

MINNESOTA DEPARTMENT OF TRANSPORTATION OTTER TAIL COUNTY

GOVERNING SPECIFICATIONS

THE 2025 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST MNUMCTD, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS

CONSTRUCTION PLAN FOR GRADING AND BITUMINOUS SUFACING

LOCATED ON C.S.A.H. 8 BETWEEN 12TH ST NE & LILAC DR (GEOGRAPHIC DESCRIPTION)

FROM 4644.5' N & 35.1 E OF S. 1/4 COR. SEC. 11, T.136N, R.39W TO 32.8' N & 374.4 E OF N. 1/4 COR. SEC. 11, T.136N, R.39W (LEGAL DESCRIPTION)

PLAN SYMBOLS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT OF WAY LINE
- PRESENT RIGHT OF WAY LINE
- CONTROL OF ACCESS LINE
- PROPERTY LINE (EXCEPT LAND LINES)
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS

- TRUNK HIGHWAY CENTERLINE
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT OF WAY LINE
- RIVER OR CREEK

- DRY RUN
- DRAINAGE DITCH
- DRAIN TILE
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- RAILROAD SNOW FENCE

- STONE WALL OR FENCE
- HEDGE
- RAILROAD CROSSING SIGN
- RAILROAD CROSSING BELL
- ELECTRIC WARNING SIGN
- CROSSING GATE
- MEANDER CORNER
- SPRINGS
- MARSH

- TIMBER ORCHARD
- BUSH NURSERY
- CATCH BASIN
- FIRE HYDRANT

- UNDERPASS (HIGHWAY UNDER)
- OVERPASS (HIGHWAY OVER)
- BRIDGE

- IRON PIPE OR ROD
- MONUMENT (STONE, CONCRETE OR METAL)
- WOODEN HUB
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY

UTILITY SYMBOLS

- CONDUIT
- TELEPHONE CABLE IN CONDUIT
- ELECTRIC CABLE IN CONDUIT
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- BURIED TELEPHONE CABLE
- BURIED ELECTRIC CABLE
- AERIAL TELEPHONE CABLE
- SEWER (SANITARY OR STORM)
- SEWER MANHOLE

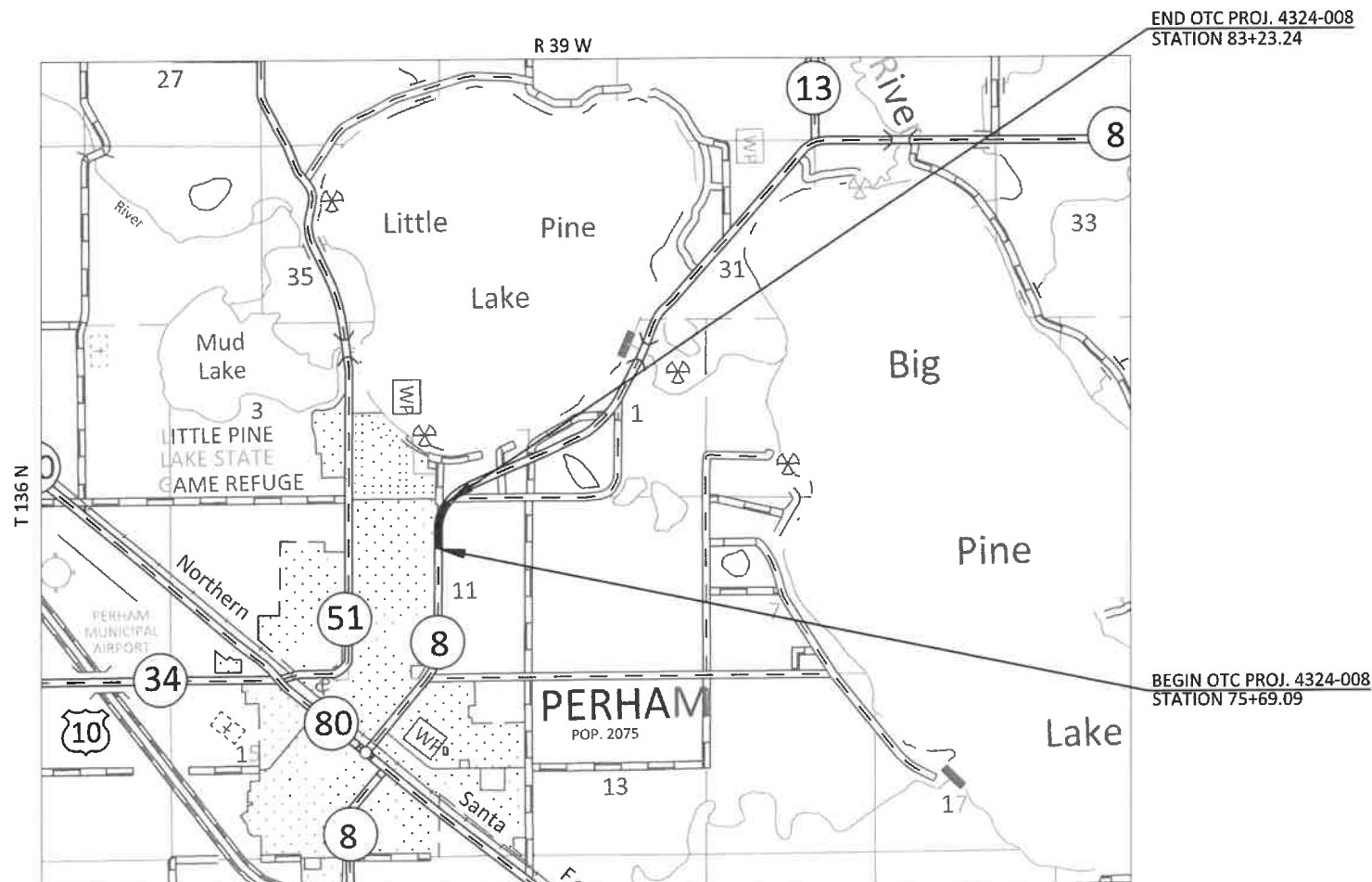
- POWER POLE LINE
- TELEPHONE OR TELEGRAPH
- JOINT TELEPHONE AND POWER ON POWER POLES
- ON TELEPHONE POLES

- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL (TELEPHONE CABLE TERMINAL)
- GAS MAIN
- WATER MAIN

GROSS LENGTH	754.150	FEET	.143	MILES
BRIDGES LENGTH	N/A	FEET	N/A	MILES
EXCEPTIONS LENGTH	N/A	FEET	N/A	MILES
NET LENGTH	754.150	FEET	.143	MILES
STATION EQUATIONS	N/A			

SCALE

INDEX MAP 0' 5280'



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 38-22 ENTITLED "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

SHEET	INDEX
1	TITLE SHEET
2	ESTIMATED QUANTITIES
3	CONSTRUCTION DETAIL
4	TYPICAL SECTIONS
5	UTILITIES
6	TRAFFIC CONTROL
7-8	CROSS SECTIONS

THIS PLAN CONTAINS 8 SHEETS

DESIGN DESIGNATION

PRESENT ADT (2026): 2,915
 PROJ. ADT (2046): 2,650
 T (HEAVY COMMERCIAL): 9.2%
 SOIL FACTOR: 120%
 10 TON DESIGN
 ESALS: 833,000
 R-VALUE: 22.5
 SHOULDER WIDTH: 1.5'
 FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR
 NO. OF TRAFFIC LANES: 2 NO. OF PARKING LANES: N/A
 STATUTORY SPEED: 55 MPH
 BASED ON STOPPING DISTANCE:
 3.5' HEIGHT OF EYE. 2.0' HEIGHT OF OBJECT.
 DESIGN SPEED NOT ACHIEVED AT: N/A
 STOP CONDITION AT: N/A

APPROVED

Jodi Teich OTTER TAIL COUNTY ENGINEER
 JODI L. TEICH, P.E.

DESIGN ENGINEER: 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: 6/15/2024 LICENSE NUMBER: 41633

OTC PROJ. 4324-008 SHEET NO. 1 OF 8 SHEETS



ESTIMATED QUANTITIES					
NOTES	SPECIFICATION NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITIES	FINAL QUANTITIES
	2021.501	MOBILIZATION	LUMP SUM	1	
1	2104.503	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT	618	
	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	271	
2	2106.507	EXCAVATION - COMMON	CU YD	263	
2	2106.507	COMMON EMBANKMENT (CV)	CU YD	5	
	2118.509	AGGREGATE SURFACING CLASS 1	TON	99	
3	2123.603	SKID LOADER	HR	1	
	2211.509	AGGREGATE BASE CLASS 5	TON	255	
	2232.504	MILL BITUMINOUS SURFACE	SQ YD	271	
	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TON	96	
	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)	TON	94	
	2563.601	TRAFFIC CONTROL	LUMP SUM	1	
4	2573.503	SEDIMENT CONTROL LOG TYPE WOOD CHIP	LIN FT	120	
5	2574.609	COMMON TOPSOIL BORROW	TON	28	
6	2575.501	TURF ESTABLISHMENT	LUMP SUM	1	
7	2582.503	10" DOTTED LINE MULTI COMP	LIN FT	39	
8	2582.503	6" SOLID LINE MULTI COMP	LIN FT	610	

* ESTIMATED QUANTITIES ARE BASED ON STATION TYPICAL SECTIONS

NOTES PERTAINING TO ESTIMATED QUANTITIES

- 1 FULL DEPTH SAW JOINT ALONG ALL BITUMINOUS REMOVALS.
- 2 TOPSOIL IS INCLUDED IN EXCAVATION - COMMON AND COMMON EMBANKMENT (CV), APPROX. 23 CY OF TOPSOIL IS NEEDED.
- 3 SKID LOADER (OR COMPACT TRACK LOADER) TO BE USED WITH 6' POWER BOX RAKE FOR TOPSOIL.
- 4 TO BE USED AROUND APPROACH CULVERT AND CULVERT INLET ON 450TH ST.
- 5 COMMON TOPSOIL BORROW WILL BE USED AT ENGINEERS DISCRETION DUE TO POOR EXISTING TOPSOIL CONDITIONS.
- 6 TURF ESTABLISHMENT INCLUDES FERTILIZER TYPE 2, HYDRAULIC BONDED FIBER MATRIX, SEED TWO-YEAR COVER CROP, AND SEED MESIC INSLOPE FOR AN AREA OF APPROXIMATELY .08 ACRES .
- 7 WHITE AND PLACED AT 3:15 CYCLE.
- 8 WHITE.

CONSTRUCTION NOTES

- INSPECTOR WILL MARK OUT THE PAVEMENT MARKINGS.
- 2" MILL WILL TAKE PLACE AFTER ALL AGGREGATE BASE HAS BEEN COMPLETED.
- ESTIMATED QUANTITIES OF BITUMINOUS MATERIAL FOR TACK COATE BASED ON 1084 SQ YDS. BITUMINOUS MATERIAL FOR TACK SHALL BE INCIDENTAL.
- PERFORMANCE GRADED ASPHALT SHALL BE 58H-34 (MSCR SPECS).
- PAVING WILL BE IN 2 LIFTS AND COMPLETED WITHIN 48 HOURS OF 2" MILLING.
- HYDRAULIC BONDED FIBER MATRIX TO BE SEEDED WITH SEED TWO-YEAR COVER CROP (SEED MESIC INSLOPE).

BASIS FOR PLANNED QUANTITIES

AGGREGATE BASE		
COMPACTED DENSITY		140 LBS/CU FT
GRAVEL MATERIAL ASSUMED BY WEIGHT		2800 LBS/CU YD
BITUMINOUS SURFACE		
BITUMINOUS MATERIAL FOR TACK		0.06 - 0.09 GAL/SQ YD
BITUMINOUS MIXTURE		115 LBS/INCH/SQ YD
TURF ESTABLISHMENT		
FERTILIZER TYPE 2		200 LBS/ACRE 23-0-30 (NPK)
SEED TWO-YEAR COVER CROP		25 LBS/ACRE
SEED MESIC INSLOPE		65 LBS/ACRE
HYDRAULIC BONDED FIBER MATRIX		3500 LBS/ACRE
TOPSOIL		
COMMON TOPSOIL BORROW ASSUMED BY WEIGHT		2400 LBS/CU YD

WEARING COURSE (SPWEB330C)					
MIXTURE FOR BITUMINOUS SURFACE - 345.0 lb/Sq Yd (3.0")					
Station to Station	Length Stations	Width Feet	Mixture Per Sta.	Lin Feet/Ton of Material	Ton
76+69.09 - 82+79.09	6.100	8	15.333	6.522	94
TOTAL					94

WEARING COURSE (SPWEA340C)					
MIXTURE FOR BITUMINOUS SURFACE - 230.0 lb/Sq Yd (2.0")					
Station to Station	Length Stations	Width Feet	Mixture Per Sta.	Lin Feet/Ton of Material	Ton
76+69.09 - 82+79.09	6.100	12	15.333	6.522	94
SAFETY WEDGE	6.10	0.289			2
TOTAL					96

STANDARD PLATES	
THE FOLLOWING STANDARD DETAIL PLATES APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY TO THIS PROJECT.	
PLATE NO.	DESCRIPTION
8000K	TEMPORARY CHANNELIZER - TYPE A

ESTIMATED QUANTITIES

CERTIFIED BY: *Jodi Kuhn* LIC. NO. 41633
LICENSED PROFESSIONAL ENGINEER

6/15/2026

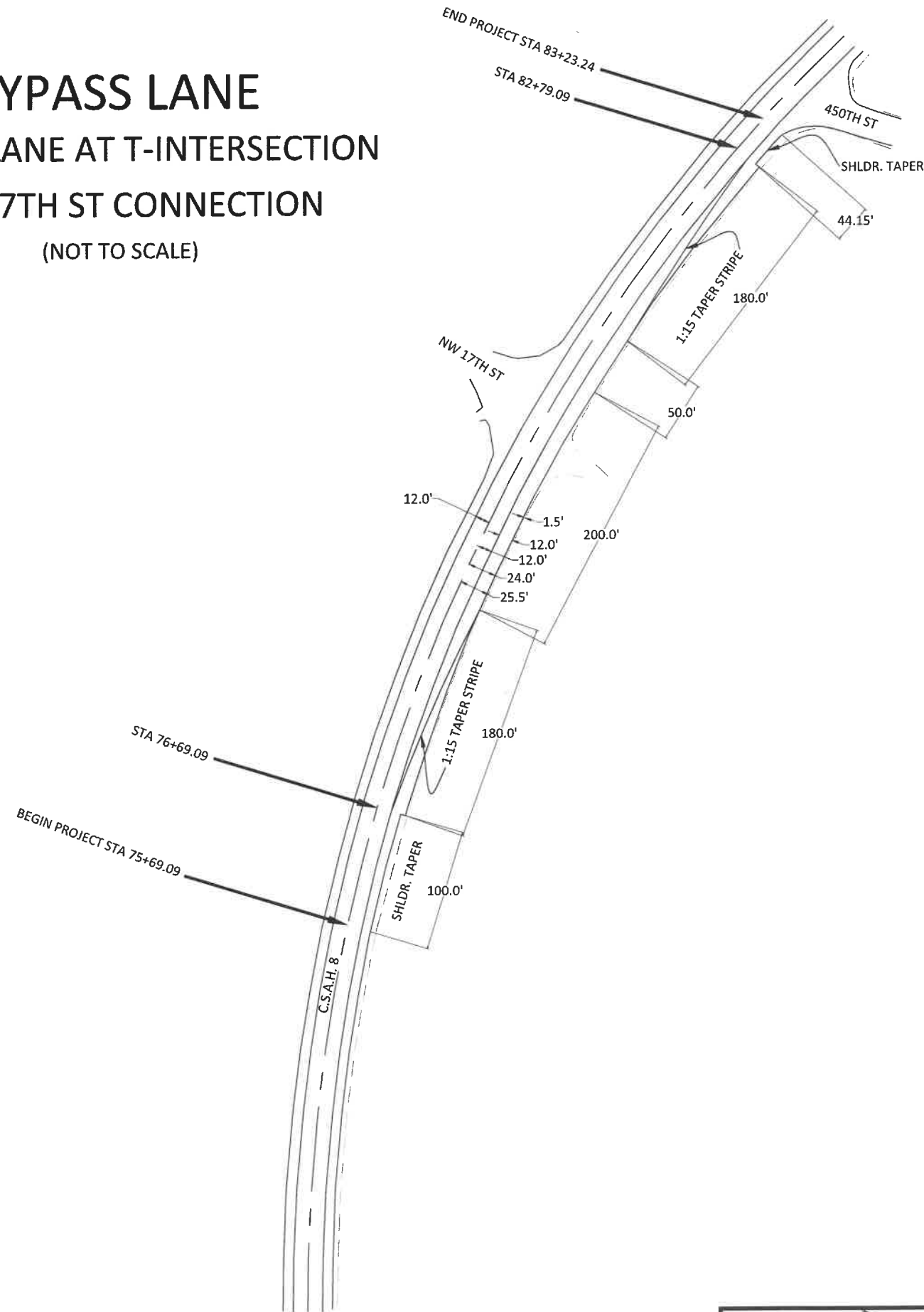
OTC PROJ. 4324-008 SHEET NO. 2 OF 8 SHEETS

BYPASS LANE

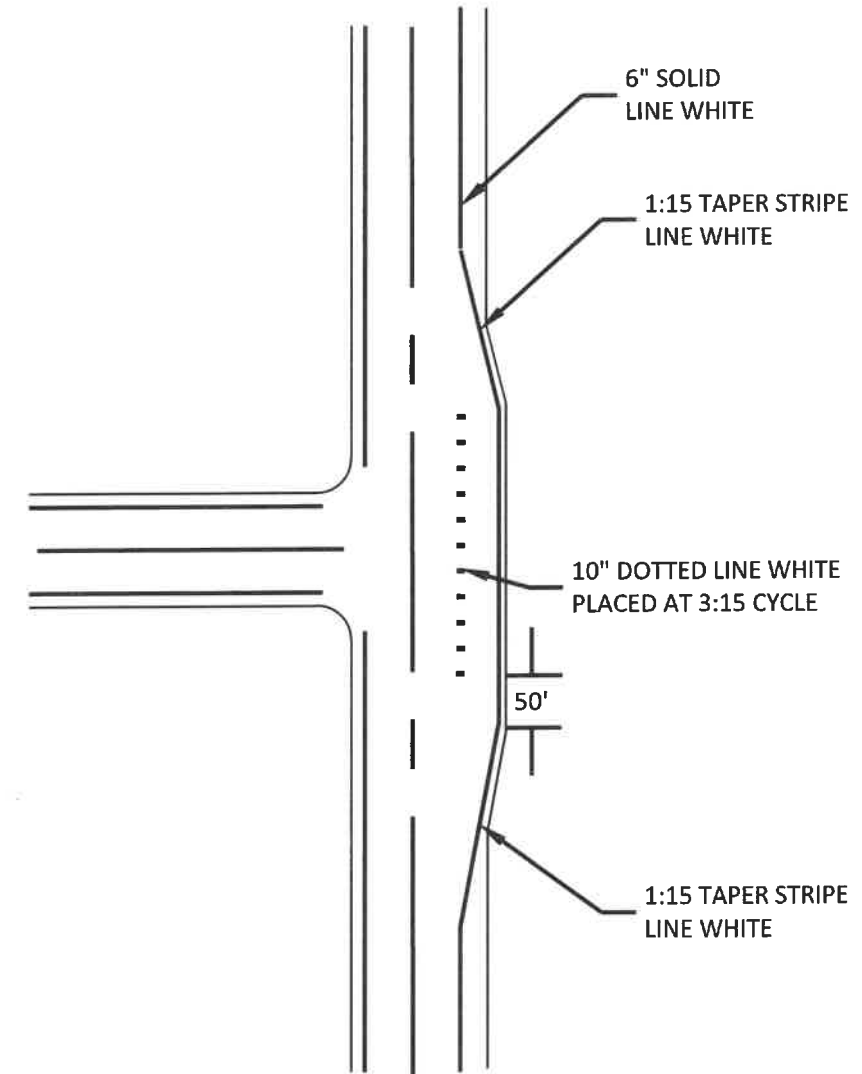
BYPASS LANE AT T-INTERSECTION

NW 17TH ST CONNECTION

(NOT TO SCALE)



BYPASS LANE PAVEMENT MARKINGS



CONSTRUCTION DETAILS

CERTIFIED BY: *[Signature]* LIC. NO. 41633 *6/15/2024*
LICENSED PROFESSIONAL ENGINEER

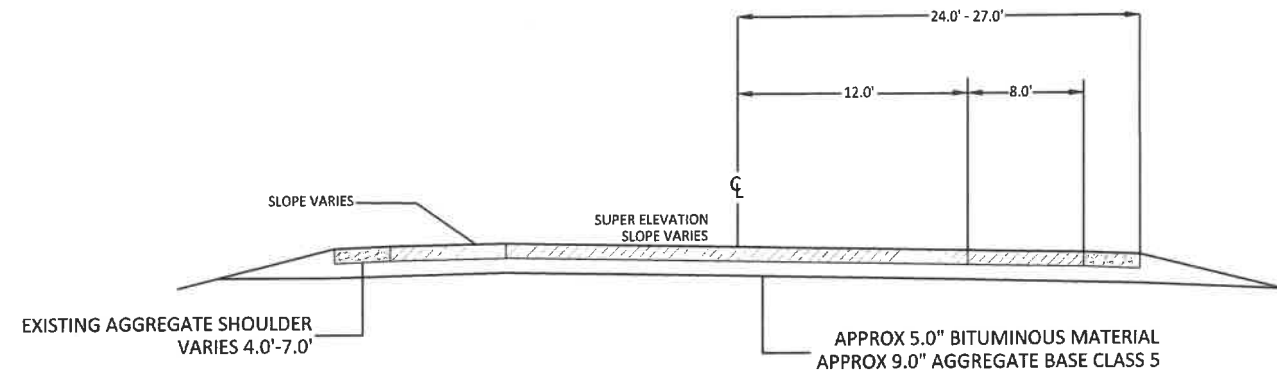
OTC PROJ. 4324-008 SHEET NO. 3 OF 8 SHEETS

EXISTING SUPER ELEVATION

75+69.09 - 83+23.24

75.0'
R/W

75.0'
R/W

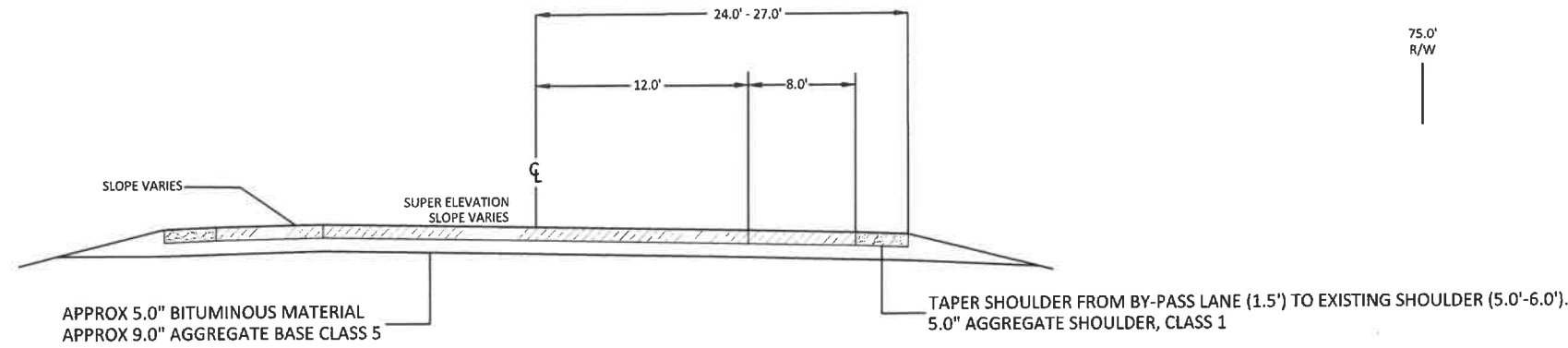


PROPOSED SUPER ELEVATION SHOULDER TIE-INS

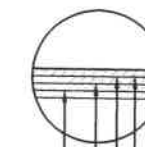
75+69.09 - 76+69.09
82+79.09 - 83+23.24

75.0'
R/W

75.0'
R/W

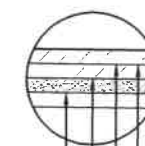


INSET A



- MILL DEPTH 2" EXISTING BITUMINOUS MATERIAL/
230.0 LBS/SQ YD (2.0")
TYPE SP 9.5 WEAR (SPWEA340C)
- TACK COAT (INCIDENTAL)
- APPROX 3.0" EXISTING BITUMINOUS MATERIAL
- APPOX 9.0" EXISTING AGGREGATE BASE CLASS 5

INSET B



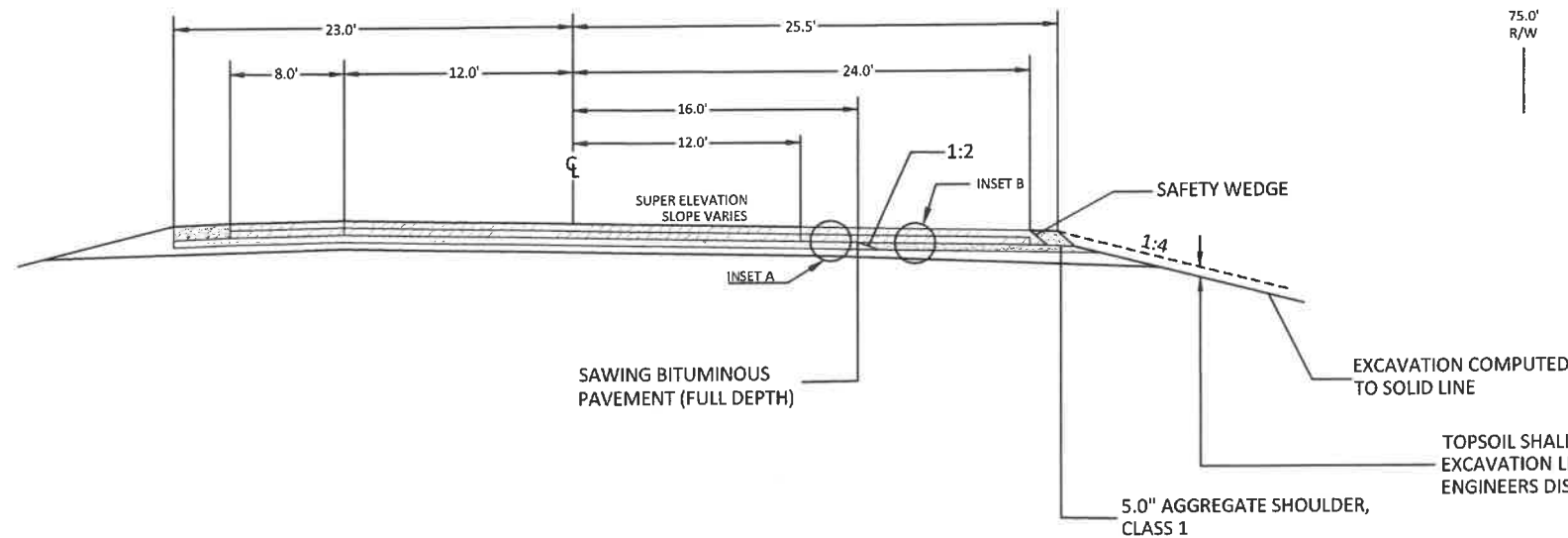
- 230.0 LBS/SQ YD (2.0")
TYPE SP 9.5 WEAR (SPWEA340C)
- TACK COAT (INCIDENTAL)
- 345.0 LBS/SQ YD (3.0")
TYPE SP 12.5 WEAR (SPWEB330C)
- 9.0" AGGREGATE BASE CLASS 5

PROPOSED SUPER ELEVATION BY-PASS LANE

76+69.09 - 82+79.09

75.0'
R/W

75.0'
R/W



TYPICAL SECTIONS
NO SCALE

CERTIFIED BY:

[Signature] LIC. NO. 41633 6/15/2026
LICENSED PROFESSIONAL ENGINEER

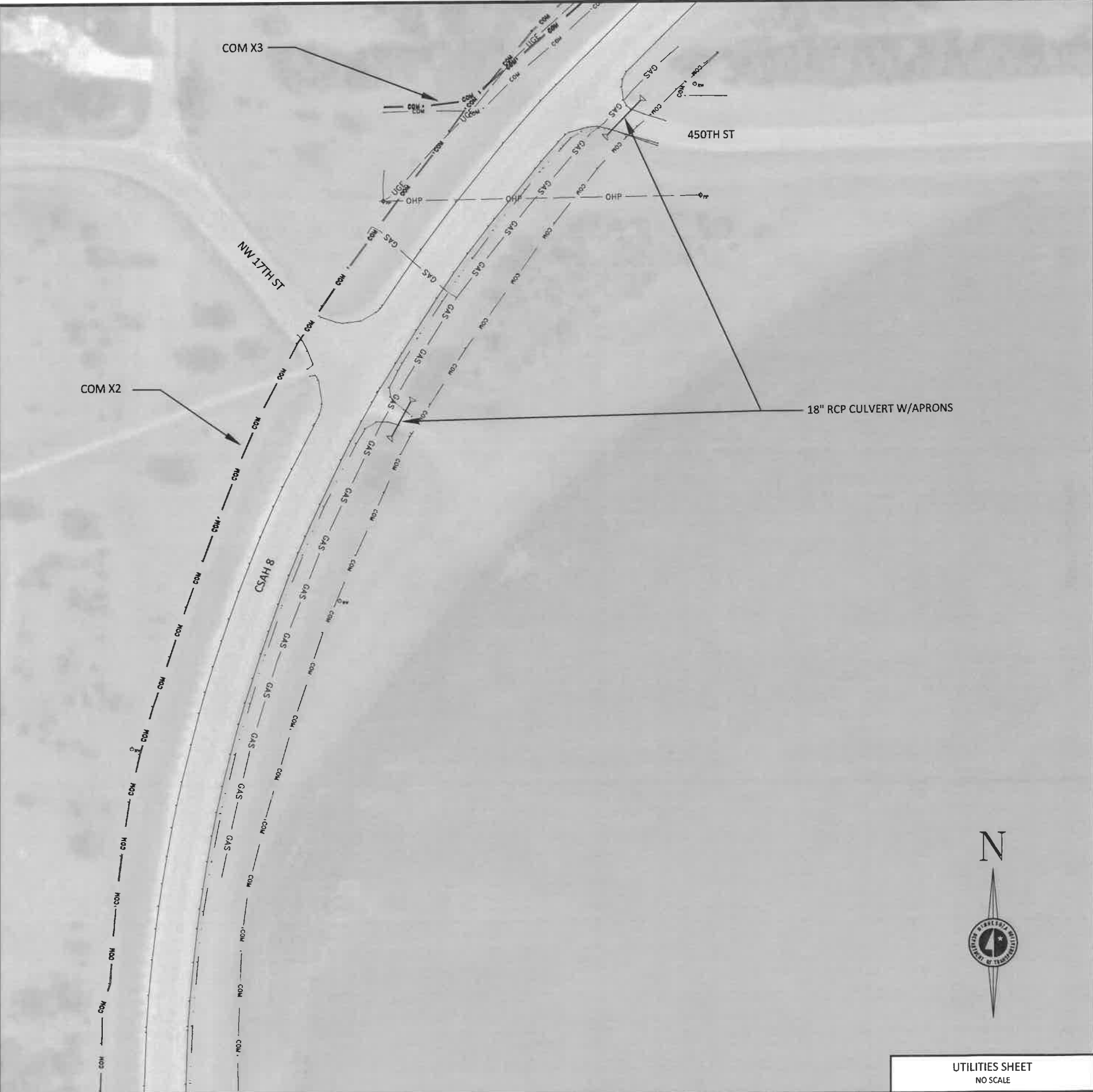
OTC PROJ. 4324-008

SHEET NO. 4 OF 8 SHEETS

UTILITIES LEGEND	
— UGE —	— UNDERGROUND ELECTRIC
— OHP —	— OVERHEAD POWER
— COM —	— BURIED COMMUNICATIONS LINE
— GAS —	— NATURAL GAS

*NOTE: ALL UTILITY LOCATIONS ARE APPROXIMATE

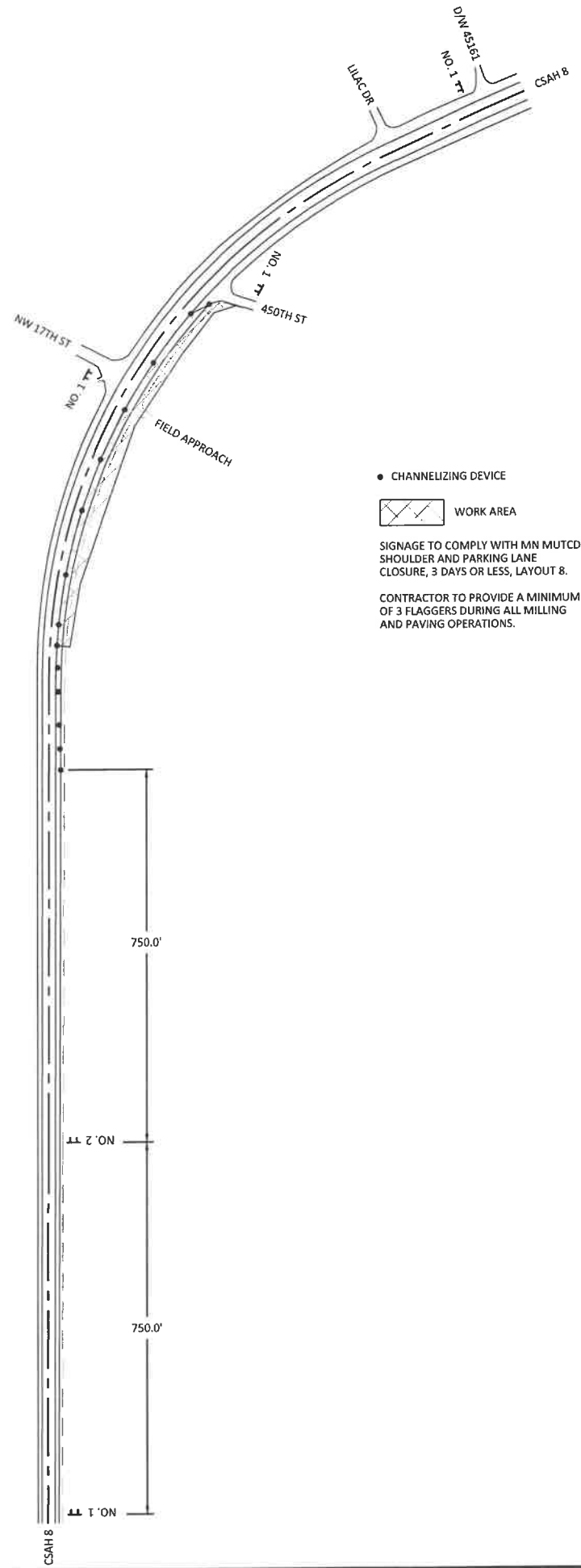
UTILITY COMPANIES	
ARVIG	(218) 346-8248
CITY OF PERHAM	(218) 346-4455
OTTER TAIL POWER ELECTRIC	(218) 739-8831



UTILITIES SHEET
NO SCALE

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL "D". THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-22 ENTITLED "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

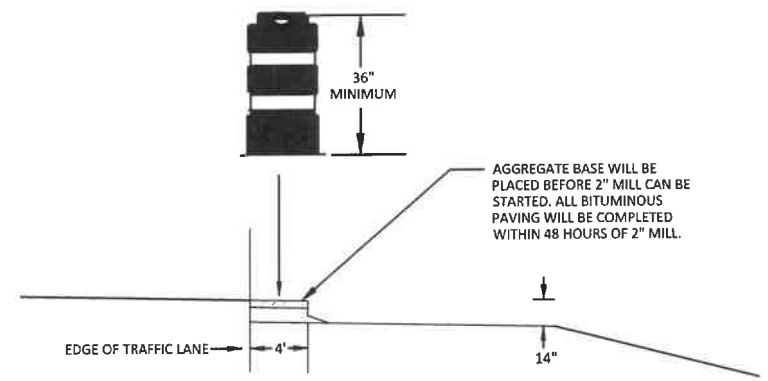
CERTIFIED BY: *[Signature]* LIC. NO. 41633 6/19/2026
LICENSED PROFESSIONAL ENGINEER



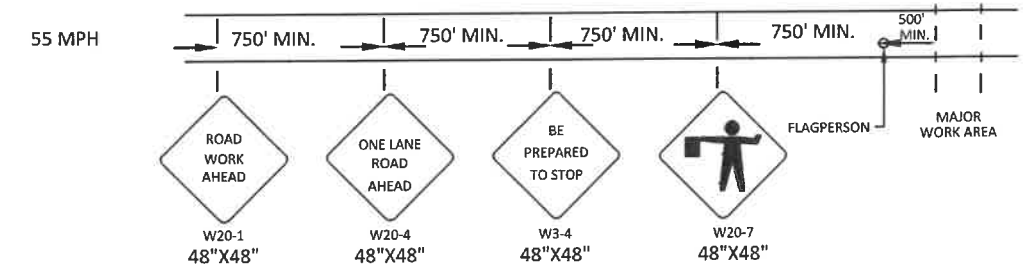
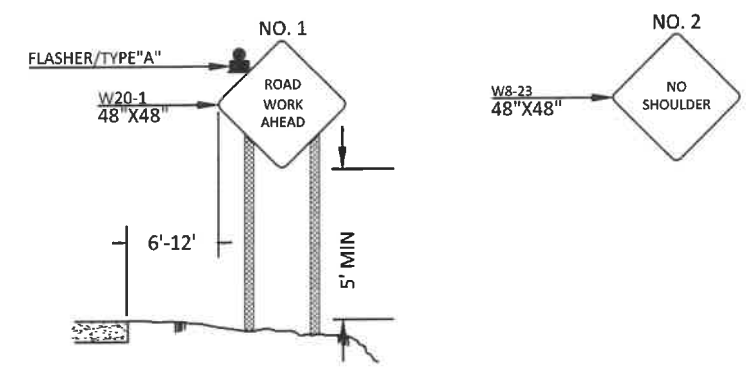
● CHANNELIZING DEVICE
 ▨ WORK AREA

SIGNAGE TO COMPLY WITH MN MUTCD SHOULDER AND PARKING LANE CLOSURE, 3 DAYS OR LESS, LAYOUT 8.

CONTRACTOR TO PROVIDE A MINIMUM OF 3 FLAGGERS DURING ALL MILLING AND PAVING OPERATIONS.

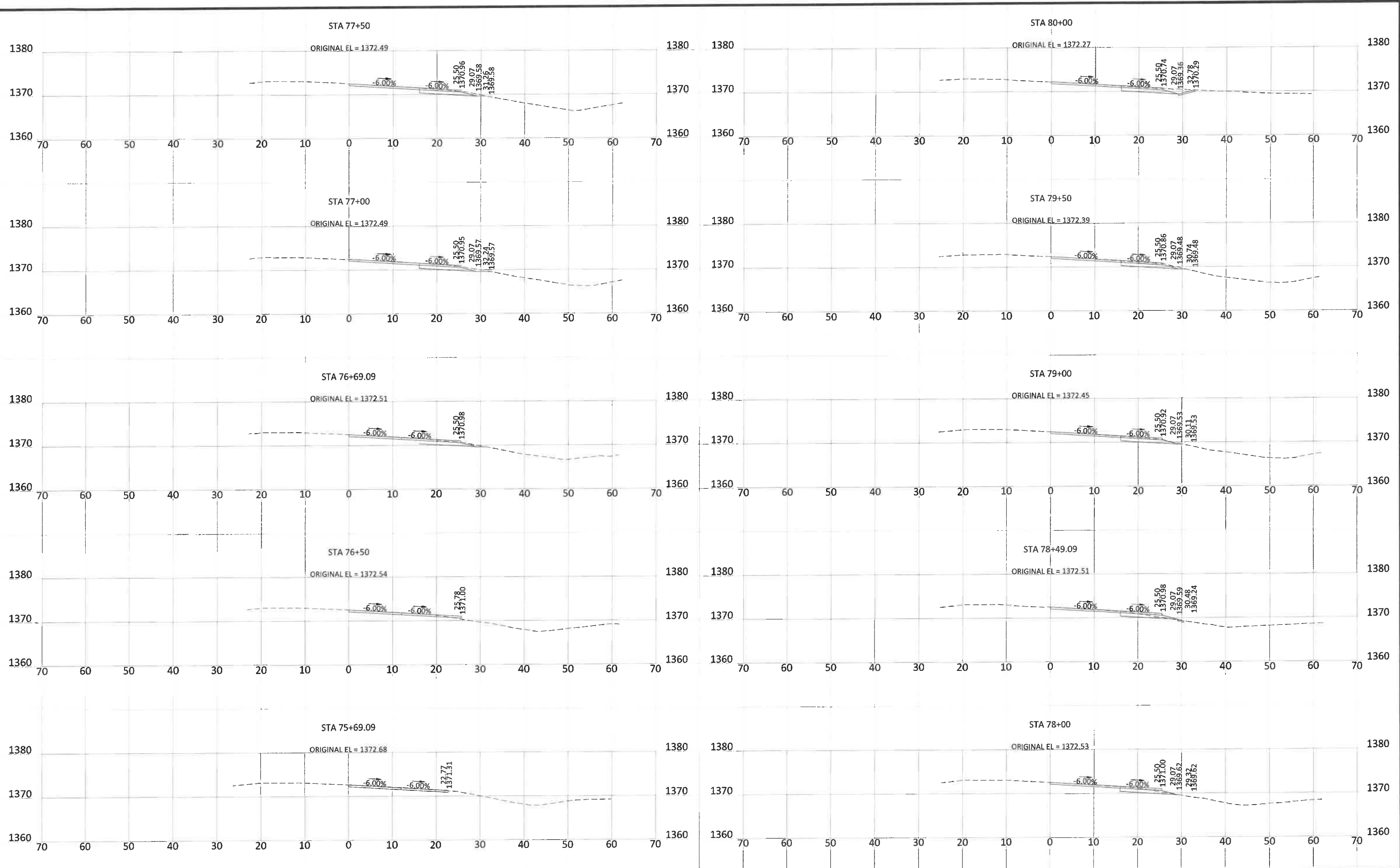


SIGN SCHEDULE	
SIGN NUMBER	QUANTITY
1	4
2	1
CHANNELIZING DEVICES	14
NOTES	
ALL CONSTRUCTION SIGNINGS AS SHOWN BELOW BUT NOT LIMITED TO SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY REQUIRED FLAGGERS AND/OR PILOT CAR OPERATIONS SHALL BE FURNISHED BY THE CONTRACTOR AND WILL BE PAID FOR AS PART OF TRAFFIC CONTROL.	
ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MUTCD AND ALL REVISIONS, AND THE MOST RECENT EDITION OF THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS (FIELD MANUAL).	
ALL SIGN POSTS SHALL BE POUNDED	



TRAFFIC CONTROL PLAN
 NO SCALE

CERTIFIED BY: *John Fresh* LIC. NO. 41633 6/15/2026
 LICENSED PROFESSIONAL ENGINEER

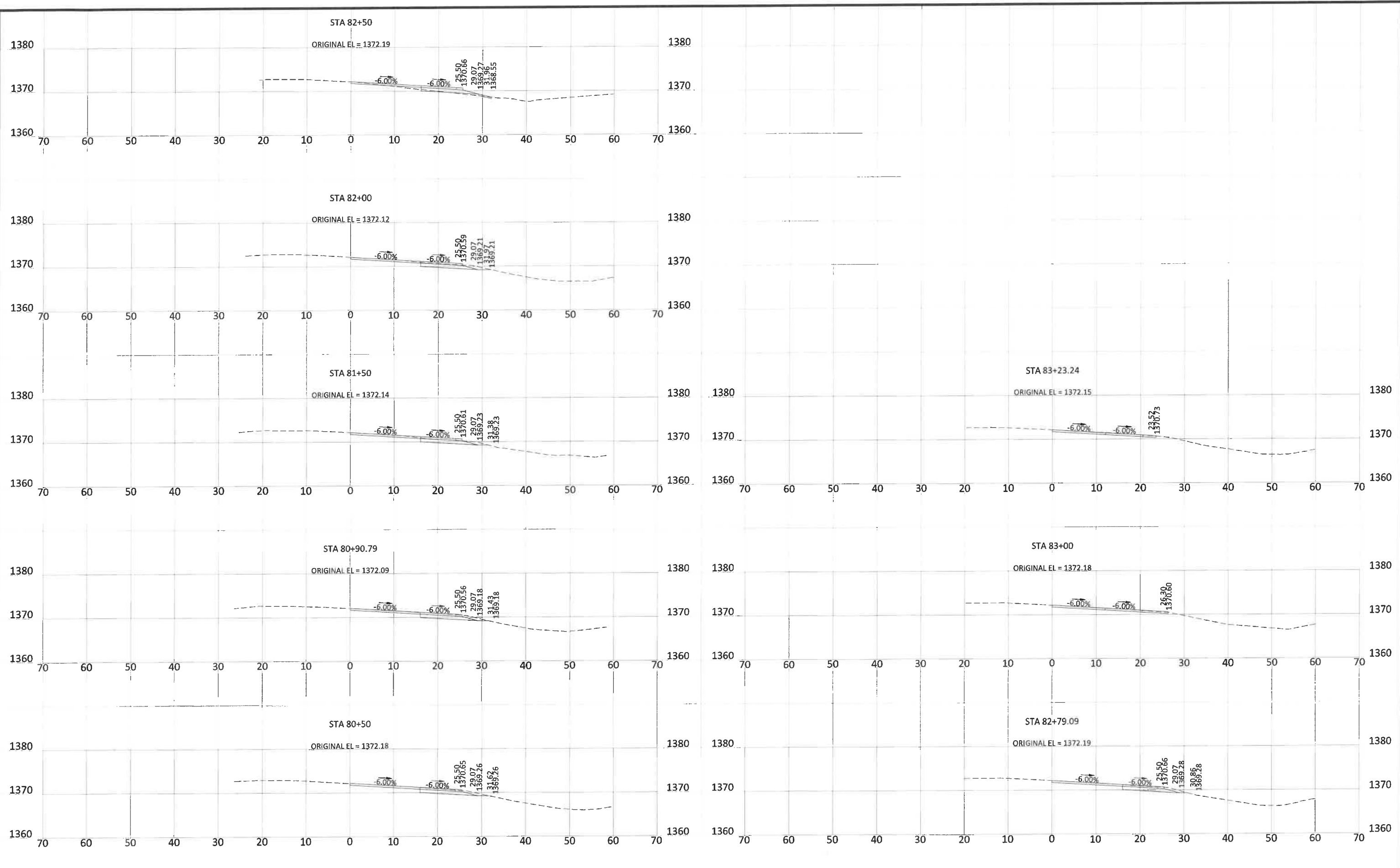


*CROSS SECTIONS DO NOT SHOW 1:2 TAPER FOR COMMON EXCAVATION ON BASE.

CERTIFIED BY: *Jodi Park* LIC. NO. 41633 *6/15/2024*
LICENSED PROFESSIONAL ENGINEER

CROSS SECTIONS

OTC PROJ. 4324-008 SHEET NO. 7 OF 8 SHEETS



*CROSS SECTIONS DO NOT SHOW 1:2 TAPER FOR COMMON EXCAVATION ON BASE.

CERTIFIED BY: *Jodi Stein* LIC. NO. 41633 *6/15/2026*
LICENSED PROFESSIONAL ENGINEER

CROSS SECTIONS

OTC PROJ. 4324-008 SHEET NO. 8 OF 8 SHEETS