



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

FINANCIAL ASSISTANCE PROVIDED BY THE STATE HIGH WATER INFRASTRUCTURE GRANT PROGRAM, AUTHORIZED UNDER SECTION 1006 OF PUBLIC ACT 87 OF 2021.

TRAFFIC DATA

ADT 2023 = 350 (5% COMMERCIAL)
ADT 2043 = 360 (5% COMMERCIAL)

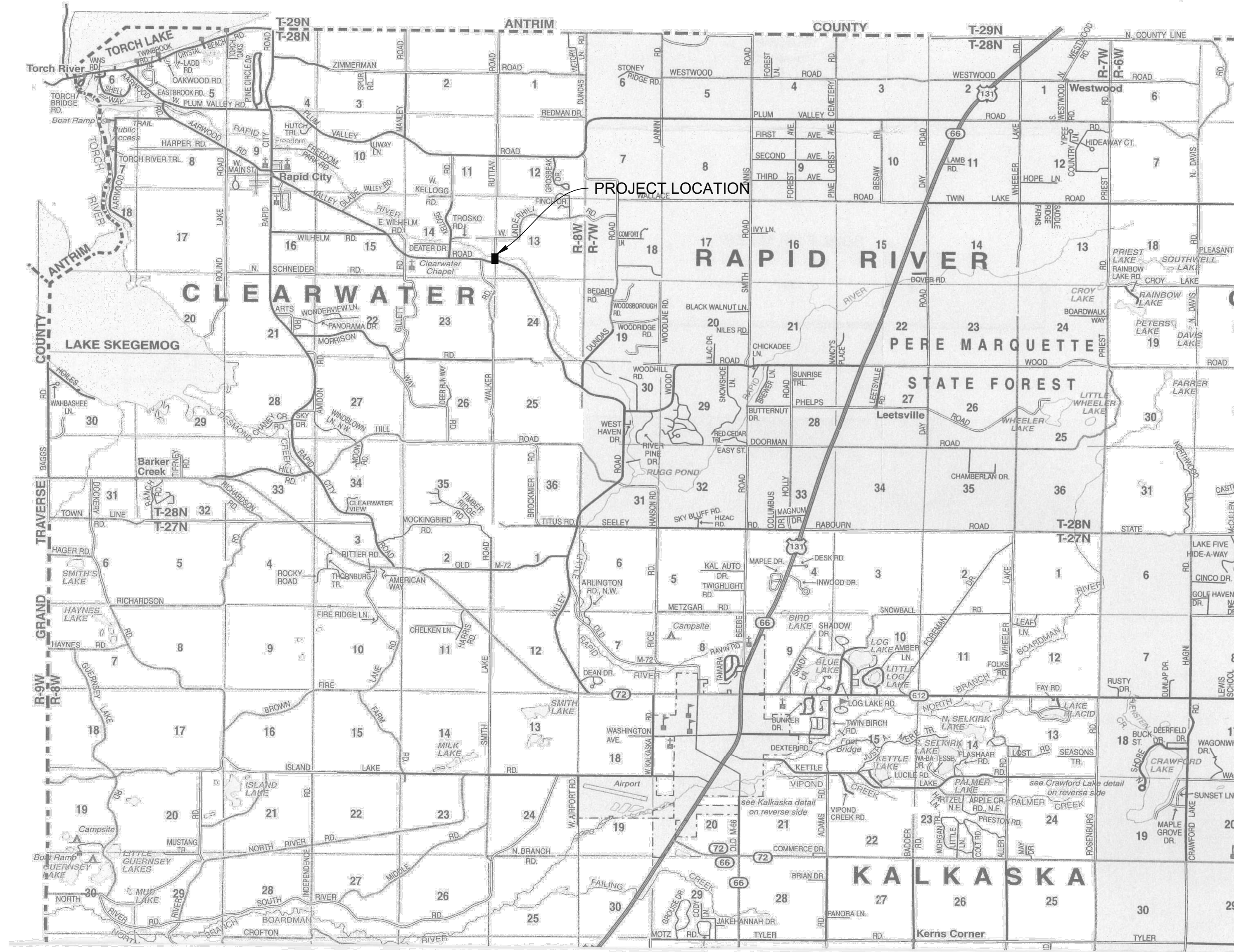
KALKASKA COUNTY ROAD COMMISSION
IN COOPERATION WITH
CLEARWATER TOWNSHIP
PLANS OF PROPOSED IMPROVEMENTS
UNDERHILL ROAD
SECTION 13 & 14, T28N, R9W, CLEARWATER TOWNSHIP
KALKASKA COUNTY, MICHIGAN

GENERAL NOTES
EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PAVEMENT MARKING AND THE PLACING OF TRAFFIC SIGNS SHALL BE DONE IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS REVISED.

THESE PLANS ARE DESIGNED IN ACCORDANCE WITH 3R GUIDELINES AS DETAILED IN THE MICHIGAN DEPARTMENT OF TRANSPORTATION LOCAL AGENCY PROGRAMS GUIDELINES FOR GEOMETRICS, 2017 EDITION.

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL DIAL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS-DIG" ALERT SYSTEM.



THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES

- COLI, INC. FIBER OPTICS
7280 RAPID CITY ROAD, PO BOX 100
RAPID CITY, MI 48676
231-331-4622
FIBER & CABLE
GREAT LAKES ENERGY COOPERATIVE
630 MAGNUM DRIVE
KALKASKA, MI 49646
CONTACT: DEREK SMITH
231-357-9211
ELECTRIC
FRONTIER/VERIZON TELEPHONE
CONTACT: CHUCK HARDIN
989-732-8575
TELEPHONE

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES

- *R-60-J GUARDRAIL TYPES A, B, BD, T, TD, MGS-8, & MGS-8D
*R-62-H GUARDRAIL APPROACH TERMINAL TYPES 2B & 2T
*R-66-E GUARDRAIL DEPARTING TERMINAL TYPES B,T & MGS
*R-67-G GUARDRAIL ANCHORAGE, BRIDGE, DETAILS
R-96-E SOIL EROSION & SEDIMENTATION CONTROL MEASURES
*R-100-I SEEDING AND TREE PLANTING
R-105-D GRADING CROSS-SECTIONS
*21 GUARDRAIL AT INTERSECTIONS

*SPECIAL DETAIL - INCLUDED IN THE PLANS

INDEX OF SHEETS table with columns for sheet number and description (TITLE SHEET, NOTE & DETAIL SHEET, LEGEND SHEET, PLAN SHEET)

PROJECT LENGTH = 0.54 MILES

CONTRACT FOR:
AGGREGATE BASE, HMA SURFACING, AND DRAINAGE IMPROVEMENTS.

KALKASKA COUNTY ROAD COMMISSION APPROVAL

CHAIRMAN

MANAGER - JOHN S. ROGERS

PREPARED UNDER THE SUPERVISION OF

REBECCA E. RIVARD, P.E. 50497
REGISTERED PROFESSIONAL ENGINEER REGISTRATION NO.

HURON ENGINEERING AND SURVEYING, INC.
ORGANIZATION

3205 US-23 SOUTH, ALPENA, MI 49707
ADDRESS

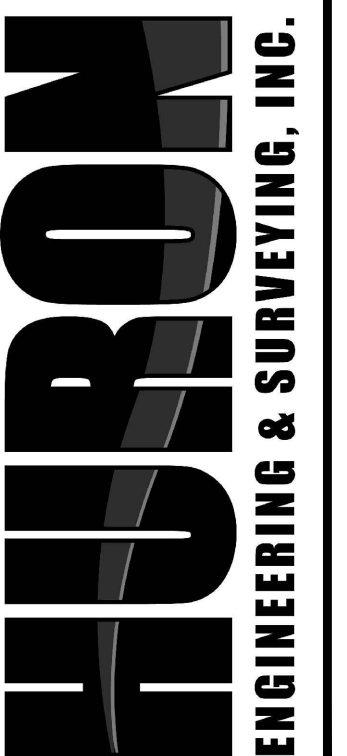
TITLE SHEET

SCALE NA

ENGINEER RIVARD

DATE FEBRUARY 26 2024

JOB NUMBER 23-120



SHEET NO.

1

WATER & DRAINAGE SYMBOLS

- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING MANHOLE
- PROPOSED MANHOLE
- EXISTING CULVERT END SECTION
- PROPOSED CULVERT END SECTION
- EXISTING HEADWALL
- PROPOSED HEADWALL
- WATER SHUTOFF(Service Valve)
- GATE VALVE
- GATEWELL
- WATER METER
- WATER MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- ADJUST FIRE HYDRANT
- ADJUST FIRE HYDRANT
- ADJUST DRAINAGE STRUCTURE
- ADJUST DRAINAGE STRUCTURE W/COVER
- ADJUST DRAINAGE STRUCTURE BY OTHERS
- RELOCATE - BY OTHERS
- SIDEWALK RAMP TYPE
- CHECK DAM (PROFILES)
- DIKE (PROFILES)
- WATER TABLE (PROFILES)
- POST
- WATER WELL

REAL ESTATE SYMBOLS

- PROPERTY OWNERSHIP ARROW
- CONTIGUOUS PROPERTY SYMBOL
- PARCEL NUMBER BOX
- PARCEL LINES

UTILITIES SYMBOLS

- POWER POLE
- TELEPHONE POLE
- GUY POLE
- LIGHT POLE
- POWER LIGHT POLE
- TELEPHONE MANHOLE
- POWER TOWER
- GAS VALVE
- WALK/NO-WALK
- GUY ANCHOR
- RAILROAD SIGNAL
- ELECTRICAL MANHOLE
- ELECTRICAL HANDHOLE
- TELEPHONE PEDESTAL/RISER
- FIBER OPTIC MARKER

MISCELLANEOUS SYMBOLS

- RIPRAP
- SIGN
- STUMP
- SWAMP
- DECIDUOUS TREE
- CONIFEROUS TREE
- BUSH
- MAIL BOX
- FLAG
- BAR & CAP
- SECTION CORNER
- QUARTER SECTION
- BENCHMARK
- USGS MARKER
- CONTROL POINT
- BEAM G. R. RUN NUMBER (EXISTING)
- BEAM G. R. RUN NUMBER (PROPOSED)

USED WITH UNDERGROUND GAS & ELECTRICAL LINES

USED WITH FIBER OPTICS LINES

-
- PROPOSED CULVERT/SEWER
- EXISTING CULVERT/SEWER

UTILITY PATTERNS

- ELECTRICAL LINE
- GAS LINE
- OIL LINE
- TELEPHONE LINE
- WATER LINE
- CABLE TV
- FIBER OPTICS
- POWER TRANSMISSION LINE

R.O.W. PATTERNS

- EX. LIMITED ACCESS R.O.W.
- EXISTING R.O.W.
- PROP LIMITED ACCESS R.O.W.
- PROP FREE ACCESS R.O.W.
- SECTION LINE
- GRADING EASEMENT

TOPO PATTERNS

- HEDGE LINE
- TREE LINE
- EXISTING FENCE
- PROPOSED FENCE
- EXISTING GUARD RAIL
- PROPOSED GUARD RAIL
- DRAINAGE CRS/EDGE OF WATER
- WETLANDS AREA
- ABANDON ANY UTILITY
- CITY LIMITS
- RAILROAD
- SOUND ABATEMENT WALL
- CONCRETE MEDIAN BARRIER
- SLOPE STAKE LINE

DRIVE/APPROACH LEGEND

- CONCRETE
- HMA
- AGGREGATE
- GRASS

REMOVAL LEGEND

- REMOVING
- ABANDONING
- SAVE
- BULKHEAD
- REMOVING CURB & GUTTER

SPECIAL LEGEND THIS PROJECT

-
-
-

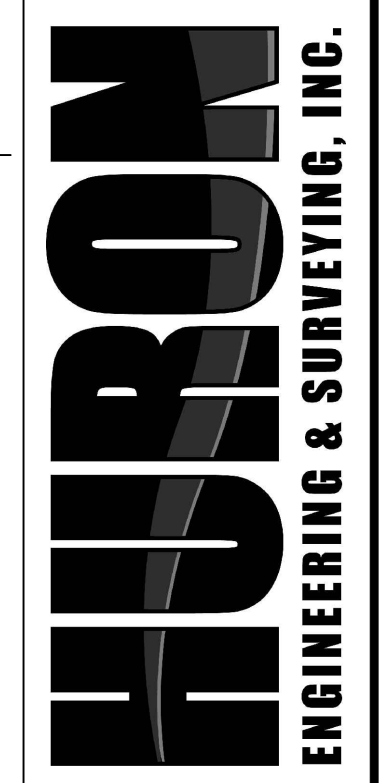
LEGEND SHEET

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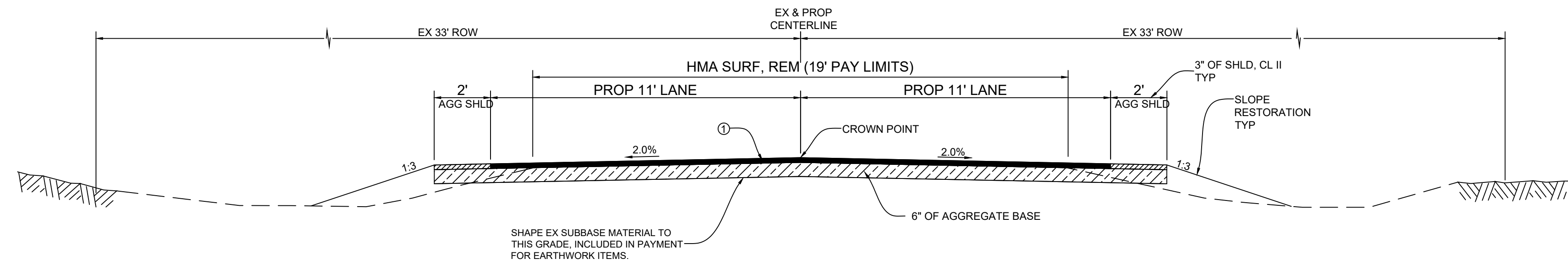
ENGINEER
RIVARD

DATE
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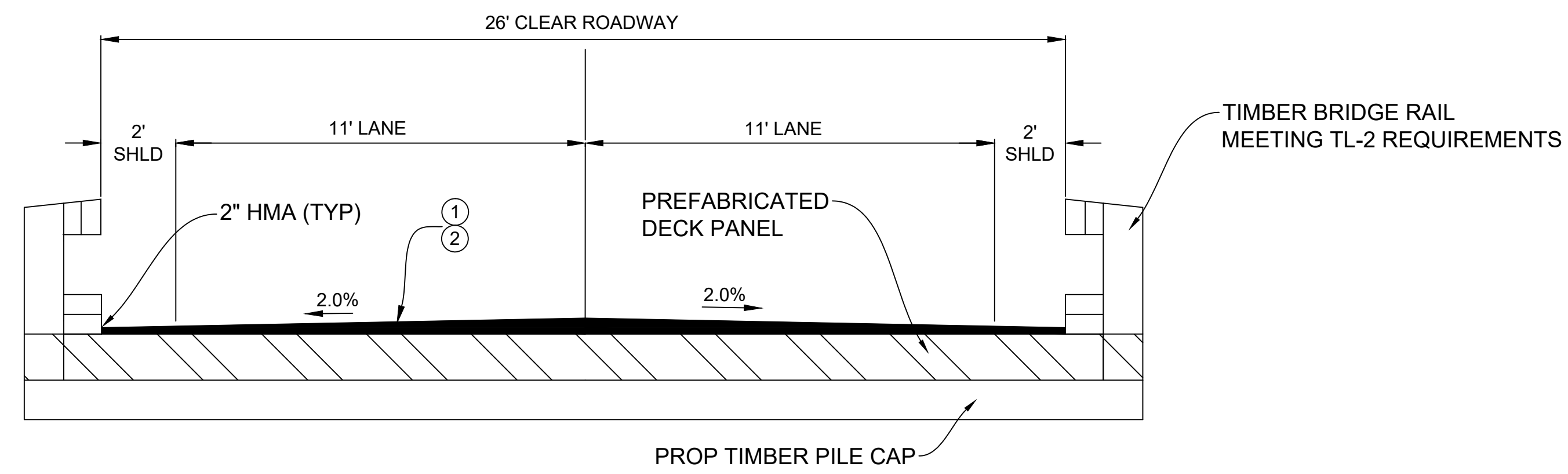
SHEET NO.
3



PROPOSED TYPICAL SECTION
TO APPLY: ST A10+65 TO STA 16+00

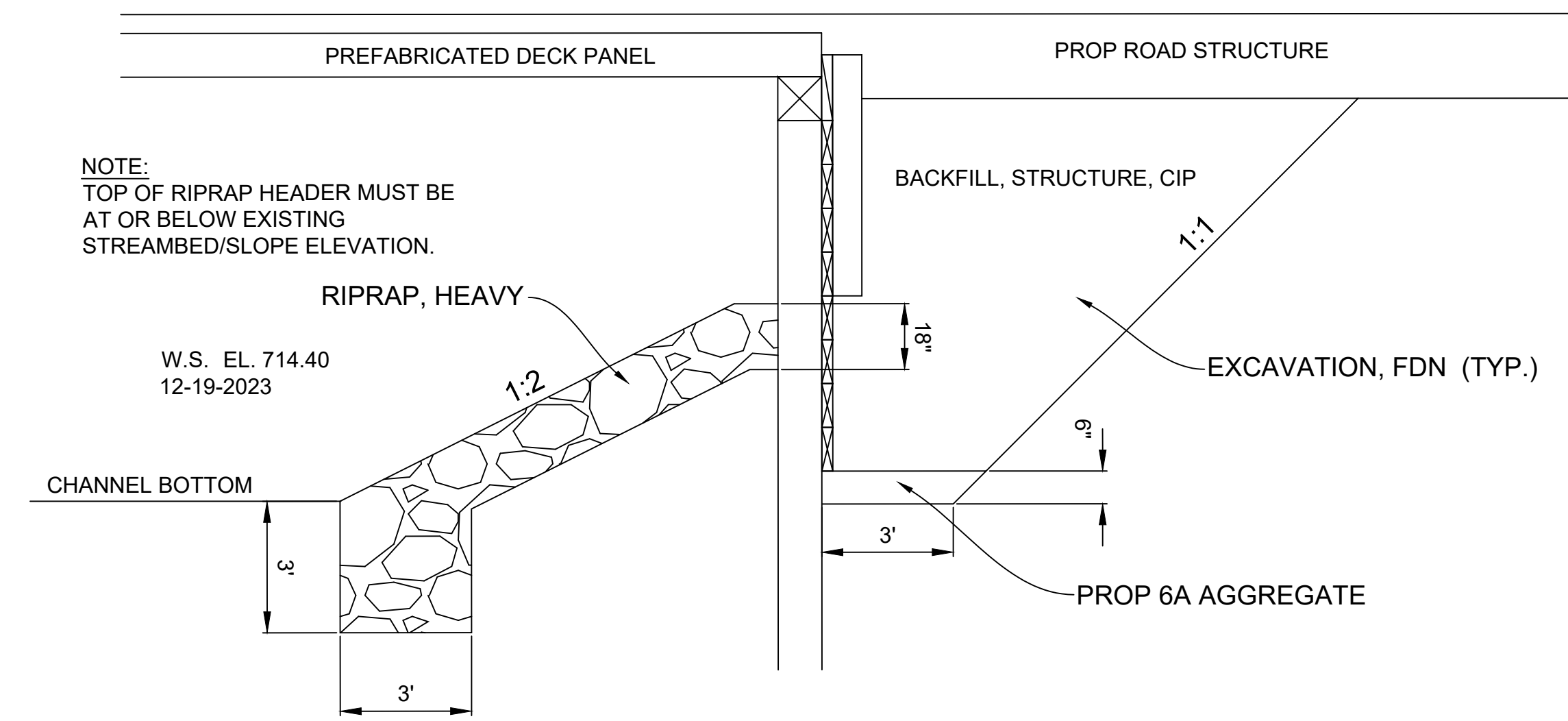
HMA APPLICATION TABLE

IDENT.	PAY ITEM	#/SYD	PERFORMANCE GRADE	REMARKS
1	HMA, 13A	220	58-28	TOP COURSE
2	HMA, 13A	VARIES	58-28	WEDGE
3	HMA, 13A	VARIES	58-28	HMA APPROACH
HMA BOND COAT		0.05-0.15 GAL/SYD (FOR INFORMATION ONLY)		

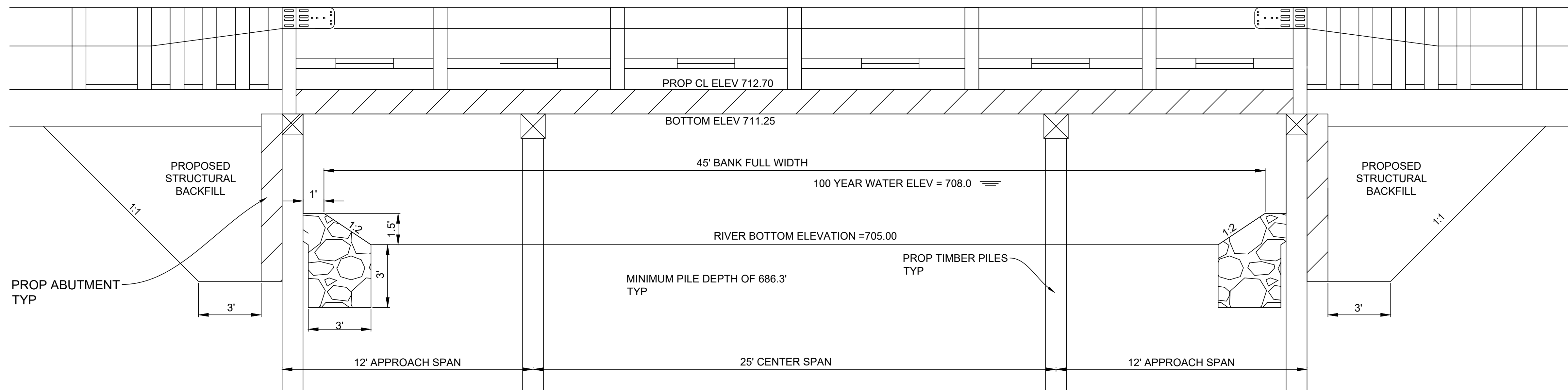


PROPOSED BRIDGE DECK CROSS SECTION

NOT TO SCALE



ABUTMENT & RIPRAP SECTION



PROPOSED BRIDGE CROSS SECTION

NOTE & DETAIL SHEET

SCALE
NA

ENGINEER
RIVARD

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HURON
ENGINEERING & SURVEYING, INC.

SHEET NO.

2

PLACE RIPRAP AT INLET AND OUTLET OF THE CULVERT ON THE BANKS ADJACENT TO THE ROADWAY AS DIRECTED BY THE OWNER AT THE TIME OF CONSTRUCTION

DURING STREAM ENCLOSURE ACTIVITIES AND ALL CONSTRUCTION ACTIVITIES PLACE EROSION CONTROL MEASURES TO PREVENT SEDIMENT FROM ENTERING THE WATERWAY.

ALL EROSION CONTROL MATERIALS SHALL USE WILDLIFE SAFE NETTING PER THE FISH AND WILDLIFE SERVICE SPECIFICATIONS.

ALL EQUIPMENT WILL BE SPRAYED WITH WATER PRIOR TO MOVING TO THE SITE TO AVOID THE INTRODUCTION OF INVASIVE SPECIES.

SILT FENCE WILL BE INSTALLED A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY INFERS THAT SUBSURFACE CONDITIONS ARE THE SAME OTHER THAN AT THE EXACT LOCATION OF BORINGS.

PLACE TOPSOIL, FERTILIZER, AND MULCH AS SOON AS POSSIBLE. CRITICAL GRADES SHOULD BE PROTECTED WITH MULCH BLANKETS AS DIRECTED BY THE ENGINEER. CIRCLED NUMBERS ON PLANS REFER TO ITEMS ON THE MDOT STANDARD PLAN-96-SERIES.

EARTHWORK WILL BE PAID AT PLAN QUANTITIES WITH REVISIONS FOR KNOWN CHANGES.

TIMBER BRIDGE WILL BE PURCHASED AND DELIVERED TO SITE BY THE OWNER.

SECTION 14, T28N R8W
CLEARWATER TOWNSHIP
KALKASKA COUNTY

GRADE AND SURFACE DRIVES THIS SHEET

STATION	Approach, CI II Ton
11+00 LT	14
15+20 RT	12
15+58 LT	13
TOTAL	39

GUARDRAIL QUANTITIES THIS SHEET

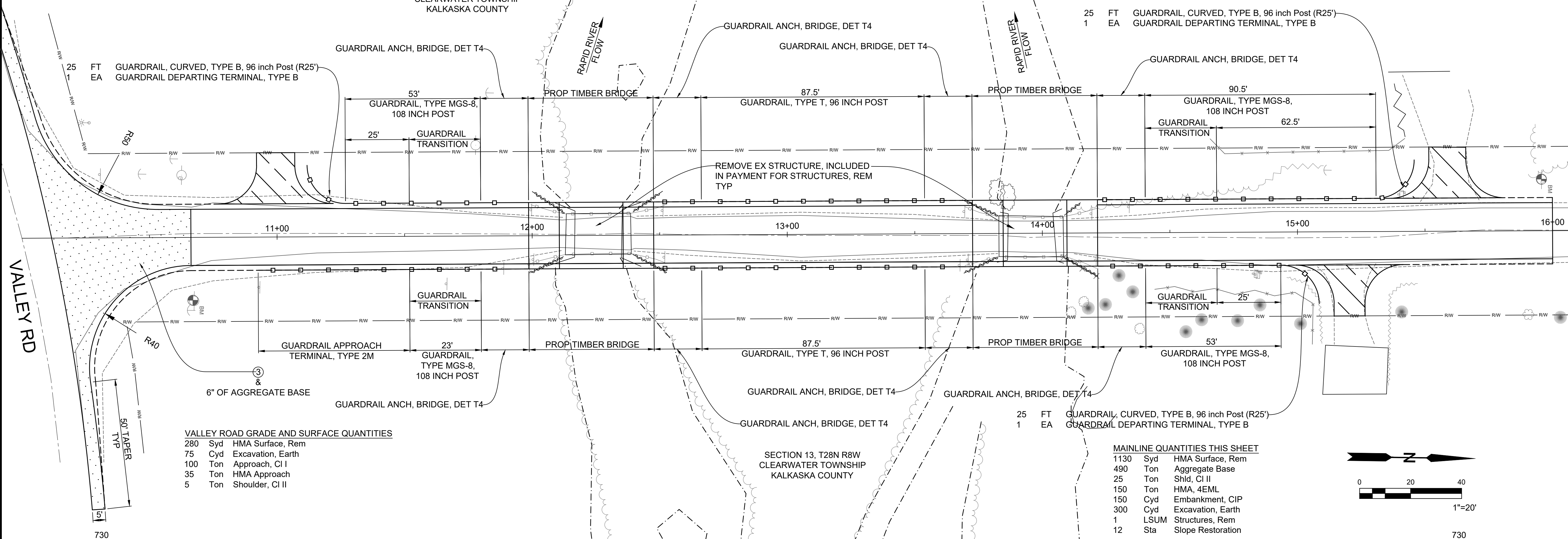
212	Ft	Guardrail, Rem
1	Ea	Guardrail Approach Terminal, Type 2M
3	Ea	Guardrail Departing Terminal, Type B
75	Ft	Guardrail, Curved, Type B, 96 inch Post
219.5	Ft	Guardrail, Type MGS-8, 108 inch Post
175	Ft	Guardrail, Type T, 96 inch Post
8	Ea	Guardrail Anch, Bridge, Det T4
16	Ea	Guardrail Reflector

SUMMARY OF HYDRAULIC ANALYSIS

FLOOD EVENT	EXISTING			PROPOSED		
	DISCHARGE (CFS)	WATER SURFACE ELEV AT U/S FACE OF STRUCTURE (FT)	VELOCITY AT D/S FACE (FPS)	WATER SURFACE ELEV AT U/S FACE OF STRUCTURE (FT)	VELOCITY AT D/S FACE (FPS)	CHANGE IN WS ELEV
50 YEAR (2%)	550	709.02	5.17	707.93	5.20	-1.09
100 YEAR (1%)	600	709.20	5.34	708.02	5.34	-1.18

THE CONTRIBUTING DRAINAGE AREA IS 59.4 SQUARE MILES.

THE WATER SURFACE AND/OR ENERGY GRADE ELEVATIONS SHOWN ON THE HYDRAULIC TABLE ARE TO BE USED FOR COMPARISON ONLY

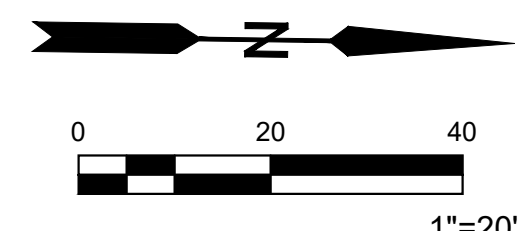


VALLEY ROAD GRADE AND SURFACE QUANTITIES

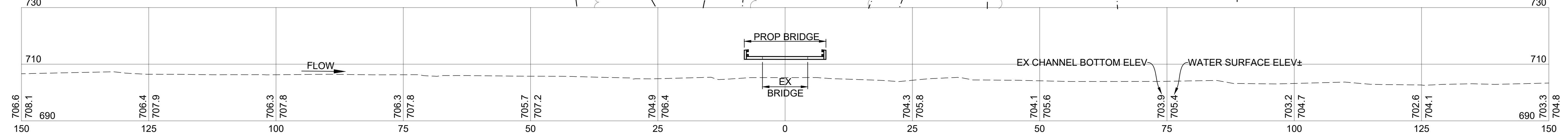
280	Syd	HMA Surface, Rem
75	Cyd	Excavation, Earth
100	Ton	Approach, CI I
35	Ton	HMA Approach
5	Ton	Shoulder, CI II

MAINLINE QUANTITIES THIS SHEET

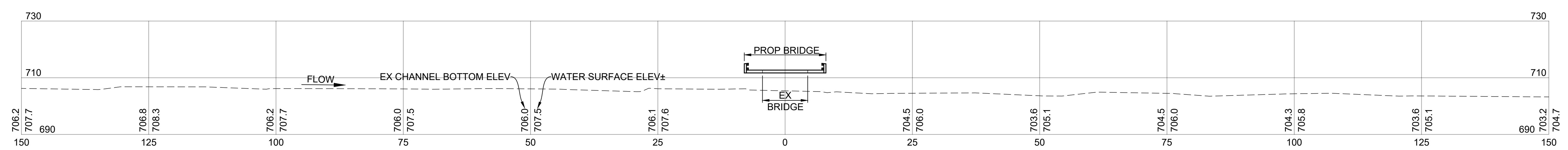
1130	Syd	HMA Surface, Rem
490	Ton	Aggregate Base
25	Ton	Shld, CI II
150	Ton	HMA, 4EML
150	Cyd	Embankment, CIP
300	Cyd	Excavation, Earth
1	LSUM	Structures, Rem
12	Sta	Slope Restoration



STREAM PROFILE SOUTH



STREAM PROFILE NORTH



PLAN SHEET

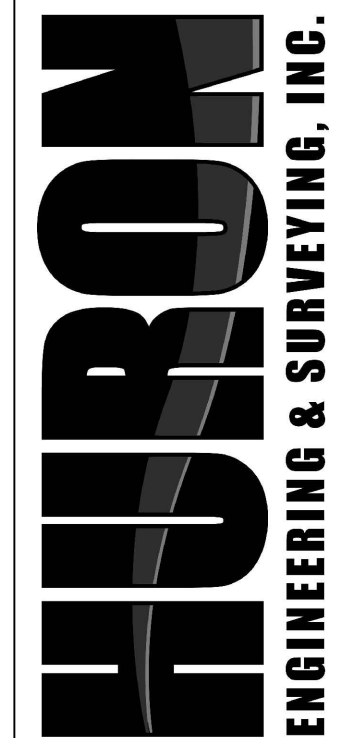
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ENGINEER
RIVARD

DATE
FEBRUARY 26 2024

JOB NUMBER
23.120

705.6



4
SHEET NO.