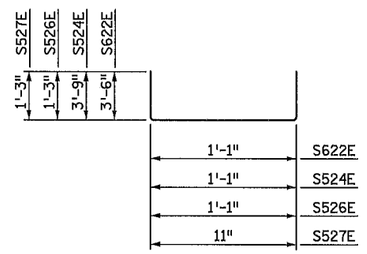
## BAR BENDING DIAGRAMS



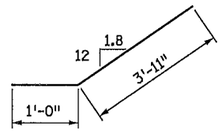

S510E, S511E, S512E & S515E



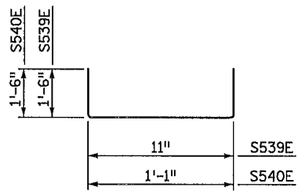

S713E & S614E



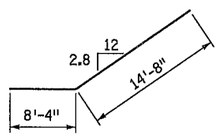

S622E, S524E, S526E & S527E




S623E




S539E & S540E




S538E

| SUMMARY OF QUANTITIES FOR SOUTH WALL | | |
|---|---|---|
| ITEM DESCRIPTION | UNIT | TOTAL |
| STRUCTURAL CONCRETE (1G52) | CU YD | 46 |
| STRUCTURAL CONCRETE (3B52) | CU YD | 50 |
| STRUCTURAL CONCRETE (3W82) | CU YD | 7 |
| REINFORCEMENT BARS | POUND | 5,690 |
| REINFORCEMENT BARS (EPOXY COATED) | POUND | 7,750 |
| PIPE RAILING | LIN FT | 62 |
| ① DRAINAGE SYSTEM TYPE (B910) | LUMP SUM | PART |

① DRAINAGE SYSTEM, SEE DRAINAGE PLAN.

**NOTE:**

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

DATE: 5/4/2016 TIME: 1:36:09 PM
FILENAME: K:\a-f\AnokaCty\53440000\hwy-brdg\hwy\pln-sht\Sbox10.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matt A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067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651.292.4400
tkda.com

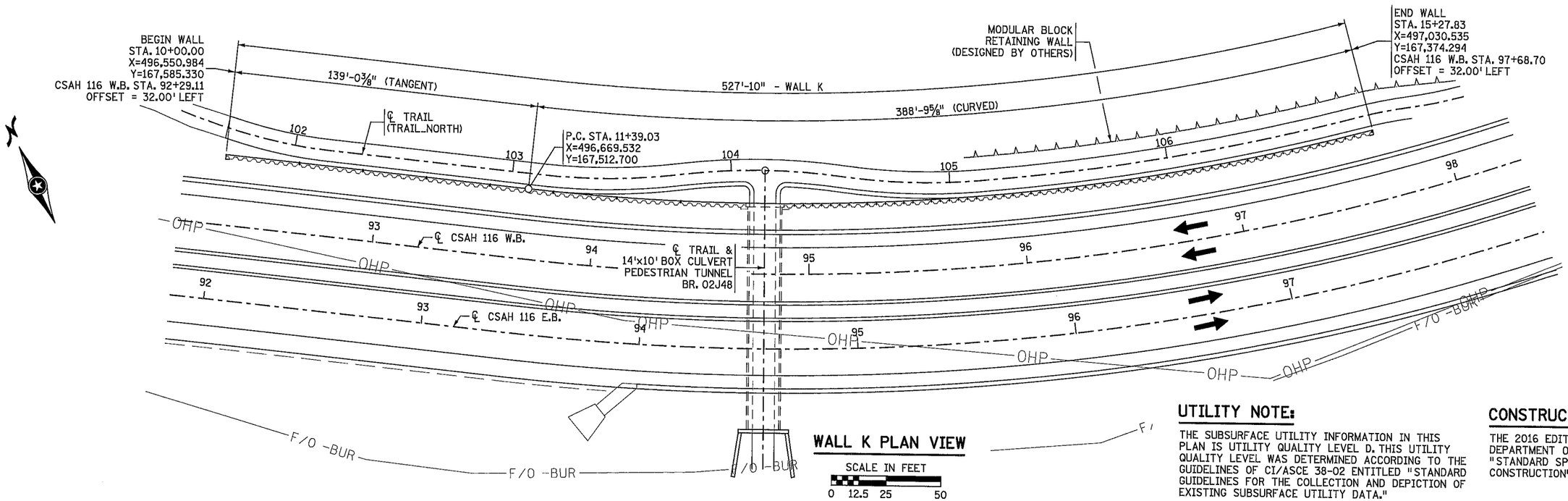

ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
SOUTH WALL
BARLIST & QUANTITIES

DES: MAV | DR: MAV | APPROVED
CHK: MJC | CHK: MJC

Sheet No. 67 of 482 Sheets

Bridge No.
02J48




## WALL K PLAN VIEW

SCALE IN FEET

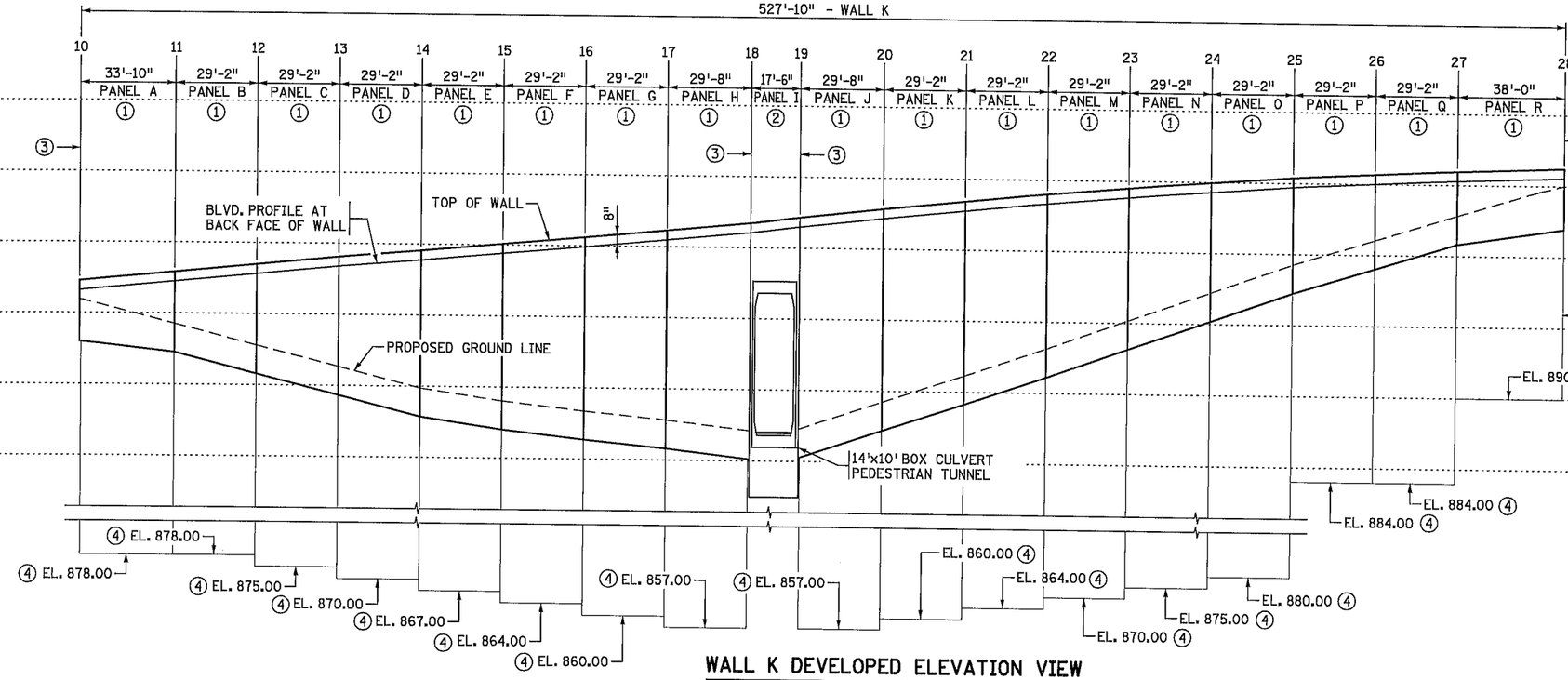
0 12.5 25 50

## UTILITY NOTE:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

## CONSTRUCTION NOTES:

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.




## WALL K DEVELOPED ELEVATION VIEW

(LOOKING FROM BACK FACE; CONCRETE TEXTURE AND BARRIER NOT SHOWN FOR CLARITY)

## NOTES:

1. SEE SHEET 69 FOR SHEET PILE WALL PANEL GEOMETRIC DETAILS. (PANEL A - PANEL H & PANEL J - PANEL R).
2. SEE SHEET 54-57 FOR CAST IN PLACE WALL PANEL DETAILS. (PANEL I)
3. INCLUDES CONCRETE END OF WALL DETAIL OR SHEAR LUG. SEE SHEET 71-72 FOR DETAILS.
4. BOTTOM OF SHEET PILE ELEVATION. (NOT DRAWN TO SCALE).

DATE: 5/4/2016 TIME: 1:36:11 PM
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| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

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SIGNED _____ MATTHEW A. VOLZ

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tkda.com

ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
RETAINING WALL K
PLAN & PROFILE

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 68 of 482 Sheets

Bridge No. 02J48

## WALL K ALIGNMENT TABULATION

| POINT NO. | POINT | STATION | CURVE DATA | | | | | COORDINATES | | AZIMUTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DELTA | DEGREE | RADIUS | TANGENT | LENGTH | X | Y | |
| 1 | POT | 10+00.00 | | | | | | 496,550.984 | 167,585.330 | 121°29'39.776" |
| 2 | PC | 11+39.03 | | | | | | 496,669.532 | 167,512.700 | |
| 3 | PI | 13+35.64 | 21°02'09.008" (LT) | 05°24'37.319" | 1059.000 | 196.617 | 388.806 | 496,837.185 | 167,409.985 | PI |
| 4 | CC | | | | | | | 497,222.769 | 168,415.700 | 100°27'30.768" |
| 5 | PT | 15+27.83 | | | | | | 497,030.535 | 167,374.294 | |

## RETAINING WALL DATA - WALL K (SHEET PILE WALL)

| JOINT NO | STATION | COORDINATES | | FINISHED GRADE | TOP OF WALL | BLVD. ELEV. | BOTTOM OF CONCRETE | CONC. HEIGHT FT | BOTTOM OF SHEET PILE (1) | CONC. CAP HEIGHT | SHEET PILE HEIGHT | LENGTH FT | PANEL ID | JOINT TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | X | Y | | | | | | | | | | | |
| 10 | 10+00.00 | 496,550.984 | 167,585.330 | 895.94 | 897.21 | 896.54 | 892.96 | 4.25 | 878.00 | 2.50 | 16.71 | | | END OF WALL |
| 11 | 10+33.83 | 496,579.833 | 167,567.655 | 894.26 | 897.86 | 897.19 | 892.26 | 5.60 | 878.00 | 2.50 | 17.36 | 33.83 | A | CONSTRUCTION |
| 12 | 10+63.00 | 496,604.703 | 167,552.418 | 892.81 | 898.43 | 897.76 | 890.81 | 7.62 | 878.00 | 2.50 | 17.93 | 29.17 | B | CONSTRUCTION |
| 13 | 10+92.17 | 496,629.573 | 167,537.181 | 891.36 | 898.99 | 898.32 | 889.36 | 9.63 | 875.00 | 2.50 | 21.49 | 29.17 | C | CORK |
| 14 | 11+21.33 | 496,654.444 | 167,521.944 | 889.91 | 899.49 | 898.82 | 887.91 | 11.58 | 870.00 | 2.50 | 26.99 | 29.17 | D | CONSTRUCTION |
| 15 | 11+50.50 | 496,679.346 | 167,506.760 | 889.06 | 900.03 | 899.36 | 887.06 | 12.97 | 867.00 | 2.50 | 30.53 | 29.17 | E | CONSTRUCTION |
| 16 | 11+79.67 | 496,704.583 | 167,492.140 | 888.36 | 900.57 | 899.90 | 886.36 | 14.21 | 864.00 | 2.50 | 34.07 | 29.17 | F | CORK |
| 17 | 12+08.83 | 496,730.213 | 167,478.220 | 887.66 | 901.13 | 900.46 | 885.66 | 15.47 | 860.00 | 2.50 | 38.63 | 29.17 | G | CONSTRUCTION |
| 18 | 12+38.50 | 496,756.665 | 167,464.791 | 886.95 | 901.71 | 901.04 | 884.95 | 16.76 | 857.00 | 2.50 | 42.21 | 29.67 | H | SHEAR LUG |
| | | | | | | | | | | | | | | |
| 19 | 12+56.00 | 496,772.442 | 167,457.219 | 887.03 | 902.14 | 901.47 | 885.03 | 17.11 | 857.00 | 2.50 | 42.64 | | | SHEAR LUG |
| 20 | 12+85.67 | 496,799.466 | 167,444.981 | 888.94 | 902.85 | 902.18 | 886.94 | 15.91 | 860.00 | 2.50 | 40.35 | 29.67 | J | CONSTRUCTION |
| 21 | 13+14.83 | 496,826.358 | 167,433.692 | 890.92 | 903.47 | 902.80 | 888.92 | 14.55 | 864.00 | 2.50 | 36.97 | 29.17 | K | CONSTRUCTION |
| 22 | 13+44.00 | 496,853.551 | 167,423.148 | 892.90 | 904.06 | 903.39 | 890.90 | 13.16 | 870.00 | 2.50 | 31.56 | 29.17 | L | CORK |
| 23 | 13+73.17 | 496,881.024 | 167,413.357 | 894.89 | 904.57 | 903.90 | 892.89 | 11.68 | 875.00 | 2.50 | 27.07 | 29.17 | M | CONSTRUCTION |
| 24 | 14+02.33 | 496,908.757 | 167,404.326 | 896.86 | 905.03 | 904.36 | 894.86 | 10.17 | 880.00 | 2.50 | 22.53 | 29.17 | N | CONSTRUCTION |
| 25 | 14+31.50 | 496,936.727 | 167,396.062 | 898.55 | 905.44 | 904.77 | 896.55 | 8.89 | 884.00 | 2.50 | 18.94 | 29.17 | O | CORK |
| 26 | 14+60.67 | 496,964.915 | 167,388.572 | 900.48 | 905.75 | 905.08 | 898.48 | 7.27 | 884.00 | 2.50 | 19.25 | 29.17 | P | CONSTRUCTION |
| 27 | 14+89.83 | 496,993.298 | 167,381.861 | 902.40 | 906.01 | 905.34 | 900.40 | 5.61 | 890.00 | 2.50 | 13.51 | 29.17 | Q | CONSTRUCTION |
| 28 | 15+27.83 | 497,030.535 | 167,374.294 | 904.75 | 906.30 | 905.63 | 902.05 | 4.25 | 890.00 | 2.50 | 13.80 | 38.00 | R | END OF WALL |

## SUMMARY OF QUANTITIES FOR WALL K

| | ITEM DESCRIPTION | UNIT | TOTAL |
|---|---|---|---|
| | STRUCTURAL CONCRETE (3B52) | CU YD | 344 |
| | TYPE P-2 (TL-4) RAILING CONCRETE (3S52) | LF | 528 |
| (1) | REINFORCEMENT BARS (EPOXY COATED) | POUND | 41,550 |
| | SHEAR STUDS | EACH | 2,200 |
| | STRUCTURAL TUBE RAILING DESIGN T-1 | LIN FT | 522 |
| (2) | STEEL SHEET PILING (PERMANENT) | SQ FT | 14,240 |
| (3) | DRAINAGE SYSTEM TYPE (B910) | LUMP SUM | PART |

(1) INCLUDES REINFORCEMENT FOR WALL K AND TYPE P-2 (TL-4) BARRIER.

(2) PAYMENT FOR STEEL SHEET PILING (PERMANENT) IS BASED ON TOTAL AREA OF SHEET PILING. SEE SPECIAL PROVISIONS.

(3) DRAINAGE SYSTEM, SEE DRAINAGE PLAN.

## NOTES:

(1) SEE SHEET 68 FOR ADDITIONAL INFORMATION.

## SHEET PILE WALL DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION (2014), LOAD & RESISITANCE FACTOR DESIGN AND MnDOT DESIGN POLICIES AS STATED IN THE MnDOT LRFD BRIDGE DESIGN MANUAL

REINFORCED CONCRETE:
$f'_c$ = 4000 psi
$f_y$ = 60000 psi
n = 8

BACKFILL CHARACTERISTICS:
INTERNAL ANGLE OF FRICTION=32°
UNIT WEIGHT: 120 pcf

IN-SITU SOIL CHARACTERISTICS:
INTERNAL ANGLE OF FRICTION=32°
COHESION: N/A psf
UNIT WEIGHT: 120 pcf

STRUCTURAL STEEL:
SHEET PILE SECTIONS SHALL MEET THE REQUIREMENTS OF ASTM A328 OR ASTM A572 FOR GRADE 50.
FOR DESIGN, $f_y$ = 50,000 psi

MAXIMUM ALLOWABLE TIP DEFLECTION = 1.0 INCH.

## GENERAL NOTES:

UTILITIES:
EXISTING AND PROPOSED UTILITIES ARE SHOWN ON SHEETS 49 & 68 AND IN THE ROADWAY PLANS. PRIOR TO EXCAVATION, VERIFY THE LOCATION OF EXISTING FACILITIES AND EXERCISE CARE IN ADJACENT CONSTRUCTION.

EXCAVATION AND EARTHWORK:
ALL EXCAVATION AND EMBANKMENT WORK SHALL CONFORM TO SPEC. 2451.

CONCRETE:
ALL CONCRETE SHALL CONFORM TO SPEC. 2461.

THE THICKNESS OF THE ARCHITECTURAL CONCRETE TEXTURE VARIES WITH THE TEXTURE RELIEF PATTERN.

CONSTRUCTION:
CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPEC. 2411, EXCEPT AS NOTED.

REFER TO SHEET 71 FOR WALL JOINT DETAILS AND END OF WALL DETAILS.

REFER TO SHEET 72 FOR WALL SHEAR LUG DETAILS.

APPLY MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481 TO BACK SIDE OF WALL TO COVER ALL THRU-BOLT FORM HOLES.

FOR PANELS A THROUGH R, WALL MAY BE BACKFILLED TO BOTTOM OF BACKFACE CAP PRIOR TO PLACEMENT OF C-I-P CONCRETE WALL FACING. EXCAVATION REQUIRED TO CAST FACING ON FRONT FACE OF WALL TO BE BACKFILLED PRIOR TO PLACING BACKFILL ABOVE BOTTOM OF BACKFACE CAP.

REINFORCING STEEL:
USE REINFORCEMENT BARS CONFORMING TO SPEC. 3301, GRADE 60.

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED. ALL BARS WHICH COME OUT OF THE FOOTING AND ALL BARS WHICH ARE ABOVE THE FOOTING SHALL BE EPOXY COATED.

THE FIRST DIGIT OF EACH BAR MARK INDICATES THE BAR SIZE.

ALL BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT.

MAINTAIN CLEAR DISTANCE BETWEEN REINFORCEMENT BARS AND FACE OF CONCRETE.

GEOMETRICS AND GRADES:
DATA FOR BASELINE GEOMETRY IS TABULATED FOR WALL ALIGNMENT, SEE THIS SHEET. WALL ALIGNMENT REFERENCE IS ALONG REFERENCE LINE, CONCURRENT WITH FRONT FACE OF WALL.

DATE: 5/4/2016 TIME: 1:36:13 PM
FILENAME: K:\d-f\AnokaCty\53440000\hwy-brdg\hwy\pln-sht\wall\A02.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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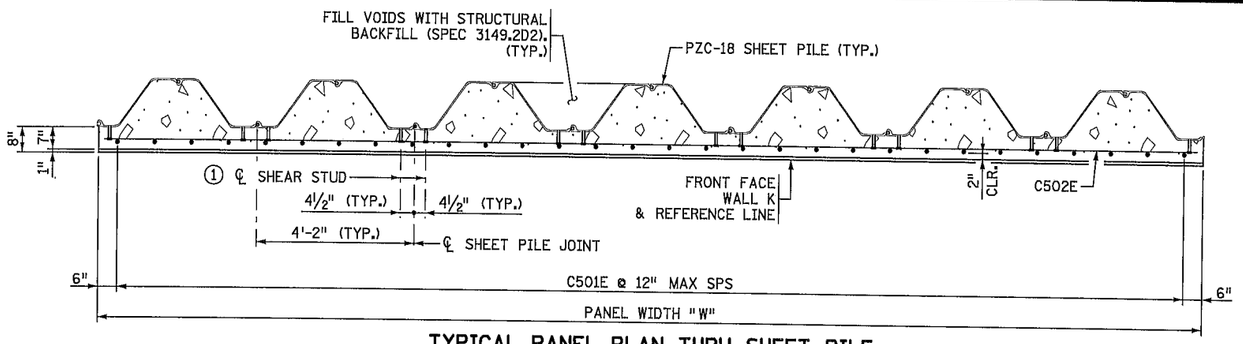
S.P. 002-716-015

TITLE: RETAINING WALL K GEOMETRIC DATA

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

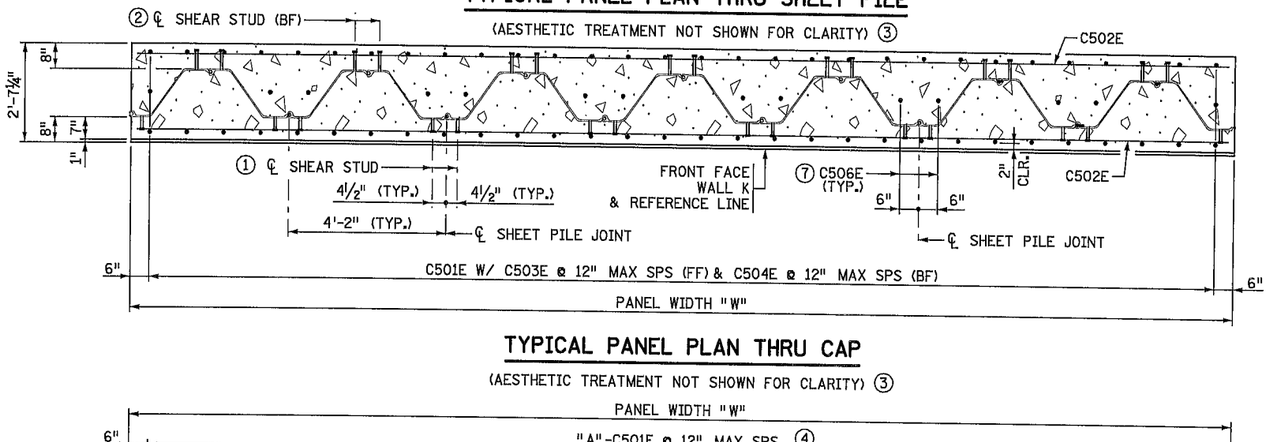
Sheet No. 69 of 482 Sheets

Bridge No. 02J48



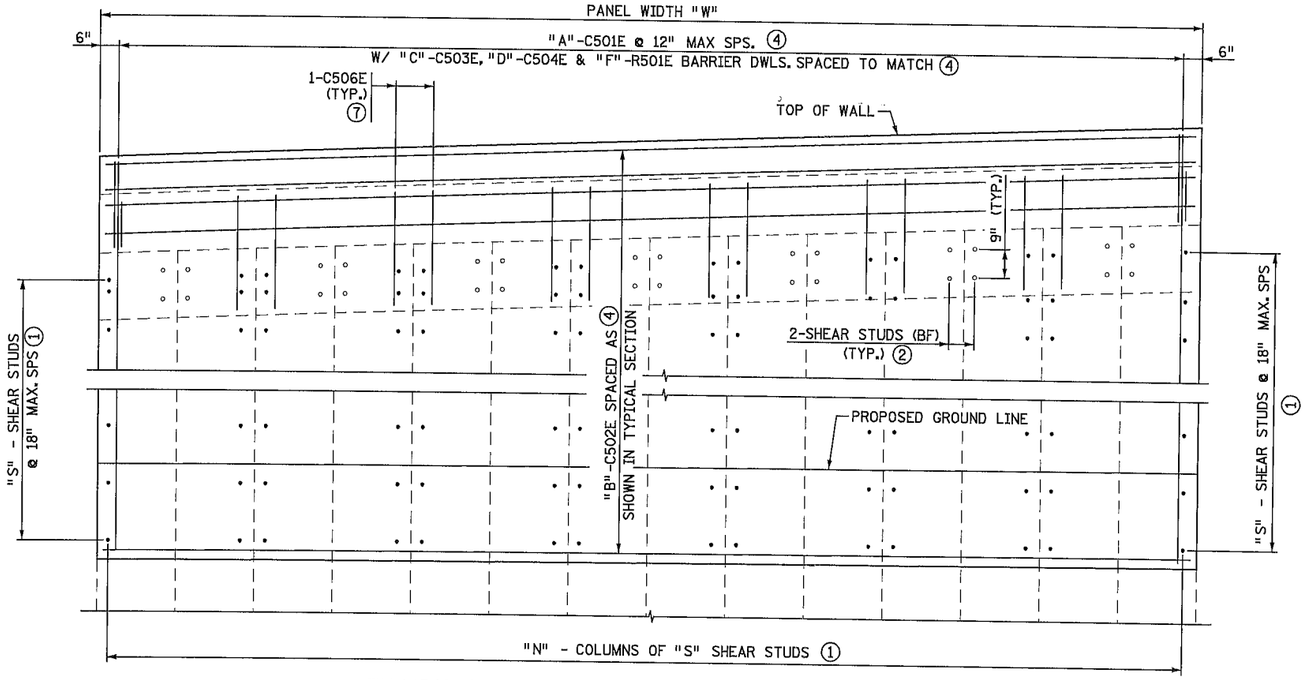

## TYPICAL PANEL PLAN THRU SHEET PILE

(AESTHETIC TREATMENT NOT SHOWN FOR CLARITY) ③




## TYPICAL PANEL PLAN THRU CAP

(AESTHETIC TREATMENT NOT SHOWN FOR CLARITY) ③

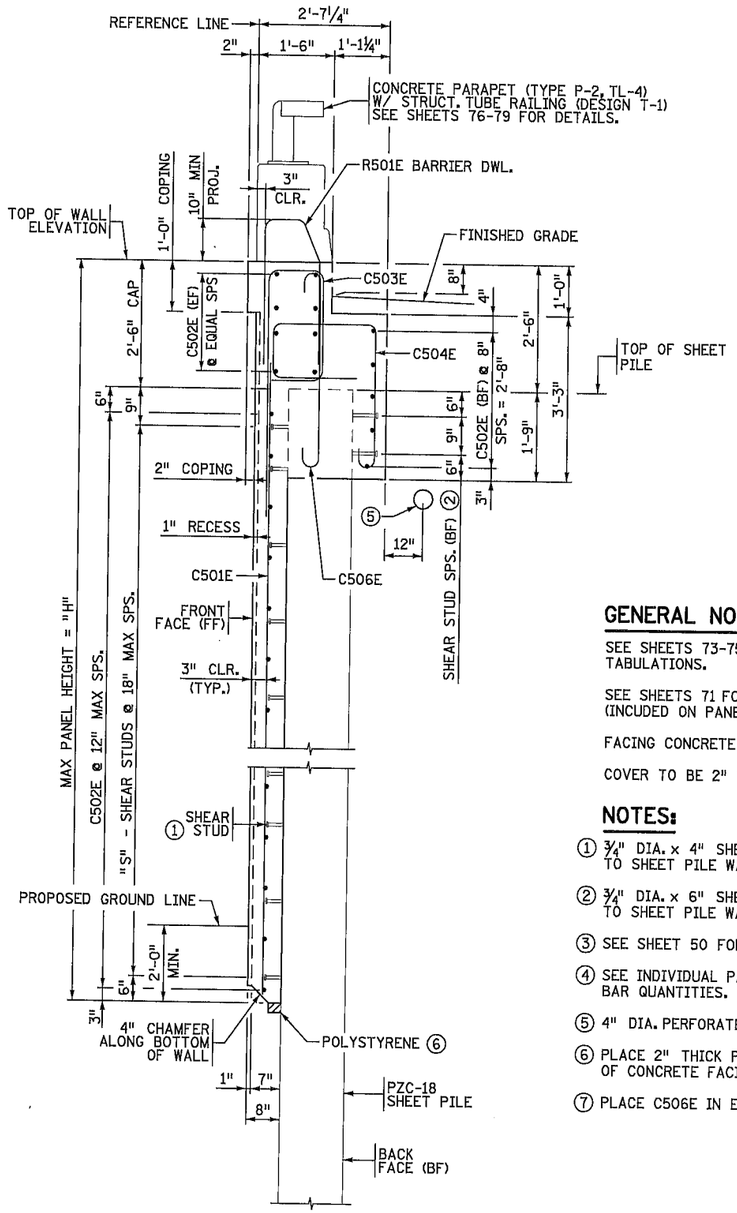



## TYPICAL PANEL SHEET PILE WALL REINFORCEMENT

(CONCRETE BARRIER & CONCRETE TEXTURE NOT SHOWN FOR CLARITY)

○ DENOTES BACK FACE SHEAR STUD

● DENOTES FRONT FACE SHEAR STUD




## TYPICAL PANEL SECTION

## GENERAL NOTES:

SEE SHEETS 73-75 FOR INDIVIDUAL PANEL TABULATIONS.

SEE SHEETS 71 FOR PANEL END OF WALL DETAILS (INCUDED ON PANELS A & R).

FACING CONCRETE SHALL BE MnDOT MIX DESIGN 3B52.

COVER TO BE 2" CLEAR UNLESS NOTED OTHERWISE.

## NOTES:

① ¾" DIA. x 4" SHEAR STUD (FF) TO BE WELDED TO SHEET PILE WALL IN THE FIELD.

② ¾" DIA. x 6" SHEAR STUD (BF) TO BE WELDED TO SHEET PILE WALL IN THE FIELD.

③ SEE SHEET 50 FOR WALL AESTHETIC DETAILS.

④ SEE INDIVIDUAL PANEL TABULATION SHEETS FOR BAR QUANTITIES.

⑤ 4" DIA. PERFORATED PIPE. SEE DRAINAGE PLAN

⑥ PLACE 2" THICK POLYSTYRENE (TYPE B) AT BOTTOM OF CONCRETE FACING.

⑦ PLACE C506E IN EACH SHEET PILE BAY AS SHOWN.

DATE: 5/4/2016 TIME: 1:36:14 PM
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SIGNED Matthew A. Volz
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DATE: 5/4/2016 LIC. NO.: 53067

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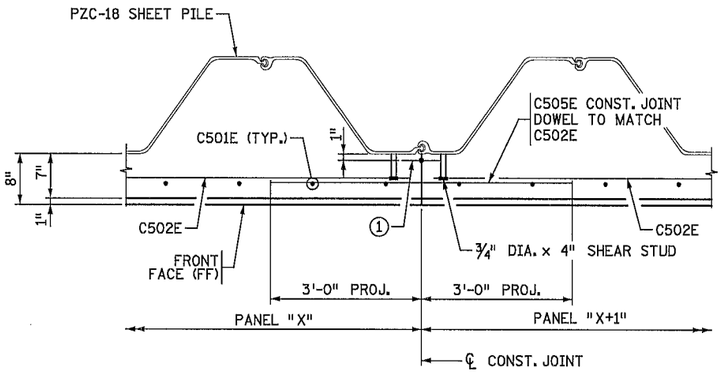
S.P. 002-716-015

TITLE: RETAINING WALL K TYPICAL PANEL DETAILS

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

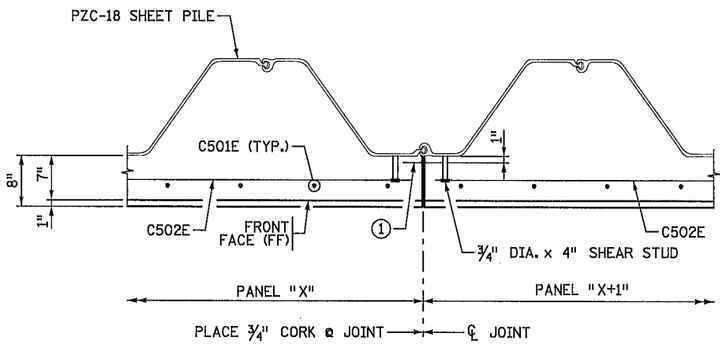
Sheet No. 70 of 482 Sheets

Bridge No. 02J48



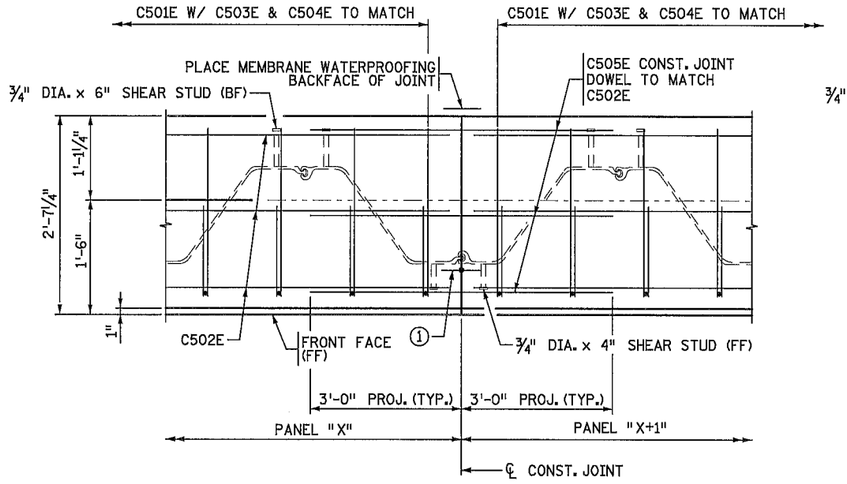

## CONSTRUCTION JOINT DETAIL

(THROUGH SHEET PILE)



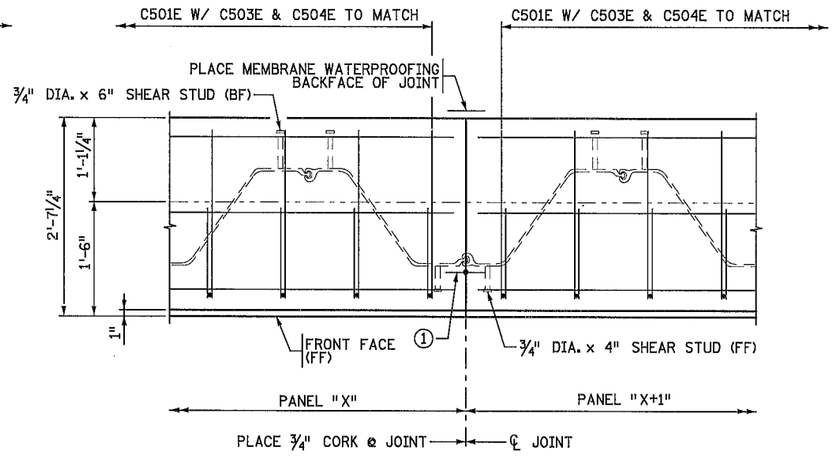

## CORK JOINT DETAIL

(THROUGH SHEET PILE)



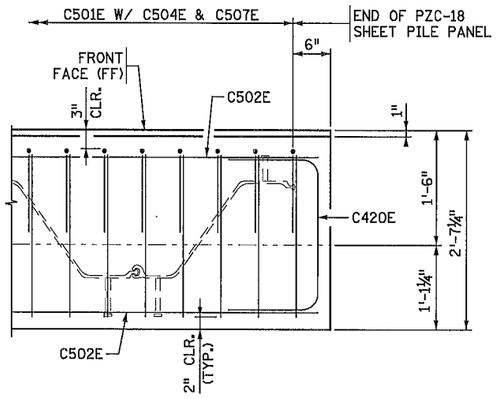

## CONSTRUCTION JOINT DETAIL

(THROUGH CONCRETE CAP)

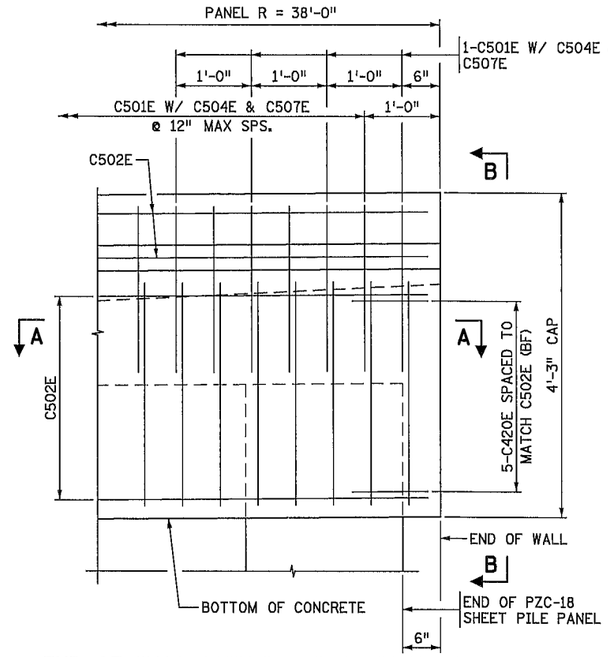



## CORK JOINT DETAIL

(THROUGH CONCRETE CAP)

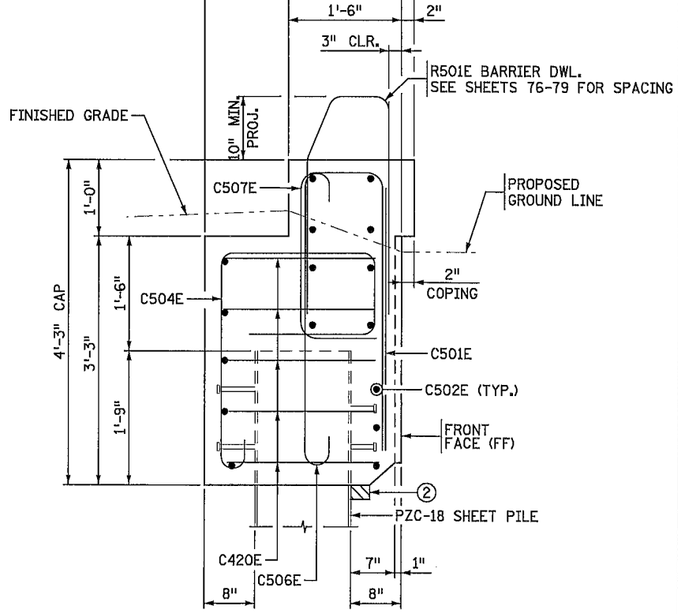



## SECTION A-A




## END OF WALL DETAILS ELEVATION VIEW

(LOOKING AT BACKFACE OF WALL)
(R501E DWLS. NOT SHOWN FOR CLARITY, SEE SHEETS 76-79)
(PANEL R SHOWN; PANEL A SIMILAR)




## VIEW B-B

## NOTES:

① PLACE RIBBED CENTERBULB PVC WATERSTOP ALONG JOINT FROM BOTTOM OF CONCRETE TO TOP OF SHEET PILE. WATERSTOP TO HAVE 4" WEB WITH ¾" OUTER DIAMETER CENTERBULB (SIKA GREENSTREAK PRODUCT 702 OR SIMILAR). PAYMENT FOR WATERSTOP INCIDENTAL TO "SHEET PILING (PERMANENT)".

② PLACE 2" THICK POLYSTYRENE (TYPE B) AT BOTTOM OF CONCRETE FACING.

DATE: 5/4/2016 TIME: 1:36:15 PM
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SIGNED MATTHEW A. VOLZ
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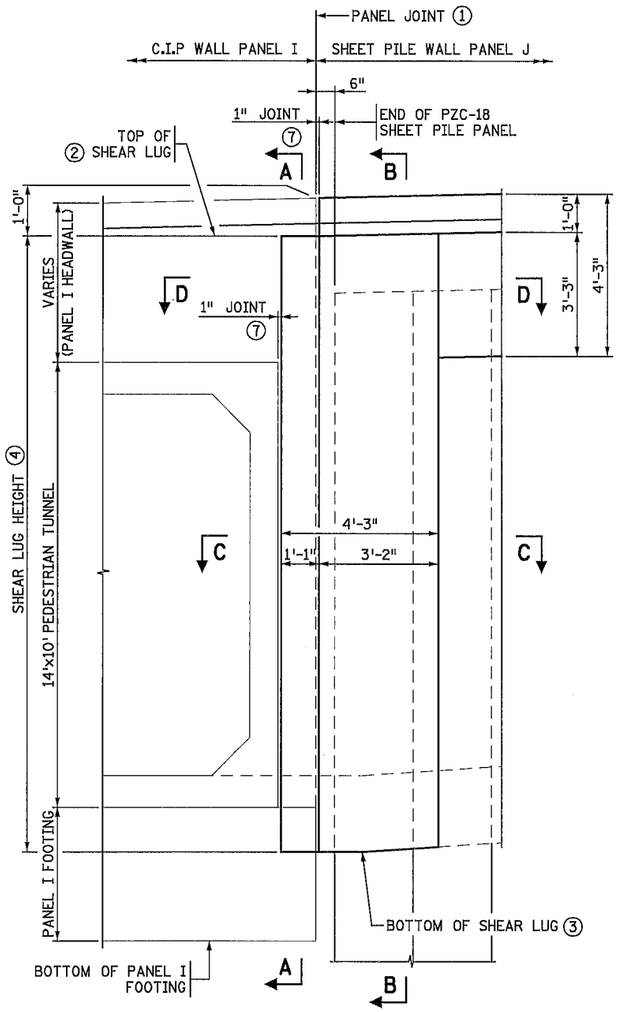
S.P. 002-716-015

TITLE:
RETAINING WALL K
TYPICAL JOINT DETAILS

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

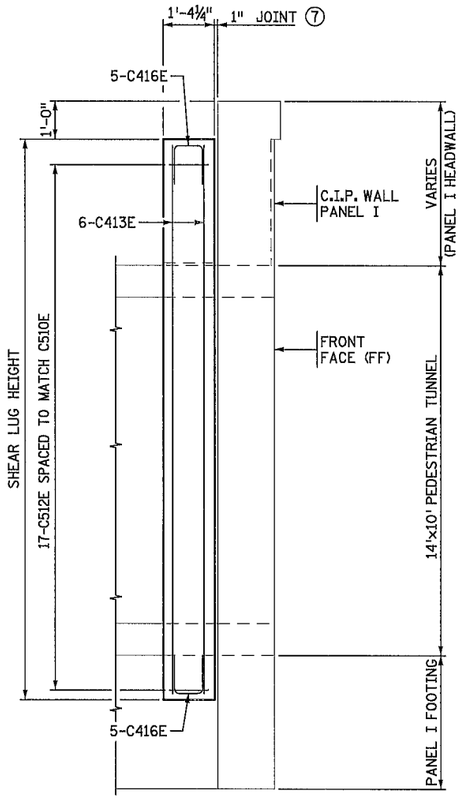
Sheet No. 71 of 482 Sheets

Bridge No. 02J48

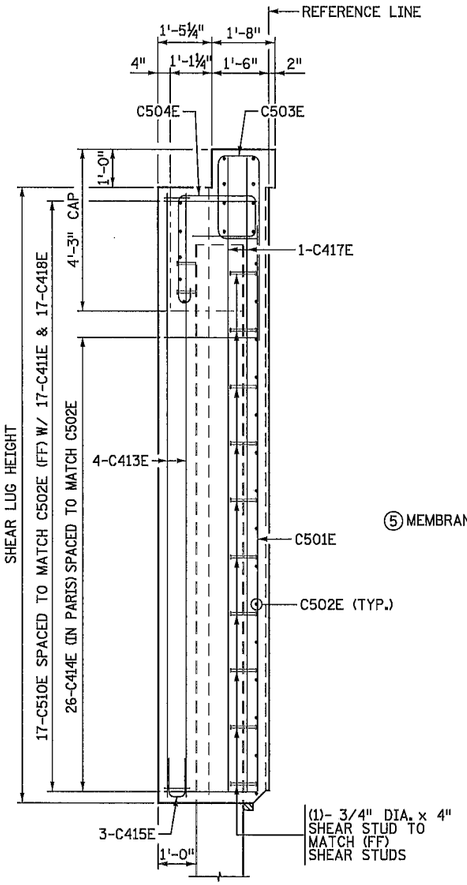



## SHEAR LUG DETAIL

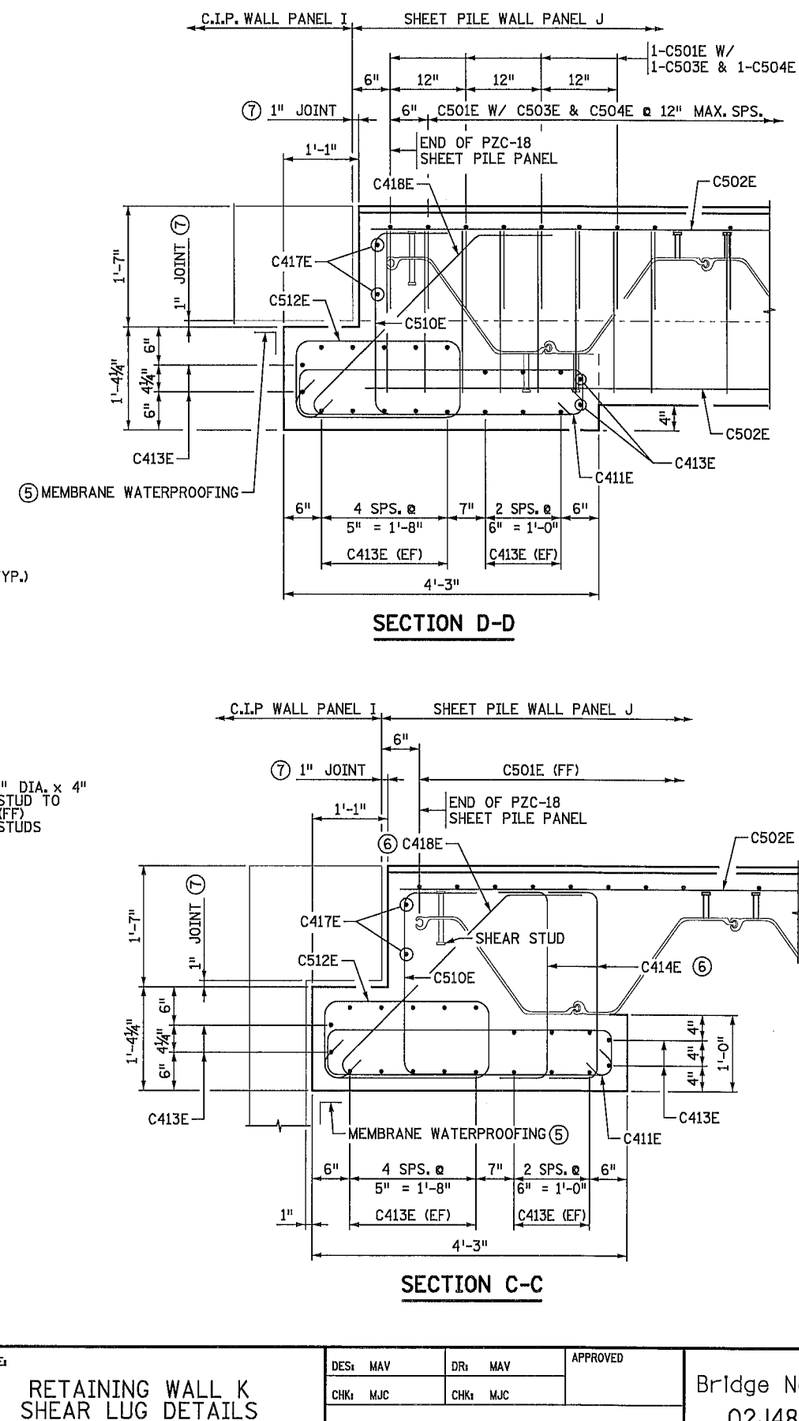
(BACKFACE SHOWN)
(JOINT 19 SHOWN; JOINT 18 SIMILAR)




## SECTION A-A




## SECTION B-B




## SECTION D-D




## SECTION C-C

## NOTES:

① SEE SHEET 69 FOR PANEL AND JOINT DATA & ELEVATIONS. SHEAR LUG LOCATED ON PANEL H, JOINT 18; PANEL J, JOINT 19.

② TOP OF SHEAR LUG ELEVATIONS:
-PANEL H, EL. 900.71
-PANEL J, EL. 901.14

③ BOTTOM OF SHEAR LUG ELEVATIONS:
-PANEL H, EL. 884.95
-PANEL J, EL. 885.03

④ SHEAR LUG HEIGHT:
-PANEL H, H=15.76'
-PANEL J, H=16.10'

⑤ MEMBRANE WATERPROOFING AS PER SPEC. 2481

⑥ BURN 1½" DIA. HOLE IN SHEET PILE TO ALLOW FOR PLACEMENT OF C414E OR C418E.

⑦ PLACE 1" (TYPE B) POLYSTYRENE IN JOINT.

## GENERAL NOTES:

CLEAR COVER TO BE 2" UNLESS NOTED OTHERWISE.

SEE SHEET 69 FOR WALL ALIGNMENT & PANEL DATA.

SEE SHEETS 73-75 FOR SHEET PILE WALL PANEL TABULATIONS.

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
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| | | | |

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TITLE:
RETAINING WALL K
SHEAR LUG DETAILS

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 72 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:36:16 PM
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**PANEL A**

H = 5.60 | BEGIN STA. 10+00.00 | END STA. 10+33.83 | W = 33'-10"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 38 | 3'-9" | —— | WALL VERT. | 149 |
| C502E | 17 | 33'-4" | —— | WALL HORIZ. | 591 |
| C503E | 0 | 8'-7" | ⊔ | CAP TOP TIE | 0 |
| C504E | 38 | 8'-7" | ⊔ | CAP BF TIE | 340 |
| C505E | 17 | 6'-0" | —— | CONST JT DWLS | 106 |
| C506E | 16 | 5'-1" | ⌒ | CAP VERT. TIE | 85 |
| END CAP REINFORCEMENT | | | | | |
| C420E | 5 | 5'-1" | ⊓ | END CAP TIE | 17 |
| C507E | 38 | 7'-7" | ⊔ | CAP TOP TIE | 301 |
| BARRIER DOWEL | | | | | |
| R501E | 41 | 6'-6" | ⊂ | BARRIER DOWEL | 278 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 3 |
| N | 16 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 13.8 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1867 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 48 | EA |
| 3/4"x6" SHEAR STUDS | |
| 32 | EA |

**PANEL B**

H = 7.62 | BEGIN STA. 10+33.83 | END STA. 10+63.00 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 5'-1" | —— | WALL VERT. | 159 |
| C502E | 19 | 28'-8" | —— | WALL HORIZ. | 568 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 19 | 6'-0" | —— | CONST JT DWLS | 119 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 4 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 14.2 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1674 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 56 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL C**

H = 9.63 | BEGIN STA. 10+63.00 | END STA. 10+92.17 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 7'-1" | —— | WALL VERT. | 222 |
| C502E | 21 | 28'-8" | —— | WALL HORIZ. | 628 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 0 | 6'-0" | —— | CONST JT DWLS | 0 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 5 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 16.6 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1678 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 70 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL D**

H = 11.58 | BEGIN STA. 10+92.17 | END STA. 11+21.33 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 9'-2" | —— | WALL VERT. | 287 |
| C502E | 23 | 28'-8" | —— | WALL HORIZ. | 688 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 23 | 6'-0" | —— | CONST JT DWLS | 144 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 7 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 19.7 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1947 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 98 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL E**

H = 12.97 | BEGIN STA. 11+21.33 | END STA. 11+50.50 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 11'-1" | —— | WALL VERT. | 347 |
| C502E | 24 | 28'-8" | —— | WALL HORIZ. | 718 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 24 | 6'-0" | —— | CONST JT DWLS | 150 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 8 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 21.3 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 2043 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 112 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL F**

H = 14.21 | BEGIN STA. 11+50.50 | END STA. 11+79.67 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 12'-6" | —— | WALL VERT. | 391 |
| C502E | 25 | 28'-8" | —— | WALL HORIZ. | 747 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 0 | 6'-0" | —— | CONST JT DWLS | 0 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

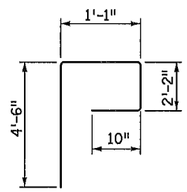
SHEAR STUDS

| | |
|---|---|
| S | 8 |
| N | 14 |

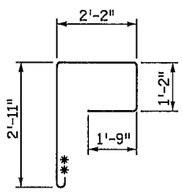
QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 22.9 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1967 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 112 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

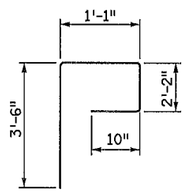
## BAR BENDING DIAGRAMS



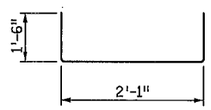

C503E



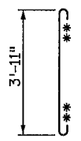

C504E



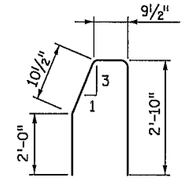

C507E




C420E




C506E




R501E

**NOTE:**

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

** DENOTES STANDARD 180° HOOK

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED Matthew A. Volz

MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067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ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: RETAINING WALL K PANEL TABULATIONS (1 OF 3)

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 73 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:36:17 PM
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DATE: 5/4/2016 TIME: 1:36:18 PM
FILENAME: K:\a-f\Anoka Cty\53440000\hwy-brdg\hwy\pln-sht\wallA08.dgn

## PANEL G

H = 15.47 | BEGIN STA. 11+79.67 | END STA. 12+08.83 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 13'-9" | —— | WALL VERT. | 430 |
| C502E | 27 | 28'-8" | —— | WALL HORIZ. | 807 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 27 | 6'-0" | —— | CONST JT DWLS | 169 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | END CAP TIE | 217 |

DIMENSIONS

| SHEAR STUDS | |
|---|---|
| S | 9 |
| N | 14 |

| QUANTITIES | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 24.5 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 2018 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 126 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

## PANEL H

H = 16.76 | BEGIN STA. 12+08.83 | END STA. 12+38.50 | W = 29'-8"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 34 | 15'-0" | —— | WALL VERT. | 532 |
| C502E | 28 | 29'-2" | —— | WALL HORIZ. | 852 |
| C503E | 34 | 8'-7" | ⊔ | CAP TOP TIE | 304 |
| C504E | 34 | 8'-7" | ⊔ | CAP BF TIE | 304 |
| C505E | 0 | 6'-0" | —— | CONST JT DWLS | 0 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| SHEAR LUG REINFORCEMENT | | | | | |
| C510E | 17 | 4'-11" | ⊓ | END TIE | 87 |
| C411E | 17 | 9'-11" | ▭ | HORIZ. TIE | 113 |
| C512E | 17 | 7'-5" | ▭ | KEY HORIZ. | 132 |
| C413E | 20 | 15'-3" | —— | KEY VERTICAL | 204 |
| C414E | 26 | 3'-9" | ⊓ | SHEET PILE TIE | 65 |
| C415E | 3 | 2'-7" | ⊓ | B TIE | 5 |
| C416E | 10 | 2'-10" | ⊓ | T & B TIE | 19 |
| C417E | 2 | 16'-3" | —— | CAP END TIE | 22 |
| C418E | 17 | 5'-5" | ◹ | DIAGANOL | 62 |
| BARRIER DOWEL | | | | | |
| R501E | 33 | 6'-6" | ⊂ | BARRIER DOWEL | 224 |

DIMENSIONS

| SHEAR STUDS | |
|---|---|
| S | 10 |
| N | 14 |

| QUANTITIES | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 29.0 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 2998 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 140 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

## PANEL J

H = 17.11 | BEGIN STA. 12+56.00 | END STA. 12+85.67 | W = 29'-8"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 34 | 15'-5" | —— | WALL VERT. | 547 |
| C502E | 28 | 29'-2" | —— | WALL HORIZ. | 852 |
| C503E | 34 | 8'-7" | ⊔ | CAP TOP TIE | 304 |
| C504E | 34 | 8'-7" | ⊔ | CAP BF TIE | 304 |
| C505E | 28 | 6'-0" | —— | CONST JT DWLS | 175 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| SHEAR LUG REINFORCEMENT | | | | | |
| C510E | 17 | 4'-11" | ⊓ | END TIE | 87 |
| C411E | 17 | 9'-11" | ▭ | HORIZ. TIE | 113 |
| C512E | 17 | 7'-5" | ▭ | KEY HORIZ. | 132 |
| C413E | 20 | 15'-7" | —— | KEY VERTICAL | 208 |
| C414E | 26 | 3'-9" | ⊓ | SHEET PILE TIE | 65 |
| C415E | 3 | 2'-7" | ⊓ | B TIE | 5 |
| C416E | 10 | 2'-10" | ⊓ | T & B TIE | 19 |
| C417E | 2 | 16'-7" | —— | CAP END TIE | 22 |
| C418E | 17 | 5'-5" | ◹ | DIAGANOL | 62 |
| BARRIER DOWEL | | | | | |
| R501E | 33 | 6'-6" | ⊂ | BARRIER DOWEL | 224 |

DIMENSIONS

| SHEAR STUDS | |
|---|---|
| S | 10 |
| N | 14 |

| QUANTITIES | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 29.6 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 3193 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 140 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

## PANEL K

H = 15.91 | BEGIN STA. 12+85.67 | END STA. 13+14.83 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 14'-1" | —— | WALL VERT. | 441 |
| C502E | 27 | 28'-8" | —— | WALL HORIZ. | 807 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 27 | 6'-0" | —— | CONST JT DWLS | 169 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

| SHEAR STUDS | |
|---|---|
| S | 10 |
| N | 14 |

| QUANTITIES | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 25.0 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 2245 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 140 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

## PANEL L

H = 14.55 | BEGIN STA. 13+14.83 | END STA. 13+44.00 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 12'-8" | —— | WALL VERT. | 396 |
| C502E | 26 | 28'-8" | —— | WALL HORIZ. | 777 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 0 | 6'-0" | —— | CONST JT DWLS | 0 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

| SHEAR STUDS | |
|---|---|
| S | 9 |
| N | 14 |

| QUANTITIES | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 23.3 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 2002 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 126 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

## PANEL M

H = 13.16 | BEGIN STA. 13+44.00 | END STA. 13+73.17 | W = 29'-2"

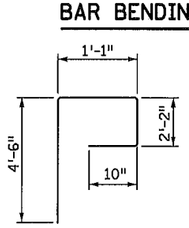
| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 11'-2" | —— | WALL VERT. | 349 |
| C502E | 24 | 28'-8" | —— | WALL HORIZ. | 718 |
| C503E | 30 | 8'-7" | ⊔ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊔ | CAP BF TIE | 269 |
| C505E | 24 | 6'-0" | —— | CONST JT DWLS | 150 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

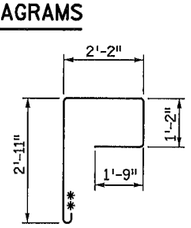
| SHEAR STUDS | |
|---|---|
| S | 8 |
| N | 14 |

| QUANTITIES | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 21.4 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 2045 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 112 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

## BAR BENDING DIAGRAMS




C503E

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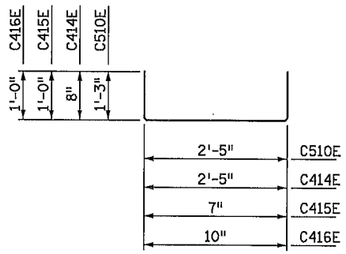
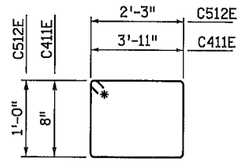
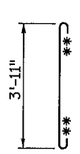


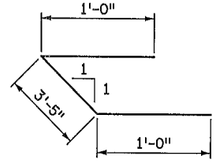

C510E, C414E, C415E & C416E



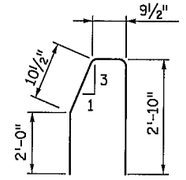

C411E & C512E




C506E




C418E




R501E

**NOTE:**

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

** DENOTES STANDARD 180° HOOK

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067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444 Cedar Street, Suite 1500
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ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: RETAINING WALL K PANEL TABULATIONS (2 OF 3)

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 74 of 482 Sheets

Bridge No. 02J48

**PANEL N**

H = 11.68 | BEGIN STA. 13+73.17 | END STA. 14+02.33 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 9'-8" | ——— | WALL VERT. | 302 |
| C502E | 23 | 28'-8" | ——— | WALL HORIZ. | 688 |
| C503E | 30 | 8'-7" | ⊏⊐ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊏⊐ | CAP BF TIE | 269 |
| C505E | 23 | 6'-0" | ——— | CONST JT DWLS | 144 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 7 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 19.5 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1962 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 98 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL O**

H = 10.17 | BEGIN STA. 14+02.33 | END STA. 14+31.50 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 8'-5" | ——— | WALL VERT. | 263 |
| C502E | 21 | 28'-8" | ——— | WALL HORIZ. | 628 |
| C503E | 30 | 8'-7" | ⊏⊐ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊏⊐ | CAP BF TIE | 269 |
| C505E | 0 | 6'-0" | ——— | CONST JT DWLS | 0 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 6 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 17.7 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1720 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 84 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL P**

H = 8.89 | BEGIN STA. 14+31.50 | END STA. 14+60.67 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 6'-9" | ——— | WALL VERT. | 211 |
| C502E | 20 | 28'-8" | ——— | WALL HORIZ. | 598 |
| C503E | 30 | 8'-7" | ⊏⊐ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊏⊐ | CAP BF TIE | 269 |
| C505E | 20 | 6'-0" | ——— | CONST JT DWLS | 125 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 5 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 15.9 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1546 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 70 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL Q**

H = 7.27 | BEGIN STA. 14+60.67 | END STA. 14+89.83 | W = 29'-2"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 30 | 5'-1" | ——— | WALL VERT. | 159 |
| C502E | 19 | 28'-8" | ——— | WALL HORIZ. | 568 |
| C503E | 30 | 8'-7" | ⊏⊐ | CAP TOP TIE | 269 |
| C504E | 30 | 8'-7" | ⊏⊐ | CAP BF TIE | 269 |
| C505E | 19 | 6'-0" | ——— | CONST JT DWLS | 119 |
| C506E | 14 | 5'-1" | ⌒ | CAP VERT. TIE | 74 |
| BARRIER DOWEL | | | | | |
| R501E | 32 | 6'-6" | ⊂ | BARRIER DOWEL | 217 |

DIMENSIONS

SHEAR STUDS

| | |
|---|---|
| S | 4 |
| N | 14 |

QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 13.8 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1457 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 56 | EA |
| 3/4"x6" SHEAR STUDS | |
| 28 | EA |

**PANEL R**

H = 5.61 | BEGIN STA. 14+89.83 | END STA. 15+27.83 | W = 38'-0"

| BAR MARK | NO. | LENGTH | SHAPE | LOCATION | WT |
|---|---|---|---|---|---|
| WALL PANEL REINFORCEMENT | | | | | |
| C501E | 42 | 3'-9" | ——— | WALL VERT. | 164 |
| C502E | 17 | 37'-6" | ——— | WALL HORIZ. | 665 |
| C503E | 0 | 8'-7" | ⊏⊐ | CAP TOP TIE | 0 |
| C504E | 42 | 8'-7" | ⊏⊐ | CAP BF TIE | 376 |
| C505E | 0 | 6'-0" | ——— | CONST JT DWLS | 0 |
| C506E | 18 | 5'-1" | ⌒ | CAP VERT. TIE | 95 |
| END CAP REINFORCEMENT | | | | | |
| C420E | 5 | 5'-1" | ⌐¬ | END CAP TIE | 17 |
| C507E | 42 | 7'-7" | ⊔ | CAP TOP TIE | 332 |
| BARRIER DOWEL | | | | | |
| R501E | 45 | 6'-6" | ⊂ | BARRIER DOWEL | 305 |

DIMENSIONS

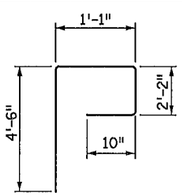
SHEAR STUDS

| | |
|---|---|
| S | 3 |
| N | 18 |

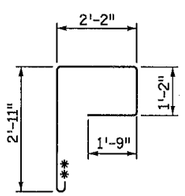
QUANTITIES

| | |
|---|---|
| STRUCTURAL CONCRETE (3B52) | |
| 15.5 | CU YD |
| REINFORCEMENT BARS (EPOXY) | |
| 1955 | LBS |
| 3/4"x4" SHEAR STUDS | |
| 54 | EA |
| 3/4"x6" SHEAR STUDS | |
| 36 | EA |

## BAR BENDING DIAGRAMS



C503E



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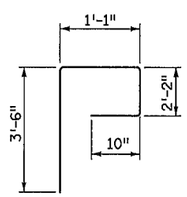
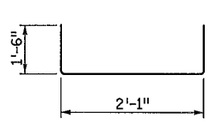
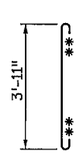


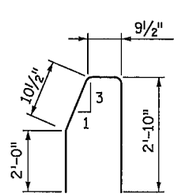
C507E



C420E



C506E



R501E

**NOTE:**

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

** DENOTES STANDARD 180° HOOK

DATE: 5/4/2016 TIME: 1:36:9 PM
FILENAME: K:\cr-f\Anoka\Cty\53440000\hwy-brdg\hwy\pln-sht\wall\A09.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067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Saint Paul, MN 55101
651.292.4400
tkda.com


ANOKA COUNTY

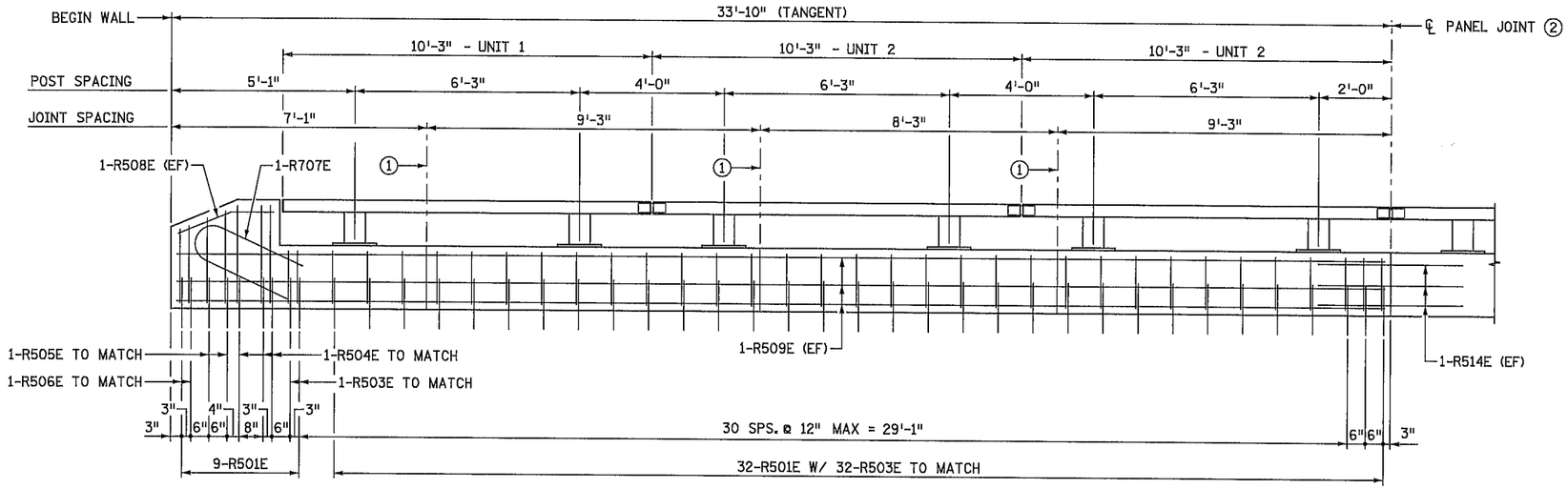
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: RETAINING WALL K PANEL TABULATIONS (3 OF 3)

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

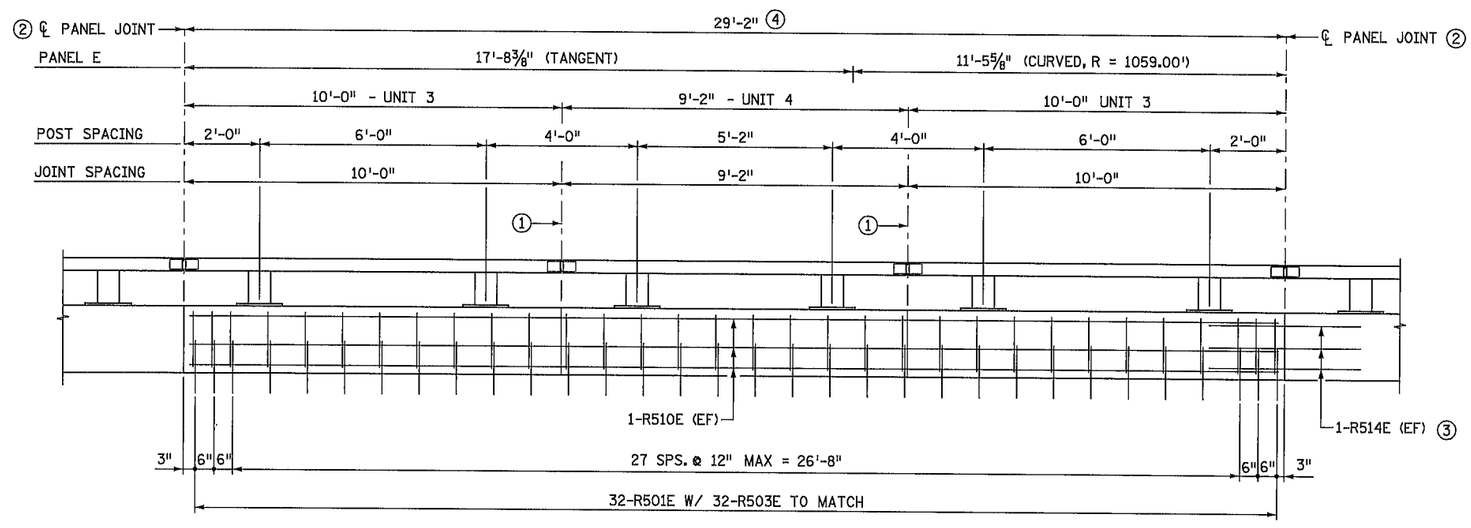
Sheet No. 75 of 482 Sheets

Bridge No. 02J48




## DEVELOPED BARRIER ELEVATION

(PANEL A)




## TYPICAL DEVELOPED BARRIER ELEVATION

(TYPICAL FOR PANEL B TO PANEL G & PANEL K TO PANEL Q)

### NOTES:

① ℄ CONTROL JOINT, SEE SECTION D-D ON SHEET 78.

② SEE SHEET 69 FOR PANEL JOINT DETAILS.

③ PROVIDE R514E JOINT DOWELS AT PANEL CONSTRUCTION JOINTS. CENTER BAR ON JOINT. NO R514E REQUIRED AT CORK JOINTS, SHEAR LUG JOINTS OR END CAPS.

④ PANEL B TO PANEL D HAVE TANGENT ALIGNMENT. PANEL F, PANEL G & PANEL K TO PANEL R HAVE CURVED ALIGNEMENT (R = 1059.00').

FOR SPACING OF VERTICAL REINFORCEMENT REFER TO CONCRETE PARAPET (TYPE P-2, TL-4) SHEET 78.

PARAPET MEASUREMENTS ARE ALONG WALL K REFERECE LINE.

STRUCTURAL TUBE RAILING POST SPACING IS ALONG WALL K REFERENCE LINE.

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

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SIGNED Matt A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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Saint Paul, MN 55101
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tkda.com

ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: WALL K BARRIER ELEVATION (1 OF 2)

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 76 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:36:20 PM
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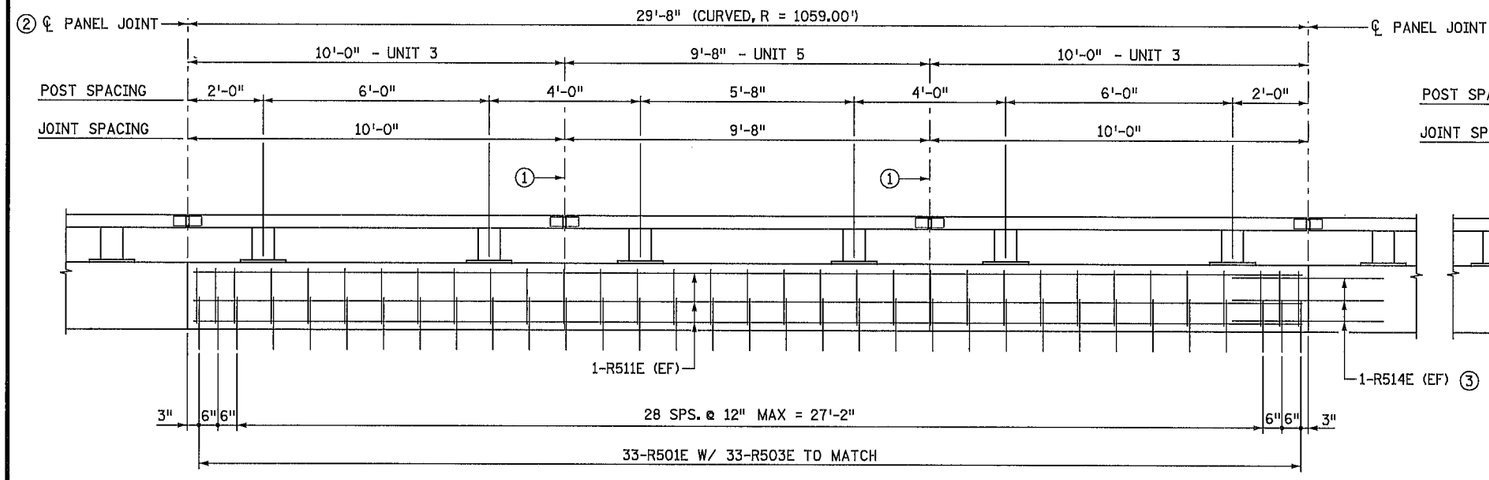
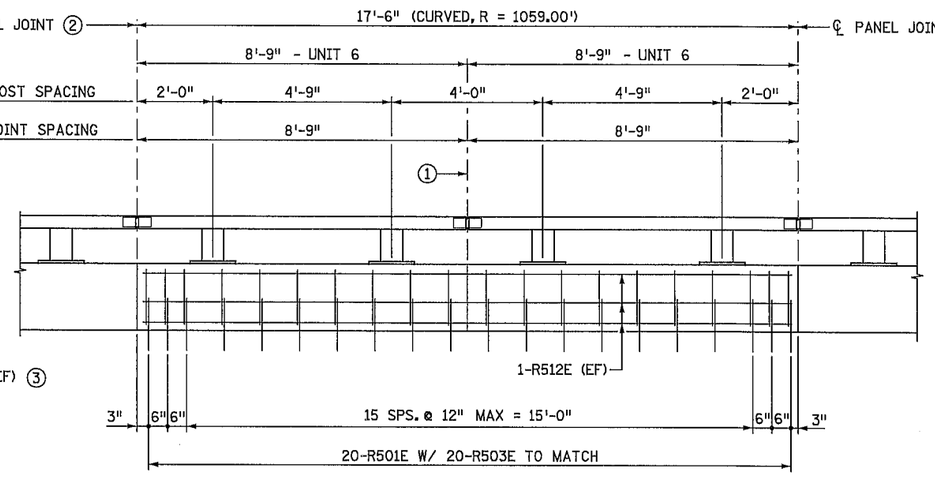


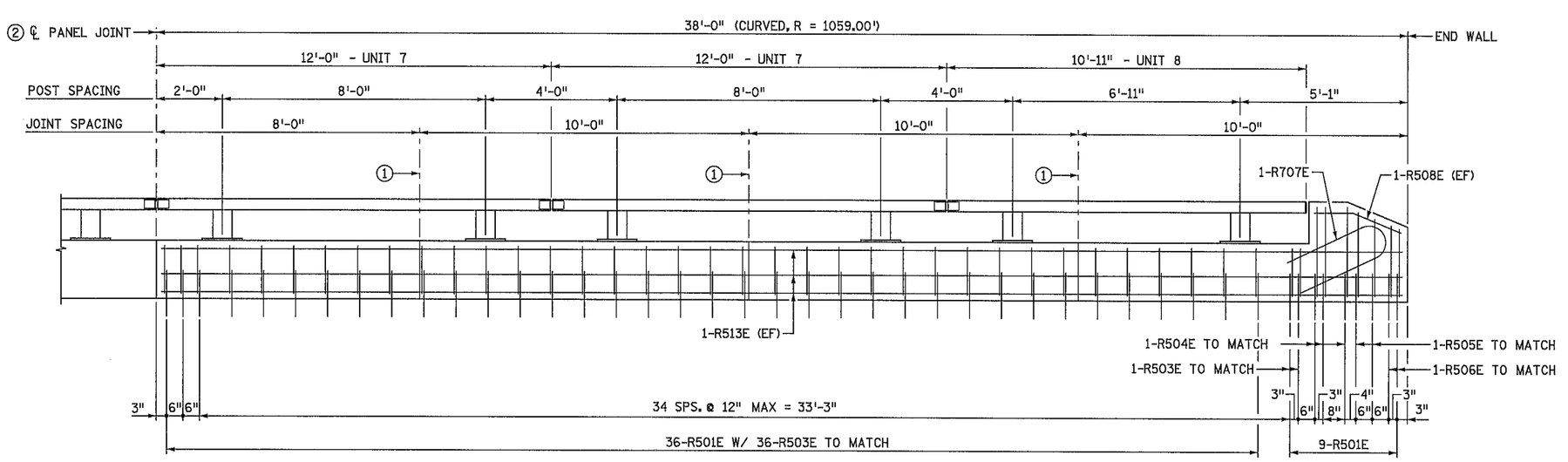

## DEVELOPED BARRIER ELEVATION

(PANEL H & PANEL J)




## DEVELOPED BARRIER ELEVATION

(PANEL I)




## DEVELOPED BARRIER ELEVATION

(PANEL R)

### NOTES:

① ℄ CONTROL JOINT, SEE SECTION D-D ON SHEET 78.

② SEE SHEET 69 FOR PANEL JOINT DETAILS.

③ PROVIDE R514E JOINT DOWELS AT PANEL CONSTRUCTION JOINTS. CENTER BAR ON JOINT. NO R514E REQUIRED AT CORK JOINTS, SHEAR LUG JOINTS OR END CAPS.

FOR SPACING OF VERTICAL REINFORCEMENT REFER TO CONCRETE PARAPET (TYPE P-2, TL-4) SHEET 78.

PARAPET MEASUREMENTS ARE ALONG WALL K REFERECE LINE.

STRUCTURAL TUBE RAILING POST SPACING IS ALONG WALL K REFERENCE LINE.

DATE: 5/4/2016 TIME: 1:36:21 PM
FILENAME: K:\a-f\Anoka Cty\53440000\hwy-brdg\hwy\pln-sht\bar03.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

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SIGNED _____ MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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ANOKA COUNTY

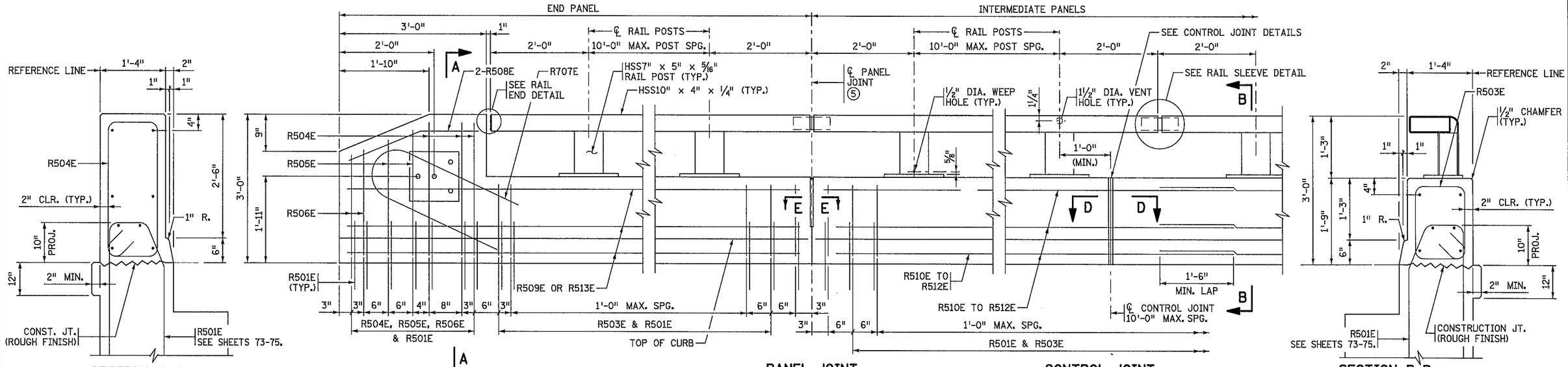
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

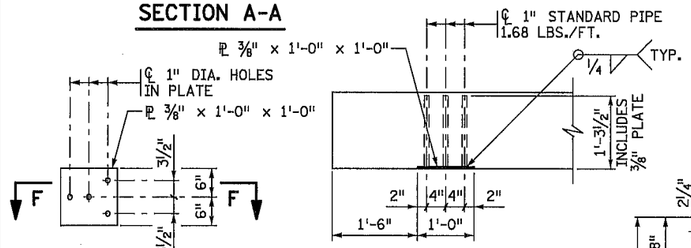
TITLE: WALL K BARRIER ELEVATION (2 OF 2)

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 77 of 482 Sheets

Bridge No. 02J48



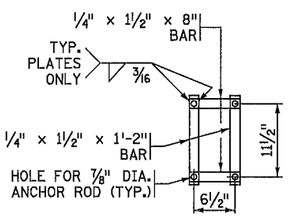



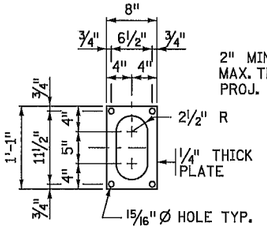


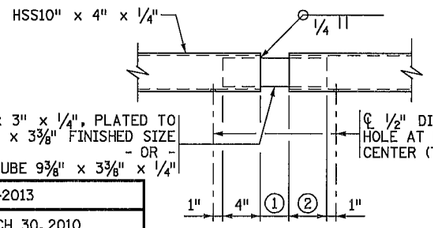


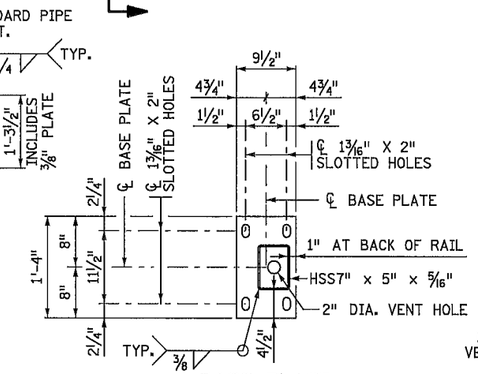
## GUARDRAIL CONNECTION DETAIL

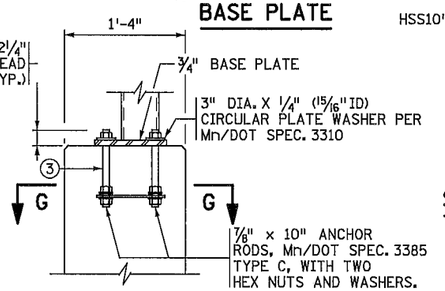
GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394
ESTIMATED WEIGHT = 22 LBS.

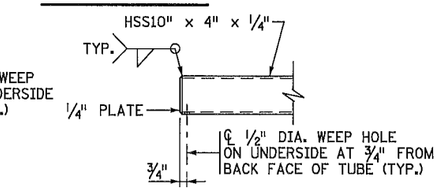


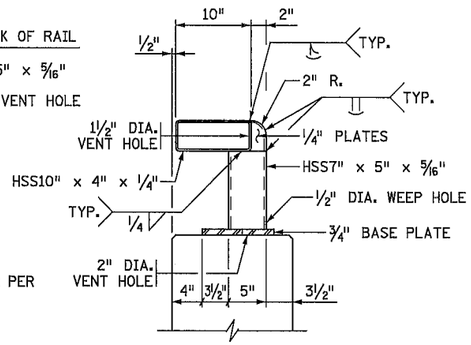



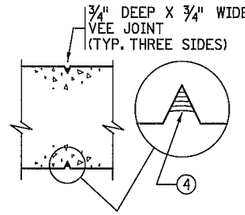

## PANEL JOINT

## INSIDE ELEVATION OF RAILING

**RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350**




## STRUCTURAL TUBE RAIL DETAIL

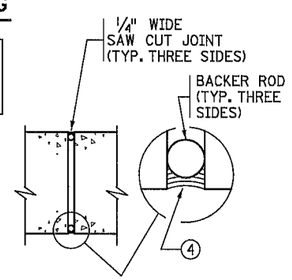



## SECTION D-D & SECTION E-E

(USE CONTROL JOINT DETAIL FOR SECTION E-E AT CONSTRUCTION JOINT)

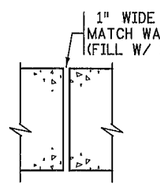
## CONTROL JOINT DETAILS

## CONTROL JOINT




## SECTION E-E

(AT CORK JOINTS)




## SECTION E-E

(AT SHEAR LUG)

## GENERAL NOTES

FOR PAYMENT OF "TYPE P-2 (TL-4) BARRIER CONCRETE (3S52)" MEASURE LENGTH OF CONCRETE BARRIER BETWEEN END FACES. CONCRETE PARAPET = 363 LBS./FT. (0.089 CU. YDS./FT.)

FOR PAYMENT OF "STRUCTURAL TUBE RAILING DESIGN T-1" MEASURE LENGTH OF RAIL FROM END TO END OF TUBING. DO NOT DEDUCT FOR JOINTS.

FINISH ALL EDGES OF RAIL WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAX. SPACING OF CONCRETE CONTROL JOINTS SHALL BE 10 FT.

PROVIDE CORRECT ALIGNMENT FOR ANCHORAGES BY PLACING THEM ACCURATELY AND NORMAL TO GRADE. SEE SPECIAL PROVISIONS.

PROVIDE STRUCTURAL STEEL AND PLATE WASHERS PER Mn/DOT SPEC. 3310. PROVIDE STRUCTURAL TUBES PER A.S.T.M. A500, GRADE B AS SPECIFIED IN Mn/DOT SPEC. 3361.

GALVANIZE BOLTS, NUTS, AND WASHERS PER Mn/DOT SPEC. 3392.

GALVANIZE ALL OTHER STRUCTURAL STEEL PER Mn/DOT SPEC. 3394, AFTER FABRICATION.

PROVIDE GUARDRAIL CONNECTION STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.

GUARDRAIL CONNECTION IS INCIDENTAL TO "TYPE P-2 (TL-4) BARRIER CONCRETE (3S52)".

PRICE BID FOR "STRUCTURAL TUBE RAILING DESIGN T-1" INCLUDES ANCHORAGES AND ALL MATERIAL ABOVE TOP OF CONCRETE BARRIER.

ALL MATERIAL IN THE CONCRETE BARRIER IS LISTED IN SUMMARY OF QUANTITIES FOR WALL A.

PAINT IN ACCORDANCE WITH MnDOT 2478. PAINT COLOR SHALL MATCH FEDERAL STANDARD 595C COLOR NO. 27038 (BLACK).

CONTINUOUSLY GROUND THE METAL RAILING AS DIRECTED IN THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

① 1" AT RAILING JOINTS. AT EXPANSION JOINTS, MAKE 1" LARGER THAN GAP IN EXPANSION JOINTS.

② 5" AT RAILING JOINTS AND 8" AT EXPANSION JOINTS.

③ SUBSTITUTION OF CHEMICAL ANCHOR RODS FOR CAST-IN-PLACE ANCHORAGE IS NOT PERMITTED.

④ JOINT SEALANT PER MNDOT APPROVED/QUALIFIED PRODUCTS LIST.
- CRACK AND JOINT MATERIALS.
-SILICONE JOINT SEALERS.

⑤ SEE SHEET 69 FOR JOINT TYPE.

MODIFICATIONS:
-NO WEARING COURSE.
-UPDATED CONCRETE MIX.
-ABUT. JOINT MODIFIED FOR PANEL JOINT
-BARRIER ON RETAINING WALL.
-ADDED SECTION E-E.
-MOVED BILL OF REINFORCEMENT AND BAR BENDING DIAGRAMS TO BARRIER BARLIST SHEET.
-REMOVED NOTE 1 AND RENUMBERED NOTES.
-MODIFIED NOTES 1, 2, 4 AND 5.
-UPDATED WEIGHT AND VOLUME PER FOOT.
-ADDED PAINTING REQUIREMENTS AND COLOR.

**FIG. 5-397.157 MOD**

REVISED: 04-17-2013

APPROVED: MARCH 30, 2010
Daniel L. Dhlgren
STATE BRIDGE ENGINEER

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

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SIGNED Matthew A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

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Saint Paul, MN 55101
651.292.4400
tkda.com

ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
STRUCTURAL TUBE RAILING (DESIGN T-1) AND CONCRETE PARAPET (TYPE P-2, TL-4)
(WITH INTEGRAL END POST)

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 78 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:36:22 PM
FILENAME: K:\cf-AnokaCty\53440000\hwy-brdg\hwy\pln-sht\barO1.dgn

| BILL OF REINFORCEMENT - BARRIER | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| R503E | 574 | 5'-9" | | BARRIER VERTICAL |
| R504E | 6 | 8'-3" | | BARRIER VERTICAL |
| R505E | 4 | SER. 1 | | BARRIER VERTICAL |
| R506E | 4 | SER. 2 | | BARRIER VERTICAL |
| R707E | 2 | 6'-7" | | PARAPET END |
| R508E | 4 | 2'-7" | | PARAPET END LONGITUDINAL |
| R509E | 6 | 33'-6" | | PANEL A LONGITUDINAL |
| R510E | 72 | 28'-10" | | TYPICAL PANEL LONGITUDINAL |
| R511E | 12 | 29'-4" | | PANEL H & J LONGITUDINAL |
| R512E | 6 | 17'-2" | | PANEL I LONGITUDINAL |
| R513E | 6 | 37'-8" | | PANEL R LONGITUDINAL |
| R514E | 66 | 4'-0" | | BARRIER CONST. JT DOWEL |

SERIES 1 = 2 SERIES OF 2 BARS (7'-7" TO 7'-11")

SERIES 2 = 2 SERIES OF 2 BARS (6'-11" TO 7'-1")

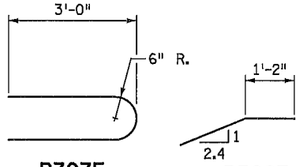
## NOTE:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

** DENOTES STANDARD 180° HOOK

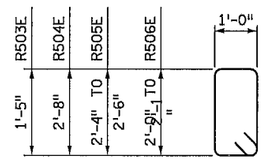
## BAR BENDING DIAGRAMS




R707E




R508E




R503E, R504E, R505E & R506E

DATE: 5/4/2016 TIME: 1:36:23 PM
FILENAME: K:\a-f\Anoka\City\53440000\hwy-brdg\hwy\pln-sht\bar04.dgn

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SIGNED Matt A. Volz
MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

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tkda.com

ANOKA COUNTY

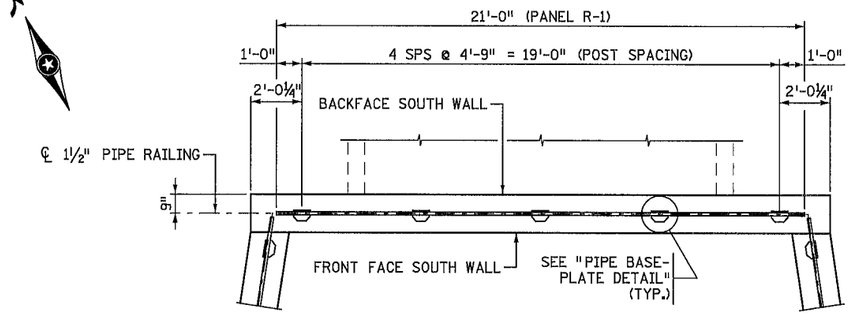
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE:
WALL K
BARRIER BARLIST

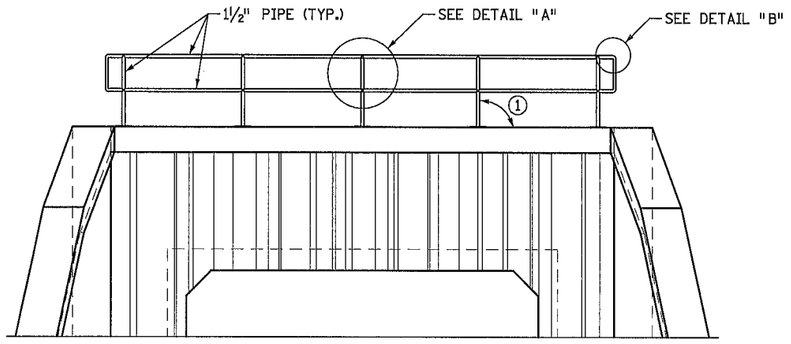
| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 79 of 482 Sheets

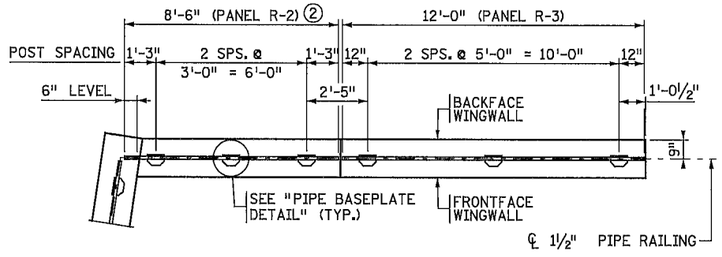
Bridge No. 02J48



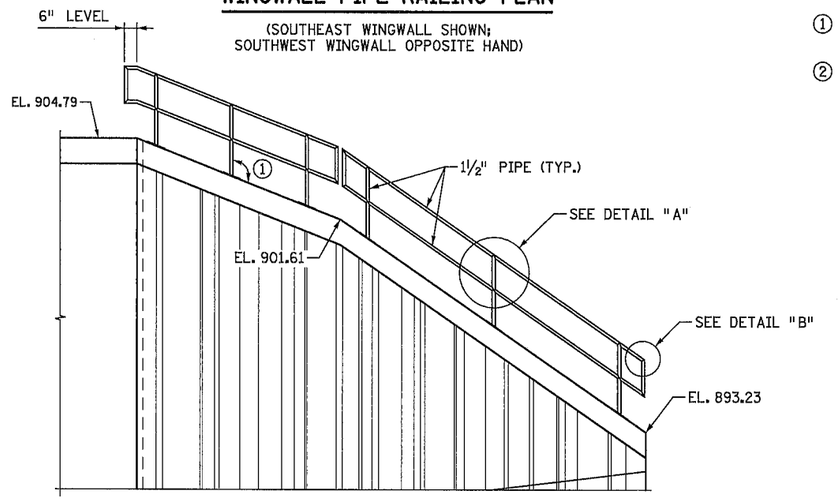

## SOUTH WALL PIPE RAILING PLAN




## SOUTH WALL PIPE RAILING ELEVATION




## WINGWALL PIPE RAILING PLAN




## WINGWALL PIPE RAILING ELEVATION

### NOTES:

POSTS AND RAILS SHALL BE 1-1/2'' NOM. DIA. STANDARD PIPE AT 2.72 LBS. PER LIN. FT., PER SPEC. 3362.

ALL STRUCTURAL STEEL SHALL BE MnDOT SPEC. 3306.

FABRICATION SHALL BE PER MnDOT SPEC. 2471.

PROVIDE VENT HOLES AS NECESSARY FOR GALVANIZING.

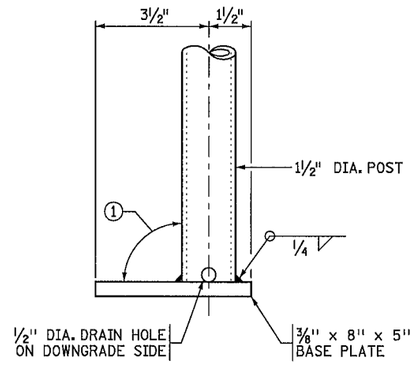
ALL CONNECTIONS SHALL BE MITERED, FULL BUTT WELDED AND GROUND SMOOTH.

RAILING SHALL BE SHOP INSPECTED BY MnDOT BEFORE AND AFTER GALVANIZING.

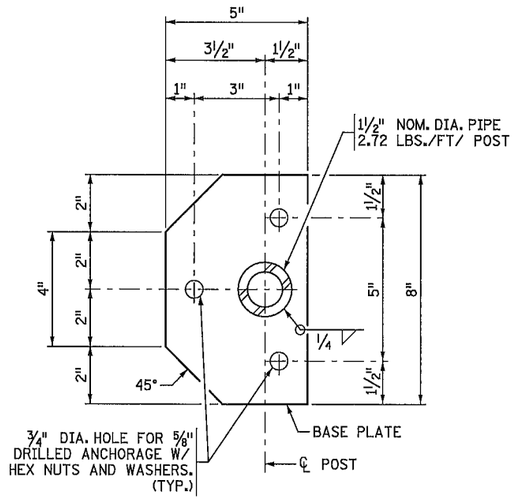
GALVANIZE AFTER FABRICATION PER SPEC. 3394, PROVIDE WEEP HOLES.

① POSTS SHALL BE SET VERTICAL, UNLESS OTHERWISE NOTED. SHIM AS REQUIRED TO PREVENT WOBBLE.

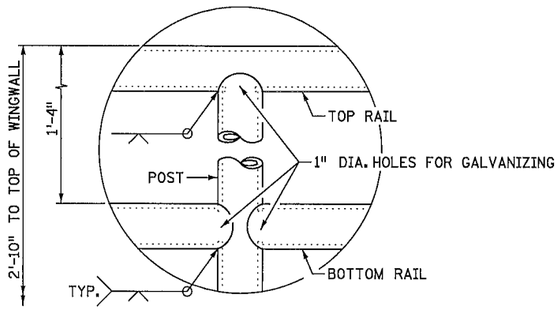
② PANEL R-4 FOR SOUTHWEST WINGWALL. SIMILAR POST SPACING AS R-2.



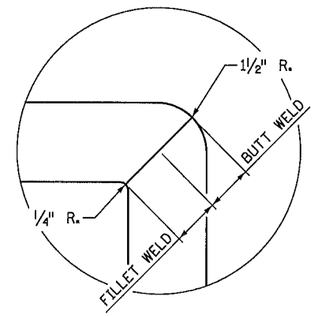

## PIPE BASE PLATE AND POST ELEVATION




## PIPE BASE PLATE DETAIL




## DETAIL "A"




## DETAIL "B"

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|
| | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED _____ MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

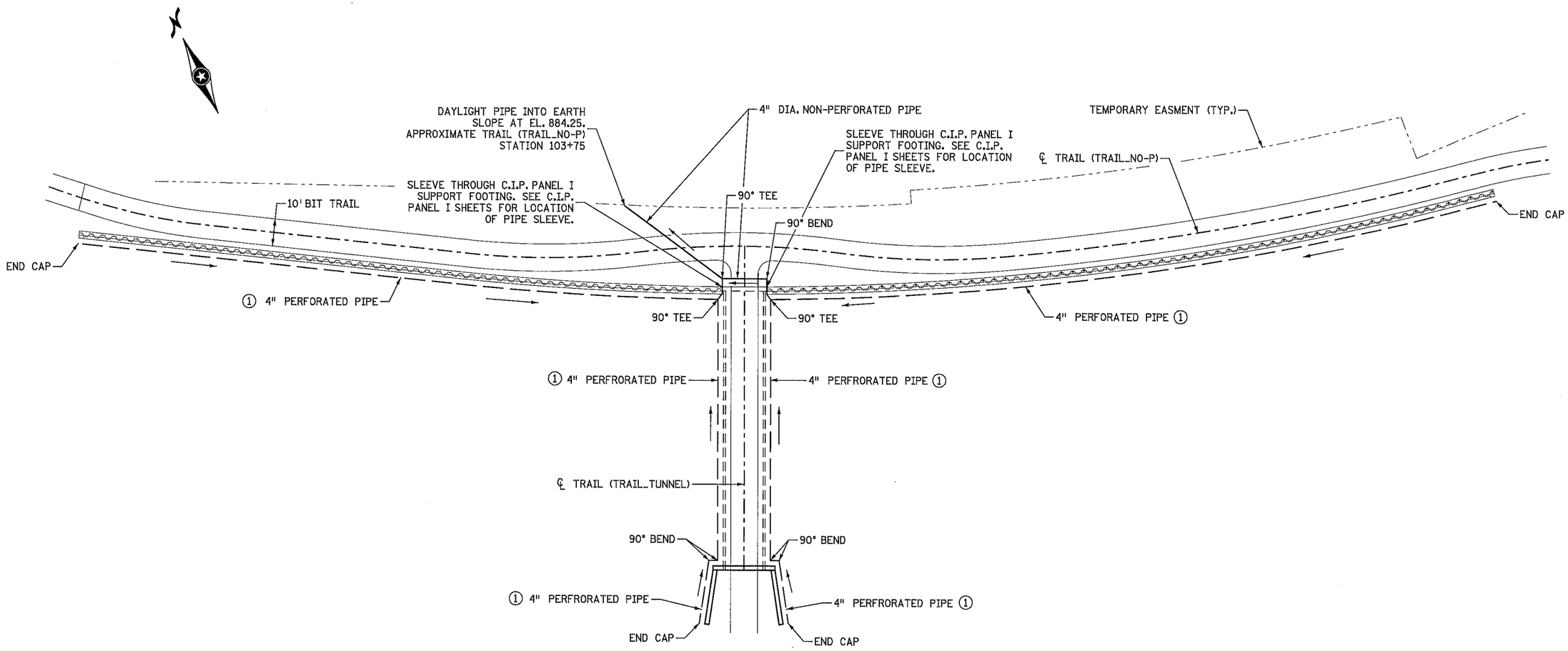
TITLE: PIPE RAILING DETAILS

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 80 of 482 Sheets

Bridge No. 02J48

DATE: 5/4/2016 TIME: 1:36:25 PM
FILENAME: K:\cr-f\Anoka Cty\5344000\hwy-brdg\hwy\plr-sht\Sbox11.dgn




## DRAINAGE PLAN

SCALE IN FEET

0 10 20 40

## DRAINAGE NOTES:

→ INDICATES DIRIECTION OF SLOPE.

PERFORATED PIPE TO BE PLACED 1'-0" MAX BEHIND RETAINING WALLS AND 6" MAX AWAY FROM BOX CULVERT WALLS.

① 4" THERMOPLASTIC PERFORATED PIPE SPEC. 3245, WRAP WITH TYPE 1 GEOTEXTILE, SPEC. 3733 (TYP.) INSTALLATION AS PER SPEC. 2502. PIPE SHOULD BE CONTINUOUS AND SOLID BEYOND WALL K. (INCIDENTAL)

DATE: 5/4/2016 TIME: 1:36:27 PM
FILENAME: K:\a-f\Anoka\Cty\53440000\hwy-brdg\hwy\pln-sht\drn01.dgn

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED Matt A. Volz
MATTHEW A. VOLZ
DATE: 5/4/2016 LIC. NO.: 53067

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

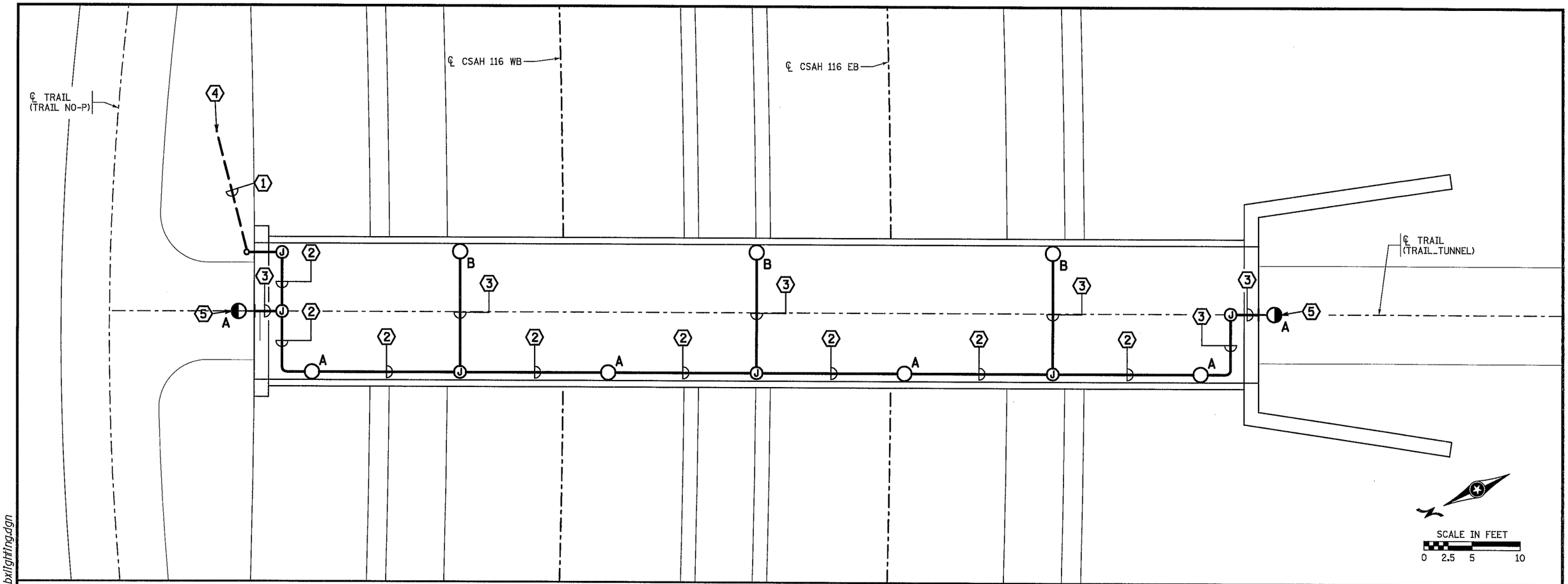
ANOKA COUNTY
C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

TITLE: DRAINAGE PLAN

| DES: MAV | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: MJC | |

Sheet No. 81 of 482 Sheets

Bridge No. 02J48




DATE: 5/4/2016 TIME: 1:36:28 PM
FILENAME: K:\a-f\Anoka Cty\V5344000\hwy-brdg\hwy\pln-sht\bxlighting.dgn

| LIGHT FIXTURE SCHEDULE * | |
|---|---|
| SYMBOL | DESCRIPTION |
| ○ | LUMINAIRE ANYX 13" LED ROUND.<br>MODEL NO. ARV13HO-40W LED-4300K-120-FP-BLK-KO-TX/SD |
| ◑ | LUMINAIRE ANYX 13" LED ROUND EYELID.<br>MODEL NO. ARV13HO-40W LED-4300K-120-FP-BLK-KO-TX/SD EYELID |

* FIXTURES SHALL HAVE A LIFETIME WARRANTY ON ANY FIXTURE DAMAGE DUE TO VANDALISM.

## LEGEND

A – SWITCHED CIRCUIT (CONTROLLED VIA EXISTING PHOTO CELL)

B – UNSWITCHED CIRCUIT (ON 24 HOURS PER DAY)

(J) – WEATHERPROOF JUNCTION BOX

## NOTES:

1. ¾" PVC CONDUIT WITH; (4)#10+(1)#12 GND. FROM PROPOSED LIGHTING CONTROL CABINET TO JUNCTION BOX AS SHOWN. TRANSITION FROM PVC TO GRS BELOW GRADE AT SWEEP AND CONTINUE SURFACE MOUNTED TO JUNCTION BOX.
2. ½" GRS CONDUIT WITH; (4)#10+(1)#12 GND.
3. ½" GRS CONDUIT WITH; (2)#10+(1)#12 GND.
4. CONDUIT TO BE EXTENDED TO PROPOSED LIGHTING CONTROL CABINET. TO BE DESIGNED BY OTHERS.
5. FIXTURE SHALL BE MOUNTED AT 12'-0" ABOVE FINISHED GRADE ON FACE OF TUNNEL.
6. ALL GRS CONDUIT AND FITTINGS EXPOSED ON TUNNEL FACE SHALL BE PAINTED TO MATCH TUNNEL FACE COLOR.

| NO. | DATE | BY | DESCRIPTION OF REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED Matthew A. Volz

MATTHEW A. VOLZ

DATE: 5/4/2016 LIC. NO.: 53067

TKDA
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Saint Paul, MN 55101
651.292.4400
tkda.com

ANOKA COUNTY

C.S.A.H. 116 RECONSTRUCTION
S.P. 002-716-015

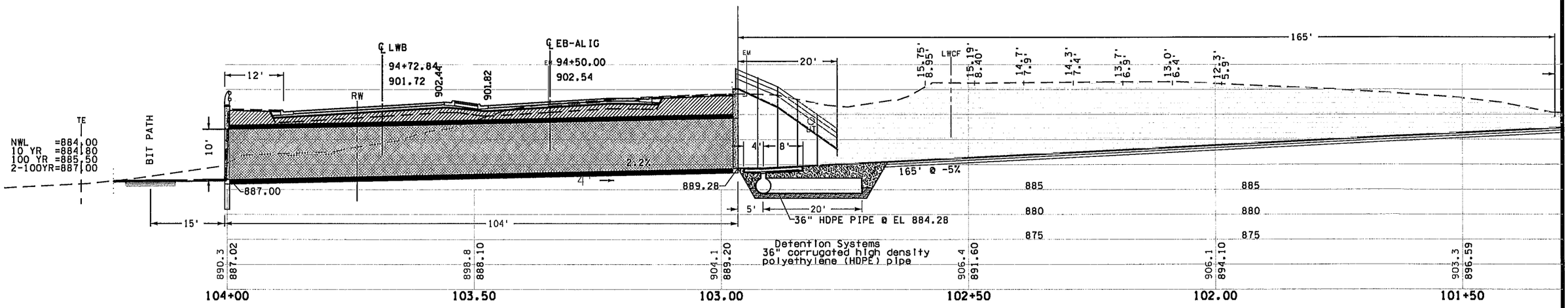
TITLE:
LIGHTING PLAN
PEDESTRIAN UNDERPASS

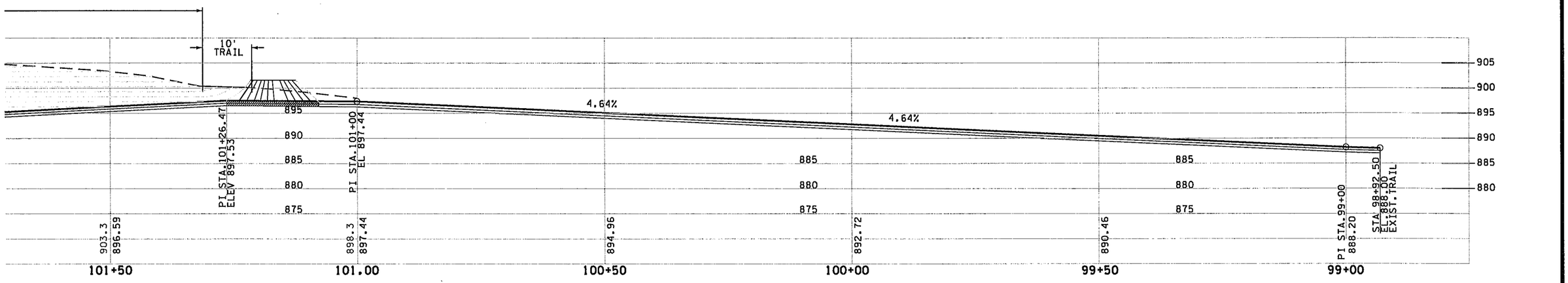
| DES: JRY | DR: MAV | APPROVED |
|---|---|---|
| CHK: MJC | CHK: JRY | |

Sheet No. 82 of 482 Sheets

Bridge No.
02J48

# 14'X10' CULVERT BOX AND PEDESTRIAN TRAIL PROFILE
## C/L LWB STA 94+79.70, LEB STA 94+57.00




| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_UNDERPASS-PROF.dgn 04/12/2016 1:59:23 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

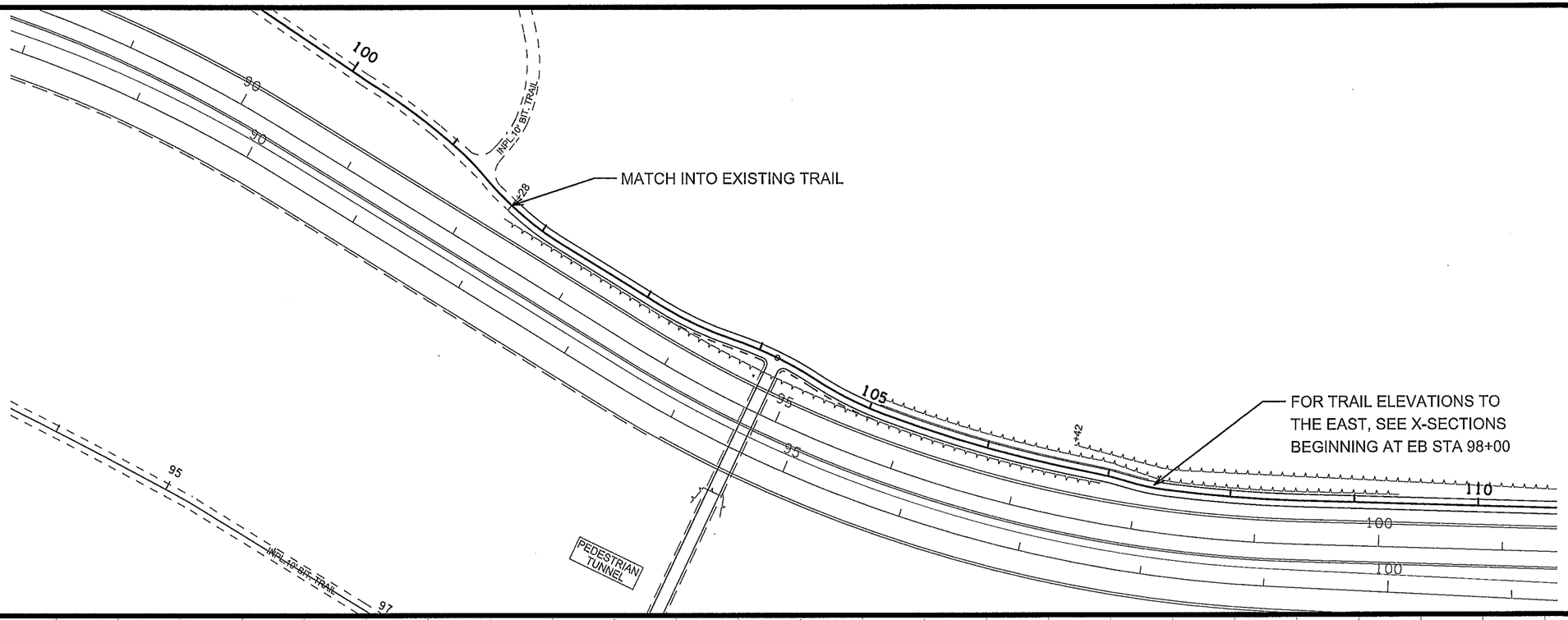
ANOKA COUNTY

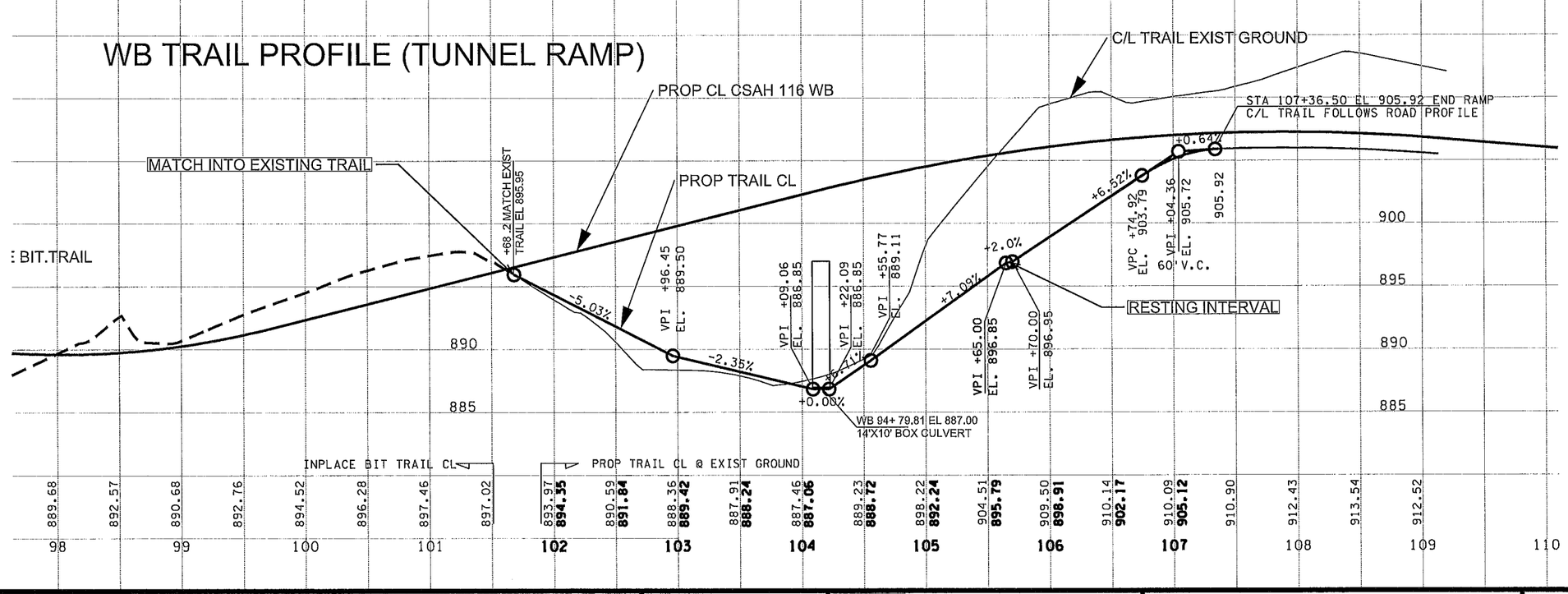
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAIL UNDERPASS AND TRAIL RAMP PROFILE

Sheet 83 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

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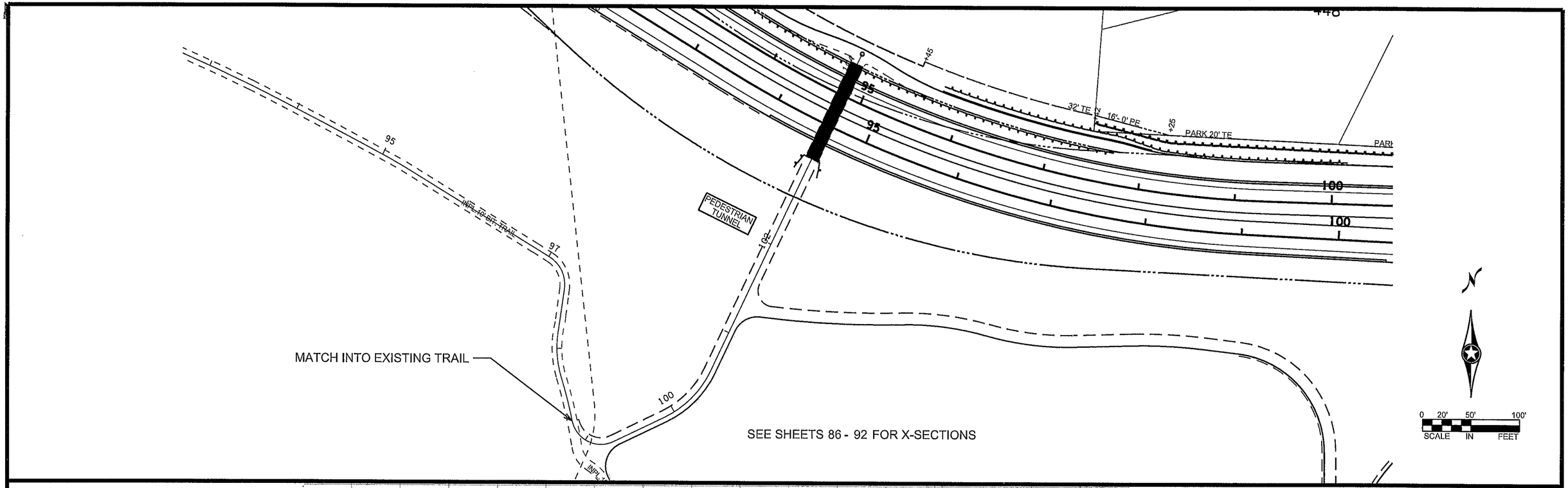
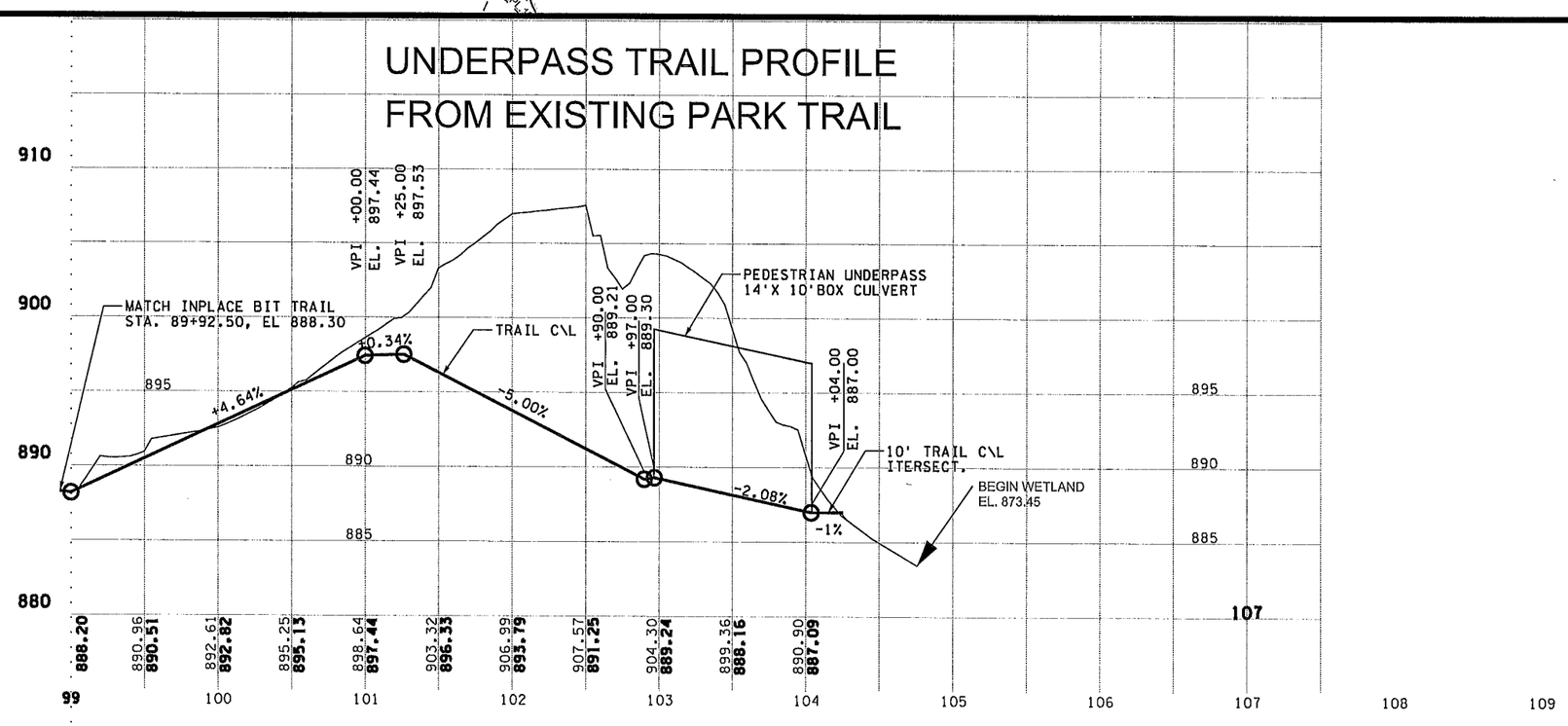
NORTH TRAIL RAMP TO UNDERPASS

Sheet 84 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

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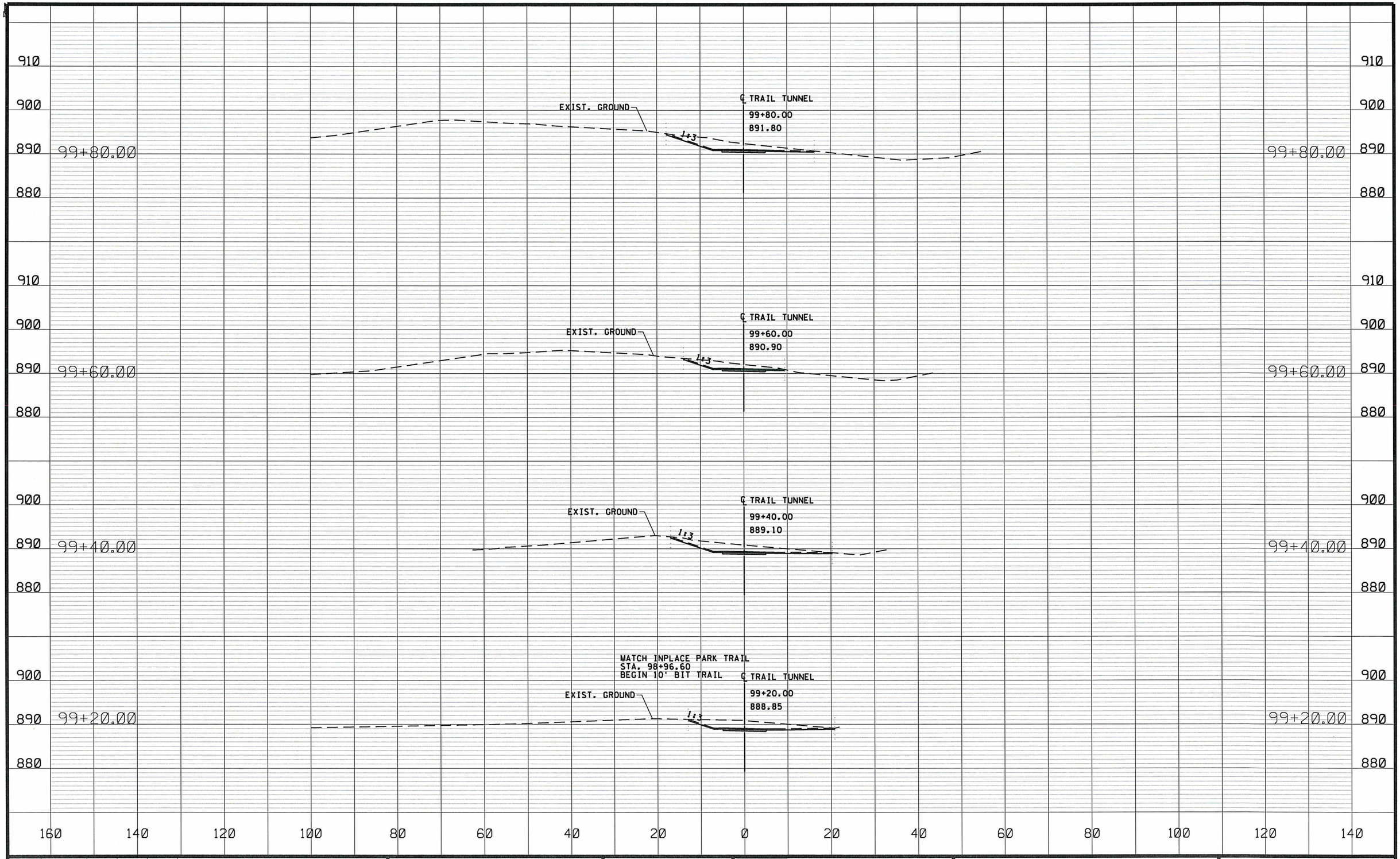
SOUTH TRAIL RAMP TO UNDERPASS

Sheet 85 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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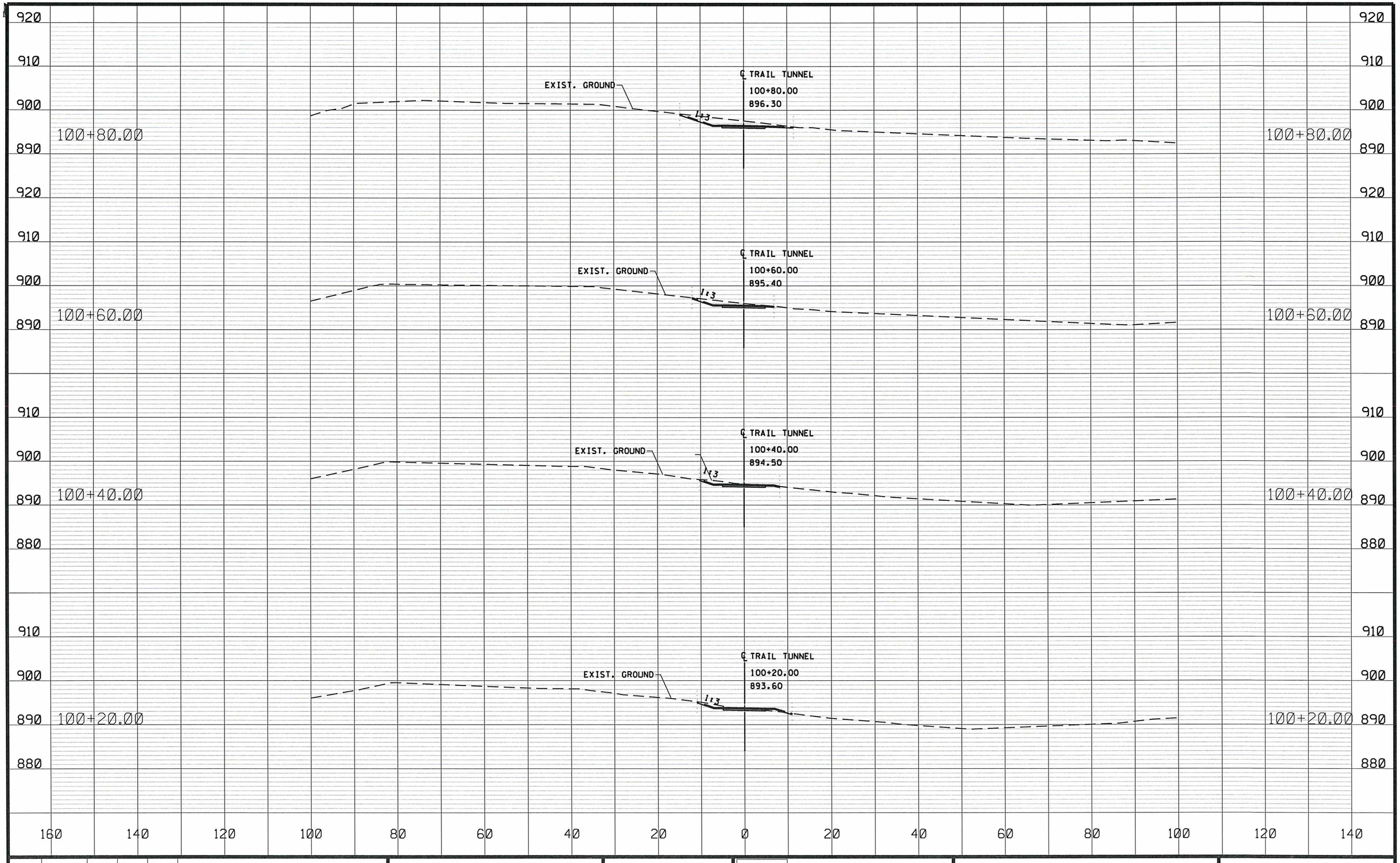
CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 99+20.00 TO 99+80.00

Sheet 86 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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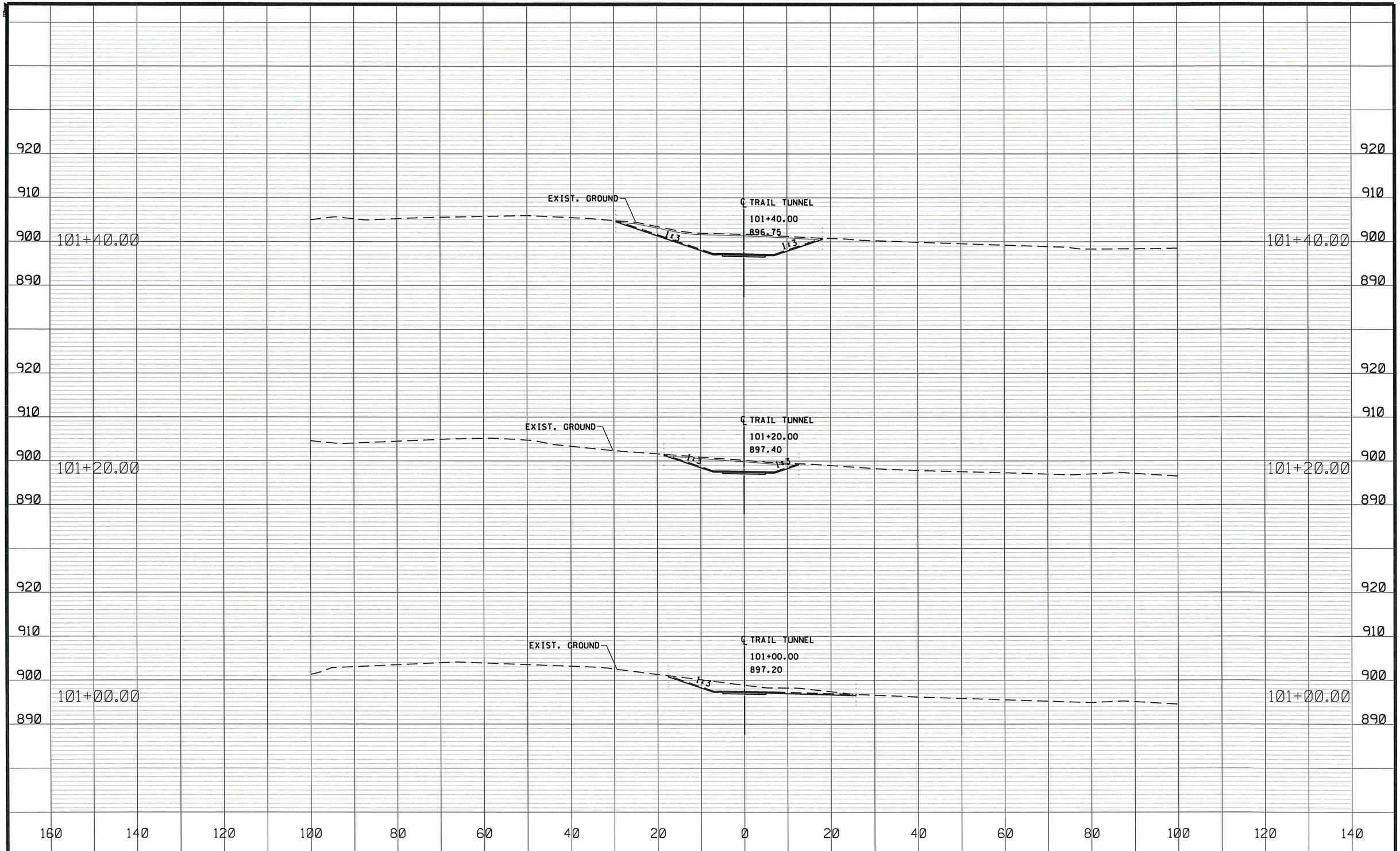
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 100+20.00 TO 100+80.00

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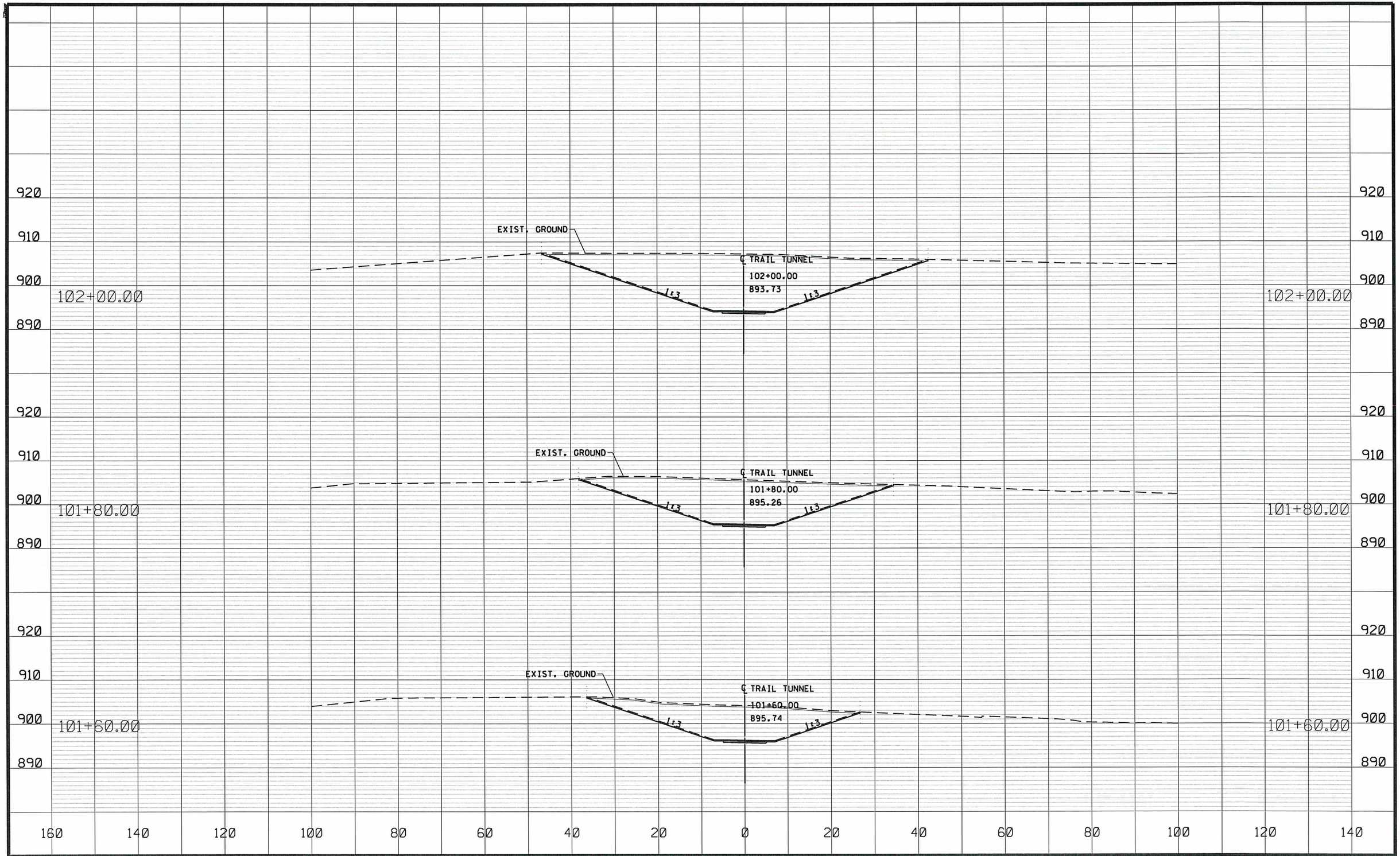
C.P. 11-25

CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 101+00.00 TO 101+40.00

Sheet 88 of 482 Sheets

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DRAWN BY ZB DATE 04-12-16

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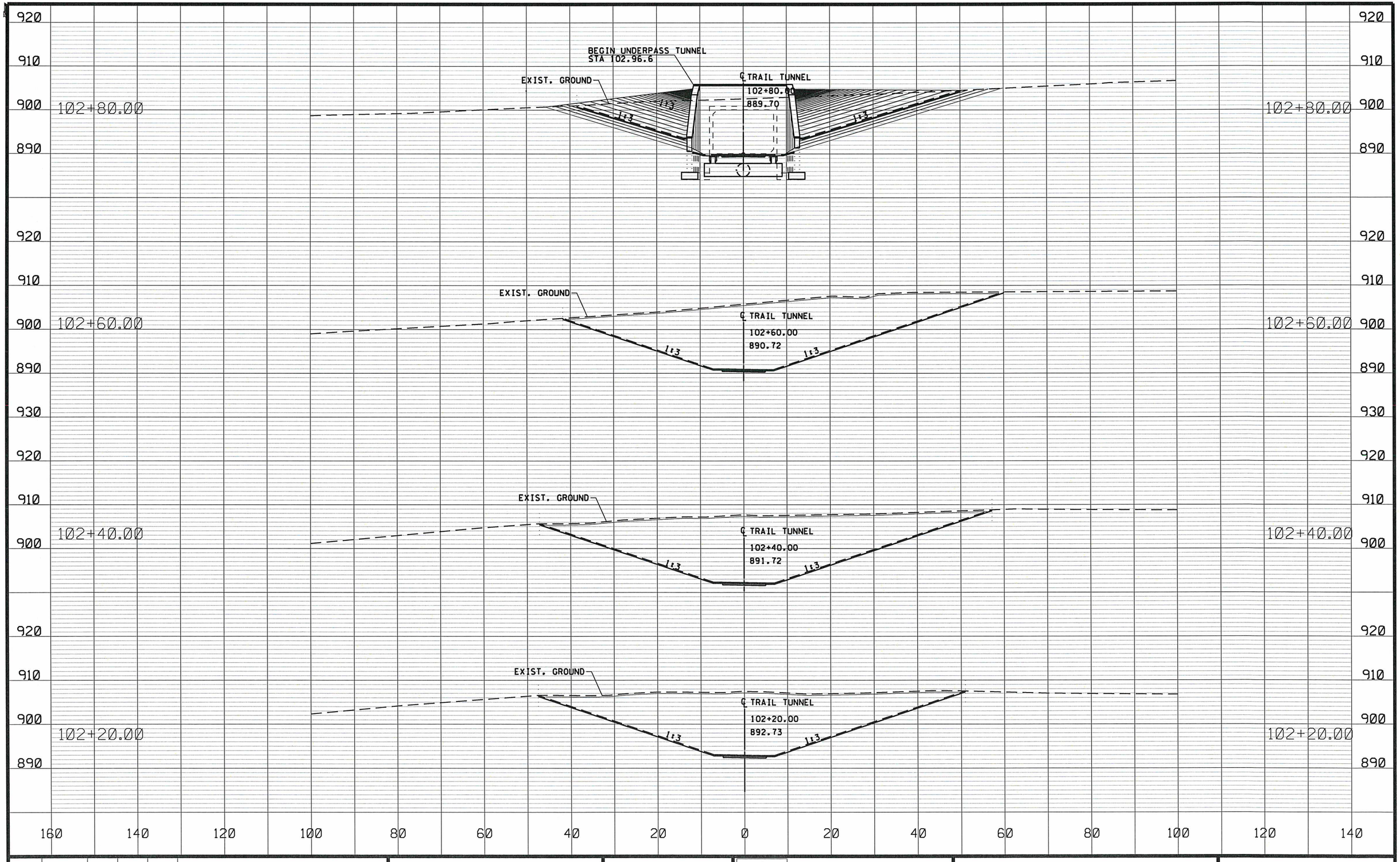
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 101+60.00 TO 102+00.00

Sheet 89 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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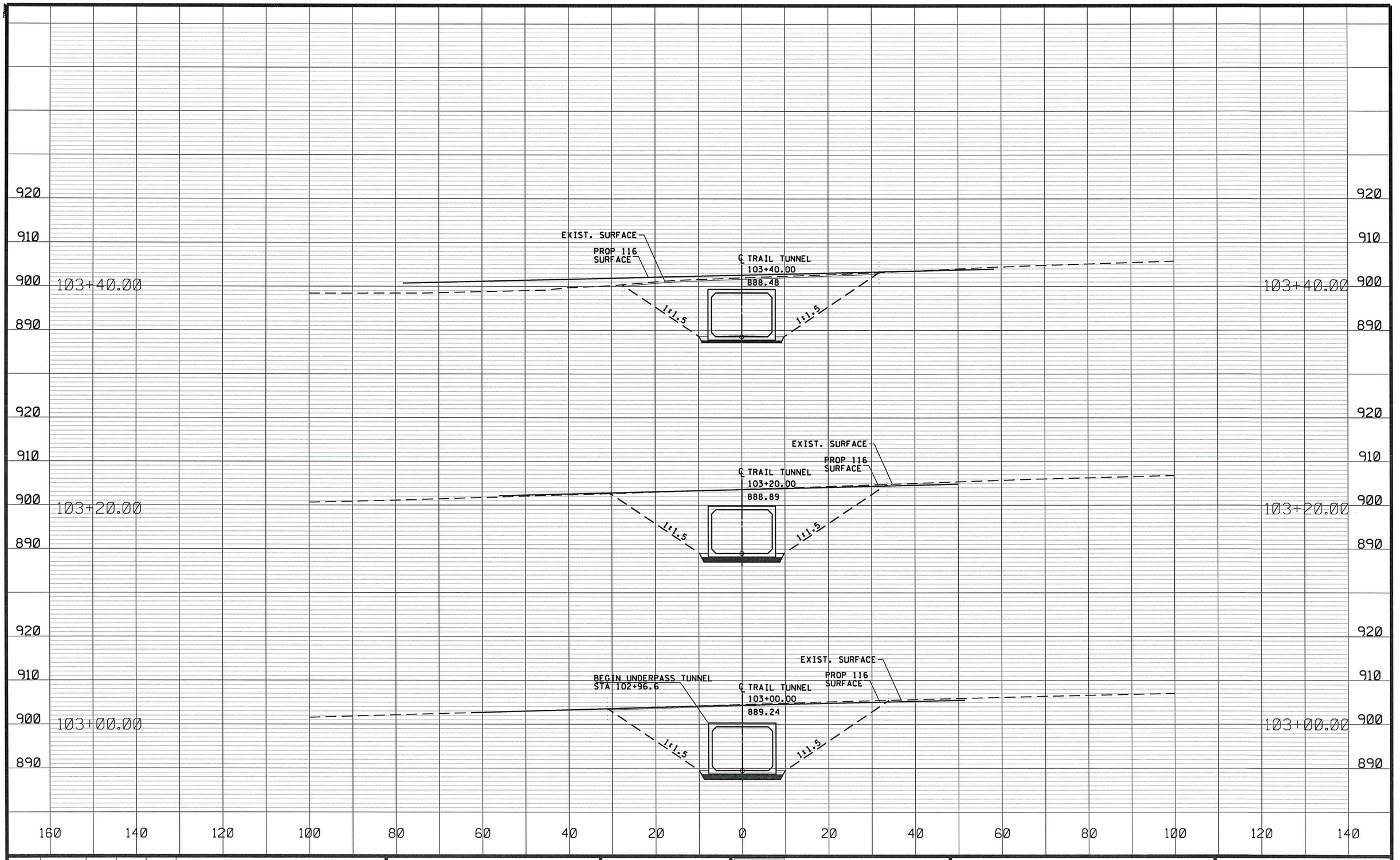
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 102+20.00 TO 102+80.00

Sheet 90 of 482 Sheets

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|---|---|---|---|---|---|

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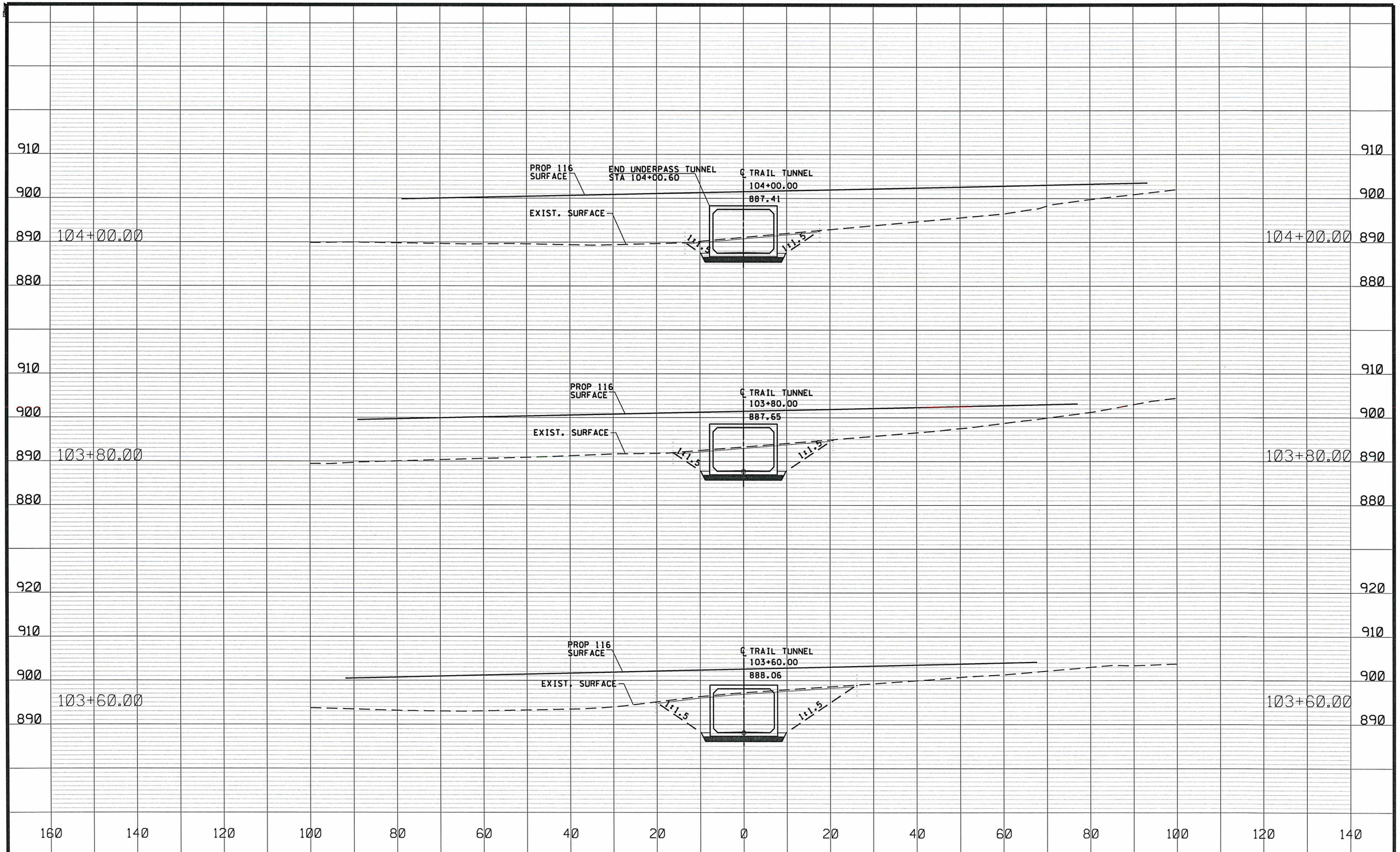
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 103+00.00 TO 103+40.00




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

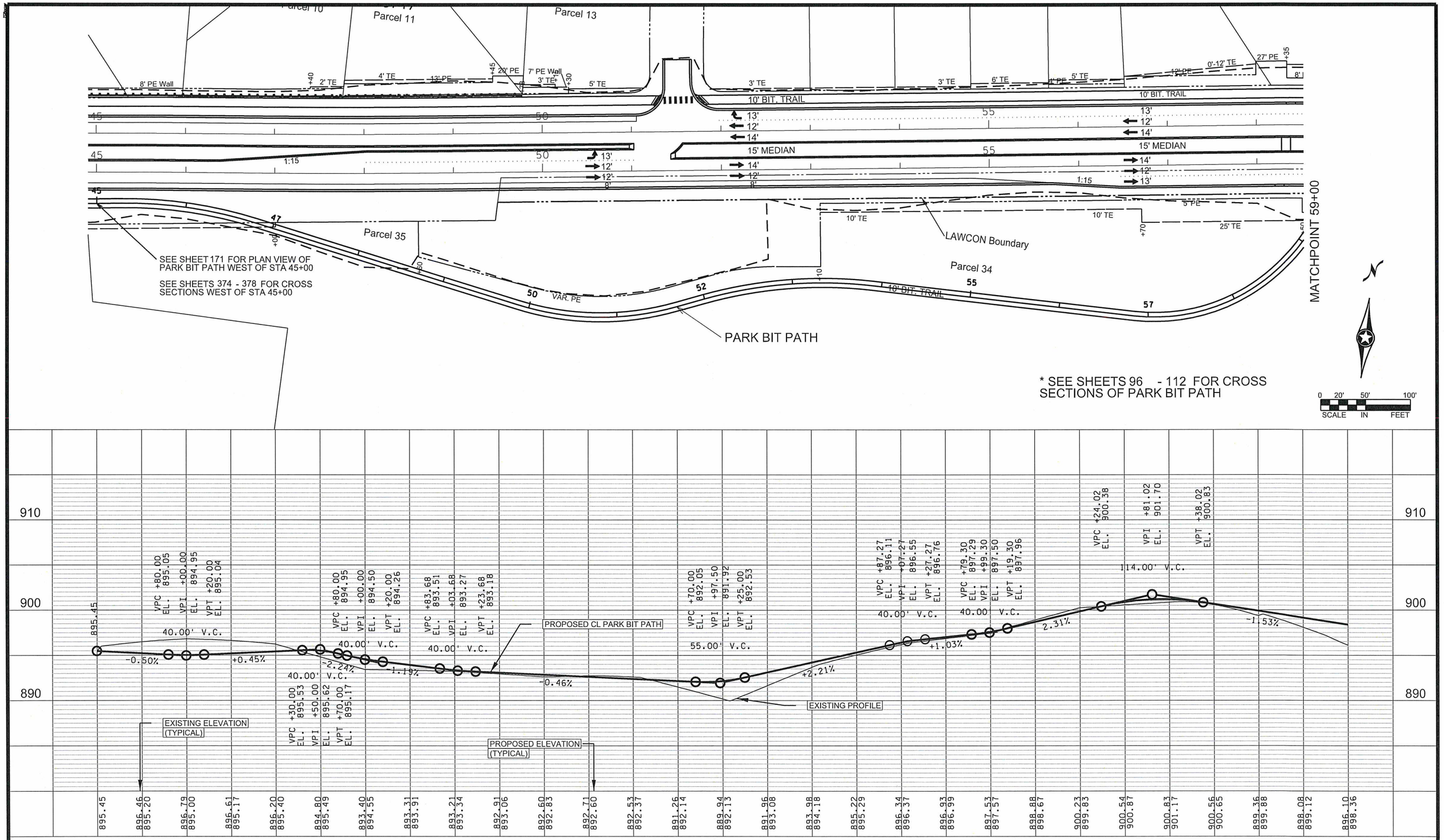
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PEDESTRIAN TUNNEL TRAIL
STA 103+60.00 TO 104+00.00

Sheet 92 of 482 Sheets




1 OF 3

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PBP1.dgn 04/12/2016 1:59:34 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

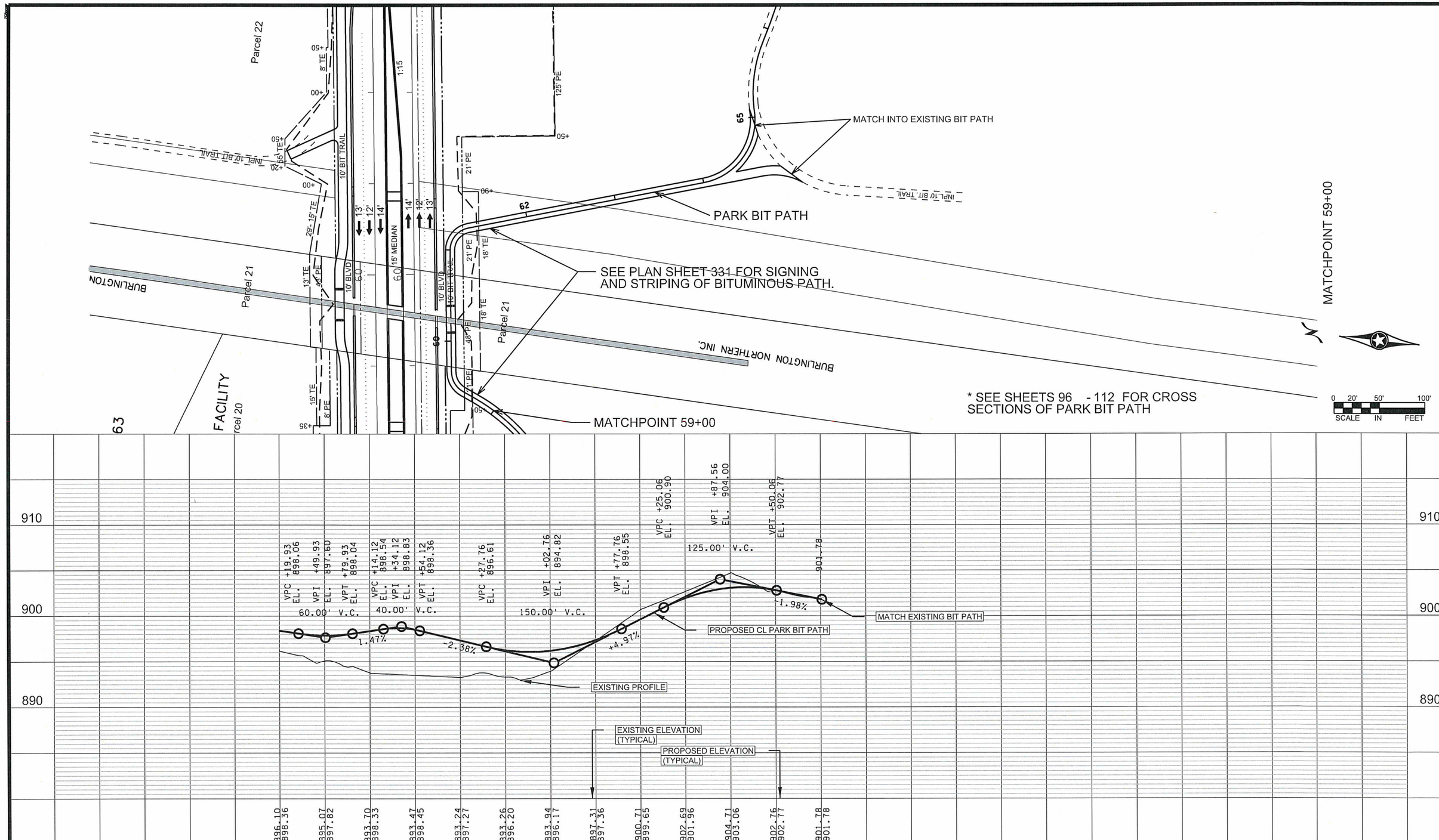
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
PLAN & PROFILE

STA 45+00.00 TO 59+00.00

Sheet 93 of 482 Sheets




2 OF 3

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_PBP2.dgn 04/12/2016 1:59:35 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

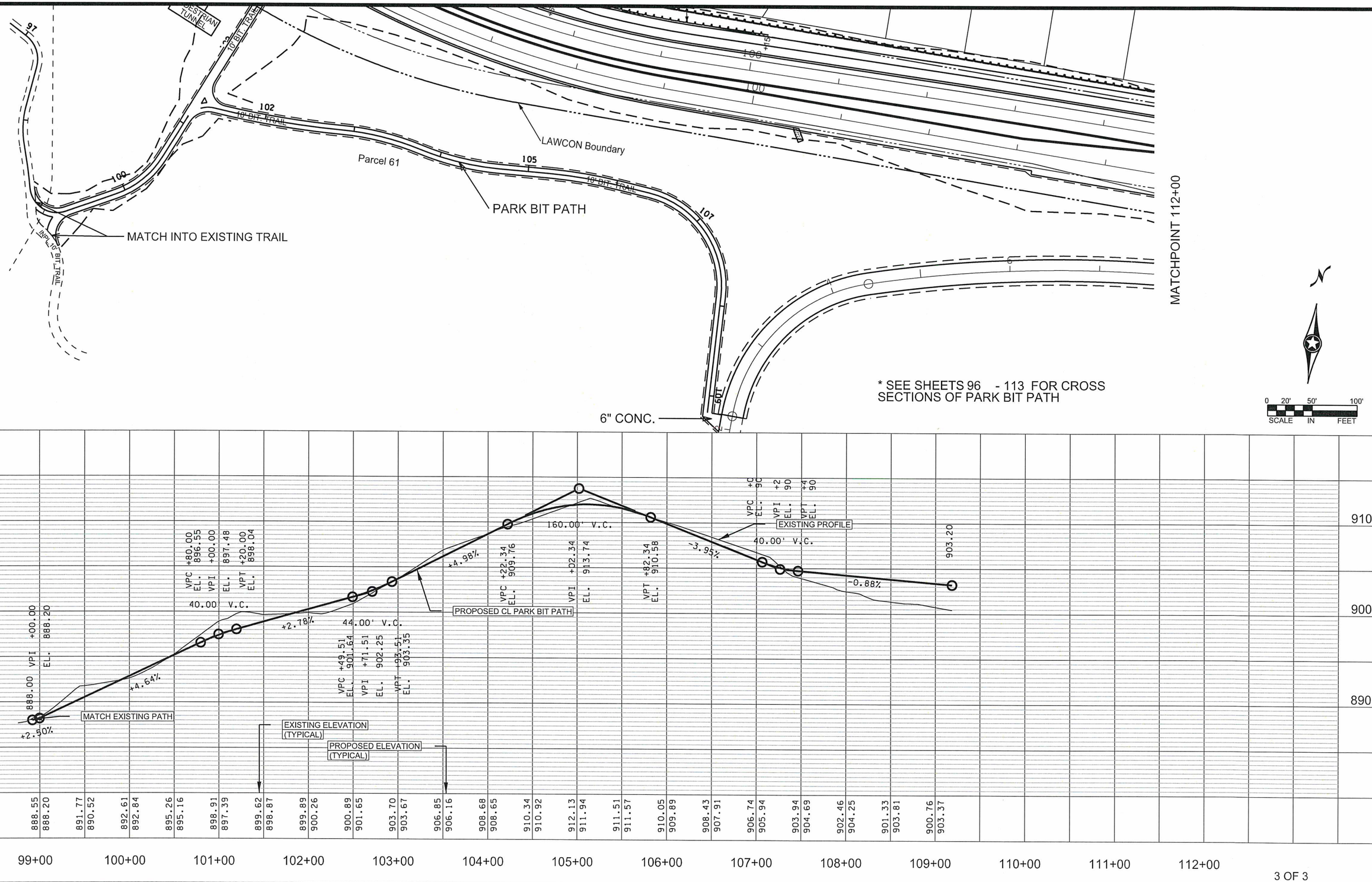
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
PLAN & PROFILE

STA 59+00.00 TO 65+00.00

Sheet 94 of 482 Sheets




3 OF 3

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PBP3.dgn 04/12/2016 1:59:37 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
PLAN & PROFILE

STA 99+00.00 TO 112+00.00

Sheet 95 of 482 Sheets

910
900
890
920
910
900
890
910
900
890
910
900
890

49+50.00

℄ TRAIL
49+50.00
893.06

49+50.00

49+00.00

℄ TRAIL
49+00.00
893.34

49+00.00

48+50.00

℄ TRAIL
48+50.00
893.91

48+50.00

48+00.00

℄ TRAIL
48+00.00
894.55

48+00.00

SEE SHEETS 374 - 379
FOR TRAIL WEST OF STA 48+00

160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140

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|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_XS_SOUTH PARK PATH.dgn 04/12/2016 1:59:39 PM

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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S.P. 197-020-005
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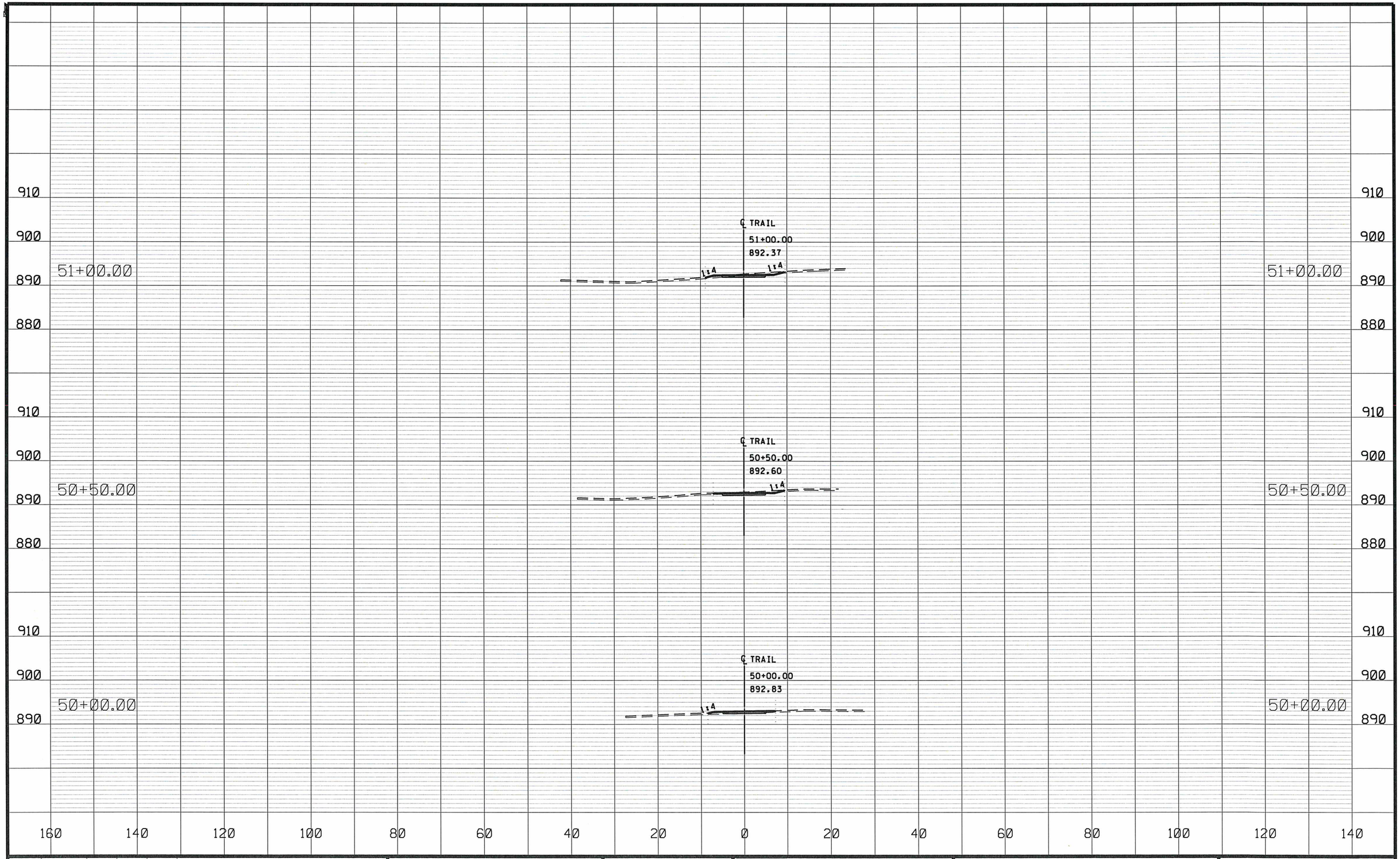
PARK BIT PATH
CROSS SECTIONS
STA 48+00.00 TO 49+50.00

Sheet 96 of 482 Sheets

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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

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S.P. 197-020-005
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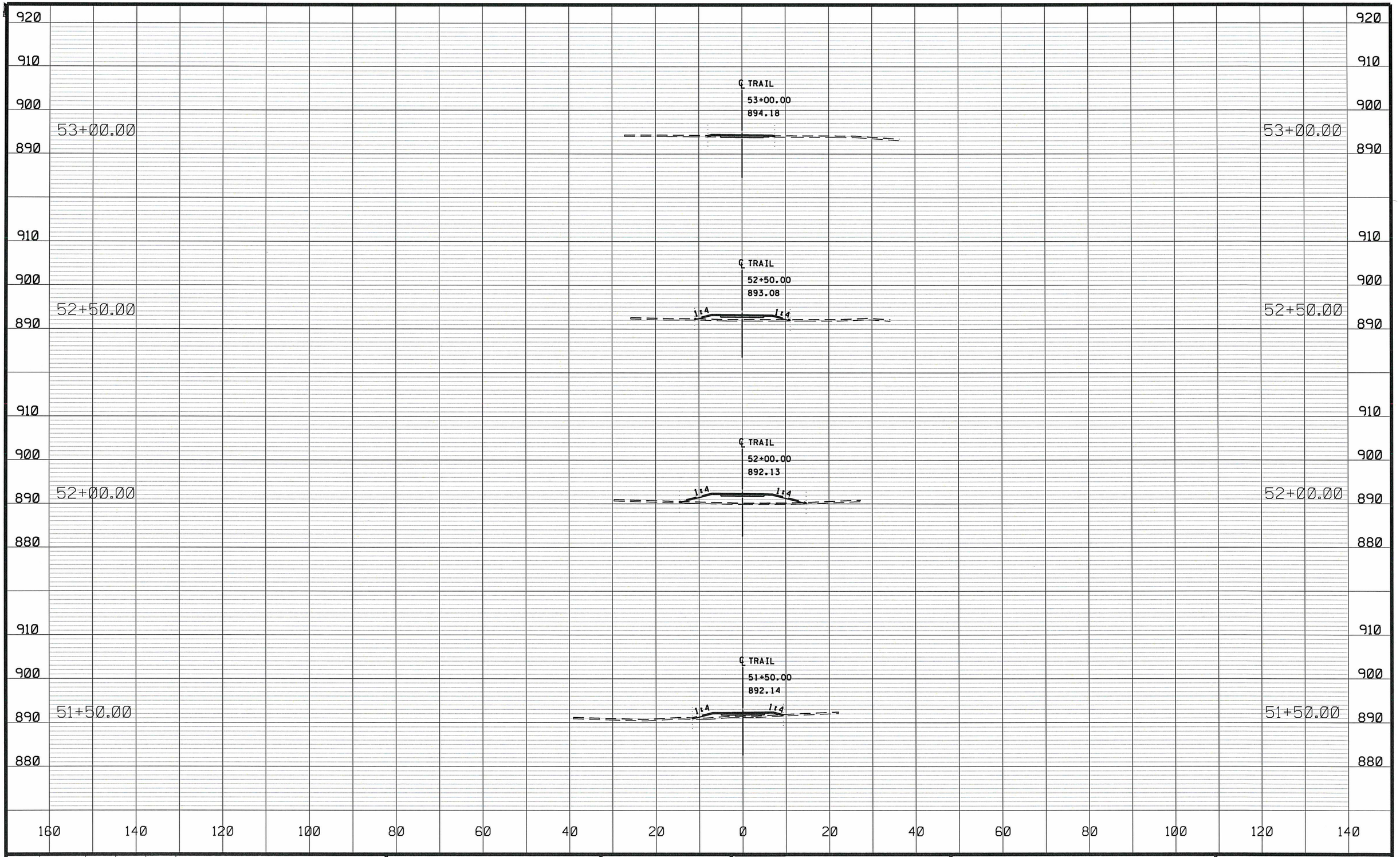
PARK BIT PATH
CROSS SECTIONS
STA 50+00.00 TO 51+00.00

Sheet 97 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_XS_SOUTH PARK PATH.dgn 04/12/2016 1:59:40 PM

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
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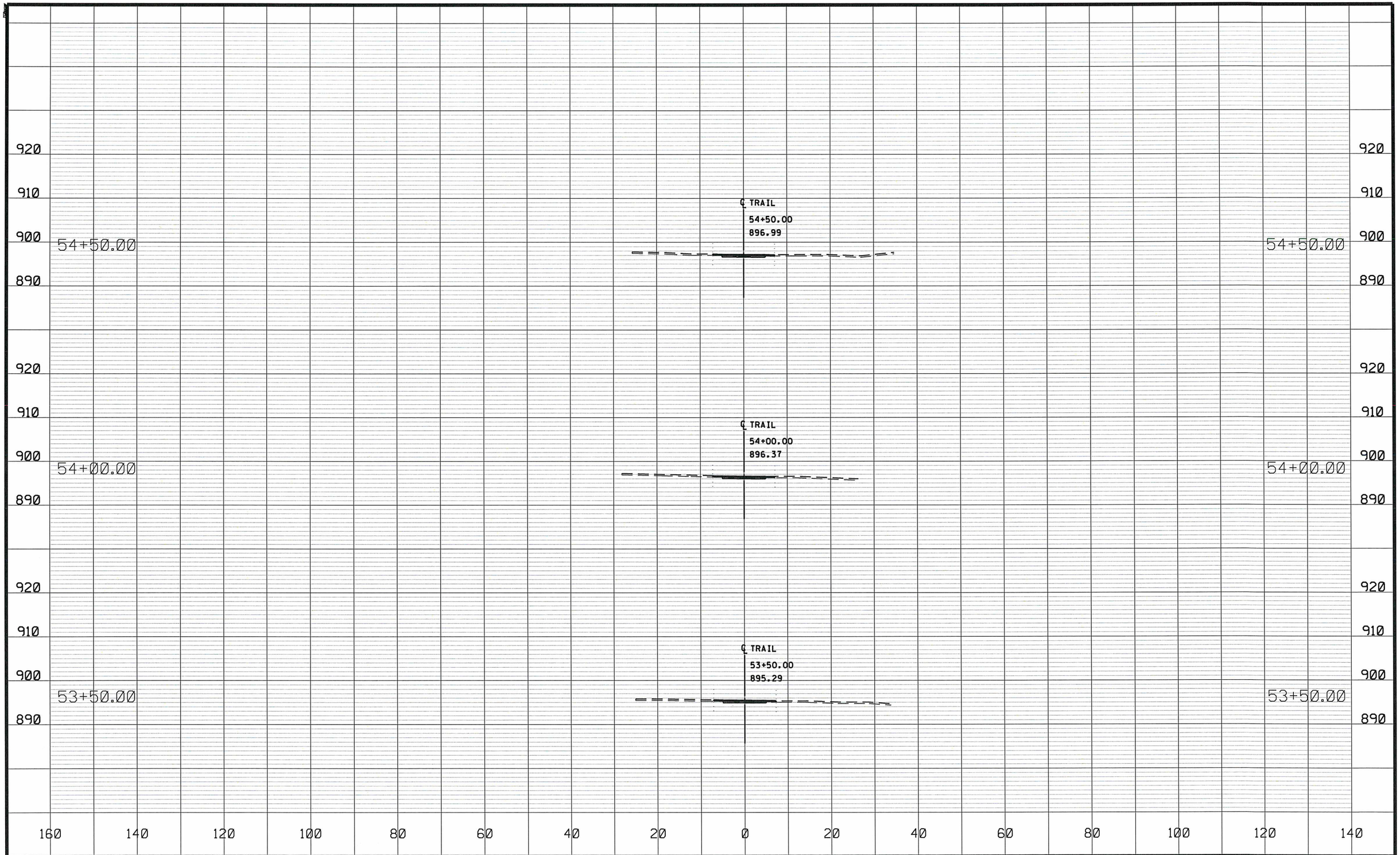
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 51+50.00 TO 53+00.00

Sheet 98 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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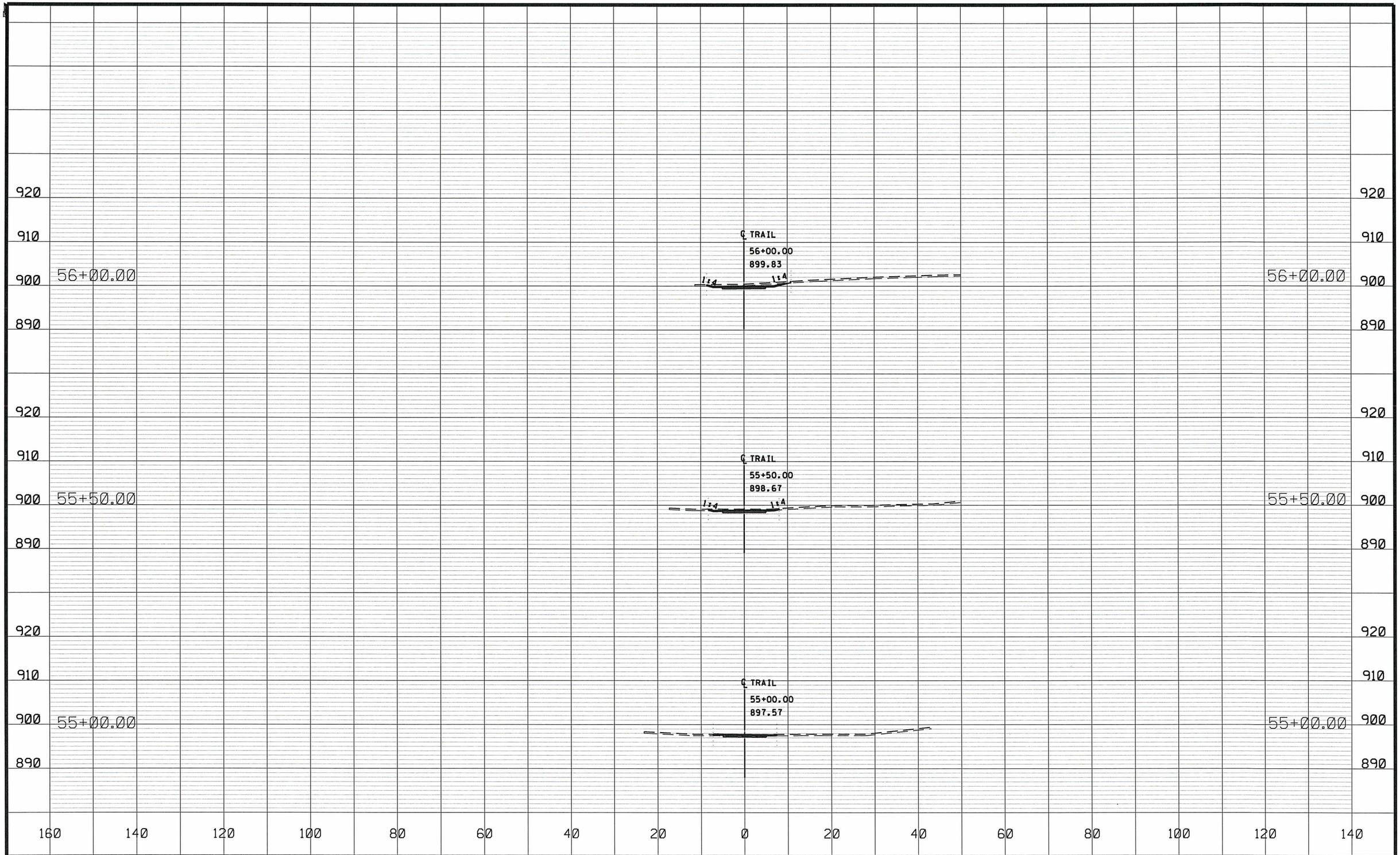
PARK BIT PATH
CROSS SECTIONS
STA 53+50.00 TO 54+50.00

Sheet 99 of 482 Sheets

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DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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ANOKA COUNTY
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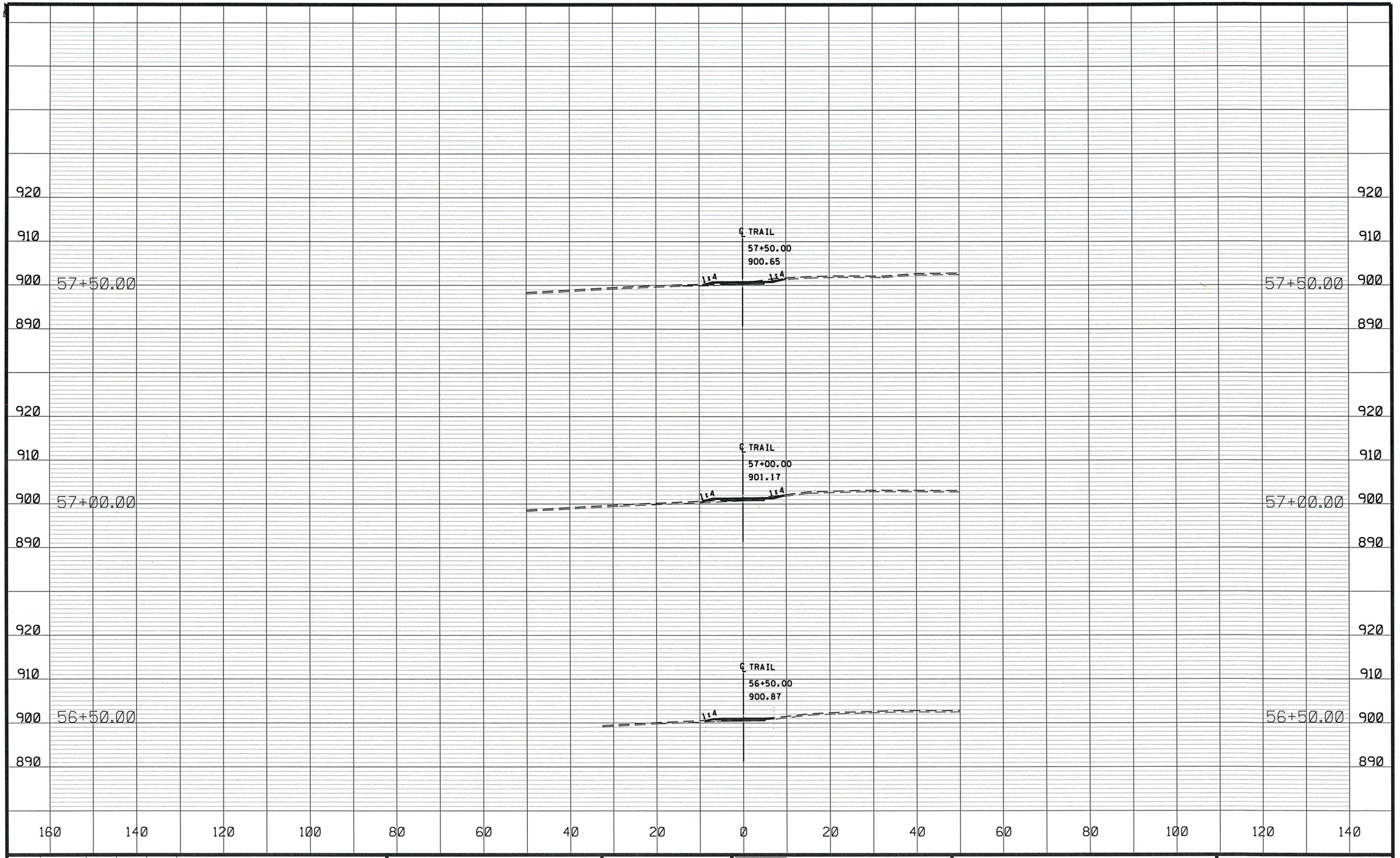
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 55+00.00 TO 56+00.00

Sheet 100 of 482 Sheets

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DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
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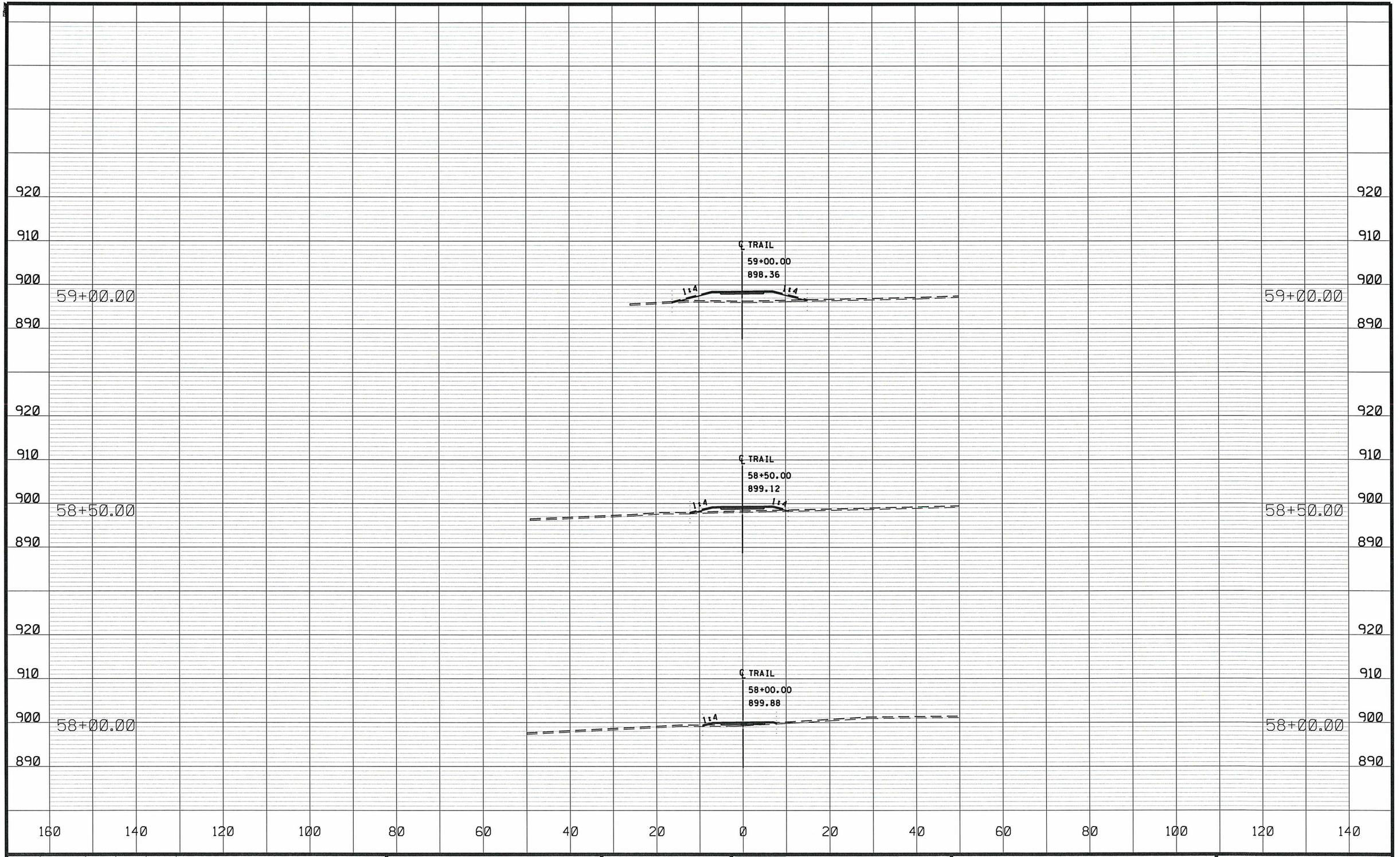
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 56+50.00 TO 57+50.00

Sheet 101 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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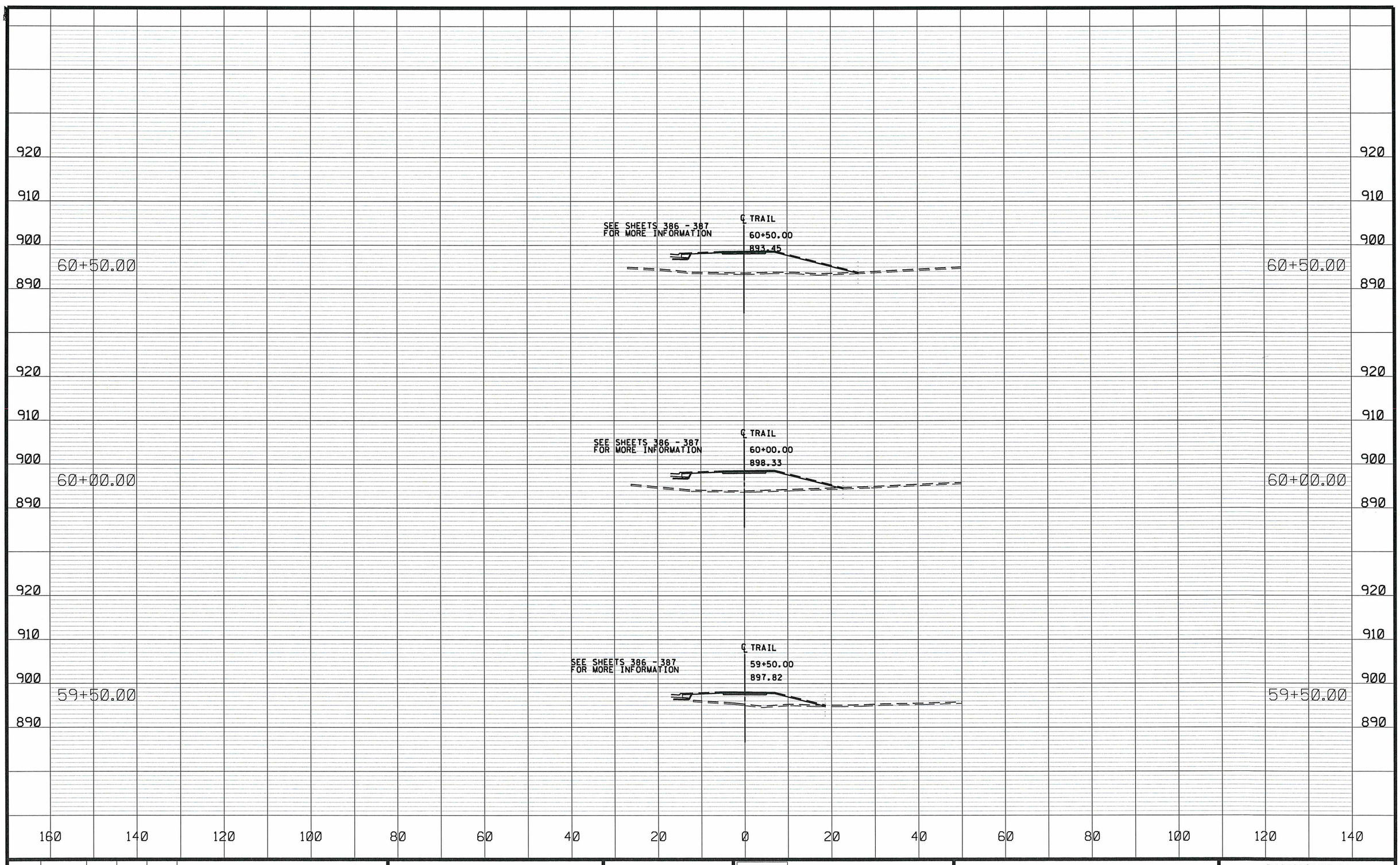
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 58+00.00 TO 59+00.00

Sheet 102 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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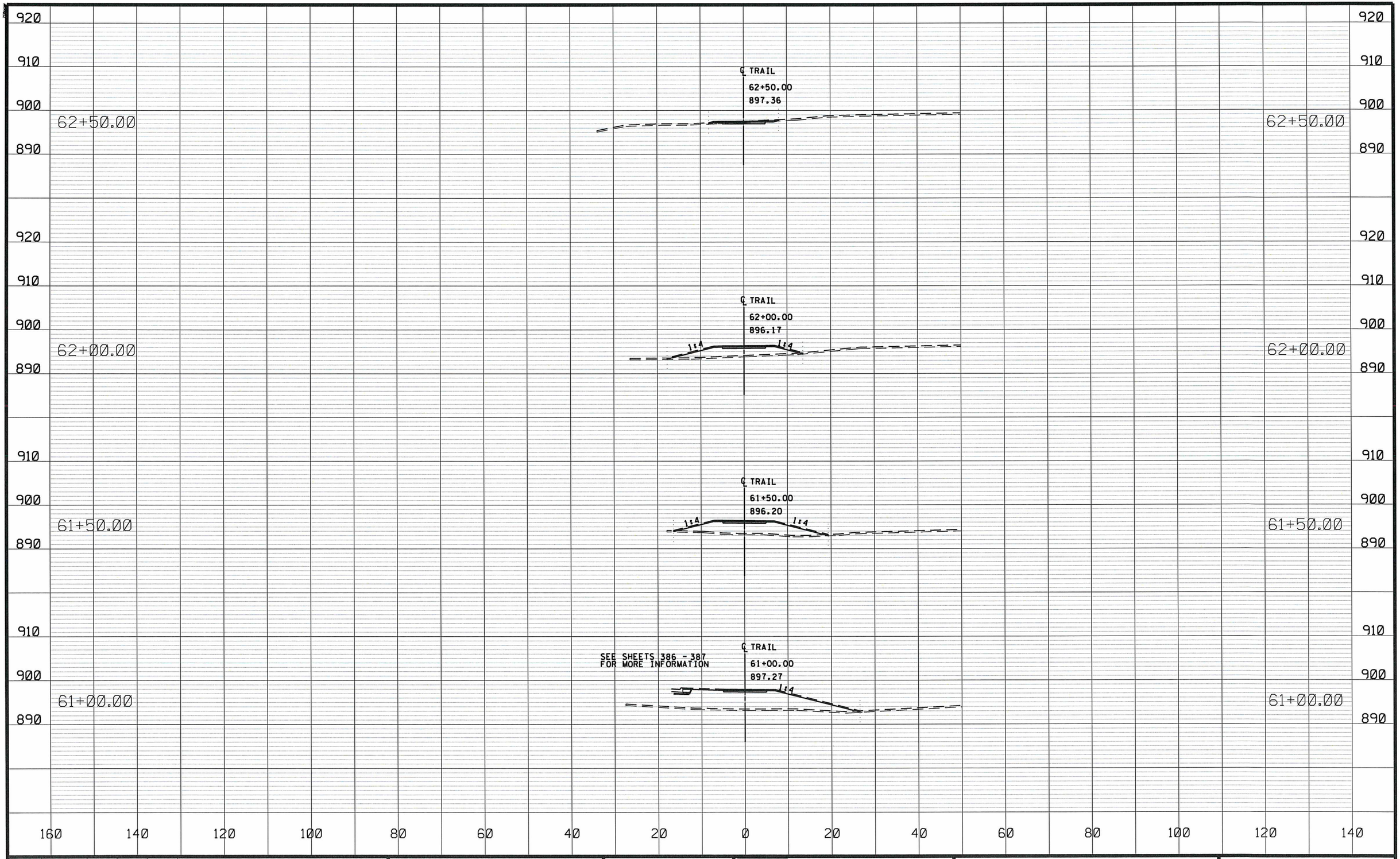
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 59+50.00 TO 60+50.00

Sheet 103 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_XS_SOUTH PARK PATH.dgn 04/12/2016 1:59:41 PM

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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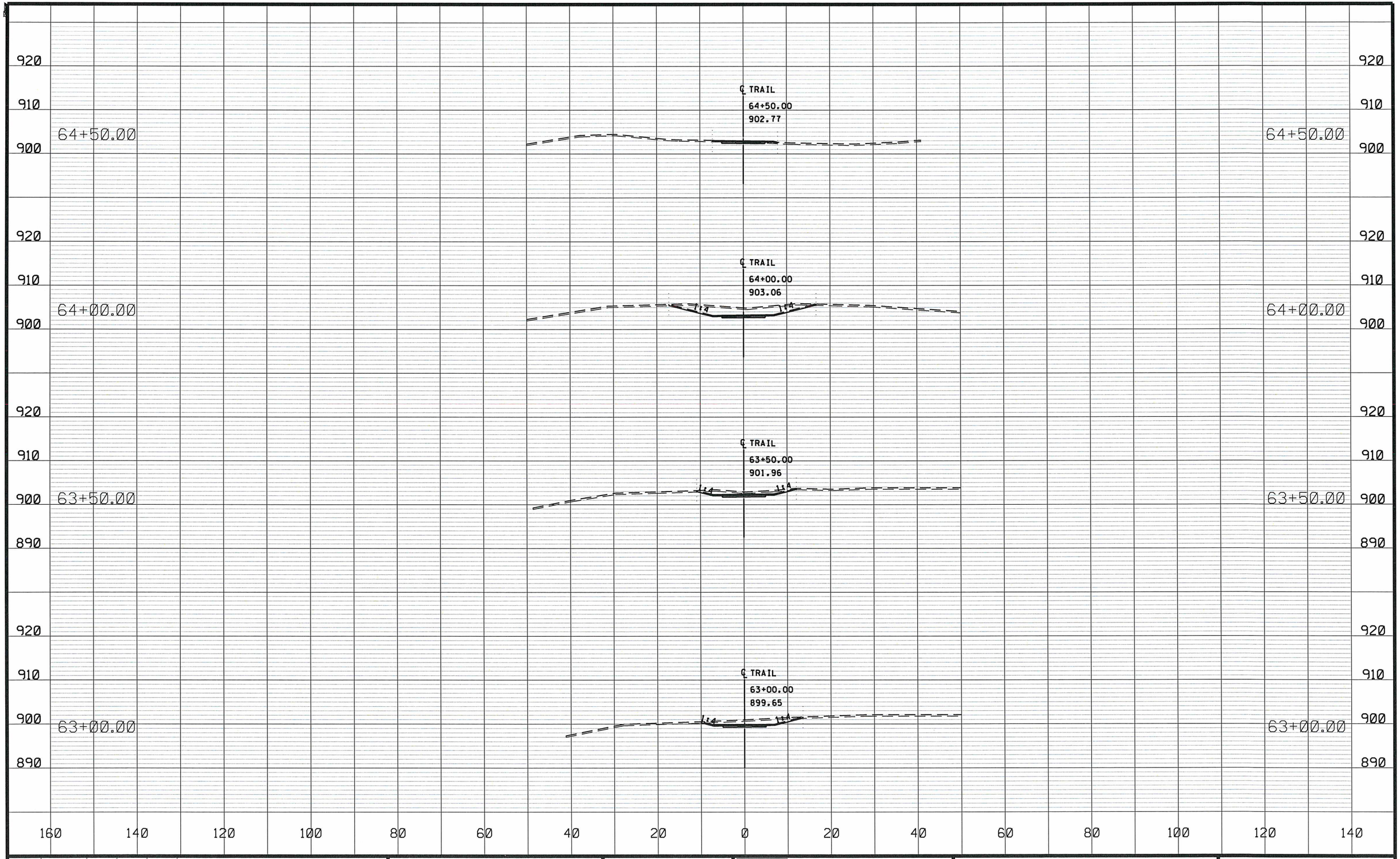
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS

STA 61+00.00 TO 62+50.00

Sheet 104 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 63+00.00 TO 64+50.00

Sheet 105 of 482 Sheets

PROPOSED TRAIL MATCHES
INTO EXISTING TRAIL

920
910
900

65+00.00

℄ TRAIL
65+00.00
901.78

65+00.00

920
910
900

160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140

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DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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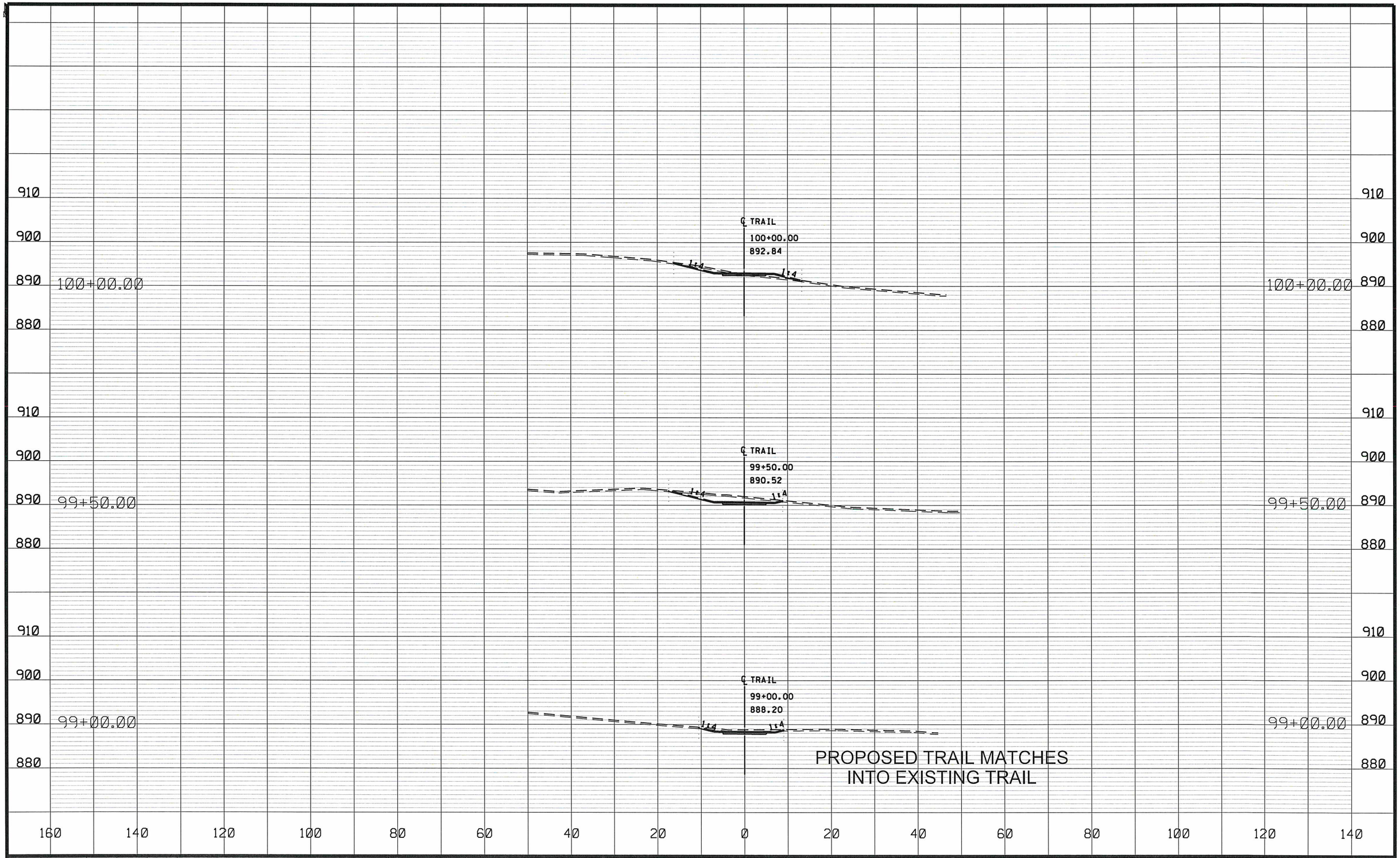
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 65+00.00 TO 65+00.00

Sheet 106 of 482 Sheets




PROPOSED TRAIL MATCHES
INTO EXISTING TRAIL

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_XS_SOUTH PARK PATH.dgn 04/12/2016 1:59:42 PM

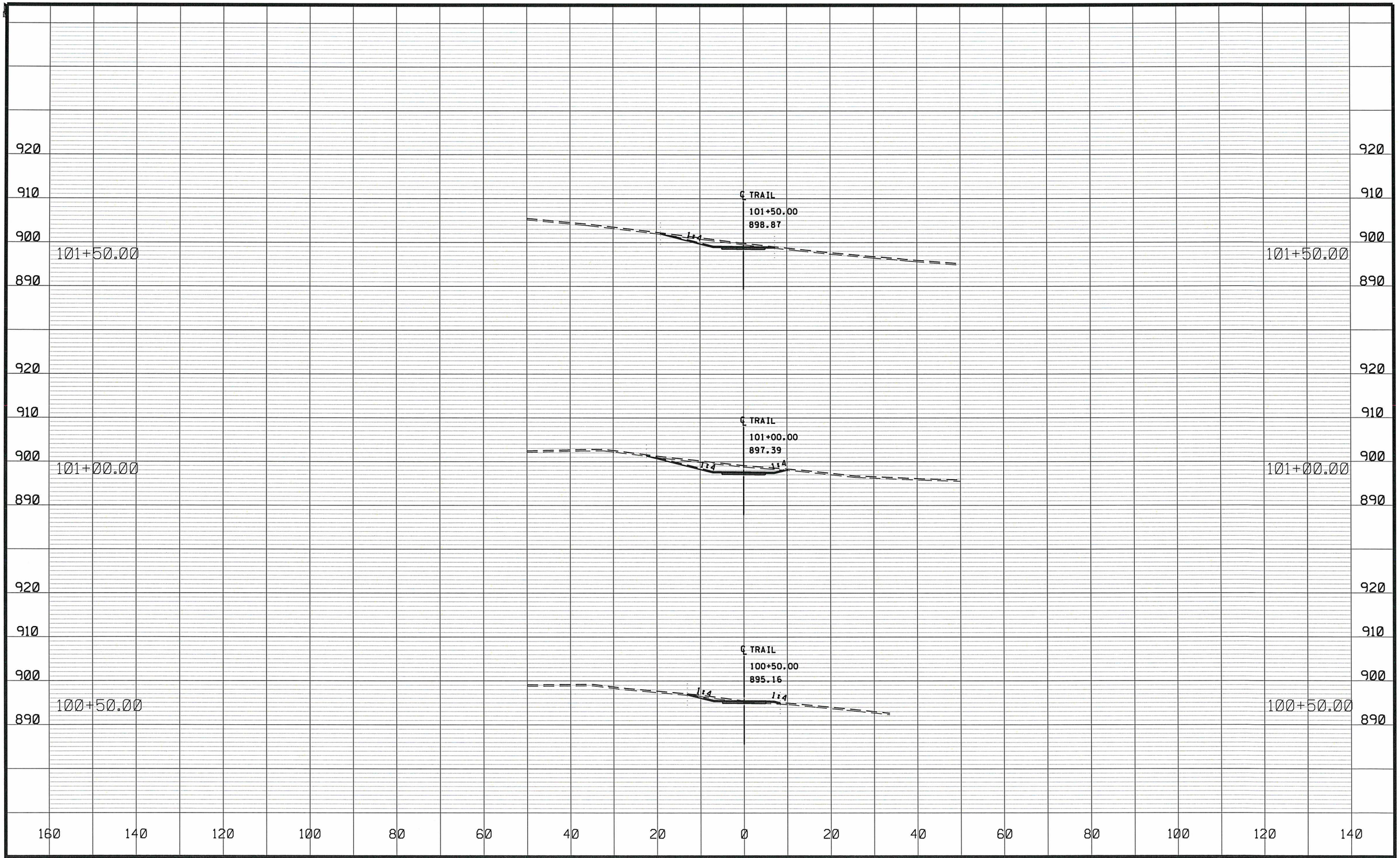
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 99+00.00 TO 100+00.00

Sheet 107 of 482 Sheets

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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

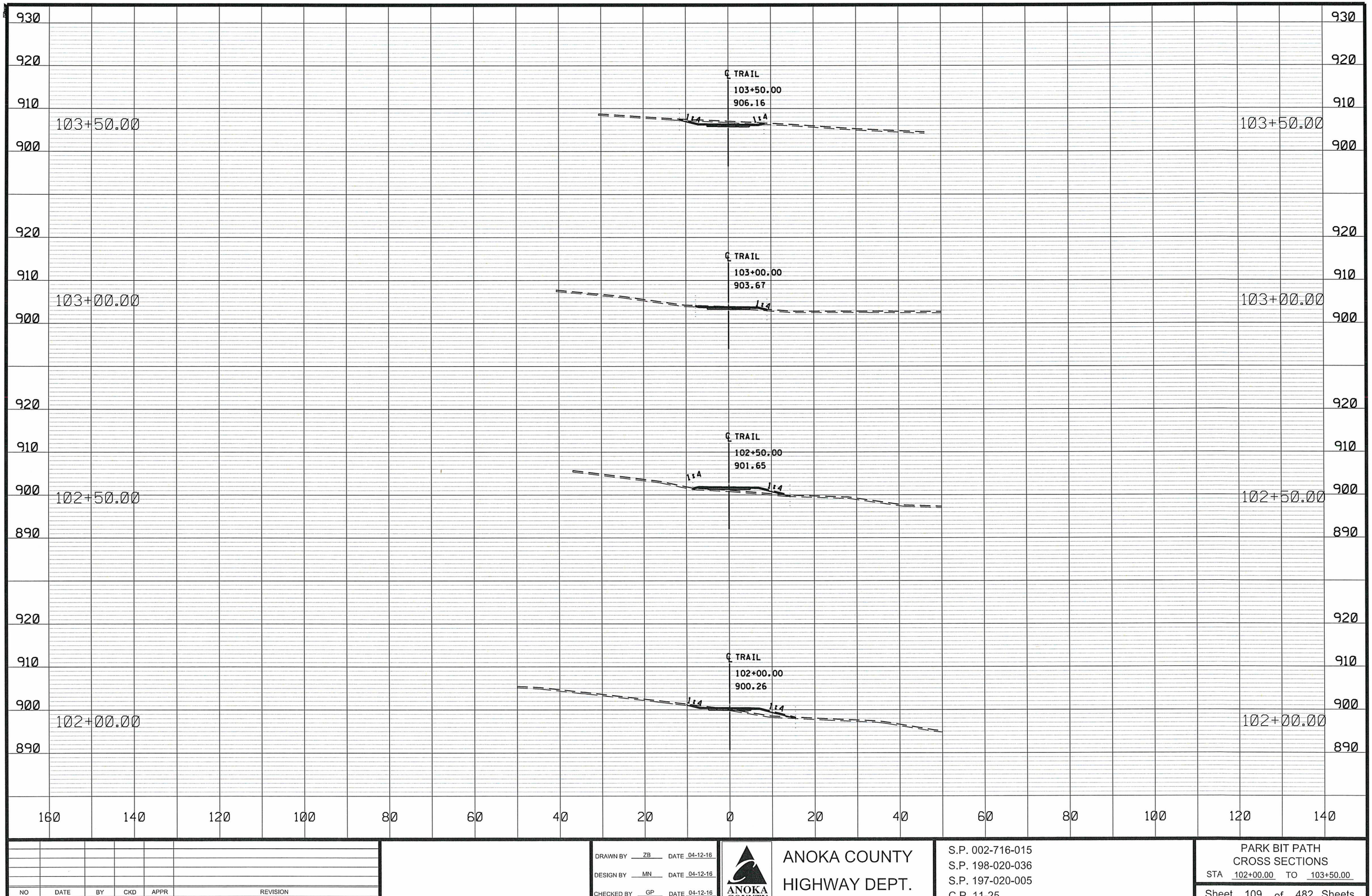
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 100+50.00 TO 101+50.00

Sheet 108 of 482 Sheets

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DRAWN BY ZB DATE 04-12-16

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ANOKA COUNTY

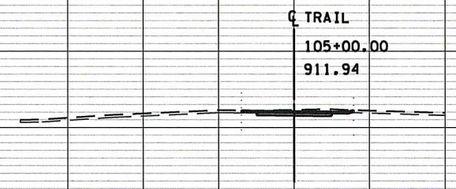
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

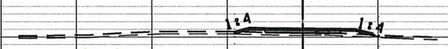
PARK BIT PATH
CROSS SECTIONS
STA 102+00.00 TO 103+50.00

Sheet 109 of 482 Sheets

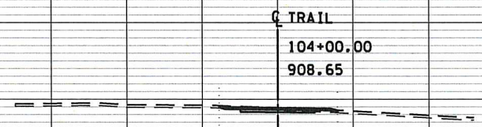
105+00.00




104+50.00




104+00.00




160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140

| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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ANOKA COUNTY
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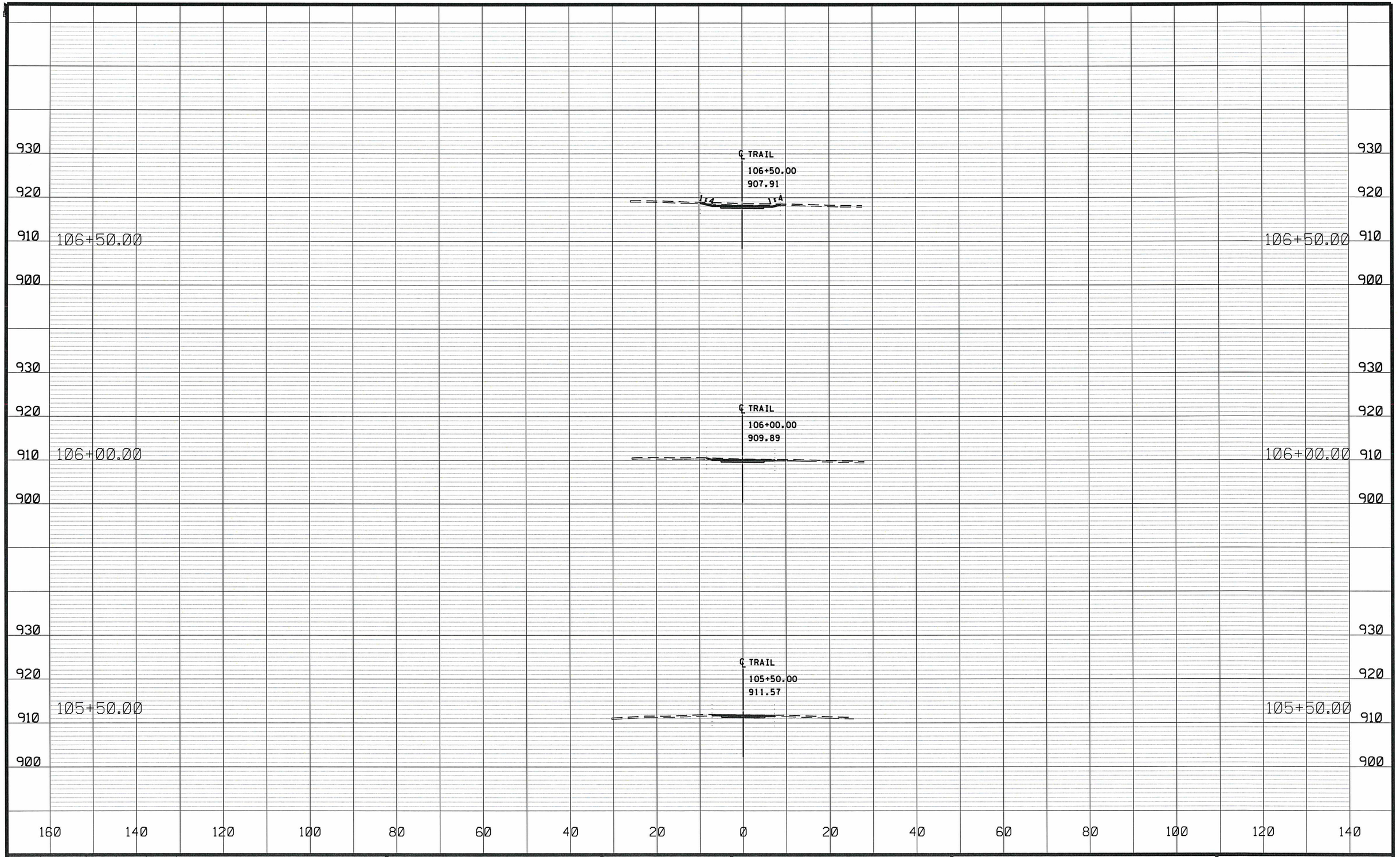
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 104+00.00 TO 105+00.00

Sheet 110 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

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ANOKA COUNTY

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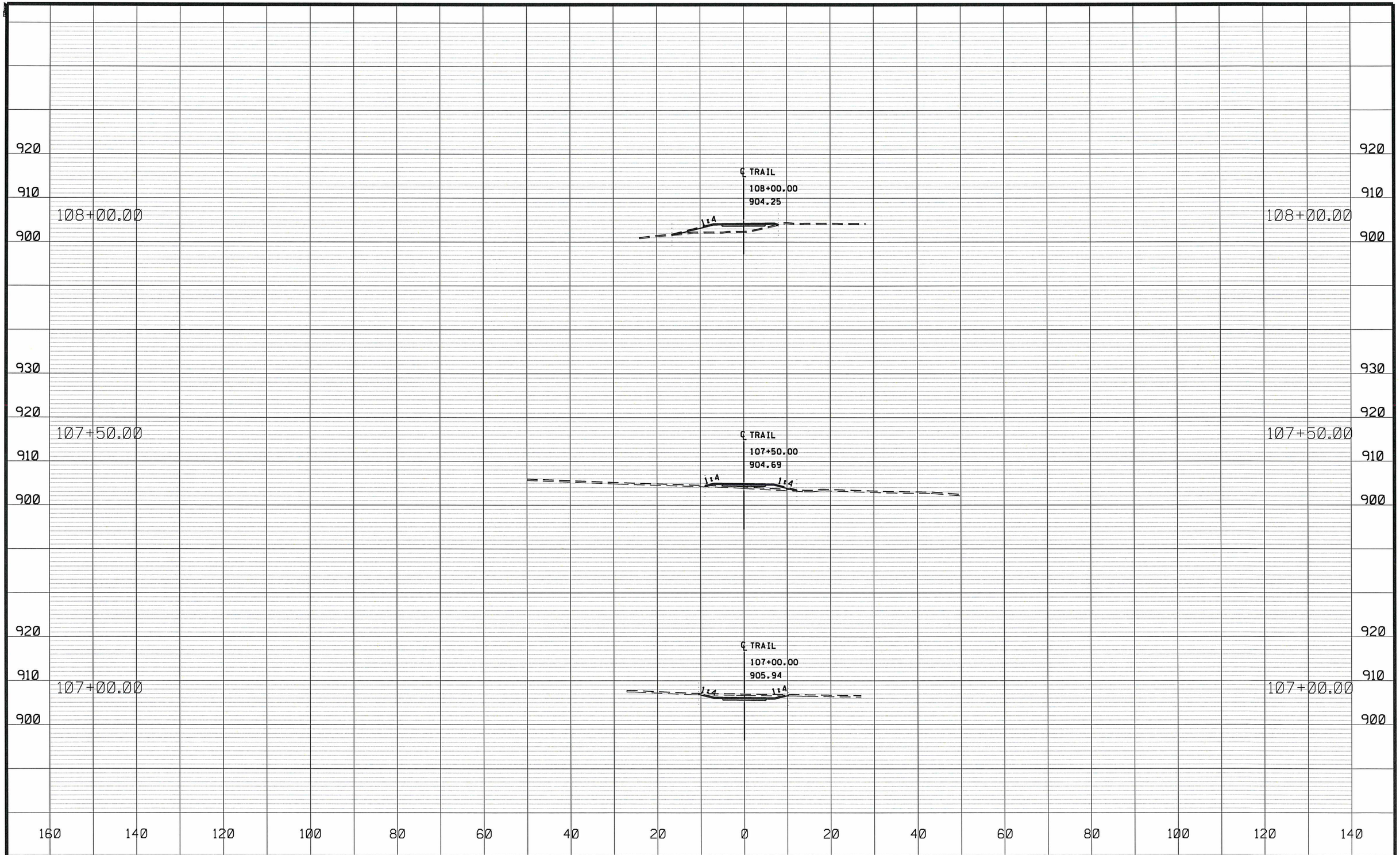
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 105+50.00 TO 106+50.00

Sheet 111 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
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ANOKA COUNTY

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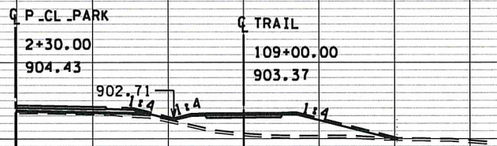
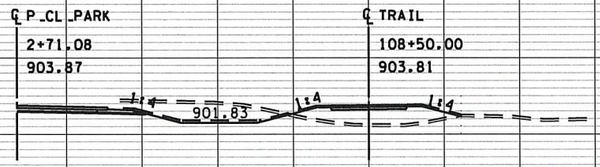
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 107+00.00 TO 108+00.00

Sheet 112 of 482 Sheets

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S.P. 197-020-005
C.P. 11-25

PARK BIT PATH
CROSS SECTIONS
STA 108+50.00 TO 109+00.00

Sheet 113 of 482 Sheets

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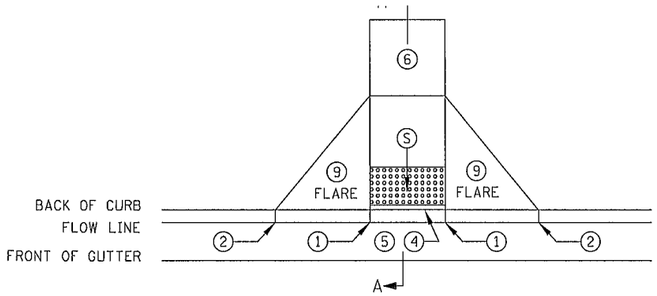
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME:
@FILENAME@

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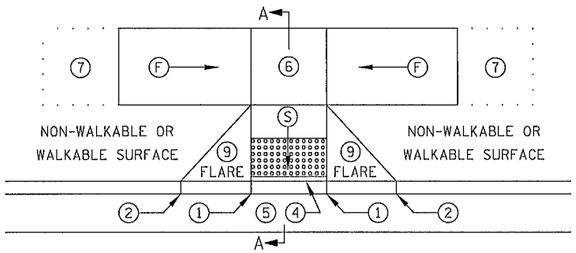


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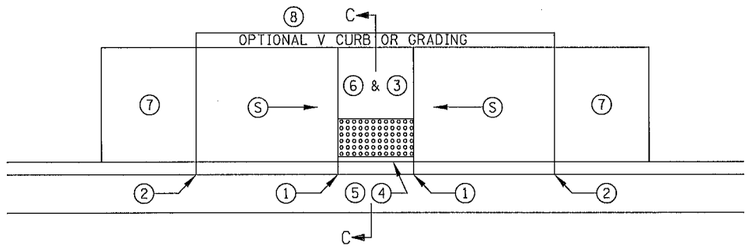
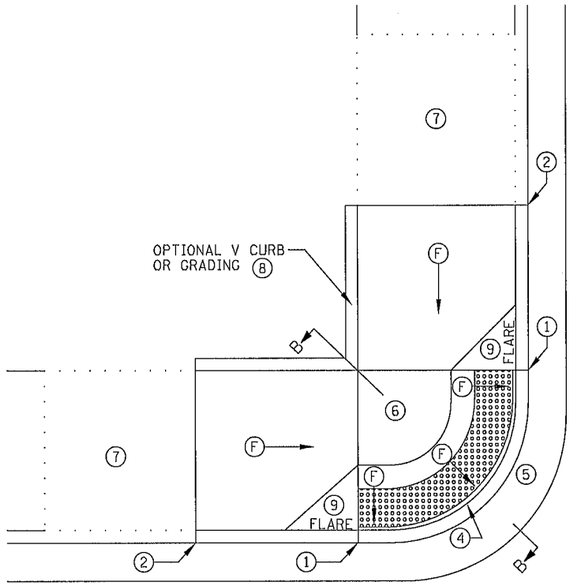



PARALLEL

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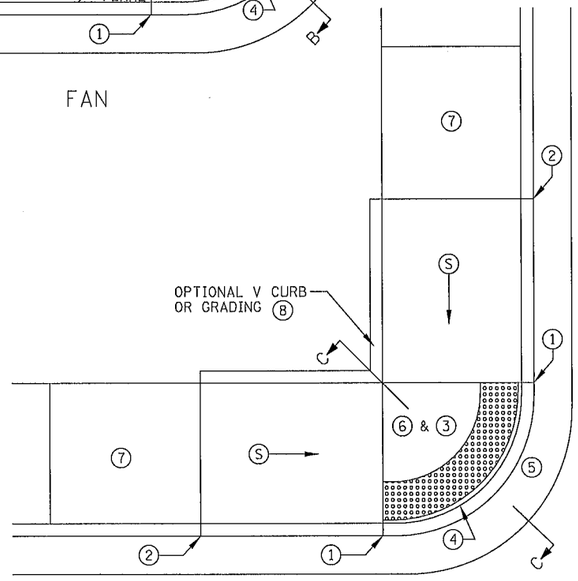
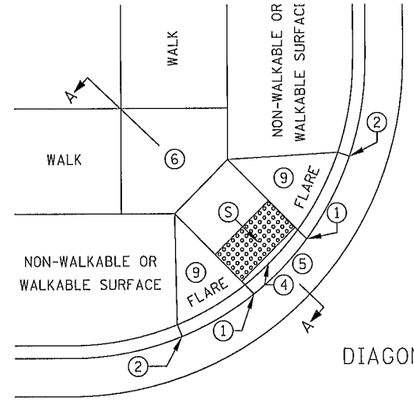
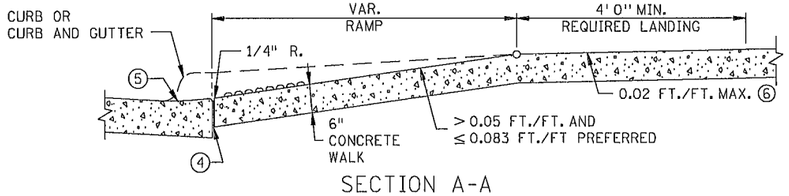



DEPRESSED CORNER

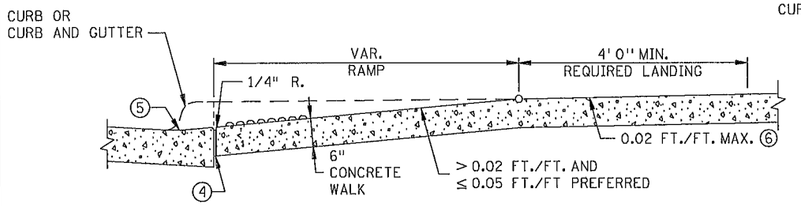



DIAGONAL ⑩



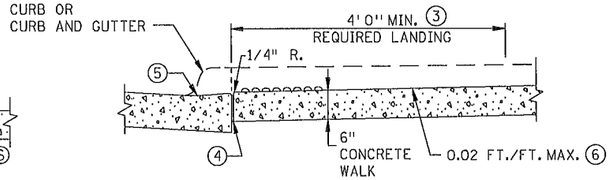

SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL




SECTION B-B

FAN




SECTION C-C

PARALLEL/DEPRESSED CORNER

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONCTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.

ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.

SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

(1) 0" CURB HEIGHT.

(2) FULL CURB HEIGHT.

(3) DETECTABLE WARNINGS MAY BE PART OF 4' X 4' LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(4) 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

(5) SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.

(6) 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.

(7) IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.

(8) V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. SEE SHEET 5 OF 5.

(9) SEE SHEET 15 OF 16, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(10) DIAGONAL RAMPS SHOULD ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%



REVISION:

APPROVED: 8-6-2014
OPERATIONS ENGINEER

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

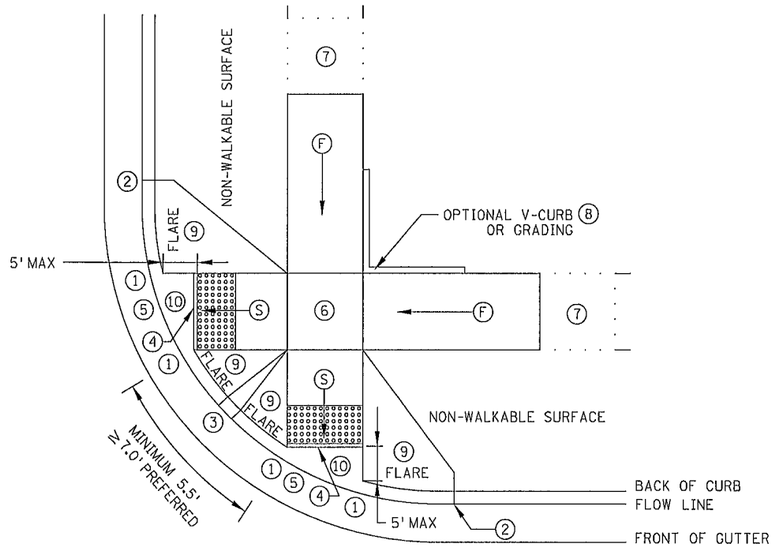
REVISED:

APPROVED: 8-6-2014
STATE DESIGN ENGINEER

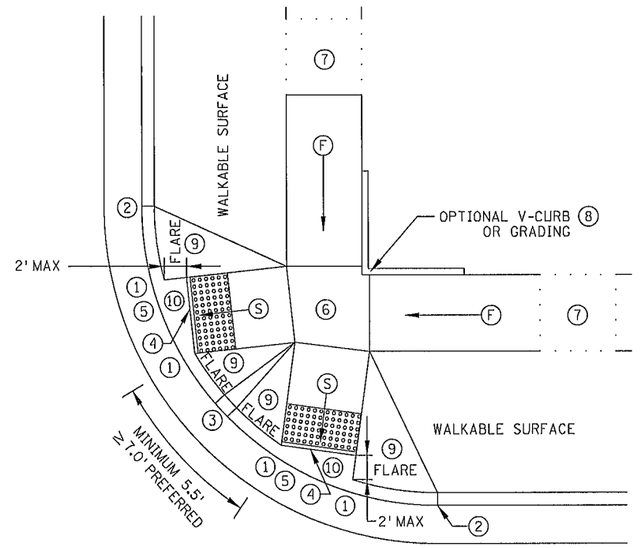
# PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 114 OF 482

PLOTTED/REVISED:
$$$$@DATE@$$$$

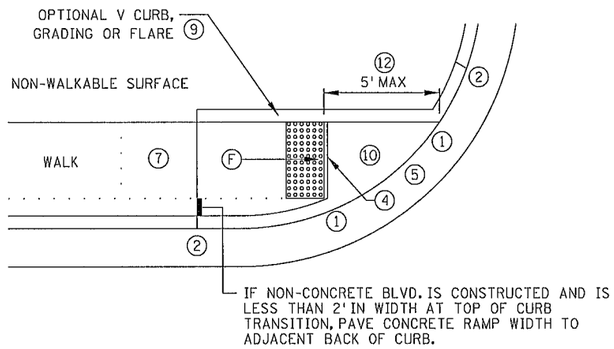



ADJACENT TO NON-WALKABLE SURFACE

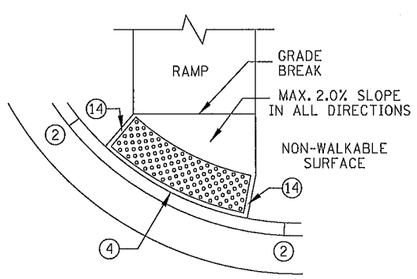


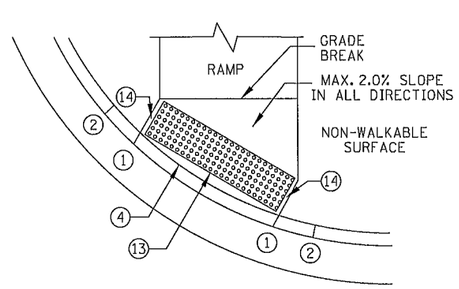

ADJACENT TO WALKABLE SURFACE

## COMBINED DIRECTIONAL (15)

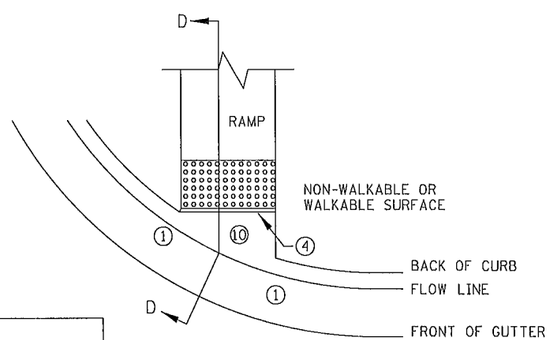



ONE-WAY DIRECTIONAL

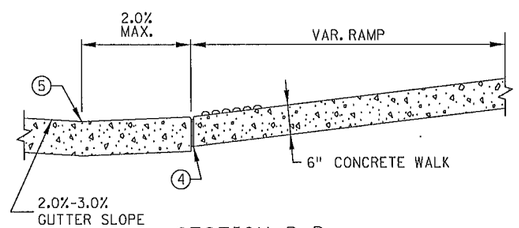



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED




CURB FOR DIRECTIONAL RAMPS (11)




SECTION D-D

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONCTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.

ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.

SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

(1) 0" CURB HEIGHT.
(2) FULL CURB HEIGHT.
(3) 3" MINIMUM CURB HEIGHT, 4" PREFERRED.
(4) 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MIN. TO 6" MAX. FROM THE BACK OF CURB.
(5) SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
(6) 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
(7) IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
(8) V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
(9) SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
(10) MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
(11) TO BE USED FOR ALL DIRECTIONAL RAMPS.
(12) PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
(13) RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
(14) WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
(15) FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER

### LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

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FILE NAME: @FILENAME@

REVISION:

APPROVED: 8-6-2014
OPERATIONS ENGINEER

S.P. 002-716-015
S.P. 198-020-036
S.P. 198-020-036
S.P. 198-020-036

MINNESOTA DEPARTMENT OF TRANSPORTATION

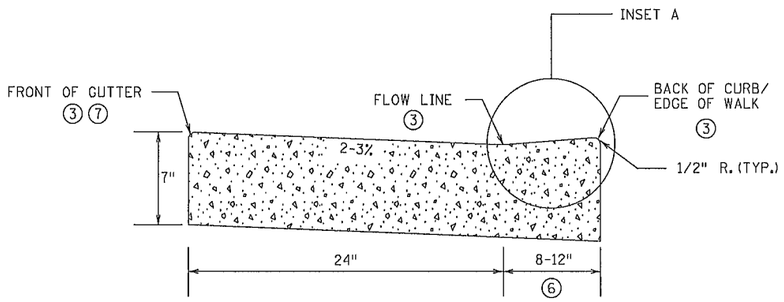
REVISED:

STATE DESIGN ENGINEER

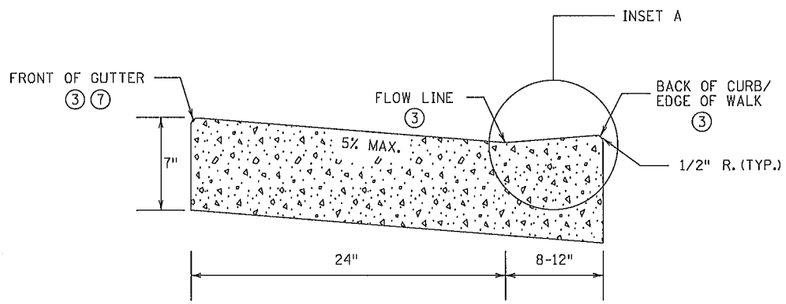
APPROVED: 8-6-2014

PEDESTRIAN CURB RAMP DETAILS

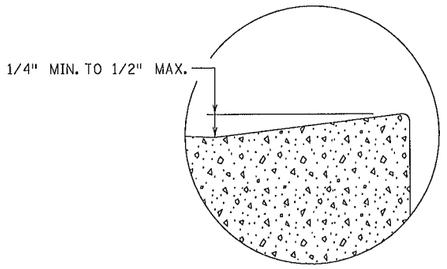
STANDARD PLAN 5-297.250




NON PERPENDICULAR ①

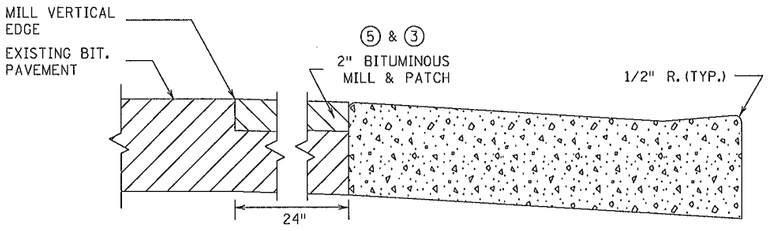


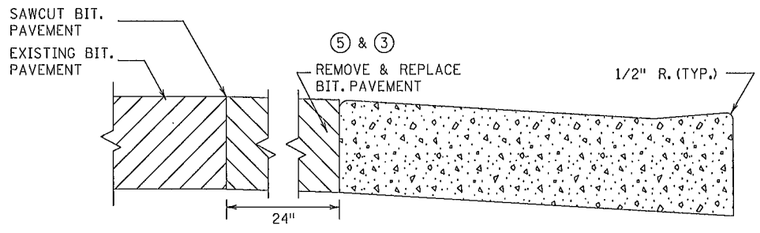

PERPENDICULAR ②

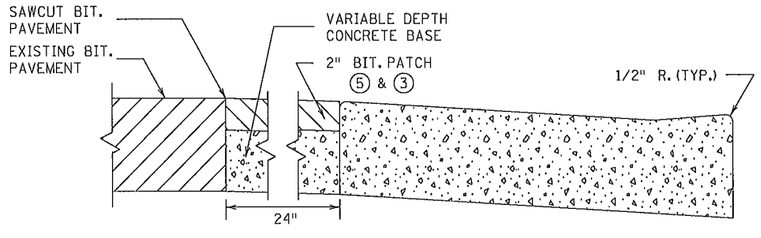


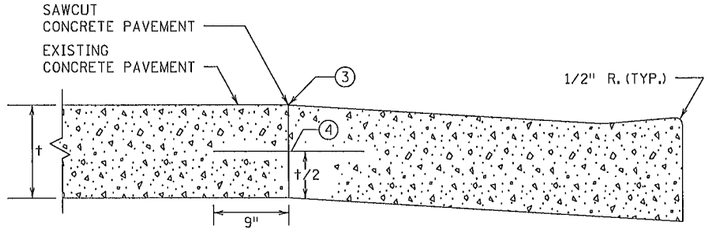

INSET A

## PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



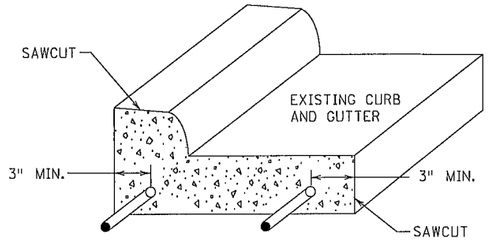




## PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS




## CURB AND GUTTER REINFORCEMENT ⑧

FOR USE ON CURB RAMP RETROFITS

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.

NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.

② FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".

④ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.

⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.

⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.

⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. PAR GUTTER SHALL NOT BE OVERLAID.

⑧ WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED).



PLOTTED/REVISED: $$$$@DATE@$$$$

USER NAME: $$@USER$NAME@$$

PATH & FILENAME: $$$@PATHFILENAME@$$$

FILE NAME: @FILENAME@

REVISION:

APPROVED: 8-6-2014

OPERATIONS ENGINEER

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S.P. 197-020-005
C.P. 11-25

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:

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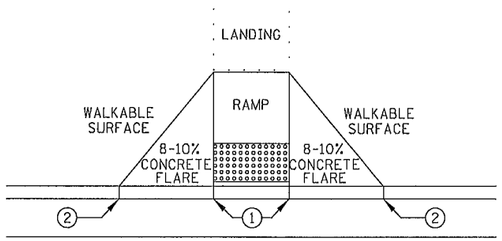
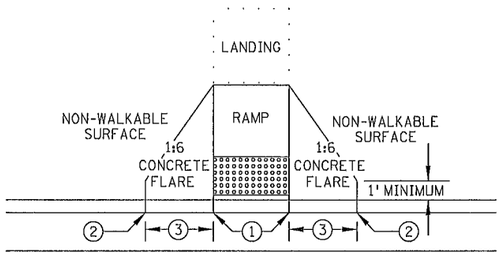
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

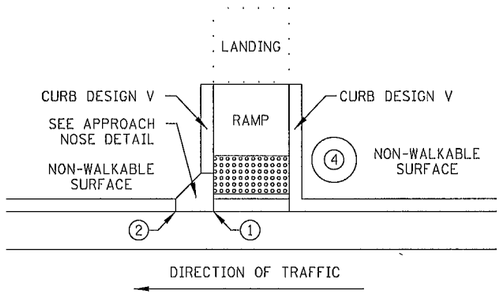
STANDARD PLAN 5-297.250 | 116 OF 482



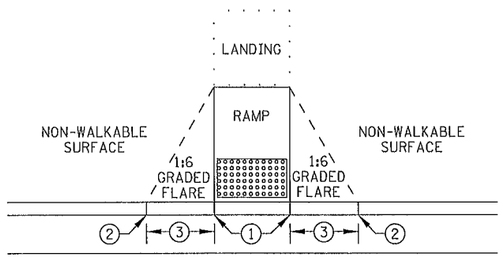

PAVED FLARES
ADJACENT TO WALKABLE SURFACE




PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

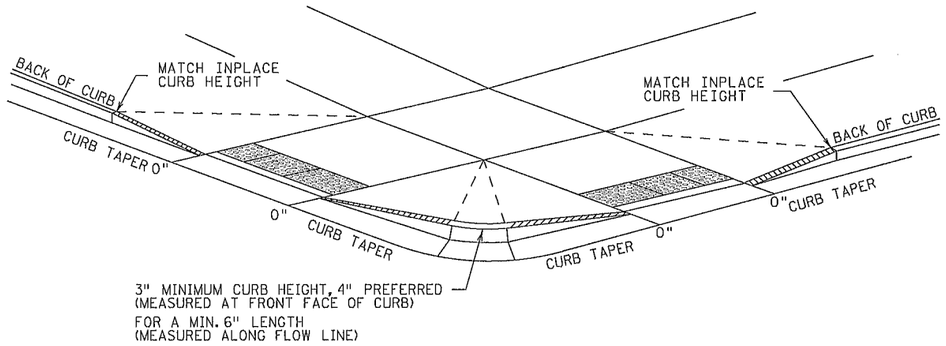



RETURNED CURB

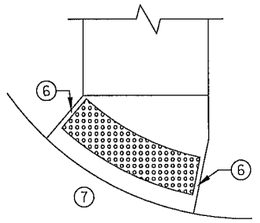



GRADED FLARES

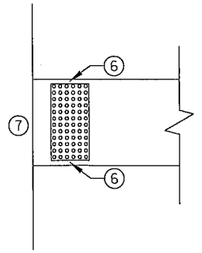
TYPICAL SIDE TREATMENT OPTIONS ⑤




DETECTABLE EDGE WITH
CURB AND GUTTER ⑧

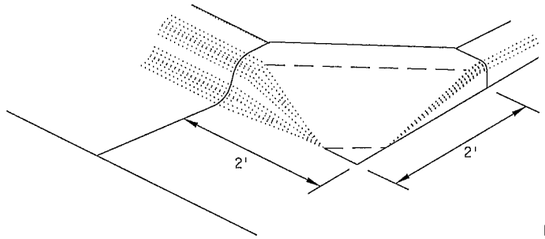


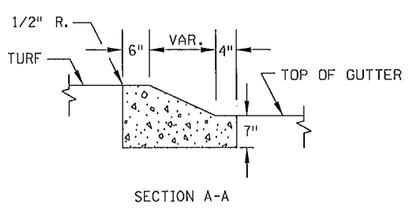

RADIAL DETECTABLE WARNING



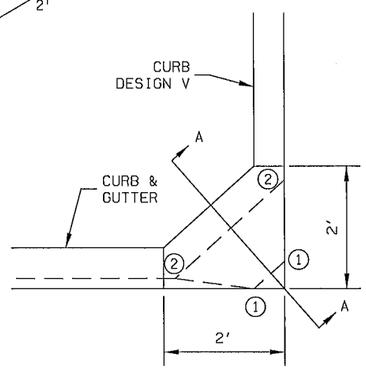

RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER




SECTION A-A




APPROACH NOSE DETAIL
FOR DOWNSTREAM SIDE OF TRAFFIC

NOTES:

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT.
② FULL CURB HEIGHT.
③ 2' - 3' FLARE.
④ IMMOVABLE OBJECT OR OBSTRUCTION.
⑤ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED ON ALL RAMPS AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF ROADWAY TO PROVIDE VISUAL CONTRAST.
⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.



PLOTTED/REVISED: $$$$@DATE@$$$$
USER NAME: $$@USER$NAME@$$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@

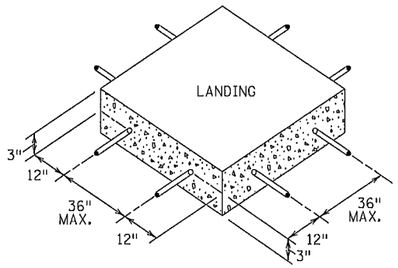
REVISION:
APPROVED: 8-6-2014
OPERATIONS ENGINEER

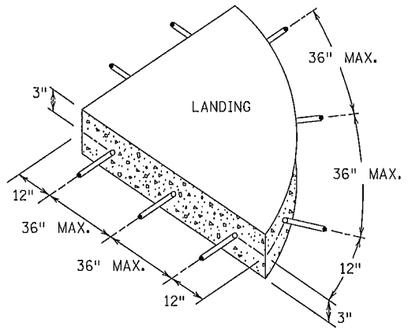
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

MINNESOTA DEPARTMENT OF TRANSPORTATION
REVISED:
STATE DESIGN ENGINEER
APPROVED: 8-6-2014

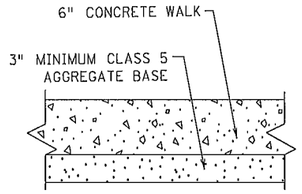
PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 117 OF 482

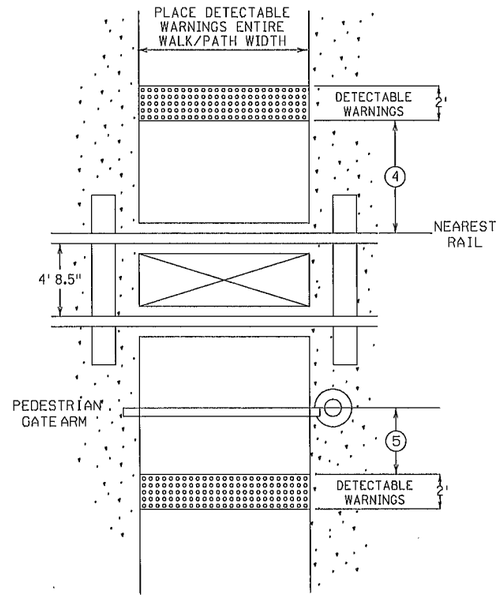


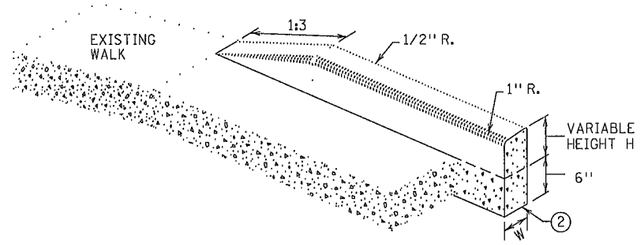

SIDEWALK REINFORCEMENT ⑥ ⑦



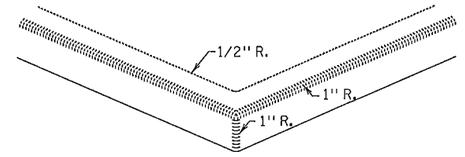

TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER




RAILROAD CROSSING
PLAN VIEW

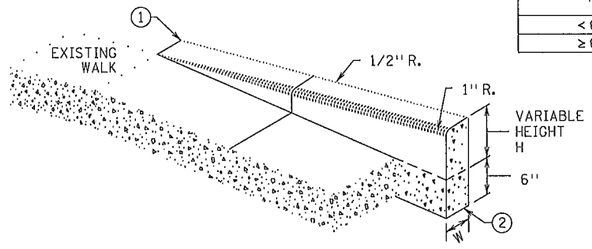



V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS

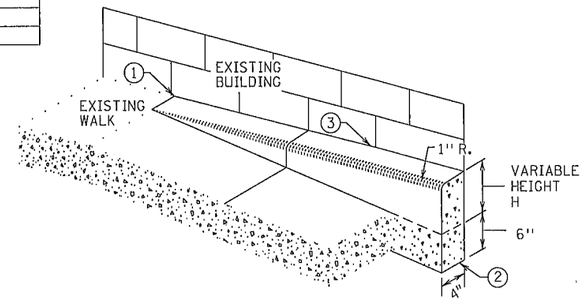



V CURB INTERSECTION

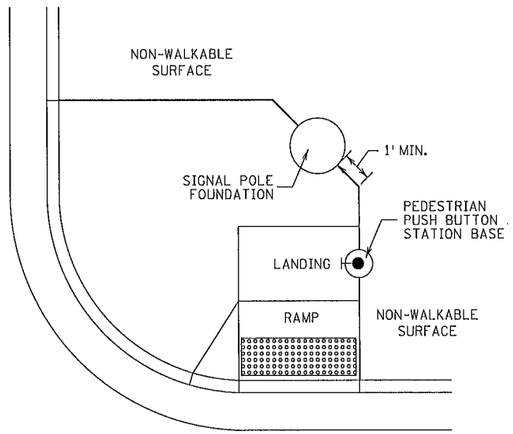
| CONCRETE CURB DESIGN V | |
|---|---|
| CURB HEIGHT H | CURB WIDTH W |
| < 6" | 4" |
| ≥ 6" | 6" |




V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS




V CURB ADJACENT TO BUILDING
OR BARRIER




CONCRETE WALK EDGES ADJACENT
TO CONCRETE STRUCTURES

NOTES:

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.

④ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.

⑤ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM.

⑥ WHEN PLAN SPECIFIES, DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAX. CENTER TO CENTER (EPOXY COATED).

⑦ TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET WHEN LANDINGS ARE CAST SEPARATELY.



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USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@

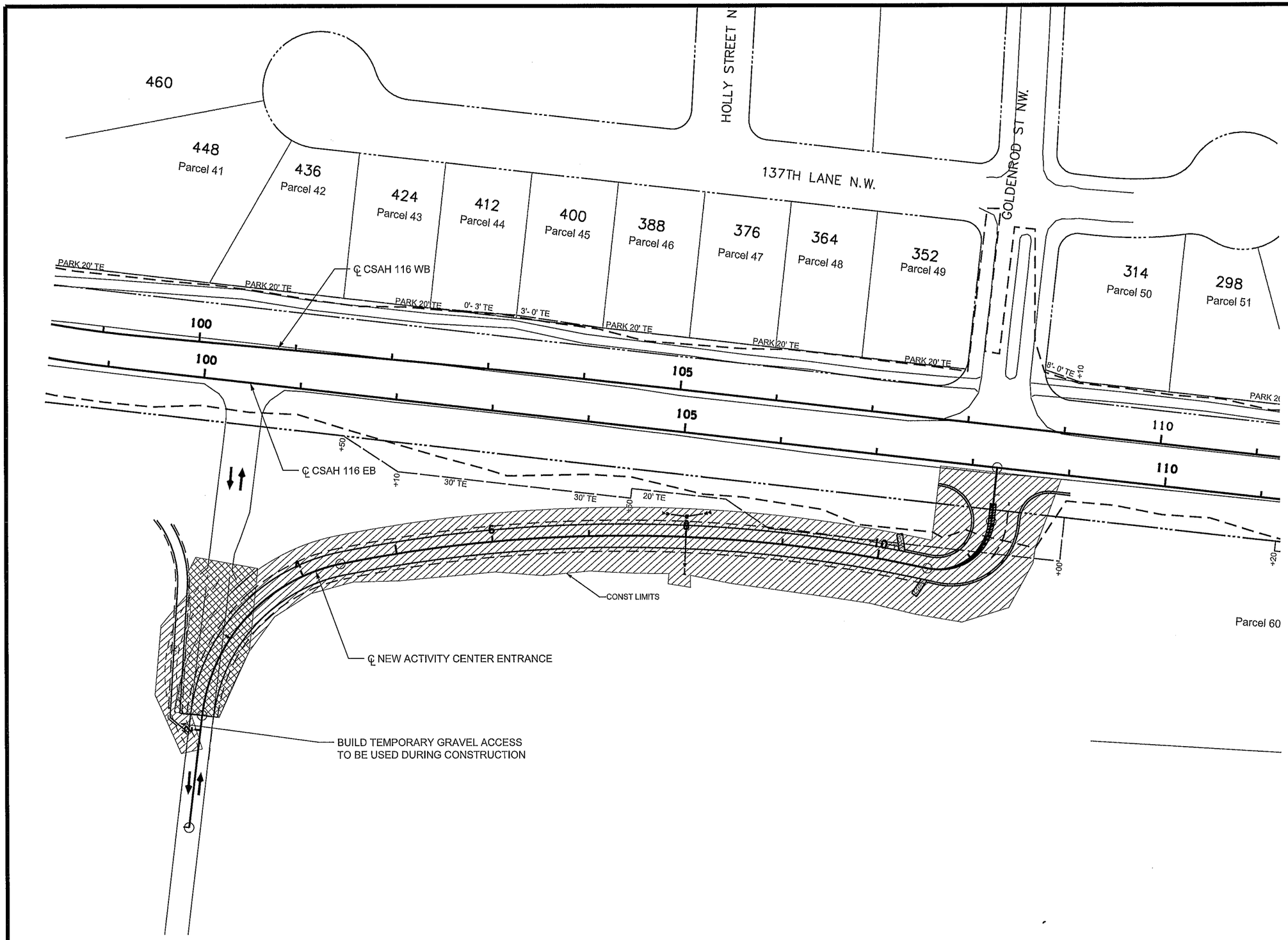
REVISION:
APPROVED: 2-9-2015
OPERATIONS ENGINEER

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

MINNESOTA DEPARTMENT OF TRANSPORTATION
REVISED:
STATE DESIGN ENGINEER
APPROVED: 2-9-2015

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 118 OF 482




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE

STAGE 1 CONSTRUCTION NOTES:

FULL CONSTRUCTION OF PARK ENTRANCE INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND STORM SEWER.

CSAH 116 FROM STA 134+00 TO 144+50: BIT. REMOVAL, MUCKING EXCAVATION, PRELIMINARY GRADING,TEMPORARY BITUMINOUS SURFACING, CULVERTS, POND, AND STORM SEWER SYSTEM.

STAGE 1 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC FROM STA 134+00 TO STA 144+50.

EXISTING PARK ENTRANCE TO REMAIN OPEN DURING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

0 100
SCALE IN FEET

1 OF 3

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_STG1-P1.dgn 06/01/2016 12:41:59 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

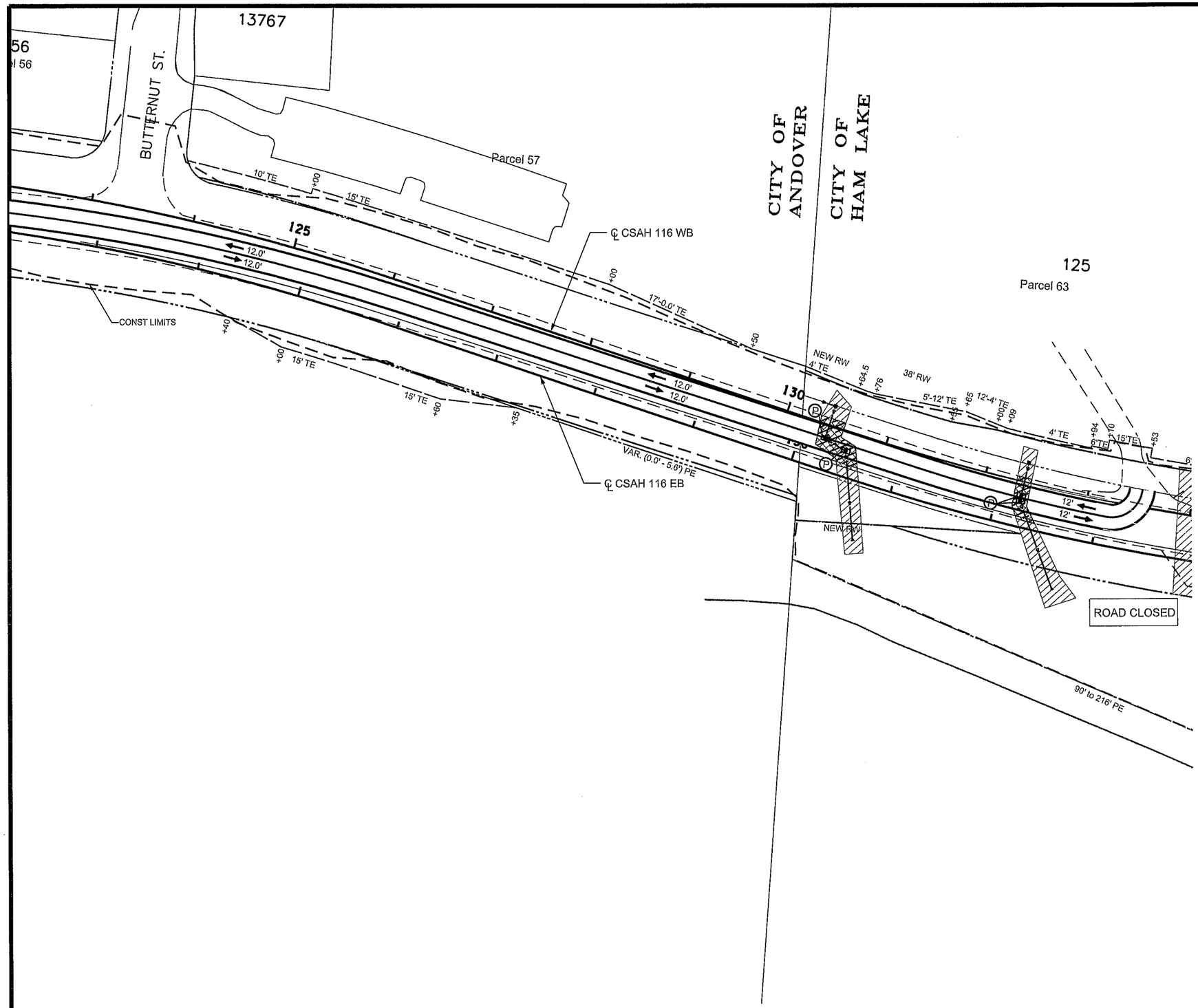
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

ACTIVITY CENTER ENTRANCE
2016 STAGING PLAN
STAGE 1

Sheet 119 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TEMPORARY BIT. SURFACING
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- (P) PLATE & COVER

STAGE 1 CONSTRUCTION NOTES:

FULL CONSTRUCTION OF PARK ENTRANCE INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND STORM SEWER.

CSAH 116 FROM STA 130+00 TO 133+00: STORM SEWER CROSSINGS.

CSAH 116 FROM STA 134+00 TO 144+50: BIT. REMOVAL, MUCKING EXCAVATION, PRELIMINARY GRADING,TEMPORARY BITUMINOUS SURFACING, CULVERTS, POND, AND STORM SEWER SYSTEM.

STAGE 1 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC FROM STA 134+00 TO STA 144+50.

EXISTING PARK ENTRANCE TO REMAIN OPEN DURING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

0 100
SCALE IN FEET

2 OF 3

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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NAME: P:\02-716-15\Plan\0271615_STG1-P2.dgn 06/01/2016 12:42:02 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 1

Sheet 120 of 482 Sheets

# MUCKING & RESURFACING

| North Edge Bituminous Resurfacing | | |
|---|---|---|
| Station | Alignment | Offset |
| 134+16 | 116 WB | MATCH EX |
| 134+50 | 116 WB | 4.7 LT |
| 135+00 | 116 WB | 5.9 LT |
| 135+50 | 116 WB | 6.7 LT |
| 136+00 | 116 WB | 7.2 LT |
| 136+50 | 116 WB | 7.1 LT |
| 137+00 | 116 WB | 7.0 LT |
| 137+50 | 116 WB | 6.9 LT |
| 138+00 | 116 WB | 6.7 LT |
| 138+50 | 116 WB | 6.6 LT |
| 139+00 | 116 WB | 6.5 LT |
| 139+50 | 116 WB | 6.4 LT |
| 140+00 | 116 WB | 6.3 LT |
| 140+50 | 116 WB | 6.1 LT |
| 141+00 | 116 WB | 6.0 LT |
| 141+50 | 116 WB | 5.9 LT |
| 142+00 | 116 WB | 6.0 LT |
| 142+50 | 116 WB | 5.6 LT |
| 143+00 | 116 WB | 5.3 LT |
| 143+50 | 116 WB | 4.7 LT |
| 144+00 | 116 WB | 3.5 LT |
| 144+57 | 116 WB | MATCH EX |

| South Edge Bituminous Resurfacing | | |
|---|---|---|
| Station | Alignment | Offset |
| 134+17 | 116 EB | MATCH EX |
| 134+50 | 116 EB | 29.6 LT |
| 135+00 | 116 EB | 29.1 LT |
| 135+50 | 116 EB | 28.7 LT |
| 136+00 | 116 EB | 28.0 LT |
| 136+50 | 116 EB | 28.0 LT |
| 137+00 | 116 EB | 28.1 LT |
| 137+50 | 116 EB | 28.3 LT |
| 138+00 | 116 EB | 28.4 LT |
| 138+50 | 116 EB | 28.5 LT |
| 139+00 | 116 EB | 28.7 LT |
| 139+50 | 116 EB | 28.8 LT |
| 140+00 | 116 EB | 28.9 LT |
| 140+50 | 116 EB | 29.1 LT |
| 141+00 | 116 EB | 29.2 LT |
| 141+50 | 116 EB | 29.3 LT |
| 142+00 | 116 EB | 29.5 LT |
| 142+50 | 116 EB | 29.7 LT |
| 143+00 | 116 EB | 30.1 LT |
| 143+50 | 116 EB | 30.7 LT |
| 144+00 | 116 EB | 31.8 LT |
| 144+56 | 116 EB | MATCH EX |

125
63

329
Parcel 64

1371
Parcel

Parcel 74

ROAD CLOSED

35' TEMPORARY BITUMINOUS RESURFACING. ROADWAY TO SHIFT SLIGHTLY TO THE NORTH.

℄ CSAH 116 WB

PRELIMINARY GRADING TO BE DONE TO EDGE OF FUTURE ROADWAY.

CONST LIMITS

90' to 216' PE

℄ CSAH 116 EB

SOUTH EDGE OF BITUMINOUS SURFACING TO ALIGN WITH EXISTING STRIPING ON EAST AND WEST END

PRELIMINARY GRADING TO BE DONE TO EDGE OF FUTURE ROADWAY.

ROAD CLOSED

888.07

200' PE

120' TE

## LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TEMPORARY BIT. SURFACING
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- PLATE & COVER

STAGE 1 CONSTRUCTION NOTES:

FULL CONSTRUCTION OF PARK ENTRANCE INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND STORM SEWER.

CSAH 116 FROM STA 134+00 TO 144+50: BIT. REMOVAL, MUCKING EXCAVATION, PRELIMINARY GRADING,TEMPORARY BITUMINOUS SURFACING, CULVERTS, POND, AND STORM SEWER SYSTEM.

STAGE 1 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC FROM STA 134+00 TO STA 144+50.

EXISTING PARK ENTRANCE TO REMAIN OPEN DURING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

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SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_STG1-P3.dgn 06/01/2016 12:42:03 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

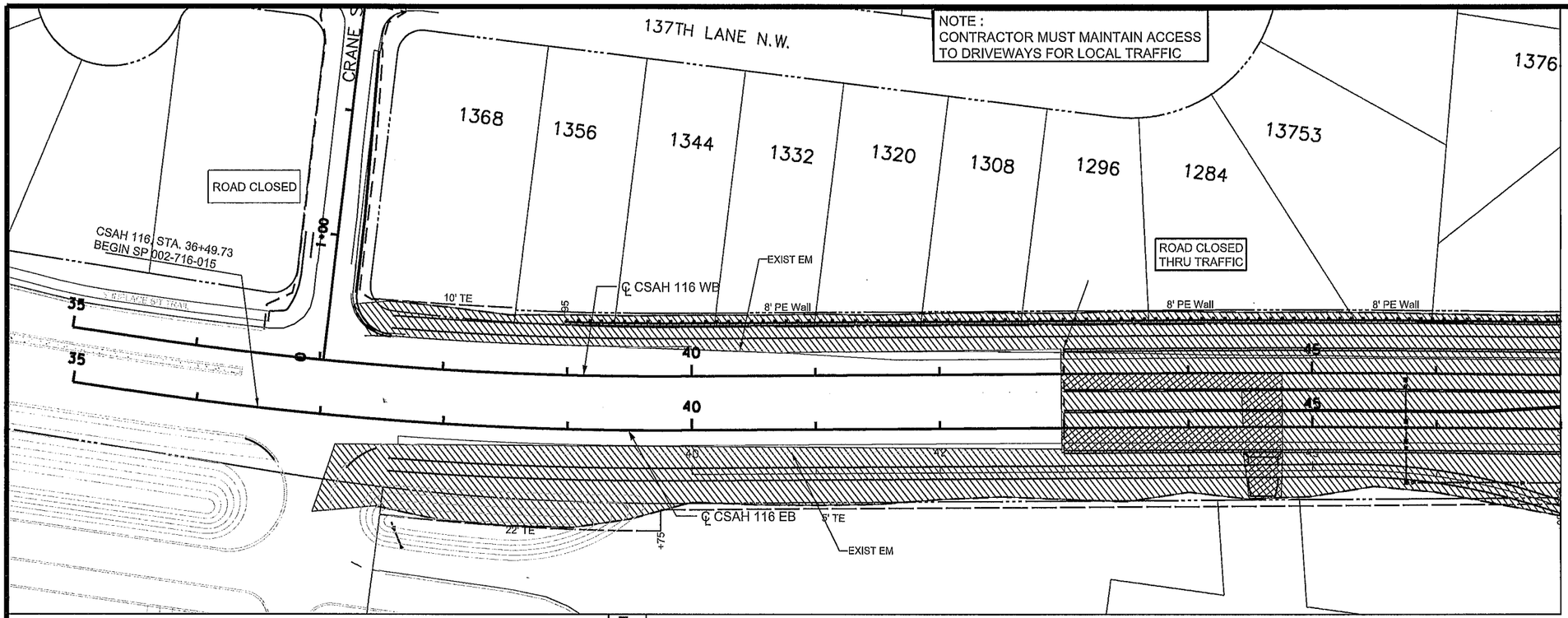
ANOKA COUNTY

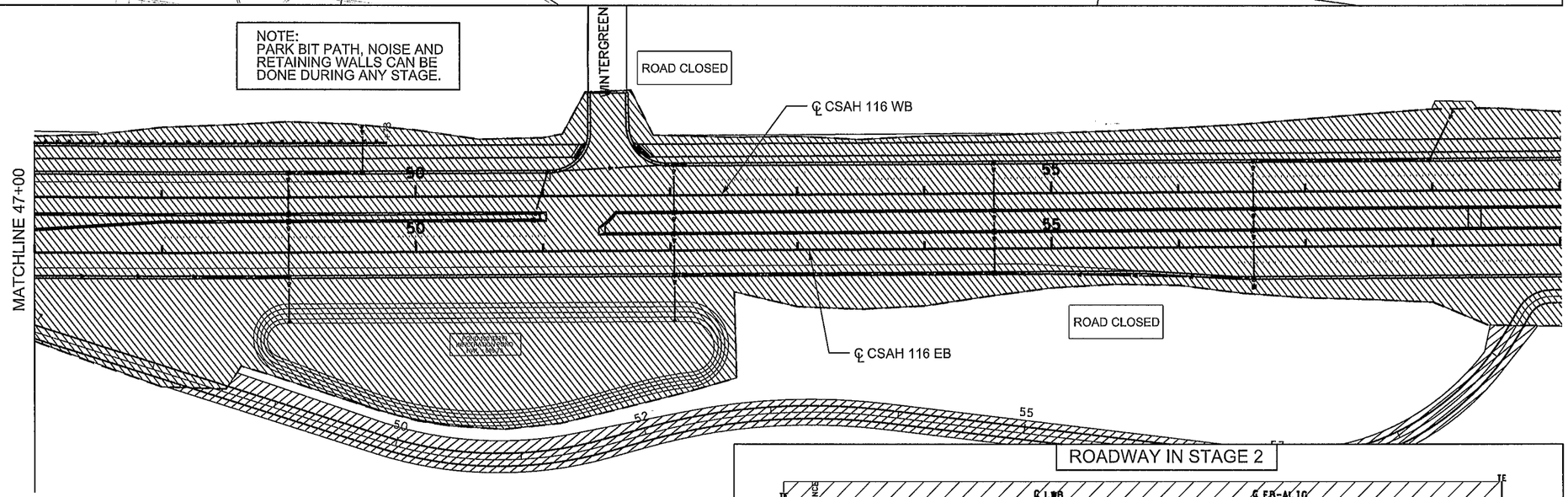
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 1

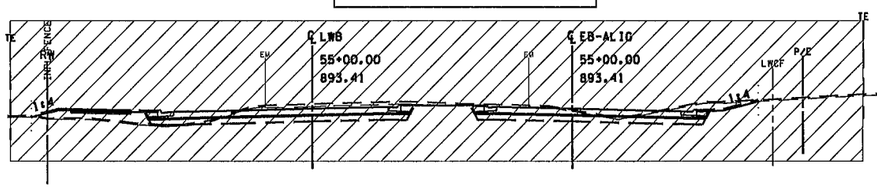
Sheet 121 of 482 Sheets




PERMANENT CONSTRUCTION UNDER TRAFFIC IN THIS STAGE.
THE CONTRACTOR SHALL PROVIDE FOR FLAGGING OPERATIONS, AS DIRECTED BY THE ENGINEER, PER THE "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
LUMP SUM BID FOR TRAFFIC CONTROL.

ROADWAY IN STAGE 2




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD: FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC BETWEEN CRANE ST AND GOLDENROD RD. (DETOUR 1 IN PLACE)

INTERSECTION OF SYCAMORE ST. AND CNTY PKWY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
CSAH 116 FROM CRANE ST TO PRAIRIE RD (INCLUDING PRAIRIE RD) TO BE COMPLETED BY OCT. 15TH 2016. THE REMAINING PORTION OF STAGE 2 TO BE COMPLETED BY NOV. 19TH 2016. SEE S-30 IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.

N

0 100
SCALE IN FEET

1 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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NAME: P:\02-716-15\Plan\0271615_STG2-P1.dgn 06/01/2016 2:32:28 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 6/10/16 LICENSE NO. 52598

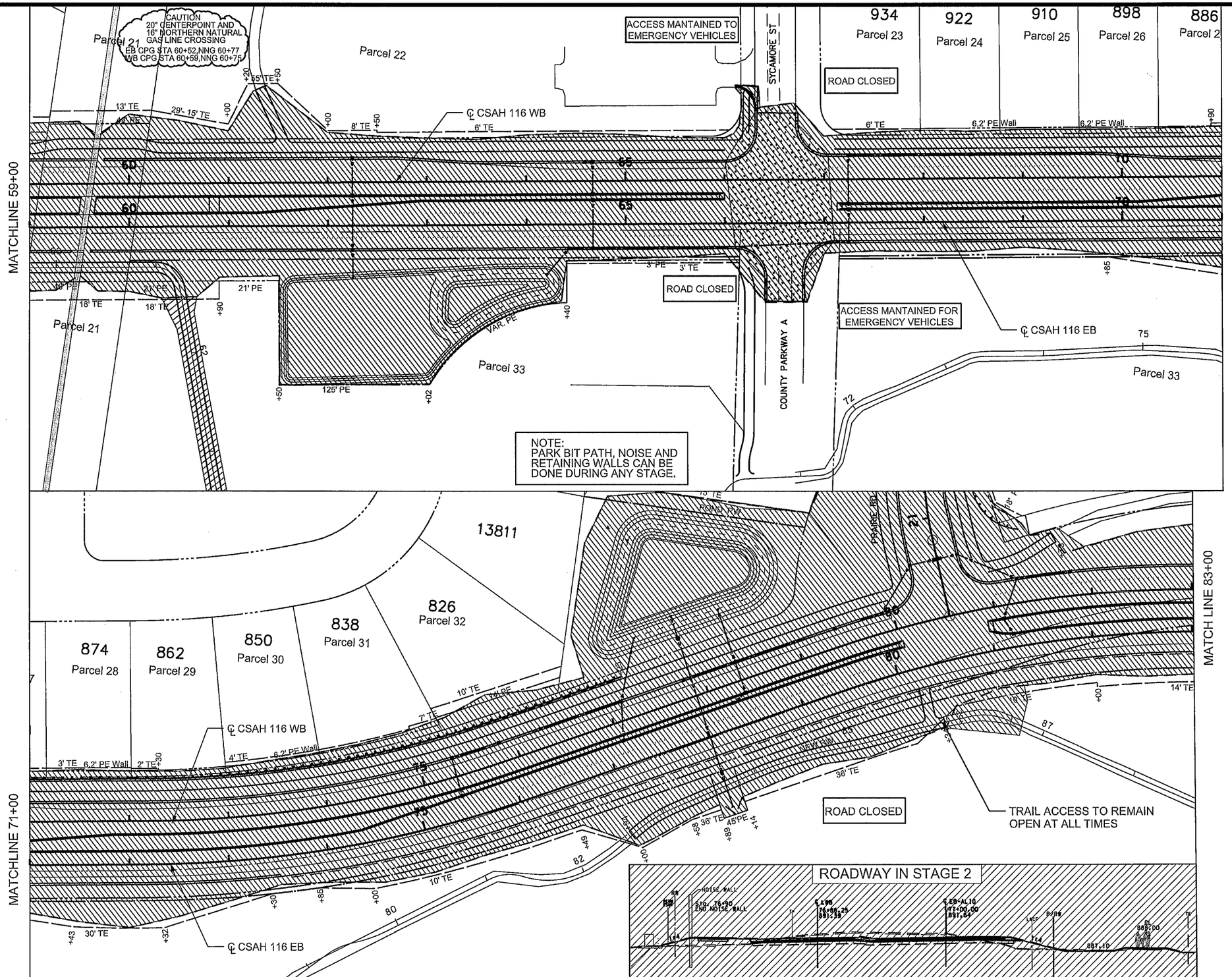
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 122 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- EMERGENCY VEHICLE ACCESS
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD: FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC BETWEEN CRANE ST AND GOLDENROD RD. (DETOUR 1 IN PLACE)

INTERSECTION OF SYCAMORE ST. AND CNTY PKWY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.

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NOTE:
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N

SCALE 0 100 IN FEET



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NAME: P:\02-716-15\Plan\0271615_STG2-P2.dgn 06/01/2016 2:32:30 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 6/1/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

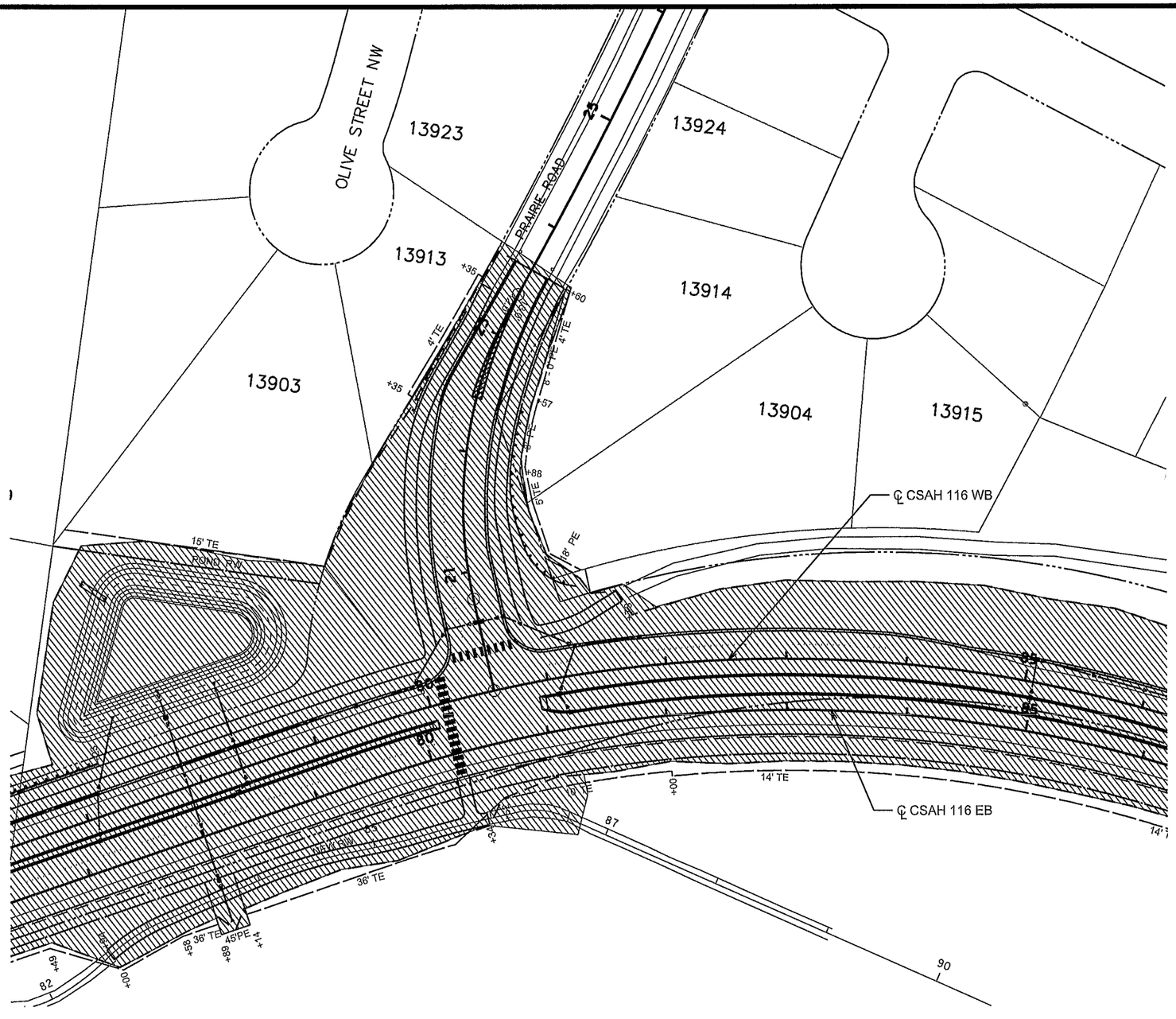
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 123 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD: FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC BETWEEN CRANE ST AND GOLDENROD RD. (DETOUR 1 IN PLACE)

INTERSECTION OF SYCAMORE ST. AND CNTY PKWY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
CSAH 116 FROM CRANE ST TO PRAIRIE RD (INCLUDING PRAIRIE RD) TO BE COMPLETED BY OCT. 15TH 2016. THE REMAINING PORTION OF STAGE 2 TO BE COMPLETED BY NOV. 19TH 2016. SEE S-30 IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.

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SCALE IN FEET



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NAME: P:\02-716-15\Plan\0271615_STG2-P3.dgn 06/01/2016 2:32:32 PM

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PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 6/1/16 LICENSE NO. 52698

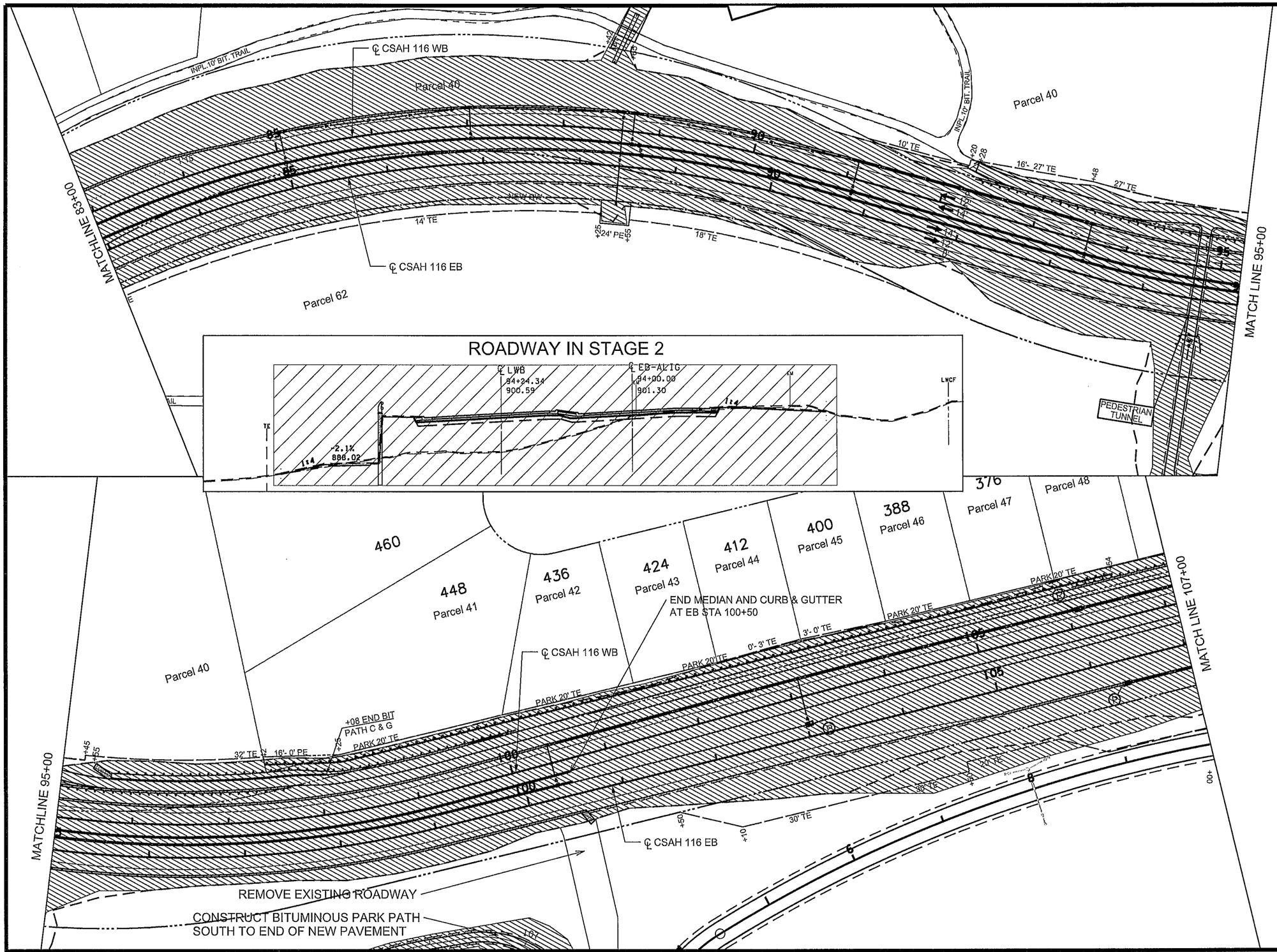
DRAWN BY ZB DATE #$DATE$
DESIGN BY MN DATE #$DATE$
CHECKED BY GP DATE #$DATEAS

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 124 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD: FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

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INTERSECTION OF SYCAMORE ST. AND CNTY PKWY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.

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NOTE:
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SCALE 0 100 IN FEET



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NAME: P:\02-716-15\Plan\0271615_STG2-P4.dgn 06/01/2016 2:32:33 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 6/1/16 LICENSE NO. 52598

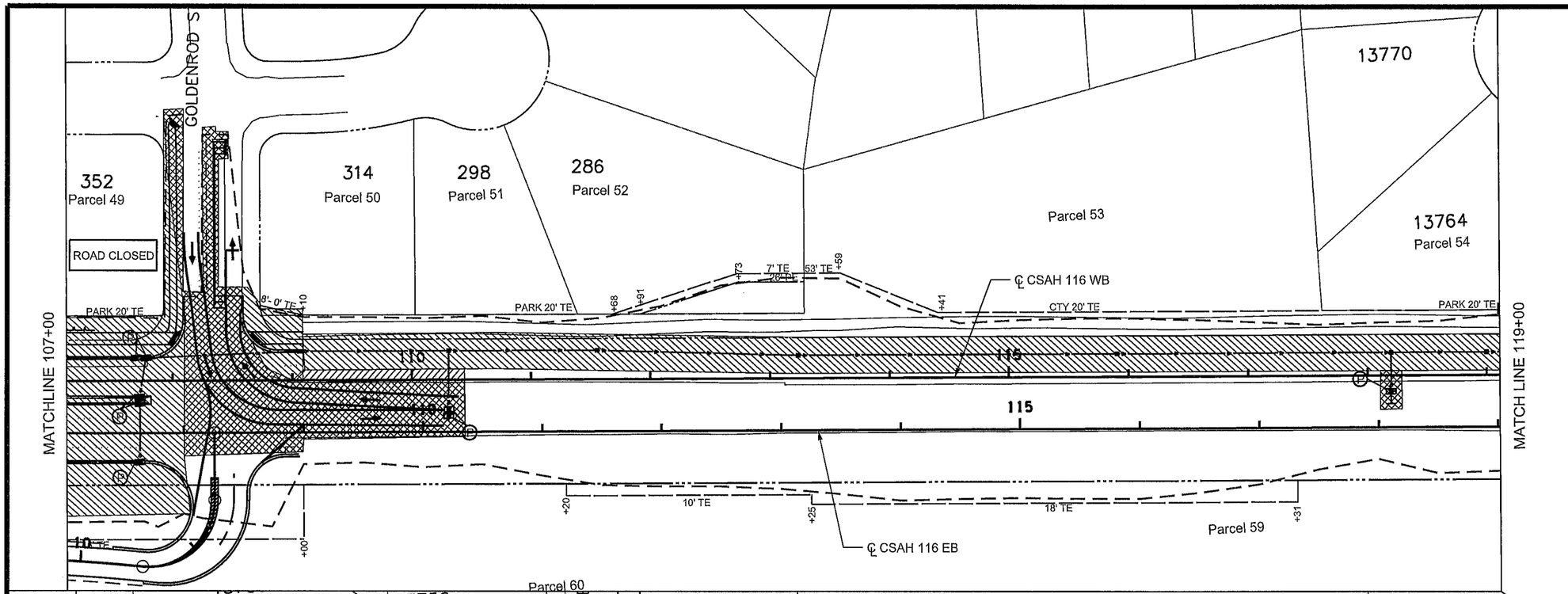
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 125 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- TEMPORARY BITUMINOUS
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- PLATE & COVER

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD: FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC BETWEEN CRANE ST AND GOLDENROD RD. (DETOUR 1 IN PLACE)

INTERSECTION OF SYCAMORE ST. AND CNTY PKWY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
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5 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG2-P5.dgn 06/01/2016 2:32:35 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 6/7/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

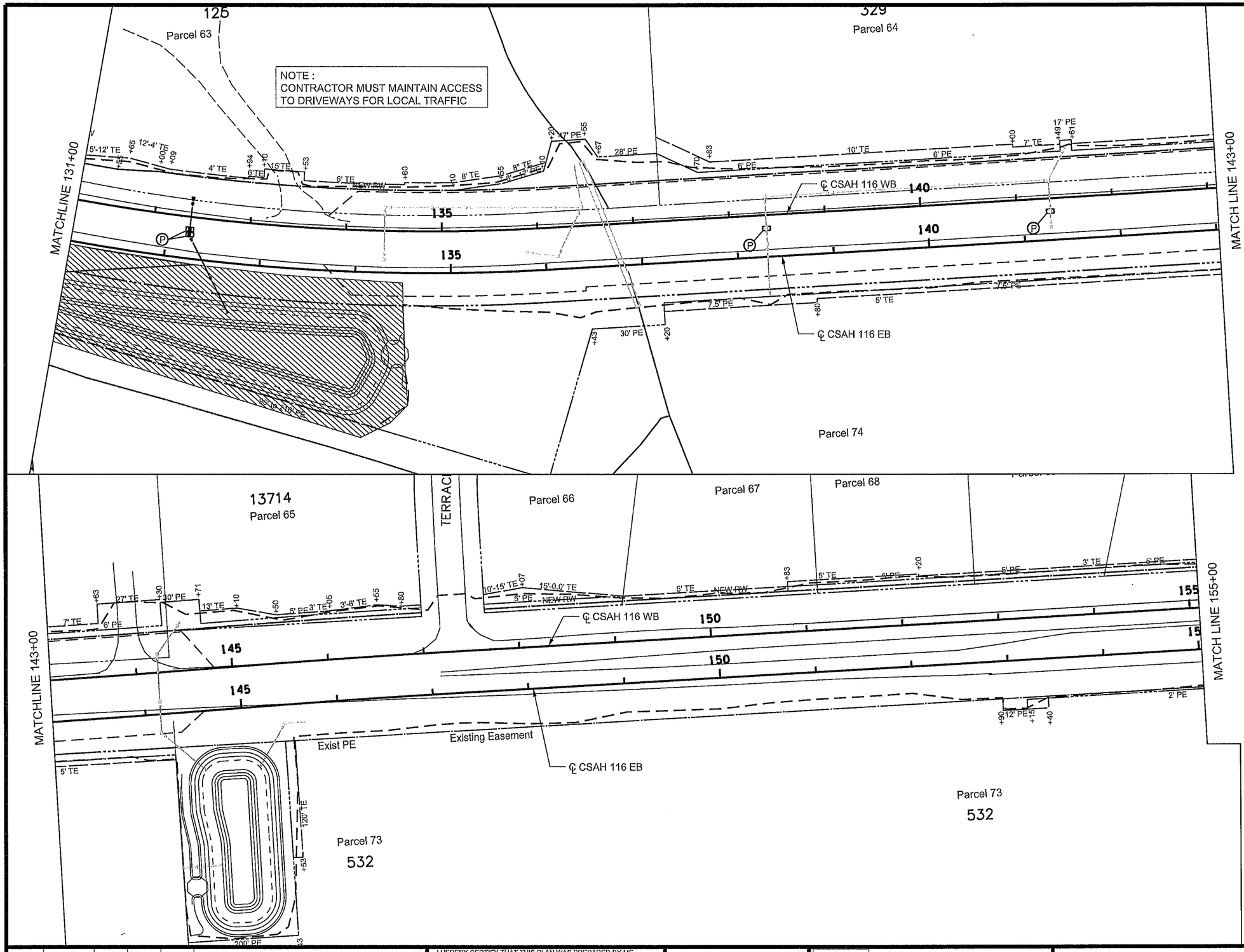
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 126 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- TEMPORARY WIDENING
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD; FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC BETWEEN CRANE ST AND GOLDENROD RD. (DETOUR 1 IN PLACE)

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NOTE:
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SCALE 0 100 IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG2-P6.dgn 06/01/2016 2:32:37 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 6/1/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 127 of 482 Sheets

548
Parcel 70

701
Parcel 71

NOTE:
CONSTRUCTION ON THIS PAGE TO TAKE PLACE DURING A DIFFERENT STAGE.

138TH AVENUE NE

CONST LIMITS
NEW RW
EXIST RW
EXIST EM
℄ CSAH 116 WB

3' TE
4' TE
NEW RW
5' TE
NEW RW
9' PE
5'-13' TE
13' -6' TE
6' TE
11' TE
9' PE
11' TE
9' PE

160
165
160
165

MATCHLINE 155+00

MATCH LINE 167+00

EXIST EM
℄ CSAH 116 EB

6' PE
JEFFERSON ST. N.W.

Parcel 72
13643

100' - 150' PE
Parcel 77

845 #101

℄ CSAH 116 WB
EXIST EM
NEW RW
NEW RW

170
175
170
175

MATCHLINE 167+00

EXIST EM
℄ CSAH 116 EB

VAN BUREN ST.

13632

13633

919
925
912

STAGE 2 CONSTRUCTION NOTES:

CSAH 116 BETWEEN CRANE ST AND GOLDENROD RD: FULL RECONSTRUCTION, BITUMINOUS BASE & BINDER LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS)

PRAIRIE RD: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.

STAGE 2 TRAFFIC NOTES:

CSAH 116 CLOSED TO THRU TRAFFIC BETWEEN CRANE ST AND GOLDENROD RD. (DETOUR 1 IN PLACE)

INTERSECTION OF SYCAMORE ST. AND CNTY PKWY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.

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NOTE:
CSAH 116 FROM CRANE ST TO PRAIRIE RD (INCLUDING PRAIRIE RD) TO BE COMPLETED BY OCT. 15TH 2016. THE REMAINING PORTION OF STAGE 2 TO BE COMPLETED BY NOV. 19TH 2016. SEE S-30 IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.

N

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SCALE IN FEET

7 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG2-P7.dgn 06/01/2016 2:32:38 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 6/1/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

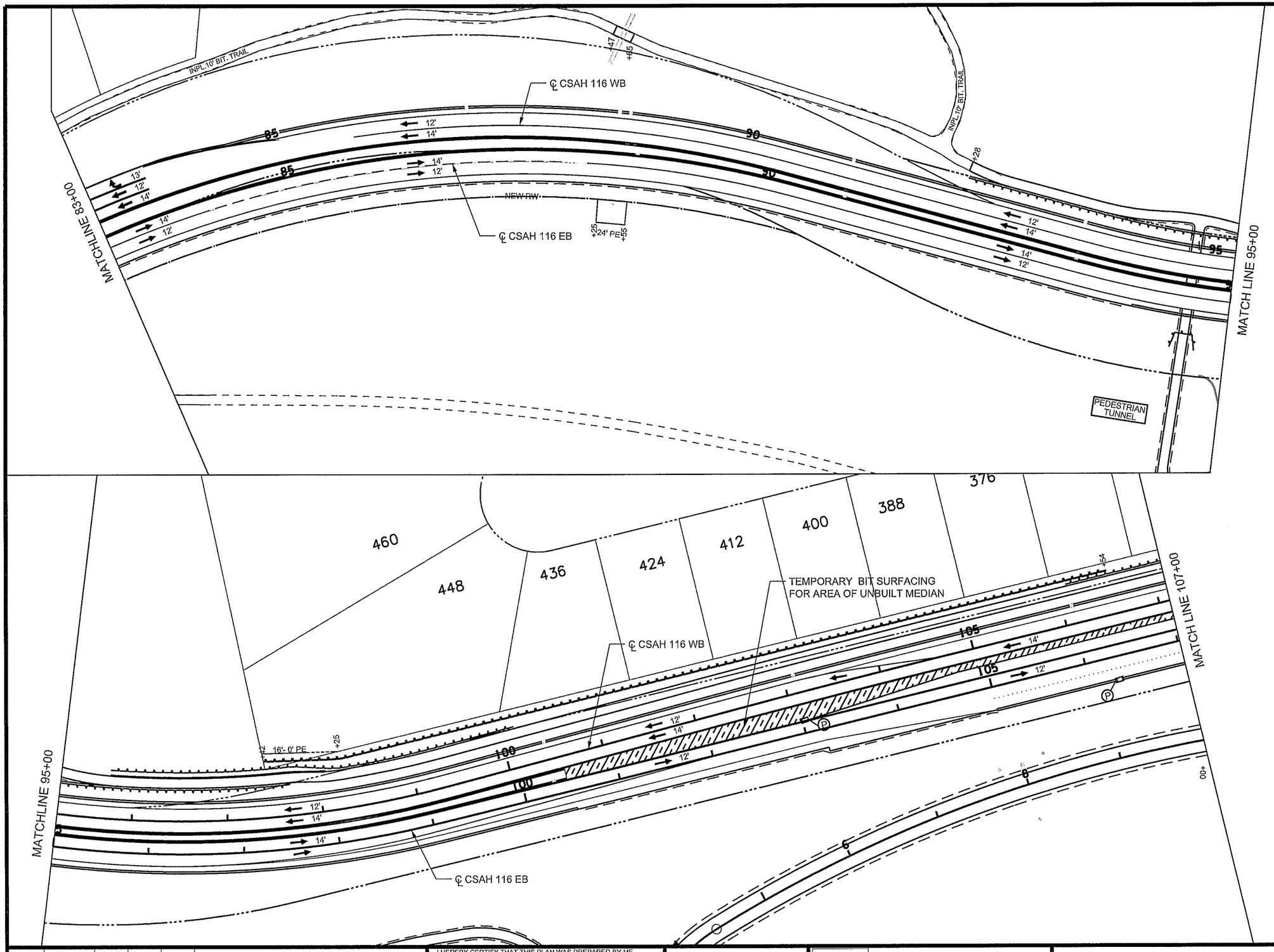
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 2

Sheet 128 of 482 Sheets




LEGEND

- INPLACE DRAINAGE STRUCTURE
- TRAFFIC FLOW DIRECTION
- PLATE & COVER

STAGE 3 CONSTRUCTION NOTES:

~ 130' OF CSAH 116 JUST EAST OF GOLDENROD TO BE REMOVED. NEW TEMPORARY BITUMINOUS TO BE INSTALLED TO MATCH NEW PAVEMENT WEST OF GOLDENROD TO THE EXISTING PAVEMENT EAST OF GOLDENROD.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

STAGE 3 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD, BUT TRAFFIC WILL BE TAPERED DOWN TO ONE LANE BY EB STA 107+00. WB TRAFFIC WILL BE 1 LANE EAST OF WB STA 106+00

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

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SCALE IN FEET



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| NAME: P:\02-716-15\Plan\0271615_STG3-P1.dgn | | | | | 06/01/2016 12:42:18 PM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
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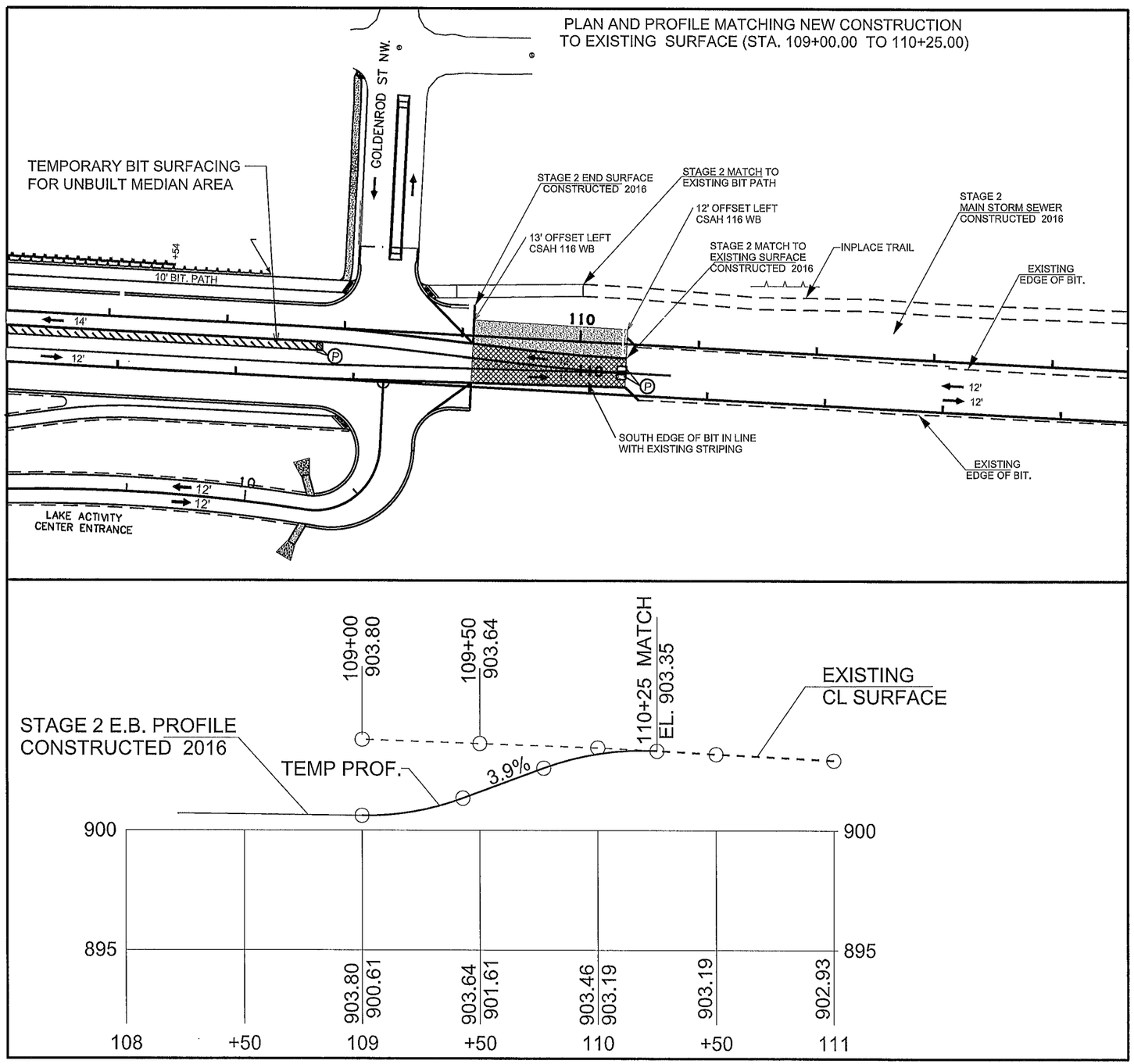
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2016 STAGING PLAN
STAGE 3

Sheet 129 of 482 Sheets




LEGEND

- REMOVE BIT. / TEMPORARY BIT SURFACE
- TRAFFIC FLOW DIRECTION
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 3 CONSTRUCTION NOTES:

~ 130' OF CSAH 116 JUST EAST OF GOLDENROD TO BE REMOVED. NEW TEMPORARY BITUMINOUS TO BE INSTALLED TO MATCH NEW PAVEMENT WEST OF GOLDENROD TO THE EXISTING PAVEMENT EAST OF GOLDENROD.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

STAGE 3 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD, BUT TRAFFIC WILL BE TAPERED DOWN TO ONE LANE BY EB STA 107+00. WB TRAFFIC WILL BE 1 LANE EAST OF WB STA 106+00

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

N

SCALE 0 100 IN FEET

2 OF 2

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG3-P2.dgn 06/01/2016 12:42:19 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

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DRAWN BY ZB DATE 04-12-16

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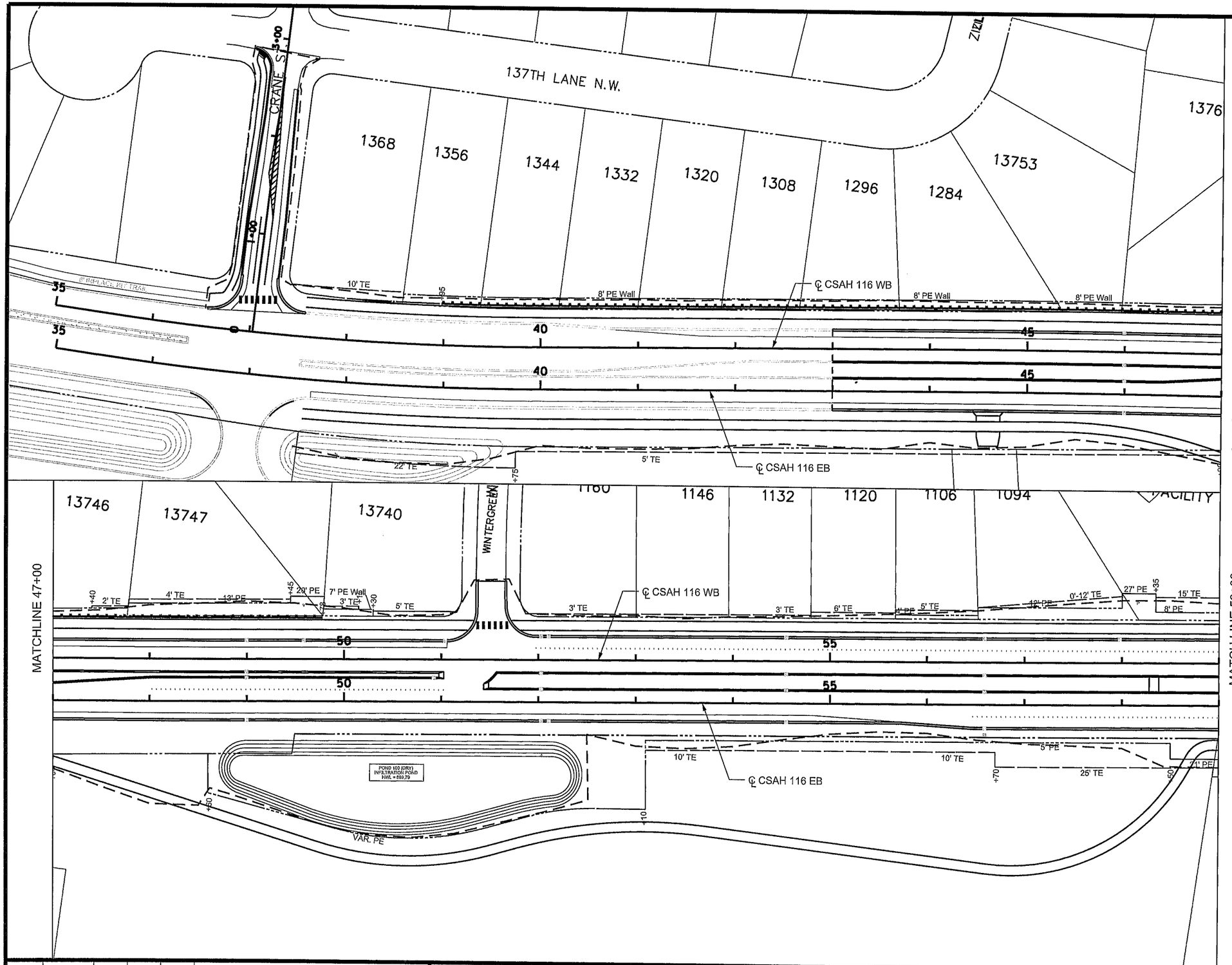
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TEMP MATCHING PLAN & PROF
2016 STAGING PLAN
STAGE 3

Sheet 130 of 482 Sheets




LEGEND

INPLACE DRAINAGE STRUCTURE

WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC BY 2016.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

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SCALE IN FEET

1 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_WS-P1.dgn 04/12/2016 2:00:27 PM

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PRINT NAME: ZACHARY BORGERDING

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DATE: 5/3/16 LICENSE NO. 52598

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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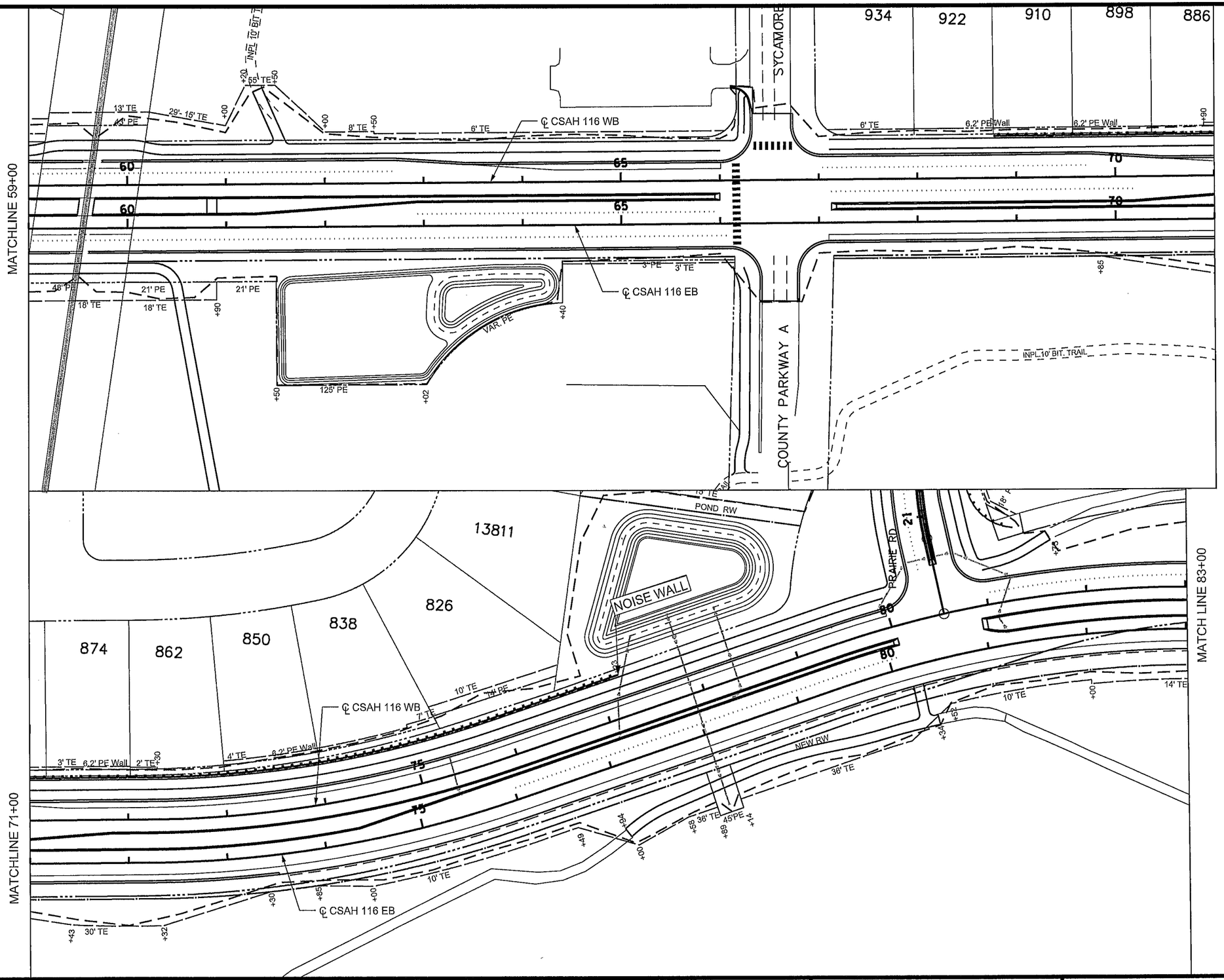
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WINTER SUSPENSION STAGE

Sheet 131 of 482 Sheets




LEGEND

INPLACE DRAINAGE STRUCTURE

WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC BY 2016.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_WS-P2.dgn 04/12/2016 2:00:29 PM

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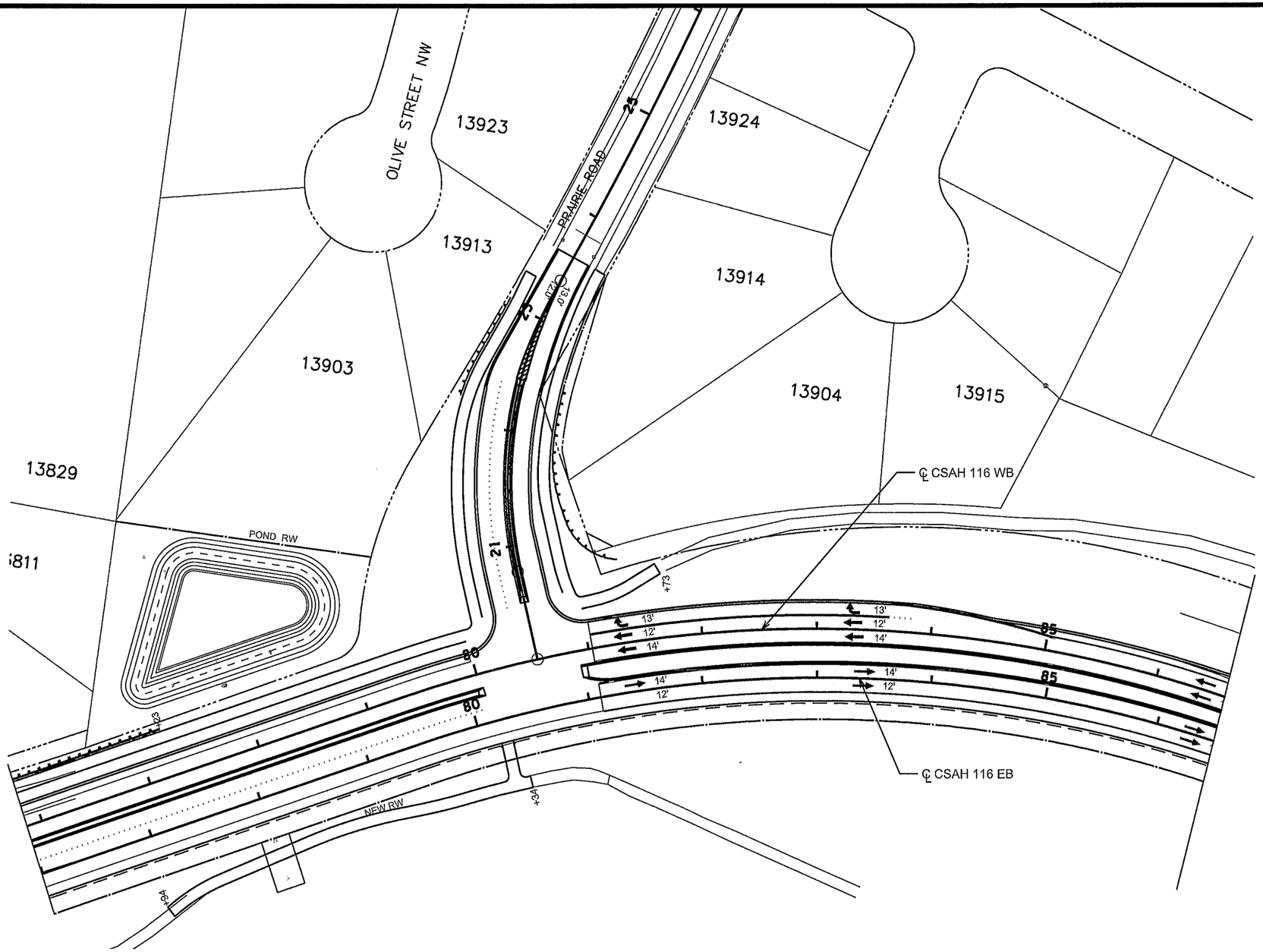
WINTER SUSPENSION STAGE

Sheet 132 of 482 Sheets




LEGEND

INPLACE DRAINAGE STRUCTURE

TRAFFIC FLOW DIRECTION

WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC BY 2016.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

N

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SCALE IN FEET

3 OF 7

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NAME: P:\02-716-15\Plan\0271615_WS-P3.dgn 04/12/2016 2:00:31 PM

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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

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DRAWN BY ZB DATE #$DATE$

DESIGN BY MN DATE #$DATE$

CHECKED BY GP DATE #$DATEAS

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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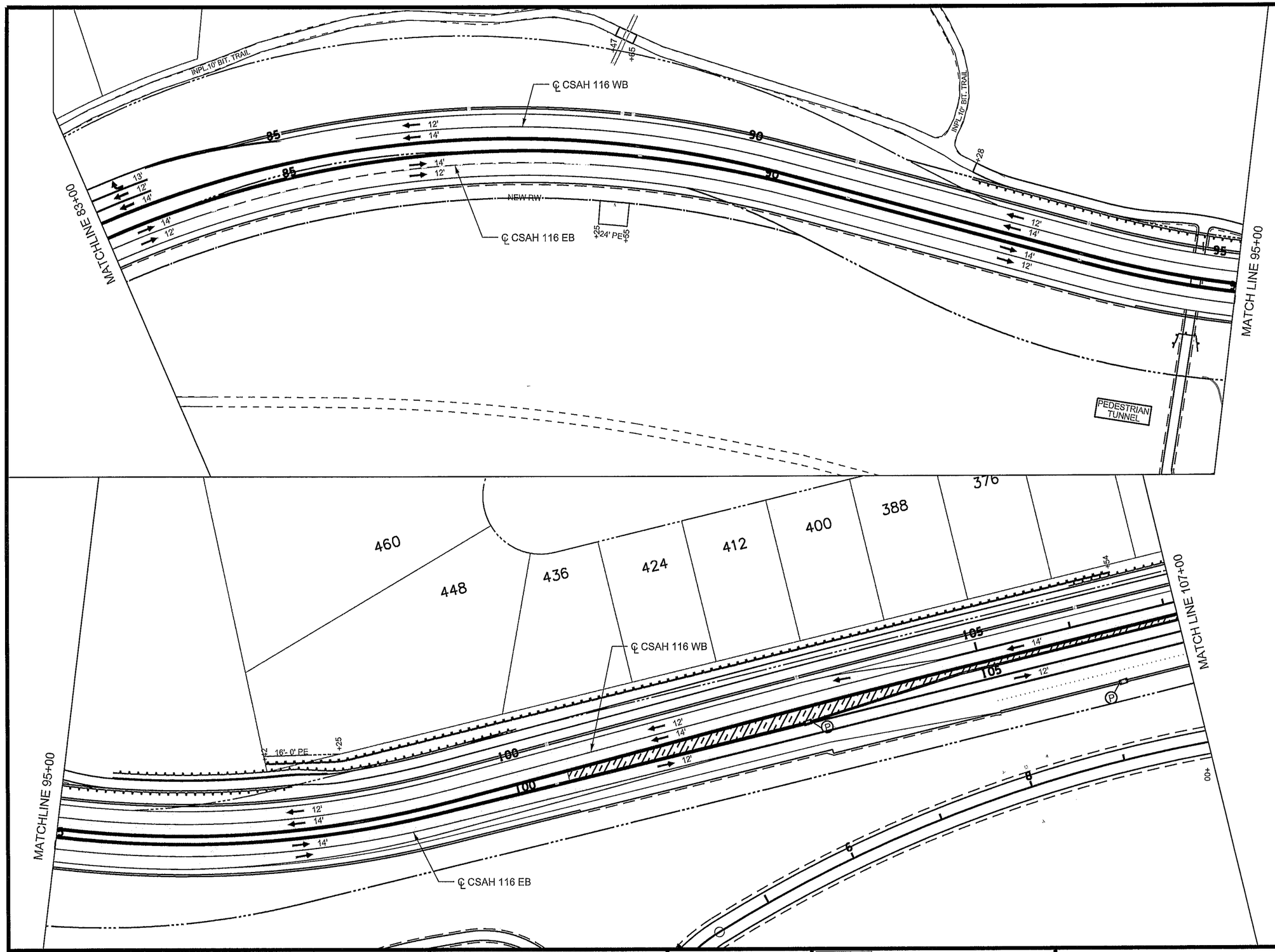
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WINTER SUSPENSION STAGE

Sheet 133 of 482 Sheets




LEGEND

INPLACE DRAINAGE STRUCTURE

TRAFFIC FLOW DIRECTION

WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC BY 2016.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

N

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SCALE IN FEET

4 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

NAME: P:\02-716-15\Plan\0271615_WS-P4.dgn 04/12/2016 2:00:33 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

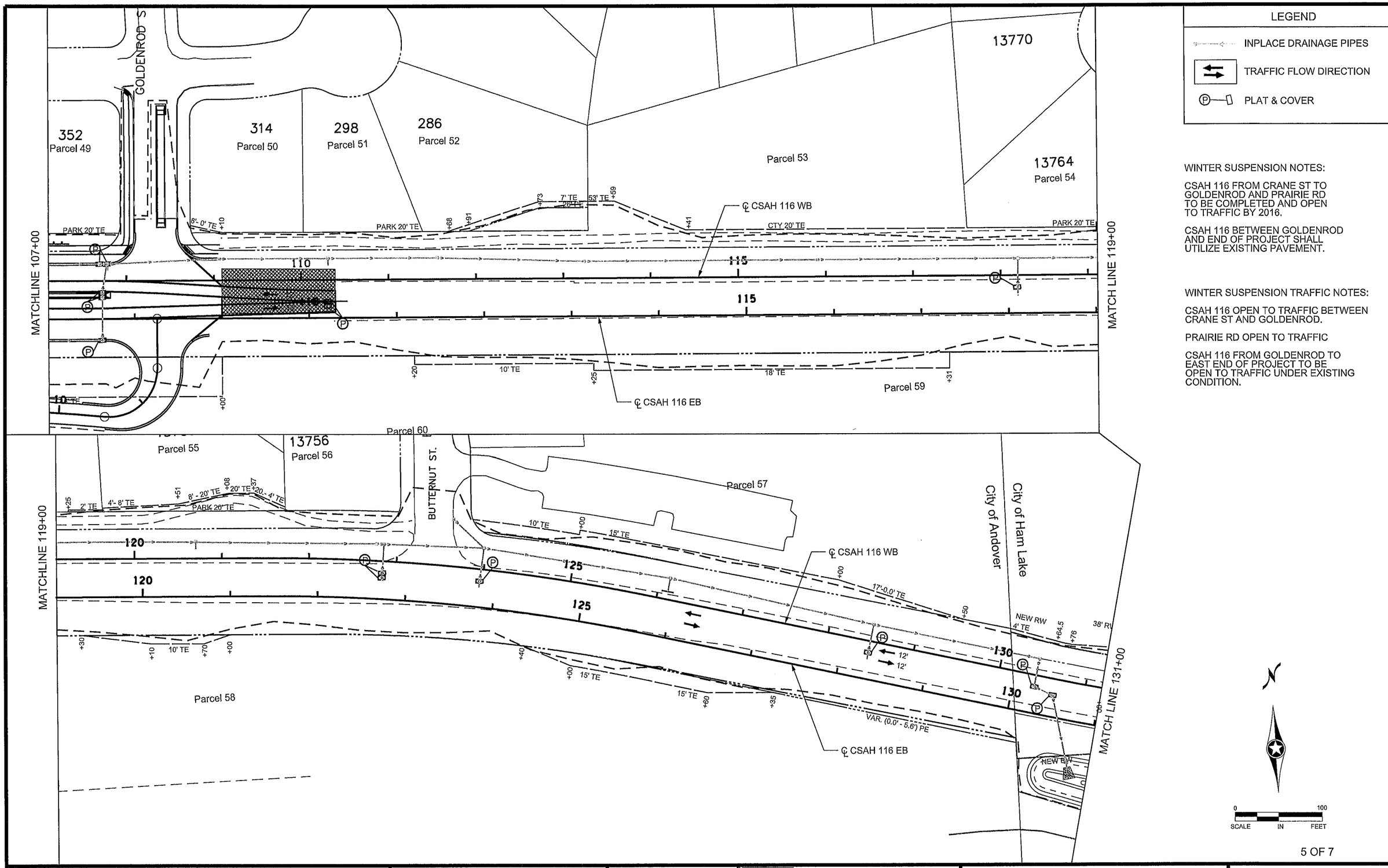
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WINTER SUSPENSION STAGE

Sheet 134 of 482 Sheets




WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC BY 2016.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

5 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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NAME: P:\02-716-15\Plan\0271615_WS-P5.dgn 04/12/2016 2:00:34 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

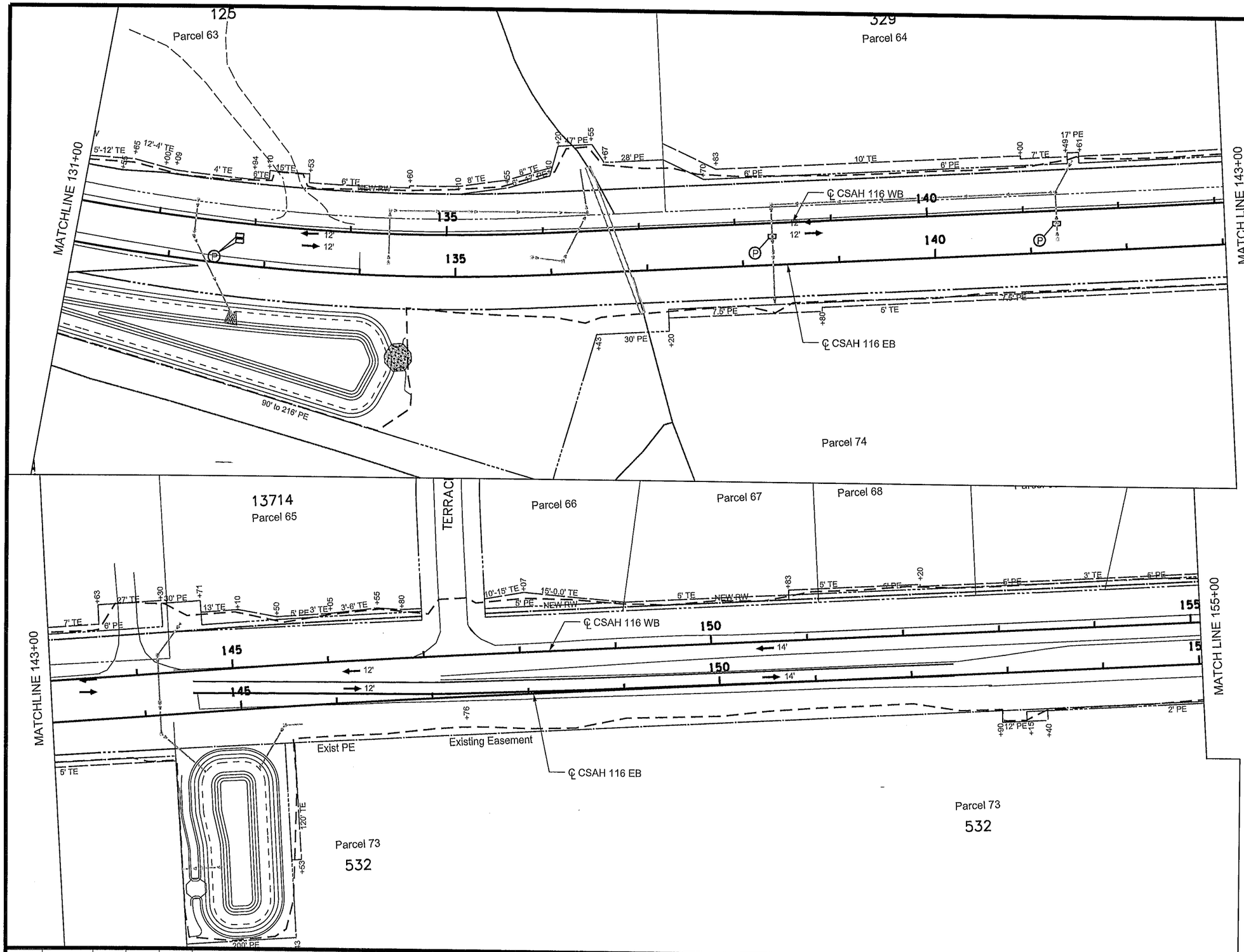
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WINTER SUSPENSION STAGE

Sheet 135 of 482 Sheets




LEGEND

- INPLACE DRAINAGE PIPES
- TRAFFIC FLOW DIRECTION
- PLAT & COVER

WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC BY 2016.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC UNDER EXISTING CONDITION.

N

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SCALE IN FEET

6 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_WS-P6.dgn 04/12/2016 2:00:36 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

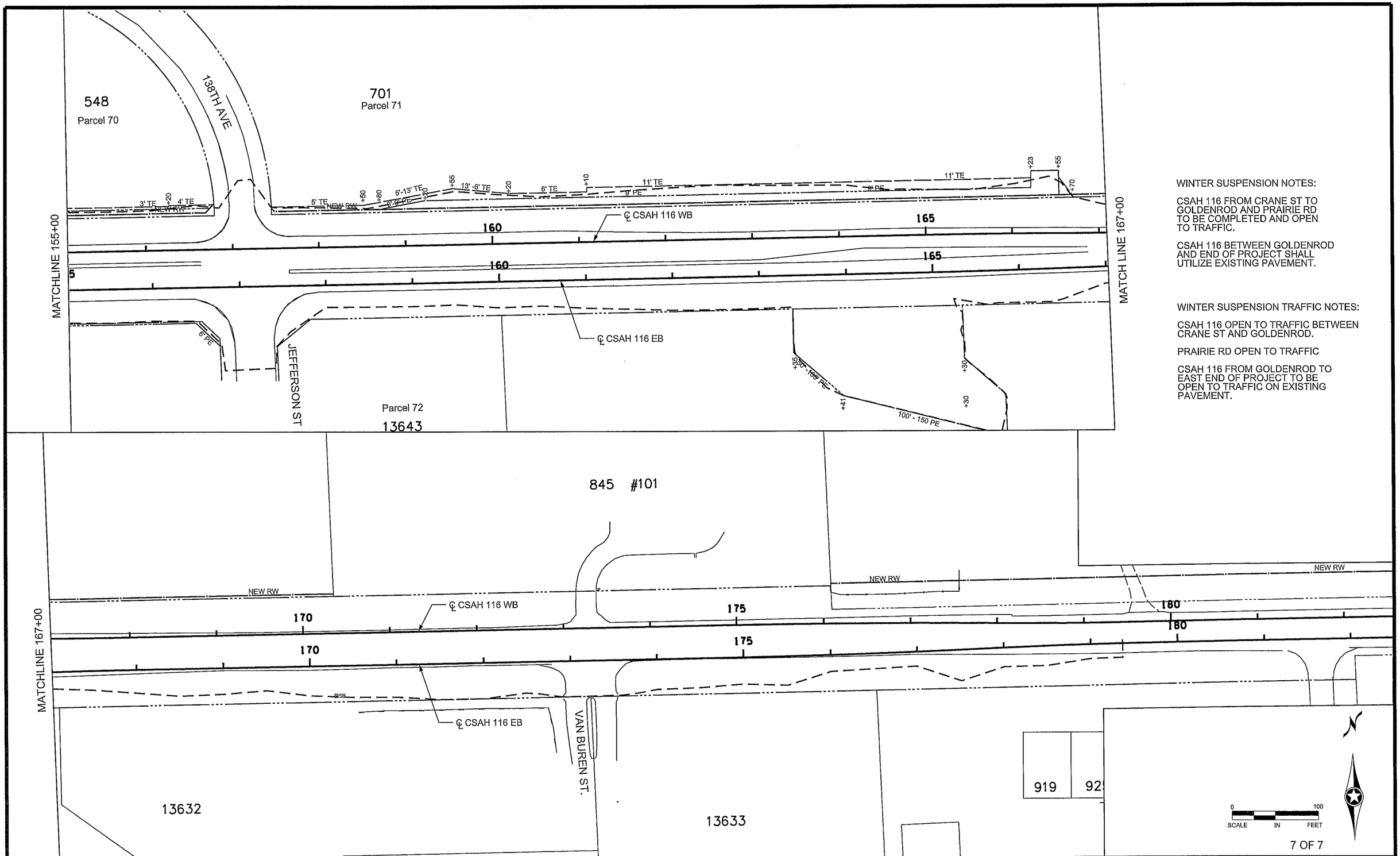
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WINTER SUSPENSION STAGE

Sheet 136 of 482 Sheets




WINTER SUSPENSION NOTES:

CSAH 116 FROM CRANE ST TO GOLDENROD AND PRAIRIE RD TO BE COMPLETED AND OPEN TO TRAFFIC.

CSAH 116 BETWEEN GOLDENROD AND END OF PROJECT SHALL UTILIZE EXISTING PAVEMENT.

WINTER SUSPENSION TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC BETWEEN CRANE ST AND GOLDENROD.

PRAIRIE RD OPEN TO TRAFFIC

CSAH 116 FROM GOLDENROD TO EAST END OF PROJECT TO BE OPEN TO TRAFFIC ON EXISTING PAVEMENT.

7 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_WS-P7.dgn 04/12/2016 2:00:38 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

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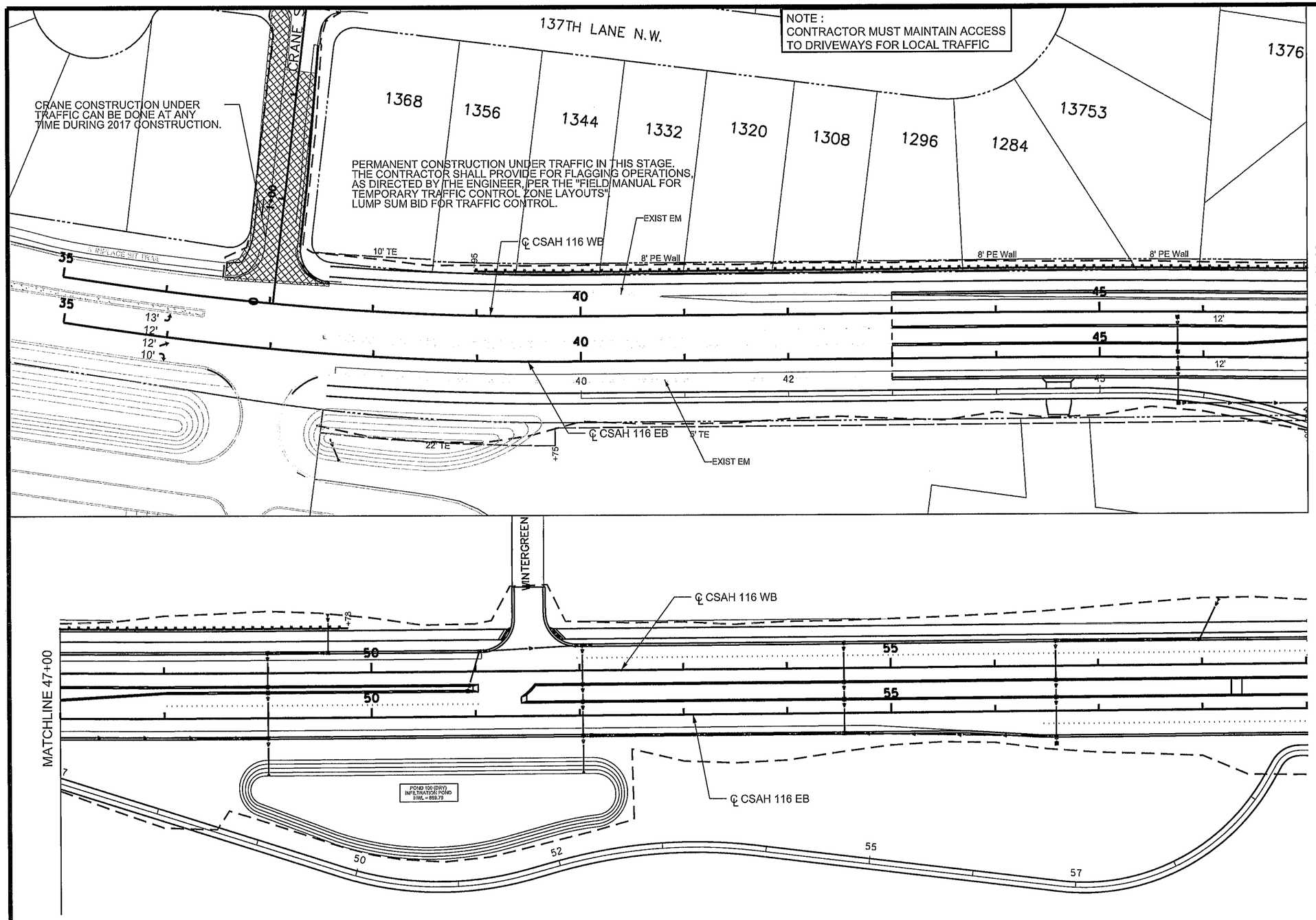
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WINTER SUSPENSION STAGE

Sheet 137 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE

STAGE 4 (2017)
CONSTRUCTION NOTES:

CRANE ST: MILL & OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BIT SURFACING, & CONCRETE SIDEWALK.

CSAH 116, TEMPORARY BITUMINOUS WIDENING, STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.

MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING.
STA 147+00 TO STA 151+60 &
STA 152+60 TO STA 166+80.

INSTALL CULVERT AT STA 166+25.

STAGE 4 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

SCALE 0 100 IN FEET

1 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

NAME: P:\02-716-15\Plan\0271615_STG4-P1.dgn 05/27/2016 7:58:36 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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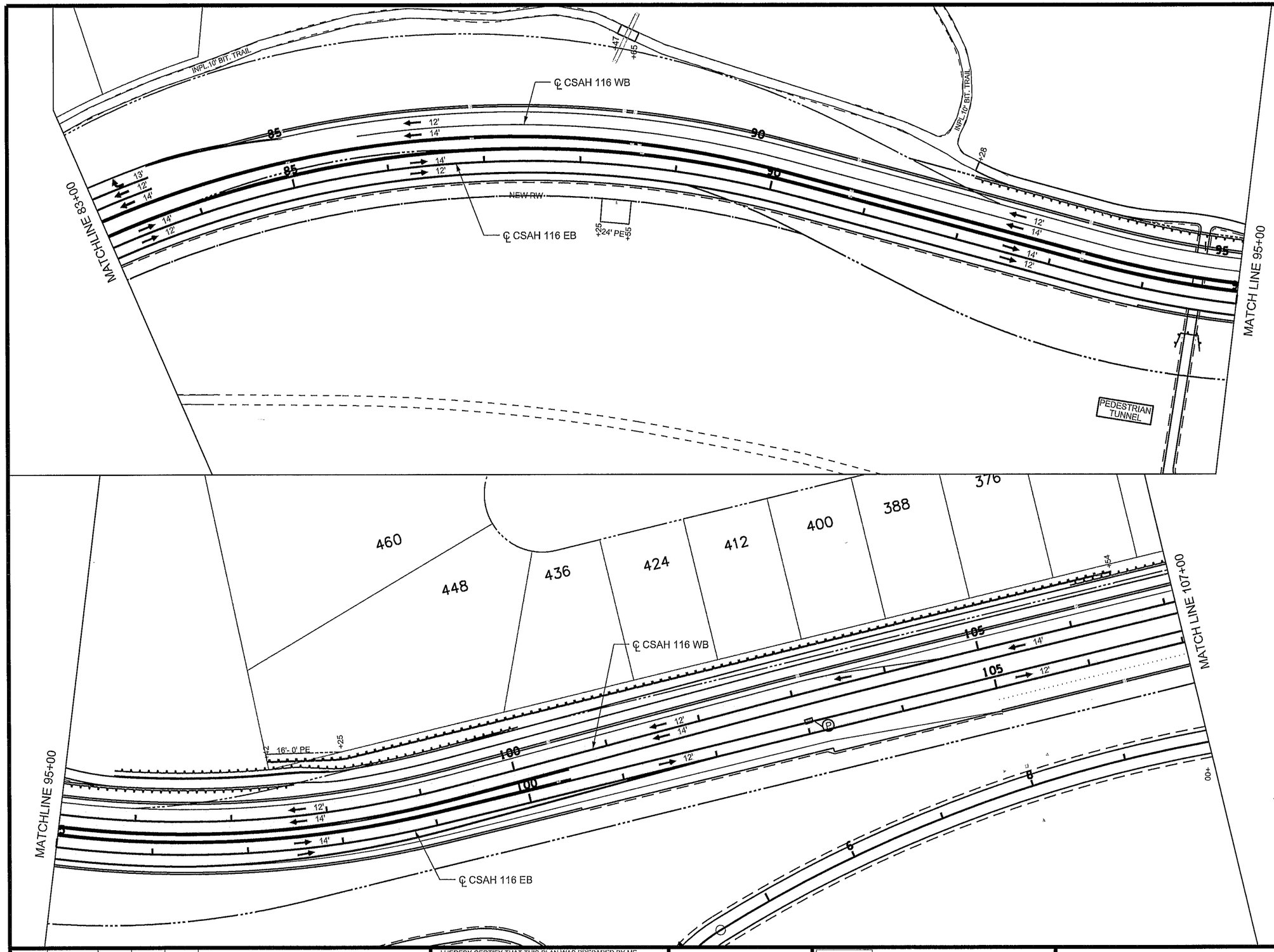
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 4

Sheet 138 of 482 Sheets




LEGEND

- INPLACE DRAINAGE STRUCTURE
- TRAFFIC FLOW DIRECTION
- PLATE & COVER

STAGE 4 (2017)
CONSTRUCTION NOTES:

CRANE ST: MILL & OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BIT SURFACING, & CONCRETE SIDEWALK.

CSAH 116, TEMPORARY BITUMINOUS WIDENING. STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.

MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING.
STA 147+00 TO STA 151+60 &
STA 152+60 TO STA 166+80.

INSTALL CULVERT AT STA 166+25.

STAGE 4 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

0 100
SCALE IN FEET

2 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_STG4-P2.dgn 05/27/2016 7:58:38 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/27/16 LICENSE NO. 52598

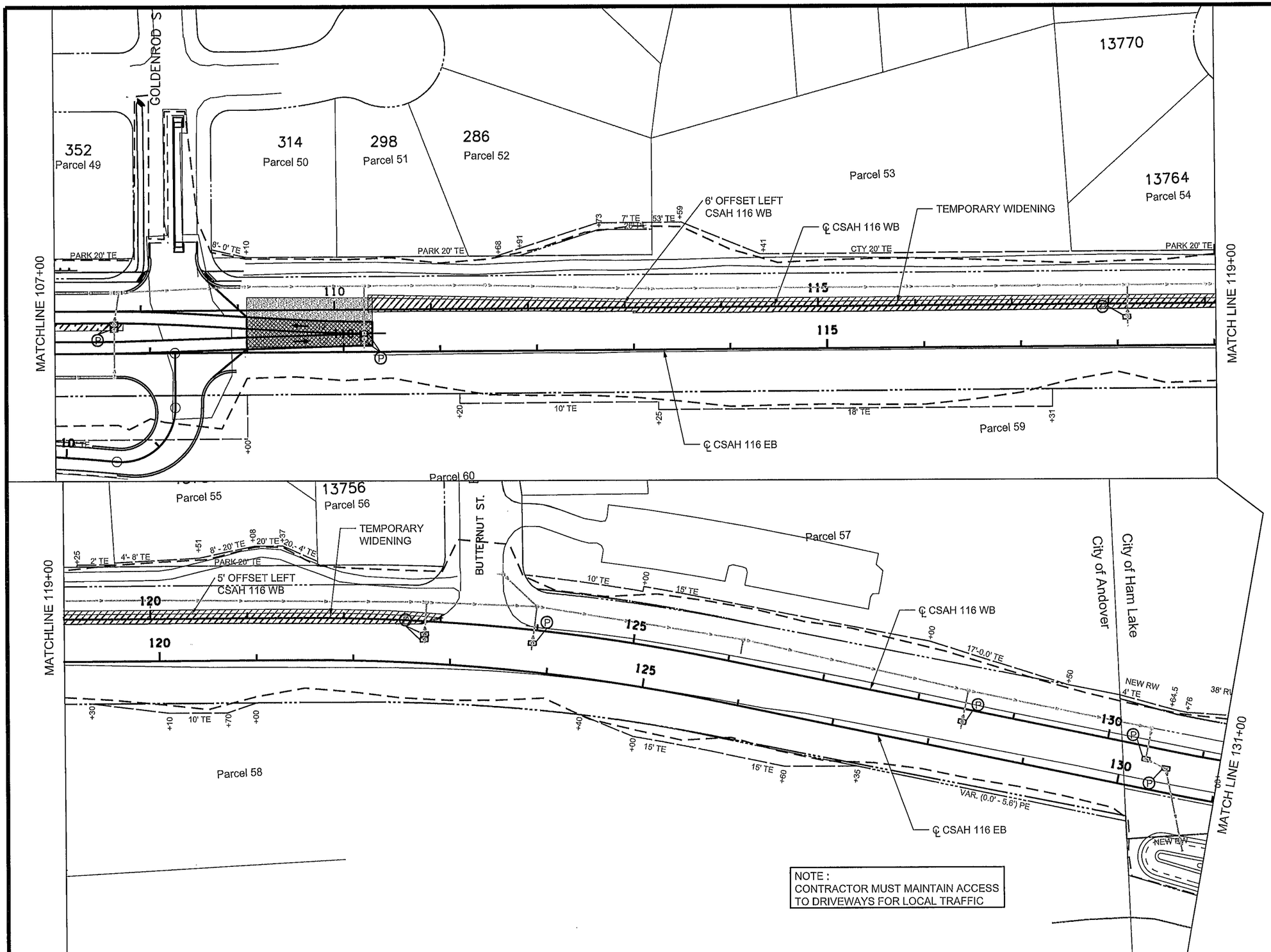
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 4

Sheet 139 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- TEMPORARY WIDENING
- TRANSITION PAVEMENT
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 4 (2017)
CONSTRUCTION NOTES:

CRANE ST: MILL & OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BIT SURFACING, & CONCRETE SIDEWALK.

CSAH 116, TEMPORARY BITUMINOUS WIDENING, STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.

MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING.
STA 147+00 TO STA 151+60 &
STA 152+60 TO STA 166+80.

INSTALL CULVERT AT STA 166+25.

STAGE 4 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE :
CONTRACTOR MUST MAINTAIN ACCESS TO DRIVEWAYS FOR LOCAL TRAFFIC

N

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SCALE IN FEET

3 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG4-P3.dgn 05/27/2016 7:58:40 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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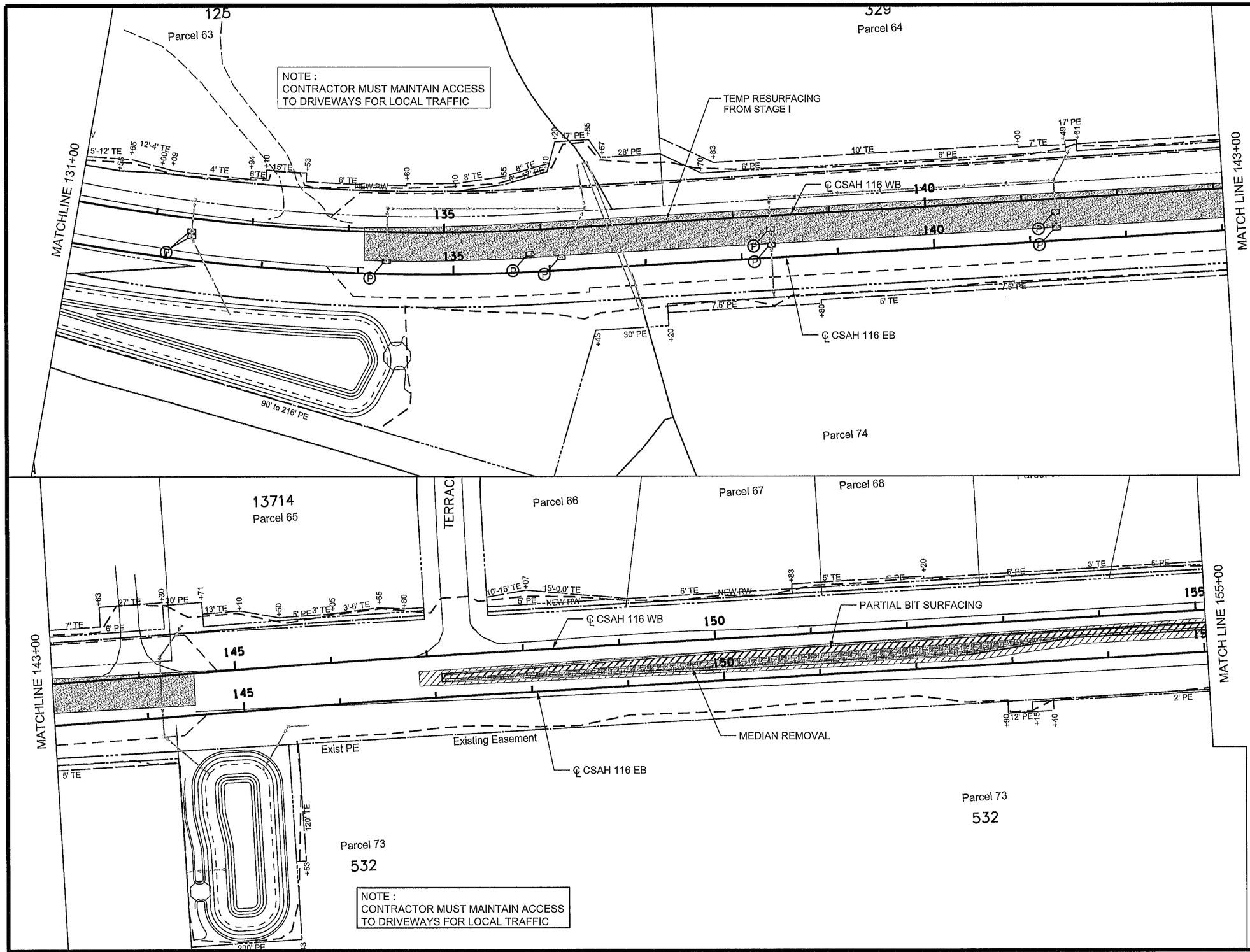
ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 4

Sheet 140 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- MEDIAN REMOVAL
- TEMPORARY WIDENING / PARTIAL BIT. SURFACING
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 4 (2017)
CONSTRUCTION NOTES:

CRANE ST: MILL & OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BIT SURFACING, & CONCRETE SIDEWALK.

CSAH 116, TEMPORARY BITUMINOUS WIDENING. STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.

MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING.
STA 147+00 TO STA 151+60 &
STA 152+60 TO STA 166+80.

INSTALL CULVERT AT STA 166+25.

STAGE 4 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

0 100
SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_STG4-P4.dgn 05/27/2016 7:58:42 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/27/16 LICENSE NO. 52598

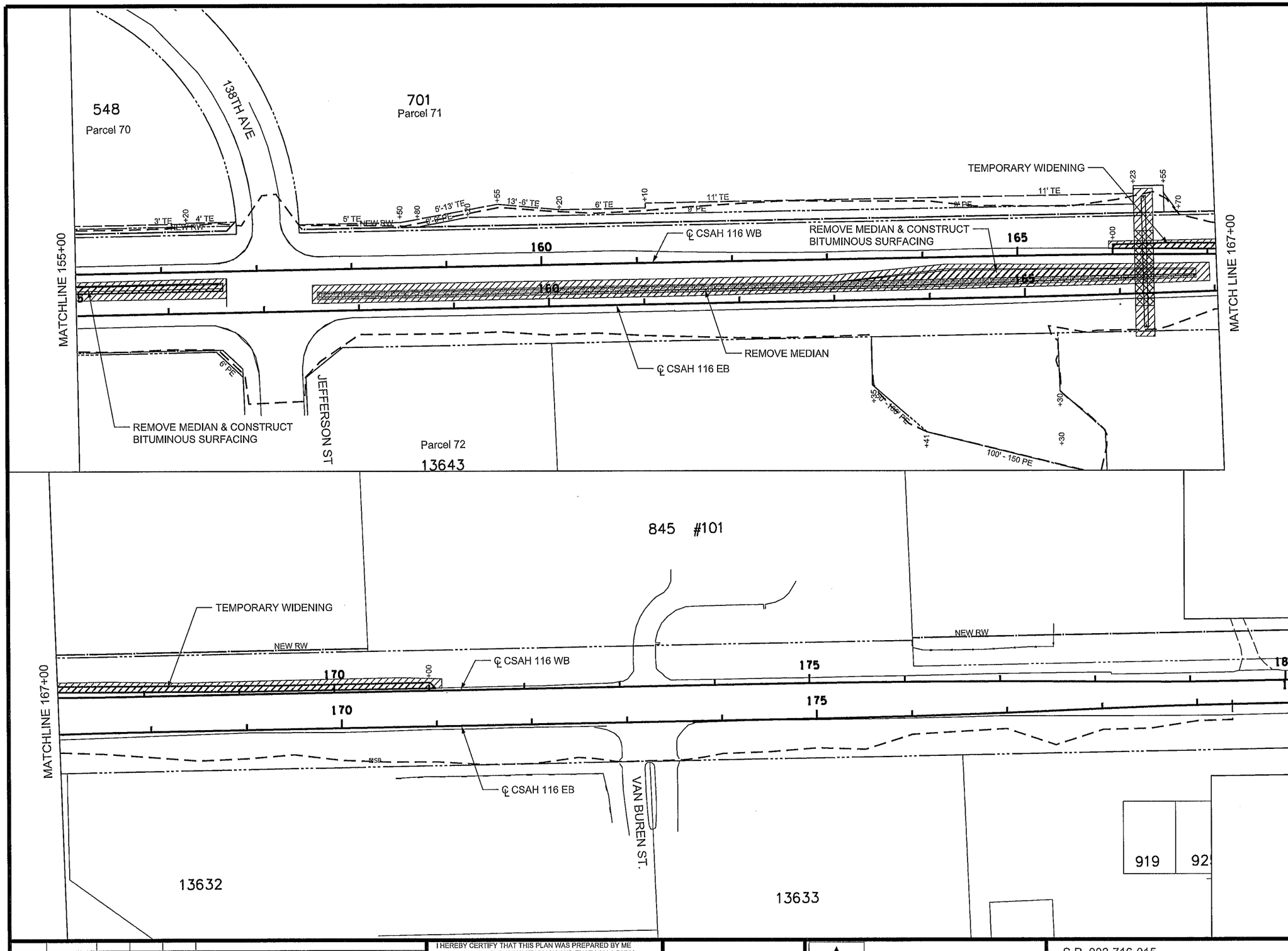
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 4

Sheet 141 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- MEDIAN REMOVAL
- TEMPORARY WIDENING / PARTIAL BIT. SURFACING
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 4 (2017)
CONSTRUCTION NOTES:

CRANE ST: MILL & OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BIT SURFACING, & CONCRETE SIDEWALK.

CSAH 116, TEMPORARY BITUMINOUS WIDENING. STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.

MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING.
STA 147+00 TO STA 151+60 &
STA 152+60 TO STA 166+80.

INSTALL CULVERT AT STA 166+25.

STAGE 4 TRAFFIC NOTES:

CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

5 OF 5

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG4-P5.dgn 05/27/2016 7:58:44 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/27/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

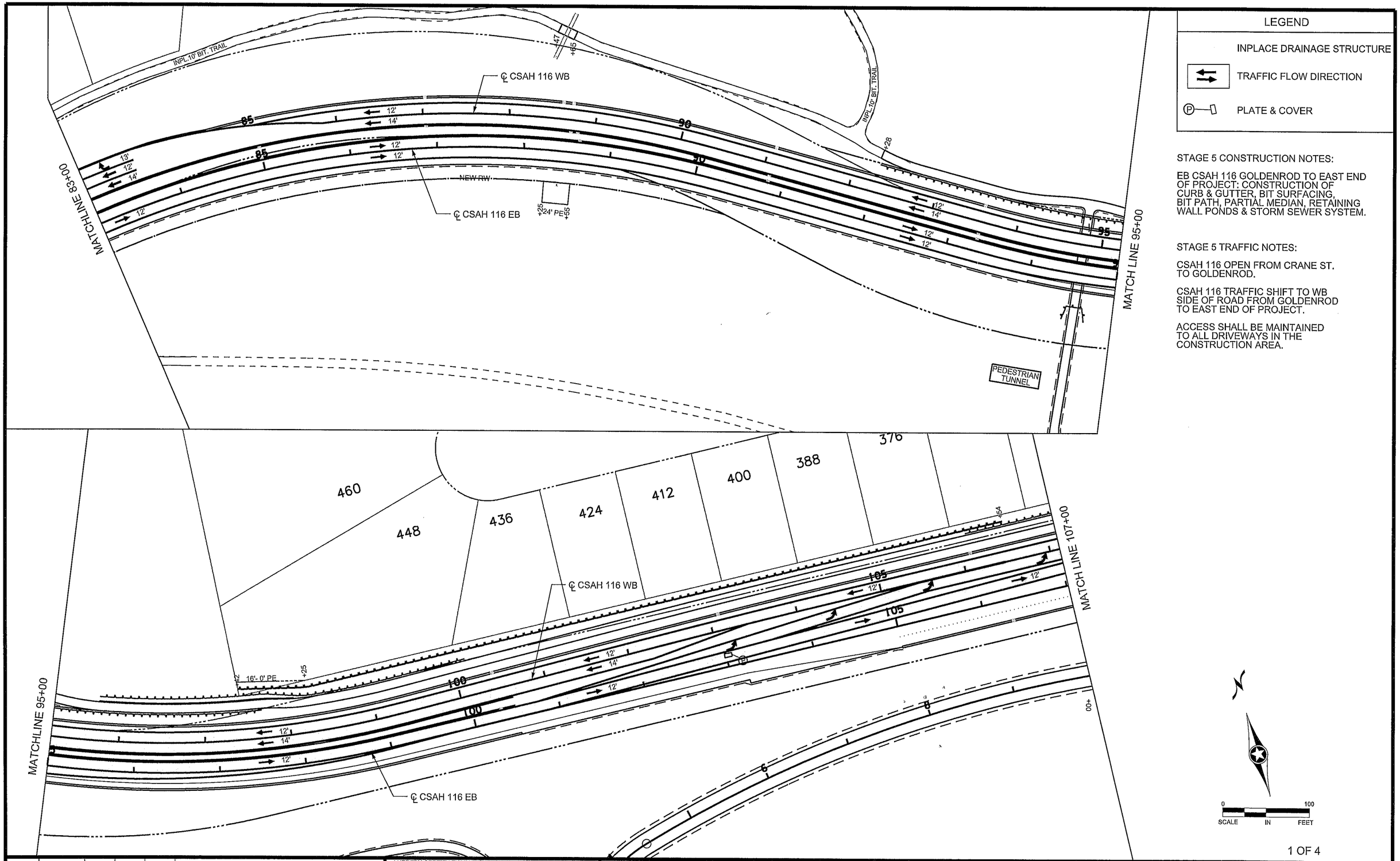
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 4

Sheet 142 of 482 Sheets




LEGEND

- INPLACE DRAINAGE STRUCTURE
- TRAFFIC FLOW DIRECTION
- PLATE & COVER

STAGE 5 CONSTRUCTION NOTES:

EB CSAH 116 GOLDENROD TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS & STORM SEWER SYSTEM.

STAGE 5 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC SHIFT TO WB SIDE OF ROAD FROM GOLDENROD TO EAST END OF PROJECT.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

0 100
SCALE IN FEET

1 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: P:\02-716-15\Plan\0271615_STG5-P1.dgn | | | | | 04/12/2016 2:00:51 PM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

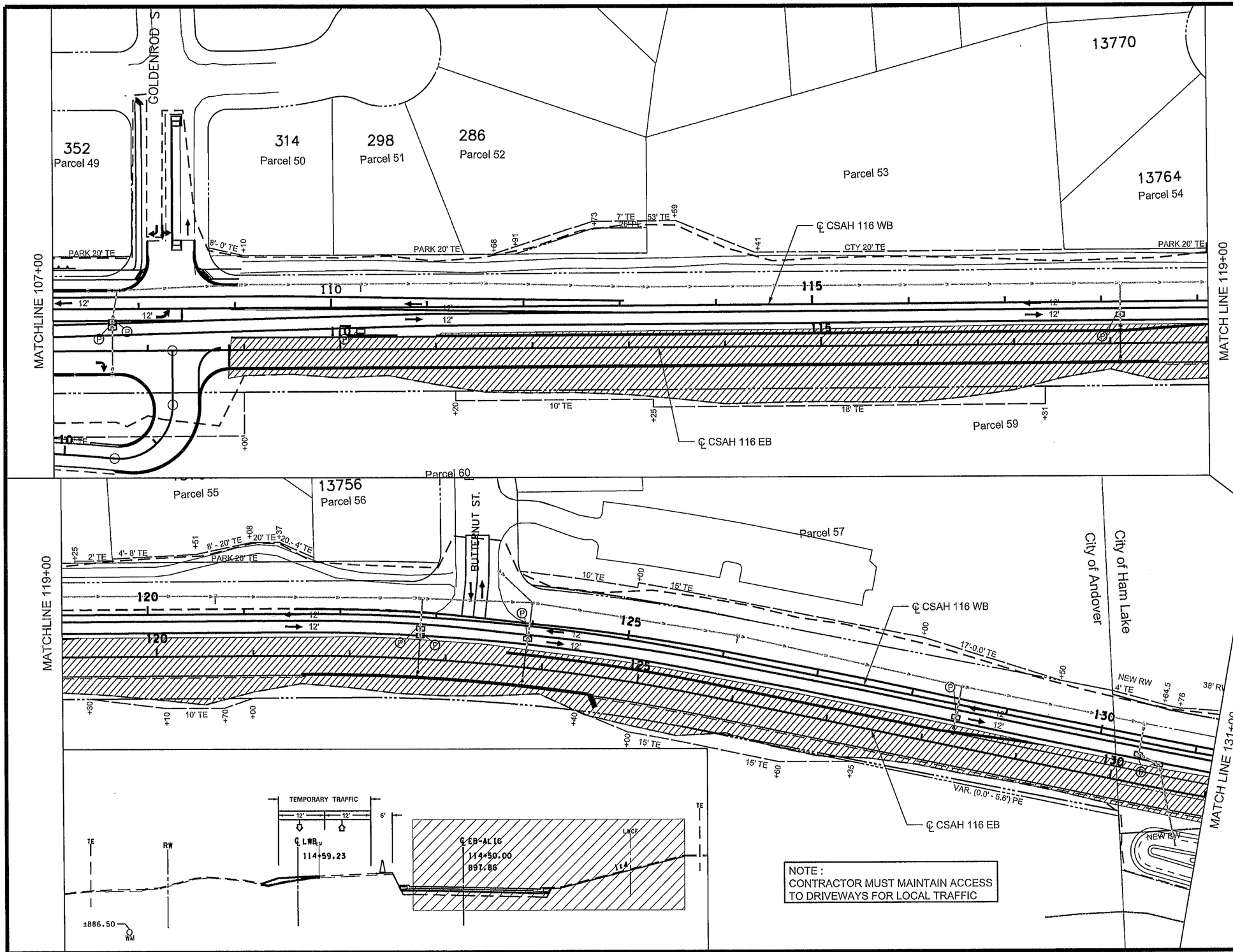
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 5

Sheet 143 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 5 CONSTRUCTION NOTES:

EB CSAH 116 GOLDENROD TO EAST END OF PROJECT; CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS & STORM SEWER SYSTEM.

STAGE 5 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC SHIFT TO WB SIDE OF ROAD FROM GOLDENROD TO EAST END OF PROJECT.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

N

0 100
SCALE IN FEET

2 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

NAME: P:\02-716-15\Plan\0271615_STG5-P2.dgn 04/12/2016 2:00:53 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

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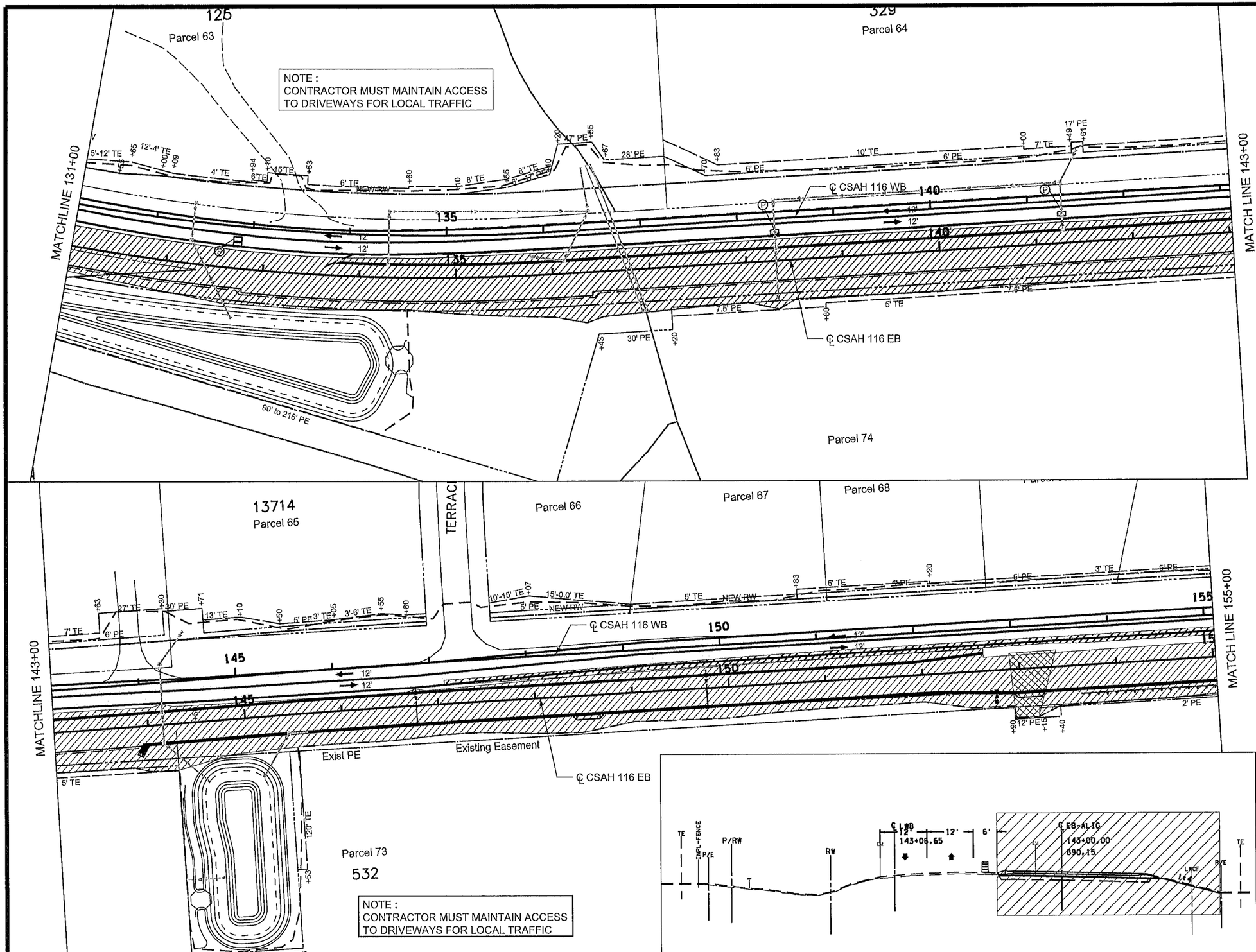
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 5

Sheet 144 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 5 CONSTRUCTION NOTES:

EB CSAH 116 GOLDENROD TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS & STORM SEWER SYSTEM.

STAGE 5 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC SHIFT TO WB SIDE OF ROAD FROM GOLDENROD TO EAST END OF PROJECT.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: P:\02-716-15\Plan\0271615_STG5-P3.dgn | | | | | 04/12/2016 2:00:55 PM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

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S.P. 198-020-036
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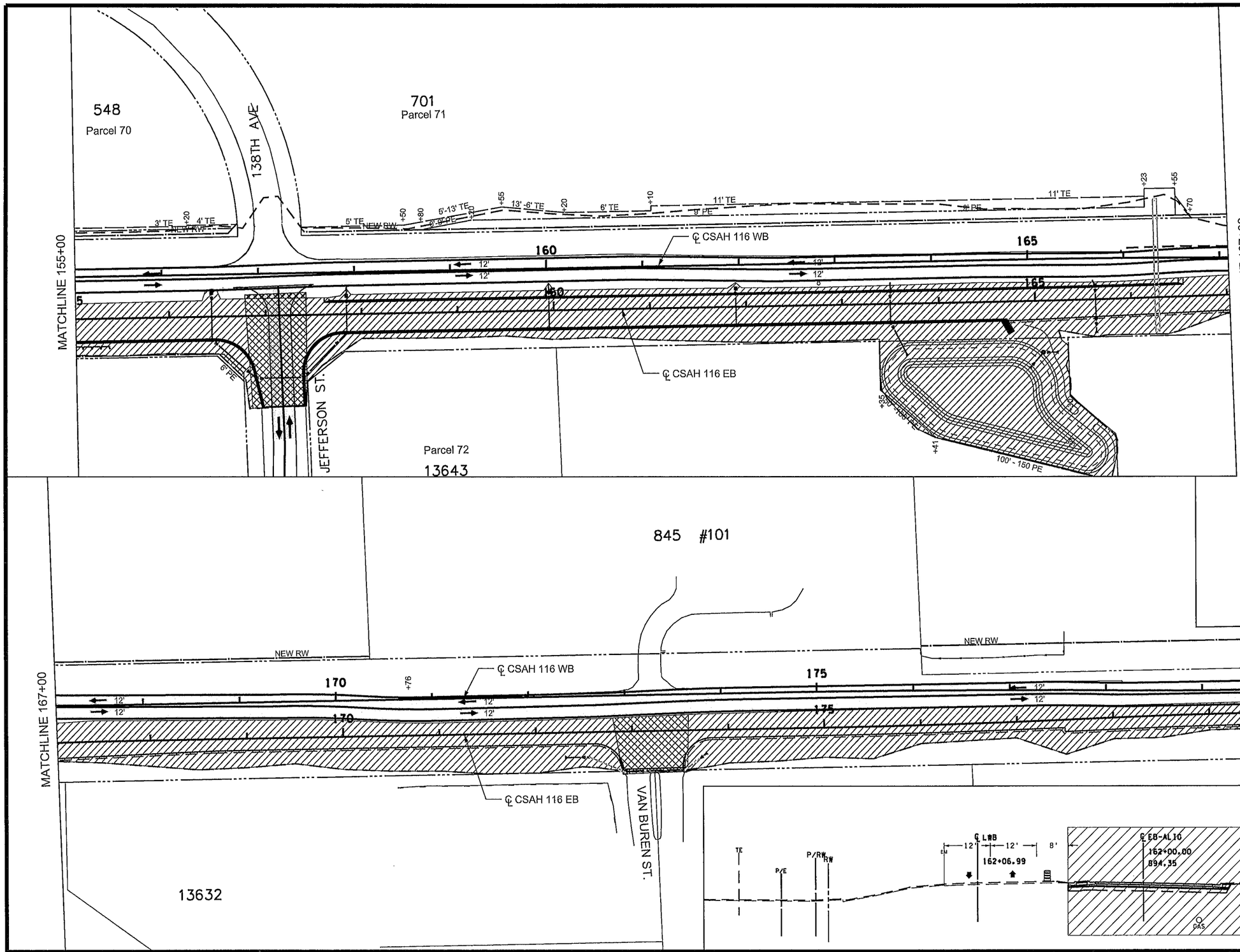
C.P. 11-25

2017 STAGING PLAN
STAGE 5

Sheet 145 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 5 CONSTRUCTION NOTES:

EB CSAH 116 GOLDENROD TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS & STORM SEWER SYSTEM.

STAGE 5 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC SHIFT TO WB SIDE OF ROAD FROM GOLDENROD TO EAST END OF PROJECT.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

4 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG5-P4.dgn 04/12/2016 2:00:57 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

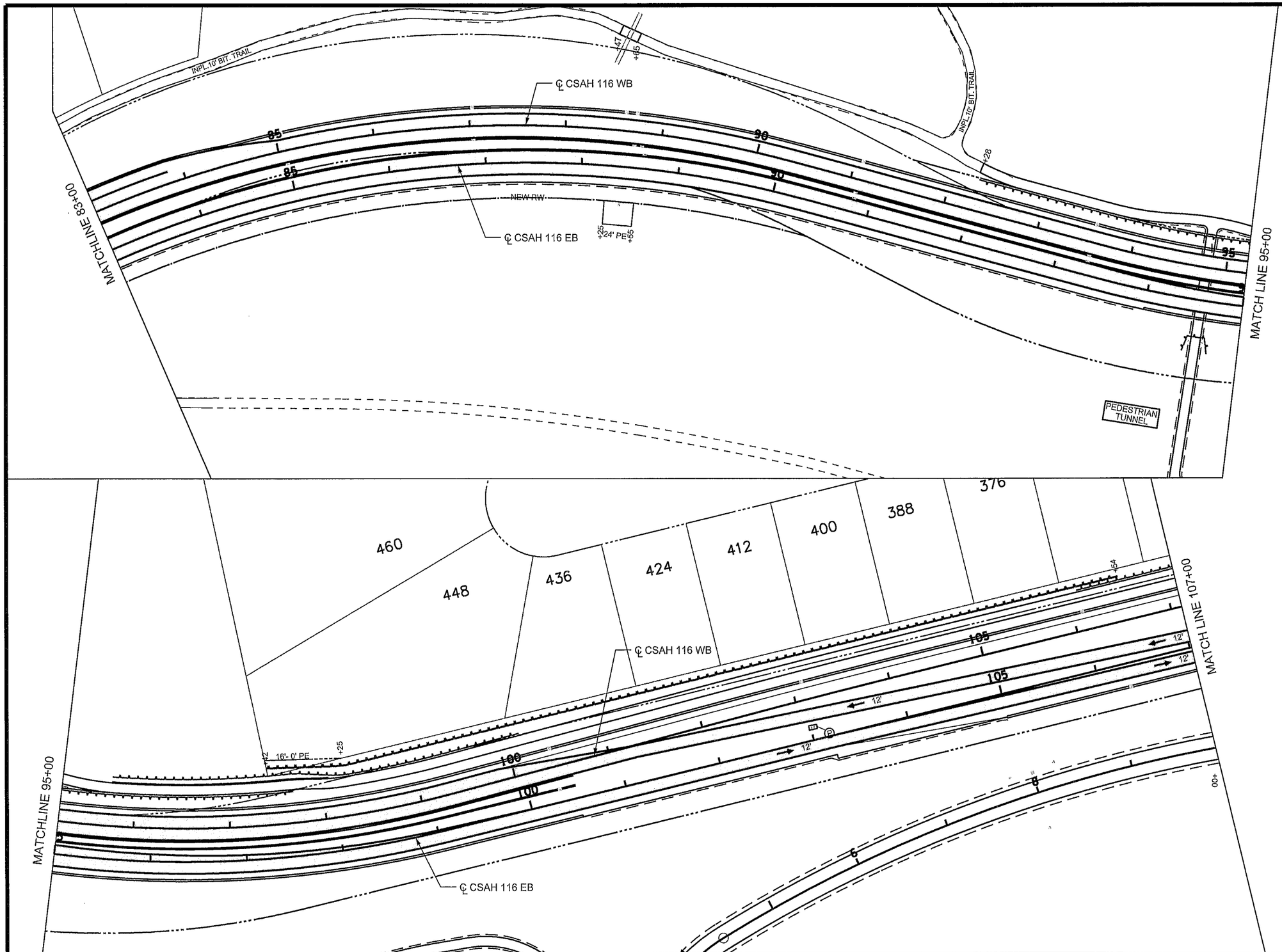
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 5

Sheet 146 of 482 Sheets




## LEGEND

- INPLACE DRAINAGE STRUCTURE
- TRAFFIC FLOW DIRECTION
- PLATE & COVER

STAGE 6 CONSTRUCTION NOTES:

CSAH 116 WB BETWEEN GOLDENROD AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

STAGE 6 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE EB LANES.

BUTTERNUT ST. TO REMAIN OPEN DURING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

1 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG6-P1.dgn 04/12/2016 2:01:00 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zane Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

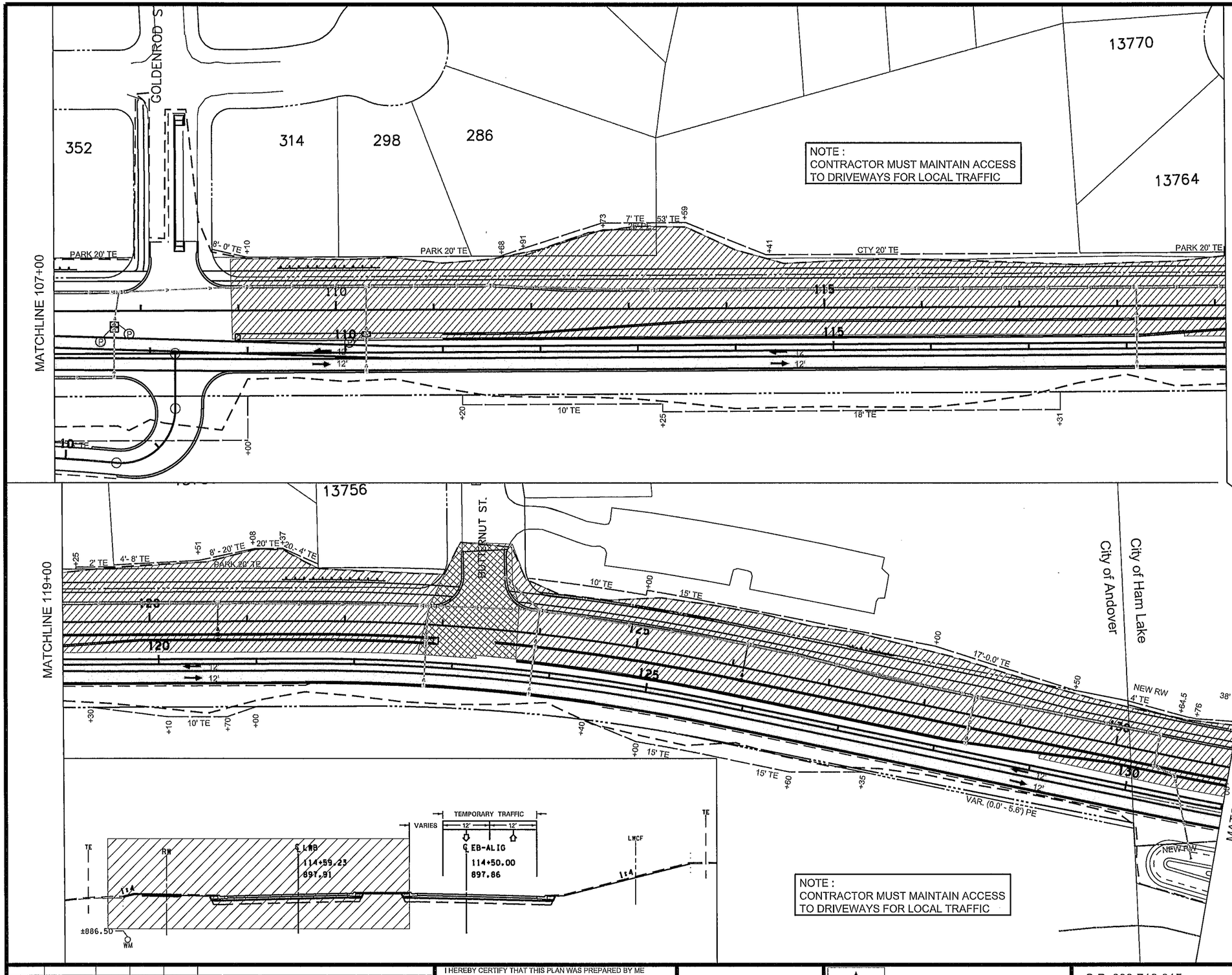
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 6

Sheet 147 of 482 Sheets




## LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES
- PLATE & COVER

STAGE 6 CONSTRUCTION NOTES:

CSAH 116 WB BETWEEN GOLDENROD AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

STAGE 6 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE EB LANES.

BUTTERNUT ST. TO REMAIN OPEN DURING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG6-P2.dgn 04/12/2016 2:01:02 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE #$DATE$

DESIGN BY MN DATE #$DATE$

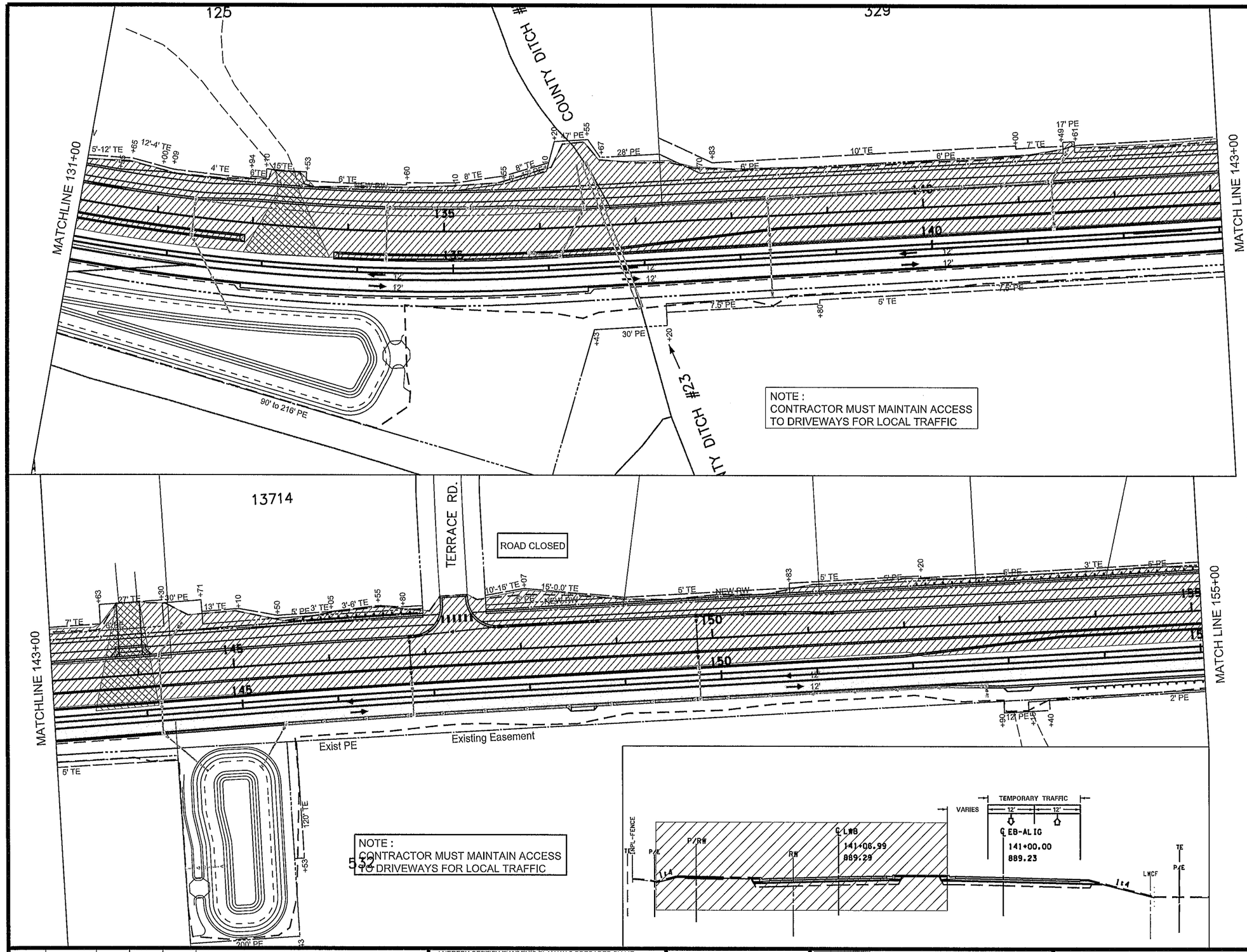
CHECKED BY GP DATE #$DATEA$

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 6

Sheet 148 of 482 Sheets




## LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES

STAGE 6 CONSTRUCTION NOTES:

CSAH 116 WB BETWEEN GOLDENROD AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

STAGE 6 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE EB LANES.

BUTTERNUT ST. TO REMAIN OPEN DURING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

3 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_STG6-P3.dgn 04/12/2016 2:01:04 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE #$DATE$

DESIGN BY MN DATE #$DATE$

CHECKED BY GP DATE #$DATEAS

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 6

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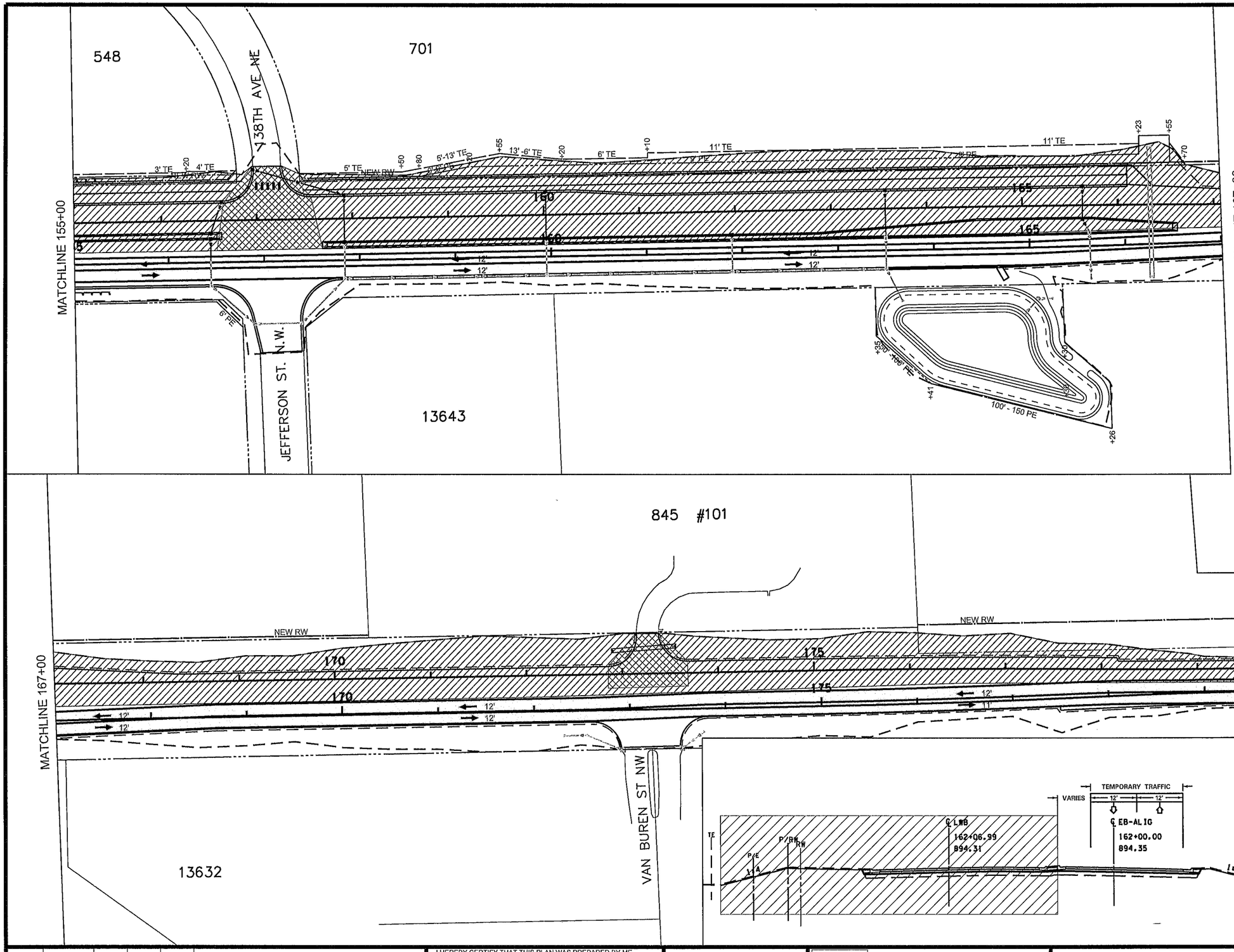


LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- DRAINAGE TO BE COMPLETED DURING CURRENT STAGE
- INPLACE DRAINAGE PIPES

STAGE 6 CONSTRUCTION NOTES:

CSAH 116 WB BETWEEN GOLDENROD AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

STAGE 6 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE EB LANES.

BUTTERNUT ST. TO REMAIN OPEN DURNING CONSTRUCTION.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

4 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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NAME: P:\02-716-16\Plan\0271615_STG6-P4.dgn 04/12/2016 2:01:06 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE #$DATE$

DESIGN BY MN DATE #$DATE$

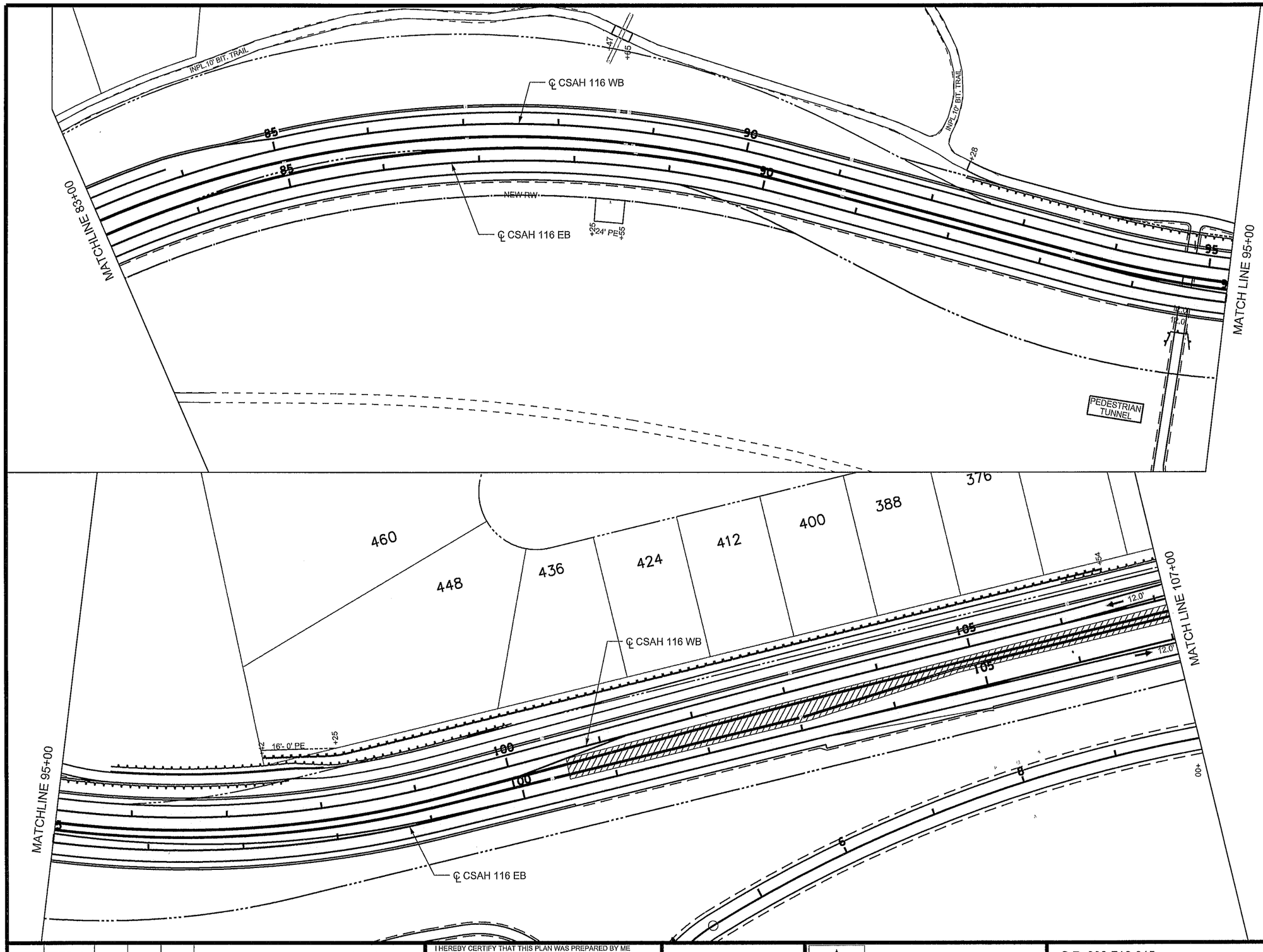
CHECKED BY GP DATE #$DATEAS$

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 6

Sheet 150 of 482 Sheets




LEGEND

INPLACE DRAINAGE STRUCTURE

TRAFFIC FLOW DIRECTION

STAGE 7 CONSTRUCTION NOTES:

CSAH 116 BETWEEN GOLDENROD AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.

WEAR COURSE FOR:
EB LANES FROM STA 93+40 TO EAST END
WB LANES FROM STA 100+00 TO EAST END

STAGE 7 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE OUTSIDE LANES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
CONSTRUCTION SHOWN IN THIS STAGE MAY ALREADY BE COMPLETE.

N

0 100
SCALE IN FEET

1 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG7-P1.dgn 04/12/2016 2:01:08 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

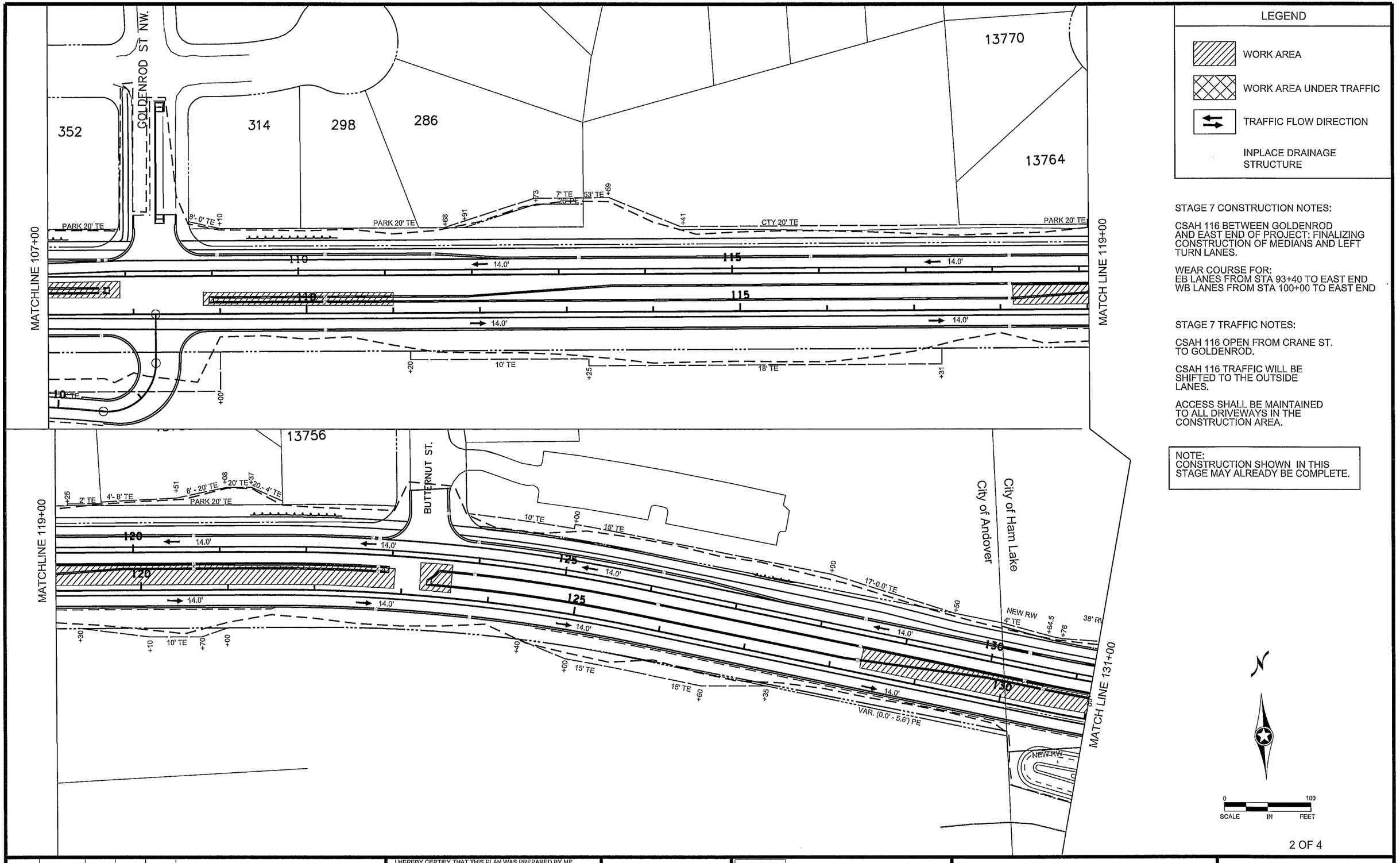
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 7

Sheet 151 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- INPLACE DRAINAGE STRUCTURE

STAGE 7 CONSTRUCTION NOTES:

CSAH 116 BETWEEN GOLDENROD AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.

WEAR COURSE FOR:
EB LANES FROM STA 93+40 TO EAST END
WB LANES FROM STA 100+00 TO EAST END

STAGE 7 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE OUTSIDE LANES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
CONSTRUCTION SHOWN IN THIS STAGE MAY ALREADY BE COMPLETE.

N

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SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
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| NAME: P:\02-716-15\Plan\0271615_STG7-P2.dgn | | | | | 04/12/2016 2:01:10 PM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/13/16 LICENSE NO. 52598

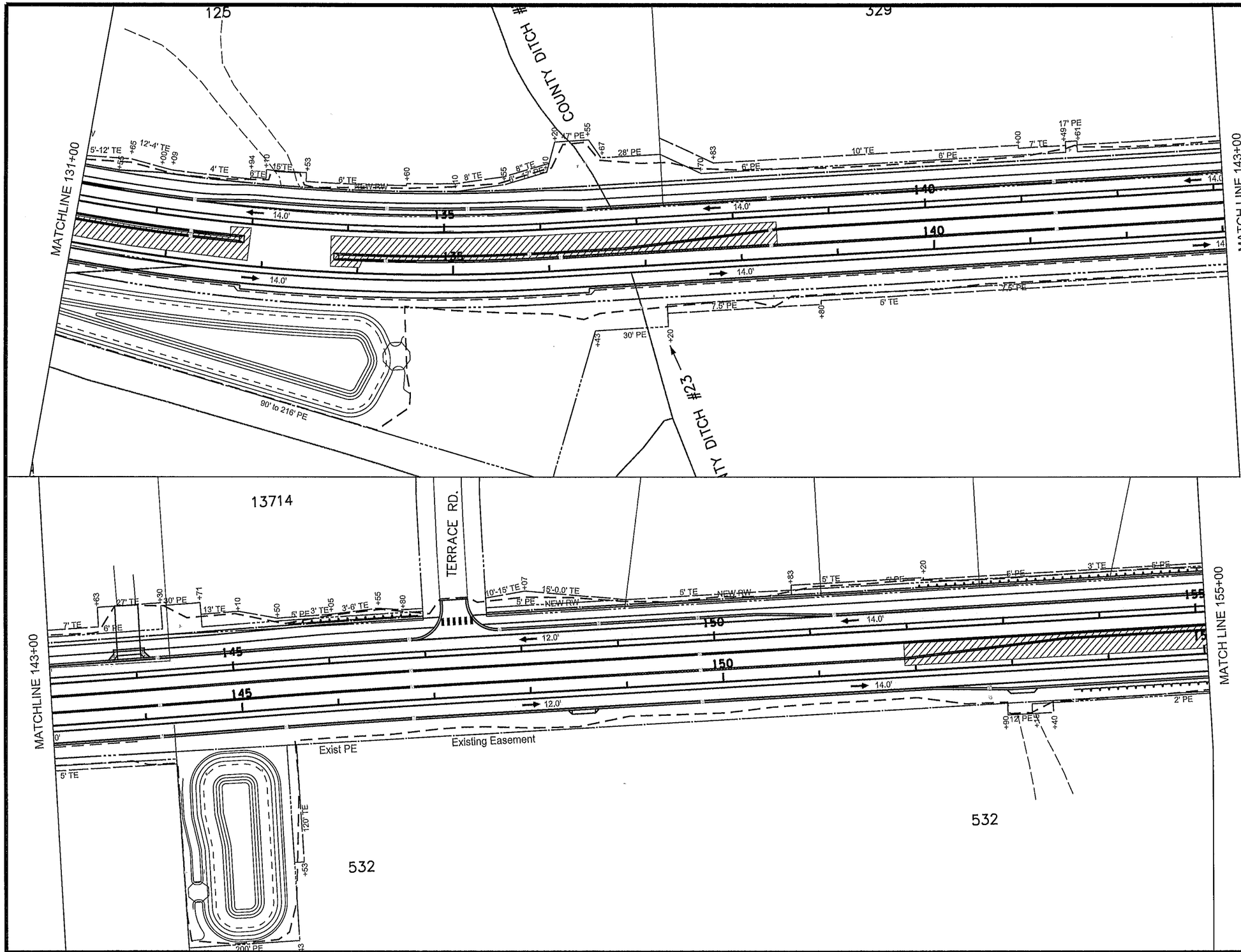
DRAWN BY ZB DATE /f$DATE$
DESIGN BY MN DATE /f$DATE$
CHECKED BY GP DATE /f$DATEA$

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 7

Sheet 152 of 482 Sheets




LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- INPLACE DRAINAGE STRUCTURE

STAGE 7 CONSTRUCTION NOTES:

CSAH 116 BETWEEN GOLDENROD AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.

WEAR COURSE FOR:
EB LANES FROM STA 93+40 TO EAST END
WB LANES FROM STA 100+00 TO EAST END

STAGE 7 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE OUTSIDE LANES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
CONSTRUCTION SHOWN IN THIS STAGE MAY ALREADY BE COMPLETE.

N

0 100
SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG7-P3.dgn 04/12/2016 2:01:12 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE /#$DATE$
DESIGN BY MN DATE /#$DATE$
CHECKED BY GP DATE /#$DATEAS

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 7

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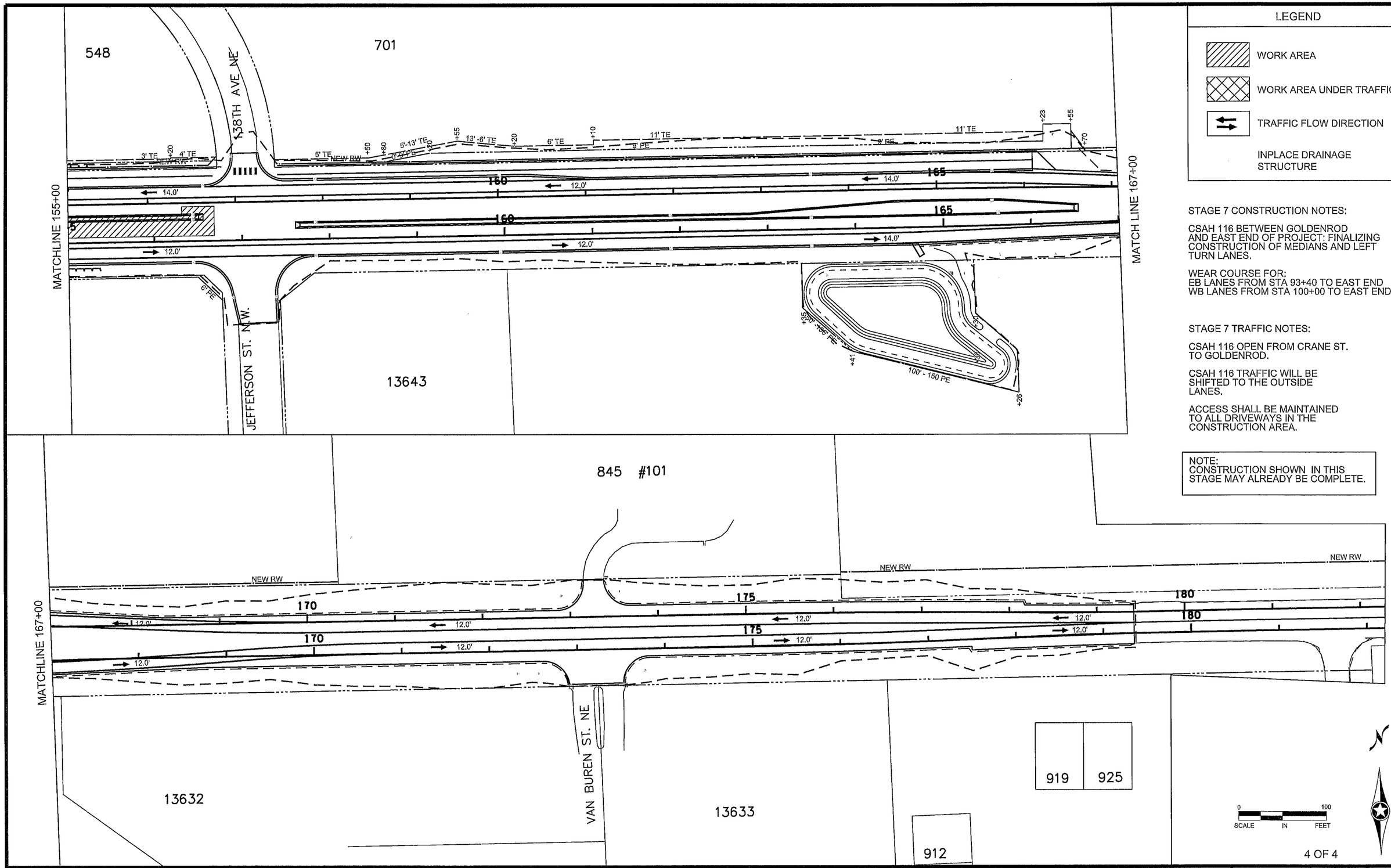


LEGEND

- WORK AREA
- WORK AREA UNDER TRAFFIC
- TRAFFIC FLOW DIRECTION
- INPLACE DRAINAGE STRUCTURE

STAGE 7 CONSTRUCTION NOTES:

CSAH 116 BETWEEN GOLDENROD AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.

WEAR COURSE FOR:
EB LANES FROM STA 93+40 TO EAST END
WB LANES FROM STA 100+00 TO EAST END

STAGE 7 TRAFFIC NOTES:

CSAH 116 OPEN FROM CRANE ST. TO GOLDENROD.

CSAH 116 TRAFFIC WILL BE SHIFTED TO THE OUTSIDE LANES.

ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS IN THE CONSTRUCTION AREA.

NOTE:
CONSTRUCTION SHOWN IN THIS STAGE MAY ALREADY BE COMPLETE.

SCALE 0 100 IN FEET

4 OF 4

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_STG7-P4.dgn 04/12/2016 2:01:14 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

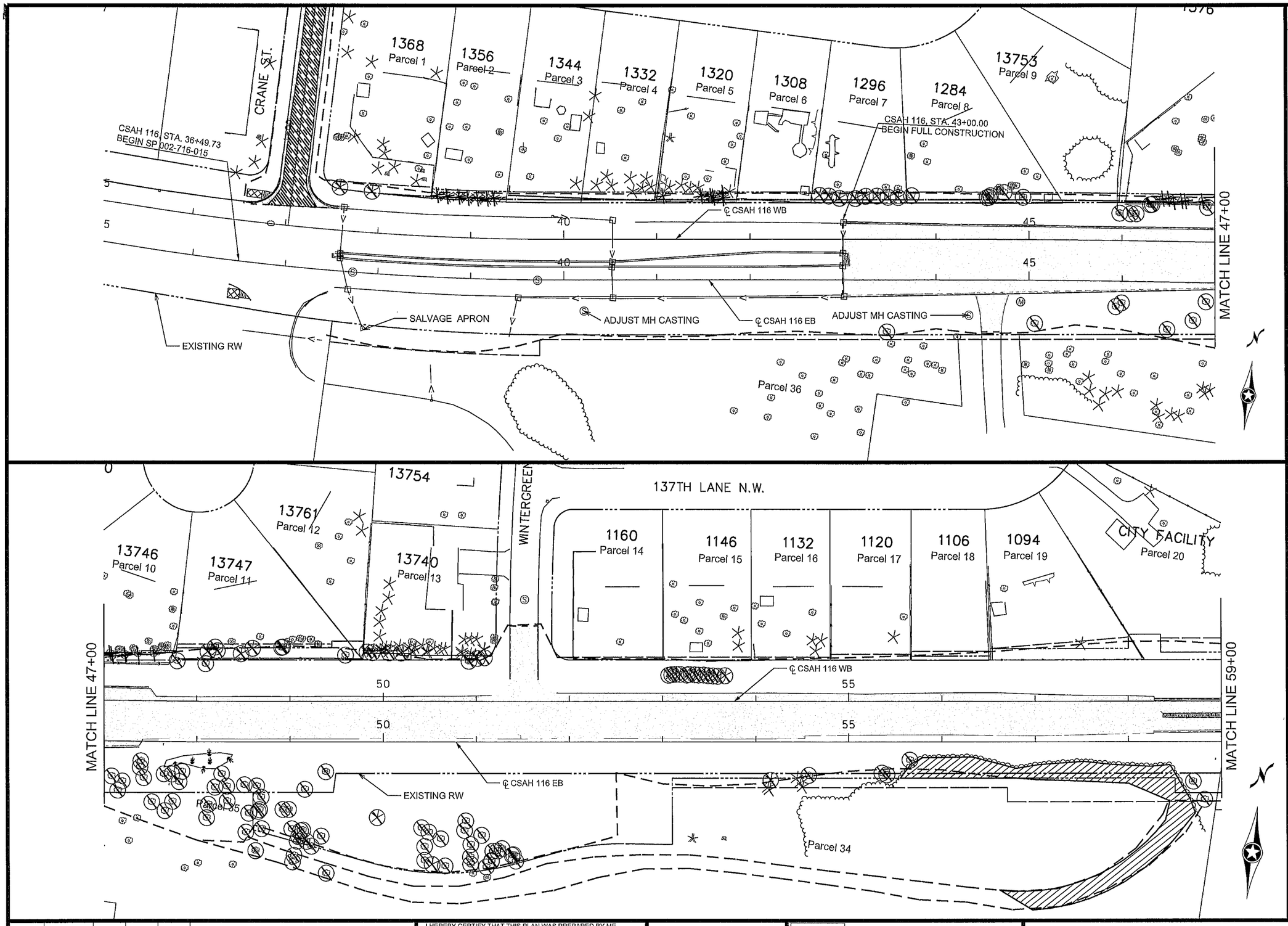
DRAWN BY ZB DATE #$DATE$
DESIGN BY MN DATE #$DATE$
CHECKED BY GP DATE #$DATE$

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

2017 STAGING PLAN
STAGE 7

Sheet 154 of 482 Sheets




## LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- CLEAR & GRUB (ACRE) (BY OTHERS)
- CLEAR & GRUB (ACRE)
- 1.5" MILL AND OVERLAY BITUMINOUS PAVEMENT
- TREE REMOVAL BY EACH
- TREE REMOVAL BY EACH (BY OTHERS)
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER
- (M) REMOVE / REPLACE MAILBOX

## REMOVAL NOTES

REFER TO TRAFFIC SIGNAL PLANS FOR TRAFFIC SIGNAL REMOVALS.

THE CONTRACTOR SHALL PERFORM ALL CLEARING AND GRUBBING AS DIRECTED AND MARKED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL OTHERWISE PROTECT ALL EXISTING TREES NOT SPECIFICALLY MARKED FOR REMOVAL.

ALL MANHOLES AND CATCH BASINS WILL BE PAID FOR AS "REMOVE DRAINAGE STRUCTURE" ITEM 2104.509 CALLED OUT IN REMOVAL PLANS AS MH AND CB. FOR INFORMATION PURPOSES ONLY.

ALL PRIVATE UTILITIES TO BE RELOCATED BY OTHERS AS REQUIRED. SEE IN PLACE UTILITY TABULATION FOR MORE INFORMATION.

ALL ROADWAY SIGNS WITHIN THE CONSTRUCTION LIMITS AND CONFLICTING SIGNS SHALL BE SALVAGED BY THE CONTRACTOR, WITH ITHE EXCEPTION OF ANY CITY OF ANDOVER SIGNS. THE CONTRACTOR SHALL COORDINATE SIGN REMOVAL WITH THE CITY OF ANDOVER.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_REM1.dgn 04/12/2016 2:01:16 PM

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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

STA 36+49.73 TO 59+00.00

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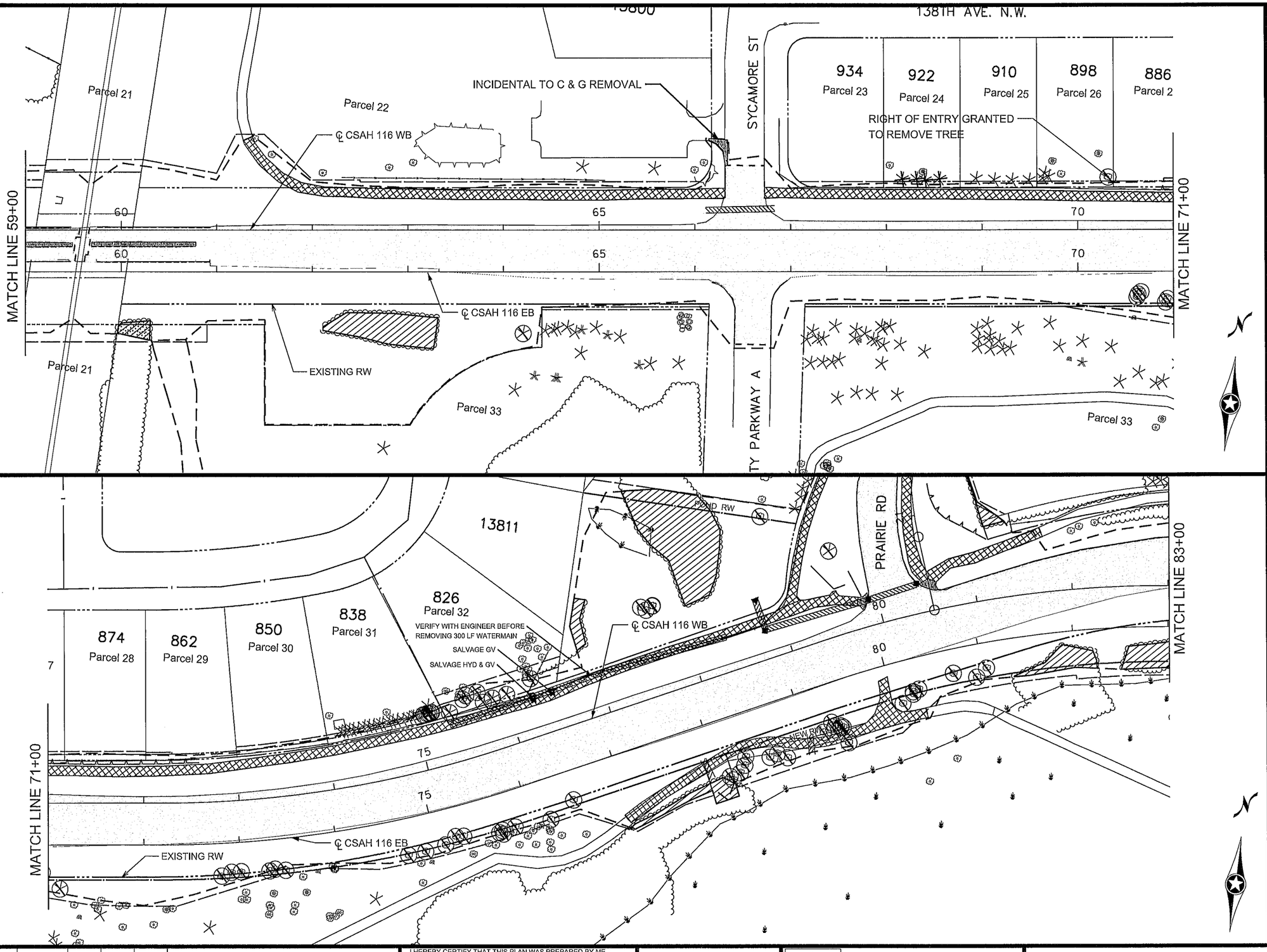


LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- REMOVE BITUMINOUS PATH
- CLEAR & GRUB (ACRE) (BY OTHERS)
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT REMOVE WATERMAIN
- REMOVE CB / MH
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- TREE REMOVAL BY EACH (BY OTHERS)
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER
- REMOVE WALL

0 100
SCALE IN FEET

## REMOVAL NOTES

REFER TO TRAFFIC SIGNAL PLANS FOR TRAFFIC SIGNAL REMOVALS.

THE CONTRACTOR SHALL PERFORM ALL CLEARING AND GRUBBING AS DIRECTED AND MARKED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL OTHERWISE PROTECT ALL EXISTING TREES NOT SPECIFICALLY MARKED FOR REMOVAL.

ALL MANHOLES AND CATCH BASINS WILL BE PAID FOR AS "REMOVE DRAINAGE STRUCTURE" ITEM 2104.509 CALLED OUT IN REMOVAL PLANS AS MH AND CB. FOR INFORMATION PURPOSES ONLY.

ALL PRIVATE UTILITIES TO BE RELOCATED BY OTHERS AS REQUIRED. SEE IN PLACE UTILITY TABULATION FOR MORE INFORMATION.

ALL ROADWAY SIGNS WITHIN THE CONSTRUCTION LIMITS AND CONFLICTING SIGNS SHALL BE SALVAGED BY THE CONTRACTOR, WITH THE EXCEPTION OF ANY CITY OF ANDOVER SIGNS. THE CONTRACTOR SHALL COORDINATE SIGN REMOVAL WITH THE CITY OF ANDOVER.



| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_REM2.dgn 04/12/2016 2:01:19 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

STA 59+00.00 TO 83+00.00

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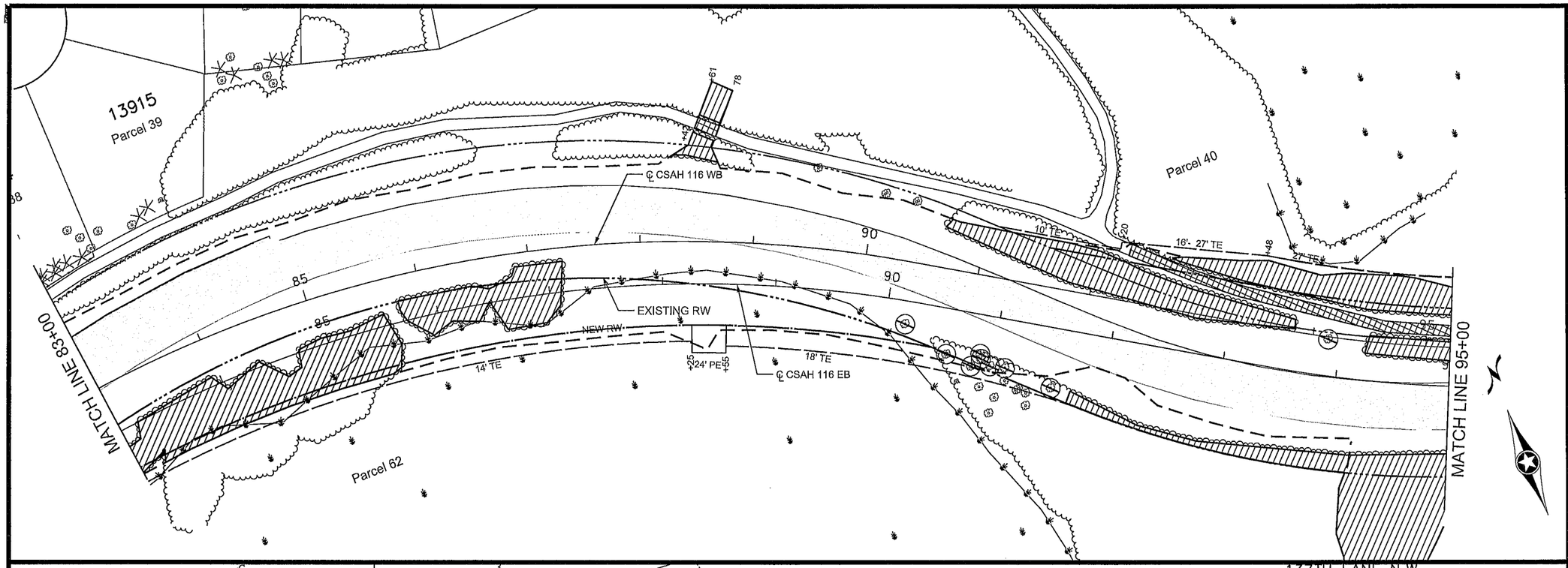


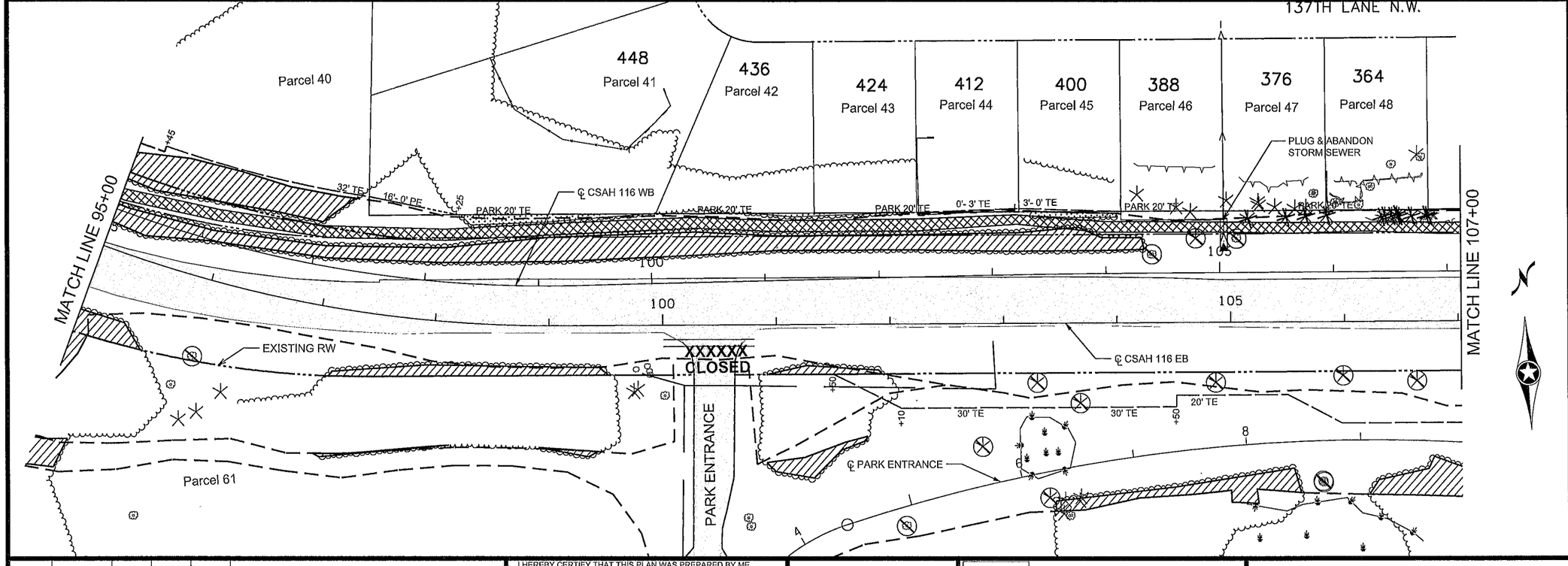


## LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS PATH
- CLEAR & GRUB (ACRE) (BY OTHERS)
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- TREE REMOVAL BY EACH (BY OTHERS)
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER
- XX CLOSE DRIVE ACCESS

0 100
SCALE IN FEET

## REMOVAL NOTES

REFER TO TRAFFIC SIGNAL PLANS FOR TRAFFIC SIGNAL REMOVALS.

THE CONTRACTOR SHALL PERFORM ALL CLEARING AND GRUBBING AS DIRECTED AND MARKED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL OTHERWISE PROTECT ALL EXISTING TREES NOT SPECIFICALLY MARKED FOR REMOVAL.

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| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_REM3.dgn 04/15/2016 8:02:47 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

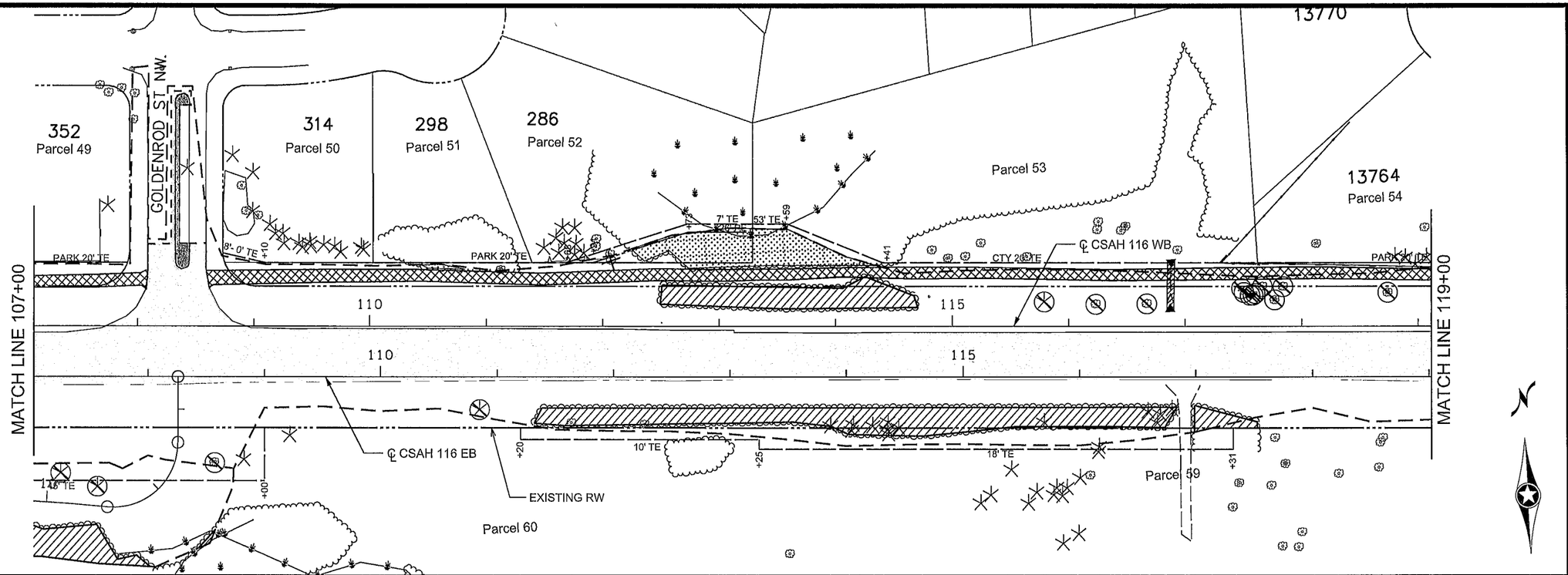
ANOKA COUNTY HIGHWAY DEPT.

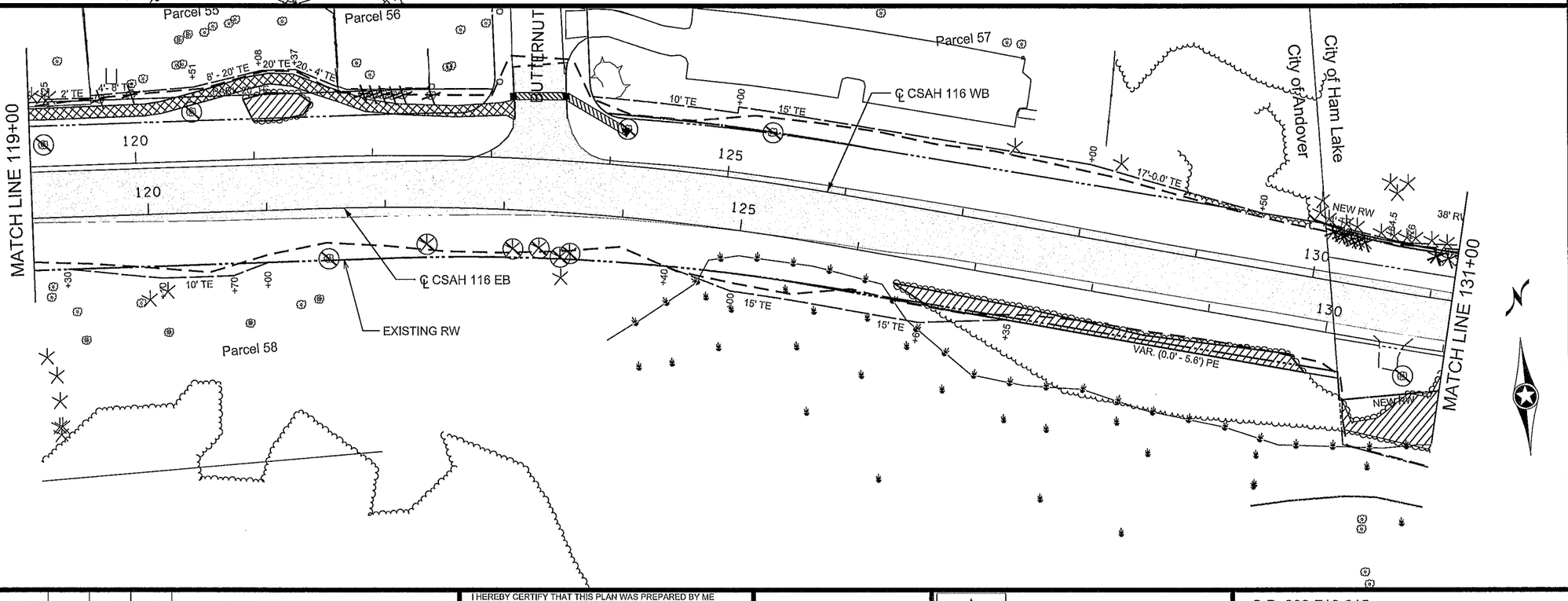
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

STA 83+00.00 TO 107+00.00

Sheet 157 of 482 Sheets




## LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- REMOVE BITUMINOUS PATH
- CLEAR & GRUB (ACRE) (BY OTHERS)
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT
- REMOVE CB / MH
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- TREE REMOVAL BY EACH (BY OTHERS)
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER

SCALE 0 100 IN FEET

## REMOVAL NOTES

REFER TO TRAFFIC SIGNAL PLANS FOR TRAFFIC SIGNAL REMOVALS.

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NAME: P:\02-716-15\Plan\0271615_REM4.dgn 04/12/2016 2:01:23 PM

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PRINT NAME: ZACHARY BORGERDING

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DATE: 5/3/16 LICENSE NO. 52598

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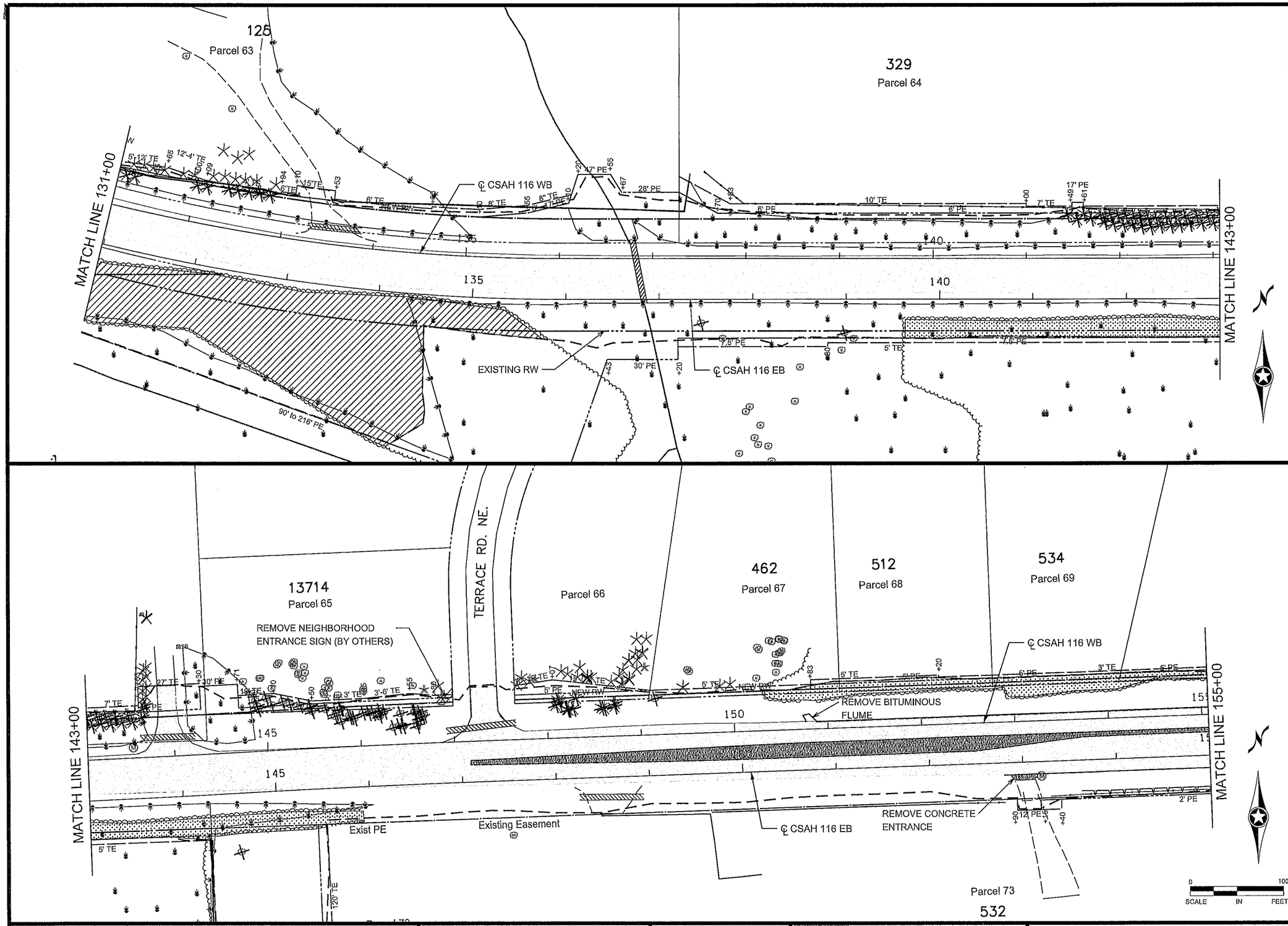
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

STA 107+00.00 TO 131+00.00

Sheet 158 of 482 Sheets




## LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- REMOVE BITUMINOUS PATH
- RECLAIM AND OVERLAY BITUMINOUS PAVEMENT
- CLEAR & GRUB (ACRE) (BY OTHERS)
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT
- REMOVE STORM/CULVERT
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- (M) REMOVE / REPLACE MAILBOX
- XX CLOSE DRIVE ACCESS
- REMOVE CURB AND GUTTER
- REMOVE WALL

0 100
SCALE IN FEET

## REMOVAL NOTES

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S.P. 198-020-036
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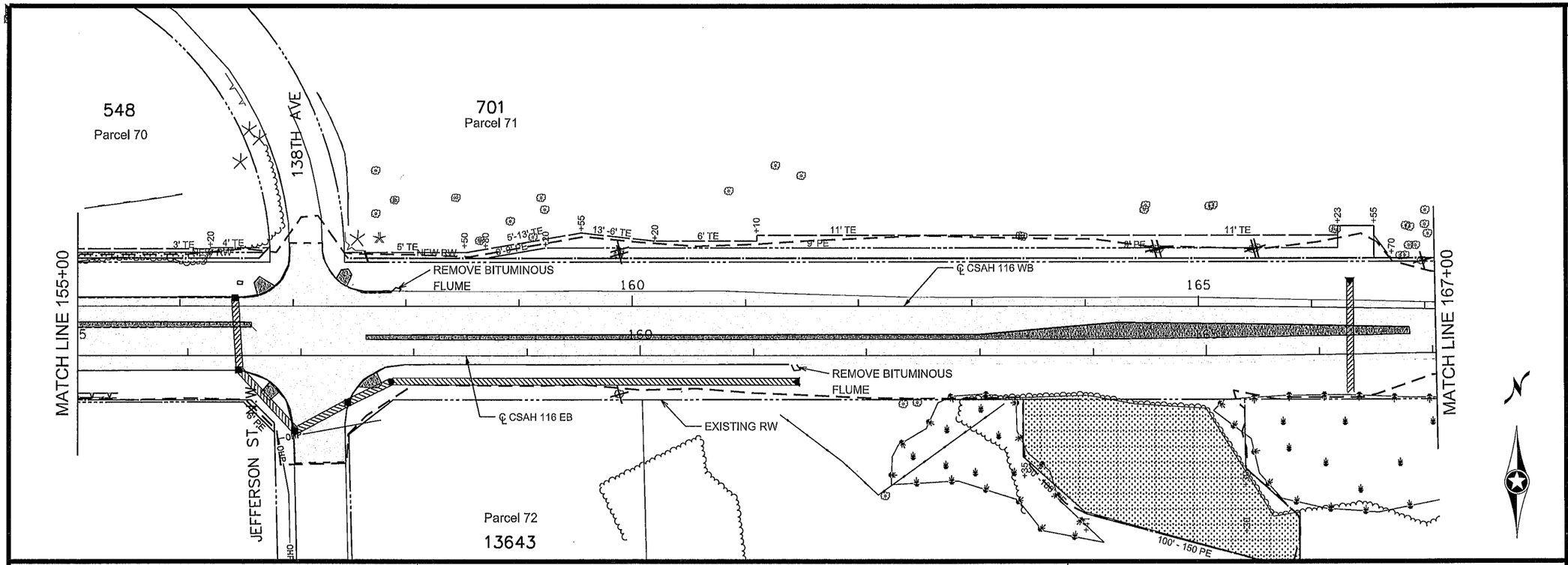
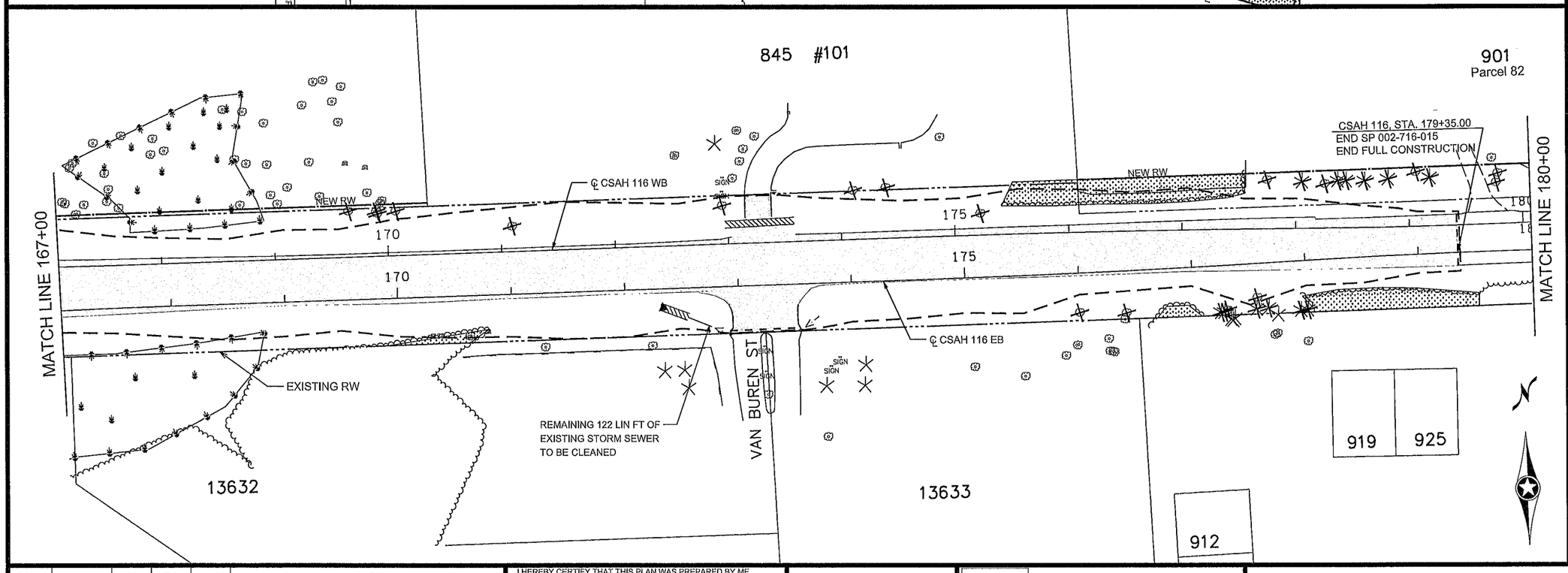
C.P. 11-25

REMOVAL PLAN
STA 131+00.00 TO 155+00.00
Sheet 159 of 482 Sheets




## LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT
- REMOVE STORM/CULVERT
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER

SCALE 0 100 IN FEET

## REMOVAL NOTES

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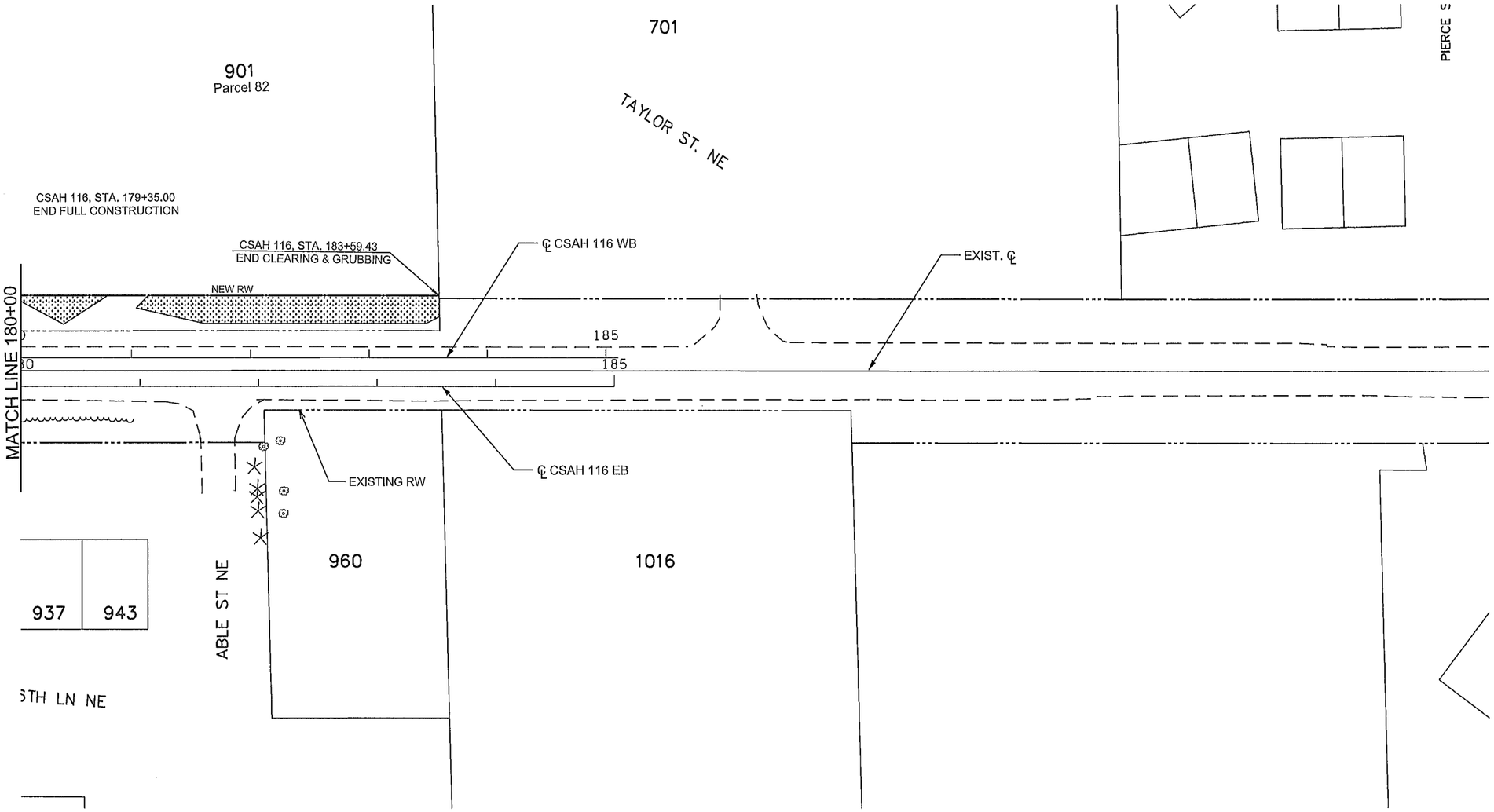
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

STA 155+00.00 TO 180+00.00

Sheet 160 of 482 Sheets




LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- REMOVE BITUMINOUS PATH
- RECLAIM AND OVERLAY BITUMINOUS PAVEMENT
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT
- REMOVE STORM/CULVERT
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER
- REMOVE WALL

## REMOVAL NOTES

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NAME: P:\02-716-15\Plan\0271615_REM7.dgn 04/12/2016 2:01:31 PM

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ANOKA COUNTY

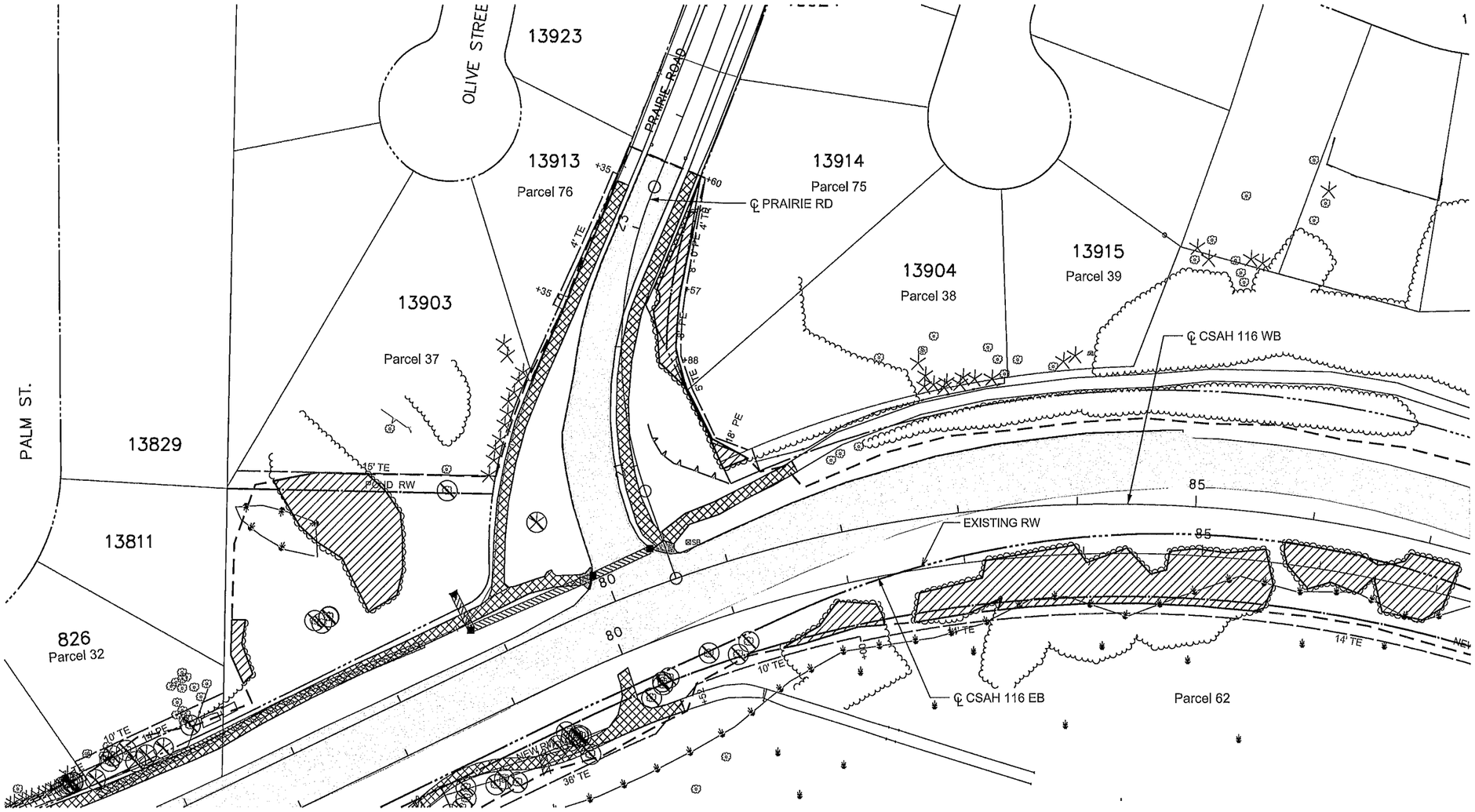
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

STA 180+00.00 TO 183+59.43

Sheet 161 of 482 Sheets




## LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN/SIDEWALK
- REMOVE BITUMINOUS PATH
- RECLAIM AND OVERLAY BITUMINOUS PAVEMENT
- CLEAR & GRUB (ACRE) (BY OTHERS)
- CLEAR & GRUB (ACRE)
- REMOVE STORM/CULVERT
- REMOVE STORM/CULVERT
- REMOVE PIPE APRON
- TREE REMOVAL BY EACH
- TREE REMOVAL BY EACH (BY OTHERS)
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- REMOVE CURB AND GUTTER
- REMOVE WALL

## REMOVAL NOTES

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NAME: P:\02-716-15\Plan\0271615_REM8.dgn 04/12/2016 2:01:32 PM

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DATE: 5/31/16 LICENSE NO. 52598

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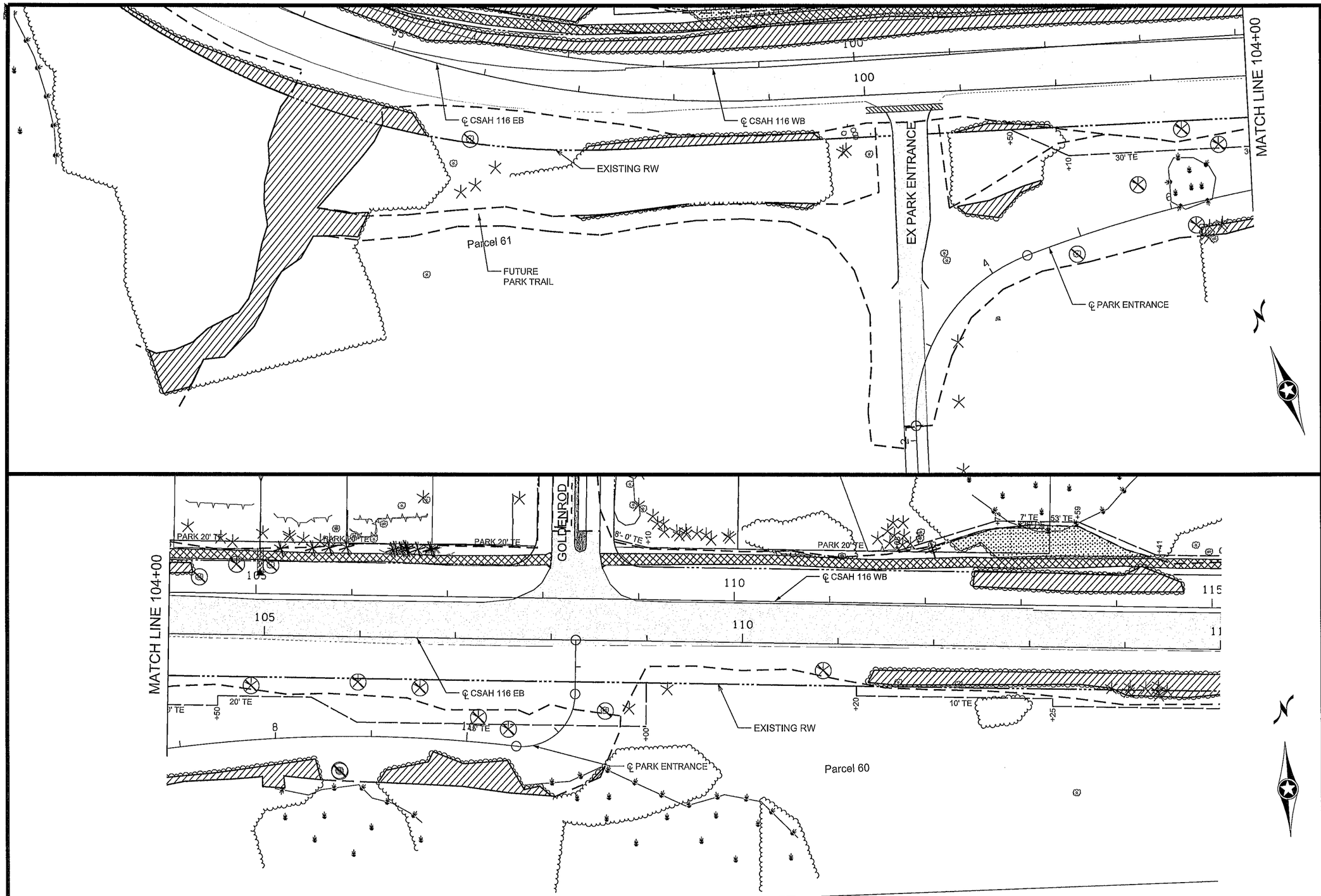
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN

PRAIRIE ROAD

Sheet 162 of 482 Sheets




## REMOVAL NOTES

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PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
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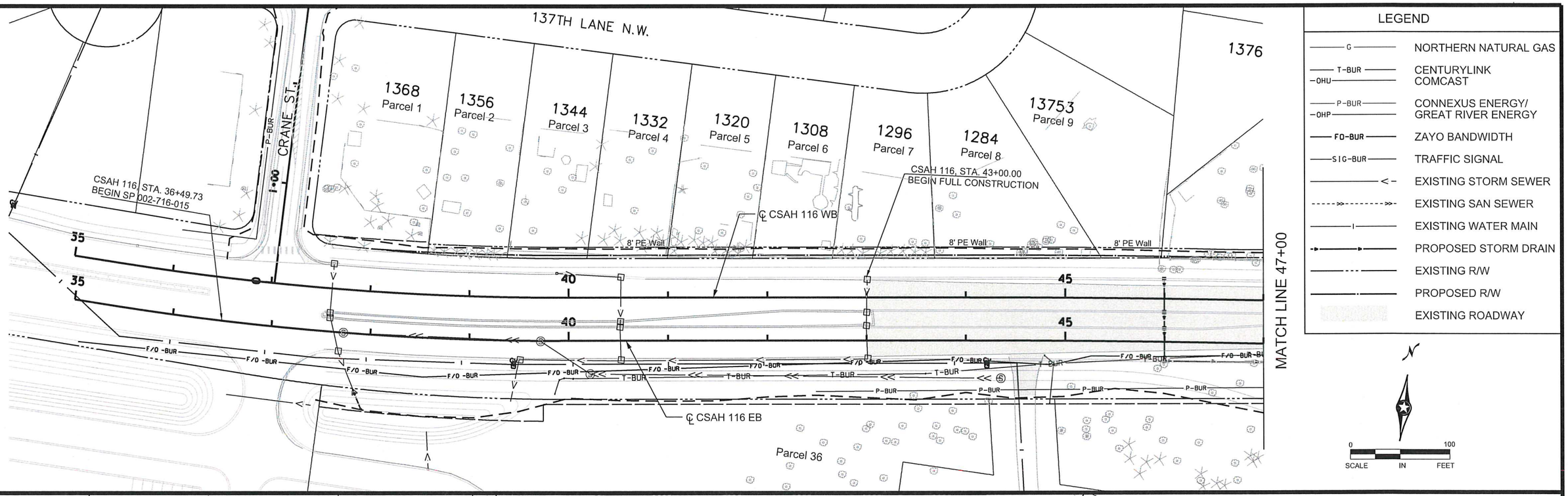
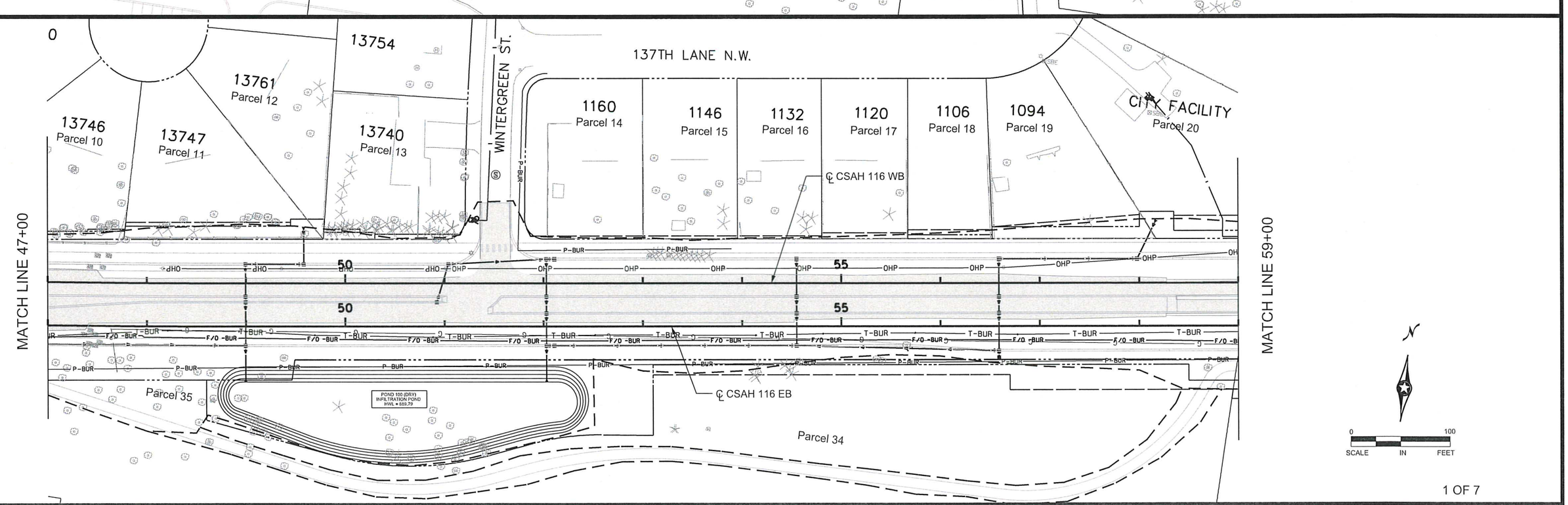
ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REMOVAL PLAN
PARK TRAIL AND PARK ENTRANCE
Sheet 163 of 482 Sheets




1 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_UTL1.dgn 04/12/2016 2:01:38 PM

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ANOKA COUNTY

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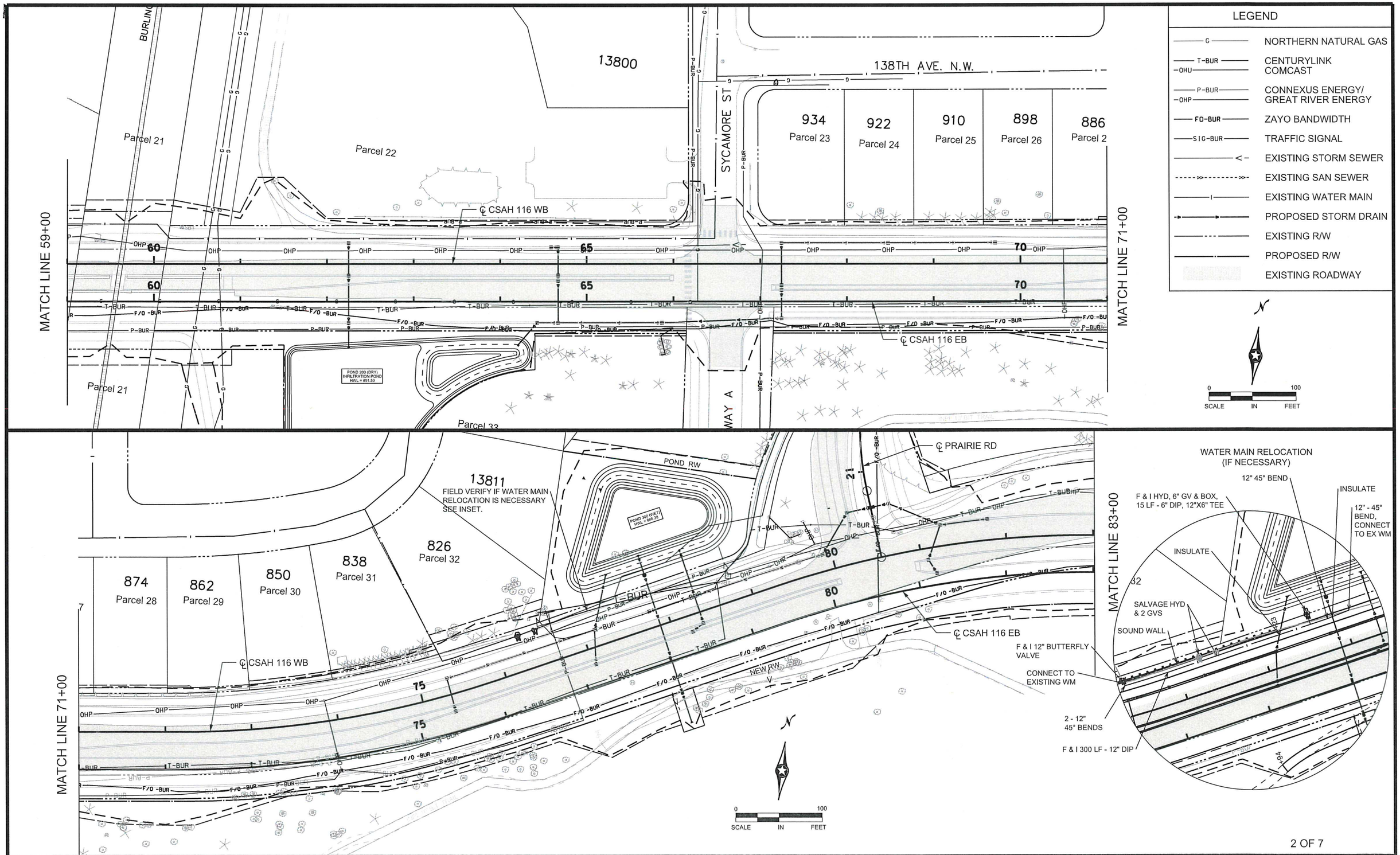
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

UTILITY PLAN

STA 36+49.73 TO 59+00.00

Sheet 164 of 482 Sheets




2 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_UTL2.dgn 04/12/2016 2:01:40 PM

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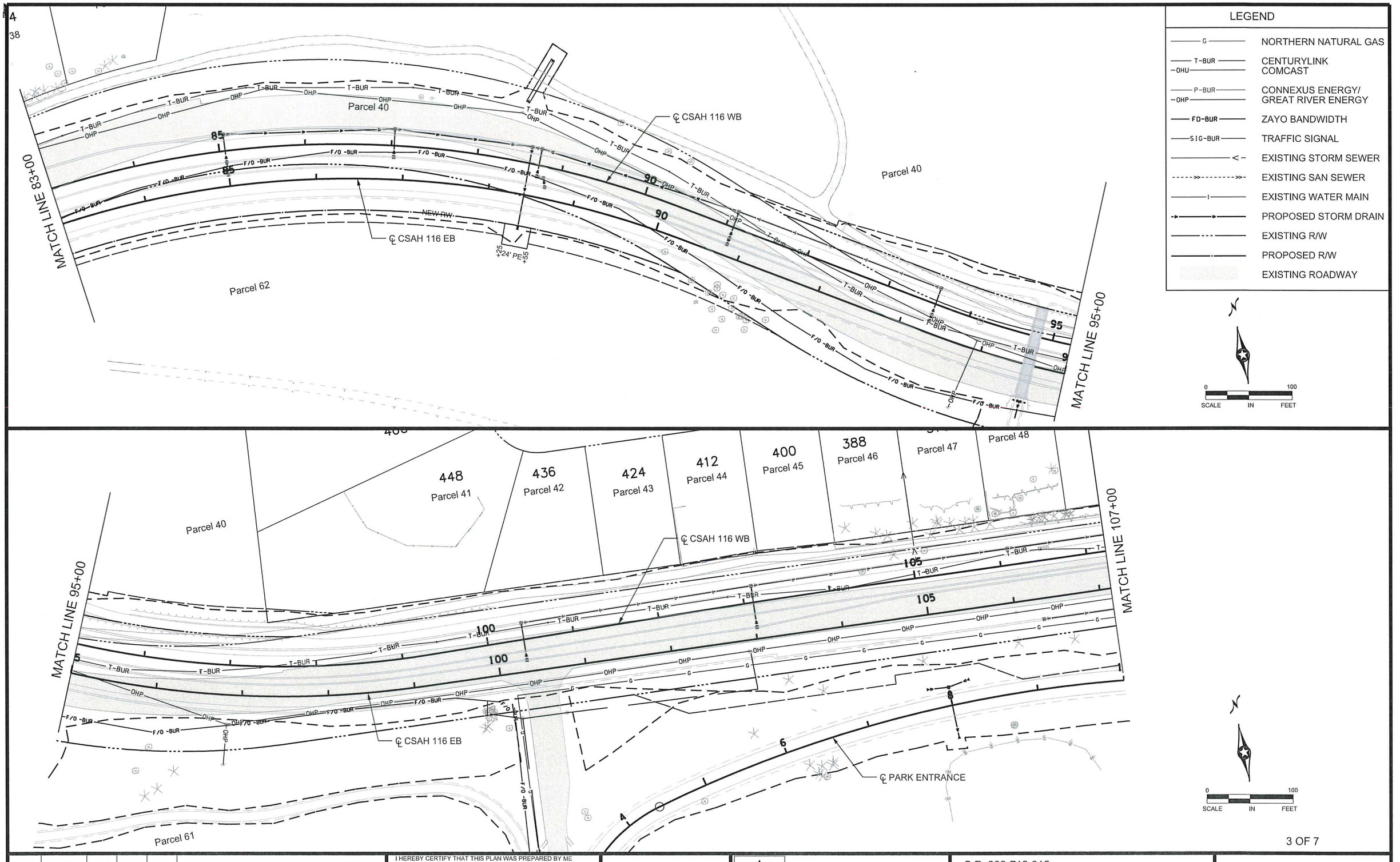
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

UTILITY PLAN

STA 47+00.00 TO 83+00.00

Sheet 165 of 482 Sheets




3 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_UTL3.dgn 04/15/2016 8:03:31 AM

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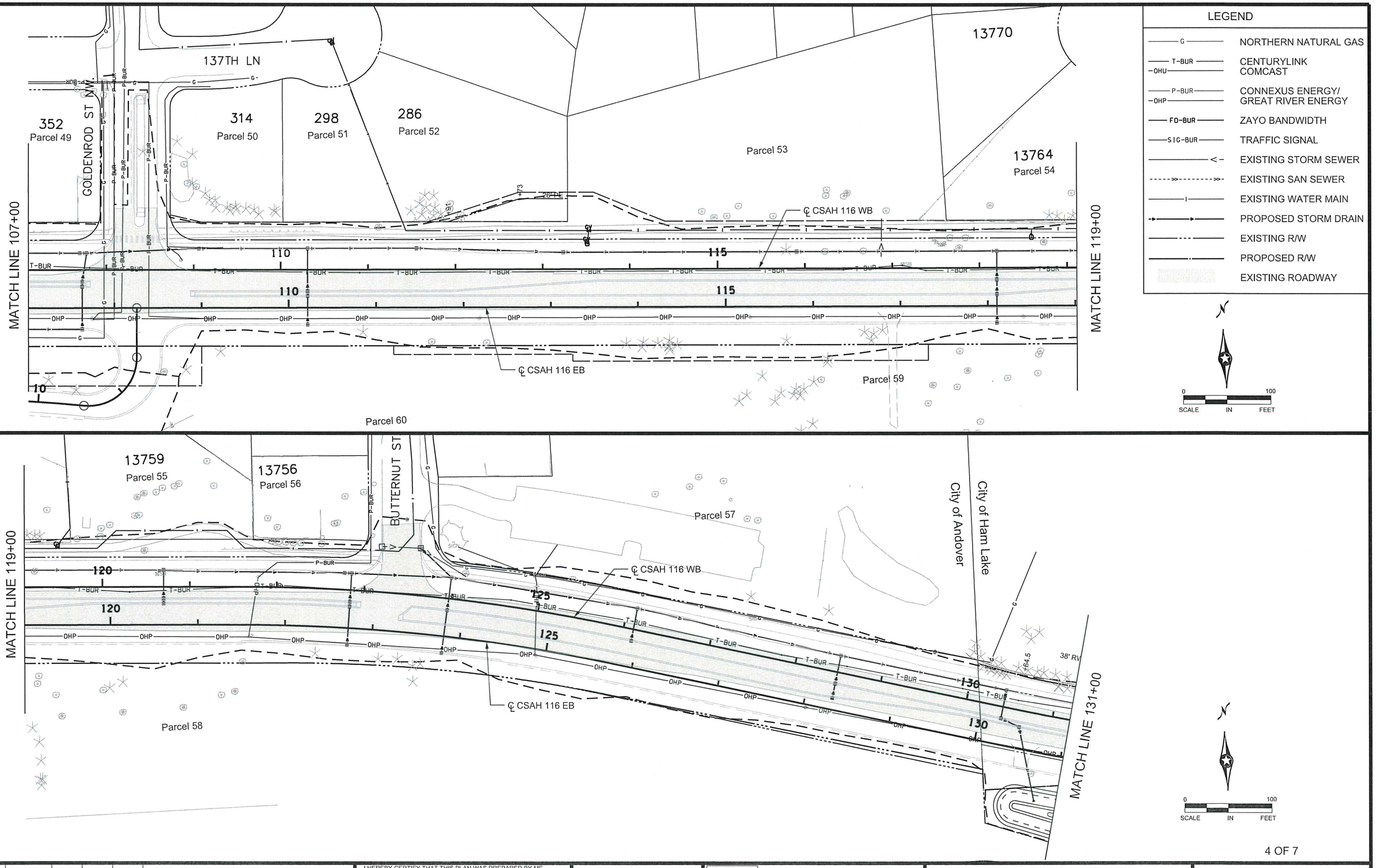
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

UTILITY PLAN

STA 83+00.00 TO 107+00.00

Sheet 166 of 482 Sheets




4 OF 7

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NAME: P:\02-716-15\Plan\0271615_UTL4.dgn 04/12/2016 2:01:45 PM

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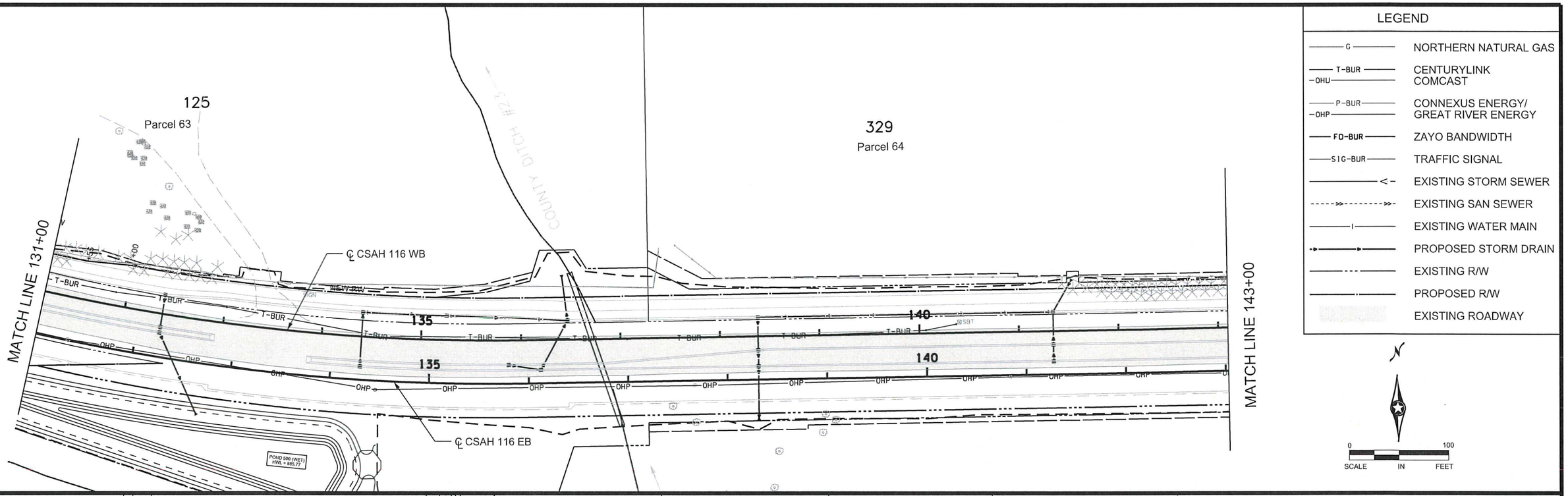
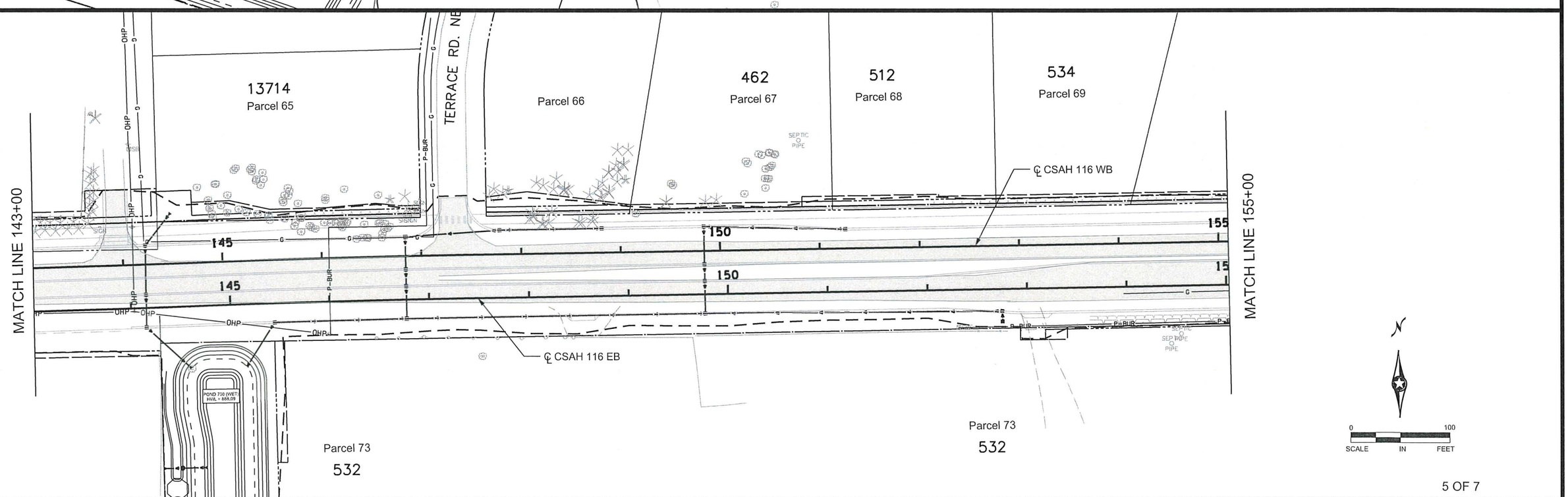
C.P. 11-25

UTILITY PLAN

STA 107+00.00 TO 131+00.00

Sheet 167 of 482 Sheets




5 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
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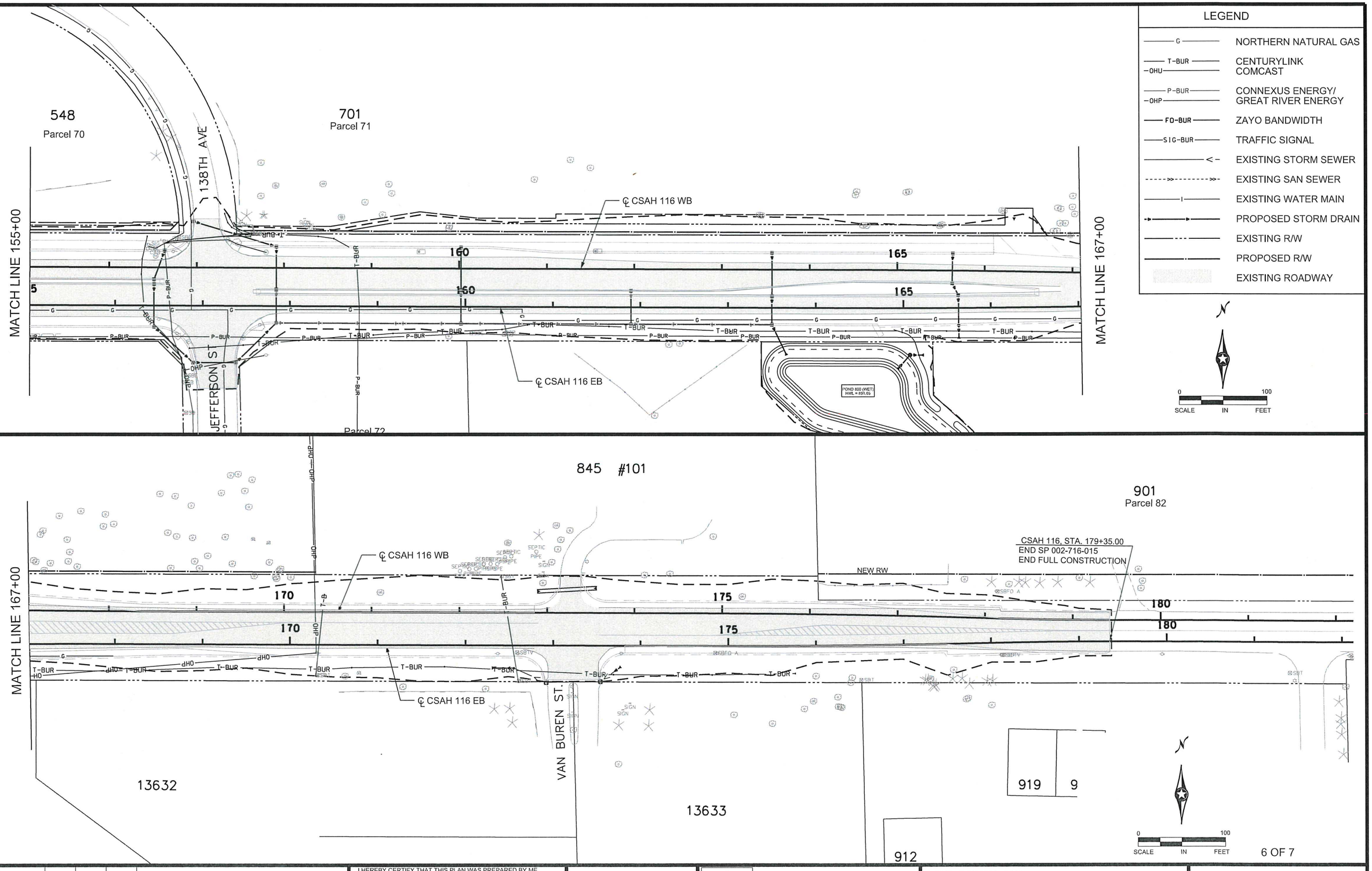
UTILITY PLAN

STA 131+00.00 TO 155+00.00

Sheet 168 of 482 Sheets




| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_UTL6.dgn 04/12/2016 2:01:49 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

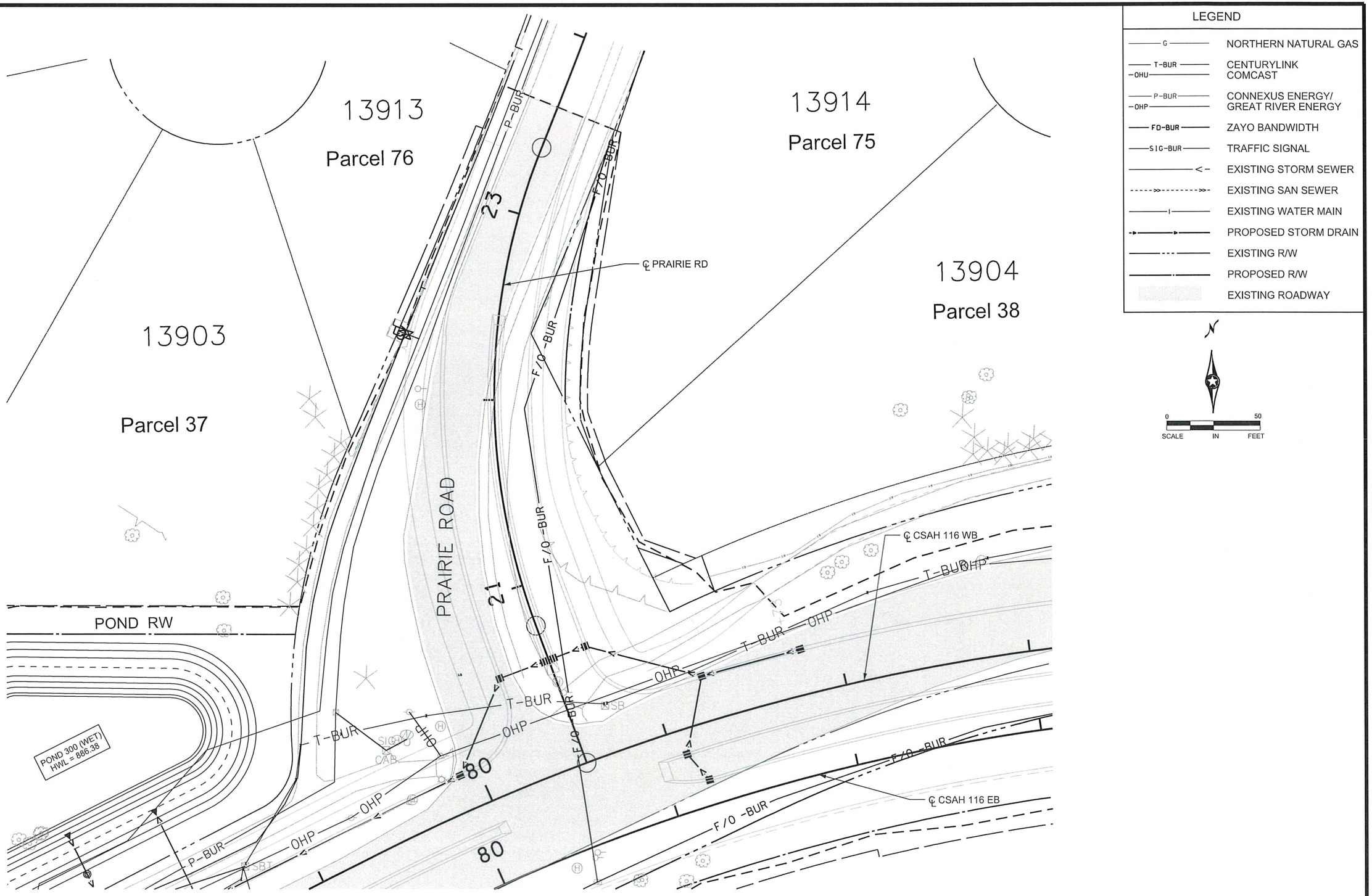
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

UTILITY PLAN

STA 155+00.00 TO 179+34.92

Sheet 169 of 482 Sheets

6 OF 7




LEGEND

| | |
|---|---|
| G | NORTHERN NATURAL GAS |
| T-BUR / OHU | CENTURYLINK / COMCAST |
| P-BUR / OHP | CONNEXUS ENERGY/ GREAT RIVER ENERGY |
| FO-BUR | ZAYO BANDWIDTH |
| SIG-BUR | TRAFFIC SIGNAL |
| <- | EXISTING STORM SEWER |
| >> | EXISTING SAN SEWER |
| I | EXISTING WATER MAIN |
| | PROPOSED STORM DRAIN |
| | EXISTING R/W |
| | PROPOSED R/W |
| | EXISTING ROADWAY |

N

0 50
SCALE IN FEET

7 OF 7

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_UTL7.dgn 04/12/2016 2:01:51 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

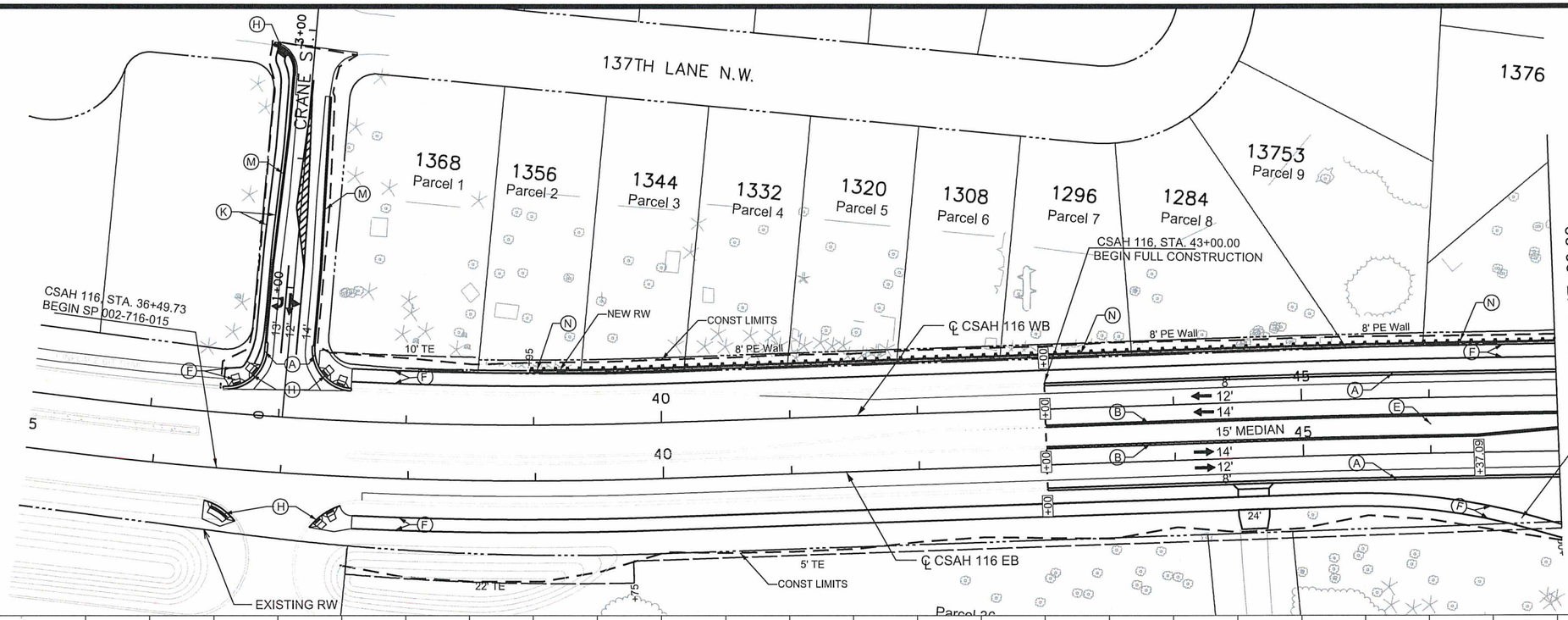
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

UTILITY PLAN
PRAIRIE RD

STA 20+00.00 TO 23+59.80

Sheet 170 of 482 Sheets




## CONSTRUCTION NOTES:

- (A) B424 CURB & GUTTER
- (B) B418 MOD CURB & GUTTER
- (D) B618 CURB & GUTTER
- (E) 4" CONC. MEDIAN
- (F) BITUMINOUS TRAIL
- (H) PEDESTRIAN CURB RAMP & TRUNCATED DOMES
- (K) 4" CONCRETE SIDEWALK
- (M) S512 CURB & GUTTER
- (N) NOISE BARRIER WALL

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

NOTE:
SEE SHEETS 470- 471 FOR CRANE ST CROSS SECTIONS.

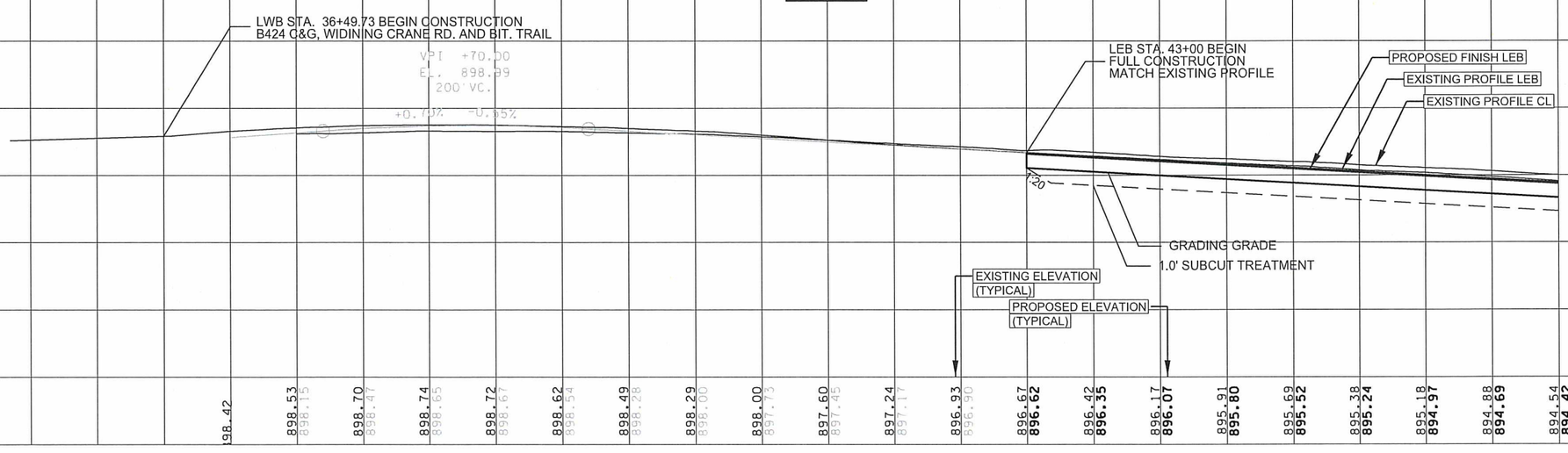
N

0 100
SCALE IN FEET

## E.B. C.S.A.H. 116

E.B. CSAH 116

TRAFFIC




1 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP1.dgn 04/12/2016 2:01:53 PM

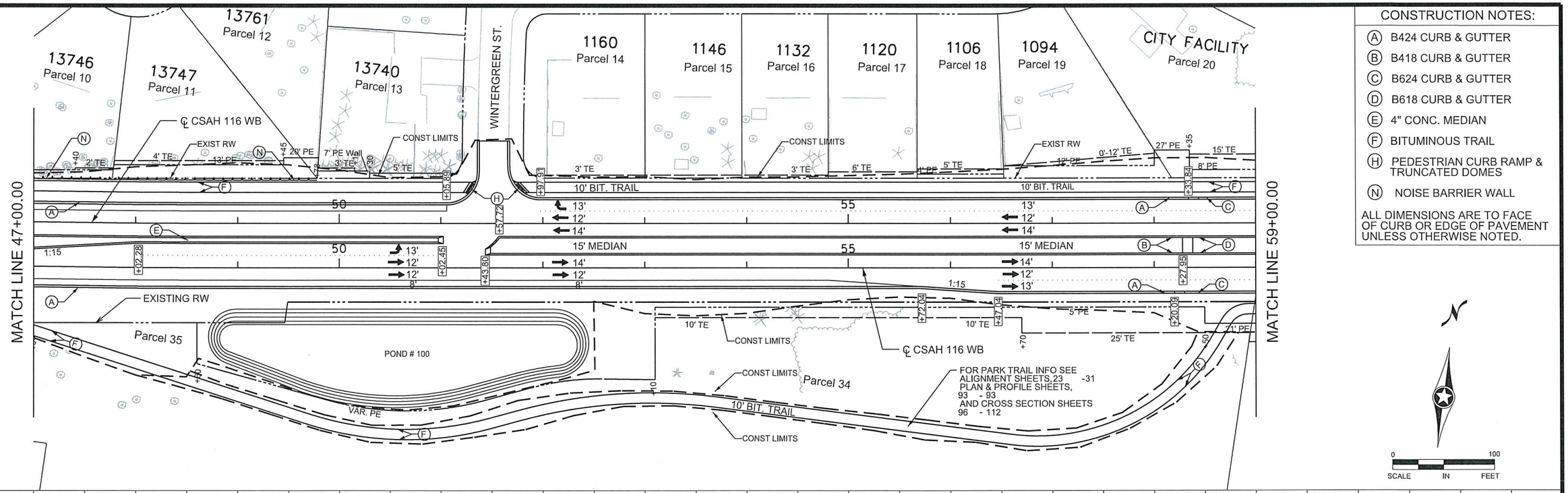
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA,
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zm Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE
STA 36+49.73 TO 47+00.00
Sheet 171 of 482 Sheets



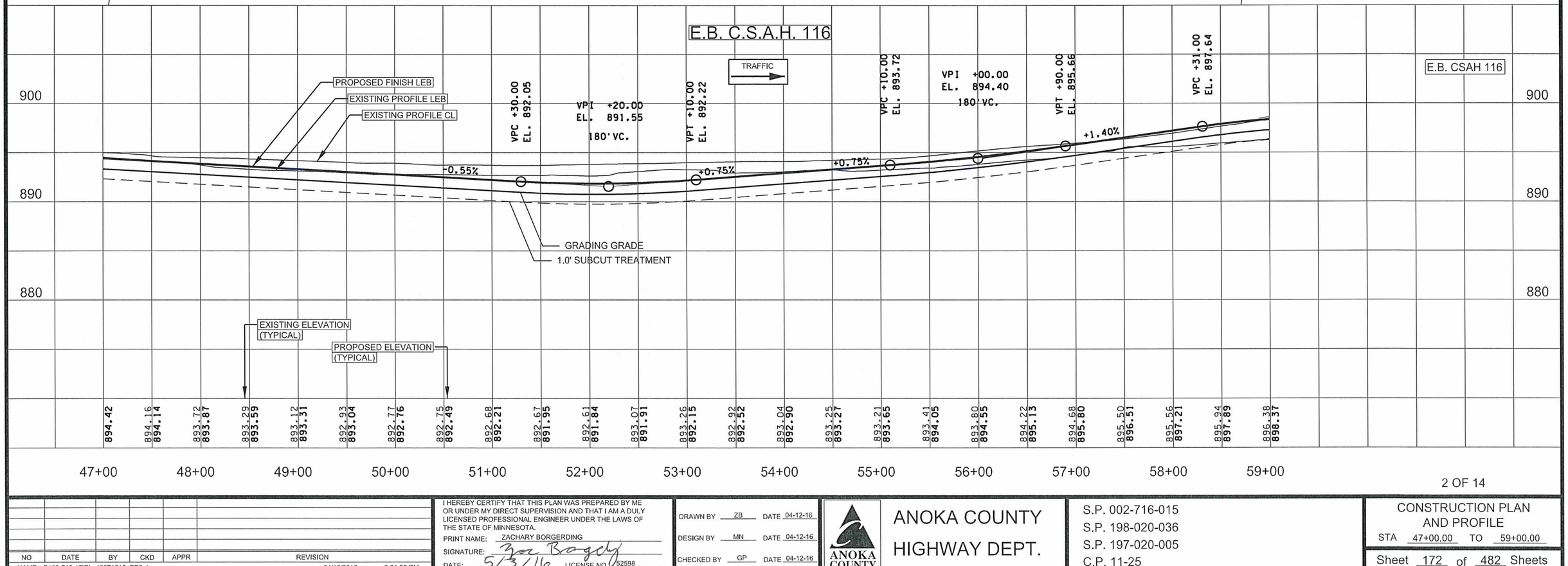

CONSTRUCTION NOTES:

- (A) B424 CURB & GUTTER
- (B) B418 CURB & GUTTER
- (C) B624 CURB & GUTTER
- (D) B618 CURB & GUTTER
- (E) 4" CONC. MEDIAN
- (F) BITUMINOUS TRAIL
- (H) PEDESTRIAN CURB RAMP & TRUNCATED DOMES
- (N) NOISE BARRIER WALL

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

N

0 100
SCALE IN FEET






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP2.dgn 04/12/2016 2:01:55 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

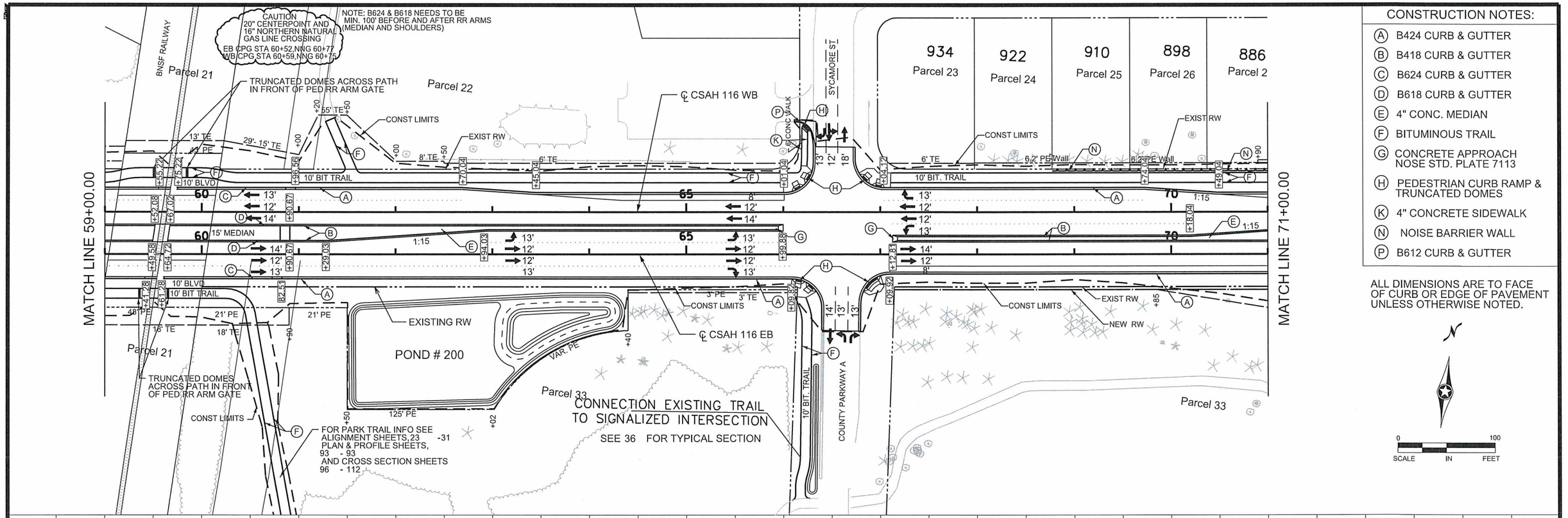
ANOKA COUNTY HIGHWAY DEPT.

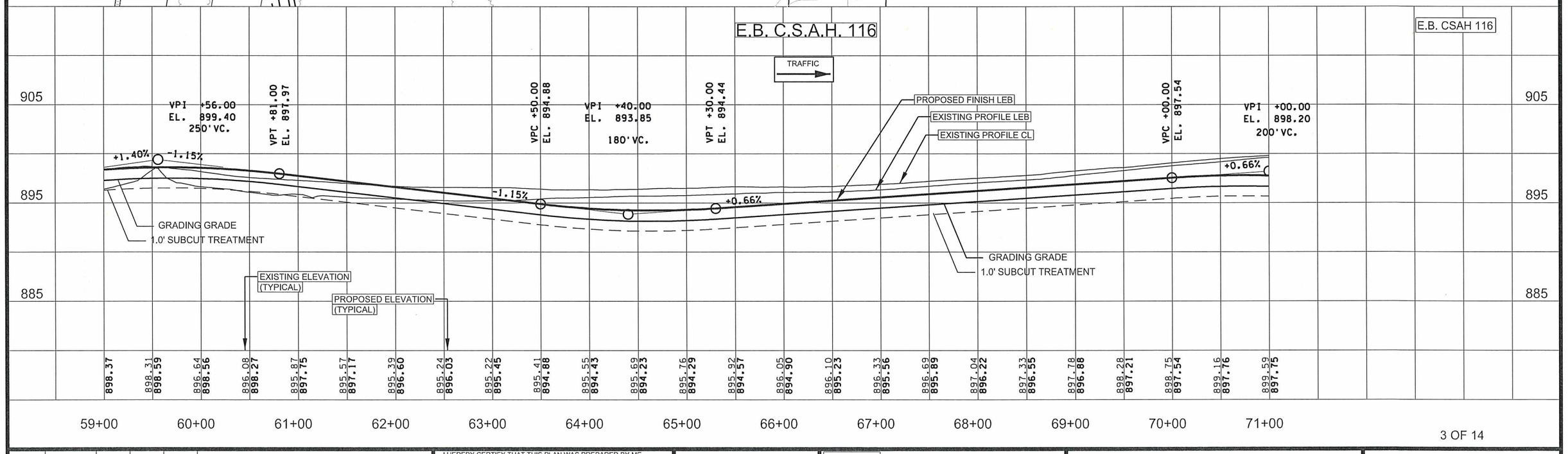
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 47+00.00 TO 59+00.00

Sheet 172 of 482 Sheets




3 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP3.dgn 04/12/2016 2:01:57 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

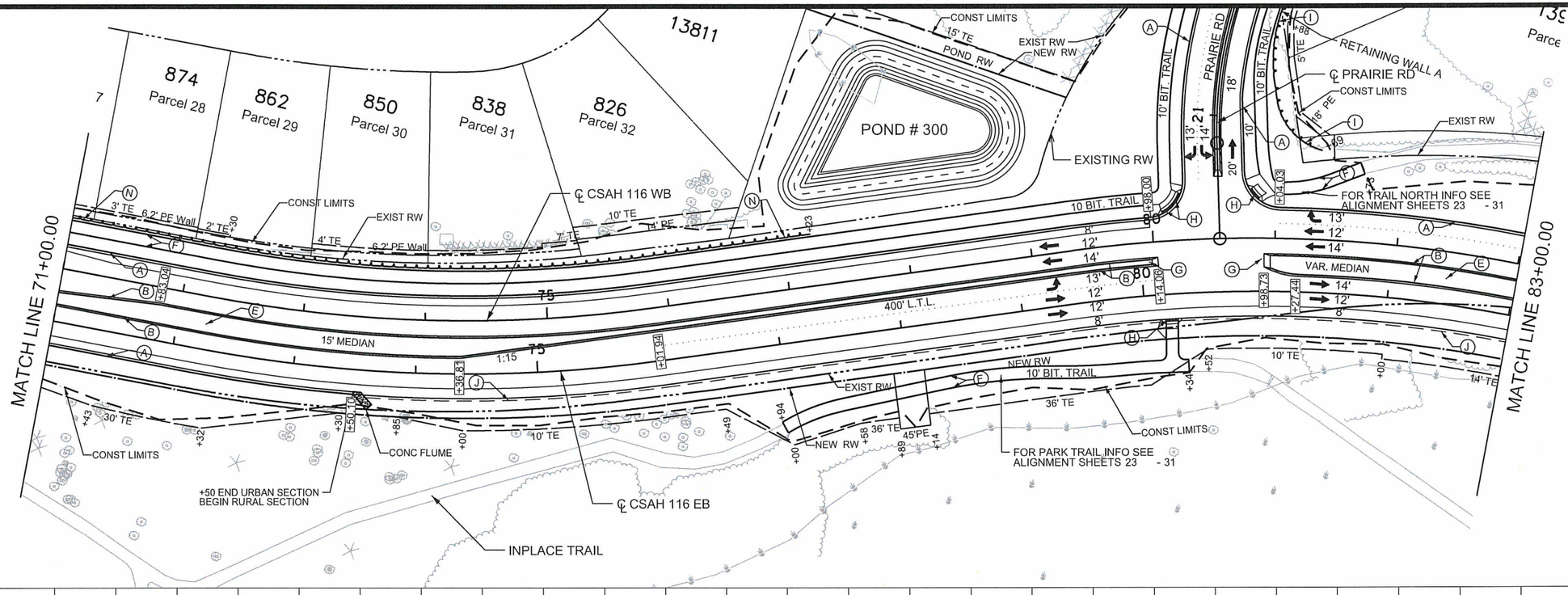
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 59+00.00 TO 71+00.00

Sheet 173 of 482 Sheets



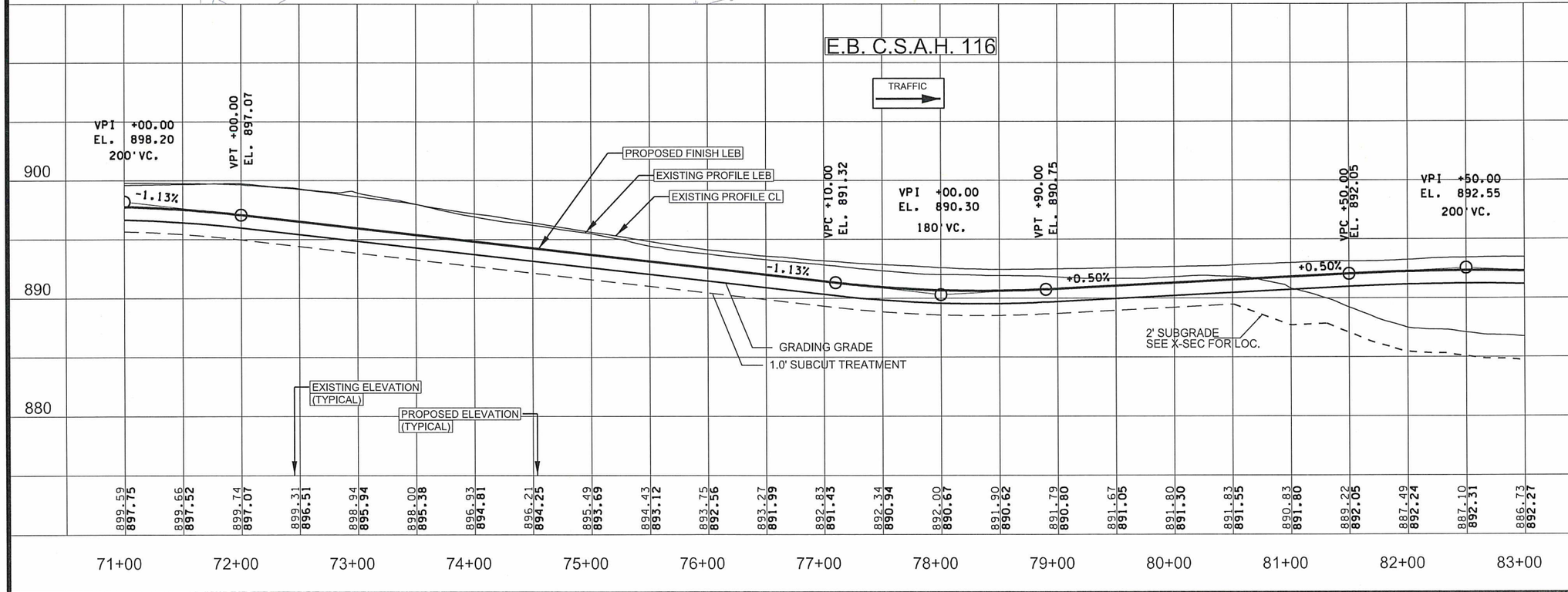

## CONSTRUCTION NOTES:

- (A) B424 CURB & GUTTER
- (B) B418 CURB & GUTTER
- (D) B618 CURB & GUTTER
- (E) 4" CONC. MEDIAN
- (F) BITUMINOUS TRAIL
- (G) CONCRETE APPROACH NOSE STD. PLATE 7113
- (H) PEDESTRIAN CURB RAMP & TRUNCATED DOMES
- (I) RETAINING WALL
- (J) 2' AGGREGATE SHOULDER
- (N) NOISE BARRIER WALL

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

N

0 100
SCALE IN FEET






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP4.dgn 04/12/2016 2:01:59 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

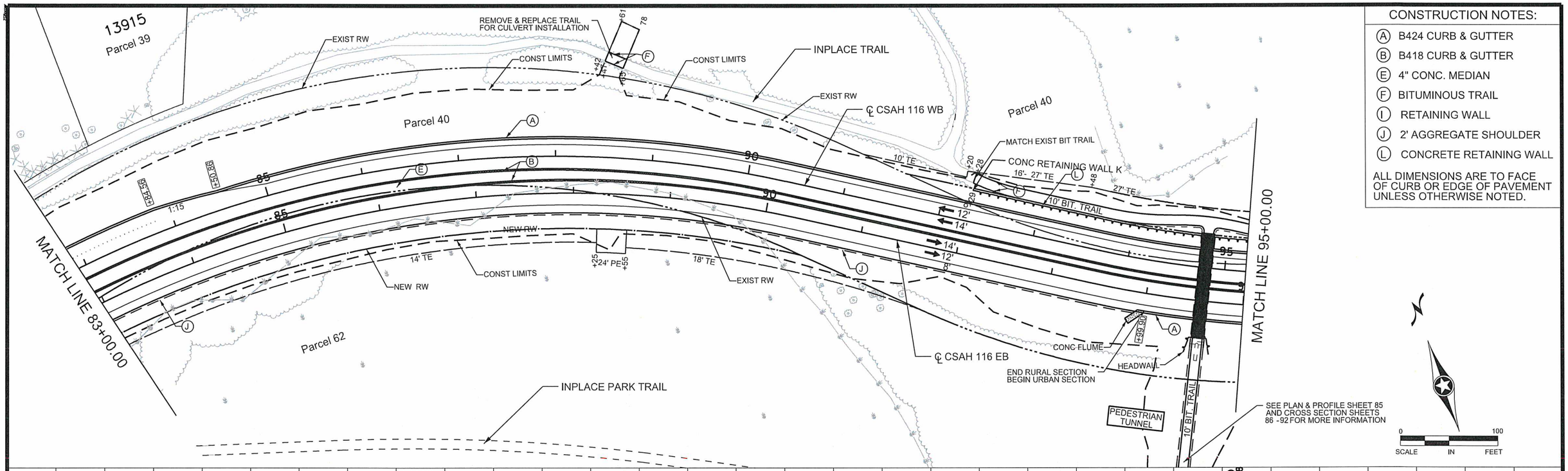
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

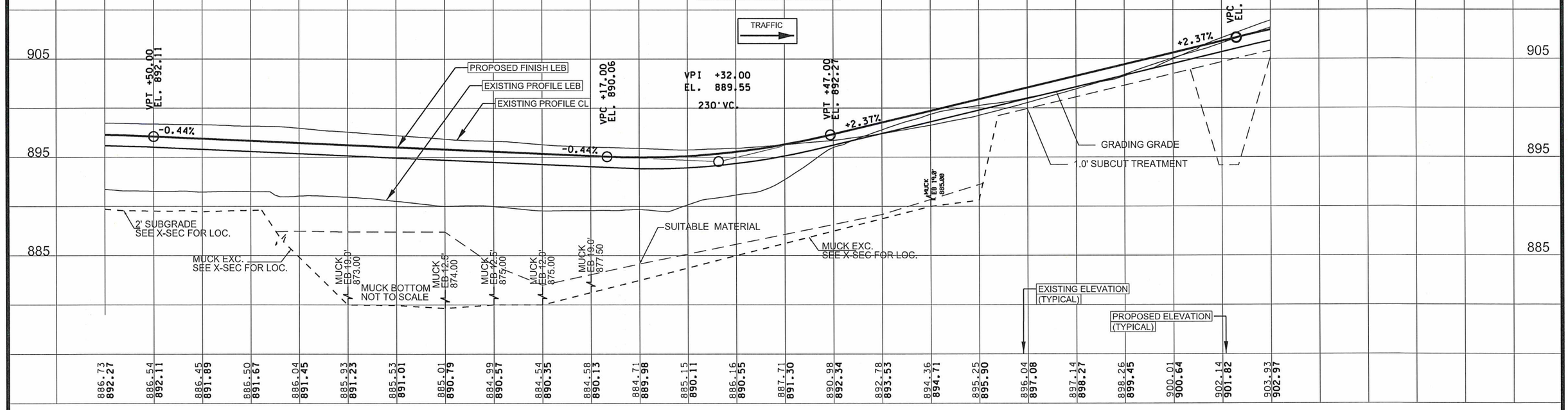
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE
STA 71+00.00 TO 83+00.00

Sheet 174 of 482 Sheets




5 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP5.dgn 04/12/2016 2:02:02 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

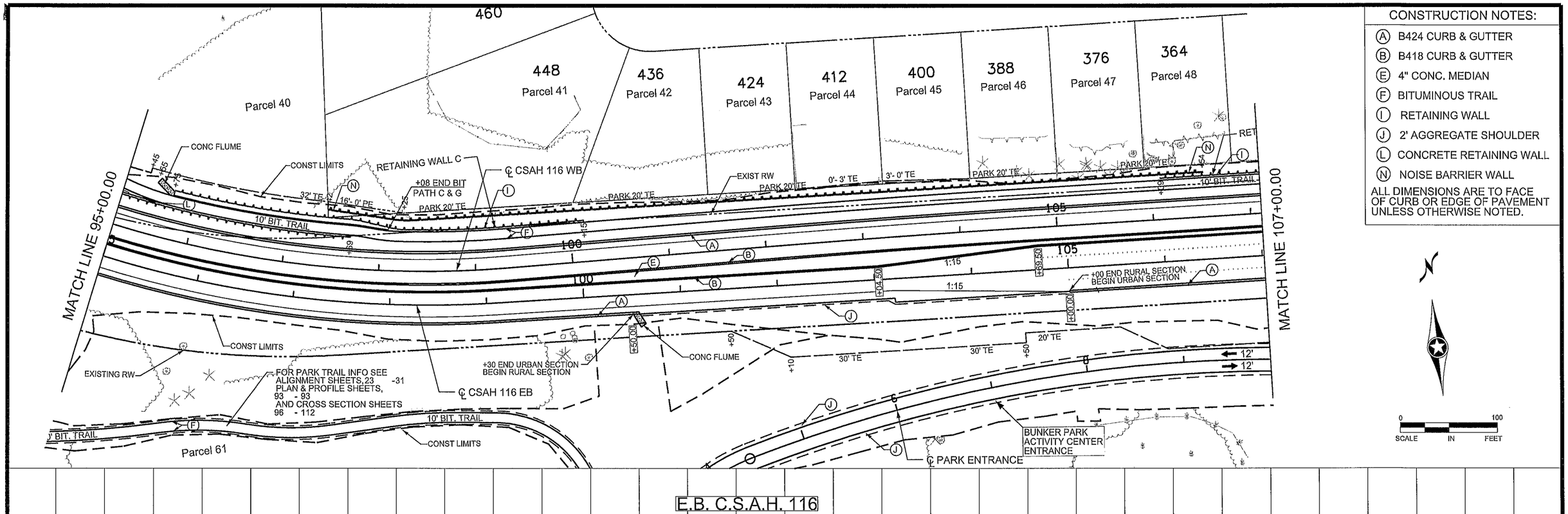
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 83+00.00 TO 95+00.00

Sheet 175 of 482 Sheets






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP6.dgn 05/12/2016 12:34:43 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

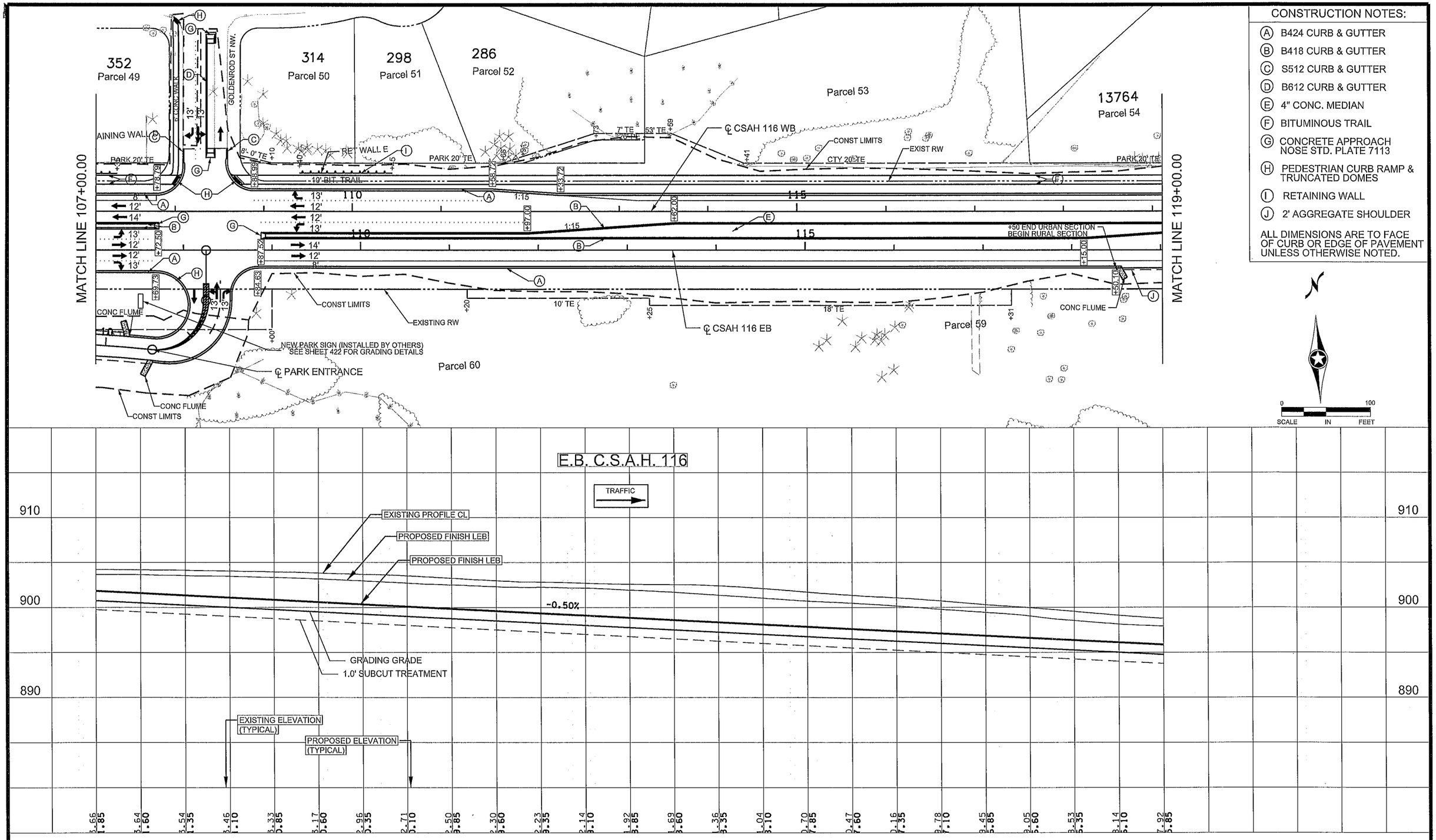
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 95+00.00 TO 107+00.00

Sheet 176 of 482 Sheets




CONSTRUCTION NOTES:

- (A) B424 CURB & GUTTER
- (B) B418 CURB & GUTTER
- (C) S512 CURB & GUTTER
- (D) B612 CURB & GUTTER
- (E) 4" CONC. MEDIAN
- (F) BITUMINOUS TRAIL
- (G) CONCRETE APPROACH NOSE STD. PLATE 7113
- (H) PEDESTRIAN CURB RAMP & TRUNCATED DOMES
- (I) RETAINING WALL
- (J) 2' AGGREGATE SHOULDER

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

N

0 100
SCALE IN FEET

7 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP7.dgn 05/12/2016 12:34:45 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/3/16 LICENSE NO. 52598

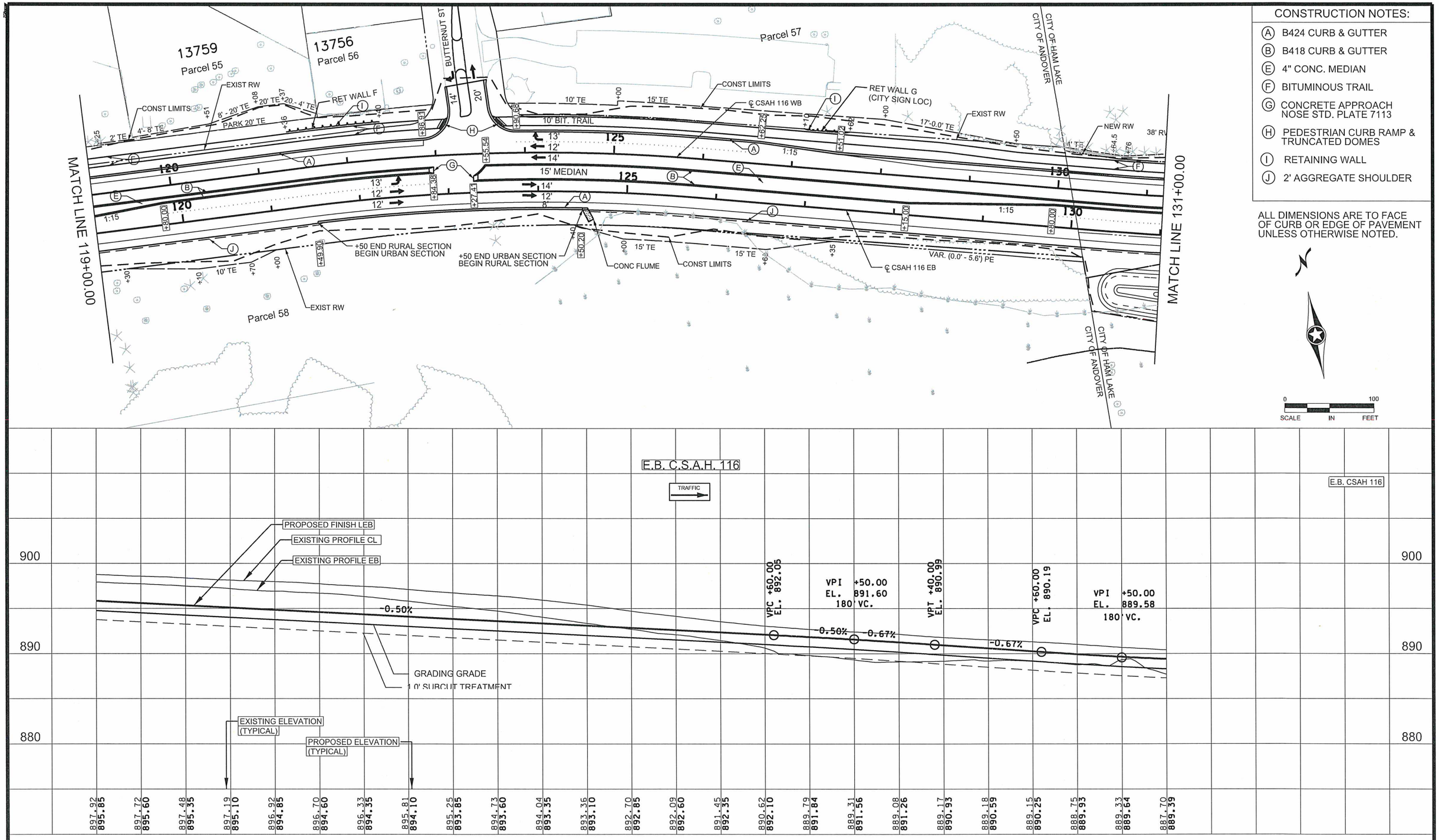
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE
STA 107+00.00 TO 119+00.00

Sheet 177 of 482 Sheets




## CONSTRUCTION NOTES:

- (A) B424 CURB & GUTTER
- (B) B418 CURB & GUTTER
- (E) 4" CONC. MEDIAN
- (F) BITUMINOUS TRAIL
- (G) CONCRETE APPROACH NOSE STD. PLATE 7113
- (H) PEDESTRIAN CURB RAMP & TRUNCATED DOMES
- (I) RETAINING WALL
- (J) 2' AGGREGATE SHOULDER

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

N

0 100
SCALE IN FEET

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|---|---|---|---|---|---|
| NO | DATE | BY | CKD | APPR | REVISION |

NAME: P:\02-716-15\Plan\0271615_PP8.dgn 04/12/2016 2:02:08 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

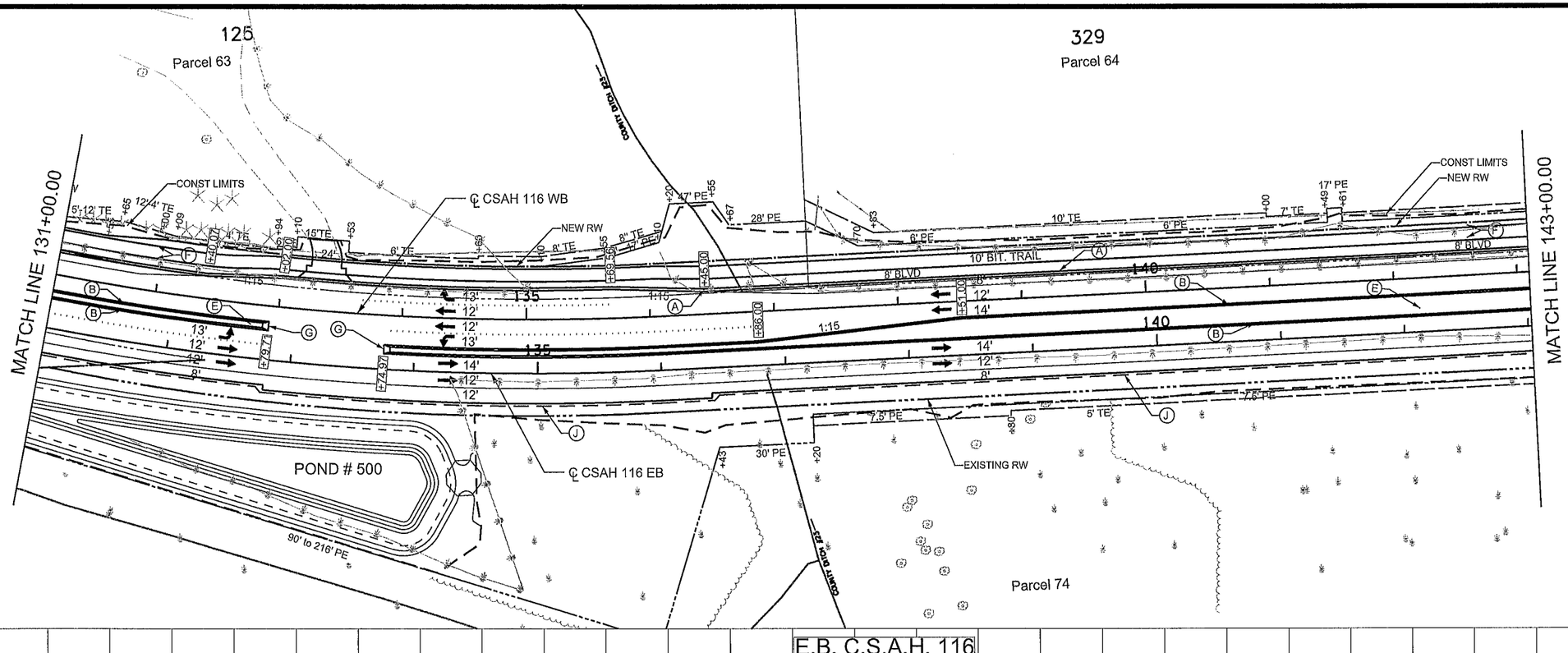
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 119+00.00 TO 131+00.00

Sheet 178 of 482 Sheets




9 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271616_PP9.dgn 04/12/2016 2:02:10 PM

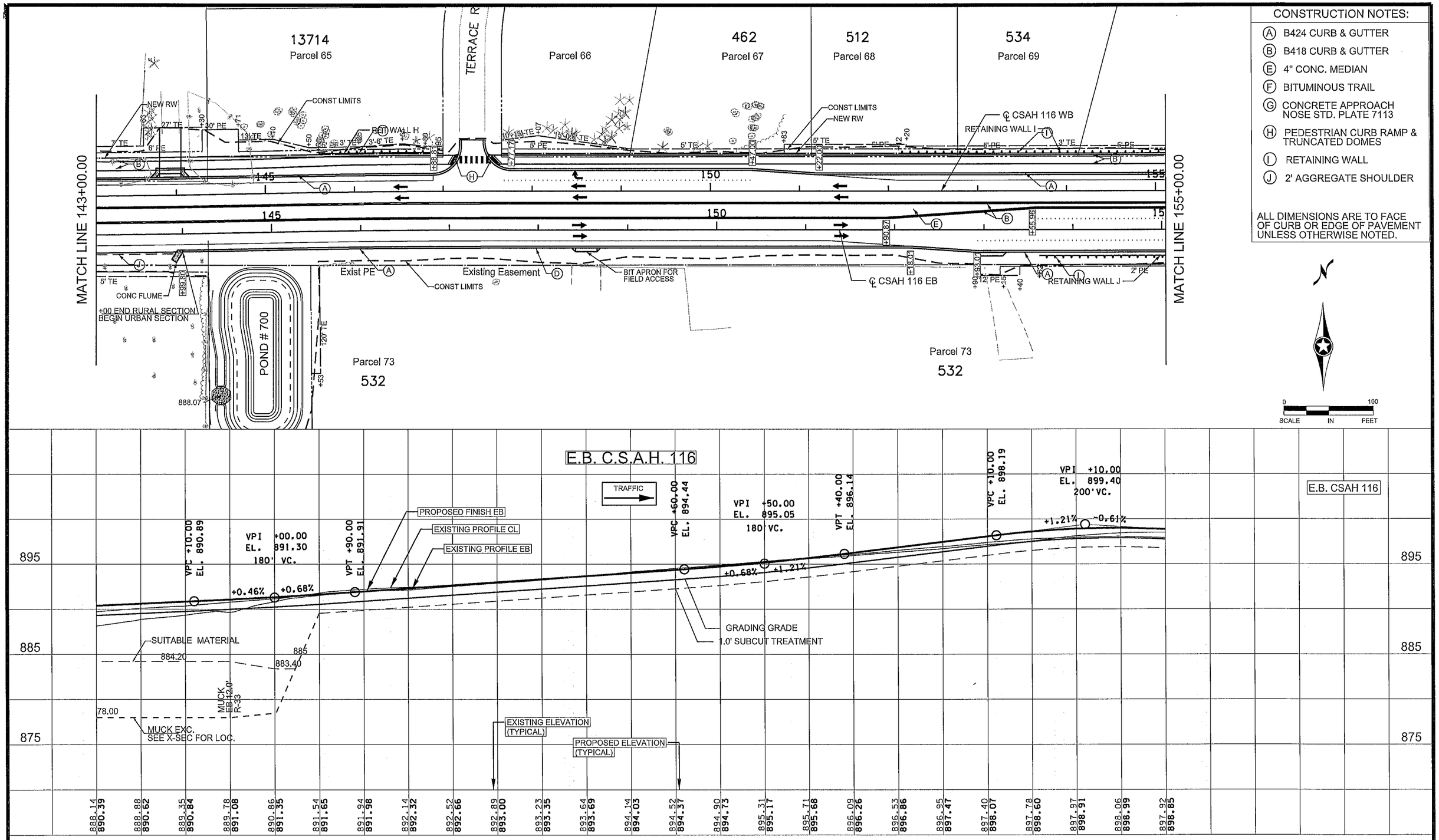
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE
STA 131+00.00 TO 143+00.00
Sheet 179 of 482 Sheets




10 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP10.dgn 04/12/2016 2:02:12 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

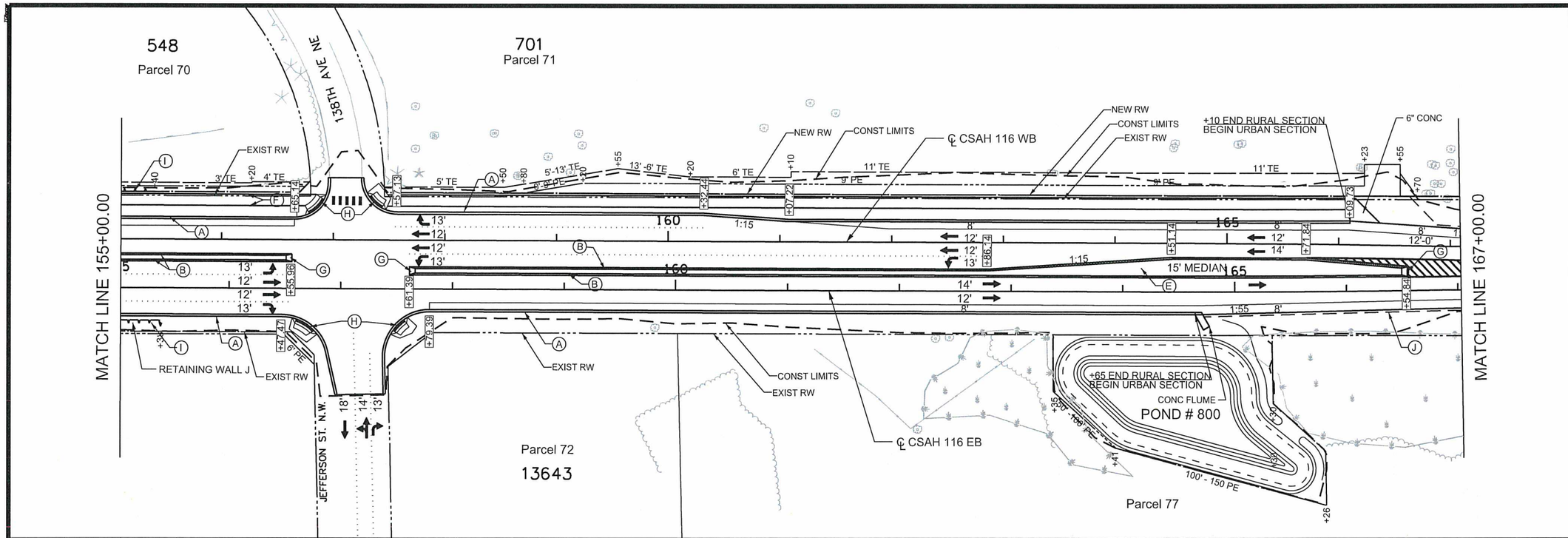
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 143+00.00 TO 155+00.00

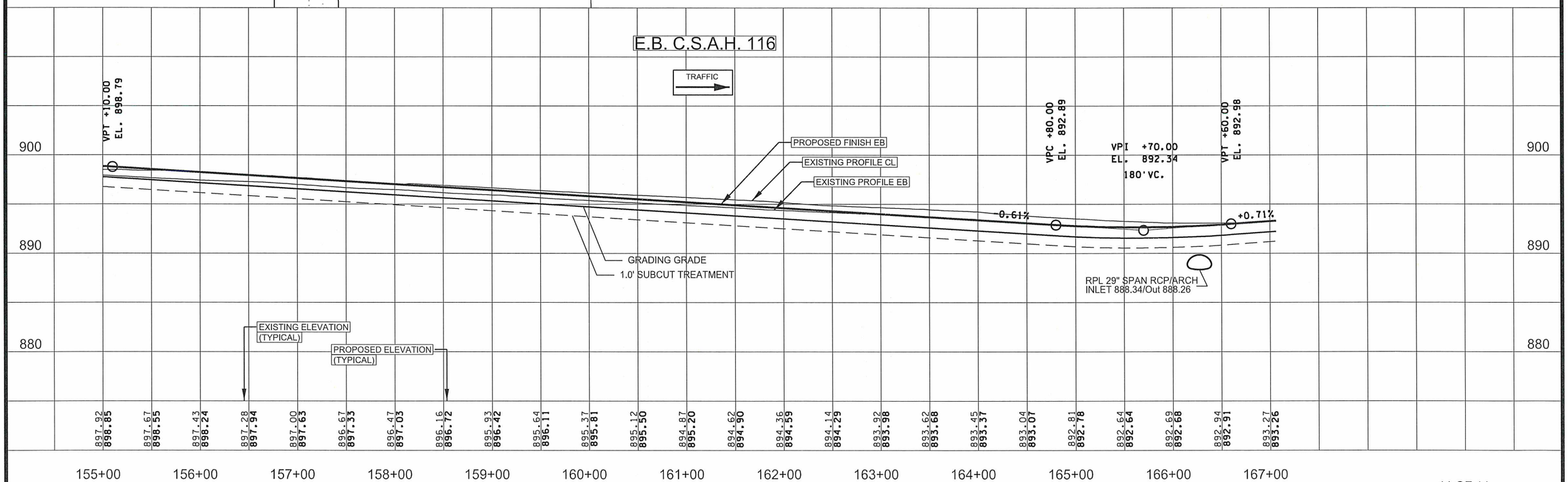
Sheet 180 of 482 Sheets




CONSTRUCTION NOTES:

- (A) B424 CURB & GUTTER
- (B) B418 CURB & GUTTER
- (E) 4" CONC. MEDIAN
- (F) BITUMINOUS TRAIL
- (G) CONCRETE APPROACH NOSE STD. PLATE 7113
- (H) PEDESTRIAN CURB RAMP & TRUNCATED DOMES
- (I) RETAINING WALL
- (J) 2' AGGREGATE SHOULDER

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP11.dgn 04/12/2016 2:02:14 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

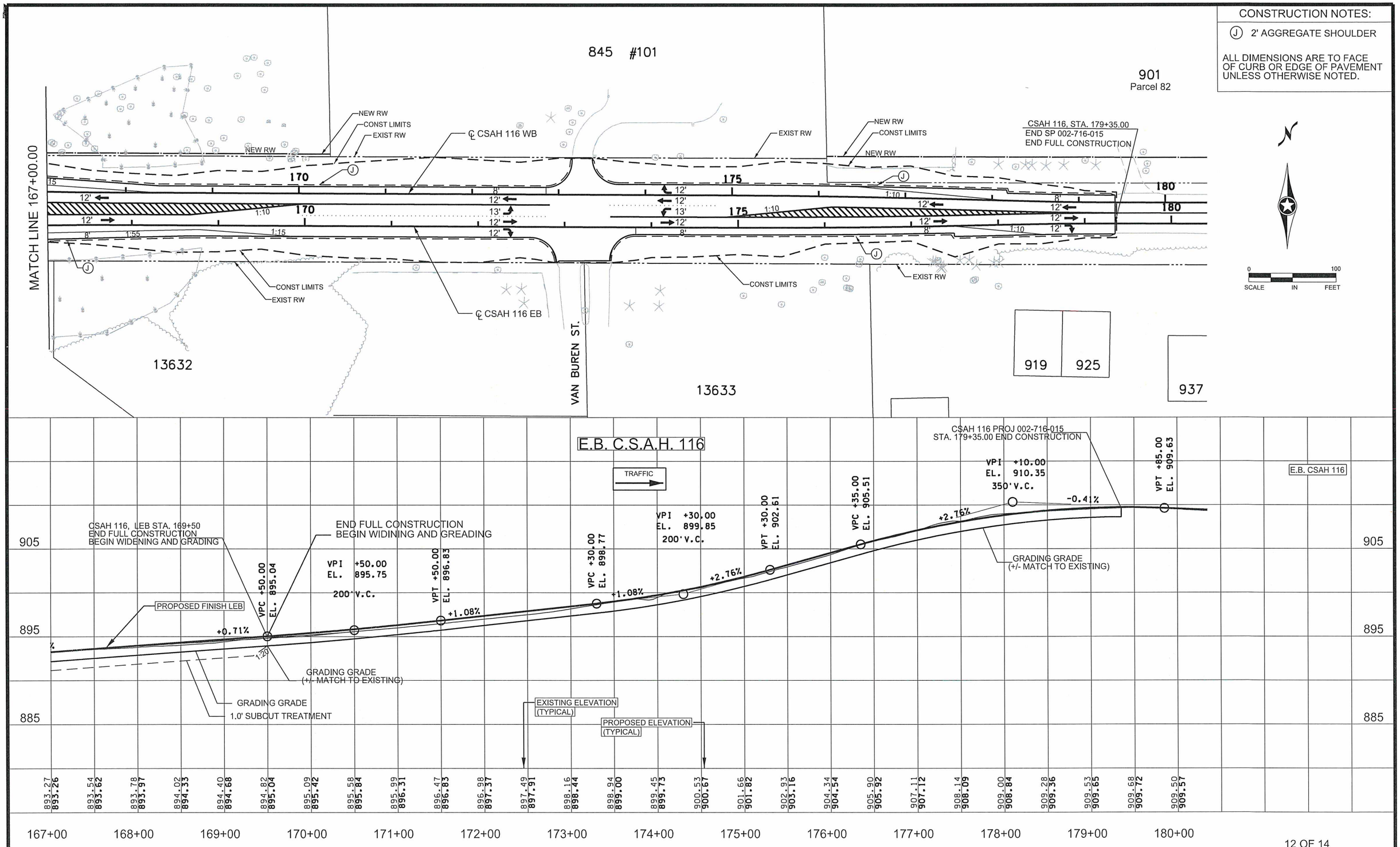
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 155+00.00 TO 167+00.00

Sheet 181 of 482 Sheets




CONSTRUCTION NOTES:

(J) 2' AGGREGATE SHOULDER

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

12 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP12.dgn 04/12/2016 2:02:16 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

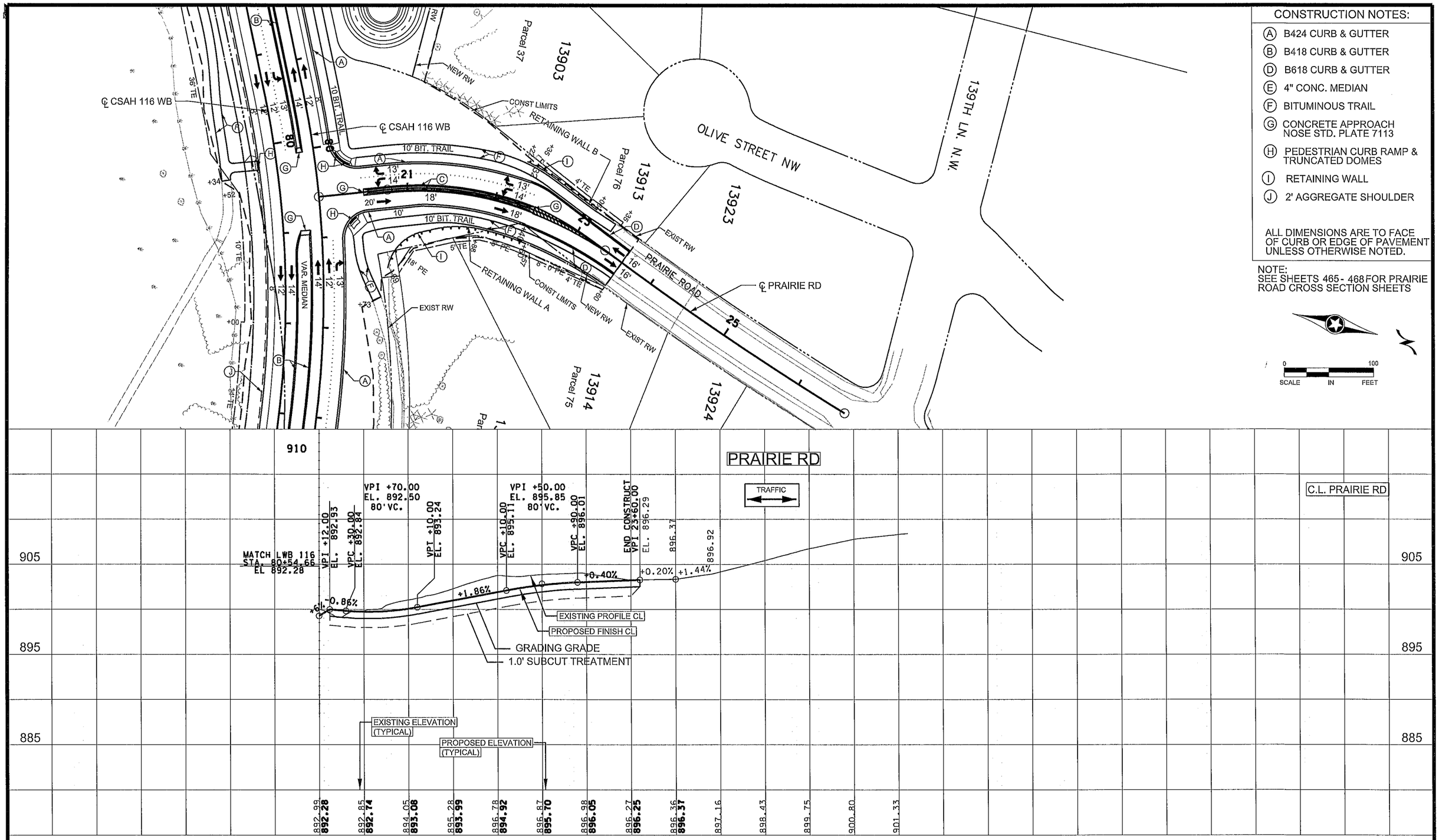
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CONSTRUCTION PLAN AND PROFILE

STA 167+00.00 TO 179+34.92

Sheet 182 of 482 Sheets




13 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_PP13.dgn 04/12/2016 2:02:18 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

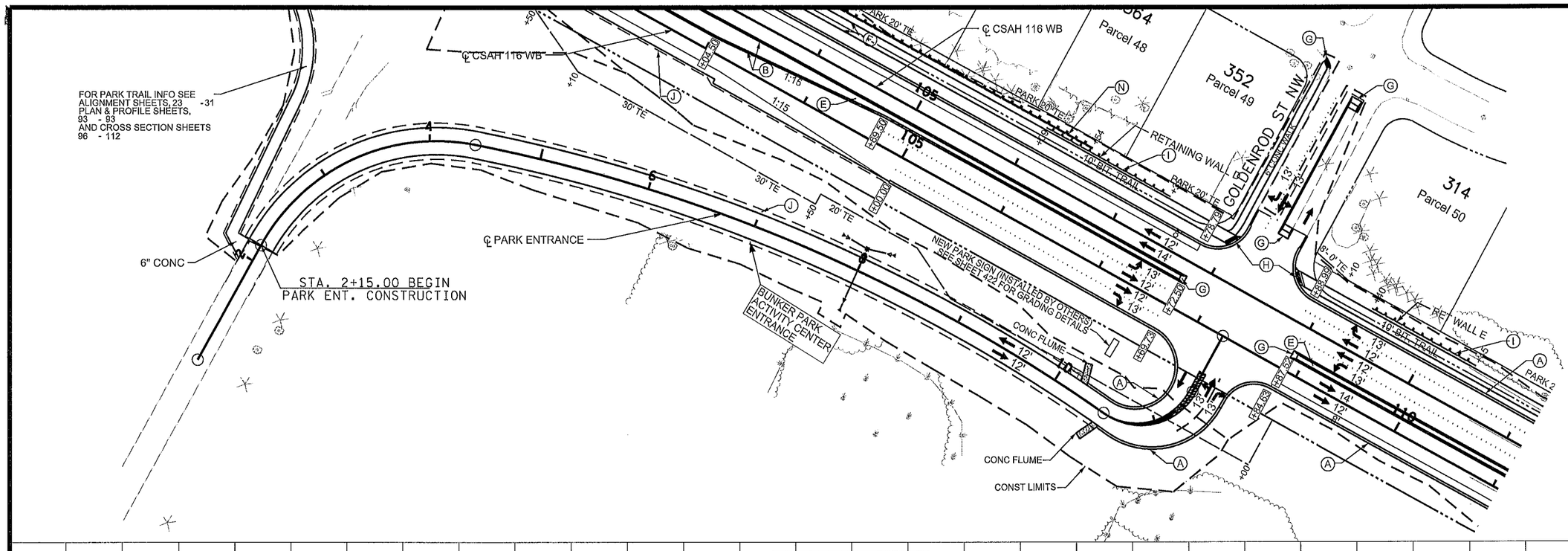
ANOKA COUNTY HIGHWAY DEPT.

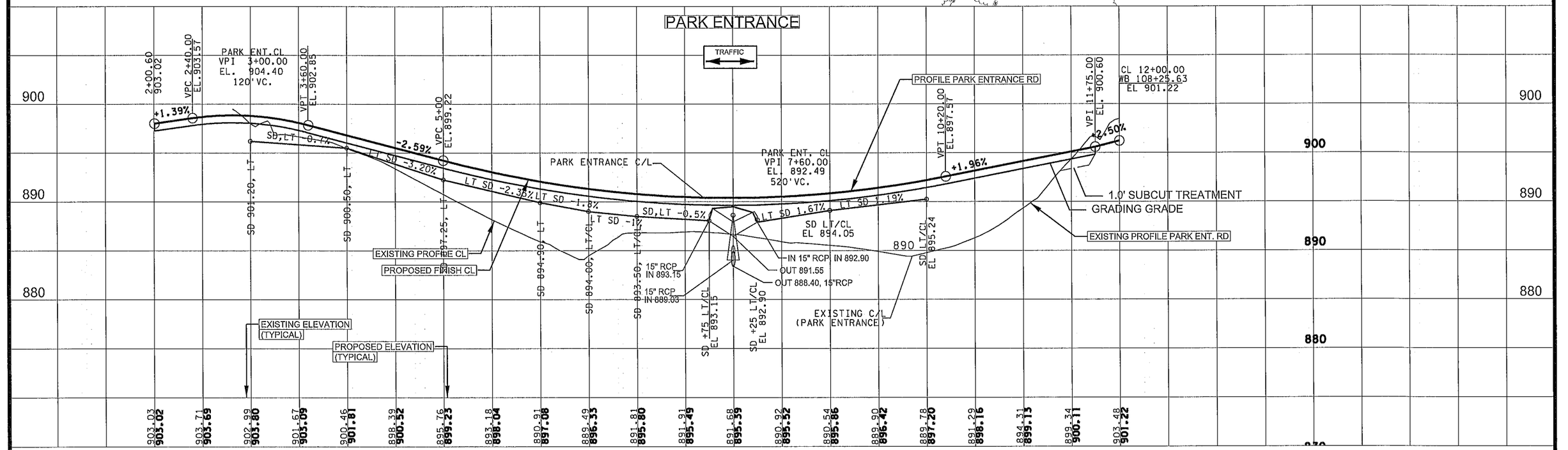
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PRAIRIE ROAD CONSTRUCTION PLAN AND PROFILE

STA 20+00.00 TO 23+59.80

Sheet 183 of 482 Sheets




14 OF 14

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

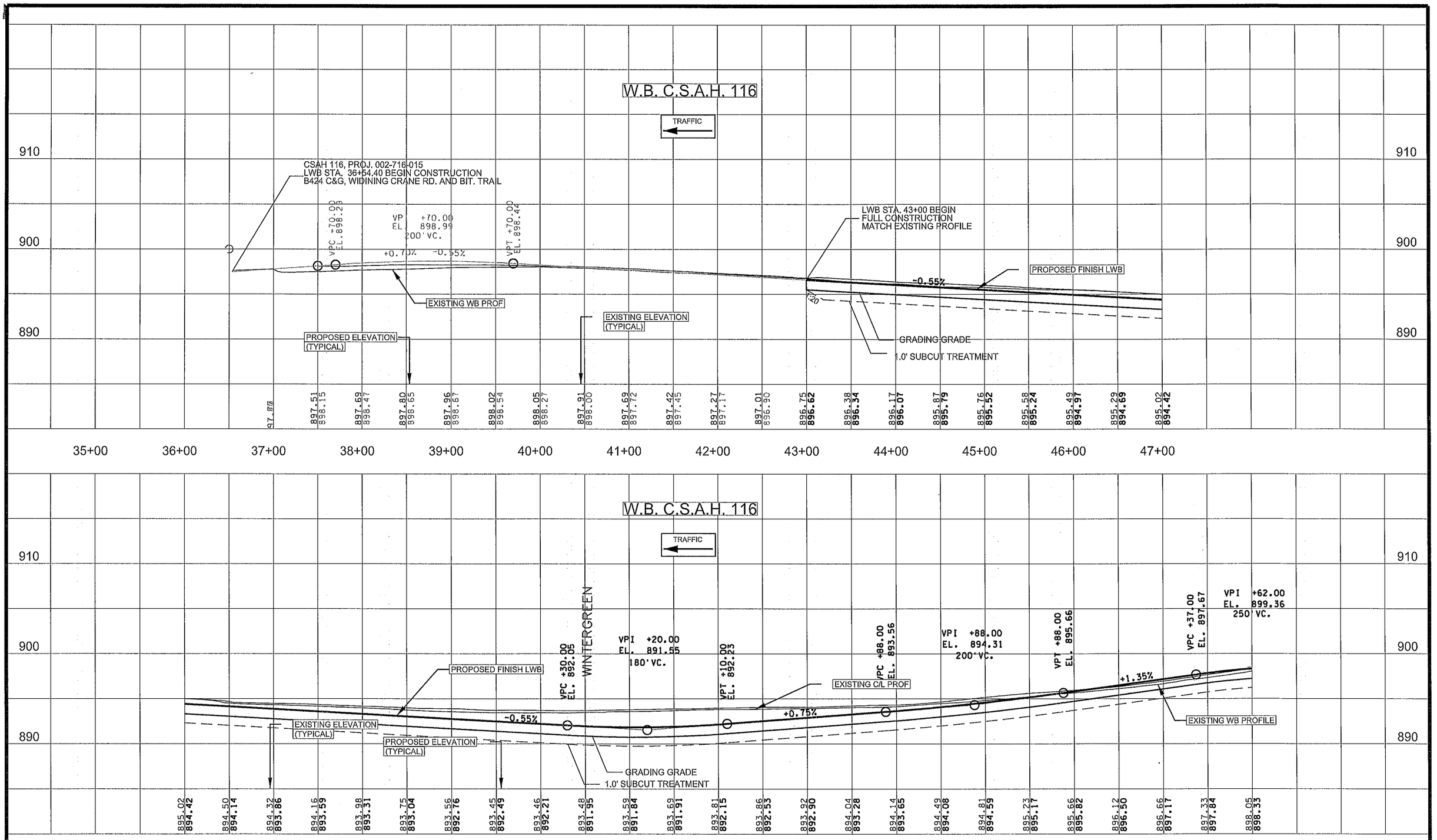
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PARK ENTRANCE CONSTRUCTION PLAN AND PROFILE
STA 2+15.00 TO 12+00.00

Sheet 184 of 482 Sheets







1 OF 6

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

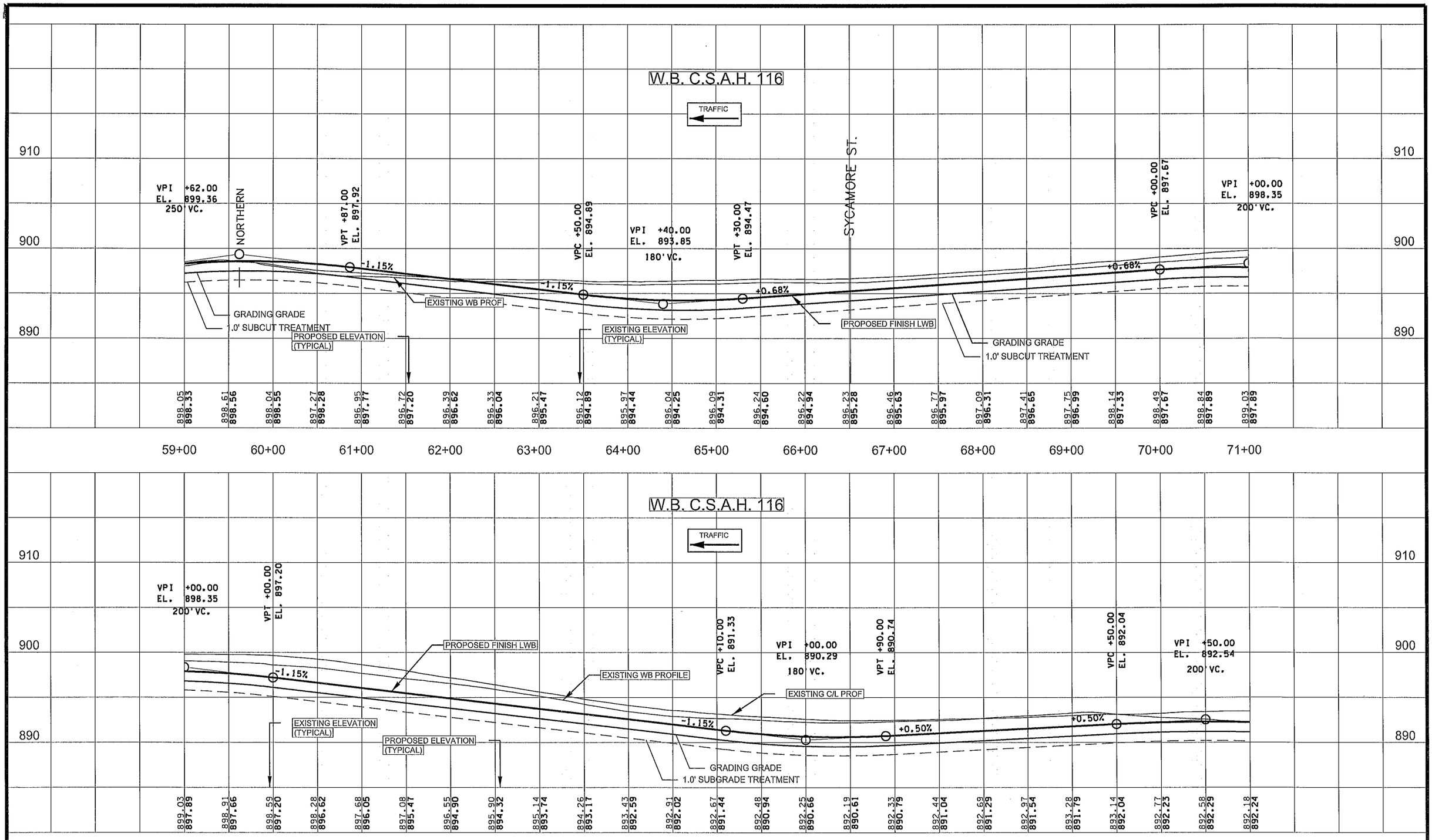
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WB PROFILE

STA 35+00.00 TO 59+00.00

Sheet 185 of 482 Sheets







2 OF 6

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

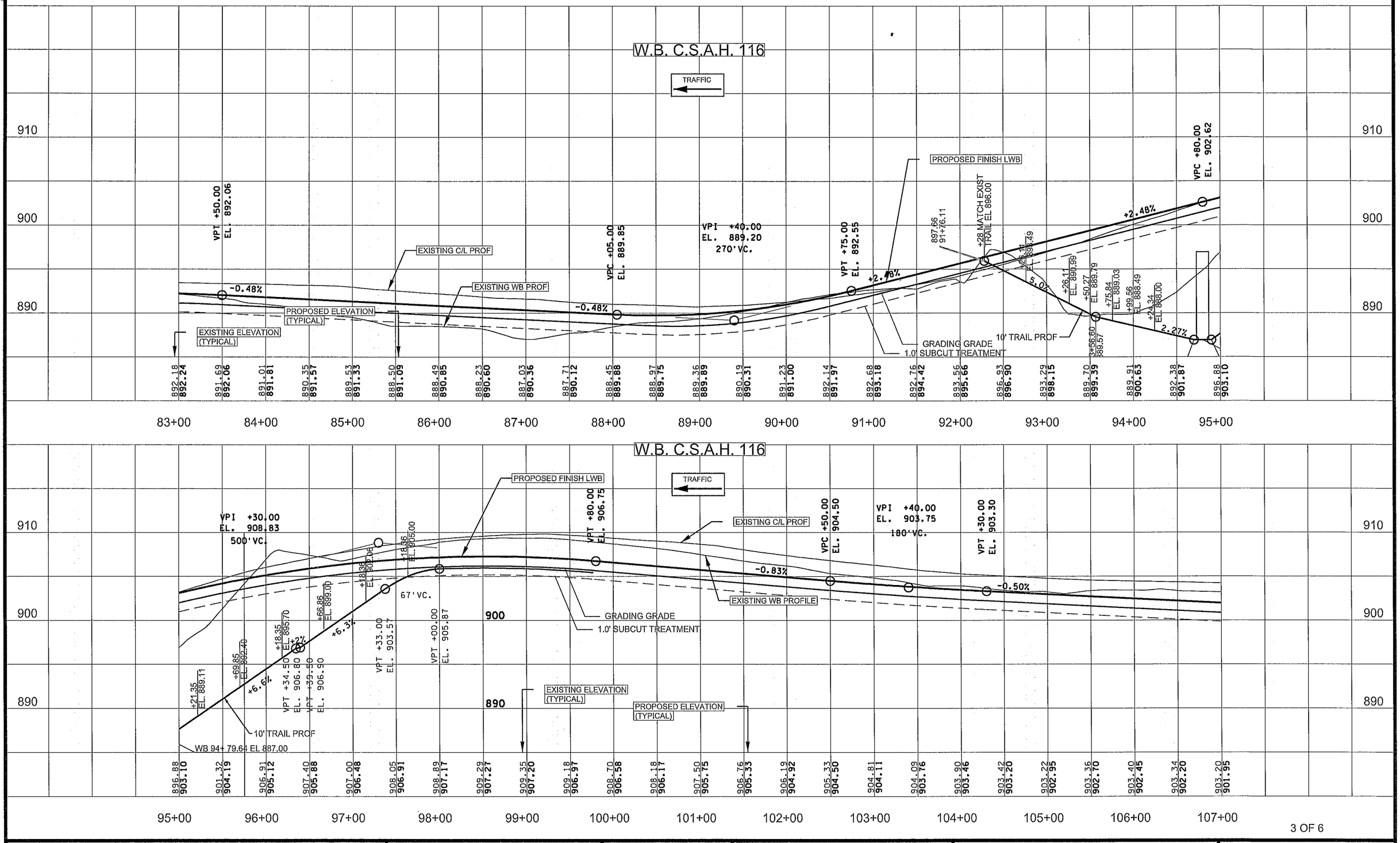
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WB PROFILE

STA 59+00.00 TO 83+00.00

Sheet 186 of 482 Sheets







3 OF 6

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|---|---|---|---|---|---|

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

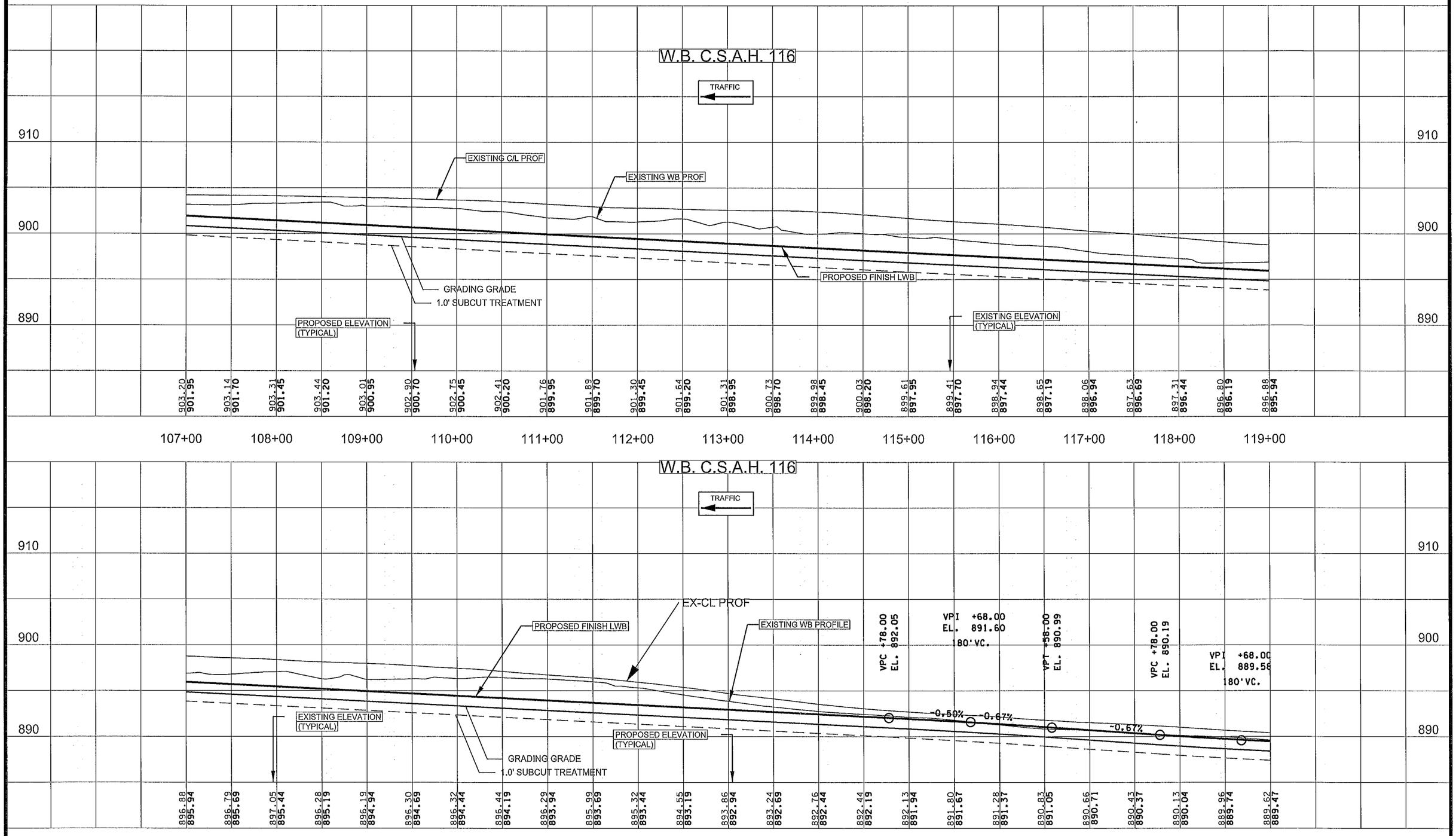
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WB PROFILE

STA 83+00.00 TO 107+00.00

Sheet 187 of 482 Sheets




4 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

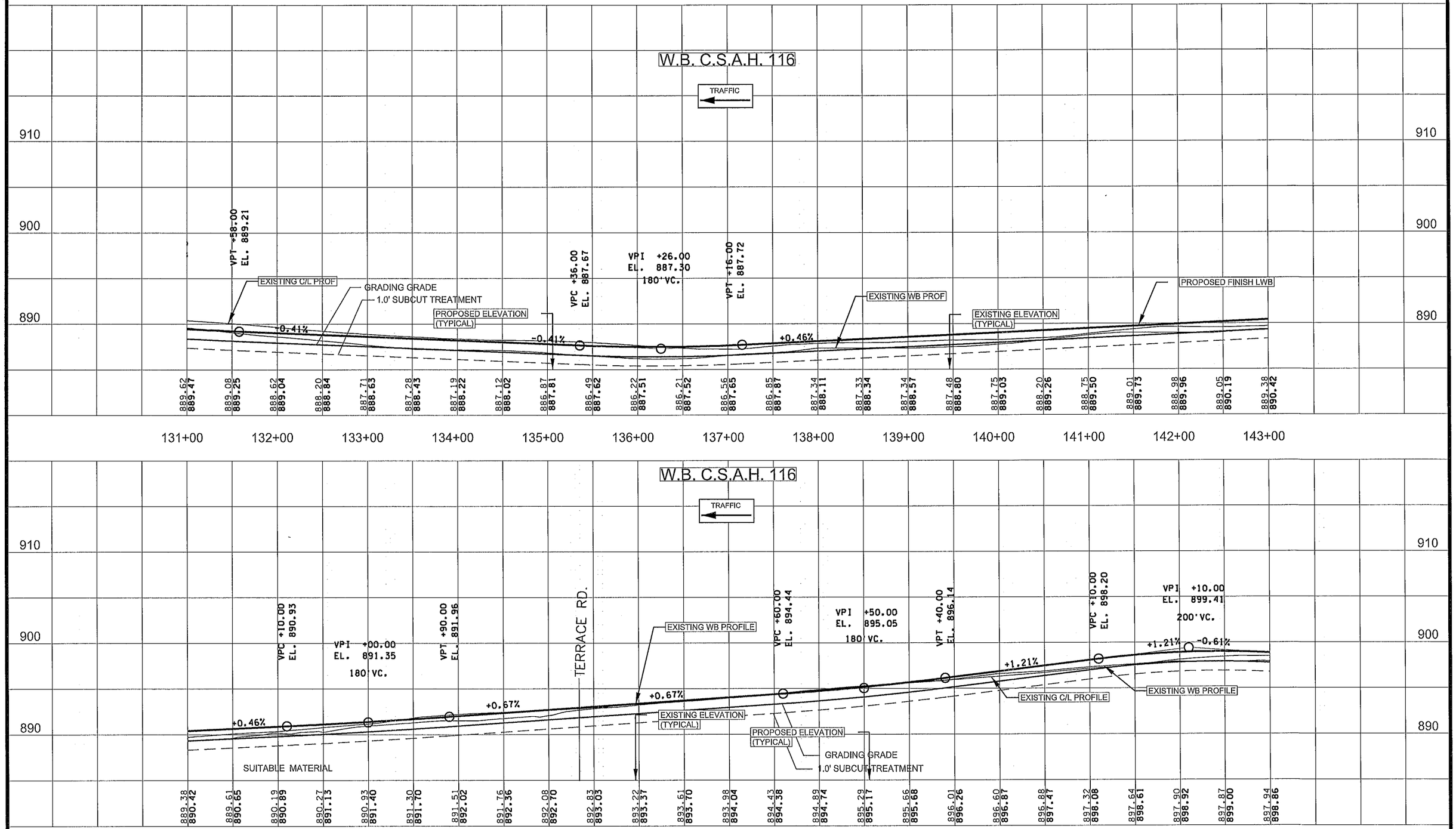
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WB PROFILE

STA 107+00.00 TO 131+00.00

Sheet 188 of 482 Sheets




5 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

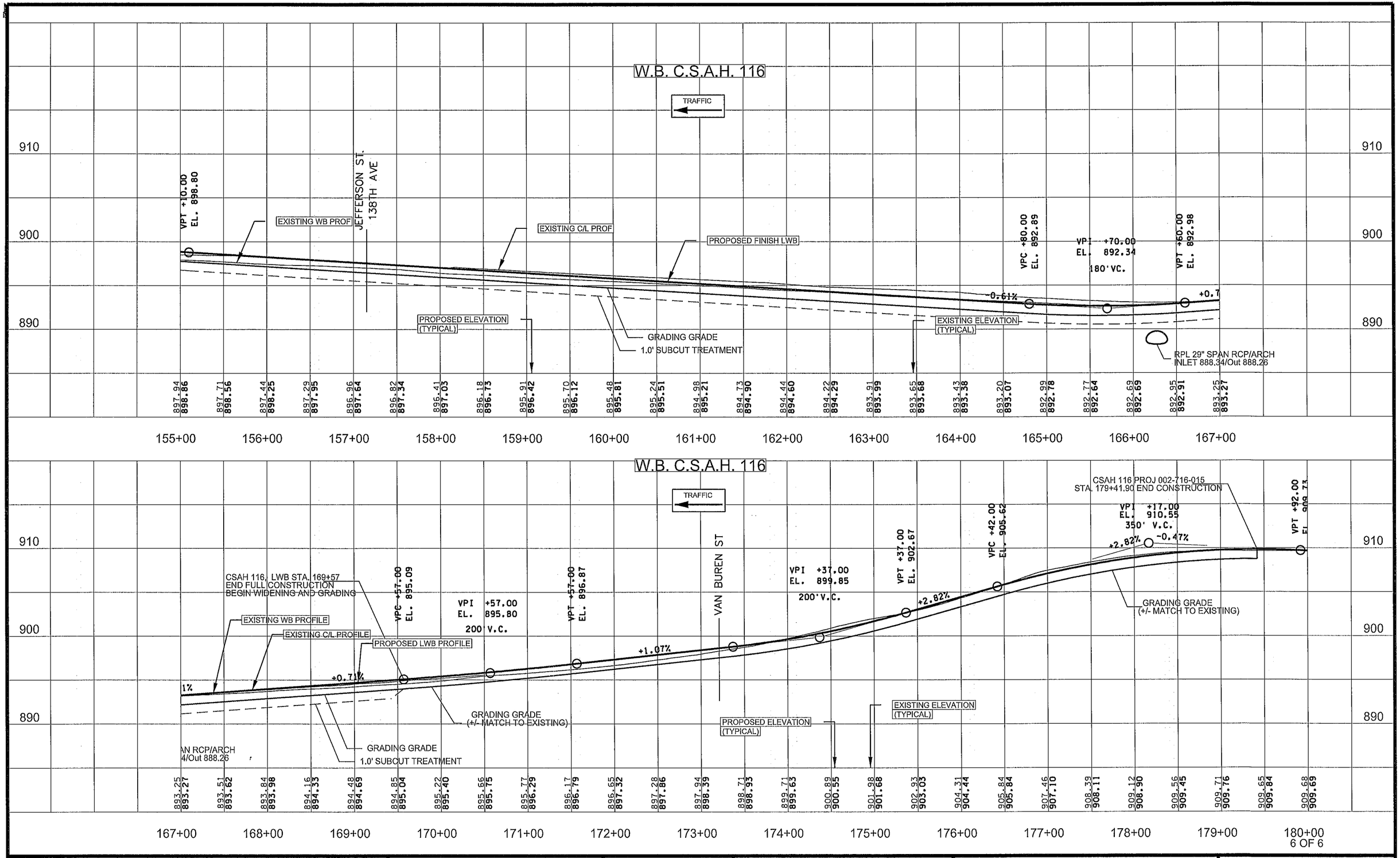
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WB PROFILE

STA 131+00.00 TO 155+00.00

Sheet 189 of 482 Sheets




6 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zan Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

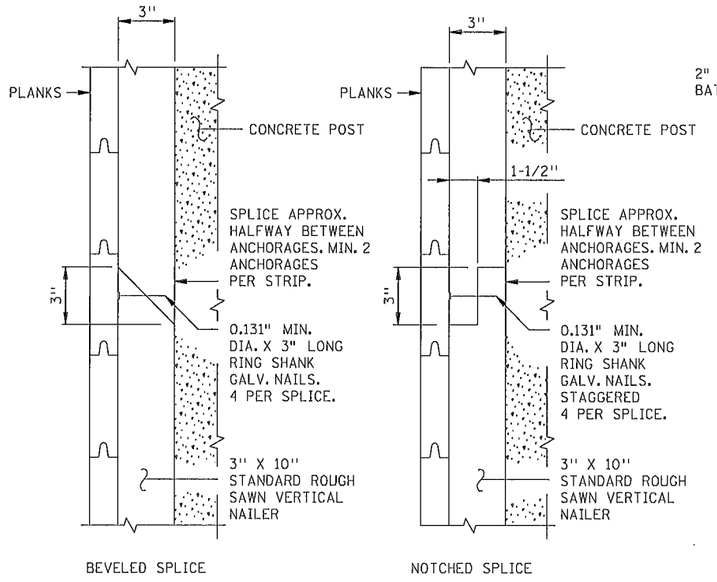
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

WB PROFILE

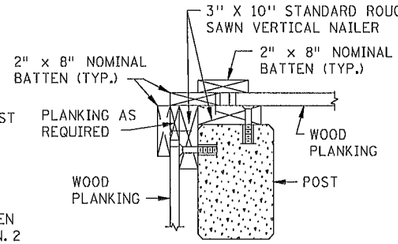
STA 155+00.00 TO 179+34.92

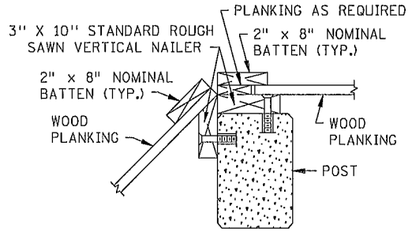
Sheet 190 of 482 Sheets

PLOTTED/REVISED:
$$$$@DATE@$$$$$

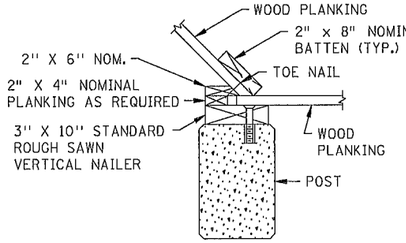


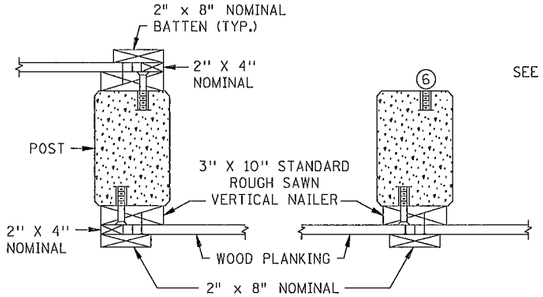

VERTICAL NAILER SPLICE DETAIL
(CONTRACTOR OPTION)



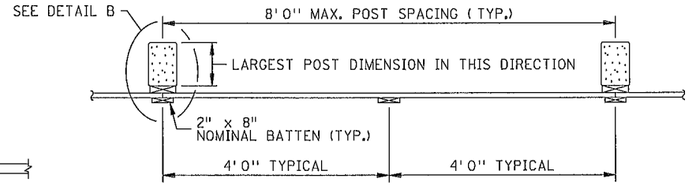




POST LOCATIONS FOR ANGLE TURNS




DETAIL A DETAIL B




FILL SIDE

WALL TYPE NO. 1 ①

NOTES:

PROVIDE PRESERVATIVE TREATED TIMBER PRODUCTS PER SPEC. 3491.

GALVANIZE NAILS PER SPEC. 3392. NAILING REQUIREMENTS SHOWN ARE BASED ON FULL HEAD NAILS AND ENTIRE LENGTH OF SHANK RINGED.

① SEE CONSTRUCTION PLAN FOR REQUIRED WALL TYPE.

② WALL TYPE NO. 2 SHALL BE USED IN NON-FILL CONDITIONS ONLY.

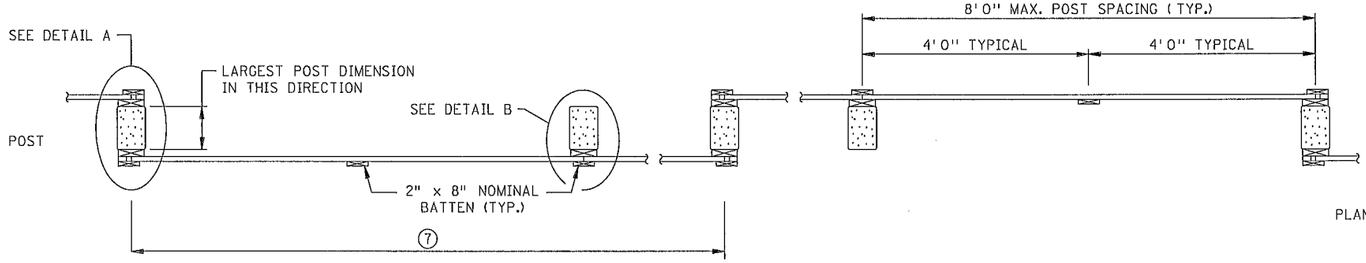
③ USE THE POST SIZE AND EMBEDMENT FOR THE HIGHER WALL SECTION AT THE STEP.

④ SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING SCREWS AND NAILS.

⑤ REFER TO STANDARD FIGURE 5-297.661 (3 OF 3) FOR ADDITIONAL DETAILS REGARDING OPTIONAL PLANK SPLICE LOCATIONS.

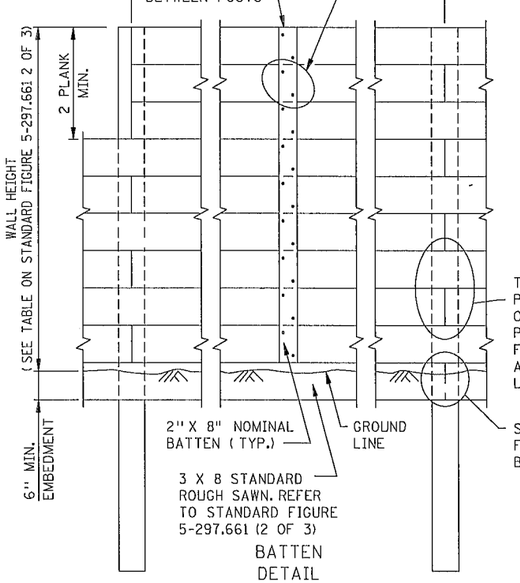
⑥ GALVANIZED COIL THREAD ANCHORS SHALL BE PLACED ON ALTERNATE SIDES OF POST FACE ℄. MINIMUM FACTORED PULL OUT OF 2.5 KIPS PER ANCHOR. UNUSED ANCHORS SHALL BE COMPLETELY FILLED WITH A MnDOT APPROVED/QUALIFIED PRODUCT PER 3722, SILICONE JOINT SEALANT.

⑦ PREFERRED LAYOUT IS 5-7 POSTS SPACES.




TRAFFIC SIDE

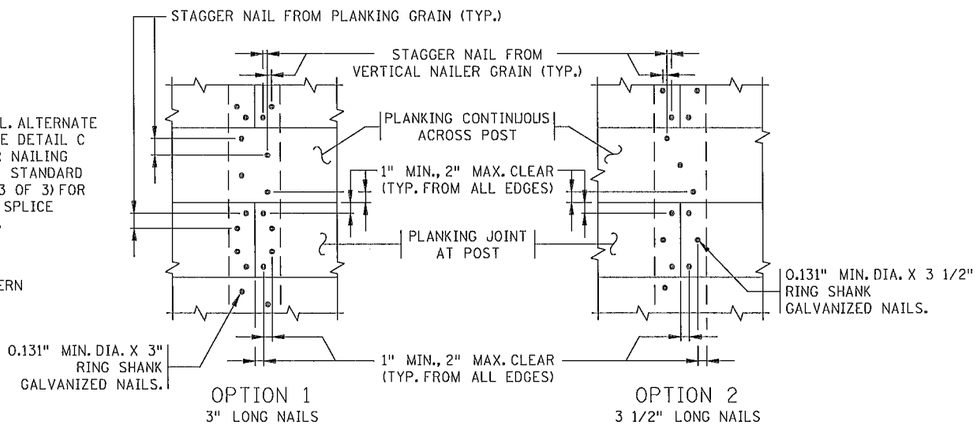
WALL TYPE NO. 2 ①②



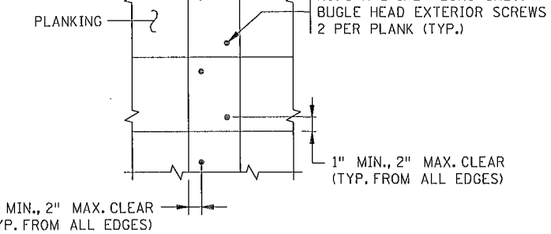

BATTEN DETAIL

STEP DETAIL LEVEL DETAIL

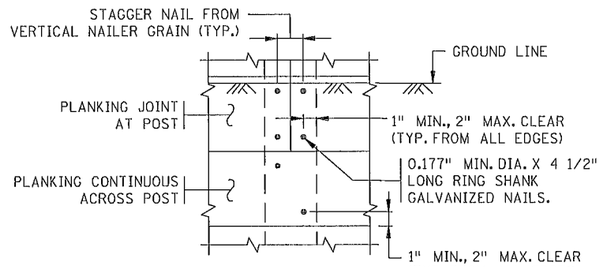
FRONT ELEVATION ⑤
POST BATTENS NOT SHOWN




DETAIL C ④
NAILING PATTERN FOR PLANK TO VERTICAL NAILER - ABOVE GROUND




DETAIL E ④
FASTENER PATTERN FOR BATTENS




DETAIL D ④
NAILING PATTERN FOR PLANK TO VERTICAL NAILER - BELOW GROUND

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$$
PATH & FILENAME: $$$@PATHFILENAME@$$$$
FILE NAME: @FILENAME@

REVISION:

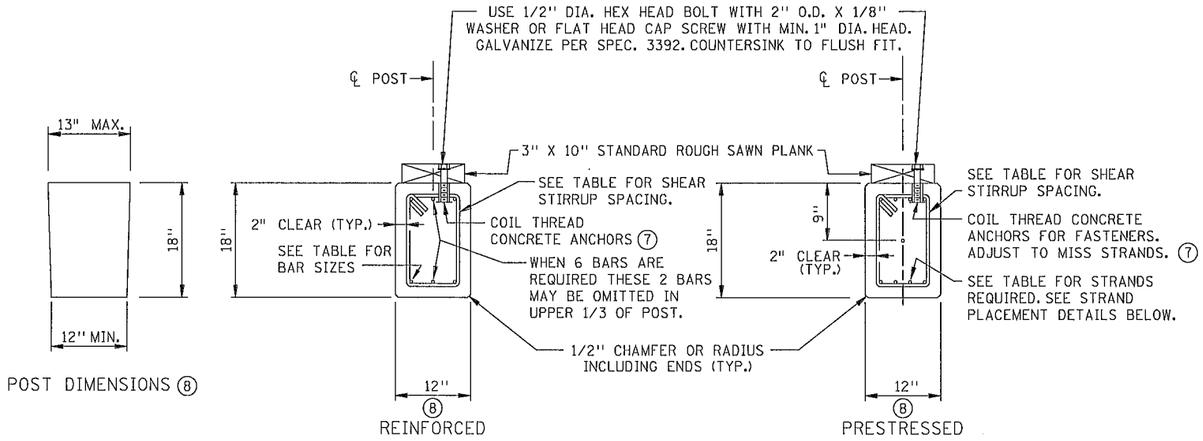
APPROVED: 5-13-2014
Nancy Daubenberger
STATE BRIDGE ENGINEER

REVISED:

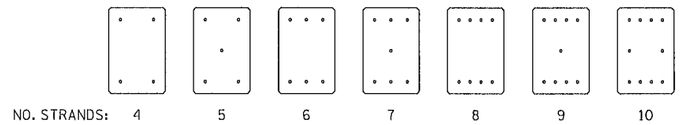
APPROVED: 5-13-2014
STATE DESIGN ENGINEER

# WOOD PLANKING NOISE WALL WITH CONCRETE POSTS

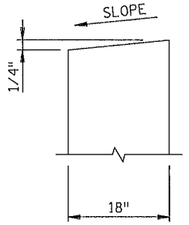
STANDARD PLAN 5-297.661 | 1910F482




POST DETAILS




STRAND PLACEMENT DETAILS




TOP OF POST

## POST EMBEDMENT TABLE
### FILL HEIGHT W = 1 FT. MAXIMUM

| "H" WALL HEIGHT (FT.) | POST SPACING (FT.) | POST SIZE (IN.) | REINF. BARS | SHEAR STIRRUP SPACING (IN.) (9) | PRE-STRESSED STRANDS | POST EMBEDMENT (1) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | LEVEL GROUND | 1(V):4(H) SLOPE | 1(V):3(H) SLOPE | 1(V):2(H) SLOPE (11) |
| 5 | 8 | 12 X 18 | 4 NO. 4 | 18 | 4 | 6'0" | 6'0" | 7'0" | 8'0" |
| 6 | 8 | 12 X 18 | 4 NO. 4 | 18 | 4 | 7'0" | 7'0" | 7'0" | 8'0" |
| 7 | 8 | 12 X 18 | 4 NO. 4 | 18 | 4 | 7'0" | 7'0" | 8'0" | 9'0" |
| 8 | 8 | 12 X 18 | 4 NO. 5 | 18 | 4 | 7'0" | 8'0" | 8'0" | 9'0" |
| 9 | 8 | 12 X 18 | 4 NO. 5 | 18 | 4 | 8'0" | 8'0" | 8'0" | 9'0" |
| 10 | 8 | 12 X 18 | 4 NO. 5 | 18 | 4 | 8'0" | 8'0" | 9'0" | 10'0" |
| 11 | 8 | 12 X 18 | 4 NO. 5 | 10 | 4 | 8'0" | 9'0" | 9'0" | 10'0" |
| 12 | 8 | 12 X 18 | 6 NO. 5 | 10 | 4 | 8'0" | 9'0" | 9'0" | 10'0" |
| 13 | 8 | 12 X 18 | 6 NO. 5 | 10 | 4 | 9'0" | 9'0" | 10'0" | 10'0" |
| 14 | 8 | 12 X 18 | 6 NO. 5 | 10 | 4 | 9'0" | 10'0" | 10'0" | 11'0" |
| 15 | 8 | 12 X 18 | 6 NO. 6 | 10 | 4 | 9'0" | 10'0" | 10'0" | 11'0" |
| 16 | 8 | 12 X 18 | 6 NO. 6 | 10 | 4 | 10'0" | 10'0" | 11'0" | 12'0" |
| 17 | 8 | 12 X 18 | 6 NO. 6 | 10 | 4 | 10'0" | 10'0" | 11'0" | 12'0" |
| 18 | 8 | 12 X 18 | 6 NO. 6 | 10 | 4 | 10'0" | 11'0" | 11'0" | 13'0" |
| 19 | 8 | 12 X 18 | 6 NO. 7 | 10 | 5 | 11'0" | 11'0" | 12'0" | 13'0" |
| 20 | 8 | 12 X 18 | 6 NO. 7 | 10 | 6 | 11'0" | 11'0" | 12'0" | 13'0" |
| 21 | 8 | 12 X 18 | 6 NO. 7 | 10 | 6 | 11'0" | 12'0" | 12'0" | 14'0" |
| 22 | 8 | 12 X 18 | 6 NO. 8 | 10 | 7 | 12'0" | 12'0" | 13'0" | 14'0" |
| 23 | 8 | 12 X 18 | 6 NO. 8 | 10 | 8 | 12'0" | 12'0" | 13'0" | 15'0" |
| 24 | 8 | 12 X 18 | 6 NO. 8 | 10 | 9 | 12'0" | 13'0" | 14'0" | 15'0" |
| 25 | 8 | 12 X 18 | 6 NO. 8 | 10 | 10 | 12'0" | 13'0" | 14'0" | 17'0" |

## DESIGN CRITERIA:

2012 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, INCLUDING 2013 INTERIMS.

2012 NATIONAL DESIGN SPECIFICATION (NDS) FOR WALL CONSTRUCTION - LRFD

$\phi$ = 30° ( GRANULAR )
$\gamma$ = 110 P.C.F.
WIND LOAD = 19 P.S.F.
$F_b$ = 1500 P.S.I. WOOD PLANKING AND BATTEN.
$F_b$ = 1200 P.S.I. ALL OTHER WOOD MEMBERS.

POST DESIGN CRITERIA

| NO. OF STRANDS | f'ci (3) | f'c (4) |
|---|---|---|
| 6 OR LESS | 4000 PSI | 5500 PSI |
| 7 OR MORE | 4000 PSI | 6000 PSI |

## NOTES:

REFER TO SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE: HORIZONTAL DISTANCE.

EMBEDMENT LENGTH IS BASED ON THE WATER TABLE BEING BELOW THE EMBEDMENT DEPTH OTHER CONDITIONS REQUIRE A SPECIAL DESIGN.

FOR SLOPES BETWEEN THOSE SHOWN, USE THE EMBEDMENTS FOR THE STEEPER SLOPE OR USE INTERPOLATION.

FOR SLOPES 1(V):6(H) OR FLATTER, USE LEVEL GROUND EMBEDMENT.

POSTS LOCATED WITHIN 20 FEET OF THE OUTSIDE EDGE OF A ROADWAY SHOULDER AND ALL POSTS SUPPORTING GLUE LAMINATED RUBRAIL (STANDARD FIGURE 5-297.678) SHALL BE CONVENTIONALLY REINFORCED (NOT PRESTRESSED). FABRICATOR TO IDENTIFY NON-PRESTRESSED POSTS WITH PERMANENT MARK ON BOTTOM OF POST.

SOIL TESTS AT MAXIMUM 200 FT. INTERVALS SHALL BE REQUIRED AT EACH SITE LOCATION AND THE RESULTS REVIEWED BY THE SOILS ENGINEER FOR RECOMMENDATIONS.

CONCRETE POSTS WITH THE SAME TOTAL LENGTH SHALL USE THE LARGEST NUMBER OF PRESTRESSED STRANDS REQUIRED FOR THAT POST LENGTH. USE MIX 3W36 FOR ALL POSTS.

PRESTRESSED STEEL STRANDS ARE 1/2" DIA. ( AREA = 0.153 SQ. IN. ), MIN. OF 4 LOW-RELAXATION STRANDS, 270 KSI ULTIMATE STRENGTH. INITIAL PRESTRESS EQUALS 30,900 LBS./STRAND.

STEEL STRANDS PER SPEC. 3348 AND PAINT THE EXPOSED ENDS OF THE STRANDS WITH AN APPROVED GRAY EPOXY.

ALL REINF. BARS SHALL BE EPOXY COATED GRADE 60 PER SPEC. 3301 AND HAVE A MIN. 2" CLEAR UNLESS OTHERWISE NOTED.

(1) EMBEDMENT DEPTH IN THE TABLE IS BASED ON A 3 FT. MIN. BERM IN FRONT OF THE WALL.

(2) WHEN THE CURB LINE IS CLOSER THAN 1(V):2(H) SLOPE, A SPECIAL DESIGN IS REQUIRED.

(3) MINIMUM CONCRETE STRENGTH AT THE TIME OF PRESTRESS TRANSFER.

(4) MIN. CONCRETE STRENGTH AT WHICH THE POST CAN BE TRANSPORTED AND PLACED.

(5) SEE POST EMBEDMENT TABLES FOR MAXIMUM SLOPE.

(6) SEE SPEC. 3491 FOR ADDITIONAL PRESERVATIVE TREATMENT REQUIREMENTS FOR LUMBER PLACED BELOW GRADE.

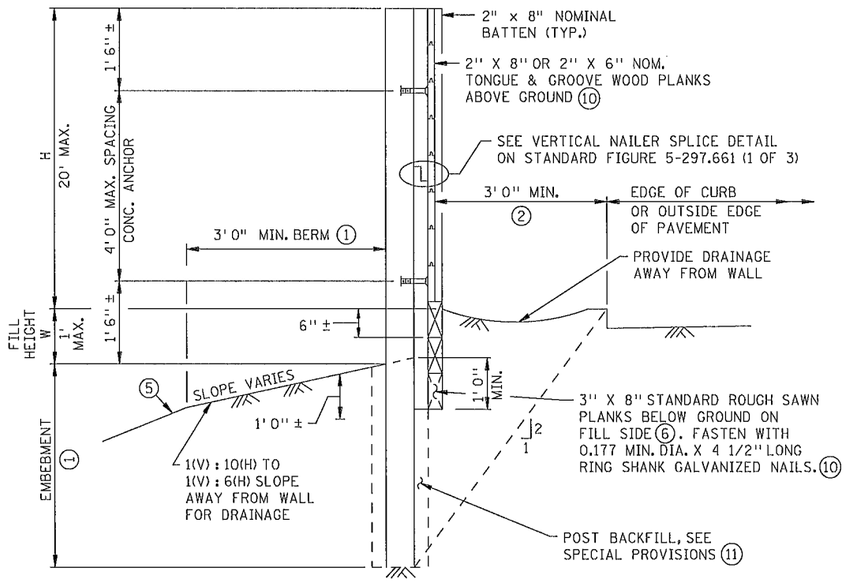
(7) GALVANIZED COIL THREAD ANCHORS SHALL BE PLACED ON ALTERNATE SIDES OF POST FACE ℄. MINIMUM FACTORED PULL OUT OF 2.5 KIPS PER ANCHOR. UNUSED ANCHORS SHALL BE COMPLETELY FILLED WITH A MnDOT APPROVED/QUALIFIED PRODUCT PER 3372, SILICONE JOINT SEALANT.

(8) 12" MIN, 13" MAX. TO ALLOW FOR DRAFT OF FORM.

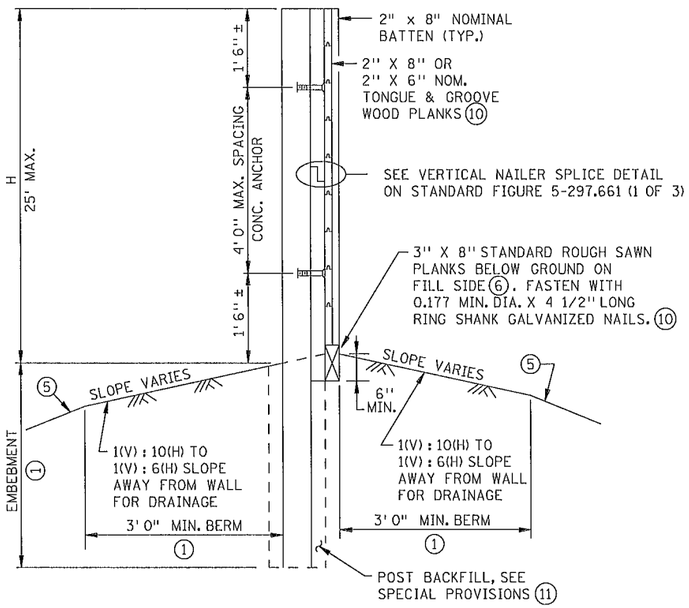
(9) USE NO. 3 BARS FOR SHEAR STIRRUPS.

(10) REFER TO STANDARD FIGURE 5-297.661 (1 OF 3) FOR NAILING PATTERN.

(11) ON 1(V) : 2(H) SLOPES, WHEN H = 10 FT. AND GREATER, FILL HOLE WITH CONC. SEE SPECIAL PROVISIONS.




SECTION AT POST
WITH EARTH FILL
(MAX. FILL RETAINED 1'-0")
(WALL TYPE 1 ONLY)




SECTION AT POST
WITHOUT EARTH FILL
(WALL TYPE 1 OR 2)

REVISION:

APPROVED: 5-13-2014
Nancy Daubenberger
STATE BRIDGE ENGINEER

REVISED:

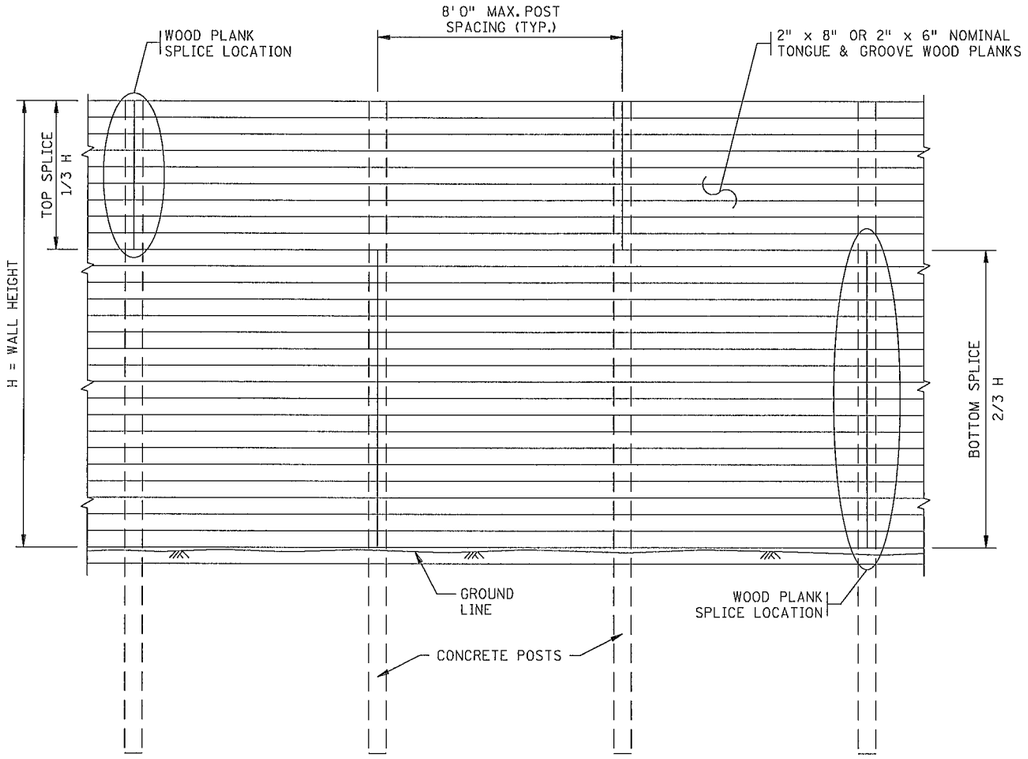
APPROVED: 5-13-2014
Christopher Ky
STATE DESIGN ENGINEER

WOOD PLANKING NOISE WALL
WITH CONCRETE POSTS

STANDARD PLAN 5-297.661 | 1920F482

PLOTTED/REVISED: $$$$@DATE@$$$$
DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@

PLOTTED/REVISED:
$$$$@DATE@$$$$

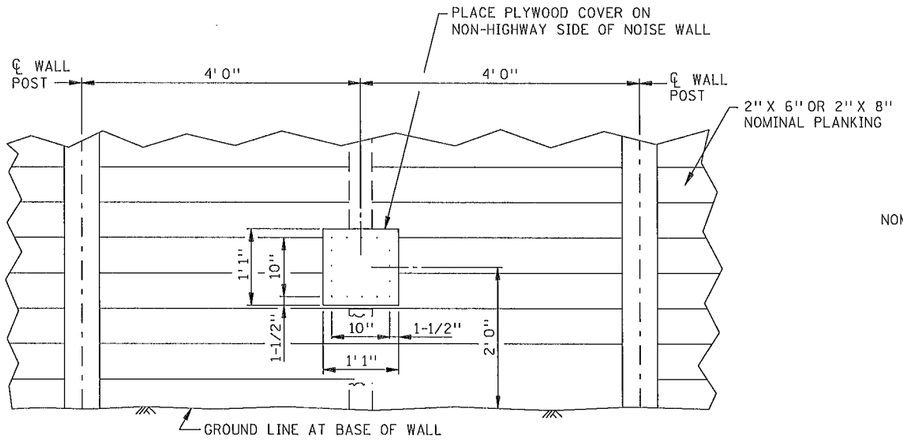



OPTIONAL PLANK SPLICE LOCATION ①

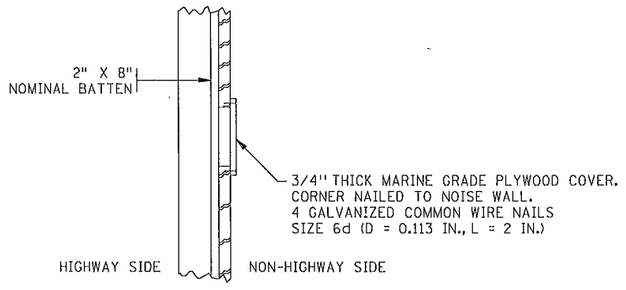
AT THE CONTRACTOR'S OPTION, IN LIEU OF ALTERNATING PLANK SPLICES AS SHOWN ON MNDOT STANDARD PLAN SHEET 5-297.661 (1 OF 3) - FRONT ELEVATION, THE PATTERN SHOWN ABOVE MAY BE USED.

NOTES:

① IF THE CONTRACTOR CHOOSES TO USE THIS PLANK SPLICE PATTERN, THE TOP SPLICE DIMENSION SHALL BE 1/3 OF THE WALL HEIGHT (H/3) AS MEASURED FROM THE TOP OF THE WALL. THE BOTTOM SPLICE DIMENSION SHALL BE 2/3 OF THE WALL HEIGHT (2/3 OF H) AS MEASURED FROM THE BOTTOM OF THE WALL. IN NO CASE SHALL MORE THAN 2/3 OF THE BOARDS BE SPLICED AT ANY SINGLE POST LOCATION. REFER TO STANDARD FIGURE 5-297.661 (1 OF 3) FOR NAILING PATTERN

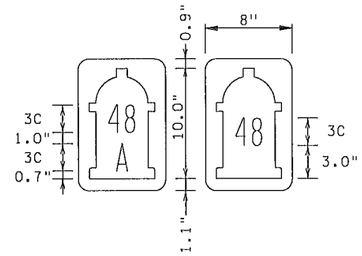



ELEVATION FROM NON-HIGHWAY SIDE




SECTION AT ACCESS OPENING

FIRE HOSE ACCESS DETAIL




IDENTIFICATION SIGN

8" X 12" SIGN WITH 1" RADIUS CORNERS.
WHITE LETTERS, RED HYDRANT ON WHITE BACKGROUND FULLY REFLECTORIZED.
THE ENGINEER WILL PROVIDE THE NUMBER AND LETTER DESIGNATION FOR EACH LOCATION. LOCATE SIGN ON HIGHWAY SIDE ADJACENT TO FIRE HOSE ACCESS HOLE.
SIGNS ARE INCIDENTAL.

DISTRICT #: $@DISTRICT@$
USER NAME: $$@USER$NAME@$$
PATH & FILENAME: $$$@PATH\FILENAME@$$$
FILE NAME: @FILENAME@

REVISION:

APPROVED: 5-13-2014
Nancy Daubenberger
STATE BRIDGE ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:

Christopher Ry
STATE DESIGN ENGINEER

APPROVED: 5-13-2014

WOOD PLANKING NOISE WALL
WITH CONCRETE POSTS

STANDARD PLAN 5-297.661 | 193 OF 482

## WOOD NOISE BARRIER D — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 1 | 38+96.00 | 43.25 | 897.85 | 911.92 | 124.70 | 25 | 10.93 | 886.92 |
| 2 | 39+04.19 | 43.25 | 897.86 | 911.92 | 117.36 | 25 | 10.94 | 886.92 |
| 3 | 39+12.38 | 43.25 | 897.87 | 911.92 | 117.36 | 25 | 10.95 | 886.92 |
| 4 | 39+20.57 | 43.25 | 897.87 | 911.92 | 117.36 | 25 | 10.95 | 886.92 |
| 5 | 39+28.76 | 43.25 | 897.88 | 911.92 | 117.36 | 25 | 10.96 | 886.92 |
| 6 | 39+36.95 | 43.25 | 897.89 | 911.92 | 124.70 | 25 | 10.97 | 886.92 |
| 7 | 39+45.14 | 43.25 | 897.90 | 911.92 | 124.70 | 25 | 10.98 | 886.92 |
| 8 | 39+53.33 | 43.25 | 897.90 | 911.92 | 117.36 | 25 | 10.98 | 886.92 |
| 9 | 39+61.52 | 43.25 | 897.91 | 911.92 | 117.36 | 25 | 10.99 | 886.92 |
| 10 | 39+69.71 | 43.25 | 897.92 | 911.92 | 117.36 | 25 | 11.00 | 886.92 |
| 11 | 39+77.90 | 43.25 | 897.93 | 911.92 | 117.36 | 25 | 11.01 | 886.92 |
| 12 | 39+86.09 | 43.25 | 897.93 | 911.92 | 124.70 | 25 | 11.01 | 886.92 |
| 13 | 39+94.28 | 43.25 | 897.94 | 911.92 | 124.70 | 25 | 11.02 | 886.92 |
| 14 | 40+02.28 | 43.25 | 897.95 | 911.92 | 117.36 | 25 | 11.03 | 886.92 |
| 15 | 40+10.28 | 43.25 | 897.96 | 911.92 | 117.36 | 25 | 11.04 | 886.92 |
| 16 | 40+18.28 | 43.25 | 897.96 | 911.92 | 117.36 | 25 | 11.04 | 886.92 |
| 17 | 40+26.28 | 43.25 | 897.97 | 911.92 | 117.36 | 25 | 11.05 | 886.92 |
| 18 | 40+34.28 | 43.25 | 897.98 | 911.92 | 124.70 | 25 | 11.06 | 886.92 |
| 19 | 40+42.28 | 43.25 | 897.99 | 911.92 | 124.70 | 25 | 11.07 | 886.92 |
| 20 | 40+50.28 | 43.25 | 897.99 | 911.92 | 117.36 | 25 | 11.07 | 886.92 |
| 21 | 40+58.28 | 43.25 | 898.00 | 911.92 | 117.36 | 25 | 11.08 | 886.92 |
| 22 | 40+66.28 | 43.25 | 897.95 | 911.92 | 117.36 | 25 | 11.03 | 886.92 |
| 23 | 40+74.28 | 43.25 | 897.89 | 911.92 | 117.36 | 25 | 10.97 | 886.92 |
| 24 | 40+82.28 | 43.25 | 897.84 | 911.92 | 124.70 | 25 | 10.92 | 886.92 |
| 25 | 40+90.28 | 43.25 | 897.79 | 911.92 | 124.70 | 25 | 10.87 | 886.92 |

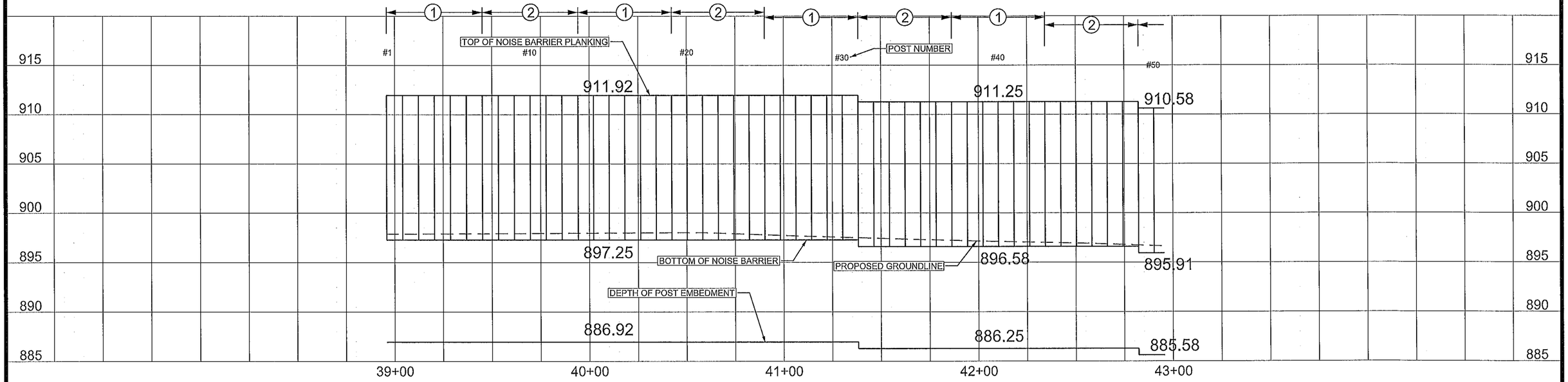
## WOOD NOISE BARRIER D — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 26 | 40+98.28 | 43.25 | 897.73 | 911.92 | 117.36 | 25 | 10.81 | 886.92 |
| 27 | 41+06.28 | 43.25 | 897.68 | 911.92 | 117.36 | 25 | 10.76 | 886.92 |
| 28 | 41+14.28 | 43.25 | 897.63 | 911.92 | 117.36 | 25 | 10.71 | 886.92 |
| 29 | 41+22.28 | 43.25 | 897.59 | 911.92 | 117.36 | 25 | 10.67 | 886.92 |
| 30 | 41+30.28 | 43.25 | 897.54 | 911.92 | 124.70 | 25 | 10.62 | 886.92 |
| 31 | 41+38.28 | 43.25 | 897.49 | 911.25 | 124.70 | 25 | 11.24 | 886.25 |
| 32 | 41+46.28 | 43.25 | 897.45 | 911.25 | 117.36 | 25 | 11.20 | 886.25 |
| 33 | 41+54.28 | 43.25 | 897.40 | 911.25 | 117.36 | 25 | 11.15 | 886.25 |
| 34 | 41+62.28 | 43.25 | 897.36 | 911.25 | 117.36 | 25 | 11.11 | 886.25 |
| 35 | 41+70.28 | 43.25 | 897.31 | 911.25 | 117.36 | 25 | 11.06 | 886.25 |
| 36 | 41+78.28 | 43.25 | 897.27 | 911.25 | 124.70 | 25 | 11.02 | 886.25 |
| 37 | 41+86.28 | 43.25 | 897.22 | 911.25 | 124.70 | 25 | 10.97 | 886.25 |
| 38 | 41+94.28 | 43.25 | 897.18 | 911.25 | 117.36 | 25 | 10.93 | 886.25 |
| 39 | 42+02.28 | 43.25 | 897.13 | 911.25 | 117.36 | 25 | 10.88 | 886.25 |
| 40 | 42+10.28 | 43.25 | 897.10 | 911.25 | 117.36 | 25 | 10.85 | 886.25 |
| 41 | 42+18.28 | 43.25 | 897.06 | 911.25 | 117.36 | 25 | 10.81 | 886.25 |
| 42 | 42+26.28 | 43.25 | 897.03 | 911.25 | 124.70 | 25 | 10.78 | 886.25 |
| 43 | 42+34.28 | 43.25 | 897.00 | 911.25 | 124.70 | 25 | 10.75 | 886.25 |
| 44 | 42+42.28 | 43.25 | 896.97 | 911.25 | 117.36 | 25 | 10.72 | 886.25 |
| 45 | 42+50.28 | 43.25 | 896.93 | 911.25 | 117.36 | 25 | 10.68 | 886.25 |
| 46 | 42+58.28 | 43.25 | 896.90 | 911.25 | 117.36 | 25 | 10.65 | 886.25 |
| 47 | 42+66.28 | 43.25 | 896.84 | 911.25 | 117.36 | 25 | 10.59 | 886.25 |
| 48 | 42+74.28 | 43.25 | 896.79 | 911.25 | 124.70 | 25 | 10.54 | 886.25 |
| 49 | 42+82.28 | 43.25 | 896.73 | 910.58 | 124.70 | 25 | 11.15 | 885.58 |
| 50 | 42+90.28 | 43.25 | 896.67 | 910.58 | 117.36 | 25 | 11.09 | 885.58 |

NOISE BARRIER D

WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_NWD_PP1.dgn 04/20/2016 11:54:28 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/13/16 LICENSE NO. 62598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW D (1 of 3)
STA 38+96.00 TO 42+90.28

Sheet 194 of 482 Sheets

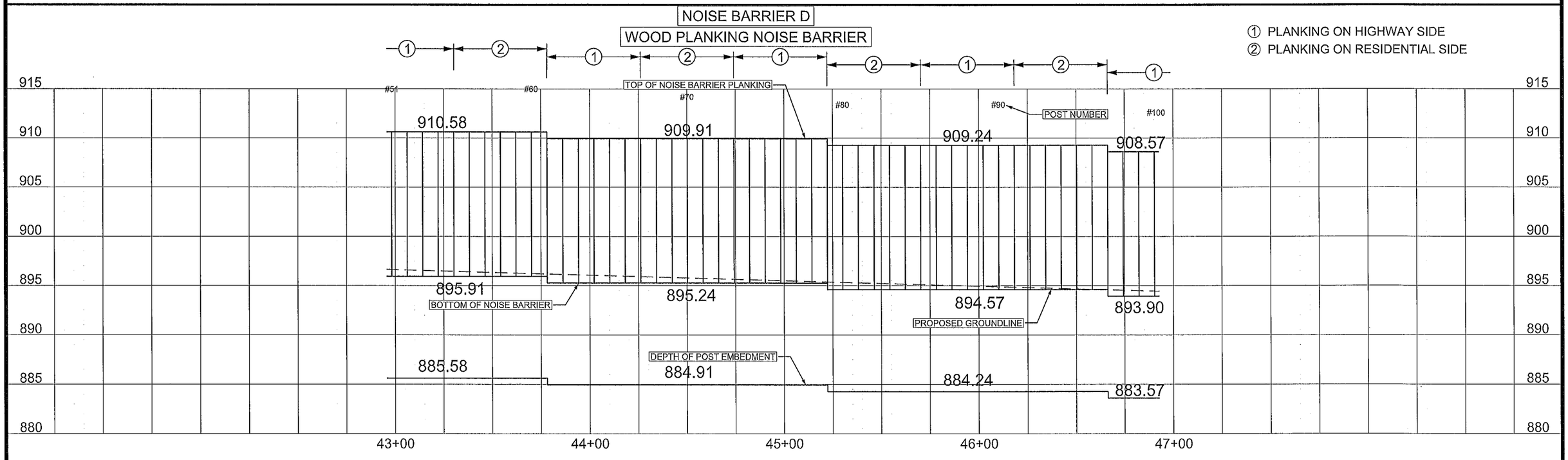
## WOOD NOISE BARRIER D — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING TOP | PLANKING AREA | POST LENGTH | EMBED. EMBEDED POST | EMBED. POST BOTTOM |
|---|---|---|---|---|---|---|---|---|
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 51 | 42+98.28 | 43.25 | 896.62 | 910.58 | 117.36 | 25 | 11.04 | 885.58 |
| 52 | 43+06.28 | 43.25 | 896.56 | 910.58 | 117.36 | 25 | 10.98 | 885.58 |
| 53 | 43+14.28 | 43.25 | 896.52 | 910.58 | 117.36 | 25 | 10.94 | 885.58 |
| 54 | 43+22.28 | 43.25 | 896.47 | 910.58 | 124.70 | 25 | 10.89 | 885.58 |
| 55 | 43+30.28 | 43.25 | 896.43 | 910.58 | 124.70 | 25 | 10.85 | 885.58 |
| 56 | 43+38.28 | 43.25 | 896.39 | 910.58 | 117.36 | 25 | 10.81 | 885.58 |
| 57 | 43+46.28 | 43.25 | 896.34 | 910.58 | 117.36 | 25 | 10.76 | 885.58 |
| 58 | 43+54.28 | 43.25 | 896.30 | 910.58 | 117.36 | 25 | 10.72 | 885.58 |
| 59 | 43+62.28 | 43.25 | 896.26 | 910.58 | 117.36 | 25 | 10.68 | 885.58 |
| 60 | 43+70.28 | 43.25 | 896.21 | 910.58 | 124.70 | 25 | 10.63 | 885.58 |
| 61 | 43+78.28 | 43.25 | 896.17 | 909.91 | 124.70 | 25 | 11.26 | 884.91 |
| 62 | 43+86.28 | 43.25 | 896.12 | 909.91 | 117.36 | 25 | 11.21 | 884.91 |
| 63 | 43+94.28 | 43.25 | 896.08 | 909.91 | 117.36 | 25 | 11.17 | 884.91 |
| 64 | 44+02.28 | 43.25 | 896.03 | 909.91 | 117.36 | 25 | 11.12 | 884.91 |
| 65 | 44+10.28 | 43.25 | 895.99 | 909.91 | 117.36 | 25 | 11.08 | 884.91 |
| 66 | 44+18.28 | 43.25 | 895.94 | 909.91 | 124.70 | 25 | 11.03 | 884.91 |
| 67 | 44+26.28 | 43.25 | 895.90 | 909.91 | 124.70 | 25 | 10.99 | 884.91 |
| 68 | 44+34.28 | 43.25 | 895.86 | 909.91 | 117.36 | 25 | 10.95 | 884.91 |
| 69 | 44+42.28 | 43.25 | 895.81 | 909.91 | 117.36 | 25 | 10.90 | 884.91 |
| 70 | 44+50.28 | 43.25 | 895.77 | 909.91 | 117.36 | 25 | 10.86 | 884.91 |
| 71 | 44+58.28 | 43.25 | 895.72 | 909.91 | 117.36 | 25 | 10.81 | 884.91 |
| 72 | 44+66.28 | 43.25 | 895.68 | 909.91 | 124.70 | 25 | 10.77 | 884.91 |
| 73 | 44+74.28 | 43.25 | 895.63 | 909.91 | 124.70 | 25 | 10.72 | 884.91 |
| 74 | 44+82.28 | 43.25 | 895.59 | 909.91 | 117.36 | 25 | 10.68 | 884.91 |
| 75 | 44+90.28 | 43.25 | 895.55 | 909.91 | 117.36 | 25 | 10.64 | 884.91 |

## WOOD NOISE BARRIER D — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING TOP | PLANKING AREA | POST LENGTH | EMBED. EMBEDED POST | EMBED. POST BOTTOM |
|---|---|---|---|---|---|---|---|---|
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 76 | 44+98.28 | 43.25 | 895.50 | 909.91 | 117.36 | 25 | 10.59 | 884.91 |
| 77 | 45+06.28 | 43.25 | 895.46 | 909.91 | 117.36 | 25 | 10.55 | 884.91 |
| 78 | 45+14.28 | 43.25 | 895.41 | 909.91 | 124.70 | 25 | 10.50 | 884.91 |
| 79 | 45+22.28 | 43.25 | 895.37 | 909.24 | 124.70 | 25 | 11.13 | 884.24 |
| 80 | 45+30.28 | 43.25 | 895.32 | 909.24 | 117.36 | 25 | 11.08 | 884.24 |
| 81 | 45+38.28 | 43.25 | 895.28 | 909.24 | 117.36 | 25 | 11.04 | 884.24 |
| 82 | 45+46.28 | 43.25 | 895.23 | 909.24 | 117.36 | 25 | 10.99 | 884.24 |
| 83 | 45+54.28 | 43.25 | 895.19 | 909.24 | 117.36 | 25 | 10.95 | 884.24 |
| 84 | 45+62.28 | 43.25 | 895.15 | 909.24 | 124.70 | 25 | 10.91 | 884.24 |
| 85 | 45+70.28 | 43.25 | 895.10 | 909.24 | 124.70 | 25 | 10.86 | 884.24 |
| 86 | 45+78.28 | 43.25 | 895.06 | 909.24 | 117.36 | 25 | 10.82 | 884.24 |
| 87 | 45+86.28 | 43.25 | 895.01 | 909.24 | 117.36 | 25 | 10.77 | 884.24 |
| 88 | 45+94.28 | 43.25 | 894.97 | 909.24 | 117.36 | 25 | 10.73 | 884.24 |
| 89 | 46+02.28 | 43.25 | 894.92 | 909.24 | 117.36 | 25 | 10.68 | 884.24 |
| 90 | 46+10.28 | 43.25 | 894.88 | 909.24 | 124.70 | 25 | 10.64 | 884.24 |
| 91 | 46+18.28 | 43.25 | 894.83 | 909.24 | 124.70 | 25 | 10.59 | 884.24 |
| 92 | 46+26.28 | 43.25 | 894.79 | 909.24 | 117.36 | 25 | 10.55 | 884.24 |
| 93 | 46+34.28 | 43.25 | 894.75 | 909.24 | 117.36 | 25 | 10.51 | 884.24 |
| 94 | 46+42.28 | 43.25 | 894.70 | 909.24 | 117.36 | 25 | 10.46 | 884.24 |
| 95 | 46+50.28 | 43.25 | 894.66 | 909.24 | 117.36 | 25 | 10.42 | 884.24 |
| 96 | 46+58.28 | 43.25 | 894.61 | 909.24 | 124.70 | 25 | 10.37 | 884.24 |
| 97 | 46+66.28 | 43.25 | 894.57 | 908.57 | 124.70 | 25 | 11.00 | 883.57 |
| 98 | 46+74.28 | 43.25 | 894.52 | 908.57 | 117.36 | 25 | 10.95 | 883.57 |
| 99 | 46+82.28 | 43.25 | 894.48 | 908.57 | 117.36 | 25 | 10.91 | 883.57 |
| 100 | 46+90.28 | 43.25 | 894.44 | 908.57 | 117.36 | 25 | 10.87 | 883.57 |

## NOISE BARRIER D
### WOOD PLANKING NOISE BARRIER






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_NWD_PP2.dgn 04/28/2016 11:54:34 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE:

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW D (2 of 3)
STA 42+98.28 TO 46+90.28

Sheet 195 of 482 Sheets

## WOOD NOISE BARRIER D — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING TOP | PLANKING AREA | POST LENGTH | EMBED. EMBEDED POST | EMBED. POST BOTTOM |
|---|---|---|---|---|---|---|---|---|
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 101 | 46+98.28 | 43.25 | 894.39 | 908.57 | 117.36 | 25 | 10.82 | 883.57 |
| 102 | 47+06.28 | 43.25 | 894.35 | 908.57 | 124.70 | 25 | 10.78 | 883.57 |
| 103 | 47+14.28 | 43.25 | 894.30 | 908.57 | 124.70 | 25 | 10.73 | 883.57 |
| 104 | 47+22.28 | 43.25 | 894.26 | 908.57 | 117.36 | 25 | 10.69 | 883.57 |
| 105 | 47+30.28 | 43.25 | 894.21 | 908.57 | 117.36 | 25 | 10.64 | 883.57 |
| 106 | 47+38.28 | 43.25 | 894.17 | 908.57 | 117.36 | 25 | 10.60 | 883.57 |
| 107 | 47+46.28 | 43.25 | 894.12 | 908.57 | 117.36 | 25 | 10.55 | 883.57 |
| 108 | 47+54.28 | 43.25 | 894.08 | 908.57 | 124.70 | 25 | 10.51 | 883.57 |
| 109 | 47+62.28 | 43.25 | 894.04 | 907.90 | 124.70 | 25 | 11.14 | 882.90 |
| 110 | 47+70.28 | 43.25 | 893.99 | 907.90 | 117.36 | 25 | 11.09 | 882.90 |
| 111 | 47+78.28 | 43.25 | 893.95 | 907.90 | 117.36 | 25 | 11.05 | 882.90 |
| 112 | 47+86.28 | 43.25 | 893.90 | 907.90 | 117.36 | 25 | 11.00 | 882.90 |
| 113 | 47+94.28 | 43.25 | 893.86 | 907.90 | 117.36 | 25 | 10.96 | 882.90 |
| 114 | 48+02.28 | 43.25 | 893.81 | 907.90 | 124.70 | 25 | 10.91 | 882.90 |
| 115 | 48+10.28 | 43.25 | 893.77 | 907.90 | 124.70 | 25 | 10.87 | 882.90 |
| 116 | 48+18.28 | 43.25 | 893.72 | 907.90 | 117.36 | 25 | 10.82 | 882.90 |
| 117 | 48+26.28 | 43.25 | 893.68 | 907.90 | 117.36 | 25 | 10.78 | 882.90 |
| 118 | 48+34.28 | 43.25 | 893.64 | 907.90 | 117.36 | 25 | 10.74 | 882.90 |
| 119 | 48+42.28 | 43.25 | 893.59 | 907.90 | 117.36 | 25 | 10.69 | 882.90 |
| 120 | 48+50.28 | 43.25 | 893.55 | 907.90 | 124.70 | 25 | 10.65 | 882.90 |
| 121 | 48+58.28 | 43.25 | 893.50 | 907.23 | 124.70 | 25 | 11.27 | 882.23 |
| 122 | 48+66.28 | 43.25 | 893.46 | 907.23 | 117.36 | 25 | 11.23 | 882.23 |
| 123 | 48+74.28 | 43.25 | 893.41 | 907.23 | 117.36 | 25 | 11.18 | 882.23 |
| 124 | 48+82.28 | 43.25 | 893.37 | 907.23 | 117.36 | 25 | 11.14 | 882.23 |
| 125 | 48+90.28 | 43.25 | 893.33 | 907.23 | 117.36 | 25 | 11.10 | 882.23 |

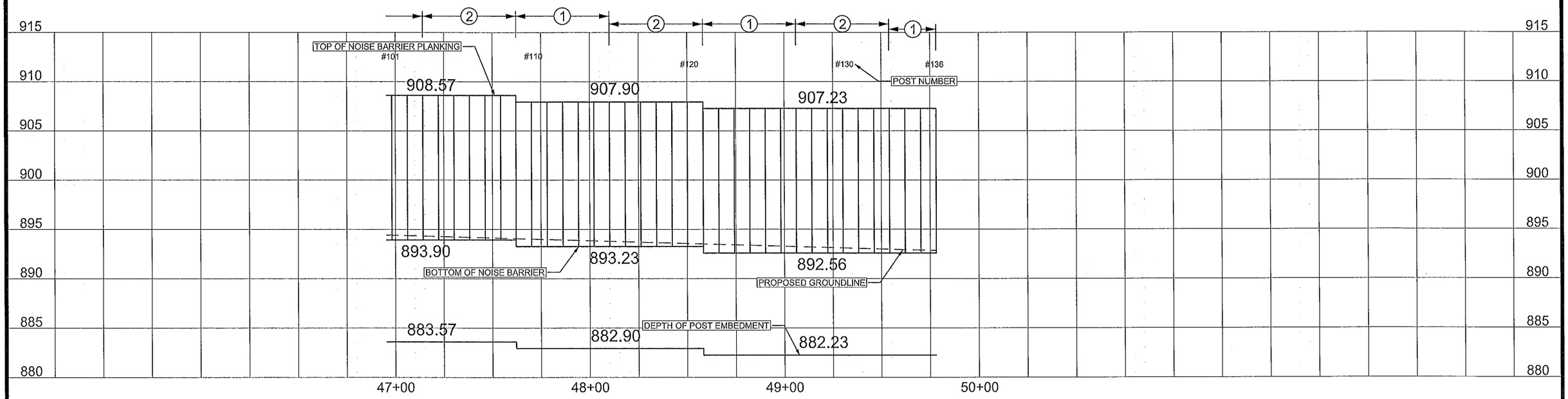
## WOOD NOISE BARRIER D — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING TOP | PLANKING AREA | POST LENGTH | EMBED. EMBEDED POST | EMBED. POST BOTTOM |
|---|---|---|---|---|---|---|---|---|
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 126 | 48+98.28 | 43.25 | 893.28 | 907.23 | 124.70 | 25 | 11.05 | 882.23 |
| 127 | 49+06.28 | 43.25 | 893.24 | 907.23 | 124.70 | 25 | 11.01 | 882.23 |
| 128 | 49+14.28 | 43.25 | 893.19 | 907.23 | 117.36 | 25 | 10.96 | 882.23 |
| 129 | 49+22.28 | 43.25 | 893.15 | 907.23 | 117.36 | 25 | 10.92 | 882.23 |
| 130 | 49+30.28 | 43.25 | 893.10 | 907.23 | 117.36 | 25 | 10.87 | 882.23 |
| 131 | 49+38.28 | 43.25 | 893.06 | 907.23 | 117.36 | 25 | 10.83 | 882.23 |
| 132 | 49+46.28 | 43.25 | 893.01 | 907.23 | 124.70 | 25 | 10.78 | 882.23 |
| 133 | 49+54.28 | 43.25 | 892.97 | 907.23 | 124.70 | 25 | 10.74 | 882.23 |
| 134 | 49+62.28 | 43.25 | 892.93 | 907.23 | 117.36 | 25 | 10.70 | 882.23 |
| 135 | 49+70.28 | 43.25 | 892.88 | 907.23 | 124.70 | 25 | 10.65 | 882.23 |
| 136 | 49+78.28 | 43.25 | 892.83 | | | 25 | 10.60 | 882.23 |
| 136 | TOTAL | | | | 15442 | 3400 | | |

## NOISE BARRIER D

### WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_NWD_PP3.dgn 04/28/2016 11:54:40 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/3/16 LICENSE NO. 50598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW D (3 of 3)
STA 46+98.28 TO 49+78.28

Sheet 196 of 482 Sheets

## WOOD NOISE BARRIER G — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 1 | 68+77.00 | 43.25 | 896.56 | | | 20 | 9.68 | 886.88 |
| 2 | 68+85.00 | 43.25 | 896.62 | 906.88 | 90.70 | 20 | 9.74 | 886.88 |
| 3 | 68+93.00 | 43.25 | 896.68 | 906.88 | 85.36 | 20 | 9.80 | 886.88 |
| 4 | 69+01.00 | 43.25 | 896.74 | 906.88 | 85.36 | 20 | 9.86 | 886.88 |
| 5 | 69+09.00 | 43.25 | 896.79 | 906.88 | 85.36 | 20 | 9.91 | 886.88 |
| 6 | 69+17.00 | 43.25 | 896.85 | 906.88 | 85.36 | 20 | 9.97 | 886.88 |
| 7 | 69+25.00 | 43.25 | 896.91 | 906.88 | 90.70 | 19 | 9.03 | 887.88 |
| 8 | 69+33.00 | 43.25 | 896.97 | 906.88 | 90.70 | 19 | 9.09 | 887.88 |
| 9 | 69+41.00 | 43.25 | 897.03 | 906.88 | 85.36 | 19 | 9.15 | 887.88 |
| 10 | 69+49.00 | 43.25 | 897.08 | 906.88 | 85.36 | 19 | 9.20 | 887.88 |
| 11 | 69+57.00 | 43.25 | 897.14 | 906.88 | 85.36 | 19 | 9.26 | 887.88 |
| 12 | 69+65.00 | 43.25 | 897.20 | 906.88 | 85.36 | 19 | 9.32 | 887.88 |
| 13 | 69+73.00 | 43.25 | 897.26 | 906.88 | 90.70 | 20 | 9.71 | 887.55 |
| 14 | 69+81.00 | 43.25 | 897.32 | 907.55 | 90.70 | 20 | 9.77 | 887.55 |
| 15 | 69+89.00 | 43.25 | 897.37 | 907.55 | 85.36 | 20 | 9.82 | 887.55 |
| 16 | 69+97.00 | 43.25 | 897.43 | 907.55 | 85.36 | 20 | 9.88 | 887.55 |
| 17 | 70+05.00 | 43.25 | 897.49 | 907.55 | 85.36 | 20 | 9.94 | 887.55 |
| 18 | 70+13.00 | 43.25 | 897.55 | 907.55 | 85.36 | 19 | 9.00 | 888.55 |
| 19 | 70+21.00 | 43.25 | 897.61 | 907.55 | 90.70 | 19 | 9.06 | 888.55 |
| 20 | 70+29.00 | 43.25 | 897.67 | 907.55 | 90.70 | 19 | 9.12 | 888.55 |
| 21 | 70+37.00 | 43.25 | 897.73 | 907.55 | 85.36 | 19 | 9.18 | 888.55 |
| 22 | 70+45.00 | 43.25 | 897.79 | 907.55 | 85.36 | 19 | 9.24 | 888.55 |
| 23 | 70+53.00 | 43.25 | 897.85 | 907.55 | 85.36 | 19 | 9.30 | 888.55 |
| 24 | 70+61.00 | 43.25 | 897.85 | 907.55 | 85.36 | 19 | 9.30 | 888.55 |
| 25 | 70+69.00 | 43.25 | 897.85 | 907.55 | 90.70 | 19 | 9.30 | 888.55 |
| 26 | 70+77.00 | 43.25 | 897.85 | 907.55 | 90.70 | 19 | 9.30 | 888.55 |
| 27 | 70+85.00 | 43.25 | 897.85 | 907.55 | 85.36 | 19 | 9.30 | 888.55 |
| | | | | 907.55 | 85.36 | | | |

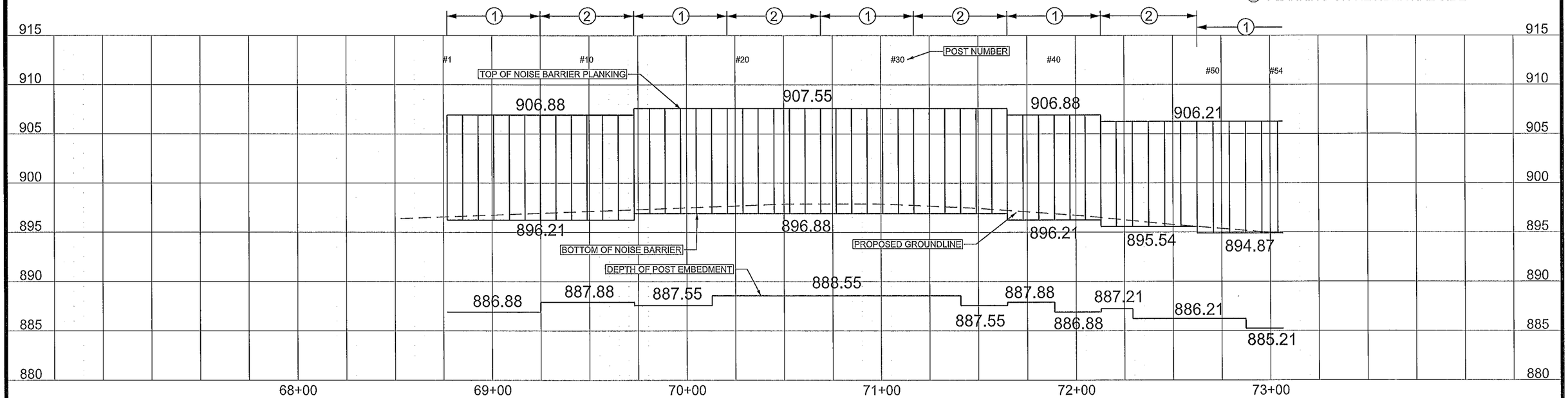
## WOOD NOISE BARRIER G — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 28 | 70+93.00 | 43.25 | 897.84 | | | 19 | 9.29 | 888.55 |
| 29 | 71+01.00 | 43.25 | 897.84 | 907.55 | 85.36 | 19 | 9.29 | 888.55 |
| 30 | 71+09.00 | 43.25 | 897.77 | 907.55 | 85.36 | 19 | 9.22 | 888.55 |
| 31 | 71+17.00 | 43.25 | 897.70 | 907.55 | 90.70 | 19 | 9.15 | 888.55 |
| 32 | 71+25.00 | 43.25 | 897.63 | 907.55 | 90.70 | 19 | 9.08 | 888.55 |
| 33 | 71+33.00 | 43.25 | 897.56 | 907.55 | 85.36 | 19 | 9.01 | 888.55 |
| 34 | 71+41.00 | 43.25 | 897.49 | 907.55 | 85.36 | 20 | 9.94 | 887.55 |
| 35 | 71+49.00 | 43.25 | 897.42 | 907.55 | 85.36 | 20 | 9.87 | 887.55 |
| 36 | 71+57.00 | 43.25 | 897.31 | 907.55 | 90.70 | 20 | 9.76 | 887.55 |
| 37 | 71+65.00 | 43.25 | 897.19 | 906.88 | 90.70 | 19 | 9.31 | 887.88 |
| 38 | 71+73.00 | 43.25 | 897.08 | 906.88 | 85.36 | 19 | 9.20 | 887.88 |
| 39 | 71+81.00 | 43.25 | 896.97 | 906.88 | 85.36 | 19 | 9.09 | 887.88 |
| 40 | 71+89.00 | 43.25 | 896.86 | 906.88 | 85.36 | 20 | 9.98 | 886.88 |
| 41 | 71+97.00 | 43.25 | 896.74 | 906.88 | 85.36 | 20 | 9.86 | 886.88 |
| 42 | 72+05.00 | 43.25 | 896.63 | 906.88 | 90.70 | 20 | 9.75 | 886.88 |
| 43 | 72+13.00 | 43.25 | 896.47 | 906.21 | 90.70 | 19 | 9.26 | 887.21 |
| 44 | 72+21.00 | 43.25 | 896.32 | 906.21 | 85.36 | 19 | 9.11 | 887.21 |
| 45 | 72+29.30 | 43.25 | 896.15 | 906.21 | 85.36 | 20 | 9.94 | 886.21 |
| 46 | 72+37.60 | 43.25 | 895.99 | 906.21 | 85.36 | 20 | 9.78 | 886.21 |
| 47 | 72+45.90 | 43.25 | 895.83 | 906.21 | 85.36 | 20 | 9.62 | 886.21 |
| 48 | 72+54.21 | 43.25 | 895.69 | 906.21 | 90.70 | 20 | 9.48 | 886.21 |
| 49 | 72+62.51 | 43.25 | 895.56 | 906.21 | 96.31 | 20 | 9.35 | 886.21 |
| 50 | 72+70.81 | 43.25 | 895.42 | 906.21 | 90.64 | 20 | 9.21 | 886.21 |
| 51 | 72+79.11 | 43.25 | 895.28 | 906.21 | 90.64 | 20 | 9.07 | 886.21 |
| 52 | 72+87.42 | 43.25 | 895.15 | 906.21 | 90.64 | 21 | 9.94 | 885.21 |
| 53 | 72+95.72 | 43.25 | 895.01 | 906.21 | 90.64 | 21 | 9.80 | 885.21 |
| 54 | 73+04.02 | 43.25 | 894.90 | 906.21 | 96.31 | 21 | 9.69 | 885.21 |

## NOISE BARRIER G

### WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_NWG_PP1.dgn 04/28/2016 11:54:46 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 47598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW G (1 of 2)
STA 68+77.00 TO 73+04.02

## WOOD NOISE BARRIER G — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 55 | 73+12.33 | 43.25 | 894.80 | | | 20 | 9.26 | 885.54 |
| 56 | 73+20.63 | 43.25 | 894.69 | 905.54 | 96.31 | 20 | 9.15 | 885.54 |
| 57 | 73+28.93 | 43.25 | 894.58 | 905.54 | 90.64 | 20 | 9.04 | 885.54 |
| 58 | 73+37.24 | 43.25 | 894.48 | 905.54 | 90.64 | 21 | 9.94 | 884.54 |
| 59 | 73+45.54 | 43.25 | 894.37 | 905.54 | 90.64 | 21 | 9.83 | 884.54 |
| 60 | 73+53.84 | 43.25 | 894.27 | 905.54 | 90.64 | 21 | 9.73 | 884.54 |
| 61 | 73+62.14 | 43.25 | 894.18 | 905.54 | 96.31 | 20 | 9.31 | 884.87 |
| 62 | 73+70.45 | 43.25 | 894.08 | 904.87 | 96.31 | 20 | 9.21 | 884.87 |
| 63 | 73+78.75 | 43.25 | 893.98 | 904.87 | 90.64 | 20 | 9.11 | 884.87 |
| 64 | 73+87.05 | 43.25 | 893.89 | 904.87 | 90.64 | 20 | 9.02 | 884.87 |
| 65 | 73+95.36 | 43.25 | 893.79 | 904.87 | 90.64 | 21 | 9.92 | 883.87 |
| 66 | 74+03.66 | 43.25 | 893.70 | 904.87 | 90.64 | 21 | 9.82 | 883.87 |
| 67 | 74+11.96 | 43.25 | 893.60 | 904.87 | 96.31 | 20 | 9.40 | 884.20 |
| 68 | 74+20.27 | 43.25 | 893.51 | 904.20 | 96.31 | 20 | 9.30 | 884.20 |
| 69 | 74+28.57 | 43.25 | 893.41 | 904.20 | 90.64 | 20 | 9.21 | 884.20 |
| 70 | 74+36.87 | 43.25 | 893.32 | 904.20 | 90.64 | 20 | 9.12 | 884.20 |
| 71 | 74+45.17 | 43.25 | 893.22 | 904.20 | 90.64 | 20 | 9.02 | 884.20 |
| 72 | 74+53.48 | 43.25 | 893.12 | 904.20 | 90.64 | 21 | 9.92 | 883.20 |
| 73 | 74+61.78 | 43.25 | 893.03 | 904.20 | 96.31 | 21 | 9.83 | 883.20 |
| 74 | 74+70.08 | 43.25 | 892.93 | 904.20 | 102.00 | 21 | 9.73 | 883.20 |
| 75 | 74+78.39 | 43.25 | 892.84 | 904.20 | 96.00 | 21 | 9.64 | 883.20 |
| 76 | 74+86.69 | 43.25 | 892.74 | 904.20 | 96.00 | 21 | 9.54 | 883.20 |
| 77 | 74+94.99 | 43.25 | 892.69 | 904.20 | 96.00 | 21 | 9.49 | 883.20 |
| 78 | 75+03.29 | 43.25 | 892.63 | 904.20 | 96.00 | 21 | 9.43 | 883.20 |
| 79 | 75+11.60 | 43.25 | 892.58 | 904.20 | 102.00 | 20 | 9.72 | 882.86 |
| 80 | 75+19.90 | 43.25 | 892.53 | 902.86 | 90.70 | 20 | 9.67 | 882.86 |
| 81 | 75+28.20 | 43.25 | 892.47 | 902.86 | 85.36 | 20 | 9.61 | 882.86 |
| | | | | 902.86 | 85.36 | | | |

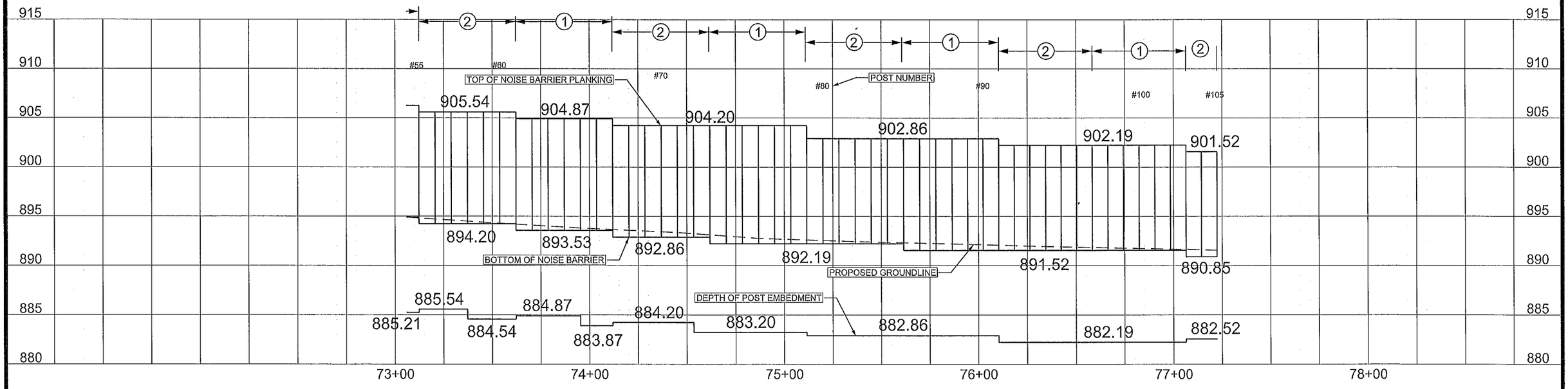
## WOOD NOISE BARRIER G — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 82 | 75+36.51 | 43.25 | 892.42 | | | 20 | 9.56 | 882.86 |
| 83 | 75+44.81 | 43.25 | 892.38 | 902.86 | 85.36 | 20 | 9.52 | 882.86 |
| 84 | 75+53.11 | 43.25 | 892.34 | 902.86 | 85.36 | 20 | 9.48 | 882.86 |
| 85 | 75+61.42 | 43.25 | 892.30 | 902.86 | 90.70 | 20 | 9.44 | 882.86 |
| 86 | 75+69.72 | 43.25 | 892.26 | 902.86 | 96.31 | 20 | 9.40 | 882.86 |
| 87 | 75+78.02 | 43.25 | 892.22 | 902.86 | 90.64 | 20 | 9.36 | 882.86 |
| 88 | 75+86.32 | 43.25 | 892.18 | 902.86 | 90.64 | 20 | 9.32 | 882.86 |
| 89 | 75+94.32 | 43.25 | 892.14 | 902.86 | 90.64 | 20 | 9.28 | 882.86 |
| 90 | 76+02.32 | 43.25 | 892.10 | 902.86 | 90.64 | 20 | 9.24 | 882.86 |
| 91 | 76+10.32 | 43.25 | 892.06 | 902.86 | 96.31 | 20 | 9.86 | 882.19 |
| 92 | 76+18.32 | 43.25 | 892.01 | 902.19 | 90.70 | 20 | 9.82 | 882.19 |
| 93 | 76+26.32 | 43.25 | 891.97 | 902.19 | 85.36 | 20 | 9.78 | 882.19 |
| 94 | 76+34.32 | 43.25 | 891.93 | 902.19 | 85.36 | 20 | 9.74 | 882.19 |
| 95 | 76+42.32 | 43.25 | 891.90 | 902.19 | 85.36 | 20 | 9.71 | 882.19 |
| 96 | 76+50.32 | 43.25 | 891.86 | 902.19 | 85.36 | 20 | 9.67 | 882.19 |
| 97 | 76+58.32 | 43.25 | 891.83 | 902.19 | 90.70 | 20 | 9.64 | 882.19 |
| 98 | 76+66.32 | 43.25 | 891.79 | 902.19 | 90.70 | 20 | 9.60 | 882.19 |
| 99 | 76+74.32 | 43.25 | 891.76 | 902.19 | 85.36 | 20 | 9.57 | 882.19 |
| 100 | 76+82.32 | 43.25 | 891.73 | 902.19 | 85.36 | 20 | 9.54 | 882.19 |
| 101 | 76+90.32 | 43.25 | 891.69 | 902.19 | 85.36 | 20 | 9.50 | 882.19 |
| 102 | 76+98.32 | 43.25 | 891.65 | 902.19 | 85.36 | 20 | 9.46 | 882.19 |
| 103 | 77+06.32 | 43.25 | 891.61 | 902.19 | 90.70 | 19 | 9.09 | 882.52 |
| 104 | 77+14.32 | 43.25 | 891.57 | 901.52 | 90.70 | 19 | 9.05 | 882.52 |
| 105 | 77+22.32 | 43.25 | 891.53 | 901.52 | 90.70 | 19 | 9.01 | 882.52 |
| 105 | TOTAL | | | | 9,296 | 2,085 | | |

NOISE BARRIER G

WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE




8 OF 11

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_NWG_PP2.dgn 04/28/2016 11:54:52 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW G (2 of 2)
STA 73+12.33 TO 77+22.32

Sheet 198 of 482 Sheets

## WOOD NOISE BARRIER I — G

| POST NO. | WALL STA. | CENTER CONC POST LT | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LIN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 1 | 97+42.05 | 59.19 | 908.75 | 920.43 | 102.00 | 23 | 11.32 | 897.43 |
| 2 | 97+50.49 | 58.76 | 908.85 | 920.43 | 96.00 | 23 | 11.42 | 897.43 |
| 3 | 97+58.91 | 58.26 | 908.95 | 920.43 | 96.00 | 22 | 10.52 | 898.43 |
| 4 | 97+67.33 | 57.71 | 909.05 | 920.43 | 88.00 | 22 | 10.62 | 898.43 |
| 5 | 97+75.74 | 57.09 | 909.23 | 920.43 | 88.00 | 22 | 10.80 | 898.43 |
| 6 | 97+84.14 | 56.41 | 909.40 | 920.43 | 93.50 | 21 | 9.97 | 899.43 |
| 7 | 97+92.53 | 55.68 | 909.58 | 920.43 | 93.50 | 21 | 10.15 | 899.43 |
| 8 | 98+00.90 | 54.88 | 909.75 | 920.43 | 88.00 | 21 | 10.32 | 899.43 |
| 9 | 98+09.26 | 54.02 | 909.93 | 920.43 | 88.00 | 21 | 10.50 | 899.43 |
| 10 | 98+17.62 | 53.15 | 910.10 | 920.43 | 80.00 | 20 | 9.67 | 900.43 |
| 11 | 98+26.01 | 52.77 | 910.26 | 920.43 | 80.00 | 20 | 9.83 | 900.43 |
| 12 | 98+34.40 | 52.96 | 910.42 | 920.43 | 80.00 | 20 | 9.99 | 900.43 |
| 13 | 98+42.79 | 53.49 | 910.59 | 920.43 | 85.00 | 20 | 10.16 | 900.43 |
| 14 | 98+51.18 | 53.97 | 910.75 | 920.43 | 85.00 | 20 | 10.32 | 900.43 |
| 15 | 98+59.57 | 54.38 | 910.91 | 920.43 | 80.00 | 20 | 10.48 | 900.43 |
| 16 | 98+67.98 | 54.73 | 910.99 | 920.43 | 80.00 | 20 | 10.56 | 900.43 |
| 17 | 98+76.38 | 55.01 | 911.08 | 920.43 | 80.00 | 20 | 10.65 | 900.43 |
| 18 | 98+84.80 | 55.24 | 911.16 | 920.43 | 80.00 | 20 | 10.73 | 900.43 |
| 19 | 98+93.21 | 55.40 | 911.24 | 920.43 | 85.00 | 19 | 9.81 | 901.43 |

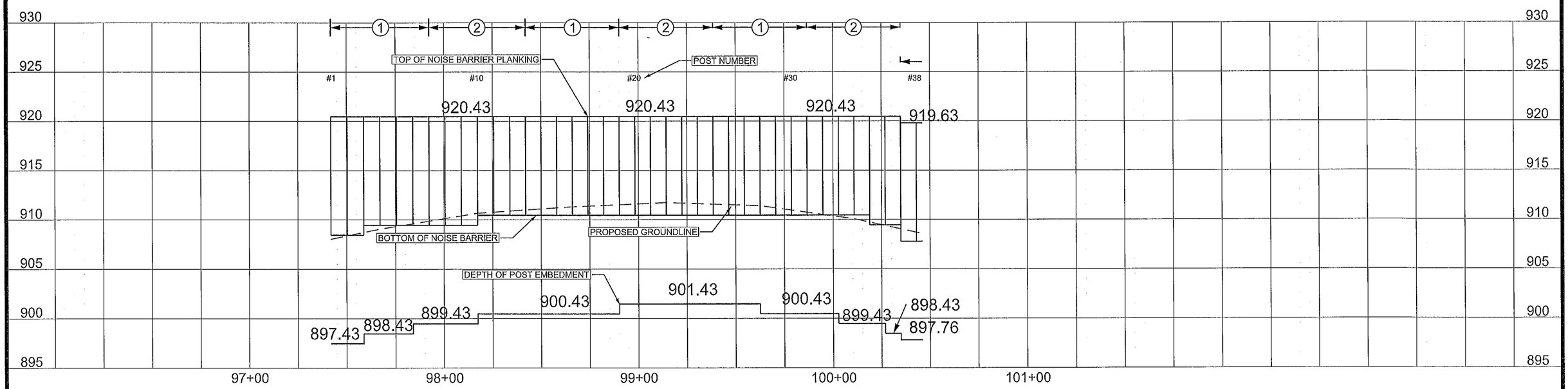
## WOOD NOISE BARRIER I — G

| POST NO. | WALL STA. | CENTER CONC POST LT | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LIN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 20 | 99+01.63 | 55.51 | 911.33 | 920.43 | 85.00 | 19 | 9.90 | 901.43 |
| 21 | 99+10.05 | 55.55 | 911.41 | 920.43 | 80.00 | 19 | 9.98 | 901.43 |
| 22 | 99+18.47 | 55.53 | 911.29 | 920.43 | 80.00 | 19 | 9.86 | 901.43 |
| 23 | 99+26.88 | 55.45 | 911.17 | 920.43 | 80.00 | 19 | 9.74 | 901.43 |
| 24 | 99+35.22 | 55.30 | 911.05 | 920.43 | 85.00 | 19 | 9.62 | 901.43 |
| 25 | 99+43.22 | 55.14 | 910.93 | 920.43 | 85.00 | 19 | 9.50 | 901.43 |
| 26 | 99+51.21 | 54.98 | 910.82 | 920.43 | 80.00 | 19 | 9.39 | 901.43 |
| 27 | 99+59.21 | 54.82 | 910.71 | 920.43 | 80.00 | 19 | 9.28 | 901.43 |
| 28 | 99+67.21 | 55.65 | 910.58 | 920.43 | 80.00 | 20 | 10.15 | 900.43 |
| 29 | 99+75.21 | 54.49 | 910.45 | 920.43 | 80.00 | 20 | 10.02 | 900.43 |
| 30 | 99+83.21 | 54.33 | 910.32 | 920.43 | 85.00 | 20 | 9.89 | 900.43 |
| 31 | 99+91.21 | 54.17 | 910.19 | 920.43 | 85.00 | 20 | 9.76 | 900.43 |
| 32 | 99+99.21 | 54.00 | 910.06 | 920.43 | 80.00 | 20 | 9.63 | 900.43 |
| 33 | 100+07.21 | 53.84 | 909.93 | 920.43 | 80.00 | 21 | 10.50 | 899.43 |
| 34 | 100+15.21 | 53.68 | 909.80 | 920.43 | 80.00 | 21 | 10.37 | 899.43 |
| 35 | 100+23.21 | 53.52 | 909.53 | 920.43 | 88.00 | 21 | 10.10 | 899.43 |
| 36 | 100+31.21 | 53.36 | 909.26 | 920.43 | 93.50 | 22 | 10.83 | 898.43 |
| 37 | 100+39.21 | 53.19 | 908.98 | 919.76 | 102.00 | 22 | 11.22 | 897.76 |
| 38 | 100+47.21 | 53.03 | 908.71 | 919.76 | 96.00 | 22 | 10.95 | 897.76 |

NOISE BARRIER I

WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_NWI_PP1.dgn 04/27/2016 8:19:00 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE:

DATE: 5/3/16 LICENSE NO. 62598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW I (1 of 3)
STA 97+42.00 TO 100+43.07

Sheet 199 of 482 Sheets

## WOOD NOISE BARRIER I — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 39 | 100+55.21 | 52.87 | 908.44 | | | 22 | 10.68 | 897.76 |
| 40 | 100+63.21 | 52.71 | 907.90 | 919.76 | 96.00 | 22 | 10.14 | 897.76 |
| 41 | 100+71.21 | 52.54 | 907.36 | 919.76 | 96.00 | 24 | 11.60 | 895.76 |
| 42 | 100+79.21 | 52.38 | 906.82 | 919.76 | 104.00 | 24 | 11.06 | 895.76 |
| 43 | 100+87.21 | 52.22 | 906.27 | 919.76 | 110.50 | 24 | 10.51 | 895.76 |
| 44 | 100+95.21 | 52.06 | 905.73 | 919.76 | 119.00 | 24 | 9.97 | 895.76 |
| 45 | 101+03.21 | 51.89 | 905.19 | 919.76 | 112.00 | 26 | 11.43 | 893.76 |
| 46 | 101+11.21 | 51.73 | 904.65 | 919.76 | 120.00 | 26 | 10.89 | 893.76 |
| 47 | 101+19.21 | 51.57 | 904.43 | 919.76 | 120.00 | 26 | 10.67 | 893.76 |
| 48 | 101+27.21 | 51.41 | 904.21 | 919.76 | 120.00 | 26 | 10.45 | 893.76 |
| 49 | 101+35.21 | 51.24 | 903.99 | 919.76 | 127.50 | 27 | 11.90 | 892.09 |
| 50 | 101+43.21 | 51.08 | 903.77 | 919.09 | 136.00 | 27 | 11.68 | 892.09 |
| 51 | 101+51.21 | 50.92 | 903.55 | 919.09 | 128.00 | 27 | 11.46 | 892.09 |
| 52 | 101+59.21 | 50.75 | 903.33 | 919.09 | 128.00 | 27 | 11.24 | 892.09 |
| 53 | 101+67.21 | 50.59 | 903.30 | 919.09 | 128.00 | 27 | 11.21 | 892.09 |
| 54 | 101+75.21 | 50.43 | 903.27 | 919.09 | 128.00 | 27 | 11.18 | 892.09 |
| 55 | 101+83.21 | 50.26 | 903.24 | 919.09 | 134.00 | 27 | 11.15 | 892.09 |
| 56 | 101+91.21 | 50.10 | 903.21 | 919.09 | 134.00 | 27 | 11.12 | 892.09 |
| 57 | 101+99.21 | 49.94 | 903.18 | 919.09 | 128.00 | 27 | 11.09 | 892.09 |
| | | | | 919.09 | 128.00 | | | |

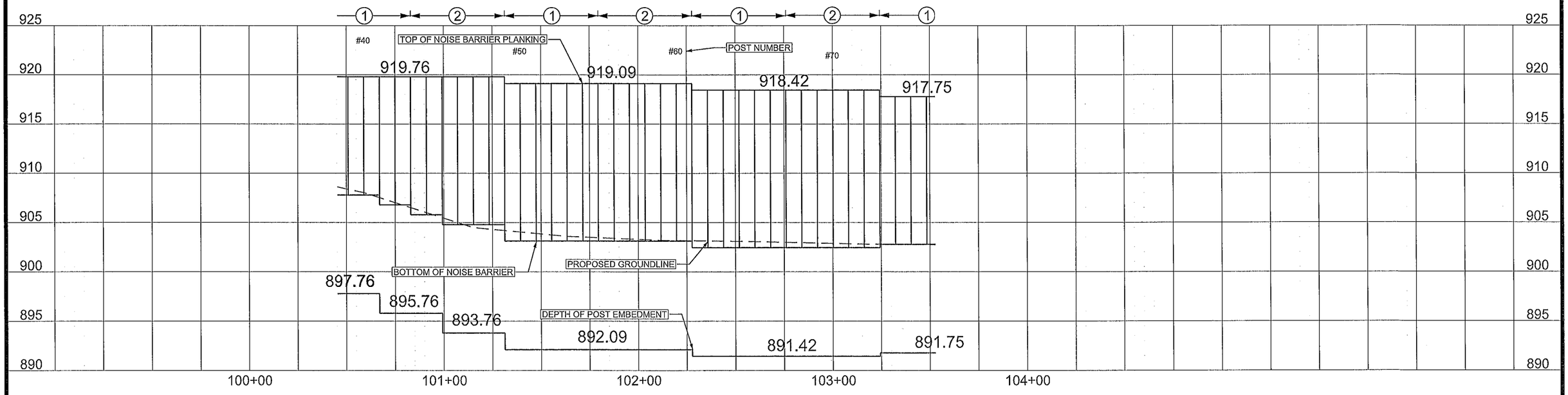
## WOOD NOISE BARRIER I — G

| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
|---|---|---|---|---|---|---|---|---|
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 58 | 102+07.21 | 49.77 | 903.15 | | | 27 | 11.06 | 892.09 |
| 59 | 102+15.16 | 49.61 | 903.13 | 919.09 | 128.00 | 27 | 11.04 | 892.09 |
| 60 | 102+23.16 | 49.46 | 903.12 | 919.09 | 128.00 | 27 | 11.03 | 892.09 |
| 61 | 102+31.14 | 49.31 | 903.10 | 919.09 | 134.00 | 27 | 11.68 | 891.42 |
| 62 | 102+39.10 | 49.15 | 903.08 | 918.42 | 127.50 | 27 | 11.66 | 891.42 |
| 63 | 102+47.07 | 49.00 | 903.06 | 918.42 | 120.00 | 27 | 11.64 | 891.42 |
| 64 | 102+55.03 | 48.85 | 903.05 | 918.42 | 120.00 | 27 | 11.63 | 891.42 |
| 65 | 102+63.00 | 48.70 | 903.03 | 918.42 | 120.00 | 27 | 11.61 | 891.42 |
| 66 | 102+70.96 | 48.58 | 902.99 | 918.42 | 120.00 | 27 | 11.57 | 891.42 |
| 67 | 102+78.93 | 48.46 | 902.96 | 918.42 | 127.50 | 27 | 11.54 | 891.42 |
| 68 | 102+86.89 | 48.35 | 902.92 | 918.42 | 127.50 | 27 | 11.50 | 891.42 |
| 69 | 102+94.86 | 48.23 | 902.88 | 918.42 | 120.00 | 27 | 11.46 | 891.42 |
| 70 | 103+02.82 | 48.11 | 902.85 | 918.42 | 128.00 | 27 | 11.43 | 891.42 |
| 71 | 103+10.79 | 47.99 | 902.81 | 918.42 | 128.00 | 27 | 11.39 | 891.42 |
| 72 | 103+18.75 | 47.88 | 902.78 | 918.42 | 128.00 | 27 | 11.36 | 891.42 |
| 73 | 103+26.72 | 47.79 | 902.74 | 918.42 | 134.00 | 26 | 10.99 | 891.75 |
| 74 | 103+34.68 | 47.71 | 902.71 | 917.75 | 127.50 | 26 | 10.96 | 891.75 |
| 75 | 103+42.65 | 47.62 | 902.68 | 917.75 | 120.00 | 26 | 10.93 | 891.75 |
| 76 | 103+50.61 | 47.54 | 902.64 | 917.75 | 120.00 | 26 | 10.89 | 891.75 |
| | | | | 917.75 | 120.00 | | | |

## NOISE BARRIER I

### WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_NWI_PP2.dgn 04/27/2016 8:19:05 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW I (2 of 3)
STA 100+51.11 TO 103+48.59

Sheet 200 of 482 Sheets

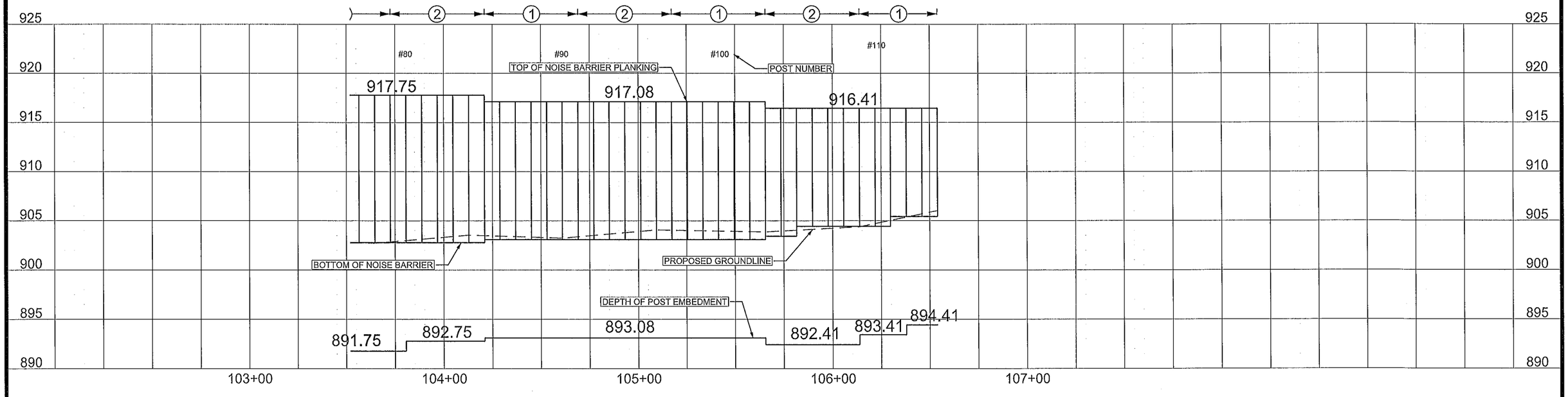
| WOOD NOISE BARRIER I | | | | | | | | G |
|---|---|---|---|---|---|---|---|---|
| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 77 | 103+58.58 | 47.45 | 902.61 | | | 26 | 10.86 | 891.75 |
| 78 | 103+66.55 | 47.41 | 902.76 | 917.75 | 120.00 | 26 | 11.01 | 891.75 |
| 79 | 103+74.52 | 47.36 | 902.92 | 917.75 | 127.50 | 26 | 11.17 | 891.75 |
| 80 | 103+82.49 | 47.30 | 903.07 | 917.75 | 127.50 | 25 | 10.32 | 892.75 |
| 81 | 103+90.46 | 47.25 | 903.22 | 917.75 | 120.00 | 25 | 10.47 | 892.75 |
| 82 | 103+98.43 | 47.20 | 903.38 | 917.75 | 120.00 | 25 | 10.63 | 892.75 |
| 83 | 104+06.40 | 47.14 | 903.53 | 917.75 | 112.00 | 25 | 10.78 | 892.75 |
| 84 | 104+14.37 | 47.11 | 903.48 | 917.75 | 112.00 | 25 | 10.73 | 892.75 |
| 85 | 104+22.34 | 47.09 | 903.44 | 917.75 | 119.00 | 24 | 10.36 | 893.08 |
| 86 | 104+30.31 | 47.07 | 903.39 | 917.08 | 119.00 | 24 | 10.31 | 893.08 |
| 87 | 104+38.28 | 47.05 | 903.34 | 917.08 | 112.00 | 24 | 10.26 | 893.08 |
| 88 | 104+46.25 | 47.03 | 903.29 | 917.08 | 112.00 | 24 | 10.21 | 893.08 |
| 89 | 104+54.22 | 47.01 | 903.25 | 917.08 | 112.00 | 24 | 10.17 | 893.08 |
| 90 | 104+62.20 | 47.00 | 903.20 | 917.08 | 112.00 | 24 | 10.12 | 893.08 |
| 91 | 104+70.20 | 47.00 | 903.30 | 917.08 | 119.00 | 24 | 10.22 | 893.08 |
| 92 | 104+78.20 | 47.00 | 903.40 | 917.08 | 119.00 | 24 | 10.32 | 893.08 |
| 93 | 104+86.20 | 47.00 | 903.50 | 917.08 | 112.00 | 24 | 10.42 | 893.08 |
| 94 | 104+94.20 | 47.00 | 903.59 | 917.08 | 112.00 | 24 | 10.51 | 893.08 |
| 95 | 105+02.20 | 47.00 | 903.69 | 917.08 | 112.00 | 24 | 10.61 | 893.08 |
| 96 | 105+10.20 | 47.00 | 903.79 | 917.08 | 119.00 | 24 | 10.71 | 893.08 |

| WOOD NOISE BARRIER I | | | | | | | | G |
|---|---|---|---|---|---|---|---|---|
| POST NO. | WALL STA. | CENTER CONC POST LT FROM WB CL | WALL GROUND | PLANKING | | POST LENGTH | EMBED. | |
| | | | | TOP | AREA | | EMBEDED POST | POST BOTTOM |
| EACH | STA. | LN FT | ELEV. | ELEV. | SQ FT | LN FT | LN FT | ELEV |
| 97 | 105+18.20 | 47.00 | 903.75 | | | 24 | 10.67 | 893.08 |
| 98 | 105+26.20 | 47.00 | 903.71 | 917.08 | 119.00 | 24 | 10.63 | 893.08 |
| 99 | 105+34.20 | 47.00 | 903.67 | 917.08 | 112.00 | 24 | 10.59 | 893.08 |
| 100 | 105+42.20 | 47.00 | 903.62 | 917.08 | 112.00 | 24 | 10.54 | 893.08 |
| 101 | 105+50.20 | 47.00 | 903.58 | 917.08 | 112.00 | 24 | 10.50 | 893.08 |
| 102 | 105+58.20 | 47.00 | 903.54 | 917.08 | 119.00 | 24 | 10.46 | 893.08 |
| 103 | 105+66.20 | 47.00 | 903.60 | 916.41 | 110.50 | 24 | 11.19 | 892.41 |
| 104 | 105+74.20 | 47.00 | 903.66 | 916.41 | 104.00 | 24 | 11.25 | 892.41 |
| 105 | 105+82.20 | 47.00 | 903.72 | 916.41 | 96.00 | 24 | 11.31 | 892.41 |
| 106 | 105+90.20 | 47.00 | 903.78 | 916.41 | 96.00 | 24 | 11.37 | 892.41 |
| 107 | 105+98.20 | 47.00 | 903.84 | 916.41 | 96.00 | 24 | 11.43 | 892.41 |
| 108 | 106+06.20 | 47.00 | 903.90 | 916.41 | 102.00 | 24 | 11.49 | 892.41 |
| 109 | 106+14.20 | 47.00 | 904.24 | 916.41 | 102.00 | 23 | 10.83 | 893.41 |
| 110 | 106+22.20 | 47.00 | 904.57 | 916.41 | 96.00 | 23 | 11.16 | 893.41 |
| 111 | 106+30.20 | 47.00 | 904.91 | 916.41 | 88.00 | 23 | 11.50 | 893.41 |
| 112 | 106+38.20 | 47.00 | 905.24 | 916.41 | 88.00 | 22 | 10.83 | 894.41 |
| 113 | 106+46.20 | 47.00 | 905.58 | 916.41 | 88.00 | 22 | 11.17 | 894.41 |
| 114 | 106+54.20 | 47.00 | 905.91 | | | 22 | 11.50 | 894.41 |
| 114 | TOTAL | | | | 12,010.0 | 2,686.0 | | |

NOISE BARRIER I

WOOD PLANKING NOISE BARRIER

① PLANKING ON HIGHWAY SIDE
② PLANKING ON RESIDENTIAL SIDE




11 OF 11

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_NWI_PP3.dgn 04/27/2016 8:19:10 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

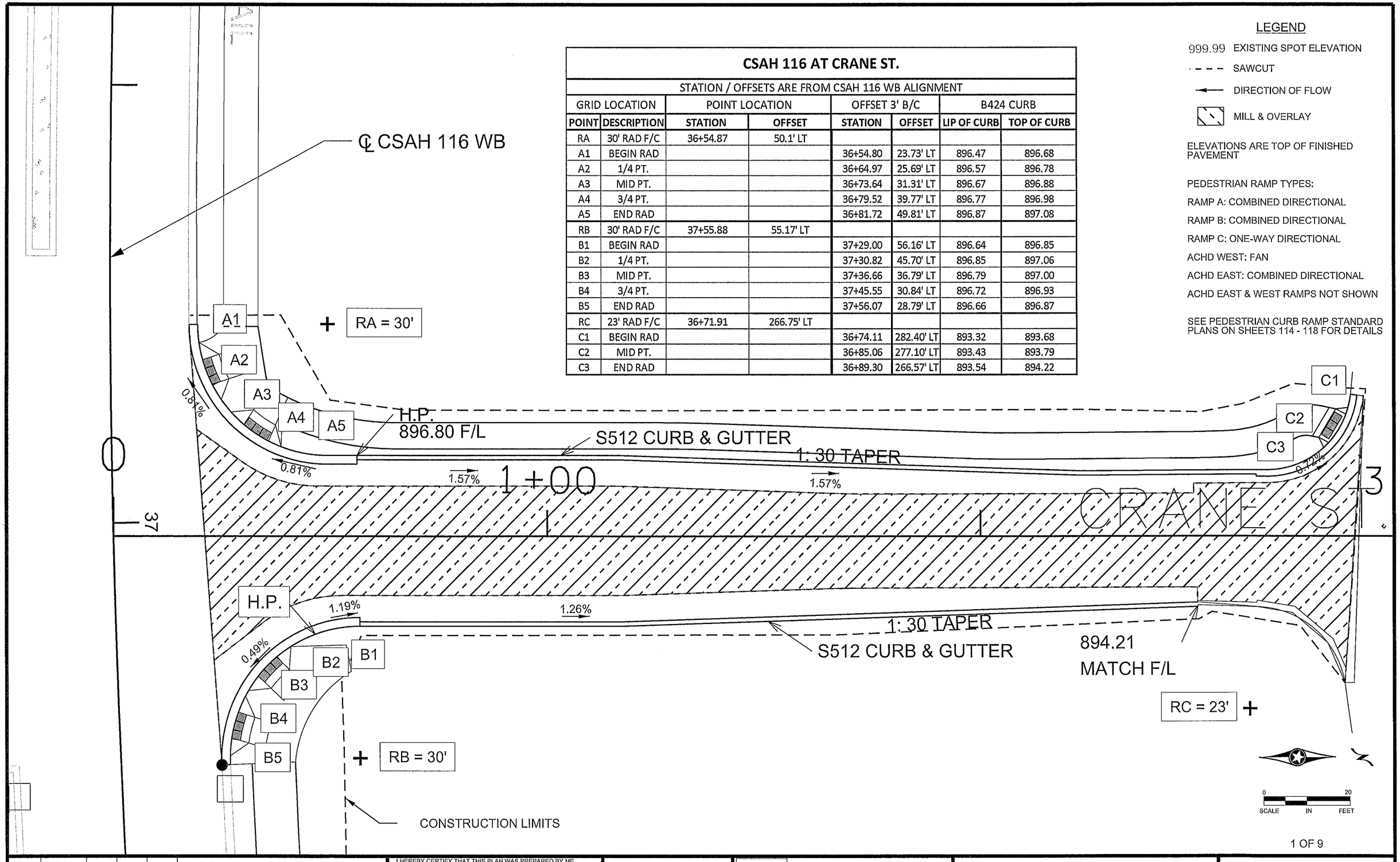
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

NOISE BARRIER PLANS
NW I (3 of 3)
STA 103+56.63 TO 106+54.11

Sheet 201 of 482 Sheets




## CSAH 116 AT CRANE ST.

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RA | 30' RAD F/C | 36+54.87 | 50.1' LT | | | | |
| A1 | BEGIN RAD | | | 36+54.80 | 23.73' LT | 896.47 | 896.68 |
| A2 | 1/4 PT. | | | 36+64.97 | 25.69' LT | 896.57 | 896.78 |
| A3 | MID PT. | | | 36+73.64 | 31.31' LT | 896.67 | 896.88 |
| A4 | 3/4 PT. | | | 36+79.52 | 39.77' LT | 896.77 | 896.98 |
| A5 | END RAD | | | 36+81.72 | 49.81' LT | 896.87 | 897.08 |
| RB | 30' RAD F/C | 37+55.88 | 55.17' LT | | | | |
| B1 | BEGIN RAD | | | 37+29.00 | 56.16' LT | 896.64 | 896.85 |
| B2 | 1/4 PT. | | | 37+30.82 | 45.70' LT | 896.85 | 897.06 |
| B3 | MID PT. | | | 37+36.66 | 36.79' LT | 896.79 | 897.00 |
| B4 | 3/4 PT. | | | 37+45.55 | 30.84' LT | 896.72 | 896.93 |
| B5 | END RAD | | | 37+56.07 | 28.79' LT | 896.66 | 896.87 |
| RC | 23' RAD F/C | 36+71.91 | 266.75' LT | | | | |
| C1 | BEGIN RAD | | | 36+74.11 | 282.40' LT | 893.32 | 893.68 |
| C2 | MID PT. | | | 36+85.06 | 277.10' LT | 893.43 | 893.79 |
| C3 | END RAD | | | 36+89.30 | 266.57' LT | 893.54 | 894.22 |

LEGEND

999.99 EXISTING SPOT ELEVATION

SAWCUT

DIRECTION OF FLOW

MILL & OVERLAY

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:

RAMP A: COMBINED DIRECTIONAL

RAMP B: COMBINED DIRECTIONAL

RAMP C: ONE-WAY DIRECTIONAL

ACHD WEST: FAN

ACHD EAST: COMBINED DIRECTIONAL

ACHD EAST & WEST RAMPS NOT SHOWN

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_IN1_CRANE.dgn 04/12/2016 2:03:30 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zachary Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

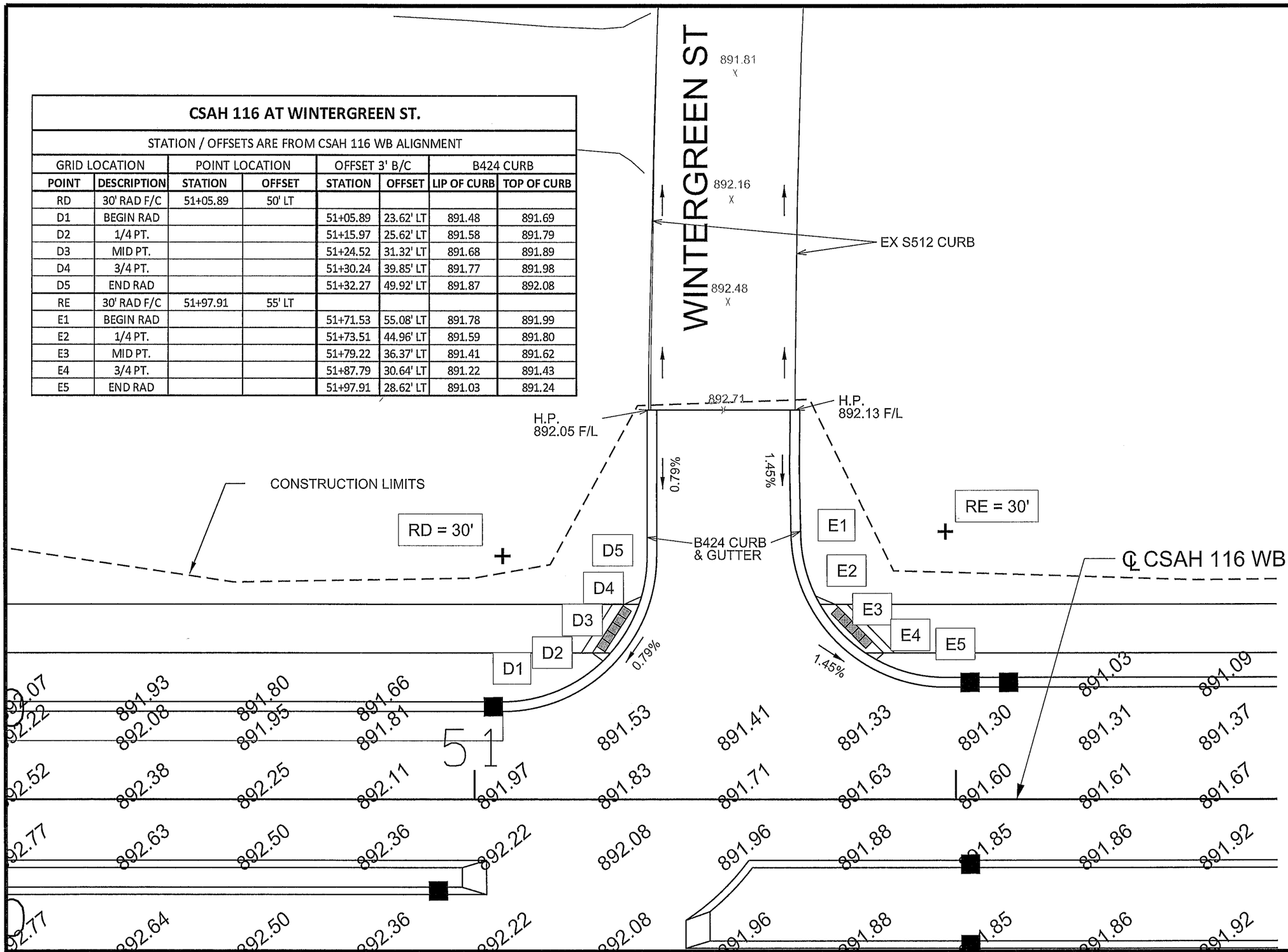
INTERSECTION DETAILS
CSAH 116 & CRANE ST

Sheet 202 of 482 Sheets

## CSAH 116 AT WINTERGREEN ST.

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RD | 30' RAD F/C | 51+05.89 | 50' LT | | | | |
| D1 | BEGIN RAD | | | 51+05.89 | 23.62' LT | 891.48 | 891.69 |
| D2 | 1/4 PT. | | | 51+15.97 | 25.62' LT | 891.58 | 891.79 |
| D3 | MID PT. | | | 51+24.52 | 31.32' LT | 891.68 | 891.89 |
| D4 | 3/4 PT. | | | 51+30.24 | 39.85' LT | 891.77 | 891.98 |
| D5 | END RAD | | | 51+32.27 | 49.92' LT | 891.87 | 892.08 |
| RE | 30' RAD F/C | 51+97.91 | 55' LT | | | | |
| E1 | BEGIN RAD | | | 51+71.53 | 55.08' LT | 891.78 | 891.99 |
| E2 | 1/4 PT. | | | 51+73.51 | 44.96' LT | 891.59 | 891.80 |
| E3 | MID PT. | | | 51+79.22 | 36.37' LT | 891.41 | 891.62 |
| E4 | 3/4 PT. | | | 51+87.79 | 30.64' LT | 891.22 | 891.43 |
| E5 | END RAD | | | 51+97.91 | 28.62' LT | 891.03 | 891.24 |




### LEGEND

999.99 EXISTING SPOT ELEVATION
999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:

RAMP D: ONE-WAY DIRECTIONAL

RAMP E: ONE-WAY DIRECTIONAL

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS

N

0 20
SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_IN2_WINTERGREEN.dgn 04/12/2016 2:03:34 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

INTERSECTION DETAILS
CSAH 116 AT WINTERGREEN ST

## CSAH 116 AT COUNTY PARKWAY A

STATION / OFFSETS ARE FROM CSAH 116 EB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RH | 30' RAD F/C | 66+10.70 | 55' RT | | | | |
| H1 | BEGIN RAD | | | 66+10.70 | 28.62' RT | 894.1 | 894.31 |
| H2 | 1/4 PT. | | | 66+20.92 | 30.68' RT | 894.34 | 894.55 |
| H3 | MID PT. | | | 66+29.54 | 36.54' RT | 894.58 | 894.79 |
| H4 | 3/4 PT. | | | 66+35.22 | 45.29' RT | 894.82 | 895.03 |
| H5 | END RAD | | | 66+37.07 | 55.55' RT | 895.29 | 895.50 |
| RI | 30' RAD F/C | 67+09.82 | 50' RT | | | | |
| I1 | BEGIN RAD | | | 66+83.45 | 49.45' RT | 895.34 | 895.55 |
| I2 | 1/4 PT. | | | 66+85.61 | 39.52' RT | 895.22 | 895.43 |
| I3 | MID PT. | | | 66+91.36 | 31.15' RT | 895.10 | 895.31 |
| I4 | 3/4 PT. | | | 66+99.85 | 25.58' RT | 894.99 | 895.20 |
| I5 | END RAD | | | 67+09.82 | 23.62' RT | 894.87 | 895.08 |

## CSAH 116 AT SYCAMORE ST.

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RF | 30' RAD F/C | 66+01.04 | 50' LT | | | | |
| F1 | BEGIN RAD | | | 66+01.04 | 23.62' LT | 894.23 | 894.44 |
| F2 | 1/4 PT. | | | 66+11.05 | 25.59' LT | 894.29 | 894.50 |
| F3 | MID PT. | | | 66+19.57 | 31.22' LT | 894.35 | 894.56 |
| F4 | 3/4 PT. | | | 66+25.31 | 39.66' LT | 894.42 | 894.63 |
| F5 | END RAD | | | 66+27.42 | 49.64' LT | 894.48 | 894.69 |
| RFF | 16.4' RAD F/C | 66+13.71 | 75.72' LT | OFFSET 3' B/C | | B612 CURB | |
| FA | | | | 66+11.79 | 88.51' LT | 894.22 | 894.60 |
| FB | | | | 66+21.35 | 88.94' LT | 894.28 | 894.66 |
| FC | | | | 66+25.78 | 79.86' LT | 894.34 | 894.72 |
| RG | 30' RAD F/C | 67+04.12 | 55' LT | OFFSET 3' B/C | | B424 CURB | |
| G1 | BEGIN RAD | | | 66+77.74 | 55.36' LT | 894.37 | 894.58 |
| G2 | 1/4 PT. | | | 66+79.64 | 45.15' LT | 894.48 | 894.69 |
| G3 | MID PT. | | | 66+85.34 | 36.47' LT | 894.59 | 894.80 |
| G4 | 3/4 PT. | | | 66+93.94 | 30.66' LT | 894.70 | 894.91 |
| G5 | END RAD | | | 67+04.12 | 28.62' LT | 894.81 | 895.02 |

### LEGEND

999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:
RAMP F: COMBINED DIRECTIONAL
RAMP G: COMBINED DIRECTIONAL
RAMP H: COMBINED DIRECTIONAL
RAMP I: FAN

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS

894.33 894.57 894.34 894.61 894.36 894.06 893.91
894.50 894.74 894.51 894.78 894.53 894.23 894.08
894.09 894.36 894.66 894.90 894.99 894.70 894.40
894.53 894.83 895.07 895.17 895.11 894.87 894.57
894.69 894.99 895.23 895.31 895.28 895.04 894.74
894.86 895.16 895.40 895.46 895.46 895.22 894.92
895.02 895.32 895.56 895.65 895.63 895.39 895.09

RH = 30'
H1
H2
H3
H4
H5
896.10 F/L
1.90%
B424 CURB & GUTTER
3.70%
EX DROP CURB
TRASITION TO DROP CURB
GRADE TRANSITION @ H4

F1
F2
F3
F4
F5
RF = 30'
RFF = 16.4'
FA
FB
FC
B424 CURB & GUTTER
0.50%
H.P.
0.47%
B612 CURB & GUTTER WITH OUTFLOW GUTTER
MATCH VALLEY GUTTER F/L 893.75
TRANSITION FROM B424 TO B612 WITH OUTFLOW GUTTER
VALLEY GUTTER PORK CHOP

CNTY PKWY A
℄ CSAH 116 EB
EX B612 CURB & GUTTER
B424 CURB & GUTTER
0.94%
895.52 F/L
I1
I2
I3
I4
I5
RI = 30'

SYCAMORE ST
℄ CSAH 116 WB
B424 CURB & GUTTER
0.86%
894.22 F/L
EX S512 CURB & GUTTER
G1
G2
G3
G4
G5
RG = 30'
CONSTRUCTION LIMITS

0 20
SCALE IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_IN3_SYCAMORE.dgn 04/12/2016 2:03:36 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

INTERSECTION DETAILS
CSAH 116 AT SYCAMORE ST
CSAH 116 AT CNTY PWY A

## CSAH 116 AT PRAIRIE RD.

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RJ | 30' RAD F/C | 79+98.00 | 50' LT | | | | |
| J1 | BEGIN RAD | | | 79+98.00 | 23.62' LT | 892.5 | 892.71 |
| J2 | 1/4 PT. | | | 80+07.58 | 25.55' LT | 892.42 | 892.63 |
| J3 | MID PT. | | | 80+15.71 | 31.06' LT | 892.35 | 892.56 |
| J4 | 3/4 PT. | | | 80+21.18 | 39.30' LT | 892.27 | 892.48 |
| J5 | END RAD | | | 80+23.24 | 49.05' LT | 892.19 | 892.40 |
| RK | 30' RAD F/C | 81+04.03 | 55' LT | | | | |
| K1 | BEGIN RAD | | | 80+78.90 | 54.03' LT | 892.20 | 892.41 |
| K2 | 1/4 PT. | | | 80+80.96 | 44.28' LT | 892.43 | 892.64 |
| K3 | MID PT. | | | 80+86.40 | 36.05' LT | 892.66 | 892.87 |
| K4 | 3/4 PT. | | | 80+94.49 | 30.55' LT | 892.88 | 893.09 |
| K5 | END RAD | | | 81+04.03 | 28.62' LT | 893.11 | 893.32 |

### LEGEND

999.99 EXISTING SPOT ELEVATION
999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

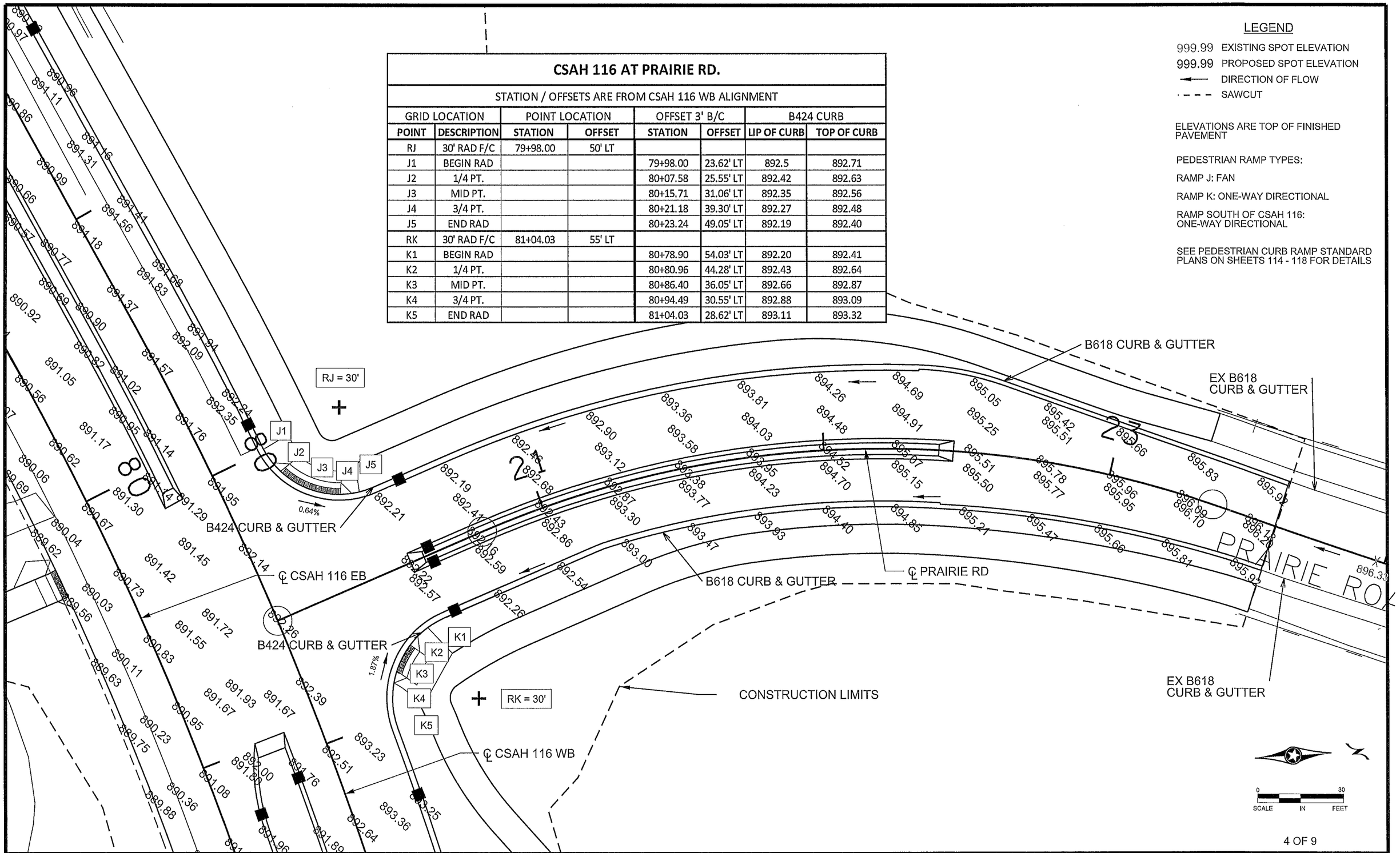
PEDESTRIAN RAMP TYPES:

RAMP J: FAN

RAMP K: ONE-WAY DIRECTIONAL

RAMP SOUTH OF CSAH 116: ONE-WAY DIRECTIONAL

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS




4 OF 9

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_IN4_PRAIRIE.dgn 04/12/2016 2:03:40 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/3/16 LICENSE NO. 52598

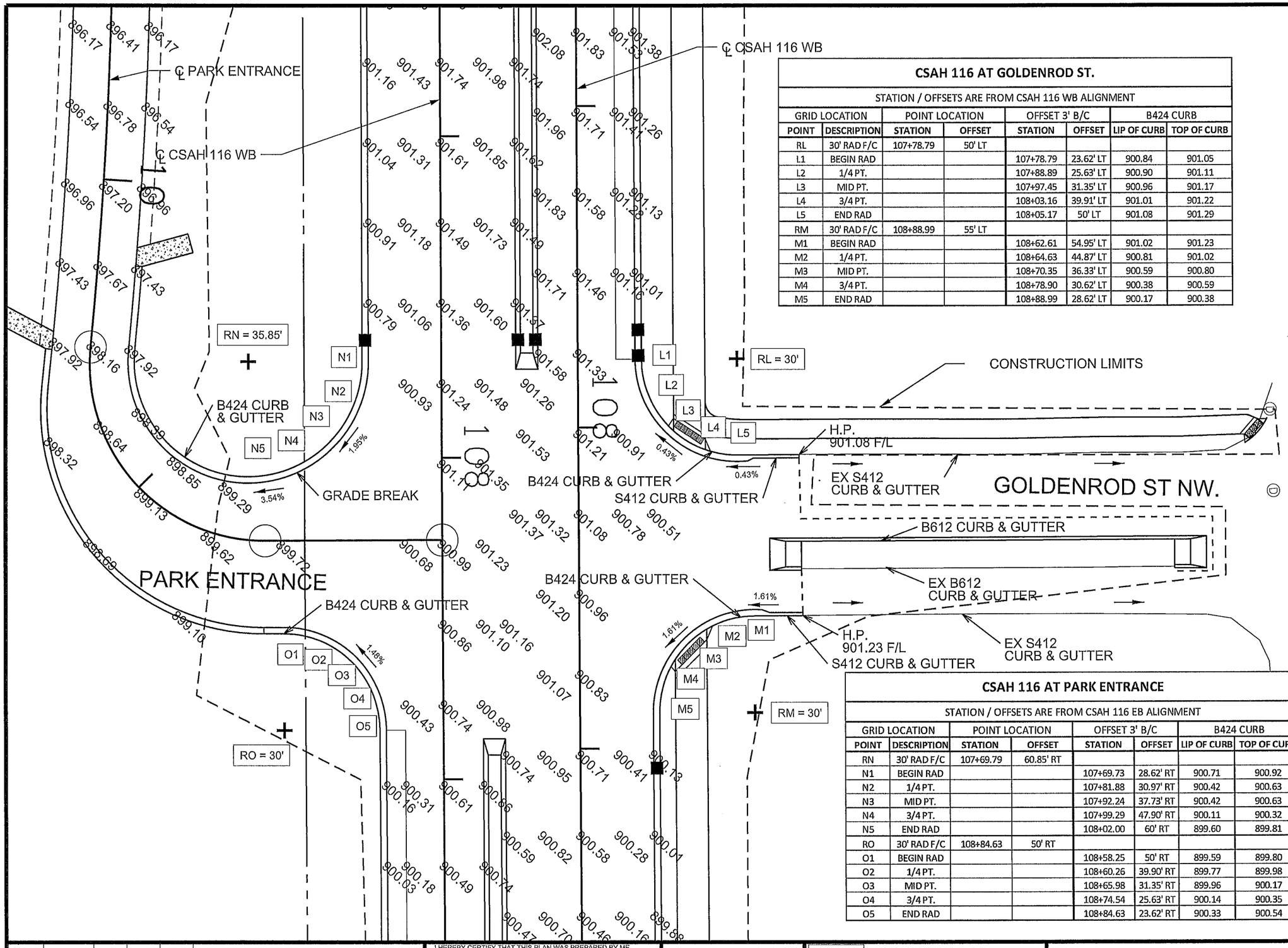
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

INTERSECTION DETAILS
CSAH 116 AT PRAIRIE

Sheet 205 of 482 Sheets




**CSAH 116 AT GOLDENROD ST.**

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RL | 30' RAD F/C | 107+78.79 | 50' LT | | | | |
| L1 | BEGIN RAD | | | 107+78.79 | 23.62' LT | 900.84 | 901.05 |
| L2 | 1/4 PT. | | | 107+88.89 | 25.63' LT | 900.90 | 901.11 |
| L3 | MID PT. | | | 107+97.45 | 31.35' LT | 900.96 | 901.17 |
| L4 | 3/4 PT. | | | 108+03.16 | 39.91' LT | 901.01 | 901.22 |
| L5 | END RAD | | | 108+05.17 | 50' LT | 901.08 | 901.29 |
| RM | 30' RAD F/C | 108+88.99 | 55' LT | | | | |
| M1 | BEGIN RAD | | | 108+62.61 | 54.95' LT | 901.02 | 901.23 |
| M2 | 1/4 PT. | | | 108+64.63 | 44.87' LT | 900.81 | 901.02 |
| M3 | MID PT. | | | 108+70.35 | 36.33' LT | 900.59 | 900.80 |
| M4 | 3/4 PT. | | | 108+78.90 | 30.62' LT | 900.38 | 900.59 |
| M5 | END RAD | | | 108+88.99 | 28.62' LT | 900.17 | 900.38 |

**CSAH 116 AT PARK ENTRANCE**

STATION / OFFSETS ARE FROM CSAH 116 EB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RN | 30' RAD F/C | 107+69.79 | 60.85' RT | | | | |
| N1 | BEGIN RAD | | | 107+69.73 | 28.62' RT | 900.71 | 900.92 |
| N2 | 1/4 PT. | | | 107+81.88 | 30.97' RT | 900.42 | 900.63 |
| N3 | MID PT. | | | 107+92.24 | 37.73' RT | 900.42 | 900.63 |
| N4 | 3/4 PT. | | | 107+99.29 | 47.90' RT | 900.11 | 900.32 |
| N5 | END RAD | | | 108+02.00 | 60' RT | 899.60 | 899.81 |
| RO | 30' RAD F/C | 108+84.63 | 50' RT | | | | |
| O1 | BEGIN RAD | | | 108+58.25 | 50' RT | 899.59 | 899.80 |
| O2 | 1/4 PT. | | | 108+60.26 | 39.90' RT | 899.77 | 899.98 |
| O3 | MID PT. | | | 108+65.98 | 31.35' RT | 899.96 | 900.17 |
| O4 | 3/4 PT. | | | 108+74.54 | 25.63' RT | 900.14 | 900.35 |
| O5 | END RAD | | | 108+84.63 | 23.62' RT | 900.33 | 900.54 |

LEGEND

999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:

RAMP L: ONE-WAY DIRECTIONAL

RAMP M: ONE-WAY DIRECTIONAL

RAMP N: FAN

NORTH RAMP ON GOLDENROD: ONE-WAY DIRECTIONAL

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS

SCALE 0 30 IN FEET



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_IN5_GOLDENROD.dgn 04/12/2016 2:03:43 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

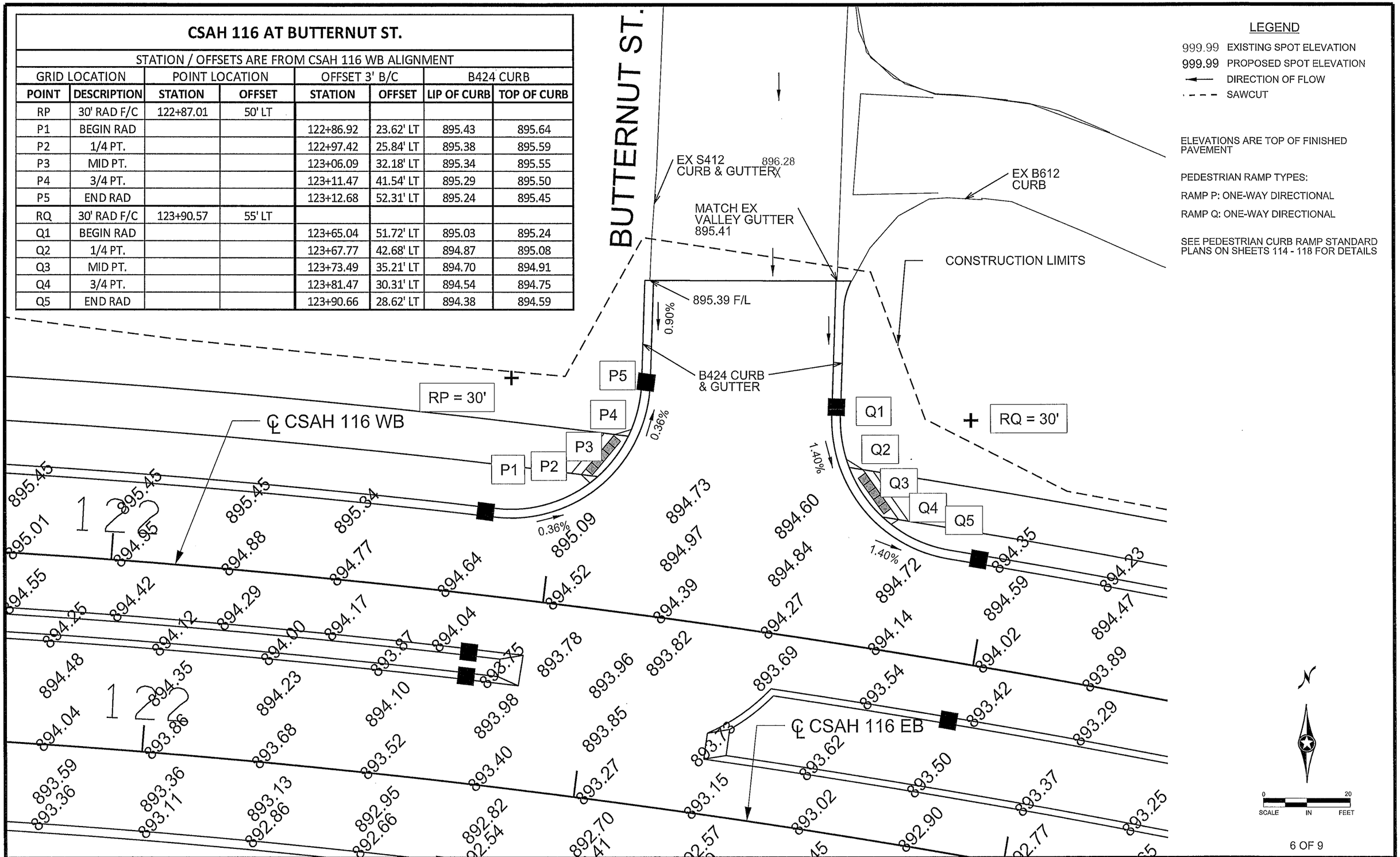
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

INTERSECTION DETAILS
CSAH 116 AT GOLDENROD
CSAH 116 AT PARK ENTRANCE

## CSAH 116 AT BUTTERNUT ST.

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RP | 30' RAD F/C | 122+87.01 | 50' LT | | | | |
| P1 | BEGIN RAD | | | 122+86.92 | 23.62' LT | 895.43 | 895.64 |
| P2 | 1/4 PT. | | | 122+97.42 | 25.84' LT | 895.38 | 895.59 |
| P3 | MID PT. | | | 123+06.09 | 32.18' LT | 895.34 | 895.55 |
| P4 | 3/4 PT. | | | 123+11.47 | 41.54' LT | 895.29 | 895.50 |
| P5 | END RAD | | | 123+12.68 | 52.31' LT | 895.24 | 895.45 |
| RQ | 30' RAD F/C | 123+90.57 | 55' LT | | | | |
| Q1 | BEGIN RAD | | | 123+65.04 | 51.72' LT | 895.03 | 895.24 |
| Q2 | 1/4 PT. | | | 123+67.77 | 42.68' LT | 894.87 | 895.08 |
| Q3 | MID PT. | | | 123+73.49 | 35.21' LT | 894.70 | 894.91 |
| Q4 | 3/4 PT. | | | 123+81.47 | 30.31' LT | 894.54 | 894.75 |
| Q5 | END RAD | | | 123+90.66 | 28.62' LT | 894.38 | 894.59 |




LEGEND

999.99 EXISTING SPOT ELEVATION
999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:

RAMP P: ONE-WAY DIRECTIONAL

RAMP Q: ONE-WAY DIRECTIONAL

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: P:\02-716-15\Plan\0271615_IN6_BUTTERNUT.dgn | | | | | 04/18/2016 2:31:45 PM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

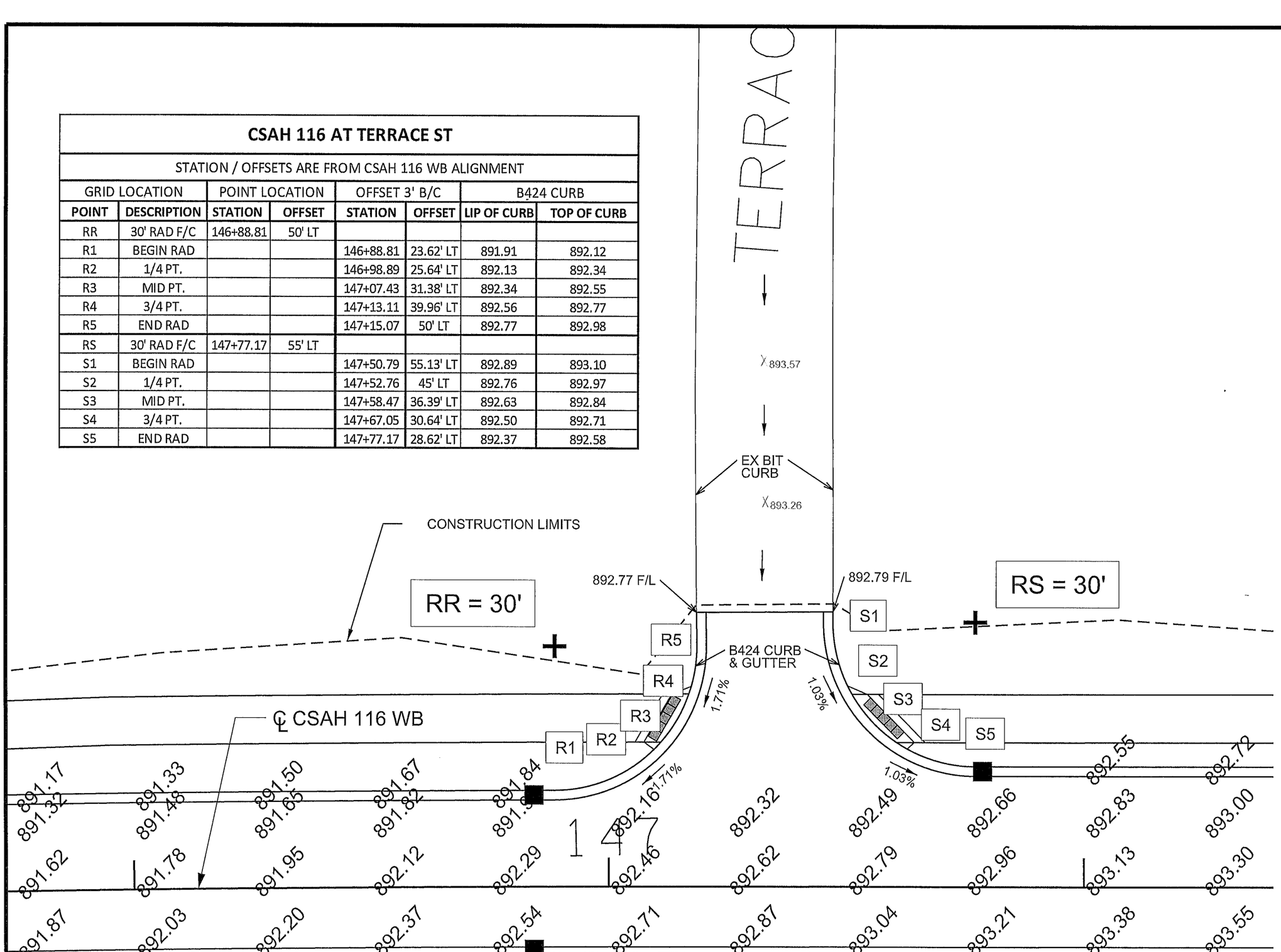
INTERSECTION DETAILS
CSAH 116 AT BUTTERNUT ST

Sheet 207 of 482 Sheets

## CSAH 116 AT TERRACE ST

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| **POINT** | **DESCRIPTION** | **STATION** | **OFFSET** | **STATION** | **OFFSET** | **LIP OF CURB** | **TOP OF CURB** |
| RR | 30' RAD F/C | 146+88.81 | 50' LT | | | | |
| R1 | BEGIN RAD | | | 146+88.81 | 23.62' LT | 891.91 | 892.12 |
| R2 | 1/4 PT. | | | 146+98.89 | 25.64' LT | 892.13 | 892.34 |
| R3 | MID PT. | | | 147+07.43 | 31.38' LT | 892.34 | 892.55 |
| R4 | 3/4 PT. | | | 147+13.11 | 39.96' LT | 892.56 | 892.77 |
| R5 | END RAD | | | 147+15.07 | 50' LT | 892.77 | 892.98 |
| RS | 30' RAD F/C | 147+77.17 | 55' LT | | | | |
| S1 | BEGIN RAD | | | 147+50.79 | 55.13' LT | 892.89 | 893.10 |
| S2 | 1/4 PT. | | | 147+52.76 | 45' LT | 892.76 | 892.97 |
| S3 | MID PT. | | | 147+58.47 | 36.39' LT | 892.63 | 892.84 |
| S4 | 3/4 PT. | | | 147+67.05 | 30.64' LT | 892.50 | 892.71 |
| S5 | END RAD | | | 147+77.17 | 28.62' LT | 892.37 | 892.58 |




### LEGEND

999.99 EXISTING SPOT ELEVATION
999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:

RAMP R: ONE-WAY DIRECTIONAL

RAMP S: ONE-WAY DIRECTIONAL

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS

SCALE 0 20 IN FEET

7 OF 9

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_IN7_TERRACE.dgn 04/12/2016 2:03:50 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

INTERSECTION DETAILS TERRACE RD

Sheet 208 of 482 Sheets

## CSAH 116 AT JEFFERSON ST NW

STATION / OFFSETS ARE FROM CSAH 116 EB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RV | 30' RAD F/C | 156+47.47 | 65' RT | | | | |
| V1 | BEGIN RAD | | | 156+47.47 | 28.62' RT | 897.12 | 897.33 |
| V2 | 1/4 PT. | | | 156+59.51 | 30.67' RT | 897.02 | 897.23 |
| V3 | MID PT. | | | 156+70.19 | 36.58' RT | 896.91 | 897.12 |
| V4 | 3/4 PT. | | | 156+78.31 | 45.70' RT | 896.81 | 897.02 |
| V5 | END RAD | | | 156+82.96 | 56.99' RT | 896.70 | 896.91 |
| RW | 30' RAD F/C | 157+79.39 | 60' RT | | | | |
| W1 | BEGIN RAD | | | 157+43.02 | 60.90' RT | 896.48 | 896.69 |
| W2 | 1/4 PT. | | | 157+45.53 | 46.70' RT | 896.56 | 896.77 |
| W3 | MID PT. | | | 157+53.35 | 34.59' RT | 896.64 | 896.85 |
| W4 | 3/4 PT. | | | 157+65.26 | 26.48' RT | 896.54 | 896.75 |
| W5 | END RAD | | | 157+79.39 | 23.62' RT | 896.44 | 896.65 |

RV = 40'

RW = 40'

℄ CSAH 116 EB

℄ CSAH 116 WB

RT = 30'

RU = 30'

V1 V2 V3 V4 V5

W1 W2 W3 W4 W5

T1 T2 T3 T4 T5

U1 U2 U3 U4 U5

897.43 897.70 898.00 898.24 898.01 898.26 898.01 897.71 897.56

897.28 897.55 897.85 898.09 897.86 898.11 897.86 897.56 897.41

897.12 897.40 897.70 897.94 897.73 897.96 897.71 897.47 897.26

0.74% 3.10%

GRADE BREAK @ T2

897.79 897.88 897.55 1.95%

GRADE BREAK @ T4

897.25 897.55 897.79 897.10 897.64 897.70 897.40

897.09 897.39 897.63

2.68%

896.58 T/C

896.86 F/L

0.74%

0.72%

895.80 F/L

EX BIT CURB

EX B618 CURB & GUTTER

B424 CURB & GUTTER

B424 CURB & GUTTER

0.99%

897.49 897.25 896.95

896.94 897.24 897.48 897.54

0.99%

895.88 F/L

0.61%

0.69%

896.66 F/L

896.79 897.09 897.33 897.41 897.34 897.10 896.80

0.91%

896.64 896.94 896.97 897.19 896.95 896.65 896.37

### LEGEND

999.99 PROPOSED SPOT ELEVATION

DIRECTION OF FLOW

SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

PEDESTRIAN RAMP TYPES:

RAMP T: FAN

RAMP U: FAN

RAMP V: FAN

RAMP W: FAN

SEE PEDESTRIAN CURB RAMP STANDARD PLANS ON SHEETS 114 - 118 FOR DETAILS

SCALE 0 20 IN FEET

## CSAH 116 AT 138TH AVE. NE

STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' B/C | | B424 CURB | |
|---|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB | TOP OF CURB |
| RT | 30' RAD F/C | 156+65.14 | 50' LT | | | | |
| T1 | BEGIN RAD | | | 146+88.81 | 23.62' LT | 897.15 | 897.36 |
| T2 | 1/4 PT. | | | 146+98.89 | 25.64' LT | 896.76 | 896.97 |
| T3 | MID PT. | | | 147+07.43 | 31.38' LT | 896.52 | 896.73 |
| T4 | 3/4 PT. | | | 147+13.11 | 39.96' LT | 896.27 | 896.48 |
| T5 | END RAD | | | 147+15.07 | 50' LT | 896.03 | 896.24 |
| RU | 30' RAD F/C | 157+57.13 | 55' LT | | | | |
| U1 | BEGIN RAD | | | 157+30.75 | 55' LT | 895.94 | 896.15 |
| U2 | 1/4 PT. | | | 157+32.75 | 44.89' LT | 896.07 | 896.28 |
| U3 | MID PT. | | | 157+38.47 | 36.33' LT | 896.19 | 896.40 |
| U4 | 3/4 PT. | | | 157+47.03 | 30.61' LT | 896.32 | 896.53 |
| U5 | END RAD | | | 157+57.13 | 28.62' LT | 896.44 | 896.65 |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_IN8_JEFFERSON.dgn 04/12/2016 2:03:53 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

INTERSECTION DETAILS
CSAH 116 AT 138TH AVE
CSAH 116 AT JEFFERSON ST

Sheet 209 of 482 Sheets

## CSAH 116 AT WILLOWS APT

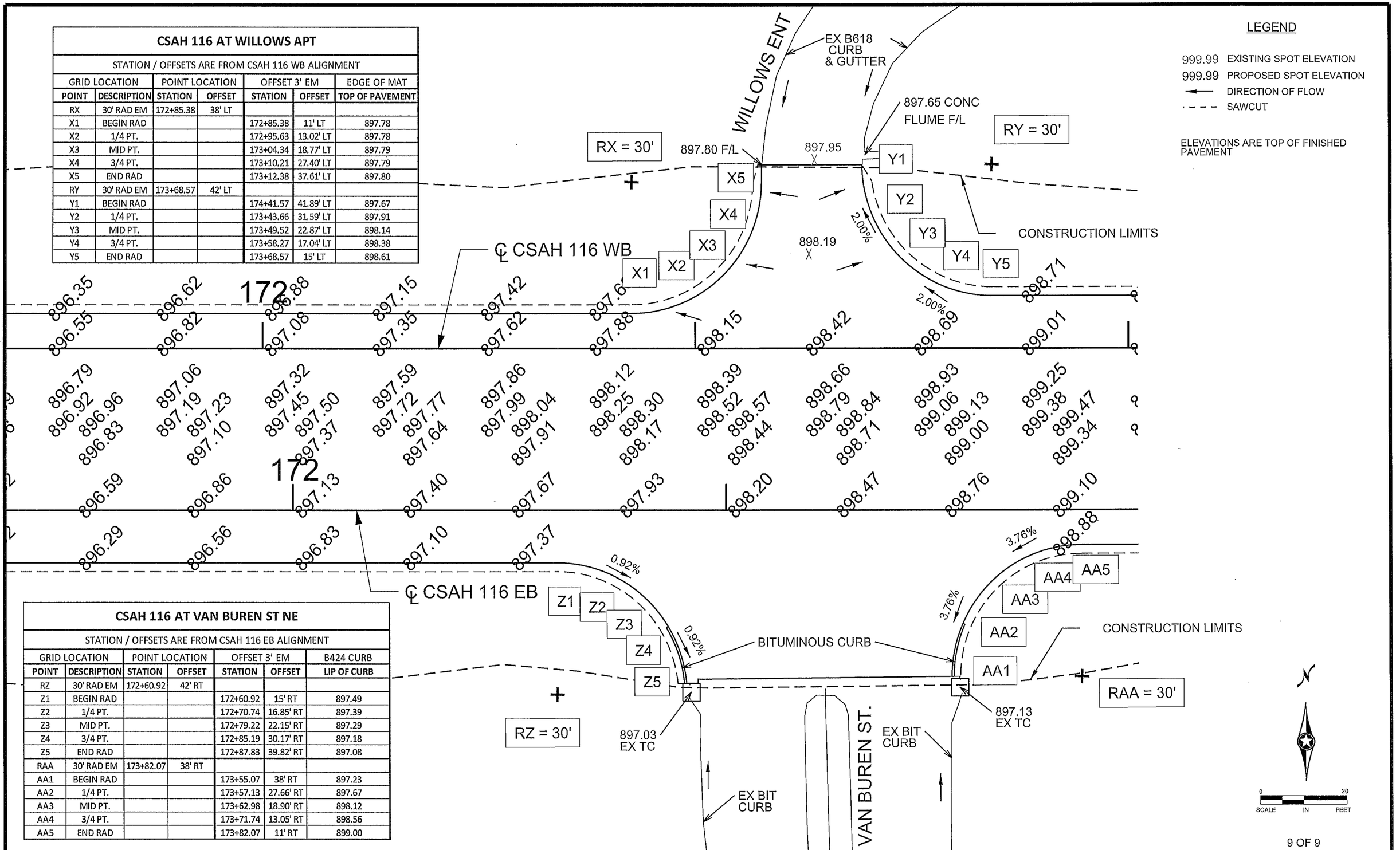
STATION / OFFSETS ARE FROM CSAH 116 WB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' EM | | EDGE OF MAT |
|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | TOP OF PAVEMENT |
| RX | 30' RAD EM | 172+85.38 | 38' LT | | | |
| X1 | BEGIN RAD | | | 172+85.38 | 11' LT | 897.78 |
| X2 | 1/4 PT. | | | 172+95.63 | 13.02' LT | 897.78 |
| X3 | MID PT. | | | 173+04.34 | 18.77' LT | 897.79 |
| X4 | 3/4 PT. | | | 173+10.21 | 27.40' LT | 897.79 |
| X5 | END RAD | | | 173+12.38 | 37.61' LT | 897.80 |
| RY | 30' RAD EM | 173+68.57 | 42' LT | | | |
| Y1 | BEGIN RAD | | | 174+41.57 | 41.89' LT | 897.67 |
| Y2 | 1/4 PT. | | | 173+43.66 | 31.59' LT | 897.91 |
| Y3 | MID PT. | | | 173+49.52 | 22.87' LT | 898.14 |
| Y4 | 3/4 PT. | | | 173+58.27 | 17.04' LT | 898.38 |
| Y5 | END RAD | | | 173+68.57 | 15' LT | 898.61 |

## CSAH 116 AT VAN BUREN ST NE

STATION / OFFSETS ARE FROM CSAH 116 EB ALIGNMENT

| GRID LOCATION | | POINT LOCATION | | OFFSET 3' EM | | B424 CURB |
|---|---|---|---|---|---|---|
| POINT | DESCRIPTION | STATION | OFFSET | STATION | OFFSET | LIP OF CURB |
| RZ | 30' RAD EM | 172+60.92 | 42' RT | | | |
| Z1 | BEGIN RAD | | | 172+60.92 | 15' RT | 897.49 |
| Z2 | 1/4 PT. | | | 172+70.74 | 16.85' RT | 897.39 |
| Z3 | MID PT. | | | 172+79.22 | 22.15' RT | 897.29 |
| Z4 | 3/4 PT. | | | 172+85.19 | 30.17' RT | 897.18 |
| Z5 | END RAD | | | 172+87.83 | 39.82' RT | 897.08 |
| RAA | 30' RAD EM | 173+82.07 | 38' RT | | | |
| AA1 | BEGIN RAD | | | 173+55.07 | 38' RT | 897.23 |
| AA2 | 1/4 PT. | | | 173+57.13 | 27.66' RT | 897.67 |
| AA3 | MID PT. | | | 173+62.98 | 18.90' RT | 898.12 |
| AA4 | 3/4 PT. | | | 173+71.74 | 13.05' RT | 898.56 |
| AA5 | END RAD | | | 173+82.07 | 11' RT | 899.00 |




LEGEND

999.99 EXISTING SPOT ELEVATION
999.99 PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
SAWCUT

ELEVATIONS ARE TOP OF FINISHED PAVEMENT

9 OF 9

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_IN9_VANBUREN.dgn 04/12/2016 2:03:56 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

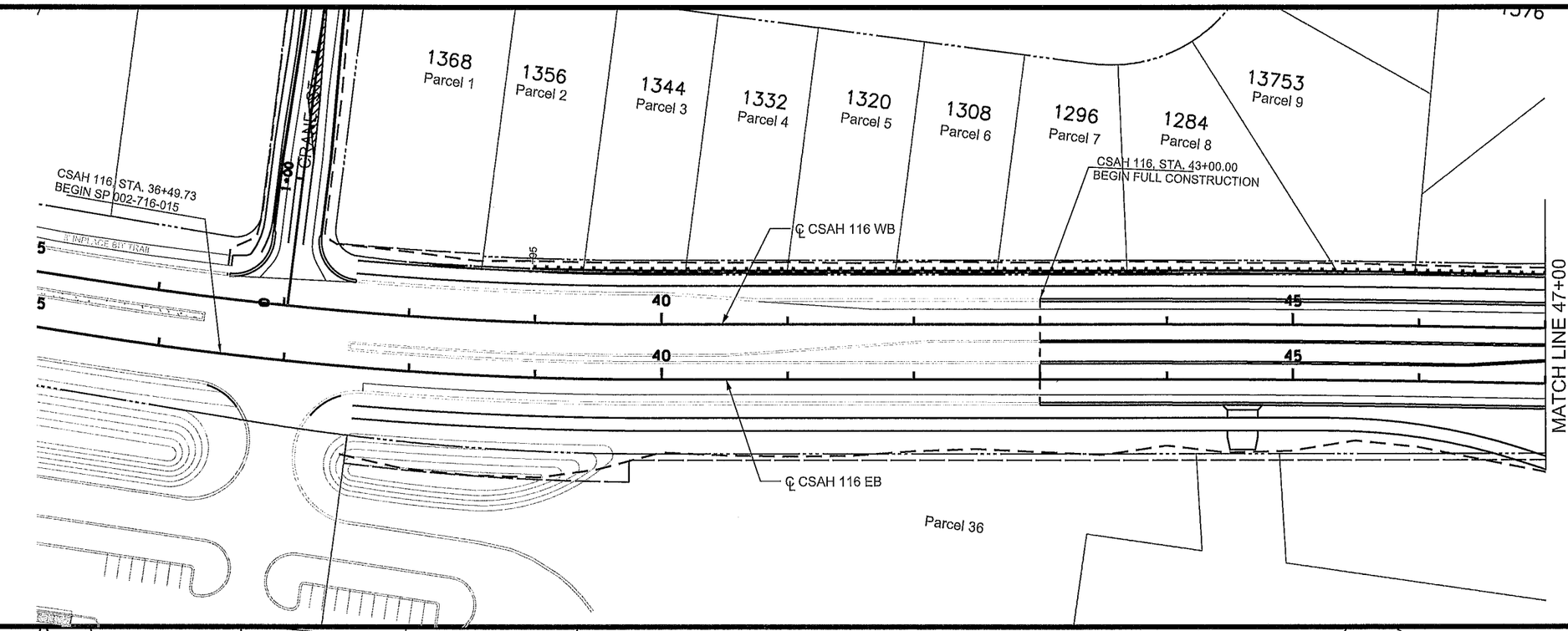
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. S.P. 002-716-015
STATE AID PROJECT NO. S.P. 198-020-036
CITY PROJECT NO. S.P. 197-020-005
COUNTY PROJECT NO. C.P. 11-25

INTERSECTION DETAILS
CSAH 116 AT WILLOW APT
CSAH 116 AT VAN BUREN ST

Sheet 210 of 482 Sheets




LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET
2. STATIONING FOR EAST BOUND CSAH 116 BASED ON EAST BOUND ALIGNMENT
3. STATIONING FOR WEST BOUND CSAH 116 BASED ON WEST BOUND ALIGNMENT
4. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.

0 100
SCALE IN FEET

1 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_SE_1.dgn 04/12/2016 2:04:00 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

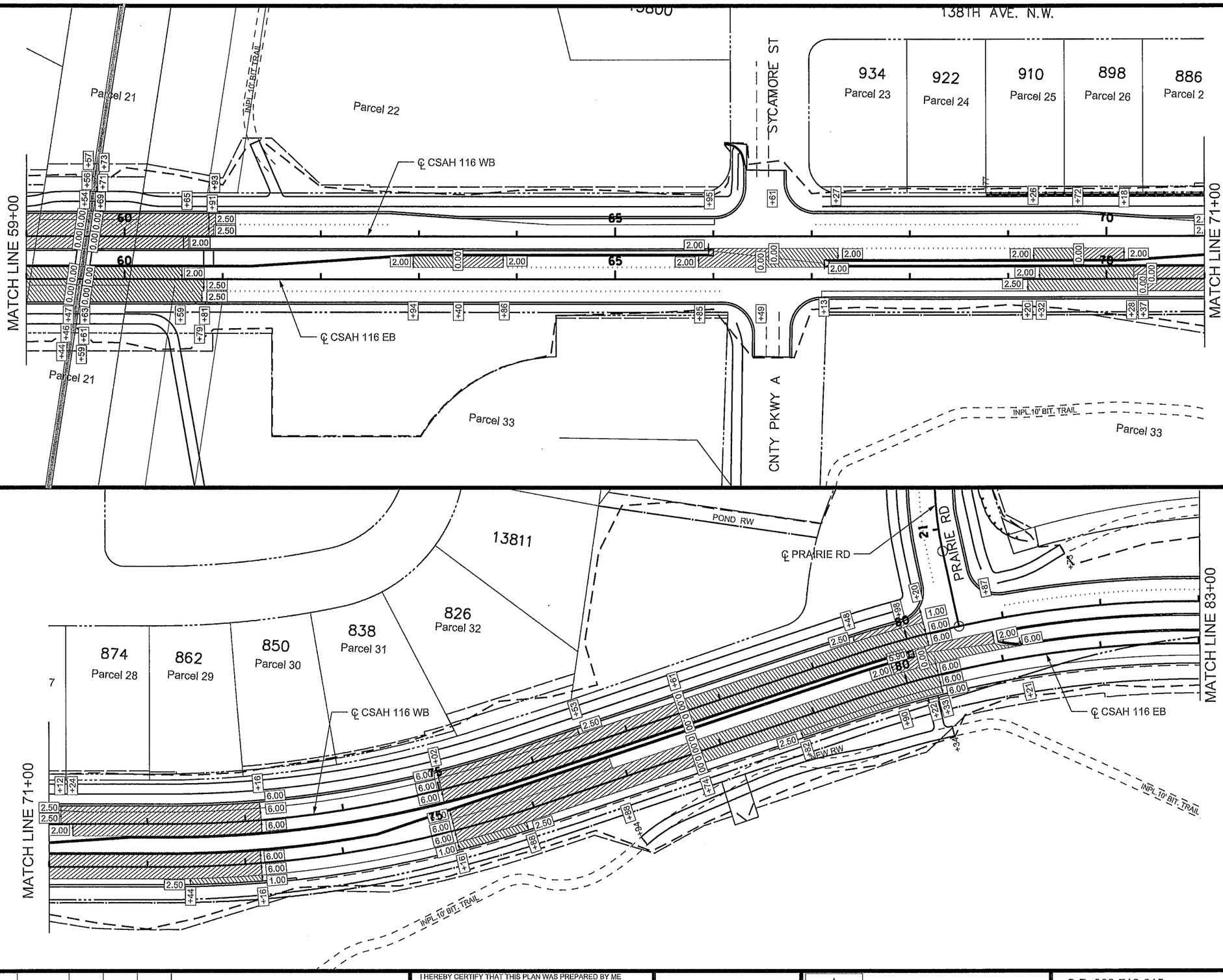
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SUPERELEVEATION PLAN

STA 36+49.73 TO 59+00.00

Sheet 211 of 482 Sheets




LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET
2. STATIONING FOR EAST BOUND CSAH 116 BASED ON EAST BOUND ALIGNMENT
3. STATIONING FOR WEST BOUND CSAH 116 BASED ON WEST BOUND ALIGNMENT
4. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.

N

0 100
SCALE IN FEET

2 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_SE2.dgn 04/12/2016 2:04:02 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zay Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

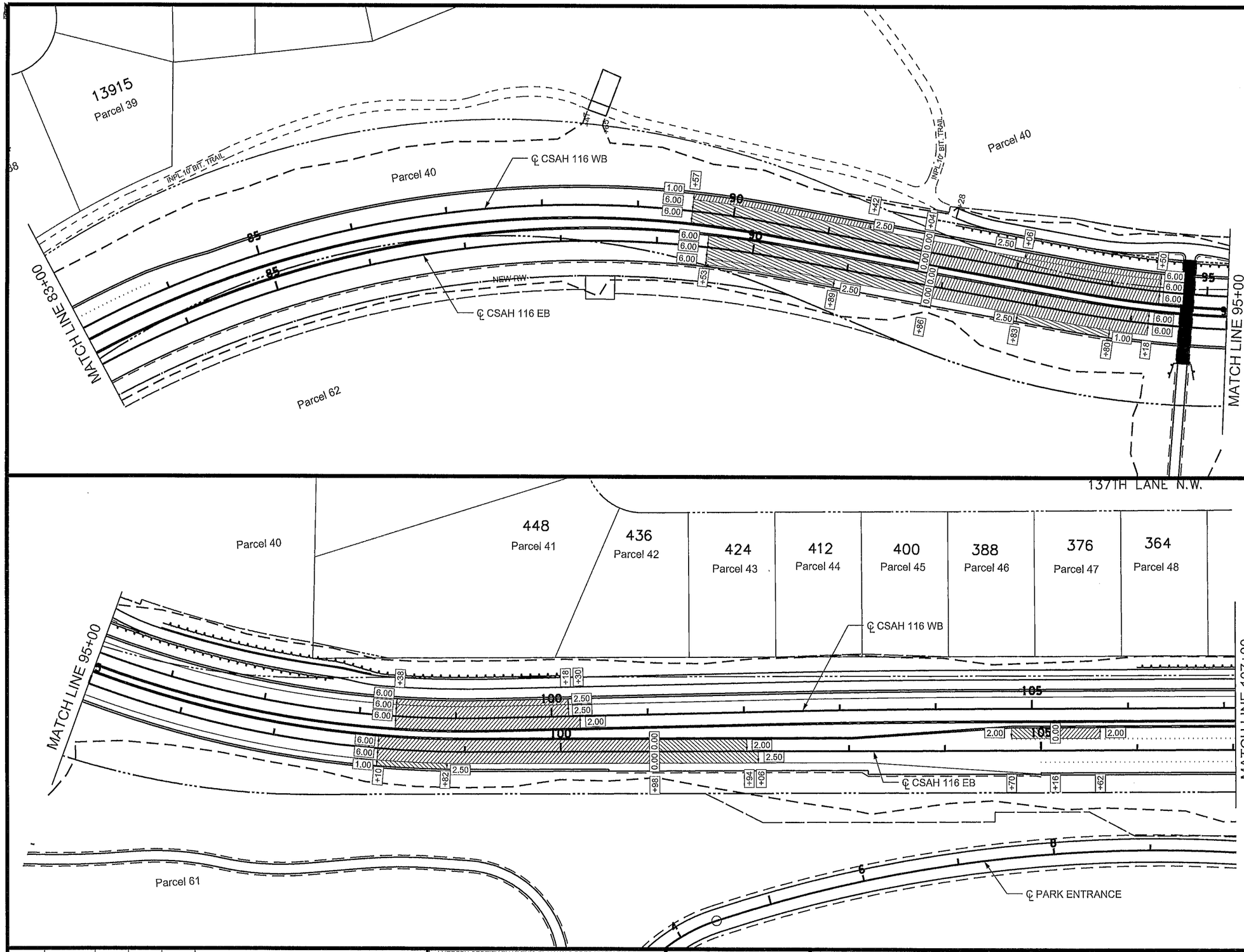
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SUPERELEVATION PLAN

STA 59+00.00 TO 83+00.00

Sheet 212 of 482 Sheets




LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET
2. STATIONING FOR EAST BOUND CSAH 116 BASED ON EAST BOUND ALIGNMENT
3. STATIONING FOR WEST BOUND CSAH 116 BASED ON WEST BOUND ALIGNMENT
4. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.

0 100
SCALE IN FEET

3 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_SE3.dgn 04/12/2016 2:04:04 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

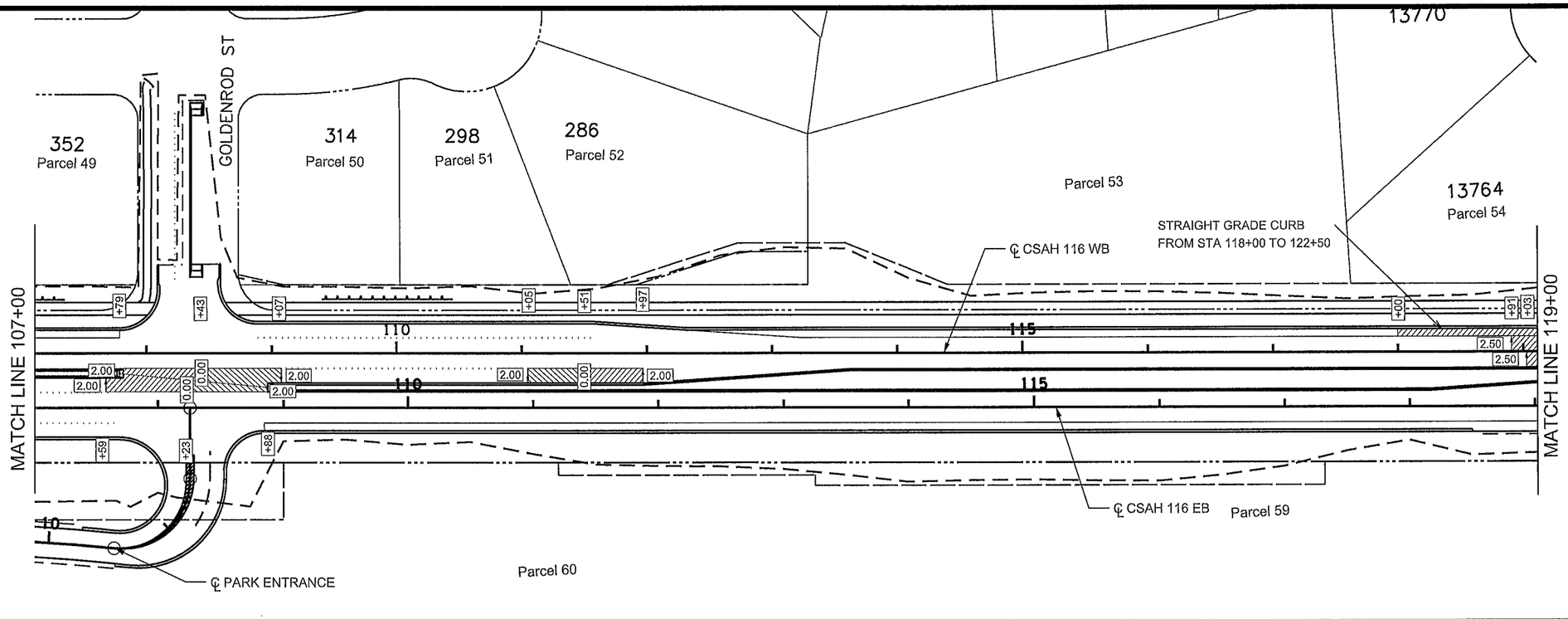
ANOKA COUNTY HIGHWAY DEPT.

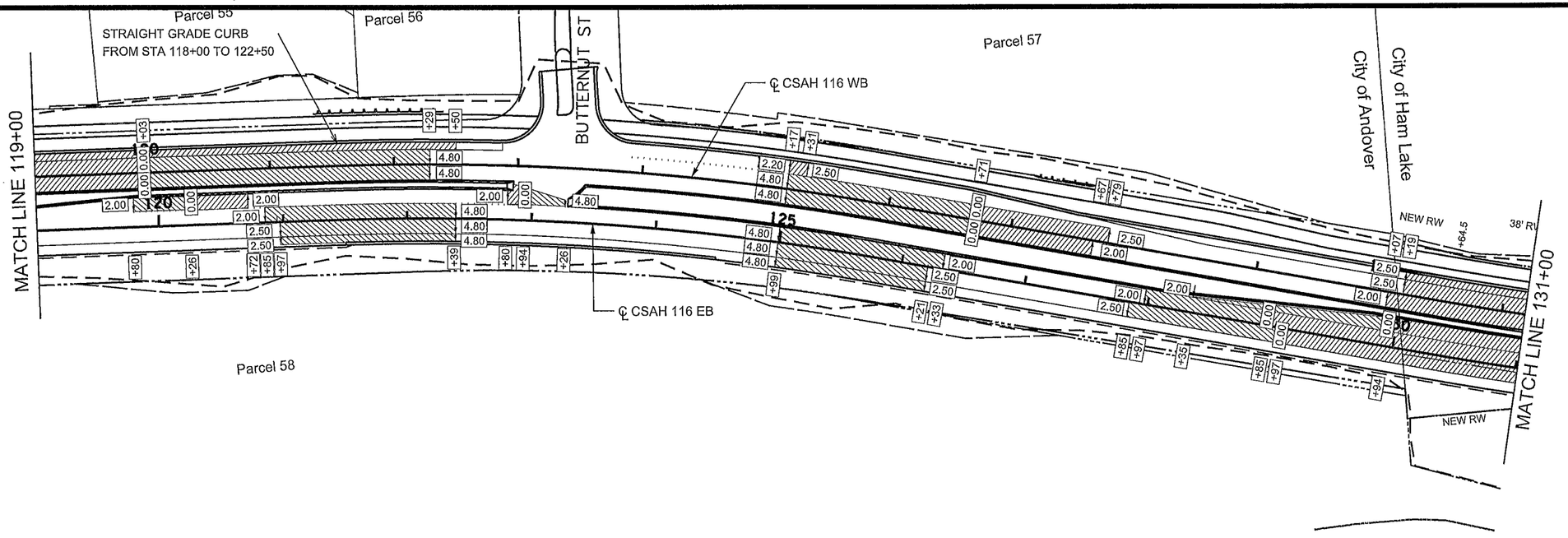
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SUPERELEVATION PLAN

STA 83+00.00 TO 107+00.00

Sheet 213 of 482 Sheets




LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET
2. STATIONING FOR EAST BOUND CSAH 116 BASED ON EAST BOUND ALIGNMENT
3. STATIONING FOR WEST BOUND CSAH 116 BASED ON WEST BOUND ALIGNMENT
4. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.

N

0 100
SCALE IN FEET

4 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_SE4.dgn 04/12/2016 2:04:06 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

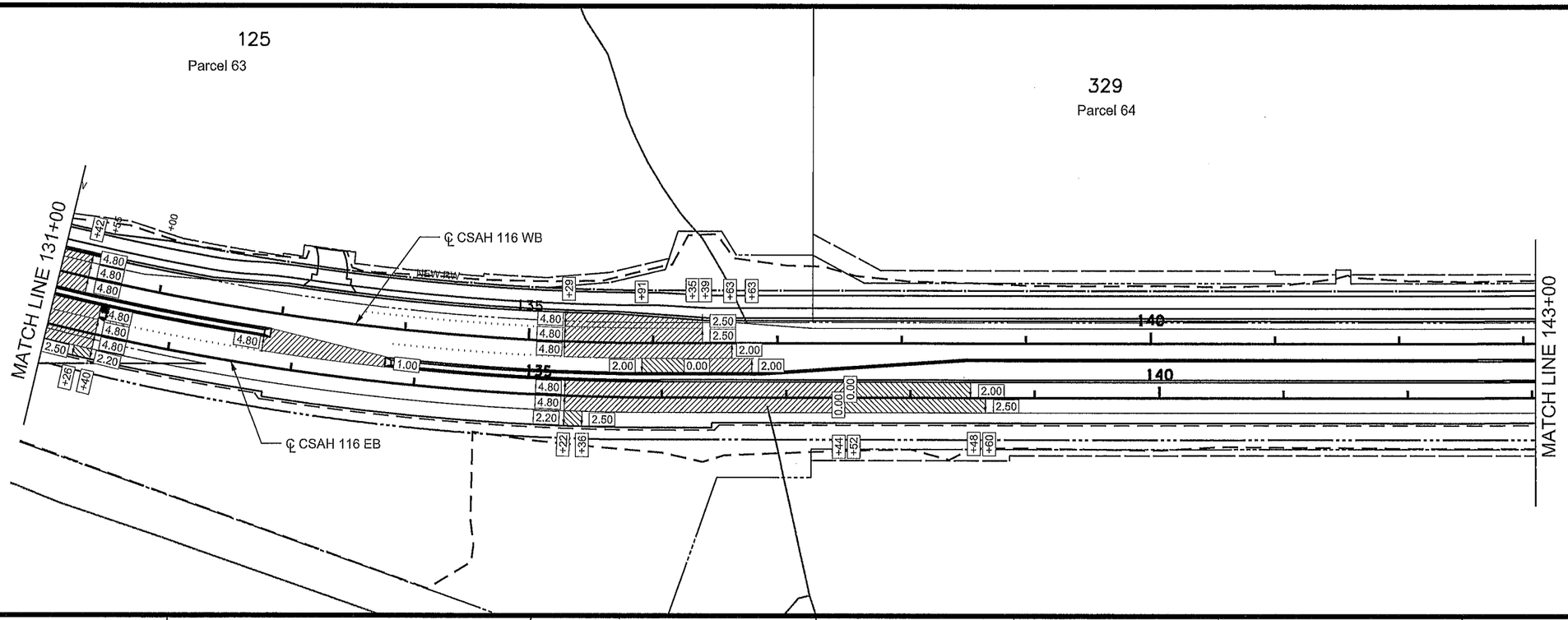
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SUPERELEVATION PLAN

STA 107+00.00 TO 131+00.00

Sheet 214 of 482 Sheets




LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET
2. STATIONING FOR EAST BOUND CSAH 116 BASED ON EAST BOUND ALIGNMENT
3. STATIONING FOR WEST BOUND CSAH 116 BASED ON WEST BOUND ALIGNMENT
4. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.

SCALE 0 100 IN FEET

5 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_SE5.dgn 04/12/2016 2:04:07 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

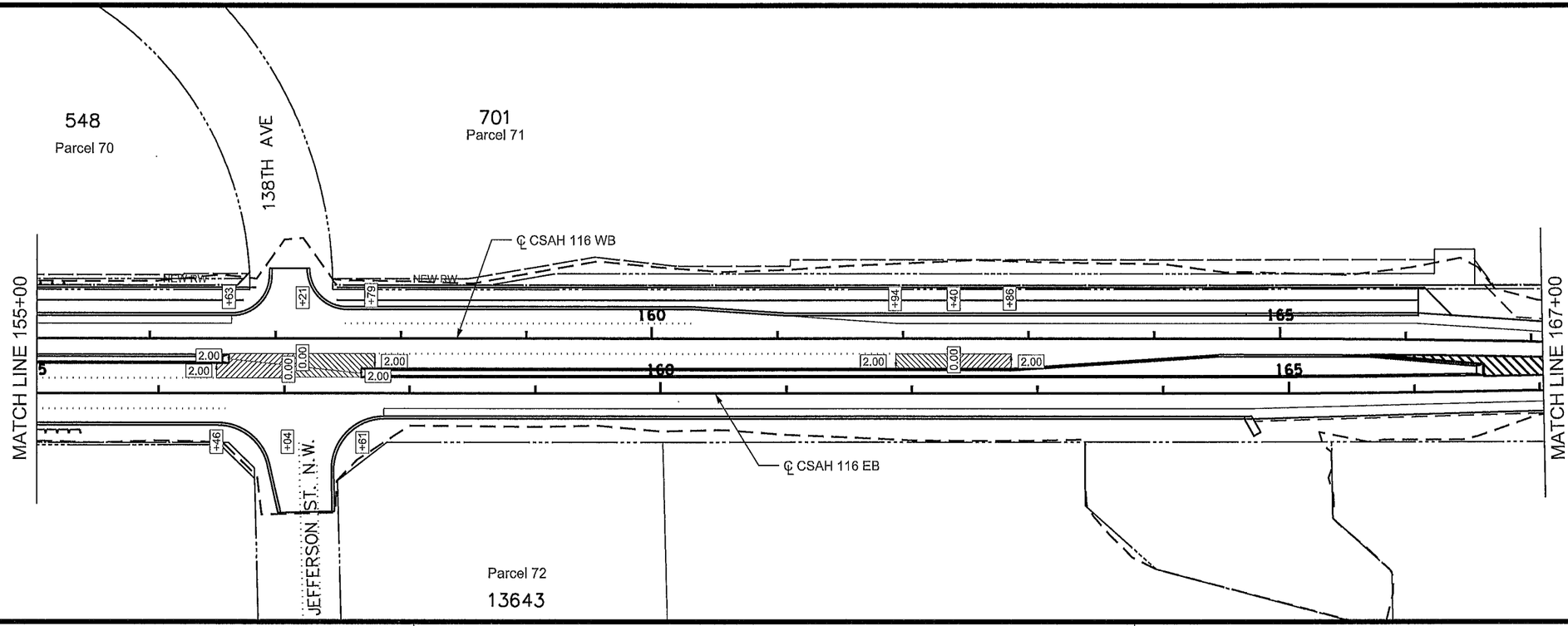
CHECKED BY GP DATE 04-12-16

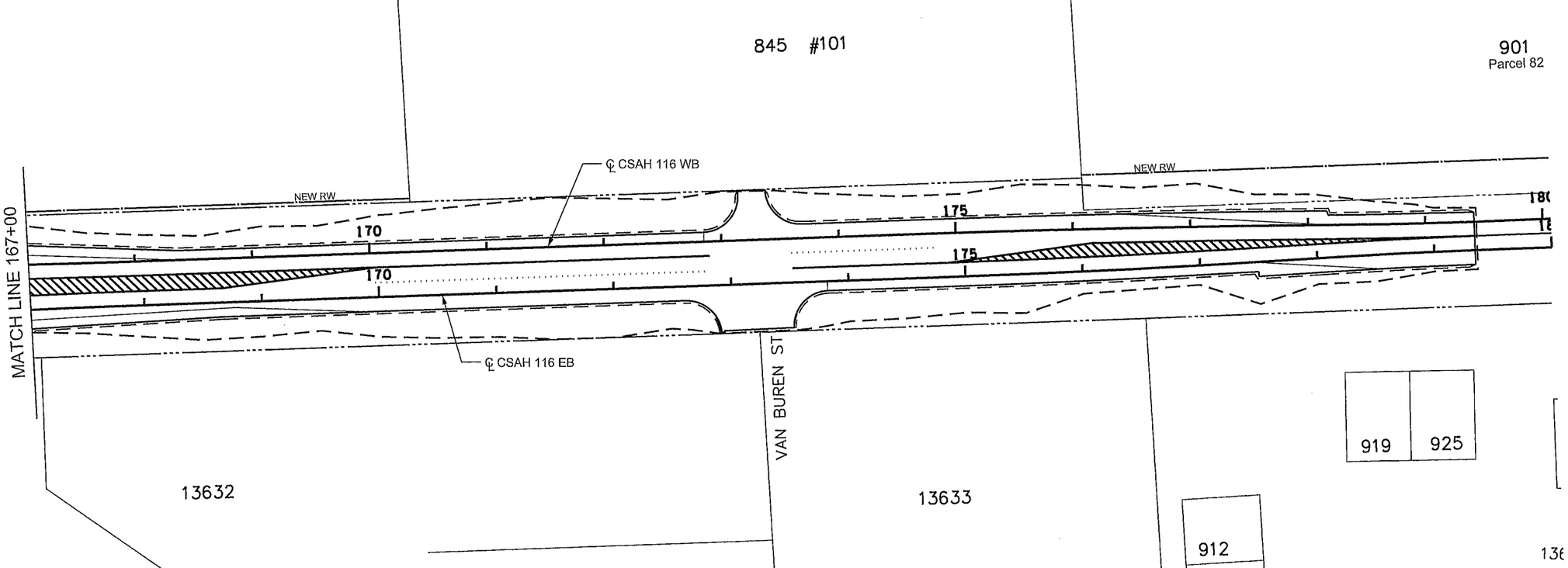
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SUPERELEVATION PLAN
STA 131+00.00 TO 155+00.00

Sheet 215 of 482 Sheets




LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET
2. STATIONING FOR EAST BOUND CSAH 116 BASED ON EAST BOUND ALIGNMENT
3. STATIONING FOR WEST BOUND CSAH 116 BASED ON WEST BOUND ALIGNMENT
4. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.

N

0 100
SCALE IN FEET

6 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_SE6.dgn 04/12/2016 2:04:09 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SUPERELEVATION PLAN

STA 155+00.00 TO 179+34.92

Sheet 216 of 482 Sheets

# DRAINAGE TAB

S1

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | | STORM SEWER | | | | | | | | | | | | | | | | | | | | SOD TYPE SALT | RIPRAP CLASS II | GEOTEXTILE FABRIC | CONNECT TO EX STORM | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | INSTALL 15" RCP APRON | 15" RCP APRON | 15" TRASH GUARD | 18" RCP CL III | 18" RCP APRON | 18" TRASH GUARD | 21" RCP CL III | 21" RCP APRON | 24" RCP CL III | 24" RCP APRON | | | | | | | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L / R | TYPE | DESIGN | H | 48-4020 | 54-4020 | TYPE | | | | | | LIN FT | EACH | EACH | EACH | LIN FT | EACH | EACH | LIN FT | EACH | LIN FT | EACH | SQ YD | CU YD | SQ YD | EACH | | | |
| Pond 100 Micropool | | EB-ALIG | | | | | Rip Rap | | | | | | | | | | | | | | | | | | | | | | 114 | 244 | | | |
| EX PIPE | 99 | EB-ALIG | 37+85.71 | 54.77 | R | | | | | | | | | 890.73 | 890.64 | 0.40 | 17 | | | | | | | | | | | | | | 1 | | |
| 99 | | EB-ALIG | 37+95.32 | 73.37 | R | | APRON | | | | | | | 890.64 | | | | 1 | | | | | | | | | | | | 3 | 18 | | | |
| 100 | 101 | WB-ALIG | 45+99.43 | 19.00 | L | CB | H | 3.20 | | | D | | 894.20 | 890.95 | 890.79 | 0.50 | 32 | | | | | | | | | | | | | | | | | |
| 101 | 102 | WB-ALIG | 45+99.96 | 13.25 | R | CB | 48-4020 | | 4.07 | | B | | 894.91 | 890.79 | 890.70 | 0.50 | 17 | | | | | | | | | | | | | | | | | |
| 102 | 103 | EB-ALIG | 45+99.53 | 13.25 | L | CB | 48-4020 | | 4.16 | | B | | 894.91 | 890.70 | 890.54 | 0.50 | 32 | | | | | | | | | | | | | | | | | |
| 103 | 113 | EB-ALIG | 46+00.05 | 19.00 | R | CB | 48-4020 | | 3.61 | | D | | 894.20 | 890.54 | 887.00 | 1.18 | 300 | | | | | | | | | | | | | | | | | |
| 110 | 111 | WB-ALIG | 48+99.80 | 19.00 | L | CB | 48-4020 | | 4.09 | | D | | 892.54 | 888.40 | 888.24 | 0.50 | | | | | 32 | | | | | | | | | | | | | |
| 111 | 112 | WB-ALIG | 48+99.78 | 13.25 | R | CB | 48-4020 | | 4.97 | | B | YES | 893.26 | 888.24 | 888.21 | 0.53 | | | | | 6 | | | | | | | | | | | | | |
| 112 | 113 | EB-ALIG | 48+99.78 | 24.25 | L | CB | 48-4020 | | 4.76 | | B | YES | 893.02 | 888.21 | 887.99 | 0.50 | | | | | 43 | | | | | | | | | | | | | |
| 113 | 124 | EB-ALIG | 48+99.77 | 19.00 | R | CB | 48-4020 | | 5.99 | | D | YES | 892.54 | 886.50 | 886.14 | 1.00 | | | | | | | | 30 | | | | | | | | | | |
| 115 | 116 | WB-ALIG | 49+58.45 | 56.17 | L | | APRON | | | | D | | | 889.30 | 888.69 | 1.64 | | | | | 31 | 1 | 1 | | | | | | 10 | | | | | |
| 116 | 110 | WB-ALIG | 49+58.45 | 19.00 | L | CB | 48-4020 | | 3.48 | | D | | 892.22 | 888.69 | 888.40 | 0.50 | | | | | 59 | | | | | | | | | | | | | |
| 119 | 120 | EB-ALIG | 50+92.45 | 24.25 | L | CB | H | 3.20 | | | B | | 891.97 | 888.72 | 888.16 | 1.42 | 39 | | | | | | | | | | | | | | | | | |
| 120 | 130 | WB-ALIG | 51+03.93 | 19.00 | L | CB | 48-4020 | | 3.46 | | D | | 891.42 | 887.91 | 887.30 | 0.62 | | | | | 99 | | | | | | | | | | | | | |
| 124 | | EB-ALIG | 48+99.78 | 55.05 | R | | APRON | | | | | | | 886.14 | | | | | | | | | | | | 1 | | | 5 | 24 | | | |
| 130 | 131 | WB-ALIG | 52+03.00 | 24.00 | L | CB | 48-4020 | | 3.84 | | C | | 890.94 | 887.05 | 886.86 | 0.50 | | | | | | | | 37 | | | | | | | | | | |
| 131 | 132 | WB-ALIG | 52+03.00 | 13.25 | R | CB | 48-4020 | | 4.87 | | A | YES | 891.78 | 886.86 | 886.78 | 0.50 | | | | | | | | 17 | | | | | | | | | | |
| 132 | 133 | EB-ALIG | 52+03.00 | 13.25 | L | CB | 48-4020 | | 4.95 | | A | YES | 891.78 | 886.78 | 886.62 | 0.50 | | | | | | | | 32 | | | | | | | | | | |
| 133 | 136 | EB-ALIG | 52+03.00 | 19.00 | R | CB | 54-4020 | | | 4.64 | C | YES | 891.06 | 886.37 | 886.14 | 0.64 | | | | | | | | | | 30 | | | | | | | | |
| 134 | 130 | WB-ALIG | 52+11.00 | 24.00 | L | CB | H | 3.31 | | | C | | 890.94 | 887.58 | 887.55 | 0.36 | 8 | | | | | | | | | | | | | | | | | |
| 135 | 133 | EB-ALIG | 52+11.00 | 19.00 | R | CB | 48-4020 | | 4.25 | | C | | 890.95 | 886.65 | 886.62 | 0.42 | | | | | | | | 8 | | | | | | | | | | |
| 136 | | EB-ALIG | 52+03.00 | 55.03 | R | | APRON | | | | | | | 886.14 | | | | | | | | | | | | | 1 | | | 6 | 30 | | | |
| 150 | 151 | WB-ALIG | 54+55.05 | 24.00 | L | CB | H | 3.21 | | | D | | 892.42 | 889.16 | 888.97 | 0.50 | 37 | | | | | | | | | | | | | | | | | |
| 151 | 152 | WB-ALIG | 54+55.03 | 13.25 | R | CB | 48-4020 | | 4.24 | | B | | 893.26 | 888.97 | 888.89 | 0.50 | 17 | | | | | | | | | | | | | | | | | |
| 152 | 153 | EB-ALIG | 54+55.03 | 13.25 | L | CB | 48-4020 | | 4.32 | | B | | 893.26 | 888.89 | 888.29 | 1.86 | 32 | | | | | | | | | | | | | | | | | |
| 153 | 135 | EB-ALIG | 54+55.01 | 19.00 | R | CB | 48-4020 | | 4.45 | | D | | 892.54 | 888.04 | 886.65 | 0.57 | | | | | 244 | | | | | | | | | | | | | |
| 170 | 171 | WB-ALIG | 56+59.05 | 24.00 | L | CB | 48-4020 | | 4.25 | | D | | 894.38 | 890.08 | 889.72 | 0.97 | 37 | | | | | | | | | | | | | | | | | |
| 171 | 172 | WB-ALIG | 56+59.03 | 13.25 | R | CB | 48-4020 | | 5.46 | | B | YES | 895.23 | 889.72 | 889.56 | 0.97 | 17 | | | | | | | | | | | | | | | | | |
| 172 | 173 | EB-ALIG | 56+59.05 | 13.25 | L | CB | 48-4020. | | | | B | | 895.19 | 889.56 | 889.21 | 0.94 | 37 | | | | | | | | | | | | | | | | | |
| 173 | 153 | EB-ALIG | 56+59.05 | 24.00 | R | CB | 48-4020 | | 4.14 | | D | | 893.40 | 889.21 | 888.04 | 0.57 | | | | | 204 | | | | | | | | | | | | | |
| 174 | 173 | EB-ALIG | 56+59.05 | 30.95 | R | BH | H | 3.63 | | | E | | 892.52 | 889.26 | 889.21 | 0.72 | 7 | | | | | | | | | | | | | | | | | |
| 180 | 170 | WB-ALIG | 57+97.91 | 24.00 | L | | 48-4020 | | 4.78 | | | YES | 896.25 | 891.42 | 890.08 | 0.97 | 139 | | | | | | | | | | | | | | | | | |
| 181 | 180 | WB-ALIG | 58+17.11 | 62.56 | L | | APRON | | | | | | | 891.64 | 891.42 | 0.50 | 37 | | 1 | 1 | | | | | | | | | 8 | | | | | |
| DRAINAGE SUBTOTAL (1) | | | | | | | | 16.55 | 88.14 | 4.64 | 27 | | | | | | 805 | 1 | 1 | 1 | 718 | 1 | 1 | 124 | 1 | 30 | 1 | 18 | 128 | 316 | 1 | | | |

# DRAINAGE TAB

S2

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | STORM SEWER | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" RCP APRON | 18" RCP CL III | 28" SPAN CL IIA | 28" SPAN APRON | RIPRAP CLASS II | GEOTEXTILE FABRIC | NOTES |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L / R | TYPE | DESIGN | H | 48-4020 | TYPE | | | | | | LIN FT | EACH | LIN FT | LIN FT | EACH | CU YD | SQ YD | |
| P 2 Rock Weeper | | EB-ALIG | | | | | Rip Rap | | | | | | | | | | | | | | 20 | 30 | |
| 200 | 201 | WB-ALIG | 62+25.04 | 24.00 | L | CB | H | 3.20 | | D | | 895.43 | 892.18 | 892.00 | 0.50 | 37 | | | | | | | |
| 201 | 202 | WB-ALIG | 62+25.02 | 13.00 | R | CB | 48-4020 | | 4.22 | B | | 896.27 | 892.00 | 890.52 | 2.74 | 54 | | | | | | | |
| 202 | 204 | EB-ALIG | 62+25.02 | 24.00 | R | CB | 48-4020 | | 4.85 | D | YES | 895.42 | 890.52 | 890.23 | 1.00 | 23 | | | | | | | |
| 204 | | EB-ALIG | 62+25.02 | 52.95 | R | | APRON | | | | | | 890.23 | | | | 1 | | | | 3 | 18 | |
| 210 | 214 | WB-ALIG | 64+59.00 | 19.00 | L | CB | H | 2.72 | | C | | 893.47 | 890.70 | 890.68 | 0.30 | 8 | | | | | | | |
| 211 | 212 | WB-ALIG | 64+67.00 | 13.00 | R | CB | 48-4020 | | 3.55 | A | | 894.18 | 890.58 | 890.57 | 0.30 | 6 | | | | | | | |
| 212 | 215 | EB-ALIG | 64+67.00 | 24.00 | L | CB | 48-4020 | | 3.31 | A | | 893.93 | 890.57 | 890.33 | 0.50 | 48 | | | | | | | |
| 213 | 216 | EB-ALIG | 64+42.63 | 24.00 | R | CB | 48-4020 | | 3.11 | C | | 893.35 | 890.19 | 890.03 | 0.45 | | | | 29 | | | | |
| 214 | 211 | WB-ALIG | 64+67.00 | 19.00 | L | CB | 48-4020 | | 2.74 | C | | 893.47 | 890.68 | 890.58 | 0.30 | 32 | | | | | | | |
| 215 | 213 | EB-ALIG | 64+67.00 | 24.00 | R | CB | 48-4020 | | 2.95 | C | | 893.33 | 890.33 | 890.19 | 0.55 | | | | 24 | | | | |
| 216 | | EB-ALIG | 64+19.50 | 50.19 | R | | APRON | | | | | | 890.03 | | | | | | | 1 | 6 | 30 | |
| 223 | 215 | 7118 | 65+86.51 | 24.00 | R | CB | 48-4020 | | 3.05 | D | | 893.92 | 890.82 | 890.33 | 0.42 | | | | 120 | | | | |
| 230 | 231 | WB-ALIG | 67+24.54 | 24.00 | L | CB | 48-4020 | | 3.21 | D | | 894.90 | 891.64 | 891.50 | 0.30 | 48 | | | | | | | |
| 231 | 232 | WB-ALIG | 67+24.52 | 24.25 | R | CB | 48-4020 | | 3.95 | B | | 895.50 | 891.50 | 891.48 | 0.30 | 6 | | | | | | | |
| 232 | 233 | EB-ALIG | 67+24.54 | 13.25 | L | CB | 48-4020 | | 4.14 | B | | 895.67 | 891.48 | 891.32 | 0.51 | 32 | | | | | | | |
| 233 | 223 | EB-ALIG | 67+24.51 | 19.00 | R | CB | 48-4020 | | 3.58 | D | | 894.95 | 891.32 | 890.82 | 0.36 | | | 138 | | | | | |
| 235 | 230 | WB-ALIG | 68+47.82 | 24.00 | L | CB | 48-4020 | | 3.20 | D | | 895.73 | 892.48 | 891.64 | 0.68 | 123 | | | | | | | |
| 240 | 235 | WB-ALIG | 69+71.11 | 24.00 | L | CB | H | 3.20 | | D | | 896.57 | 893.32 | 892.48 | 0.68 | 123 | | | | | | | |
| DRAINAGE SUBTOTAL (2) | | | | | | | | 9.12 | 45.86 | 16 | | | | | | 540 | 1 | 138 | 173 | 1 | 29 | 78 | |

GENERAL NOTES:
1. R-3448C NEENAH CASTING ASSEMBLIES OR EAST JORDAN IRON WORKS PRODUCT NO. 00500050C01 OR APPROVED EQUALS.
2. STATION AND OFFSET FOR EACH STRUCTURE GIVEN AT CENTER OF GRATE/CASTING FOR CATCH BASINS AND MANHOLES, AND AT APRON END FOR APRONS. INVERT ELEVATIONS GIVEN AT CENTER OF STRUCTURE OR END OF APRON.
3. IF STEPS REQUIRED, STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
4. PIPE LENGTH DOES NOT INCLUDE APRON.
5. SEE TAB CHART H FOR EXISTING CATCH BASIN ADJUSTMENTS. SEE TAB M FOR CULVERT INFORMATION.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_DR_TAB.dgn 04/12/2016 2:04:11 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE TABULATIONS

# DRAINAGE TAB

S3

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | STORM SEWER | | | | | | | | | RIPRAP CLASS II | GEOTEXTILE FABRIC | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" RCP APRON | 15" TRASH GUARD | 18" RCP CL III | 18" RCP APRON | | | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L/R | TYPE | DESIGN | H | 48-4020 | TYPE | | | | | | LIN FT | EACH | EACH | LIN FT | EACH | CU YD | SQ YD | |
| Pond 300 Micropool | | WB-ALIG | | | | | Rip Rap | | | | | | | | | | | | | | 159 | 198 | |
| 300 | 310 | WB-ALIG | 75+33.82 | 19.00 | L | CB | 48-4020 | | 3.21 | D | | 891.81 | 888.55 | 887.00 | 0.86 | 180 | | | | | | | |
| 302 | 300 | EB-ALIG | 75+45.31 | 23.00 | L | CB | H | 3.20 | | B | | 892.56 | 889.31 | 888.55 | 1.95 | 39 | | | | | | | |
| 309 | | WB-ALIG | 77+43.25 | 69.92 | L | | APRON | | | | | | 884.00 | | | | | | | 1 | 4 | 22 | |
| 310 | 309 | WB-ALIG | 77+14.24 | 19.00 | L | CB | 48-4020 | | 6.02 | D | YES | 890.72 | 884.65 | 884.00 | 1.00 | | | | 59 | | | | |
| 312 | 310 | EB-ALIG | 77+17.15 | 24.25 | L | CB | H | 3.18 | | B | | 890.94 | 887.71 | 887.00 | 1.81 | 39 | | | | | | | |
| 315 | 315A | WB-ALIG | 77+88.51 | 84.19 | L | | APRON | | | | | | 882.00 | 885.00 | 0 | 18 | 1 | 1 | | | 3 | 18 | |
| 315A | 317 | WB-ALIG | 77+88.40 | 60.06 | L | CB | SPECIAL | | 4.73 | | | 886.78 | 885.00 | 884.80 | 0.14 | 141 | | | | | | | |
| 316 | | EB-ALIG | 78+00.62 | 73.96 | R | | APRON | | | | | | 884.75 | | | | 1 | | | | 3 | 18 | |
| 317 | 316 | EB-ALIG | 78+00.93 | 37.84 | R | BH | 48-4020 | | 3.04 | | | 887.50 | 884.80 | 884.75 | 0.13 | 30 | | | | | | | |
| 318 | 320 | WB-ALIG | 77+80.42 | 19.00 | L | CB | H | 3.20 | | C | | 890.62 | 887.37 | 887.09 | 0.50 | 55 | | | | | | | |
| 319 | | WB-ALIG | 78+35.50 | 69.94 | L | | APRON | | | | | | 884.00 | | | | | | | 1 | 4 | 22 | |
| 320 | 319 | WB-ALIG | 78+35.50 | 19.00 | L | CB | 48-4020 | | 6.18 | D | YES | 890.79 | 884.56 | 884.00 | 1.00 | | | | 50 | | | | |
| 321 | 320 | WB-ALIG | 78+35.50 | 13.25 | R | CB | 48-4020 | | 3.49 | A | | 890.53 | 886.99 | 886.66 | 1.00 | 32 | | | | | | | |
| 322 | 321 | EB-ALIG | 78+34.74 | 24.25 | L | CB | H | 3.20 | | A | | 890.31 | 887.06 | 886.99 | 0.50 | 16 | | | | | | | |
| 330 | 320 | WB-ALIG | 79+89.74 | 19.00 | L | CB | 48-4020 | | 4.85 | D | YES | 892.33 | 887.43 | 884.81 | 1.69 | 155 | | | | | | | |
| 335 | 330 | CL-P_PRAIRIE | 40+58.02 | 28.00 | L | CB | 48-4020 | | 4.31 | C | | 892.06 | 887.70 | 887.43 | 0.50 | 56 | | | | | | | |
| 336 | 335 | CL-P_PRAIRIE | 40+58.02 | 2.75 | L | CB | 48-4020 | | 4.16 | A | | 892.04 | 887.83 | 887.70 | 0.50 | 25 | | | | | | | |
| 337 | 336 | CL-P_PRAIRIE | 40+58.02 | 2.78 | R | CB | 48-4020 | | 4.56 | A | YES | 892.47 | 887.86 | 887.83 | 0.50 | 6 | | | | | | | |
| 338 | 337 | CL-P_PRAIRIE | 40+58.02 | 21.00 | R | CB | 48-4020 | | 4.13 | C | | 892.13 | 887.95 | 887.86 | 0.50 | 18 | | | | | | | |
| 340 | 338 | WB-ALIG | 81+27.00 | 24.00 | L | CB | 48-4020 | | 4.85 | D | YES | 893.17 | 888.27 | 887.95 | 0.50 | 64 | | | | | | | |
| 341 | 340 | WB-ALIG | 81+07.54 | 13.25 | R | CB | 48-4020 | | 3.20 | B | | 891.73 | 888.48 | 888.27 | 0.50 | 42 | | | | | | | |
| 342 | 341 | EB-ALIG | 81+21.81 | 13.25 | L | CB | H | 3.20 | | B | | 891.87 | 888.62 | 888.48 | 0.78 | 18 | | | | | | | |
| 345 | 340 | WB-ALIG | 81+80.50 | 24.00 | L | CB | H | 3.20 | | D | | 893.42 | 890.17 | 888.27 | 3.47 | 55 | | | | | | | |
| DRAINAGE SUBTOTAL (3) | | | | | | | | 19.18 | 56.73 | 17 | | | | | | 989 | 2 | 1 | 109 | 2 | 173 | 278 | |

# DRAINAGE TAB

S4

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | | STORM SEWER | | | | | | | RIPRAP CLASS II | GEOTEXTILE FABRIC | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | | CASTING ASSEMBLY | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 24" RCP CL III | 24" RCP APRON | | | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L/R | TYPE | DESIGN | H | 48-4020 | 72-4020 | TYPE | | | | | | LIN FT | LIN FT | EACH | CU YD | SQ YD | |
| 400 | 410 | WB-ALIG | 85+06.47 | 19.00 | L | CB | 48-4020 | | 4.76 | | D | YES | 892.60 | 887.79 | 886.84 | 0.48 | 200 | | | | | |
| 401 | 400 | WB-ALIG | 85+06.88 | 13.25 | R | CB | 48-4020 | | 3.20 | | B | | 891.20 | 887.95 | 887.79 | 0.50 | 32 | | | | | |
| 402 | 401 | EB-ALIG | 84+99.10 | 13.25 | L | CB | H | 3.20 | | | B | | 891.42 | 888.17 | 887.95 | 1.52 | 14 | | | | | |
| 410 | 415 | WB-ALIG | 87+03.19 | 19.00 | L | CB | 48-4020 | | 4.75 | | D | YES | 891.64 | 886.84 | 885.16 | 1.05 | 161 | | | | | |
| 411 | 410 | WB-ALIG | 87+03.30 | 13.25 | R | CB | H | 3.20 | | | B | | 890.25 | 887.00 | 886.84 | 0.50 | 32 | | | | | |
| 415 | 428 | WB-ALIG | 88+61.19 | 19.00 | L | CB | 72-4020 | | | 10.45 | C | YES | 890.91 | 884.41 | 883.92 | 0.50 | | 91 | | | | [1] |
| 420 | 415 | WB-ALIG | 88+72.62 | 19.00 | L | CB | 48-4020 | | 6.41 | | C | YES | 890.90 | 884.44 | 884.41 | 0.30 | | 12 | | | | |
| 421 | 420 | WB-ALIG | 88+72.62 | 13.25 | R | CB | 48-4020 | | 4.11 | | A | | 889.51 | 885.35 | 885.19 | 0.50 | 32 | | | | | |
| 422 | 425 | EB-ALIG | 88+63.33 | 13.25 | L | CB | H | 4.33 | | | A | | 889.88 | 885.50 | 885.39 | 1.03 | 11 | | | | | |
| 425 | 421 | WB-ALIG | 88+80.62 | 13.25 | R | CB | 48-4020 | | 3.20 | | A | | 888.64 | 885.39 | 885.35 | 0.50 | 8 | | | | | |
| 428 | | EB-ALIG | 88+41.05 | 41.00 | R | | APRON | | | | | | | 883.92 | | | | | 1 | 6 | 30 | |
| 430 | 420 | WB-ALIG | 91+08.41 | 19.00 | L | CB | 48-4020 | | 4.06 | | D | | 893.72 | 889.61 | 885.19 | 1.86 | 238 | | | | | |
| 431 | 430 | WB-ALIG | 91+08.56 | 13.25 | R | CB | 48-4020 | | 3.49 | | B | | 893.31 | 889.77 | 889.61 | 0.50 | 32 | | | | | |
| 432 | 431 | EB-ALIG | 90+82.48 | 13.25 | L | CB | H | 3.20 | | | B | | 893.06 | 889.81 | 889.77 | 0.50 | 8 | | | | | |
| 440 | 430 | WB-ALIG | 93+58.41 | 19.00 | L | CB | 48-4020 | | 3.20 | | D | | 898.38 | 895.13 | 889.61 | 2.21 | 250 | | | | | |
| 441 | 440 | WB-ALIG | 93+58.56 | 13.25 | R | CB | 48-4020 | | 3.84 | | B | | 899.55 | 895.66 | 895.13 | 1.64 | 32 | | | | | |
| 442 | 441 | EB-ALIG | 93+32.48 | 13.25 | L | CB | H | 3.20 | | | B | | 898.95 | 895.70 | 895.66 | 0.50 | 8 | | | | | |
| DRAINAGE SUBTOTAL (4) | | | | | | | | 17.13 | 41.02 | 10.45 | 16 | | | | | | 1058 | 103 | 1 | 6 | 30 | |

NOTE: [1] - THIS IS A BAFFLE STRUCTURE WITH A 4.0' SUMP. SUMP ELEVATION IS 880.41. SEE PLAN SHEET 164 FOR STRUCTURE DETAILS.

GENERAL NOTES:
1. R-3448C NEENAH CASTING ASSEMBLIES OR EAST JORDAN IRON WORKS PRODUCT NO. 00500050C01 OR APPROVED EQUALS.
2. STATION AND OFFSET FOR EACH STRUCTURE GIVEN AT CENTER OF GRATE/CASTING FOR CATCH BASINS AND MANHOLES, AND AT APRON END FOR APRONS. INVERT ELEVATIONS GIVEN AT CENTER OF STRUCTURE OR END OF APRON.
3. IF STEPS REQUIRED, STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
4. PIPE LENGTH DOES NOT INCLUDE APRON.
5. SEE TAB CHART H FOR EXISTING CATCH BASIN ADJUSTMENTS. SEE TAB M FOR CULVERT INFORMATION.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: P:\02-716-15\Plan\0271615_DR_TAB.dgn | | | | | 04/12/2016 2:04:23 PM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE TABULATIONS

## DRAINAGE TAB

S5

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | | | | | STORM SEWER | | | | | | | | | RIPRAP CLASS II | GEOTEXTILE FABRIC | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | | | | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" RCP APRON | 18" RCP CL III | 21" RCP CL III | 24" RCP CL III | 30"RCP CL III | 33" RCP CL III | 33" RCP APRON | | | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L/R | TYPE | DESIGN | H | 48-4020 | 54-4020 | 60-4020 | 66-4020 | 72-4020 | TYPE | | | | | | LIN FT | EACH | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | EACH | CU YD | SQ YD | |
| Pond 500 Overflow | | EB-ALIG | 134+43.01 | 83.22 | R | | Rip Rap | | | | | | | | | | 885.00 | | | | | | | | | | 23 | 69 | |
| Pond 500 Micropool | | EB-ALIG | | | | | Rip Rap | | | | | | | | | | | | | | | | | | | | 82 | 88 | |
| 500 | 505 | WB-ALIG | 100+41.79 | 19.00 | L | CB | 48-4020 | | 3.20 | | | | | D | | 905.46 | 902.21 | 900.00 | 0.82 | 269 | | | | | | | | | | [6] |
| 502 | 500 | EB-ALIG | 100+33.10 | 13.25 | L | CB | H | 3.20 | | | | | | B | | 905.75 | 902.50 | 902.21 | 0.68 | 43 | | | | | | | | | | [6] |
| 505 | 510 | WB-ALIG | 103+10.87 | 19.00 | L | CB | 48-4020 | | 3.20 | | | | | D | | 903.25 | 900.00 | 897.77 | 0.75 | 299 | | | | | | | | | | [6] |
| 507 | 505 | EB-ALIG | 103+01.93 | 13.25 | L | CB | H | 3.20 | | | | | | B | | 903.87 | 900.62 | 900.00 | 1.29 | 48 | | | | | | | | | | [6] |
| 510 | 515 | WB-ALIG | 106+10.00 | 19.00 | L | CB | 48-4020 | | 4.31 | | | | | D | | 901.63 | 897.27 | 896.53 | 0.46 | | | | 160 | | | | | | | [6] |
| 511 | 523 | EB-ALIG | 106+31.65 | 24.00 | R | CB | H | 3.20 | | | | | | D | | 901.29 | 898.04 | 897.39 | 0.50 | 132 | | | | | | | | | | [6] |
| 515 | 520 | WB-ALIG | 107+69.65 | 19.00 | L | CB | 48-4020 | | 4.25 | | | | | D | | 900.83 | 896.53 | 896.48 | 0.63 | | | | 8 | | | | | | | [6] |
| 520 | 525 | WB-ALIG | 107+77.65 | 19.00 | L | CB | 54-4020 | | | 4.26 | | | | D | | 900.79 | 896.48 | 896.07 | 0.32 | | | | 129 | | | | | | | [6] |
| 521 | 520 | WB-ALIG | 107+72.54 | 13.25 | R | CB | 48-4020 | | 4.35 | | | | | B | | 901.53 | 897.13 | 896.98 | 0.46 | 33 | | | | | | | | | | [6] |
| 522 | 521 | EB-ALIG | 107+63.31 | 24.25 | L | CB | 48-4020 | | 4.03 | | | | | B | | 901.24 | 897.16 | 897.13 | 0.55 | 6 | | | | | | | | | | [6] |
| 523 | 522 | EB-ALIG | 107+63.31 | 24.00 | R | CB | 48-4020 | | 3.20 | | | | | D | | 900.64 | 897.39 | 897.16 | 0.47 | 48 | | | | | | | | | | [6] |
| 525 | 530 | WB-ALIG | 109+05.10 | 24.00 | L | CB | 48-4020 | | 3.90 | | | | | D | | 900.02 | 896.07 | 895.29 | 0.62 | | | | 125 | | | | | | | [6] |
| 530 | 534 | WB-ALIG | 110+30.85 | 24.00 | L | CB | 48-4020 | | 4.30 | | | | | D | | 899.39 | 895.04 | 894.67 | 0.30 | | | | | 125 | | | | | | [6] |
| 531 | 530 | WB-ALIG | 110+30.85 | 24.25 | R | CB | 48-4020 | | 4.17 | | | | | B | | 900.25 | 896.03 | 895.79 | 0.50 | 48 | | | | | | | | | | [6] |
| 532 | 531 | EB-ALIG | 110+21.62 | 13.25 | L | CB | 48-4020 | | 4.07 | | | | | B | | 900.18 | 896.06 | 896.03 | 0.50 | 6 | | | | | | | | | | [6] |
| 533 | 532 | EB-ALIG | 110+21.62 | 19.00 | R | CB | H | 3.20 | | | | | | D | | 899.47 | 896.22 | 896.06 | 0.50 | 32 | | | | | | | | | | |
| 534 | 535 | WB-ALIG | 111+55.59 | 24.00 | L | CB | 48-4020 | | 4.05 | | | | | D | | 898.77 | 894.67 | 893.93 | 0.44 | | | | | 168 | | | | | | [6] |
| 535 | 540 | WB-ALIG | 113+23.65 | 19.00 | L | CB | 48-4020 | | 3.95 | | | | | D | | 897.93 | 893.93 | 892.72 | 0.45 | | | | | 267 | | | | | | [6] |
| 540 | 545 | WB-ALIG | 115+90.65 | 19.00 | L | CB | 48-4020 | | 3.95 | | | | | D | | 896.72 | 892.72 | 891.12 | 0.70 | | | | | 229 | | | | | | [6] |
| 545 | 549 | WB-ALIG | 118+19.88 | 19.00 | L | CB | 54-4020 | | | 4.90 | | | | D | YES | 895.57 | 890.62 | 890.27 | 0.43 | | | | | | 80 | | | | | [6] |
| 546 | 545 | WB-ALIG | 118+19.88 | 13.25 | R | CB | 48-4020 | | 4.46 | | | | | B | | 896.29 | 891.78 | 891.62 | 0.50 | | | 32 | | | | | | | | [6] |
| 547 | 546 | EB-ALIG | 118+10.65 | 13.25 | L | CB | 48-4020 | | 3.61 | | | | | B | | 895.52 | 891.86 | 891.78 | 0.50 | | | 17 | | | | | | | | |
| 548 | 547 | EB-ALIG | 118+10.65 | 19.00 | R | CB | H | 3.20 | | | | | | D | | 895.52 | 892.27 | 892.11 | 0.50 | 32 | | | | | | | | | | |
| 549 | 550 | WB-ALIG | 119+00.00 | 19.00 | L | CB | 54-4020 | | | 4.83 | | | | D | YES | 895.15 | 890.27 | 889.85 | 0.43 | | | | | | 100 | | | | | |
| 550 | 560 | WB-ALIG | 120+00.00 | 19.00 | L | CB | 60-4020 | | | | 5.38 | | | D | YES | 895.28 | 889.85 | 887.56 | 0.80 | | | | | | 286 | | | | | [6] |
| 551 | 550 | WB-ALIG | 120+00.00 | 13.25 | R | CB | 48-4020 | | 3.55 | | | | | B | | 895.33 | 891.73 | 891.10 | 1.98 | 32 | | | | | | | | | | |
| 552 | 551 | EB-ALIG | 119+90.77 | 24.25 | L | CB | H | 3.20 | | | | | | B | | 895.01 | 891.76 | 891.73 | 0.50 | 6 | | | | | | | | | | |
| 555 | 564 | WB-ALIG | 123+17.16 | 52.75 | L | CB | H | 3.23 | | | | | | D | | 895.18 | 891.90 | 887.56 | 0.57 | 44 | | | | | | | | | | [6] |
| 560 | 565 | WB-ALIG | 122+84.52 | 19.00 | L | CB | 60-4020 | | | | 7.76 | | | D | YES | 895.37 | 887.56 | 886.99 | 0.50 | | | | | | 114 | | | | | [6] |
| 561 | 560 | WB-ALIG | 122+84.23 | 13.25 | R | CB | 48-4020 | | 4.91 | | | | | B | YES | 893.93 | 888.97 | 888.81 | 0.50 | 32 | | | | | | | | | | [6] |
| 562 | 561 | EB-ALIG | 122+72.32 | 24.25 | L | CB | 48-4020 | | 4.64 | | | | | B | YES | 893.69 | 889.00 | 888.97 | 0.50 | 6 | | | | | | | | | | [6] |
| 563 | 562 | EB-ALIG | 122+71.91 | 19.00 | R | CB | H | 3.20 | | | | | | D | | 892.47 | 889.22 | 889.00 | 0.50 | 43 | | | | | | | | | | |
| 564 | 565 | WB-ALIG | 123+60.33 | 53.17 | L | CB | 48-4020 | | 3.28 | | | | | D | | 894.98 | 891.65 | 890.78 | 1.83 | 48 | | | | | | | | | | [6] |
| 565 | 570 | WB-ALIG | 123+97.38 | 24.00 | L | CB | 60-4020 | | | | 7.49 | | | D | YES | 894.28 | 886.74 | 886.09 | 0.30 | | | | | | | 216 | | | | [6] |
| 566 | 565 | WB-ALIG | 123+96.44 | 13.25 | R | CB | 48-4020 | | 4.89 | | | | | B | YES | 893.37 | 888.43 | 888.24 | 0.50 | 37 | | | | | | | | | | [6] |
| 567 | 566 | EB-ALIG | 123+81.04 | 19.00 | R | CB | H | 3.20 | | | | | | D | | 891.92 | 888.67 | 888.43 | 0.50 | 49 | | | | | | | | | | |
| 570 | 575 | WB-ALIG | 126+11.04 | 24.00 | L | CB | 60-4020 | | | | 6.33 | | | D | YES | 892.47 | 886.09 | 885.38 | 0.30 | | | | | | | 238 | | | | [6] |
| 571 | 570 | WB-ALIG | 126+11.38 | 13.25 | R | CB | H | 3.22 | | | | | | B | | 892.31 | 889.04 | 888.49 | 1.50 | 37 | | | | | | | | | | [6] |
| 575 | 580 | WB-ALIG | 128+49.17 | 19.00 | L | CB | 60-4020 | | | | 4.85 | | | D | YES | 890.28 | 885.38 | 884.09 | 0.67 | | | | | | | 193 | | | | [6] |
| 576 | 575 | WB-ALIG | 128+49.16 | 13.25 | R | CB | H | 3.29 | | | | | | B | | 891.00 | 887.66 | 886.88 | 2.42 | 32 | | | | | | | | | | [6] |
| 577 | 578 | EB-ALIG | 128+31.00 | 13.25 | L | CB | H | 3.20 | | | | | | B | | 890.99 | 887.74 | 887.66 | 0.50 | 17 | | | | | | | | | | |
| 580 | 581 | WB-ALIG | 130+42.44 | 19.00 | L | CB | 72-4020 | | | | | | 4.70 | D | YES | 888.84 | 884.09 | 883.93 | 0.50 | | | | | | | 32 | | | | [6] |
| 581 | 582 | WB-ALIG | 130+42.42 | 13.25 | R | CB | 66-4020 | | | | | 5.75 | | B | YES | 889.73 | 883.93 | 883.82 | 0.50 | | | | | | | 23 | | | | [6] |
| 582 | 583 | EB-ALIG | 130+46.70 | 24.25 | L | CB | 60-4020 | | | | 5.72 | | | B | YES | 889.59 | 883.82 | 883.25 | 0.66 | | | | | | | 80 | | | | [6] |
| 583 | | EB-ALIG | 130+79.12 | 55.19 | R | | APRON | | | | | | | | | | 883.25 | | | | | | | | | 1 | 10 | 42 | [6] |
| 590 | 591 | WB-ALIG | 132+38.05 | 19.00 | L | CB | H | 3.20 | | | | | | D | | 887.36 | 884.11 | 884.02 | 0.30 | 32 | | | | | | | | | | [6] |
| 591 | 592 | WB-ALIG | 132+38.05 | 13.25 | R | CB | 48-4020 | | 4.77 | | | | | B | YES | 888.84 | 884.02 | 884.00 | 0.30 | 6 | | | | | | | | | | [6] |
| 592 | 593 | EB-ALIG | 132+23.47 | 24.25 | L | CB | 48-4020 | | 4.74 | | | | | B | YES | 888.79 | 884.00 | 883.73 | 0.30 | 84 | | | | | | | | | | [6] |
| 593 | | EB-ALIG | 132+72.01 | 51.45 | R | | APRON | | | | | | | | | | 883.58 | | | | 1 | | | | | 3 | 18 | |
| DRAINAGE SUBTOTAL (5) | | | | | | | | 41.74 | 93.78 | 13.99 | 37.53 | 5.75 | 4.70 | 47 | | | | | | 1501.24 | 1 | 49 | 422 | 789 | 580 | 782 | 1 | 118 | 217 | |

NOTE: [6] - AFTER INSTALLATION, STRUCTURE SHALL BE PLATED AND COVERED UNTIL 2017 CONSTURCTION SEASON.

## DRAINAGE TAB

S6

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | | | | STORM SEWER | | | | | | | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" RCP APRON | 15" TRASH GUARD | 18" RCP CL III | 18" RCP APRON | SOD TYPE SALT | RIPRAP CLASS II | GEOTEXTILE FABRIC | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L/R | TYPE | DESIGN | H | 48-4020 | 60-4020 | 72-4020 | TYPE | | | | | | LIN FT | EACH | EACH | LIN FT | EACH | SQ YD | CU YD | SQ YD | |
| 600 | 605 | WB-ALIG | 134+40.11 | 24.25 | L | CB | 48-4020 | | 3.20 | | | D | | 886.30 | 883.05 | 882.68 | 0.44 | 84 | | | | | | | | [6] |
| 602 | 600 | EB-ALIG | 134+29.71 | 13.25 | L | CB | H | 3.20 | | | | B | | 887.96 | 884.71 | 883.05 | 3.08 | 54 | | | | | | | | [6] |
| 605 | 610 | WB-ALIG | 135+25.00 | 24.00 | L | CB | 48-4020 | | 3.47 | | | C | | 885.95 | 882.43 | 881.30 | 0.93 | | | | 121 | | | | | [6] |
| 606 | 607 | WB-ALIG | 135+87.50 | 24.25 | R | CB | H | 3.20 | | | | A | | 887.22 | 883.97 | 883.81 | 0.50 | 33 | | | | | | | | [6] |
| 607 | 610 | EB-ALIG | 136+12.50 | 13.25 | L | CB | 48-4020 | | 3.54 | | | A | | 887.40 | 883.81 | 881.55 | 4.03 | 56 | | | | | | | | [6] |
| 610 | 611 | WB-ALIG | 136+47.00 | 19.00 | L | CB | 72-4020 | | | | 9.35 | D | YES | 886.70 | 881.30 | 880.85 | 1.00 | | | | 39 | | | | | [2], [6] |
| 611 | | WB-ALIG | 136+41.65 | 64.15 | L | | APRON | 3.20 | | | | | | | 880.85 | | | | | | | 1 | | 4 | 22 | |
| 620 | 621 | WB-ALIG | 138+38.38 | 19.00 | L | CB | 60-4020 | | | 7.20 | | D | YES | 887.51 | 884.26 | 884.10 | 0.50 | 33 | | | | | | | | [3], [6] |
| 621 | 622 | WB-ALIG | 138+38.38 | 13.64 | R | CB | 48-4020 | | 4.34 | | | B | | 888.24 | 883.85 | 883.77 | 0.50 | | | | 16 | | | | | [6] |
| 622 | 623 | EB-ALIG | 138+31.39 | 13.25 | L | CB | 48-4020 | | 4.37 | | | B | | 888.19 | 883.77 | 883.50 | 0.50 | | | | 48 | | | | | [6] |
| 623 | | EB-ALIG | 138+30.90 | 40.27 | R | | APRON | | | | | | | | 883.35 | | | | | | | 1 | | 4 | 22 | |
| 629 | 630 | WB-ALIG | 141+53.98 | 51.21 | L | | APRON | | | | | D | | | 885.80 | 885.64 | 0.43 | 31 | 1 | 1 | | | 8 | | | |
| 630 | 620 | WB-ALIG | 141+34.81 | 19.00 | L | CB | 48-4020 | | 3.20 | | | D | | 888.89 | 885.64 | 884.26 | 0.46 | 296 | | | | | | | | [6] |
| 631 | 630 | WB-ALIG | 141+34.81 | 13.25 | R | CB | 48-4020 | | 3.34 | | | B | | 889.60 | 886.21 | 885.64 | 1.79 | 32 | | | | | | | | [6] |
| 632 | 631 | EB-ALIG | 141+27.82 | 13.25 | L | CB | H | 3.20 | | | | B | | 889.54 | 886.29 | 886.21 | 0.50 | 17 | | | | | | | | [6] |
| DRAINAGE SUBTOTAL (6) | | | | | | | | 12.80 | 25.46 | 7.20 | 9.35 | 13 | | | | | | 636 | 1 | 1 | 224 | 2 | 8 | 8 | 44 | |

NOTE: [2] - THIS IS A BAFFLE STRUCTURE WITH A 4.0' SUMP. SUMP ELEVATION IS 877.30. SEE PLAN SHEET 164 FOR STRUCTURE DETAILS.
NOTE: [3] - THIS IS A BAFFLE STRUCTURE WITH A 4.0' SUMP. SUMP ELEVATION IS 880.26. SEE PLAN SHEET 164 FOR STRUCTURE DETAILS.
NOTE: [6] - AFTER INSTALLATION, STRUCTURE SHALL BE PLATED AND COVERED UNTIL 2017 CONSTURCTION SEASON.

GENERAL NOTES:
1. R-3448C NEENAH CASTING ASSEMBLIES OR EAST JORDAN IRON WORKS PRODUCT NO. 00500050C01 OR APPROVED EQUALS.
2. STATION AND OFFSET FOR EACH STRUCTURE GIVEN AT CENTER OF GRATE/CASTING FOR CATCH BASINS AND MANHOLES, AND AT APRON END FOR APRONS. INVERT ELEVATIONS GIVEN AT CENTER OF STRUCTURE OR END OF APRON.
3. IF STEPS REQUIRED, STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
4. PIPE LENGTH DOES NOT INCLUDE APRON.
5. SEE TAB CHART H FOR EXISTING CATCH BASIN ADJUSTMENTS. SEE TAB M FOR CULVERT INFORMATION.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_DR_TAB.dgn 04/19/2016 2:45:17 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE TABULATIONS

# DRAINAGE TAB

S7

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | STORM SEWER | | | | | | | | | | | SOD TYPE SALT | RIPRAP CLASS II | GEOTEXTILE FABRIC | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" RCP APRON | 15" TRASH GUARD | 18" RCP CL III | 21" RCP CL III | 24" RCP CL III | 24" RCP APRON | | | | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L/R | TYPE | DESIGN | H LIN FT | 48-4020 LIN FT | TYPE | | | | | | LIN FT | EACH | EACH | LIN FT | LIN FT | LIN FT | EACH | SQ YD | CU YD | SQ YD | |
| Pond 700 Overflow | | EB-ALIG | 144+35.40 | 123.12 | R | | Rip Rap | | | | | | 888.08 | | | | | | | | | | | 23 | 69 | |
| Pond 700 Micropool | | EB-ALIG | | | | | Rip Rap | | | | | | | | | | | | | | | | | 73 | 78 | |
| 700 | 702 | WB-ALIG | 144+22.67 | 19.00 | L | CB | 48-4020 | | 3.25 | D | | 890.22 | 886.92 | 886.40 | 1.07 | 49 | | | | | | | | | | [6] |
| 702 | 703 | EB-ALIG | 144+15.57 | 13.25 | L | CB | 48-4020 | | 4.41 | B | | 890.86 | 886.40 | 886.09 | 0.97 | 32 | | | | | | | | | | [6] |
| 703 | 704 | EB-ALIG | 144+15.00 | 19.00 | R | CB | 48-4020 | | 3.99 | D | | 890.13 | 886.09 | 885.50 | 1.00 | 53 | | | | | | | | | | [6] |
| 704 | | EB-ALIG | 144+57.21 | 59.84 | R | | APRON | | | | | | 885.50 | | | | 1 | 1 | | | | | | 3 | 18 | |
| 705 | 700 | WB-ALIG | 144+49.31 | 50.36 | L | | APRON | | | D | | 890.00 | 888.10 | 886.92 | 2.87 | 35 | 1 | 1 | | | | | 8 | | | |
| 706 | 707 | EB-ALIG | 144+70.34 | 159.87 | R | | APRON | | | | | | 883.50 | 885.50 | | 19 | 1 | | | | | | | 3 | 18 | |
| 707 | 708 | EB-ALIG | 144+45.68 | 159.50 | R | CB | SPECIAL | | | | | 888.58 | 885.50 | 885.40 | 0.53 | | | | | | 13 | | | | | |
| 708 | | EB-ALIG | 144+27.00 | 159.16 | R | | APRON | | | | | | 885.40 | | | | | | | | | 1 | | 6 | 30 | |
| 712 | | EB-ALIG | 145+15.43 | 60.65 | R | | APRON | | | | | | 885.50 | | | | | | | | | 1 | | 6 | 30 | |
| 713 | 712 | EB-ALIG | 145+59.02 | 19.00 | R | CB | 48-4020 | | 4.79 | D | YES | 890.94 | 886.10 | 885.50 | 1.00 | | | | | | 54 | | | | | |
| 720 | 721 | WB-ALIG | 146+84.28 | 19.00 | L | CB | 48-4020 | | 3.45 | D | | 891.82 | 888.32 | 888.16 | 0.50 | | | | 32 | | | | | | | |
| 721 | 722 | WB-ALIG | 146+84.20 | 13.25 | R | CB | 48-4020 | | 4.32 | B | | 892.53 | 888.16 | 888.07 | 0.50 | | | | 17 | | | | | | | |
| 722 | 723 | EB-ALIG | 146+77.38 | 13.25 | L | CB | 48-4020 | | 4.33 | B | | 892.45 | 888.07 | 887.91 | 0.50 | | | | 32 | | | | | | | |
| 723 | 713 | EB-ALIG | 146+77.31 | 19.00 | R | CB | 48-4020 | | 4.03 | D | | 891.74 | 887.66 | 886.35 | 1.11 | | | | | 118 | | | | | | |
| 725 | 720 | WB-ALIG | 147+78.69 | 24.00 | L | CB | 48-4020 | | 3.20 | D | | 892.33 | 889.08 | 888.57 | 0.54 | 95 | | | | | | | | | | |
| 726 | 725 | WB-ALIG | 148+81.34 | 24.00 | L | CB | H | 3.20 | | D | | 893.02 | 889.77 | 889.08 | 0.67 | 103 | | | | | | | | | | |
| 730 | 731 | WB-ALIG | 149+83.99 | 24.00 | L | CB | 48-4020 | | 3.20 | D | | 893.72 | 890.47 | 890.28 | 0.50 | 37 | | | | | | | | | | |
| 731 | 732 | WB-ALIG | 149+83.99 | 13.25 | R | CB | 48-4020 | | 4.23 | B | | 894.56 | 890.28 | 890.20 | 0.50 | 17 | | | | | | | | | | |
| 732 | 733 | EB-ALIG | 149+77.00 | 13.25 | L | CB | 48-4020 | | 4.43 | B | | 894.68 | 890.20 | 890.04 | 0.50 | 32 | | | | | | | | | | |
| 733 | 723 | EB-ALIG | 149+77.00 | 19.00 | R | CB | 48-4020 | | 3.94 | D | | 893.78 | 889.79 | 887.91 | 0.63 | | | | 300 | | | | | | | |
| 734 | 733 | EB-ALIG | 152+75.00 | 21.80 | R | CB | 48-4020 | | 3.21 | D | | 896.89 | 893.63 | 890.04 | 1.21 | 298 | | | | | | | | | | |
| 735 | 734 | EB-ALIG | 152+75.00 | 32.00 | R | CB | 48-4020 | | 6.62 | E | YES | 896.93 | 893.68 | 893.63 | 0.50 | 10 | | | | | | | | | | [4] |
| 740 | 730 | WB-ALIG | 151+26.00 | 19.00 | L | CB | H | 3.20 | | D | | 895.19 | 891.94 | 890.47 | 1.04 | 142 | | | | | | | | | | |
| DRAINAGE SUBTOTAL (7) | | | | | | | | 6.40 | 61.40 | 18 | | | | | | 922 | 3 | 2 | 381 | 118 | 67 | 2 | 8 | 114 | 243 | |

NOTE: [4] - THIS IS A CATCH BASIN WITH A 3.0' SUMP. SUMP ELEVATION IS 890.68

NOTE: [6] - AFTER INSTALLATION, STRUCTURE SHALL BE PLATED AND COVERED UNTIL 2017 CONSTURCTION SEASON.

# DRAINAGE TAB

S8

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | | | STORM SEWER | | | | | | | | | | | | | SOD TYPE SALT | RIPRAP CLASS II | GEOTEXTILE FABRIC | CONNECT TO EX STORM | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PAY HEIGHT | | | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" CS PIPE | 15" RCP APRON | 15" CS PIPE APRON | 15" TRASH GUARD | 18" RCP CL III | 18" RCP APRON | 28" SPAN CL IIA | 28" SPAN APRON | | | | | |
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L/R | TYPE | DESIGN | H LIN FT | 48-4020 LIN FT | 54-4020 LIN FT | TYPE | | | | | | LIN FT | LIN FT | EACH | EACH | EACH | LIN FT | EACH | LIN FT | EACH | SQ YD | CU YD | SQ YD | EACH | |
| Pond 800 Overflow | | EB-ALIG | 165+46.97 | 125.10 | R | | Rip Rap | | | | | | | 891.05 | | | | | | | | | | | | | 23 | 59 | | |
| Pond 800 Micropool | | EB-ALIG | | | | | Rip Rap | | | | | | | | | | | | | | | | | | | | 79 | 84 | | |
| 800 | 801 | WB-ALIG | 156+51.38 | 19.00 | L | CB | H | 3.20 | | | D | | 897.17 | 893.92 | 893.76 | 0.50 | 32 | | | | | | | | | | | | | |
| 800A | 810 | WB-ALIG | 156+96.14 | 52.00 | L | CB | H | 3.20 | | | D | | 895.83 | 892.58 | 892.28 | 0.30 | 99 | | | | | | | | | | | | | |
| 801 | 802 | WB-ALIG | 156+51.38 | 13.25 | R | CB | 48-4020 | | 4.93 | | B | YES | 897.88 | 893.76 | 893.73 | 0.50 | 6 | | | | | | | | | | | | | |
| 802 | 803 | EB-ALIG | 156+44.39 | 24.25 | L | CB | 48-4020 | | 3.90 | | B | | 897.68 | 893.73 | 893.49 | 0.50 | 48 | | | | | | | | | | | | | |
| 803 | 805 | EB-ALIG | 156+44.39 | 24.00 | R | CB | 48-4020 | | 3.54 | | D | | 897.08 | 893.49 | 893.29 | 0.33 | 60 | | | | | | | | | | | | | |
| 805 | 808 | EB-ALIG | 156+89.33 | 64.21 | R | CB | 48-4020 | | 3.58 | | C | | 896.68 | 893.05 | 892.90 | 0.31 | | | | | | 49 | | | | | | | | |
| 808 | 813 | EB-ALIG | 157+38.48 | 64.01 | R | CB | 48-4020 | | 3.55 | | C | | 896.50 | 892.90 | 892.02 | 1.37 | | | | | | 64 | | | | | | | | |
| 810 | 811 | WB-ALIG | 157+91.38 | 24.00 | L | CB | 48-4020 | | 3.86 | | D | | 896.19 | 892.28 | 892.13 | 0.31 | 48 | | | | | | | | | | | | | |
| 811 | 813 | WB-ALIG | 157+91.38 | 24.25 | R | CB | 48-4020 | | 4.61 | | B | YES | 896.79 | 892.13 | 892.02 | 0.30 | 38 | | | | | | | | | | | | | |
| 813 | 823 | EB-ALIG | 157+84.40 | 19.00 | R | CB | 48-4020 | | 4.28 | | D | | 896.35 | 892.02 | 890.90 | 0.53 | | | | | | 211 | | | | | | | | |
| 820 | 821 | WB-ALIG | 160+02.15 | 24.00 | L | CB | H | 3.20 | | | D | | 894.90 | 891.65 | 891.38 | 0.56 | 48 | | | | | | | | | | | | | |
| 821 | 823 | WB-ALIG | 160+02.15 | 24.25 | R | CB | 48-4020 | | 4.07 | | B | | 895.50 | 891.38 | 891.15 | 0.61 | 38 | | | | | | | | | | | | | |
| 823 | 833 | EB-ALIG | 159+95.16 | 19.00 | R | CB | 54-4020 | | | 4.12 | D | | 895.07 | 890.90 | 890.05 | 0.44 | | | | | | | | 194 | | | | | | |
| 831 | 833 | WB-ALIG | 161+96.38 | 24.25 | R | CB | H | 3.85 | | | B | | 894.32 | 890.42 | 890.27 | 0.40 | 38 | | | | | | | | | | | | | |
| 833 | 843 | EB-ALIG | 161+89.40 | 19.00 | R | CB | 54-4020 | | | 3.78 | D | | 893.88 | 890.05 | 889.27 | 0.49 | | | | | | | | 161 | | | | | | |
| 840 | 842 | WB-ALIG | 163+57.01 | 19.00 | L | CB | H | 2.89 | | | D | | 892.87 | 889.93 | 889.68 | 0.50 | 49 | | | | | | | | | | | | | |
| 842 | 843 | EB-ALIG | 163+50.00 | 13.25 | L | CB | 48-4020 | | 3.89 | | B | | 893.62 | 889.68 | 889.52 | 0.50 | 32 | | | | | | | | | | | | | |
| 843 | 844 | EB-ALIG | 163+50.00 | 19.00 | R | CB | 54-4020 | | | 3.59 | D | | 892.91 | 889.27 | 889.05 | 0.57 | | | | | | | | 32 | | | | | | |
| 844 | | EB-ALIG | 163+66.87 | 53.36 | R | | APRON | | | | | | | 889.05 | 889.05 | | | | | | | | | | 1 | | 6 | 30 | | |
| 845 | 846 | EB-ALIG | 164+93.46 | 68.70 | R | | APRON | | | | | | | 887.55 | 889.05 | 0 | 15 | | 1 | | 1 | | | | | | 3 | 18 | | |
| 846 | 847 | EB-ALIG | 165+07.50 | 52.93 | R | CB | SPECIAL | | 4.00 | | | | 891.59 | 889.55 | 889.05 | 0.63 | | | | | | 10 | | | | | | | | |
| 847 | | EB-ALIG | 165+23.34 | 53.00 | R | | APRON | | | | | | | 889.45 | 889.05 | | | | | | | | 1 | | | | 4 | 22 | | |
| 848 | 850 | WB-ALIG | 165+63.28 | 19.39 | L | CB | H | 2.75 | | | C | | 891.86 | 889.06 | 888.93 | 0.40 | 34 | | | | | | | | | | | | | |
| 850 | 851 | WB-ALIG | 165+63.01 | 14.36 | R | CB | 48-4020 | | 3.65 | | A | | 892.63 | 888.93 | 888.86 | 0.40 | 16 | | | | | | | | | | | | | |
| 851 | 852 | EB-ALIG | 165+62.93 | 13.25 | L | CB | 48-4020 | | 3.67 | | A | | 892.58 | 888.86 | 888.73 | 0.40 | 33 | | | | | | | | | | | | | |
| 852 | 853 | EB-ALIG | 165+63.23 | 19.52 | R | MH | 48-4020 | | 3.08 | | F | | 891.86 | 888.73 | 888.67 | 0.40 | 9 | | | | | | | | | | | | | |
| 853 | | EB-ALIG | 165+63.05 | 35.91 | R | | APRON | | | | | | | 888.67 | | | | | 1 | | | | | | | | 3 | 18 | | |
| 870 | | EB-ALIG | 172+29.96 | 25.38 | R | | APRON | | | | | | | 894.00 | | | | | | | | | 1 | | | 10 | | | | |
| 871 | 870 | EB-ALIG | 172+55.04 | 25.58 | R | MH | 48-4020 | | 2.75 | | F | | 896.85 | 894.05 | 894.00 | 0.20 | | | | | | 19 | | | | | | | 1 | |
| 873 | EXCB | EB-ALIG | 173+77.67 | 23.37 | R | | APRON | | | | | | | 895.70 | | | | 6 | | 1 | 1 | | | | | 7 | | | | [5] |
| DRAINAGE SUBTOTAL (8) | | | | | | | | 19.09 | 57.36 | 11.49 | 23 | | | | | | 643 | 6 | 2 | 1 | 2 | 353 | 2 | 387 | 1 | 17 | 118 | 231 | 1 | |

NOTE: [5] - THE CMP IS TO BE EXTENDED AND APRON SHALL HAVE ELEVATION OF 896.70.

GENERAL NOTES:

1. R-3448C NEENAH CASTING ASSEMBLIES OR EAST JORDAN IRON WORKS PRODUCT NO. 00500050C01 OR APPROVED EQUALS.
2. STATION AND OFFSET FOR EACH STRUCTURE GIVEN AT CENTER OF GRATE/CASTING FOR CATCH BASINS AND MANHOLES, AND AT APRON END FOR APRONS. INVERT ELEVATIONS GIVEN AT CENTER OF STRUCTURE OR END OF APRON.
3. IF STEPS REQUIRED, STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
4. PIPE LENGTH DOES NOT INCLUDE APRON.
5. SEE TAB CHART H FOR EXISTING CATCH BASIN ADJUSTMENTS. SEE TAB M FOR CULVERT INFORMATION.



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SIGNATURE: Zac Borgerding

DATE: 5/23/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

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CHECKED BY GP DATE 04-12-16

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DRAINAGE TABULATIONS

## DRAINAGE TAB

S9

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | | | | STORM SEWER | | | | | | | RIPRAP CLASS II | GEOTEXTILE FABRIC | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L / R | TYPE | DESIGN | PAY HEIGH 48-4020 | CASTING ASSEMB | STEPS REQ'D | TOP OF CASTING ELEVATION | OUTLET ELEVATION | DOWN STREAM INLET | SLOPE % | 15" RCP CL V | 15" RCP APRON | 15" TRASH GUARD | | | |
| | | | | | | | | LIN FT | TYPE | | | | | | LIN FT | EACH | EACH | CU YD | SQ YD | |
| P-1 | PA-5 | CL-P_PARK | 8+00.00 | 21.00 | L | MH | 48-4020 | 5.22 | F | YES | 894.30 | 889.03 | 888.40 | 1.10 | 54 | | | | | |
| PA-3 | P1 | CL-P_PARK | 7+75.05 | 23.60 | L | | APRON | | | | | 893.15 | 891.55 | 6.29 | 20 | 1 | 1 | | | |
| PA-4 | P1 | CL-P_PARK | 8+24.90 | 26.41 | L | | APRON | | | | | 892.90 | 891.55 | 5.26 | 20 | 1 | 1 | | | |
| PA-5 | | CL-P_PARK | 8+00.00 | 39.00 | R | | APRON | | | | | 888.40 | | | | 1 | | 5 | 21 | |
| DRAINAGE SUBTOTAL (PARK) | | | | | | | | 5.22 | 1 | | | | | | 94 | 3 | 2 | 5 | 21 | |

## DRAINAGE TAB

S10

| STRUCTURE NO. | | | CENTER OF CASTING | | | DRAINAGE STRUCTURES | | PAY HEIGHT | | | | | CASTING ASSEMB | STORM SEWER | | | | | | | | | | | | | | | | SOD TYPE SALT | RIPRAP CLASS II | GEOTEXTILE FABRIC | CONNECT TO EX STORM | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FLOWS FROM | FLOWS TO | ALIGN | STATION | O/S | L / R | TYPE | DESIGN | H | 48-4020 | 54-4020 | 60-4020 | 66-4020 | 72-4020 | | 15" RCP CL V | 15" CS PIPE | INSTALL 15" RCP APRON | 15" RCP APRON | 15" CS PIPE APRON | 15" TRASH GUARD | 18" RCP CL III | 18" RCP APRON | 18" TRASH GUARD | 21" RCP CL III | 21" RCP APRON | 24" RCP CL III | 24" RCP APRON | 28" SPAN CL IIA | 28" SPAN APRON | 30"RCP CL III | 33" RCP CL III | 33" RCP APRON | | | | | |
| | | | | | | | | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | LIN FT | TYPE | LIN FT | LIN FT | EACH | EACH | EACH | EACH | LIN FT | EACH | EACH | LIN FT | EACH | LIN FT | EACH | LIN FT | EACH | LIN FT | LIN FT | EACH | SQ YD | CU YD | SQ YD | EACH | |
| DRAINAGE SUBTOTAL (1) | | | | | | | | 16.55 | 88.14 | 4.64 | | | | 27 | 805 | | 1 | 1 | | 1 | 718 | 1 | 1 | 124 | 1 | 30 | 1 | | | | | | 18 | 128 | 316 | 1 | |
| DRAINAGE SUBTOTAL (2) | | | | | | | | 9.12 | 45.86 | | | | | 16 | 540 | | | 1 | | | 138 | | | | | | | 173 | 1 | | | | | 29 | 78 | | |
| DRAINAGE SUBTOTAL (3) | | | | | | | | 19.18 | 56.73 | | | | | 17 | 989 | | | 2 | | 1 | 109 | 2 | | | | | | | | | | | | 173 | 278 | | |
| DRAINAGE SUBTOTAL (4) | | | | | | | | 17.13 | 41.02 | | | | 10.45 | 16 | 1058 | | | | | | | | | | | 103 | 1 | | | | | | | 6 | 30 | | |
| DRAINAGE SUBTOTAL (5) | | | | | | | | 41.74 | 93.78 | 13.99 | 37.53 | 5.75 | 4.70 | 47 | 1501.24 | | | 1 | | | 49 | | | 422 | | 789 | | | | 580 | 782 | 1 | | 118 | 217 | | |
| DRAINAGE SUBTOTAL (6) | | | | | | | | 12.80 | 25.46 | | 7.20 | | 9.35 | 13 | 636 | | | 1 | | 1 | 224 | 2 | | | | | | | | | | 8 | 8 | 44 | | |
| DRAINAGE SUBTOTAL (7) | | | | | | | | 6.40 | 61.39 | | | | | 18 | 922 | | | 3 | | 2 | 381 | | | 118 | | 58 | 2 | | | | | 8 | 114 | 243 | | |
| DRAINAGE SUBTOTAL (8) | | | | | | | | 19.09 | 57.16 | 11.49 | | | | 23 | 643 | 6 | | 2 | 1 | 2 | 353 | 2 | | | | | | 387 | 1 | | | | 17 | 118 | 231 | 1 | |
| DRAINAGE SUBTOTAL (PARK) | | | | | | | | | 5.22 | | | | | 1 | 94 | | | 3 | | 2 | | | | | | | | | | | | | 5 | 21 | | |
| PROJECT TOTAL | | | | | | | | 142.01 | 474.76 | 30.12 | 44.73 | 5.75 | 24.50 | 178 | 7188.24 | 6 | 1 | 14 | 1 | 9 | 1972 | 7 | 1 | 664 | 1 | 980 | 4 | 560 | 2 | 580 | 782 | 1 | 51 | 699 | 1458 | 2 | |

GENERAL NOTES:

1. R-3448C NEENAH CASTING ASSEMBLIES OR EAST JORDAN IRON WORKS PRODUCT NO. 00500050C01 OR APPROVED EQUALS.
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SIGNATURE: Zac Borgerding

DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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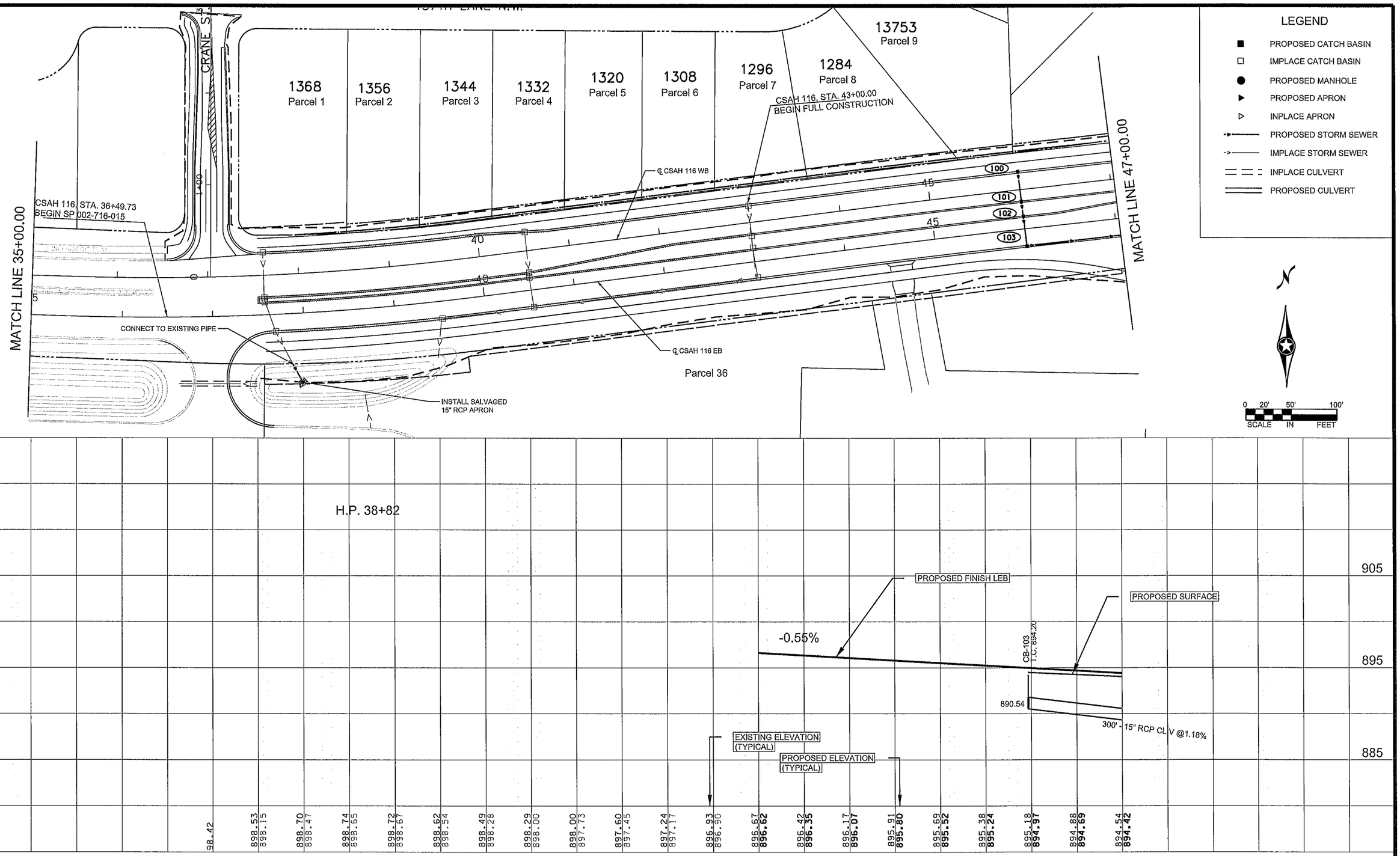
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE TABULATIONS

Sheet 221 of 482 Sheets



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SIGNATURE: Zac Borgerding

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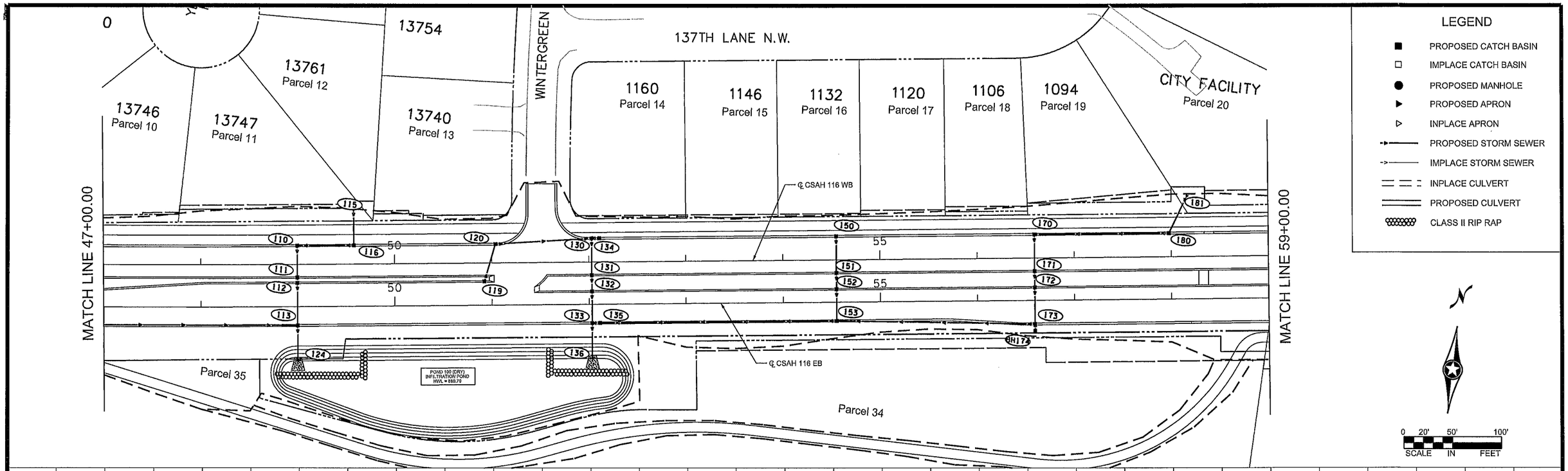
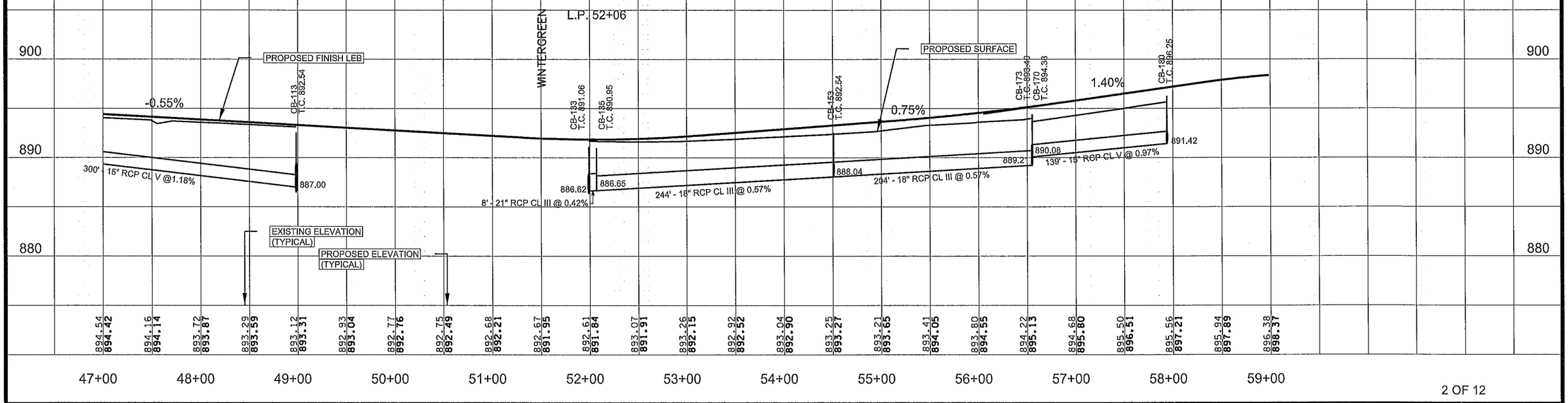
DRAINAGE PLAN AND PROFILE

STA 36+49.73 TO 47+00.00

Sheet 222 of 482 Sheets



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SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

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DRAINAGE PLAN AND PROFILE

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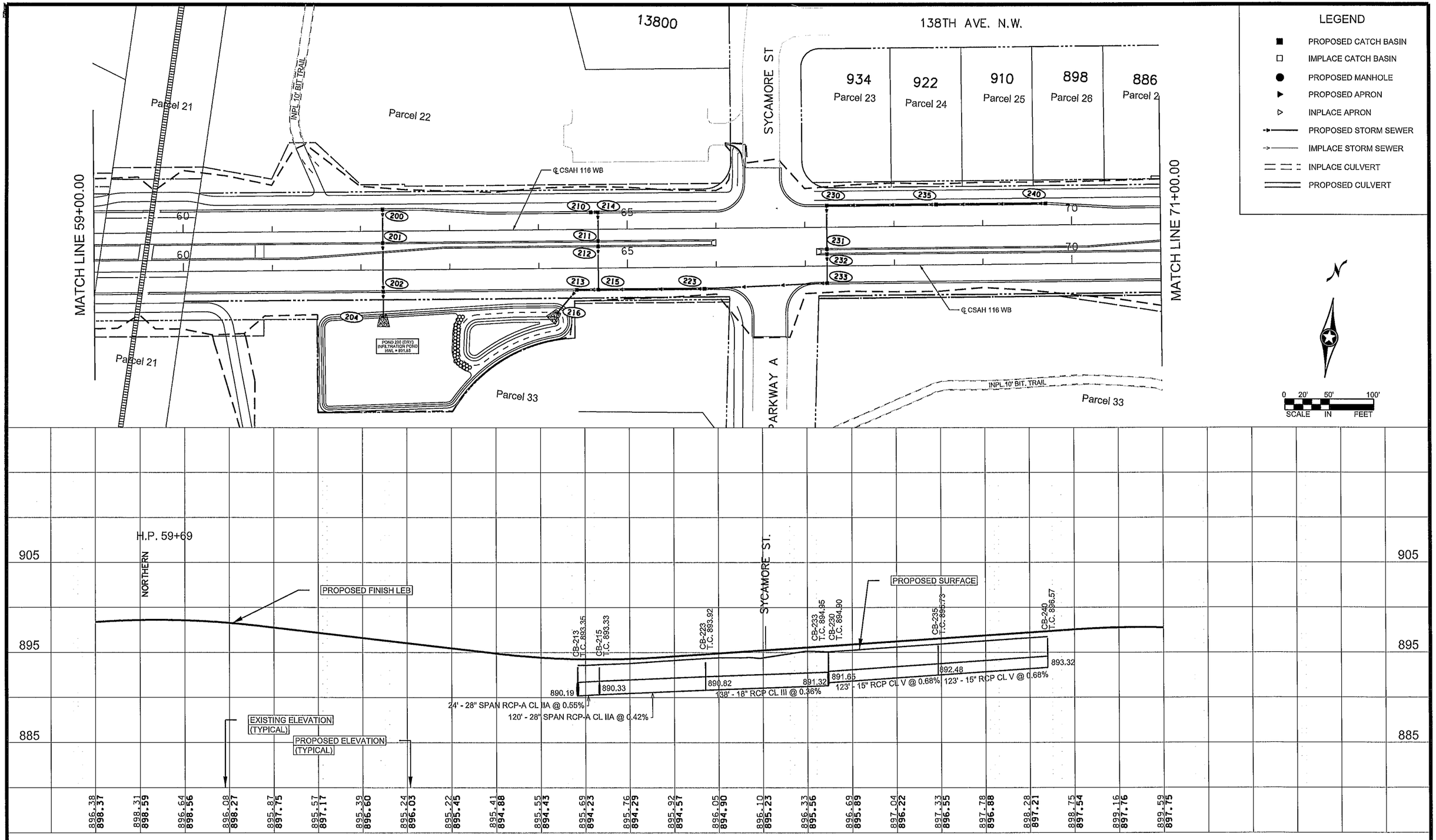
Sheet 223 of 482 Sheets




3 OF 12

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DRAINAGE PLAN AND PROFILE

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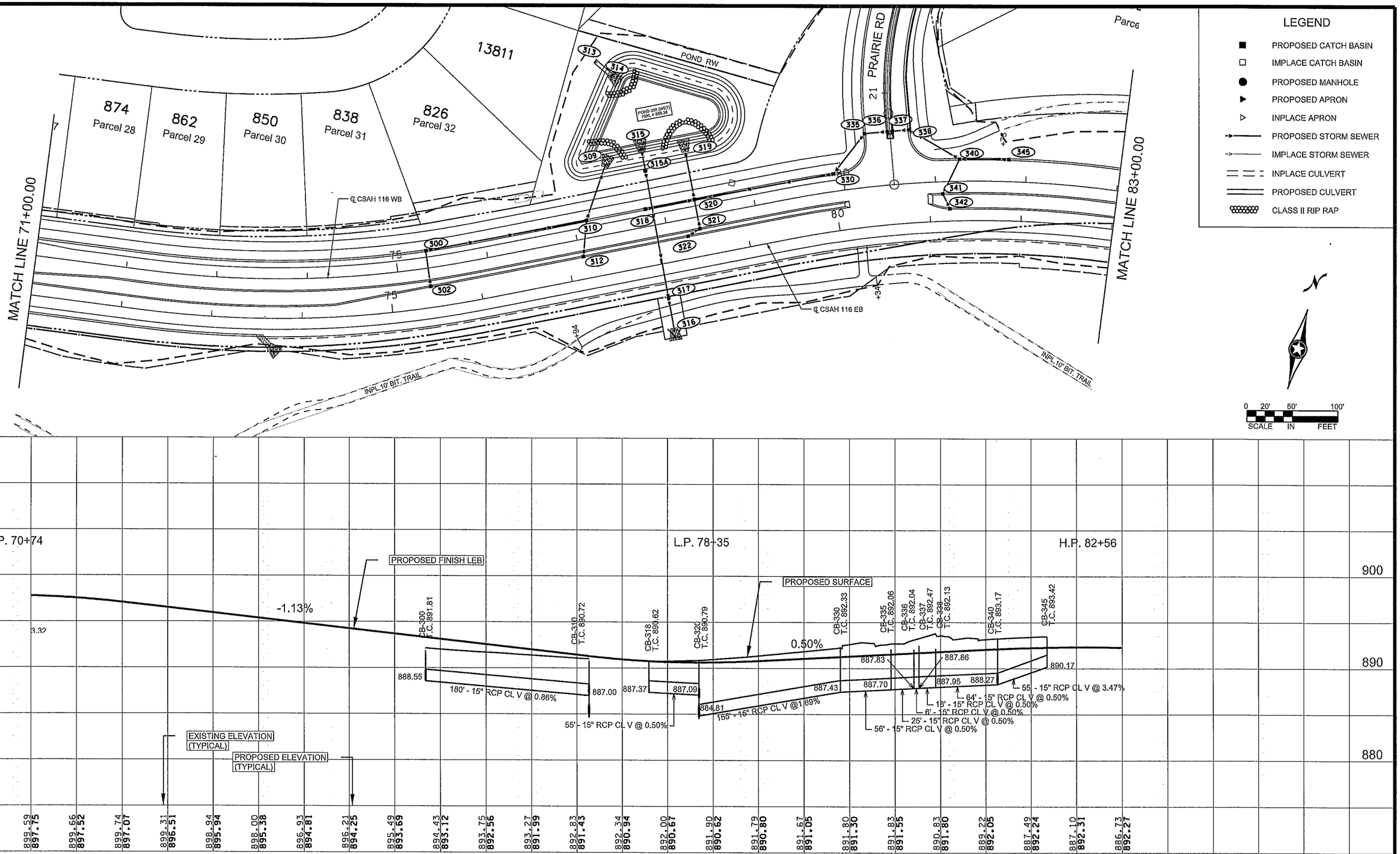
Sheet 224 of 482 Sheets




4 OF 12

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DRAINAGE PLAN AND PROFILE

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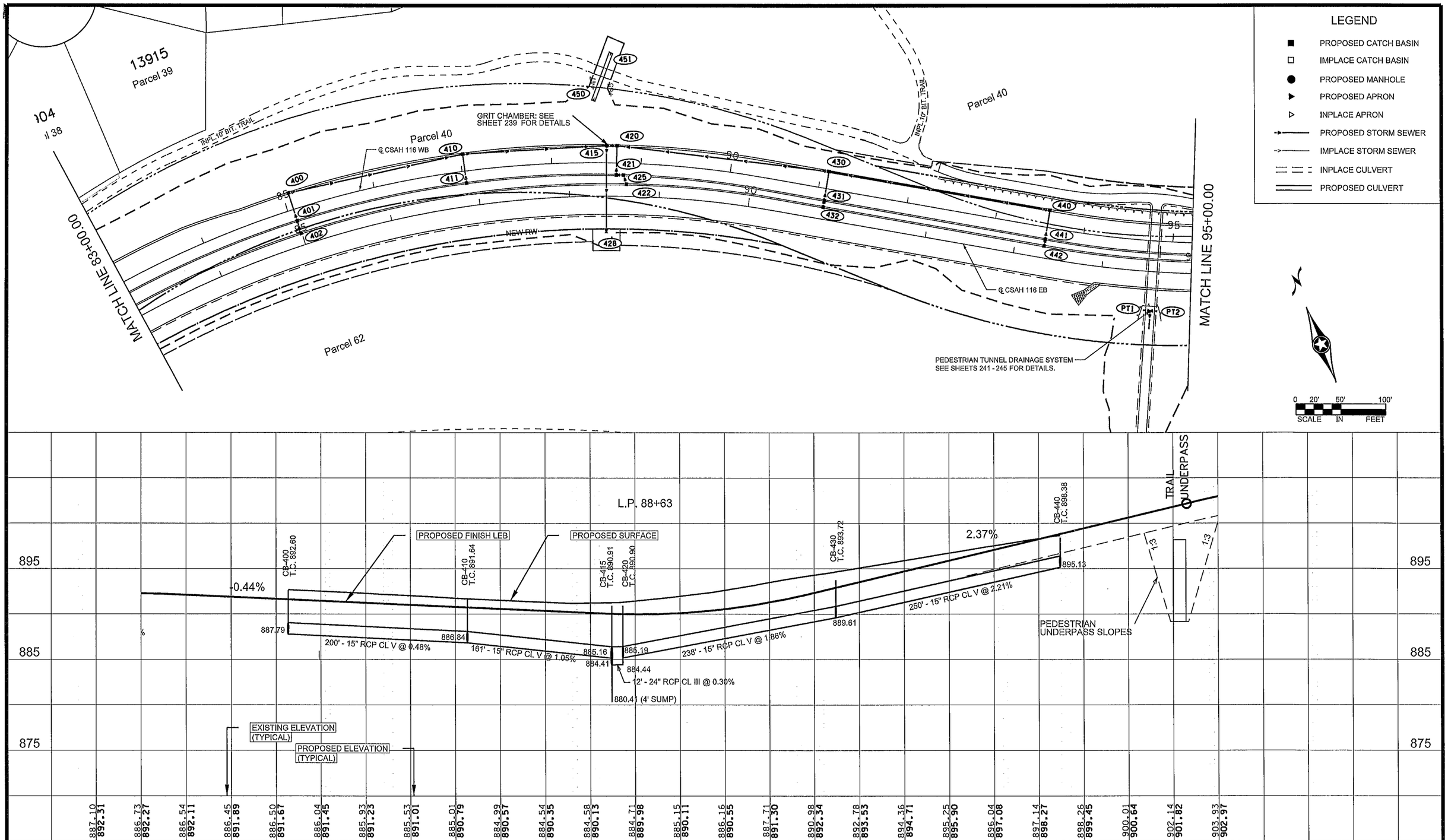
Sheet 225 of 482 Sheets




5 OF 12

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DRAINAGE PLAN AND PROFILE

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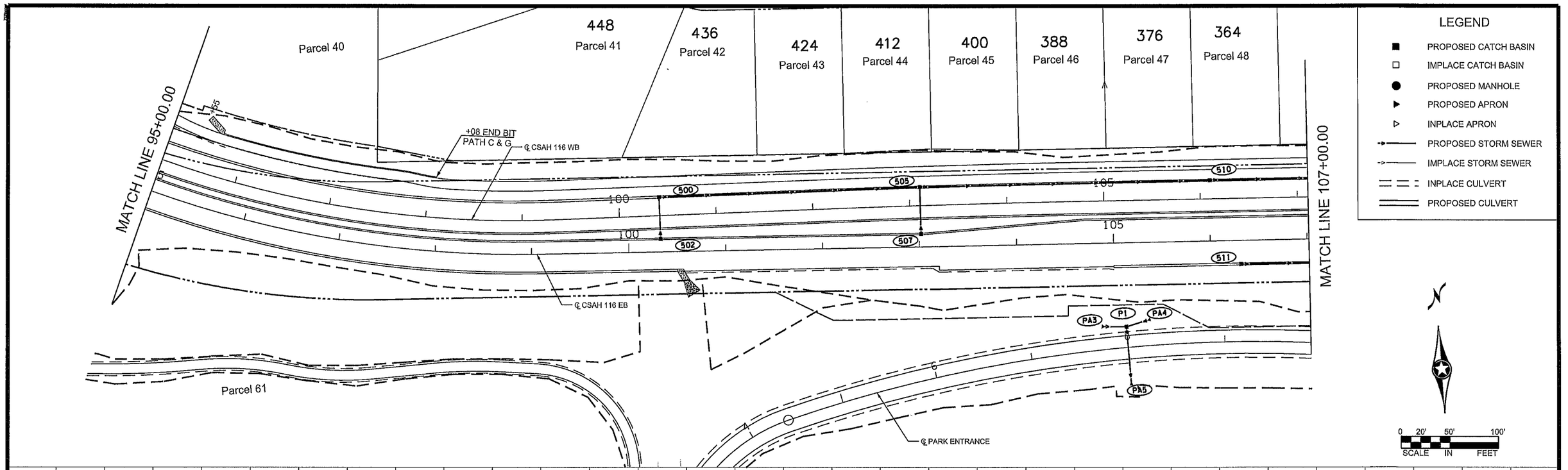
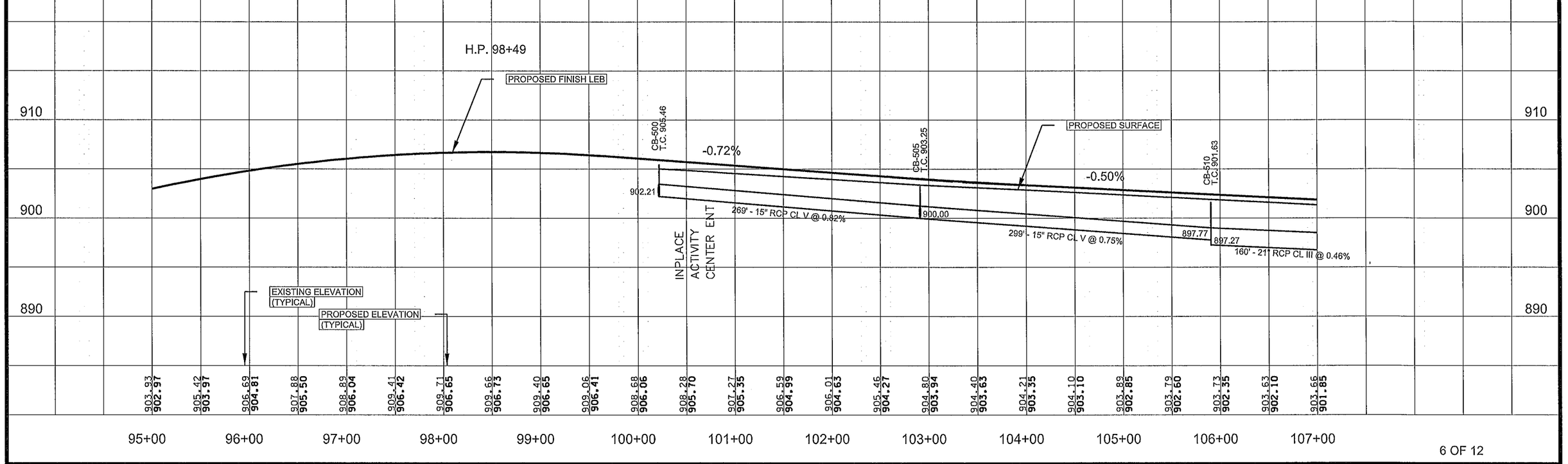
Sheet 226 of 482 Sheets



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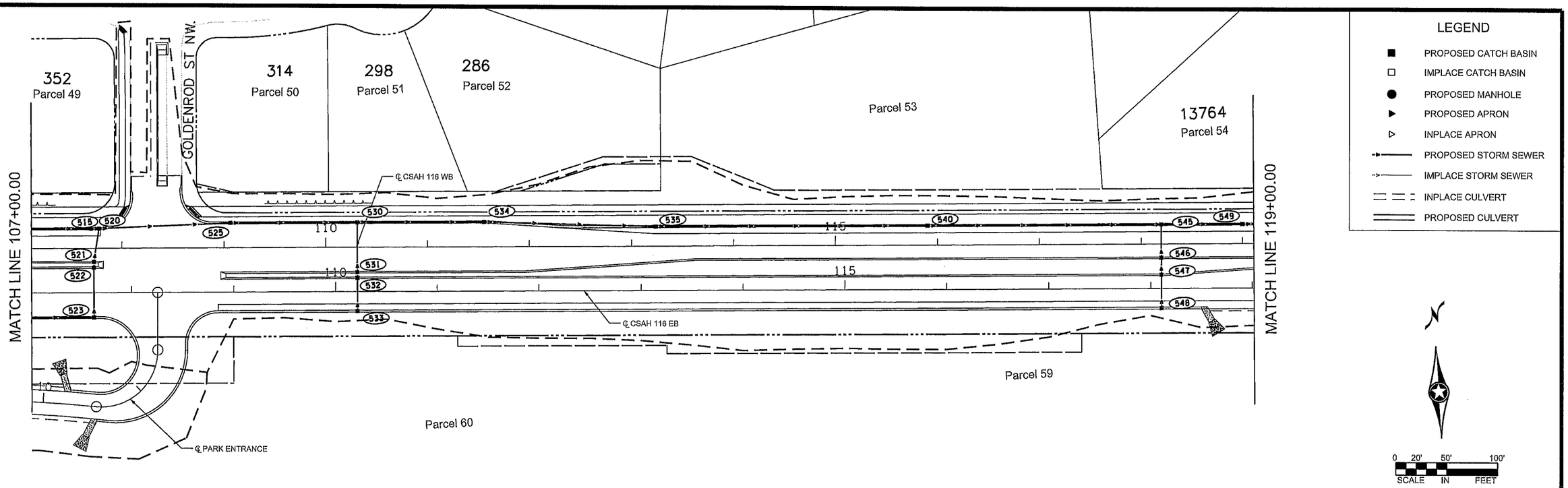
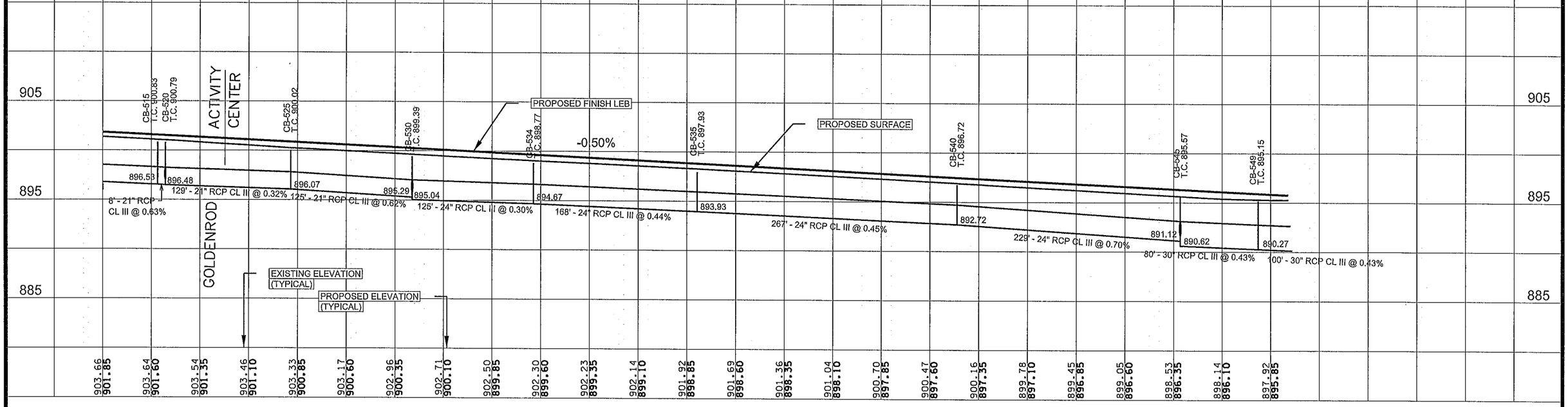
DRAINAGE PLAN AND PROFILE

STA 95+00.00 TO 107+00.00

Sheet 227 of 482 Sheets




7 OF 12

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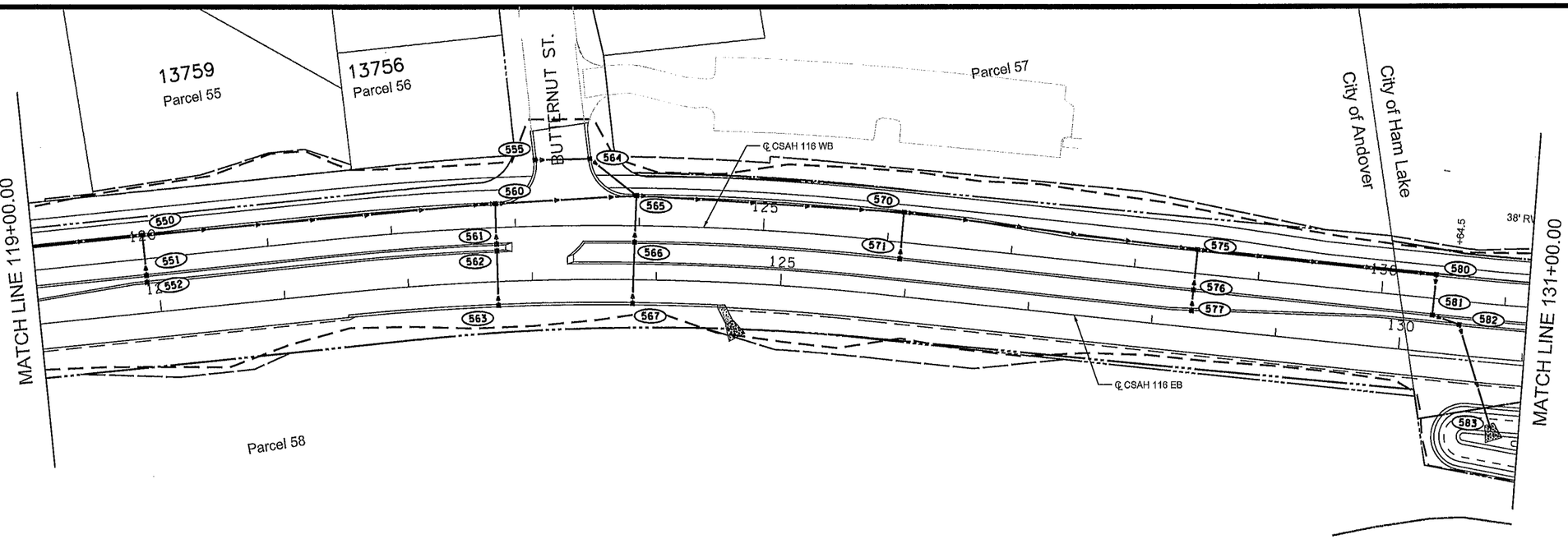
STA 107+00.00 TO 119+00.00

Sheet 228 of 482 Sheets

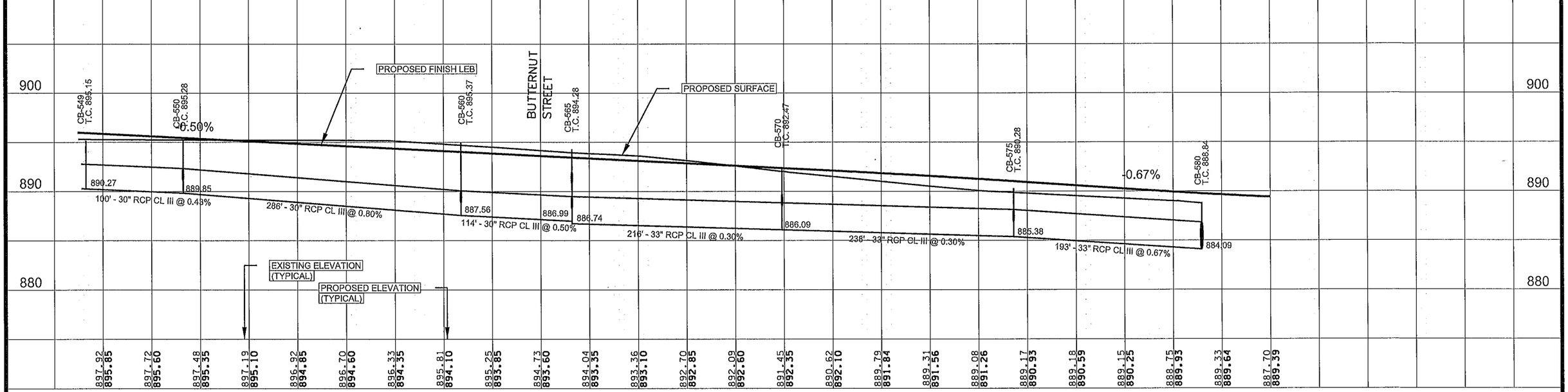



LEGEND

- PROPOSED CATCH BASIN
- IMPLACE CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED APRON
- INPLACE APRON
- PROPOSED STORM SEWER
- IMPLACE STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT

N

0 20' 50' 100'
SCALE IN FEET






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_DR8.dgn 04/18/2016 2:31:50 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

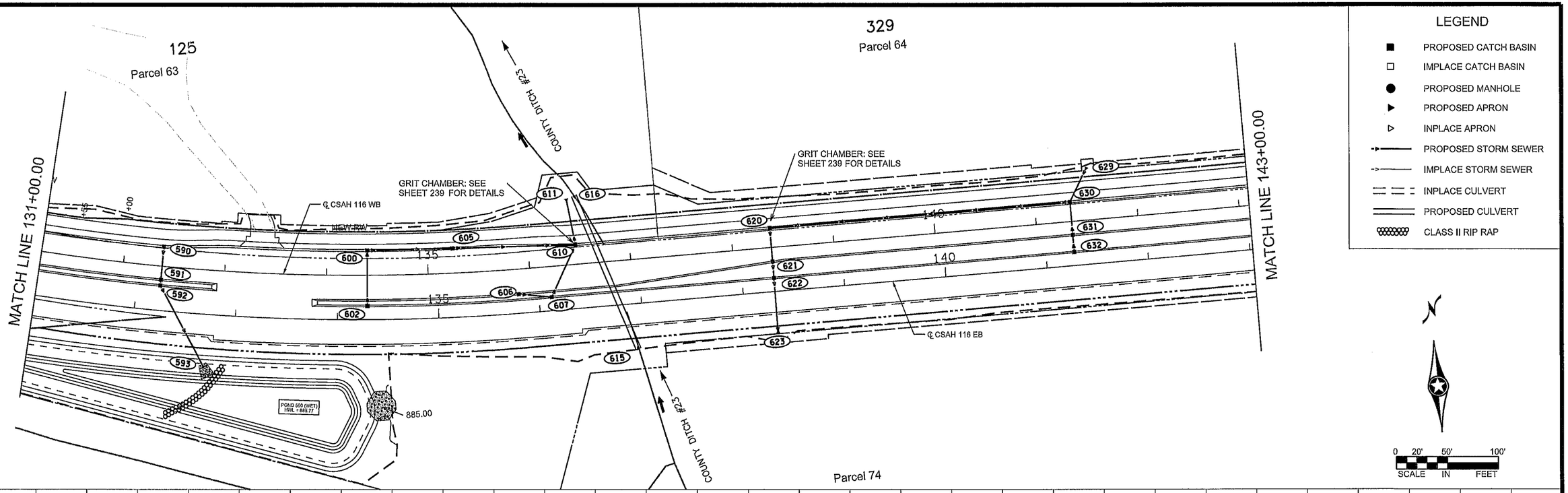
ANOKA COUNTY HIGHWAY DEPT.

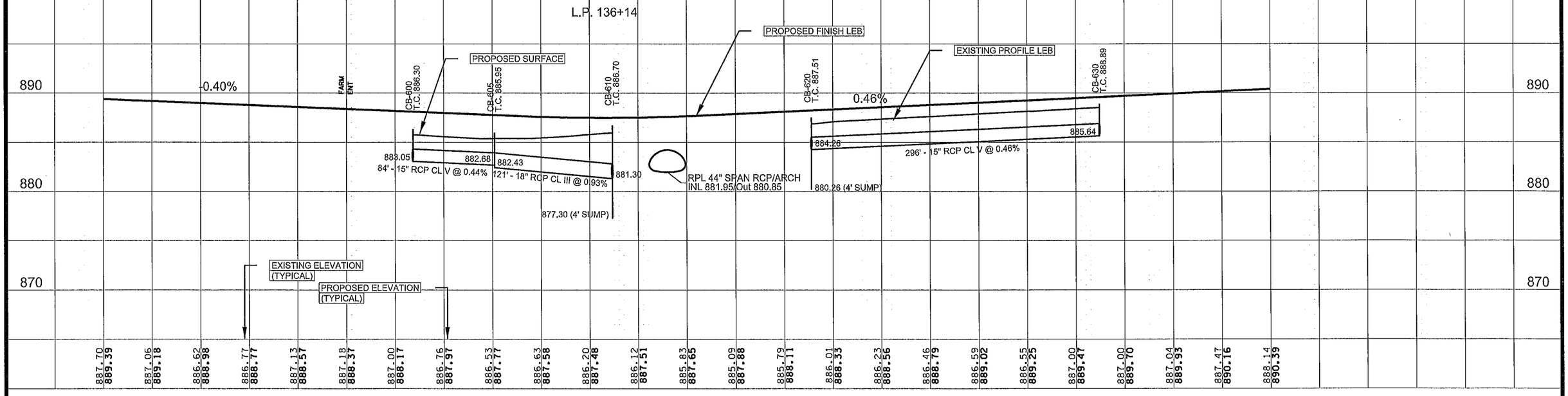
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE PLAN AND PROFILE

STA 119+00.00 TO 131+00.00

Sheet 229 of 482 Sheets






| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_DR9.dgn 04/12/2016 2:05:18 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

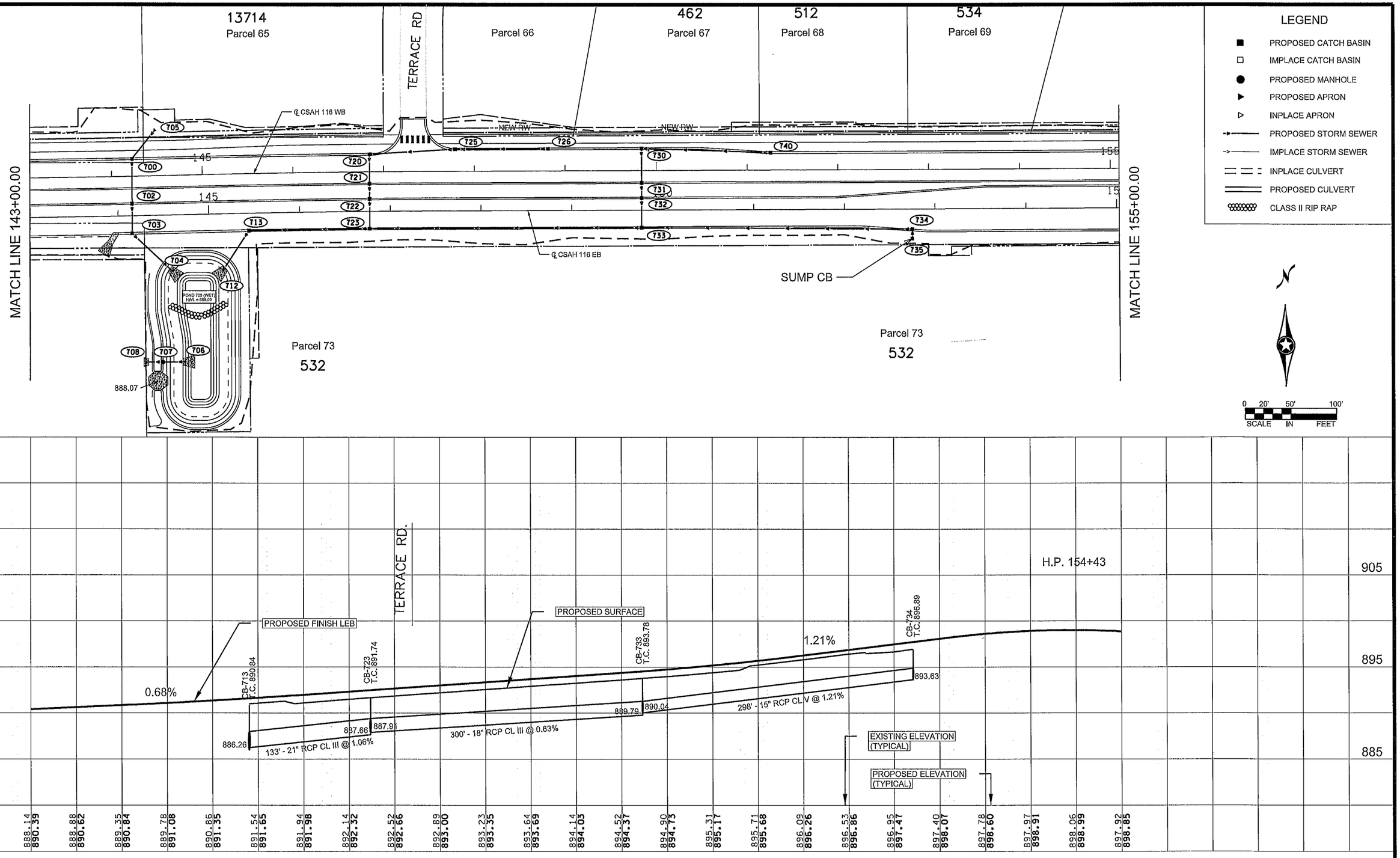
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE PLAN AND PROFILE

STA 131+00.00 TO 143+00.00

Sheet 230 of 482 Sheets







10 OF 12

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_DR10.dgn 04/12/2016 2:05:20 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE PLAN AND PROFILE

STA 143+00.00 TO 155+00.00

Sheet 231 of 482 Sheets

548
Parcel 70

701
Parcel 71

138TH AVE

MATCH LINE 155+00.00

MATCH LINE 167+00.00

JEFFERSON ST. N.W.

℄ CSAH 116 WB

℄ CSAH 116 EB

NEW R/W

800A 800 801 802 803 805 808 810 811 813 820 821 823 831 833 840 842 843 844 845 846 847 848 850 851 852 853 860 861

1-65

165

POND 800 (WBT)
NWL = 891.05

891.05

Parcel 72
13643

Parcel 77

LEGEND

- PROPOSED CATCH BASIN
- IMPLACE CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED APRON
- INPLACE APRON
- PROPOSED STORM SEWER
- IMPLACE STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- CLASS II RIP RAP

N

0 20' 50' 100'
SCALE IN FEET

JEFFERSON ST. N.W.
138TH AVE

905
895
885

L.P. 165+63

PROPOSED SURFACE

PROPOSED FINISH LEB

CB-803 T.C. 897.08
CB-805 T.C. 896.68
CB-808 T.C. 896.50
CB-813 T.C. 896.35
CB-823 T.C. 895.07
CB-833 T.C. 893.88
CB-843 T.C. 892.91

-0.61%

893.49 893.29 893.05 892.90 892.02 890.90 890.05 889.27

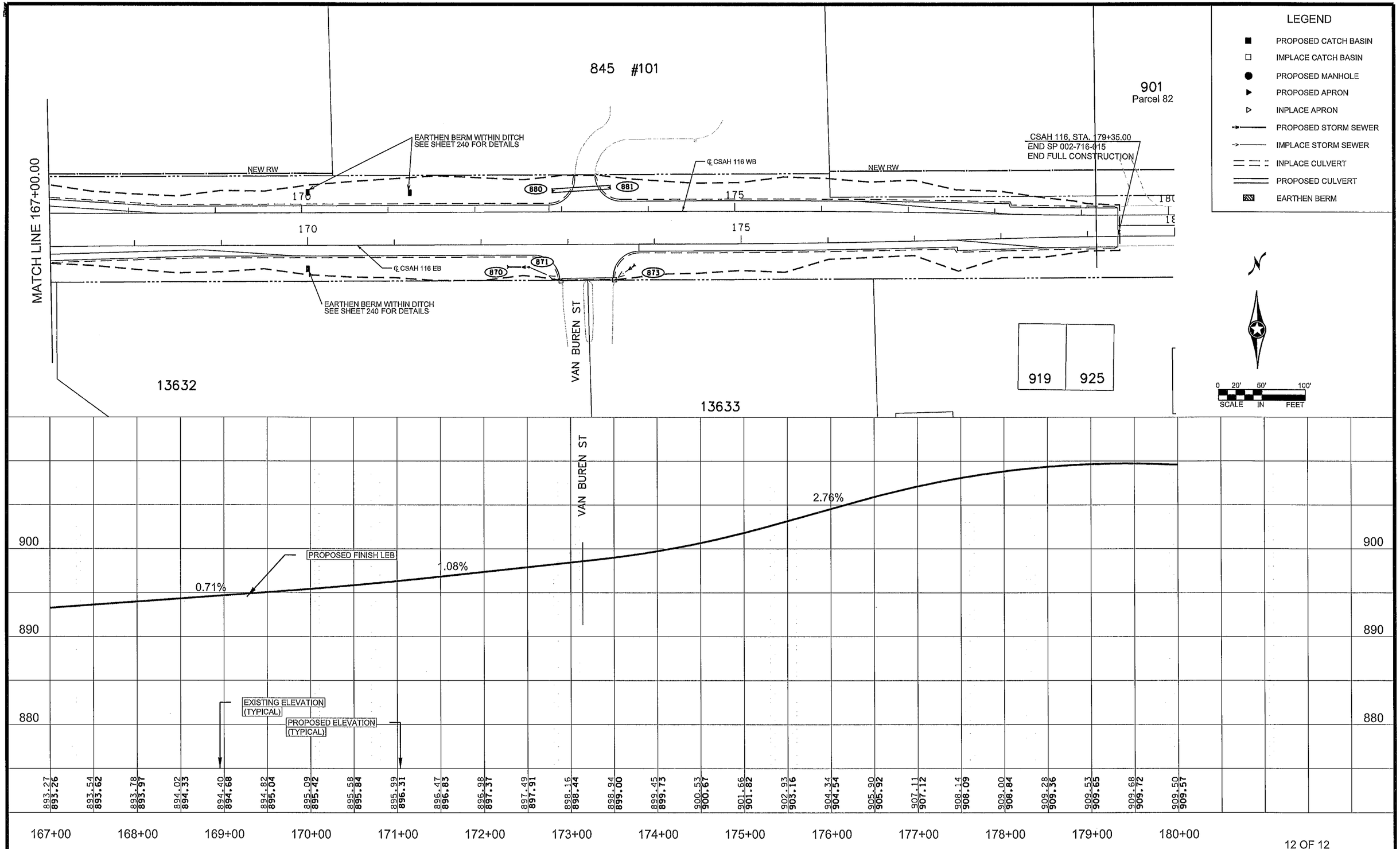
60' - 15" RCP CL V @ 0.33%
49' - 18" RCP CL III @ 0.31%
64' - 18" RCP CL III @ 1.37%
211' - 18" RCP CL III @ 0.53%
194' - 28" SPAN RCP-A CL IIA @ 0.44%
161' - 28" SPAN RCP-A CL IIA @ 0.49%

RPL 29" SPAN RCP/ARCH
INLET 888.34/Out 888.26

EXISTING ELEVATION (TYPICAL)

PROPOSED ELEVATION (TYPICAL)

| | | |




12 OF 12

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_DR12.dgn 04/12/2016 2:05:24 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/5/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

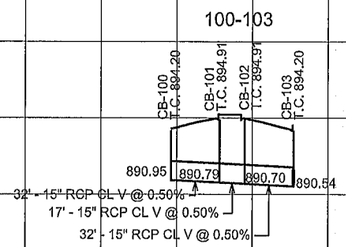
ANOKA COUNTY HIGHWAY DEPT.

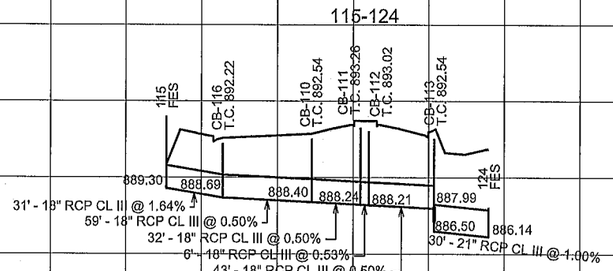
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

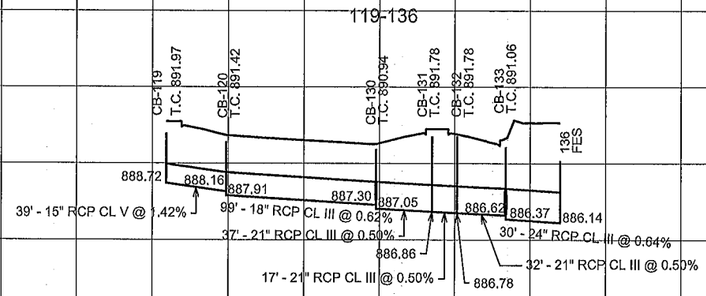
DRAINAGE PLAN AND PROFILE

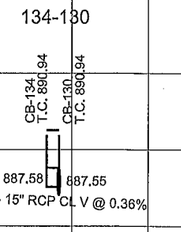
STA 167+00.00 TO 179+35.00

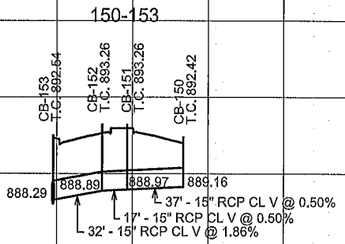
Sheet 233 of 482 Sheets

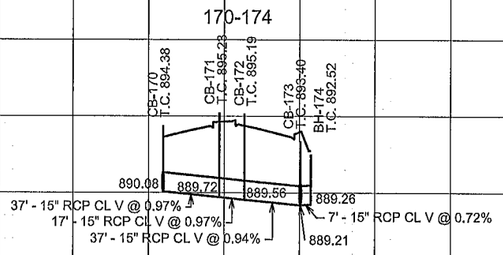


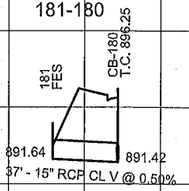



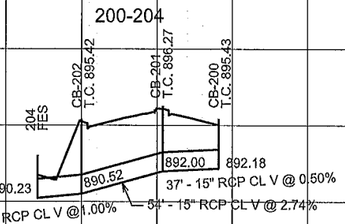



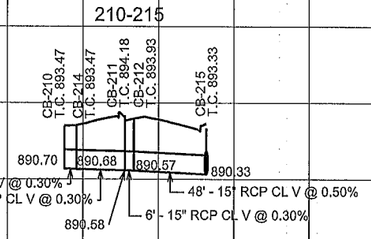



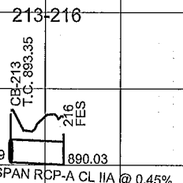



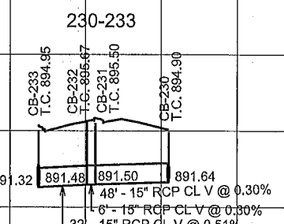



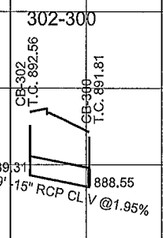



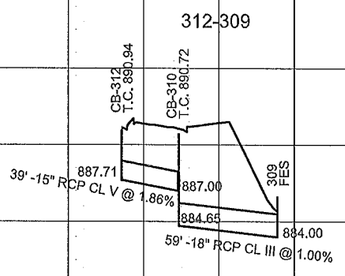



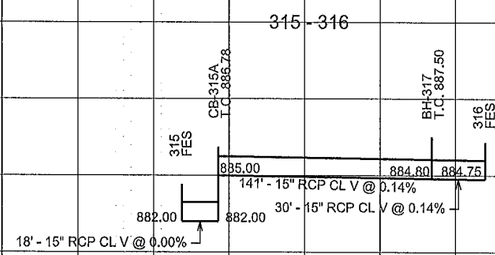



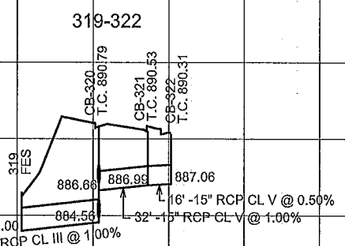



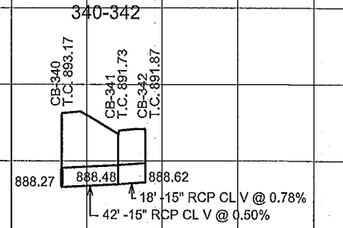




NOTES:
1. LENGTHS GIVEN ARE LENGTH OF PIPE ONLY
2. ELEVATIONS GIVEN ARE TO INVERT OR END OF APRON
3. SLOPES ARE CALCULATED TO END OF APRON (WHEN APPLICABLE)



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_DR_LEADS.dgn 05/20/2016 1:39:12 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

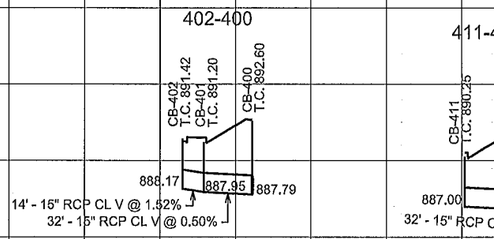
ANOKA COUNTY

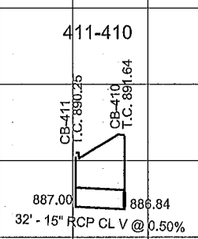
ANOKA COUNTY HIGHWAY DEPT.

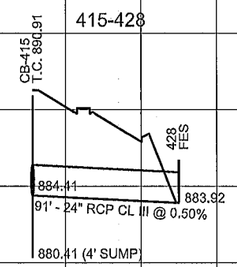
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

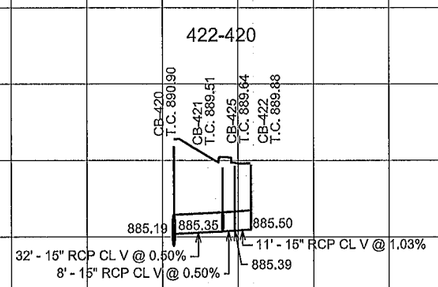
DRAINAGE LEADS

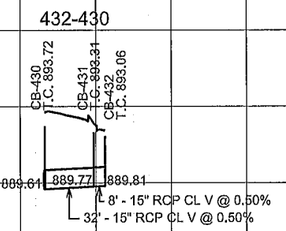
Sheet 234 of 482 Sheets

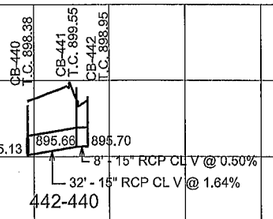


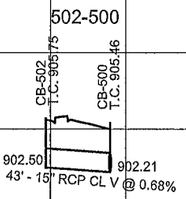



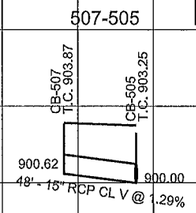



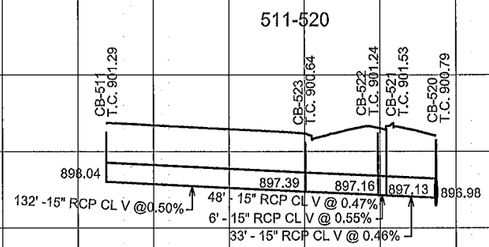



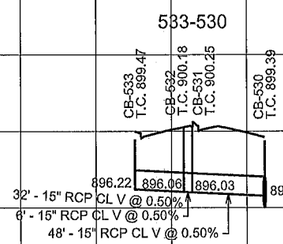



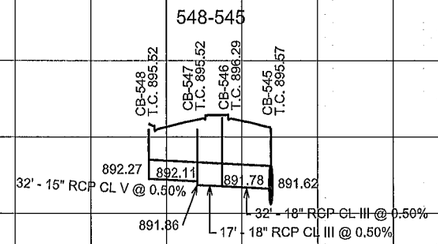



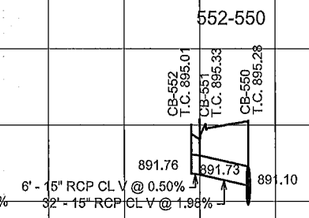



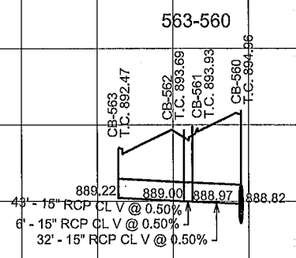



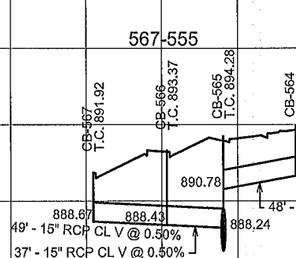



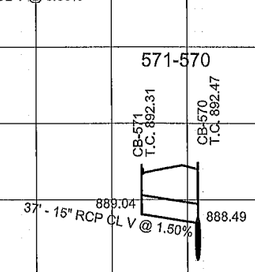



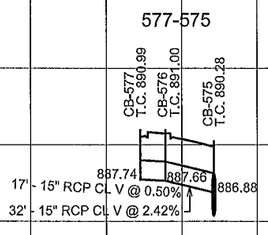



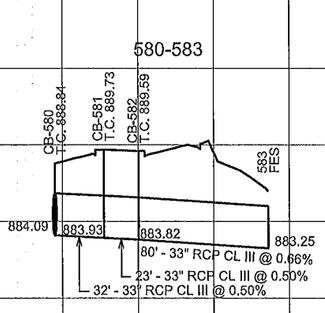



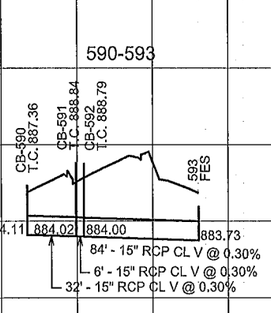



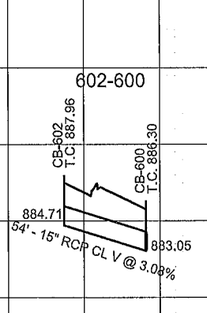



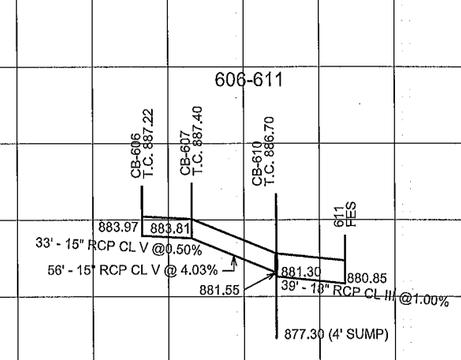




NOTES:
1. LENGTHS GIVEN ARE LENGTH OF PIPE ONLY
2. ELEVATIONS GIVEN ARE TO INVERT OR END OF APRON
3. SLOPES ARE CALCULATED TO END OF APRON (WHEN APPLICABLE)



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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgdy

DATE: 5/23/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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C.P. 11-25

DRAINAGE LEADS

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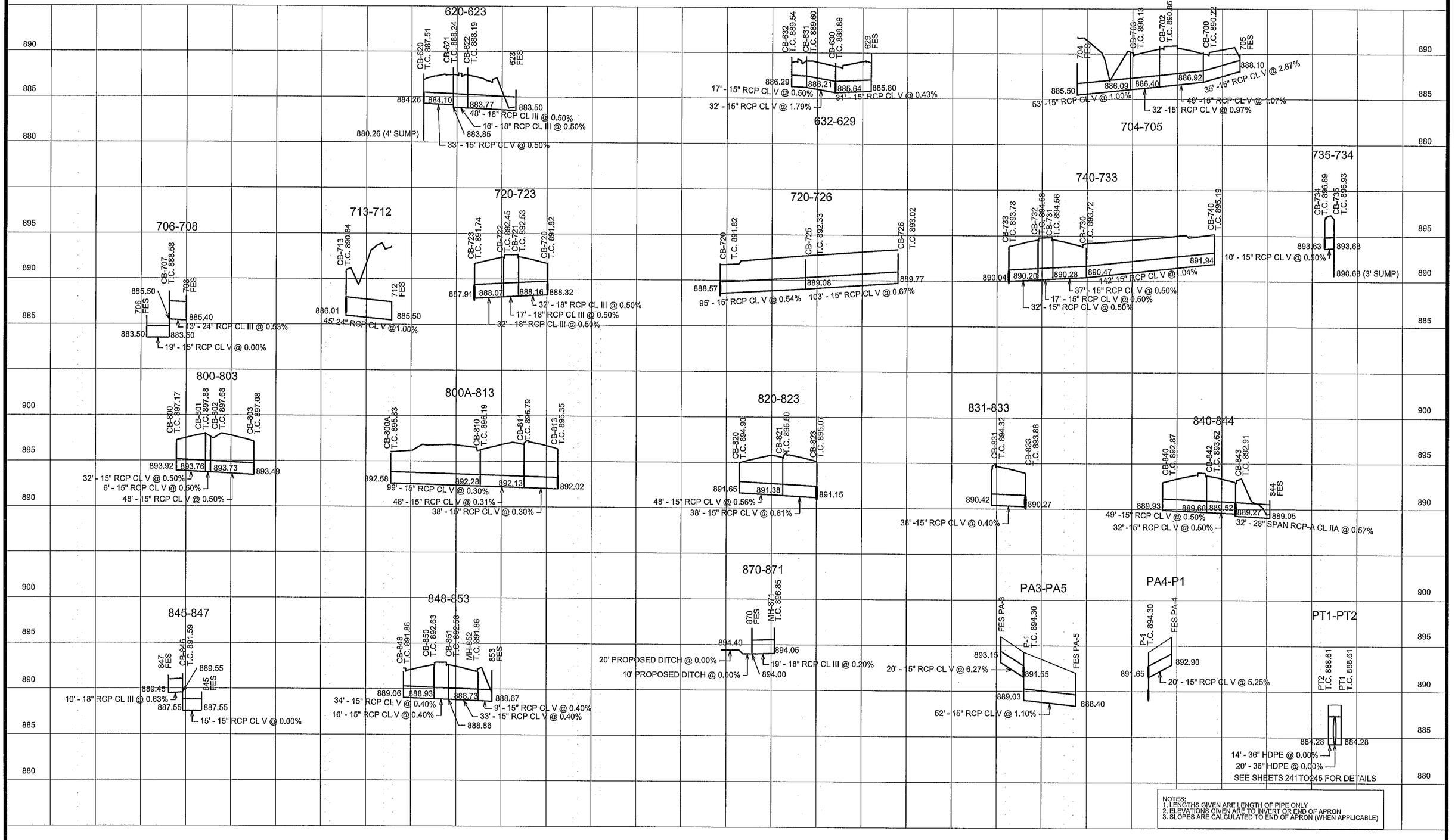




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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zm Borgerding

DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

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DRAINAGE LEADS

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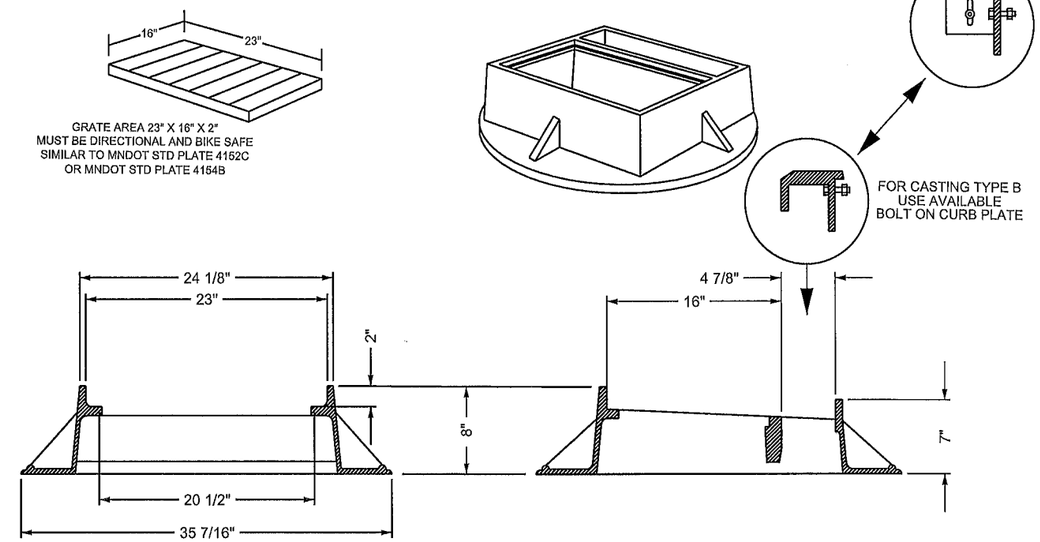
# FRAME RING AND CASTING TYPE A
# FRAME RING AND CASTING TYPE B

TO BE USED FOR MEDIAN CATCH BASINS

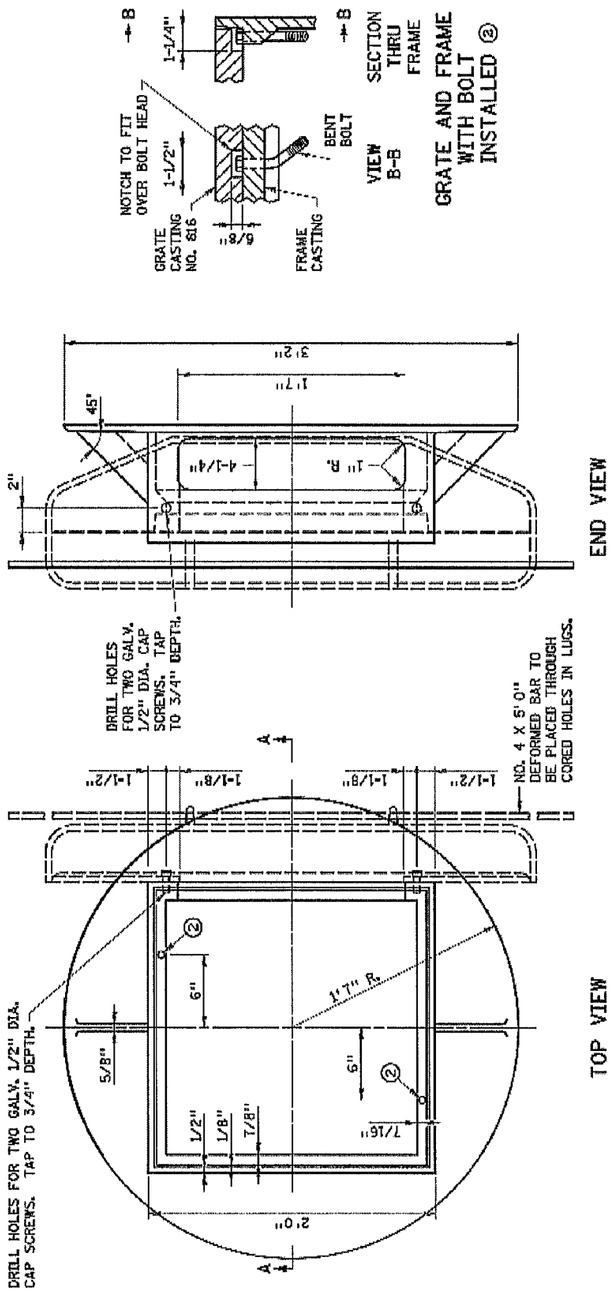



| CASTING TYPE | CASTING HEIGHT (FT) | | | |
|---|---|---|---|---|
| A | 0.7500 | | MEDIAN BOX | CB |
| B | 0.7500 | | MEDIAN NO BOX | CB |
| C | 0.7500 | | OUTER BOX | CB |
| D | 0.7500 | | OUTER NO BOX | CB |
| E | 0.3333 | | BEEHIVE | BH |
| F | 0.7500 | | MANHOLE | MH |

FOR FRAME CASTING FOR TYPE E & F SEE MNDOT STD PLATE 4101D
FOR GRATE CASTING TYPE E SEE S MNDOT STD PLATE 4140D "CONCAVE"
FOR GRATE CASTING TYPE F SEE S MNDOT STD PLATE 4110F

FOR FRAME CASTING FOR TYPE G SEE MNDOT STD PLATE 4126F
SEE MNDOT STD PLATE 4161F FOR CURB BOX ON G TYPE CASTING
FOR TYPE G CASTINGS USE GRATE NO 810 - MNDOT STD PLATE 4149C






GRATE FRAME CASTING TYPE C & D

## CASTINGS USED FOR ASSEMBLY

GRATE NO. 816 (MNDOT STD PLATE 4154B)

CURB BOX ① NO. 823A (MNDOT STD PLATE 4160) OR

## NOTES:

USE 1/4" FILLETS IN ALL CORNERS.
SEE MNDOT STANDARD PLATE 7111 FOR INSTALLATION REQUIREMENTS.
① APPLIES TO DESIGN B OR V CURB AND CURB AND GUTTER.
①② AT LOCATIONS INDICATED IN TOP VIEW, PROVIDE 9/16" DIA. HOLES WHEN GRATE NO 816 (MNDOT STD PLATE 4154) IS USED WITH THIS FRAME. FIELD PLACE 1/2" DIA X 4" LONG GALV BOLT IN UP STREAM SIDE AND BENT UNDERSIDE TO PREVENT REMOVAL. THIS WILL PREVENT GRATE NO. 816 (MNDOT STD PLATE 4154) FROM BEING PLACED IN WRONG AND NOT BEING BICYCLE SAFE

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PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zachary Borgerding
DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY NJD DATE 10/31/13
DESIGN BY NJD DATE 10/31/13
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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DRAINAGE DETAILS

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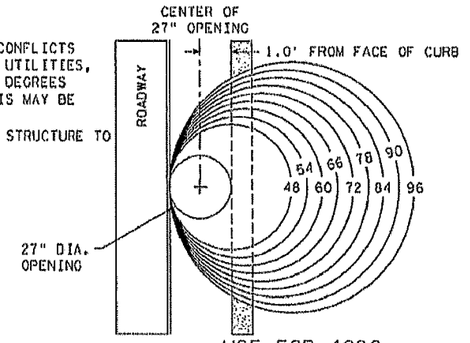
TABLE A

| 4020 DIAMETER | *OFFSET FEET |
|---|---|
| 48" | 0.79 |
| 54" | 1.08 |
| 60" | 1.29 |
| 66" | 1.58 |
| 72" | 1.79 |
| 78" | 2.08 |
| 84" | 2.29 |
| 90" | 2.58 |
| 96" | 2.88 |
| 102" | 3.17 |
| 108" | 3.29 |
| 120" | 3.79 |

WHERE THE 4020 DIAMETER CONFLICTS WITH OTHER STRUCTURES OR UTILITIES, ROTATE THE STRUCTURE 180 DEGREES TO PROVIDE CLEARANCE. THIS MAY BE ADJUSTED IN THE FIELD.

* OFFSET IS FROM CENTER OF STRUCTURE TO CENTER OF OPENING.



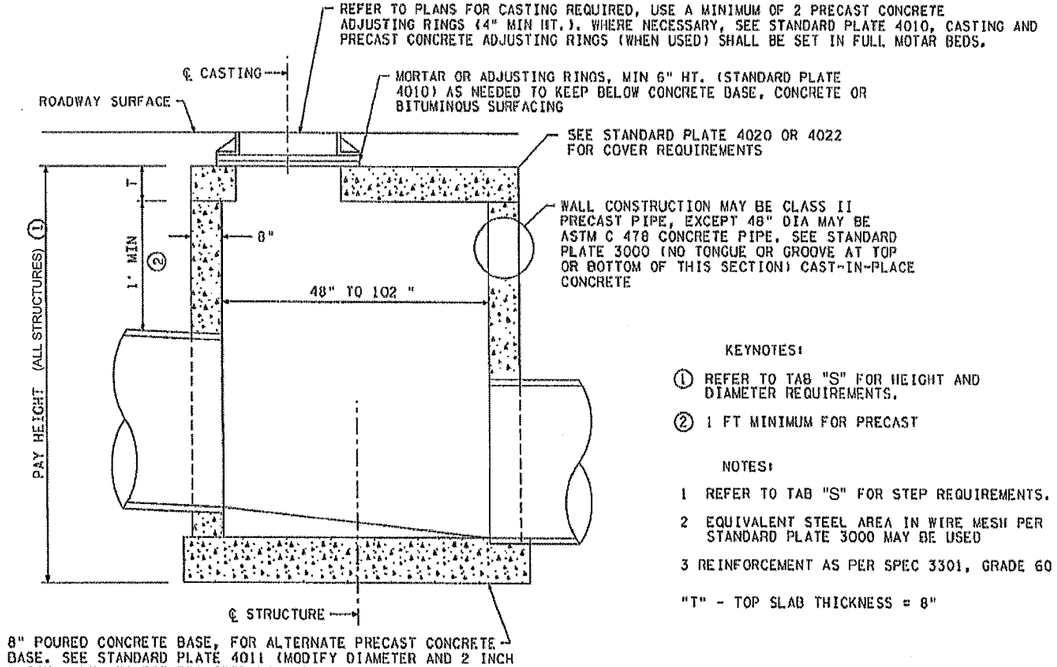

USE FOR 4020

THE FOLLOWING PLACEMENT LOCATIONS SHALL BE USED WITH CONCRETE CURB AND GUTTER.

1. THE CENTER OF GRATE STATION AND OFFSET LOCATION IS GIVEN IN THE DRAINAGE TABULATION
2. THE OFFSET FROM THE CENTER OF STRUCTURE TO THE CENTER OF GRATE IS GIVEN IN TABLE "A" TO THE LEFT FOR 4020 STRUCTURES. OFFSET FOR 4005 STRUCTURES IS 0.9 FT.
3. THE CENTER OF OPENING IS 1.0' TOWARD THE ROADWAY FROM THE FACE OF CURB.
4. THE STRUCTURES THAT HAVE STEPS SHALL BE LOCATED ON THE ROADSIDE OF THE 27" OPENING AND MUST BE EASILY ACCESSIBLE. THE STEP LOCATION MAY NEED TO BE ADJUSTED IF THERE IS A LARGE PIPE DIRECTLY BELOW THE OPENING.

## STRUCTURE LOCATION

NO SCALE




KEYNOTES:

① REFER TO TAB "S" FOR HEIGHT AND DIAMETER REQUIREMENTS.

② 1 FT MINIMUM FOR PRECAST

NOTES:

1 REFER TO TAB "S" FOR STEP REQUIREMENTS.

2 EQUIVALENT STEEL AREA IN WIRE MESH PER STANDARD PLATE 3000 MAY BE USED

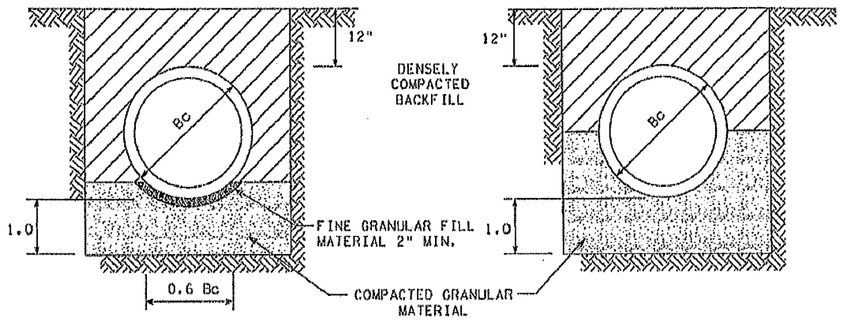
3 REINFORCEMENT AS PER SPEC 3301, GRADE 60

"T" - TOP SLAB THICKNESS = 8"

VIEW OF INSTALLATION

## DRAINAGE STUCTURE DESIGN 4020

NO SCALE




SHAPED SUBGRADE WITH GRANULAR FOUNDATION (FOR GRANULAR SOILS)

GRANULAR FOUNDATION FOR COHESIVE SOILS

## CLASS B

$B_f$ = 1.9

LEGEND

$B_C$ = OUTSIDE DIAMETER
H = BACKFILL COVER ABOVE TOP OF PIPE
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

NOTES:

FOR CLASS B BEDDINGS, SUBGRADES SHOULD BE EXCAVATED OR OVER EXCAVATED, IF NECESSARY, SO A UNIFORM FOUNDATION FREE OF PROTRUDING ROCKS MAY BE PROVIDED.

PIPE BEDDING FOR PIPE LAYED IN TRENCHES WHERE UNSUITABLE SOILS ARE ENCOUNTERED IS INCIDENTAL.

A MINIMUM OF ONE FOOT OF GRANULAR FOUNDATION SHALL BE PLACED BELOW BOTTOM OF PIPE, SEE SPECIFICATION.

## TRENCH BEDDING CLASS B

NO SCALE



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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

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S.P. 197-020-005
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DRAINAGE DETAILS

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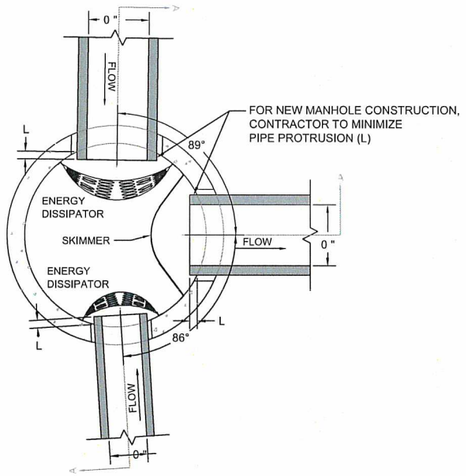
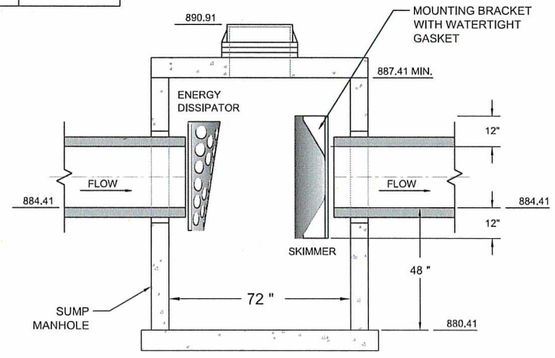
## PLAN VIEW



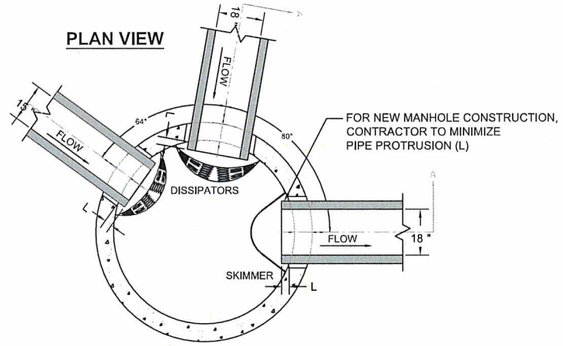

| COMPONENT | PART # |
|---|---|
| ENERGY DISSIPATOR | D15 |
| ENERGY DISSIPATOR | D24.58 |
| SKIMMER | S24.56 |

## CROSS SECTION AA



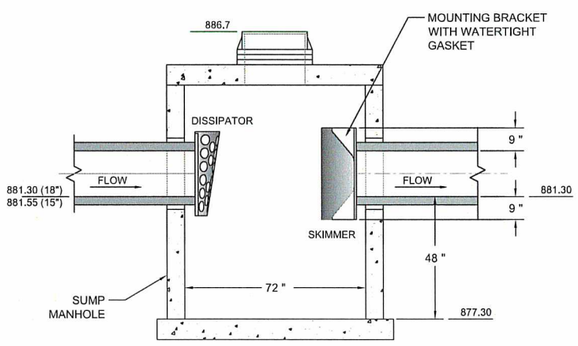

CB 415: BAFFLE STRUCTURE DETAIL

## PLAN VIEW



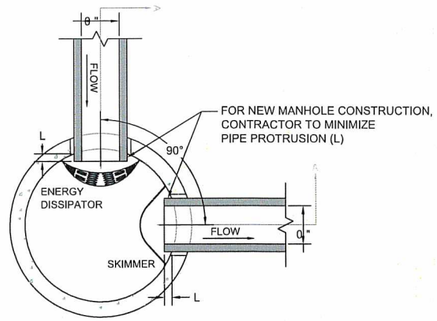

| COMPONENT | PART # |
|---|---|
| DISSIPATOR | D15 |
| DISSIPATOR | D18.48 |
| SKIMMER | S18.56 |

## CROSS SECTION AA



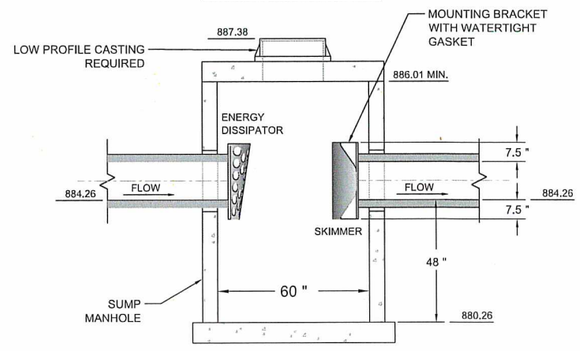

CB 610: BAFFLE STRUCTURE DETAIL

## PLAN VIEW




| COMPONENT | PART # |
|---|---|
| ENERGY DISSIPATOR | D15 |
| SKIMMER | S15.56 |

## CROSS SECTION AA




CB 620: BAFFLE STRUCTURE DETAIL



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|---|---|---|---|---|---|
| | | | | | |

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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

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DRAINAGE DETAILS

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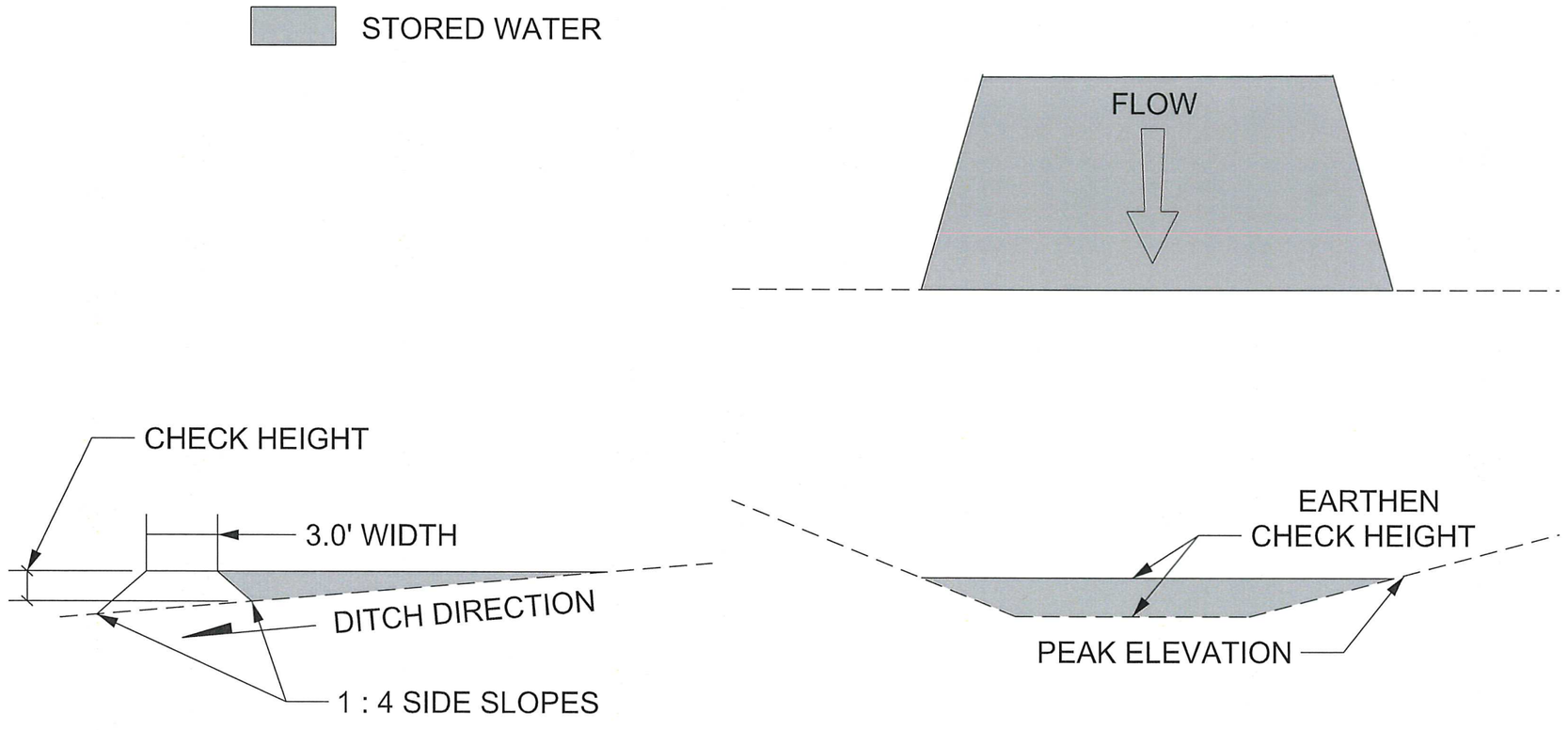
| Alignment | Station | Offset to Center of Berm | Top of Berm | Bottom of Berm |
|---|---|---|---|---|
| CSAH 116 EB | 170+00 | 26.7' | 893.3 | 892.4 |
| CSAH 116 WB | 170+07 | 23.3' | 893.4 | 892.4 |
| CSAH 116 WB | 171+25 | 22.5' | 894.6 | 893.6 |




# EARTHEN DITCH CHECK DETAIL



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|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_DR_DETAILS.dgn 04/12/2016 2:07:19 PM

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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

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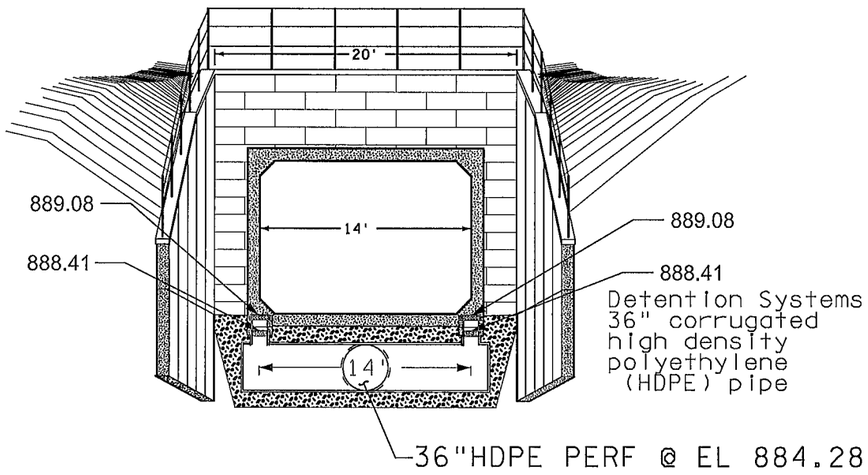
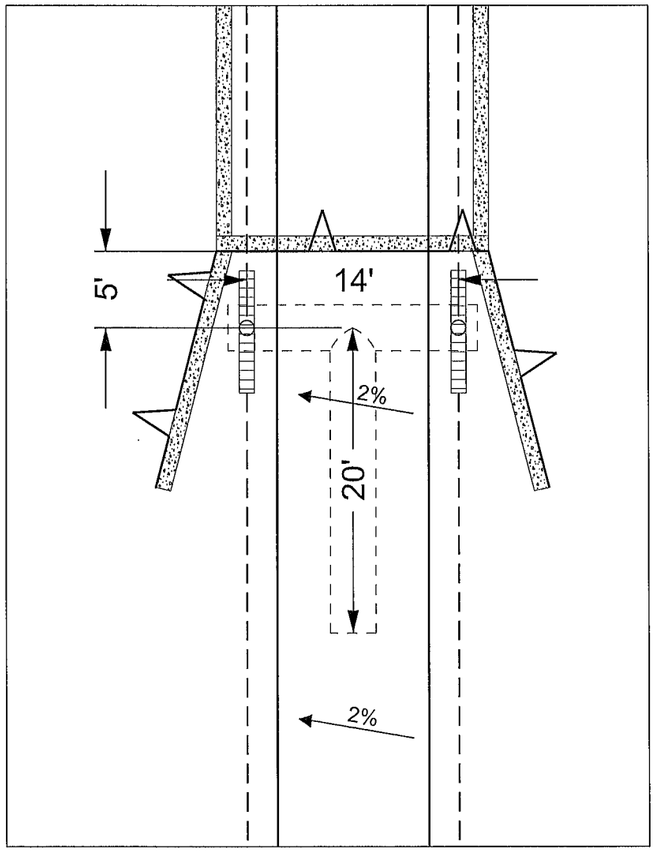
DRAINAGE DETAILS

Sheet 240 of 482 Sheets

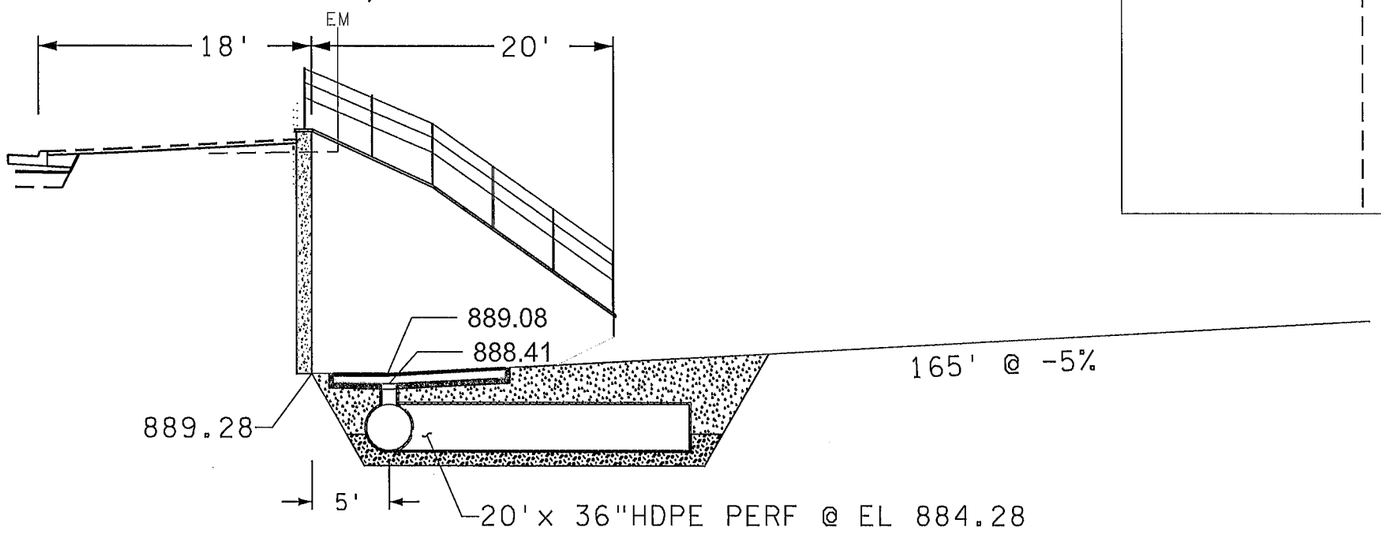
# PEDESTRIAN TUNNEL DRAINAGE SYSTEM

SOUTH SIDE TUNNEL DRAINAGE SYSTEM




TRAIL UNDERPASS C/L
LEB STA. 94+57, LWB 94+79.70



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DATE: 5/3/16 LICENSE NO. 52598

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ANOKA COUNTY
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DRAINAGE DETAILS

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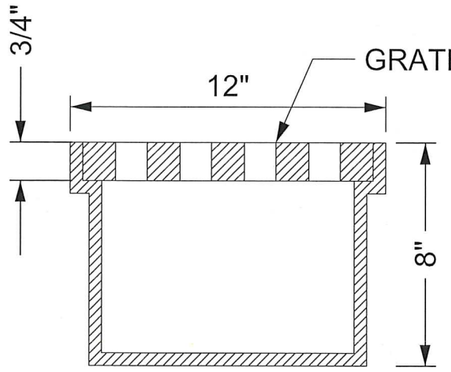
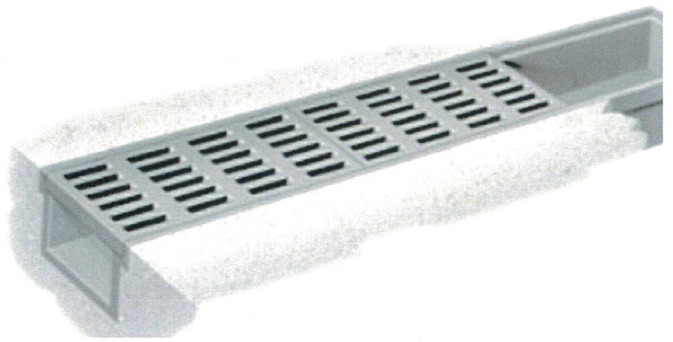
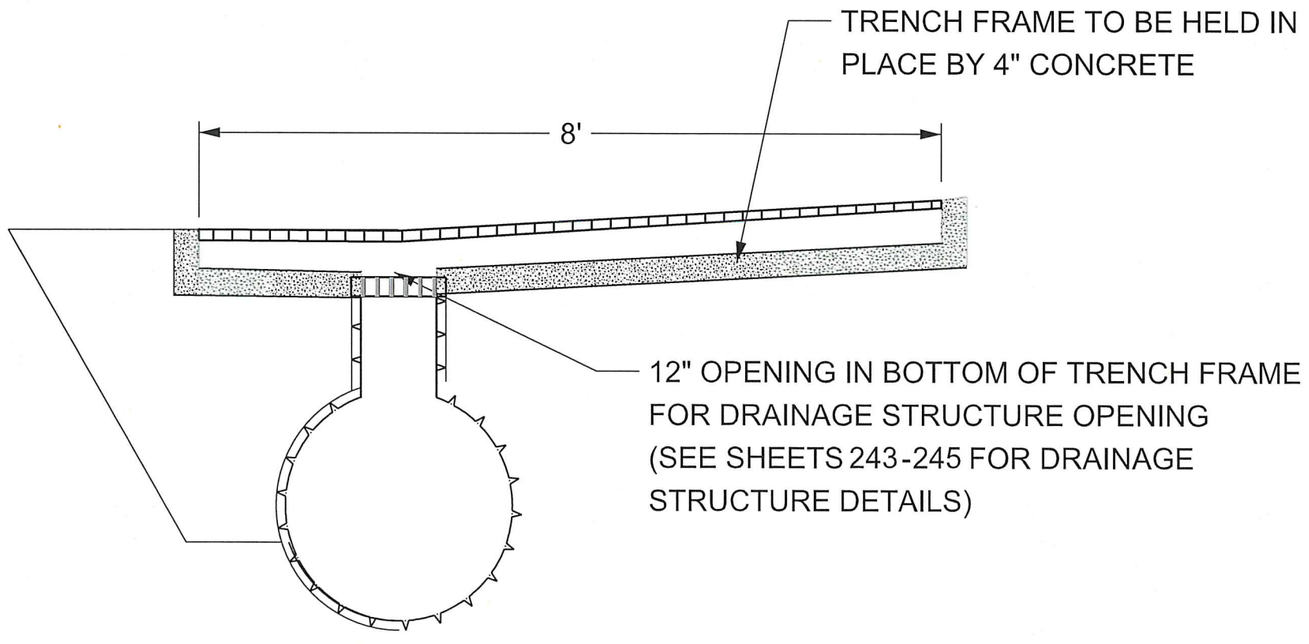
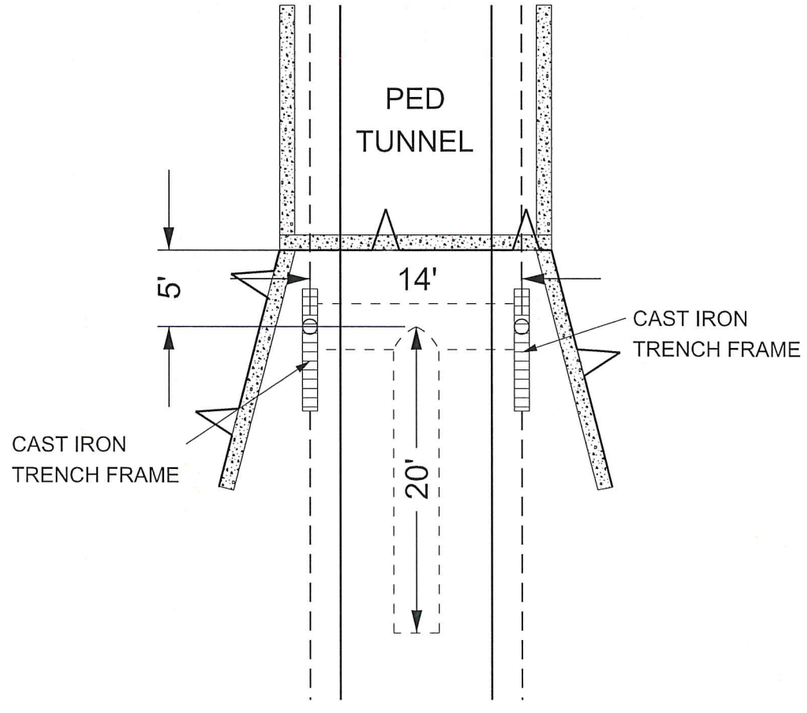
# CAST IRON TRENCH FRAME WITH GRATED COVER DETAIL





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DRAINAGE DETAILS

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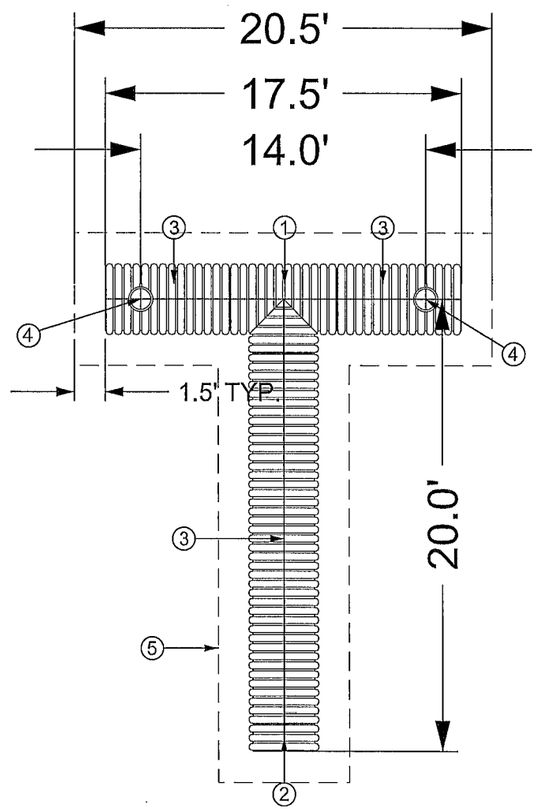
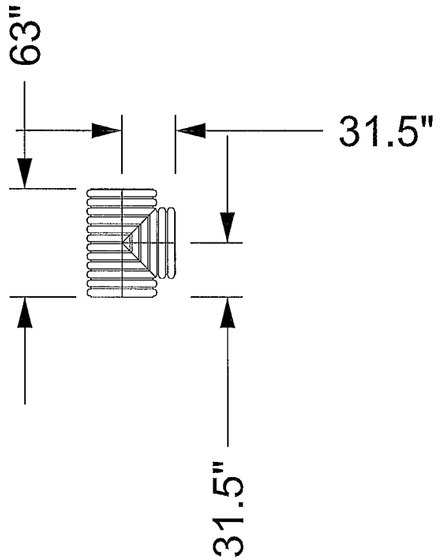
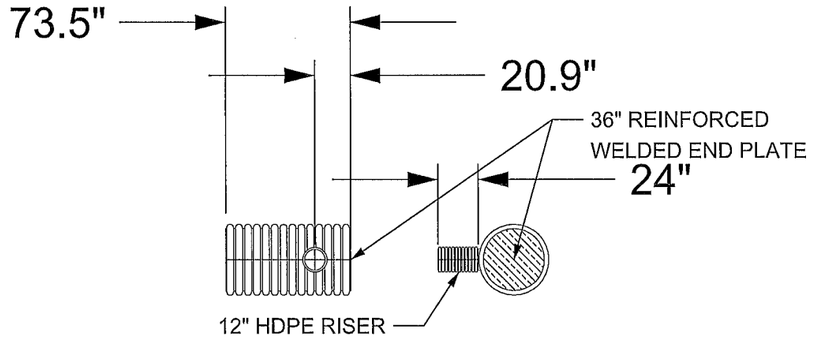
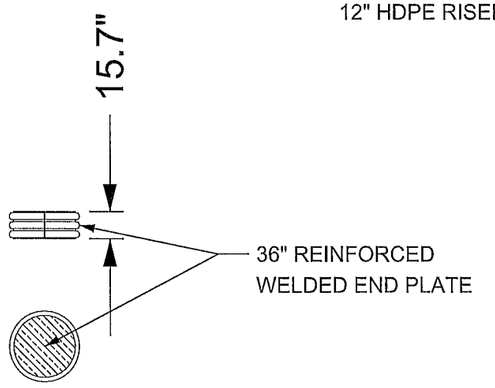
# PEDESTRIAN TUNNEL DRAINAGE SYSTEM

| BILL OF MATERIALS | | | | |
|---|---|---|---|---|
| EXTRA COMPONENTS NOT LISTED HEREIN, MAY BE NECESSARY TO COMPLETE THE CONSTRUCTION OF THE SYSTEM | | | | |
| **ITEM** | **QTY** | **DESCRIPTION** | **MATERIAL** | **NOTE** |
| 1 | 1 | 36" SINGLE MANIFOLD TEE | HDPE | SEE DETAIL |
| 2 | 1 | 36" END CAP | HDPE | SEE DETAIL |
| 3 | 3 | 36" PIPE STICK: PERF | HDPE | FIELD CUT |
| | 4 | 36" SPLIT COUPLER | HDPE | NOT SHOWN |
| 4 | 2 | 12" INLINE DRAIN | VARIES | SEE DETAIL |
| 5 | 1 | GEOTEXTILE FABRIC | AS SPECIFIED | AS NEEDED |



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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DRAINAGE DETAILS

Sheet 243 of 482 Sheets

# PEDESTRIAN TUNNEL DRAINAGE SYSTEM SPECIFICATIONS

## RETENTION/DETENTION PIPE SYSTEM SPECIFICATION

SCOPE
THIS SPECIFICATION DESCRIBES ADS RETENTION/DETENTION PIPE SYSTEMS FOR USE IN NON-PRESSURE GRAVITY-FLOW STORM WATER COLLECTION SYSTEMS UTILIZING A CONTINUOUS OUTFALL STRUCTURE.

PIPE REQUIREMENTS
RETENTION/DETENTION SYSTEMS MAY UTILIZE ANY OF THE VARIOUS PIPE PRODUCTS BELOW:

- N-12® STIB PIPE (PER AASHTO) SHALL MEET AASHTO M 294, TYPE S OR ASTM F2306
- N-12® STIB PIPE (PER ASTM F2648) SHALL MEET ASTM F2648
- N-12® MEGA GREEN™ STIB SHALL MEET ASTM F2648

ALL PRODUCTS SHALL HAVE A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS.

JOINT PERFORMANCE
PLAIN END / SOIL-TIGHT (STIB):
STIB PIPE SHALL BE JOINED USING A BELL AND SPIGOT JOINT. THE BELL AND SPIGOT JOINT SHALL MEET THE SOIL-TIGHT REQUIREMENTS OF ASTM F2306 AND GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.

PLAIN END PIPE AND FITTINGS CONNECTIONS SHALL BE JOINED WITH COUPLING BANDS COVERING AT LEAST TWO FULL CORRUGATIONS ON EACH END OF THE PIPE. GASKETED SOIL-TIGHT COUPLING BAND CONNECTIONS SHALL INCORPORATE A CLOSED-CELL SYNTHETIC EXPANDED RUBBER GASKET MEETING THE REQUIREMENTS OF ASTM D1056 GRADE 2A2. GASKETS, WHEN APPLICABLE, SHALL BE INSTALLED BY THE PIPE MANUFACTURER.

FITTINGS
FITTINGS SHALL CONFORM TO ASTM F2306 AND MEET JOINT PERFORMANCE INDICATED ABOVE FOR FITTINGS CONNECTIONS. CUSTOM FITTINGS ARE AVAILABLE AND MAY REQUIRE SPECIAL INSTALLATION CRITERION.

INSTALLATION
INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND ADS RECOMMENDED INSTALLATION GUIDELINES, WITH THE EXCEPTION THAT MINIMUM COVER IN NON-TRAFFIC AREAS FOR 12-60 INCH (300-1500 mm) DIAMETERS SHALL BE 1 FT (0.3 m). MINIMUM COVER IN TRAFFICKED AREAS FOR 12-36 INCH (300-900 mm) DIAMETERS SHALL BE 1 FT (0.3 m) AND FOR 42-60 INCH (1050-1500 mm) DIAMETERS, THE MINIMUM COVER SHALL BE 2 FT (0.6 m). BACKFILL SHALL CONSIST OF CLASS I (COMPACTED) OR CLASS II (MINIMUM 90% SPD) MATERIAL, WITH THE EXCEPTION THAT 60 INCH (1500 mm) SYSTEMS SHALL USE CLASS I MATERIAL ONLY. MINIMUM COVER HEIGHTS DO NOT ACCOUNT FOR PIPE BUOYANCY. REFER TO ADS TECHNICAL NOTE 5.05 "PIPE FLOTATION" FOR BUOYANCY DESIGN CONSIDERATIONS. MAXIMUM COVER OVER SYSTEM USING STANDARD BACKFILL IS 8 FT (2.4 m); CONTACT A REPRESENTATIVE WHEN MAXIMUM FILL HEIGHT MAY BE EXCEEDED. ADDITIONAL INSTALLATION REQUIREMENTS ARE PROVIDED IN THE DRAINAGE HANDBOOK SECTION 6 "RETENTION/DETENTION".

NOTES:

1) ALL ELEVATIONS, DIMENSIONS AND LOCATIONS OF RISERS, INLETS AND OUTLETS, SHALL BE VERIFIED BY THE ENGINEER PRIOR TO RELEASING FOR FABRICATION.
2) IN SITUATIONS WHERE A FINE-GRAINED BACKFILL MATERIAL IS USED ADJACENT TO THE PIPE SYSTEM, AND ESPECIALLY INVOLVING GROUND WATER CONDITIONS, CONSIDERATION SHOULD BE GIVEN TO THE USE OF GASKETED PIPE JOINTS. AT THE VERY LEAST THE PIPE JOINTS SHOULD BE WRAPPED IN A SUITABLE, NON-WOVEN GEOTEXTILE FABRIC TO PREVENT INFILTRATION OF FINES INTO THE PIPE SYSTEM.
3) CONSIDERATION FOR CONSTRUCTION EQUIPMENT LOADS MUST BE TAKEN INTO ACCOUNT.
4) ALL PIPE DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.
5) ALL RISERS TO BE FIELD EXTENDED OR TRIMMED TO FINAL GRADE.



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DRAINAGE DETAILS

## HDPE TYPICAL TRENCH DETAIL

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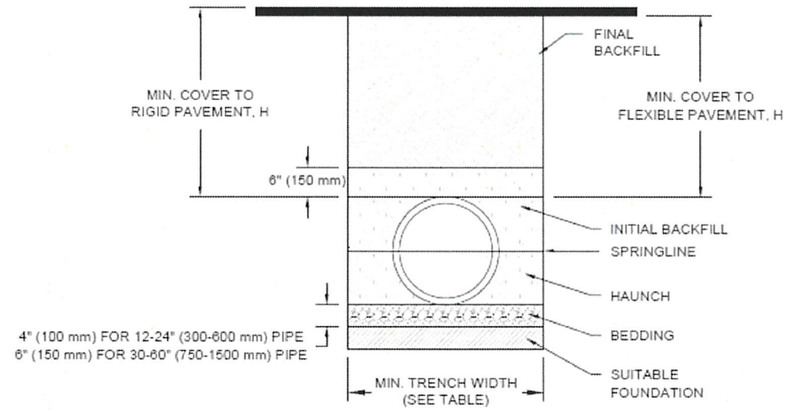



**NOTES:**

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100 mm) FOR 4-24" (100-600 mm); 6" (150 mm) FOR 30-60" (750-900 mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" (150 mm) ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300 mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" (300 mm) UP TO 48" (1200 mm) DIAMETER PIPE AND 24" (600 mm) OF COVER FOR 54-60" (1350-1500 mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

| PIPE DIAM. | MIN. TRENCH WIDTH |
|---|---|
| 4" (100 mm) | 21" (530 mm) |
| 6" (150 mm) | 23" (580 mm) |
| 8" (200 mm) | 26" (660 mm) |
| 10" (250 mm) | 28" (710 mm) |
| 12" (300 mm) | 30" (750 mm) |
| 15" (375 mm) | 34" (860 mm) |
| 18" (450 mm) | 39" (990 mm) |
| 24" (600 mm) | 48" (1200 mm) |
| 30" (750 mm) | 56" (1420 mm) |
| 36" (900 mm) | 64" (1620 mm) |
| 42" (1050 mm) | 72" (1820 mm) |
| 48" (1200 mm) | 80" (2020 mm) |
| 54" (1350 mm) | 88" (2230 mm) |
| 60" (1500 mm) | 96" (2440 mm) |

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

| PIPE DIAM. | SURFACE LIVE LOADING CONDITION | |
|---|---|---|
| | H-25 | HEAVY CONSTRUCTION (75T AXLE LOAD) * |
| 12-48" (300-1200 mm) | 12" (300 mm) | 48" (1200 mm) |
| 54-60" (1350-1500 mm) | 24" (600 mm) | 60" (1500 mm) |

* VEHICLES WITH AXLE LOADS IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

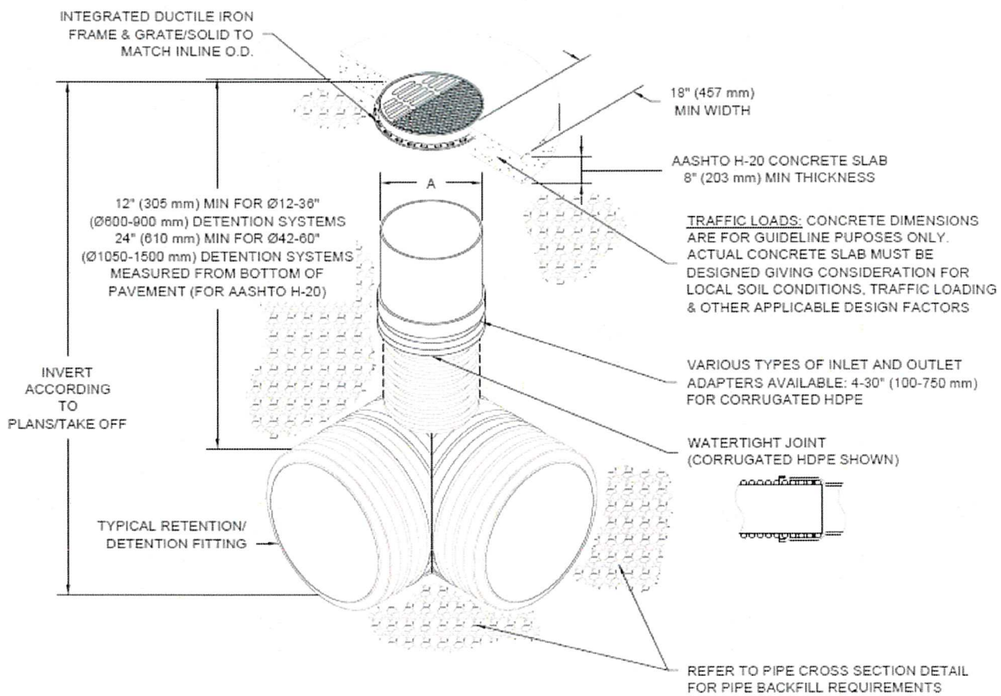
MINIMUM RECOMMENDED COVER BASED ON RAILWAY LOADING CONDITIONS

| PIPE DIAMETER | COOPER E-80** |
|---|---|
| UP TO 24" (600 mm) | 24" (600 mm) |
| 30-36" (750-900 mm) | 36" (900 mm) |
| 42-60" (1050-1500 mm) | 48" (1200 mm) |

** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE.
*** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

## INLINE DRAIN

NTS




## NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE & SDR 35 PVC

| A | PART # | GRATE/SOLID COVER OPTIONS | | |
|---|---|---|---|---|
| 8" (200 mm) | 2708AG | PEDESTRIAN LIGHT DUTY | STANDARD LIGHT DUTY | SOLID LIGHT DUTY |
| 10" (250 mm) | 2710AG | PEDESTRIAN LIGHT DUTY | STANDARD LIGHT DUTY | SOLID LIGHT DUTY |
| 12" (300 mm) | 2712AG | PEDESTRIAN AASHTO H-10 | STANDARD AASHTO H-20 | SOLID AASHTO H-20 |
| 15" (375 mm) | 2715AG | PEDESTRIAN AASHTO H-10 | STANDARD AASHTO H-20 | SOLID AASHTO H-20 |
| 18" (450 mm) | 2718AG | PEDESTRIAN AASHTO H-10 | STANDARD AASHTO H-20 | SOLID AASHTO H-20 |
| 24" (600 mm) | 2724AG | PEDESTRIAN AASHTO H-10 | STANDARD AASHTO H-20 | SOLID AASHTO H-20 |
| 30" (750 mm) | 2730AG | PEDESTRIAN AASHTO H-20 | STANDARD AASHTO H-20 | SOLID AASHTO H-20 |



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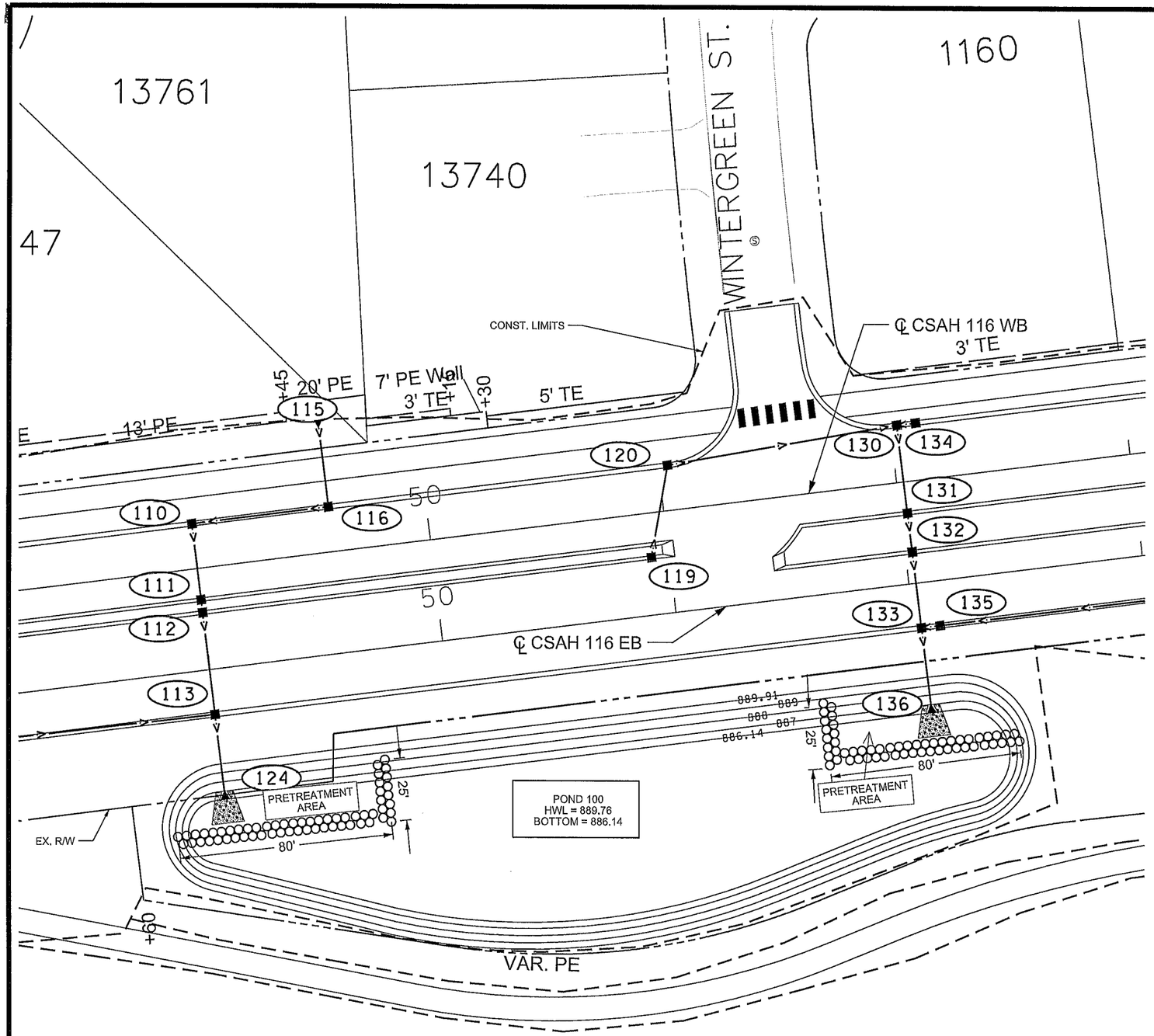
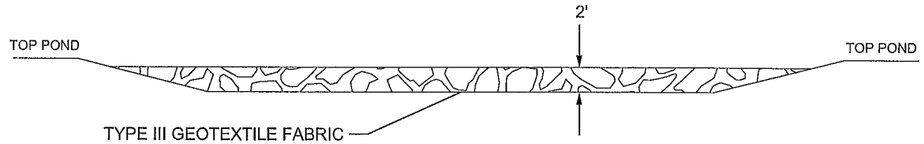
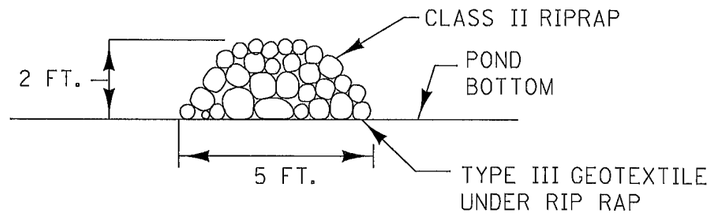
DRAINAGE DETAILS

Sheet 245 of 482 Sheets



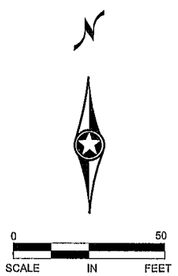

CLASS II RIP RAP AROUND
PRETREATMENT AREAS




POND SIZED TO CONTAIN BACK TO BACK
100 YEAR STORM EVENTS.
DOUBLE INFILTRATION TEST RESULTED IN 15 IN/HR.
INFILTRATION RATE OF 8.5 IN/HR USED IN CALCULATIONS.

NOTE:
ONCE POND GRADING IS COMPLETED, CONTRACTOR SHALL INSTALL SILT FENCE AROUND POND AND KEEP ALL EQUIPMENT OUT OF POND. A POST CONSTRUCTION DOUBLE RING INFILTROMETER TEST ON THE INFILTRATION BASIN WILL BE REQUIRED TO VERIFY THE INFILTRATION RATES USED IN THE CALCULATIONS ARE OBTAINED. INFILTRATION RATE MUST BE GREATER THAN OR EQUAL TO 8.5 IN/HR. THE CCWD SHALL BE NOTIFIED PRIOR TO THE TEST TO WITNESS THE RESULTS. INFILTRATION TESTING SHALL BE INCIDENTAL TO THE POND GRADING.



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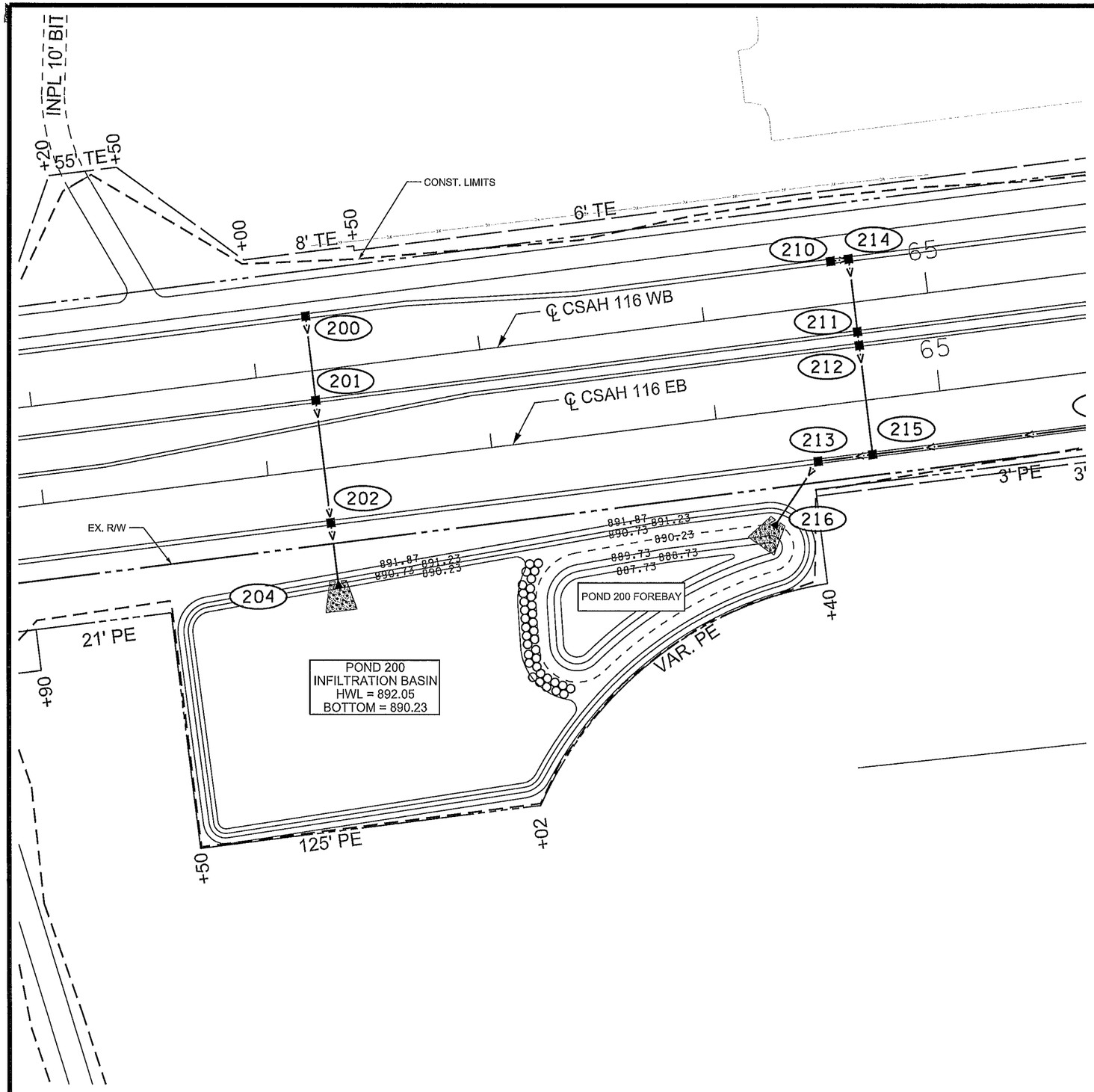
POND GRADING PLAN

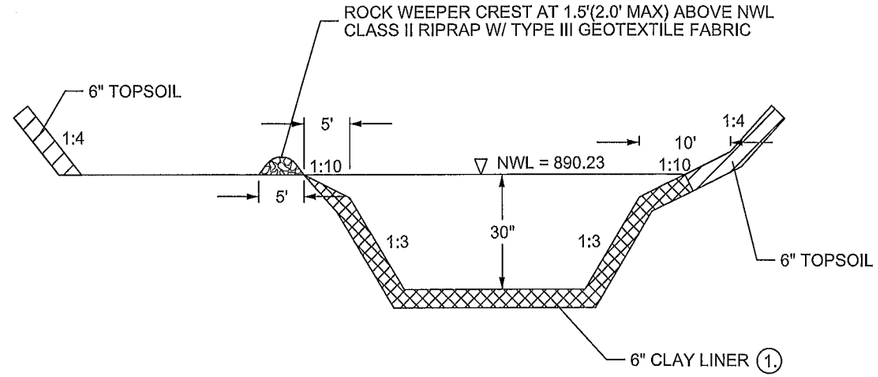
STA 48+00.00 TO 54+00.00

Sheet 246 of 482 Sheets




# POND 200 FOREBAY

NOT TO SCALE




NOTE:

(1.) COMMON BORROW SPECIAL (CV) - SOILS USED WITIN THIS AREA SHALL BE AT LEAST 30% CLAY PARTICLES AS DEFINED IN THE MNDOT GEOTECHNICAL AND PAVEMENT MANUAL. COMPACTION SHALL BE MEASURED BY THE SPECIFIED DENSITY METHOD (100% COMPACTION).

N

0 50

SCALE IN FEET

POND SIZED TO HOLD BACK TO BACK
100 YEAR STORM EVENTS.
DOUBLE RING INFILTRATION TEST RESULTED IN 30 IN/HR.
INFILTRATION RATE OF 15 IN/HR USED FOR CALCULATIONS.

FOREBAY SIZED TO HOLD 0.5" RUNOFF
OVER IMPERVIOUS AREA

NOTE:
ONCE POND GRADING IS COMPLETED, CONTRACTOR SHALL INSTALL SILT FENCE AROUND POND AND KEEP ALL EQUIPMENT OUT OF POND. A POST CONSTRUCTION DOUBLE RING INFILTROMETER TEST ON THE INFILTRATION BASIN WILL BE REQUIRED TO VERIFY THE INFILTRATION RATES USED IN THE CALCULATIONS ARE OBTAINED. INFILTRATION RATE MUST BE GREATER THAN OR EQUAL TO 15 IN/HR. THE CCWD SHALL BE NOTIFIED PRIOR TO THE TEST TO WITNESS THE RESULTS. INFILTRATION TESTING SHALL BE INCIDENTAL TO THE POND GRADING.



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POND GRADING PLAN

STA 61+00.00 TO 65+00.00

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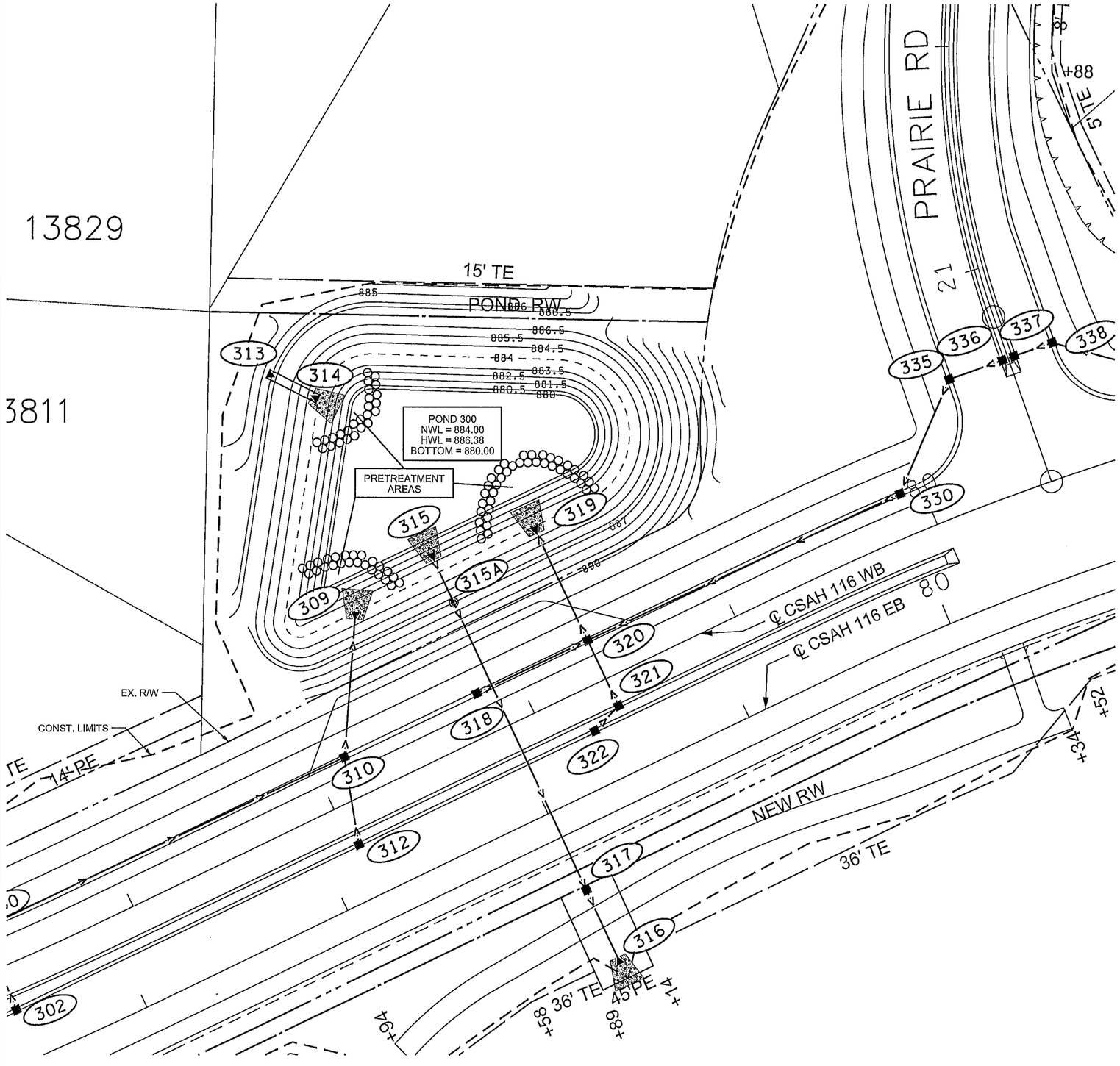
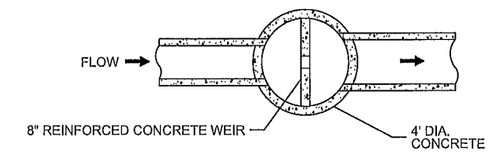
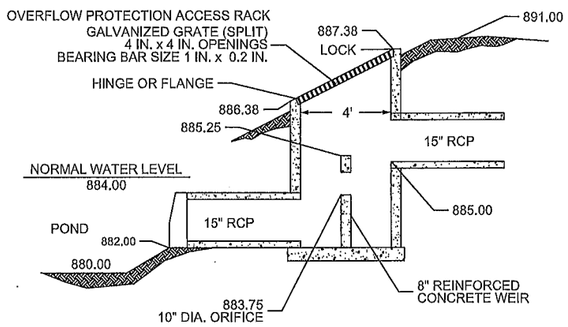
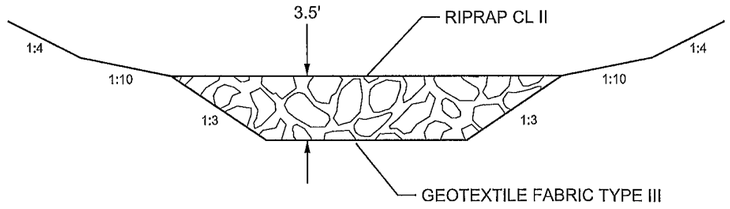


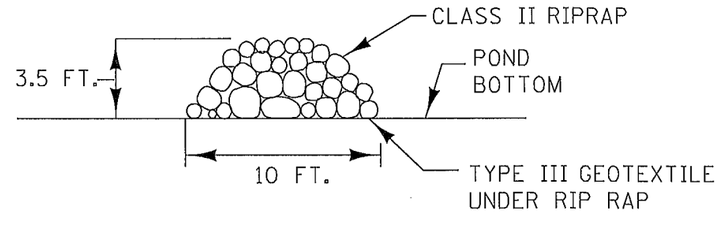

DETAIL : POND 300 OVERFLOW STRUCTURE #315A
DRAINAGE STRUCTURE DESIGN SPECIAL



RIP RAP AROUND
PRETREATMENT AREAS



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POND GRADING PLAN
STA 77+00.00 TO 80+00.00

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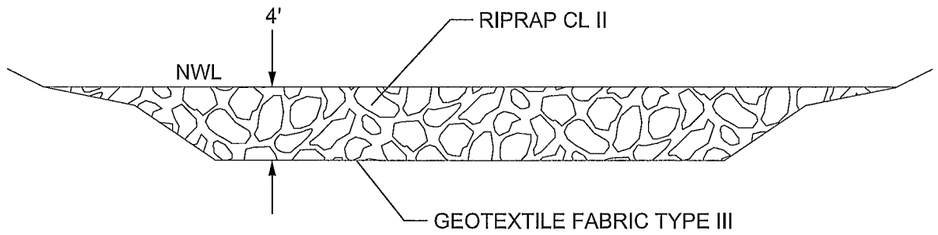
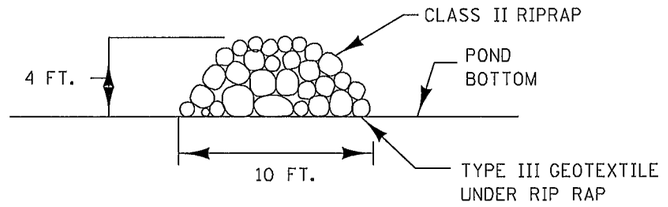
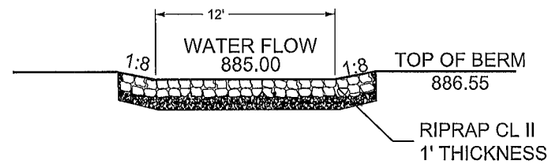
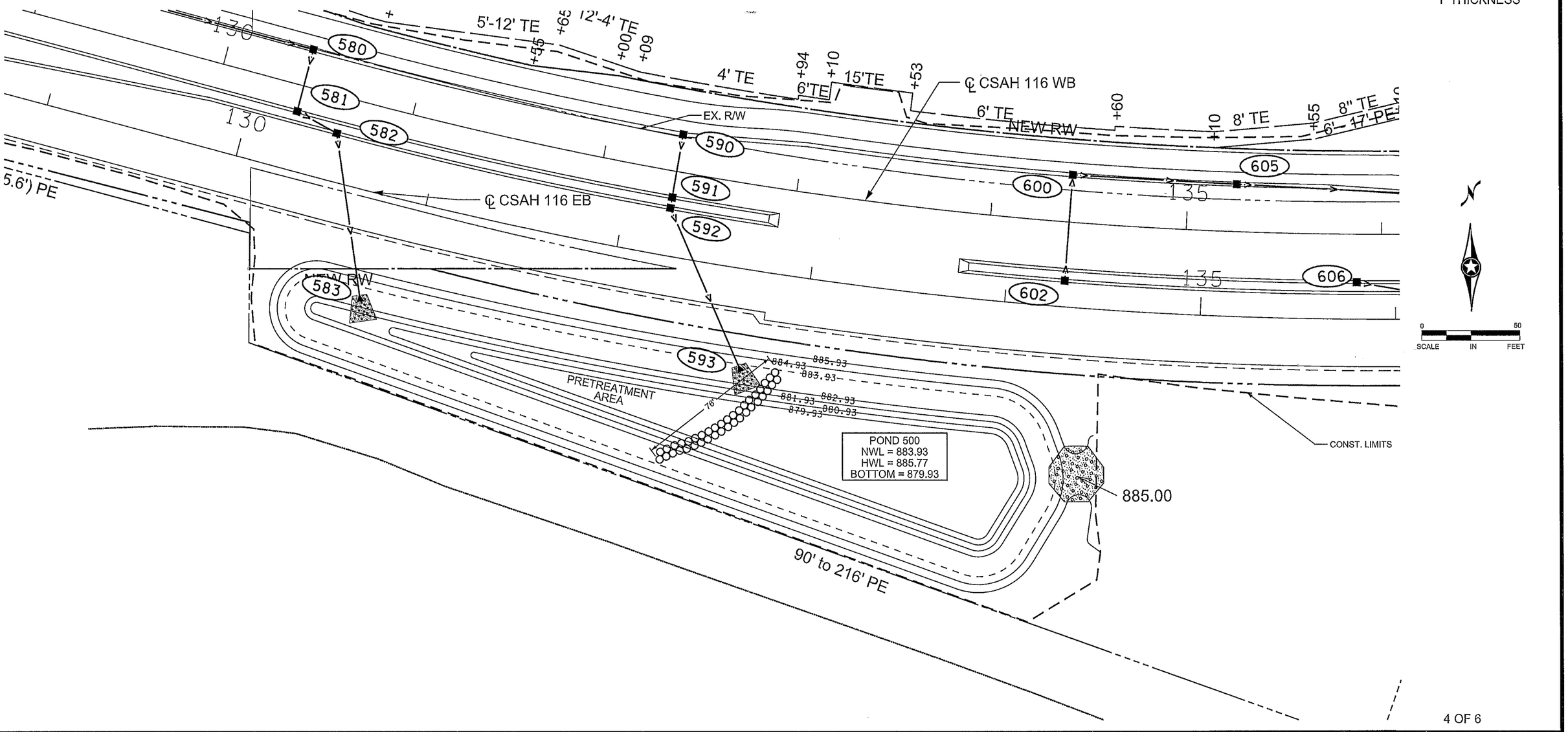
# RIP RAP AROUND PRETREATMENT AREA




POND 500 OVERFLOW TO WETLAND




4 OF 6

| NO | DATE | BY | CKD | APPR | REVISION |
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| | | | | | |

NAME: P:\02-716-15\Plan\0271615_DR_PND5.dgn 04/12/2016 2:07:51 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/13/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

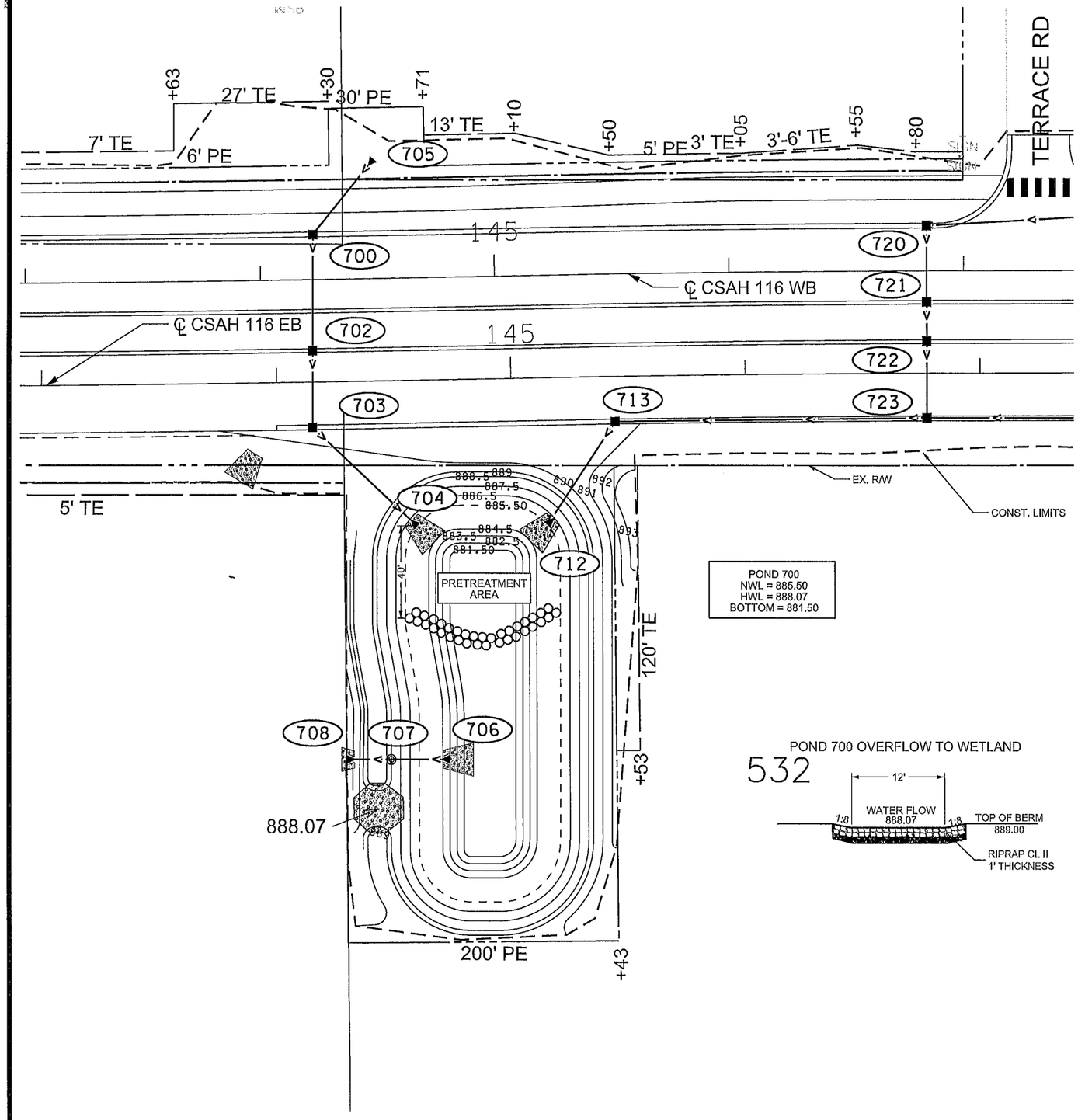
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

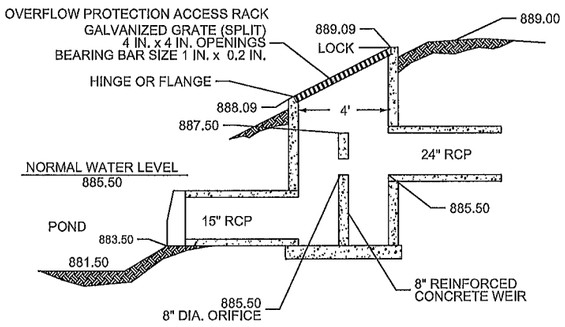
POND GRADING PLAN

STA 129+00.00 TO 136+00.00

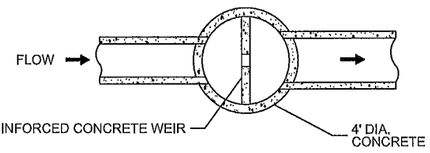
Sheet 249 of 482 Sheets

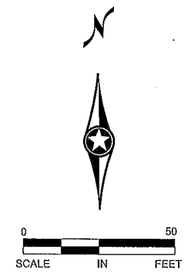



POND 700
NWL = 885.50
HWL = 888.07
BOTTOM = 881.50




DETAIL : POND 700 OVERFLOW STRUCTURE #707
DRAINAGE STRUCTURE DESIGN SPECIAL

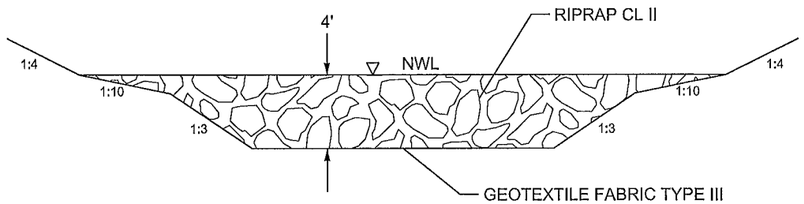


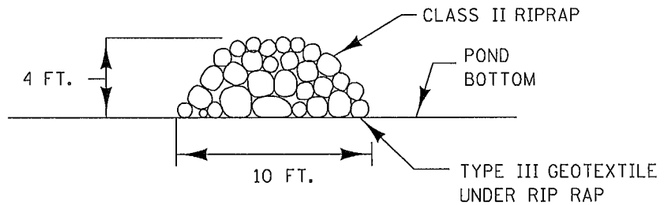




POND 700 OVERFLOW TO WETLAND




RIP RAP AROUND
PRETREATMENT AREA



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NAME: P:\02-716-15\Plan\0271615_DR_PND7.dgn 04/12/2016 2:07:53 PM

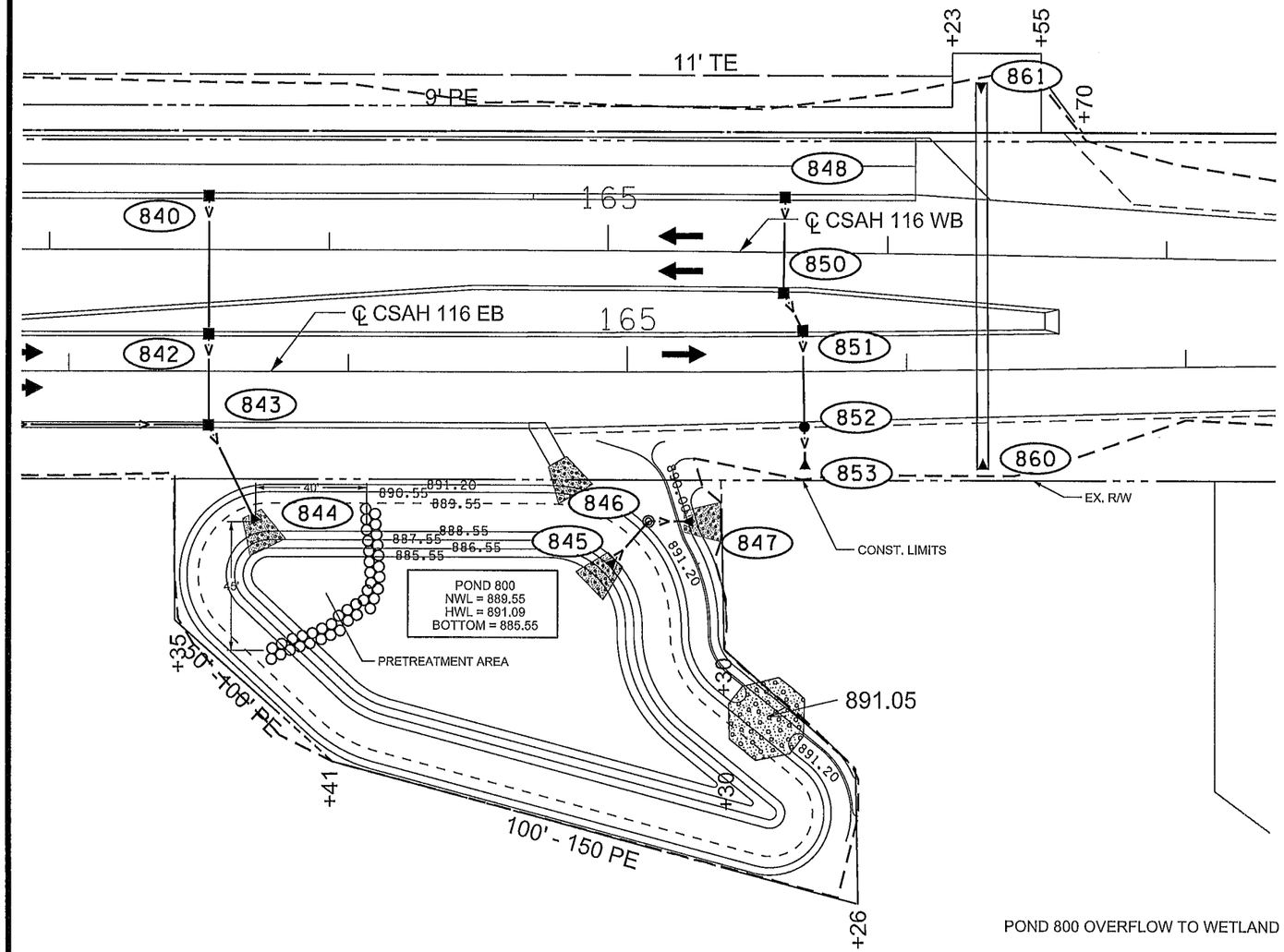
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zac Borgerding
DATE: 5/13/16 LICENSE NO. 52598

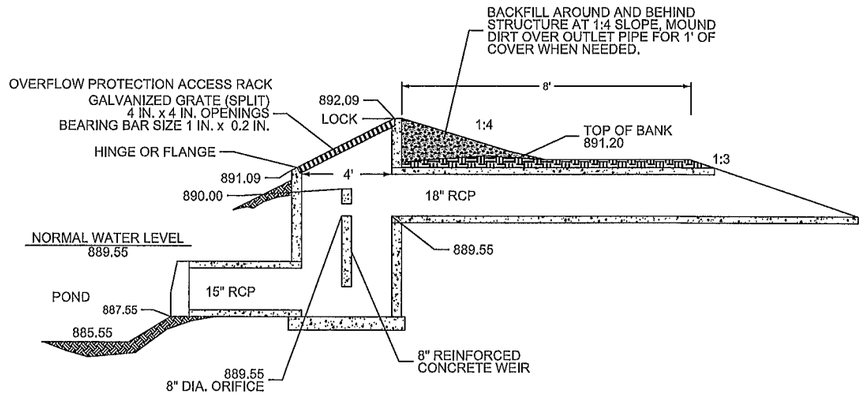
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

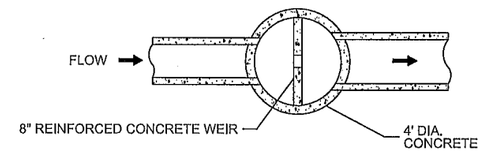
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

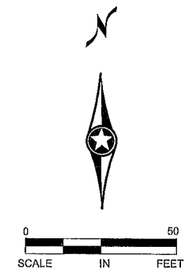
POND GRADING PLAN
STA 143+00.00 TO 147+00.00
Sheet 250 of 482 Sheets



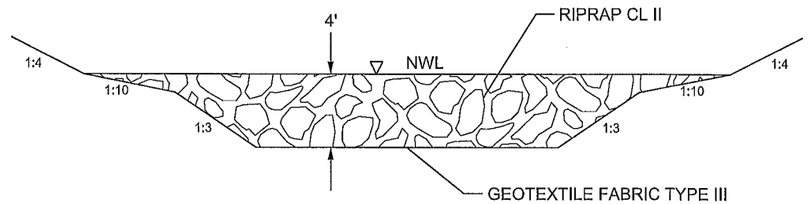




DETAIL : POND 800 OVERFLOW STRUCTURE #846
DRAINAGE STRUCTURE DESIGN SPECIAL

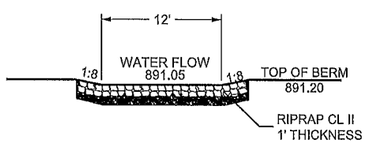


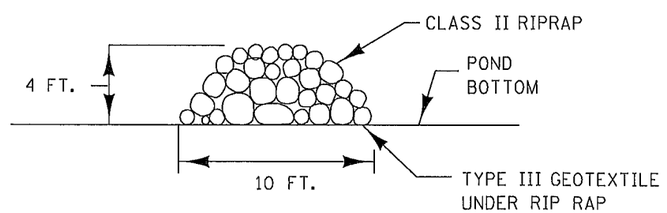




RIP RAP AROUND
PRETREATMENT AREA




POND 800 OVERFLOW TO WETLAND



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NAME: P:\02-716-15\Plan\0271615_DR_PND8.dgn 04/12/2016 2:07:54 PM

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PRINT NAME: ZACHARY BORGERDING

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CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

POND GRADING PLAN

STA 163+00.00 TO 167+00.00

Sheet 251 of 482 Sheets

# STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

## PROJECT LOCATION AND GENERAL INFORMATION

SP 002-716-015 IS LOCATED AT CSAH 116 (BUNKER LAKE BLVD) BETWEEN CRANE ST TO 1340' EAST OF JEFFERSON ST NW IN THE CITIES OF ANDOVER AND HAM LAKE.

THE PROPOSED PROJECT WILL BE TO RECONSTRUCT THE ROADWAY INTO A FOUR LANE DIVIDED ROADWAY WITH TURN LANES AT ALL PUBLIC STREETS. IN ADDITION, A TRAIL WILL BE BUILT ALONG THE COORIDOR AND NEW DRAINAGE WILL BE CONSTRUCTED CONSISTING OF A STORM SEWER SYSTEM, GRIT CHAMBERS, NURP PONDS, AND INFILTRATION PONDS. THE RECEIVING WATERS WILL LEAVE THE SITE AT TWO LOCATIONS. THE FIRST LOCATION IS BUNKER LAKE. WATER WILL GET THERE THREE WAYS. FIRST, A PORTION OF THE WATER WILL BE COLLECTED BY THE STORM SEWER SYSTEM AND SENT TO A NURP POND AT THE NW CORNER OF THE PRAIRIE/CSAH116 INTERSECTION. AFTER TREATMENT THE WATER IS SENT ACROSS CSAH 116 TO BUNKER LAKE. SECOND, A PORTION OF THE WATER WILL BE COLLECTED BY THE STORM SEWER SYSTEM, TREATED BY A GRIT CHAMBER, AND THEN SENT TO BUNKER LAKE. LASTLY, A PORTION OF THE WATER WILL RUN OFF OF THE ROADWAY, AND WILL BE TREATED BY THE ROADSIDE BUFFER ZONE BEFORE GETTING TO BUNKER LAKE. THE SECOND LOCATION WATER LEAVES THE SITE IS AT COUNTY DITCH 23. WATER GETS TO THE DITCH IN TWO WAYS. THE FIRST IS THE THE WATER IS COLLECTED BY THE STORM SEWER SYSTEM, THEN SENT TO A NURP POND, WHERE IT IS TREATED, AND RELEASED TO FLOW TO THE DITCH. THE SECOND WAY IS THAT THE WATER IS COLLECTED BY THE STORM SEWER SYSTEM, TREATED BY A GRIT CHAMBER, AND THEN SENT TO THE DITCH. THE DITCH WILL THEN ULTIMATELY FLOW TO COON CREEK. ON THE EAST END OF THE PROJECT, RUNOFF EVENTUALLY ENDS UP IN EXISTING WETLANDS TWO WAYS. WATER FROM WEST OF THE WETLANDS FLOW TO A NURP POND WHERE IT IS TREATED AND OUTLETS TO THE WETLANDS. WATER EAST OF THE WETLANDS FLOW VIA ROADSIDE DITCHES, CULVERTS, AND CONTROL STRUCTURES TO THE WETLANDS .

THIS PROJECT WILL IMPACT 51.94 ACRES OF SOILS AND CREATE POTENTIAL FOR SEDIMENT DISCHARGE FROM THE SITE.

## TRAINING REQUIREMENTS

THE CONTRACTOR SHALL ENSURE COMPLIANCE WITH THE TRAINING REQUIRED IN PART 111.A.2 OF THE GENERAL STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY.

THE INDIVIDUALS TRAINED AND THE TRAINING RECEIVED SHALL BE RECORDED IN THE SWPPP BEFORE THE START OF CONSTRUCTION OR AS SOON AS PERSONNEL FOR THE PROJECT HAVE BEEN DETERMINED.

## LONG TERM OPERATION AND MAINTENANCE

THE STREETS DIVISIONS OF CITIES OF ANDOVER AND HAM LAKE SHALL BE RESPONSIBLE FOR THE LONG TERM OPERATION AND MAINTENANCE OF PERMANENT STORM WATER MANAGEMENT.

| STORMWATER BMP'S | | |
|---|---|---|
| LOCATION | BMP | MAINTENANCE RESPONSIBILITY |
| POND 100 | MICROPOOL | STREETS DIVISION OF ANDOVER |
| POND 200 | FOREBAY | STREETS DIVISION OF ANDOVER |
| POND 300 | MICROPOOLS | STREETS DIVISION OF ANDOVER |
| NETWORK 400 | GRIT CHAMBER | STREETS DIVISION OF ANDOVER |
| POND 500 | MICROPOOL | STREETS DIVISION OF HAM LAKE |
| NETWORK 500 | GRIT CHAMBER | STREETS DIVISION OF HAM LAKE |
| NETWORK 600 | GRIT CHAMBER | STREETS DIVISION OF HAM LAKE |
| POND 700 | MICROPOOL | STREETS DIVISION OF HAM LAKE |
| POND 800 | MICROPOOL | STREETS DIVISION OF HAM LAKE |

## RECEIVING SURFACE WATERS, DISCHARGE TO IMPAIRED WATERS & SPECIAL WATERS

THE FOLLOWING TABLE IDENTIFIES ALL SURFACE WATERS WITHIN 1 MILE OF THE PROJECT BOUNDARY, WHICH WILL RECEIVE STORM WATER RUNOFF FROM THE CONSTRUCTION SITE, DURING AND AFTER CONSTRUCTION.

| RECEIVING SURFACE WATERS | | |
|---|---|---|
| NAME OF WATER BODY | SPECIAL WATER | IMPAIRED WATER |
| BUNKER LAKE | NO | NO |
| COUNTY DITCH 23 | NO | NO |
| COON CREEK | NO | YES |
| WETLANDS | NO | NO |

STORM WATER FROM A DISCHARGE POINT ON THE PROJECT WHICH FLOWS TO A SURFACE WATER IDENTIFIED AS IMPAIRED AND/OR SPECIAL MUST INCLUDE THE FOLLOWING ADDITIONAL BMP REQUIREMENTS:

1) ALL EXPOSED SOILS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.

2) TEMPORARY SEDIMENT BASINS MUST BE USED FOR COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH FIVE (5) OR MORE ACRES DISTURBED AT ONE TIME. THIS PROJECT AS DESIGNED DOES NOT HAVE FIVE (5) DISTURBED ACRES DRAINING TO A COMMON LOCATION AND TEMPORARY SEDIMENT BASINS WILL NOT BE REQUIRED.

## DISTURBED AREA

TOTAL PROJECT AREA DISTURBED : 51.94 ACRES
EXISTING IMPERVIOUS AREA : 17.86 ACRES
PROPOSED IMPERVIOUS AREA : 30.92 ACRES

## CONSTRUCTION PHASING

SILT FENCE AND/OR OTHER SUITABLE PERIMETER BMPS AS PROVIDED IN THE PLANS WILL BE INSTALLED PRIOR TO THE START OF ANY LAND DISTURBING ACTIVITY. CONSTRUCTION WILL BE REQUIRED TO BE PHASED SO THAT ALL DOWN GRADIENT SEDIMENT CONTROL MEASURES ARE INSTALLED PRIOR TO OR IN CONJUNCTION WITH ANY SOIL DISTURBING ACTIVITIES.

WHEN TOPSOIL IS DISTURBED, THE TOPSOIL SHALL BE STRIPPED AND STOCKPILED IN SOIL BERMS AT THE TOE OF THE STRIPPED SLOPES ALONG THE PROJECT LIMITS. TEMPORARY VEGETATION WILL BE ESTABLISHED ON THE STOCKPILED TOPSOIL BERMS WITH HYDROMULCH AS NEEDED. STOCKPILED TOPSOIL BERMS SHALL NOT BE PLACED IN ANY STORM WATER CONVEYANCES.

AFTER STRIPPING THE TOPSOIL THE EXPOSED SOIL IN SLOPES SHALL BE STABILIZED WITH DISK ANCHORED TYPE 1 MULCH WITHIN 14 DAYS, AFTER THE CONSTRUCTION ACTIVITY IN THAT PROTION OF THE SITE HAS BEEN TEMPORARILY OR PERMANENTLY CEASED.

## TEMPORARY SEDIMENT BASIN

WHEN 5 OR MORE ACRES OF DISTRUBED SOIL DRAIN TO A COMMON LOCATION, THE CONTRACTOR MUST PROVIDE A TEMPORARY SEDIMENT TRAP OR BASIN TO TREAT RUNNOF. A SWPPP AMENDMENT IS REQUIRED. THE BASIN MUST PROVIDE LIVE STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A 2-YEAR, 24 HOUR STORM FOR EACH ACRE DRAINING TO THE BASIN, EXCEPT IN NO CASE SHALL THE BASIN PROVIDE LESS THAN 1800 CUBIC FEET OF LIVE STORAGE FOR EACH ACRE DRAINING TO THE BASIN. THE OUTLET MUST WITHDRAW WATER FROM THE SURFACE.

## PERMANENT STORM WATER MANAGEMENT SYSTEM

ALL STORM WATER MUST BE DISCHARGED IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING WATERS OR ON DOWNSLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING A SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.

THIS ROAD CONSTRUCTION PROJECT HAS AN INCREASE OF THIRTEEN ACRES IN IMPERVIOUS AREA.

## EROSION PREVENTION PRACTICES

ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. FOR ALL AREAS WHERE DISTURBED SOILS DRAIN TO AN IMPAIRED OR SPECIAL WATERS, THE EXPOSED SOIL MUST BE STABLIZED NO LATER THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA CEASED. SEE THE IMPAIRED & SPECIAL WATERS SECTION OF THIS SWPPP FOR ADDITIONAL BMP REQUIREMENTS FOR DISTURBED AREAS THAT DRAIN TO A SPECIAL OR IMPAIRED WATER.

THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAIN WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER. STABLITIZATION OF THE LAST 200 FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER.

PIPE CULVERT OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER. THIS WILL INCLUDE DRAINAGE DITCHES THAT DRAIN WATER FROM ANY PORTION OF THE CONSTRUCTION SITE.

## POLLUTION PREVENTION MEASURES

THE CONTRACTOR SHALL IMPLEMENT THE POLLUTION PREVENTION MANAGEMENT MEASURES AS DIRECTED IN THE NPDES PERMIT PART IV.F AS PERTAINING TO SOLID WASTE, HAZARDOUS MATERIALS, EXTERNAL TRUCK WASHING, AND CONCRETE WASHOUT ONSITE.

THESE MANAGEMENT MEASURE FOR POLLUTION PREVENTION SHALL BE STRICTLY ENFORCED.

## WITHHOLDING OF PAYMENT/NONCOMPLIANCE

IF THE CONTRACTOR FAILS TO INSTALL EROSION OR SIDIMENT CONTROL MEASURES ORDERED BY THE ENGINEER, THE ENGINEER MAY WITHHOLD PAYMENT FROM RELATED WORK UNTIL THE CONTOL MEASURES ARE UNDERTAKEDN BY THE CONTRACTOR. WHEN THE CONTRACTOR FAILS TO CONDUCT THE QUALITY CONTROL PROGRAM, DOESN'T CONDUCT THE INSPECTIONS REQUIRED IN THE NPDES PERMIT, OR FAILS TO TAKE ACTION ORDERED BY THE ENGINEER TO REMEDY EROSION OR SEDIMENT CONTROL PROBLEMS: THE ENGINEER WILL ISSUE A WRITTEN ORDER TO THE CONTRACTOR. THE CONTRACTOR SHALL RESPOND WITHIN 24 HOURS WITH SUFFICIENT PERSONNEL, EQUIPMENT AND/OR MATERIALS AND CONDUCT THE REQUIRED WORK OR BE SUBJECT TO A $500.00 PER CALENDAR DAY DEDUCTION FOR NONCOMPLIANCE.

## TEMPORARY STOCKPILES

THE CONTRACTOR MUST FOLLOW THE REQUIREMENTS IN THE NPDES PERMIT. THOSE REQUIREMENTS ARE AS FOLLOWS: TEMPORARY SOIL STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS, AND CANNOT BE PLACED IN ANY NATURAL BUFFERS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER. THE CONTRACTOR MUST STABILZE ALL EXPOSED SOIL AREAS (INCLUDING STOCKPILES). STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHENEVER ANY CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING SEVEN CALENDAR DAYS. TEMPORARY STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY, OR ORGANIC COMPONENTS (E.G. CLEAN AGGREGATE STOCKPILES, DEMOLITION CONCRETE STOCKPILES, SAND STOCKPILES) ARE EXEMPT FROM THE STABILIZATION REQUIREMENT.

| PROJECT CONTACTS | | | |
|---|---|---|---|
| DNR | NOT REQUIRED | | |
| COE | NOT REQUIRED | | |
| ANOKA COUNTY DESIGN SWPPP PREPRATION | U OF M DESIGN OF SWPPP EXPIRES 5/17 | ZAC BORGERDING | 763-862-4263 |
| ANOKA COUNTY REPRESENTATIVE | U OF M SITE MANAGEMENT EXPIRES 5/17 | BRUCE LUIKART | 763-862-4242 |
| EROSION CONTROL SUPERVISOR (CONTRACTOR) | | | |

## SEDIMENT CONTROL PRACTICES

TEMPORARY STOCKPILED TOPSOIL BERMS MUST INCLUDE PERIMETER BMPS AS PROVIDED IN THE PLAN AT LOCAITONS WHERE CONSTRUCTION STORM WATER DRAINS FROM THE PROJECT.

IN ORDER TO MAINTAIN SHEET FLOW AND MINIMIZE RILLS AND/OR GULLIES, THERE SHALL BE NO UNBROKEN SLOPE LENGTH OF GREATER THAT 75 FEET FOR SLOPES WITH A GRADE OF 1:3 OR STEEPER.

ALL STORM DRAIN INLETS MUST BE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL DISCHARGE TO THE INLET HAVE BEEN STABILIZED.

VEHICLE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE MUST BE MINIMIZED. STREET SWEEPING MUST BE USED IF SEDIMENT IS BEING TRACKED OFF THE CONSTRUCTION SITE.

## STAGING AREAS

CONTRACTOR REQUIRED TO STAY WITHIN CONSTRUCTION LIMITS. IF CONTRACTOR REQUESTS PERMISSION TO USE OFF-SITE AREAS OR AREAS WITHIN THE PROJECT LIMITS, BUT OUTSIDE CONSTRUCTION LIMITS, THE COUNTY WILL REQUEST A SWPPP AMENDMENT FROM THE CONTRACTOR, WHICH WILL BE PROVIDED TO CCWD FOR REVIEW AND ACCEPTANCE.

## LOCATION OF SWPPP REQUIREMENTS

| REQUIREMENT | PLAN TITLE | PLAN LOCATION | MN/DOT SPECIFICATION | SPECIAL PROVISION |
|---|---|---|---|---|
| NPDES PERMIT COMPLIANCE | | | 1701, 1702, &1717 | 1717 (AIR, LAND & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) |
| CERTIFIED PERSONNEL IN EROSION AND SEDIMENT CONTROL SITE MANAGEMENT | STORM WATER POLLUTION PREVENTION PLAN | SHEETS 189 - 190 | 1506, 1717, & 2573 | 1717 (AIR, LAND & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) |
| CHAIN OF RESPONSIBILITY | | | 1506, 1717, & 2573 | |
| PROJECT SCHEDULE / WEEKLY EROSION & SEDIMENT CONTROL SCHEDULE / COMPLETING INSPECTION / MAINTENANCE LOG | | | 1717 & 2573 | 1717 (AIR, LAND & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) |
| SWPPP PREPARATION | | | | |
| SITE MAP / RECEIVING WATERS / DIRECTION OF FLOW | EROSION CONTROL PLAN | SHEETS 191 - 198 | 1717 | |
| PROJECT SPECIFIC CONSTRUCTION STAGING | CONSTRUCTION STAGING & TRAFFIC CONTROL | SHEETS 63 - 91 | 1717 | 1717 (AIR, LAND & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)<br>1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) |
| TEMPORARY EROSION AND SEDIMENT CONTROL BMP LOCATIONS, INSTALLATION, TIMING OF INSTALLATION AND TYPE OF BMP | EROSION CONTROL PLAN, TABULATION CHARTS | SHEETS 16, 191 - 198 | 2573 & 2525 | 2575 (RAPID STABILIZATION SPECIFICATION) |
| ADDITIONAL TEMPORARY AND OR PERMANENT EROSION AND SEDIMENT CONTROL BMP'S NOT PROVIDED OR SHOWN IN THE PLAN | STORM WATER POLLUTION PREVENTION PLAN | SHEETS 189 - 190 | 1717, 2573, & 2575 | 1717 (AIR, LAND & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)<br>2575 (RAPID STABILIZATION SPECIFICATION) |
| MAINTENANCE OF EROSION AND SEDIMENT CONTROL DEVICES, REMOVAL OF TRACKED SEDIMENT, REMOVAL OF DEVICES | | | 1717 & 2573 | 1514 (MAINTENANCE DURING CONSTRUCTION)<br>1717 (LAND AIR & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) |
| DEWATERING | | | 2105.3B, & 2451.3C | DEWATERING MAY ALSO REQUIRE DNR PERMIT. NO DEWATERING IS ANTICIPATED FOR THIS PROJECT |
| FINAL STABILIZATION | TURF ESTABLISHMENT PLAN, TABULATION CHARTS | SHEETS 16, 191 - 198 | 1717, 2573, & 2575 | 1717 (AIR, LAND & WATER)<br>1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) |
| TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS | EROSION CONTROL STANDARD PLAN | SHEETS 199 - 203 | 2575 | 2575 (RAPID STABILIZATION SPECIFICATION) |
| PERMANENT EROSION CONTROL DETAILS | | | 2575 | 2575 (CONTROLLING EROSION AND ESTABLISHING VEGETATION) |



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| 1 | 04/09/2009 | EM | JO | CK | ADDED HAZARDOUS MATERIAL CONTAINMENT NOTE PER MNDOT REVIEW COMMENTS. |

NAME: P:\02-716-15\Plan\0271615_SWPPP.dgn 04/12/2016 2:07:56 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ZACHARY BORGERDING
SIGNATURE:
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STORM WATER POLLUTION PREVENTION PLAN

Sheet 252 of 482 Sheets

# STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

AMENDING THE SWPPP

THE SWPPP MUST BE AMENDED TO RECORD CHANGES OR MODIFICATIONS TO PERMANENT BMPS OR OTHER STORM WATER TREATMENT SYSTEMS AND REMOVALS OF TEMPORARY BMPS. CHANGES TO TEMPORARY BMPS MAY BE RECORDED IN THIS SHEET. INCLUDE A BRIEF DESCRIPTION OF THE PROBLEM, LOCATION, NATURE OF ALTERATION AND COMMENTS. THIS RECORD IS TO BE RETAINED FOR THREE YEARS AFTER PROJECT COMPLETION.

| Date Reported | Staff | Plan Location (sheet) | Project Location (station) | Problem, solution, and notes |
|---|---|---|---|---|
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| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: P:\02-716-15\Plan\0271615_SWPPP.dgn 04/12/2016 2:08:00 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

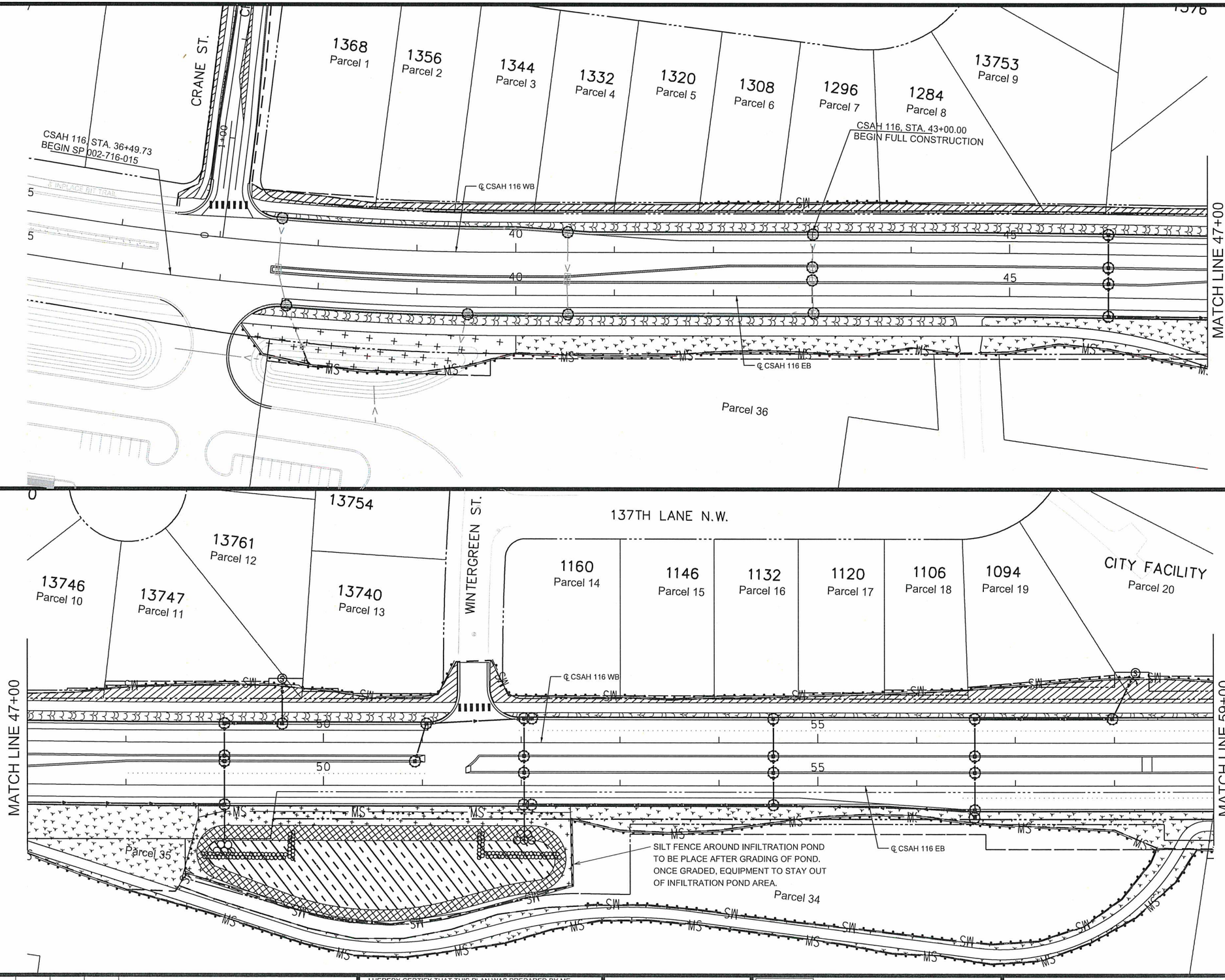
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STORM WATER POLLUTION PREVENTION PLAN

Sheet 253 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- PROPOSED CULVERT
- SILT FENCE TYPE MACHINE SLICED
- RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
- SOD APRON INLET OR OUTLET
- INLET PROTECTION
- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
- SODDING TYPE SALT RESISTANT FERTILIZER TYPE 3 22-5-10
- SEEDING MIX 25-121 FERTILIZER TYPE 3 22-5-10 MULCH TYPE 1 DISC ANCHORING
- SEEDING MIX 35-241 FERTILIZER TYPE 4 17-10-7 MULCH TYPE 3 DISC ANCHORING
- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00
- HYDROSEED MIX 33-261

### NOTES

1.) THE CONTRACTOR SHALL CONSTRUCT WASHED GRAVEL ENTRANCES AT POINTS OF EXIT FROM THE WORK AREA ONTO EXISTING BITUMINOUS PAVEMENT AS DIRECTED BY THE ENGINEER.

2.) SILT FENCE SHALL FOLLOW AS CLOSE AS POSSIBLE A SINGLE CONTOUR.

3.) SILT FENCE SHALL BE CLEANED OUT OR REPLACED WHEN SEDIMENT REACHES 8" OR $\frac{1}{3}$ OF SILT FENCE HEIGHT.

4.) WHEN SEDIMENT DEPOSITS IN A WATER OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN 7 DAYS.

5.) IF SILT DEPOSITS IN THE ANOKA COUNTY RIGHT-OF-WAY, THE CONTRACTOR IS RESPONSIBLE FOR ITS REMOVAL.

6.) ALL GRADED AREAS ARE TO BE REVEGETATED WITHIN 7 DAYS OF THE COMPLETION OF GRADING.

7.) REDUNDANT PERIMETER CONTROL IS REQUIRED WITHIN 50 FEET OF ANY WATER BODY/DELINEATED WETLAND.

N

0 100
SCALE IN FEET

1 OF 8

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_EC_1.dgn 04/12/2016 2:08:03 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

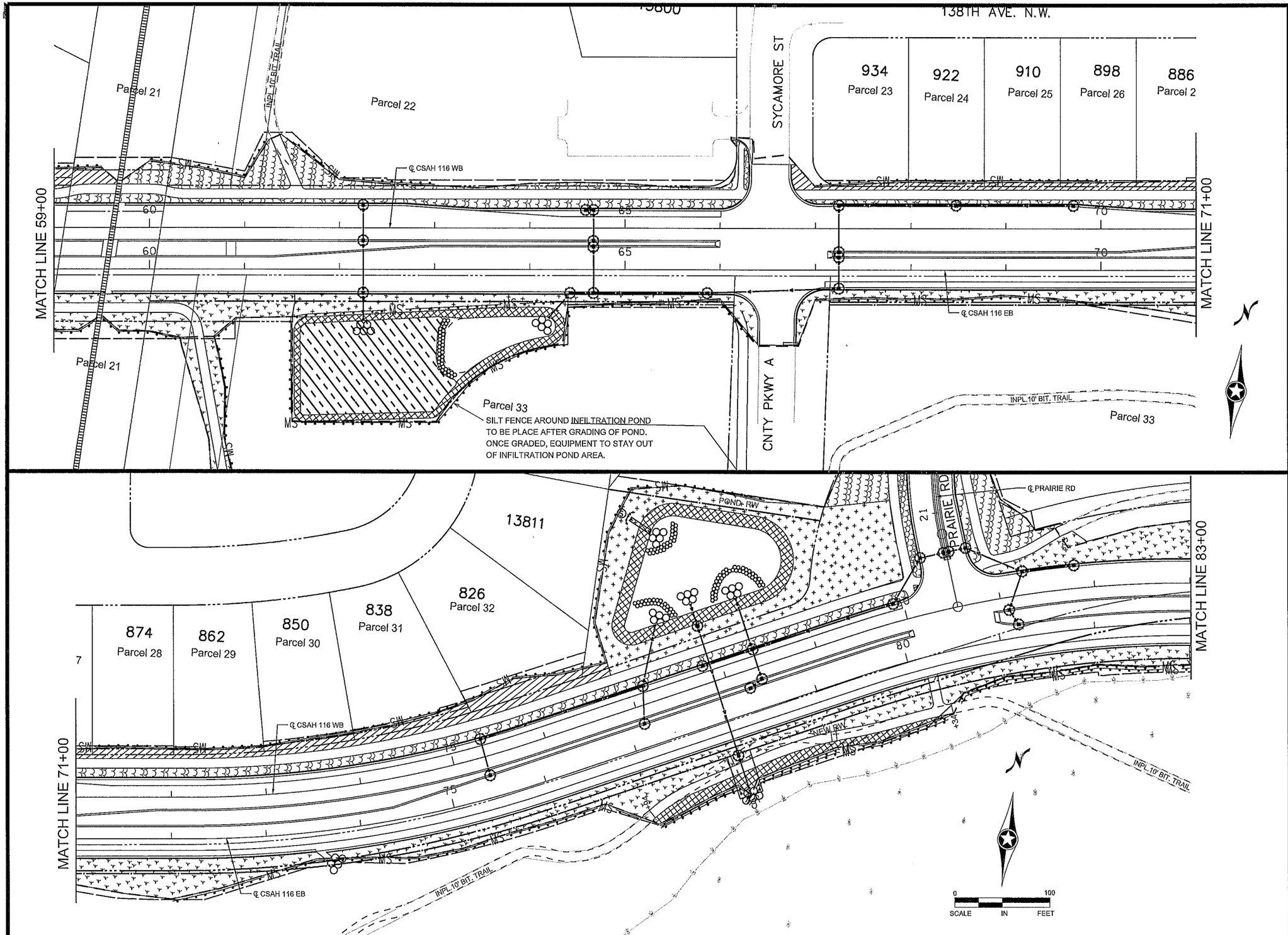
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN

STA 36+49.73 TO 59+00.00

Sheet 254 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- PROPOSED CULVERT
- MS — SILT FENCE TYPE MACHINE SLICED
- RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
- (S) SOD APRON INLET OR OUTLET
- INLET PROTECTION
- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
- SODDING TYPE SALT RESISTANT FERTILIZER TYPE 3 22-5-10
- SEEDING MIX 25-121 FERTILIZER TYPE 3 22-5-10 MULCH TYPE 1 DISC ANCHORING
- SEEDING MIX 35-241 FERTILIZER TYPE 4 17-10-7 MULCH TYPE 3 DISC ANCHORING
- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00
- HYDROSEED MIX 33-261

### NOTES

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7.) REDUNDANT PERIMETER CONTROL IS REQUIRED WITHIN 50 FEET OF ANY WATER BODY/DELINEATED WETLAND.



| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_EC2.dgn 04/13/2016 1:13:11 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52698

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

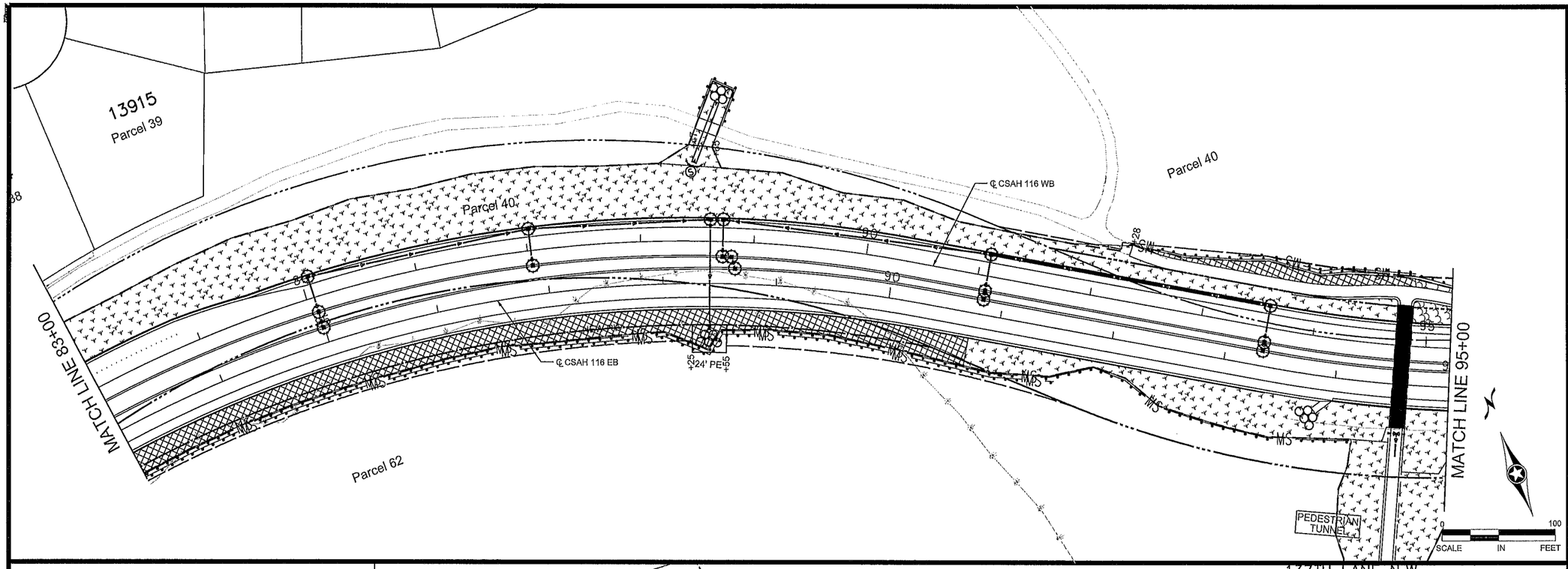
ANOKA COUNTY HIGHWAY DEPT.

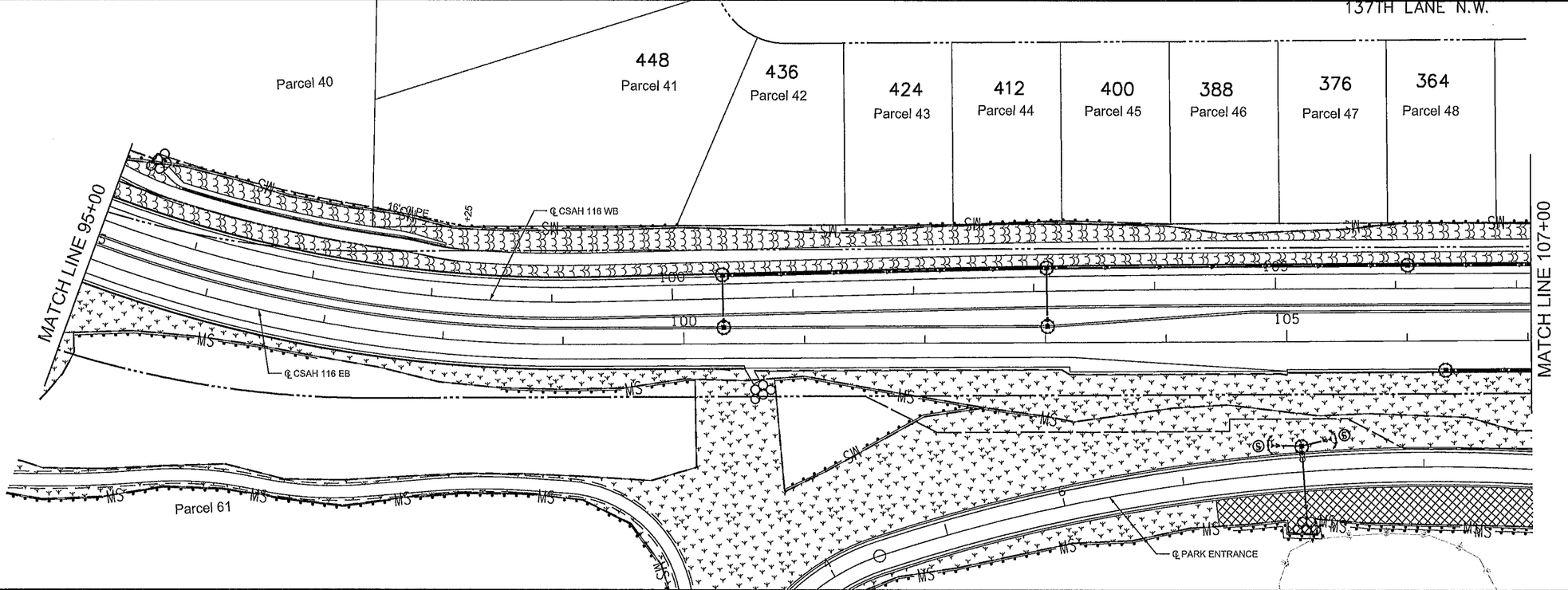
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN

STA 59+00.00 TO 83+00.00

Sheet 255 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- SILT FENCE TYPE MACHINE SLICED
- RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
- SOD APRON INLET OR OUTLET
- INLET PROTECTION
- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
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- SEEDING MIX 25-121 FERTILIZER TYPE 3 22-5-10 MULCH TYPE 1 DISC ANCHORING
- SEEDING MIX 35-241 FERTILIZER TYPE 4 17-10-7 MULCH TYPE 3 DISC ANCHORING
- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00

### NOTES

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N

0 100
SCALE IN FEET

3 OF 8

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_EC3.dgn 04/12/2016 2:08:09 PM

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PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

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CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

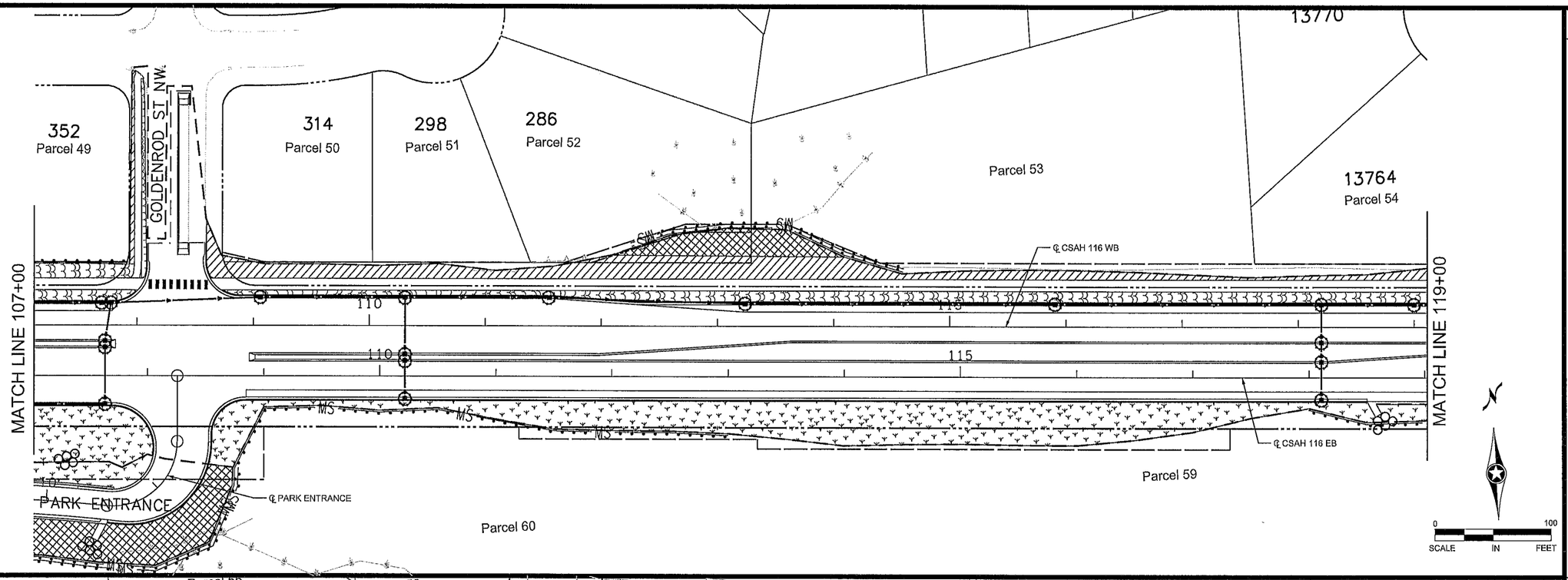
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN

STA 83+00.00 TO 107+00.00

Sheet 256 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- SILT FENCE TYPE MACHINE SLICED
- RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
- SOD APRON INLET OR OUTLET
- INLET PROTECTION
- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
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- SEEDING MIX 35-241 FERTILIZER TYPE 4 17-10-7 MULCH TYPE 3 DISC ANCHORING
- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00

## NOTES

1.) THE CONTRACTOR SHALL CONSTRUCT WASHED GRAVEL ENTRANCES AT POINTS OF EXIT FROM THE WORK AREA ONTO EXISTING BITUMINOUS PAVEMENT AS DIRECTED BY THE ENGINEER.

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0 100
SCALE IN FEET

4 OF 8

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_EC4.dgn 04/18/2016 2:03:00 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

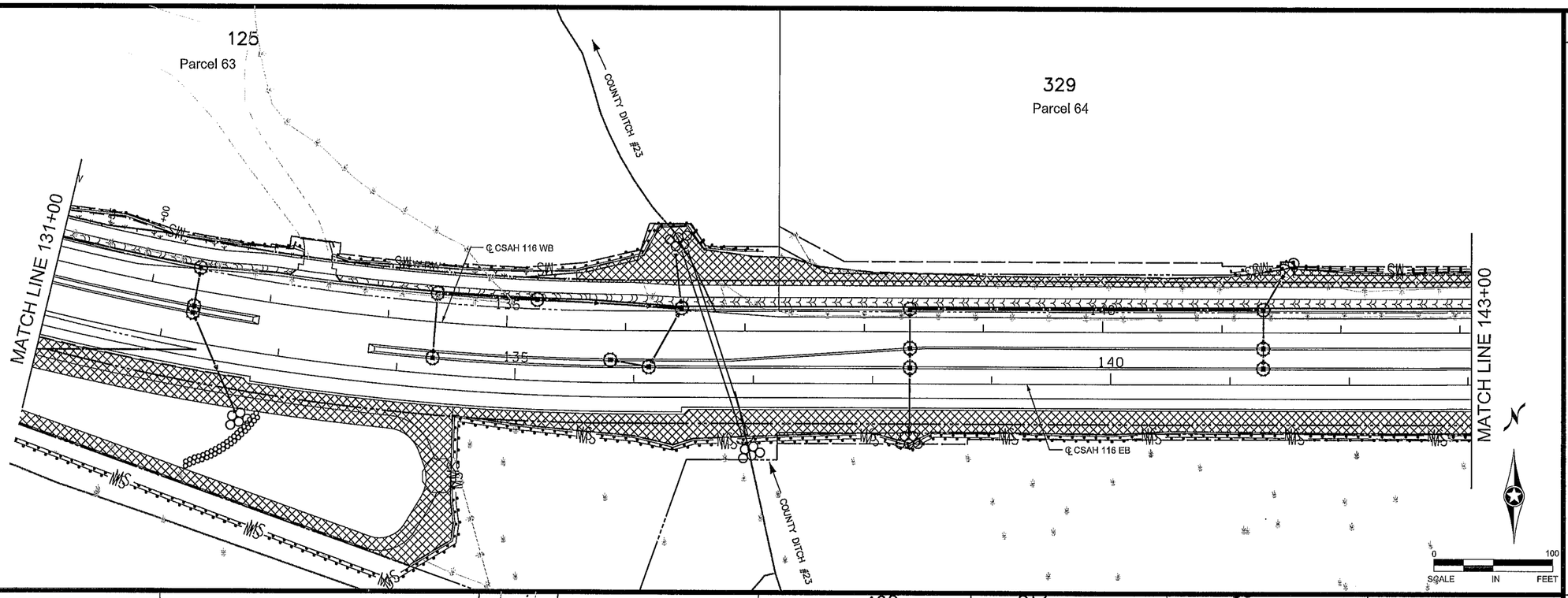
ANOKA COUNTY HIGHWAY DEPT.

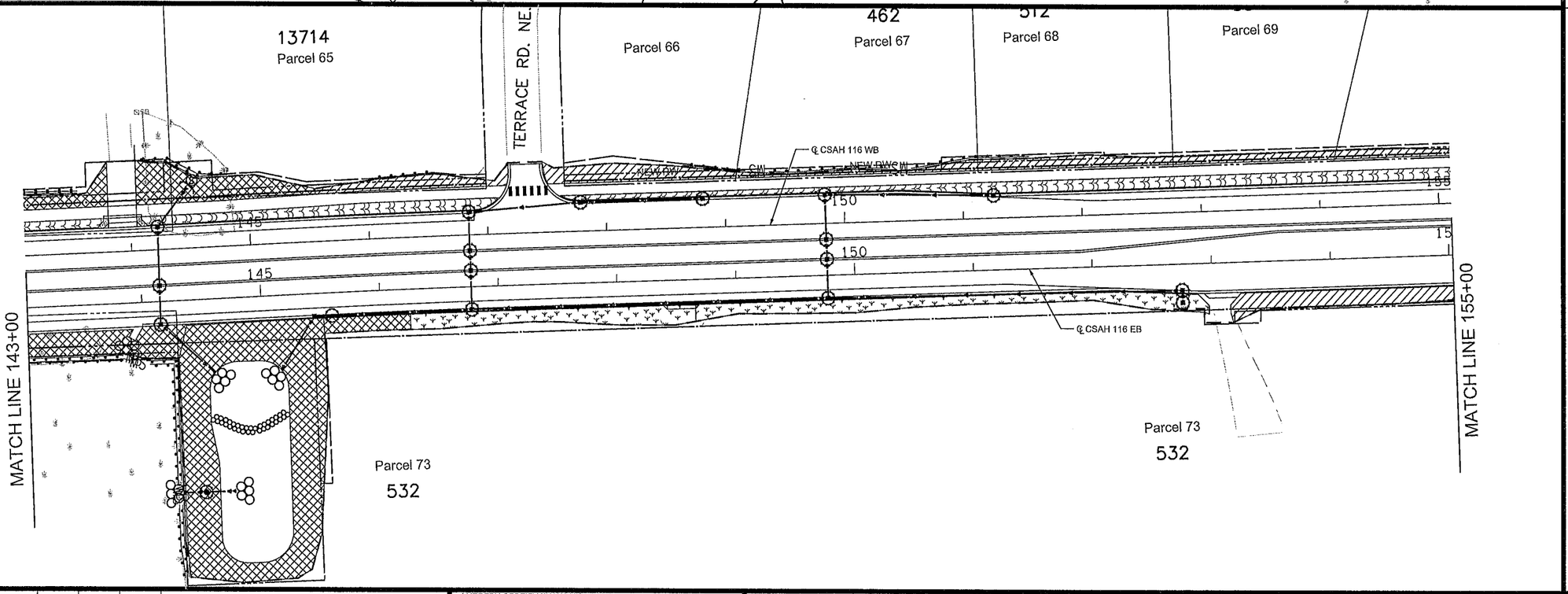
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN

STA 107+00.00 TO 131+00.00

Sheet 257 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- MS — SILT FENCE TYPE MACHINE SLICED
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- S — SOD APRON INLET OR OUTLET
- INLET PROTECTION
- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
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- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00

NOTES

1.) THE CONTRACTOR SHALL CONSTRUCT WASHED GRAVEL ENTRANCES AT POINTS OF EXIT FROM THE WORK AREA ONTO EXISTING BITUMINOUS PAVEMENT AS DIRECTED BY THE ENGINEER.

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7.) REDUNDANT PERIMETER CONTROL IS REQUIRED WITHIN 50 FEET OF ANY WATER BODY/DELINEATED WETLAND.

N

0 100
SCALE IN FEET

5 OF 8

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
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NAME: P:\02-716-15\Plan\0271615_EC5.dgn 04/12/2016 2:08:14 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zach Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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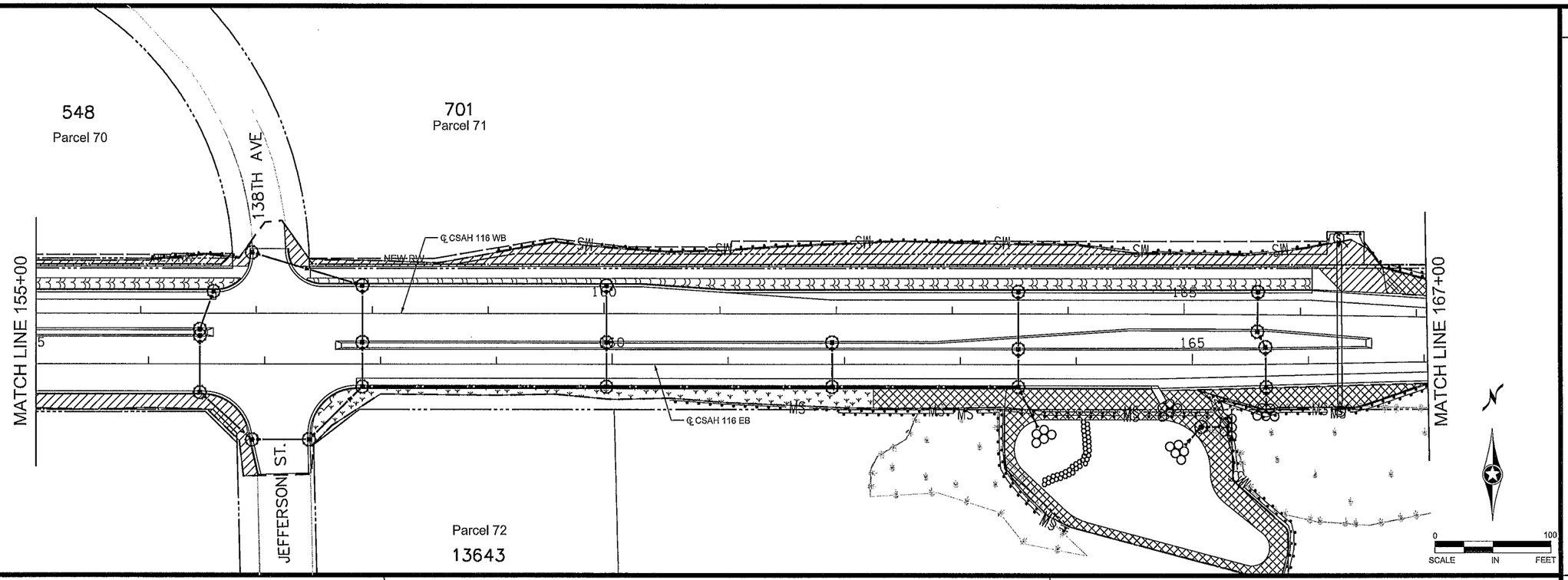
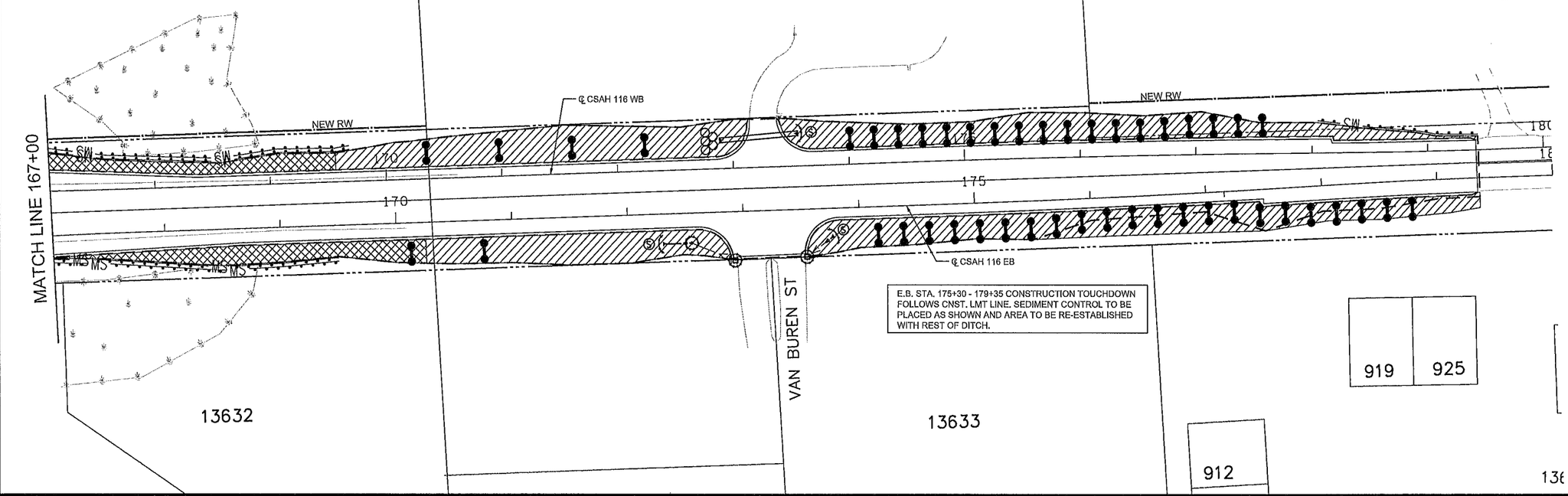
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN

STA 131+00.00 TO 155+00.00

Sheet 258 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- SILT FENCE TYPE MACHINE SLICED
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- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
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- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00
- SEDIMENT CONTROL LOG TYPE WOOD FIBER

### NOTES

1.) THE CONTRACTOR SHALL CONSTRUCT WASHED GRAVEL ENTRANCES AT POINTS OF EXIT FROM THE WORK AREA ONTO EXISTING BITUMINOUS PAVEMENT AS DIRECTED BY THE ENGINEER.

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N

0 100
SCALE IN FEET

6 OF 8

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_EC6.dgn 04/12/2016 2:08:16 PM

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PRINT NAME: ZACHARY BORGERDING
SIGNATURE: Zach Borgerding
DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16
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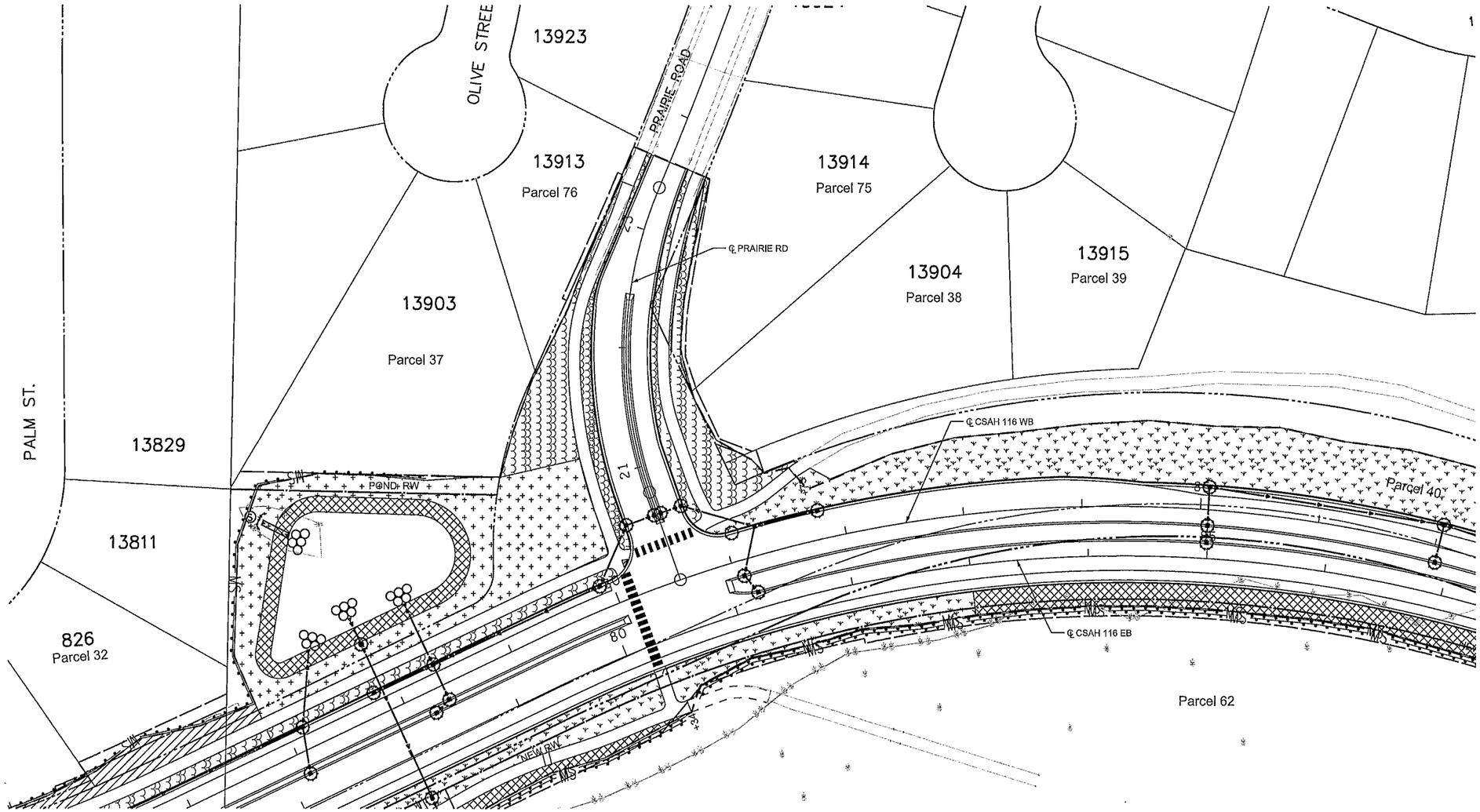
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN
STA 155+00.00 TO 179+34.92
Sheet 259 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- SILT FENCE TYPE MACHINE SLICED
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- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00

NOTES

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| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Plan\0271615_EC7.dgn 04/12/2016 2:08:18 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/3/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

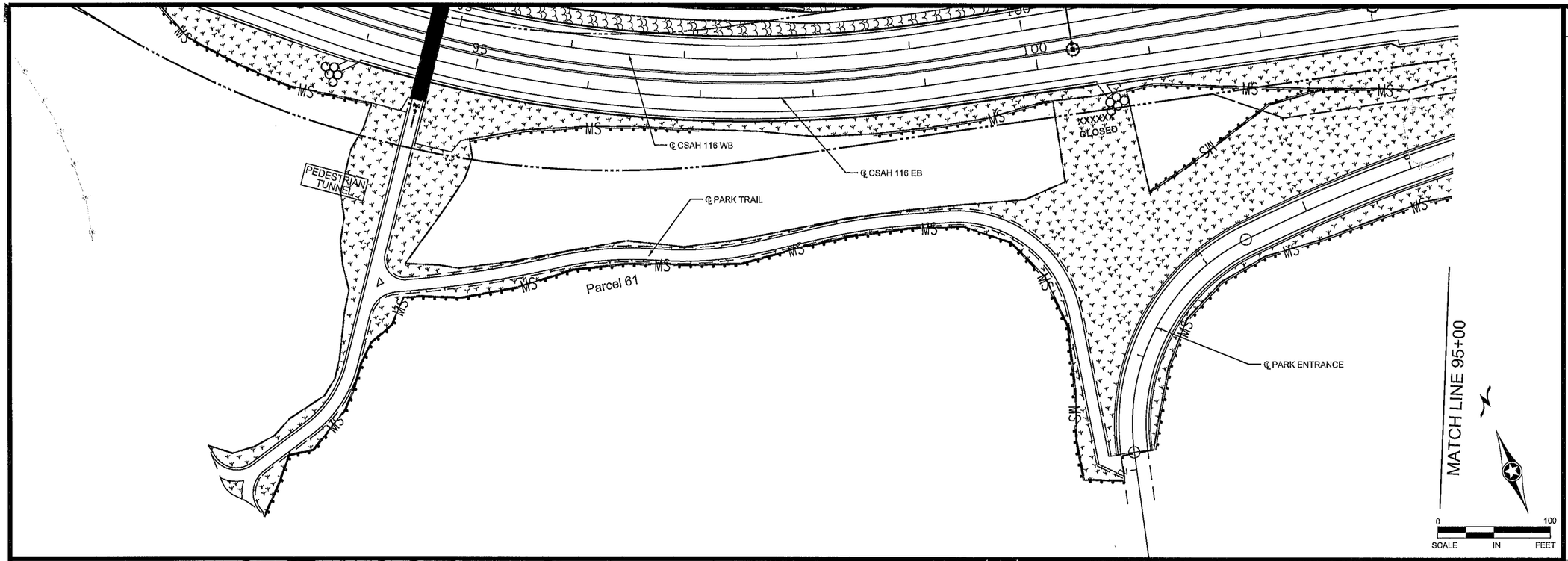
ANOKA COUNTY HIGHWAY DEPT.

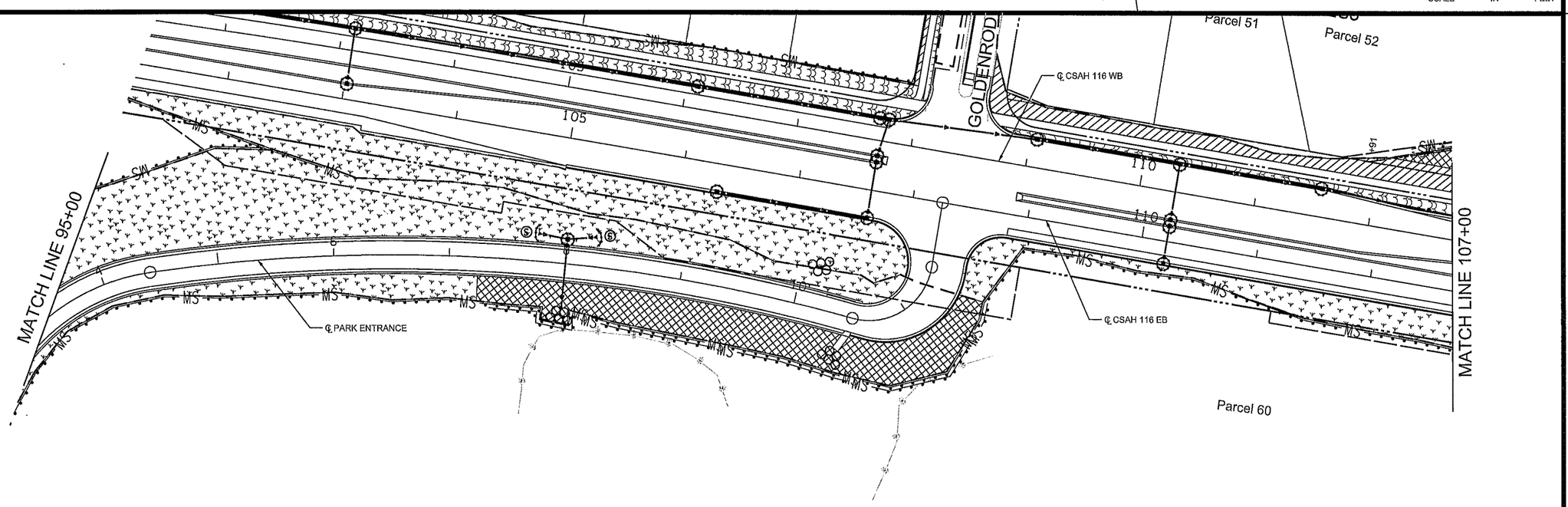
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN

STA 20+00.00 TO 23+59.30

Sheet 260 of 482 Sheets




## LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- INPLACE CULVERT
- PROPOSED CULVERT
- SILT FENCE TYPE MACHINE SLICED
- RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
- SOD APRON INLET OR OUTLET
- INLET PROTECTION
- WETLAND BOUNDARIES
- EROSION CONTROL BLANKET CATEGORY 00 SEED MIX 25-131 FERTILIZER TYPE 3 22-5-10
- SODDING TYPE SALT RESISTANT FERTILIZER TYPE 3 22-5-10
- SEEDING MIX 25-121 FERTILIZER TYPE 3 22-5-10 MULCH TYPE 1 DISC ANCHORING
- SEEDING MIX 35-241 FERTILIZER TYPE 4 17-10-7 MULCH TYPE 3 DISC ANCHORING
- SEEDING MIX 33-261 FERTILIZER TYPE 4 17-10-7 EROSION CONTROL BLANKET CATEFORY 00

SCALE 0 100 IN FEET

### NOTES

1.) THE CONTRACTOR SHALL CONSTRUCT WASHED GRAVEL ENTRANCES AT POINTS OF EXIT FROM THE WORK AREA ONTO EXISTING BITUMINOUS PAVEMENT AS DIRECTED BY THE ENGINEER.

2.) SILT FENCE SHALL FOLLOW AS CLOSE AS POSSIBLE A SINGLE CONTOUR.

3.) SILT FENCE SHALL BE CLEANED OUT OR REPLACED WHEN SEDIMENT REACHES 8" OR $\frac{1}{3}$ OF SILT FENCE HEIGHT.

4.) WHEN SEDIMENT DEPOSITS IN A WATER OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN 7 DAYS.

5.) IF SILT DEPOSITS IN THE ANOKA COUNTY RIGHT-OF-WAY, THE CONTRACTOR IS RESPONSIBLE FOR ITS REMOVAL.

6.) ALL GRADED AREAS ARE TO BE REVEGETATED WITHIN 7 DAYS OF THE COMPLETION OF GRADING.

7.) REDUNDANT PERIMETER CONTROL IS REQUIRED WITHIN 50 FEET OF ANY WATER BODY/DELINEATED WETLAND.

SCALE 0 100 IN FEET

8 OF 8

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|

NAME: P:\02-716-15\Plan\0271615_EC8.dgn 04/12/2016 2:08:21 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ZACHARY BORGERDING

SIGNATURE: Zac Borgerding

DATE: 5/31/16 LICENSE NO. 52598

DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

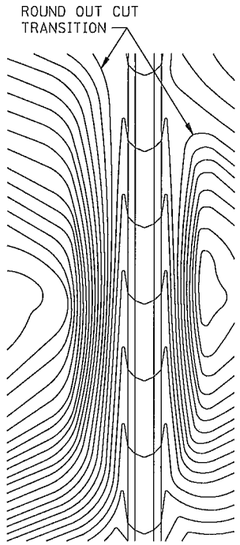
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

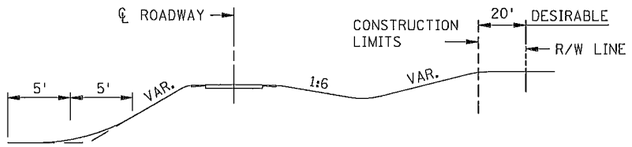
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EROSION CONTROL PLAN
PARK TRAIL / ENTRANCE

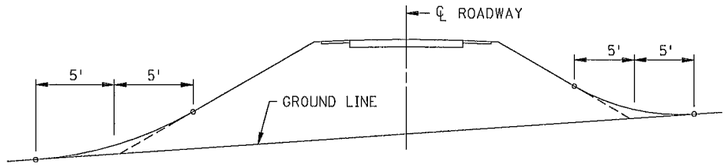
Sheet 261 of 482 Sheets



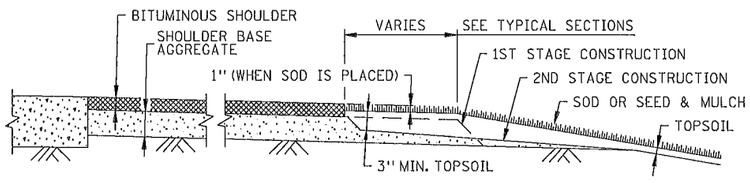

CONTOURING ROAD CUTS



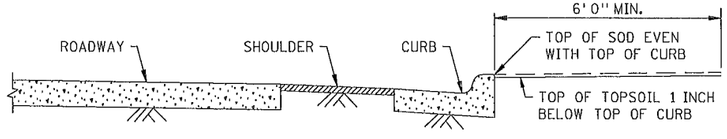

ROUNDING SHOULDERS AND BACKSLOPES



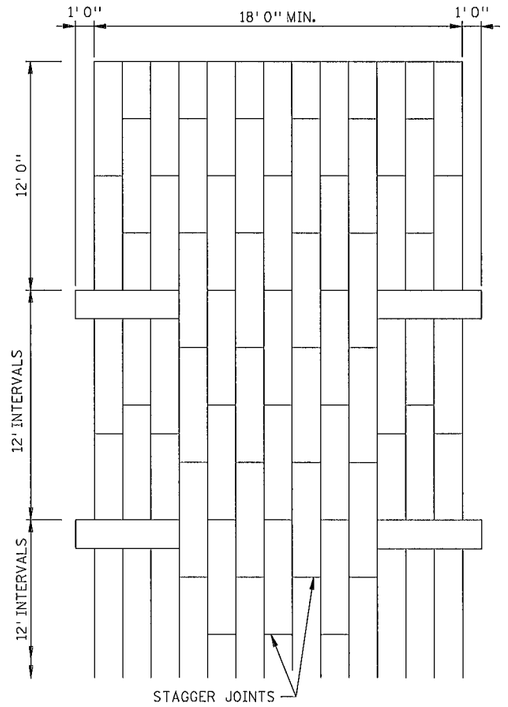

SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



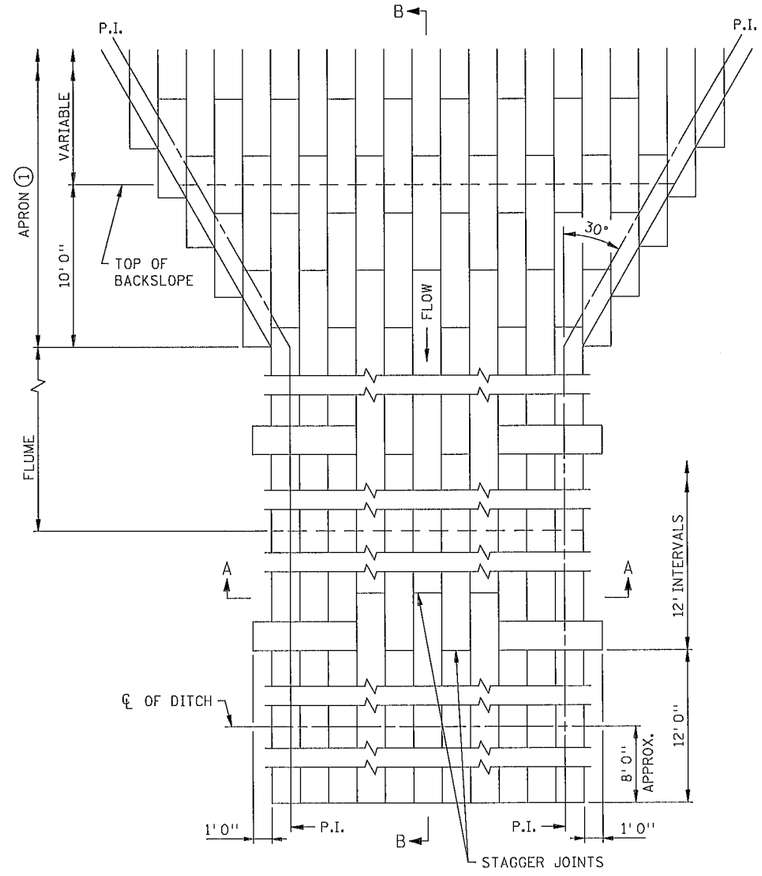

SHAPING AND TOPSOILING INSLOPES



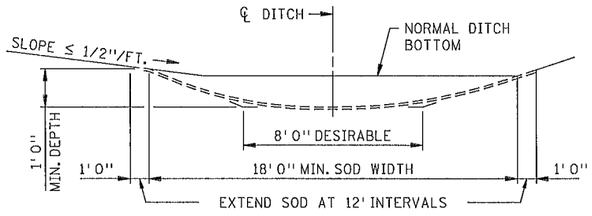

SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED




PLAN VIEW

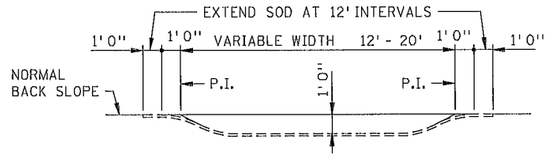



PLAN VIEW

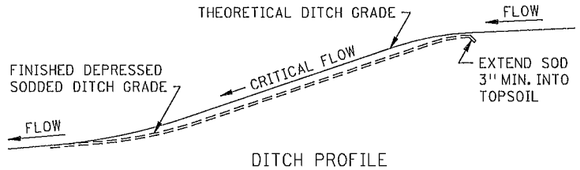



SODDED DITCH CROSS SECTION

WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.

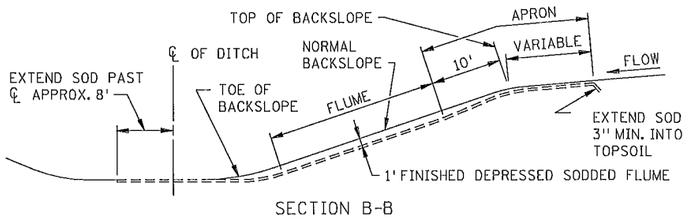



SECTION A-A




DITCH PROFILE

SODDED DITCH DETAILS




SECTION B-B

SODDED FLUME DETAILS

NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION:

APPROVED: 8-6-2014

CHIEF ENVIRONMENTAL OFFICER

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:

STATE DESIGN ENGINEER

APPROVED: 8-6-2014

PERMANENT EROSION CONTROL
ALONG ROADWAYS, DITCHES AND FLUMES

STANDARD PLAN 5-297.404 | 262 OF 482

PLOTTED/REVISED: $$$$@DATE@$$$$
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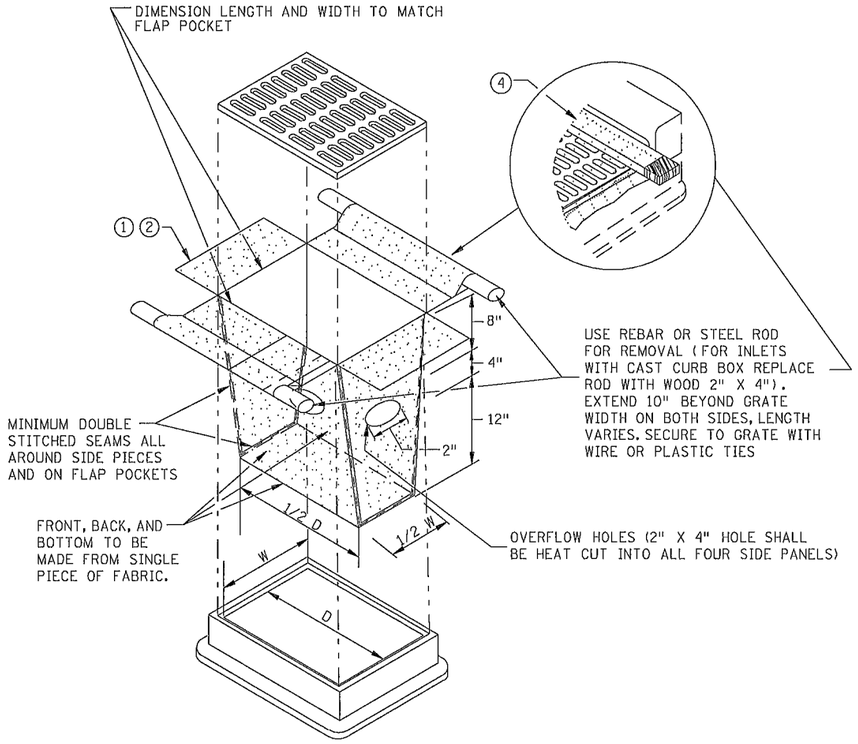
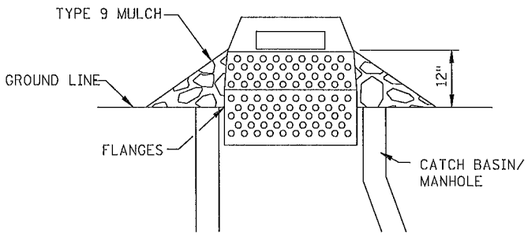


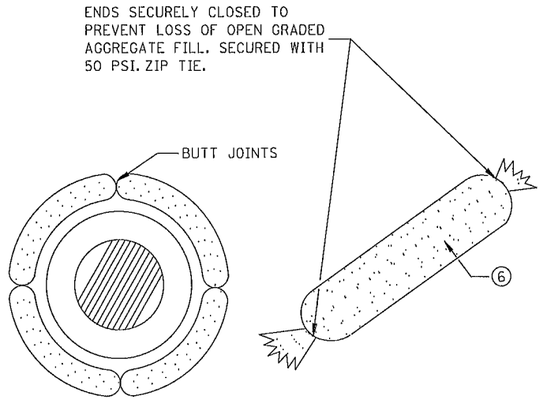

FILTER BAG INSERT ③

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)

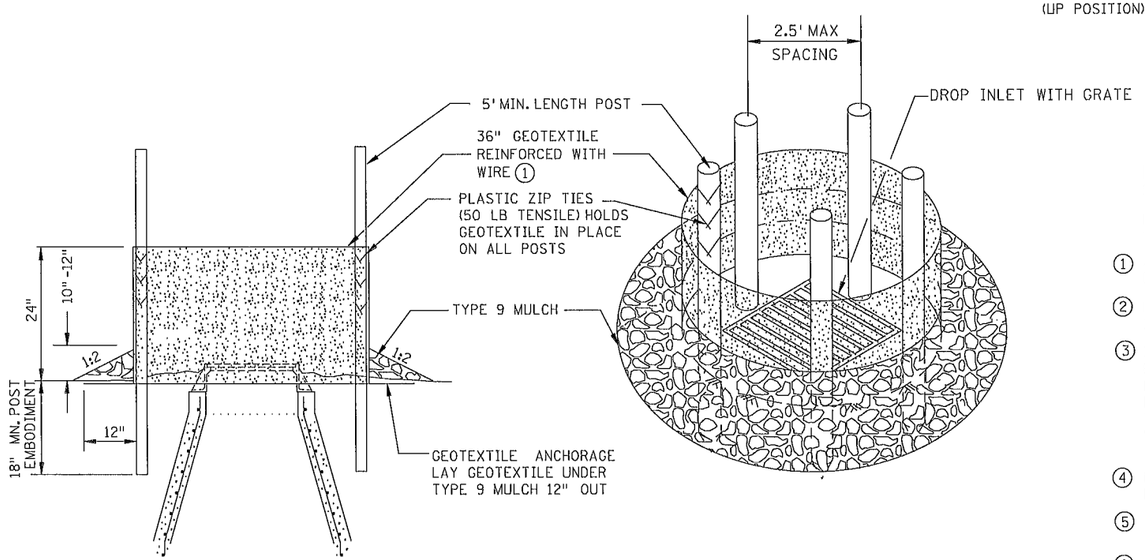



SEDIMENT CONTROL INLET HAT

NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.

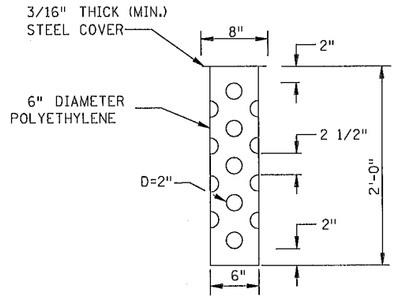



ROCK LOG/COMPOST LOG

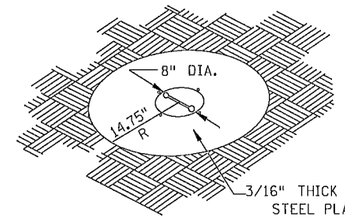



SILT FENCE RING AND ROCK FILTER BERM

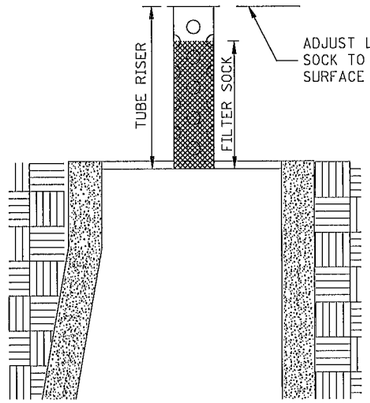
USE WHERE INLET DRAINS IN AN AREA WITH SLOPES AT 1:3 or LESS



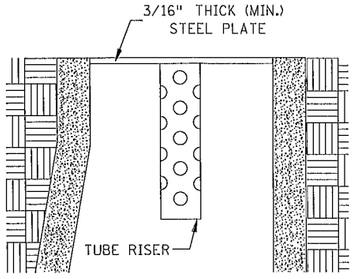

TUBE RISER




PERSPECTIVE VIEW




SECTION
(UP POSITION)




SECTION
(DOWN POSITION)

POP-UP HEAD

NOTES:
SEE SPECS. 2573, 3137, & 3886.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.

② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

③ INSTALLATION NOTES:
DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.

④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

⑤ SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.

⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

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REVISION:

APPROVED: 8-6-2014
CHIEF ENVIRONMENTAL OFFICER

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REVISED:

APPROVED: 8-6-2014
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
STORM DRAIN INLET PROTECTION

STANDARD PLAN 5-297.405 | 263 OF 482

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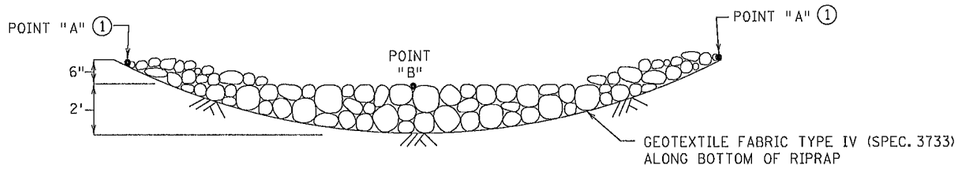
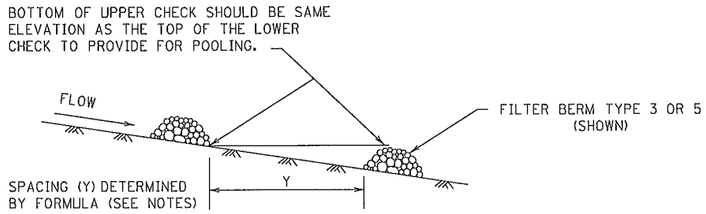


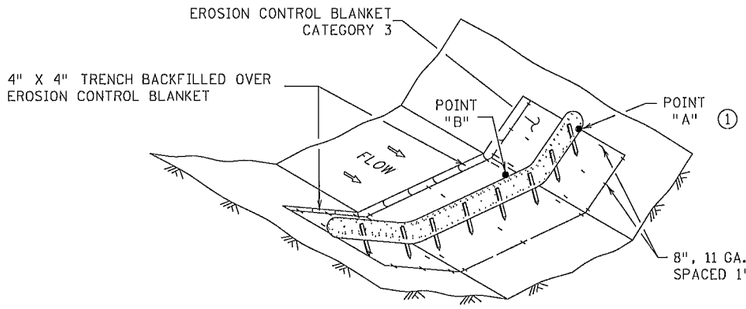

## ROCK DITCH CHECKS
## FILTER BERMS TYPE 3 (ROCK WEEPER) OR FILTER TYPE 5 (ROCK) ②③

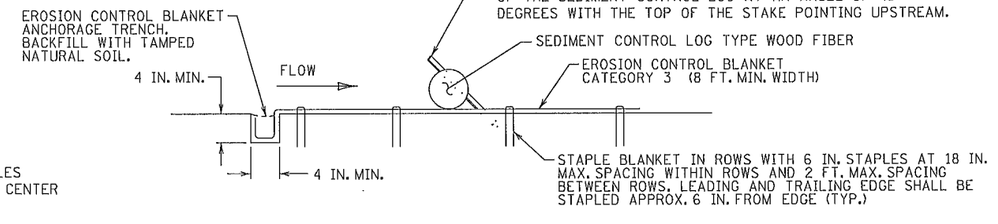
(FOR USE ON ROUGH GRADED AREAS)



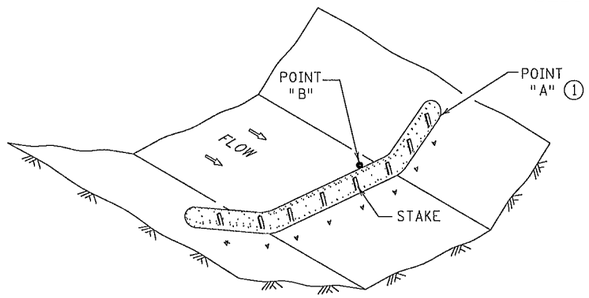

## DITCH CHECK SPACING

(FOR ALL FILTER BERM TYPES)




## SEDIMENT CONTROL LOG TYPE BLANKET SYSTEM ④




## SEDIMENT CONTROL LOG TYPE WOOD FIBER, OR TYPE COMPOST ⑤

(FOR USE ON ROUGH GRADED AREAS)

NOTES:

SEE SPECS. 2573, 3601, 3733, 3885, 3886 & 3889.

FOR DITCH CHECKS, PLACE SEDIMENT CONTROL LOG PERPENDICULAR TO FLOW AND IN A CRESCENT SHAPE WITH THE ENDS FACING UPSTREAM.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}} \times 100$$

① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

② PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE ARE TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

③ DITCH GRADE 3% - 5%, MAX. FLOW VELOCITY 12 FT./SEC..

④ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 4.5 FT./SEC..

⑤ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 1.5 FT./SEC..

REVISION:

APPROVED: 8-6-2014
CHIEF ENVIRONMENTAL OFFICER

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REVISED:

APPROVED: 8-6-2014
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
DITCH CHECK

STANDARD PLAN 5-297.405 | 264 OF 482

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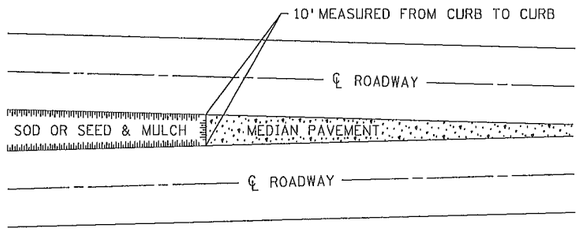
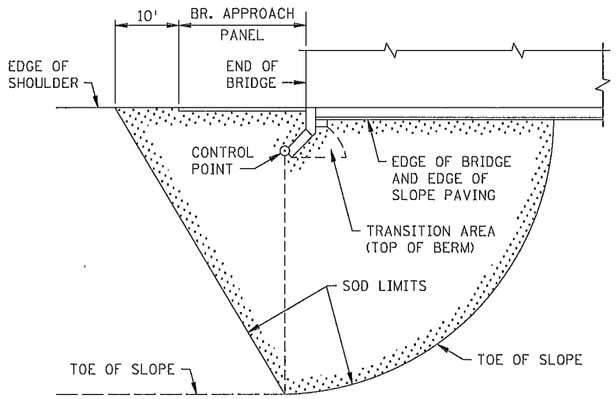
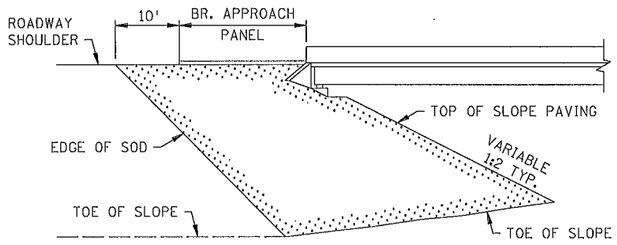



SODDING LIMITS AT GORE AREA

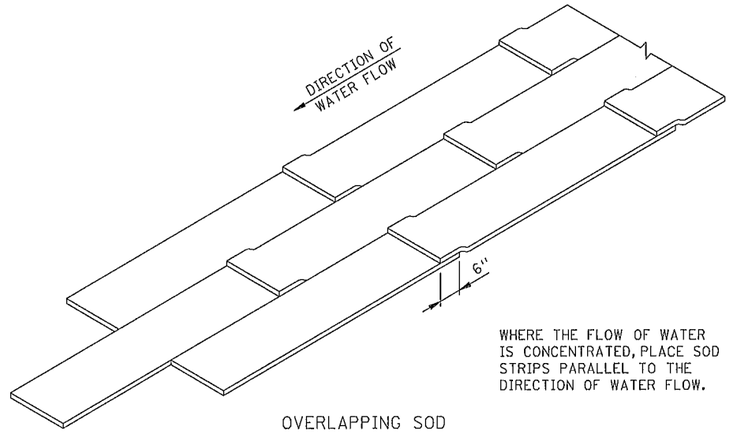



PLAN



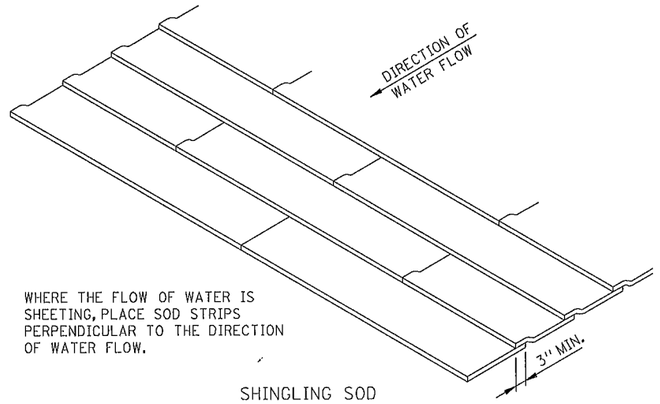

ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS




WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.

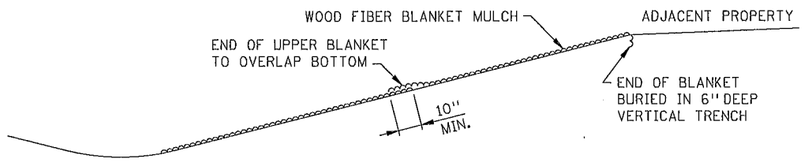
OVERLAPPING SOD



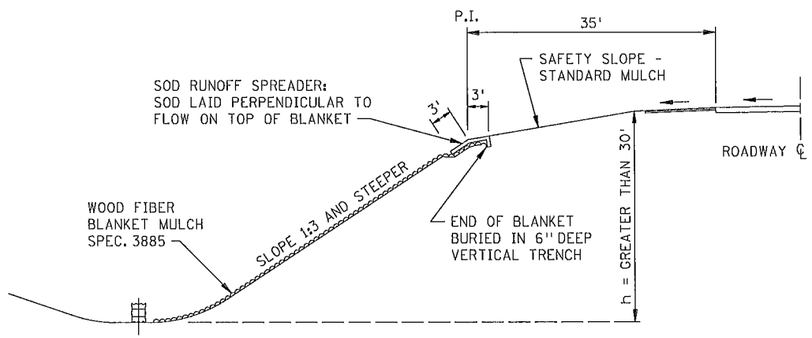

WHERE THE FLOW OF WATER IS SHEETING, PLACE SOD STRIPS PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

SHINGLING SOD

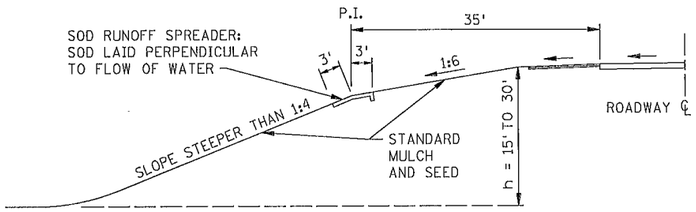
SPECIAL SOD PLACEMENT TECHNIQUES



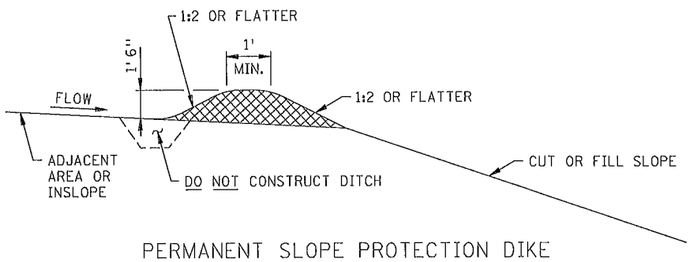

WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



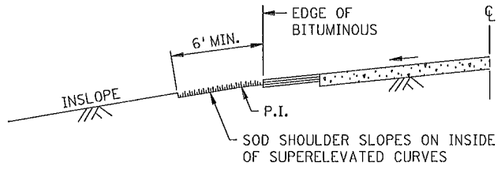

WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
( WHEN REQUIRED )




BROKEN-BACK SAFETY FILL SLOPE




PERMANENT SLOPE PROTECTION DIKE




SODDING INSLOPES OF SUPERELEVATED CURVES

REVISION:

APPROVED: 8-6-2014
CHIEF ENVIRONMENTAL OFFICER

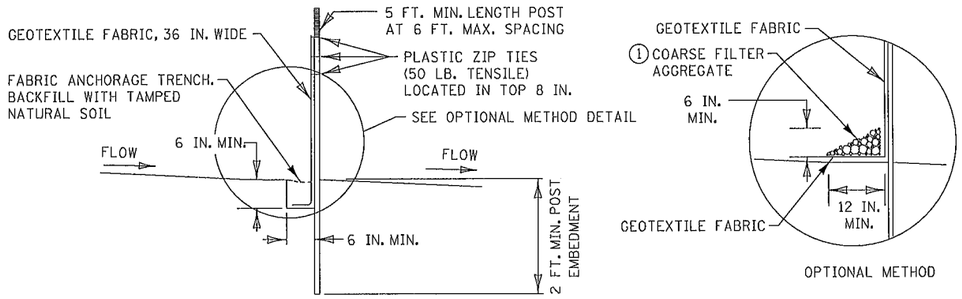
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

REVISED:

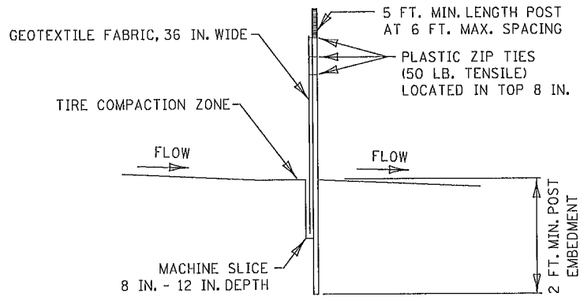
APPROVED: 8-6-2014
STATE DESIGN ENGINEER

# PERMANENT SEDIMENT CONTROL
ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS

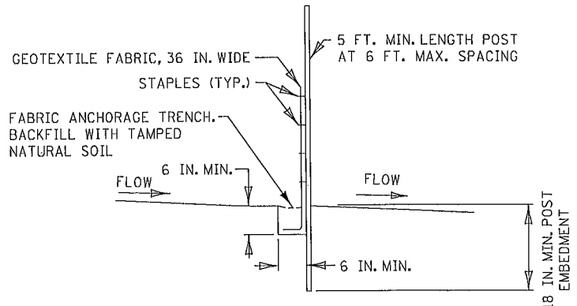
STANDARD PLAN 5-297.406 | 265 OF 482



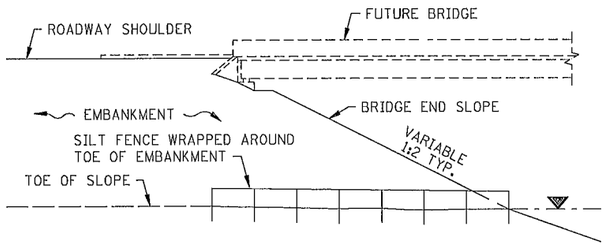

SILT FENCE TYPE HI ②
(HAND INSTALLED)



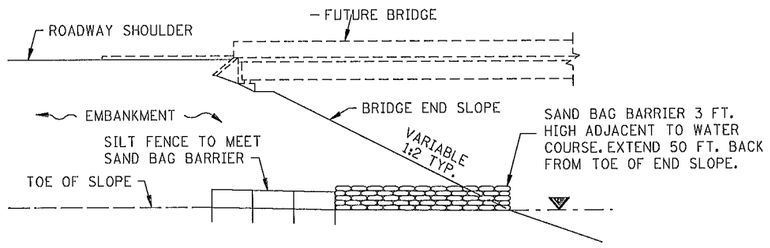

SILT FENCE TYPE MS ②
(MACHINE SLICED)




SILT FENCE TYPE PA ③
(PREASSEMBLED)

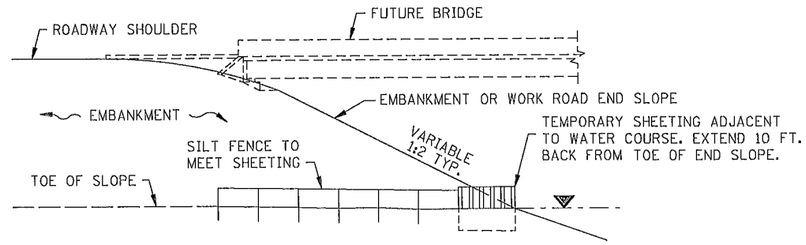



SILT FENCE ONLY ④

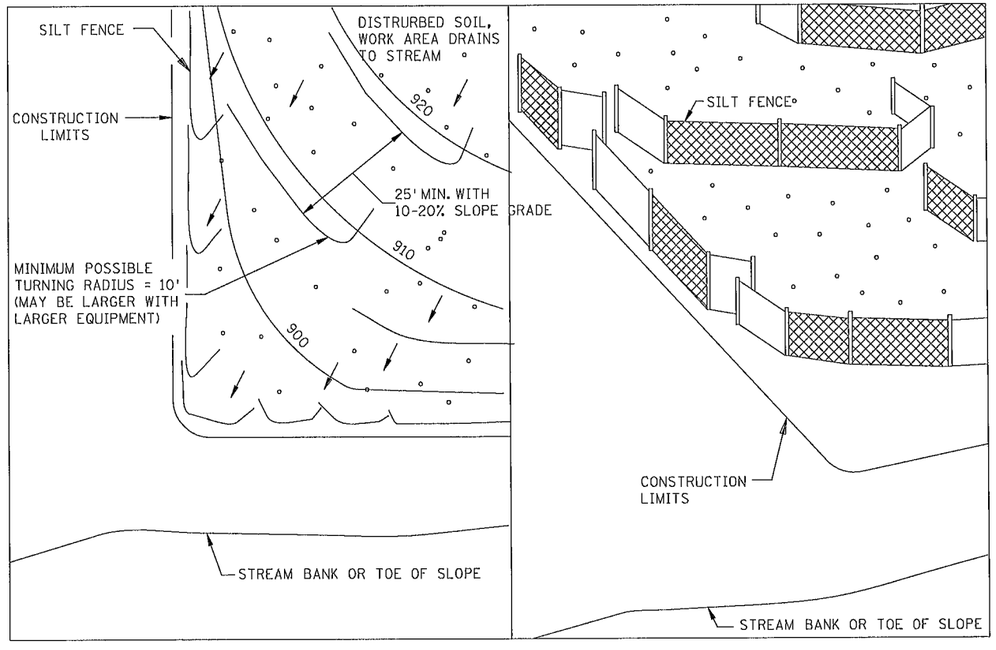



SILT FENCE WITH SAND BAGS ⑤

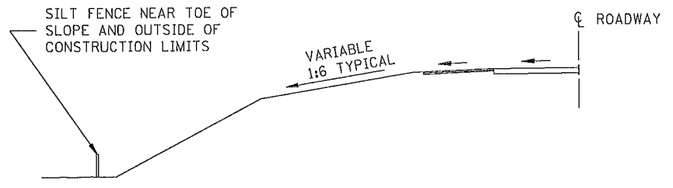
INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER




SILT FENCE WITH SHEETING ⑥




J-HOOK INSTALLATION




LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

④ WATER COURSE FLOW VELOCITY: STANDING.
CONTRIBUTING SLOPE AREA: 1./2 ACRE.

⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1. ACRE.

⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES.

REVISION:

APPROVED: 8-6-2014
CHIEF ENVIRONMENTAL OFFICER

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

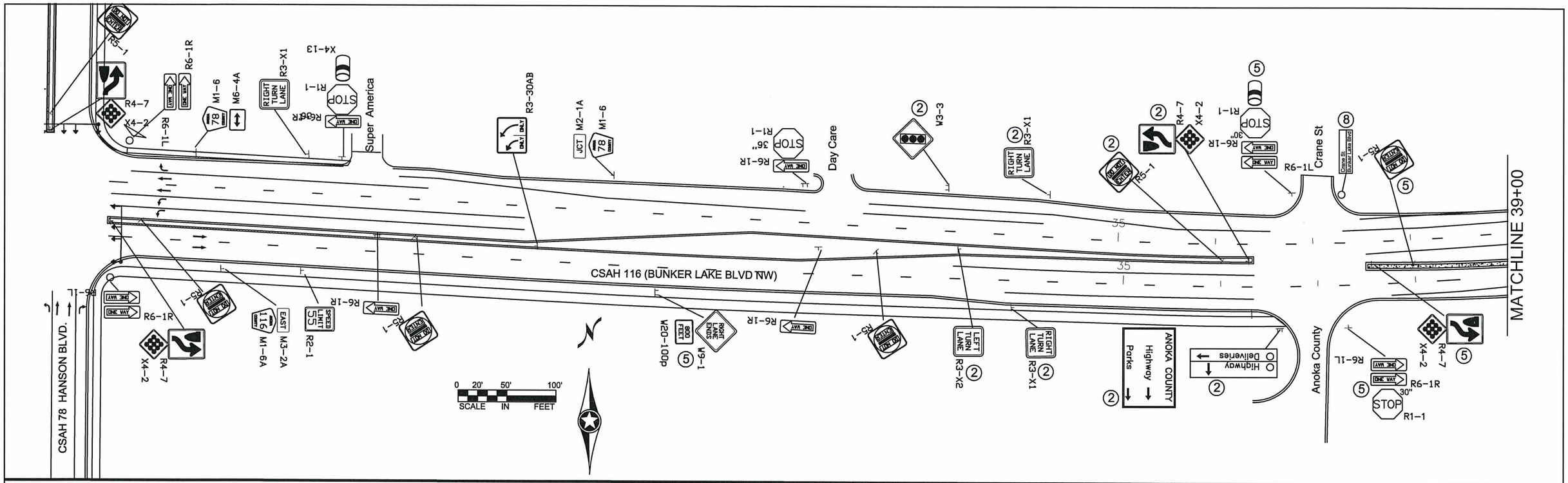
REVISED:

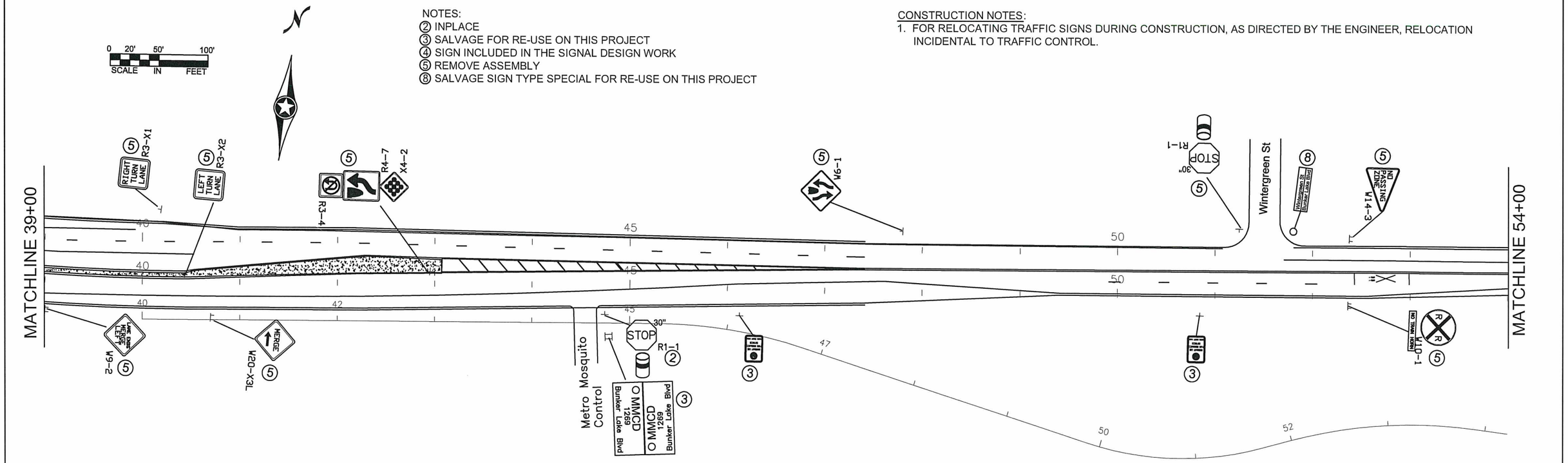
APPROVED: 8-6-2014
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
SILT FENCE

STANDARD PLAN 5-297.405 | 266 OF 482

PLOTTED/REVISED: $$$$@DATE@$$$$
USER NAME: $$@USER$NAME@$$$
PATH & FILENAME: $$$@PATHFILENAME@$$$
FILE NAME: @FILENAME@




NOTES:
② INPLACE
③ SALVAGE FOR RE-USE ON THIS PROJECT
④ SIGN INCLUDED IN THE SIGNAL DESIGN WORK
⑤ REMOVE ASSEMBLY
⑧ SALVAGE SIGN TYPE SPECIAL FOR RE-USE ON THIS PROJECT

CONSTRUCTION NOTES:
1. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg | | | | MN. |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/20/16 REG. NO. 20235

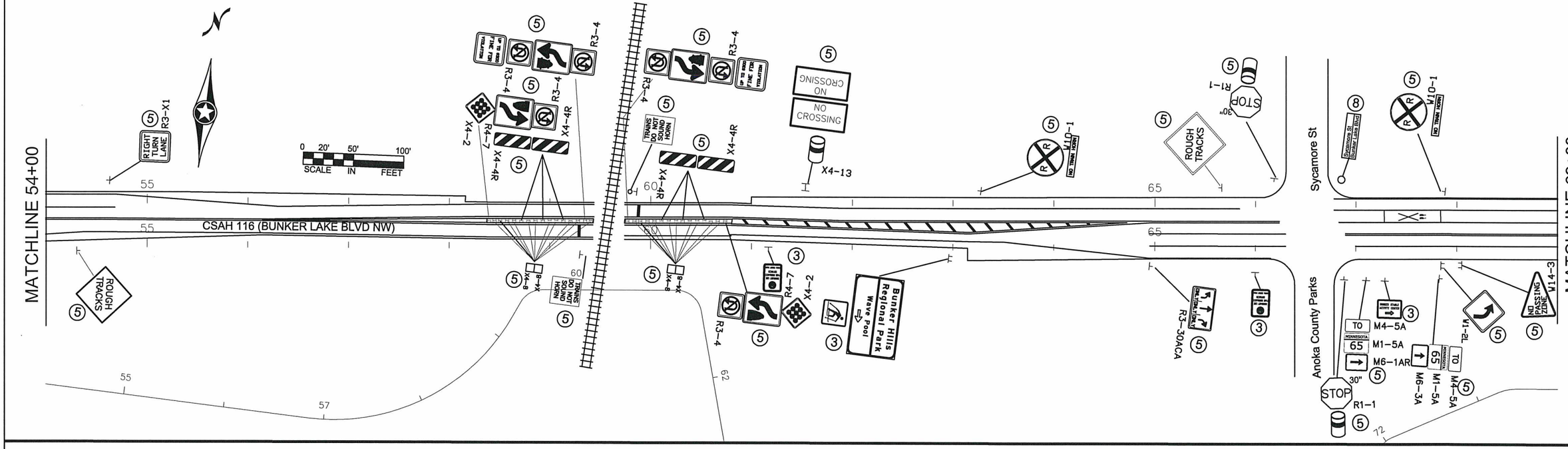
DRAWN BY TMV DATE 01-26-16
DESIGN BY DATE
CHECKED BY DATE

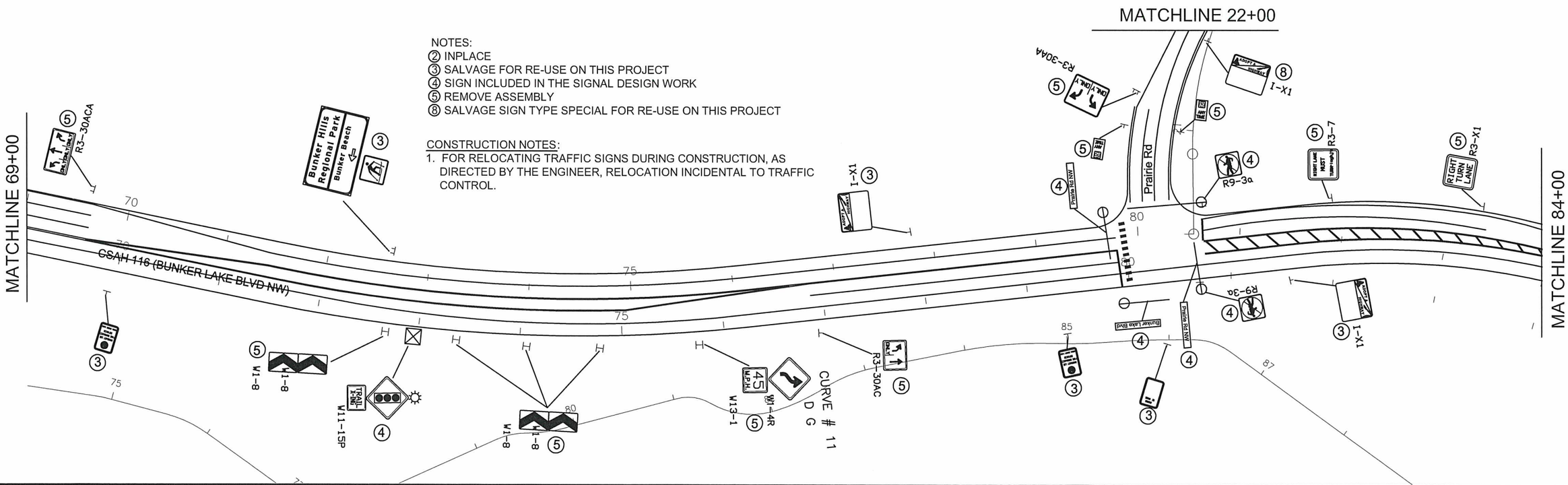
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIGNING & STRIPING PLAN

Sheet 267 of 482 Sheets

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DATE: 5/25/16 REG. NO. 20235

DRAWN BY TMV DATE 01-26-16
DESIGN BY DATE
CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIIGNING & STRIPING PLAN

Sheet 268 of 482 Sheets

MATCHLINE 84+00

MATCHLINE 99+00

CSAH 116 (BUNKER LAKE BLVD NW)

NOTES:
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0 20' 50' 100'
SCALE IN FEET

ACTIVITY CENTER ENTRANCE 600 FT.

W1-8 W1-15P TRAIL XING W1-2L W1-2R W16-7P W3-1 W1-4R 45 M.P.H. W13-1 R1-1 STOP 30" R3-1 NO OUTLET EXCEPT BIKES R4-7 Goldenrod St Goldenrod St Bunker Lake Blvd RIGHT TURN LANE R3-X1 Bunker Park Stables Horse Rides Trail Rides 763-757-9445

MATCHLINE 99+00

MATCHLINE 114+00

CSAH 116 (BUNKER LAKE BLVD NW)

BUNKER HILLS ACTIVITY CENTER
PARKS HEADQUARTERS
EXTENSION SERVICE
BUNKER PARK STABLES
550 BUNKER LAKE BLVD NW

Bunker Beach/Campground

CURVE # 11

Parks Activity Center

M6-3A M1-5A M4-5A TO 65 MINIMUM

NO PASSING ZONE W14-3

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/25/16 REG. NO. 20235

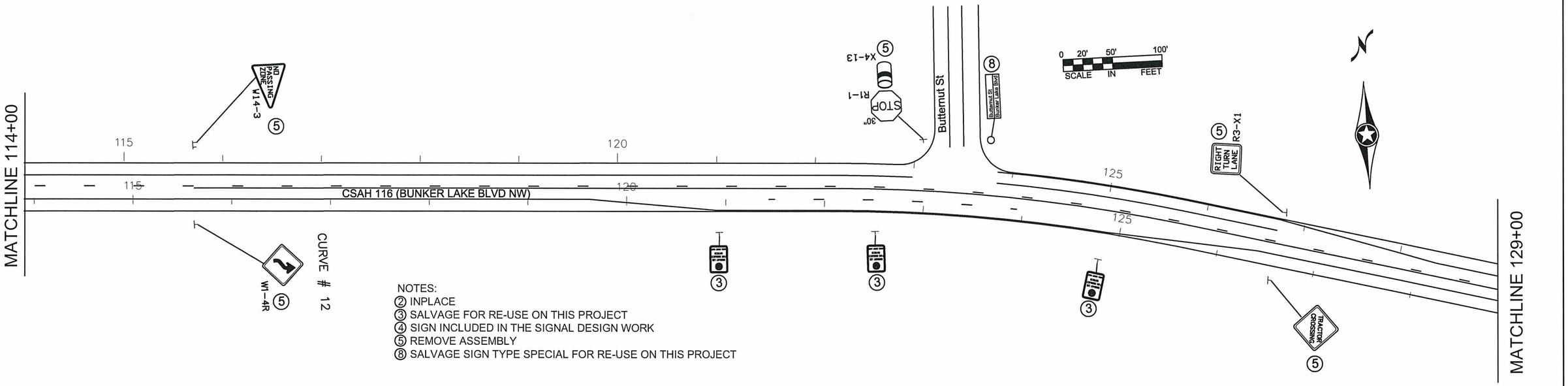
DRAWN BY TMV DATE 01-26-16
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIGNING & STRIPING PLAN

Sheet 269 of 482 Sheets

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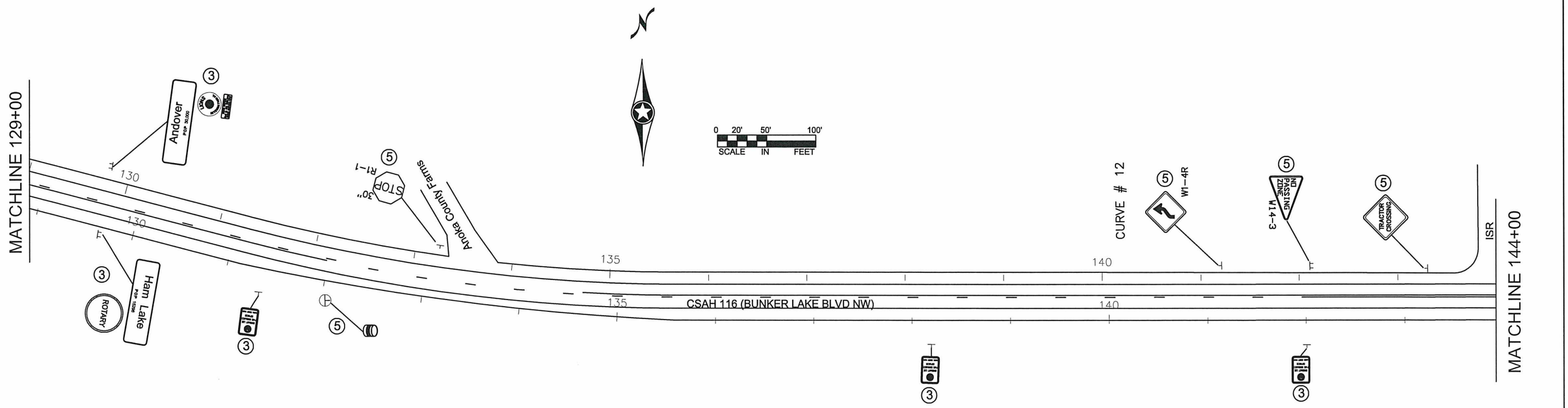


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DATE: 5/25/16 REG. NO. 20235

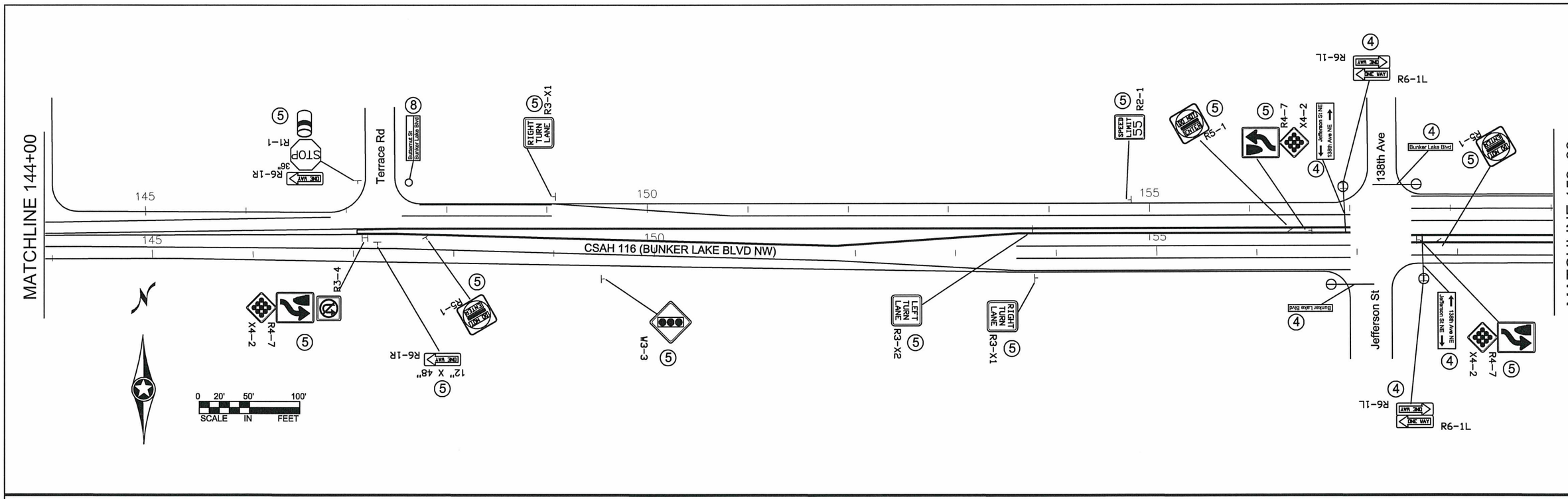
DRAWN BY TMV DATE 01-26-16
DESIGN BY DATE
CHECKED BY DATE

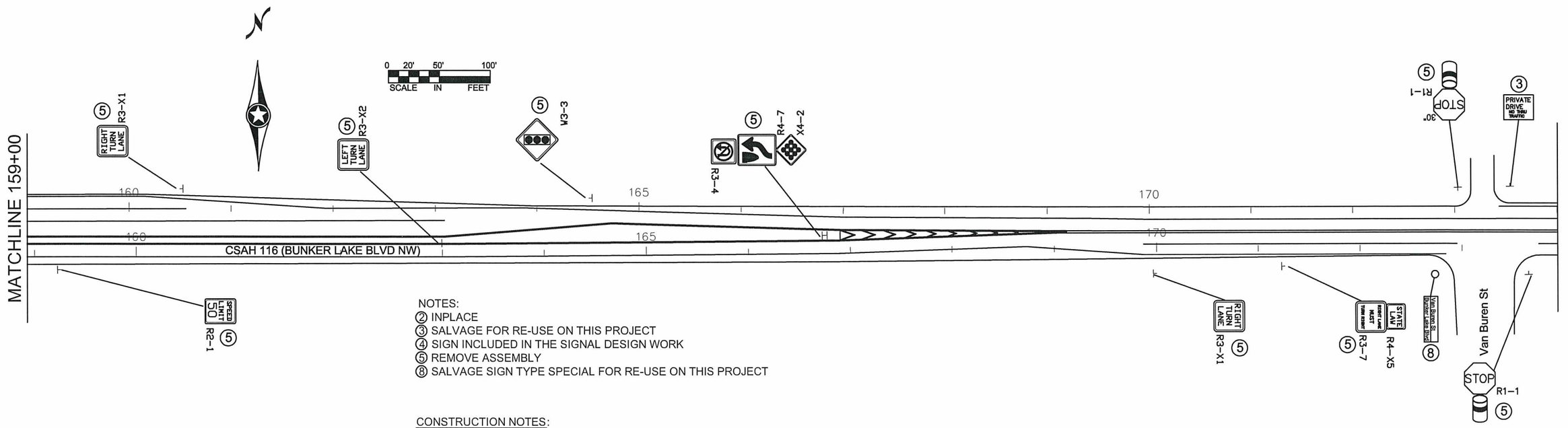
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIGNING & STRIPING PLAN

Sheet 270 of 482 Sheets

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PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/25/16 REG. NO. 20235

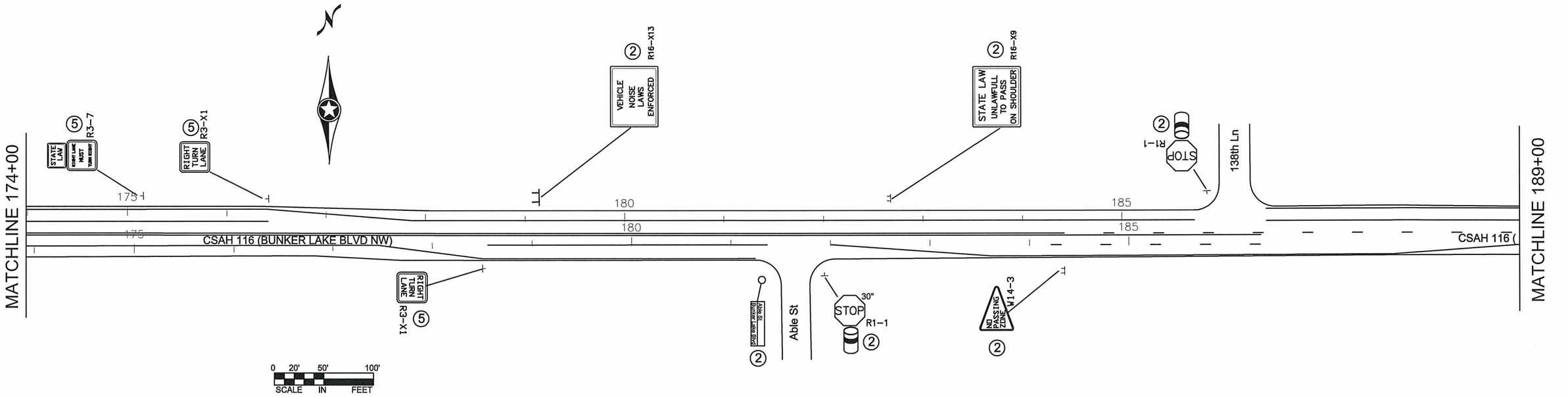
DRAWN BY TMV DATE 01-26-16
DESIGN BY DATE
CHECKED BY EH DATE 8/10/10

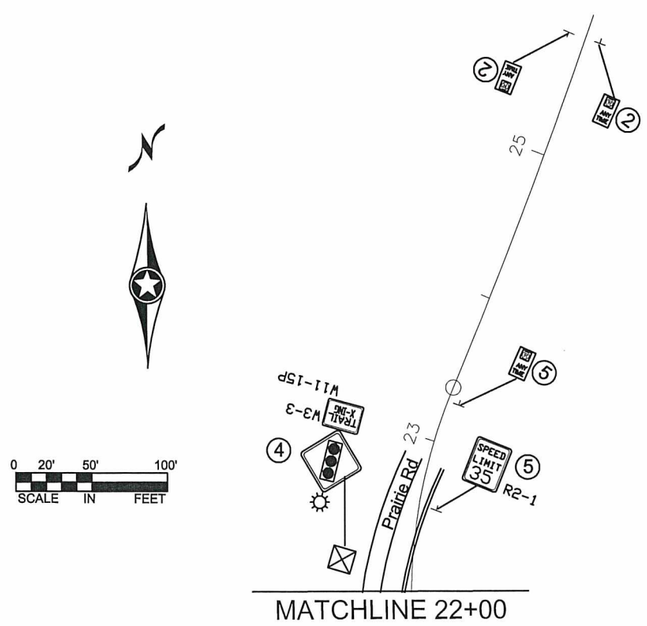
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIGNING & STRIPING PLAN

Sheet 271 of 482 Sheets

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIGNING & STRIPING

Sheet 272 of 482 Sheets

**M** — EXISTING SIGN TAB

| STATION | ADDRESS/ DESCRIPTION (NOTES) | SALVAGE SIGN TYPE C | SALVAGE SIGN TYPE D | SALVAGE SIGN TYPE SPECIAL (1) | INSTALL SIGN TYPE C | INSTALL SIGN TYPE D | INSTALL SIGN TYPE SPECIAL (1) | SIGN NUMBER | SIGN LEGEND |
|---|---|---|---|---|---|---|---|---|---|
| | | EACH | EACH | EACH | EACH | EACH | EACH | | |
| 36+00 | Median | 1 | | | | | | R5-1 | Do Not Enter |
| 36+20 | Rt | | 1 | | | | | | AC, Hwy Prks |
| 36+35 | Median | 1 | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine-Button |
| 36+60 | Rt | | 1 | | | | | | Hwy, Deliv |
| 36+80 | Lt | 1 | | | | | | R6-14 | One Way |
| | | | | | | | | R6-14 | One Way |
| | | | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 37+30 | Lt | | | 1 | | | 1 | | Street Sign |
| 37+30 | Rt | 1 | | | | | | R4-7 | One Way |
| | | | | | | | | R4-7 | One Way |
| | | | | | | | | X4-2 | 30" Stop |
| 37+50 | Median | 1 | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine-Button |
| 38+00 | Median | 1 | | | | | | R5-1 | Do Not Enter |
| 39+00 | Rt | 1 | | | | | | W9-2 | Lane Ends Mrge |
| 40+20 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 40+45 | Median | 1 | | | | | | R3-X2 | Left Turn Ln |
| 40+70 | Rt | 1 | | | | | | W20-X3L | Merge |
| 42+95 | Rt | 1 | | | | | | R3-4 | No U Turn |
| | | | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine-Button |
| 44+70 | Rt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 44+80 | Rt | 1 | | | 1 | | | | MMCD |
| 46+10 | Rt | 1 | | | 1 | | | | AC Parks |
| 47+80 | Lt | 1 | | | | | | W6-1 | Divided Hwy |
| 50+80 | Rt | 1 | | | 1 | | | | AC Parks |
| 51+25 | Lt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 51+80 | Lt | | | 1 | | | 1 | | Street Sign |
| 52+35 | Rt | 1 | | | | | | W10-1 | RR Xing |
| | | | | | | | | | No Train Horn |
| 52+35 | Lt | 1 | | | | | | W14-3 | No Passing Zone |
| 54+30 | Rt | 1 | | | | | | W8-X13 | Rough Tracks |
| 54+65 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 58+40 | Median | 1 | | | | | | R3-4 | No U Turn |
| | | | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine-Button |
| 58+49 | Median | 1 | | | | | | X4-8 | Delineator |
| 58+56 | Median | 1 | | | | | | X4-8 | Delineator |
| 58+63 | Median | 1 | | | | | | X4-8 | Delineator |
| 58+70 | Median | 1 | | | | | | X4-4R | Chevron |
| 58+77 | Median | 1 | | | | | | X4-8 | Delineator |
| 58+84 | Median | 1 | | | | | | X4-8 | Delineator |
| 58+91 | Median | 1 | | | | | | X4-4R | Chevron |
| 58+98 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+05 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+12 | Median | 1 | | | | | | X4-4R | Chevron |
| 59+19 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+26 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+35 | Median | 1 | | | | | | R3-4 | No U Turn |
| | | | | | | | | | Fine Violation |
| | | | | | | | | R4-7 | Keep Right |
| | | | | | | | | R3-4 | No U Turn |
| 59+35 | Median | 1 | | | | | | | No Horns |
| 59+42 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+75 | Median | 1 | | | | | | | No Horns |
| 59+75 | Median | 1 | | | | | | R4-7 | Keep Right |
| | | | | | | | | R3-4 | No U Turn |
| | | | | | | | | R3-4 | No U Turn |
| | | | | | | | | | Fine Violation |
| 59+82 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+89 | Median | 1 | | | | | | X4-8 | Delineator |
| 59+96 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+03 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+10 | Median | 1 | | | | | | X4-4R | Chevron |
| 60+17 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+24 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+31 | Median | 1 | | | | | | X4-4R | Chevron |
| 60+38 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+45 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+52 | Median | 1 | | | | | | X4-4R | Chevron |
| 60+59 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+66 | Median | 1 | | | | | | X4-8 | Delineator |
| 60+75 | Median | 1 | | | | | | R3-4 | No U Turn |
| | | | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine Button |
| 61+20 | Rt | 1 | | | 1 | | | | AC Parks |
| 61+55 | Lt | 1 | | | | | | | No Crossing |
| | | | | | | | | | No Crossing |
| | | | | | | | | X4-13 | Delineator |
| 62+95 | Rt | 1 | | | 1 | | | | Bunker Hills |
| | | | | | 1 | | | D7-X14 | X Country Ski |
| 63+30 | Lt | 1 | | | | | | W10-1 | RR Xing |
| | | | | | | | | | No Train Horn |
| 64+95 | Rt | 1 | | | | | | R3-30ACA | Lane Designation |
| 65+70 | Lt | 1 | | | | | | W8-X13 | Rough Tracks |

**M** — EXISTING SIGN TAB

| STATION | ADDRESS/ DESCRIPTION (NOTES) | SALVAGE SIGN TYPE C | SALVAGE SIGN TYPE D | SALVAGE SIGN TYPE SPECIAL (1) | INSTALL SIGN TYPE C | INSTALL SIGN TYPE D | INSTALL SIGN TYPE SPECIAL (1) | SIGN NUMBER | SIGN LEGEND |
|---|---|---|---|---|---|---|---|---|---|
| | | EACH | EACH | EACH | EACH | EACH | EACH | | |
| 66+00 | Rt | 1 | | | 1 | | | | AC Parks |
| 66+20 | Lt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | X4-13 | Delineator |
| 66+90 | Rt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | X4-13 | Delineator |
| 66+90 | Lt | | | 1 | | | 1 | | Street Sign |
| 67+10 | Rt | 1 | | | | | | M4-5A | TO |
| | | | | | | | | M1-5A | MN 65 |
| | | | | | | | | M6-1AR | Arrow |
| 67+30 | Rt | 1 | | | 1 | | | | Bunker Stable |
| 67+80 | Rt | 1 | | | | | | M4-5A | TO |
| | | | | | | | | M1-5A | MN 65 |
| | | | | | | | | M6-3A | Arrow |
| 67+80 | Rt | 1 | | | | | | W1-2L | Curve |
| 67+90 | Lt | 1 | | | | | | W10-1 | RR Xing |
| | | | | | | | | | No Train Horn |
| 68+00 | Rt | 1 | | | | | | W14-3 | No Passing Zone |
| 69+60 | Lt | 1 | | | | | | R3-30ACA | Lane Designation |
| 70+00 | | 1 | | | 1 | | | | AC Parks |
| 72+70 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 72+70 | Lt | 1 | | | 1 | | | | Bunker Hills |
| | | | | | 1 | | | D7-X14 | X Country Ski |
| 73+40 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 74+10 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 74+80 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 75+75 | Rt | 1 | | | | | | W1-4R | Curve |
| | | | | | | | | W13-1 | Advisory Speed |
| 76+90 | Rt | 1 | | | | | | R3-30ACA | Lane Designation |
| 77+85 | Lt | 1 | | | | | | I-X1 | Adopt A Hwy |
| 79+35 | Rt | 1 | | | 1 | | | | AC Parks |
| 80+30 | Rt | 1 | | | 1 | | | | Attn Pet Owners |
| 80+60 | Lt | 1 | | | 1 | | | R9-3a | No Peds |
| 80+70 | Rt | 1 | | | 1 | | | R9-3a | No Peds |
| 81+60 | Rt | 1 | | | | | | I-X1 | Adopt A Hwy |
| 81+90 | Lt | 1 | | | | | | R3-7 | Rt Ln Must Turn Rt |
| 83+30 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 84+60 | Lt | 1 | | | | | | X4-5 | Plow Up |
| 84+80 | Lt | 1 | | | | | | W1-2L | Curve |
| 84+80 | Rt | | 1 | | 1 | | | | Activty Center |
| 86+10 | Rt | | | 1 | 1 | | | | AC Parks |
| 87+70 | Lt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 88+40 | Lt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 89+20 | Lt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 89+90 | Lt | 1 | | | | | | W1-8 | Chevron |
| 90+60 | Lt | 1 | | | | | | W1-8 | Chevron |
| 90+80 | Rt | 1 | | | 1 | | | | AC Parkss |
| | | | | 1 | 1 | | | | No Mtr Vehicles |
| 91+40 | Lt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 92+10 | Lt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 93+50 | Rt | 1 | | | | | | W1-8 | Chevron |
| 94+35 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 95+35 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 96+35 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 97+10 | Rt | 1 | | | | | | W1-8 | Chevron |
| | | | | | | | | W1-8 | Chevron |
| 97+20 | Rt | 1 | 1 | | 1 | | | | Bunker Pk Stables |
| 97+50 | Rt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 99+60 | Rt | | 1 | | 1 | | | | Activity Center |
| 100+00 | Rt | | | 1 | 1 | | | | AC Parks |
| 100+60 | Rt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 100+90 | Rt | | | 1 | 1 | | | | AC Parks |
| 101+40 | Rt | 1 | | | | | | M4-5A | TO |
| | | | | | | | | M1-5A | MN 65 |
| | | | | | | | | M6-3A | Arrow |
| 102+30 | Lt | | 1 | | | | | | Activity Center |
| 104+70 | Lt | 1 | | | | | | W1-4R | Curve |
| | | | | | | | | W13-1 | Advisory Speed |
| 107+00 | Rt | 1 | | | | | | W14-3 | No Passing Zone |
| 107+30 | Rt | | | 1 | 1 | | | | AC Parks |
| 107+70 | Rt | 1 | | | | | | | TP |
| 107+95 | Lt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 108+00 | Rt | | 1 | | 1 | | | | Bunker Pk Stables |

**M** — EXISTING SIGN TAB

| STATION | ADDRESS/ DESCRIPTION (NOTES) | SALVAGE SIGN TYPE C | SALVAGE SIGN TYPE D | SALVAGE SIGN TYPE SPECIAL (1) | INSTALL SIGN TYPE C | INSTALL SIGN TYPE D | INSTALL SIGN TYPE SPECIAL (1) | SIGN NUMBER | SIGN LEGEND |
|---|---|---|---|---|---|---|---|---|---|
| | | EACH | EACH | EACH | EACH | EACH | EACH | | |
| 108+40 | Lt | 1 | | | | | | R4-7 | Keep Right |
| 108+40 | Rt | | | 1 | 1 | | | | No Mtr Vehicles |
| 108+80 | Lt | | | 1 | | | 1 | | Street Sign |
| 110+20 | Rt | | | 1 | 1 | | | | AC Parks |
| 111+70 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 115+60 | Rt | 1 | | | | | | W1-4R | Curve |
| 115+70 | Lt | 1 | | | | | | W14-3 | No Passing Zone |
| 120+95 | Rt | | | 1 | 1 | | | | AC Parks |
| 122+55 | Rt | | | 1 | 1 | | | | AC Parks |
| 123+10 | Lt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 123+95 | Lt | | | 1 | | | 1 | | Street Sign |
| 124+80 | Rt | | | 1 | 1 | | | | AC Parks |
| 126+55 | Rt | 1 | | | | | | W11-5 | Tractor Crossing |
| 126+80 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 129+65 | Rt | 1 | | | | | | | Ham Lake |
| | | | | | | | | | Rotary |
| 129+80 | Lt | 1 | | | | | | | Andover |
| | | | | | | | | | Lions |
| 131+40 | Rt | | | 1 | 1 | | | | AC Parks |
| 132+00 | Rt | 1 | | | | | | | TP |
| 133+25 | Lt | 1 | | | | | | R1-1 | 30" Stop |
| 138+20 | Rt | | | 1 | 1 | | | | AC Parks |
| 141+20 | Lt | 1 | | | | | | W1-4R | Curve |
| 142+00 | Rt | | | 1 | 1 | | | | AC Parks |
| 142+10 | Lt | 1 | | | | | | W14-3 | No Passing Zone |
| 143+30 | Lt | 1 | | | | | | W11-5 | Tractor Crossing |
| 147+10 | Median | 1 | | | | | | R3-4 | No U Turn |
| | | | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine Button |
| 147+10 | Lt | 1 | | | | | | R6-1R | One Way |
| | | | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 147+25 | Median | 1 | | | | | | R6-1R | One Way |
| 147+60 | Lt | | | 1 | | | 1 | | Street Sign |
| 147+70 | Rt | 1 | | | | | | R5-1 | Do Not Enter |
| 149+10 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 149+45 | Rt | 1 | | | | | | W3-3 | Signal Ahead |
| 153+80 | Rt | 1 | | | | | | R3-X2 | Left Turn Ln |
| 153+80 | Rt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 154+80 | Lt | 1 | | | | | | R2-1 | Speed Limit |
| 156+30 | Median | 1 | | | | | | R5-1 | Do Not Enter |
| 156+55 | Median | 1 | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine Button |
| 156+90 | Lt | 1 | | | | | | R6-1L | One Way |
| | | | | | | | | R6-1L | One Way |
| 157+55 | Rt | 1 | | | | | | R6-1L | One Way |
| | | | | | | | | R6-1L | One Way |
| 157+60 | Rt | 1 | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine Button |
| 157+80 | Rt | 1 | | | | | | R5-1 | Do Not Enter |
| 159+20 | Rt | 1 | | | | | | R2-1 | Speed Limit |
| 160+50 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 163+00 | Median | 1 | | | | | | R3-X2 | Left Turn Ln |
| 164+60 | Lt | 1 | | | | | | W3-3 | Signal Ahead |
| 166+75 | Lt | 1 | | | | | | R3-4 | No U Turn |
| | | | | | | | | R4-7 | Keep Right |
| | | | | | | | | X4-2 | Nine Button |
| 169+95 | Rt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 171+20 | Rt | 1 | | | | | | R4-X5 | State Law |
| | | | | | | | | R3-7 | Rt Ln Must Turn Rt |
| 172+80 | Rt | | | 1 | | | 1 | | Street Sign |
| 173+00 | Lt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 173+50 | Lt | | | 1 | | | | | Private Dr |
| 173+65 | Rt | 1 | | | | | | R1-1 | 30" Stop |
| | | | | | | | | | Delineator |
| 175+20 | Lt | 1 | | | | | | R4-X5 | State Law |
| | | | | | | | | R3-7 | Rt Ln Must Turn Rt |
| 176+50 | Lt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 178+30 | Rt | 1 | | | | | | R3-X1 | Right Turn Ln |
| 179+10 | Lt | 1 | | | | | | R16-X13 | Vehicle Noise |
| | | | | | | | | | |
| PRAIRIE ROAD | | | | | | | | | |
| 21+00 | Rt | 1 | | | | | | R8-3 | No Parking |
| 21+00 | Lt | 1 | | | | | | R8-3 | No Parking |
| 21+20 | Lt | 1 | | | | | | R3-30AA | Lane Designation |
| 21+90 | Rt | 1 | | | | | | | Adopt-A-Highway |
| 22+60 | Rt | 1 | | | | | | R2-1 | Sp Lmt 35 |
| 23+30 | Rt | 1 | | | | | | R8-3 | No Parking |
| | | | | | | | | | |
| | | | | | | | | | |
| | TOTAL | 156 | 7 | 21 | 33 | 0 | 7 | | |

**CONSTRUCTION NOTES:**

**1. SIGN TYPE SPECIAL ARE TO REMAIN VISIBLE AT ALL TIMES. SHALL BE PAID BY THE EACH, WHEN RELOCATION IS REQUIRED.**

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg | | | | MN. |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/25/16 REG. NO. 20235

DRAWN BY TMV DATE 01-26-16

DESIGN BY _____ DATE _____

CHECKED BY _____ DATE _____

ANOKA COUNTY

# ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

EXISTING SIGNING & STRIPING PLAN

Sheet 273 of 482 Sheets

CR 16 (Andover Blvd)

CSAH 78 (Hanson Blvd)

Prairie Road

CSAH 116 (Bunker Lk Blvd)

Foley Blvd

CSAH 51 (University Ave)

Jefferson St

PLACE SIGN AT TIME OF PRAIRIE RD CLOSURE.

SIGN TO BE REMOVED WHEN PRAIRIE RD OPENS TO TRAFFIC

PLACE SIGNS AT TIME OF PRAIRIE RD CLOSURE.

SIGNS TO BE REMOVED WHEN PRAIRIE RD OPENS TO TRAFFIC

DRAWING NOT TO SCALE

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME:

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY T.V. DATE 01/2016

DESIGN BY DATE

CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DETOUR PLAN

Sheet 274 of 482 Sheets

| M.U.T.C.D. CODE | SIZE | INSERT | QUANTITY |
|---|---|---|---|
| W20-1 | 36" x 36" | ROAD WORK AHEAD | 2 |
| M1-6 | 24" x 24" | ANOKA 116 COUNTY | 4 |
| W20-2 | 36" x 36" | DETOUR AHEAD | 4 |
| W20-3 | 36" x 36" | ROAD CLOSED AHEAD | 2 |
| M4-10R | 48" x 18" | DETOUR | SEE NOTE (2) |
| TYPE III | 8 FOOT | | 2 |
| M4-10L | 48" x 18" | DETOUR | SEE NOTE (2) |
| TYPE III | 8 FOOT | | 1 |
| | | ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (2) |
| TYPE III | 8 FOOT | | 6 |
| FLASHER | | | |
| R11-3a | 48" x 18" | ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (5) |
| PLACE AT WEST END OF PROJECT | | | 1 |
| R11-3a | 48" x 18" | ROAD CLOSED 1.25 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (5) |
| PLACE AT EAST END OF PROJECT | | | 1 |
| R11-3a | 48" x 18" | ROAD CLOSED 1/4 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (6) |
| PLACE AT WEST END OF PROJECT | | | 1 |
| R11-3a | 48" x 18" | ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (6) |
| PLACE AT EAST END OF PROJECT | | | 1 |
| R11-3a | 48" x 18" | ROAD CLOSED 3/4 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (7) |
| PLACE ON PRAIRIE RD | | | 1 |
| R11-3a | 48" x 18" | ROAD CLOSED 1 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (8) |
| PLACE AT WEST END OF PROJECT | | | 1 |
| R11-3a | 48" x 18" | ROAD CLOSED 1.5 MILES AHEAD LOCAL TRAFFIC ONLY | SEE NOTE (8) |
| PLACE AT EAST END OF PROJECT | | | 1 |

| M.U.T.C.D. CODE | SIZE | INSERT | QUANTITY |
|---|---|---|---|
| M4-8A | 24" x 12" | DETOUR WEST | 24 |
| M3-4A | 24" x 12" | | 24 |
| M1-6A | 24" x 24" | ANOKA 116 COUNTY | 24 |
| | 21" X 15" | M5-1AL | 2 |
| | | M6-1AL | 3 |
| | | M5-1AR | 3 |
| | | M6-1AR | 4 |
| | | M5-2AR | 2 |
| | | M6-3A | 10 |
| M4-8A | 24" x 12" | DETOUR EAST | 22 |
| M3-4A | 24" x 12" | | 22 |
| M1-6A | 24" x 24" | ANOKA 116 COUNTY | 22 |
| | 21" X 15" | M5-1AL | 3 |
| | | M6-1AL | 3 |
| | | M5-1AR | 3 |
| | | M6-1AR | 3 |
| | | M6-3A | 10 |
| M4-6A | 24" x 12" | END DETOUR | 4 |
| M4-8A | 24" x 12" | | 4 |
| M1-6A | 24" x 24" | ANOKA 116 COUNTY | 4 |
| G20-X2 | 132" x 106" | ROAD CLOSED Butternut St To Terrace Rd FOLLOW DETOUR | SEE NOTE (5) 3 |
| | | G20-X2 | |
| G20-X2A | 84" x 20" | Crane St | SEE NOTE (7) 3 |
| G20-X2A | 84" x 20" | Goldenrod St | SEE NOTE (7) 3 |
| G20-X2A | 84" x 20" | Prairie Rd | SEE NOTE (8) 3 |
| G20-X2A | 114" x 20" | BEGINS MO/DY | ✳ 3 |

| M.U.T.C.D. CODE | SIZE | INSERT | QUANTITY |
|---|---|---|---|
| G20-X2 | 132" x 106" | ANOKA 116 COUNTY ROAD CLOSED Terrace Rd To Butternut St FOLLOW DETOUR | SEE NOTE (5) 3 |
| | | G20-X2 | |
| G20-X2A | 84" x 20" | Goldenrod St | SEE NOTE (7) 3 |
| G20-X2A | 84" x 20" | Crane St | SEE NOTE (7) 3 |
| G20-X2A | 84" x 20" | Prairie Rd | SEE NOTE (8) 3 |
| G20-X2A | 114" x 20" | BEGINS MO/DY | ✳ 3 |

✳ SIGNS TO BE INSTALLED A MINIMUM OF TEN DAYS PRIOR TO ACTUAL CLOSING DATE OF ROAD CLOSURE AND IMPLEMENTATION OF DETOUR SIGNING. SIGNS TO BE REMOVED AT TIME OF DETOUR INSTALLATION.

## DETOUR TRAFFIC CONTROL NOTES:

1. LOCATIONS OF ALL SIGNS ARE APPROXIMATE, EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. ALL BARRICADES SHALL HAVE REFLECTIVE MATERIAL ON BOTH SIDES AND MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD).
3. ALL BARRICADES AND SIGNS SHALL BE PROPERLY WEIGHTED WITH SANDBAGS.
4. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
5. PLACE SIGNS PRIOR TO THE COMMENCEMENT OF ROAD CLOSURE FOR STAGE 1 CONSTRUCTION.
6. REMOVE STAGE 1 SIGN AND PLACE SIGN AT COMMENCEMENT OF ROAD CLOSURE FOR STAGE 2 CONSTRUCTION.
7. PLACE AT COMMENCEMENT OF STAGE 2 CONSTRUCTION.
8. REMOVE STAGE 2 SIGN AND PLACE SIGN AT COMMENCEMENT OF ROAD CLOSURE FOR STAGE 2B CONSTRUCTION.
9. ADDITIONS OR CHANGES TO THIS PLAN MAY BE MADE AS DETERMINED BY THE ENGINEER.

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | | | | | |

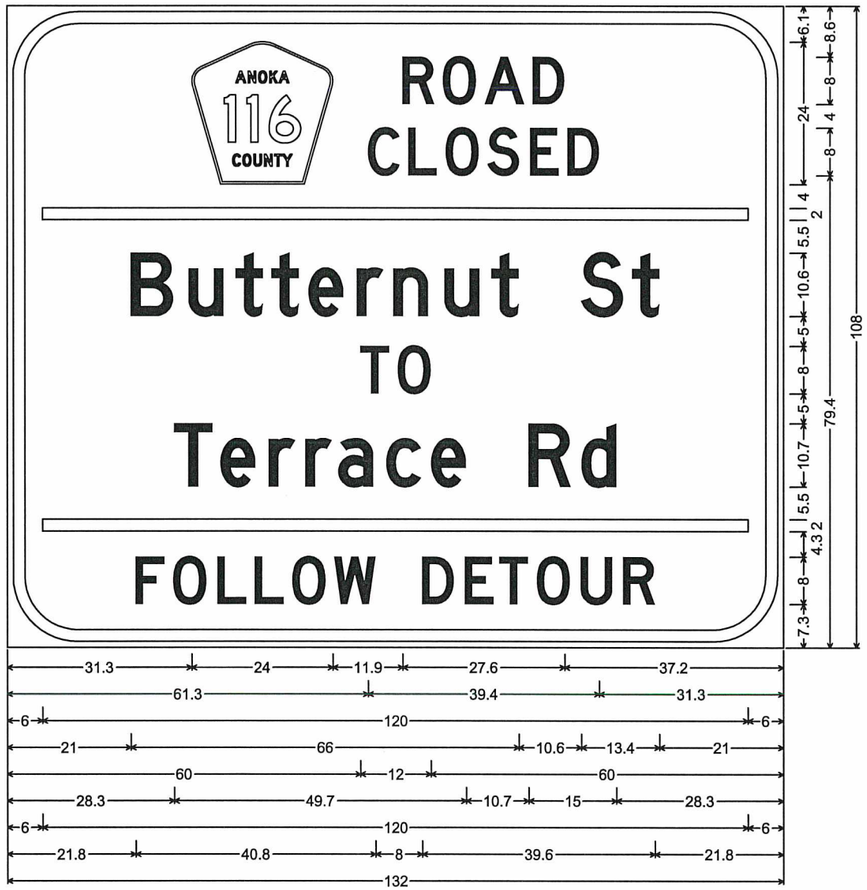
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/31/16 REG. NO. 20235

DRAWN BY T.V. DATE 01/2016
DESIGN BY DATE
CHECKED BY DATE

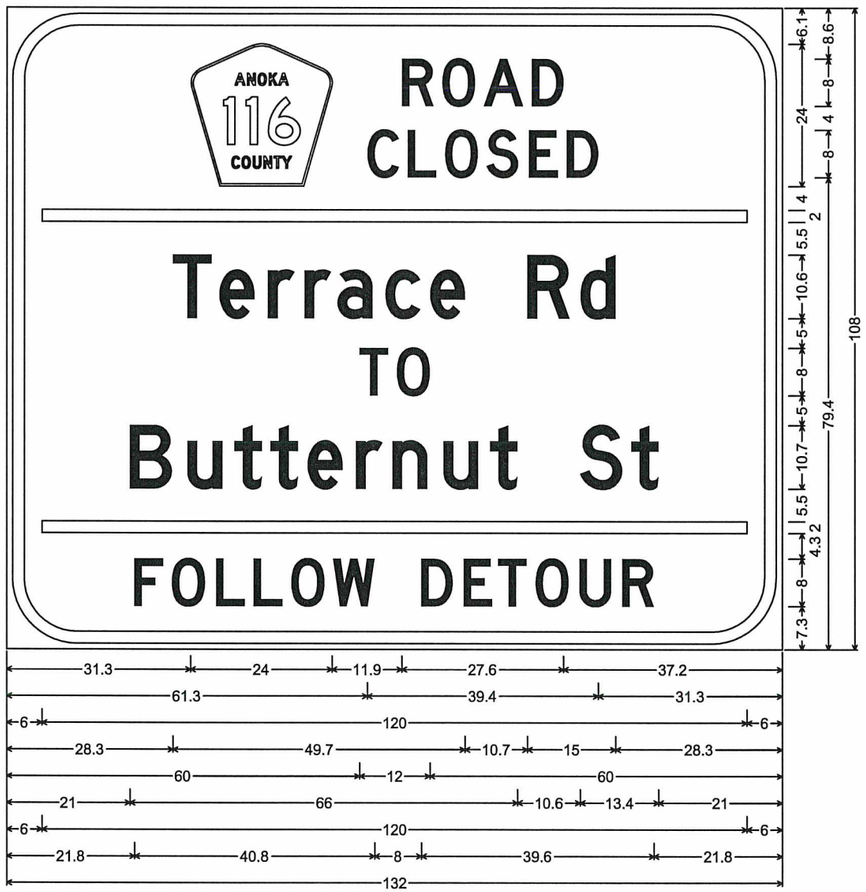
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

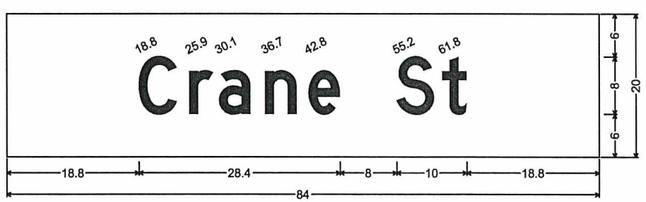
DETOUR
PLAN QUANTITIES



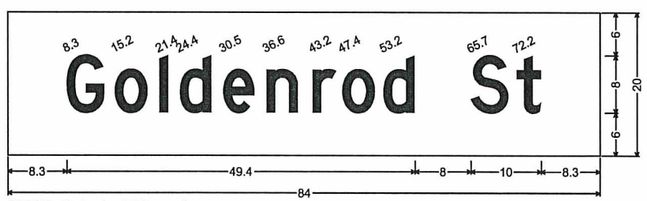

G20-X2_132x108; 12.0" Radius, 2.0" Border, 1.0" Indent, Black on Orange;
[ROAD] D; [CLOSED] D; [Butternut St] D; [TO] D; [Terrace Rd] D; [FOLLOW] D; [DETOUR] D;



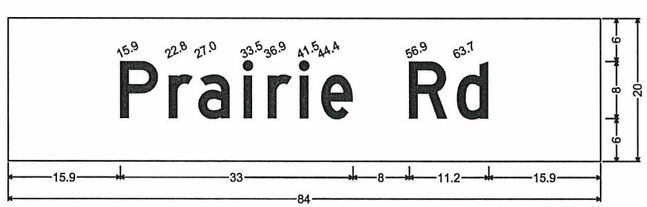

G20-X2_132x108; 12.0" Radius, 2.0" Border, 1.0" Indent, Black on Orange;
[ROAD] D; [CLOSED] D; [Terrace Rd] D; [TO] D; [Butternut St] D; [FOLLOW] D; [DETOUR] D;




BEGINS; No border, White on Orange;
[Crane St] D;




BEGINS; No border, White on Orange;
[Goldenrod St] D;




BEGINS; No border, White on Orange;
[Prairie Rd] D;

| NO | DATE | BY | CKD | APPR | REVISION |
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PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

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ANOKA COUNTY

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

DETOUR
PLAN QUANTITIES

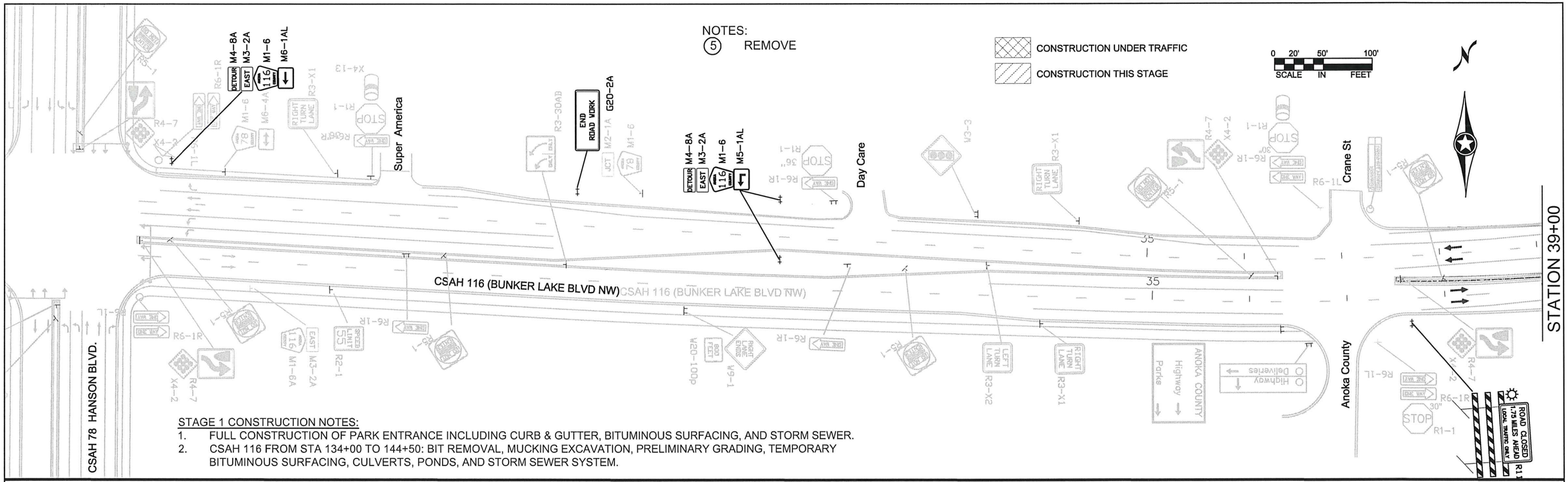
Sheet 276 of 482 Sheets

NOTES:
⑤ REMOVE

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

0 20' 50' 100'
SCALE IN FEET




STAGE 1 CONSTRUCTION NOTES:

1. FULL CONSTRUCTION OF PARK ENTRANCE INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND STORM SEWER.
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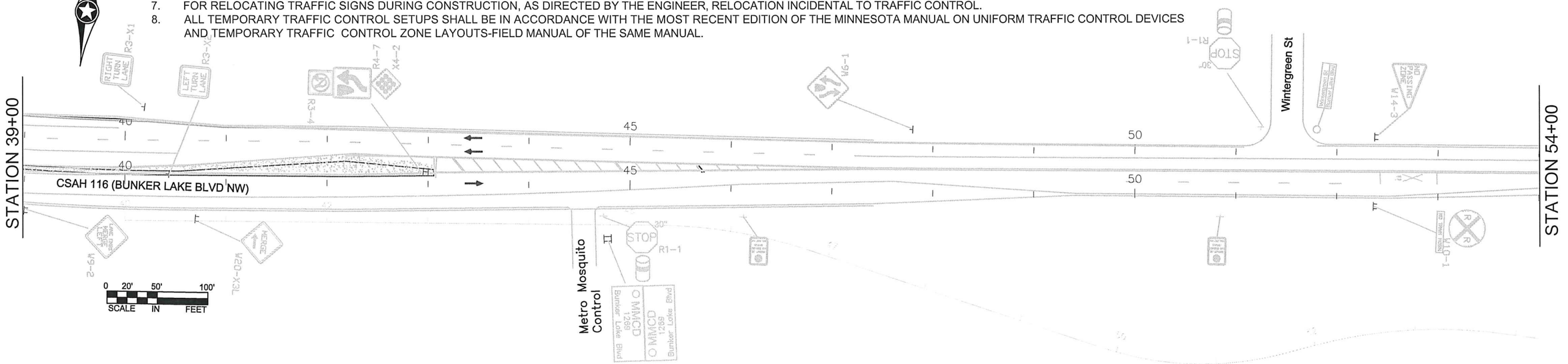


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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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S.P. 002-716-015
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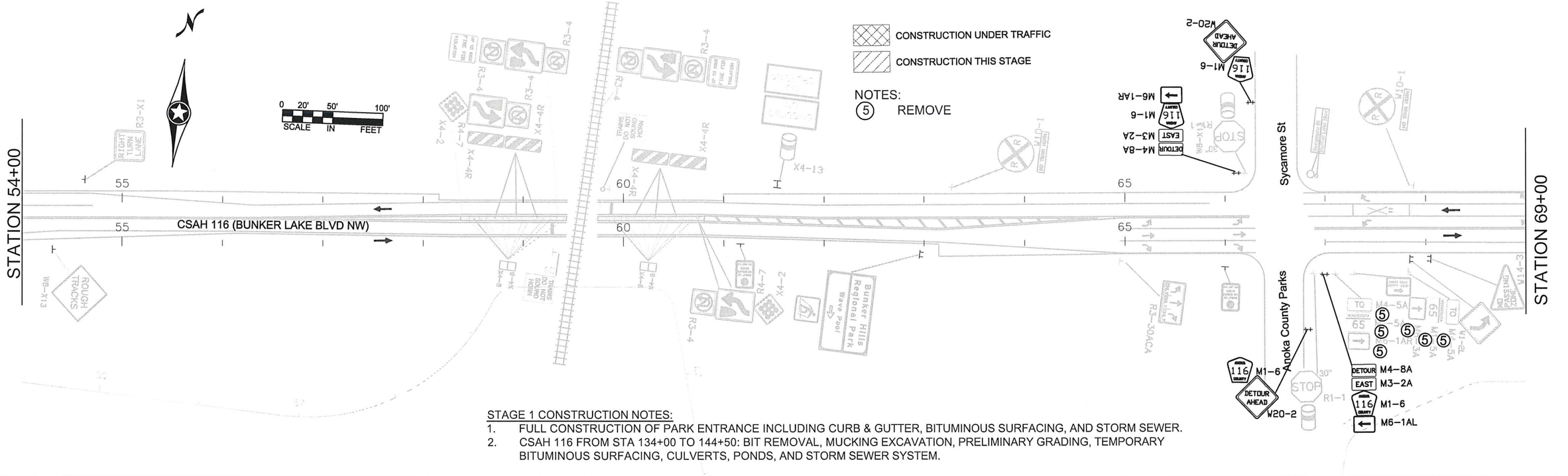
TRAFFIC CONTROL
STAGE 1

Sheet 277 of 482 Sheets

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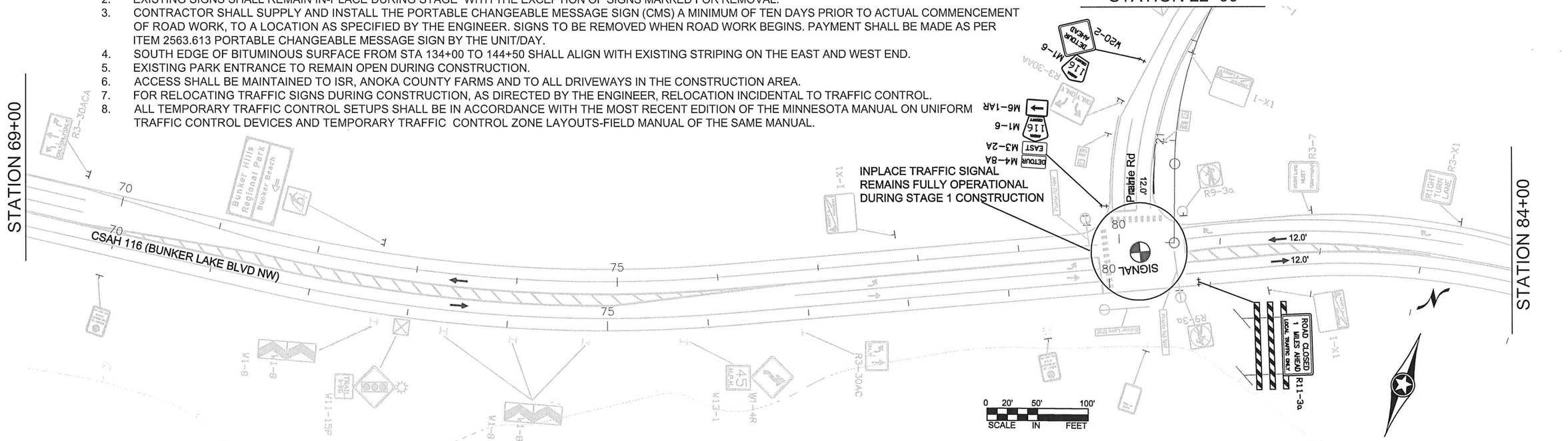


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STAGE 1
TRAFFIC CONTROL

Sheet 278 of 482 Sheets

STAGE 1 CONSTRUCTION NOTES:

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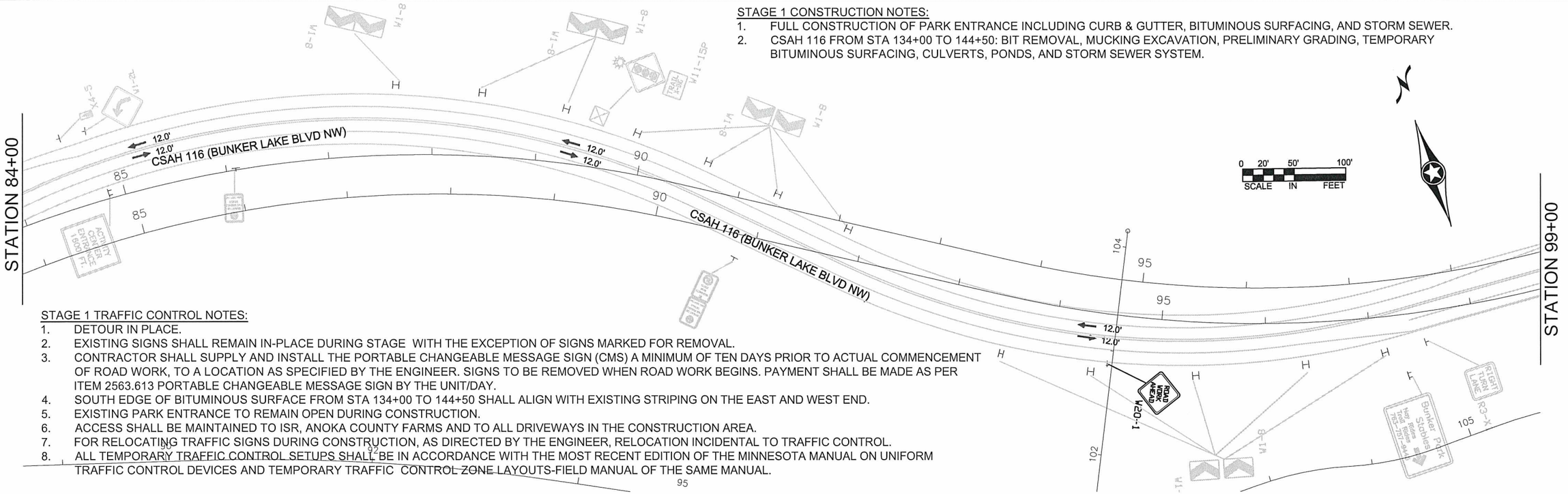


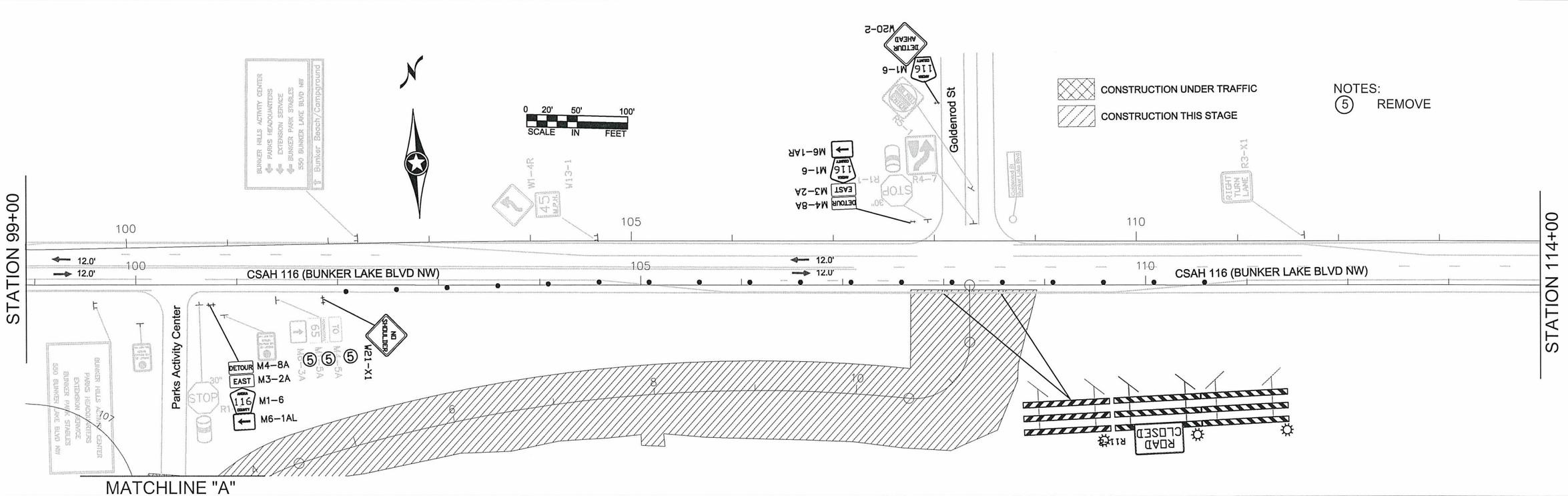


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TRAFFIC CONTROL
STAGE 1

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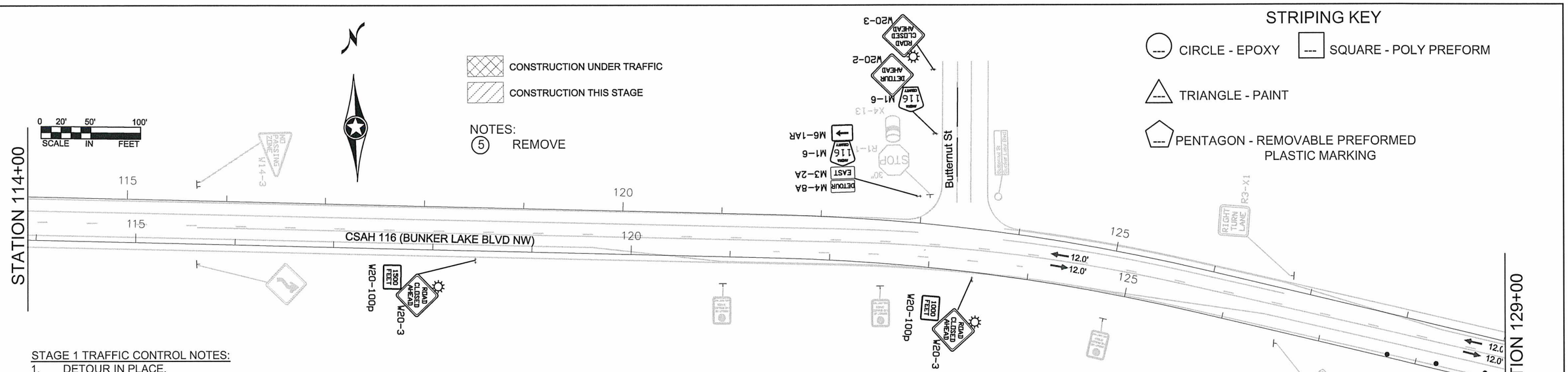


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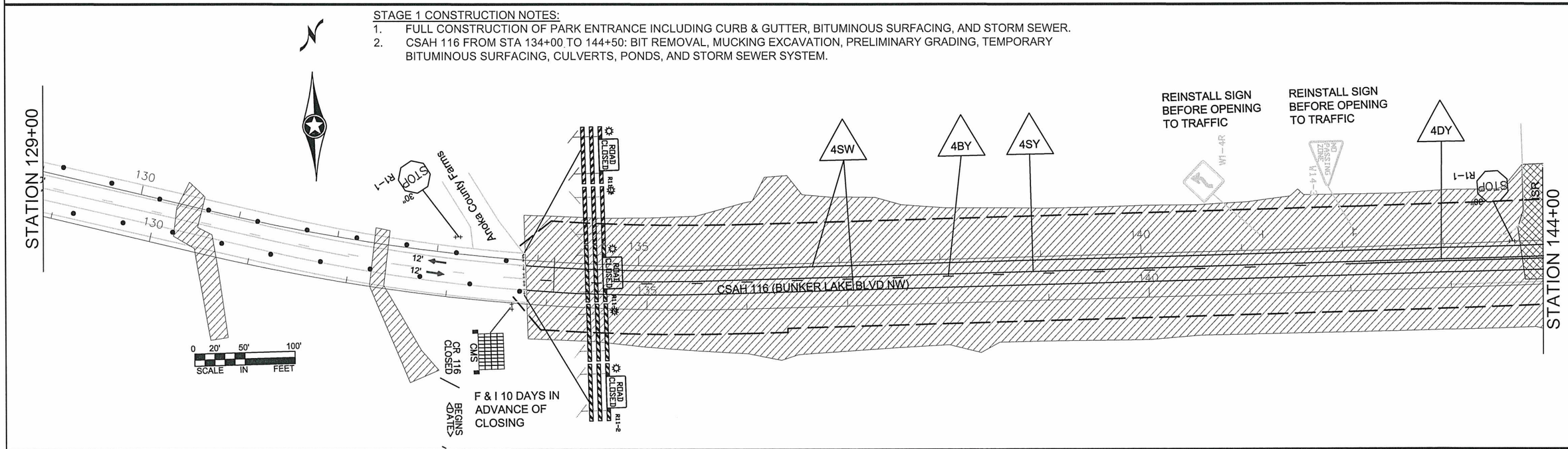


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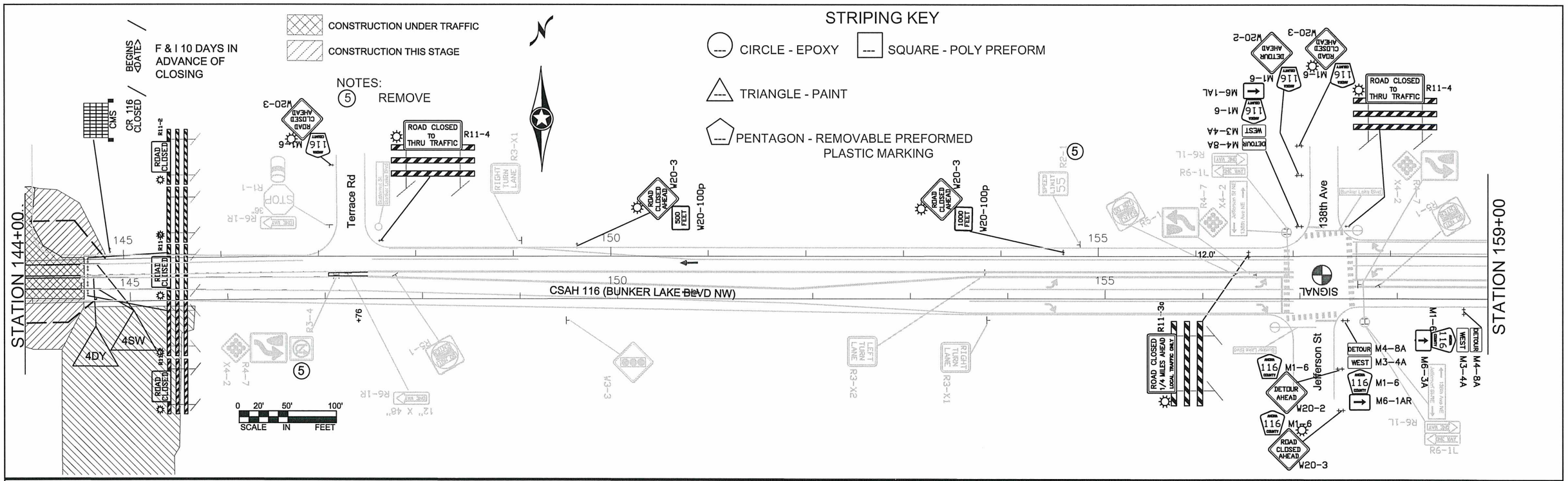
TRAFFIC CONTROL STAGE 1

Sheet 280 of 482 Sheets

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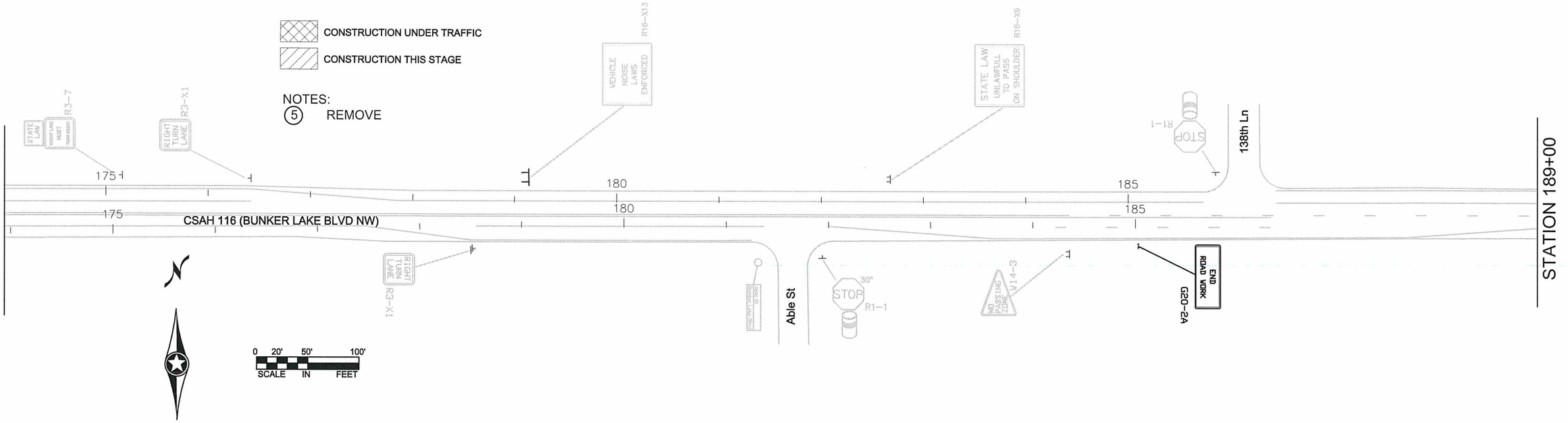
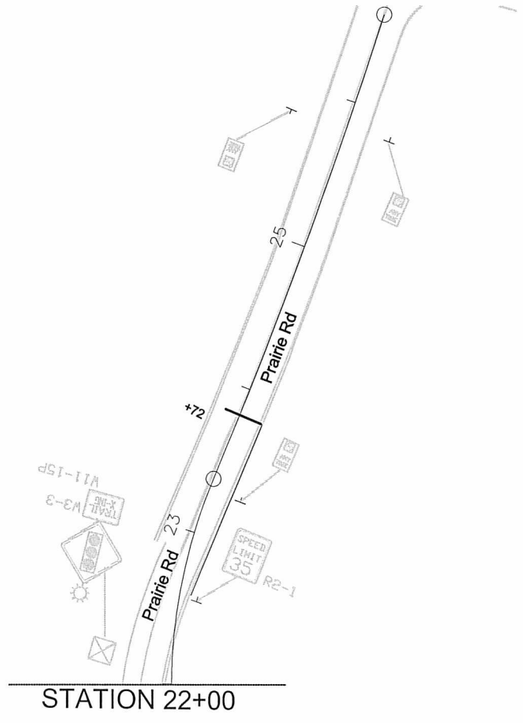
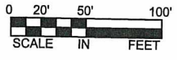
TRAFFIC CONTROL STAGE 1

Sheet 281 of 482 Sheets



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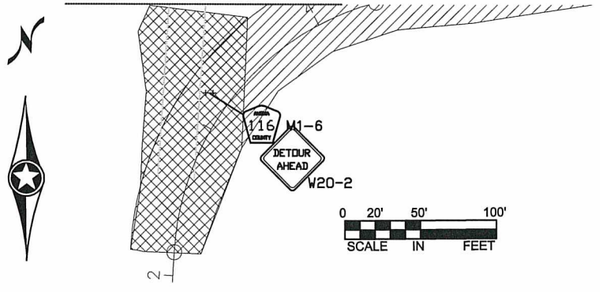


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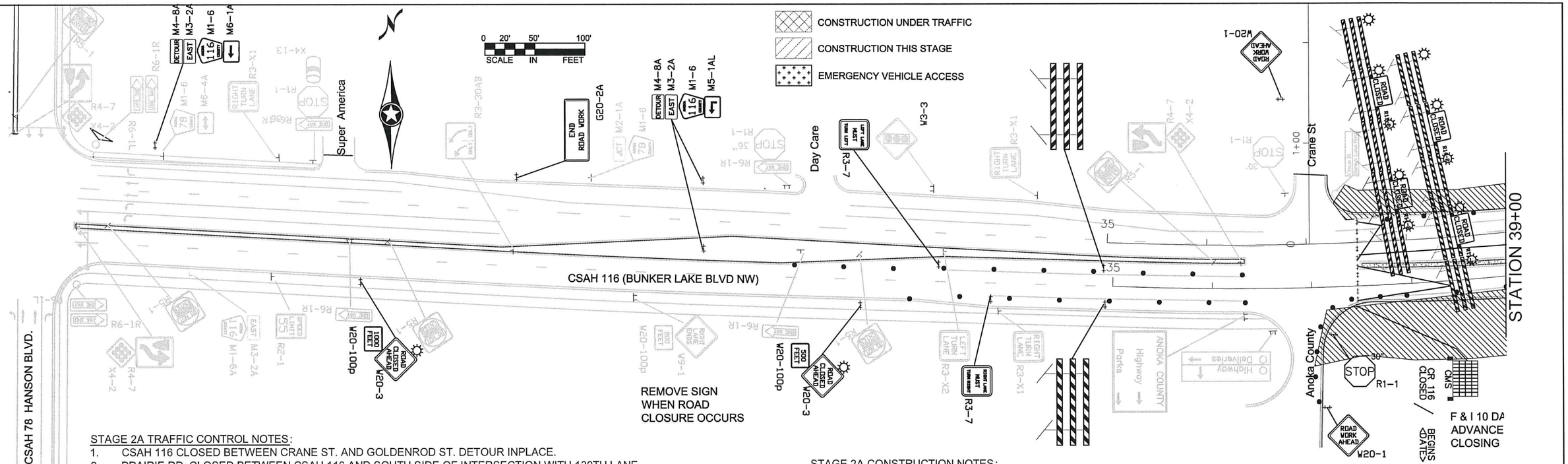
TRAFFIC CONTROL
STAGE 1

Sheet 282 of 482 Sheets




STAGE 2A TRAFFIC CONTROL NOTES:

1. CSAH 116 CLOSED BETWEEN CRANE ST. AND GOLDENROD ST. DETOUR INPLACE.
2. PRAIRIE RD. CLOSED BETWEEN CSAH 116 AND SOUTH SIDE OF INTERSECTION WITH 139TH LANE.
3. ACCESS SHALL BE MAINTAINED TO CRANE ST., METRO MOSQUITO CONTROL, GOLDENROD ST. BUTTERNUT ST., AND ALL DRIVEWAYS IN THE CONSTRUCTION AREA.
4. INTERSECTION OF SYCAMORE ST. AND COUNTY PARKWAY A TO ALLOW EMERGENCY VEHICLE ACCESS AT ALL TIMES.
5. STOP SIGNS SHALL BE PLACED ON TEMP POSTS, SIGNS TO BE MAINTAINED THROUGHOUT CONSTRUCTION.
6. ALL PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
7. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM OF TEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
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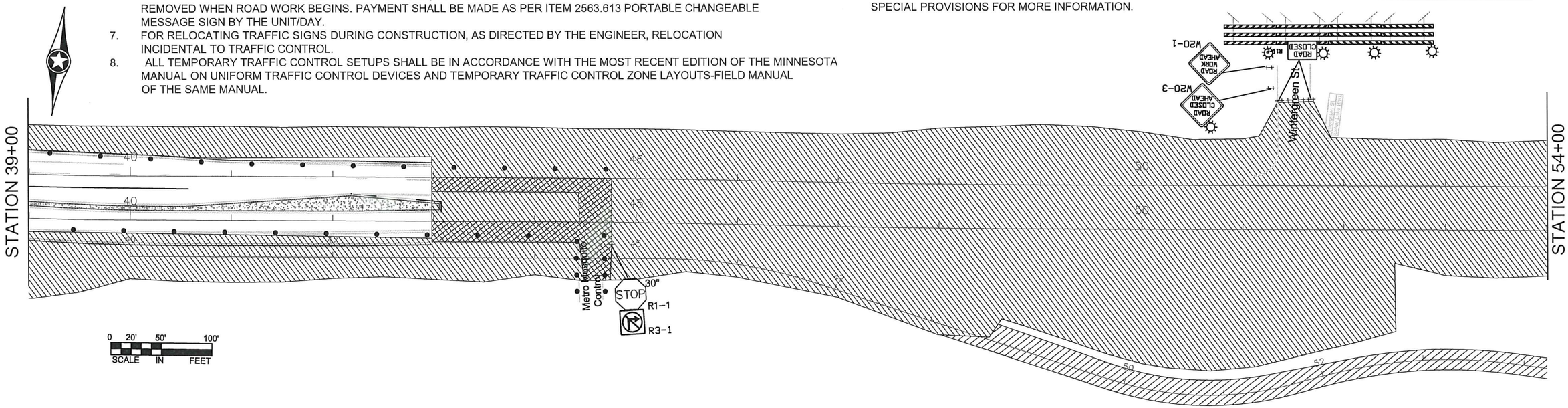
STAGE 2A CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
2. PRAIRIE RD.: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.
3. PRAIRIE RD. AND CSAH 116 FROM CRANE ST. TO PRAIRIE RD. TO BE COMPLETED BY OCTOBER 15TH. ONCE COMPLETED, THIS SECTION SHALL BE OPEN TO TRAFFIC. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.




| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY DATE

CHECKED BY DATE

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 2A

Sheet 283 of 482 Sheets

STAGE 2A CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
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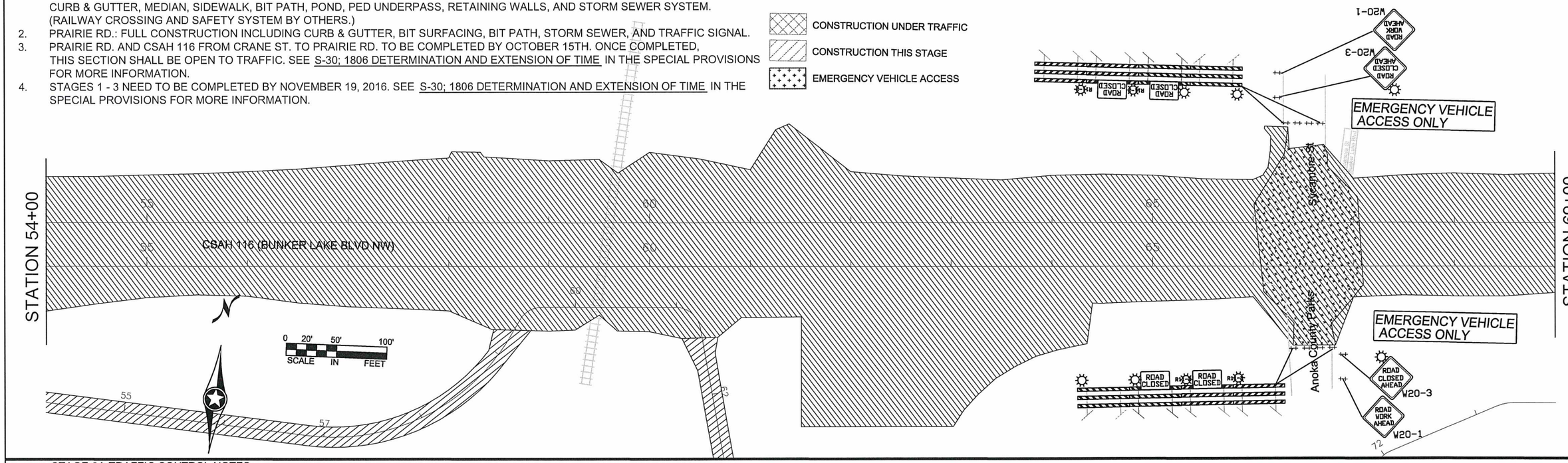
CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

EMERGENCY VEHICLE ACCESS

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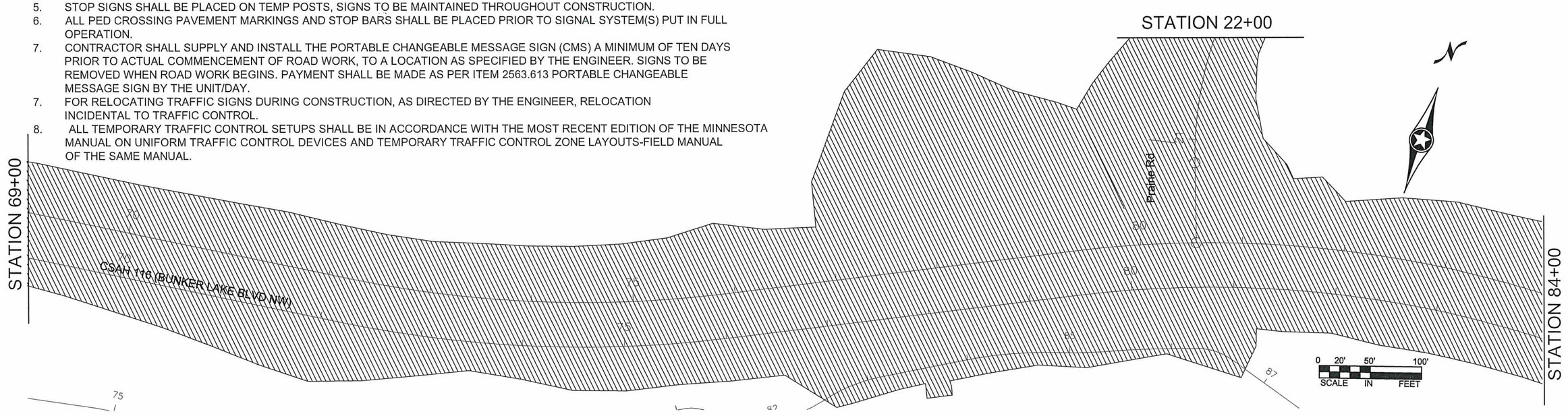


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S.P. 002-716-015
S.P. 198-020-036
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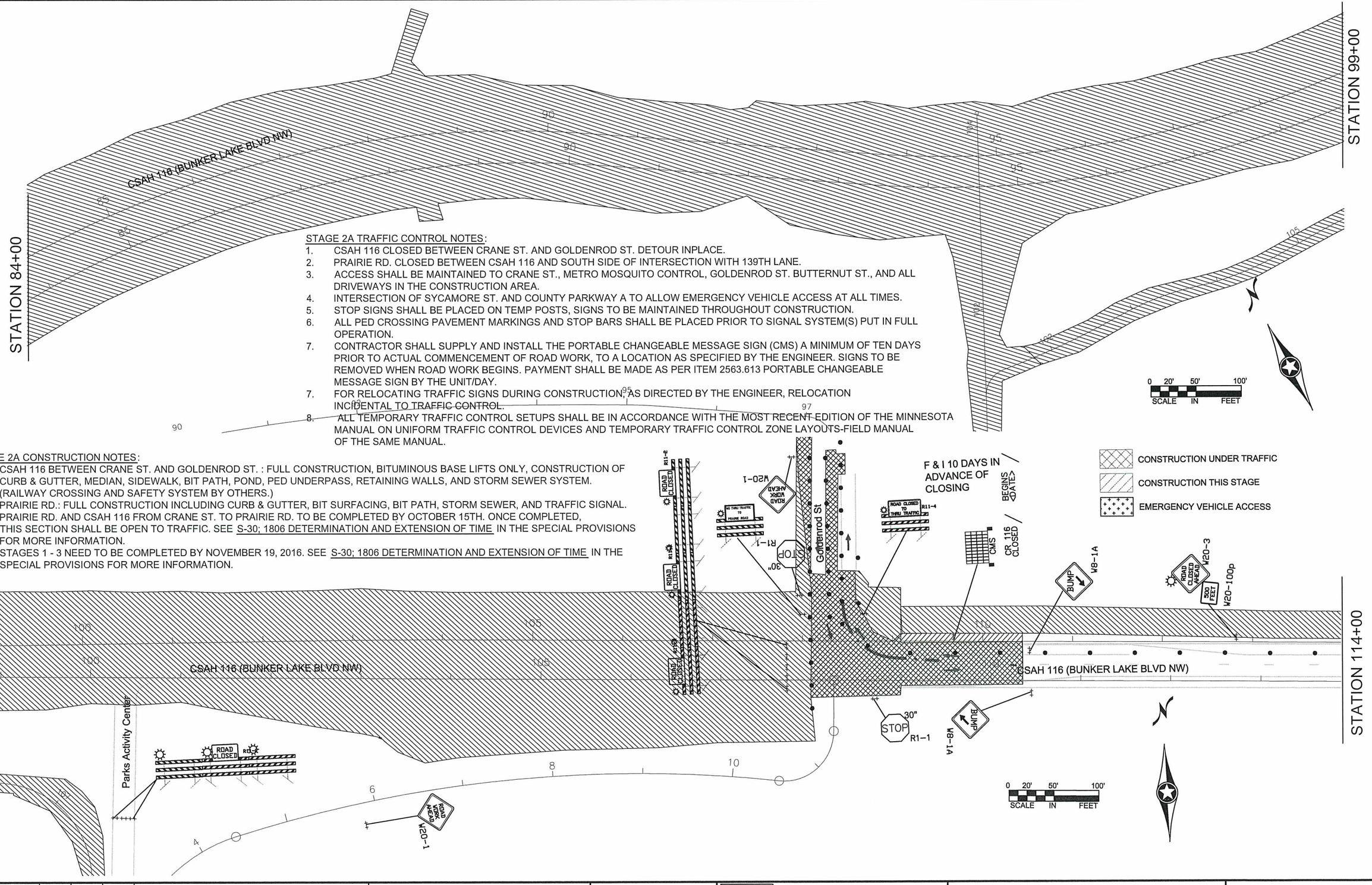
TRAFFIC CONTROL
STAGE 2A

Sheet 284 of 482 Sheets

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S.P. 002-716-015
S.P. 198-020-036
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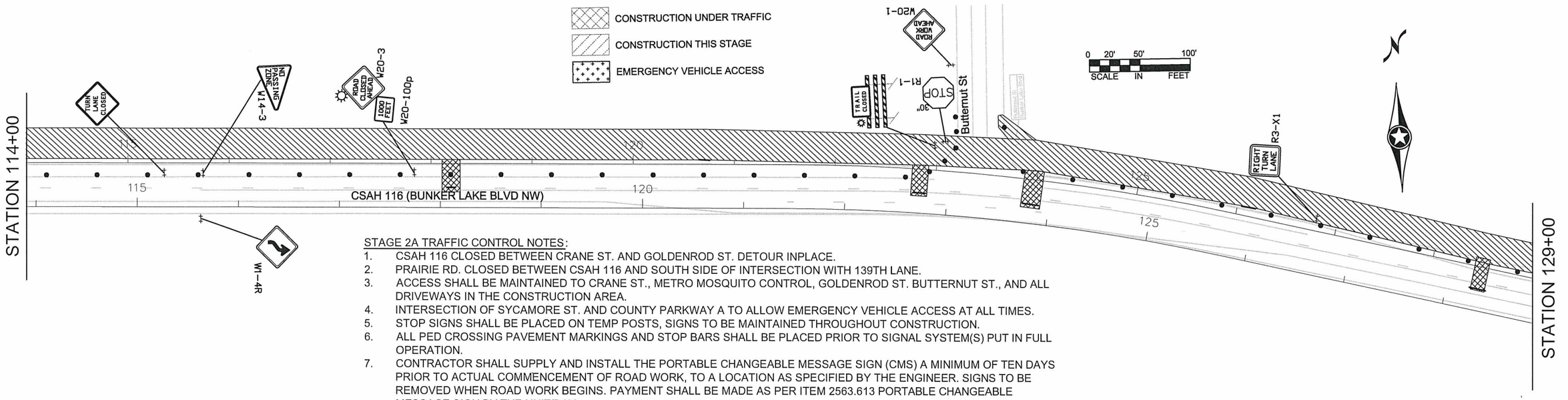
TRAFFIC CONTROL
STAGE 2A

Sheet 285 of 482 Sheets

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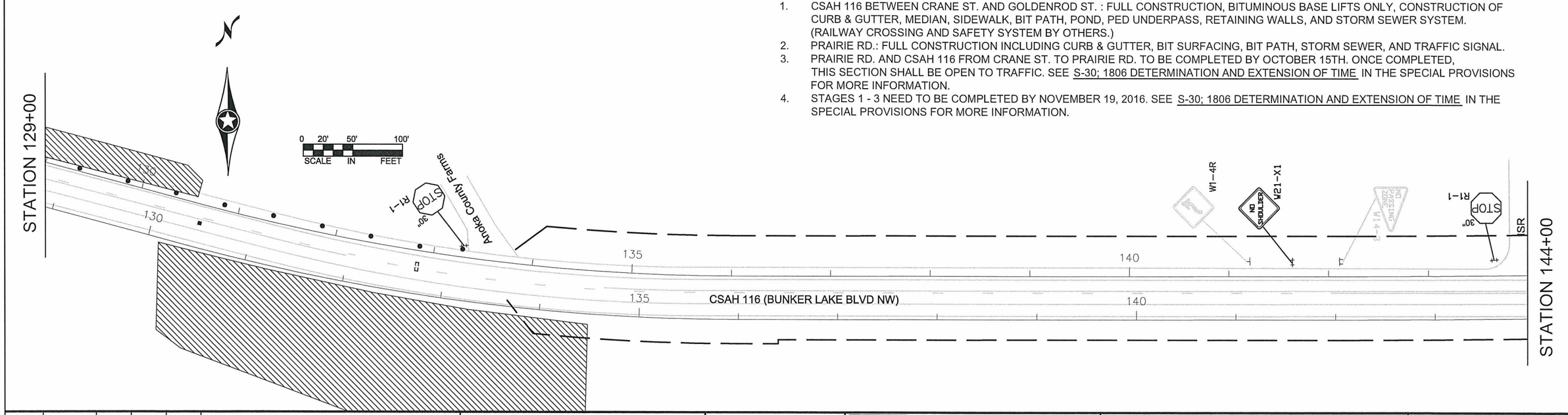


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PRINT NAME: DOUGLAS W. FISCHER, P.E.

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
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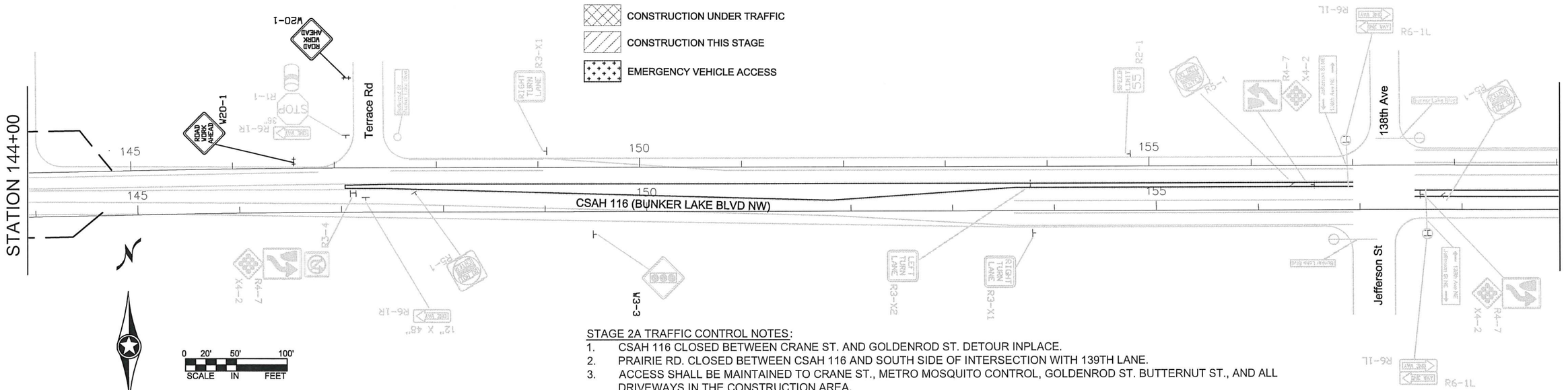
C.P. 11-25

TRAFFIC CONTROL STAGE 2A

Sheet 286 of 482 Sheets

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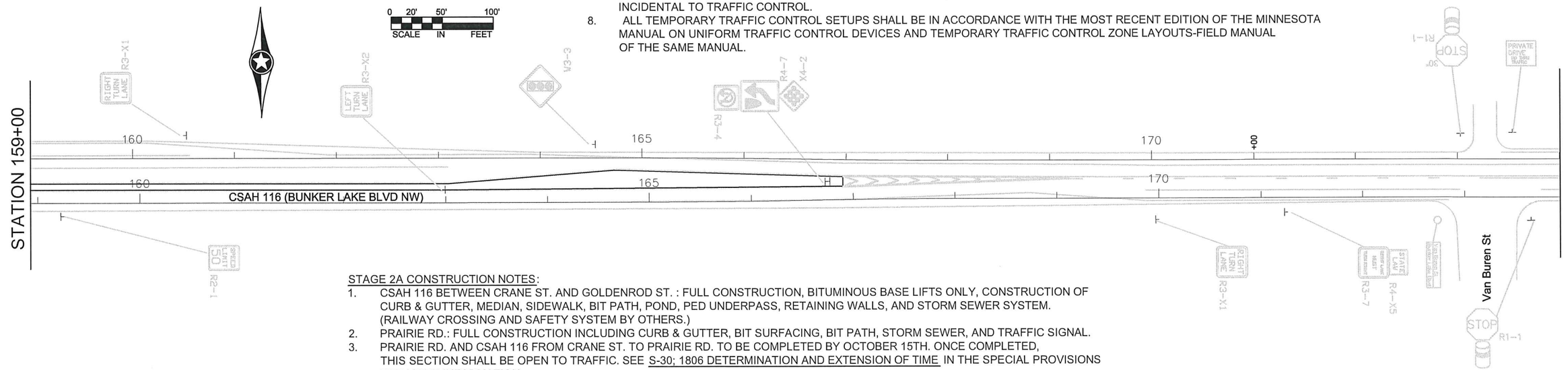


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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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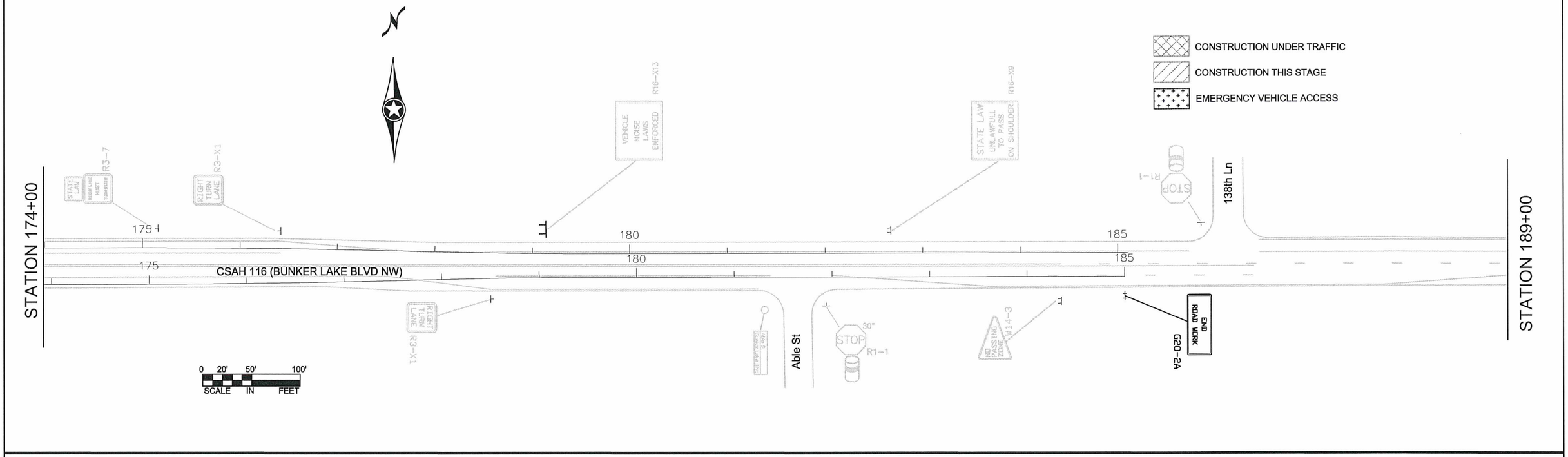
TRAFFIC CONTROL
STAGE 2A

Sheet 287 of 482 Sheets

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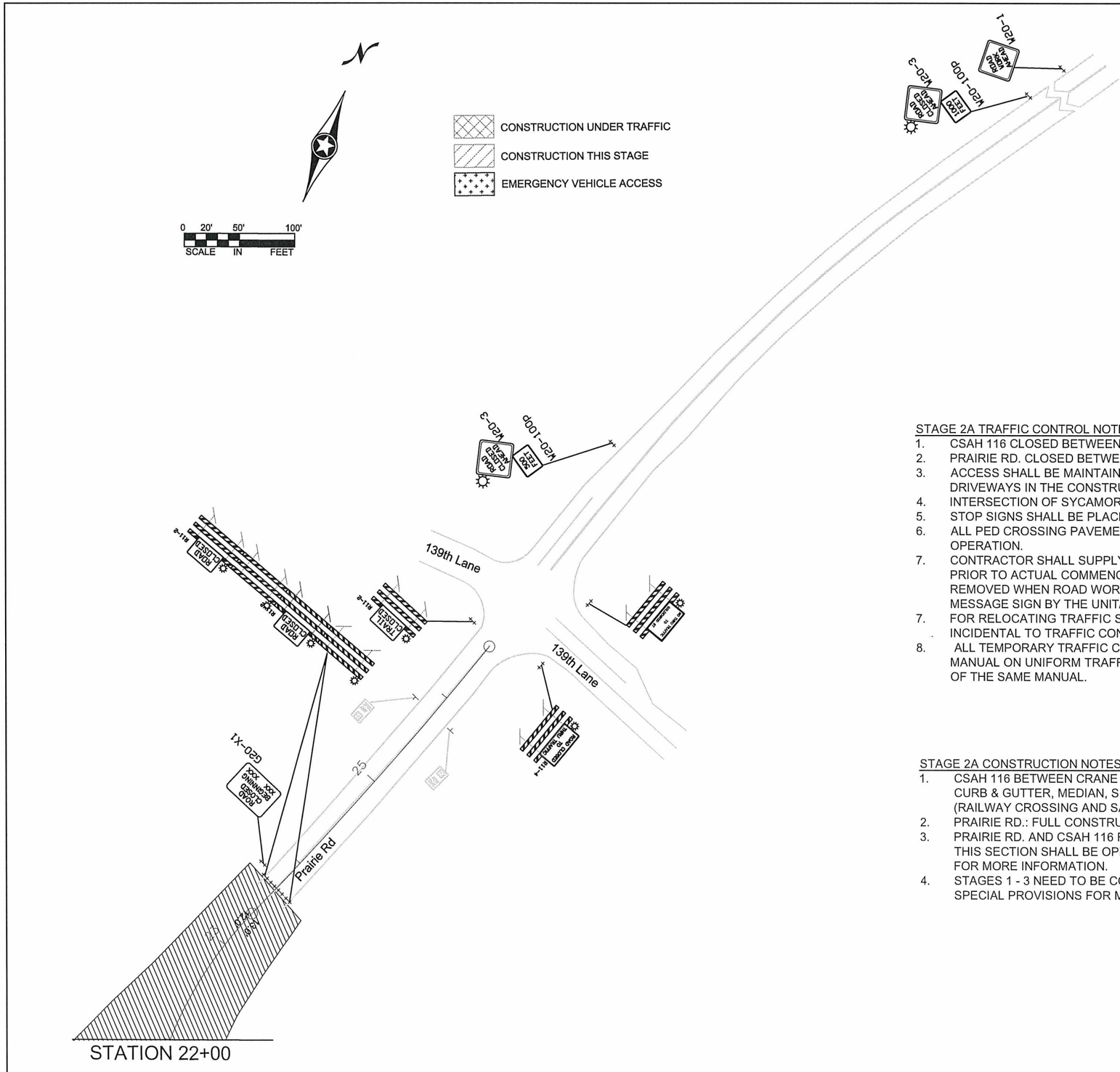
TRAFFIC CONTROL
STAGE 2A

Sheet 288 of 482 Sheets

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ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 2A

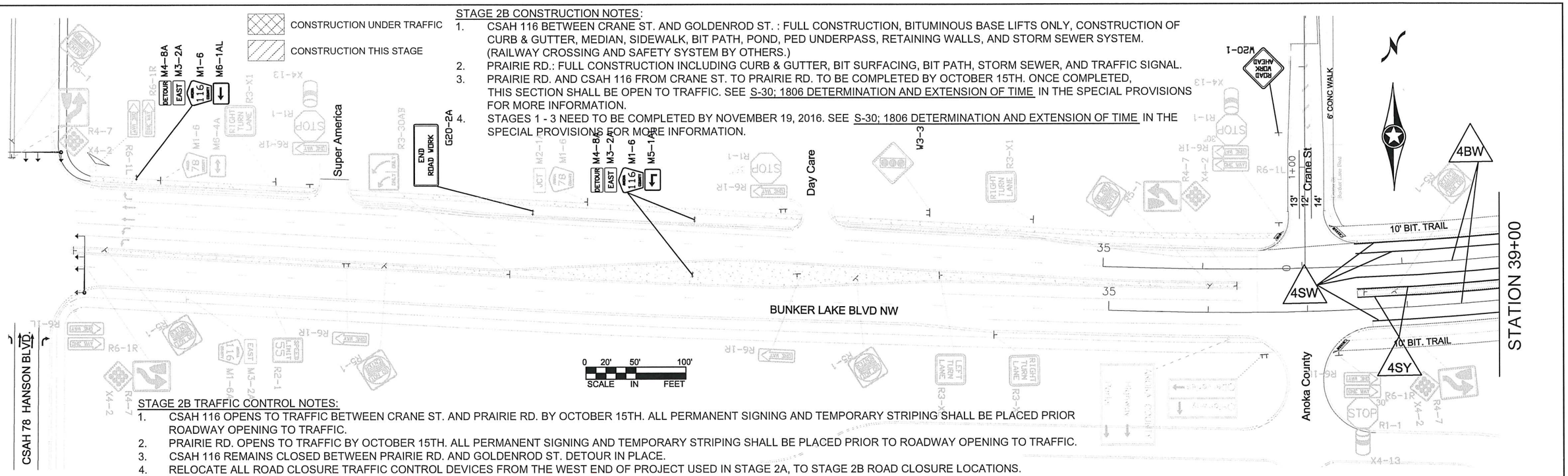
Sheet 289 of 482 Sheets

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

STAGE 2B CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
2. PRAIRIE RD.: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.
3. PRAIRIE RD. AND CSAH 116 FROM CRANE ST. TO PRAIRIE RD. TO BE COMPLETED BY OCTOBER 15TH. ONCE COMPLETED, THIS SECTION SHALL BE OPEN TO TRAFFIC. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.




STAGE 2B TRAFFIC CONTROL NOTES:

1. CSAH 116 OPENS TO TRAFFIC BETWEEN CRANE ST. AND PRAIRIE RD. BY OCTOBER 15TH. ALL PERMANENT SIGNING AND TEMPORARY STRIPING SHALL BE PLACED PRIOR ROADWAY OPENING TO TRAFFIC.
2. PRAIRIE RD. OPENS TO TRAFFIC BY OCTOBER 15TH. ALL PERMANENT SIGNING AND TEMPORARY STRIPING SHALL BE PLACED PRIOR TO ROADWAY OPENING TO TRAFFIC.
3. CSAH 116 REMAINS CLOSED BETWEEN PRAIRIE RD. AND GOLDENROD ST. DETOUR IN PLACE.
4. RELOCATE ALL ROAD CLOSURE TRAFFIC CONTROL DEVICES FROM THE WEST END OF PROJECT USED IN STAGE 2A, TO STAGE 2B ROAD CLOSURE LOCATIONS.
5. PERMANENT MEDIAN SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00.
6. FOR ALL OTHER PERMANENT SIGNS BETWEEN STA 36+47 AND STA 80+00, TEMPS MAY BE PLACED UNTIL ALL CONSTRUCTION ACTIVITIES ARE COMPLETE. ALL PERMANENT SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00 IMMEDIATELY FOLLOWING COMPLETED CONSTRUCTION ACTIVITIES AND/OR PRIOR TO WINTER SUSPENSION.
7. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. ALL TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
9. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) AT TIME SYCAMORE ST. SIGNAL SYSTEM IS PLACED IN FULL OPERATION FOR A PERIOD OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER, PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
10. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA OF EB CSAH 116. TRPMs SHALL BE REMOVED PRIOR TO TEMPORARY STRIPING FOR ROADWAY OPENING/WINTER SUSPENSION.
11. LANE TAPE SHALL BE PLACED ON EB CSAH 116 BETWEEN STA 67+00 AND STA 80+00. LANE TAPE SHALL BE REMOVED PRIOR TO TEMPORARY STRIPING FOR ROADWAY OPENING/WINTER SUSPENSION
12. THE INTERSECTION OF CSAH 116 AND PRAIRIE RD. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. STOP SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
13. ACCESS SHALL BE MAINTAINED TO GOLDENROD ST., PARKS ENTRANCE AND ALL DRIVEWAYS IN THE CONSTRUCTION AREA.
14. TRAFFIC WILL BE ON EXISTING STRIPING BETWEEN GOLDENROD ST. AND EAST END OF PROJECT.
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16. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

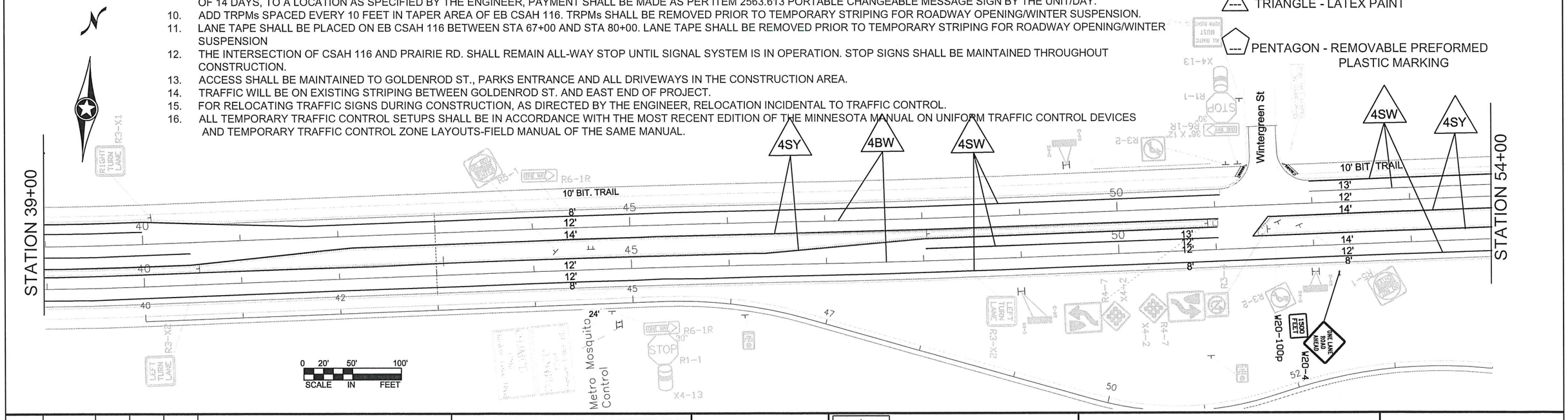
STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - LATEX PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

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| NAME: | T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg | | | | MN. |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

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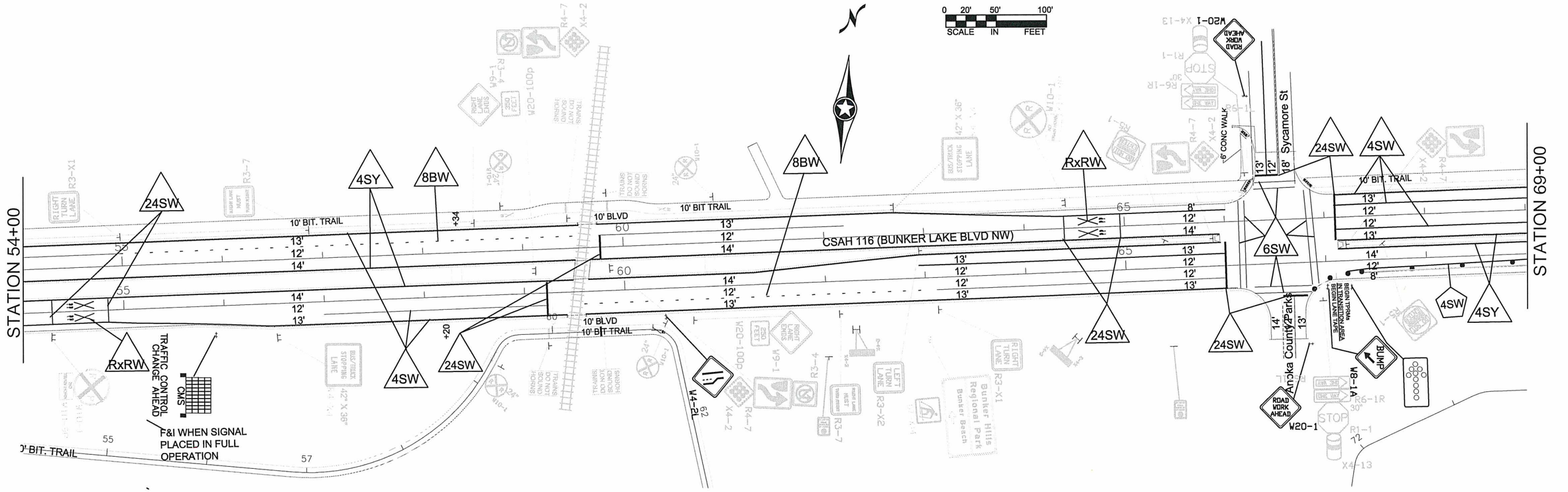
TRAFFIC CONTROL STAGE 2B

Sheet 290 of 482 Sheets




STAGE 2B TRAFFIC CONTROL NOTES:

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5. PERMANENT MEDIAN SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00.
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CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

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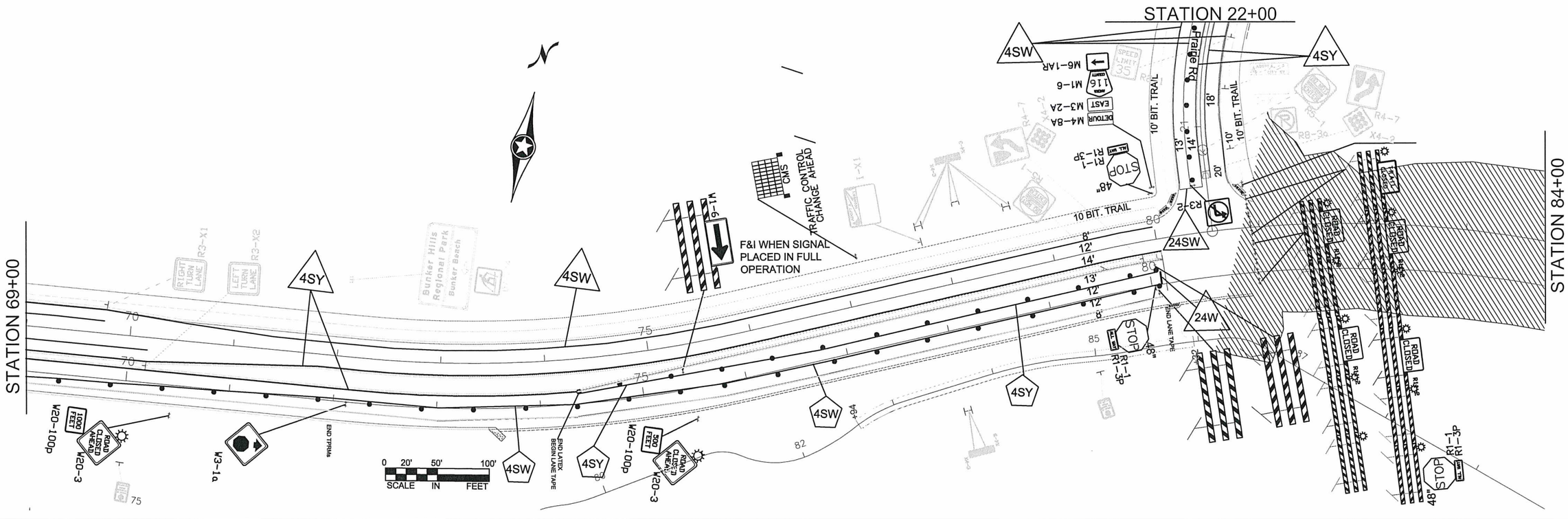
TRAFFIC CONTROL STAGE 2B

Sheet 291 of 482 Sheets

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CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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TRAFFIC CONTROL STAGE 2B

Sheet 292 of 482 Sheets

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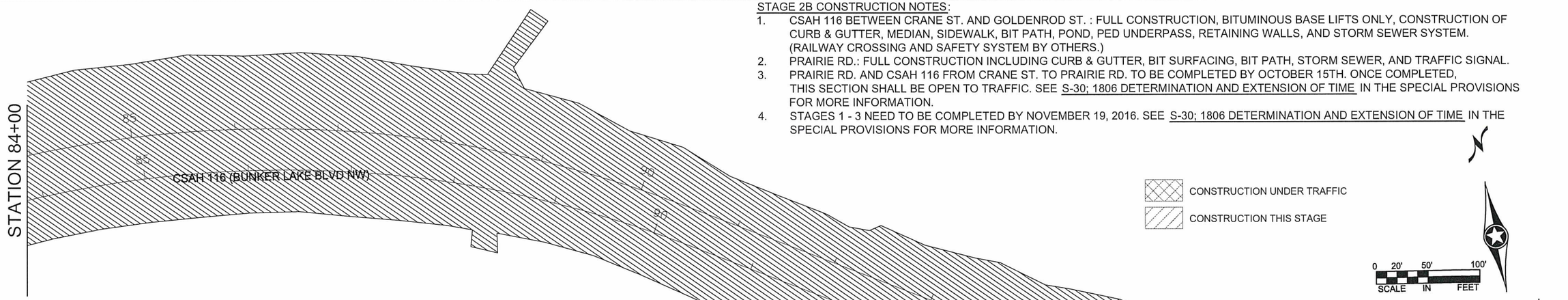


STAGE 2B TRAFFIC CONTROL NOTES:

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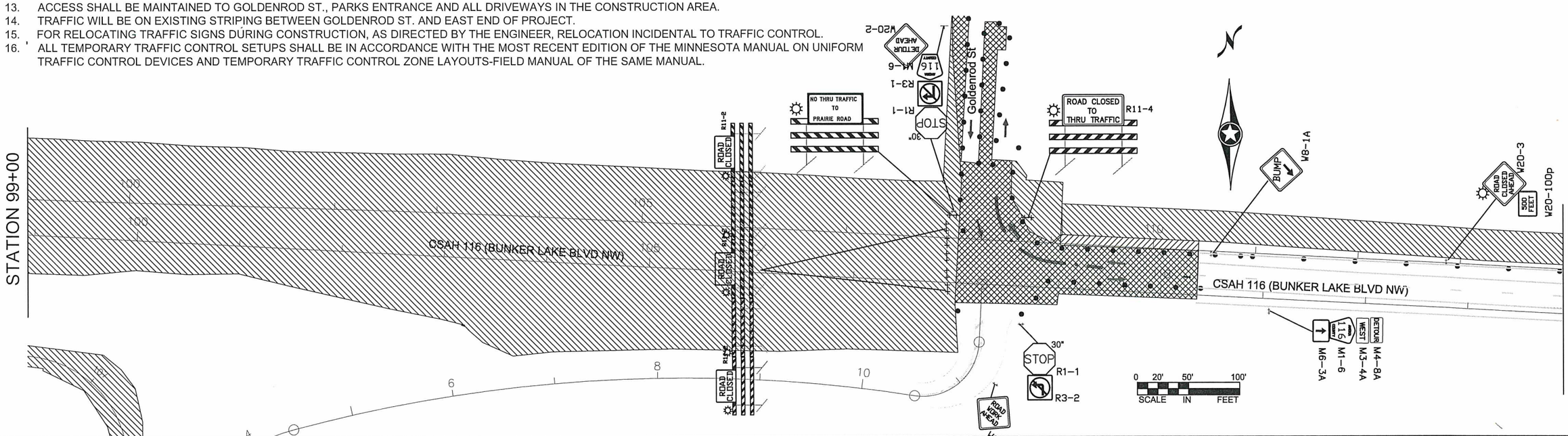


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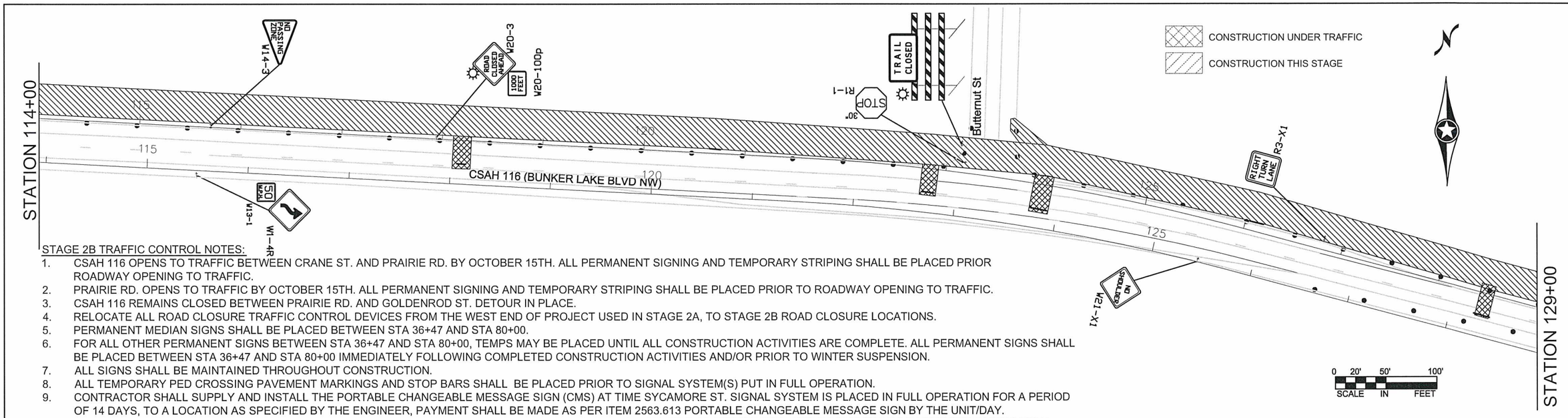
TRAFFIC CONTROL
STAGE 2B

Sheet 293 of 482 Sheets

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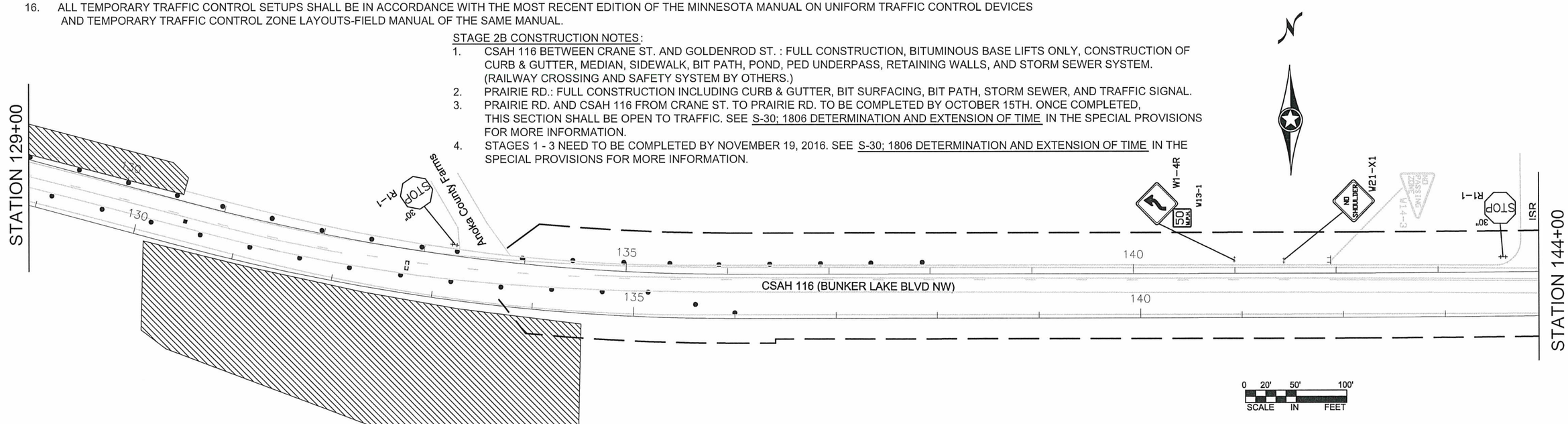
STAGE 2B CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
2. PRAIRIE RD.: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.
3. PRAIRIE RD. AND CSAH 116 FROM CRANE ST. TO PRAIRIE RD. TO BE COMPLETED BY OCTOBER 15TH. ONCE COMPLETED, THIS SECTION SHALL BE OPEN TO TRAFFIC. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.




| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg | | | | MN. |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016
DESIGN BY DATE
CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL STAGE 2B

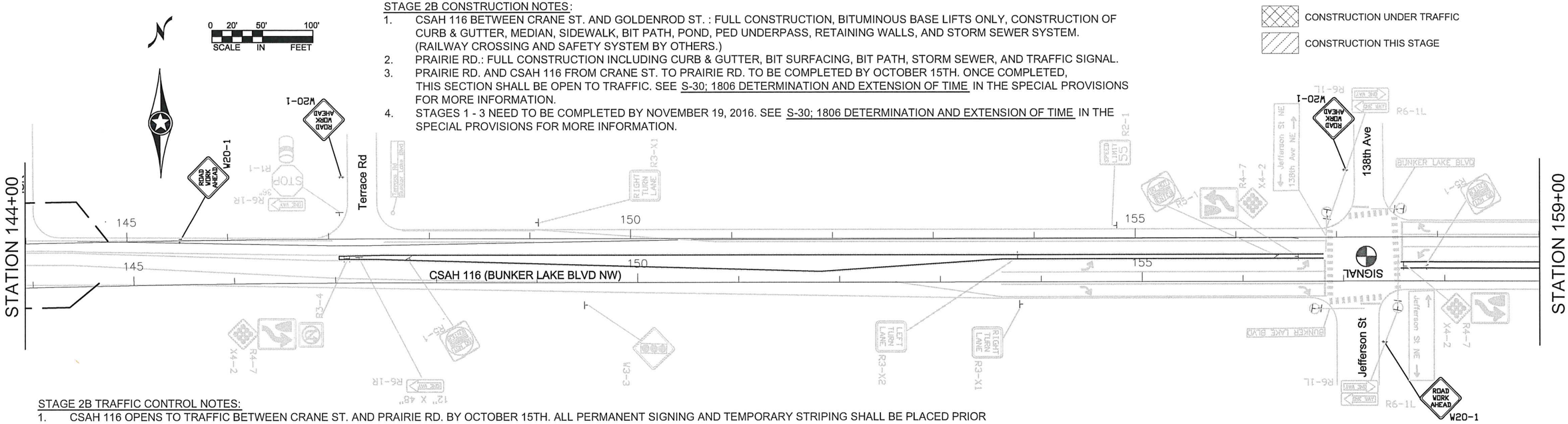
Sheet 294 of 482 Sheets

STAGE 2B CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
2. PRAIRIE RD.: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.
3. PRAIRIE RD. AND CSAH 116 FROM CRANE ST. TO PRAIRIE RD. TO BE COMPLETED BY OCTOBER 15TH. ONCE COMPLETED, THIS SECTION SHALL BE OPEN TO TRAFFIC. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.

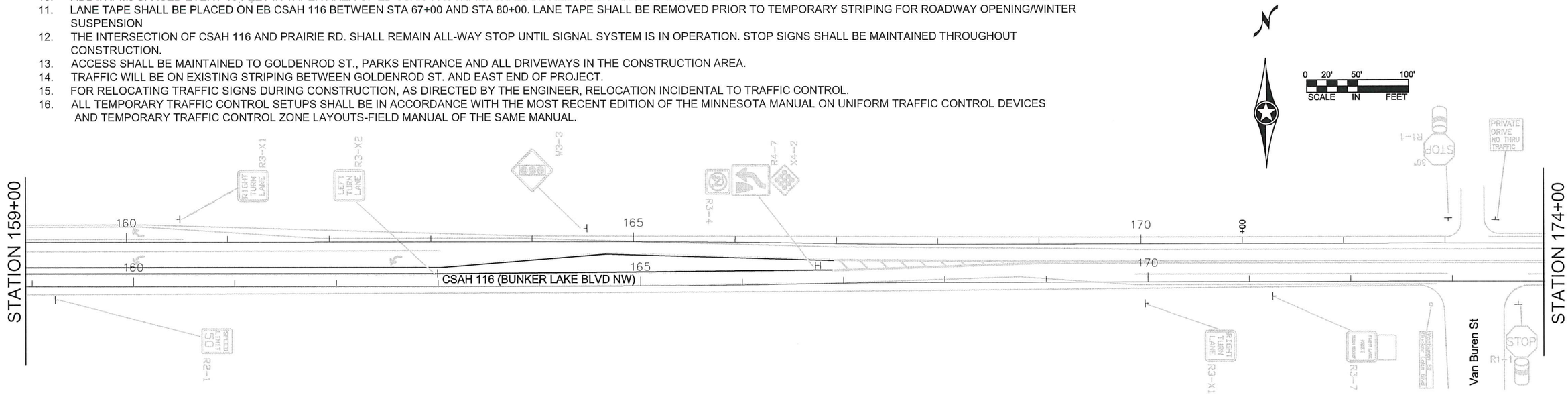
CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE




STAGE 2B TRAFFIC CONTROL NOTES:

1. CSAH 116 OPENS TO TRAFFIC BETWEEN CRANE ST. AND PRAIRIE RD. BY OCTOBER 15TH. ALL PERMANENT SIGNING AND TEMPORARY STRIPING SHALL BE PLACED PRIOR ROADWAY OPENING TO TRAFFIC.
2. PRAIRIE RD. OPENS TO TRAFFIC BY OCTOBER 15TH. ALL PERMANENT SIGNING AND TEMPORARY STRIPING SHALL BE PLACED PRIOR TO ROADWAY OPENING TO TRAFFIC.
3. CSAH 116 REMAINS CLOSED BETWEEN PRAIRIE RD. AND GOLDENROD ST. DETOUR IN PLACE.
4. RELOCATE ALL ROAD CLOSURE TRAFFIC CONTROL DEVICES FROM THE WEST END OF PROJECT USED IN STAGE 2A, TO STAGE 2B ROAD CLOSURE LOCATIONS.
5. PERMANENT MEDIAN SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00.
6. FOR ALL OTHER PERMANENT SIGNS BETWEEN STA 36+47 AND STA 80+00, TEMPS MAY BE PLACED UNTIL ALL CONSTRUCTION ACTIVITIES ARE COMPLETE. ALL PERMANENT SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00 IMMEDIATELY FOLLOWING COMPLETED CONSTRUCTION ACTIVITIES AND/OR PRIOR TO WINTER SUSPENSION.
7. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. ALL TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
9. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) AT TIME SYCAMORE ST. SIGNAL SYSTEM IS PLACED IN FULL OPERATION FOR A PERIOD OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER, PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
10. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA OF EB CSAH 116. TRPMs SHALL BE REMOVED PRIOR TO TEMPORARY STRIPING FOR ROADWAY OPENING/WINTER SUSPENSION.
11. LANE TAPE SHALL BE PLACED ON EB CSAH 116 BETWEEN STA 67+00 AND STA 80+00. LANE TAPE SHALL BE REMOVED PRIOR TO TEMPORARY STRIPING FOR ROADWAY OPENING/WINTER SUSPENSION
12. THE INTERSECTION OF CSAH 116 AND PRAIRIE RD. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. STOP SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
13. ACCESS SHALL BE MAINTAINED TO GOLDENROD ST., PARKS ENTRANCE AND ALL DRIVEWAYS IN THE CONSTRUCTION AREA.
14. TRAFFIC WILL BE ON EXISTING STRIPING BETWEEN GOLDENROD ST. AND EAST END OF PROJECT.
15. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
16. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY ..... DATE .....

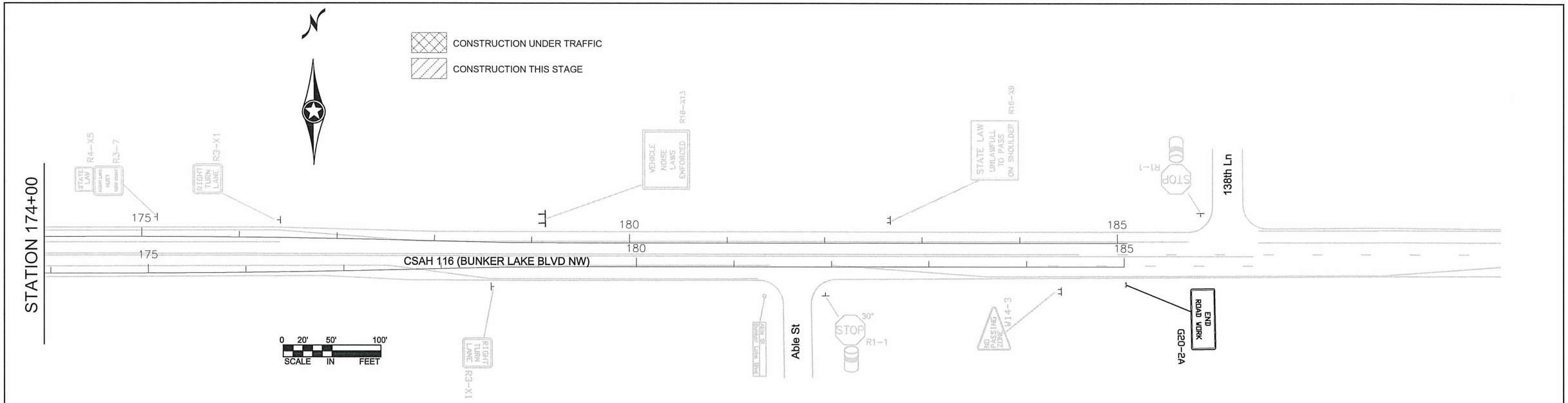
CHECKED BY ..... DATE .....

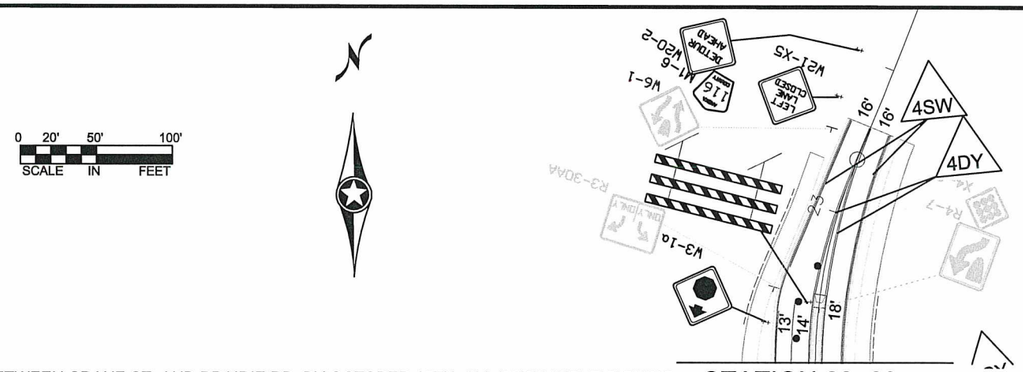
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 2B

Sheet 295 of 482 Sheets




STAGE 2B TRAFFIC CONTROL NOTES:

1. CSAH 116 OPENS TO TRAFFIC BETWEEN CRANE ST. AND PRAIRIE RD. BY OCTOBER 15TH. ALL PERMANENT SIGNING AND TEMPORARY STRIPING SHALL BE PLACED PRIOR ROADWAY OPENING TO TRAFFIC.
2. PRAIRIE RD. OPENS TO TRAFFIC BY OCTOBER 15TH. ALL PERMANENT SIGNING AND TEMPORARY STRIPING SHALL BE PLACED PRIOR TO ROADWAY OPENING TO TRAFFIC.
3. CSAH 116 REMAINS CLOSED BETWEEN PRAIRIE RD. AND GOLDENROD ST. DETOUR IN PLACE.
4. RELOCATE ALL ROAD CLOSURE TRAFFIC CONTROL DEVICES FROM THE WEST END OF PROJECT USED IN STAGE 2A, TO STAGE 2B ROAD CLOSURE LOCATIONS.
5. PERMANENT MEDIAN SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00.
6. FOR ALL OTHER PERMANENT SIGNS BETWEEN STA 36+47 AND STA 80+00, TEMPS MAY BE PLACED UNTIL ALL CONSTRUCTION ACTIVITIES ARE COMPLETE ALL PERMANENT SIGNS SHALL BE PLACED BETWEEN STA 36+47 AND STA 80+00 IMMEDIATELY FOLLOWING COMPLETED CONSTRUCTION ACTIVITIES AND/OR PRIOR TO WINTER SUSPENSION.
7. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. ALL TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
9. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) AT TIME SYCAMORE ST. SIGNAL SYSTEM IS PLACED IN FULL OPERATION FOR A PERIOD OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER, PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
10. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA OF EB CSAH 116. TRPMs SHALL BE REMOVED PRIOR TO TEMPORARY STRIPING FOR ROADWAY OPENING/WINTER SUSPENSION.
11. LANE TAPE SHALL BE PLACED ON EB CSAH 116 BETWEEN STA 67+00 AND STA 80+00. LANE TAPE SHALL BE REMOVED PRIOR TO TEMPORARY STRIPING FOR ROADWAY OPENING/WINTER SUSPENSION
12. THE INTERSECTION OF CSAH 116 AND PRAIRIE RD. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. STOP SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
13. ACCESS SHALL BE MAINTAINED TO GOLDENROD ST., PARKS ENTRANCE AND ALL DRIVEWAYS IN THE CONSTRUCTION AREA.
14. TRAFFIC WILL BE ON EXISTING STRIPING BETWEEN GOLDENROD ST. AND EAST END OF PROJECT.
15. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
16. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STAGE 2B CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
2. PRAIRIE RD.: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.
3. PRAIRIE RD. AND CSAH 116 FROM CRANE ST. TO PRAIRIE RD. TO BE COMPLETED BY OCTOBER 15TH. ONCE COMPLETED, THIS SECTION SHALL BE OPEN TO TRAFFIC. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/27/16 REG. NO. 20235

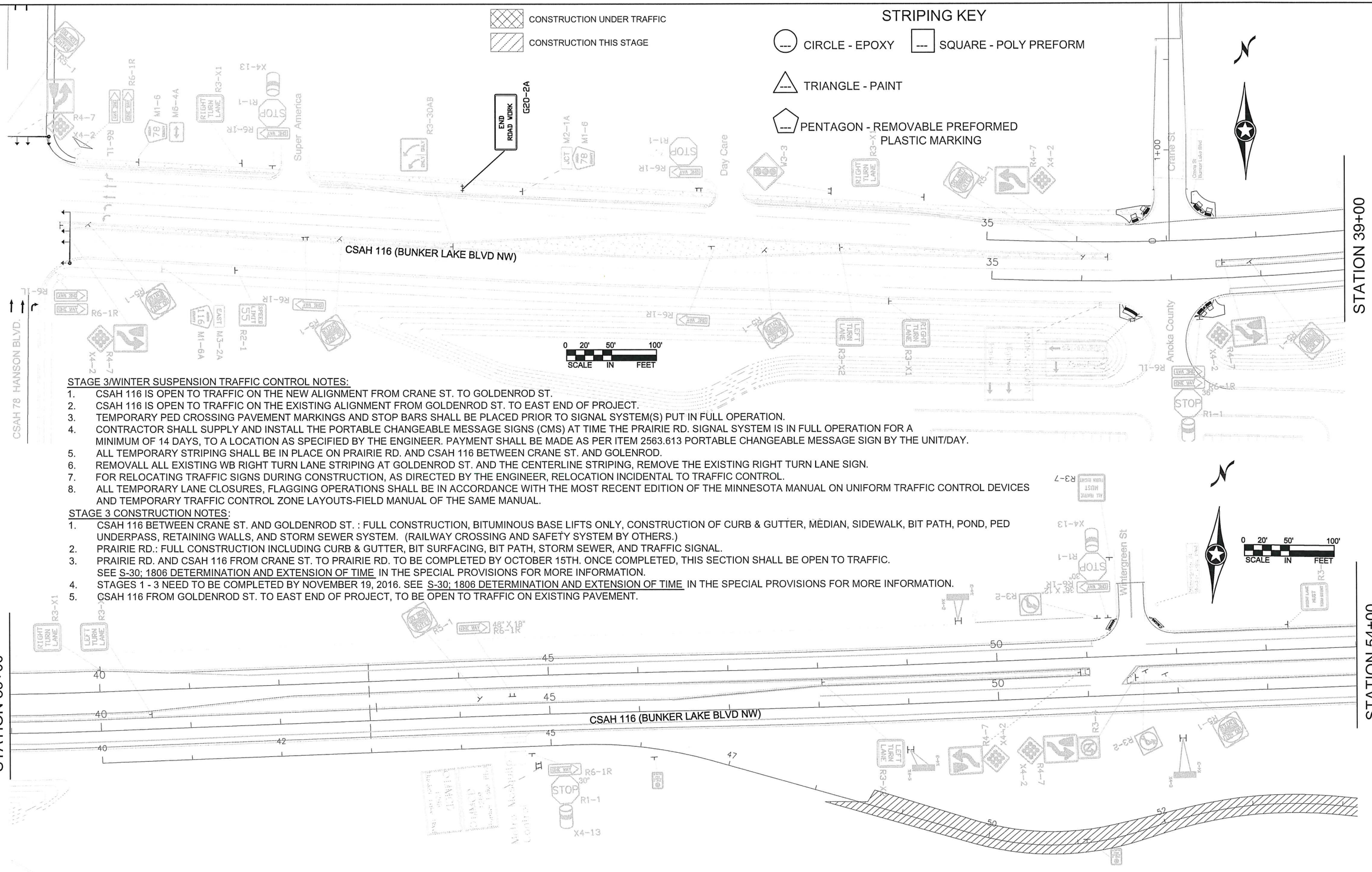
DRAWN BY TMV DATE 01/2016
DESIGN BY DATE
CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 2B

Sheet 296 of 482 Sheets




STAGE 3/WINTER SUSPENSION TRAFFIC CONTROL NOTES:

1. CSAH 116 IS OPEN TO TRAFFIC ON THE NEW ALIGNMENT FROM CRANE ST. TO GOLDENROD ST.
2. CSAH 116 IS OPEN TO TRAFFIC ON THE EXISTING ALIGNMENT FROM GOLDENROD ST. TO EAST END OF PROJECT.
3. TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
4. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS) AT TIME THE PRAIRIE RD. SIGNAL SYSTEM IS IN FULL OPERATION FOR A MINIMUM OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
5. ALL TEMPORARY STRIPING SHALL BE IN PLACE ON PRAIRIE RD. AND CSAH 116 BETWEEN CRANE ST. AND GOLENROD.
6. REMOVALL ALL EXISTING WB RIGHT TURN LANE STRIPING AT GOLDENROD ST. AND THE CENTERLINE STRIPING, REMOVE THE EXISTING RIGHT TURN LANE SIGN.
7. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
8. ALL TEMPORARY LANE CLOSURES, FLAGGING OPERATIONS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STAGE 3 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
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5. CSAH 116 FROM GOLDENROD ST. TO EAST END OF PROJECT, TO BE OPEN TO TRAFFIC ON EXISTING PAVEMENT.

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TRAFFIC CONTROL
STAGE 3/WINTER
SUSPENSION

Sheet 297 of 482 Sheets

## STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

STAGE 3 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
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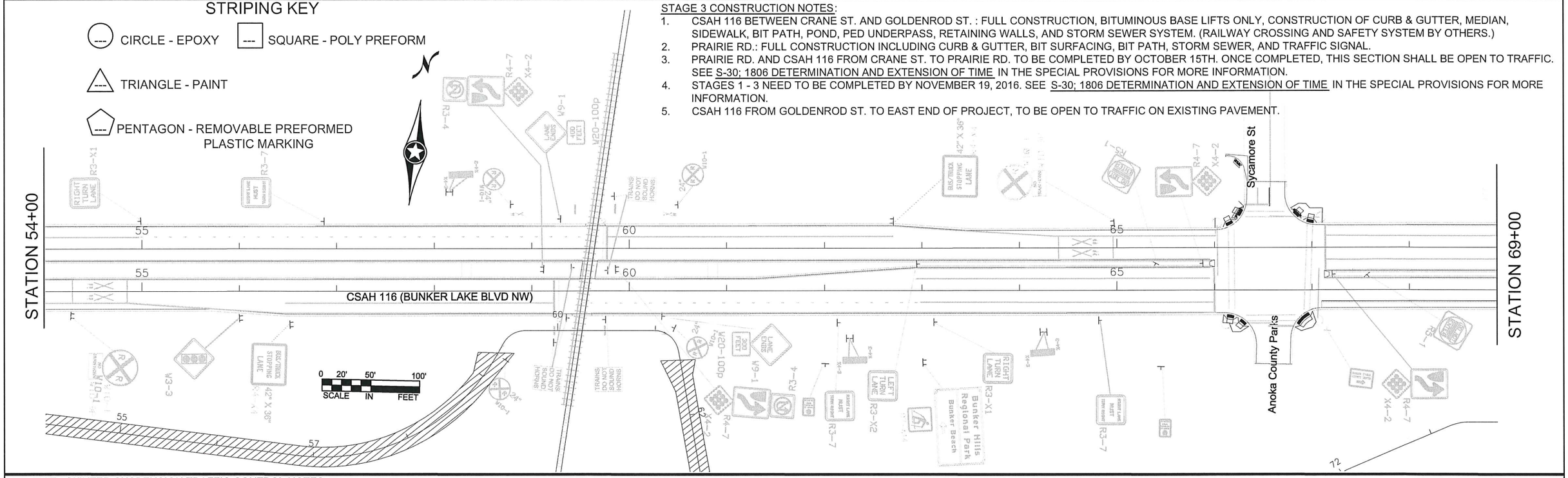
5. CSAH 116 FROM GOLDENROD ST. TO EAST END OF PROJECT, TO BE OPEN TO TRAFFIC ON EXISTING PAVEMENT.

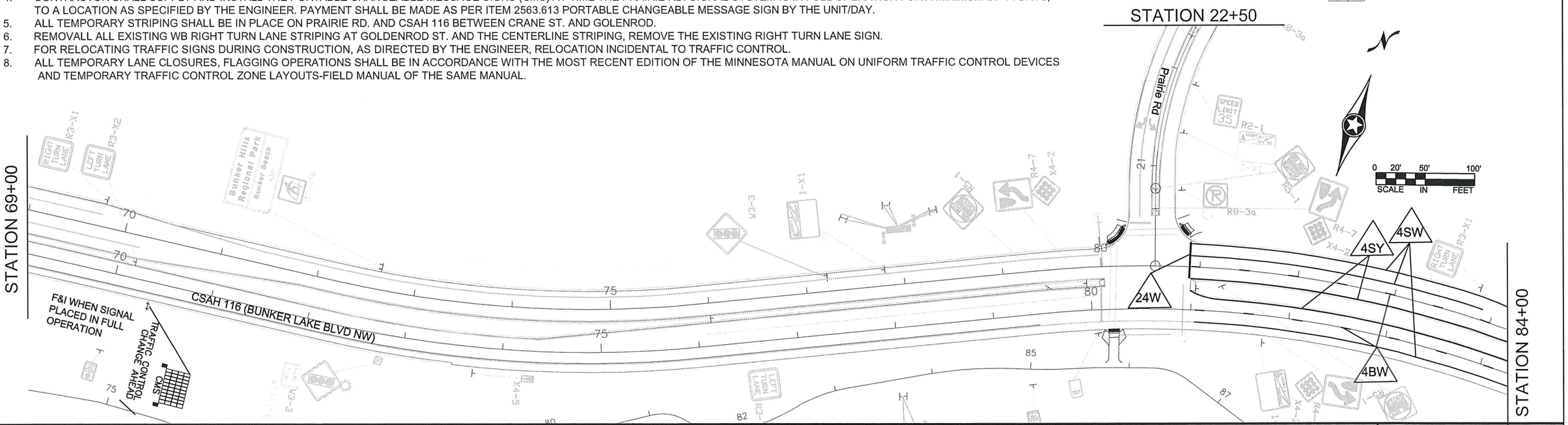



STAGE 3/WINTER SUSPENSION TRAFFIC CONTROL NOTES:

1. CSAH 116 IS OPEN TO TRAFFIC ON THE NEW ALIGNMENT FROM CRANE ST. TO GOLDENROD ST.
2. CSAH 116 IS OPEN TO TRAFFIC ON THE EXISTING ALIGNMENT FROM GOLDENROD ST. TO EAST END OF PROJECT.
3. TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
4. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS) AT TIME THE PRAIRIE RD. SIGNAL SYSTEM IS IN FULL OPERATION FOR A MINIMUM OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
5. ALL TEMPORARY STRIPING SHALL BE IN PLACE ON PRAIRIE RD. AND CSAH 116 BETWEEN CRANE ST. AND GOLENROD.
6. REMOVALL ALL EXISTING WB RIGHT TURN LANE STRIPING AT GOLDENROD ST. AND THE CENTERLINE STRIPING, REMOVE THE EXISTING RIGHT TURN LANE SIGN.
7. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
8. ALL TEMPORARY LANE CLOSURES, FLAGGING OPERATIONS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

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TRAFFIC CONTROL
STAGE 3/WINTER SUSPENSION

STAGE 3 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
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4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
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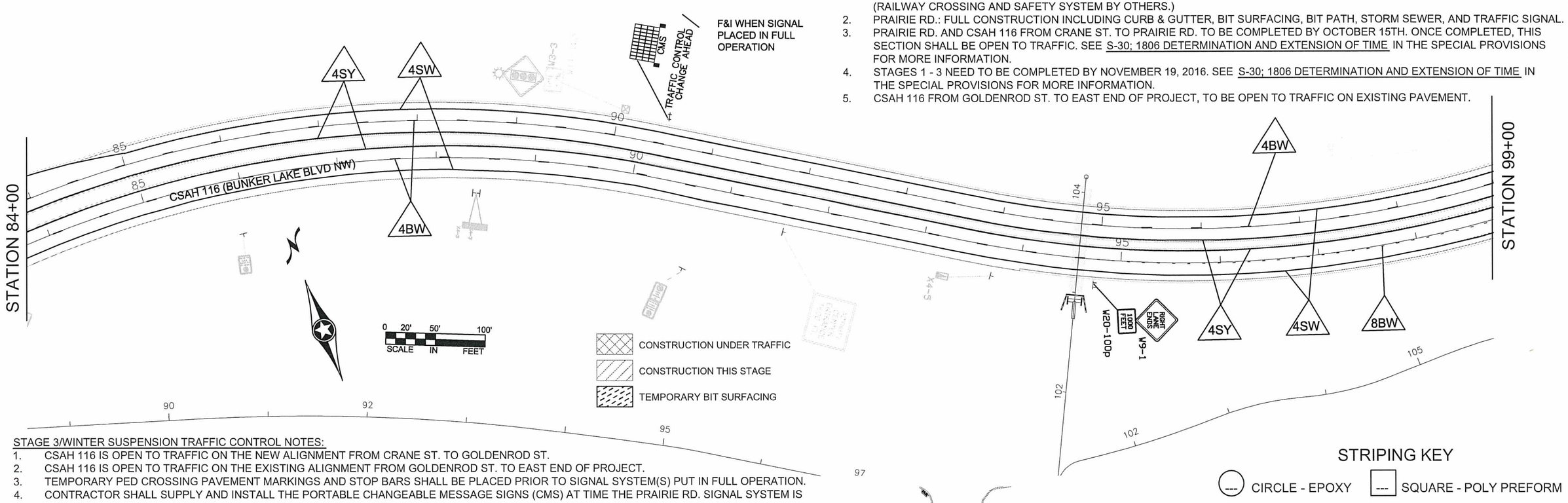


STAGE 3/WINTER SUSPENSION TRAFFIC CONTROL NOTES:

1. CSAH 116 IS OPEN TO TRAFFIC ON THE NEW ALIGNMENT FROM CRANE ST. TO GOLDENROD ST.
2. CSAH 116 IS OPEN TO TRAFFIC ON THE EXISTING ALIGNMENT FROM GOLDENROD ST. TO EAST END OF PROJECT.
3. TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
4. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS) AT TIME THE PRAIRIE RD. SIGNAL SYSTEM IS IN FULL OPERATION FOR A MINIMUM OF 14 DAYS,
   TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
5. ALL TEMPORARY STRIPING SHALL BE IN PLACE ON PRAIRIE RD. AND CSAH 116 BETWEEN CRANE ST. AND GOLENROD.
6. REMOVALL ALL EXISTING WB RIGHT TURN LANE STRIPING AT GOLDENROD ST. AND THE CENTERLINE STRIPING, REMOVE THE EXISTING RIGHT TURN LANE SIGN.
7. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
8. ALL TEMPORARY LANE CLOSURES, FLAGGING OPERATIONS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STRIPING KEY

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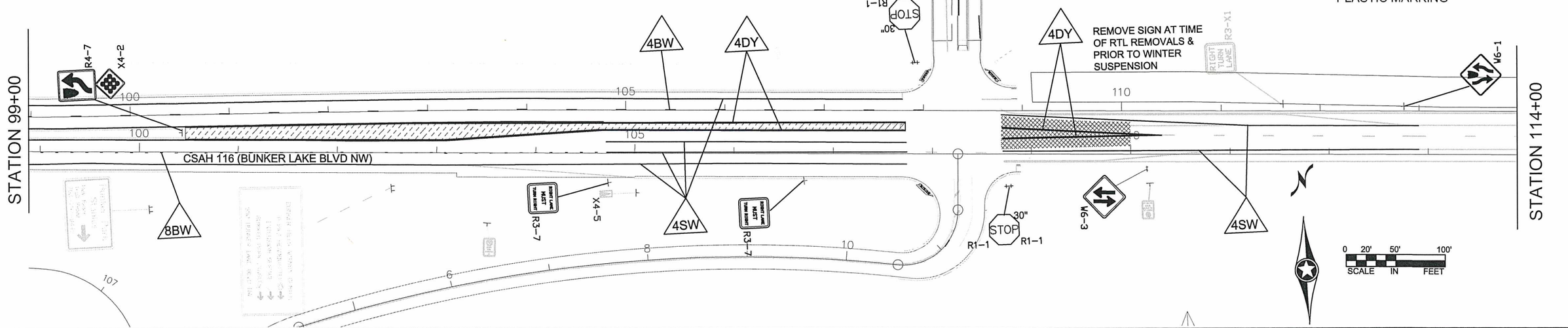


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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016
DESIGN BY DATE
CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-15
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 3/WINTER SUSPENSION

Sheet 299 of 482 Sheets

## STRIPING KEY

CIRCLE - EPOXY

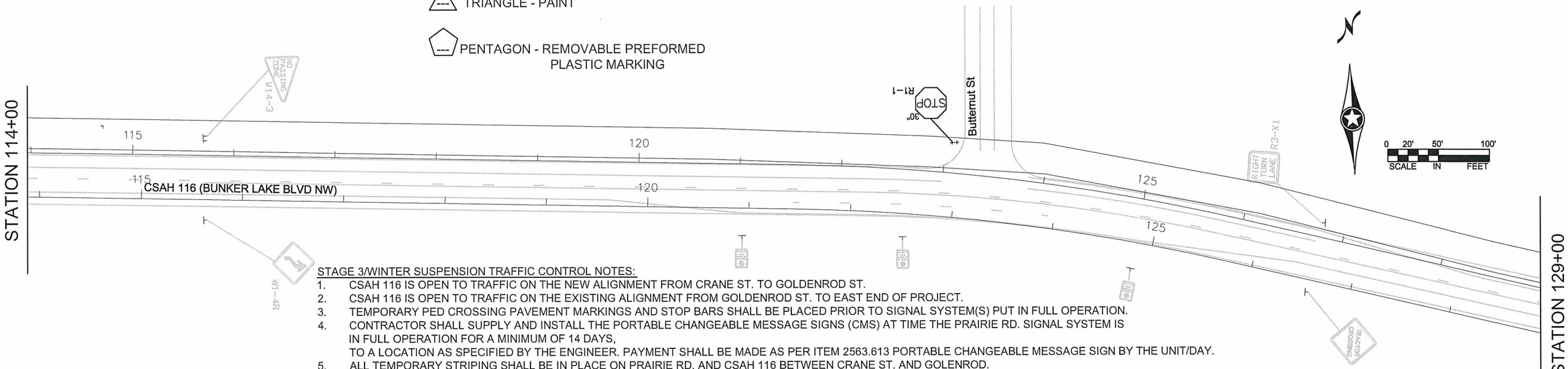
SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

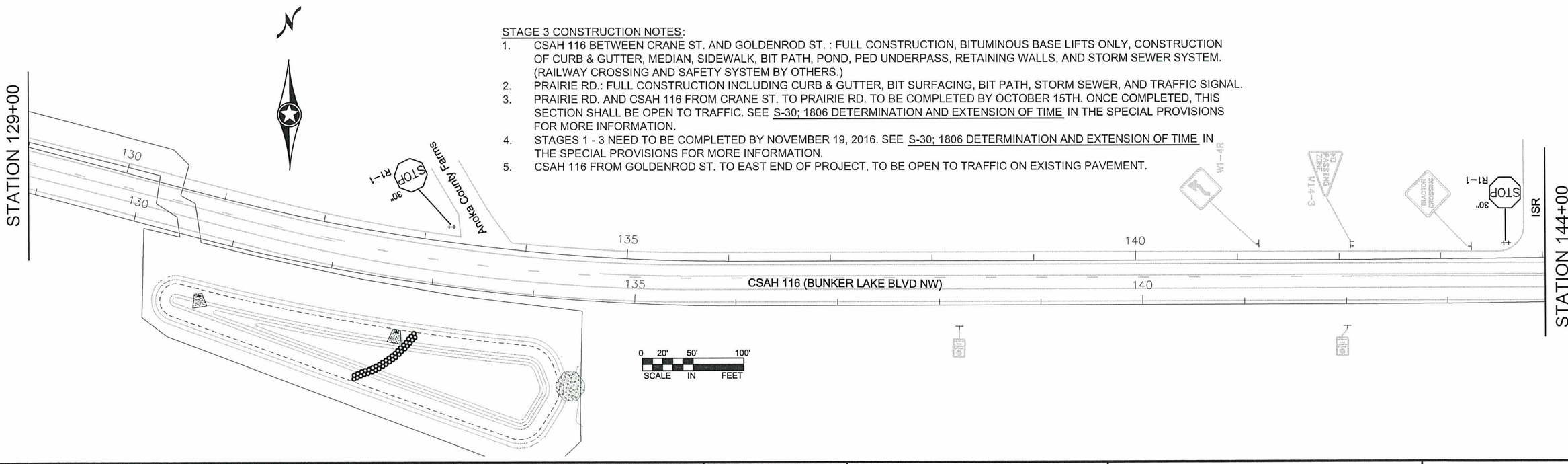
CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE




STAGE 3/WINTER SUSPENSION TRAFFIC CONTROL NOTES:

1. CSAH 116 IS OPEN TO TRAFFIC ON THE NEW ALIGNMENT FROM CRANE ST. TO GOLDENROD ST.
2. CSAH 116 IS OPEN TO TRAFFIC ON THE EXISTING ALIGNMENT FROM GOLDENROD ST. TO EAST END OF PROJECT.
3. TEMPORARY PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
4. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS) AT TIME THE PRAIRIE RD. SIGNAL SYSTEM IS IN FULL OPERATION FOR A MINIMUM OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
5. ALL TEMPORARY STRIPING SHALL BE IN PLACE ON PRAIRIE RD. AND CSAH 116 BETWEEN CRANE ST. AND GOLENROD.
6. REMOVALL ALL EXISTING WB RIGHT TURN LANE STRIPING AT GOLDENROD ST. AND THE CENTERLINE STRIPING, REMOVE THE EXISTING RIGHT TURN LANE SIGN.
7. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
8. ALL TEMPORARY LANE CLOSURES, FLAGGING OPERATIONS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.




STAGE 3 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN CRANE ST. AND GOLDENROD ST. : FULL CONSTRUCTION, BITUMINOUS BASE LIFTS ONLY, CONSTRUCTION OF CURB & GUTTER, MEDIAN, SIDEWALK, BIT PATH, POND, PED UNDERPASS, RETAINING WALLS, AND STORM SEWER SYSTEM. (RAILWAY CROSSING AND SAFETY SYSTEM BY OTHERS.)
2. PRAIRIE RD.: FULL CONSTRUCTION INCLUDING CURB & GUTTER, BIT SURFACING, BIT PATH, STORM SEWER, AND TRAFFIC SIGNAL.
3. PRAIRIE RD. AND CSAH 116 FROM CRANE ST. TO PRAIRIE RD. TO BE COMPLETED BY OCTOBER 15TH. ONCE COMPLETED, THIS SECTION SHALL BE OPEN TO TRAFFIC. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
4. STAGES 1 - 3 NEED TO BE COMPLETED BY NOVEMBER 19, 2016. SEE S-30; 1806 DETERMINATION AND EXTENSION OF TIME IN THE SPECIAL PROVISIONS FOR MORE INFORMATION.
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| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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PRINT NAME: DOUGLAS W. FISCHER, P.E.

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-15
S.P. 198-020-036
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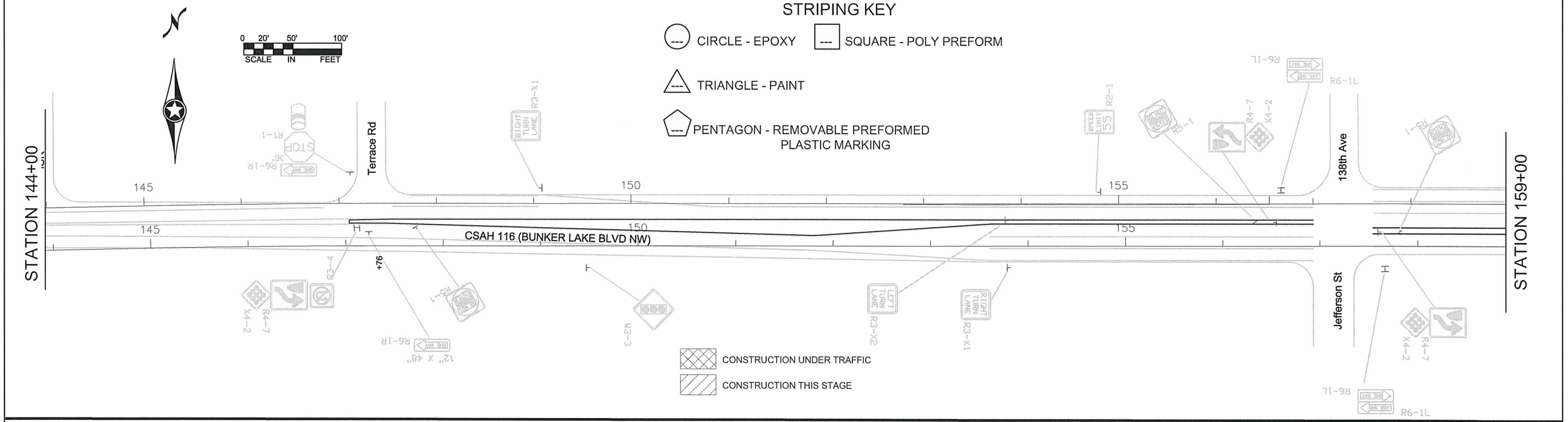
C.P. 11-25

TRAFFIC CONTROL
STAGE 3/WINTER SUSPENSION




STAGE 3/WINTER SUSPENSION TRAFFIC CONTROL NOTES:

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6. REMOVALL ALL EXISTING WB RIGHT TURN LANE STRIPING AT GOLDENROD ST. AND THE CENTERLINE STRIPING, REMOVE THE EXISTING RIGHT TURN LANE SIGN.
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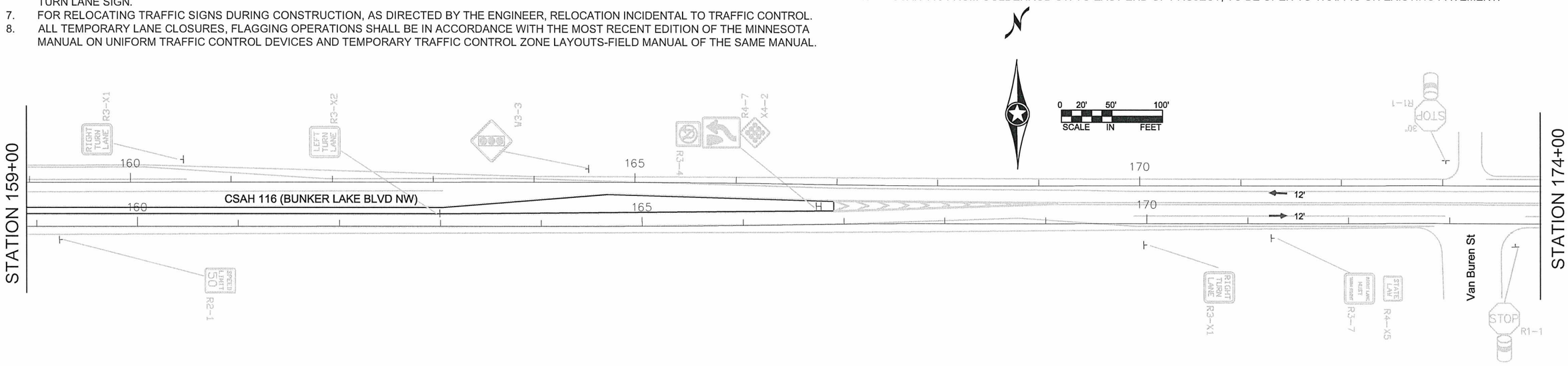


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PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-15
S.P. 198-020-036
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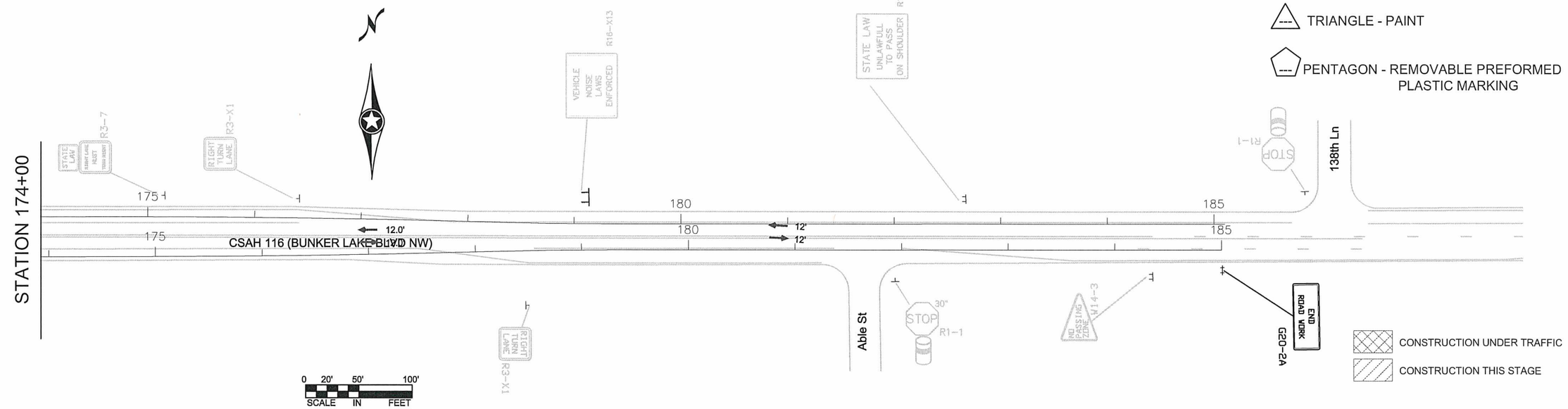
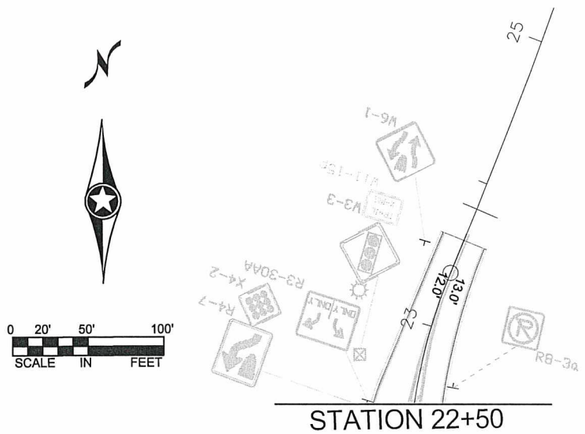
C.P. 11-25

TRAFFIC CONTROL
STAGE 3/WINTER SUSPENSION

Sheet 301 of 482 Sheets

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 10/18/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016
DESIGN BY DATE
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ANOKA COUNTY HIGHWAY DEPT.

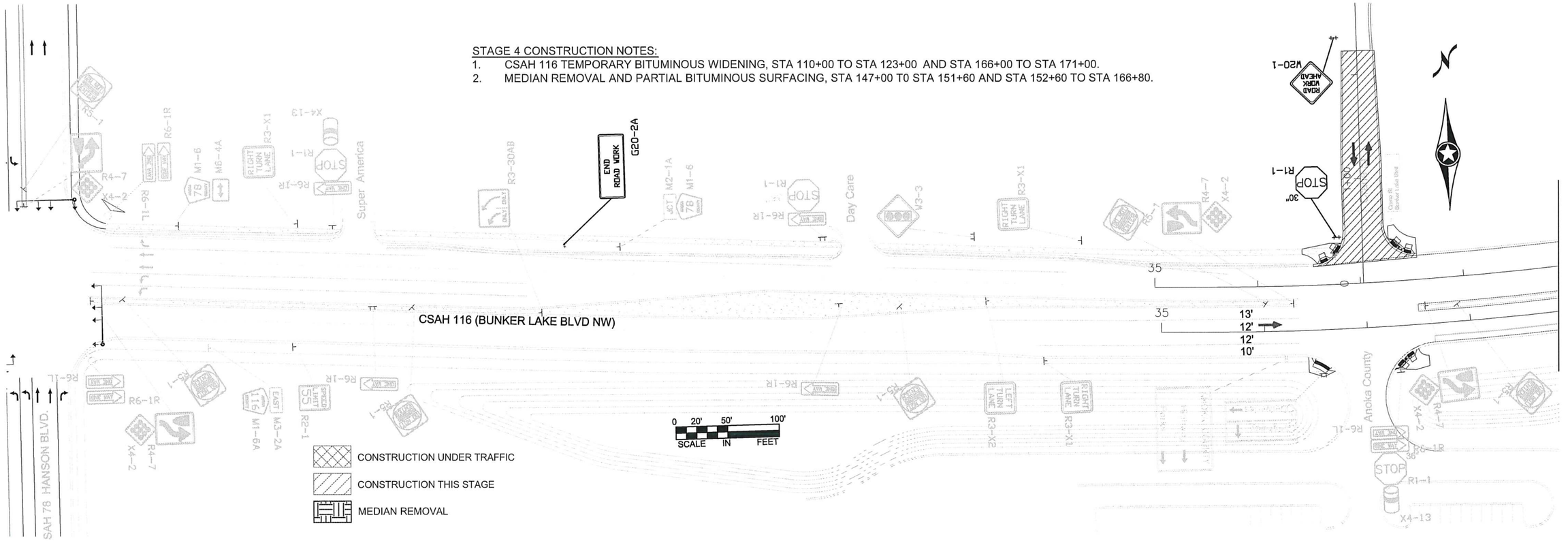
S.P. 002-716-15
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 3/WINTER SUSPENSION

Sheet 302 of 482 Sheets

STAGE 4 CONSTRUCTION NOTES:

1. CSAH 116 TEMPORARY BITUMINOUS WIDENING, STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.
2. MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING, STA 147+00 T0 STA 151+60 AND STA 152+60 TO STA 166+80.




STAGE 4 TRAFFIC CONTROL NOTES:

1. CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.
2. CRANE ST.: MILL AND OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND CONCRETE SIDEWALK.
3. ALL-WAY STOPS SHALL BE PLACED AT TIME SIGNAL SYSTEM IS REMOVED FROM OPERATION.
4. ACCESS SHALL BE MAINTAINED TO ALL STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
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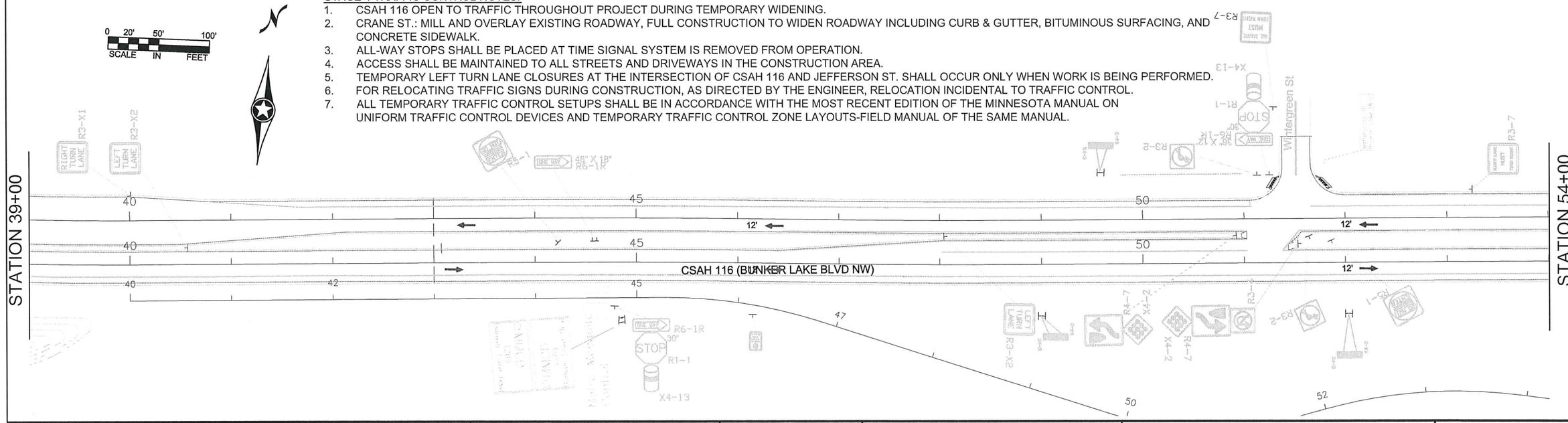


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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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PRINT NAME: DOUGLAS W. FISCHER, P.E.

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-15
S.P. 198-020-036
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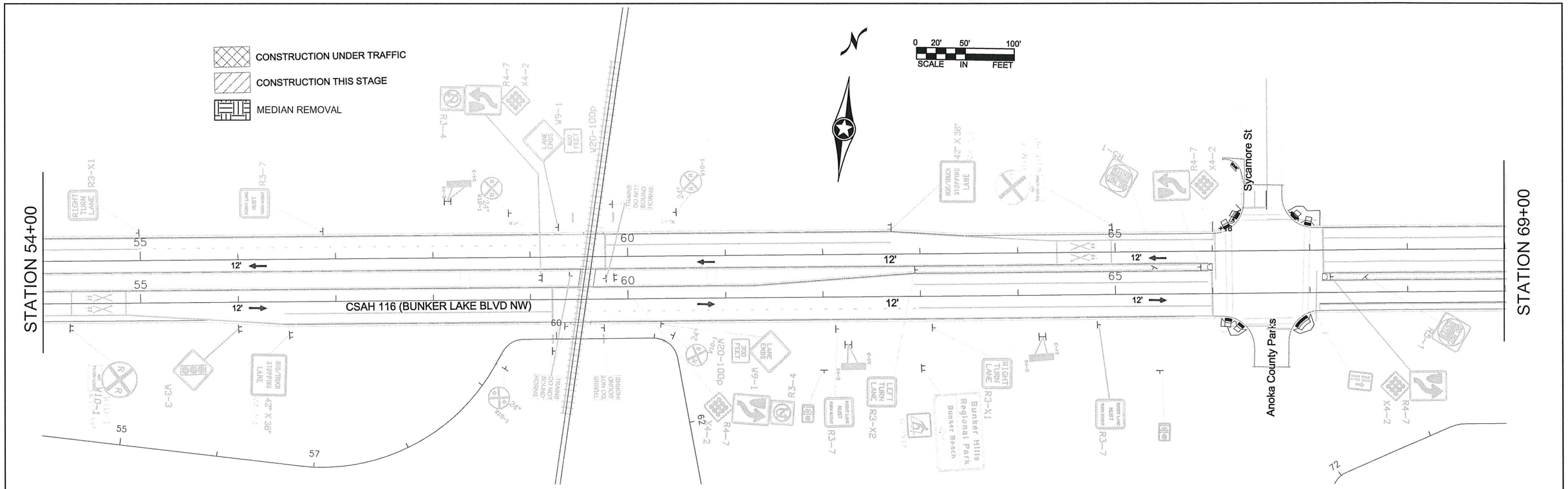
C.P. 11-25

TRAFFIC CONTROL
STAGE 4

Sheet 303 of 482 Sheets




STAGE 4 TRAFFIC CONTROL NOTES:

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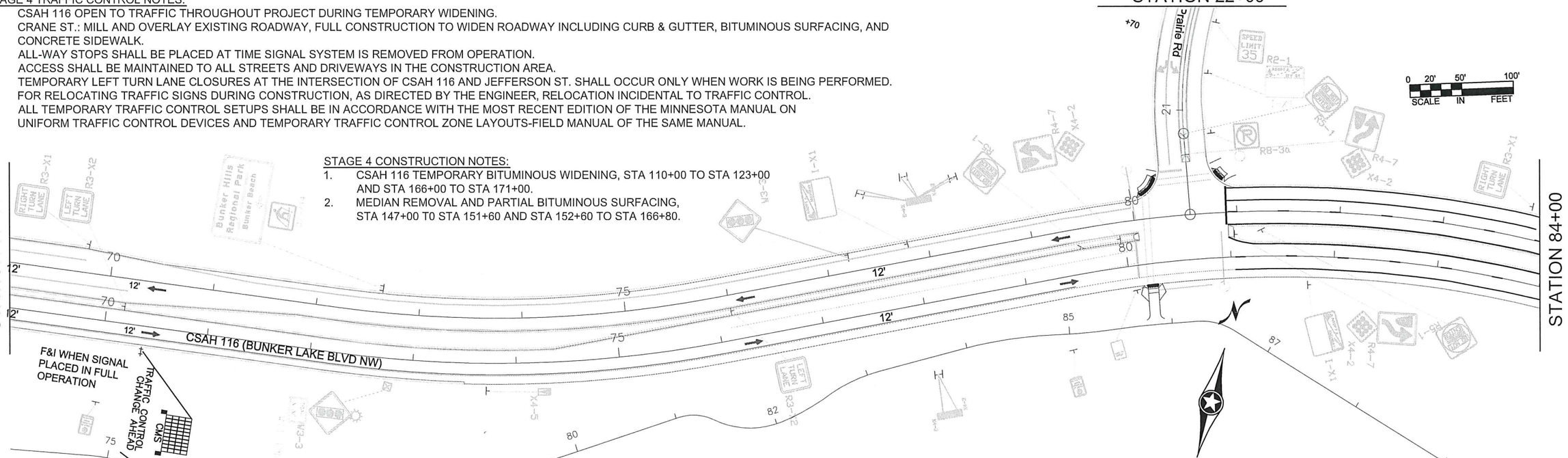
STAGE 4 CONSTRUCTION NOTES:

1. CSAH 116 TEMPORARY BITUMINOUS WIDENING, STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.
2. MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING, STA 147+00 T0 STA 151+60 AND STA 152+60 TO STA 166+80.

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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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S.P. 198-020-036
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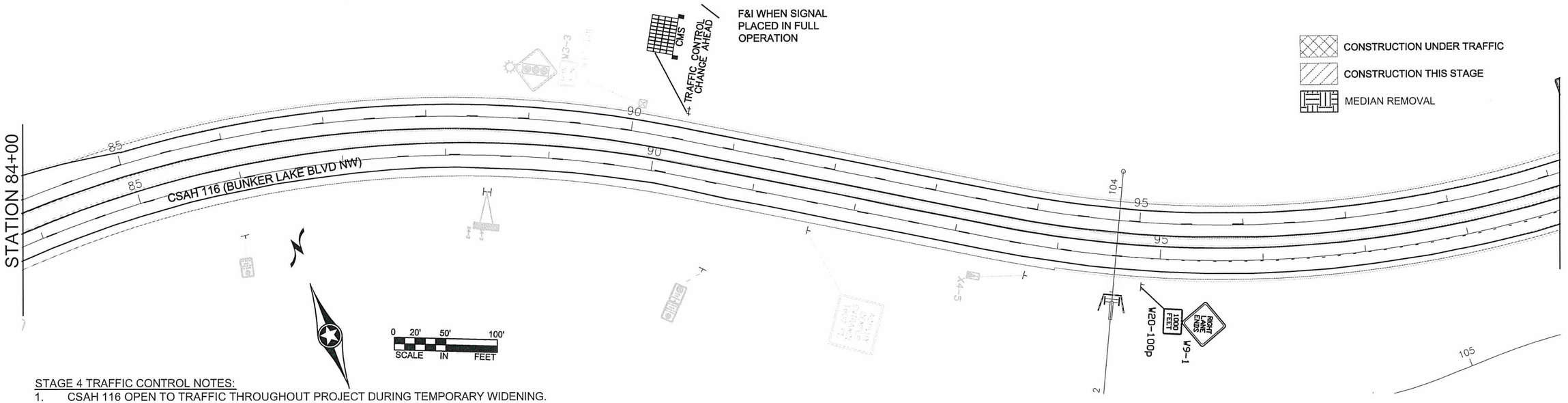
TRAFFIC CONTROL STAGE 4

Sheet 304 of 482 Sheets




STAGE 4 TRAFFIC CONTROL NOTES:

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2. CRANE ST.: MILL AND OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND CONCRETE SIDEWALK.
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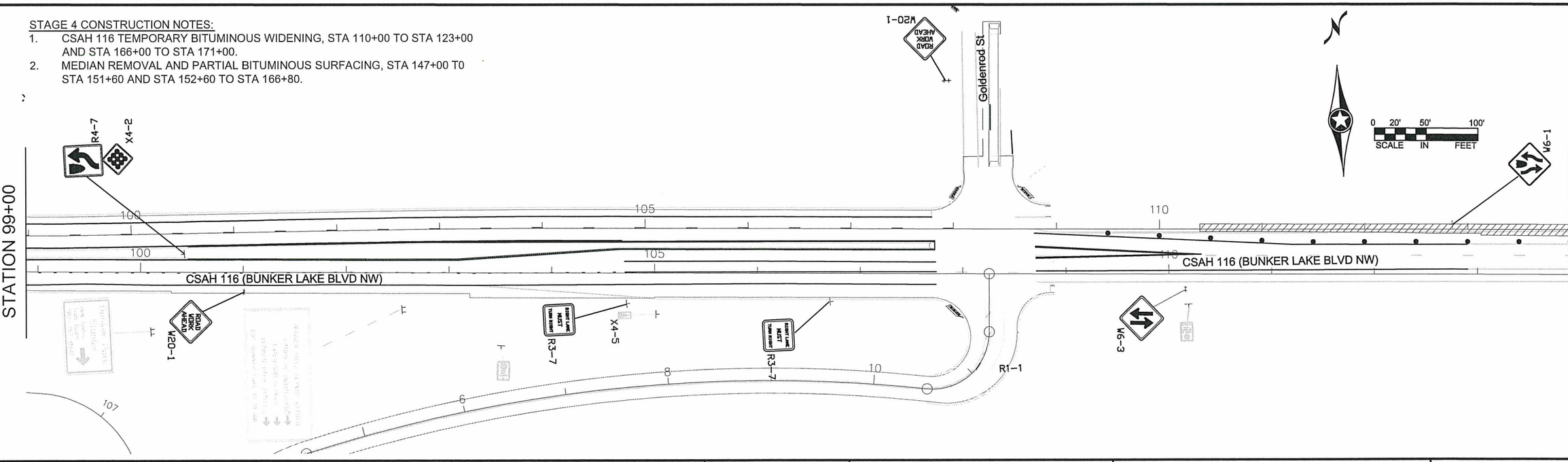


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TRAFFIC CONTROL STAGE 4

Sheet 305 of 482 Sheets

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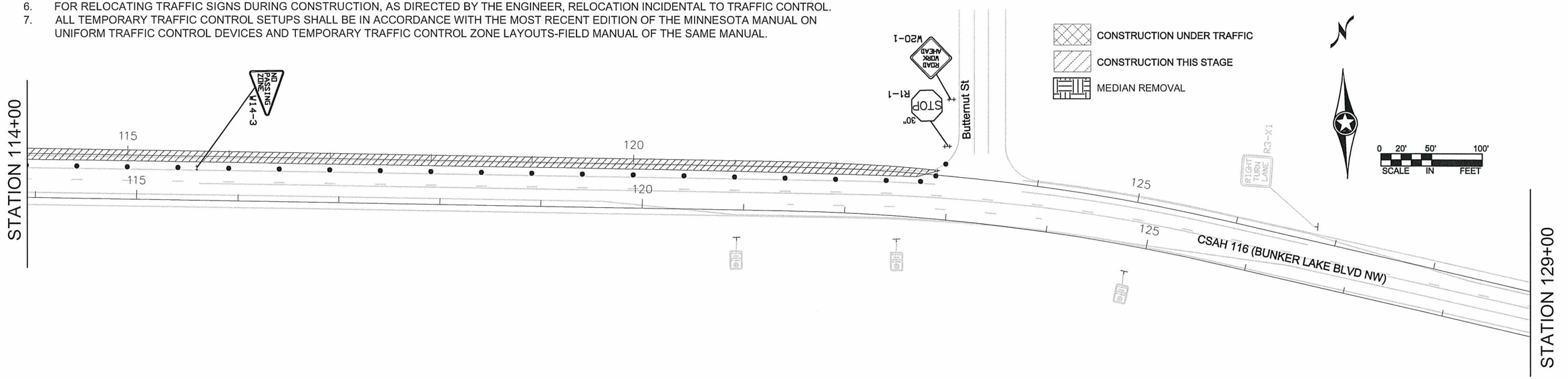


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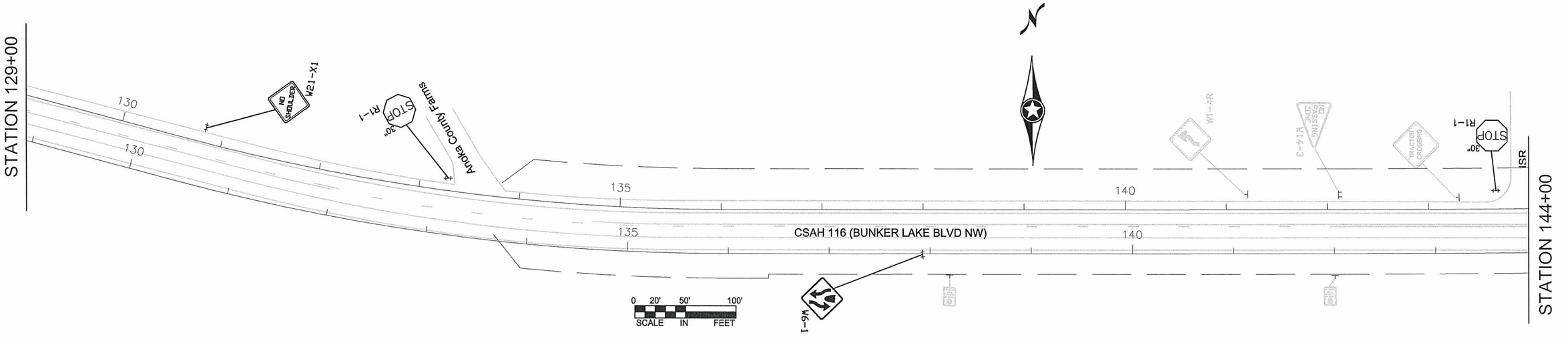


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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/31/16 REG. NO. 20235

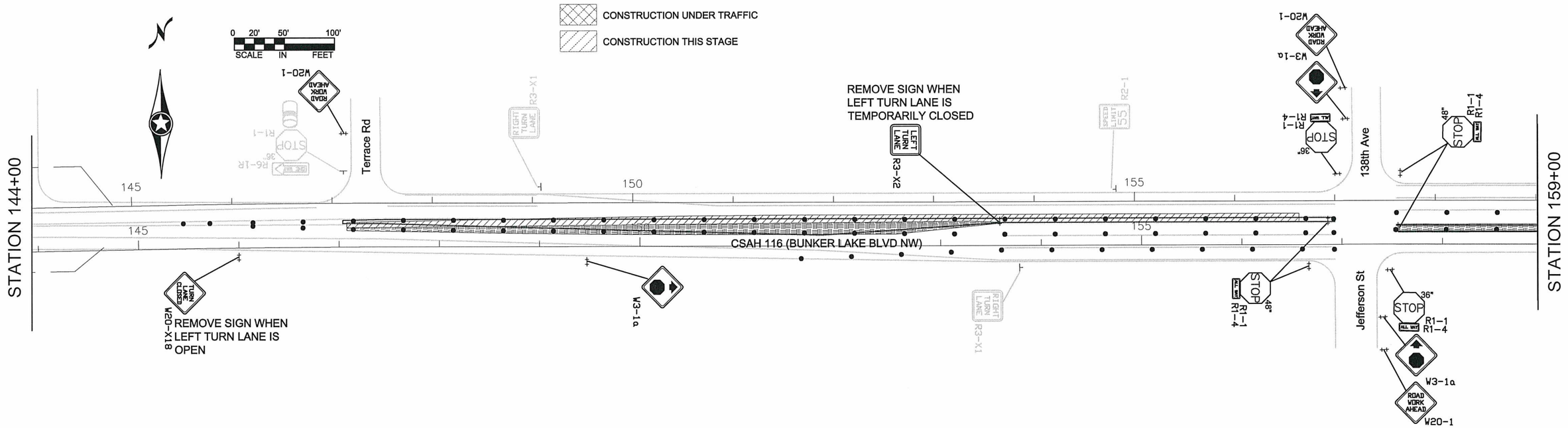
DRAWN BY TMV DATE 01/2016
DESIGN BY DATE
CHECKED BY DATE

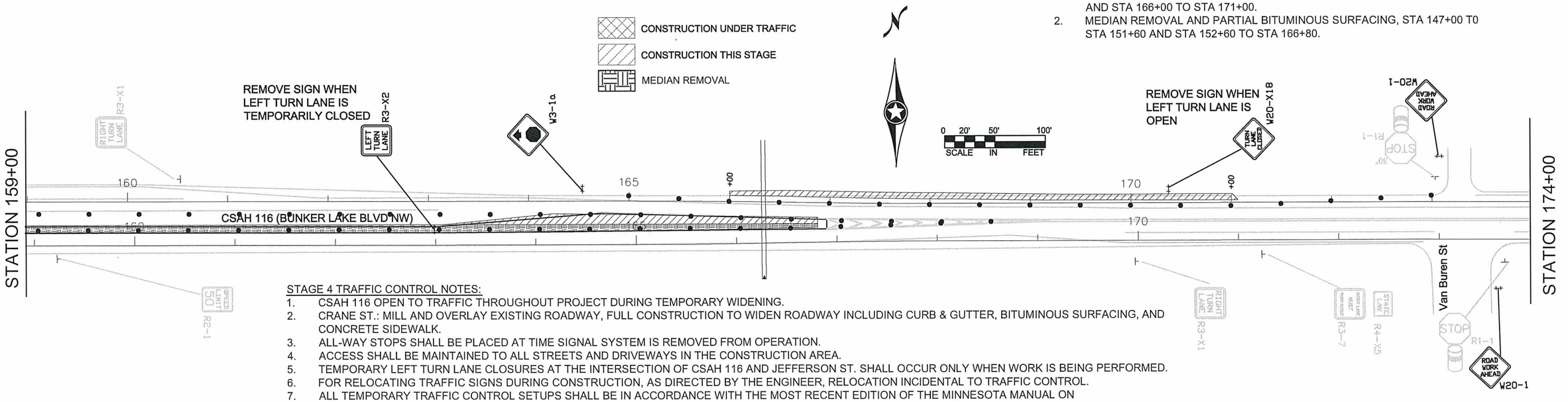
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-15
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL STAGE 4

Sheet 306 of 482 Sheets




STAGE 4 CONSTRUCTION NOTES:

1. CSAH 116 TEMPORARY BITUMINOUS WIDENING, STA 110+00 TO STA 123+00 AND STA 166+00 TO STA 171+00.
2. MEDIAN REMOVAL AND PARTIAL BITUMINOUS SURFACING, STA 147+00 T0 STA 151+60 AND STA 152+60 TO STA 166+80.

STAGE 4 TRAFFIC CONTROL NOTES:

1. CSAH 116 OPEN TO TRAFFIC THROUGHOUT PROJECT DURING TEMPORARY WIDENING.
2. CRANE ST.: MILL AND OVERLAY EXISTING ROADWAY, FULL CONSTRUCTION TO WIDEN ROADWAY INCLUDING CURB & GUTTER, BITUMINOUS SURFACING, AND CONCRETE SIDEWALK.
3. ALL-WAY STOPS SHALL BE PLACED AT TIME SIGNAL SYSTEM IS REMOVED FROM OPERATION.
4. ACCESS SHALL BE MAINTAINED TO ALL STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
5. TEMPORARY LEFT TURN LANE CLOSURES AT THE INTERSECTION OF CSAH 116 AND JEFFERSON ST. SHALL OCCUR ONLY WHEN WORK IS BEING PERFORMED.
6. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
7. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

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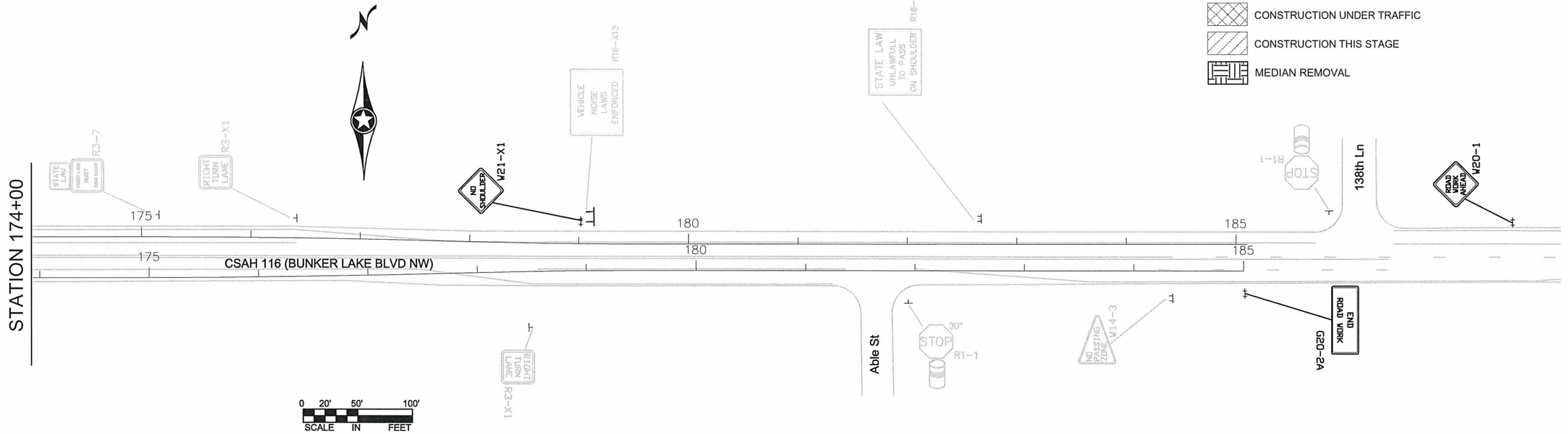
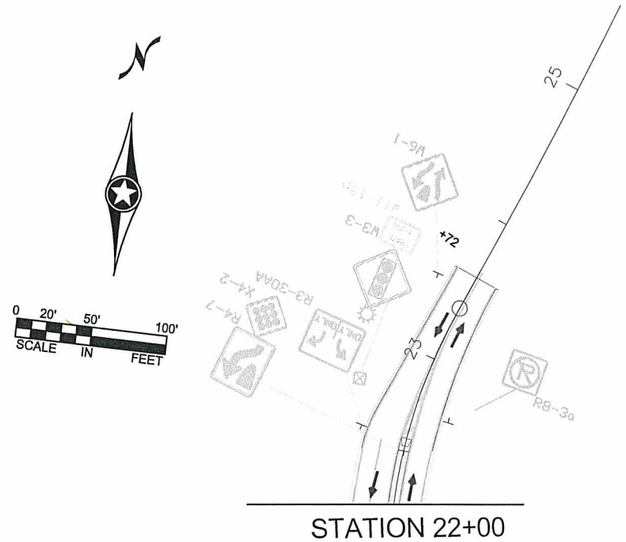
TRAFFIC CONTROL
STAGE 4

Sheet 307 of 482 Sheets




STATION 22+00

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C.P. 11-25

TRAFFIC CONTROL
STAGE 4

Sheet 308 of 482 Sheets

STAGE 5 CONSTRUCTION NOTES:

1. EB CSAH 116 GOLDENROD ST TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS, AND STORM SEWER SYSTEM.

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

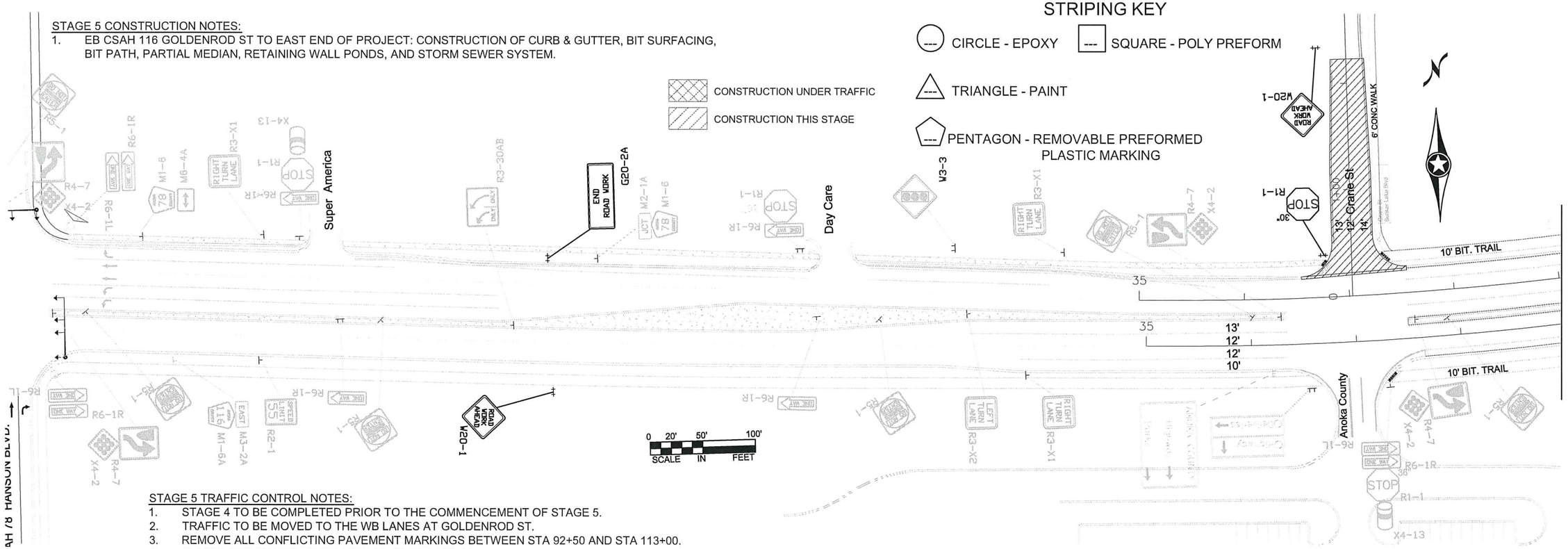
## STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING




STAGE 5 TRAFFIC CONTROL NOTES:

1. STAGE 4 TO BE COMPLETED PRIOR TO THE COMMENCEMENT OF STAGE 5.
2. TRAFFIC TO BE MOVED TO THE WB LANES AT GOLDENROD ST.
3. REMOVE ALL CONFLICTING PAVEMENT MARKINGS BETWEEN STA 92+50 AND STA 113+00.
4. PLACE LANE TAPE BETWEEN STA 92+50 AND 107+80.
5. PLACE PAINT BETWEEN STA 108+80 AND STA 183+00.
6. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
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TRAFFIC CONTROL
STAGE 5

Sheet 309 of 482 Sheets

STAGE 5 CONSTRUCTION NOTES:

1. EB CSAH 116 GOLDENROD ST TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS, AND STORM SEWER SYSTEM.

STRIPING KEY

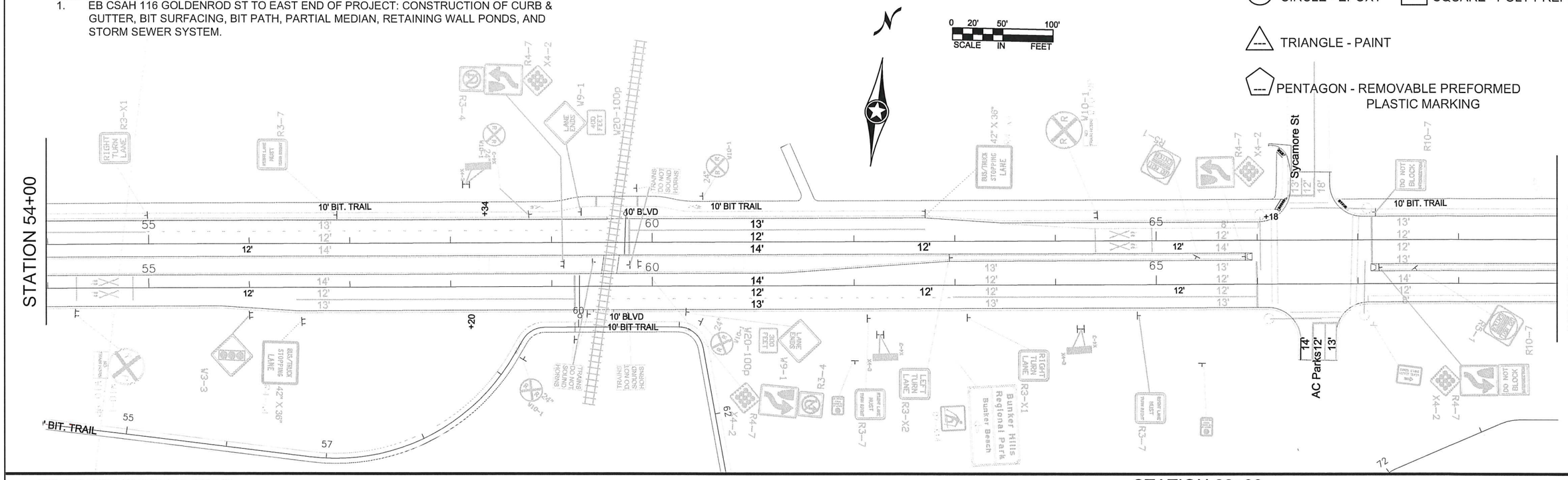
CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

SCALE IN FEET 0 20' 50' 100'

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CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

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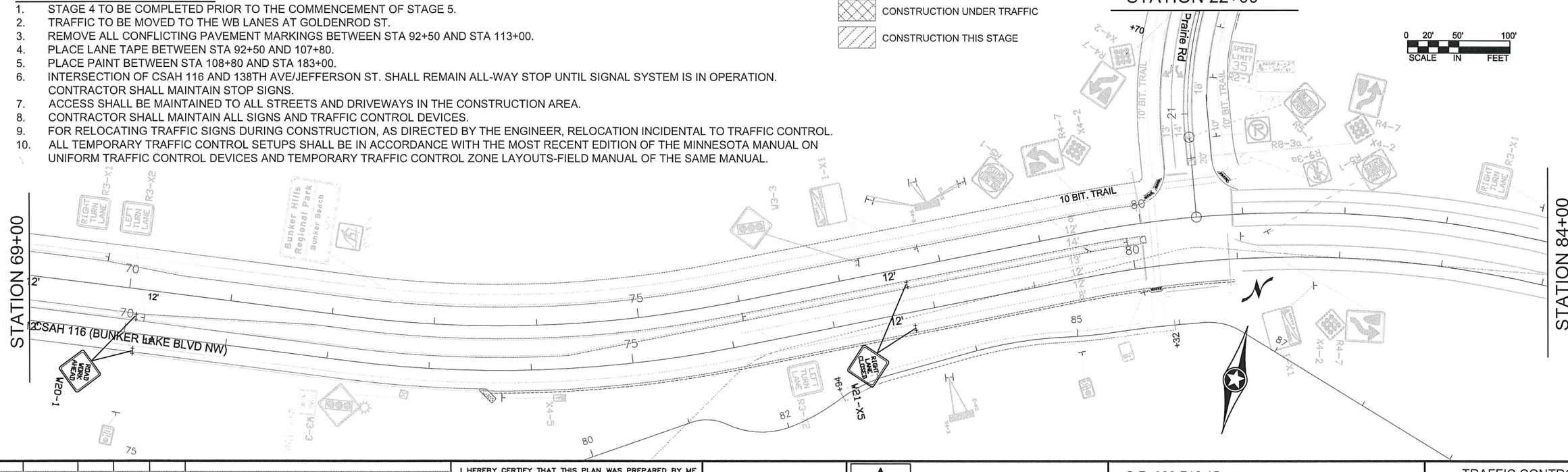


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TRAFFIC CONTROL
STAGE 5

Sheet 310 of 482 Sheets

STAGE 5 CONSTRUCTION NOTES:

1. EB CSAH 116 GOLDENROD ST TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS, AND STORM SEWER SYSTEM.

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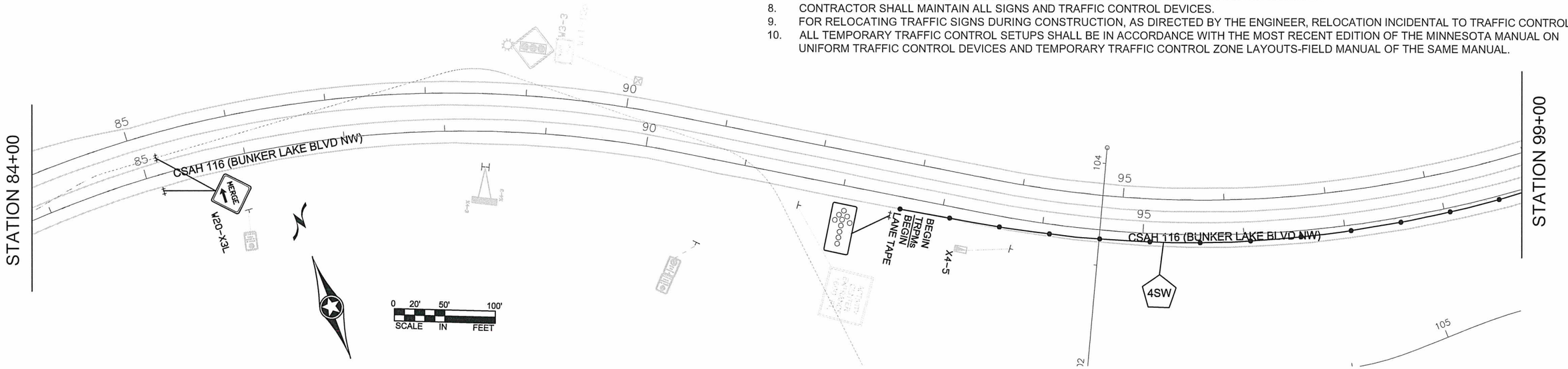



STRIPING KEY

CIRCLE - EPOXY

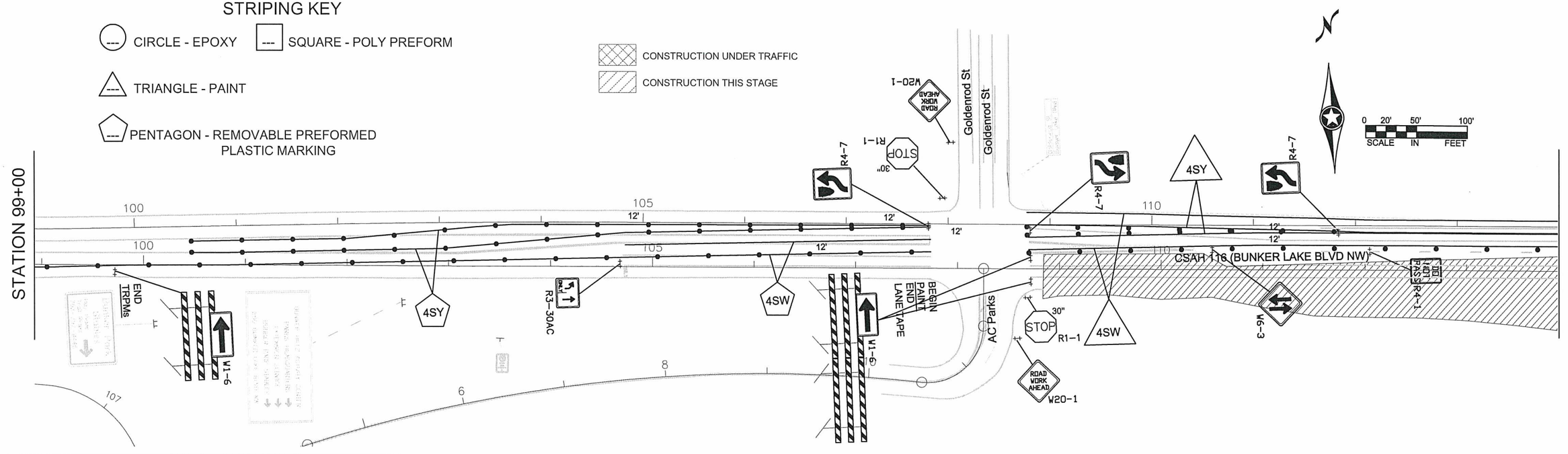
SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

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TRAFFIC CONTROL STAGE 5

Sheet 311 of 482 Sheets

STAGE 5 TRAFFIC CONTROL NOTES:

1. STAGE 4 TO BE COMPLETED PRIOR TO THE COMMENCEMENT OF STAGE 5.
2. TRAFFIC TO BE MOVED TO THE WB LANES AT GOLDENROD ST.
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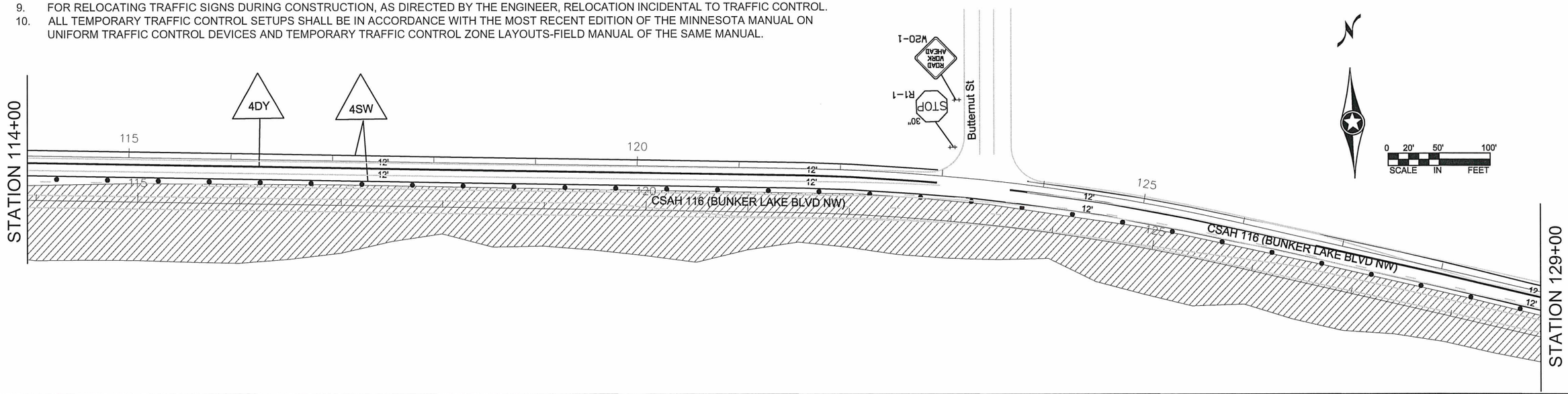


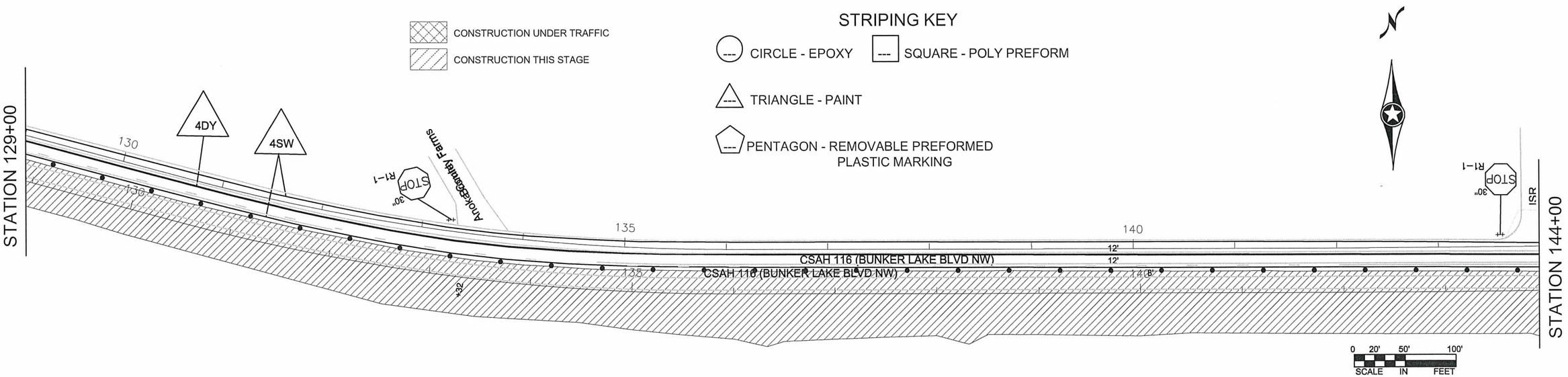


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TRAFFIC CONTROL
STAGE 5

Sheet 312 of 482 Sheets

## STRIPING KEY

CONSTRUCTION UNDER TRAFFIC

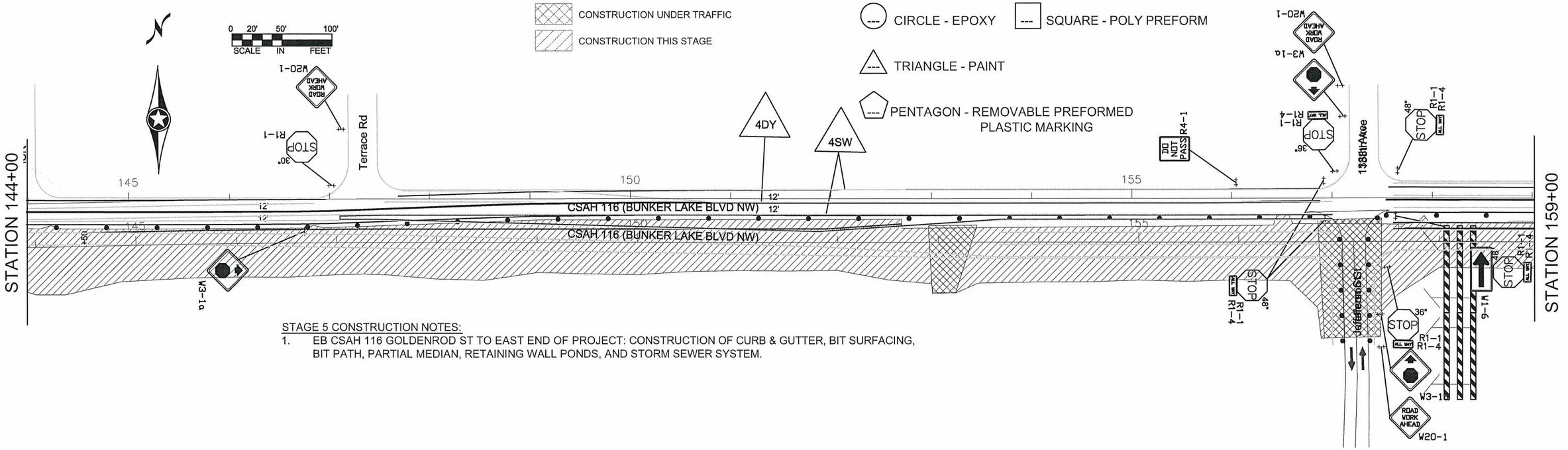
CONSTRUCTION THIS STAGE

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

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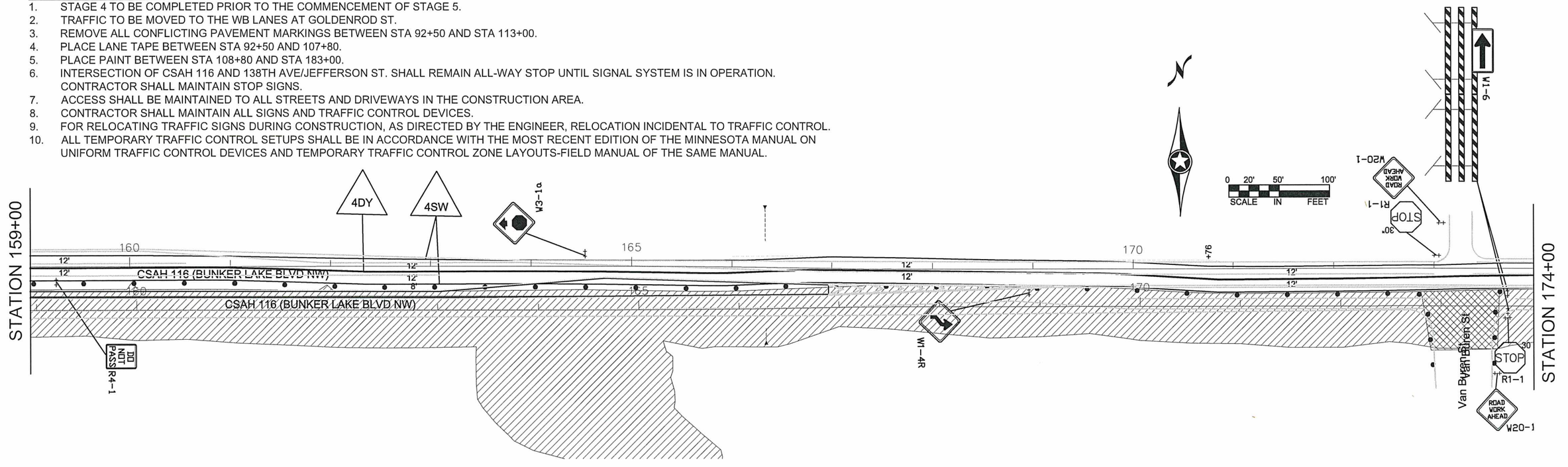


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TRAFFIC CONTROL
STAGE 5

Sheet 313 of 482 Sheets

## STRIPING KEY

CIRCLE - EPOXY

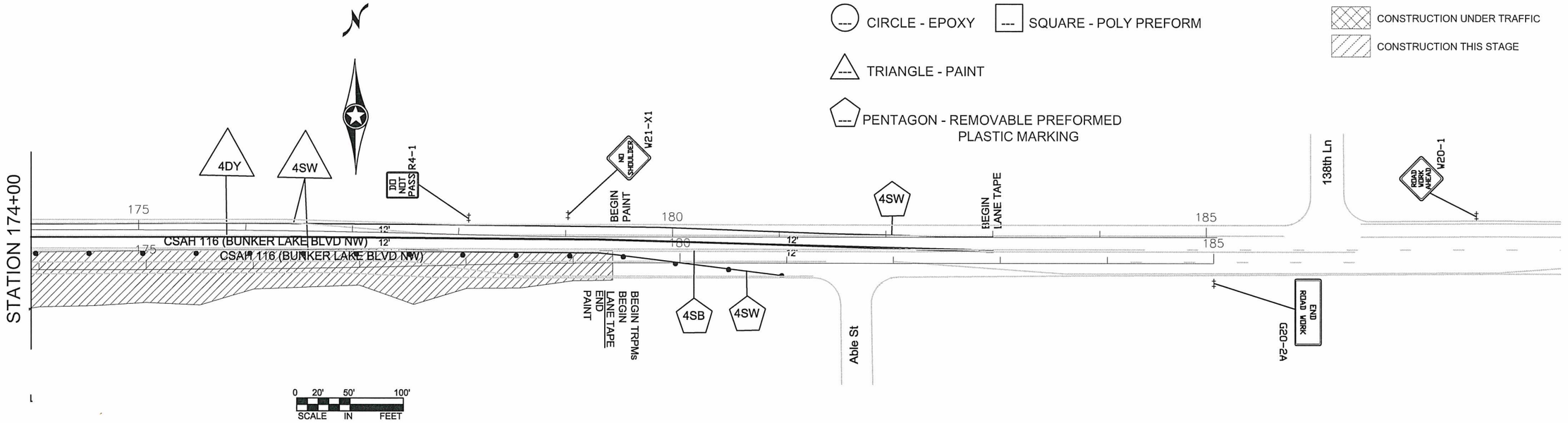
SQUARE - POLY PREFORM

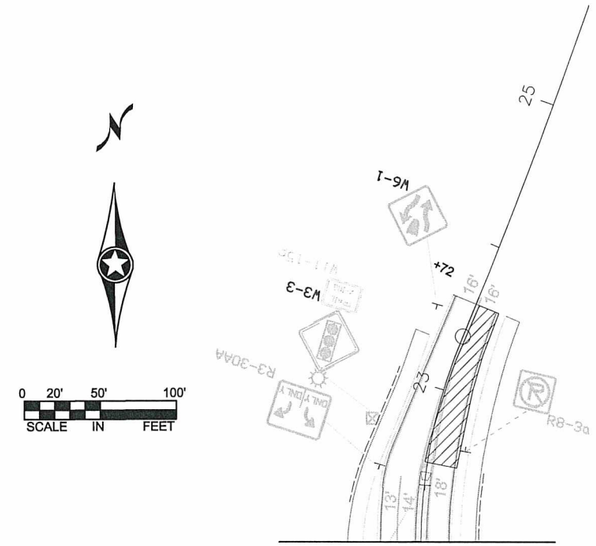
TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE




STATION 22+00

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STAGE 5 CONSTRUCTION NOTES:

1. EB CSAH 116 GOLDENROD ST TO EAST END OF PROJECT: CONSTRUCTION OF CURB & GUTTER, BIT SURFACING, BIT PATH, PARTIAL MEDIAN, RETAINING WALL PONDS, AND STORM SEWER SYSTEM.

| NO | DATE | BY | CKD | APPR | REVISION |
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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 3/Dec/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY ..... DATE .....

CHECKED BY ..... DATE .....

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-15
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL
STAGE 5

Sheet 314 of 482 Sheets

# STRIPING KEY

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

CIRCLE - EPOXY

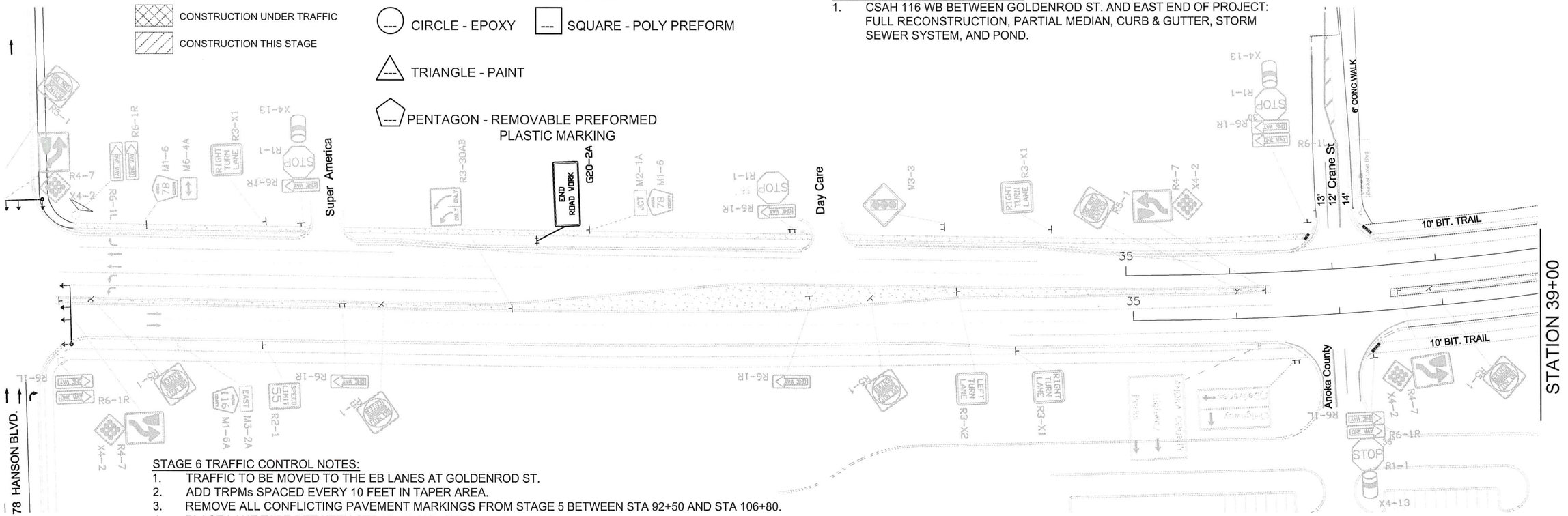
SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

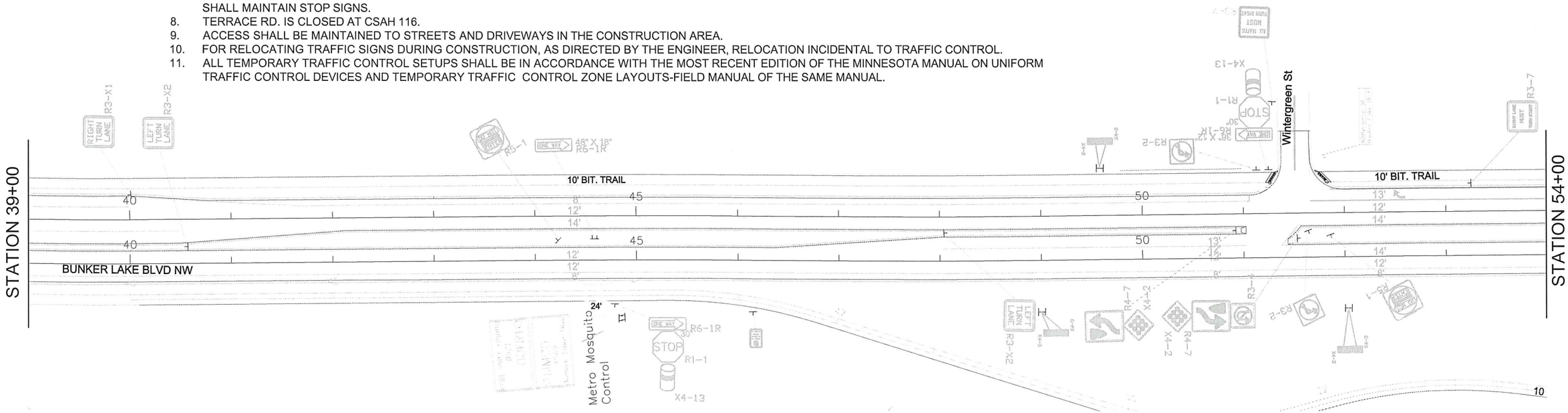
STAGE 6 CONSTRUCTION NOTES:

1. CSAH 116 WB BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.




STAGE 6 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE EB LANES AT GOLDENROD ST.
2. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA.
3. REMOVE ALL CONFLICTING PAVEMENT MARKINGS FROM STAGE 5 BETWEEN STA 92+50 AND STA 106+80.
4. PLACE LANE TAPE BETWEEN STA 92+20 AND STA 107+80.
5. PLACE PAINT BETWEEN STA 108+80 AND 183+00.
6. PAINT TO MATCH INTO EXISTING STRIPING AT EAST END OF PROJECT.
7. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
8. TERRACE RD. IS CLOSED AT CSAH 116.
9. ACCESS SHALL BE MAINTAINED TO STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
10. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
11. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

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PRINT NAME: DOUGLAS W. FISCHER, P.E.

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ANOKA COUNTY HIGHWAY DEPT.

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S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL STAGE 6

Sheet 315 of 482 Sheets

STAGE 6 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE EB LANES AT GOLDENROD ST.
2. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA.
3. REMOVE ALL CONFLICTING PAVEMENT MARKINGS FROM STAGE 5 BETWEEN STA 92+50 AND STA 106+80.
4. PLACE LANE TAPE BETWEEN STA 92+20 AND STA 107+80.
5. PLACE PAINT BETWEEN STA 108+80 AND 183+00.
6. PAINT TO MATCH INTO EXISTING STRIPING AT EAST END OF PROJECT.
7. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
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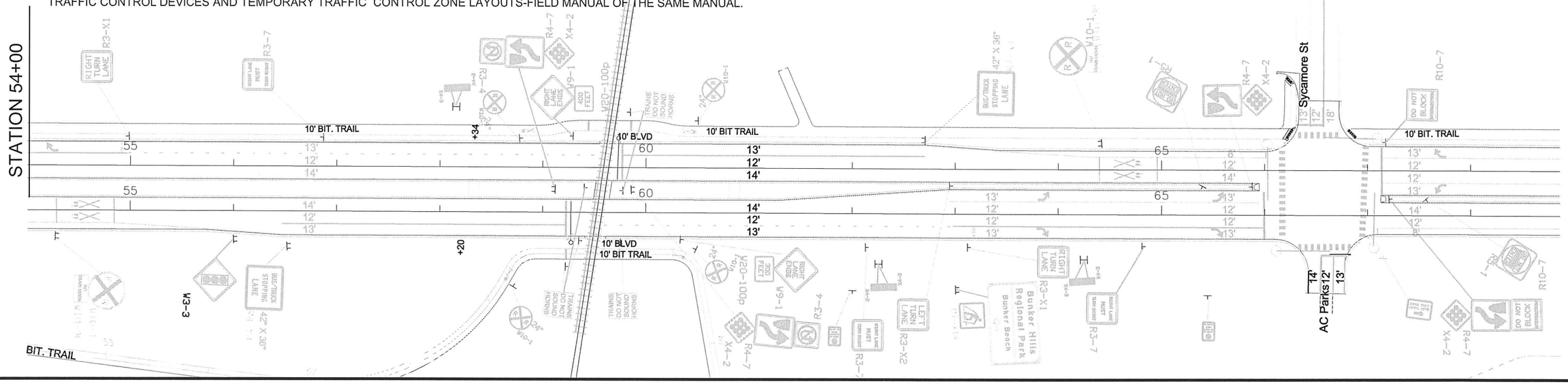
9. ACCESS SHALL BE MAINTAINED TO STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
10. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
11. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STAGE 6 CONSTRUCTION NOTES:

1. CSAH 116 WB BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

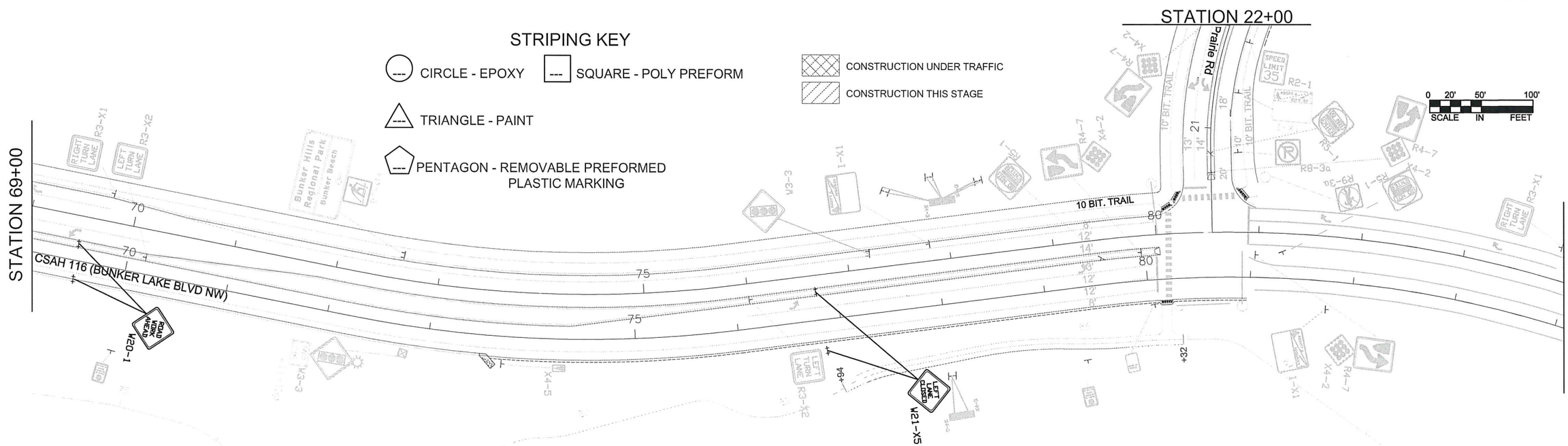



STRIPING KEY

- CIRCLE - EPOXY
- SQUARE - POLY PREFORM
- TRIANGLE - PAINT
- PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

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C.P. 11-25

TRAFFIC CONTROL STAGE 6

Sheet 316 of 482 Sheets

## STRIPING KEY

CONSTRUCTION UNDER TRAFFIC

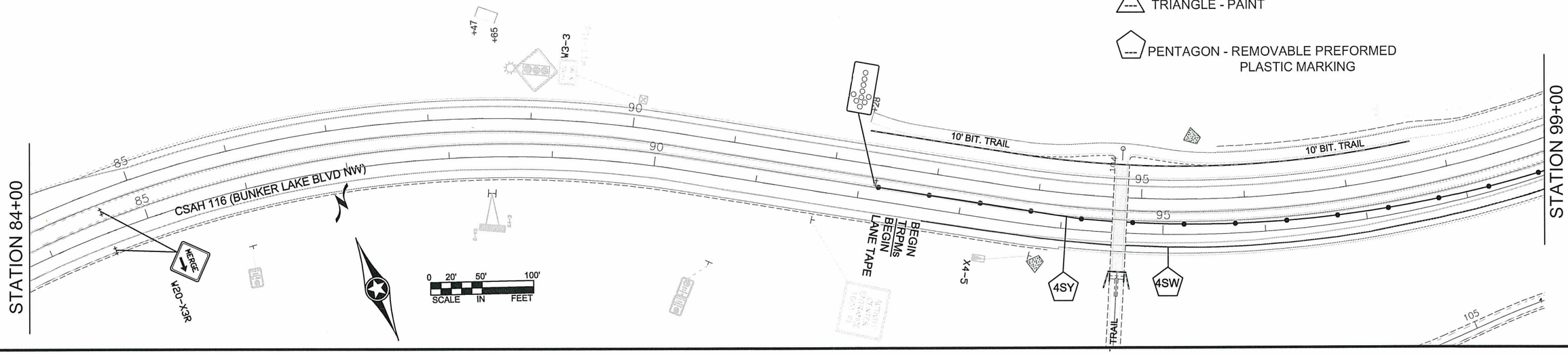
CONSTRUCTION THIS STAGE

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING




STAGE 6 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE EB LANES AT GOLDENROD ST.
2. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA.
3. REMOVE ALL CONFLICTING PAVEMENT MARKINGS FROM STAGE 5 BETWEEN STA 92+50 AND STA 106+80.
4. PLACE LANE TAPE BETWEEN STA 92+20 AND STA 107+80.
5. PLACE PAINT BETWEEN STA 108+80 AND 183+00.
6. PAINT TO MATCH INTO EXISTING STRIPING AT EAST END OF PROJECT.
7. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
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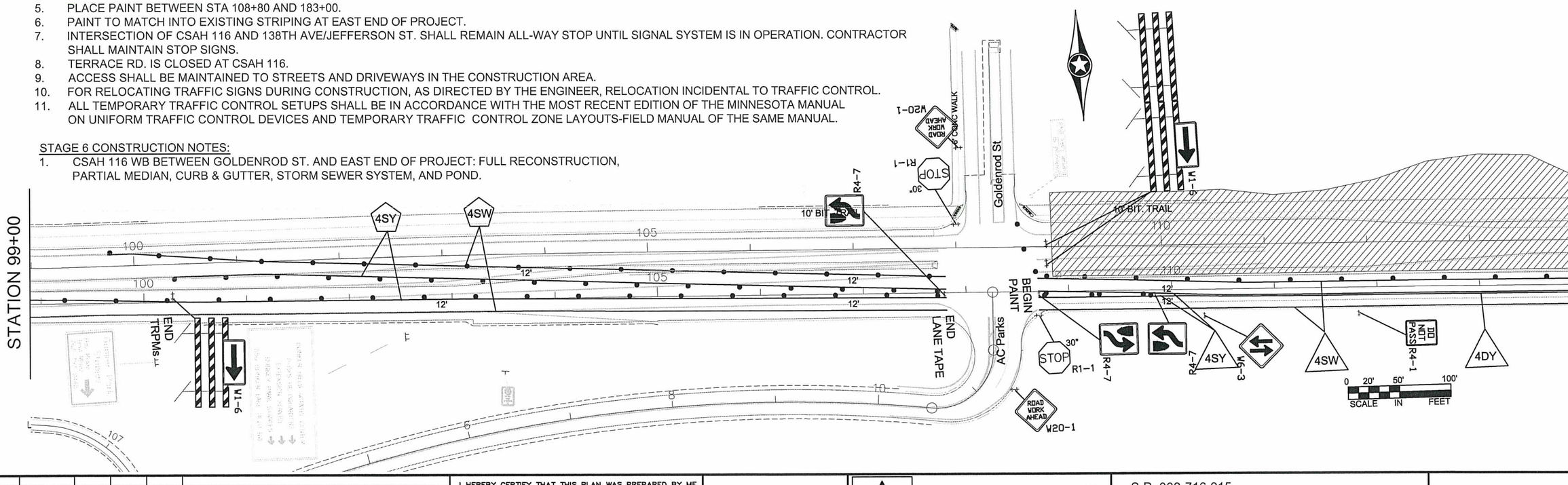
STAGE 6 CONSTRUCTION NOTES:

1. CSAH 116 WB BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

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TRAFFIC CONTROL STAGE 6

Sheet 317 of 482 Sheets

STAGE 6 CONSTRUCTION NOTES:

1. CSAH 116 WB BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

## STRIPING KEY

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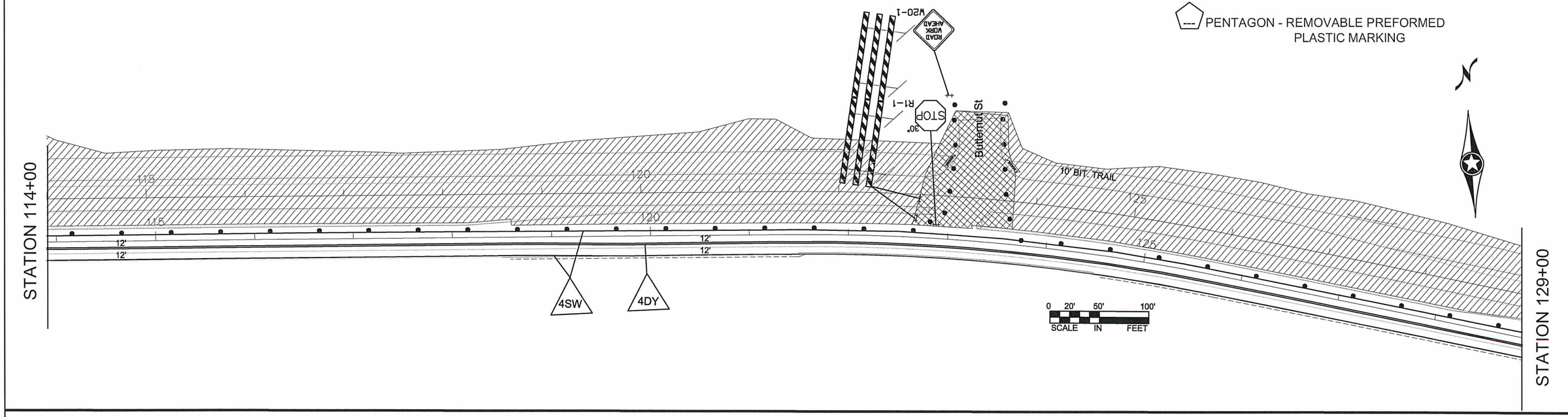


STAGE 6 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE EB LANES AT GOLDENROD ST.
2. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA.
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5. PLACE PAINT BETWEEN STA 108+80 AND 183+00.
6. PAINT TO MATCH INTO EXISTING STRIPING AT EAST END OF PROJECT.
7. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
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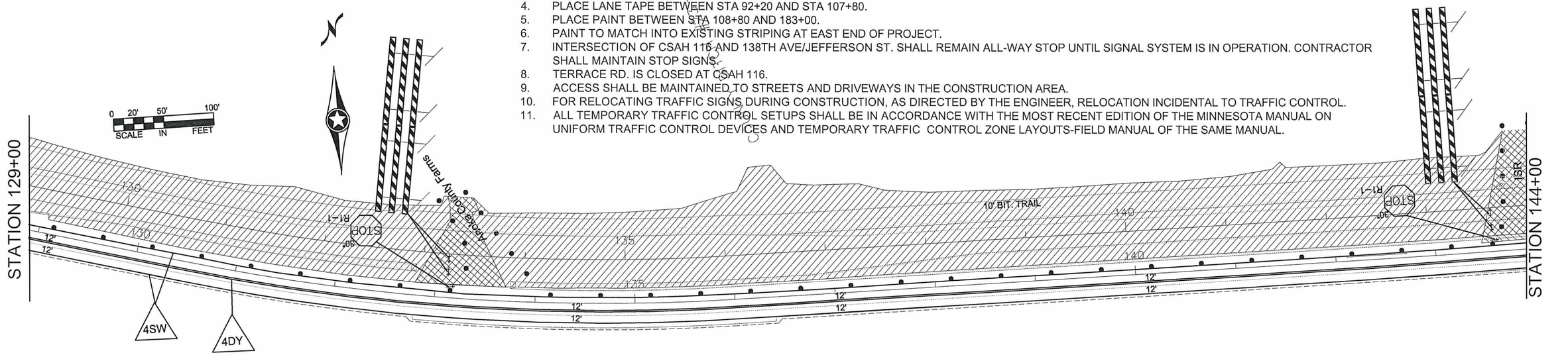


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TRAFFIC CONTROL
STAGE 6

## STRIPING KEY

CIRCLE - EPOXY

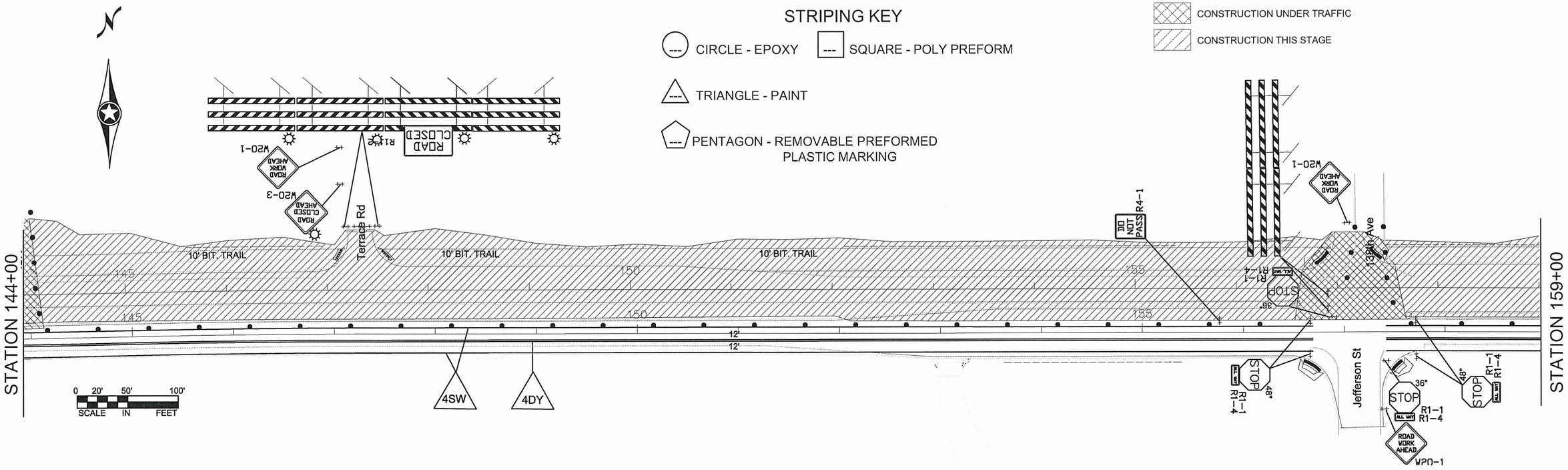
SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE

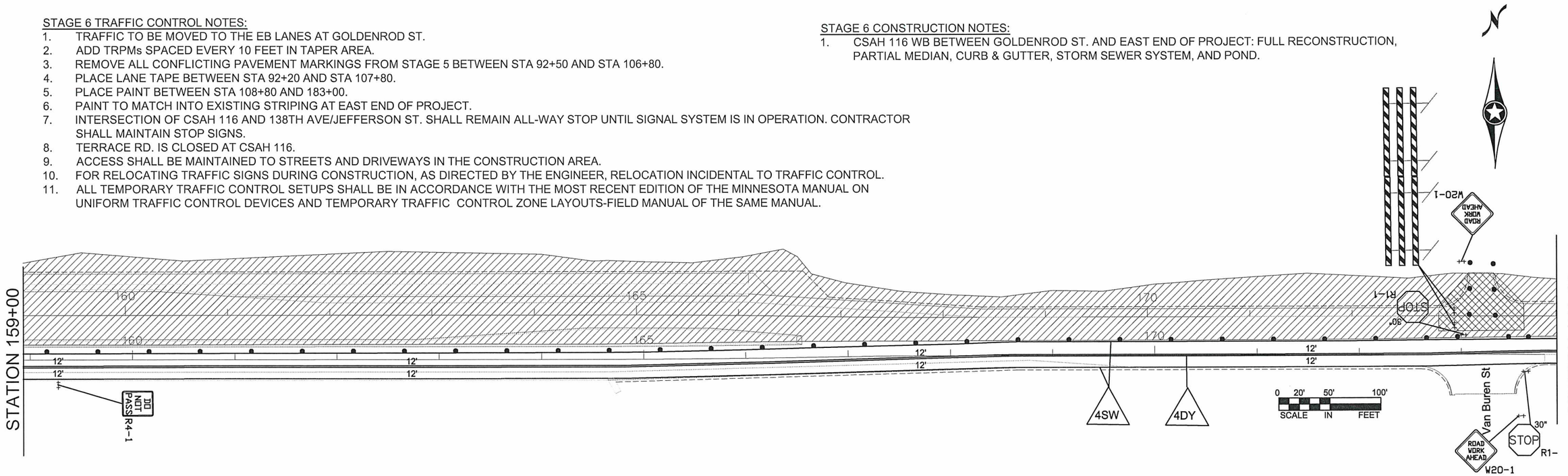



STAGE 6 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE EB LANES AT GOLDENROD ST.
2. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA.
3. REMOVE ALL CONFLICTING PAVEMENT MARKINGS FROM STAGE 5 BETWEEN STA 92+50 AND STA 106+80.
4. PLACE LANE TAPE BETWEEN STA 92+20 AND STA 107+80.
5. PLACE PAINT BETWEEN STA 108+80 AND 183+00.
6. PAINT TO MATCH INTO EXISTING STRIPING AT EAST END OF PROJECT.
7. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
8. TERRACE RD. IS CLOSED AT CSAH 116.
9. ACCESS SHALL BE MAINTAINED TO STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
10. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
11. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STAGE 6 CONSTRUCTION NOTES:

1. CSAH 116 WB BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

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TRAFFIC CONTROL
STAGE 6

Sheet 319 of 482 Sheets

## STRIPING KEY

CIRCLE - EPOXY

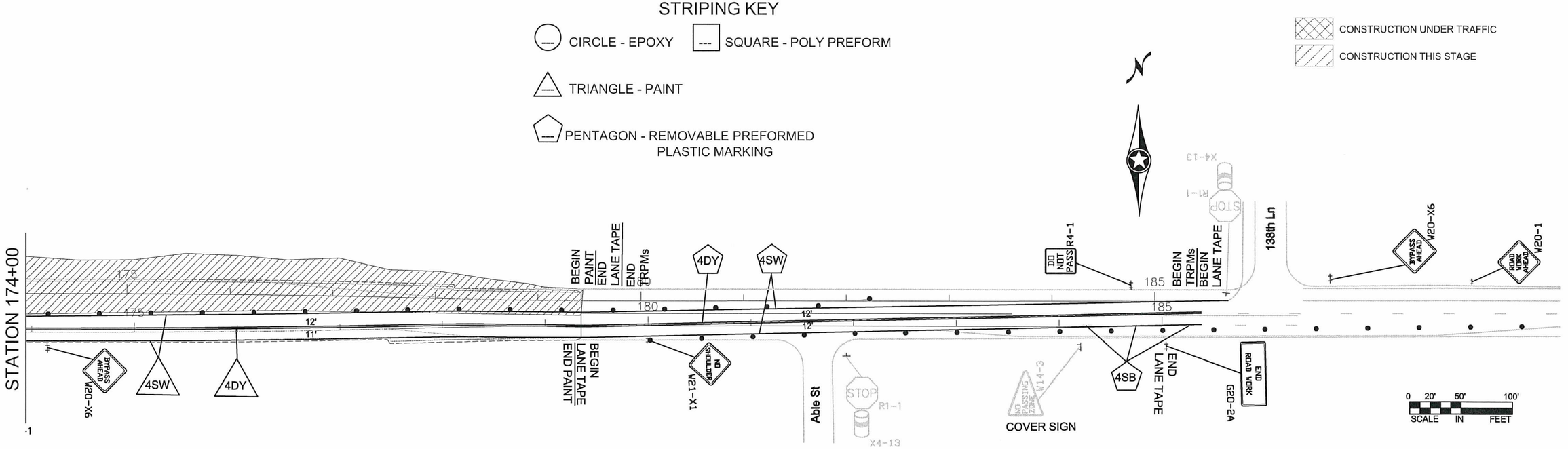
SQUARE - POLY PREFORM

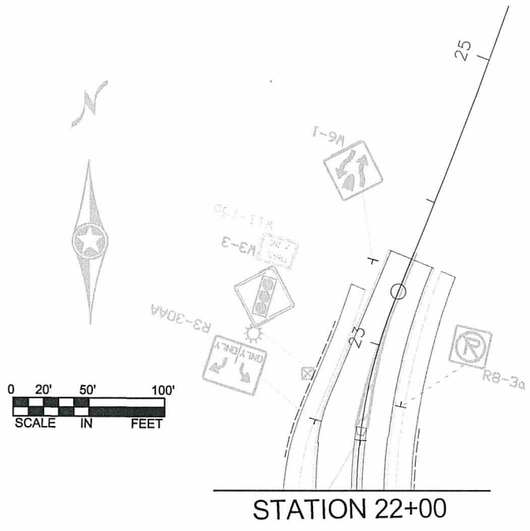
TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE




STATION 22+00

STAGE 6 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE EB LANES AT GOLDENROD ST.
2. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREA.
3. REMOVE ALL CONFLICTING PAVEMENT MARKINGS FROM STAGE 5 BETWEEN STA 92+50 AND STA 106+80.
4. PLACE LANE TAPE BETWEEN STA 92+20 AND STA 107+80.
5. PLACE PAINT BETWEEN STA 108+80 AND 183+00.
6. PAINT TO MATCH INTO EXISTING STRIPING AT EAST END OF PROJECT.
7. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN OPERATION. CONTRACTOR SHALL MAINTAIN STOP SIGNS.
8. TERRACE RD. IS CLOSED AT CSAH 116.
9. ACCESS SHALL BE MAINTAINED TO STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
10. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
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STAGE 6 CONSTRUCTION NOTES:

1. CSAH 116 WB BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FULL RECONSTRUCTION, PARTIAL MEDIAN, CURB & GUTTER, STORM SEWER SYSTEM, AND POND.

| NO | DATE | BY | CKD | APPR | REVISION |
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TRAFFIC CONTROL STAGE 6

Sheet 320 of 482 Sheets

## STRIPING KEY

CONSTRUCTION UNDER TRAFFIC

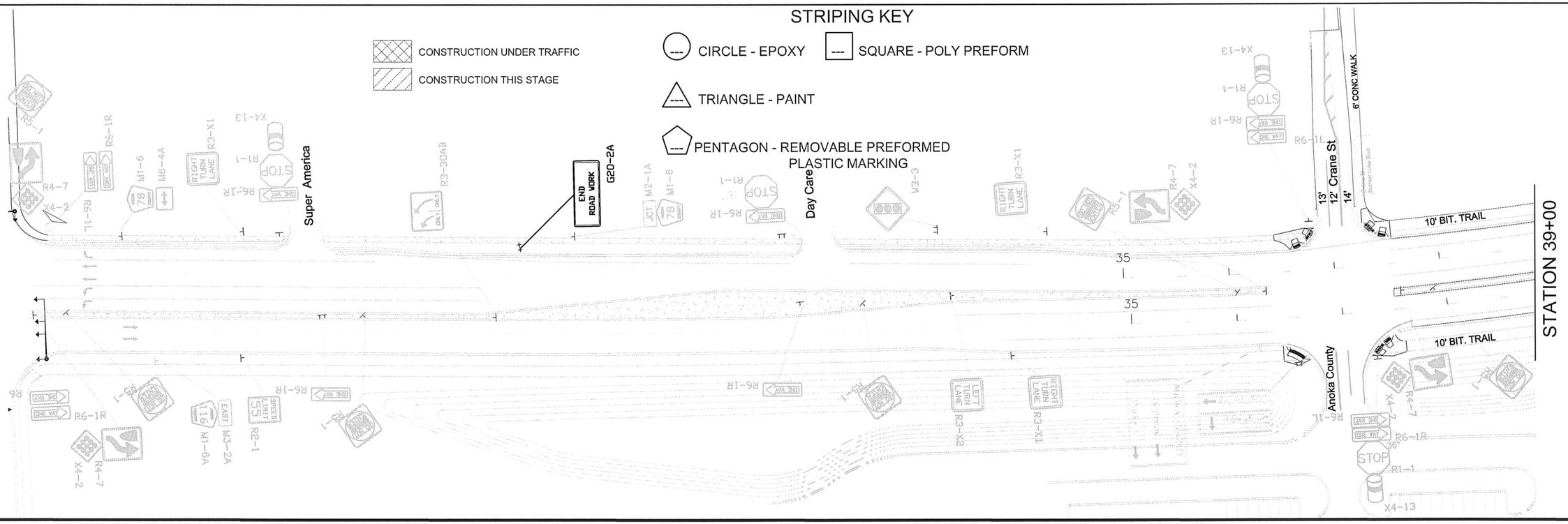
CONSTRUCTION THIS STAGE

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

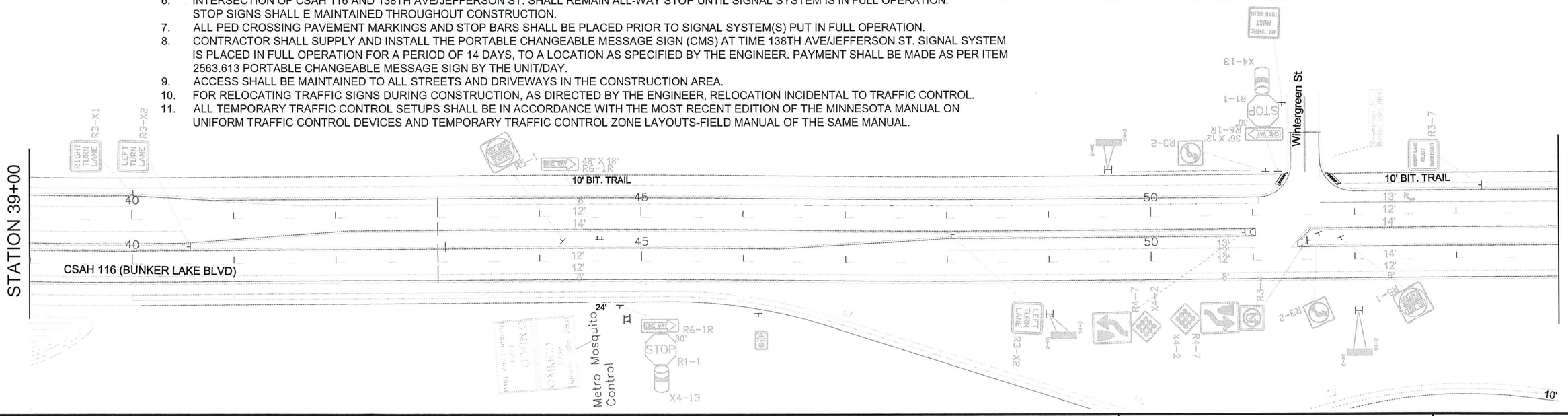



STAGE 7 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE OUTSIDE LANES.
2. REMOVE ALL CONFLICTING PAVEMENT MARKINGS.
3. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREAS. TRPMs SHALL BE REMOVED PRIOR TO WEAR COURSE.
4. PLACE LANE TAPE EB FROM STA 92+00 TO 99+00 AND 179+00 TO 185+50; WB 179+00 TO 185+50.
5. PLACE PAINT EB FROM STA 99+00 TO 179+00; WB 100+00 TO 179+00.
6. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN FULL OPERATION. STOP SIGNS SHALL E MAINTAINED THROUGHOUT CONSTRUCTION.
7. ALL PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM(S) PUT IN FULL OPERATION.
8. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) AT TIME 138TH AVE/JEFFERSON ST. SIGNAL SYSTEM IS PLACED IN FULL OPERATION FOR A PERIOD OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
9. ACCESS SHALL BE MAINTAINED TO ALL STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
10. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
11. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STAGE 7 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.
2. WEAR COURSE FOR:
   EB LANES FROM STA 93+40 TO EAST END OF PROJECT.
   WB LANES FROM STA 100+00 TO EAST END OF PROJECT.

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TRAFFIC CONTROL STAGE 7

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## STRIPING KEY

CIRCLE - EPOXY

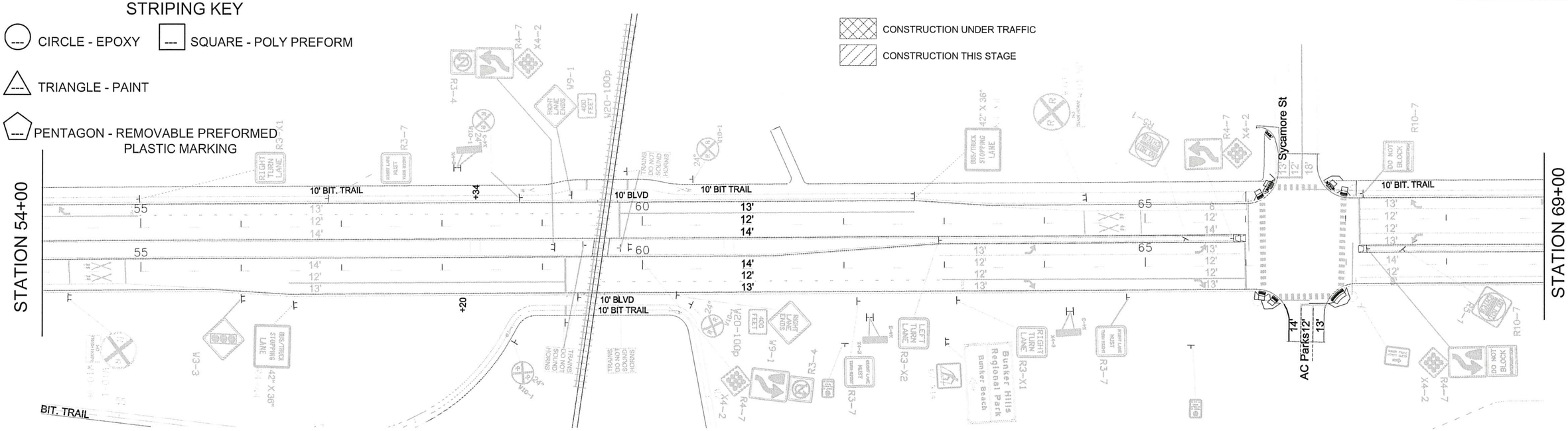
SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION THIS STAGE




STAGE 7 TRAFFIC CONTROL NOTES:

1. TRAFFIC TO BE MOVED TO THE OUTSIDE LANES.
2. REMOVE ALL CONFLICTING PAVEMENT MARKINGS.
3. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREAS. TRPMs SHALL BE REMOVED PRIOR TO WEAR COURSE.
4. PLACE LANE TAPE EB FROM STA 92+00 TO 99+00 AND 179+00 TO 185+50; WB 179+00 TO 185+50.
5. PLACE PAINT EB FROM STA 99+00 TO 179+00; WB 100+00 TO 179+00.
6. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN FULL OPERATION. STOP SIGNS SHALL E MAINTAINED THROUGHOUT CONSTRUCTION.
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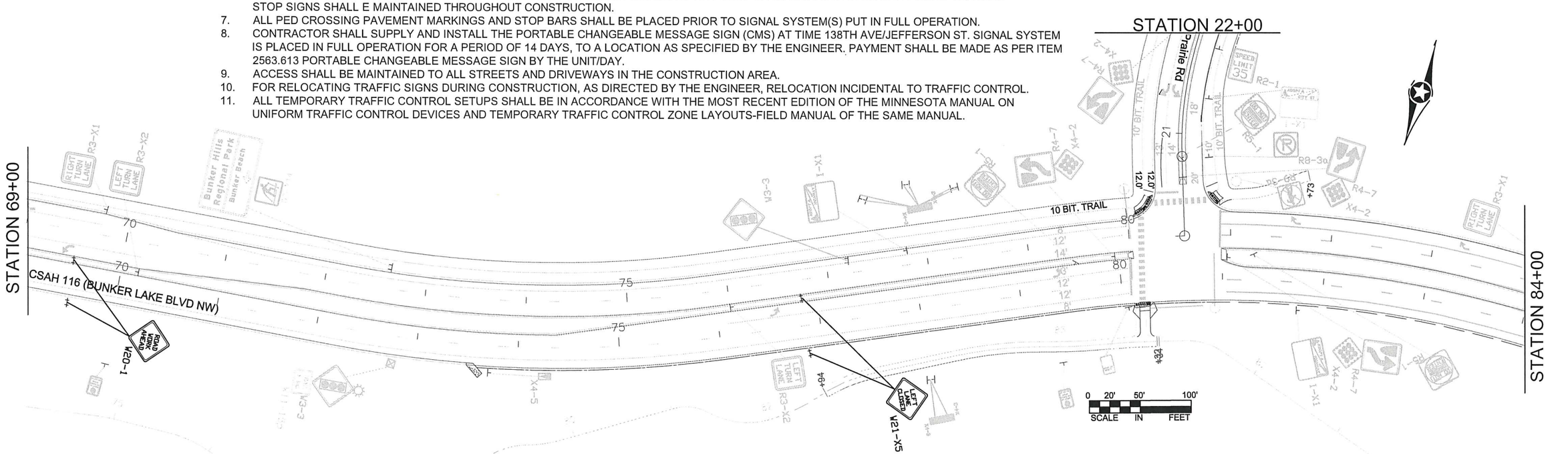
8. CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) AT TIME 138TH AVE/JEFFERSON ST. SIGNAL SYSTEM IS PLACED IN FULL OPERATION FOR A PERIOD OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
9. ACCESS SHALL BE MAINTAINED TO ALL STREETS AND DRIVEWAYS IN THE CONSTRUCTION AREA.
10. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
11. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS-FIELD MANUAL OF THE SAME MANUAL.

STAGE 7 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.
2. WEAR COURSE FOR:
   EB LANES FROM STA 93+40 TO EAST END OF PROJECT.
   WB LANES FROM STA 100+00 TO EAST END OF PROJECT.




| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/25/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY DATE

CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

TRAFFIC CONTROL STAGE 7

Sheet 322 of 482 Sheets

STAGE 7 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.
2. WEAR COURSE.

STRIPING KEY

CONSTRUCTION UNDER TRAFFIC

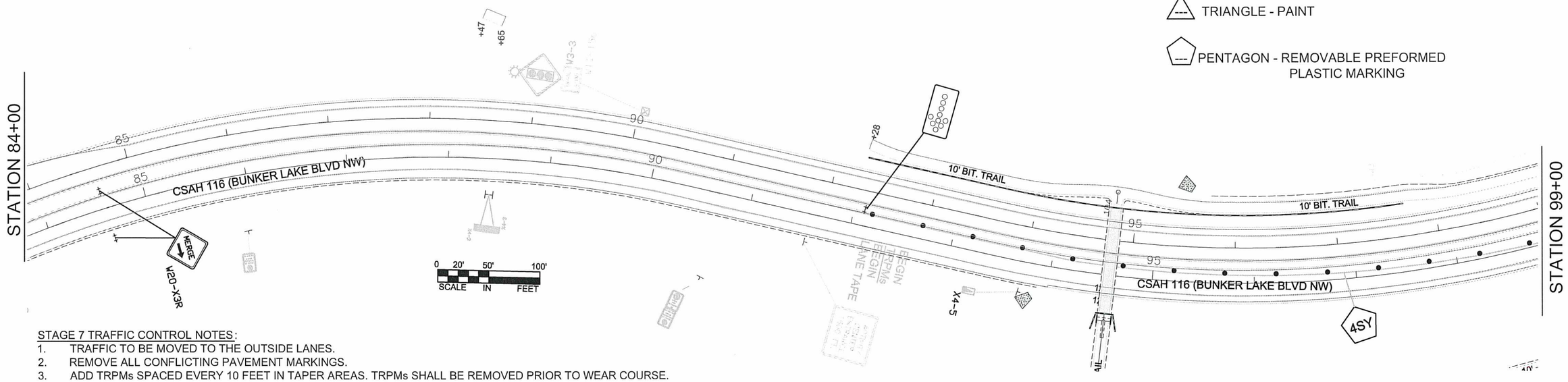
CONSTRUCTION THIS STAGE

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING




STAGE 7 TRAFFIC CONTROL NOTES:

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3. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREAS. TRPMs SHALL BE REMOVED PRIOR TO WEAR COURSE.
4. ~~PLACE LANE TAPE EB FROM STA 82+00 TO 88+00 AND 170+00 TO 185+50; WB 170+00 TO 185+50.~~
5. PLACE PAINT EB FROM STA 99+00 TO 179+00; WB 100+00 TO 179+00.
6. INTERSECTION OF CSAH 116 AND 138TH AVE/JEFFERSON ST. SHALL REMAIN ALL-WAY STOP UNTIL SIGNAL SYSTEM IS IN FULL OPERATION. STOP SIGNS SHALL E MAINTAINED THROUGHOUT CONSTRUCTION.
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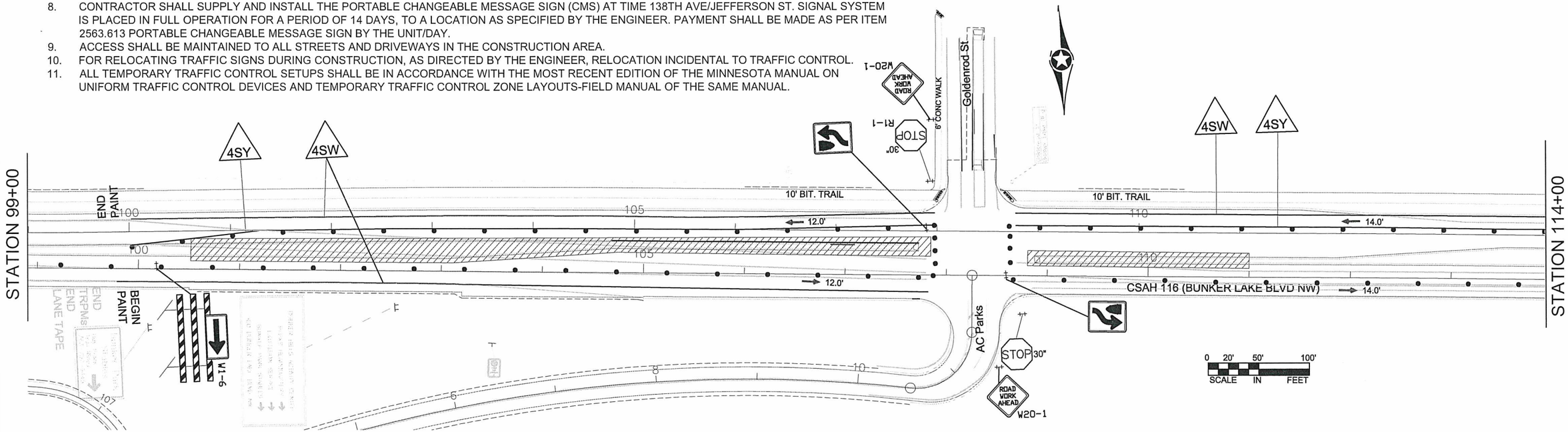


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TRAFFIC CONTROL STAGE 7

Sheet 323 of 482 Sheets

STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

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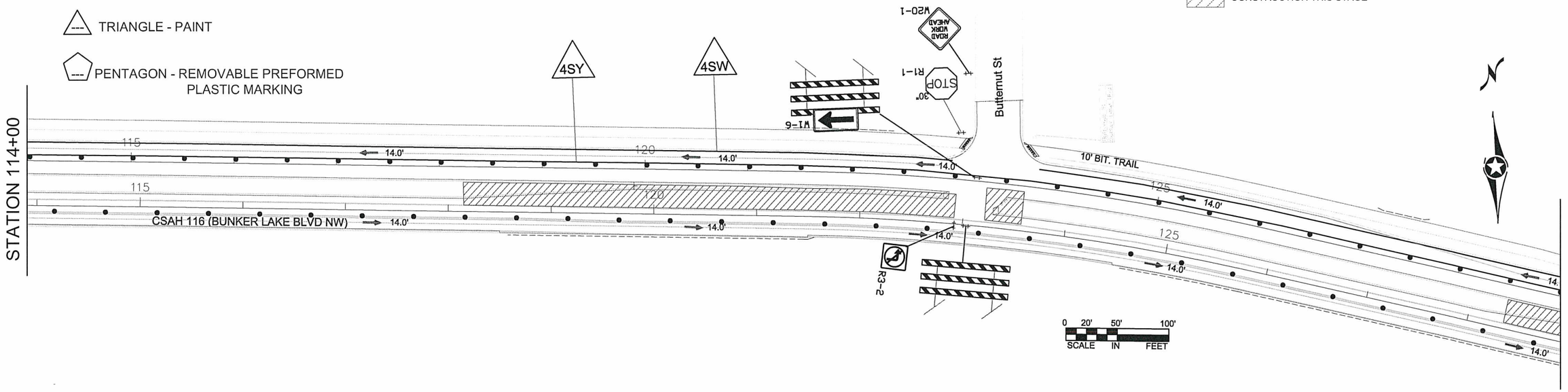


STAGE 7 CONSTRUCTION NOTES:

1. CSAH 116 BETWEEN GOLDENROD ST. AND EAST END OF PROJECT: FINALIZING CONSTRUCTION OF MEDIANS AND LEFT TURN LANES.
2. WEAR COURSE.

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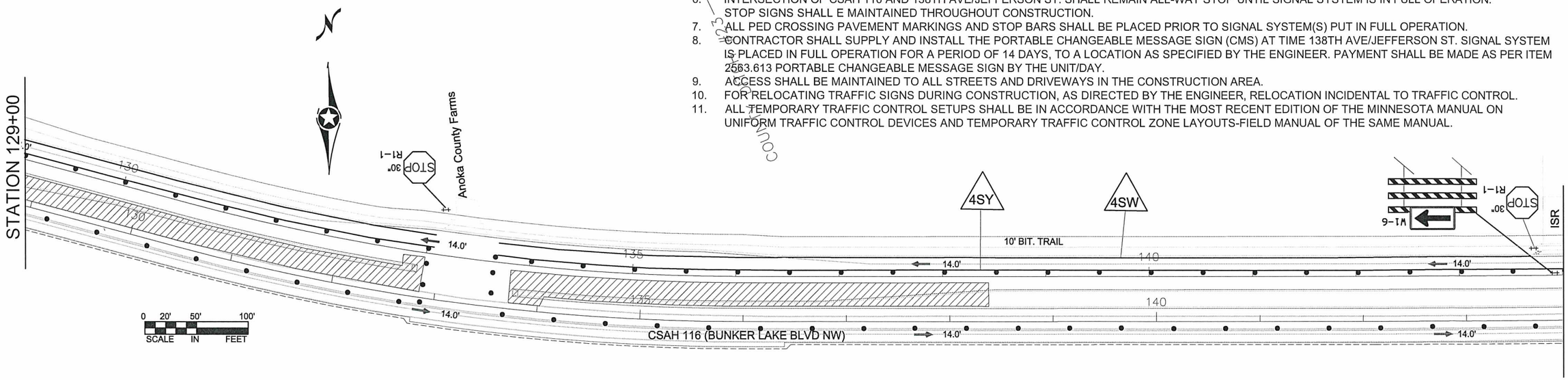


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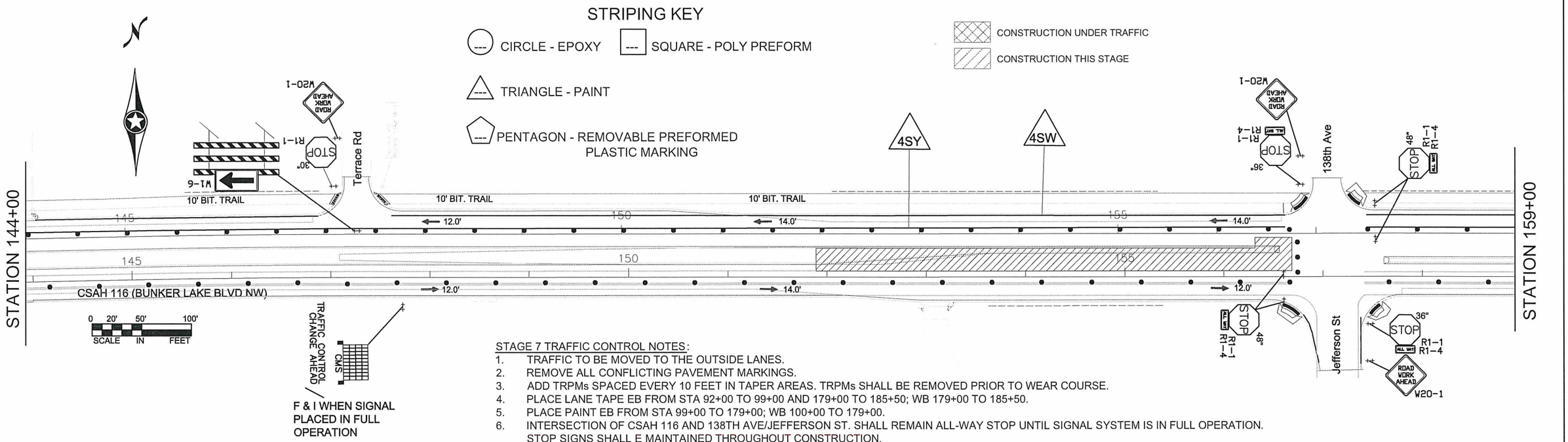
TRAFFIC CONTROL
STAGE 7

Sheet 324 of 482 Sheets

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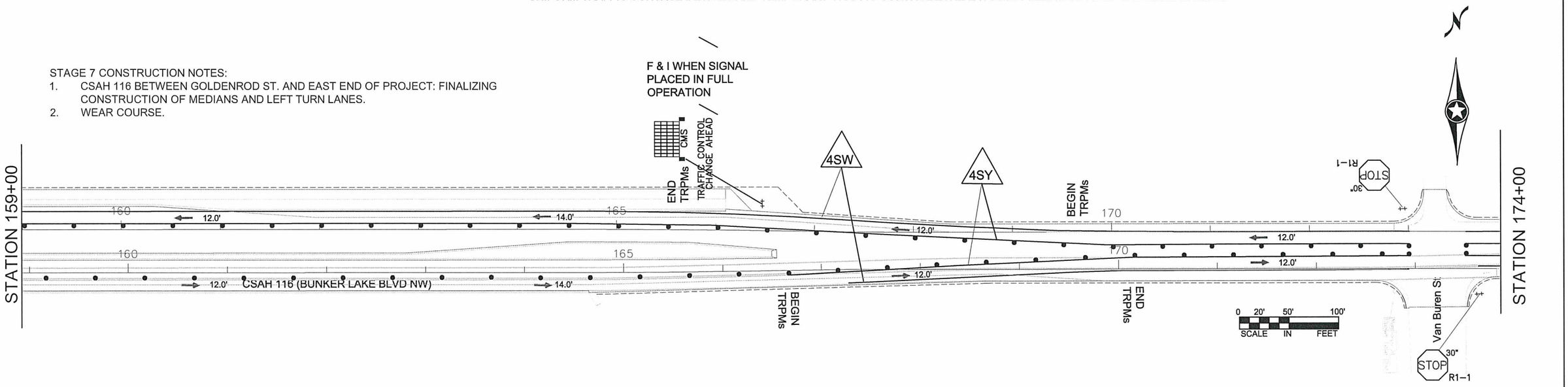


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TRAFFIC CONTROL STAGE 7

Sheet 325 of 482 Sheets

## STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

CONSTRUCTION UNDER TRAFFIC

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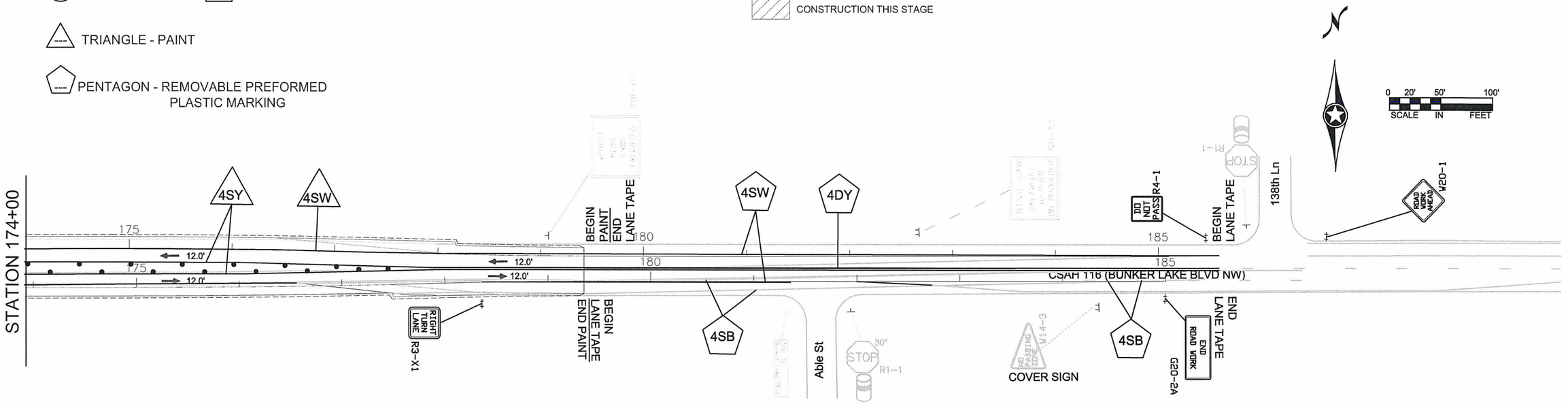


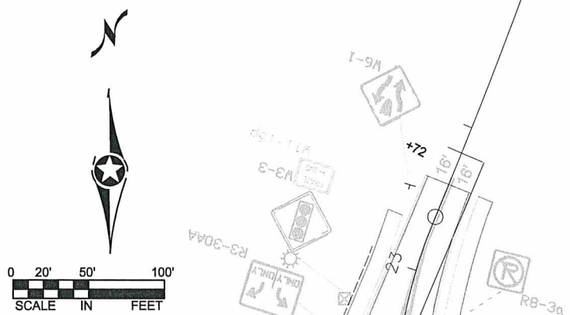





STATION 22+00

STAGE 7 TRAFFIC CONTROL NOTES:

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TRAFFIC CONTROL
STAGE 7

Sheet 326 of 482 Sheets

| M.U.T.C.D. CODE | SIZE | INSERT | QTY. STG. 1 | QTY. STG. 2A | QTY. STG. 2B | QTY. STG. 3 WINTER SUSP. | QTY. STG. 4 | QTY. STG. 5 | QTY. STG. 6 | QTY. STG. 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| R1-1 | 30" x 30" | STOP | 2 | 6 | 5 | 5 | 4 | 9 | 7 | 6 |
| | 36" x 36" | | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 |
| | 48" x 48" | | 0 | 0 | 3 | 0 | 4 | 3 | 4 | 4 |
| R1-3P | 18" x 6" | ALL WAY | 0 | 0 | 3 | 0 | 6 | 5 | 6 | 6 |
| R3-1 | 24" x 24" | | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| R3-1 | 24" x 24" | | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| R3-2 | 24" x 24" | | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| R3-X1 | 30" x 30" | RIGHT TURN LANE | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| R3-X1 | 30" x 30" | LEFT TURN LANE | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| R3-7 | 30" x 30" | LEFT LANE MUST TURN LEFT | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| R3-7 | 30" x 30" | RIGHT LANE MUST TURN RIGHT | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 |
| R3-7 | 24" x 30" | | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| R3-7 | 24" x 30" | | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 2 |
| R3-8AC | 36" x 30" | ONLY | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| R4-1 | 24" x 30" | DO NOT PASS | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 1 |
| W1-4R | 48" x 48" | | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| W13-1 | 30" x 30" | 50 MPH | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| W3-1a | 48" x 48" | | 0 | 0 | 2 | 0 | 4 | 4 | 0 | 0 |
| W4-2L | 48" x 48" | | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| W6-1 | 48" x 48" | | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| W6-3 | 48" x 48" | | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| W8-1A | 48" x 48" | BUMP | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| W9-1 | 48" x 48" | RIGHT LANE ENDS | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| W20-100p | 42" x 18" | 1000 FEET | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| W14-3 | 48" x 64" x 64" | NO PASSING ZONE | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |

| M.U.T.C.D. CODE | SIZE | INSERT | QTY. STG. 1 | QTY. STG. 2A | QTY. STG. 2B | QTY. STG. 3 WINTER SUSP. | QTY. STG. 4 | QTY. STG. 5 | QTY. STG. 6 | QTY. STG. 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| W20-1 | 48" x 48" | ROAD WORK AHEAD | 2 | 11 | 8 | 0 | 9 | 13 | 11 | 9 |
| M1-6A | 24" x 24" | 116 COUNTY | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| W20-2 | 48" x 48" | DETOUR AHEAD | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| M1-6A | 24" x 24" | 116 COUNTY | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W20-3 | 48" x 48" | ROAD CLOSED AHEAD | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W20-3 | 48" x 48" | ROAD CLOSED AHEAD | 6 | 9 | 4 | 0 | 0 | 0 | 1 | 0 |
| W20-100p | 42" x 18" | 500 FEET | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 |
| W20-100p | 42" x 18" | 1000 FEET | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 |
| W20-100p | 42" x 18" | 1500 FEET | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W20-4 | 48" x 48" | ONE LANE ROAD AHEAD | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| W20-100p | 42" x 18" | 1500 FEET | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| W20-X3L | 48" x 48" | MERGE | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| W20-X3R | 48" x 48" | MERGE | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| W20-X3L | 48" x 48" | NO SHOULDER | 1 | 1 | 2 | 0 | 2 | 1 | 1 | 0 |
| W20-X18 | 48" x 48" | TURN LANE CLOSED | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 |
| W21-X5 | 48" x 48" | LEFT LANE CLOSED | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 2 |
| W21-X5 | 48" x 48" | RIGHT LANE CLOSED | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| W20-X6 | 48" x 48" | BYPASS AHEAD | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| TYPE III | 8 FOOT | | 0 | 1 | 1 | 0 | 0 | 3 | 10 | 0 |
| TYPE III | 8 FOOT | | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 |
| TYPE III<br>FLASHER | 8 FOOT | | 3 | 9 | 4 | 0 | 0 | 0 | 2 | 0 |
| TYPE III<br>FLASHER | 8 FOOT | | 3 | 10 | 4 | 0 | 0 | 0 | 1 | 0 |

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|---|---|---|---|---|---|---|---|---|---|---|
| R9-9a<br>TYPE III<br>FLASHER | 48" x 30" | TRAIL CLOSED | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| R9-9a<br>TYPE III<br>FLASHER | 60" x 30" | ROAD CLOSED TO THRU TRAFFIC | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| R11-2<br>TYPE III<br>FLASHER | 54" x 30" | NO THRU TRAFFIC TO PRAIRIE ROAD | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| R11-2<br>TYPE III<br>FLASHER | 54" x 30" | NO THRU TRAFFIC TO GOLDENROD ST | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| R11-2<br>TYPE III<br>FLASHER | 48" x 30" | ROAD CLOSED | 4 | 9 | 4 | 0 | 0 | 0 | 0 | 0 |
| R11-2<br>TYPE III<br>FLASHER | 48" x 30" | ROAD CLOSED | 3 | 6 | 3 | 0 | 0 | 0 | 1 | 0 |
| TYPE III<br>FLASHER | 8 FOOT | ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY | | | | | | | | |
| R11-3a | 48" x 18" | ROAD CLOSED 1/4 MILES AHEAD LOCAL TRAFFIC ONLY | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R11-3a | 48" x 18" | ROAD CLOSED 1.75 MILES AHEAD LOCAL TRAFFIC ONLY | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R11-3a | 48" x 18" | ROAD CLOSED 1 MILES AHEAD LOCAL TRAFFIC ONLY | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W1-6<br>TYPE III | 48" X 24"<br>8 FOOT | | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 4 |
| W1-6<br>TYPE III | 48" X 24"<br>8 FOOT | | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| G20-X1 | 54" x 48" | ROAD CLOSED BEGINNING XXX XX | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

NOTES:

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- ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES. BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE M.U.T.C.D.

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Base\TRAFFIC\STAGE QTY.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY DATE

CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

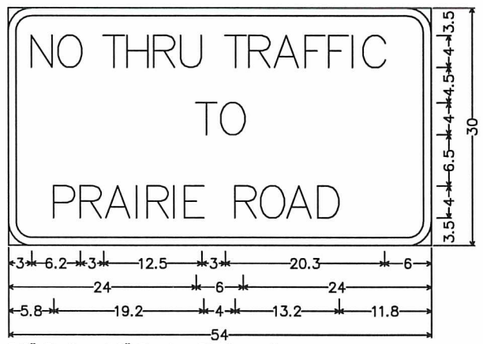
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STAGING
SIGN QUANTITIES

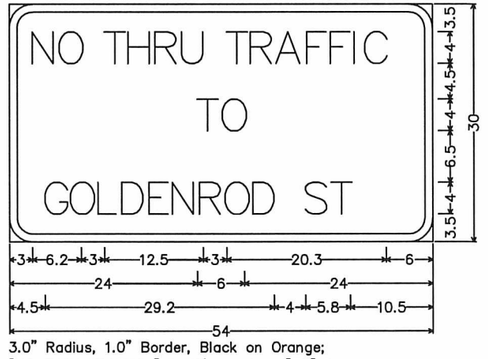
Sheet 327 of 482 Sheets

| | SIZE | INSERT | QTY. STG. 1 | QTY. STG. 2A | QTY. STG. 2B | QTY. STG. 3 WINTER SUSP. | QTY. STG. 4 | QTY. STG. 5 | QTY. STG. 6 | QTY. STG. 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| G20-2A | 48" x 24" | END ROAD WORK | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| M4-8A | 24" x 12" | DETOUR | 9 | 2 | 4 | 0 | 0 | 0 | 0 | 0 |
| M3-2A | 24" x 12" | EAST | 9 | 2 | 4 | 0 | 0 | 0 | 0 | 0 |
| M1-6A | 24" x 24" | 116 | 9 | 2 | 4 | 0 | 0 | 0 | 0 | 0 |
| | 21" x 15" | | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| M4-8A | 24" x 12" | DETOUR | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| M3-4A | 24" x 12" | WEST | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| M1-6A | 24" x 24" | 116 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | 21" x 15" | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| REFLECTORIZED REBOUNDABLE DRUM | | | 41 | 144 | 177 | 0 | 151 | 236 | 280 | 338 |
| ARROWBOARD | | | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| ARROWBOARD | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| CMS sign to be installed a minimum of ten days prior to actual commencement of road work. Signs to be removed when road work begins. | | CMS | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 2 |

| TEMPORARY PAVEMENT MARKING TABULATION | | |
|---|---|---|
| PAVEMENT MARKING REMOVAL 4" BROKEN PAINT | LIN FT | 110 |
| PAVEMENT MARKING REMOVAL 8" BROKEN PAINT | LIN FT | 200 |
| PAVEMENT MARKING REMOVAL 4" SOLID PAINT | LIN FT | 1000 |
| PAVEMENT MARKING REMOVAL 4" DOUBLE SOLID PAINT | LIN FT | 1250 |
| PAVEMENT MARKING REMOVAL 24" REMOVABLE POLY PREFORM | LIN FT | 74 |
| REMOVABLE PREFORM PLASTIC MARKING (YELLOW) | LIN FT | 7970 |
| REMOVABLE PREFORM PLASTIC MARKING (WHITE) | LIN FT | 8690 |
| REMOVABLE PREFORM PLASTIC MARKING (BLACK) | LIN FT | 800 |
| 4" SOLID LINE WHITE - PAINT | LIN FT | 61770 |
| 4" SOLID LINE YELLOW - PAINT | LIN FT | 29760 |
| 4" BROKEN LINE WHITE - PAINT | LIN FT | 1200 |
| 8" BROKEN LINE WHITE - PAINT | LIN FT | 363 |
| 4" BROKEN LINE YELLOW - PAINT | LIN FT | 160 |
| 4" DOUBLE LINE YELLOW - PAINT | LIN FT | 14070 |
| 12" SOLID LINE WHITE - PAINT | LIN FT | 191 |
| 24" SOLID LINE WHITE - PAINT | LIN FT | 378 |
| PAVEMENT MARKING RR XING SOLID WHITE - PAINT | SQ FT | 248 |
| CROSSWALKS | LIN FT | 523 |
| TEMPORARY RAISED PAVEMENT MARKER | EACH | 300 |




3.0" Radius, 1.0" Border, Black on Orange;
[NO THRU TRAFFIC ] D 78} spacing; [TO] D;
[PRAIRIE ROAD ] D 78} spacing;




3.0" Radius, 1.0" Border, Black on Orange;
[NO THRU TRAFFIC ] D 78} spacing; [TO] D;
[GOLDENROD ST ] D 78} spacing;

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| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\02-716-15\Base\TRAFFIC\STAGE QTY.dwg

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PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

STAGING
SIGN QUANTITIES

# PERMANENT PAVEMENT MARKING PLAN
## NOTES AND GUIDELINES

**GENERAL INFORMATION:**
THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. ANOKA COUNTY HIGHWAY DEPARTMENT WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS, LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF $\frac{1}{4}$ INCH UNDER OR $\frac{1}{4}$ INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO ONE-HALF FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS, ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

**EPOXY:**
THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENT AND/OR LAITANCE ON LOW SPEED (SPEED LIMIT 35 MPH OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS. SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

AN EPOXY RESIN LINE 4" WIDE AND 15 MILL THICKNESS (WET), REQUIRES AN APPLICATION RATE OF ONE (1) GALLON OF COMPONENTS FOR 320 FEET OF LINE. GLASS BEADS SHALL BE APPLIED AT A POUND PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES FAHRENHEIT OR GREATER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

**PREFORMED THERMOPLASTIC:**
THE PREFORMED THERMOPLASTIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON CLEAN AND DRY SURFACES. SEE SPECIAL PROVISIONS FOR PREFORMED THERMOPLASTIC MARKING SPECIFICATIONS.

**PAINT:**
AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICAITON IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50 DEGREES FARHENHEIT OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OR DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

PAVEMENT MARKING TABULATION

| ITEM | UNIT | TOTAL QUANTITY |
|---|---|---|
| 4" SOLID LINE WHITE -EPOXY PAINT | LIN FT | 40345 |
| 4" BROKEN LINE WHITE - EPOXY PAINT | LIN FT | 7154 |
| 8" BROKEN LINE WHITE - EPOXY PAINT | LIN FT | 162 |
| 4" SOLID LINE YELLOW - EPOXY PAINT | LIN FT | 25070 |
| 4" SOLID DOUBLE LINE YELLOW - EPOXY PAINT | LIN FT | 5060 |
| 24" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC | LIN FT | 484 |
| 24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC | LIN FT | 563 |
| 3'x6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC | SQ FT | 1818 |
| PAVEMENT MESSAGE (LFT ARROW) - PREFORMED THERMOPLASTIC | EACH | 11 |
| PAVEMENT MESSAGE (RT ARROW) - PREFORMED THERMOPLASTIC | EACH | 13 |
| PAVEMENT MESSAGE (ONLY) - PREFORMED THERMOPLASTIC | EACH | 2 |
| RAILROAD X-ING - PREFORMED THERMOPLASTIC | EACH | 4 |
| TRAIL RR X-ING - PREFORMED THERMOPLASTIC | EACH | 4 |

## SYMBOLS & MATERIALS LEGEND

CROSSWALK BLOCK WHITE PREFORMED THERMOPLASTIC

PAVEMENT MESSAGE (LEFT ARROW) PREFORMED THERMOPLASTIC

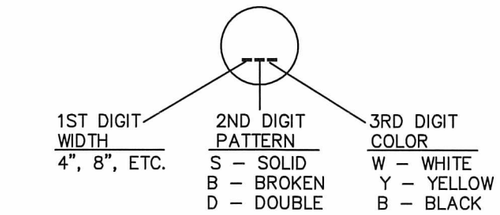
## STRIPING KEY

CIRCLE - EPOXY

SQUARE PREFORMED THERMOPLASTIC

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING




EXAMPLE: (4SW) = 4" SOLID LINE WHITE – EPOXY

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: P:\13-01-00\CSAH 18\Base\TRAFFIC\Perm pvmt mrkg guide notes_guidelines.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/25/16 LICENSE NO. 20235

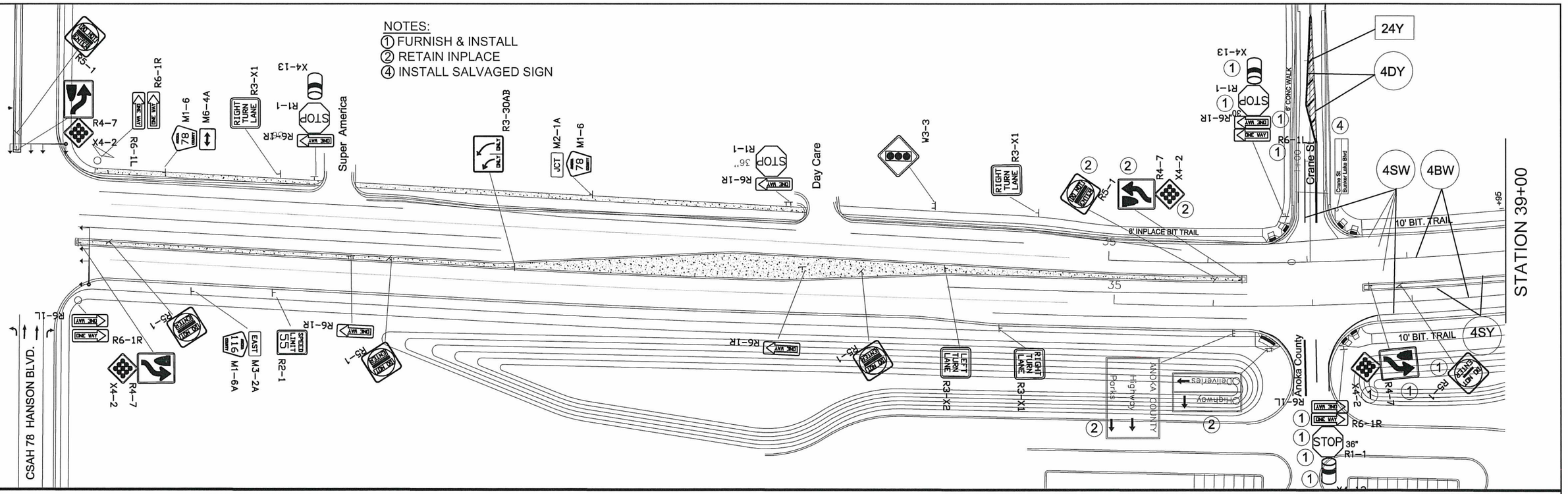
DRAWN BY TMV DATE 01/2016
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PERMANENT MARKING TABULATION

NOTES:
① FURNISH & INSTALL
② RETAIN INPLACE
④ INSTALL SALVAGED SIGN



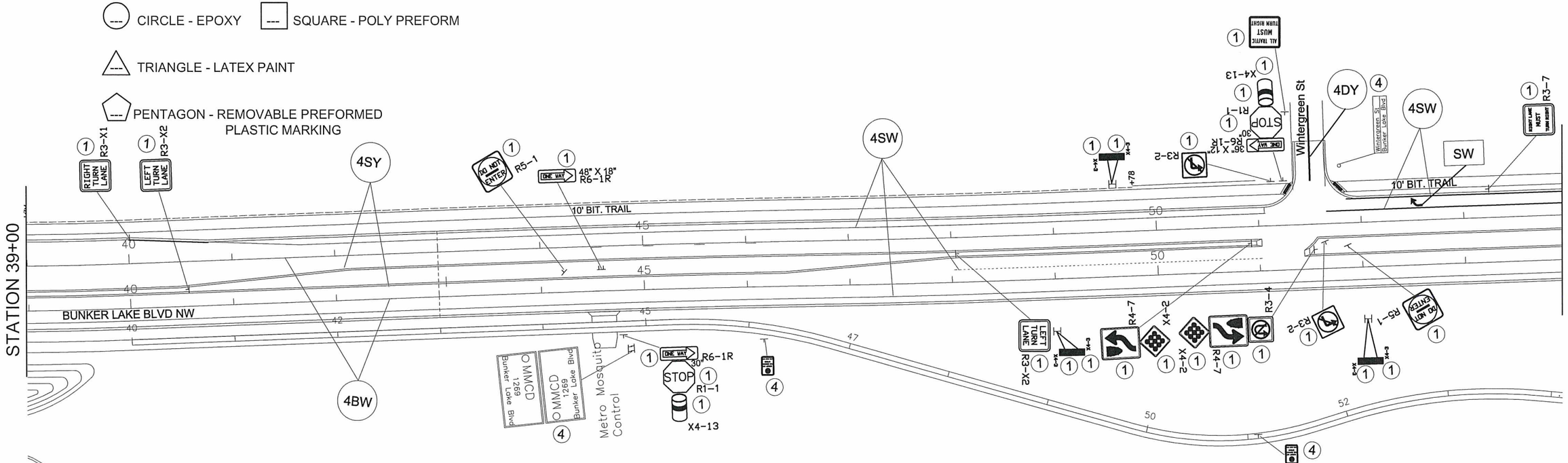

STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - LATEX PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

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NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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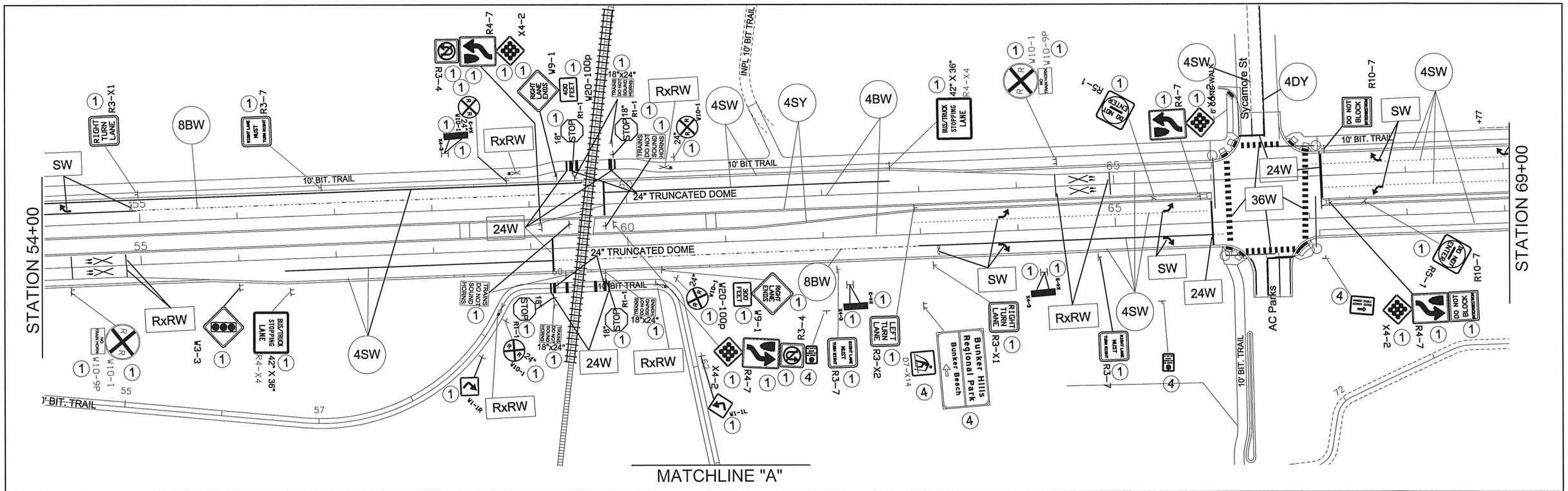
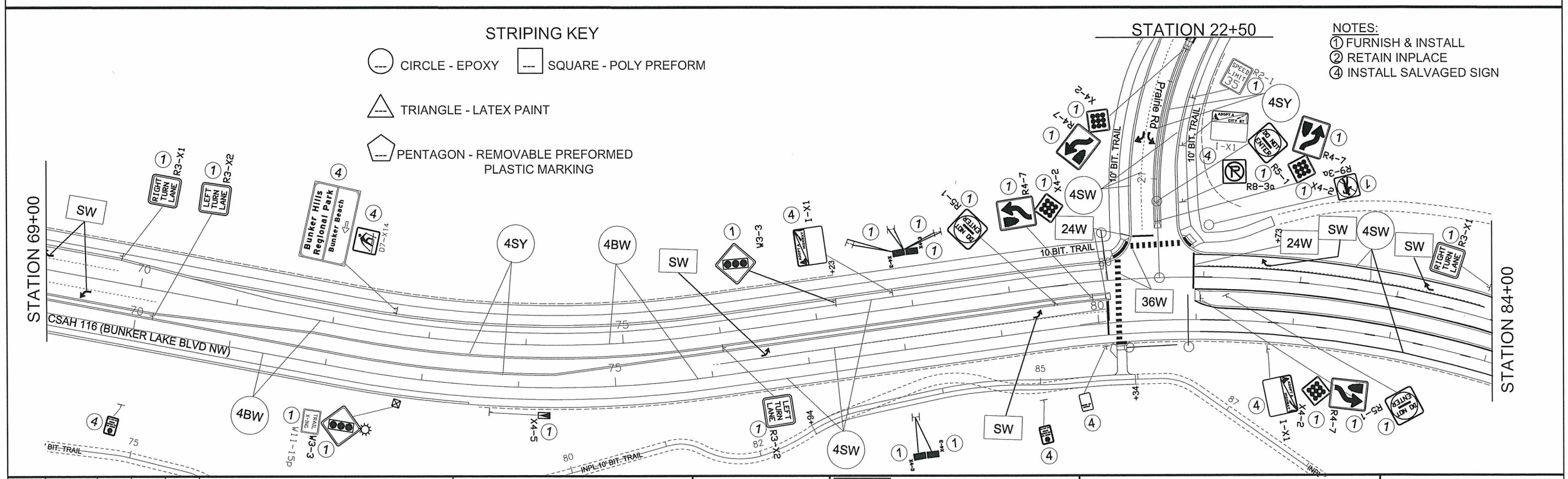
PERMANENT SIGNING & STRIPING PLAN

Sheet 330 of 482 Sheets

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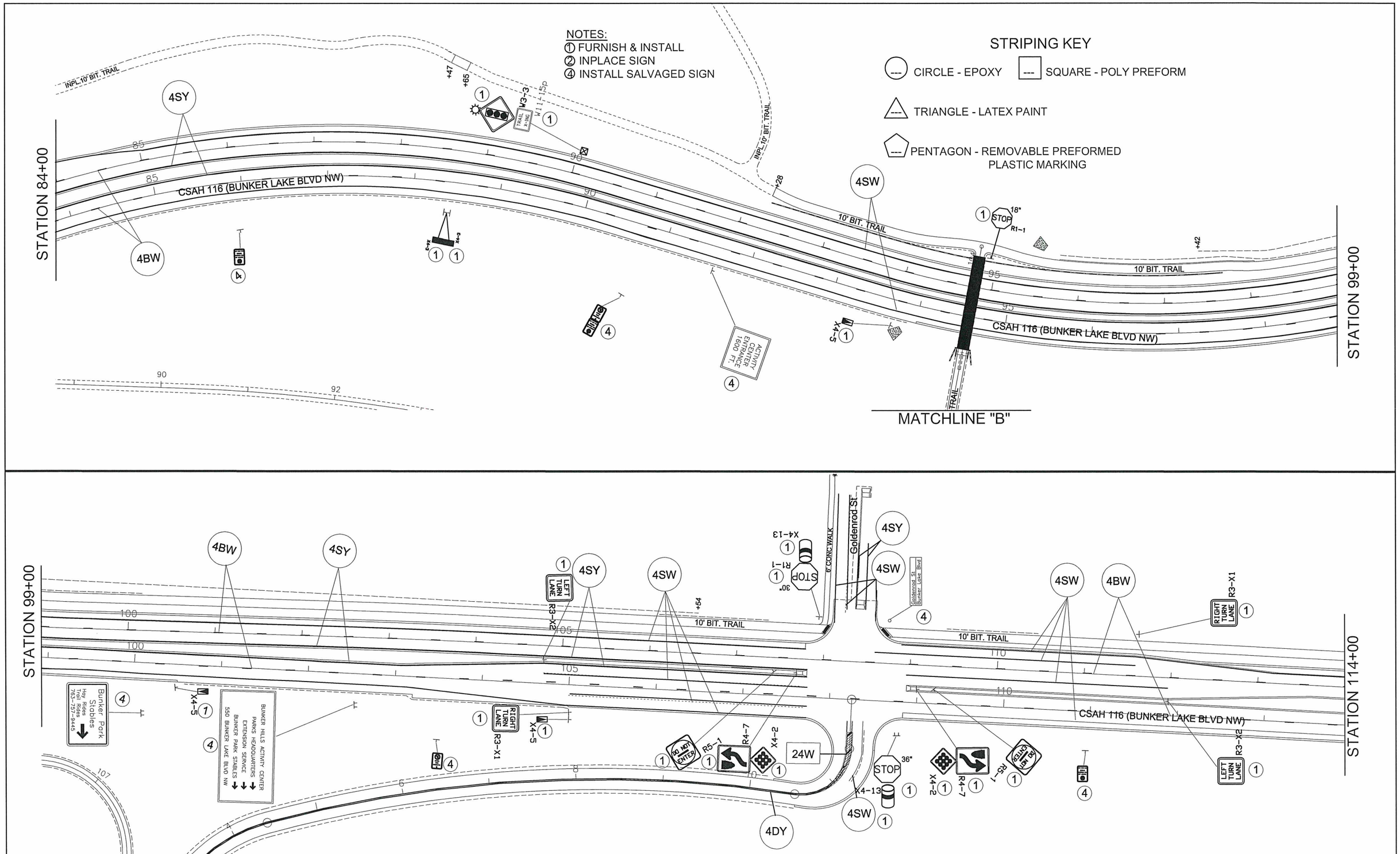
Sheet 331 of 482 Sheets

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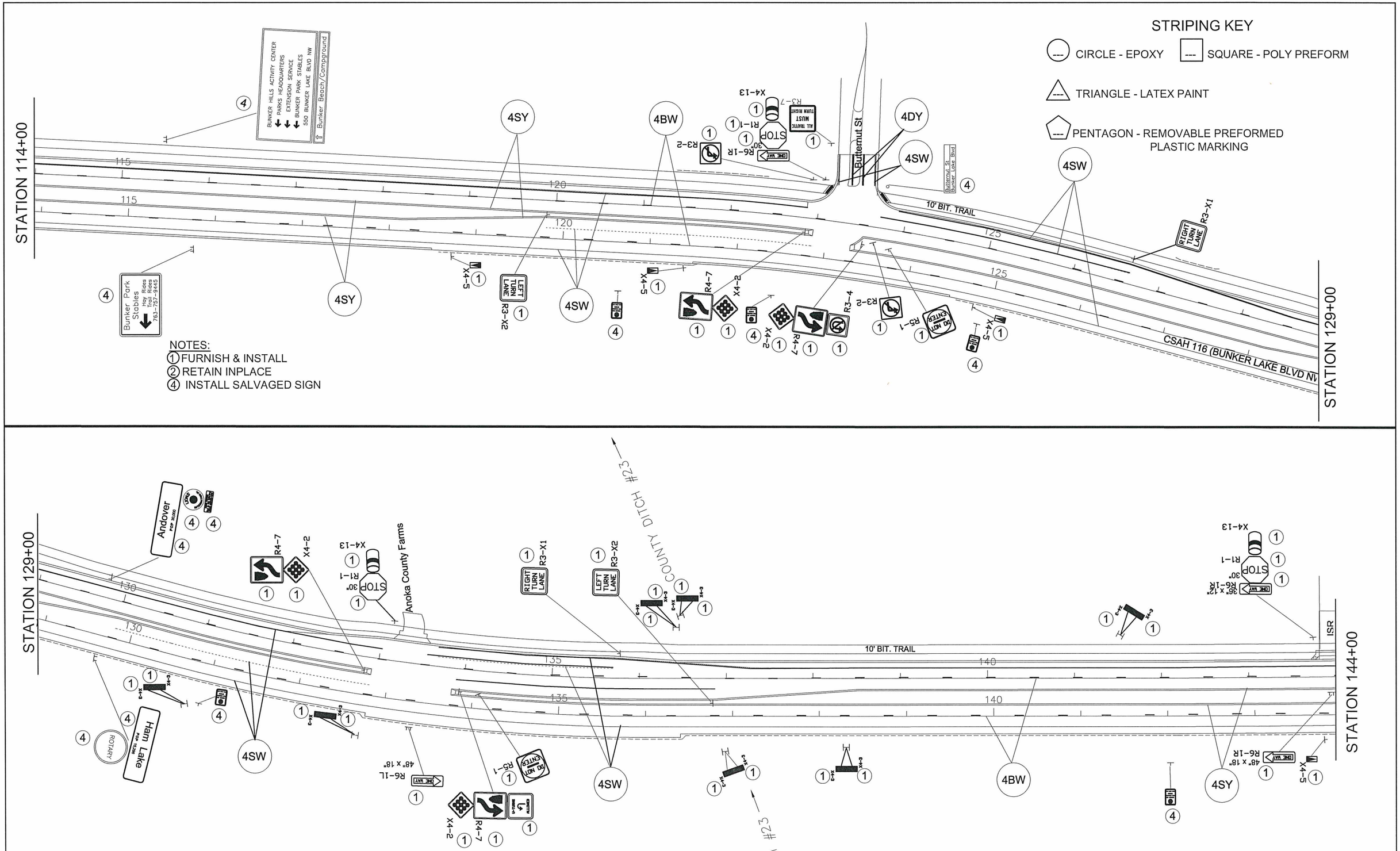


NOTES:
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4. INSTALL SALVAGED SIGN

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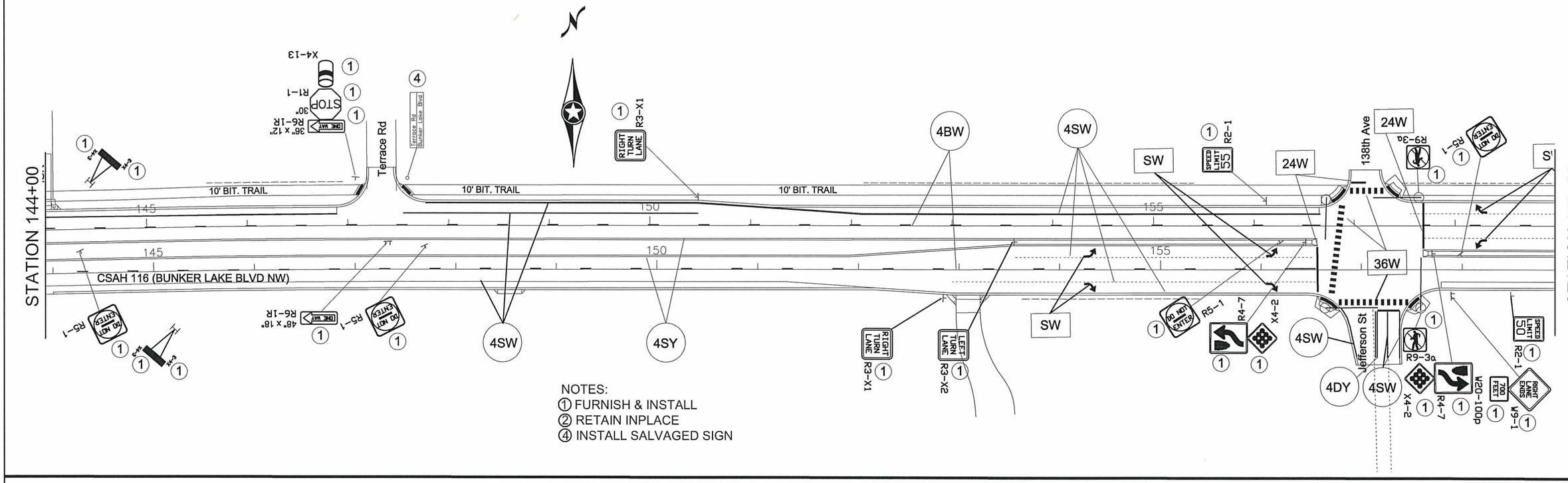
Sheet 333 of 482 Sheets



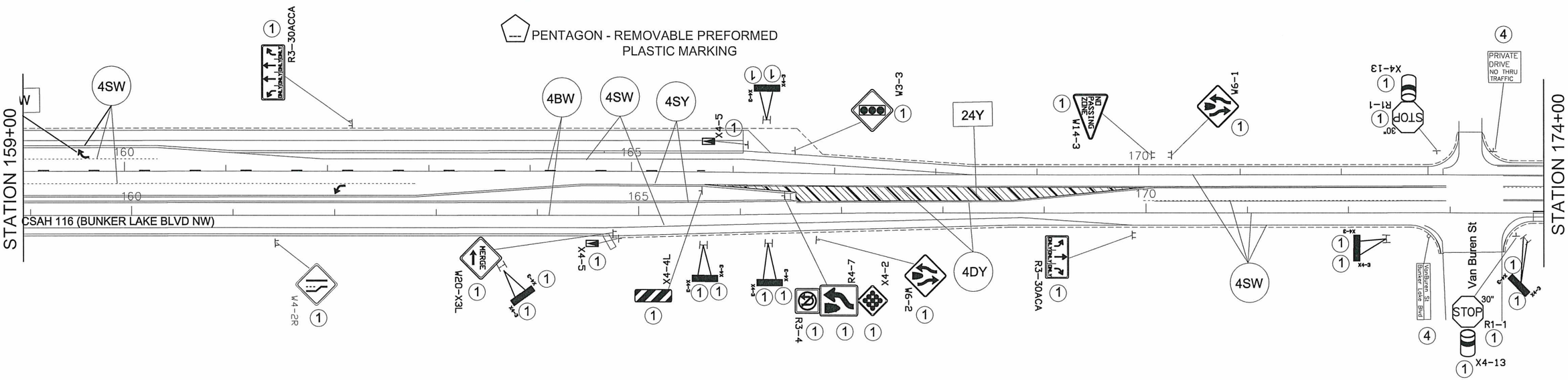

## STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - LATEX PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

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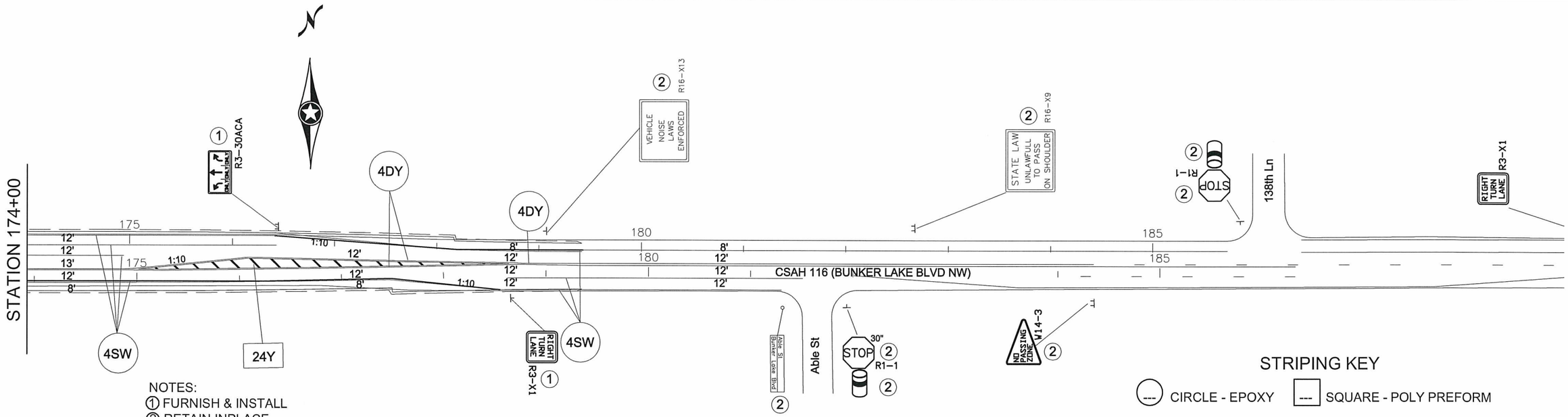
Sheet 334 of 482 Sheets

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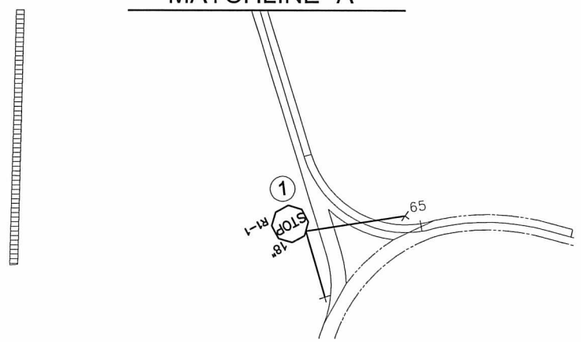
## STRIPING KEY

--- CIRCLE - EPOXY  --- SQUARE - POLY PREFORM

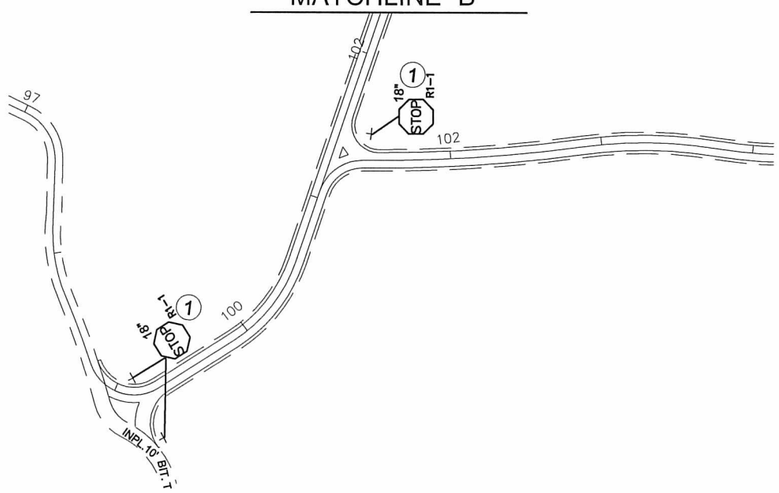
--- TRIANGLE - PAINT

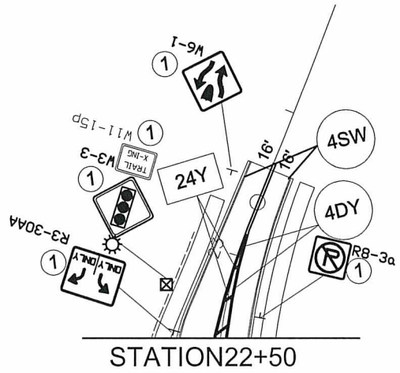
--- PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

## MATCHLINE "A"




## MATCHLINE "B"




STATION22+50

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg | | | | MN. |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/25/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PERMANENT SIGNING & STRIPING PLAN

Sheet 335 of 482 Sheets

# SIGN PANELS TYPE C

| M.U.T.C.D. CODE | SIZE | INSERT | QUANTITY | SQ FT PANEL AREA | SQ FT TOTAL AREA | MOUNTING POST PER INSTALLATION | MOUNTING HEIGHT |
|---|---|---|---|---|---|---|---|
| R6-1R | 36" X 12" | ONE WAY | 9 | 3.00 | 27.00 | | |
| R6-1L | 36" X 12" | ONE WAY | 4 | 3.00 | 12.00 | | |
| R1-1 | 30" X 30" | STOP | 11 | 6.25 | 68.75 | 1 | 7.0' |
| | 36" X 36" | | 3 | 9.00 | 18.00 | | |
| | 48" X 48" | | 0 | 16.00 | 16.00 | | |
| X4-13 | 4" diameter x 15" | | 14 | 00.42 | 5.88 | | |
| R1-1 | 18" X 18" | STOP | 10 | 2.25 | 12.25 | 1 | 4.0' |
| R2-1 | 24" X 30" | SPEED LIMIT 35 | 1 | 5.00 | 5.00 | 1 | 7.0' |
| R2-1 | 24" X 30" | SPEED LIMIT 50 | 1 | 5.00 | 5.00 | 1 | 7.0' |
| R2-1 | 24" X 30" | SPEED LIMIT 55 | 1 | 5.00 | 5.00 | 1 | 7.0' |
| R3-X1 | 30" X 30" | RIGHT TURN LANE | 10 | 6.25 | 62.50 | 1 | 7.0' |
| R3-X2 | 30" X 30" | LEFT TURN LANE | 9 | 6.25 | 56.25 | 1 | 7.0' |
| R3-7 | 30" X 30" | RIGHT LANE MUST TURN RIGHT | 2 | 6.25 | 12.50 | 1 | 7.0' |
| R3-30AA | 36" X 30" | ONLY ONLY | 1 | 7.50 | 7.50 | 1 | 7.0' |
| R3-30ACC | 54" X 30" | ONLY ONLY ONLY | 1 | 11.25 | 11.25 | 2 | 7.0' |
| R3-30ACC | 66" X 30" | ONLY ONLY ONLY ONLY | 2 | 13.75 | 22.50 | 2 | 7.0' |
| R3-30ACA | 54" X 30" | ONLY ONLY ONLY | 2 | 11.25 | 22.50 | 2 | 7.0' |
| R10-7 | 30" X 30" | DO NOT BLOCK | 1 | 6.25 | 6.25 | 1 | 7.0' |
| R10-7 | 30" X 30" | DO NOT BLOCK | 1 | 6.25 | 6.25 | | |
| R3-2 | 24" X 24" | 9 CLOSE ALLEYS | 1 | 4.00 | 4.00 | | |
| R3-4 | 24" X 24" | | 5 | 4.00 | 20.00 | | |
| R4-7 | 24" X 30" | | 20 | 5.00 | 100.00 | 1 | 7.0' |
| X4-2 | 18" X 18" | | 20 | 2.25 | 45.00 | | |
| R3-2 | 24" X 24" | | 4 | 4.00 | 16.00 | 1 | 7.0' |
| R3-7 | 42" X 36" | ALL TRAFFIC MUST TURN RIGHT | 2 | 10.50 | 21.00 | 1 | 7.0' |
| R4-X4 | 42" X 36" | BUS/TRUCK STOPPING LANE | 2 | 10.50 | 21.00 | 1 | 7.0' |
| R5-1 | 30" X 30" | DO NOT ENTER | 16 | 6.25 | 100.00 | 1 | 7.0' |
| R6-1R | 48" X 18" | ONE WAY | 3 | 6.00 | 18.00 | 2 | 7.0' |
| R6-1L | 48" X 18" | ONE WAY | 1 | 6.00 | 6.00 | 2 | 7.0' |

# SIGN PANELS TYPE C

| M.U.T.C.D. CODE | SIZE | INSERT | QUANTITY | SQ FT PANEL AREA | SQ FT TOTAL AREA | MOUNTING POST PER INSTALLATION | MOUNTING HEIGHT |
|---|---|---|---|---|---|---|---|
| W1-1R | 18" x 18" | W1-1R | 1 | 2.25 | 2.25 | 1 | 4.0' |
| W1-1L | 18" x 18" | W1-1L | 1 | 2.25 | 2.25 | 1 | 4.0' |
| W3-3 | 36" x 36" | | 1 | 9.00 | 9.00 | 2 | 7.0' |
| W3-X5 | 48" x 48" | TRAFFIC CONTROL CHANGE AHEAD | 1 | 16.00 | 16.00 | 2 | 7.0' |
| W6-1 | 36" X 36" | | 2 | 9.00 | 18.00 | 2 | 7.0' |
| W6-2 | 36" X 36" | | 1 | 9.00 | 9.00 | 2 | 7.0' |
| W4-2R | 36" X 36" | | 1 | 9.00 | 9.00 | 2 | 7.0' |
| W9-1 | 36" X 36" | RIGHT LANE ENDS | 3 | 9.00 | 27.00 | 2 | 7.0' |
| W20-100p | 30" X 24" | 250 FEET | 1 | 5.00 | 5.00 | | |
| W20-100p | 30" X 24" | 350 FEET | 1 | 5.00 | 5.00 | | |
| W20-100p | 30" X 24" | 600 FEET | 1 | 5.00 | 5.00 | | |
| W10-1 | 36" X 36" | R R | 2 | 9.00 | 18.00 | 2 | 7.0' |
| W10-9p | 30" X 24" | NO TRAIN HORN | 2 | 5.00 | 10.00 | | |
| W10-1 | 24" x 24" | R R | 4 | 4.00 | 16.00 | 1 | 4.0' |
| | 18" X 24" | TRAINS DO NOT SOUND HORNS | 4 | 3.00 | 12.00 | 1 | 4.0' |
| | 30" X 36" | | 4 | 7.50 | 30.00 | 1 | 7.0' |
| W14-3 | 48" X 64" X 64" | NO PASSING ZONE | 1 | 21.33 | 21.33 | 2 | 7.0' |
| W20-X3L | 36" X 36" | MERGE | 1 | 9.00 | 9.00 | 2 | 7.0' |
| X4-3 | 6" x 12" | | 50 | 0.50 | 25.00 | 1 | 4.0' |
| X4-L | 12" x 36" | | 1 | 3.00 | 3.00 | 1 | 4.0' |
| X4-5 | 6" x 12" | | 5 | 0.50 | 2.50 | 1 | 4.0' |
| X4-5 | 6" x 12" | | 4 | 0.50 | 2.00 | 1 | 4.0' |
| R8-3a | 24" X 24" | | 2 | 4.00 | 8.00 | 1 | 7.0' |
| R9-3a | 18" X 18" | | 3 | 2.25 | 6.75 | | Attach to Signal Pole |
| W3-3 | 36" x 36" | | 3 | 9.00 | 27.00 | | Attach to Signal Pole |
| W11-15P | 24" x 18" | TRAIL X-ING | 3 | 3.00 | 9.00 | | |
| PROJECT TOTALS | | | 261 | | 1,081.96 | | |

NOTES:

- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING PART VI, "FIELD MANUAL", DATED JANUARY 2014.
- LOCATIONS OF ALL PERMANENT STRIPING AND PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- ALL MAINLINE PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
- SEE PERMANENT SIGN TABULATIONS FOR ADDITIONAL INFORMATION.
- ALL SEGMENT STRIPE LINES SHALL BE EPOXY. PERMANENT MESSAGES AND ARROWS SHALL BE PREFORMED THERMOPLASTIC.
- ALL SIGNS SHALL BE FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| | | | | | |

NAME: T:\Traffic\dwg\CSAH 116 (Bunker Lake Blvd)\from CSAH 83 to CSAH 17.dwg MN.

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PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY DATE

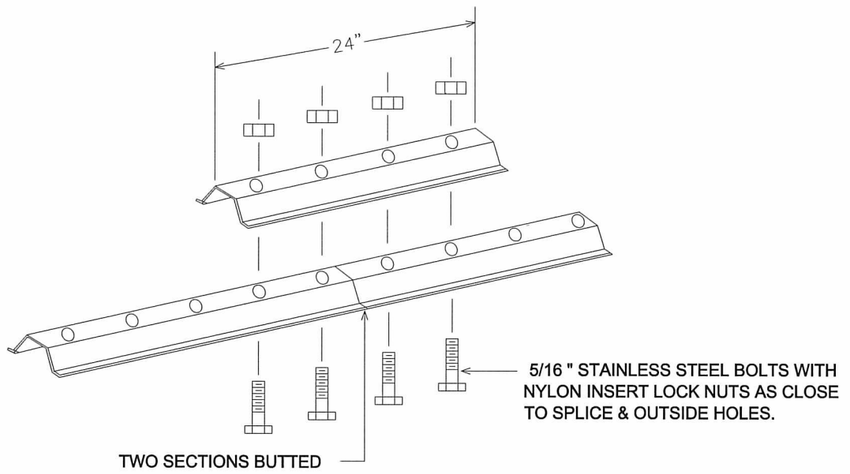
CHECKED BY DATE

ANOKA COUNTY HIGHWAY DEPT.

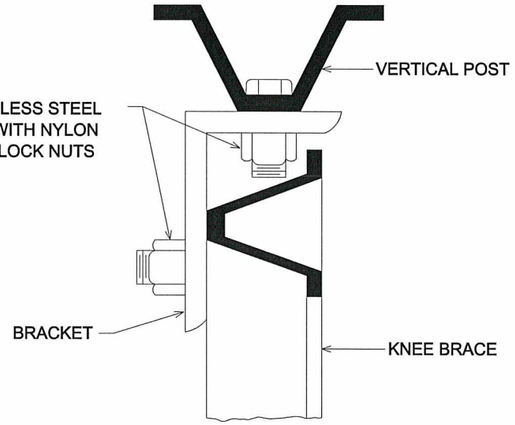
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

PERMANENT SIGN TABULATION

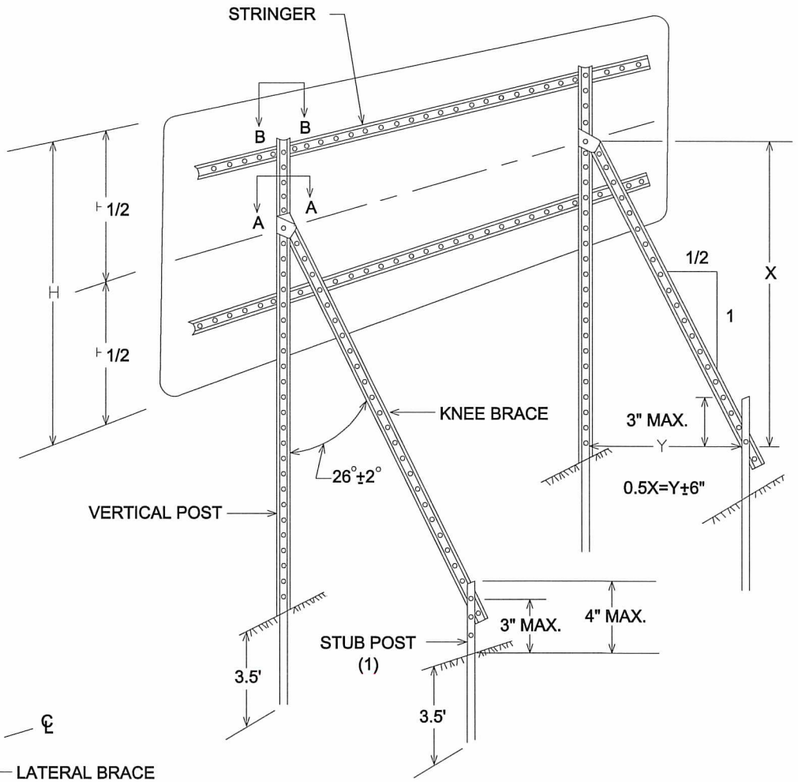
Sheet 336 of 482 Sheets



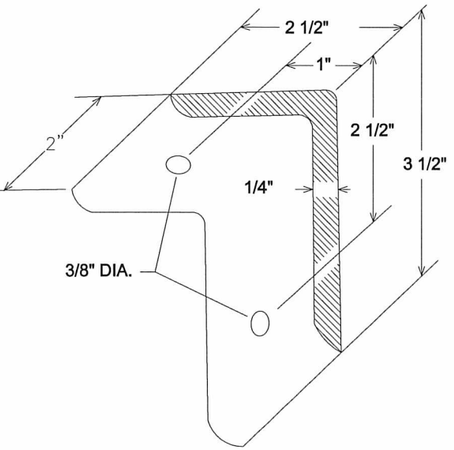

## LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)




## SECTION A-A

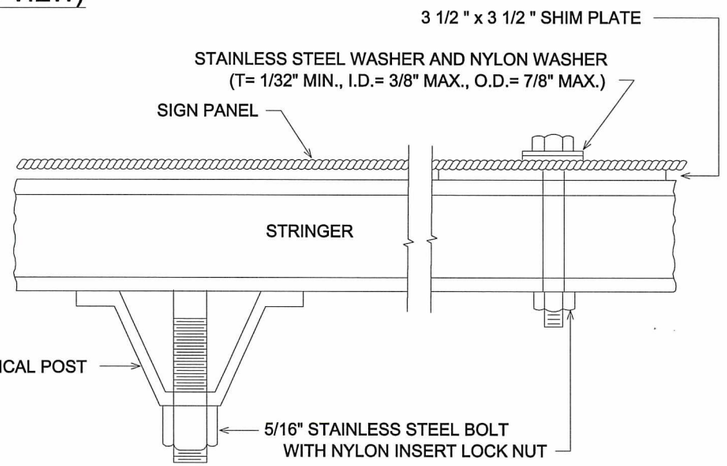



## TYPICAL "A-FRAME" INSTALLATION TYPE "D" SIGNS

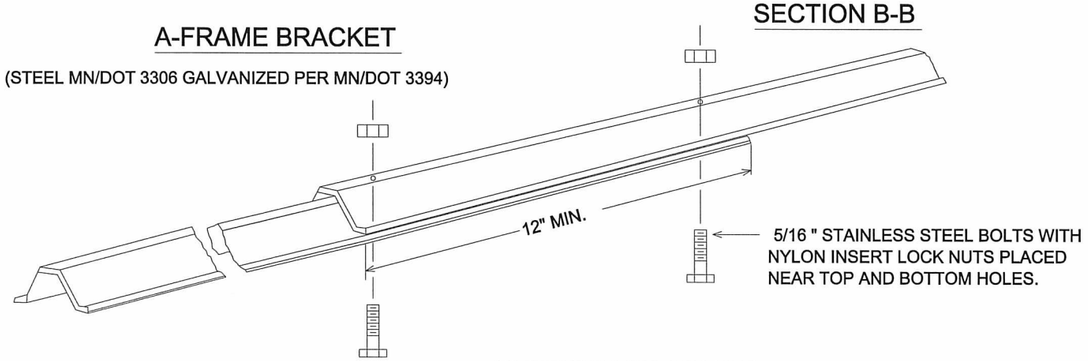



## A-FRAME BRACKET

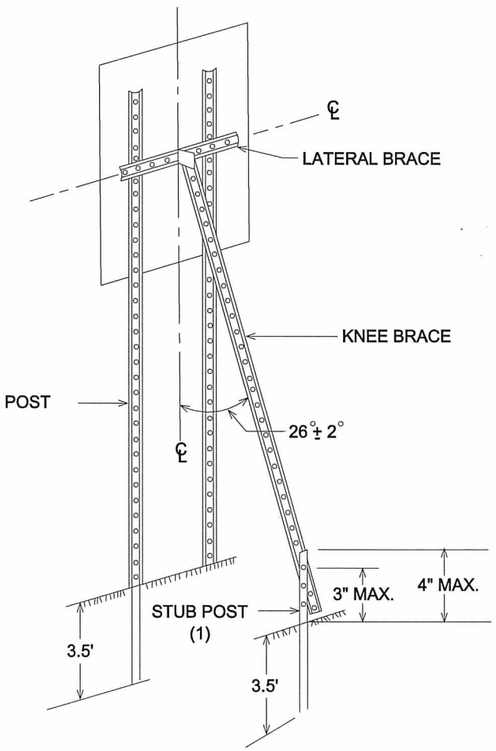
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



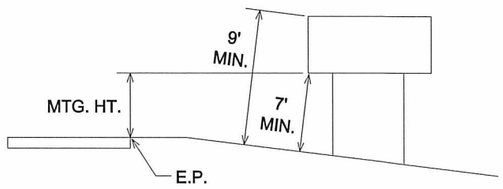

## SECTION B-B




## KNEE BRACE SPLICE




## TYPICAL "A-FRAME" INSTALLATION TYPE "C" SIGNS




## TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST.

# TYPE C & D SIGN STRUCTURAL DETAILS

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | | | | | |

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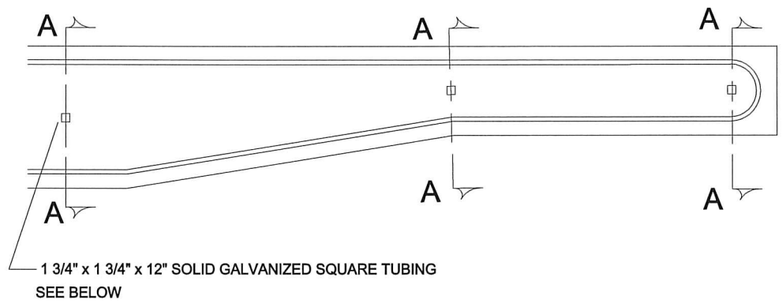
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: REG. NO. 20235

DRAWN BY TMV DATE 01/2016
DESIGN BY DATE
CHECKED BY DATE

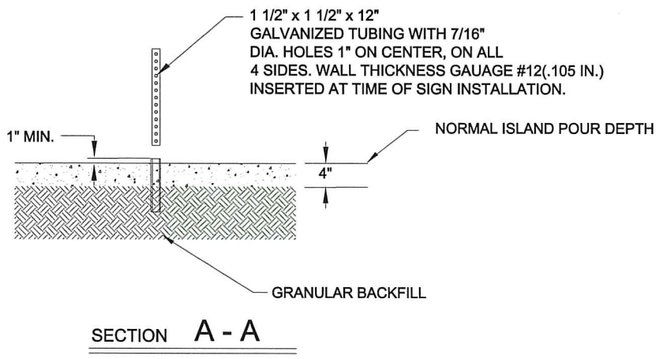
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SIGNING & STRIPING DETAILS

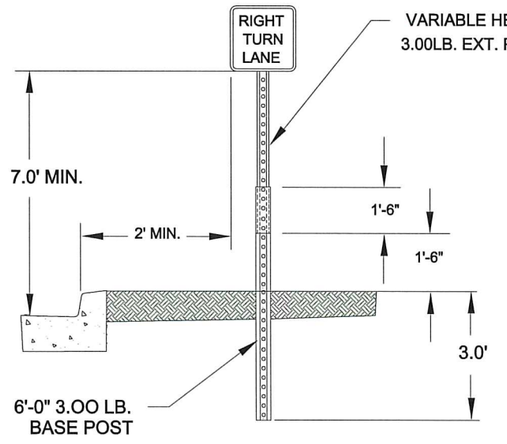


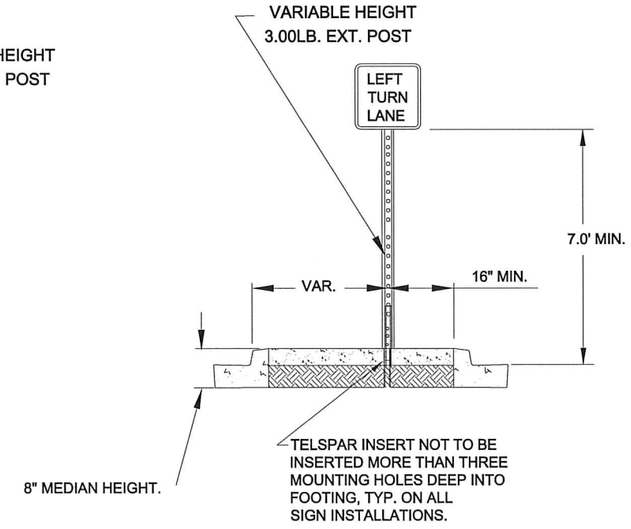

GROUND POST MOUNT SIGN
INSTALLATION TYPICAL




SECTION A - A

ISLAND MOUNT BREAK-AWAY SIGN
INSTALLATION TYPICAL

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|---|---|---|---|---|---|
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PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 5/25/16 REG. NO. 20235

DRAWN BY TMV DATE 08/2015
DESIGN BY ____ DATE ____
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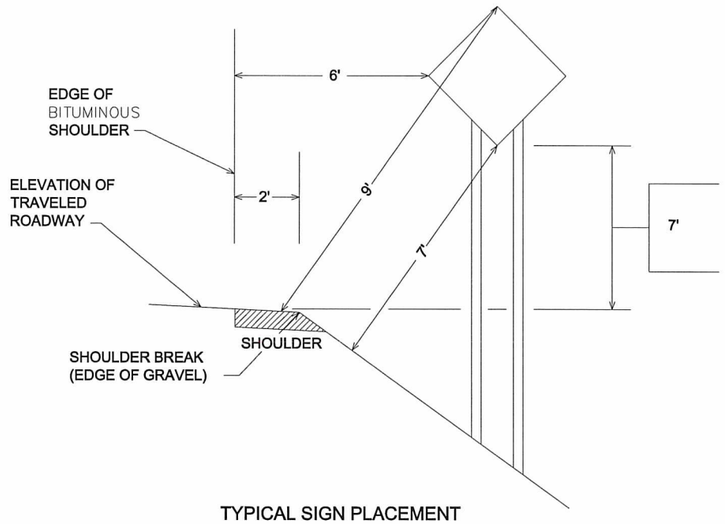
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SIGNING & STRIPING
DETAILS

Sheet 338 of 482 Sheets

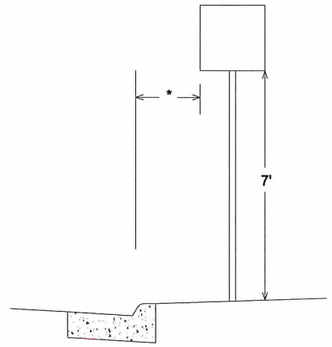
## RURAL

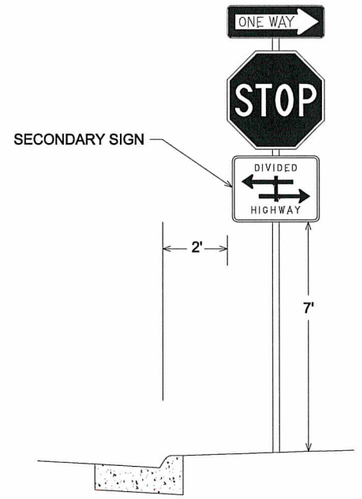



TYPICAL SIGN PLACEMENT

## URBAN

* 2' - NARROW BOULEVARD ( < 8' WIDE)
6' - WIDE BOULEVARD

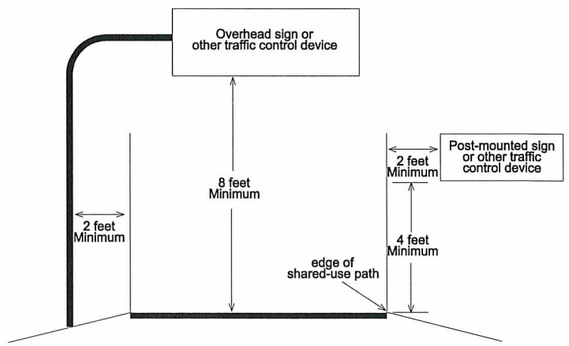



TYPICAL SIGN PLACEMENT

NOTE:

- ALL DIMENSIONS ARE MINIMUMS
- MAINTAIN 2' CLEAR FROM SIGNS TO BITUMINOUS TRAIL




TYPICAL SIGN PLACEMENT
SHARED-USE PATH

| NO | DATE | BY | CKD | APPR | REVISION |
|---|---|---|---|---|---|
| NAME: | | | | | |

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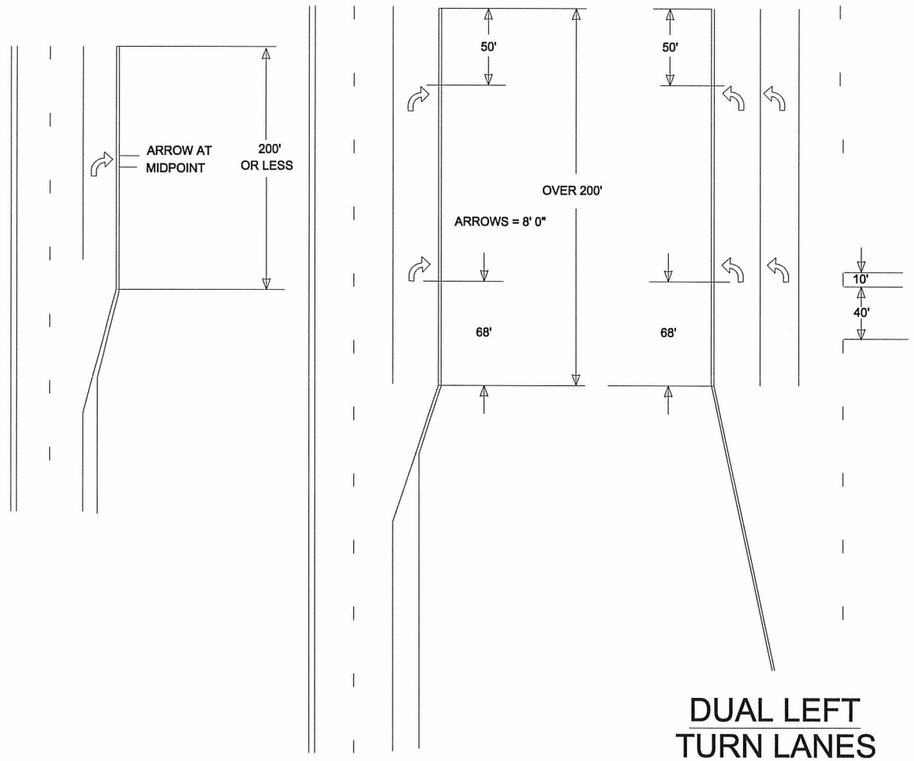
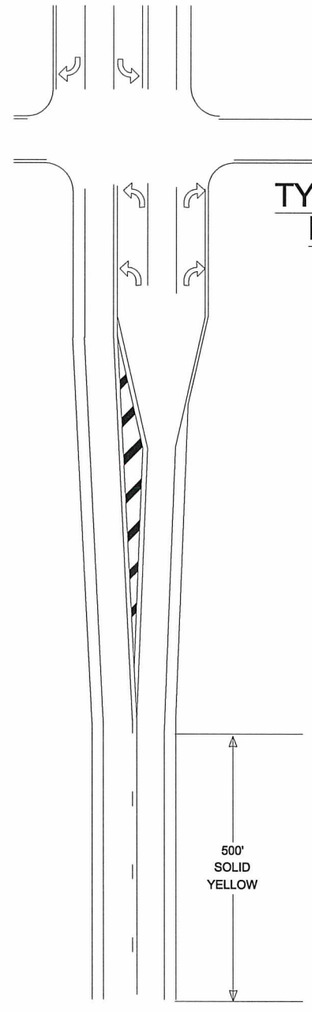
C.P. 11-25

SIGNING & STRIPING DETAILS

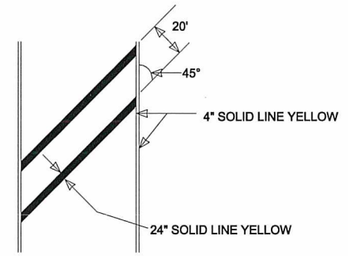
## TYPICAL MESSAGE PLACEMENT FOR TURN LANES




## DUAL LEFT TURN LANES




## TYPICAL MARKINGS FOR LEFT TURN ISLANDS

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|---|---|---|---|---|---|
| | | | | | |

NAME:

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
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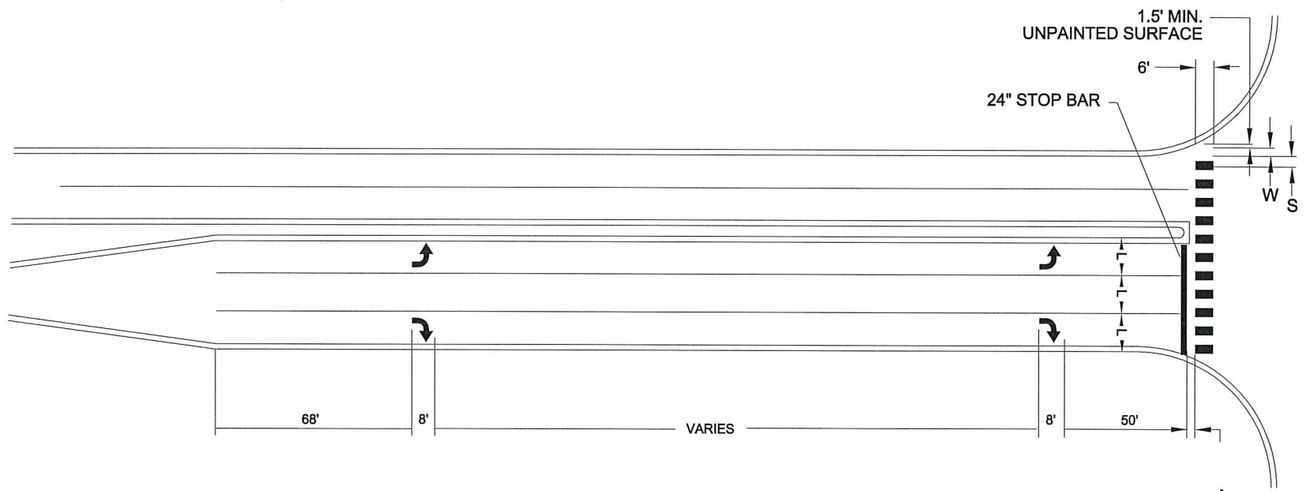
SIGNING & STRIPING DETAILS

# MARKINGS FOR PEDESTRIAN CROSSWALKS




| ( L ) | ( W ) | ( S ) |
|---|---|---|
| WIDTH OF INSIDE LANE | WIDTH OF PAINTED AREAS | WIDTH OF SPACE |
| 9' | 2.0' | 2.5' |
| 10' | 2.5' | 2.5' |
| 11' | 2.5' | 3.0' |
| 12' | 3.0' | 3.0' |
| 13' | 3.0' | 3.5' |

NOTES: CROSSWALKS:

1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.

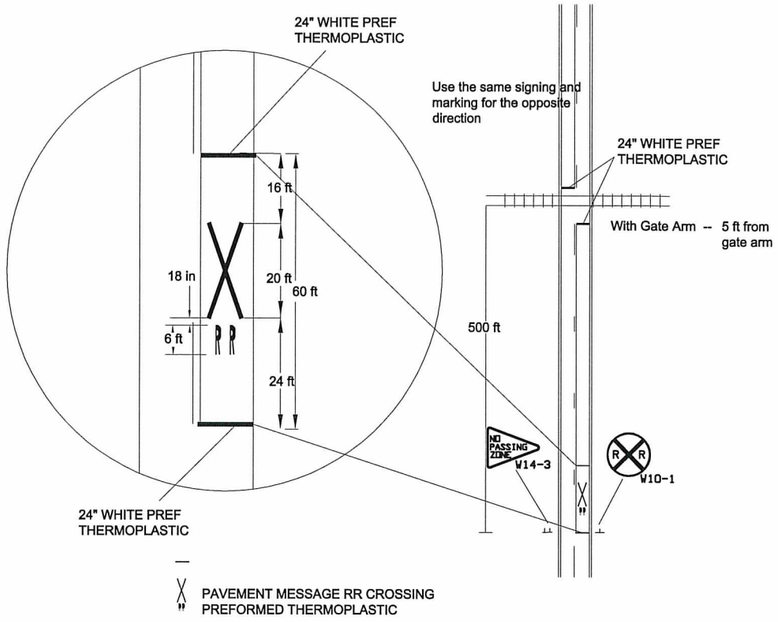
2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMPS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERFIED DURING CONSTRUCTION BY THE FIELD ENGR.

3.) ZEBRA CROSSWALKS ARE TO BE PARALLEL TO THE DRIVING LANE OR LANES. EVEN IF THE STREET IS ON AN ANGLE TO THE INTERSECTION.

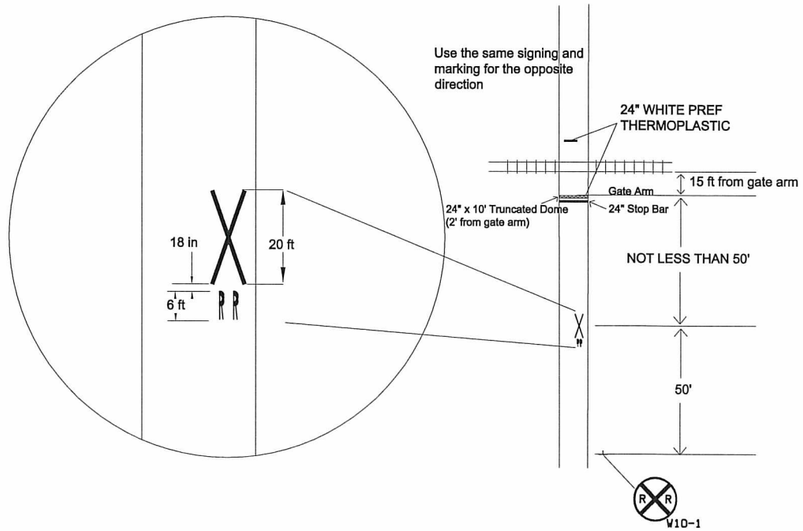
4.) A MIN. OF 1.5' (450mm) CLEAR DISTANCE MUST BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS AREA, IT MUST BE OMITTED.

5.) ON TWO LANE STREETS, USE SPACING SHOWN FOR AN 11' (3.3mm) INSIDE LANE.

# RAILROAD CROSSING PAVEMENT MARKINGS




# RAILROAD CROSSING PAVEMENT MARKINGS TRAIL GRADE CROSSING

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|---|---|---|---|---|---|
| | | | | | |

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SIGNATURE:

DATE: 5/31/16 REG. NO. 20235

DRAWN BY TMV DATE 01/2016

DESIGN BY DATE

CHECKED BY DATE

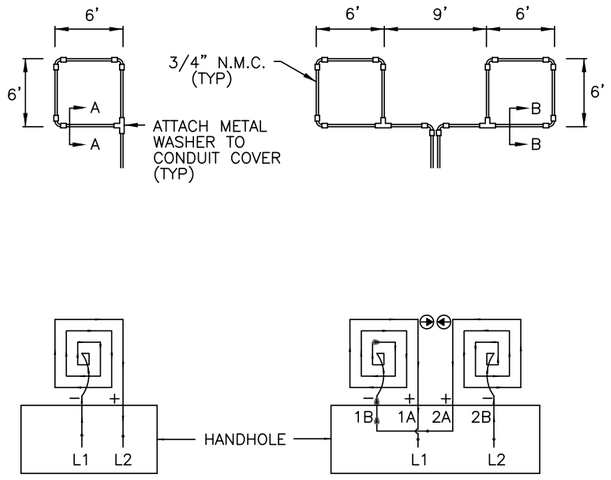
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

SIGNING & STRIPING DETAILS

Sheet 341 of 482 Sheets

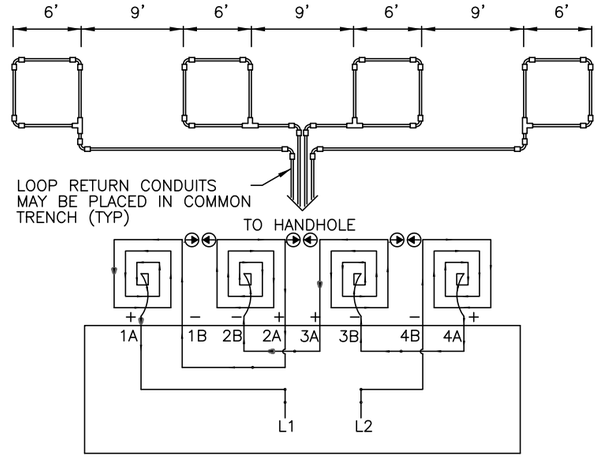



**LOOP DETECTOR DETAIL 'A'**
(LOOP PHASING FOR SINGLE CONNECTION)

LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO L2

**LOOP DETECTOR DETAIL 'B'**
(LOOP PHASING FOR SERIES CONNECTION)

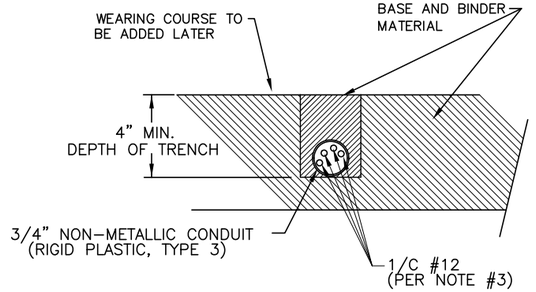



LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

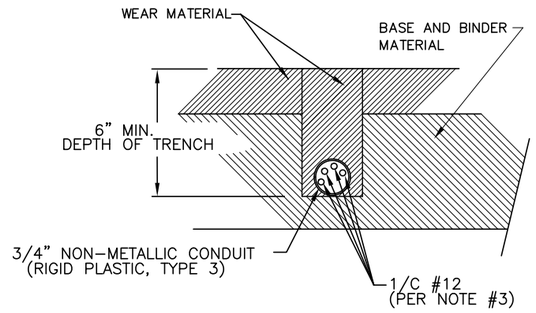
L1 TO 1A
1B TO 2A
2B TO 3A
3B TO 4A
4B TO L2

SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)

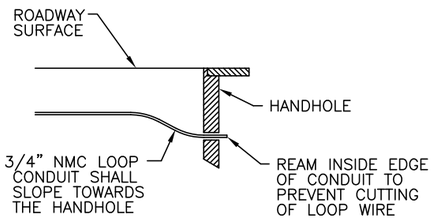
**LOOP DETECTOR DETAIL 'C'**
(LOOP PHASING FOR SERIES CONNECTION)




**SECTION A–A**
DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY




**SECTION B–B**
DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY




**DRAINAGE DETAIL**

## LOOP DETECTOR WIRING

1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

## LEGEND OF SYMBOLS

- CONTROLLER AND SERVICE EQUIP. NO's — (A)
- SIGNAL BASE NO. — (1)
- SIGNAL FACE NO. — (1-H)
- LUMINAIRE NO. — (1)
- CONTROLLER AND CABINET
- CONTROLLER AND CABINET – IN PLACE
- HANDHOLE
- HANDHOLE – IN PLACE
- RIGID STEEL CONDUIT (RSC)
- RIGID STEEL CONDUIT (RSC) – IN PLACE
- SIGNAL FACE WITH BACKGROUND SHIELD
- SIGNAL FACE W/O BACKGROUND SHIELD
- SIGNAL FACE – IN PLACE
- PEDESTRIAN INDICATORS
- PEDESTRIAN INDICATORS – IN PLACE
- PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE
- PEDESTRIAN PUSH BUTTON STATION
- TRAFFIC SIGNAL PEDESTAL
- TRAFFIC SIGNAL PEDESTAL – INPLACE
- TRAFFIC SIGNAL POLE AND MAST ARM
- TRAFFIC SIGNAL POLE AND MAST ARM – IN PLACE
- STREET LIGHT POLE AND LUMINAIRE
- STREET LIGHT POLE AND LUMINAIRE – IN PLACE
- MAST ARM AND LUMINAIRE
- MAST ARM AND LUMINAIRE – INPLACE
- WOOD POLE
- WOOD POLE – IN PLACE
- SOURCE OF POWER
- RAILROAD SIGNAL – IN PLACE
- RIGHT OF WAY LINE
- CENTERLINE — 3
- EDGE OF ROADWAY
- SHOULDERLINE
- CURB LINE
- STOP BAR
- EMERGENCY VEHICLE PREEMPTION DETECTOR

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| 3–1(EG) | SIGNAL HEAD PHASE "3" – NO "1" | P2–1(EG) | PED INDICATION PHASE "2" – NO. "1" |
| BR. GR. | BARE GROUND | PB | PUSH BUTTON |
| CH. SW. | CHECK SWITCH | PB2–1(EG) | PUSH BUTTON PHASE "2" – NO. "1" |
| CLR | CLEAR | PEC | PHOTOELECTRIC CELL |
| D2–1(EG) | DETECTOR PHASE "2" – NO. "1" | PED | PEDESTRIAN |
| DWK | DON'T WALK | R | RED |
| EQG | EQUIPMENT GROUND | R&S | REMOVE AND SALVAGE |
| EVP | EMERGENCY VEHICLE PRE–EMPTION | RLTA | RED LEFT TURN ARROW |
| F&I | FURNISH AND INSTALL | RRTA | RED RIGHT TURN ARROW |
| FL | FLASH/FLASHING | RSC | RIGID STEEL CONDUIT |
| G | GREEN | SOP | SOURCE OF POWER |
| GLTA | GREEN LEFT TURN ARROW | SPR | SPARE |
| GRN | GREEN | ST. LHT | STREET LIGHT |
| GR. R | GROUND ROD | STA | STATION |
| GRTA | GREEN RIGHT TURN ARROW | SW | SWITCH |
| GTHA | GREEN THRU ARROW | SWD | SWITCHED |
| HH | HANDHOLE | S&R | SALVAGE AND REINSTALL |
| HPS | HIGH PRESSURE SODIUM | TDW | TELEPHONE DROP WIRE |
| JB | JUNCTION BOX | WLK | WALK |
| LUM | LUMINAIRE | YEL | YELLOW |
| NEU | NEUTRAL | YLTA | YELLOW LEFT TURN ARROW |
| NMC | NONMETALLIC CONDUIT | YRTA | YELLOW RIGHT TURN ARROW |
| | | YTHA | YELLOW THRU ARROW |

## CONDUCTOR COLOR CODE

| | |
|---|---|
| R | RED |
| O | ORANGE |
| BL | BLUE |
| WH | WHITE |
| R/BLK | RED WITH BLACK TRACER |
| O/BLK | ORANGE WITH BLACK TRACER |
| BL/BLK | BLUE WITH BLACK TRACER |
| WH/BLK | WHITE WITH BLACK TRACER |
| BLK | BLACK |
| BLK/WH | BLACK WITH WHITE TRACER |
| G/BLK | GREEN WITH BLACK TRACER |
| G | GREEN |

## TRAFFIC SIGNAL TABULATION — X

| ITEM NO | ITEM | UNIT | TOTAL ESTIMATED QUANTITY |
|---|---|---|---|
| 2104 | REMOVE SIGNAL SYSTEM "B" | EACH | 1 |
| 2104 | REMOVE SIGNAL SYSTEM "C" | EACH | 1 |
| 2565 | TRAFFIC CONTROL SIGNAL SYSTEM "A" | SIG. SYS. | 1 |
| 2565 | TRAFFIC CONTROL SIGNAL SYSTEM "B" | SIG. SYS. | 1 |
| 2565 | TRAFFIC CONTROL SIGNAL SYSTEM "C" | SIG. SYS. | 1 |
| 2565 | EMERGENCY VEHICLE PREEMPTION SYSTEM "A" | LUMP SUM | 1 |
| 2565 | EMERGENCY VEHICLE PREEMPTION SYSTEM "B" | LUMP SUM | 1 |
| 2565 | EMERGENCY VEHICLE PREEMPTION SYSTEM "C" | LUMP SUM | 1 |
| 2565 | TRAFFIC CONTROL INTERCONNECT "A" | LUMP SUM | 1 |
| 2565 | TRAFFIC CONTROL INTERCONNECT "B" | LUMP SUM | 1 |
| 2565 | SIGNAL SERVICE CABINET | EACH | 3 |
| 2565 | 4" NON–METALLIC CONDUIT | LIN FT | 260 |

## TRAFFIC SIGNAL STANDARD PLATES

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT

| PLATE NO. | DESCRIPTION |
|---|---|
| * 8000 J | CHANNELIZERS – TYPE A, B, C (3 SHEETS) |
| * 8111 E | TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED) (3 SHEETS) |
| * 8112 I | PEDESTAL FOUNDATION (TRAFFIC CONTROL SIGNALS) |
| * 8118 D | SERVICE EQUIPMENT & POLE–TRAFFIC CONTROL SIGNALS |
| * 8119 C | GROUND MOUNTED CABINET FOUNDATION |
| * 8120 Q | POLE FOUNDATION (PA 85) |
| * 8121 H | TRANSFORMER BASE & POLE BASE PLATE (2 SHEETS) |
| * 8122 F | PEDESTAL & PEDESTAL BASE (FOR TRAFFIC CONTROL SIGNALS SUPPORT) (2 SHEETS) |
| * 8123 G | POLE & MAST ARM–LUMINAIRES & TRAFFIC LIGHTS ASSEMBLY (2 SHEETS) |
| * 8126 L | POLE FOUNDATION (PA90 & PA100) |
| * 8129 A | SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING) |

* – STANDARD PLATES APPLICABLE TO THIS PROJECT

S.P. 002–716–015

DRAWN BY: XXX
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC SIGNAL SYSTEMS 'A-C
DETAILS AND STANDARD PLATES
CSAH 116 SIGNAL SYSTEMS

FILE NO. ANOKC 132658
SIGNAL SHEET 1 OF 32
342/482

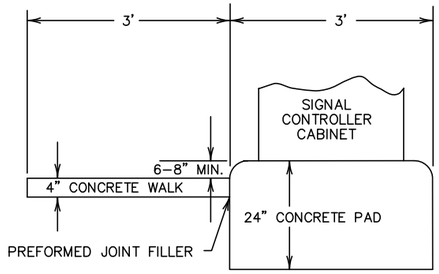
# TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

**SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)**

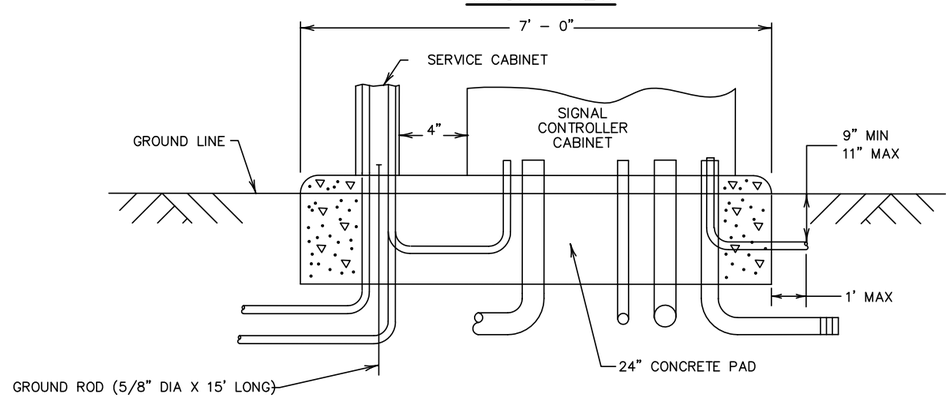
## NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLERS AND CABINETS SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF EACH NEW EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE OF THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3F52 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PADS AND SIDEWALKS.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PADS SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN EACH PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON EACH EQUIPMENT PAD FOUNDATION AS SHOWN.

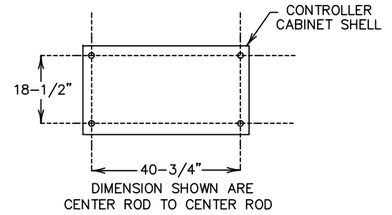
### SIDE VIEW




### FRONT VIEW

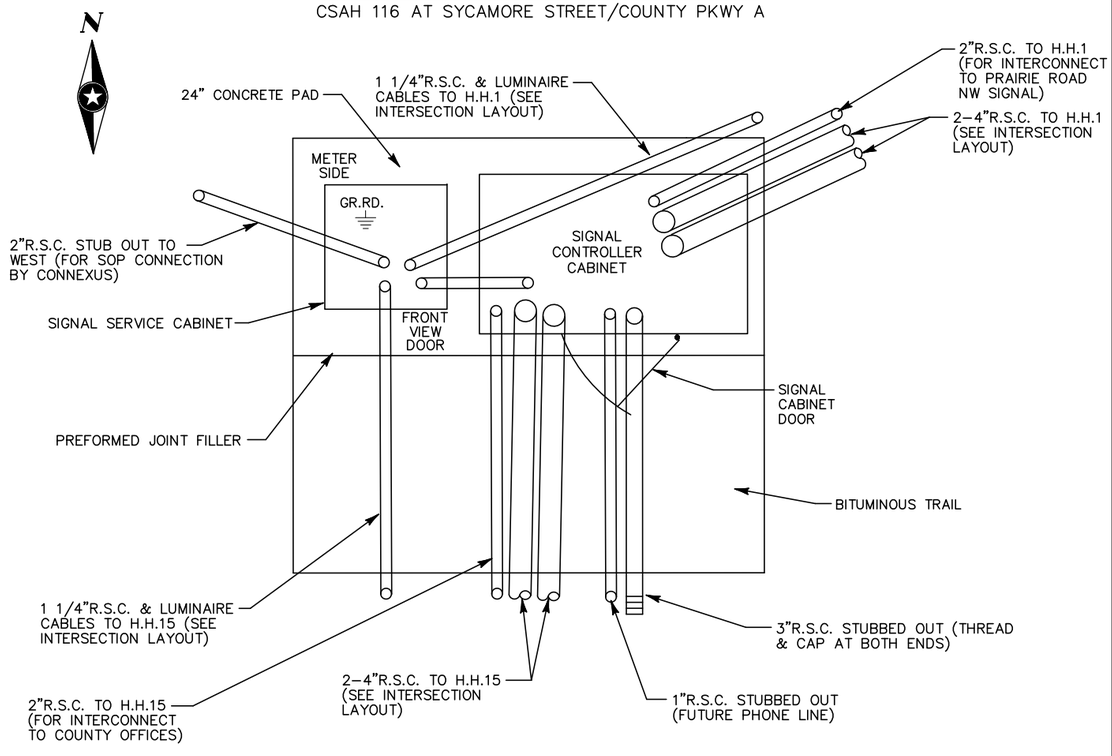



### CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



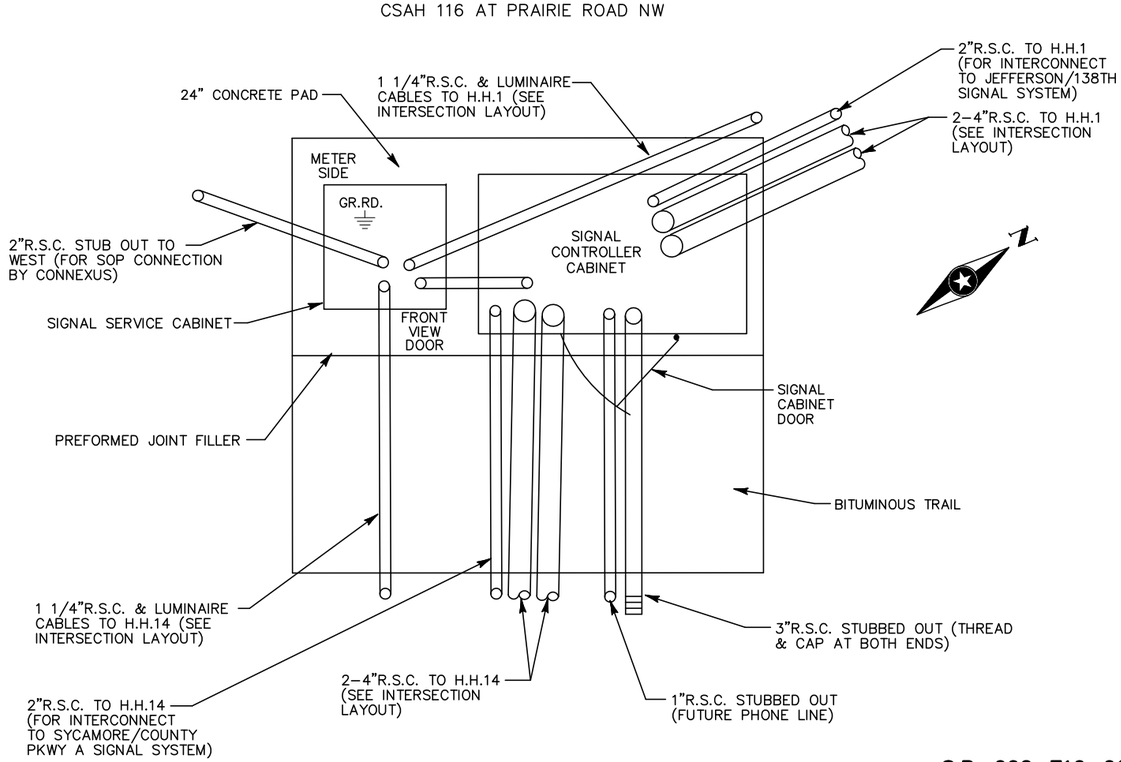

## PLAN VIEW – SYSTEM "A"

CSAH 116 AT SYCAMORE STREET/COUNTY PKWY A




## PLAN VIEW–SYSTEM "B"

CSAH 116 AT PRAIRIE ROAD NW




S.P. 002-716-015

DRAWN BY: XXX
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Name: John M. Gray, PE
Date: February 19, 2016 Lic. No. 22457


SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110


ANOKA COUNTY
CITY OF ANDOVER

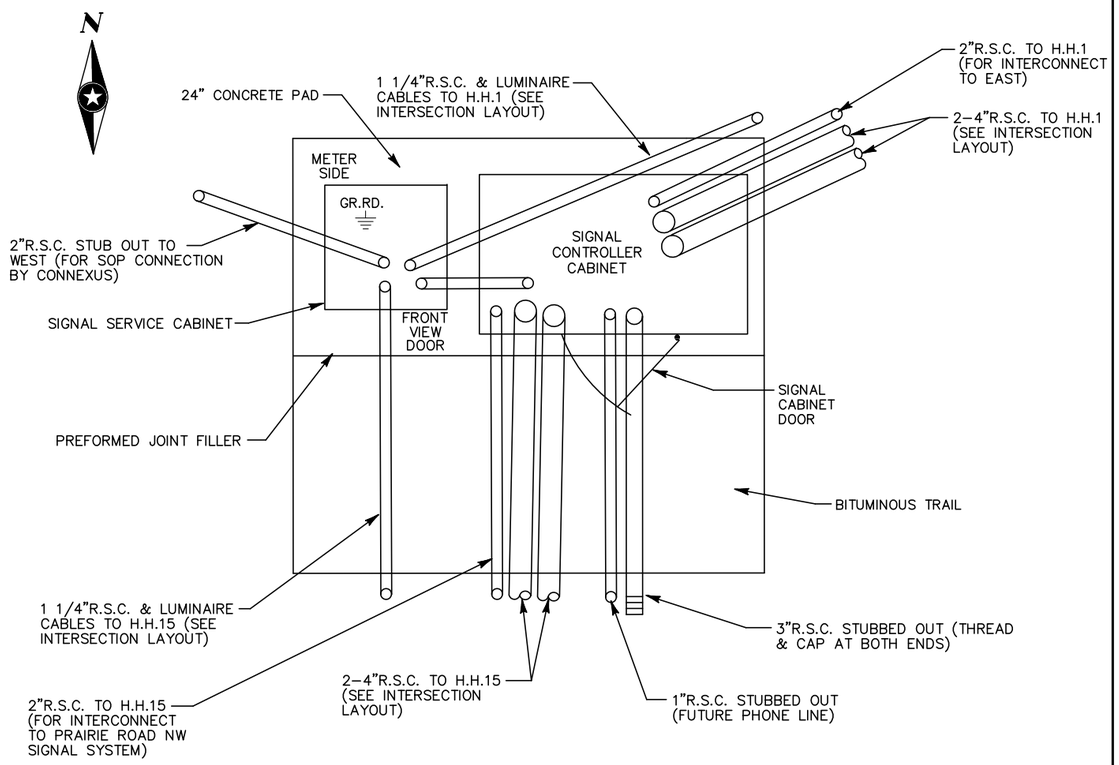
TRAFFIC SIGNAL SYSTEMS "A-C"
EQUIPMENT PAD DETAILS
CSAH 116 SIGNAL SYSTEMS

FILE NO. ANOKC 132658
SIGNAL SHEET 2 OF 32

343/482

## PLAN VIEW – SYSTEM "C"

CSAH 116 AT JEFFERSON ST NE/138TH AVE NE




SIGNS FOR TRAFFIC SIGNAL SYSTEM

SIGN PANELS – TYPE D (FURNISH AND INSTALL)

| SIGNAL SYSTEM | SIGN PANEL | POLE NO. | a (FT) | b (FT) | SIZE (IN) | MOUNTING BRACKET QUANTITY | MOUNTING BRACKET SPACING (1) | AREA/SIGN (SQ. FT.) | NO. REQ. | PANEL LEGEND |
|---|---|---|---|---|---|---|---|---|---|---|
| A | D–1 | 1 | – | 30' | 138 x 36 | 5 | --- | 34.50 | 1 | County Pkwy A w/LT Arrow, Sycamore St NW w/RT arrow |
| A | D–2 | 2 | 8' | – | 150 x 24 | 5 | --- | 25.00 | 1 | Bunker Lake Blvd NW |
| A | D–3 | 3 | – | 30' | 138 x 36 | 5 | --- | 34.50 | 1 | Sycamore St NW w/LT Arrow, County Pkwy A w/RT arrow |
| A | D–4 | 4 | 8' | – | 150 x 24 | 5 | --- | 25.00 | 1 | Bunker Lake Blvd NW |
| B | D–5 | 1 | 18' | – | 120 x 24 | 4 | --- | 20.00 | 1 | Prairie Rd NW w/RT Arrow |
| B | D–6 | 3 | – | 28' | 120 x 24 | 4 | --- | 20.00 | 1 | Prairie Rd NW w/LT Arrow |
| B | D–7 | 4 | 8' | – | 150 x 24 | 5 | --- | 25.00 | 1 | Bunker Lake Blvd NW |
| C | D–8 | 1 | – | 28' | 138 x 36 | 5 | --- | 34.50 | 1 | Jefferson St NE w/LT Arrow, 138th Ave NE w/RT Arrow |
| C | D–9 | 2 | 6' | – | 150 x 24 | 5 | --- | 25.00 | 1 | Bunker Lake Blvd NE |
| C | D–10 | 3 | – | 28' | 138 x 36 | 5 | --- | 34.50 | 1 | 138th Ave NE w/LT Arrow, Jefferson St NE w/RT Arrow |
| C | D–11 | 4 | 8' | – | 150 x 24 | 5 | --- | 25.00 | 1 | Bunker Lake Blvd NE |
| | | | | | | | | | | |
| TOTAL QUANTITIES | | | | | | | | 303.00 | 11 | |

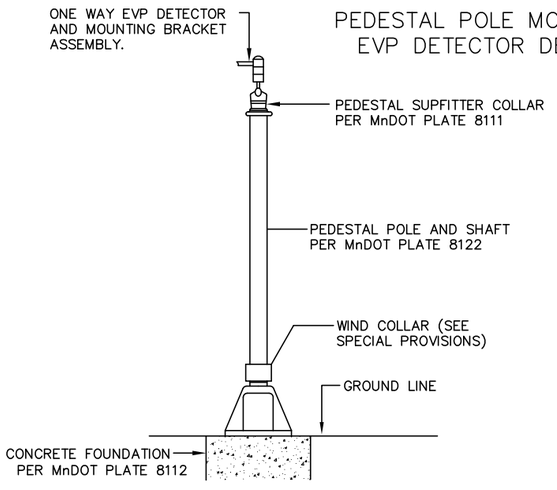
(1) = SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE STANDARD SIGNS MANUAL, PAGE 105A (REVISION DATE 7/06/2007) FOR BRACKET SPACING REQUIREMENTS.

SIGNS FOR TRAFFIC SIGNAL SYSTEM

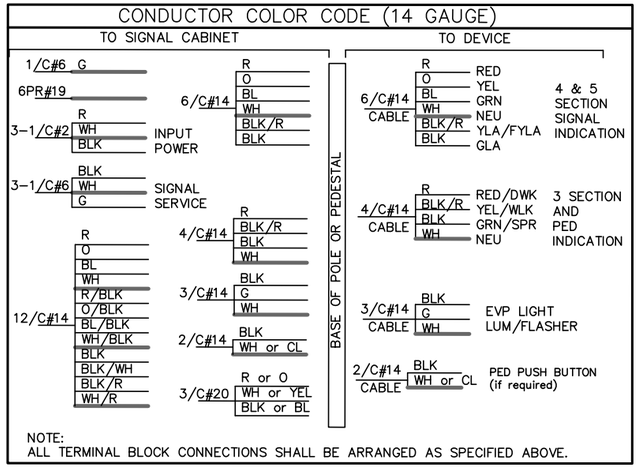
SIGN PANELS – TYPE C (FURNISH AND INSTALL)

| SIGNAL SYSTEM | SIGN PANEL | POLE NO. | a (FT) | b (FT) | SIZE (IN) | MOUNTING BRACKET QUANTITY | MOUNTING BRACKET SPACING (1) | AREA/SIGN (SQ. FT.) | NO. REQ. | PANEL LEGEND |
|---|---|---|---|---|---|---|---|---|---|---|
| A | R6–1L | 1,3 | – | – | 36 x 12 | ① | --- | 3.00 | 2 | ONE WAY (LEFT) |
| A | R6–1R | 1,3 | – | – | 36 x 12 | ① | --- | 3.00 | 2 | ONE WAY (RIGHT) |
| B | R6–1L | 3 | – | – | 36 x 12 | ① | --- | 3.00 | 1 | ONE WAY (LEFT) |
| B | R6–1R | 1 | – | – | 36 x 12 | ① | --- | 3.00 | 1 | ONE WAY (RIGHT) |
| C | R6–1L | 1,3 | – | – | 36 x 12 | ① | --- | 3.00 | 2 | ONE WAY (LEFT) |
| C | R6–1R | 1,3 | – | – | 36 x 12 | ① | --- | 3.00 | 2 | ONE WAY (RIGHT) |
| B | R9–3 | 2,3 | – | – | 18 x 18 | ① | --- | 2.25 | 2 | NO PEDESTRIAN CROSSING (SYMBOL) |
| A | R10–X12 | 1,3 | 1' | – | 36 x 48 | 2 | --- | 12.00 | 2 | LEFT TURN YIELD ON FLASHING YELLOW ARROW |
| B | R10–X12 | 3 | 1' | – | 36 x 48 | 2 | --- | 12.00 | 1 | LEFT TURN YIELD ON FLASHING YELLOW ARROW |
| C | R10–X12 | 1,3 | 1' | – | 36 x 48 | 2 | --- | 12.00 | 2 | LEFT TURN YIELD ON FLASHING YELLOW ARROW |
| B | W3–3 | 5,6,7 | – | – | 36 x 36 | ② | --- | 9.00 | 3 | SIGNAL AHEAD |
| TOTAL QUANTITIES | | | | | | | | 121.50 | 20 | |

## PEDESTAL POLE MOUNTED EVP DETECTOR DETAIL



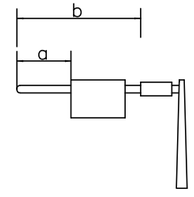

## CONDUCTOR COLOR CODE (14 GAUGE)




NOTE:
ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

GENERAL SIGNING NOTES:

1) COLOR FOR ALL TYPE D SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
2) CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
3) FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS, SEE STANDARD SIGNS MANUAL, PAGE 105A (REVISION DATE: 7/06/07), AND SPECIAL PROVISIONS.
4) SEE STANDARD SIGNS MANUAL FOR DETAILED DRAWINGS OF TYPE C SIGN PANELS AND ARROW DETAILS.
5) FURNISHING AND INSTALLING TYPE C & D SIGNS SHALL BE INCLUDED UNDER THE PAY ITEMS FOR ITEM NO. 2565 (TRAFFIC SIGNAL SYSTEMS "A–C"). SEE SPECIAL PROVISIONS.
6) ALL NEW TYPE C AND D SIGN PANELS SHALL BE FABRICATED USING DG3 SHEETING. SEE SPECIAL PROVISIONS.
7) ① = INSTALL SIGN PANEL ON TRAFFIC SIGNAL MAST ARM POLE.
8) ② = INSTALL SIGN PANEL ON TRAFFIC SIGNAL PEDESTAL POLE.




S.P. 002–716–015

DRAWN BY: XXX
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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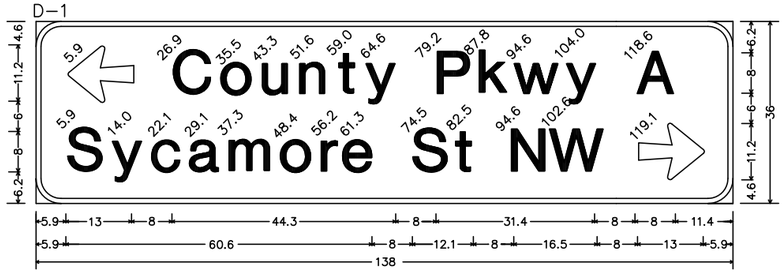
ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC SIGNAL SYSTEMS "A-C"
EQUIPMENT PAD/MISCELLANEOUS DETAILS
CSAH 116 SIGNAL SYSTEMS

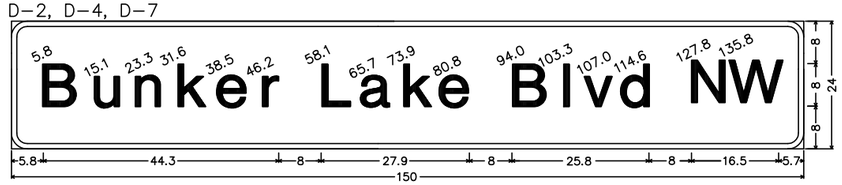
FILE NO. ANOKC 132658
SIGNAL SHEET 3 OF 32

D-1



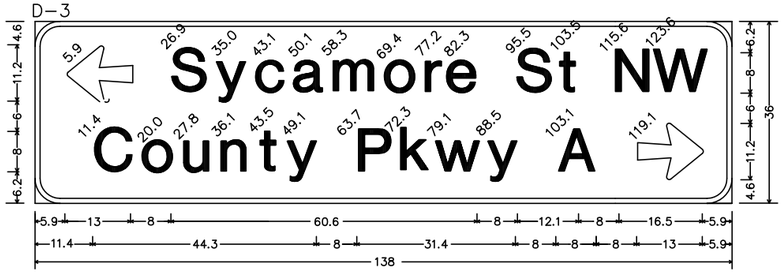

3.0" Radius, 1.0" Border, White on Green
Arrow 5 – 13.0" 180°, (County Pkwy A) E Mod.
(Sycamore St NW) E Mod., Arrow 5 – 13.0" 0°

D-2, D-4, D-7



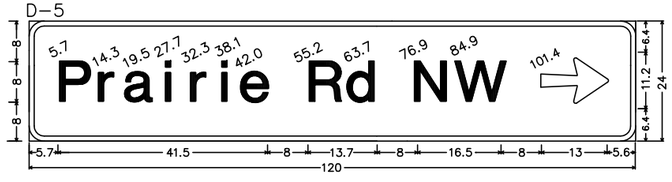

3.0" Radius, 1.0" Border, White on Green;
[Bunker Lake Blvd NW] E Mod;

D-3



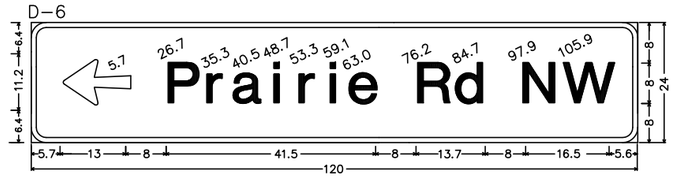

3.0" Radius, 1.0" Border, White on Green
Arrow 5 – 13.0" 180°, (Sycamore St NW) E Mod.
(County Pkwy A) E Mod., Arrow 5 – 13.0" 0°

D-5




3.0" Radius, 1.0" Border, White on Green;
[Prairie Rd NW] E Mod; Arrow 5 – 13.0" 0°

D-6

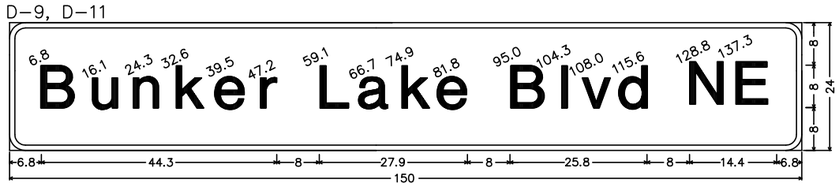



3.0" Radius, 1.0" Border, White on Green;
Arrow 5 – 13.0" 180°, [Prairie Rd NW] E Mod

D-8

3.0" Radius, 1.0" Border, White on Green
Arrow 5 – 13.0" 180°, (Jefferson St NE) E Mod.
(138th Ave NE) E Mod., Arrow 5 – 13.0" 0°

D-9, D-11



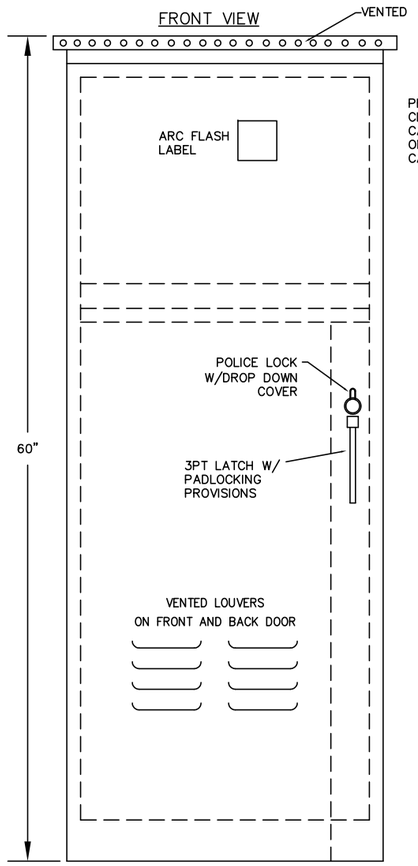

3.0" Radius, 1.0" Border, White on Green;
[Bunker Lake Blvd NE] E Mod;

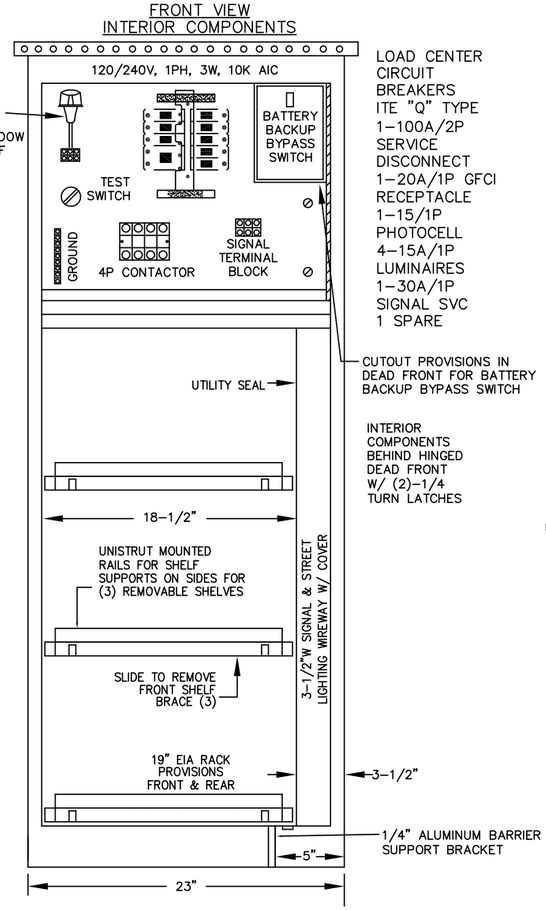
D-10

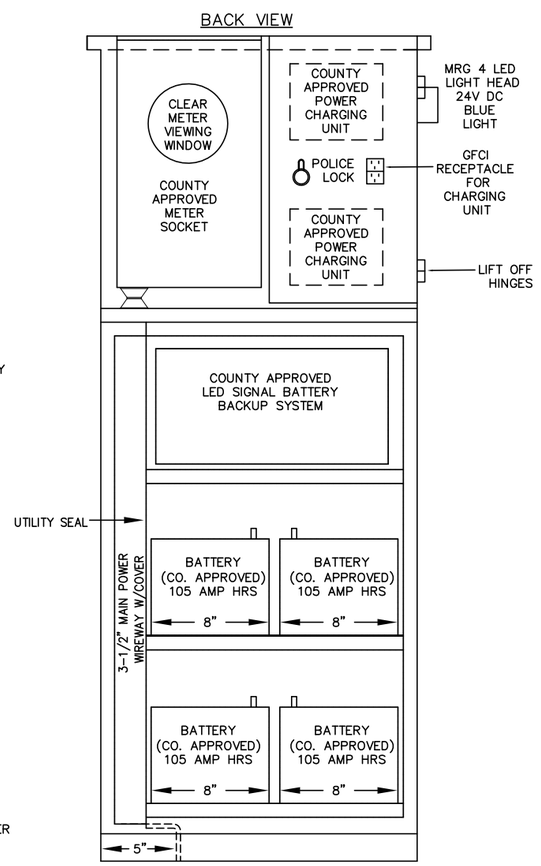
3.0" Radius, 1.0" Border, White on Green
Arrow 5 – 13.0" 180°, (138th Ave NE) E Mod.
(Jefferson St NE) E Mod., Arrow 5 – 13.0" 0°

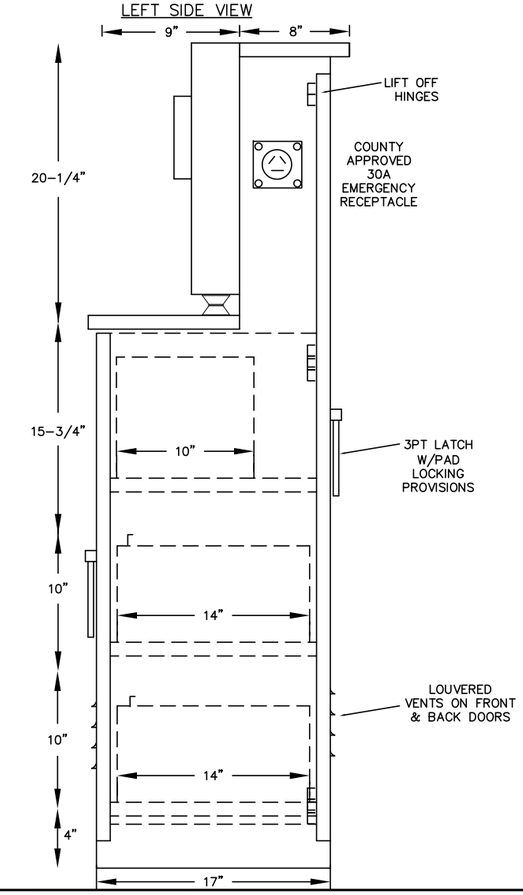
S.P. 002-716-015

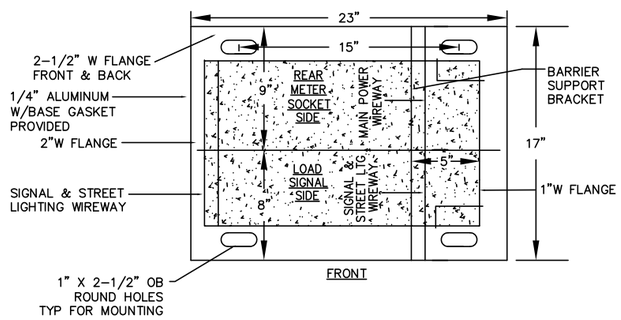
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN BY: XXX<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457 | SEH<br>PHONE: (651) 490-2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF ANDOVER | TRAFFIC SIGNAL SYSTEMS 'A-C'<br>SIGNAL SIGNING DETAILS<br>CSAH 116 SIGNAL SYSTEMS | FILE NO. ANOKC 132658<br>SIGNAL SHEET 4 OF 32<br>345/482 |



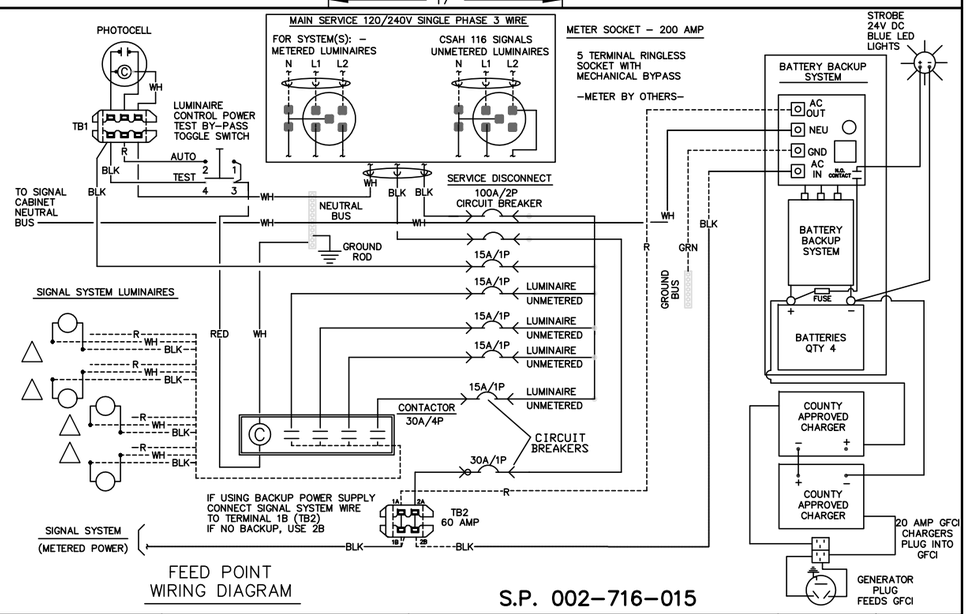




## CABINET CONSTRUCTION

-NEMA 3R
-1/8" ALUMINUM 5052-H32
-ANODIZED 30 MINUTE CLEAR
-NEOPRENE GASKETED DOORS
-NON-CORRODING HARDWARE
-ETL LISTED IN ACCORDANCE W/UL508A

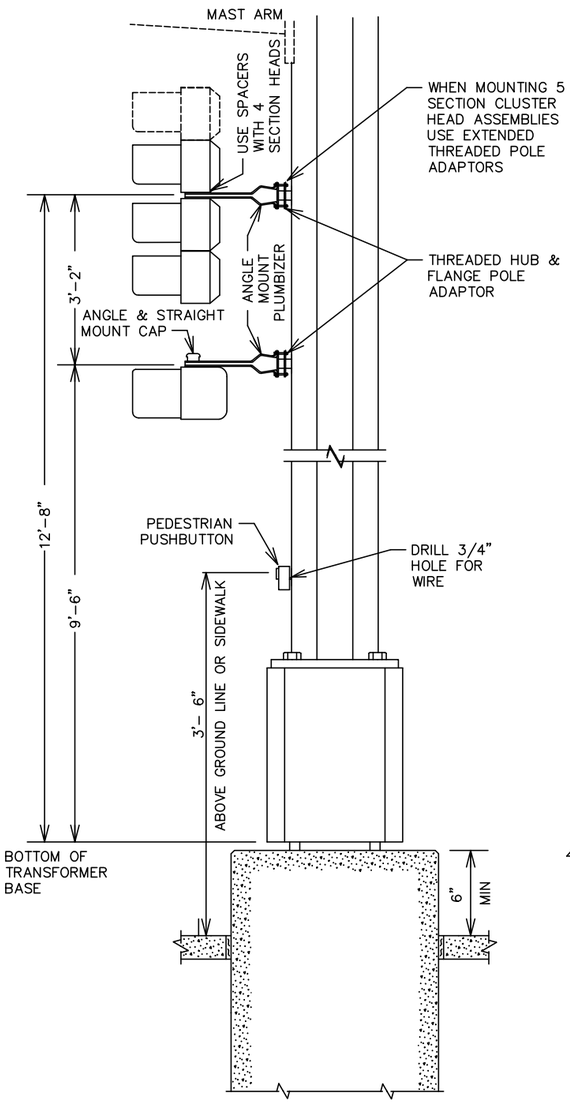
SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SEPARATE PAY ITEM FOR FURNISHING & INSTALLING NEW BATTERY BACK-UP SIGNAL SERVICE CABINETS.




FEED POINT WIRING DIAGRAM

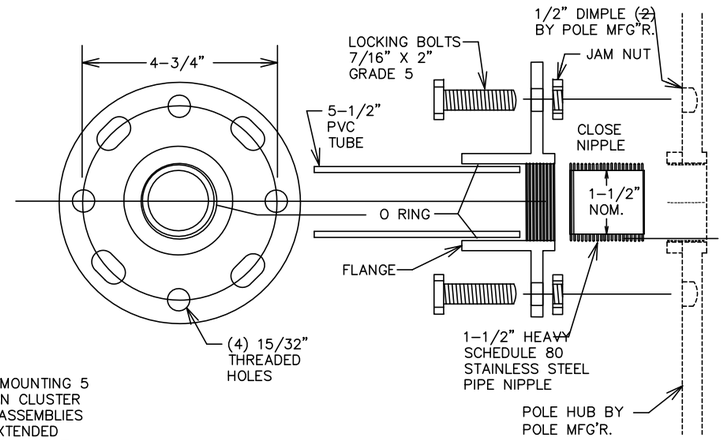
S.P. 002-716-015

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DRAWN BY: XXX | | | | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. | SEH PHONE: (651) 490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110 | ANOKA COUNTY CITY OF ANDOVER | TRAFFIC SIGNAL SYSTEMS "A-C" SIGNAL SERVICE CABINET DETAILS CSAH 116 SIGNAL SYSTEMS | FILE NO. ANOKC 132658 |
| DESIGNER: JMG | | | | Name: John M. Gray, PE | | | | SIGNAL SHEET 5 OF 32 |
| CHECKED BY: JMG | | | | Date: February 19, 2016 Lic. No. 22457 | | | | 346/482 |
| DESIGN TEAM | NO. | BY | DATE | REVISIONS | | | | |

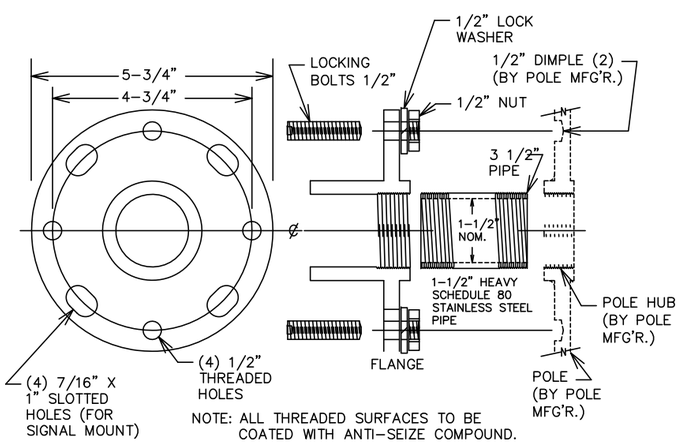



TYPICAL SIGNAL POLE MOUNTING

NOT TO SCALE



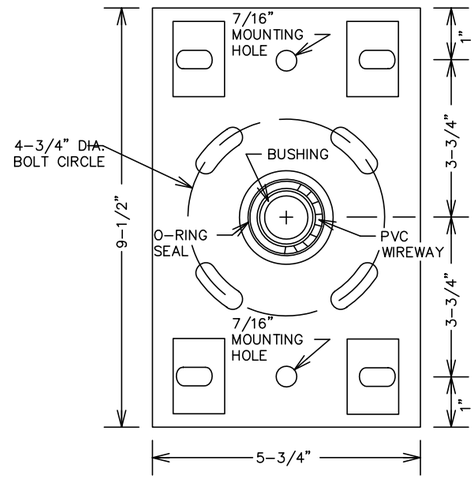

THREADED HUB AND FLANGE POLE ADAPTOR



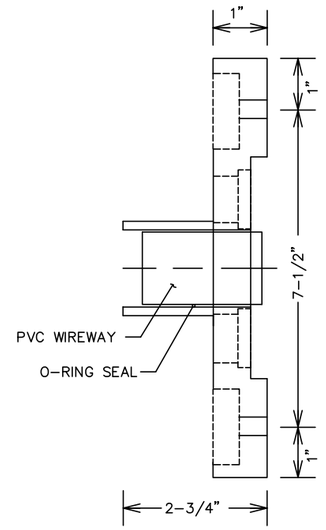

NOTE: ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.

EXTENDED THREADED POLE ADAPTER

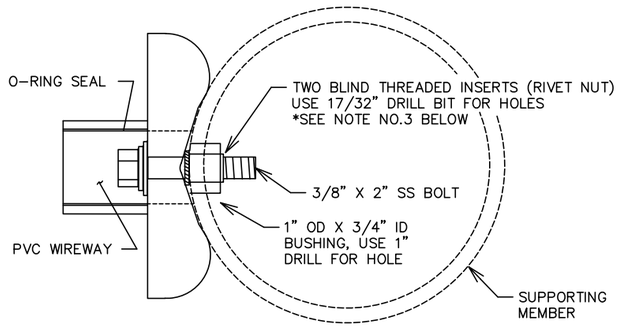
NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.




BOLT ON HUB & FLANGE

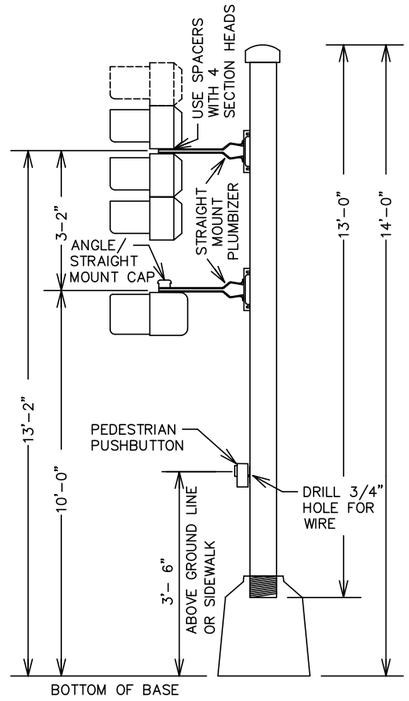



SIDE VIEW




TOP VIEW

NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. BLIND THREADED INSERTS (RIVET NUT) MUST BE INSERTED USING MANUFACTURERS SPECIFIC INSERTION TOOL. NO OTHER METHOD IS ACCEPTABLE.
4. SEE STANDARD PLATE NUMBER 8122 FOR ADDITIONAL PEDESTAL POLE DETAILS.




TYPICAL PEDESTAL MOUNTING

NOT TO SCALE

S.P. 002-716-015

DRAWN BY: XXX
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

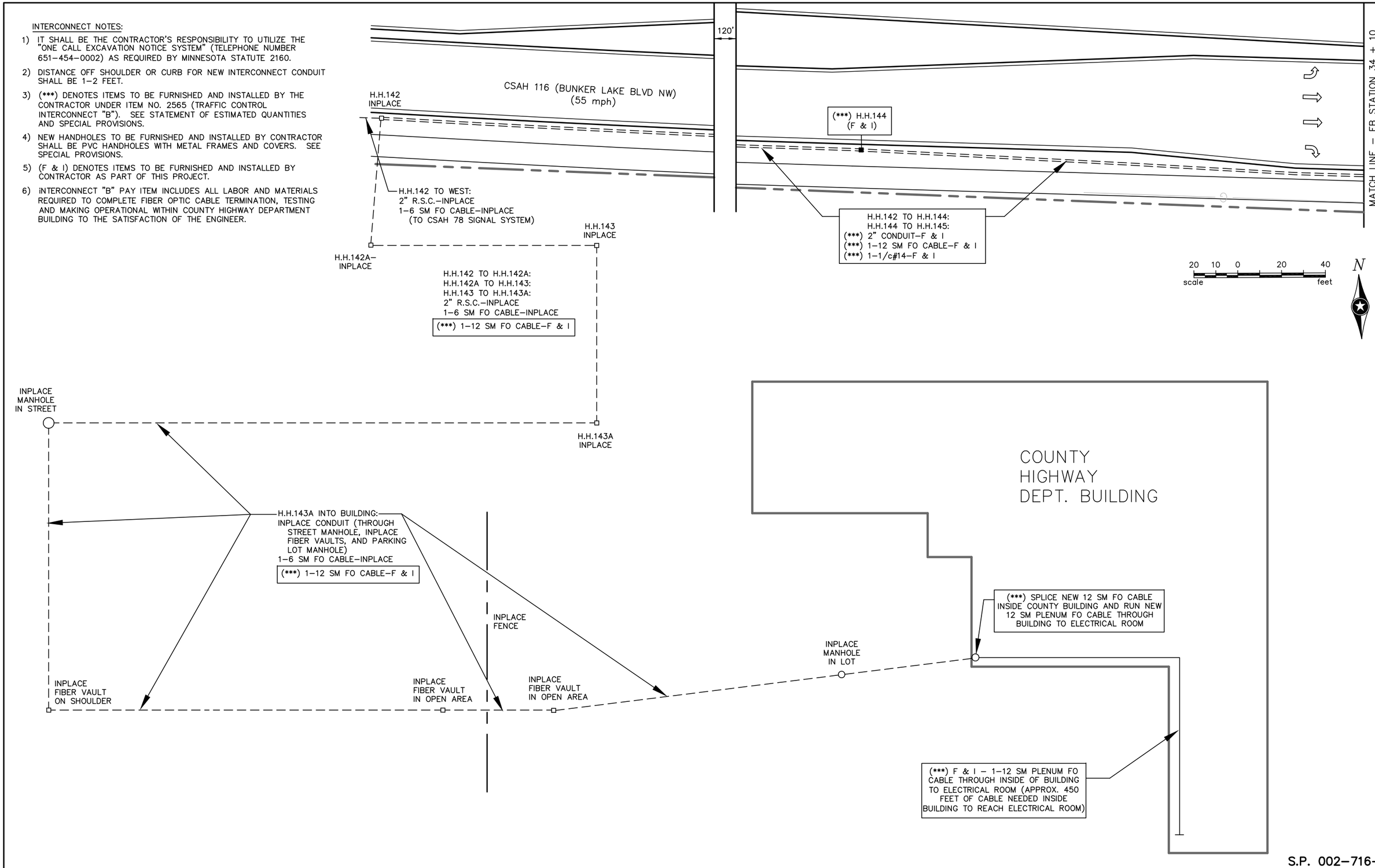
ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC SIGNAL SYSTEMS "A-C"
POLE MOUNT DETAILS
CSAH 116 SIGNAL SYSTEMS

FILE NO. ANOKC 132658
SIGNAL SHEET 6 OF 32
347/482

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR NEW INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "B"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
6) INTERCONNECT "B" PAY ITEM INCLUDES ALL LABOR AND MATERIALS REQUIRED TO COMPLETE FIBER OPTIC CABLE TERMINATION, TESTING AND MAKING OPERATIONAL WITHIN COUNTY HIGHWAY DEPARTMENT BUILDING TO THE SATISFACTION OF THE ENGINEER.




S.P. 002–716–015

DRAWN BY: LC/JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

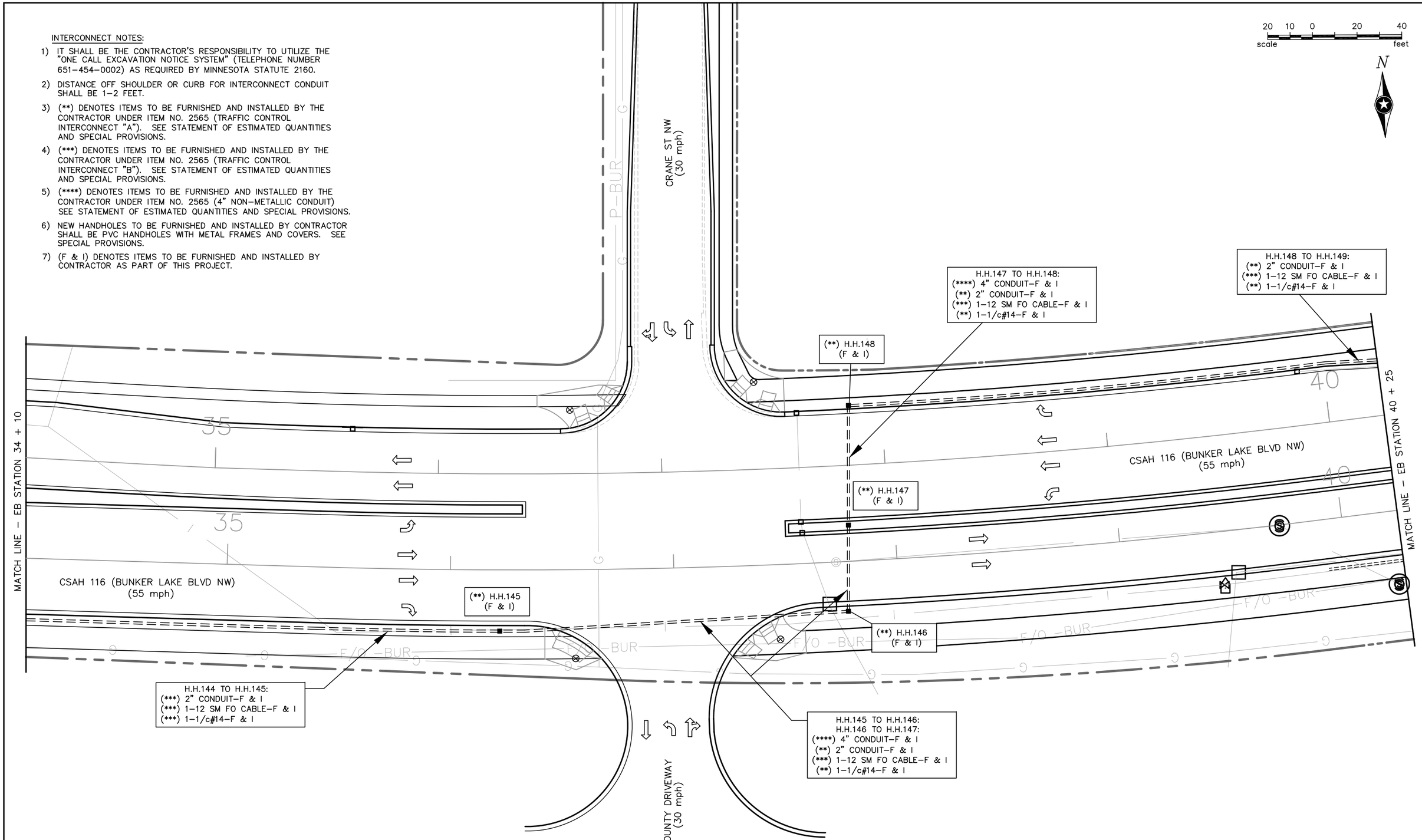
ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL INTERCONNECT
INTERSECTION LAYOUT
CSAH 116 (HIGHWAY DEPT TO CRANE ST)

FILE NO. ANOKC 132658
SIGNAL SHEET 7 OF 32

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1-2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "B"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
5) (****) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (4" NON-METALLIC CONDUIT) SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
6) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
7) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.




S.P. 002-716-015

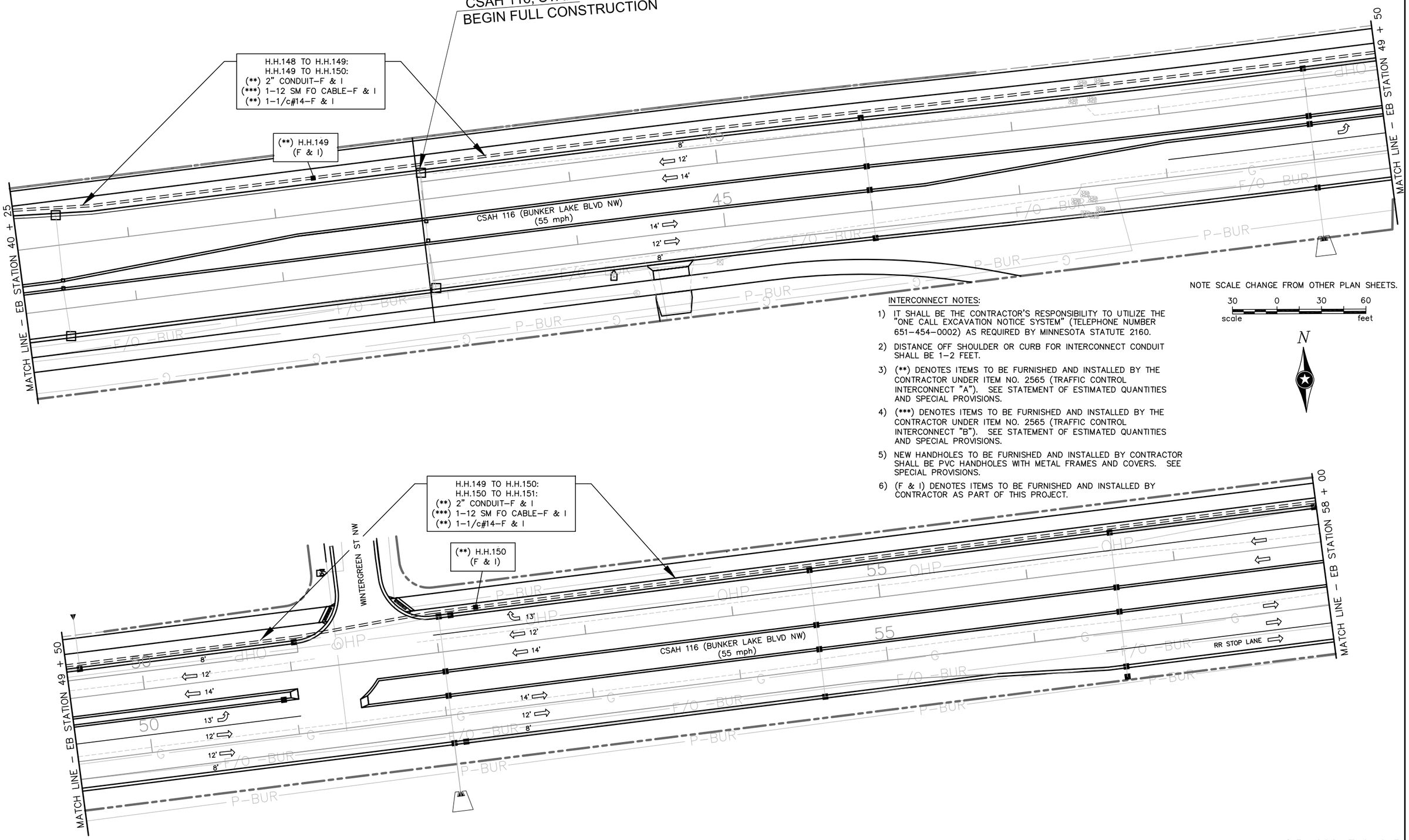
| | | | | | |
|---|---|---|---|---|---|
| DRAWN BY: LC/JMG<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Date: February 19, 2016<br>Name: John M. Gray, PE<br>Lic. No. 22457 |

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

**ANOKA COUNTY**
**CITY OF ANDOVER**

**TRAFFIC CONTROL INTERCONNECT INTERSECTION LAYOUT**
**CSAH 116 AT CRANE ST/HIGHWAY DRIVEWAY**

FILE NO. ANOKC 132658
SIGNAL SHEET 8 OF 32




NOTE SCALE CHANGE FROM OTHER PLAN SHEETS.

30 0 30 60
scale feet

N

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "B"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
5) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
6) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.

S.P. 002–716–015

DRAWN BY: LC/JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
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Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

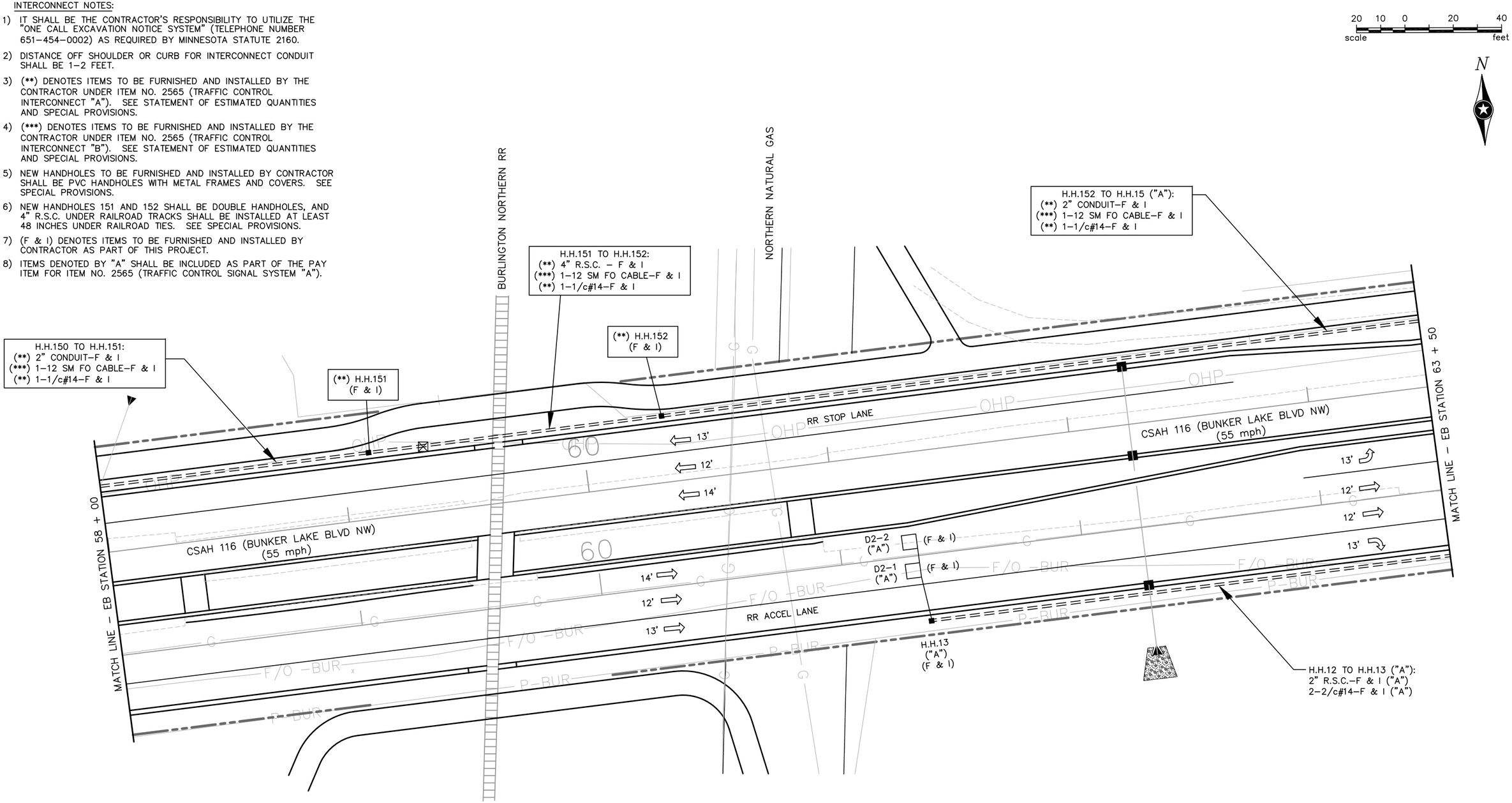
ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL INTERCONNECT
INTERSECTION LAYOUT
CSAH 116 (CRANE ST TO SYCAMORE ST)

FILE NO. ANOKC 132658
SIGNAL SHEET 9 OF 32

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "B"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
5) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
6) NEW HANDHOLES 151 AND 152 SHALL BE DOUBLE HANDHOLES, AND 4" R.S.C. UNDER RAILROAD TRACKS SHALL BE INSTALLED AT LEAST 48 INCHES UNDER RAILROAD TIES. SEE SPECIAL PROVISIONS.
7) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
8) ITEMS DENOTED BY "A" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "A").




S.P. 002–716–015

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|---|---|---|---|---|---|---|---|---|
| DRAWN BY: LC/JMG<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Date: February 19, 2016<br>Name: John M. Gray, PE<br>Lic. No. 22457 | SEH<br>PHONE: (651) 490–2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF ANDOVER | TRAFFIC SIGNAL SYSTEM "A"/INTERCONNECT<br>INTERSECTION LAYOUT<br>CSAH 116 (CRANE ST TO SYCAMORE ST) | FILE NO.<br>ANOKC 132658<br>SIGNAL SHEET<br>10 OF 32 | 351<br>482 |

NOTES:

1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM END OF EACH MAST ARM (FOR EVP).
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CONNEXUS). SEE SPECIAL PROVISIONS.
6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM A").
7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
8) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
9) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
11) (*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM "A"). SEE STATEMENT OF ESTIMATED AND SPECIAL PROVISIONS.
12) (**) AND (***) DENOTE ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A" AND "B" RESPECTIVELY). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.

F & I N.M.C. LOOP DETECTORS

| NUMBER | SIZE (FT.) | LOCATION | FUNCTION |
|---|---|---|---|
| D1-1 | 2-6x6 | 15' & 45' | 1 |
| D1-2 | 2-6x6 | 0' & 30' | 1 |
| D2-1 | 6x6 | 475' | 1 |
| D2-2 | 6x6 | 475' | 1 |
| D4-1 | 6x6 | 120' | 3,8 |
| D4-2 | 2-6x6 | 0' & 15' | 7 |
| D4-3 | 2-6x6 | 0' & 15' | 7 |
| D5-1 | 2-6x6 | 20' & 50' | 1 |
| D5-2 | 2-6x6 | 5' & 35' | 1 |
| D6-1 | 6x6 | 475' | 1 |
| D6-2 | 6x6 | 475' | 1 |
| D8-1 | 6x6 | 120' | 3,8 |
| D8-2 | 2-6x6 | 0' & 15' | 7 |
| D8-3 | 2-6x6 | 0' & 15' | 7 |

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

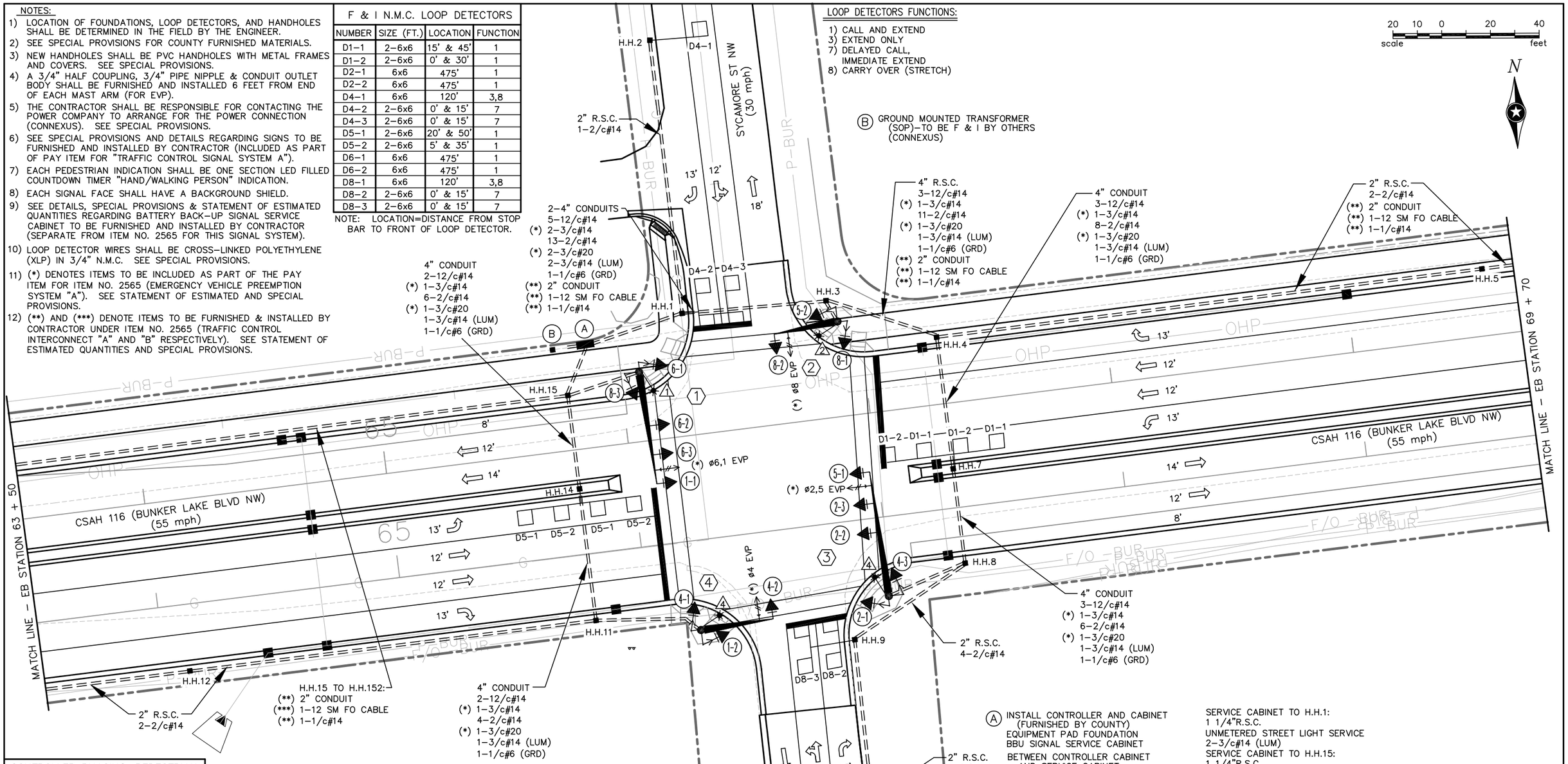
LOOP DETECTORS FUNCTIONS:

1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)

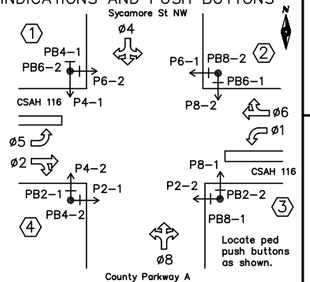
scale 20 10 0 20 40 feet

N

(B) GROUND MOUNTED TRANSFORMER (SOP)-TO BE F & I BY OTHERS (CONNEXUS)




CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS




SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING FLASHING YELLOW ARROWS (FLASH BY TIME OF DAY).
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

**SEE NEXT SHEET FOR DETAILED POLE NOTES**

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE 25' OF 1-2/c#14 IN HANDHOLES 1, 4, AND 9 (FOR FUTURE PUSH BUTTON INSTALLATIONS BY OTHERS).

(A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
EQUIPMENT PAD FOUNDATION
BBU SIGNAL SERVICE CABINET
BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
METERED SIGNAL SERVICE
2"R.S.C.
3-1/c#6

CONTROLLER CABINET TO H.H.1:
4"R.S.C. 2-12/c#14 (*) 1-3/c#14 6-2/c#14 (*) 1-3/c#20 1-1/c#6 (GRD)
4"R.S.C. 3-12/c#14 (*) 1-3/c#14 11-2/c#14 (*) 1-3/c#20

CONTROLLER CABINET TO H.H.15:
4"R.S.C. 3-12/c#14 (*) 1-3/c#14 2-2/c#14 (*) 1-3/c#20 1-1/c#6 (GRD)
4"R.S.C. 2-12/c#14 (*) 1-3/c#14 6-2/c#14 (*) 1-3/c#20

SERVICE CABINET TO H.H.1:
1 1/4"R.S.C.
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
SERVICE CABINET TO H.H.15:
1 1/4"R.S.C.
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
STUB OUT 1-2"R.S.C. FROM SERVICE CABINET TO WEST (FOR POWER CABLES BY CONNEXUS)
STUB OUT 3"R.S.C. FROM CONTROLLER CABINET TO SOUTH (THREAD AND CAP-FOR FUTURE USE)
STUB OUT 1"R.S.C. FROM CONTROLLER CABINET (FOR FUTURE PHONE LINE BY OTHERS)
CONTROLLER CABINET TO H.H.1:
(**) 2"R.S.C.
(**) 1-12 SM FIBER-OPTIC CABLE
(**) 1-1/c#14
CONTROLLER CABINET TO H.H.15:
(**) 2"R.S.C.
(***) 1-12 SM FIBER-OPTIC CABLE
(**) 1-1/c#14

LED SIGNAL FACES
ALL SIGNAL INDICATIONS SHALL BE 12"

| SIGNAL FACE | R | Y | FYA | G |
|---|---|---|---|---|
| 1-1, 1-2 | ← | ← | ← | ← |
| 2-1, 2-2, 2-3 | ● | ● | | ● |
| 4-1, 4-2, 4-3 | ● | ● | | ● |
| 5-1, 5-2 | ← | ← | ← | ← |
| 6-1, 6-2, 6-3 | ● | ● | | ● |
| 8-1, 8-2, 8-3 | ● | ● | | ● |

FYA = FLASHING YELLOW ARROW.

S.P. 002-716-015

| | | | | |
|---|---|---|---|---|
| DRAWN BY: | LC/JMG | | | |
| DESIGNER: | JMG | | | |
| CHECKED BY: | JMG | | | |
| DESIGN TEAM | NO. | BY | DATE | REVISIONS |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "A"
INTERSECTION LAYOUT
CSAH 116 AT SYCAMORE ST/COUNTY PKWY A

FILE NO. ANOKC 132658
SIGNAL SHEET 11 OF 32

352/482

(1) PA100 POLE FOUNDATION
TYPE PA100-A-45-D30-9 (DAVIT AT 350 DEG)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
2-R6-1 SIGN PANELS-POLE MOUNTED 0 DEG AND 180 DEG
R10-X12 SIGN PANEL-ADJACENT TO 1-1
TYPE D SIGN PANEL-OVERHEAD (D-1)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø6,1)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.15:
3"R.S.C.
3-12/c#14
(*) 1-3/c#14
2-2/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

(2) PA85 POLE FOUNDATION
TYPE PA85-A-25-D30-9 (DAVIT AT 350 DEG.)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
TYPE D SIGN PANEL-OVERHEAD (D-2)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø8)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.3:
3"R.S.C.
2-12/c#14
(*) 1-3/c#14
2-2/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

(3) PA100 POLE FOUNDATION
TYPE PA100-A-50-D30-9 (DAVIT AT 350 DEG)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
2-R6-1 SIGN PANELS-POLE MOUNTED 0 DEG AND 180 DEG
R10-X12 SIGN PANEL-ADJACENT TO 5-1
TYPE D SIGN PANEL-OVERHEAD (D-3)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø2,5)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.8:
3"R.S.C.
3-12/c#14
(*) 1-3/c#14
2-2/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

(4) PA90 POLE FOUNDATION
TYPE PA90-A-30-D30-9 (DAVIT AT 350 DEG)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
TYPE D SIGN PANEL-OVERHEAD (D-4)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø4)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.11:
3"R.S.C.
2-12/c#14
(*) 1-3/c#14
2-2/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

S.P. 002-716-015

DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

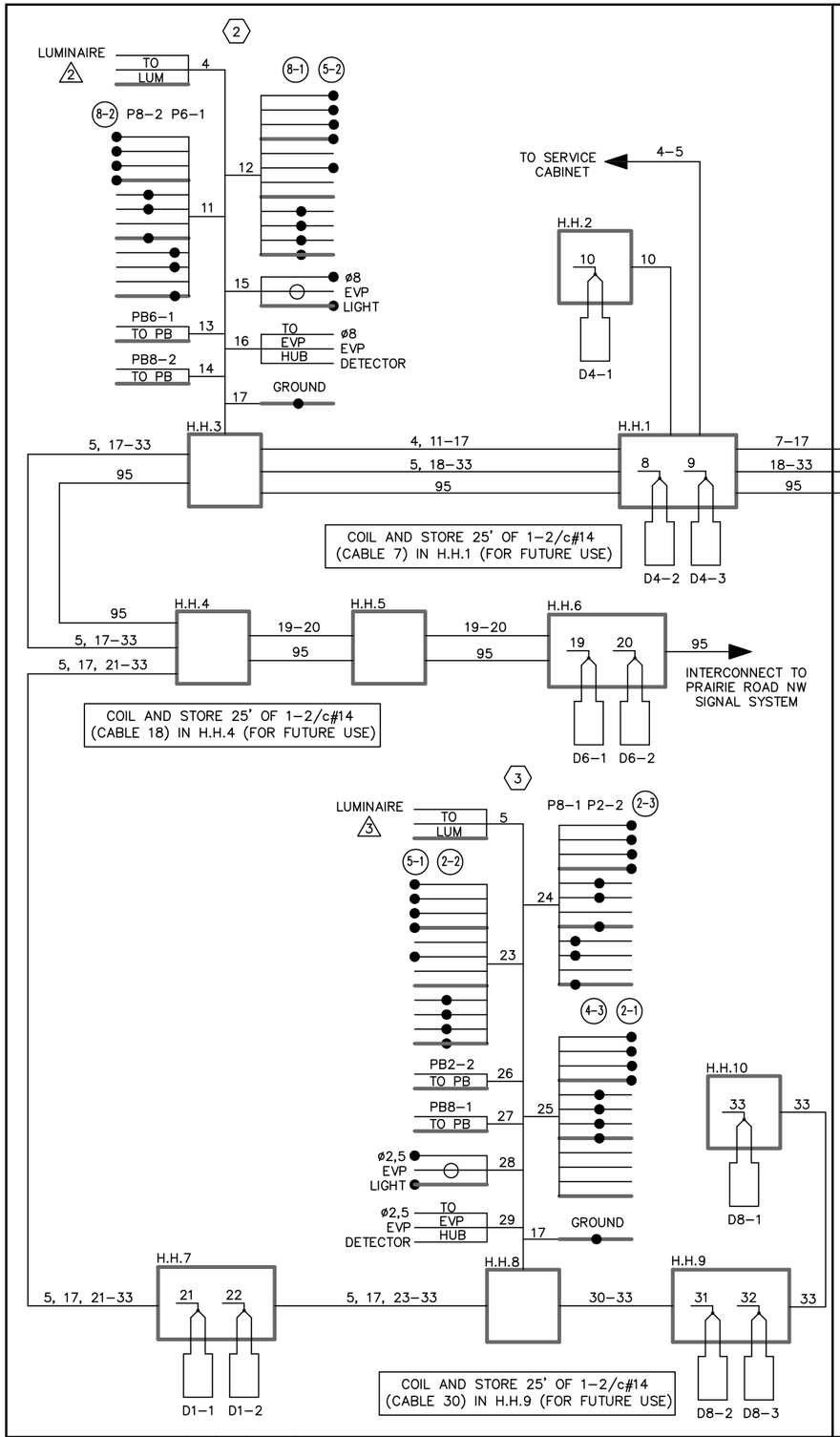
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Name: John M. Gray, PE
Date: February 19, 2016
Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "A"
INTERSECTION LAYOUT
CSAH 116 AT SYCAMORE ST/COUNTY PKWY A

FILE NO. ANOKC 132658
SIGNAL SHEET 12 OF 32
353/482




DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

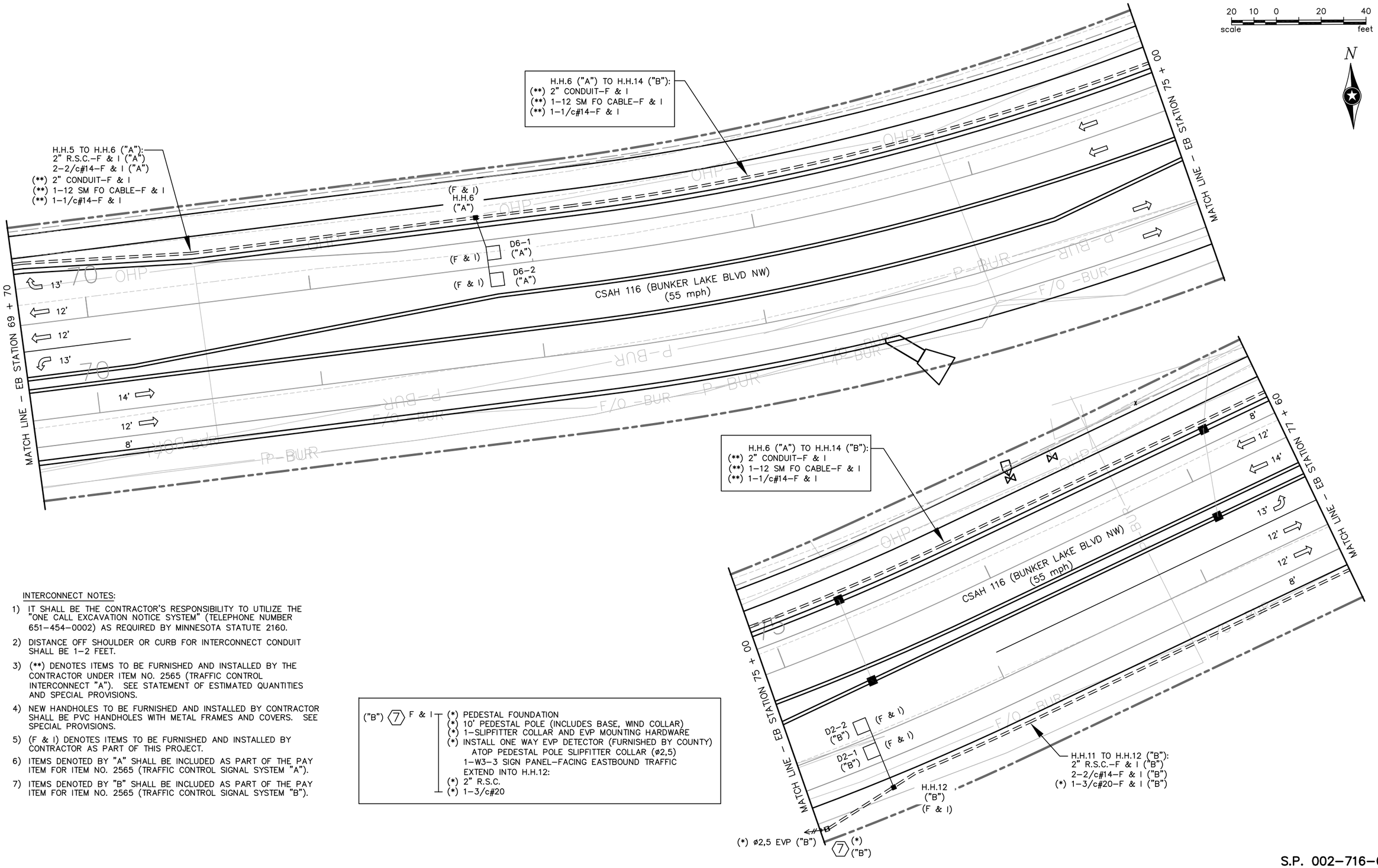
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "A"
FIELD WIRING DIAGRAM
CSAH 116 AT SYCAMORE ST/COUNTY PKWY A

FILE NO. ANOKC 132658
SIGNAL SHEET 13 OF 32
354/482




INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
6) ITEMS DENOTED BY "A" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "A").
7) ITEMS DENOTED BY "B" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "B").

("B") 7 F & I
- (*) PEDESTAL FOUNDATION
- (*) 10' PEDESTAL POLE (INCLUDES BASE, WIND COLLAR)
- (*) 1–SLIPFITTER COLLAR AND EVP MOUNTING HARDWARE
- (*) INSTALL ONE WAY EVP DETECTOR (FURNISHED BY COUNTY) ATOP PEDESTAL POLE SLIPFITTER COLLAR (ø2,5)
  1–W3–3 SIGN PANEL–FACING EASTBOUND TRAFFIC
  EXTEND INTO H.H.12:
- (*) 2" R.S.C.
- (*) 1–3/c#20

S.P. 002–716–015

| | | | | | |
|---|---|---|---|---|---|
| DRAWN BY: LC/JMG | | | | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. | SEH PHONE: (651) 490–2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110 |
| DESIGNER: JMG | | | | Name: John M. Gray, PE | ANOKA COUNTY CITY OF ANDOVER |
| CHECKED BY: JMG | | | | Date: February 19, 2016 Lic. No. 22457 | TRAFFIC CONTROL SIGNAL SYSTEMS "A-B" INTERSECTION LAYOUT CSAH 116 (SYCAMORE ST TO PRAIRIE ROAD) |
| DESIGN TEAM | NO. | BY | DATE | REVISIONS | FILE NO. ANOKC 132658 · SIGNAL SHEET 14 OF 32 · 355/482 |

| F & I N.M.C. LOOP DETECTORS | | | |
|---|---|---|---|
| NUMBER | SIZE (FT.) | LOCATION | FUNCTION |
| D2–1 | 6x6 | 475' | 1 |
| D2–2 | 6x6 | 475' | 1 |
| D4–1 | 6x6 | 180' | 3,8 |
| D4–2 | 6x6 | 180' | 3,8 |
| D4–3 | 2–6x6 | 0' & 15' | 7 |
| D4–4 | 2–6x6 | 0' & 15' | 1 |
| D5–1 | 2–6x6 | 15' & 45' | 1 |
| D5–2 | 2–6x6 | 0' & 30' | 1 |
| D6–1 | 6x6 | 475' | 1 |
| D6–2 | 6x6 | 475' | 1 |

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

LOOP DETECTORS FUNCTIONS:

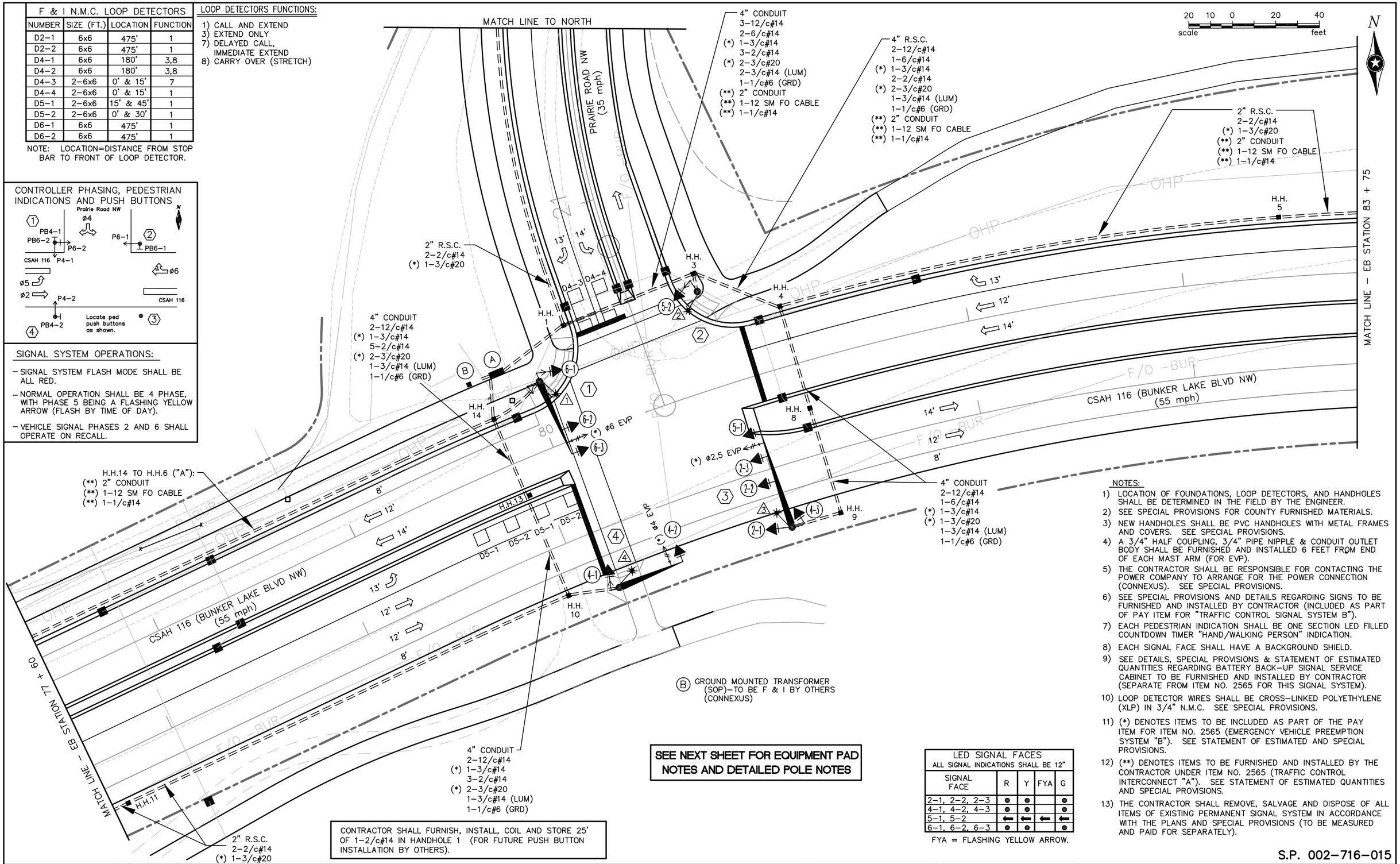
1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS




SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 4 PHASE, WITH PHASE 5 BEING A FLASHING YELLOW ARROW (FLASH BY TIME OF DAY).
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.




(B) GROUND MOUNTED TRANSFORMER (SOP)–TO BE F & I BY OTHERS (CONNEXUS)

**SEE NEXT SHEET FOR EQUIPMENT PAD NOTES AND DETAILED POLE NOTES**

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE 25' OF 1–2/c#14 IN HANDHOLE 1 (FOR FUTURE PUSH BUTTON INSTALLATION BY OTHERS).

| LED SIGNAL FACES ALL SIGNAL INDICATIONS SHALL BE 12" | | | | |
|---|---|---|---|---|
| SIGNAL FACE | R | Y | FYA | G |
| 2–1, 2–2, 2–3 | ● | ● | | ● |
| 4–1, 4–2, 4–3 | ● | ● | | ● |
| 5–1, 5–2 | ← | ← | ← | ← |
| 6–1, 6–2, 6–3 | ● | ● | | ● |

FYA = FLASHING YELLOW ARROW.

NOTES:

1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM END OF EACH MAST ARM (FOR EVP).
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CONNEXUS). SEE SPECIAL PROVISIONS.
6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM B").
7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
8) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
9) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK–UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
10) LOOP DETECTOR WIRES SHALL BE CROSS–LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
11) (*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM "B"). SEE STATEMENT OF ESTIMATED AND SPECIAL PROVISIONS.
12) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
13) THE CONTRACTOR SHALL REMOVE, SALVAGE AND DISPOSE OF ALL ITEMS OF EXISTING PERMANENT SIGNAL SYSTEM IN ACCORDANCE WITH THE PLANS AND SPECIAL PROVISIONS (TO BE MEASURED AND PAID FOR SEPARATELY).

S.P. 002–716–015

DRAWN BY: LC/JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "B"
INTERSECTION LAYOUT
CSAH 116 AT PRAIRIE ROAD NW

FILE NO. ANOKC 132658
SIGNAL SHEET 15 OF 32

356/482

20 10 0 20 40
scale feet

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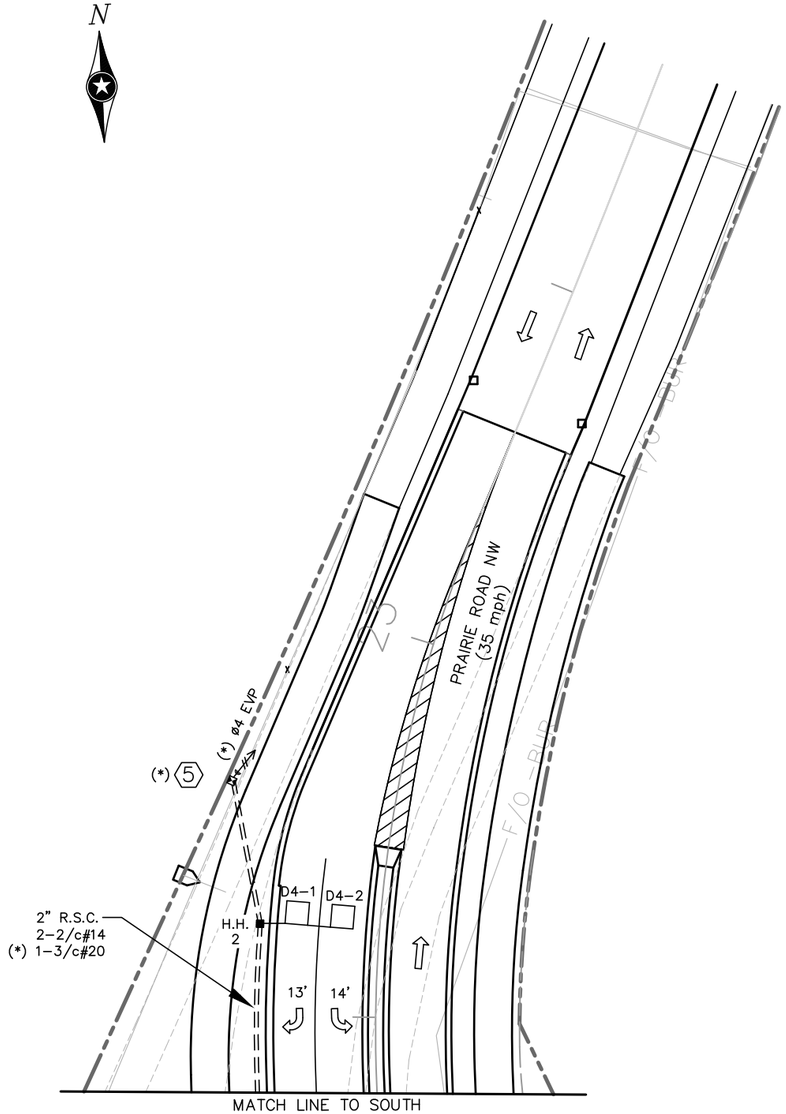



Ⓐ INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
EQUIPMENT PAD FOUNDATION
BBU SIGNAL SERVICE CABINET

BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
METERED SIGNAL SERVICE
2"R.S.C.
3-1/c#6

CONTROLLER CABINET TO H.H.1:

| | |
|---|---|
| 4"R.S.C. | 4"R.S.C. |
| 1-12/c#14 | 2-12/c#14 |
| 1-6/c#14 | 1-6/c#14 |
| 6-2/c#14 | (*) 1-3/c#14 |
| (*) 1-3/c#20 | 2-2/c#14 |
| 1-1/c#6 (GRD) | (*) 2-3/c#20 |

CONTROLLER CABINET TO H.H.14:

| | |
|---|---|
| 4"R.S.C. | 4"R.S.C. |
| 2-12/c#14 | 2-12/c#14 |
| 1-6/c#14 | (*) 1-3/c#14 |
| (*) 1-3/c#14 | 5-2/c#14 |
| 2-2/c#14 | (*) 2-3/c#20 |
| (*) 1-3/c#20 | |
| 1-1/c#6 (GRD) | |

SERVICE CABINET TO H.H.1:
1 1/4"R.S.C.
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
SERVICE CABINET TO H.H.14:
1 1/4"R.S.C.
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
STUB OUT 1-2"R.S.C. FROM SERVICE CABINET TO WEST (FOR POWER CABLES BY CONNEXUS)
STUB OUT 3"R.S.C. FROM CONTROLLER CABINET TO SOUTH (THREAD AND CAP-FOR FUTURE USE)
STUB OUT 1"R.S.C. FROM CONTROLLER CABINET (FOR FUTURE PHONE LINE BY OTHERS)
CONTROLLER CABINET TO H.H.1:
(**) 2"R.S.C.
(**) 1-12 SM FIBER-OPTIC CABLE
(**) 1-1/c#14
CONTROLLER CABINET TO H.H.14:
(**) 2"R.S.C.
(**) 1-12 SM FIBER-OPTIC CABLE
(**) 1-1/c#14

① PA90 POLE FOUNDATION
TYPE PA90-A-35-D30-9 (DAVIT AT 350 DEG)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL-OVERHEAD AT 11'
1-ANGLE MOUNT SIGNAL-POLE MOUNTED 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
1-R6-1R SIGN PANEL-POLE MOUNTED 180 DEG
TYPE D SIGN PANEL-OVERHEAD (D-5)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø6)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.14:
3"R.S.C.
2-12/c#14
1-6/c#14
(*) 1-3/c#14
2-2/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

② PA85 POLE FOUNDATION
TYPE PA85-A-D30-9 MAST ARM POLE (DAVIT AT 350 DEG.)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-POLE MOUNTED 90 DEG
1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED 90 DEG
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
R9-3 SIGN PANEL-FACING POLE 3
EXTEND INTO H.H.3:
3"R.S.C.
1-12/c#14
1-6/c#14
1-2/c#14
1-3/c#14 (LUM)
1-1/c#6 (GRD)

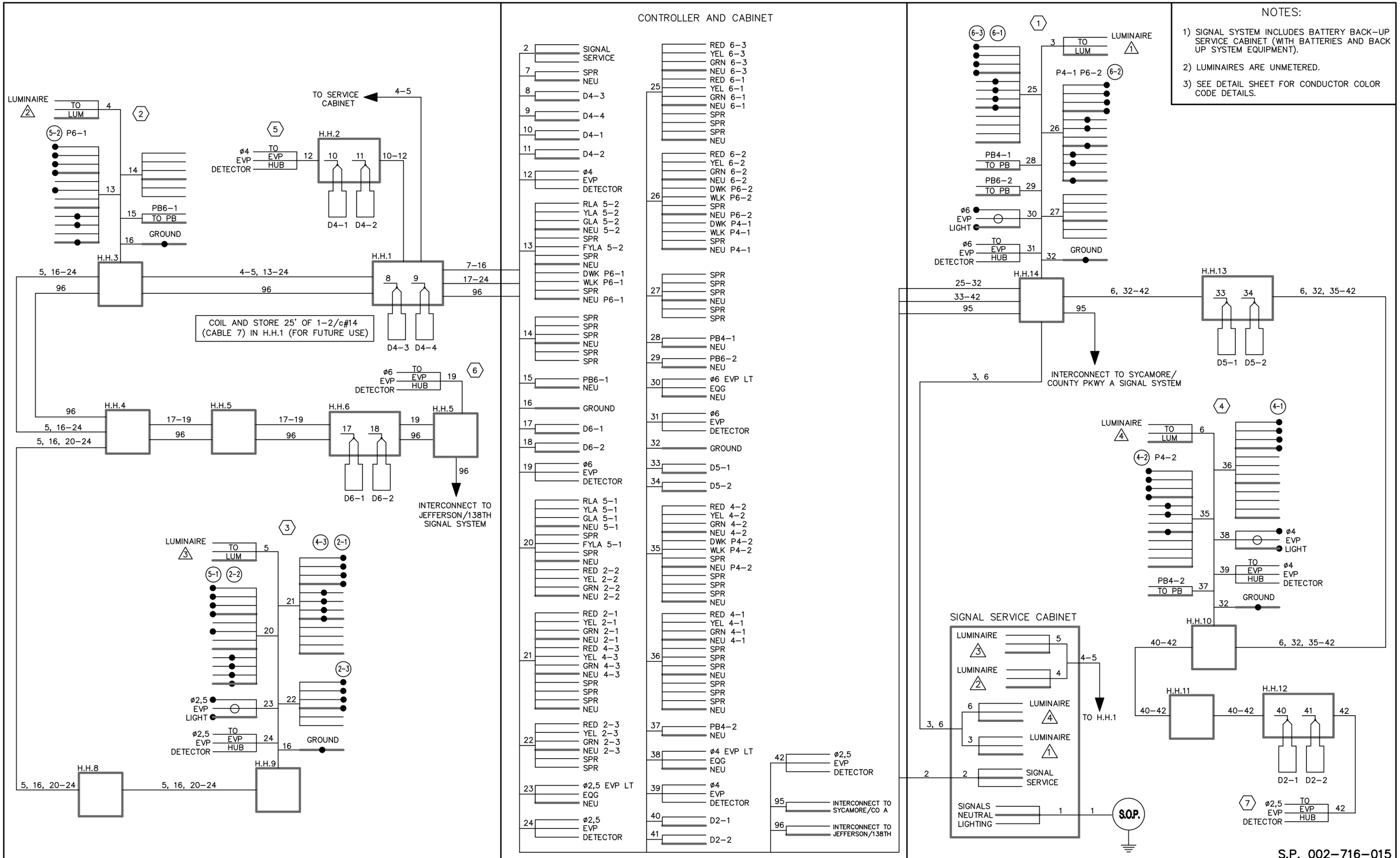
③ PA100 POLE FOUNDATION
TYPE PA100-A-45-D30-9 (DAVIT AT 350 DEG)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 270 DEG
R9-3 SIGN PANEL-FACING POLE 2
1-R6-1L SIGN PANEL-POLE MOUNTED 0 DEG
R10-X12 SIGN PANEL-ADJACENT TO 5-1
TYPE D SIGN PANEL-OVERHEAD (D-6)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø2,5)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.9:
3"R.S.C.
2-12/c#14
1-6/c#14
(*) 1-3/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

④ PA90 POLE FOUNDATION
TYPE PA90-A-30-D30-9 (DAVIT AT 350 DEG)
LUMINAIRE-LED SHOEBOX
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL-POLE MOUNTED 180 DEG
1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED 180 DEG
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
TYPE D SIGN PANEL-OVERHEAD (D-7)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø4)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.10:
3"R.S.C.
2-12/c#14
(*) 1-3/c#14
1-2/c#14
(*) 1-3/c#20
1-3/c#14 (LUM)
1-1/c#6 (GRD)

⑤ (*) PEDESTAL FOUNDATION
(*) 10' PEDESTAL POLE (INCLUDES BASE, WIND COLLAR)
(*) 1-SLIPFITTER COLLAR AND EVP MOUNTING HARDWARE
(*) INSTALL ONE WAY EVP DETECTOR (FURNISHED BY COUNTY) ATOP PEDESTAL POLE SLIPFITTER COLLAR (ø4)
1-W3-3 SIGN PANEL-FACING SOUTHBOUND TRAFFIC
EXTEND INTO H.H.2:
(*) 2" R.S.C.
(*) 1-3/c#20

S.P. 002-716-015

| | | | | | |
|---|---|---|---|---|---|
| DRAWN BY: LC/JMG | | | | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. | SEH PHONE: (651) 490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110 | ANOKA COUNTY CITY OF ANDOVER | TRAFFIC CONTROL SIGNAL SYSTEM "B" INTERSECTION LAYOUT CSAH 116 AT PRAIRIE ROAD NW | FILE NO. ANOKC 132658 | 357 |
| DESIGNER: JMG | | | | | | | | SIGNAL SHEET 16 OF 32 | 482 |
| CHECKED BY: JMG | | | | Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457 | | | | | |
| DESIGN TEAM | NO. | BY | DATE | REVISIONS | | | | | |




S.P. 002-716-015

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN BY: JMG<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Date: February 19, 2016<br>Name: John M. Gray, PE<br>Lic. No. 22457 | SEH<br>PHONE: (651) 490-2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF ANDOVER | TRAFFIC CONTROL SIGNAL SYSTEM "B"<br>FIELD WIRING DIAGRAM<br>CSAH 116 AT PRAIRIE ROAD NW | FILE NO. ANOKC 132658<br>SIGNAL SHEET 17 OF 32<br>358/482 |

("B") 6 F & I
- (*) PEDESTAL FOUNDATION
- (*) 10' PEDESTAL POLE (INCLUDES BASE, WIND COLLAR)
- (*) 1–SLIPFITTER COLLAR AND EVP MOUNTING HARDWARE
- (*) INSTALL ONE WAY EVP DETECTOR (FURNISHED BY COUNTY) ATOP PEDESTAL POLE SLIPFITTER COLLAR (ø6)
  1–W3–3 SIGN PANEL–FACING WESTBOUND TRAFFIC
  EXTEND INTO H.H.7:
- (*) 2" R.S.C.
- (*) 1–3/c#20

NOTE SCALE CHANGE FROM OTHER PLAN SHEETS.

30 0 30 60
scale feet

N

MATCH LINE – EB STATION 83 + 75

H.H.5 TO H.H.6 ("B"):
2" R.S.C.–F & I ("B")
2–2/c#14–F & I ("B")
(*) 1–3/c#20–F & I ("B")
(**) 2" CONDUIT–F & I
(**) 1–12 SM FO CABLE–F & I
(**) 1–1/c#14–F & I

(F & I)
H.H.6 ("B")

H.H.6 TO H.H.7 ("B"):
(*) 2" R.S.C.–F & I ("B")
(*) 1–3/c#20–F & I ("B")
(**) 2" CONDUIT–F & I
(**) 1–12 SM FO CABLE–F & I
(**) 1–1/c#14–F & I

13'
12'
14'
14'
12'
8'

D6–1 ("B") (F & I)
D6–2 ("B") (F & I)

CSAH 116 (BUNKER LAKE BLVD NW)
(55 mph)

H.H.7 ("B")
(*)
6 (*)("B")
(*) ø6 EVP ("B")

H.H.7 ("B") TO H.H.153:
(**) 2" CONDUIT–F & I
(**) 1–12 SM FO CABLE–F & I
(**) 1–1/c#14–F & I

OHP
F/O BUR
85
90
93

8'
12'
14'
14'
12'
8'

MATCH LINE – EB STATION 93 + 50

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
6) ITEMS DENOTED BY "B" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "B").

S.P. 002–716–015

DRAWN BY: LC/JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC SIGNAL SYSTEM "B"/INTERCONNECT
INTERSECTION LAYOUT
CSAH 116 (PRAIRIE RD TO GOLDENROD ST)

FILE NO. ANOKC 132658
SIGNAL SHEET 18 OF 32
359/482

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
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4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
6) ITEMS DENOTED BY "B" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "B").

NOTE SCALE CHANGE FROM OTHER PLAN SHEETS.

30 0 30 60
scale feet

N

MATCH LINE – EB STATION 93 + 50

H.H.7 ("B") TO H.H.153:
H.H.153 TO H.H.154:
(**) 2" CONDUIT–F & I
(**) 1–12 SM FO CABLE–F & I
(**) 1–1/c#14–F & I

(**) H.H.153
(F & I)

CSAH 116 (BUNKER LAKE BLVD NW)
(55 mph)

MATCH LINE – EB STATION 102 + 75

H.H.153 TO H.H.154:
(**) 2" CONDUIT–F & I
(**) 1–12 SM FO CABLE–F & I
(**) 1–1/c#14–F & I

(**) H.H.154
(F & I)

H.H.154 TO H.H.155:
(**) 2" CONDUIT–F & I
(**) 1–12 SM FO CABLE–F & I
(**) 1–1/c#14–F & I

GOLDENROD ST NW

CSAH 116 (BUNKER LAKE BLVD NW)
(55 mph)

MATCH LINE – EB STATION 112 + 00

S.P. 002–716–015

| | | | | |
|---|---|---|---|---|
| DRAWN BY: LC/JMG | | | | |
| DESIGNER: JMG | | | | |
| CHECKED BY: JMG | | | | |
| DESIGN TEAM | NO. | BY | DATE | REVISIONS |

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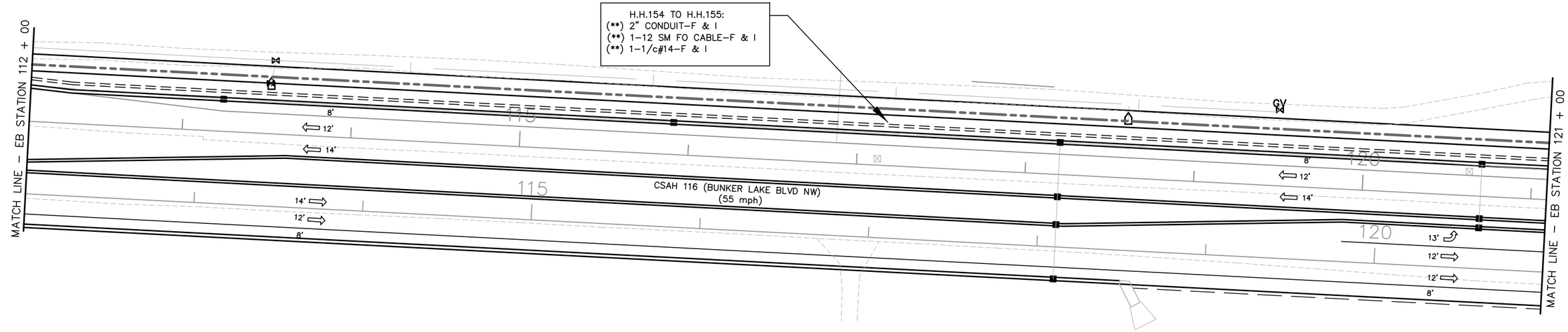
Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457

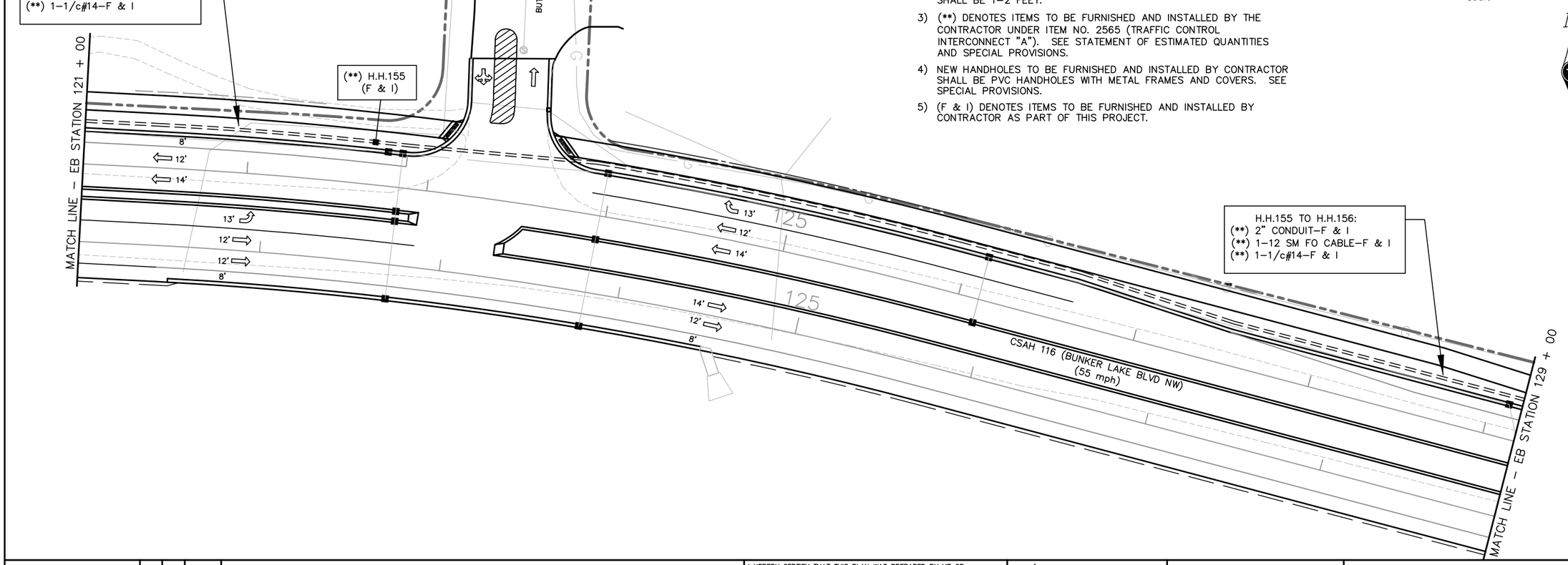
SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL INTERCONNECT
INTERSECTION LAYOUT
CSAH 116 (PRAIRIE RD TO BUTTERNUT ST)

FILE NO. ANOKC 132658
SIGNAL SHEET 19 OF 32
360 / 482




INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
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3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.

NOTE SCALE CHANGE FROM OTHER PLAN SHEETS.

30 0 30 60
scale feet

N

S.P. 002–716–015

DRAWN BY: LC/JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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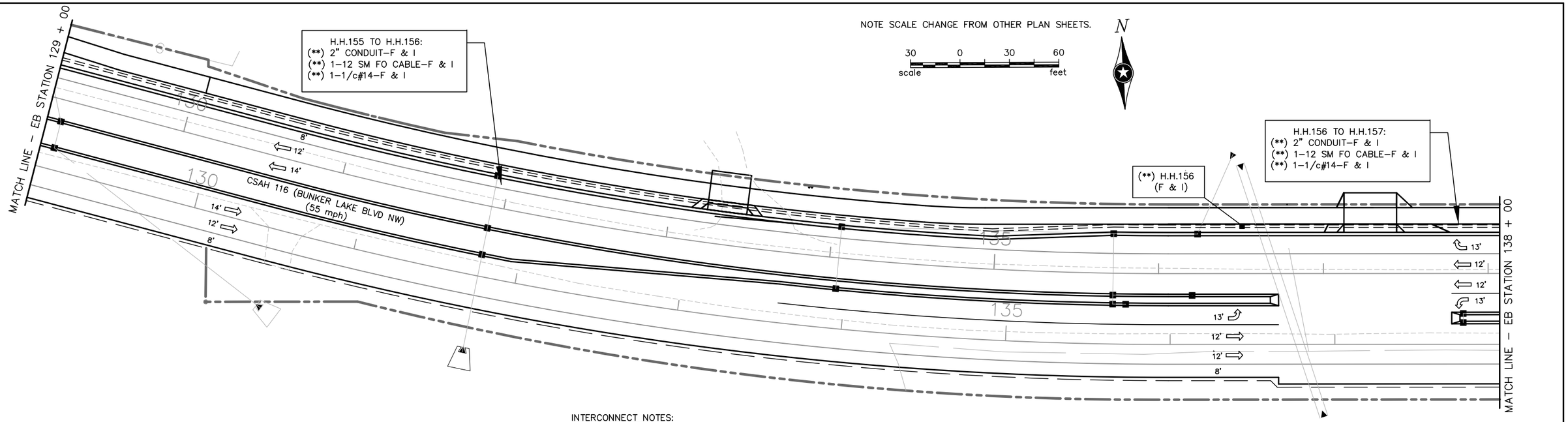
Name: John M. Gray, PE
Date: February 19, 2016 Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

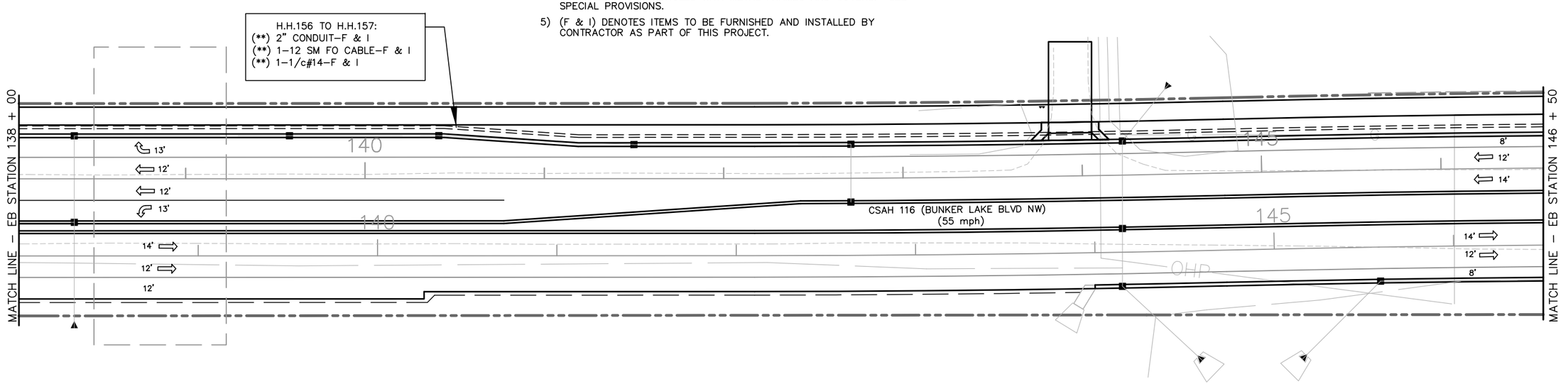
TRAFFIC CONTROL INTERCONNECT
INTERSECTION LAYOUT
CSAH 116 (GOLDENROD ST TO JEFFERSON ST)

FILE NO. ANOKC 132658
SIGNAL SHEET 20 OF 32
361/482




INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.




S.P. 002–716–015

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN BY: LC/JMG<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Name: John M. Gray, PE<br>Date: February 19, 2016 Lic. No. 22457 | SEH<br>PHONE: (651) 490–2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF ANDOVER<br>TRAFFIC CONTROL INTERCONNECT INTERSECTION LAYOUT<br>CSAH 116 (BUTTERNUT ST TO JEFFERSON ST) | FILE NO. ANOKC 132658<br>SIGNAL SHEET 21 OF 32 | 362/482 |

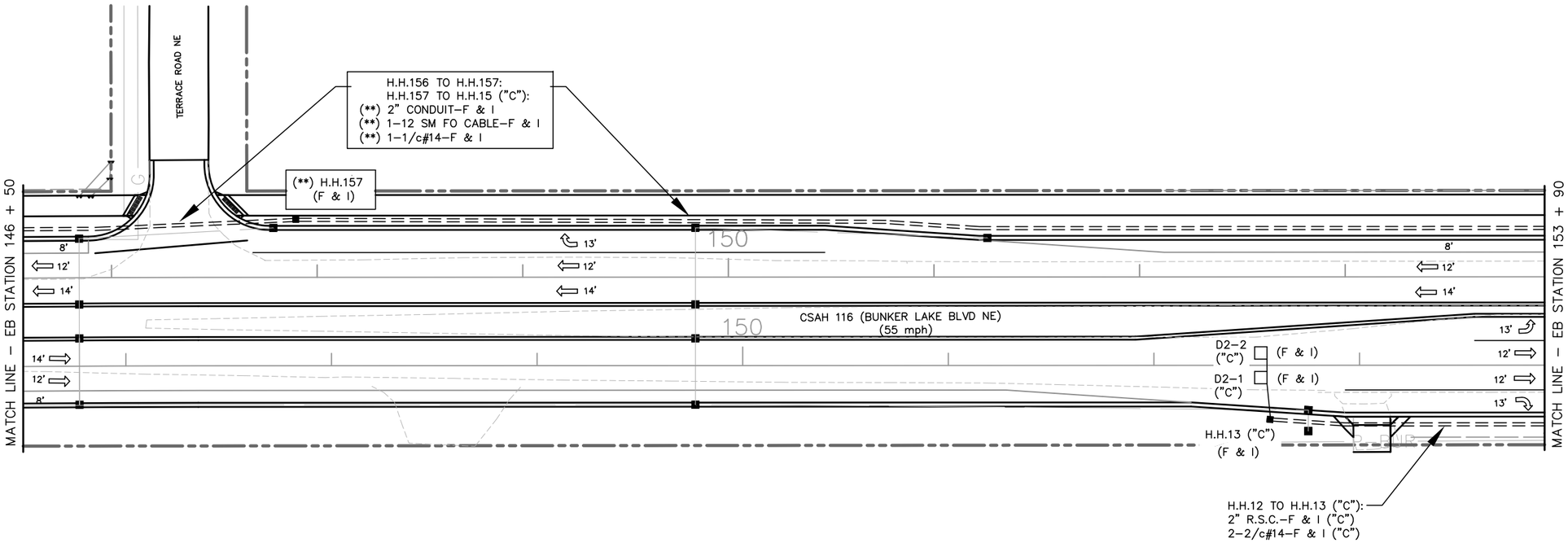
NOTE SCALE CHANGE FROM OTHER PLAN SHEETS.

30 0 30 60
scale feet

N

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
6) ITEMS DENOTED BY "C" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "C").




S.P. 002–716–015

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DRAWN BY: LC/JMG<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Date: February 19, 2016<br>Name: John M. Gray, PE<br>Lic. No. 22457 | SEH<br>PHONE: (651) 490–2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF ANDOVER | TRAFFIC SIGNAL SYSTEM "C"/INTERCONNECT<br>INTERSECTION LAYOUT<br>CSAH 116 (BUTTERNUT ST TO JEFFERSON ST) | FILE NO. ANOKC 132658<br>SIGNAL SHEET 22 OF 32 | 363/482 |

NOTES:

1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM END OF EACH MAST ARM (FOR EVP).
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CONNEXUS). SEE SPECIAL PROVISIONS.
6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM B").
7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
8) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
9) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
11) (*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM "B"). SEE STATEMENT OF ESTIMATED AND SPECIAL PROVISIONS.

| F & I N.M.C. LOOP DETECTORS | | | |
|---|---|---|---|
| NUMBER | SIZE (FT.) | LOCATION | FUNCTION |
| D1-1 | 2-6x6 | 15' & 45' | 1 |
| D1-2 | 2-6x6 | 0' & 30' | 1 |
| D2-1 | 6x6 | 400' | 1 |
| D2-2 | 6x6 | 400' | 1 |
| D4-1 | 6x6 | 120' | 3,8 |
| D4-2 | 6x8 | 0' & 15' | 7 |
| D5-1 | 2-6x6 | 15' & 45' | 1 |
| D5-2 | 2-6x6 | 0' & 30' | 1 |
| D6-1 | 6x6 | 400' | 1 |
| D6-2 | 6x6 | 400' | 1 |
| D8-1 | 6x6 | 250' | 3,8 |
| D8-2 | 2-6x6 | 0' & 15' | 7 |
| D8-3 | 2-6x6 | 0' & 15' | 7 |

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

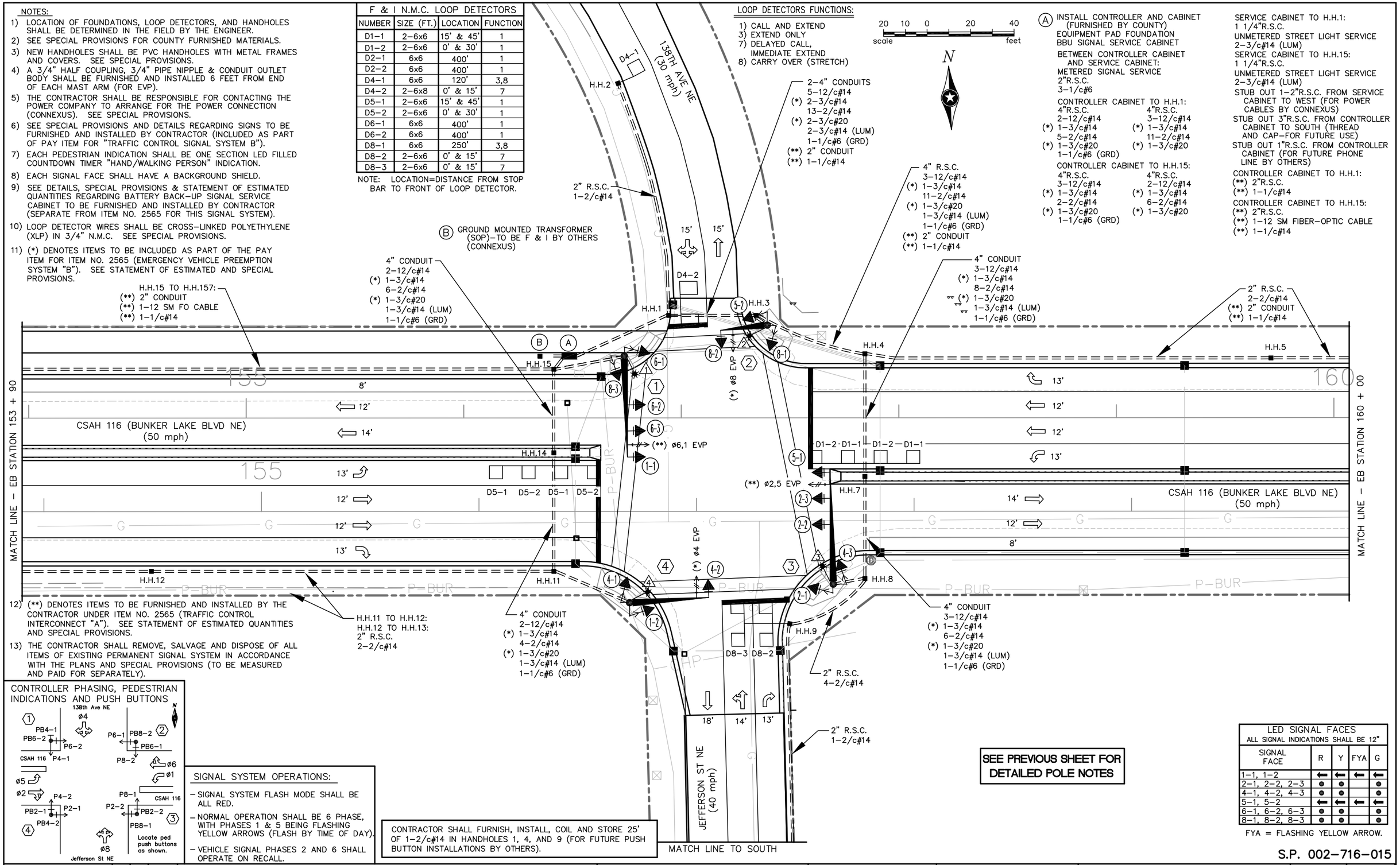
LOOP DETECTORS FUNCTIONS:

1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)

20 10 0 20 40
scale feet

N

(A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
EQUIPMENT PAD FOUNDATION
BBU SIGNAL SERVICE CABINET
BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
METERED SIGNAL SERVICE
2"R.S.C.
3-1/c#6
CONTROLLER CABINET TO H.H.1:
4"R.S.C. 2-12/c#14, (*) 1-3/c#14, 5-2/c#14, (*) 1-3/c#20, 1-1/c#6 (GRD)
4"R.S.C. 3-12/c#14, (*) 1-3/c#14, 11-2/c#14, (*) 1-3/c#20
CONTROLLER CABINET TO H.H.15:
4"R.S.C. 3-12/c#14, (*) 1-3/c#14, 2-2/c#14, (*) 1-3/c#20, 1-1/c#6 (GRD)
4"R.S.C. 2-12/c#14, (*) 1-3/c#14, 6-2/c#14, (*) 1-3/c#20
SERVICE CABINET TO H.H.1:
1 1/4"R.S.C.
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
SERVICE CABINET TO H.H.15:
1 1/4"R.S.C.
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
STUB OUT 1-2"R.S.C. FROM SERVICE CABINET TO WEST (FOR POWER CABLES BY CONNEXUS)
STUB OUT 3"R.S.C. FROM CONTROLLER CABINET TO SOUTH (THREAD AND CAP-FOR FUTURE USE)
STUB OUT 1"R.S.C. FROM CONTROLLER CABINET (FOR FUTURE PHONE LINE BY OTHERS)
CONTROLLER CABINET TO H.H.1:
(**) 2"R.S.C.
(**) 1-1/c#14
CONTROLLER CABINET TO H.H.15:
(**) 2"R.S.C.
(**) 1-12 SM FIBER-OPTIC CABLE
(**) 1-1/c#14




12) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
13) THE CONTRACTOR SHALL REMOVE, SALVAGE AND DISPOSE OF ALL ITEMS OF EXISTING PERMANENT SIGNAL SYSTEM IN ACCORDANCE WITH THE PLANS AND SPECIAL PROVISIONS (TO BE MEASURED AND PAID FOR SEPARATELY).

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS




SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING FLASHING YELLOW ARROWS (FLASH BY TIME OF DAY).
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE 25' OF 1-2/c#14 IN HANDHOLES 1, 4, AND 9 (FOR FUTURE PUSH BUTTON INSTALLATIONS BY OTHERS).

SEE PREVIOUS SHEET FOR DETAILED POLE NOTES

| LED SIGNAL FACES ALL SIGNAL INDICATIONS SHALL BE 12" | | | | |
|---|---|---|---|---|
| SIGNAL FACE | R | Y | FYA | G |
| 1-1, 1-2 | ← | ← | ← | ← |
| 2-1, 2-2, 2-3 | ● | ● | | ● |
| 4-1, 4-2, 4-3 | ● | ● | | ● |
| 5-1, 5-2 | ← | ← | ← | ← |
| 6-1, 6-2, 6-3 | ● | ● | | ● |
| 8-1, 8-2, 8-3 | ● | ● | | ● |

FYA = FLASHING YELLOW ARROW.

S.P. 002-716-015

| DESIGN TEAM | NO. | BY | DATE | REVISIONS |
|---|---|---|---|---|
| DRAWN BY: LC/JMG | | | | |
| DESIGNER: JMG | | | | |
| CHECKED BY: JMG | | | | |

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Date: February 19, 2016 Name: John M. Gray, PE Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "C"
INTERSECTION LAYOUT
CSAH 116 AT JEFFERSON ST NE/138TH AVE NE

FILE NO. ANOKC 132658
SIGNAL SHEET 23 OF 32
364/482

20 10 0 20 40
scale feet

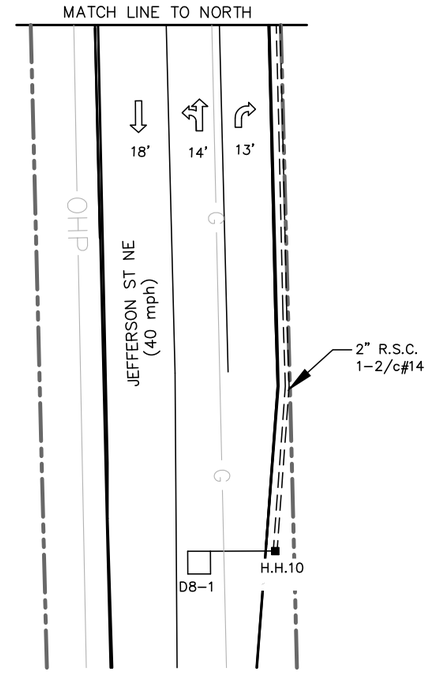
N

(1) PA100 POLE FOUNDATION
TYPE PA100–A–45–D30–9 (DAVIT AT 350 DEG)
LUMINAIRE–LED SHOEBOX
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
2–STRAIGHT MOUNT SIGNALS–OVERHEAD AT 11' & 23'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
2–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 90 DEG AND 180 DEG
2–PEDESTRIAN PUSH BUTTONS & SIGNS (R10–3e)
2–R6–1 SIGN PANELS–POLE MOUNTED 0 DEG AND 180 DEG
R10–X12 SIGN PANEL–ADJACENT TO 1–1
TYPE D SIGN PANEL–OVERHEAD (D–8)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø6,1)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.15:
3"R.S.C.
3–12/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–3/c#14 (LUM)
1–1/c#6 (GRD)

(2) PA85 POLE FOUNDATION
TYPE PA85–A–20–D30–9 (DAVIT AT 350 DEG.)
LUMINAIRE–LED SHOEBOX
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
2–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 90 DEG AND 180 DEG
2–PEDESTRIAN PUSH BUTTONS & SIGNS (R10–3e)
TYPE D SIGN PANEL–OVERHEAD (D–9)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø8)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.3:
3"R.S.C.
2–12/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–3/c#14 (LUM)
1–1/c#6 (GRD)

(3) PA100 POLE FOUNDATION
TYPE PA100–A–50–D30–9 (DAVIT AT 350 DEG)
LUMINAIRE–LED SHOEBOX
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
2–STRAIGHT MOUNT SIGNALS–OVERHEAD AT 11' & 23'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
2–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 90 DEG AND 180 DEG
2–PEDESTRIAN PUSH BUTTONS & SIGNS (R10–3e)
2–R6–1 SIGN PANELS–POLE MOUNTED 0 DEG AND 180 DEG
R10–X12 SIGN PANEL–ADJACENT TO 5–1
TYPE D SIGN PANEL–OVERHEAD (D–10)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø2,5)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.8:
3"R.S.C.
3–12/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–3/c#14 (LUM)
1–1/c#6 (GRD)

(4) PA90 POLE FOUNDATION
TYPE PA90–A–35–D30–9 (DAVIT AT 350 DEG)
LUMINAIRE–LED SHOEBOX
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
2–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 90 DEG AND 180 DEG
2–PEDESTRIAN PUSH BUTTONS & SIGNS (R10–3e)
TYPE D SIGN PANEL–OVERHEAD (D–11)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø4)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.11:
3"R.S.C.
2–12/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–3/c#14 (LUM)
1–1/c#6 (GRD)




S.P. 002–716–015

| DRAWN BY: LC/JMG | NO. | BY | DATE | REVISIONS |
|---|---|---|---|---|
| DESIGNER: JMG | | | | |
| CHECKED BY: JMG | | | | |
| DESIGN TEAM | | | | |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Name: John M. Gray, PE
Date: February 19, 2016 Lic. No. 22457

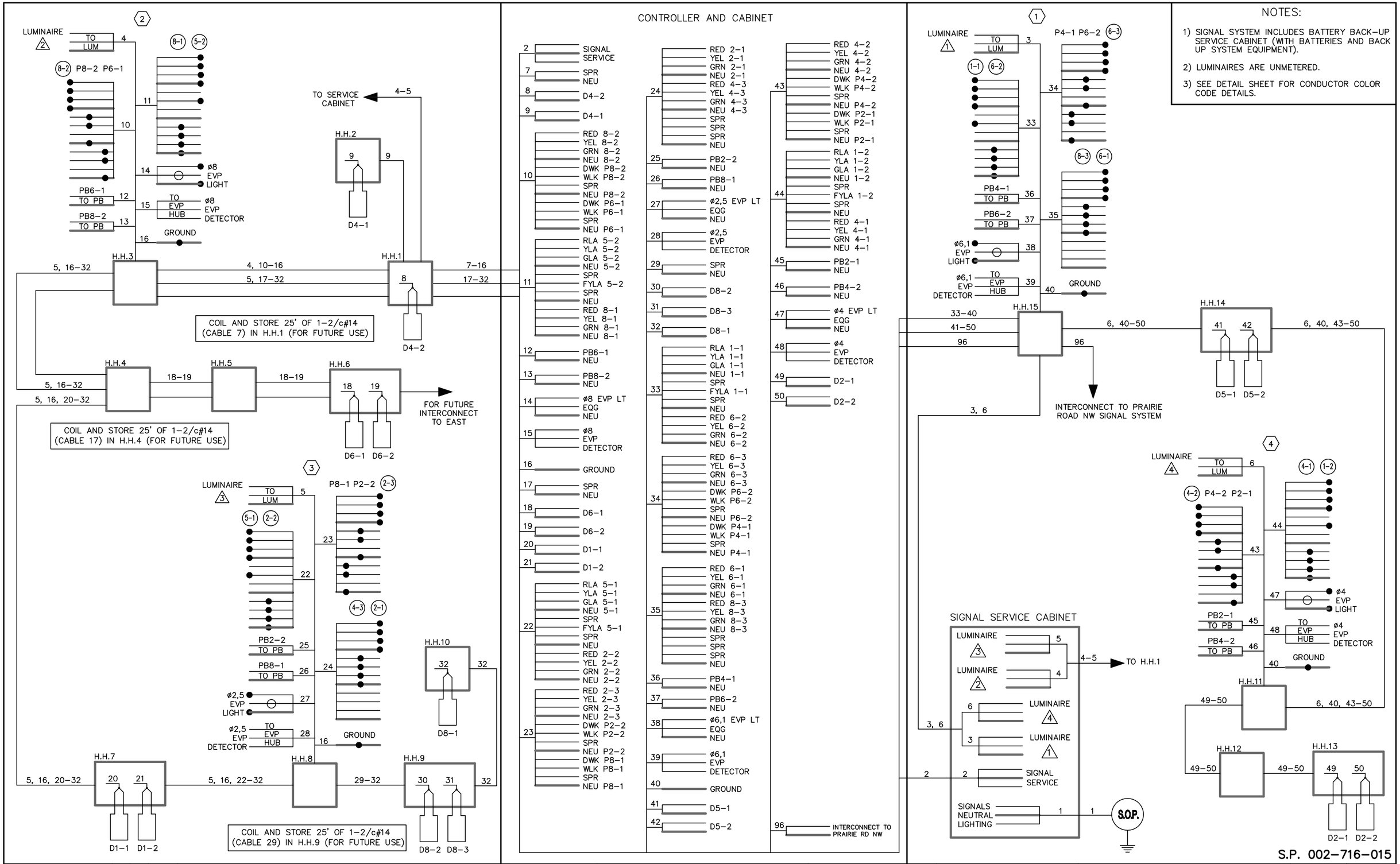
SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "C"
INTERSECTION LAYOUT
CSAH 116 AT JEFFERSON ST NE/138TH AVE NE

FILE NO. ANOKC 132658
SIGNAL SHEET 24 OF 32

365/482




S.P. 002-716-015

DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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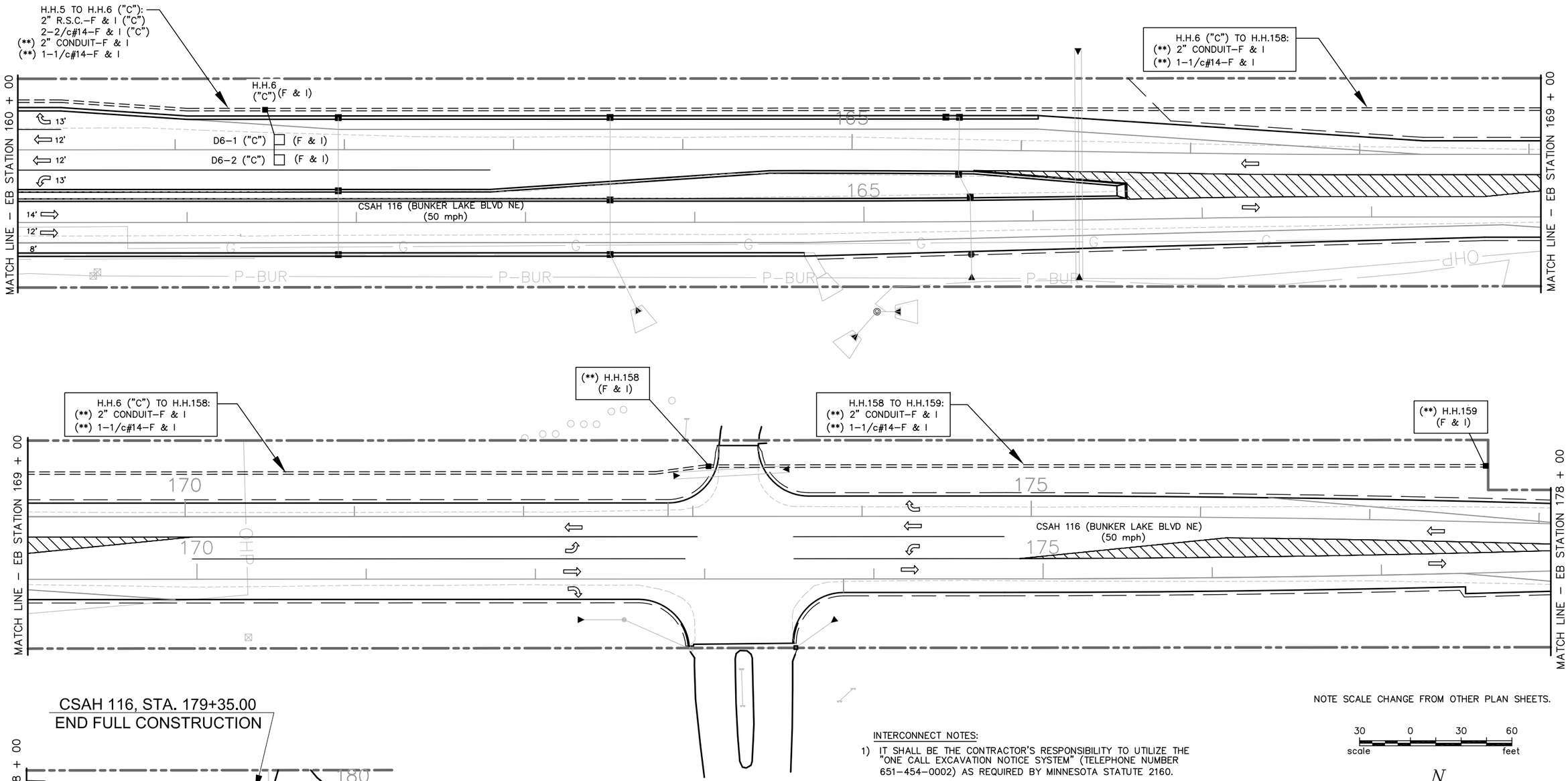
Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "C"
FIELD WIRING DIAGRAM
CSAH 116 AT JEFFERSON ST NE/138TH AVE NE

FILE NO. ANOKC 132658
SIGNAL SHEET 25 OF 32




NOTE SCALE CHANGE FROM OTHER PLAN SHEETS.

30 0 30 60
scale feet

N

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1–2 FEET.
3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "A"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) NEW HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
5) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
6) ITEMS DENOTED BY "C" SHALL BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM "C").

S.P. 002–716–015

DRAWN BY: LC/JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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Name: John M. Gray, PE
Date: February 19, 2016 Lic. No. 22457

SEH
PHONE: (651) 490–2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

TRAFFIC CONTROL SIGNAL SYSTEM "C"
INTERSECTION LAYOUT
CSAH 116 AT JEFFERSON ST NE/138TH AVE NE

FILE NO. ANOKC 132658
SIGNAL SHEET 26 OF 32

NOTES:

1) LOCATION OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR CITY AND COUNTY FURNISHED MATERIALS.
3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, ALL TO BE F & I BY CONTRACTOR.
5) EACH SIGNAL FACE WILL HAVE BACKGROUND SHIELD.
6) EACH PEDESTRIAN INDICATION WILL BE ONE SECTION HAND/WALKING PERSON INDICATION.
7) ALL VEHICLE SIGNAL INDICATIONS, AND ALL PEDESTRIAN SIGNAL INDICATIONS WILL BE LED.
8) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED & INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511 FOR THIS SIGNAL SYSTEM).
9) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL FACE.
10) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).

| F & I N.M.C. LOOP DETECTORS | | | |
|---|---|---|---|
| NUMBER | SIZE (FT.) | LOCATION | FUNCTION |
| D2-1 | 6x6 | 475' | 1 |
| D4-1 | 6x6 | 180' | 3,8 |
| D4-2 | 6x12&6x6 | 5' | 7 |
| D4-3 | 3-6x6 | 0,15',27' | 7 |
| D5-1 | 6x6 | 35' | 1 |
| D5-2 | 6x6 | 5' | 1 |
| D6-1 | 6x6 | 475' | 1 |

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

LOOP DETECTORS FUNCTIONS:

1) CALL AND EXTEND
2) CALL ONLY
3) EXTEND ONLY
4) CALL ONLY DENSITY
5) DELAYED CALL ONLY
6) DELAYED CALL ONLY DENSITY
7) DELAYED CALL- IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
9) ADVISORY DETECTOR
10) SAMPLING DETECTOR
11) COUNTING DETECTOR







(1) PA85 POLE FOUNDATION
TYPE PA85-A-25
ONE WAY SIGNAL-OVERHEAD
TYPE 10A-POLE MOUNTED 270°
TYPE D SIGN PANEL-OVERHEAD (D-1)
ONE WAY EVP DETECTOR AND LIGHT (ø6)
EXTEND INTO H.H.12:
3"R.S.C.
1-12/c#12
1-3/c#12
1-3/c#20

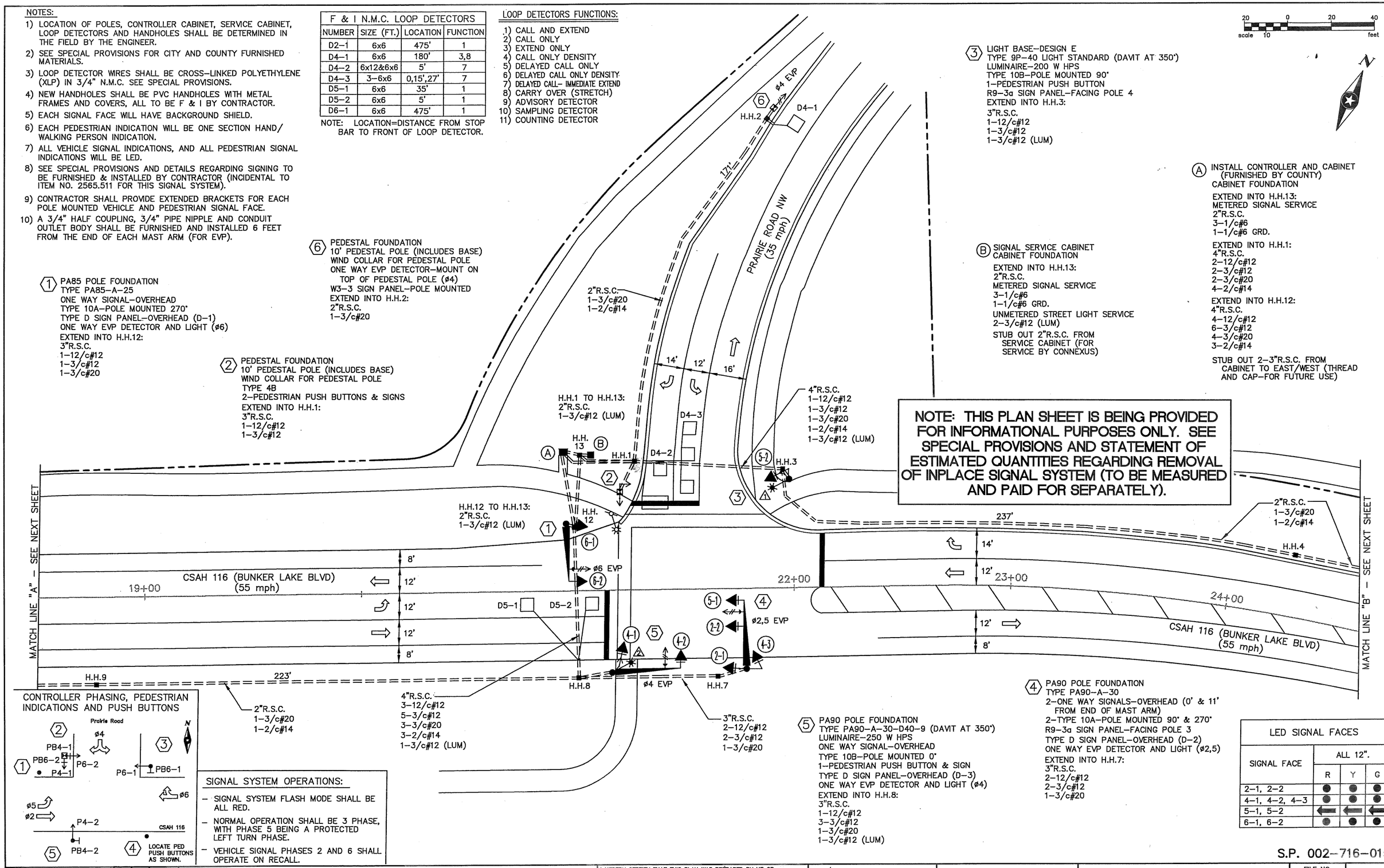
(2) PEDESTAL FOUNDATION
10' PEDESTAL POLE (INCLUDES BASE)
WIND COLLAR FOR PEDESTAL POLE
TYPE 4B
2-PEDESTRIAN PUSH BUTTONS & SIGNS
EXTEND INTO H.H.1:
3"R.S.C.
1-12/c#12
1-3/c#12

(6) PEDESTAL FOUNDATION
10' PEDESTAL POLE (INCLUDES BASE)
WIND COLLAR FOR PEDESTAL POLE
ONE WAY EVP DETECTOR-MOUNT ON TOP OF PEDESTAL POLE (ø4)
W3-3 SIGN PANEL-POLE MOUNTED
EXTEND INTO H.H.2:
2"R.S.C.
1-3/c#20

(3) LIGHT BASE-DESIGN E
TYPE 9P-40 LIGHT STANDARD (DAVIT AT 350°)
LUMINAIRE-200 W HPS
TYPE 10B-POLE MOUNTED 90°
1-PEDESTRIAN PUSH BUTTON
R9-3a SIGN PANEL-FACING POLE 4
EXTEND INTO H.H.3:
3"R.S.C.
1-12/c#12
1-3/c#12
1-3/c#12 (LUM)

(A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
CABINET FOUNDATION
EXTEND INTO H.H.13:
METERED SIGNAL SERVICE
2"R.S.C.
3-1/c#6
1-1/c#6 GRD.
EXTEND INTO H.H.1:
4"R.S.C.
2-12/c#12
2-3/c#12
2-3/c#20
4-2/c#14
EXTEND INTO H.H.12:
4"R.S.C.
4-12/c#12
6-3/c#12
4-3/c#20
3-2/c#14
STUB OUT 2-3"R.S.C. FROM CABINET TO EAST/WEST (THREAD AND CAP-FOR FUTURE USE)

(B) SIGNAL SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO H.H.13:
2"R.S.C.
METERED SIGNAL SERVICE
3-1/c#6
1-1/c#6 GRD.
UNMETERED STREET LIGHT SERVICE
2-3/c#12 (LUM)
STUB OUT 2"R.S.C. FROM SERVICE CABINET (FOR SERVICE BY CONNEXUS)




NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY. SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING REMOVAL OF INPLACE SIGNAL SYSTEM (TO BE MEASURED AND PAID FOR SEPARATELY).

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS




SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 3 PHASE, WITH PHASE 5 BEING A PROTECTED LEFT TURN PHASE.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

(4) PA90 POLE FOUNDATION
TYPE PA90-A-30
2-ONE WAY SIGNALS-OVERHEAD (0' & 11' FROM END OF MAST ARM)
2-TYPE 10A-POLE MOUNTED 90° & 270°
R9-3a SIGN PANEL-FACING POLE 3
TYPE D SIGN PANEL-OVERHEAD (D-2)
ONE WAY EVP DETECTOR AND LIGHT (ø2,5)
EXTEND INTO H.H.7:
3"R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20

(5) PA90 POLE FOUNDATION
TYPE PA90-A-30-D40-9 (DAVIT AT 350°)
LUMINAIRE-250 W HPS
ONE WAY SIGNAL-OVERHEAD
TYPE 10B-POLE MOUNTED 0°
1-PEDESTRIAN PUSH BUTTON & SIGN
TYPE D SIGN PANEL-OVERHEAD (D-3)
ONE WAY EVP DETECTOR AND LIGHT (ø4)
EXTEND INTO H.H.8:
3"R.S.C.
1-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

| LED SIGNAL FACES | | | |
|---|---|---|---|
| SIGNAL FACE | ALL 12". | | |
| | R | Y | G |
| 2-1, 2-2 | ● | ● | ● |
| 4-1, 4-2, 4-3 | ● | ● | ● |
| 5-1, 5-2 | ← | ← | ← |
| 6-1, 6-2 | ● | ● | ● |

S.P. 002-716-015

| | | | |
|---|---|---|---|
| DRAWN BY: | XXX | | |
| DESIGNER: | JMG | | |
| CHECKED BY: | JMG | | |
| DESIGN TEAM | | | |

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|
| | | | |

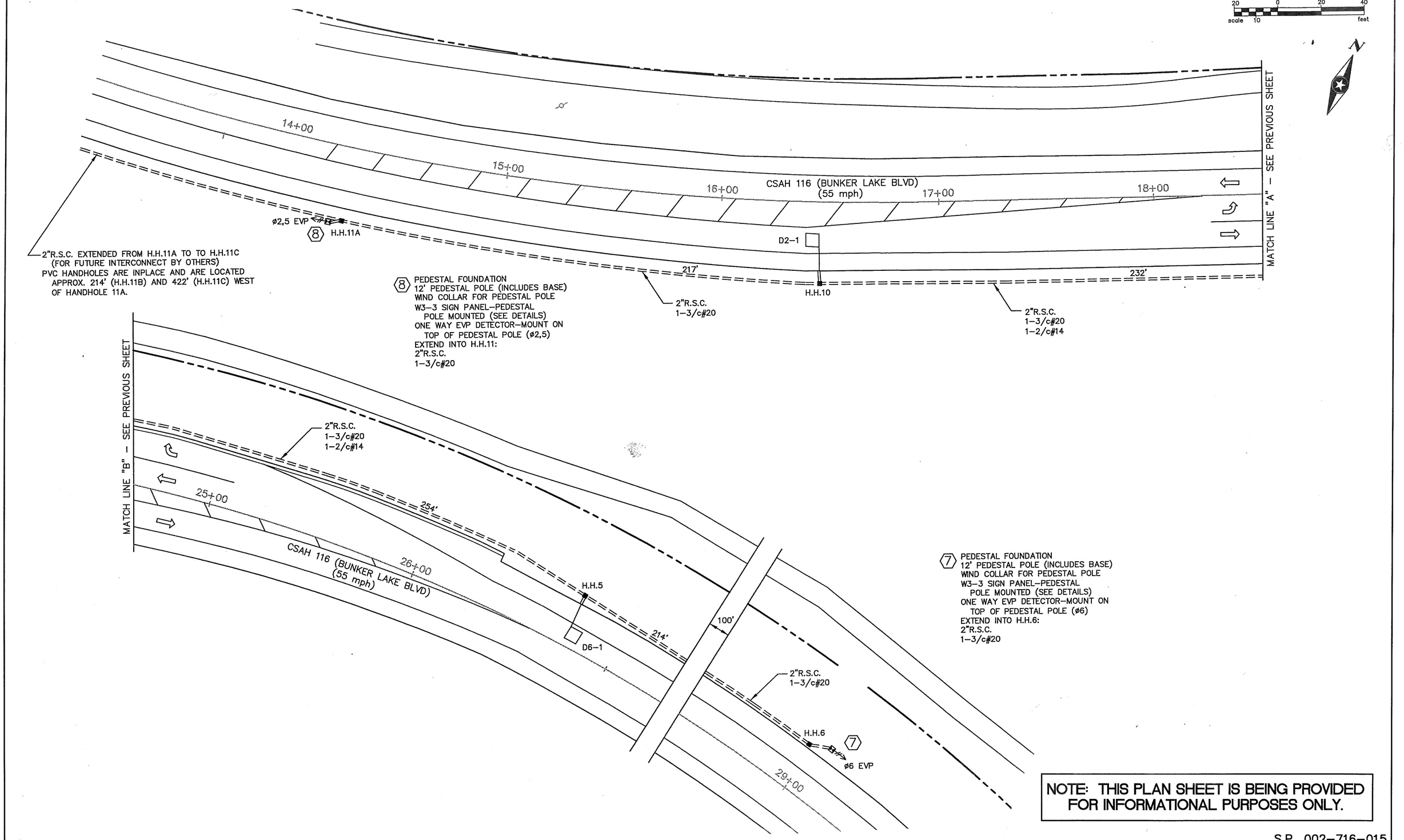
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: February 19, 2016
Name: John M. Gray, PE
Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

INPLACE SIGNAL SYSTEM "B"
"FOR INFORMATION ONLY"
CSAH 116 AT PRAIRIE ROAD NW

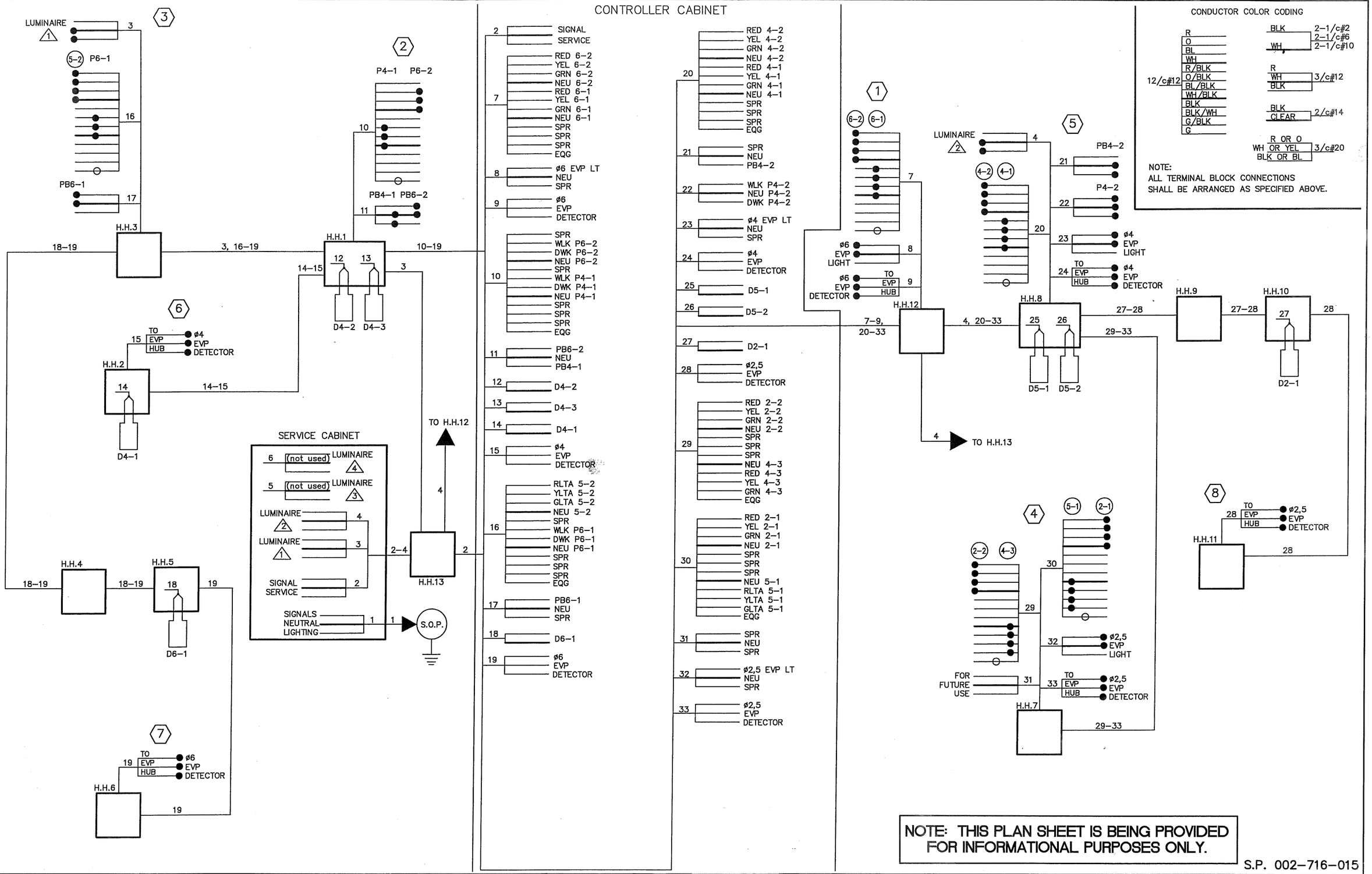
FILE NO. ANOKC 132658
SIGNAL SHEET 27 OF 32
368 / 482




NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

S.P. 002–716–015

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DRAWN BY: XXX<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Date: February 19, 2016<br>Name: John M. Gray, PE<br>Lic. No. 22457 | SEH<br>PHONE: (651) 490–2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF ANDOVER | INPLACE SIGNAL SYSTEM "B"<br>"FOR INFORMATION ONLY"<br>CSAH 116 AT PRAIRIE ROAD NW | FILE NO.<br>ANOKC 132658<br>SIGNAL SHEET<br>28 OF 32 | 369<br>482 |




NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

S.P. 002-716-015

| | | | | | |
|---|---|---|---|---|---|
| DRAWN BY: XXX<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Name: John M. Gray, PE<br>Date: February 19, 2016 Lic. No. 22457 |

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF ANDOVER

INPLACE SIGNAL SYSTEM "B"
"FOR INFORMATION ONLY"
CSAH 116 AT PRAIRIE ROAD NW

FILE NO. ANOKC 132658
SIGNAL SHEET 29 OF 32

370/482

NOTES:

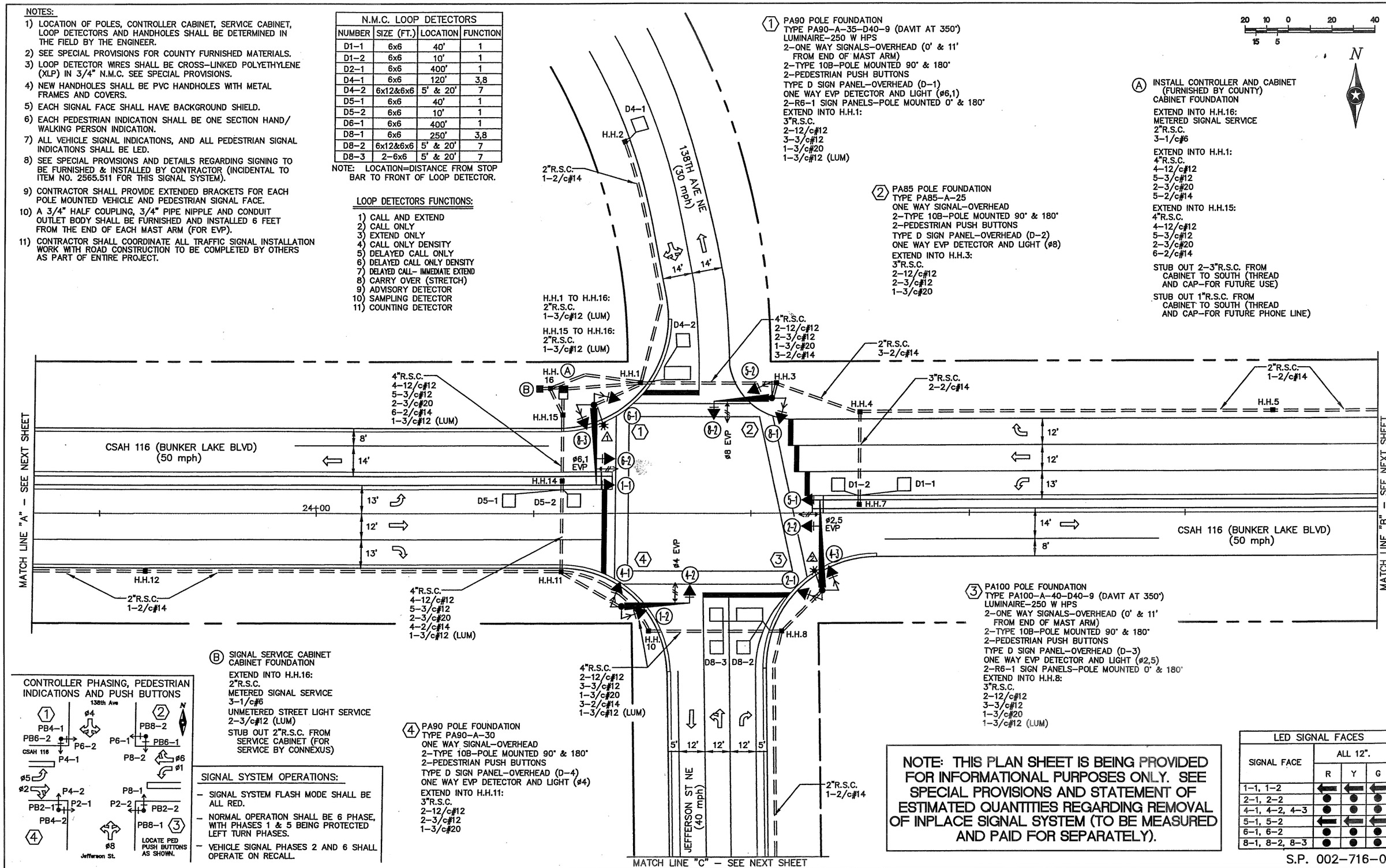
1) LOCATION OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION.
7) ALL VEHICLE SIGNAL INDICATIONS, AND ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
8) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED & INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511 FOR THIS SIGNAL SYSTEM).
9) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL FACE.
10) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
11) CONTRACTOR SHALL COORDINATE ALL TRAFFIC SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION TO BE COMPLETED BY OTHERS AS PART OF ENTIRE PROJECT.

| N.M.C. LOOP DETECTORS | | | |
|---|---|---|---|
| NUMBER | SIZE (FT.) | LOCATION | FUNCTION |
| D1-1 | 6x6 | 40' | 1 |
| D1-2 | 6x6 | 10' | 1 |
| D2-1 | 6x6 | 400' | 1 |
| D4-1 | 6x6 | 120' | 3,8 |
| D4-2 | 6x12&6x6 | 5' & 20' | 7 |
| D5-1 | 6x6 | 40' | 1 |
| D5-2 | 6x6 | 10' | 1 |
| D6-1 | 6x6 | 400' | 1 |
| D8-1 | 6x6 | 250' | 3,8 |
| D8-2 | 6x12&6x6 | 5' & 20' | 7 |
| D8-3 | 2-6x6 | 5' & 20' | 7 |

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

LOOP DETECTORS FUNCTIONS:

1) CALL AND EXTEND
2) CALL ONLY
3) EXTEND ONLY
4) CALL ONLY DENSITY
5) DELAYED CALL ONLY
6) DELAYED CALL ONLY DENSITY
7) DELAYED CALL- IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
9) ADVISORY DETECTOR
10) SAMPLING DETECTOR
11) COUNTING DETECTOR




CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS




(B) SIGNAL SERVICE CABINET CABINET FOUNDATION
EXTEND INTO H.H.16:
2"R.S.C.
METERED SIGNAL SERVICE
3-1/c#6
UNMETERED STREET LIGHT SERVICE
2-3/c#12 (LUM)
STUB OUT 2"R.S.C. FROM SERVICE CABINET (FOR SERVICE BY CONNEXUS)

SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

(4) PA90 POLE FOUNDATION
TYPE PA90-A-30
ONE WAY SIGNAL-OVERHEAD
2-TYPE 10B-POLE MOUNTED 90° & 180°
2-PEDESTRIAN PUSH BUTTONS
TYPE D SIGN PANEL-OVERHEAD (D-4)
ONE WAY EVP DETECTOR AND LIGHT (ø4)
EXTEND INTO H.H.11:
3"R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20

| LED SIGNAL FACES | | | |
|---|---|---|---|
| SIGNAL FACE | ALL 12". | | |
| | R | Y | G |
| 1-1, 1-2 | ← | ← | ← |
| 2-1, 2-2 | ● | ● | ● |
| 4-1, 4-2, 4-3 | ● | ● | ● |
| 5-1, 5-2 | ← | ← | ← |
| 6-1, 6-2 | ● | ● | ● |
| 8-1, 8-2, 8-3 | ● | ● | ● |

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S.P. 002-716-015

DRAWN BY: XXX
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

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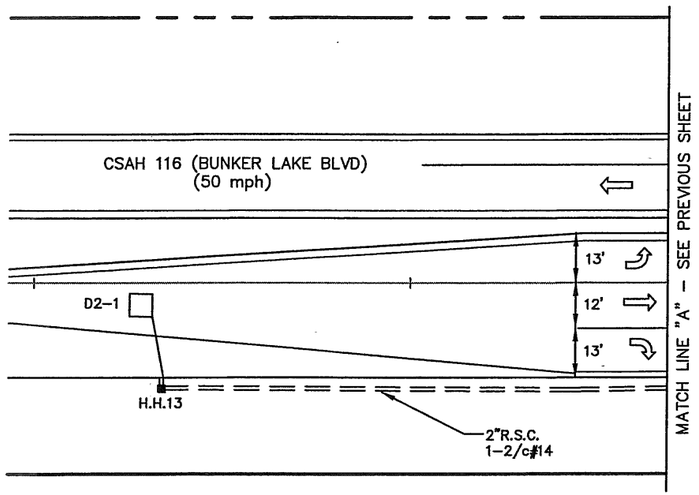
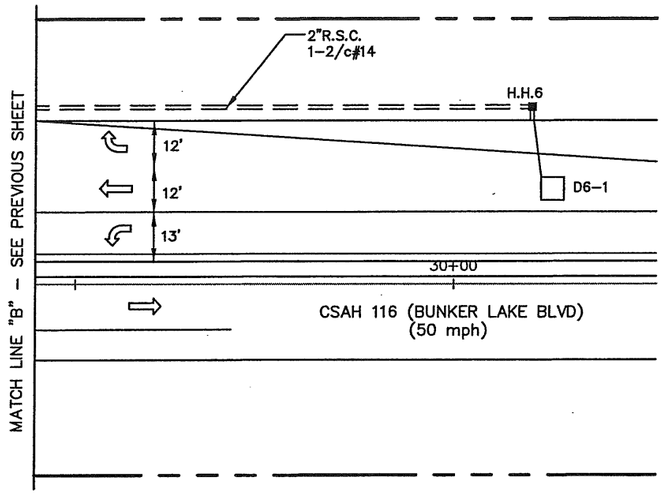
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

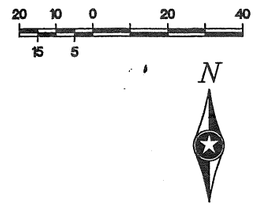
ANOKA COUNTY
CITY OF HAM LAKE

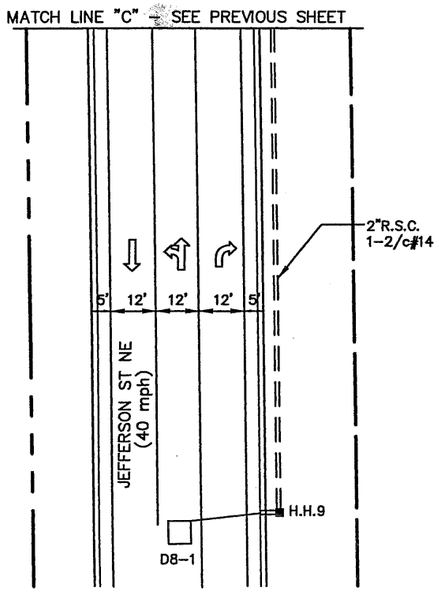
INPLACE SIGNAL SYSTEM "C"
"FOR INFORMATION ONLY"
CSAH 116 AT JEFFERSON ST NE/138TH AVE NE

FILE NO. ANOKC 132658
SIGNAL SHEET 30 OF 32
371/482



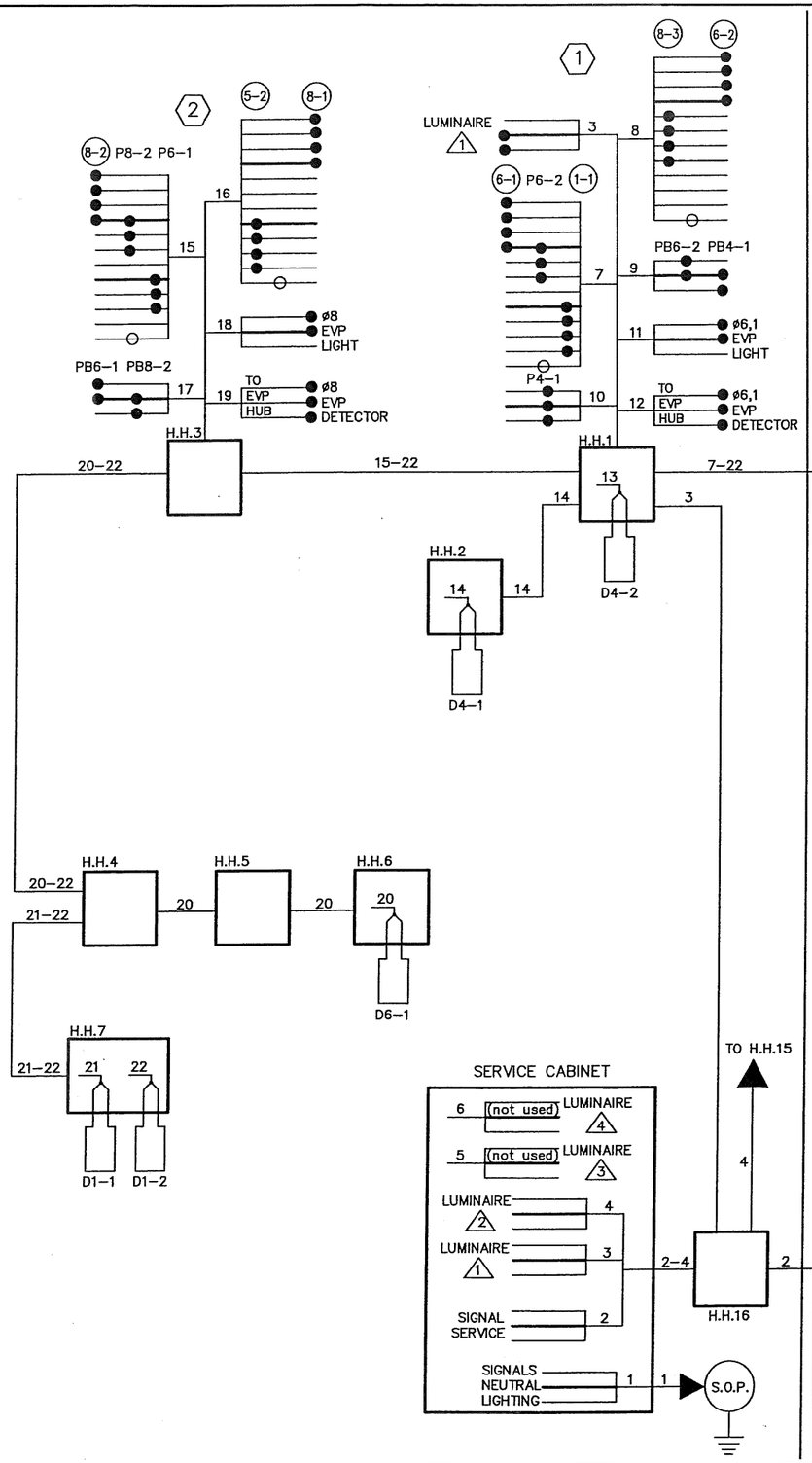




NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

S.P. 002-716-015

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DRAWN BY: XXX<br>DESIGNER: JMG<br>CHECKED BY: JMG<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Name: John M. Gray, PE<br>Date: February 19, 2016 Lic. No. 22457 | SEH<br>PHONE: (651) 490-2000<br>3535 VADNAIS CENTER DR.<br>ST. PAUL, MN 55110 | ANOKA COUNTY<br>CITY OF HAM LAKE | INPLACE SIGNAL SYSTEM "C"<br>"FOR INFORMATION ONLY"<br>CSAH 116 AT JEFFERSON ST NE/138TH AVE NE | FILE NO.<br>ANOKC 132658<br>SIGNAL SHEET<br>31 OF 32 | 372/482 |



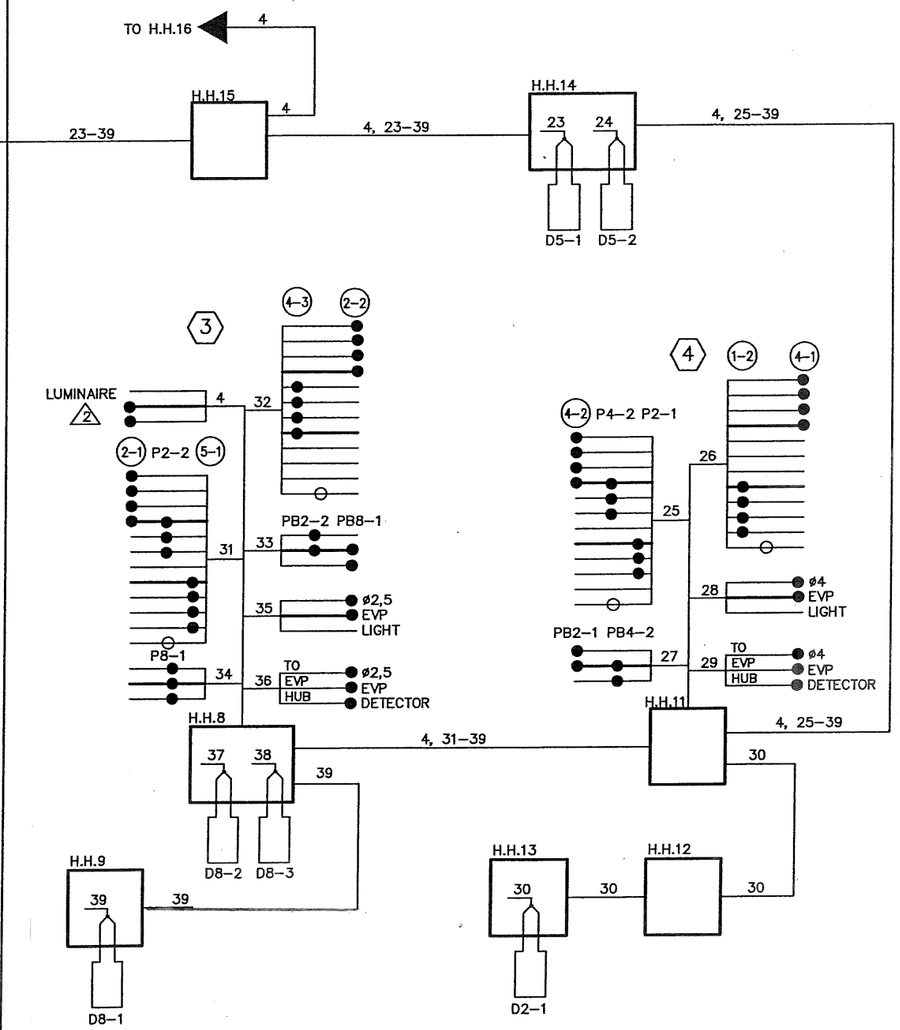

## CONTROLLER CABINET

| | |
|---|---|
| 2 | SIGNAL SERVICE |
| 7 | RED 6-1<br>YEL 6-1<br>GRN 6-1<br>NEU 6-1, P6-2<br>WLK P6-2<br>DWK P6-2<br>SPR<br>NEU 1-1<br>RLTA 1-1<br>YLTA 1-1<br>GLTA 1-1<br>EQG |
| 8 | RED 6-2<br>YEL 6-2<br>GRN 6-2<br>NEU 6-2<br>RED 8-3<br>YEL 8-3<br>GRN 8-3<br>NEU 8-3<br>SPR<br>SPR<br>SPR<br>EQG |
| 9 | PB6-2<br>NEU<br>PB4-1 |
| 10 | WLK P4-1<br>NEU P4-1<br>DWK P4-1 |
| 11 | ø6,1 EVP LT<br>NEU<br>SPR |
| 12 | ø6,1<br>EVP<br>DETECTOR |
| 13 | D4-2 |
| 14 | D4-1 |
| 15 | RED 8-2<br>YEL 8-2<br>GRN 8-2<br>NEU 8-2, P8-2<br>WLK P8-2<br>DWK P8-2<br>SPR<br>NEU P6-1<br>WLK P6-1<br>DWK P6-1<br>SPR<br>EQG |
| 16 | RED 8-1<br>YEL 8-1<br>GRN 8-1<br>NEU 8-1<br>SPR<br>SPR<br>SPR<br>NEU 5-2<br>RLTA 5-2<br>YLTA 5-2<br>GLTA 5-2<br>EQG |
| 17 | PB6-1<br>NEU<br>PB8-2 |
| 18 | ø8 EVP LT<br>NEU<br>SPR |
| 19 | ø8<br>EVP<br>DETECTOR |
| 20 | D6-1 |
| 21 | D1-1 |
| 22 | D1-2 |
| 23 | D5-1 |
| 24 | D5-2 |
| 25 | RED 4-2<br>YEL 4-2<br>GRN 4-2<br>NEU 4-2, P4-2<br>WLK P4-2<br>DWK P4-2<br>SPR<br>NEU P2-1<br>WLK P2-1<br>DWK P2-1<br>SPR<br>EQG |
| 26 | RED 4-1<br>YEL 4-1<br>GRN 4-1<br>NEU 4-1<br>SPR<br>SPR<br>SPR<br>NEU 1-2<br>RLTA 1-2<br>YLTA 1-2<br>GLTA 1-2<br>EQG |
| 27 | PB2-1<br>NEU<br>PB4-2 |
| 28 | ø4 EVP LT<br>NEU<br>SPR |
| 29 | ø4<br>EVP<br>DETECTOR |
| 30 | D2-1 |
| 31 | RED 2-1<br>YEL 2-1<br>GRN 2-1<br>NEU 2-1, P2-2<br>WLK P2-2<br>DWK P2-2<br>SPR<br>NEU 5-1<br>RLTA 5-1<br>YLTA 5-1<br>GLTA 5-1<br>EQG |
| 32 | RED 2-2<br>YEL 2-2<br>GRN 2-2<br>NEU 2-2<br>RED 4-3<br>YEL 4-3<br>GRN 4-3<br>NEU 4-3<br>SPR<br>SPR<br>SPR<br>EQG |
| 33 | PB2-2<br>NEU<br>PB8-1 |
| 34 | WLK P8-1<br>NEU P8-1<br>DWK P8-1 |
| 35 | ø2,5 EVP LT<br>NEU<br>SPR |
| 36 | ø2,5<br>EVP<br>DETECTOR |
| 37 | D8-2 |
| 38 | D8-3 |
| 39 | D8-1 |

### CONDUCTOR COLOR CODING

| | | |
|---|---|---|
| 12/c#12 | R<br>O<br>BL<br>WH<br>R/BLK<br>O/BLK<br>BL/BLK<br>WH/BLK<br>BLK<br>BLK/WH<br>G/BLK<br>G | BLK 2-1/c#2<br>2-1/c#6<br>WH 2-1/c#10<br>R<br>WH 3/c#12<br>BLK<br>BLK<br>CLEAR 2/c#14<br>R OR O<br>WH OR YEL<br>BLK OR BL 3/c#20 |

NOTE:
ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.




**NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.**

S.P. 002-716-015

DRAWN BY: XXX
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

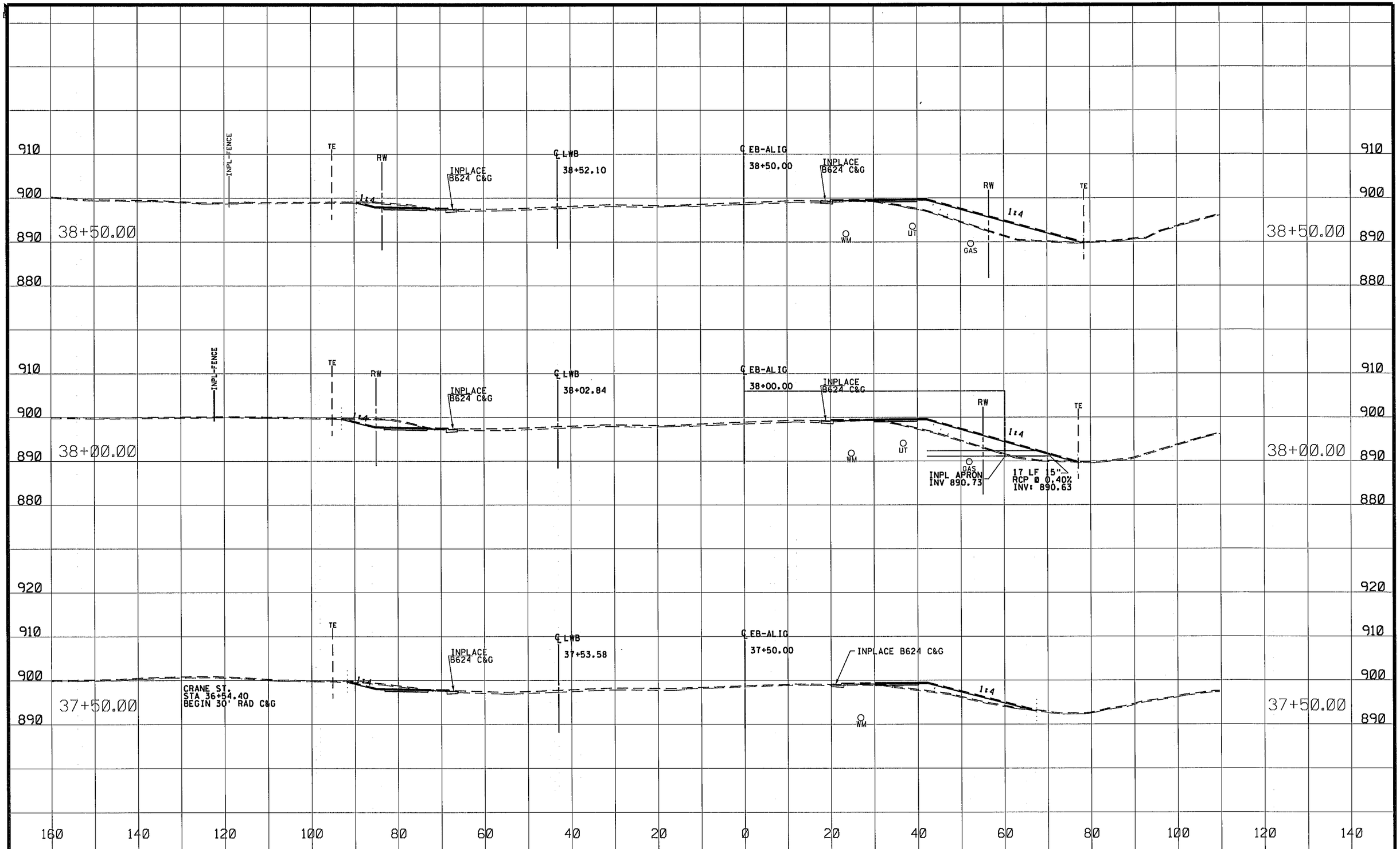
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Name: John M. Gray, PE
Date: February 19, 2016 Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY
CITY OF HAM LAKE

INPLACE SIGNAL SYSTEM "C"
"FOR INFORMATION ONLY"
CSAH 116 AT JEFFERSON ST NE/138TH AVE NE

FILE NO. ANOKC 132658
SIGNAL SHEET 32 OF 32
373/482

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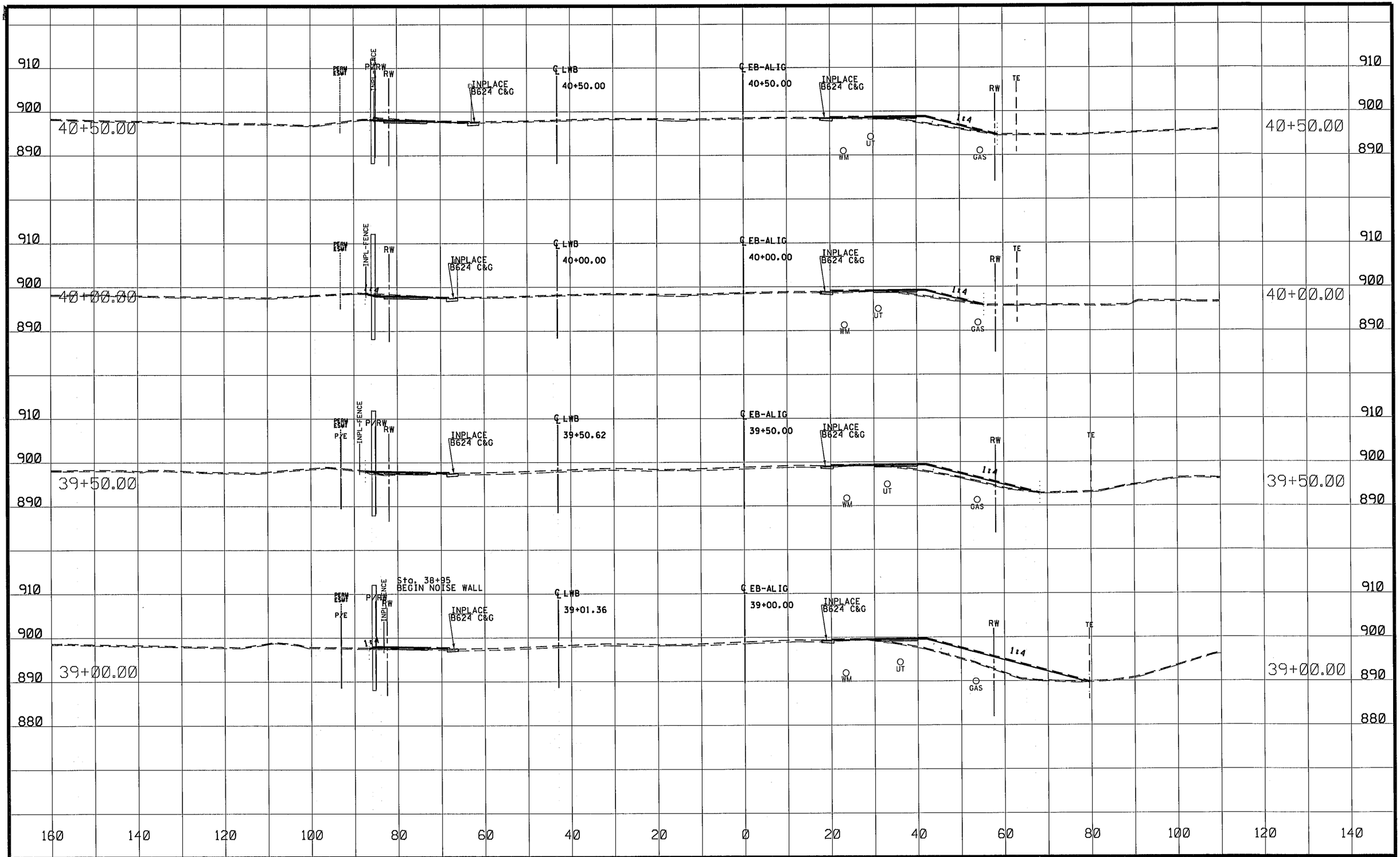
DRAWN BY ZB DATE 04-12-16
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 37+50.00 TO 38+50.00
Sheet 374 of 482 Sheets

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ANOKA COUNTY

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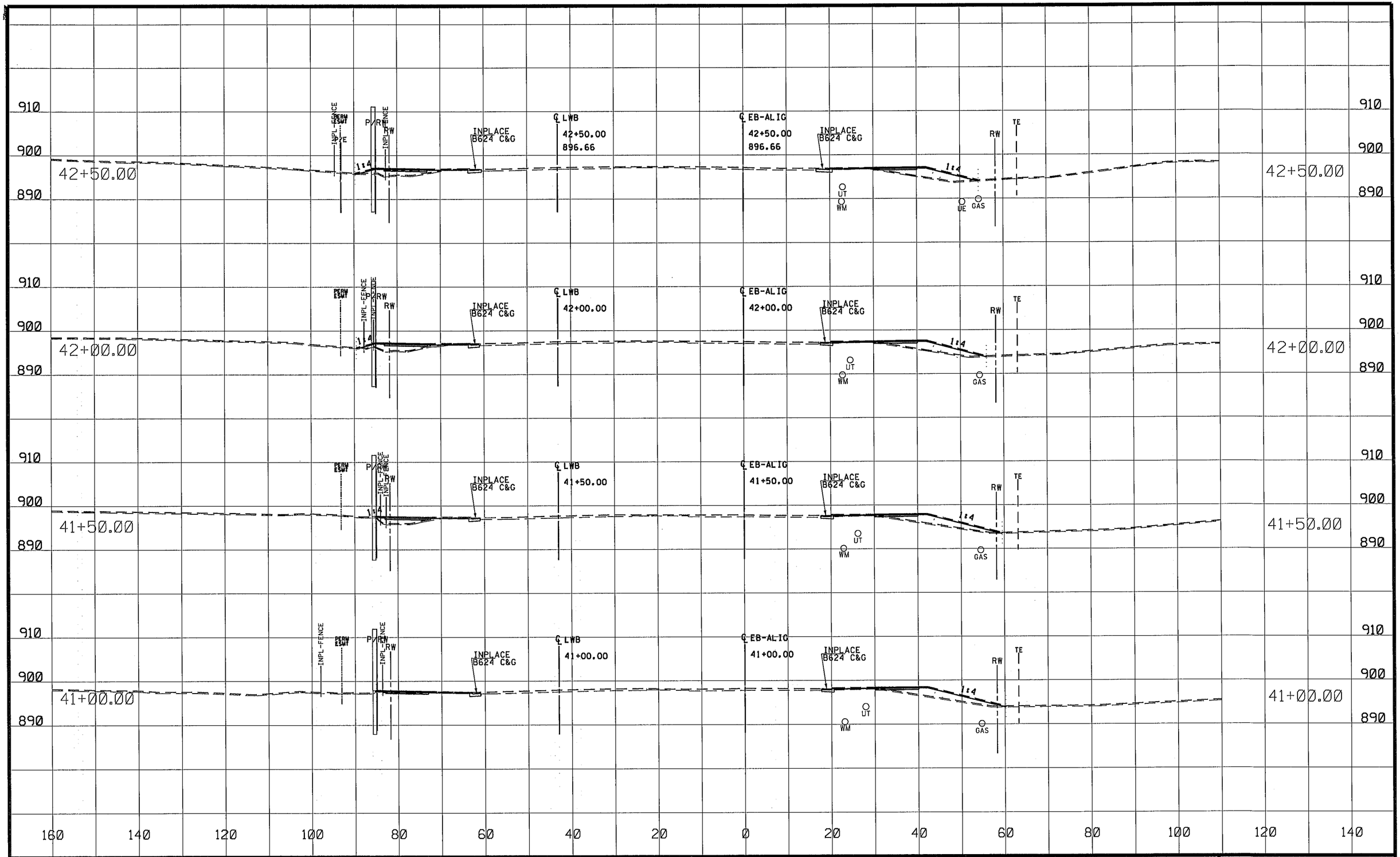
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 39+00.00 TO 40+50.00

Sheet 375 of 482 Sheets

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ANOKA COUNTY

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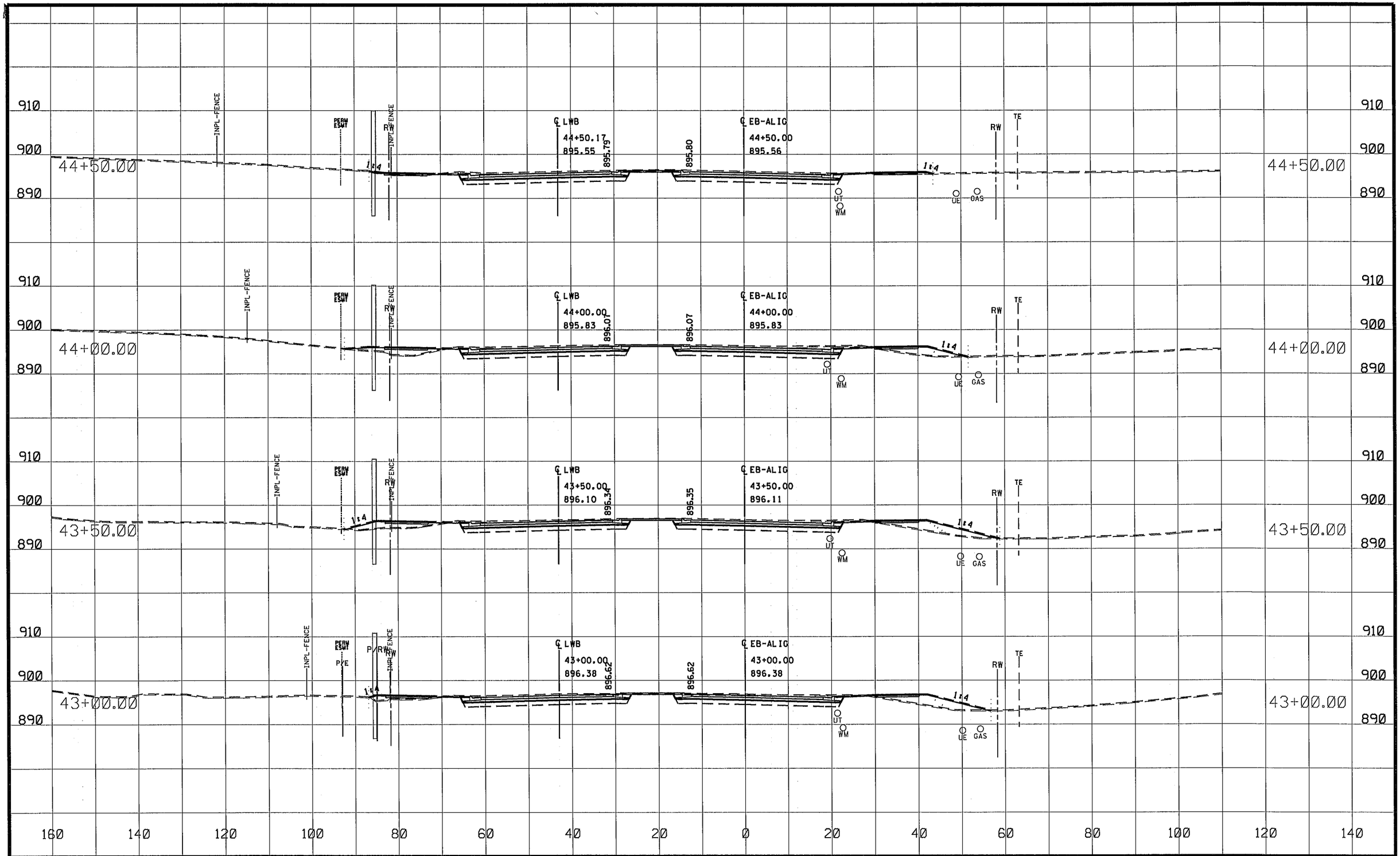
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 41+00.00 TO 42+50.00

Sheet 376 of 482 Sheets

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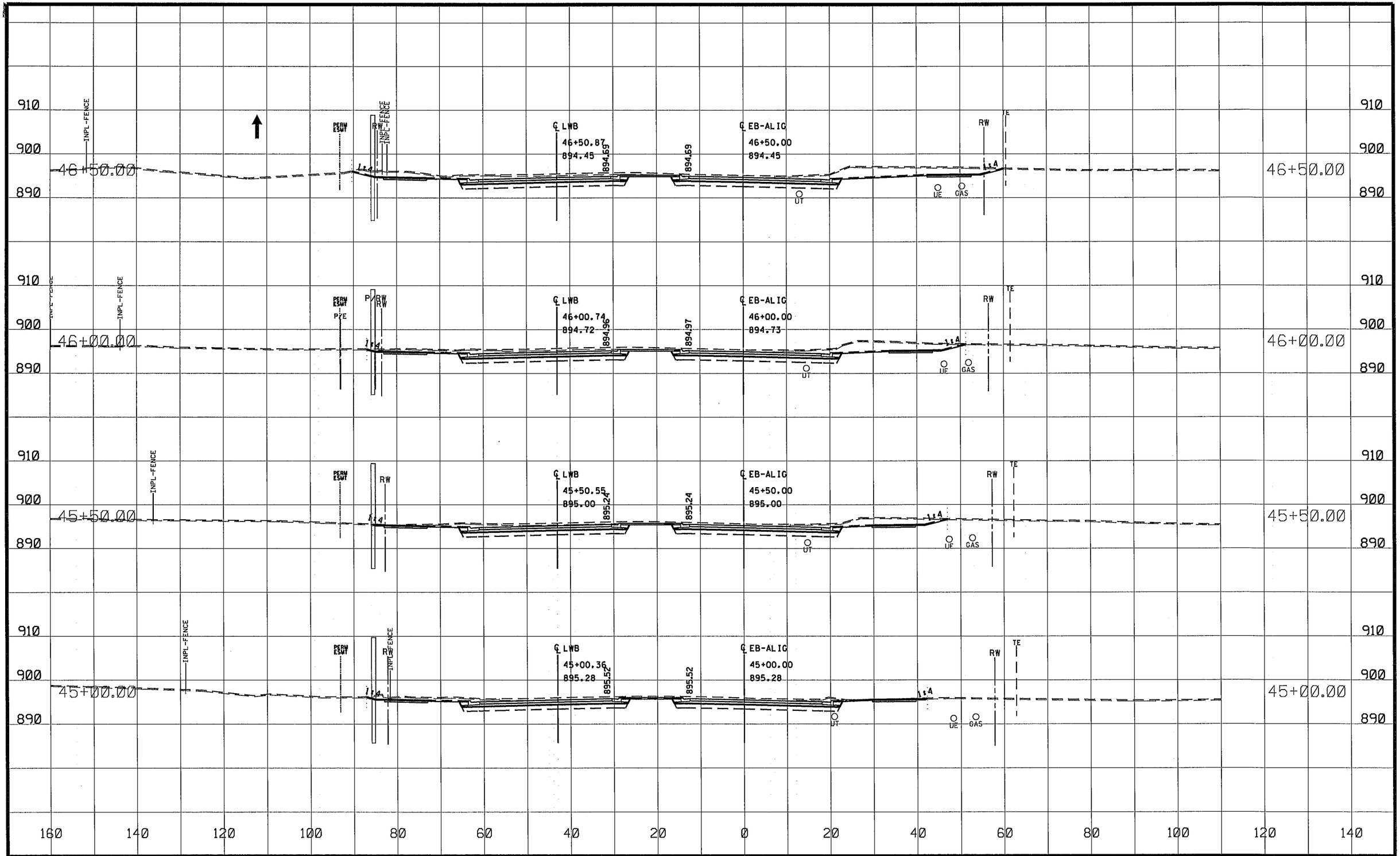
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 43+00.00 TO 44+50.00
Sheet 377 of 482 Sheets

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ANOKA COUNTY

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S.P. 002-716-015
S.P. 198-020-036
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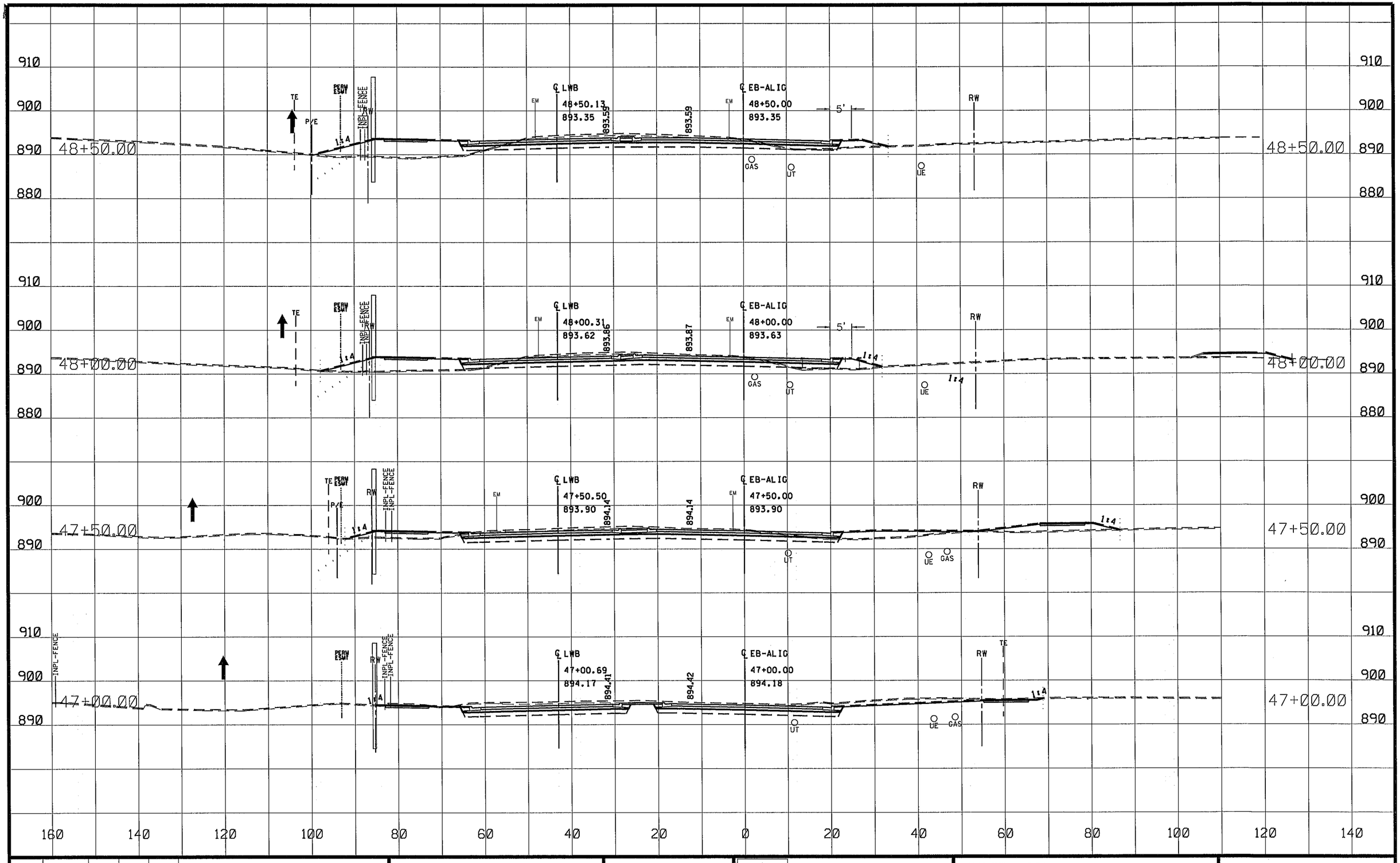
C.P. 11-25

CROSS SECTIONS

STA 45+00.00 TO 46+50.00

Sheet 378 of 482 Sheets

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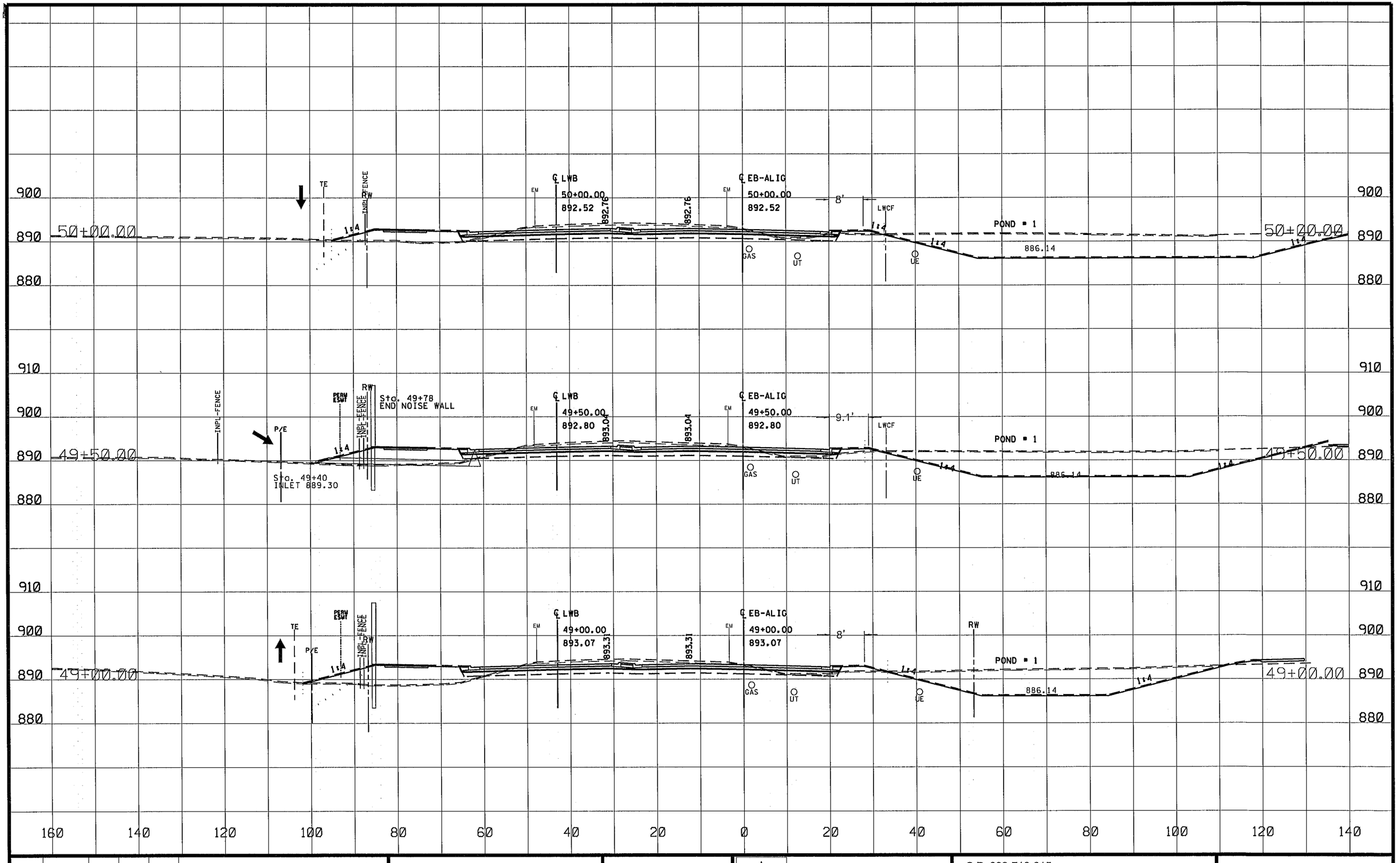
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 47+00.00 TO 48+50.00

Sheet 379 of 482 Sheets

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ANOKA COUNTY

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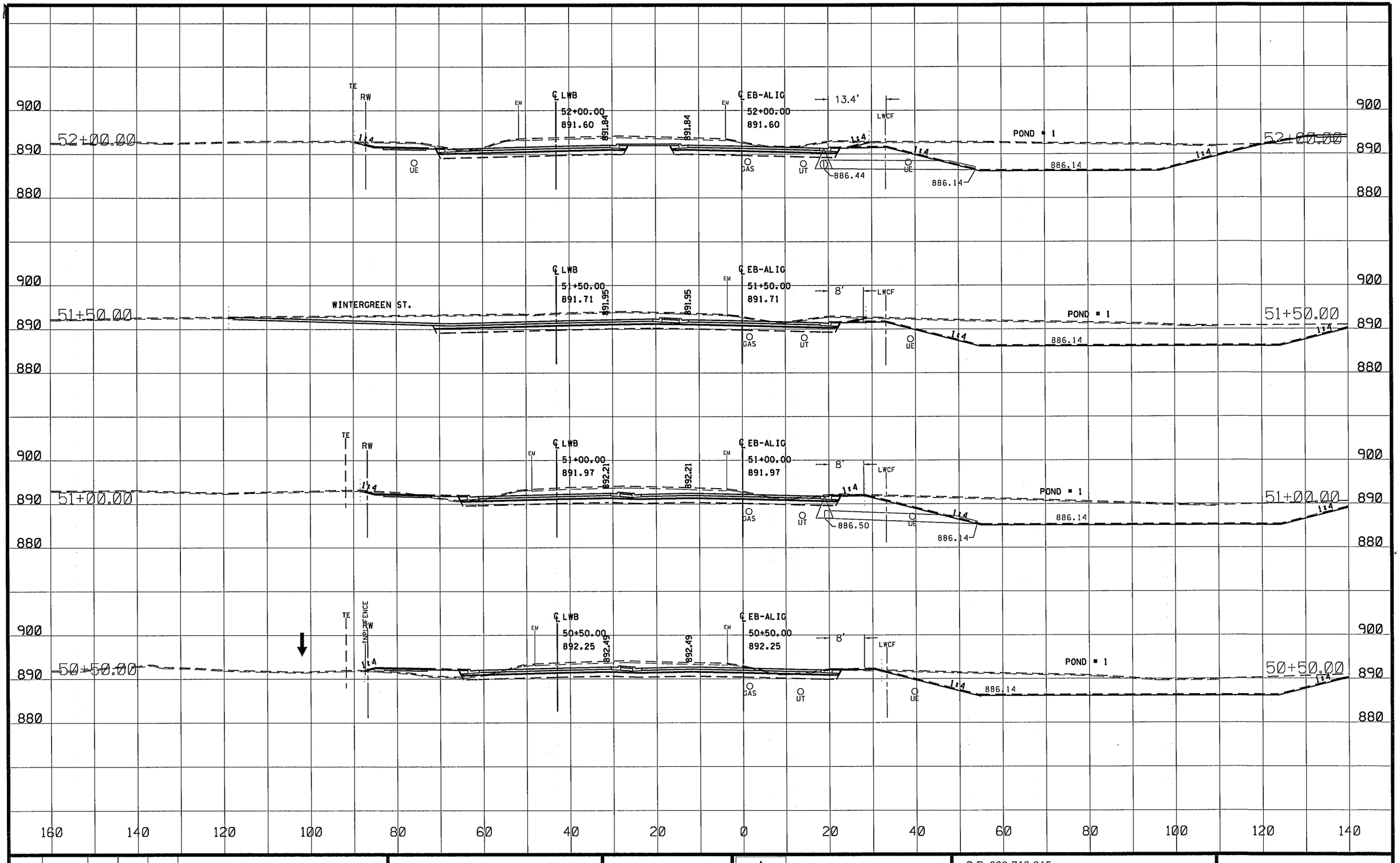
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 49+00.00 TO 50+00.00

Sheet 380 of 482 Sheets

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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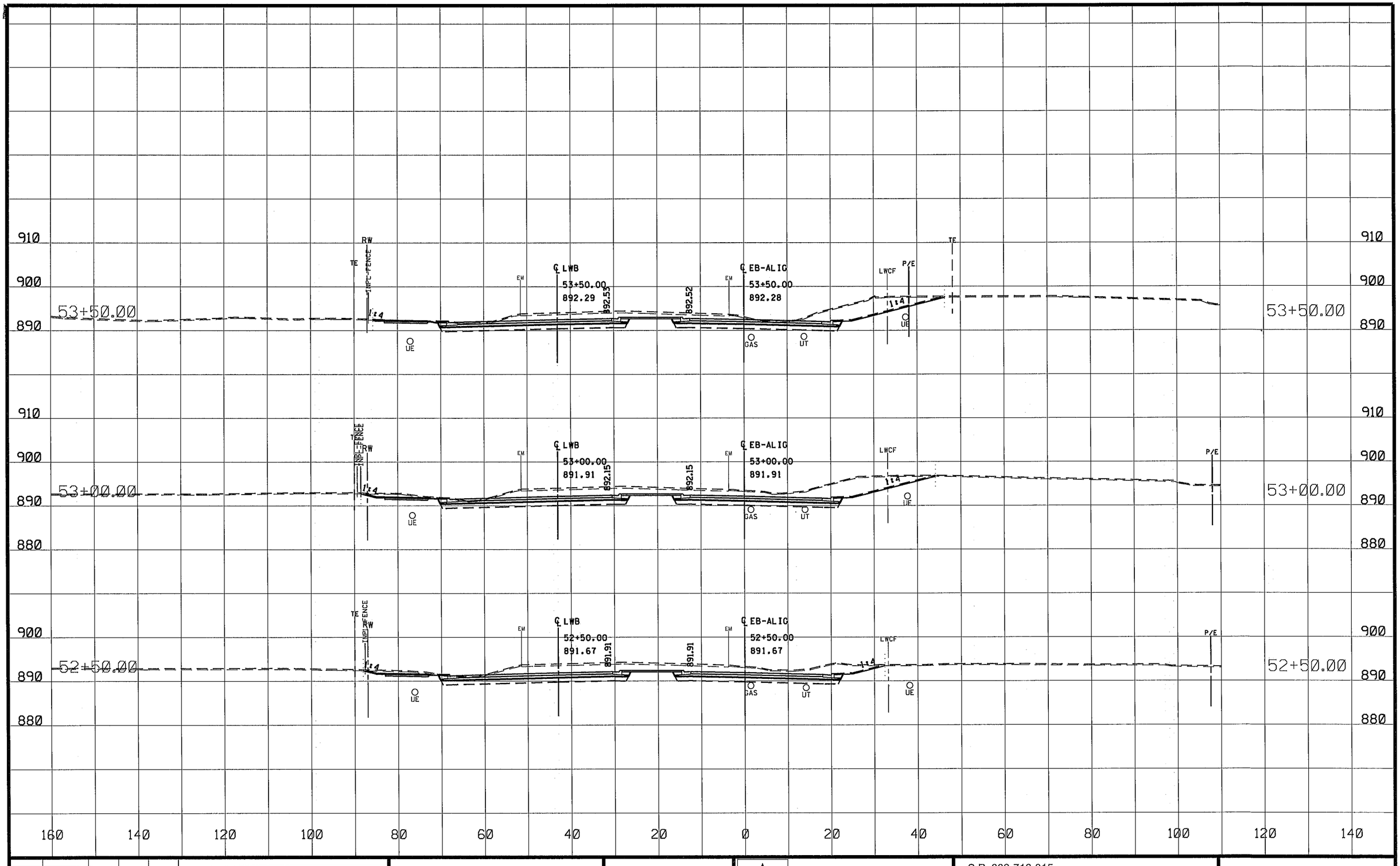
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 50+50.00 TO 52+00.00

Sheet 381 of 482 Sheets

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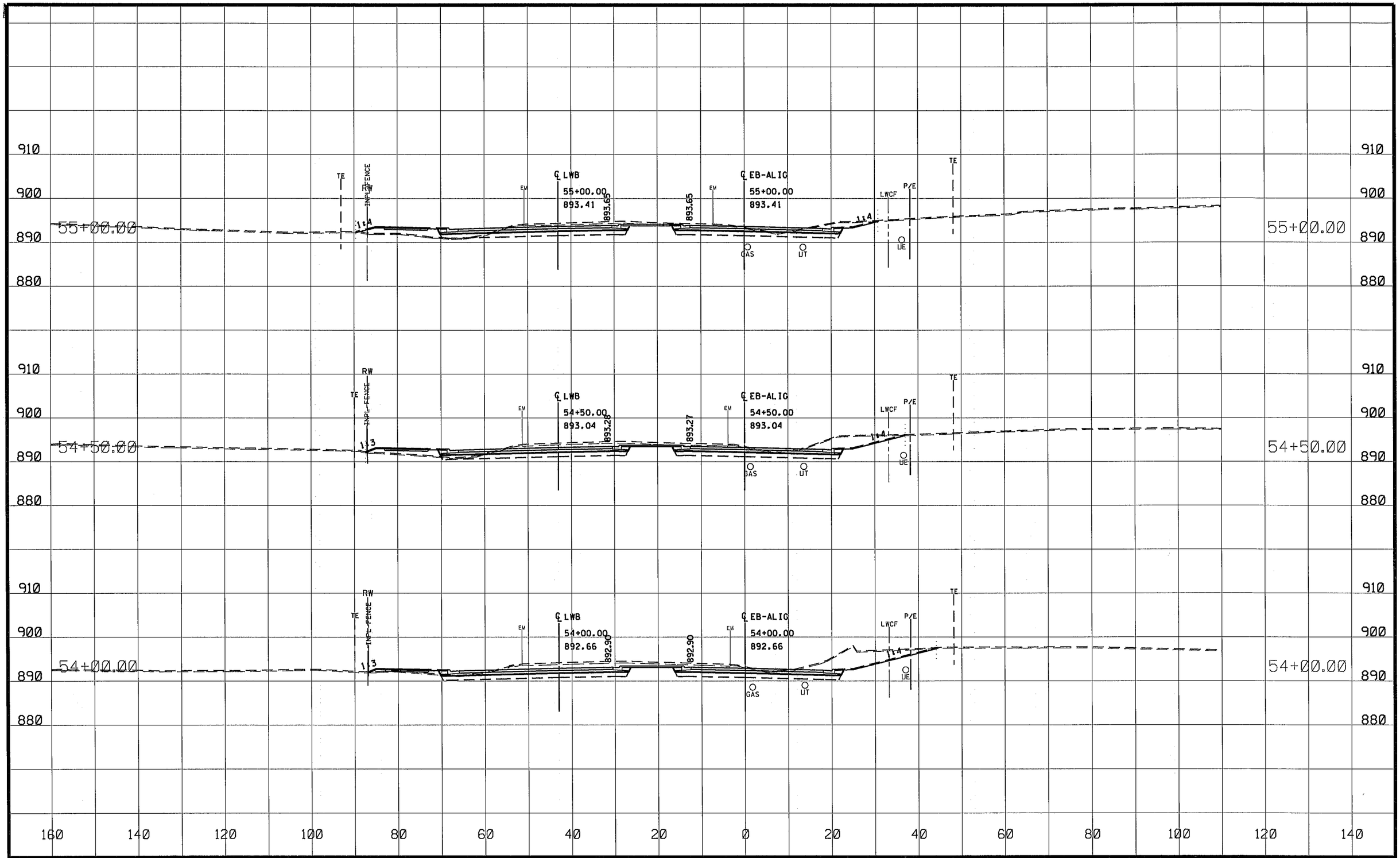
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 52+50.00 TO 53+50.00

Sheet 382 of 482 Sheets

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ANOKA COUNTY

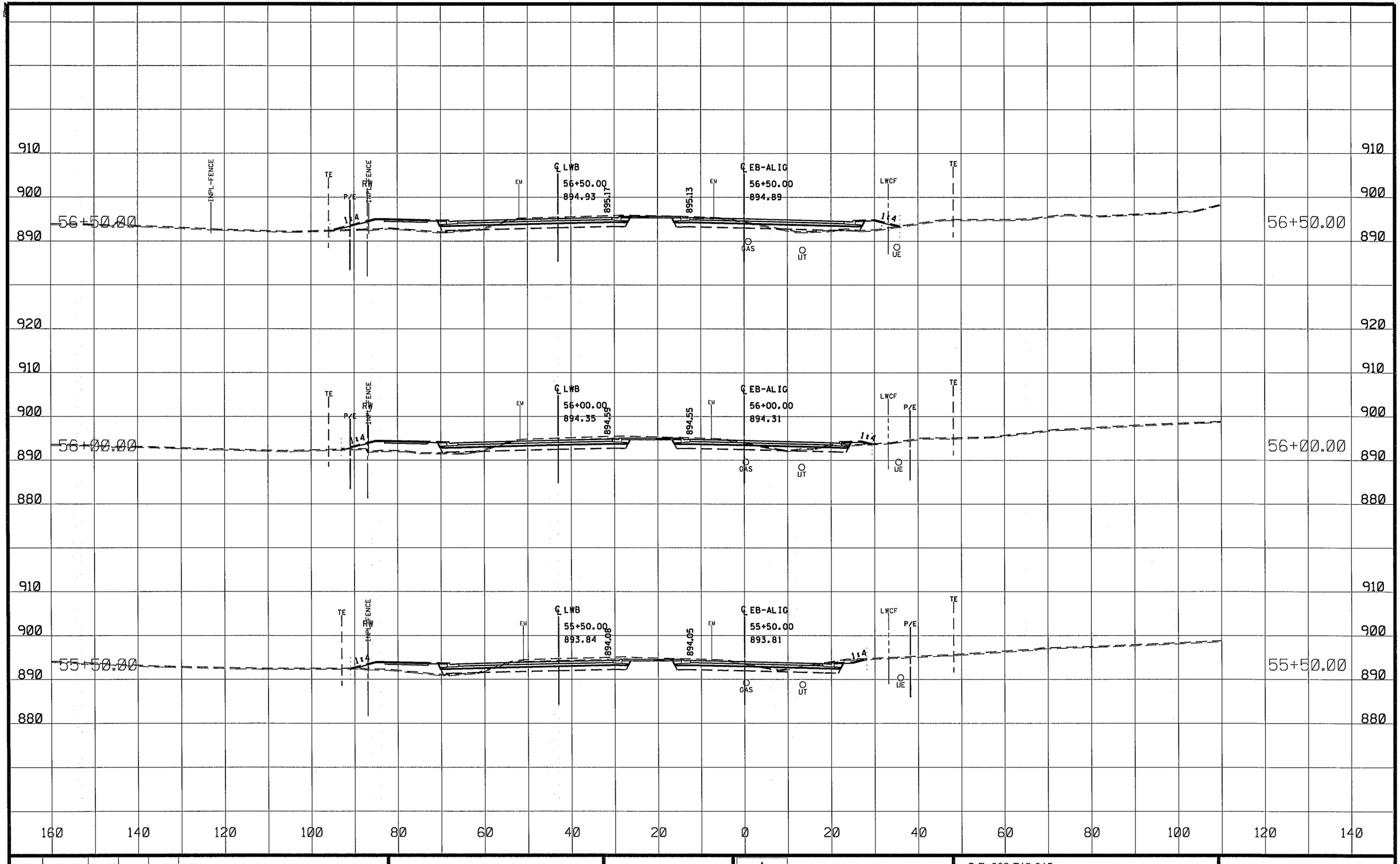
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 54+00.00 TO 55+00.00

Sheet 383 of 482 Sheets

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ANOKA COUNTY

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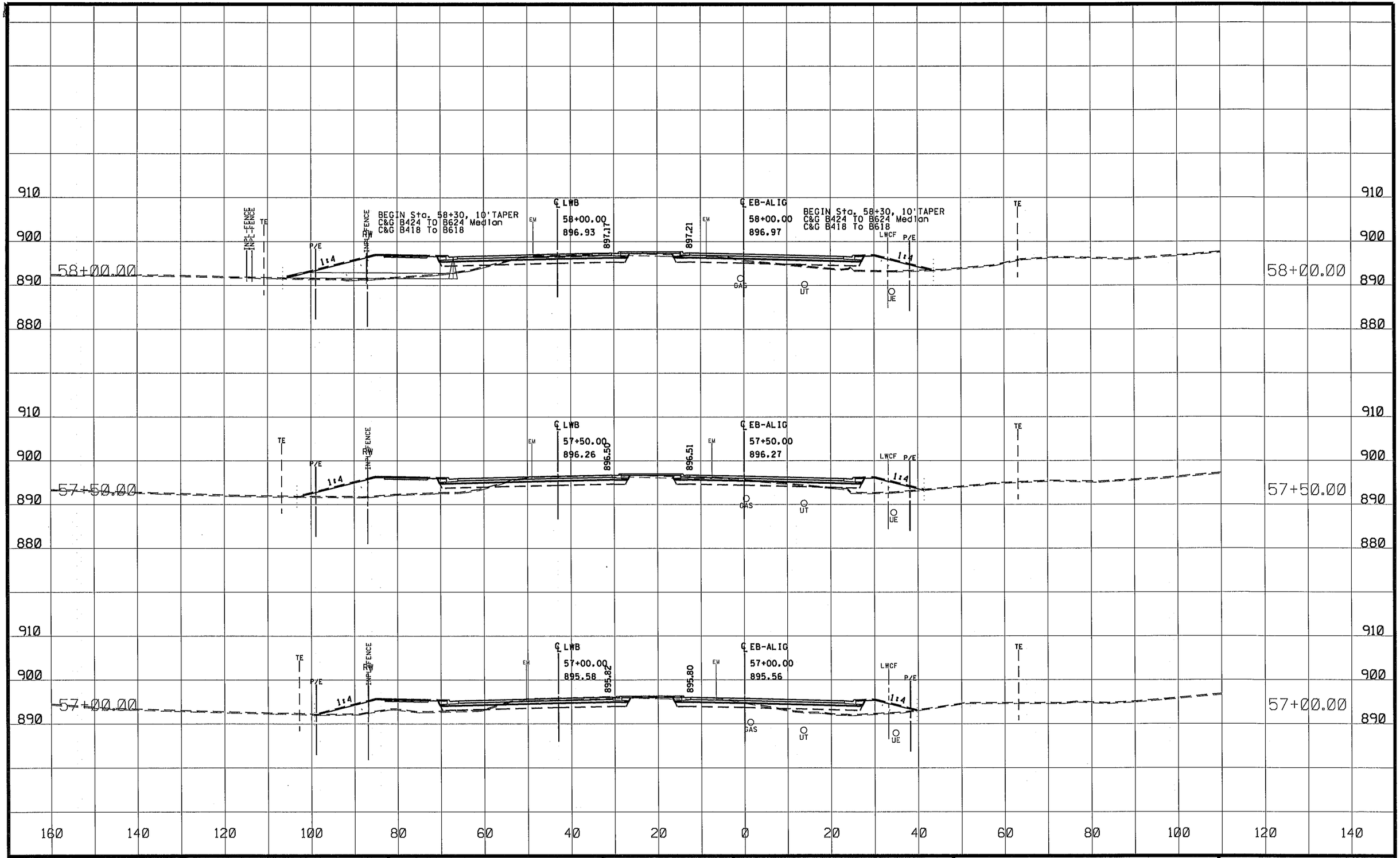
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 55+50.00 TO 56+50.00

Sheet 384 of 482 Sheets

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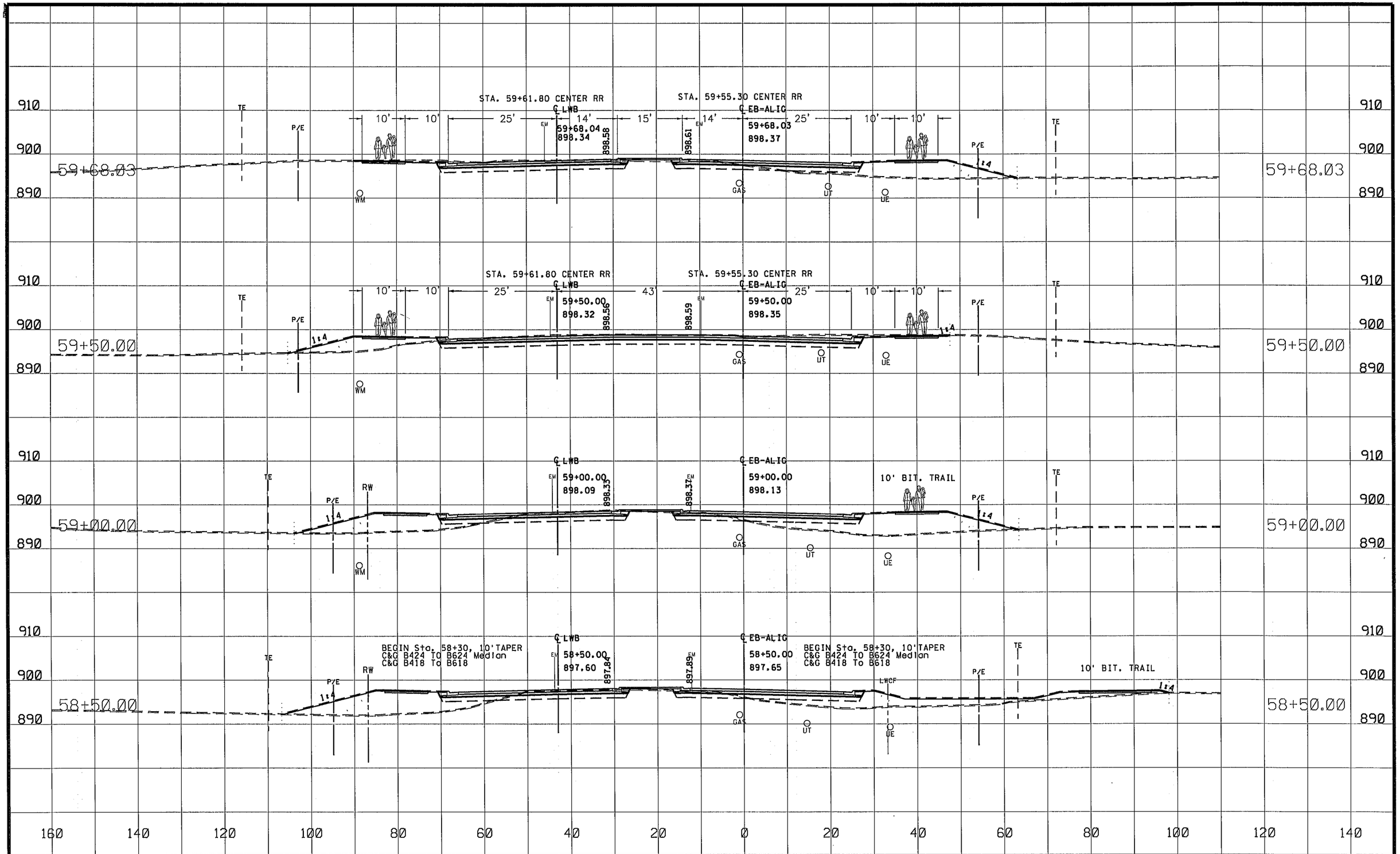
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 57+00.00 TO 58+00.00
Sheet 385 of 482 Sheets

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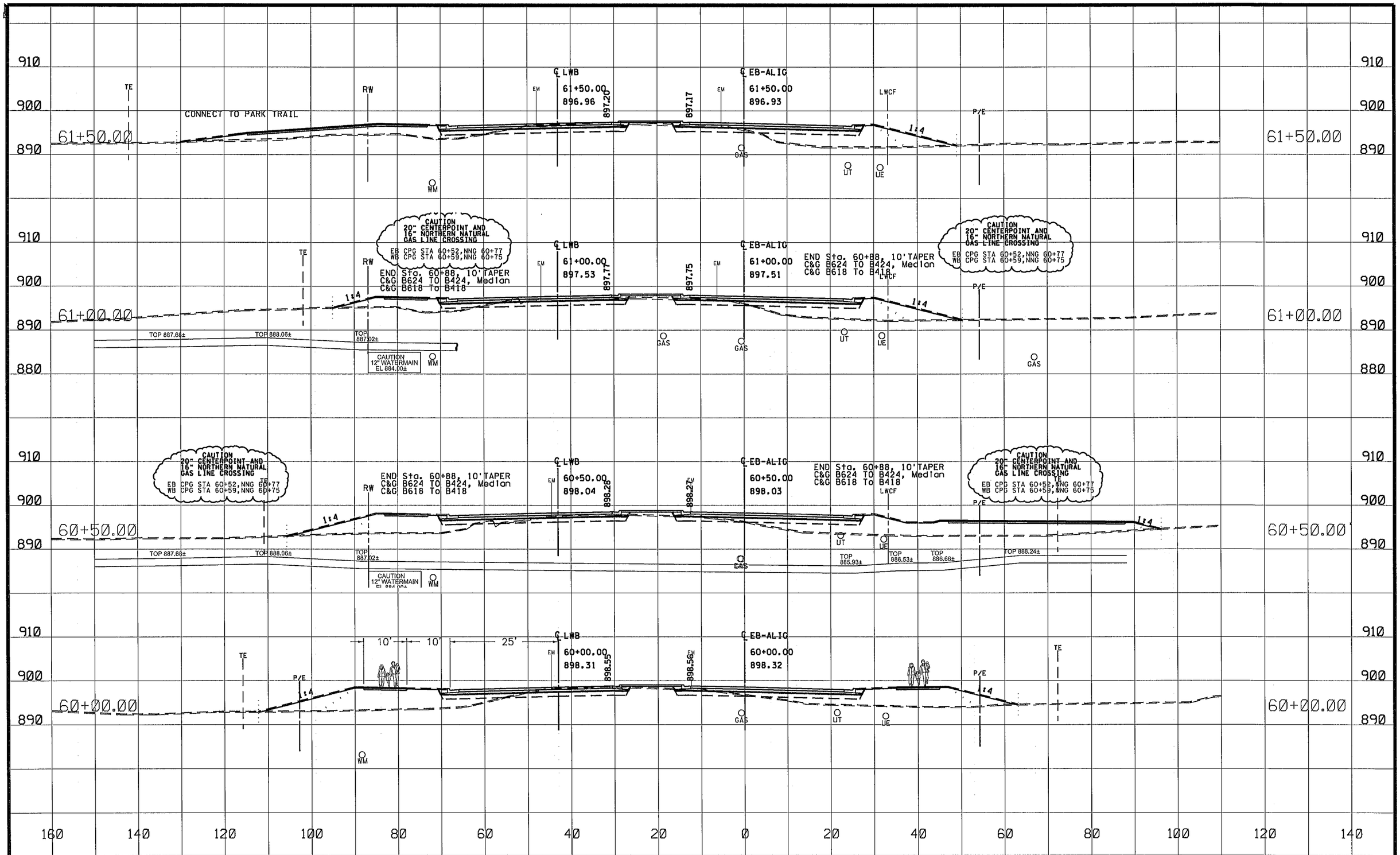
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 58+50.00 TO 59+68.03

Sheet 386 of 482 Sheets

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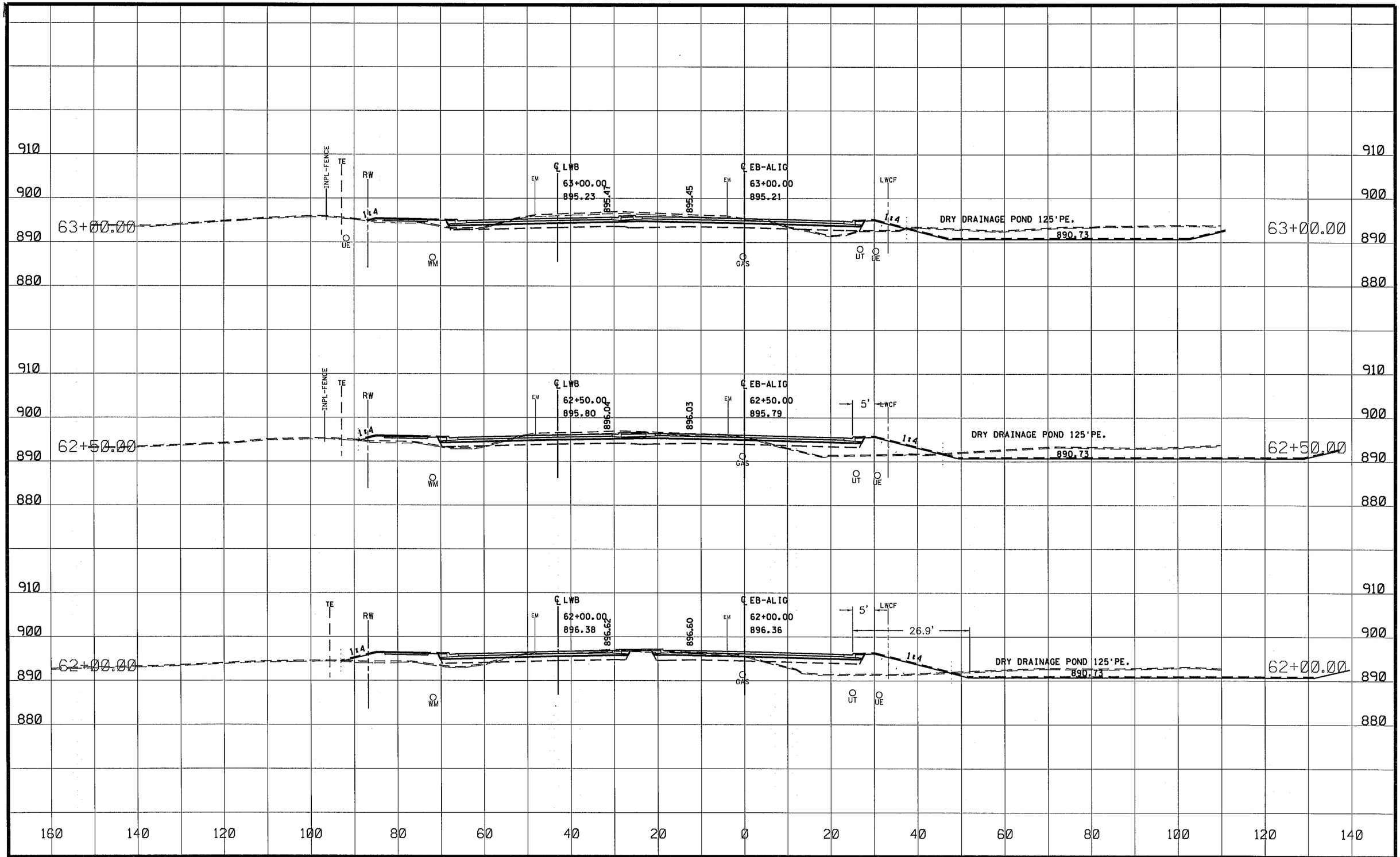
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 60+00.00 TO 61+50.00

Sheet 387 of 482 Sheets

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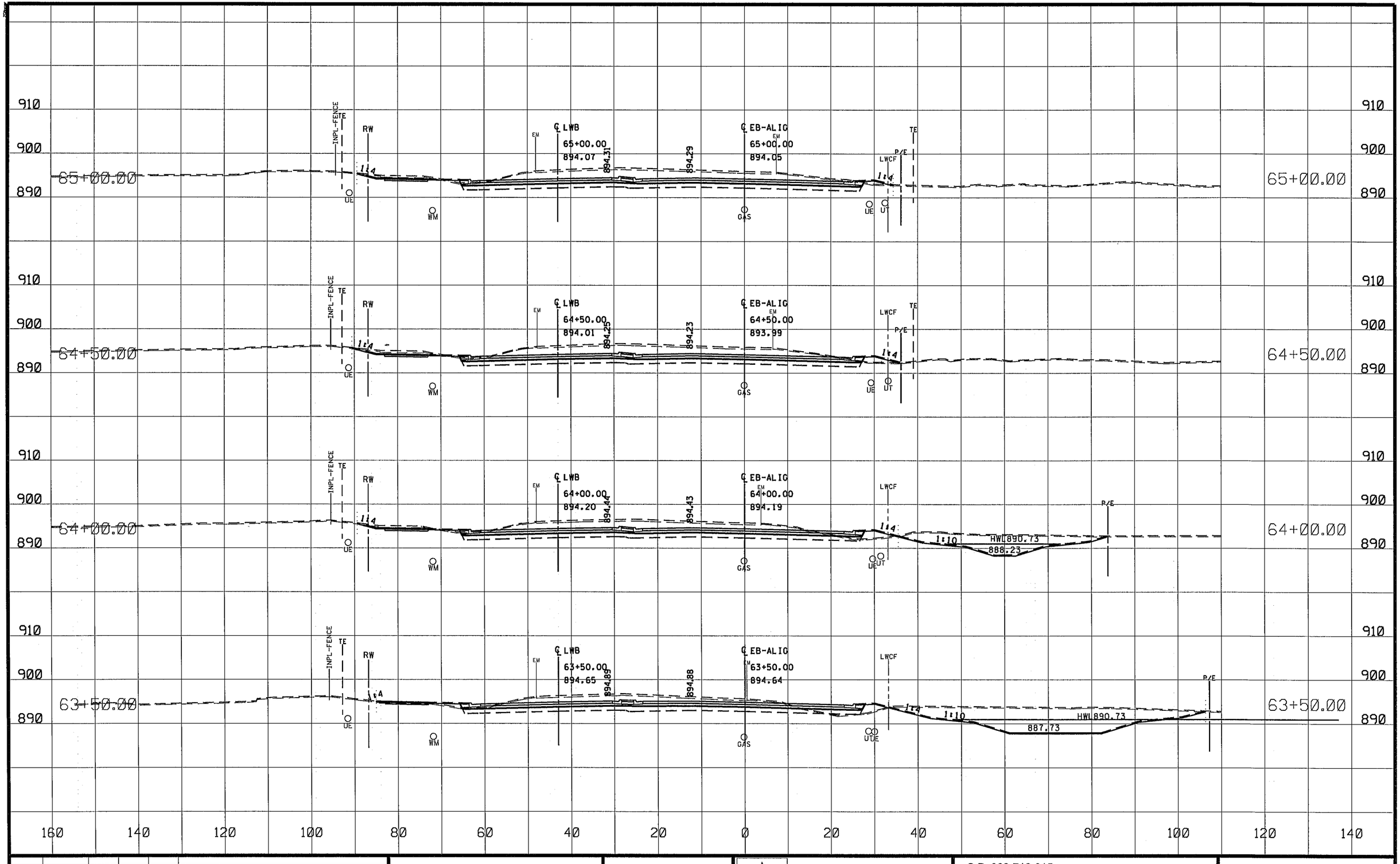
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 62+00.00 TO 63+00.00

Sheet 388 of 482 Sheets

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ANOKA COUNTY

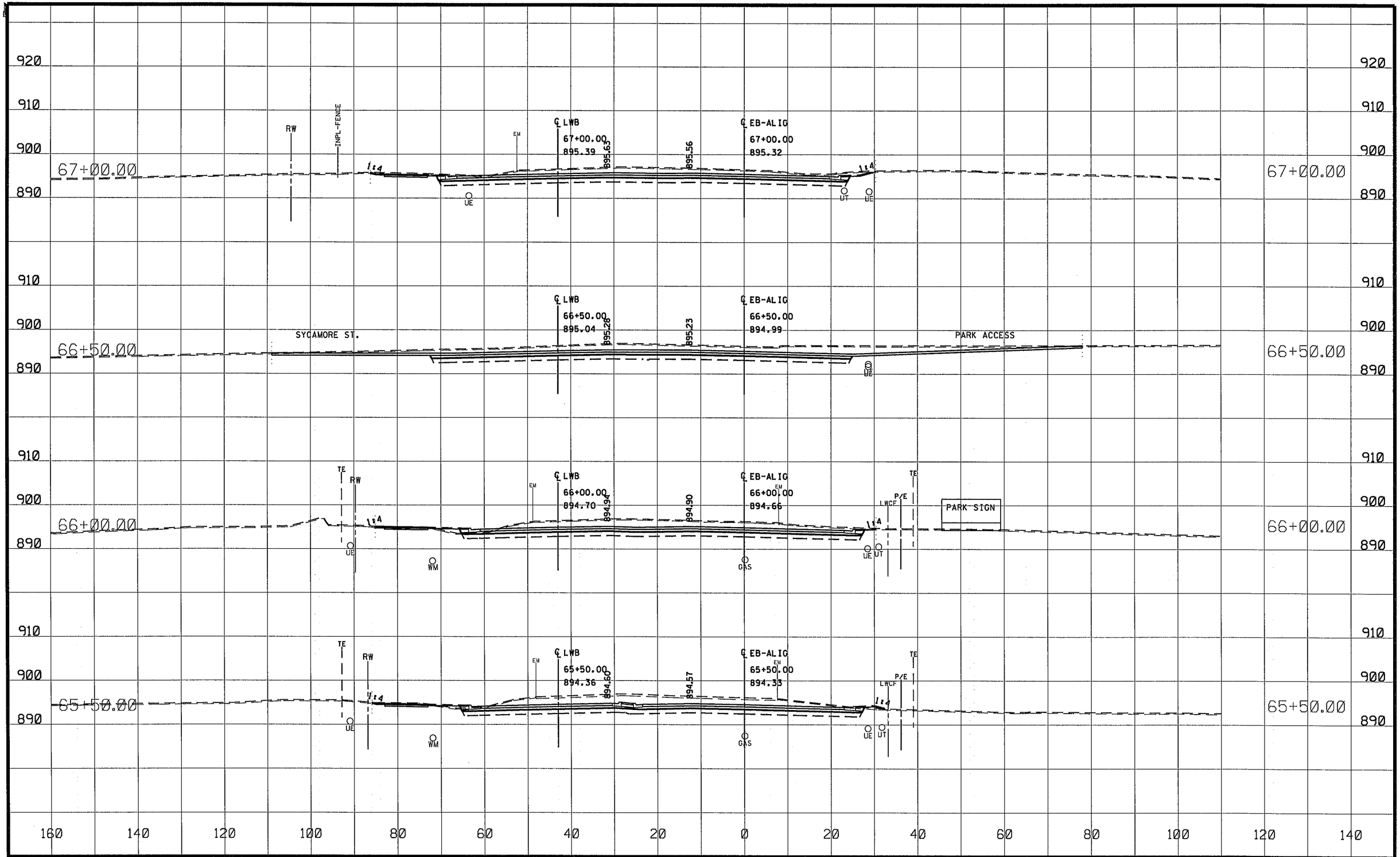
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 63+50.00 TO 65+00.00

Sheet 389 of 482 Sheets

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
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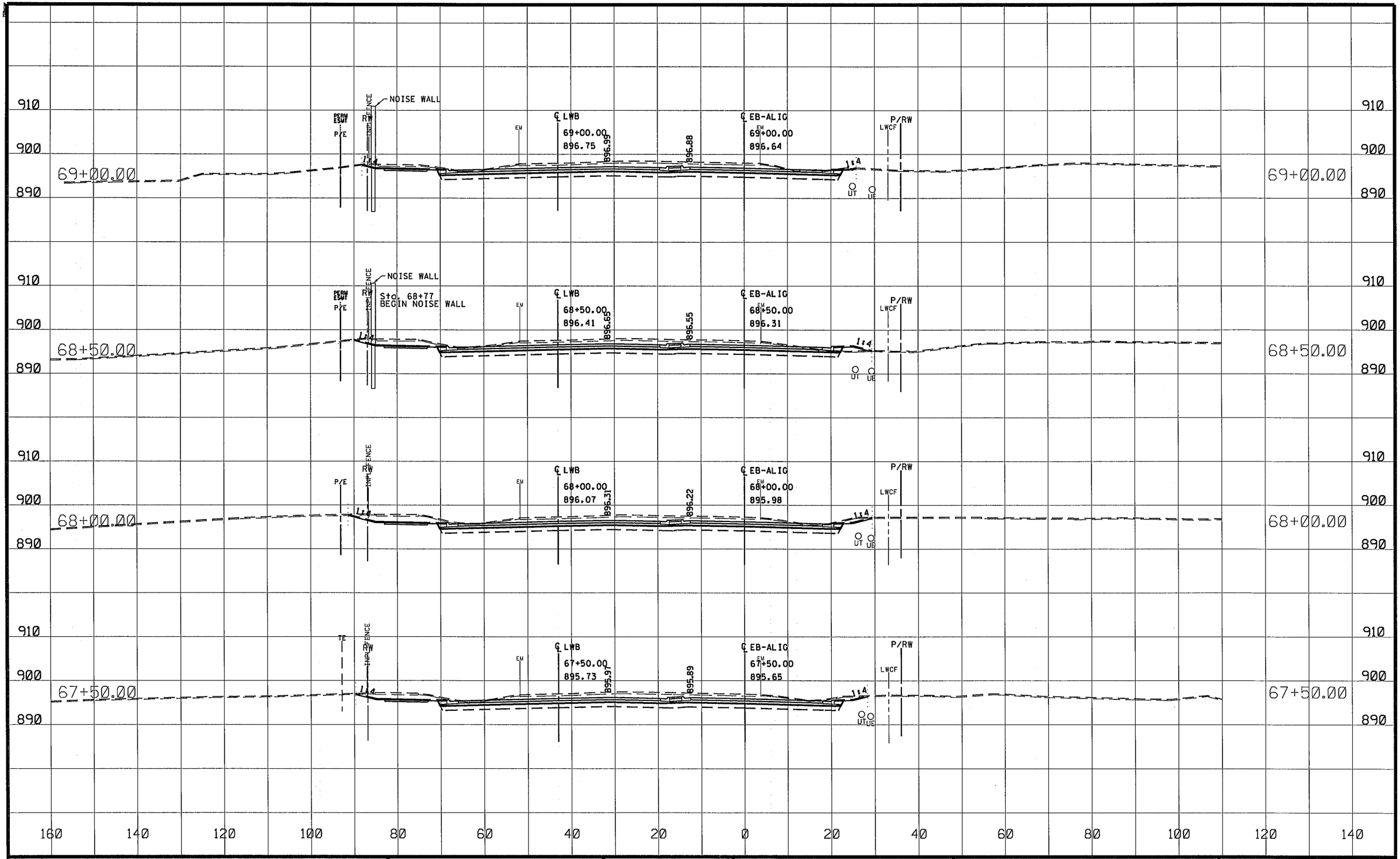
CROSS SECTIONS
STA 65+50.00 TO 67+00.00

Sheet 390 of 482 Sheets

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ANOKA COUNTY
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S.P. 198-020-036
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CROSS SECTIONS
STA 67+50.00 TO 69+00.00
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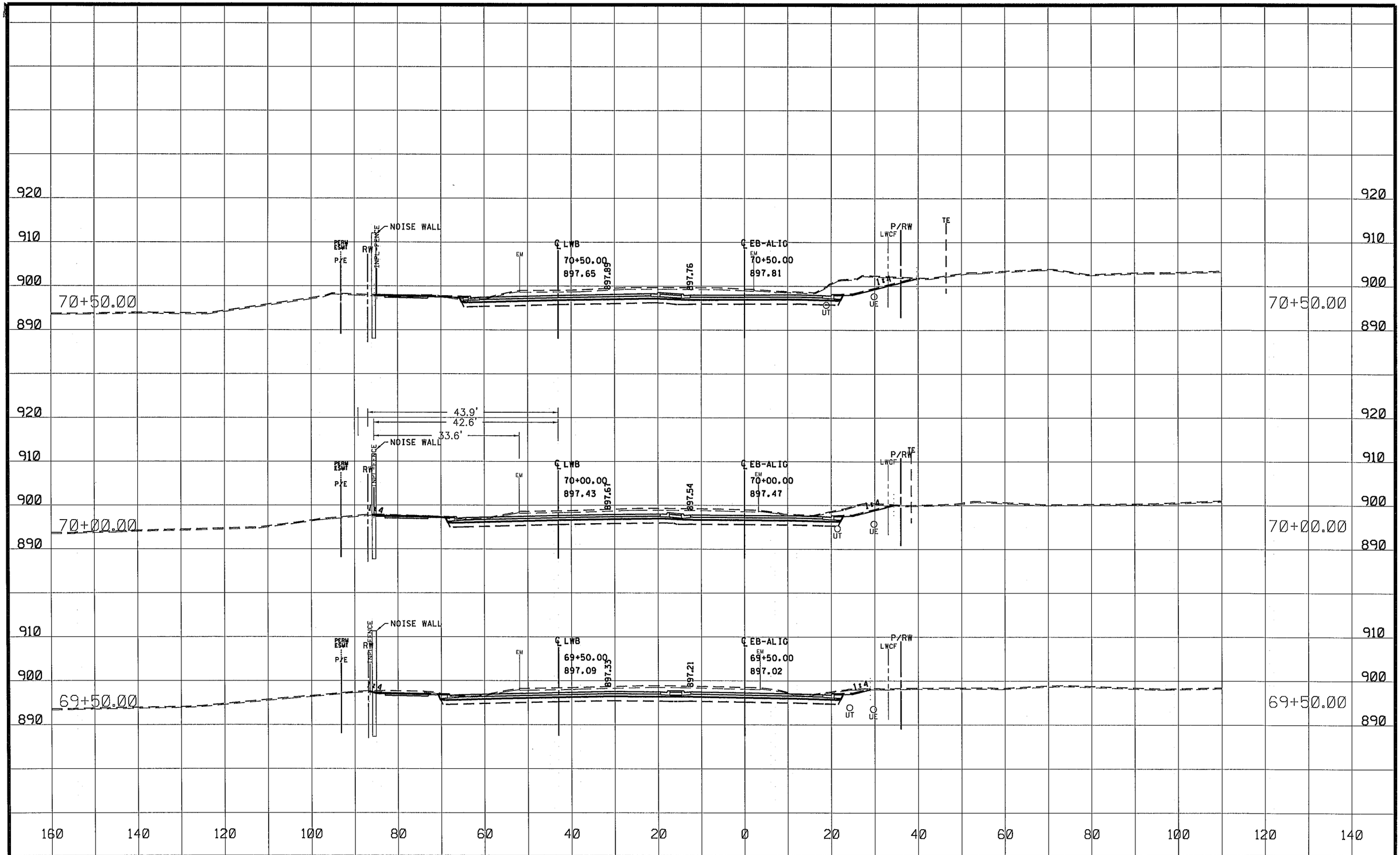


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S.P. 198-020-036
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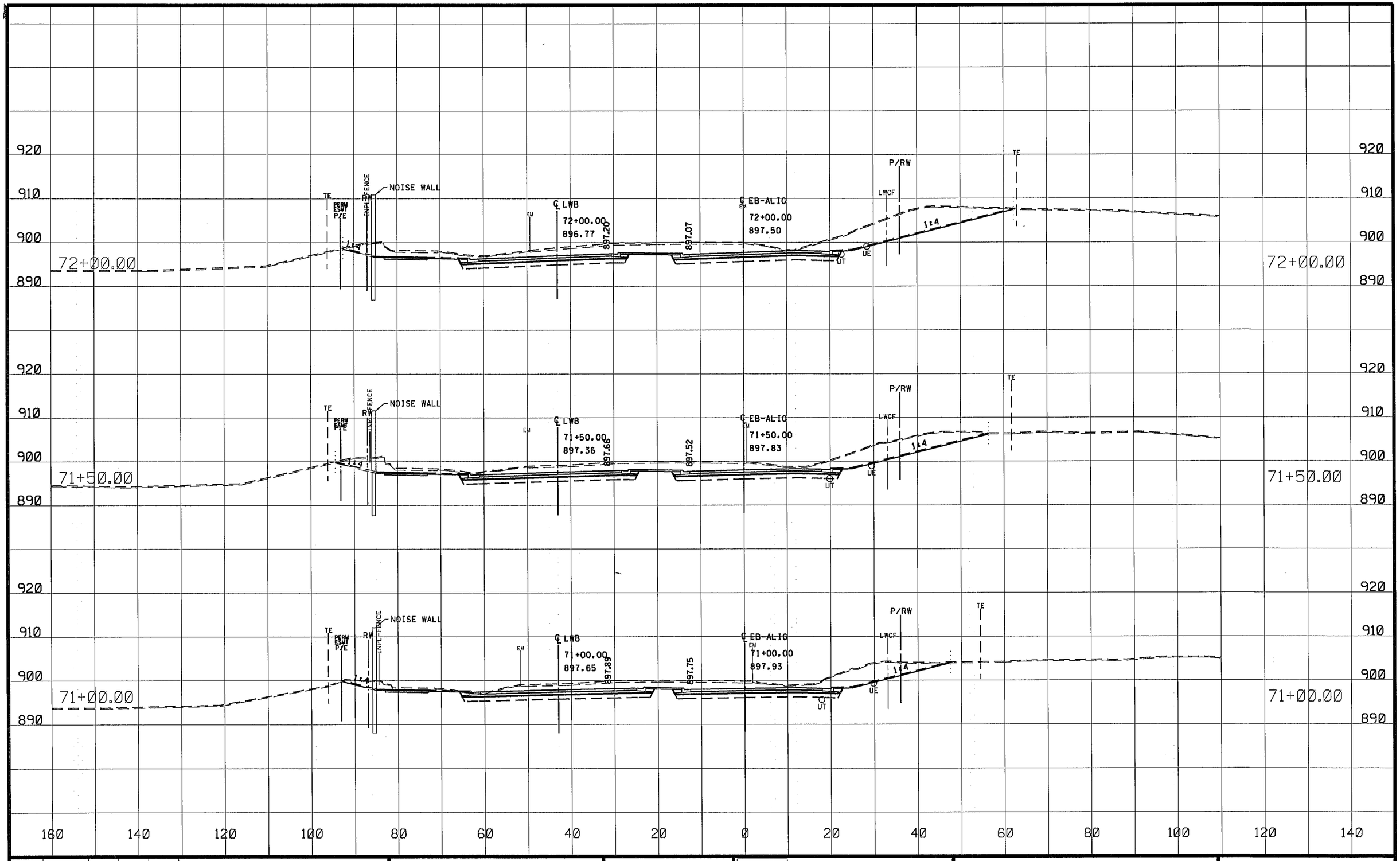
CROSS SECTIONS
STA 69+50.00 TO 70+50.00

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CROSS SECTIONS
STA 71+00.00 TO 72+00.00

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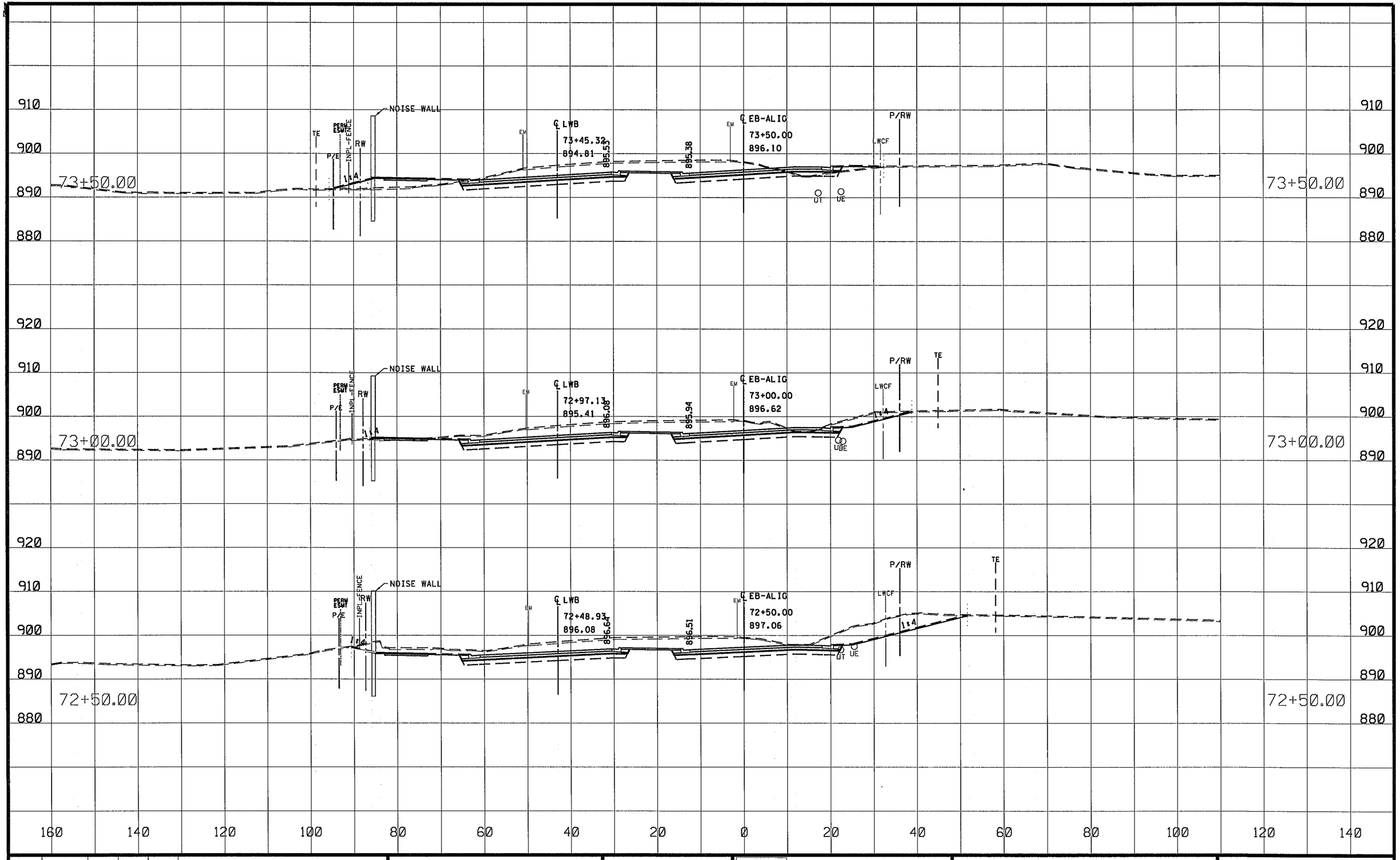


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ANOKA COUNTY

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CROSS SECTIONS

STA 72+50.00 TO 73+50.00

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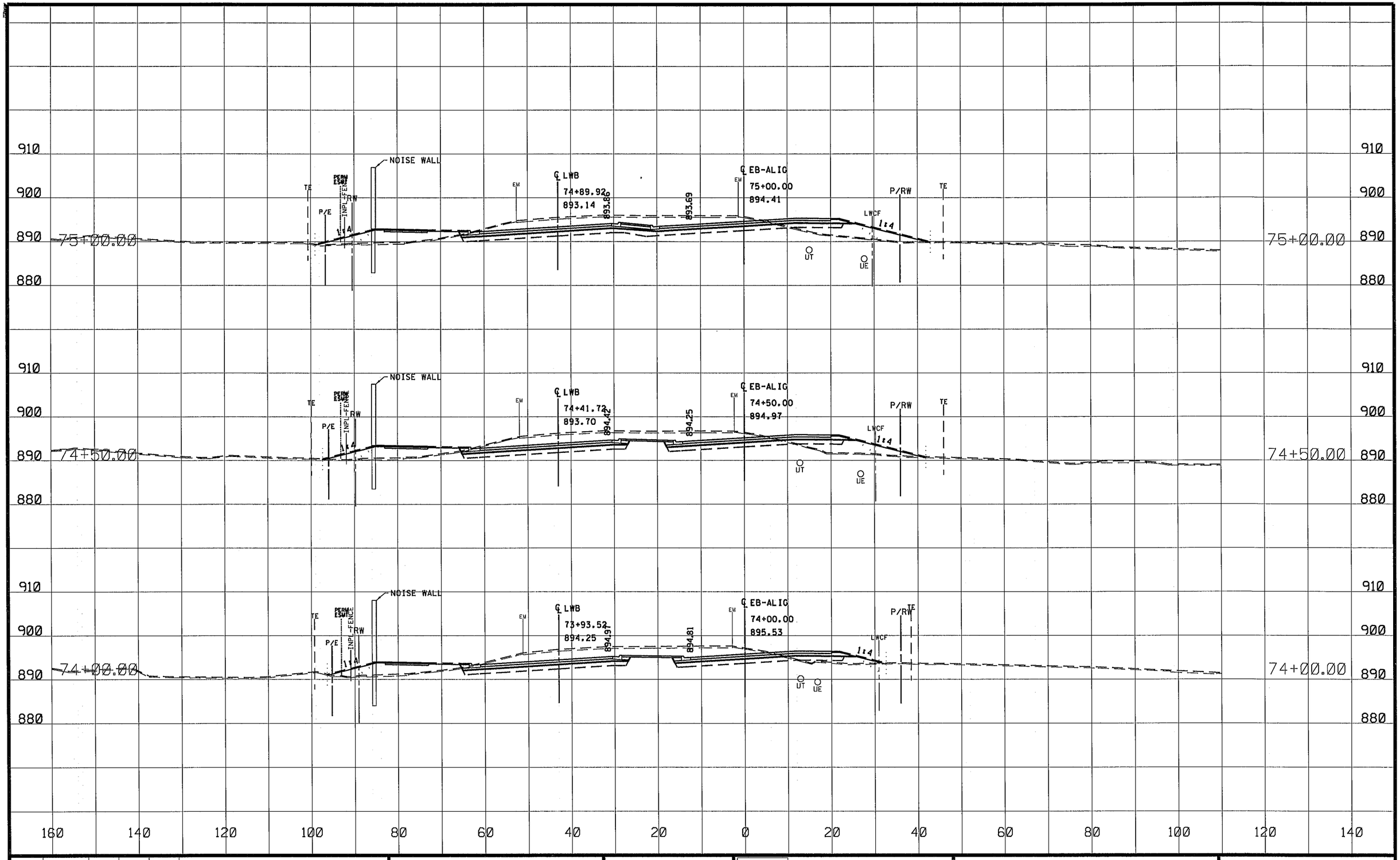


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CROSS SECTIONS

STA 74+00.00 TO 75+00.00

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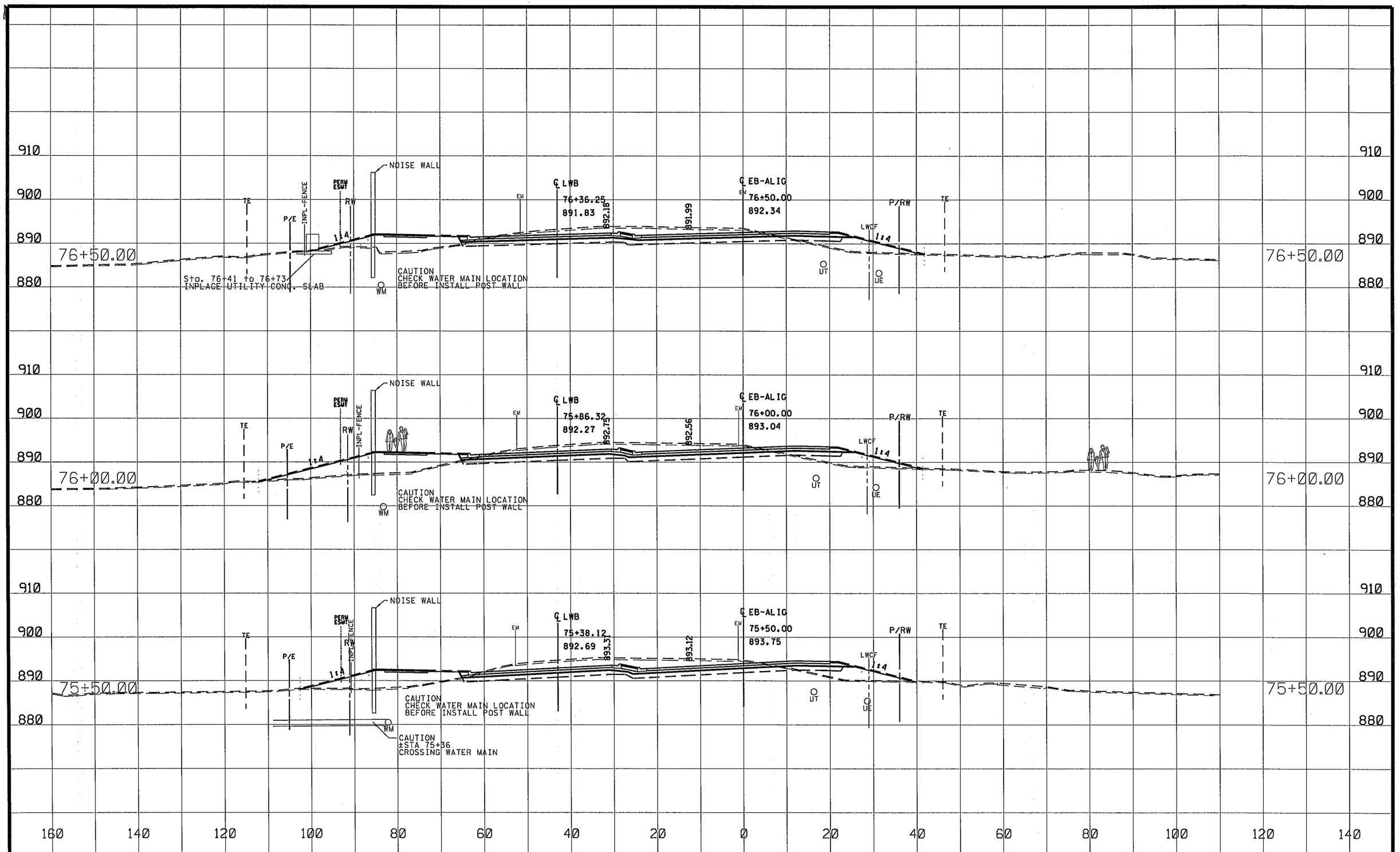


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CROSS SECTIONS
STA 75+50.00 TO 76+50.00

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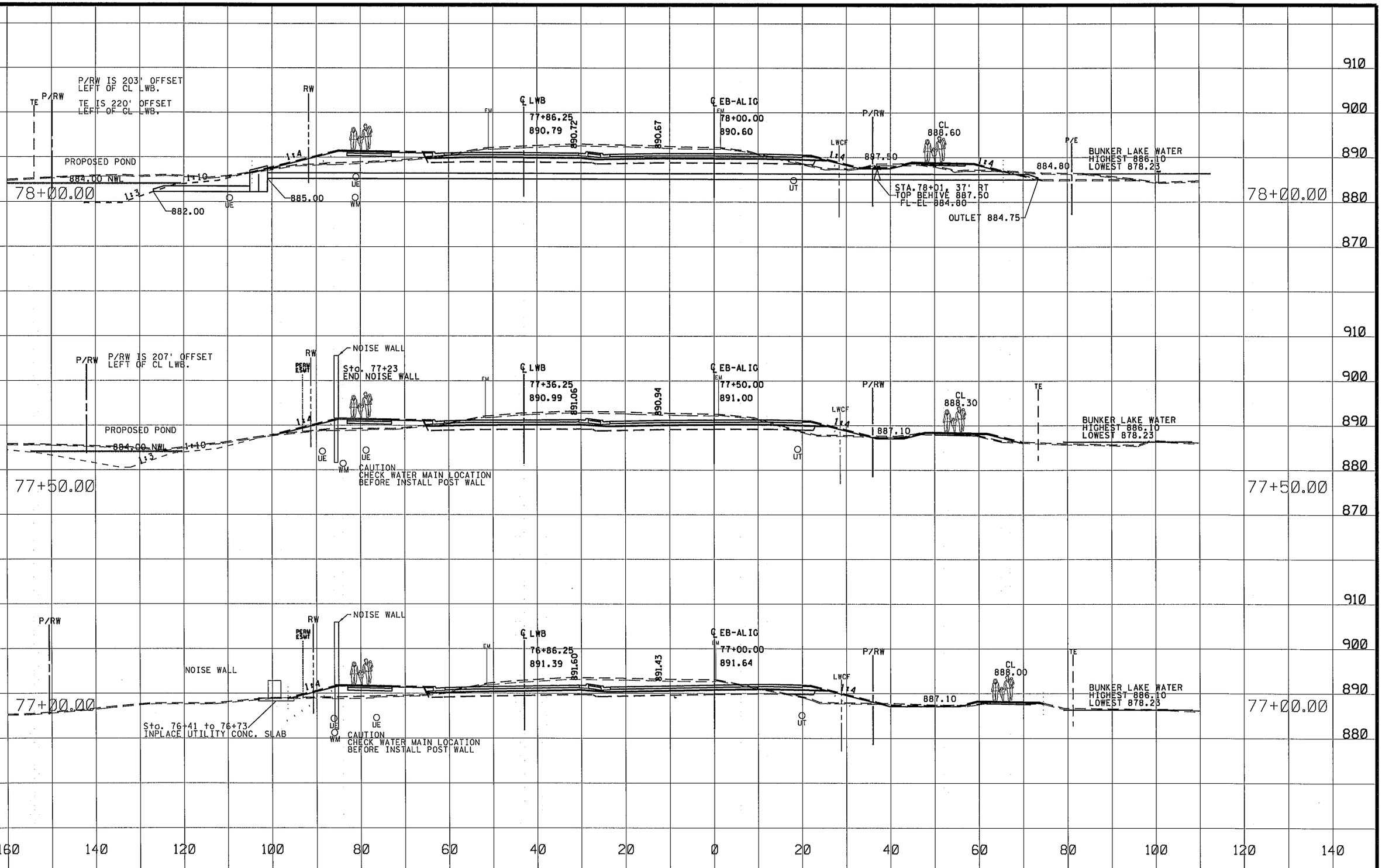


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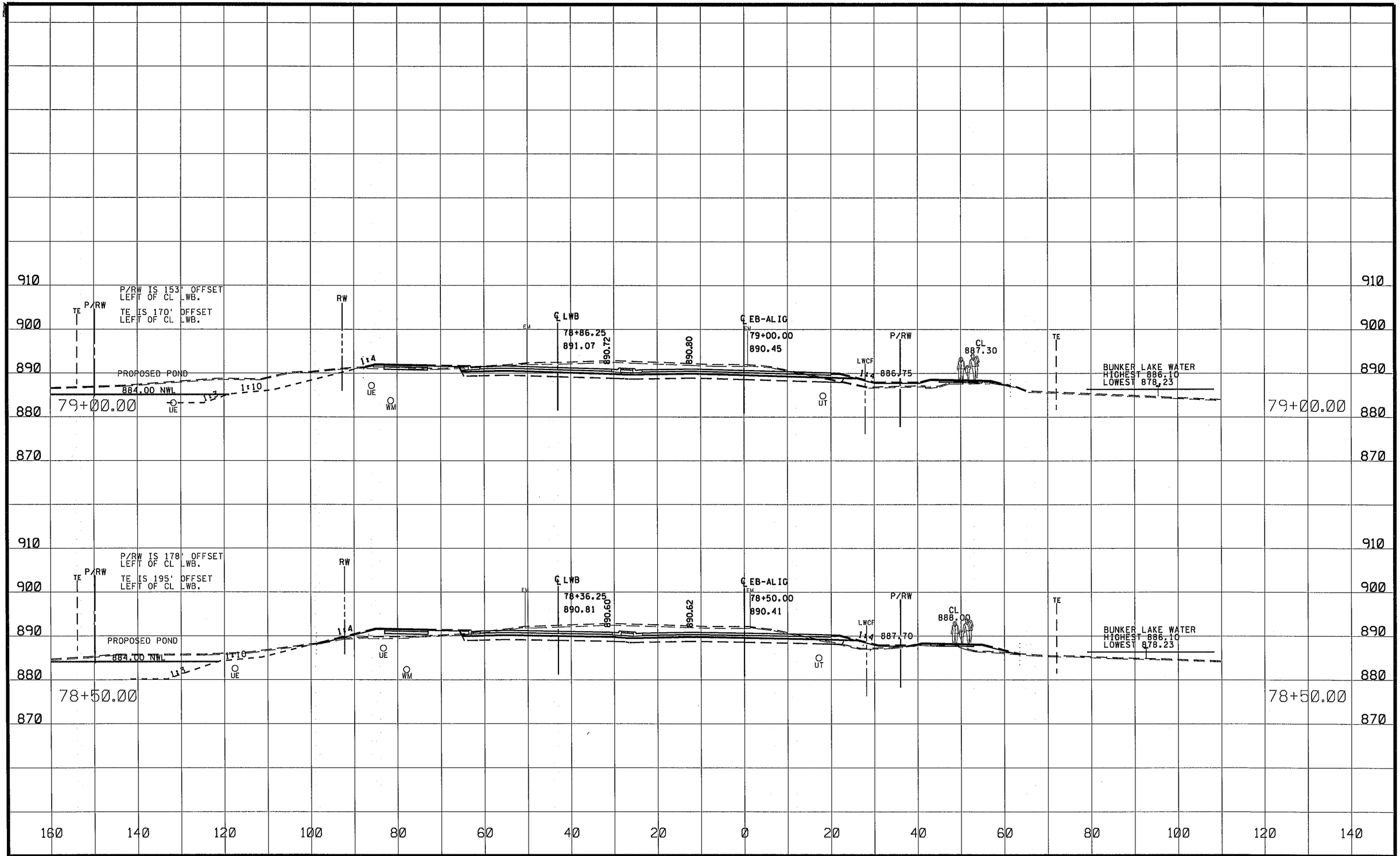
CROSS SECTIONS
STA 77+00.00 TO 78+00.00

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CROSS SECTIONS

STA 78+50.00 TO 79+00.00

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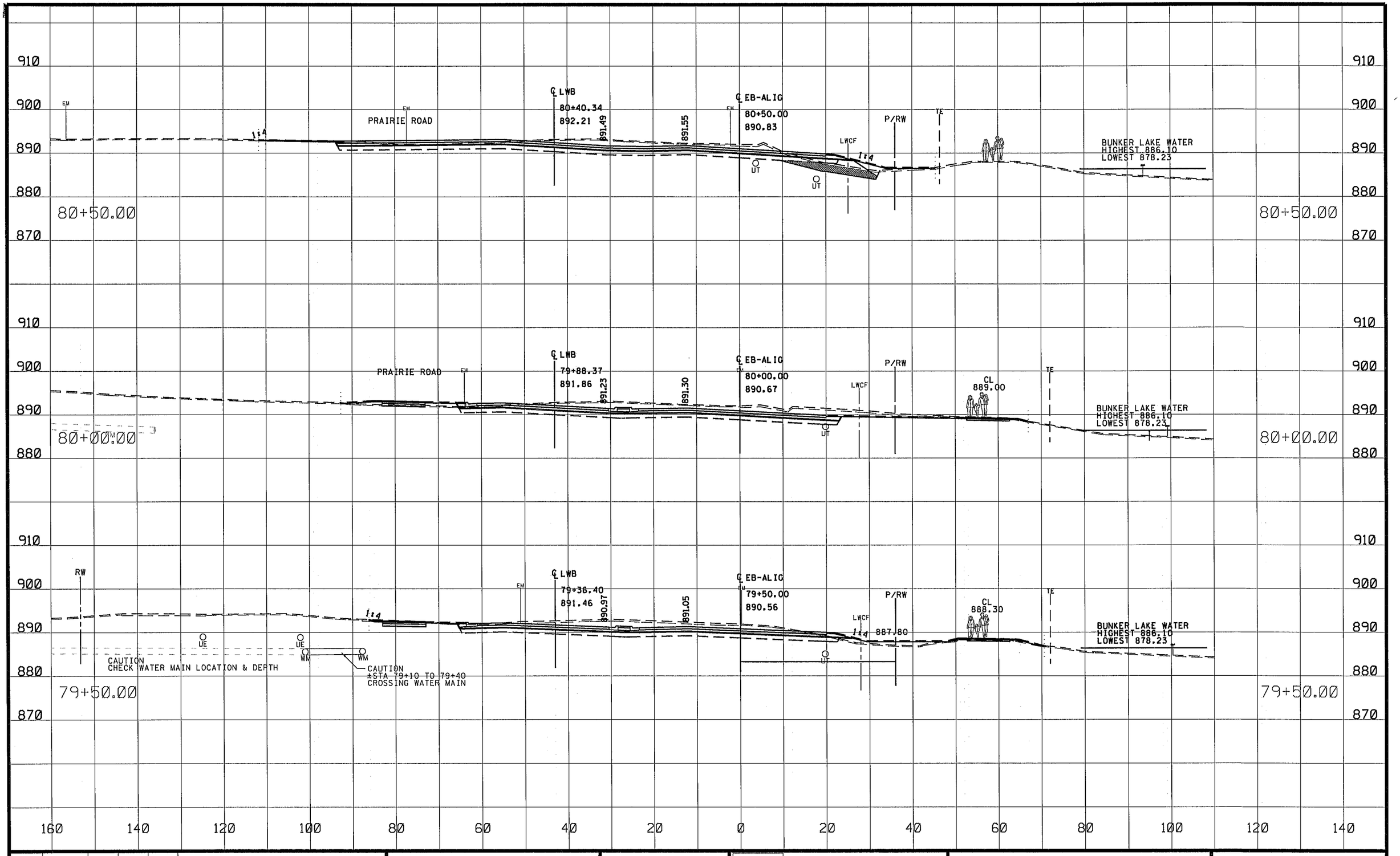


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CROSS SECTIONS

STA 79+50.00 TO 80+50.00

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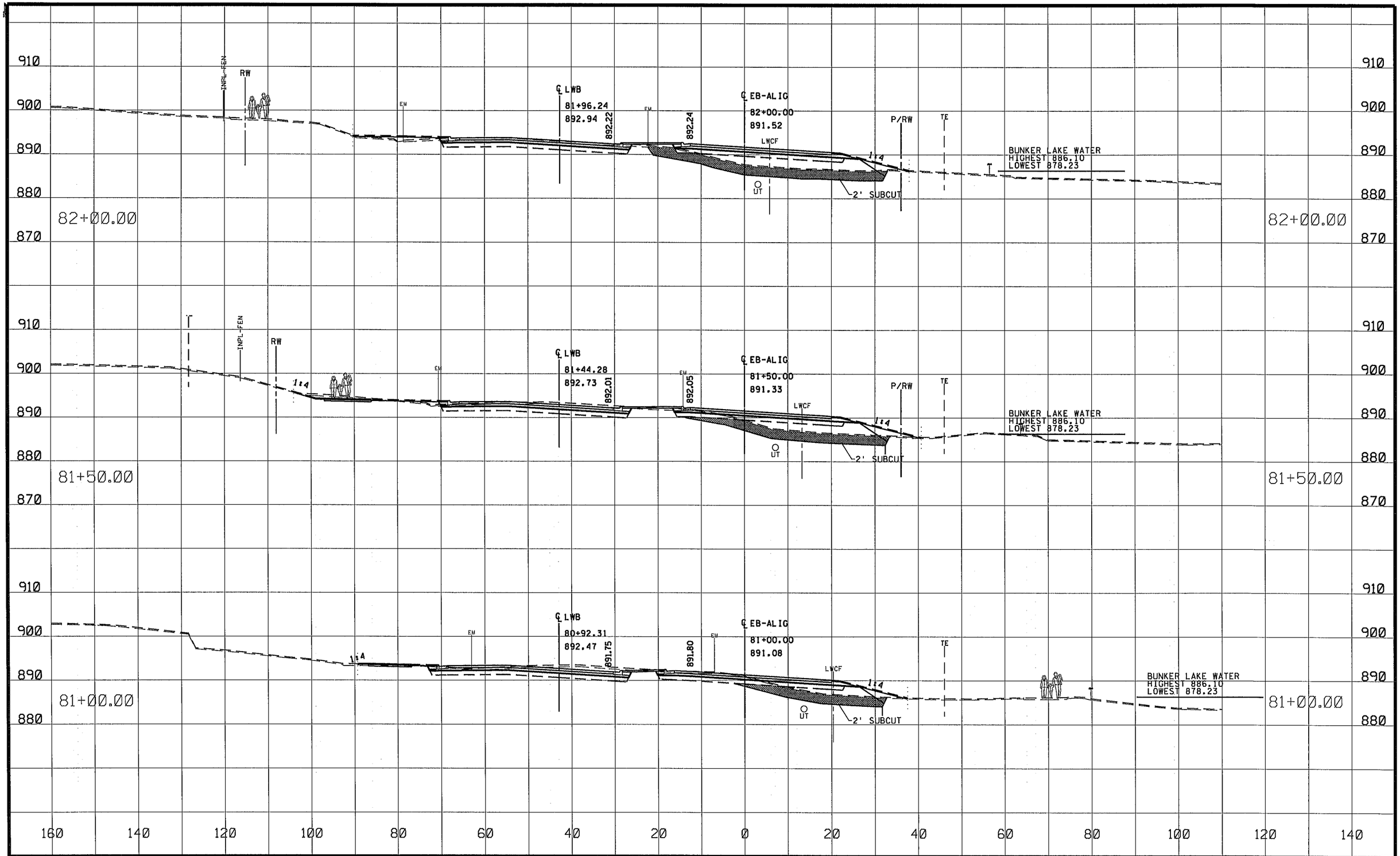


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CROSS SECTIONS

STA 81+00.00 TO 82+00.00

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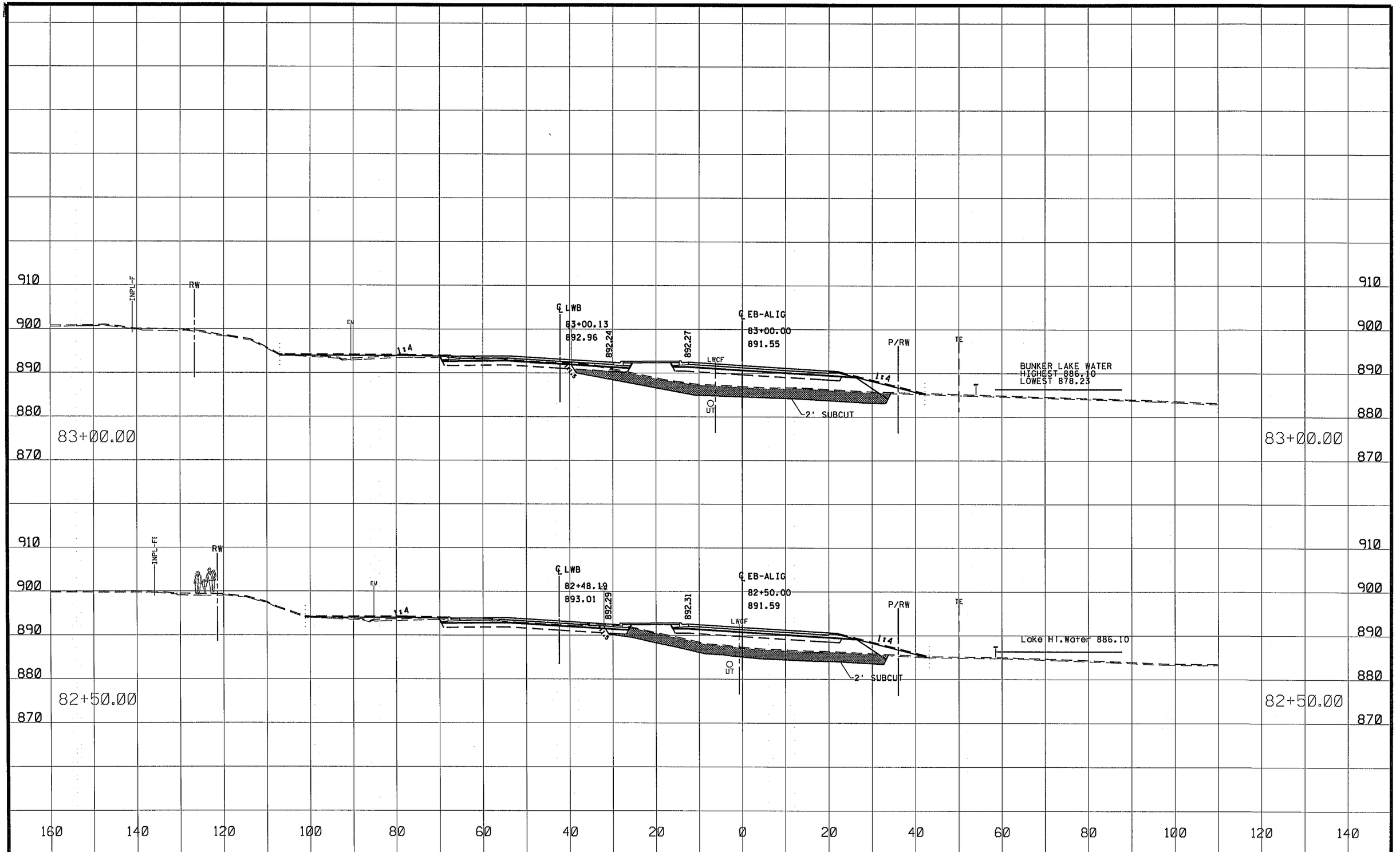


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ANOKA COUNTY

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CROSS SECTIONS

STA 82+50.00 TO 83+00.00

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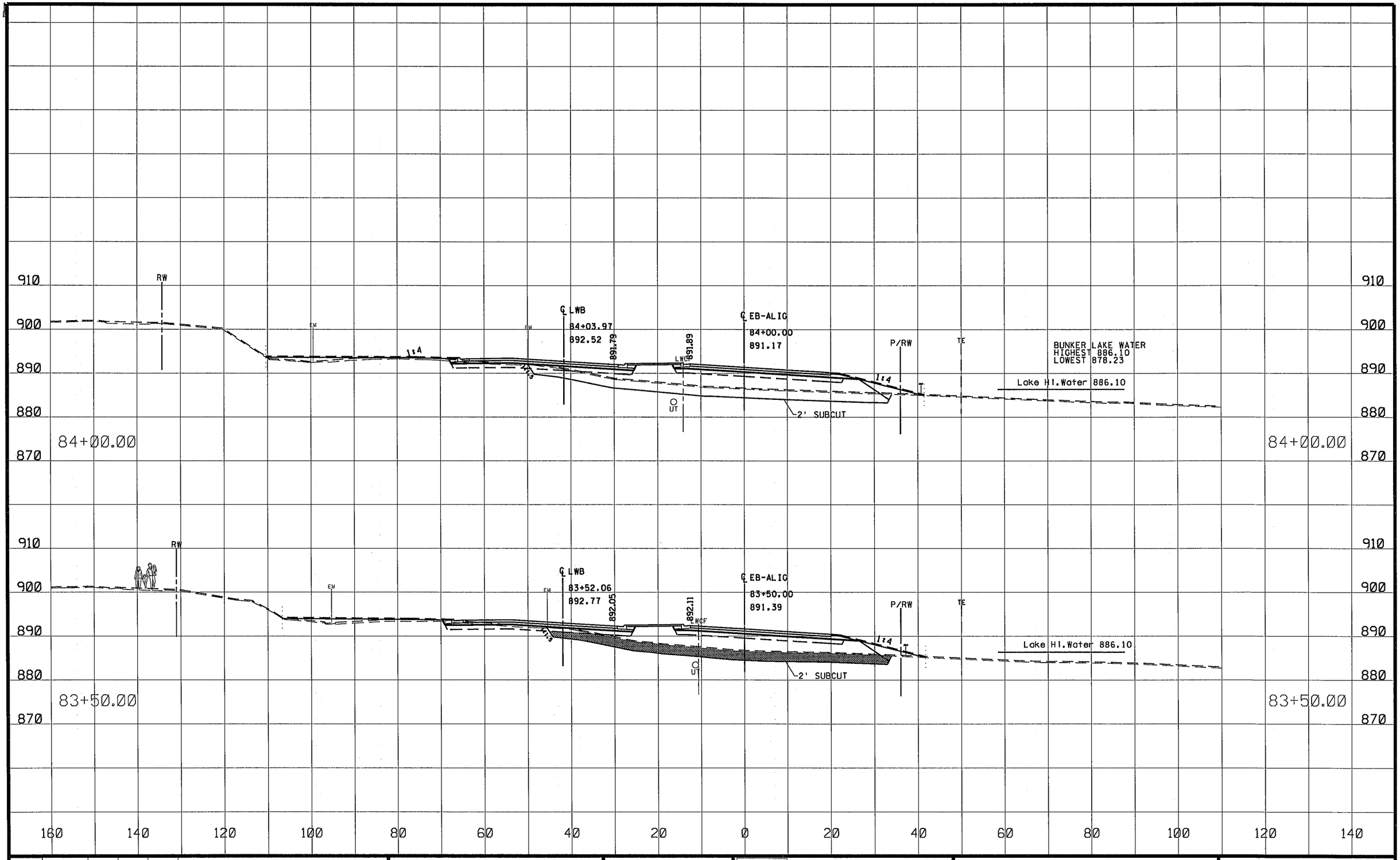


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ANOKA COUNTY

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CROSS SECTIONS

STA 83+50.00 TO 84+00.00

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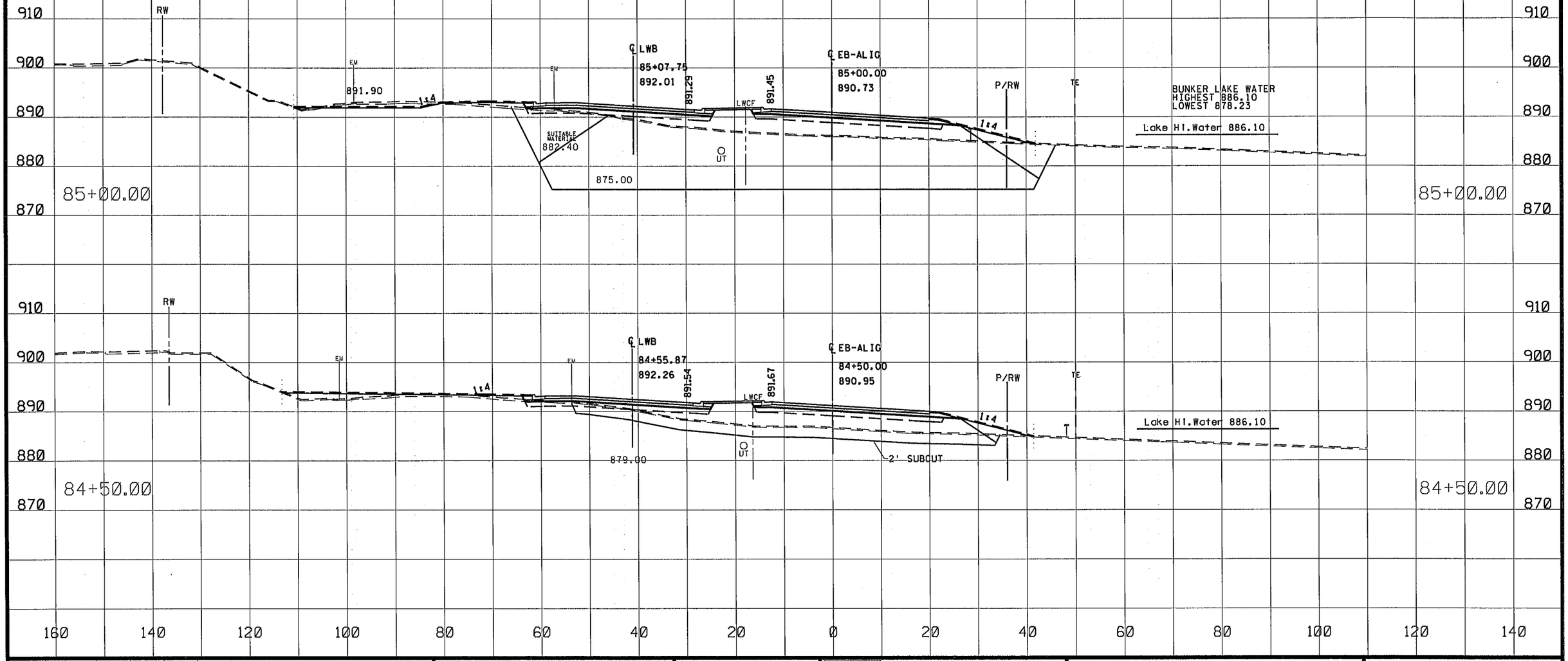


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CROSS SECTIONS

STA 84+50.00 TO 85+00.00

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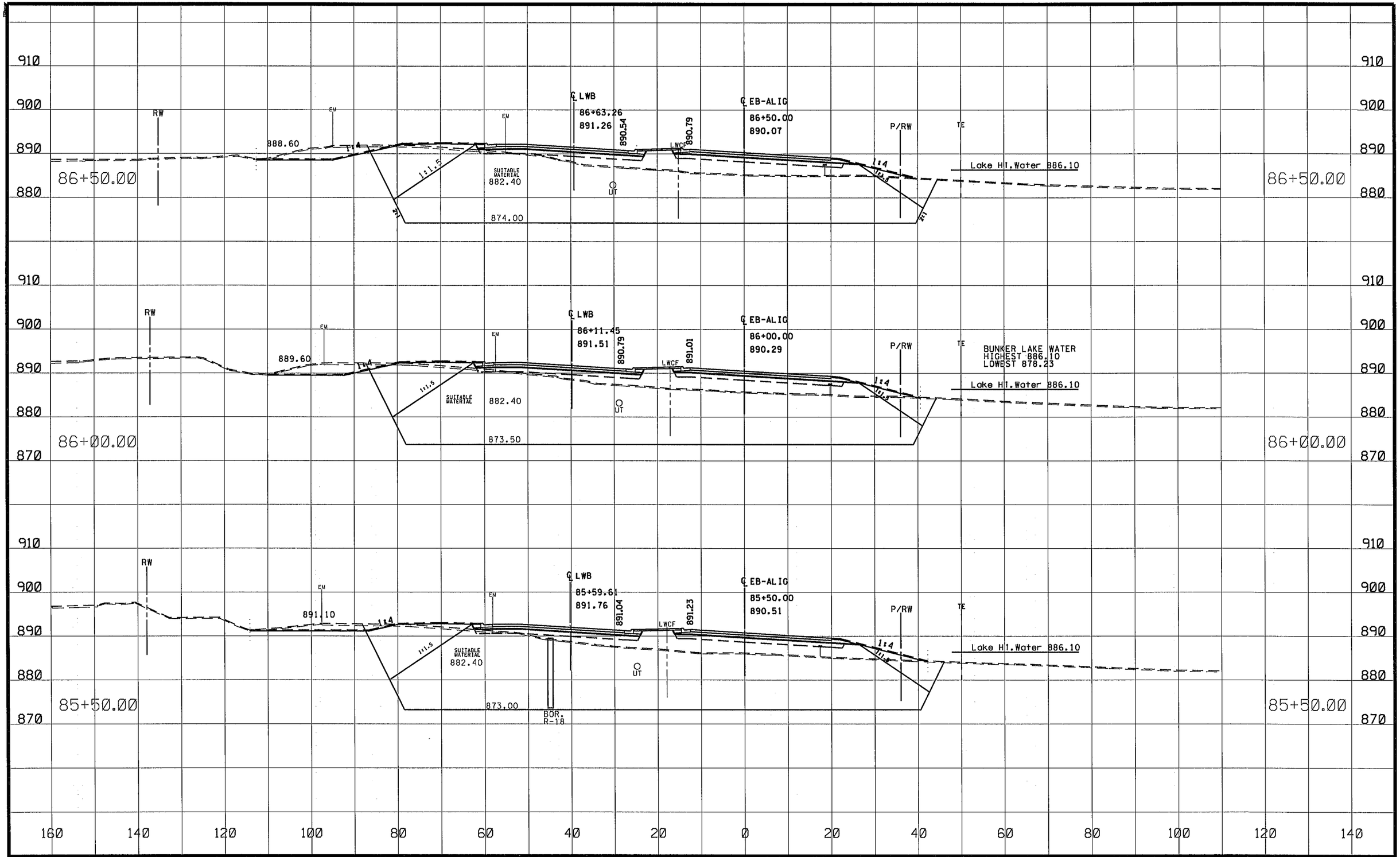


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ANOKA COUNTY

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CROSS SECTIONS
STA 85+50.00 TO 86+50.00

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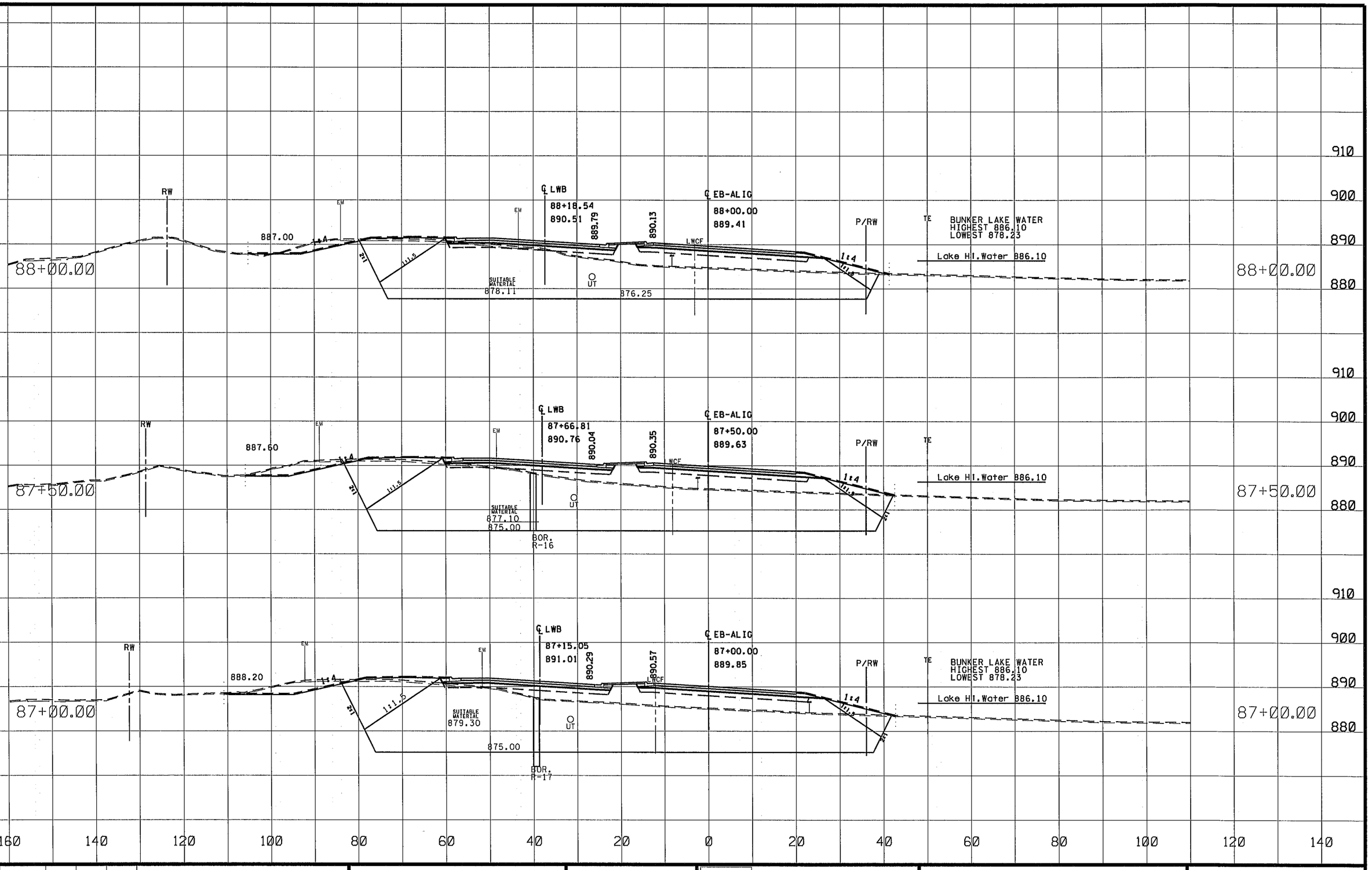


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ANOKA COUNTY HIGHWAY DEPT.

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CROSS SECTIONS

STA 87+00.00 TO 88+00.00

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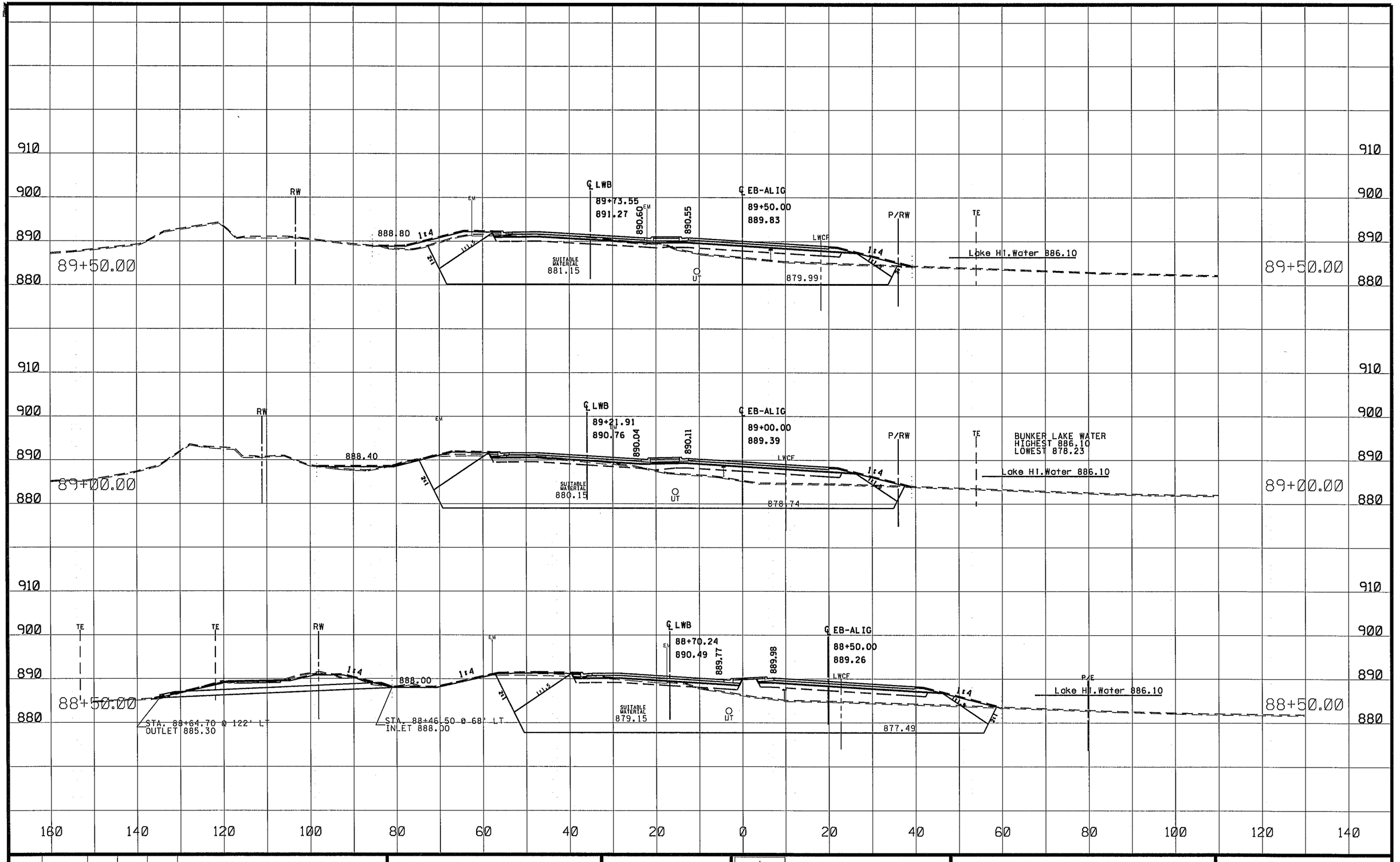


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ANOKA COUNTY

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CROSS SECTIONS

STA 88+50.00 TO 89+50.00

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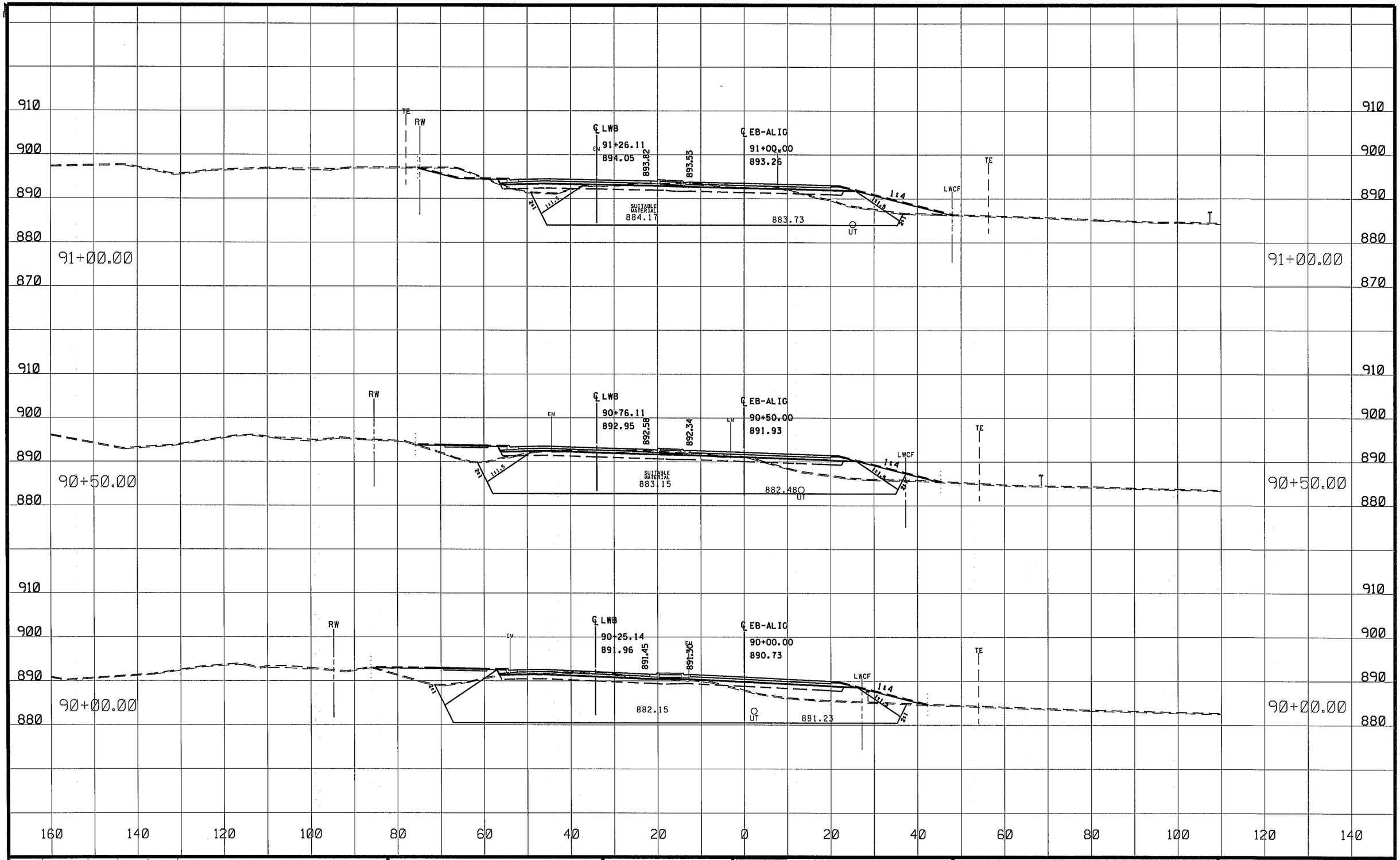


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ANOKA COUNTY

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CROSS SECTIONS

STA 90+00.00 TO 91+00.00

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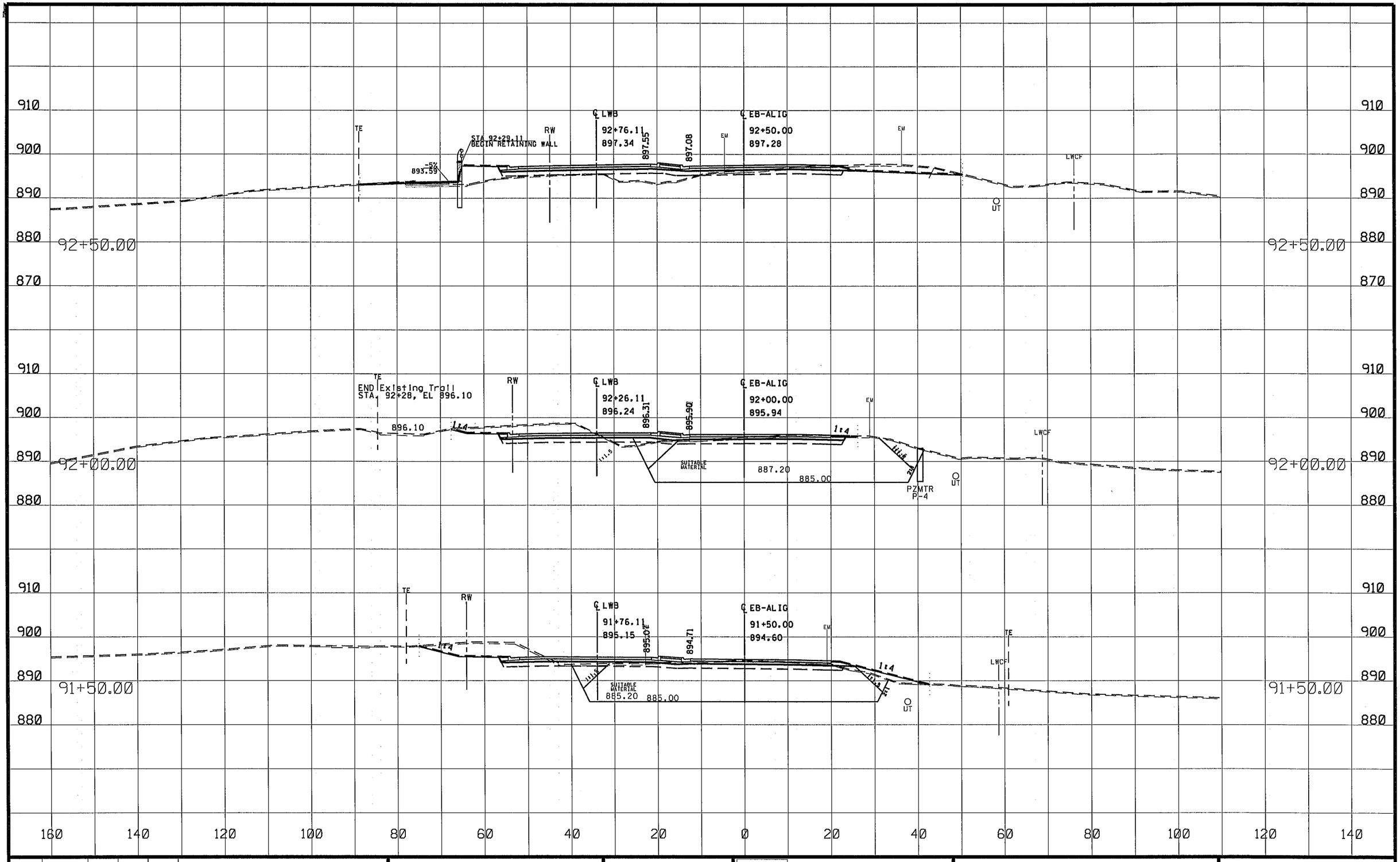


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ANOKA COUNTY

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CROSS SECTIONS

STA 91+50.00 TO 92+50.00

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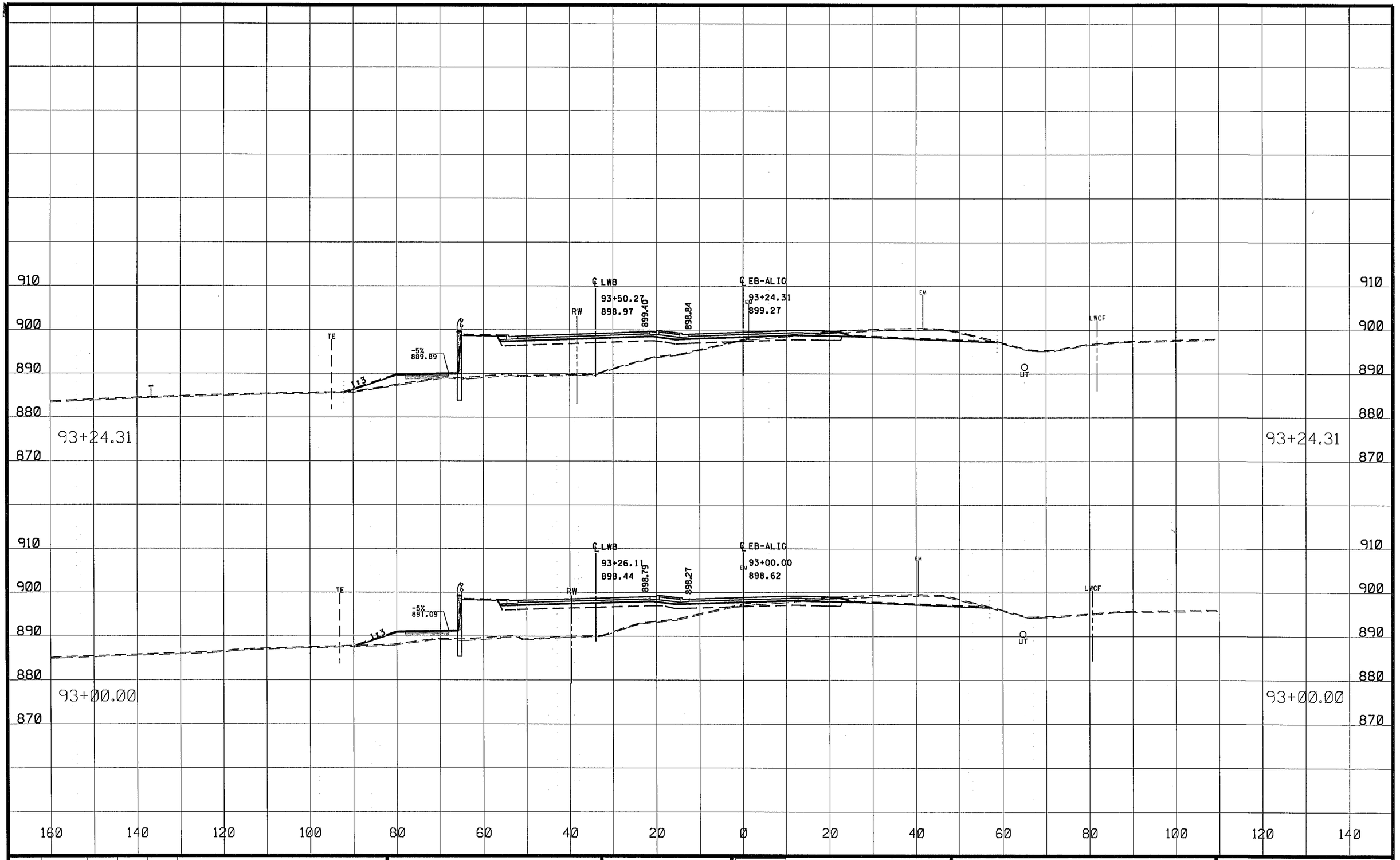


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ANOKA COUNTY

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CROSS SECTIONS

STA 93+00.00 TO 93+24.31

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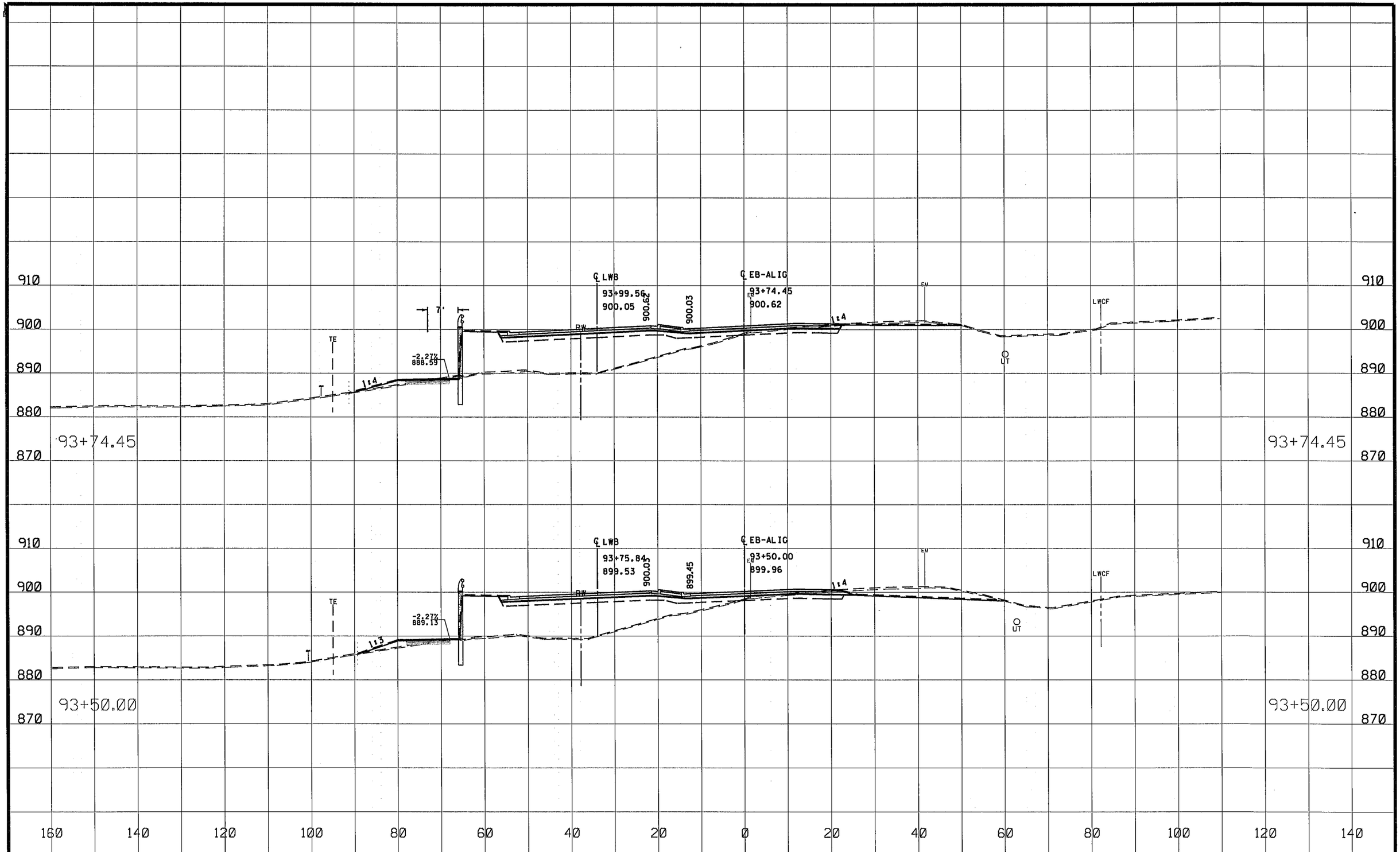


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ANOKA COUNTY HIGHWAY DEPT.

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CROSS SECTIONS
STA 93+50.00 TO 93+74.45

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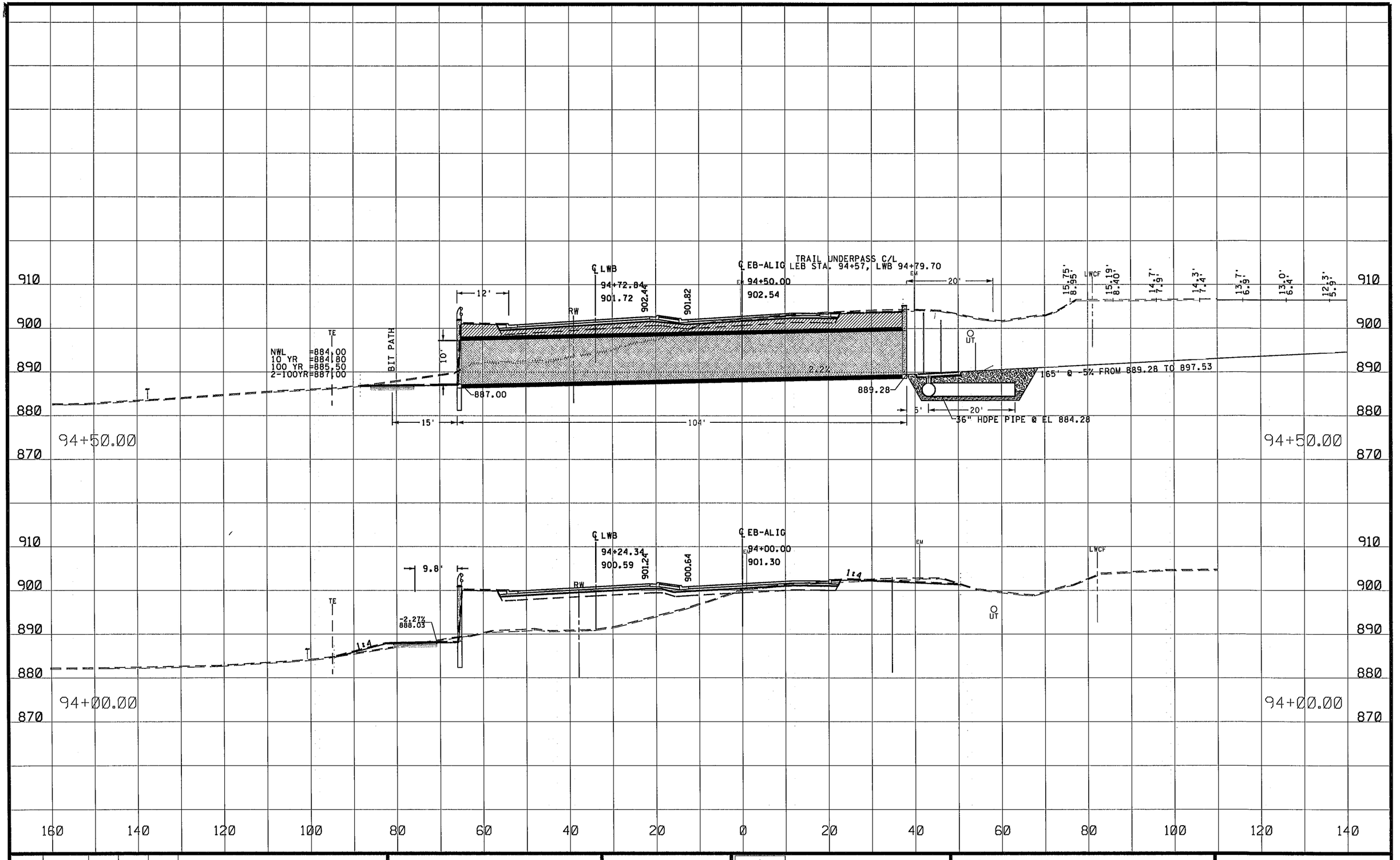


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ANOKA COUNTY HIGHWAY DEPT.

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CROSS SECTIONS
STA 94+00.00 TO 94+50.00

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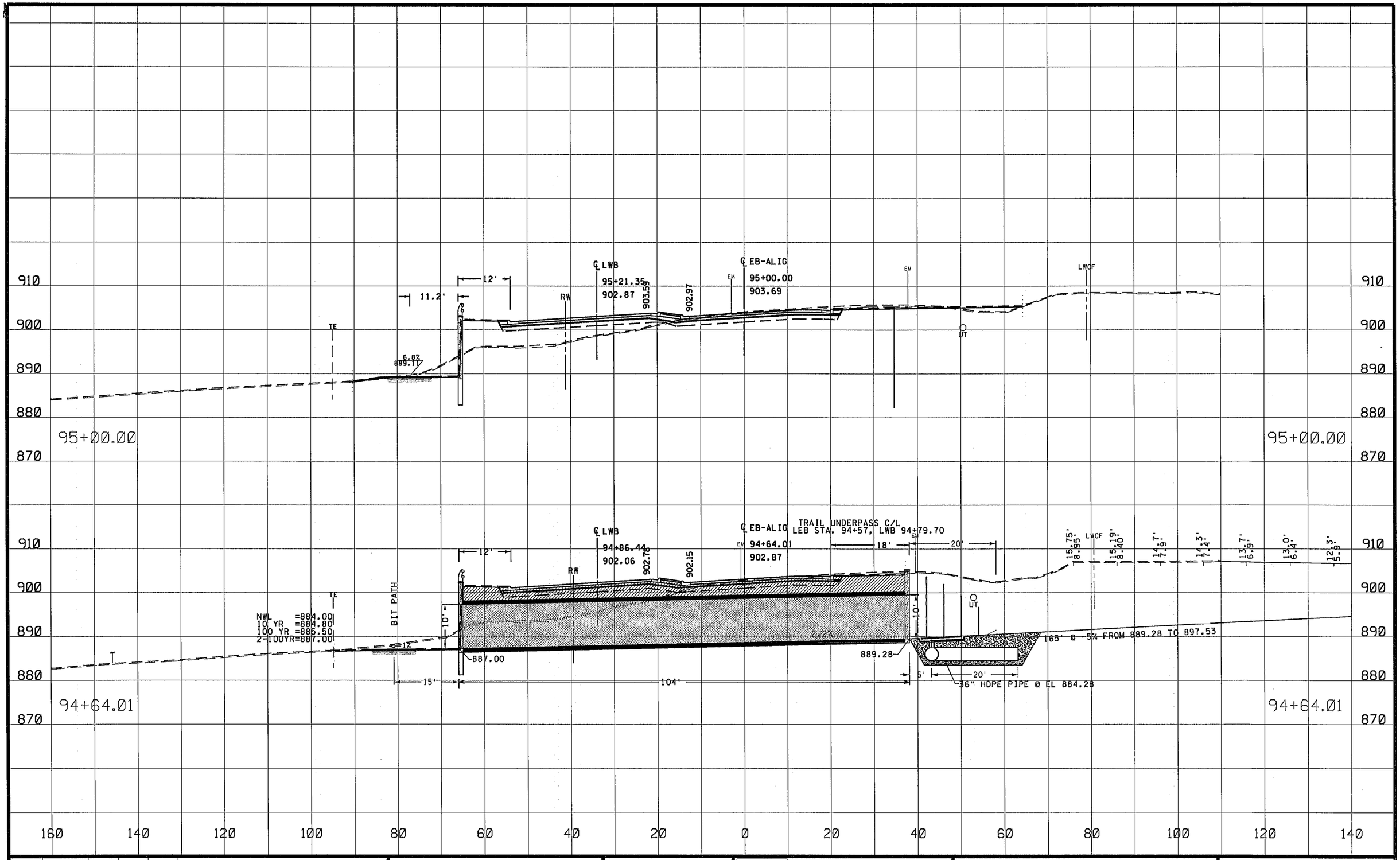


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CROSS SECTIONS
STA 94+64.01 TO 95+00.00

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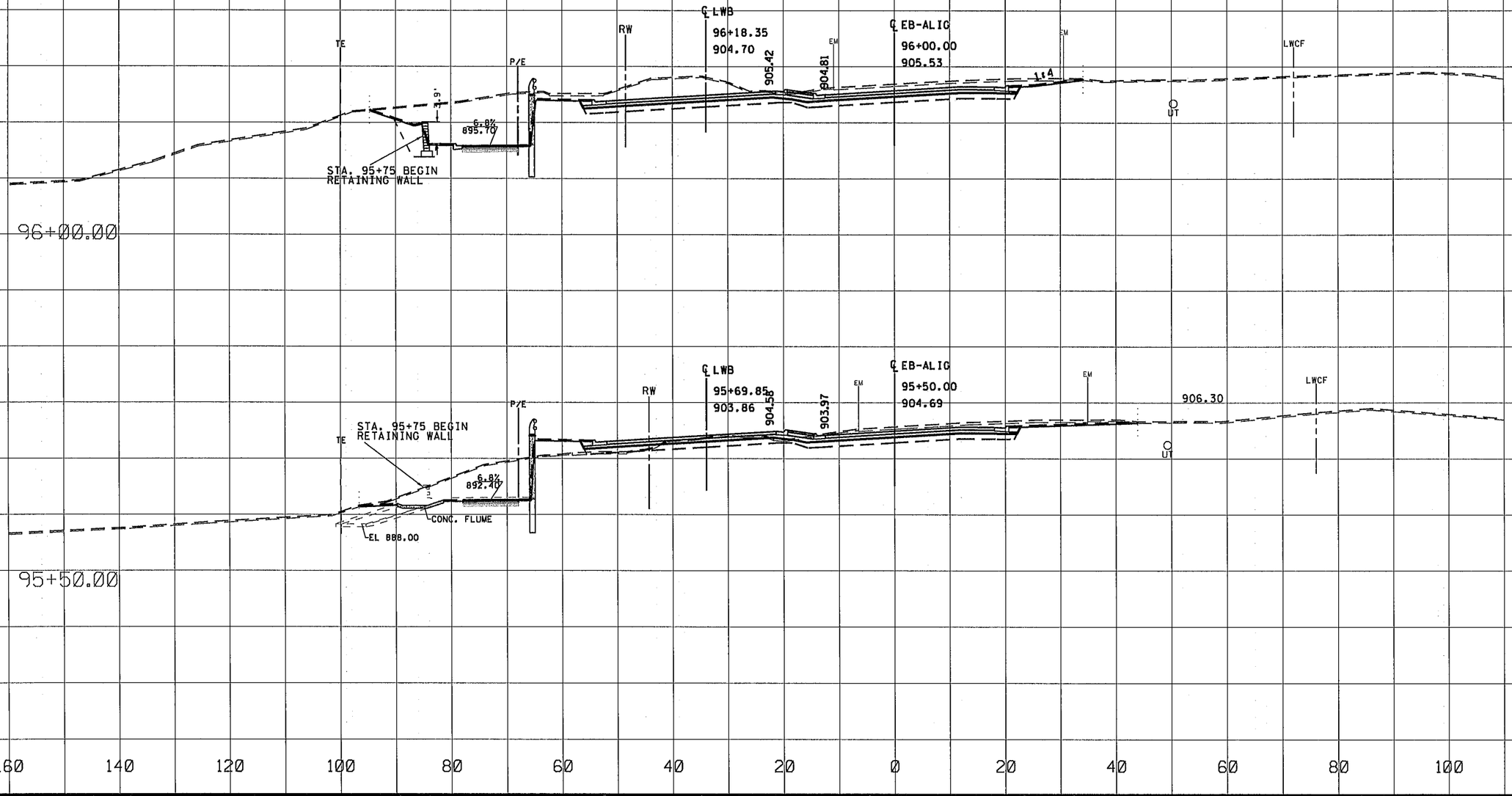


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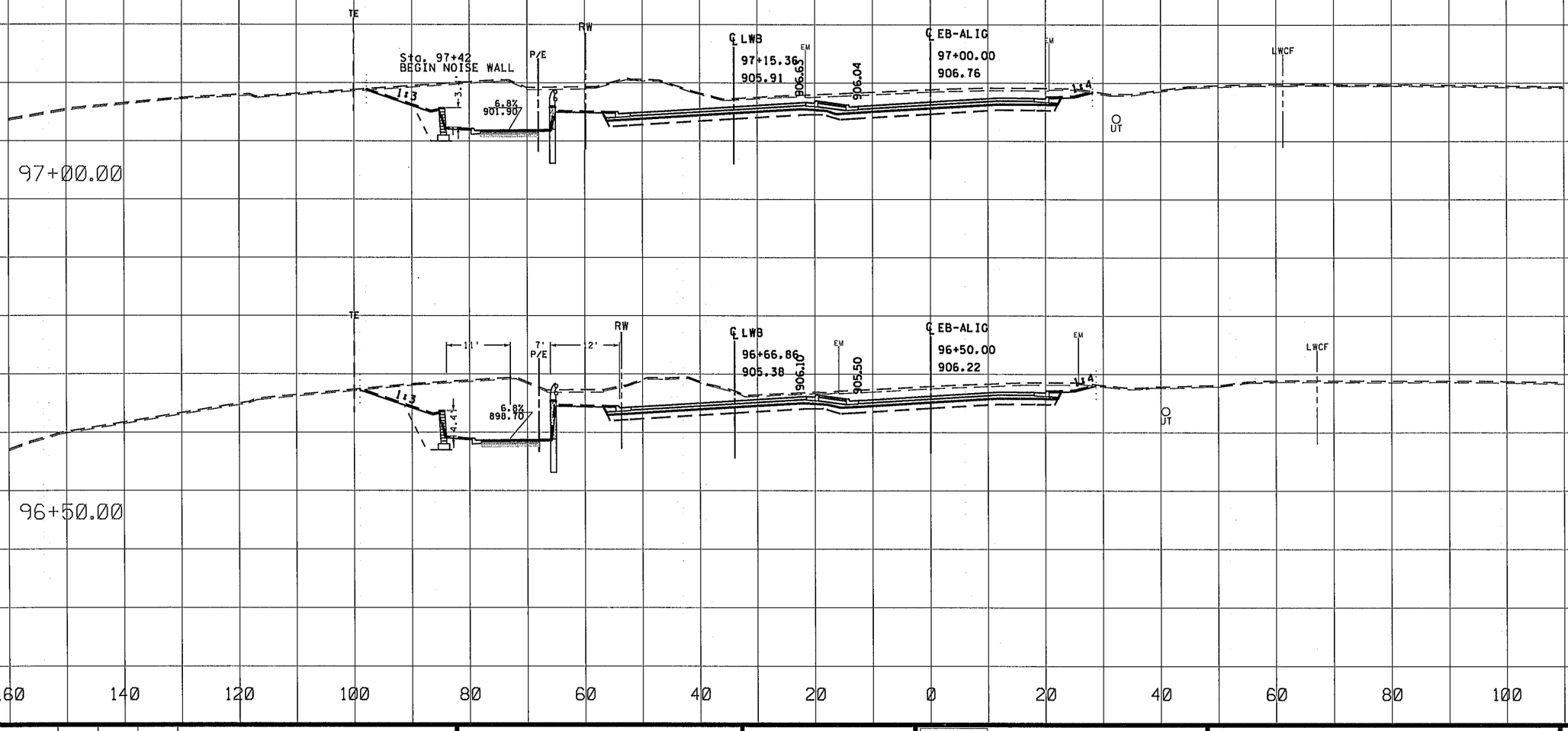
C.P. 11-25

CROSS SECTIONS

STA 95+50.00 TO 96+00.00

Sheet 413 of 482 Sheets

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ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
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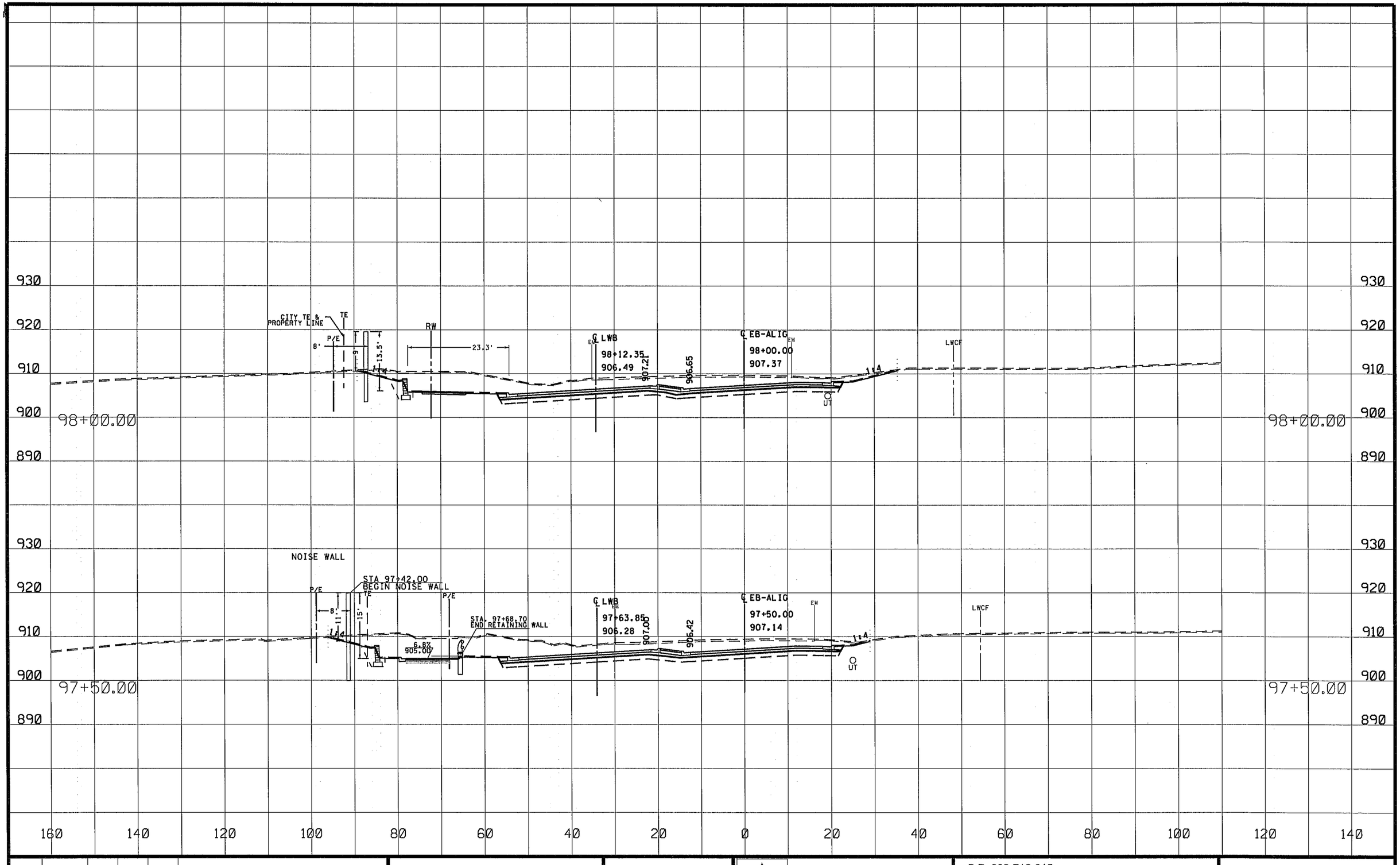
CROSS SECTIONS
STA 96+50.00 TO 97+00.00

Sheet 414 of 482 Sheets

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ANOKA COUNTY

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CROSS SECTIONS

STA 97+50.00 TO 98+00.00

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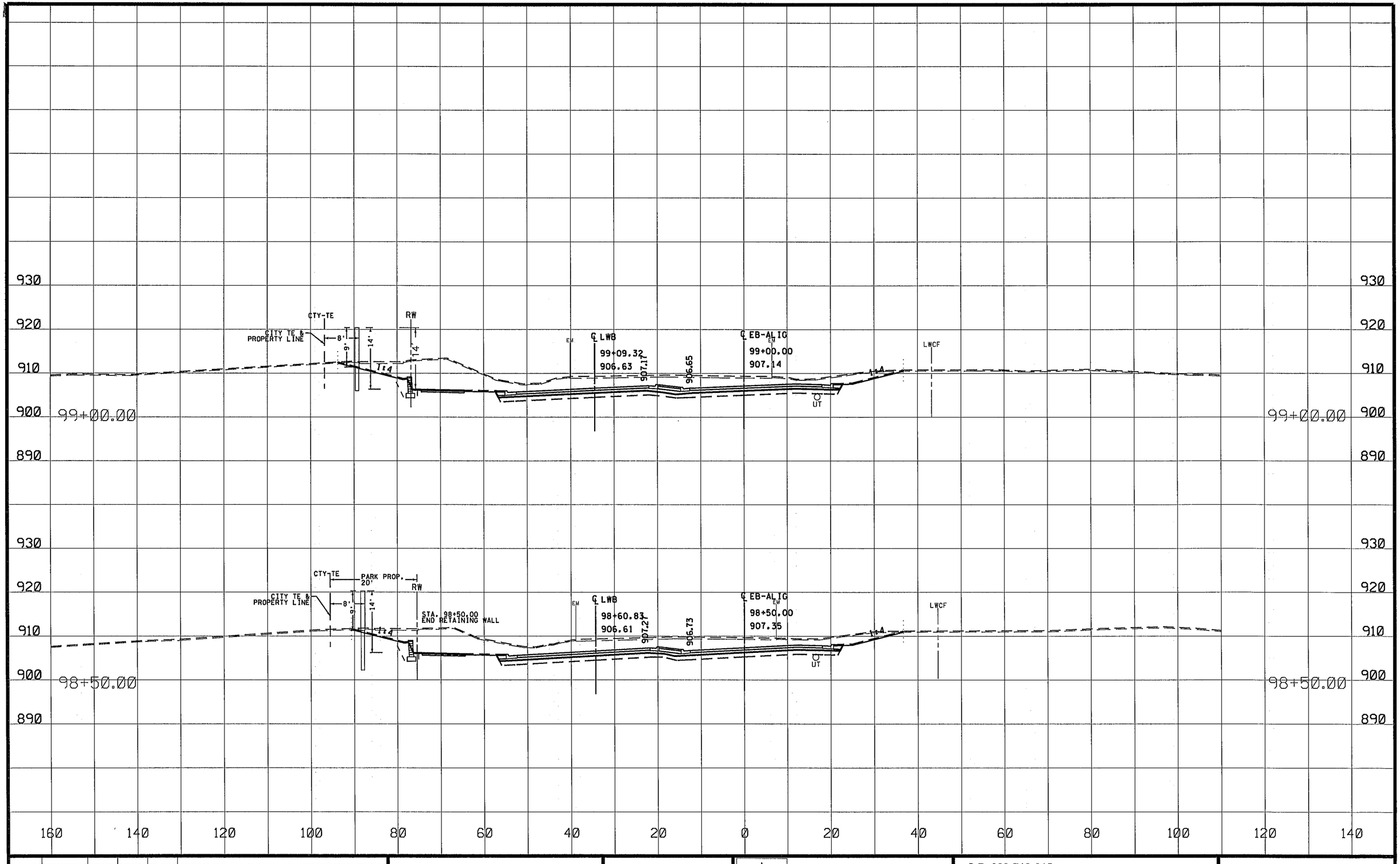


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ANOKA COUNTY
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S.P. 198-020-036
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CROSS SECTIONS
STA 98+50.00 TO 99+00.00

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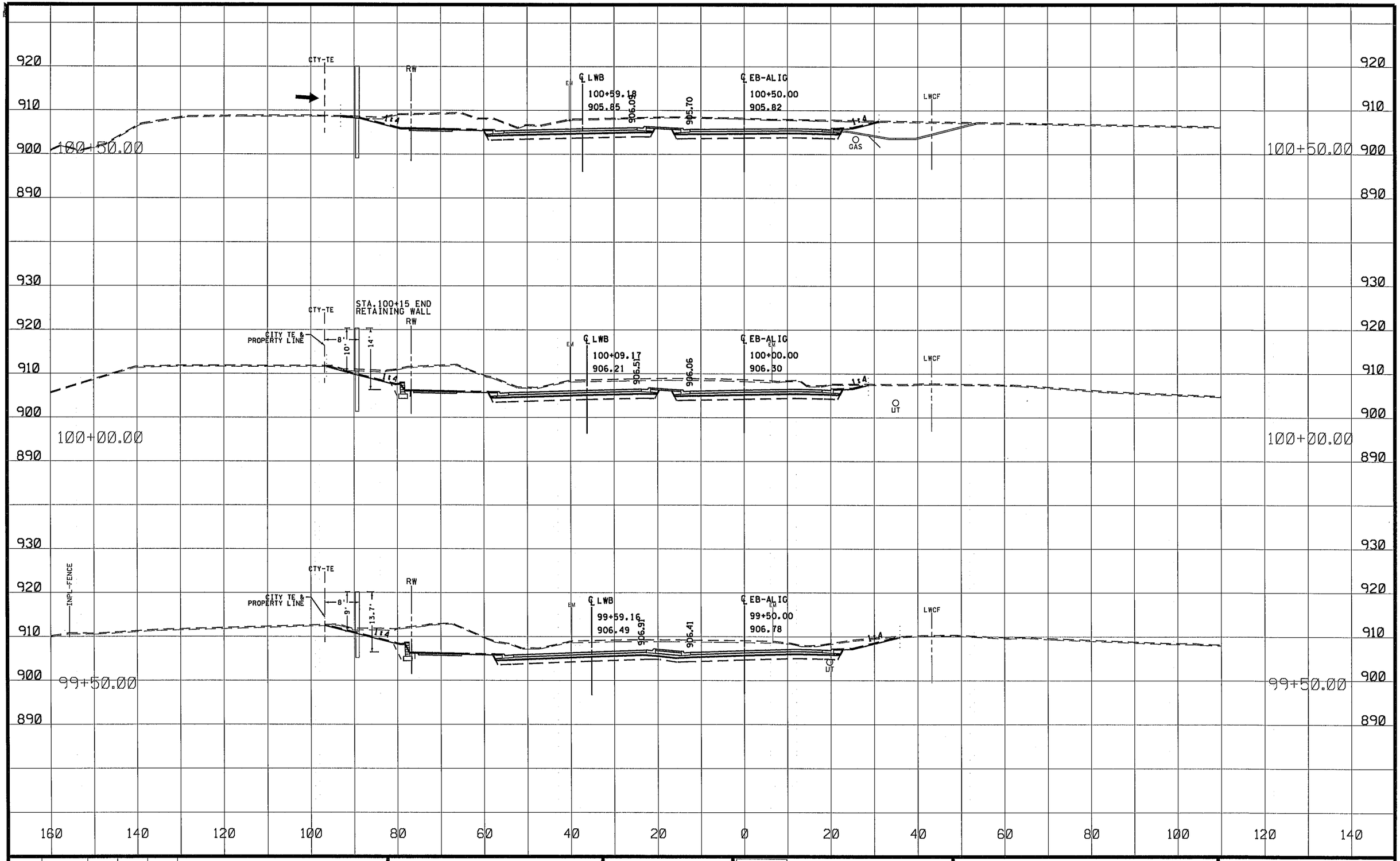


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ANOKA COUNTY

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CROSS SECTIONS

STA 99+50.00 TO 100+50.00

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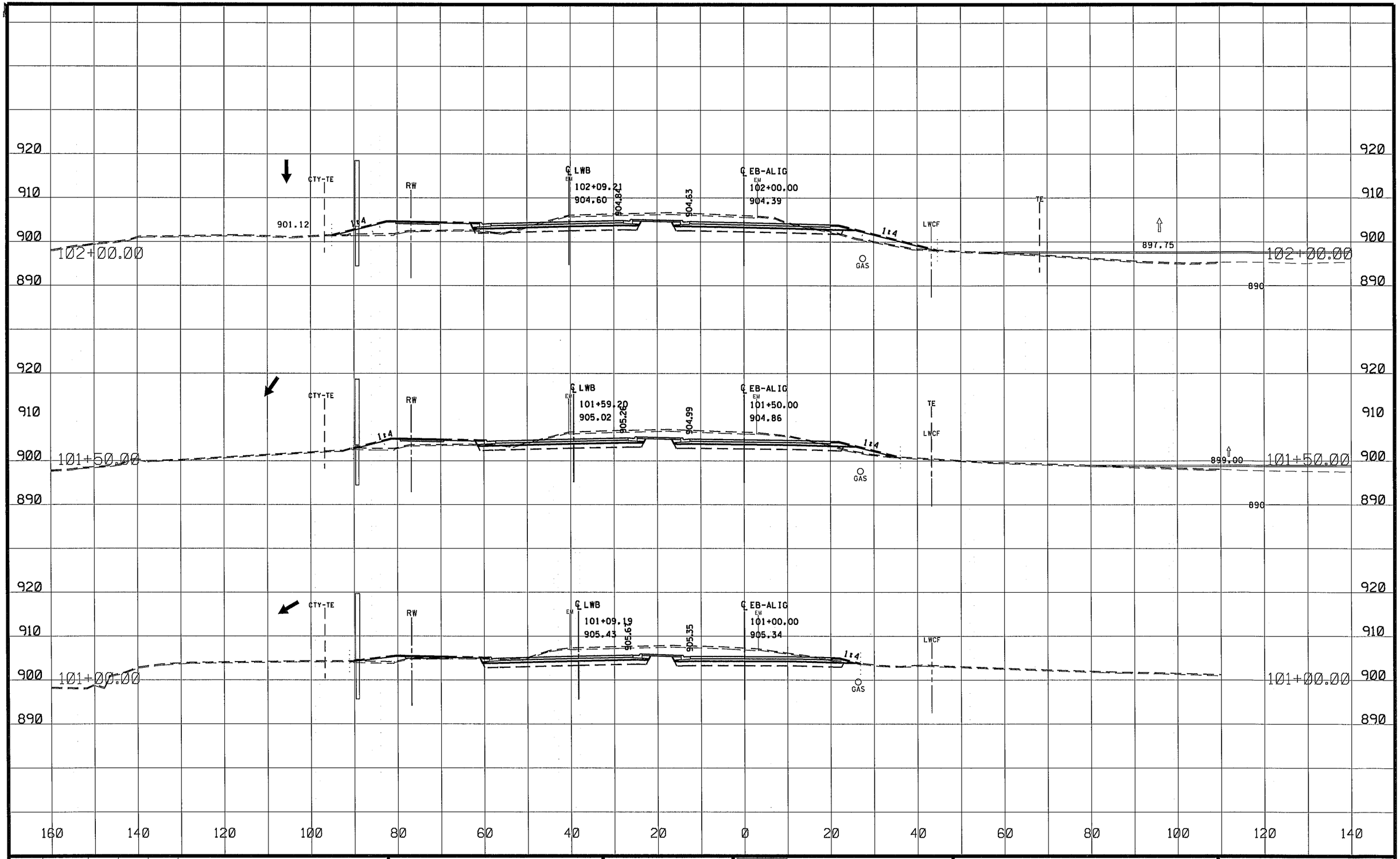


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ANOKA COUNTY

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CROSS SECTIONS

STA 101+00.00 TO 102+00.00

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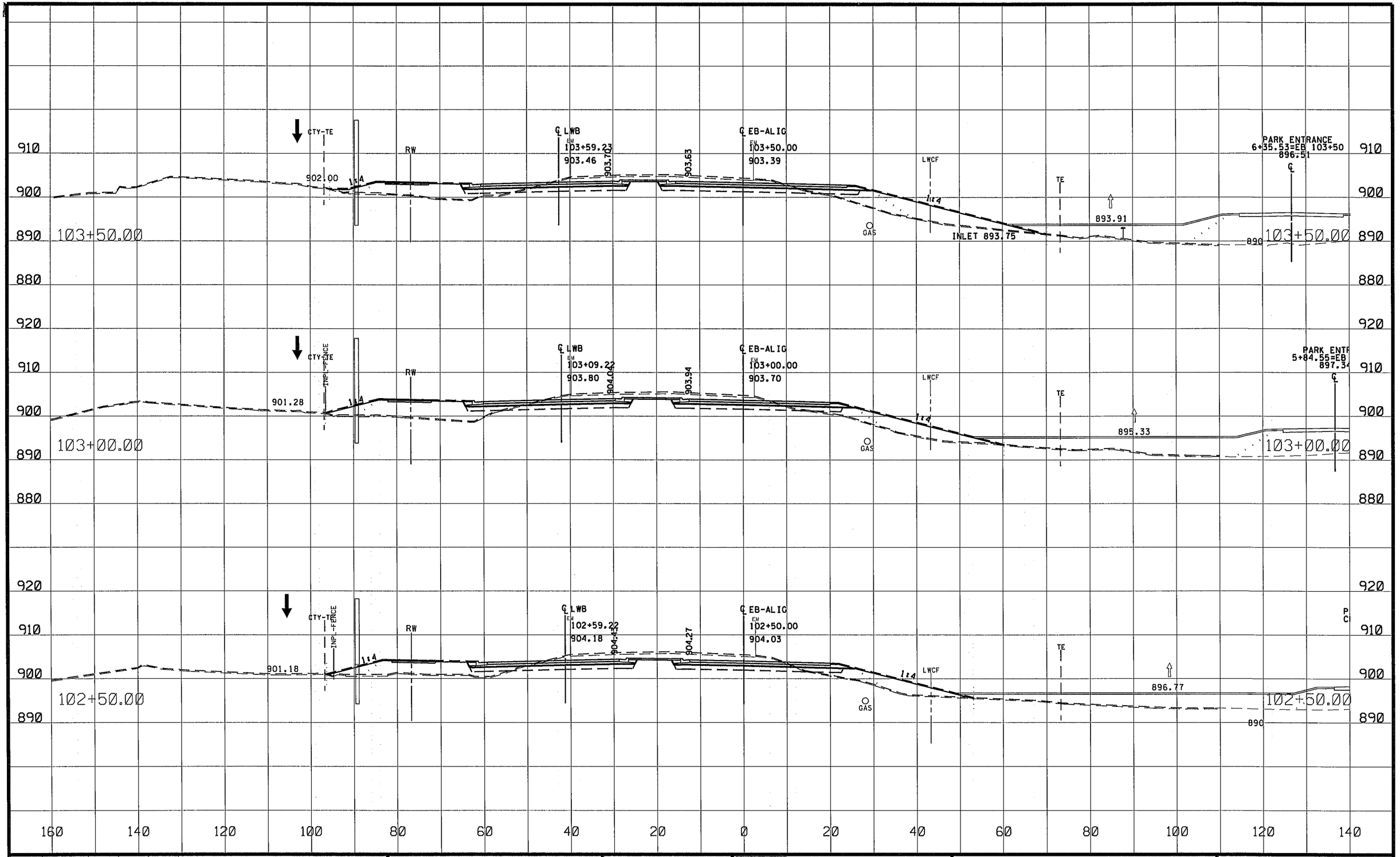


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CROSS SECTIONS
STA 102+50.00 TO 103+50.00

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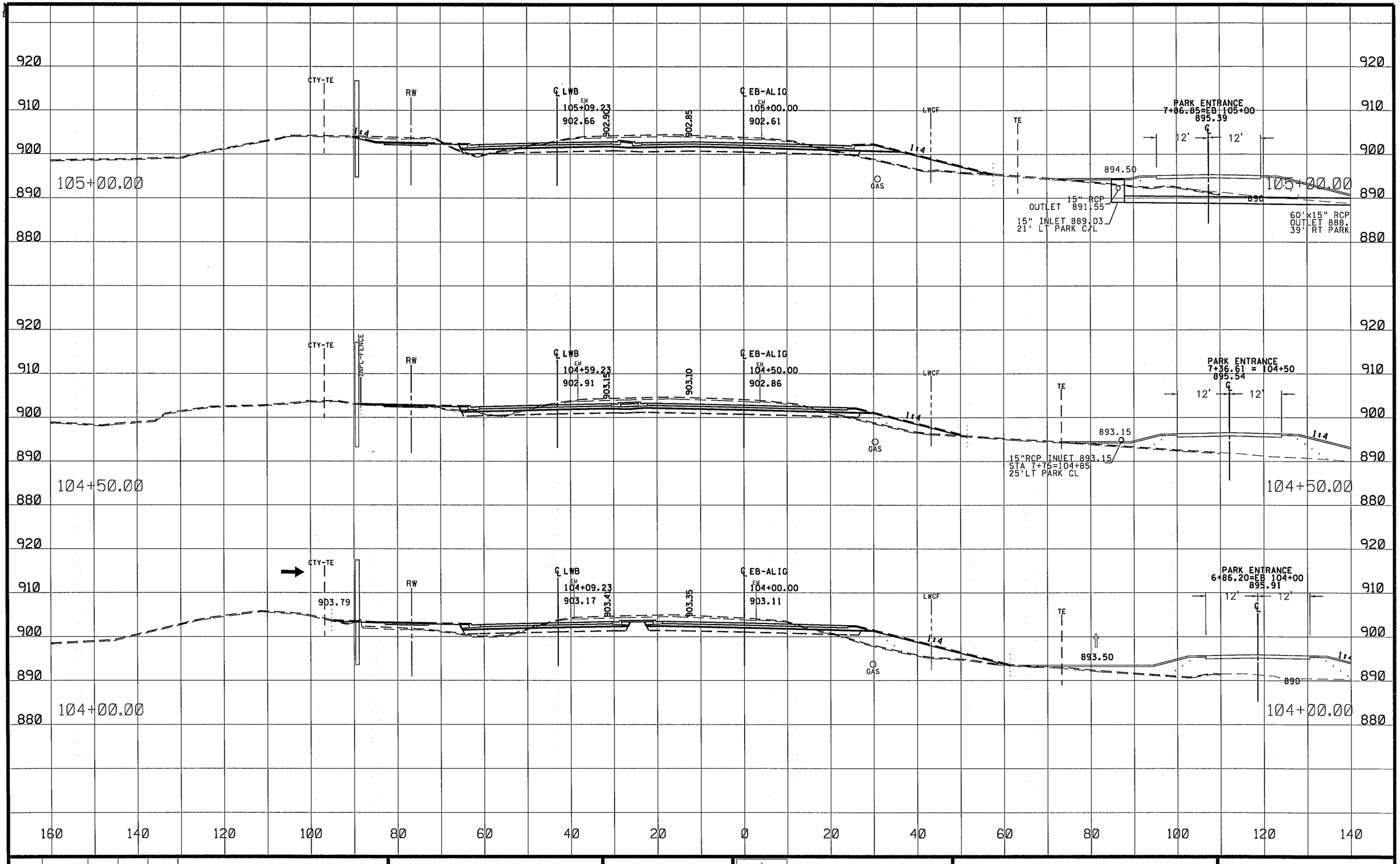


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ANOKA COUNTY HIGHWAY DEPT.

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CROSS SECTIONS

STA 104+00.00 TO 105+00.00

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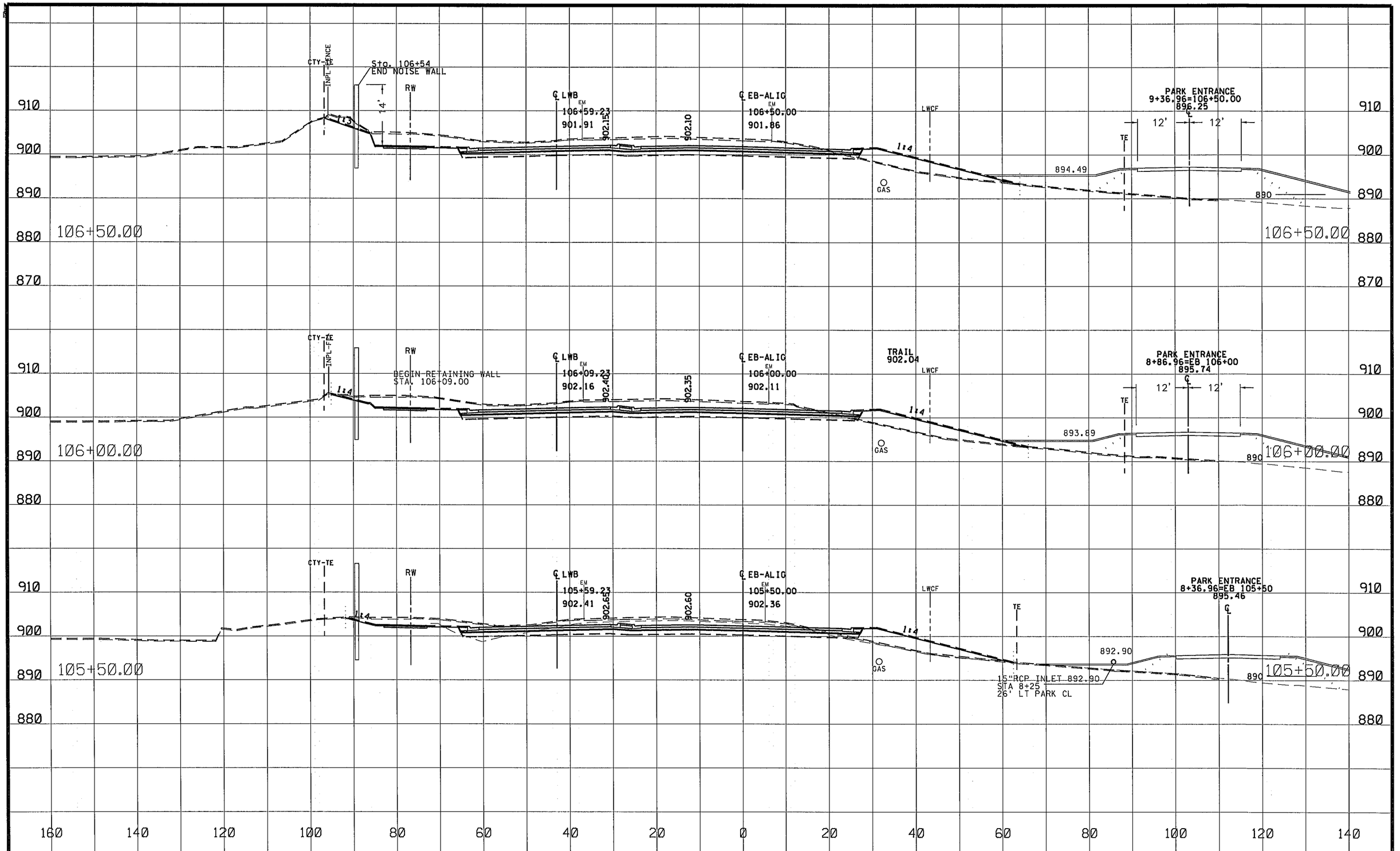


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ANOKA COUNTY

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CROSS SECTIONS

STA 105+50.00 TO 106+50.00

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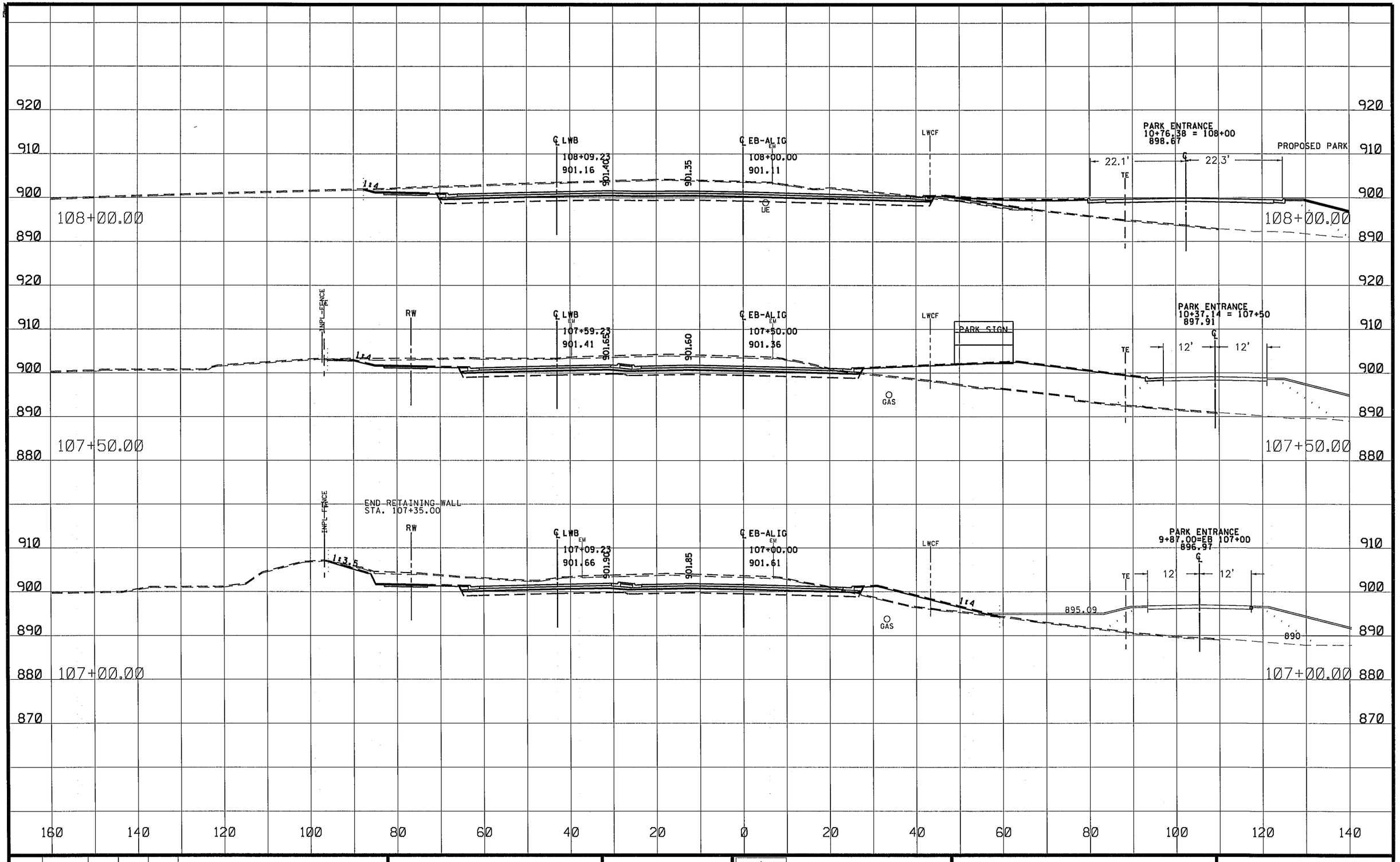


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ANOKA COUNTY

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CROSS SECTIONS

STA 107+00.00 TO 108+00.00

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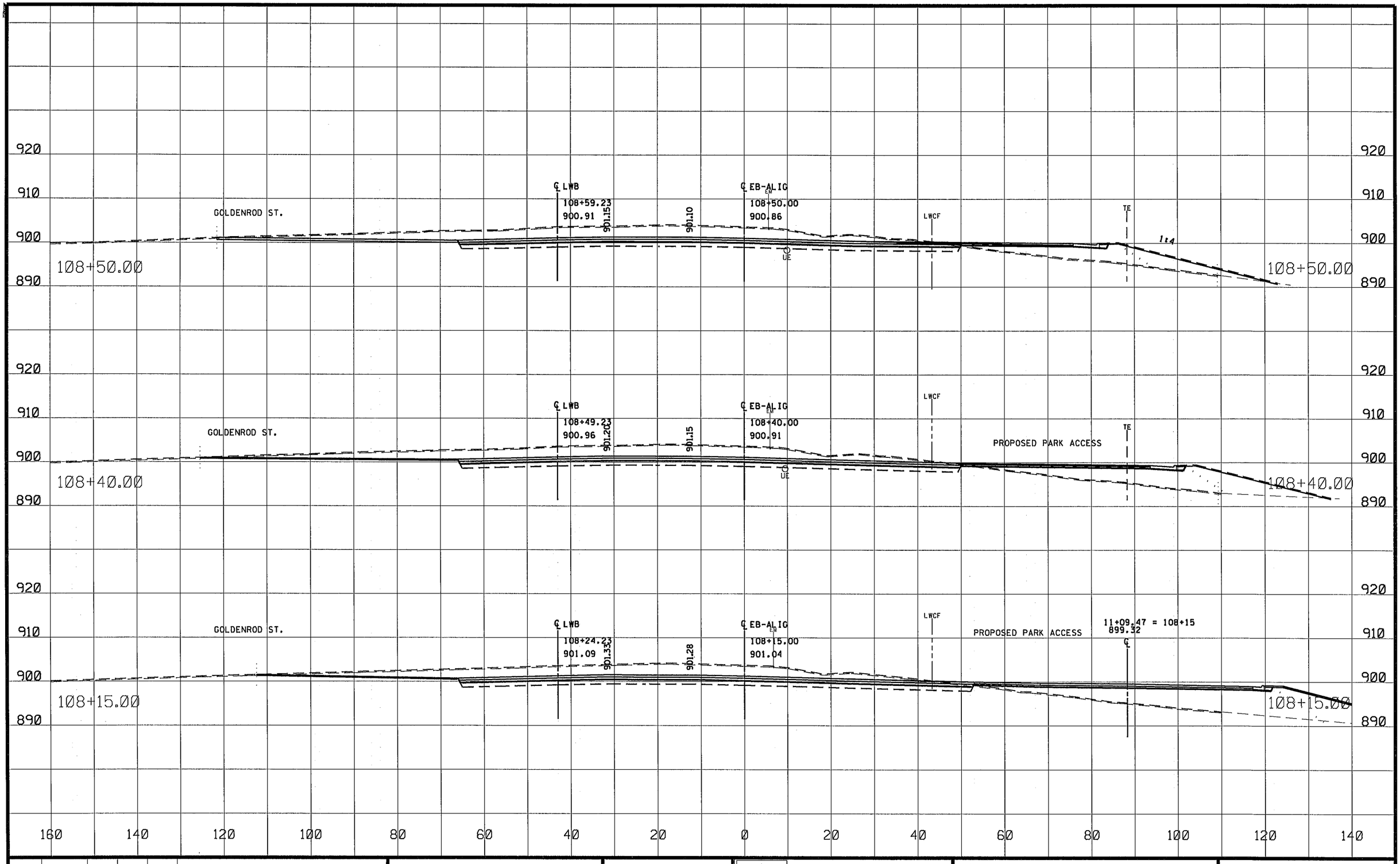


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ANOKA COUNTY

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CROSS SECTIONS

STA 108+15.00 TO 108+50.00

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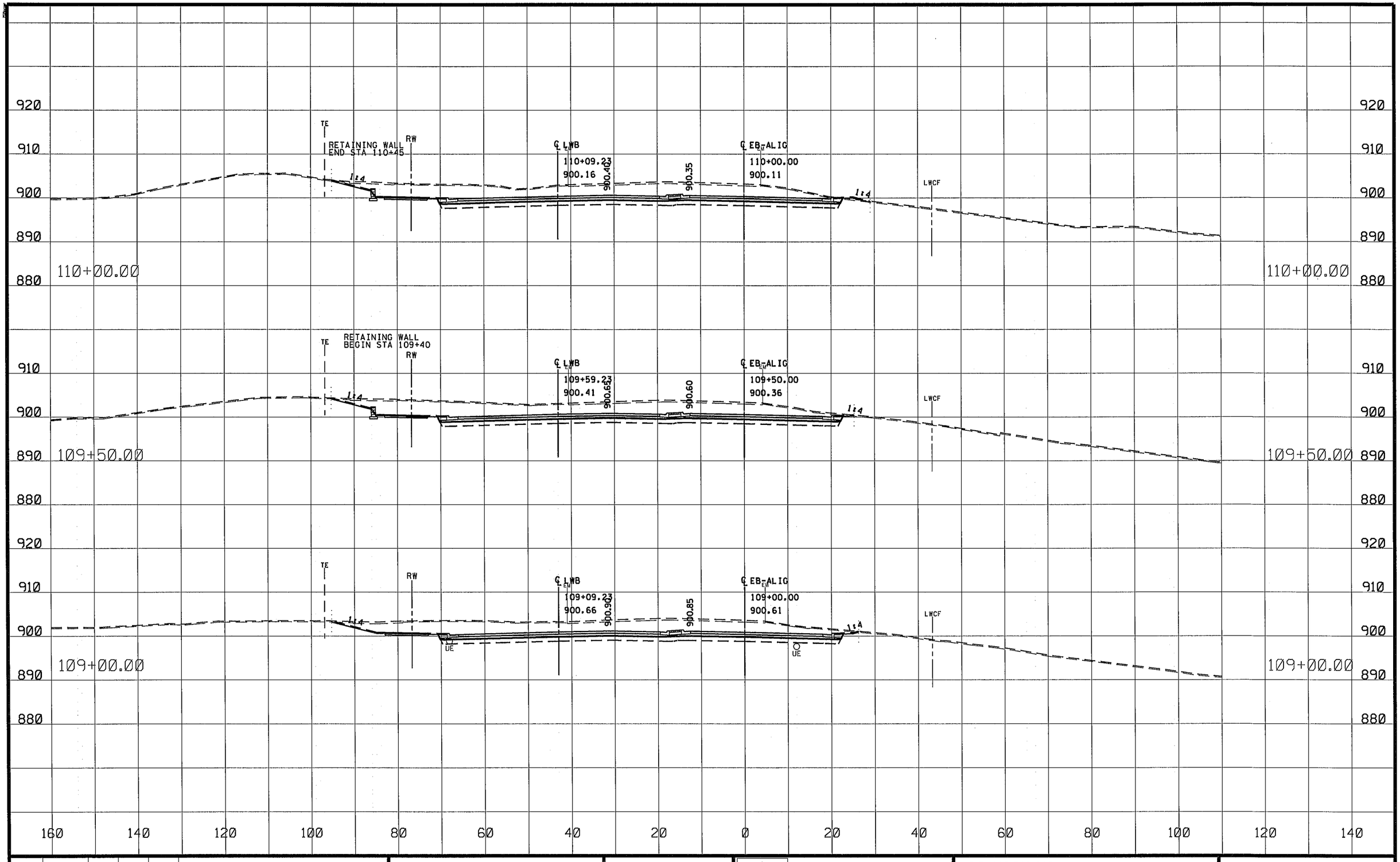


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ANOKA COUNTY

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CROSS SECTIONS

STA 109+00.00 TO 110+00.00

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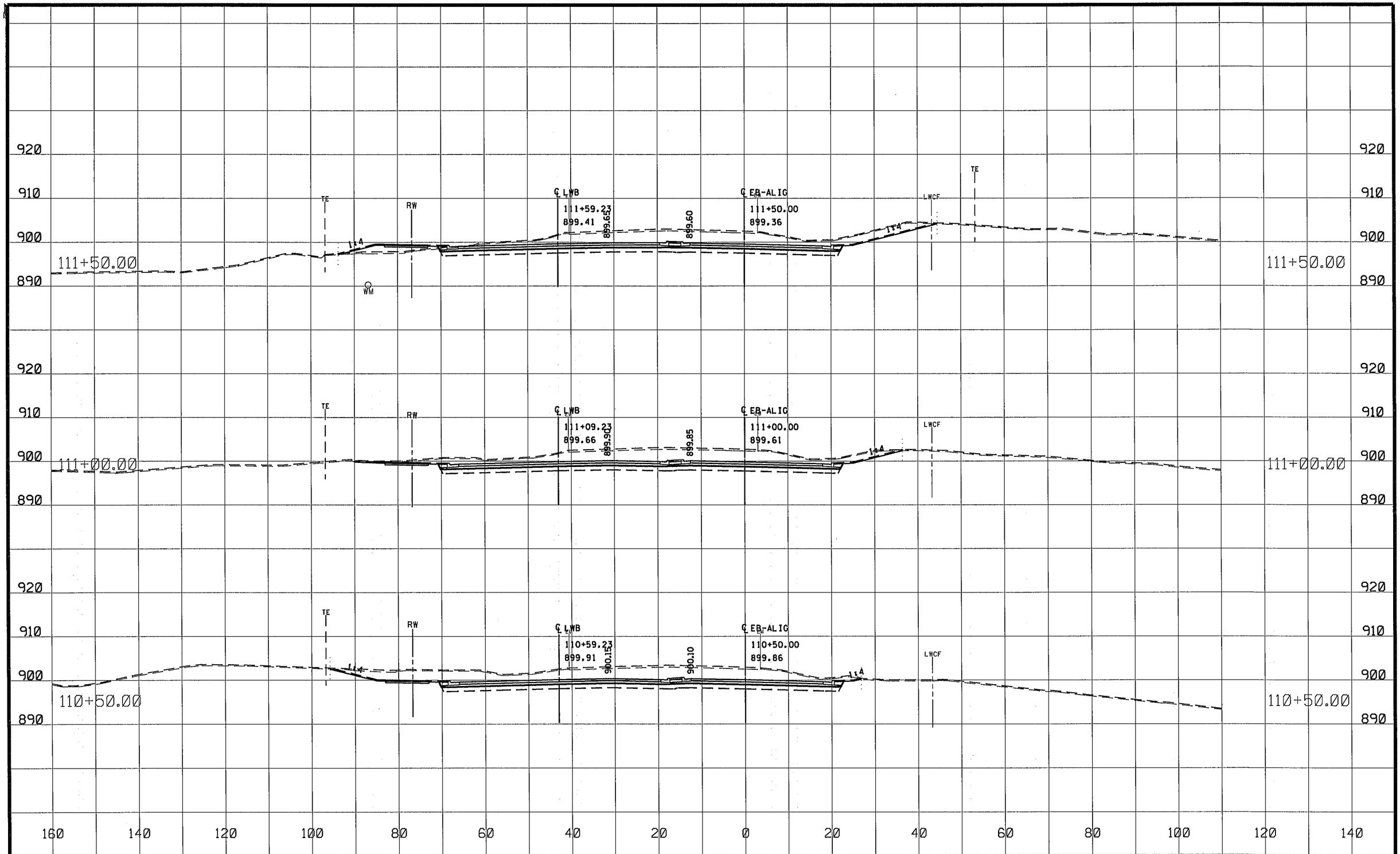


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ANOKA COUNTY

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CROSS SECTIONS
STA 110+50.00 TO 111+50.00

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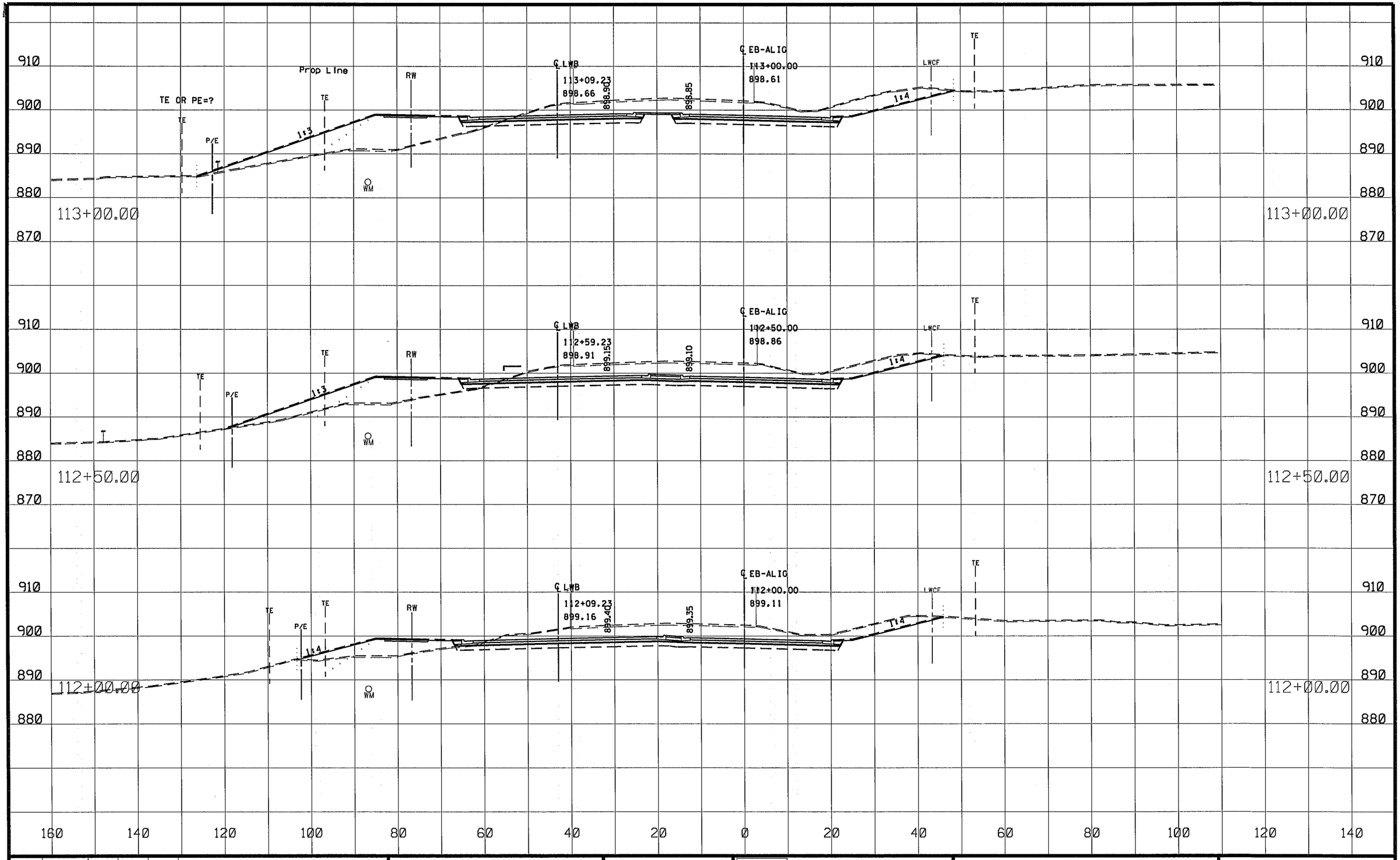


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ANOKA COUNTY HIGHWAY DEPT.

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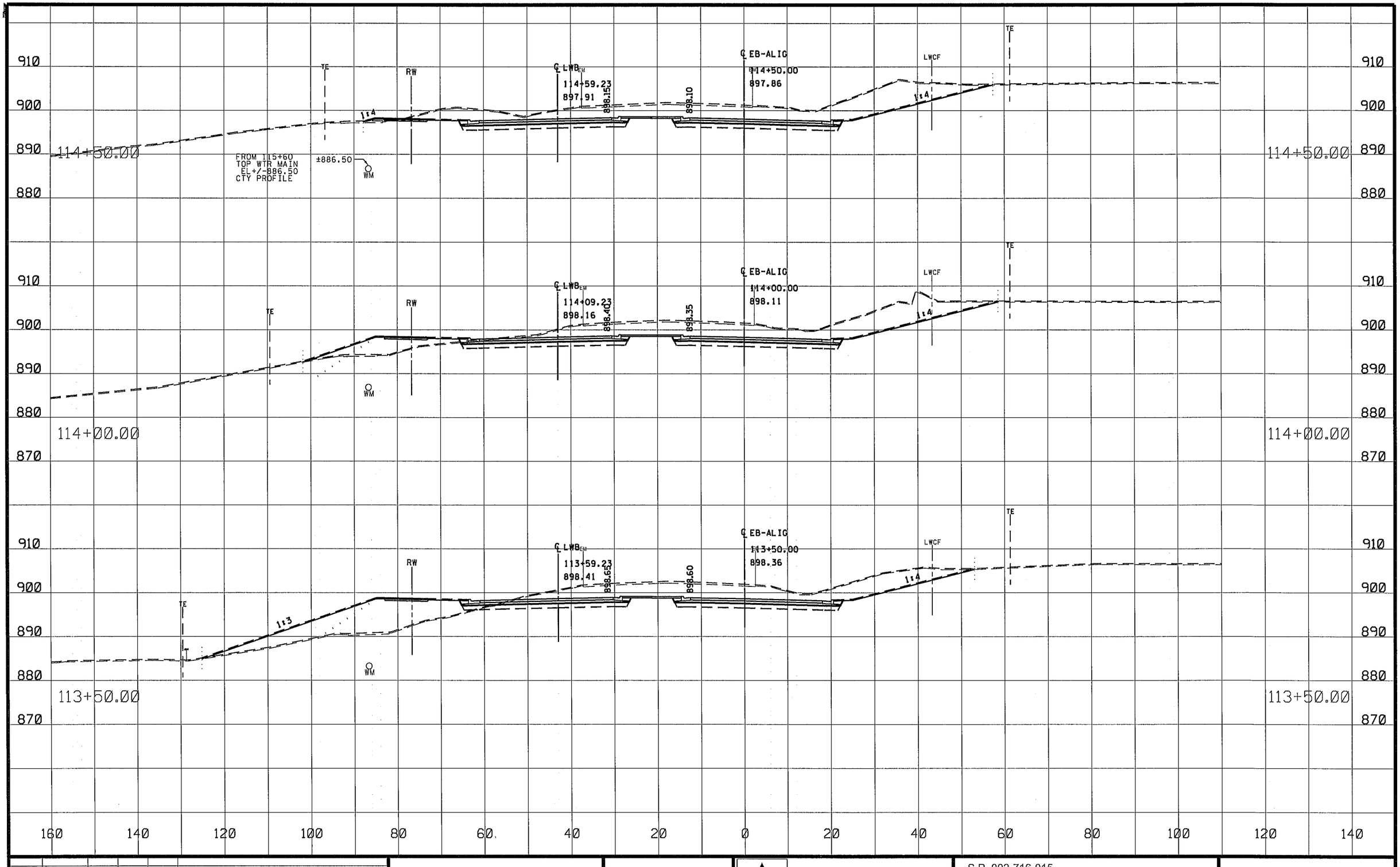
CROSS SECTIONS
STA 112+00.00 TO 113+00.00
Sheet 426 of 482 Sheets

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ANOKA COUNTY

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CROSS SECTIONS

STA 113+50.00 TO 114+50.00

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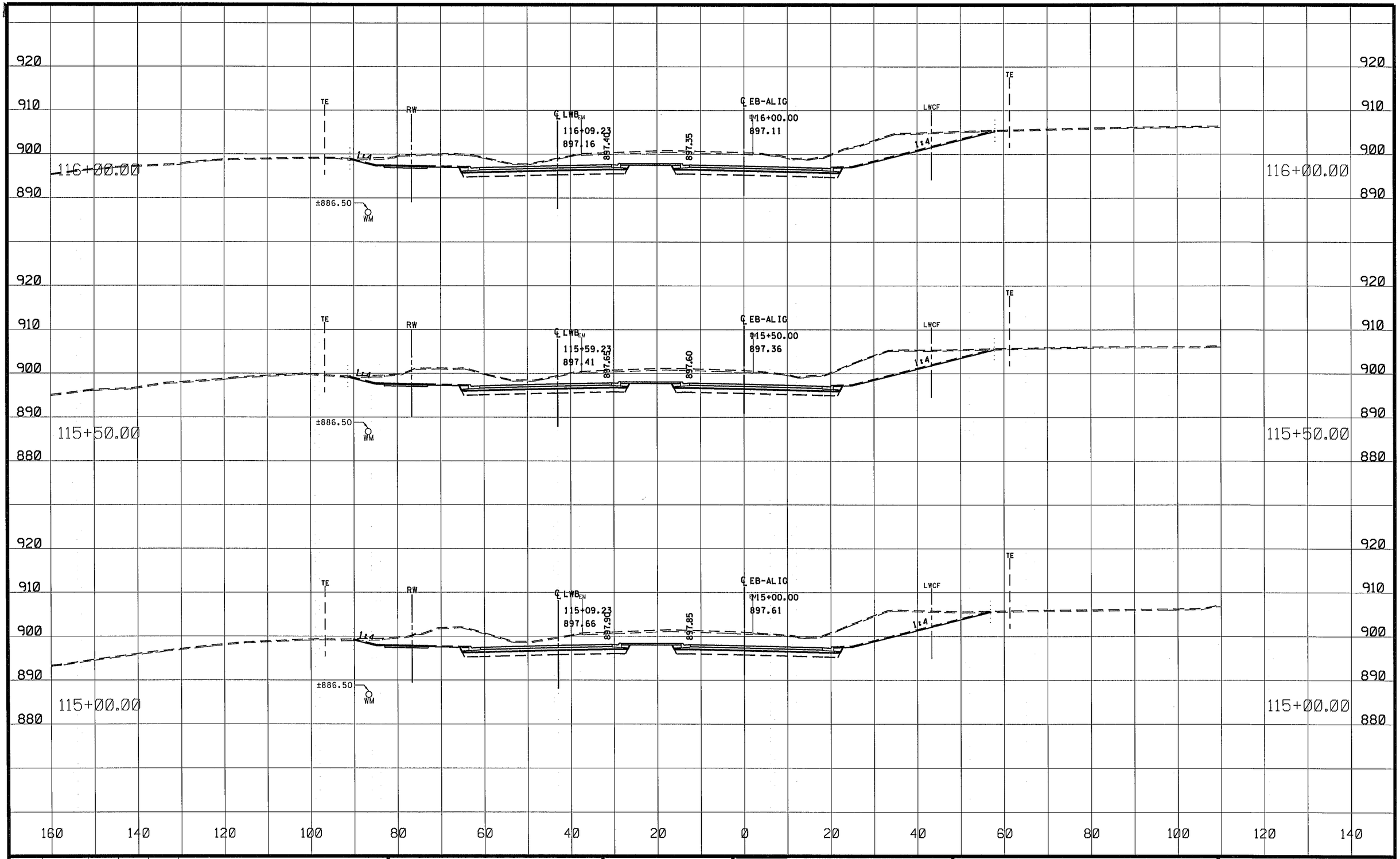


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ANOKA COUNTY

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CROSS SECTIONS

STA 115+00.00 TO 116+00.00

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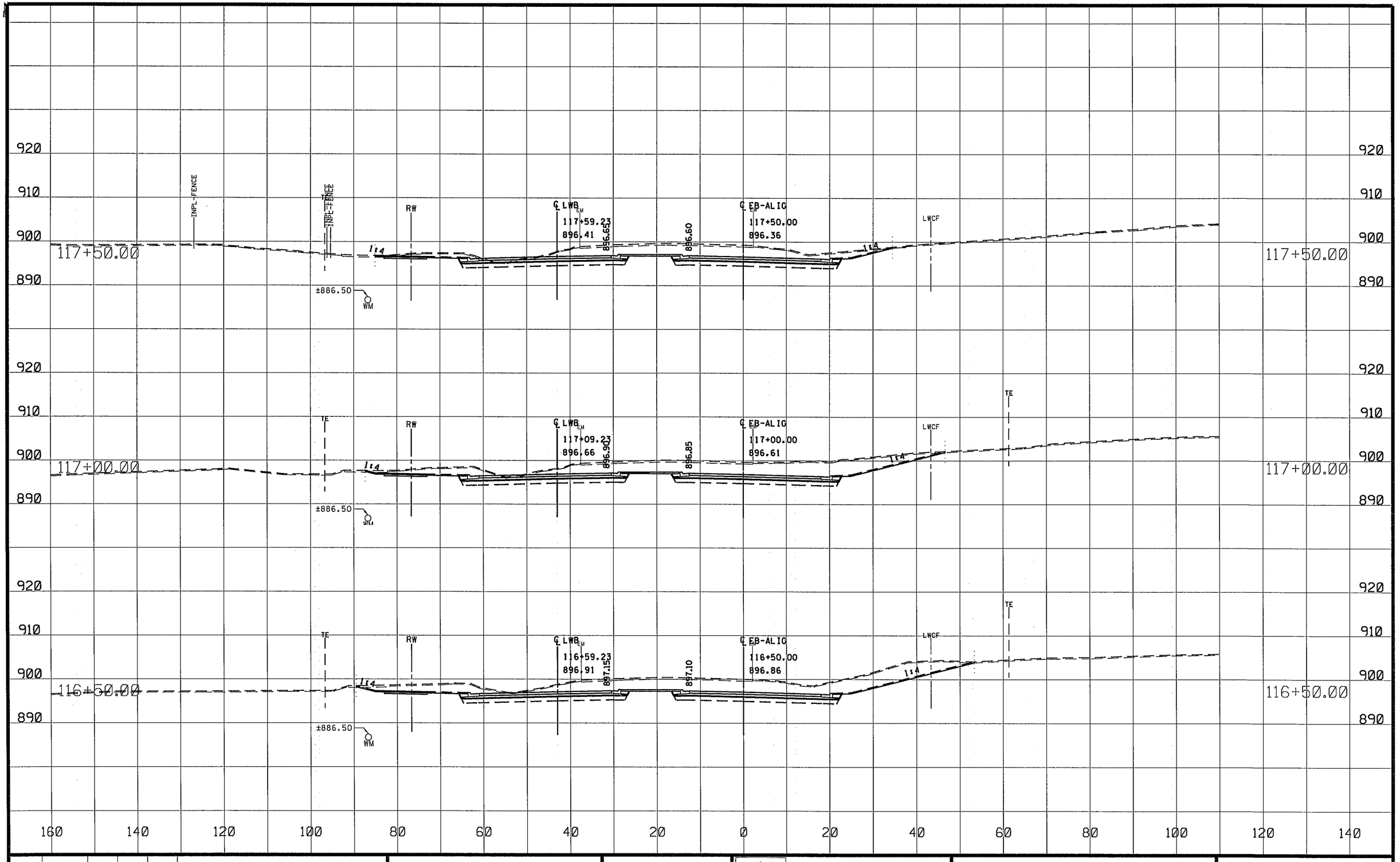


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ANOKA COUNTY

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CROSS SECTIONS

STA 116+50.00 TO 117+50.00

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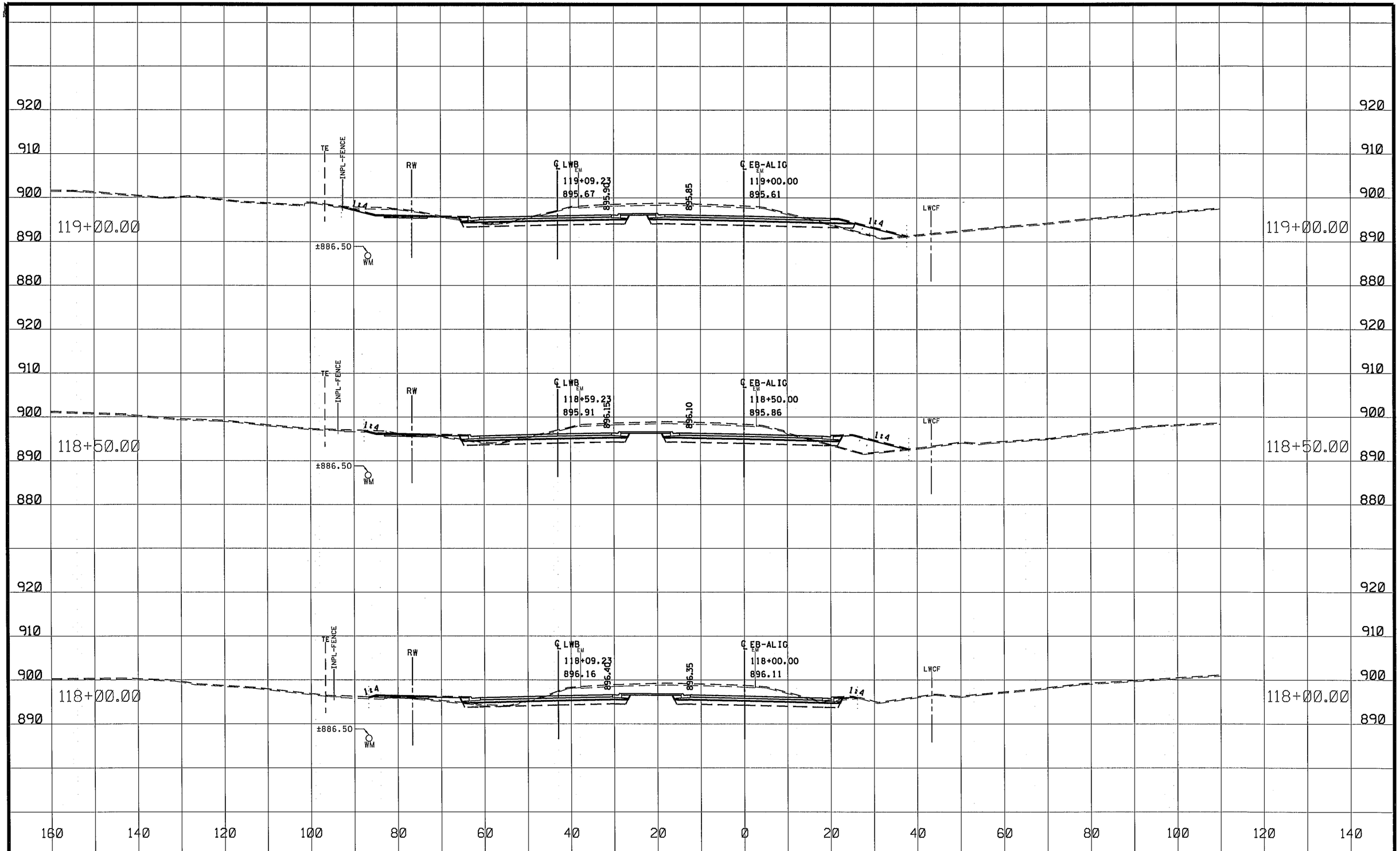


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ANOKA COUNTY
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CROSS SECTIONS
STA 118+00.00 TO 119+00.00

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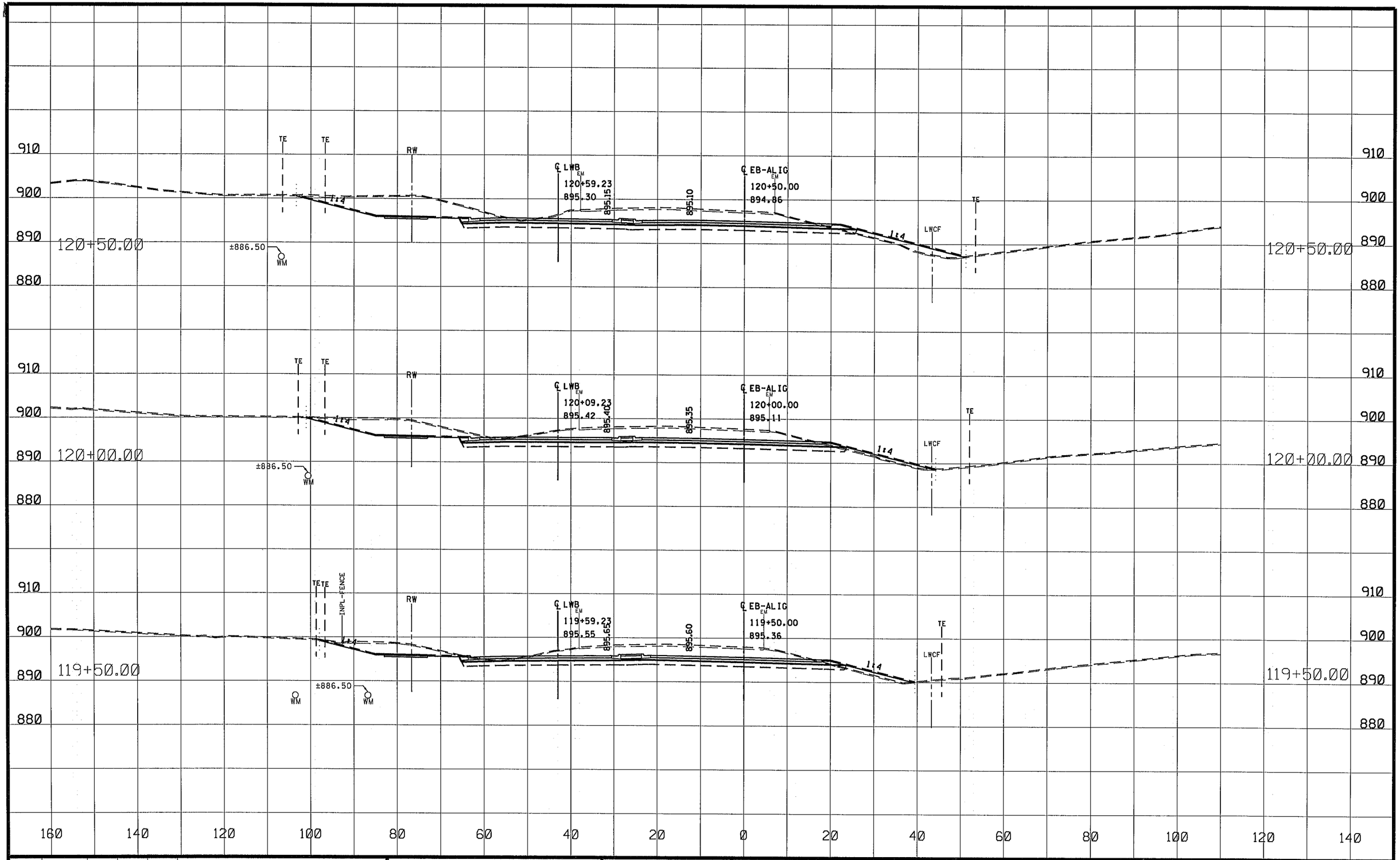


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CROSS SECTIONS

STA 119+50.00 TO 120+50.00

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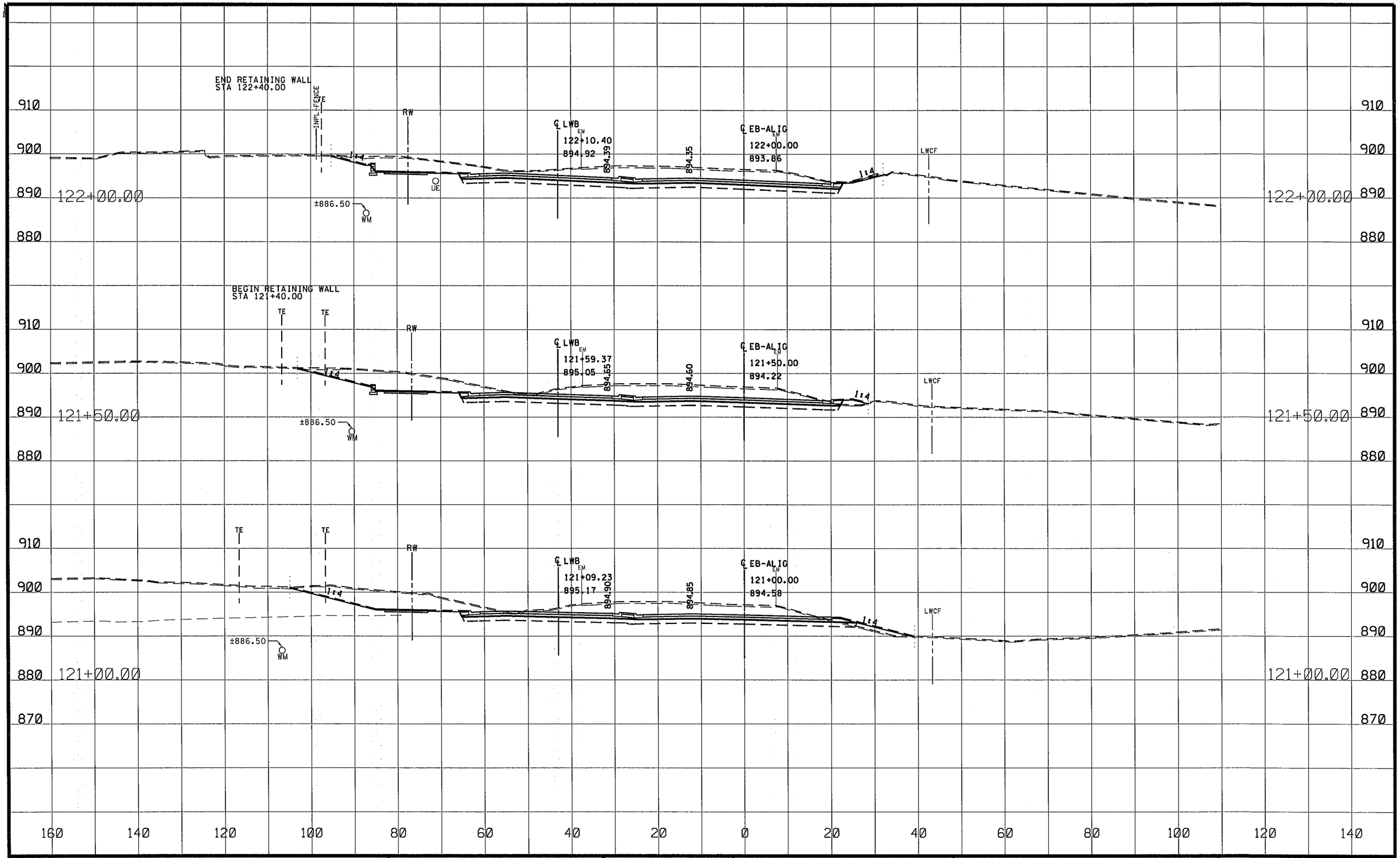


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CROSS SECTIONS
STA 121+00.00 TO 122+00.00

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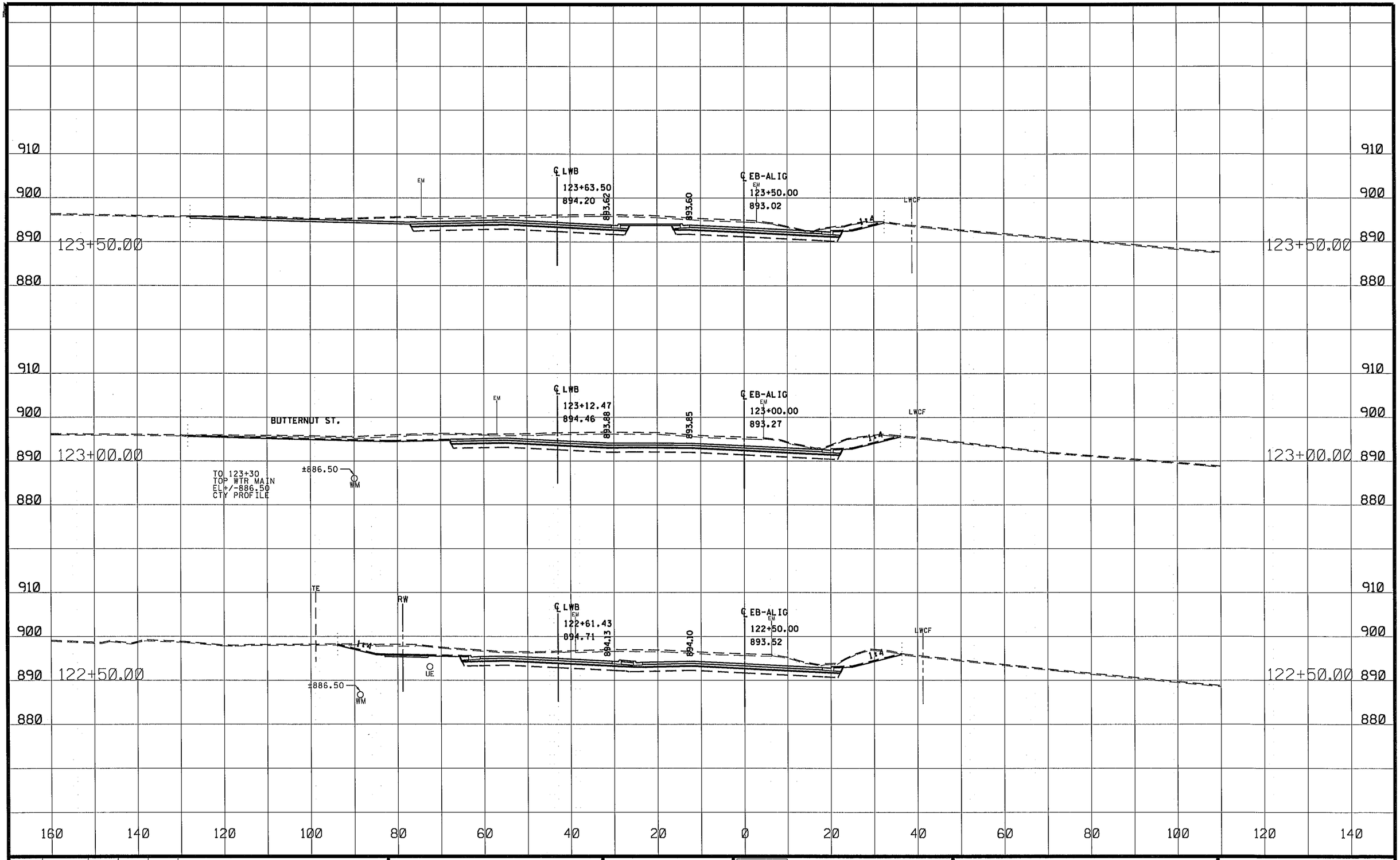


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CROSS SECTIONS
STA 122+50.00 TO 123+50.00

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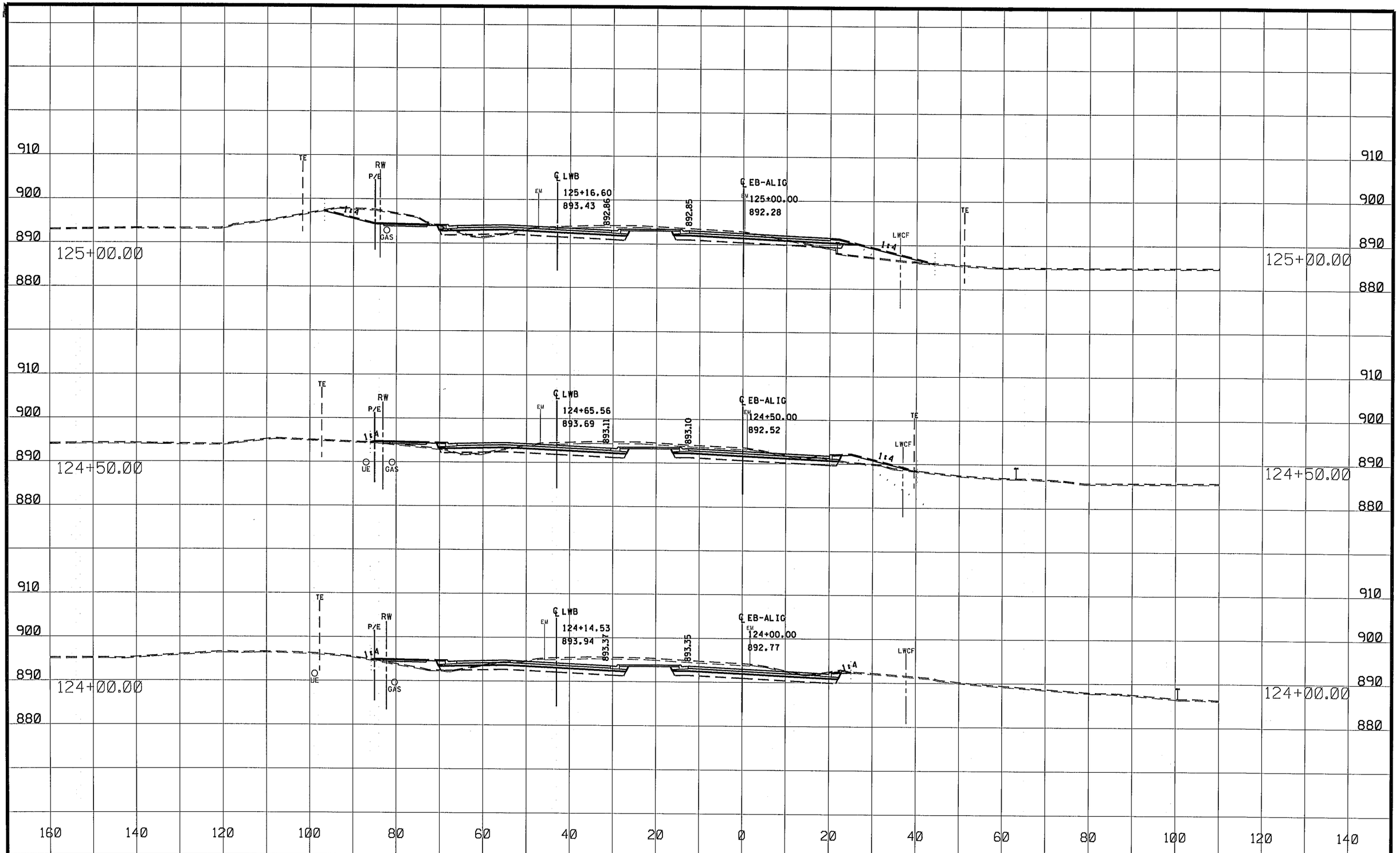


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CROSS SECTIONS

STA 124+00.00 TO 125+00.00

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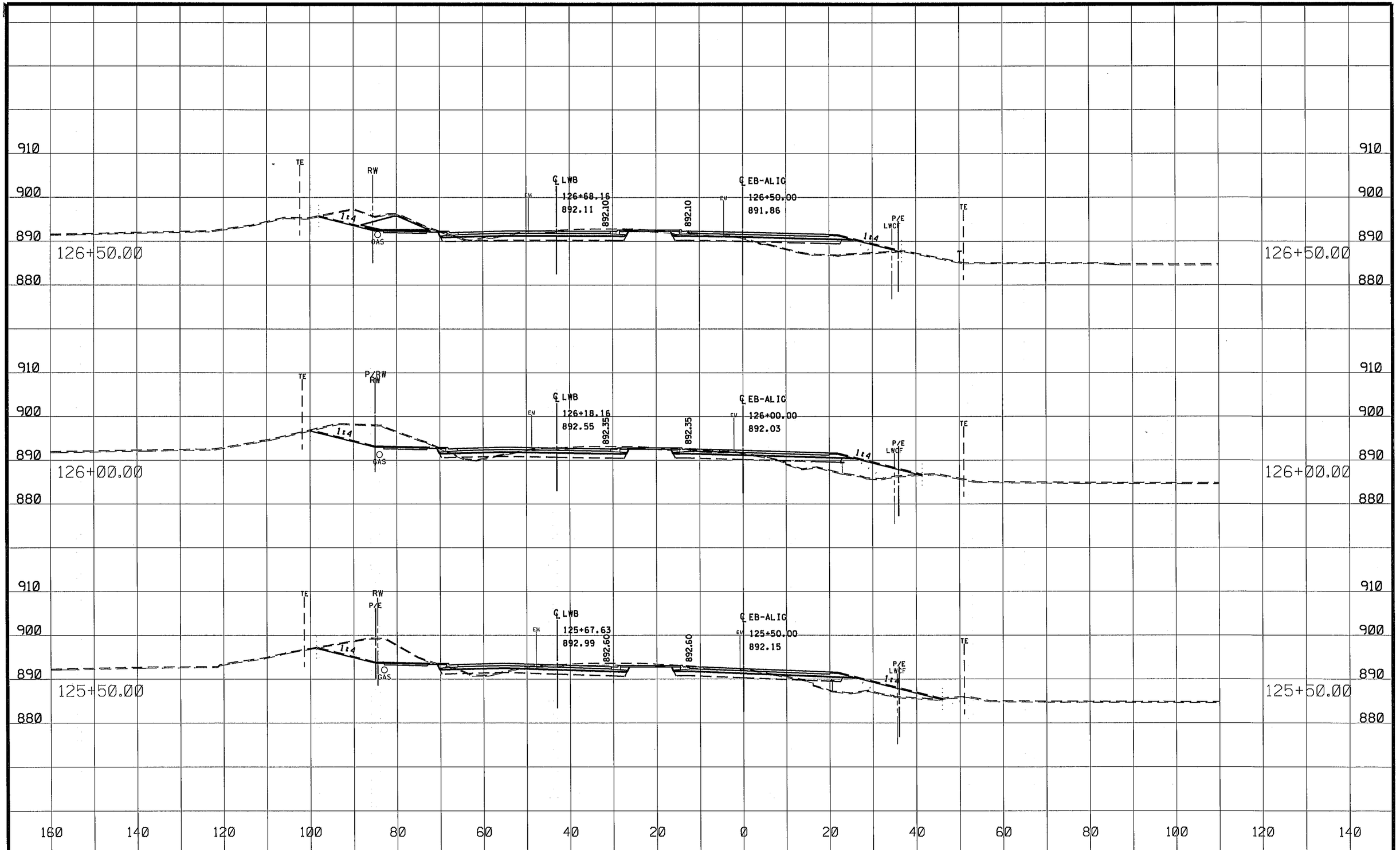


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CROSS SECTIONS

STA 125+50.00 TO 126+50.00

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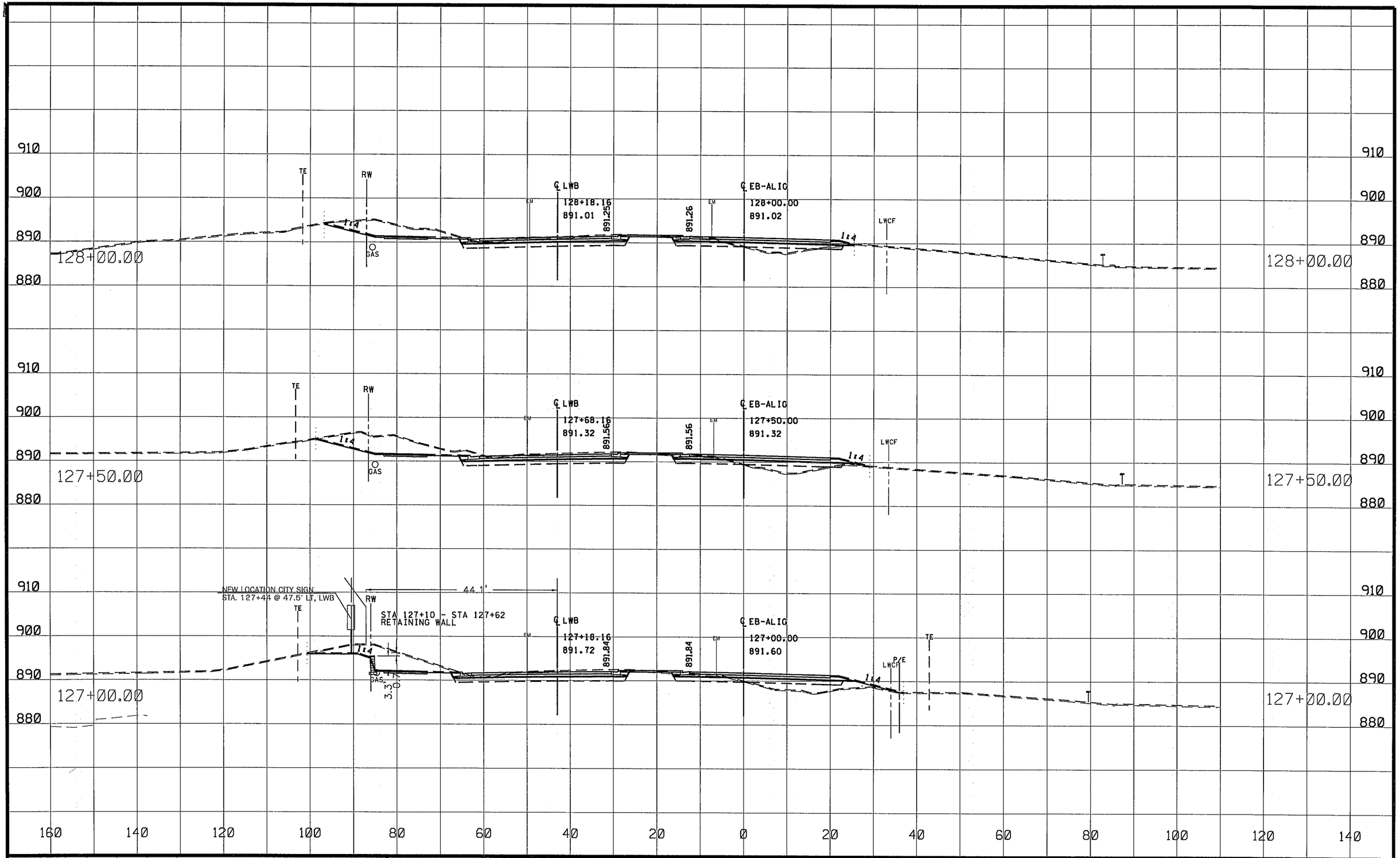


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CROSS SECTIONS

STA 127+00.00 TO 128+00.00

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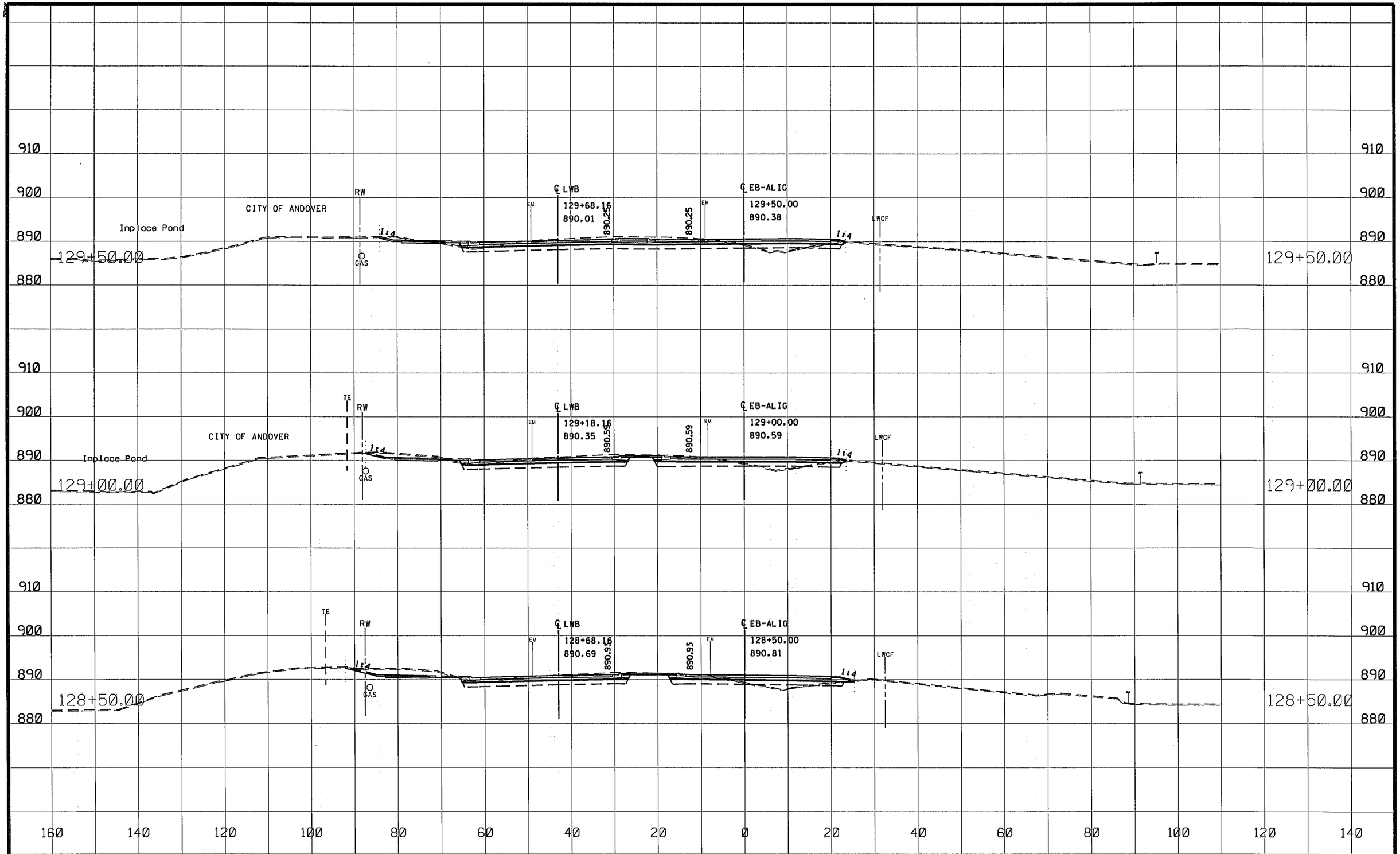


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CROSS SECTIONS
STA 128+50.00 TO 129+50.00

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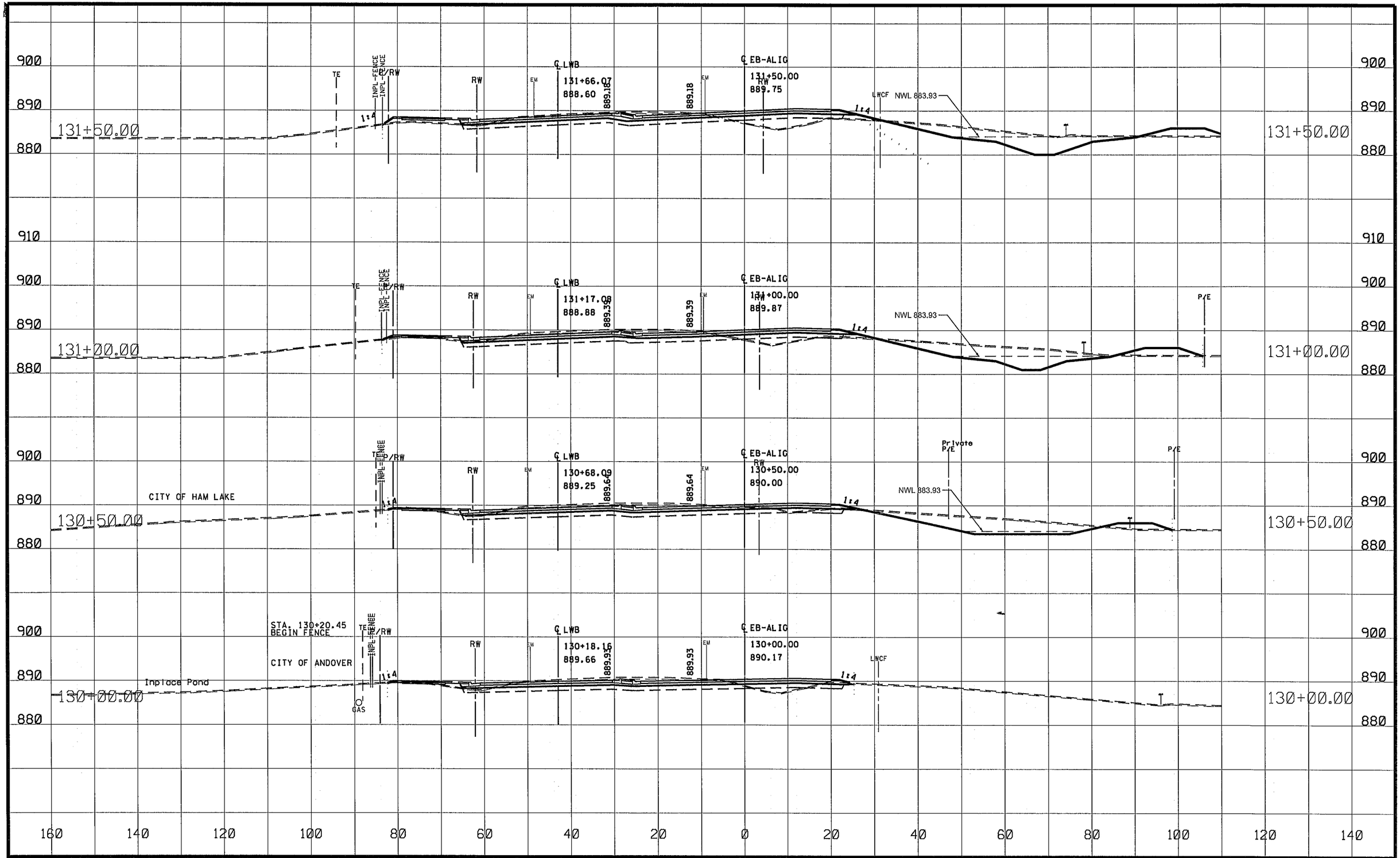


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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
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C.P. 11-25

CROSS SECTIONS

STA 130+00.00 TO 131+50.00

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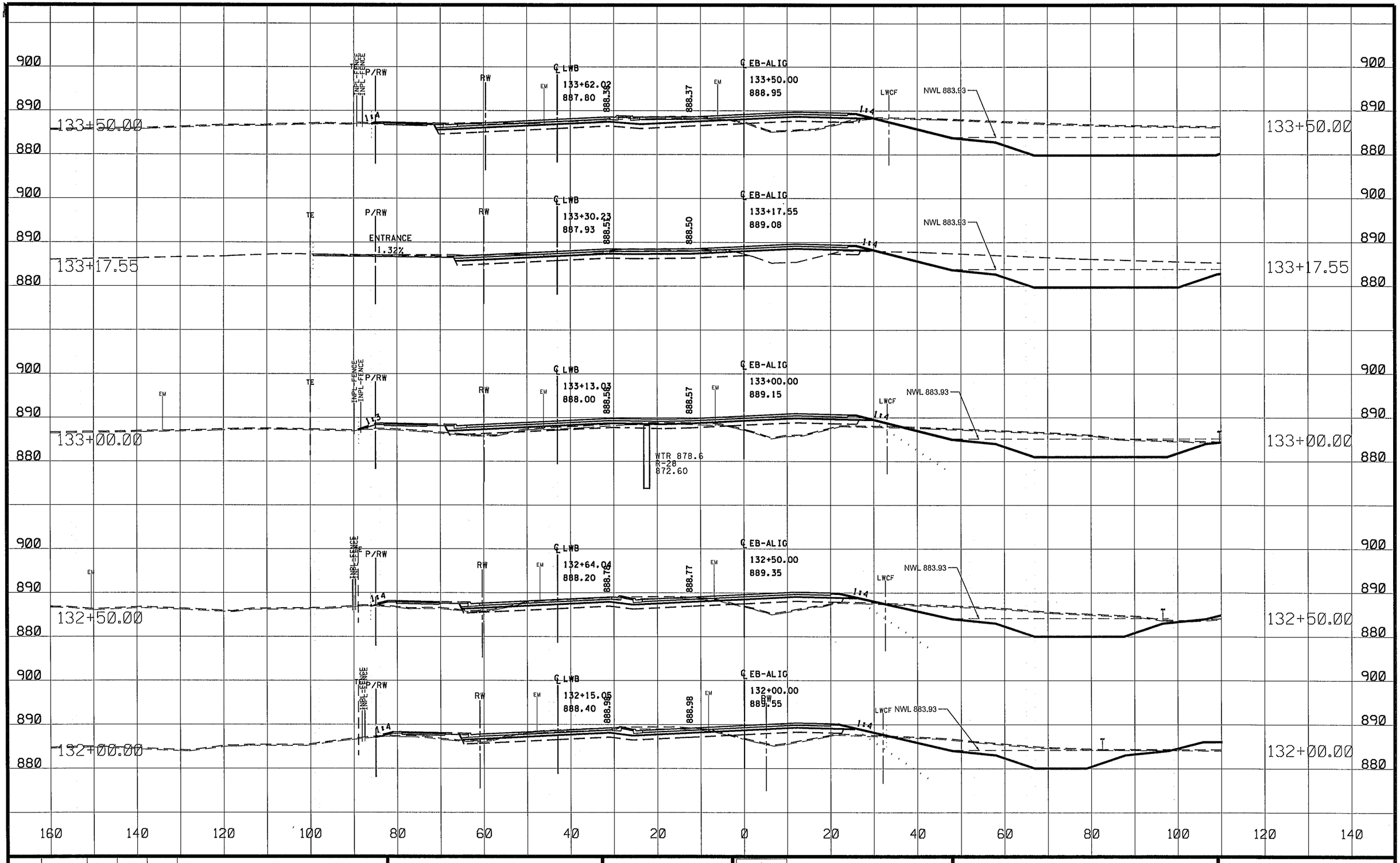


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ANOKA COUNTY

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S.P. 198-020-036
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CROSS SECTIONS

STA 132+00.00 TO 133+50.00

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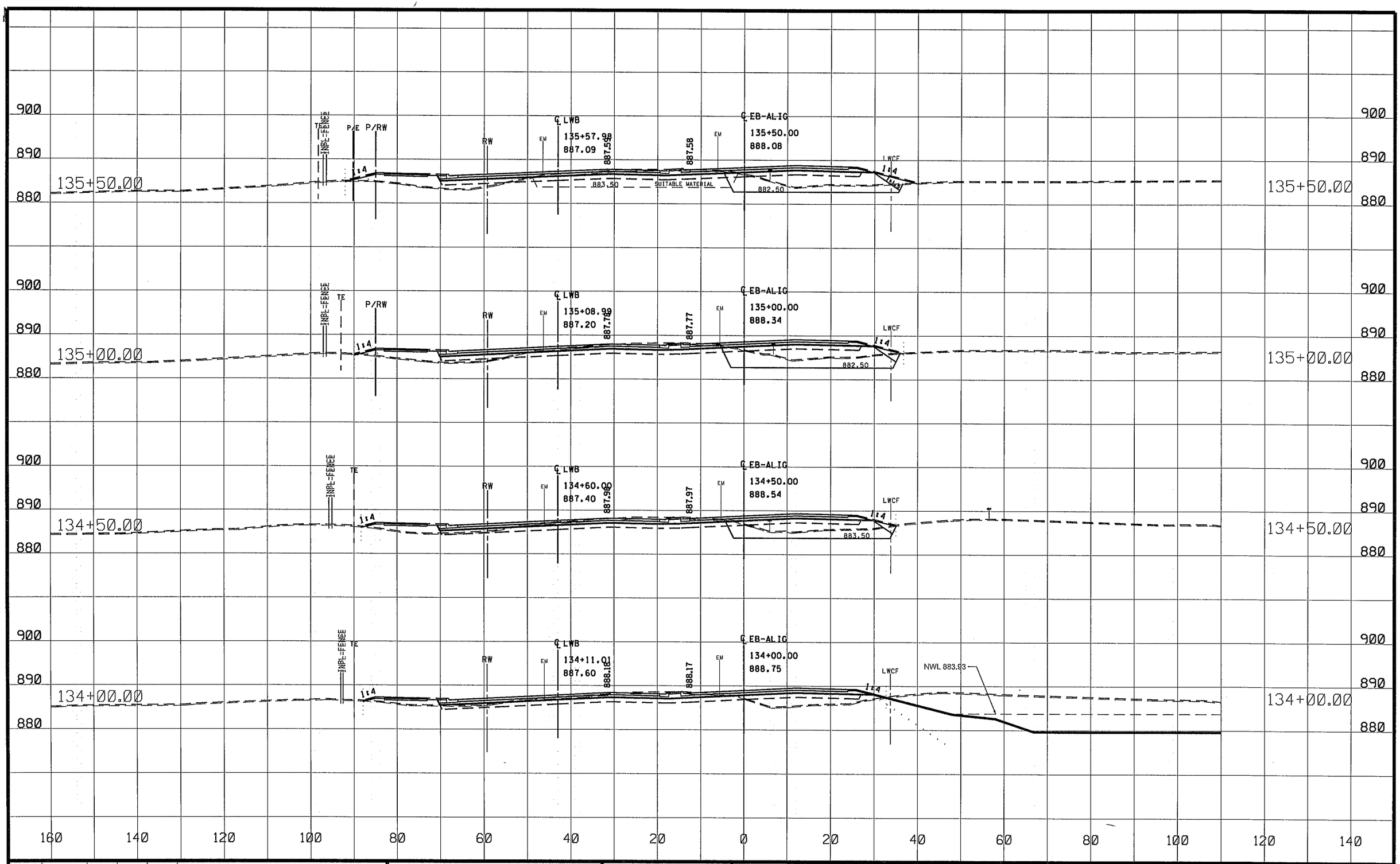


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ANOKA COUNTY

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CROSS SECTIONS

STA 134+00.00 TO 135+50.00

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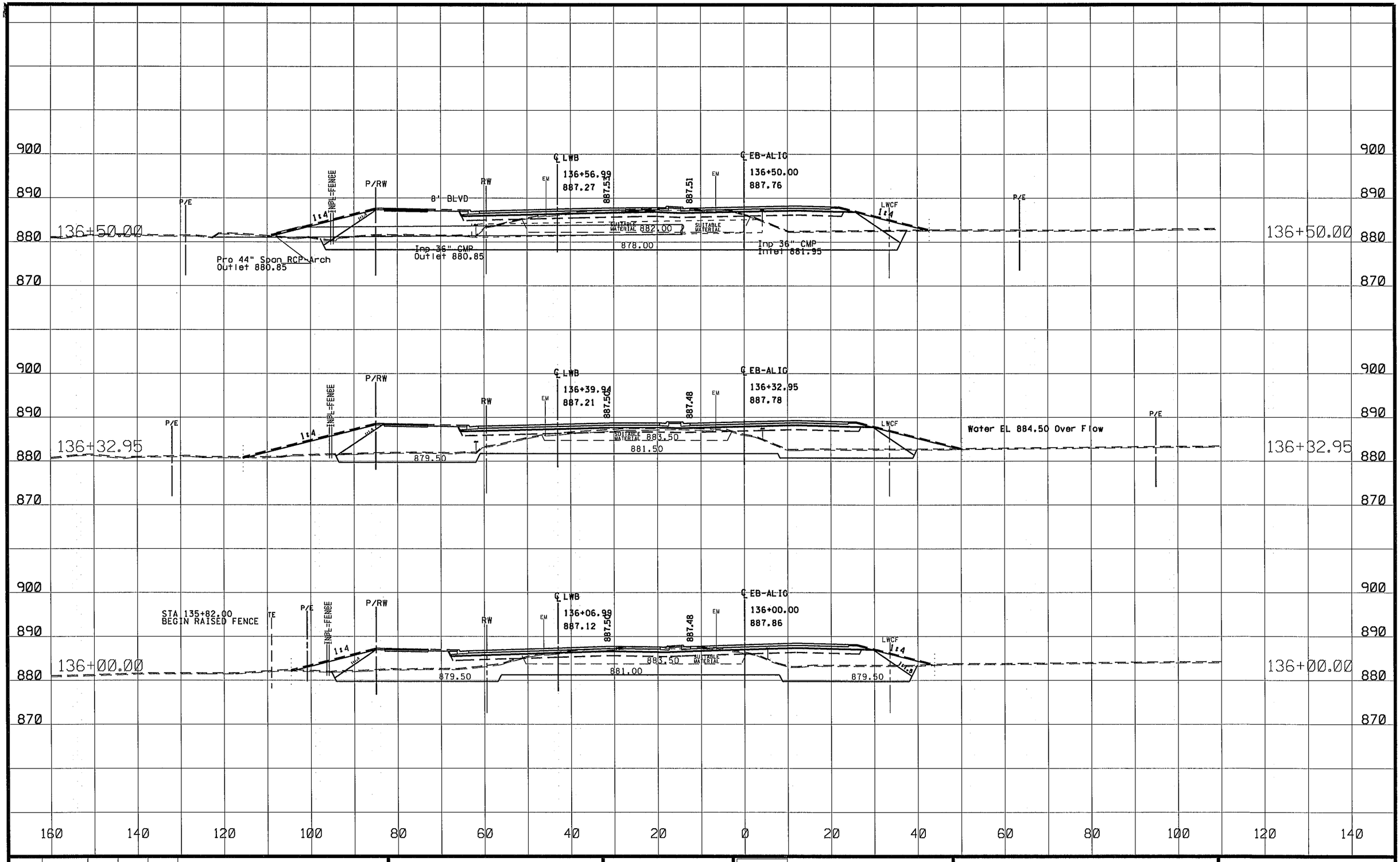


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ANOKA COUNTY

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CROSS SECTIONS

STA 136+00.00 TO 136+50.00

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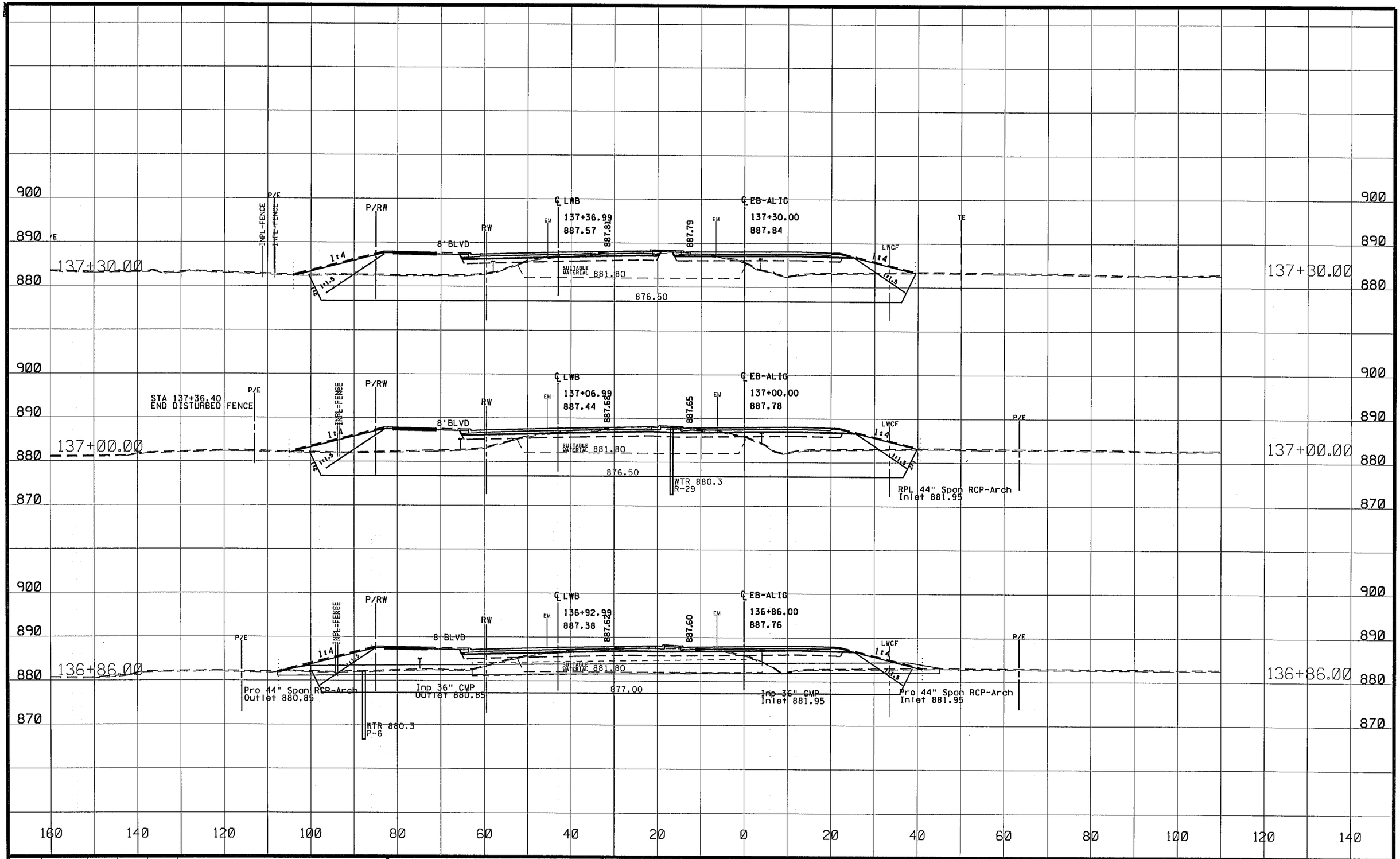


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ANOKA COUNTY

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CROSS SECTIONS

STA 136+86.00 TO 137+30.00

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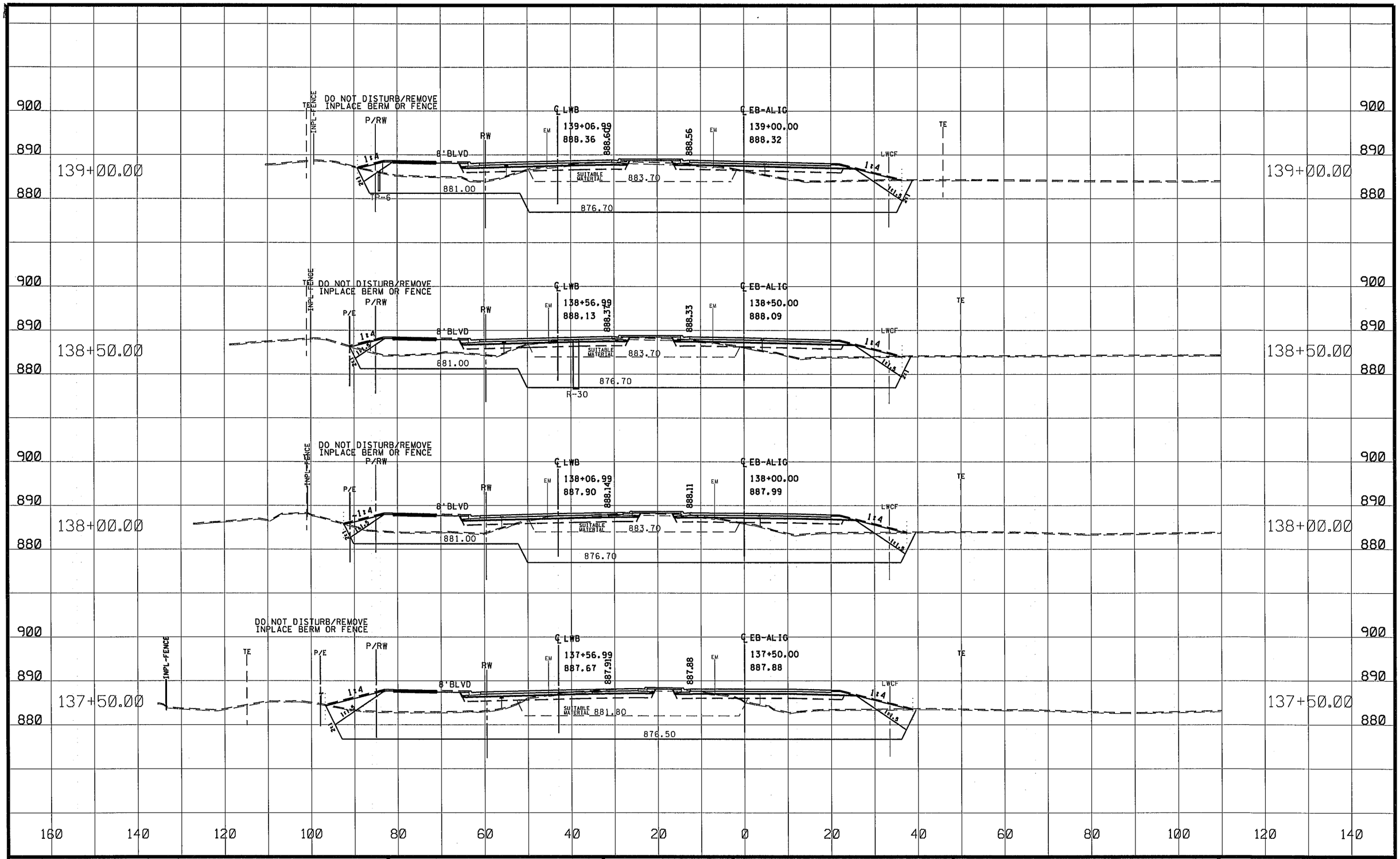


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CROSS SECTIONS

STA 137+50.00 TO 139+00.00

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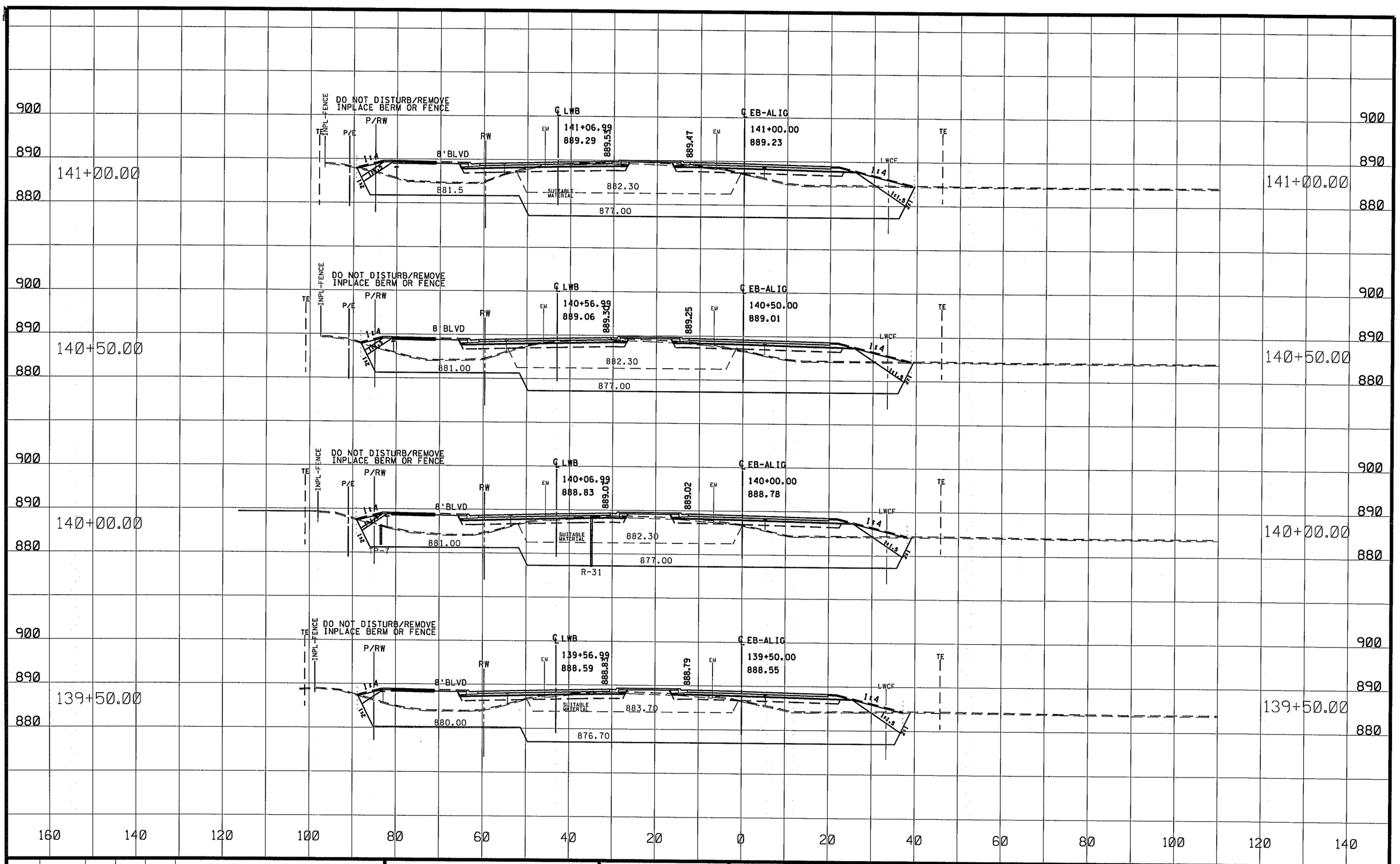


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ANOKA COUNTY

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CROSS SECTIONS

STA 139+50.00 TO 141+00.00

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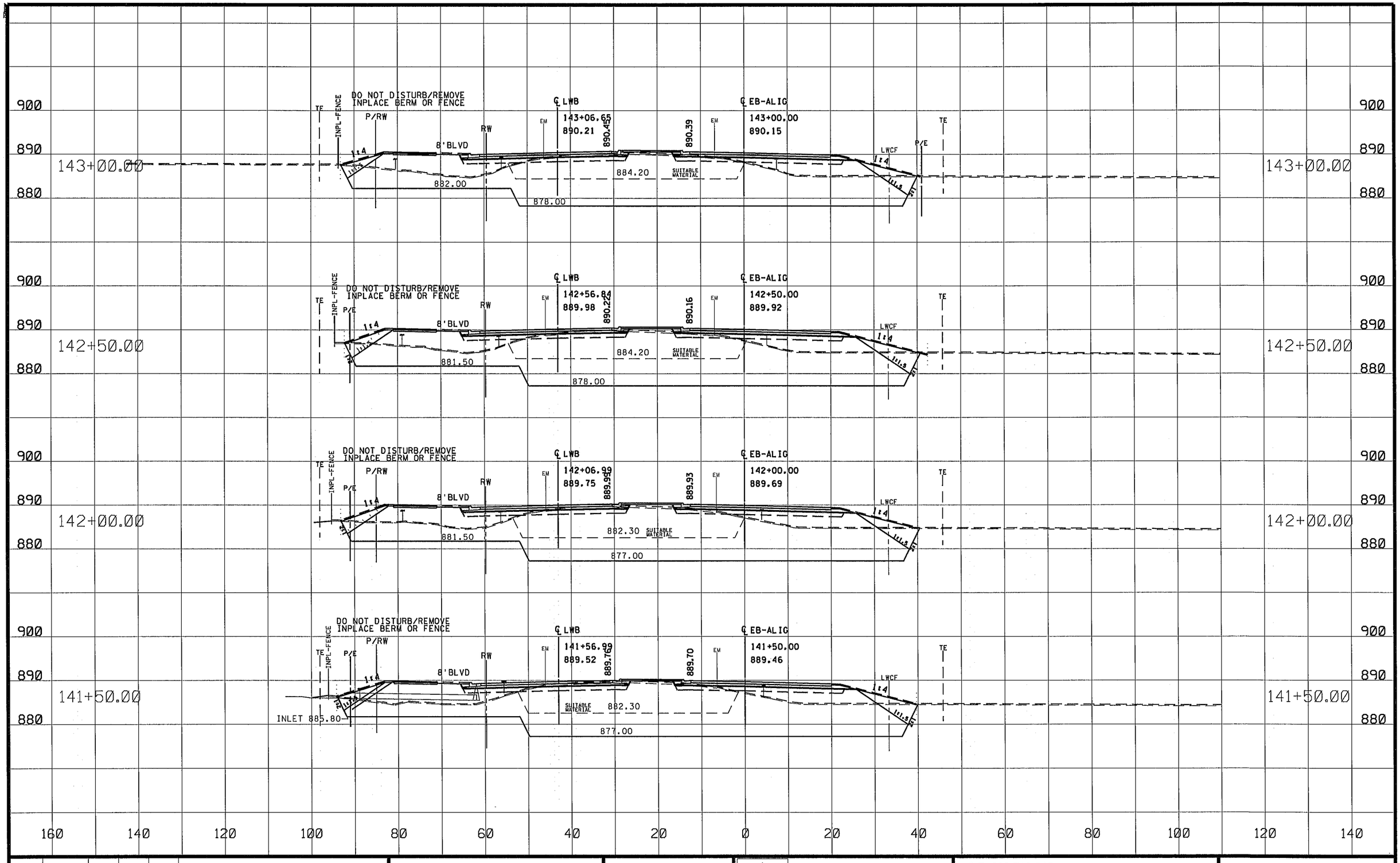


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CROSS SECTIONS

STA 141+50.00 TO 143+00.00

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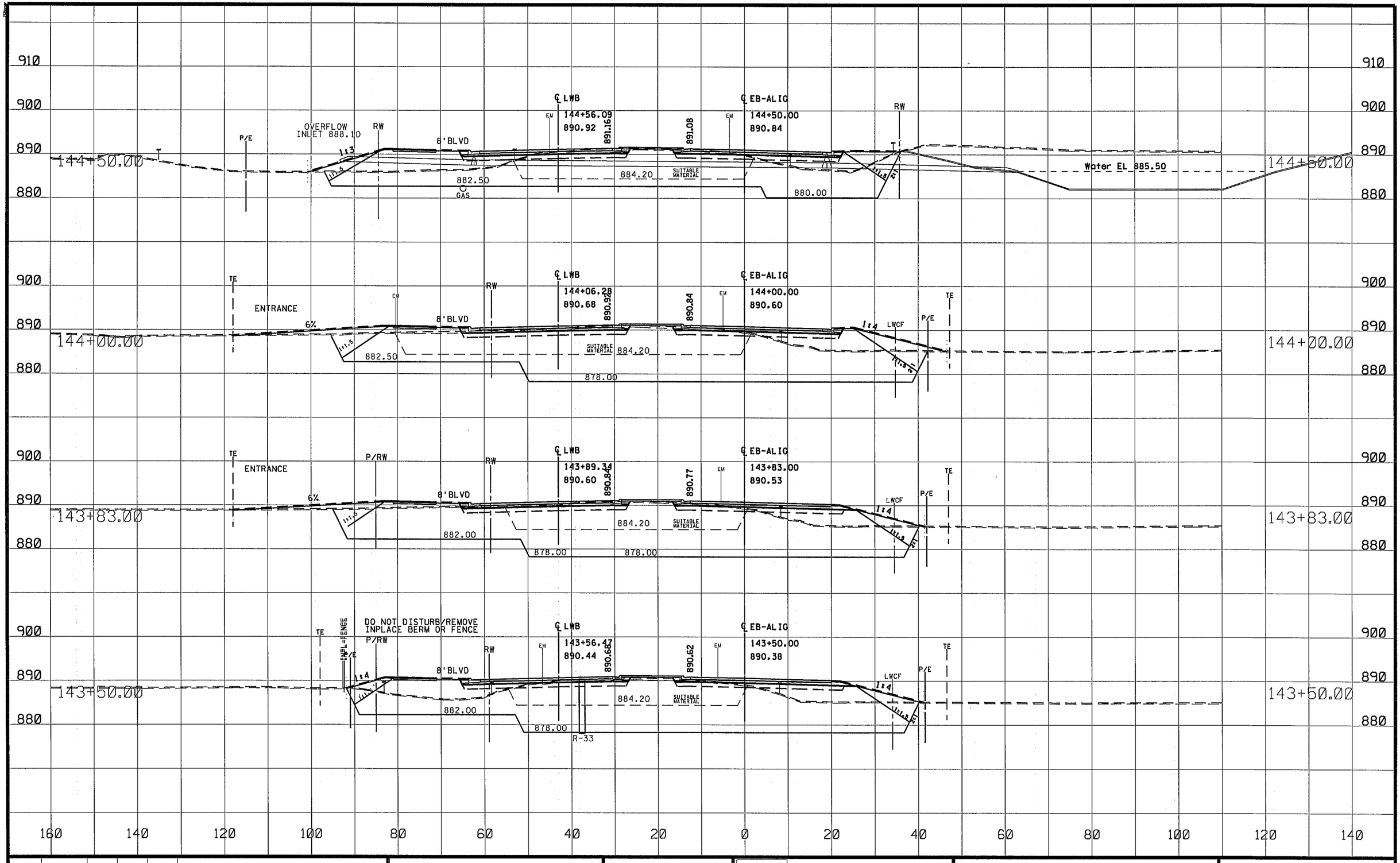


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ANOKA COUNTY

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CROSS SECTIONS

STA 143+50.00 TO 144+50.00

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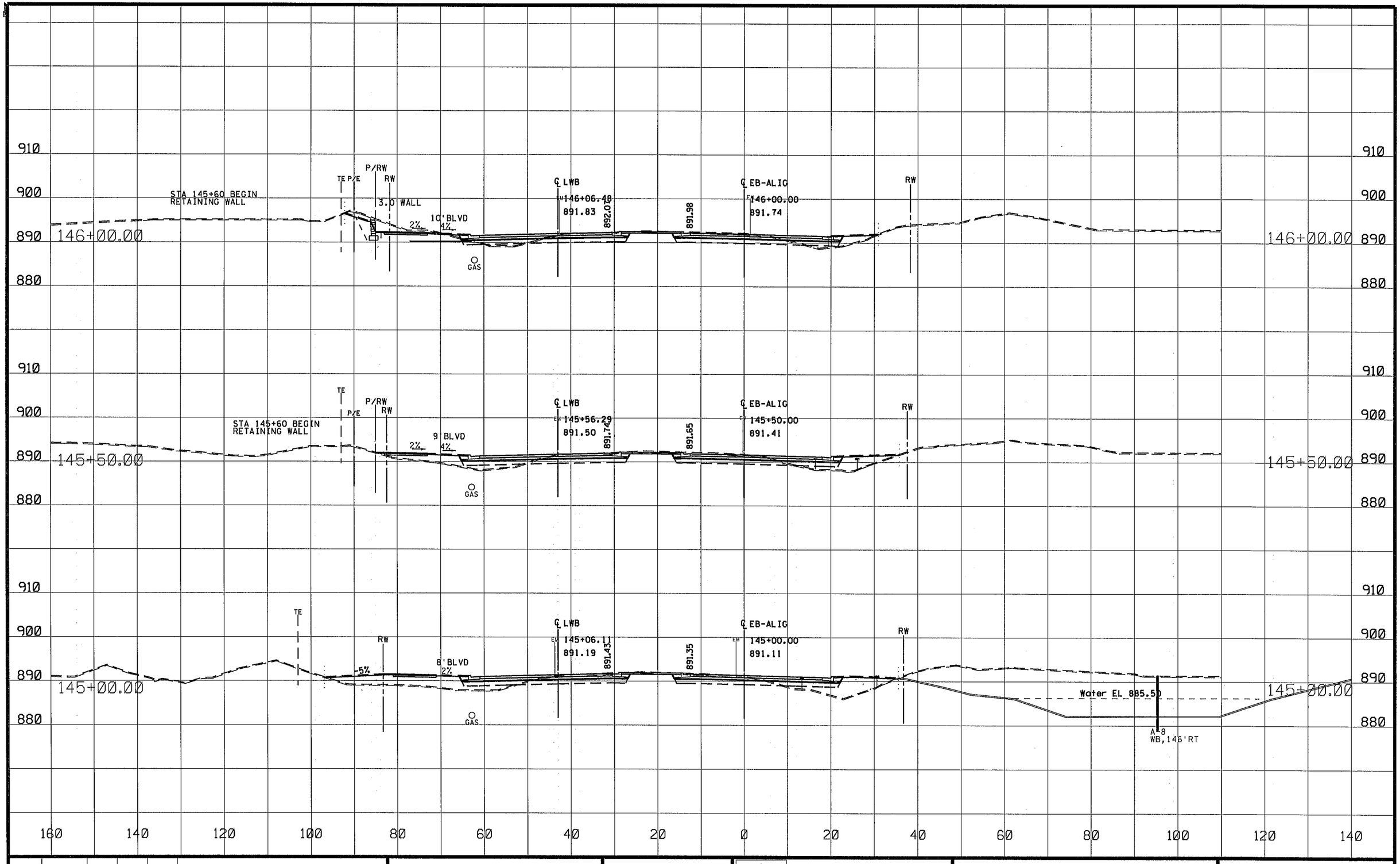


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ANOKA COUNTY

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CROSS SECTIONS

STA 145+00.00 TO 146+00.00

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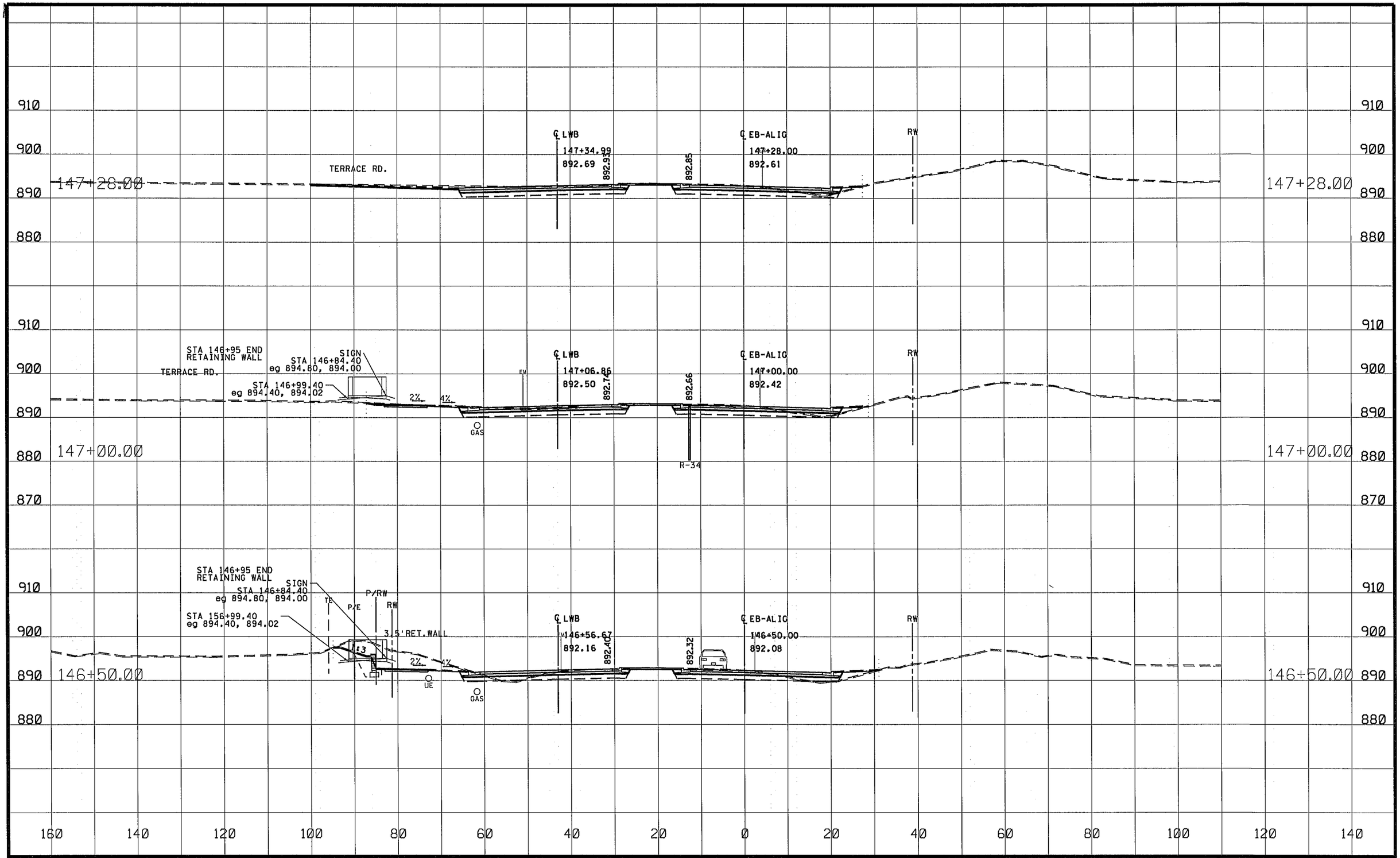


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CROSS SECTIONS
STA 146+50.00 TO 147+28.00

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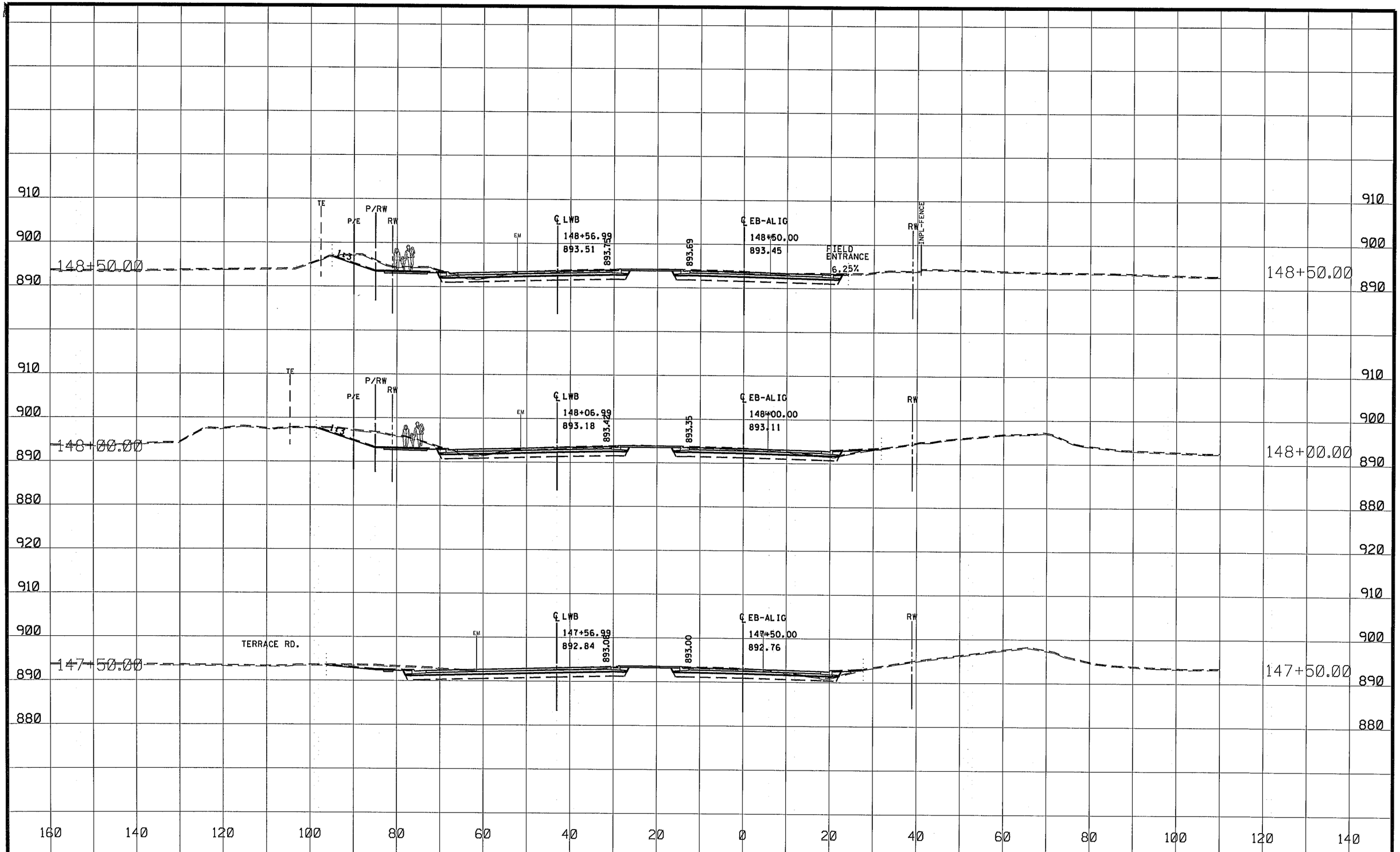


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ANOKA COUNTY

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CROSS SECTIONS

STA 147+50.00 TO 148+50.00

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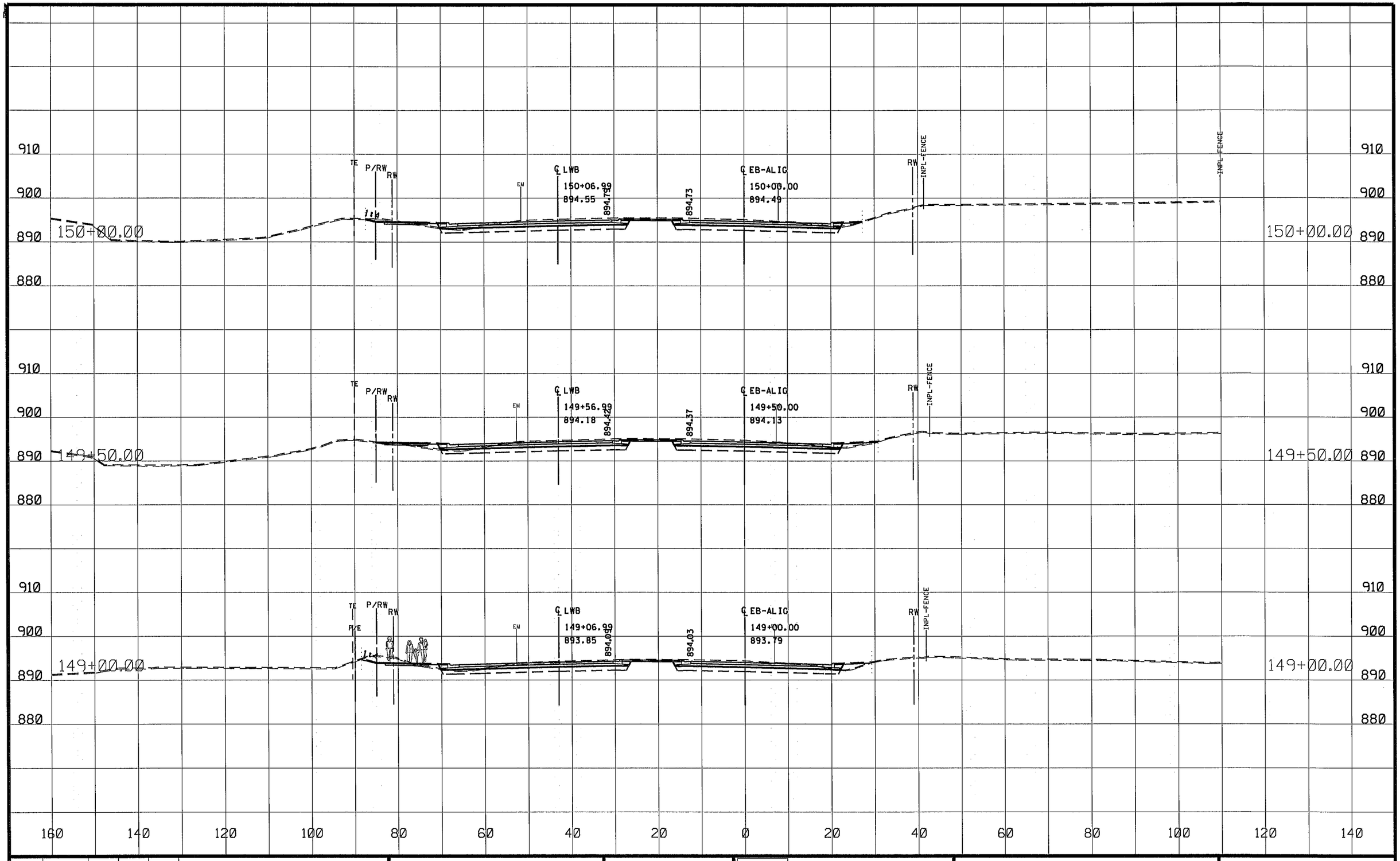


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ANOKA COUNTY

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CROSS SECTIONS

STA 149+00.00 TO 150+00.00

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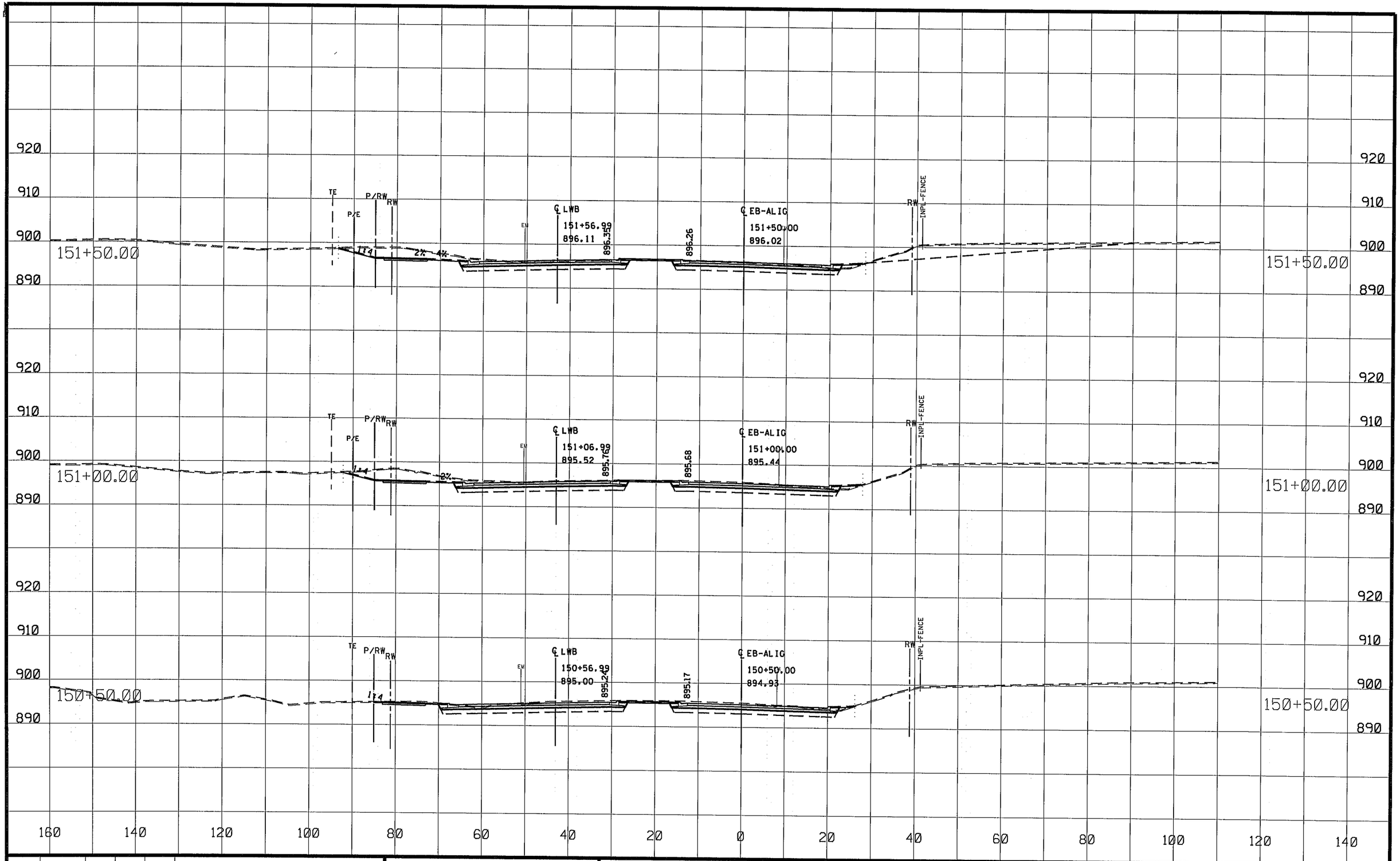


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CROSS SECTIONS
STA 150+50.00 TO 151+50.00

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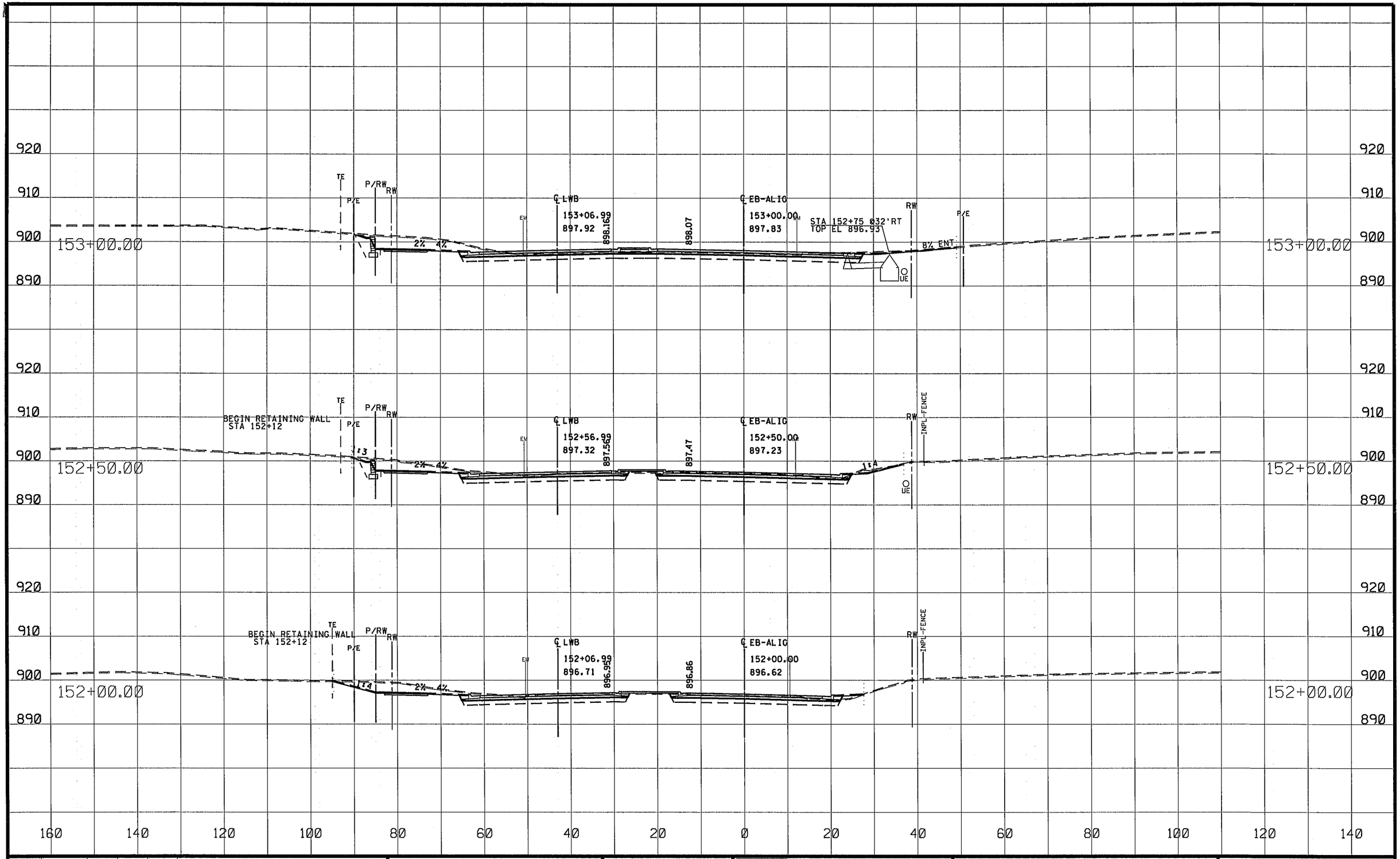


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ANOKA COUNTY

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CROSS SECTIONS

STA 152+00.00 TO 153+00.00

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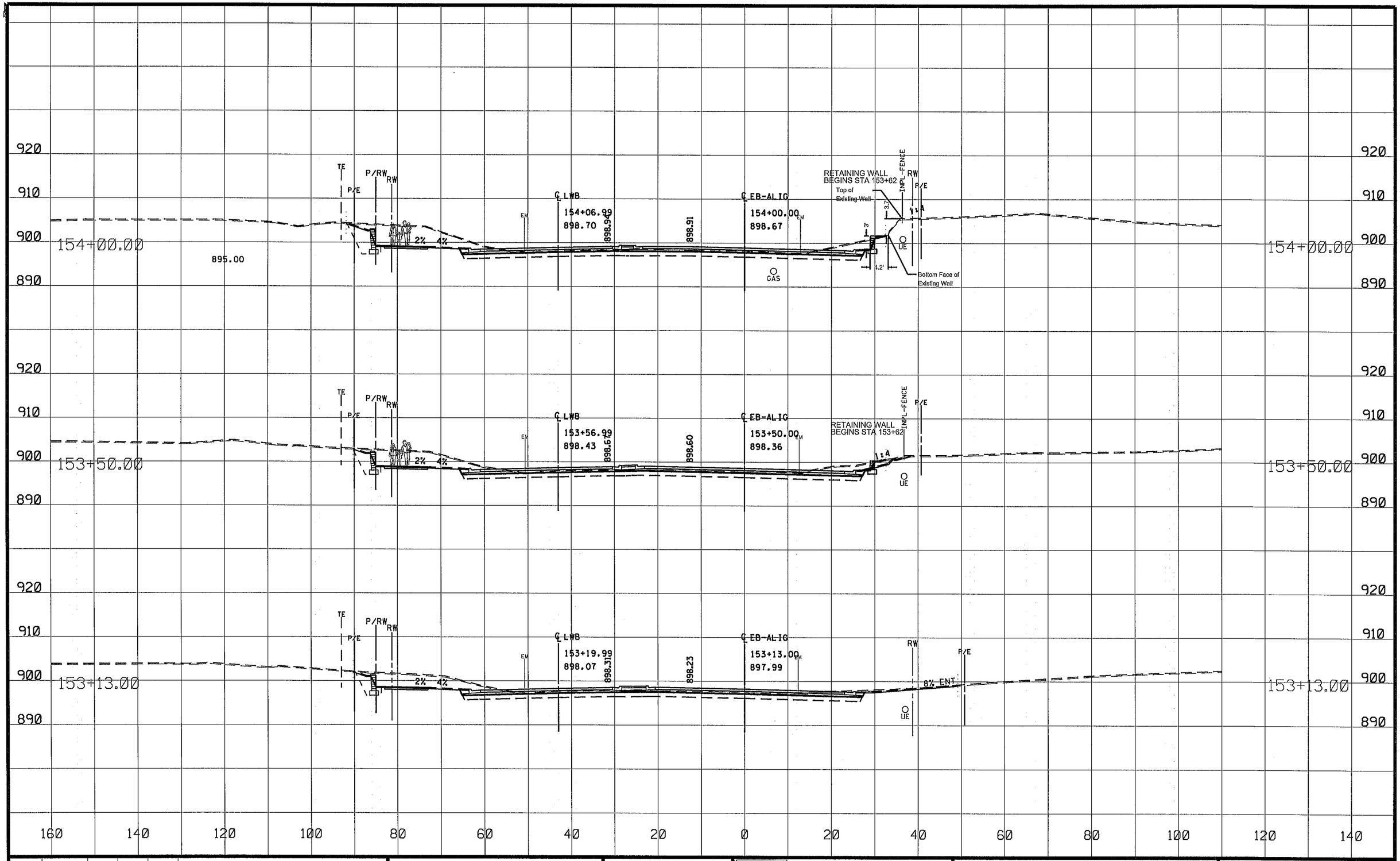


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ANOKA COUNTY
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CROSS SECTIONS
STA 153+13.00 TO 154+00.00
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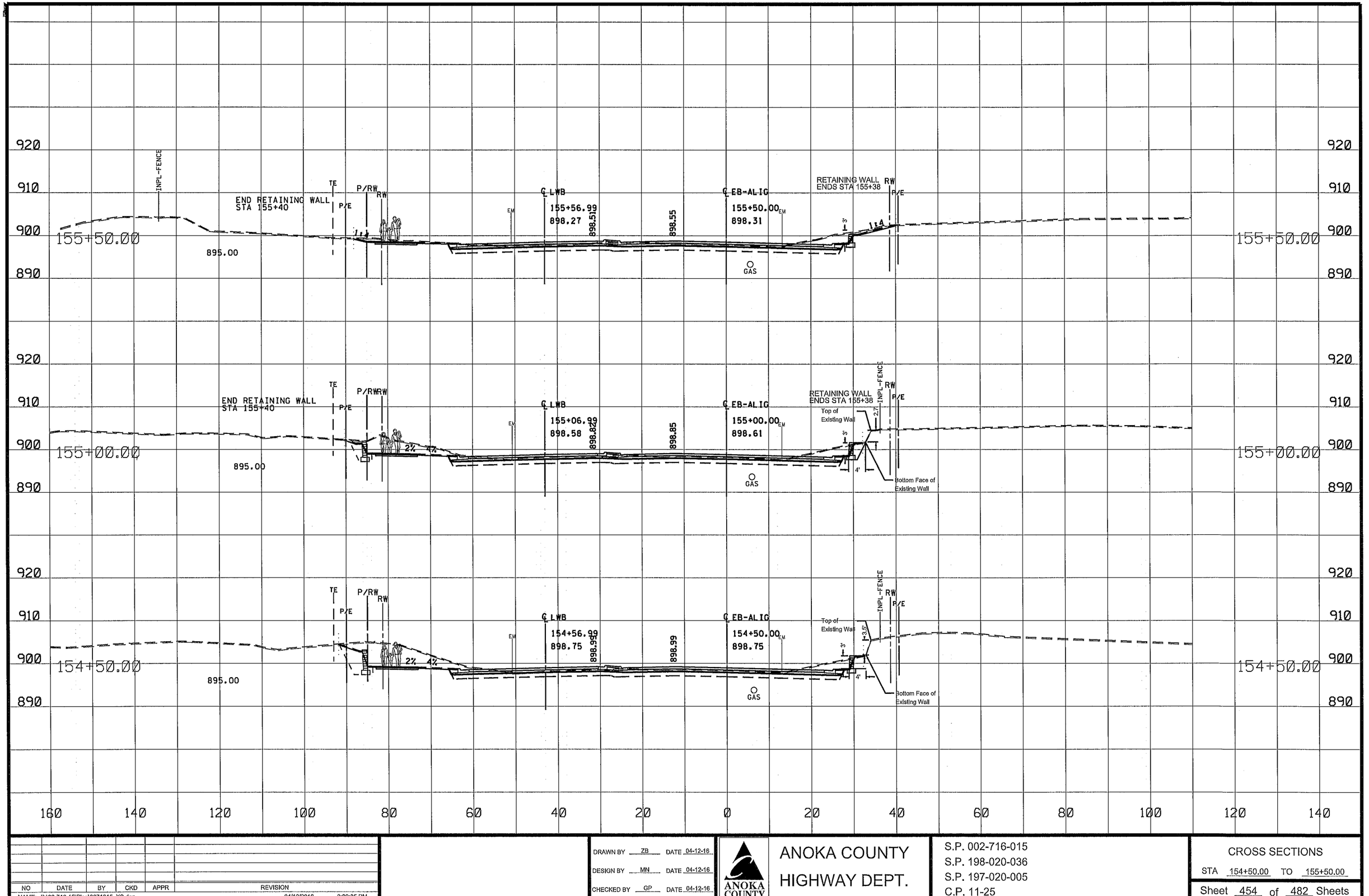


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ANOKA COUNTY

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CROSS SECTIONS
STA 154+50.00 TO 155+50.00

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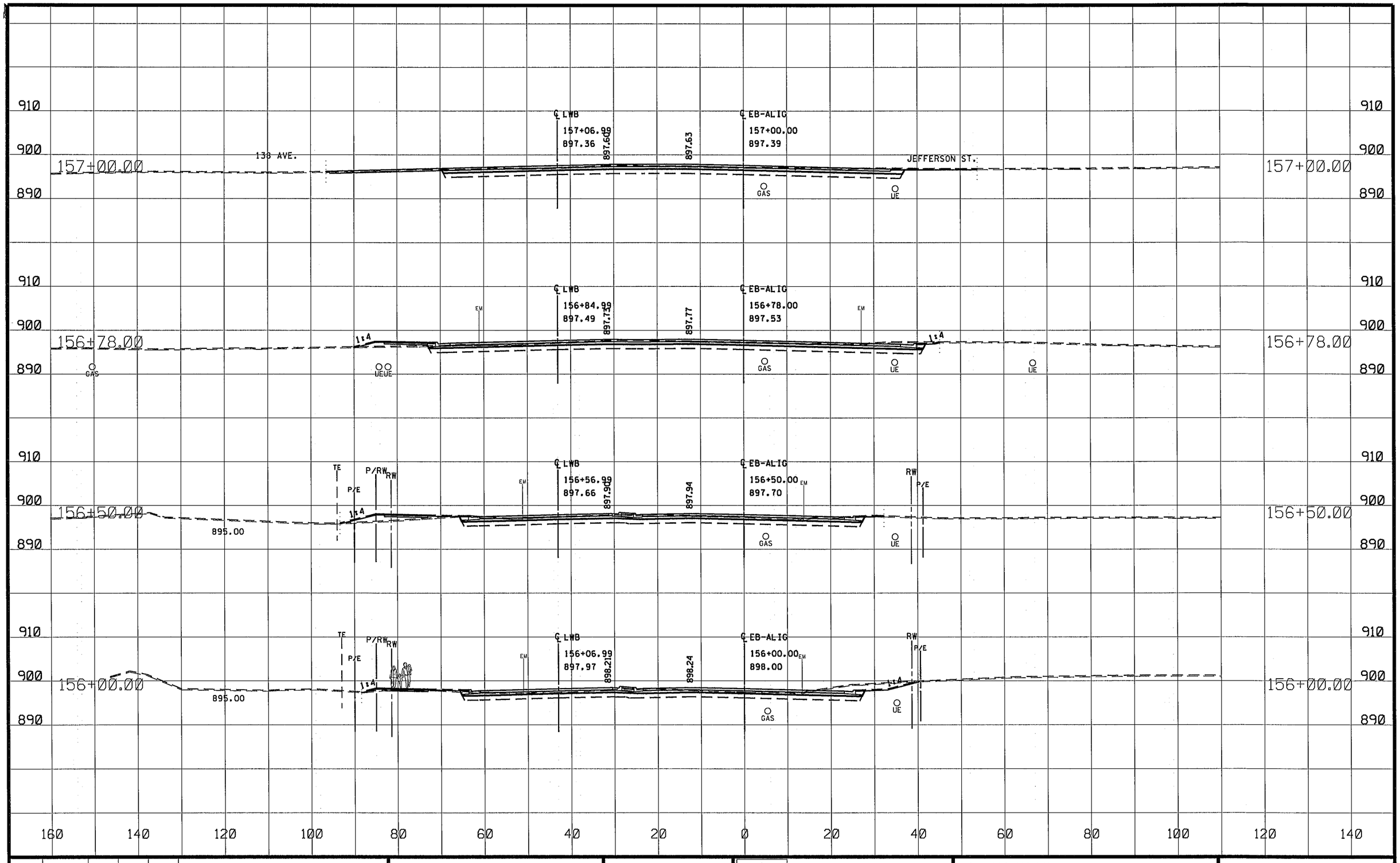


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CROSS SECTIONS
STA 156+00.00 TO 157+00.00
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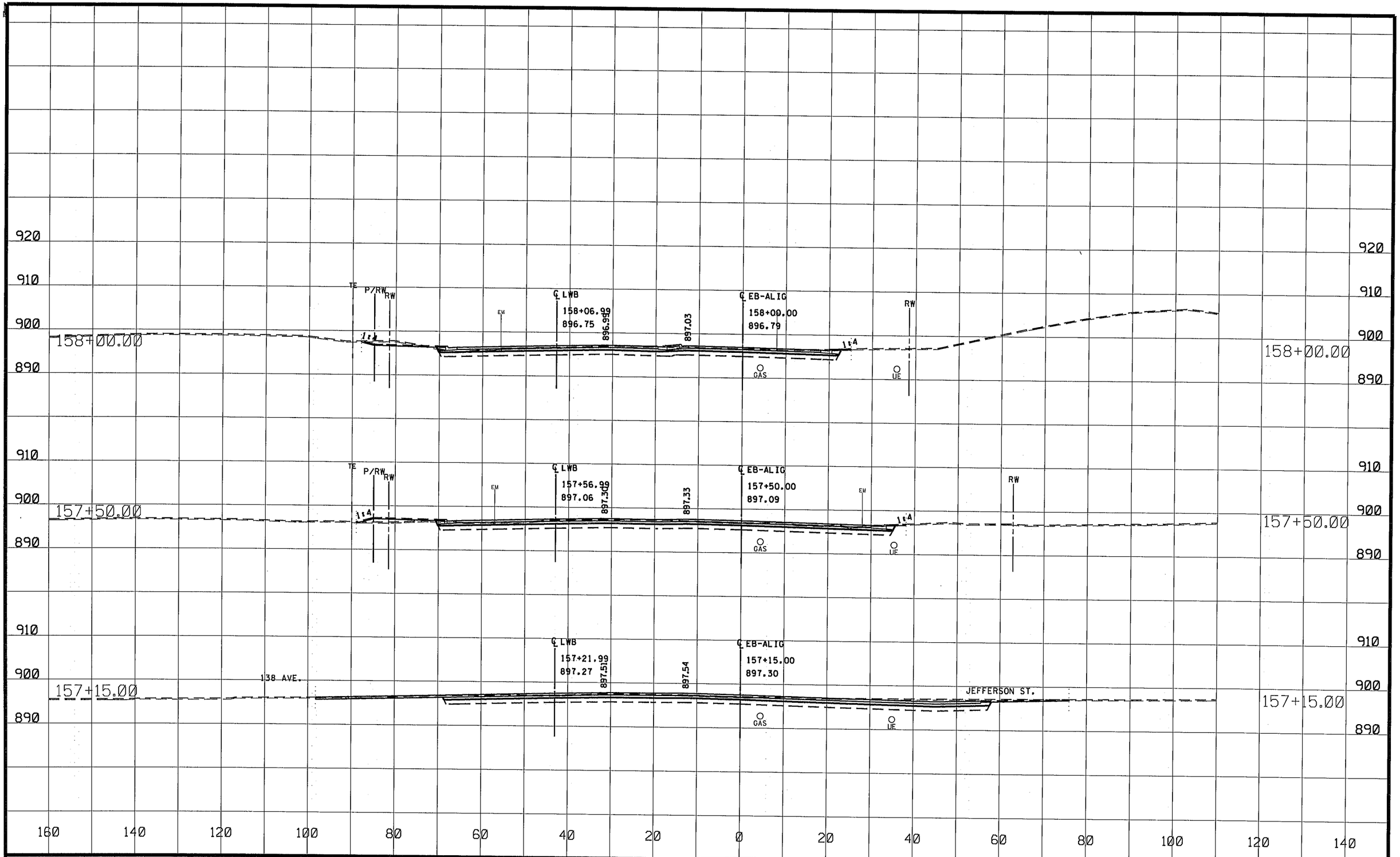


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ANOKA COUNTY

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CROSS SECTIONS

STA 157+15.00 TO 158+00.00

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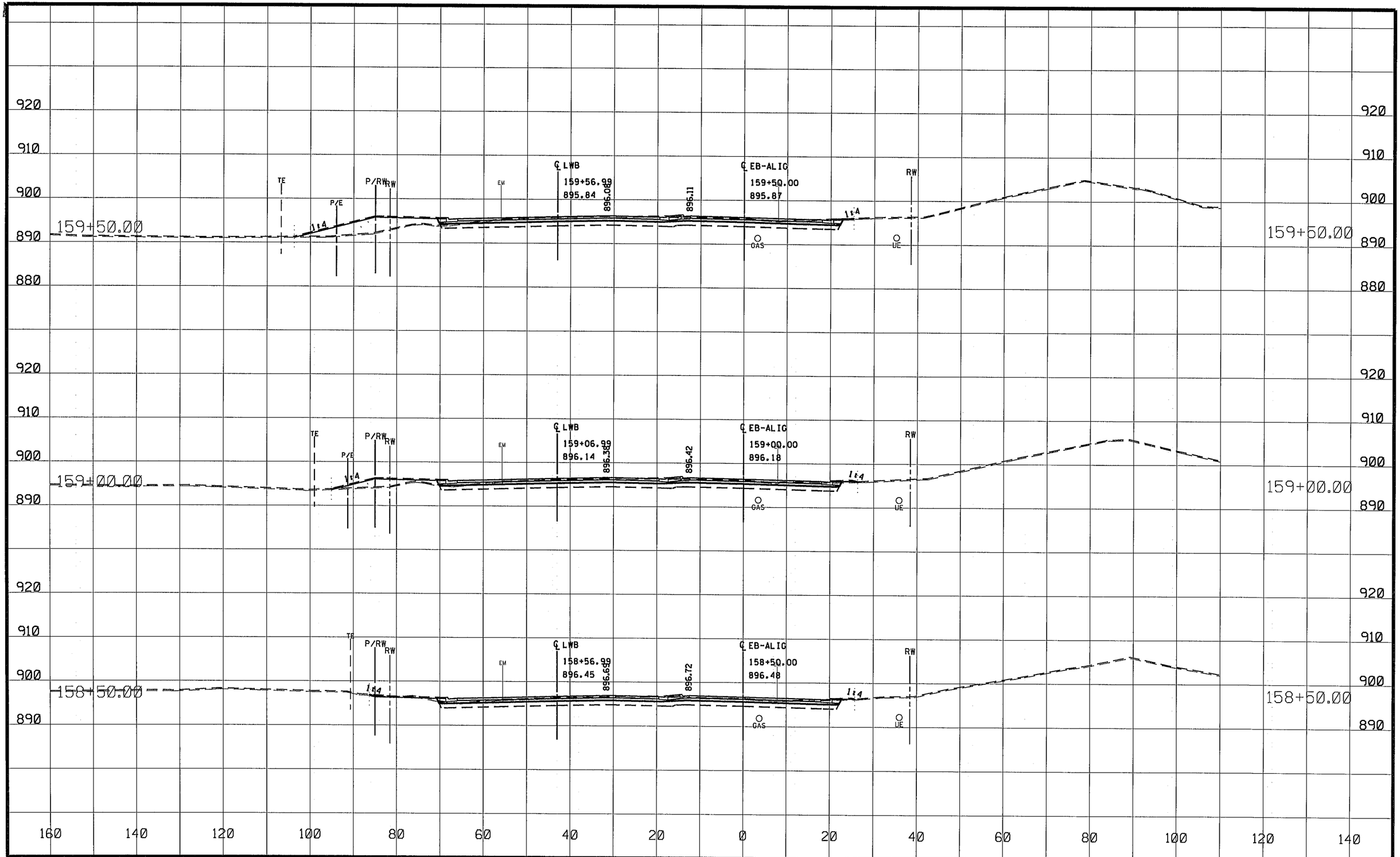


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CROSS SECTIONS
STA 158+50.00 TO 159+50.00

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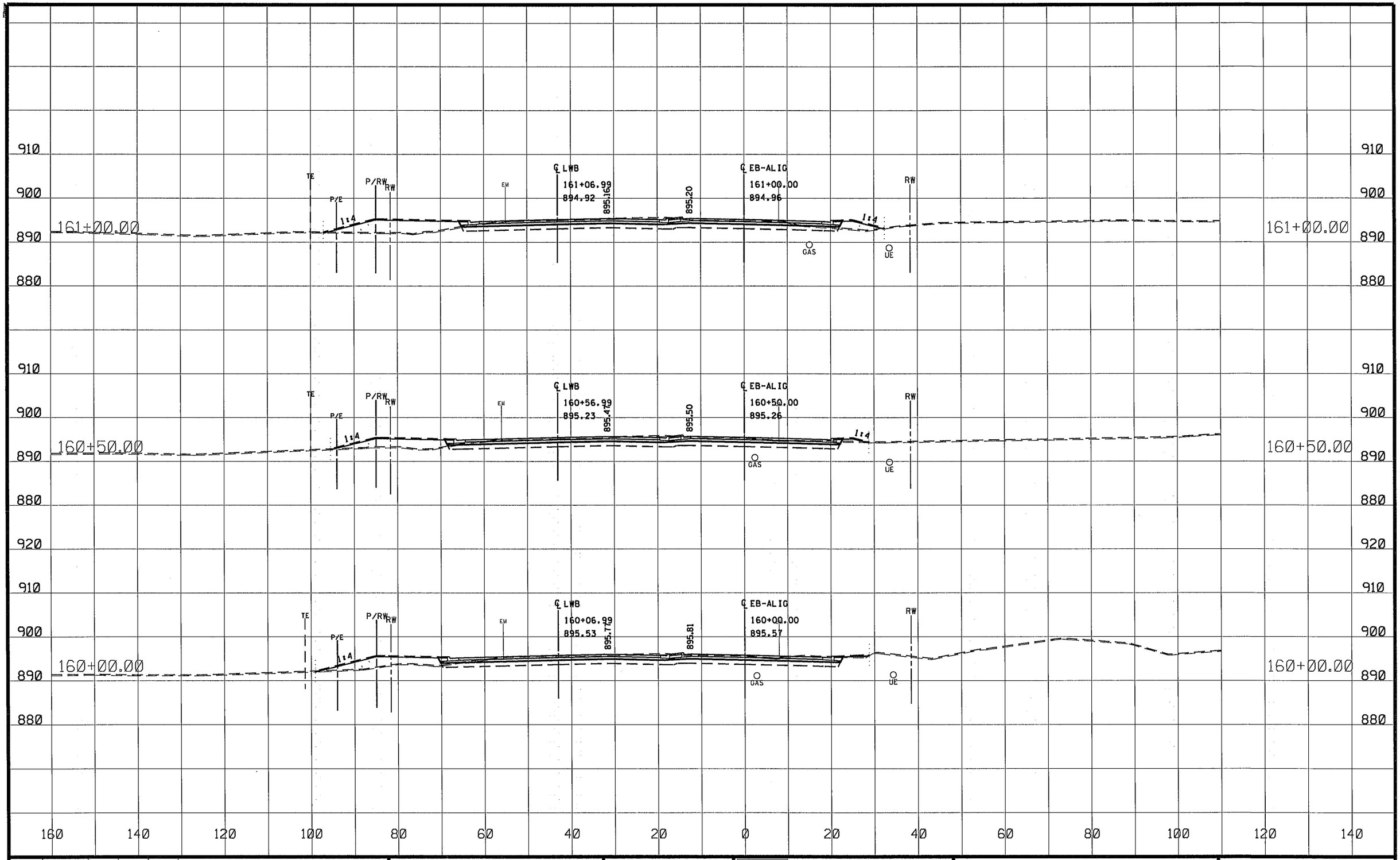


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ANOKA COUNTY

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CROSS SECTIONS

STA 160+00.00 TO 161+00.00

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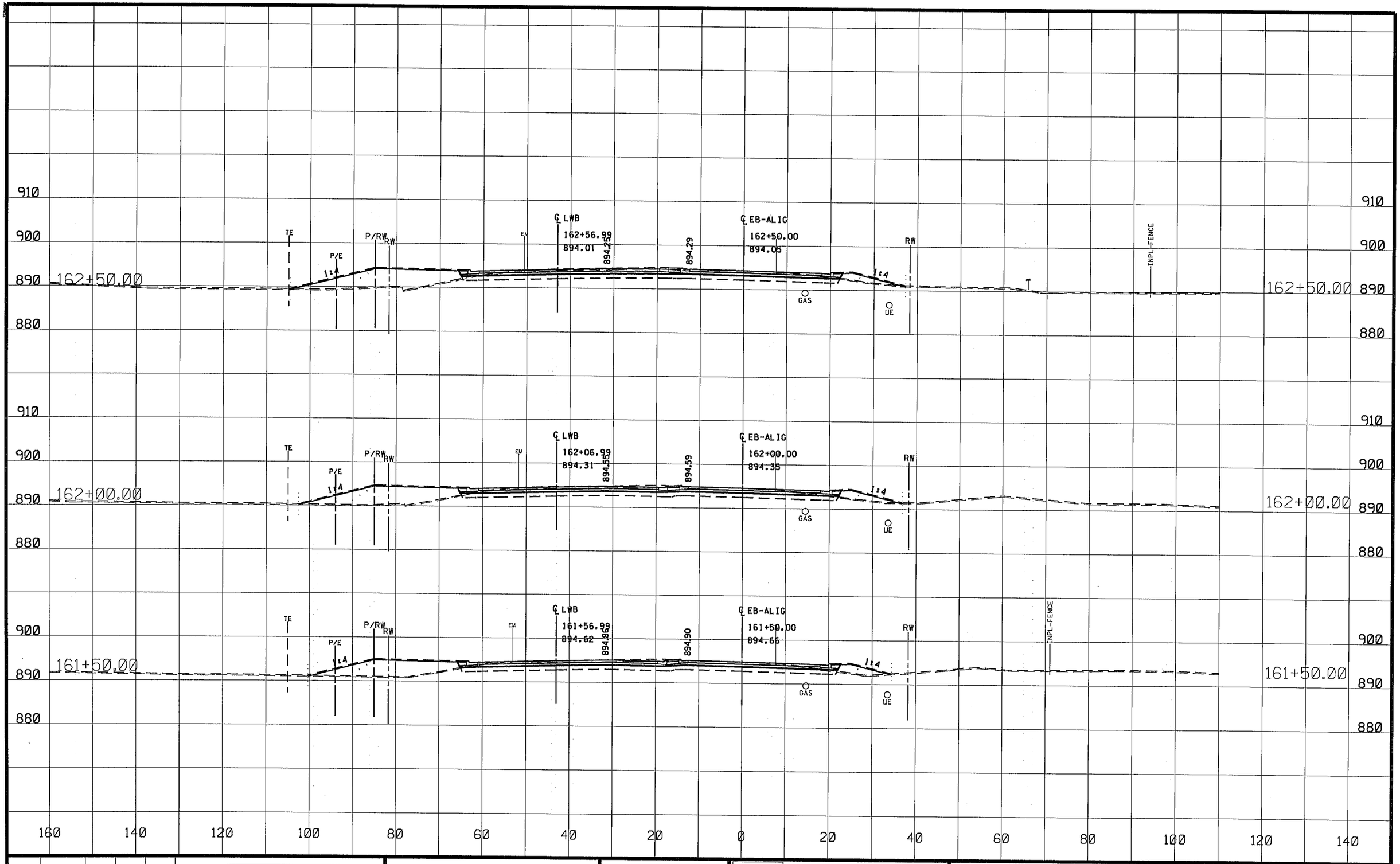


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ANOKA COUNTY

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CROSS SECTIONS

STA 161+50.00 TO 162+50.00

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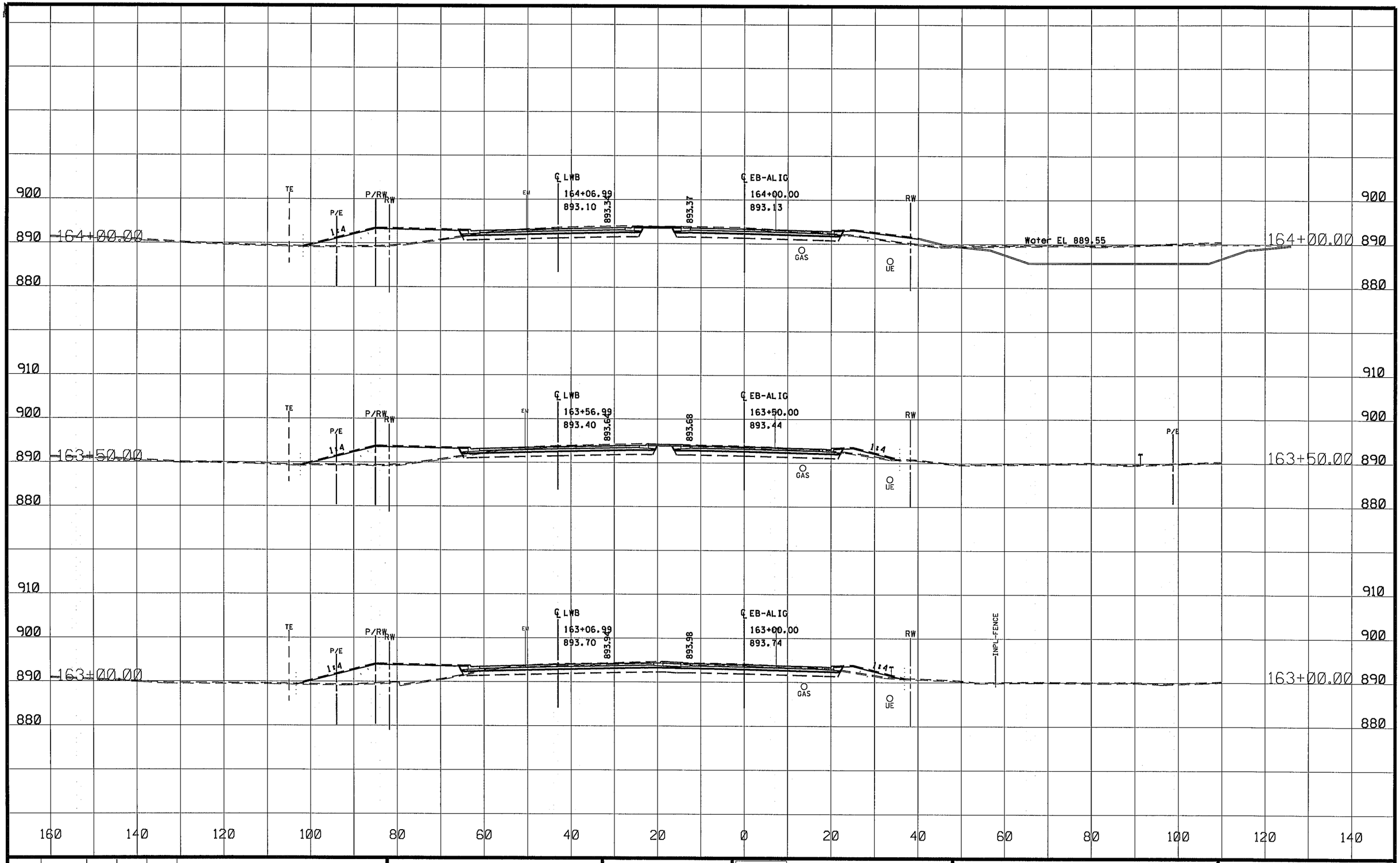


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ANOKA COUNTY

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CROSS SECTIONS

STA 163+00.00 TO 164+00.00

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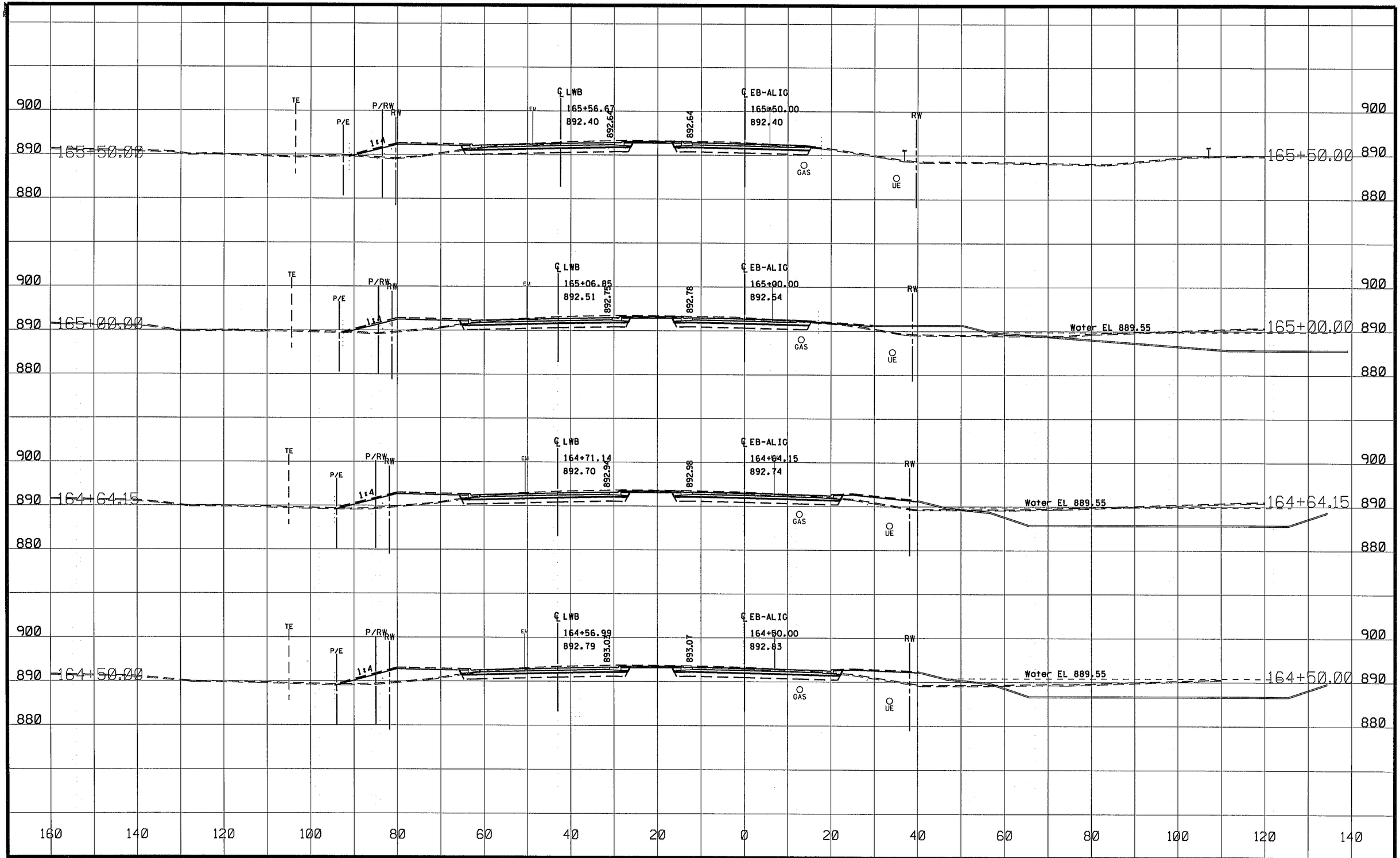


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CROSS SECTIONS
STA 164+50.00 TO 165+50.00

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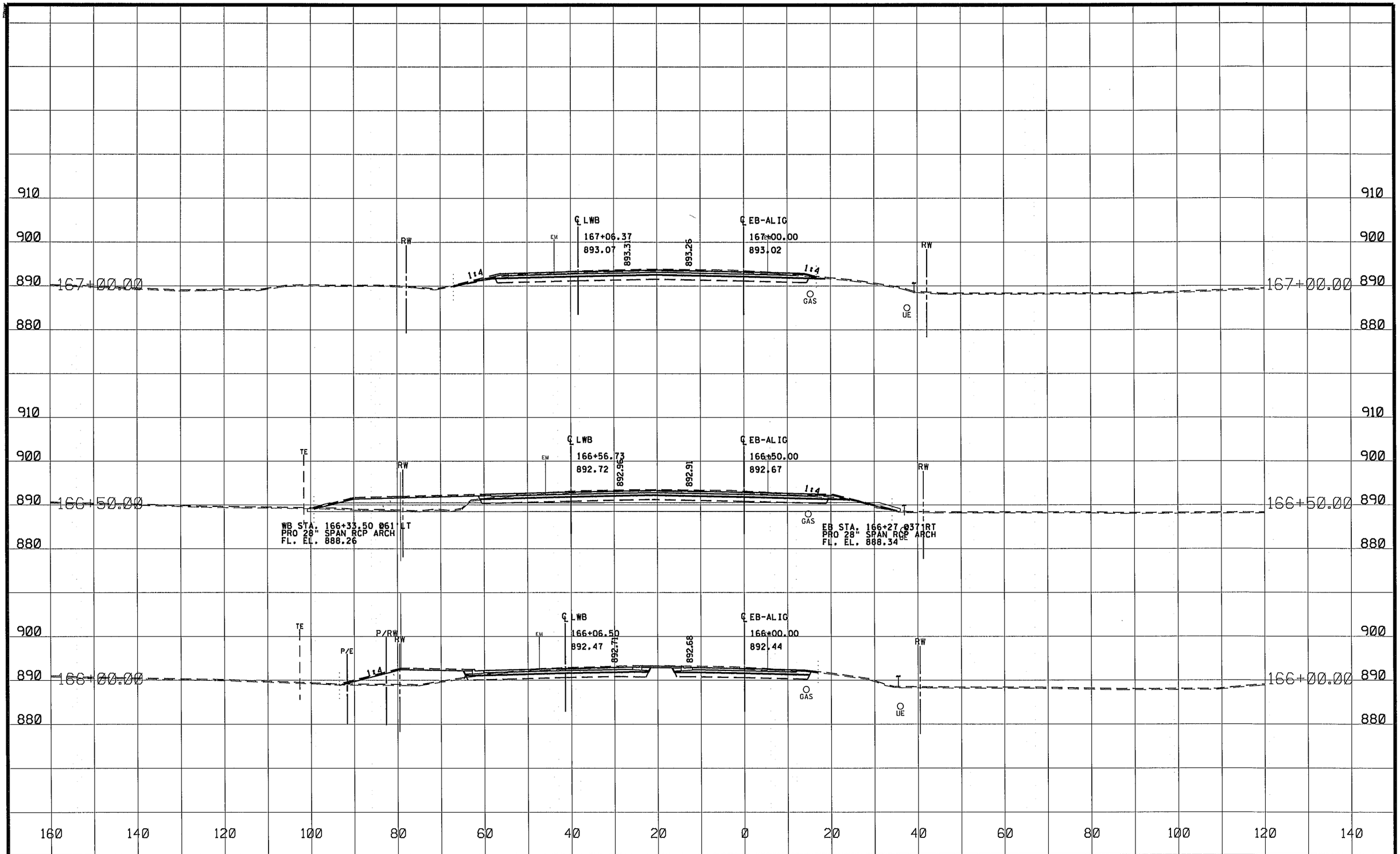


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DRAWN BY ZB DATE 04-12-16

DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

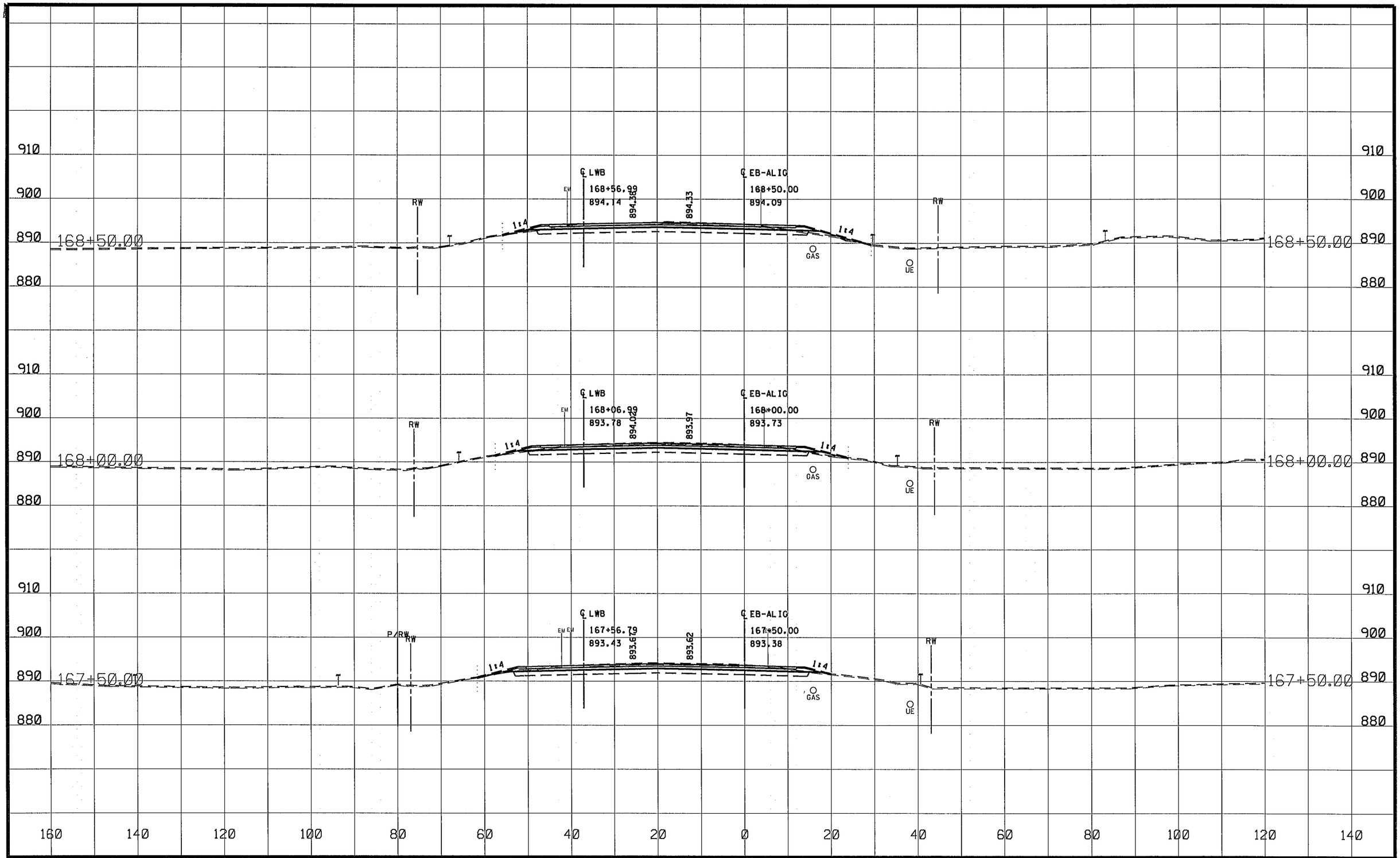
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 166+00.00 TO 167+00.00

Sheet 462 of 482 Sheets

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DESIGN BY MN DATE 04-12-16

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ANOKA COUNTY

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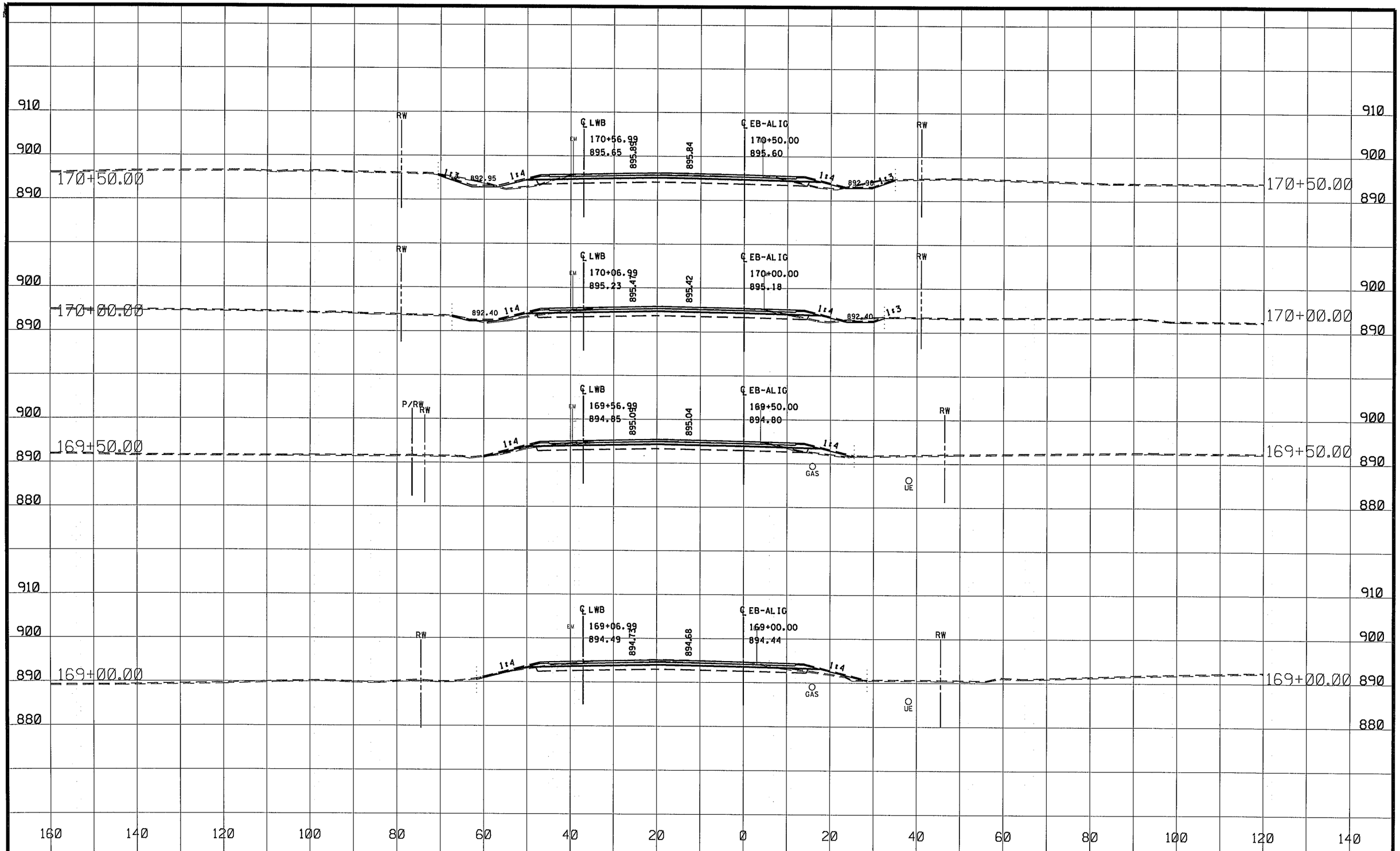
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 167+50.00 TO 168+50.00

Sheet 463 of 482 Sheets

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

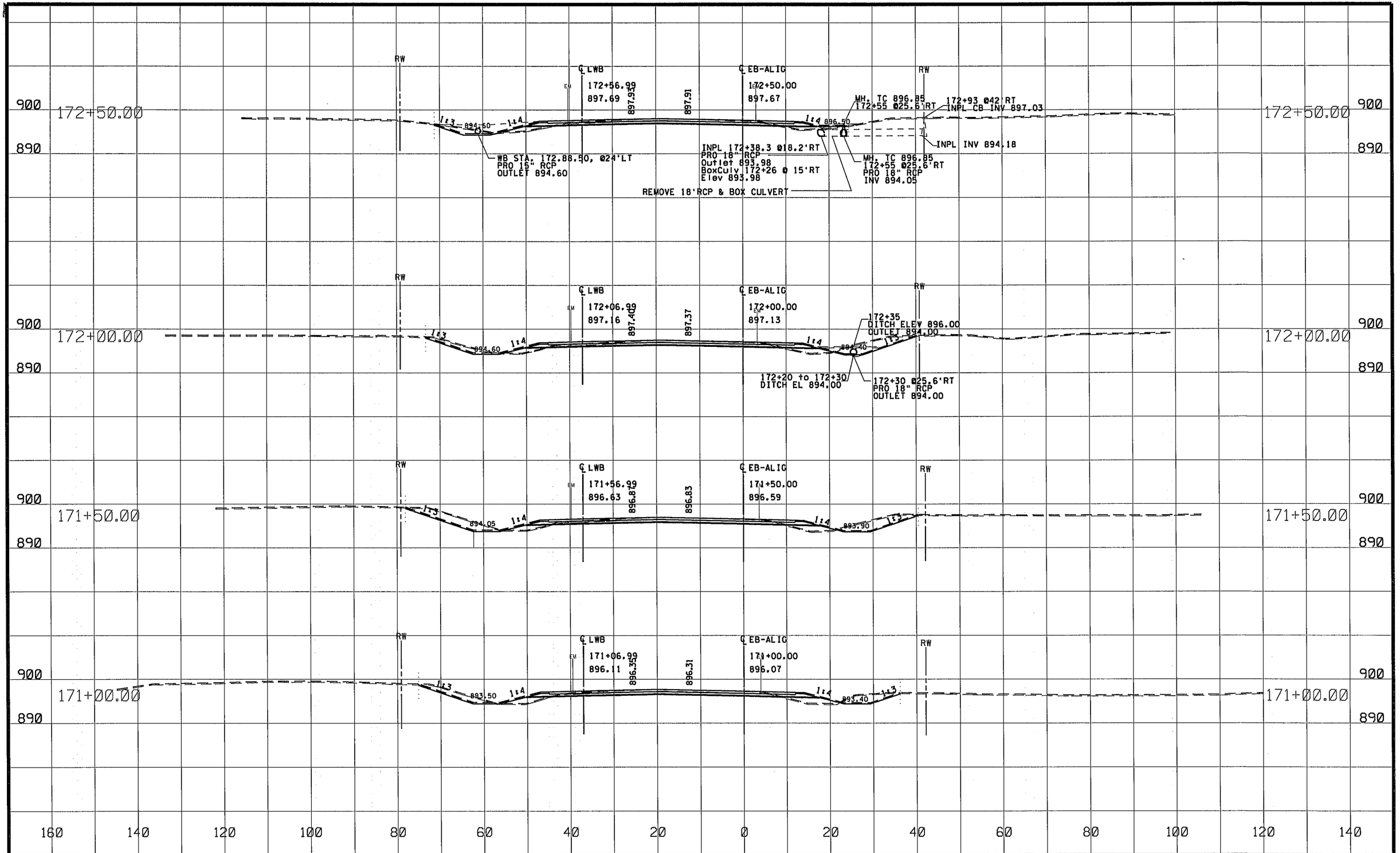
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 169+00.00 TO 170+50.00

Sheet 464 of 482 Sheets

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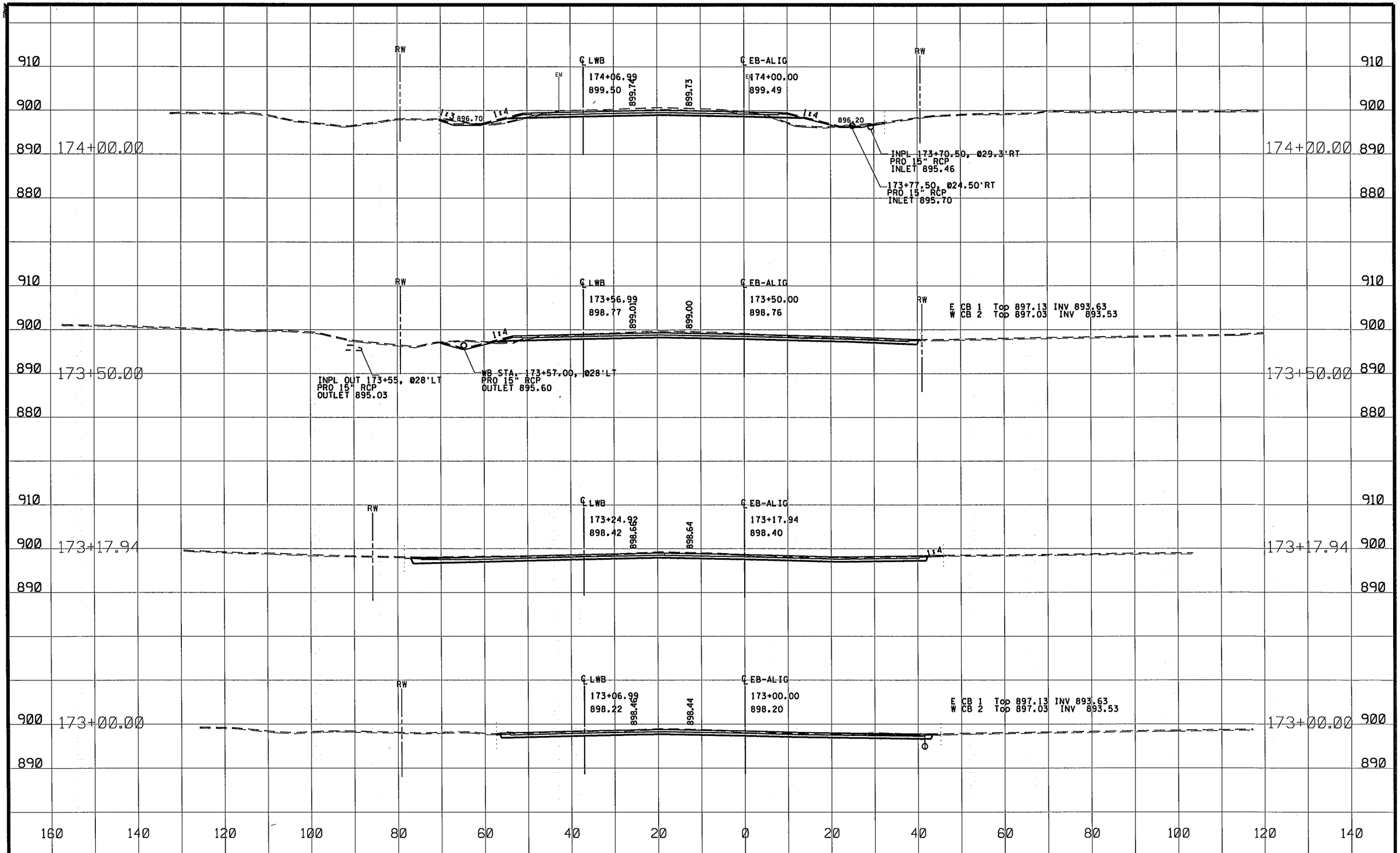
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 171+00.00 TO 172+50.00

Sheet 465 of 482 Sheets

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

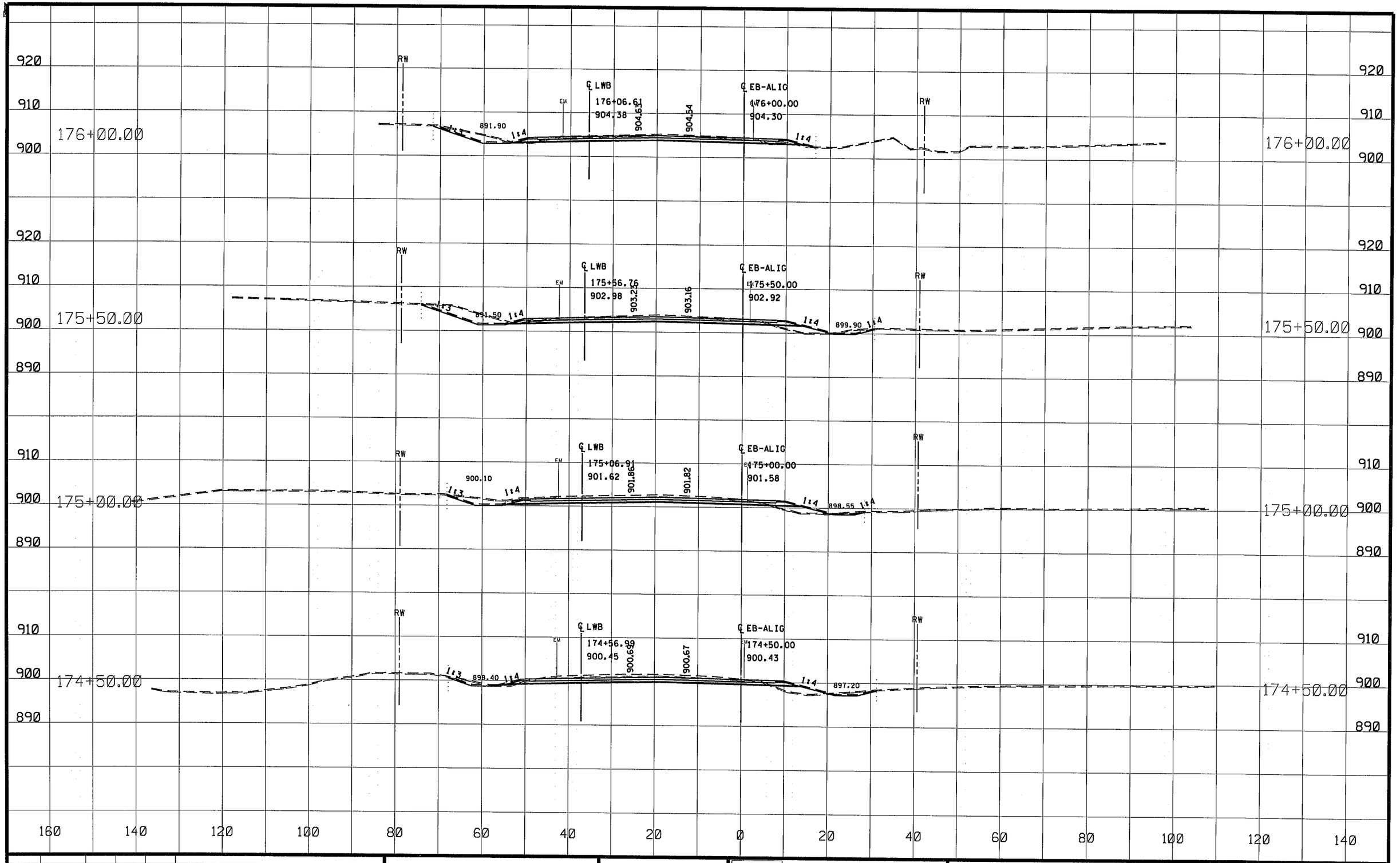
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS

STA 173+00.00 TO 174+00.00

Sheet 466 of 482 Sheets

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DESIGN BY MN DATE 04-12-16
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ANOKA COUNTY
HIGHWAY DEPT.

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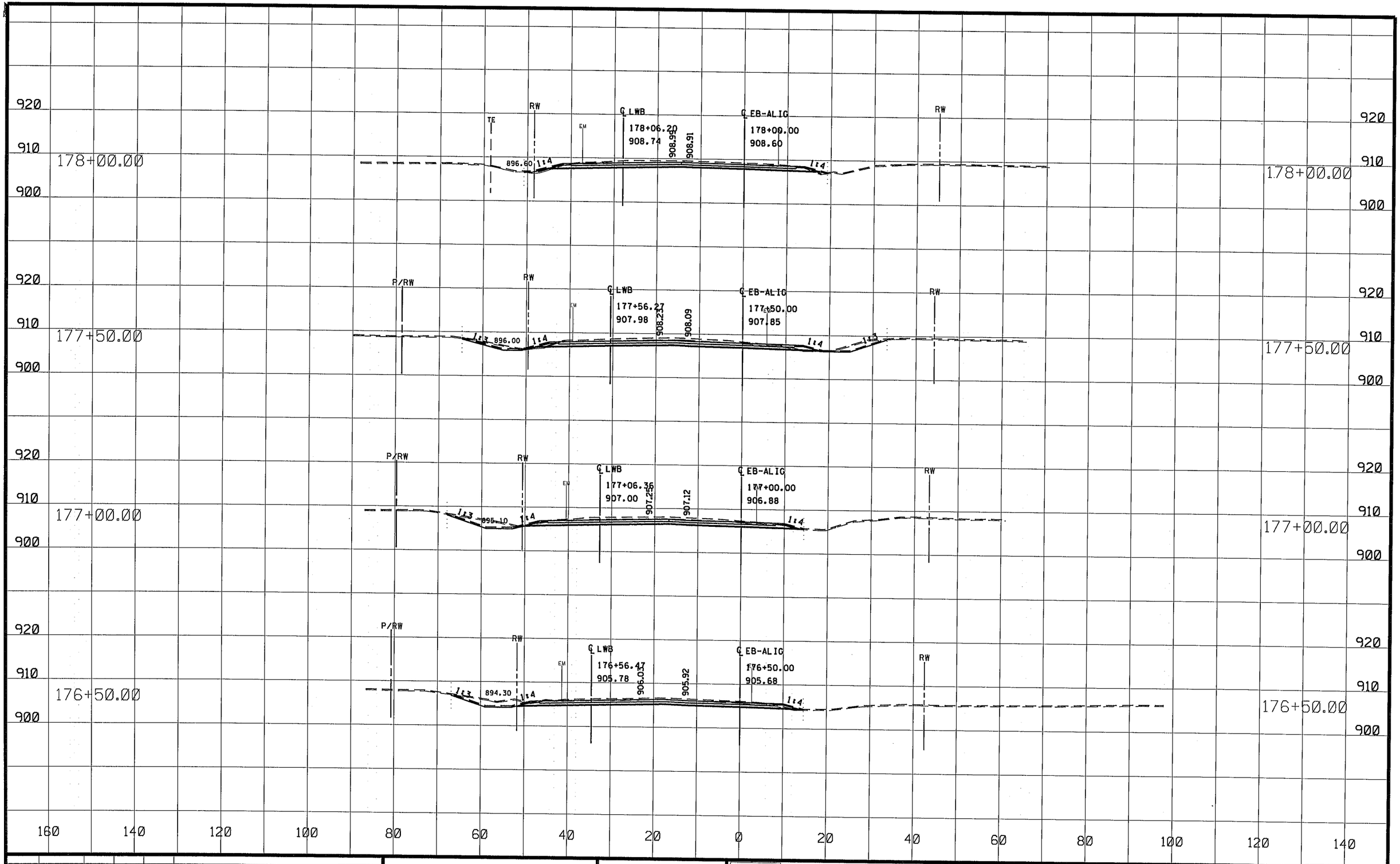
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 174+50.00 TO 176+00.00

Sheet 467 of 482 Sheets

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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S.P. 198-020-036
S.P. 197-020-005
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CROSS SECTIONS

STA 176+50.00 TO 178+00.00

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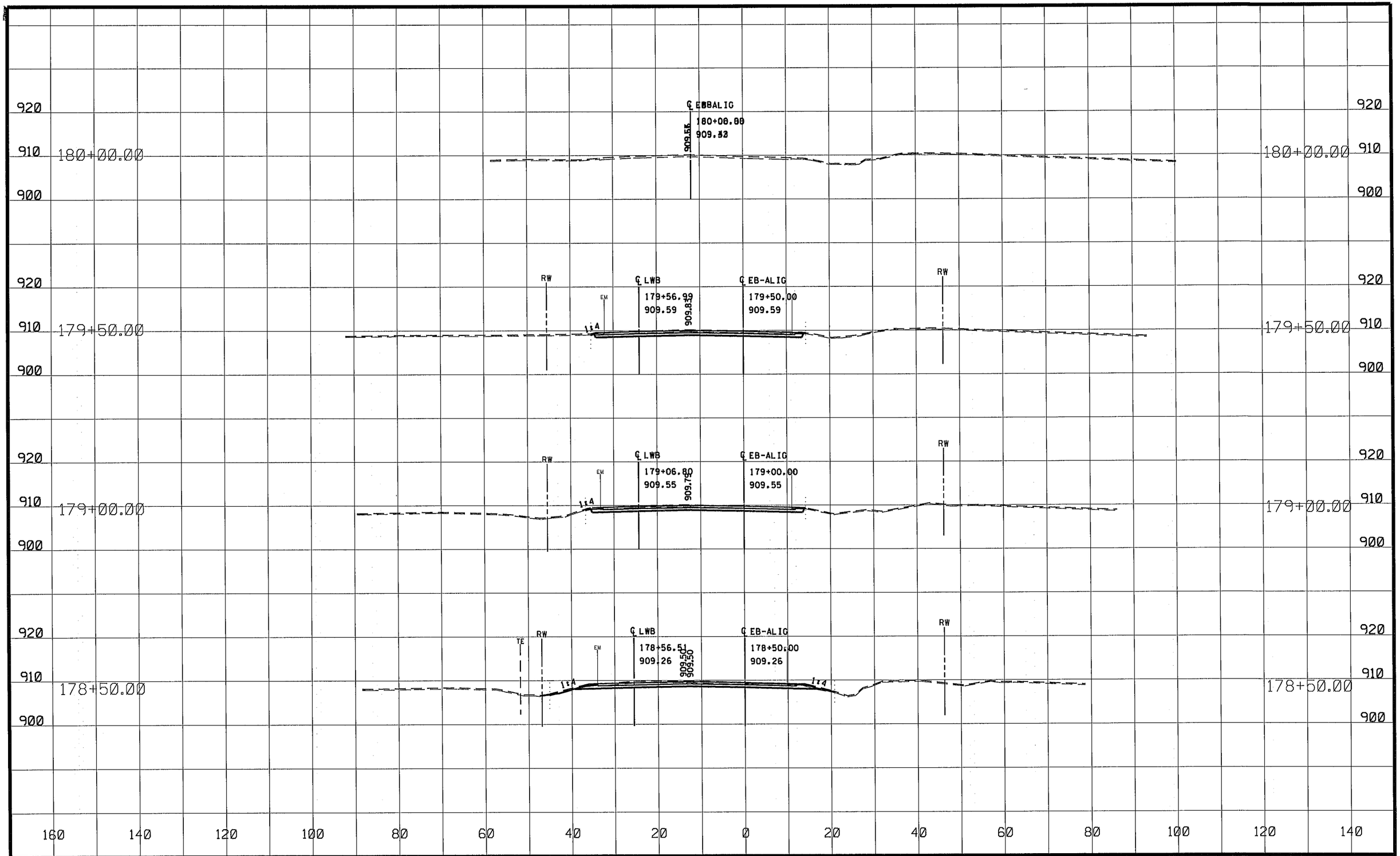


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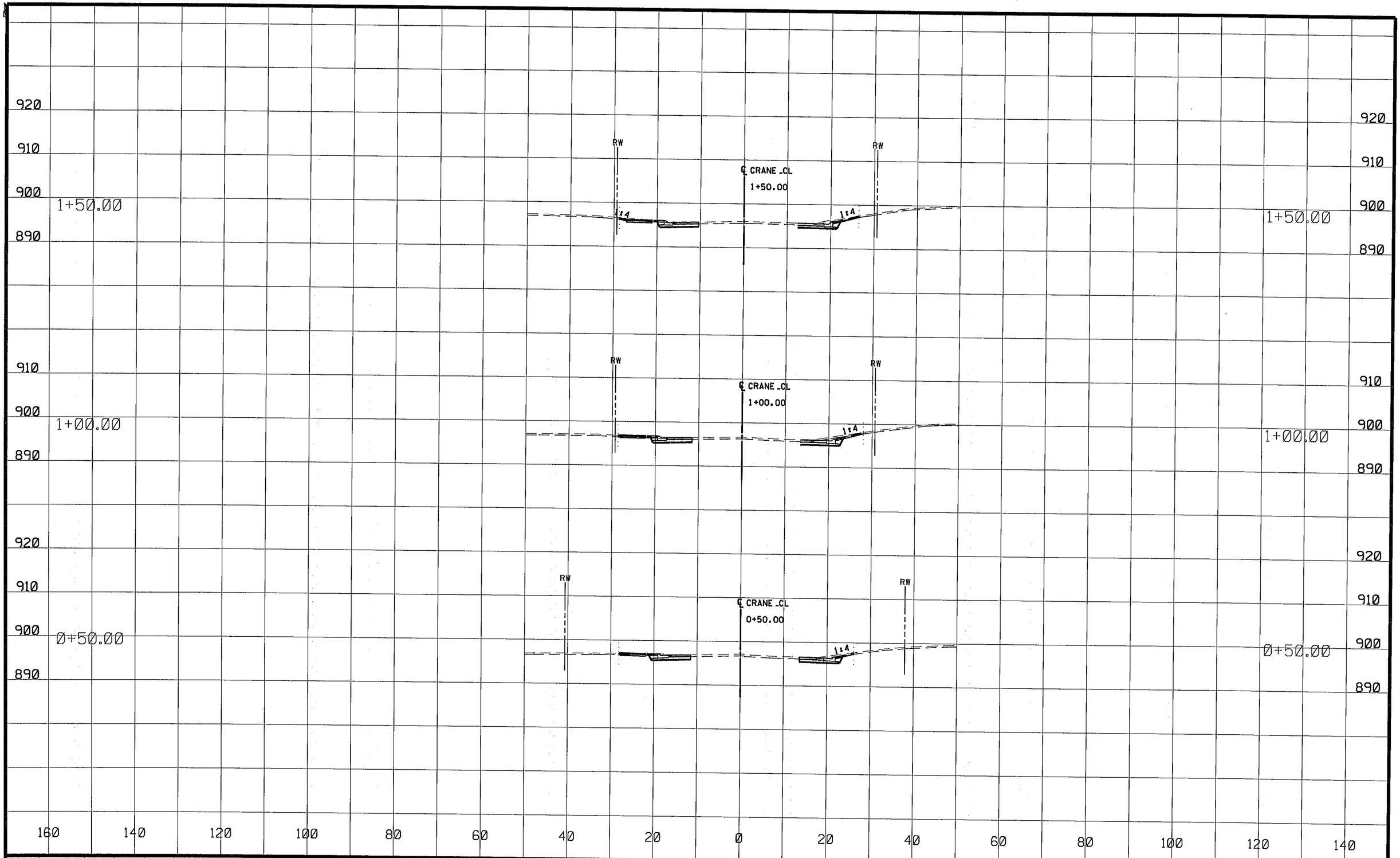
DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
STA 178+50.00 TO 180+00.00

Sheet 469 of 482 Sheets

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DESIGN BY MN DATE 04-12-16
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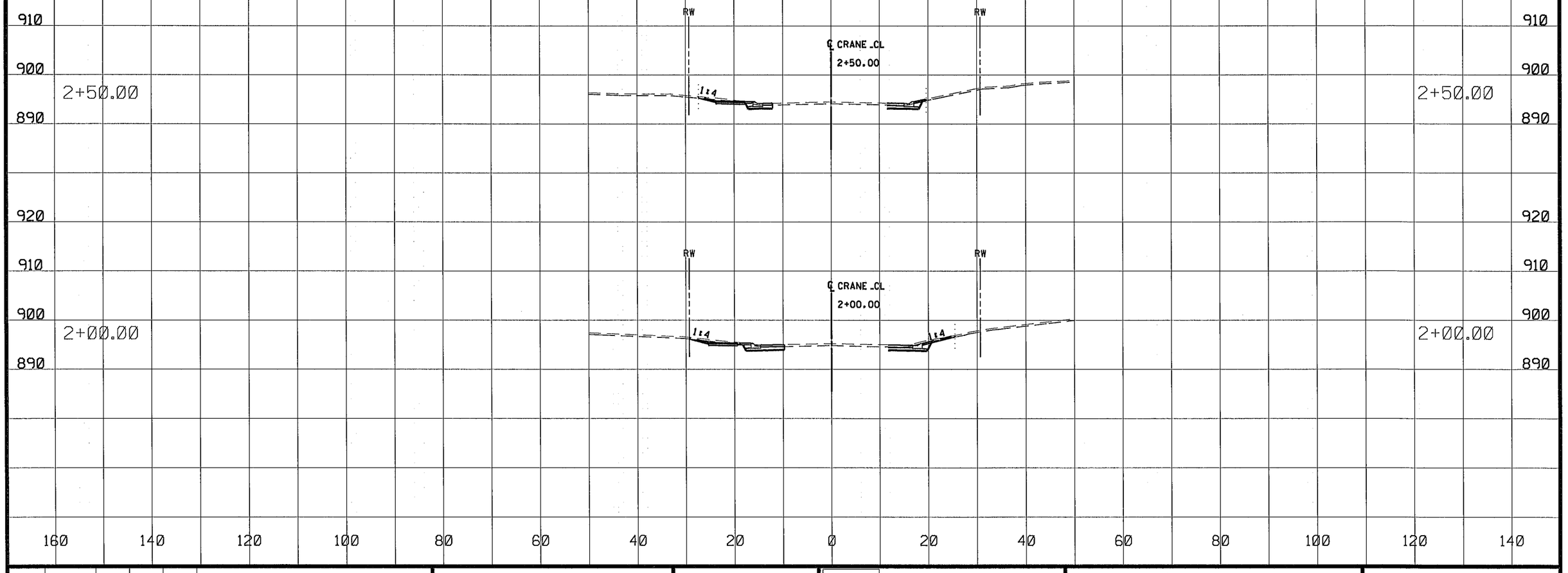
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
CRANE STREET
STA 0+50.00 TO 1+50.00

Sheet 470 of 482 Sheets

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

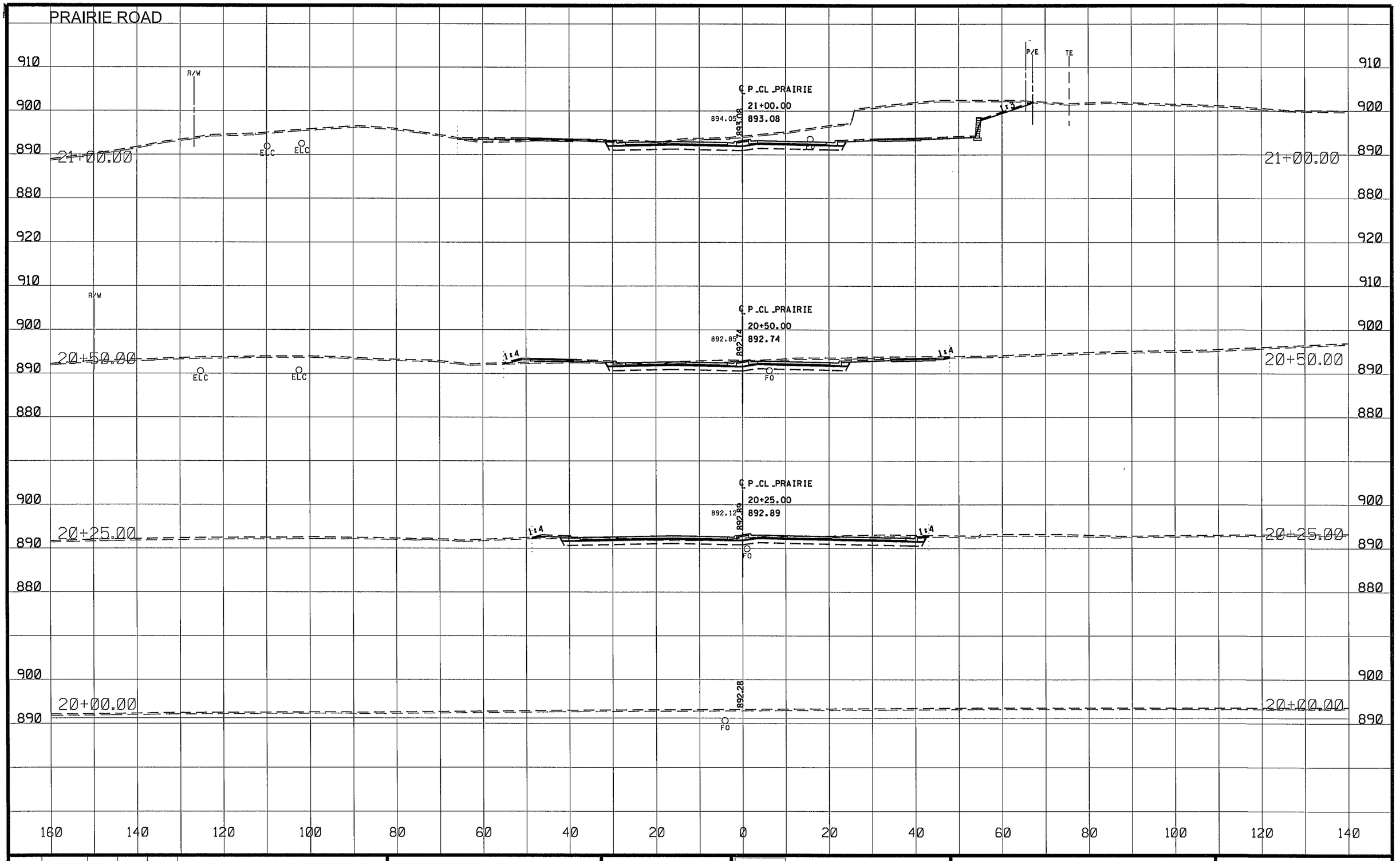
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
CRANE STREET
STA 2+00.00 TO 2+50.00

Sheet 471 of 482 Sheets

PRAIRIE ROAD

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CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

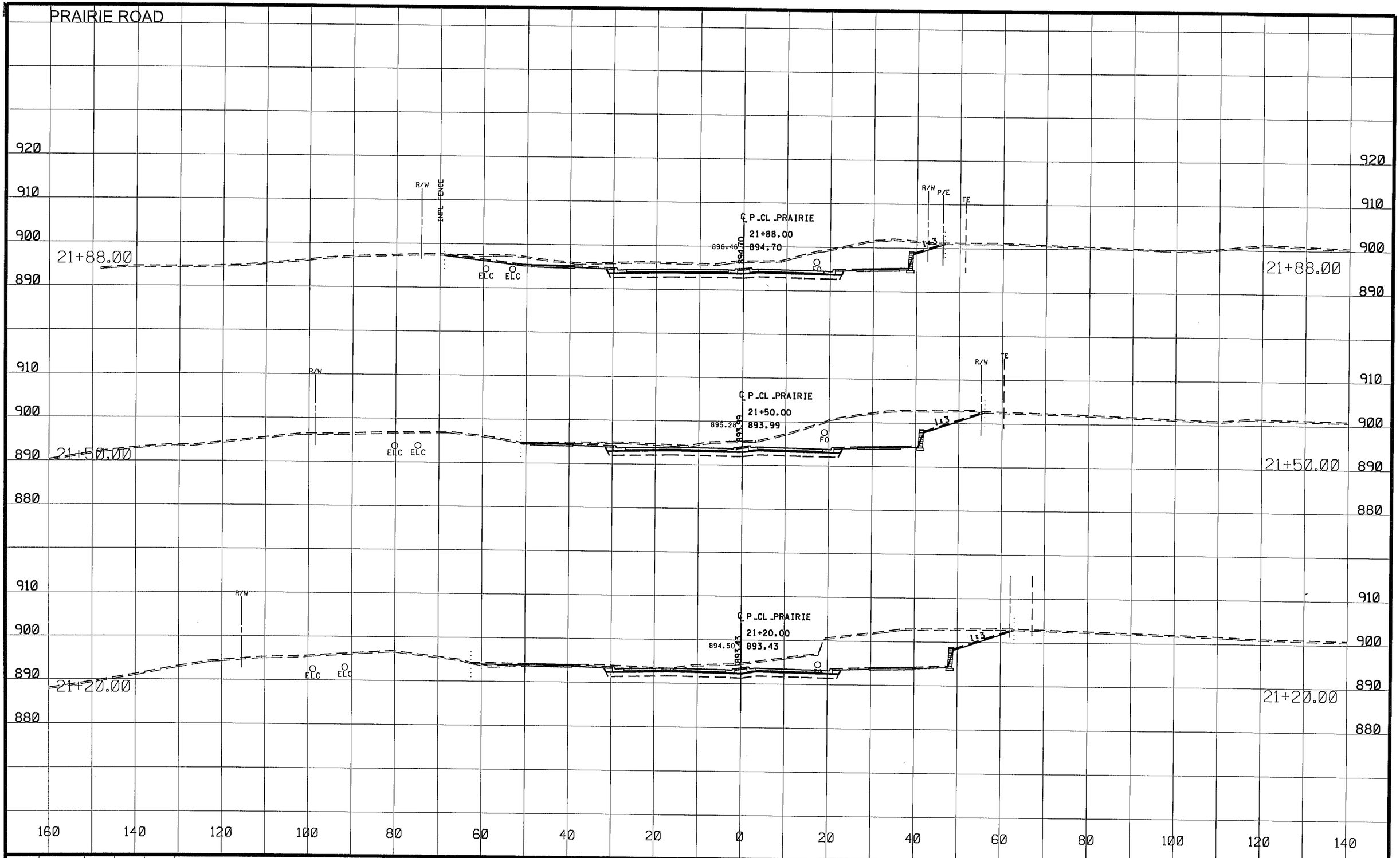
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PRAIRIE ROAD
STA 20+00.00 TO 21+00.00

Sheet 472 of 482 Sheets

PRAIRIE ROAD

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

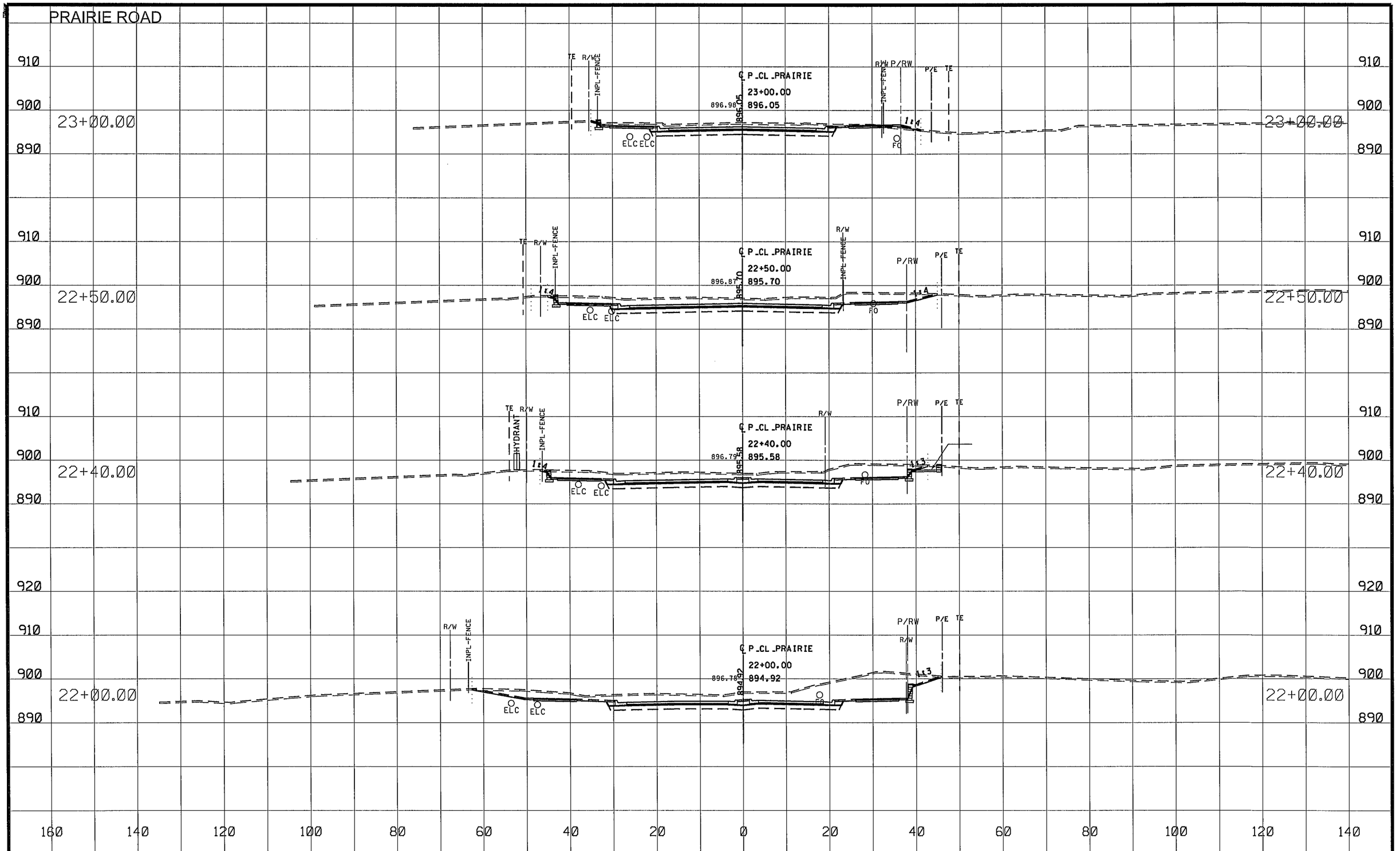
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PRAIRIE ROAD
STA 21+20.00 TO 21+88.00

Sheet 473 of 482 Sheets

PRAIRIE ROAD

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DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

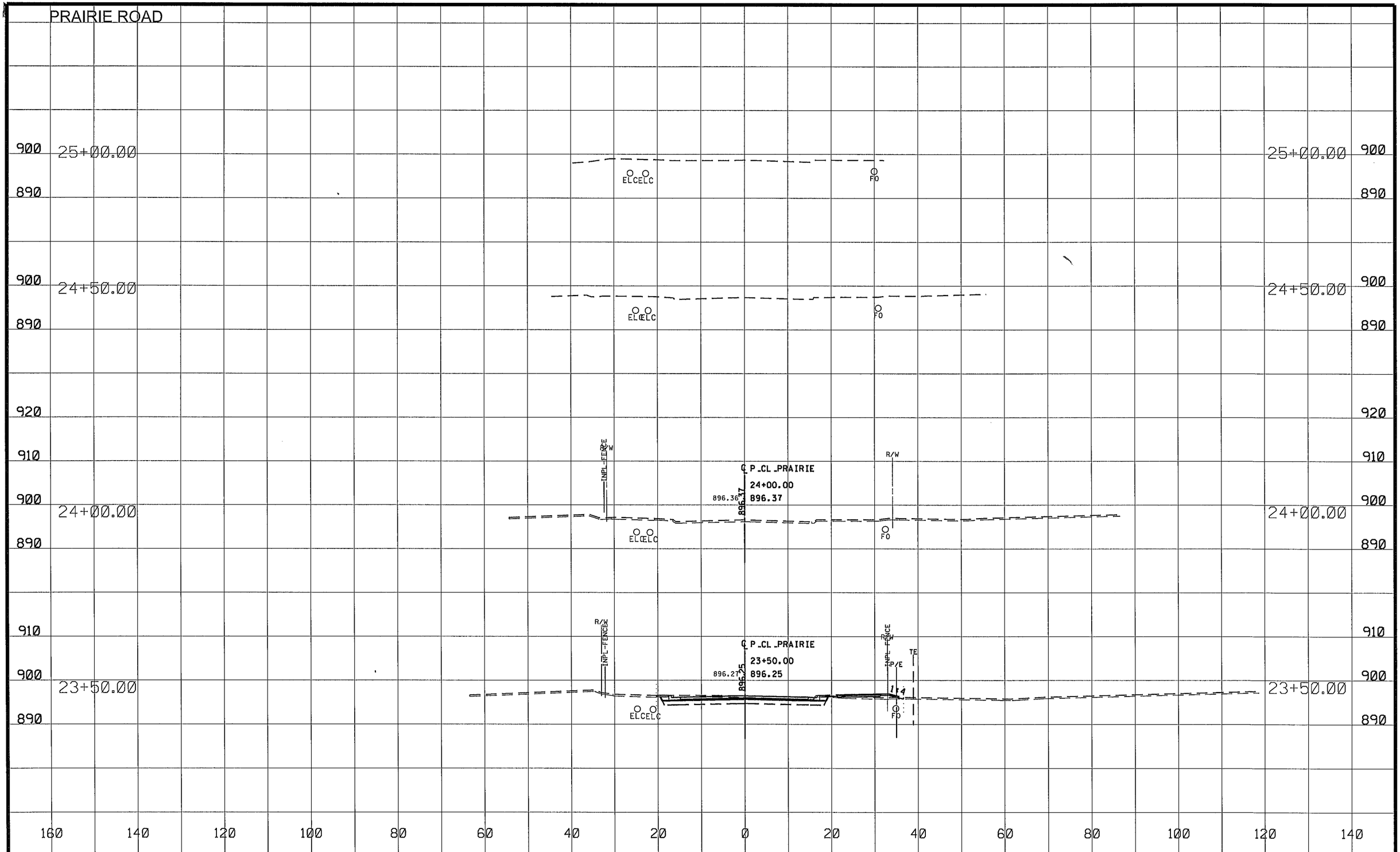
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PRAIRIE ROAD
STA 22+00.00 TO 23+00.00

Sheet 474 of 482 Sheets

PRAIRIE ROAD

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

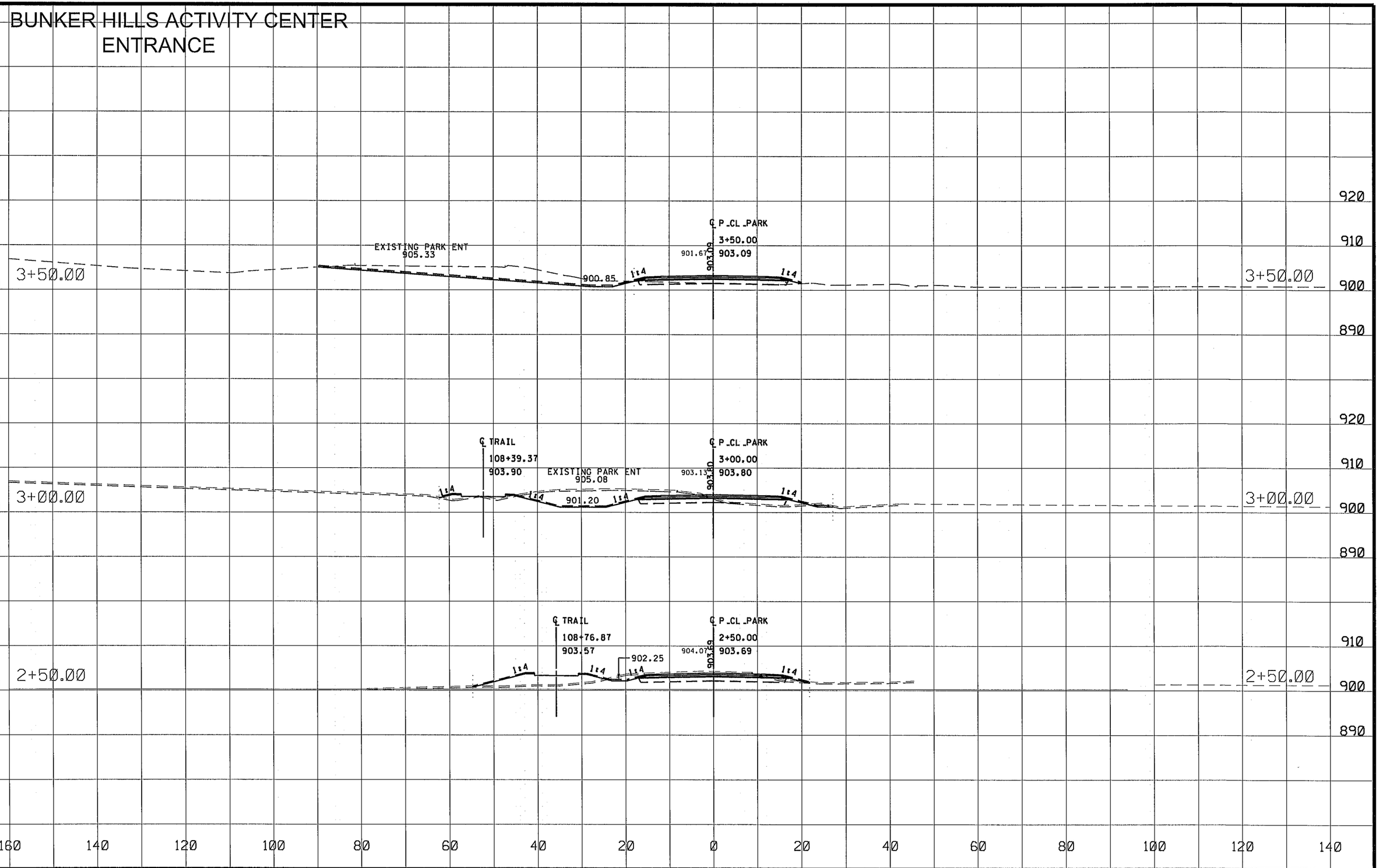
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
PRAIRIE ROAD
STA 23+50.00 TO 25+00.00

Sheet 475 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER ENTRANCE

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

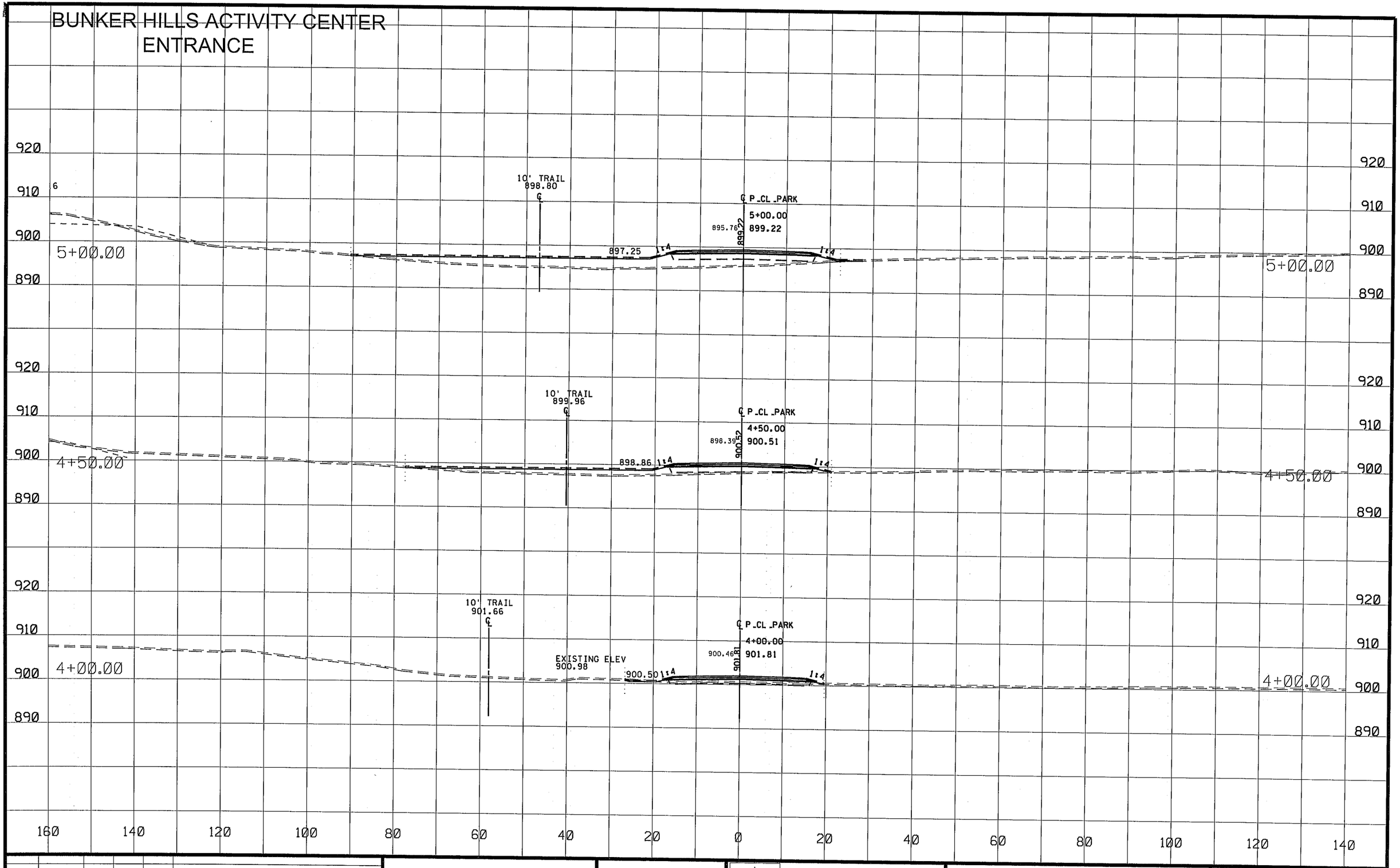
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 2+50.00 TO 3+50.00

Sheet 476 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER ENTRANCE

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

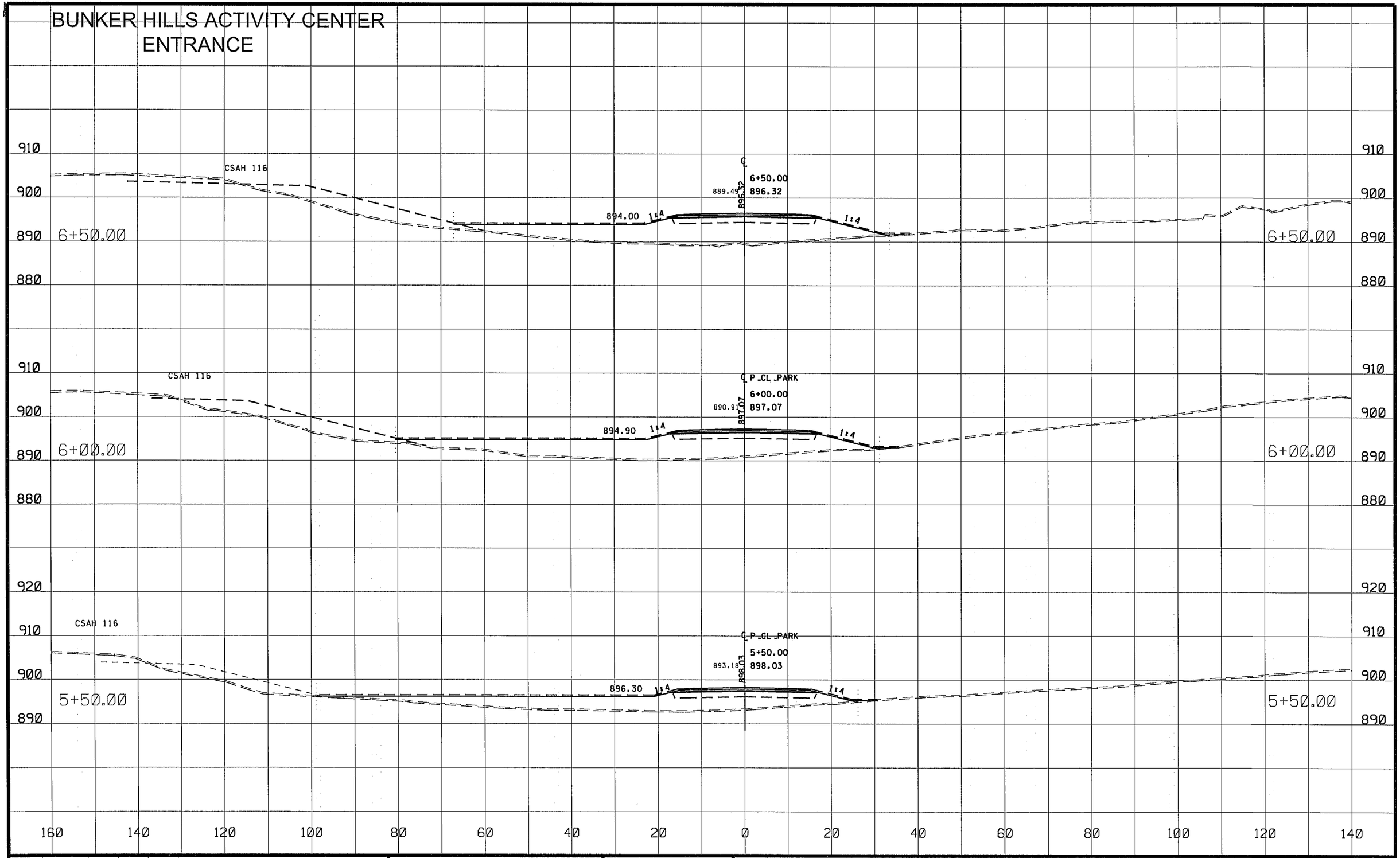
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 4+00.00 TO 5+00.00

Sheet 477 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER ENTRANCE

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DESIGN BY MN DATE 04-12-16

CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

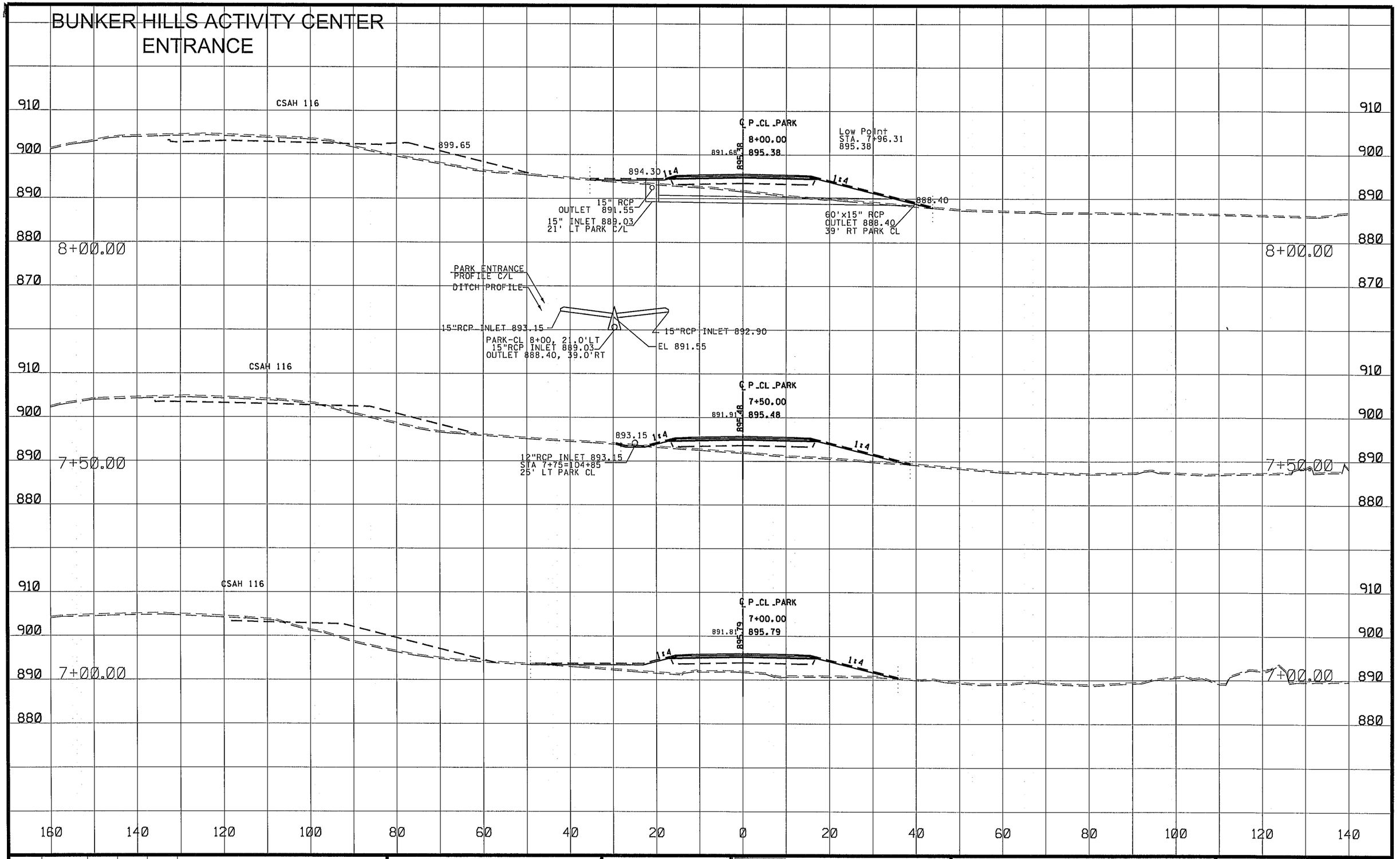
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 5+50.00 TO 6+50.00

Sheet 478 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER ENTRANCE

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DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

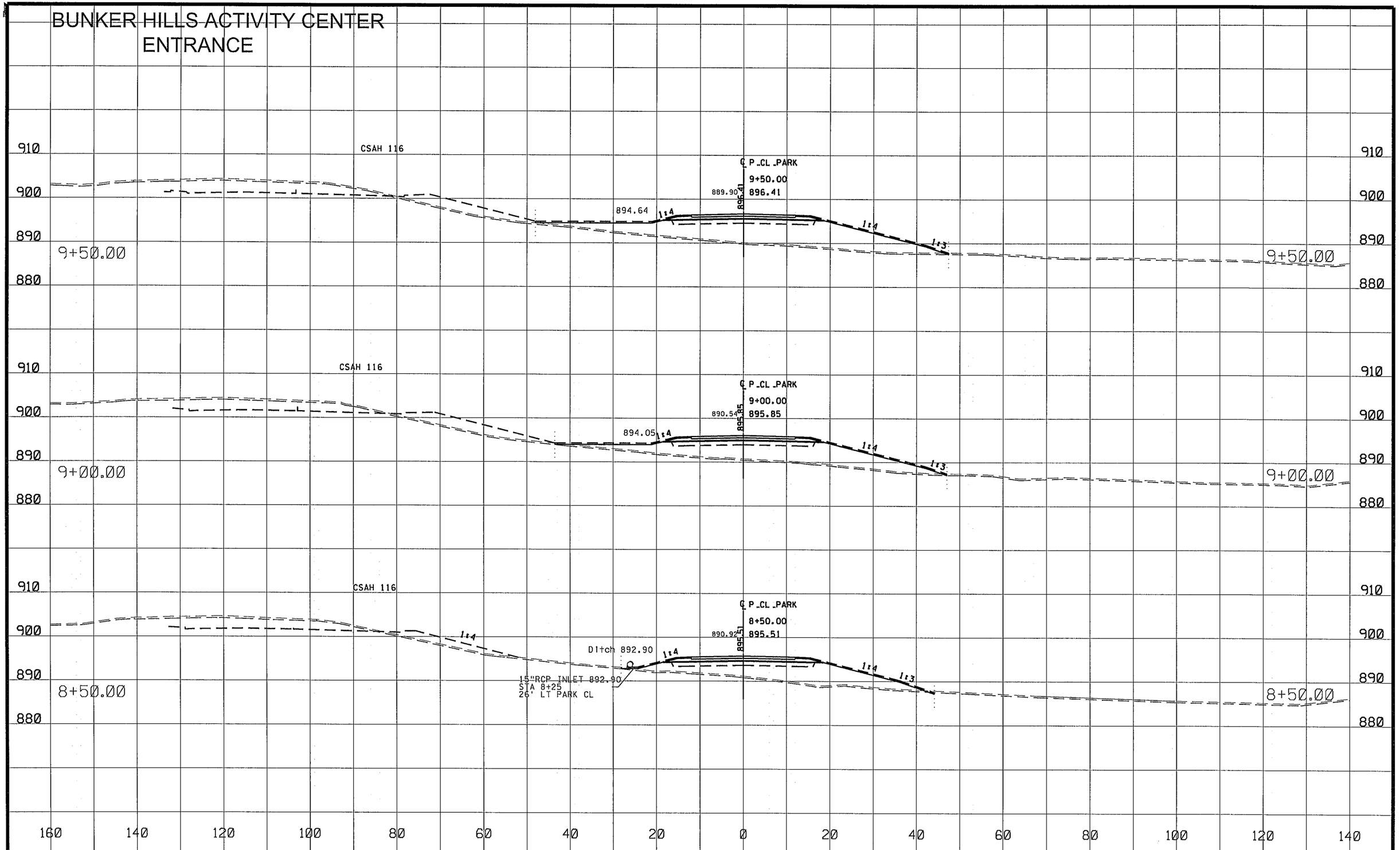
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 7+00.00 TO 8+00.00

Sheet 479 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER ENTRANCE

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CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

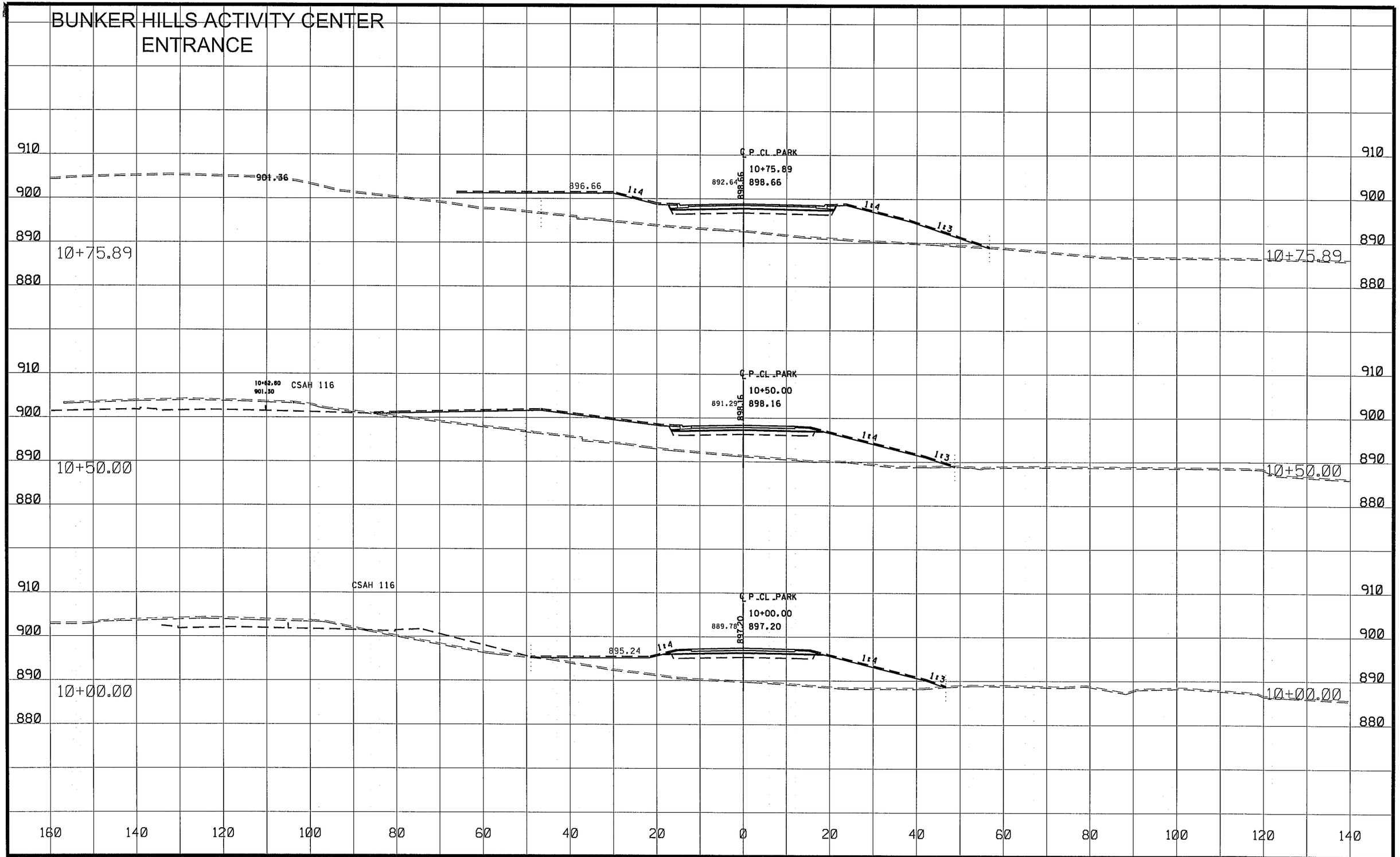
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 8+50.00 TO 9+50.00

Sheet 480 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER ENTRANCE

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DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY

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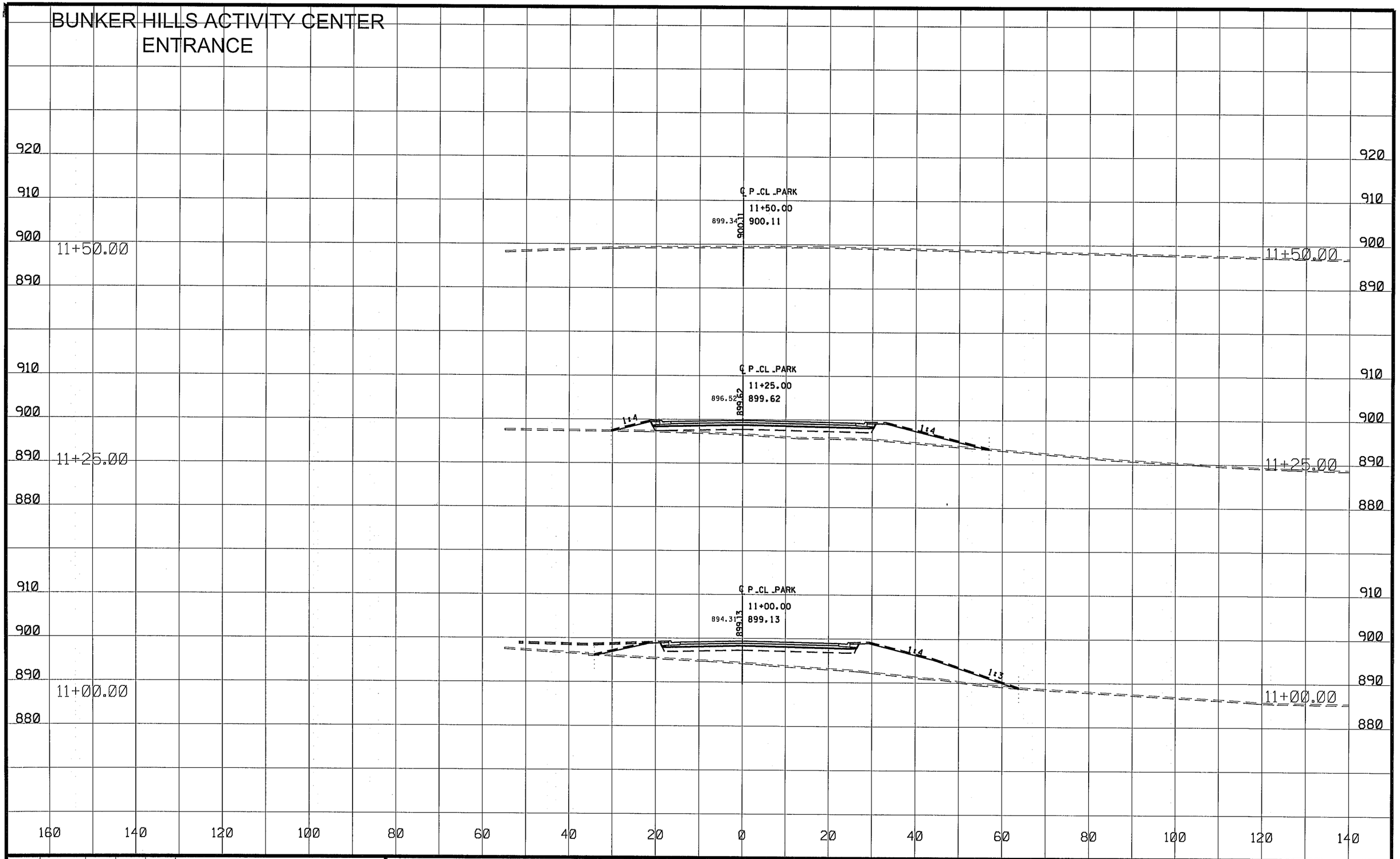
S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 10+00.00 TO 10+75.89

Sheet 481 of 482 Sheets

# BUNKER HILLS ACTIVITY CENTER
## ENTRANCE

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DESIGN BY MN DATE 04-12-16
CHECKED BY GP DATE 04-12-16

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-716-015
S.P. 198-020-036
S.P. 197-020-005
C.P. 11-25

CROSS SECTIONS
ACTIVITY CENTER ENTRANCE
STA 11+00.00 TO 11+50.00

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