TUSCOLA COUNTY ROAD COMMISSION
REQUEST FOR PROPOSAL
PROFESSIONAL ENGINEERING AND BRIDGE DESIGN SERVICES
East Dayton over Cass River Bridge Design
Letting Date: September 28th, 2023

Consultant: _____

Address: _____

_____

Sign & Print: _____

Date: _____

Phone & Fax: _____

Email: _____

Bridge Design:
Completed Proposal to the Tuscola County Road Commission by September 28th, 2023

Structure No 10512, E Dayton over Cass River, Indianfields Township

Cost for Design Package: $_____

Suggested Rehabilitation Structure: _____

Estimated Construction Cost: $_____

Qualification statements/quote proposals shall be received no later than 8:30 am on September 28th, 2023, to Brent Dankert P.E., Acting County Highway Engineer. Late proposals will not be considered. See notice to bidder. Proposals must be delivered in a plainly marked and seal envelope. No electronic bids will be accepted.

Proposal Intent

The Tuscola County Road Commission seeks to hire a qualified, professional engineering team to provide design services, any necessary environmental permitting, and preparation of plans, specifications, and preliminary estimates of cost for the rehabilitation of Structure No. 10512, E Dayton over Cass River. The TCRC expects consultants proposing on this project to have the qualifications, experience, personnel, and overall understanding of the work.

Background

Structure No. 10512, E Dayton over Cass River, has reached a point that it requires rehabilitation. The existing bridge is a three-span structure with steel beams, a concrete deck with an epoxy overlay, and concrete curtainwall abutments. The bridge has a total length of 180 feet and a clear width of 37.2 feet. E Dayton Road is a Major Collector, with an average daily traffic of 3006 vehicles per day. The E Dayton Road Bridge over Cass River was used for the Tuscola County Road Commission 2026 Local Bridge Application Program. **Final plans, special provisions, preliminary estimates of cost and EGLE permitting must be completed and submitted to the Tuscola County Road Commission by the end of 2024.**

Proposal Submittal

The Tuscola County Road Commission (TCRC) is soliciting qualification statements and quote proposals to perform bridge design services for the structure listed on page one. The proposal shall contain, at a minimum, the following items:

- Proposed bridge design including the type of structure intended for the location and estimated cost of construction to build the proposed design.
- Qualifications for all team members Involved.
- An understanding of the requested design services.
- Design fee and breakdown
    - Cost to include all soil borings, hydraulic analysis, and any other services necessary for a complete design.
        - Minimum of one soil boring per side to a minimum depth of 50 feet
    - Include an hourly fee schedule with the proposal.
- The proposed bridge design must follow all MDOT Local Agency design standards and guidelines and include the following:
    - A clear width of 32 feet inside-of-rail to inside-of-rail
    - Minimum of a 50-foot bridge approach
    - Tuscola County Road Commission standard name plate
    - A final plan set with all necessary special provisions associated to the construction of the proposed design
- Final Deliverables
    - A signed and sealed completed plan set, a copy of all special provisions, load rating calculations and computations, a preliminary estimate of construction cost completed in MERL, and an electronic copy of all design files.

The following items shall not be included in the proposal:

- Any cost or qualifications for ROW or land acquisition. If these services are required, a cost will be determined prior to beginning the work.
- Any cost related to asbestos testing. The Tuscola County Road Commission will be responsible for obtaining any testing or related items if deemed necessary.

Scoring

The scoring of the submitted proposal will be based on the following criteria:

30%	Understanding of Services
30%	Qualifications of Team
20%	Design Fee
15%	Past Performance
5%	Location

Award and Payment

Award will be made in the best interest of the Road Commission. Payment will be made by monthly invoicing. Please limit your package to a maximum of five (5) pages and submit your company's hourly fee schedule with the proposal. The completed first page of the RFP does not count towards the maximum 5 pages. Any questions should be made to Brent Dankert at highwayengineer@tuscolaroad.org or 989-751-3873.

Attachments

- E Dayton Road Bridge 2026 Programming Application
- Location map
- Existing Structure Plans
- Photos

LIABILITY

The consultant shall always exercise extreme care and shall assume all liability for any damages resulting from their operation. Furthermore, they shall hold the Tuscola County Road Commission harmless from any such claims or damages.

NON-COMPLIANCE WITH PROJECT SPECIFICATION PROVISIONS

Any variation from the specifications of the project herein without written approval from the Tuscola County Road Commission and/or its authorized representative may result in, at the discretion of the Tuscola County Road Commission, the voiding and/or cancelling of the acceptance of any contract, resulting from this project.

The Tuscola County Board of Road Commissioners reserves the right to accept or reject any or all proposals and to re-advertise or to accept the proposal, that in their opinion, is in the best interest of Tuscola County.

Tuscola County Road Commission

Application For Michigan Department of Transportation Local Bridge Fund

East Dayton Road over the Cass River (SN 10512)

Indianfields Township

Tuscola County

I. Introduction

The East Dayton Road Bridge (Structure No. 10512) over the Cass River is a primary priority for Tuscola County in the 2026 fiscal year Michigan Department of Transportation Bridge Funding. Bridge Rehabilitation is required for the East Dayton Road Bridge. The structure was inspected within the last two years.

The East Dayton Road bridge was originally constructed in 1976. The bridge is a three span structure with steel beams and a concrete bridge deck with an epoxy overlay. The structure has concrete curtainwall abutments. The Dayton Road Bridge has a total length of 180 feet and a clear width of 37.2 feet.

East Dayton Road is a northwest/southeast road, has a NFC classification as a Major Collector and is classified as a primary, all season roadway for the Tuscola County Road Commission. The bridge is approximately 0.5 miles east of M-24. The average daily traffic on East Dayton Road over the Cass River is approximately 3006 vehicles per day. A significant portion of the traffic using this bridge is related to the agricultural industry, commuting traffic and local economies of surrounding municipalities.

East Dayton Road is a primary route from traffic in and out of the City of Caro. The City of Caro hosts the County Seat for Tuscola County and is the center of Industry. Pioneer Sugar, the Caro Center and POET Bioprocessing are some of the larger manufacturing industries within the City. The Road Commission considers this structure a critical asset and key transportation link within their road network. If selected, the Tuscola County Road Commission is committed to a 20% local match to fund the project.

II. General Conditions

East Dayton Road Bridge over the Cass River SN 10512

The East Dayton Road Bridge over the Cass River is not currently posted. The deficiencies noted from a June 2021 inspection included the following:

- Remove brush and trees from slope paving abutments.
- Remove aggregate from expansion joint devices.

It was noted in the 2021 Inspection, the piers have experienced map cracking in all concrete pier casings. Pier 2w has open vertical cracks in all columns up to 1 ½' with large sections of concrete delamination. Pier 1w has open vertical cracks as well as a result of the map cracking. Rehabilitation will focus on the substructure of the East Dayton Road Bridge.

III. Narrative Supporting the Application

A. Contact Person

The contact person for the Tuscola County Road Commission is:

Mr. Brent Dankert, P.E.

Acting County Highway Engineer

Tuscola County Road Commission

1733 Mertz Road, Caro, MI 48723

Phone: 989-751-3873

Email: highwayengineer@tuscolaroad.org

B. This application is for the **Rehabilitation** of the East Dayton Road Bridge over the Cass River

C. Economic Importance

East Dayton Road is an east-west road serving commuters, residential, industrial, and agricultural users. East Dayton Road sees approximately 3006 vehicles per day. The economic importance of the East Dayton Road over North Branch of White Creek includes the following:

- East Dayton Road is northwest/southeast road serving commuters, residential, and agricultural users who live and work in the surrounding area between M-81, M-24 and M-46.
- East Dayton Road is a primary route in and out of Caro for traffic.
- Multiple large manufacturing industries rely on this route for shipping and receiving daily.
- If this bridge were to be closed or weight restricted, the detour would be several miles in order to bypass the bridge.
- Restrictions would a major problem to commercial and agricultural operations.
- East Dayton Road allows traffic operations to support the economy of local municipalities including both Caro, Mayville, and Kingston.
- East Dayton Road is a primary route through Tuscola if any surrounding bridges were to be close. There are only two bridges, M-24 and Deckerville Road, to cross the Cass River.

D. Existing Impact of Structure Detour

The East Dayton Road Bridge over the Cass River is located on a primary route within Tuscola County seeing approximately 3006 vehicles cross per day. If the bridge were to be closed, traffic would be detoured from the intersection of Bevens Road and East Dayton Road west approximately 2.0 miles to M-24, and north on M-24 approximately 2.5 miles back to the intersection of East Dayton and M-24

making the detour a total of 4.5 miles. If the structure were to be closed, traffic would have to use M-24 to cross the Cass River as Deckerville Road is the closest bridge to cross within several miles other than East Dayton Road and M-24.

E. Structure Maintenance

The Tuscola County Road Commission has performed the following:

- Epoxy Overlay.
- Brush Cutting in 2019.

IV. Cost Breakdown

The following is the estimated cost for the rehabilitation of the East Dayton Road Bridge over the Cass River SN 10512.

ITEM	COST ITEM	COST
A.	Approach Construction (A)	$85,000
B.	Structure Construction (B)	$774,750
	Total (A&B)	$859,750
	Contingency, Mob., Inflation	$411,000
	Total Estimated Project Cost	$1,271,000

V. Priority List

1. Hurds Corner Road Bridge over the Sucker Creek Drain Structure No. 10511.
2. East Dayton Road Bridge over the Cass River Structure No. 10512.

The Tuscola County Road Commission is committed to funding both the Hurds Corner Road Bridge and East Dayton Road Bridge.

Exhibit 4 - Cost Estimating Worksheet

2023

BRIDGE COST ESTIMATE WORKSHEET

- CPM, REHAB, REPLACE -

REV. 01/31/2023

OWNER: Tuscola County FISCAL YEAR: 2026 DATE: 4/3/2023
REGION: Bay ENGINEER: Brent Dankert
TSC: Huron PR: #N/A MP: #N/A

	Out to Out	Curb to Curb
LENGTH	WIDTH	WIDTH
180.0	37.2	30.0

STRUCTURE ID: 10512
BRIDGE ID: N/A

LOCATION: EAST DAYTON ROAD over CASS RIVER
PRIMARY WORK ACTIVITY: Substructure Replacement
OTHER WORK:

DECK AREA: 6,696 SFT
CLEAR ROADWAY: 5,400 SFT

STR. TYPE: Steel
Multi-Stringer, W or I-Bean

WORK ACTIVITY		MDOT Bridge Design Guides	QUANTITY	UNIT	UNIT COST		TOTAL
NEW BRIDGE		(increase deck area based on design standards and hydraulic requirements)					
Single or Multiple Spans, Grade Separation		(add demo, approach, MOT)		SFT	$415.00	/SFT	
Single Span, Over Water	Length < 100ft	(add demo, approach, MOT)		SFT	$500.00	/SFT	
Multiple Spans, Over Water	Length > 100ft	(add demo, approach, MOT)		SFT	$450.00	/SFT	
Precast Culvert	Length < 40ft	(add demo, approach, MOT)		SFT	$540.00	/SFT	
NEW SUPERSTRUCTURE							
New Superstructure, Grade Separation		(incl. remove exist deck/super; add MOT & approach)		SFT	$295.00	/SFT	
New Superstructure, Over Water		(incl. remove exist deck/super; add MOT & approach)		SFT	$300.00	/SFT	
WIDENING							
Structure Widening, ft		(incl. deck/super/sub widening, add approach transition)		SFT	$630.00	/SFT	
NEW DECK							
New Bridge Deck & Barrier		(incl. remove exist deck/railing, add approach, MOT)		SFT	$150.00	/SFT	
DEMOLITION							
Entire Structure, Grade Separation				SFT	$75.00	/SFT	
Entire Structure, Over Water				SFT	$95.00	/SFT	
DECK REPAIR / TREATMENTS							
Bridge Railing Replacement		(incl. removal and replacement)		FT	$750.00	/FT	
Concrete Brush Block / Curb Patch		(incl. hand chipping and formwork)		FT	$29.00	/FT	
Concrete Barrier Patch		(incl. hand chipping and formwork)		SFT	$85.00	/SFT	
Concrete Deck Patch		(incl. hand chipping)		SFT	$68.00	/SFT	
Deep Overlay		(incl. joint repl & hydro)		SFT	$46.00	/SFT	
Epoxy Overlay		(incl. warranty)		SYD	$48.00	/SYD	
Expansion Joint Gland Replacement		(remove and replace elastomeric gland)		FT	$125.00	/FT	
Expansion Joint Replacement		(incl. removal)		FT	$860.00	/FT	
Full Depth Patch				SFT	$140.00	/SFT	
Healer / Sealer		(penetrates cracks in bridge deck)		SYD	$30.00	/SYD	
HMA Overlay with WP membrane				SYD	$60.00	/SYD	
Overlay Removal		(Epoxy: $22/syd | Latex: $26/syd | HMA: $7/syd)		SYD	$22.00	/SYD	
Reseal Bridge Joints				FT	$28.00	/FT	
Shallow Overlay		(incl. joint repl & hydro)		SFT	$46.00	/SFT	
SUPERSTRUCTURE REPAIR							
Bearing Realignment / Replacement		(incl. temporary supports)		EA	$6,450.00	EA	
Heat Straightening		(incl. clean and coat)		EA	$57,000.00	EA	
Pack Rust Repair		(greater than 3/8" separation)		FT	$1,150.00	/FT	
Paint - Complete		(incl. clean & coat)		SFT	$30.00	/SFT	
Paint - Partial / Spot / Zone		(incl. clean & coat - $20k minimum)		SFT	$60.00	/SFT	
PCI Beam End Blockout		(incl. temporary supports)		EA	$7,200.00	EA	
Pin & Hanger Replacement		(incl. temporary supports)		EA	$17,000.00	EA	
Structural Steel Repair		(based on 6ft repair length)		EA	$4,000.00	EA	
Structural Steel Repair - Stiffener		(includes each side of beam)		EA	$1,500.00	EA	
SUBSTRUCTURE REPAIR							
Substructure Patching		(measured x 2) replace if repair area > 30%	125.0	CFT	$360.00	/CFT	$45,000.00
Substructure Replacement		(incl. temporary supports, excavation)	1,020.0	CFT	$375.00	/CFT	$382,500.00
Substructure Horizontal Surface Sealer				SYD	$75.00	/SYD	
Temporary Supports		(add Structural Steel Repair - Stiffener for ea steel beam)		EA	$4,000.00	EA	
MISCELLANEOUS							
Articulating Concrete Block System (ACB)				SYD	$320.00	/SYD	
Concrete Surface Coating				SYD	$47.00	/SYD	
Culvert Cleanout				FT	$125.00	/FT	
Epoxy Crack Injection		(structural crack repair)		FT	$70.00	/FT	
Metal Mesh Panels		(48" width, max 6'-6" length)		SFT	$28.00	/SFT	
Pressure Relief Joint		(use when approach concrete roadway exceeds 1,000ft)		FT	$110.00	/FT	
Riprap		(assume 10ft distance around perimeter of substructure)	990.0	SYD	$275.00	/SYD	$272,250.00
Silane Treatment		(penetrating sealer for concrete surfaces)		SFT	$7.00	/SFT	
Slope Protection Repairs				SYD	$150.00	/SYD	
Other		(cofferdams/dewatering)	1.0	LSUM	$75,000.00	LSUM	$75,000.00
					STRUCTURE CONSTRUCTION BUDGET		$774,750
ROAD WORK							
Approach Pavement, 12" RC		(incl. removal; add curb, gutter, guardrail) 40' ea. end		SYD	$230.00	/SYD	
Approach Curb & Gutter		(incl. removal) 40' ea. quadrant		FT	$57.00	/FT	
Guardrail Anchorage to Bridge		(each quadrant)		EA	$2,540.00	/EA	
Guardrail		(incl. removal) < 200ft beyond reference line		FT	$41.00	/FT	
Guardrail Terminal		(each quadrant)		EA	$3,900.00	/EA	
Roadway Approach Work		(beyond approach pavement)		LSUM		LSUM	
Utilities				LSUM		LSUM	
TRAFFIC CONTROL		*Unit Cost to be determined by Region or TSC Traffic & Safety*					
Part Width Construction				LSUM		LSUM	
Crossovers				EA		/EA	
Temporary Traffic Signals				set		/set	
RR Flagging				LSUM		LSUM	
Detour		(roadway and pedestrian)	1.0	LSUM	$85,000.00	LSUM	$85,000.00
					RELATED ROAD/TRAFFIC CONSTRUCTION BUDGET		$85,000
CONTINGENCY	(10% - 20%) (use higher contingency for small projects)		20	%	$860,000.00		$172,000
MOBILIZATION	(estimate at 10%)		10	%	$1,032,000.00		$103,000
INFLATION	(assume 4% per year, beginning in 2024)		12	%	$1,135,000.00		$136,000

(Does not include PE or CE)

TOTAL CONSTRUCTION BUDGET $1,271,000

(Refer to programming guidelines in Bridge Cost Estimating Worksheet-Key for CE,PE & PE-S)

12 % CE	CON BUDGET	$1,424,000
12 % PE	PE BUDGET	$14,000
10 % PE	PE-S BUDGET	$110,000

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512 BRIDGE SAFETY INSPECTION REPORT

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

NBI INSPECTION NY4L

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
James Brock	ROWE Professional Services Company	24	06/24/2022

GENERAL NOTES

Assisted by: Abby Righter
Established directions: East Dayton E/W, Cass River N/S
TCRC ID: B-TUS-P-1

DECK

	06/18	06/20	06/22	
1. Surface (SIA-58A)	8	8	8	Epoxy overlay over concrete deck. No deficiencies noted. (06/22) Epoxy overlay over concrete deck. No visible cracks. (06/20) Newer epoxy overlay over concrete deck. (06/18)
2. Expansion Joints	8	7	7	Both joints over pin and hanger assemblies replaced with strip seal joints in 2016. Glands are partially debris filled and armor exhibits minor rust. Coverplates above strip seals along sidewalk. Concrete near sliding plate joint over East joint at sidewalk has 2 transverse cracks. (06/22) Both joints over pin and hanger assemblies replaced with strip seal joints in 2016. Both joints are full of debris from epoxy overlay. Sliding plate joint over East joint at sidewalk has 2 transverse cracks. (06/20) Both joints over pin and hanger assemblies replaced with strip seal joints in 2016. Both joints are full of aggregate from epoxy overlay. Sliding plate joint over East joint at sidewalk has 2 transverse cracks. (06/18)
3. Other Joints	7	N	N	(06/22) (06/20) Transverse tooled joints in concrete sidewalk. (06/18)
4. Railings	7	7	7	3-tube aluminum barriers mounted to concrete brush block on the south side and mounted to raised concrete sidewalk on the north side. Minor cracks, spalls, and weathering in concrete brush block. (06/22) 3-tube aluminum barriers mounted to concrete brush block on the south side and mounted to sidewalk on the north side. Minor cracks and spalls in concrete brush block. (06/20) 3-tube aluminum barriers mounted to concrete brush block on the south side and mounted to sidewalk on the north side. Minor cracks and spalls in concrete brush block. (06/18)
5. Sidewalks or Curbs	7	7	7	Concrete sidewalk on the north side of the structure only. Minor edge spalls and tight hairline cracks. (06/22) Concrete sidewalk on the north side of the structure only. Minor edge spalls and tight hairline cracks. (06/20) Concrete sidewalk on the north side of the structure only. Minor edge spalls and tight hairline cracks. (06/18)
6. Deck Bottom Surface (SIA-58B)	7	7	7	Concrete deck. Tail spans have minor cracking. Transverse cracks up to 1/32" wide in all deck fascias. Cracking with leakage and efflorescence along drip edge of both fascias. (06/22) Concrete deck. Tail spans have minor cracking. Transverse cracks all deck fascias. Cracking with leakage and efflorescence along drip edge of both fascias. (06/20) Concrete deck. Tail spans have minor cracking. Transverse cracks all deck fascias. Cracking with leakage and efflorescence along drip edge of both fascias. (06/18)

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7. Deck (SIA-58)	7	7	7	Surface: Epoxy overlay over concrete deck. No deficiencies noted. Bottom Surface: Concrete deck. Tail spans have minor cracking. Fascias: Concrete deck. Tail spans have minor cracking. Transverse cracks up to 1/32" wide in all deck fascias. Cracking with leakage and efflorescence along drip edge of both fascias. (06/22) Surface: Newer epoxy overlay over concrete deck. Bottom Surface: Concrete deck. Tail spans have minor cracking. Fascias: Transverse cracks all deck fascias. Cracking with leakage and efflorescence along drip edge of both fascias. (06/20) Surface: Newer epoxy overlay over concrete deck. Bottom Surface: Concrete deck. Tail spans have minor cracking. Fascias: Transverse cracks all deck fascias. Cracking with leakage and efflorescence along drip edge of both fascias. (06/18)
8. Drainage				Off both ends of the structure. (06/22) Off both ends of the structure. (06/20) Off both ends of the structure. (06/18)

SUPERSTRUCTURE

	06/18	06/20	06/22	
9. Stringer (SIA-59)	7	7	7	5 steel I-beams with two rows of interior diaphragms, one at midspan and one end diaphragm. Square end cover plates on bottom flanges. Pin & Hanger assemblies near each pier in span 2W. No beam end contact. 80 degree F ambient air temp. A588 weathering steel. At pin &hangers, rust and scale on bottom flanges. (06/22) There are 5 steel I-beams with two rows of interior diaphragms, one at midspan and one end diaphragm. Square end cover plates on bottom flanges. Pin & Hanger assemblies have been replaced. A588 weathering steel. At pin &hangers, rust and scale on bottom flanges. (06/20) There are 5 steel I-beams with two rows of interior diaphragms, one at midspan and one end diaphragm. Square end cover plates on bottom flanges. Pin & Hanger assemblies have been replaced. A588 weathering steel. (06/18)
10. Paint (SIA-59A)	5	5	5	A588 weathering steel with active corrosion/patina on beam ends and top and bottom flanges. (06/22) A588 weathering steel with active corrosion on beam ends and top and bottom flanges. (06/20) A588 weathering steel with active corrosion on beam ends and top flanges. (06/18)
11. Section Loss	2	2	2	Section loss is minor at this time. (06/22) Section loss is minor at this time. (06/20) Section loss is minor at this time. (06/18)
12. Bearings	7	7	7	Galvanized steel bearings with upper steel sole plates. Sole plates are uniformly rusted. (06/22) Galvanized steel bearings with upper steel sole plates. Sole plates are uniformly rusted. (06/20) Galvanized steel bearings with upper steel sole plates. Sole plates are uniformly rusted. (06/18)

SUBSTRUCTURE

	06/18	06/20	06/22	
13. Abutments (SIA-60)	7	7	7	Concrete curtainwall abutments. Both abutments have tight hairline vertical cracks. Slope paving concrete in front of each abutment has shifted and settled differentially. Some exposed reinforcement. (06/22) Concrete curtainwall abutments. Both abutments have tight hairline vertical cracks. Slope paving concrete in front of each abutment has shifted and settled differentially. Some exposed reinforcement. (06/20) Concrete curtainwall abutments. Both abutments have tight hairline vertical cracks. Slope paving concrete in front of each abutment has shifted and settled differentially. Some exposed reinforcement. (06/18)

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14. Piers (SIA-60)	6	6	6	Concrete encased pile bent piers with concrete caps. There are 8 piles per pier. Map cracking in all concrete casings. Pier 2w has open vertical cracks up to 1/16" wide in all columns at waterline. Large open 1 1/2" vertical crack and 2'x2' delaminated region on column 3s. Pier 1w has hairline and open vertical cracks up to 1/8" wide in all columns, most severe in column 2S. Pier 2w is worse than pier 1w. (06/22) Concrete encased pile bent piers with concrete caps. There are 8 piles per pier. Map cracking in all concrete casings. Pier 2w has open vertical cracks in all columns at waterline. Large open 1 1/2" vertical crack and 2'x2' delaminated region on column 3s. Pier 1w has hairline and open vertical cracks in all columns. Pier 2w is worse than pier 1w. (06/20) Concrete encased pile bent piers with concrete caps. There are 8 piles per pier. Map cracking in all concrete casings. Pier 2w has open vertical cracks in all columns at waterline. Large open 1 1/2" vertical crack and 2'x2" delaminated region on column 3s. Pier 1w has hairline and open vertical cracks in all columns. Pier 2w is worse than pier 1w. (06/18)
15. Slope Protection	N	N	N	(06/22) (06/20) (06/18)
16. Channel (SIA-61)	6	6	6	Channel flows primarily under span 2W. Sandy with cobbles. Trees and debris in front of east pier. Scour hole downstream of bridge (06/22) Sandy with cobbles. Trees and debris in front of east pier. Scour hole downstream of bridge (06/20) Sandy with cobbles. Trees and debris in front of east pier. (06/18)
17. Scour Inspection	7	7	7	Probed around piers with water max 5' deep. Abutments were dry at time of inspection. (06/22) Probed around piers with water max 5' deep. Abutments were dry at time of inspection. (06/20) Probed around piers with water max 5' deep. Abutments were dry at time of inspection. (06/18)

APPROACH

	06/18	06/20	06/22	
18. Approach Pavement	8	8	8	25' concrete approaches with epoxy overlay. HMA approaches beyond. No deficiencies noted. (06/22) 25' concrete approaches with epoxy overlay. HMA approaches beyond. (06/20) 25' newer concrete approaches with epoxy overlay. Newer HMA approaches beyond. (06/18)
19. Approach Shoulders Sidewalks	8	8	8	Concrete curb and gutter and HMA shoulders in all four quadrants. Aggregate shoulders beyond HMA. (06/22) Concrete curb and gutter and new HMA shoulders in all four quadrants. Aggregate shoulders beyond HMA. (06/20) Concrete curb and gutter and new HMA shoulders in all four quadrants. Aggregate shoulders beyond HMA. (06/18)
20. Approach Slopes				HMA slope paving in all four quadrants off back of wingwalls. (06/22) HMA slope paving in all four quadrants off back of wingwalls. (06/20) HMA slope paving in all four quadrants off back of wingwalls. (06/18)
21. Utilities				There is a 6" diameter PVC conduit exposed coming out of the north end of the bridge in bay 5W. There is a 1" diameter HDPE cable in bay 4s. Overhead electric South of structure. (06/22) There is a 6" diameter PVC conduit exposed coming out of the north end of the bridge in bay 5W. There is a 1" diameter HDPE cable in bay 4s. Overhead electric South of structure. (06/20) There is a 6" diameter PVC conduit exposed coming out of the north end of the bridge in bay 5W. There is a 1" diameter HDPE cable in bay 4s. Overhead electric South of structure. (06/18)
22. Drainage Culverts				None noted. (06/22) (06/20) (06/18)

STR 10512 **BRIDGE SAFETY INSPECTION REPORT**

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

MISCELLANEOUS

Guard Rail

Item	Rating
36A. Bridge Railings	0
36B. Transitions	0
36C. Approach Guardrail	1
36D. Approach Guardrail Ends	0

Other Items

Item	Rating
71. Water Adequacy	8
72. Approach Alignment	4
Temporary Support	0 No Temporary Supports
High Load Hit (M)	No
Special Insp. Equipment	2
Underwater Insp. Method	1

False Decking (Timber) Removed to Complete Inspection N/A - No False Decking

Critical Feature Inspections (SIA-92)

	Freq	Date
92A. Fracture Critical		
92B. Underwater		
92C. Other Special		
92D. Fatigue Sensitive		

STR 10512 **BRIDGE SAFETY INSPECTION REPORT**

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

SUPPORTING IMAGES

NY4L 06/24/2022

Document Name: 13F1A449-7B77-4C9E-A084-59B98443DBB1.jpeg
Category: Elevation
Span Number:
Comments: North elevation

Document Name: B18DF781-751E-4F57-94E9-8B1C14C72BE8.jpeg
Category: Elevation
Span Number:
Comments: South elevation

Document Name: 5F9F7CC9-675E-4C7B-82F3-19C2BA98E8AF.jpeg
Category: Approach
Span Number:
Comments: West approach

Document Name: EBA5BD52-1354-414D-8283-369A55C84924.jpeg
Category: Approach
Span Number:
Comments: East approach

STR 10512 BRIDGE SAFETY INSPECTION REPORT

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Document Name: DB696624-2AF2-499B-AD19-14B66F4BA8A8.jpeg
Category: Railing
Span Number:
Comments: Railing, typical

Document Name: 0853D0A8-AFD8-4CCE-A65A-1AD072A68620.jpeg
Category: Deck
Span Number:
Comments: Concrete deck bottom surface

Document Name: 41CFCBA2-A0A4-4CDF-8F06-32144386D8B4.jpeg
Category: Deck
Span Number:
Comments: Concrete deck bottom surface

Document Name: 81C05783-F9B1-4C8C-8806-7E12C43ADA1A.jpeg
Category: Deck
Span Number:
Comments: Epoxy overlay surface, span 2W

STR 10512 **BRIDGE SAFETY INSPECTION REPORT**

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Document Name: D90CFF84-D6DE-448C-993B-DF1AAFD236E0.jpeg
Category: Deck
Span Number:
Comments: Looking east over structure

Document Name: 271449BA-9D27-4A0E-9FBE-31C61A3BC01D.jpeg
Category: Joints
Span Number:
Comments: West reference line joint

Document Name: 4CEAFAD1-2428-4F3D-81FB-866D139FAB70.jpeg
Category: Joints
Span Number:
Comments: Joint 1W

Document Name: 56BFD97E-EEAD-4AF2-AD96-65F2EF362CDA.jpeg
Category: Joints
Span Number:
Comments: Joint 2W

STR 10512 **BRIDGE SAFETY INSPECTION REPORT**

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
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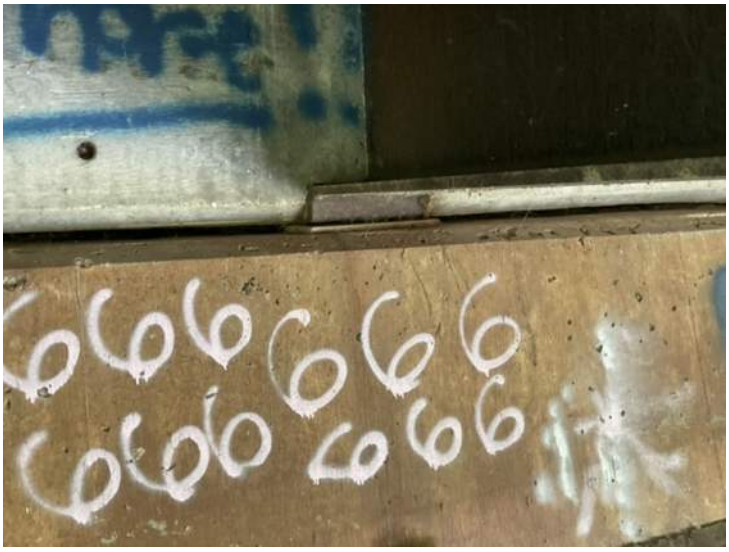
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Document Name: 946A56A2-8A5A-406D-98E2-AAD513434D22.jpeg
Category: Joints
Span Number:
Comments: East reference line joint

Document Name: 00EAA6B4-C3AB-4A4F-AE62-D3D87FBE8F7F.jpeg
Category: Superstructure
Span Number:
Comments: Steel beams, typical

Document Name: 673D00EC-26ED-470C-BB4D-C2ADCD92CCA5.jpeg
Category: Pin and Hanger
Span Number:
Comments: P&H assemblies near piers



Document Name: 738678AB-AF60-459D-AE23-57AB09E03A36.jpeg
Category: Bearings
Span Number:
Comments: Steel plate bearings, typical

STR 10512 **BRIDGE SAFETY INSPECTION REPORT**

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Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Document Name: 002121A3-42E3-4300-866F-7EDF5A685A30.jpeg
Category: Substructure
Span Number:
Comments: East face of pier 2W

Document Name: 14EBBEC0-5E99-4CDE-884F-2C5840056C4D.jpeg
Category: Substructure
Span Number:
Comments: East abutment

Document Name: 46535538-C7BC-4594-B1EB-9FFF05519A4C.jpeg
Category: Substructure
Span Number:
Comments: West abutment

Document Name: 9AB2E179-A652-48BF-A24C-8414EA1BC0E3.jpeg
Category: Substructure
Span Number:
Comments: West face of pier 1W

STR 10512 BRIDGE SAFETY INSPECTION REPORT

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Document Name: 6E638954-064B-46C8-A885-BBD7BEE9845E.jpeg
Category: Channel
Span Number:
Comments: Looking south off structure

Document Name: AEE49047-AA6F-4FFE-93BA-5919E41E5F1C.jpeg
Category: Channel
Span Number:
Comments: Looking north off structure

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512 STRUCTURE INVENTORY AND APPRAISAL

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Bridge History, Type, Materials

27 - Year Built	1976	
106 - Year Reconstructed		
202 - Year Painted		
203 - Year Overlay		
43 - Main Span Bridge Type	3	02
44 - Appr Span Bridge Type		
77 - Steel Type	4	
78 - Paint Type	0	
79 - Rail Type	3	
80 - Post Type	3	
107 - Deck Type	1	
108A - Wearing Surface	5	
108B - Membrane	0	
108C - Deck Protection	0	

Structure Dimensions

34 - Skew	10
35 - Struct Flared	N
45 - Num Main Spans	3
46 - Num Apprs Spans	0
48 - Max Span Length	64.1
49 - Structure Length	180
50A - Width Left Curb/SW	4.3
50B - Width Right Curb/SW	.5
33 - Median	0
51 - Width Curb to Curb	30
52 - Width Out to Out	37.2
112 - NBIS Length	Y

Inspection Data

90 - Inspection Date	06/24/2022	
91 - Inspection Freq	24	
92A - Frac Crit Req/Freq	N	
93A - Frac Crit Insp Date		
92B - Und Water Req/Freq	N	
93B - Und Water Insp Date		
92C - Oth Spec Insp Req/Freq	N	
93C - Oth Spec Insp Date		
92D - Fatigue Req/Freq	N	
93D - Fatigue Insp Date		
176A - Und Water Insp Method	1	
58 - Deck Rating	7	
58A/B - Deck Surface/Bottom	8	7
59 - Superstructure Rating	7	
59A - Paint Rating	5	
60 - Substructure Rating	6	
61 - Channel Rating	6	
62 - Culvert Rating	N	

Navigation Data

38 - Navigation Control	0
39 - Vertical Clearance	0
40 - Horizontal Clearance	0
111 - Pier Protection	
116 - Lift Brdg Vert Clear	

Route Carried By Structure(ON Record)

5A - Record Type	1	
5B - Route Signing	4	
5C - Level of Service	0	
5D - Route Number	00000	
5E - Direction Suffix	0	
10L - Best 3m Unclr-Lt	0	0
10R - Best 3m Unclr-Rt	99	99
PR Number		
Control Section		
11 - Mile Point	0	
12 - Base Highway Network	0	
13 - LRS Route-Subroute	0000002707 10	
19 - Detour Length	2	
20 - Toll Facility	3	
26 - Functional Class	08	
28A - Lanes On	2	
29 - ADT	5144	
30 - Year of ADT	2016	
32 - Appr Roadway Width	32	
32A/B - Ap Pvt Type/Width	5	25
42A - Service Type On	1	
47L - Left Horizontal Clear	0.0	
47R - Right Horizontal Clear	30.0	
53 - Min Vert Clr Ov Deck	99	99
100 - STRAHNET	0	
102 - Traffic Direct	2	
109 - Truck %	2	
110 - Truck Network	0	
114 - Future ADT	6928	
115 - Year Future ADT	2036	
Freeway	0	

Structure Appraisal

36A - Bridge Railing	0
36B - Rail Transition	0
36C - Approach Rail	1
36D - Rail Termination	0
67 - Structure Evaluation	6
68 - Deck Geometry	3
69 - Underclearance	N
71 - Waterway Adequacy	8
72 - Approach Alignment	4
103 - Temporary Structure	
113 - Scour Criticality	5

Miscellaneous

37 - Historical Significance	5
98A - Border Bridge State	
98B - Border Bridge %	
101 - Parallel Structure	N
EPA ID	
Stay in Place Forms	
143 - Pin & Hanger Code	0
148 - No. of Pin & Hangers	0

Route Under Structure (UNDER Record)

5A - Record Type		
5B - Route Signing		
5C - Level of Service		
5D - Route Number		
5E - Direction Suffix		
10L - Best 3m Unclr-Lt		
10R - Best 3m Unclr-Rt		
PR Number		
Control Section		
11 - Mile Point		
12 - Base Highway Network		
13 - LRS Route-Subroute		
19 - Detour Length		
20 - Toll Facility		
26 - Functional Class		
28B - Lanes Under		
29 - ADT		
30 - Year of ADT		
42B - Service Type Under	5	
47L - Left Horizontal Clear		
47R - Right Horizontal Clear		
54A - Left Feature		
54B - Left Underclearance	99	99
54C - Right Feature		
54D - Right Clearance	99	99
Under Clearance Year	0	
55A - Reference Feature	N	
55B - Right Horiz Clearance	99.9	
56 - Left Horiz Clearance	0	
100 - STRAHNET		
102 - Traffic Direct		
109 - Truck %		
110 - Truck Network		
114 - Future ADT		
115 - Year Future ADT		
Freeway		

Proposed Improvements

75 - Type of Work	38	1
76 - Length of Improvement	180	
94 - Bridge Cost	239	
95 - Roadway Cost	14	
96 - Total Cost	296	
97 - Year of Cost Estimate	2015	

Load Rating and Posting

31 - Design Load	5
41 - Open, Posted, Closed	A
63 - Fed Oper Rtg Method	6
64F - Fed Oper Rtg Load	2.23
64MA - Mich Oper Rtg Method	6
64MB - Mich Oper Rtg	1.28
64MC - Mich Oper Truck	17
65 - Inv Rtg Method	6
66 - Inventory Load	1.17
70 - Posting	5
141 - Posted Loading	
193 - Overload Class	

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512	**SAFETY INSPECTION REPORT - AASHTO ELEMENTS**		
Facility	**Latitude / Longitude**	**MDOT Structure ID**	**Structure Condition**
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

No inspections available for bridge key 79200316000B010

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512 — WORK RECOMMENDATIONS

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

WORK RECOMMENDATIONS — NY4L

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
James Brock	ROWE Professional Services Company	24	06/24/2022

RECOMMENDATIONS & ACTION ITEMS

Recommendation Type	Priority	Description
Brush Cut	H	Remove brush & trees from slope paving. (20) (22)
Joint Repair	H	Remove aggregate from expansion joint devices. (20) (22)

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512	**SCOUR CRITICAL BRIDGE ACTION PLAN**		
Facility	**Latitude / Longitude**	**MDOT Structure ID**	**Structure Condition**
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

No plan available for bridge key 79200316000B010

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512 — LOAD RATING ASSUMPTIONS

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Rating Considers Field Condition of Members: Yes **Inspection Date:** 06/26/2020

Deterioration:

rust and scale on bottom flanges

Most Recent Year Construct / Reconstruct / Overlay: 1976

History of Work Impacting Load Rating:

Original Construction - Pin & Hangers have been replaced

Superstructure Component: 4 Steel Continuous **Beam fy:** 50.0 **ksi** **Beam f'c / fb:** 3.0 **ksi**

Composite: Yes **Number of Beams:** 5 **Shop Drawings Verified:** No

Beam Size(s) & Names (each span): (5) W30x99 w/ 9"x0.625" Cover Plates in span 1,2, and 3

Deck: **Thickness (in.):** 8.5 **Fy / f'c:** 60.0 / 3.0 ksi **Deck Design Load > H15:** Yes

Wearing Surface: **Mat'l:** **Thickness (in.):** **Unit Weight (pcf.):**

	LEFT	CENTER	RIGHT
Barrier: Type / Weight (plf.):	Sidewalk w/ Al Rail / 741.0	/	BB w/ Al Rail / 274.0
Sidewalk: Width / Thick (in.):	/	/	/

Clear Roadway (ft.): 30.0

Additional Loads:

60psf LL on Sidewalk

Unique Factors That Affect Capacity:

Analyzed By: Matthew Finley **Date:** 02/15/2022

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512 — LOAD RATING SUMMARY

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

Compliance Issue: None
Compliance Verified: No
Analysis Program: AASHTOWare Bridge Rating (BrR)
Analysis Program Version: 7.1.1.3001
Rating Considers Field Condition of Members: Yes **Inspection Date:** 06/26/2020
Controlling component and failure mode:

Steel Flexure

NEW INVENTORY CODING

NBI Item 63 - Operating Rating Method 6 LFR in Rating Factor
NBI Item 64F - Federal Operating Ratings 2.23

MDOT Item 64MA - Michigan Operating Method 6 LFR in Rating Factor
MDOT Item 64MB - Michigan Operating Rating 1.28
MDOT Item 64MC - Michigan Operating Truck 17

NBI Item 65 - Inventory Rating Method 6 LFR in Rating Factor
NBI Item 66 - Federal Inventory Rating 1.17

NBI Item 41 - Structure Open Posted Closed A A Open, no restriction
NBI Item 70 - Bridge Posting 5 5 - 100% or more
Posted By No Posting
MDOT Item 141 - Posted Loading

MDOT Item 193A - Michigan Overload Class
MDOT Item 193C - Overload Status

Analyzed By: Matthew Finley **Date:** 02/15/2022
Checked By: Rich Kathrens, P.E. **Date:** 02/16/2022

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512	**REQUEST FOR ACTION**		
Facility	**Latitude / Longitude**	**MDOT Structure ID**	**Structure Condition**
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

No inspections available for bridge key 79200316000B010

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 10512 — OUTSTANDING WORK

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
EAST DAYTON ROAD	43.4902 / -83.3762	79200316000B010	Fair Condition(6)
Feature	**Length / Width / Spans**	**Owner**	
CASS RIVER	180 / 37.2 / 3	County: Tuscola(79)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
SEC 2 INDIANFIELDS TWP	1976 / / /	Huron(28)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Bay(4) / Tuscola(79)	3 Steel / 02 Multi Str Non Comp	06/24/2022 / NY4L	5 Stable w/in footing

WORK RECOMMENDATIONS

JOINTS

Request For	Contact/User	Agency/Company Name	Estimated Quantity	Unit
Joint Repair				
Activity	**Material**	**Other Material**	**Actual Quantity**	**Unit**
Personnel Hours	**Equipment**			**Complete Date**

Comments

Remove aggregate from expansion joint devices. (20) (22) (James Brock 07/11/2022)

Roads & Bridges
To Our Future

Tuscola County Road Commission
1733 Mertz
Caro, MI 48723
Phone 989 673-2128
Fax 989 673-3294

TUSCOLA COUNTY BOARD OF ROAD COMMISSIONERS
RESOLUTION OF
SUPPORT FOR THE REHABILITATION OF THE EAST DAYTON ROAD BRIDGE OVER THE CASS RIVER, SECTION 2 – INDIANFIELDS TOWNSHIP
STRUCTURE NUMBER 10512

Commissioner Duane Weber offered the following resolution and moved for its adoption:

BE IT RESOLVED, the Tuscola County Board of Road Commissioners supports the application for State and/or Federal funding participation in the rehabilitation of the East Dayton Road Bridge over the Cass River (Structure Number 10512),

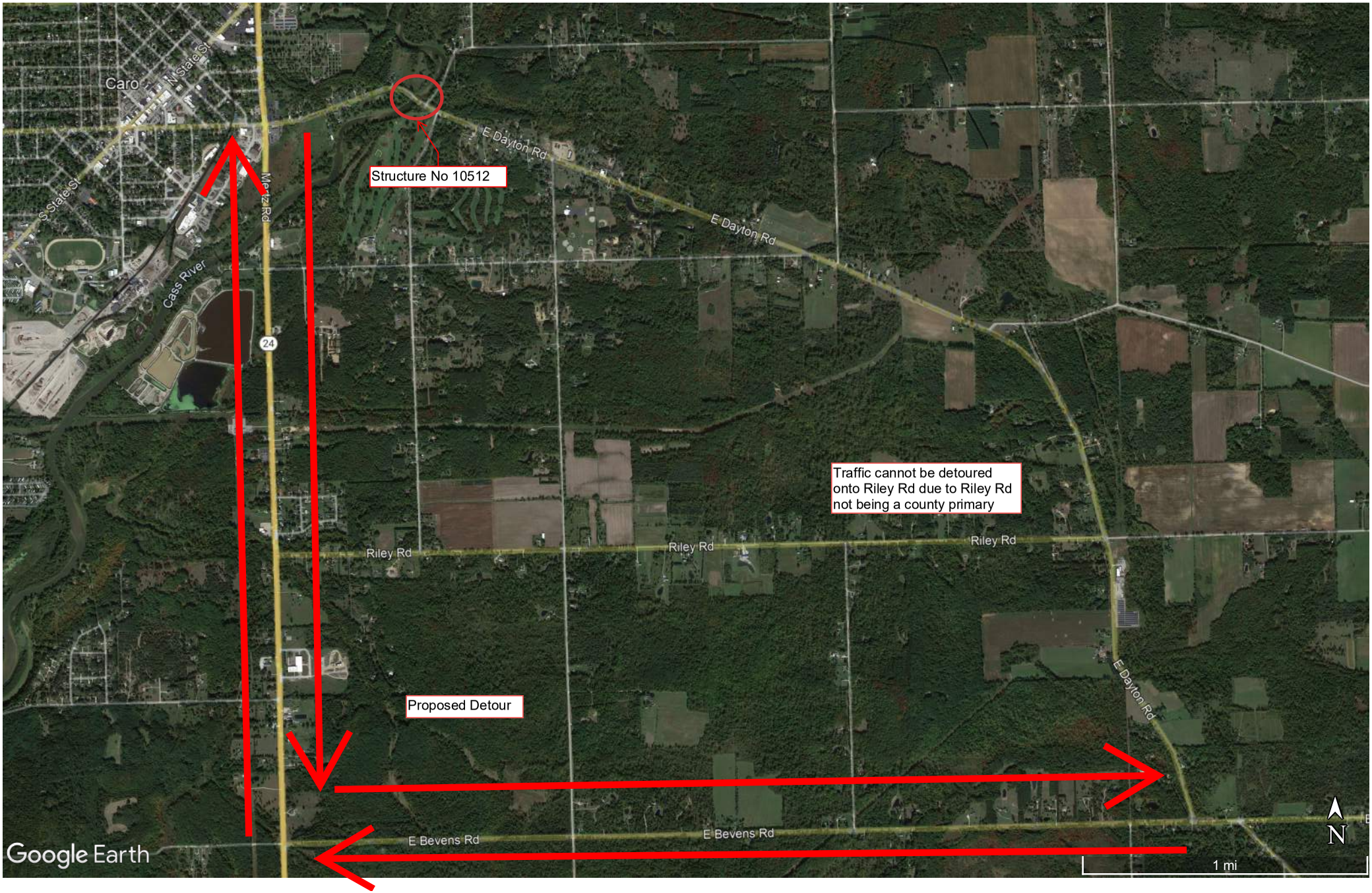
BE IT FURTHER RESOLVED, that the Board of Road Commissioners, County of Tuscola, concurs that this rehabilitation is urgently needed, and that the Tuscola County Road Commission will commit up to 20% local funding.

Motion supported and resolution adopted on a roll call vote:

AYES: Duane Weber, David Kennard, Julie Matuszak, Gary Parsell, John Laurie
NAYS: None

I hereby certify that the foregoing is a true and correct copy of a motion made and adopted at a regular meeting of the Board held on the 30th day of March, 2023.

Signed: _____
Secretary-Clerk of the Board


Caro
N State St
S State St
Cass River
Mertz Rd
24
Structure No 10512
E Dayton Rd
E Dayton Rd
Traffic cannot be detoured onto Riley Rd due to Riley Rd not being a county primary
Riley Rd
Riley Rd
Riley Rd
E Dayton Rd
Proposed Detour
E Bevens Rd
E Bevens Rd
Google Earth
1 mi
N


E Dayton over Cass River
Legend
E Dayton over Cass River
Orr Rd
Boy Scout Rd
E Dayton Rd
E Dayton over Cass River
E Dayton Rd
Buick GMC
Weeden Rd
E Dayton Rd
Google Earth
N
1000 ft

Trim Line

BORROW REQUIREMENTS

WHERE REQUIRED STA. TO STA.	AMOUNT REQUIRED	AMOUNT AVAILABLE	SOILS SERIES	PIT LOCATION

TUSCOLA
COUNTY ROAD COMMISSION

IN CO-OPERATION WITH

MICHIGAN DEPARTMENT OF STATE HIGHWAYS & TRANSPORTATION

AND

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF STATE HIGHWAYS CURRENT STANDARD SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS.

FHWA DIV. NO.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MICH.				
ROUTE	STATE PROJECT	COUNTY	TWP.	SHEET NO.	TOTAL SHEETS
	79022	TUSCOLA	INDIAN FIELDS	1	15

DESIGN SPEED ..... 40 M.P.H.

A. D. T. (1995) 3000

PLAN AND PROFILE OF PROPOSED

EAST OAYTON ROAD CROSSING THE CASS RIVER 0.6 MILES EAST OF M-24

MICHIGAN PROJECT MCS 79022 BRS 874(101)

(ITEM II)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
PERMIT NO. 74-11-58
DATED: DECEMBER 16, 1974

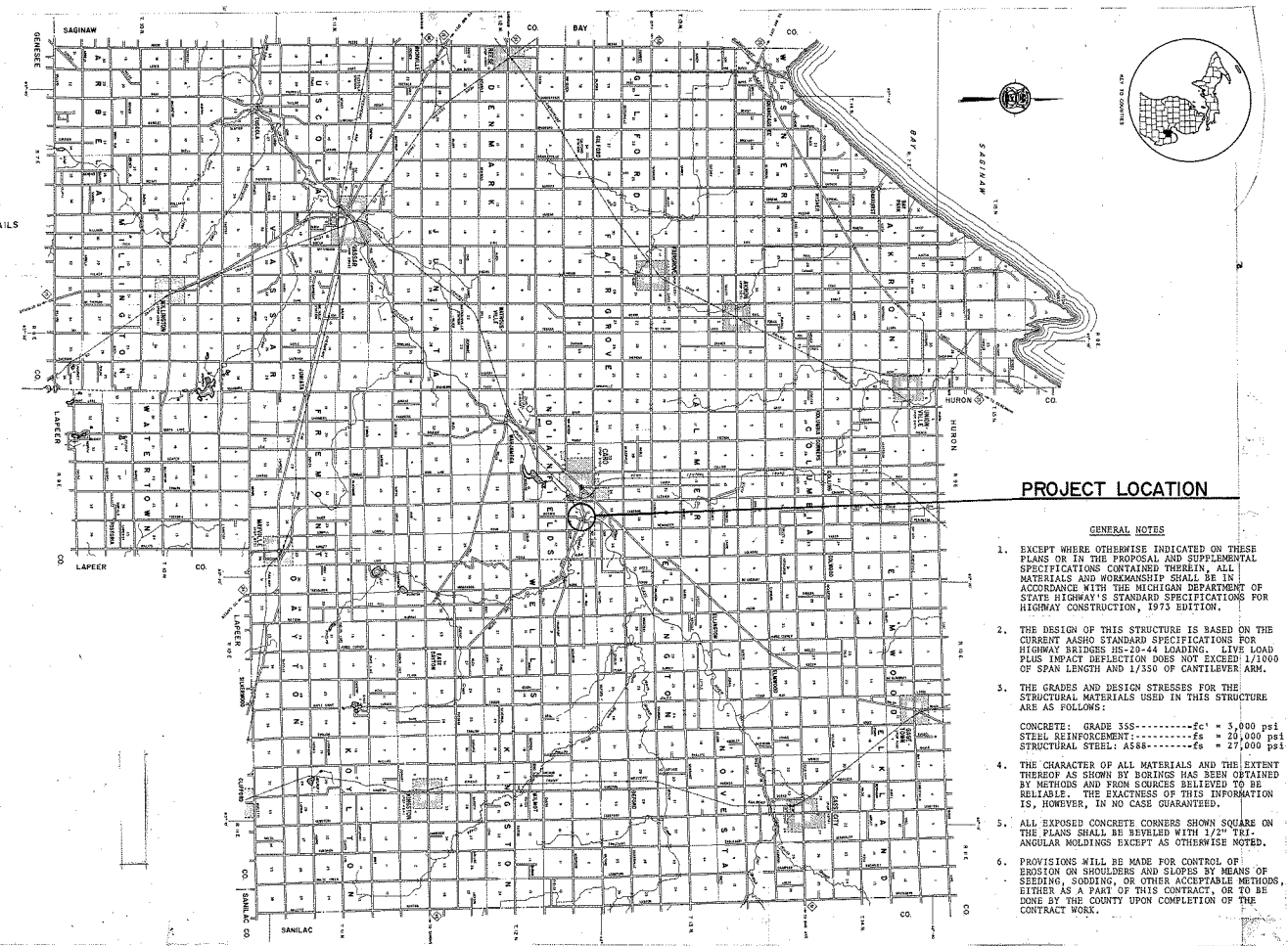
INDEX OF SHEETS

STANDARD PLANS TO BE PRINTED

R-13 BRIDGE RAILING, MOLDING AND BEVEL DETAILS

STANDARD PLANS NOT TO BE PRINTED

II-32A BRIDGE APPROACH CURB & GUTTER
III 60C BEAM GUARD RAIL-TYPE A
IX 96A EROSION CONTROL
II 46A COBBLE GUTTER



GENERAL NOTES

1. EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF STATE HIGHWAY'S STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 1973 EDITION.

2. THE DESIGN OF THIS STRUCTURE IS BASED ON THE CURRENT AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES HS-20-44 LOADING. LIVE LOAD PLUS IMPACT DEFLECTION DOES NOT EXCEED 1/1000 OF SPAN LENGTH AND 1/350 OF CANTILEVER ARM.

3. THE GRADES AND DESIGN STRESSES FOR THE STRUCTURAL MATERIALS USED IN THIS STRUCTURE ARE AS FOLLOWS:

   CONCRETE: GRADE 35S----------fc' = 3,000 psi
   STEEL REINFORCEMENT:----------fs = 20,000 psi
   STRUCTURAL STEEL: A588-------fs = 27,000 psi

4. THE CHARACTER OF ALL MATERIALS AND THE EXTENT THEREOF AS SHOWN BY BORINGS HAS BEEN OBTAINED BY METHODS AND FROM SOURCES BELIEVED TO BE RELIABLE. THE EXACTNESS OF THIS INFORMATION IS, HOWEVER, IN NO CASE GUARANTEED.

5. ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH 1/2" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

6. PROVISIONS WILL BE MADE FOR CONTROL OF EROSION ON SHOULDERS AND SLOPES BY MEANS OF SEEDING, SODDING, OR OTHER ACCEPTABLE METHODS, EITHER AS A PART OF THIS CONTRACT, OR TO BE DONE BY THE COUNTY UPON COMPLETION OF THE CONTRACT WORK.

CONTRACT FOR _____

COUNTY APPROVAL
BOARD OF COUNTY ROAD COMMISSIONERS

BY _____ CHAIRMAN DATE
BY _____ MEMBER DATE
BY _____ MEMBER DATE
BY _____ COUNTY ENGINEER DATE

DEPARTMENT OF STATE HIGHWAYS APPROVAL

APPROVED COMMISSION

BY _____ CHIEF, BUREAU OF ENGINEERING - CHIEF ENGINEER DATE

CONTRACT FOR BRIDGE & APPROACHES

COUNTY APPROVAL
BOARD OF COUNTY ROAD COMMISSIONERS

BY _____ CHAIRMAN GROVER LAURIE DATE
BY _____ VICE CHAIRMAN HARVEY ENO DATE
BY _____ MEMBER ALTON REAVEY DATE
BY _____ COUNTY ENGINEER ROBERT WELLINGTON DATE

LOCAL GOVERNMENT DIVISION
RECOMMENDED FOR APPROVAL

BY Robert C. Fuller FEDERAL AID BRIDGE ENGINEER 6/16/75 DATE
BY Merle R. Luse F.A.S. ENGINEER 6-17-75 DATE

DEPARTMENT OF STATE HIGHWAYS APPROVAL

APPROVED COMMISSION

BY for Max N. Clyde DEPUTY DIRECTOR HIGHWAYS 6.17.75 DATE

PREPARED UNDER SUPERVISION OF

Thomas R. Hardwick 5-21-75
ENGINEER NO. 16022

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 15578

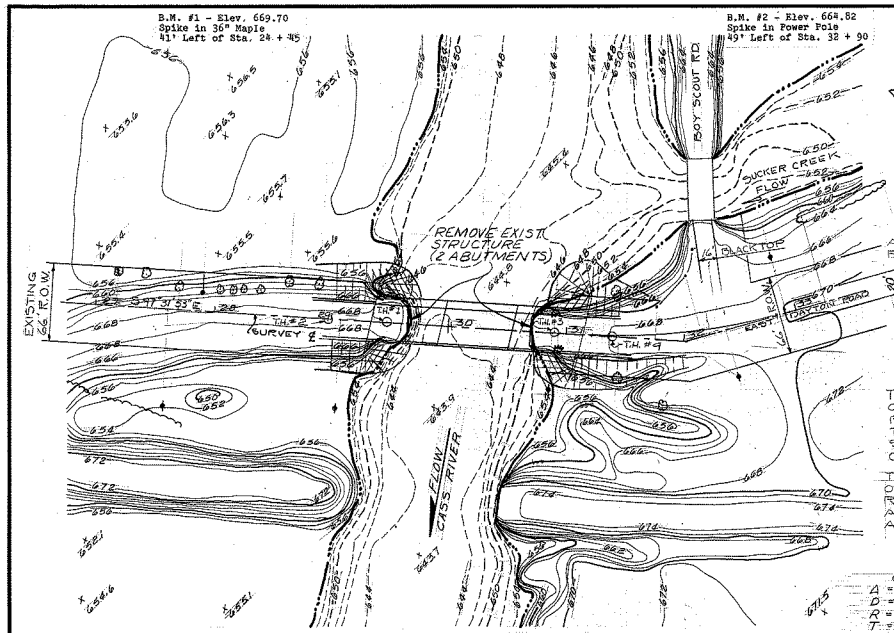
R. S. SCOTT ENGINEERING CO., INC.
405 RIVER STREET
ALPENA, MICHIGAN 49707

STATE PROJECT	FEDERAL PROJECT	SHEET NO.
BI OF 79-13-20		1

JOB NO. 08-722A.1 BI OF 79-13-20

BRS 874(101) Item II

Trim Line



BORINGS COMPLETED BY MICHIGAN DRILLING CONSULTING ENGINEERS, DETROIT, MICHIGAN.

NOTE: FIGURES IN CIRCLES INDICATE TOTAL NUMBER OF BLOWS REQUIRED TO DRIVE A 2.00" O.D. SAMPLER 1 FT. USING A 140 LB. HAMMER FALLING 30".

THE CHARACTER OF ALL MATERIALS AND THE EXTENT THEREOF AS SHOWN BY BORINGS HAS BEEN OBTAINED BY METHODS AND FROM SOURCES BELIEVED TO BE RELIABLE. THE EXACTNESS OF THIS INFORMATION IS, HOWEVER, IN NO CASE GUARANTEED.

THE WORK COVERED BY THESE PLANS INCLUDES THE REMOVAL OF PORTIONS OF THE EXISTING ABUTMENTS AND THE CONSTRUCTION OF THE PROPOSED BRIDGE AND PLACING STRUCTURE BACKFILL AND RIPRAP TO THE LIMITS SHOWN.

CONTRACTOR IS TO EXERCISE CARE TO AVOID EXCESSIVE SILTING OF STREAM DURING CONSTRUCTION OPERATIONS.

DESIGN DATA: THE DESIGN OF THIS BRIDGE IS BASED ON THE CURRENT AASHO STANDARD SPECIFICATIONS, HS20-44 LOADING. LIVE LOAD PLUS IMPACT DEFLECTION EQUALS 1/1000 OF SPAN LENGTH AND .375 OF THE CANTILEVER ARM.

THE CONTRIBUTING DRAINAGE AREA AT THIS LOCATION IS 403 SQ. MILES. THE 50 & 100 YEAR FLOOD FREQUENCY DISCHARGES ARE 14,900 CFS & 16,400 CFS AS SUPPLIED BY THE HYDROLOGIC STUDIES UNIT OF THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES.

THE WATERWAY AREA SUPPLIED BELOW HIGH WATER IS 2076 SQ.FT. WHICH GIVES A STREAM VELOCITY OF 7.9 FT./SEC. THE EXISTING BRIDGE HAD A WATERWAY OPENING BELOW HIGH WATER OF 1085 SQ.FT.

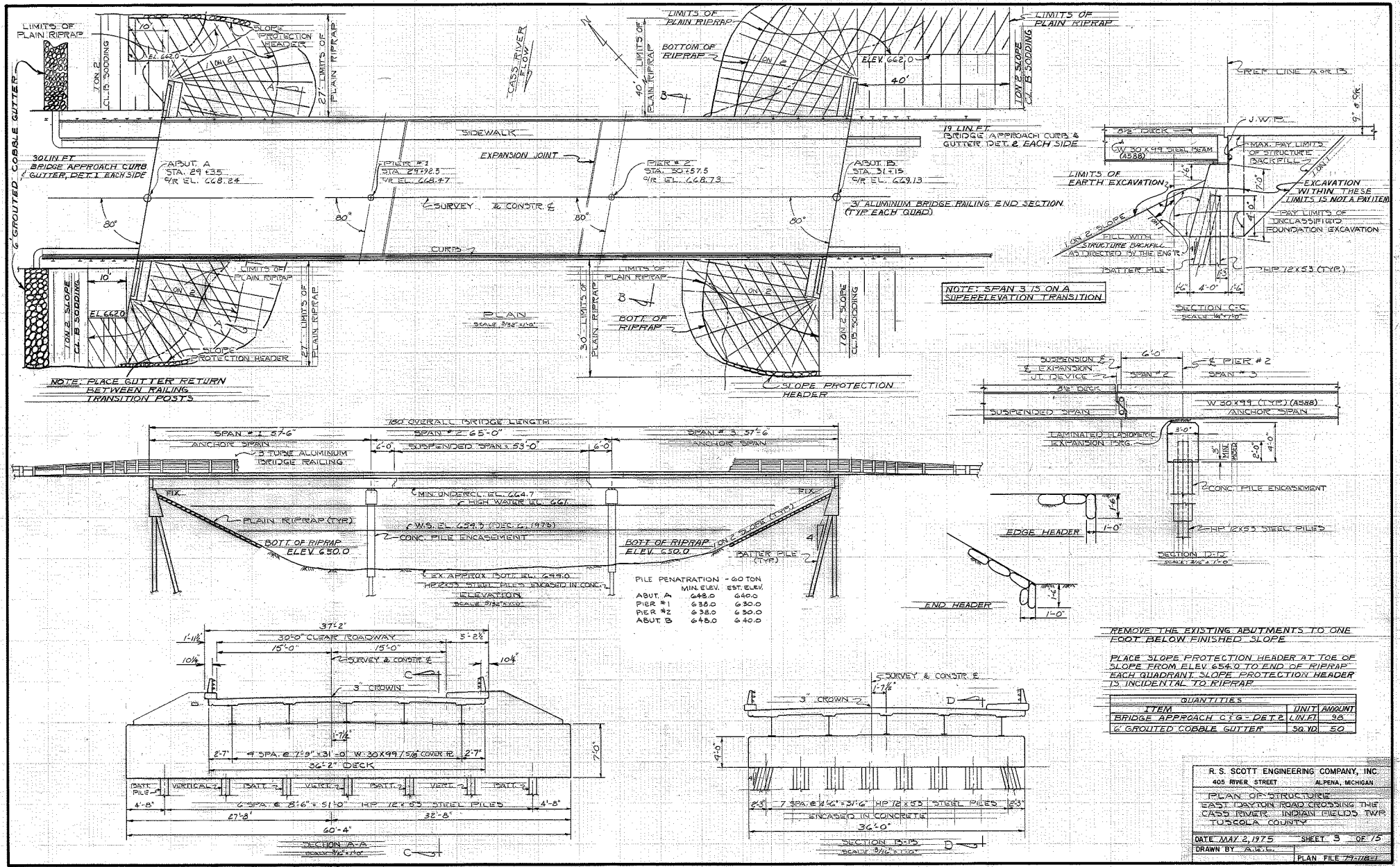
A.D.T. (1995) 3,000
DESIGN SPEED 40 M.P.H.

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

PLAN OF SITE
EAST DAYTON ROAD CROSSING THE CASS RIVER INDIAN FIELDS TWP.
TUSCOLA COUNTY

DATE APRIL 30, 1975 SHEET 2 OF 15
DRAWN BY E.T.L.
& A.E.L.
PLAN FILE 79-118-1

81- of 79-13-20



QUANTITIES		
ITEM	UNIT	AMOUNT
BRIDGE APPROACH C & G - DET 2	LIN FT	98
6" GROUTED COBBLE GUTTER	SQ YD	50

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

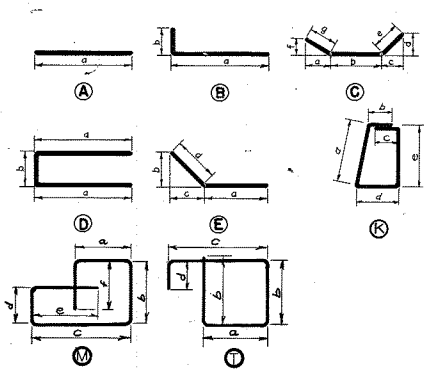
PLAN OF STRUCTURE
EAST DAYTON ROAD CROSSING THE CASS RIVER INDIAN FIELDS TWP TUSCOLA COUNTY

DATE MAY 2, 1975 SHEET 3 OF 15
DRAWN BY A.G.L. PLAN FILE 79-1187

B1- of 79-13-20

ITEM	UNIT	QUANTITY
REMOVAL OF PORTION OF STRUCTURES	L.S.	L.S.
UNCLASSIFIED FOUNDATION EXCAVATION	CU. YD	310
STRUCTURE BACKFILL (C.I.P.)	CU. YD	600
STEEL PILES-FURN. & DRIVEN (12")	LIN. FT.	880
TEST PILES-STEEL (12")	EACH	4
SPLICES-STEEL PILES (12")	EACH	26
FURNISH EQUIP FOR DRIVING PILES	L.S.	L.S.
CONCRETE PILE INCASEMENT	L.S.	L.S.
SUBSTRUCTURE CONCRETE	CU. YD	134.0
SUPERSTRUCTURE CONCRETE	CU. YD	253.0
FORM, FINISH, CURE SUPERSTRUCTURE CONC.	L.S.	L.S.
STEEL REINFORCEMENT	LBS.	54,850
CLEAR PROTECTIVE COAT SUBSTRUCTURE CONC.	SQ. FT.	1,900
PROTECTIVE TREATMENT FOR BRIDGE DECK	SQ. FT.	6,700
EXP. JOINT DEVICE ~ T20-1¼	LIN. FT.	40
STR. STEEL-FURN. (FAB. (A588 ROLLED)	LBS.	130,000
STR. STEEL-ERECTION (A-588 ROLLED)	LBS.	130,000
2" ELASTOMERIC BEARING	SQ. FT.	15
SHEAR DEVELOPERS	L.S.	L.S.
JOINT WATERPROOFING	SQ. FT.	270
BRIDGE RAILING, ALUM.	LIN. FT.	484
PLAIN RIPRAP	SQ. YD.	990
GROUTED COBBLE DITCH	SQ. YD.	50
BRIDGE APPROACH C&G-DET. 2	LIN. FT.	98
EARTH EXCAVATION	CU. YD.	2000
MACHINE GRADING (MODIFIED)	STA.	9.7
SUBBASE	CU. YD.	900
EMBANKMENT (C.I.P.)	CU. YD.	3000
AGGREGATE SURFACE CSE.	CU. YD.	1000
BIT. AGGREGATE SURF. CSE.	TON	315
GALV. BEAM GUARD RAIL-TYPE "B", DET. 2	LIN. FT.	675
GALV. CURVED BEAM GUARD RAIL-TYPE B, DET 2	LIN. FT.	75
CLASS B SODDING	SQ. YD.	2450
TOPSOIL, FERTILIZING, SEEDING & MULCHING	ACRE	0.8
CEREAL RYE SEEDING	LBS.	240

BAR BENDING DIAGRAM



BAR	DIMENSIONS a	b	c	d	e	f	g	SIZE	LENGTH	NO. REQ'D	TOTAL WT.
A-1	35'-0"							6	35'-0"	24	1262
A-2	26'-2"							6	26'-2"	24	944
A-3	5'-6"							4	5'-6"	4	15
A-4	7'-6"							4	7'-6"	4	20
A-5	9'-6"							4	9'-6"	4	26
A-6	5'-9"							4	5'-9"	4	16
A-7	8'-4"							4	8'-4"	4	23
A-8	10'-9"							4	10'-9"	4	29
D-1	5'-11"	6"						4	12'-4"	12	33
D-2	5'-0"	6"						4	10'-6"	4	28
D-3	4'-4"	6"						4	9'-2"	4	25
D-4	3'-8"	6"						4	7'-10"	4	21
D-5	3'-0"	6"						4	6'-6"	4	18
D-6	2'-4"	6"						4	5'-2"	4	14
E-1	2'-9"	3'-9"	6'-3"	7'-3"				4	10'-0"	4	27
E-2	2'-9"	3'-9"	7'-10"	8'-8"				4	11'-5"	4	31
K-1	6'-7"	1'-3"	1'-3"	3'-4"	6'-9"			4	18'-9"	88	1103
A-51	35'-6"							6	35'-6"	18	960
K-51	3'-6"	1'-9"	1'-9"	2'-6"	3'-6"			4	13'-0"	60	522
A-101	32'-1"							4	32'-1"	164	3515
A-102	32'-3"							5	32'-3"	184	6190
A-103	36'-2"							6	36'-2"	614	33,366
A-104	26'-2"							4	26'-2"	82	1434
A-105	26'-3"							5	26'-3"	92	2519
A-106	12'-0"							4	12'-0"	28	225
A-107	14'-0"							4	14'-0"	28	262
A-108	36'-2"							4	36'-2"	12	290
T-101	1'-0"	1'-5"	1'-6"	8"				4	6'-0"	152	610
T-102	10"	1'-3"	1'-4"	6"				4	3'-11"	155	306
B-101	4'-7⅛"	7⅛"						4	5'-3"	155	544
M-101	10¼"	3'-0"	1'-3⅛"	2'-0"	11¼"	1'-6"		4	9'-7"	58	372

GRAND TOTAL 54850

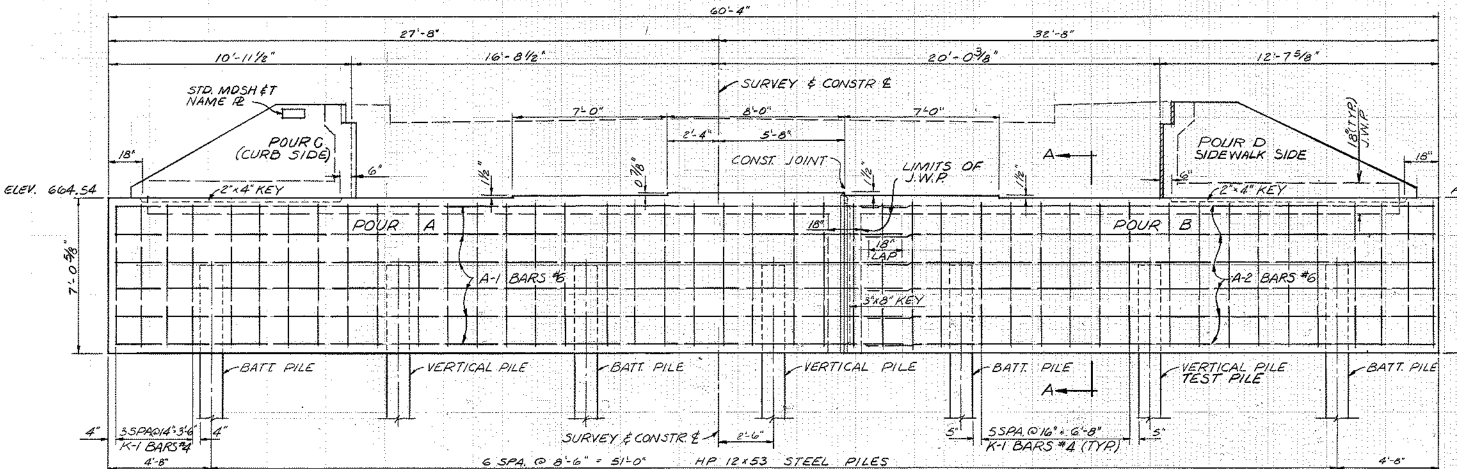
TOLERANCES IN CUTTING AND BENDING BARS ARE AS ESTABLISHED IN THE MANUAL OF STANDARD PRACTICE OF THE CONCRETE REINFORCING STEEL INSTITUTE AND DETAILING MANUAL OF THE AMERICAN CONCRETE INSTITUTE.

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

QUANTITY SHEET
&
REINFORCING STEEL

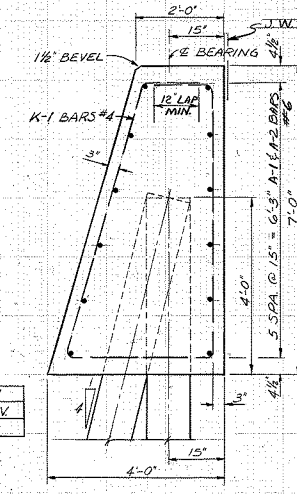
DATE MAY 13, 1975 SHEET 4 OF 15
DRAWN BY R.G.P.
PLAN FILE 79-118-1

B1 of 79-13-20

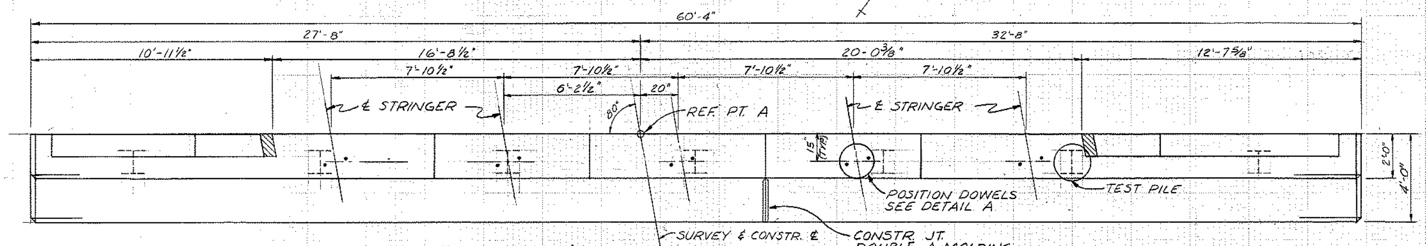


ELEVATION
SCALE: 3/8"=1'-0"

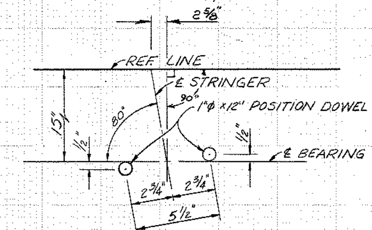
PILE PENATRATION	
MIN. ELEV.	EST. ELEV.
648.0	640.0



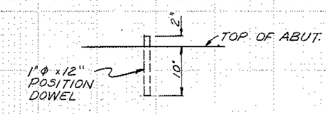
SECTION A-A
SCALE: 3/4"=1'-0"



PLAN
SCALE: 3/8"=1'-0"

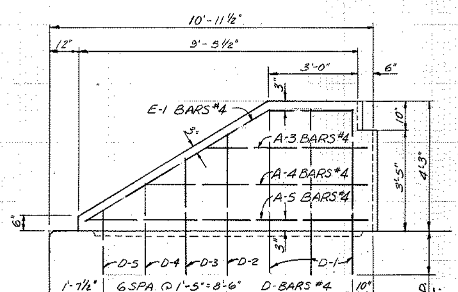


DETAIL A
SCALE: 3"=1'-0"

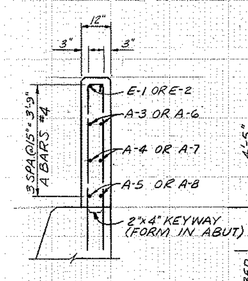


POSITION DOWEL
ELEVATION
SCALE: 1"=1'-0"

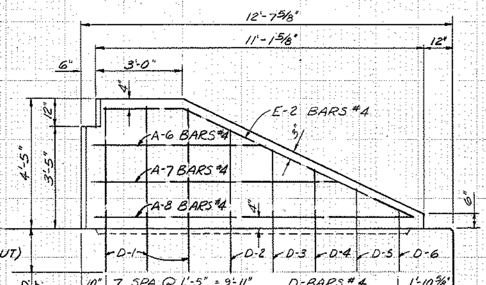
SEE SHEET #7 FOR GENERAL NOTES-ABUTMENTS & PIERS



SLOPEWALL DETAIL
CURB SIDE
SCALE: ½"=1'-0"



END VIEW
SCALE: ½"=1'-0"



SLOPEWALL DETAILS
SIDEWALK SIDE
SCALE: ½"=1'-0"

SUBSTRUCTURE CONCRETE QUANTITIES	
POUR	CU. YDS
A	26.3
B	21.1
C	1.2
D	1.4
TOTAL	50.0

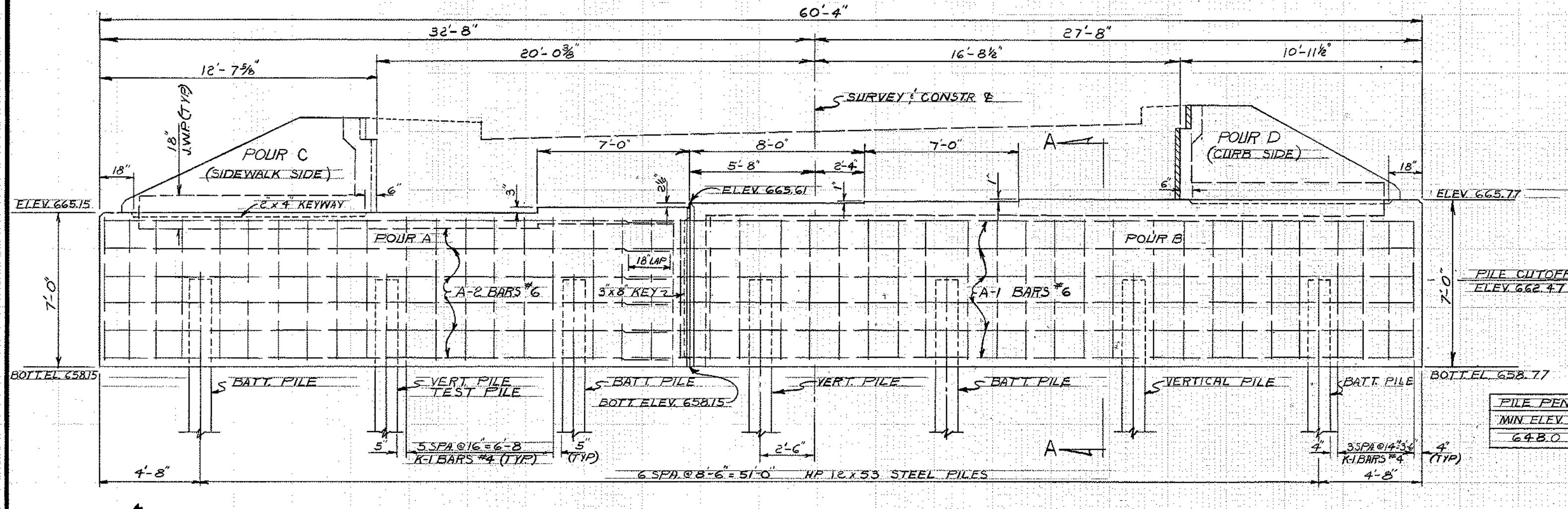
PILE QUANTITIES	NO. PILES	EST. LENGTH EA. FURN. & DRIVEN	TOTAL EST. LENGTH FURN. & DRIVEN
BATTER	4	22	88
VERTICAL	2	22	44
TEST	1	32	32
TOTAL			164
SPLICES	6		

MISCELLANEOUS QUANTITIES ITEM	UNIT	AMOUNT
JOINT WATERPROOFING	SQ. FT.	80
CLEAR PROTECTIVE COATING FOR SUBSTRUCTURE CONCRETE	SQ. FT.	150
UNCLASSIFIED FOUNDATION EXCAV.	CU. YDS	150
REMOVAL OF STRUCTURES INCL. ABUT. B	LUMP SUM	
STRUCTURE BACKFILL-(C.I.P.)	CU. YDS.	300
PLAIN RIPRAP	SQ. YDS.	440

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

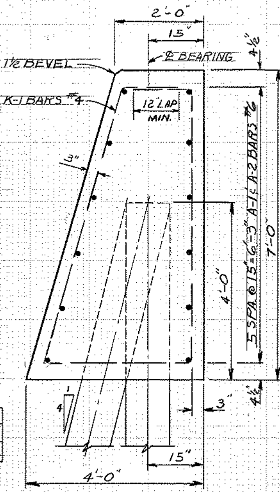
ABUTMENT A

DATE 4-25-75 SHEET 5 OF 15
DRAWN BY T.R.H.
PLAN FILE 79-118-1

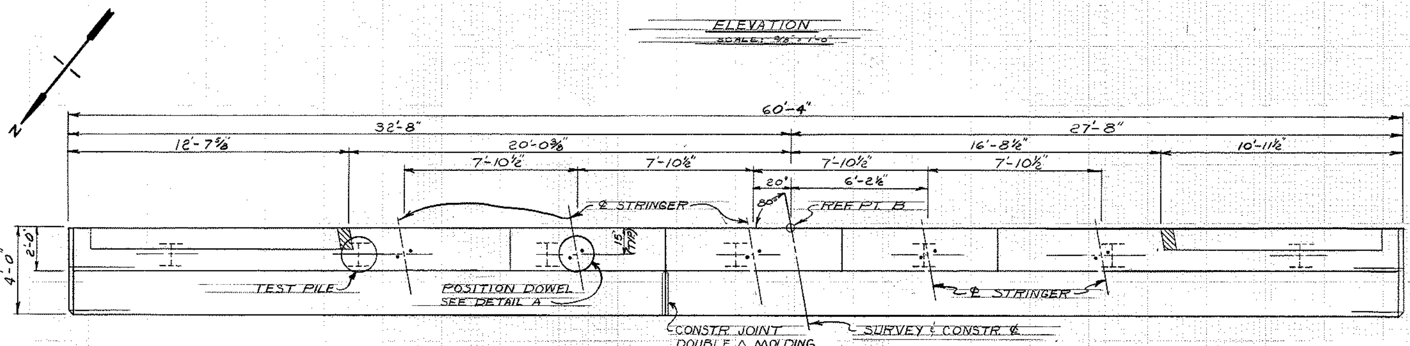


ELEVATION
SCALE: 3/16" = 1'-0"

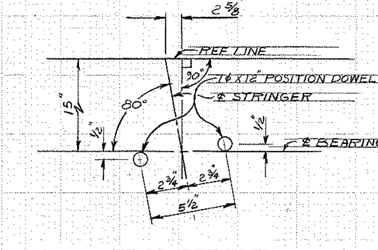
PILE PENATRATION	
MIN. ELEV.	EST. ELEV.
648.0	640.0



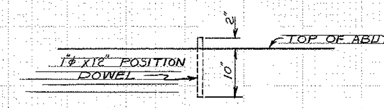
SECTION A-A
SCALE: 3/4" = 1'-0"



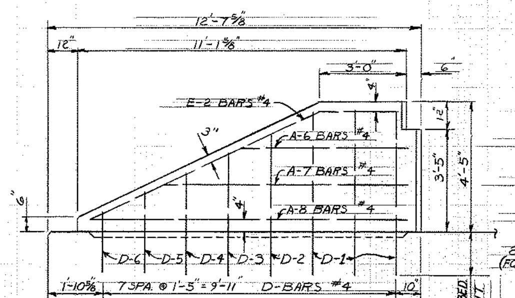
PLAN
SCALE: 3/16" = 1'-0"



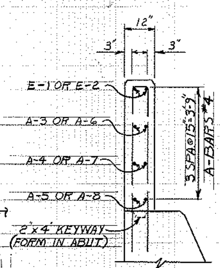
DETAIL A
SCALE: 3" = 1'-0"



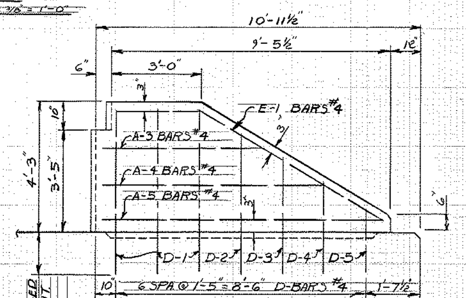
POSITION DOWEL ELEVATION
SCALE: 1" = 1'-0"



SLOPEWALL DETAIL
SIDEWALK SIDE
SCALE: 1/2" = 1'-0"



END VIEW
SCALE: 1/2" = 1'-0"



SLOPEWALL DETAIL
CURB SIDE
SCALE: 1/2" = 1'-0"

SUBSTRUCTURE CONCRETE QUANTITIES

POUR	CU. YDS.
A	21.2
B	27.2
C	1.4
D	1.2
TOTAL	51.0

PILE QUANTITIES

	NO. PILES	EST. LENGTH EA. FURN. & DRIVEN	TOTAL EST. LENGTH FURN. & DRIVEN
BATTER	4	22	88
VERTICAL	2	22	44
TEST	1	32	32
TOTAL			164
SPLICES 6			

MISCELLANEOUS QUANTITIES

ITEM	UNIT	AMOUNT
JOINT WATERPROOFING	SQ. FT.	80
CLEAR PROTECTIVE COATING FOR SUBSTRUCTURE CONCRETE	SQ. FT.	150
UNCLASSIFIED FOUNDATION EXCAV.	CU. YDS.	160
STRUCTURE BACKFILL (CIP)	CU. YDS.	300
PLAIN RIPRAP	SQ. YDS.	550

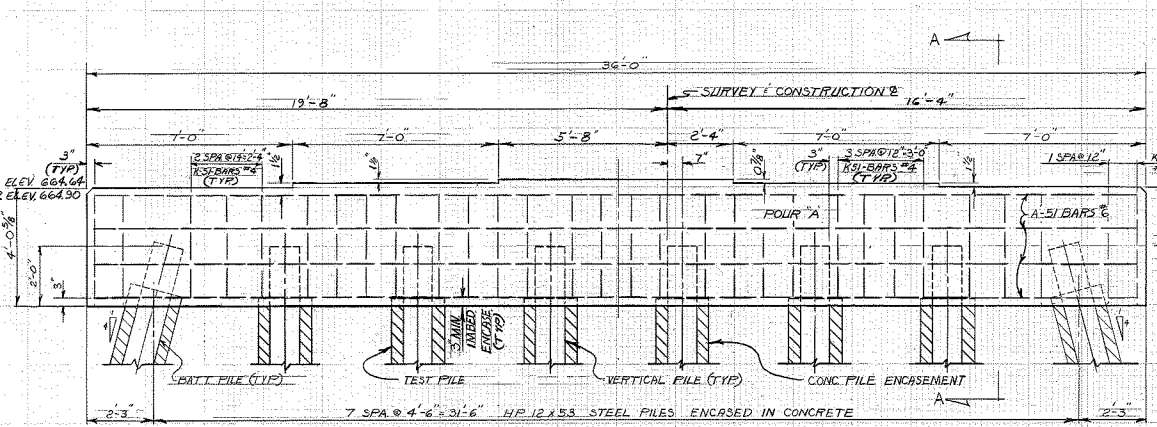
SEE SHT. #7 FOR GENERAL NOTES - ABUTMENTS & PIERS.

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET   ALPENA, MICHIGAN

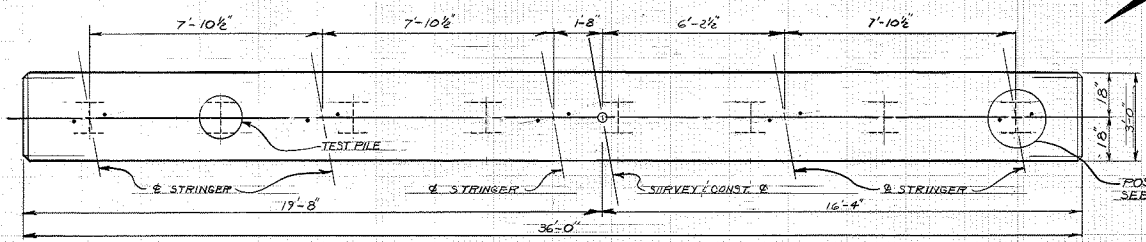
ABUTMENT "B"

DATE MAY 2, 1975   SHEET 6 OF 15
DRAWN BY R.G.R.
PLAN FILE 79-118-1

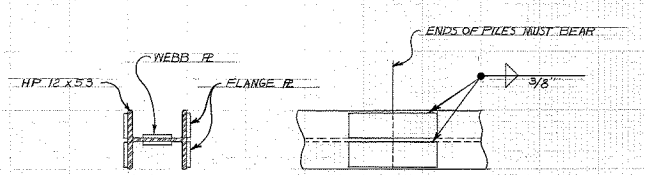
PILE PENETRATION		
	MIN. ELEV.	EST. ELEV.
PIER 1	638.0	630.0
PIER 2	638.0	630.0



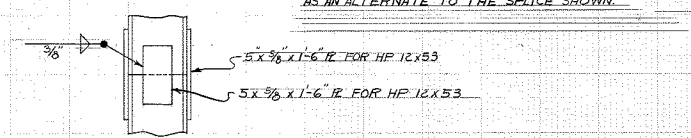
ELEVATION
SCALE: 1/4" = 1'-0"



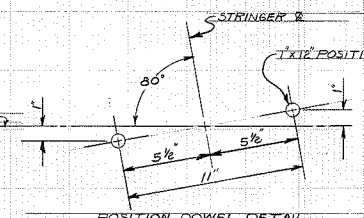
PLAN
SCALE: 1/8" = 1'-0"



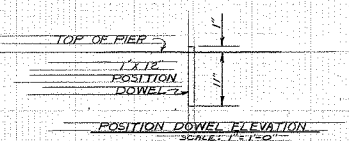
NOTE: BUTT WELDED SPLICES AS DESCRIBED IN THE STANDARD SPECIFICATIONS, WILL BE PERMITTED AS AN ALTERNATE TO THE SPLICE SHOWN.



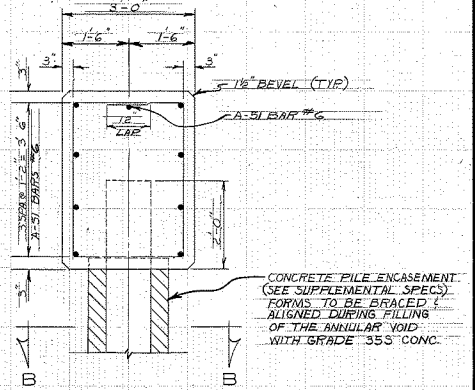
PILE SPLICE DETAILS



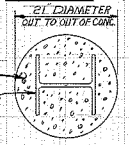
POSITION DOWEL DETAIL
SCALE: 3"=1'-0"



POSITION DOWEL ELEVATION
SCALE: 1"=1'-0"



SECTION A-A
SCALE: 3/4"=1'-0"



SECTION B-B

NOTE: FIBER FORMS MAY BE USED FOR FORMING THE PILE ENCASEMENT (FIBER FORMS MUST BE REMOVED AFTER THE CONCRETE IS PLACED)

EIGHTEEN-INCH ID CLASS A CULVERT PIPE (CONCRETE) CLASS II, ASTM C76, MAY BE USED AS LEFT IN PLACE FORMS. THE CULVERT PIPE SHALL HAVE TONGUE-AND-GROOVE TYPE JOINT.

PILE QUANTITIES - (60 TONS)			
	NO. PILES	EST. LENGTH EA FURN. & DRIVEN	TOTAL EST. LEN. FURN. & DRIVEN
PIER #1			
VERTICAL	5	33	165
BATTER	2	34	68
TEST	1	43	43
PIER #2			
VERTICAL	5	33	165
BATTER	2	34	68
TEST	1	43	43
TOTAL			552
SPLICES 1% EACH			

MISCELLANEOUS QUANTITIES			
		AMOUNT	
ITEM	UNIT	PIER #1	PIER #2
CONC. PILE ENCASEMENT	LUMP SUM		
CLEAR PROTECTIVE COATING FOR SUBSTR. CONC.	SQ. FT.	795	805

GENERAL NOTES: ABUTMENTS AND PIERS

1. J.W.P. DENOTES JOINT WATERPROOFING.
2. FOR BEVEL AND MOLDING DETAILS SEE SHEET R13.
3. ADJUST THE SPACING OF REINFORCING STEEL AS REQUIRED TO PERMIT PLACING OF POSITION DOWELS.
4. THE CONCRETE SURFACE BELOW AN ELASTOMERIC BEARING SHALL BE BROOM FINISHED AND SHALL BE CLEAN AND DRY AT THE TIME OF INSTALLATION OF THE BEARING.
5. ALL PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 60 TONS.
6. AFTER THE STEEL PILES ARE DRIVEN AND CUT OFF, THE PORTIONS TO BE EMBEDDED IN CONCRETE SHALL BE THOROUGHLY CLEANED OF ALL SCALE AND DIRT TO INSURE THAT A SATISFACTORY BOND BETWEEN THE CONCRETE AND STEEL WILL BE OBTAINED.
7. STEEL H PILES SHALL BE 12" H SECTIONS WEIGHING 53 POUNDS PER FOOT.
8. PILES ARE TO BE DRIVEN TO SUCH ACCURACY THAT THE ENDS OF THE PILES TO BE EMBEDDED IN THE CONCRETE ARE WITHIN 3" OF THE LOCATION SHOWN ON THE PLANS.
9. CLEAR PROTECTIVE COATING FOR SUBSTRUCTURE CONCRETE IS TO BE APPLIED TO THE BRIDGE SEAT AND FRONT FACE OF THE ABUTMENT BETWEEN FACIA LINES TO 6" BELOW THE FINISHED GROUND LINE.
10. CLEAR PROTECTIVE COATING FOR SUBSTRUCTURE CONCRETE IS TO BE APPLIED TO THE COMPLETE AREA OF THE PIER CONCRETE AND CONCRETE PILE ENCASEMENT ABOVE WATER LINE.
11. DRILLING HOLES FOR POSITION DOWELS WILL NOT BE PERMITTED.
12. REMOVAL OF PORTIONS OF EXISTING SUBSTRUCTURE WITHIN THE OUTLINE OF THE FOUNDATION EXCAVATION LIMITS AND BETWEEN GROUND ELEVATION AND BOTTOM OF PROPOSED EXCAVATION IS INCLUDED IN THE QUANTITY OF UNCLASSIFIED FOUNDATION EXCAVATION. REMOVAL OF ALL OTHER PORTIONS OF THE EXISTING STRUCTURE IS INCLUDED IN THE ITEM "REMOVAL OF STRUCTURES".

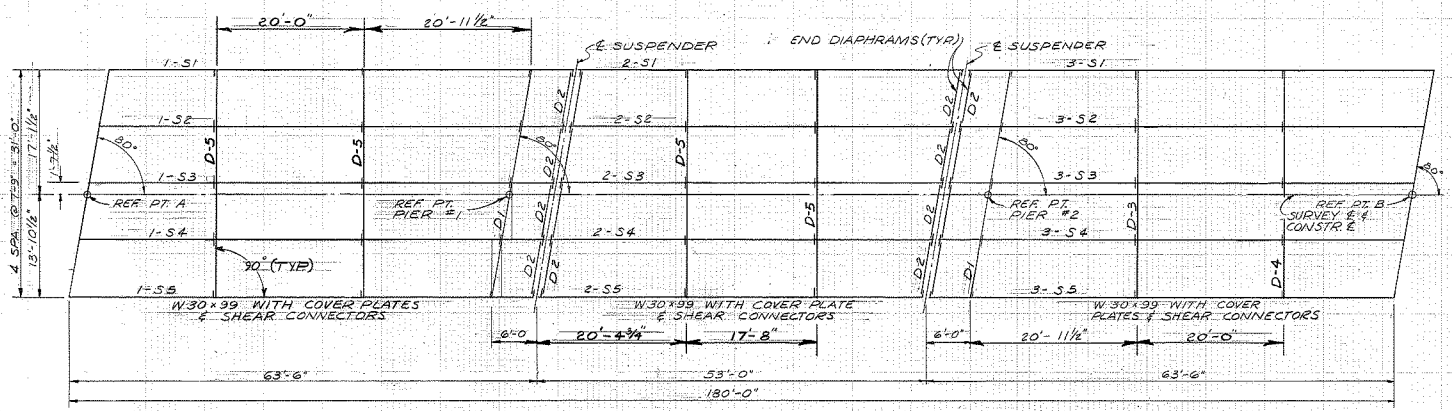
SUBSTRUCTURE CONCRETE QUANTITIES			
	CU. YDS.		
POUR	PIER #1	PIER #2	TOTAL
A	16.5	16.5	33.0

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

PIER 1 OR 2

DATE MAR 27, 1975 SHEET 7 OF 15
DRAWN BY R.S.R.
PLAN FILE 79-118-1

B1 of 79-13-20



STRUCTURAL STEEL LAYOUT
SCALE : 1/8" = 1'-0"

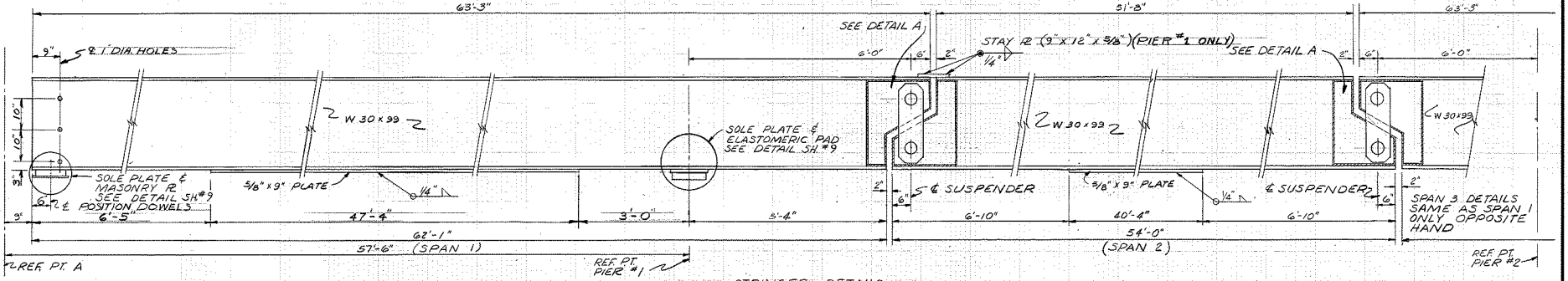
N

GENERAL NOTES - STRUCTURAL STEEL

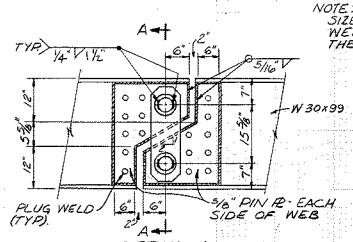
1. DESIGN: MICHIGAN DEPARTMENT OF STATE HIGHWAYS SPECIFICATIONS FOR DESIGN OF HIGHWAY BRIDGES - 1958 EDITION AND CURRENT AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (HS20-44 LOADING).
2. FABRICATION: MICHIGAN DEPARTMENT OF STATE HIGHWAYS STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION - 1973 EDITION.
3. SHOP CONNECTIONS SHALL BE WELDED AS SHOWN ON THE PLANS.
4. FIELD CONNECTIONS SHALL BE BOLTED WITH 3/4" HIGH-STRENGTH BOLTS (EXCEPT AS NOTED). THE USE OF N-DRIV FASTENING SYSTEM FOR HIGH-STRENGTH BOLTS IS PERMITTED.
5. THE BEAMS ARE TO HAVE A PARABOLIC CAMBER WITH ORDINATES AS SHOWN ON THE CAMBER DIAGRAM. THIS CAMBER IS TO BE MEASURED WITH THE BEAM LYING ON ITS SIDE. ALLOWABLE CAMBER TOLERANCE SHALL BE ± 1/4" AT CENTER. HEATING IS TO BE USED, IF NECESSARY, TO ASSURE CAMBER OF PERMANENCY WITHIN THE ABOVE TOLERANCE. THE DEAD LOAD DEFLECTION OF THE BEAMS ALONE, WITH ALL STEEL ERECTED IS AS SHOWN ON THE CAMBER DIAGRAM.
6. STEEL IN ANCHOR BOLTS MAY BE ASTM A-307.
7. THE QUANTITY STRUCTURAL STEEL INCLUDES:

STEEL	129,850	#
BRONZE	150	#
LEAD	0	#
TOTAL	130,000	#

8. POSITION DOWELS AND ANCHOR BOLTS (INCLUDING NUTS AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION A-153.
9. ALL STEEL MATERIAL USED FOR BEARINGS, WITH EXCEPTION OF PORTION WELDED TO BEAMS, SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION A-123. GALVANIZING SHALL BE APPLIED AFTER FABRICATION OF BEARING. MILL SCALE AND FOREIGN MATERIAL SHALL BE REMOVED PRIOR TO GALVANIZING. ALL WORK AND MATERIAL REQUIRED FOR PREPARATION AND GALVANIZING ARE INCIDENTAL.
10. BRONZE FOR WASHERS SHALL BE ASTM B-100 OR ASTM B-22.
11. STRUCTURAL STEEL SHALL CONFORM TO ASTM A-588 EXCEPT THAT STEEL FOR GALVANIZED PORTIONS OF BEARINGS MAY BE ASTM A-36.
12. STRUCTURAL STEEL SHALL NOT BE PAINTED.

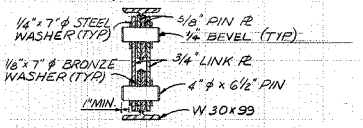


STRINGER DETAILS
SCALE : 3/4" = 1'-0"

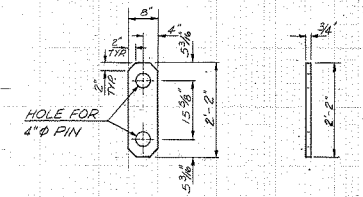


DETAIL A
SCALE : 3/4" = 1'-0"

NOTE:
SIZE AND SPACING OF THE PLUG WELDS SHALL BE ACCORDING TO THE A.W.S. CURRENT SPECIFICATIONS.



SECTION A-A
SCALE : 3/4" = 1'-0"



LINK PLATE
SCALE : 3/4" = 1'-0"

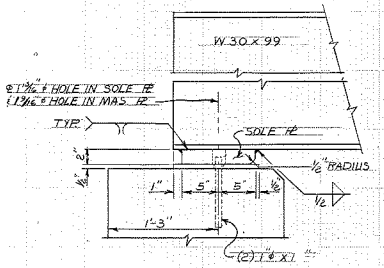
QUANTITIES		
ITEM	UNIT	QTY.
STRUCTURAL STEEL-FURN. FAB. & ERECT.	LBS.	130,000
SHEAR DEVELOPERS	LUMP SUM	
2" ELASTOMERIC BEARING	SQ.FT.	15

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

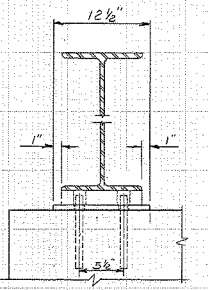
STRUCTURAL STEEL DETAILS

DATE 4-8-75 SHEET 8 OF 15
DRAWN BY T.R.H.
PLAN FILE 79-118-1

B1 of 79-13-20



ELEVATION AT ABUTMENT
SOLE & MASONRY PL DETAIL
N.T.S.

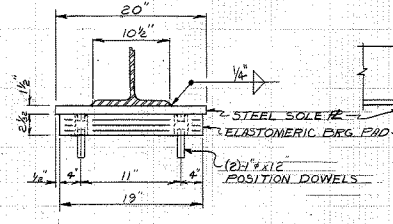


SIDE VIEW
N.T.S.

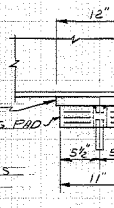
NOTES:

ELASTOMER FOR LAMINATED PAD SHALL BE 50 DUROMETER HARDNESS.

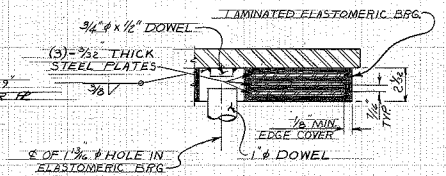
STEEL SOLE PLATES AND DOWELS ARE INCLUDED IN STRUCTURAL STEEL WEIGHTS, SHEET NUMBER 8.



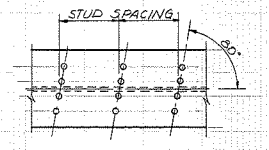
ELEVATION AT PIER
SOLE PL & ELASTOMERIC BRG DETAIL
N.T.S.



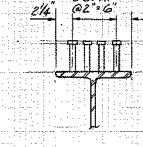
SIDE VIEW
N.T.S.



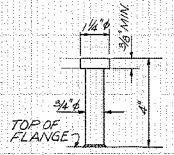
ELASTOMERIC BRG DETAIL
N.T.S.



PLAN OF STUDS
SCALE: 1 1/2" = 1'-0"



SECTION
SCALE: 1 1/2" = 1'-0"



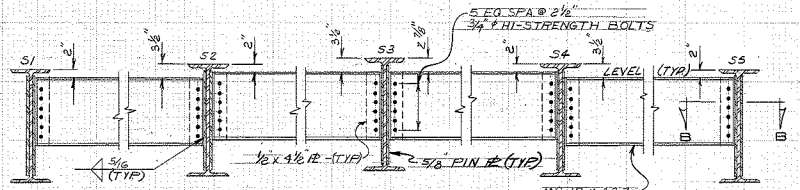
DETAIL OF STUD
SCALE: 3/8" = 1"

NOTES:

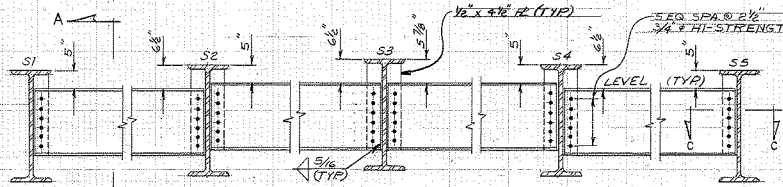
FURNISHING OF STUDS AND WELDING OF STUDS TO BEAM FLANGES IS INCLUDED IN BID ITEM "SHEAR DEVELOPERS."

THE WEIGHT OF THE SHEAR DEVELOPERS IS NOT INCLUDED IN THE STRUCTURAL STEEL WEIGHT.

SEE SHT. #10 FOR DIAPHRAGMS D-3 & D-4

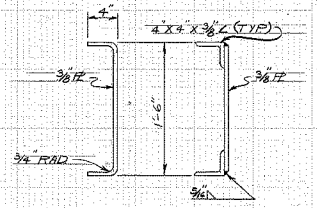


END DIAPHRAGMS D-2
SCALE: 3/4" = 1'-0"

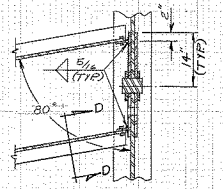


INTERMEDIATE DIAPHRAGMS D-1 & D-5
SCALE: 3/4" = 1'-0"

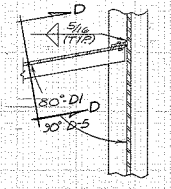
NOTE: AT PIERS 1 & 2 EXTEND 1/2" X 4 1/2" PL TO BOTTOM FLANGE. DO NOT WELD TO TOP FLANGE.



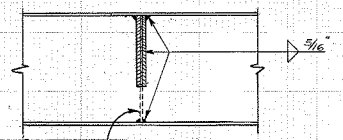
OPTIONAL DIAPHRAGMS
SECTION A-A
SCALE: 1/2" = 1'-0"



SECTION B-B
SCALE: 3/4" = 1'-0"

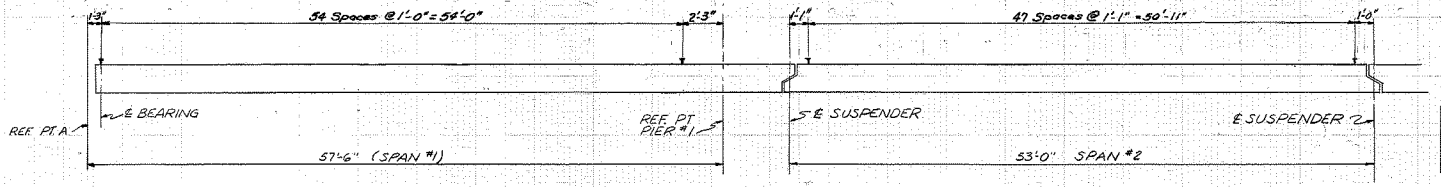


SECTION C-C
SCALE: 3/4" = 1'-0"



EXTEND PL TO BOTTOM FLANGE AT PIER 1 & 2

SECTION D-D
SCALE: 3/4" = 1'-0"



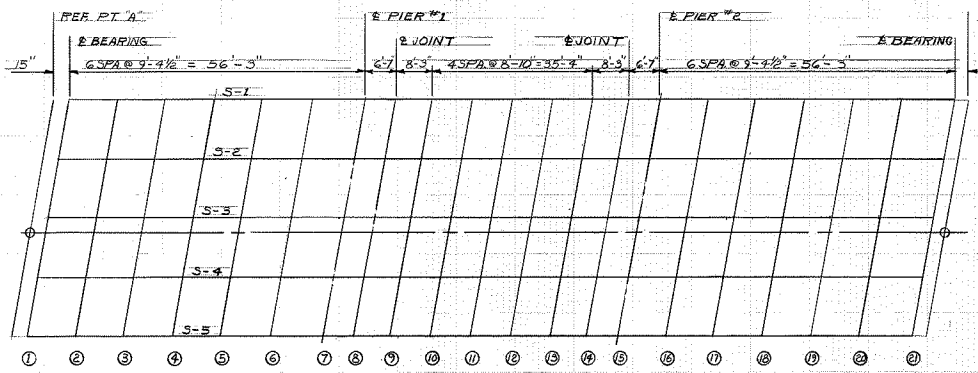
SPAN #3 DETAILS SAME AS SPAN #1 ONLY OPPOSITE HAND

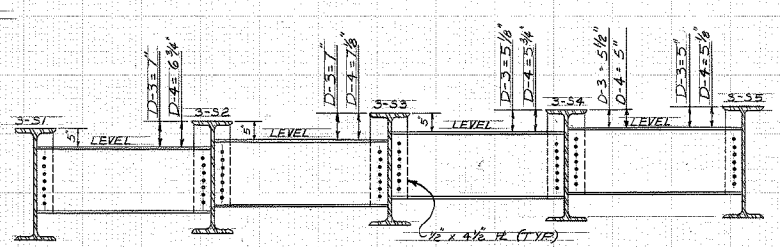
STUD SHEAR DEVELOPER DETAILS
SCALE: 3/16" = 1'-0"

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

STRUCTURAL STEEL DETAILS

DATE APRIL 11, 1975 SHEET 9 OF 15
DRAWN BY R.G.R.&T.R.H.
PLAN FILE 79-118-1





INTERMEDIATE DIAPHRAGMS D-3 & D-4

SCALE: 3/16" = 1'-0"

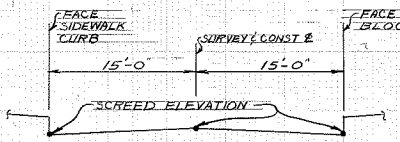
BOTTOM OF SLAB ELEVATIONS @ STRINGERS

LINE	STRINGER				
	S-1	S-2	S-3	S-4	S-5
REF. PT. A	67.25	67.38	67.50	67.43	67.29
1 (centerline bearing)	67.26	67.39	67.51	67.44	67.30
2	67.30	67.43	67.55	67.48	67.34
3	67.38	67.51	67.63	67.56	67.42
4	67.48	67.61	67.73	67.66	67.52
5	67.46	67.59	67.71	67.64	67.50
6	67.45	67.58	67.70	67.63	67.49
7 (centerline pier)	67.48	67.61	67.73	67.66	67.52
8 (centerline joint)	67.49	67.62	67.74	67.67	67.53
9	67.53	67.66	67.78	67.71	67.57
10	67.60	67.73	67.85	67.78	67.64
11	67.70	67.83	67.95	67.88	67.74
12	67.68	67.81	67.93	67.86	67.72
13	67.67	67.80	67.92	67.85	67.71
14 (centerline joint)	67.69	67.82	67.94	67.87	67.73
15 (centerline pier)	67.74	67.87	67.99	67.92	67.78
16	67.78	67.93	68.06	68.02	67.92
17	67.86	68.01	68.17	68.15	68.08
18	67.95	68.12	68.29	68.30	68.27
19	67.93	68.11	68.29	68.34	68.33
20	67.92	68.12	68.32	68.39	68.42
21 (centerline bearing)	67.95	68.15	68.37	68.47	68.53
REF. PT. B	67.95	68.16	68.38	68.48	68.55

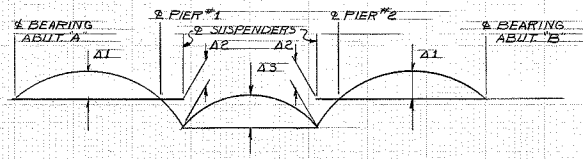
BOTTOM OF SLAB ELEVATIONS BASED ON STRUCTURAL STEEL ERECTED (NO OTHER LOADS APPLIED).

SCREED ELEVATIONS

LINE	15' LT. SIDEWALK SIDE	SURVEY CENTER-LINE	15' RT. BRUSH BLOCK SIDE
REF. PT. A	668.00	668.24	667.98
1 (centerline bearing)	68.01	68.25	67.99
2	68.05	68.29	68.03
3	68.12	68.36	68.10
4	68.21	68.45	68.19
5	68.20	68.44	68.18
6	68.20	68.44	68.18
7 (centerline pier)	68.23	68.47	68.21
8 (centerline joint)	68.23	68.47	68.21
8 (centerline joint)	68.24	68.48	68.22
9	68.28	68.52	68.26
10	68.34	68.58	68.32
11	68.44	68.68	68.42
12	68.42	68.66	68.40
13	68.42	68.66	68.40
14 (centerline joint)	68.44	68.68	68.42
14 (centerline joint)	68.43	68.67	68.41
15 (centerline pier)	68.49	68.73	68.47
16	68.54	68.81	68.61
17	68.60	68.90	68.77
18	68.69	69.02	68.95
19	68.68	69.03	69.03
20	68.69	69.07	69.13
21 (centerline bearing)	68.71	69.12	69.25
REF. PT. B	68.72	69.13	69.27



SCREED ELEVATION LOCATION

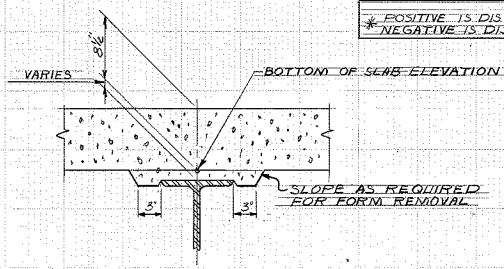


CAMBER & DEFLECTION DIAGRAM

BEAM CAMBER ORDINATES *

STAGE	Δ1	Δ2	Δ3
CAMBER	+1½"	-¼"	+1½"
STRUCTUAL STEEL ERECTED (NO OTHER LOADS APPLIED)	+1 3/16"	-¼"	+1 3/16"
FORMS, SHEAR DEVELOPERS AND STEEL REINFORCEMENT IN PLACE (ALL SPANS COMPLETE)	+1⅛"	-3/16"	+13/16"
DECK CONCRETE PLACED IN SPAN #2 ONLY	+1⅛"	-5/16"	+1/8"
DECK CONCRETE PLACED (ALL SPANS COMPLETE	+¼"	0	+⅛"

* POSITIVE IS DISTANCE ABOVE STRAIGHT LINE
NEGATIVE IS DISTANCE BELOW STRAIGHT LINE



TYPICAL SECTION

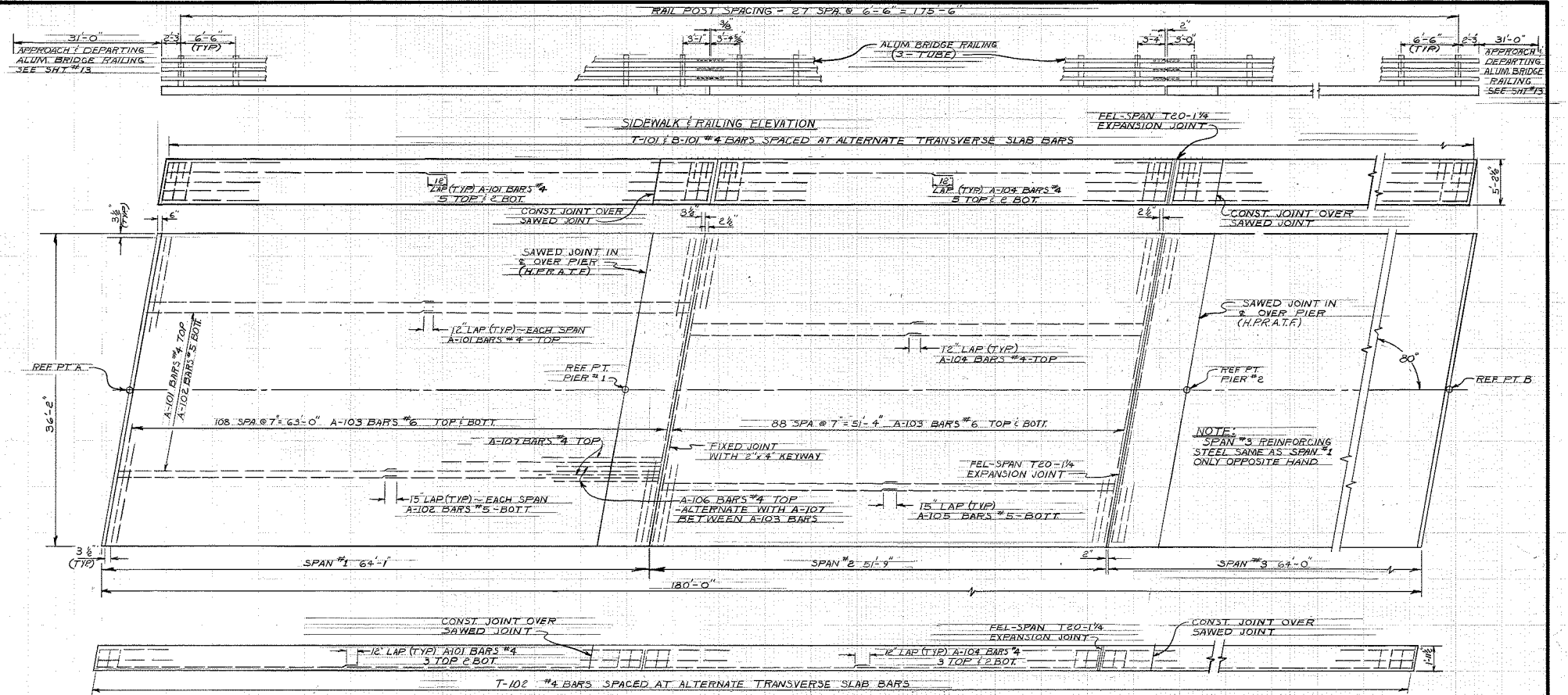
SCALE: 1½" = 1'-0"

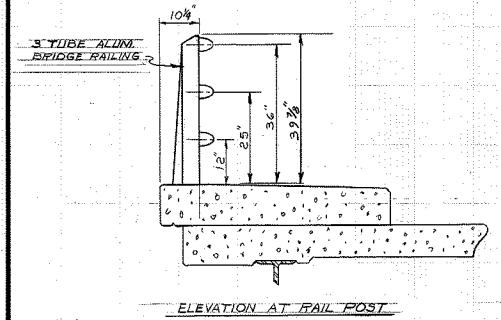
R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

STRUCTURAL STEEL & SUPERSTRUCTURE

DATE MAY 14, 1975 SHEET 10 OF 15
DRAWN BY A. C. R. PLAN FILE 79-118-1

B1 of 79-13-20





ELEVATION AT RAIL POST

PLAN OF SPAN #1-2-3

SCALE: 3/16" = 1'-0"

NOTE: PROVIDE FALSE JOINTS IN BRUSH BLOCK AND SIDEWALK AT ⅓ POINTS OF EACH SPAN

GENERAL NOTES - SUPERSTRUCTURE

1. JWP DENOTES JOINT WATERPROOFING.
2. H.P.R.A.T.F. DENOTES HOT-POURED RUBBER ASPHALT TYPE FILLER.
3. SIDEWALK POURS SHALL NOT BE CAST UNTIL SLAB CONCRETE HAS ATTAINED AT LEAST 50% OF ITS DESIGN STRENGTH AS DETERMINED BY TABLE 7.01-4 OF THE STANDARD SPECIFICATIONS.
4. SCREEDS AFFECTED BY LOADS IN OTHER SPANS ARE TO BE SET TO THE ELEVATIONS SHOWN BEFORE CASTING ANY CONCRETE. CONCRETE IN THE SUSPENDED SPAN IS TO BE CAST BEFORE THE CONCRETE IN THE ANCHOR SPANS.
5. ALPHABETICAL DESIGNATION OF POURS IS NOT TO BE CONSTRUED AS A POUR SEQUENCE.
6. DECK POURS ARE TO BE MADE IN THE FOLLOWING SEQUENCE: A, K, F, C, I, E, G, B, D, H, AND J.
7. THE CONTRACTOR IS TO PROVIDE A SAWED JOINT 1/2" DEEP BY 1/8" WIDE (MIN.) IN THE TOP OF SLAB OVER AND PARALLEL TO THE CENTER-LINE OF PIERS. THE JOINT IS TO BE SAWED BEFORE CASTING OF SIDEWALKS AND IS TO BE FILLED WITH HOT-POURED RUBBER ASPHALT TYPE FILLER (INCIDENTAL).
8. BACKWALL CONCRETE IS TO BE POURED BEFORE CASTING CONCRETE IN CENTER SPAN.
9. BOTTOM OF SLAB ELEVATIONS ARE BASED ON THE CONDITION THAT ALL STRUCTURAL STEEL HAS BEEN ERECTED, BUT NO OTHER LOADS APPLIED. THESE ELEVATIONS INCLUDE ALLOWANCES FOR DEFLECTIONS DUE TO FORMS, STEEL REINFORCEMENT, DECK CONCRETE AND RAILING.
10. PROTECTIVE TREATMENT FOR BRIDGE DECKS IS TO BE APPLIED TO ALL SUPERSTRUCTURE CONCRETE SURFACES BETWEEN INSIDE FACES OF RAILINGS.
11. ANCHORAGE FOR GUARD RAIL IS TO BE PROVIDED IN RAILING. FOR DETAILS SEE SHEET NO. 13.
12. EXPANSION JOINT DEVICE IS TO BE "FEL-SPAN MODEL T 20 - 1 1/4" AS MANUFACTURED BY THE CONSTRUCTION PRODUCTS, DIVISION OF FEL-PRO, INC.

QUANTITIES

ITEM	UNIT	QTY
BRIDGE RAILING, ALUMINUM	LIN.FT.	484
EXPANSION JOINT DEVICE T20-1¼	LIN.FT.	40
PROTECTIVE TREATMENT FOR BRIDGE DECK	SQ.FT.	6700
FORMING, FINISHING & CURING SUPERSTRUCTURE CONC.	LUMP SUM	
JOINT WATERPROOFING	SQ.FT.	110

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

SUPERSTRUCTURE

DATE MAY 2, 1975 SHEET 11 OF 15
DRAWN BY R.G.R. PLAN FILE 79-118-1

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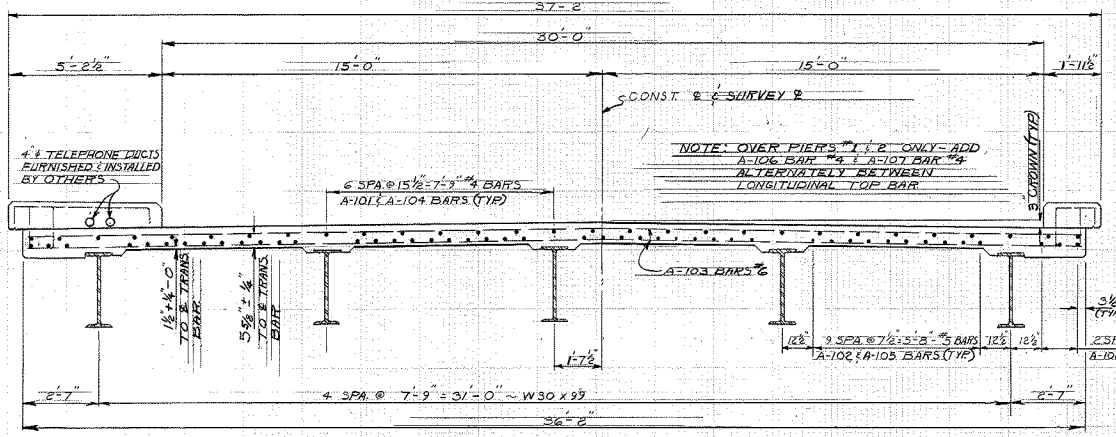
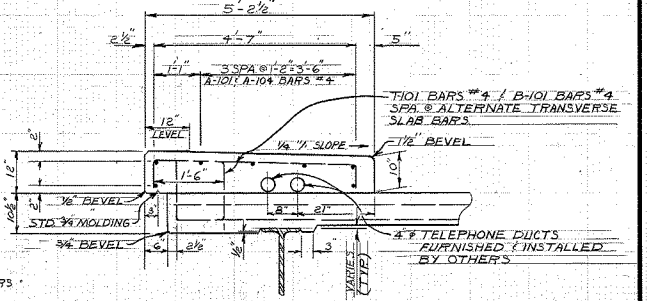
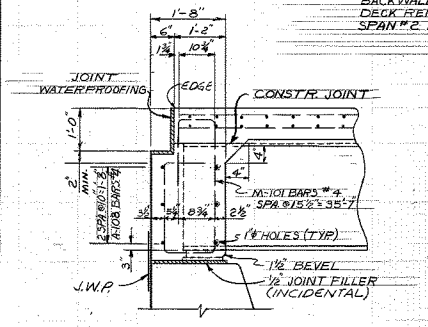




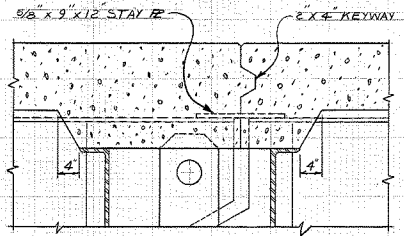
SECTION AT SIDEWALK
SCALE: ¾"=1'-0"

NOTE: CAST LOWER PORTION OF BACKWALL PRIOR TO PLACING DECK REINFORCING & CASTING SPAN #2 DECK CONCRETE

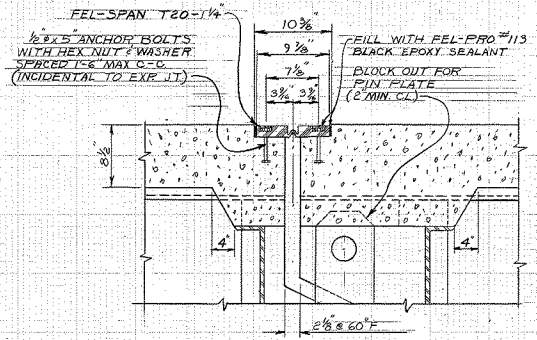
SECTION THRU DECK
SCALE: ½"=1'-0"



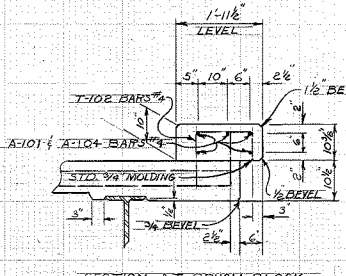
SECTION THRU BACKWALL
SCALE: ¾"=1'-0"



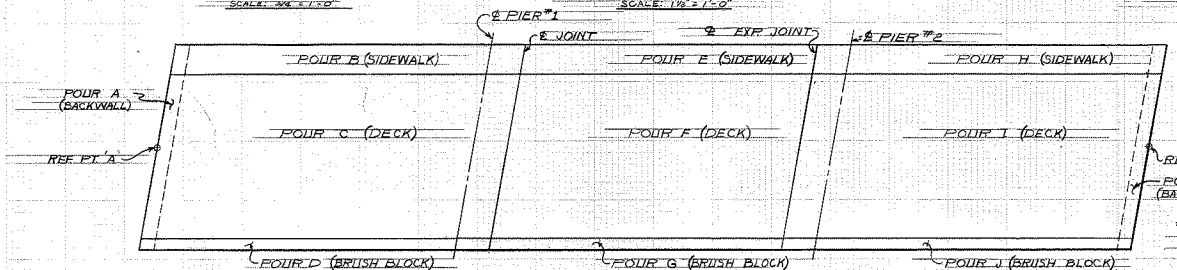
SECTION AT FIXED JOINT
SCALE: 1½"=1'-0"



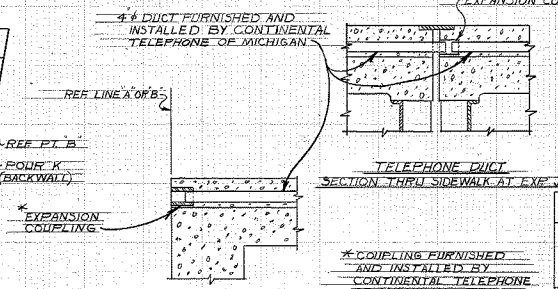
SECTION AT EXPANSION JOINT
SCALE: 1½"=1'-0"



SECTION AT BRUSH BLOCK
SCALE: ¾"=1'-0"



POUR DIAGRAM



TELEPHONE DUCT
SECTION THRU SIDEWALK AT EXP. JT.

TELEPHONE DUCT
SECTION THRU SIDEWALK AT REF. LINES

* COUPLING FURNISHED AND INSTALLED BY CONTINENTAL TELEPHONE OF MICHIGAN.

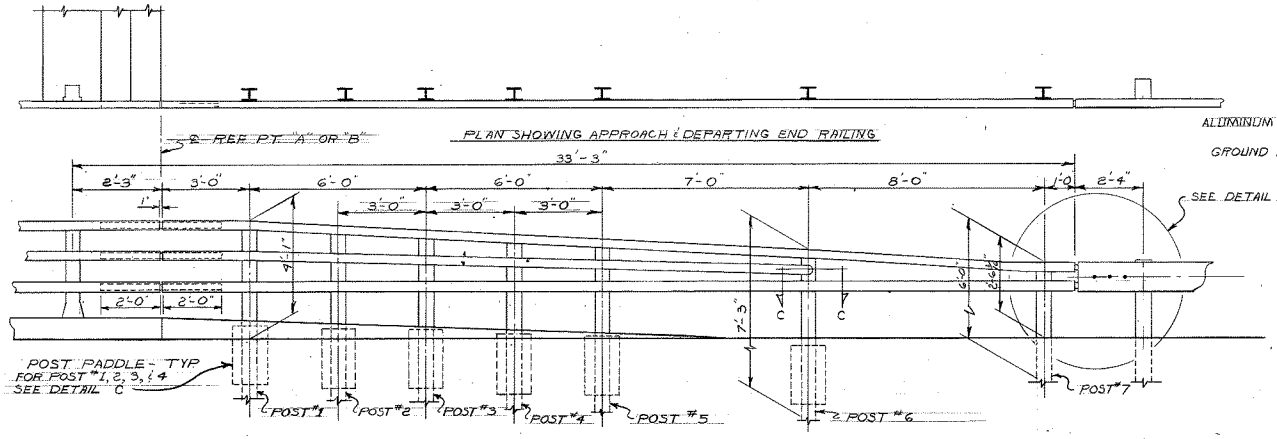
GRADE A CONCRETE (3SS) SUPERSTRUCTURE	
POUR	AMOUNT CU. YDS.
A	6.3
B	11.6
C	65.8
D	4.1
E	9.4
F	57.3
G	3.1
H	11.6
I	70.0
J	4.1
K	6.7
TOTAL	253.0

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

SUPERSTRUCTURE DETAILS

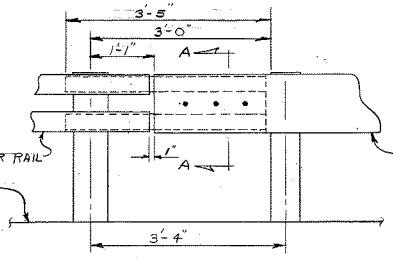
DATE APRIL 16, 1975 SHEET 12 OF 15
DRAWN BY R.G.R.
PLAN FILE 79-118-1

B1 of 79-13-20

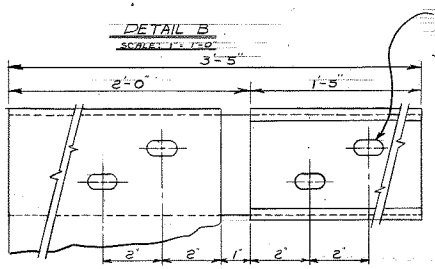


PLAN SHOWING APPROACH & DEPARTING END RAILING

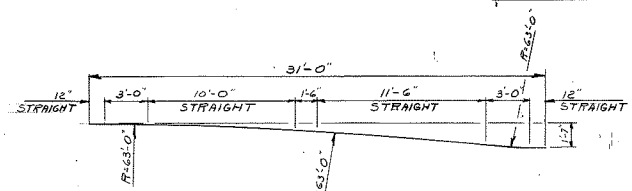
ELEVATION SHOWING APPROACH & DEPARTING END RAILING



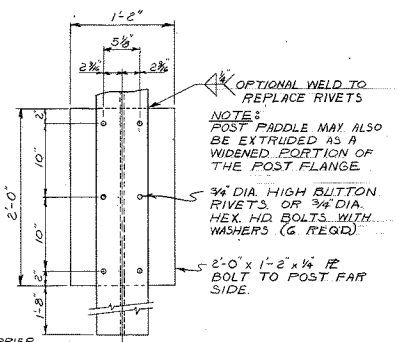
DETAIL B
SCALE: 1" = 1'-0"



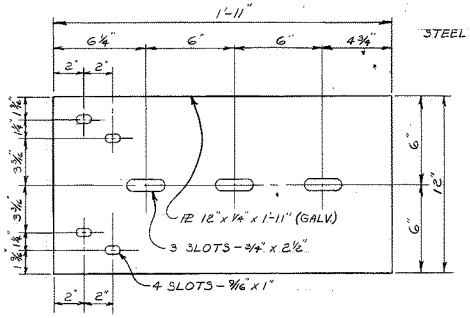
SPLICE BAR DETAIL B
SCALE: 12" = 1'
(BACKSIDE VIEW)



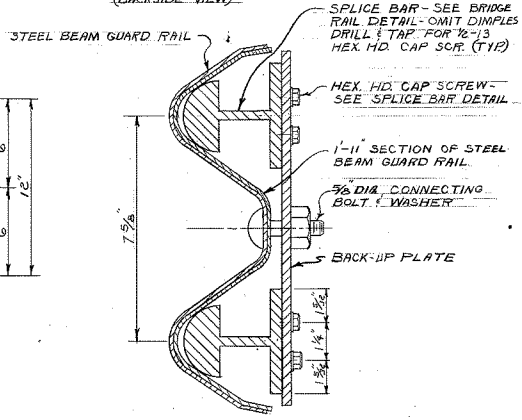
BENDING DIAGRAM - TOP RAIL
SCALE: 1/4" = 1'-0"



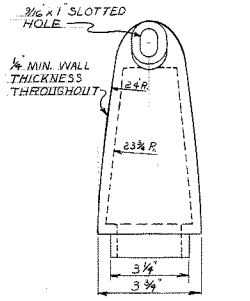
DETAIL C
SCALE: 1½" = 1'-0"

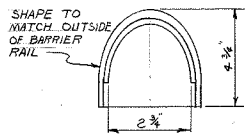


BACK-UP PLATE DETAIL
SCALE: ¼" = 1"

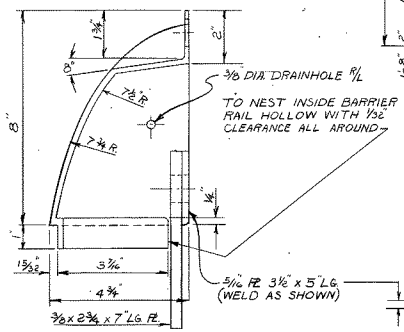


SECTION A-A
SCALE: 1½" = 1"

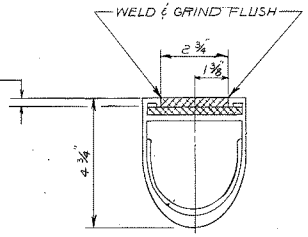




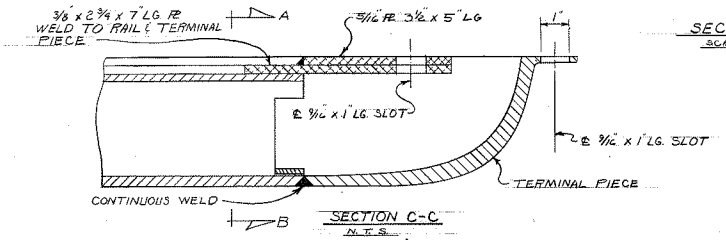
TERMINAL PIECE
N.T.S.



NOTE:
ALL RADII TO BE ¼" UNLESS OTHERWISE SPECIFIED.



VIEW A-B
N.T.S.



SECTION C-C
N.T.S.

R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

APPROACH & DEPARTING DETAILS FOR 3 TUBE ALUMINUM BRIDGE RAILING

DATE APRIL 24, 1975 SHEET 13 OF 15
DRAWN BY R.G.R.
PLAN FILE 79-118-1

B1 of 79-13-20

QUANTITIES		
ITEM	UNIT	AMOUNT
MACHINE GRADING (MODIFIED)	STA.	6.85
SUBBASE	CU. YD.	900
EMBANKMENT (C.I.P.)	CU. YD.	2000
AGGREGATE SURFACE CSE.	CU. YD.	730
BITUMINOUS AGGREGATE SURF. CSE.	TON	190
GALV. BEAM GUARD RAIL, TYPE B DET. 2	LIN. FT.	575
CLASS B SODDING	SQ. YD.	1900
TOPSOIL, FERTILIZING, SEEDING & MULCHING	ACRE	0.5
CEREAL RYE SEEDING	LBS.	170

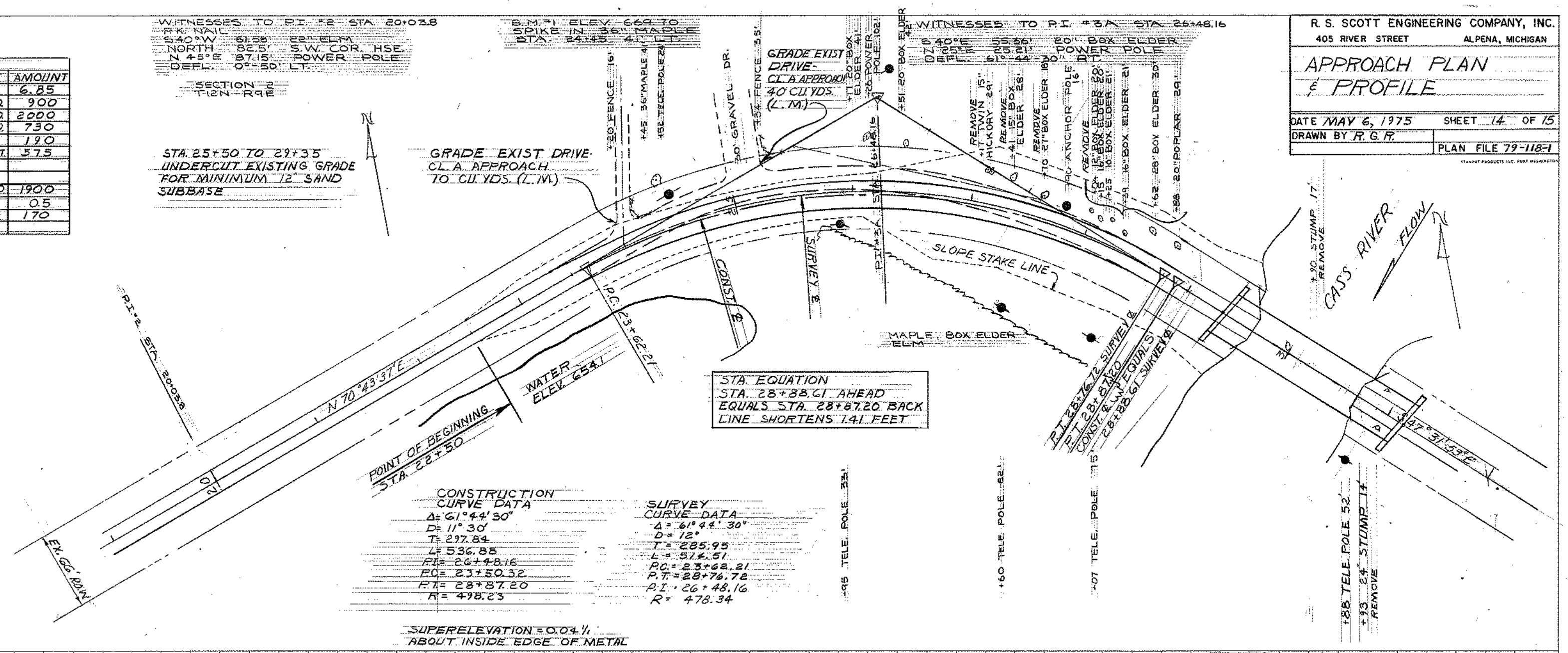
R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

APPROACH PLAN & PROFILE

DATE MAY 6, 1975 — SHEET 14 OF 15

DRAWN BY R. G. R.

PLAN FILE 79-118-1



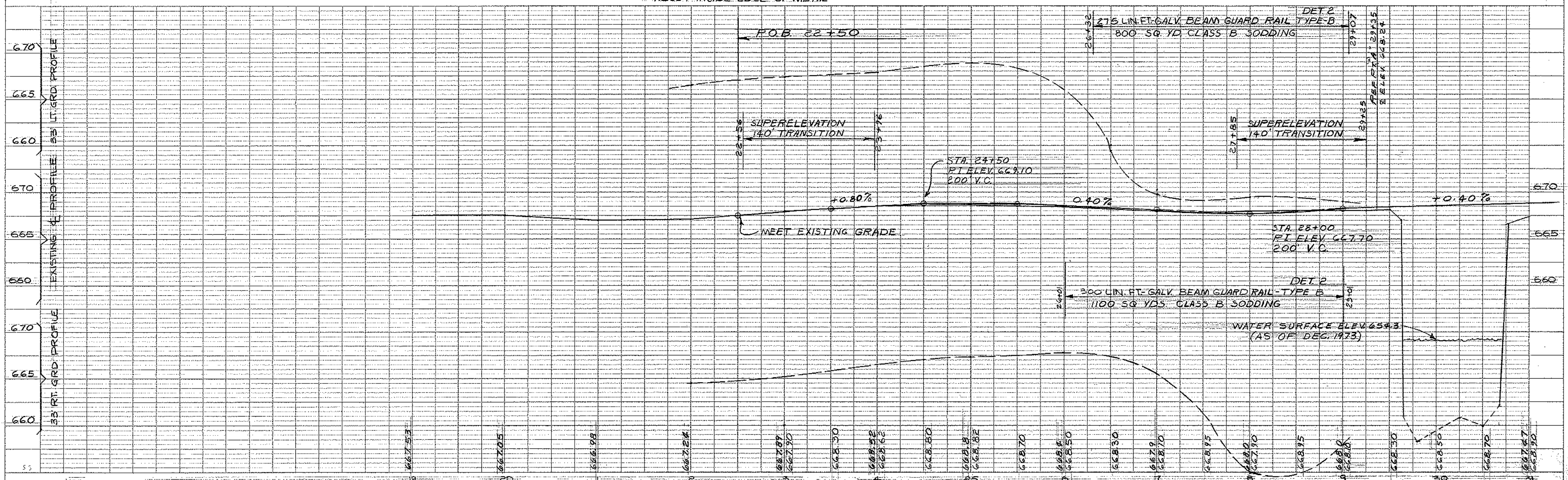
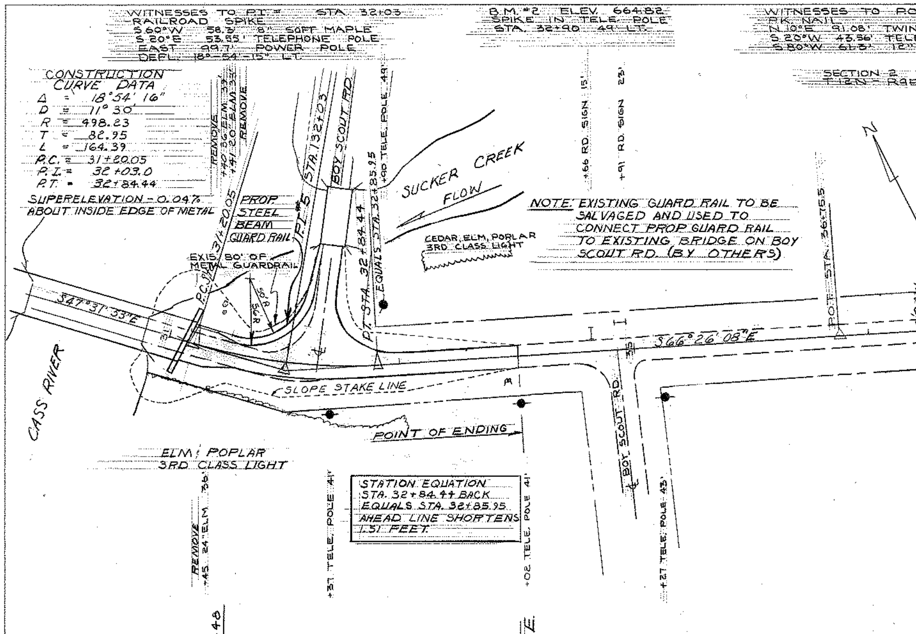
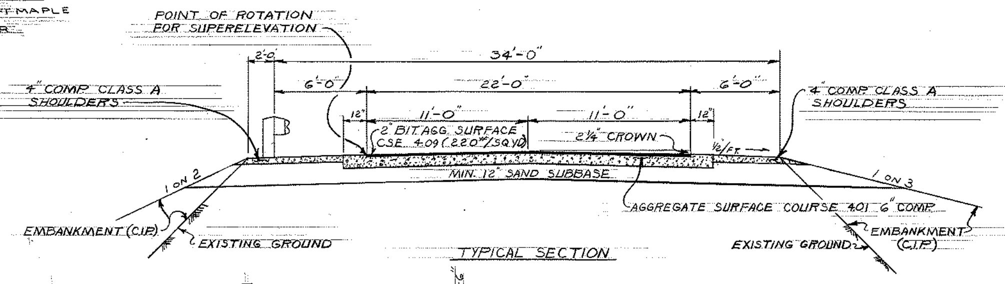


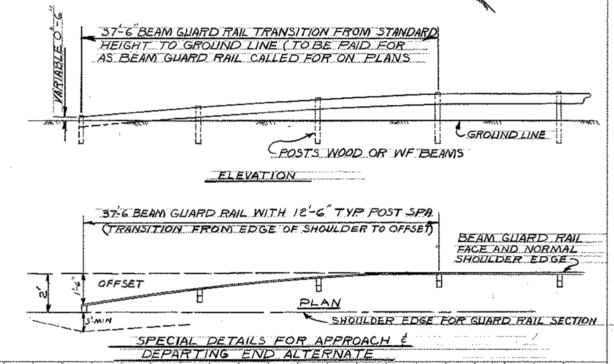
PLATE 1—PLAN, PROFILE C. P. R. & S. E. STANDARD
THE FREDERICK POST CO., CHICAGO

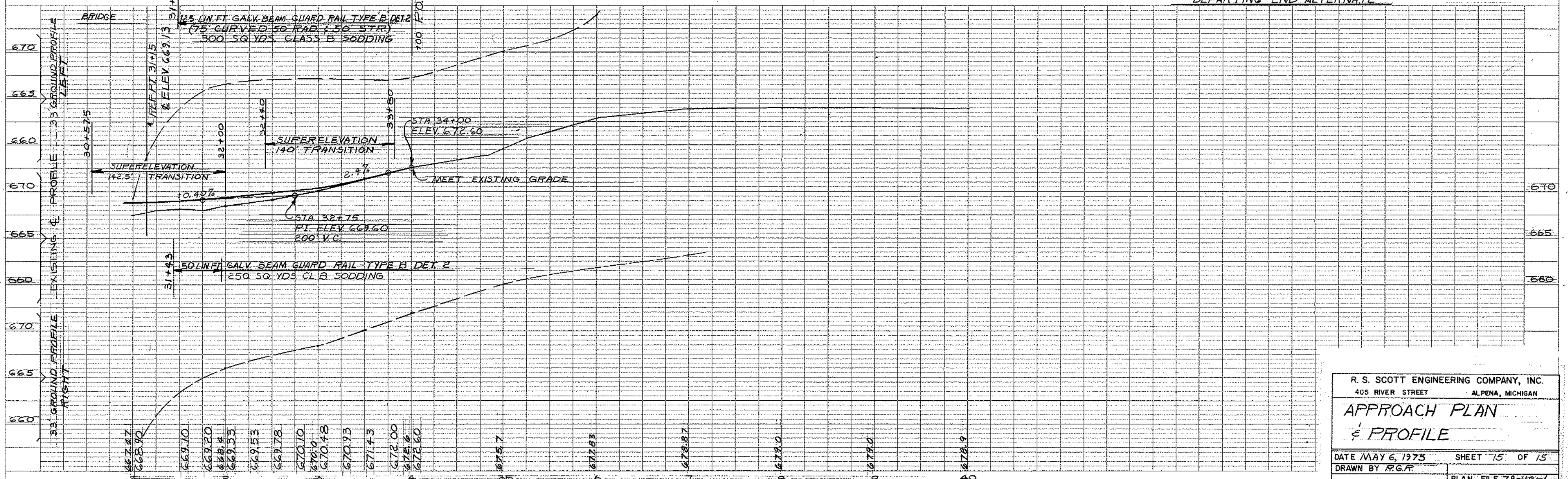
B1 of 79-13-20





QUANTITIES		
ITEM	UNIT	AMOUNT
MACHINE GRADING (MODIFIED)	STA.	2.85
	CU. YD.	—
EMBANKMENT (C.I.P.)	CU. YD.	1000
AGGREGATE SURFACE CSE.	CU. YD.	270
BIT. AGGREGATE SURFACE CSE.	TON	125
GALV. BEAM GUARD RAIL - TYPE B DET. 2	LIN. FT.	100
GALV. CURVED BEAM GUARD RAIL - TYPE B DET. 2	LIN. FT.	75
CEREAL RYE SEEDING	LBS	70
CLASS B SODDING	SQ. YD.	550
TOPSOIL, FERTILIZING, SEEDING & MULCHING	ACRE	0.3





R. S. SCOTT ENGINEERING COMPANY, INC.
405 RIVER STREET ALPENA, MICHIGAN

APPROACH PLAN & PROFILE

DATE MAY 6, 1975 SHEET 15 OF 15
DRAWN BY R.G.R.
PLAN FILE 79-118-1

W.O. 79-118-1

PLATE 1—PLAN PROFILE O.P.R. & R.E. STANDARD
THE FREDERICK POST CO., CHICAGO

B1 of 79-13-20