

LEVEL 2 ECOLOGICAL SURVEY REPORT



OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENTAL SERVICES
1980 WEST BROAD STREET
COLUMBUS, OHIO 43223
(614) 466-7100



View of Maumee River from south bank, facing north.

Project C-R-S / Name:	HEN-New Bridge
Project Identification Number (PID):	PID 22984
Report Type:	Level Two ESR
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PROJECT SUMMARY

LOCATION DATA		
ODOT District:	District 2	
County(ies):	Henry	
Township(s):	Napoleon TWP.	
Project Center (lat. /long. Decimal Degrees):	41.403647 lat. / -84.102483 long.	
Project Area Size (Ac):	42.54 ac	

PROJECT DESCRIPTION

Henry County Transportation Improvement District (TID) authorized a study to evaluate potential environmental concerns associated with the proposed bridge spanning the Maumee River, a State Scenic River. The construction of the bridge will provide a reduction in downtown congestion and improve safety in the City of Napoleon. The proposed bridge is expected to span the Maumee River; connecting State Route 110 in the south and Industrial Drive in the north portion of the study area. The study area consists of a mixture of residential, public, and commercial land uses within the City of Napoleon, Henry County, Ohio.

ECOLOGICAL IMPACT SUMMARY (Impacts may be preliminary and subject to revision)

Detailed design plans have been completed for the proposed project. Impacts discussed in this report are preliminary, and represent the maximum likely impacts to resources that would result from the proposed project. The impacts discussed within this report will not be exceeded, but may be reduced by the actual construction activities.

The project is anticipated to permanently impact 0.10-acre of Wetland B, a Category 2 wetland. In addition, a total of 150 linear feet of temporary impacts and 40 linear feet of permanent impacts to the Maumee River will result from the construction of the proposed bridge. See page 23 for details.

Short-term water quality impacts are expected to occur as a result of construction. These impacts include increased turbidity, substrate disturbance, and runoff from roadways and disturbed areas near the project site. Increased turbidity and substrate disturbance will decrease when construction is complete and stream bank stabilization occurs. Short term water quality impacts resulting from runoff from disturbed areas during construction will be minimized through the use of sediment and erosion controls in accordance with the ODOT *Construction and Materials Specifications*. Longer duration water quality impacts associated with roadway runoff will be minimized through the implementation of post-construction best management practices in accordance with the ODOT *Location and Design Manual*.

It is unlikely that construction activities will result in the permanent loss of any aquatic species. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project. It is unlikely that any state or federally listed mussel species will be impacted by the proposed project. The Ohio EPA Division of Surface Water Ecological Assessment Unit has completed fish and macroinvertebrates surveys on the Maumee River in the vicinity of the project site.

This project is within the known range of the Indiana bat (*Myotis sodalis*, E), northern long-eared bat (*Myotis septentrionalis*, PE), and the bald eagle (*Haliaeetus leucocephalus*).

- Construction activities associated with the project would result in impacts to five trees with potentially suitable summer roosting habitat and zero trees with potentially suitable maternity roosting habitat for the Indiana bat. In addition, these trees have potentially suitable roosting habitat for the northern long-eared bat. It is unlikely that the project will impact either species.

- No bald eagles nests are known to be located in the vicinity of the project area. Therefore, the project will not impact the species.

A review of the Ohio Biodiversity Database indicated records for the state threatened threehorn wartyback (*Obliquaria reflexa*) within one mile of the proposed project site. According to the Ohio Biodiversity Database, the last documented observation of this species within one mile of the project site was on 1996-09-24 (ODNR, 10/12/2012). Construction activities may cause sedimentation and habitat degradation to mussel beds. During our ecological survey on 12/11/14, the threehorn wartyback was identified. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project.

During our ecological survey on 9/28/12, the great egret (*Ardea alba*) was identified. This species is an Ohio Species of Concern. The great egret is generally found in the western Lake Erie basin in shallow marshes, ditches, wet fields, and river edges, but may be found elsewhere in Ohio (ODNR, 2012). According to the ODNR, the great egret has a peak breeding activity in mid-April (2012). The ODNR defines a Species of Concern as a species that may become threatened in Ohio due to external stressors or a species for which there is some concern. Due to insufficient information, the ODNR was unable to provide an accurate status evaluation of the great egret (2012). The species will not be impacted by this project.

During our ecological survey on 12/11/14, the deertoe (*Truncilla truncata*) was identified. This species is an Ohio Species of Concern. The deertoe is usually found in large streams and rivers, but has also been found in lakes. The deertoe occurs in riverine substrates, such as mud, sand and gravel. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project.

Most of the vegetative communities within the project site experience intermediate to high levels of disturbance. Developed open space (DS), developed low intensity (DL), and developed medium intensity (DM) areas are located in the northern portion of the proposed project site. Cultivated crops (CC) occupy the majority of the southern portion of the project site. A small area of herbaceous riverine community (HR) is located in the southwest portion of the project site. The proposed project will not adversely impact any high quality vegetative communities, because the greater part of the project site consists of highly disturbed and fragmented vegetative communities.

LITERATURE REVIEW			
Literature Source(s) Reviewed		Results of Review	Map Included In Appendix
<input checked="" type="checkbox"/>	Ecoregion Map	List Ecoregion(s): 57a. Maumee Lake Plains (Choose an Ecoregion)	NO
<input checked="" type="checkbox"/>	Physiographic Regions Map of Ohio	List Physiographic Region(s): 7.0 Maumee Lake Plains (Choose Physiographic Region)	NO
<input checked="" type="checkbox"/>	USGS 7.5 Minute Topographic Quadrangle Maps	List quadrangle(s): <div> <input type="text" value="Napoleon East"/> </div> <div> <input type="text" value="Select..."/> </div>	Map Required
<input checked="" type="checkbox"/>	County Soil Survey	Mapped hydric soils within project area? YES	Map Required
<input type="checkbox"/>	Ohio Water Quality Standards (Ohio Administrative Code, Chapter 3745-1)		Not Applicable
<input type="checkbox"/>	Biological and Water Quality Reports	List reports that cover project area (if applicable):	Not Applicable
<input checked="" type="checkbox"/>	Hydrologic Unit Code(s) (HUC)	List 14 Digit Watershed boundaries within project area: 04100009010080	NO
<input type="checkbox"/>	Total Maximum Daily Load (TMDL) Program	List TMDL status of project area (If applicable):	(Choose)
<input checked="" type="checkbox"/>	National and State Wild and Scenic River lists, and the Nationwide Rivers Inventory (NRI)	List river(s) within or near the project area (if within applicable reach): Maumee River (State) (Choose River)	NO
<input checked="" type="checkbox"/>	Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM)	Is the project within a 100 year floodplain: YES	YES
<input type="checkbox"/>	Ohio's Coastal Zone Management Area	Is the project within the Coastal Zone Management Area: NO	NO
<input checked="" type="checkbox"/>	National Wetlands Inventory (NWI) and or Ohio Wetland Inventory Mapping (OWI)		YES
<input checked="" type="checkbox"/>	ODNR Division of Natural Areas and Preserves Natural Heritage Database	Are there records for listed species within 1 mile of the project area? YES Summarize on State Listed Species Table	YES
<input checked="" type="checkbox"/>	Federally Endangered, Threatened, Proposed and Candidate Species in Ohio	List and Summarize on Federally Listed Species Table	Not Applicable
<input checked="" type="checkbox"/>	Oak Openings Region of Ohio	Is the project located within the Oak Openings Region of Ohio? NO	NO
<input type="checkbox"/>	Other		

FIELD METHODS	
Field Investigator Name(s):	K. Carr, K. Simon, J. Stratigakos
Affiliation:	The Mannik & Smith Group, Inc.
Date(s) of Field Work:	September 28, 2012, October 11, 2012, October 12, 2012, October 15, 2012, April 1, 2014 and December 11, 2014
Weather Conditions:	Sunny, partly cloudy 50° F low, 75° F high

Stream Survey (Habitat and Biology)	
<input type="checkbox"/>	Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams (v 2.3) (OEPA 2009)
<input type="checkbox"/>	Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). (OEPA 2006)
<input type="checkbox"/>	Biological Criteria for the Protection of Aquatic Life: Volume I (OEPA 1987a), Volume II (OEPA 1987b, 2008a), Volume III (OEPA 1989, 2008b),
<input type="checkbox"/>	ODOT Ecological Manual: Sections 203.2.1.1 -Stream, 203.2.1.5-Fishes, 203.2.1.6-Macrobenthos, 203.2.1.7-Mussels (ODOT 2010)
<input type="checkbox"/>	Other Methods (describe and cite):
Wetland Delineation and Classification	
<input checked="" type="checkbox"/>	Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1 (Environmental Laboratory 1987)
	Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual:
<input type="checkbox"/>	Midwest Region (Environmental Laboratory 2008)
<input checked="" type="checkbox"/>	Northcentral and Northeast
<input type="checkbox"/>	Eastern Mountains and Piedmont
<input checked="" type="checkbox"/>	Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et.al. 1979)
<input checked="" type="checkbox"/>	Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms (OEPA 2001)
<input type="checkbox"/>	Other Methods (describe and cite):
Other Waters	
<input type="checkbox"/>	ODOT Ecological Manual: Sections 203.2.1.3-Ditches/Swales, 203.2.1.4-Ponds/Lakes (ODOT 2010)
<input type="checkbox"/>	Other Methods (describe and cite):
Terrestrial	
<input checked="" type="checkbox"/>	ODOT Ecological Manual: Section 203.2.2 -Terrestrial Ecology (ODOT 2010)
<input type="checkbox"/>	Other Methods (describe and cite):
Listed Species	
<input checked="" type="checkbox"/>	ODOT Ecological Manual: Sections 203.2.3 -Listed Species (ODOT 2010)
<input type="checkbox"/>	Other Methods (describe and cite):

FIELD DATA COLLECTION RESULTS

AQUATIC ECOLOGY	
Streams	
Were any streams identified within the project area? (If NO, delete the Stream Table)	YES
Total number of streams within the project area:	1
Total length of streams within the project area (linear feet):	1,100 ft.
Wetlands	
Were any wetlands identified within the project area? (If NO, delete the Wetland Table)	YES
Total number of wetlands within the project area:	2
Total area of wetlands within the project area (acres):	0.625
Potentially Jurisdictional Ditches	
Were any potentially jurisdictional ditches identified within the project area? (If NO, delete the Potentially Jurisdictional Ditch Table)	NO
Total number of potentially jurisdictional ditches within the project area:	0
Total area of potentially jurisdictional ditches within the project area (acres):	0
Ponds	
Were any ponds identified within the project area? (If NO, delete the Pond Table)	NO
Total number of ponds within the project area:	0
Total area of ponds within the project area (acres):	0
Aquatic Life	
Were any fish communities sampled/observed within the project area? (If NO, delete the Fish Table)	YES
If yes, total number of fish species identified:	23
Were any aquatic macroinvertebrate communities sampled/observed within the project area? (If NO, delete the Macroinvertebrate Table)	YES
If yes, total number of aquatic macroinvertebrate species identified:	48
Were any mussel communities sampled/observed within the project area? (If NO, delete the Mussel Table)	YES
If yes, total number of mussel species identified:	6

STREAM TABLE : RESOURCES IDENTIFIED ON FIGURE(S) 5

Stream Name/I.D.:	Photograph #(s):	Receiving Waters:	Drainage Area (mi ²):	14-Digit HUC:	Total Length Within Project Area (lin. ft.):	Is this Stream Captured within the Roadway Ditch:	Stream Hydrology Type:	USACE Flow Characteristics:	Habitat Assessment	Evidence of Mussels Present:	Biological Sampling Conducted			Ohio EPA Aquatic Life Use Designation (may be provisional based on qualitative data):	Anti-degradation Designation:	National or State Wild, Scenic, or NRI Stream, or within 1,000 ft. of a Wild or Scenic:	Within a HUC with an Approved or Pending TMDL:
											Salamanders Observed:	Fish Observed:	Aquatic Macro-invertebrates Observed:				
Maumee River	1-16, 26-27	Lake Erie	5650	04100009010	1,100	NO	Perennial (supraficial)	Relatively Permanent Water-Perennial	QHEI 51.5	YES	Not Surveyed	IBI-WWH	ICI-WWH	Modified Warmwater habitat	Outstanding State Waters	State	YES
Additional Information. List how the stream connects to a Traditional Navigable Water (TNW) and any other pertinent observations (such as water quality measurements if taken) :						Maumee River (TNW) → Lake Erie. The bridge is expected to connect 110-OH to Industrial Drive spanning across the Maumee River. Ecological Surveys were conducted in September 2012, October 2012, and April 2014. Biological surveys for aquatic macroinvertebrates and fish were conducted in July and August 2012. The surveys were conducted on River Mile 47.10 of the Maumee River, near the Napoleon Water Treatment Plant intake. The average IBI was 39, the average modified Iwb was 9.4, and an ICI of 10 was recorded (OEPA 2012).											

WETLAND TABLE : RESOURCES IDENTIFIED ON FIGURE(S) 5

Wetland Name/I.D.:	Photograph #(s):	Hydrologic Connection:	Receiving Waters (if non-isolated):	14-Digit HUC Boundary the Wetland is Located within:	Located Within a Mapped Hydric Soil Unit(s):	Approximate Total Size (Ac.):	Wetland Area Located within the Project Area (Ac.):	ORAM Assessment Score:	Provisional Wetland Category (based on ORAM):	Known High Quality Wetland (from Natural Heritage Database):	Dominant Wetland Community(ies) Based on Cowardin (1979) Wetland Classifications:	Estimated Hydroperiod (Cowardin, 1979)
Wetland A	2,3	Abutting	Maumee River	04100009010080	YES Sh	0.175	0.043	59	Category 2	NO	Palustrine - Emergent Wetland Persistent Palustrine - Scrub/Shrub Wetland	Permanently Flooded
Additional Information. List How the wetland connects to a Traditional Navigable Water (TNW) if non-isolated, dominant plant species, and any other pertinent observations :						<p>Wetland A → Maumee River (TNW) → Lake Erie.</p> <p>Wetland A is a vegetated bar within an active channel. Such areas are known to have problematic hydric soils. As a result, the soil profile lacks clear hydric soil characteristics but still satisfies the hydric soil criterion for identifying wetlands. These soils are described in the Regional Supplements to the Corps of Engineers Wetland Delineation Manual as "Fluvial Deposits within Floodplains". In addition, Wetland A is dominated with herbaceous hydrophytic vegetation, possesses indicators of hydrology and is clearly functioning as wetland habitat.</p> <p>Wetland A is located along the north bank of the Maumee River within the project site. Dominant vegetation in Wetland A consisted of sycamore (<i>Platanus occidentalis</i>: FACW), American elm (<i>Ulmus americana</i>: FACW), rough-leaved dogwood (<i>Cornus drummondii</i>: FAC), sandbar willow (<i>Salix exigua</i>: OBL), water-willow (<i>Decodon verticillatus</i>: OBL), river-bank grape (<i>Vitis riparia</i>: FAC), and poison-ivy (<i>Toxicodendron radicans</i>: FAC).</p>						
Wetland B	6,7	Abutting	Maumee River	04100009010080	YES HdA	0.582	0.582	58.5	Category 2	NO	Palustrine - Emergent Wetland Persistent	Permanently Flooded
Additional Information. List How the wetland connects to a Traditional Navigable Water (TNW) if non-isolated, dominant plant species, and any other pertinent observations :						<p>Wetland B → Maumee River (TNW) → Lake Erie.</p> <p>This wetland is a fringe wetland along the south bank of the Maumee River within the project site. Dominant vegetation in Wetland B consisted of herbs and vines including: rough-leaved dogwood (<i>Cornus drummondii</i>: FAC), water-willow (<i>Decodon verticillatus</i>: OBL), spotted touch-me-not (<i>Impatiens capensis</i>: FACW), river-bank grape (<i>Vitis riparia</i>: FAC), and poison-ivy (<i>Toxicodendron radicans</i>: FAC).</p>						

FISH TABLE (Species Characteristics from OEPA, 2008a)								
Scientific Name	Common Name	Feeding Guild:	Breeding Guild:	Pollution Tolerance:	Federally Listed:	State Listed:	Declining Species (OAC 3745-1-05, Table 5-2):	Observed in Stream(s) (Include Quantity) :
SEE ATTACHMENT	SEE ATTACHMENT	(Choose)	(Choose)	(Choose)	(Choose)	(Choose)	(Choose)	SEE ATTACHMENT

General Fish Community Observations:

Survey was taken on River Mile 47.10 of the Maumee River, near the Napoleon Water Treatment Plant intake (OEPA 2012).

See Attachment for details:

OEPA Division of Surface Water Ecological Assessment Unit (2012). Ohio EPA/DSW Ecological Assessment Section: Species List: Fish.
Survey date range: 7/16/2012 - 8/14/2012

AQUATIC MACROINVERTEBRATE TABLE	
Taxa Observed	Observed in Stream(s) (Include Quantity) :
SEE ATTACHMENT	SEE ATTACHMENT

Additional Aquatic Macroinvertebrate Community Observations:
<p>Survey was taken on River Mile 47.10 of the Maumee River, near the Napoleon Water Treatment Plant intake (OEPA 2012).</p> <p>See Attachment for details: OEPA Division of Surface Water Ecological Assessment Unit (2012). Ohio EPA/DSW Ecological Assessment Section: Macroinvertebrate Collection. Collection Date: 8/30/2012</p>

MUSSEL TABLE								
Scientific Name	Common Name	Federally Listed:	State Listed:	List All Stream Locations and Quantity by Condition				
				Stream I.D.	Live	Dead	Weathered Dead	Sub Fossil
<i>Fusconaia flava</i>	Wabash pigtoe	Not Listed	Not Listed	Maumee River	-	-	3	-
<i>Lampsilis cardium</i>	plain pocketbook	Not Listed	Not Listed	Maumee River	-	-	1	-
<i>Obliquaria reflexa</i>	threehorn wartyback	Not Listed	Threatened	Maumee River	-	-	1	-
<i>Pyganodon grandis grandis</i>	giant floater	Not Listed	Not Listed	Maumee River	-	-	3	-
<i>Quadrula quadrula</i>	mapleleaf	Not Listed	Not Listed	Maumee River	-	-	11	-
<i>Truncilla truncata</i>	deertoe	Not Listed	Species of Concern	Maumee River	-	-	4	-

Additional Mussel Community Observations:

During our ecological survey on 12/11/14, dead mussels were collected along wadeable portions of the riverbank. No live specimens were collected.

A Group 3 Survey will be conducted and any state or federally-listed mussel species found within construction limits will be relocated outside of the project site prior to construction.

Terrestrial Ecology

VEGETATIVE COMMUNITIES	
List the number of distinct vegetative communities identified within the project area	6
Were any unique or high quality terrestrial habitats identified within the project area?	NO

TERRESTRIAL WILDLIFE	
Were any mammals observed within the project area? (If NO, delete the Mammal Table)	YES
If yes, total number of species identified:	2
Were any birds observed within the project area? (If NO, delete the Bird Table)	YES
If yes, total number of bird species identified:	12
Were any reptiles observed within the project area? (If NO, delete the Reptile Table)	NO
If yes, total number of reptile species identified:	0
Were any amphibian communities sampled/observed within the project area? (If NO, delete the Amphibian Table)	NO
If yes, total number of amphibian species identified:	0

Vegetative Communities and Land Cover Table : Vegetation and Land Cover Areas Identified on Figure(s) 4			
Vegetative Communities and Land Cover found within the project area:	Degree of Man Induced Ecological Disturbance (based on descriptions in Andreas et. al., 2004)	Unique, Rare, or High Quality?	Acres
Open Water - All areas of open water, generally with less than 25% cover of vegetation or soil.	Low Disturbance (dominated by plants with a narrow range of ecological tolerances that typify a stable or near "climax" community)	NO	22.90
Community Description (list dominant species, include Anderson (1982) community classification if applicable):	Portions of the project site included the Maumee River, which is a state scenic river. There was minimal vegetation on the open waters of the river, but the dominant species noted along the banks was water-willow (<i>Decodon verticillatus</i> , OBL).		
Cultivated Crops - CC - (annual crops, all land being actively tilled, and perennial woody crops such as orchards and vineyards)	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders or native highly tolerant taxa)	NO	12.71
Community Description (list dominant species, include Anderson (1982) community classification if applicable):	The southern portion of the site contained annual crops. The major cultivated crop observed was corn (<i>Zea mays</i>).		
Developed Open Space - DS - (mown right-of-way, large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes)	High Disturbance (dominated by widespread taxa not typical of a particular community)	NO	2.81
Community Description (list dominant species, include Anderson (1982) community classification if applicable):	The northeast and southern portions of the project site included single-family housing units and mown right-of-way. Dominant vegetation included: <i>Lonicera japonica</i> , <i>Elaeagnus umbellata</i> , and <i>Trifolium repens</i> .		
Developed, Low Intensity (DL) - Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 % of total cover. These areas most commonly include single-family housing units.	High Disturbance (dominated by widespread taxa not typical of a particular community)	NO	4.07
Community Description (list dominant species, include Anderson (1982) community classification if applicable):	There were open old field areas, and residential sites within and near the project site that would be considered low intensity development. The dominant vegetation included: <i>Plantago major</i> , <i>Solidago canadensis</i> , <i>Cichorium intybus</i> , <i>Achillea millefolium</i> , <i>Setaria pumila</i> , and <i>Daucus carota</i> .		
Developed, Medium Intensity (DM) - Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79 % of the total cover. These areas most commonly include single-family housing units.	High Disturbance (dominated by widespread taxa not typical of a particular community)	NO	0.02
Community Description (list dominant species, include Anderson (1982) community classification if applicable):	The northern portions of the project site contained maintained areas, dump sites, and open old fields along the railroad near Industrial Drive. Opportunistic species dominated these areas, such as <i>Solidago canadensis</i> , <i>Trifolium repens</i> , <i>Lotus corniculata</i> , <i>Lonicera maackii</i> , <i>Ambrosia artemisiifolia</i> , <i>Cirsium arvense</i> , and <i>Dipsacus fullonum</i> .		
Herbaceous Riverine Community - HR - (submergent, floating, and/or emergent vegetation along rivers and streams)	Intermediate Disturbance (dominated by plants that typify a stable phase of a native community that persists under some disturbance)	NO	0.02
Community Description (list dominant species, include Anderson (1982) community classification if applicable):	Both the north and south margins of the Maumee River within the project site had fringe wetlands with emergent, floating herbaceous plants, and dwarf shrubs, which then were considered herbaceous riverine communities. Dominant species included: <i>Decodon verticillatus</i> , <i>Impatiens capensis</i> , <i>Sparganium eurycarpum</i> , <i>Xanthium strumarium</i> , <i>Persicaria lapathifolium</i> , and <i>Cephalanthus occidentalis</i> .		

VEGETATION TABLE						
Scientific Name:	Common Name:	C of C:	Indicator Status:	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Abies spp.</i>	fir	-	FAC	NO	NO	UF, DL
<i>Acer negundo</i>	box elder	3	FAC	NO	NO	FF, DL
<i>Acer rubrum</i>	red maple	2	FAC	NO	NO	FF, DL
<i>Acer saccharinum</i>	silver maple	3	FACW	NO	NO	FF, DL
<i>Ageratina altissima</i>	white snakeroot	3	FACU	NO	NO	UF
<i>Ailanthus altissima</i>	tree-of-heaven	*	UPL	NO	NO	FF
<i>Alliaria petiolata</i>	garlic mustard	*	FACU	NO	NO	DL, DM
<i>Ambrosia artemisiifolia</i>	annual ragweed	0	FACU	NO	NO	DL, DM
<i>Ambrosia trifida</i>	giant ragweed	0	FAC	NO	NO	FF
<i>Apocynum cannabinum</i>	Indian hemp	1	FAC	NO	NO	UF, FF
<i>Asimina triloba</i>	pawpaw	6	FAC	NO	NO	FF
<i>Bidens frondosa</i>	common beggars-ticks	2	FACW	NO	NO	HR
<i>Campsis radicans</i>	trumpet creeper	1	FAC	NO	NO	FF, UF
<i>Carex comosa</i>	longhair sedge	2	OBL	NO	NO	HR
<i>Carex spp.</i>	sedge	-	FACW	NO	NO	HR
<i>Carya cordiformis</i>	bitternut hickory	5	FAC	NO	NO	UF
<i>Catalpa speciosa</i>	northern catalpa	*	FACU	NO	NO	UF
<i>Celtis occidentalis</i>	common hackberry	4	FAC	NO	NO	UF
<i>Cephalanthus occidentalis</i>	buttonbush	6	OBL	NO	NO	HR
<i>Cichorium intybus</i>	chicory	*	FACU	NO	NO	DM
<i>Cirsium arvense</i>	Canadian thistle	*	FACU	NO	NO	DL, DM
<i>Clematis virginiana</i>	virgin's bower	3	FAC	NO	NO	FF
<i>Cornus alba</i>	red-osier dogwood	3	FACW	NO	NO	HR
<i>Cornus amomum</i>	silky dogwood	2	FACW	NO	NO	FF
<i>Cornus drummondii</i>	rough-leaved dogwood	3	FAC	NO	NO	UF, FF, HR
<i>Cornus florida</i>	flowering dogwood	5	FACU	NO	NO	FF, DM, DL

VEGETATION TABLE						
Scientific Name:	Common Name:	C. of C.:	Indicator Status:	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Cornus racemosa</i>	gray dogwood	1	FAC	NO	NO	DL
<i>Crataegus spp.</i>	hawthorn	3	FAC	NO	NO	UF
<i>Cuscuta gronovii</i>	common dodder	3	FACW	NO	NO	HR
<i>Cyperus esculentus</i>	yellow nut sedge	0	FACW	NO	NO	HR
<i>Daucus carota</i>	Queen Anne's lace	*	UPL	NO	NO	DL, DM
<i>Decodon verticillatus</i>	water willow	6	OBL	NO	NO	HR
<i>Dipsacus fullonum</i>	wild teasel	*	FACU	NO	NO	FF, DL, DM
<i>Echinochloa muricata</i>	rough barnyard grass	3	OBL	NO	NO	HR
<i>Echinocystis lobata</i>	wild cucumber	2	FACW	NO	NO	HR
<i>Elaeagnus umbellata</i>	autumn olive	*	UPL	NO	NO	UF, DL, DM
<i>Elymus virginicus</i>	Virginia wild rye	3	FACW	NO	NO	FF
<i>Equisetum arvense</i>	field horsetail	0	FAC	NO	NO	DL
<i>Erigeron spp.</i>	fleabane	-	FACU	NO	NO	FF, UF
<i>Eupatorium perfoliatum</i>	common boneset	3	FACW	NO	NO	FF, HR
<i>Fagus grandifolia</i>	American beech	7	FACU	NO	NO	UF
<i>Fragaria virginiana</i>	Virginia strawberry	1	FACU	NO	NO	UF
<i>Fraxinus americana</i>	white ash	6	FACU	NO	NO	UF
<i>Fraxinus pennsylvanica</i>	green ash	3	FACW	NO	NO	FF
<i>Galium spp.</i>	bedstraw	-	FACU	NO	NO	FF
<i>Gleditsia triacanthos</i>	honey locust	4	FAC	NO	NO	FF, DL, DM
<i>Glyceria striata</i>	fowl manna grass	2	OBL	NO	NO	HR
<i>Hibiscus moscheutos</i>	crimson-eyed rose mallow	4	OBL	NO	NO	HR
<i>Impatiens capensis</i>	spotted touch-me-not	2	FACW	NO	NO	HR
<i>Juglans nigra</i>	black walnut	5	FACU	NO	NO	FF, DL
<i>Juniperus virginiana</i>	eastern red-cedar	3	FACU	NO	NO	DL, FF
<i>Leersia oryzoides</i>	rice cut grass	1	OBL	NO	NO	HR

VEGETATION TABLE						
Scientific Name:	Common Name:	C of C:	Indicator Status:	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Ligustrum vulgare</i>	European privet	*	FACU	NO	NO	FF, UF
<i>Lonicera japonica</i>	Japanese honeysuckle	*	FACU	NO	NO	DL, UF
<i>Lonicera maackii</i>	Maack's honeysuckle	*	UPL	NO	NO	DL, UF, FF
<i>Lonicera tatarica</i>	Tartarian honeysuckle	*	FACU	NO	NO	DL, UF, FF
<i>Lotus corniculatus</i>	bird's-foot trefoil	*	FACU	NO	NO	DL, FF
<i>Lycopus uniflorus</i>	northern water horehound	3	OBL	NO	NO	HR
<i>Lysimachia nummularia</i>	creeping jenny	*	FACW	NO	NO	HR
<i>Mentha arvensis</i>	American wild mint	2	FACW	NO	NO	HR
<i>Morus alba</i>	white mulberry	*	FACU	NO	NO	DL, UF, FF
<i>Oenothera biennis</i>	common evening primrose	1	FACU	NO	NO	FF, HR,
<i>Oxalis spp.</i>	wood sorrel	-	FACU	NO	NO	UF
<i>Panicum spp.</i>	panic grass	-	FACU	NO	NO	FF, DL
<i>Parthenocissus inserta</i>	thicket creeper	1	FACU	NO	NO	FF, UF, DL, DM
<i>Parthenocissus quinquefolia</i>	Virginia creeper	2	FACU	NO	NO	FF, UF, HR, DL, DM
<i>Persicaria hydropiperoides</i>	mild water pepper	1	OBL	NO	NO	HR
<i>Persicaria lapathifolia</i>	dock leaf smartweed	1	FACW	NO	NO	HR
<i>Phyla lanceolata</i>	lanceleaf fogfruit	3	OBL	NO	NO	HR
<i>Phytolacca americana</i>	American pokeweed	1	FACU	NO	NO	DL, FF, UF
<i>Picea pungens</i>	Colorado blue spruce	*	FACU	NO	NO	DM
<i>Pinus strobus</i>	Eastern white pine	6	FACU	NO	NO	DM
<i>Plantago major</i>	great plantain	*	FACU	NO	NO	DL, UF
<i>Platanus occidentalis</i>	American sycamore	7	FACW	NO	NO	DL, FF, HR?
<i>Poa spp.</i>	grass	-	FAC	NO	NO	DL, DM, UF
<i>Populus alba</i>	white poplar	*	UPL	NO	NO	HR
<i>Populus deltoides</i>	eastern cottonwood	3	FAC	NO	NO	FF, UF, DL, DM
<i>Populus tremuloides</i>	quaking aspen	2	FACU	NO	NO	HR, FF,

VEGETATION TABLE						
Scientific Name:	Common Name:	C of C:	Indicator Status:	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Potentilla spp.</i>	cinquefoil	-	FAC	NO	NO	FF
<i>Prunus serotina</i>	black cherry	3	FACU	NO	NO	FF
<i>Prunus virginiana</i>	choke cherry	2	FACU	NO	NO	FF, UF
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	4	FACW	NO	NO	FF, DL, DM,
<i>Quercus alba</i>	white oak	6	FACU	NO	NO	FF
<i>Quercus rubra</i>	Northern red oak	6	FACU	NO	NO	FF
<i>Quercus velutina</i>	black oak	7	UPL	NO	NO	FF
<i>Rhus glauca</i>	smooth sumac	2	UPL	NO	NO	UF
<i>Robinia pseudoacacia</i>	black locust	0	FACU	NO	NO	DM, DL, UF, FF
<i>Rosa multiflora</i>	multiflora rose	*	FACU	NO	NO	FF, UF, DM, DL
<i>Rubus allegheniensis</i>	blackberry	1	FACU	NO	NO	UF
<i>Rubus occidentalis</i>	black raspberry	1	UPL	NO	NO	FF
<i>Rubus ideaus var. strigosus</i>	red raspberry	6	UPL	NO	NO	FF
<i>Rumex crispus</i>	curly dock	*	FAC	NO	NO	HR, FF, UF, DL, DM
<i>Salix interior</i>	sandbar willow	1	FACW	NO	NO	FF, HR
<i>Salix nigra</i>	black willow	2	OBL	NO	NO	FF, HR
<i>Sambucus canadensis</i>	common elderberry	3	FACW	NO	NO	HR
<i>Sedum spp.</i>	stonecrop	-	FACU	NO	NO	UF
<i>Setaria pumila</i>	yellow foxtail	*	FAC	NO	NO	UF, DL
<i>Setaria spp.</i>	foxtail	*	FACU	NO	NO	UF, FF
<i>Smilax hispida</i>	bristly greenbrier	3	FAC	NO	NO	FF
<i>Solanum ptycanthum</i>	eastern black nightshade	*	FACU	NO	NO	UF
<i>Solidago canadensis</i>	Canada goldenrod	1	FACU	NO	NO	UF
<i>Solidago spp.</i>	goldenrod	-	FACU	NO	NO	FF, UF, DL, DM
<i>Sparganium eurycarpum</i>	broadfruit bur-reed	4	OBL	NO	NO	HR
<i>Staphylea trifolia</i>	American bladdernut	6	FAC	NO	NO	HR

VEGETATION TABLE						
Scientific Name:	Common Name:	<u>C of C:</u>	Indicator Status:	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Symphyotrichum lateriflorum</i>	calico aster	2	FAC	NO	NO	HR
<i>Symphyotrichum novae-angliae</i>	New England American aster	2	FACW	NO	NO	DL, DM, FF
<i>Symphyotrichum pilosum</i>	hairy white oldfield aster	1	FACU	NO	NO	DL, DM, UF, FF
<i>Taraxacum officinale</i>	common dandelion	*	FACU	NO	NO	UF
<i>Tilia americana</i>	American basswood	6	FACU	NO	NO	FF, UF, DL
<i>Toxicodendron radicans</i>	eastern poison ivy	1	FAC	NO	NO	HR, FF, UF, DL, DM
<i>Trifolium repens</i>	white clover	*	FACU	NO	NO	FF, DL, DM
<i>Ulmus americana</i>	American elm	2	FACW	NO	NO	DL, FF, HR
<i>Ulmus pumila</i>	Siberian elm	*	FACU	NO	NO	FF
<i>Urtica dioica</i>	stinging nettle	1	FAC	NO	NO	HR
<i>Verbascum thapsus</i>	great mullein	*	UPL	NO	NO	FF, UF, DL, DM
<i>Verbesina alternifolia</i>	wingstem	5	FACW	NO	NO	HR, FF, DL
<i>Viburnum opulus</i>	high bush cranberry	8	FACW	NO	NO	FF, UF
<i>Viola odorata</i>	fragrant violet	*	FACU	NO	NO	UF
<i>Vitis riparia</i>	riverbank grape	3	FAC	NO	NO	HR, FF, UF, DL, DM
<i>Xanthium strumarium</i>	common cockle bur	*	FAC	NO	NO	HR, FF

*Non-native, invasive, and/or adventive species, (no C of C value determined)

-No definitive C of C value determined (only genus, no species confirmed)

Additional Vegetation Observations:

Cultivated croplands are located south of the Maumee River. The major cultivated crops observed within the project site are corn (*Zea mays*) and soybean (*Glycine max*).

MAMMAL TABLE				
Scientific Name	Common Name	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Microtus pennsylvanicus</i>	<i>field mouse</i>	Not Listed	Not Listed	HR, FF
<i>Procyon lotor</i>	<i>raccoon</i>	Not Listed	Not Listed	HR, FF

Additional Mammal Observations:

Mammals were included based on both direct (sightings) and indirect (scat and tracks) observations. Mammals observed near or within the project site were common species to disturbed areas and fragmented habitats.

BIRD TABLE						
Scientific Name	Common Name	Date of Observation	Typical Ohio Range	Federally Listed:	State Listed:	Location (use vegetative community codes):
<i>Anas platyrhynchos</i>	mallard	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Ardea alba</i>	great egret	9/28/2012	Migrant	Not Listed	Species of Concern	Open water, HR, FF
<i>Ardea herodias</i>	great blue heron	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Branta canadensis</i>	Canada goose	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Buteo jamaicensis</i>	red-tailed hawk	9/28/2012	Year-Round Resident	Not Listed	Not Listed	Open water, HR, FF
<i>Ceryle alcyon</i>	belted kingfisher	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Cyanocitta cristata</i>	blue jay	9/28/2012	Year-Round Resident	Not Listed	Not Listed	Open water, HR, FF
<i>Haliaeetus leucocephalus</i>	bald eagle	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Larus delawarensis</i>	ringed-bill gull	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Phalacrocorax auritus</i>	double-crested cormorant	9/28/2012	Migrant	Not Listed	Not Listed	Open water, HR, FF
<i>Zenaidura macroura</i>	mourning dove	9/28/2012	Year-Round Resident Migrant	Not Listed	Not Listed	Open water, HR, FF

Additional Bird Observations:

Open water habitat was observed by boat or by shore. Most of the bird identification was based on visual observations during field activities.

During our ecological survey on 09/28/12, an Ohio species of concern, the great egret (*Ardea alba*, SC) was identified. This species generally lives in the western Lake Erie basin in shallow marshes, ditches, wet fields, and river edges, but may be found elsewhere in Ohio (ODNR, 2012). According to the ODNR, the great egret (*Ardea alba*, SC) has peak breeding activity in mid-April (2012). The ODNR defines Species of Concern as a species that might become threatened in Ohio due to external stressors or a species for which there is some concern. Due to insufficient information, the ODNR was unable to provide an accurate status evaluation (2012).

Listed Species

FEDERALLY LISTED SPECIES	
Were any federally listed species observed within the project area?	NO
Were any suitable habitats for federally listed species (known to be within the range of the project area) observed within the project area?	YES
Were any designated critical habitats for federally listed species present within the project area?	NO
This project is within the known range of the Indiana bat (<i>Myotis sodalis</i> , E), northern long-eared bat (<i>Myotis septentrionalis</i> , PE) and the bald eagle (<i>Haliaeetus leucocephalus</i>).	

STATE LISTED SPECIES	
Are any state listed species known to be within 1 mile of the project area?	YES
Were any state listed species observed within the project area?	YES
If any state listed species are known to be within a mile of the project area (Natural Heritage Database record or other), was suitable habitat for the species observed within the project area?	YES
A review of the Ohio Biodiversity Database indicated records for 1 State Threatened or Endangered Species within one mile of the study area.	
During our ecological survey on 9/28/12, an Ohio species of concern, the great egret (<i>Ardea alba</i>), was identified.	
During our ecological survey on 12/11/14, an Ohio species of concern, the deertoe (<i>Truncilla truncata</i>) was identified. The threehorn wartyback (<i>Obliquaria reflexa</i>), a state threatened species, was also identified on 12/11/14.	

Federally Listed Species Table: All species observed within the project area, or known to be within the county(ies) the project is located within			
Scientific Name	Common Name	Listing	Discuss Presence of Suitable Habitat(s) (note designated critical habitat if present)
<i>Haliaeetus leucocephalus</i>	bald eagle	Bald and Golden Eagle Protection Act	Based on our ecological survey conducted on 9/28/12, one specimen was identified and suitable habitat was recognized. However, no bald eagle nests are known to be located in the vicinity of the project area. Therefore, the project will not impact this species.
<i>Myotis septentrionalis</i>	northern long-eared bat	Proposed Endangered	Based on our ecological surveys on 9/28/12, 10/11/12, 10/12/12, 10/15/12, and 4/1/14, 15 potential roost trees were identified near or within the project site. Nearly half of the potential roost bat trees were dead trees or snags with exfoliating bark and cavities. The tree species of the live trees with potentially suitable summer roosting habitat included: shagbark hickory (<i>Carya ovata</i>), hackberry (<i>Celtis occidentalis</i>), ash (<i>Fraxinus spp.</i>), black walnut (<i>Juglans nigra</i>), sycamore (<i>Platanus occidentalis</i>), American basswood (<i>Tilia americana</i>), and American elm (<i>Ulmus americana</i>). Five of the potential roost trees will likely be impacted by the project.
<i>Myotis sodalis</i>	Indiana Bat	Endangered	<p>Complete Attached Bat Habitat Worksheet in Appendix C. Include Figure(s) indicating the location of potential Indiana Bat habitat trees when feasible.</p> <p>During the summer months Indiana bats live in roosting and brood rearing habitat, which includes living or standing dead trees or snags with exfoliating, peeling or loose bark, and split trunks and/or branches, or cavities (BO 2007). During the winter months, the Indiana bat dwells in hibernacula, such as caves and/or abandoned mines that provide a humid, stable environment for hibernation. According to the Biological Opinion (BO) on the Ohio Department of Transportation's Statewide Transportation Program for the Federally-listed endangered Indiana bat (<i>Myotis sodalis</i>); the project area is located within the Western management unit (2007).</p> <p>Based on our ecological surveys conducted on 9/28/12, 10/11/12, 10/12/12, 10/15/12, and 4/1/14, 15 potential Indiana bat trees were identified near or within the project site. Nearly half of the potential Indiana bat trees were dead trees or snags with exfoliating bark and cavities. The tree species of the live trees with potentially suitable summer roosting habitat included: shagbark hickory (<i>Carya ovata</i>), hackberry (<i>Celtis occidentalis</i>), ash (<i>Fraxinus spp.</i>), black walnut (<i>Juglans nigra</i>), sycamore (<i>Platanus occidentalis</i>), American basswood (<i>Tilia americana</i>), and American elm (<i>Ulmus americana</i>). Five of the potential roost trees will likely be impacted by the project.</p>

State Listed Species Table: All species observed within the project area, or known to be within 1 mile of the project area			
Scientific Name	Common Name	Listing	Discuss Presence of Suitable Habitat(s)
<i>Ardea alba</i>	great egret	Species of Concern	During our ecological survey on 9/28/12, the great egret (<i>Ardea alba</i>) was identified. This species is an Ohio Species of Concern. The great egret is generally found in the western Lake Erie basin in shallow marshes, ditches, wet fields, and river edges, but may be found elsewhere in Ohio (ODNR, 2012). According to the ODNR, the great egret has a peak breeding activity in mid-April (2012). The ODNR defines a Species of Concern as a species that may become threatened in Ohio due to external stressors or a species for which there is some concern. Due to insufficient information, the ODNR was unable to provide an accurate status evaluation of the great egret (2012).
<i>Obliquaria reflexa</i>	threehorn wartyback	Threatened	ODNR Ohio Natural Heritage Database revealed that this species was identified within one mile of the project area on September 9, 1996. The threehorn wartyback (<i>Obliquaria reflexa</i>) is found in riverine substrates, such as, mud, sand and gravel. During our ecological survey on 12/11/14, the threehorn wartyback was identified. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project.
<i>Truncilla truncata</i>	deertoe	Species of Concern	During our ecological survey on 12/11/14, the deertoe (<i>Truncilla truncata</i>) was identified. This species is an Ohio Species of Concern. The deertoe is usually found in large streams and rivers, but has also been found in lakes. The deertoe occurs in riverine substrates, such as mud, sand and gravel. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project.

IMPACT SUMMARY

STREAMS IMPACTS	
Will any streams be impacts by the project? (If NO, delete the Stream Impact Table)	YES
Total number of streams impacted by the project (list multiple alignments separately):	1
Total length of streams impacted by the project (feet):	150

Stream Impacts Table			Alternative Impacts (ft.)		
Stream I.D.	Use Designation	USACE Flow Characteristics	Alternative 1	Alternative 2	Alternative 3
Maumee River	Modified Warmwater habitat	Relatively Permanent Water- Perennial	150	N/A	N/A

Total impacts (ft.)	150	N/A	N/A
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Discuss the type of impact(s) expected to each stream. If a stream is impacted at multiple locations, discuss each location separately and include the distance (stream length) from other impacted locations.
A total of 150 linear feet of temporary impacts to the Maumee River will occur as a result of the temporary causeway. The proposed project will result in 40 linear feet of permanent impacts to the Maumee River as a result of construction activities (including but not limited to: pier construction and RCP). Temporary short-term impacts include: increased turbidity, substrate disturbance, increased runoff from roadways and disturbed areas into the Maumee River as a result of construction activities.

WETLAND IMPACTS	
Will any wetlands be impacted by the project? (If NO, delete the Wetland Impact Table)	YES
Total number of wetlands impacted by the project	1
Total area of wetlands impacted by the project (acres):	0.10

Wetland Impacts Table			Alternative Impacts (ac)		
Wetland I.D.	Provisional Wetland Category	Hydrologic Connection	Alternative 1	Alternative 2	Alternative 3
Wetland A	Category 2	Abutting	0.0	N/A	N/A
Wetland B	Category 2	Abutting	0.10	N/A	N/A

Total impacts (ac)	0.10	N/A	N/A
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Discuss the types of impact(s) expected to each wetland.
According to design plans, 0.10-acre of Wetland B will be permanently impacted by construction activities (including but not limited to: causeway construction, pier construction and RCP) for the proposed bridge.

IMPACTS TO AQUATIC LIFE
Discuss the expected impacts to aquatic fauna (fish, mussels, and aquatic macroinvertebrates). Specific stream locations should be referenced when appropriate.
<p>It is likely that aquatic fauna will temporarily leave the project site due to increased noise levels and runoff during construction. This will not result in permanent impacts to aquatic life. Freshwater mussels will be located and moved outside of the project site prior to construction activities.</p>
OTHER WATER QUALITY IMPACTS
Discuss potential short term and long term water quality impacts that are likely expect to occur as a result of the proposed project.
<p>Short term water quality impacts, including increased turbidity, substrate disturbance, and runoff, are expected to occur. Stream bank stabilization and vegetation will restore typical turbidity levels and substrates after construction ends.</p>
Discuss how the project will be implemented to minimize these water quality impacts.
<p>Short term water quality impacts resulting from runoff from disturbed areas during construction will be minimized through the use of sediment and erosion controls in accordance with the ODOT Construction and Materials Specifications. Long term water quality impacts associated with roadway runoff will be minimized through the implementation of post-construction best management practices in accordance with the ODOT Location and Design Manual.</p>

VEGETATIVE COMMUNITY AND LAND COVER IMPACTS	
Will any vegetative communities be impacted by the project? (If NO, delete the Vegetative Community Impact Table)	YES
Total number of vegetative communities impacted by the project:	5
Total area of vegetative communities impacted by the project (acres):	16.02
Describe any impacts to vegetative communities (with emphasis on rare or unique communities) from an ecological perspective:	
Most of the vegetative communities within the project site experience intermediate to high levels of disturbance. Developed open space (DS), developed low intensity (DL), and developed medium intensity (DM) areas are located in the northern portion of the proposed project site. Cultivated crops (CC) occupy the majority of the southern portion of the project site. A small area of herbaceous riverine community (HR) is located in the southwest portion of the project site. The proposed project will not adversely impact any high quality vegetative communities, because the greater part of the project site consists of highly disturbed and fragmented vegetative communities.	

Vegetative Community and Land Cover Impacts Table			Alternative Impacts (ac)		
Vegetative Community	Disturbance Level	Unique, Rare, or High Quality	Alternative 1	Alternative 2	Alternative 3
Open Water	Low Disturbance	NO	2.57	N/A	N/A
Cultivated Crops	Extreme Disturbance	NO	3.14	N/A	N/A
Developed, Open Space	High Disturbance	NO	2.56	N/A	N/A
Developed, Low Intensity	High Disturbance	NO	7.67	N/A	N/A
Developed, Medium Intensity	High Disturbance	NO	0.08	N/A	N/A
Herbaceous Riverine Community	Low Disturbance	NO	0.00	N/A	N/A
-----	-----	Total Impacts	16.02	N/A	N/A

IMPACTS TO TERRESTRIAL WILDLIFE
<p>Discuss any terrestrial habitat alternations that may result from construction activities:</p>
<p>Cutting or trimming trees may pose a threat to Indiana bat (<i>Myotis sodalis</i>, E) and northern long-eared bat (<i>Myotis septentrionalis</i>, PE) habitat. However, ecological surveys were conducted within construction limits and potential bat trees were identified and documented, so they can be avoided or impacts minimized.</p>
<p>Discuss the expected duration of the impacts (temporary/short term or permanent/long-term):</p>
<p>Habitat alterations, such as tree-cutting, will result in long-term impacts. Short-term alterations include increased noise levels and runoff, which are expected to subside post-construction.</p>
<p>Discuss if the project impacts would result in the likely extirpation of any taxa from the area:</p>
<p>The project is not expected to extirpate any taxa within the project site.</p>
<p>Include a general discussion of impacts to terrestrial fauna (mammals, birds, reptiles, and amphibians):</p>
<p>Most of the terrestrial fauna observed within the project site are common species to disturbed areas and not unique to the project site. The project will primarily impact disturbed areas, including croplands, residential areas, and old fields. Therefore, the project will not impact terrestrial fauna.</p> <p>The floodplain and forested upland areas along the banks of the Maumee River within the project site provide suitable habitat for foraging, navigating, and accessing water resources. During our ecological survey on 9/28/12, the great egret (<i>Ardea alba</i>) was identified. This species is an Ohio Species of Concern. The great egret is generally found in the western Lake Erie basin in shallow marshes, ditches, wet fields, and river edges, but may be found elsewhere in Ohio (ODNR, 2012). According to the ODNR, the great egret has a peak breeding activity in mid-April (2012). The ODNR defines a Species of Concern as a species that may become threatened in Ohio due to external stressors or a species for which there is some concern, but due to insufficient information, the ODNR is unable to provide an accurate status evaluation (2012). The project will have no impact on this species.</p>

FEDERALLY LISTED SPECIES IMPACTS	
Will any federally listed species or suitable habitat for federally listed potentially be impacted by the project? (If NO, delete the Federally Listed Species Impact Table)	YES
Will any designated critical habitats potentially be impacted by the project?	NO

Federally Endangered Indiana Bat (<i>Myotis sodalis</i>) Impact Table				
Alternative I.D.	Potential Maternity Roost Tree Impacts (#)	Potential Roost Tree Impacts (#)	Total Forest Habitat Impacts (ac)	Anticipated Impacts
Alternative 1	0	5	0	Not Likely
Discussion of Impacts: Based on our ecological surveys conducted on 9/28/12, 10/11/12, 10/12/12, 10/15/12, and 4/1/14, 15 potential Indiana bat trees were identified near or within the project site. Nearly half of the potential Indiana bat trees were dead trees or snags with exfoliating bark and cavities. The tree species of the live trees with potentially suitable summer roosting habitat included: shagbark hickory (<i>Carya ovata</i>), hackberry (<i>Celtis occidentalis</i>), ash (<i>Fraxinus spp.</i>), black walnut (<i>Juglans nigra</i>), sycamore (<i>Platanus occidentalis</i>), American basswood (<i>Tilia americana</i>), and American elm (<i>Ulmus americana</i>). Five of the potential roost trees will likely be impacted by the project.				
Alternative 2	N/A	N/A	N/A	None
Discussion of Impacts:				
Alternative 3	N/A	N/A	N/A	None
Discussion of Impacts:				

Federally Listed Species Impact Summary Table (List Each Species Within the County/Range)			Anticipated Impacts		
Scientific Name	Common Name	Listing	Alternative 1	Alternative 2	Alternative 3
<i>Haliaeetus leucocephalus</i>	bald eagle	Bald and Golden Eagle Protection Act	NONE	N/A	N/A
<i>Myotis septentrionalis</i>	northern long-eared bat	Proposed Endangered	Likely	N/A	N/A
<i>Myotis sodalis</i>	Indiana bat	Endangered	Likely	N/A	N/A

For each species discuss the presence of, and anticipated impacts to, suitable habitats. The discussion should justify the level of anticipated impact.

Northern long-eared bat (*Myotis septentrionalis*):

Based on our ecological surveys on 9/28/12, 10/11/12, 10/12/12, 10/15/12, and 4/1/14, 15 potential roost trees were identified near or within the project site. Nearly half of the potential roost trees were dead trees or snags with exfoliating bark and cavities. The tree species of the live trees with potentially suitable summer roosting habitat included: shagbark hickory (*Carya ovata*), hackberry (*Celtis occidentalis*), ash (*Fraxinus spp.*), black walnut (*Juglans nigra*), sycamore (*Platanus occidentalis*), American basswood (*Tilia americana*), and American elm (*Ulmus americana*). Five of the potential roost trees will likely be impacted by the project.

Indiana bat (*Myotis sodalis*):

During the summer months Indiana bats live in roosting and brood rearing habitat, which includes living or standing dead trees or snags with exfoliating, peeling or loose bark, and split trunks and/or branches, or cavities (BO 2007). During the winter months, the Indiana bat dwells in hibernacula, such as caves and/or abandoned mines that provide a humid, stable environment for hibernation. According to the Biological Opinion (BO) on the Ohio Department of Transportation's Statewide Transportation Program for the Federally-listed endangered Indiana bat (*Myotis sodalis*); the project area is located within the Western management unit (2007).

Based on our ecological surveys conducted on 9/28/12, 10/11/12, 10/12/12, 10/15/12, and 4/1/14, 15 potential Indiana bat trees were identified near or within the project site. Nearly half of the potential Indiana bat trees were dead trees or snags with exfoliating bark and cavities. The tree species of the live trees with potentially suitable summer roosting habitat included: shagbark hickory (*Carya ovata*), hackberry (*Celtis occidentalis*), ash (*Fraxinus spp.*), black walnut (*Juglans nigra*), sycamore (*Platanus occidentalis*), American basswood (*Tilia americana*), and American elm (*Ulmus americana*). Five of the potential roost trees will likely be impacted by the project.

Bald eagle (*Haliaeetus leucocephalus*):

Based on our ecological survey conducted on 9/28/12, one specimen was identified and suitable habitat was recognized. However, no bald eagle nests are known to be located in the vicinity of the project area. Therefore, this species will not be impacted by the project.

STATE LISTED SPECIES IMPACTS	
Will any state listed species potentially be impacted by the project? (If NO, delete the State Listed Species Impact Table)	NO

State Listed Species Impact Table (List Each Species Found Within or Known to be Within 1 Mile of the Project Area)			Anticipated Impacts		
Scientific Name	Common Name	Listing	Alternative 1	Alternative 2	Alternative 3
<i>Ardea alba</i>	great egret	Species of Concern	NONE	N/A	N/A
<i>Obliquaria reflexa</i>	three horn wartyback	Threatened	NONE	N/A	N/A
<i>Truncilla truncata</i>	deertoe	Species of Concern	NONE	N/A	N/A

For each species discuss the presence of, and anticipated impacts to, suitable habitats. The discussion should justify the level of anticipated impact.

Great egret (*Ardea alba*):

During our ecological survey on 9/28/12, the great egret (*Ardea alba*) was identified. This species is an Ohio Species of Concern. The great egret is generally found in the western Lake Erie basin in shallow marshes, ditches, wet fields, and river edges, but may be found elsewhere in Ohio (ODNR, 2012). According to the ODNR, the great egret has a peak breeding activity in mid-April (2012). The ODNR defines a Species of Concern as a species that may become threatened in Ohio due to external stressors or a species for which there is some concern. Due to insufficient information, the ODNR was unable to provide an accurate status evaluation of the great egret (2012). The species will not be impacted by this project.

Threehorn wartyback (*Obliquaria reflexa*):

The threehorn wartyback (*Obliquaria reflexa*) is found in riverine substrates, such as, mud, sand and gravel. ODNR Ohio Natural Heritage Database revealed that this species was identified within one mile of the project area on September 9, 1996. During our ecological survey on 12/11/14, the threehorn wartyback was identified. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project.

Deertoe (*Truncilla truncata*):

During our ecological survey on 12/11/14, the deertoe (*Truncilla truncata*) was identified by collection of a dead shell along the riverbank. This species is an Ohio Species of Concern. The deertoe is usually found in large streams and rivers, but has also been found in lakes. The deertoe occurs in riverine substrates, such as mud, sand and gravel. A Group 3 Survey will be conducted prior to construction and any state or federally listed species will be relocated to suitable habitat outside the "impact area" for the project.

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APPENDICES

1- Figures

- ☒ Project Location Mapping
- ☐ Literature Review Mapping Results
- ☒ Ecological Resource Mapping
- ☒ Other (List): NCLD MAP

2 - Photographs

- ☒ Photograph Location Map
- ☒ Photographs

3 - Data Forms

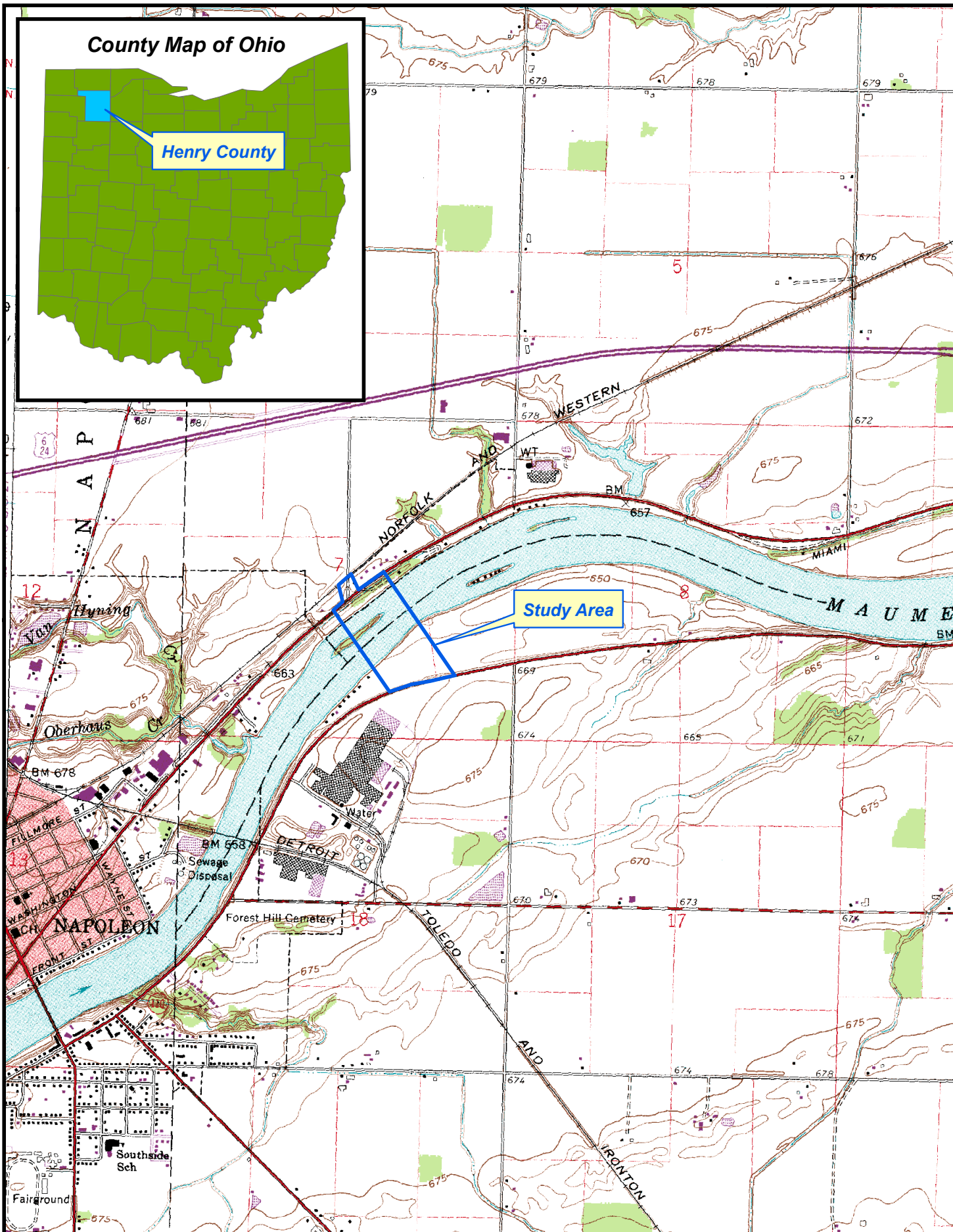
- ☒ Stream Characterization/Assessment Data Forms
- ☒ Wetland Characterization/Assessment Data Forms
- ☒ Indiana Bat Habitat Characterization Worksheet
- ☐ Other (List):

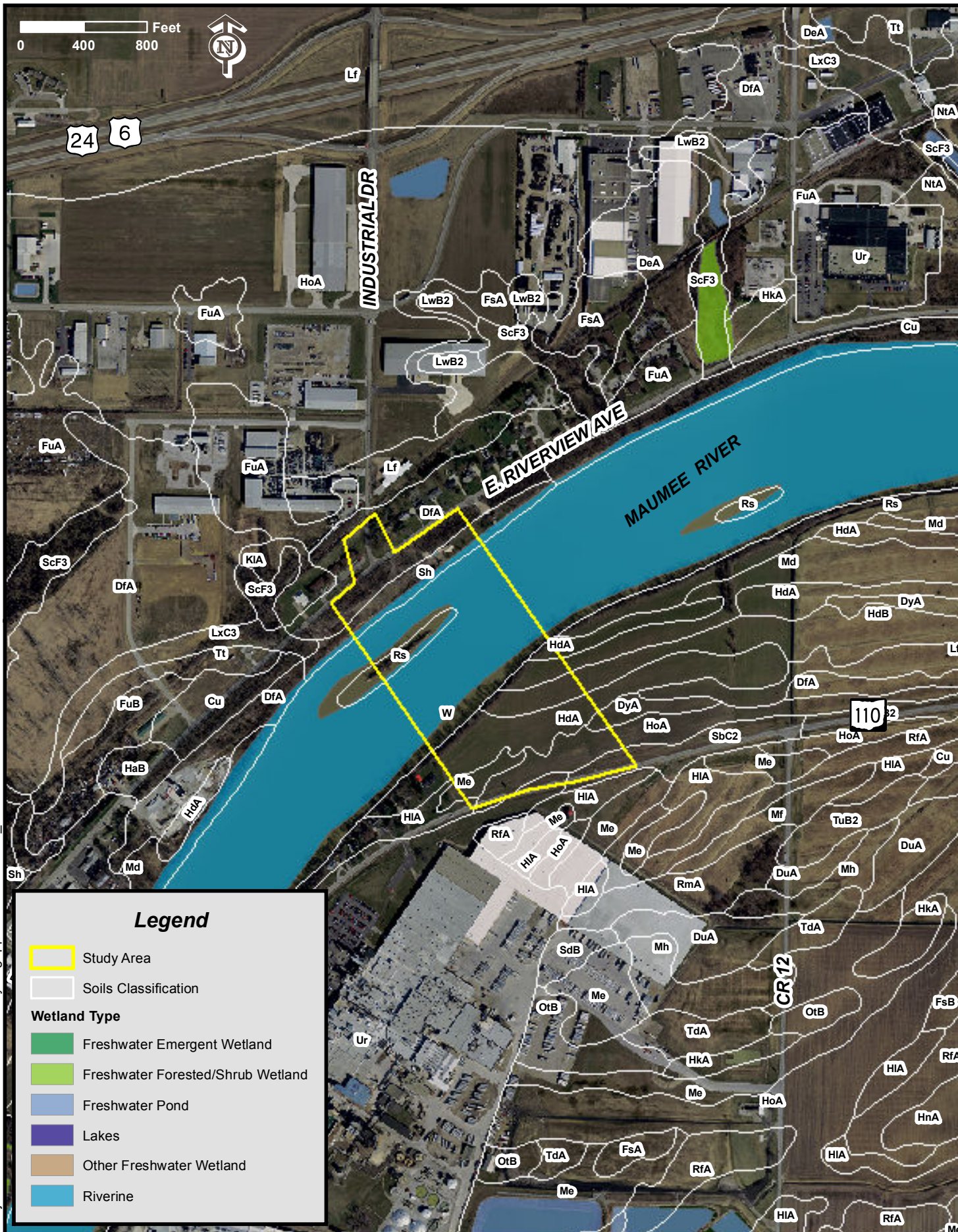
4 – Agency Data Requests

- ☒ ODNR, Division of Natural Areas and Preserves – Natural Heritage Database Information Request
- ☒ USFWS – Federally Listed Species Information Request
- ☒ Other (List): –Ohio EPA/DSW Ecological Assessment Section (Fish and Macroinvertebrates Collections)

APPENDIX 1

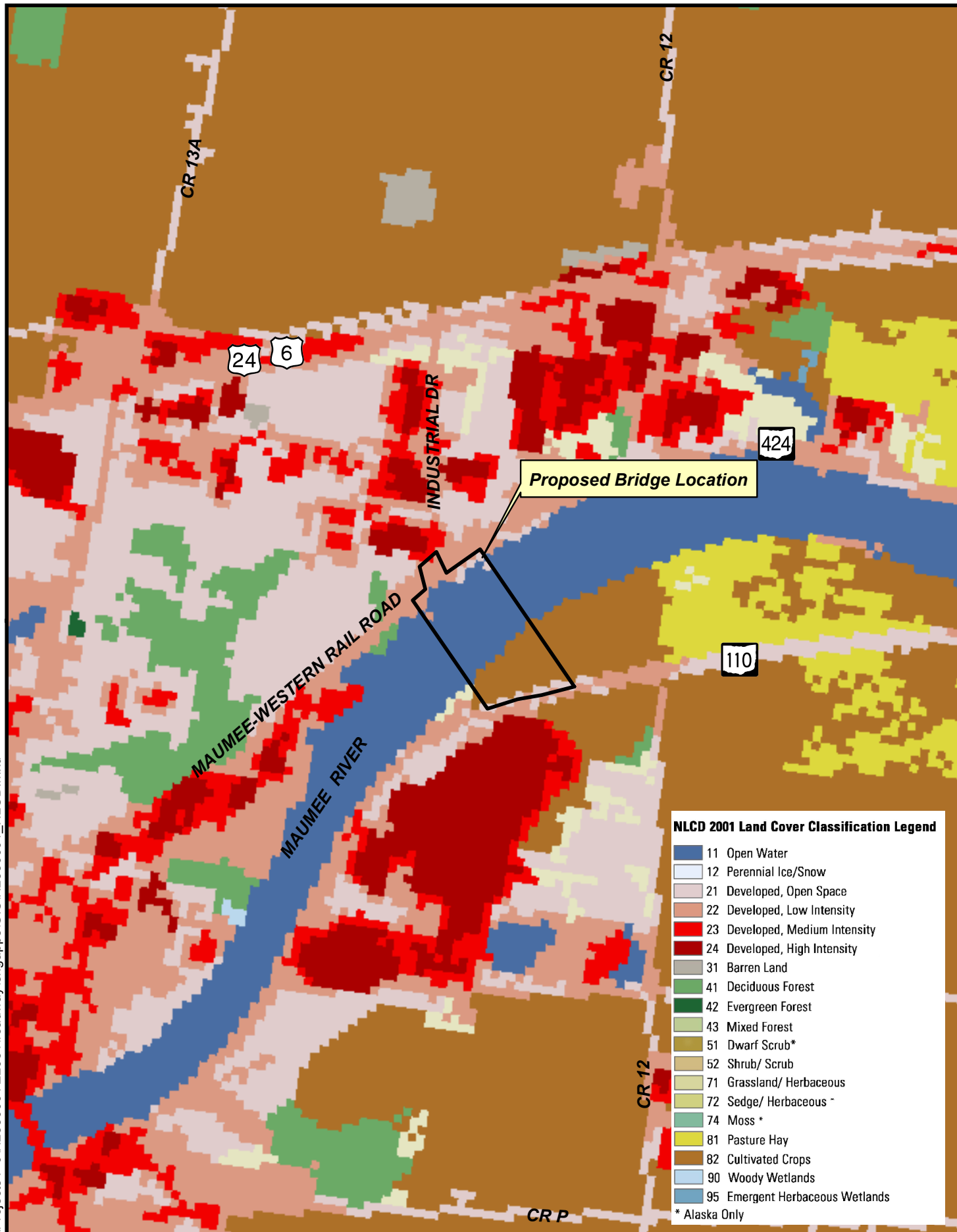
Figures





**Figure 2: NWI/Soils Classification
Proposed Maumee River Crossing
Napoleon, Ohio**

Notes:
The soils data is provided by the U.S. Department of Agriculture, Natural Resources Conservation Service. The NWI data is provided by the U.S. Department of the Interior, Fish and Wildlife Service. The Henry county photography, dated April 2012, is provided by OGRIP as part of the Ohio Statewide Imagery Program.



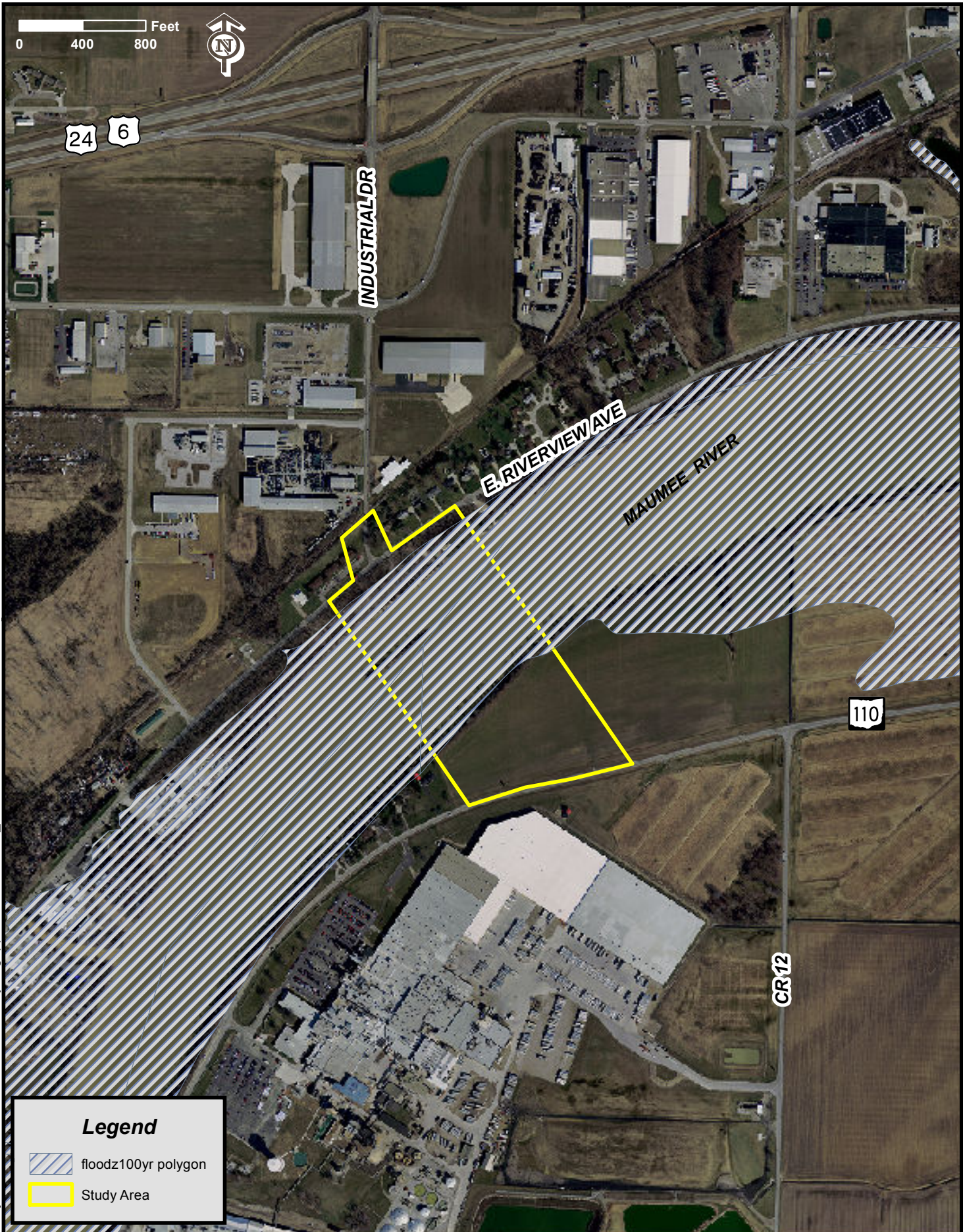
**Figure 3: National Land Cover Database
 Proposed Maumee River Crossing
 Napoleon, Ohio**

Notes

National Land Cover Dataset, 2001
 U.S. Geological Survey

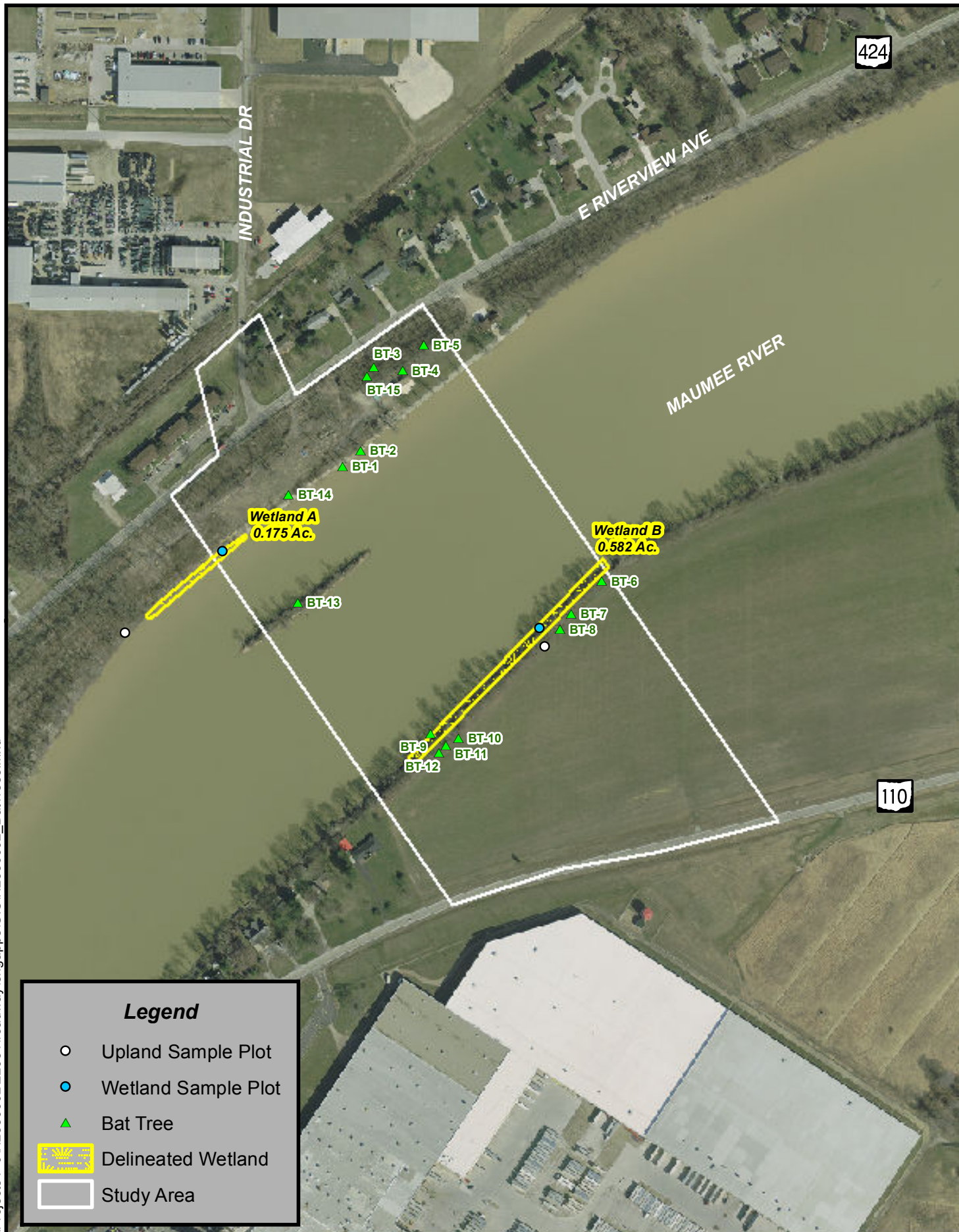
0 750 1,500 Feet





Notes:

The flood zone boundary is provided by FEMA.
The Henry county photography, dated April 2012, is
provided by OGRIP as part of the Ohio Statewide
Imagery Program.



Notes

The Henry county photography, dated April 2012, is provided by OGRIP as part of the Ohio Statewide Imagery Program.



APPENDIX 2

Photographs

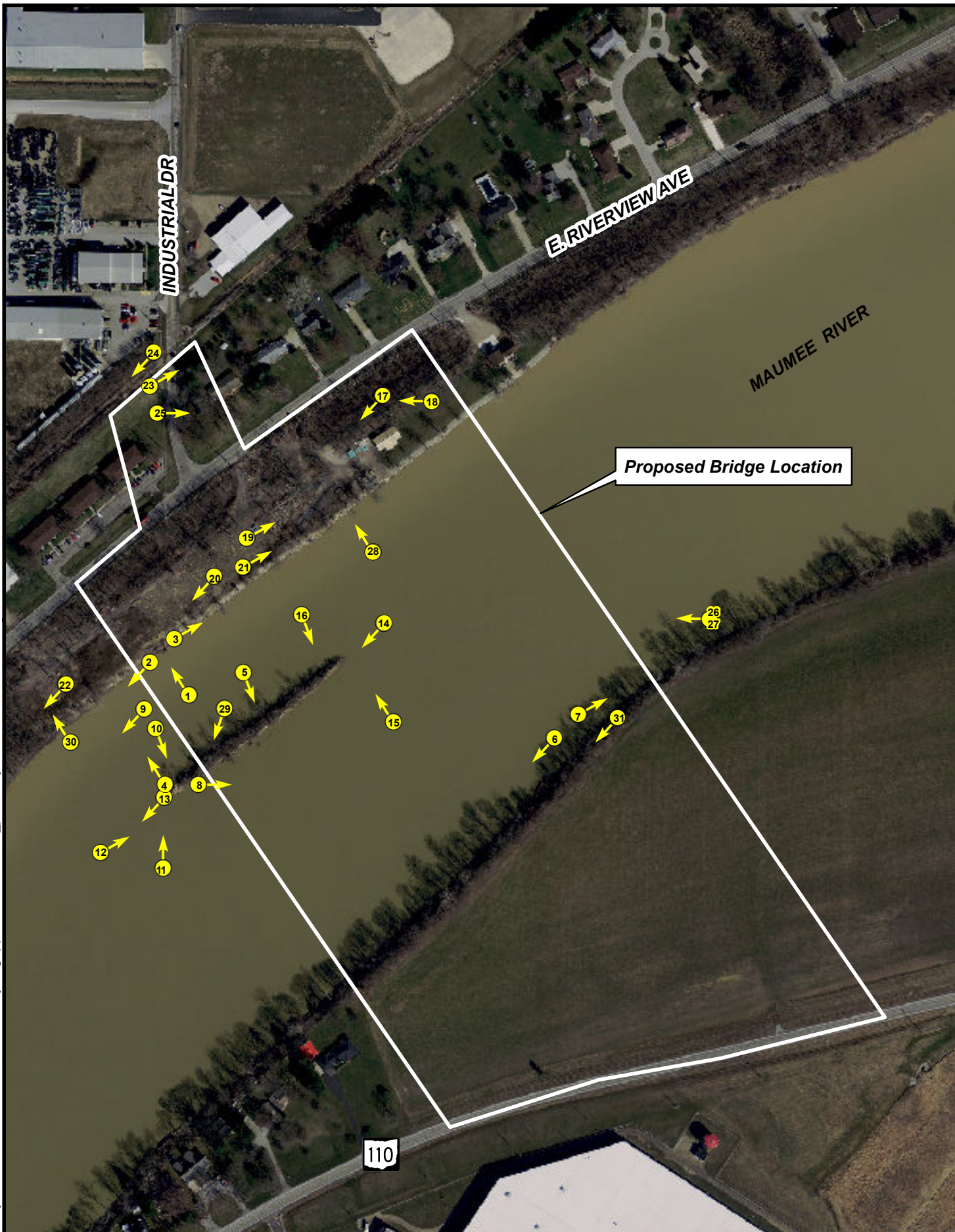




Photo 1: North bank view from boat facing north



Photo 2: North bank facing west with fringe Wetland A



Photo 3: Fringe Wetland A facing east



Photo 4: North bank view from island



Photo 5: South bank of Maumee River from boat facing south



Photo 6: South bank facing west with fringe Wetland B



Photo 7: Fringe Wetland B facing east



Photo 8: South bank view from island



Photo 9: West end of island facing west



Photo 10: West end of island facing south



Photo 11: West end of island facing north



Photo 12: West end of island facing east



Photo 13: West end of island facing west



Photo 14: East end of island facing west



Photo 15: East end of island facing north



Photo 16: North side of island facing south



Photo 17: Canal forest on the north bank of project area



Photo 18: Floodplain forest on the north bank of project area



Photo 19: Upland forest on the north bank of project area



Photo 20: Open site on the north bank of project area facing west



Photo 21: Open site on the north bank of project area facing east



Photo 22: Margin forest west of project area



Photo 23: Inactive railroad facing east



Photo 24: Inactive railroad facing west



Photo 25: Residential area north of the Maumee River



Photo 26: On south bank of Maumee River facing north towards island



Photo 27: Close-up of island from south bank of Maumee River



Photo 28: Bat tree 1 on north bank facing north.



Photo 29: Bald eagle perched on snag on island.



Photo 30: Upland sample point for Wetland A.



Photo 31: Upland sample point for Wetland B.

APPENDIX 3

Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: H2530001 City/County: Napoleon/ Henry Co. Sampling Date: 9-28-2012
 Applicant/Owner: Henry County State: OH Sampling Point: Wetland A
 Investigator(s): B. Boos, K. Carr Section, Township, Range: Napoleon TWP
 Landform (hillslope, terrace, etc.): River bank Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR L Lat: 41.404662 Long: 84.10572 Datum: DD
 Soil Map Unit Name: Shoals silt loam NWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No
 Are Vegetation , Soil ☒, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <u> </u>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <u> </u> If yes, optional Wetland Site ID: <u>WETLAND A</u>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <u> </u>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <u> </u>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Fringe wetland, along the northern bank of Maumee River		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland A

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Platanus occidentalis</i>	65	X	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <i>Ulmus americana</i>	40	X	FACW	
3. <i>Juglans nigra</i>	20		FACU	
4. <i>Tilia americana</i>	15		FACU	
5. _____	_____	_____	_____	Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> Total % Cover of: _____ Multiply by: _____ </div> OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	140	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <i>Cornus drummondii</i>	40	X	FAC	
2. <i>Salix exigua</i>	20	X	OBL	
3. <i>Cephalanthus occidentalis</i>	5		OBL	
4. <i>Staphylea trifolia</i>	2		FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	67	= Total Cover		Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Herb Stratum (Plot size: _____)				
1. <i>Decodon verticillatus</i>	80	X	OBL	
2. <i>Echinochloa muricata</i>	60		OBL	
3. <i>Phyla lanceolata</i>	45		OBL	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
4. <i>Persicaria lapathifolia</i>	35		FACW	
5. <i>Eupatorium perfoliatum</i>	20		FACW	
6. <i>Xanthium strumarium</i>	15		FAC	
7. <i>Lycopus uniflorus</i>	10		OBL	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	265	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. <i>Toxicodendron radicans</i>	5	X	FAC	
2. <i>Vitis riparia</i>	2	X	FAC	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	7	= Total Cover		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R,
<input type="checkbox"/> Histic Epipedon (A2)	MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☒ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 2

Hydric Soil Present? Yes _____ No X

Remarks:

Wetland A is a vegetated bar within an active channel. Such areas are known to have problematic hydric soils. As a result, the soil profile lacks clear hydric soil characteristics but still satisfies the hydric soil criterion for identifying wetlands. These soils are described in the Regional Supplements to the Corps of Engineers Wetland Delineation Manual as "Fluvial Deposits within Floodplains". In addition, Wetland A is dominated with herbaceous hydrophytic vegetation, possesses indicators of hydrology and is clearly functioning as wetland habitat.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: H2530002 City/County: Napoleon, Henry County Sampling Date: 9-28-2012
 Applicant/Owner: Henry County State: OH Sampling Point: Wetland B
 Investigator(s): B. Boos, K. Carr Section, Township, Range: NAPOLEON TWP
 Landform (hillslope, terrace, etc.): river bank Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR L Lat: 41.404044 Long: 84.10205 Datum: DD
 Soil Map Unit Name: Haney loam, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No
 Are Vegetation , Soil ☒, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <u> </u>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <u> </u> If yes, optional Wetland Site ID: <u>WETLAND B</u>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <u> </u>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <u> </u>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <u> </u> Depth (inches): <u> </u> Water Table Present? Yes <input checked="" type="checkbox"/> No <u> </u> Depth (inches): <u> </u> Saturation Present? Yes <input checked="" type="checkbox"/> No <u> </u> Depth (inches): <u> </u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland B

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	<u>0</u>	= Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = <u>0</u>	FACW species _____	x 2 = <u>0</u>	FAC species _____	x 3 = <u>0</u>	FACU species _____	x 4 = <u>0</u>	UPL species _____	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = <u>0</u>																	
FACW species _____	x 2 = <u>0</u>																	
FAC species _____	x 3 = <u>0</u>																	
FACU species _____	x 4 = <u>0</u>																	
UPL species _____	x 5 = <u>0</u>																	
Column Totals: <u>0</u> (A)	<u>0</u> (B)																	
Sapling/Shrub Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	<u>0</u>	= Total Cover																
Herb Stratum (Plot size: _____)																		
1. <i>Decodon verticillatus</i>	85	X	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <i>Impatiens capensis</i>	75	X	FACW															
3. <i>Cornus drummondii</i>	68	X	FAC															
4. <i>Bidens frondosa</i>	50		FACW															
5. <i>Echinochloa muricata</i>	40		OBL															
6. <i>Lysimachia nummularia</i>	20		FACW															
7. <i>Apocynum cannabinum</i>	10		FAC															
8. <i>Glyceria striata</i>	10		OBL															
9. <i>Urtica dioica</i>	5		FAC															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
	<u>363</u>	= Total Cover																
Woody Vine Stratum (Plot size: _____)																		
1. <i>Vitis riparia</i>	45	X	FAC	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. <i>Toxicodendron radicans</i>	20	X	FAC															
3. <i>Parthenocissus vitacea</i>	5		FACU															
4. _____	_____	_____	_____															
	<u>70</u>	= Total Cover																
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes <u>X</u> No _____														

SOIL

Sampling Point: Wetland B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R,
<input type="checkbox"/> Histic Epipedon (A2)	MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks:

Project/Site: H2530002 City/County: NAPOLEON/ HENRY Sampling Date: 12/12/2014
Applicant/Owner: HENRY COUNTY State: OH Sampling Point: UPLAND
Investigator(s): K. CARR, K. SIMON Section, Township, Range: NAPOLEON TWP
Landform (hillslope, terrace, etc.): RIVERBANK Local relief (concave, convex, none): CONCAVE Slope (%): _____
Subregion (LRR or MLRA): LRR L Lat: _____ Long: _____ Datum: DD
Soil Map Unit Name: Shoals silt loam NWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present? Yes _____ No <u> X </u> Hydric Soil Present? Yes _____ No <u> X </u> Wetland Hydrology Present? Yes _____ No <u> X </u>	Is the Sampled Area within a Wetland? Yes _____ No <u> X </u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	
UPLAND SAMPLE POINT FOR WETLAND A	

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)		
		<input type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

VEGETATION – Use scientific names of plants.

 Sampling Point: UPLAND

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <i>Populus deltoides</i>	40	X	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)														
2. <i>Juglans nigra</i>	10		FACU															
3. <i>Acer negundo</i>	10		FAC															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>75</u></td> <td>x 3 = <u>225</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>110</u> (A)</td> <td><u>370</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.36</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>75</u>	x 3 = <u>225</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>110</u> (A)	<u>370</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>75</u>	x 3 = <u>225</u>																	
FACU species <u>30</u>	x 4 = <u>120</u>																	
UPL species <u>5</u>	x 5 = <u>25</u>																	
Column Totals: <u>110</u> (A)	<u>370</u> (B)																	
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	60	= Total Cover																
Sapling/Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <i>Cornus racemosa</i>	10	X	FAC															
2. <i>Acer negundo</i>	5	X	FAC															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	15	= Total Cover		Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
Herb Stratum (Plot size: _____)																		
1. <i>Erigeron annuus</i>	10	X	FACU															
2. <i>Solidago altissima</i>	5	X	FACU															
3. <i>Cirsium discolor</i>	5	X	UPL															
4. <i>Alliaria petiolata</i>	5	X	FACU	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____	Woody Vine Stratum (Plot size: _____)														
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____	Woody Vine Stratum (Plot size: _____)														
1. <i>Vitis riparia</i>	10	X	FAC															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____	Woody Vine Stratum (Plot size: _____)														
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	10	= Total Cover																

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R,
<input type="checkbox"/> Histic Epipedon (A2)	MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Project/Site: H2530002 City/County: NAPOLEON/ HENRY Sampling Date: 12/12/2014
Applicant/Owner: HENRY COUNTY State: OH Sampling Point: UPLAND
Investigator(s): K. CARR, K. SIMON Section, Township, Range: NAPOLEON TWP
Landform (hillslope, terrace, etc.): RIVERBANK Local relief (concave, convex, none): CONCAVE Slope (%): _____
Subregion (LRR or MLRA): LRR L Lat: _____ Long: _____ Datum: DD
Soil Map Unit Name: Haney loam, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

<p>Hydrophytic Vegetation Present? Yes <u>X</u> No _____</p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p> <p>Remarks: (Explain alternative procedures here or in a separate report.)</p>	<p>Is the Sampled Area within a Wetland? Yes _____ No <u>X</u></p> <p>If yes, optional Wetland Site ID: _____</p>
<h2 style="margin-top: 0;">UPLAND SAMPLE POINT FOR WETLAND B</h2>	

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

VEGETATION – Use scientific names of plants.

 Sampling Point: UPLAND

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Celtis occidentalis</u>	40	X	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)														
2. <u>Acer negundo</u>	20	X	FAC															
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	60	= Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>0</u> (A)	<u>0</u> (B)																	
Sapling/Shrub Stratum (Plot size: _____)																		
1. <u>Cornus racemosa</u>	10	X	FAC															
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	10	= Total Cover																
Herb Stratum (Plot size: _____)																		
1. <u>Solidago altissima</u>	60	X	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Solidago canadensis</u>	10		FACU															
3. <u>Ambrosia trifida</u>	5		FAC															
4. <u>Poa pratensis</u>	5		FACU															
5. <u>Alliaria petiolata</u>	5		FACU															
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
12. _____																		
	85	= Total Cover																
Woody Vine Stratum (Plot size: _____)																		
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____														
2. _____																		
3. _____																		
4. _____																		
	0	= Total Cover																
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R,
<input type="checkbox"/> Histic Epipedon (A2)	MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name:	Jessica Stratigakos, Keith Carr
Date:	November 27, 2012
Affiliation:	The Mannik & Smith Group
Address:	1800 Indian Wood Circle, Maumee, OH 43537
Phone Number:	419-891-2222
e-mail address:	jstratigakos@manniksmithgroup.com, kcarr@manniksmithgroup.com
Name of Wetland:	Wetland A
Vegetation Communit(ies):	Emergent
HGM Class(es):	riverine/upland complex wetland
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
See Figure 5 in Level 2 Ecological Survey Report.	
Lat/Long or UTM Coordinate	41.404662, -84.10572
USGS Quad Name	Napoleon, OH
County	Henry
Township	Napoleon
Section and Subsection	--
Hydrologic Unit Code	04100009010080
Site Visit	9/28/12, 10/11/12, 10/12/12
National Wetland Inventory Map	No
Ohio Wetland Inventory Map	No
Soil Survey	Yes
Delineation report/map	Yes

Name of Wetland: Wetland A	
Wetland Size (acres, hectares):	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. See Figure 5 in Level 2 Ecological Survey Report.	
Comments, Narrative Discussion, Justification of Category Changes: None.	
Final score : 59	Category: 2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	✓	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland A**Rater(s):** Jessica Stratigakos**Date:** November 27, 2011

1.0

1.0

Metric 1. Wetland Area (size).

max 6 pts.

subtotal

Select one size class and assign score.

1.0

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☐ <0.1 acres (0.04ha) (0 pts)

10.0

11.0

Metric 2. Upland buffers and surrounding land use.

max 14 pts.

subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

4.0

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☒ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

6.0

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

22.5

33.5

Metric 3. Hydrology.

max 30 pts.

subtotal

3a. Sources of Water. Score all that apply.

5.0

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☐ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☒ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

2.0

- ☐ >0.7 (27.6in) (3)
☒ 0.4 to 0.7m (15.7 to 27.6in) (2)
☐ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

9.5

- ☒ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

2.0

- ☒ 100 year floodplain (1)
☐ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g. forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

4.0

- ☒ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☐ Seasonally inundated (2)
☐ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile | <input type="checkbox"/> filling/grading |
| <input type="checkbox"/> dike | <input type="checkbox"/> road bed/RR track |
| <input type="checkbox"/> weir | <input type="checkbox"/> dredging |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> other _____ |

15.5

49.0

Metric 4. Habitat Alteration and Development.

max 20 pts.

subtotal

4a. Substrate disturbance. Score one or double check and average.

3.5

- ☒ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

4.5

- ☐ Excellent (7)
☐ Very good (6)
☒ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

7.5

- ☒ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal |
| <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation |
| <input type="checkbox"/> selective cutting | <input type="checkbox"/> dredging |
| <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming |
| <input type="checkbox"/> toxic pollutants | <input type="checkbox"/> nutrient enrichment |

49.0

subtotal this page

Site: Wetland A	Rater(s): Jessica Stratigakos	Date: November 27, 2019
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49.0

subtotal first page

0.0

49.0

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

0

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

10.0

59.0

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

6

- ☐ 0 Aquatic bed
- ☐ 3 Emergent
- ☐ 2 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 1 Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersions.

Select only one.

4

- ☐ High (5)
- ☒ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

-1

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

1

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

59.0

End of Quantitative Rating. Complete Categorization Worksheets.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	<input type="radio"/> NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	<input checked="" type="radio"/> YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input type="radio"/> NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name:	Keith Carr, Jessica Stratigakos	
Date:	November 27, 2012	
Affiliation:	The Mannik & Smith Group	
Address:	1800 Indian Wood Circle, Maumee, OH 43537	
Phone Number:	419-891-2222	
e-mail address:	kcarr@manniksmithgroup.com, jstratigakos@manniksmithgroup.com	
Name of Wetland:	Wetland B	
Vegetation Communit(ies):	Emergent	
HGM Class(es):	riverine/upland complex wetland	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	<p>See Figure 5 in Level 2 Ecological Survey Report.</p>	
Lat/Long or UTM Coordinate	41.404044, -84.10205	
USGS Quad Name	Napoleon, OH	
County	Henry	
Township	Napoleon	
Section and Subsection	--	
Hydrologic Unit Code	04100009010080	
Site Visit	9/28/12, 10/11/12, 10/12/12	
National Wetland Inventory Map	No	
Ohio Wetland Inventory Map	No	
Soil Survey	Yes	
Delineation report/map	Yes	

Name of Wetland: Wetland B	
Wetland Size (acres, hectares):	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. See Figure 5 in Level 2 Ecological Survey Report.	
Comments, Narrative Discussion, Justification of Category Changes: None.	
Final score : 58.5	Category: 2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	✓	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pelliata</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland B**Rater(s):** J. Stratigakos**Date:** November 27, 2011

2.0

2.0

Metric 1. Wetland Area (size).

max 6 pts.

subtotal

Select one size class and assign score.

- 2.0
- ☐ >50 acres (>20.2ha) (6 pts)
 - ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
 - ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
 - ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
 - ☒ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
 - ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
 - ☐ <0.1 acres (0.04ha) (0 pts)

10.0

12.0

Metric 2. Upland buffers and surrounding land use.

max 14 pts.

subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- 4.0
- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
 - ☒ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
 - ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
 - ☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- 6.0
- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
 - ☒ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
 - ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
 - ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

22.5

34.5

Metric 3. Hydrology.

max 30 pts.

subtotal

3a. Sources of Water. Score all that apply.

- 5.0
- ☐ High pH groundwater (5)
 - ☐ Other groundwater (3)
 - ☐ Precipitation (1)
 - ☐ Seasonal/Intermittent surface water (3)
 - ☒ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- 2.0
- ☐ >0.7 (27.6in) (3)
 - ☒ 0.4 to 0.7m (15.7 to 27.6in) (2)
 - ☐ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- 9.5
- ☒ None or none apparent (12)
 - ☒ Recovered (7)
 - ☐ Recovering (3)
 - ☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 2.0
- ☒ 100 year floodplain (1)
 - ☐ Between stream/lake and other human use (1)
 - ☐ Part of wetland/upland (e.g. forest), complex (1)
 - ☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- 4.0
- ☒ Semi- to permanently inundated/saturated (4)
 - ☐ Regularly inundated/saturated (3)
 - ☐ Seasonally inundated (2)
 - ☐ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile | <input type="checkbox"/> filling/grading |
| <input type="checkbox"/> dike | <input type="checkbox"/> road bed/RR track |
| <input type="checkbox"/> weir | <input type="checkbox"/> dredging |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> other _____ |

15.0

49.5

Metric 4. Habitat Alteration and Development.

max 20 pts.

subtotal

4a. Substrate disturbance. Score one or double check and average.

- 3.5
- ☒ None or none apparent (4)
 - ☒ Recovered (3)
 - ☐ Recovering (2)
 - ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- 4.0
- ☐ Excellent (7)
 - ☐ Very good (6)
 - ☐ Good (5)
 - ☒ Moderately good (4)
 - ☐ Fair (3)
 - ☐ Poor to fair (2)
 - ☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- 7.5
- ☒ None or none apparent (9)
 - ☒ Recovered (6)
 - ☐ Recovering (3)
 - ☐ Recent or no recovery (1)

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal |
| <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation |
| <input type="checkbox"/> selective cutting | <input type="checkbox"/> dredging |
| <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming |
| <input type="checkbox"/> toxic pollutants | <input type="checkbox"/> nutrient enrichment |

49.5

subtotal this page

Site: Wetland B	Rater(s): J. Stratigakos	Date: November 27, 2019
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49.5

subtotal first page

0.0

49.5

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

0

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

9.0

58.5

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

6

- ☐ 0 Aquatic bed
- ☐ 3 Emergent
- ☐ 2 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 1 Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

3

- ☐ High (5)
- ☐ Moderately high(4)
- ☒ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

-1

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

1

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

58.5

End of Quantitative Rating. Complete Categorization Worksheets.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	<input checked="" type="radio"/> YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3

58.5

End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX 4

Agency Data Requests

October 2, 2012

Ohio Department of Natural Resources
Division of Wildlife
Ohio Biodiversity Database Program
2045 Morse Road, Bldg. G-3
Columbus, Ohio 43229-6693

Re: **ODNR Biodiversity Request for the Proposed New Maumee River Crossing Project
City of Napoleon, Henry County, Ohio**

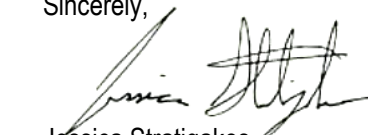
Dear Sir or Madam:

We are requesting that an Ohio Biodiversity search be conducted to request any records you may have on Threatened & Endangered species for the New Maumee River Crossing Project referenced above. In June 2012, The Mannik & Smith Group, Inc. (MSG) was contracted by the Henry County Transportation Improvement District (HCTID) to provide preliminary engineering services for the proposed New Maumee River Crossing project (PID #22984; State Job #42378). The proposed project will construct a new bridge spanning the Maumee River at Napoleon in Harrison Township, Henry County. The preferred alternative under consideration would connect Industrial Drive and State Route 424 on the north side of the river with State Route 110 on the south side of the river (Figure 1).

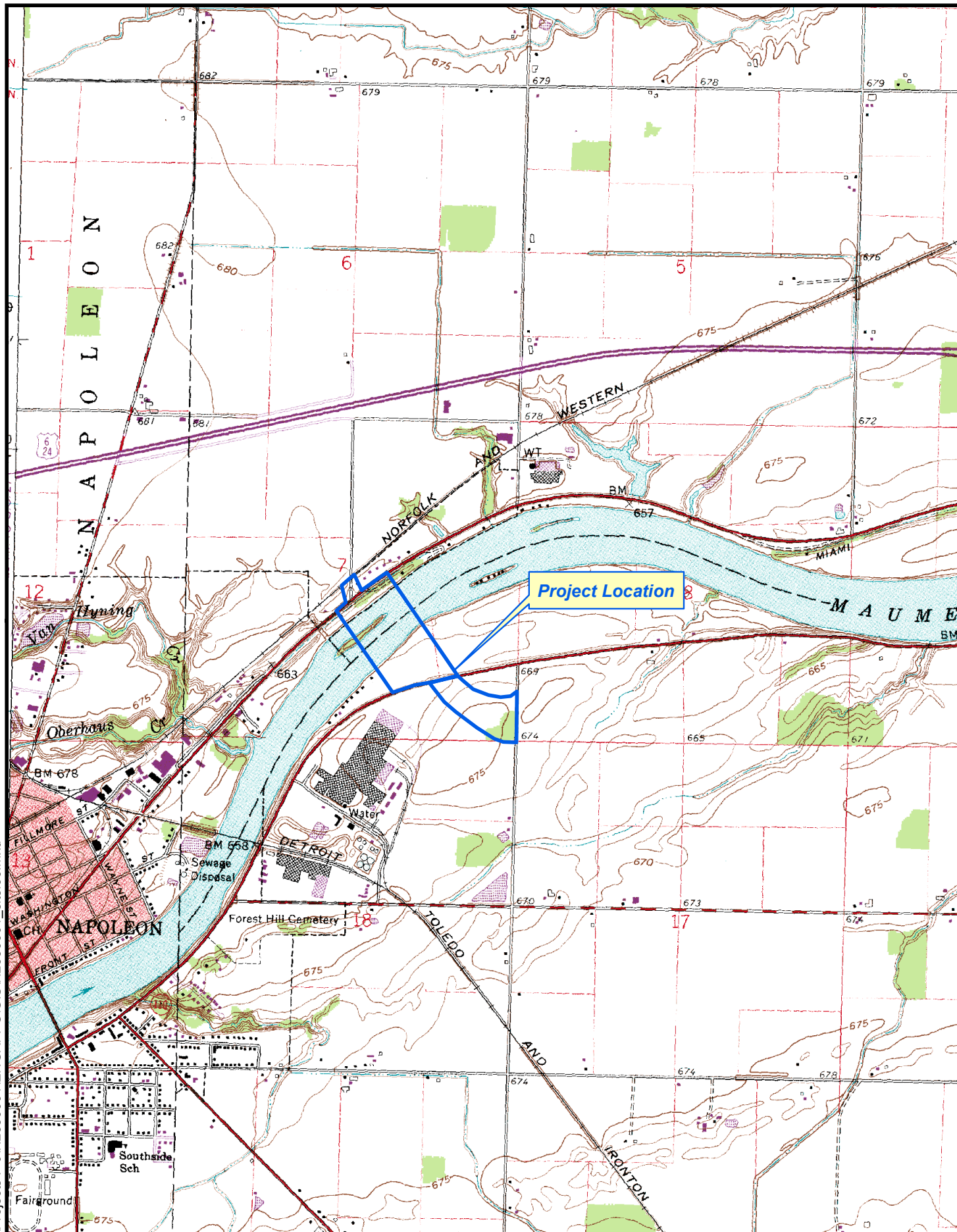
The goal of this project is to better connect the northern and southern halves of the City of Napoleon, in Henry County, Ohio. Heavy traffic volumes on the single river crossing at SR 108 causes significant traffic congestion and delays in the central business district (downtown) during peak traffic periods. These peak traffic periods are associated with shift changes and truck traffic both to and from the Campbell's facility and school traffic, which together place high demands on the lone bridge. A transportation solution is needed that will provide an alternative link for these important areas of the community and reduce the demand on the State Route 108 Bridge. This will also reduce congestion within the downtown area of Napoleon.

If you need any further information regarding this project, please contact me at jstratigakos@manniksmithgroup.com or (216) 378-1490.

Sincerely,



Jessica Stratigakos
Environmental Scientist



Mannik & Smith
The Group, Inc.
1800 Indian Wood Circle (419) 891-2222
Maumee, Ohio 43537 Fax: (419) 891-1595
Civil Engineering, Surveying and Environmental Consulting
MAUMEE ♦ CLEVELAND ♦ MONROE ♦ CANTON

**Figure 1: Study Area Location Map
Proposed Maumee River Crossing
Napoleon, Ohio**

Notes

USGS Quadrangle, 7.5' Series Topographic
Napoleon East, OH 1960, Revised 1977

0 1,000 2,000 Feet



DATA REQUEST FORM

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
OHIO NATURAL HERITAGE PROGRAM
2045 MORSE RD., BLDG. G-3
COLUMBUS, OHIO 43229-6693
PHONE: 614-265-6452; EMAIL: obdrequest@dnr.state.oh.us

INSTRUCTIONS:

Please complete both pages of this form, sign and return it to the address or email address above along with: (1) a brief letter describing your project, and (2) a map detailing the boundaries of your project site. A copy of the pertinent portion of a USGS 7.5 minute topographic map is preferred but other maps are acceptable. Data requests will be completed within approximately 30 days. If you email your request you do not need to mail the original unless otherwise requested.

FEES:

As of June 2010, we have temporarily suspended charging a fee until a review of the data request process has been completed.

WHAT WE PROVIDE: The Natural Heritage Database is the most comprehensive source of information on the location of Ohio's rare species and significant natural features. Records for the following will be provided: plants and animals (state and federal listed species), high quality plant communities, geologic features, breeding animal concentrations and unprotected significant natural areas. We also provide locations for managed areas including federal, state, county, local and non-profit sites, as well as state and national scenic rivers. A minimum one mile radius around the project site will automatically be searched. Because the data is sensitive information, it is our policy to provide only the data needed to complete your project.

Date: 10/02/2012 Company name: The Mannik & Smith Group

Name of person response letter should be addressed to: Mr. ☐ Ms. ☒

Jessica Stratigakos

Address: 23225 Mercantile Road

City/State/Zip: Beachwood Ohio 44122

Phone: 216 378 1490 Fax: _____

E-mail address: jstratigakos@manniksmithgroup.com

Project Name: Proposed New Maumee River Crossing Project

Project Number: H2530001

Project Site Address: Maumee River

Project County: Henry County

Project City/Township: Napoleon

Project site is located on the following USGS 7.5 minute topographic quad(s): _____

Napoleon East, Ohio

Project Latitude and Longitude if available (decimal degrees is preferred): _____

-84.104; 41.404

Description of work to be performed at the project site: The proposed project will construct a new bridge
spanning the Maumee River.

How do you want your data reported? (Both formats provide exactly the same data. The only difference is in the format of our response. The manual search is most appropriate for small scale projects or for those who do not have GIS capabilities. Please choose only one option.)

Printed list and map (manual search) _____ **OR** GIS shapefile (computer search) X

Additional information you require: None

How will the information be used? To complete an ODOT Ecological Survey Report.

I certify that data supplied by the Ohio Natural Heritage Program will not be published without crediting the ODNR Division of Wildlife as the source of the material. In addition, I certify that electronic datasets will not be distributed to others without the consent of the Division of Wildlife, Ohio Natural Heritage Program.

Signature [Handwritten Signature]

Date: 10/2/12



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife

Scott Zody, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

October 12, 2012

Jessica Stratigakos
Mannik & Smith Group
23225 Mercantile Road
Beachwood, OH 44122

Dear Ms. Stratigakos,

I have e-mailed you a set of ArcView shape files for the Proposed New Maumee River Crossing project, including a one mile radius, in the City of Napoleon, Henry County, Ohio. This data may not be published or distributed beyond the scope of the project description on the data request form without prior written permission of the Natural Heritage Program.

I am attaching a shape file for the rare and endangered plants and animals, geologic features, high quality plant communities and animal assemblages. Fields included are scientific and common names, state and federal statuses, as well as date of the most recent observation. State and federal statuses are defined as: E = endangered, T = threatened, P = potentially threatened, SC = species of concern, SI = special interest, FE = federal endangered, FT = federal threatened, FPE = federal potentially endangered, FC = federal candidate and FSC = federal species of concern.

This project crosses the Maumee State Designated Scenic River. The approval of the Director of ODNR may be required in accordance with Ohio Revised Code section 1547.82. Please contact Scenic River Program Manager Bob Gable at 614-265-6814 for further information.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas.

This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Please contact me at 614-265-6452 if I can be of further assistance.

Sincerely,

A handwritten signature in blue ink that reads "Greg Schneider".

Greg Schneider, Administrator
Ohio Natural Heritage Program

River Mile	Type	Date	Drainage area (sq mi)	Number of				Percent of Individuals							DELTA anomalies	Rel.No. minus tolerants /(1.0 km)	IBI	Modified lwb
				Total species	Sunfish species	Sucker species	Intolerant species	Rnd-bodied suckers	Simple Lithophils	Tolerant fishes	Omni- vores	Top carnivores	Insect- ivores					
Maumee River - (04-001)																		
Year: 2012																		
47.10	A	07/16/2012	5649	21(5)	4(5)	3(3)	0(1)	2(1)	4(1)	13(5)	30(1)	7(3)	60(5)	0.0(5)	462(5)	40	9.4	
47.10	A	08/14/2012	5649	19(3)	4(5)	4(3)	0(1)	2(1)	3(1)	12(5)	32(1)	8(3)	59(5)	0.0(5)	598(5)	38	9.4	
41.20	A	07/16/2012	5693	18(3)	4(5)	2(1)	0(1)	0(1)	1(1)	37(1)	66(1)	3(1)	28(3)	0.4(5)	290(3)	26	7.7	
41.20	A	08/28/2012	5693	19(3)	4(5)	3(3)	0(1)	0(1)	1(1)	12(5)	44(1)	3(1)	52(3)	0.0(5)	892(5)	34	7.7	

♦ - IBI is low end adjusted.

* - < 200 Total individuals in sample

** - < 50 Total individuals in sample

Species List

Page 1

River Code: 04-001	Stream: Maumee River	Sample Date: 2012
River Mile: 47.10	Location: <i>Napoleon WTP intake</i>	Date Range: 07/16/2012
Time Fished: 4146 sec	Drainage: 5649.0 sq mi	Thru: 08/14/2012
Dist Fished: 1.00 km	Basin: Maumee River	No of Passes: 2
		Sampler Type: A

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Longnose Gar		P	M	1	1.00	0.17	0.04	0.03	35.00
Gizzard Shad		O	M	111	111.00	18.38	3.53	3.09	31.83
Smallmouth Buffalo	C	I	M	54	54.00	8.94	17.25	15.10	319.36
Quillback	C	O	M	6	6.00	0.99	0.05	0.04	7.67
Shorthead Redhorse	R	I	S M	1	1.00	0.17	0.54	0.47	540.00
Spotted Sucker	R	I	S	9	9.00	1.49	0.83	0.72	91.67
Common Carp	G	O	M T	18	18.00	2.98	36.90	32.32	2,050.00
Emerald Shiner	N	I	M	59	59.00	9.77	0.17	0.15	2.93
Redfin Shiner	N	I	N	1	1.00	0.17	0.00	0.00	2.00
Spotfin Shiner	N	I	M	63	63.00	10.43	0.19	0.17	3.02
Sand Shiner	N	I	M M	2	2.00	0.33	0.00	0.00	2.00
Ghost Shiner	N	I	M	43	43.00	7.12	0.05	0.04	1.05
Bluntnose Minnow	N	O	C T	52	52.00	8.61	0.09	0.08	1.69
Channel Catfish	F		C	3	3.00	0.50	0.34	0.30	114.00
Flathead Catfish	F	P	C	10	10.00	1.66	39.55	34.64	3,955.00
Brook Silverside		I	M M	7	7.00	1.16	0.01	0.01	1.43
White Crappie	S	I	C	12	12.00	1.99	1.88	1.65	156.58
Largemouth Bass	F	C	C	33	33.00	5.46	2.68	2.35	81.33
Green Sunfish	S	I	C T	4	4.00	0.66	0.15	0.13	38.00
Bluegill Sunfish	S	I	C P	10	10.00	1.66	0.48	0.42	48.20
Orangespotted Sunfish	S	I	C	82	82.00	13.58	0.82	0.72	10.01
Green Sf X Bluegill Sf				1	1.00	0.17	0.03	0.02	25.00
Logperch	D	I	S M	11	11.00	1.82	0.08	0.07	7.09
Freshwater Drum			M P	11	11.00	1.82	8.54	7.48	776.09
<i>Mile Total</i>				604	604.00		114.19		
<i>Number of Species</i>				23					
<i>Number of Hybrids</i>				1					

Species List

Page 2

River Code: 04-001	Stream: Maumee River	Sample Date: 2012
River Mile: 41.20	Location: 1.0 mi. upst. St. Rt. 109	Date Range: 07/16/2012
Time Fished: 3849 sec	Drainage: 5693.0 sq mi	Thru: 08/28/2012
Dist Fished: 1.00 km	Basin: Maumee River	No of Passes: 2
		Sampler Type: A

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M	209	209.00	28.36	1.21	3.27	5.80
Smallmouth Buffalo	C	I	M	58	58.00	7.87	2.27	6.11	39.05
Quillback	C	O	M	31	31.00	4.21	0.35	0.93	11.13
Shorthead Redhorse	R	I	S M	1	1.00	0.14	0.85	2.29	850.00
Common Carp	G	O	M T	12	12.00	1.63	24.35	65.71	2,029.17
Creek Chub	N	G	N T	7	7.00	0.95	0.05	0.14	7.43
Emerald Shiner	N	I	M	17	17.00	2.31	0.07	0.19	4.24
Common Shiner	N	I	S	2	2.00	0.27	0.01	0.02	4.00
Spottail Shiner	N	I	M P	3	3.00	0.41	0.01	0.03	4.00
Spotfin Shiner	N	I	M	17	17.00	2.31	0.06	0.17	3.76
Sand Shiner	N	I	M M	1	1.00	0.14	0.00	0.01	2.00
Ghost Shiner	N	I	M	140	140.00	19.00	0.14	0.36	0.96
Bluntnose Minnow	N	O	C T	125	125.00	16.96	0.15	0.40	1.18
Flathead Catfish	F	P	C	7	7.00	0.95	3.91	10.54	557.86
Brook Silverside		I	M M	3	3.00	0.41	0.01	0.02	2.33
White Crappie	S	I	C	8	8.00	1.09	0.53	1.43	66.25
Largemouth Bass	F	C	C	18	18.00	2.44	1.22	3.30	67.94
Green Sunfish	S	I	C T	2	2.00	0.27	0.11	0.30	56.50
Bluegill Sunfish	S	I	C P	25	25.00	3.39	0.48	1.30	19.25
Orangespotted Sunfish	S	I	C	42	42.00	5.70	0.21	0.57	5.02
Logperch	D	I	S M	7	7.00	0.95	0.07	0.18	9.29
Freshwater Drum			M P	2	2.00	0.27	1.01	2.71	503.00
<i>Mile Total</i>				737	737.00		37.06		
<i>Number of Species</i>				22					
<i>Number of Hybrids</i>				0					

River Mile	QHEI	Gradient (ft/mile)	WWH Attributes										MWH Attributes										Total MLL MWH Attributes	(MWH HL+1)/(MWH+1) Ratio	(MWH MLL+1)/(MWH+1) Ratio							
			No Channelization or Recovered Boulder/Cobble/Gravel Substrates	Silt Free Substrates	Good/Excellent Substrates	Moderate/High Sinuosity	Extensive/Moderate Cover	Fast Current/Eddies	Low-Normal Overall Embeddedness	Max Depth > 40 cm	Low-Normal Riffle Embeddedness	Total WWH Attributes	High Influence					Moderate Influence														
													Channelized or No Recovery Silt/Muck Substrates	No Sinuosity	Sparse/No Cover	Max Depth < 40 cm (WD, HW)	Total HLL MWH Attributes	Recovering Channel	Heavy/Moderate Silt Cover	Sand Substrates (Boat)	Hardpan Substrate Origin	Fair/Poor Development				Low Sinuosity	Only 1-2 Cover Types	Intermittent and Poor Pools	No Fast Current	High/Mod. Overall Embeddedness	High/Mod. Riffle Embeddedness	No Riffle
(04-001) Maumee River																																
Year: 2012																																
47.1	51.5	0.59	#	#		#		#		4	◆		◆		2	●	●	●	●	●	●	●	●	●	●	●	●	●	6	0.60	1.80	
41.2	47.5	0.54	#					#		2	◆		◆		2	●	●	●	●	●	●	●	●	●	●	●	●	●	6	1.00	3.00	

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 08/30/2012 River Code: 04-001 RM: 47.10

Site: Maumee River
Napoleon WTP intake

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00455	<i>Dosilia radiospiculata</i>	+	93900	<i>Elimia sp</i>	+
01801	<i>Turbellaria</i>	2880 +	95100	<i>Physella sp</i>	40 +
03040	<i>Fredericella sp</i>	+	95907	<i>Gyraulus (Torquis) parvus</i>	+
03221	<i>Pectinatella magnifica</i>	80 +	96930	<i>Laevapex fuscus</i>	+
03360	<i>Plumatella sp</i>	1 +	98600	<i>Sphaerium sp</i>	+
03451	<i>Urnatella gracilis</i>	8	99260	<i>Lasmigona compressa</i>	+
03600	<i>Oligochaeta</i>	2240 +			
04664	<i>Helobdella stagnalis</i>	+	No. Quantitative Taxa: 15		Total Taxa: 48
04964	<i>Erpobdella microstoma</i>	+	No. Qualitative Taxa: 45		ICI: 10
06201	<i>Hyaella azteca</i>	+	Number of Organisms: 27939		Qual EPT: 5
06810	<i>Gammarus fasciatus</i>	+			
08451	<i>Palaemonetes kadiakensis</i>	+			
08601	<i>Hydrachnidia</i>	+			
11200	<i>Callibaetis sp</i>	+			
16700	<i>Tricorythodes sp</i>	144			
17200	<i>Caenis sp</i>	8 +			
22001	<i>Coenagrionidae</i>	8 +			
22300	<i>Argia sp</i>	+			
26700	<i>Macromia sp</i>	+			
42700	<i>Belostoma sp</i>	+			
53800	<i>Hydroptila sp</i>	+			
54200	<i>Orthotrichia sp</i>	129 +			
59500	<i>Oecetis sp</i>	+			
60900	<i>Peltodytes sp</i>	+			
63900	<i>Laccophilus sp</i>	+			
66500	<i>Enochrus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68702	<i>Dubiraphia bivittata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
72420	<i>Chaoborus sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77130	<i>Ablabesmyia rhamphe group</i>	164			
78655	<i>Procladius (Holotanypus) sp</i>	+			
81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	164 +			
83051	<i>Dicrotendipes simpsoni</i>	3107 +			
83300	<i>Glyptotendipes (G.) sp</i>	17985 +			
84000	<i>Parachironomus sp</i>	+			
84060	<i>Parachironomus pectinatellae</i>	981 +			
84520	<i>Polypedilum (Tripodura) halterale group</i>	+			
84888	<i>Xenochironomus xenolabis</i>	+			
85800	<i>Tanytarsus sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Maumee River

Collection Date: 08/28/2012 River Code: 04-001 RM: 41.20

1.0 mi. upst. St. Rt. 109

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	652			
03221	<i>Pectinatella magnifica</i>	80			
03360	<i>Plumatella sp</i>	40 +			
03600	<i>Oligochaeta</i>	9728 +			
04682	<i>Placobdella montifera</i>	+			
04935	<i>Erpobdella punctata punctata</i>	+			
08601	<i>Hydrachnidia</i>	+			
17200	<i>Caenis sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	3 +			
45100	<i>Palmarcorixa sp</i>	+			
54300	<i>Oxyethira sp</i>	8			
59520	<i>Oecetis cinerascens</i>	75 +			
59555	<i>Oecetis inconspicua complex sp F (sensu Floyd, 1995)</i>	+			
83051	<i>Dicrotendipes simpsoni</i>	7207 +			
83300	<i>Glyptotendipes (G.) sp</i>	33758 +			
84060	<i>Parachironomus pectinatellae</i>	379 +			
84520	<i>Polypedilum (Tripodura) halterale group</i>	+			

No. Quantitative Taxa: 10 Total Taxa: 18

No. Qualitative Taxa: 15 ICI: 4

Number of Organisms: 51930 Qual EPT: 3

River Mile	Drainage Area (sq mi)	Number of				Percent:					Qual. EPT	Eco- region	ICI
		Total Taxa	Mayfly Taxa	Caddisfly Taxa	Dipteran Taxa	Mayflies	Caddis- flies	Tany- tarsini	Other Dipt/NI	Tolerant Organisms			
Maumee River (04-001)													
Year: 2012													
47.10	5649	15(2)	2(0)	1(0)	5(4)	0.5(2)	0.5(0)	0.0(0)	99.0(0)	19.3(0)	5(2)	1	10
41.20	5693	10(0)	0(0)	2(2)	3(2)	0.0(0)	0.2(0)	0.0(0)	99.8(0)	32.6(0)	3(0)	1	4

River Mile	All Taxa			Sen. Taxa			EPT Taxa		CW Taxa	Ql.	Ql.	QCTV	ICI	Nar.	Drain	Comments
	Total	Qt.	Ql.	Total	Qt.	Ql.	Total	Ql.		Tol.	S					
Maumee River (04-001)																
Year: 2012																
47.10	48	15	45	6	3	4	6	5	0	20	0.20	34.3	10		5649.0	X2,8
41.20	18	10	15	1	1	1	4	3	0	7	0.14	34.3	4		5693.0	X2,8

POTENTIAL INDIANA BAT HABITAT CHARACTERIZATION WORKSHEET FOR LV1 (MOA) LEVEL ECOLOGICAL SURVEYS OR MINOR LV2 ESR

Which Indiana bat Management Unit (see map) does the project primarily occur within?	W	X	C		NE	
	S				E	
Are there any known or suspected <u>hibernacula</u> within 10 miles of the project (DNAP - Natural Heritage Database records)?	Y				N	X
• If yes, list the total number and the distance to the closest record.	#:		mi.			
Are there any known Indiana bat capture records within 5 miles of the project (DNAP - Natural Heritage Database records)?	Y				N	X
• If yes, list the total number and the distance to the closest record.	#:		mi.			
Total number of potential Indiana bat habitat <u>roost trees</u> impacted by the project.	#:		3			
• Number of these trees that are considered <u>isolated</u> .	#:		0			
Total number of potential Indiana bat habitat <u>maternity roost trees</u> impacted by the project.	#:		0			
• Number of these trees that are considered <u>isolated</u> .	#:		0			
Total amount of impact to forested areas as a result of the project			0 ac.			

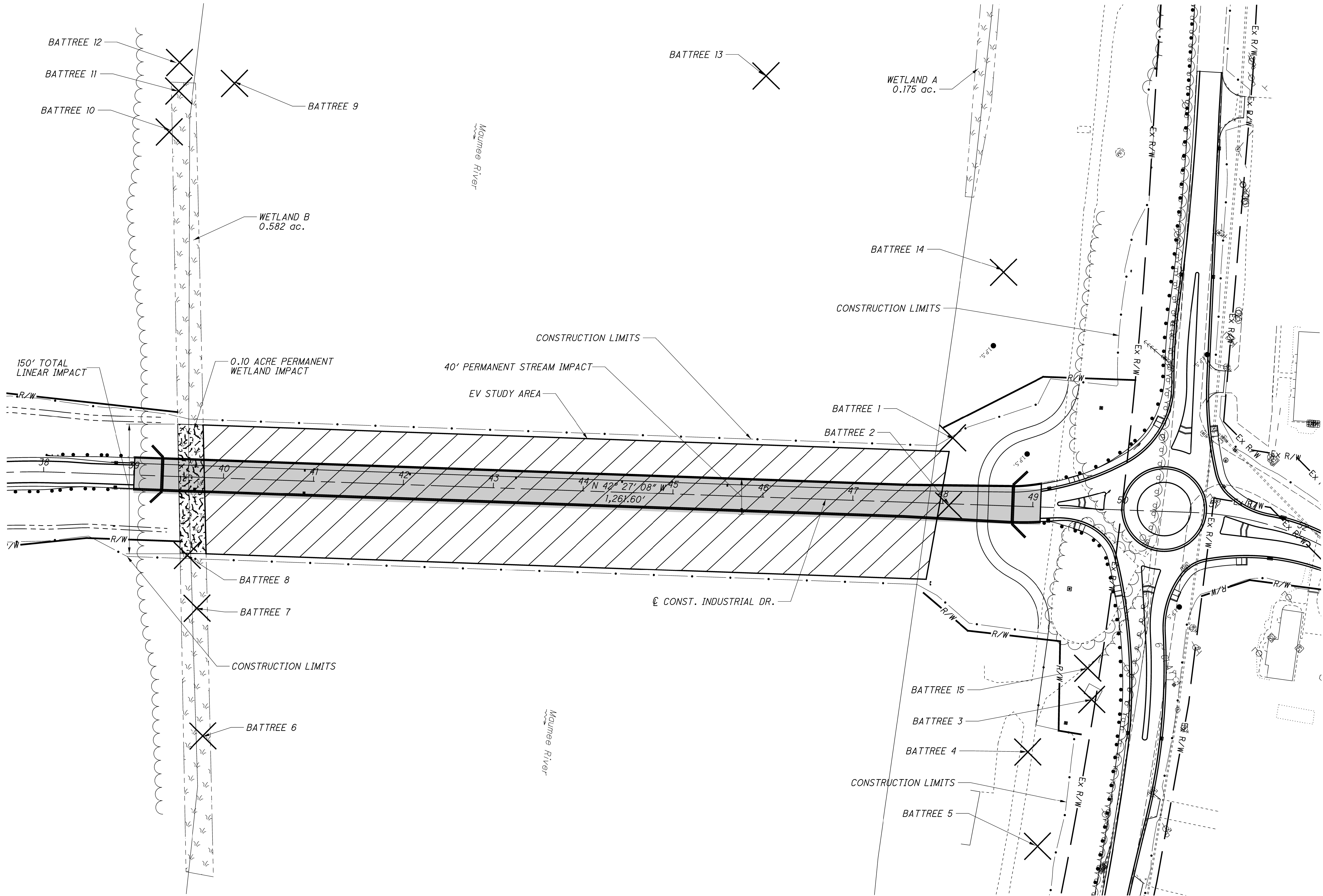
 Stop if the project is located within the **NE**, **E**, or **S** Management Units.

 Continue with form if the project is located within the **W** or **C** Management Units.

Are the impacted potential <u>roost trees</u> located within a forested area?	Y	X	N	
• If yes, what is the approximate size of the forested area in acres (include areas not impacted)?	Less than .10 ac.			
Are the impacted potential <u>roost trees</u> connected to a forest area via a tree line (row of 2 or more wide)?	Y	X	N	
• If yes, what is the size of the connected forested area?	Less than .10 ac.			
Is there a perennial water sources within 0.5 mile of the impacted potential <u>roost trees</u> ?	Y	X	N	
Will the project remove all or a portion of a potential Indiana bat <u>travel corridor</u> ?	Y		N	X
Will the project remove more than 10% of the forest area it is within (or connected to)?	Y		N	X

Definitions for bold words located in the ODOT Ecological Manual section 203.2.3.

APPENDIX 5
Stage 2 Plans



1

1

**HEN-NEW MAUMEE
RIVER BRIDGE**

ECOLOGICAL IMPACT

INDUSTRIAL DR.

CALCULATED

CHECKED

0

50

100

HORIZONTAL

SCALE IN FEET

S.R. 110
CURVE DATA
P.I. STA. 97+48.28
 $\Delta = 21^\circ 40' 09''$ (RT)
 $D_c = 2^\circ 00' 00''$
 $R = 2,864.80'$
 $T = 548.28'$
 $L = 1,083.46'$
 $E = 51.99'$
 $e_{max} = 0.045$

S.R. 110
CURVE DATA
P.I. STA. 103+94.64
 $\Delta = 20^\circ 59' 50''$ (LT)
 $D_c = 9^\circ 32' 57''$
 $R = 600.00'$
 $T = 111.19'$
 $L = 219.88'$
 $E = 10.22'$
 $e_{max} = NC$

S.R. 110
EX. CURVE DATA
P.I. STA. 90+33.37
 $\Delta = 49^{\circ} 52' 00''$ (RT)
 $Dc = 2^{\circ} 00' 00''$
 $R = 2,864.80'$
 $T = 1,331.82'$
 $L = 2,493.34'$
 $E = 294.45'$
 $e_{max} = 0.045$

S.R. 110
CURVE DATA
P.I. STA. 105+83.15
 $\Delta = 18^\circ 08' 21''$ (RT)
 $D_c = 11^\circ 27' 33''$
 $R = 500.00'$
 $T = 79.81'$
 $L = 158.29'$
 $E = 6.33'$
 $e_{max} = NC$

S.R. 110
CURVE DATA
P.I. STA. 107+61.70
 $\Delta = 11^\circ 25' 43''$ (RT)
 $D_c = 5^\circ 43' 46''$
 $R = 1,000.00'$
 $T = 100.06'$
 $L = 199.47'$
 $E = 4.99'$
 $e_{max} = NC$

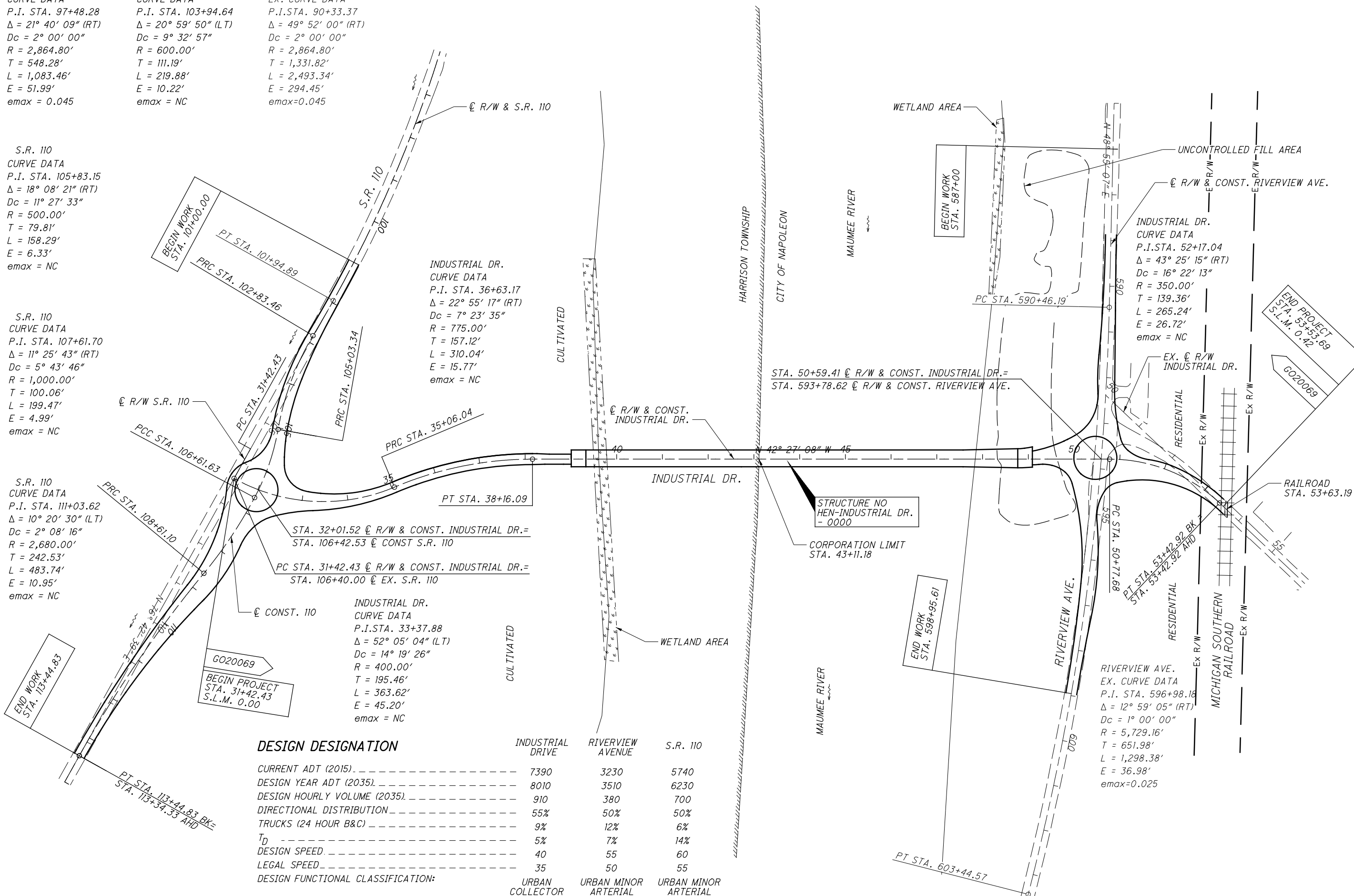
S.R. 110
CURVE DATA
P.I. STA. 111+03.62
 $\Delta = 10^{\circ} 20' 30''$ (LT)
 $Dc = 2^{\circ} 08' 16''$
 $R = 2,680.00'$
 $T = 242.53'$
 $L = 483.74'$
 $E = 10.95'$
 $e_{max} = NC$

INDUSTRIAL DR.
CURVE DATA
P.I. STA. 36+63.17
 $\Delta = 22^\circ 55' 17''$ (RT)
 $D_c = 7^\circ 23' 35''$
 $R = 775.00'$
 $T = 157.12'$
 $L = 310.04'$
 $E = 15.77'$
 $e_{max} = NC$

INDUSTRIAL DR.
CURVE DATA
P.I. STA. 33+37.88
 $\Delta = 52^{\circ} 05' 04''$ (LT)
 $D_c = 14^{\circ} 19' 26''$
 $R = 400.00'$
 $T = 195.46'$
 $L = 363.62'$
 $E = 45.20'$
 $e_{max} = NC$

DESIGN DESIGNATION

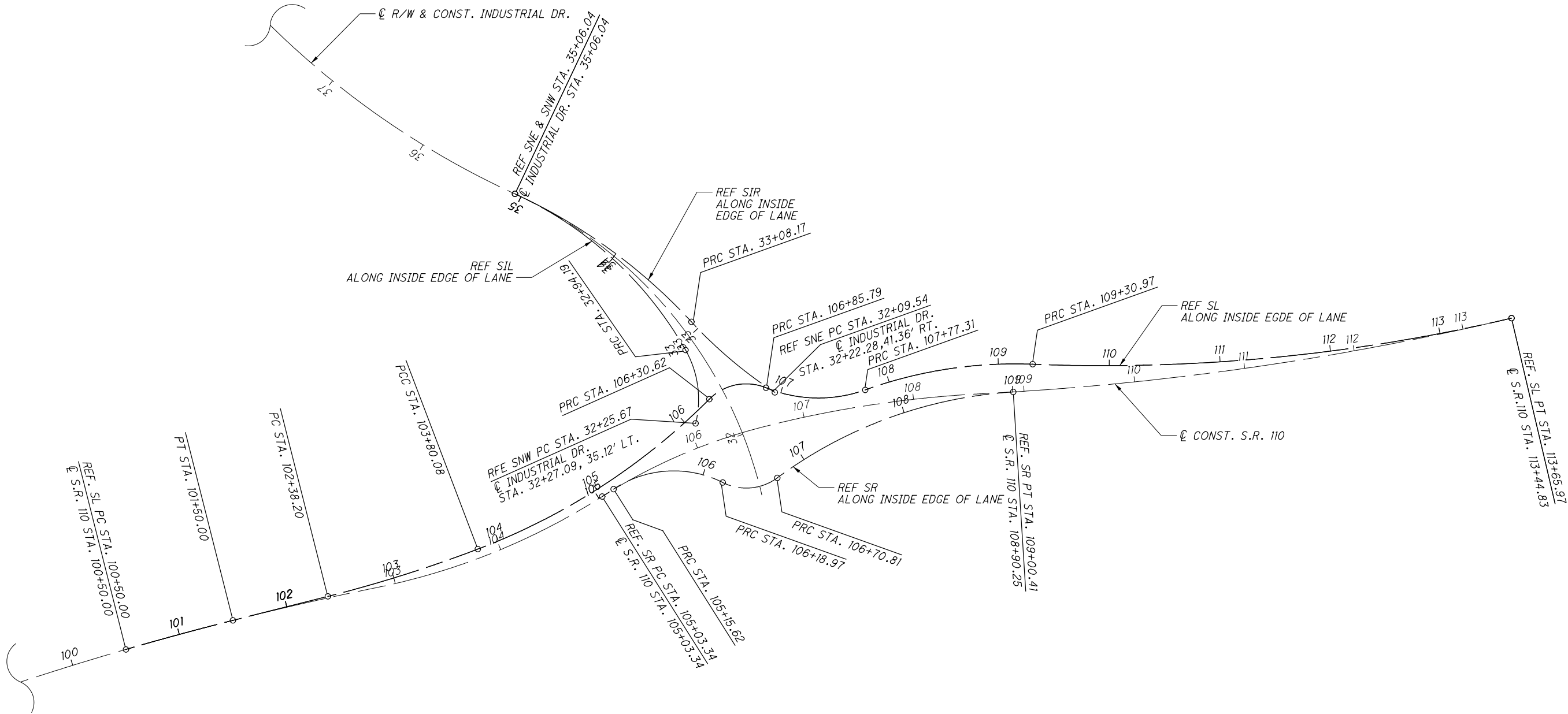
DESIGN DESIGNATION	INDUSTRIAL DRIVE	RIVERVIEW AVENUE	S.R. 110
CURRENT ADT (2015)	7390	3230	5740
DESIGN YEAR ADT (2035)	8010	3510	6230
DESIGN HOURLY VOLUME (2035)	910	380	700
DIRECTIONAL DISTRIBUTION	55%	50%	50%
TRUCKS (24 HOUR B&C)	9%	12%	6%
T_D	5%	7%	14%
DESIGN SPEED	40	55	60
LEGAL SPEED	35	50	55
DESIGN FUNCTIONAL CLASSIFICATION:	URBAN COLLECTOR	URBAN MINOR ARTERIAL	URBAN MINOR ARTERIAL



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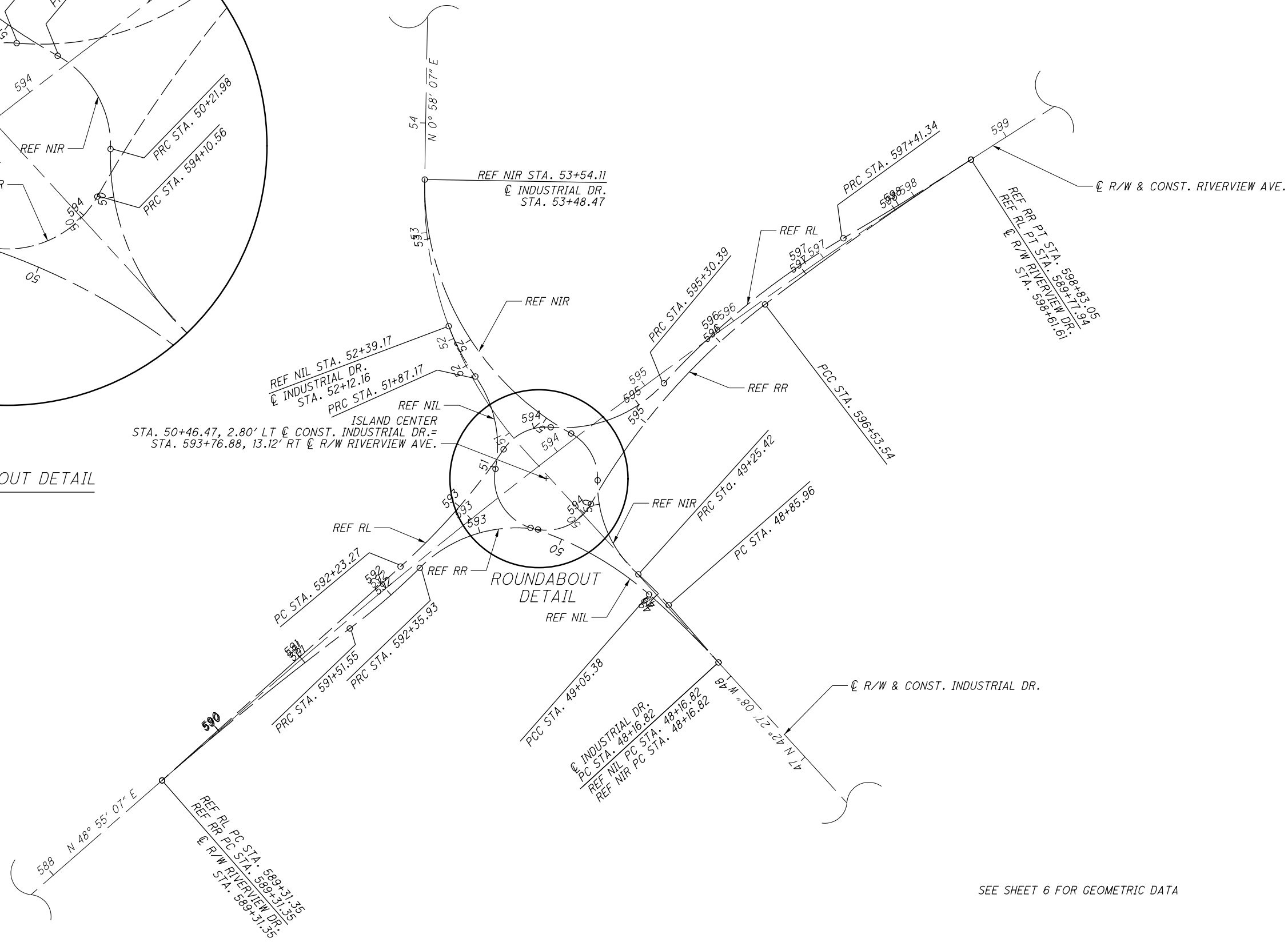
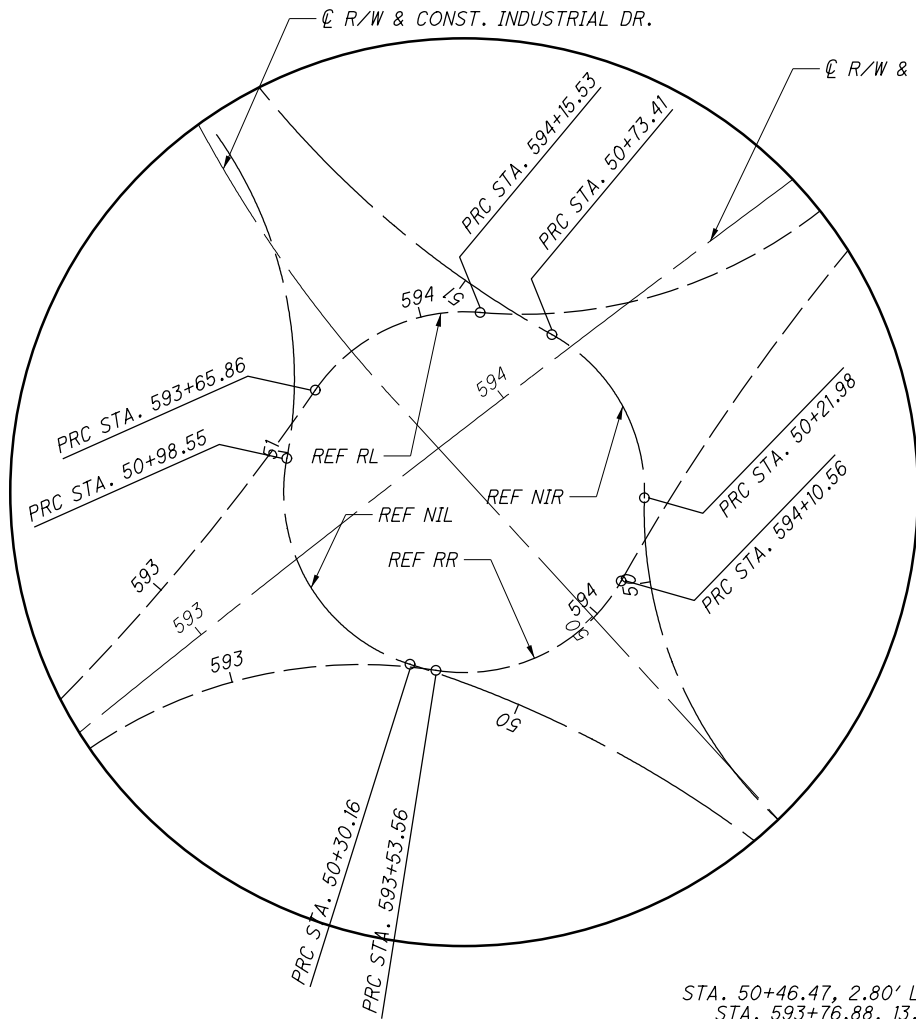
PRIMARY PROJECT CONTROL INFORMATION				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
ARP1	638573.6970	1528220.3138	678.11	IPINS /CIR
ARP2	638206.8882	1528219.4996	678.39	IPINS /CIR
ARP3	638499.0526	1529338.0111	674.81	IPINS /CIR
ARP4	637071.1187	1527468.4342	671.16	IPINS /CIR
ARP5	636091.1981	1528575.4343	667.46	IPINS /CIR
ARP6	635754.7549	1528038.3710	671.21	IPINS /CIR
JAS500	637266.4642	1527666.6053	670.59	MAG SPIKE
JEW1	636329.8015	1529263.7085	667.21	IPINS /CIR
JEW2	636549.8196	1530198.8952	665.77	IPINS /CIR
JEW3	636112.8419	1530882.4102	671.58	IPINS /CIR
JEW4	637659.8855	1528148.4581	678.13	IPINS /CIR
JEW5	637834.1903	1528370.4531	677.75	IPINS /CIR
JEW6	637483.2673	1528308.0899	657.38	IPINS /CIR
JEW7	637594.2634	1528367.7320	658.49	IPINS /CIR
JEW8	637725.4669	1528460.3426	660.03	MAG
JEW9	637889.5540	1528167.4761	678.45	IPINS /CAP
JEW10	637533.8146	1528056.8241	676.36	IPIN -CAP
JEW11	637404.8315	1527907.9181	675.19	IPIN -CAP
JEW12	637242.5817	1527729.1355	673.40	IPIN -CAP
JJL1	638118.1772	1528248.0499	678.06	IPINS /CIR
JJL2	637886.5906	1528504.3997	675.99	IPINS
JJL3	638056.5414	1528759.0865	674.94	IPINS
JJL4	638204.6910	1529006.4512	673.59	IPINS
JJL5	638131.5868	1528882.9361	674.10	MAGS
MSGBASE1	637271.9148	1526923.5899	678.73	IPINS /CIR

VERTICAL CONTROL INFORMATION			
POINT NO.	ELEVATION	DESCRIPTION	
BM18	680.83	CMON /BRASS DISC	STA. 65+94.80-134.94' LT CL INDUSTRIAL DR.
BM38	672.71	CMON /BRASS DISC	STA. 55+02.58-19.45' RT CL SR110
BM82	677.06	CMON /BRASS DISC	STA. 578+65.55-540.18' LT CL RIVERVIEW



SEE SHEET 6 FOR GEOMETRIC DATA

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SEE SHEET 6 FOR GEOMETRIC DATA

 0 50 100 HORIZONTAL SCALE IN FEET	CALCULATED	5 180
	CHECKED	
HEN-NEW MAUMEE RIVER BRIDGE		
ROUNDABOUT GEOMETRIC LAYOUT RIVERVIEW AVE. & INDUSTRIAL DR.		

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REF. ALIGNMENT	P.I./P.O.T. STATION	NORTHING	EASTING	Degree	Delta	T (FT.)	L (FT.)	R (FT.)	BEGIN CURVE/CHAIN	END CURVE/CHAIN	AHEAD/BACK BEARING
SL		636247.79	1529035.18						100+50.00		
	101+00.01	636261.73	1529083.21	2° 00' 00"	2° 00' 00"	50.00	100.00	2864.80			
		636273.98	1529131.69							101+50.00	75° 48' 47"
		636295.60	1529217.19						102+38.20		
	103+09.22	636313.01	1529286.05	4° 40' 38"	6° 38' 10"	71.02	141.88	1225.00			
		636338.25	1529352.43							103+80.08	
	105+07.25	636383.46	1529471.30	9° 40' 42"	24° 14' 52"	127.17	250.54	592.00			
		636473.50	1529561.11							106+30.62	
	106+61.89	636495.63	1529583.19	121° 58' 06"	67° 17' 54"	31.27	55.18	46.98			
		636483.80	1529612.14							106+85.79	
	107+33.71	636465.68	1529656.50	45° 50' 12"	41° 56' 56"	47.92	91.52	125.00			
		636481.85	1529701.60							107+77.31	
	108+55.10	636508.10	1529774.83	14° 19' 26"	22° 00' 35"	77.79	153.66	400.00			
		636504.99	1529852.55							109+30.97	
	111+49.82	636496.25	1530071.23	3° 34' 52"	15° 34' 38"	218.85	435.00	1600.00			
		636546.56	1530284.22							113+65.97	
SR		636385.63	1529464.50						105+03.34		
	105+09.48	636388.93	1529469.67	9° 32' 57"	1° 10' 21"	6.14	12.28	600.00			
		636392.34	1529474.78							105+15.62	
	105+72.68	636423.99	1529522.26	58° 27' 54"	60° 25' 29"	57.07	103.35	98.00			
		636398.32	1529573.23							106+18.97	
	106+47.88	636385.31	1529599.05	121° 54' 21"	63° 11' 45"	28.91	51.84	47.00			
		636402.49	1529622.30							106+70.81	
	107+88.87	636472.65	1529717.26	14° 19' 26"	32° 53' 17"	118.06	229.60	400.00			
		636480.00	1529835.09							109+00.41	
SIL		636451.62	1529548.76						32+25.67		
	32+61.69	636486.57	1529557.44	63° 39' 43"	43° 37' 15"	36.02	68.52	90.00			
		636517.87	1529539.61							32+94.19	
	34+03.68	636613.00	1529485.41	16° 51' 06"	35° 42' 04"	109.49	211.86	340.00			
SIR		636658.63	1529385.87							35+06.04	
		636479.63	1529620.09						32+09.54		
	32+59.11	636506.75	1529578.60	14° 19' 26"	14° 07' 41"	49.57	98.63	400.00			
		636543.18	1529544.99							33+08.17	
	34+08.42	636616.86	1529477.00	11° 27' 33"	22° 40' 28"	100.25	197.87	500.00			
		636658.63	1529385.87							35+06.04	

REF. ALIGNMENT	P.I./P.O.T. STATION	NORTHING	EASTING	Degree	Delta	T (FT.)	L (FT.)	R (FT.)	BEGIN CURVE/CHAIN	END CURVE/CHAIN	AHEAD/BACK BEARING
RL		637470.89	1527954.44							589+31.35	48° 07' 23"
		637665.76	1528171.80							592+23.27	
	592+94.90	637713.57	1528225.14	9° 32' 57"	13° 36' 58"	71.63	142.59	600.00			
		637772.60	1528265.72							593+65.86	
	593+93.30	637795.21	1528281.26	121° 54' 21"	60° 33' 21"	27.44	49.67	47.00			
		637792.79	1528308.59							594+15.53	
	594+77.38	637787.33	1528370.19	45° 50' 12"	52° 38' 48"	61.84	114.86	125.00			
		637832.99	1528411.91							595+30.39	
	596+36.67	637911.45	1528483.59	8° 11' 06"	17° 15' 58"	106.28	210.95	700.00			
		637965.10	1528575.34							597+41.34	
	598+09.65	637999.58	1528634.31	1° 54' 35"	2° 36' 32"	68.31	136.60	3000.00			
		638036.71	1528691.64							598+77.94	
RR		637470.89	1527954.44							589+31.35	
	590+41.50	637543.27	1528037.47	1° 54' 35"	4° 12' 20"	110.15	220.20	3000.00			
		637609.37	1528125.58							591+51.55	
	591+93.81	637634.73	1528159.39	9° 32' 57"	8° 03' 27"	42.26	84.38	600.00			
		637664.57	1528189.30							592+35.93	
	592+99.51	637709.48	1528234.31	45° 50' 12"	53° 54' 59"	63.58	117.63	125.00			
		637699.55	1528297.11							593+53.56	
	593+86.16	637694.46	1528329.31	121° 54' 21"	69° 29' 43"	32.60	57.00	47.00			
		637722.84	1528345.36							594+10.56	
	595+33.74	637830.06	1528405.99	9° 32' 57"	23° 12' 09"	123.18	242.97	600.00			
NIL		637904.72	1528503.96							596+53.54	
	597+68.35	637974.31	1528595.28	1° 54' 35"	4° 23' 00"	114.81	229.51	3000.00			
		638036.71	1528691.64							598+83.05	
		637578.42	1528461.52							48+16.82	
	48+61.14	637611.12	1528431.60	7° 03' 53"	6° 15' 24"	44.33	88.56	811.00			
		637640.37	1528398.30							49+05.38	
	49+68.69	637682.14	1528350.73	19° 05' 55"	23° 49' 54"	63.31	124.78	300.00			
		637701.14	1528290.34							50+30.16	
	50+72.01	637713.70	1528250.42	121° 54' 21"	83° 22' 00"	41.85	68.39	47.00			
		637754.80	1528258.28							50+98.55	
NIR		637800.84	1528267.09	52° 05' 14"	46° 09' 40"	46.87	88.62	110.00			
	51+45.42	637839.08	1528239.98							51+87.17	
	52+13.32	637860.41	1528224.85	28° 38' 52"	14° 53' 47"	26.15	52.00	200.00			
		637884.91	1528215.72							52+39.17	
		637578.42	1528461.52							48+16.82	40° 57' 08"
		637630.64	1528416.20							48+85.96	
	49+05.72	637645.56	1528403.25	19° 05' 55"	7° 32' 06"	19.76	39.45	300.00			
		637658.65	1528388.46							49+25.42	
	49+77.06	637692.88	1528349.79	52° 05' 13"	50° 17' 40"	51.64	96.56	110.00			
		637744.49	1528351.42							50+21.98	
NIR		637773.11	1528352.33	121° 54' 21"	62° 41' 51"	28.63	51.43	47.00			
	50+50.61	637787.04	1528327.31							50+73.41	
	52+29.20	637862.83	1528191.20	22° 02' 13"	61° 51' 32"	155.79	280.71	260.00			
		638018.59	1528193.83							53+54.11	

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LEGEND

- 1

ITEM 441 - 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN
- 2

ITEM 442 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (446), AS PER PLAN
- 3

ITEM 301 - 6" ASPHALT CONCRETE BASE, PG64-22
- 4

ITEM 304 - 6" AGGREGATE BASE
- 5

ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE (0.04 GAL/SY)
- 6

ITEM 407 - TACK COAT (0.075 GAL/SY)
- 7

ITEM 203 - SUBGRADE COMPACTION
- 8

ITEM 605 - 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP
- 9

ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 2
- 10

ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 3, AS PER PLAN
- 11

ITEM 609 - CURB, TYPE 2-A
- 12

ITEM 609 - CURB, TYPE 6
- 13

ITEM 452 - NON-REINFORCED CONCRETE PAVEMENT, MISC.: DECORATIVE, 8" THICK (TRUCK APRON)
- 14

ITEM 608 WALKWAY MISC.: DECORATIVE CONCRETE, 6" THICK (SPLITTER ISLAND)
- 15

ITEM 608 - 4" CONCRETE WALK
- 16

ITEM 659 - SEEDING AND MULCHING
- 17

ITEM 526 - REINFORCED CONCRETE APPROACH SLAB. (T=17"), AS PER PLAN
- 18

ITEM 606 - GUARDRAIL, TYPE MGS WITH LONG POSTS
- 19

ITEM 204 - EXCAVATION OF SUBGRADE
ITEM 204 - GRANULAR MATERIAL, TYPE B
- 20

ITEM 609 - CURB, TYPE 4C
- 21

ITEM 608 - 1" AGGREGATE WALK (LIMESTONE SCREENINGS)
- 22

ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448) (DEPTH VARIES TO ESTABLISH CROSS SLOPE)
- 23

ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (DEPTH VARIES FROM 1.25" TO 1.75")
- 24

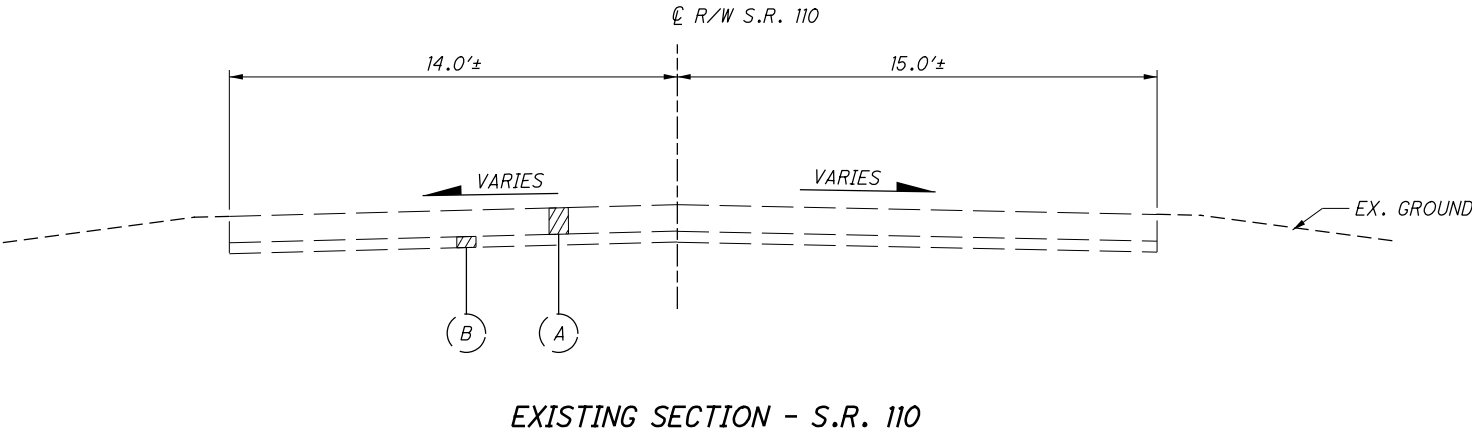
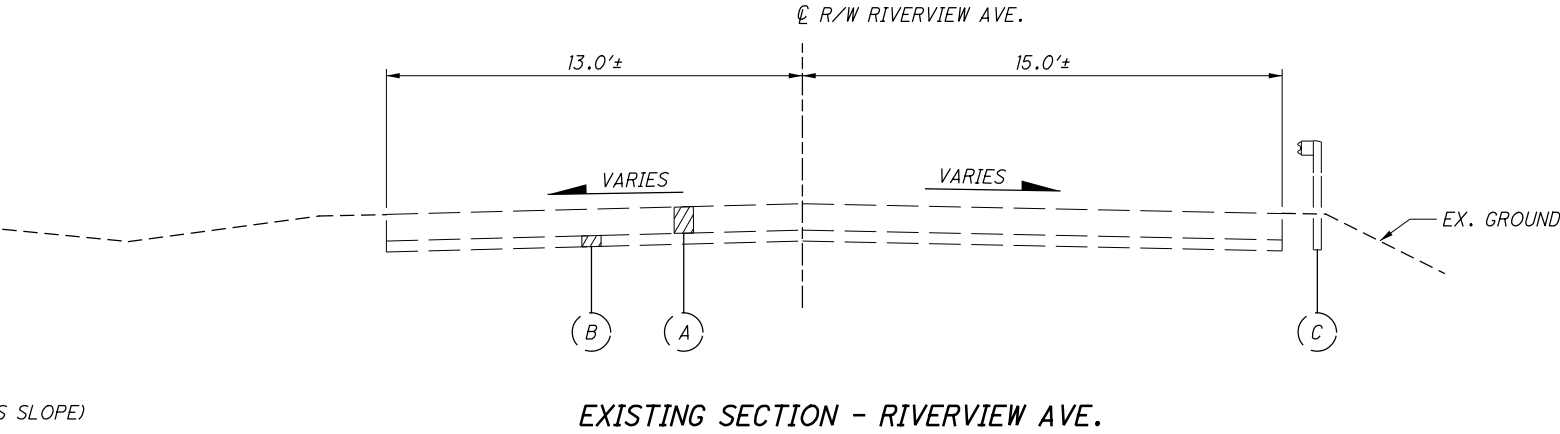
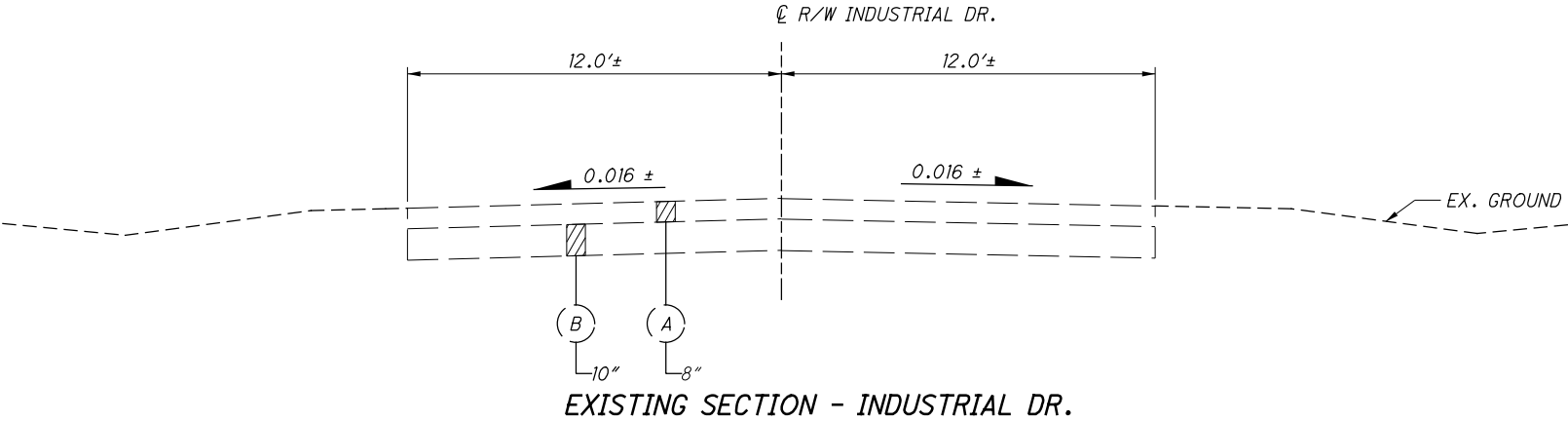
ITEM 409 - SEALING MISC.: LONGITUDINAL JOINT SEALER

- (A)

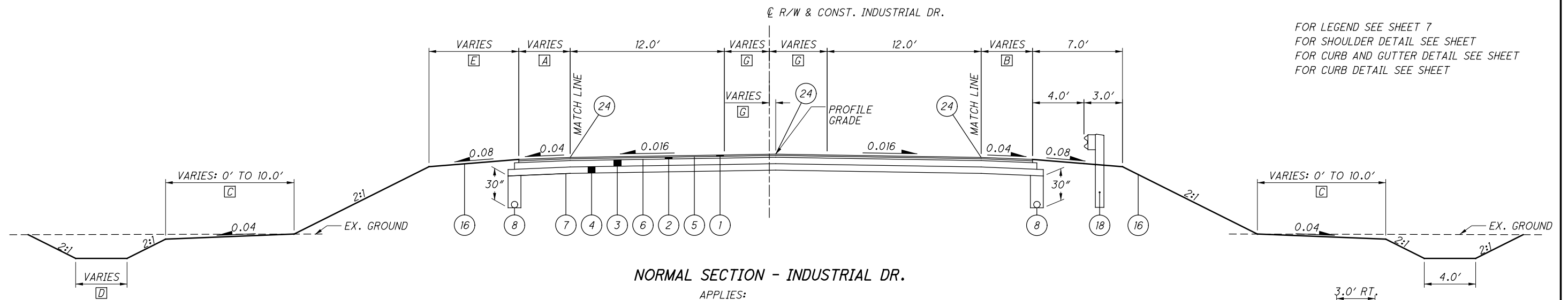
10" ASPHALT (UNLESS OTHERWISE SHOWN)
- (B)

4" AGGREGATE BASE (UNLESS OTHERWISE SHOWN)
- (C)

GUARDRAIL

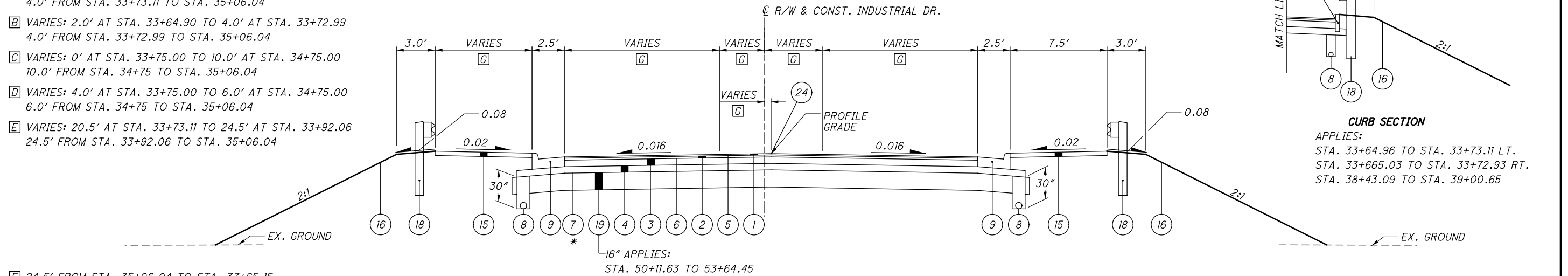


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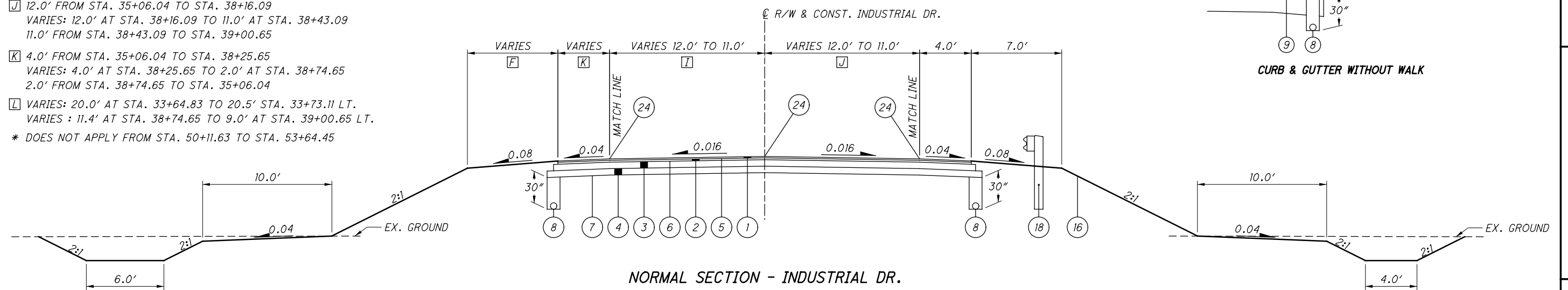
- A** VARIES: 2.0' AT STA. 33+64.83 TO 4.0' AT STA. 33+73.11
4.0' FROM STA. 33+73.11 TO STA. 35+06.04
- B** VARIES: 2.0' AT STA. 33+64.90 TO 4.0' AT STA. 33+72.99
4.0' FROM STA. 33+72.99 TO STA. 35+06.04
- C** VARIES: 0' AT STA. 33+75.00 TO 10.0' AT STA. 34+75.00
10.0' FROM STA. 34+75 TO STA. 35+06.04
- D** VARIES: 4.0' AT STA. 33+75.00 TO 6.0' AT STA. 34+75.00
6.0' FROM STA. 34+75 TO STA. 35+06.04
- E** VARIES: 20.5' AT STA. 33+73.11 TO 24.5' AT STA. 33+92.06
24.5' FROM STA. 33+92.06 TO STA. 35+06.04

- F** 24.5' FROM STA. 35+06.04 TO STA. 37+65.15
VARIES: 24.5' AT STA. 37+65.15 TO 11.4' AT STA. 38+74.65
- G** VARIES: SEE GEOMETRIC DETAILS
- H** VARIES: SEE GRADING PLAN
- I** 12.0' FROM STA. 35+06.04 TO STA. 38+25.65
VARIES: 12.0' AT STA. 38+25.65 TO 11.0' AT STA. 38+52.65
11.0' FROM STA. 38+52.65 TO STA. 39+00.65
- J** 12.0' FROM STA. 35+06.04 TO STA. 38+16.09
VARIES: 12.0' AT STA. 38+16.09 TO 11.0' AT STA. 38+43.09
11.0' FROM STA. 38+43.09 TO STA. 39+00.65
- K** 4.0' FROM STA. 35+06.04 TO STA. 38+25.65
VARIES: 4.0' AT STA. 38+25.65 TO 2.0' AT STA. 38+74.65
2.0' FROM STA. 38+74.65 TO STA. 35+06.04
- L** VARIES: 20.0' AT STA. 33+64.83 TO 20.5' AT STA. 33+73.11 LT.
VARIES: 11.4' AT STA. 38+74.65 TO 9.0' AT STA. 39+00.65 LT.
- * DOES NOT APPLY FROM STA. 50+11.63 TO STA. 53+64.45



NORMAL SECTION - INDUSTRIAL DR.

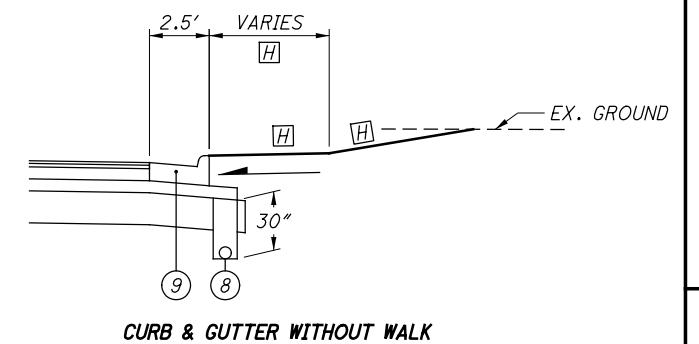
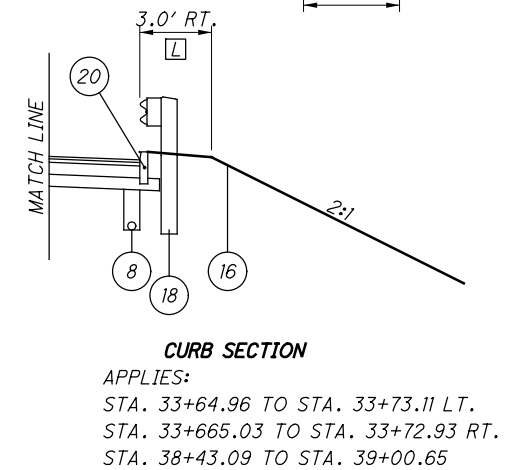
APPLIES:
STA. 49+08.98 TO STA. 49+27.57
STA. 52+15.45 TO STA. 53+64.45



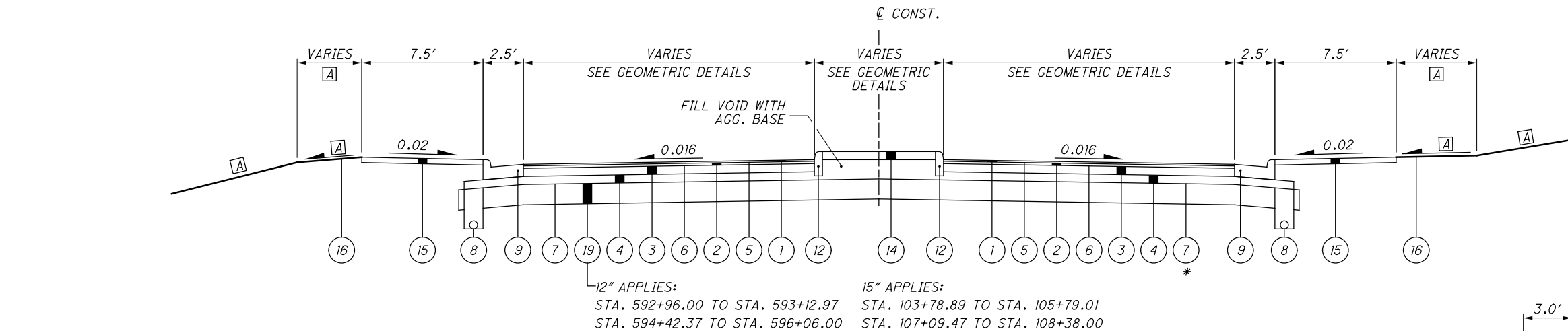
NORMAL SECTION - INDUSTRIAL DR.

APPLIES:
STA. 35+06.04 TO STA. 39+00.65

FOR LEGEND SEE SHEET 7
FOR SHOULDER DETAIL SEE SHEET
FOR CURB AND GUTTER DETAIL SEE SHEET
FOR CURB DETAIL SEE SHEET



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NORMAL SECTION - SPLITTER ISLANDS

APPLIES:

INDUSTRIAL DR.

STA. 32+64.77 TO STA. 33+63.77

STA. 49+27.51 TO STA. 49+81.05

STA. 51+11.17 TO STA. 52+15.46

RIVERVIEW AVE.

STA. 591+11.11 TO STA. 593+12.97

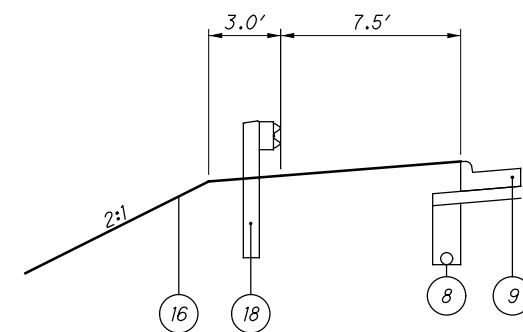
STA. 594+42.37 TO STA. 596+34.91

S.R. 110

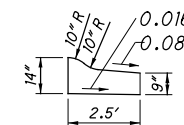
STA. 103+78.89 TO STA. 105+79.01

STA. 107+09.47 TO STA. 110+94.51

* DOES NOT APPLY IN AREAS WHERE EXCAVATION OF SUBGRADE OCCURS

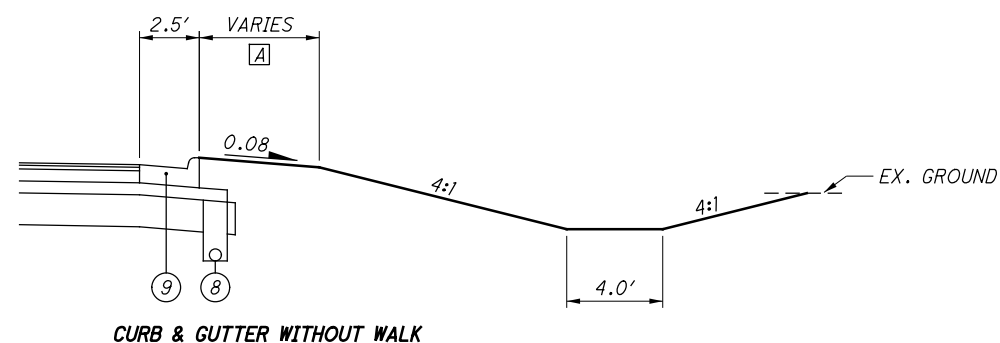


BARRIER GRADING DETAIL

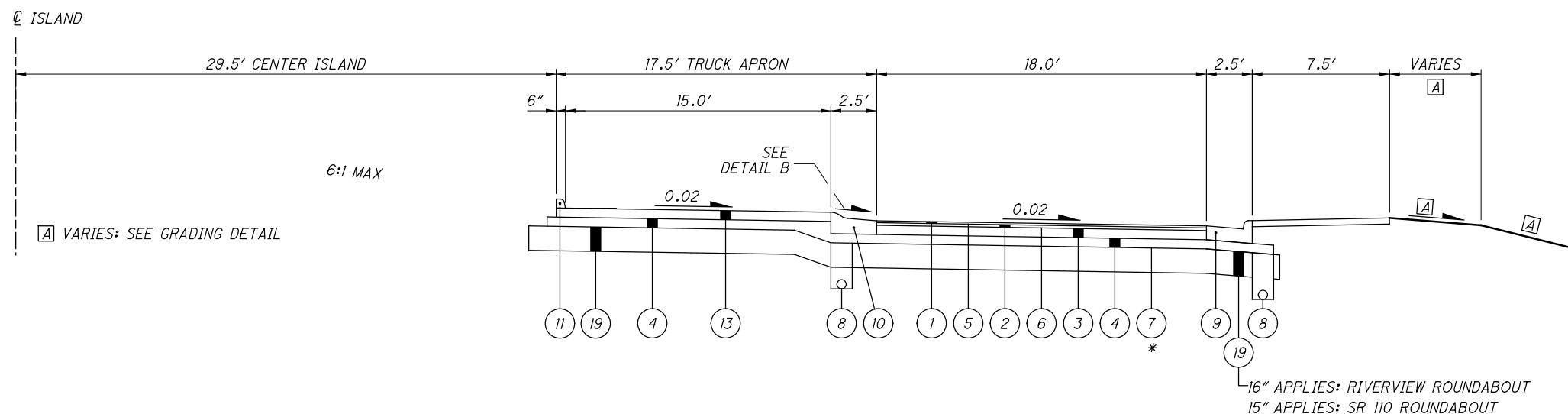


DETAIL B

COMBINATION CURB AND GUTTER,
TYPE 3, AS PER PLAN



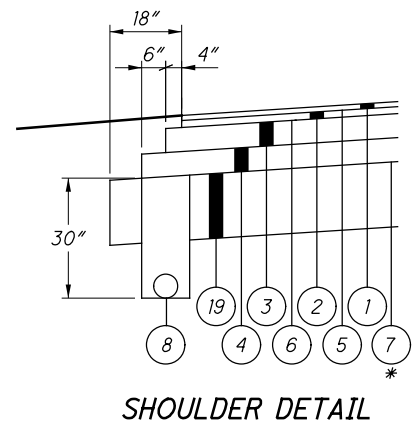
CURB & GUTTER WITHOUT WALK



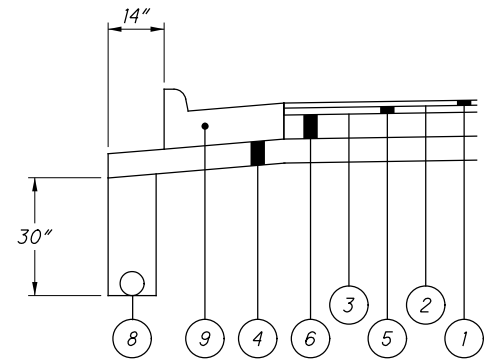
NORMAL SECTION - ROUNDABOUT

FOR LEGEND SEE SHEET 7
FOR SHOULDER DETAIL SEE SHEET
FOR CURB AND GUTTER DETAIL SEE SHEET

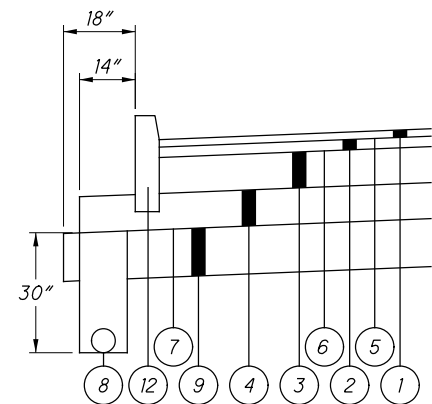
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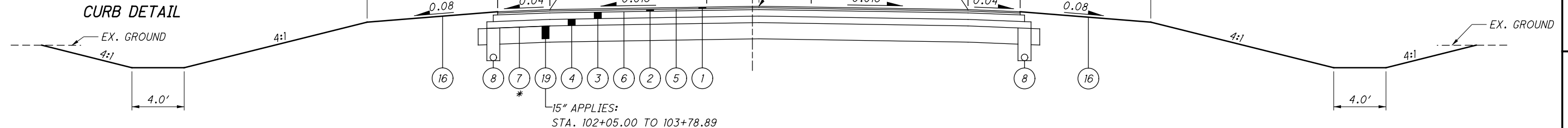
SHOULDER DETAIL



CURB & GUTTER DETAIL



CURB DETAIL



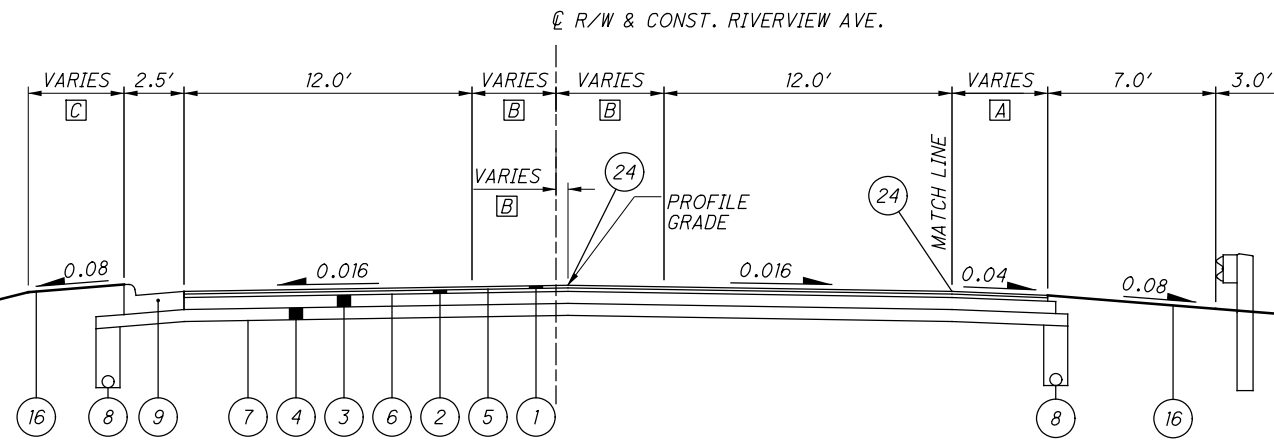
NORMAL SECTION - S.R. 110

APPLIES:
STA. 101+00.00 TO STA. 103+78.89
STA. 110+94.51 TO STA. 113+44.83

[D] 3.0' FROM STA. 101+00.00 TO STA. 103+74.75
VARIES: 3.0' AT STA. 103+74.75 TO 2.0' AT STA. 103+78.86
VARIES: 2.0' AT STA. 110+95.52 TO 3.0' AT STA. 110+99.70
3.0' FROM STA. 110+99.70 TO STA. 113+44.83

[E] 3.0' FROM STA. 101+00.00 TO STA. 103+74.89
VARIES: 3.0' AT STA. 103+74.89 TO 2.0' AT STA. 103+78.89
VARIES: 2.0' AT STA. 110+94.51 TO 3.0' AT STA. 110+98.51
3.0' FROM STA. 110+98.51 TO STA. 113+44.83

* DOES NOT APPLY IN AREAS WHERE EXCAVATION OF SUBGRADE OCCURS



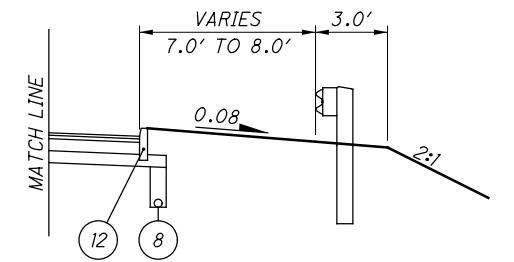
NORMAL SECTION - RIVERVIEW AVE.

APPLIES:
STA. 588+87.77 TO STA. 591+10.23
STA. 596+35.53 TO STA. 598+95.61

[A] 3.0' FROM STA. 588+87.77 TO STA. 591+06.20
VARIES: 3.0' AT STA. 591+06.20 TO 2.0' AT STA. 591+10.23
VARIES: 2.0' AT STA. 596+35.65 TO 3.0' AT STA. 596+39.63
3.0' FROM STA. 596+39.63 TO STA. 598+95.61

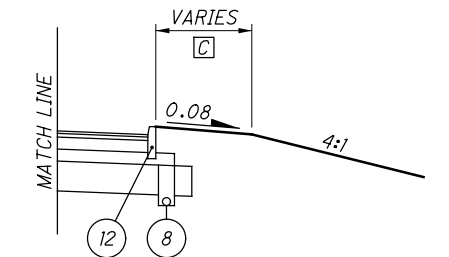
[B] VARIES: SEE GEOMETRIC DETAILS

[C] VARIES: SEE GRADING DETAIL



CURB SECTION

APPLIES:
STA. 591+06.20 TO STA. 591+10.23 RT.
STA. 596+35.65 TO STA. 596+39.63 RT.

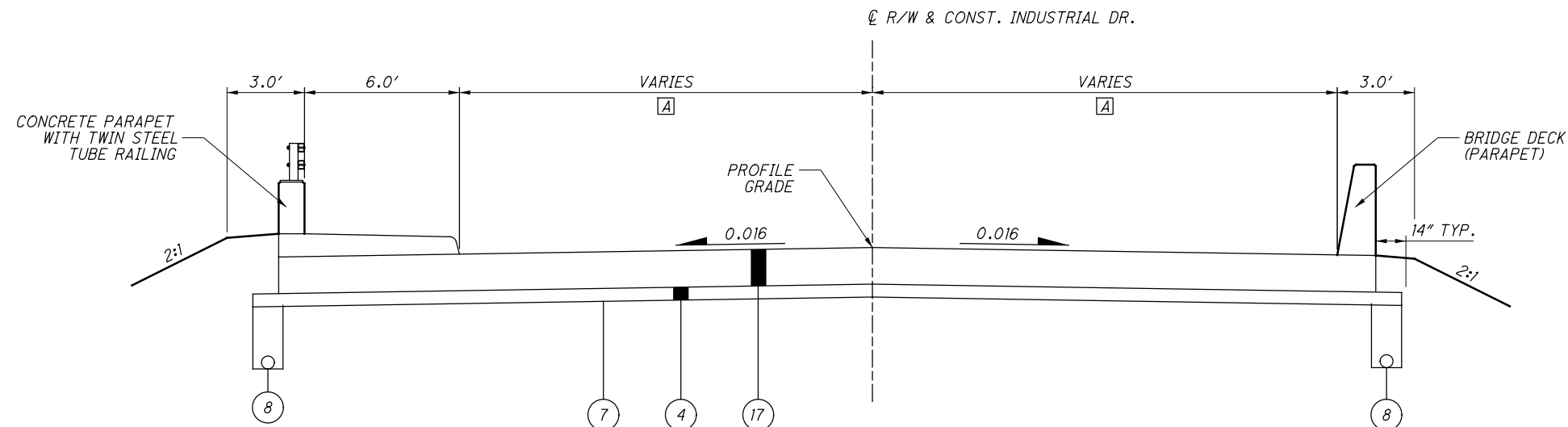


CURB SECTION

APPLIES:
STA. 103+74.75 TO STA. 103+78.86 LT.
STA. 103+74.89 TO STA. 103+78.80 RT.
STA. 110+94.51 TO STA. 110+98.51 RT.
STA. 110+95.65 TO STA. 110+99.70 LT.

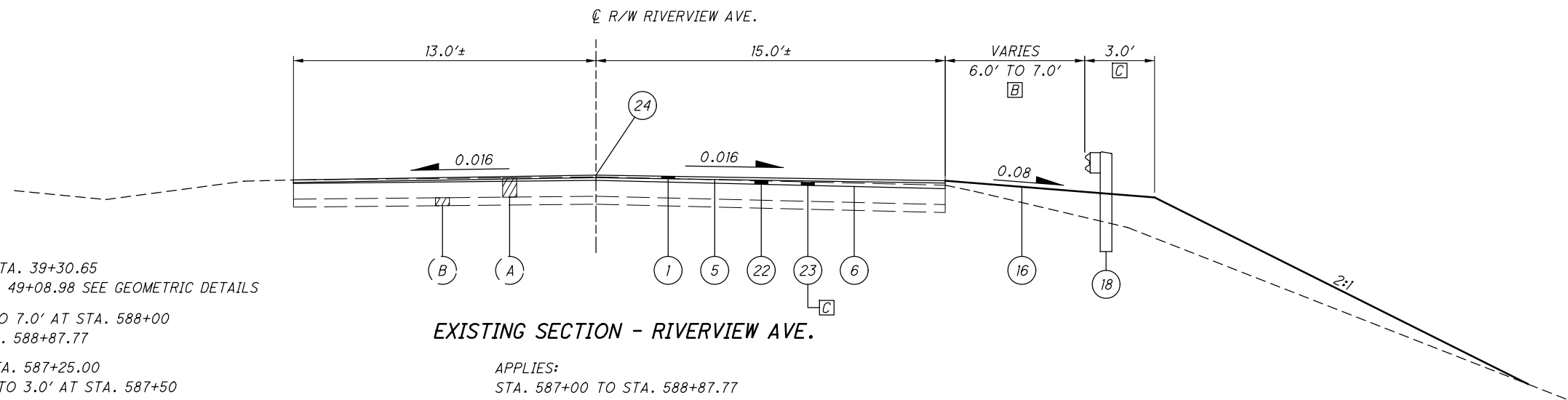
FOR LEGEND, SEE SHEET 7

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NORMAL SECTION - APPROACH SLAB

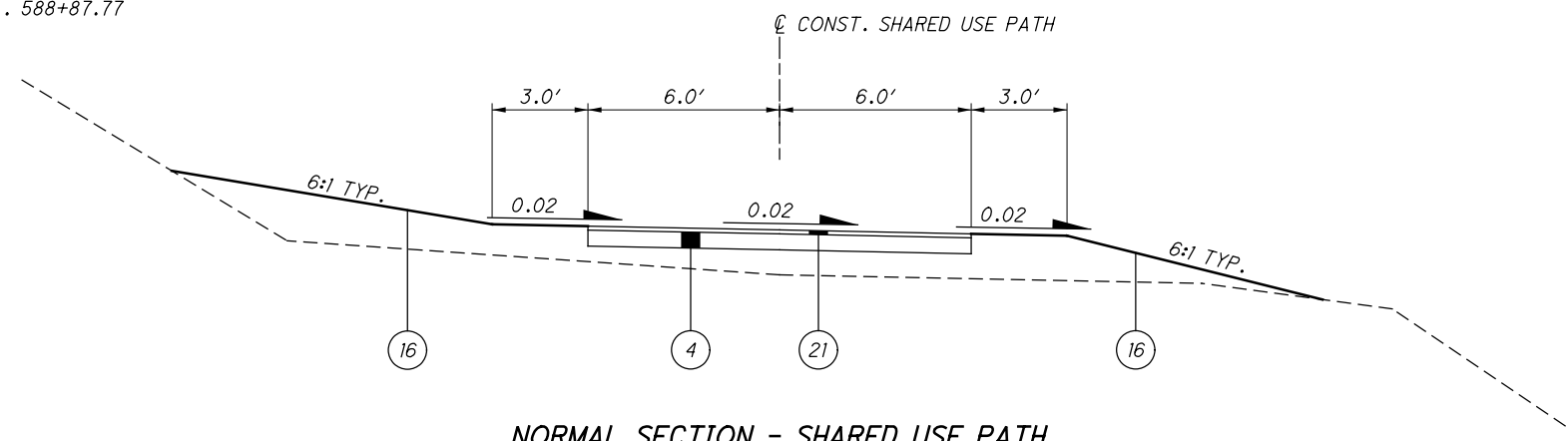
APPLIES:
STA. 39+00.65 TO STA. 39+30.65
STA. 48+78.98 TO STA. 49+08.98



EXISTING SECTION - RIVERVIEW AVE.

APPLIES:
STA. 587+00 TO STA. 588+87.77

- [A] 11.0' FROM STA. 39+00.65 TO STA. 39+30.65
VARIES: STA. 48+78.98 TO STA. 49+08.98 SEE GEOMETRIC DETAILS
- [B] VARIES: 6.0' AT STA. 587+00 TO 7.0' AT STA. 588+00
7.0' FROM STA. 588+00 TO STA. 588+87.77
- [C] 0' FROM STA. 587+00.00 TO STA. 587+25.00
VARIES: 0' AT STA. 587+25.00 TO 3.0' AT STA. 587+50
3.0' FROM STA. 587+50.00 TO STA. 588+87.77
- [D] VARIES: 1.25" AT STA. 587+00.00 TO 1.75" AT STA. 587+50.00
VARIES: 1.75" AT STA. 587+50.00 TO 1.25" AT STA. 588+00.00
1.25" FROM STA. 588+00.00 TO STA. 588+87.77



NORMAL SECTION - SHARED USE PATH

FOR LEGEND, SEE SHEET 7

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ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLIES TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

UTILITIES

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

UTILITY OWNERSHIP

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

TIME WARNER CABLE

CITY OF NAPOLEON
255 WEST RIVERVIEW
NAPOLEON, OH 43545
(419) 592-4010

OHIO GAS
335 E. LEGGETT STREET
WASEON, OH 43567
(419) 825-5368

TOLEDO EDISON
300 MADISON AVENUE
TOLEDO, OH 43652
(419)249-5218

CENTURY LINK
812 DOLAN ST.
DEFIANCE, OH 43512

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEET ___ OF THE PLANS FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

PROJECT CONTROL

POSITIONING METHOD: ODOT VRS
MONUMENT TYPE: CORS STATIONS

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
GEOID: GEOID9

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83 (CORS96)
ELLIPSOID: GRS 80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE - NORTH ZONE
COMBINED SCALE FACTOR: 1.0000675074
ORIGIN OF COORDINATE
SYSTEM: 0.00, 0.00

SURVEYING PARAMETERS (CONT.)

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 823.

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

ITEM 441, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN

ITEM 441, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN SHALL FOLLOW THE SPECIFICATIONS FOR 441 EXCEPT FOR SECTION 441.02 THAT THE BINDER SHALL BE PG88-22M FOR THE SURFACE COURSE AND A MAXIMUM OF 10% RAP BY DRY WEIGHT OF MIX CAN BE USED.

THE PG88-22M BINDER USED FOR THIS MIXTURE SHALL BE SAMPLED AT THE SUPPLIER TERMINAL AND TESTED BY THE DEPARTMENT PRIOR TO SHIPMENT TO THE ASPHALT PLANT. CONTACT THE DISTRICT FOR SAMPLING. IF THE SUPPLIER IS CERTIFIED FOR THE BINDER DO NOT SAMPLE AT THE TERMINAL. OBTAIN FOUR 1-QUART SAMPLES OF THE BINDER FROM THE ASPHALT PLANT STORAGE TANK AND HOLD FOR THE DISTRICT.

THE USE OF WARM MIX IS NOT PERMITTED FOR THIS MIXTURE.

ITEM 441, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (446), AS PER PLAN

ITEM 441, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (446), AS PER PLAN SHALL FOLLOW THE SPECIFICATIONS FOR 441 EXCEPT FOR SECTION 441.02 THAT THE BINDER SHALL BE PG88-22M FOR THE INTERMEDIATE COURSE AND A MAXIMUM OF 10% RAP BY DRY WEIGHT OF MIX CAN BE USED.

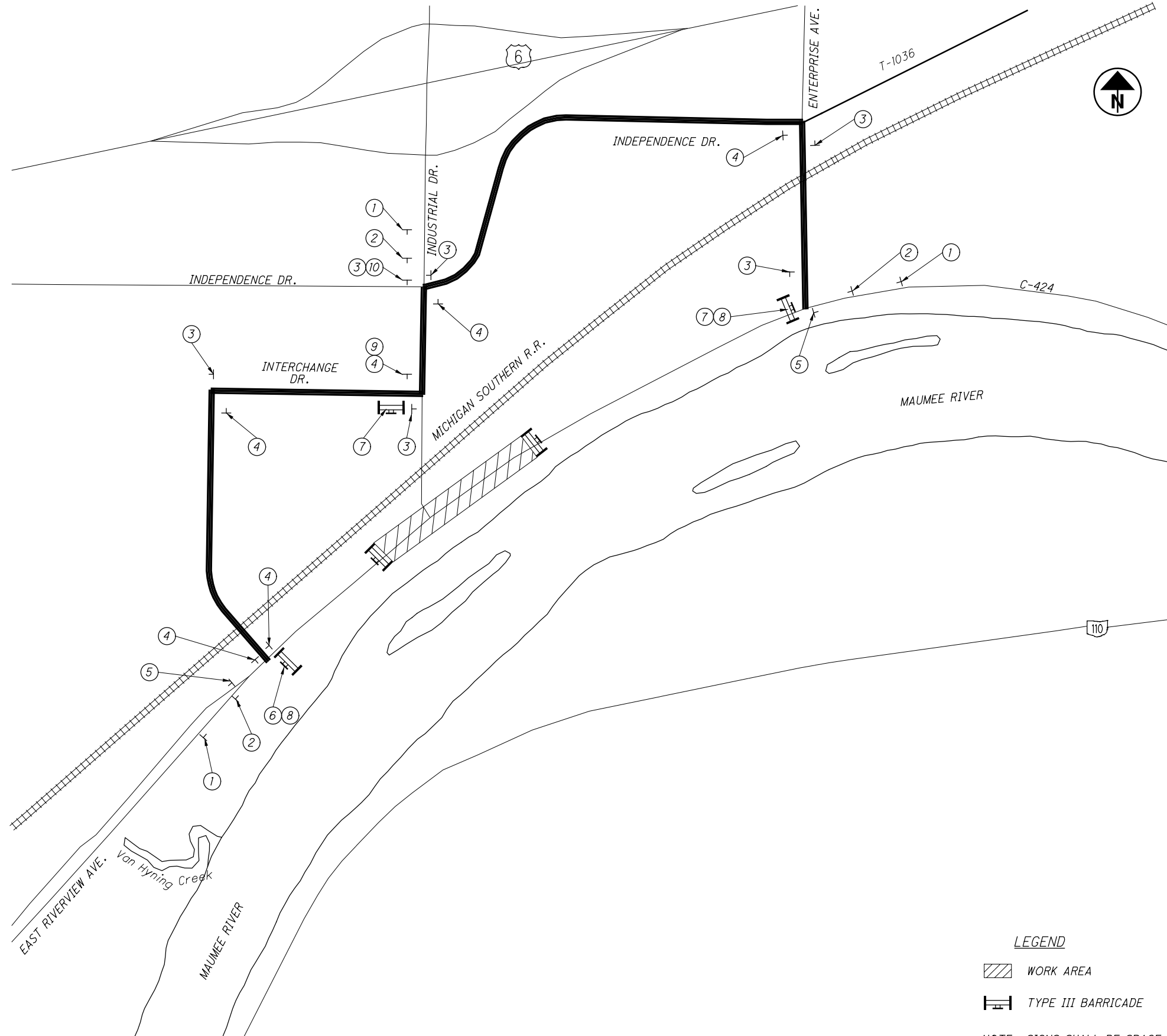
THE PG88-22M BINDER USED FOR THIS MIXTURE SHALL BE SAMPLED AT THE SUPPLIER TERMINAL AND TESTED BY THE DEPARTMENT PRIOR TO SHIPMENT TO THE ASPHALT PLANT. CONTACT THE DISTRICT FOR SAMPLING. IF THE SUPPLIER IS CERTIFIED FOR THE BINDER DO NOT SAMPLE AT THE TERMINAL. OBTAIN FOUR 1-QUART SAMPLES OF THE BINDER FROM THE ASPHALT PLANT STORAGE TANK AND HOLD FOR THE DISTRICT.

THE USE OF WARM MIX IS NOT PERMITTED FOR THIS MIXTURE.

UNCONTROLLED FILL AREA

THE UNCONTROLLED FILL AREA IDENTIFIED IN THE PLANS CONSISTS LEGALLY DEPOSITED SOLID WASTE FIL MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING THE EXISTING MATERIAL THAT IS WITHIN THE PROJECT CONSTRUCTION LIMITS TO A DEPTH OF 7 FEET BELOW THE EXISTING GRADE AND REPLACING WITH GRANULAR EMBANKMENT.

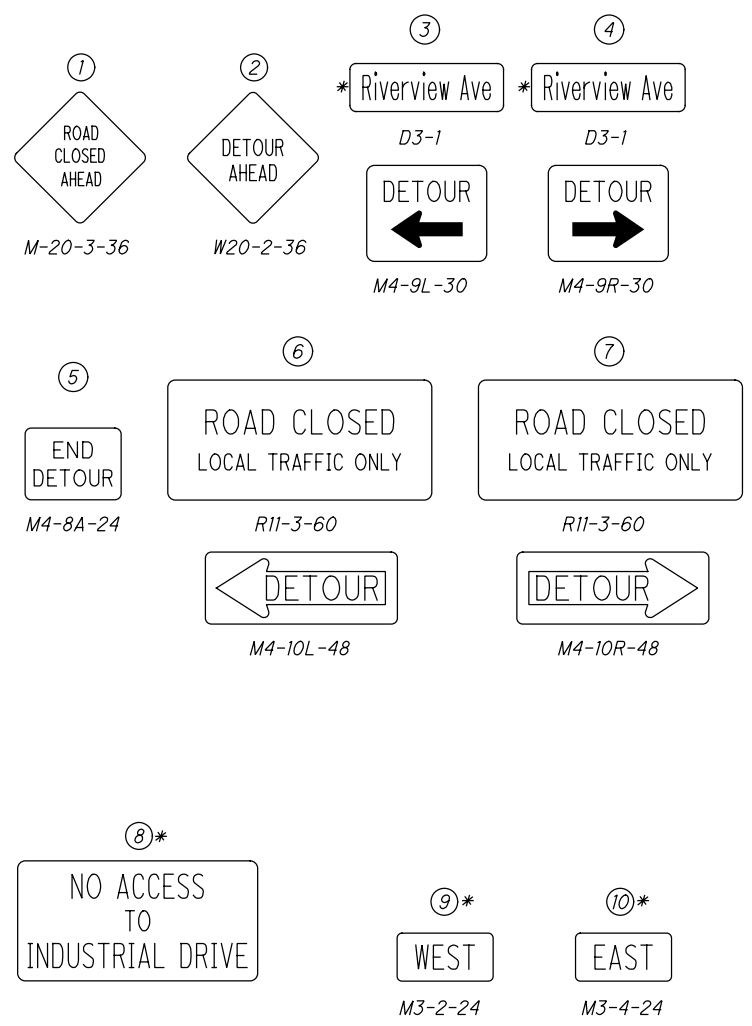
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LEGEND

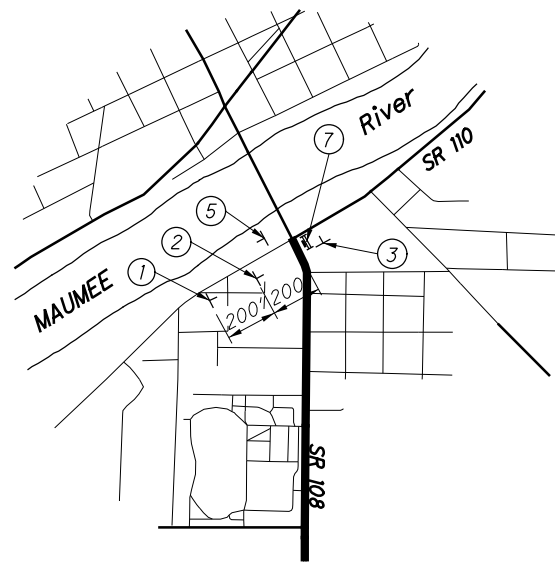
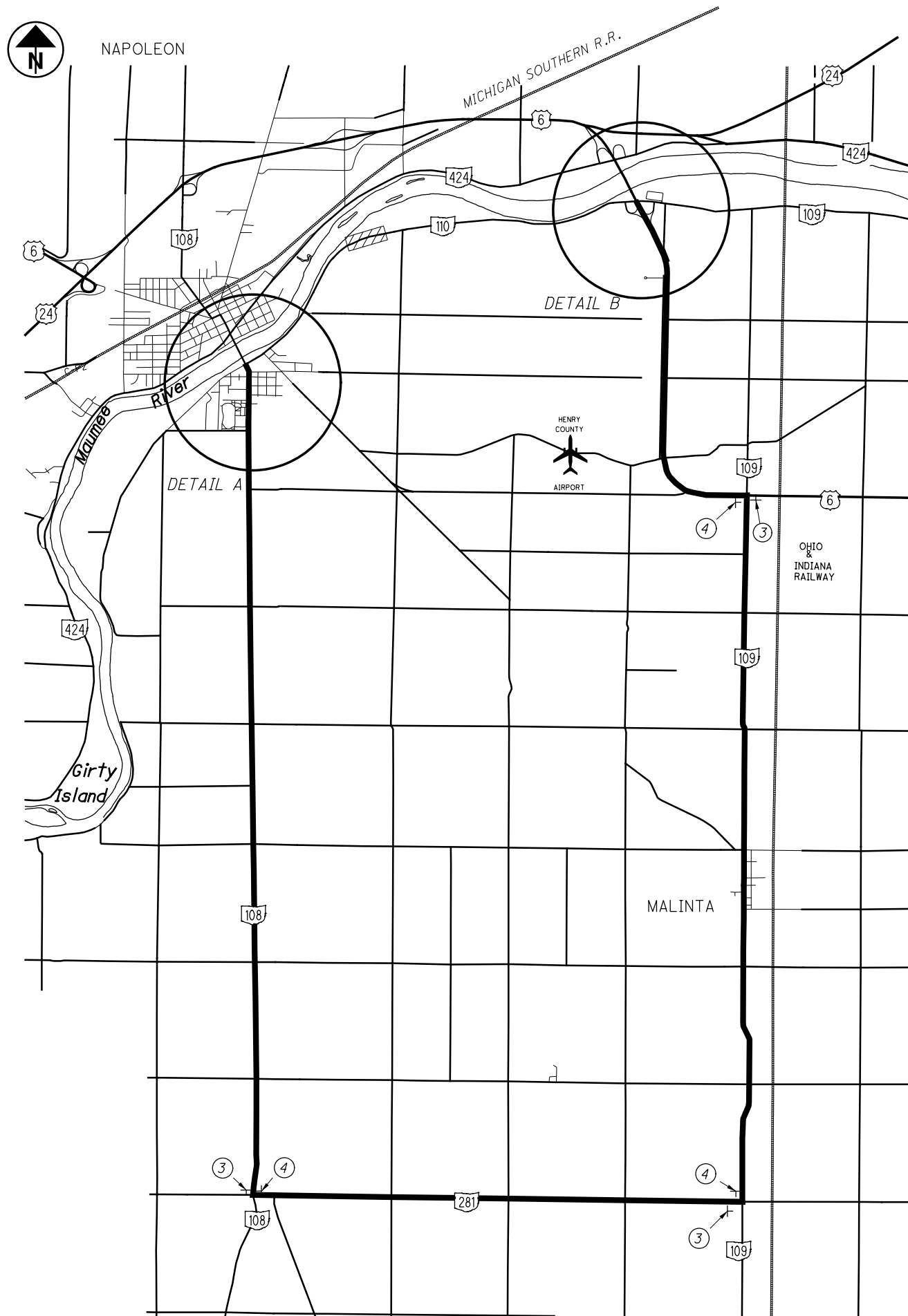
- WORK AREA
- TYPE III BARRICADE

NOTE: SIGNS SHALL BE SPACE AT 200' FOR INDUSTRIAL DR. AND 350' FOR RIVERVIEW AVE.
CONTRACTOR SHALL CLOSE RIVERVIEW AVE AND INDUSTRIAL DR AT THE PROJECT WORK LIMITS
WHILE MAINTAINING ACCESS TO ALL PROPERTIES.

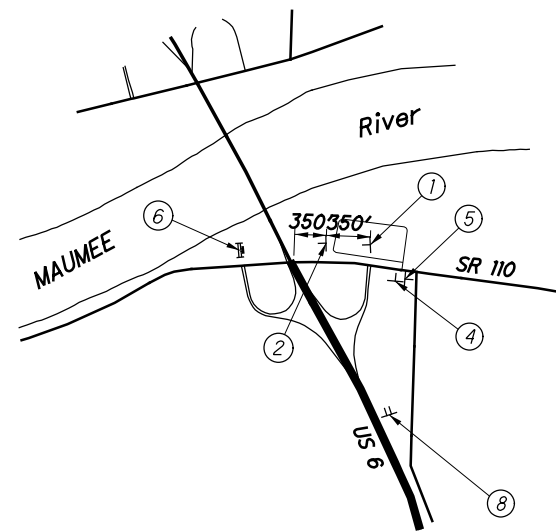


* SIGN SHALL BE BLACK ON ORANGE

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DETAIL A
S.R. 108 AND S.R. 110

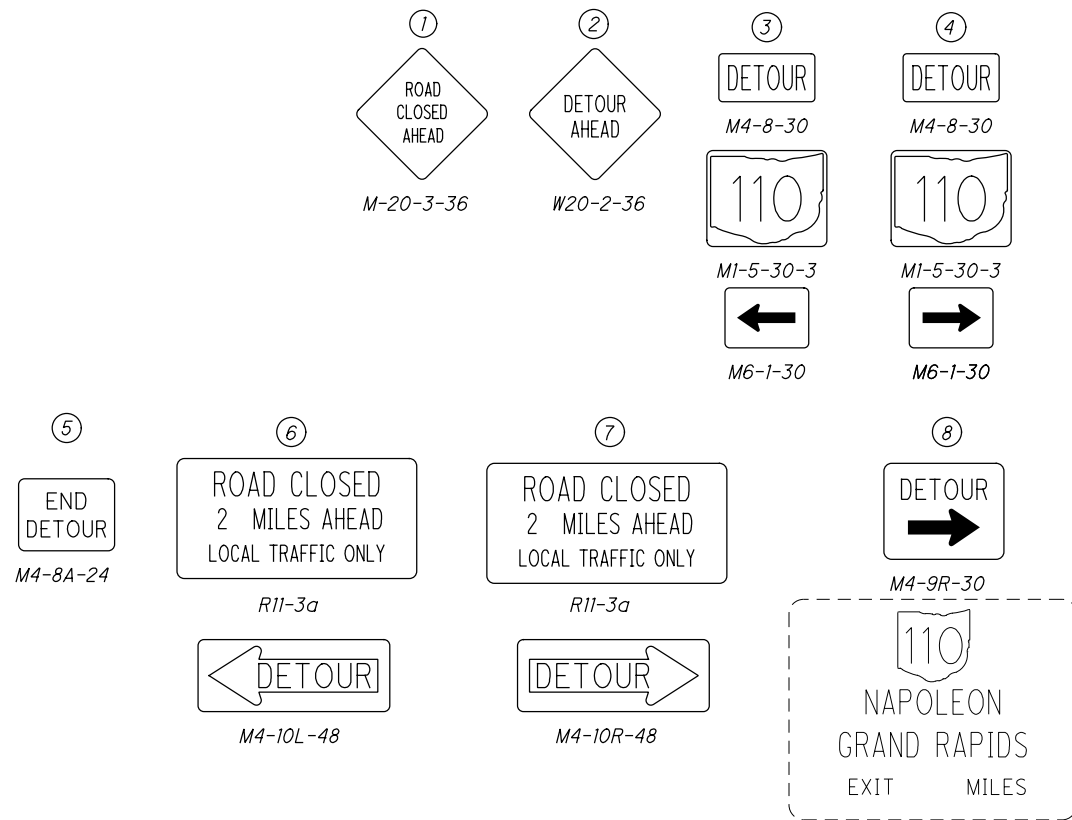


DETAIL B
U.S. 6 AND S.R. 110

LEGEND

WORK AREA

TYPE III BARRICADE



MAINTENANCE OF TRAFFIC
DETOUR MAP - S.R. 110

HEN-NEW MAUMEE
RIVER BRIDGE

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ITEM 614, MAINTAINING TRAFFIC

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED FOR ALL ROADS AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED __ CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEET ___ OR THE USE OF ONE WAY SIGNAL OPERATION. DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF \$----- FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT. RIVERVIEW DRIVE AND SR 110 SHALL NOT BE CLOSED AT THE SAME TIME.

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE. THE SIGNS MAY BE ERECTED ANYWHERE ON RAMPS AS LONG AS THEY ARE VISIBLE TO THE MOTORISTS USING THE RAMP.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DETERMINED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

ITEM 410, TRAFFIC COMPACTED SURFACE, TYPE A OR B	----- CU. YD.
ITEM 410, TRAFFIC COMPACTED SURFACE, TYPE C	----- CU. YD.
ITEM 614, ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	----- CU. YD.
ITEM 616, WATER	----- M. GAL.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

OVERNIGHT TRENCH CLOSING

THE BASE WIDENING SHALL BE COMPLETED TO A DEPTH OF NO MORE THAN ---- INCHES BELOW THE EXISTING PAVEMENT BY THE END OF EACH WORK DAY. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT EXCEPT FOR A SHORT LENGTH (25 FEET OR LESS) OF A WORK SECTION AT THE END OF THE TRENCH. IN CASE WORK MUST BE SUSPENDED BECAUSE OF INCLEMENT WEATHER OR OTHER REASONS, THE TRENCH FOR THE UN-COMPLETED BASE WIDENING SHALL BE BACKFILLED AT THE DIRECTION OF THE ENGINEER.

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

ITEM 616, WATER ----- M. GAL

ITEM 614, REPLACEMENT SIGN

FLATSHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT SIGNS SHALL BE NEW. OTHER MATERIALS MAY BE IN USED, BUT GOOD, CONDITION SUBJECT TO APPROVAL BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE CONTRACT PRICE PER EACH FOR ITEM 614, REPLACEMENT SIGN, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF DAMAGED SIGNS, HARDWARE AND SUPPORTS, AND PROVIDING THE NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC.

AN ESTIMATED QUANTITY OF ---- EACH HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

ITEM 614, REPLACEMENT DRUM

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT DRUMS SHALL BE NEW.

PAYMENT FOR THE NEW DRUMS SHALL BE MADE AT THE CONTRACT PRICE PER EACH FOR ITEM 614, REPLACEMENT DRUM, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM, AND PROVIDING AND MAINTAINING THE REPLACEMENT DRUM IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUM.

AN ESTIMATED QUANTITY OF ---- EACH HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

ITEM 614, BARRIER REFLECTORS AND/OR OBJECT MARKERS

BARRIER REFLECTORS AND/OR OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO CMS 626, EXCEPT THAT THE SPACING SHALL BE 50 FEET. AN ESTIMATED QUANTITY OF --- EACH OF ITEM 614 BARRIER REFLECTOR, TYPE B AND --- EACH OF ITEM 614 OBJECT MARKER, --WAY HAVE BEEN PROVIDED AND CARRIED TO THE GENERAL SUMMARY.

FULLY-ACTUATED OPERATION OF WORK ZONE TRAFFIC SIGNAL

THE WORK ZONE SIGNAL CONTROL REQUIRED FOR THIS PROJECT AND SHOWN ON SHEETS ----- AND SCDS MT-96.11, 96.20 AND 96.26 SHALL BE FULLY TRAFFIC-ACTUATED AND OPERATE IN A MANNER SIMILAR TO THAT DESCRIBED IN SECTION 733.02 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS.

THE INITIAL CONTROLLER TIMING SHALL BE AS FOLLOWS:

RIVER AVE PHASE *				
	1 (All Red) Dummy Phase	2 Mainline Direction	3 (All Red) Dummy Phase	4 Mainline Direction
MIN. GREEN		10		10
EXTENSION		4		4
MAX. GREEN		30		30
YELLOW		3.5		3.5
ALL RED	30		30	
RECALL	MAX.	MIN.	MAX.	MIN.

SR 110 PHASE *				
	1 (All Red) Dummy Phase	2 Mainline Direction	3 (All Red) Dummy Phase	4 Mainline Direction
MIN. GREEN		10		10
EXTENSION		4		4
MAX. GREEN		30		30
YELLOW		3.5		3.5
ALL RED	30		30	
RECALL	MAX.	MIN.	MAX.	MIN.

*PHASES AS SHOWN ON SCD MT-96.20 FOR ACTUATED CONTROL. ADD MORE PHASES AS NEEDED TO ACCOMMODATE SIDE STREETS, DRIVEWAYS, ETC.
+/- PROVIDE TIMING FOR THE SIGNAL LOCATION UNDER CONSIDERATION.

1 INDICATE DIRECTION OF GREEN.

THE CONTRACTOR SHALL ALSO DESIGN, FURNISH, INSTALL AND MAINTAIN A TRAFFIC DETECTOR ON EACH TRAFFIC APPROACH WHICH WILL RELIABLY DETECT ALL LEGAL TRAFFIC APPROACHING (BUT NOT LEAVING) THE SIGNAL AS IT PASSES OR WAITS IN THE DESIGNATED DETECTOR ZONE SHOWN IN THE PLANS. DETECTOR DESIGNS WHICH DO NOT PROVIDE RELIABLE DETECTION, FREE FROM FALSE CALLS, SHALL BE IMMEDIATELY REPLACED BY THE CONTRACTOR.

SEQUENCE OF CONSTRUCTION

GENERAL

THE CONSTRUCTION OF THE NEW STRUCTURE MAY BE PERFORMED AT ANY TIME DURING THE CONSTRUCTION SEQUENCE SO LONG AS ALL REQUIREMENTS OF THESE PLANS AND THE PROJECT SCHEDULE ARE MET.

STAGE 1

SETUP THE TEMPORARY TRAFFIC CONTROL AS DETAILED ON SHEETS XX-XX AND PERFORM THE FOLLOWING WORK. TRAFFIC SHALL BE MAINTAINED ON EXISTING PAVEMENT OF SR 110 AND RIVERVIEW AVENUE.

-CONSTRUCT THE NEW INDUSTRIAL DRIVE ALIGNMENT OUTSIDE OF THE EXISTING PAVEMENT TO THE PROPOSED SUBGRADE.

STAGE 2

UPON THE COMPLETION OF STAGE 1 INSTALL TEMPORARY SIGNALS AT RIVERVIEW AVENUE AND SR 110. UPON THE INSTALLATION OF THE TEMPORARY SIGNALS SETUP THE TEMPORARY TRAFFIC CONTROL AS DETAILED ON SHEETS XX-XX AND PERFORM THE FOLLOWING WORK.

-CONSTRUCT EB SIDE OF RIVERVIEW AVENUE TO THE PROPOSED SUBGRADE.

-CONSTRUCT WB SIDE OF SR 110 TO THE PROPOSED SUBGRADE.

STAGE 3

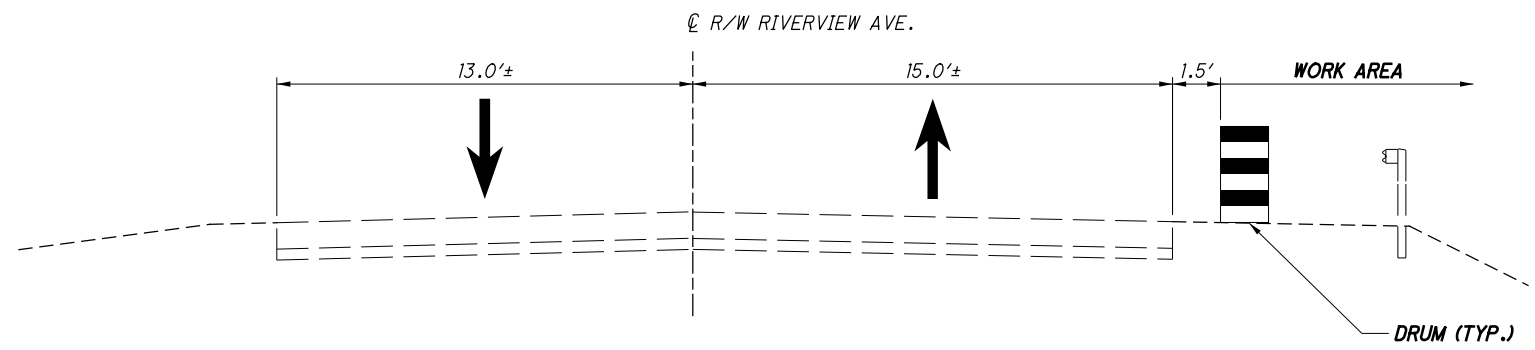
UPON COMPLETION OF STAGE 2 CLOSE INDUSTRIAL DRIVE, RIVERVIEW AVE., AND SR 110 TO THROUGH TRAFFIC AND DETOUR TRAFFIC AS SHOWN ON SHEETS XX-XX AND PERFORM THE FOLLOWING WORK. AT THE COMPLETION OF PHASE 3 THE CONTRACTOR SHALL OPEN THE BRIDGE TO TRAFFIC.

-CONSTRUCT INDUSTRIAL DRIVE NORTH OF RIVERVIEW AVENUE AVE AND SR 110 TO THE FINAL SURFACE COURSE.

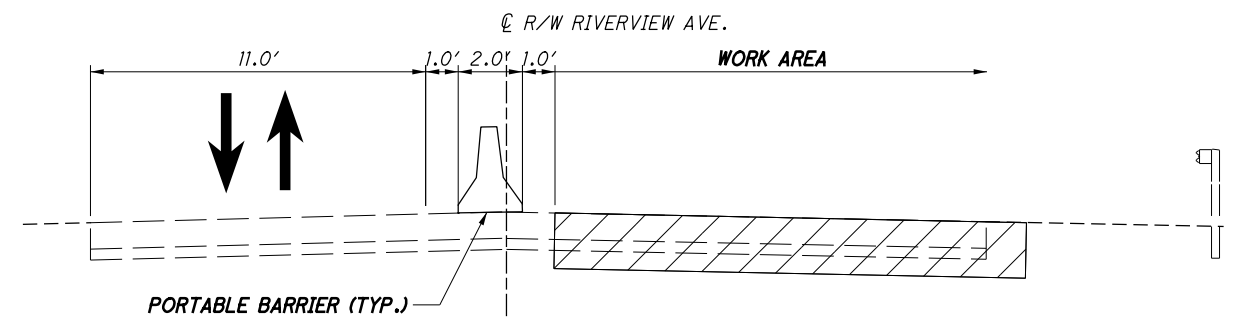
-CONSTRUCT THE RIVERVIEW AVENUE AND SR 110 ROUNDABOUTS TO THE FINAL SURFACE COURSE.

-INSTALL PAVEMENT MARKINGS AND SIGNS. MARKINGS AND SIGNS FOR THE ROUNDABOUT SHALL BE INSTALLED PRIOR TO OPENING THE ROUNDABOUT TO TRAFFIC.

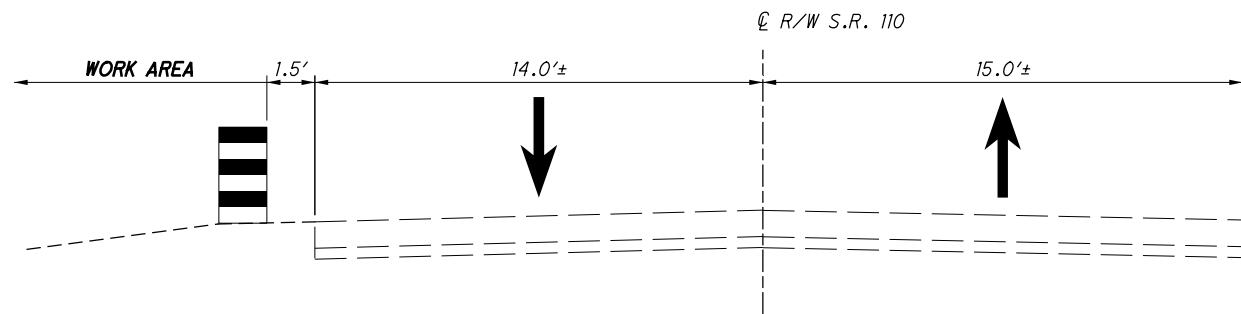
W:\Projects\Projects F-J\H2530002\22984\mot\sheet\22984MY001.dgn 1/15/2016 10:52:20 AM svalentin



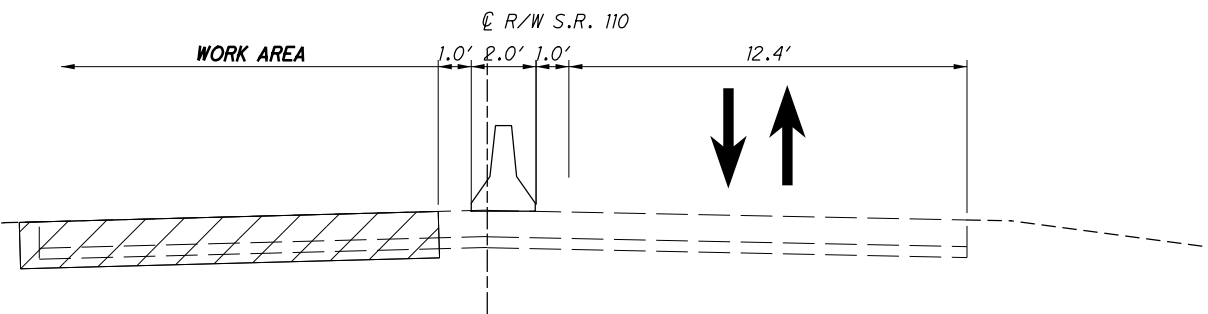
TYPICAL SECTION - STAGE 1
RIVERVIEW AVE.



TYPICAL SECTION - STAGE 2
RIVERVIEW AVE.



TYPICAL SECTION - STAGE 1
S.R. 110



TYPICAL SECTION - STAGE 2
S.R. 110

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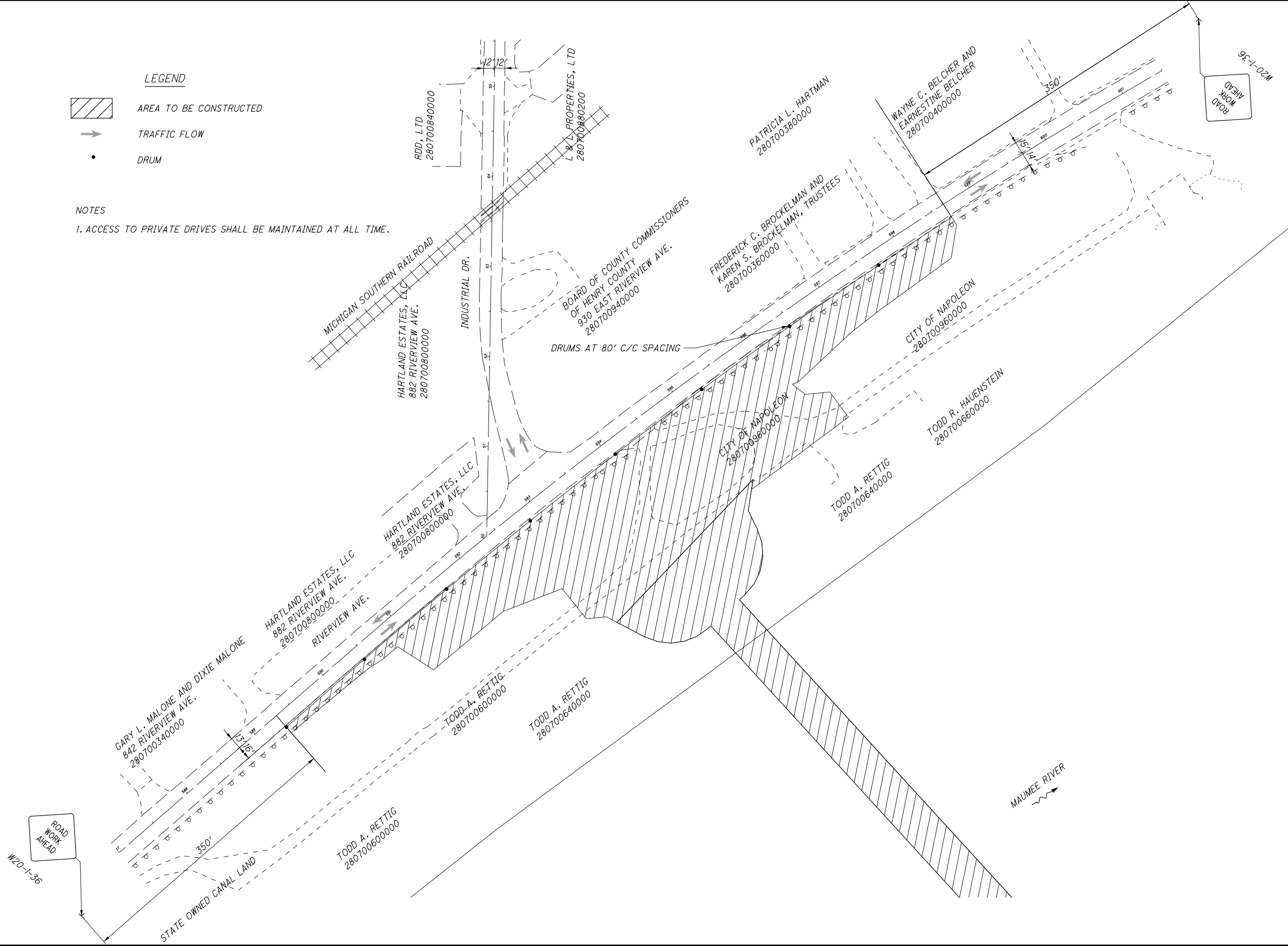
LEGEND

AREA TO BE CONSTRUCTED

TRAFFIC FLOW

DRUM

NOTES
1. ACCESS TO PRIVATE DRIVES SHALL BE MAINTAINED AT ALL TIME.



17
180

HEN-NEW MAUMEE
RIVER BRIDGE

MAINTENANCE OF TRAFFIC
STAGE 1

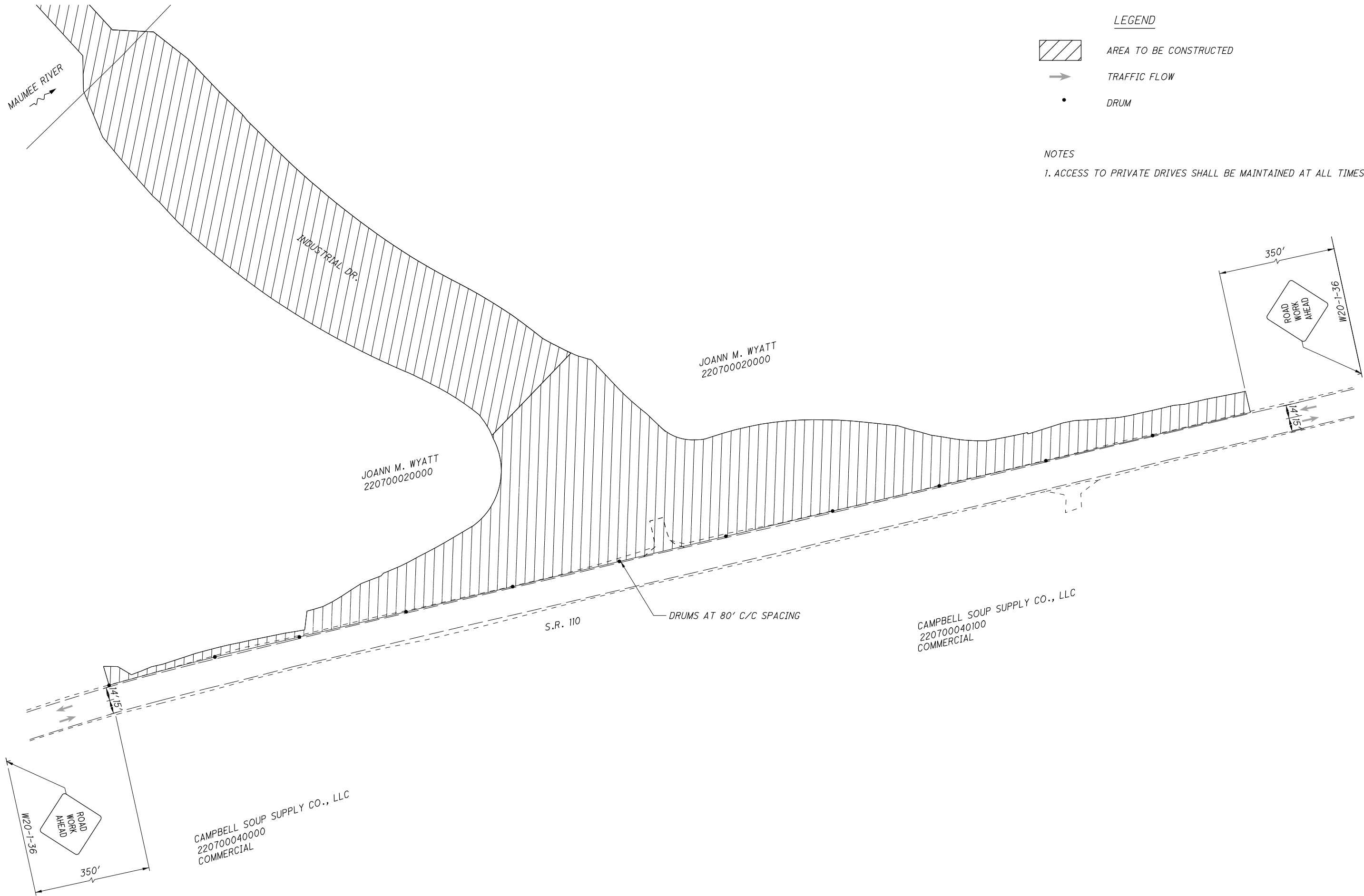
CALCULATED
CHECKED

0 50 100

HORIZONTAL
SCALE IN FEET

2

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LEGEND



AREA TO BE CONSTRUCTED



TRAFFIC FLOW



DRUM

NOTES

1. ACCESS TO PRIVATE DRIVES SHALL BE MAINTAINED AT ALL TIMES.




CALCULATED

CHECKED


MAINTENANCE OF TRAFFIC
STAGE 1

HEN-NEW MAUMEE
RIVER BRIDGE


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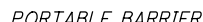
AREA TO BE CONSTRUCTED




TRAFFIC FLOW



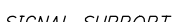
TYPE III BARRICADE



PORTABLE BARRIER



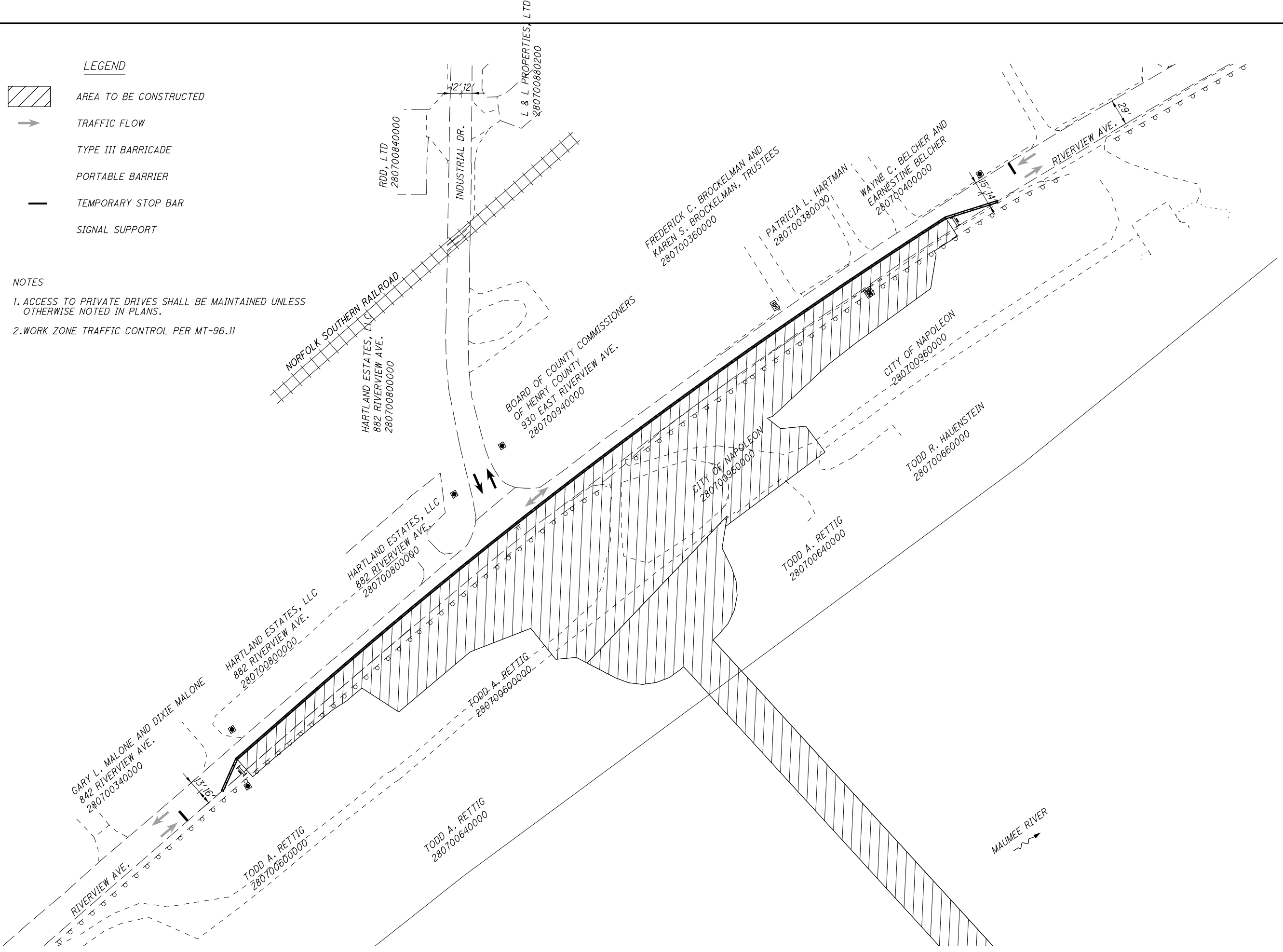
TEMPORARY STOP BAR



SIGNAL SUPPORT

NOTES

- 1. ACCESS TO PRIVATE DRIVES SHALL BE MAINTAINED UNLESS OTHERWISE NOTED IN PLANS.
- 2. WORK ZONE TRAFFIC CONTROL PER MT-96.11







CALCULATED

CHECKED

HEN-NEW MAUMEE RIVER BRIDGE


MAINTENANCE OF TRAFFIC STAGE 2


19


180



LEGEND

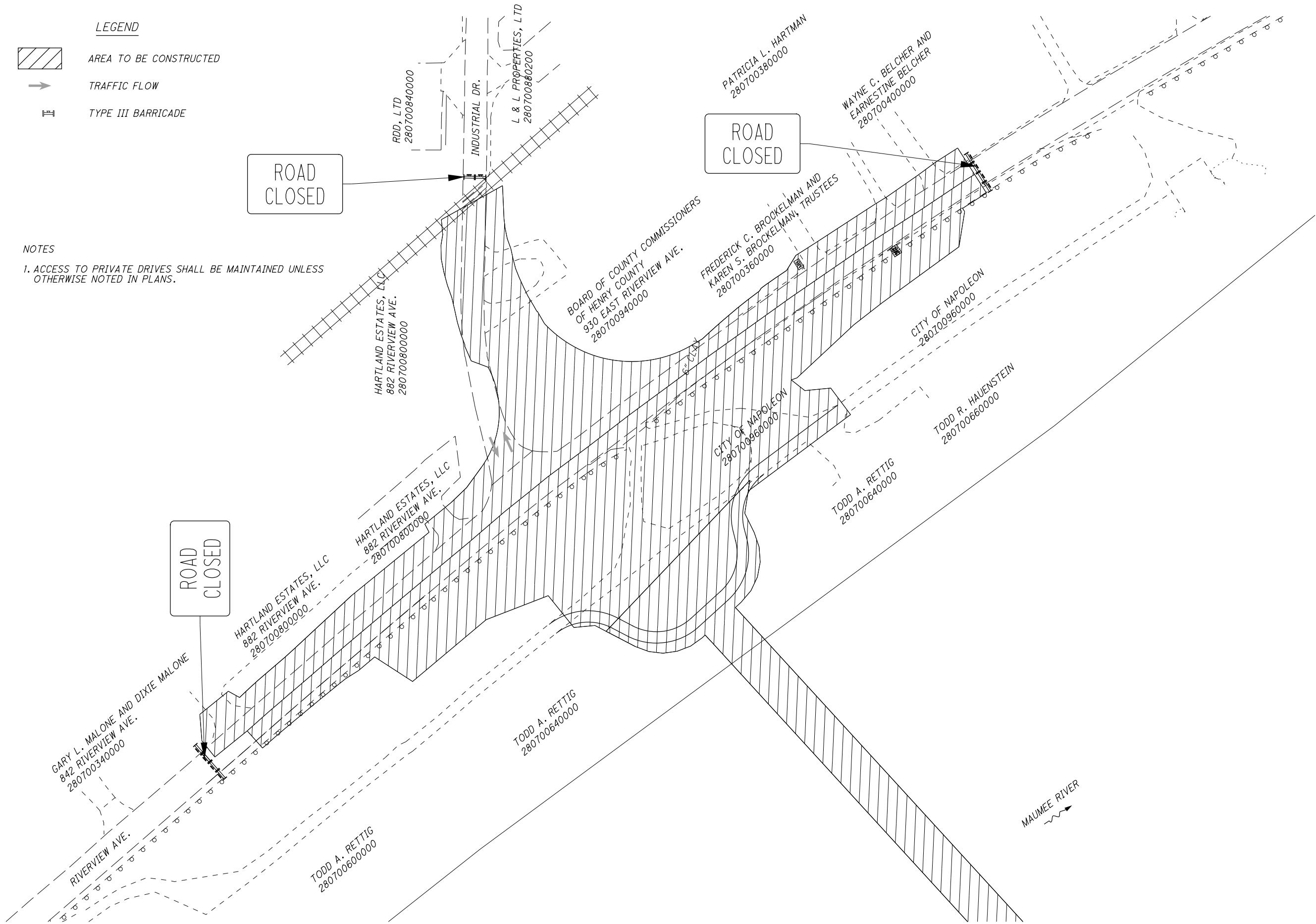
 AREA TO BE CONSTRUCTED

 TRAFFIC FLOW

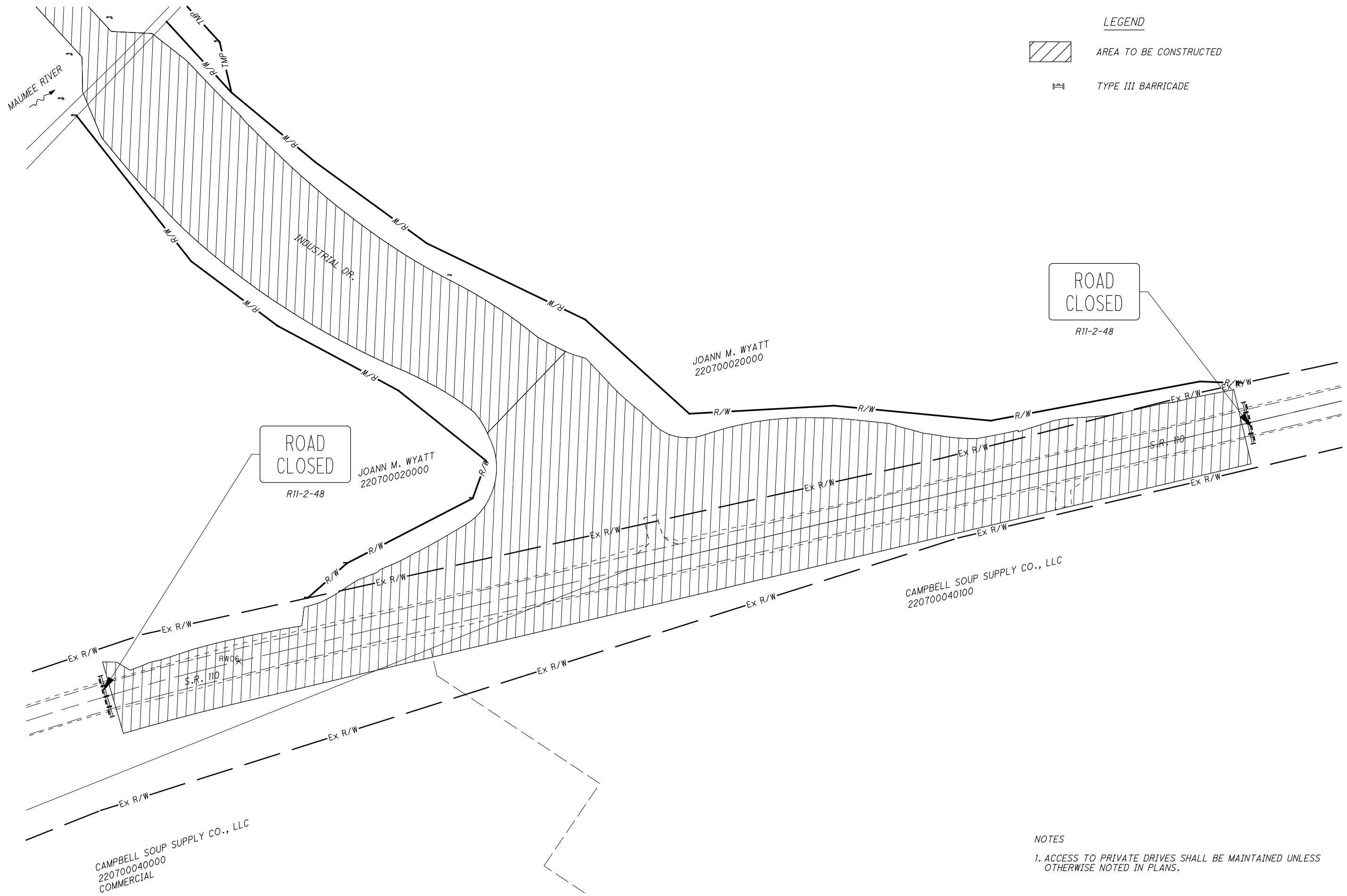
 TYPE III BARRICADE

NOTES

1. ACCESS TO PRIVATE DRIVES SHALL BE MAINTAINED UNLESS OTHERWISE NOTED IN PLANS.



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LEGEND



AREA TO BE CONSTRUCTED



TYPE III BARRICADE

ROAD
CLOSED

R11-2-48

ROAD
CLOSED

R11-2-48

NOTES

- 1. ACCESS TO PRIVATE DRIVES SHALL BE MAINTAINED UNLESS OTHERWISE NOTED IN PLANS.

0 25 50 100
HORIZONTAL
SCALE IN FEET

CALCULATED

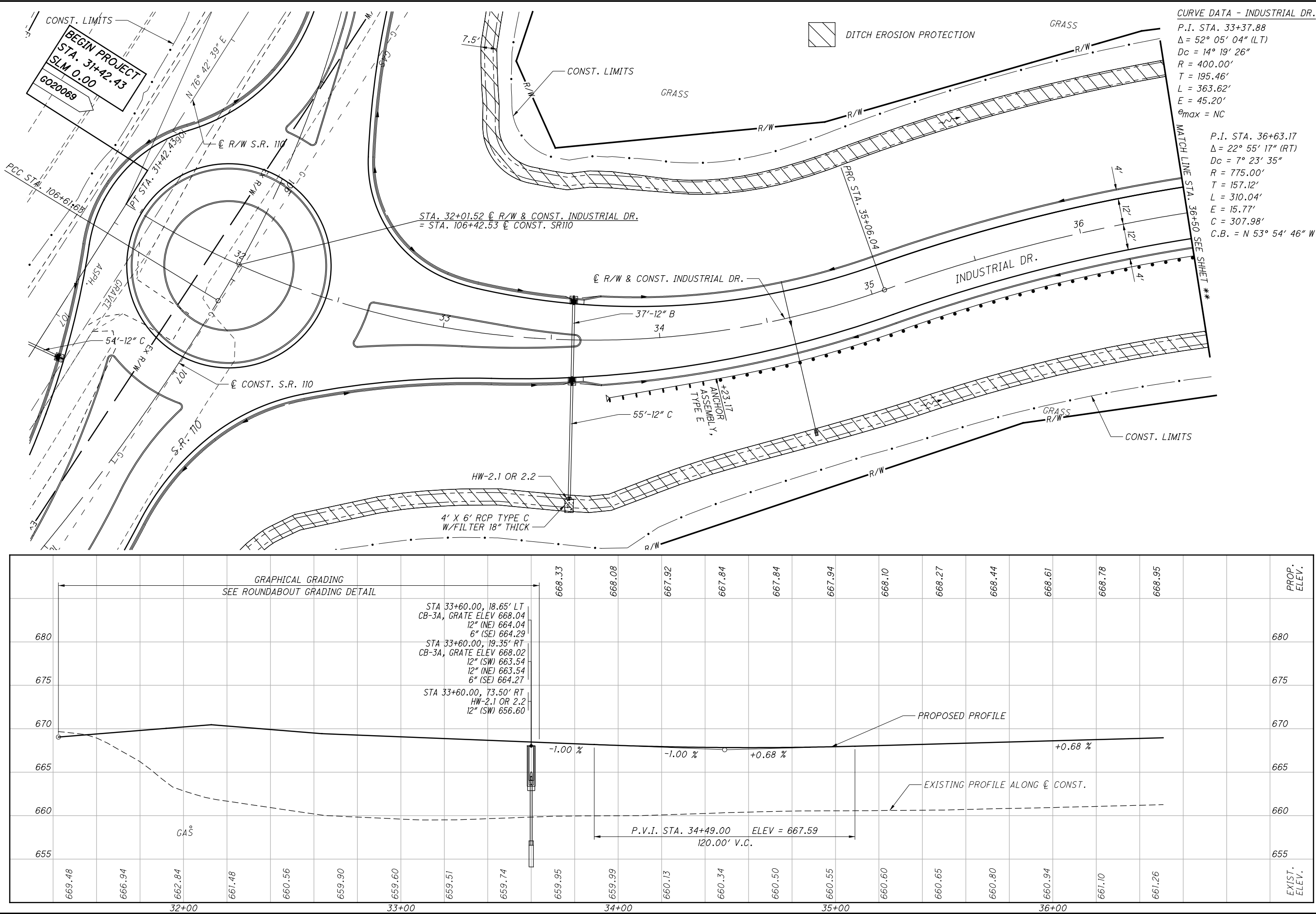
CHECKED

**HEN-NEW MAUMEE
RIVER BRIDGE**

**MAINTENANCE OF TRAFFIC
STAGE 3**

22
180

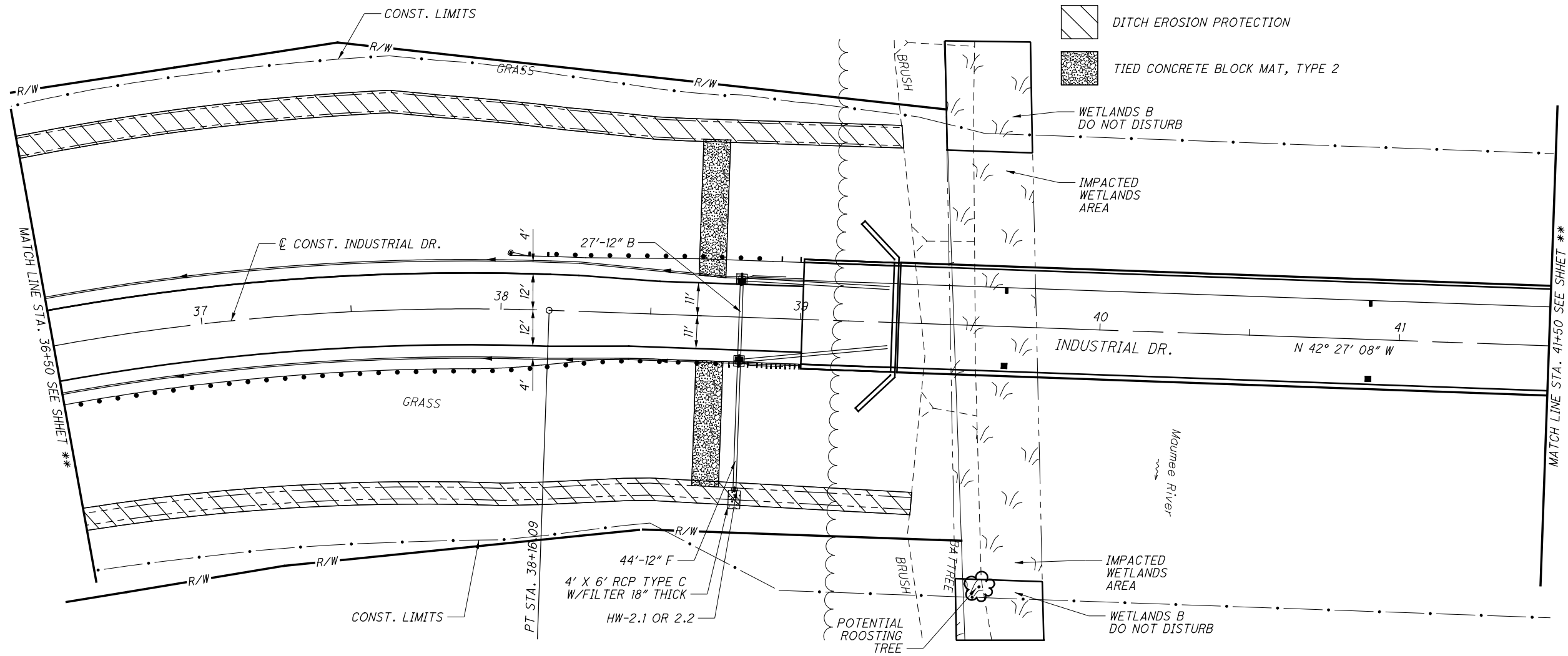
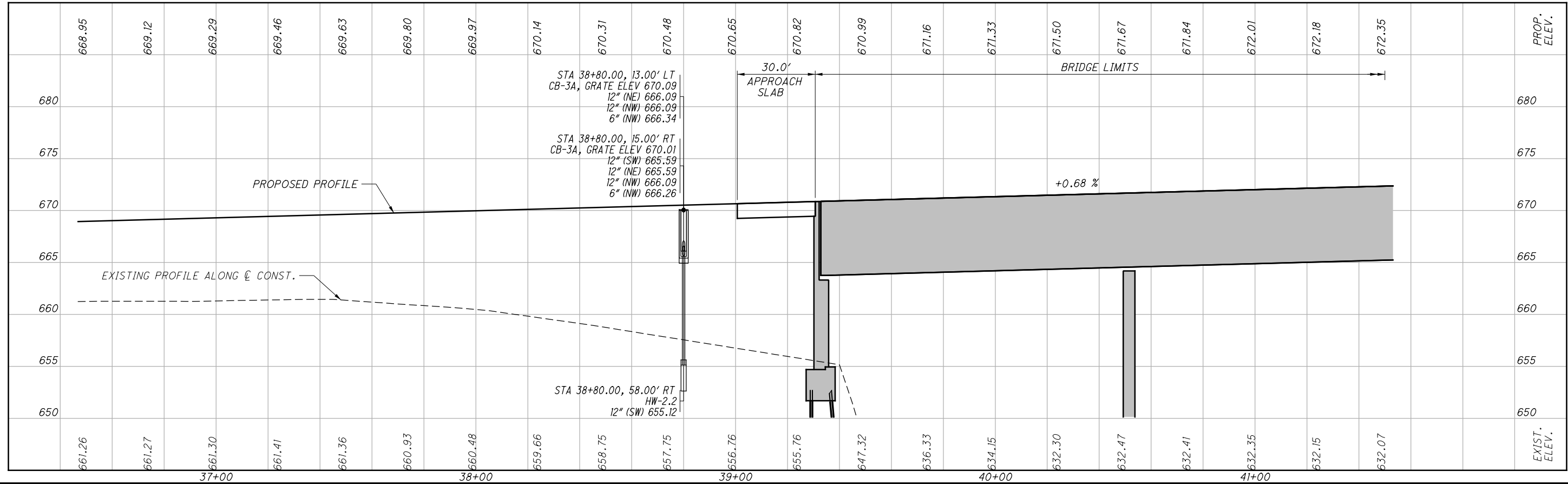
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CURVE DATA - INDUSTRIAL DR.

P.I. STA. 33+37.88
 $\Delta = 52^\circ 05' 04''$ (LT)
 $D_c = 14^\circ 19' 26''$
 $R = 400.00'$
 $T = 195.46'$
 $L = 363.62'$
 $E = 45.20'$
 $\theta_{max} = NC$

P.I. STA. 36+63.17
 $\Delta = 22^\circ 55' 17''$ (RT)
 $D_c = 7^\circ 23' 35''$
 $R = 775.00'$
 $T = 157.12'$
 $L = 310.04'$
 $E = 15.77'$
 $C = 307.98'$
 $C.B. = N 53^\circ 54' 46'' W$

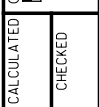


DITCH EROSION PROTECTION

TIED CONCRETE BLOCK MAT, TYPE 2

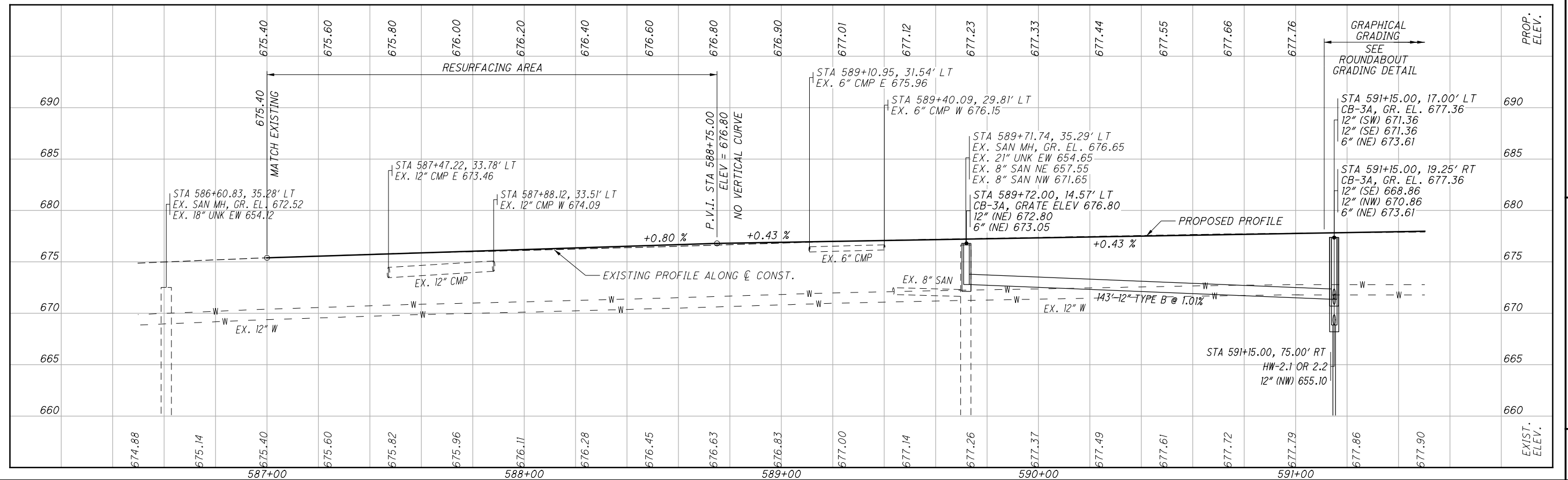
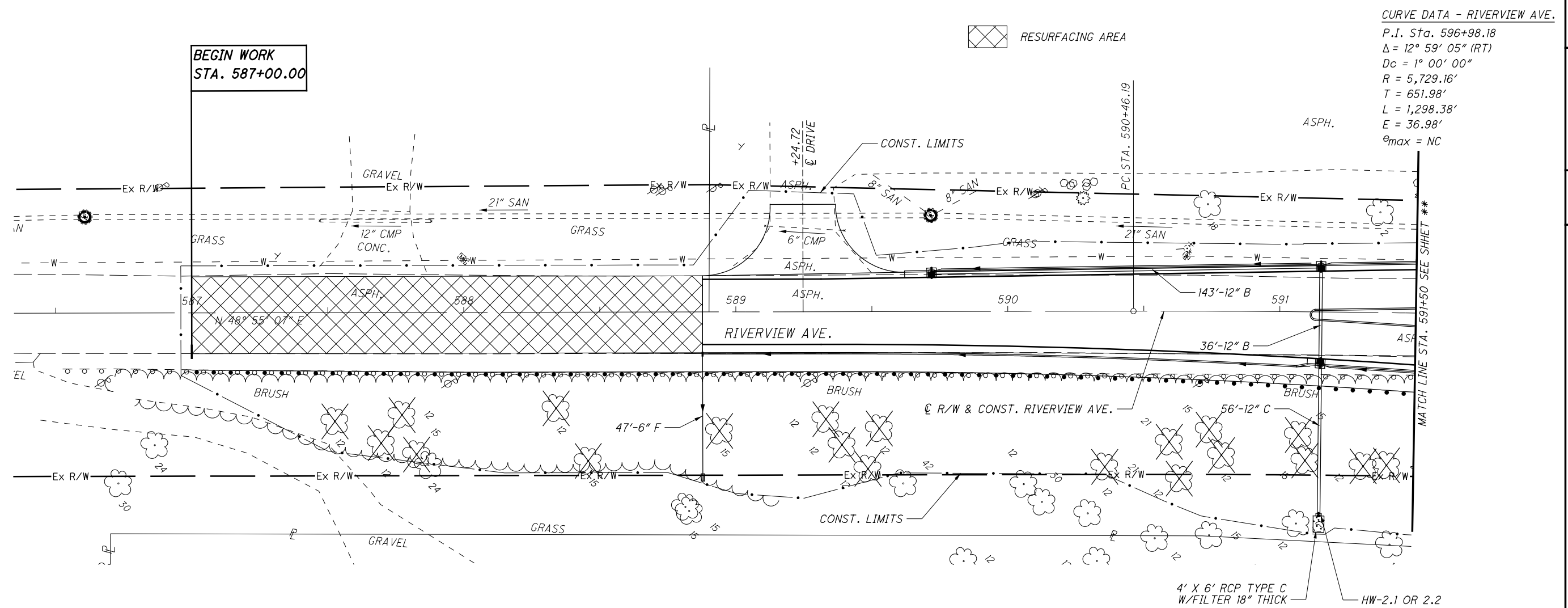
CURVE DATA - INDUSTRIAL DR.

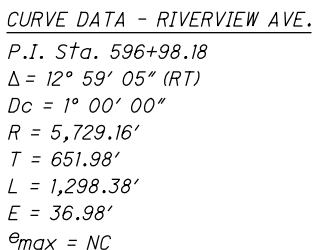
P.I. STA. 36+63.17
 $\Delta = 22^\circ 55' 17''$ (RT)
 $D_c = 7^\circ 23' 35''$
 $R = 775.00'$
 $T = 157.12'$
 $L = 310.04'$
 $E = 15.77'$
 $C = 307.98'$
C.B. = N 53° 54' 46" W

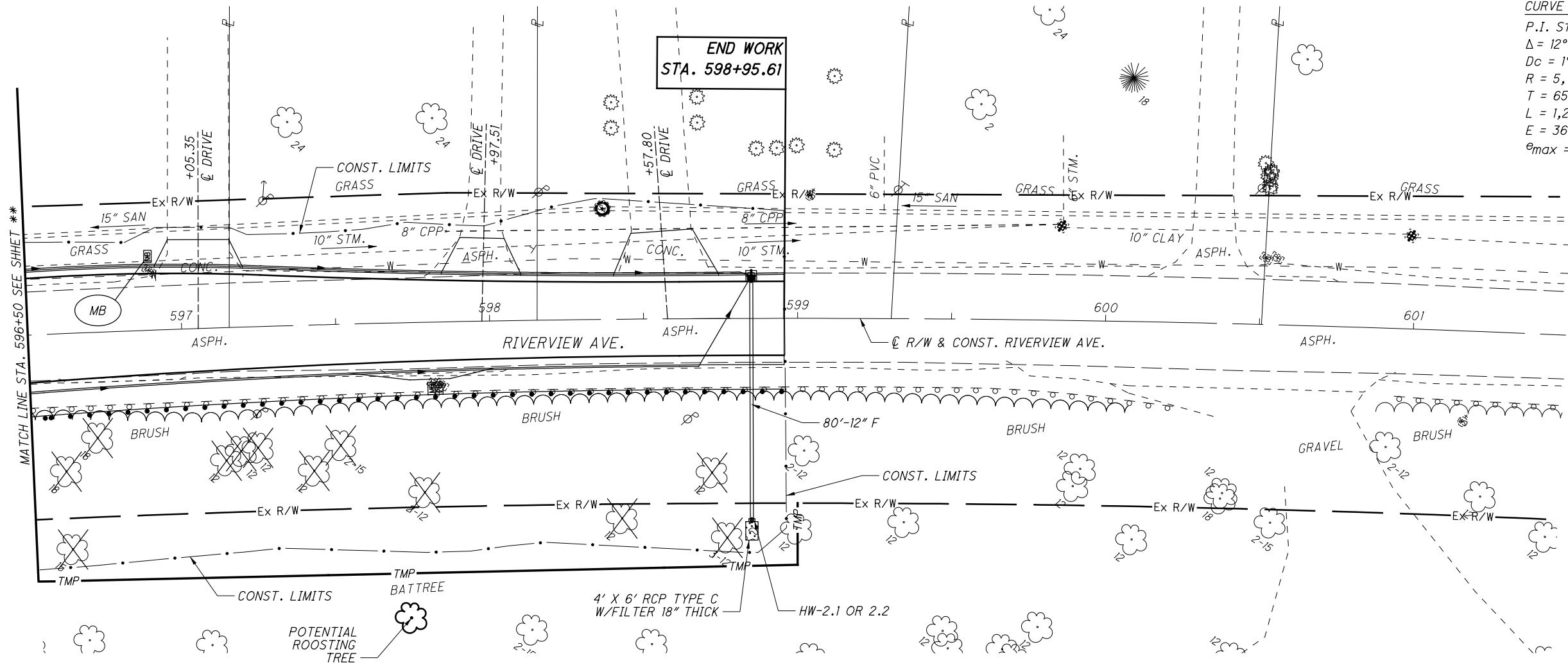


P.I. Sta. 596+98.18
 $\Delta = 12^\circ 59' 05''$ (RT)
 $Dc = 1^\circ 00' 00''$
 $R = 5,729.16'$
 $T = 651.98'$
 $L = 1,298.38'$
 $E = 36.98'$
 $\theta_{max} = NC$

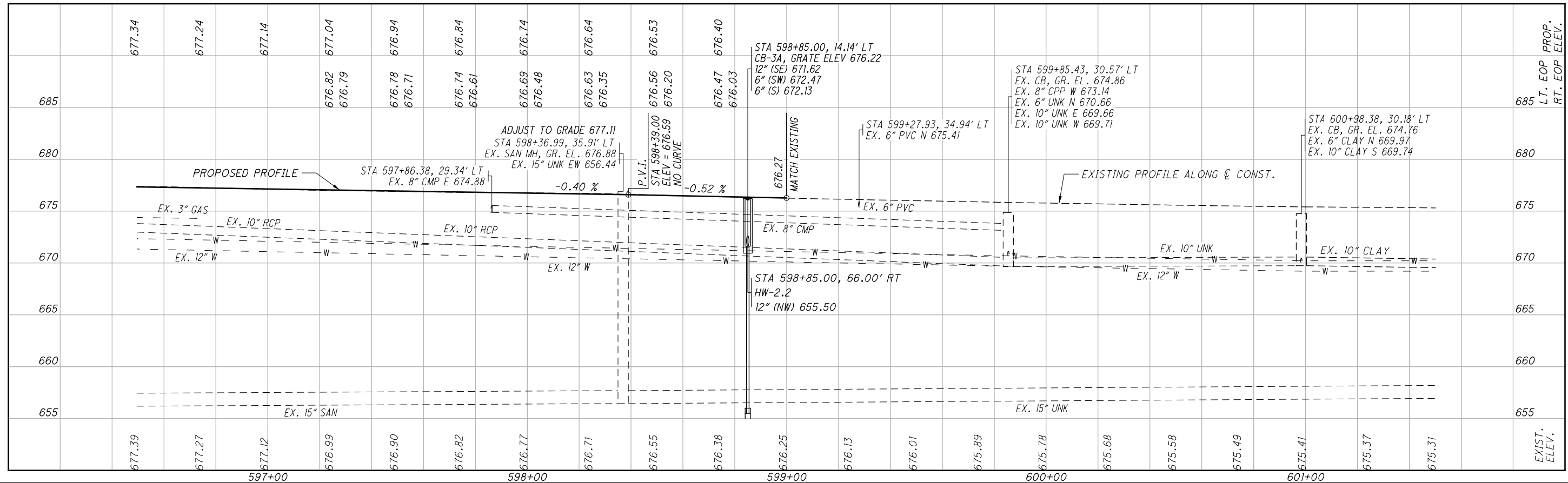


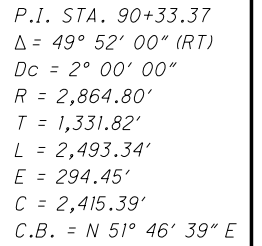




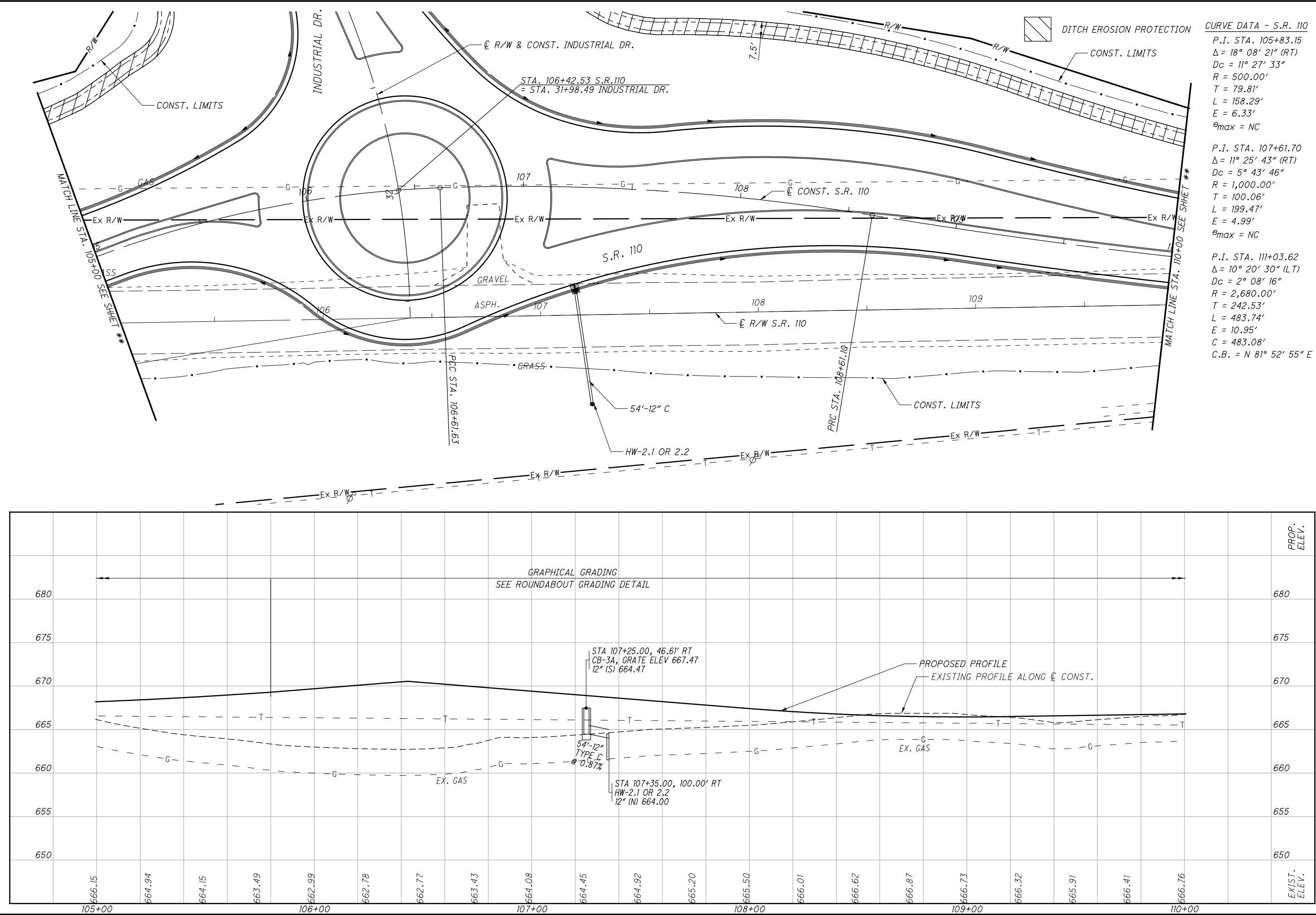


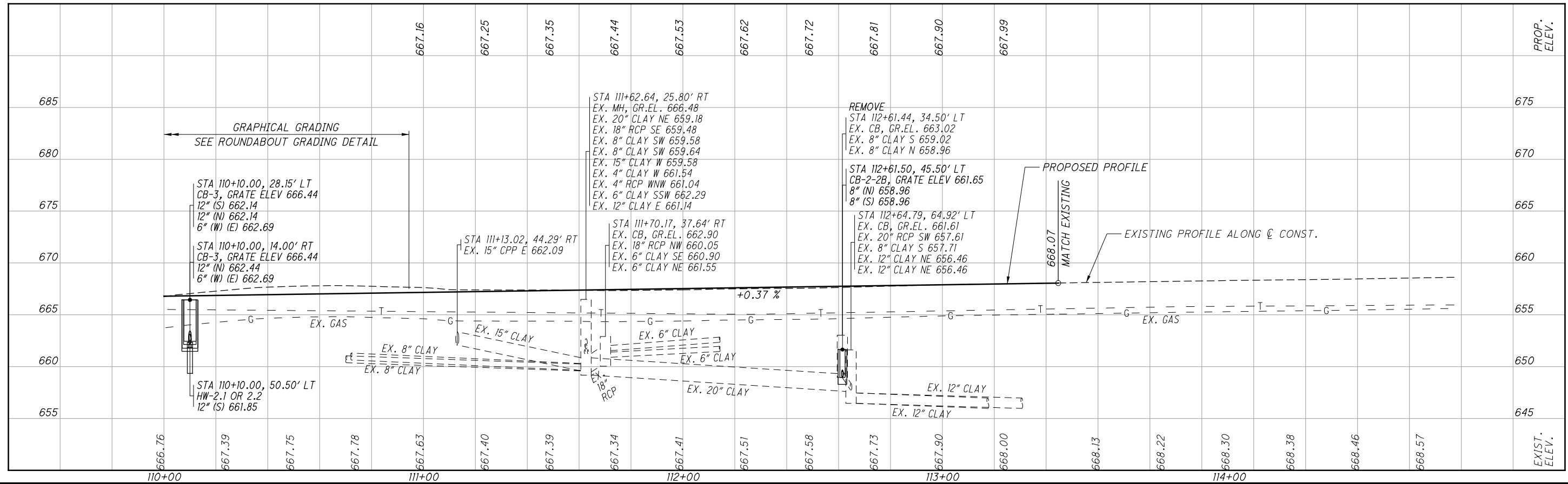
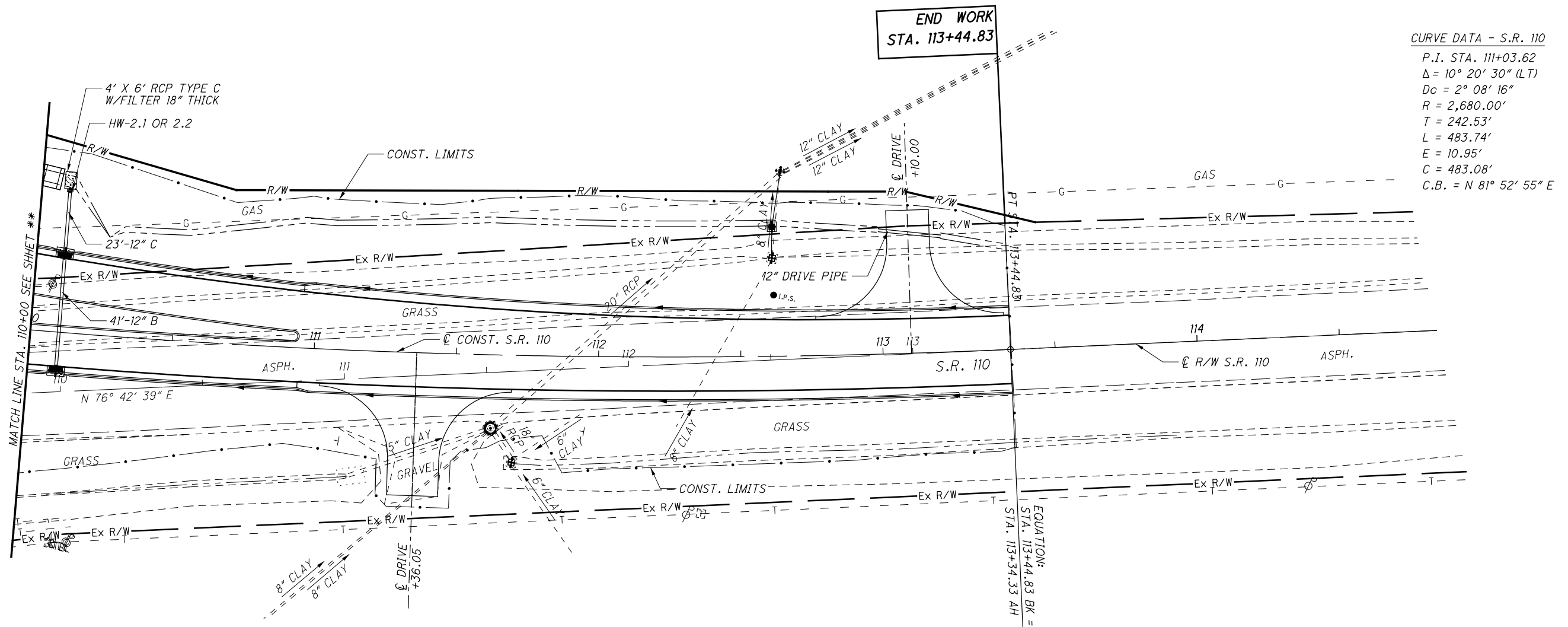
CURVE DATA - RIVERVIEW AVE.
P.I. Sta. 596+98.18
 $\Delta = 12^\circ 59' 05''$ (RT)
 $Dc = 1^\circ 00' 00''$
 $R = 5,729.16'$
 $T = 651.98'$
 $L = 1,298.38'$
 $E = 36.98'$
 $e_{max} = NC$

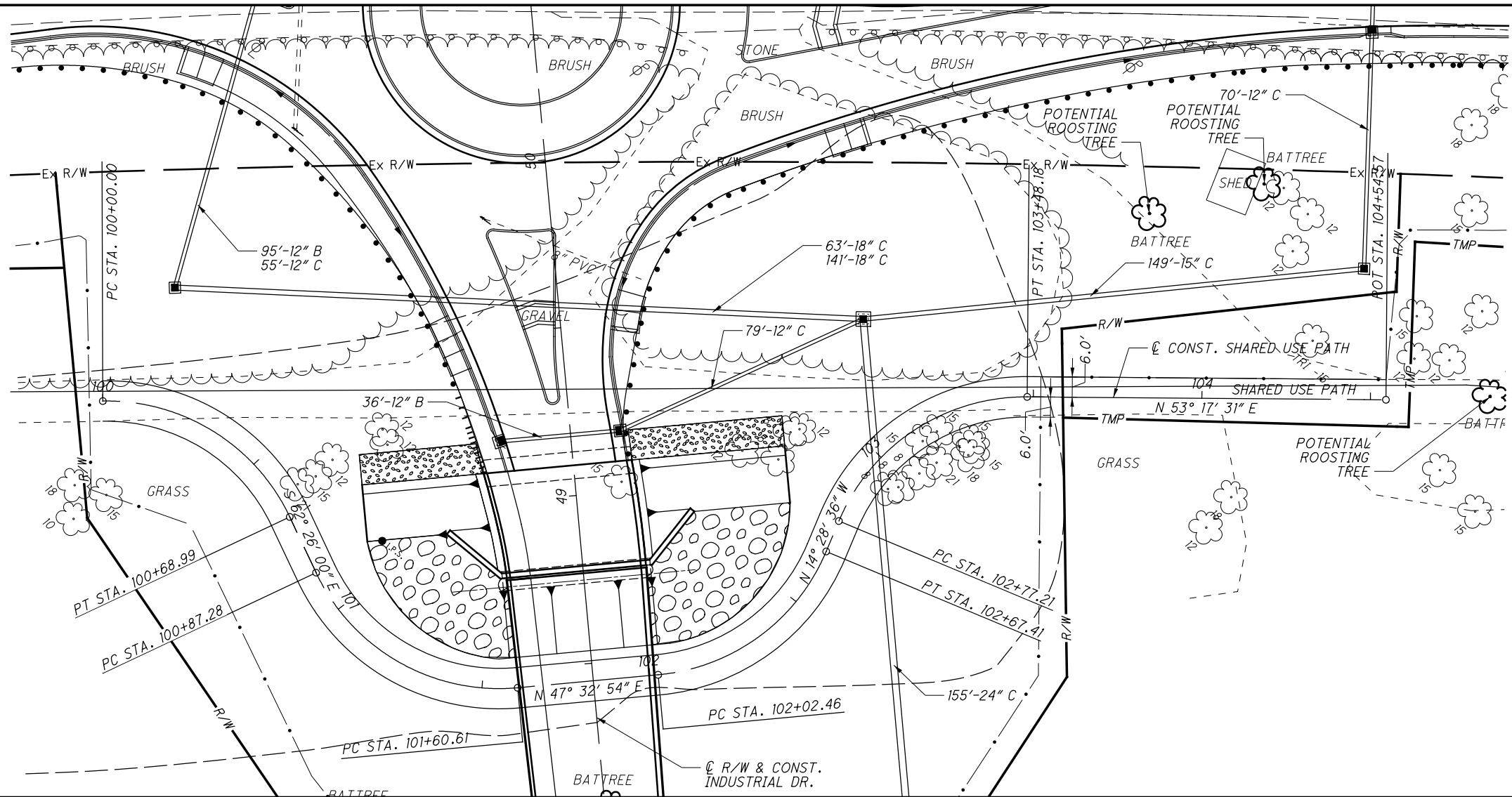




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CURVE DATA - SHARED USE PATH

P.I. Sta. 100+38.87	P.I. Sta. 101+29.31
$\Delta = 65^\circ 52' 36''$ (RT)	$\Delta = 70^\circ 01' 06''$ (LT)
$Dc = 95^\circ 29' 35''$	$Dc = 95^\circ 29' 35''$
$R = 60.00'$	$R = 60.00'$
$T = 38.87'$	$T = 42.03'$
$L = 68.99'$	$L = 73.32'$
$E = 11.49'$	$E = 13.25'$
$\theta_{max} = NC$	$\theta_{max} = NC$

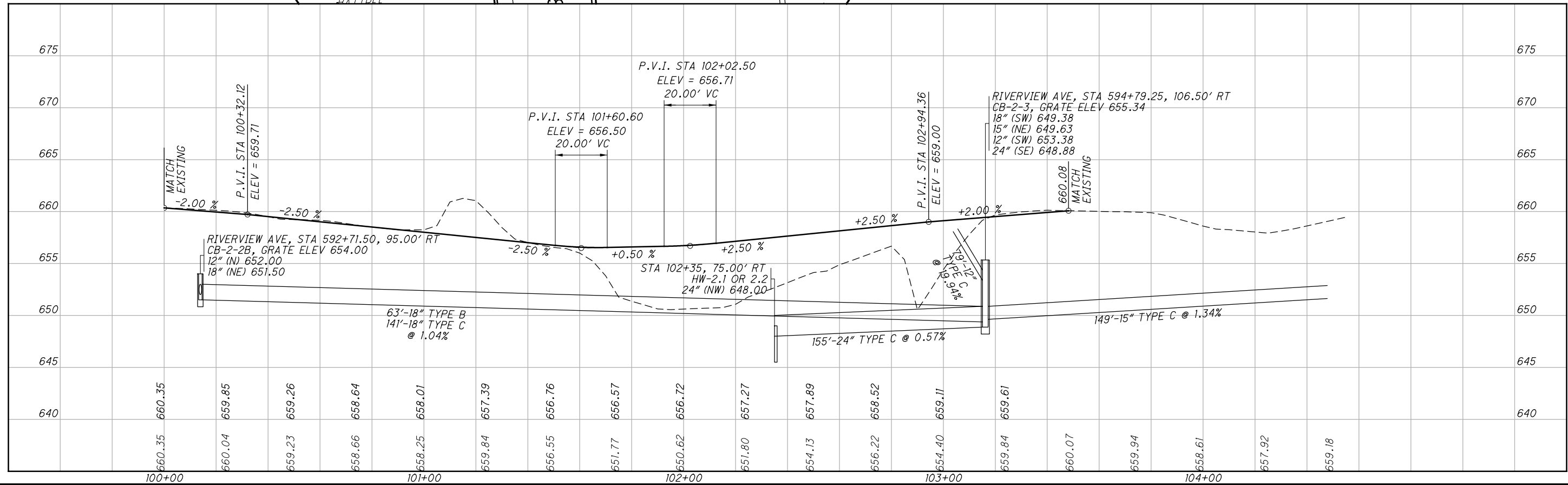
P.I. Sta. 102+38.53	P.I. Sta. 103+17.50
$\Delta = 62^\circ 01' 29''$ (LT)	$\Delta = 67^\circ 46' 06''$ (RT)
$Dc = 95^\circ 29' 35''$	$Dc = 95^\circ 29' 35''$
$R = 60.00'$	$R = 60.00'$
$T = 36.07'$	$T = 40.29'$
$L = 64.95'$	$L = 70.97'$
$E = 10.01'$	$E = 12.27'$
$\theta_{max} = NC$	$\theta_{max} = NC$

VERTICAL CLEARANCE

MINIMUM VERTICAL CLEARANCE IS 12.82' AT STA. 102+01.43, 6.0' LT.

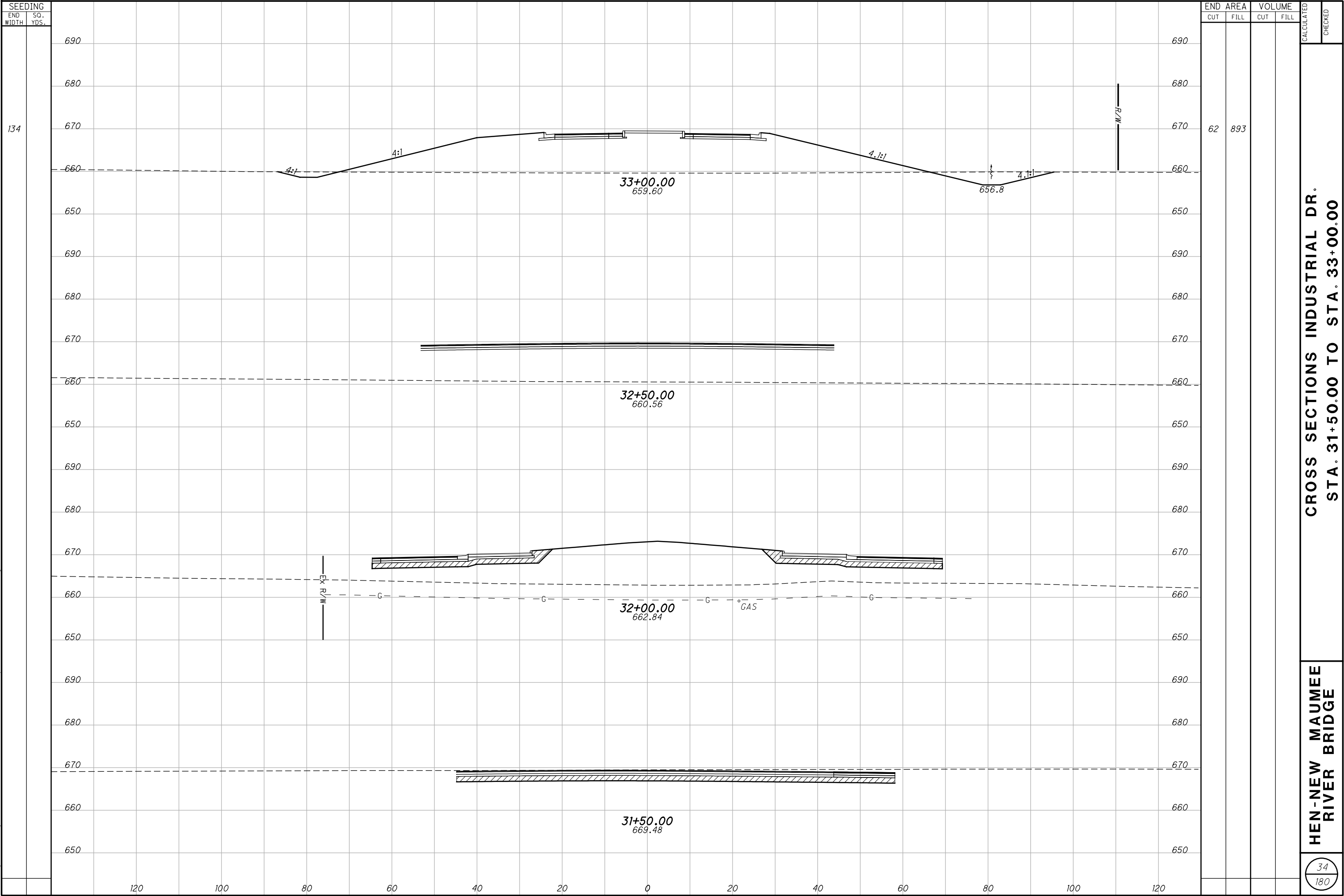
DESIGN SPEED

DESIGN SPEED IS 18 MPH



CALCULATED
CHECKED

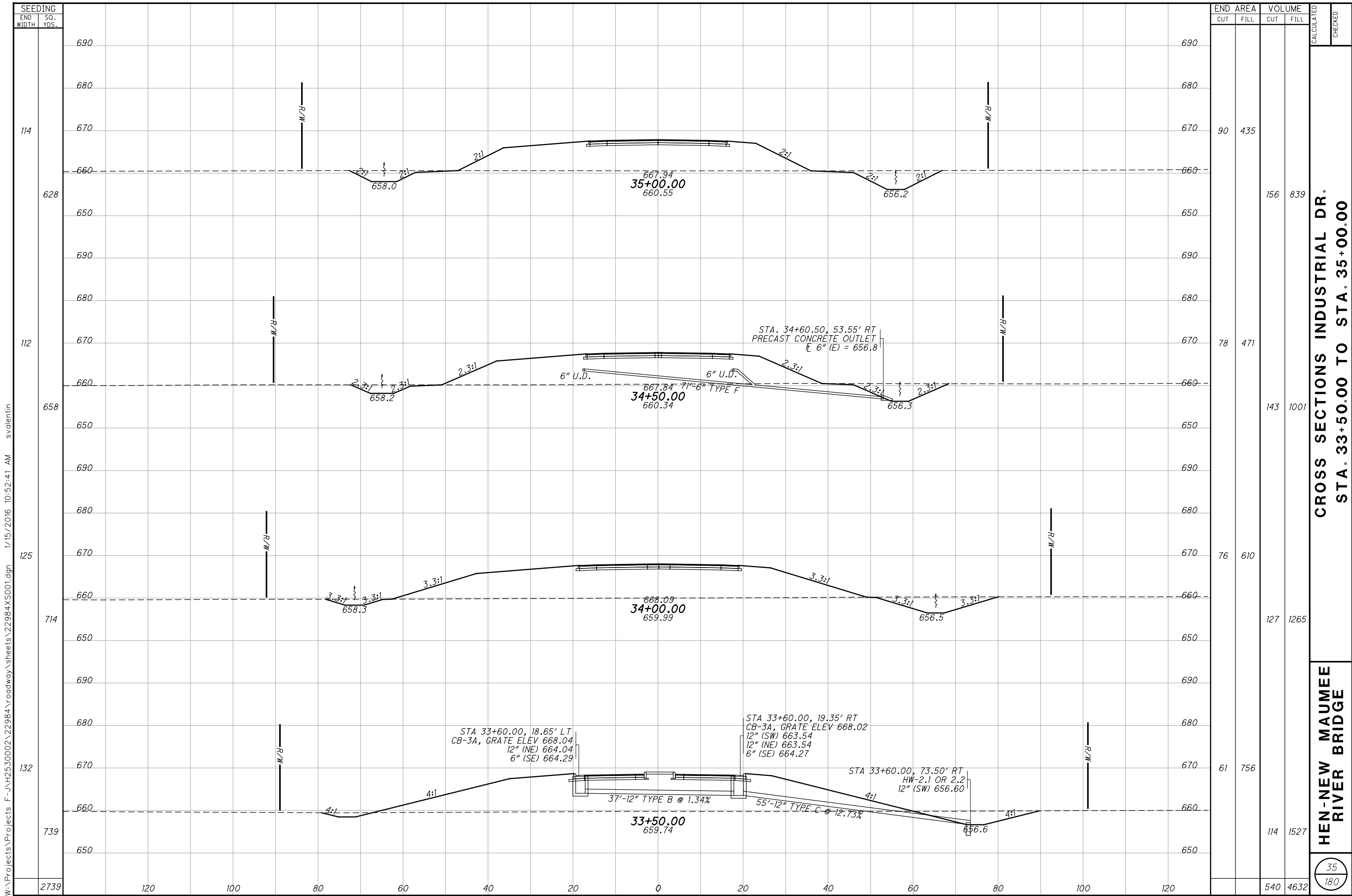
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CROSS SECTIONS INDUSTRIAL DR.
STA. 31+50.00 TO STA. 33+00.00

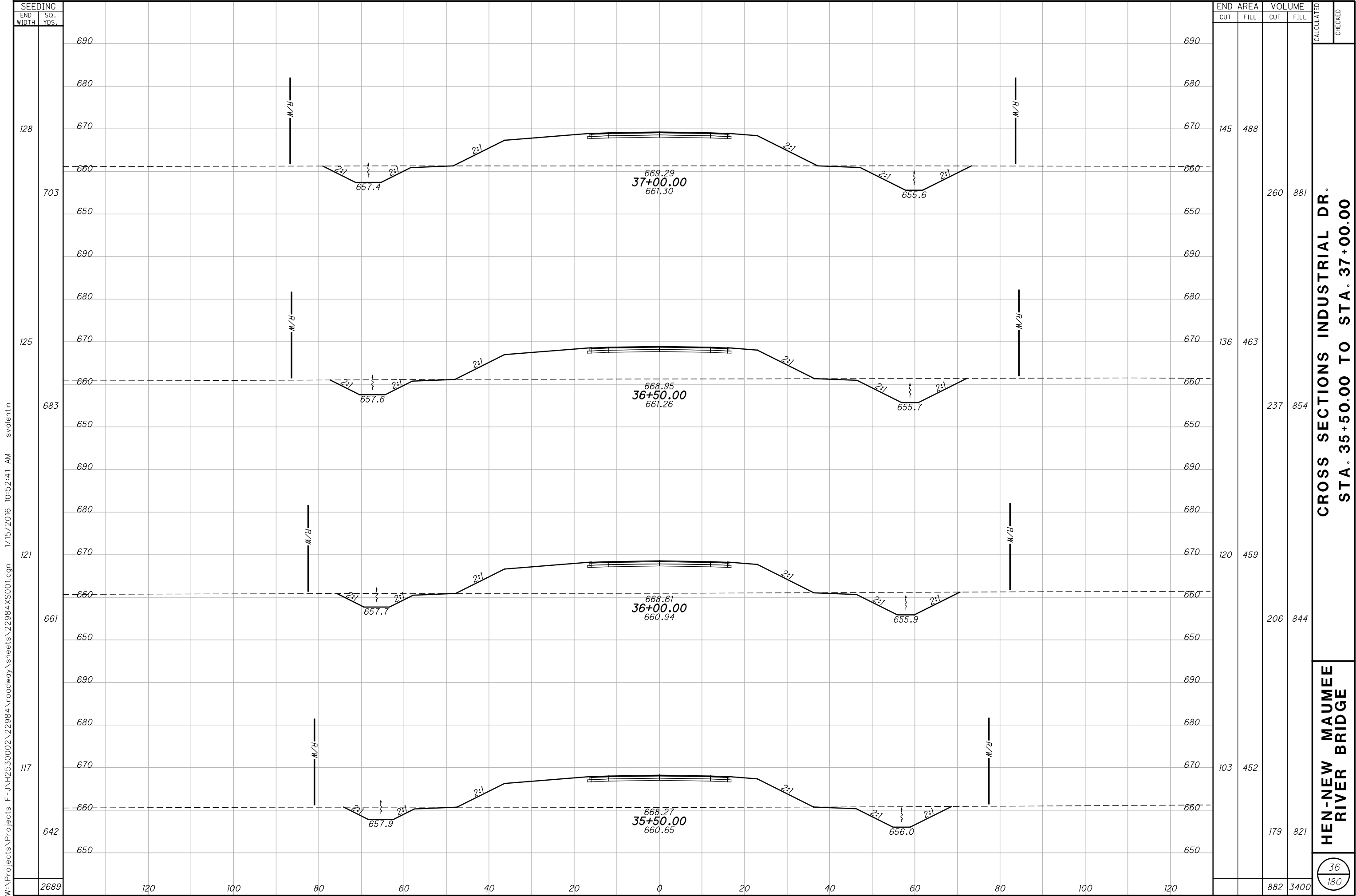
HEN-NEW MAUMEE
RIVER BRIDGE

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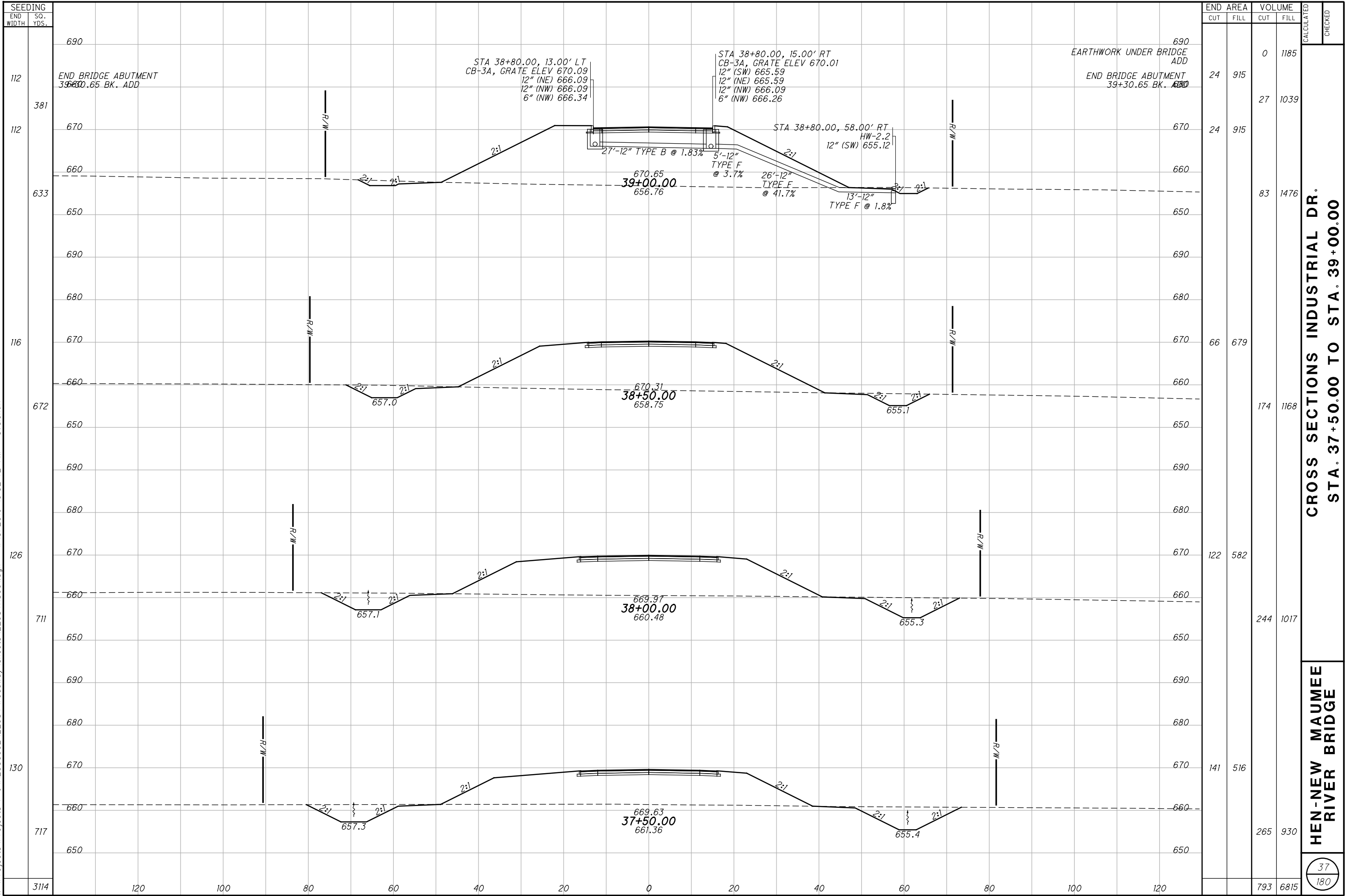


CROSS SECTIONS INDUSTRIAL DR.
STA. 33+50.00 TO STA. 35+00.00

HEN-NEW MAUMEE
RIVER BRIDGE



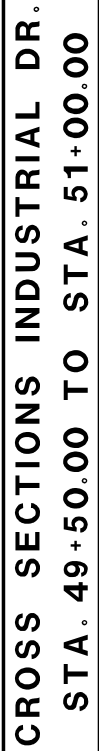
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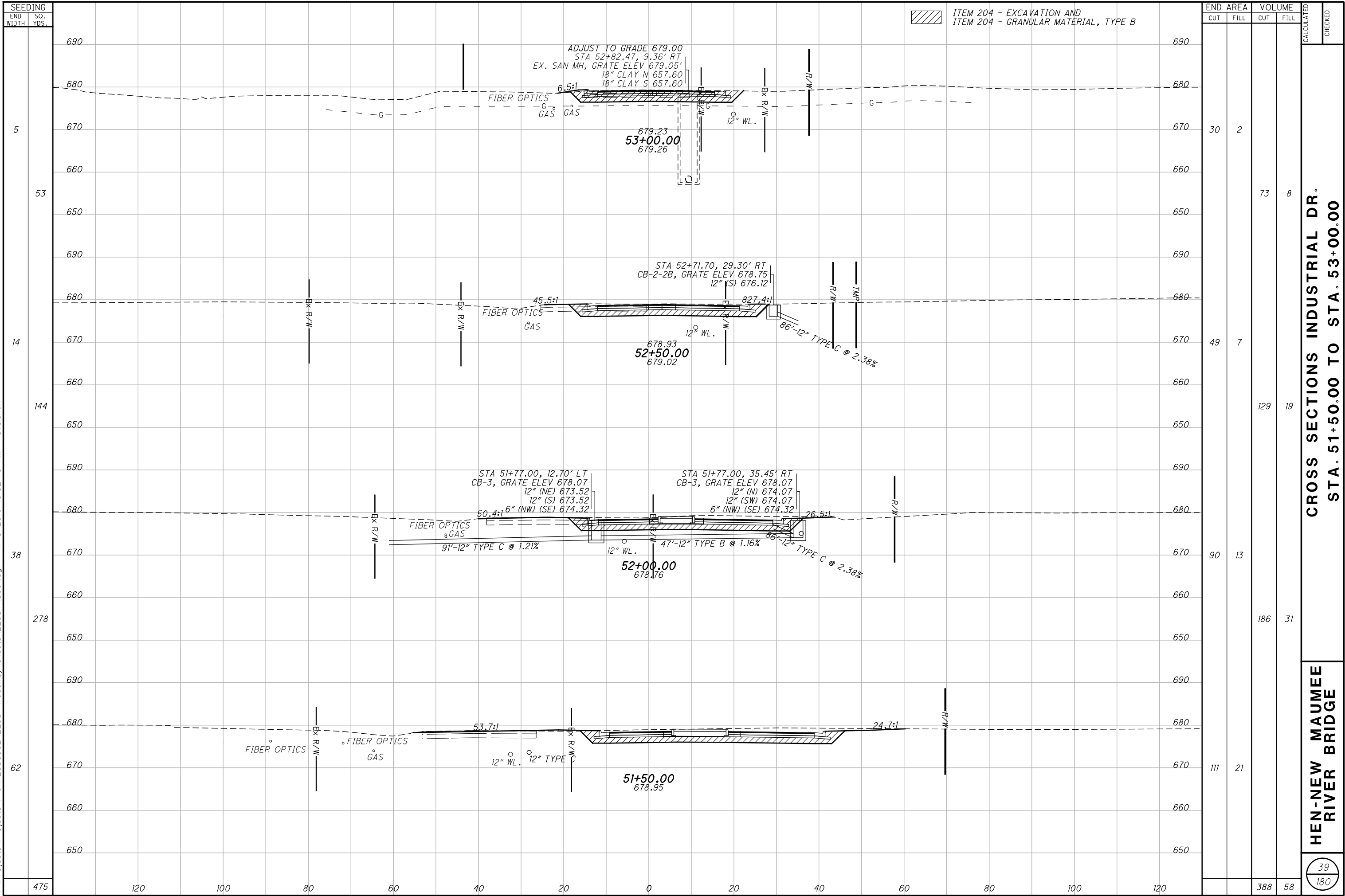
CROSS SECTIONS INDUSTRIAL DR.
STA. 37+50.00 TO STA. 39+00.00

HEN-NEW MAUMEE
RIVER BRIDGE

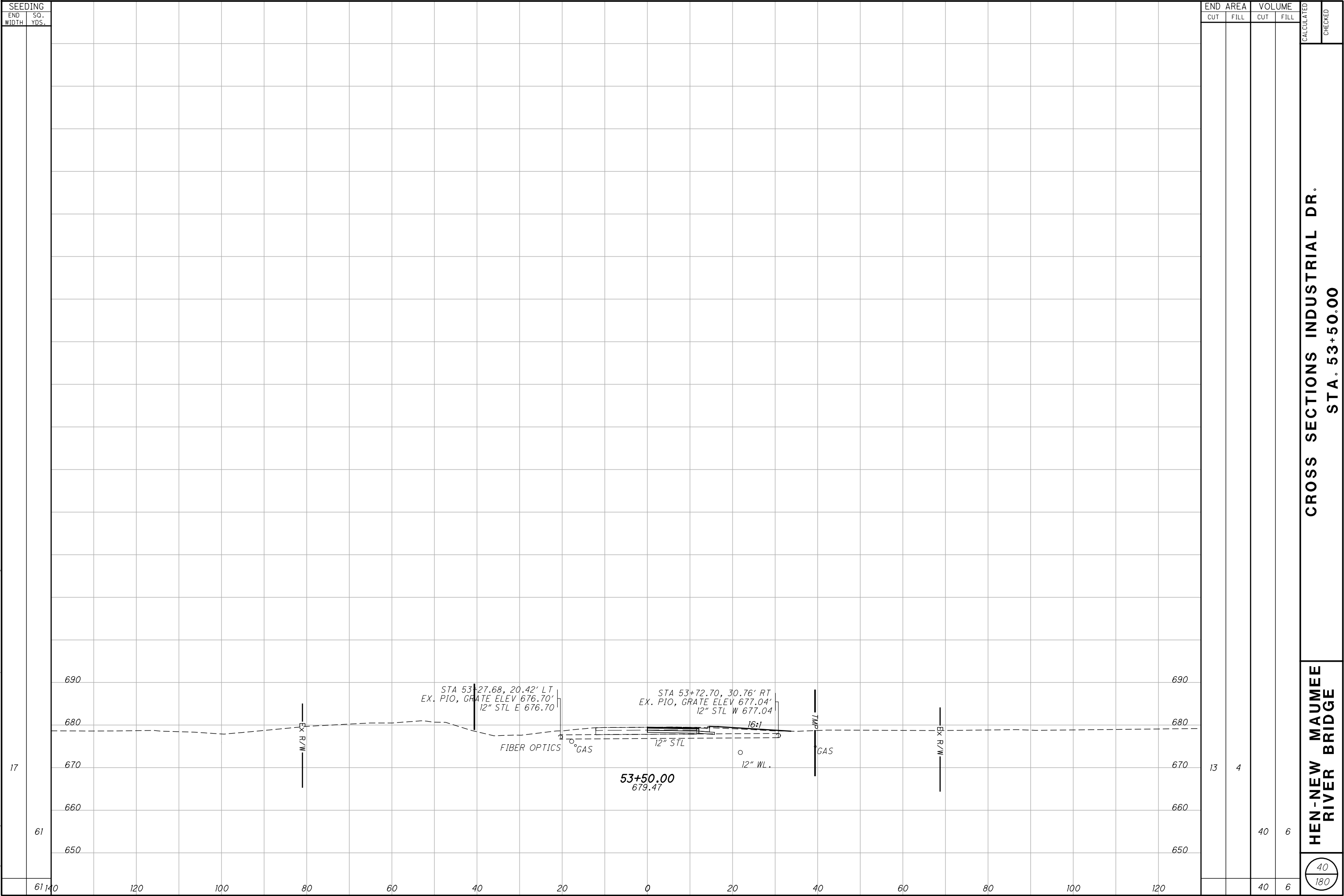
37
180



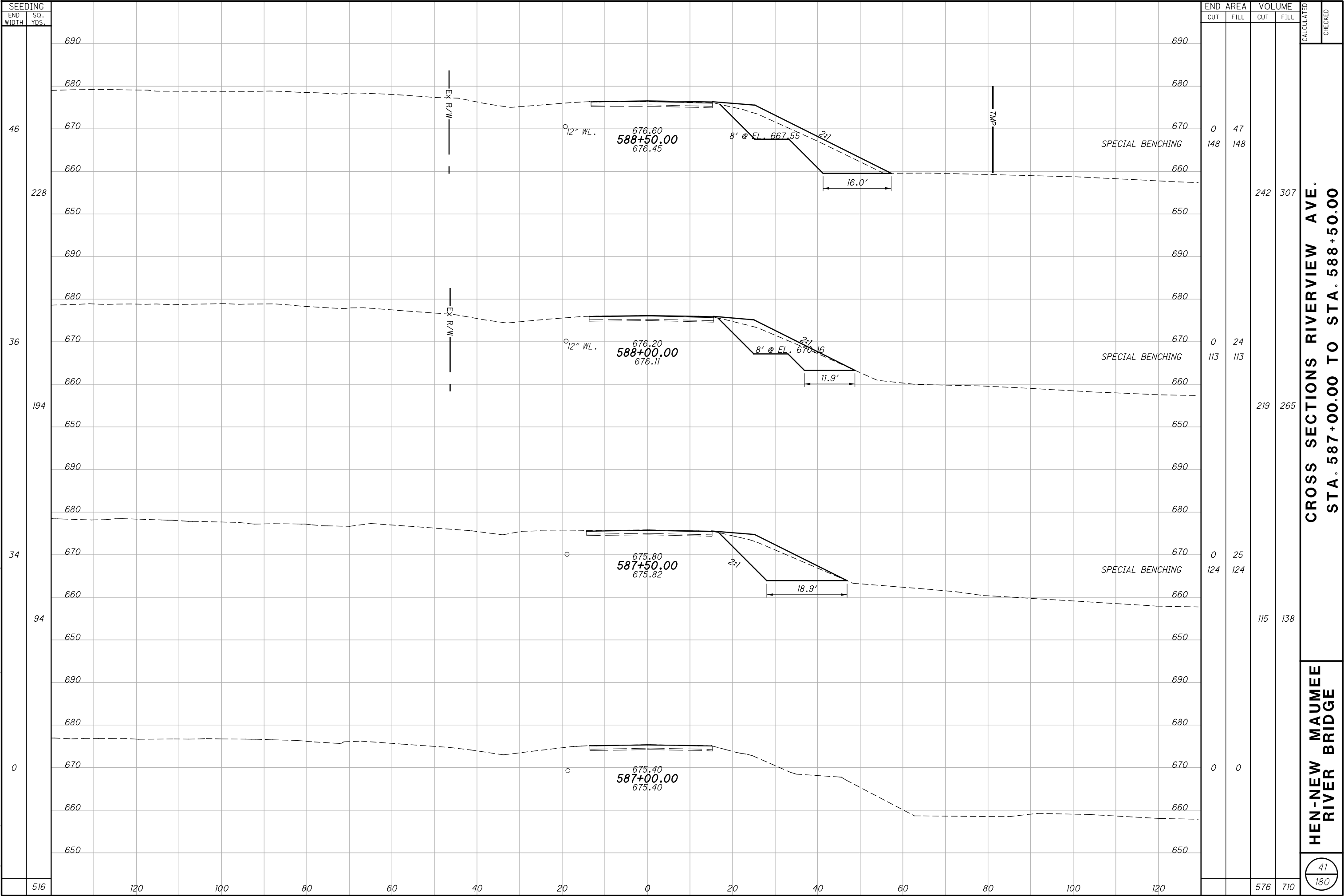
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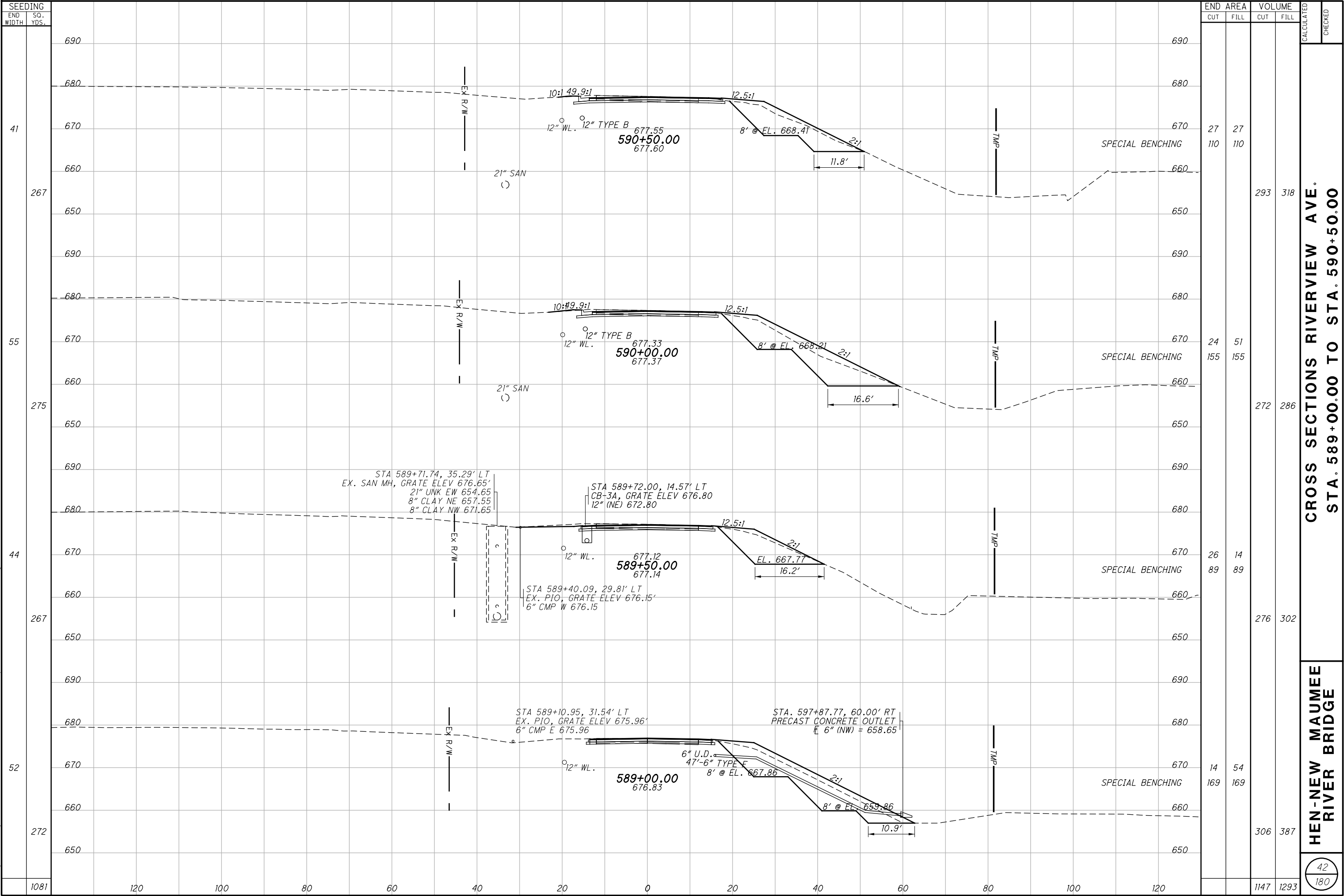
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HEN-NEW MAUMEE
RIVER BRIDGE

41
180

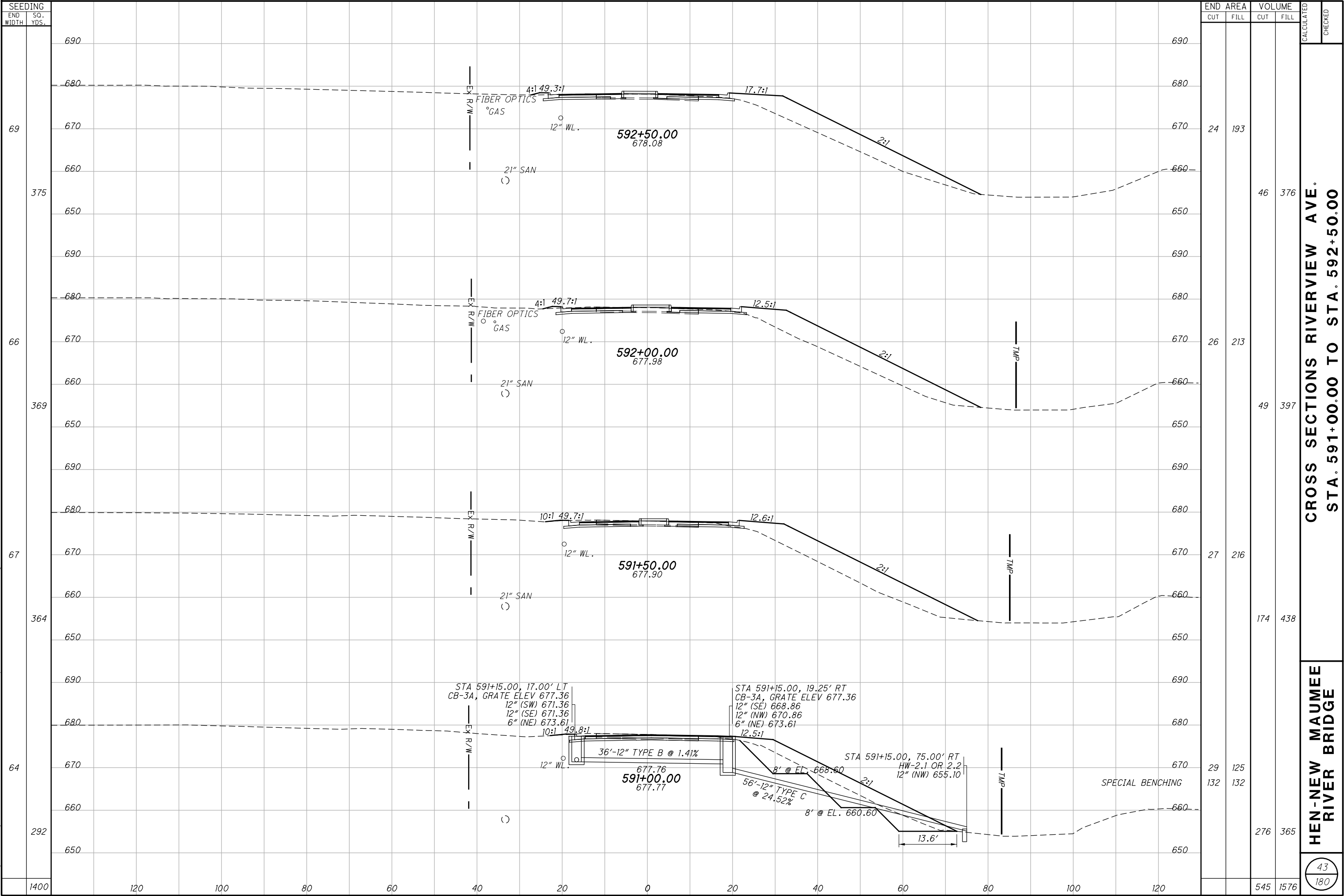
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CROSS SECTIONS RIVERVIEW AVE.
STA. 589+00.00 TO STA. 590+50.00

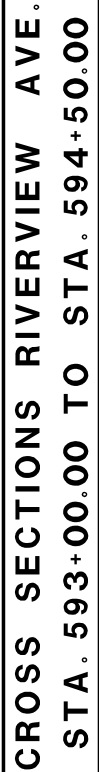
HEN-NEW MAUMEE
RIVER BRIDGE

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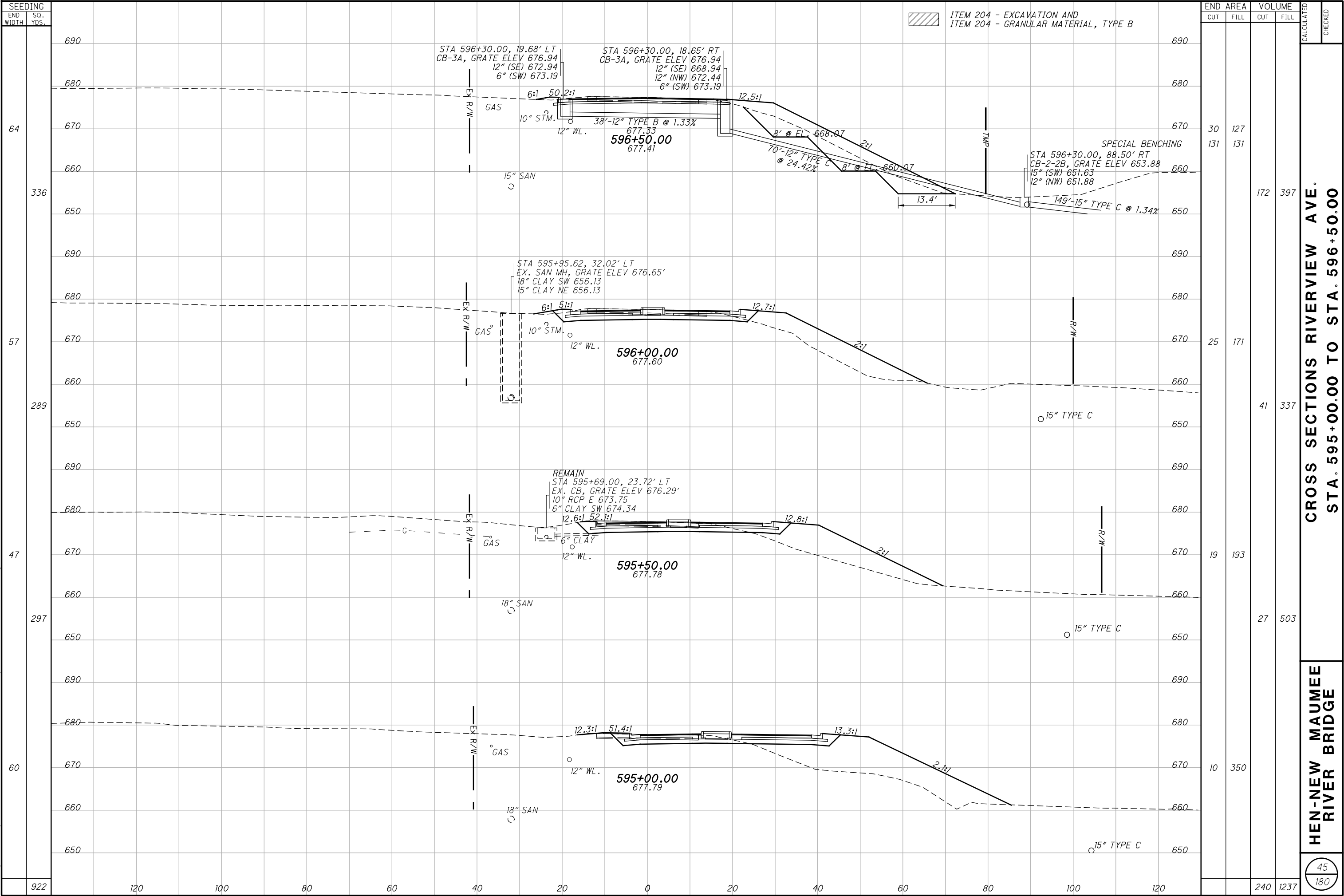


CROSS SECTIONS RIVERVIEW AVE.
STA. 591+00.00 TO STA. 592+50.00

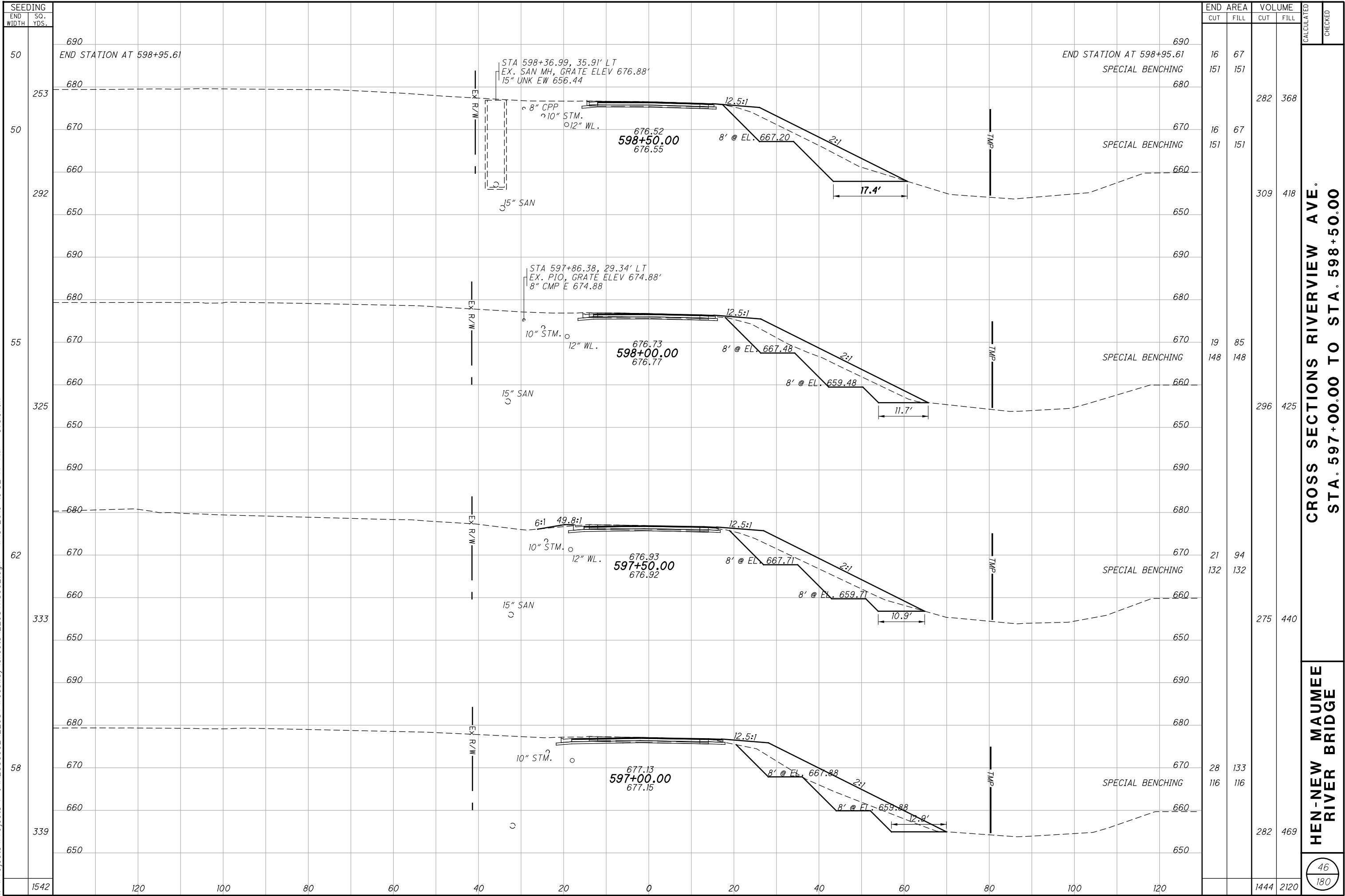
HEN-NEW MAUMEE
RIVER BRIDGE



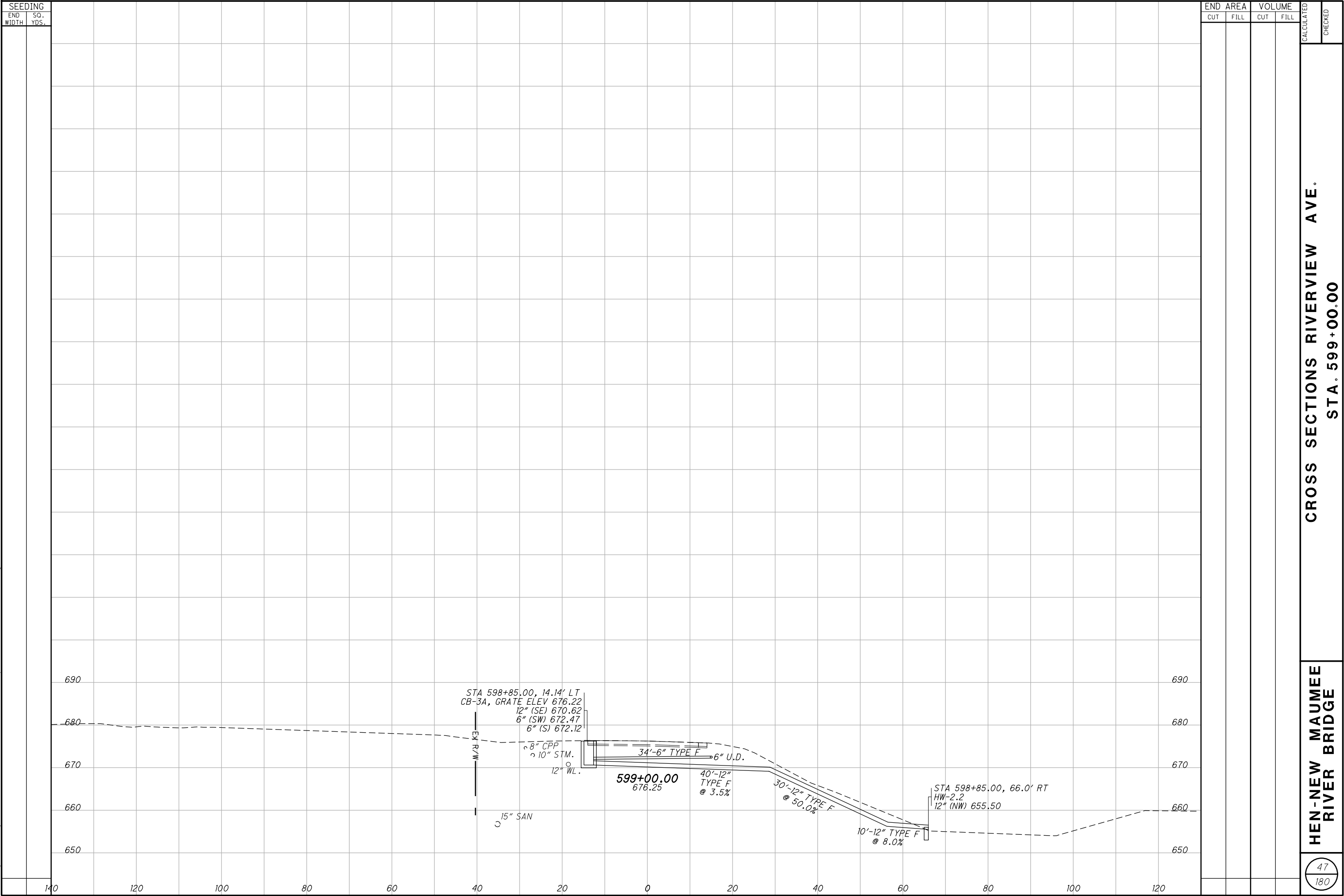
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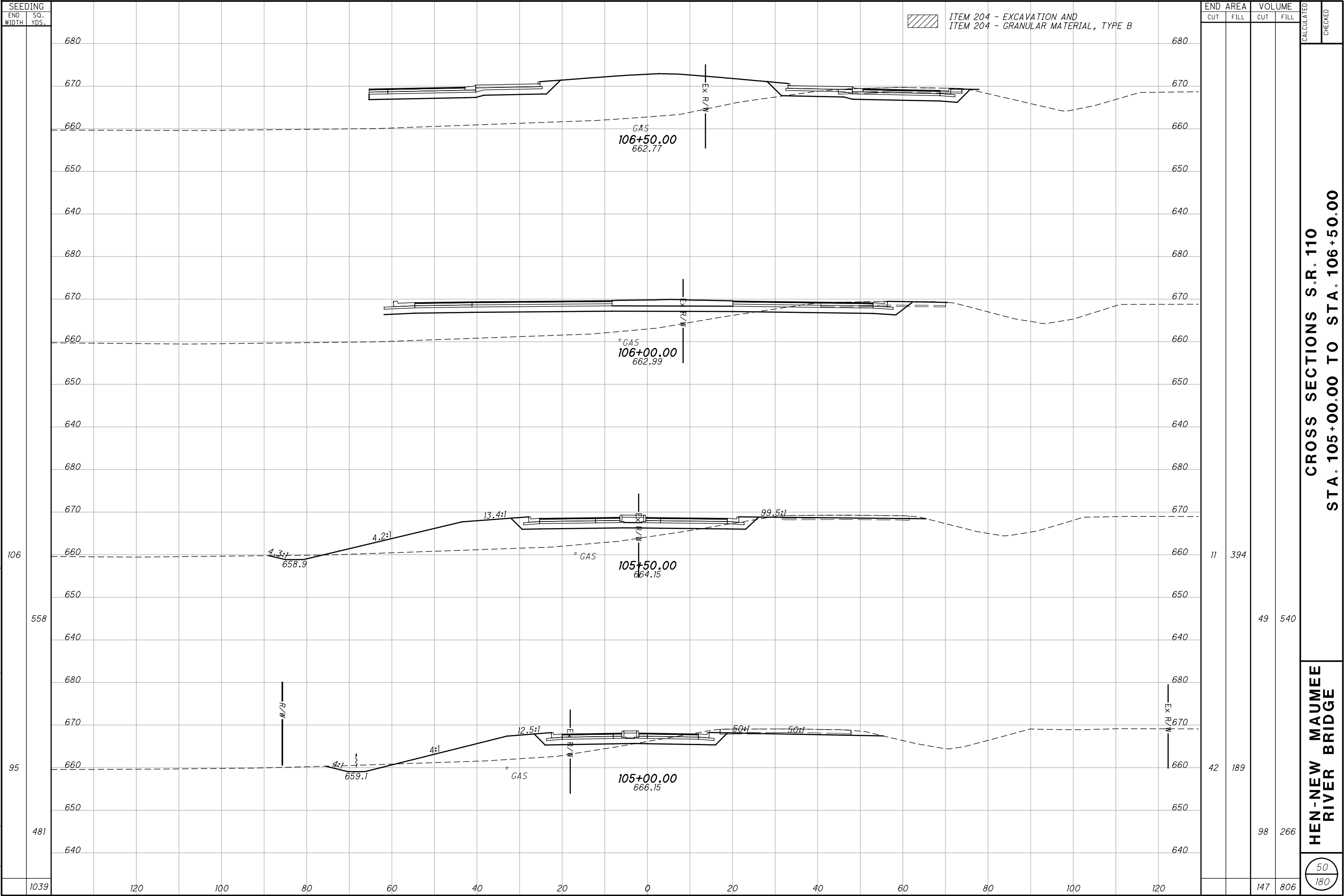


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$$\frac{48}{180}$$

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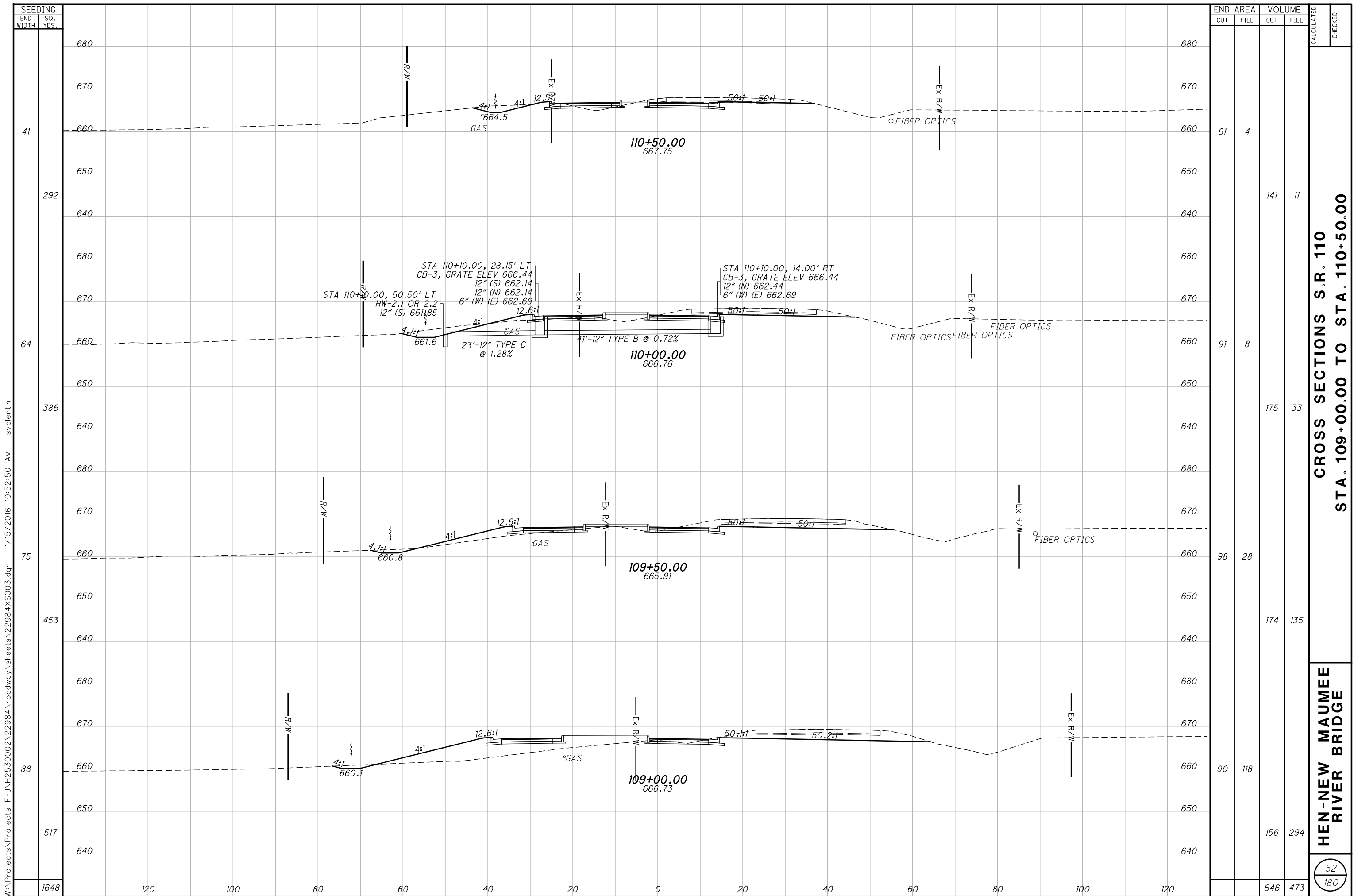


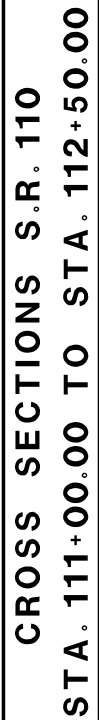
○

○

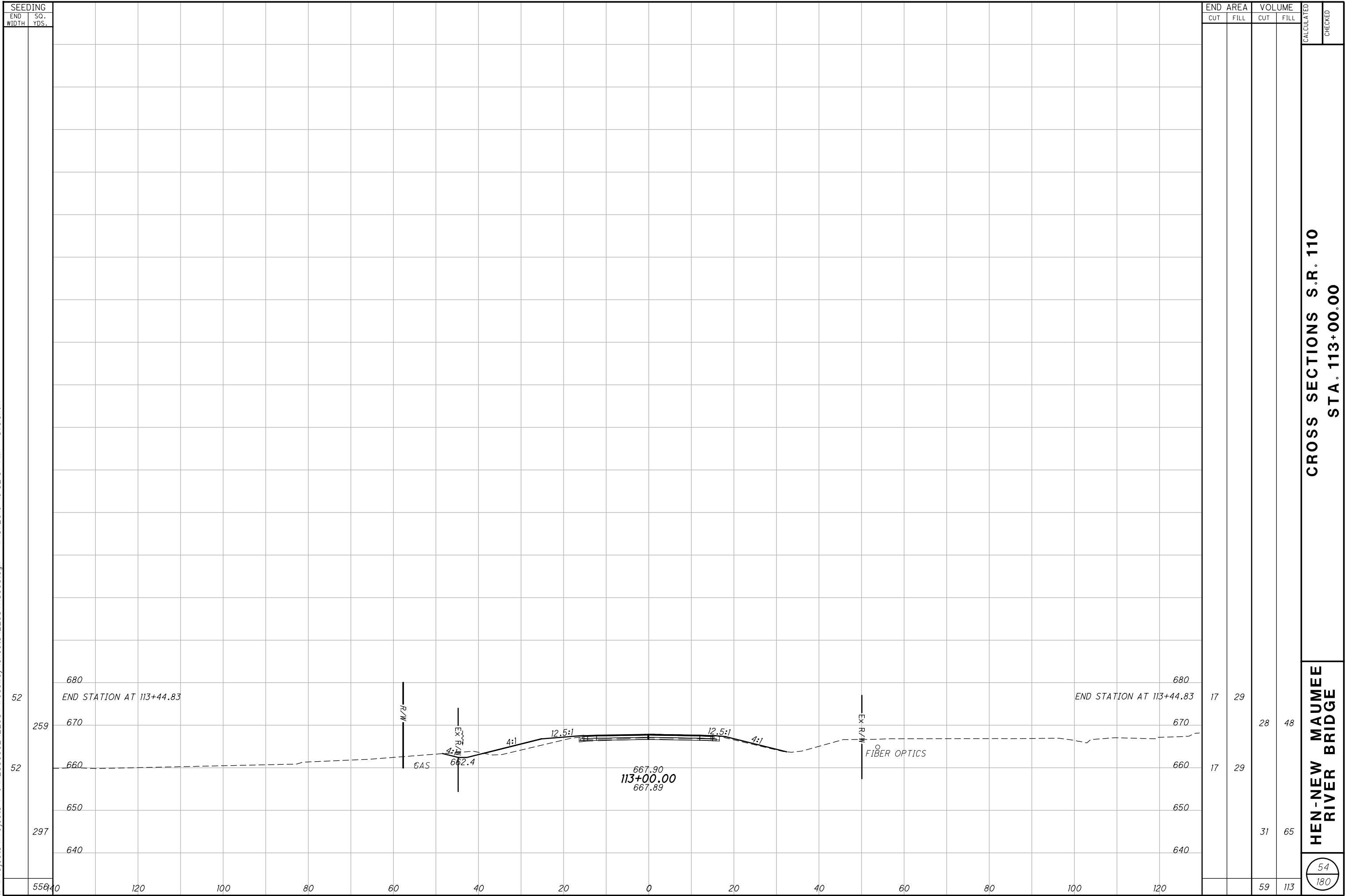
○

○

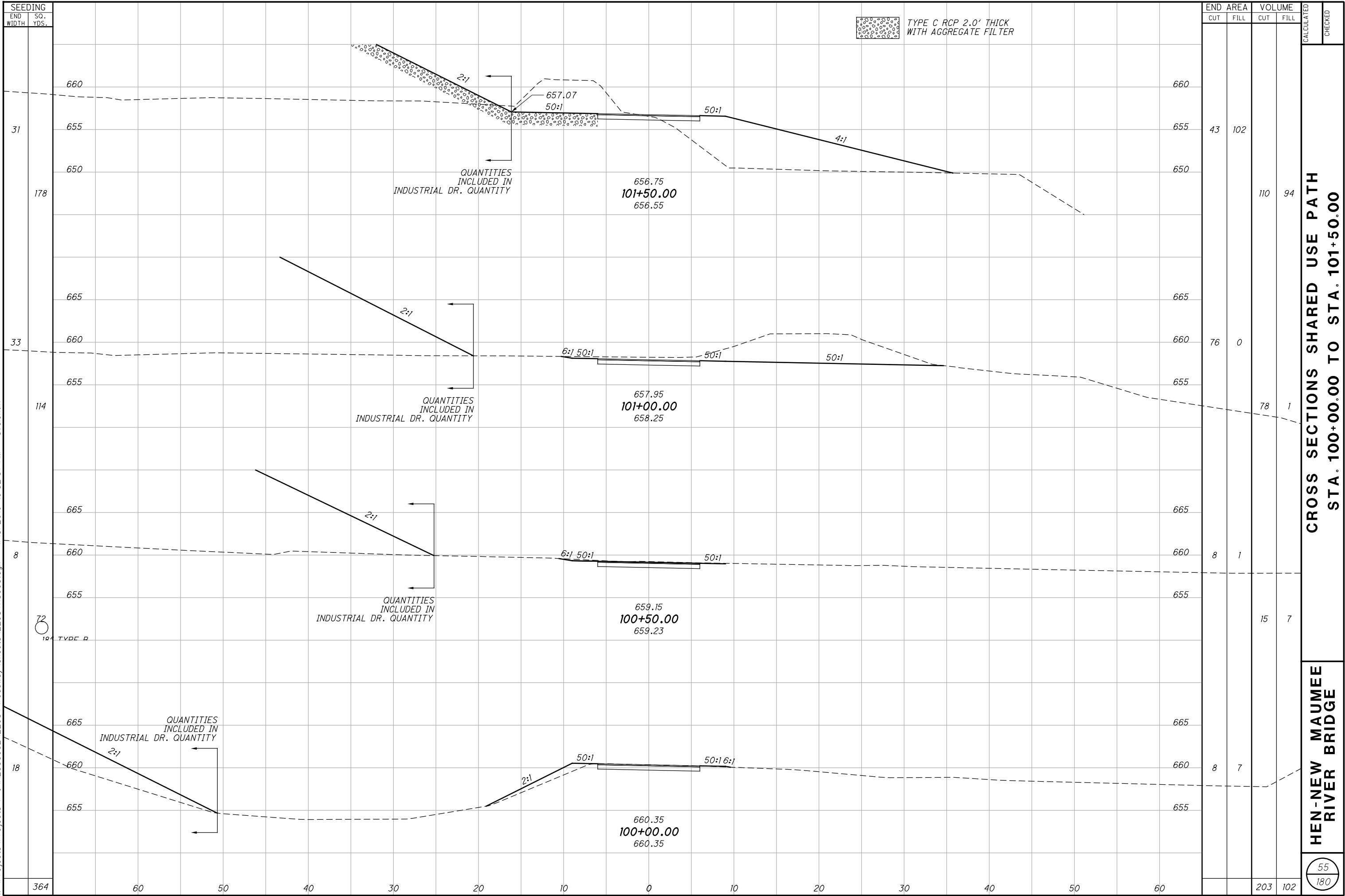




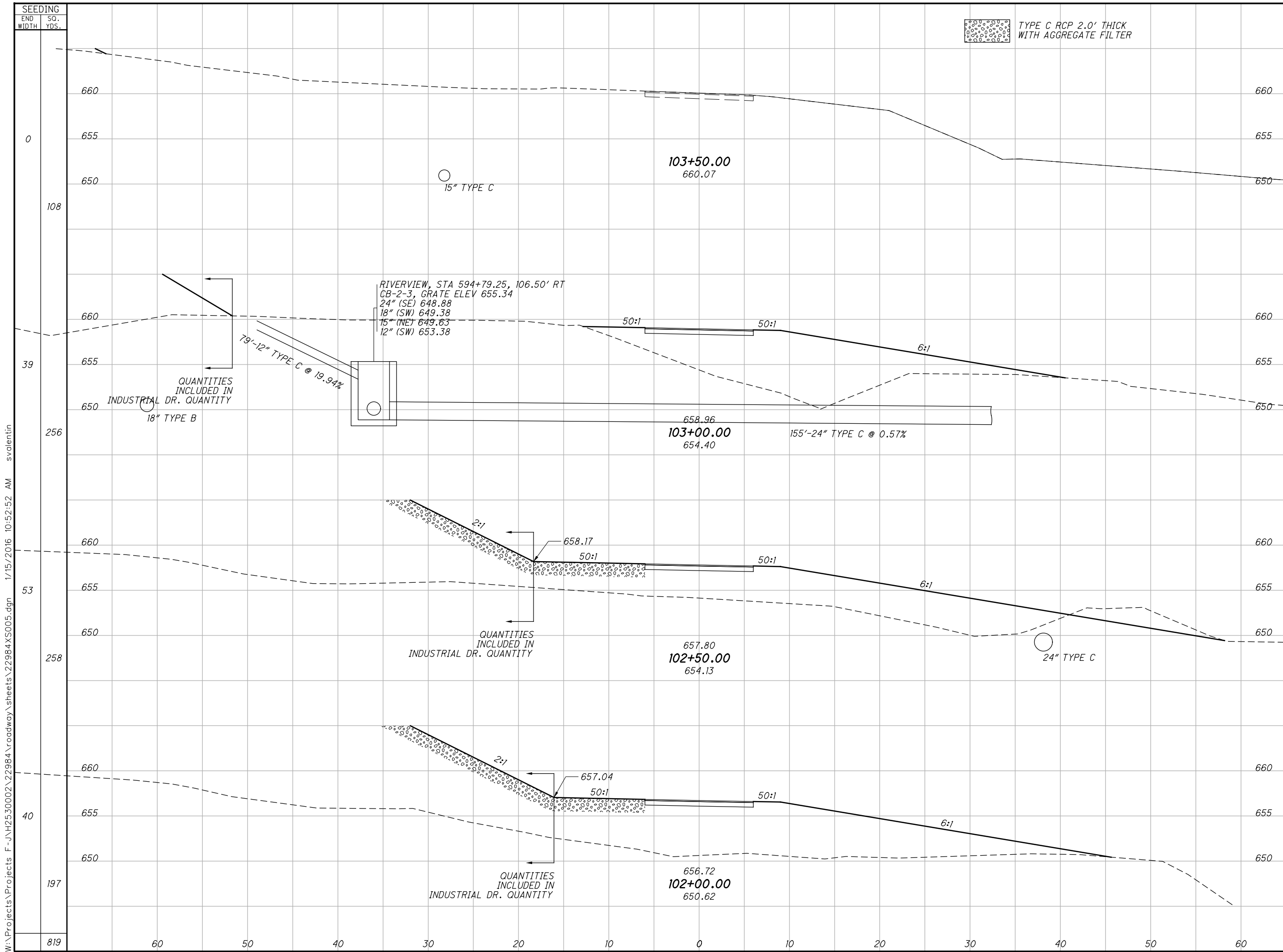
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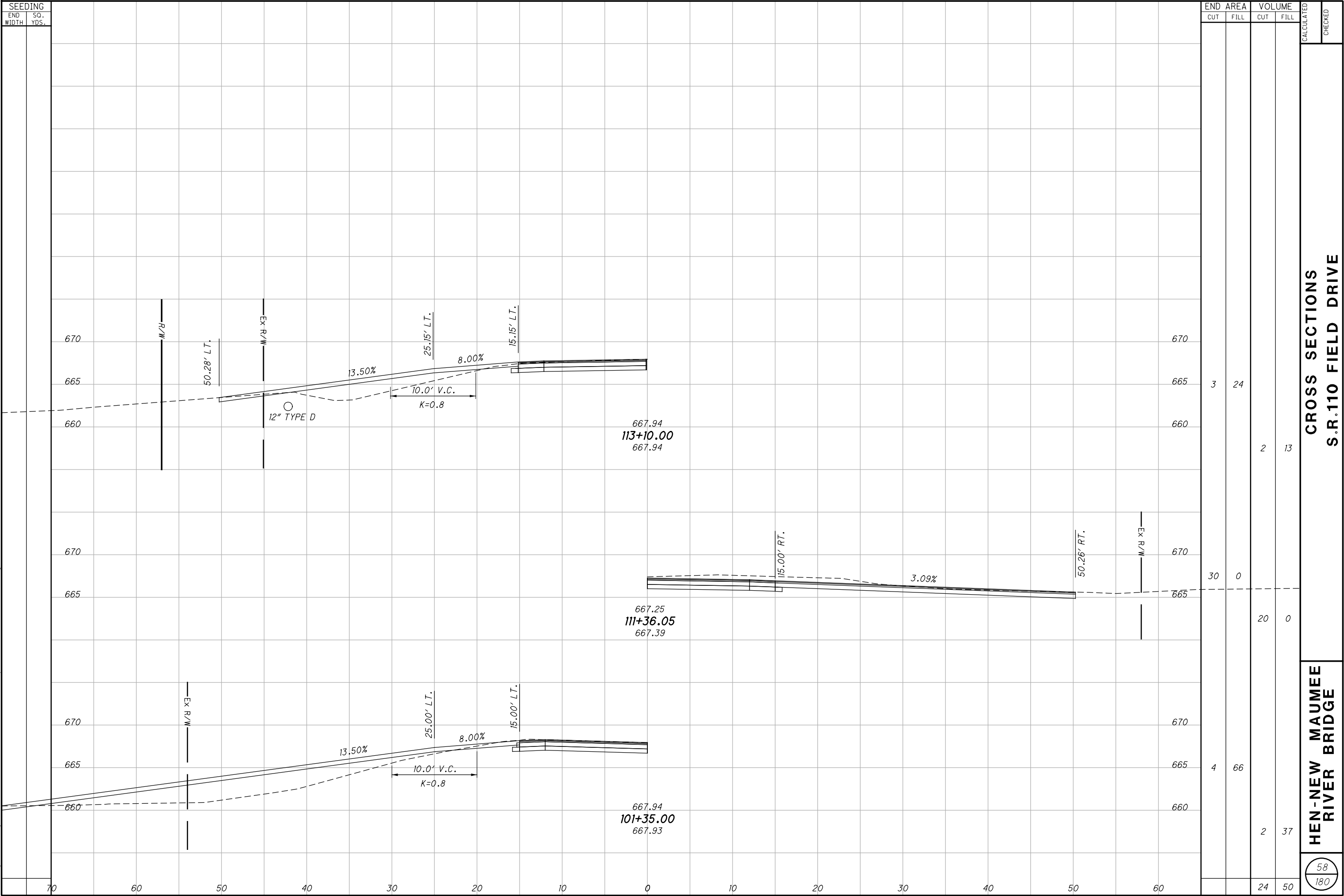


END AREA		VOLUME		CALCULATED	CHECKED
CUT	FILL	CUT	FILL		
0	0			CROSS SECTIONS SHARED USE PATH STA. 102+00.00 TO STA. 103+50.00	HEN-NEW MAUMEE RIVER BRIDGE
		0	164		
0	177				
		19	344		
20	195				
		19	404		
0	241				
		40	318		
		78	1230		



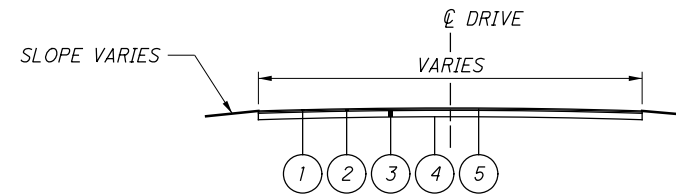
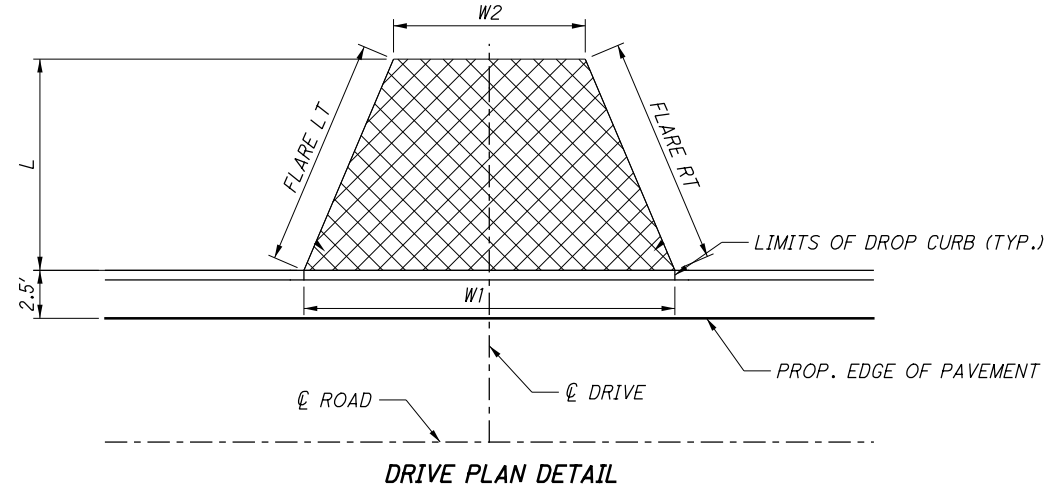
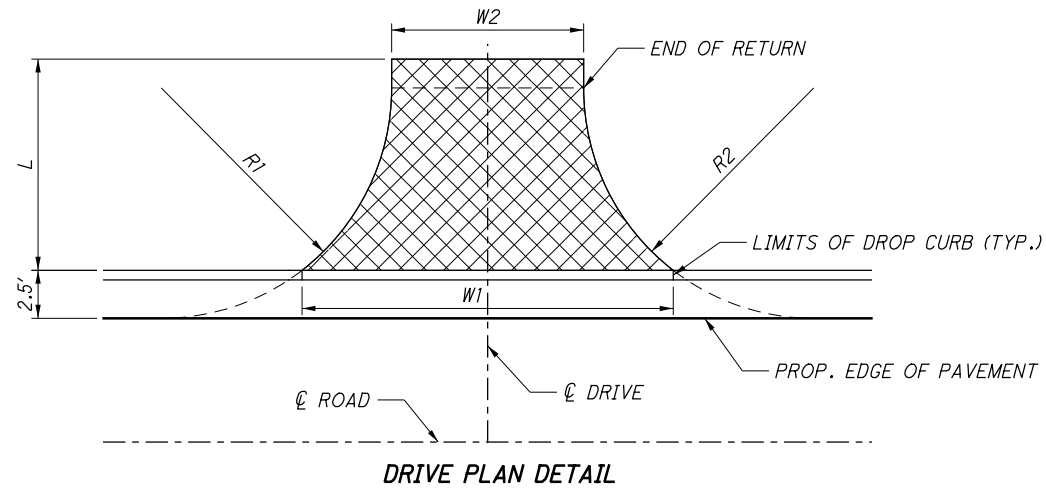
END AREA		VOLUME		CALCULATED	CHECKED
CUT	FILL	CUT	FILL		
11	0	11	0	DRIVEWAY PROFILES INDUSTRIAL DR.	
9	0	7	0		
7	0	6	0		
11	0	10	0		
		34	0	HEN-NEW MAUMEE RIVER BRIDGE	
				<div>57 180</div>	

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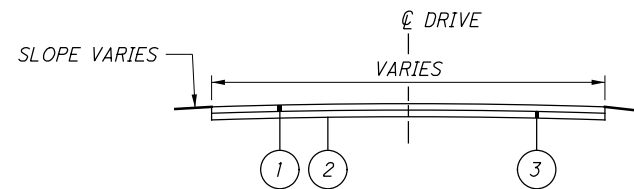


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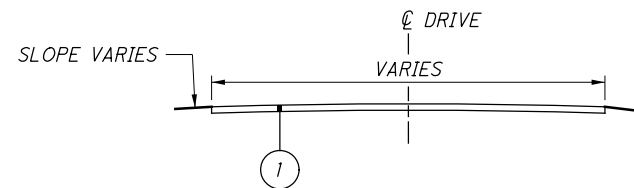
 MATCH EXISTING
DRIVE MATERIAL



- 1 ITEM 441 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448) (DRIVEWAYS)
- 2 ITEM 441 1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448) (DRIVEWAYS)
- 3 ITEM 304 8" AGGREGATE BASE
- 4 ITEM 204, SUBGRADE COMPACTION
- 5 ITEM 690, SPECIAL-MISC.: TRACKLESS TACK COAT (0.04 GAL./SY. YD.)



- 1 ITEM 452 8" NON-REINFORCED CONCRETE PAVEMENT
- 2 ITEM 204 SUBGRADE COMPACTION
- 3 ITEM 304 6" AGGREGATE BASE



- 1 ITEM 304 6" AGGREGATE BASE

SHEET NO.	STATION	SIDE	DRIVE TYPE	EXISTING DRIVE MATERIAL	DRIVE ANGLE	APRON LENGTH "L"	WIDTH "W1"	WIDTH "W2"	R1 (LEFT SIDE RADI) OF DRIVE LOOKING FROM CL)	R2 (RIGHT SIDE RADI) LOOKING FROM CL)	FLARED RATE (LT)	FLARED RATE (RT)
					DEG.	FT	FT	FT	FT	FT	FT	FT
RIVERVIEW AVE.												
GP201	589+24.72	LT	RES.	ASPH.	90.00	25.58	74.30	24.04	25.00	25.00		
GP202	592+29.53	LT	RES.	ASPH.	90.00	16.86	40.13	24.00	15.00	15.00		
GP203	597+05.35	LT	RES.	CONC.	91.86	8.50	28.65	20.00			9.47	9.86
GP203	597+97.51	LT	RES.	ASPH.	92.30	11.43	25.79	14.38			12.86	12.65
GP203	598+57.80	LT	RES.	CONC.	86.42	13.30	34.06	20.00			14.41	16.87
INDUSTRIAL DR.												
GP105	52+87.48	RT	RES.	ASPH.	78.36	9.65	26.73	15.00			9.95	11.98
S.R. 110												
GP301	101+35.00	LT	FIELD	AGG.	90.00	34.50	64.57	15.00	25.00	25.00		
GP303	111+36.05	RT	FIELD	AGG.	90.00	35.26	67.35	18.00	25.00	25.00		
GP303	113+10.00	LT	FIELD	AGG.	90.00	26.26	66.08	15.00	25.00	25.00		

CALCULATED

CHECKED

DRIVE DETAILS

HEN-NEW MAUMEE
RIVER BRIDGE

59
180

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LINE TABLE		
LINE	LENGTH	BEARING
L1	53.71	N 61°05'54" E
L2	7.09	N 61°05'54" E
L3	62.27	N 35°44'47" W

CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	CHORD BRG
C1	6.28	2.00	180°00'00"	N/A	4.00	S 20°49'23" E
C2	8.69	104.00	4°47'9"	4.35	8.68	N 58°42'20" E
C3	3.73	2.00	106°59'20"	2.70	3.22	S 65°24'26" E
C4	11.50	67.00	9°50'11"	5.77	11.49	S 16°49'51" E
C5	3.92	2.00	112°13'12"	2.98	3.32	N 34°21'40" E
C6	45.11	88.00	29°22'21"	23.06	44.62	S 75°47'05" W
C7	8.73	2.90	172°20'50"	43.41	5.79	S 45°08'07" W
C8	4.36	2.00	124°49'01"	3.83	3.55	N 12°51'43" E
C9	17.98	67.00	15°22'27"	9.04	17.92	S 67°35'00" W
C10	2.94	2.00	84°21'26"	1.81	2.69	S 77°55'30" E
C11	6.16	2.00	176°22'15"	63.13	4.00	N 6°04'48" W
C12	4.36	2.00	124°49'01"	3.83	3.55	N 56°46'10" W
C13	37.01	67.00	31°39'03"	18.99	36.54	S 10°11'11" E
C14	4.10	2.00	117°21'43"	3.29	3.42	N 32°40'09" E
C15	76.33	400.00	10°56'00"	38.28	76.21	N 52°04'06" E
C16	70.70	58.00	69°50'40"	40.49	66.41	N 11°40'46" E
C17	15.06	90.00	9°35'18"	7.55	15.04	S 28°02'14" E
C18	87.04	400.00	12°28'03"	43.69	86.87	S 50°31'40" E
C19	46.56	100.00	26°40'36"	23.71	46.14	N 70°05'59" W
C20	52.40	120.00	25°01'10"	26.62	51.99	N 84°03'08" E
C21	232.66	400.00	33°19'33"	119.72	229.39	S 69°29'47" W
C22	73.47	65.00	64°45'33"	41.22	69.62	S 85°12'47" W
C23	93.10	88.00	60°37'10"	51.44	88.82	S 87°16'59" W

40

0

20

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HORIZONTAL SCALE IN FEET

CALCULATED

CHECKED

ROUNDABOUT GEOMETRIC DETAIL
INDUSTRIAL DR. & S.R. 110

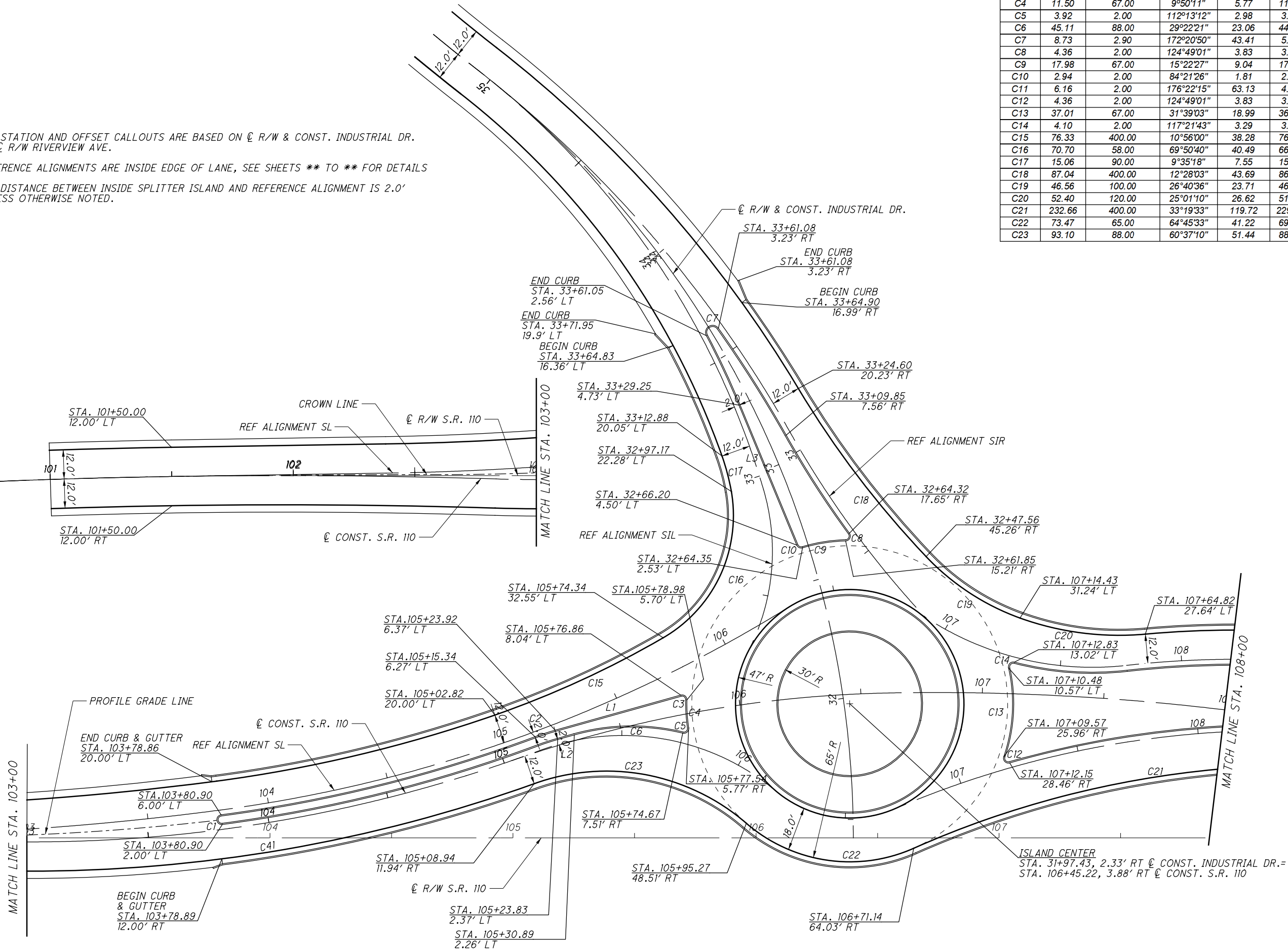
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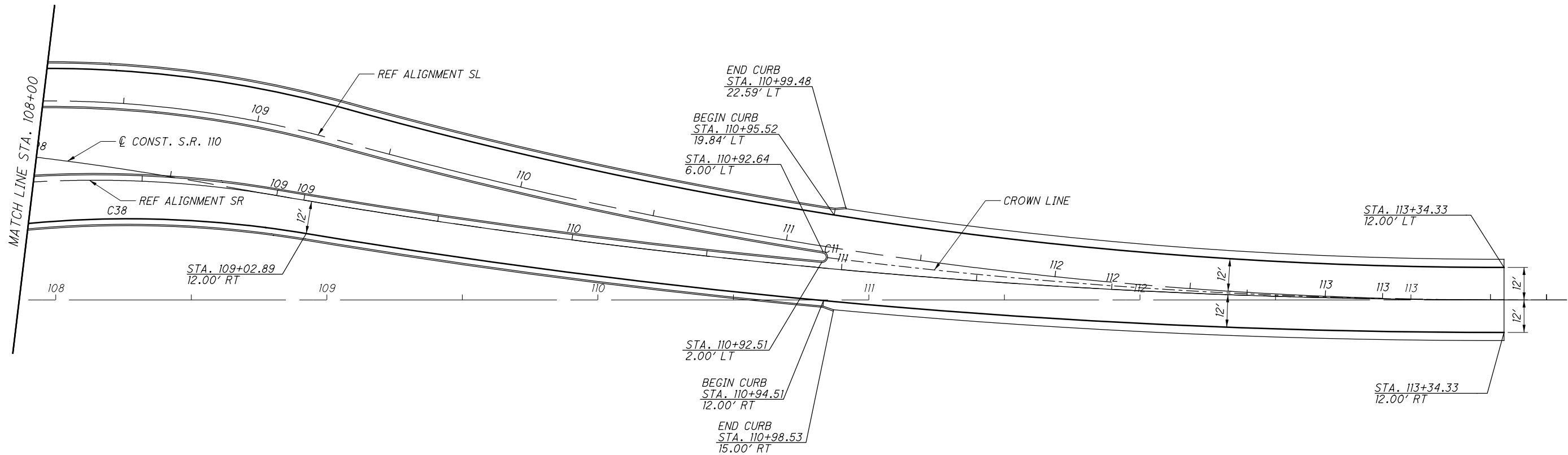
180

NOTE: ALL STATION AND OFFSET CALLOUTS ARE BASED ON \varnothing R/W & CONST. INDUSTRIAL DR.
OR \varnothing R/W RIVERVIEW AVE.

REFERENCE ALIGNMENTS ARE INSIDE EDGE OF LANE, SEE SHEETS ** TO ** FOR DETAILS

THE DISTANCE BETWEEN INSIDE SPLITTER ISLAND AND REFERENCE ALIGNMENT IS 2.0'
UNLESS OTHERWISE NOTED.





NOTE: ALL STATION AND OFFSET CALLOUTS ARE BASED ON \varnothing CONST. S.R. 110.
REFERENCE ALIGNMENTS ARE INSIDE EDGE OF LANE, SEE SHEETS ** TO ** FOR DETAILS.
THE DISTANCE BETWEEN INSIDE SPLITTER ISLAND AND REFERENCE ALIGNMENT IS 2.0'
UNLESS OTHERWISE NOTED.
SEE SHEET ** FOR CURVE AND LINE DATA.

CURVE DATA - S.R. 110
P.I. Sta. 111+03.62
 $\Delta = 10^\circ 20' 30''$ (LT)
 $Dc = 2^\circ 08' 16''$
 $R = 2,680.00'$
 $T = 242.53'$
 $L = 483.74'$
 $E = 10.95'$
 $C = 483.08'$
 $C.B. = N 81^\circ 52' 55'' E$

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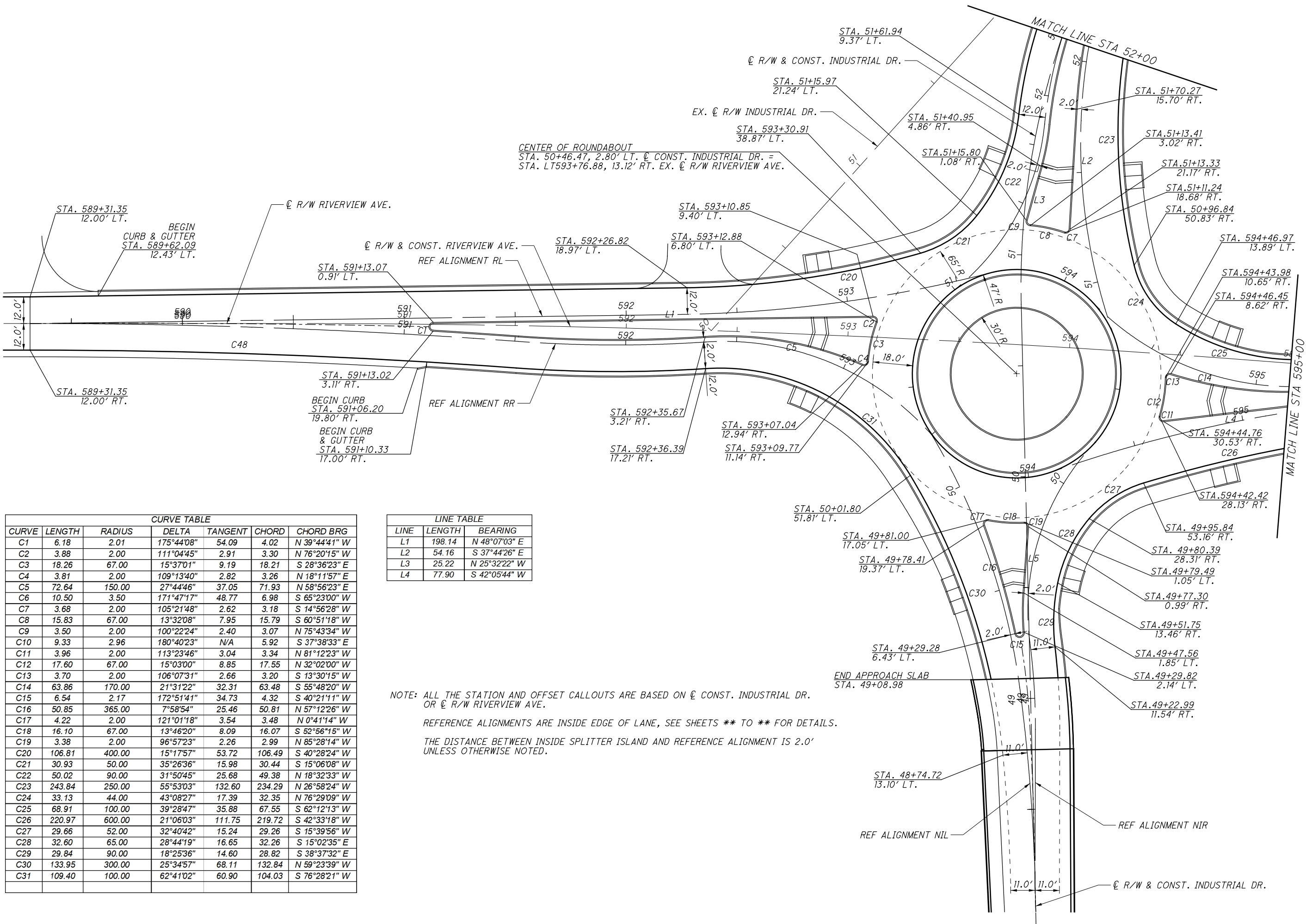
CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	CHORD BRG
C1	6.18	2.01	175°44'08"	54.09	4.02	N 39°44'41" W
C2	3.88	2.00	111°04'45"	2.91	3.30	N 76°20'15" W
C3	18.26	67.00	15°37'01"	9.19	18.21	S 28°36'23" E
C4	3.81	2.00	109°13'40"	2.82	3.26	N 18°11'57" E
C5	72.64	150.00	27°44'46"	37.05	71.93	N 58°56'23" E
C6	10.50	3.50	171°47'17"	48.77	6.98	S 65°23'00" W
C7	3.68	2.00	105°21'48"	2.62	3.18	S 14°56'28" W
C8	15.83	67.00	13°32'08"	7.95	15.79	S 60°51'18" W
C9	3.50	2.00	100°22'24"	2.40	3.07	N 75°43'34" W
C10	9.33	2.96	180°40'23"	N/A	5.92	S 37°38'33" E
C11	3.96	2.00	113°23'46"	3.04	3.34	N 81°12'23" W
C12	17.60	67.00	15°03'00"	8.85	17.55	N 32°02'00" W
C13	3.70	2.00	106°07'31"	2.66	3.20	S 13°30'15" W
C14	63.86	170.00	21°31'22"	32.31	63.48	S 55°48'20" W
C15	6.54	2.17	172°51'41"	34.73	4.32	S 40°21'11" W
C16	50.85	365.00	7°58'54"	25.46	50.81	N 57°12'26" W
C17	4.22	2.00	121°01'18"	3.54	3.48	N 0°41'14" W
C18	16.10	67.00	13°46'20"	8.09	16.07	S 52°56'15" W
C19	3.38	2.00	96°57'23"	2.26	2.99	N 85°28'14" W
C20	106.81	400.00	15°17'57"	53.72	106.49	S 40°28'24" W
C21	30.93	50.00	35°26'36"	15.98	30.44	S 15°06'08" W
C22	50.02	90.00	31°50'45"	25.68	49.38	N 18°32'33" W
C23	243.84	250.00	55°53'03"	132.60	234.29	N 26°58'24" W
C24	33.13	44.00	43°08'27"	17.39	32.35	N 76°29'09" W
C25	68.91	100.00	39°28'47"	35.88	67.55	S 62°12'13" W
C26	220.97	600.00	21°06'03"	111.75	219.72	S 42°33'18" W
C27	29.66	52.00	32°40'42"	15.24	29.26	S 15°39'56" W
C28	32.60	65.00	28°44'19"	16.65	32.26	S 15°02'35" E
C29	29.84	90.00	18°25'36"	14.60	28.82	S 38°37'32" E
C30	133.95	300.00	25°34'57"	68.11	132.84	N 59°23'39" W
C31	109.40	100.00	62°41'02"	60.90	104.03	S 76°28'21" W

LINE TABLE		
LINE	LENGTH	BEARING
L1	198.14	N 48°07'03" E
L2	54.16	S 37°44'26" E
L3	25.22	N 25°32'22" W
L4	77.90	S 42°05'44" W

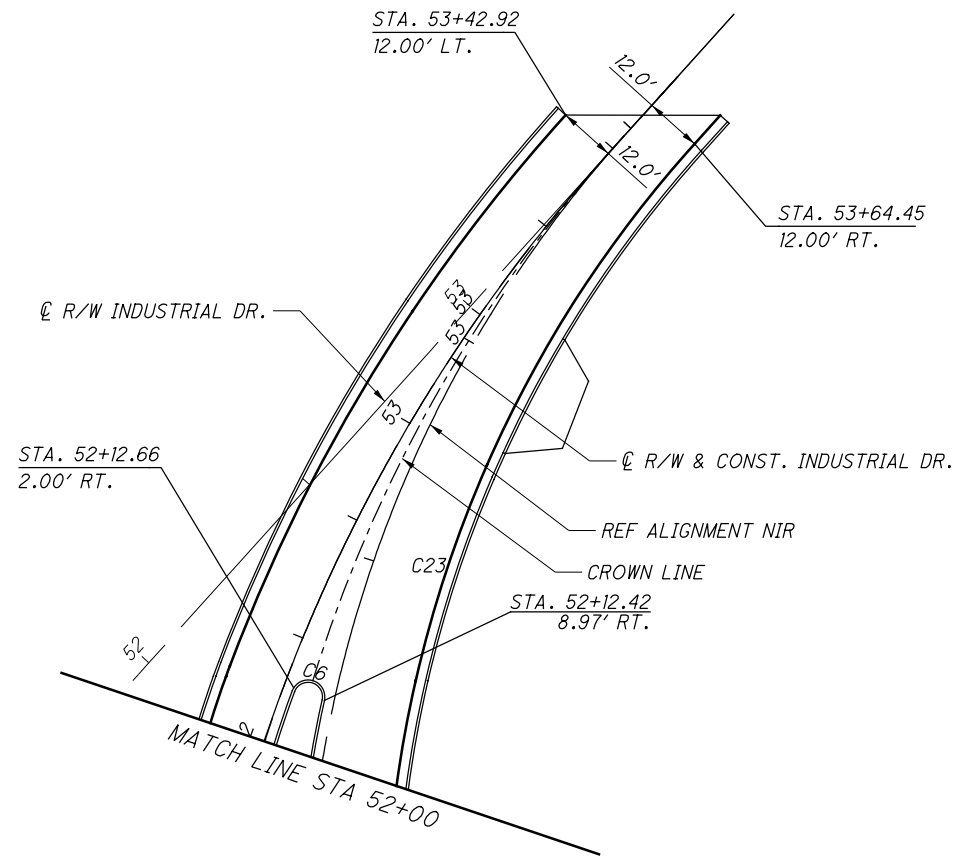
NOTE: ALL THE STATION AND OFFSET CALLOUTS ARE BASED ON \varnothing CONST. INDUSTRIAL DR.
OR \varnothing R/W RIVERVIEW AVE.

REFERENCE ALIGNMENTS ARE INSIDE EDGE OF LANE, SEE SHEETS ** TO ** FOR DETAILS.

THE DISTANCE BETWEEN INSIDE SPLITTER ISLAND AND REFERENCE ALIGNMENT IS 2.0'
UNLESS OTHERWISE NOTED.



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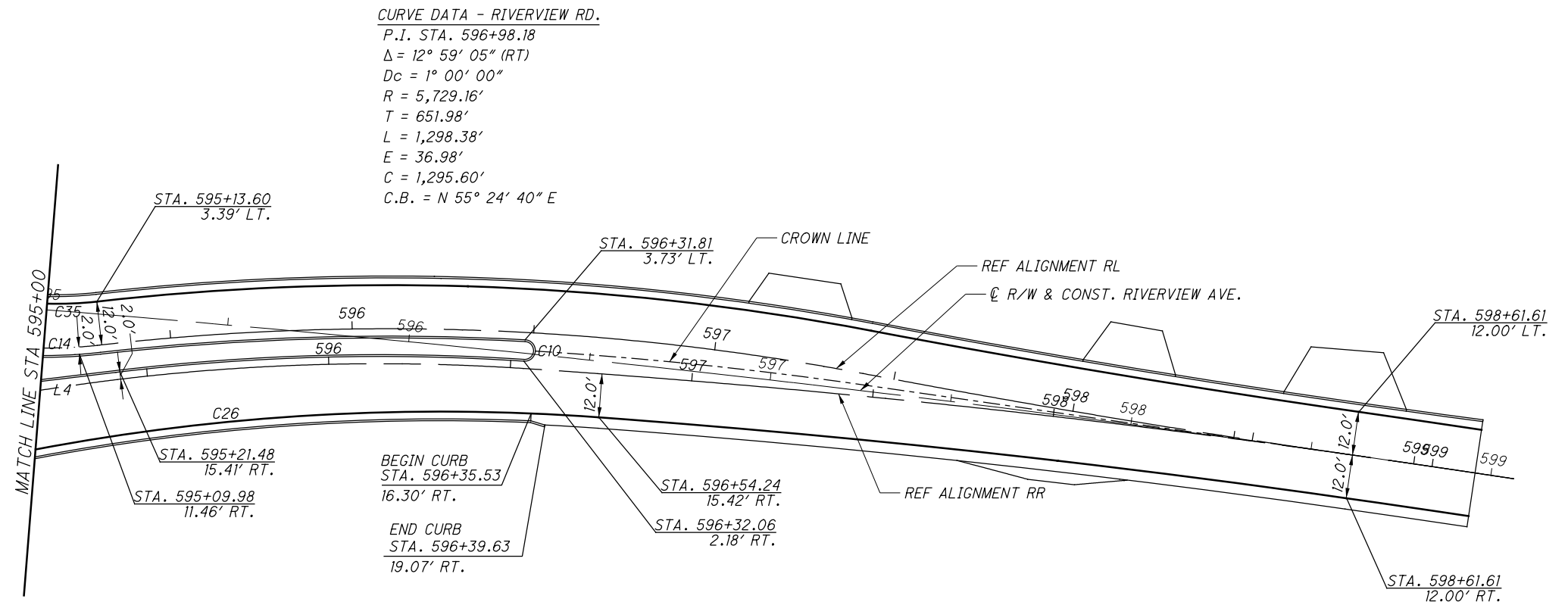
CURVE DATA - INDUSTRIAL DR.
P.I. STA. 52+17.04
 $\Delta = 43^\circ 25' 15''$ (RT)
 $Dc = 16^\circ 22' 13''$
 $R = 350.00'$
 $T = 139.36'$
 $L = 265.24'$
 $E = 26.72'$
 $C = 258.94'$
C.B. = N $20^\circ 44' 30''$ W

NOTE: ALL STATION AND OFFSET CALLOUTS ARE BASED ON \varnothing CONST. INDUSTRIAL DR.
OR \varnothing R/W RIVERVIEW AVE.

REFERENCE ALIGNMENTS ARE INSIDE EDGE OF LANE, SEE SHEETS ** TO ** FOR DETAILS.

THE DISTANCE BETWEEN INSIDE SPLITTER ISLAND AND REFERENCE ALIGNMENT IS 2.0'
UNLESS OTHERWISE NOTED.

SEE SHEET ** FOR CURVE AND LINE DATA.



CURVE DATA - RIVERVIEW RD.
P.I. STA. 596+98.18
 $\Delta = 12^\circ 59' 05''$ (RT)
 $Dc = 1^\circ 00' 00''$
 $R = 5,729.16'$
 $T = 651.98'$
 $L = 1,298.38'$
 $E = 36.98'$
 $C = 1,295.60'$
C.B. = N $55^\circ 24' 40''$ E

BEGIN CURB
STA. 596+35.53
16.30' RT.
END CURB
STA. 596+39.63
19.07' RT.

NOTE: SEE SHEET XX FOR CURB AND LINE DATA

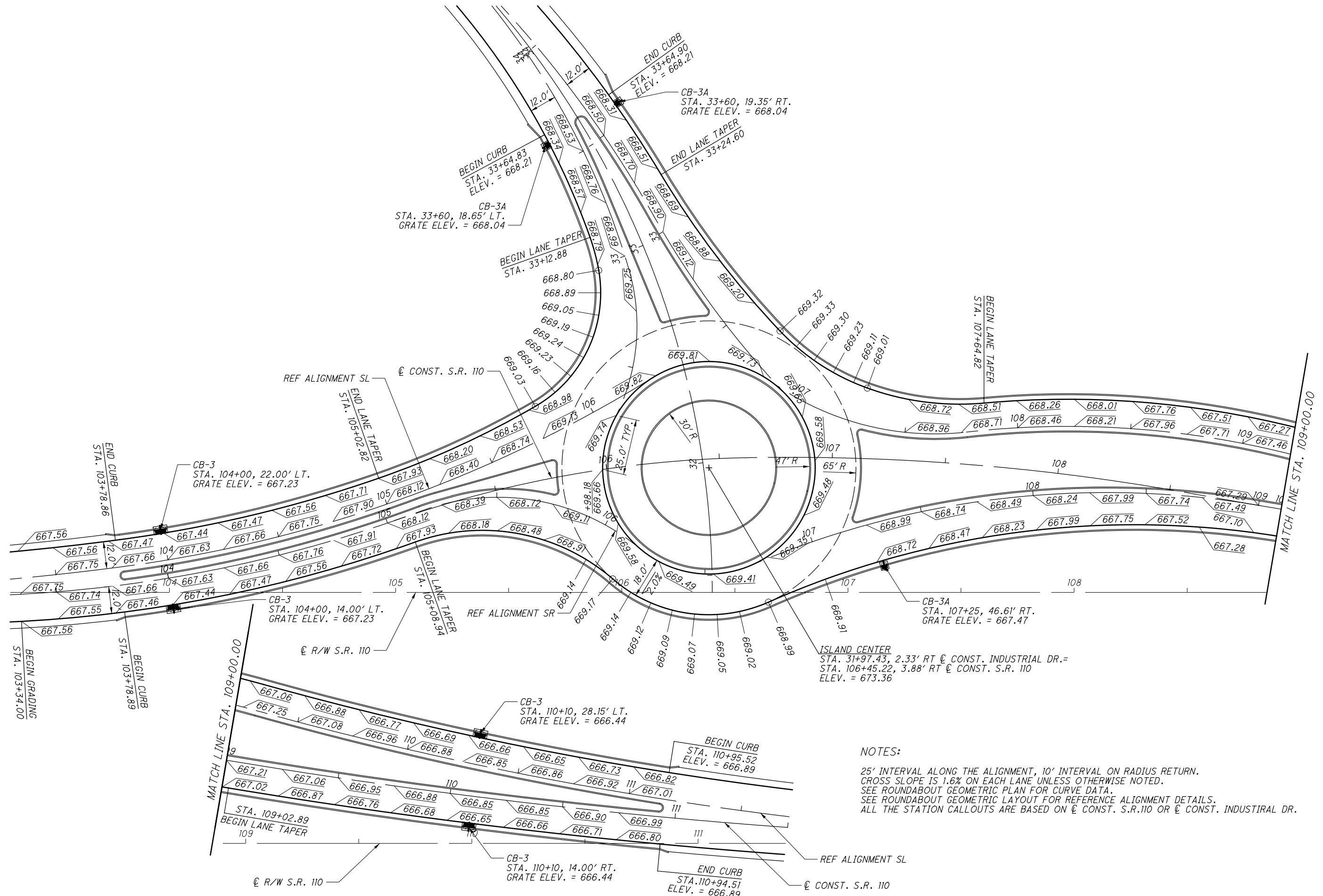


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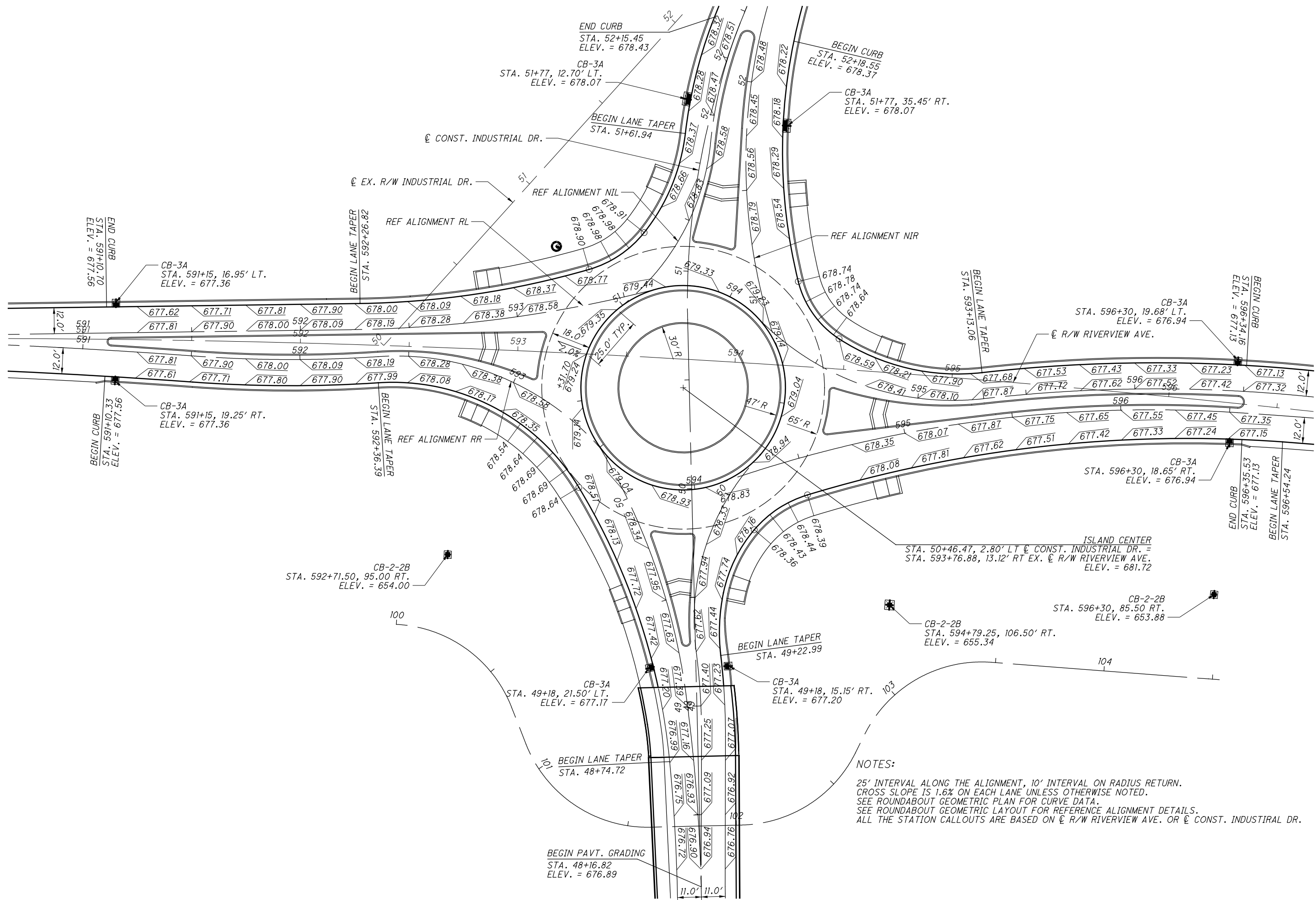
ROUNDABOUT GEOMETRIC DETAIL
INDUSTRIAL DR. & RIVERVIEW AVE.

HEN-NEW MAUMEE
RIVER BRIDGE

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NOTES:
25' INTERVAL ALONG THE ALIGNMENT, 10' INTERVAL ON RADIUS RETURN.
CROSS SLOPE IS 1.6% ON EACH LANE UNLESS OTHERWISE NOTED.
SEE ROUNDABOUT GEOMETRIC PLAN FOR CURVE DATA.
SEE ROUNDABOUT GEOMETRIC LAYOUT FOR REFERENCE ALIGNMENT DETAILS.
ALL THE STATION CALLOUTS ARE BASED ON $\text{\textcircled{C}}$ CONST. S.R.110 OR $\text{\textcircled{C}}$ CONST. INDUSTRIAL DR.

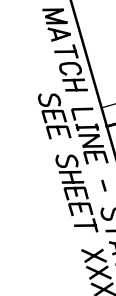




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HEN-NEW MAUMEE RIVER BRIDGE



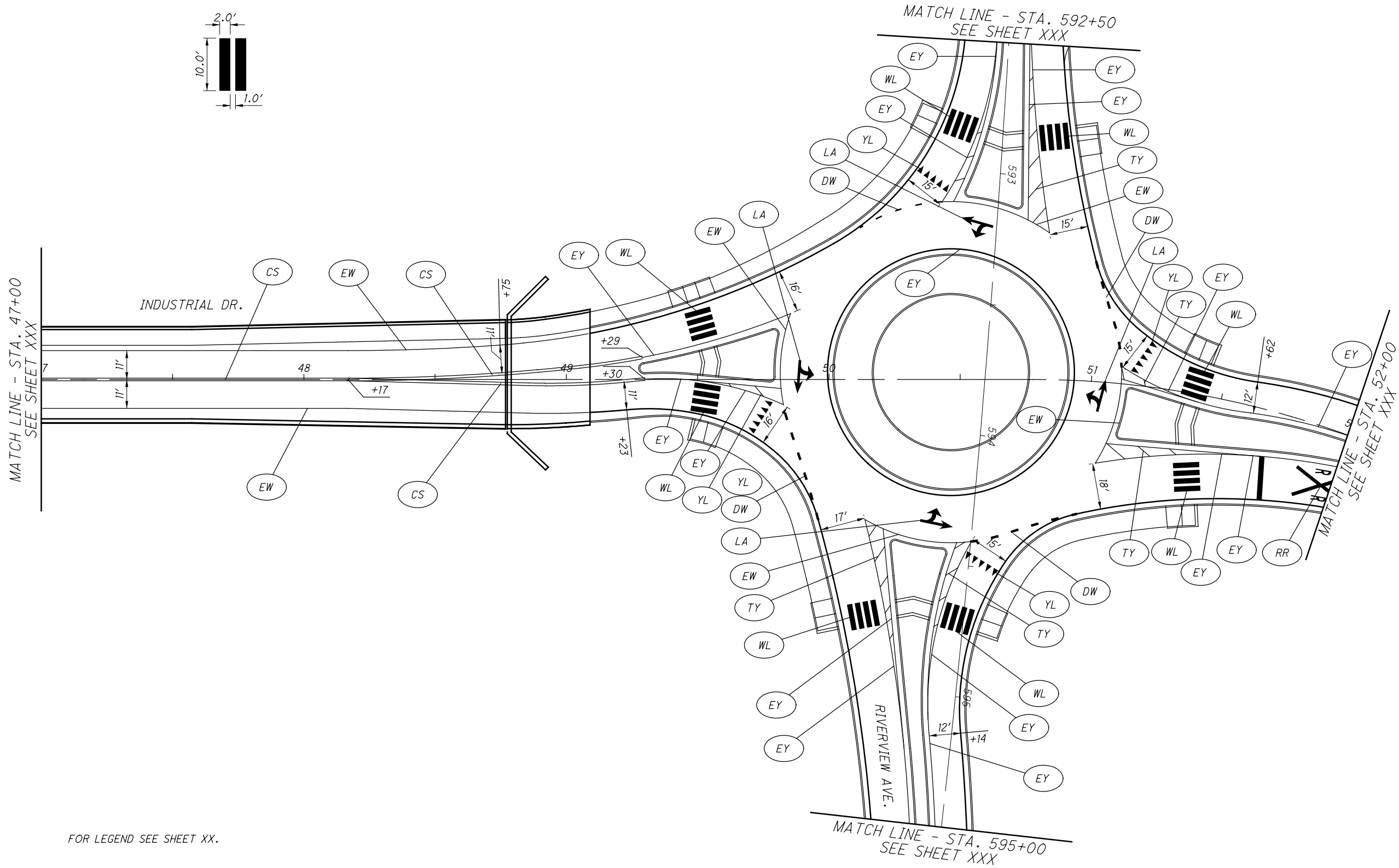
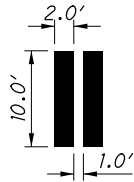
FOR LEGEND, SEE SHEET XX.

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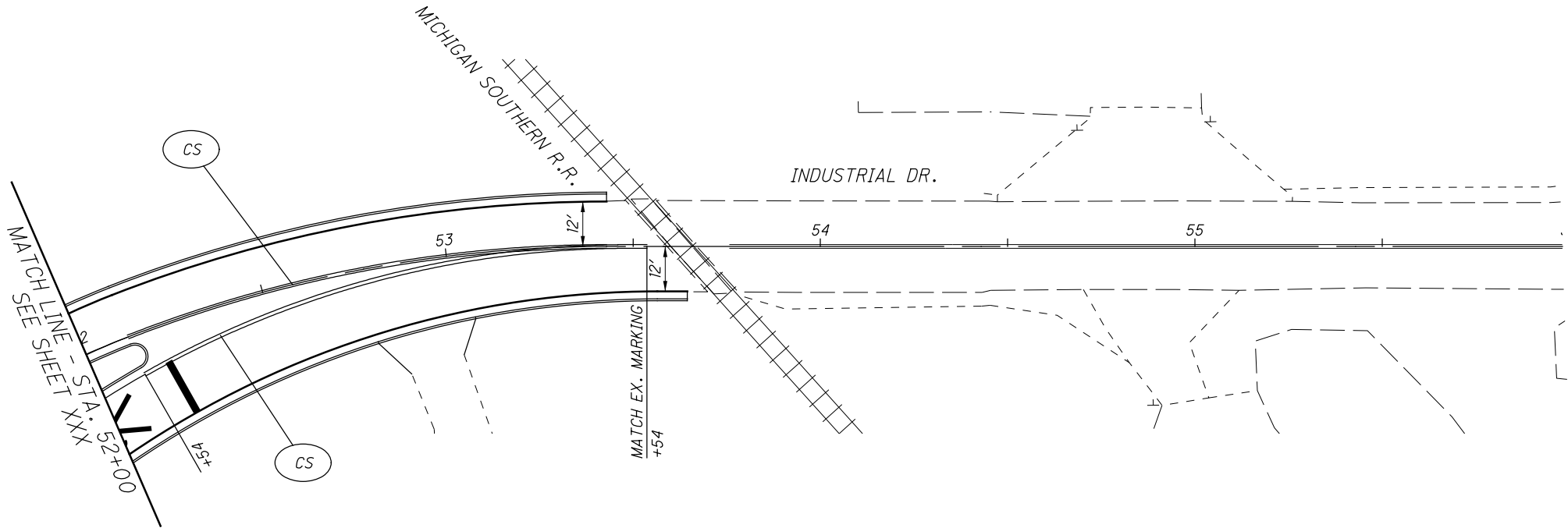
NOTE:

ITEM 644 - CROSSWALK LINE

24" WHITE LONGITUDIAL LINES SHALL BE PLACED PARALLEL TO TRAFFIC FLOW AS SHOWN IN FOLLOWING DETAIL. THE MARKING DESIGN SHOULD AVOID THE WHEEL PATHS. THE METHOD OF MESUREMENT SHALL BE PARALLEL TO TRAFFIC FLOW ALONG THE 24" LONGITUDINAL LINES.

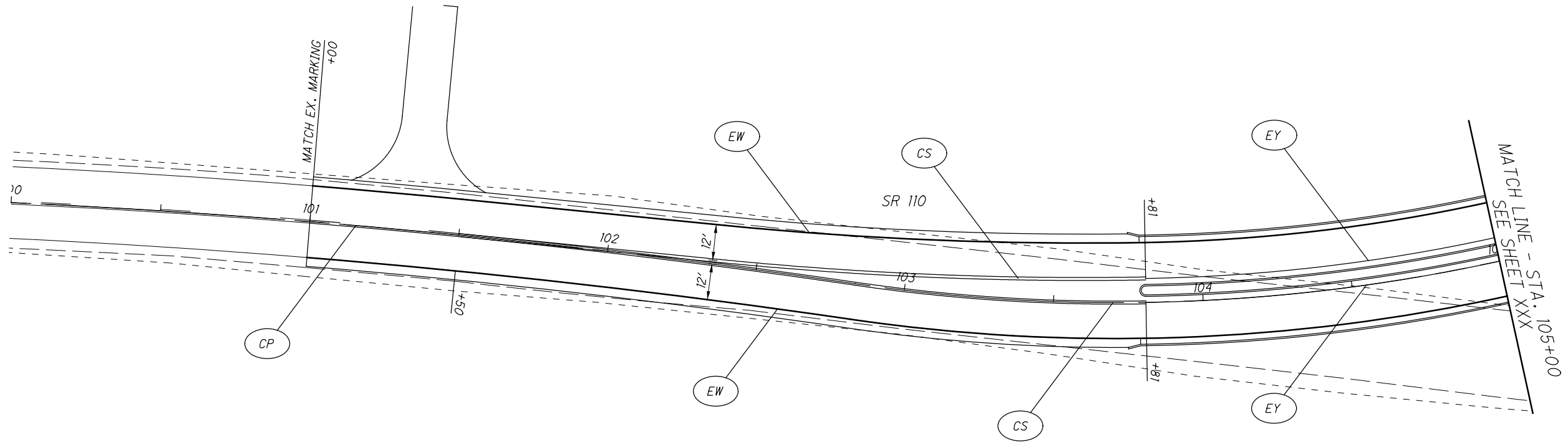


FOR LEGEND SEE SHEET XX.



FOR LEGEND, SEE SHEET XX.

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FOR LEGEND, SEE SHEET XX.

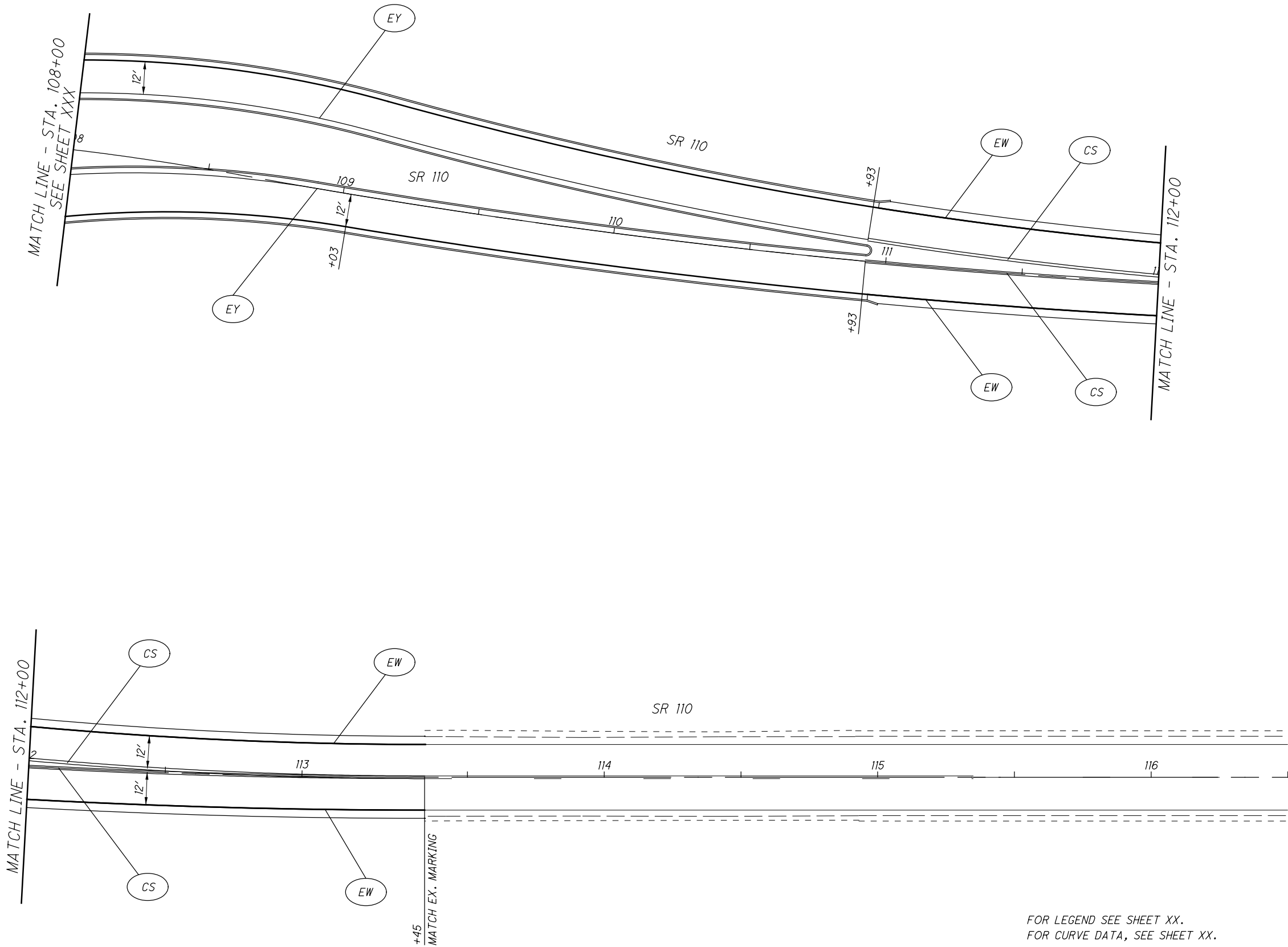


CALCULATED
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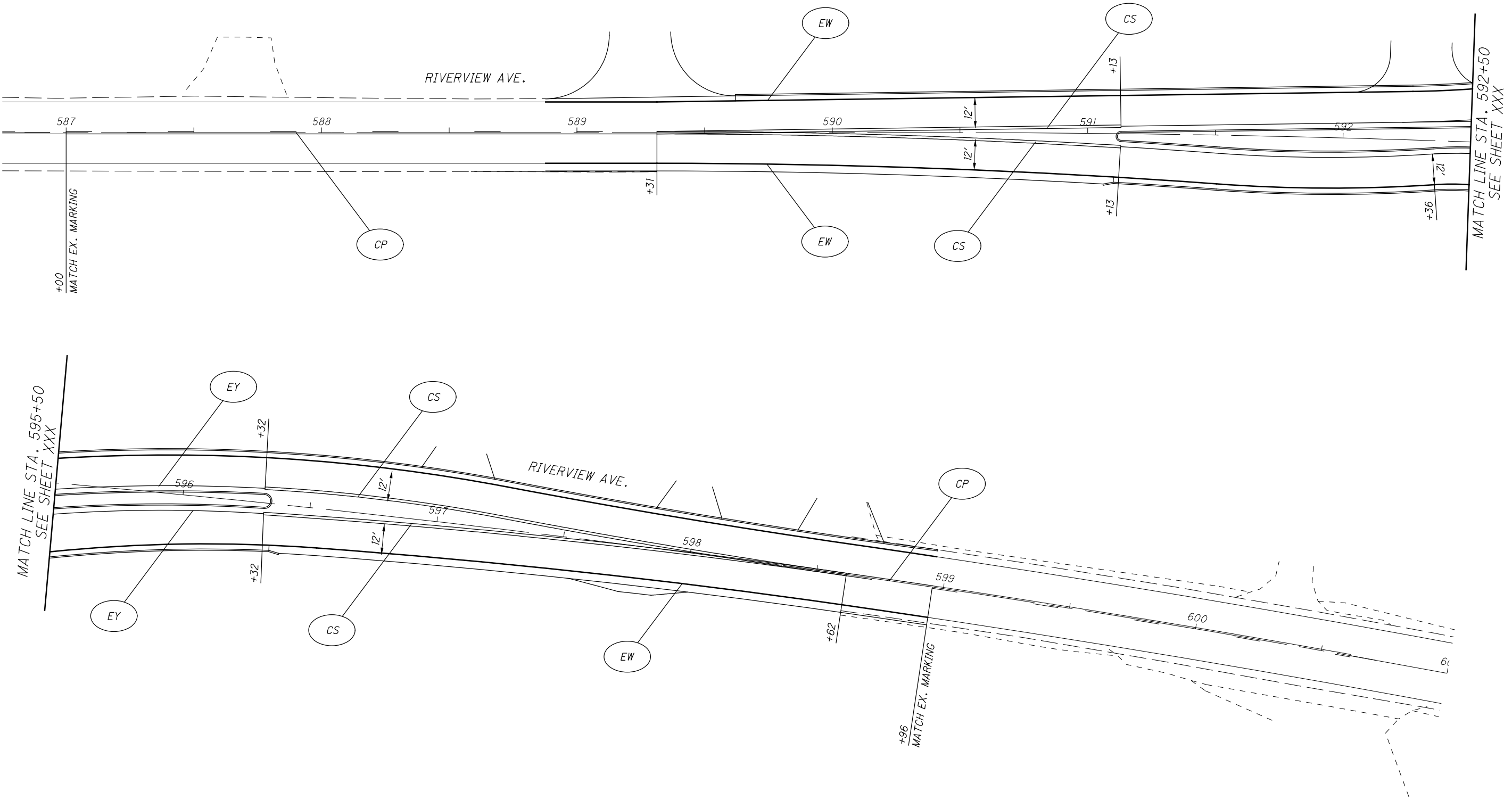
SIGNING AND PAVEMENT MARKING PLAN
SR 110

**HEN-NEW MAUMEE
RIVER BRIDGE**

70
180

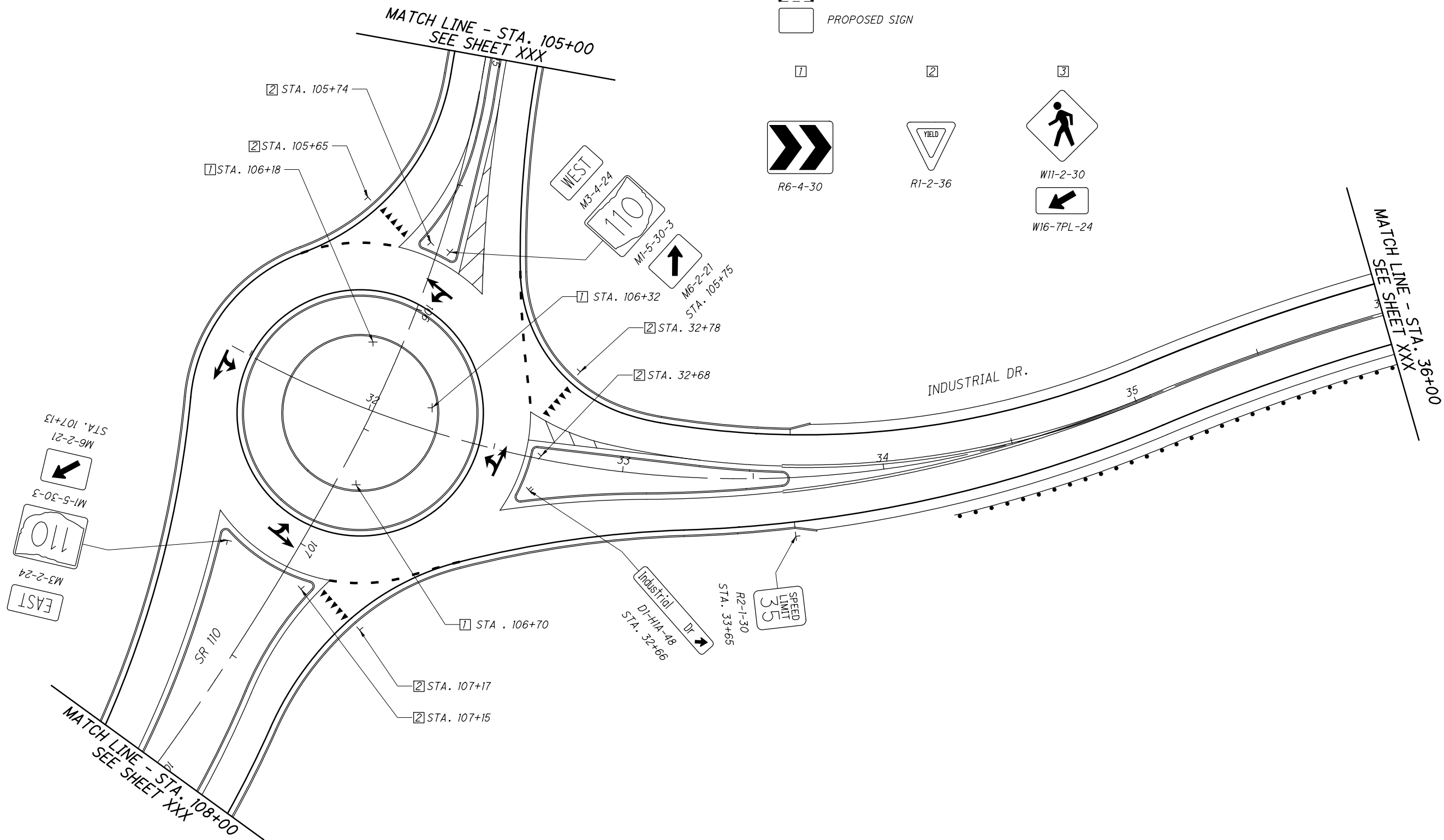


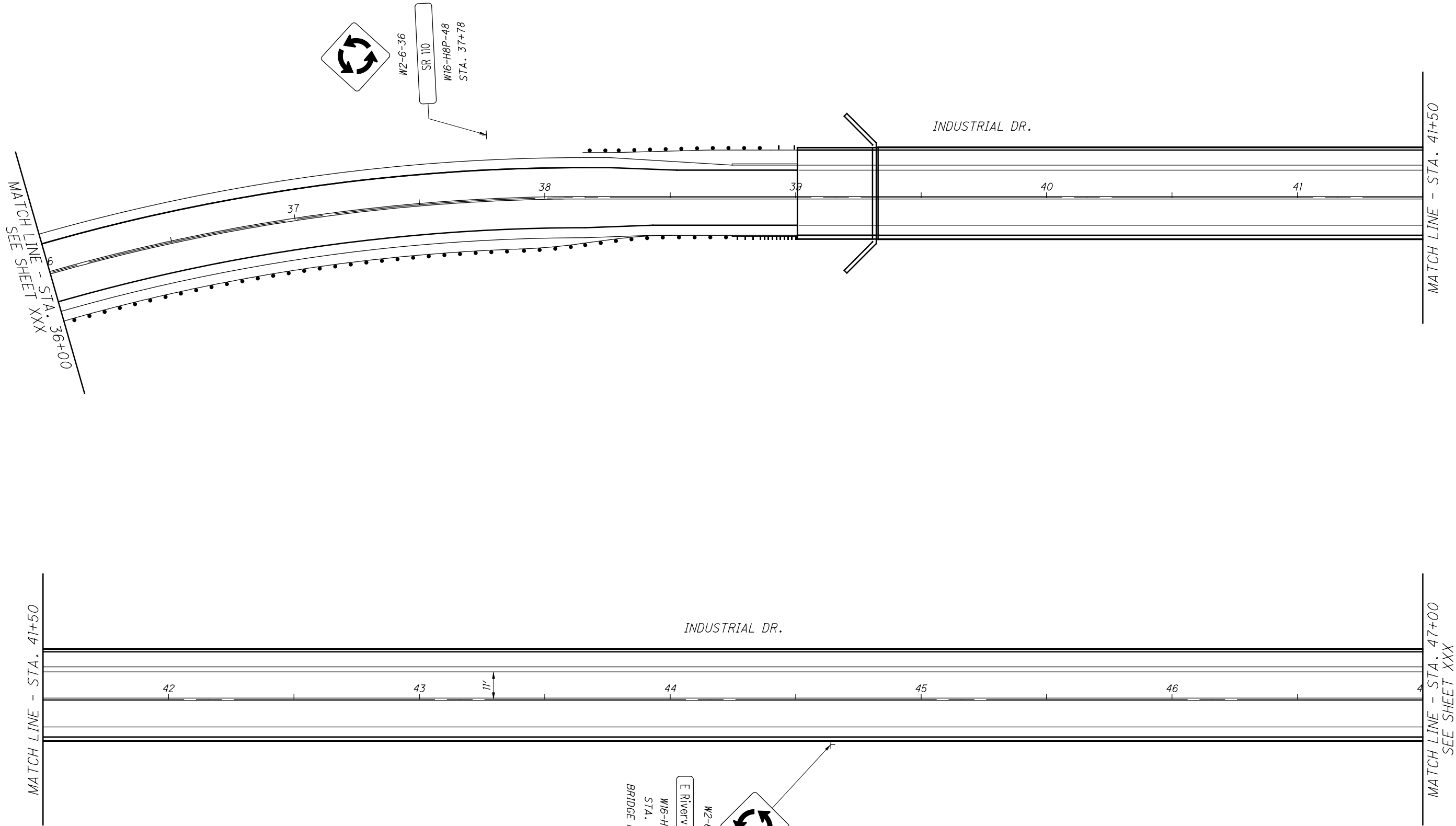
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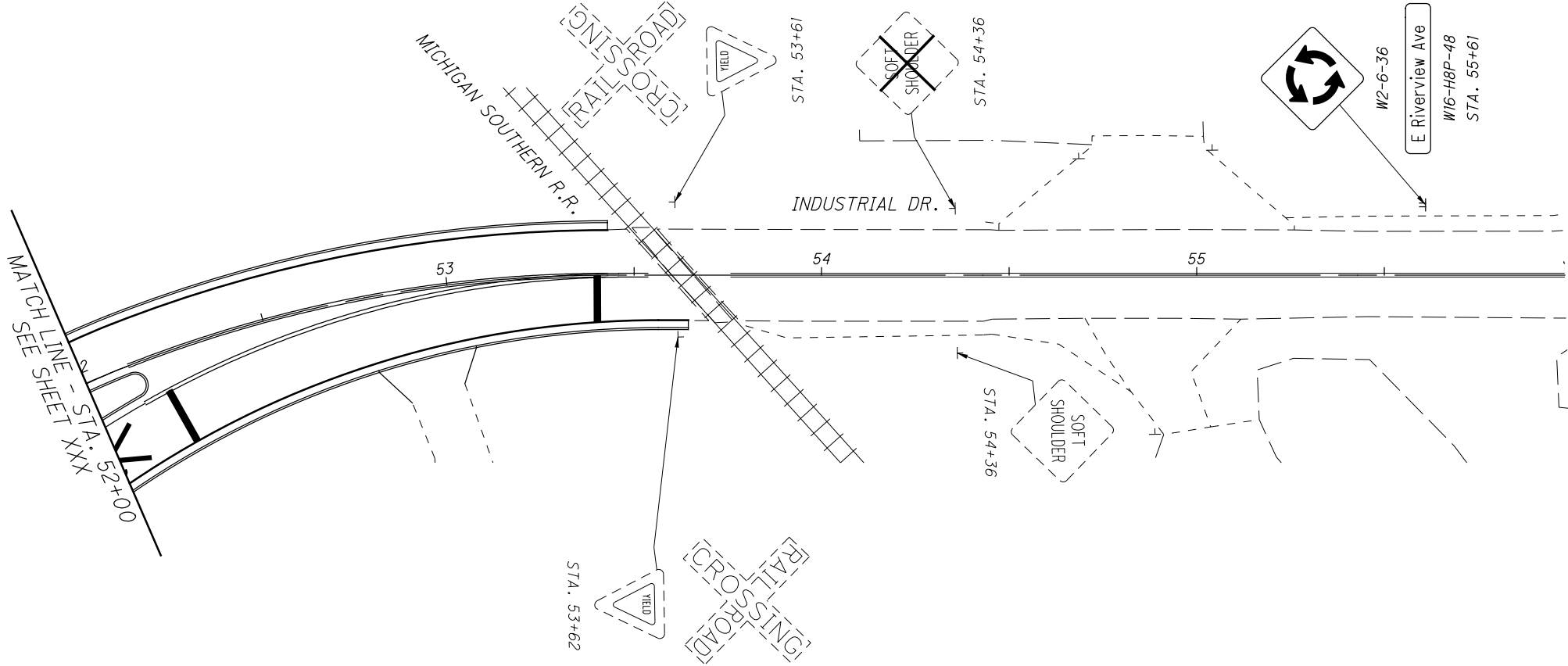
FOR LEGEND SEE SHEET XX.

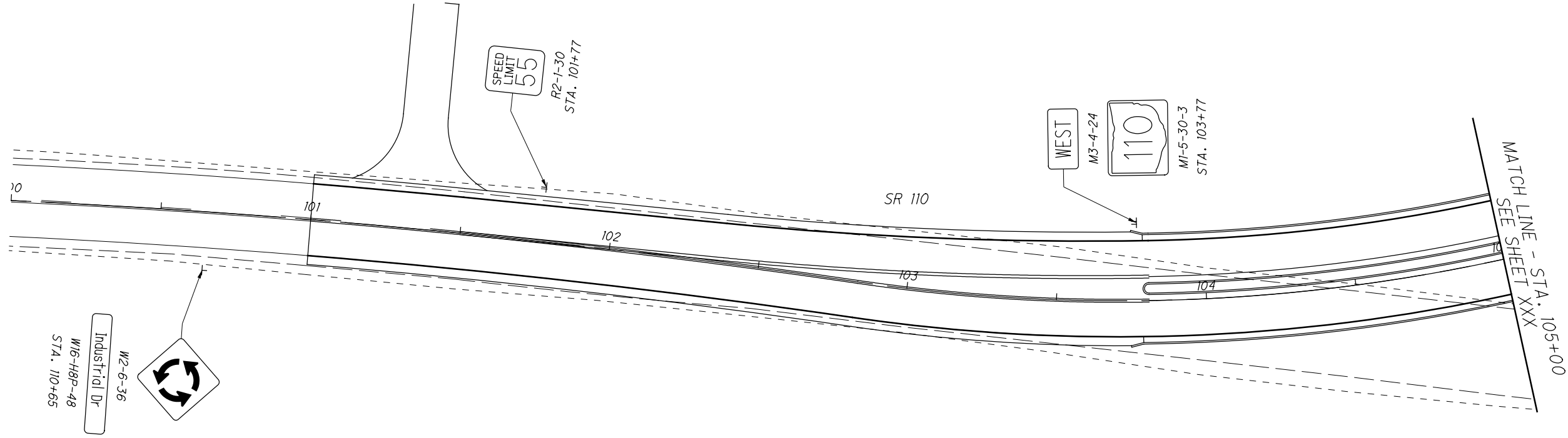
		HORIZONTAL SCALE IN FEET	
		CALCULATED	CHECKED
HEN-NEW MAUMEE RIVER BRIDGE		SIGNING AND PAVEMENT MARKING PLAN	
RIVERVIEW AVE.			
			

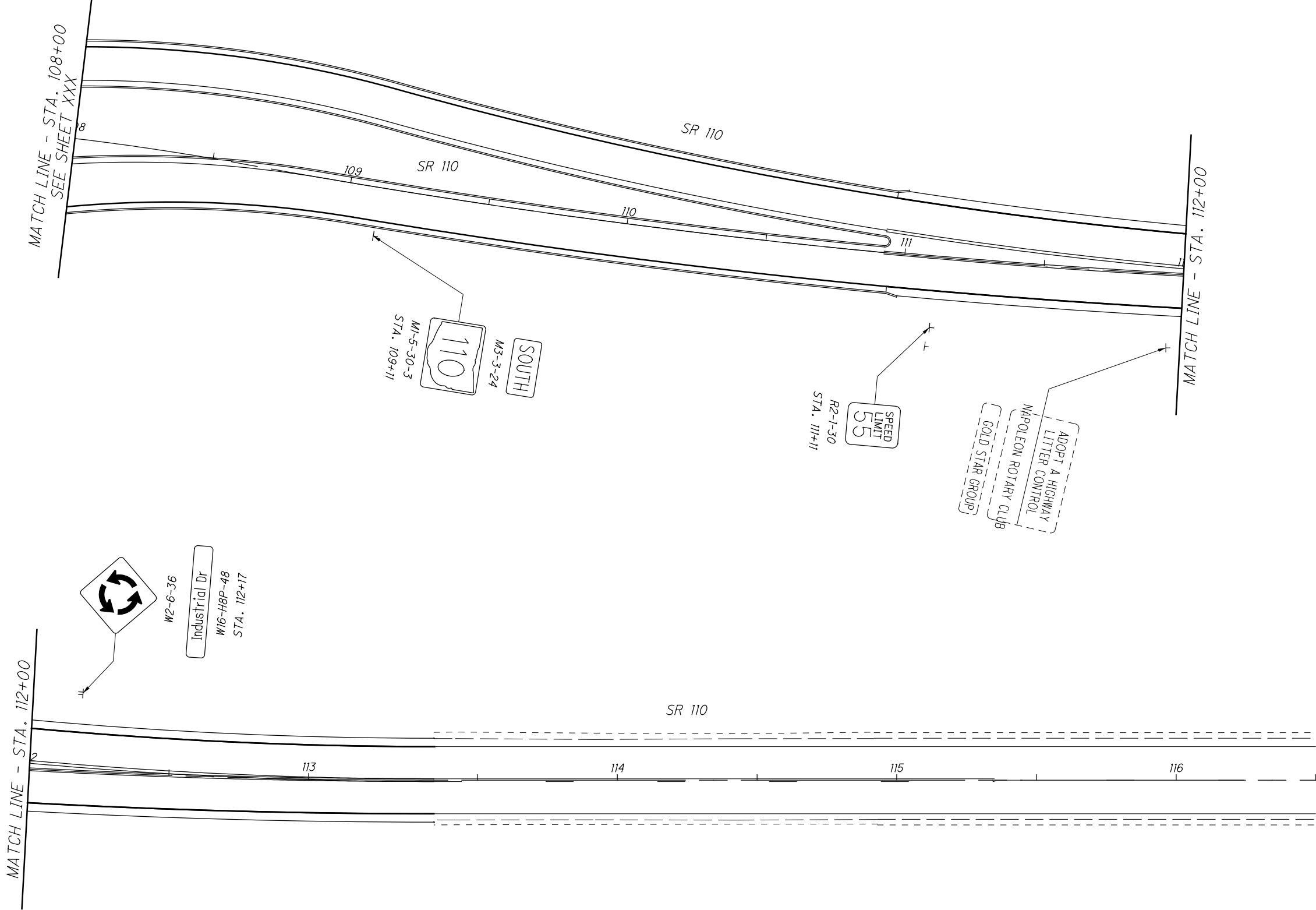


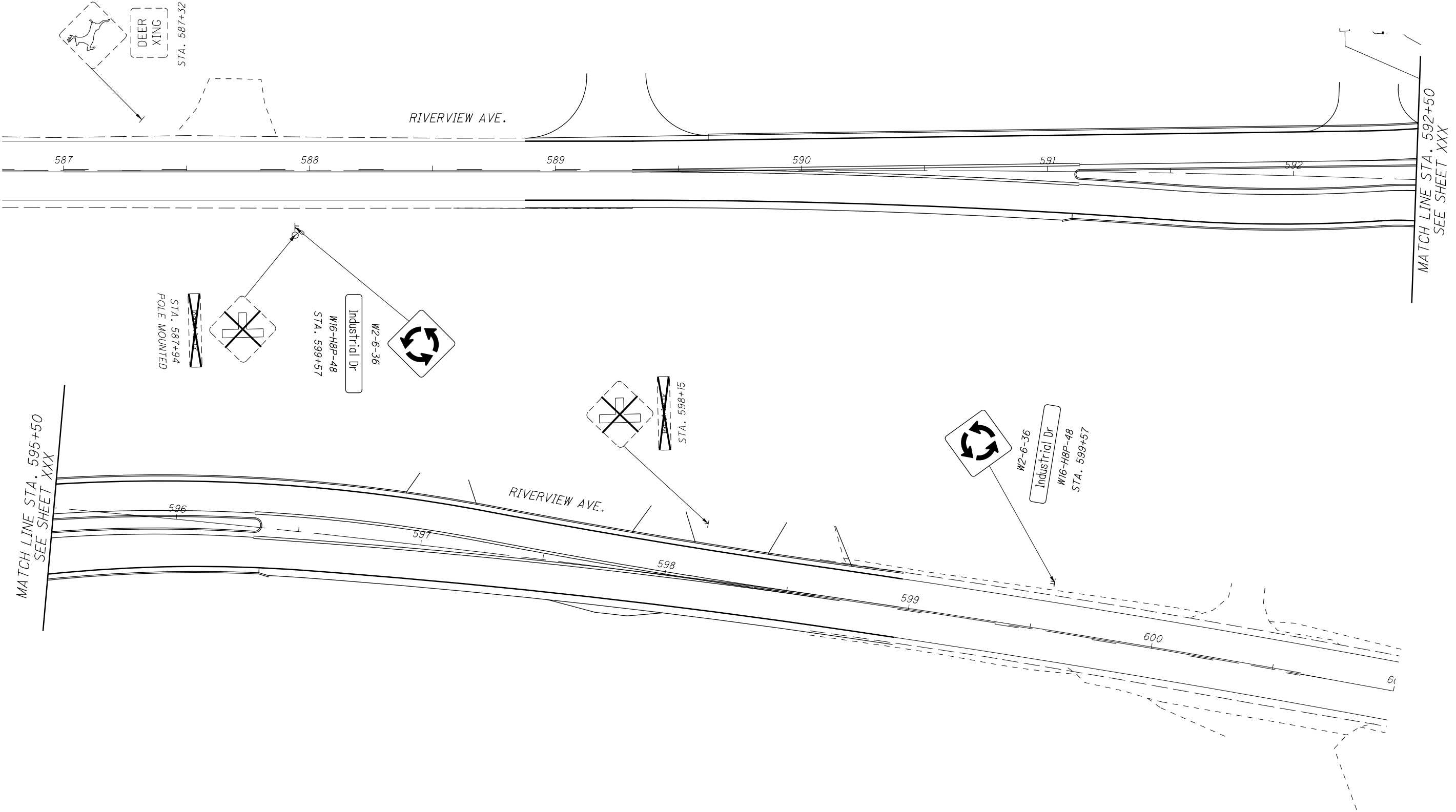












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SPECIFICATIONS

LIGHTING GENERAL NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 725 OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS, DATED JANUARY 1, 2013, WHICH SHALL GOVERN ALL WORK OF THIS PROJECT, EXCEPT AS HEREINAFTER MODIFIED.

REFERENCES SHALL BE MADE TO STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET.

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO ODOT STANDARD DRAWING HL-30.11 FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED 20 FEET. THE COST FOR THIS WORK IS TO BE INCLUDED IN THE PULLBOX ITEMS.

625, POWER SERVICE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF THE SPECIFICATIONS, THE FOLLOWING IS ADDED.

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

TOLEDO EDISON
MS: A-HLOC-2332
6099 ANGOLA ROAD
TOLEDO, OHIO, 43528
MR. BRAD RUETZ
419-249-5903

THE ENGINEER SHALL ENSURE THAT EACH POWER SERVICE ELECTRICAL ENERGY ACCOUNT IS IN THE NAME OF AND THAT THE BILLING ADDRESS IS TO THE MAINTAINING AGENCY NOTED IN THE PLANS.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625, "POWER SERVICE, AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

PADLOCKS AND KEYS


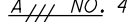










PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNAN 660A, AND SHALL BE KEYED IN ACCORDANCE WITH CMS 631.06. PAYMENT SHALL BE INCLUDED IN THE BID FOR THE ITEM(S) BEING LOCKED.

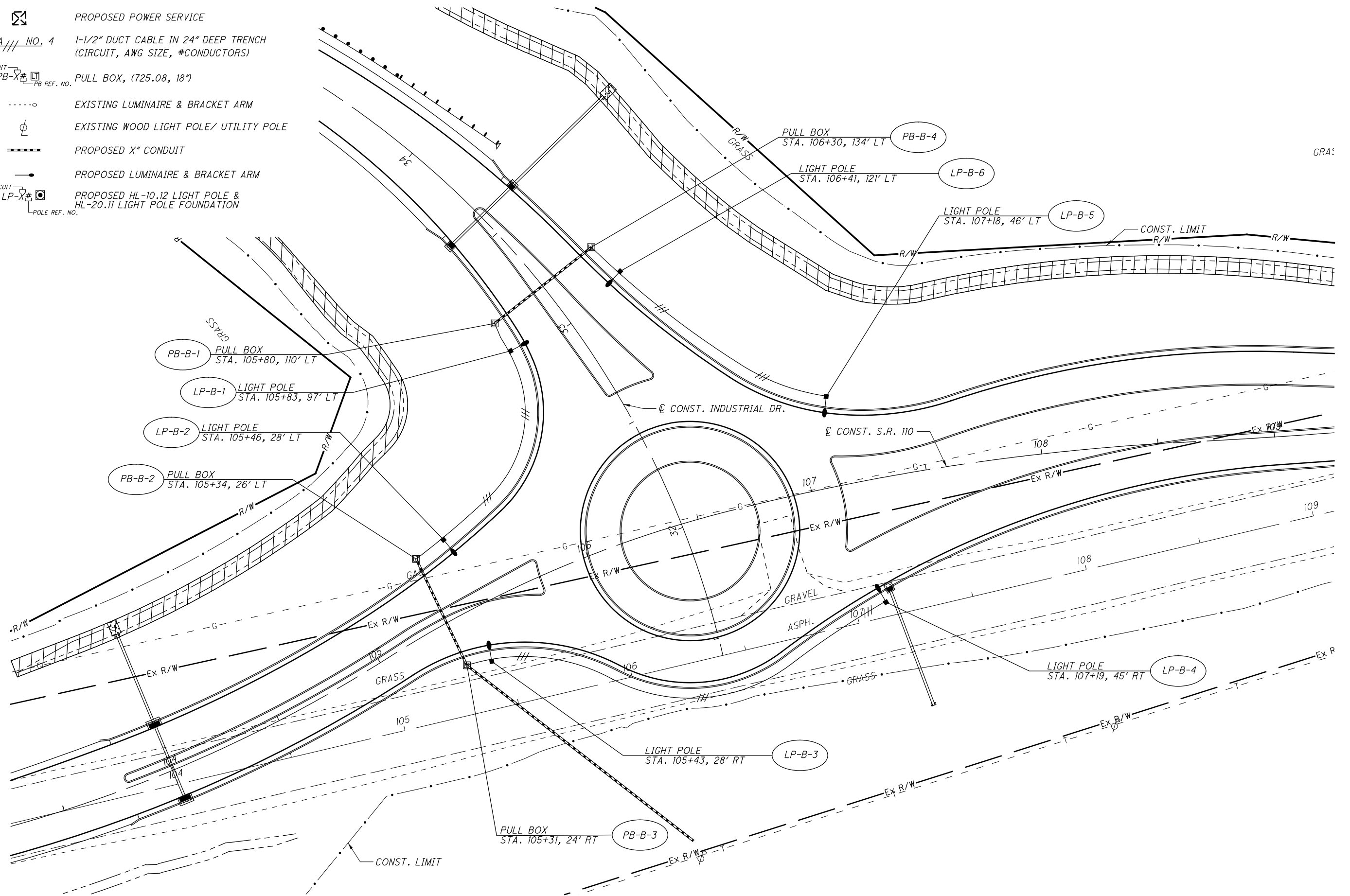
CONTROL CENTER DATA									
CONTROL CENTER	LINE VOLTS	CONNECTED LOAD (KVA)	SERVICE ENTRANCE CONDUCTOR SIZE-AWG	ENCLOSURE RATING (AMPS)	CIRCUIT NO.	CIRCUIT LOAD AMPS	CIRCUIT FUSE SIZE AMPS	CIRCUIT FUSE SIZE AWG	MAINTAINING AGENCY
	120/240V SINGLE PHASE		PER TOLEDO EDISON	100					ODOT/ CITY
NOTE: FOR ADDITIONAL CONTROL CENTER DETAILS, SEE STANDARD DRAWINGS									

PULL BOX
STA. 594+16, 190 RT

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PLAN LEGEND

-  PROPOSED POWER SERVICE
-  NO. 4 1-1/2" DUCT CABLE IN 24" DEEP TRENCH
(CIRCUIT, AWG SIZE, #CONDUCTORS)
-   PB-X#  PULL BOX, (725.08, 18")
-  EXISTING LUMINAIRE & BRACKET ARM
-  EXISTING WOOD LIGHT POLE/ UTILITY POLE
-  PROPOSED X" CONDUIT
-  PROPOSED LUMINAIRE & BRACKET ARM
-   LP-X#  PROPOSED HL-10.12 LIGHT POLE &
HL-20.11 LIGHT POLE FOUNDATION



0 20 40
HORIZONTAL
SCALE IN FEET

CALCULATED
CHECKED

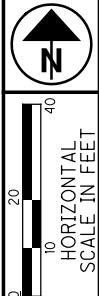
LIGHTING PLAN
S.R. 110 AND INDUSTRIAL DRIVE

HEN-NEW MAUMEE
RIVER BRIDGE

82
180

[illegible]

NOTES:

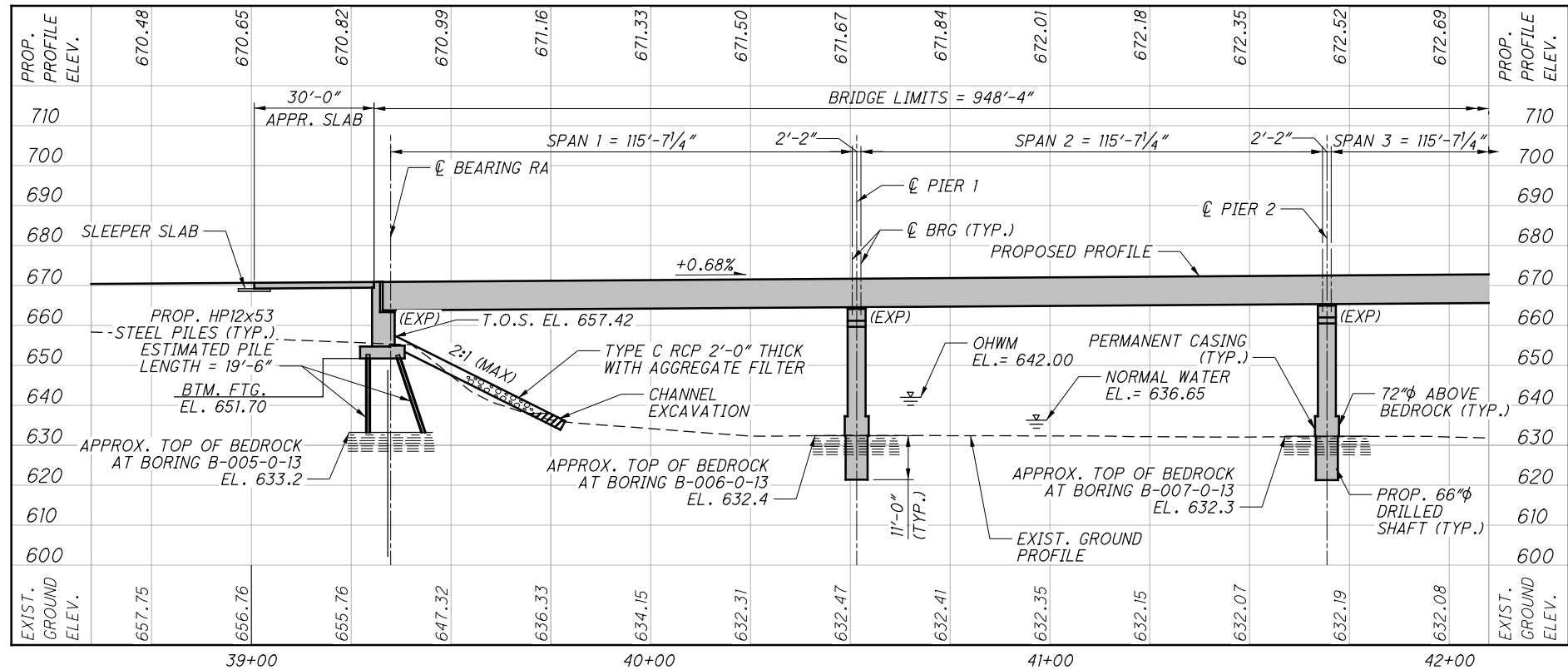
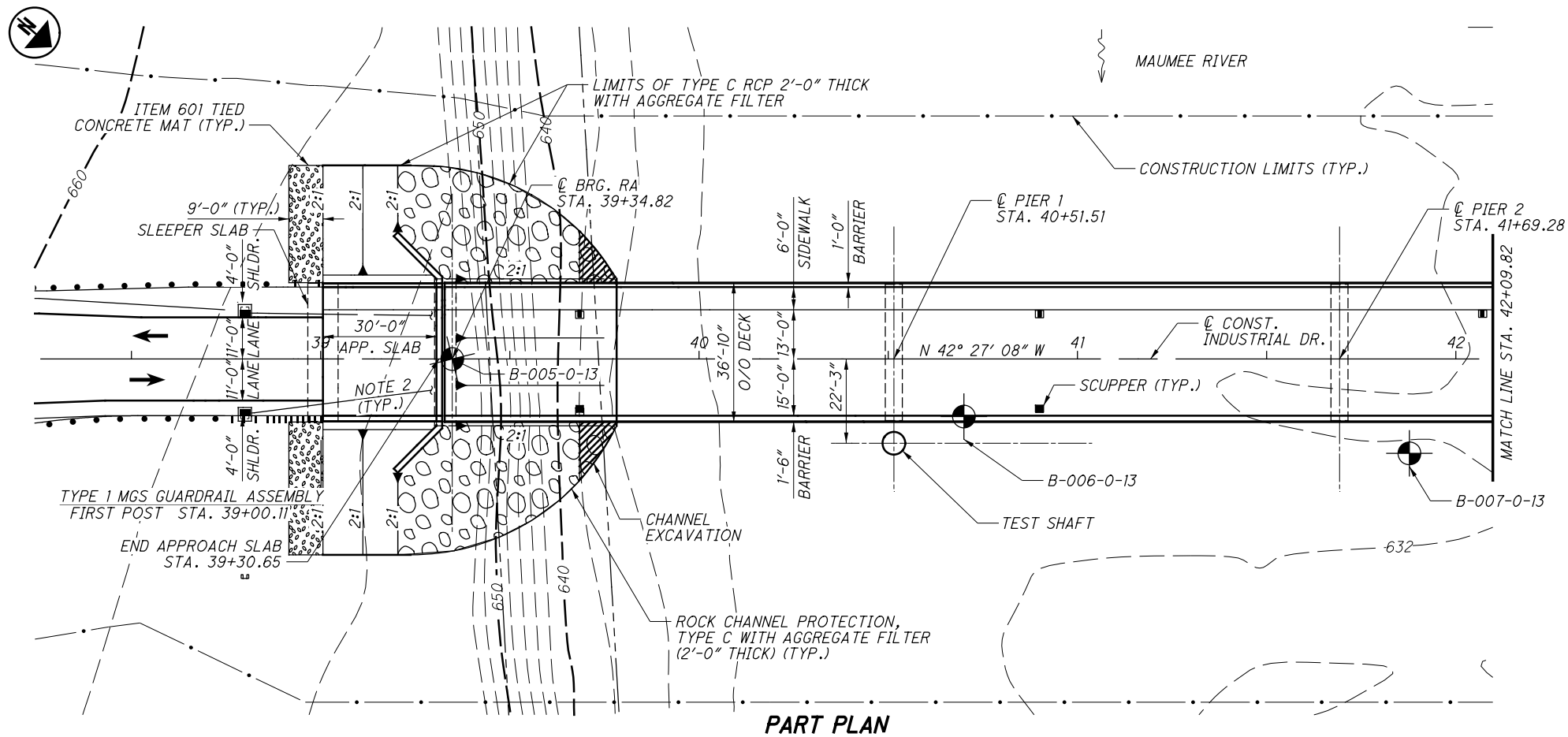


LANDSCAPE PLAN

HEN-NEW MAUMEE RIVER BRIDGE



NOTES:



BENCHMARK DATA

BM #1 STA. 55+02.58	ELEV. 672.71	OFFSET 19.45' RT
BM #2 STA. 65+94.80	ELEV. 680.83	OFFSET 134.94' LT
BM #3 STA.	ELEV.	OFFSET
BM #4 STA.	ELEV.	OFFSET

NOTES

- EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
- 12"φ PVC, SDR 35 (707.45), OUTLET TO CATCH BASINS. SEE ROADWAY PLANS FOR MORE INFORMATION.

DESIGN TRAFFIC:

2015 ADT = 7660 2015 ADTT = 690
2035 ADT = 9860 2035 ADTT = 890
DIRECTIONAL DISTRIBUTION = 0.55

LEGEND

- BORING LOCATION
- CHANNEL EXCAVATION
- T.O.S. - TOP OF SLOPE
- RCP - ROCK CHANNEL PROTECTION
- CONCRETE MAT
- PROPOSED STRUCTURE

HYDRAULIC DATA

DRAINAGE AREA = 5650 SQ. MILES
Q (25) = 87780 CFS V (25) = 5.00 FT/S
Q (100) = 110100 CFS V (100) = 5.49 FT/S
STRUCTURE CLEARS THE 25 YEAR
DESIGN HW BY 8.48 FEET.

APPROXIMATE TOP OF BEDROCK ELEVATIONS

B-005-0-13	EL. 633.2
B-006-0-13	EL. 632.4
B-007-0-13	EL. 632.3
B-008-0-13	EL. 631.0
B-009-0-13	EL. 631.8
B-010-0-13	EL. 632.2
B-011-0-13	EL. 634.3
B-012-0-13	EL. 631.3
B-013-1-13	EL. 634.8
B-013-1-13	EL. 631.3

PROPOSED STRUCTURE

TYPE: EIGHT SPAN COMPOSITE PRESTRESSED I-BEAM SUPERSTRUCTURE WITH REINFORCED CONCRETE DECK SUPPORTED BY REINFORCED CONCRETE ABUTMENTS AND PIERS WITH SLOPED EMBANKMENTS

SPANS: 8 SPANS @ 115'-7 1/4", 115'-7 1/4", 115'-7 1/4", 115'-7 1/4", 115'-7 1/4", 115'-7 1/4", 115'-7 1/4" AND 115'-7 1/4" C/C BEARINGS MEASURED ALONG C CONSTRUCTION INDUSTRIAL DR.

ROADWAY: VARIABLE WIDTH 28'-0" MIN. TO 32'-0" MAX. TOE/TOE BARRIER WITH 6'-0" SIDEWALK (LEFT SIDE)

LOADING: HL-93 W/ 60 PSF FUTURE WEARING SURFACE

SKEW: NONE

APPROACH SLABS: 30'-0" LONG (AS-1-15) MODIFIED

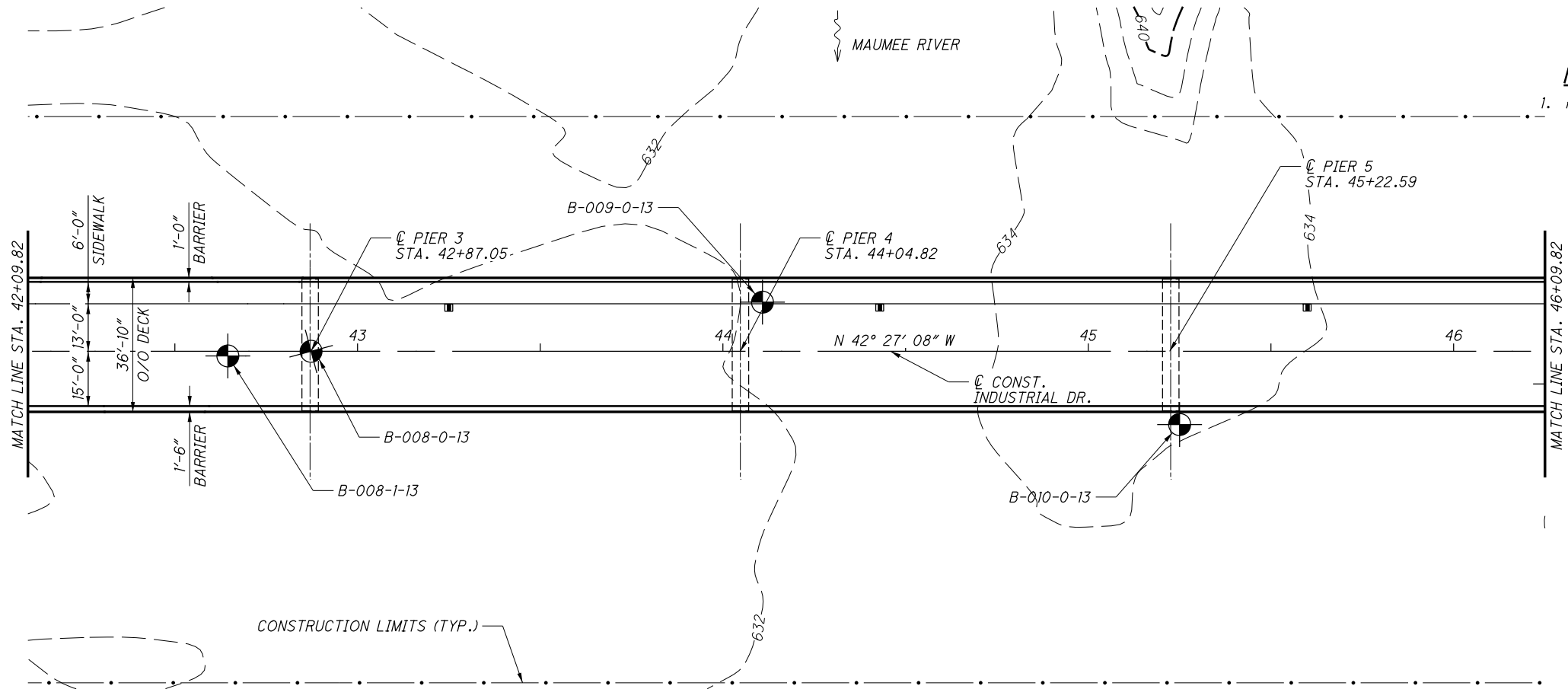
ALIGNMENT: TANGENT

CROWN: 0.016 FT/FT

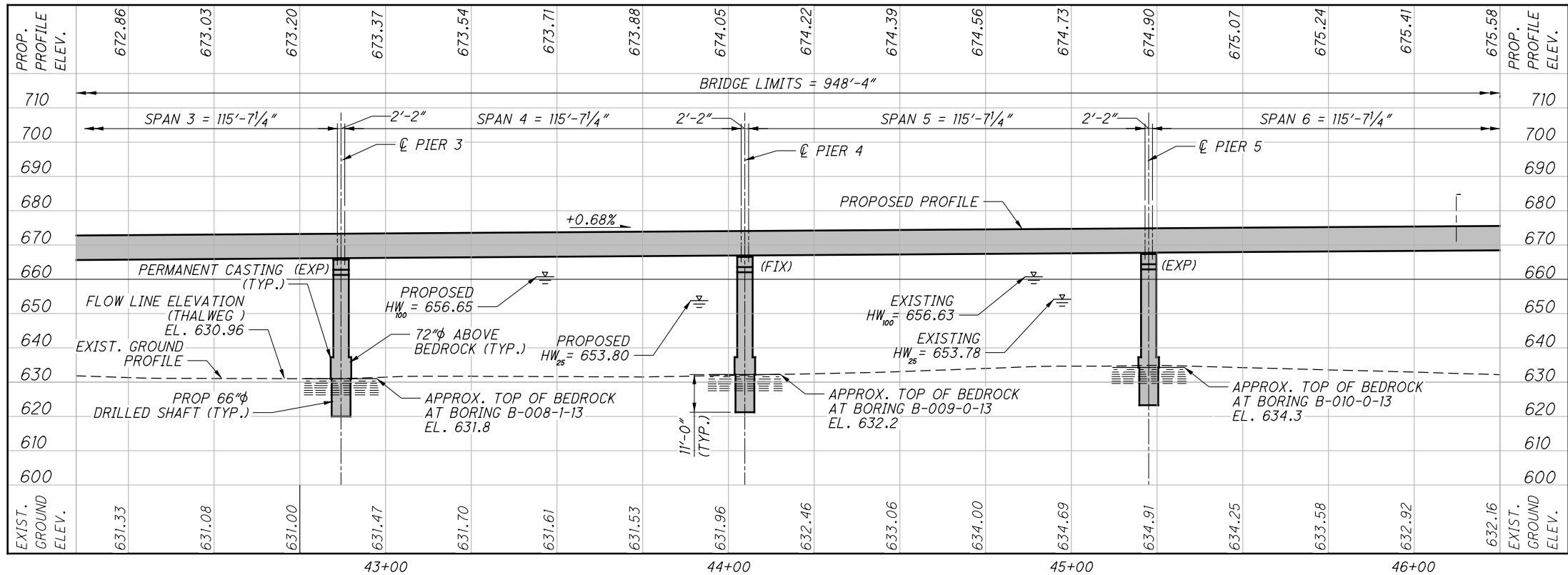
WEARING SURFACE: 1" MONOLITHIC CONCRETE

COORDINATES: LATITUDE N 41° 24' 17"
LONGITUDE W 84° 06' 14"

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PART PLAN

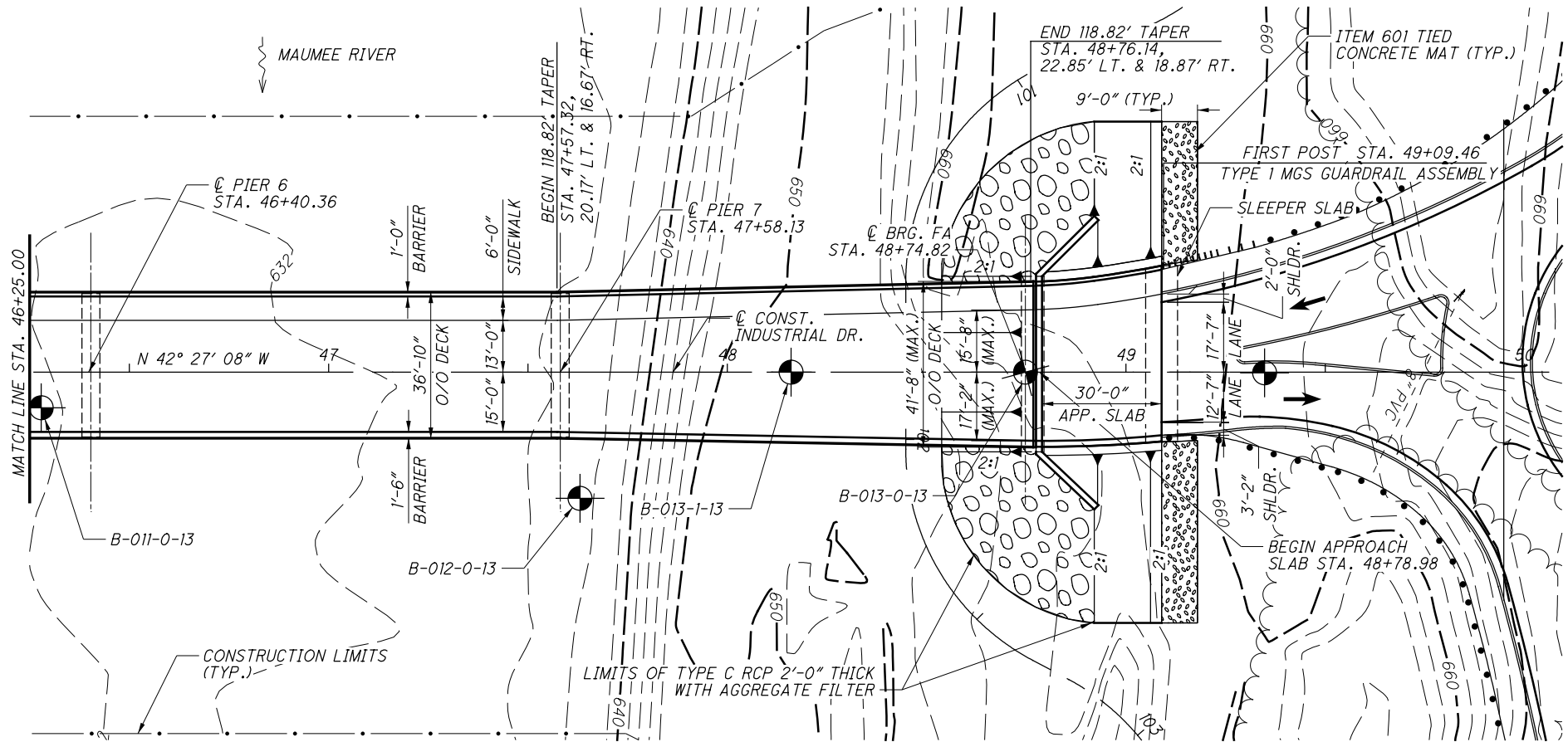


PART PROFILE ALONG C CONST. INDUSTRIAL DRIVE

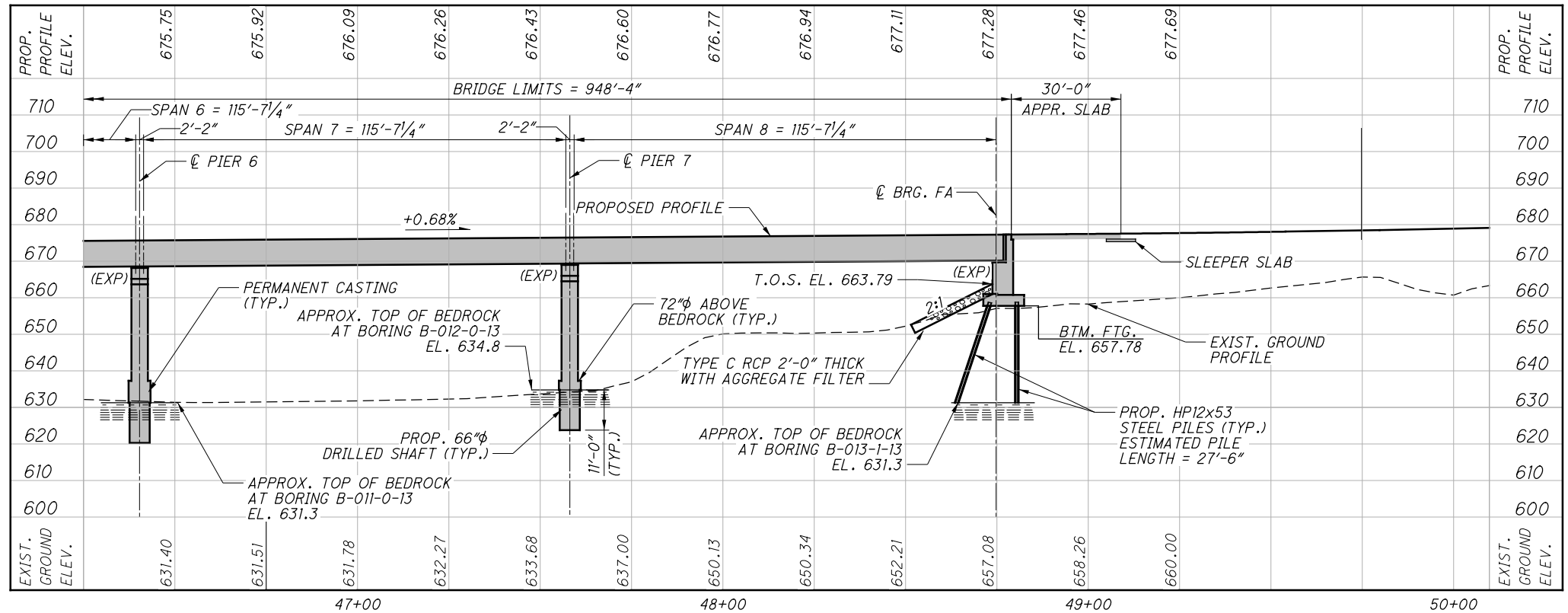
NOTES

1. FOR PLAN NOTES AND LEGEND SEE SHEET 1/65

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PART PLAN



PART PROFILE ALONG C CONST. INDUSTRIAL DRIVE

NOTES

1. FOR PLAN NOTES AND LEGEND SEE SHEET 1/65

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STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWING(S):

AS-1-15 DATED/REVISED 7/17/2015

AS-2-15 DATED/REVISED 7/15/2015

BR-2-98 DATED/REVISED 7/20/2012

EXJ-6-06 DATED/REVISED 1/18/2013

PSID-1-13 DATED/REVISED 1/16/2015

SBR-1-13 DATED/REVISED 1/17/2014

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION(S):

800 DATED 4/17/2015 832 DATED 1/17/2014

846 DATED 4/17/2015

DESIGN SPECIFICATIONS

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 8TH EDITION, INCLUDING THE 2013 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

LOAD MODIFIER FOR OPERATIONAL IMPORTANCE

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN LOADING

DESIGN LOADING: HL-93

FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/SQ.FT.

DESIGN DATA

DESIGN DATA:
CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)
CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)
CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.0 KSI (DRILLED SHAFT)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

STEEL H-PILES - ASTM A572 - YIELD STRENGTH 50 KSI

DESIGN DATA

CONCRETE FOR PRESTRESSED BEAMS:
COMPRESSIVE STRENGTH (FINAL) - 7.0 KSI
COMPRESSIVE STRENGTH (RELEASE) - 5.0 KSI
PRESTRESSING STRAND:
AREA = 0.217 SQ. IN.
ULTIMATE STRENGTH = 270 KSI
INITIAL STRESS = 202.5 KSI (LOW RELAXATION STRANDS)

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL

2.5" CONCRETE COVER

PILE DRIVING CONSTRAINTS

PILE DRIVING CONSTRAINTS: PRIOR TO DRIVING PILES, CONSTRUCT THE SPILL THROUGH SLOPES AND THE BRIDGE APPROACH EMBANKMENT BEHIND THE ABUTMENTS UP TO THE LEVEL OF THE SUBGRADE ELEVATION FOR A MINIMUM DISTANCE OF 200 FT BEHIND EACH ABUTMENT. DO NOT BEGIN THE EXCAVATION FOR THE ABUTMENT FOOTINGS AND THE INSTALLATION OF THE ABUTMENT PILES UNTIL AFTER THE ABOVE REQUIRED EMBANKMENT HAS BEEN CONSTRUCTED.

PILES TO BEDROCK

PILES TO BEDROCK: DRIVE PILES TO REFUSAL ON BEDROCK. THE DEPARTMENT WILL CONSIDER REFUSAL TO BE OBTAINED WHEN THE PILE PENETRATION IS AN INCH OR LESS AFTER RECEIVING AT LEAST 20 BLOWS FROM THE PILE HAMMER. SELECT THE HAMMER SIZE TO ACHIEVE THE REQUIRED DEPTH TO BEDROCK AND REFUSAL.

THE TOTAL FACTORED LOAD IS 317 KIPS PER PILE FOR THE REAR ABUTMENT PILES AND 336 KIPS PER PILE FOR THE FORWARD ABUTMENT PILES. THE ABUTMENT PILES INCLUDE AN ADDITIONAL 36 KIPS OF FACTORED LOAD PER PILE TO ACCOUNT FOR POSSIBLE DOWNDRAW FORCES.

ABUTMENT PILES:
REAR:
26 HP12X53 PILES 25 FEET LONG, ORDER LENGTH
FORWARD:
28 HP12X53 PILES 35 FEET LONG, ORDER LENGTH

PILE SPLICES

PILE SPLICES: IN LIEU OF USING THE FULL PENETRATION BUTT WELDS SPECIFIED IN CMS 507.09 TO SPLICE STEEL H-PILES, THE CONTRACTOR MAY USE A MANUFACTURED H-PILE SPLICER. FURNISH SPLICERS FROM THE FOLLOWING MANUFACTURER:

ASSOCIATED PILE AND FITTING CORPORATION
8 WOOD HOLLOW RD. PLAZA 1
PARSIPPANY, NJ 07054

INSTALL AND WELD THE SPLICER TO THE PILE SECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN ASSEMBLY PROCEDURE SUPPLIED TO THE ENGINEER BEFORE THE WELDING IS PERFORMED.

ITEM 203 EMBANKMENT, AS PER PLAN

PLACE AND COMPACT EMBANKMENT MATERIAL IN 6 INCH LIFTS FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT BETWEEN STATIONS 38+34.82 TO 49+74.82.

ITEM 503 UNCLASSIFIED EXCAVATION, AS PER PLAN:

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THAT THE BACKFILL MATERIAL PLACED BEHIND THE ABUTMENTS SHALL BE 703.17 MATERIAL PLACED IN 6 INCH LIFTS AS PER 304.05.

ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN

ITEM - 509 EPOXY COATED REINFORCING STEEL, AS PER PLAN: IN ADDITION TO THE PROVISIONS OF ITEM 509, FIELD BEND AND/OR FIELD CUT THE REINFORCING STEEL DESIGNATED IN THE PLANS, AS NECESSARY, IN ORDER TO MAINTAIN THE REQUIRED CLEARANCES AND BAR SPACINGS. REPAIR ALL DAMAGE TO THE EPOXY COATING, AS A RESULT OF THIS WORK, ACCORDING TO 709.00

DECK PLACEMENT DESIGN ASSUMPTIONS:

DECK PLACEMENT DESIGN ASSUMPTIONS: THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.2 KIPS FOR A TOTAL MACHINE LOAD OF 17.6 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103".

A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48 IN.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA CONCRETE, SUPERSTRUCTURE, AS PER PLAN (BRIDGE DECK)

DESCRIPTION:
IN ADDITION TO THE WORK REQUIREMENTS OF 511,THE CONTRACTOR MAY EITHER PROVIDE TRADITIONAL BRIDGE DECK FORMS CONFORMING TO CMS 508 OR DESIGN, BUILD, PROVIDE, AND CONSTRUCT GALVANIZED STEEL STAY-IN-PLACE (SIP) FABRICATED METAL FORMS CONFORMING TO CMS 508 AND THESE ADDITIONAL REQUIREMENTS. THE DEPARTMENT WILL NOT SEPARATELY PAY FOR SIP FORMS. THE COST OF THIS WORK IF CHOSEN BY THE CONTRACTOR SHALL BE INCLUDED FOR PAYMENT IN THE PRICE BID FOR ITEM 511. THE DEPARTMENT WILL PAY NO EXTRA FOR ANY ADDITIONAL CONCRETE, REINFORCEMENT STEEL, OR STRUCTURAL STEEL THAT MAY BE REQUIRED WHEN USING SIP FORMS. ANY ADDITIONAL COST AND/OR DESIGN ASSOCIATED WITH THE USE OF SIP FORMS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE ADDITIONAL DEAD LOAD OF THE SIP FORM PLUS THE WEIGHT OF THE ADDITIONAL CONCRETE SHALL BE DETERMINED FROM THE REQUIRED BEAM SPACING AND DEPTH OF FORM. THIS LOAD WILL BE IN ADDITION TO THE LOADS AS SPECIFIED AS DESIGN LOADS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DESIGN, FABRICATION, AND INSTALLATION MODIFICATIONS TO THE BRIDGE COMPONENTS INCLUDING THE BRIDGE BEAMS OR GIRDERS, CAMBER DIAGRAM, DECK SCREED TABLES, BRIDGE BEARINGS, AND SUBSTRUCTURES. ALL PLAN MODIFICATIONS SHALL BE PREPARED AS PER 501.

DESIGN, BUILD, SIP FORMS WILL NOT BE PERMITTED AT OVERHANGS, AND WITHIN EIGHT FEET OF ALL EXPANSION JOINTS AND FOUR FEET OF ALL THROUGH DECK DRAINAGE SYSTEMS. IN ADDITION SIP FORMS WILL NOT BE PERMITTED WITHIN STRINGER BAYS WHERE CONSTRUCTION IS PHASED OR CLOSURE POURS ARE USED.

IF THE CONTRACTOR ELECTS TO USE CONVENTIONAL FORM METHODS OR SIP FORMS, THEN THE FORM METHOD SELECTED SHALL BE USED FOR THE ENTIRE BRIDGE PROJECT UNLESS SPECIFIED IN THE PLANS OR APPROVED BY THE ENGINEER. THIS INCLUDES PROJECTS UTILIZING PHASED CONSTRUCTION AND STIPULATES THAT ALL PHASES BE CONSTRUCTED ALIKE.

DESIGN:
SUBMIT CONSTRUCTION PLANS ACCORDING TO 501.05.B.3. DESIGN SIP FORMS TO SUPPORT THE SELF WEIGHT OF SIP FORMS, REINFORCEMENT, WET CONCRETE FOR THE DECK, ANY CONSTRUCTION EQUIPMENT LOADS, AND AT LEAST A 50 PSI LOAD FOR CONSTRUCTION LIVE LOADS MEET THE DEFLECTION REQUIREMENTS OF 508.

DESIGN SIP FORMS THAT HAVE THE DEPTH OF THE FORM CORRUGATION FILLED WITH CONCRETE.

- INCLUDED THE FOLLOWING INFORMATION IN THE CONSTRUCTION PLAN:
- A: DESIGN CALCULATIONS
 - B: PHYSICAL PROPERTIES OF THE SIP FORMS (GAGE, SECTION MODULUS, WEIGHT, DEPTH, AND PITCH)
 - C: CROSS SECTION VIEW AND DIMENSIONS OF: SIP FORMS, SUPPORT ANGLES, CHANNELS CLOSURES, SAFETY STOPS, CLIPS, PLATES, AND HARDWARE.
 - D: INCLUDE AN OVERALL LAYOUT PLAN WITH
 1. WORKING POINTS OR CONTROL ELEVATIONS NECESSARY TO SET SUPPORT ANGLES.
 2. TYPICAL AND SPECIFIC CROSS SECTIONS OR DETAILS: SUPPORT CONNECTIONS TO THE STRUCTURAL MEMBERS, SIP FORM CONNECTIONS TO SUPPORTS, FORM LAPS, AND CLOSURE SECTIONS.
 3. MINIMUM BEARING LENGTHS (EDGE DISTANCES) OF SIP FORMS TO THE SUPPORT ANGLES.
 4. WELDING DETAILS: SIZE, LENGTH, LOCATIONS, ELECTRODES, AND PROCESS.
 - E: WORKER SAFETY RESTRICTIONS.
 - F: INSTALLATION INSPECTION CHECK LISTS.

MATERIALS:
SUBMIT 501.06 TEST REPORTS AND WRITTEN ACCEPTANCE LETTERS TO THE ENGINEER. MATERIALS INSPECTION AND ACCEPTANCE IS PERFORMED BY THE ENGINEER AT THE PROJECT SITE. FURNISH FORM, SUPPORT MATERIALS, AND HARDWARE CONFORMING TO THE FOLLOWING:

- A: FORM AND SUPPORT MATERIAL, ASTM A653 HAVING A COATING DESIGNATION OF G235, AND CONFORMING TO THE MECHANICAL PROPERTIES THE DESIGN REQUIRES.
- B: PROVIDE DECK FORMS WITH A 2 INCH MINIMUM FORM DEPTH.
- C: PROVIDE MINIMUM MATERIAL THICKNESS AS FOLLOWS: SIP FORMS (20 GAGE), SUPPORT ANGLES (12 GAGE) AND SUPPORT BARS (12 GAGE).
- D: SUPPLY DECK, SELF DRILLING FASTENERS WITH CADMIUM PLATING PER ASTM B766 WITH MINIMUM THICKNESS OF 5, TEN THOUSANDTHS. (0.0005 INCH). THE HEADS OF THESE FASTENERS WILL BE A HIGHLY VISIBLE COLOR, RED OR OTHER, TO AID INSPECTION.

MANNIK SMITH GROUP

1800 INDIAN WOOD CIRCLE
MAUMEE, OHIO 43537

DATE
05/2015

REVIEWED
TLR

DRAWN
RJS

DESIGNED
DRH

STRUCTURE FILE NUMBER
TBD

CHECKED
SCT

REVISED

GENERAL NOTES (1 OF 3)

HEN-INDUSTRIAL DRIVE-0000
INDUSTRIAL DRIVE OVER MAUMEE RIVER

HEN - IND - 00.00

PID No. 22984

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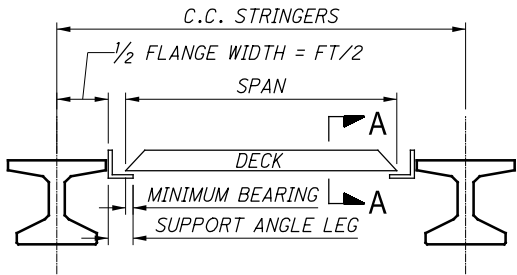
ITEM 511 – CLASS QC2 CONCRETE WITH QC/QA CONCRETE, BRIDGE DECK, AS PER PLAN (CONTINUED)

WELDING:

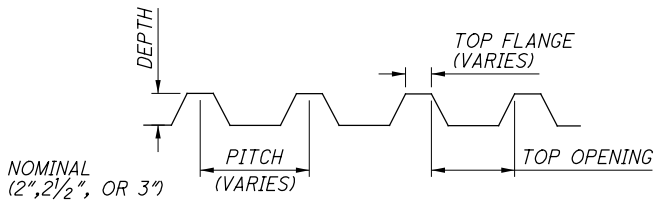
DO NOT WELD SIP FORM OR THEIR SUPPORTS TO THE STEEL BRIDGE MEMBERS. SIP SUPPORTS MAY BE WELDED TO ANCHORS CAST INTO PRECAST CONCRETE BRIDGE MEMBERS. PERFORM WELDING PER 513.21.

INSTALLATION LIMITATIONS:

- A: FIELD CUT SIP FORMS USING MECHANICAL CUTTING METHODS. THERMAL CUTTING IS NOT PERMITTED.
- B: PLACE FORMS ON FORM SUPPORTS. DO NOT INSTALL SIP FORMS DIRECTLY TO THE BRIDGE'S STRUCTURAL MEMBERS.
- C: ADJUST THE SCREED ELEVATIONS BY PRORATING THE CONCRETE DEAD LOAD DEFLECTION TO ACCOUNT FOR THE ADDITIONAL PERMANENT DEAD LOADS ASSOCIATED WITH CONCRETE FILLED STAY IN PLACE FORMS.
- D: SET THE HEIGHT OF THE FORM SUPPORTS TO DEVELOP THE ADJUSTED SCREED ELEVATIONS, DECK THICKNESS, AND PLAN PROFILE.
- E: PLACE SIP FORMS TO FORM SUPPORTS TO ACHIEVE MINIMUM BEARING LENGTH PER MANUFACTURES DESIGN.
- F: CONNECT SIP FORMS TO FORM SUPPORTS BEFORE USING THE SIP AS A WORKING SURFACE AND BEFORE THE END OF EACH WORK SHIFT.
- G: PROVIDE SAFETY STOPS TO ELIMINATE HAZARDS FROM SUDDEN UPLIFT AND LATERAL MOVEMENT. AFTER THE DECK CONCRETE MEETS THE LOADING REQUIREMENTS OF CMS 511.17, REMOVE THE VISIBLE PORTION OF ALL SAFETY STOPS.
- H: COATINGS DAMAGED BY MECHANICAL CUTTING OR FIELD WELDING NEED NOT BE REPAIRED UNLESS SPECIFIED BY THE SIP FORM MANUFACTURER.
- I: THE CONTRACTOR SHALL PROTECT INSTALLED SIP FORMS FROM ANY CLEANING SOLUTIONS, BLASTING, OR OTHER WORK OPERATIONS THAT MAY DAMAGE THE FORM COATING. FORMS THAT ARE DAMAGED FROM LACK OF PROTECTION SHALL BE REPAIRED OR REMOVED AS DIRECTED BY THE ENGINEER. IF DIRECTED TO REPAIR, THE DAMAGED AREAS SHALL BE METALIZED AS PER 516.03 AND SUPPLEMENTAL SPECIFICATION 845. ALL COST FOR THE REPAIR OR REMOVAL SHALL BE PAID BY THE CONTRACTOR.



STAY IN PLACE DECK ELEVATION
NTS



SECTION A-A
STAY IN PLACE FORM TYPICAL DETAIL
(OPTIONAL)
NTS

INSPECTIONS:

THE ENGINEER WILL CHECK SIP MATERIALS MEET DESIGN REQUIREMENTS AND EVALUATE INSTALLATION BASED ON CONSTRUCTION PLAN.

BASIS OF PAYMENT:

THE DEPARTMENT WILL NOT SEPARATELY PAY FOR SIP FORMS. THE COST OF THIS WORK IS INCLUDED FOR PAYMENT IN THE PRICE BID FOR THE ITEM FOR WHICH THE SIP FORMS ARE USED.

ITEM 513 STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN

ALL MATERIAL, LABOR, AND INCIDENTALS ASSOCIATED WITH INTERMEDIATE SCUPPER SUPPORTS SHALL BE INCLUDED WITH ABOVE ITEM 513 FOR PAYMENT.

ITEM 515 INTERMEDIATE DIAPHRAGM, AS PER PLAN

THE GALVANIZED STEEL OPTION FOR INTERMEDIATE DIAPHRAGMS SHALL BE USED. THE CONCRETE OPTION SHALL NOT BE USED.

ITEM 516 SPECIAL: MODULAR EXPANSION JOINT

ABUTMENT JOINTS SHALL BE WATSON BOWMAN ACME (WABO) MODULAR D-600, DS BROWN D-160, OR APPROVED ALTERNATE. THE MANUFACTURER SHALL SUBMIT DESIGN CALCULATIONS SHOWING THAT THE DEVICE CAN MEET THE IMPACT AND FATIGUE DESIGN REQUIREMENTS SET FORTH BY AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, SECTION 14.5.

A. DESCRIPTION:

FURNISH ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST AND INSTALL MODULAR EXPANSION JOINTS IN ACCORDANCE WITH THE PLANS AND THESE NOTES. ALL REQUIREMENTS OF 513, SF LEVEL FABRICATION APPLY, UNLESS MODIFIED BY THESE NOTES.

B. DESIGN:

- PREPARE AND CHECK THE DESIGN UNDER THE AUTHORITY OF AN OHIO REGISTERED PROFESSIONAL ENGINEER. THE REGISTERED ENGINEER SHALL SEAL, SIGN, AND DATE THE DESIGN CALCULATIONS AND SHOP DRAWINGS.
- INCLUDE DESIGN CALCULATIONS WITH THE CONTRACTOR'S SUBMISSION OF SHOP DRAWINGS PER 513.06.
- PROVIDE A DETAILED INSTALLATION PROCEDURE AND INCLUDE ANY SPECIFIC MANUFACTURER'S NOTES NECESSARY FOR COMPLETION OF THE WORK.
- DESIGN AND TEST THE MODULAR JOINT COMPONENTS, JOINT ARMOR AND ANCHORAGES ACCORDING TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 402 "FATIGUE DESIGN OF MODULAR BRIDGE EXPANSION JOINTS" APPENDIX A AND B.
- DESIGN TEMPORARY AND FIELD CONNECTIONS TO THE BRIDGE TO ACCOMMODATE ADJUSTMENTS FOR ROADWAY GEOMETRY AND VARYING TEMPERATURE.
- DESIGN FOR THE PLAN SPECIFIED MOVEMENT PER AASHTO LRFD 3.12.2 FOR A COLD CLIMATE (TEMPERATE RANGE IS FROM -30°F TO +120°F WITH BASE TEMPERATURE SET TO 60°F).

- SUPPLY SUPPORT BAR BEARINGS TO TRANSFER THE LOAD FROM THE SUPPORT BARS TO THE JOINT ARMOR.
- FOR DESIGN OF THE DECK JOINT AT ALL LIMIT STATES, THE DYNAMIC LOAD ALLOWANCE (IM) SHALL BE TAKEN AS 125% OF THE STATIC EFFECT OF EITHER THE DESIGN TRUCK OR THE DESIGN TANDEM.
- SUPPLY EQUALIZATION SPRINGS TO COUNTER THE COMPRESSION FORCES FROM THE SEALING ELEMENTS AND MAINTAIN EQUAL EXPANSION PROPERTIES FOR EACH SEALING ELEMENT ACROSS THE JOINT.
- SUPPLY CONTROL SPRINGS WHICH WORK LONGITUDINALLY TO MAINTAIN EQUAL DISTANT SPACING BETWEEN TRANSVERSE SEPARATION BEAMS.
- SUPPLY SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS TO LIMIT TOTAL HORIZONTAL MOVEMENT IN ANY INDIVIDUAL STRIP SEAL.
- SUPPLY A STRIP SEAL TYPE SEAL CONNECTED TO MATCHING RETAINERS CONNECTED TO THE JOINT ARMOR AND THE SEPARATION BEAMS. DO NOT EXCEED 3.15 INCHES OF TOTAL HORIZONTAL MOVEMENT IN ANY INDIVIDUAL STRIP SEAL.
- SUPPLY REMOVABLE AND REPLACEABLE NEOPRENE SEALS, SUPPORT BAR BEARINGS AND EQUALIZATION SPRINGS.
- SET SEALS AND RETAINERS 1/8" LOWER THAN THE ROADWAY SURFACE.
- DESIGN AND FABRICATE THE MODULAR JOINT AS A CONTINUOUS FULL LENGTH MEMBER WITHOUT FIELD SPLICES.

C. MATERIALS:

- SUPPLY STRUCTURAL STEEL MEETING ASTM A709 GRADE 50. SUPPLY SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS, EDGE BEAMS AND JOINT ARMOR MEETING CHARPY V NOTCH IMPACT REQUIREMENTS PER ASTM A709 TABLE S1.2 ZONE 2 TEMPERATURE RANGE. SUPPLY TUBE SECTIONS MEETING ASTM A501 OR A500 GRADE B.
- SUPPLY ASTM A240, TYPE 304 STAINLESS STEEL, 13 GAGE MINIMUM THICKNESSES WITH NO. 8 FINISH FOR SLIDING SURFACES IN CONTACT WITH PTFE.
- SUPPLY TESTING AND REPORTS BY THE MANUFACTURER OR AN INDEPENDENT TESTING LABORATORY FOR ALL ELASTOMERIC, PTFE URETHANE AND PREFORMED FABRIC MATERIALS USED IN ALL BEARINGS AND SPRINGS. THE SUBMISSION OF MATERIAL CERTIFICATION AND TESTING DATA SHALL BE PER 514.08. THESE MATERIALS SHALL BE TESTED ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 402 APPENDIX A "A GUIDELINE FOR DURABILITY (NCHRP) REPORT 402 APPENDIX A "A GUIDELINE FOR DURABILITY TESTING OF SPRINGS AND BEARINGS FOR MBEJ."
- SUPPLY STRIP SEALS CONFORMING TO ASTM D5973. SUBMIT CERTIFIED TEST DATA PER 513.08 FORM THE MANUFACTURER OR AN ACCREDITED LABORATORY. D5973 SECTION 8, LOT SIZE IS ONE SAMPLE PER JOINT. A SAMPLE IS A PIECE 4 FEET LONG WITH ALL MANUFACTURES' MARKINGS. THE SEAL AND RETAINER ARE AN INTEGRAL SYSTEM SUPPLIED BY ONE MANUFACTURER.

- SEAL RETAINERS: EXTRUDE, HOT ROLL OR MACHINE, STEEL RETAINERS INTO A SOLID SHAPE. RETAINERS MANUFACTURED FROM BENT PLATE OR BUILT UP PIECES ARE NOT ACCEPT-ABLE. THE INTERNAL DIMENSION OF THE RETAINER SHALL BE SPECIFIED BY THE MANUFACTURER TO ACHIEVE POSITIVE SEAL ANCHORAGE.
- SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS SHALL BE A SOLID, NON WELDED MACHINED OR EXTRUDED STEEL SECTION.
- LUBRICANT – ADHESIVE, ONE PART MOISTURE CURING POLYURETHANE COMPOUND MEETING THE REQUIREMENTS OF ASTM D4070 AND AS SPECIFIED BY THE SEAL MANUFACTURER.
- HARDWARE SHALL BE ASTM A5325 TYPE 1, GALVANIZED, OR A449 GALVANIZED.

D. FABRICATION:

- THE MODULAR JOINTS SHALL BE FABRICATED ACCORDING TO CMS 513.
- SHOP ASSEMBLE THE MODULAR JOINT WITH ALL COMPONENTS EXCEPT, NEOPRENE SEALS, PER 513.24 EXCEPT THAT FULL ASSEMBLY IS REQUIRED WITH PHASED CONSTRUCTION.
- JOINTS IN STRIP SEALS: NO JOINTS ARE ALLOWED.
- JOINTS IN RETAINERS: WELDS ARE WATER TIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. MAKE SPLICES ONLY IN COMPRESSION ZONES OF THE JOINT ARMOR. GRIND FLUSH ALL WELDS IN CONTACT WITH THE SEAL AND JOINT ARMOR. DO NOT USE SHORT PIECES OF RETAINERS LESS THAN 6'-0" LONG, UNLESS REQUIRED. AT CURBS OR SIDEWALKS. DO NOT PROVIDE ADDITIONAL SPLICES IN RETAINERS AT CURB OR SIDEWALK SECTIONS OTHER THAN REQUIRED FOR GEOMETRY.
- SHOP OR FIELD WELDS OR CENTER BEAMS AND JOINT ARMOR, SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS AND BE 100% ULTRA-SONICALLY TESTED PER AASHTO/AWS BRIDGE WELDING CODE, WITH TENSION ACCEPTANCE CRITERIA, WITNESSED BY THE DEPARTMENT.
- CODE, WITH TENSION ACCEPTANCE CRITERIA, WITNESSED BY THE DEPARTMENT. SUPPORT BAR CONNECTIONS SHALL BE COMPLETE PENETRATION WELDS GROUND TO PROVIDE SMOOTH TRANSITIONS AND BE 100% ULTRASONICALLY TESTED PER AASHTO/AWS BRIDGE WELDING CODE, WITH TENSION ACCEPTANCE CRITERIA, WITNESSED BY THE DEPARTMENT.
- TEMPORARY SUPPORTS: FABRICATOR DESIGNED AND INSTALLED SUPPORTS ARE REQUIRED TO SUPPORT SHIPPING, ERECTION AND CONSTRUCTION FORCES WITHOUT DAMAGE TO THE STEEL ARMOR OR COATINGS. THESE SUPPORTS SHALL BE ADJUSTABLE FOR FIELD TEMPERATURE SETTING.

GENERAL NOTES (2 OF 3)

HEN-INDUSTRIAL DRIVE-0000
INDUSTRIAL DRIVE OVER MAUMEE RIVER

HEN-IND-00.00

PID No. 22984

5 / 65

89
180



DESIGNED	DRAWN	REVIEWED	DATE
DRH	RJS	TLR	05/2015
CHECKED	REVISED	STRUCTURE FILE NUMBER	TBD
SCT			

ITEM 516 SPECIAL: MODULAR EXPANSION JOINT (CONTINUED)

E. COATING:

- GALVANIZE OR METALIZE ALL STEEL SURFACES AND COMPONENTS, EXCEPT AT STAINLESS STEEL AND PTFE SLIDING SURFACES. THESE COATING MAY BE MIXED ON ONE ASSEMBLY, IF ALL SIMILAR COMPONENTS OF THE ASSEMBLY HAVE THE SAME COATING TYPE.
- PROVIDE A GALVANIZED COATING PER ASTM A123, WITH A MINIMUM THICKNESS OF 4 MILS. CLEAN EXCESSIVE GALVANIZING AS NECESSARY TO ACHIEVE MECHANICAL MOVEMENT AND SEAL INSTALLATION.
- PROVIDE A METALIZED COATING PER SOCIETY FOR PROTECTIVE COATINGS (SSPC) SPECIFICATION SSPC-CS23.00 (MARCH 17, 2003) FOR THERMAL SPRAY METALLIC COATINGS. THE COATING SHALL BE A MINIMUM OF 8 MILS THICK. THE METALIZING WIRE SHALL BE 100% ZINC. AREAS OF STRUCTURAL STEEL THAT ARE IN CONTACT WITH CAST-IN-PLACE CONCRETE SHALL HAVE AN ADDITIONAL COATING. THE COATING SHALL BE THE EPOXY INTERMEDIATE COAT SPECIFIED IN CMS 514. THE COATING THICKNESS WILL COVER ALL PEAKS, VALLEYS AND SURFACE ROUGHNESS ATTRIBUTED TO METALIZING.
- COATING REPAIRS: DAMAGED COATINGS SHALL BE REPAIRED BY ASTM A780, ANNEX "A1. REPAIR USING ZINC BASED ALLOYS". THE PROCEDURE SHALL BE AS FOLLOWS: REMOVE SURFACE CONTAMINATES, PREHEAT TO 600°F, AND APPLY ZINC COATING BY RUBBING WITH A PURE ZINC STICK OR SPRINKLING ZINC POWDER ON THE PREHEATED SURFACE, TO ACHIEVE A MINIMUM COATING. THICKNESS OF 6 MILS.
- THE METALIZED OR GALVANIZED COATINGS SHOULD NOT BE FIELD PAINTED. DAMAGED AREAS SHALL BE METALIZED AS PER 516.03 AND SUPPLEMENTAL SPECIFICATION 845.
- PRIOR TO SHIPPING, RETAINER GROOVES SHALL BE PROTECTED FROM CONSTRUCTION DEBRIS BY THE INSTALLATION OF BACKER RODS OR OTHER EFFECTIVE MASKING TECHNIQUES.

F. INSTALLATION:

- A JOINT MANUFACTURER'S TECHNICAL REPRESENTATIVE TO PHYSICALLY OVERSEE THE FABRICATION, INSTALLATION, ADJUSTMENT AND TESTING DURING ALL OPERATIONS. WHERE SPECIAL INSTRUCTIONS ARE NOT CONTAINED HEREIN OR ELSEWHERE IN THESE NOTES, DIRECTION FOR THE INSTALLATION SHALL BE ACCORDING TO THE RECOMMENDATIONS OF THE TECHNICAL REPRESENTATIVE.
- COORDINATE AND SCHEDULE THE TECHNICAL REPRESENTATIVE.
- INSTALL THE SUPERSTRUCTURE SUPPORTING UNITS BEFORE INSTALLING THE MODULAR JOINT. POSITION THE JOINT TO MATCH ROADWAY GEOMETRY SUPERSTRUCTURE CONNECTIONS AND TEMPERATURE OPENING. TAKE CARE TO MAINTAIN EXACT ALIGNMENT OF ADJACENT ENDS OF THE ARMOR AND SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS FOR FIELD WELDED UNITS. PROVIDE TEMPORARY SUPPORTS AS DIRECTED BY THE MANUFACTURER TO MAINTAIN THE PROPER POSITIONING. FOR PHASED CONSTRUCTION, THE CONTRACTOR'S METHODS FOR INSTALLATION AND TEMPORARY SUPPORTS SHALL ACHIEVE SEPARATION OF THE PHASES AND UNRESTRICTED TEMPERATURE MOVEMENT.

- PERFORM CONCRETE PLACEMENT USING VIBRATION AND HAND WORK AS NECESSARY TO ACHIEVE CONSOLIDATION AND ELIMINATE AIR VOIDS. THE MAXIMUM AGGREGATE SIZE SHALL BE #8 FOR CONCRETE BLOCKOUT AREAS.
- PLACE THE DECK CONCRETE FIRST. CHECK THE ABUTMENT OR ADJACENT SPAN SIDE OF THE MODULAR JOINT FOR ALIGNMENT AND TEMPERATURE ADJUSTMENT. THE TEMPERATURE SHALL BE MEASURED AT THE UNDERSIDE OF THE CONCRETE DECK AT EACH END AND MID-SPAN TO ACHIEVE THE AVERAGE SUPERSTRUCTURE TEMPERATURE. PLACE THE BACKWALL OR ADJACENT SPAN CONCRETE SECOND. THE MANUFACTURER'S REPRESENTATIVE SHALL CHECK THAT TEMPERATURE MOVEMENT HAS NOT CAUSED ANY DAMAGE TO THE BOND BETWEEN THE JOINT AND THE CONCRETE.
- EXAMINE SEAL RETAINERS FOR SOIL OR DEFECTS THAT CAN DAMAGE THE SEAL. REPAIR ANY DEFECTS AS DIRECTED BY THE MANUFACTURER'S REPRESENTATIVE.
- SOLVENT CLEAN THE NEOPRENE SEAL ELEMENTS AND THE RETAINER GROOVES TO REMOVE OIL, GREASE OR OTHER SOIL IMMEDIATELY PRIOR TO INSTALLING THE SEALS. INSTALL SEALS USING PROCEDURES AND ADHESIVE SPECIFIED BY THE JOINT MANUFACTURER. KEEP THE BONDING SURFACES CLEAN, DRY AND WARMER THAN 45°F.
- TEST THE INSTALLED MODULAR JOINT FOR LEAKS. FLOOD THE TOTAL EXPANSION JOINT LENGTH WITH WATER FOR A PERIOD OF NOT LESS THAN ONE HOUR. COVER THE ENTIRE JOINT SYSTEM BY EITHER PONDING OR FLOWING WATER. LOCATE ANY POINTS OR LEAKAGE AND TAKE ANY AND ALL MEASURES NECESSARY TO STOP THE LEAKAGE. PERFORM THIS WORK AT THE CONTRACTOR'S EXPENSE. PERFORM A SECOND WATER TEST AFTER ALL REPAIRS HAVE BEEN MADE.

ITEM 524 DRILLED SHAFTS, AS PER PLAN

DRILLED SHAFTS:

THE MAXIMUM FACTORED LOAD TO BE SUPPORTED BY EACH DRILLED SHAFT IS 1367 KIPS AT PIERS 1 - 6 AND 1407 KIPS AT PIER 7. THIS LOAD IS RESISTED BY SIDE RESISTANCE WITHIN A PORTION OF THE BEDROCK SOCKET AND ALSO BY TIP RESISTANCE. THE FACTORED UNIT RESISTANCE DEVELOPED BY SIDE RESISTANCE IS 3.0 KSF, ASSUMED TO ACT ALONG THE BOTTOM 6 FEET OF THE BEDROCK SOCKET FOR THE PIERS. THE FACTORED UNIT RESISTANCE PROVIDED BY THE DRILLED SHAFT TIP IS 45.8 KSF.

FOR HOLE EXCAVATION SEE CMS 524.04, CASE D PERMANENT CASING CONSTRUCTION METHOD SHALL BE USED TO CONSTRUCT PIERS 1 THRU 7.

SUPPLY ALL REQUIRED EQUIPMENT AND PERSONNEL NECESSARY TO PERFORM VIDEO INSPECTION OF THE DRILLED SHAFT EXCAVATION, INCLUDING THE INSPECTIONS PERFORMED UNDERWATER OR WITHIN SLURRY. PROVIDE EQUIPMENT CAPABLE OF THE FOLLOWING: MEASURING THE DEPTH OF LOOSE OR DISTURBED MATERIAL AT THE BOTTOM OF THE SHAFT, AND RECORDING COLOR VIDEO IMAGES OF THE INSPECTION TO A DVD OR VIDEOTAPE. FURNISH ALL NECESSARY SUPPLIES, FUEL AND ELECTRIC SERVICE TO OPERATE THE EQUIPMENT. PERFORM THE VIDEO INSPECTION IMMEDIATELY BEFORE POURING THE CONCRETE, AND IN THE PRESENCE OF THE ENGINEER OR INSPECTOR. SUBMIT RECORDINGS OF ALL VIDEO INSPECTIONS TO THE ENGINEER AFTER COMPLETING ALL VIDEO INSPECTIONS, OR WHEN REQUESTED BY THE ENGINEER.

PAYMENT IS FULL COMPENSATION FOR SUPPLYING THE REQUIRED EQUIPMENT AND PERSONNEL, AND FOR PERFORMING THE VIDEO INSPECTION OF THE DRILLED SHAFT EXCAVATIONS. THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE LUMP SUM CONTRACT PRICE FOR ITEM 524 DRILLED SHAFT, 66" DIAMETER, INTO BEDROCK, AS PER PLAN

ITEM 524 DRILLED SHAFTS, MISC: DRILLED SHAFT OSTERBERG LOAD TEST AS PER PLAN

- THE LOAD TEST ON THE TEST SHAFT SHALL BE PERFORMED PRIOR TO BEGINNING ANY WORK ON THE PRODUCTION SHAFTS.
- THE CONTRACTOR SHALL FURNISH, INSTALL, INSTRUMENT, AND LOAD TEST THE TEST PILE IN ACCORDANCE WITH THE PROJECT CONTRACT PLANS, PER ITEM 524 DRILLED SHAFTS,MISC: DRILLED SHAFT OSTERBERG LOAD TEST, AS PER PLAN, THE PROJECT SPECIFICATIONS, AND THE PROJECT SPECIFICATIONS FOR OSTERBERG CELL LOAD TESTING OF DEEP FOUNDATIONS.
- SOME DETAILS OF OSTERBERG (O-CELL) CONSTRUCTION ARE SUBJECT TO CHANGE BY LOADTEST, INC WITH APPROVAL OF THE GEOTECHNICAL ENGINEER.
- THE SIZE AND OR LOCATION OF ALL PLATE CUTS ARE TO BE MADE AT THE DIRECTION OF LOADTEST, INC. ADDITIONAL CUTOUTS MAY BE REQUIRED. DETAILS AND DIMENSIONS ARE FOR GENERAL INFORMATION ONLY. ACTUAL DIMENSIONS ARE TO BE DETERMINED BT LOADTEST, INC. ADDITIONAL PLATES MAY BE REQUIRED AT THE DIRECTION OF LOADTEST, INC.
- STRAIN GAGES, TELLTALES, AND LVWDTs ARE REQUIRED TO MONITOR THE PERFORMANCE OF THE TEST SHAFT. STRAIN GAGE LOCATIONS MAY BE CHANGED AFTER EXCAVATION OF THE TEST SHAFT WITH THE JOINT APPROVAL OF THE GEOTECHNICAL ENGINEER AND LOADTEST, INC.
- PUMP CONCRETE IN A TREMIE PIPE NO SMALLER THAN 8.00 INCHES DIAMETER THAT ALLOWS THE TREMIE PIPE TO PASS THRU THE O-CELL BEARING PLATES TO THE BOTTOM OF THE TEST SHAFT.
- THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING, DETAILING, AND CONSTRUCTING WORK PLATFORMS TO ALLOW ACCESS TO THE TOP OF THE TEST PIER AND TO SUPPORT SURVEY INSTRUMENTS. COORDINATE ALL WORK WITH LOADTEST, INC. ON THE DESIGN AND DETAILING OF THE WORK PLATFORM AND SURVEY PLATFORM.
- THE TESTING SHALL BE PERFORMED AS OUTLINED IN THE PROJECT SPECIFICATIONS FOR OSTERBERG CELL LOAD TESTING OF DEEP FOUNDATIONS, AS DESCRIBED ON THE CONTRACT PLANS, AND AS OUTLINED IN SECTION 17.2.2.2 OF PUBLICATION NO. FHWA-NHI-10-016 (FHWA GEC 010, MAY 2010).
- THE TEST SHAFT WILL BE CONSIDERED TO HAVE PERFORMED SATISFACTORILY IF THE TOTAL (NOMINAL) END BEARING AND SIDE RESISTANCE OF THE DRILLED SHAFT IS EQUAL TO OR GREATER THAN 2,090 KIPS. THE CONTRACTOR SHALL PROVIDE THE RESULTS OF THE TESTS TO THE DESIGN ENGINEER.
- UPON COMPLETION OF THE TEST SHAFT AND UPON ACCEPTANCE OF THE TEST SHAFT BY THE ENGINEER, THE CONTRACTOR SHALL REMOVE THE TEST SHAFT TO THE LEVEL OF THE BOTTOM OF CASING OR BOTTOM OF ROCK SOCKET UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ABBREVIATIONS:

ABUT.	-	ABUTMENT
APPR.	-	APPROACH
APPROX.	-	APPROXIMATELY
BRG	-	BEARING
BOT.	-	BOTTOM
BTWN.	-	BETWEEN
C/C	-	CENTER TO CENTER
CJ	-	CONSTRUCTION JOINT
CLR.	-	CLEAR
CNTRL.	-	CONTROL
CONST.	-	CONSTRUCTION
DIA.	-	DIAMETER
DWG.	-	DRAWING
EF	-	EACH FACE
EL.	-	ELEVATION
EQ.	-	EQUAL
EXP.	-	EXPANSION
FA	-	FORWARD ABUTMENT
FF	-	FAR FACE
FWD.	-	FORWARD
INV.	-	INVERT
JT.	-	JOINT(S)
LT.	-	LEFT
LEN.	-	LENGTH
MAX.	-	MAXIMUM
MIN.	-	MINIMUM
NF	-	NEAR FACE
NO.	-	NUMBER
N.P.C.P.P.	-	NON-PERFORATED CORRUGATED PLASTIC PIPE
O/O	-	OUT TO OUT
P.C.P.P.	-	PERFORATED CORRUGATED PLASTIC PIPE
P.E.J.F.	-	PREFORMED EXPANSION JOINT FILLER
PG	-	PROFILE GRADE
PROP.	-	PROPOSED
RA	-	REAR ABUTMENT
RT.	-	RIGHT
SER	-	SERIES
SHLDR.	-	SHOULDER
SPA.	-	SPACE OR SPACES
STA.	-	STATION
STD.	-	STANDARD
STR	-	STRAIGHT
T	-	TOP
TEMP.	-	TEMPORARY
THK.	-	THICK
T.O.S.	-	TOP OF SLOPE
T/T	-	TOE TO TOE
TYP.	-	TYPICAL
U.N.O.	-	UNLESS NOTED OTHERWISE
VAR.	-	VARIES

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ESTIMATED QUANTITIES					CALCULATED: RJS	DATE: 5-13-15	CHECKED: DRH			DATE: 5-15-15	
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION		ABUT.	PIERS	SUPER.	GEN.	SHEET #	
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING							
503	21301	LUMP		UNCLASSIFIED EXCAVATION, AS PER PLAN						4	
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION							
507	00200	1630	FT	STEEL PILES HP12X53, FURNISHED	1630						
507	00250	1360	FT	STEEL PILES HP12X53, DRIVEN	1360						
509	10001	556576	POUND	EPOXY COATED REINFORCING STEEL, AS PER PLAN	XXXX	XXXX	XXXX			4	
511	21543	1060	CU YD	CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE, AS PER PLAN (DECK)				1060		4,5	
511	33418	93	CU YD	CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE (DIAPHRAGMS)				93			
511	34450	152	CU YD	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)				152			
511	41013	499	CU YD	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS, AS PER PLAN		499				21	
511	43512	409	CU YD	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING	409						
511	51512	205	CU YD	CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK				192	13		
512	10100	5528	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	243			5285			
512	33000	1	SQ YD	TYPE 2 WATERPROOFING				1			
513	10201	9389	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN				9389		5	
515	15130	32	EACH	DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF72-49				32			
515	20001	72	EACH	INTERMEDIATE DIAPHRAGMS, AS PER PLAN				72			
SPECIAL	51612400	78	FT	MODULAR EXPANSION JOINT				78		5,6	
516	13600	115	SQ FT	1" PREFORMED EXPANSION JOINT FILLER				115			
516	13800	126	SQ FT	1½" PREFORMED EXPANSION JOINT FILLER				126			
516	44100	52	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (14"x22"x2.36") AND LOAD PLATE (15"x41"x2") (NEOPRENE)		52					
516	44100	4	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (14"x22"x2.36") AND LOAD PLATE (15"x41"x2.1875") (NEOPRENE)	4						
516	44200	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (14.5"x25"x3.39") AND LOAD PLATE (15.5"x41"x2") (NEOPRENE)	8						
517	75120	1008	FT	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)				1008			
518	12001	8	EACH	SCUPPERS INCLUDING SUPPORTS, AS PER PLAN				8		59	
518	21200	189	CU YD	POROUS BACKFILL WITH FILTER FABRIC		189					
518	40000	137	FT	6" PERFORATED CORRUGATED PLASTIC PIPE		137					
518	40010	56	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS		56					
518	43300	25	FT	6" PIPE DOWNSPOUT, INCLUDING SPECIALS				25			
							104				
524	94947	104	FT	DRILLED SHAFTS, 72" DIAMETER, ABOVE BEDROCK, AS PER PLAN		231				6	
524	94935	231	FT	DRILLED SHAFTS, 66" DIAMETER, INTO BEDROCK, AS PER PLAN						6	
524	E95100	1	EA	DRILLED SHAFTS, MISC: DRILLED SHAFT OSTERBERG LOAD TEST, AS PER PLAN					1		
										57,58	
526	30001	265	SQ YD	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17"), AS PER PLAN					265		
526	90010	81	FT	TYPE A INSTALLATION					81		
611	04600	784	FT	12" CONDUIT, TYPE C, 707.45				784			
846	00100	81	FT	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM					81		

1800 INDIAN WOOD CIRCLE
MAUMEE, OHIO 43537

Mannik

Smith

GROUP

DATE
05/2015

REVIEWED
TLR

DRAWN
RJS

DESIGNED
RJS

FILE NUMBER
TBD

STRUCTURE
TBD

REVISED

CHECKED
SCT

ESTIMATED QUANTITIES

HEN-INDUSTRIAL DRIVE-0000

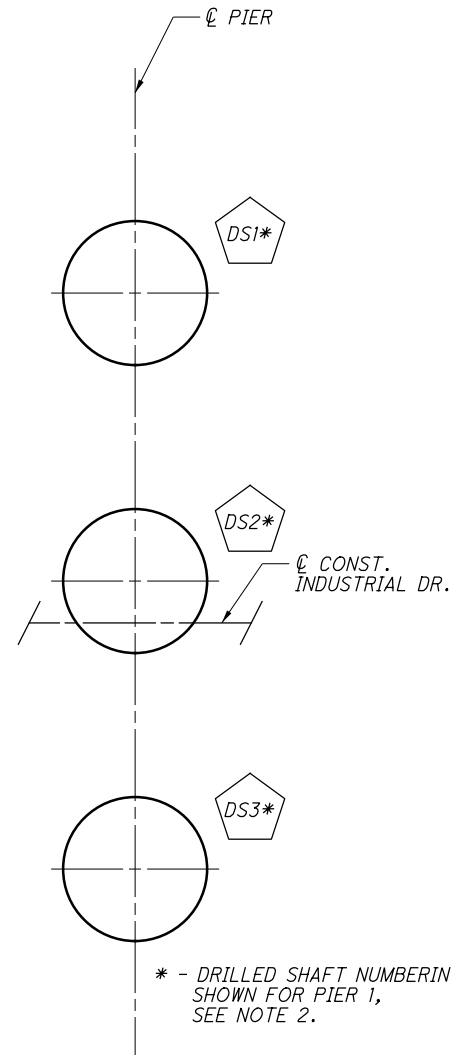
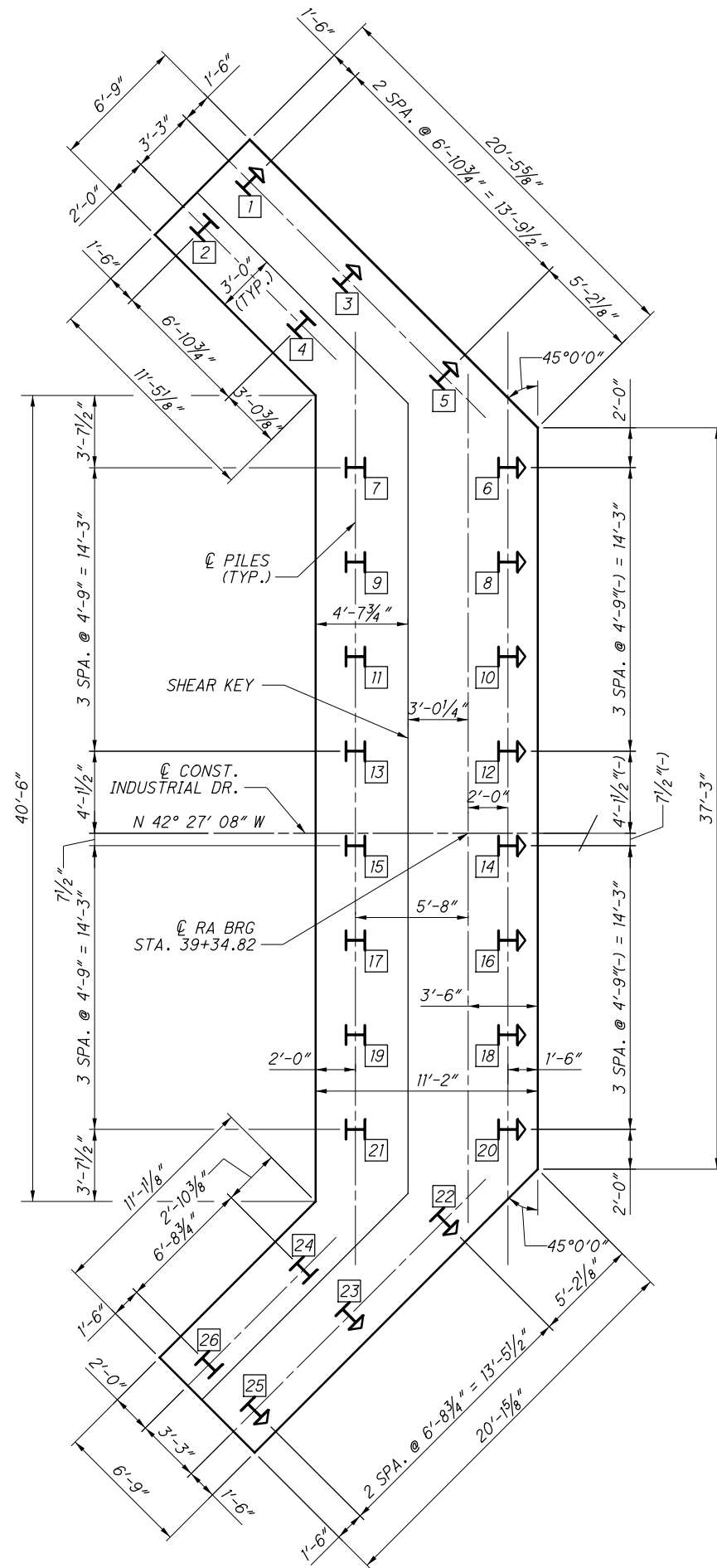
INDUSTRIAL DRIVE OVER MAUMEE RIVER

HEN - IND - 00.00

PID No. 22984

91 / 180

7 / 65




NOTES:

1. FOR PILE AND DRILLED SHAFT CAPACITY,
SEE SHEETS 4/65 AND 6/65
2. FOR DRILLED SHAFT NUMBERING
AND LOCATIONS,
SEE SHEETS 9-10/65

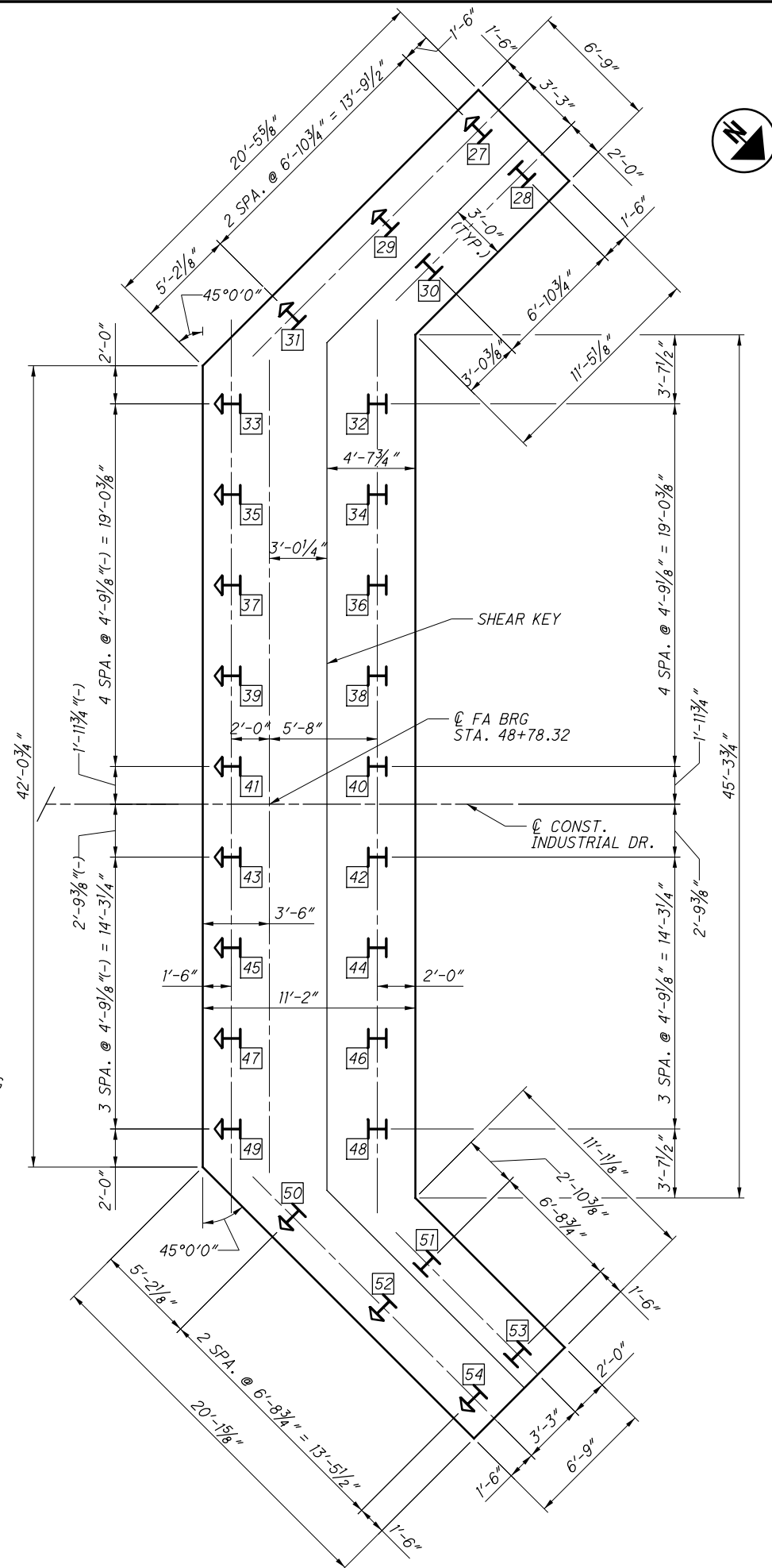
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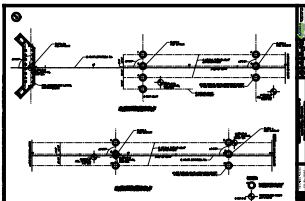
- PILE NUMBER

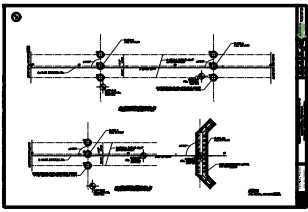
 *DS1** - DRILLED SHAFT NUMBER

 - HP12x53 DRIVEN AT 3:1
BATTER IN DIRECTION SHOWN

I - HP12x53 STRAIGHT







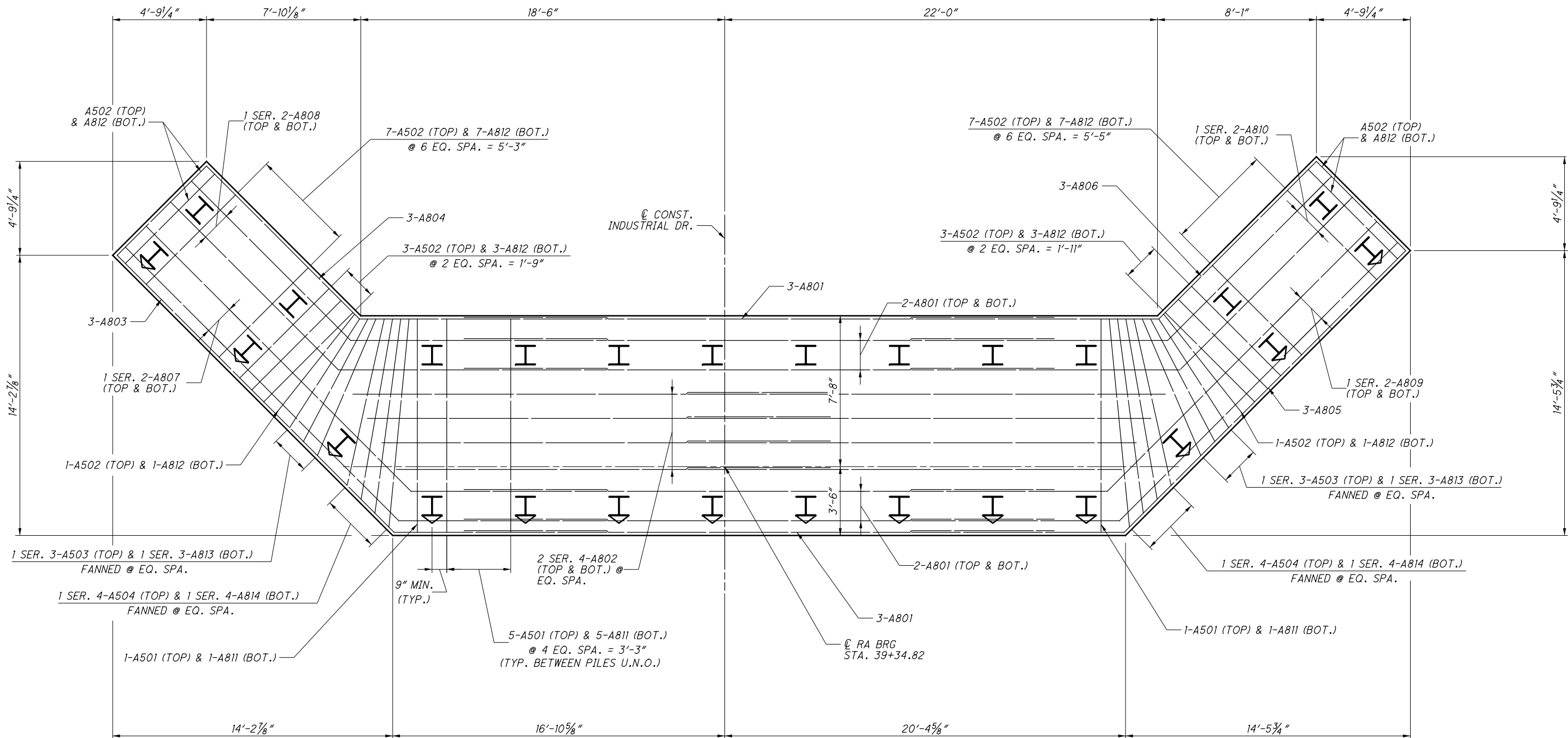


**ABUTMENT REINFORCING
REQUIRED LAP LENGTHS**

- LEGEND:**

- NOTES:**

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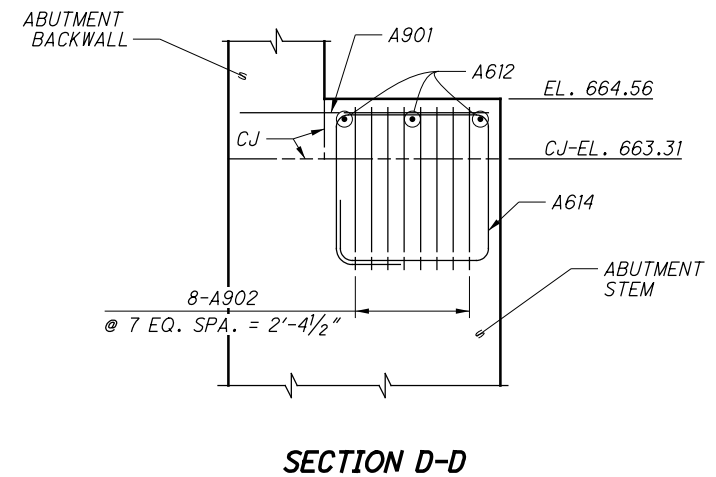
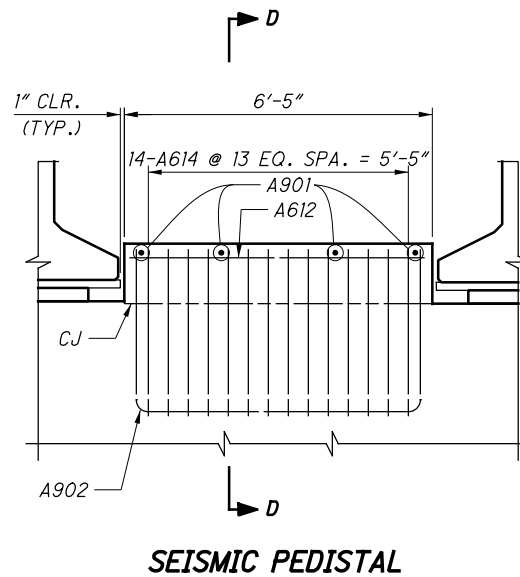
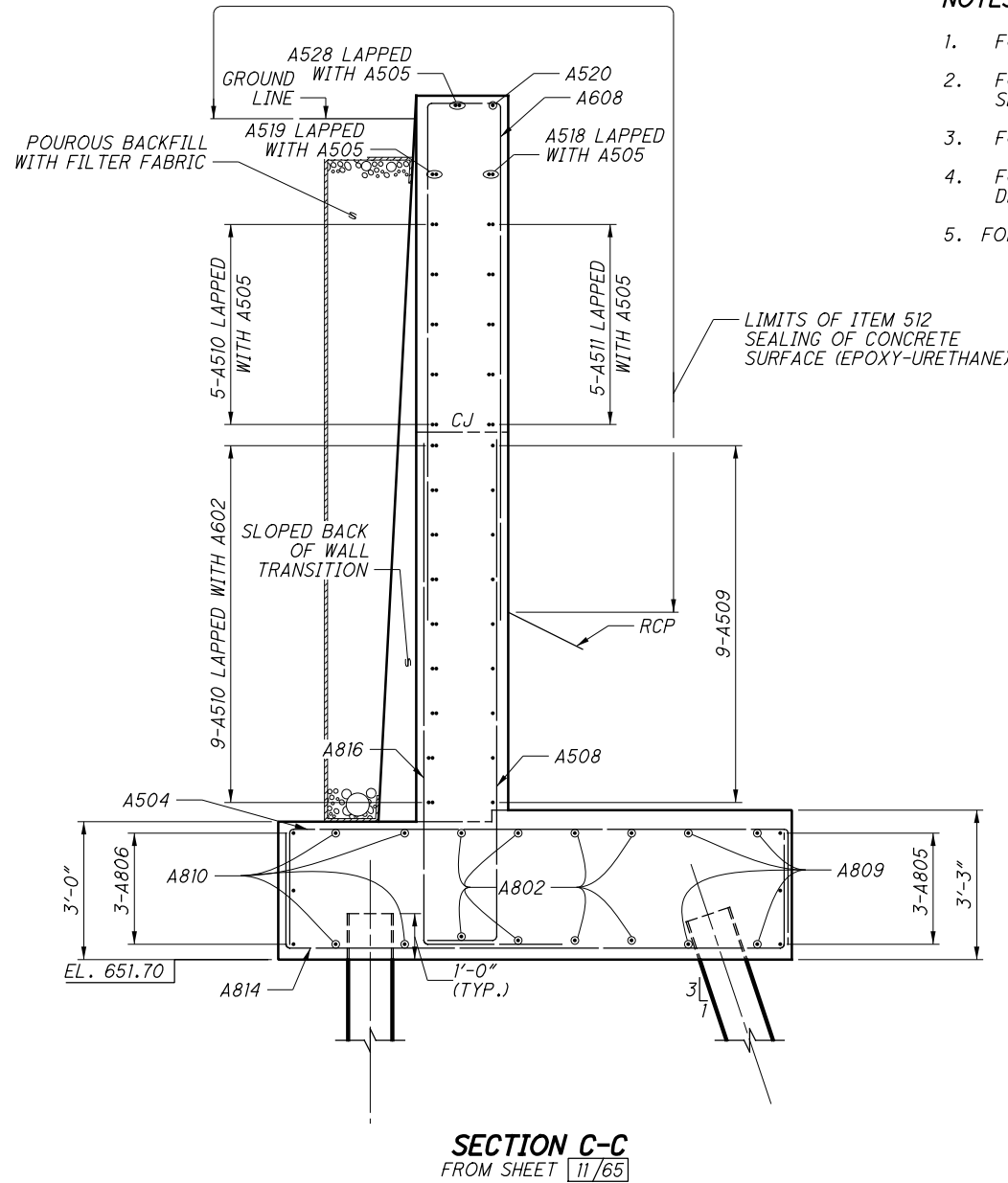
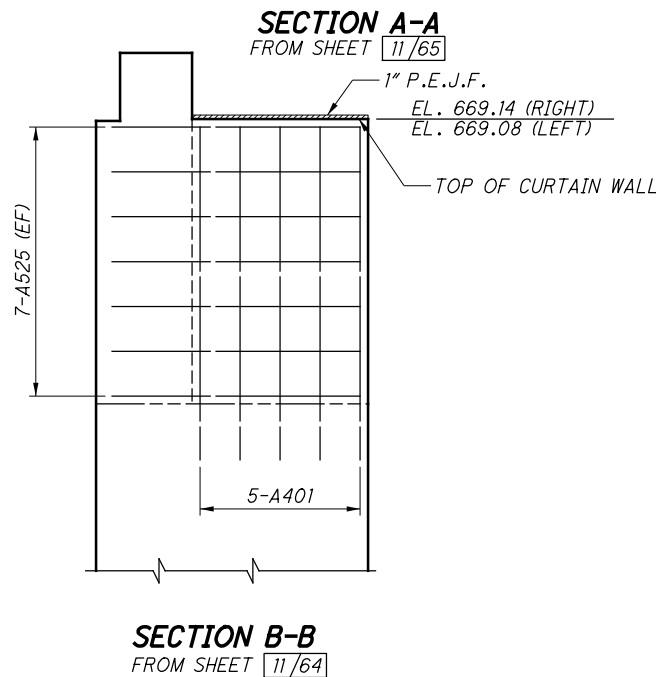
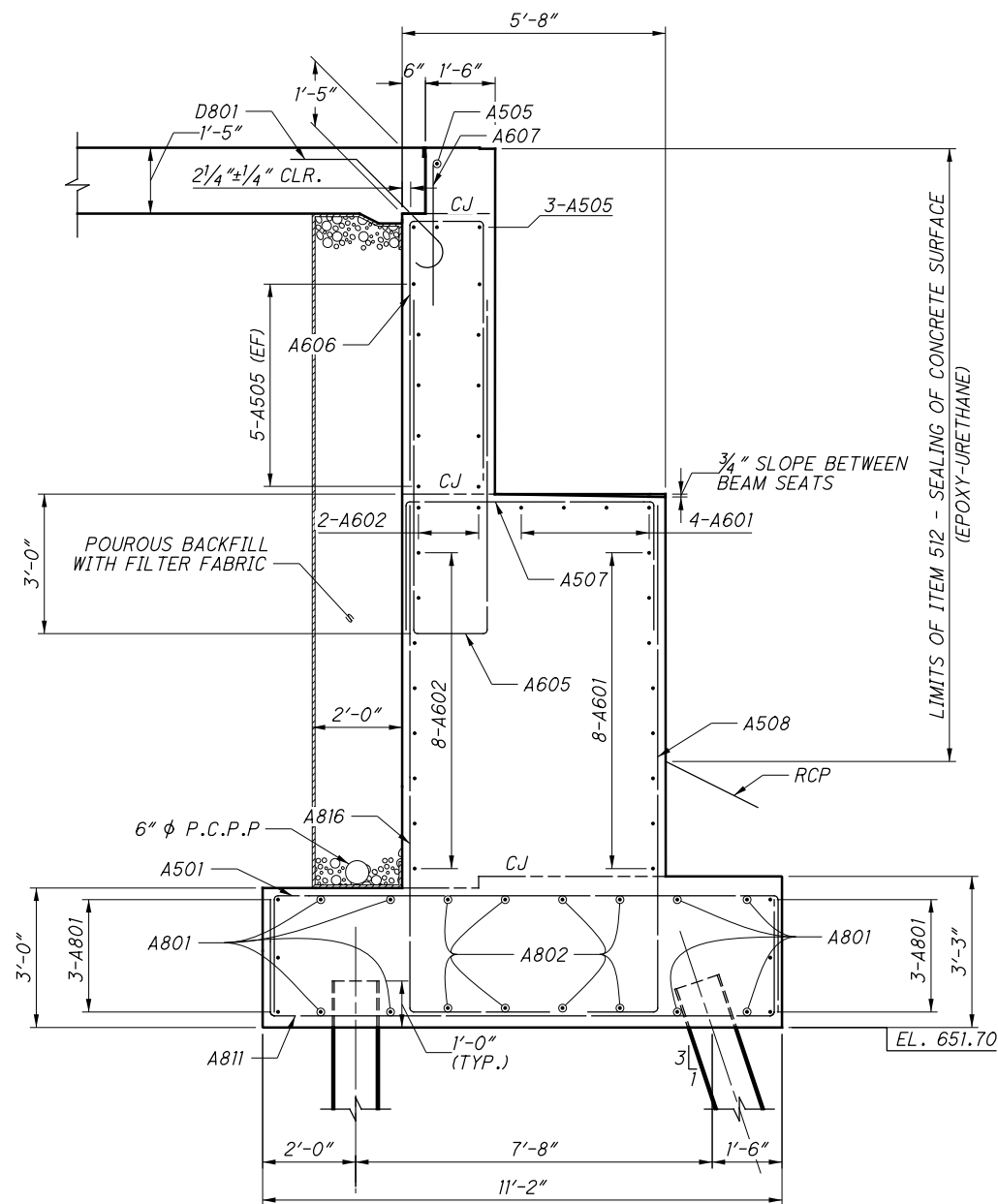
NOTES:

1. FOR ABUTMENT PLAN AND ELEVATION, SEE SHEET **11/65**
2. FOR PILE LAYOUT, SEE SHEET **8/65**

ABUTMENT REINFORCING REQUIRED LAP LENGTHS	
HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.

REAR ABUTMENT FOOTING REINFORCING PLAN





NOTES:

1. FOR WINGWALL DETAILS, SEE SHEET 14-15/65
2. FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEET 36/65
3. FOR PILE LAYOUT, SEE SHEET 8/65
4. FOR MODULAR EXPANSION JOINT (NOT SHOWN) DETAILS, SEE SHEETS 55-57/65
5. FOR RAILING DETAILS, SEE SHEETS 50-53/65

ABUTMENT REINFORCING REQUIRED LAP LENGTHS	
HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.



OUTLET PAID FOR WITH ITEM 518:
6" NON-PERFORATED CORRUGATED PLASTIC PIPE

▽ - INDICATES FANNED BAR
SEE SHEET 12/65 FOR DETAILS

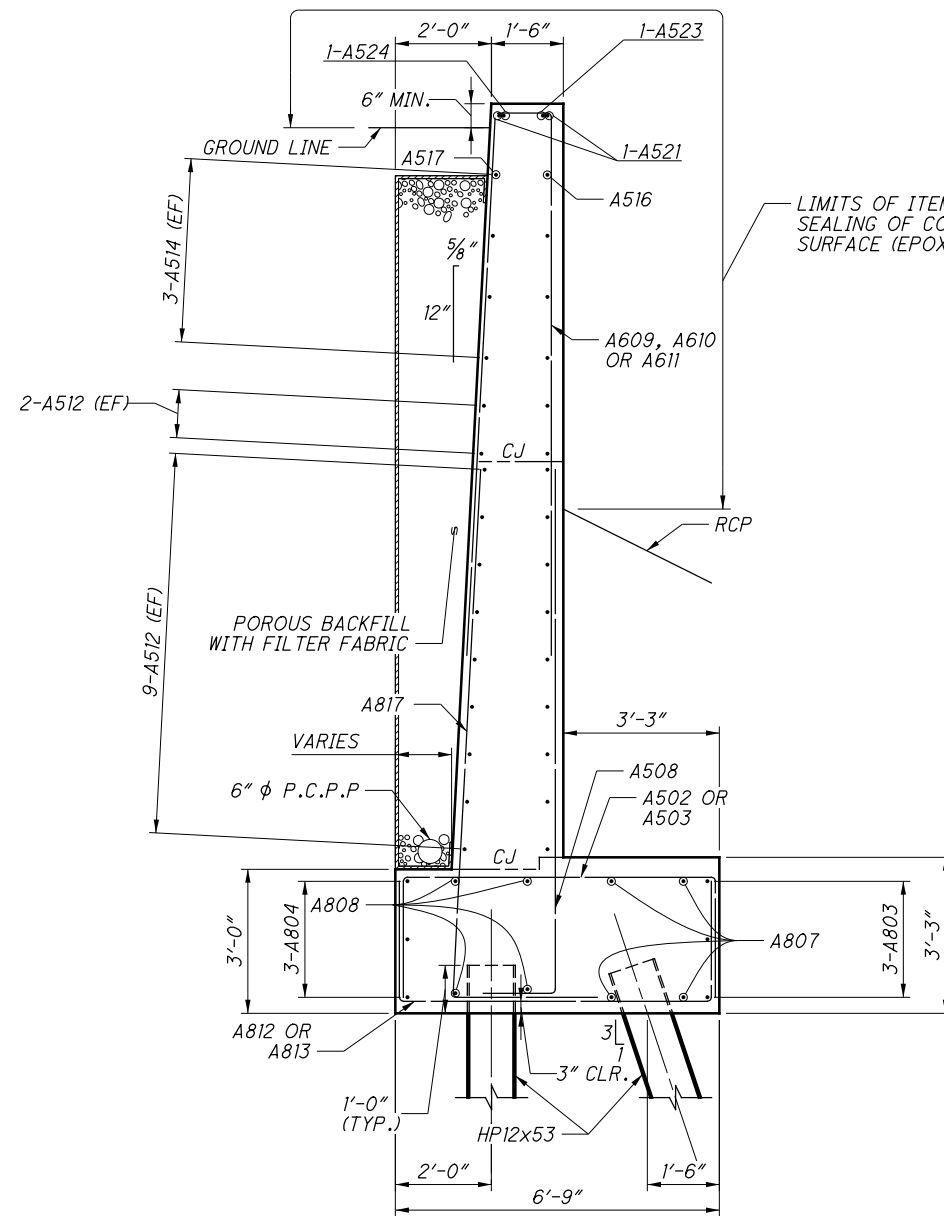
◇ - INDICATES POSSIBLE NECESSITY
FOR FIELD BEND TO MATCH
BATTERED BACK FACE

ABUTMENT REINFORCING REQUIRED LAP LENGTHS	
HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.

NOTES:

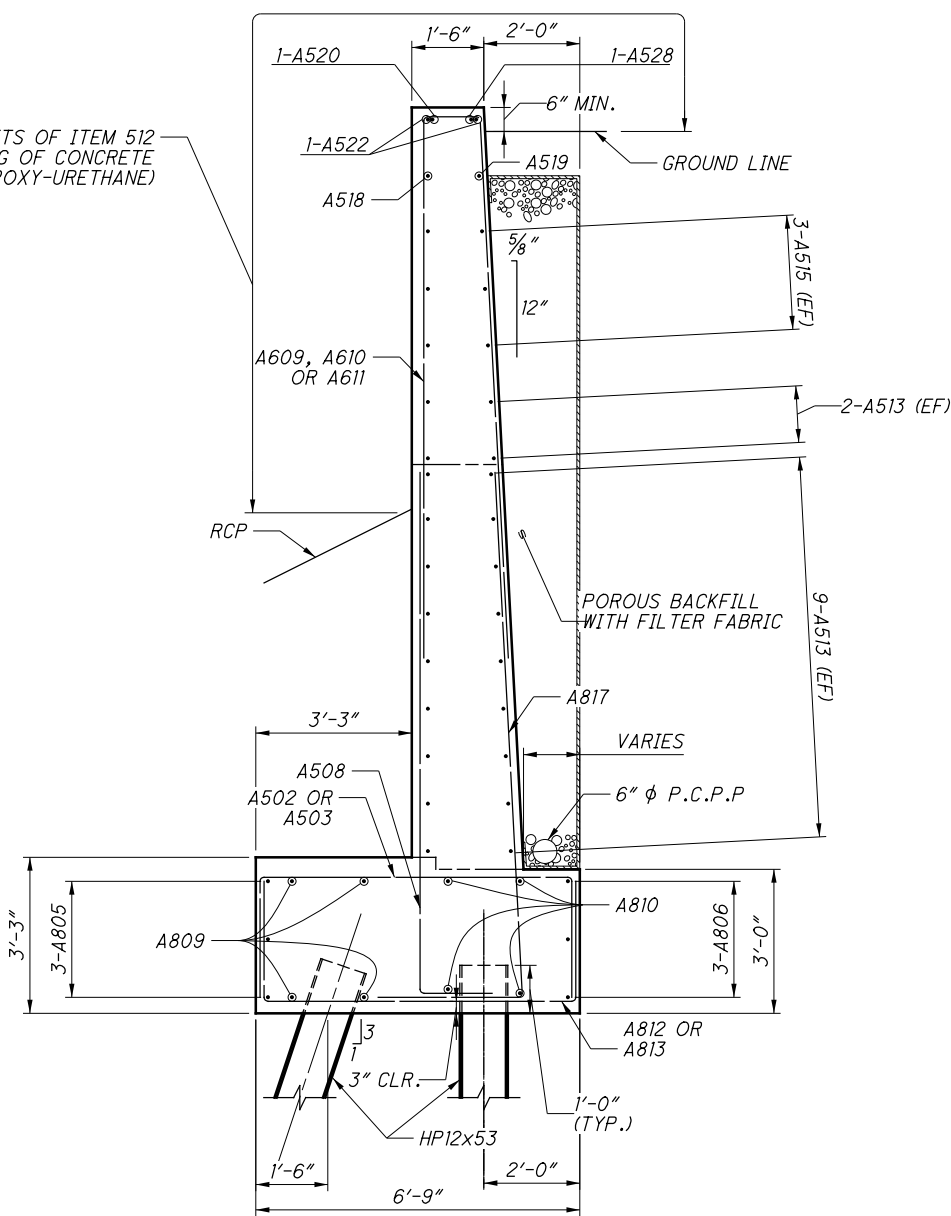
1. FOR ABUTMENT DETAILS, SEE SHEET 11/65
2. FOR ABUTMENT DIAPHRAGM DETAILS,
SEE SHEET 36/65
3. FOR PILE LAYOUT, SEE SHEET 8/65
4. FOR MODULAR EXPANSION JOINT DETAILS,
SEE SHEETS 55-57/65
5. FOR SECTIONS E-E & F-F AND
VIEWS G-G & H-H, SEE SHEET 15/65

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LIMITS OF ITEM 512
SEALING OF CONCRETE
SURFACE (EPOXY-URETHANE)

LIMITS OF ITEM 512
SEALING OF CONCRETE
SURFACE (EPOXY-URETHANE)

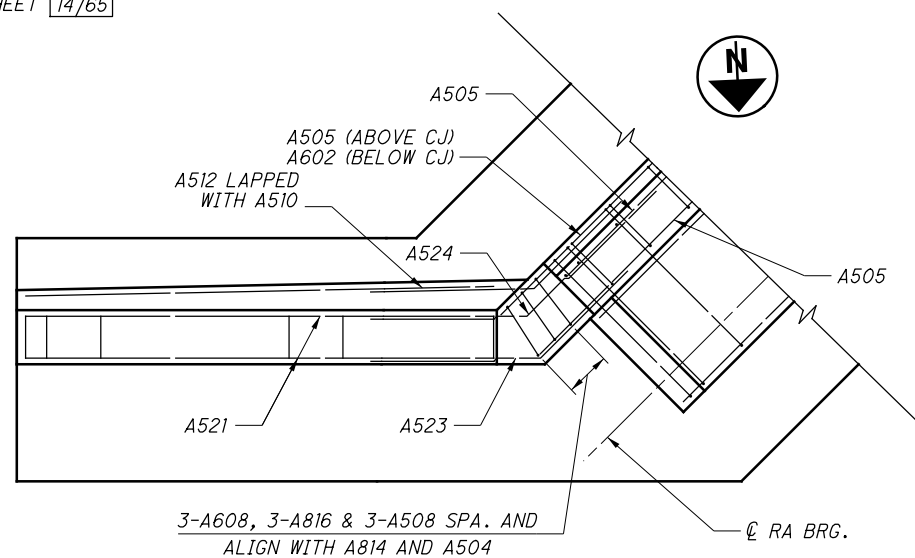


NOTES:

1. FOR ABUTMENT DETAILS, SEE SHEET 11/65
2. FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEET 39/65
3. FOR PILE LAYOUT, SEE SHEET 8/65
4. FOR MODULAR EXPANSION JOINT DETAILS, SEE SHEETS 55-57/65
5. FOR RAILING DETAILS, SEE SHEETS 50-53/65
6. FOR SIDEWALK DETAILS, SEE SHEET 54/65

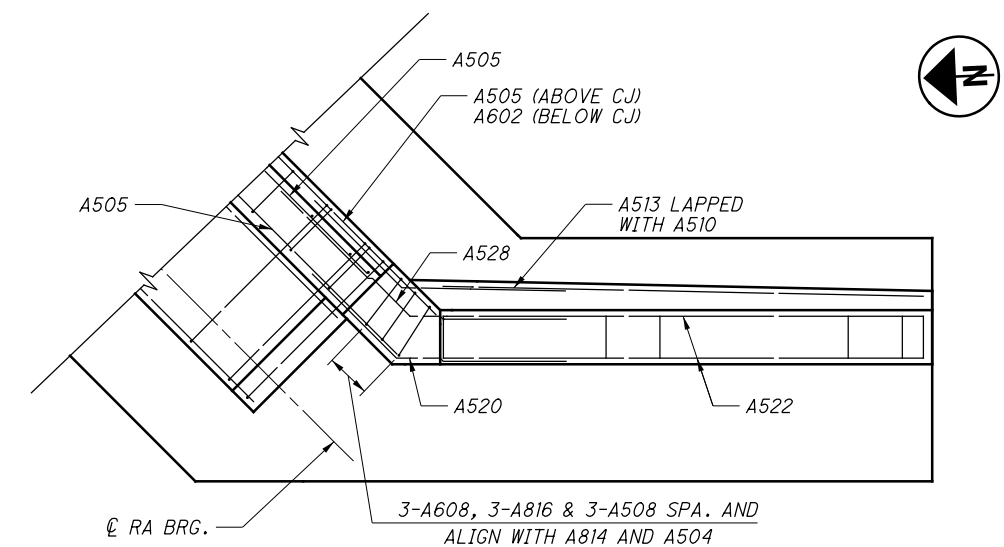
ABUTMENT REINFORCING REQUIRED LAP LENGTHS

HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.



VIEW G-G

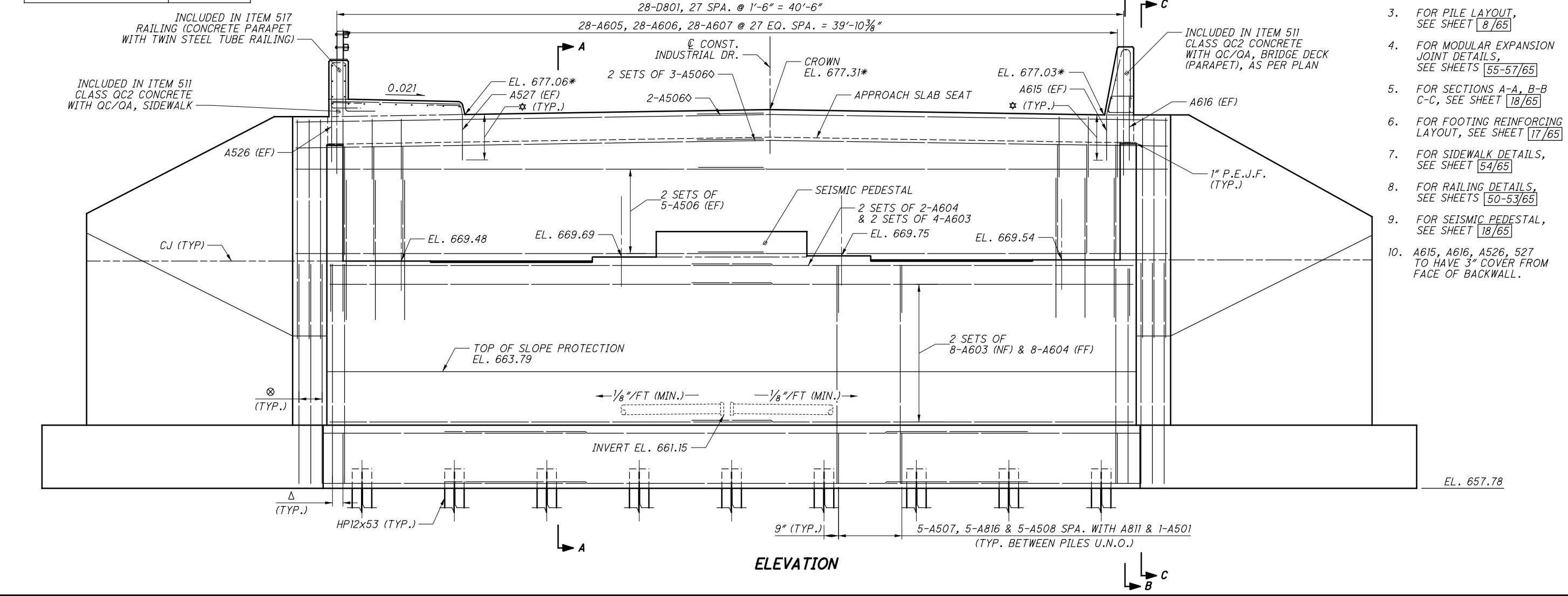
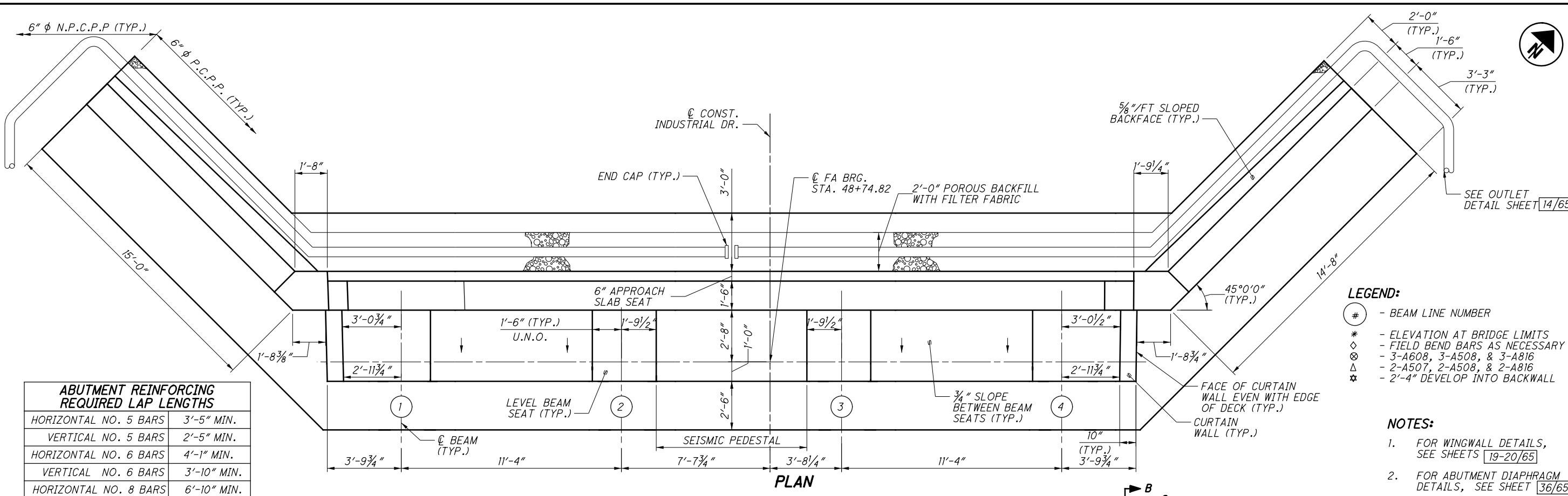
FROM SHEET 14/65



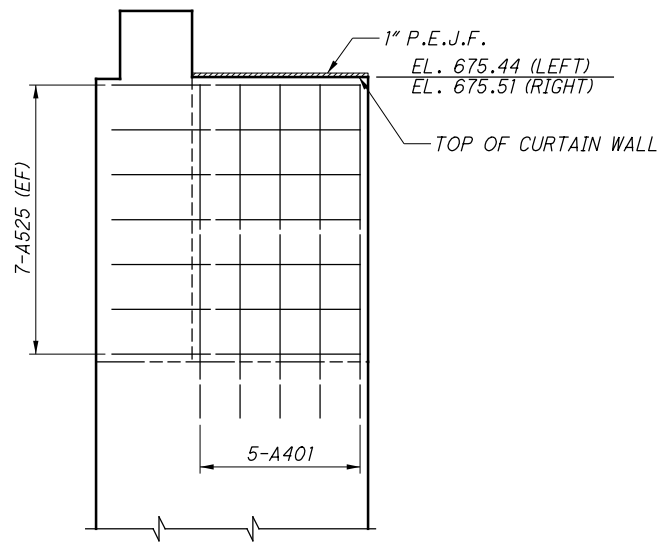
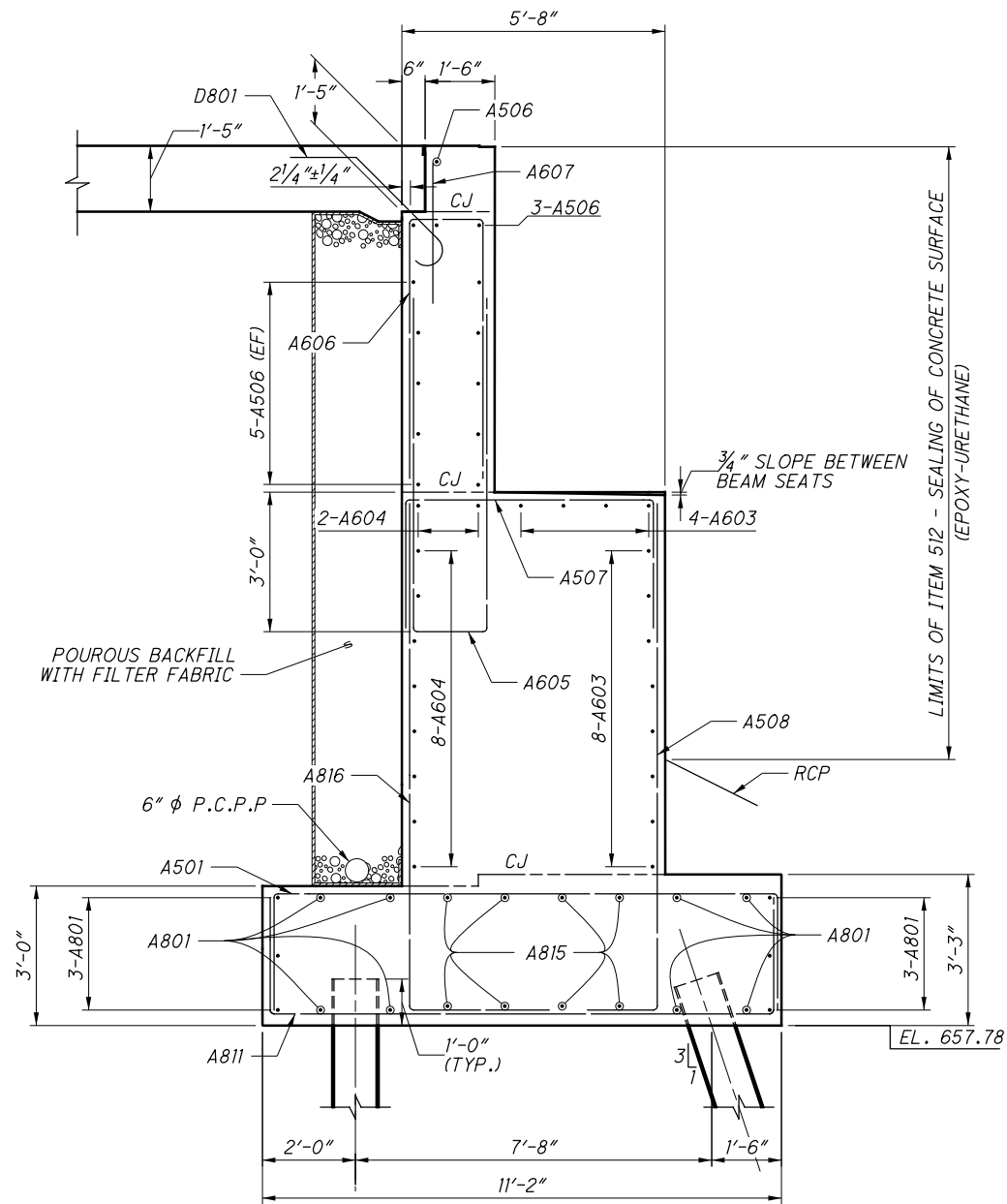
VIEW H-H

FROM SHEET 14/65

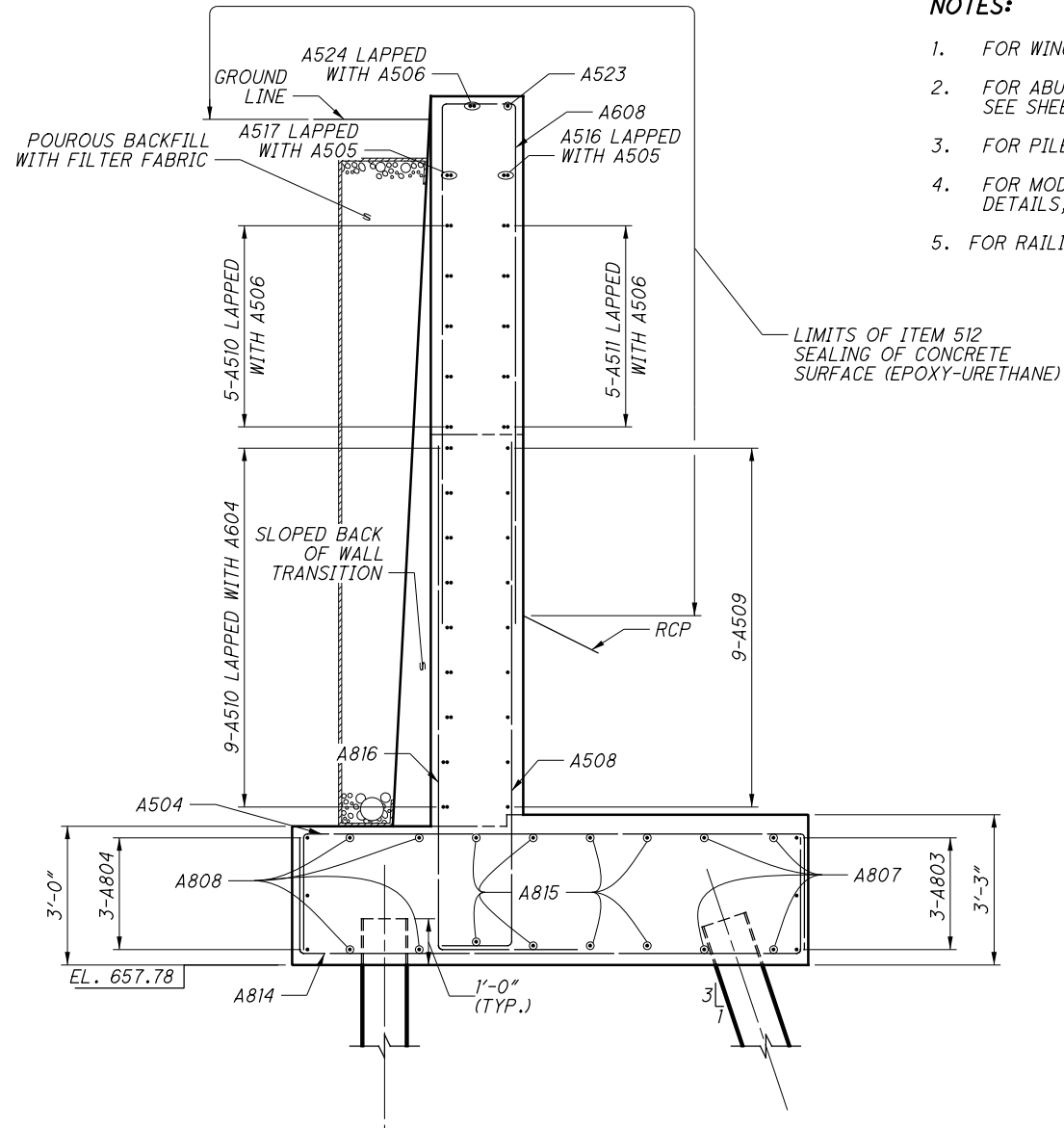
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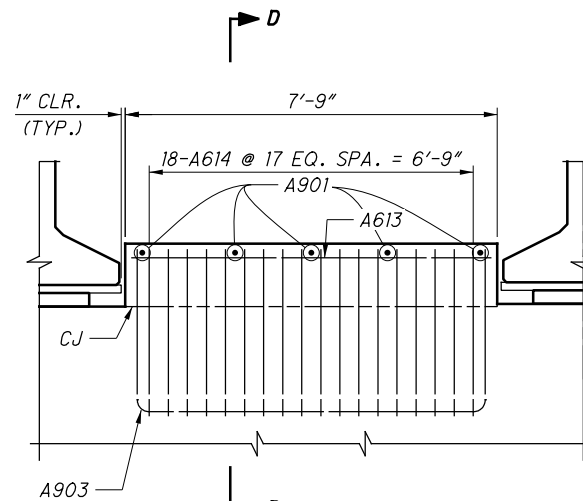
ABUTMENT REINFORCING REQUIRED LAP LENGTHS	
HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.



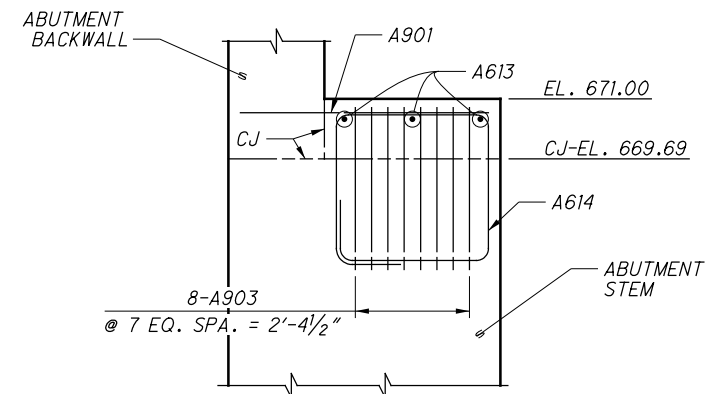
SECTION B-B
FROM SHEET 16/65



SECTION C-C
FROM SHEET 16/65



SEISMIC PEDISTAL



SECTION D-D

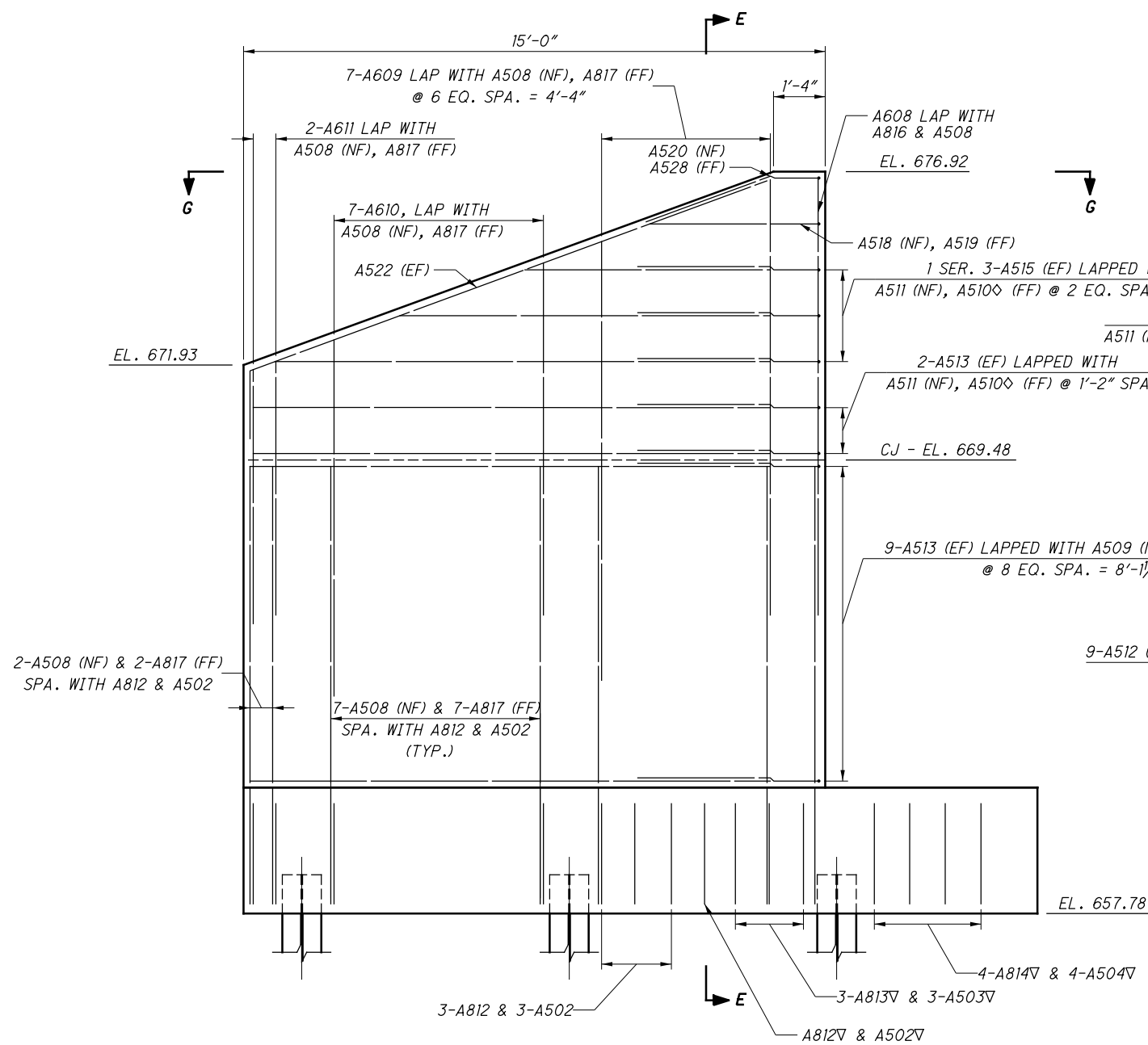
NOTES:

1. FOR WINGWALL DETAILS, SEE SHEETS 19-20/65
2. FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEET 36/65
3. FOR PILE LAYOUT, SEE SHEET 8/65
4. FOR MODULAR EXPANSION JOINT (NOT SHOWN) DETAILS, SEE SHEETS 55-57/65
5. FOR RAILING DETAILS, SEE SHEETS 50-53/65

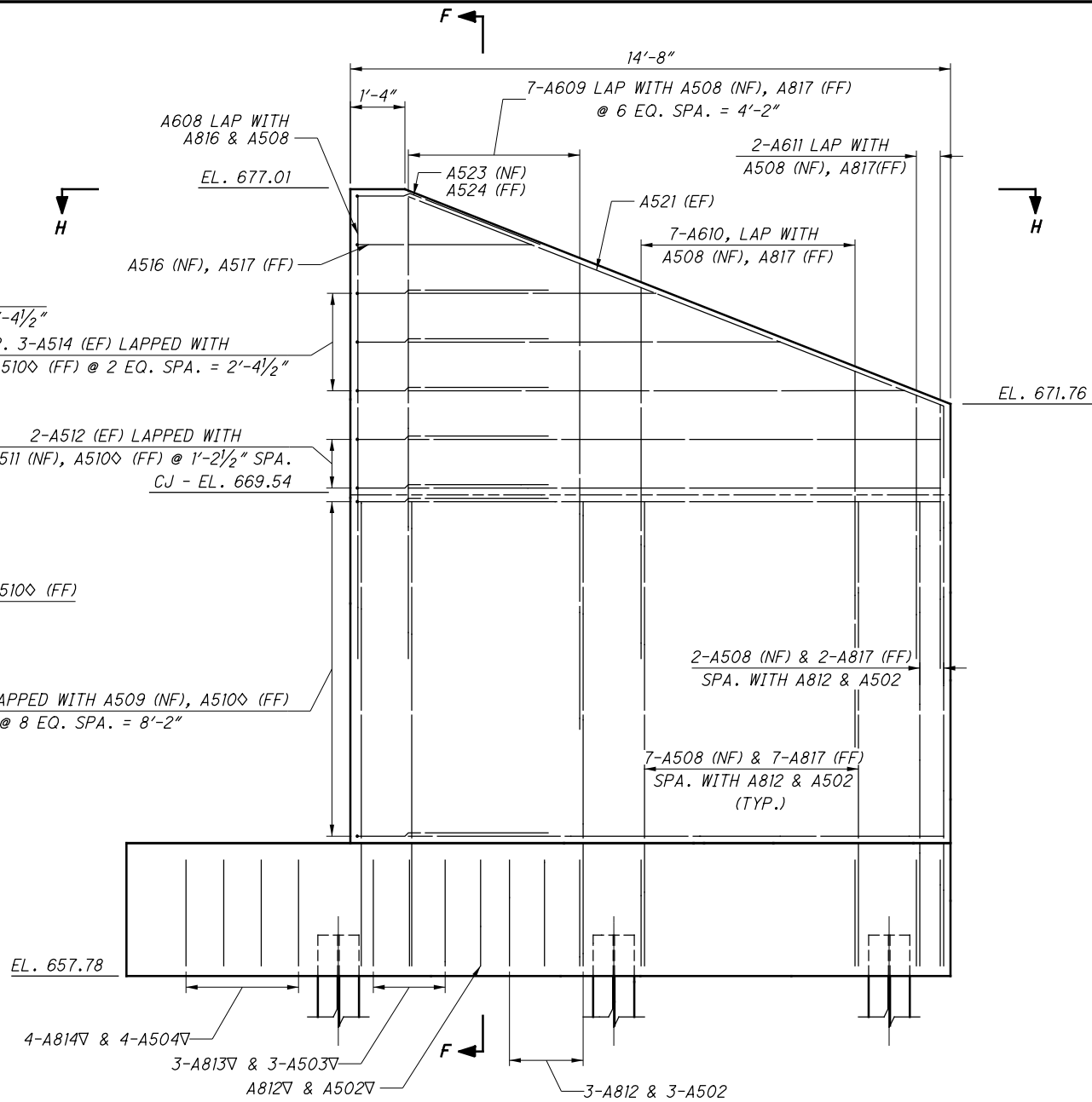
ABUTMENT REINFORCING
REQUIRED LAP LENGTHS

HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.

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FORWARD LEFT WINGWALL



FORWARD RIGHT WINGWALL

▽ - INDICATES FANNED BAR
SEE SHEET 17/65 FOR DETAILS
◇ - INDICATES POSSIBLE NECESSITY
FOR FIELD BEND TO MATCH
BATTERED BACK FACE

NOTES:

1. FOR ABUTMENT DETAILS, SEE SHEET 16/65
2. FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEET 36/65
3. FOR PILE LAYOUT, SEE SHEET 8/65
4. FOR MODULAR EXPANSION JOINT DETAILS, SEE SHEETS 55-57/65
5. FOR SECTIONS E-E & F-F AND VIEWS G-G & H-H, SEE SHEET 20/65

ABUTMENT REINFORCING REQUIRED LAP LENGTHS	
HORIZONTAL NO. 5 BARS	3'-5" MIN.
VERTICAL NO. 5 BARS	2'-5" MIN.
HORIZONTAL NO. 6 BARS	4'-1" MIN.
VERTICAL NO. 6 BARS	3'-10" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.



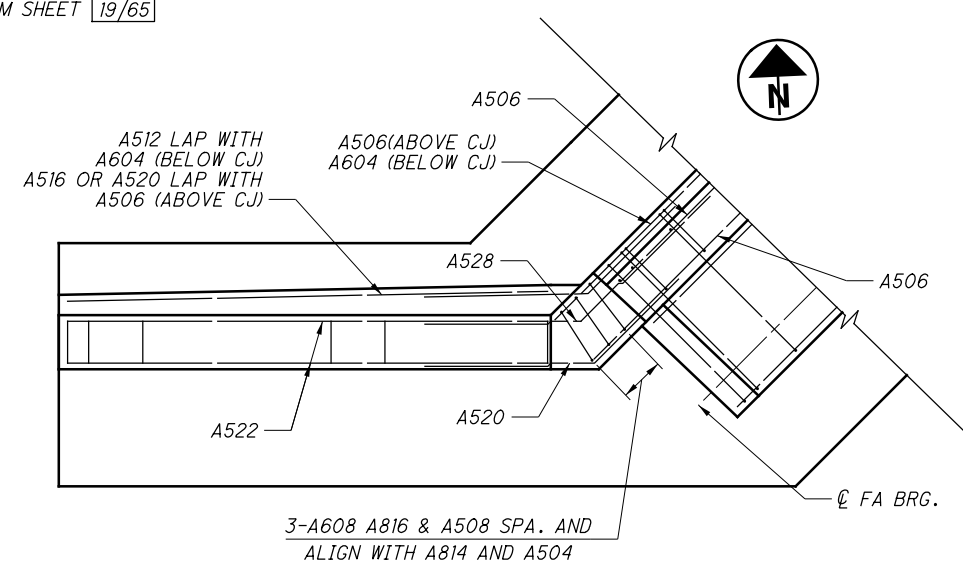
SECTION E-E
FROM SHEET 19/65



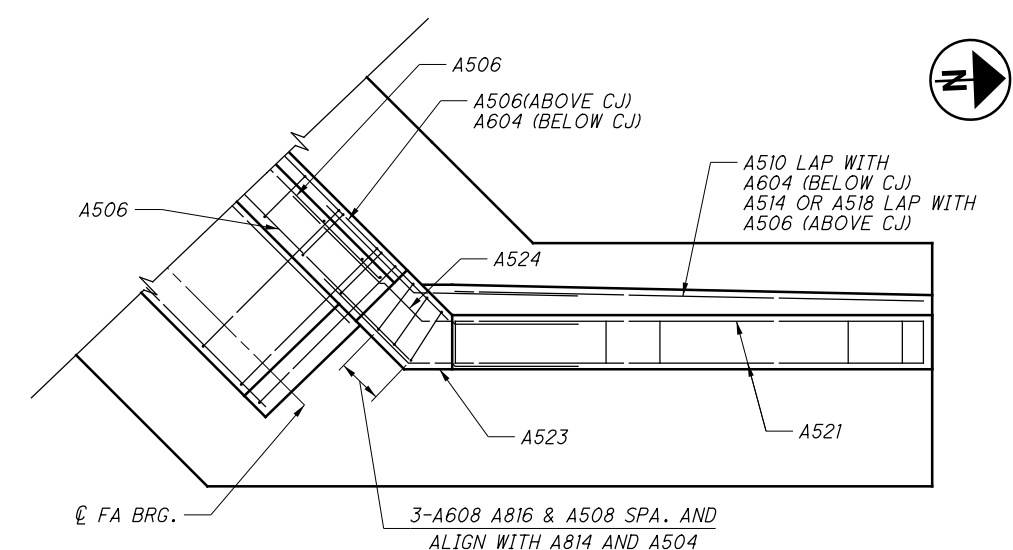
1. FOR ABUTMENT DETAILS, SEE SHEET 16/65
2. FOR ABUTMENT DIAPHRAGM DETAILS,
SEE SHEET 36/65
3. FOR PILE LAYOUT, SEE SHEET 8/65
4. FOR MODULAR EXPANSION JOINT DETAILS,
SEE SHEETS 55-57/65
5. FOR RAILING DETAILS, SEE SHEETS 50-53/65
6. FOR SIDEWALK DETAILS, SEE SHEET 54/65

<i>ABUTMENT REINFORCING REQUIRED LAP LENGTHS</i>	
<i>HORIZONTAL NO. 5 BARS</i>	<i>3'-5" MIN.</i>
<i>VERTICAL NO. 5 BARS</i>	<i>2'-5" MIN.</i>
<i>HORIZONTAL NO. 6 BARS</i>	<i>4'-1" MIN.</i>
<i>VERTICAL NO. 6 BARS</i>	<i>3'-10" MIN.</i>
<i>HORIZONTAL NO. 8 BARS</i>	<i>6'-10" MIN.</i>

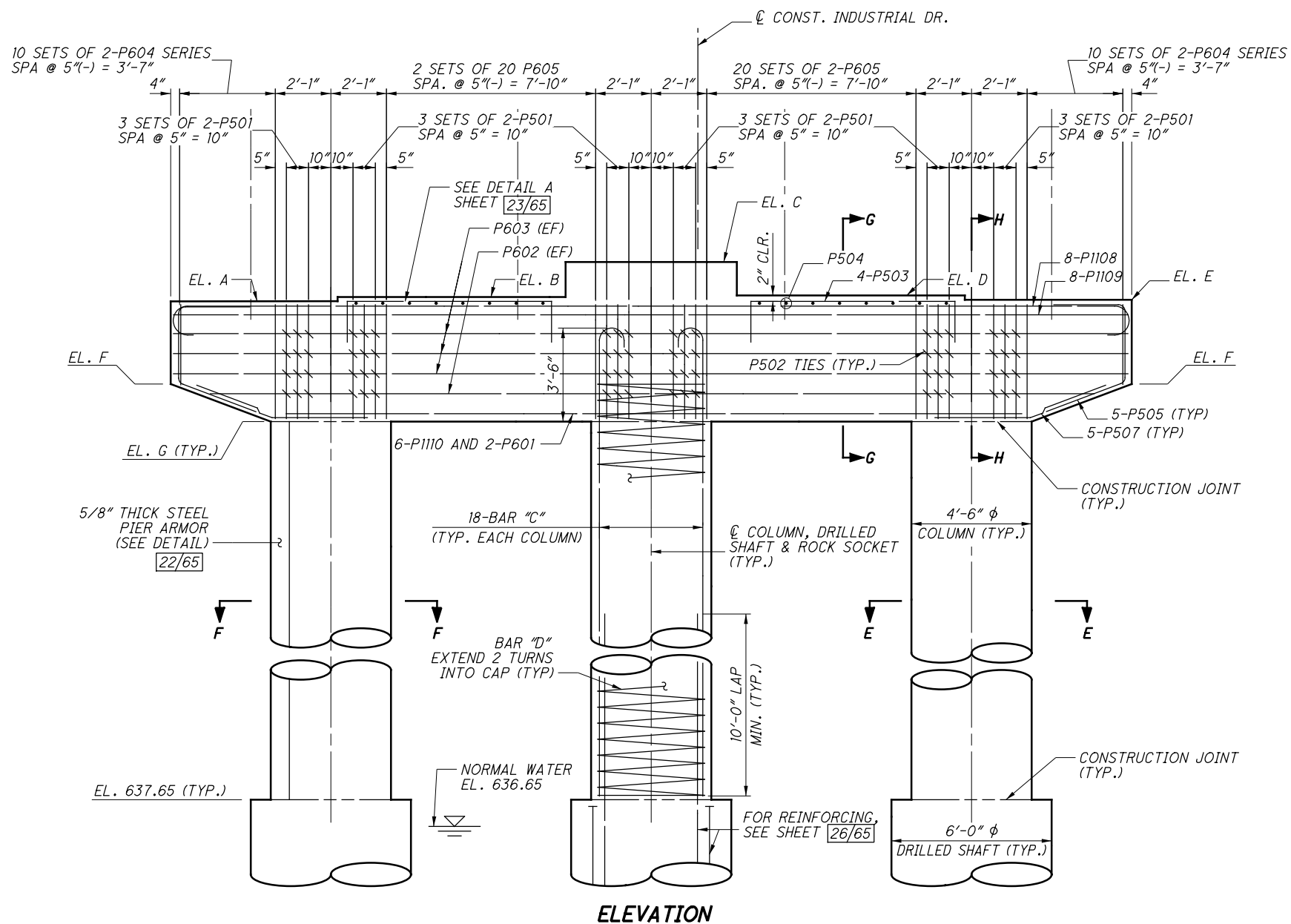
SECTION F-F
FROM SHEET 19/65



VIEW G-G
FROM SHEET 19/65



VIEW H-H
FROM SHEET 19/65



REINFORCING BAR	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7
BAR "C"	P1101	P1102	P1103	P1104	P1105	P1106	P1107
BAR "D"	SP403	SP404	SP405	SP406	SP407	SP408	SP409

1. FOR DRILLED SHAFT DETAILS, SEE SHEET 26/65.
2. FOR FOUNDATION PLAN, SEE SHEET 9-10/65.
3. FOR ELASTOMERIC BEARING DETAILS, SEE SHEET 34-35/65.
4. FOR SEISMIC PEDESTAL DETAILS, SEE SHEET 23/65.
5. FOR FIXED PIER DOWEL BAR DETAILS, SEE SHEET 22/65.
6. FOR SECTIONS E-E, F-F, G-G, AND H-H, SEE SHEET 22/65.
7. ALL MATERIAL, LABOR, AND INCIDENTALS ASSOCIATED WITH THE STEEL PIER ARMOR SHALL BE INCLUDED IN PAYMENT FOR ITEM 511, CLASS QCI CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS. AS PER PLAN.

SECTION E-E

SECTION F-F
(COLUMN REINFORCEMENT NOT SHOWN)

STEEL PIER ARMOR
(SHOWN DEVELOPED)

SECTION G-G

SECTION G-G
(FIXED PIER)
(PIER 4)

SECTION H-H

FRONT VIEW OF SEISMIC PEDESTAL

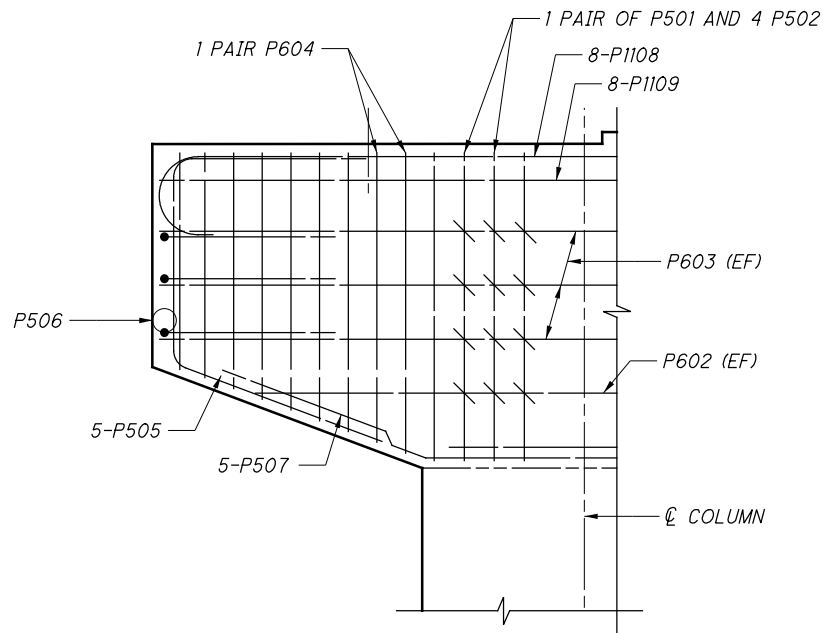
SECTION H-H

DETAIL A
PIER 4 DOWELS NOT SHOWN

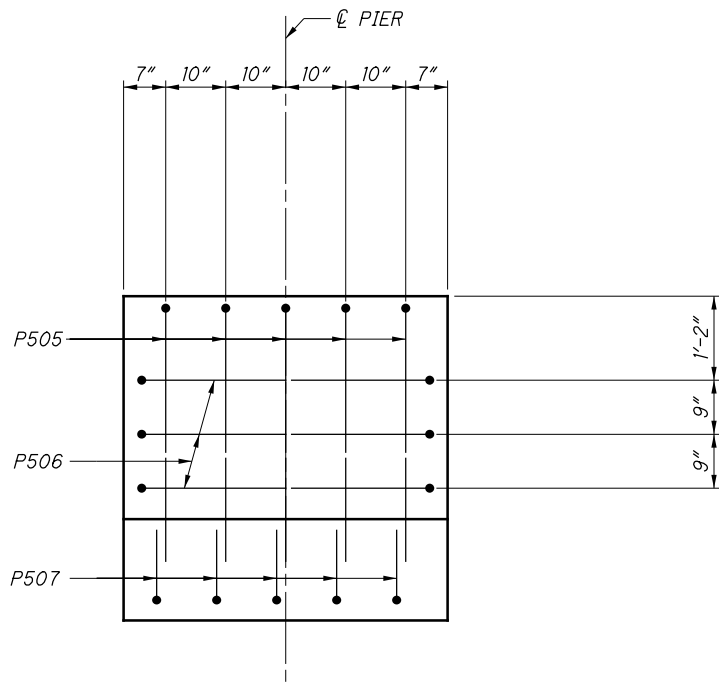
NOTES:

1. SEE SHEET 21/65 FOR NOTES.

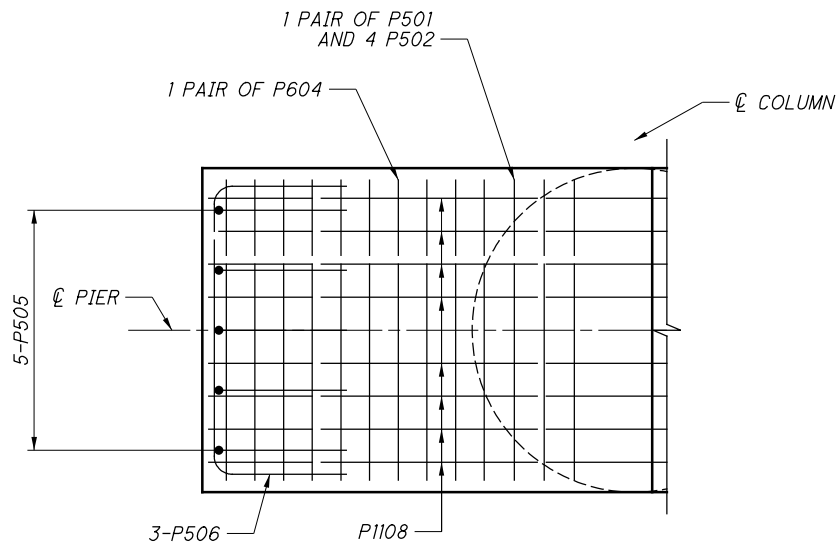
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PIER CAP ELEVATION
(COLUMN REINFORCING STEEL AND PIER 4 DOWELS NOT SHOWN)

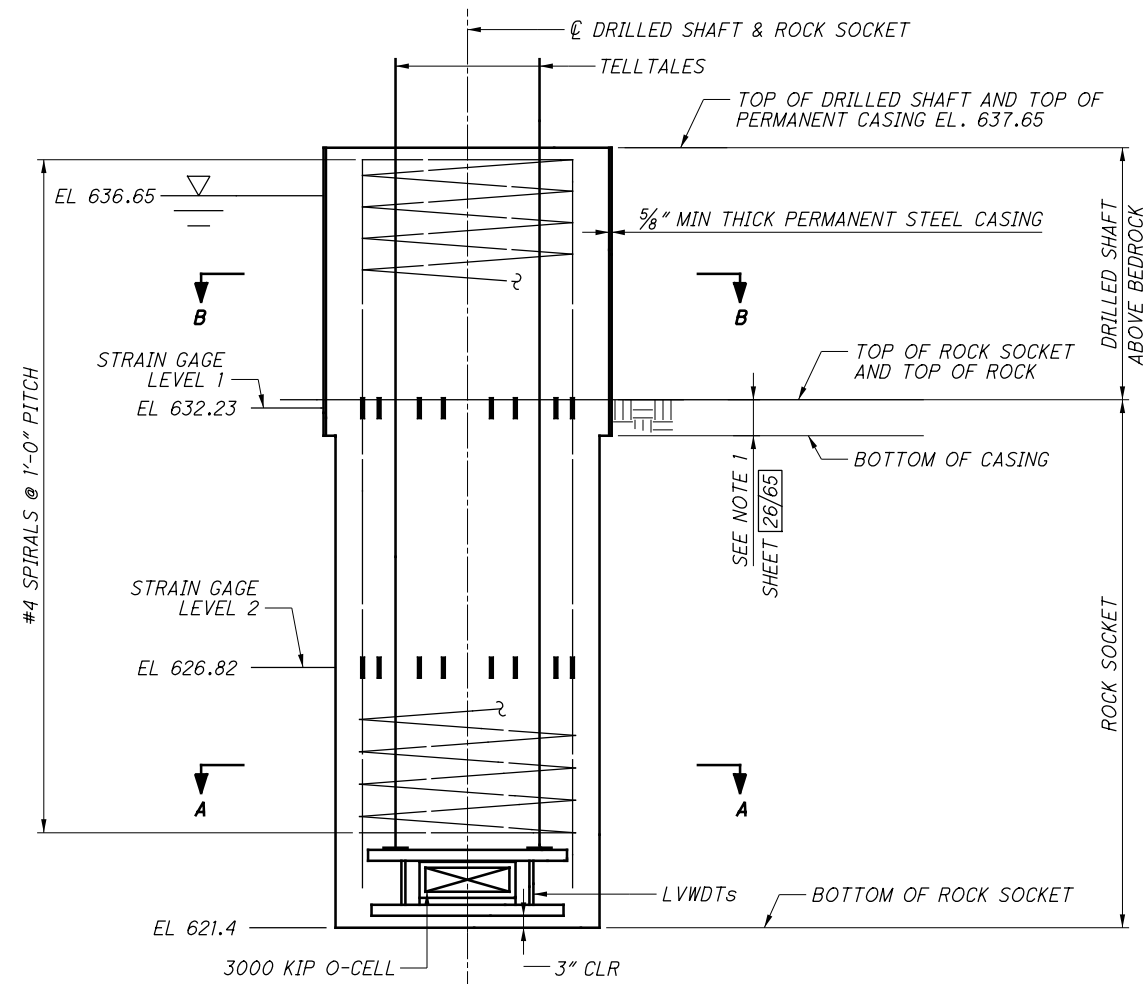


PIER CAP END DETAIL

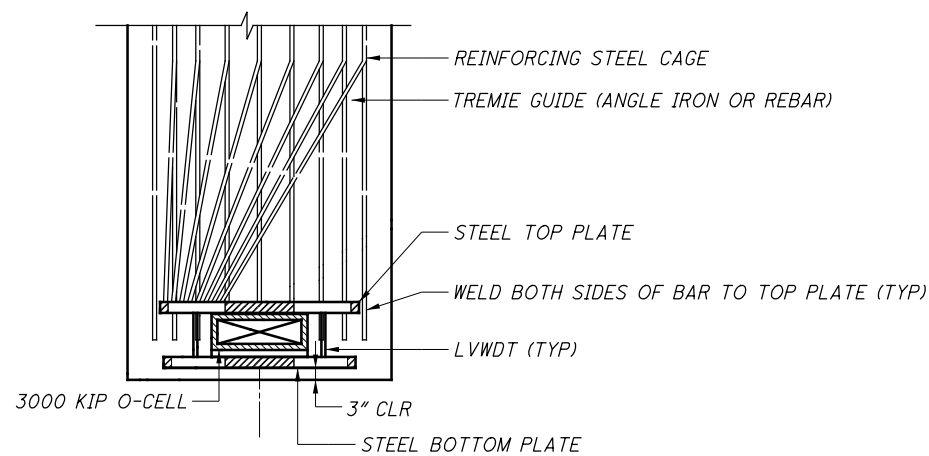


PIER CAP SECTION LEFT

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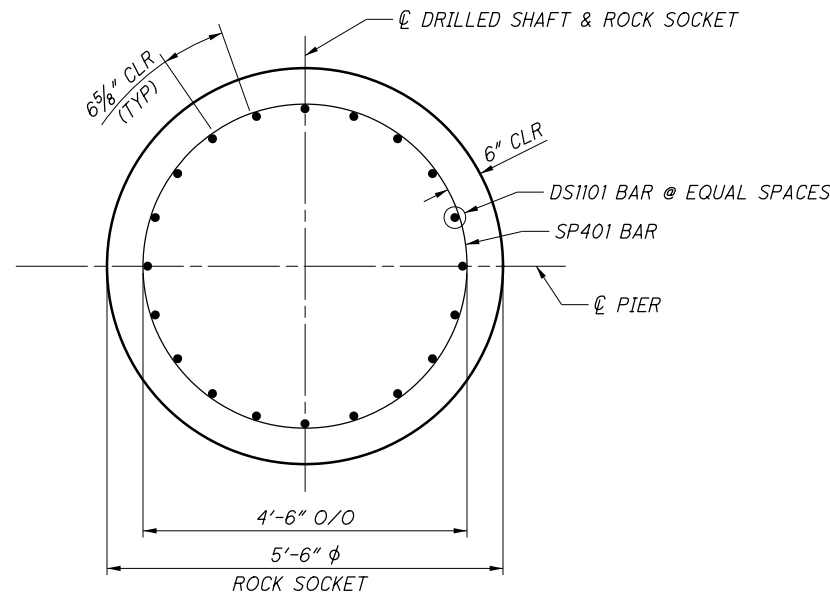
TEST SHAFT ELEVATION



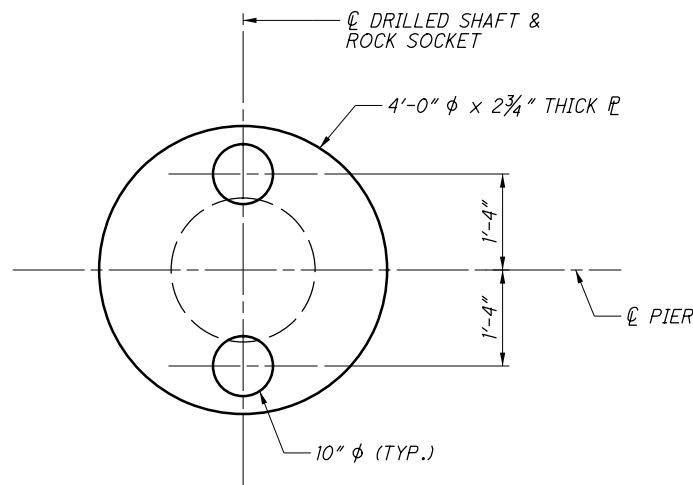
TREMIE GUIDE

ASSEMBLY STEPS

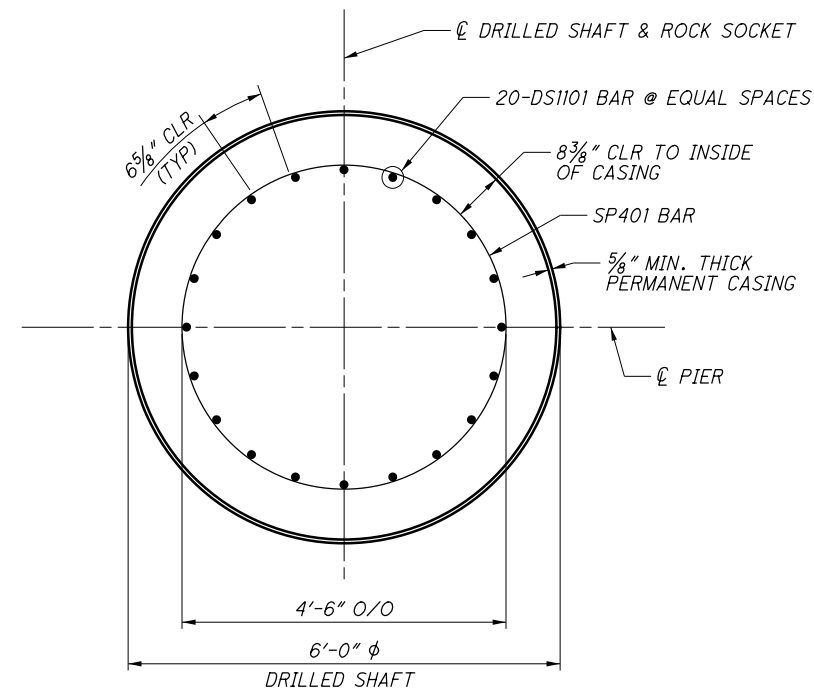
1. O-CELL FITTED WITH TOP AND BOTTOM STEEL PLATES
2. TOP PLATE OF O-CELL ASSEMBLY WELDED TO REINFORCING CAGE WITH FILLED WELDS ON BOTH SIDES OF STEEL REBARS
3. A TREMIE PIPE SHALL BE USED FOR CONCRETE PLACEMENT. A GUIDE SHALL BE CONSTRUCTED TO DIRECT THE TREMIE PIPE PAST THE O-CELL ASSEMBLY
4. REINFORCING CAGE IS LOWERED INTO EXCAVATION AND SECURED AT REQUIRED ELEVATION. 12.00 INCH DIAMETER REINFORCING STEEL CENTERING DEVICES (FOUR REQUIRED PER 10.0 VERTICAL FEET OF CAGE) SHALL BE EQUALLY SPACED AROUND THE PERIMETER OF THE REINFORCING STEEL CAGE.



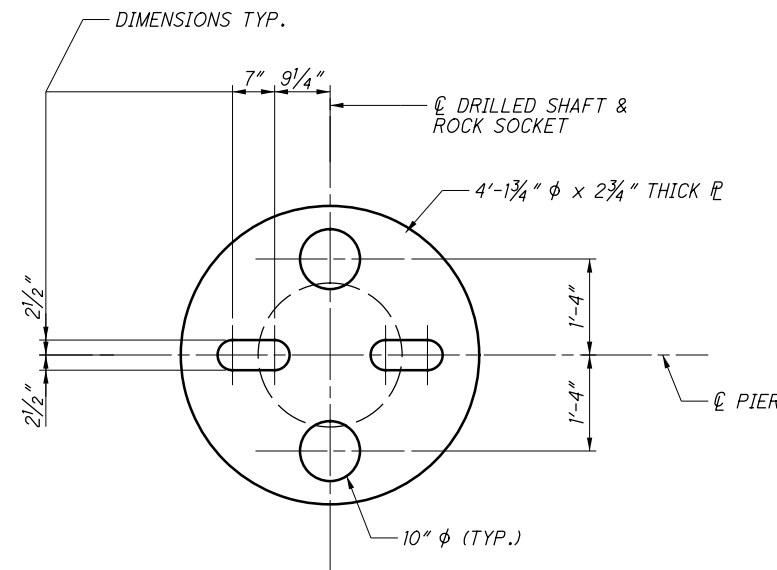
SECTION A-A



BOTTOM PLATE



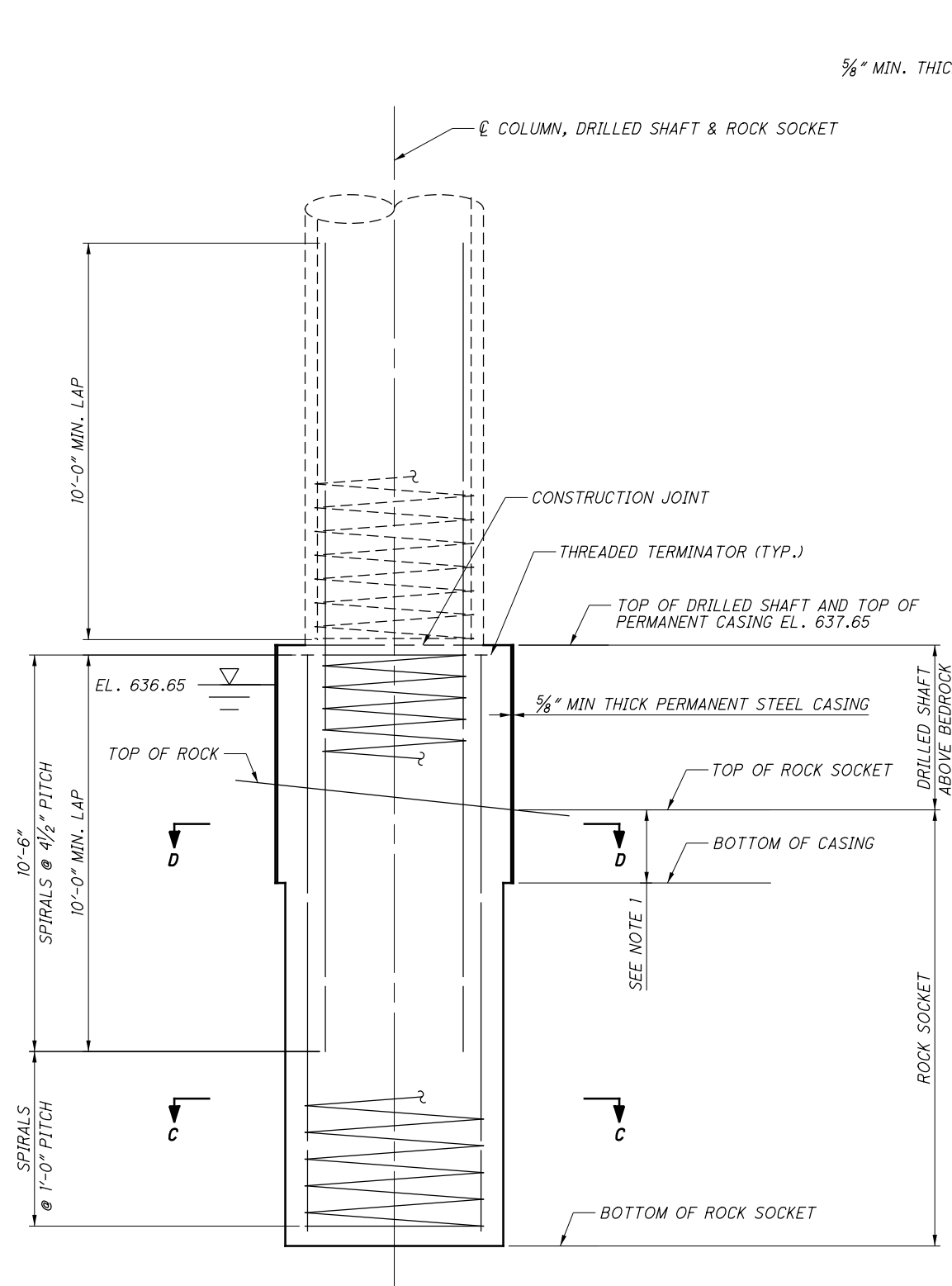
SECTION B-B



TOP PLATE

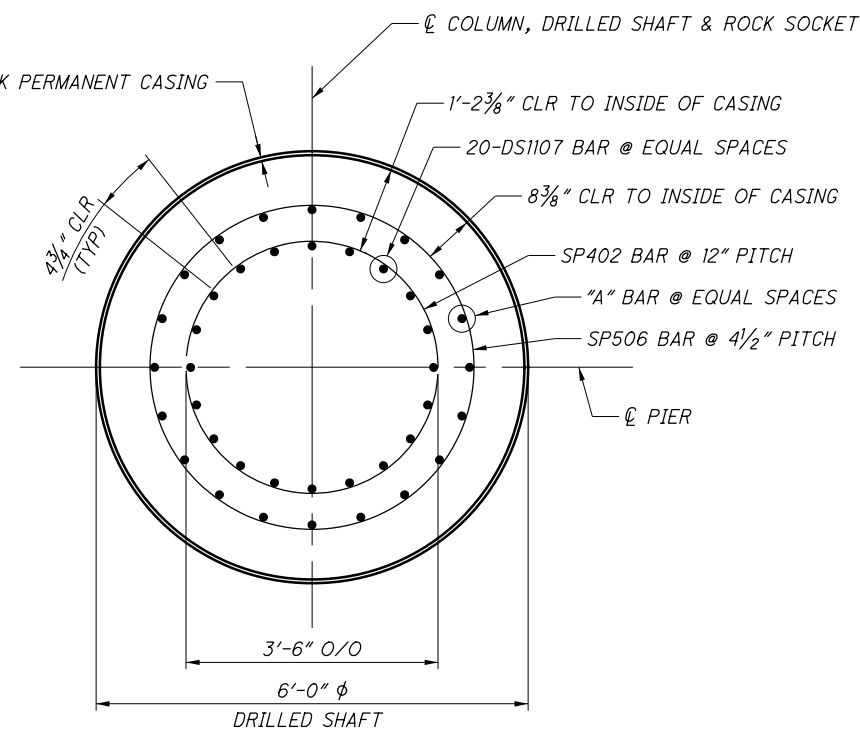
NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET [6, 26/65].
2. FOR DRILLED SHAFT RECORD, SEE SHEET [27/65].

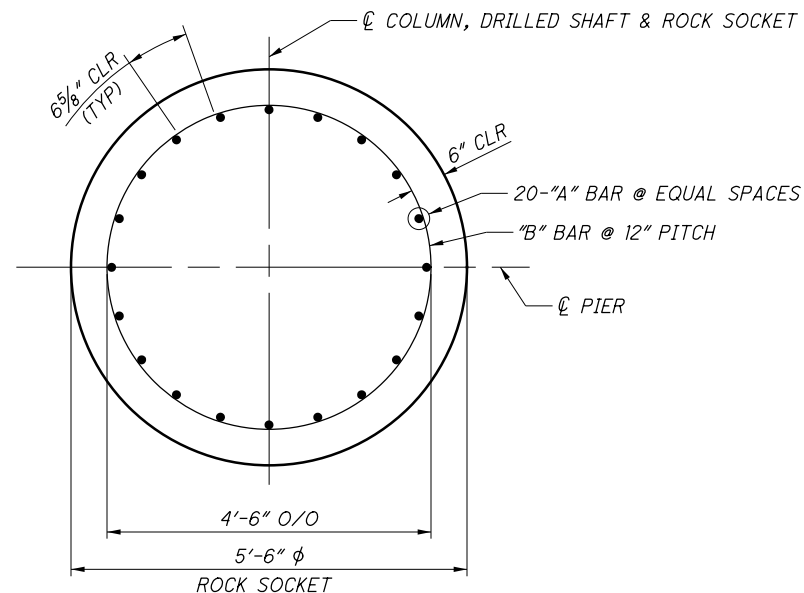


REINFORCING BAR	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7
BAR "A" *	DS1102	DS1102	DS1103	DS1102	DS1104	DS1105	DS1106
BAR "B"	SP501	SP501	SP502	SP501	SP503	SP504	SP505

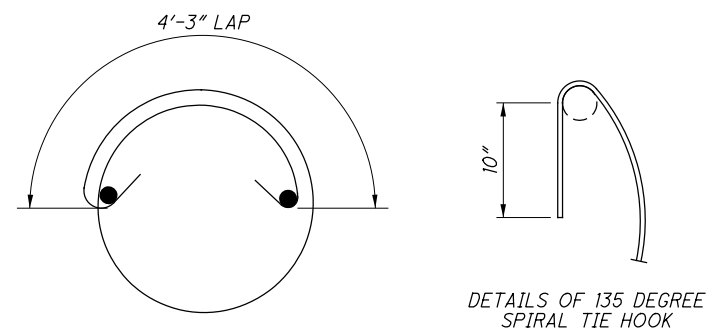
* *THREADED TERMINATOR REQUIRED*



SECTION D-D



SECTION C-C



SPIRAL ANCHOR SPLICE

NOTES:

1. PERMANENT CASING IS REQUIRED IN WATER AND IN THE OVERBURDEN, AND IT SHALL BE EMBEDDED INTO ROCK TO CREATE AND MAINTAIN A CONCRETE TIGHT SEAL FOR CONSTRUCTION OF THE DRILLED SHAFT. DIMENSION TO BE FIELD VERIFIED.
2. ELEVATIONS FOR THE BOTTOM OF THE DRILLED SHAFT AND BOTTOM OF DRILLED SHAFT ROCK SOCKET WILL BE DETERMINED BY THE OHIO DEPARTMENT OF TRANSPORTATION BASED ON THE RESULTS OF ROCK SOUNDING AND ROCK CORING. QUANTITIES FOR THE DRILLED SHAFTS SHOWN ON THE ESTIMATED QUANTITIES SHEET ARE ESTIMATES. THE PAID QUANTITIES WILL BE THAT OF THE ACTUAL INSTALLED QUANTITY.
3. MECHANICAL COUPLERS SHALL COMPLY WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION, ARTICLE 5.11.5.2.2. WHEN A DRILLED SHAFT IS LENGTHENED IN THE FIELD, 100% OF THE VERTICAL REINFORCEMENT MAY BE SPLICED AT THE BOTTOM OF THE REINFORCEMENT CAGE.
4. SPIRAL SPLICES SHALL BE MECHANICALLY COUPLED, WELDED, OR HOOKED LAPPED SPLICED. ENDS OF SPIRAL REINFORCING SHALL BE HOOKED 135 DEGREES AROUND A VERTICAL REINFORCING BAR. SEE SPLICE DETAIL.
5. 5/8 INCH CASING THICKNESS SHOWN IS A MINIMAL STRUCTURAL REQUIREMENT FOR THE DRILLED SHAFTS IN THEIR FINAL IN-SERVICE CONDITION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SIZE THE CASING TO SATISFY CONSTRUCTION INSTALLATION REQUIREMENTS.
6. FOR DRILLED SHAFT RECORD, SEE SHEET 27/65 .
7. DIMENSIONS SHOWN IN THE DRAWINGS ARE BASED ON THE SATISFACTORY PERFORMANCE OF THE TEST SHAFT. IN THE EVENT OF UNSATISFACTORY PERFORMANCE OF THE TEST SHAFT, THE DESIGN ENGINEER RESERVES THE RIGHT TO REVISE THE DIMENSIONS OF THE PRODUCTION SHAFTS.
8. REINFORCING BARS ARE INCLUDED IN PAYMENT FOR ITEM 524 - DRILLED SHAFT

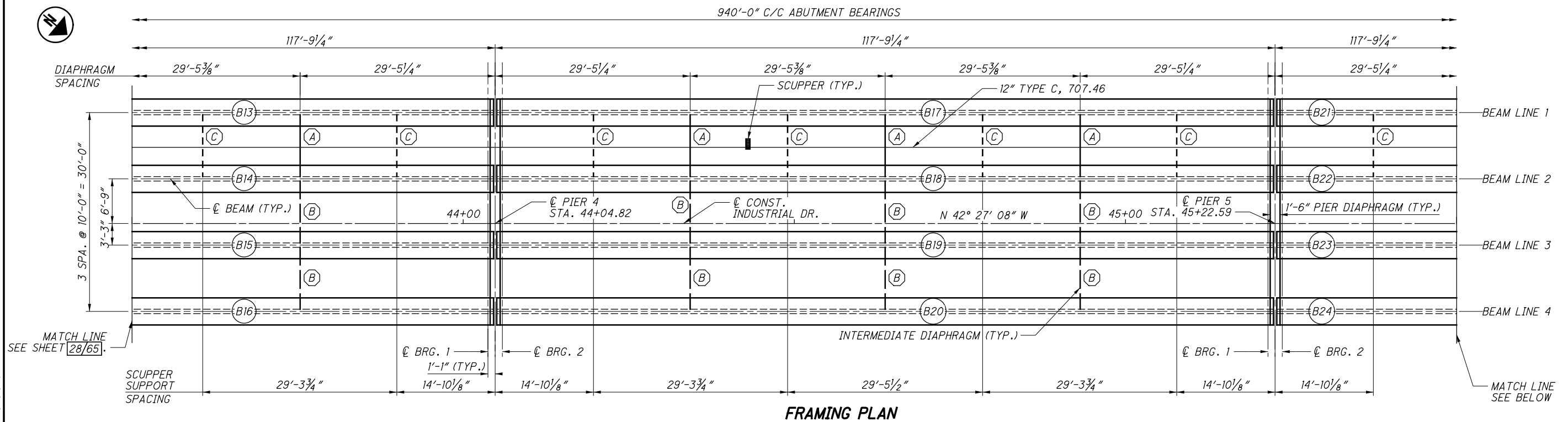
PIER NUMBER	DRILLED SHAFT NUMBER	REQUIRED FACTORED RESISTANCE KIPS		ELEVATIONS				DRILLED SHAFT ROCK SOCKET LENGTH	DRILLED SHAFT ABOVE BEDROCK LENGTH
				TOP OF DRILLED SHAFT	TOP OF ROCK ②	BOTT OF ROCK SOCKET ELEVATION	TOP OF ROCK SOCKET ④		
		BEARING	LATERAL			PLAN ③		PLAN	PLAN
1	1	1303	120	637.65	632.40	621.40	632.40	11.00	5.25
	2	1303	120	637.65	632.40	621.40	632.40	11.00	5.25
	3	1303	120	637.65	632.40	621.40	632.40	11.00	5.25
*	4	2090	-	637.65	632.40	621.40	632.40	11.00	5.25
2	5	1303	120	637.65	632.30	621.30	632.30	11.00	5.35
	6	1303	120	637.65	632.30	621.30	632.30	11.00	5.35
	7	1303	120	637.65	632.30	621.30	632.30	11.00	5.35
3	8	1303	120	637.65	631.80	620.80	631.80	11.00	6.65
	9	1303	120	637.65	631.80	620.80	631.80	11.00	6.65
	10	1303	120	637.65	631.80	620.80	631.80	11.00	6.65
4	11	1303	120	637.65	632.20	621.20	632.20	11.00	5.45
	12	1303	120	637.65	632.20	621.20	632.20	11.00	5.45
	13	1303	120	637.65	632.20	621.20	632.20	11.00	5.45
5	14	1303	120	637.65	634.30	623.30	634.30	11.00	3.35
	15	1303	120	637.65	634.30	623.30	634.30	11.00	3.35
	16	1303	120	637.65	634.30	623.30	634.30	11.00	3.35
6	17	1303	120	637.65	631.30	620.30	631.30	11.00	6.35
	18	1303	120	637.65	631.30	620.30	631.30	11.00	6.35
	19	1303	120	637.65	631.30	620.30	631.30	11.00	6.35
7	20	1303	145	637.65	634.80	623.80	634.80	11.00	2.85
	21	1303	145	637.65	634.80	623.80	634.80	11.00	2.85
	22	1303	145	637.65	634.80	623.80	634.80	11.00	2.85

NOTES:

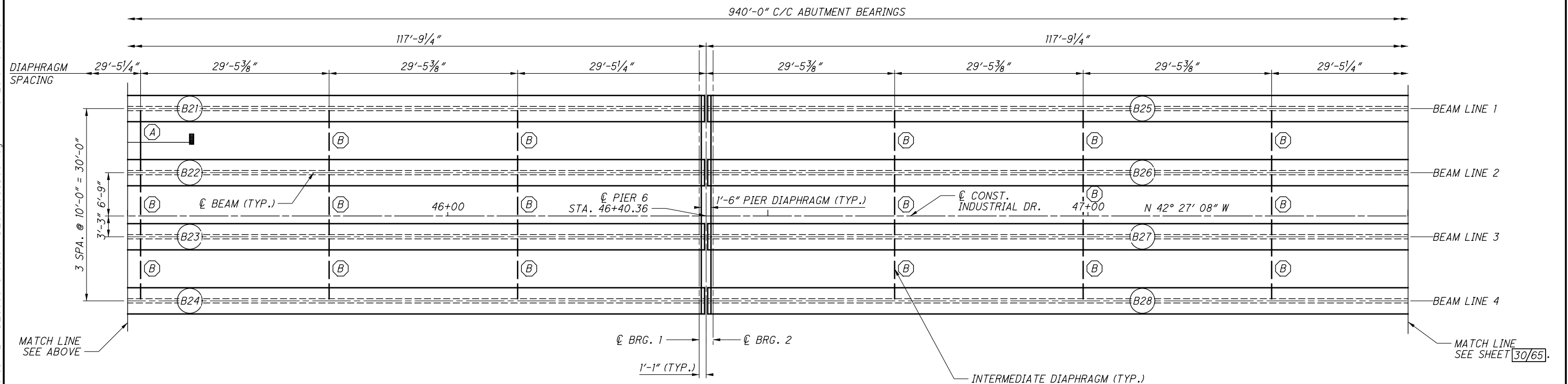
- * 1. DRILLED SHAFT NUMBER 4 IS A TEST SHAFT.
- 2. TOP OF ROCK ELEVATIONS BASED ON 2014 BORINGS / ROCK CORE.
- 3. BOTTOM OF ROCK SOCKET ELEVATONS WERE SELECTED BASED ON THE TOP OF ROCK ELEVATIONS AT EACH SHAFT AND FOR CONSISTANCY OF TIP ELEVATONS IN A GIVEN ROW.
- 4. TOP OF ROCK SOCKET ELEVATION IS ESTIMATED FROM THE LOWEST TOP OF ROCK ELEVATION NEAR EACH SHAFT. TOP OF ROCK SOCKET ELEVATION SHALL BE VERIFIED BY THE CONTRACTOR PER C&MS 524.01.
- 5. THE FOLLOWING RESISTANCE FACTORS WERE CONSIDERED IN CALCULATING REQUIRED NOMINAL GEOTECHNICAL RESISTANCE PER AASHTO LRFD TABLE 10.5.5.2.4-1 AND ARTICLE 10.5.5.3.3:

RESISTANCE FACTOR FOR AXIAL COMPRESSION RESISTANCE (SIDE RESISTANCE IN ROCK) = 0.55
RESISTANCE FACTOR FOR AXIAL COMPRESSION RESISTANCE (TIP RESISTANCE IN ROCK) = 0.50
RESISTANCE FACTOR FOR HORIZONTAL (LATERAL) GEOTECHNICAL RESISTANCE OF SINGLE SHAFT OR SHAFT GROUP = 1.0
RESISTANCE FACTOR FOR AXIAL COMPRESSION RESISTANCE (SIDE RESISTANCE IN ROCK) FOR EXTREME EVENT = 1.0
RESISTANCE FACTOR FOR AXIAL COMPRESSION RESISTANCE (TIP RESISTANCE IN ROCK) FOR EXTREME EVENT = 1.0

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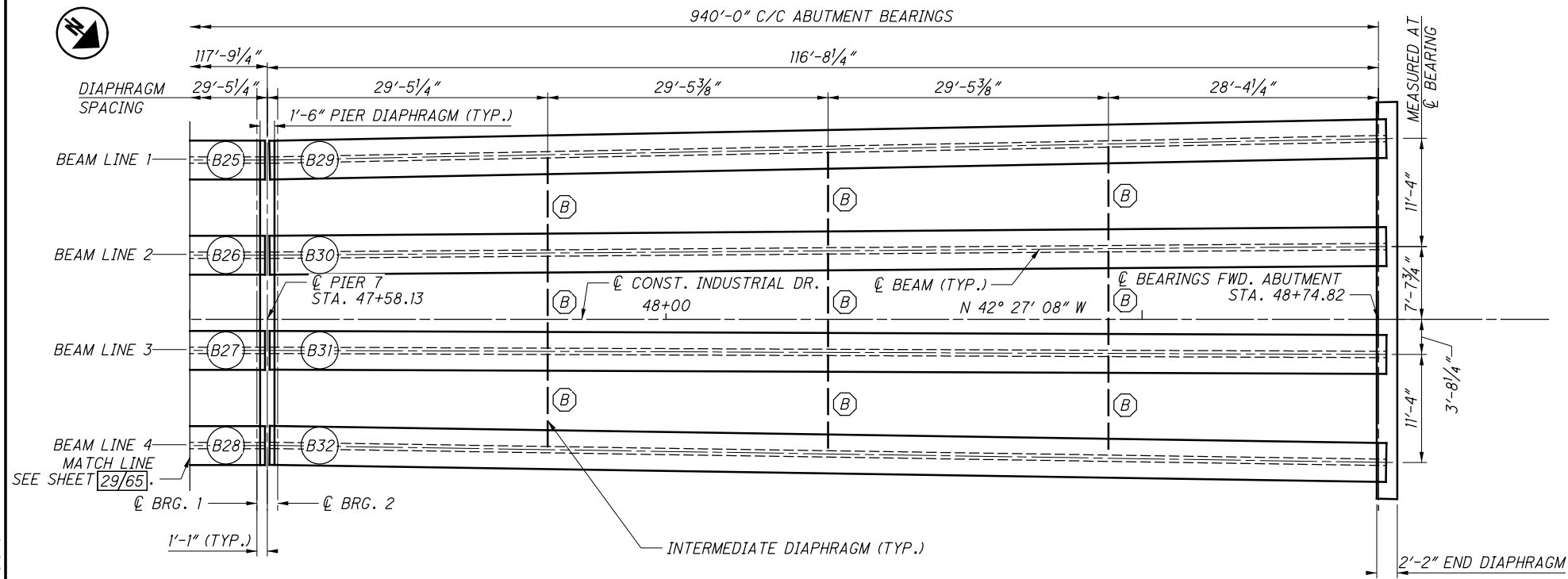
FRAMING PLAN



FRAMING PLAN

NOTES:
1. FOR NOTES, SEE SHEETS 28/65.

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FRAMING PLAN

CAMBER (SPANS 8)

CALCULATED CAMBER AT DAY 0 (D30) IS 2.002 INCHES.

CALCULATED CAMBER AT DAY 30 (D30) IS 2.899 INCHES.

DEFLECTION DUE TO REMAINING DEAD LOAD (E.G. CONCRETE DECK, CROSSFRAMES, DIAPHRAGMS, BARRIERS, UTILITIES, ETC.) IS 1.8 INCHES (INTERIOR) AND 1.412 INCHES (FASCIA).

THE BEAM SEAT ELEVATIONS ASSUME ESTIMATED CAMBER D30 WITH A SACRIFICIAL HAUNCH THICKNESS OF 2-INCHES.

NOTES:
1. FOR NOTES, SEE SHEETS 28/65.

DESIGNED

KRH

DRAWN

RJS

REVIEWED

SCT

DATE

05/2015

CHECKED

SCT

STRUCTURE FILE NUMBER

TBD

MANNIK SMITH GROUP

1800 INDIAN WOOD CIRCLE
MAUMEE, OHIO 43537

FRAMING PLAN (3 OF 3)

HEN-IND-00.00

HEN-INDUSTRIAL DRIVE-0000

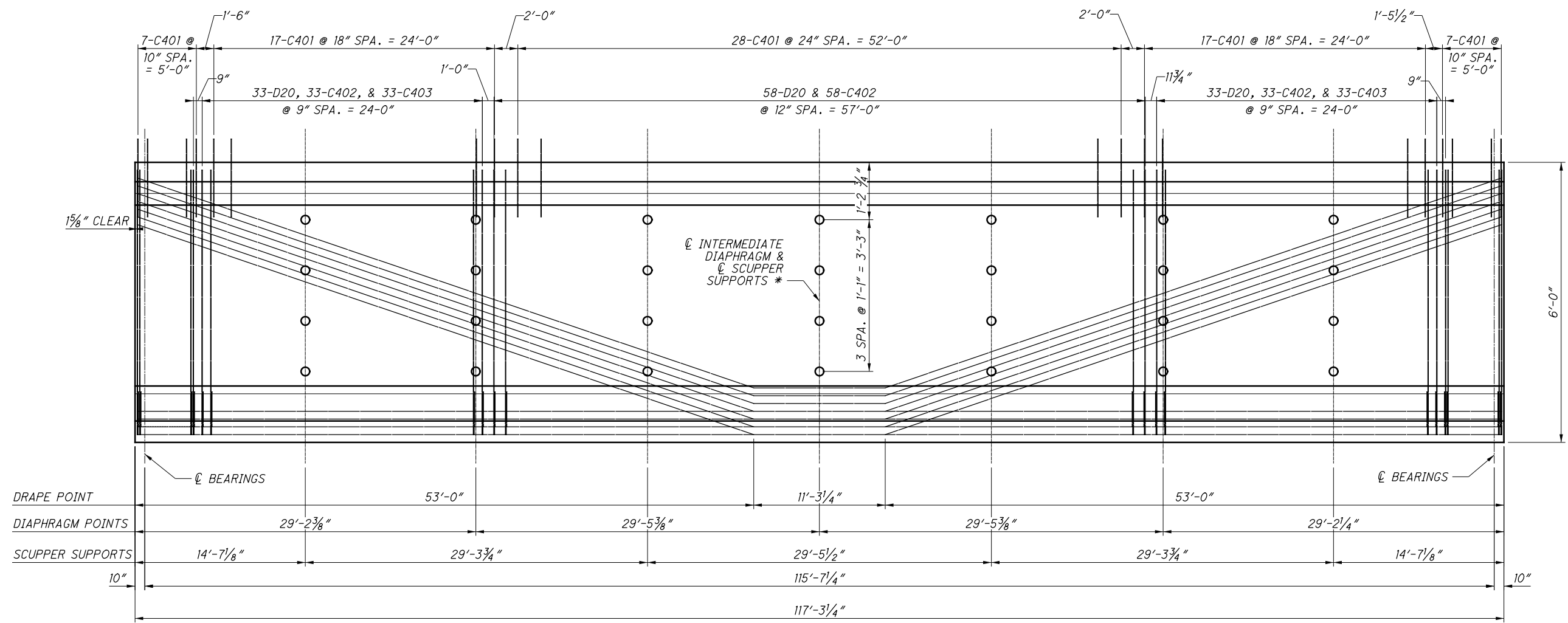
INDUSTRIAL DRIVE OVER MAUMEE RIVER

PID No. 22984

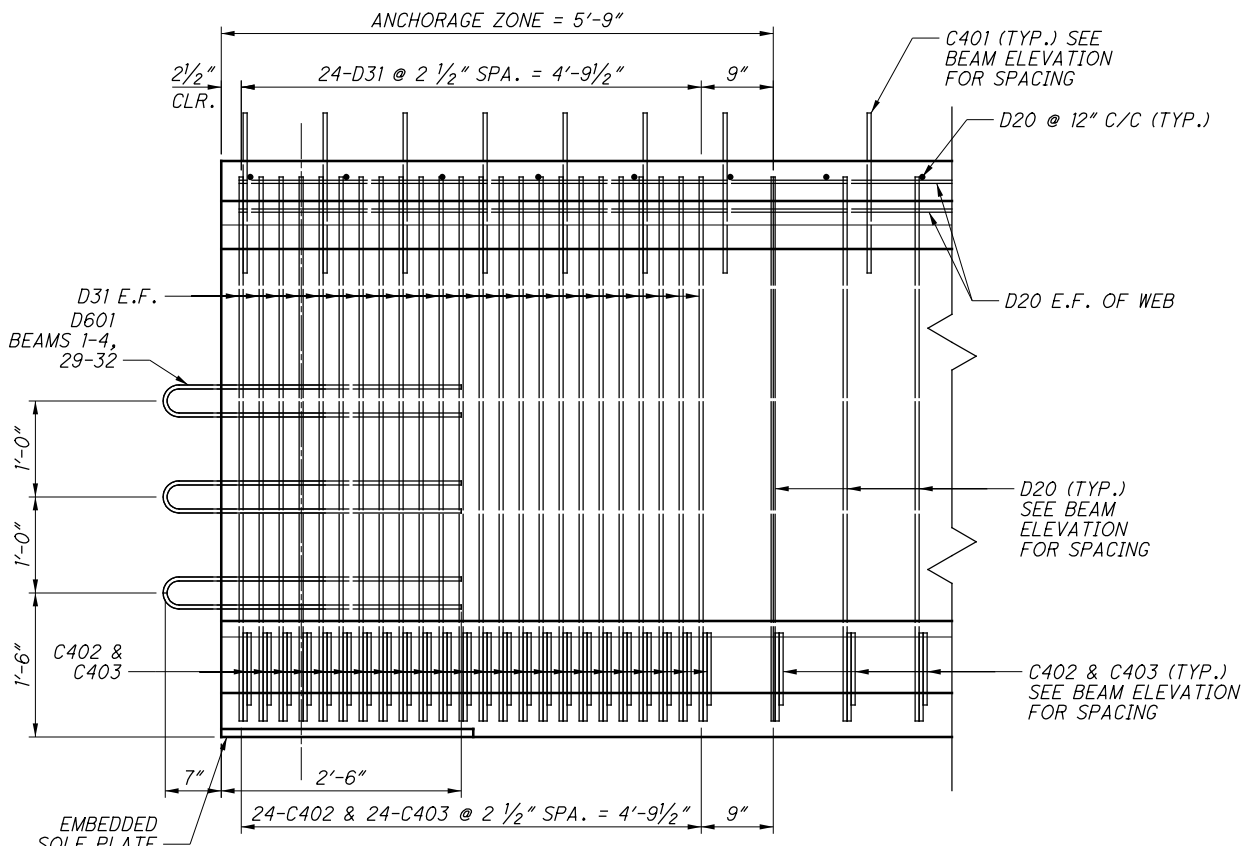
30/65

114
180

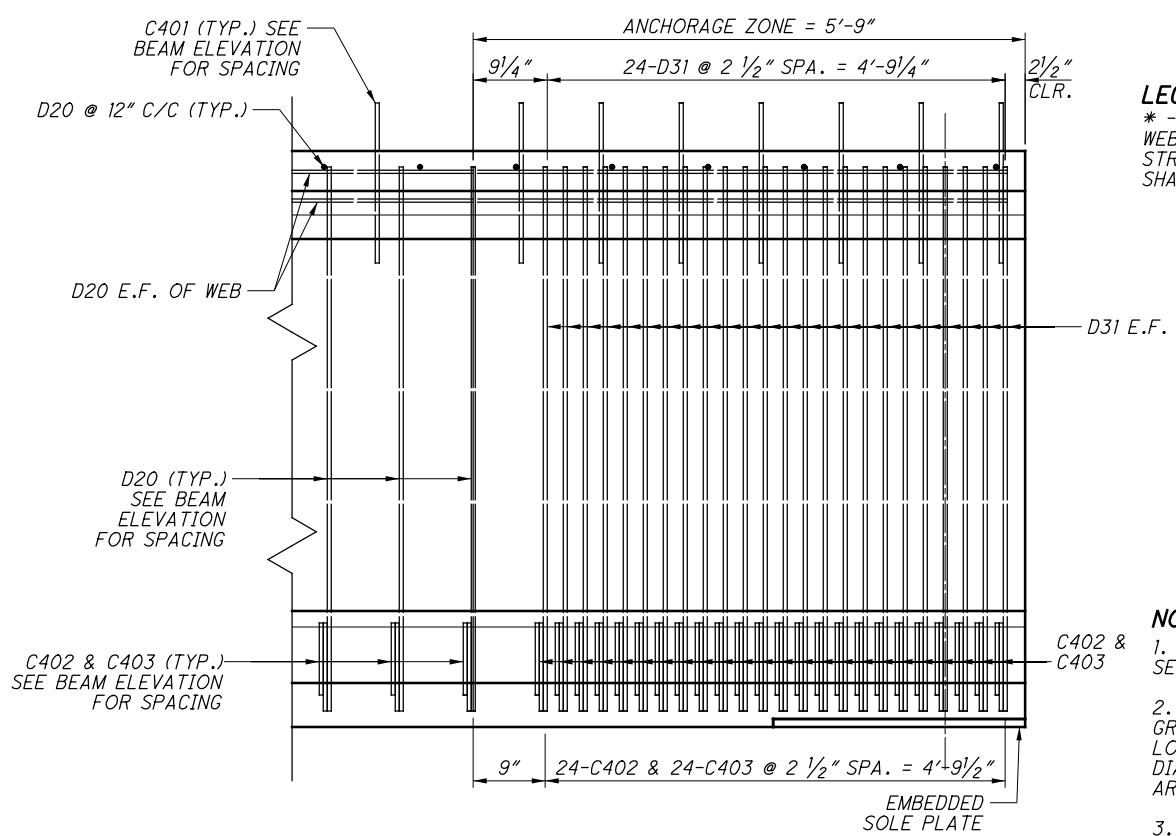
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BEAM ELEVATION



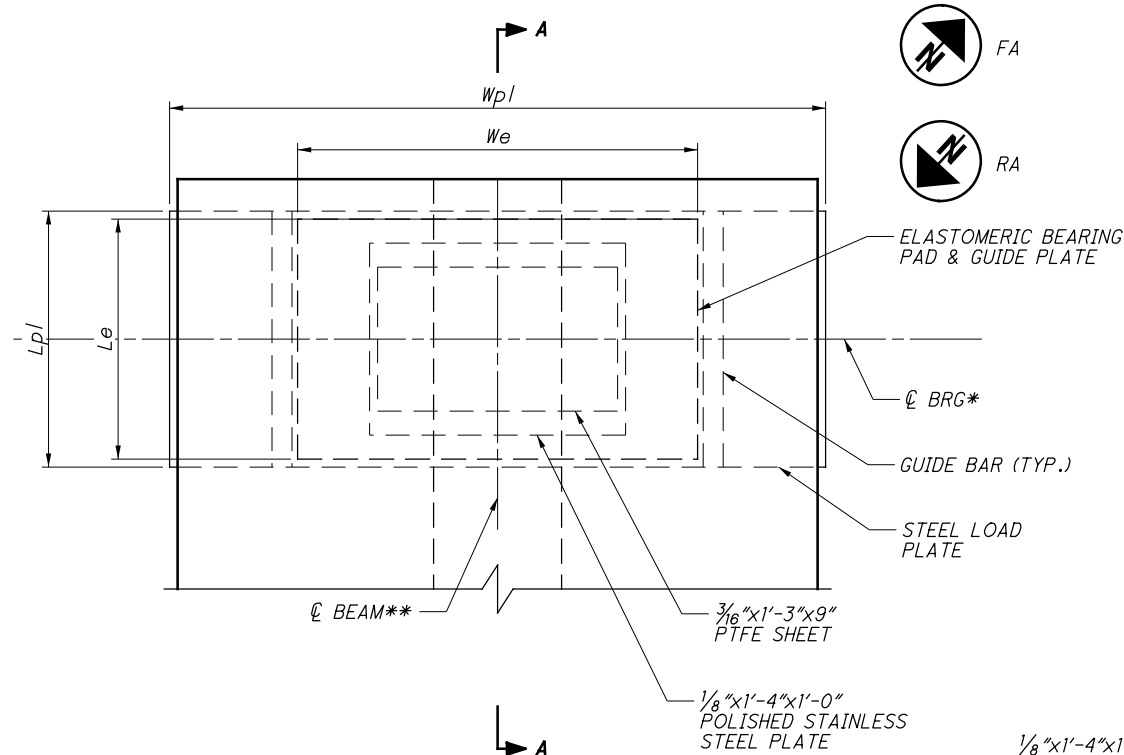
ACHORAGE REINFORCEMENT DETAIL AT ABUTMENTS



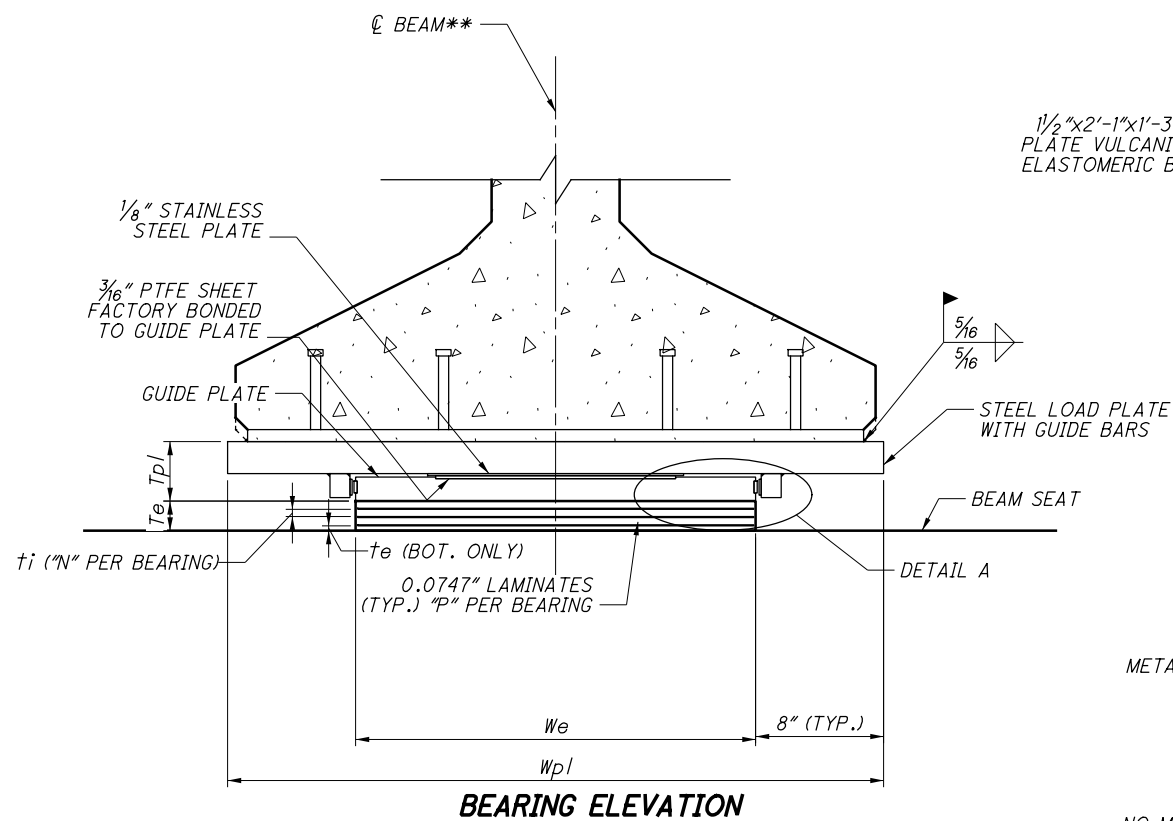
ACHORAGE REINFORCEMENT DETAIL AT PIERS

LEGEND:
* - LOCATE BOLT HOLES IN THE I-BEAM WEBS TO AVOID PRESTRESS PRESTRESSING STRANDS. THE MINIMUM CLEAR DISTANCE SHALL BE 1 1/2"

NOTES:
1. FOR ADDITIONAL DETAILS AND NOTES, SEE ODOT STANDARD DRAWING PSID-I-13.
2. ALL PRESTRESSING STRANDS SHALL BE GRADE 270 KIPS SEVEN WIRE, UNCOATED, LOW RELAXATION STRAND, WITH A DIAMETER OF 0.6 INCHES AND A NOMINAL AREA OF 0.217 SQUARE INCHES.
3. ONLY THE C401 REINFORCING BARS SHALL BE EPOXY COATED, GRADE 60.



BEARING LAYOUT



BEARING ELEVATION

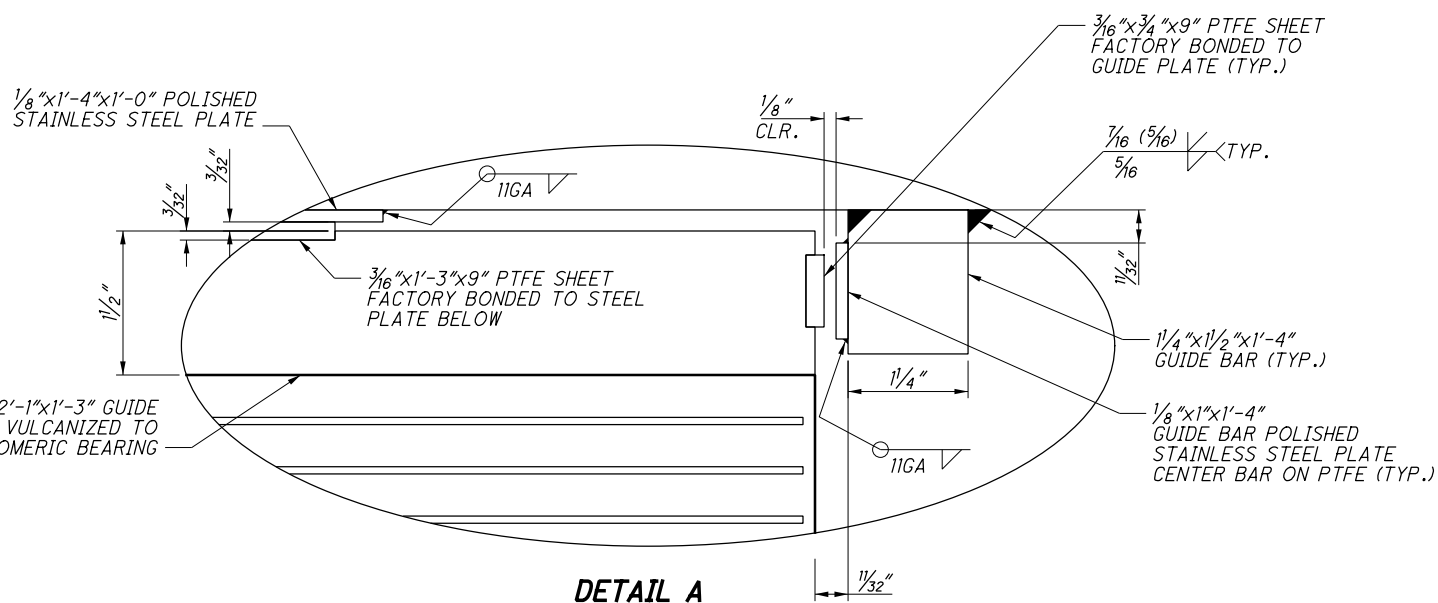
		ELASTOMER							STEEL LAMINATES		LOAD PLATE			LOAD (KIPS)		
LOCATION	TYPE	DUROMETER	Le	We	Te	ti	te	N	P	t	Lpl	Wpl	Tpl	DL	LL	TOTAL
REAR ABUTMENT	EXP	50	15"	25"	1.84"	0.44"	0.3"	3	3	0.0747"	16"	41"	2"	215	110	325
FORWARD ABUTMENT	EXP	50	15"	25"	1.84"	0.44"	0.3"	3	3	0.0747"	16"	41"	2"	230	110	340

NOTES:

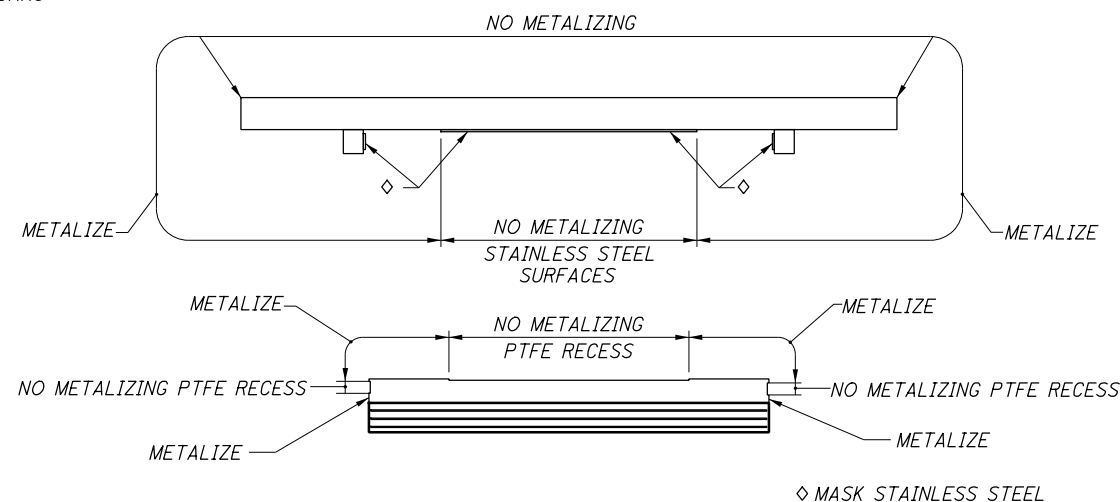
- LOAD PLATE:
THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
- ELASTOMERIC BEARING:
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.
- THE STEEL LOAD PLATE, GUIDE PLATE, AND GUIDE BARS SHALL BE METALIZED ASTM A709 GRADE 50 STEEL.
- ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A DIRECTION ARROW THAT POINTS UP-STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.

LEGEND:

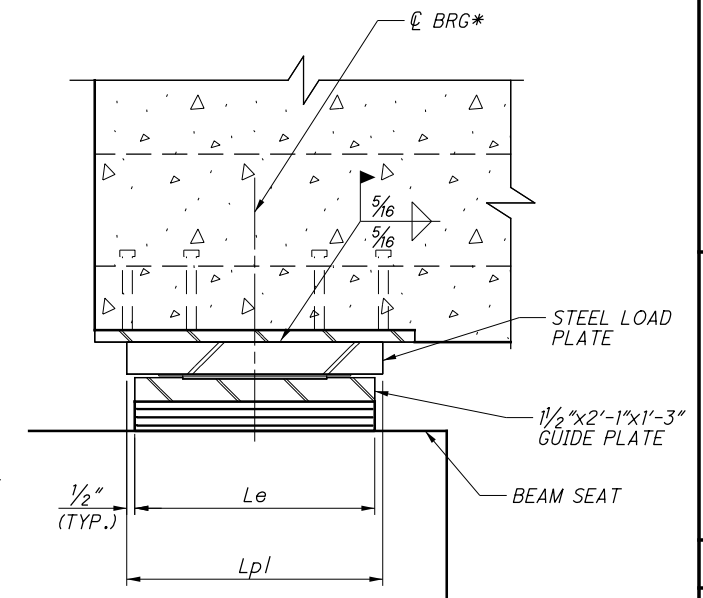
- * - DIMENSIONS SYMMETRICAL ABOUT CL BRG (& BRG ASSEMBLY)
** - DIMENSIONS SYMMETRICAL ABOUT CL BEAM
- Le - LENGTH OF LAMINATED ELASTOMERIC BEARING
We - WIDTH OF LAMINATED ELASTOMERIC BEARING
Te - TOTAL THICKNESS OF LAMINATED ELASTOMERIC BEARING
ti - THICKNESS OF INTERNAL ELASTOMER LAYER
te - THICKNESS OF EXTERNAL ELASTOMER LAYER
N - NUMBER OF INTERNAL ELASTOMER LAYERS
t - THICKNESS OF STEEL LAMINATES
P - NUMBER OF STEEL LAMINATES



DETAIL A

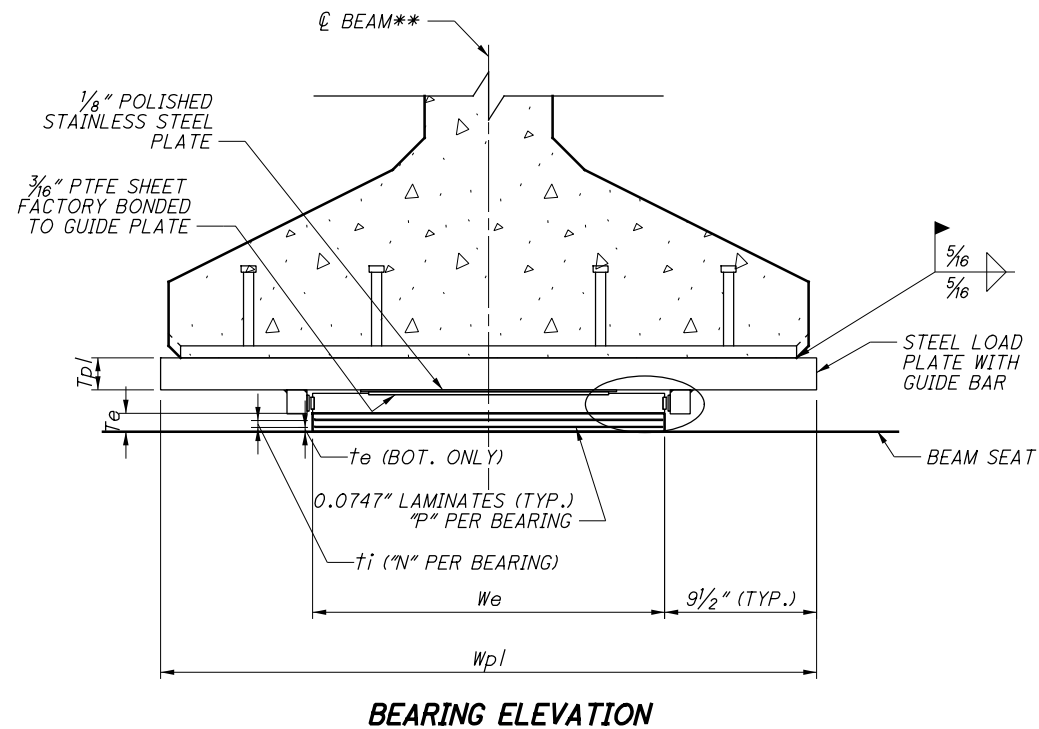
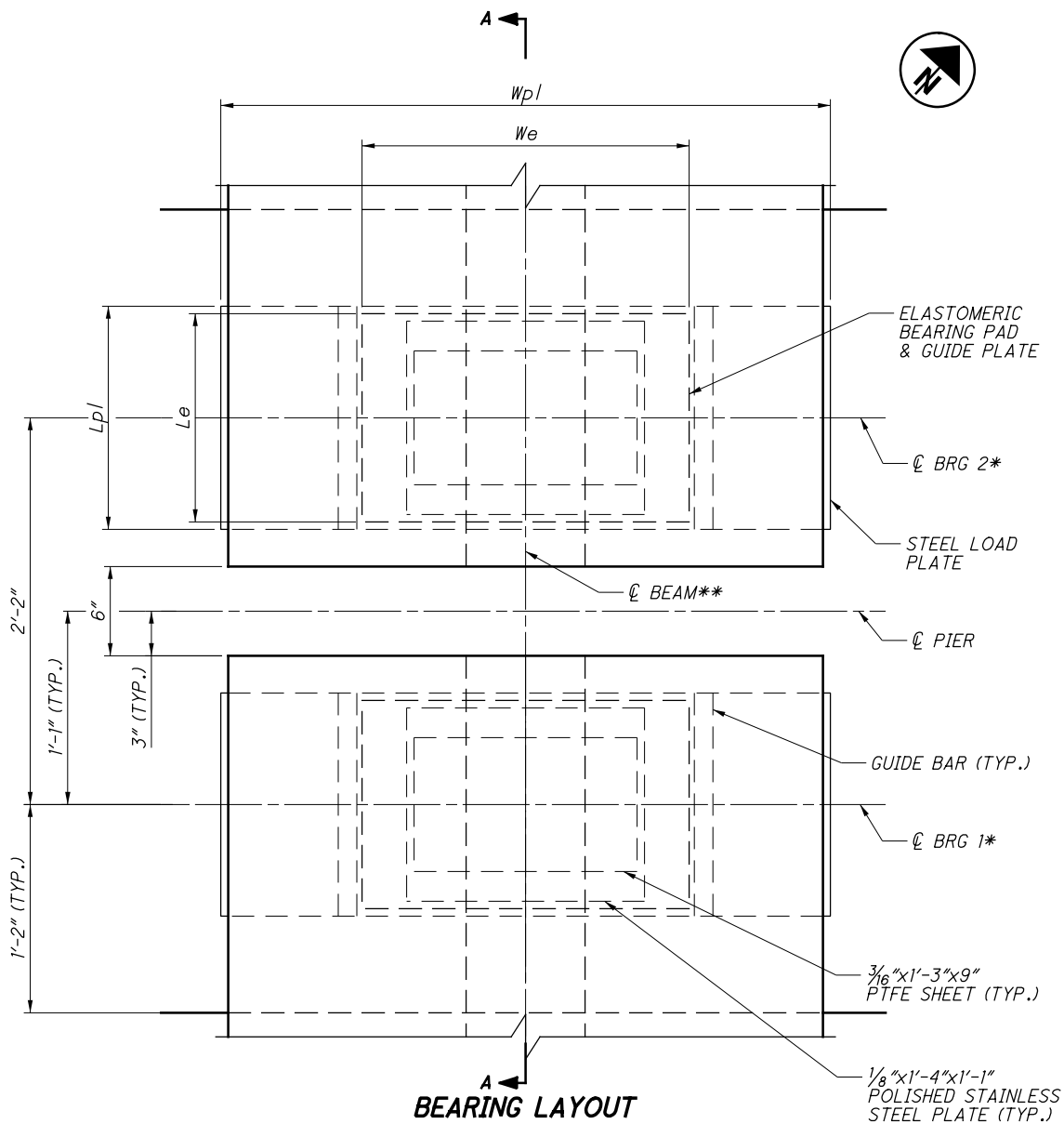


METALIZING DIAGRAM



SECTION A-A

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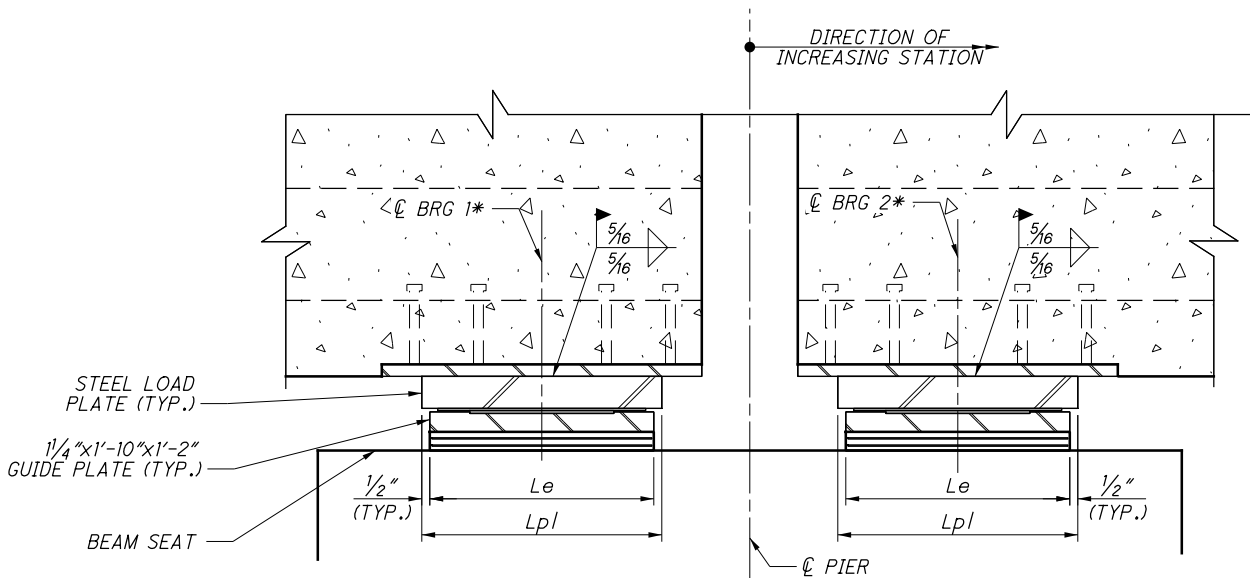
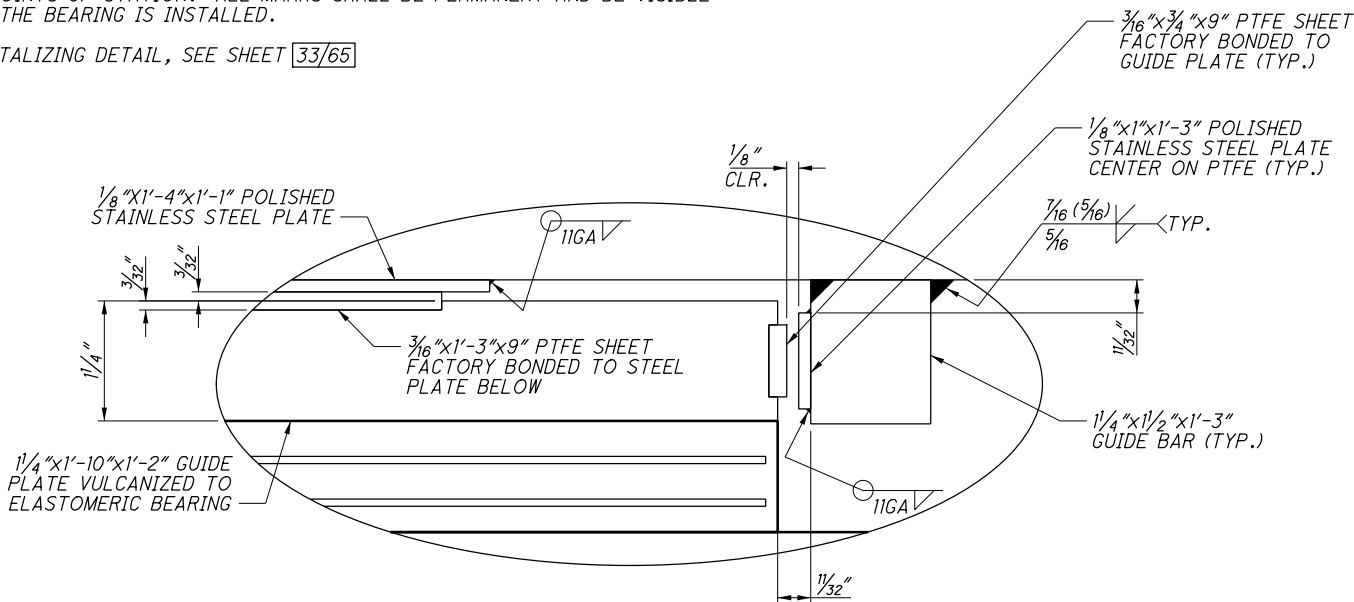
			ELASTOMER							STEEL LAMINATES		LOAD PLATE			LOAD (KIPS)		
LOCATION		TYPE	DUROMETER	Le	We	Te	ti	te	N	P	t	Lpl	Wpl	Tpl	DL	LL	TOTAL
PIERS 1	BRG 1	EXP	50	14"	22"	1.16"	0.44"	0.3"	2	2	0.0747"	15"	41"	2"	203	110	313
	BRG 2	EXP	50	14"	22"	1.16"	0.44"	0.3"	2	2	0.0747"	15"	41"	2 3/16"	203	110	313
PIERS 7	BRG 1	EXP	50	14"	22"	1.16"	0.44"	0.3"	2	2	0.0747"	15"	41"	2"	203	110	313
	BRG 2	EXP	50	14"	22"	1.16"	0.44"	0.3"	2	2	0.0747"	15"	41"	2"	209	110	319

NOTES:

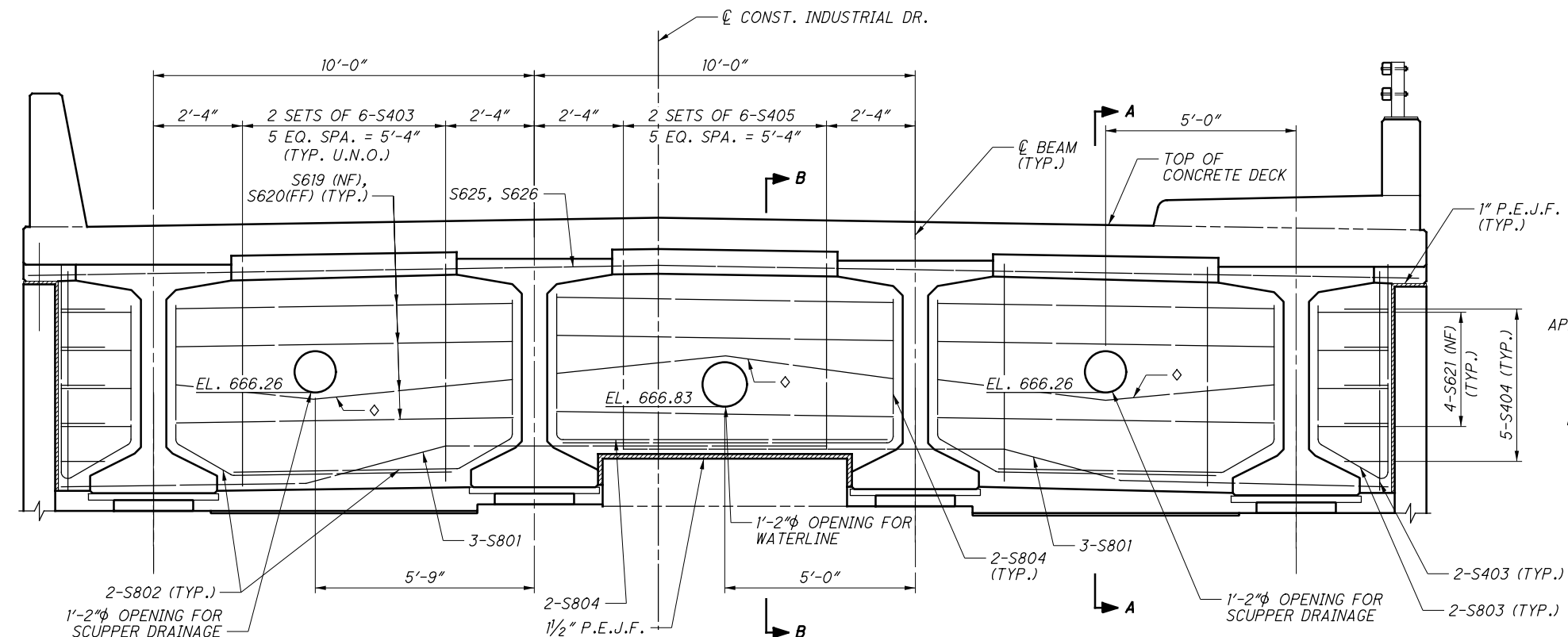
- LOAD PLATE:
THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
- ELASTOMERIC BEARING:
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.
- THE STEEL LOAD PLATES, GUIDE PLATES AND GUIDE BARS SHALL BE METALIZED ASTM A709 GRADE 50 STEEL.
- ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A DIRECTION ARROW THAT POINTS UP-STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.
- FOR METALIZING DETAIL, SEE SHEET 33/65

LEGEND:

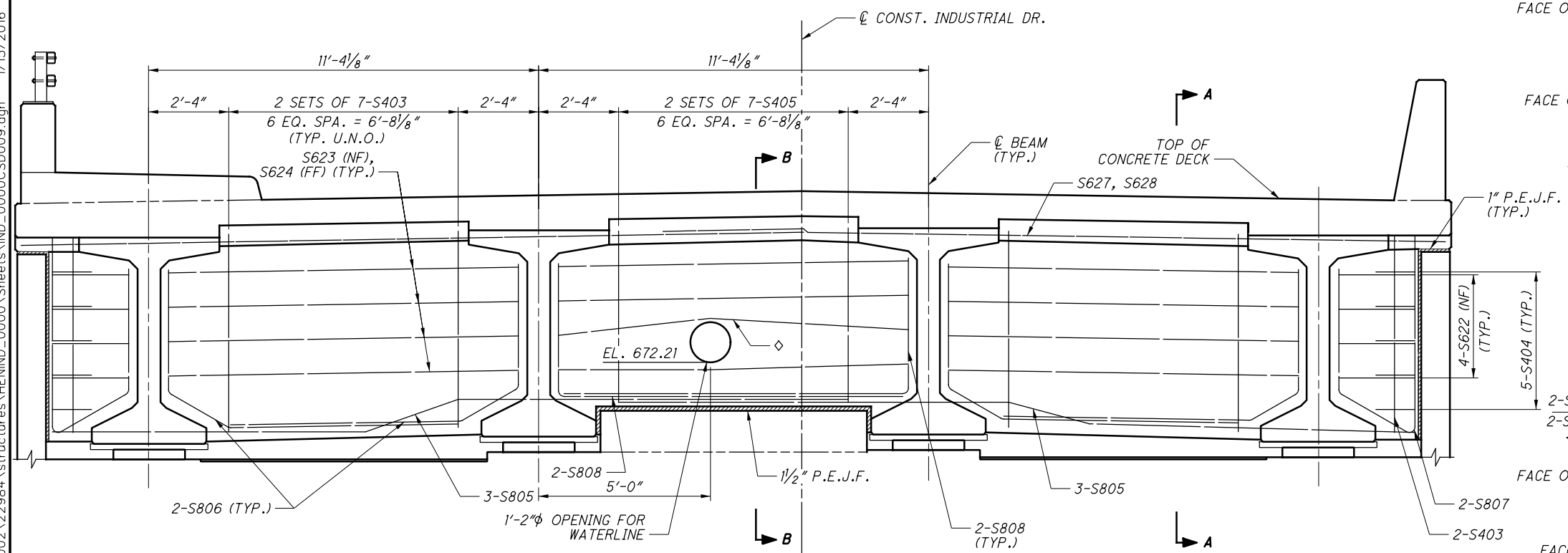
- * - DIMENSIONS SYMMETRICAL ABOUT CL BRG (& BRG ASSEMBLY)
- ** - DIMENSIONS SYMMETRICAL ABOUT CL BEAM
- Le - LENGTH OF LAMINATED ELASTOMERIC BEARING
- We - WIDTH OF LAMINATED ELASTOMERIC BEARING
- Te - TOTAL THICKNESS OF LAMINATED ELASTOMERIC BEARING
- ti - THICKNESS OF INTERNAL ELASTOMER LAYER
- te - THICKNESS OF EXTERNAL ELASTOMER LAYER
- N - NUMBER OF INTERNAL ELASTOMER LAYERS
- t - THICKNESS OF STEEL LAMINATES
- P - NUMBER OF STEEL LAMINATES



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REAR ABUTMENT END DIAPHRAGM ELEVATION
(LOOKING DOWNSTATION)

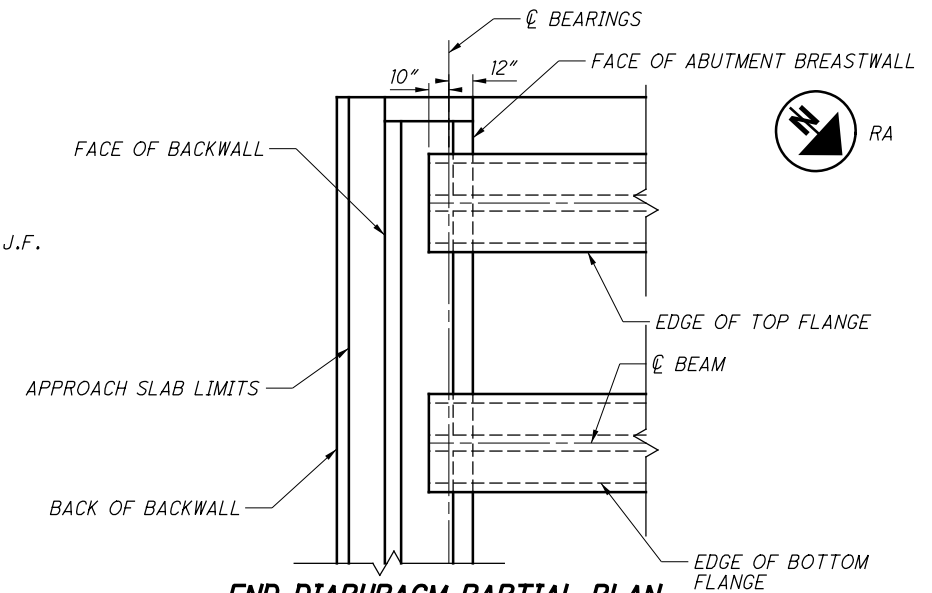


FORWARD ABUTMENT END DIAPHRAGM ELEVATION
(LOOKING UPSTATION)

- NOTES:**
1. FOR ADDITIONAL DETAILS AND NOTES NOT SHOWN, SEE ODOT STANDARD DRAWING PSID-1-13.
 2. FOR BEARING DETAILS, SEE SHEET 33/65.
 3. PLACE VERTICAL BARS PARALLEL TO BEAMS.
 4. ABUTMENT DIAPHRAGM, PRESTRESSED I-BEAM SUPERSTRUCTURE: PLACE THE CONCRETE ENCASING THE PRESTRESSED I-BEAM STRUCTURAL MEMBERS AS PART OF THE DECK POUR.

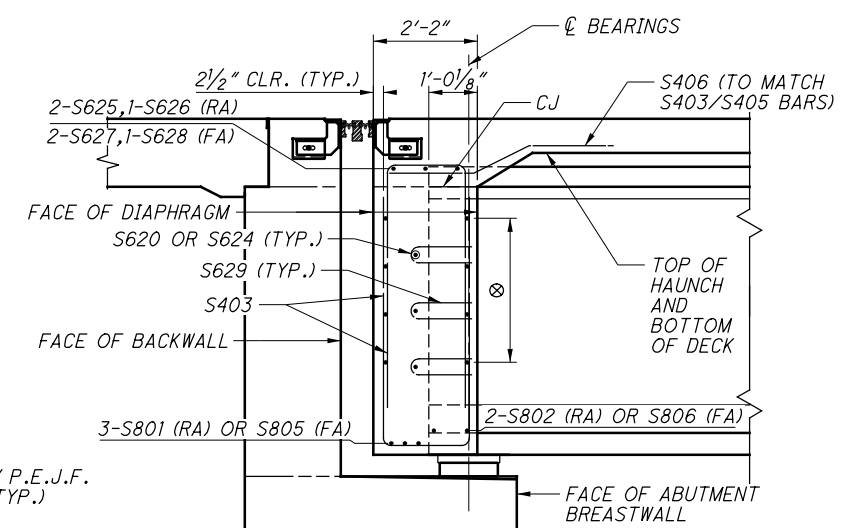
DIAPHRAGM REINFORCING REQUIRED LAP LENGTHS	
HORIZONTAL NO. 6 BARS	4'-1" MIN.
HORIZONTAL NO. 8 BARS	6'-10" MIN.

- LEGEND:**
- ⊗ - 4-S619 (RA) OR 4-S623 (FA) (NF)
4-S620 (RA) OR 4-S624 (FA) (FF)
3 SPA. @ 1'-0" MAX.
 - ◇ - FIELD BEND TO AVOID PIPE OPENINGS

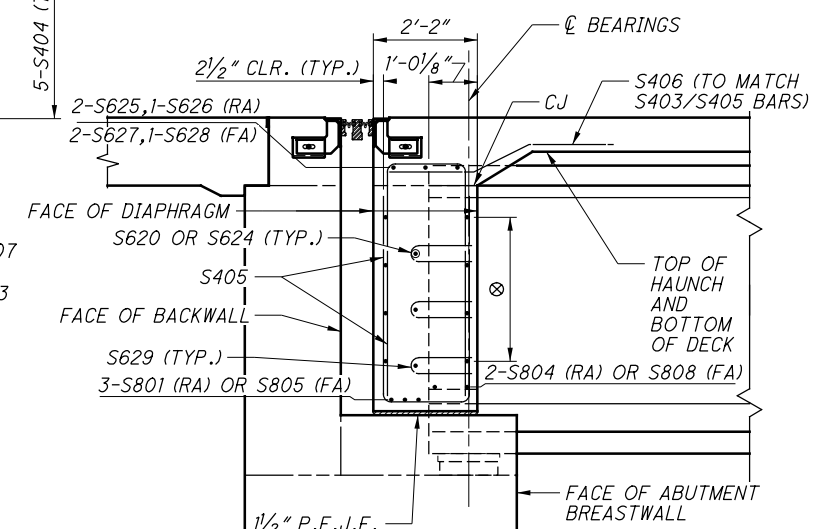


END DIAPHRAGM PARTIAL PLAN

(REAR ABUTMENT SHOWN, FORWARD ABUTMENT SIMILAR, OPPOSITE HAND)
(MODULAR EXPANSION JOINT NOT SHOWN FOR CLARITY)



SECTION A-A



SECTION B-B

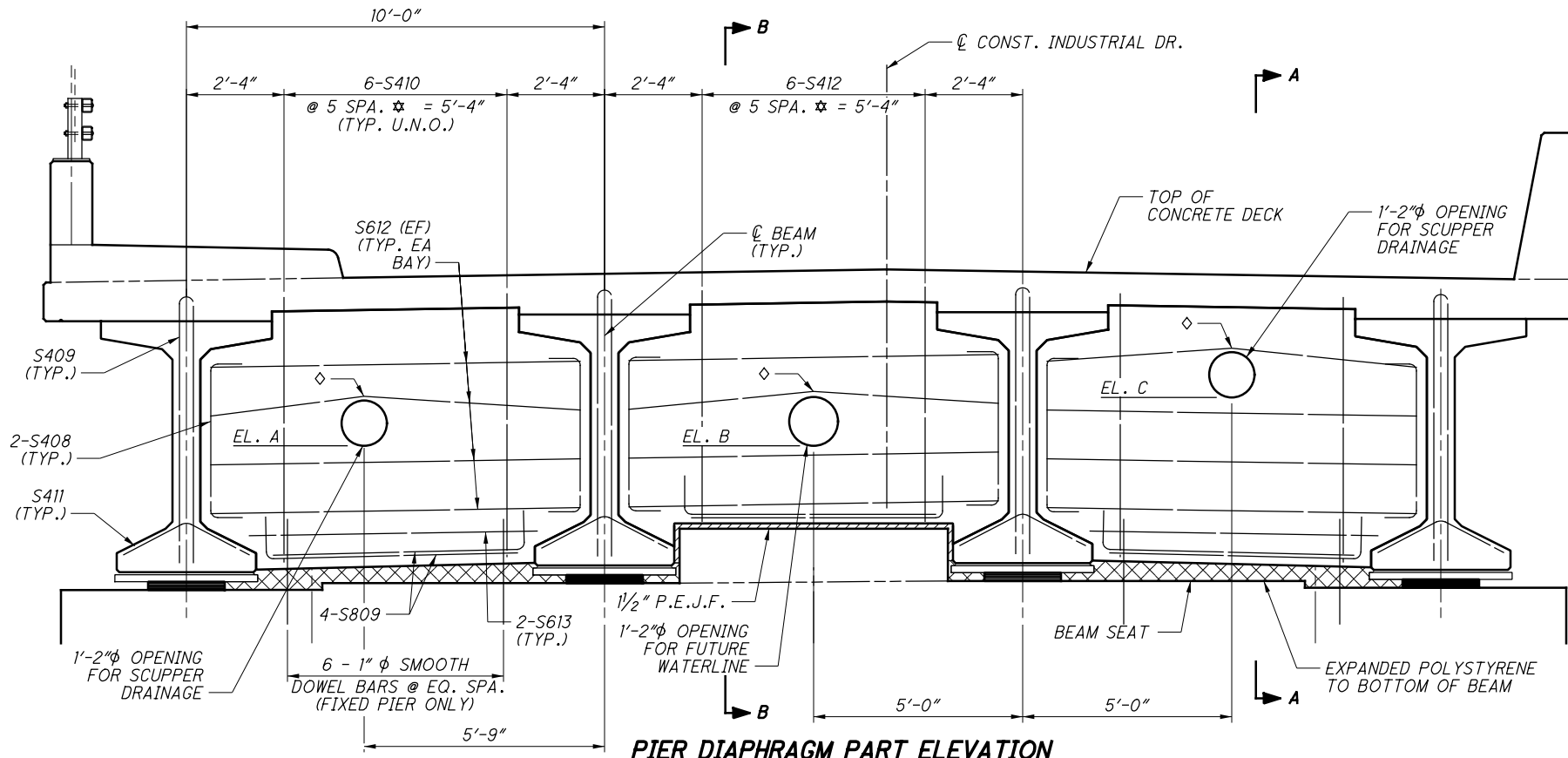
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SCUPPER DRAINAGE
OPENING LOCATION

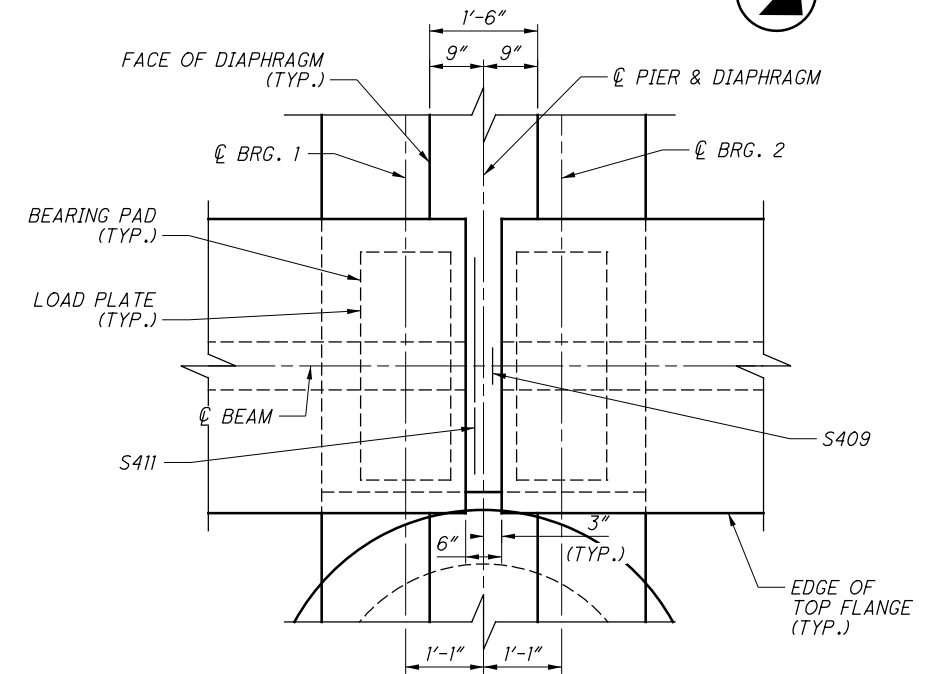
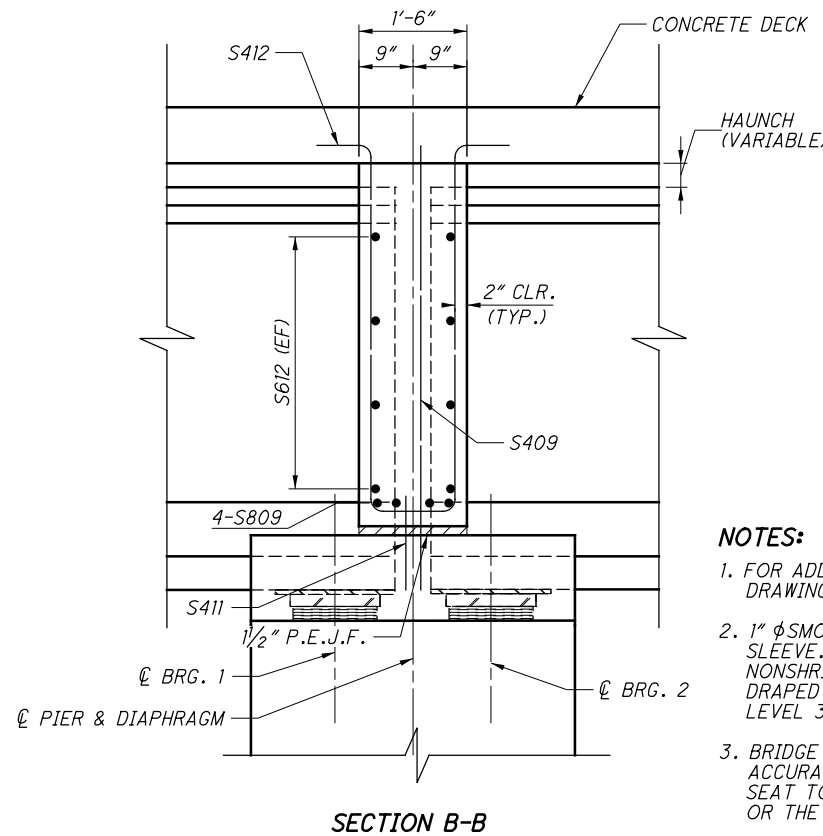
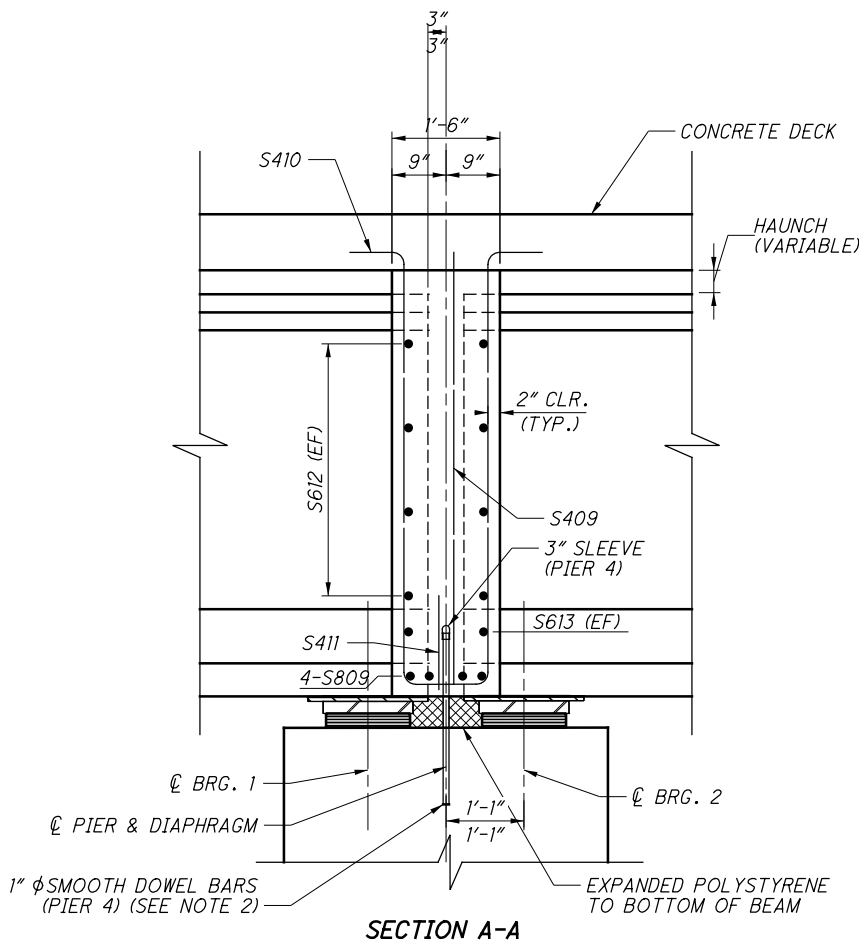
PIER	EL. A	EL. C
1	667.43	668.59
2	668.60	-
3	669.76	-
4	670.96	-
5	672.14	-

WATERLINE OPENING
LOCATION

PIER	EL. B
1	666.62
2	667.42
3	668.22
4	669.02
5	669.82
6	670.62
7	671.42



* - SPA. NOT TO EXCEED 1'-0" EXCEPT TO AVOID SCUPPER & WATERLINE OPENINGS.



NOTES:

- FOR ADDITIONAL DETAILS AND NOTES NOT SHOWN, SEE ODOT STANDARD DRAWING PSID-1-13.
- 1" Ø SMOOTH DOWEL BARS ARE ASTM A311 CLASS A, GRADE 1018, WITH SLEEVE. (INSTALL DOWEL ACCORDING TO ITEM 510 DOWEL HOLES WITH NONSHRINK, NON-METALLIC GROUT, 705.20.) INCLUDED WITH ITEM 515, DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, WF72-49 FOR PAYMENT.
- BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATLY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR HOLES OR THE PRESETTING OF ANCHORS.

LEGEND:

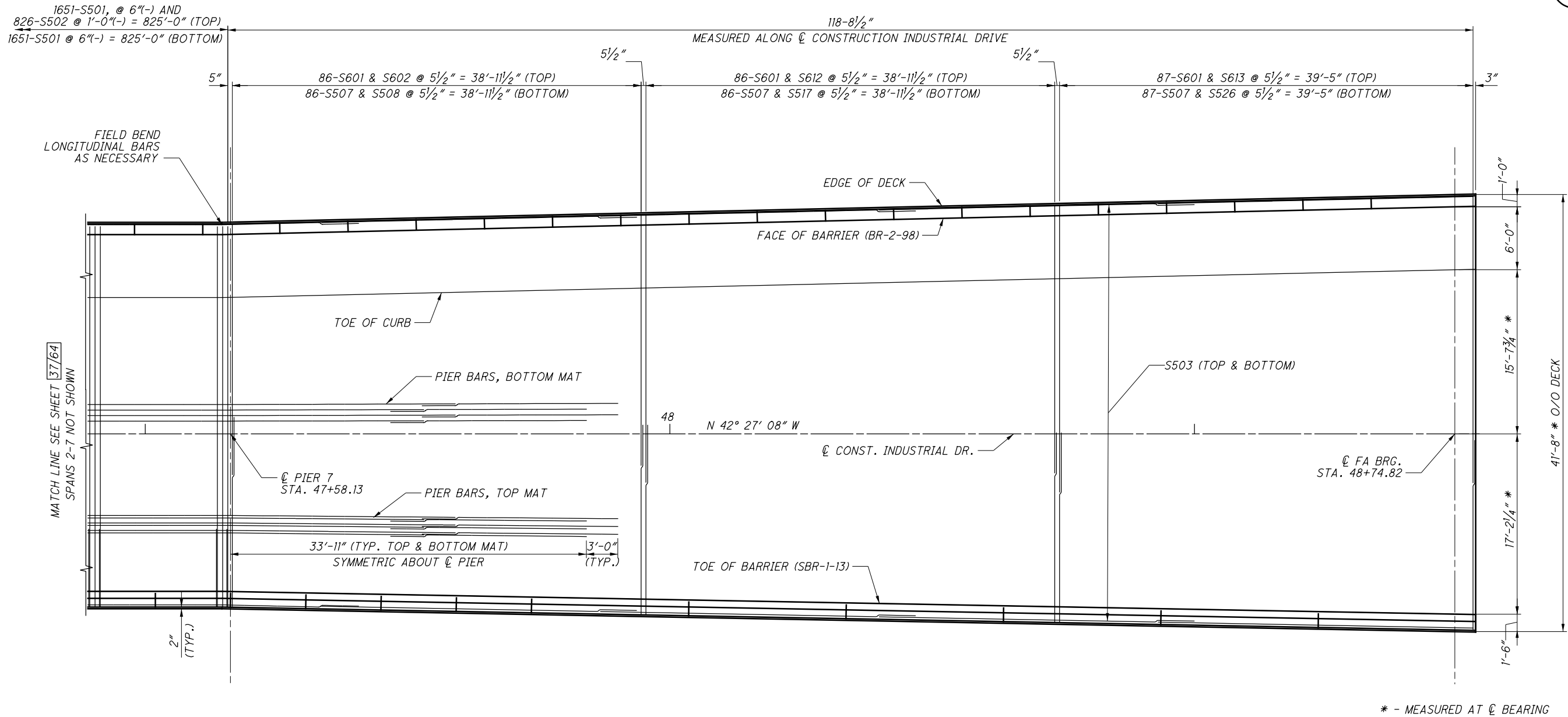
◇ - FIELD BEND AROUND PIPE OPENINGS



PARTIAL DECK PLAN

- THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE BEAM/GIRDER, FROM THE SURFACE OF THE DECK TO THE TOP OF THE TOP FLANGE MINUS THE DECK SLAB THICKNESS.

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PARTIAL DECK PLAN

DECK REINFORCING REQUIRED LAP LENGTHS	
NO. 4 BARS	2'-0" MIN.
NO. 5 BARS	3'-2" MIN.
NO. 6 BARS	3'-10" MIN.

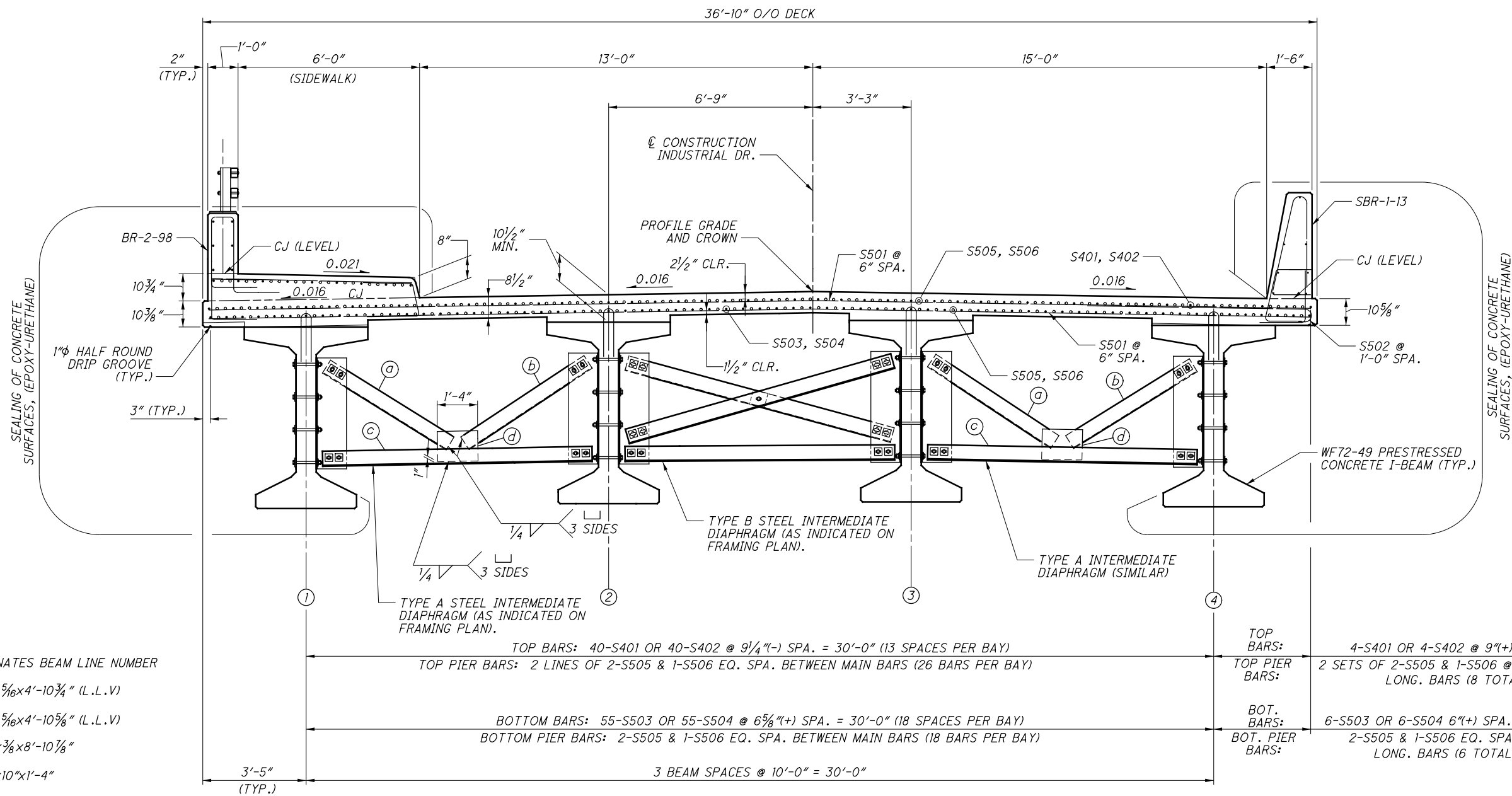
NOTES:
1. FOR NOTES, SEE SHEET 38/65.

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LEGEND:

- # - DESIGNATES BEAM LINE NUMBER
- a - L6x4x $\frac{5}{16}$ x4'-10 $\frac{3}{4}$ " (L.L.V)
- b - L6x4x $\frac{5}{16}$ x4'-10 $\frac{5}{8}$ " (L.L.V)
- c - L6x6x $\frac{3}{8}$ x8'-10 $\frac{1}{8}$ "
- d - \angle $\frac{5}{8}$ "x10"x1'-4"

DECK REINFORCING REQUIRED LAP LENGTHS	
NO. 4 BARS	2'-0" MIN.
NO. 5 BARS	3'-2" MIN.
NO. 6 BARS	3'-10" MIN.



TRANSVERSE SECTION SPANS 1 - 7

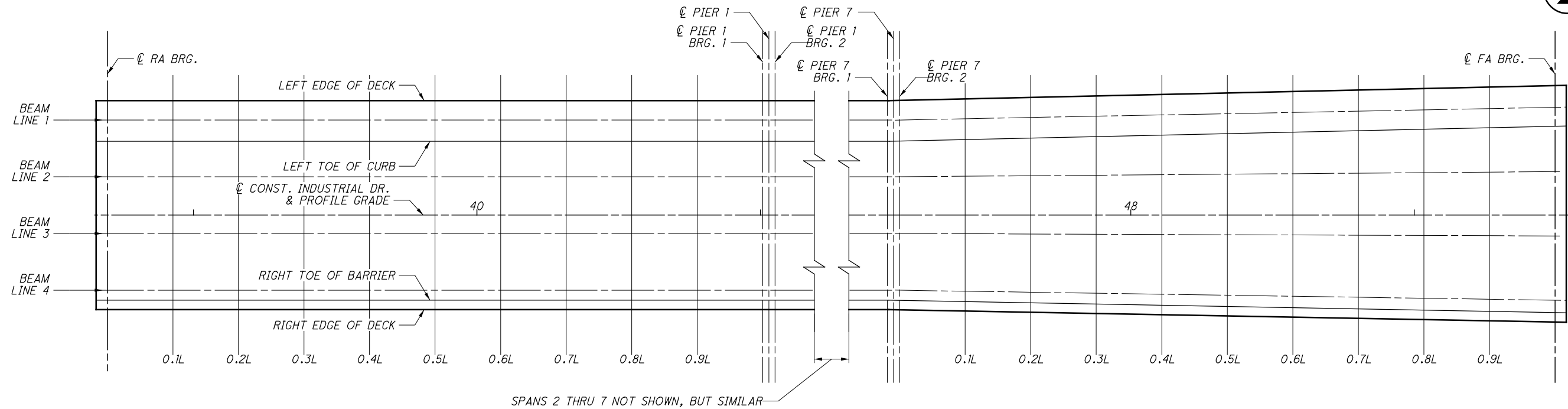
NOTES:

- FOR SPAN 8 TRANSVERSE SECTION, SEE SHEET 40/64.
- DECK SLAB THICKNESS FOR CONCRETE QUANTITY: THE TOPPING THICKNESSES SHOWN FROM THE TOP OF DECK SLAB TO THE TOP OF THE TOP FLANGE ALONG THE CENTERLINE OF THE I-BEAM ARE THEORETICAL DIMENSIONS. THE HAUNCH DEPTH IS THE TOPPING THICKNESS MINUS THE DESIGN SLAB THICKNESS. THE DEPARTMENT WILL PAY FOR SUPERSTRUCTURE CONCRETE BASED ON THE DESIGN SLAB THICKNESS AND THE AVERAGE OF THE THEORETICAL HAUNCH DEPTHS AT MID-SPAN AND AT EACH BEAM BEARING EVEN THOUGH THE DEVIATION FROM THE DIMENSIONS SHOWN MAY BE NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. ONCE ALL BEAMS ARE SET IN THEIR FINAL POSITION, THE ACTUAL CAMBER FOR EACH MEMBER WILL BE THE TOP OF THE BEAM ELEVATION AT THE MID-SPAN MINUS THE AVERAGE TOP OF BEAM ELEVATION AT EACH BEARING. THE ACTUAL TOPPING THICKNESS AT MID-SPAN WILL BE THE THEORETICAL DIMENSION PLUS OR MINUS THE DIFFERENCE BETWEEN THE ACTUAL AND ANTICIPATED CAMBER.
- FOR DECK PLAN, SEE SHEETS 37-38/64.
- FOR FRAMING PLAN, SEE SHEETS 28-30/64.
- FOR RAILING DETAILS, SEE SHEETS 49-52/64.
- FOR SIDEWALK DETAILS, SEE SHEET 53/64.
- FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET 31-32/64.
- FOR "TYPE B" STEEL INTERMEDIATE DIAPHRAGM DETAILS, SEE STD. DWG. PSID-1-13.
- FOR "TYPE A" STEEL INTERMEDIATE DIAPHRAGM DETAILS, USE STD. DWG. PSID-1-13 EXCEPT AS DETAILED HEREIN.

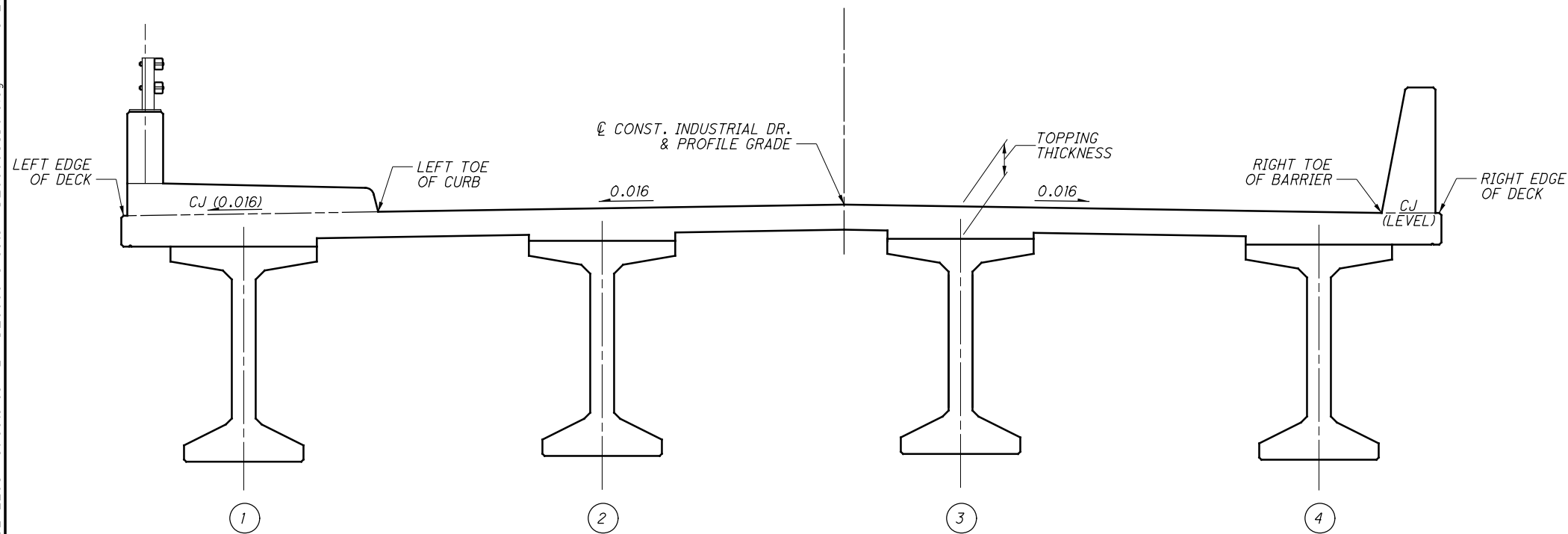
TRANSVERSE SECTION
SPAN 8

1. FOR TRANSVERSE SECTION ALONG SPANS 1 - 7, AND TRANSVERSE SECTION NOTES, SEE SHEET 39/64.

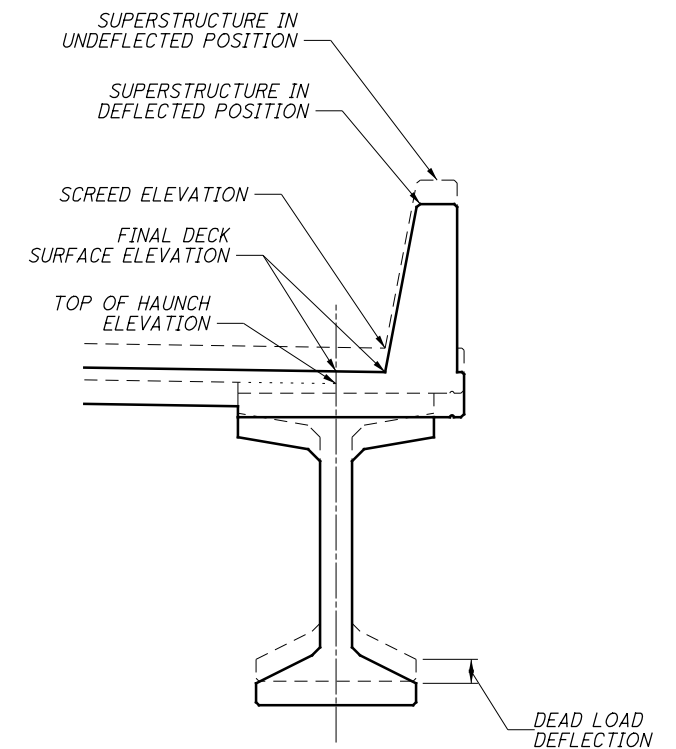
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KEY PLAN



TYPICAL CROSS SECTION



SCREED AND HAUNCH LOCATION

NOTES:

1. DECK SLAB THICKNESS FOR CONCRETE QUANTITY: THE TOPPING THICKNESSES SHOWN FROM THE TOP OF THE DECK SLAB TO THE TOP OF THE TOP FLANGE ALONG THE CENTERLINE OF THE I-BEAM ARE THEORETICAL DIMENSIONS. THE HAUNCH DEPTH CONCRETE BASED ON THE DESIGN SLAB THICKNESS AND THE AVERAGE OF THE THEORETICAL HAUNCH DEPTHS AT MID-SPAN AND AT EACH BEAM BEARING EVEN THROUGH DEVIATION FROM THE DIMENSIONS SHOWN MAY BE NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. ONCE ALL BEAM S ARE SET IN THEIR FINAL POSITION, THE ACTUAL CAMBER FOR EACH MEMBER WILL BE THE TOP OF BEAM ELEVATION AT MID-SPAN MINUS THE AVERAGE TOP OF BEAM ELEVATION AT EACH BEARING. THE ACTUAL TOPPING THICKNESS AT MID-SPAN WILL BE THE THEORETICAL DIMENSION PLUS OR MINUS THE DIFFERENCE BETWEEN THE ACTUAL AND ANTICIPATED CAMBER.

LEGEND:

- BEAM LINE NUMBER

BEAM LINE	BEAMS
1	B1, B5, B9, B13, B17, B21, B25, AND B29
2	B2, B6, B10, B14, B18, B22, B26, AND B30
3	B3, B7, B11, B15, B19, B23, B27, AND B31
4	B4, B8, B12, B16, B20, B24, B28, AND B32

SCREED ELEVATIONS

SCREED ELEVATIONS SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

SCREED ELEVATIONS											
LOCATION		LEFT EDGE OF DECK		LEFT TOE OF CURB		CL CONST. IND DR & PG		RIGHT TOE OF BARRIER		RIGHT EDGE OF DECK	
		STATION	ELEV.	STATION	ELEV.	STATION	ELEV.	STATION	ELEV.	STATION	ELEV.
SPAN 1	CL RA BRG	39+34.82	670.57	39+34.82	670.68	39+34.82	670.89	39+34.82	670.65	39+34.82	670.65
	0.1L	39+46.49	670.68	39+46.49	670.79	39+46.49	671.01	39+46.49	670.76	39+46.49	670.76
	0.2L	39+58.16	670.79	39+58.16	670.90	39+58.16	671.12	39+58.16	670.87	39+58.16	670.87
	0.3L	39+69.83	670.89	39+69.83	671.01	39+69.83	671.23	39+69.83	670.98	39+69.83	670.98
	0.4L	39+81.50	670.99	39+81.50	671.10	39+81.50	671.33	39+81.50	671.07	39+81.50	671.07
	0.5L	39+93.16	671.07	39+93.16	671.19	39+93.16	671.41	39+93.16	671.16	39+93.16	671.16
	0.6L	40+04.83	671.15	40+04.83	671.26	40+04.83	671.49	40+04.83	671.23	40+04.83	671.23
	0.7L	40+16.50	671.21	40+16.50	671.33	40+16.50	671.55	40+16.50	671.29	40+16.50	671.29
	0.8L	40+28.17	671.27	40+28.17	671.38	40+28.17	671.60	40+28.17	671.35	40+28.17	671.35
	0.9L	40+39.84	671.31	40+39.84	671.43	40+39.84	671.64	40+39.84	671.40	40+39.84	671.40
	P1 BRG 1	40+50.42	671.35	40+50.42	671.47	40+50.42	671.68	40+50.42	671.44	40+50.42	671.44
×	PIER 1	40+51.51	671.36	40+51.51	671.48	40+51.51	671.68	40+51.51	671.44	40+51.51	671.44
SPAN 2	P1 BRG 2	40+52.59	671.37	40+52.59	671.48	40+52.59	671.69	40+52.59	671.45	40+52.59	671.45
	0.1L	40+63.28	671.47	40+63.28	671.59	40+63.28	671.80	40+63.28	671.56	40+63.28	671.56
	0.2L	40+75.06	671.58	40+75.06	671.70	40+75.06	671.92	40+75.06	671.67	40+75.06	671.67
	0.3L	40+86.84	671.69	40+86.84	671.80	40+86.84	672.03	40+86.84	671.77	40+86.84	671.77
	0.4L	40+98.62	671.79	40+98.62	671.90	40+98.62	672.12	40+98.62	671.87	40+98.62	671.87
	0.5L	41+10.39	671.87	41+10.39	671.99	41+10.39	672.21	41+10.39	671.95	41+10.39	671.95
	0.6L	41+22.17	671.95	41+22.17	672.06	41+22.17	672.28	41+22.17	672.03	41+22.17	672.03
	0.7L	41+33.95	672.01	41+33.95	672.12	41+33.95	672.35	41+33.95	672.09	41+33.95	672.09
	0.8L	41+45.72	672.07	41+45.72	672.18	41+45.72	672.40	41+45.72	672.15	41+45.72	672.15
	0.9L	41+57.50	672.11	41+57.50	672.23	41+57.50	672.44	41+57.50	672.20	41+57.50	672.20
	P2 BRG 1	41+68.19	672.15	41+68.19	672.27	41+68.19	672.48	41+68.19	672.24	41+68.19	672.24
×	PIER 2	41+69.28	672.16	41+69.28	672.28	41+69.28	672.48	41+69.28	672.24	41+69.28	672.24
SPAN 3	P2 BRG 2	41+70.36	672.17	41+70.36	672.28	41+70.36	672.49	41+70.36	672.25	41+70.36	672.25
	0.1L	41+81.06	672.27	41+81.06	672.39	41+81.06	672.60	41+81.06	672.36	41+81.06	672.36
	0.2L	41+92.83	672.39	41+92.83	672.50	41+92.83	672.72	41+92.83	672.47	41+92.83	672.47
	0.3L	42+04.61	672.49	42+04.61	672.61	42+04.61	672.83	42+04.61	672.57	42+04.61	672.57
	0.4L	42+16.39	672.59	42+16.39	672.70	42+16.39	672.92	42+16.39	672.67	42+16.39	672.67
	0.5L	42+28.16	672.67	42+28.16	672.79	42+28.16	673.01	42+28.16	672.75	42+28.16	672.75
	0.6L	42+39.94	672.75	42+39.94	672.86	42+39.94	673.09	42+39.94	672.83	42+39.94	672.83
	0.7L	42+51.72	672.81	42+51.72	672.93	42+51.72	673.15	42+51.72	672.89	42+51.72	672.89
	0.8L	42+63.49	672.87	42+63.49	672.98	42+63.49	673.20	42+63.49	672.95	42+63.49	672.95
	0.9L	42+75.27	672.92	42+75.27	673.03	42+75.27	673.24	42+75.27	673.00	42+75.27	673.00
	P3 BRG 1	42+85.97	672.96	42+85.97	673.07	42+85.97	673.28	42+85.97	673.04	42+85.97	673.04
×	PIER 3	42+87.05	672.96	42+87.05	673.08	42+87.05	673.29	42+87.05	673.05	42+87.05	673.05
SPAN 4	P3 BRG 2	42+88.13	672.97	42+88.13	673.08	42+88.13	673.29	42+88.13	673.05	42+88.13	673.05
	0.1L	42+98.83	673.08	42+98.83	673.19	42+98.83	673.40	42+98.83	673.16	42+98.83	673.16
	0.2L	43+10.60	673.19	43+10.60	673.30	43+10.60	673.52	43+10.60	673.27	43+10.60	673.27
	0.3L	43+22.38	673.29	43+22.38	673.41	43+22.38	673.63	43+22.38	673.37	43+22.38	673.37
	0.4L	43+34.16	673.39	43+34.16	673.50	43+34.16	673.73	43+34.16	673.47	43+34.16	673.47
	0.5L	43+45.93	673.47	43+45.93	673.59	43+45.93	673.81	43+45.93	673.56	43+45.93	673.56
	0.6L	43+57.71	673.55	43+57.71	673.66	43+57.71	673.89	43+57.71	673.63	43+57.71	673.63
	0.7L	43+69.49	673.61	43+69.49	673.73	43+69.49	673.95	43+69.49	673.69	43+69.49	673.69
	0.8L	43+81.27	673.67	43+81.27	673.78	43+81.27	674.00	43+81.27	673.75	43+81.27	673.75
	0.9L	43+93.04	673.72	43+93.04	673.83	43+93.04	674.04	43+93.04	673.80	43+93.04	673.80
	P4 BRG 1	44+03.74	673.76	44+03.74	673.87	44+03.74	674.08	44+03.74	673.84	44+03.74	673.84

SCREED ELEVATIONS											
LOCATION		LEFT EDGE OF DECK		LEFT TOE OF CURB		CL CONST. IND DR & PG		RIGHT TOE OF BARRIER		RIGHT EDGE OF DECK	
		STATION	ELEV.	STATION	ELEV.	STATION	ELEV.	STATION	ELEV.	STATION	ELEV.
✕	PIER 4	44+04.82	673.76	44+04.82	673.88	44+04.82	674.09	44+04.82	673.85	44+04.82	673.85
SPAN 5	P4 BRG 2	44+05.90	673.77	44+05.90	673.89	44+05.90	674.09	44+05.90	673.85	44+05.90	673.85
	0.1L	44+16.60	673.88	44+16.60	673.99	44+16.60	674.20	44+16.60	673.96	44+16.60	673.96
	0.2L	44+28.37	673.99	44+28.37	674.10	44+28.37	674.32	44+28.37	674.07	44+28.37	674.07
	0.3L	44+40.15	674.09	44+40.15	674.21	44+40.15	674.43	44+40.15	674.17	44+40.15	674.17
	0.4L	44+51.93	674.19	44+51.93	674.30	44+51.93	674.53	44+51.93	674.27	44+51.93	674.27
	0.5L	44+63.71	674.27	44+63.71	674.39	44+63.71	674.61	44+63.71	674.36	44+63.71	674.36
	0.6L	44+75.48	674.35	44+75.48	674.46	44+75.48	674.69	44+75.48	674.43	44+75.48	674.43
	0.7L	44+87.26	674.41	44+87.26	674.53	44+87.26	674.75	44+87.26	674.50	44+87.26	674.50
	0.8L	44+99.04	674.47	44+99.04	674.58	44+99.04	674.80	44+99.04	674.55	44+99.04	674.55
	0.9L	45+10.81	674.52	45+10.81	674.63	45+10.81	674.84	45+10.81	674.60	45+10.81	674.60
	P5 BRG 1	45+21.51	674.56	45+21.51	674.67	45+21.51	674.88	45+21.51	674.64	45+21.51	674.64
✕	PIER 5	45+22.59	674.56	45+22.59	674.68	45+22.59	674.89	45+22.59	674.65	45+22.59	674.65
SPAN 6	P5 BRG 2	45+23.67	674.57	45+23.67	674.69	45+23.67	674.89	45+23.67	674.65	45+23.67	674.65
	0.1L	45+34.37	674.68	45+34.37	674.79	45+34.37	675.00	45+34.37	674.76	45+34.37	674.76
	0.2L	45+46.14	674.79	45+46.14	674.90	45+46.14	675.12	45+46.14	674.87	45+46.14	674.87
	0.3L	45+57.92	674.89	45+57.92	675.01	45+57.92	675.23	45+57.92	674.98	45+57.92	674.98
	0.4L	45+69.70	674.99	45+69.70	675.10	45+69.70	675.33	45+69.70	675.07	45+69.70	675.07
	0.5L	45+81.48	675.07	45+81.48	675.19	45+81.48	675.41	45+81.48	675.16	45+81.48	675.16
	0.6L	45+93.25	675.15	45+93.25	675.26	45+93.25	675.49	45+93.25	675.23	45+93.25	675.23
	0.7L	46+05.03	675.21	46+05.03	675.33	46+05.03	675.55	46+05.03	675.30	46+05.03	675.30
	0.8L	46+16.81	675.27	46+16.81	675.38	46+16.81	675.60	46+16.81	675.35	46+16.81	675.35
	0.9L	46+28.58	675.32	46+28.58	675.43	46+28.58	675.65	46+28.58	675.40	46+28.58	675.40
	P6 BRG 1	46+39.28	675.36	46+39.28	675.47	46+39.28	675.68	46+39.28	675.44	46+39.28	675.44
✕	PIER 6	46+40.36	675.36	46+40.36	675.48	46+40.36	675.69	46+40.36	675.45	46+40.36	675.45
SPAN 7	P6 BRG 2	46+41.44	675.37	46+41.44	675.49	46+41.44	675.70	46+41.44	675.46	46+41.44	675.46
	0.1L	46+52.14	675.48	46+52.14	675.59	46+52.14	675.81	46+52.14	675.56	46+52.14	675.56
	0.2L	46+63.92	675.59	46+63.92	675.70	46+63.92	675.92	46+63.92	675.67	46+63.92	675.67
	0.3L	46+75.69	675.69	46+75.69	675.81	46+75.69	676.03	46+75.69	675.78	46+75.69	675.78
	0.4L	46+87.47	675.79	46+87.47	675.90	46+87.47	676.13	46+87.47	675.87	46+87.47	675.87
	0.5L	46+99.25	675.88	46+99.25	675.99	46+99.25	676.21	46+99.25	675.96	46+99.25	675.96
	0.6L	47+11.02	675.95	47+11.02	676.06	47+11.02	676.29	47+11.02	676.03	47+11.02	676.03
	0.7L	47+22.80	676.01	47+22.80	676.13	47+22.80	676.35	47+22.80	676.10	47+22.80	676.10
	0.8L	47+34.58	676.07	47+34.58	676.18	47+34.58	676.40	47+34.58	676.15	47+34.58	676.15
	0.9L	47+46.36	676.12	47+46.36	676.23	47+46.36	676.45	47+46.36	676.20	47+46.36	676.20
	P7 BRG 1	47+57.05	676.16	47+57.05	676.27	47+57.05	676.48	47+57.05	676.24	47+57.05	676.24
✕	PIER 7	47+58.13	676.17	47+58.13	676.28	47+58.13	676.49	47+58.13	676.25	47+58.13	676.25
SPAN 8	P7 BRG 2	47+59.22	676.17	47+59.22	676.29	47+59.22	676.50	47+59.22	676.26	47+59.22	676.26
	0.1L	47+69.80	676.27	47+69.80	676.39	47+69.80	676.61	47+69.80	676.36	47+69.80	676.36
	0.2L	47+81.47	676.38	47+81.47	676.50	47+81.47	676.73	47+81.47	676.47	47+81.47	676.47
	0.3L	47+93.14	676.48	47+93.14	676.60	47+93.14	676.84	47+93.14	676.57	47+93.14	676.57
	0.4L	48+04.81	676.58	48+04.81	676.69	48+04.81	676.94	48+04.81	676.66	48+04.81	676.66
	0.5L	48+16.48	676.66	48+16.48	676.77	48+16.48	677.04	48+16.48	676.75	48+16.48	676.75
	0.6L	48+28.14	676.73	48+28.14	676.84	48+28.14	677.11	48+28.14	676.82	48+28.14	676.82
	0.7L	48+39.81	676.79	48+39.81	676.90	48+39.81	677.17	48+39.81	676.88	48+39.81	676.88
	0.8L	48+51.48	676.84	48+51.48	676.95	48+51.48	677.21	48+51.48	676.93	48+51.48	676.93
	0.9L	48+63.15	676.88	48+63.15	676.99	48+63.15	677.25	48+63.15	676.97	48+63.15	676.97
	CL FA BRG	48+74.82	676.92	48+74.82	677.03	48+74.82	677.28	48+74.82	677.01	48+74.82	677.01

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TOP OF HAUNCH ELEVATIONS														
LOCATION		BEAM LINE 1			BEAM LINE 2			BEAM LINE 3			BEAM LINE 4			
		STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	
SPAN 1	CL RA BRG	39+34.82	669.91	16.75 LT.	39+34.82	670.07	6.75 LT.	39+34.82	670.13	3.25 RT.	39+34.82	669.97	13.25 RT.	
	0.1L	39+46.49	670.03	16.75 LT.	39+46.49	670.19	6.75 LT.	39+46.49	670.25	3.25 RT.	39+46.49	670.08	13.25 RT.	
	0.2L	39+58.16	670.14	16.75 LT.	39+58.16	670.31	6.75 LT.	39+58.16	670.36	3.25 RT.	39+58.16	670.19	13.25 RT.	
	0.3L	39+69.83	670.24	16.75 LT.	39+69.83	670.41	6.75 LT.	39+69.83	670.47	3.25 RT.	39+69.83	670.30	13.25 RT.	
	0.4L	39+81.50	670.34	16.75 LT.	39+81.50	670.51	6.75 LT.	39+81.50	670.57	3.25 RT.	39+81.50	670.39	13.25 RT.	
	0.5L	39+93.16	670.42	16.75 LT.	39+93.16	670.60	6.75 LT.	39+93.16	670.65	3.25 RT.	39+93.16	670.48	13.25 RT.	
	0.6L	40+04.83	670.49	16.75 LT.	40+04.83	670.67	6.75 LT.	40+04.83	670.73	3.25 RT.	40+04.83	670.55	13.25 RT.	
	0.7L	40+16.50	670.56	16.75 LT.	40+16.50	670.73	6.75 LT.	40+16.50	670.79	3.25 RT.	40+16.50	670.61	13.25 RT.	
	0.8L	40+28.17	670.61	16.75 LT.	40+28.17	670.78	6.75 LT.	40+28.17	670.84	3.25 RT.	40+28.17	670.67	13.25 RT.	
	0.9L	40+39.84	670.66	16.75 LT.	40+39.84	670.83	6.75 LT.	40+39.84	670.88	3.25 RT.	40+39.84	670.72	13.25 RT.	
P1 BRG 1	40+50.42	670.70	16.75 LT.	40+50.42	670.86	6.75 LT.	40+50.42	670.92	3.25 RT.	40+50.42	670.76	13.25 RT.		
SPAN 2	P1 BRG 2	40+52.59	670.71	16.75 LT.	40+52.59	670.87	6.75 LT.	40+52.59	670.93	3.25 RT.	40+52.59	670.77	13.25 RT.	
	0.1L	40+63.28	670.82	16.75 LT.	40+63.28	670.98	6.75 LT.	40+63.28	671.04	3.25 RT.	40+63.28	670.88	13.25 RT.	
	0.2L	40+75.06	670.93	16.75 LT.	40+75.06	671.10	6.75 LT.	40+75.06	671.16	3.25 RT.	40+75.06	670.99	13.25 RT.	
	0.3L	40+86.84	671.04	16.75 LT.	40+86.84	671.21	6.75 LT.	40+86.84	671.27	3.25 RT.	40+86.84	671.09	13.25 RT.	
	0.4L	40+98.62	671.13	16.75 LT.	40+98.62	671.31	6.75 LT.	40+98.62	671.36	3.25 RT.	40+98.62	671.19	13.25 RT.	
	0.5L	41+10.39	671.22	16.75 LT.	41+10.39	671.39	6.75 LT.	41+10.39	671.45	3.25 RT.	41+10.39	671.27	13.25 RT.	
	0.6L	41+22.17	671.29	16.75 LT.	41+22.17	671.47	6.75 LT.	41+22.17	671.52	3.25 RT.	41+22.17	671.35	13.25 RT.	
	0.7L	41+33.95	671.36	16.75 LT.	41+33.95	671.53	6.75 LT.	41+33.95	671.59	3.25 RT.	41+33.95	671.41	13.25 RT.	
	0.8L	41+45.72	671.41	16.75 LT.	41+45.72	671.58	6.75 LT.	41+45.72	671.64	3.25 RT.	41+45.72	671.47	13.25 RT.	
	0.9L	41+57.50	671.46	16.75 LT.	41+57.50	671.63	6.75 LT.	41+57.50	671.68	3.25 RT.	41+57.50	671.52	13.25 RT.	
P2 BRG 1	41+68.19	671.50	16.75 LT.	41+68.19	671.66	6.75 LT.	41+68.19	671.72	3.25 RT.	41+68.19	671.56	13.25 RT.		
SPAN 3	P2 BRG 2	41+70.36	671.52	16.75 LT.	41+70.36	671.68	6.75 LT.	41+70.36	671.73	3.25 RT.	41+70.36	671.57	13.25 RT.	
	0.1L	41+81.06	671.62	16.75 LT.	41+81.06	671.79	6.75 LT.	41+81.06	671.84	3.25 RT.	41+81.06	671.68	13.25 RT.	
	0.2L	41+92.83	671.73	16.75 LT.	41+92.83	671.90	6.75 LT.	41+92.83	671.96	3.25 RT.	41+92.83	671.79	13.25 RT.	
	0.3L	42+04.61	671.84	16.75 LT.	42+04.61	672.01	6.75 LT.	42+04.61	672.07	3.25 RT.	42+04.61	671.89	13.25 RT.	
	0.4L	42+16.39	671.93	16.75 LT.	42+16.39	672.11	6.75 LT.	42+16.39	672.16	3.25 RT.	42+16.39	671.99	13.25 RT.	
	0.5L	42+28.16	672.02	16.75 LT.	42+28.16	672.19	6.75 LT.	42+28.16	672.25	3.25 RT.	42+28.16	672.07	13.25 RT.	
	0.6L	42+39.94	672.09	16.75 LT.	42+39.94	672.27	6.75 LT.	42+39.94	672.32	3.25 RT.	42+39.94	672.15	13.25 RT.	
	0.7L	42+51.72	672.16	16.75 LT.	42+51.72	672.33	6.75 LT.	42+51.72	672.39	3.25 RT.	42+51.72	672.21	13.25 RT.	
	0.8L	42+63.49	672.21	16.75 LT.	42+63.49	672.38	6.75 LT.	42+63.49	672.44	3.25 RT.	42+63.49	672.27	13.25 RT.	
	0.9L	42+75.27	672.26	16.75 LT.	42+75.27	672.43	6.75 LT.	42+75.27	672.48	3.25 RT.	42+75.27	672.32	13.25 RT.	
P3 BRG 1	42+85.97	672.30	16.75 LT.	42+85.97	672.46	6.75 LT.	42+85.97	672.52	3.25 RT.	42+85.97	672.36	13.25 RT.		
SPAN 4	P3 BRG 2	42+88.13	672.32	16.75 LT.	42+88.13	672.48	6.75 LT.	42+88.13	672.53	3.25 RT.	42+88.13	672.37	13.25 RT.	
	0.1L	42+98.83	672.42	16.75 LT.	42+98.83	672.59	6.75 LT.	42+98.83	672.64	3.25 RT.	42+98.83	672.48	13.25 RT.	
	0.2L	43+10.60	672.53	16.75 LT.	43+10.60	672.70	6.75 LT.	43+10.60	672.76	3.25 RT.	43+10.60	672.59	13.25 RT.	
	0.3L	43+22.38	672.64	16.75 LT.	43+22.38	672.81	6.75 LT.	43+22.38	672.87	3.25 RT.	43+22.38	672.69	13.25 RT.	
	0.4L	43+34.16	672.73	16.75 LT.	43+34.16	672.91	6.75 LT.	43+34.16	672.97	3.25 RT.	43+34.16	672.79	13.25 RT.	
	0.5L	43+45.93	672.82	16.75 LT.	43+45.93	673.00	6.75 LT.	43+45.93	673.05	3.25 RT.	43+45.93	672.87	13.25 RT.	
	0.6L	43+57.71	672.89	16.75 LT.	43+57.71	673.07	6.75 LT.	43+57.71	673.13	3.25 RT.	43+57.71	672.95	13.25 RT.	
	0.7L	43+69.49	672.96	16.75 LT.	43+69.49	673.13	6.75 LT.	43+69.49	673.19	3.25 RT.	43+69.49	673.01	13.25 RT.	
	0.8L	43+81.27	673.01	16.75 LT.	43+81.27	673.18	6.75 LT.	43+81.27	673.24	3.25 RT.	43+81.27	673.07	13.25 RT.	
	0.9L	43+93.04	673.06	16.75 LT.	43+93.04	673.23	6.75 LT.	43+93.04	673.28	3.25 RT.	43+93.04	673.12	13.25 RT.	
P4 BRG 1	44+03.74	673.10	16.75 LT.	44+03.74	673.26	6.75 LT.	44+03.74	673.32	3.25 RT.	44+03.74	673.16	13.25 RT.		

NOTES:

1. FOR DECK KEY PLAN, SEE SHEET 42/65
2. FOR SCREED ELEVATIONS, SEE SHEET 43/65
3. FOR FINAL DECK ELEVATIONS, SEE SHEETS 46-47/65
4. FOR HAUNCH THICKNESS, SEE SHEETS 48-49/65

TOP OF HAUNCH ELEVATIONS

TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORE-
TICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE
BEAM/GIRDER HAUNCH PRIOR TO DEFLECTIONS CAUSED BY
DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

127

180

44 / 65

HEN - IND - 00.00

PID No. 22984

TOP OF HAUNCH ELEVATION (1 OF 2)
HEN-INDUSTRIAL DRIVE-0000
INDUSTRIAL DRIVE OVER MAUMEE RIVER

DESIGNED
KRH

CHECKED
SCT

DRAWN
KRH

REVISED

REVIEWED
TLR

DATE
05/2015

STRUCTURE FILE NUMBER
TBD

MAUMEE, OHIO 43537

1800 INDIAN WOOD CIRCLE

Mannik Smith

GROUP

TOP OF HAUNCH ELEVATIONS														
LOCATION		BEAM LINE 1			BEAM LINE 2			BEAM LINE 3			BEAM LINE 4			
		STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	
SPAN 5	P4 BRG 2	44+05.90	673.12	16.75 LT.	44+05.90	673.28	6.75 LT.	44+05.90	673.33	3.25 RT.	44+05.90	673.17	13.25 RT.	
	0.1L	44+16.60	673.22	16.75 LT.	44+16.60	673.39	6.75 LT.	44+16.60	673.44	3.25 RT.	44+16.60	673.28	13.25 RT.	
	0.2L	44+28.37	673.33	16.75 LT.	44+28.37	673.50	6.75 LT.	44+28.37	673.56	3.25 RT.	44+28.37	673.39	13.25 RT.	
	0.3L	44+40.15	673.44	16.75 LT.	44+40.15	673.61	6.75 LT.	44+40.15	673.67	3.25 RT.	44+40.15	673.49	13.25 RT.	
	0.4L	44+51.93	673.53	16.75 LT.	44+51.93	673.71	6.75 LT.	44+51.93	673.77	3.25 RT.	44+51.93	673.59	13.25 RT.	
	0.5L	44+63.71	673.62	16.75 LT.	44+63.71	673.80	6.75 LT.	44+63.71	673.85	3.25 RT.	44+63.71	673.68	13.25 RT.	
	0.6L	44+75.48	673.69	16.75 LT.	44+75.48	673.87	6.75 LT.	44+75.48	673.93	3.25 RT.	44+75.48	673.75	13.25 RT.	
	0.7L	44+87.26	673.76	16.75 LT.	44+87.26	673.93	6.75 LT.	44+87.26	673.99	3.25 RT.	44+87.26	673.82	13.25 RT.	
	0.8L	44+99.04	673.81	16.75 LT.	44+99.04	673.98	6.75 LT.	44+99.04	674.04	3.25 RT.	44+99.04	673.87	13.25 RT.	
	0.9L	45+10.81	673.86	16.75 LT.	45+10.81	674.03	6.75 LT.	45+10.81	674.08	3.25 RT.	45+10.81	673.92	13.25 RT.	
	P5 BRG 1	45+21.51	673.90	16.75 LT.	45+21.51	674.06	6.75 LT.	45+21.51	674.12	3.25 RT.	45+21.51	673.96	13.25 RT.	
SPAN 6	P5 BRG 2	45+23.67	673.92	16.75 LT.	45+23.67	674.08	6.75 LT.	45+23.67	674.13	3.25 RT.	45+23.67	673.97	13.25 RT.	
	0.1L	45+34.37	674.02	16.75 LT.	45+34.37	674.19	6.75 LT.	45+34.37	674.24	3.25 RT.	45+34.37	674.08	13.25 RT.	
	0.2L	45+46.14	674.13	16.75 LT.	45+46.14	674.30	6.75 LT.	45+46.14	674.36	3.25 RT.	45+46.14	674.19	13.25 RT.	
	0.3L	45+57.92	674.24	16.75 LT.	45+57.92	674.41	6.75 LT.	45+57.92	674.47	3.25 RT.	45+57.92	674.30	13.25 RT.	
	0.4L	45+69.70	674.33	16.75 LT.	45+69.70	674.51	6.75 LT.	45+69.70	674.57	3.25 RT.	45+69.70	674.39	13.25 RT.	
	0.5L	45+81.48	674.42	16.75 LT.	45+81.48	674.60	6.75 LT.	45+81.48	674.65	3.25 RT.	45+81.48	674.48	13.25 RT.	
	0.6L	45+93.25	674.50	16.75 LT.	45+93.25	674.67	6.75 LT.	45+93.25	674.73	3.25 RT.	45+93.25	674.55	13.25 RT.	
	0.7L	46+05.03	674.56	16.75 LT.	46+05.03	674.73	6.75 LT.	46+05.03	674.79	3.25 RT.	46+05.03	674.62	13.25 RT.	
	0.8L	46+16.81	674.62	16.75 LT.	46+16.81	674.79	6.75 LT.	46+16.81	674.84	3.25 RT.	46+16.81	674.67	13.25 RT.	
	0.9L	46+28.58	674.66	16.75 LT.	46+28.58	674.83	6.75 LT.	46+28.58	674.89	3.25 RT.	46+28.58	674.72	13.25 RT.	
	P6 BRG 1	46+39.28	674.70	16.75 LT.	46+39.28	674.86	6.75 LT.	46+39.28	674.92	3.25 RT.	46+39.28	674.76	13.25 RT.	
SPAN 7	P6 BRG 2	46+41.44	674.72	16.75 LT.	46+41.44	674.88	6.75 LT.	46+41.44	674.93	3.25 RT.	46+41.44	674.77	13.25 RT.	
	0.1L	46+52.14	674.82	16.75 LT.	46+52.14	674.99	6.75 LT.	46+52.14	675.04	3.25 RT.	46+52.14	674.88	13.25 RT.	
	0.2L	46+63.92	674.94	16.75 LT.	46+63.92	675.10	6.75 LT.	46+63.92	675.16	3.25 RT.	46+63.92	674.99	13.25 RT.	
	0.3L	46+75.69	675.04	16.75 LT.	46+75.69	675.21	6.75 LT.	46+75.69	675.27	3.25 RT.	46+75.69	675.10	13.25 RT.	
	0.4L	46+87.47	675.14	16.75 LT.	46+87.47	675.31	6.75 LT.	46+87.47	675.37	3.25 RT.	46+87.47	675.19	13.25 RT.	
	0.5L	46+99.25	675.22	16.75 LT.	46+99.25	675.40	6.75 LT.	46+99.25	675.45	3.25 RT.	46+99.25	675.28	13.25 RT.	
	0.6L	47+11.02	675.30	16.75 LT.	47+11.02	675.47	6.75 LT.	47+11.02	675.53	3.25 RT.	47+11.02	675.35	13.25 RT.	
	0.7L	47+22.80	675.36	16.75 LT.	47+22.80	675.53	6.75 LT.	47+22.80	675.59	3.25 RT.	47+22.80	675.42	13.25 RT.	
	0.8L	47+34.58	675.42	16.75 LT.	47+34.58	675.59	6.75 LT.	47+34.58	675.64	3.25 RT.	47+34.58	675.47	13.25 RT.	
	0.9L	47+46.36	675.47	16.75 LT.	47+46.36	675.63	6.75 LT.	47+46.36	675.69	3.25 RT.	47+46.36	675.52	13.25 RT.	
	P7 BRG 1	47+57.05	675.50	16.75 LT.	47+57.05	675.66	6.75 LT.	47+57.05	675.72	3.25 RT.	47+57.05	675.56	13.25 RT.	
SPAN 8	P7 BRG 2	47+59.22	675.50	16.75 LT.	47+59.22	675.66	6.75 LT.	47+59.22	675.71	3.25 RT.	47+59.22	675.55	13.25 RT.	
	0.1L	47+69.80	675.60	16.96 LT.	47+69.80	675.77	6.84 LT.	47+69.80	675.82	3.29 RT.	47+69.80	675.66	13.41 RT.	
	0.2L	47+81.47	675.71	17.18 LT.	47+81.47	675.89	6.93 LT.	47+81.47	675.94	3.33 RT.	47+81.47	675.77	13.59 RT.	
	0.3L	47+93.14	675.81	17.41 LT.	47+93.14	676.00	7.02 LT.	47+93.14	676.06	3.37 RT.	47+93.14	675.87	13.77 RT.	
	0.4L	48+04.81	675.91	17.63 LT.	48+04.81	676.10	7.11 LT.	48+04.81	676.16	3.42 RT.	48+04.81	675.96	13.94 RT.	
	0.5L	48+16.48	675.99	17.86 LT.	48+16.48	676.19	7.20 LT.	48+16.48	676.25	3.46 RT.	48+16.48	676.05	14.12 RT.	
	0.6L	48+28.14	676.06	18.08 LT.	48+28.14	676.26	7.29 LT.	48+28.14	676.32	3.51 RT.	48+28.14	676.12	14.30 RT.	
	0.7L	48+39.81	676.12	18.31 LT.	48+39.81	676.32	7.38 LT.	48+39.81	676.38	3.55 RT.	48+39.81	676.18	14.48 RT.	
	0.8L	48+51.48	676.17	18.53 LT.	48+51.48	676.37	7.47 LT.	48+51.48	676.43	3.59 RT.	48+51.48	676.23	14.66 RT.	
	0.9L	48+63.15	676.21	18.76 LT.	48+63.15	676.40	7.56 LT.	48+63.15	676.46	3.64 RT.	48+63.15	676.27	14.84 RT.	
	CL FA BRG	48+74.82	676.25	18.98 LT.	48+74.82	676.43	7.65 LT.	48+74.82	676.49	3.68 RT.	48+74.82	676.31	15.02 RT.	

NOTES:

1. FOR DECK KEY PLAN, SEE SHEET 42/65
2. FOR SCREED ELEVATIONS, SEE SHEET 43/65
3. FOR FINAL DECK ELEVATIONS, SEE SHEETS 46-47/65
4. FOR HAUNCH THICKNESS, SEE SHEETS 48-49/65

TOP OF HAUNCH ELEVATIONS

TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORE-
TICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE
BEAM/GIRDER HAUNCH PRIOR TO DEFLECTIONS CAUSED BY
DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

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FINAL DECK ELEVATIONS																																			
LOCATION		LEFT EDGE OF DECK				BEAM LINE 1			LEFT TOE OF CURB			BEAM LINE 2			CL CONST. IND DR & PG		BEAM LINE 3			BEAM LINE 4			RIGHT TOE OF BARRIER			RIGHT EDGE OF DECK									
		STATION	ELEV.	OFFSET(FT.)		STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)							
SPAN 1	CL RA BRG	39+34.82	670.57	20.17	LT.	39+34.82	670.62	16.75	LT.	39+34.82	670.68	13.00	LT.	39+34.82	670.78	6.75	LT.	39+34.82	670.89	39+34.82	670.84	3.25	RT.	39+34.82	670.68	13.25	RT.	39+34.82	670.65	15.00	RT.	39+34.82	670.65	16.67	RT.
	0.1L	39+46.49	670.65	20.17	LT.	39+46.49	670.70	16.75	LT.	39+46.49	670.76	13.00	LT.	39+46.49	670.86	6.75	LT.	39+46.49	670.97	39+46.49	670.92	3.25	RT.	39+46.49	670.76	13.25	RT.	39+46.49	670.73	15.00	RT.	39+46.49	670.73	16.67	RT.
	0.2L	39+58.16	670.73	20.17	LT.	39+58.16	670.78	16.75	LT.	39+58.16	670.84	13.00	LT.	39+58.16	670.94	6.75	LT.	39+58.16	671.05	39+58.16	671.00	3.25	RT.	39+58.16	670.84	13.25	RT.	39+58.16	670.81	15.00	RT.	39+58.16	670.81	16.67	RT.
	0.3L	39+69.83	670.81	20.17	LT.	39+69.83	670.86	16.75	LT.	39+69.83	670.92	13.00	LT.	39+69.83	671.02	6.75	LT.	39+69.83	671.13	39+69.83	671.08	3.25	RT.	39+69.83	670.92	13.25	RT.	39+69.83	670.89	15.00	RT.	39+69.83	670.89	16.67	RT.
	0.4L	39+81.50	670.88	20.17	LT.	39+81.50	670.94	16.75	LT.	39+81.50	671.00	13.00	LT.	39+81.50	671.10	6.75	LT.	39+81.50	671.21	39+81.50	671.16	3.25	RT.	39+81.50	671.00	13.25	RT.	39+81.50	670.97	15.00	RT.	39+81.50	670.97	16.67	RT.
	0.5L	39+93.16	670.96	20.17	LT.	39+93.16	671.02	16.75	LT.	39+93.16	671.08	13.00	LT.	39+93.16	671.18	6.75	LT.	39+93.16	671.29	39+93.16	671.23	3.25	RT.	39+93.16	671.07	13.25	RT.	39+93.16	671.05	15.00	RT.	39+93.16	671.05	16.67	RT.
	0.6L	40+04.83	671.04	20.17	LT.	40+04.83	671.10	16.75	LT.	40+04.83	671.16	13.00	LT.	40+04.83	671.26	6.75	LT.	40+04.83	671.37	40+04.83	671.31	3.25	RT.	40+04.83	671.15	13.25	RT.	40+04.83	671.13	15.00	RT.	40+04.83	671.13	16.67	RT.
	0.7L	40+16.50	671.12	20.17	LT.	40+16.50	671.18	16.75	LT.	40+16.50	671.24	13.00	LT.	40+16.50	671.34	6.75	LT.	40+16.50	671.45	40+16.50	671.39	3.25	RT.	40+16.50	671.23	13.25	RT.	40+16.50	671.21	15.00	RT.	40+16.50	671.21	16.67	RT.
	0.8L	40+28.17	671.20	20.17	LT.	40+28.17	671.26	16.75	LT.	40+28.17	671.32	13.00	LT.	40+28.17	671.42	6.75	LT.	40+28.17	671.52	40+28.17	671.47	3.25	RT.	40+28.17	671.31	13.25	RT.	40+28.17	671.28	15.00	RT.	40+28.17	671.28	16.67	RT.
0.9L	40+39.84	671.28	20.17	LT.	40+39.84	671.34	16.75	LT.	40+39.84	671.40	13.00	LT.	40+39.84	671.50	6.75	LT.	40+39.84	671.60	40+39.84	671.55	3.25	RT.	40+39.84	671.39	13.25	RT.	40+39.84	671.36	15.00	RT.	40+39.84	671.36	16.67	RT.	
SPAN 2	P1 BRG 1	40+50.42	671.35	20.17	LT.	40+50.42	671.41	16.75	LT.	40+50.42	671.47	13.00	LT.	40+50.42	671.57	6.75	LT.	40+50.42	671.68	40+50.42	671.62	3.25	RT.	40+50.42	671.46	13.25	RT.	40+50.42	671.44	15.00	RT.	40+50.42	671.44	16.67	RT.
	PIER 1	40+51.51	671.36	20.17	LT.	40+51.51	671.42	16.75	LT.	40+51.51	671.48	13.00	LT.	40+51.51	671.58	6.75	LT.	40+51.51	671.68	40+51.51	671.63	3.25	RT.	40+51.51	671.47	13.25	RT.	40+51.51	671.44	15.00	RT.	40+51.51	671.44	16.67	RT.
	P1 BRG 2	40+52.59	671.37	20.17	LT.	40+52.59	671.42	16.75	LT.	40+52.59	671.48	13.00	LT.	40+52.59	671.58	6.75	LT.	40+52.59	671.69	40+52.59	671.64	3.25	RT.	40+52.59	671.48	13.25	RT.	40+52.59	671.45	15.00	RT.	40+52.59	671.45	16.67	RT.
	0.1L	40+63.28	671.44	20.17	LT.	40+63.28	671.50	16.75	LT.	40+63.28	671.56	13.00	LT.	40+63.28	671.66	6.75	LT.	40+63.28	671.76	40+63.28	671.71	3.25	RT.	40+63.28	671.55	13.25	RT.	40+63.28	671.52	15.00	RT.	40+63.28	671.52	16.67	RT.
	0.2L	40+75.06	671.52	20.17	LT.	40+75.06	671.58	16.75	LT.	40+75.06	671.64	13.00	LT.	40+75.06	671.74	6.75	LT.	40+75.06	671.84	40+75.06	671.79	3.25	RT.	40+75.06	671.63	13.25	RT.	40+75.06	671.60	15.00	RT.	40+75.06	671.60	16.67	RT.
	0.3L	40+86.84	671.60	20.17	LT.	40+86.84	671.66	16.75	LT.	40+86.84	671.72	13.00	LT.	40+86.84	671.82	6.75	LT.	40+86.84	671.92	40+86.84	671.87	3.25	RT.	40+86.84	671.71	13.25	RT.	40+86.84	671.68	15.00	RT.	40+86.84	671.68	16.67	RT.
	0.4L	40+98.62	671.68	20.17	LT.	40+98.62	671.74	16.75	LT.	40+98.62	671.80	13.00	LT.	40+98.62	671.90	6.75	LT.	40+98.62	672.00	40+98.62	671.95	3.25	RT.	40+98.62	671.79	13.25	RT.	40+98.62	671.76	15.00	RT.	40+98.62	671.76	16.67	RT.
	0.5L	41+10.39	671.76	20.17	LT.	41+10.39	671.82	16.75	LT.	41+10.39	671.88	13.00	LT.	41+10.39	671.98	6.75	LT.	41+10.39	672.08	41+10.39	672.03	3.25	RT.	41+10.39	671.87	13.25	RT.	41+10.39	671.84	15.00	RT.	41+10.39	671.84	16.67	RT.
	0.6L	41+22.17	671.84	20.17	LT.	41+22.17	671.90	16.75	LT.	41+22.17	671.96	13.00	LT.	41+22.17	672.06	6.75	LT.	41+22.17	672.16	41+22.17	672.11	3.25	RT.	41+22.17	671.95	13.25	RT.	41+22.17	671.92	15.00	RT.	41+22.17	671.92	16.67	RT.
0.7L	41+33.95	671.92	20.17	LT.	41+33.95	671.98	16.75	LT.	41+33.95	672.04	13.00	LT.	41+33.95	672.14	6.75	LT.	41+33.95	672.24	41+33.95	672.19	3.25	RT.	41+33.95	672.03	13.25	RT.	41+33.95	672.00	15.00	RT.	41+33.95	672.00	16.67	RT.	
SPAN 3	0.8L	41+45.72	672.00	20.17	LT.	41+45.72	672.06	16.75	LT.	41+45.72	672.12	13.00	LT.	41+45.72	672.22	6.75	LT.	41+45.72	672.32	41+45.72	672.27	3.25	RT.	41+45.72	672.11	13.25	RT.	41+45.72	672.08	15.00	RT.	41+45.72	672.08	16.67	RT.
	0.9L	41+57.50	672.08	20.17	LT.	41+57.50	672.14	16.75	LT.	41+57.50	672.20	13.00	LT.	41+57.50	672.30	6.75	LT.	41+57.50	672.40	41+57.50	672.35	3.25	RT.	41+57.50	672.19	13.25	RT.	41+57.50	672.16	15.00	RT.	41+57.50	672.16	16.67	RT.
	P2 BRG 1	41+68.19	672.15	20.17	LT.	41+68.19	672.21	16.75	LT.	41+68.19	672.27	13.00	LT.	41+68.19	672.37	6.75	LT.	41+68.19	672.48	41+68.19	672.42	3.25	RT.	41+68.19	672.26	13.25	RT.	41+68.19	672.24	15.00	RT.	41+68.19	672.24	16.67	RT.
	PIER 2	41+69.28	672.16	20.17	LT.	41+69.28	672.22	16.75	LT.	41+69.28	672.28	13.00	LT.	41+69.28	672.38	6.75	LT.	41+69.28	672.48	41+69.28	672.43	3.25	RT.	41+69.28	672.27	13.25	RT.	41+69.28	672.24	15.00	RT.	41+69.28	672.24	16.67	RT.
	P2 BRG 2	41+70.36	672																																

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FINAL DECK ELEVATIONS																																			
LOCATION		LEFT EDGE OF DECK			BEAM LINE 1			LEFT TOE OF CURB			BEAM LINE 2			CL CONST. IND DR & PG		BEAM LINE 3			BEAM LINE 4			RIGHT TOE OF BARRIER			RIGHT EDGE OF DECK										
		STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)	STATION	ELEV.	OFFSET(FT.)								
SPAN 5	PIER 4	44+04.82	673.76	20.17	LT.	44+04.82	673.82	16.75	LT.	44+04.82	673.88	13.00	LT.	44+04.82	673.98	6.75	LT.	44+04.82	674.09	44+04.82	674.03	3.25	RT.	44+04.82	673.87	13.25	RT.	44+04.82	673.85	15.00	RT.	44+04.82	673.85	16.67	RT.
	P4 BRG 2	44+05.90	673.77	20.17	LT.	44+05.90	673.83	16.75	LT.	44+05.90	673.89	13.00	LT.	44+05.90	673.99	6.75	LT.	44+05.90	674.09	44+05.90	674.04	3.25	RT.	44+05.90	673.88	13.25	RT.	44+05.90	673.85	15.00	RT.	44+05.90	673.85	16.67	RT.
	0.1L	44+16.60	673.84	20.17	LT.	44+16.60	673.90	16.75	LT.	44+16.60	673.96	13.00	LT.	44+16.60	674.06	6.75	LT.	44+16.60	674.17	44+16.60	674.11	3.25	RT.	44+16.60	673.95	13.25	RT.	44+16.60	673.93	15.00	RT.	44+16.60	673.93	16.67	RT.
	0.2L	44+28.37	673.92	20.17	LT.	44+28.37	673.98	16.75	LT.	44+28.37	674.04	13.00	LT.	44+28.37	674.14	6.75	LT.	44+28.37	674.25	44+28.37	674.19	3.25	RT.	44+28.37	674.03	13.25	RT.	44+28.37	674.01	15.00	RT.	44+28.37	674.01	16.67	RT.
	0.3L	44+40.15	674.00	20.17	LT.	44+40.15	674.06	16.75	LT.	44+40.15	674.12	13.00	LT.	44+40.15	674.22	6.75	LT.	44+40.15	674.33	44+40.15	674.27	3.25	RT.	44+40.15	674.11	13.25	RT.	44+40.15	674.09	15.00	RT.	44+40.15	674.09	16.67	RT.
	0.4L	44+51.93	674.08	20.17	LT.	44+51.93	674.14	16.75	LT.	44+51.93	674.20	13.00	LT.	44+51.93	674.30	6.75	LT.	44+51.93	674.41	44+51.93	674.35	3.25	RT.	44+51.93	674.19	13.25	RT.	44+51.93	674.17	15.00	RT.	44+51.93	674.17	16.67	RT.
	0.5L	44+63.71	674.16	20.17	LT.	44+63.71	674.22	16.75	LT.	44+63.71	674.28	13.00	LT.	44+63.71	674.38	6.75	LT.	44+63.71	674.49	44+63.71	674.43	3.25	RT.	44+63.71	674.27	13.25	RT.	44+63.71	674.25	15.00	RT.	44+63.71	674.25	16.67	RT.
	0.6L	44+75.48	674.24	20.17	LT.	44+75.48	674.30	16.75	LT.	44+75.48	674.36	13.00	LT.	44+75.48	674.46	6.75	LT.	44+75.48	674.57	44+75.48	674.51	3.25	RT.	44+75.48	674.35	13.25	RT.	44+75.48	674.33	15.00	RT.	44+75.48	674.33	16.67	RT.
	0.7L	44+87.26	674.32	20.17	LT.	44+87.26	674.38	16.75	LT.	44+87.26	674.44	13.00	LT.	44+87.26	674.54	6.75	LT.	44+87.26	674.65	44+87.26	674.59	3.25	RT.	44+87.26	674.43	13.25	RT.	44+87.26	674.41	15.00	RT.	44+87.26	674.41	16.67	RT.
0.8L	44+99.04	674.40	20.17	LT.	44+99.04	674.46	16.75	LT.	44+99.04	674.52	13.00	LT.	44+99.04	674.62	6.75	LT.	44+99.04	674.73	44+99.04	674.67	3.25	RT.	44+99.04	674.51	13.25	RT.	44+99.04	674.49	15.00	RT.	44+99.04	674.49	16.67	RT.	
0.9L	45+10.81	674.48	20.17	LT.	45+10.81	674.54	16.75	LT.	45+10.81	674.60	13.00	LT.	45+10.81	674.70	6.75	LT.	45+10.81	674.81	45+10.81	674.75	3.25	RT.	45+10.81	674.59	13.25	RT.	45+10.81	674.57	15.00	RT.	45+10.81	674.57	16.67	RT.	
P5 BRG 1	45+21.51	674.56	20.17	LT.	45+21.51	674.61	16.75	LT.	45+21.51	674.67	13.00	LT.	45+21.51	674.77	6.75	LT.	45+21.51	674.88	45+21.51	674.83	3.25	RT.	45+21.51	674.67	13.25	RT.	45+21.51	674.64	15.00	RT.	45+21.51	674.64	16.67	RT.	
SPAN 6	PIER 5	45+22.59	674.56	20.17	LT.	45+22.59	674.62	16.75	LT.	45+22.59	674.68	13.00	LT.	45+22.59	674.78	6.75	LT.	45+22.59	674.89	45+22.59	674.83	3.25	RT.	45+22.59	674.67	13.25	RT.	45+22.59	674.65	15.00	RT.	45+22.59	674.65	16.67	RT.
	P5 BRG 2	45+23.67	674.57	20.17	LT.	45+23.67	674.63	16.75	LT.	45+23.67	674.69	13.00	LT.	45+23.67	674.79	6.75	LT.	45+23.67	674.89	45+23.67	674.84	3.25	RT.	45+23.67	674.68	13.25	RT.	45+23.67	674.65	15.00	RT.	45+23.67	674.65	16.67	RT.
	0.1L	45+34.37	674.64	20.17	LT.	45+34.37	674.70	16.75	LT.	45+34.37	674.76	13.00	LT.	45+34.37	674.86	6.75	LT.	45+34.37	674.97	45+34.37	674.91	3.25	RT.	45+34.37	674.75	13.25	RT.	45+34.37	674.73	15.00	RT.	45+34.37	674.73	16.67	RT.
	0.2L	45+46.14	674.72	20.17	LT.	45+46.14	674.78	16.75	LT.	45+46.14	674.84	13.00	LT.	45+46.14	674.94	6.75	LT.	45+46.14	675.05	45+46.14	674.99	3.25	RT.	45+46.14	674.83	13.25	RT.	45+46.14	674.81	15.00	RT.	45+46.14	674.81	16.67	RT.
	0.3L	45+57.92	674.80	20.17	LT.	45+57.92	674.86	16.75	LT.	45+57.92	674.92	13.00	LT.	45+57.92	675.02	6.75	LT.	45+57.92	675.13	45+57.92	675.08	3.25	RT.	45+57.92	674.92	13.25	RT.	45+57.92	674.89	15.00	RT.	45+57.92	674.89	16.67	RT.
	0.4L	45+69.70	674.88	20.17	LT.	45+69.70	674.94	16.75	LT.	45+69.70	675.00	13.00	LT.	45+69.70	675.10	6.75	LT.	45+69.70	675.21	45+69.70	675.16	3.25	RT.	45+69.70	675.00	13.25	RT.	45+69.70	674.97	15.00	RT.	45+69.70	674.97	16.67	RT.
	0.5L	45+81.48	674.96	20.17	LT.	45+81.48	675.02	16.75	LT.	45+81.48	675.08	13.00	LT.	45+81.48	675.18	6.75	LT.	45+81.48	675.29	45+81.48	675.24	3.25	RT.	45+81.48	675.08	13.25	RT.	45+81.48	675.05	15.00	RT.	45+81.48	675.05	16.67	RT.
	0.6L	45+93.25	675.04	20.17	LT.	45+93.25	675.10	16.75	LT.	45+93.25	675.16	13.00	LT.	45+93.25	675.26	6.75	LT.	45+93.25	675.37	45+93.25	675.32	3.25	RT.	45+93.25	675.16	13.25	RT.	45+93.25	675.13	15.00	RT.	45+93.25	675.13	16.67	RT.
	0.7L	46+05.03	675.12	20.17	LT.	46+05.03	675.18	16.75	LT.	46+05.03	675.24	13.00	LT.	46+05.03	675.34	6.75	LT.	46+05.03	675.45	46+05.03	675.40	3.25	RT.	46+05.03	675.24	13.25	RT.	46+05.03	675.21	15.00	RT.	46+05.03	675.21	16.67	RT.
0.8L	46+16.81	675.20	20.17	LT.	46+16.81	675.26	16.75	LT.	46+16.81	675.32	13.00	LT.	46+16.81	675.42	6.75	LT.	46+16.81	675.53	46+16.81	675.48	3.25	RT.	46+16.81	675.32	13.25	RT.	46+16.81	675.29	15.00	RT.	46+16.81	675.29	16.67	RT.	
0.9L	46+28.58	675.28	20.17	LT.	46+28.58	675.34	16.75	LT.	46+28.58	675.40	13.00	LT.	46+28.58	675.50	6.75	LT.	46+28.58	675.61	46+28.58	675.56	3.25	RT.	46+28.58	675.40	13.25	RT.	46+28.58	675.37	15.00	RT.	46+28.58	675.37	16.67	RT.	
P6 BRG 1	46+39.2																																		

VARIABLE HAUNCH THICKNESS														
LOCATION		BEAM LINE 1			BEAM LINE 2			BEAM LINE 3			BEAM LINE 4			
		STATION	THICK.	OFFSET(FT)	STATION	THICK.	OFFSET(FT)	STATION	THICK.	OFFSET(FT)	STATION	THICK.	OFFSET(FT)	
SPAN 1	CL RA BRG	39+34.82	3.97 in.	16.75 LT.	39+34.82	3.77 in.	6.75 LT.	39+34.82	3.77 in.	3.25 RT.	39+34.82	3.97 in.	13.25 RT.	
	0.1L	39+46.49	3.36 in.	16.75 LT.	39+46.49	3.22 in.	6.75 LT.	39+46.49	3.22 in.	3.25 RT.	39+46.49	3.36 in.	13.25 RT.	
	0.2L	39+58.16	2.92 in.	16.75 LT.	39+58.16	2.84 in.	6.75 LT.	39+58.16	2.84 in.	3.25 RT.	39+58.16	2.92 in.	13.25 RT.	
	0.3L	39+69.83	2.62 in.	16.75 LT.	39+69.83	2.58 in.	6.75 LT.	39+69.83	2.58 in.	3.25 RT.	39+69.83	2.62 in.	13.25 RT.	
	0.4L	39+81.50	2.45 in.	16.75 LT.	39+81.50	2.44 in.	6.75 LT.	39+81.50	2.44 in.	3.25 RT.	39+81.50	2.45 in.	13.25 RT.	
	0.5L	39+93.16	2.39 in.	16.75 LT.	39+93.16	2.39 in.	6.75 LT.	39+93.16	2.39 in.	3.25 RT.	39+93.16	2.39 in.	13.25 RT.	
	0.6L	40+04.83	2.45 in.	16.75 LT.	40+04.83	2.44 in.	6.75 LT.	40+04.83	2.44 in.	3.25 RT.	40+04.83	2.45 in.	13.25 RT.	
	0.7L	40+16.50	2.63 in.	16.75 LT.	40+16.50	2.59 in.	6.75 LT.	40+16.50	2.59 in.	3.25 RT.	40+16.50	2.63 in.	13.25 RT.	
	0.8L	40+28.17	2.93 in.	16.75 LT.	40+28.17	2.85 in.	6.75 LT.	40+28.17	2.85 in.	3.25 RT.	40+28.17	2.93 in.	13.25 RT.	
	0.9L	40+39.84	3.37 in.	16.75 LT.	40+39.84	3.23 in.	6.75 LT.	40+39.84	3.23 in.	3.25 RT.	40+39.84	3.37 in.	13.25 RT.	
P1 BRG 1	40+50.42	3.97 in.	16.75 LT.	40+50.42	3.77 in.	6.75 LT.	40+50.42	3.77 in.	3.25 RT.	40+50.42	3.97 in.	13.25 RT.		
SPAN 2	P1 BRG 2	40+52.59	3.97 in.	16.75 LT.	40+52.59	3.77 in.	6.75 LT.	40+52.59	3.77 in.	3.25 RT.	40+52.59	3.97 in.	13.25 RT.	
	0.1L	40+63.28	3.36 in.	16.75 LT.	40+63.28	3.22 in.	6.75 LT.	40+63.28	3.22 in.	3.25 RT.	40+63.28	3.36 in.	13.25 RT.	
	0.2L	40+75.06	2.92 in.	16.75 LT.	40+75.06	2.84 in.	6.75 LT.	40+75.06	2.84 in.	3.25 RT.	40+75.06	2.92 in.	13.25 RT.	
	0.3L	40+86.84	2.62 in.	16.75 LT.	40+86.84	2.58 in.	6.75 LT.	40+86.84	2.58 in.	3.25 RT.	40+86.84	2.62 in.	13.25 RT.	
	0.4L	40+98.62	2.45 in.	16.75 LT.	40+98.62	2.44 in.	6.75 LT.	40+98.62	2.44 in.	3.25 RT.	40+98.62	2.45 in.	13.25 RT.	
	0.5L	41+10.39	2.39 in.	16.75 LT.	41+10.39	2.39 in.	6.75 LT.	41+10.39	2.39 in.	3.25 RT.	41+10.39	2.39 in.	13.25 RT.	
	0.6L	41+22.17	2.45 in.	16.75 LT.	41+22.17	2.44 in.	6.75 LT.	41+22.17	2.44 in.	3.25 RT.	41+22.17	2.45 in.	13.25 RT.	
	0.7L	41+33.95	2.63 in.	16.75 LT.	41+33.95	2.59 in.	6.75 LT.	41+33.95	2.59 in.	3.25 RT.	41+33.95	2.63 in.	13.25 RT.	
	0.8L	41+45.72	2.93 in.	16.75 LT.	41+45.72	2.85 in.	6.75 LT.	41+45.72	2.85 in.	3.25 RT.	41+45.72	2.93 in.	13.25 RT.	
	0.9L	41+57.50	3.37 in.	16.75 LT.	41+57.50	3.23 in.	6.75 LT.	41+57.50	3.23 in.	3.25 RT.	41+57.50	3.37 in.	13.25 RT.	
P2 BRG 1	41+68.19	3.97 in.	16.75 LT.	41+68.19	3.77 in.	6.75 LT.	41+68.19	3.77 in.	3.25 RT.	41+68.19	3.97 in.	13.25 RT.		
SPAN 3	P2 BRG 2	41+70.36	3.97 in.	16.75 LT.	41+70.36	3.77 in.	6.75 LT.	41+70.36	3.77 in.	3.25 RT.	41+70.36	3.97 in.	13.25 RT.	
	0.1L	41+81.06	3.36 in.	16.75 LT.	41+81.06	3.22 in.	6.75 LT.	41+81.06	3.22 in.	3.25 RT.	41+81.06	3.36 in.	13.25 RT.	
	0.2L	41+92.83	2.92 in.	16.75 LT.	41+92.83	2.84 in.	6.75 LT.	41+92.83	2.84 in.	3.25 RT.	41+92.83	2.92 in.	13.25 RT.	
	0.3L	42+04.61	2.62 in.	16.75 LT.	42+04.61	2.58 in.	6.75 LT.	42+04.61	2.58 in.	3.25 RT.	42+04.61	2.62 in.	13.25 RT.	
	0.4L	42+16.39	2.45 in.	16.75 LT.	42+16.39	2.44 in.	6.75 LT.	42+16.39	2.44 in.	3.25 RT.	42+16.39	2.45 in.	13.25 RT.	
	0.5L	42+28.16	2.39 in.	16.75 LT.	42+28.16	2.39 in.	6.75 LT.	42+28.16	2.39 in.	3.25 RT.	42+28.16	2.39 in.	13.25 RT.	
	0.6L	42+39.94	2.45 in.	16.75 LT.	42+39.94	2.44 in.	6.75 LT.	42+39.94	2.44 in.	3.25 RT.	42+39.94	2.45 in.	13.25 RT.	
	0.7L	42+51.72	2.63 in.	16.75 LT.	42+51.72	2.59 in.	6.75 LT.	42+51.72	2.59 in.	3.25 RT.	42+51.72	2.63 in.	13.25 RT.	
	0.8L	42+63.49	2.93 in.	16.75 LT.	42+63.49	2.85 in.	6.75 LT.	42+63.49	2.85 in.	3.25 RT.	42+63.49	2.93 in.	13.25 RT.	
	0.9L	42+75.27	3.37 in.	16.75 LT.	42+75.27	3.23 in.	6.75 LT.	42+75.27	3.23 in.	3.25 RT.	42+75.27	3.37 in.	13.25 RT.	
P3 BRG 1	42+85.97	3.97 in.	16.75 LT.	42+85.97	3.77 in.	6.75 LT.	42+85.97	3.77 in.	3.25 RT.	42+85.97	3.97 in.	13.25 RT.		
SPAN 4	P3 BRG 2	42+88.13	3.97 in.	16.75 LT.	42+88.13	3.77 in.	6.75 LT.	42+88.13	3.77 in.	3.25 RT.	42+88.13	3.97 in.	13.25 RT.	
	0.1L	42+98.83	3.36 in.	16.75 LT.	42+98.83	3.22 in.	6.75 LT.	42+98.83	3.22 in.	3.25 RT.	42+98.83	3.36 in.	13.25 RT.	
	0.2L	43+10.60	2.92 in.	16.75 LT.	43+10.60	2.84 in.	6.75 LT.	43+10.60	2.84 in.	3.25 RT.	43+10.60	2.92 in.	13.25 RT.	
	0.3L	43+22.38	2.62 in.	16.75 LT.	43+22.38	2.58 in.	6.75 LT.	43+22.38	2.58 in.	3.25 RT.	43+22.38	2.62 in.	13.25 RT.	
	0.4L	43+34.16	2.45 in.	16.75 LT.	43+34.16	2.44 in.	6.75 LT.	43+34.16	2.44 in.	3.25 RT.	43+34.16	2.45 in.	13.25 RT.	
	0.5L	43+45.93	2.39 in.	16.75 LT.	43+45.93	2.39 in.	6.75 LT.	43+45.93	2.39 in.	3.25 RT.	43+45.93	2.39 in.	13.25 RT.	
	0.6L	43+57.71	2.45 in.	16.75 LT.	43+57.71	2.44 in.	6.75 LT.	43+57.71	2.44 in.	3.25 RT.	43+57.71	2.45 in.	13.25 RT.	
	0.7L	43+69.49	2.63 in.	16.75 LT.	43+69.49	2.59 in.	6.75 LT.	43+69.49	2.59 in.	3.25 RT.	43+69.49	2.63 in.	13.25 RT.	
	0.8L	43+81.27	2.93 in.	16.75 LT.	43+81.27	2.85 in.	6.75 LT.	43+81.27	2.85 in.	3.25 RT.	43+81.27	2.93 in.	13.25 RT.	
	0.9L	43+93.04	3.37 in.	16.75 LT.	43+93.04	3.23 in.	6.75 LT.	43+93.04	3.23 in.	3.25 RT.	43+93.04	3.37 in.	13.25 RT.	
P4 BRG 1	44+03.74	3.97 in.	16.75 LT.	44+03.74	3.77 in.	6.75 LT.	44+03.74	3.77 in.	3.25 RT.	44+03.74	3.97 in.	13.25 RT.		

NOTES:

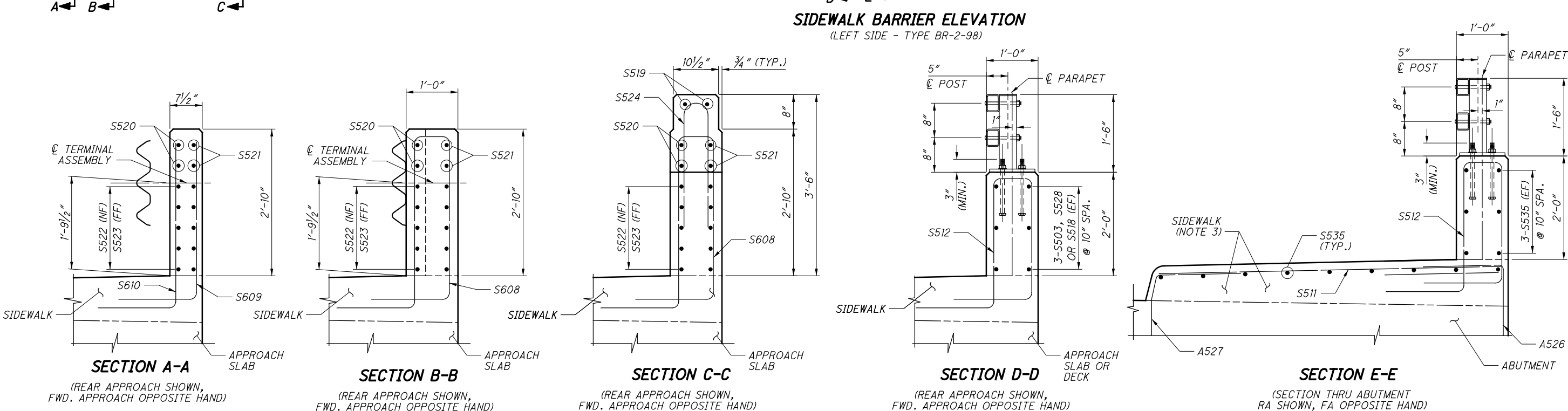
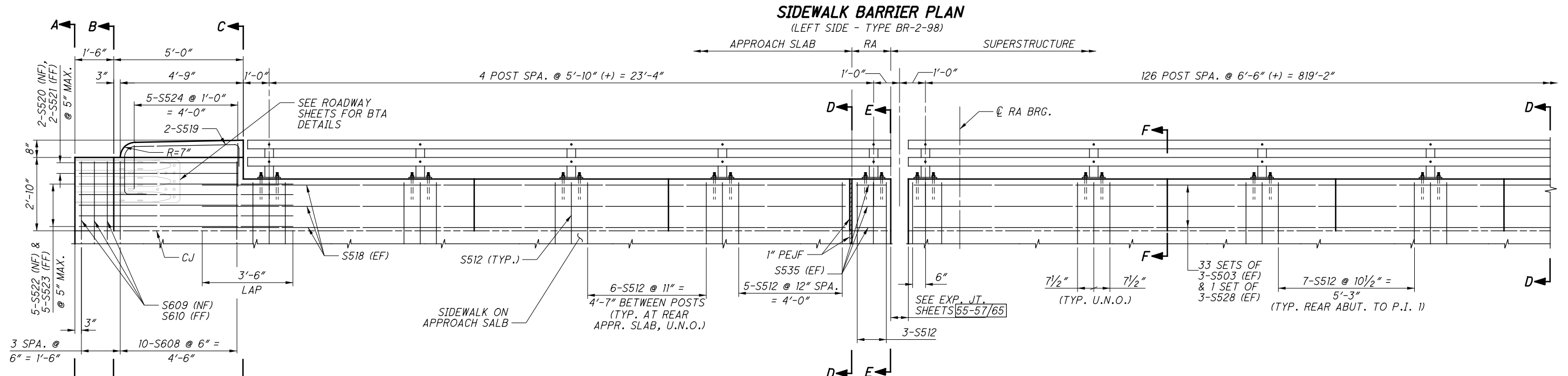
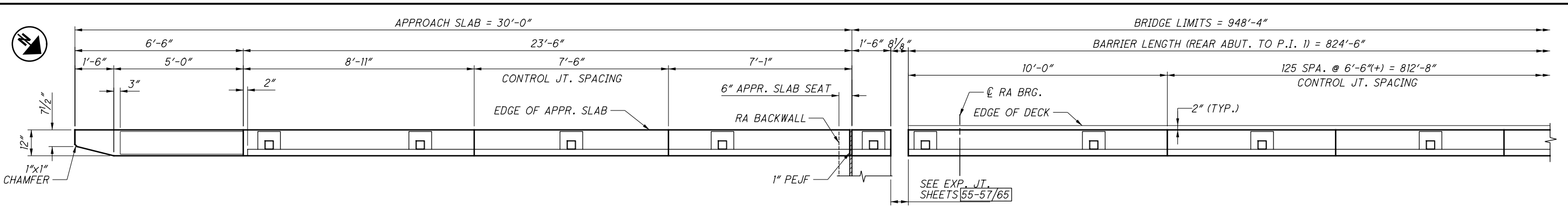
1. FOR DECK KEY PLAN, SEE SHEET 42/65
2. FOR SCREED ELEVATIONS, SEE SHEET 43/65
3. FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 44-45/65
4. FOR FINAL DECK ELEVATIONS, SEE SHEETS 46-47/65

VARIABLE HAUNCH THICKNESS													
LOCATION		BEAM LINE 1			BEAM LINE 2			BEAM LINE 3			BEAM LINE 4		
		STATION	THICK.	OFFSET(FT)	STATION	THICK.	OFFSET(FT)	STATION	THICK.	OFFSET(FT)	STATION	THICK.	OFFSET(FT)
SPAN 5	P4 BRG 2	44+05.90	3.97 in.	16.75 LT.	44+05.90	3.77 in.	6.75 LT.	44+05.90	3.77 in.	3.25 RT.	44+05.90	3.97 in.	13.25 RT.
	0.1L	44+16.60	3.36 in.	16.75 LT.	44+16.60	3.22 in.	6.75 LT.	44+16.60	3.22 in.	3.25 RT.	44+16.60	3.36 in.	13.25 RT.
	0.2L	44+28.37	2.92 in.	16.75 LT.	44+28.37	2.84 in.	6.75 LT.	44+28.37	2.84 in.	3.25 RT.	44+28.37	2.92 in.	13.25 RT.
	0.3L	44+40.15	2.62 in.	16.75 LT.	44+40.15	2.58 in.	6.75 LT.	44+40.15	2.58 in.	3.25 RT.	44+40.15	2.62 in.	13.25 RT.
	0.4L	44+51.93	2.45 in.	16.75 LT.	44+51.93	2.44 in.	6.75 LT.	44+51.93	2.44 in.	3.25 RT.	44+51.93	2.45 in.	13.25 RT.
	0.5L	44+63.71	2.39 in.	16.75 LT.	44+63.71	2.39 in.	6.75 LT.	44+63.71	2.39 in.	3.25 RT.	44+63.71	2.39 in.	13.25 RT.
	0.6L	44+75.48	2.45 in.	16.75 LT.	44+75.48	2.44 in.	6.75 LT.	44+75.48	2.44 in.	3.25 RT.	44+75.48	2.45 in.	13.25 RT.
	0.7L	44+87.26	2.63 in.	16.75 LT.	44+87.26	2.59 in.	6.75 LT.	44+87.26	2.59 in.	3.25 RT.	44+87.26	2.63 in.	13.25 RT.
	0.8L	44+99.04	2.93 in.	16.75 LT.	44+99.04	2.85 in.	6.75 LT.	44+99.04	2.85 in.	3.25 RT.	44+99.04	2.93 in.	13.25 RT.
	0.9L	45+10.81	3.37 in.	16.75 LT.	45+10.81	3.23 in.	6.75 LT.	45+10.81	3.23 in.	3.25 RT.	45+10.81	3.37 in.	13.25 RT.
SPAN 6	P5 BRG 1	45+21.51	3.97 in.	16.75 LT.	45+21.51	3.77 in.	6.75 LT.	45+21.51	3.77 in.	3.25 RT.	45+21.51	3.97 in.	13.25 RT.
	P5 BRG 2	45+23.67	3.97 in.	16.75 LT.	45+23.67	3.77 in.	6.75 LT.	45+23.67	3.77 in.	3.25 RT.	45+23.67	3.97 in.	13.25 RT.
	0.1L	45+34.37	3.36 in.	16.75 LT.	45+34.37	3.22 in.	6.75 LT.	45+34.37	3.22 in.	3.25 RT.	45+34.37	3.36 in.	13.25 RT.
	0.2L	45+46.14	2.92 in.	16.75 LT.	45+46.14	2.84 in.	6.75 LT.	45+46.14	2.84 in.	3.25 RT.	45+46.14	2.92 in.	13.25 RT.
	0.3L	45+57.92	2.62 in.	16.75 LT.	45+57.92	2.58 in.	6.75 LT.	45+57.92	2.58 in.	3.25 RT.	45+57.92	2.62 in.	13.25 RT.
	0.4L	45+69.70	2.45 in.	16.75 LT.	45+69.70	2.44 in.	6.75 LT.	45+69.70	2.44 in.	3.25 RT.	45+69.70	2.45 in.	13.25 RT.
	0.5L	45+81.48	2.39 in.	16.75 LT.	45+81.48	2.39 in.	6.75 LT.	45+81.48	2.39 in.	3.25 RT.	45+81.48	2.39 in.	13.25 RT.
	0.6L	45+93.25	2.45 in.	16.75 LT.	45+93.25	2.44 in.	6.75 LT.	45+93.25	2.44 in.	3.25 RT.	45+93.25	2.45 in.	13.25 RT.
	0.7L	46+05.03	2.63 in.	16.75 LT.	46+05.03	2.59 in.	6.75 LT.	46+05.03	2.59 in.	3.25 RT.	46+05.03	2.63 in.	13.25 RT.
	0.8L	46+16.81	2.93 in.	16.75 LT.	46+16.81	2.85 in.	6.75 LT.	46+16.81	2.85 in.	3.25 RT.	46+16.81	2.93 in.	13.25 RT.
SPAN 7	0.9L	46+28.58	3.37 in.	16.75 LT.	46+28.58	3.23 in.	6.75 LT.	46+28.58	3.23 in.	3.25 RT.	46+28.58	3.37 in.	13.25 RT.
	P6 BRG 1	46+39.28	3.97 in.	16.75 LT.	46+39.28	3.77 in.	6.75 LT.	46+39.28	3.77 in.	3.25 RT.	46+39.28	3.97 in.	13.25 RT.
	P6 BRG 2	46+41.44	3.97 in.	16.75 LT.	46+41.44	3.77 in.	6.75 LT.	46+41.44	3.77 in.	3.25 RT.	46+41.44	3.97 in.	13.25 RT.
	0.1L	46+52.14	3.36 in.	16.75 LT.	46+52.14	3.22 in.	6.75 LT.	46+52.14	3.22 in.	3.25 RT.	46+52.14	3.36 in.	13.25 RT.
	0.2L	46+63.92	2.92 in.	16.75 LT.	46+63.92	2.84 in.	6.75 LT.	46+63.92	2.84 in.	3.25 RT.	46+63.92	2.92 in.	13.25 RT.
	0.3L	46+75.69	2.62 in.	16.75 LT.	46+75.69	2.58 in.	6.75 LT.	46+75.69	2.58 in.	3.25 RT.	46+75.69	2.62 in.	13.25 RT.
	0.4L	46+87.47	2.45 in.	16.75 LT.	46+87.47	2.44 in.	6.75 LT.	46+87.47	2.44 in.	3.25 RT.	46+87.47	2.45 in.	13.25 RT.
	0.5L	46+99.25	2.39 in.	16.75 LT.	46+99.25	2.39 in.	6.75 LT.	46+99.25	2.39 in.	3.25 RT.	46+99.25	2.39 in.	13.25 RT.
	0.6L	47+11.02	2.45 in.	16.75 LT.	47+11.02	2.44 in.	6.75 LT.	47+11.02	2.44 in.	3.25 RT.	47+11.02	2.45 in.	13.25 RT.
	0.7L	47+22.80	2.63 in.	16.75 LT.	47+22.80	2.59 in.	6.75 LT.	47+22.80	2.59 in.	3.25 RT.	47+22.80	2.63 in.	13.25 RT.
SPAN 8	0.8L	47+34.58	2.93 in.	16.75 LT.	47+34.58	2.85 in.	6.75 LT.	47+34.58	2.85 in.	3.25 RT.	47+34.58	2.93 in.	13.25 RT.
	0.9L	47+46.36	3.37 in.	16.75 LT.	47+46.36	3.23 in.	6.75 LT.	47+46.36	3.23 in.	3.25 RT.	47+46.36	3.37 in.	13.25 RT.
	P7 BRG 1	47+57.05	3.97 in.	16.75 LT.	47+57.05	3.77 in.	6.75 LT.	47+57.05	3.77 in.	3.25 RT.	47+57.05	3.97 in.	13.25 RT.
	P7 BRG 2	47+59.22	3.88 in.	16.75 LT.	47+59.22	3.51 in.	6.75 LT.	47+59.22	3.51 in.	3.25 RT.	47+59.22	3.88 in.	13.25 RT.
	0.1L	47+69.80	3.28 in.	16.96 LT.	47+69.80	2.96 in.	6.84 LT.	47+69.80	2.96 in.	3.29 RT.	47+69.80	3.28 in.	13.41 RT.
	0.2L	47+81.47	2.86 in.	17.18 LT.	47+81.47	2.63 in.	6.93 LT.	47+81.47	2.63 in.	3.33 RT.	47+81.47	2.86 in.	13.59 RT.
	0.3L	47+93.14	2.58 in.	17.41 LT.	47+93.14	2.44 in.	7.02 LT.	47+93.14	2.44 in.	3.37 RT.	47+93.14	2.58 in.	13.77 RT.
	0.4L	48+04.81	2.43 in.	17.63 LT.	48+04.81	2.37 in.	7.11 LT.	48+04.81	2.37 in.	3.42 RT.	48+04.81	2.43 in.	13.94 RT.
	0.5L	48+16.48	2.39 in.	17.86 LT.	48+16.48	2.40 in.	7.20 LT.	48+16.48	2.40 in.	3.46 RT.	48+16.48	2.39 in.	14.12 RT.
	0.6L	48+28.14	2.46 in.	18.08 LT.	48+28.14	2.45 in.	7.29 LT.	48+28.14	2.45 in.	3.51 RT.	48+28.14	2.46 in.	14.30 RT.
CL FA BRG	0.7L	48+39.81	2.63 in.	18.31 LT.	48+39.81	2.57 in.	7.38 LT.	48+39.81	2.57 in.	3.55 RT.	48+39.81	2.63 in.	14.48 RT.
	0.8L	48+51.48	2.91 in.	18.53 LT.	48+51.48	2.76 in.	7.47 LT.	48+51.48	2.76 in.	3.59 RT.	48+51.48	2.91 in.	14.66 RT.
	0.9L	48+63.15	3.32 in.	18.76 LT.	48+63.15	3.05 in.	7.56 LT.	48+63.15	3.05 in.	3.64 RT.	48+63.15	3.32 in.	14.84 RT.
	CL FA BRG	48+74.82	3.88 in.	18.98 LT.	48+74.82	3.49 in.	7.65 LT.	48+74.82	3.49 in.	3.68 RT.	48+74.82	3.88 in.	15.02 RT.

NOTES:

1. FOR DECK KEY PLAN, SEE SHEET 42/65
2. FOR SCREED ELEVATIONS, SEE SHEET 43/65
3. FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 44-45/65
4. FOR FINAL DECK ELEVATIONS, SEE SHEETS 46-47/65

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- NOTES:**
1. FOR SECTION F-F, SEE SHEET 51/65.
 2. FOR ADDITIONAL NOTES, SEE SHEET 51/65.
 3. FOR SIDEWALK PLAN & ELEVATION, SEE SHEET 58-59/65.

1800 INDIAN WOOD CIRCLE
MAUMEE, OHIO 43537

DATE: 05/2015
TDR: 05/2015
STRUCTURE FILE NUMBER: TBD

DRAWN: AMK
CHECKED: SCT

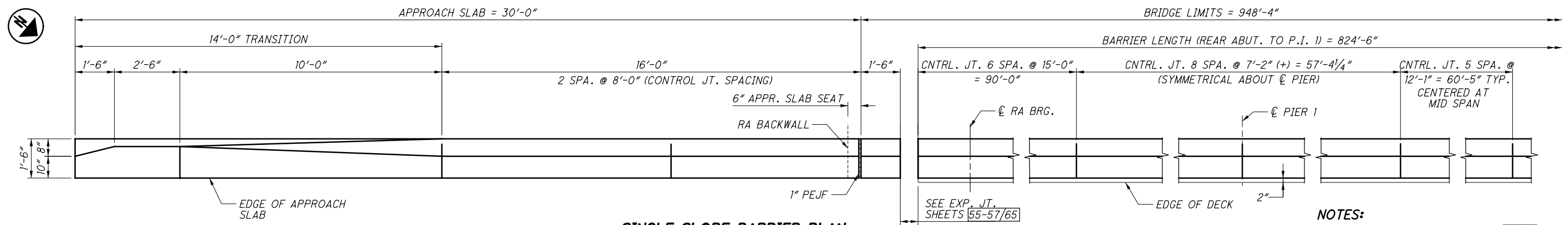
DESIGNED: AMK

LEFT RAILING DETAILS (1 OF 2)
HEN-INDUSTRIAL DRIVE-0000
INDUSTRIAL DRIVE OVER MAUMEE RIVER

HEN-IND-00.00
PID No. 22984

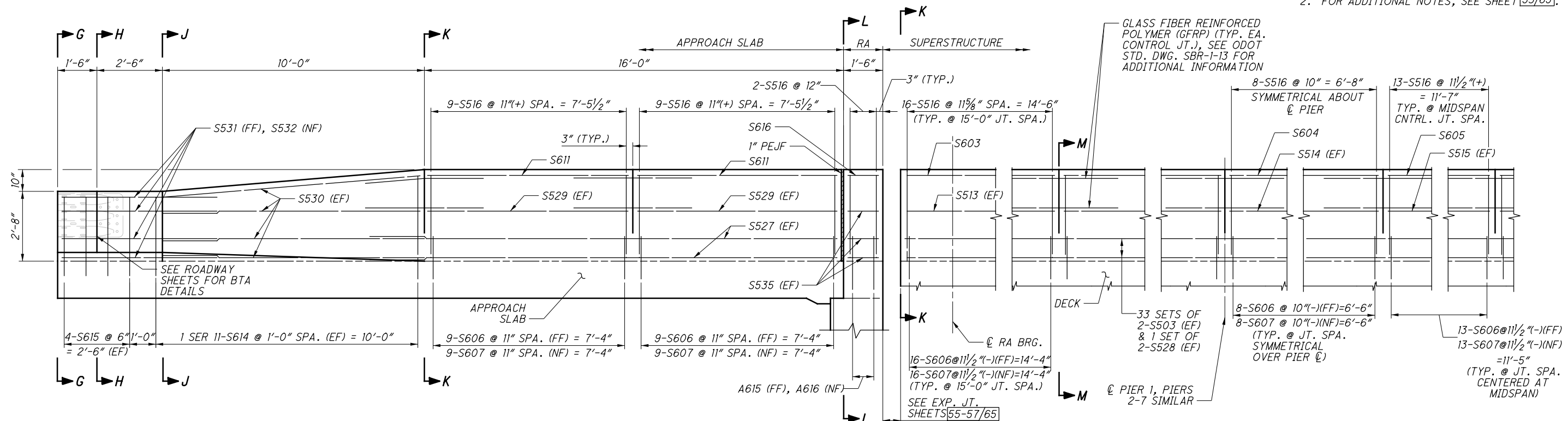
50/65
133/180

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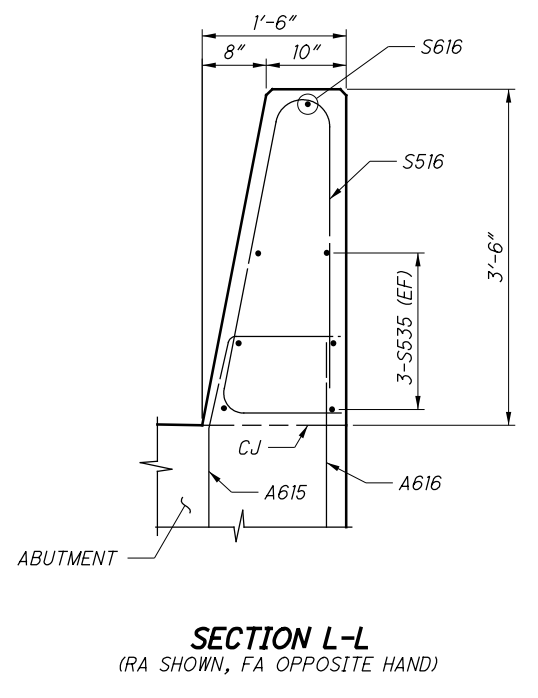
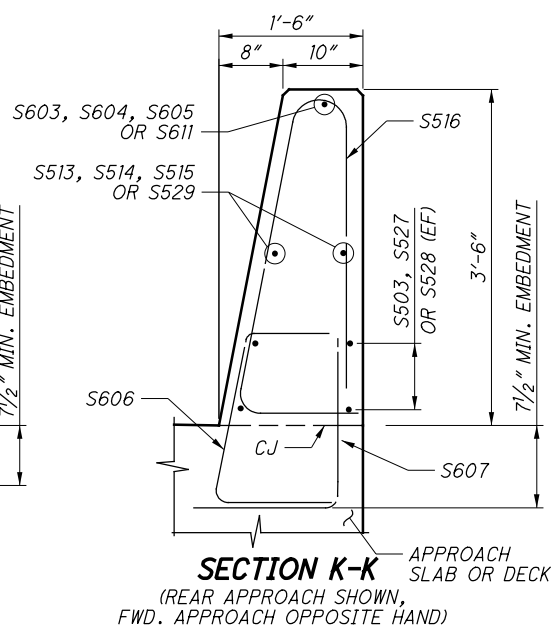
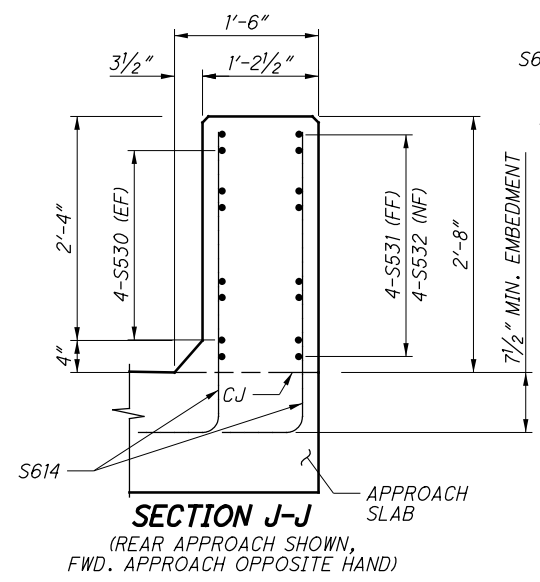
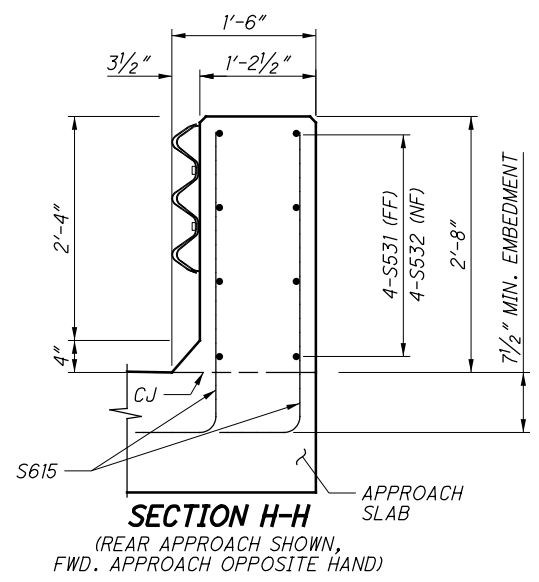
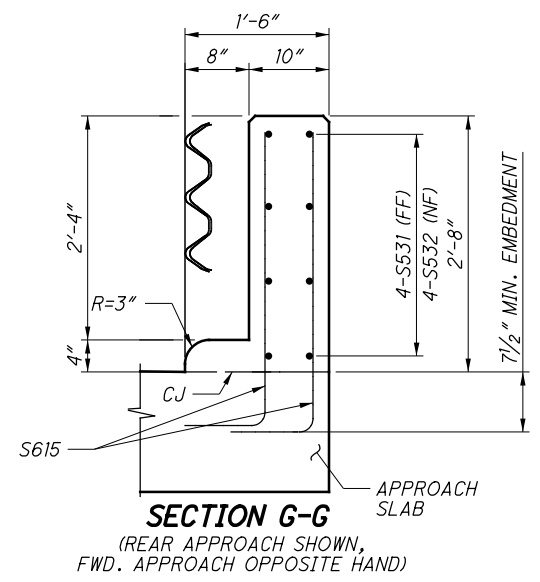


SINGLE SLOPE BARRIER PLAN
(RIGHT SIDE - TYPE SBR-1-13)

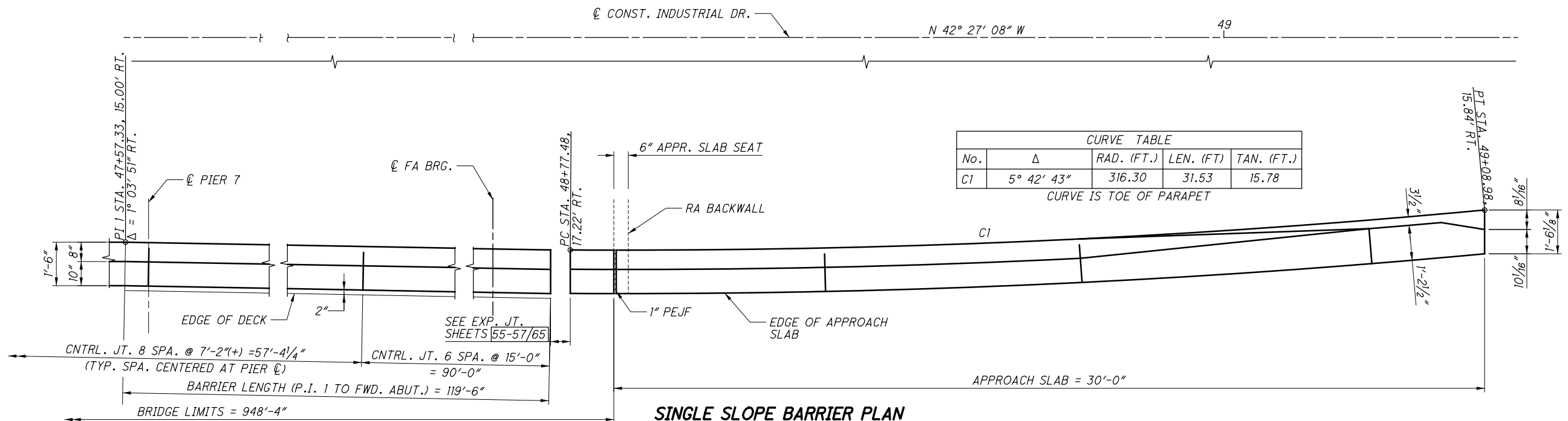
- NOTES:**
1. FOR SECTION M-M SEE, SHEET **53/65**.
 2. FOR ADDITIONAL NOTES, SEE SHEET **53/65**.



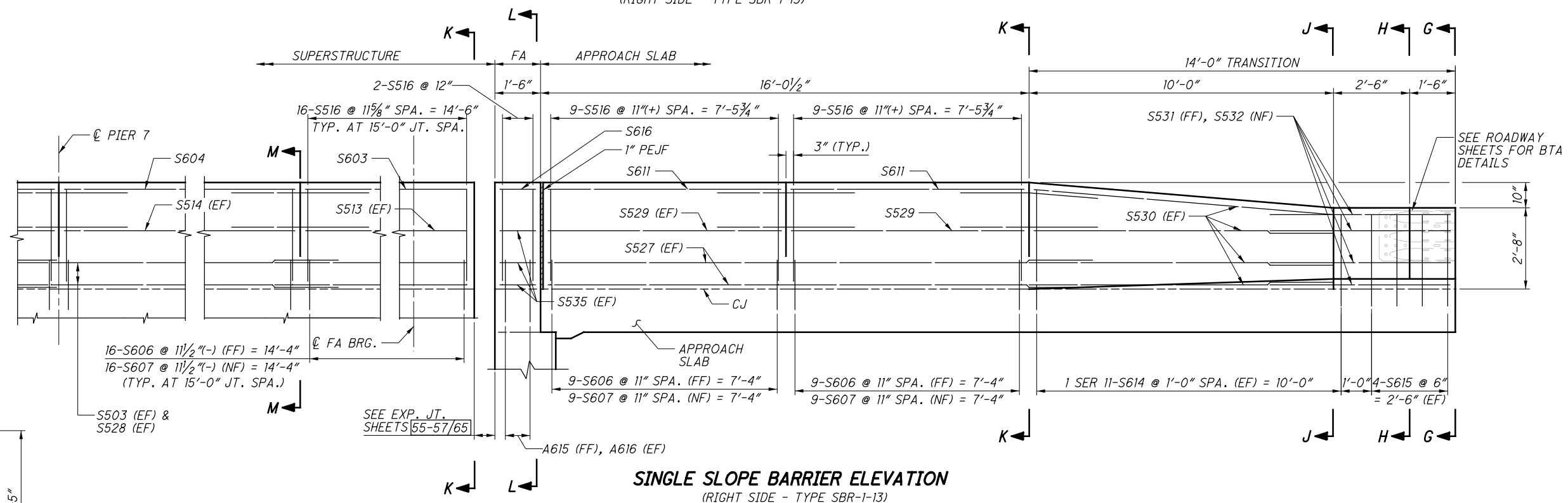
SINGLE SLOPE BARRIER ELEVATION
(RIGHT SIDE - TYPE SBR-1-13)



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SINGLE SLOPE BARRIER PLAN
(RIGHT SIDE - TYPE SBR-1-13)



SINGLE SLOPE BARRIER ELEVATION
(RIGHT SIDE - TYPE SBR-1-13)

**BARRIER REINFORCING
REQUIRED LAP LENGTHS**

NO. 5 BARS	2'-5" MIN.
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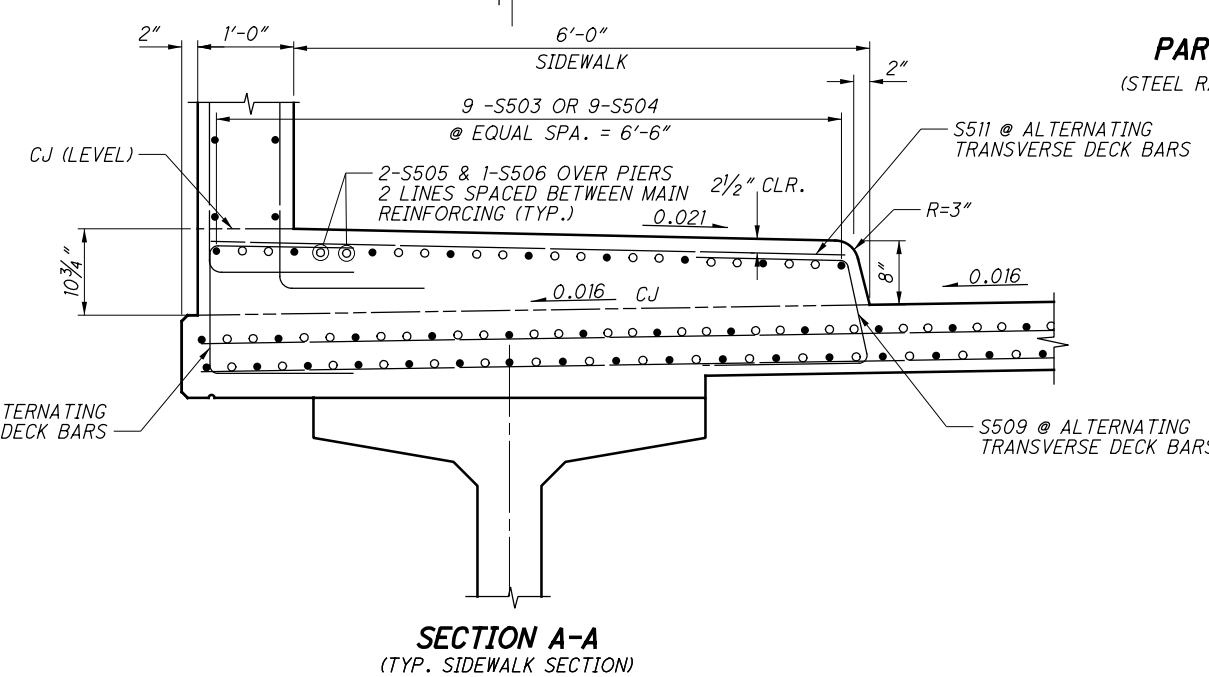
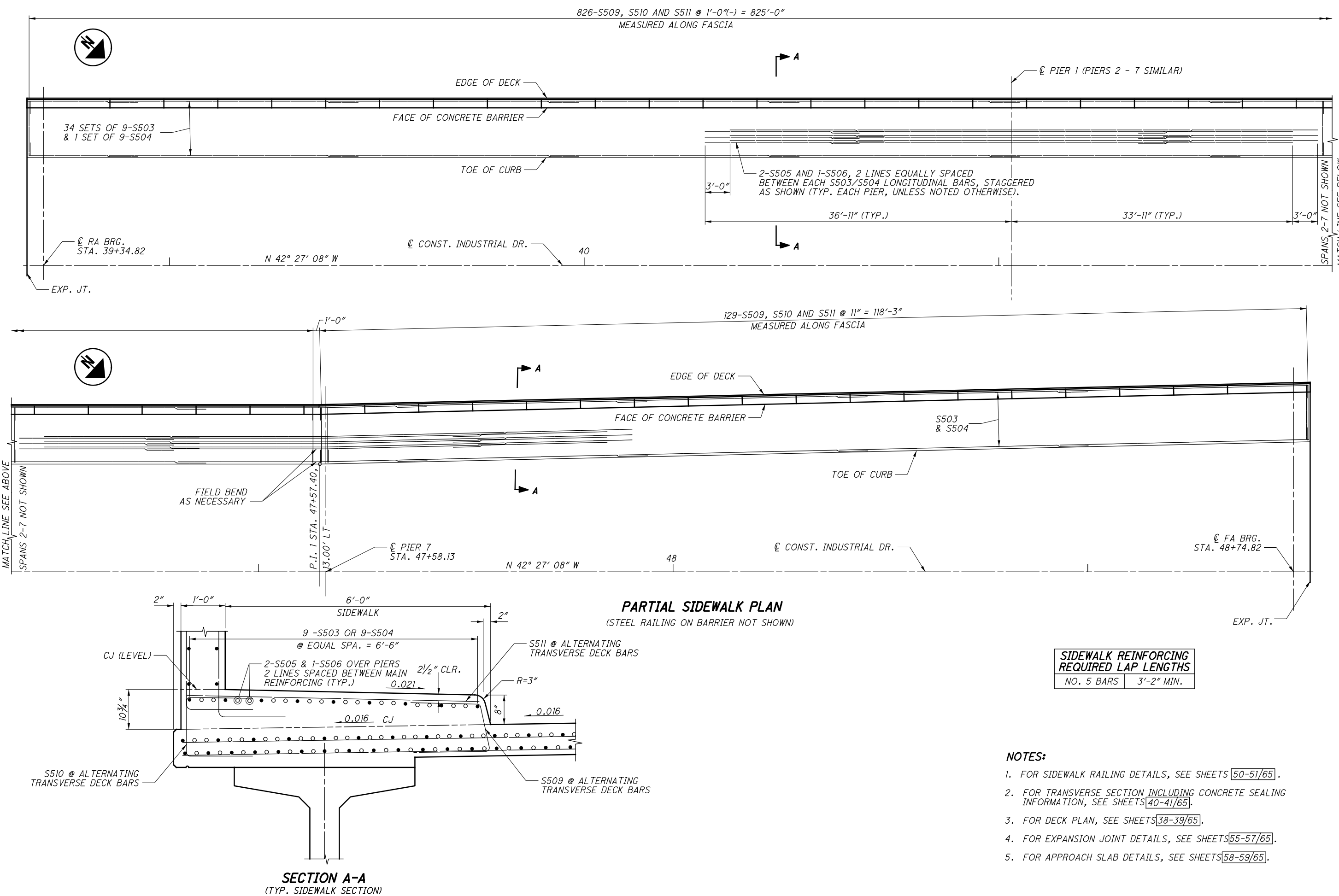
NOTES:

1. FOR SECTIONS G-G THRU L-L, SEE SHEET 52/65.
2. FOR ADDITIONAL SINGLE SLOPE RAILING INFORMATION, SEE ODOT STD. DWGS. SBR-1-13.
3. FOR DECK PLAN, SEE SHEETS 38-39/65.
4. FOR ABUTMENT DETAILS, SEE SHEETS 11-20/65.
5. FOR APPROACH SLAB DETAILS, SEE SHEETS 58-59/65.
6. FOR ADDITIONAL APPROACH SLAB INFORMATION, SEE ODOT STD. DWGS. AS-1-15 & AS-2-15.

SECTION M-M

(SECTION AT CONTROL JOINT)
(DECK SHOWN, APPROACH SIMILAR)

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PARTIAL SIDEWALK PLAN
(STEEL RAILING ON BARRIER NOT SHOWN)

SIDEWALK REINFORCING REQUIRED LAP LENGTHS	
NO. 5 BARS	3'-2" MIN.

- NOTES:
1. FOR SIDEWALK RAILING DETAILS, SEE SHEETS 50-51/65.
 2. FOR TRANSVERSE SECTION INCLUDING CONCRETE SEALING INFORMATION, SEE SHEETS 40-41/65.
 3. FOR DECK PLAN, SEE SHEETS 38-39/65.
 4. FOR EXPANSION JOINT DETAILS, SEE SHEETS 55-57/65.
 5. FOR APPROACH SLAB DETAILS, SEE SHEETS 58-59/65.



1800 INDIAN WOOD CIRCLE
MAUMEE, OHIO 43537

DESIGNED	DRAWN	REVIEWED	DATE
KRH	AMK	TLR	05/2015
CHECKED	REVISED	STRUCTURE FILE NUMBER	TBD
SCT			

SIDEWALK PLAN AND SECTION

HEN-INDUSTRIAL DRIVE-0000

INDUSTRIAL DRIVE OVER MAUMEE RIVER

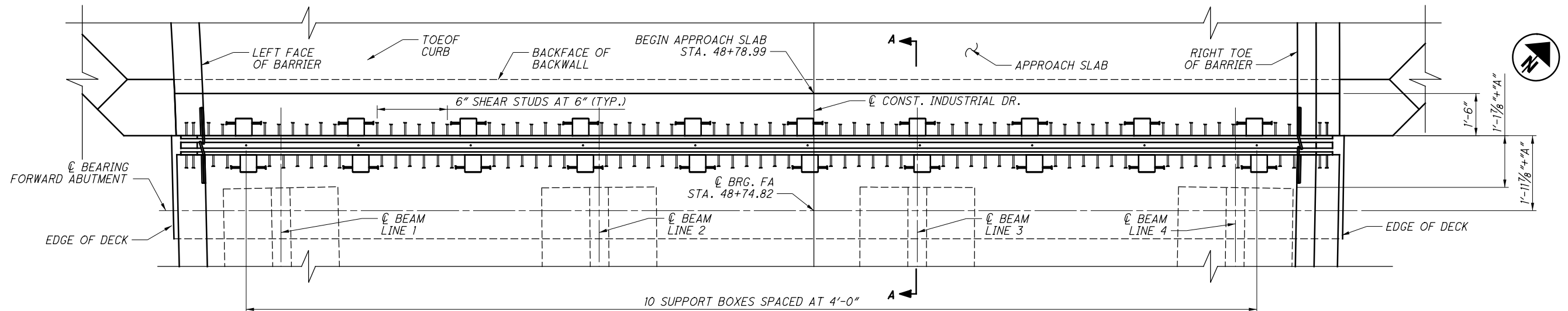
HEN-IND-00.00

PID No. 22984

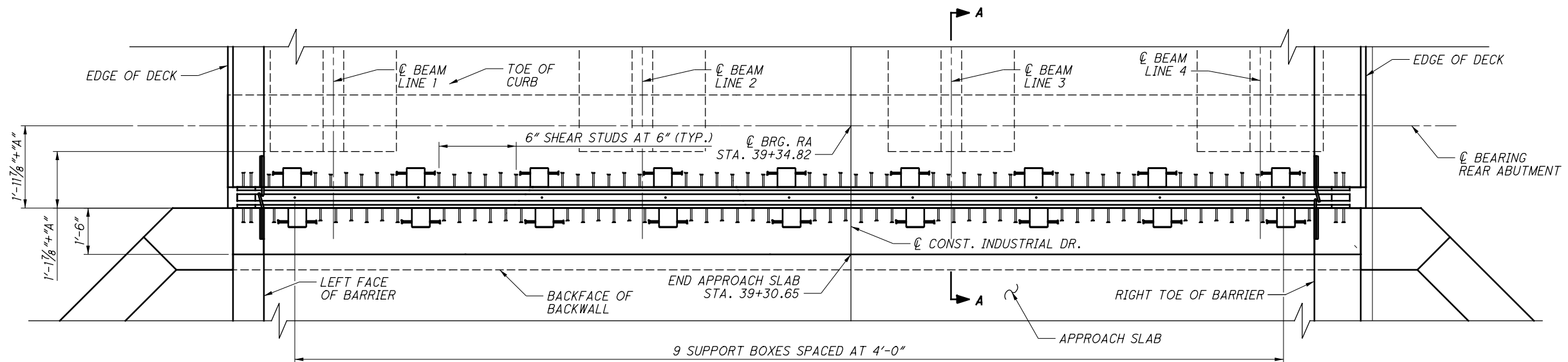
54 / 65

137 / 180

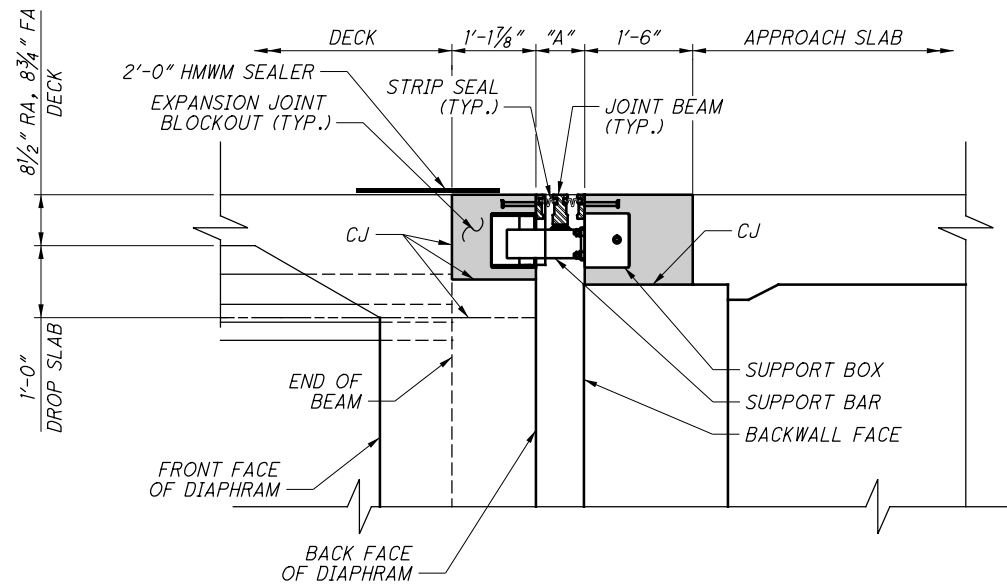
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FORWARD ABUTMENT EXPANSION JOINT DETAIL



REAR ABUTMENT EXPANSION JOINT DETAIL



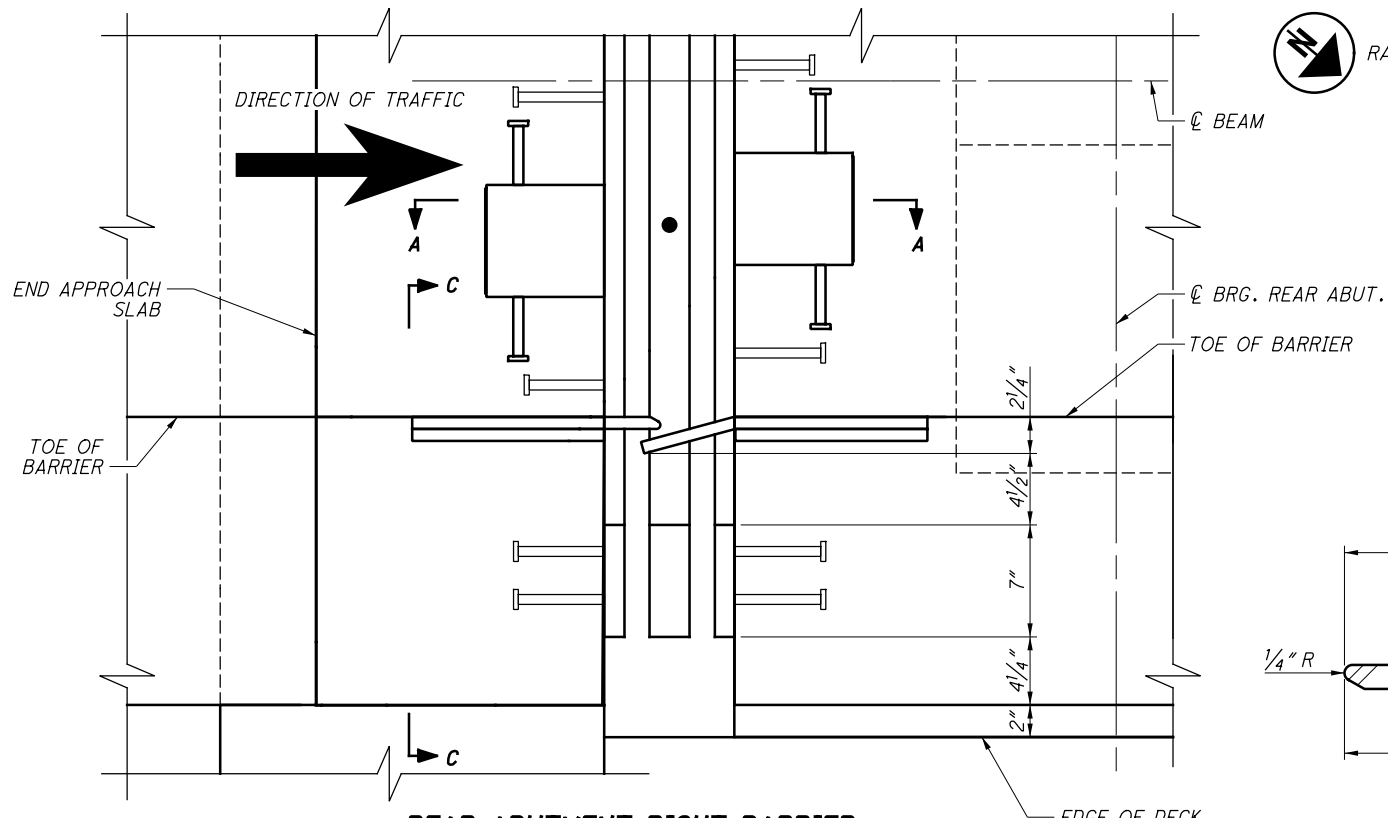
SECTION A-A

TEMP	DIMENSION "A" (INCHES)	
	REAR ABUT	FWD ABUT
15°F	9 13/16	9 13/16
20°F	9 5/8	9 5/8
30°F	9 1/4	9 1/4
40°F	8 7/8	8 7/8
50°F	8 1/2	8 1/2
60°F	8 1/8	8 1/8
70°F	7 3/4	7 3/4
80°F	7 3/8	7 3/8
90°F	7	7
95°F	6 13/16	6 13/16

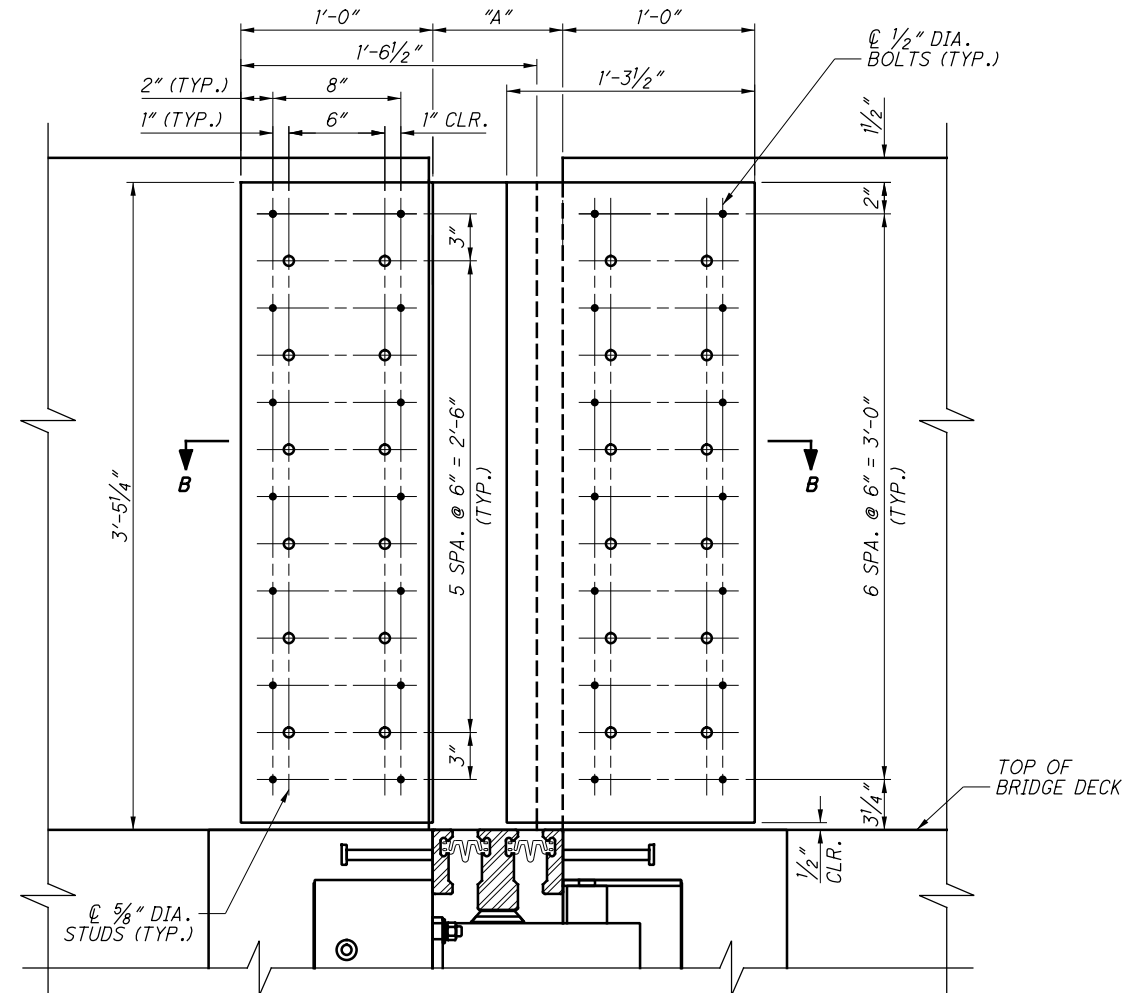
NOTES:

- SEAL TRANSVERSE DECK CONSTRUCTION JOINT WITH 2'-0" HMWM, CENTERED ABOUT JOINT.
- THE MODULAR JOINT SPECIFIED SHALL BE A D.S. BROWN "D160-PV-S" STEELFLEX MODULAR EXPANSION JOINT SYSTEM OR EQUIVALENT. IF AN ALTERNATE JOINT IS USED, THE PLANS SHALL BE MODIFIED TO ACCOMMODATE THE NEW JOINT SYSTEM.
- FOR DECK PLAN, SEE SHEETS 38-39/65
- FOR END DIAPHRAM DETAILS, SEE SHEET 36/65
- DROP SLAB SHALL EXTEND THE ENTIRE WIDTH OF DECK.
- CONCRETE PARAPETS TO BE INSTALLED AFTER INSTALLATION OF MODULAR EXPANSION JOINT.

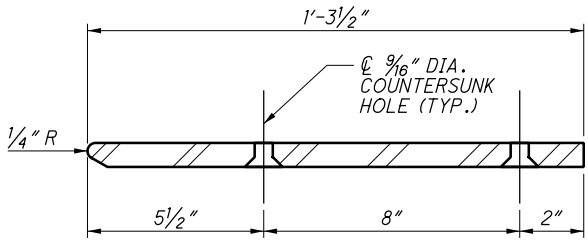
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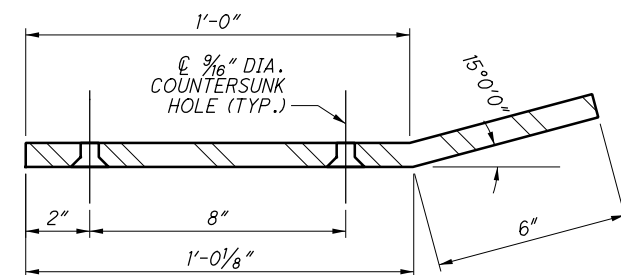
**REAR ABUTMENT RIGHT BARRIER
PART PLAN**
(FORWARD ABUTMENT OPPOSITE HAND)



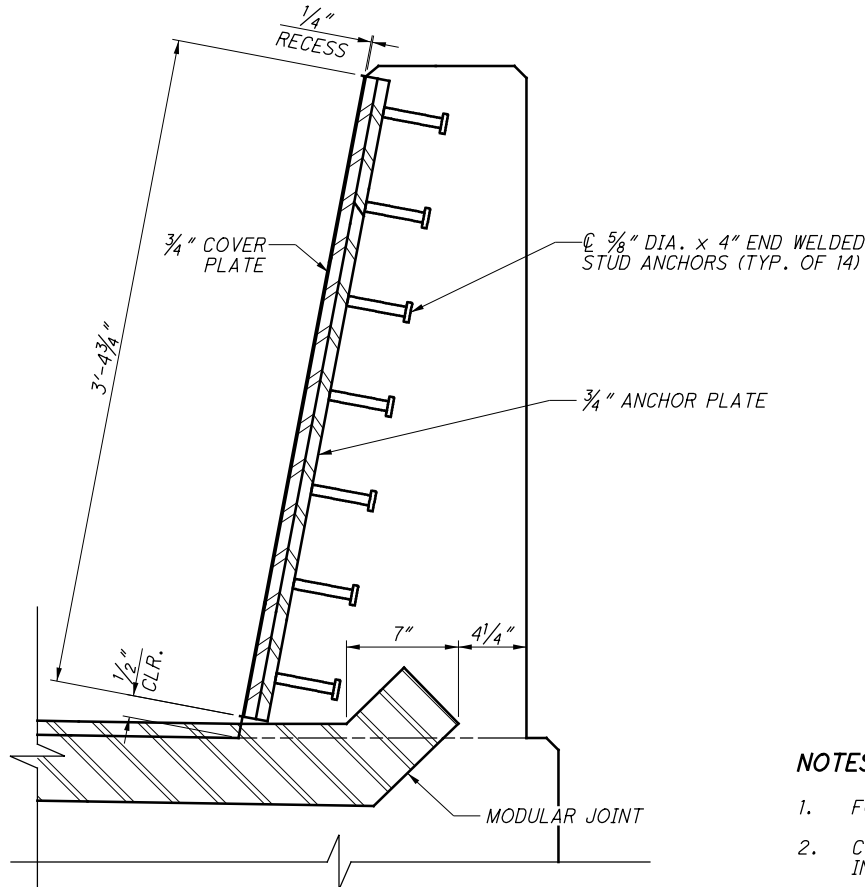
SECTION A-A
(DIMENSIONS MEASURED ARE ALONG THE FACE OF THE PARAPET)



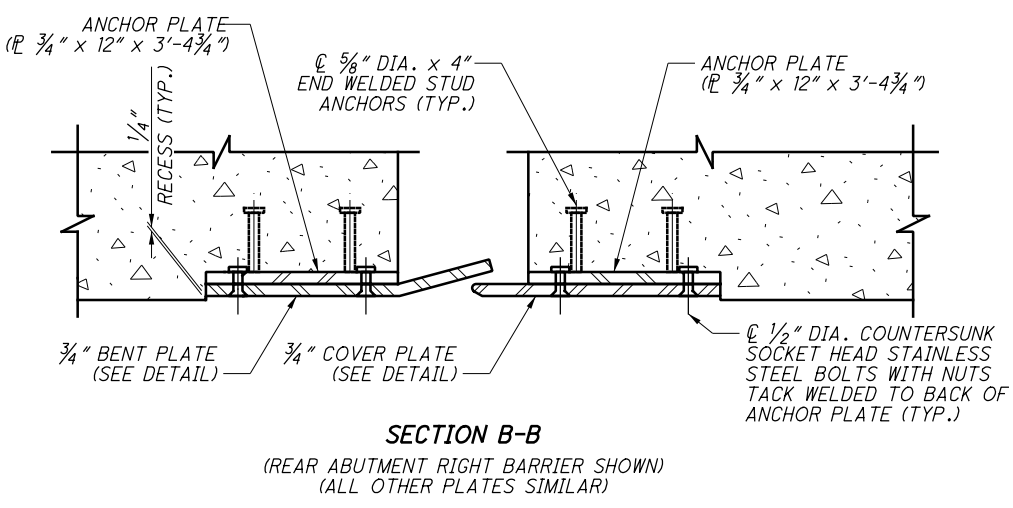
3/4" COVER PLATE



3/4" BENT PLATE

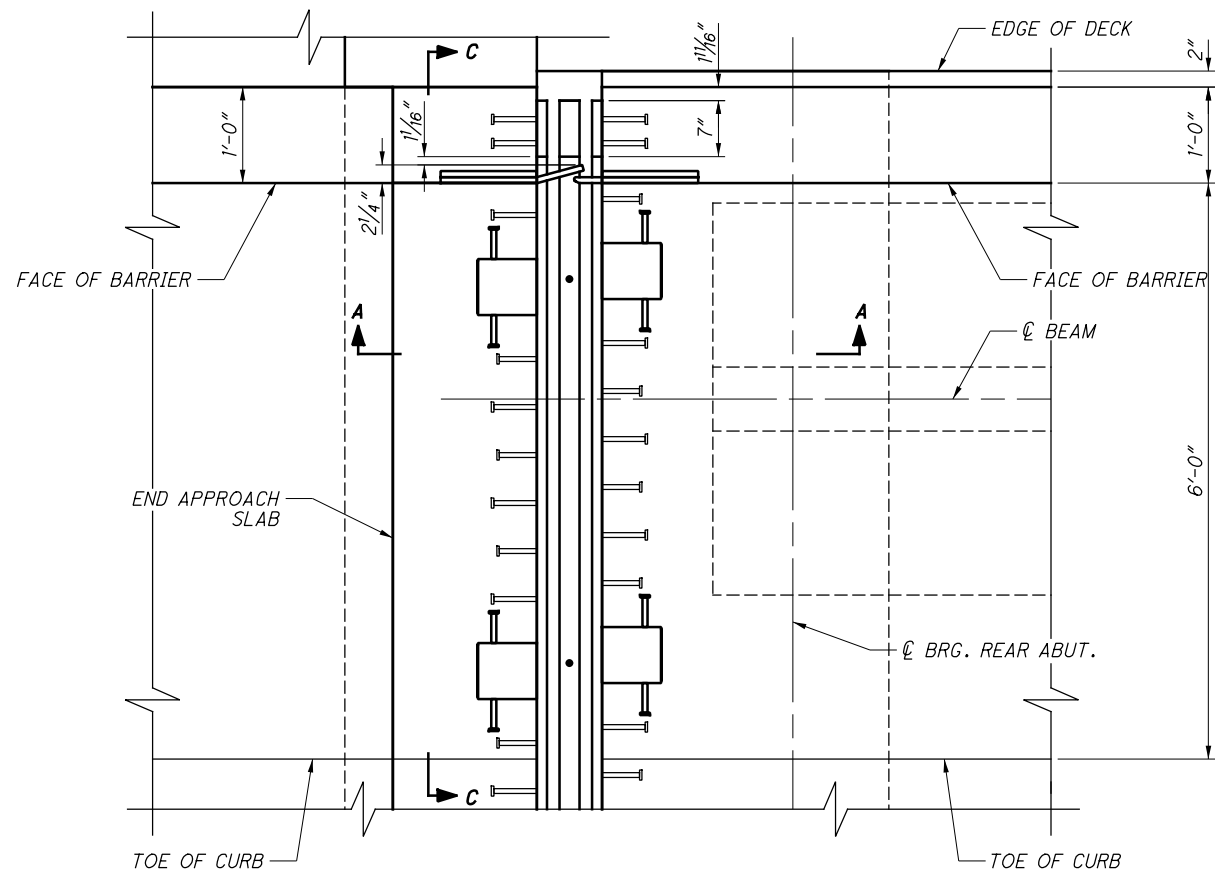


SECTION C-C

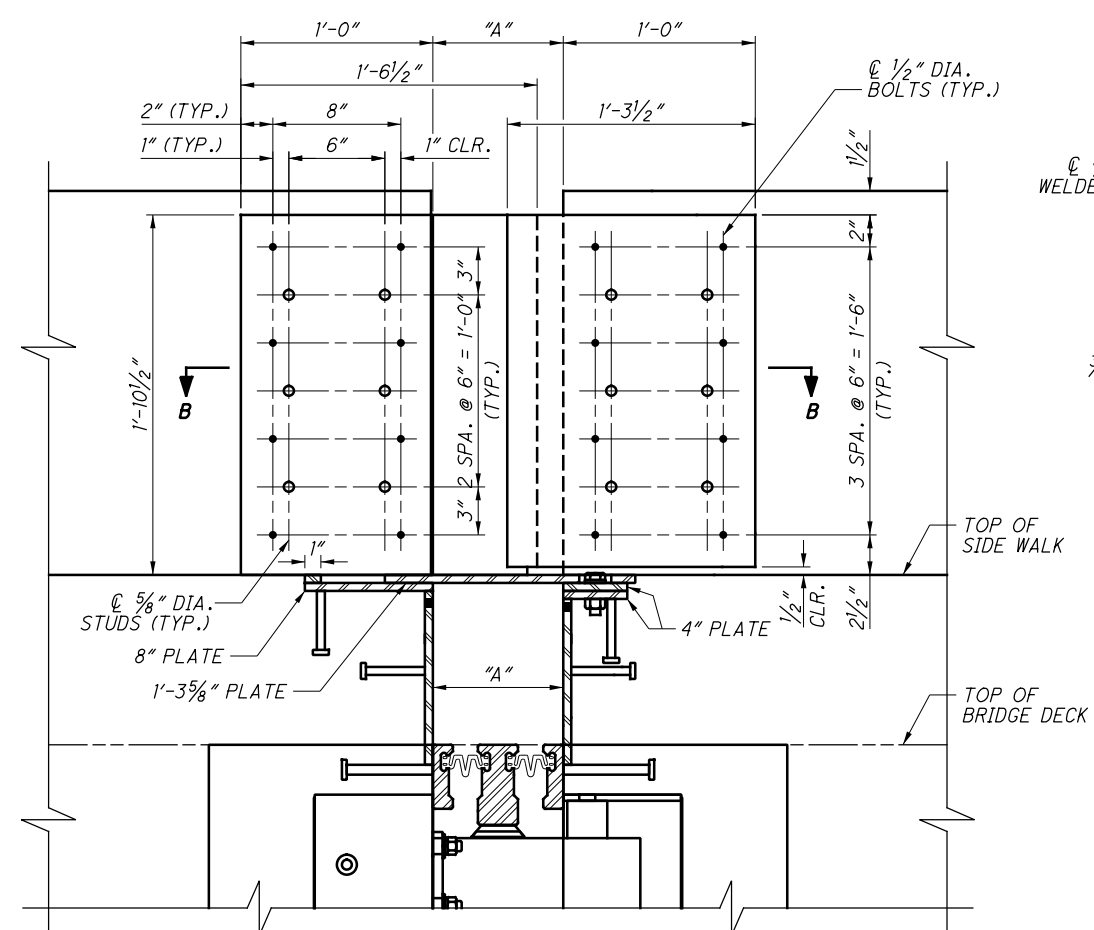


- NOTES:**
1. FOR DIMENSIONS "A", SEE SHEET **55/65**
 2. CONCRETE PARAPETS TO BE INSTALLED AFTER INSTALLATION OF MODULAR EXPANSION JOINTS.
 3. FOR ADDITIONAL NOTES SEE SHEET **55/65**

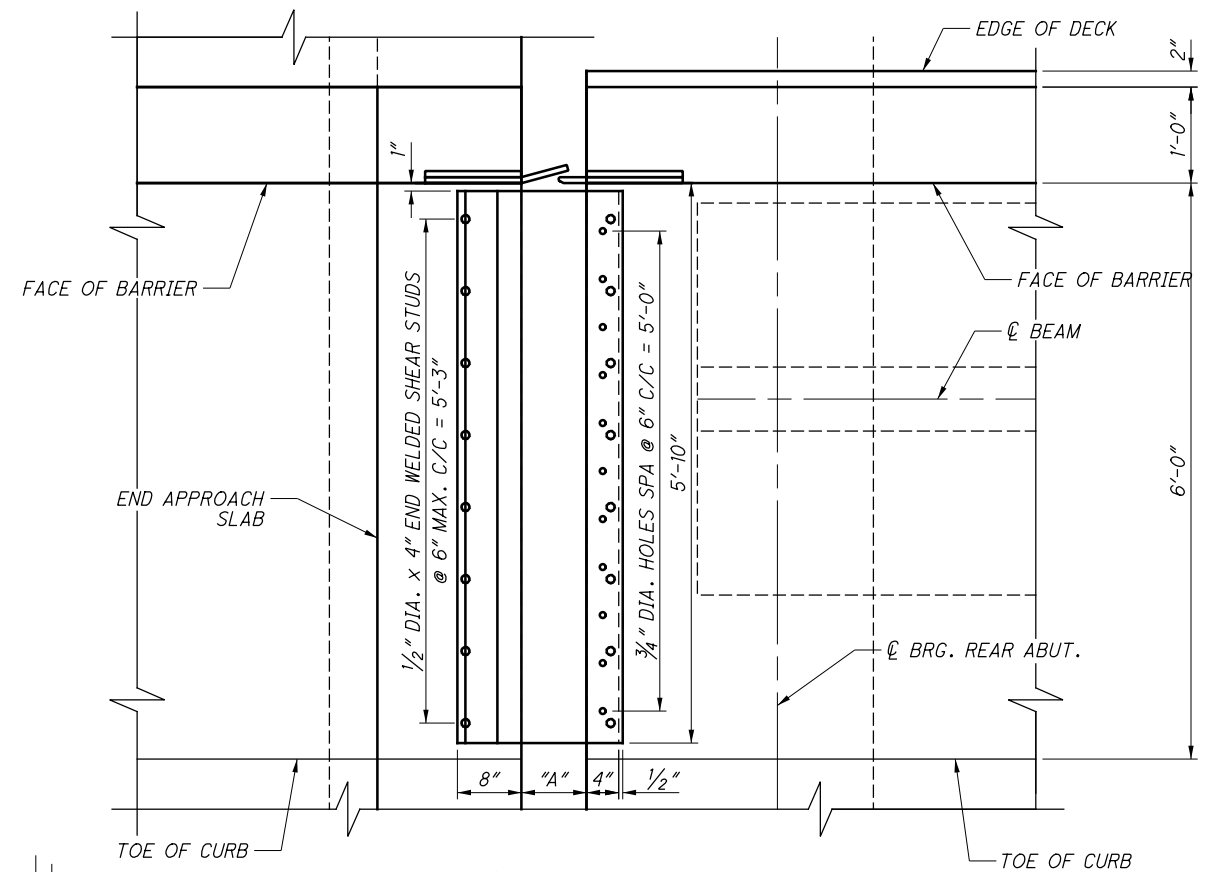
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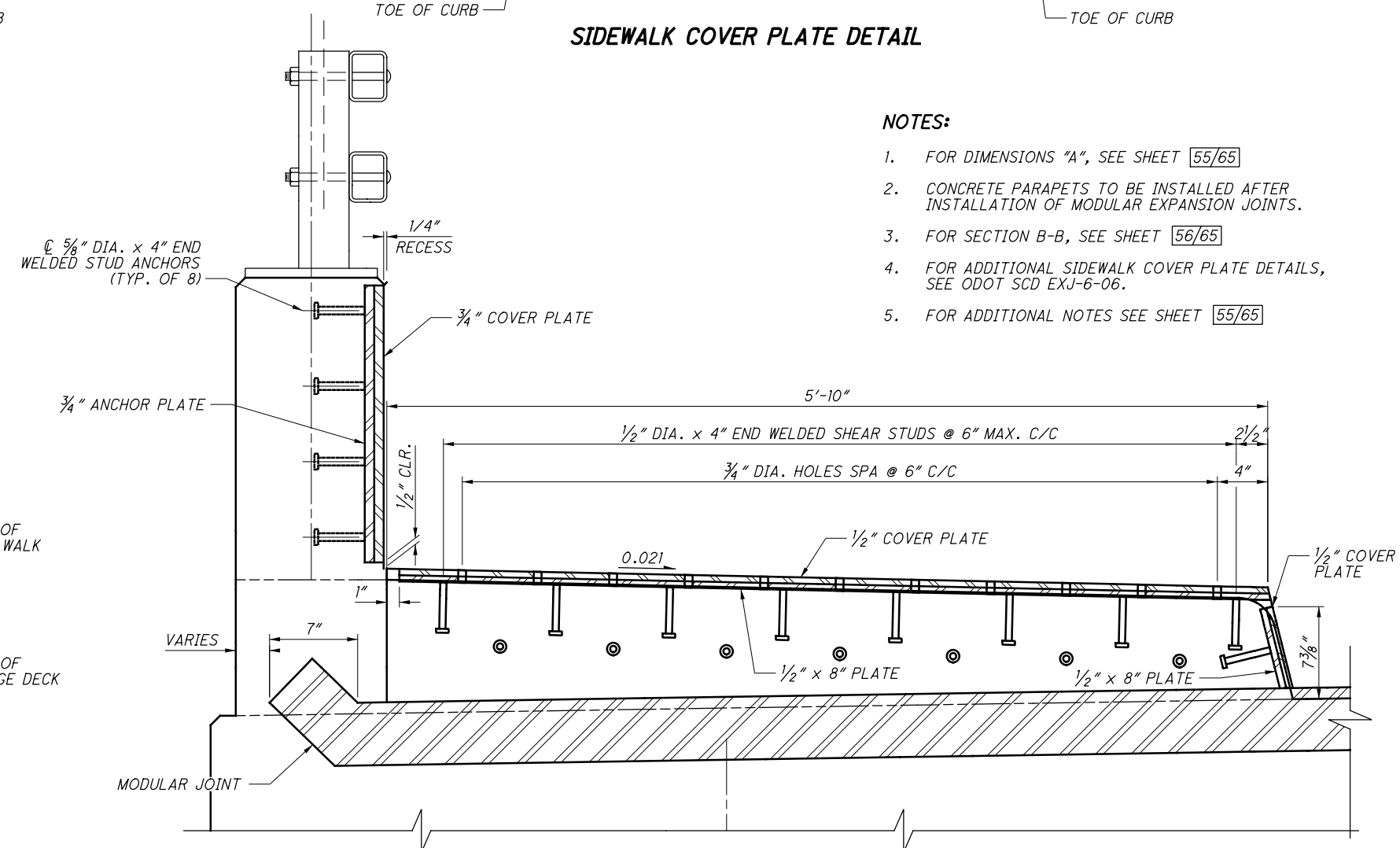
**REAR ABUTMENT LEFT BARRIER
PART PLAN**
(FORWARD ABUTMENT OPPOSITE HAND)



SECTION A-A



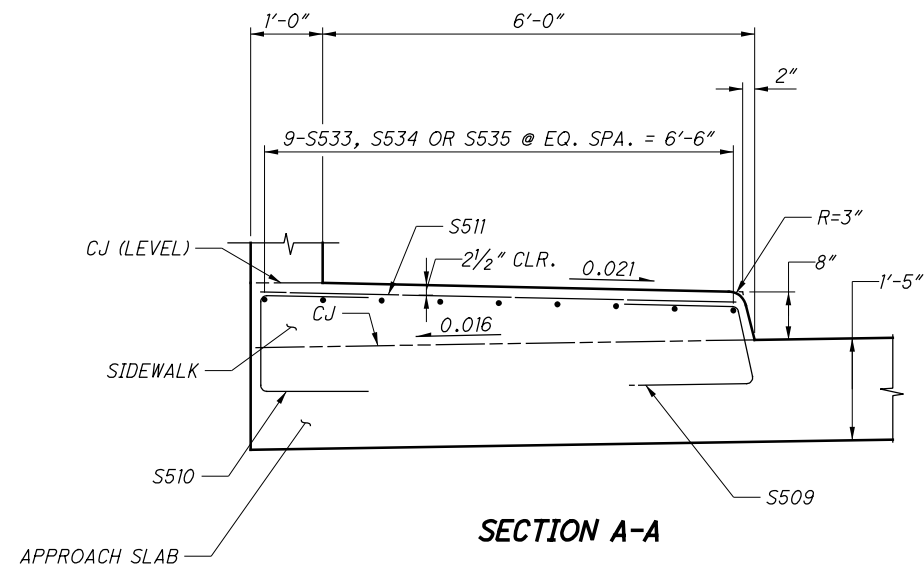
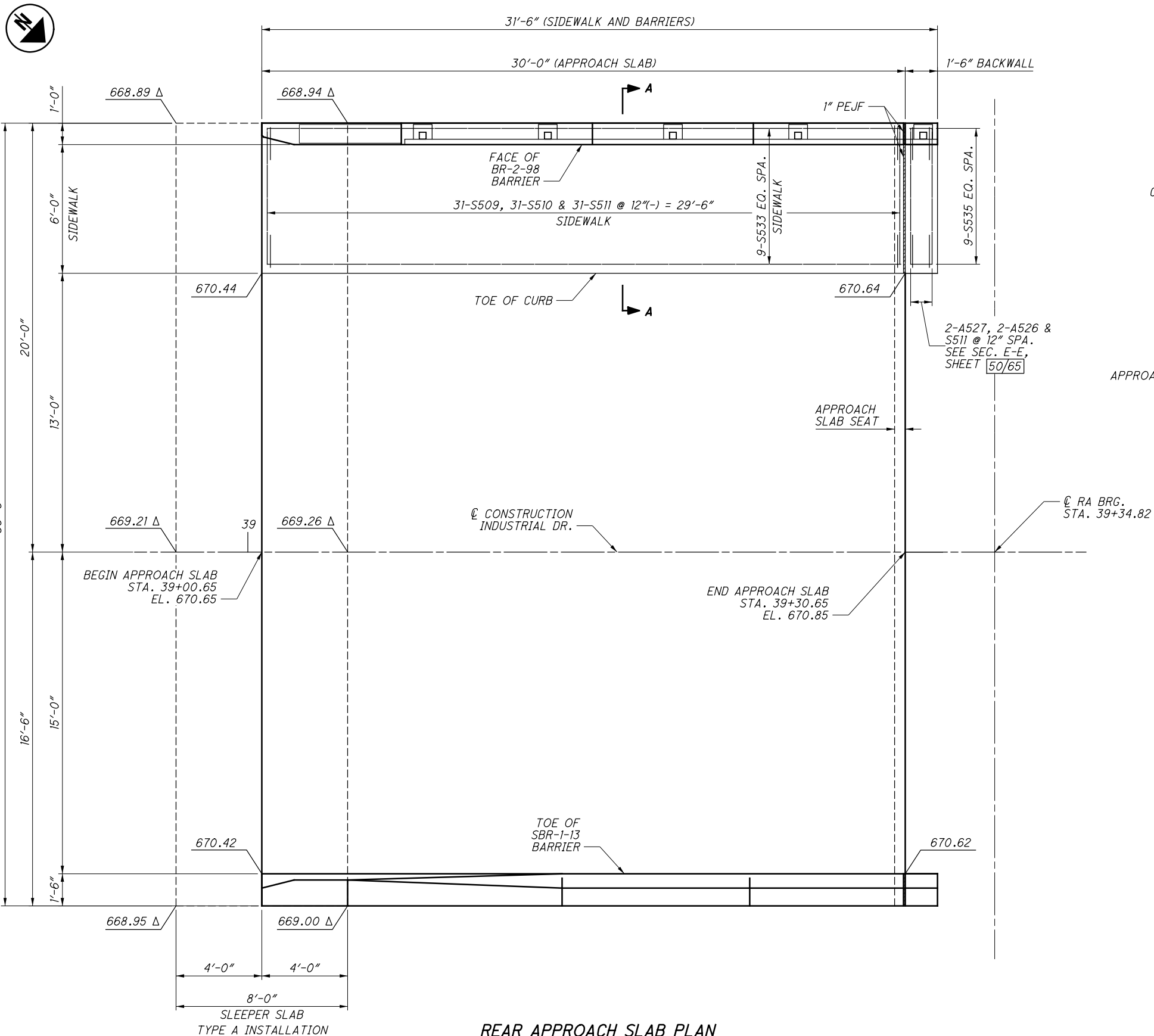
SIDEWALK COVER PLATE DETAIL



SECTION C-C

- NOTES:**
1. FOR DIMENSIONS "A", SEE SHEET **55/65**
 2. CONCRETE PARAPETS TO BE INSTALLED AFTER INSTALLATION OF MODULAR EXPANSION JOINTS.
 3. FOR SECTION B-B, SEE SHEET **56/65**
 4. FOR ADDITIONAL SIDEWALK COVER PLATE DETAILS, SEE ODOT SCD EXJ-6-06.
 5. FOR ADDITIONAL NOTES SEE SHEET **55/65**

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LEGEND:
Δ - SLEEPER SLAB SURFACE ELEVATIONS

- NOTES:**
- HMWM SEALER INCLUDED WITH ITEM 512 SEALING OF CONCRETE BRIDGE DECKS WITH HMWM RESIN AS PER PLAN FOR PAYMENT.
 - SEE STD. DWG. AS-1-15 AND AS-2-15 FOR ADDITIONAL DETAILS INCLUDING APPROACH SLAB REINFORCING STEEL.
 - FOR SIDEWALK RAILING DETAILS, SEE SHEETS 50-51/65.
 - FOR FORWARD APPROACH SLAB DETAILS, SEE SHEET 59/65.
 - THE CONCRETE AND REINFORCING STEEL FOR THE SIDEWALK PARAPET IS INCLUDED WITH ITEM 517, RAILING MISC.: CONCRETE PARAPET WITH STEEL RAILING.



APPROACH SLAB
 CURVE DATA
 CURVE A
 $\Delta = 5^{\circ} 17' 11''$
 $D = 40.76^{\circ}$
 $R = 140.56'$
 $T = 6.49'$
 $L = 12.97'$
 $CH. = 12.96'$
 $CB = N 84^{\circ} 55' 05'' E$
 CURVE B
 $\Delta = 3^{\circ} 24' 38''$
 $D = 19.69^{\circ}$
 $R = 291.00'$
 $T = 8.66'$
 $L = 17.32(+)$
 $CH. = 17.32(-)$
 $CB = N 80^{\circ} 36' 53'' E$
 CURVE C
 $\Delta = 5^{\circ} 24' 59''$
 $D = 18.03^{\circ}$
 $R = 317.80$
 $T = 15.03'$
 $L = 30.04$
 $CH. = 30.03'$
 $CB = N 87^{\circ} 22' 25'' E$

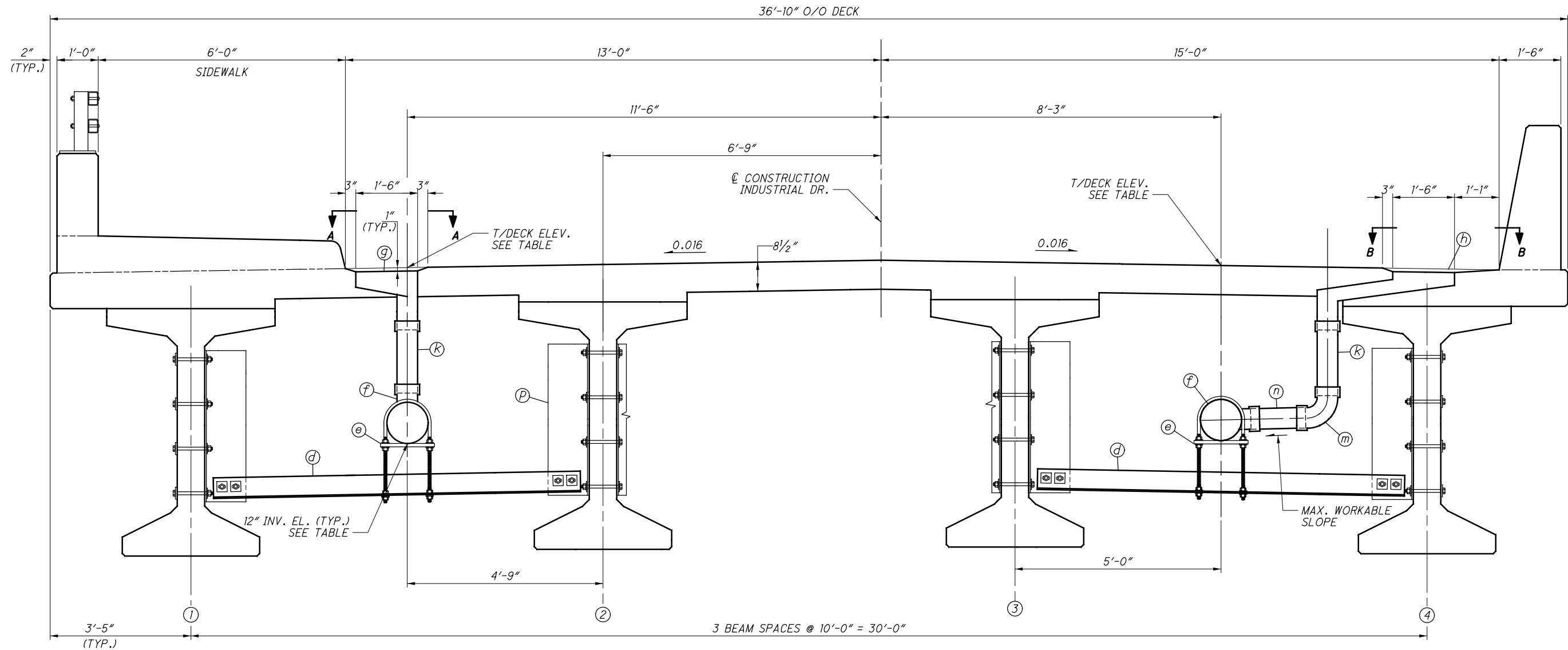
NO. 5 BARS	3'-5" MIN.
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* MEASURED PERPENDICULAR TO C CONSTRUCTION INDUSTRIAL DR.

NOTES:

1. FOR APPROACH SLAB DETAIL NOTES, SEE SHEET 58/65.
2. FOR SECTION A-A, SEE SHEET 58/65.
3. FORWARD APPROACH SLAB TO BE INCLUDED WITH ITEM 526, REINFORCED CONCRETE APPROACH SLAB WITH QC/QA (T=17") AS PER PLAN.
4. CURVE INFORMATION DEFINES OUTSIDE EDGES OF APPROACH/SLEEPER SLAB.

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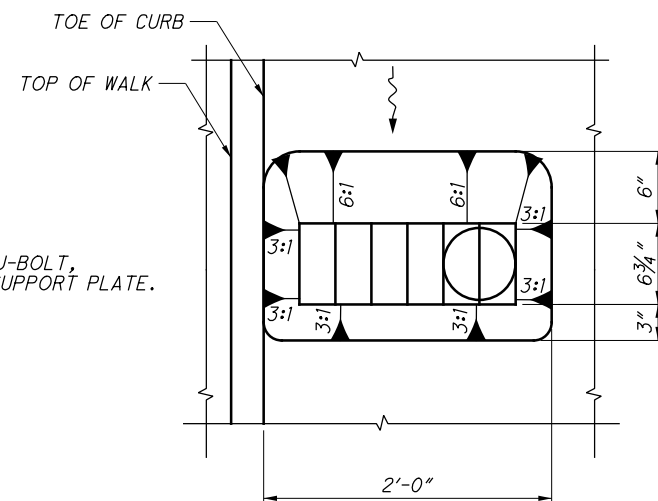
SCUPPER DETAIL

INTERMEDIATE DIAPHRAGM CROSSFRAMING NOT SHOWN

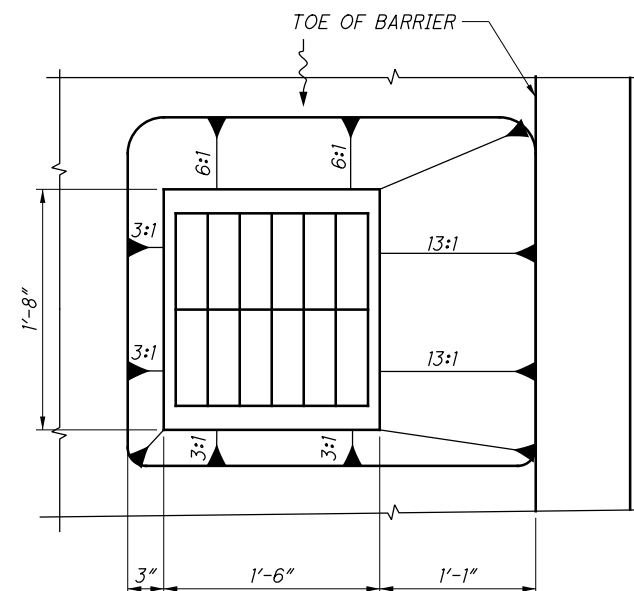
SCUPPER LOCATION TABLE			
STATION	SIDE	T/DECK	INVERT
39+68.50	LEFT	670.94	666.67
39+68.50	RIGHT	670.99	667.00
40+90.00	LEFT	671.76	667.89
40+90.00	RIGHT	671.81	669.43
42+07.00	LEFT	672.56	669.06
43+25.00	LEFT	673.37	670.24
44+43.00	LEFT	674.16	671.42
45+60.00	LEFT	674.96	672.59

LEGEND:

- Ⓢ - DESIGNATES BEAM LINE NUMBER
- Ⓢ - L6x6x3/8 SEE TYPE A CROSSFRAME, SEE SHEET 40/65.
- Ⓢ - 12"φ SUPPORT CLAMP, COMPLETE WITH 1/8"φ VARIABLE LENGTH U-BOLT, NUTS, FLAT WASHERS, BEVELED WASHERS, LOCK WASHERS AND SUPPORT PLATE.
- Ⓢ - 12"x12"x6" TEE (PVC)
- Ⓢ - TYPE 1 SCUPPER - PER ODOT SD-I-69
- Ⓢ - TYPE 2 SCUPPER - CUSTOMIZED NEENAH TYPE R-3935
- Ⓢ - 6"φ STRAIGHT PIPE (PVC), VARIABLE LENGTH, HUB ON ONE END
- Ⓢ - 6"x6" STD. RADIUS 90° BEND (PVC)
- Ⓢ - 6"φ STRAIGHT "SPOOL PIECE", NO HUB (PVC)
- Ⓢ - STEEL SUPPORT, SEE STD. DWG. PSID-I-13



VIEW A-A



VIEW B-B

NOTES:

- FOR TRANSVERSE SECTIONS ALONG SPANS 1 - 7, SEE SHEET 40/65.
- FOR DECK PLAN, SEE SHEETS 38-39/65.
- FOR FRAMING PLAN, SEE SHEETS 28-30/65.
- FOR RAILING DETAILS, SEE SHEETS 50-53/65.
- FOR SIDEWALK DETAILS, SEE SHEET 54/65.
- FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET 31-32/65.
- FOR STEEL INTERMEDIATE DIAPHRAGM DETAILS, SEE STD. DWG. PSID-I-13.
- PROVIDE 12"φ PIPE EXPANSION FITTING IN SPAN 1 NEAR REAR ABUTMENT DIAPHRAGM. TYPE SUBJECT TO ENGINEER APPROVAL.
- ALL PVC PIPE SHALL CONFORM TO ITEM 707.45.
- INCLUDE Ⓢ AND Ⓢ WITH ITEM 513 FOR PAYMENT.
- INCLUDE Ⓢ, Ⓢ AND Ⓢ WITH ITEM 518 - SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN FOR PAYMENT.
- INCLUDE Ⓢ, Ⓢ, Ⓢ AND Ⓢ WITH ITEM 518 - 6" PIPE DOWNSPOUT, INCLUDING SPECIALS FOR PAYMENT.

ABUTMENT													
D801	25	28	53	5'-0"	708	18	2'-10"	1'-0"	1'-0"				
A401	10	10	20	14'-2"	189	2	6'-11"	0'-6"	6'-11"				
A501	37	42	79	15'-7"	1284	2	2'-6"	10'-10"	2'-6"				
A502	26	26	52	11'-2"	606	2	2'-6"	6'-5"	2'-6"				
A503	2 SR OF 3	2 SR OF 3	4 SR OF 3	11'-4" TO 12'-4"	148	2	2'-6"	6'-7" TO 7'-7"	2'-6"				0'-6"
A504	2 SR OF 4	2 SR OF 4	4 SR OF 4	13'-5" TO 15'-5"	241	2	2'-6"	8'-8" TO 10'-8"	2'-6"				0'-8"
A505	28	0	28	21'-10"	638	STR							
A506	0	28	28	24'-2"	706	STR							
A507	39	44	83	10'-7"	916	2	2'-9"	5'-4"	2'-9"				
A508	77	82	159	12'-5"	2059	1	1'-6"	11'-1"					
A509	18	18	36	9'-5"	354	19	4'-9"	3'-4"	3'-4"				
A510	28	28	56	9'-2"	535	19	4'-7"	3'-3"	3'-3"				
A511	10	10	20	9'-5"	196	19	4'-9"	3'-4"	3'-4"				
A512	11	11	22	13'-0"	298	STR							
A513	11	11	22	13'-5"	308	STR							
A514	2 SR OF 3	2 SR OF 3	4 SR OF 3	6'-0" TO 13'-0"	119	STR							3'-6"
A515	2 SR OF 3	2 SR OF 3	4 SR OF 3	6'-4" TO 13'-4"	123	STR							3'-6"
A516	1	1	2	8'-6"	18	19	4'-3"	3'-0"	3'-0"				
A517	1	1	2	6'-9"	14	19	3'-4"	2'-5"	2'-5"				
A518	1	1	2	8'-6"	18	19	4'-4"	3'-0"	3'-0"				
A519	1	1	2	6'-10"	14	19	3'-5"	2'-5"	2'-5"				
A520	1	1	2	8'-1"	17	52	1'-2"	3'-3"	1'-3"	2'-5"	2'-5"		
A521	2	2	4	15'-8"	65	19	13'-11"	0'-8"	1'-8"				
A522	2	2	4	16'-0"	67	19	14'-3"	0'-8"	1'-8"				
A523	1	1	2	8'-2"	17	52	1'-3"	3'-2"	1'-4"	2'-5"	2'-5"		
A524	1	1	2	9'-7"	20	52	1'-3"	3'-2"	1'-2"	3'-7"	3'-7"		
A525	28	28	56	5'-2"	302	STR							
A526	3	3	6	4'-5"	28	1	1'-7"	3'-0"					
A527	3	3	6	4'-4"	27	13	2'-4"	0'-6"	0'-2"	1'-7"			
A528	1	1	2	9'-7"	20	52	1'-2"	3'-3"	1'-1"	3'-7"	3'-7"		
A601	24	0	24	20'-4"	733	STR							
A602	20	0	20	22'-2"	666	STR							
A603	0	24	24	22'-9"	820	STR							
A604	0	20	20	24'-6"	736	STR							
A605	25	28	53	16'-4"	1300	2	7'-6"	1'-8"	7'-6"				
A606	25	28	53	7'-1"	564	1	5'-7"	1'-8"	5'-7"				
A607	25	28	53	3'-1"	245	STR							
A608	6	6	12	23'-10"	430	2	11'-3"	1'-8"	11'-3"				
A609	14	14	28	23'-5"	985	10	0'-7"	11'-3"	1'-2"	11'-3"			
A610	14	14	28	19'-1"	803	10	0'-6"	9'-1"	1'-2"	9'-1"			
A611	4	4	8	13'-10"	166	10	0'-4"	6'-6"	1'-2"	6'-6"			
A612	3	0	3	6'-2"	28	STR							

<i>ABUTMENT</i>												
A801	14	14	28	30'-0"	2243	STR						
A802	4 SR OF 4	0	4 SR OF 4	22'-1" TO 24'-4"	991	STR						0'-9"
A803	3	3	6	30'-8"	491	19	19'-11"	7'-8"	7'-8"			
A804	3	3	6	23'-7"	378	19	11'-0"	8'-11"	8'-11"			
A805	3	3	6	31'-0"	497	19	20'-3"	7'-8"	7'-8"			
A806	3	3	6	23'-11"	383	19	11'-4"	8'-11"	8'-11"			
A807	2 SR OF 2	2 SR OF 2	4 SR OF 2	28'-11" TO 30'-3"	632	19	19'-1" TO 19'-8"	7'-0" TO 7'-6"	7'-0" TO 7'-6"		Incr A = 0'-7" Incr B = 0'-6" Incr C = 0'-6"	
A808	2 SR OF 2	2 SR OF 2	4 SR OF 2	24'-5" TO 25'-8"	536	19	11'-5" TO 12'-1"	9'-3" TO 9'-8"	9'-3" TO 9'-8"		Incr A = 0'-8" Incr B = 0'-5" Incr C = 0'-5"	
A809	2 SR OF 2	2 SR OF 2	4 SR OF 2	29'-3" TO 30'-7"	639	19	19'-5" TO 20'-0"	7'-0" TO 7'-6"	7'-0" TO 7'-6"		Incr A = 0'-7" Incr B = 0'-6" Incr C = 0'-6"	
A810	2 SR OF 2	2 SR OF 2	4 SR OF 2	24'-9" TO 26'-0"	543	19	11'-9" TO 12'-5"	9'-3" TO 9'-8"	9'-3" TO 9'-8"		Incr A = 0'-8" Incr B = 0'-5" Incr C = 0'-5"	
A811	37	42	79	15'-5"	3252	2	2'-6"	10'-10"	2'-6"			
A812	26	26	52	11'-0"	1527	2	2'-6"	6'-5"	2'-6"			
A813	2 SR OF 3	2 SR OF 3	4 SR OF 3	11'-2" TO 12'-2"	374	2	2'-6"	6'-7" TO 7'-7"	2'-6"			0'-6"
A814	2 SR OF 4	2 SR OF 4	4 SR OF 4	13'-3" TO 15'-3"	609	2	2'-6"	8'-8" TO 10'-8"	2'-6"			0'-8"
A815	0	4 SR OF 4	4 SR OF 4	25'-0" TO 27'-2"	1114	STR						0'-8 ¾
A816	45	50	95	13'-10"	3509	1	3'-0"	11'-1"				
A817	32	32	64	13'-10"	2364	11	0'-7"	11'-1"	3'-0"			
A901	4	5	9	5'-2"	158	STR						
A902	8	0	8	12'-2"	331	2	3'-5"	5'-11"	3'-5"			
A903	0	8	8	13'-6"	367	2	3'-5"	7'-3"	3'-5"			
			SUB-TOTAL	20,938								
			ABUTMENT TOTAL	39,206								

3. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, P601 IS A NO. 6 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT, AND "R" INDICATES INSIDE RADIUS, UNLESS NOTED OTHERWISE. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BEND AT THE END OF A BAR.

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MARK	NUMBER								TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS							
	TEST SHAFT	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7					A	B	C	D	E	R	INC	
DRILLED SHAFT*																				
SP401	1								1	16'-9"	188	27	12"	4'-6"						
SP402		1	1	1	1	1	1	1	7	10'-0"	667	27	12"	3'-6"						
SP501		1	1		1				3	5'-8"	381	27	12"	4'-6"						
SP502				1					1	6'-11"	145	27	12"	4'-6"						
SP503						1			1	3'-8"	98	27	12"	4'-6"						
SP504							1		1	6'-8"	142	27	12"	4'-6"						
SP505								1	1	3'-2"	90	27	12"	4'-6"						
SP506		1	1	1	1	1	1	1	7	10'-6"	3165	27	4 1/2"	4'-6"						
DS1101	20								20	14'-9"	1567	STR								
DS1102		20	20		20				60	15'-9"	5021	51	15'-9"							
DS1103				20					20	17'-2"	1825	51	17'-2"							
DS1104						20			20	13'-10"	1469	51	13'-10"							
DS1105							20		20	16'-10"	1788	51	16'-10"							
DS1106								20	20	13'-4"	1416	51	13'-4"							
DS1107		20	20	20	20	20	20	20	140	20'-4"	15122	STR								
SUB-TOTAL											33,063									

MARK	NUMBER							TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7					A	B	C	D	E	R	INC
PIERS																		
P501	36	36	36	36	36	36	36	252	8'-1"	2125	9	0'-6"	0'-8"	4'-4"	3'-6"			
P502	72	72	72	72	72	72	72	504	5'-4"	2804	17	4'-2"						
P503	8	8	8	8	8	8	8	56	11'-1"	647	2	1'-7"	7'-8"	1'-7"				
P504	16	16	16	16	16	16	16	112	4'-0"	467	STR							
P505	10	10	10	10	10	10	10	70	8'-2"	596	10	1'-2"	2'-11"	2'-10"	2'-5"			
P506	6	6	6	6	6	6	6	42	8'-7"	376	2	2'-5"	4'-0"	2'-5"				
P507	10	10	10	10	10	10	10	70	6'-7"	481	19	3-7"	2'-10"	1'-1"				
P601	2	2	2	2	2	2	2	14	28'-0"	589	STR							
P602	2	2	2	2	2	2	2	14	33'-2"	698	STR							
P603	6	6	6	6	6	6	6	42	35'-7"	2244	STR							
P604	4 SER OF 10	4 SER OF 10	4 SER OF 10	4 SER OF 10	4 SER OF 10	4 SER OF 10	4 SER OF 10	28 SER OF 10	13'-0" TO 15'-8"	6028	3	3'-3"	2'-10" TO 4'-2"					0'-1¾"
P605	80	80	80	80	80	80	80	560	15'-8"	13178	3	3'-3"	4'-2"					
P606	14	14	14	14	14	14	14	98	15'-10"	2331	33	4'-0"	3'-4"					
P607	5	5	5	5	5	5	5	35	6'-1"	320	STR							
P901	8	8	8	8	8	8	8	56	12'-0"	2285	2	3'-4"	5'-11"	3'-4"				
P1101	54							54	26'-11"	7722	16	25'-4"						
P1102		54						54	27'-9"	7962	16	26'-2"						
P1103			54					54	28'-6"	8177	16	26'-11"						
P1104				54				54	29'-4"	8416	16	27'-9"						
P1105					54			54	30'-1"	8631	16	28'-6"						
P1106						54		54	30'-11"	8870	16	29'-4"						
P1107							54	54	31'-9"	9109	16	30'-2"						
P1108	8	8	8	8	8	8	8	56	38'-9"	11529	17	35'-8"						
P1109	8	8	8	8	8	8	8	56	35'-7"	10586	STR							
P1110	6	6	6	6	6	6	6	42	28'-0"	6248	STR							
SP403	3							3	22'-8"	1583	27	0'-4½"	4'-0"	22'-8"				
SP404		3						3	23'-5"	1633	27	0'-4½"	4'-0"	23'-5"				
SP405			3					3	24'-3"	1688	27	0'-4½"	4'-0"	24'-3"				
SP406				3				3	25'-0"	1738	27	0'-4½"	4'-0"	25'-0"				
SP407					3			3	25'-10"	1793	27	0'-4½"	4'-0"	25'-10"				
SP408						3		3	26'-8"	1849	27	0'-4½"	4'-0"	26'-8"				
SP409							3	3	27'-5"	1899	27	0'-4½"	4'-0"	27'-5"				
SUB-TOTAL										134,602								

NOTES:

1. * - INDICATES ITEM IS INCLUDED IN COST OF ITEM 524, DRILLED SHAFTS.
2. FOR ADDITIONAL REINFORCING STEEL NOTES, SEE SHEET 61/65.

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MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	TOTAL				A	B	C	D	E	R	INC
DECK											
S401	1344	30'-0"	26934	STR							
S402	48	28'-3"	906	STR							
S501	3302	36'-5"	125430	STR							
S502	826	8'-0"	6892	16	7'-5"						
S503	2518	30'-0"	78788	STR							
S504	67	34'-2"	2388	STR							
S505	2240	18'-7"	43409	STR							
S506	1120	40'-0"	46726	STR							
S507	259	18'-0"	4862	STR							
S508	86	23'-2"	2078	STR							
S517	86	24'-10"	2227	STR							
S526	87	26'-5"	2397	STR							
S601	259	18'-0"	7002	STR							
S602	86	23'-10"	3078	STR							
S612	86	25'-5"	3283	STR							
S613	87	27'-0"	3528	STR							
SUB-TOTAL			359,928								
SIDEWALK											
S503	306	30'-0"	9575	STR							
S504	9	34'-0"	319	STR							
S505	224	18'-7"	4341	STR							
S506	112	40'-0"	4673	STR							
S509	1017	4'-2"	4420	28	1'-1"	1'-8"	1'-9"				
S510	1017	4'-1"	4243	2	1'-6"	1'-3"	1'-6"				
S511	1021	6'-7"	7007	STR							
S533	9	29'-7"	278	STR							
S534	9	29'-9"	279	STR						204'-11"	
S535	18	1'-2"	22	STR							
SUB-TOTAL			35,133								
RAILING - BR-2-98 (FOR INFORMATION ONLY)											
S503*	198	30'-0"		STR							
S512*	1219	7'-8"		30	1'-6"	0'-8"	2'-4"	2'-2"			
S518*	6	24'-10"		STR							
S519*	4	7'-7"		31	1'-11"	0'-1"	4'-5"			0'-4 3/8"	
S520*	4	6'-0"		19	4'-8"	1'-4"	0'-4"				
S521*	4	6'-0"		STR							
S522*	10	8'-2"		19	6'-10"	1'-4"	0'-4"				
S523*	10	8'-2"		STR							
S524*	10	3'-8"		24	0'-6"	1'-8"				0'-3 1/4"	
S525*	6	25'-3"		STR						204'-11"	
S528*	6	36'-0"		STR							
S535*	12	1'-2"		STR							
S608*	20	9'-11"		30	1'-10"	0'-8"	3'-2"	3'-0"			
S609*	6	4'-10"		1	1'-10"	3'-2"					
S610*	6	4'-8"		1	1'-10"	3'-0"					
SUB-TOTAL											

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	TOTAL				A	B	C	D	E	R	INC
RAILING - SBR-1-I3											
S503	132	30'-0"	4130	STR							
S513	24	14'-6"	363	STR							
S514	112	6'-8"	779	STR							
S515	60	11'-7"	725	STR							
S516	1070	7'-4"	8184	23	0'-11"	3'-3"	3'-0"			0'-2¾"	
S527	8	18'-4"	153	STR							
S528	4	36'-0"	150	STR							
S529	8	7'-7"	63	STR							
S530	16	10'-0"	167	STR							
S531	8	6'-4"	53	25	2'-5"	2'-5"	1'-5"	0'-1 ½"	0'-5"		
S532	8	6'-4"	53	STR							
S535	12	1'-2"	15	STR							
S603	12	14'-6"	261	STR							
S604	56	6'-8"	561	STR							
S605	30	11'-7"	522	STR							
S606	1066	3'-5"	5471	28	1'-9"	1'-0"					
S607	1066	2'-7"	4136	1	1'-0"	1'-9"					
S611	4	7'-7"	46	STR							
S614	4 SER OF 11	4'-1" TO 5'-0"	303	1	1'-0"	3'-3" TO 4'-2"					0'-1"
S615	16	4'-1"	98	1	1'-0"	3'-3"					
S616	2	3'-3"	7	STR							
SUB-TOTAL			26,167								

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	FORWARD				A	B	C	D	E	R	INC
	⊗										
APPROACH SLAB (FOR INFORMATION ONLY)											
AS501**	65	30'-0"		STR							
AS502**	1 SER OF 21	14'-7" TO 17'-1"		STR							0'-1 1/2"
AS503**	39	17'-1"		STR							
AS505**	29	29'-7"		STR							
AS506**	2	29'-9"		STR							
AS507**	2	5'-1"		STR							
AS508**	5	14'-8"		STR							
AS509**	1	14'-10"		STR							
AS1001**	1 SER OF 3	8'-10" TO 28'-10"		16	7'-5" TO 27'-5"						10'-0"
AS1002**	74	30'-11"		16	29'-6"						
AS1003**	1 SER OF 5	8'-5" TO 25'-10"		STR							4'-4 1/4"
AS1004**	3	5'-1"		STR							
SUB-TOTAL											

⊗ FOR REAR ABUTMENT REINFORCING, SEE STD. DWG. AS-1-15.

NOTES:

1. * - INDICATES ITEM IS INCLUDED IN COST OF ITEM 517
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING).
2. ** - INDICATES ITEM IS INCLUDED IN COST OF ITEM 526
REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17").
3. FOR ADDITIONAL REINFORCING STEEL NOTES, SEE SHEET 61/65.

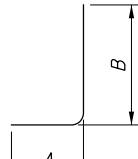
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MARK	NUMBER							TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS						
	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7					A	B	C	D	E	R	INC
PIER DIAPHRAGMS																		
S408	12	12	12	12	12	12	12	84	5'-0"	281	2	0'-9"	3'-8"	0'-9"				
S409	4	4	4	4	4	4	4	28	12'-8"	237	24	0'-4"	6'-1"				2"	
S410	12	12	12	12	12	12	12	84	15'-1"	846	6	1'-2"	6'-0"	1'-2"				
S411	4	4	4	4	4	4	4	28	3'-4"	62	19	1'-8"	1'-0"	1'-4"				
S412	6	6	6	6	6	6	6	42	13'-5"	376	6	1'-2"	5'-2"	1'-2"				
S612	24	24	24	24	24	24	24	168	9'-0"	2271	STR							
S613	4	4	4	4	4	4	4	28	6'-11"	291	STR							
S809	24	24	24	24	24	24	24	168	6'-10"	3065	1	1'-0"	6'-0"					
SUB-TOTAL										7,429								

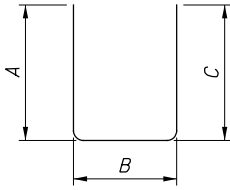
MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						
	REAR	FWD.	TOTAL				A	B	C	D	E	R	INC
END DIAPHRAGMS													
S403	28	32	60	12'-0"	481	2	5'-2"	1'-10"	5'-2"				
S404	10	10	20	4'-0"	53	2	1'-2"	1'-10"	1'-2"				
S405	12	14	26	10'-3"	178	2	4'-4"	1'-10"	4'-4"				
S406	20	23	43	4'-3"	139	53	1'-9"	1'-2"	1'-9"	0'-7"			
S619	12		12	9'-0"	162	STR							
S620	7		7	34'-6"	363	STR							
S621	8		8	1'-10"	22	STR							
S622		8	8	2'-3"	27	STR							
S623		12	12	10'-4"	186	STR							
S624		7	7	39'-6"	417	STR							
S625	2		2	36'-5"	110	STR							
S626	3		3	5'-6"	25	STR							
S627		4	4	22'-9"	137	STR							
S628		3	3	6'-10"	31	STR							
S629 *	12	12	24	4'-5"	159	24	0'-6"	1'-10"				0'-3"	
S801	6		6	21'-0"	337	53	6'-5"	3'-8"	10'-9"	1'-0"			
S802	8		8	11'-5"	244	13	5'-10"	1'-10"	0'-11"	3'-8"			
S803	4		4	10'-9"	115	54	3'-8"	0'-11"	1'-10"	5'-7"			
S804	4		4	12'-3"	131	1	8'-8"	3'-9"					
S805		6	6	23'-6"	377	53	9'-2"	2'-8"	11'-6"	1'-0"			
S806		8	8	12'-9"	272	13	7'-2"	1'-10"	0'-11"	3'-8"			
S807		4	4	11'-4"	121	54	3'-8"	1'-1"	2'-3"	5'-7"			
S808		4	4	13'-5"	144	1	10'-0"	3'-9"					
SUB-TOTAL					4,231								

* CAST WITH BEAM

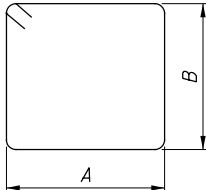
NOTES:
1. FOR REINFORCING STEEL NOTES, SEE SHEET 61/65.



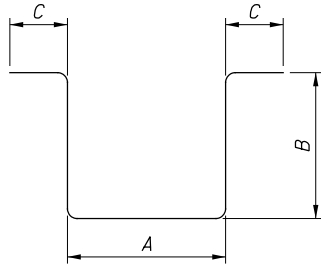
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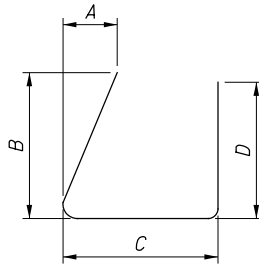
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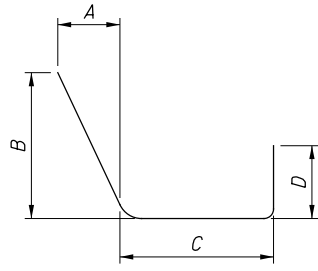
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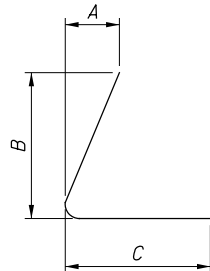
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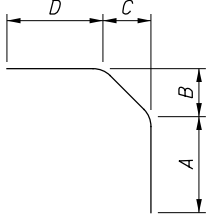
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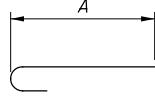
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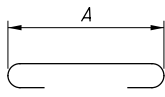
TYPE-11



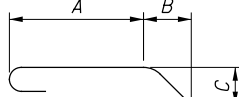
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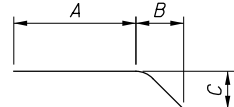
TYPE-16



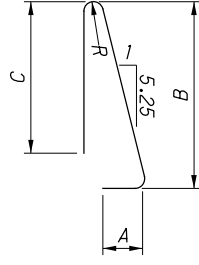
TYPE-17



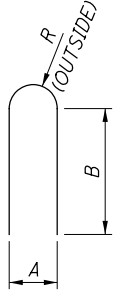
TYPE-18



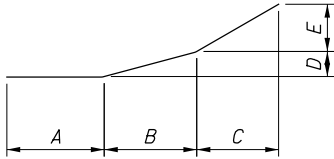
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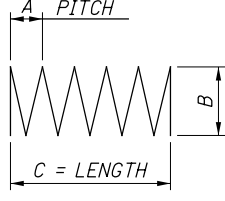
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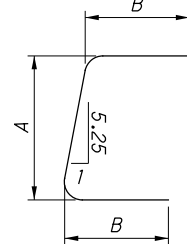
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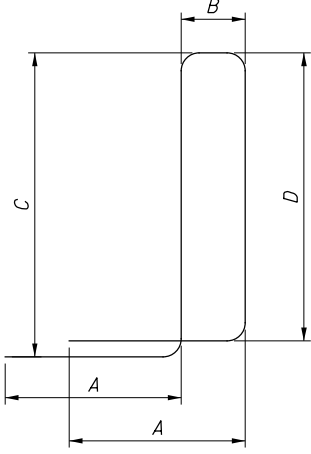
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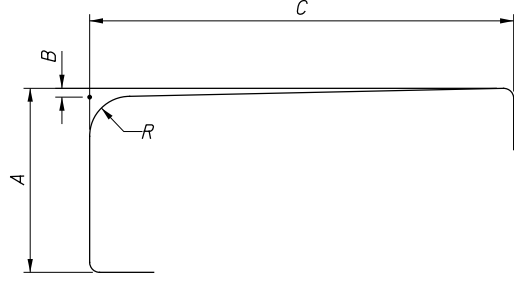
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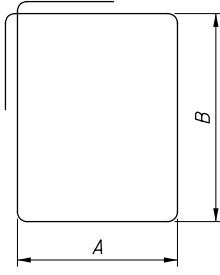
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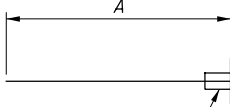
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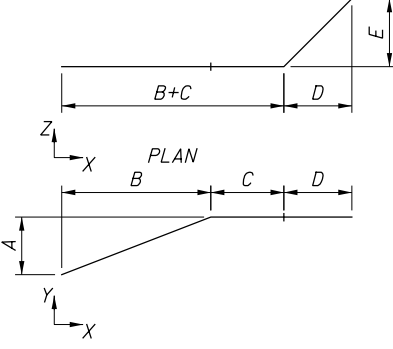
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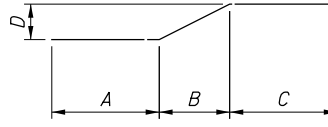
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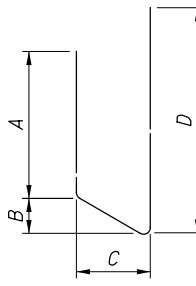
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TYPE-52



TYPE-53



TYPE-54

PROJECT DESCRIPTION

THE PROJECT, HEN-IND-0000, WILL INCLUDE CONSTRUCTING A NEW BRIDGE OVER THE MAUMEE RIVER NEAR THE CITY OF NAPOLEON, OHIO TO PROVIDE A CONNECTION BETWEEN SR 110 ON THE SOUTH SIDE OF THE RIVER TO RIVERVIEW AVENUE ON THE NORTH SIDE OF THE RIVER.

HISTORIC RECORDS

NO HISTORIC BORINGS WERE AVAILABLE FOR THIS PROJECT.

GEOLOGY

THE PROJECT SITE IS LOCATED WITHIN THE MAUMEE LAKE PLAINS PHYSIOGRAPHIC REGION OF OHIO WHICH GENERALLY CONSISTS OF PLEISTOCENE-AGE SILT AND CLAY LACUSTRINE DEPOSITS AND/OR DELTAIC SEDIMENTS OVERLYING GLACIAL TILL AND DEVONIAN-AGE LIMESTONE AND SHALE BEDROCK. THE CLOSE PROXIMITY OF THE SITE TO THE MAUMEE RIVER INDICATES THE SITE MAY CONTAIN RIVER ALLUVIUM WITH OVERBANK DEPOSITS. FLOODPLAINS AND TERRACES FLANK THE MAUMEE RIVER WITH OVERBURDEN SOILS GENERALLY CONSISTING OF SILTY AND CLAYEY FLOODPLAIN DEPOSITS OR SANDY AND LOAMY SOILS IN THE TERRACES. NEARBY WATER WELL LOGS INDICATE THE OVERBURDEN SOILS CONSIST OF CLAY AND GRAVEL OVERLYING SHALE THAT WAS ENCOUNTERED AT DEPTHS RANGING FROM 30 TO 40 FEET BELOW GROUND SURFACE (BGS). DRIFT THICKNESS MAPPING INDICATES THE OVERBURDEN IS APPROXIMATELY 15 TO 45 FEET THICK WITH BEDROCK POTENTIALLY AS SHALLOW AS THE GROUND SURFACE WITHIN THE RIVERBED.

RECONNAISSANCE

PERSONNEL FROM THE MANNIK & SMITH GROUP, INC. (MSG) CONDUCTED A SITE WALKTHROUGH ON JANUARY 20, 2014 TO OBSERVE AND DOCUMENT THE SITE CONDITIONS AND NOTE ANY GEOTECHNICAL RELATED ISSUES. A LARGE UNCONTROLLED FILL AREA IS LOCATED BETWEEN EAST RIVERVIEW AVENUE AND THE MAUMEE RIVER. THE CURRENT PROPERTY OWNER STATED TO MSG PERSONNEL THAT HE HAS BEEN DUMPING CONCRETE DEBRIS AND FILL IN THE AREA FOR SEVERAL YEARS IN ORDER TO ESTABLISH A LEVEL FINISH GRADE. THE PAVEMENT AREAS WITHIN THE PROJECT LIMITS APPEARED TO BE IN GOOD TO FAIR CONDITION WITH MINOR TO MODERATE TRANVERSE AND LONGITUDINAL CRACKING NOTED.

SUBSURFACE EXPLORATION

TWENTY-EIGHT (28) SOIL BORINGS, B-001-0-13 THROUGH B-026-0-13 AND OFFSET BORINGS B-008-1-13 AND B-013-1-13 (HEREAFTER REFERRED TO AS B-001 THROUGH B-026, B-008-1 AND B-013-1) WERE COMPLETED AS PART OF THIS SUBSURFACE EXPLORATION BETWEEN APRIL 22, 2014 AND JUNE 12, 2014. BORINGS B-001 THROUGH B-005 AND B-013 THROUGH B-026 (EXCEPT B-016) WERE DRILLED DURING THE FIRST MOBILIZATION FROM APRIL 22, 2014 TO APRIL 29, 2014. BORINGS B-006 THROUGH B-012 (BARGE DRILLING) AND B-016 WERE DRILLED DURING THE SECOND MOBILIZATION FROM JUNE 3, 2014 TO JUNE 12, 2014. A TRACK-MOUNTED GEOPROBE 7822DT DRILL RIG WAS USED TO ADVANCE THE BORINGS BY MECHANICALLY TURNING 4-1/4-INCH INNER DIAMETER HOLLOW-STEM AUGERS INTO THE SOIL MATERIAL. DISTURBED SOIL SAMPLING WAS CONDUCTED USING THE STANDARD PENETRATION TEST (SPT) IN GENERAL ACCORDANCE WITH ASTM D1586. DISTURBED SAMPLING INTERVALS WERE VARIED DEPENDING ON THE BORING TYPE AND THE PROPOSED TOP OF SUBGRADE RELATIVE TO THE EXISTING TOP OF SUBGRADE. UNDISTURBED SAMPLING (I.E. SHELBY TUBE) WAS ALSO PERFORMED AT BORINGS B-002, B-004, B-005 AND B-013-1. THE AUTOMATIC HAMMER ON THE DRILL RIG WAS CALIBRATED ON MAY 10, 2013 AND HAS A DRILL ROD ENERGY RATIO OF 89.3%. AT THE TWO ABUTMENT LOCATIONS (B-005 AND B-013-1) 10 FEET OF BEDROCK WAS CORED AND AT THE BORINGS FOR THE BRIDGE PIER LOCATIONS (B-006 TO B-012) PERFORMED ON A BARGE IN THE RIVER, 5 TO 20 FEET OF BEDROCK WAS CORED. THE SAMPLING OF THE BEDROCK WAS PERFORMED WITH A TYPE NW SERIES CORE BARREL.

EXPLORATION FINDINGS

SR 110




























BORINGS B-017 TO B-021 WERE PERFORMED ALONG SR 110. AT THE GROUND SURFACE OF ALL THE BORINGS EXCEPT B-020, 10 INCHES OF ASPHALT PAVEMENT UNDERLAIN BY 4 INCHES OF AGGREGATE BASE WAS ENCOUNTERED. AT B-020 PERFORMED JUST OUTSIDE THE PAVEMENT, THE SURFICIAL MATERIAL CONSISTED OF 3 INCHES OF TOPSOIL. THE SOIL OVERBURDEN CONSISTS PRIMARILY OF DEPOSITS OF CLAY WITH LAYERS OF SAND AND GRAVEL UNDER THE AGGREGATE BASE IN B-017 AND B-019. SOIL UNIT 1 CONSISTS OF LOOSE TO MEDIUM DENSE, GRAY COARSE AND FINE SAND AND GRAVEL WITH SAND AND SILT (A-3a AND A-2-4) ENCOUNTERED BENEATH THE AGGREGATE BASE TO DEPTHS OF 2.7 FEET AND 4.2 FEET, RESPECTIVELY, IN B-019 AND B-017. THE N₆₀ VALUES RANGED FROM 10 TO 22 BLOWS PER FOOT (BPF) WITH AN AVERAGE OF 18 BPF. THE MOISTURE CONTENTS RANGED BETWEEN 6 AND 21 PERCENT WITH AN AVERAGE OF 13 PERCENT. SOIL UNIT 2 CONSISTS PREDOMINANTLY OF STIFF TO HARD, BROWN AND/OR GRAY SILT AND CLAY, SILTY CLAY AND CLAY (A-6a, A-6b AND A-7-6). THIS SOIL UNIT WAS ENCOUNTERED BENEATH SOIL UNIT 1 AT B-017 AND B-019 AND BELOW THE PAVEMENT SECTION IN THE OTHER BORING LOCATIONS AND CONTINUED TO DEPTHS OF 6.2 TO 7.2 FEET (BORING TERMINATION DEPTHS). THE N₆₀ VALUES RANGED FROM 10 TO 60 BPF WITH AN AVERAGE OF 32 BPF. THE POCKET PENETROMETER TESTS RESULTS WERE BETWEEN 2.25 AND 4.5+ TONS PER SQUARE FOOT (TSF). THE MOISTURE CONTENTS RANGED BETWEEN 13 AND 27 PERCENT WITH AN AVERAGE OF 19 PERCENT.

INDUSTRIAL DRIVE

BORINGS B-001 TO B-016 WERE PERFORMED ALONG THE EXISTING AND PROPOSED ALIGNMENT OF INDUSTRIAL DRIVE. AT THE GROUND SURFACE OF BORINGS B-001 TO B-005, B-013-1 AND B-015, 4 TO 12 INCHES OF TOPSOIL WAS ENCOUNTERED. AT BORING B-014, THE SURFICIAL MATERIAL CONSISTED OF 12 INCHES OF GRAVEL BACKFILL. AT BORING B-016 PERFORMED WITHIN THE EXISTING INDUSTRIAL DRIVE PAVEMENT, 8 INCHES OF ASPHALT OVERLYING 12 INCHES OF AGGREGATE BASE WAS ENCOUNTERED. THE SOIL OVERBURDEN CONSISTS PRIMARILY OF DEPOSITS OF SILTY CLAY. THE BEDROCK WAS IDENTIFIED TO BE SHALE. AT B-013, VERY LOOSE BROWN SANDY SILT FILL WAS UNDERLAIN BY CONCRETE RUBBLE. REFUSAL IN THE CONCRETE RUBBLE WAS ENCOUNTERED AT 4 FEET BGS. SOIL UNIT 1 CONSISTS PREDOMINANTLY OF LOOSE TO MEDIUM DENSE, BROWN OR GRAY NON-COHESIVE SANDY SILT (A-4a) ENCOUNTERED BELOW THE SUFICIAL MATERIAL IN BORINGS B-003, B-004 AND B-013-1 TO DEPTHS OF 2.5 TO 6 FEET BGS. THE N₆₀ VALUES RANGED FROM 6 TO 12 BPF WITH AN AVERAGE OF 9 BPF. HOWEVER, AT B-004, VERY LOOSE (N₆₀ OF 3 BPF) SANDY SILT WAS ENCOUNTERED BETWEEN 3.5 AND 6 FEET BGS. THE MOISTURE CONTENTS GENERALLY RANGED BETWEEN 14 AND 21 PERCENT WITH AN AVERAGE OF 19 PERCENT. THE SOIL UNIT AT B-013-1 HAD TRACE ORGANIC CONTENT AND WATER CONTENT WAS DETERMINED TO BE 47 PERCENT. SOIL UNIT 2 CONSISTS OF SOFT TO MEDIUM STIFF, BROWN AND/OR GRAY COHESIVE SANDY SILT AND SILT (A-4a AND A-4b) AS WELL AS SILT AND CLAY AND SILTY CLAY (A-6a AND A-6b). THE N₆₀ VALUES RANGED FROM 3 TO 7 BPF WITH AN AVERAGE OF 5 BPF. HOWEVER, A LAYER OF VERY SOFT (N₆₀ VALUE

CONTINUED ON SHEET 2

LEGEND

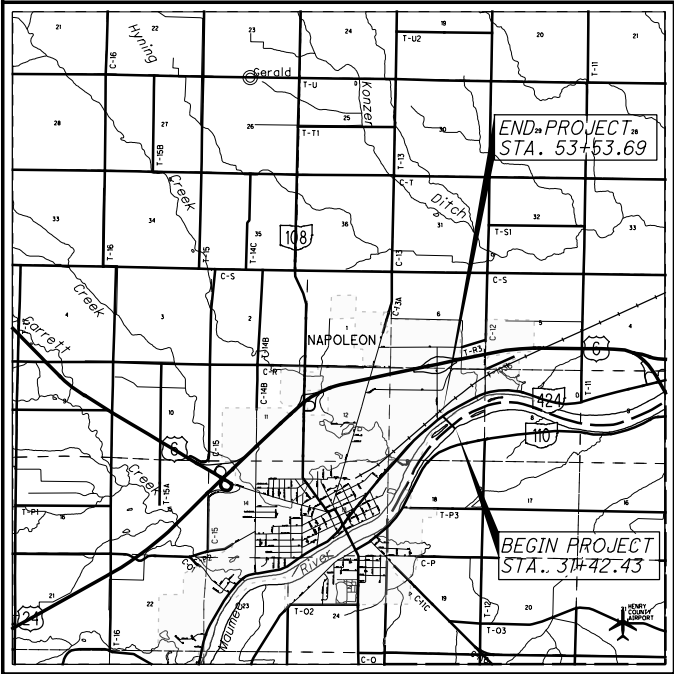
	DESCRIPTION	DOT CLASS	CLASSIFIED MECH./VISUAL	
	GRAVEL AND/OR STONE FRAGMENTS	A-1-a	1	0
	GRAVEL AND/OR STONE FRAGMENTS WITH SAND, AND SILT	A-2-4	1	1
	FINE SAND	A-3	1	0
	COARSE AND FINE SAND	A-3a	0	2
	SANDY SILT	A-4a	6	14
	SILT	A-4b	1	1
	SILT AND CLAY	A-6a	12	16
	SILTY CLAY	A-6b	7	16
	CLAY	A-7-6	10	9
		TOTAL	39	59
	CONCRETE	VISUAL		
	PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
	SOD AND TOPSOIL	VISUAL		
	SHALE BEDROCK			
	EXPLORATION LOCATION - PLAN VIEW			
	DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.			
	INDICATES WATER CONTENT IN PERCENT.			
	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.			
	INDICATES A PLASTIC MATERIAL WITH A MOISTURE CONTENT EQUAL TO OR GREATER THAN THE LIQUID LIMIT MINUS 3.			
	INDICATES A NON-PLASTIC MATERIAL WITH A MOISTURE CONTENT GREATER THAN 25% OR GREATER THAN 19% WITH A WET APPEARANCE.			
	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X = NUMBER OF BLOWS FOR 6 INCHES (UNCORRECTED) Y/D" = NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL			
	INDICATES STATIC WATER ELEVATION.			
	INDICATES FREE WATER ELEVATION.			
	INDICATES A SAMPLE TAKEN WITHIN 3 FT OF PROPOSED GRADE.			
	INDICATES A SPLIT SPOON SAMPLE.			
	INDICATES A SHELBY TUBE SAMPLE.			
	INDICATES A NON-PLASTIC SAMPLE.			
	INDICATES TOP OF ROCK.			

RECON. - LV 01/20/2014

DRILLING - RJS 04/22 - 06/12/2014

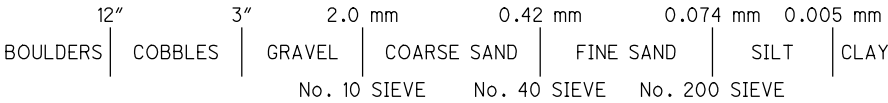
DRAWN - SJV 05/05/2015

REVIEWED - JLS 05/19/2015



LOCATION MAP
SCALE IN MILES

PARTICLE SIZE DEFINITIONS



INDEX OF SHEETS							
LOCATION FROM STA. TO STA.	PLAN VIEW SHEET	PROFILE SHEET	CUT MAX.		FILL EMB. MAX.		
INDUSTRIAL DRIVE							
31+42.43 36+50.00	8	8	1	FT	10	FT	
36+50.00 41+00.00	9	10	-	FT	16	FT	
41+00.00 45+50.00	11	12	-	FT	-	FT	
45+50.00 50+50.00	13	14	-	FT	27	FT	
50+50.00 56+00.00	15	15	1	FT	2	FT	
RIVERVIEW AVENUE							
586+50.00 591+50.00	16	16	-	FT	-	FT	
591+50.00 596+50.00	17	17	-	FT	2	FT	
596+50.00 601+50.00	18	18	-	FT	-	FT	
STATE ROUTE 110							
95+00.00 100+00.00	19	19	-	FT	-	FT	
100+00.00 105+00.00	20	20	-	FT	3	FT	
105+00.00 110+00.00	21	21	-	FT	5	FT	

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EXPLORATION FINDINGS CONTINUED

INDUSTRIAL DRIVE CONTINUED

OF 1 BPF) SILTY CLAY WAS FOUND AT B-013-1 BETWEEN DEPTHS OF 6 AND 7.5 FEET BGS. THE POCKET PENETROMETER TESTS RESULTS WERE BETWEEN 0 AND 3.0 TSF. THE MOISTURE CONTENTS RANGED BETWEEN 17 AND 26 PERCENT WITH AN AVERAGE OF 22 PERCENT. SOIL UNIT 3 CONSISTS OF STIFF TO HARD, BROWN AND/OR GRAY COHESIVE SANDY SILT AND SILT (A-4a AND A-4b) AS WELL AS SILT AND CLAY, SILTY CLAY AND CLAY (A-6a, A-6b AND A-7-6). THIS UNIT WAS ENCOUNTERED BELOW SOIL UNITS 1 OR 2 AND WAS IDENTIFIED UP TO DEPTHS OF 8 TO 20 FEET WHERE THE BORINGS WERE TERMINATED OR BEDROCK WAS ENCOUNTERED. THE N_{60} VALUES RANGED FROM 9 TO 55 BPF WITH AN AVERAGE OF 25 BPF. THE POCKET PENETROMETER TESTS RESULTS WERE BETWEEN 2.0 AND 4.5+ TSF. THE MOISTURE CONTENTS RANGED BETWEEN 9 AND 26 PERCENT WITH AN AVERAGE OF 16 PERCENT. ROCK UNIT 1 CONSISTS OF WEAK TO STRONG, BROWN OR BLACK SHALE. THESE FORMATIONS WERE FOUND AT DEPTHS OF 22 FEET BGS AND 19.2 FEET BGS AT BORINGS B-005 AND B-013-1, RESPECTIVELY, AND AT THE SURFACE FOR THE RIVER BORINGS B-006 TO B-012. THE ROD OF THE ROCK CORES WERE BETWEEN 0 AND 75 PERCENT WITH AN AVERAGE VALUE OF 29 PERCENT. NINE (9) UNCONFINED COMPRESSIVE STRENGTH TESTS PERFORMED ON THE ROCK CORES INDICATED THE UNCONFINED COMPRESSIVE STRENGTH WAS BETWEEN 1,423 AND 7,676 POUNDS PER SQUARE INCH (PSI) WITH AN AVERAGE OF 4,633 PSI. THE ROCK FORMATIONS WERE FOUND TO BE SLIGHTLY TO SEVERELY WEATHERED.

EAST RIVERVIEW AVENUE

BORINGS B-022 TO B-026 WERE PERFORMED ALONG EAST RIVERVIEW AVENUE. AT THE GROUND SURFACE OF ALL THE BORINGS, 10 INCHES OF ASPHALT PAVEMENT UNDERLAIN BY 4 INCHES OF AGGREGATE BASE WAS ENCOUNTERED. THE SOIL OVERBURDEN CONSISTS PRIMARILY OF DEPOSITS OF SILTY CLAY. SOIL UNIT 1 CONSISTS OF LOOSE TO MEDIUM DENSE, BROWN OR GRAY GRAVEL OR GRAVEL WITH SAND AND SILT (A-1-a AND A-2-4) FOUND AT BORINGS B-023 AND B-025. THE DEPOSIT IS ENCOUNTERED BELOW THE PAVEMENT SECTION AND CONTINUES TO A DEPTH OF 2.7 FEET. THE N_{60} VALUES WERE BETWEEN 22 TO 31 BPF WITH AN AVERAGE OF 27 BPF. THE MOISTURE CONTENTS RANGED BETWEEN 3 AND 16 PERCENT WITH AN AVERAGE OF 10 PERCENT. SOIL UNIT 2 CONSISTS OF MEDIUM DENSE TO DENSE, BROWN AND/OR GRAY FINE SAND AND SANDY SILT (A-3 AND A-4a). THESE DEPOSITS WERE FOUND AT ALL THE BORING LOCATIONS EXCEPT B-025 BELOW THE SURFICIAL MATERIAL OR SOIL UNIT 1 WITH A THICKNESS OF ABOUT 1.5 FEET. THE N_{60} VALUES RANGED FROM 16 TO 34 BPF WITH AN AVERAGE OF 22 BPF. THE MOISTURE CONTENTS RANGED BETWEEN 2 AND 21 PERCENT WITH AN AVERAGE OF 10 PERCENT. SOIL UNIT 3 CONSISTS PREDOMINANTLY OF STIFF TO HARD, BROWN AND/OR GRAY SILTY CLAY. THESE DEPOSITS WERE ENCOUNTERED BELOW SOIL UNITS 1 AND 2 AND EXTENDED TO THE BORING TERMINATION DEPTHS AT 7.2 FEET BGS. THE SOIL UNIT WAS IDENTIFIED AS A-4a, A-6a, A-6b AND/OR A-7-6 IN ALL THE SOIL BORINGS. THE N_{60} VALUES RANGED FROM 18 TO 63 BPF WITH AN AVERAGE OF 38 BPF. THE POCKET PENETROMETER TESTS RESULTS WERE BETWEEN 3.0 AND 4.5 TSF. THE MOISTURE CONTENTS RANGED BETWEEN 14 AND 25 PERCENT WITH AN AVERAGE OF 21 PERCENT.

GROUNDWATER

GROUNDWATER WAS ENCOUNTERED IN FOUR (4) OF THE BORINGS DRUING DRILLING ACTIVITIES INCLUDING B-002, B-003, B-005 AND B-031-1 WITH WATER LEVELS MEASURED AT THE COMPLETION OF DRILLING AT DEPTHS RANGING FROM APPROXIMATELY 2.5 TO 16 FEET BGS. THE WATER LEVELS WERE MEASURED IN THE RIVER BORINGS AND INDICATED THAT THE RIVER ELEVATIONS VARIED BETWEEN ELEVATION 638 AND 641 AT THE TIME OF DRILLING.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JULY 2013.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.

BEDROCK TEST SUMMARY			
BORING NO.	SAMPLE ID	SAMPLE DEPTH	Qu (PSI)
B-006-0-13	RC-2	5'-10'	1423
B-006-0-13	RC-4	15'-20'	1641
B-007-0-13	RC-2	5'-10'	4446
B-008-1-13	RC-2	5'-10'	4862
B-009-0-13	RC-4	15'-20'	1451
B-010-0-13	RC-2	5'-10'	7676
B-011-0-13	RC-1	0'-5'	4644
B-012-0-13	RC-1	0'-5'	5539
B-012-0-13	RC-3	10'-15'	6652



HEN-IND-0000

SOIL PROFILE

PID NO.
22984



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SUMMARY OF SOIL TEST DATA
INDUSTRIAL DRIVE

EXPLORATION NO., STATION & OFFSET	DEPTH		SAMPLE ID	% REC	HP tsf	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)	SO4 ppm	
	FROM	TO															
B-001-0-13	1.0	- 2.5	SS-1	67	0.75	2	3	16	35	44	37	18	19	21	A-6b (12)		
STA. 32+47.39, 102.9 LT.	3.5	- 5.0	SS-2	50	2.0	BROWN MOTTLED WITH GRAY SILT AND CLAY, LITTLE SAND, TRACE GRAVEL									17	A-6a (VISUAL)	
NORTHING = 636432.356	6.0	- 7.5	SS-3	0	-	SAME AS SS-2									-	A-6a (VISUAL)	
EASTING = 1529466.854	8.5	- 10.0	SS-4	61	4.5	5	6	13	35	41	29	15	14	14	A-6a (10)		
	11.0	- 12.5	SS-5	94	4.5	SAME AS SS-4									14	A-6a (VISUAL)	
	13.5	- 15.0	SS-6	25	4.5	SAME AS SS-4									14	A-6a (VISUAL)	
B-002-0-13	1.0	- 2.5	SS-1	33	2.0	BROWN SILTY CLAY, TRACE SAND									21	A-6b (VISUAL)	
STA. 34+29.06, 80.4 LT.	3.5	- 5.5	ST-1	100	4.5+	3	6	15	35	41	29	16	13	22	A-6a (9)		
NORTHING = 636554.632	6.0	- 7.5	SS-2	61	4.0	SAME AS ST-1									14	A-6a (VISUAL)	
EASTING = 1529405.397	8.5	- 10.0	SS-3	72	4.5	SAME AS ST-1									13	A-6a (VISUAL)	
	11.0	- 12.5	SS-4	0	-	SAME AS ST-1									-	A-6a (VISUAL)	
	13.5	- 15.0	SS-5	83	4.5+	3	5	14	35	43	28	16	12	16	A-6a (9)		
B-003-0-13	1.0	- 2.5	SS-1	67	-	SAME AS SS-2									21	A-4a (VISUAL)	
STA. 36+41.71, 24.9 LT.	3.5	- 5.0	SS-2	61	-	1	4	50	34	11	NP	NP	NP	14	A-4a (2)		
NORTHING = 636705.174	6.0	- 7.5	SS-3	78	4.5+	SAME AS SS-6									14	A-6a (VISUAL)	
EASTING = 1529253.905	8.5	- 10.0	SS-4	78	4.5+	SAME AS SS-6									13	A-6a (VISUAL)	
	11.0	- 12.5	SS-5	78	4.5+	SAME AS SS-6									14	A-6a (VISUAL)	
	13.5	- 15.0	SS-6	44	4.5+	3	4	10	41	42	27	16	11	14	A-6a (8)		
B-004-0-13	1.0	- 2.5	SS-1	44	-	SAME AS SS-2									19	A-4a (VISUAL)	
STA. 38+25, 4' RT.	3.5	- 5.0	SS-2	83	-	0	2	29	46	23	NP	NP	NP	21	A-4a (7)		
NORTHING = 636837.733	6.0	- 7.5	SS-3	56	-	SAME AS ST-1									16	A-4a (VISUAL)	
EASTING = 1529144.268	6.0	- 7.5	ST-1	94	-	0	0	41	45	14	22	18	4	11	A-4a (5)		
	8.5	- 10.0	SS-4	83	-	GRAY SANDY SILT, AND CLAY									14	A-4a (VISUAL)	
	11.0	- 12.5	SS-5	72	4.5+	4	5	11	40	40	27	15	12	13	A-6a (9)		
	13.5	- 15.0	SS-6	56	4.5+	SAME AS SS-5									15	A-6a (VISUAL)	
B-014-0-13	1.0	- 2.5	SS-1	78	4.5+	5	7	13	32	43	32	17	15	15	A-6a (10)		
STA. 49+50, CL	3.5	- 5.0	SS-2	17	4.5	SAME AS SS-1									15	A-6a (VISUAL)	
NORTHING = 637665.517	6.0	- 7.5	SS-3	50	4.0	SAME AS SS-1									17	A-6a (VISUAL)	
EASTING = 1528381.896	8.5	- 10.0	SS-4	50	4.5+	2	5	12	34	47	37	16	21	20	A-6b (12)		
	11.0	- 12.5	SS-5	61	3.0	GRAY CLAY, SOME SILT, TRACE GRAVEL					42	18	24	20	A-7-6 (VISUAL)		
	13.5	- 15.0	SS-6	83	4.5	SAME AS SS-6									13	A-7-6 (VISUAL)	
	16.0	- 17.5	SS-7	78	4.5+	BROWN SILTY CLAY, LITTLE SAND, TRACE GRAVEL									17	A-6b (VISUAL)	
	18.5	- 20.0	SS-8	89	4.5+	GRAY SILTY CLAY, LITTLE SAND, TRACE GRAVEL									9	A-6b (VISUAL)	
B-015-0-13	1.0	- 2.5	SS-1	67	2.5	BROWN SILT AND CLAY, LITTLE SAND									19	A-6a (VISUAL) *	1275
STA. 52+77.55, 26.7 RT.	3.5	- 5.0	SS-2	67	4.5	1	3	3	10	83	48	23	25	26	A-7-6 (16)		
NORTHING = 637952.823	6.0	- 7.5	SS-3	83	4.5	4	6	11	30	49	32	17	15	17	A-6a (10)		
EASTING = 1528225.366	8.5	- 10.0	SS-4	100	4.5	SAME AS SS-3									14	A-6a (VISUAL)	
B-016-0-13	1.7	- 3.2	SS-1	78	3.5	SAME AS SS-2									22	A-6b (VISUAL) *	
STA. 55+57, CL	3.2	- 4.7	SS-2	89	3.0	1	1	3	44	51	39	19	20	25	A-6b (12)		
NORTHING = 638227.110	4.7	- 6.2	SS-3	44	2.5	1	1	4	37	57	44	20	24	28	A-7-6 (14)		
EASTING = 1528197.360	6.2	- 7.7	SS-4	78	3.0	SAME AS SS-3									26	A-7-6 (VISUAL)	1140

NOTE:
Excludes B-005 through B-013

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SUMMARY OF SOIL TEST DATA
RIVERVIEW AVE.

EXPLORATION NO., STATION & OFFSET	DEPTH		SAMPLE ID	% REC	HP tsf	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)	SO4 ppm	
	FROM	TO															
B-022-0-13	1.2	- 2.7	SS-1	56	-			DARK BROWN SANDY SILT, SOME GRAVEL							3	A-4a (VISUAL)*	160
STA. 587+45, 7' RT.	2.7	- 4.2	SS-2	56	4.0	6	4	5	35	50	44	19	25	23	A-7-6 (15)		
NORTHING = 637343.455	4.2	- 5.7	SS-3	67	4.5			SAME AS SS-2							14	A-7-6 (VISUAL)	
EASTING = 1527818.884	5.7	- 7.2	SS-4	61	4.5	15	10	17	23	35	32	17	15	17	A-6a (7)		
B-023-0-13	1.2	- 2.7	SS-1	61	-	66	18	7	7	2	NP	NP	NP	3	A-1-a (0) *		
STA. 591+43, 9' LT.	2.7	- 4.2	SS-2	61	3.25			GRAY MOTTLED WITH BROWN SANDY SILT, LITTLE CLAY							21	A-4a (VISUAL)	1300
NORTHING = 637615.734	4.2	- 5.7	SS-3	89	4.5	0	4	5	19	72	40	20	20	22	A-6b (12)		
EASTING = 1528108.483	5.7	- 7.2	SS-4	83	4.5			SAME AS SS-3							24	A-6b (VISUAL)	
B-024-0-13	1.2	- 2.7	SS-1	72	-	0	5	85	9	1	NP	NP	NP	14	A-3 (0)		
STA. 594+66, 9' RT.	2.7	- 4.2	SS-2	67	3.0	1	0	1	41	57	49	22	27	25	A-7-6 (17)		
NORTHING = 637800.802	4.2	- 5.7	SS-3	100	4.5			BROWN SILTY CLAY, TRACE SAND							24	A-6b (VISUAL)	2880
EASTING = 1528374.091	5.7	- 7.2	SS-4	50	4.5			SAME AS SS-3							23	A-6b (VISUAL)	
B-025-0-13	1.2	- 2.7	SS-1	83	-			LIGHT GRAY GRAVEL WITH SAND AND SILT, SOME CLAY							16	A-2-4 (VISUAL) *	200
STA. 597+23, 8' LT.	2.7	- 4.2	SS-2	67	4.5	2	6	7	38	47	33	18	15	19	A-6a (10)		
NORTHING = 637966.627	4.2	- 5.7	SS-3	56	4.5			BROWN SILTY CLAY, TRACE SAND AND GRAVEL							19	A-6b (VISUAL)	
EASTING = 1528571.100	5.7	- 7.2	SS-4	78	4.5			SAME AS SS-3							22	A-6b (VISUAL)	
B-026-0-13	1.2	- 2.7	SS-1	50	-			DARK BROWN SANDY SILT, SOME GRAVEL							2	A-4a (VISUAL) *	
STA. 600+30, 5' LT.	2.7	- 4.2	SS-2	50	4.5			BROWN MOTTLED WITH GRAY SILTY CLAY, TRACE SAND							23	A-6b (VISUAL)	1140
NORTHING = 638130.283	4.2	- 5.7	SS-3	78	4.5	3	5	8	22	62	41	20	21	17	A-7-6 (13)		
EASTING = 1528832.319	5.7	- 7.2	SS-4	89	4.5			SAME AS SS-3							15	A-7-6 (VISUAL)	

SUMMARY OF SOIL TEST DATA
S.R. 110

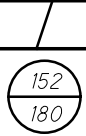
EXPLORATION NO., STATION & OFFSET	DEPTH		SAMPLE ID	% REC	HP tsf	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)	SO4 ppm	
	FROM	TO															
B-017-0-13	1.2	- 2.7	SS-1	56	-			GRAY COARSE AND FINE SAND, LITTLE GRAVEL, TRACE SILT							6	A-3a (VSUAL)	560
STA. 97+38, 5' RT.	2.7	- 4.2	SS-2	11	-			SAME AS SS-1							21	A-3a (VSUAL)	
NORTHING = 636139.886	4.2	- 5.7	SS-3	78	2.5	5	5	14	27	49	41	23	18	22	A-7-6 (11)		
EASTING = 1528743.168	5.7	- 7.2	SS-4	67	2.5	2	6	15	32	45	40	19	21	22	A-6b (12)		
B-018-0-13	1.2	- 2.7	SS-1	72	4.5+			DARK GRAY CLAY, SOME GRAVEL AND SILT, TRACE SAND							13	A-7-6 (VSUAL)	500
STA. 99+90, 8' LT.	2.7	- 4.2	SS-2	67	4.5	2	10	35	20	33	26	12	14	16	A-6a (5)		
NORTHING = 636237.894	4.2	- 5.7	SS-3	67	2.25	1	2	10	16	71	49	20	29	27	A-7-6 (17)		
EASTING = 1528975.860	5.7	- 7.2	SS-4	78	3.5			SAME AS SS-3							20	A-7-6 (VSUAL)	
B-019-0-13	1.2	- 2.7	SS-1	61	-	42	18	10	14	16	23	14	9	16	A-2-4 (0) *	760	
STA. 103+15, CL	2.7	- 4.2	SS-2	56	4.5+	6	6	8	24	56	39	19	20	17	A-6b (12)		
NORTHING = 636312.038	4.2	- 5.7	SS-3	67	4.5+				SAME AS SS-2					16	A-6b (VSUAL)		
EASTING = 1529291.934	5.7	- 7.2	SS-4	78	4.5+				SAME AS SS-2					15	A-6b (VSUAL)		
B-020-0-13	0.3	- 1.8	SS-1	61	4.5+				SAME AS SS-2					21	A-7-6 (VSUAL) *	2160	
STA. 106+98, 21' LT.	1.8	- 3.3	SS-2	42	4.5+	0	2	11	18	69	49	21	28	23	A-7-6 (17) *		
NORTHING = 636420.916	3.3	- 4.8	SS-3	56	4.5+	1	2	3	16	78	48	24	24	23	A-7-6 (15)		
EASTING = 1529660.274	4.8	- 6.3	SS-4	78	4.5+				SAME AS SS-3					15	A-7-6 (VSUAL)		
B-021-0-13	1.2	- 2.7	SS-1	56	4.5+	13	9	30	23	25	28	15	13	18	A-6a (4) *	660	
STA. 109+41.6, 6' LT.	2.7	- 4.2	SS-2	61	3.0				SAME AS SS-1					17	A-6a (VSUAL) *		
NORTHING = 636461.405	4.2	- 5.7	SS-3	67	4.5+	3	4	5	16	72	47	25	22	22	A-7-6 (14)		
EASTING = 1529900.005	5.7	- 7.2	SS-4	78	4.5+			BROWN MOTTLED WITH GRAY SILTY CLAY, TRACE SAND AND GRAVEL							15		A-6b (VSUAL)

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SUMMARY OF SOIL TEST DATA - RIVERVIEW AVE , & S.R.110

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Civil Engineering, Surveying and Geoenvironmental Consulting
TOLEDO CANTON LANSING DETROIT MONROE CLEVELAND COLUMBUS



AAR

One-Dimensional Consolidation Properties
of Soils
ASTM D2435

Project Name:Maumee River Crossing PID 22984

Sample Number:B-005-ST1

Soil Classification:A-4a

Project Number:H2530002

Sample Depth:13.5'-15'

Specific Gravity (G):2.71

Method Used:Floating Ring

d_o= Initial zero reading, (in)

0

Hs= (cm)

1.75

H0= (in)

1.00

A= (in²)

4.91

0.70

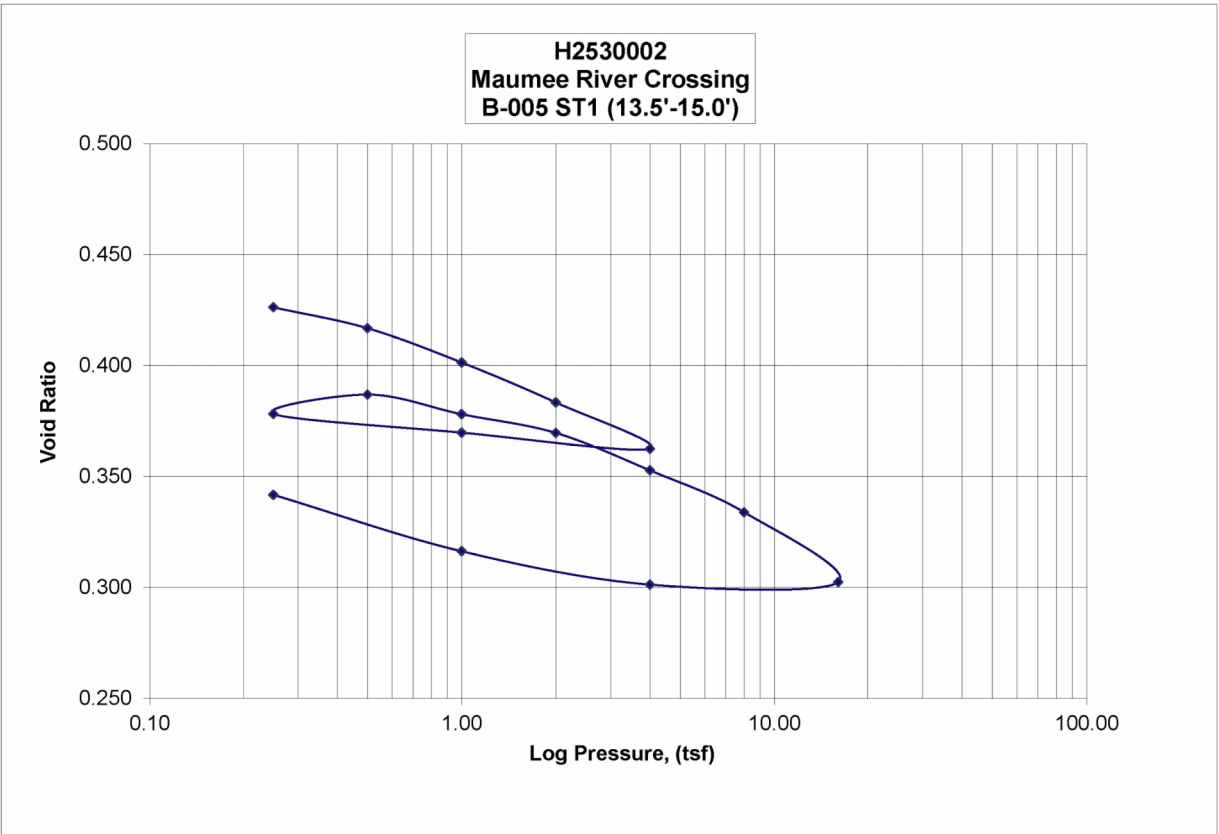
(in)

31.91

(cm²)

Load Increment, Pressure		Deformation @ end of loading or Δ H	Height of sample at the end of loading	Height of Voids,	Strain (Δ H/Ho)	Coefficient of Compressibility a _v	Void Ratio	Permeability	Coefficient of Consolidation, C _v @ 50%	Coefficient of Consolidation, C _v @ 50%
		(in)	(in)	(in)	(%)	(m ² /N)		(cm/sec)	(in ² /sec)	(cm ² /sec)
(tsf)	(psi)									
seating load	0.69	0.000	1.000	0.30	0.00		0.430			
0.25	1.20	0.003	0.997	0.30	0.26	2.09E-05	0.426	3.819E-05	4.090E-03	2.659E-02
0.50	2.00	0.009	0.991	0.29	0.92	3.39E-05	0.417	9.811E-06	6.477E-04	4.210E-03
1.00	3.60	0.020	0.980	0.28	2.00	2.77E-05	0.401	1.803E-05	1.445E-03	9.394E-03
2.00	6.70	0.033	0.967	0.27	3.26	1.67E-05	0.383	1.962E-05	2.584E-03	1.679E-02
4.00	13.00	0.047	0.953	0.25	4.72	9.52E-06	0.362	3.305E-06	7.533E-04	4.897E-03
1.00	3.60	0.042	0.958	0.26	4.21	2.23E-06	0.370	7.362E-08	7.061E-05	4.589E-04
0.25	1.20	0.036	0.964	0.26	3.62	1.01E-05	0.378	1.190E-05	2.531E-03	1.645E-02
0.50	2.00	0.030	0.970	0.27	3.01	-3.13E-05	0.387	-7.471E-06	5.157E-04	3.352E-03
1.00	3.60	0.036	0.964	0.26	3.63	1.59E-05	0.378	1.245E-05	1.702E-03	1.106E-02
2.00	6.70	0.042	0.958	0.26	4.22	7.82E-06	0.370	1.368E-06	3.782E-04	2.458E-03
4.00	13.00	0.054	0.946	0.25	5.40	7.69E-06	0.353	2.656E-06	7.418E-04	4.822E-03
8.00	25.60	0.067	0.933	0.23	6.72	4.30E-06	0.334	9.759E-07	4.812E-04	3.128E-03
16.00	50.80	0.089	0.911	0.21	8.92	3.59E-06	0.302	9.500E-07	5.543E-04	3.603E-03
4.00	13.00	0.090	0.910	0.21	9.00	-8.69E-08	0.301	-2.884E-07	6.777E-03	4.405E-02
1.00	3.60	0.080	0.921	0.22	7.95	4.59E-06	0.316	5.184E-06	2.306E-03	1.499E-02
0.25	1.20	0.062	0.938	0.24	6.17	3.05E-05	0.342	1.924E-05	1.304E-03	8.477E-03

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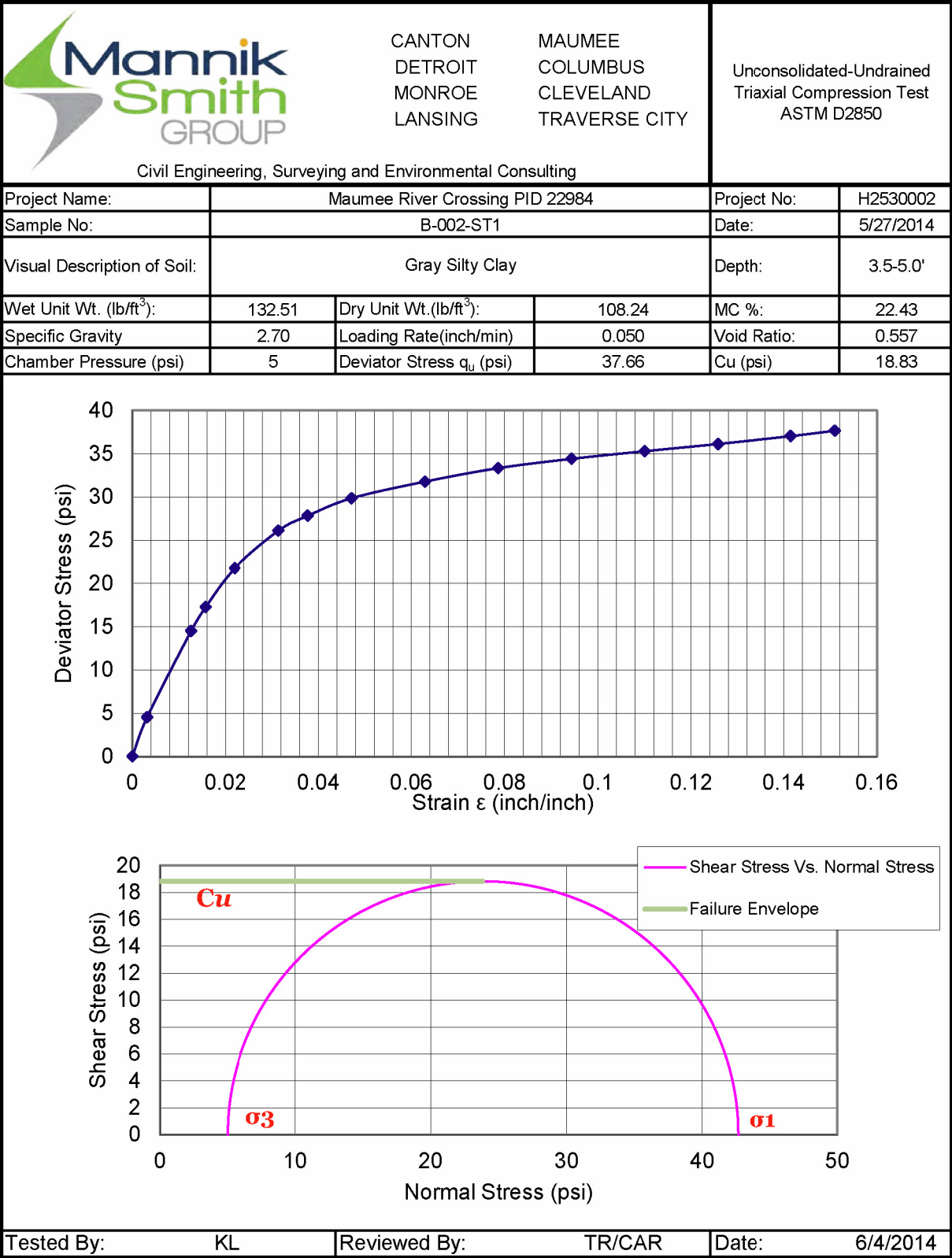


H2530002
Maumee River Crossing
B-013-1-13 ST1 (10' - 12')

Log Pressure (tsf)	Void Ratio (Top Curve)	Void Ratio (Middle Curve)	Void Ratio (Bottom Curve)
0.3	0.61	0.50	0.43
0.5	0.60	0.51	0.42
1.0	0.58	0.50	0.40
2.0	0.54	0.49	0.39
4.0	0.50	0.49	0.39
8.0	0.45	0.40	0.39
15.0	0.40	0.40	0.40

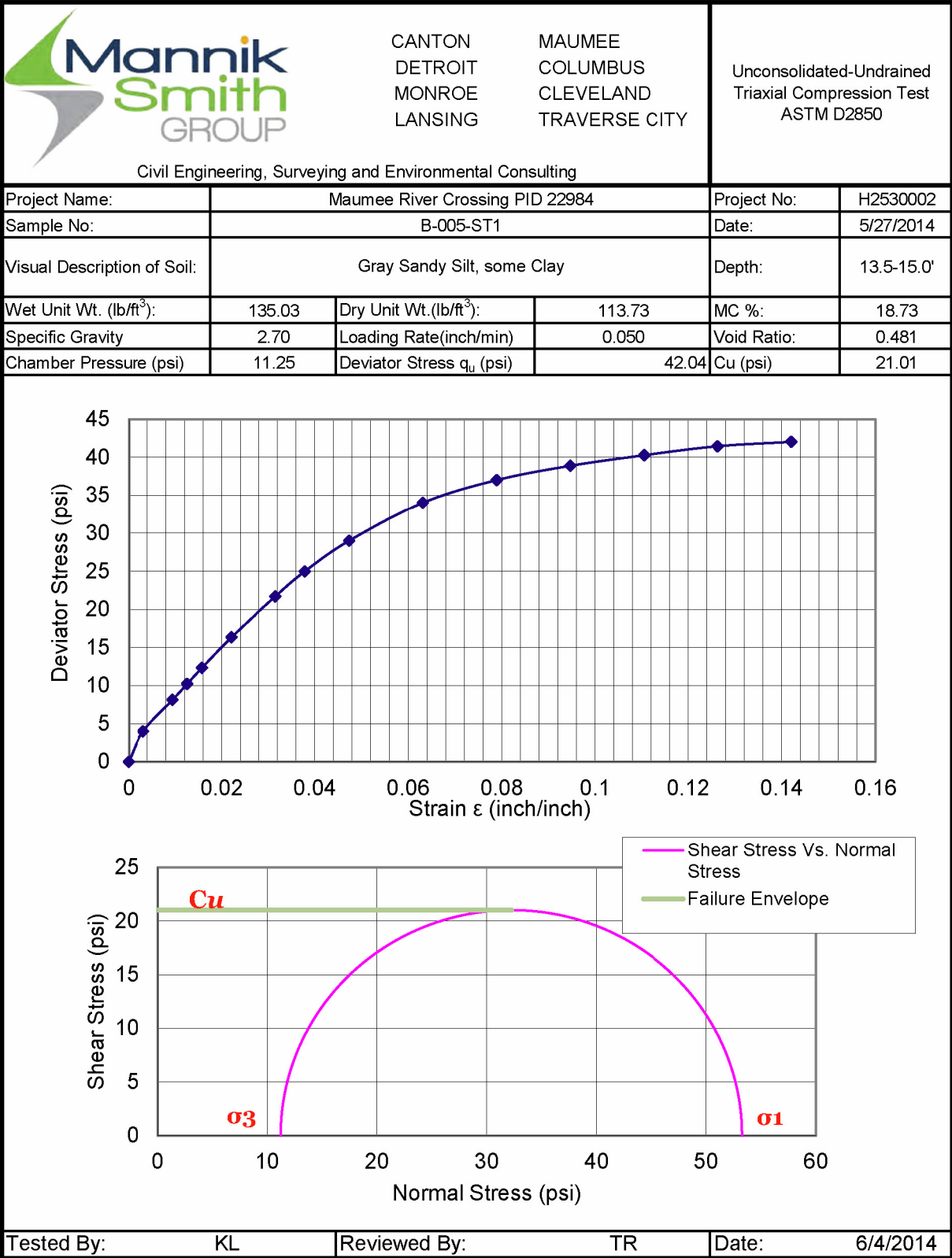
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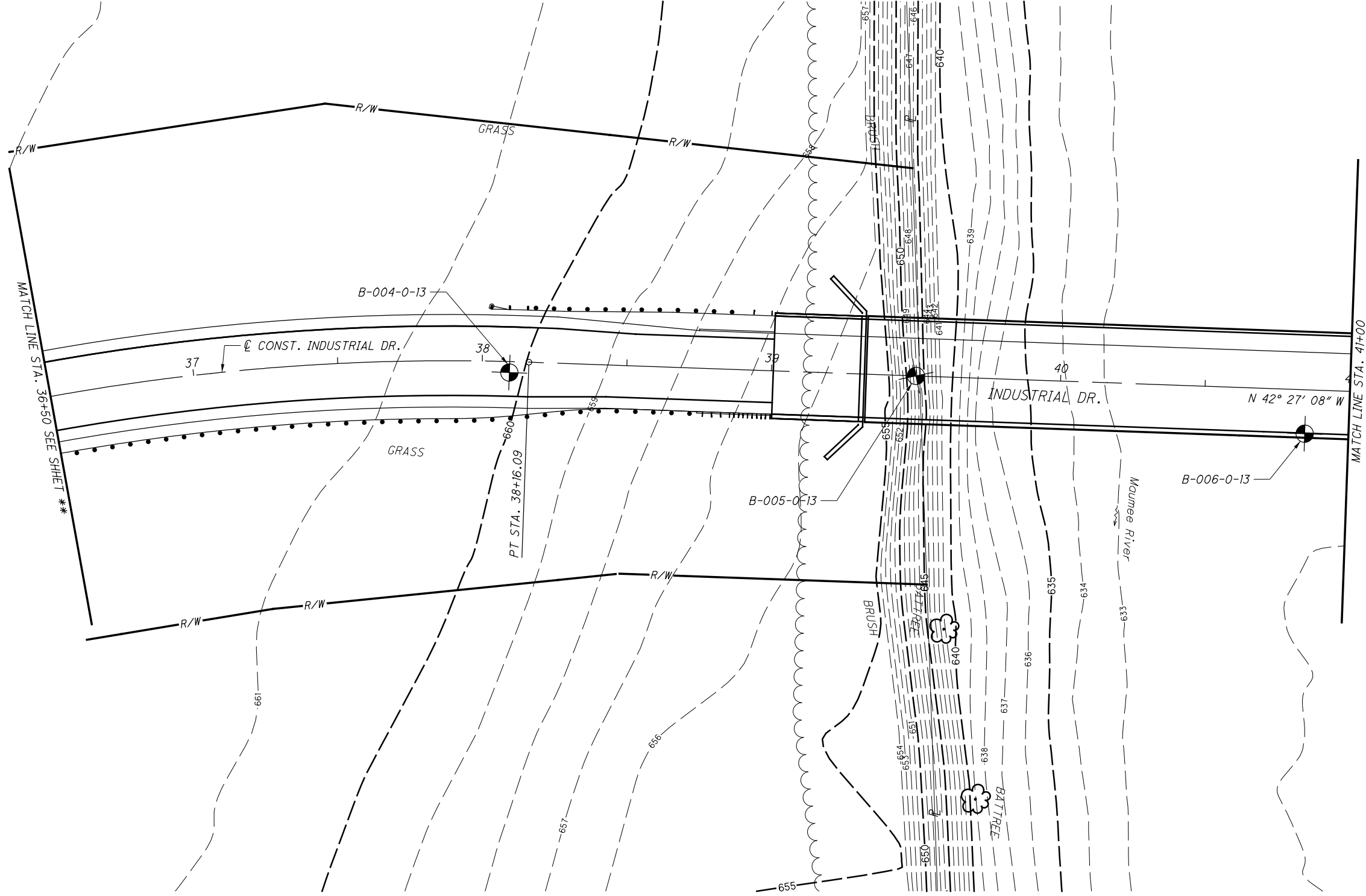
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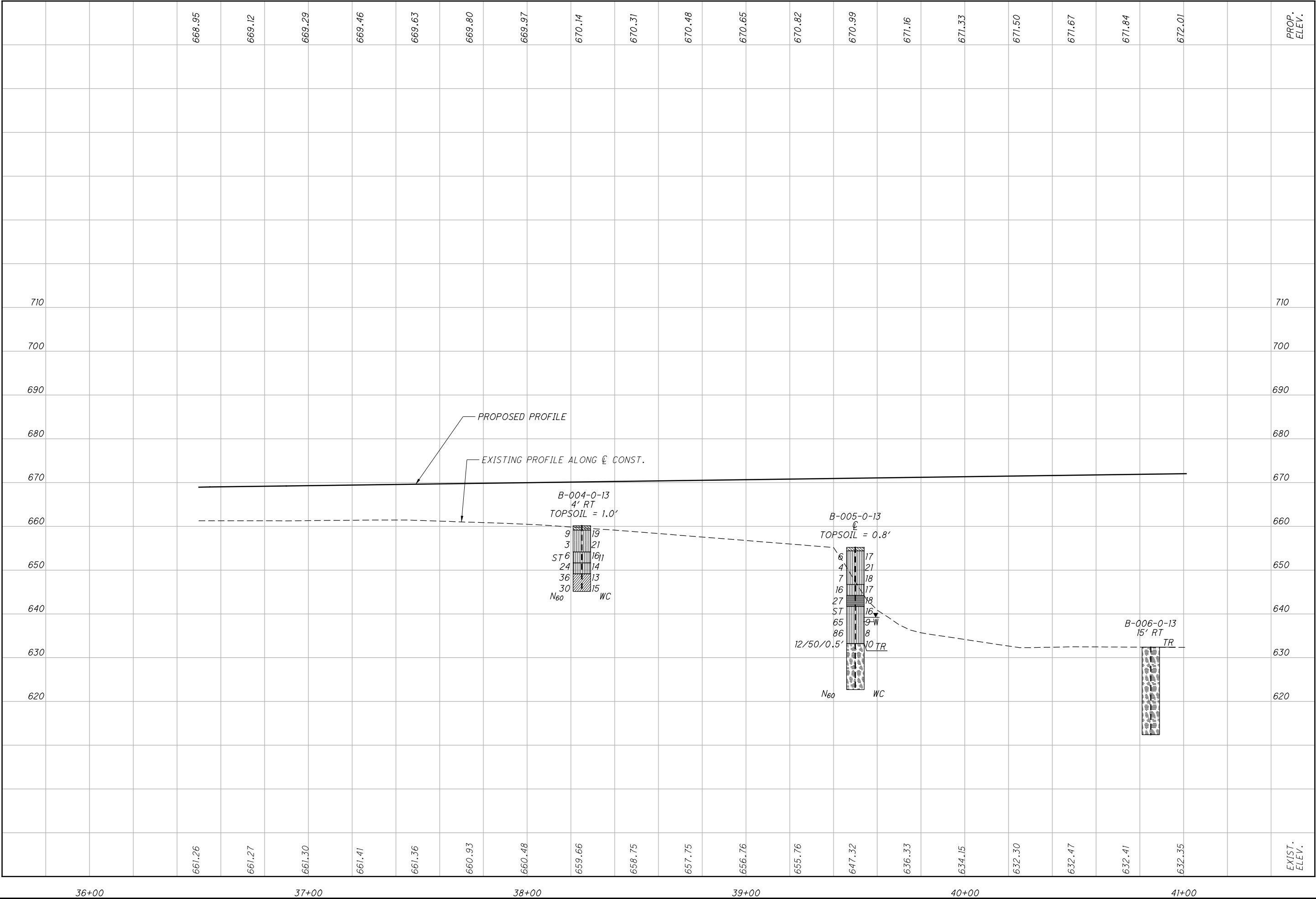


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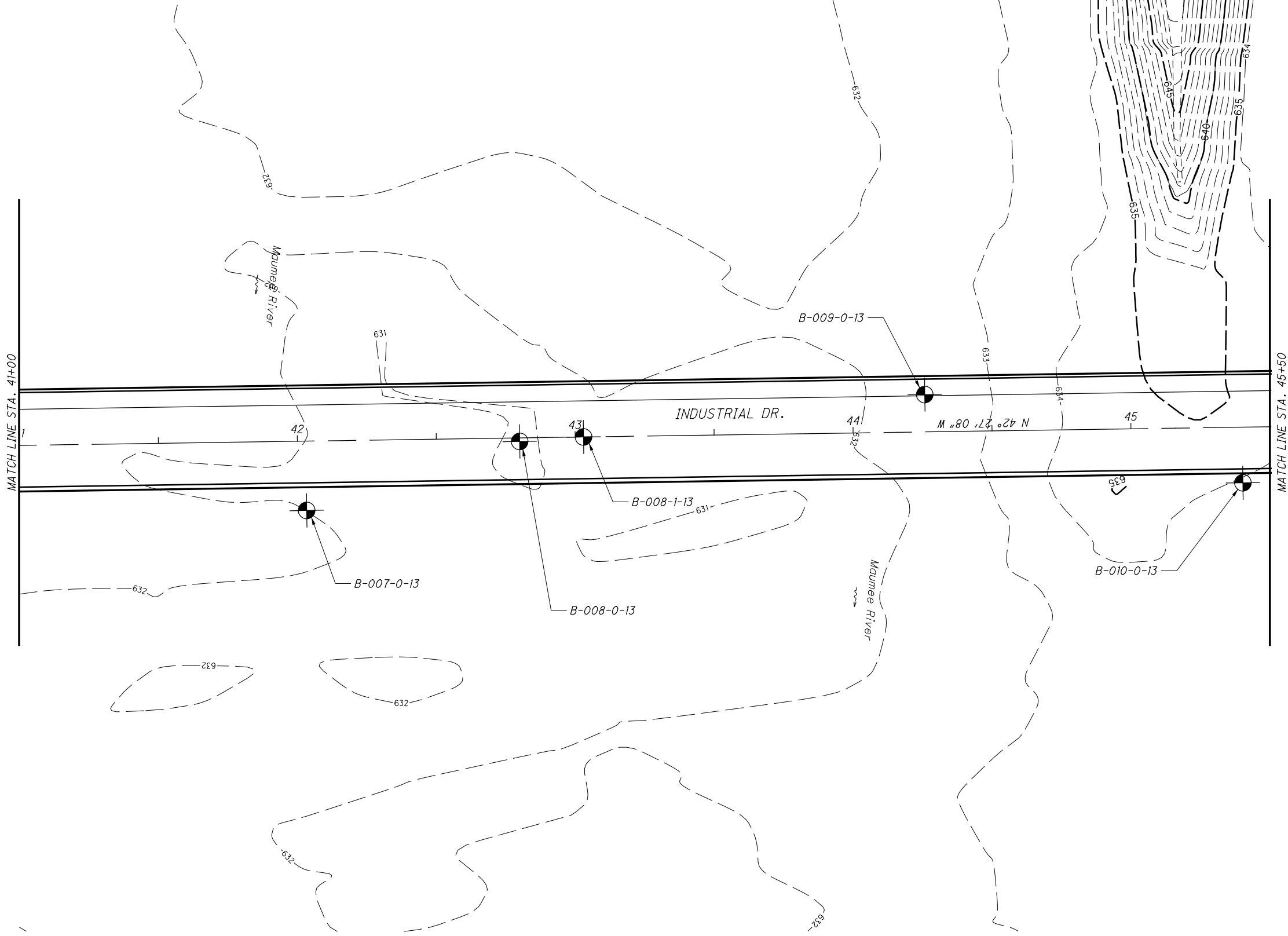
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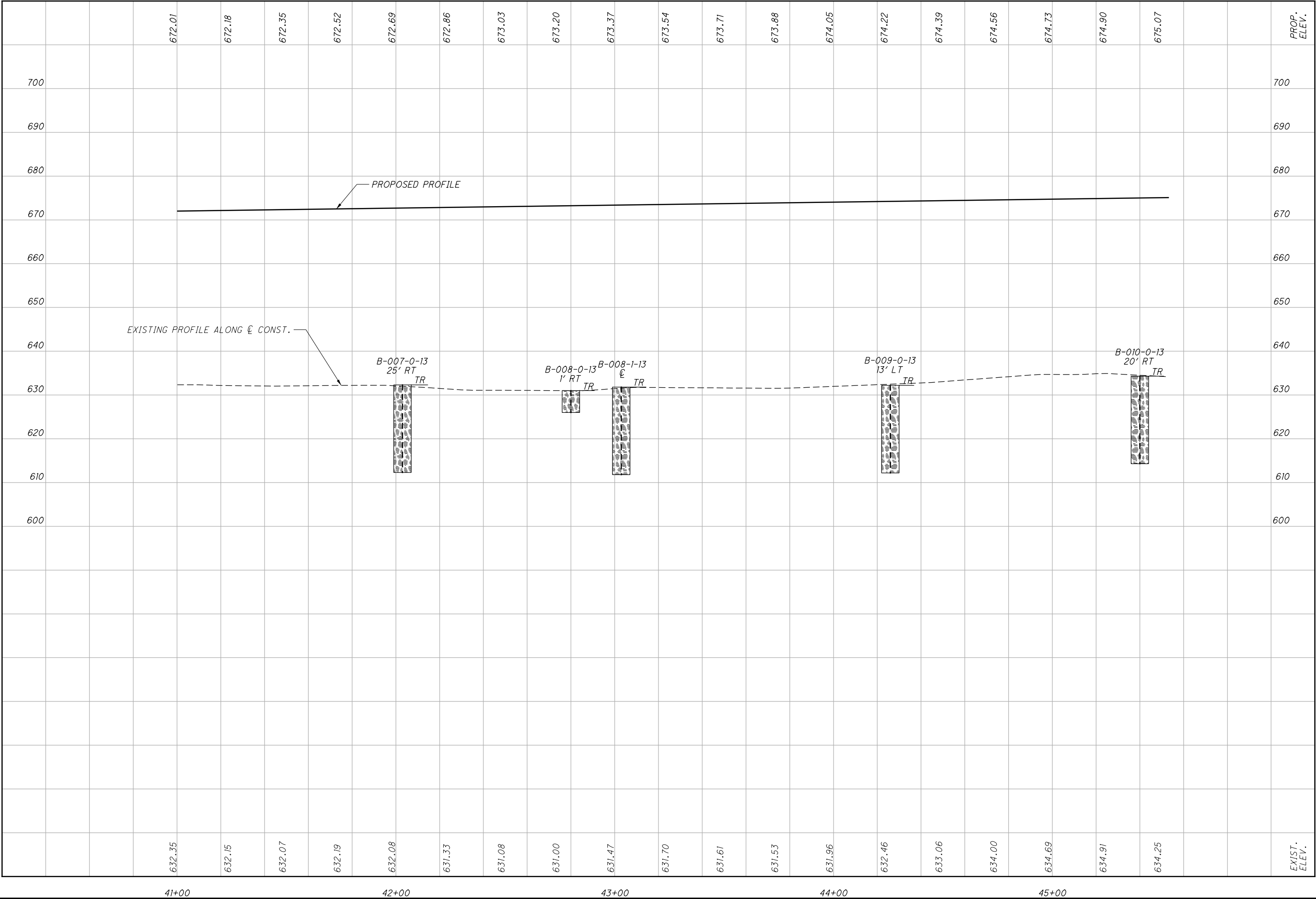
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SCALE IN FEET



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PLAN AND PROFILE - INDUSTRIAL DR.

STA. 41+00.00 TO STA. 45+50.00

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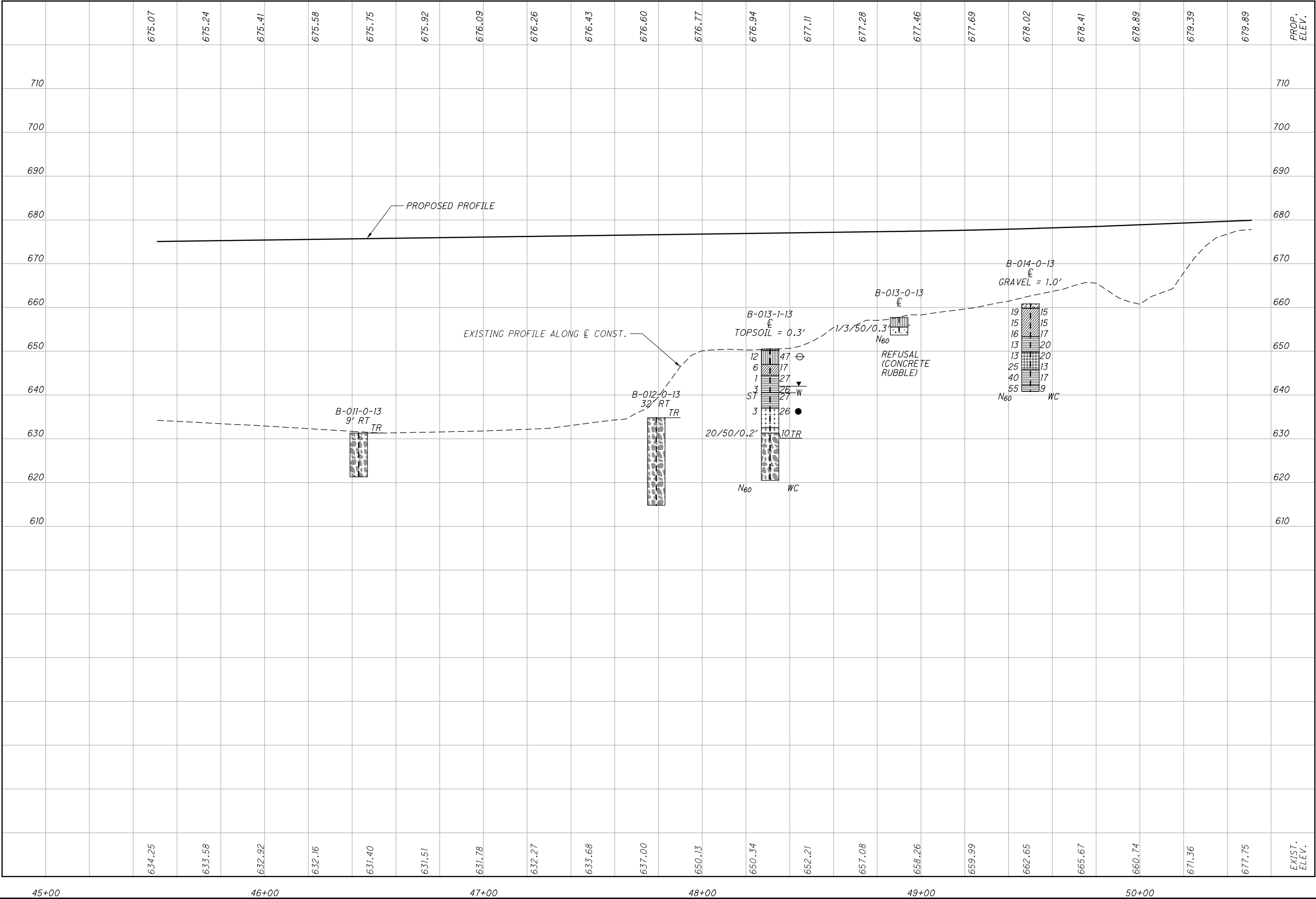
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HORIZONTAL SCALE IN FEET

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PLAN AND PROFILE - INDUSTRIAL DR.

STA. 45+50.00 TO STA. 50+50.00

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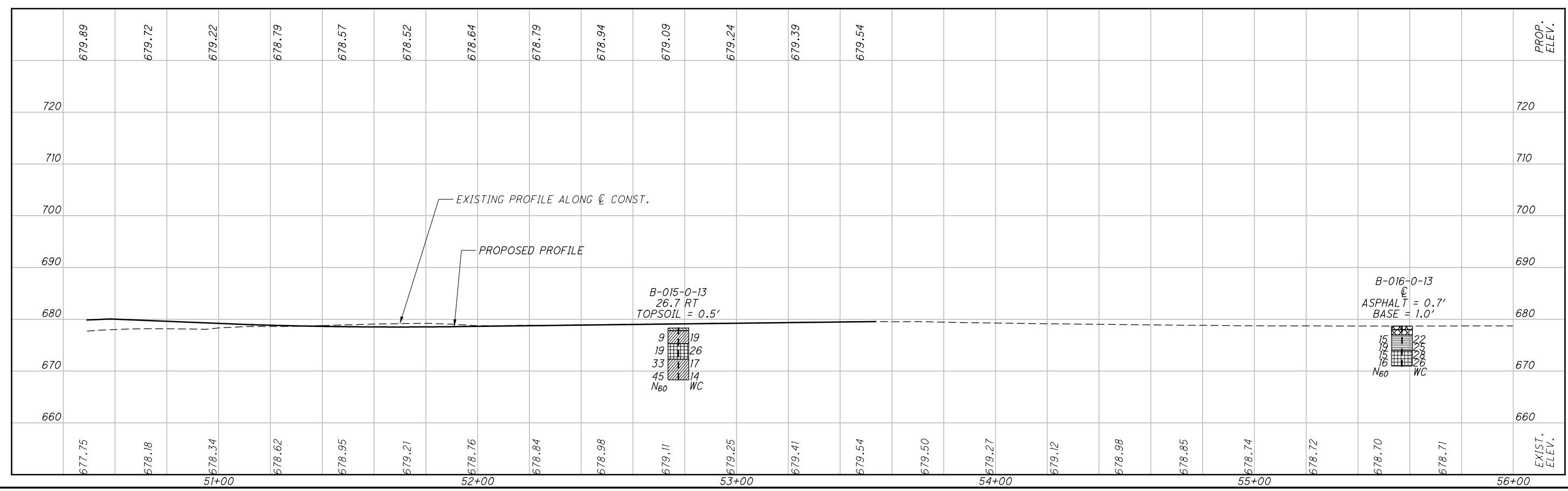
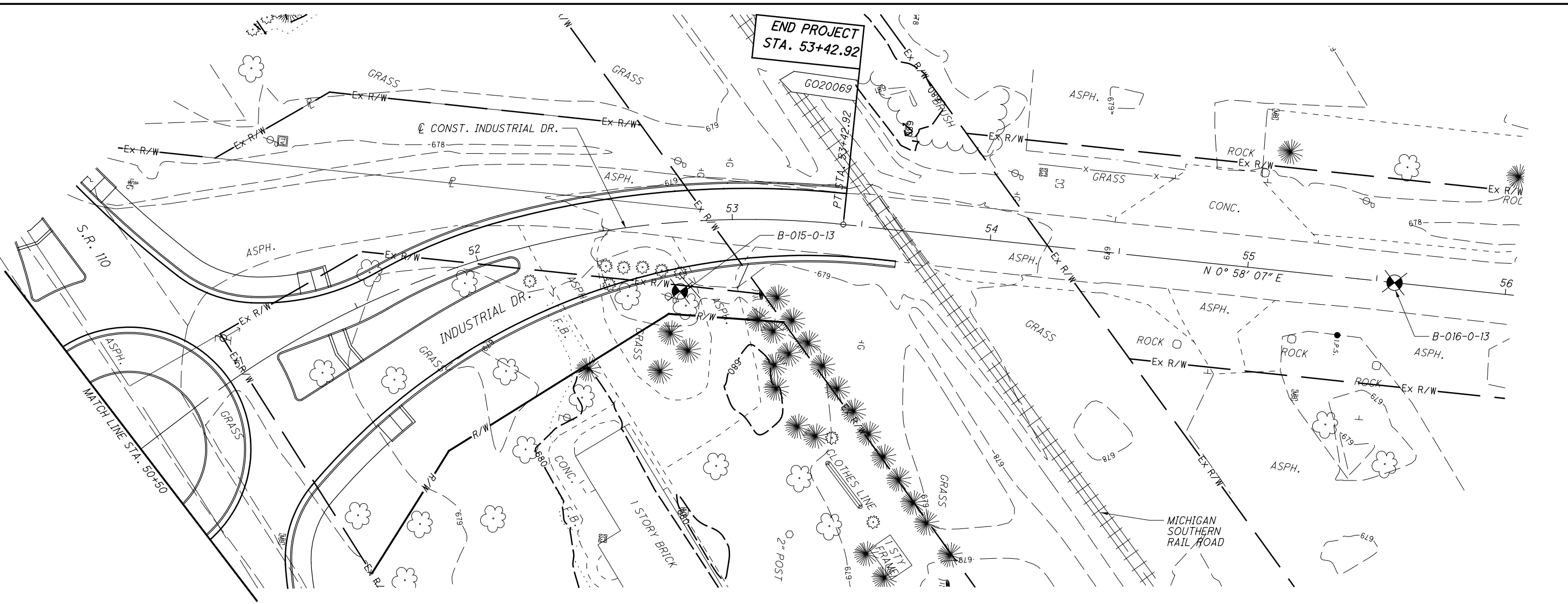
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HORIZONTAL SCALE IN FEET

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PLAN AND PROFILE - INDUSTRIAL DR.
STA. 50+50.00 TO STA. 56+00.00

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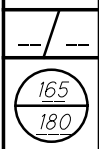
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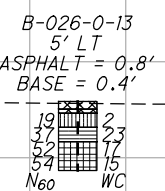
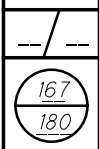
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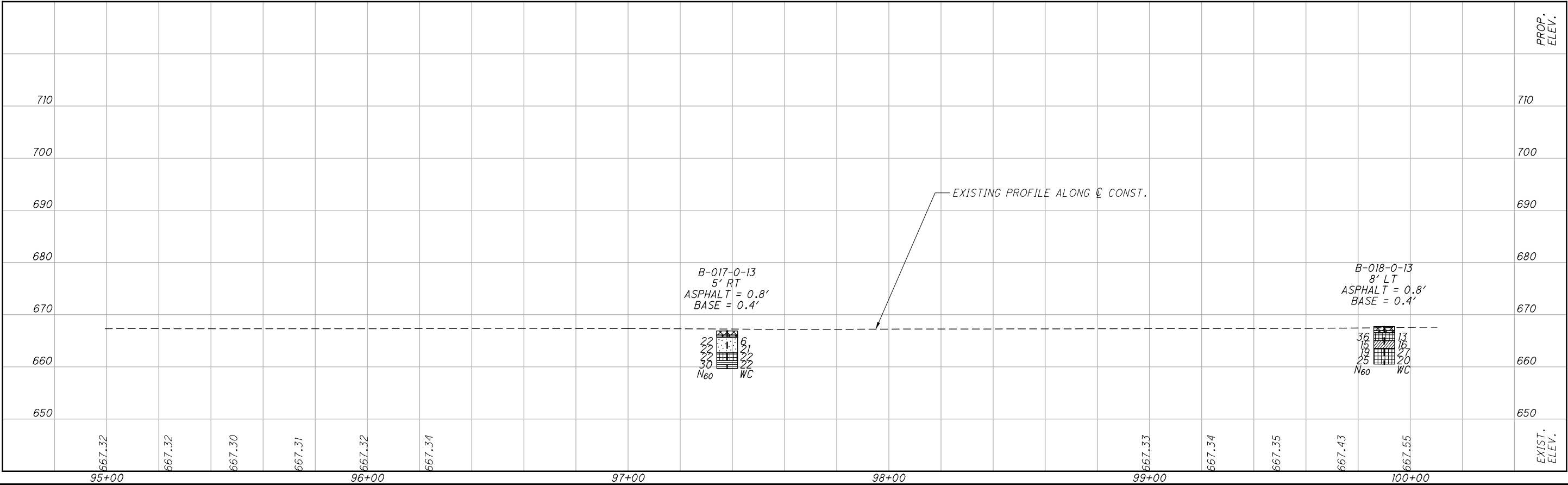
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HORIZONTAL SCALE IN FEET





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HORIZONTAL SCALE IN FEET



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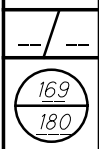
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PLAN AND PROFILE - S.R.110

STA. 95+00.00 TO STA. 100+00.00

HEN-IND-0000





PROJECT: HEN-IND-0000			DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT			DRILL RIG: GEOPROBE 7822DT			STATION / OFFSET: 39+50. CL			EXPLORATION ID									
TYPE: NEW ALIGNMENT			SAMPLING FIRM / LOGGER: MSG / M. WELKER			HAMMER: AUTOMATIC HAMMER			ALIGNMENT: INDUSTRIAL DR.			B-005-0-13									
PID: 22984 BR ID: N/A			DRILLING METHOD: 4.25" HSA / NW			CALIBRATION DATE: 5/10/13			ELEVATION: 655.2 (MSL) EOB: 32.5 ft			PAGE									
START: 4/23/14 END: 4/23/14			SAMPLING METHOD: SPT/ST/NW CORE BARREL			ENERGY RATIO (%): 89.3			COORD: 636926.243 N, 1529055.188 E			1 OF 1									
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC SAMPLE (%)	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	INST.		
TOPSOIL Soft to medium stiff, brown SANDY SILT, some clay, damp			655.2																		
			654.4	1																	
				2	2	6	61	SS-1	1.50	0	1	25	45	29	25	16	9	17	A-4a (8)		
				3																	
				4	1	4	94	SS-2	-	-	-	-	-	-	-	-	-	21	A-4a (V)		
				5	1																
				6	1	7	83	SS-3	-	-	-	-	-	-	-	-	-	18	A-4a (V)		
				7	4																
			646.7	8																	
				9	3	16	39	SS-4	3.00	14	5	19	39	23	23	16	7	17	A-4a (5)		
				10	6																
				11																	
Very stiff, brown SANDY SILT, some clay, little gravel, damp			644.2																		
				12	4	27	17	SS-5	-	-	-	-	-	-	-	-	-	18	A-6b (V)		
				13																	
			641.7																		
				14																	
				15																	
				16	12	65	78	SS-6	-	-	-	-	-	-	-	-	-	9	A-4a (V)		
				17	18	26															
				18																	
				19	19	86	89	SS-7	-	-	-	-	-	-	-	-	-	8	A-4a (V)		
				20	25	33															
				21	12	506"	78	SS-8	-	-	-	-	-	-	-	-	-	10	A-4a (V)		
SHALE, dark brown to black, slightly to moderately weathered, thinly laminated, weak to moderately strong			633.2																		
				22																	
				23																	
				24																	
				25	8	72	RC-1														CORE
				26																	
				27																	
				28																	
				29																	
				30	9	100	RC-2														CORE
				31																	
				32																	
			622.7																		

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: HEN-IND-0000
TYPE: NEW ALIGNMENT
PID: 22984 BR ID: N/A
START: 6/10/14 END: 6/10/14

DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT
SAMPLING FIRM / LOGGER: MSG / N. BREJAK
DRILLING METHOD: NW
SAMPLING METHOD: NW CORE BARREL

DRILL RIG: GEOPROBE 7822DT
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 5/10/13
ENERGY RATIO (%): 89.3

STATION / OFFSET: 40+85, 15 RT
ALIGNMENT: INDUSTRIAL DR
ELEVATION: 632.4 (MSL) EOB: 20.0 ft
COORD: 637037.666 N, 1528976.800 E

EXPLORATION ID
B-006-0-13
PAGE
1 OF 1

MATERIAL DESCRIPTION
AND NOTES

SHALE, dark gray to gray, moderately weathered, slightly strong to strong

-Unconfined compressive strength (Qu) = 1,423 psi

Becomes severely weathered and weak

Becomes moderately weathered and strong

-Unconfined compressive strength (Qu) = 1,641 psi

ELEV.
632.4

DEPTHS

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

EOB

612.4

GRADATION (%)

GR CS FS SI QL

ATTERBERG

LL PL PI

WC

ODOT CLASS (GI)

INST.

SPT/ RQD

N₆₀

REC SAMPLE (%)

ID

HP (tsf)

RC-1

RC-2

RC-3

RC-4

CORE

CORE

CORE

CORE

NOTES: BORING PERFORMED ON BARGE, WATER LEVEL IN RIVER ESTIMATED AT ELEVATION 639 FEET DURING DRILLING

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NATURAL COLLAPSE

PROJECT: HEN-IND-0000
TYPE: NEW ALIGNMENT
PID: 22984 BR ID: N/A
START: 6/5/14 END: 6/5/14

DRILLING FIRM / OPERATOR: MSG / R. SCHIPPERT
SAMPLING FIRM / LOGGER: MSG / N. BREJAK
DRILLING METHOD: NW
SAMPLING METHOD: NW CORE BARREL

STATION / OFFSET: 42+03.25 RT
ALIGNMENT: INDUSTRIAL DR
ELEVATION: 632.3 (MSL) EOB: 20.0 ft
COORD: 637131.112 N, 1528904.521 E

EXPLORATION ID
B-007-0-13
PAGE
1 OF 1

MATERIAL DESCRIPTION
AND NOTES

SHALE, dark brown to gray, moderately weathered, slightly strong to strong

-Unconfined compressive strength (Qu) = 4,446 psi

SPT/ RQD

N₆₀

REC SAMPLE ID (%)

HP (tsf)

GR

CS

FS

SI

CL

LL

PI

WC

ODOT CLASS (GI)

INST.

DEPTHS

ELEV. 632.3

612.3

EOB

20

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

90 RC-1

83 RC-2

48 RC-3

80 RC-4

CORE

CORE

CORE

CORE

NOTES: BORING PERFORMED ON BARGE, WATER LEVEL IN RIVER ESTIMATED AT ELEVATION 639 FEET DURING DRILLING
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NATURAL COLLAPSE

PROJECT: HEN-IND-0000		DRILLING FIRM / OPERATOR:MSG / R. SCHIPPER		DRILL RIG: GEOPROBE 7822DT		STATION / OFFSET: 42+80, 1 RT		EXPLORATION ID	
TYPE: NEW ALIGNMENT		SAMPLING FIRM / LOGGER: MSG / N. BREIJAK		HAMMER: AUTOMATIC HAMMER		ALIGNMENT: INDUSTRIAL DR.		B-008-0-13	
PID: 22984 BR ID: N/A		DRILLING METHOD: NW		CALIBRATION DATE: 5/10/13		ELEVATION: 631.0 (MSL) EOB: 5.0 ft.		PAGE	
START: 6/4/14 END: 6/4/14		SAMPLING METHOD: NW CORE BARREL		ENERGY RATIO (%): 89.3		COORD: 637188.193 N, 1528818.266 E		1 OF 1	
MATERIAL DESCRIPTION		ELEV.		SPT/ RQD		GRADATION (%)		ODOT CLASS (GI)	
AND NOTES		DEPTHS		REC SAMPLE ID		ATTERBERG		INST.	
SHALE , dark gray-brown, moderately weathered, slightly strong to strong						GR CS FS SI CL LL PL WC			
		1							
		2		100 RC-1					
		3							
		4							
5									
626.0		EOB							

NOTES: BORING PERFORMED ON BARGE. WATER LEVEL IN RIVER ESTIMATED AT ELEVATION 638 FEET DURING DRILLING

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NATURAL COLLAPSE

PROJECT: HEN-IND-0000
TYPE: NEW ALIGNMENT

PID: 22984 BR ID: N/A

START: 6/12/14 END: 6/12/14

DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT

SAMPLING FIRM / LOGGER: MSG / N. BREJIAK

DRILLING METHOD: NW

SAMPLING METHOD: NW CORE BARREL

MATERIAL DESCRIPTION
AND NOTES

SHALE, dark gray-brown, moderately weathered, strong

Becomes highly weathered and slightly strong

Becomes severely weathered and weak

-Unconfined compressive strength (Qu) = 4,862 psi

DRILL RIG: GEOPROBE 7822DT
HAMMER: AUTOMATIC HAMMER

CALIBRATION DATE: 5/10/13

ENERGY RATIO (%): 89.3

SPT/
RQD

N₆₀

REC SAMPLE
(%)

ID

(tst)

SPT/

RQD

0

100

RC-1

SPT/

RQD

35

83

RC-2

SPT/

RQD

0

43

RC-3

SPT/

RQD

0

0

RC-4

STATION / OFFSET: 43+03. CL

ALIGNMENT: INDUSTRIAL DR.

ELEVATION: 631.8 (MSL) EOB: 20.0 ft.

COORD: 637171.773 N, 1528835.231 E

GR

CS

FS

SI

CL

LL

PL

PI

WC

GRADATION (%)

ATTERBERG

INST.

ODOT
CLASS (GI)

CORE

CORE

CORE

CORE

EXPLOSION ID
B-008-1-13

PAGE
1 OF 1

NOTES: BORING PERFORMED ON BARGE, WATER LEVEL IN RIVER ESTIMATED AT ELEVATION 639 FEET DURING DRILLING

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NATURAL COLLAPSE

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 10/6/14 11:34 - W:\PROJECTS\PROJECTS F-J\H2530002\22984\GEO\TECHNICAL\LAB\UPDATED.GPJ

PROJECT: HEN-IND-0000		DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT		DRILL RIG: GEOPROBE 7822DT		STATION / OFFSET: 44+26, 13 LT		EXPLORATION ID			
TYPE: NEW ALIGNMENT		SAMPLING FIRM / LOGGER: MSG / N. BRELIJAK		HAMMER: AUTOMATIC HAMMER		ALIGNMENT: INDUSTRIAL DR.		B-009-0-13			
PID: 22984 BR ID: N/A		DRILLING METHOD: NW		CALIBRATION DATE: 5/10/13		ELEVATION: 632.2 (MSL) EOB: 20.0 ft.		PAGE			
START: 6/11/14 END: 6/11/14		SAMPLING METHOD: NW CORE BARREL		ENERGY RATIO (%): 89.3		COORD: 637269.805 N, 1528725.628 E		1 OF 1			
MATERIAL DESCRIPTION		ELEV. 632.2		REC SAMPLE HP		GRADATION (%)		ODOT CLASS (GI)			
AND NOTES		DEPTHS		SPT/ RQD		GR CS FS SI CL LL PL PI WC		INST.			
SHALE, dark gray to gray, moderately weathered, weak to strong		1									
		2		23		95		RC-1			
		3								CORE	
		4									
		5									
		6									
		7				37		100		RC-2	
		8									
		9									
		10									
		11									
		12									
		13				40		100		RC-3	
		14									
		15									
		16									
		17									
		18				65		100		RC-4	
		19									
		20		EOB							

612.2

-Unconfined compressive strength (Qu) = 1,451 psi

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 10/6/14 11:34 - W:\PROJECTS\PROJECTS F-J\H2530002\22984\GEO\TECHNICAL\LAB\UPDATED.GPJ

NOTES: BORING PERFORMED ON BARGE, WATER LEVEL IN RIVER ESTIMATED AT ELEVATION 640 FEET DURING DRILLING
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NATURAL COLLAPSE

PROJECT: HEN-IND-0000		DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT		DRILL RIG: GEOPROBE 7822DT		STATION / OFFSET: 46+43.9 RT		EXPLORATION ID	
TYPE: NEW ALIGNMENT		SAMPLING FIRM / LOGGER: MSG / N. BRELIJAK		HAMMER: AUTOMATIC HAMMER		ALIGNMENT: INDUSTRIAL DR.		B-011-0-13	
PID: 22984 BR ID: N/A		DRILLING METHOD: NW		CALIBRATION DATE: 5/10/13		ELEVATION: 631.3 (MSL) EOB: 10.0 ft.		PAGE	
START: 6/6/14 END: 6/6/14		SAMPLING METHOD: NW CORE BARREL		ENERGY RATIO (%): 89.3		COORD: 637445.066 N, 1528595.585 E		1 OF 1	
MATERIAL DESCRIPTION		ELEV. 631.3		REC SAMPLE HP		GRADATION (%)		ODOT	
AND NOTES		DEPTHS		N ₆₀ ID (tst)		LL PL PI WC		CLASS (GI) INST.	
SHALE, dark brown-gray, moderately to highly weathered, strong to weak -Unconfined compressive strength (Qu) = 4,644 psi		1							
		2		100				CORE	
		3		27					
		4							
		5							
		6							
		7		17				CORE	
		8							
		9							
		10							
EOB		621.3							

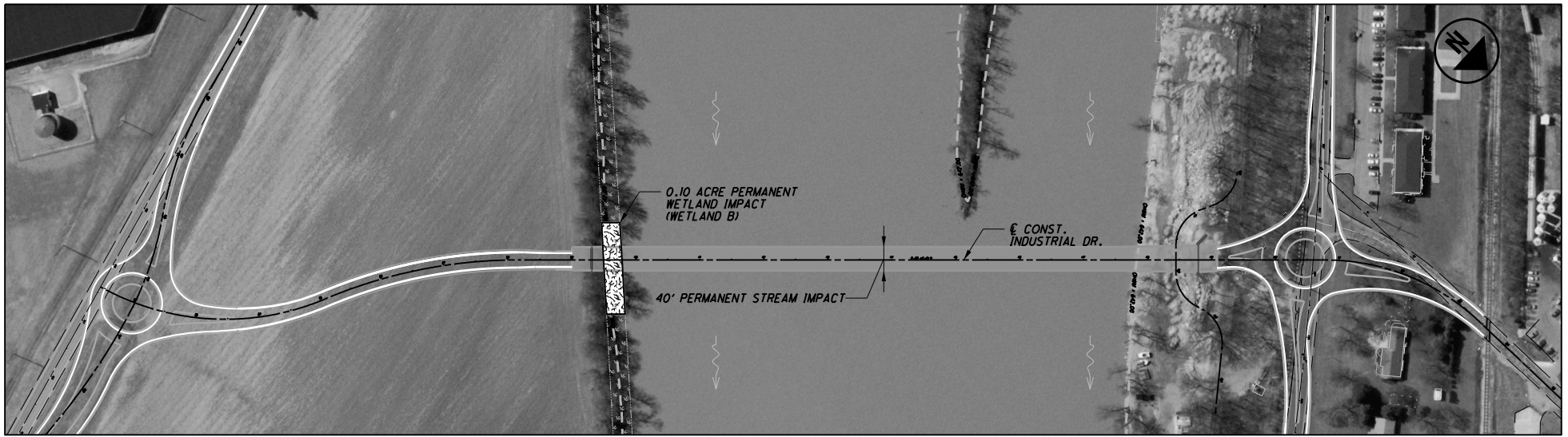
NOTES: BORING PERFORMED ON BARGE, WATER LEVEL IN RIVER ESTIMATED AT ELEVATION 640 FEET DURING DRILLING

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NATURAL COLLAPSE

PROJECT: HEN-IND-0000		DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT		DRILL RIG: GEOPROBE 7822DT		STATION / OFFSET: 48+90. CL		EXPLORATION ID	
TYPE: NEW ALIGNMENT		SAMPLING FIRM / LOGGER: MSG / J. FAITEL		HAMMER: AUTOMATIC HAMMER		ALIGNMENT: INDUSTRIAL DR.		B-0130-13	
PID: 22984 BR ID: N/A		DRILLING METHOD: 4.25" HSA		CALIBRATION DATE: 5/10/13		ELEVATION: 657.7 (MSL) EOB: 4.0 ft.		PAGE	
START: 4/22/14 END: 4/22/14		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89.3		COORD: 637621.240 N, 1528422.325 E		1 OF 1	
MATERIAL DESCRIPTION		ELEV.		REC SAMPLE		GRADATION (%)		ODOT	
AND NOTES		657.7		ID		LL PL PI		CLASS (GI)	
Very loose, brown SANDY SILT , little gravel, trace clay; damp (FILL)									
CONCRETE RUBBLE		655.5		SS-1		-		-	
		653.7							

NOTES: REFUSAL IN CONCRETE RUBBLE AT 4'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: BENTONITE CHIPS; SOIL CUTTINGS

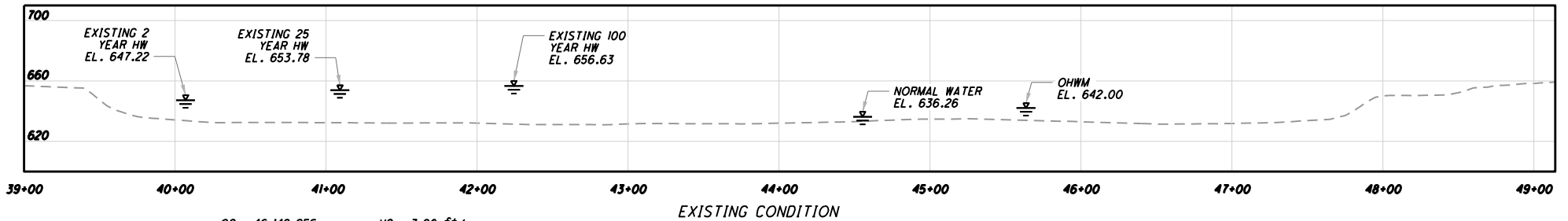
PROJECT: HEN-IND-0000 TYPE: NEW ALIGNMENT PID: 22984 BR ID: N/A START: 4/22/14 END: 4/22/14			DRILLING FIRM / OPERATOR:MSG / R. SCHIPPERT SAMPLING FIRM / LOGGER: MSG / J. FAITEL DRILLING METHOD: 4.25" HSA / NW SAMPLING METHOD: SPT/ST/NW CORE BARREL			DRILL RIG: GEOPROBE 7822DT HAMMER: AUTOMATIC HAMMER CALIBRATION DATE: 5/10/13 ENERGY RATIO (%): 89.3			STATION / OFFSET: ALIGNMENT: INDUSTRIAL DR. ELEVATION: 650.5 (MSL) EOB: 30.0 ft COORD: 637577.840 N, 1528462.050 E						EXPLORATION ID B-013-1-13 PAGE 1 OF 1												
MATERIAL DESCRIPTION AND NOTES						ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC SAMPLE (%)	ID	HP (tsf)	GRADATION (%)						ODOT CLASS (GI)								
						650.5							GR	CS	FS	SI	CL	LL	PL	PI	WC	INST.					
<div>TOPSOIL</div> <div>Loose, brown SANDY SILT, some clay, trace organics; damp</div> <div>Medium stiff, dark brown SILT AND CLAY, some sand; damp</div> <div>Very soft to soft, dark brown SILTY CLAY, trace sand; moist</div> <div>Soft to medium stiff, brown mottled with gray SILTY CLAY, trace sand; moist</div> <div>Soft, brown SILT, some clay and sand; wet</div> <div>Hard, brown SILT, some clay and sand; wet</div> <div>SHALE, dark brown to brown, slightly to moderately weathered, thinly laminated, weak to moderately strong</div>						650.2																					
							1																				
							2																				
							3																				
							4																				
							5																				
							6																				
							7																				
							8																				
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							29																				
	30																										



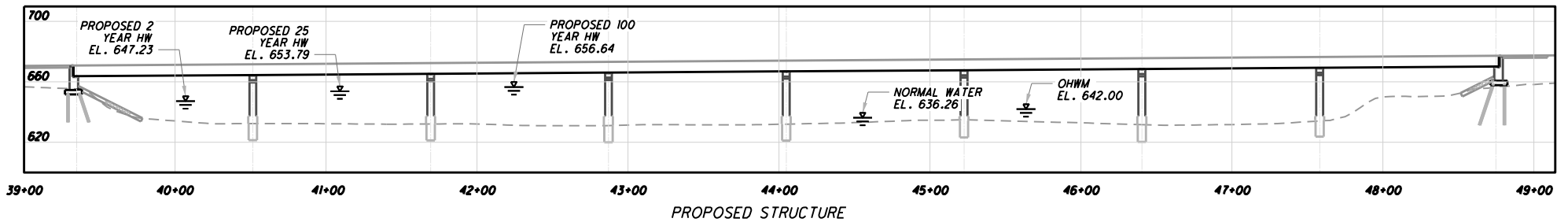
LEGEND:

- EXISTING WETLAND
 - WETLAND IMPACT
 - OHWM = 642.00

Q2 = 46,142 CFS
 Q50 = 87,780 CFS
 Q100 = 110,100 CFS
 V2 = 3.87 ft/s
 V50 = 5.00 ft/s
 V100 = 5.49 ft/s



Q2 = 46,142 CFS
 Q25 = 87,780 CFS
 Q100 = 110,100 CFS
 V2 = 3.90 ft/s
 V50 = 5.04 ft/s
 V100 = 5.54 ft/s



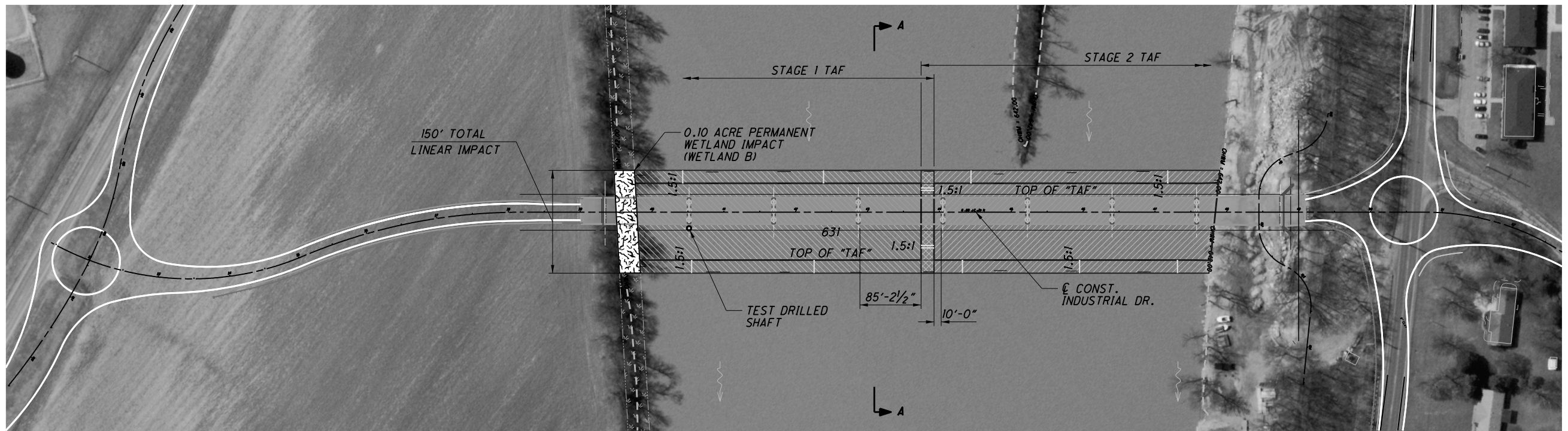
1800 INDIAN WOOD CIRCLE
 MAUMEE, OHIO 43537

PROPOSED MAUMEE RIVER CROSSING
 PLAN AND PROFILE
 HEN-INDUSTRIAL DRIVE-0000

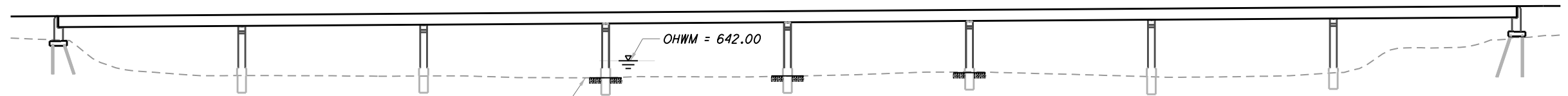
NOTES:

NOT TO SCALE

W:\Projects\Projects F-J\H2530002\22984\structures\HENIND_0000\Sheets\TEMP_ACCESS_FILL_001_Eco_DGN 11/6/2015 12:33:31 PM



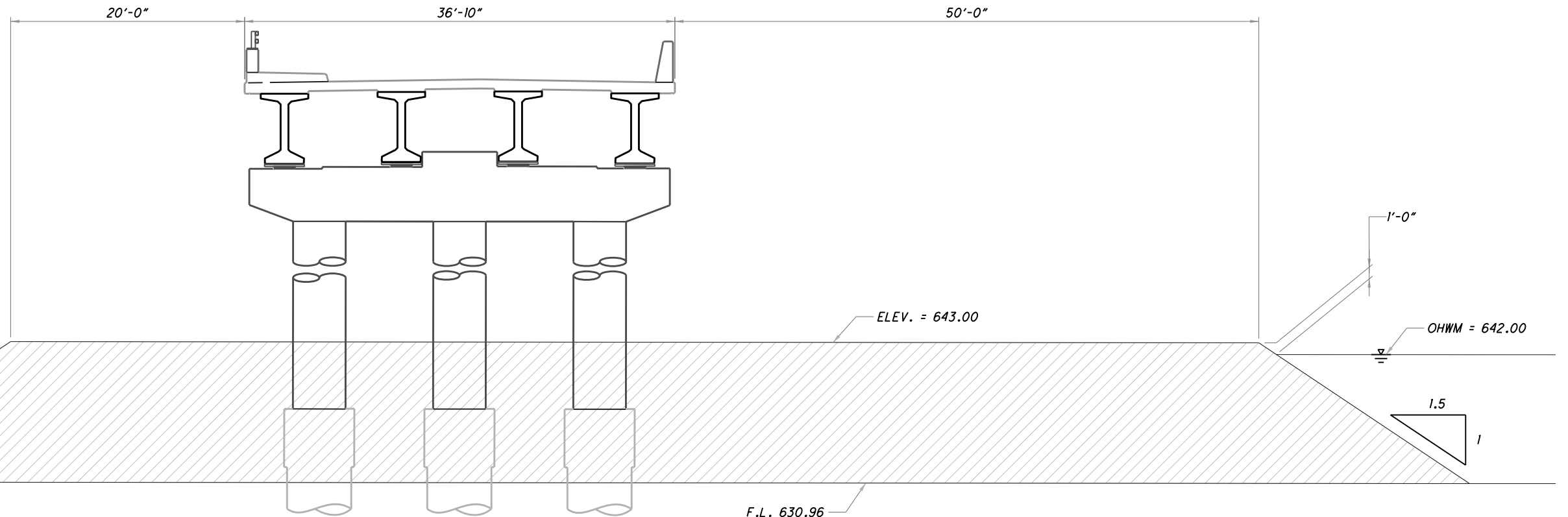
PLAN



PROFILE

LEGEND:

- EXISTING WETLAND
- PERMANENT WETLAND IMPACT
- OHWM = 642.00
- F.L. = FLOW LINE ELEV.
- TEMPORARY ACCESS FILL



SECTION A-A

THE TEMPORARY ACCESS FILL SHALL ACCOMMODATE A FLOW RATE (Q) EQUAL TO TWICE THE HIGHEST MEAN MONTHLY FLOW SUCH THAT THE BACKWATER ELEVATION DOES NOT EXCEED THE OHWM. Q FOR THIS LOCATION IS 18,220 CFS.

Ecological Impacts	December 2014 ESR 2	September 2015 ESR 2	January 2016 ESR 2
Temporary impacts to streams	no temporary impacts	143 linear feet	150 linear feet
Permanent impacts to streams	210 linear feet	36 linear feet	40 linear feet
Temporary impacts to wetlands	no temporary impacts	no temporary impacts	no temporary impacts
Permanent impacts to wetlands	0.12 acre	0.12 acre	0.10 acre
Tree impacts	1	5	5

Golnick, Phoenix

From: Staron, Christopher
Sent: Tuesday, April 05, 2016 10:55 AM
To: Schimmoeller, Stacy
Cc: Golnick, Phoenix; Stormer, Michael; Pettegrew, Michael; Earley, Adrienne
Subject: RE: Upload Notice of Level 2 ESR for HEN-New Bridge (22984)
Attachments: EcologicalImpacts_Table.pdf

Stacy,

This project was coordinated to ODNR, USFWS, OEPA and the Corps on 1/27/2015 based on anticipated impacts of 0.12 acre of a Category 2 wetland and 210 linear feet of the Maumee River. The project May Effect but Not Likely to Adversely Affect the Indiana and Northern long-eared bats. The new impacts to streams and wetland, shown on the attachment, are less than what was coordinated. The bat tree impacts coordinated under the old PA as MANLAA are also consider MANLAA under the new PA. As currently proposed the project will not need to be re-coordinated.

Thanks for the update.

Christopher Staron

Environmental Specialist
Office of Environmental Services
Ohio Department of Transportation
1980 W. Broad Street
Mailstop 4170, 3rd Floor
Columbus, Ohio 43223
(614) 466-5112

Chris.Staron@dot.ohio.gov

**The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ODOT pursuant to 23 USC 327 and a Memorandum of Understanding dated December 11, 2015, and executed by FHWA and ODOT.*

From: Schimmoeller, Stacy
Sent: Tuesday, April 05, 2016 7:21 AM
To: Staron, Christopher <Chris.Staron@dot.ohio.gov>
Cc: Golnick, Phoenix <Phoenix.Golnick@dot.ohio.gov>; Stormer, Michael <Michael.Stormer@dot.ohio.gov>
Subject: FW: Upload Notice of Level 2 ESR for HEN-New Bridge (22984)

Hi Chris,

The HEN-New Bridge Level 2 ESR has been updated again. There have been changes to the impacts as shown in the attached table. I'm not sure if the changes warrant re-coordination or not. What do you think?

Thank you,
~Stacy

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by ODOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 11, 2015, and executed by FHWA and ODOT.

From: Patrick Etchie [<mailto:PEtchie@manniksmithgroup.com>]

Sent: Thursday, February 11, 2016 1:45 PM

To: Schimmoeller, Stacy <Stacy.Schimmoeller@dot.ohio.gov>

Cc: Keith Carr <KCarr@manniksmithgroup.com>; Katie Simon <KSimon@manniksmithgroup.com>; Richard Bertz <RBertz@manniksmithgroup.com>

Subject: RE: Upload Notice of Level 2 ESR for HEN-New Bridge (22984)

Hi Stacy,

Attached is a PDF of the changes from the ESR. I also checked out from the CE online the ESR 2 and added the table to the very last page of the ESR 2. Also, Keith mentioned that to keep in mind the comments received that was recently incorporated into the CE online and PDF of the ESR 2 were coordinated based on the 2014 Version of the ESR 2 that OES reviewed.

Thanks,
Pat

>>> "Stacy.Schimmoeller@dot.ohio.gov" <Stacy.Schimmoeller@dot.ohio.gov> 2/10/2016 11:58 AM >>>

Thanks Pat. I know that the report was revised to include the impacts associated with temporary fill for the causeway, but what exactly changed? Such as ...temp impacts to streams went from X to X? permanent impacts to streams went from X to X? temp impacts to wetlands went from X to X? permanent impacts to wetlands went from X to X? tree impacts went from X to X? OES will ask me as they try to determine if it needs to be re-submitted to the agencies.

Thank you,
~Stacy

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by ODOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 11, 2015, and executed by FHWA and ODOT.

From: Patrick Etchie [<mailto:PEtchie@manniksmithgroup.com>]

Sent: Tuesday, January 26, 2016 6:24 AM

To: Schimmoeller, Stacy <Stacy.Schimmoeller@dot.ohio.gov>

Cc: Keith Carr <KCarr@manniksmithgroup.com>; Katie Simon <KSimon@manniksmithgroup.com>; Richard Bertz <RBertz@manniksmithgroup.com>

Subject: RE: Upload Notice of Level 2 ESR for HEN-New Bridge (22984)

Hi Stacy,

The updated Level 2 ESR has been uploaded to the CE Online program. As we discussed, I have also added to the very end of the report, the last two pages of the PDF are the supplemental figures that were requested that show the Temporary Fill associated with the causeways.

If you should have any questions on the Level 2 ESR, please feel free to contact Keith Carr.

Take care,
Pat

Patrick L. Etchie, AICP
Sr. Project Manager / Grant Strategist
The Mannik & Smith Group, Inc.
419-891-2222 ext. 174
419-266-1519 (Cell)
petchie@manniksmithgroup.com
www.manniksmithgroup.com



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Office of Real Estate
Paul R. Baldrige, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6649
Fax: (614) 267-4764

February 25, 2015

Timothy M. Hill, Environmental Administrator
Office of Environmental Services
Ohio Department of Transportation
1980 West Broad Street
Columbus, Ohio 43223

Attn: Matt Perlik, Mike Pettegrew, Chris Staron

Re: 15-073; ODOT Ecological Coordination for HEN-New Bridge (PID 22984)

Project: The proposed project involves construction of a new bridge spanning the Maumee River, a State Scenic River.

Location: The proposed project would connect State Route 110 and Industrial Drive in the City of Napoleon, Napoleon Township, Henry County.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat

roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior any to cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel. The DOW concurs that a mussel survey/relocation should be conducted prior to in-water construction. ODNR staff members will continue to assist you as needed in designing and implementing the survey and relocations.

The project is within the range of the greater redhorse (*Moxostoma valenciennesi*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat.

The project is within the range of the Blanding's Turtle (*Emydoidea blandingii*), a state threatened species. This species inhabits marshes, ponds, lakes, streams, wet meadows, and swampy forests. Although essentially aquatic, the Blanding's turtle will travel over land as it moves from one wetland to the next. Due to the location, the habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but also is known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. Due to the location, the habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet fields and meadows. Due to the location, the habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the blue-spotted salamander (*Ambystoma laterale*), a state endangered species. Due to the location, the habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species. (Liberty and Washington townships)

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

ODNR appreciates the opportunity to provide these comments. Please contact Brian Mitch at (614) 265-6387 if you have questions about these comments or need additional information.

Brian Mitch
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UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
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Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994



February 4, 2015

Timothy M. Hill, Administrator
Office of Environmental Services
Ohio Department of Transportation
1980 West Broad Street, Mail Stop 4170
Columbus, OH 43223

TAILS PID
03E15000-2015-4-0632 22984

Attn: Michael Pettegrew, Chris Staron

RE: HEN-New Bridge (PID 22984)

Dear Mr. Hill,

This is in response to your January 27, 2015 coordination letter, requesting U.S. Fish & Wildlife Service (Service) review and comment on the **HEN-New Bridge (PID 22984)** project. The project, as proposed, involves the construction of a new bridge spanning the Maumee River and connecting State Route 110 in the south and Industrial Drive in the north portion of the study area. The study area consists of a mixture of residential, public, and commercial land uses within the City of Napoleon, Henry County, Ohio.

FISH & WILDLIFE COORDINATION ACT COMMENTS

The Service understands that the proposed project will result in 210 linear feet of stream impacts due to the construction of seven new bridge piers. We further understand that 0.12 acres of Category II wetland impacts will also occur. We recommend that unavoidable impacts to streams and other important habitats be mitigated. In addition, staging areas should be kept well away from streams and all disturbed areas in the project vicinity should be mulched and re-vegetated with native plant species. The Service supports and recommends mitigation activities that reduce the likelihood of invasive plant spread and encourage native plant colonization that will benefit native pollinators. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats. We recommend seeding all disturbed areas during construction to encourage establishment of vegetative cover and to decrease erosion.

INDIANA BAT (*MYOTIS SODALIS*) AND NORTHERN LONG-EARED BAT (*MYOTIS SEPTENTRIONALIS*) COMMENTS

This project lies within the range of the federally endangered **Indiana bat** and the **northern long-eared bat**, a species currently proposed for listing as federally endangered under the Endangered Species Act (ESA). The project also falls under the 2007 Programmatic Consultation (PC) on the Indiana bat between FHWA/ODOT and USFWS. Based on the information provided in ODOT's Ecological Survey Report (ESR), only 1 tree containing potential roosting habitat for the Indiana and northern long-eared bat will be impacted as a result of the project.

Based on the aforementioned information, this project meets the PC2-a category of impacts under the 2007 PC. Under the PC2 designation, all tree clearing for this project must be conducted only between October 1 and March 31. Implementation of these cutting dates will be protective of both Indiana and northern long-eared bats that may be roosting in the area. Therefore, the Service *concurs* with your determination that this project, as proposed, *may affect but is not likely to adversely affect* these species.

Please note on all projects that involve tree clearing: If an applicant plans to clear trees prior to issuance of a 404 and/or 401 permit: 1) Section 7 consultation with the Service must be completed; and 2) No tree clearing on any portion of the project should occur until both the U.S. Army Corps of Engineers and Ohio EPA anticipate that issuance of both a 404/NWP and a 401 permit authorizing the project as a whole is imminent. This will ensure that clearing will be limited to the footprint of whichever alternative is ultimately permitted, and that no unnecessary clearing will occur.

ADDITIONAL SPECIES AND PROJECT COMMENTS

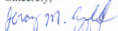
In addition to the Indiana and northern long-eared bat, this project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*), a federal species of concern protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) and the Migratory Bird Treaty Act (16 U.S.C. 703-712). ODOT has determined that this project will have *no effect* on the bald eagle; therefore, consultation under section 7(a)(2) of the ESA is not required.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act, of 1973, as amended, and are consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy. This concludes consultation on this project, as required by section 7(a)(2) of the Endangered Species Act.

Should, during the term of this action, additional information on listed or proposed species or their critical habitat become available, if a proposed species becomes officially listed, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be reinitiated to assess whether the determinations are still valid.

If you have questions, or if we may be of further assistance in this matter, please contact Marci Lininger at extension 27 or Karen Hallberg at extension 23 in this office.

Sincerely,


Jeremy Applegate
Acting Field Supervisor

cc: J. Kessler, ODNR, Office of Real Estate, Columbus, OH (email only)
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