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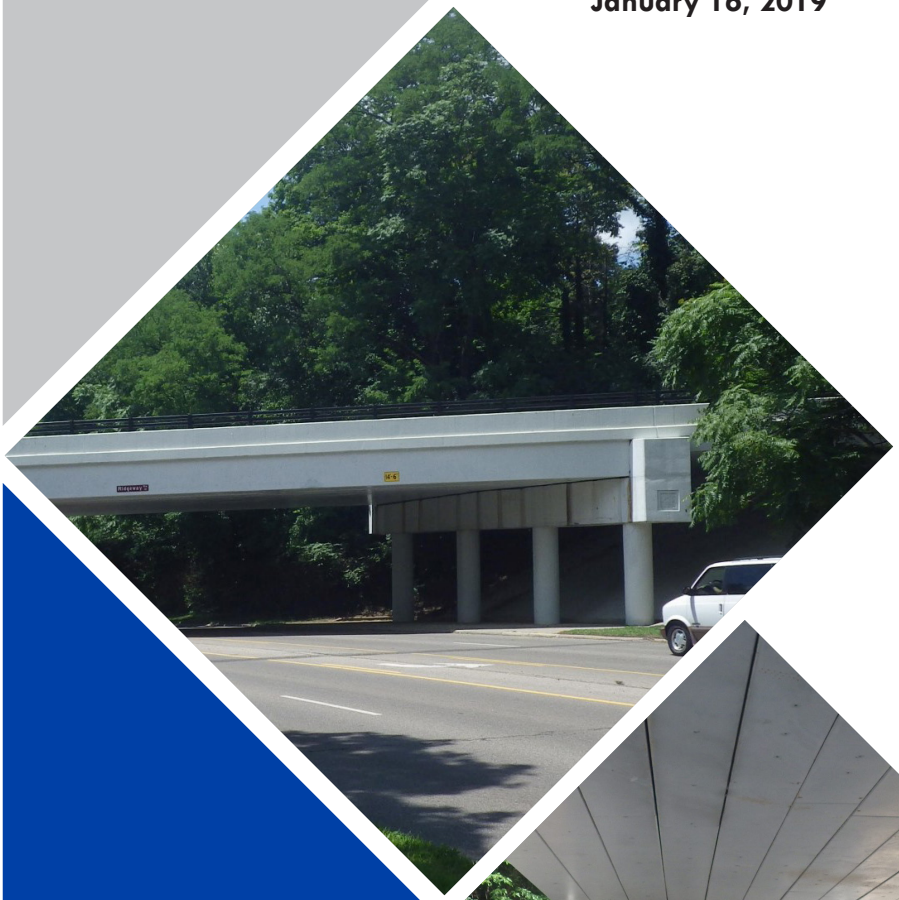
MOT-RIDGEWAY ROAD BRIDGE REPLACEMENT (PID 108706)

Feasibility Study
City of Kettering, Ohio
January 16, 2019



CITY OF KETTERING

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

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APPENDICES

1.0 INTRODUCTION

This study presents alternatives for the rehabilitation and/or replacement of the existing MOT-RDGWY-0136 (SFN 5763096) bridge carrying Ridgeway Road over West Dorothy Lane, located in the City of Kettering, within Montgomery County, Ohio. Ridgeway Road has an ADT of about 900 vehicle per day and will be closed at the bridge site during construction. Impacts to Dorothy Lane will be limited to weekend and nighttime closure due to the approximate 22,000 vehicles per day along this corridor. Alternatives considered will address both final structure type/configuration and roadway profile modifications required to accommodate the proposed vertical clearance increase. The final bridge aesthetics will be coordinated with the City and a consultant Artist and will allow the site to become a destination for the local community and visitors. A map of the project location and study area is presented below.

Location Map and Approximate Construction Limits

Note: *The proposed bridge replacement will feature advanced aesthetics which will be determined with consideration of public involvement and a consultant Artist. These advanced aesthetics are not included or considered as part of the alternative comparison; however, the intent of the project will result in the structure being a highly visible and usable destination during both daytime and night.*

1.1 Project Overview and History

The existing structure was constructed as part of the Dorothy Lane relocation and realignment in 1965, in which Dorothy Lane was realigned towards the north and cut into the hillside approximately 20 feet. This relocation required the construction of a bridge to carry Ridgeway Road over the realigned Dorothy Lane. A non-composite adjacent box beam superstructure was installed in the original construction, which was rehabilitated in 2005 by replacing six deteriorated beamlines and reconstructing the wearing surface, walks, and parapets. Existing record plans for the bridge and recent load rating with load restriction posting sign are provided in **Appendix A**.

The existing structure has advanced deterioration in several of the box beams with spalled and corroded pier caps and columns, resulting in a 47.6 sufficiency rating and recent load restriction posting for emergency vehicles. Increasing the deficient vertical clearance over West Dorothy Lane is also considered in the study. Considering the continued deterioration of the existing structure, the City of Kettering initiated planning efforts in 2016 to evaluate replacement options for the bridge. A Cost Study for a replacement structure with preliminary structure type/configurations was prepared in January of 2017. The low traffic volumes on the existing structure afforded the City the opportunity to consider demolition with no replacement of the structure; however, a thorough public outreach effort was completed by the City in 2017 to determine the community's preference on removing or replacing the existing bridge.

Public mailings and on-line survey information was communicated to approximately 1,000 residents living near the site, communicating the following three (3) potential alternatives for the site:

1) Bridge Replacement for All Modes of Traffic: Demolish the deteriorated existing structure and replace with a new bridge accommodating vehicular, pedestrian, and bicycle traffic restoring the current functionality.
2) Bridge Replacement for Pedestrian and Bicycle Traffic: Demolish the deteriorated existing structure and replace with a new bridge accommodating pedestrian and bicycle traffic only.
3) No-build: Demolish the deteriorated existing structure and cul-de-sac Ridgeway Road on both sides of the bridge.

The findings of the public involvement survey overwhelmingly (72.4% of 805 responses) supported restoration of the current functionality, or demolish and replace with a new bridge which can accommodate vehicular, pedestrian, and bicycle traffic. As a result, the City pursued funding from the Ohio Department of Transportation's (ODOT's) Municipal Bridge Program and was ultimately awarded $2,000,000 in funding for the 2021 funding year (as defined by ODOT).

Initial 2017 Pedestrian Bridge Alternative Rendering (Non-Preferred)

Beyond the replacement of the structure to meet required design parameters and safely accommodate public use, the new bridge will integrate public art and/or aesthetic enhancements into this project. A primary goal of the project is to implement the CitySites Public Art Program with a focus on ***making the proposed bridge a destination for the public and not simply a pass through.*** The art components and final scope of improvements (including the final configurations "at and/or on" the structure) have not been determined at the time of this submittal. Additional public involvement and coordination with the design team and all project stakeholders will be used to finalize all aesthetic and artistic features, and included in the Stage I Design. As noted, these advanced aesthetics are not included or considered as part of the Feasibility Study.

2.0 PURPOSE AND NEED

The purpose of the project is to address the deteriorated condition of the bridge in a manner that maintains mobility for all users while enhancing aesthetics.

Facility Deficiencies: The existing bridge currently has a sufficiency rating of 47.6 and is considered structurally deficient. The bridge has advanced deterioration in several of the box beams with spalled and corroded pier caps and columns. Due to its deteriorated condition, the bridge is posted for load reduction.

The bridge offers substandard vertical clearance of 14.5', with design standard being 15.5'.

Mobility: Public involvement efforts have demonstrated substantial public interest in retaining a transportation connection at this location for all facility users (motor vehicles, cyclists, and pedestrians). Replacement of the bridge allows the bridge to remain an effective component of the regional transportation system while also allowing the bridge to enhance the area's aesthetics and provide a destination for residents and visitor.

Economic Development: Dorothy Lane is a primary entry to the City of Kettering and the City (with public support) seeks to improve the aesthetics and destination appeal of this entryway.

3.0 STRUCTURAL ALTERNATIVES

As described in **Section 1.0**, the existing Ridgeway Road Bridge is in poor condition, has deficient vertical clearance over West Dorothy Lane, and requires significant rehabilitation and/or replacement to ensure continued public safety. Prior public outreach performed by the City, as detailed in **Section 1.1**, considered various solutions at the project site as they relate to the bridge.

Considered site solutions are summarized and supplemented based on their viability as follows:

- **Bridge Replacement for 'All Modes' of Traffic:** **Feasible – Recommended**
- **Bridge Replacement for Pedestrian and Bicycle Traffic:** **Feasible – Not Recommended**; Prior public survey determined that a "multi-modal" structure is desired.
- **No-build:** **Feasible – Not Recommended**; Prior public survey determined that a "multi-modal" structure is desired.
- **Rehabilitation of Existing Structure:** **Not Feasible** – Advanced deterioration of both the superstructure and substructure would necessitate comprehensive and costly rehabilitation. Additionally, the rehabilitated structure would not address the existing sight distance issues at the intersection of Wayside Court and Ridgeway Road. The structure's service life has been achieved and shall be replaced.

** ***Full replacement*** ***of the existing bridge is the only feasible AND recommended solution*** **

3.1 Determination of Bridge Geometry

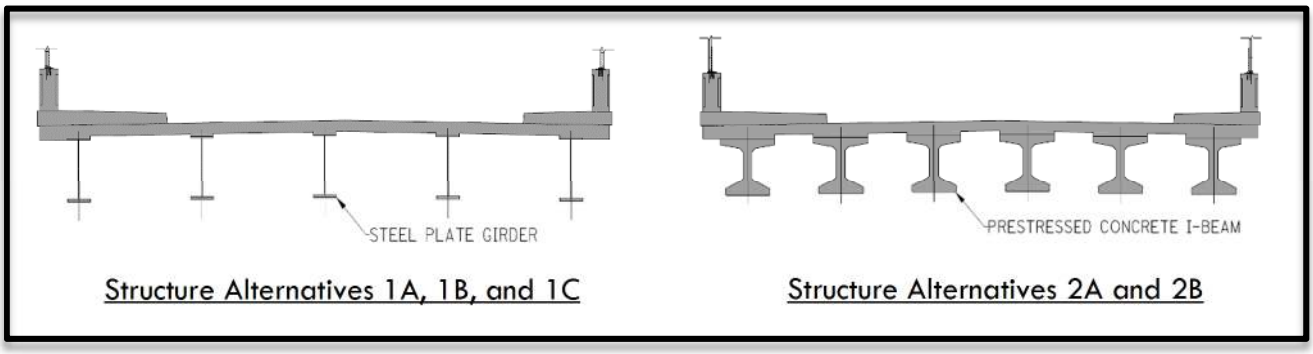
The proposed bridge alternatives and final configurations were developed considering the following constraints:

- Existing Right of Way Limits and Sensitive Historical Properties (to the north)
- Locations of existing critical utility infrastructure
- Roadway design requirements/features on West Dorothy Lane, Ridgeway Road, and Wayside Court
- Pedestrian facility capabilities on the proposed bridge, including future Artistic/Aesthetic input

The following sections of the study detail the development of the bridge alternatives at the project site respective of the above parameters. The structure alternative comparison presents feasible structure solutions considering 'base' level costs and appurtenances. Future coordination will be used to determine the scope and scale of any/all aesthetic and artistic features.

Bridge Typical Section: The bridge typical section considered facilitates two (2) – 13 foot lanes (matching existing), an 8 foot wide sidewalk on the west side of the bridge, and a 5 foot sidewalk on the east side of the bridge. The larger sidewalk (west side) is provided to accommodate resident preferences keeping the scenic westerly view. The 5 foot east sidewalk is provided to meet the minimum walk widths per ODOT's 2007 Bridge Design Manual (BDM), and also accommodate the 25 mph stopping sight distance (SSD) for Ridgeway Road at the intersection with Wayside Court (See **Section 4.3** for additional discussion). The walks at each fascia will be capped with Modified BR-2-15 parapets which are 2'-8" tall and 1'-4" wide, providing

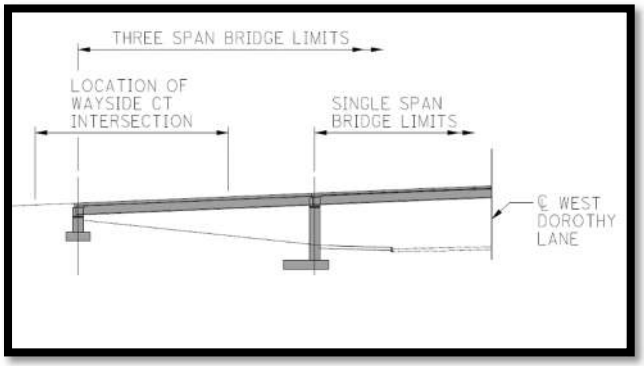
adequate geometry for use of formliners. A vandal fence will be placed atop the parapets at each fascia with future coordination used to determine exact type, height, and geometry.



Typical Transverse Sections Considered

Bridge Length: The span length of the bridge was controlled by the 40 mph (West Dorothy Lane speed limit) clear zone on the north end of the bridge, and the intersection site distance (ISD) at the West Dorothy - Hillside Avenue intersection on the south side of the bridge (See **Section 4.3** for additional discussion). Another consideration for the substructure location design at the northern edge of West Dorothy Lane is the location of an existing 12" diameter high pressure gas pipeline (Vectren); which runs parallel to West Dorothy Lane. Locating substructures to accommodate the ISD to the south and clear zone and utility conflict to the north results in a span length of approximately 115' over West Dorothy Lane - a slight increase, when compared to the existing 102'-8" center span.

Both single and multiple span bridges are feasible and were considered at the site. The existing structure facilitated non-continuous non-composite box beams with 37'-10" end spans, which are disproportionately short when compared to the existing 102'-8" middle span. If typical end span ratios were used (assume 70% of center span), the end spans would need to be about 80' in length based on the required 115 foot middle span mentioned above. These longer end spans would increase the total bridge length by about 90 feet when compared to the existing condition, and would also "move" the rear (south) abutment into the middle of the existing intersection of Wayside Court and Ridgeway Road. Disproportionate spans ratios were considered to limit bridge length, although these configurations require large counterweights (or enlarged diaphragms) to offset uplift forces associated with the structural behavior of the short end spans. This scenario does not limit the roadway work and still requires the relocation of the Wayside Court intersection.



Single vs. 'Conventional' Three-Span Comparison Exhibit

Due to the increased costs, added structural complexities, and potential needed counterweights, the use of a three span bridge layout is not a viable replacement alternative and was removed from consideration. Single span alternatives are considered feasible and are presented in the following section. The one span configuration will reduce the overall length of the structure, meet the required vertical clearance and ISD, and best accommodate existing site constraints.

Wingwall orientations are presented as turn back wingwalls on both sides of the bridge, which require the walls to be constructed parallel to Ridgeway Road. This wall configuration will minimize the overall lateral (east-west) footprint of the proposed structure, enabling the structure to be constructed entirely within the existing 60' right of way. The reduced lateral width is critical to minimize impacts to the north (likely historic) parcels. It is anticipated that temporary work easements will be required during construction to accommodate excavations at the forward (north) abutment. Use of turn back wingwalls at the other (south) corners of the bridge will minimize impacts to adjacent utilities as well as existing landscaped areas. For these reasons, **turn back wingwalls are proposed at all four corners of the proposed bridge.**

3.2 Bridge Abutment and Foundations

The abutment type proposed is a semi-integral wall type abutment. Semi-integral abutments were chosen over standard stub type abutments due to the desire to provide a joint less transition from the bridge deck to the approach slab. This joint less construction nearly eliminates water penetration at the end of the bridge, while limiting long-term corrosion and maintenance efforts at the beam ends and abutment seats.

The use of wall type abutments, in lieu of MSE wall supported abutments, is due to the proposed bridge layout relative to the existing right of way limit on the north end of the bridge. Turn back wingwalls parallel to Ridgeway Road, and adjacent to the existing right of way, are required to minimize overall encroachment. However, the combination of the turn back wingwalls and the 33 degree bridge skew creates an acute angle at the abutment/wingwall intersection – an undesirable feature as referenced in ODOT's 2007 BDM. Acute corners in MSE walls are typically avoided by inserting a second bend point in the wingwall, located such that a full soil reinforcing strap length (= 0.7 * H) is achieved at all wall locations. The configuration results in multiple bend points as shown in an exhibit in **Appendix E**. The lack of acute corners forces the MSE wall alignment onto the adjacent parcel (to the west), creating an undesirable condition. An additional concern of the MSE wall is the placement of an elevated abutment, which is typically supported on driven piles. Discussions with the project geotechnical engineer (Terracon) indicated driving piles at the site would be difficult due to the density of the underlying soils. Considering these items, and the ability to use a reasonably sized spread footing under the wall type abutment, **MSE walls have not been presented for use in the proposed structure.**

Terracon will continue to develop the final geotechnical design parameter/recommendations in support of the Stage I design. To date, Terracon has completed field reconnaissance, laboratory analysis, and has provided preliminary recommendations at the proposed abutments. The preliminary geotechnical report determined the proposed bridge abutments can be supported on a spread footing foundation bearing directly on the dense granular soils located on-site. Preliminary bearing capacities and sliding resistance parameters were used to size the proposed

footings for both bridge alternatives as outlined in the following section. Please see **Appendix D** to review the preliminary geotechnical report provided with this study.

3.3 Structure Alternative 1A, 1B, and 1C – Steel Plate Girder Superstructure

Structure Alternatives 1A, 1B, and 1C facilitate an 8.5 inch thick reinforced concrete composite deck supported on a Grade 50W steel plate girders superstructure. These alternatives use a single 114 foot span and are designed to meet AASHTO HL-93 live loading with a 60 psf Future Wearing Surface. The bridge skew will be similar to the existing condition at 33 degrees - right forward. The protective coating system for the steel will utilize bare weathering steel with an optional IZEU paint system applied to the exterior fascia beams. The final painting limits to be determine in detailed design. To aid in bridge aesthetics, it is anticipated that beam splice will not be proposed – an acceptable condition considering the span length presented. Plate girder configurations considered in the analysis include:

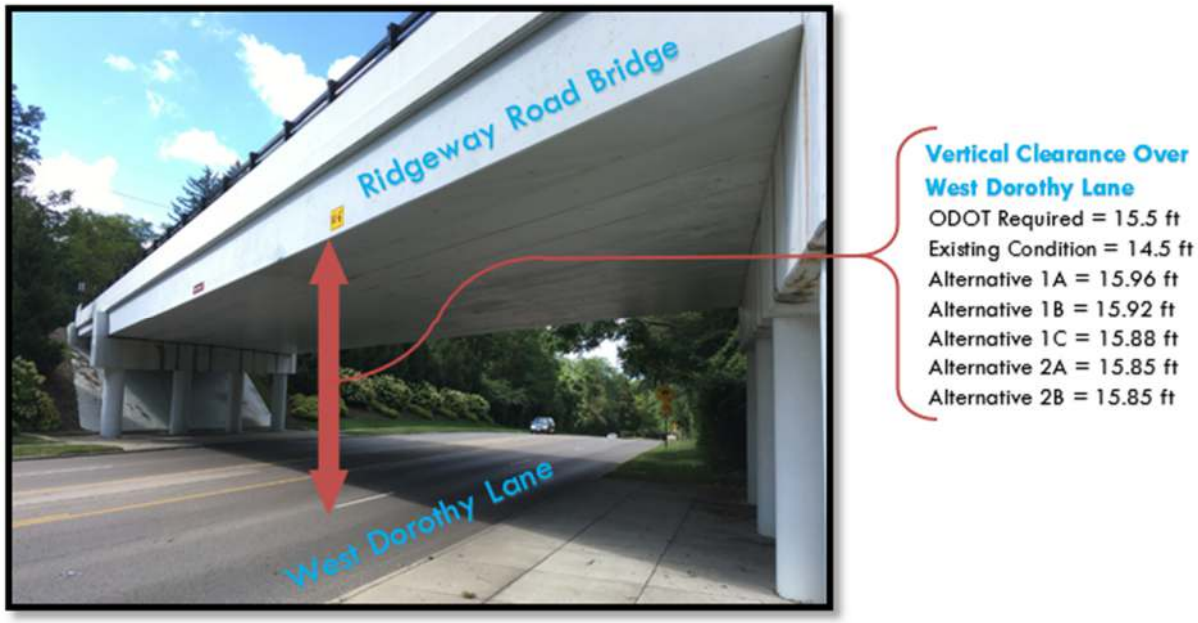
- Alternative 1A: 7 - 29.50" Deep Girders, 40" Superstructure Depth
- Alternative 1B: 5 - 37.25" Deep Girders, 48" Superstructure Depth
- Alternative 1C: 5 - 49.25" Deep Girders, 60" Superstructure Depth

Various beam depths were analyzed to determine the effects of raising the proposed profile of Ridgeway Road compared to the cost of a shallow girder superstructure. Shallower steel girders require more steel weight and more beamlines to achieve adequate capacity, as the structural efficiency of an I-shaped girder decreases as the depth of the girder decreases. Alternately, as the depth of superstructure increases, the girder efficiency increases, allowing for fewer girder lines and reducing steel weights. From the preliminary analysis, the weight of steel increases from 178,900 pounds to 320,000 pounds as the depth of the beam decreases from 49.25" to 29.50".

Similarly, as the depth of beam increases, so does the amount of required roadway profile "increase" to meet the vertical clearance requirements over West Dorothy Lane. The existing vertical clearance is approximately 14'-6", with an existing approximate 45" deep superstructure. With a proposed minimum vertical clearance required of 15'-6", the resulting superstructure depths require profile increases of 7", 15" and 27" from Alternatives 1A through 1C, respectively. In addition to increased roadway costs associated with an increased profile (as discussed in **Section 4.2**), higher profiles create steeper roadway slopes, further complicating tie-in locations to the existing roadway profile.

Preliminary exhibits for proposed Alternatives 1A, 1B, and 1C are presented in **Appendix B**.

Preliminary initial and life-cycle costs for each alternative are presented in **Appendix C**.



3.4 Structure Alternative 2A and 2B – Prestressed Concrete I-Beam Superstructure

Structure Alternatives 2A and 2B facilitate an 8.5 inch thick composite reinforced concrete deck supported on prestressed concrete I-beams. These alternatives use a single 116 foot span and are designed to meet AASHTO HL-93 live loading with a 60 psf Future Wearing Surface. The 33 degree skew of the proposed bridge requires a thicker stem/beam seat to properly embed the wide beam flanges, and results in an increased span length when compared to the steel alternatives. Similar to the steel options, multiple beam shapes were considered in an effort to compare bridge superstructure depth versus roadway profile adjustments. Concrete I-beam configurations considered in the analysis include:

- Alternative 2A: 7 – WF42-49 Beams, 54" Superstructure Depth
- Alternative 2B: 6 – WF48-49 Beams, 60" Superstructure Depth

As outlined with the steel alternatives, concrete beam costs are reduced as the depth of the structure increases. The deeper WF48-49 beams allow for a reduction in the number of beamlines when compared to the shallow WF42-49 beam section. The cost savings of the concrete beams will be compared to the increased cost in roadway profile adjustments (21" and 27"), for Alternatives 2A and 2B, in the following section.

The proposed 116 foot span length of the bridge is near the upper limit of concrete beam design. As such, the required design strengths for the proposed beams have been increased to 7.0 ksi at release, and 9.0 ksi for the final strength. ODOT Bridge Standard Drawing PSID-1-13 details a maximum release and final concrete strengths for the beams as 5.5 ksi and 7.0 ksi, respectively. Although the proposed limits exceed the ODOT Standard Drawing, we have coordinated with a

prestressed concrete I-beam manufacturer and ODOT District 7, whom has each verified these concrete strengths are obtainable and acceptable for use in the proposed structure.

Preliminary plan exhibits for the proposed Alternatives 2A and 2B are presented in **Appendix B**.

Preliminary initial and life-cycle costs for considered alternatives are presented in **Appendix C**.

3.5 Structure Aesthetics

For the purpose of this Feasibility Study, baseline aesthetics have been assumed from a bridge design perspective, including accommodation in the cost analysis. The City was informed by ODOT District 7 that the recently released ODOT Aesthetic Design Guidelines are not applicable to this project. The aesthetics of the bridge are an important piece of the project as the bridge aspires to be a destination within the community. A consultant artist will be used to develop the final aesthetics for the bridge, with their input being available following this submittal. A public involvement meeting will also coordinated to obtain input from the surrounding community. The bridge aesthetics developed by the artist will be implemented into the detailed design phase of the project. The only consideration in the Feasibility Study for the future aesthetics of the bridge is that **steel alternatives (Alternative 1A, 1B, and 1C) have greater potential for aesthetic customization at the superstructure level when compared to the concrete beam alternatives (Alternative 2A and 2B).**

4.0 ROADWAY AND PEDESTRIAN

To increase the vertical clearance of the Ridgeway Road bridge over Dorothy Lane, it is likely the profile will be raised, requiring adjustments to the approach roadway and pedestrian facilities.

4.1 Existing Conditions

The project area can be described as hilly terrain with profile grades up to 8%. Dorothy Lane, which travels under Ridgeway Road, is a principal arterial with a posted speed limit of 40 mph. Ridgway Road is a local road with a posted speed of 25 mph, designated as an on-street bike route within the Kettering bikeway system (Route K3). Other local roads affected by this project include Wayside Court and Hillside Avenue.

*(Please reference **Section 1.1** of this report for additional history of the project area, including the development of the bridge replacement alternatives.)*

4.2 Roadway

The majority of pavement replacement will occur on Ridgeway Road, and will match existing conditions where feasible. The current typical section will be matched in the proposed condition, providing 26 feet of pavement between the face of curb on each side. The existing curb and gutter within the project limits will also be replaced.

As mentioned in the previous section, the project terrain is hilly with roadway profile grades exceeding 5 %. The existing grade of Ridgeway Road is approximately 3.1 %, with an existing vertical clearance over Dorothy Lane of approximately 14.5 feet. The future improvements will increase the vertical clearance to 15.5 feet minimum (per ODOT L&D, Fig 302-1E). Improving the vertical clearance is achieved with the inclusion of a new crest vertical curve, including increased grades along Ridgeway Road (as presented in **Appendix F**). The final Ridgeway

profile grade will vary depending on the selected bridge option. As discussed in the structure sections, there are multiple alternatives of the bridge beam types that produce different superstructure depths, with resulting profile adjustments along Ridgeway Road.

A proposed profile was designed for each of the superstructure depths examined in the structure sections. Expected grades of the new bridge will be vary from 4.8 % to 3.8 % as the larger (or deeper) the superstructure depth, the steeper the resulting profile grade for Ridgeway Road. Profile grades for the larger superstructure depths can be reduced, although will require extending the pavement replacement and project limits further south along Ridgeway Road. For the purposes of this study, it was assumed the proposed profile would meet the existing grade at the same location for the 48" to 60" superstructure options; just south of the intersection with Wayside Court. The roadway improvements associated with these options are referred to as "**Alternative 1**" in the remainder of this report and exhibits. The 40" superstructure option is referred to as **"Alternative 2"**, which provides reduced pavement replacement/work limits and achieves the 15.5 foot vertical clearance. Preliminary plan and profile exhibits are presented in **Appendix F.**

4.3 Sight Distance and Clear Zone

In the design of the Ridgeway Drive Bridge replacement, sight distance (stopping and intersection) for vehicles is a major contributor to the final design. Per the ODOT Location and Design Manual (L&D), stopping sight distance (SSD) is the cumulative distance traversed by a vehicle from the instant a motorist sights an unexpected object in the roadway, applies the brakes, and is able to bring the vehicle to a stop. Intersection sight distance (ISD) is the distance a motorist should be able to see other traffic operating on the intersecting roadway in order to enter or cross the roadway safely, and to avoid or stop short of any unexpected conflicts in the intersection. The ODOT L&D Manual Section 200 states, "…intersection site distance should be provided at all intersections. If intersections sight distance cannot be provided due to environmental or right-of-way constraints, then as a minimum, the stopping sight distance for vehicles on the major road should be provided."

For the intersection of Wayside Court and Ridgeway Road, ("Sight Distance Exhibit" per **Appendix F**) the stopping sight distance and intersection distance for a 25 mph design were analyzed. If the selected Ridgeway Road Bridge design has a 5 foot wide sidewalk on the east side of the bridge, then the stopping sight distance is achieved. However, the intersection sight distance is not achieved, as the driver at the stop line would have their vision impaired by the eastern parapet. If the east sidewalk is 8 foot wide, the driver's eye would not be blocked by the structure, and the intersection sight distance would be acceptable for a 25 mph design. If the eastern walk remains at the minimum 5 foot width (per the exhibit), the southern approach slab will need to be widened, including tapering the parapet to ensure the barrier will not "block" the sight line required for the 25 mph SSD.

For the intersection of Hillside Avenue and Dorothy Lane ("Sight Distance Exhibit" per **Appendix F**), the existing condition fails for both stopping sight distance and intersection sight distance for the 40 mph design. This is due to the piers at the Ridgeway Road bridge including the hillside/landscaping along the south side of Dorothy Lane. In the proposed condition, the south bridge abutment will be designed to avoid encroachment of the sight triangle for the 40 mph ISD. Additionally, with the piers and landscaping removed, the intersection sight distance will be

improved the existing condition. It is important to note, the existing vertical curve/roadway stopping sight distance on Dorothy Lane meets 40 mph SSD (which meets minimum recommended standards) and controls the maximum sight distance the project can achieve. Improving the vertical aspect of the intersection sight distance would involve lowering of Dorothy Lane and major reconstruction, which is not within the scope or funding for these improvements.

Note: *On the north side of Dorothy Lane, the proposed location of the bridge abutment will be located outside of the 40 mph clear zone (minimum 15 feet) from the edge of traveled way, improving the safety for westbound vehicles.*

4.4 Pedestrian Access

Sidewalk exists along the south side of Dorothy Lane, although does not connect to Hillside Avenue or Wayside Court. Sidewalk is also present on the south side of Wayside Court, providing a connection to Ridgeway Road. Existing and proposed pedestrian conditions can be found in the "Pedestrian Access Exhibit" presented in **Appendix F**.

Pedestrian facilities such as sidewalk and curb ramps will be replaced where impacted in the project area and upgraded to meet ADA standards. With a focus on creating a destination at the site, a new sidewalk will be provided on the north side of Wayside Court to accommodate increased pedestrian traffic connecting Ridgeway Road to Hillside Avenue and Dorothy Lane. Efforts will be made to provide a max 5% running slope along the sidewalk, however, due to the existing profile of Wayside Court (which exceeds 5% on the east end), a portion of the walk may exceed 5% as well, but will be minimized where feasible.

Due to the lack of sidewalk along Ridgeway Road, walks will be installed on the south side of the bridge (within the pavement replacement limits) to provide pedestrian connections from the bridge to Wayside Court. This project will also provide a new crosswalk just south of the bridge on Ridgeway Road. The profile grade increases should be considered with respect to this crossing when considering the preferred alternative. The steeper the profile grade, the greater the crosswalk cross slope - ultimately decreasing pedestrian comfort. Since Ridgeway Road is a non-stopped condition, a 2% max cross slope is not required for the above mentioned crossing, although from an accessibility standpoint, the flatter the cross slope, the more preferable for the long-term condition.

As previously mentioned, this bridge serves and will continue to serve as a destination for pedestrians and bicyclists, especially with the expected improvements and artwork planned for this location. The increase in pedestrian activity will continue to be an important factor in determining the preferred alternative and developing the final design.

5.0 UTILITIES

As part of the preliminary engineering efforts, the design team reviewed and identified the following utilities within the project area:

- AT&T – North and South Side of Wayside Court, Crossing Ridgeway Road; Underground Lines.
- Charter – 170' North of Dorothy Lane; Underground Line.
- City of Kettering – Six Storm Inlets; (1) Ridgeway Road, (2) north of Dorothy Lane, (2) south of Dorothy Lane, and (2) on Wayside Court.

- Fiber Optic Duct Banks - Three Fiber Ducts are in the project limits; (1) on the south side of Dorothy Lane, and (1) on both the north and south side of Wayside Court. The line on the north side of Wayside Court is in an AT&T owned duct.
- City of Oakwood – 6" water main on the east side of Ridgeway Road and north of Dorothy Lane.
- Cincinnati Bell – Under the bridge on the South Side of Dorothy Lane; Underground Line
- DP&L – Overhead Line along the south side of Wayside Court, crossing Ridgeway Road. A separate underground line is also present (located under Dorothy Lane) crossing to the east of the Ridgeway Road bridge.
- Vectren – Four Lines are present. The first line is a 6" low-pressure steel line along Ridgeway Road; the second is a 2" low-pressure steel line along the south side of Dorothy Lane; the third facility is a 4" low-pressure steel line along Hillside Drive. Lastly, an existing 12" high-pressure steel line follows the north side of Dorothy Lane within the project limits.
- Windstream – Buried facilities along Wayside Court; Underground Line.

The following potential utility impacts are noted:

- City of Kettering – Storm inlets to the north of Dorothy Lane and on Wayside Drive may need to be reconstructed to grade. Fiber Ducts should not be impacted.
- Cincinnati Bell – Line may be impacted by bridge foundations depending upon final foundation locations.
- DP&L – Underground line may be impacted by bridge foundations depending upon final foundation locations.
- Vectren – The 6" low-pressure steel line along Ridgeway Road may be impacted if it is located within the bridge as shown per the record plans. The gas main under Dorothy Lane may be impacted by bridge foundations depending upon final foundation locations.

A color utility exhibit and current utility coordination log are presented in **Appendix G.**

6.0 ENVIRONMENTAL

The following is a summary of environmental resources within the project area and anticipated involvement with those resources under the build alternatives:

6.1 Streams and Wetlands

No streams or wetlands were identified within the project corridor.

6.2 Floodplain

The project is not located within a designated special flood hazard area.

6.3 Threatened and Endangered Species

Montgomery County is within the known habitat ranges of the Indiana and northern long-eared bats, the bald eagle, rayed bean and snuffbox mussels, and the eastern massasauga rattlesnake. The project is also located within the state-identified ranges of Kirtland's snake, the upland sandpiper, the northern harrier, the black-crowned night heron, and Sloan's crayfish.

The project is located within an urban setting, with no streams or wetlands identified within the project limits. All tree removals under the project are expected to be within 100 feet of the edge of pavement. Based on the project's setting, none of the build alternatives are expected to impact suitable habitat for protected species.

6.4 Cultural Resources

Adjacent to the project corridor, there are no National Historic Landmarks, sites listed or known eligible for the National Register of Historic Places, or sites for which Ohio Historic/Archaeological Inventory forms have been completed.

The project corridor is residential, with a wide range of housing types. Construction dates range from 1915 to 1938. Three of the homes on the north side of Dorothy Lane, constructed in the 1920s, may be considered part of Country Place movement. Additional consideration for impacts to historic properties will be required for any build alternatives that will result in acquisition from properties within the corridor.

6.5 Recreational Section 4(f)/6(f) Resources

There are no public parks, nature preserves, or wildlife refuges within the project limits. The project is located in proximity to the Hills and Dales MetroPark, which has been partially developed with Land and Water Conservation Funds. None of the build alternatives will have direct involvement with the park. Park users south of Dorothy Lane that currently utilize Ridgeway Road will be detoured during construction under all of the build alternatives.

6.6 Drinking Water Resources

The project is not located within the boundaries of a designated sole source aquifer or source water protection area. The project area is served by public water. None of the project's build alternatives are expected to impact drinking water resources.

6.7 Farmland

The project is located entirely within an urbanized area and does not require coordination under the Farmland Protection Policy Act. Additionally, acquisition under this project will not exceed the coordination thresholds of ORC 929.05.

6.8 Regulated Materials

No properties of concern were identified within the project area.

6.9 Underserved Populations

US Census data indicate the following percentages of underserved populations within the corridor. No relocations will be required under the build alternatives and right-of-way acquisition from private properties will be limited to narrow strip right-of-way. Under all build alternatives, the project is not expected to result in disproportionate or adverse impacts to underserved populations.

Block Group	% Population by Block Group*
Minority	5 to 17
Low-Income	12 to 31
Limited English Proficiency	0 to 3
Elderly	15 to 33
Disabled*	10 to 17
*Disabled percentages are 2015 ACS 5-Year Estimate by Census Tract	

During early public involvement efforts, many residents noted the importance of the bridge as a connector between Kettering and Oakwood. Permanent removal or closure of this bridge could create a barrier between communities. If this alternative is selected, an analysis of impacts to underserved populations will be required.

6.10 Public Involvement

In 2017, the City of Kettering undertook extensive public outreach to determine how area residents utilize the bridge and whether the bridge is a needed component of the regional transportation system. Public response indicated a strong desire to keep this bridge, which provides a safe crossing over Dorothy Lane for motorists, cyclists, and pedestrians. Many respondents noted that the bridge is an important connector between the Kettering and Oakwood.

The City will undertake additional public outreach as the project proceeds through the project development process.

7.0 RIGHT OF WAY

The existing structure and roadway features are currently located within City of Kettering right of way. The design intent aims to construct all proposed work within the same limits, thus avoiding acquisitions. As discussed in **Section 1.1**, Dorothy Lane was realigned as part of the 1965 project resulting in a large amount of right of way along the south side of the project. The north end of the project site consists of a 60' right of way encompassing the roadway centerline. The City's roadway right of way is flanked by likely historic properties which are considered to be a sensitive asset and should not be disturbed.

As detailed in the exhibits contained in **Appendix B**, and stated above, the proposed structure will be constructed within the limits of the existing right of way. Turn back wingwalls at the bridge abutments will retain any and all roadway embankment from encroaching onto adjacent parcels in the final condition. Although permanent takes are not anticipated, the construction efforts will require temporary easements for work outside of the existing right of way due to the construction of the bridge foundations below grade. These impacts will be coordinated through the environmental process.

A preliminary right of way plan exhibit considering worst case impacts is included in **Appendix I.** Impacts will be further refined / reduced during final design, including the use of temporary shoring to minimize the excavation foot print at the forward abutment foundation, and through continued coordination with the City and ODOT District 7 as required.

8.0 MAINTENANCE OF TRAFFIC

Maintenance of Traffic (MOT) plans will be provided to detail a full closure of the Ridgeway Road bridge. Vehicular and pedestrian traffic will be prohibited through the site for the duration of the bridge work. The MOT plans will include closure details, including signage and barricades, as well as a detour signage plan for Ridgeway Road (pending approval from the City). The Ridgeway Road detour route will utilize Peach Orchard Road, Far Hills Avenue (SR-48) and Winding Way. As a result of the profile change on Ridgeway Road, Wayside Court will also be closed to complete pavement replacement. This area can also be utilized as a staging area for the Contractor, if needed.

West Dorothy Lane traffic (below the structure) will be maintained for the majority of the project. However, impacts to West Dorothy Lane travel lanes are expected and will be addressed in the plans. The MOT general notes will permit right lane closures throughout the duration of construction, and will also allow short-term nighttime closures for overhead work. The sidewalk along the south side of West Dorothy Lane will be closed between Big Hill Road and Hillside Avenue.

Ridgeway Road also serves as Route K3 within the City's bikeway network, and is the only grade-separated crossing of West Dorothy Lane in the area. As there is not a safe bike detour route in the vicinity, plans will specify that Route K3 be temporarily closed. Bike route closure signage will be provided in the plans, and the notes will require the Contractor to coordinate the closure with the City of Kettering. This notification will require public notification through the "Bike Kettering" page on the City of Kettering website.

9.0 KEY PARAMETERS

The following elements were established to compare the alternatives including structural design considerations, roadway modifications, and construction cost containment. Additional key factors associated with maintenance of traffic, right of way needs, utility impacts, and environmental analysis were also provided as secondary elements. The "Alternatives Matrix" provided on page 17 of the study provides a graphical representation of the findings, including benefit(s) versus cost.

Structure Design Considerations: The structural options were evaluated using the categories presented below. Supplemental exhibits for each alternative is presented in **Appendix B**.

- **Vertical Clearance:** Preference will be given to rehabilitation alternatives that improve the provided vertical clearance over West Dorothy Lane to meet 15'-6". *Note: Preference will be given to steel structures over concrete considering their relative ease of repair in the event of future damage.*
- **Long-Term Maintenance:** Alternatives which provide less long-term maintenance efforts and costs will be also be given preference. For the considered alternatives, the primary driver for added maintenance cost is associated with painting of steel superstructures where applicable.
- **Ease of Aesthetic Accommodations:** As the structure and project site will be a destination in the future condition, and due to unknowns regarding the final aesthetics and artistic features to be included, preference is given to structural steel systems which can more easily accommodate complex framing needs.

Roadway Design: The roadway improvements were evaluated as to accommodate the considered structure alternatives, existing site, and to meet the vertical clearance over West Dorothy Lane. Supplemental exhibits for each alternative are presented in **Appendix F**.

- **Profile Modification:** Preference will be given to alternatives that minimize the required roadway profile modifications.
- **Roadway Impacts:** Project construction limits and impacts that minimize the total amount of work to be performed will be given preference.
- **Longitudinal Slope:** Increased longitudinal roadway slope will decrease user comfort due to the 'steepness' of the new structure. Flatter longitudinal slopes in the final condition are preferred.

Construction Cost Containment: Minimizing construction costs for the complete project is a critical factor when assessing the various alternatives (i.e. structures and roadway). Costs opinions for structure and roadway alternatives are presented in **Appendix C**.

Maintenance of Traffic (MOT): The MOT scheme chosen will be the same for all proposed structure alternatives and is not a critical item for selection, as outlined in **Section 8.0**.

Right of Way Requirements: Permanent right of way impacts are not anticipated with any of the considered bridge alternatives; however, temporary work agreements will be required to accommodate foundation excavation limits. Refer to **Section 7.0** and **Appendix I** for additional details and a Preliminary ROW Exhibit.

Utility Impacts: Impacts to existing utilities at the project site will be the same for all considered alternatives. Impacts to nearby storm, water, and gas facilities are anticipated based on the preliminary assessment. Efforts will be made to minimize or eliminate impacts where possible as the design is advanced, as outlined in **Section 5.0.** Utility owner correspondence has been initiated as part of the Feasibility Study preparation, as outlined in **Appendix G**, and will continue through all phases of design.

Environmental Analysis: Due to the scope of work and project location, no sensitive environmental red flags are identified; however, it should be noted that potential historic parcels exist to the north of the project site and encroachment within their respective right of way may require additional efforts. Impacts for all considered alternatives is the same and no differentiation exists.

10.0 COMPARISON OF ALTERNATIVES

All of the structural alternatives considered for the replacement of the existing Ridgeway Road bridge over West Dorothy Lane provide an improved condition with a long service life, and achieve the 15'-6" required vertical clearance. Alternative 1A requires the least amount of roadway modification due its shallow (40") superstructure depth. Alternative 1B and 2A provide median profiles raises; while Alternative 1C and 2B require approximately 27" of profile adjustments over the existing condition.

Structure costs and overall project costs are similar with the percent differences being less than 10 % for all considered alternatives. Steel girder Alternative 1A is the most costly with the remaining steel alternatives being a higher cost when compared to the matching superstructure depth concrete beam alternative. Initial construction and long-term costs for each structure alternative is presented in **Appendix C**.

> ***Note:*** *Project conditions associated with MOT, Right of Way, Utility Impacts, or Environmental were included in the recommendation of the preferred alternative, as each alternative is similarly and minimally impacted.*

Please reference the alternatives matrix provided on the following page for a graphical summary of the various alternatives and associated benefits/costs.

					Key Comparison Items													
	Structure Alternative		Roadway Alternative		Structural Design			Roadway Design			Preliminary Costs ($M) ***							
	Alt Number	Description	Alt Number	Description	Vertical Clearance	Long-term Maintenance	Ease of Aesthetic Accommodation	Profile Modification	Roadway Impacts	Longitudinal Slope	Structure *	Roadway, MOT/ Traffic Control/ Street Lighting, and Incidentals*	Total	% Difference vs. Maximum	Maintenance of Traffic	ROW Impacts	Utility Impacts	Environmental Analysis
Steel Girder Alternatives	1A	Single 114' Span, 7 - 29.5" Deep (Gr 50W) Steel Girders	2	Lowest Profile Increase due to Reduction in Superstructure Depth	●	○	●	●	●	●	2.32	0.31	2.63	0%	●	○	●	●
	1B	Single 114' Span, 5 - 37.25" Deep (Gr 50W) Steel Girders	1	Medium Profile Increase due to Reduced Superstructure Depth	●	○	●	○	○	○	2.14	0.41	2.55	-3.0%	●	○	●	●
	1C	Single 114' Span, 5 - 49.25" Deep (Gr 50W) Steel Girders	1	Largest Profile Increase as Superstructure Depth Matches Existing	●	○	●	○	○	○	2.06	0.42	2.49	-5.5%	●	○	●	●
Concrete Beam Alternatives	2A	Single 116' Span, 7 - WF42-49 Concrete I-Beams **	1	Medium Profile Increase due to Reduced Superstructure Depth	●	●	○	○	○	○	2.15	0.42	2.57	-2.2%	●	○	●	●
	2B	Single 116' Span, 6 - WF48-49 Concrete I-Beams **	1	Largest Profile Increase as Superstructure Depth Matches Existing	●	●	○	○	○	○	2.10	0.42	2.53	-4.0%	●	○	●	●

● Good
○ Fair
○ Poor

* Costs include 20% contingency and 8.2% inflation. Structure life-cycle costs are not included but can be reviewed in **Appendix C**.
** F'ci = 7 ksi, f'c = 9 ksi
*** Gradient cost comparison shown. **Green is least**. **Yellow is Median**. **Red is Most**.

11.0 CONCLUSION

Structure **Alternative 1B** provides an acceptable industry cost for the replacement bridge. The solution will replace the deficient existing three-span non-composite box beam bridge with a single span composite superstructure facilitating 5 – 37.25" Deep (Grade 50W) plate girders; founded on semi-integral full-height abutments with spread footing foundations. The abutment configuration will limit impacts to adjacent properties and will not require property acquisition, although temporary easements will be required during construction. The vertical clearance increases approximately 1.1 feet over West Dorothy Lane, achieving the 15'-6" minimum required. Profile modifications to Ridgeway Road are limited, allowing for a less "steep bridge" further reducing costs and improving user comfort. **Alternative 1B** has been determined to be the preferred alternative and is recommended to be advanced into the detail design phase of the project.

12.0 NEXT STEPS

The Feasibility Study will be evaluated by the City of Kettering and ODOT District 7, with follow up coordination and finalization of the study completed by the Design Team. The preferred structure type will be approved by the City of Kettering and ODOT District 7 and advanced through detail design.

Prior to development of final right of way and final environmental clearance, a public involvement meeting will be held to allow for public input and to be used to help develop the final aesthetic and artistic components on the structure. It is anticipated that the public involvement meeting will be held in March/April of 2019. A draft version of the public involvement meeting notice has been included in **Appendix H**.

The schedule for the remaining milestone dates are provided below.

Milestone	Commit Date	Actual Date	Baseline Date
Environmental Document Approved	09/06/2019		
Authorized Design Consultant	10/03/2018	10/03/2018	
Stage 1 Plans - Submitted	03/15/2019		
Stage 1 Plans - Complete	04/19/2019		
Stage 2 Plans - Submitted	07/26/2019		
Stage 2 Plans - Complete	09/06/2019		
Final R/W Plans Submitted	06/28/2019		
R/W Authorized	09/06/2019		
Plan Package Received in C.O.	08/26/2020		
Sale	10/09/2020		
Award	10/28/2020		
Estimated Begin Construction	01/04/2021		
Estimated End Construction	11/30/2021		
District R/W Certification	08/20/2020		
Preliminary R/W Plans - Submitted	03/08/2019		
Preliminary R/W Plans - Approved	03/29/2019		
Local Let PS&E Package to District	08/14/2020		
Feasibility Study - Submitted	01/18/2019	01/18/2019	
Feasibility Study - Approved	02/22/2019		
Final R/W Plans - Approved	09/06/2019		
Initial Project Scope Complete	11/19/2018	11/19/2018	

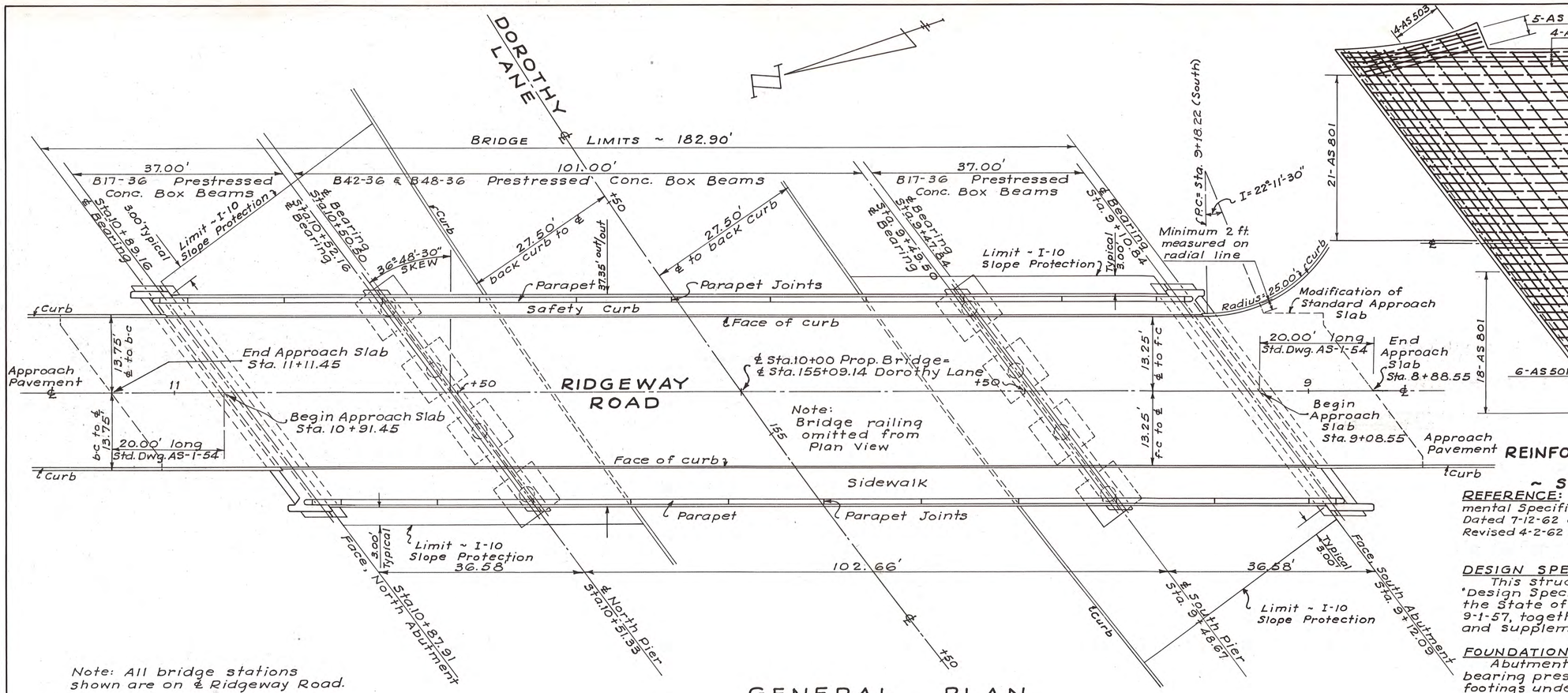
APPENDIX A:

MOT-RDGWY-0136 Existing Bridge Plans and 2019 EV Load Rating Documents

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

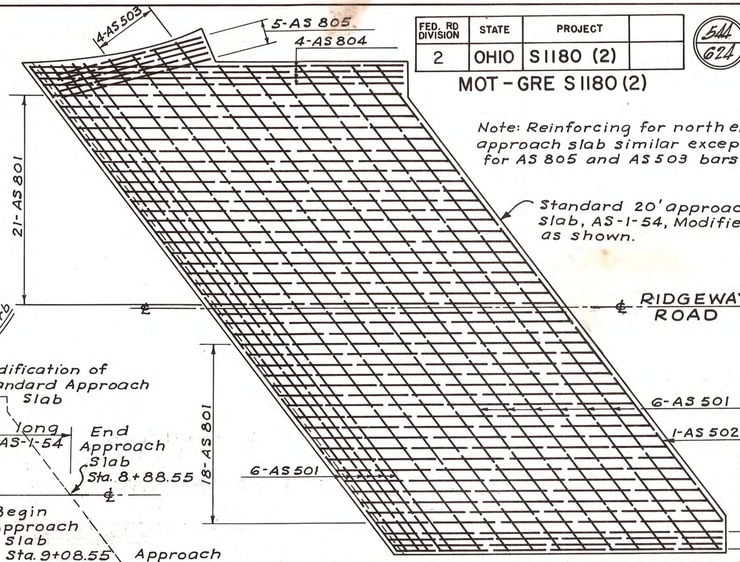
MOT - GRE S1180 (2)

544
624



Note: All bridge stations shown are on ℄ Ridgeway Road.

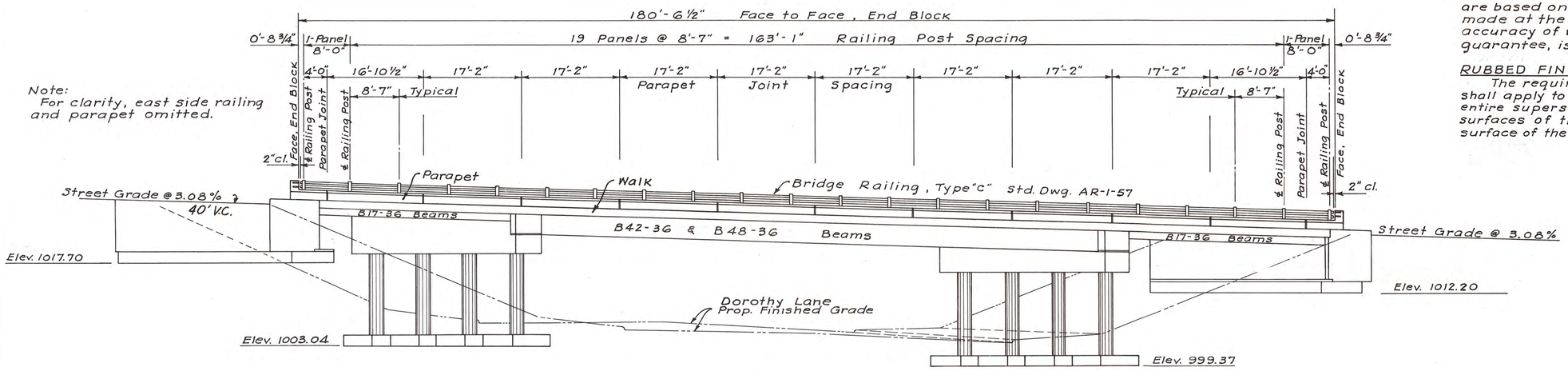
GENERAL PLAN



Note: Reinforcing for north end approach slab similar except for AS 805 and AS 503 bars.

Standard 20' approach slab, AS-1-54, Modified as shown.

REINFORCING DETAIL ~ SOUTH APPROACH SLAB



Note: For clarity, east side railing and parapet omitted.

WEST ELEVATION

~ STRUCTURAL NOTES ~

REFERENCE: Reference shall be made to Supplemental Specifications Nº S-105, Revised 1-22-62 and S-101 Dated 7-12-62 and to Standard Drawings Nº AR-1-57, Revised 4-2-62 and AS-1-54, Revised 7-5-62

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, Dated 9-1-57, together with current revisions thereof and supplements thereto.

FOUNDATION BEARING PRESSURE: Abutment footings are designed for a maximum bearing pressure of 1.55 Tons per square foot and footings under piers for a maximum bearing pressure of 2.92 Tons per square foot. Design bearing pressures under abutments and pier footings were selected as such that will produce estimated negligible settlements. Abutment elevations have been established according to estimated settlements of these structures.

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of soil sampling soundings made at the site. This sounding information, the accuracy of which the State of Ohio does not guarantee, is included in these plans.

RUBBED FINISH The requirements of Sec. S-1.22, Rubbed Finish, shall apply to the exposed concrete surfaces of the entire superstructure and substructure except the surfaces of the prestressed beams and the top surface of the walk and safety curb.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

GENERAL PLAN AND ELEVATION RIDGEWAY ROAD OVER DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	547/624

MOT-GRE S 1180 (2)

PROPOSED STRUCTURE

TYPE: Prestressed reinf. conc. box beams & reinf. concrete substructure.

SPAN: 37'-101'-37' c-c. Bearings

ROADWAY: 26'-6" face/face curbs; 1-5'-0" sidewalk. (West-side) & 2'-3" Safety curb (East side)

DESIGN LOADING: S 15-60

SKEW: 36°-48'-30"

SURFACE COURSE: Asphaltic concrete

APPROACH SLAB: AS-1-54-(20'-0" long)

ALIGNMENT: Tangent

SUPERELEVATION: None

BENCH MARK #13
Arrow on F. Hyd. @ S.E. cor. Dor. La. & Ridgeway Road.
STA. 154+15; 151' Rt.
ELEV. - 1021.29

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

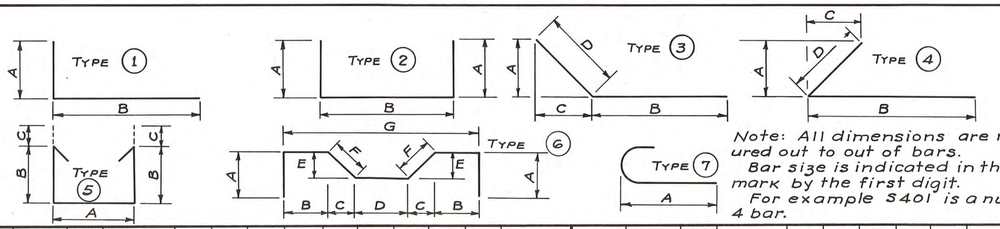
SITE PLAN
RIDGEWAY ROAD OVER DOROTHY LANE

SCALE 1" = 20'

MONTGOMERY COUNTY — DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
J.C.	D.J.A.	P.N.S.	D.J.A.	R.L.B.	

REINFORCING STEEL BAR SCHEDULE



Note: All dimensions are measured out to out of bars.
Bar size is indicated in the bar mark by the first digit.
For example S401 is a number 4 bar.

D= Number of turns = $\frac{B}{C}$ + 3 turns (expressed as nearest whole number)
Note: 1½ closed coils shall be provided at each end of spiral.
Spiral bars shall not have deformations but shall in all other respects conform to Item S-4.
Three steel channel, tee or angle spacers weighing approx. 0.68 lbs per lin. ft. shall be provided for each spiral unit. They shall be equally spaced about the periphery of the coil. The weight of of these spacers is included in the tabulated quantity of spiral bars and shall be paid for as reinforcing steel.

MARK	TOTAL	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	WEIGHT
REINFORCEMENT IN FOOTINGS:													
F501	20	5	26-0	STR.									542
F502	16	5	10-0	STR.									167
F503	124	5	5-8	STR.									733
F504	8	5	4'-6	STR.									38
F505	8	5	2-5	STR.									20
F506	8	5	7-2	STR.									60
F701	112	7	5-2	1	2-0	3-4							1184
F702	64	7	5-0	1	1-9	3-5							654
F801	192	8	8-2	STR.									4188
SUB-TOTAL ~ FOOTINGS													7586
REINFORCEMENT IN ABUTMENTS:													
A 501	9	5	6-2	STR.									58
A 502	9	5	5-3	4	1-7⅛	3-5	1-2¼	2-0					50
A 503	20	5	7-6	STR.									157
A 504	7	5	5-3	3	1-7⅛	3-5	1-2¼	2-0					39
A 505	5	5	8-9	STR.									46
A 506	90	5	5-1½	2	2-4	0-8½							482
A 507	123	5	5-9	2	1-6	3-0							738
A 508	2	5	25-0	STR.									52
A 509	3	5	4-9	STR.									15
A 510	2	5	23-0	STR.									48
A 511	8	5	18-6	STR.									154
A 512	33	5	4-9	1	3-4	1-7							164
A 513	3	5	10-1	3	1-7⅛	8-3	1-2¼	2-0					32
A 514	3	5	6-4	3	1-7⅛	4-6	1-2¼	2-0					20
A 515	2	5	20-3	STR.									42
A 516	10	5	4-2	4	1-7⅛	2-4	1-2¼	2-0					44
A 517	10	5	6-5	STR.									67
A 518	2	5	21-6	STR.									45
A 519	9	5	8-6	STR.									80
A 520	3	5	10-1	4	1-7⅛	8-3	1-2¼	2-0					32
A 521	3	5	7-0	3	3-0	3-5	2-3	3-9					22
A 522	3	5	6-2	4	1-7⅛	4-4	1-2⅛	2-0					20
A 523	6	5	9-4	STR.									59
A 524	9	5	6-8	3	1-7¼	4-10	1-2¼	2-0					63
A 525	5	5	9-6	STR.									50
A 601	48	6	2-0	STR.									●
A 701	7	7	20-7	STR.									295
A 702	7	7	22-7	STR.									323
A 703	7	7	25-3	STR.									362
A 704	7	7	27-3	STR.									390
A 705	1	7	26-0	STR.									53
A 706	1	7	21-7	STR.									44
A 707	42	7	6-6	STR.									558
A 708	18	7	6-3	STR.									230
A 709	10	7	6-0	STR.									123
A 710	11	7	5-9	STR.									130
A 711	7	7	9-4	STR.									134
A 712	2	7	8-5	STR.									35
A 713	4	7	9-7	STR.									79
A 714	6	7	8-10	STR.									109
A 715	6	7	8-8	STR.									107
A 716	26	7	6-9	STR.									359
A 717	1	7	25-6	STR.									52
A 718	1	7	22-0	STR.									45
A 719	7	7	21-6	STR.									308
A 720	7	7	23-6	STR.									337
A 721	7	7	24-3	STR.									347
A 722	7	7	26-3	STR.									376
SUB-TOTAL ~ ABUTMENTS													7375

MARK	TOTAL	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	WEIGHT
REINFORCEMENT IN COLUMNS													
C 601	4	~~6~~	342-3	8	28	14-0	3¾	48				~~1507~~ 2170	
C 602	4	~~6~~	356-6	8	28	14-6	3¾	50				~~1569~~ 2260	
C#5 Use cold drawn or A432 Steel (60000 psi yield)													
C 701	56	7	17-0	STR.									1946
C 702	56	7	17-6	STR.									2003
SUB-TOTAL ~ COLUMNS													8379
REINFORCEMENT IN PIER CAPS:													
PC 501	20	5	5-4	2	2-7	3-0							112
PC 502	18	5	5-7	2	2-10	3-0							105
PC 503	46	5	5-10	2	3-1	3-0							280
PC 504	60	5	6-0	2	3-3	3-0							376
PC 505	144	5	4-9	2	2-0	3-0							714
PC 506	20	5	5-0	1	3-8	1-6							105
PC 507	224	5	2-10	2	1-11	1-2							662
PC 508	24	5	23-5	STR.									587
PC G01	4	6	8-4	2	4-10	3-10							50
PC G02	4	6	9-3	2	5-9	3-10							56
PC G03	8	6	6-9	2	3-3	3-10							82
PC G04	12	6	8-10	1	6-5	1-9							159
PC G05	12	6	8-11	1	7-4	1-9							161
PC G06	96	6	2-0	STR.									●
PC 801	32	8	18-6	STR.									1581
PC 802	16	8	15-9	STR.									673
PC 901	28	9	25-5	STR.									2420
SUB-TOTAL ~ PIER CAPS													7962
REINFORCEMENT IN SUPERSTRUCTURE													
S 401	672	4	4-5½	6	1-2	0-3	0-3	1-7	0-3	0-4¼	2-7		▲
S 402	696	4	4-5½	6	1-2	0-9	0-3	0-7	0-3	0-4¼	2-7		▲
S 403	192	4	4-5	2	1-0	2-7							▲
S 404	168	4	6-3	2	1-11	2-7							▲
S 405	142	4	2-9	STR.									261
S 406	258	4	5-3	2	1-5	2-7							▲
S 407	172	4	1-10	1	0-11	1-0							211
S 408	12	4	34-10	STR.									280
S 409	1052	4	4-6½	6	1-2½	0-3	0-3	1-7	0-3	0-4¼	2-7		▲
S 410	1044	4	4-6½	6	1-2½	0-9	0-3	0-7	0-3	0-4¼	2-7		▲
S 411	639	4	3-7	1	0-6	3-2							▲
S 412	144	4	8-9	2	3-2	2-7							▲
S 413	213	4	4-1	1	0-6	3-8							▲
S 414	48	4	9-9	2	3-8	2-7							▲
S 415	36	4	6-3 To	2	2-1	2-3	To						▲
Series of 5 ea.			4-5			0-5		Vary by 5" increments					
S 416	12	4	6-9 To	2	2-4	2-3	To						▲
Series of 5 ea.			4-11			0-5		Vary by 5" increments					
S 417	318	4	3-3	STR.									▲
S 418	96	4	4-7 To	2	1-1	2-7	To						▲
Series of 6 ea.			2-6			0-6		Vary by 5" increments					
S 419	12	4	4-8	2	1-11								▲
S 420	6	4	4-2	2	1-5								▲

MARK	TOTAL	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	WEIGHT
REINFORCEMENT IN RAILING PARAPET													
R 501	64	5	16-10	STR.									■
R 502	16	5	16-6	STR.									■
R 503	16	5	5-11	STR.									■
R 504	16	5	1-0	STR.									■
R 505	12	5	7-0½	5	0-6½	2-10	0-5						■
REINFORCEMENT IN CONCRETE APPROACH SLAB													
AS 501	28	5	33-10	STR.									▼
AS 502	2	5	31-10	STR.									▼
AS 503	1	5	35-5	STR.									▼
Series of 4 ea.			34-2			Vary by 5" increments							
AS 801	84	8	20-7	7	19-6								▼
AS 802	2	8	20-0 To	7	18-11 To								▼
Series of 4 ea.			19-3		18-2	Vary by 3" increments							
AS 804	2	8	21-10 To	7	20-9	TO							▼
Series of 4 ea.			21-1		20-0								
AS 805	5	8	8-4	STR.									▼
TOTAL REINFORCING STEEL													35,573

*"PARTICIPATION in Bridge Costs"
88.76% - Normal Participation
11.24% - No Federal Participation
(to be borne entirely by the City of Kettering.)

REPLACEMENT BARS

MARK	NO.	SIZE	LENGTH	TYPE	WEIGHT
RE 401	1	4	5-3	STR.	
RE 501	1	5	5-7	STR.	
RE 601	1	6	5-11	STR.	
RE 701	1	7	6-3	STR.	
RE 801	1	8	6-6	STR.	
RE 901	1	9	6-10	STR.	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S 1180 (2)	

MOT-GRE S1180(2)

548
624

NOTE:
Estimated quantity of Asphaltic Concrete, Item T-35, based on average thickness of 3" to allow for camber and creep of Prestressed Concrete Beams. See Typical Sections on Sht. 567
Estimated quantity of Superstructure Concrete, Item S-1, based on maximum width of sidewalk and safety curb shown.

ESTIMATED QUANTITIES*

ITEM	TOTAL	UNIT	DESCRIPTION	SUPSTR.	ABUTS.	PIERS	GNL.
E-2	442	Cu.Yds.	Excavation, Unclassified		242	200	
E-2	Lump	Sum	Cofferdams, Cribs and Sheeting				
S-29	106	Lin.Ft.	6" Corrugated metal pipe, M-6.4(th) non-perforated		106		
S-29	88	Lin.Ft.	6" Corrugated metal pipe, M-6.4(th), including specials		88		
I-10	732	Sq.Yds.	Crushed Aggregate Slope Protection				732
S-1	62.25	Cu.Yds.	Class "C" Concrete Superstructure	62.25			
S-1	86.23	Cu.Yds.	Class "C" Concrete Pier caps and columns			86.23	
S-1	99.43	Cu.Yds.	Class "E" Concrete Abutment Walls		99.43		
S-1	91.43	Cu.Yds.	Class "E" Concrete Footings		48.61	42.82	
S-3	45	Lin.Ft.	Waterproofing, Premolded Sealing Strip		45		
S-3	548	Sq.Yds.	Type "C" Waterproofing	548		~~21359~~	
S-4	~~35219~~ 35,673	Lbs.	Reinforcing Steel	4271	9589	21,713	
S-9	400	Sq.Ft.	1" Preformed Expansion Joint Filler	400			
S-9	76	Sq.Ft.	½" Preformed Expansion Joint Filler	76			
S-14	367.75	Lin.Ft.	Railing (Aluminum Rails & Supports, Concrete Parapet, Type "C.")	367.75			
S-23	144	Lin.Ft.	Dowel Holes		48	96	
S-29	260	Cu.Yds.	Porous Backfill		260		
S-101	63	Each	Water-Reducing, Set-Retarding Admixture	63			
S-105	24	Each	Prestressed Concrete Beams B17-36	24			
S-105	9	Each	Prestressed Concrete Beams B42-36	9			
S-105	3	Each	Prestressed Concrete Beams B48-36	3			
T-35	44.88	Cu.Yds.	Asphaltic Concrete Surface Course, Type C (70-85)	44.88			

LEGEND:

● Bars marked A601 and PC606 are anchor dowels for prestressed concrete beams and are paid for under Item S-105, "Prestressed Concrete Beams."

▲ Bars marked S401, S402, S403, S404, S406, S409, S410, S411, S412, S413, S414, S415, S416, S417, S418, S419, S420, S501 and S505 are to be furnished and embedded in the prestressed concrete beams by the manufacturer, and are paid for under Item S-105, "Prestressed Concrete Beams."

■ Bars marked R501, R502, R503, R504 and R505 are to be included with Item S-14, "Railing" for payment.

▼ Bars marked AS501, AS502, AS503, AS801, AS802, AS803, AS804 and AS805 are to be included with Item I-7 "Reinforced Concrete Approach Slabs."

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

REINFORCING STEEL LIST & ESTIMATED QUANTITIES RIDGEWAY ROAD OVER DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

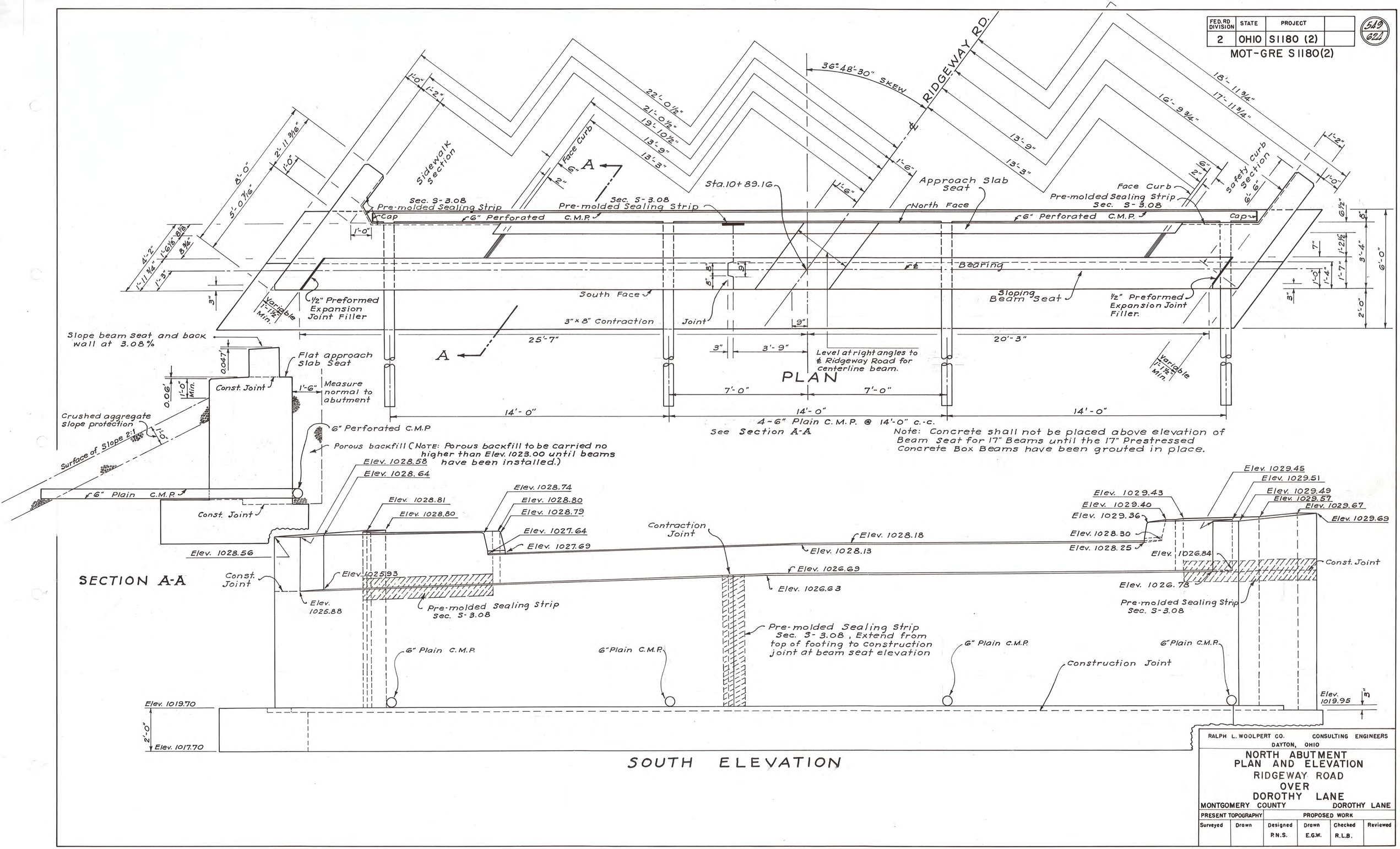
PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.		

Rev. 6/23/65

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180(2)

549
624



RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

NORTH ABUTMENT PLAN AND ELEVATION RIDGEWAY ROAD OVER DOROTHY LANE

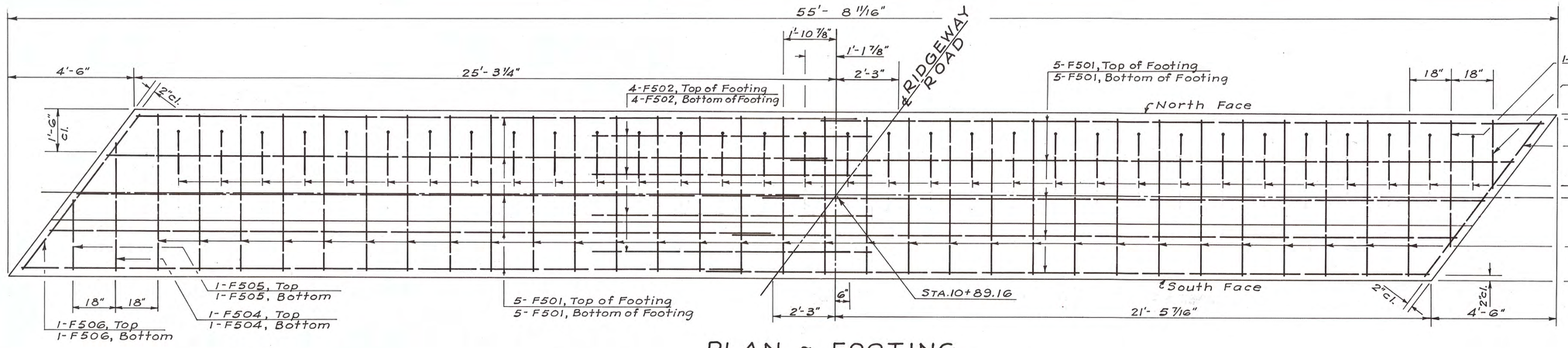
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		R.N.S.	E.G.W.	R.L.B.	

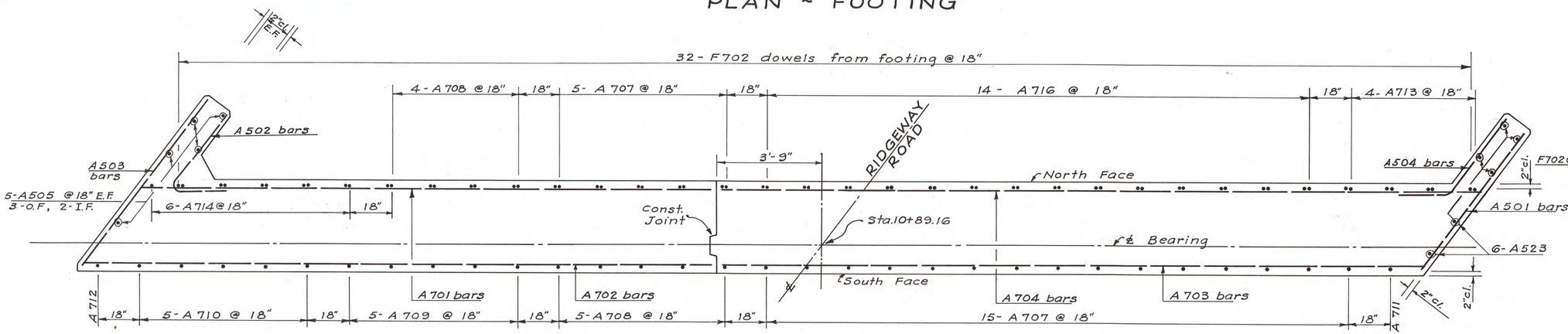
FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

550
624

MOT - GRE S 1180 (2)

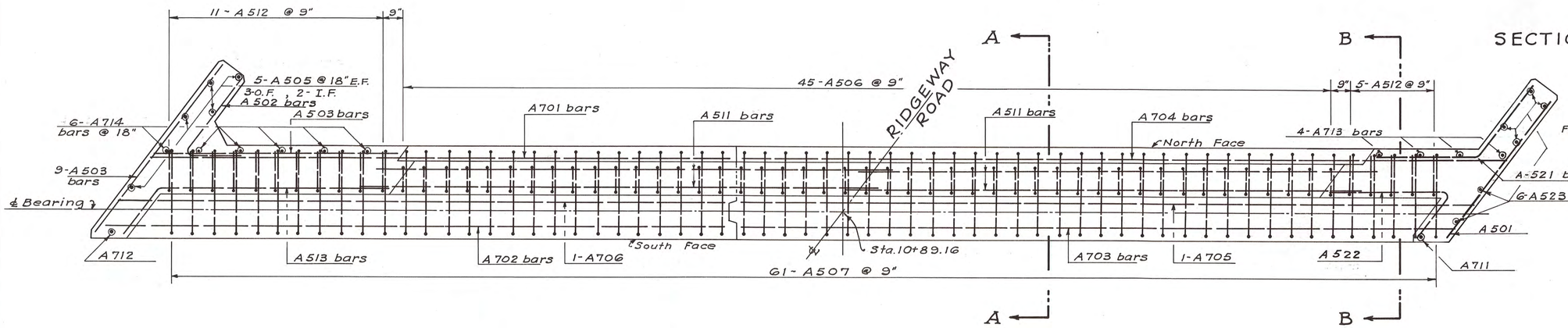


PLAN ~ FOOTING

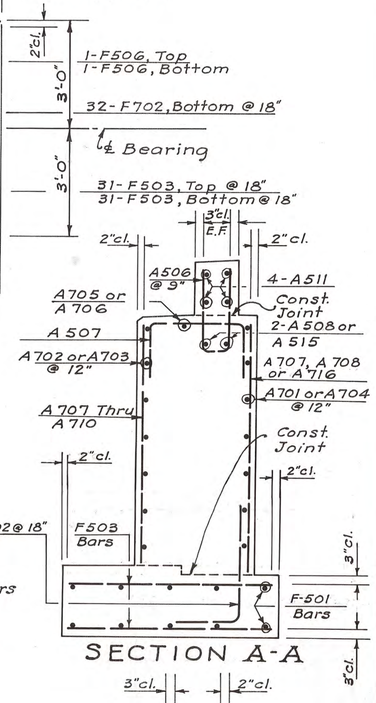


PLAN AT BASE OF ABUTMENT

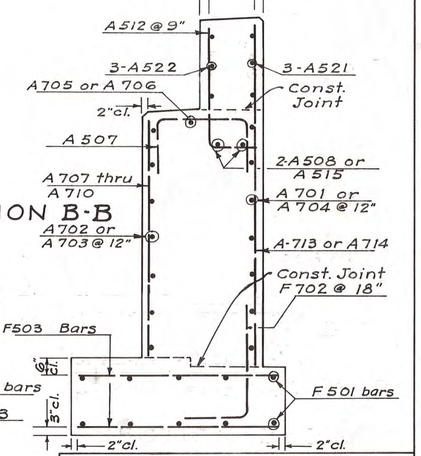
Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.



PLAN AT TOP OF ABUTMENT



SECTION A-A



SECTION B-B

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

NORTH ABUTMENT REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

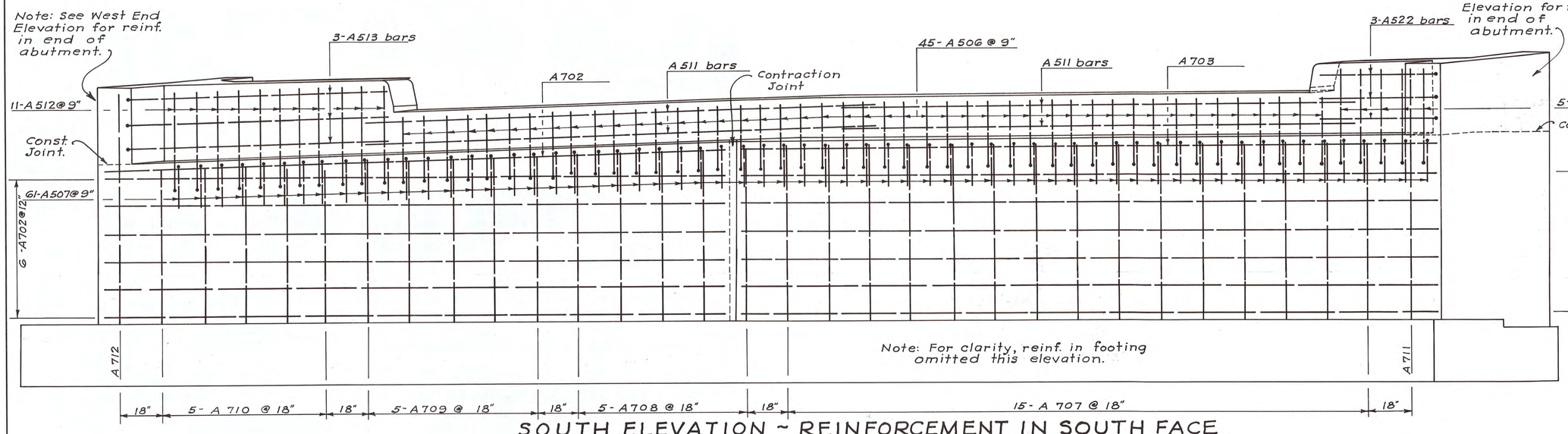
MONTGOMERY COUNTY — DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

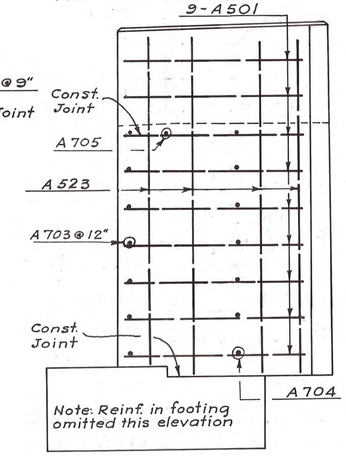
FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

551
624

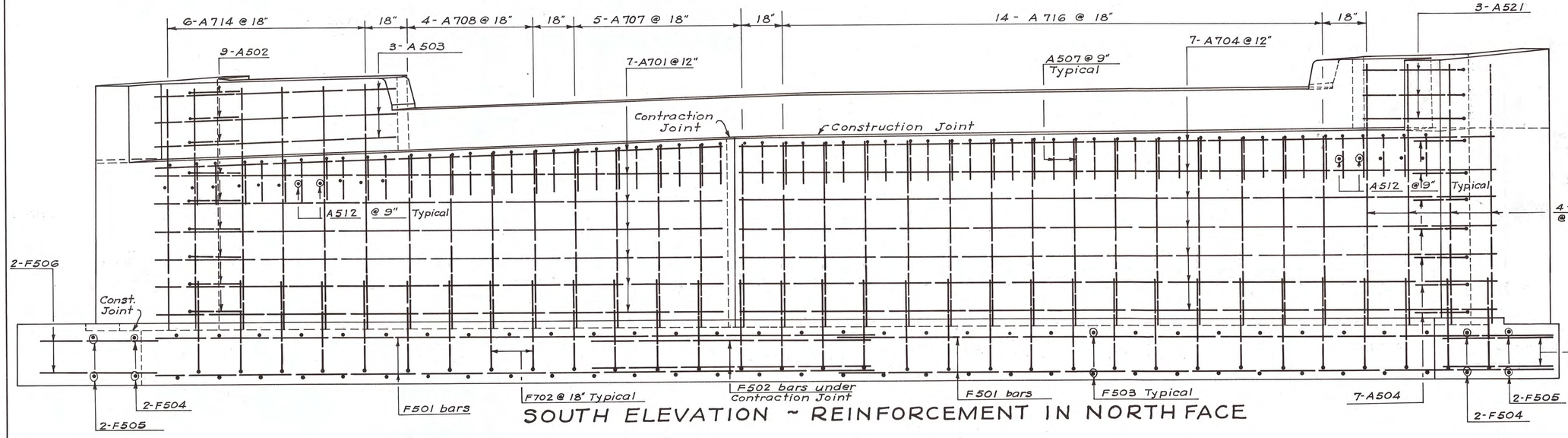
MOT-GRE S1180 (2)



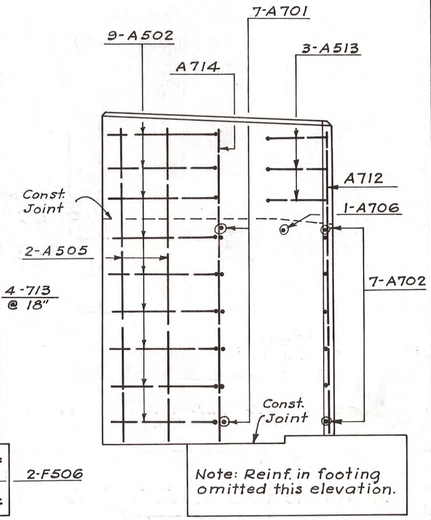
SOUTH ELEVATION ~ REINFORCEMENT IN SOUTH FACE



EAST END ELEVATION
OUTSIDE FACE
REINFORCEMENT



SOUTH ELEVATION ~ REINFORCEMENT IN NORTH FACE



WEST END ELEVATION
INSIDE FACE
REINFORCEMENT

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

NORTH ABUTMENT REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180(2)

552
624

14'-0" | 14'-0" | 14'-0" | 21'-9"

36°-48'-30" SKEW

24'-0 7/8" | 10'-6" | 3'-6"

4-6" Plain C.M.P. @ 14'-0" c-c.

See Section A-A

1'-8 15/16" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-6 29/32" | 3" | 3'-1-8 31/32"

Variable 1'-1½" Min.

3"x 8" Contraction Joint

3'-9" | 9"

½" Preformed Expansion Joint Filler.

Sloping Beam Seat

Slope to Drain

North Face

½" Preformed Expansion Joint Filler

Variable 1'-1½" Min.

℄ Bearing

6'-0" | 3'-4" | 1'-7" | 1'-2½" | 7" | 8½" | 6½" | 2'-0" | 1'-0" | 1'-4"

3" | 8" | 9"

Sta. 9+10.84

1'-0"

3" | 8 5/16" | 1'-6 15/16" | 8 5/16" | 1'-3" | 4'-2"

Cap | 6" Perforated C.M.P. | Cap

Sec. S-3.08 Pre-molded sealing strip

Sec. S-3.08 Pre-molded Sealing Strip

Seat for approach Slab

South Face

Sec. S-3.08 Pre-molded Sealing Strip

Level at right angles to ℄ Ridgeway Road for centerline beam.

1'-0" | 5'-0 7/16" | 7'-0"

1'-11 9/16"

0.047'

Slope beam seat and back wall at 3.08% grade

Flat approach slab seat

0.06'

¾" Drain

1'-0" Min.

1'-6" Const. Joint

Measure normal to abutment Porous backfill

NOTE: Porous backfill shall not be placed above Elev. 1017.00 until Beams have been placed.

Crushed aggregate slope protection

Surface of Slope: 2:1

1'-0"

6" Perforated C.M.P.

6" Plain C.M.P.

Const. Joint

8'-0" Sidewalk section

1'-0" | 1'-2"

6" | 2" Face Curb

13'-3" | 13'-9" | 19'-10½" | 21'-0½" | 22'-0½"

1'-6" | 1'-6"

℄ ROAD

RIDGEWAY

13'-3" | 13'-9" | 16'-9¾" | 17'-11¾" | 18'-11¾"

Face Curb

Safety Curb section

1'-2" | 1'-0"

PLAN

Note: Concrete shall not be placed above elevation of beam seat for 17" beams until the 17" Prestressed Concrete Box Beams have been grouted in place.

SECTION A-A

Elev. 1022.92 | Elev. 1022.91 | Elev. 1023.06 | Elev. 1023.17 | Elev. 1023.12 | Elev. 1023.18

Elev. 1023.15 | Elev. 1023.18 | Elev. 1023.22 | Elev. 1022.13 | Elev. 1022.08

Elev. 1023.86 | Elev. 1023.84 | Elev. 1023.88 | Elev. 1023.92 | Elev. 1023.99 | Elev. 1024.05 | Elev. 1024.10

Elev. 1023.79 | Elev. 1023.78 | Elev. 1022.74 | Elev. 1022.69

Elev. 1022.63 | Elev. 1022.58 | Elev. 1021.23 | Elev. 1021.17

Contraction Joint

Seat for B17-36 (far side)

Approach Slab seat (near side)

Elev. 1021.26

Const. Joint

Elev. 1021.38

Elev. 1021.32

Const. Joint

Elev. 1020.64

Elev. 1020.48

Elev. 1020.42

Pre-molded Sealing Strip Sec. S-3.08

Pre-molded Sealing Strip Sec. S-3.08

Pre-molded Sealing Strip Sec. S-3.08, Extend from top of footing to construction joint at beam seat elevation.

Pre-molded Sealing Strip Sec. S-3.08

6" Plain C.M.P. | 6" Plain C.M.P. | 6" Plain C.M.P. | Construction Joint | 6" Plain C.M.P.

Elev. 1014.45

3"

Elev. 1014.20

2'-0"

Elev. 1012.20

SOUTH ELEVATION

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SOUTH ABUTMENT PLAN AND ELEVATION RIDGEWAY ROAD OVER DOROTHY LANE

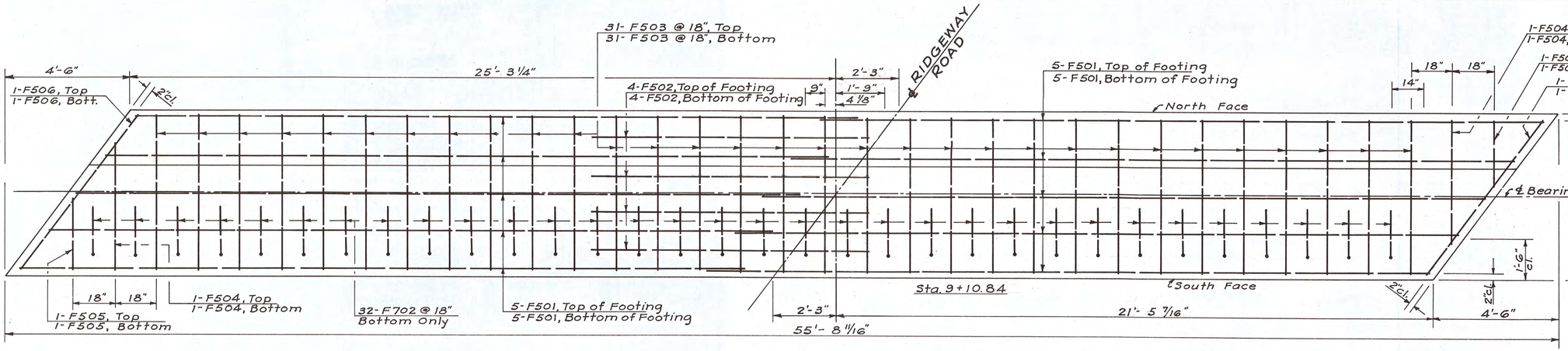
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

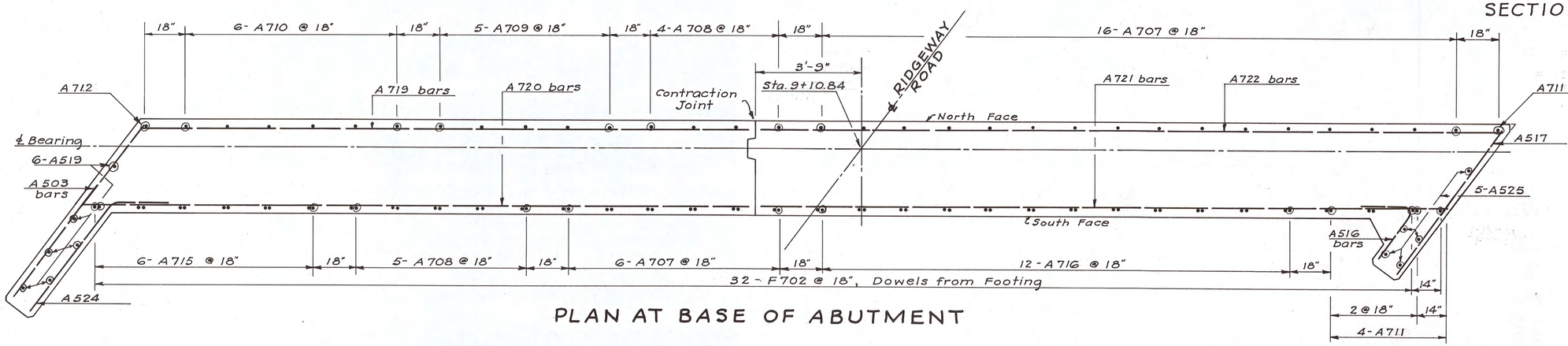
FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

553
624

MOT-GRE S1180 (2)

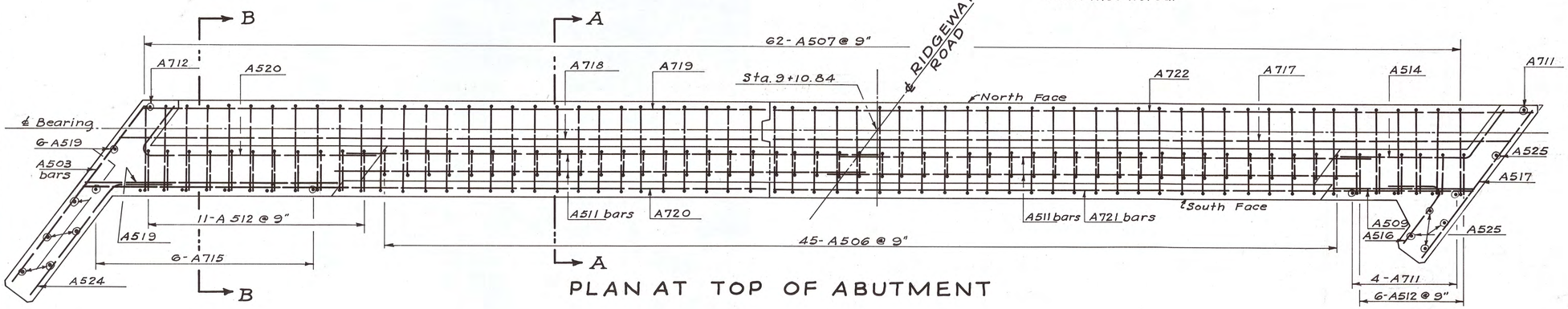


PLAN ~ FOOTING

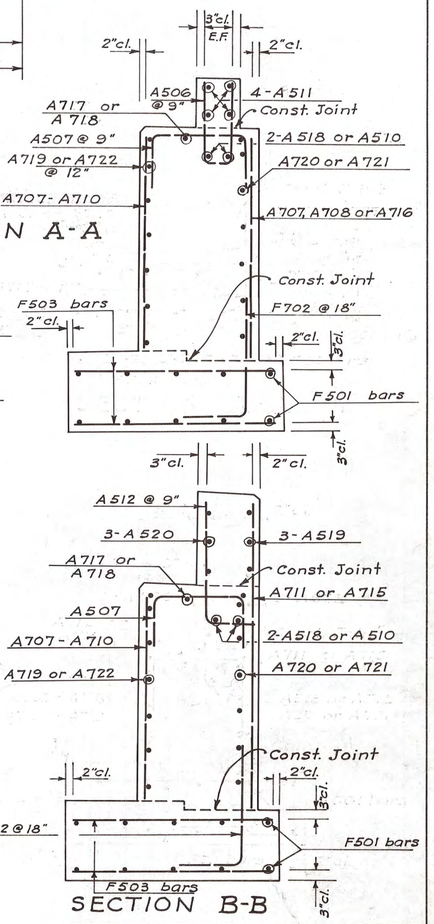


PLAN AT BASE OF ABUTMENT

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.



PLAN AT TOP OF ABUTMENT



RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SOUTH ABUTMENT REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

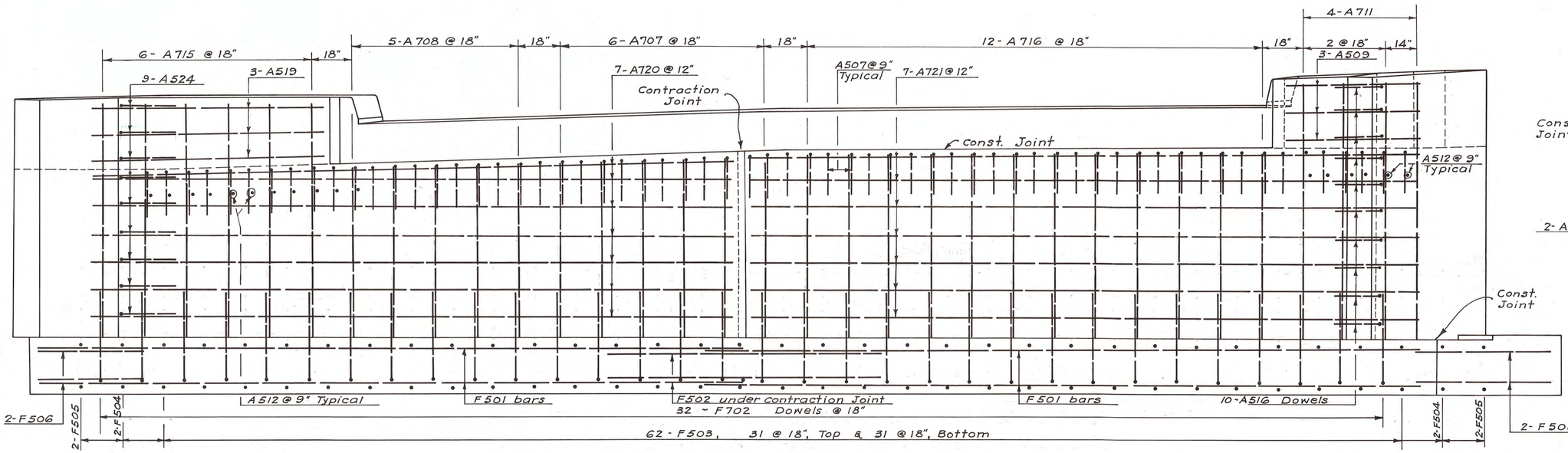
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

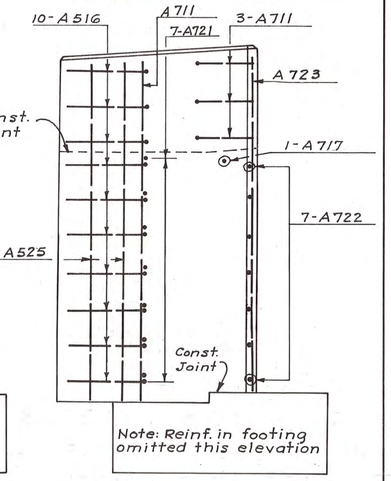
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

554
624

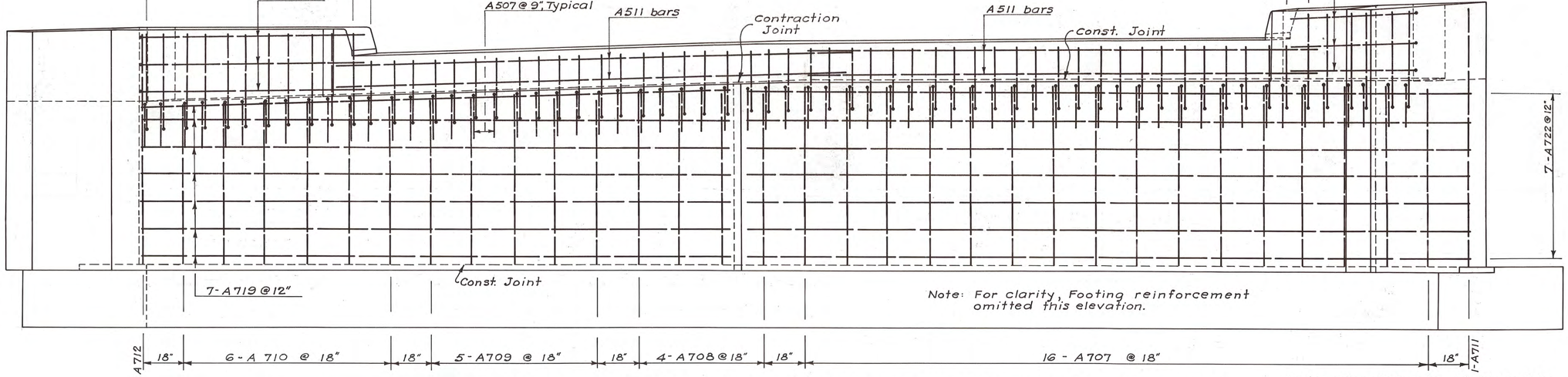
MOT - GRE S 1180 (2)



SOUTH ELEVATION ~ REINFORCEMENT IN SOUTH FACE



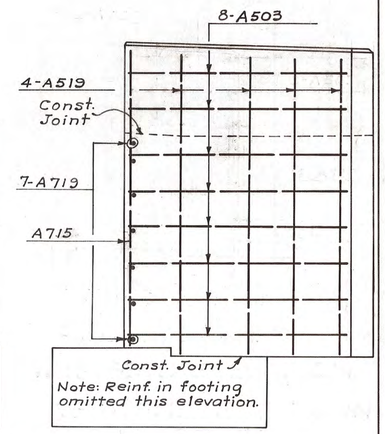
EAST END ELEVATION
INSIDE FACE
REINFORCEMENT



SOUTH ELEVATION ~ REINFORCEMENT IN NORTH FACE

Note: See End Elevations for reinforcing in ends of abutments.

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.



WEST END ELEVATION
OUTSIDE FACE
REINFORCEMENT

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SOUTH ABUTMENT REINFORCING DETAILS
RIDGEWAY ROAD
OVER
DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P. N. S.	E.G.W.	R.L.B.	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

555 624

MOT - GRE S1180 (2)

Variable 1'-1½"

19'-10½"

16'-9¾"

1'-6" RIDGEWAY ROAD

1'-6"

℄

36°48'-30" Skew

Beam seats to be level at right angles to the ℄ of Ridgeway Road for centerline beams

½" Preformed Expansion Joint Filler

½" Preformed Expansion Joint Filler

Variable 1'-1½" Min.

1'-6 15/16" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 3'-6 29/32" 3" 1'-8 31/32"

North Face

STA. 10+51.33

32" Dia. Columns

Sloping beam seat

Slope to drain

3'-4"

1'-10

1'-6"

1'-8"

1'-8"

3"

1'-0"

8"

2½"

℄ Bearing

℄ Piers

℄ Bearing

South Face

1'-6 15/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 6" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 3'-1 29/32" 8" 1'-6 7/16"

Flat beam seat

Slope to drain

5'-1½"

13'-9"

8'-9"

5'-0"

13'-9"

5'-1½"

13'-9"

1'-6½"

24'-9 7/8"

21'-0"

1'-6½"

27'-7½"

23'-10½"

Note: Concrete shall not be placed above the elevation of the beam seat for the B42-36 & B48-36 beams until said beams have been grouted in place. End blocks shall not be poured until the B17-36 beams have been grouted in place.

PLAN

Elev. 1025.98
Elev. 1026.01
Elev. 1026.11
Elev. 1026.14
Elev. 1024.74
Elev. 1022.54
End block
Rustication see detail
Elev. 1025.49
Beam seat for B17-36 beams
Construction Joint
Elev. 1023.28
Beam seat for B42-36 & B48-36 beams
Slope between bearing pads to drain

Elev. 1026.94
Elev. 1027.04
Elev. 1027.06
Elev. 1025.64
End block
Elev. 1023.43
Rustication see detail
Elev. varies 1022.54 to 1023.43
¾"
Slope to drain between bearing pads
Const. Joint
0.06' under bridge pads
Elev. varies 1024.74 to 1025.64
¾" Slope to drain between bridge pads
Elev. 1019.04

SECTION A-A

¾"
1½"
¾"
¾"
¾"
Const. Joint

DETAIL RUSTICATION

32" Dia. Columns

Elev. 1005.04
Elev. 1003.04
14'-0"
2'-0"
4'-3"
4'-3"
8'-6" Sq. (Typical)

SOUTH ELEVATION

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

NORTH PIER PLAN AND ELEVATION RIDGEWAY ROAD OVER DOROTHY LANE

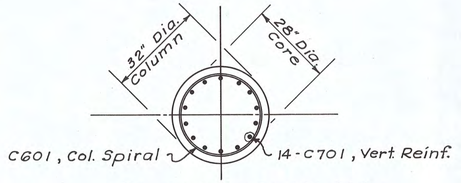
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

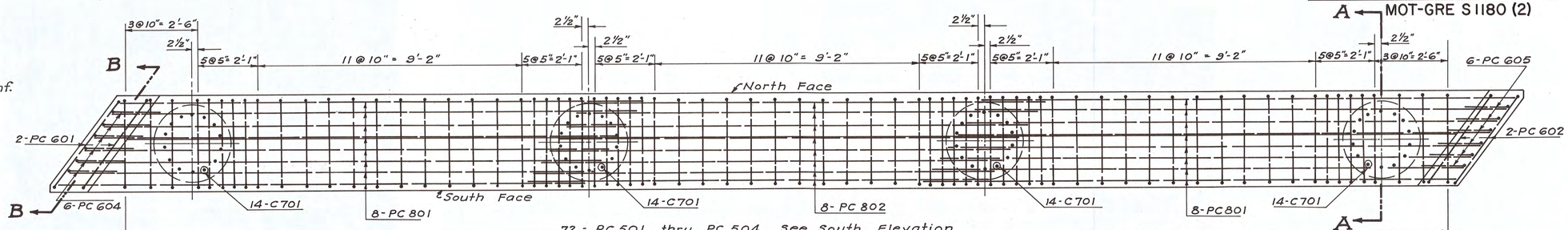
FED. RD DIVISION			
2	OHIO	S1180 (2)	

556
624

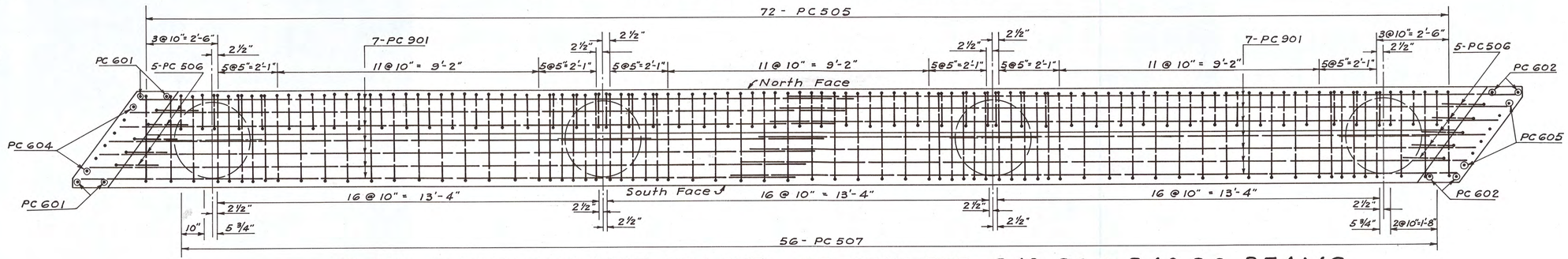
A MOT-GRE S1180 (2)



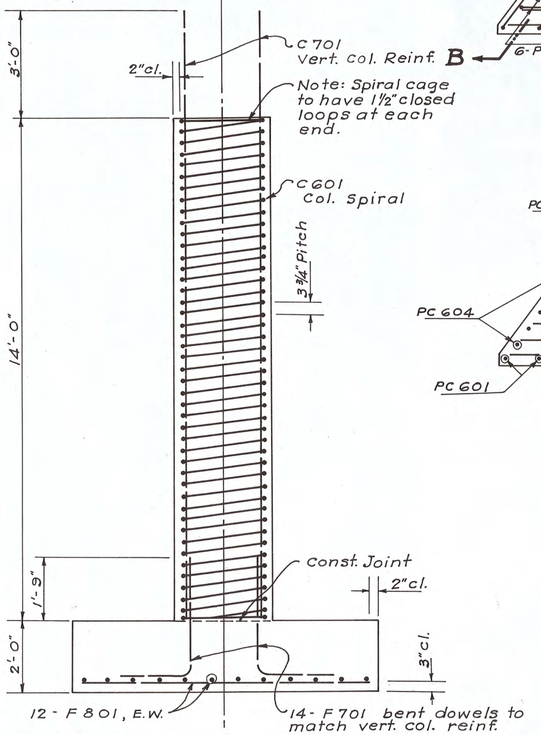
PLAN: COLUMN



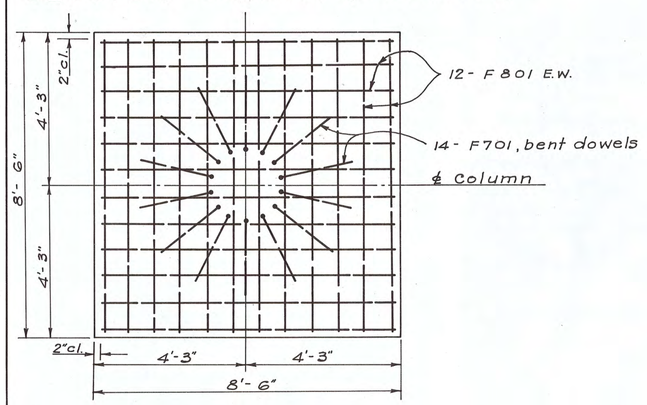
PLAN: BOTTOM REINFORCEMENT



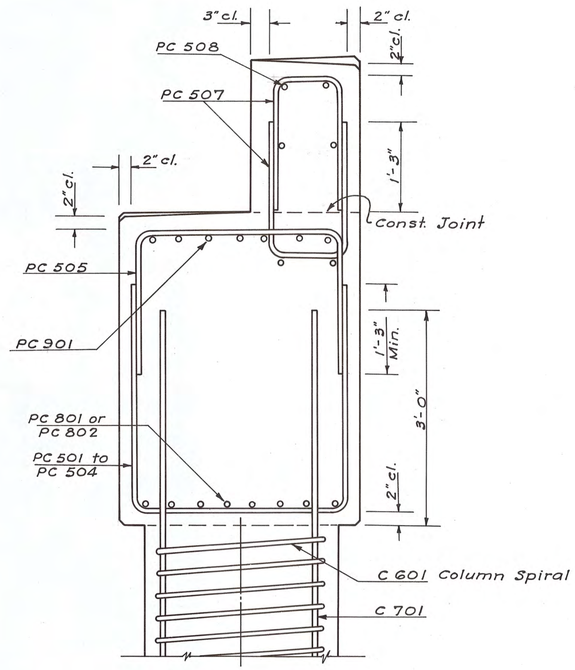
PLAN: REINFORCEMENT AT LEVEL OF SEAT FOR B42-36 & B48-36 BEAMS



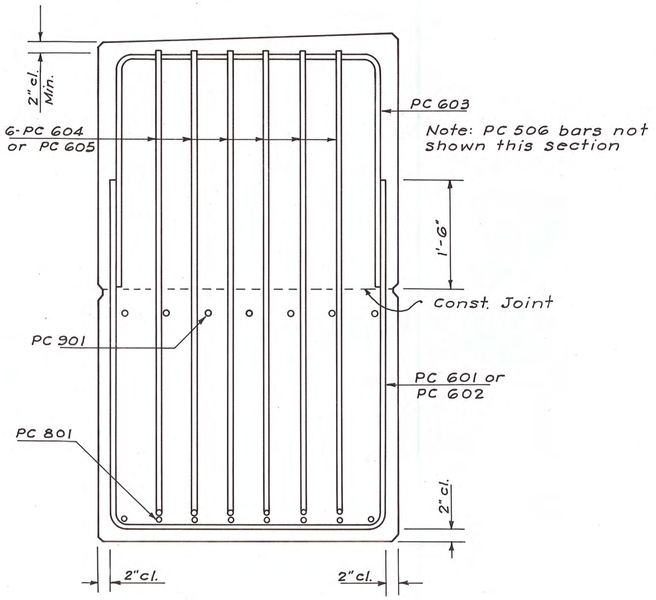
SECTION: COLUMN & FOOTING



PLAN: FOOTING



SECTION A-A



SECTION B-B

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

NORTH PIER REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

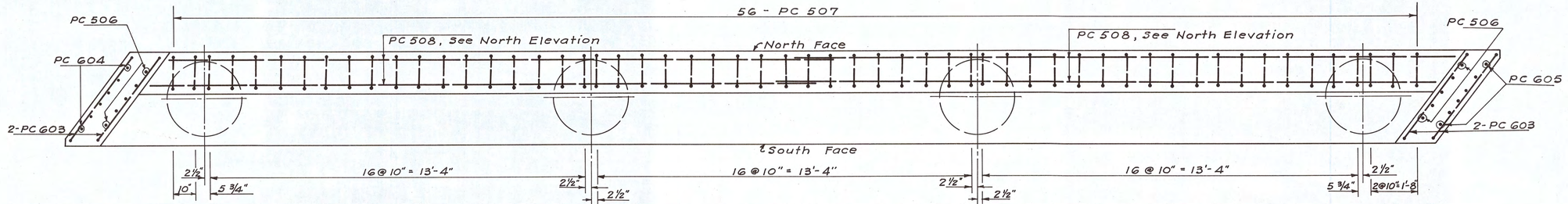
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

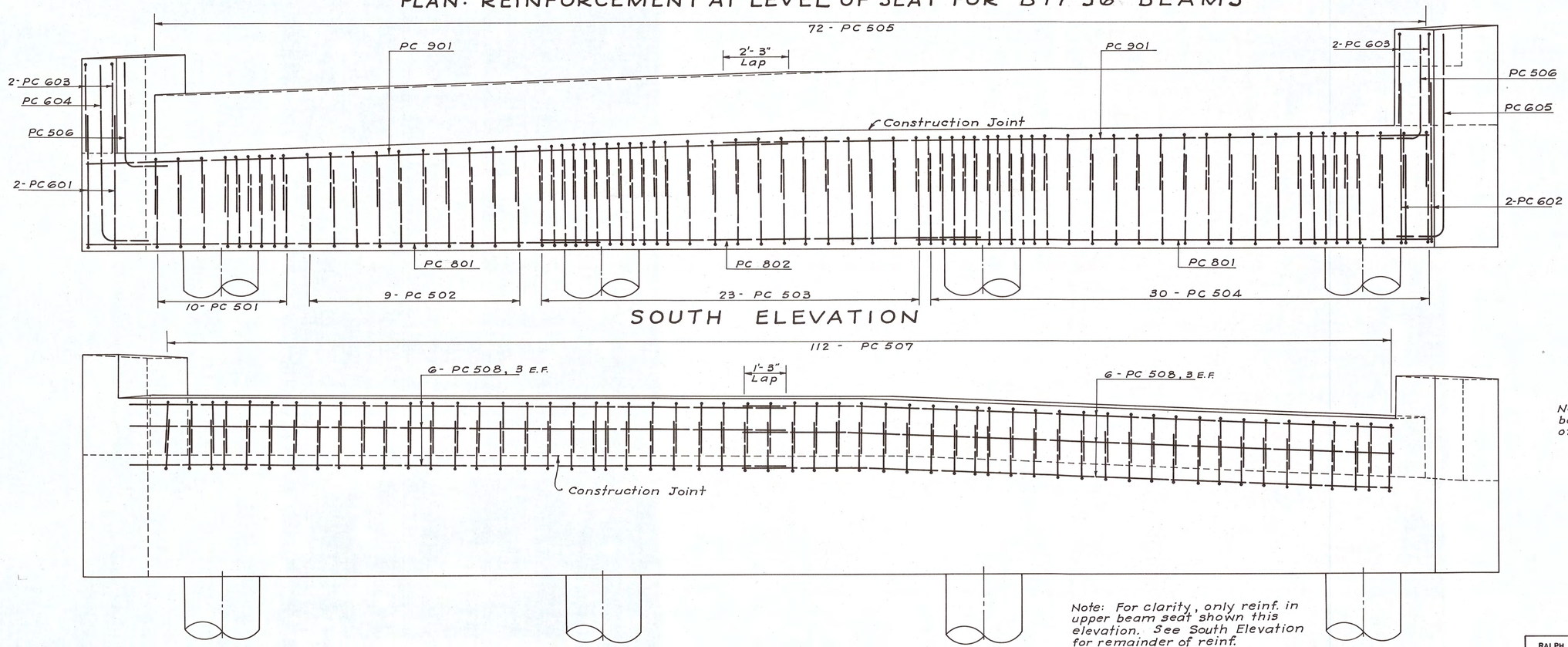
FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180 (2)

557
624



PLAN: REINFORCEMENT AT LEVEL OF SEAT FOR B17-36 BEAMS



SOUTH ELEVATION

NORTH ELEVATION

Note: For clarity, only reinf. in upper beam seat shown this elevation. See South Elevation for remainder of reinf.

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

NORTH PIER REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180(2)

558
624

Variable 1'-1½" Min.

19'-10½"

Beam seats to be level at right angles to the ℄ of Ridgeway Road for centerline beams

RIDGEWAY ROAD

1'-6"

1'-6"

36°48'30" Skew

16'-9¾"

½" Preformed Expansion Joint Filler

Variable 1'-1½" Min.

1'-6 7/16" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 3'-1 29/32" | 8" | 1'-6 15/32"

½" Preformed Expansion Joint Filler

STA. 9+48.67

North Face

32" Dia. Columns

Flat Beam Seat

Slope to drain

3'-4" | 1'-10" | 1'-8" | 1'-6" | 1'-8" | 3"

3" | 1'-0" ℄ Bearing | 8" | ℄ Piers | 6" | 2" | 8" | 1'-0" ℄ Bearing

℄ South Face

5'-1½" | 13'-9" | 8'-9" | 5'-0" | 13'-9" | 5'-1½"

13'-9"

1'-6½" | 24'-9 7/8" | 21'-0" | 1'-6½"

27'-7½" | 23'-10½"

Note: Concrete shall not be placed above the elevation of the beam seat for the B42-36 & B48-36 beams until said beams have been grouted in place. End blocks shall not be poured until the B17-36 beams have been grouted in place.

PLAN

Elev. 1022.84 | Elev. 1022.94 | Elev. 1022.97' | Elev. 1021.56

Elev. 1022.82

Elev. 1022.31

Beam seat for B17-36 beams

End Block

Rustication See detail

Elev. 1019.37

Elev. 1020.12

Beam seat for B42-36 & B48-36 beams

Construction Joint

Elev. 1023.77 | Elev. 1023.87 | Elev. 1023.90

Elev. 1023.74

Elev. 1022.46

End Blocks

Elev. 1020.26

Rustication See detail

Elev. varies 1021.56 to 1022.46

Elev. varies 1019.37 to 1020.26

1'-0"

Const. Joint

¾" between bridge pads & slope to drain

Elev. 1015.87

SECTION A-A

32" Dia. Columns

14'-6"

Elev. 1001.37

Elev. 999.37

2'-0"

4'-3" | 4'-3"

8'-6" Sq. (Typical)

SOUTH ELEVATION

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SOUTH PIER
PLAN AND ELEVATION
RIDGEWAY ROAD
OVER
DOROTHY LANE

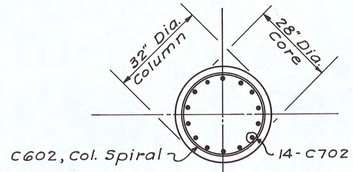
MONTGOMERY COUNTY — DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R. L. B.	

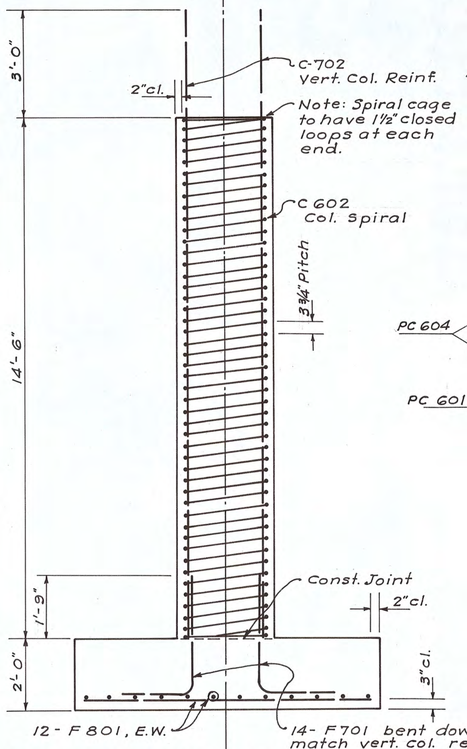
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

559
624

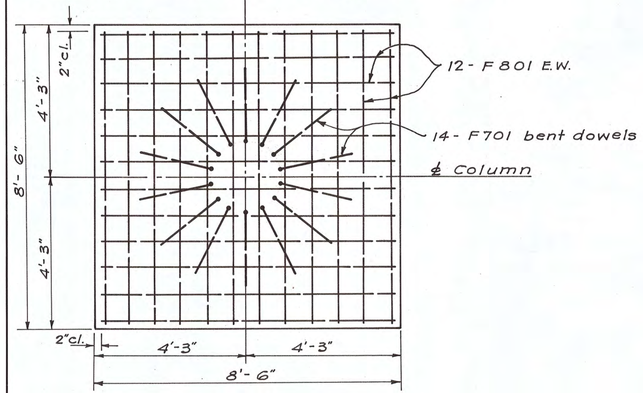
MOT-GRE S1180(2)



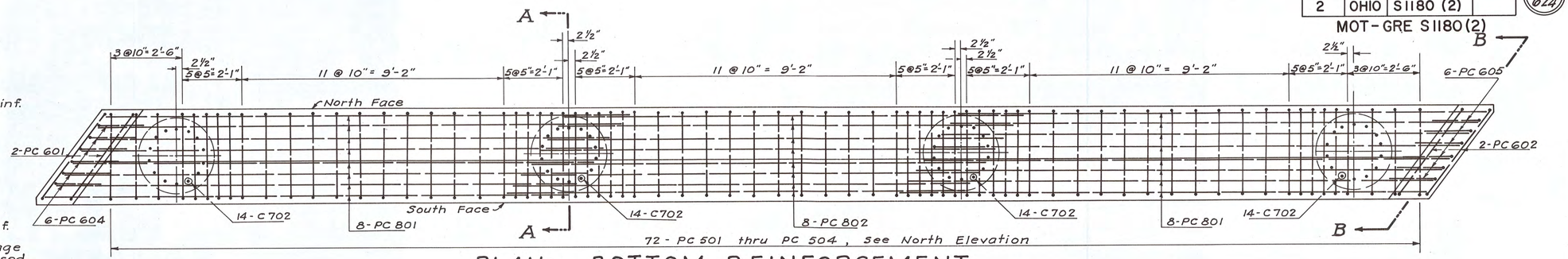
PLAN: COLUMN



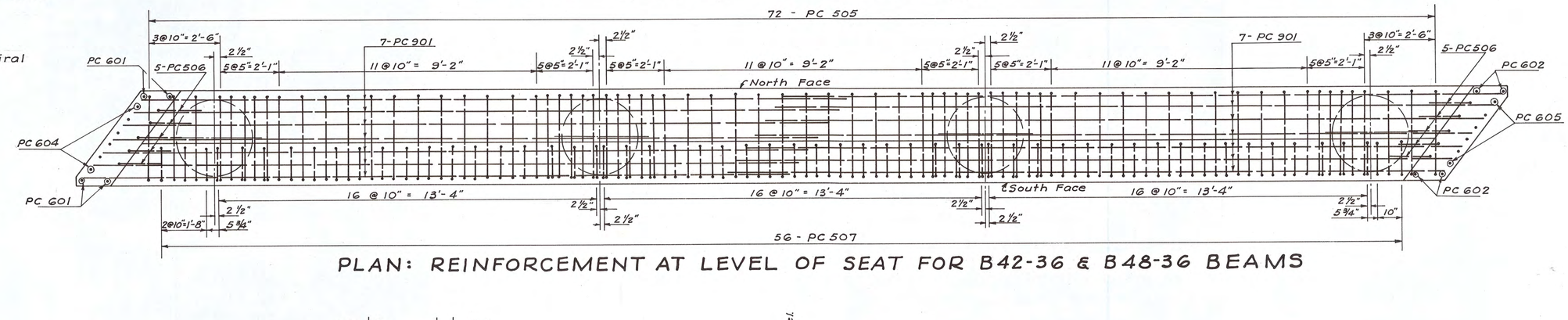
SECTION: COLUMN & FOOTING



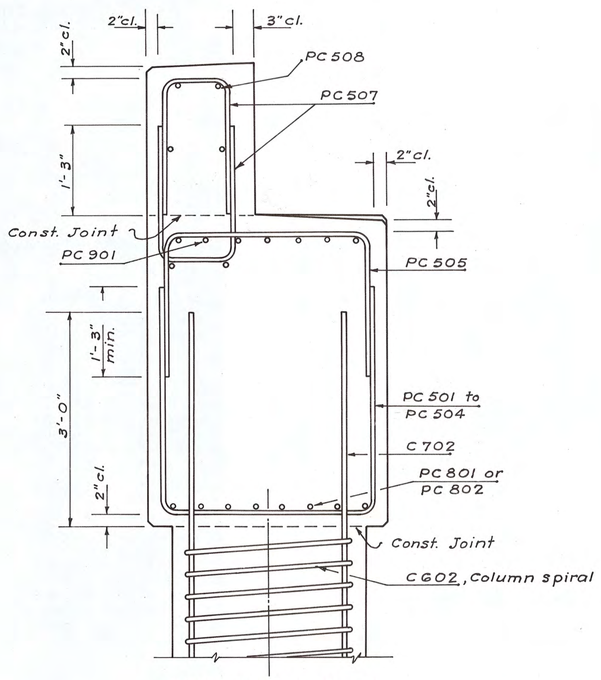
PLAN: FOOTING



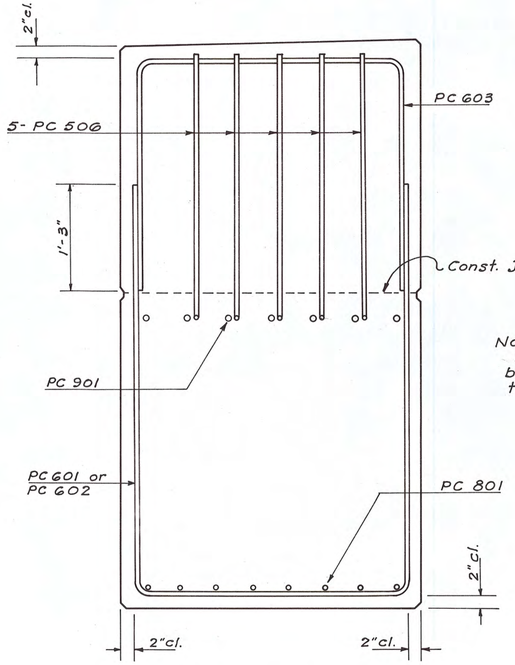
PLAN: BOTTOM REINFORCEMENT



PLAN: REINFORCEMENT AT LEVEL OF SEAT FOR B42-36 & B48-36 BEAMS



SECTION A-A



SECTION B-B

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.

Note: PC 604 & PC 605 bars, not shown this section.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SOUTH PIER REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

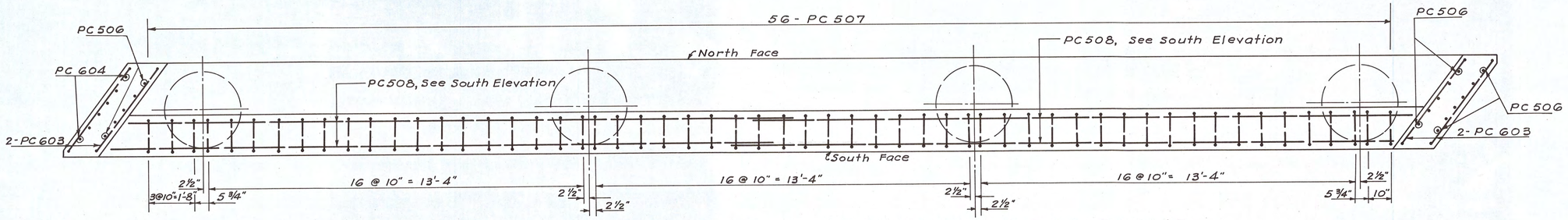
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOROGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

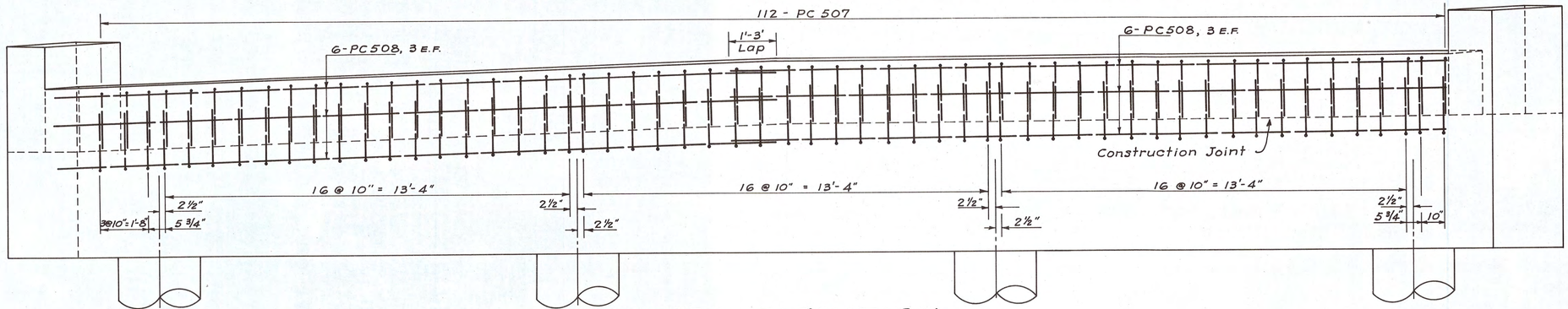
FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180 (2)

560
624



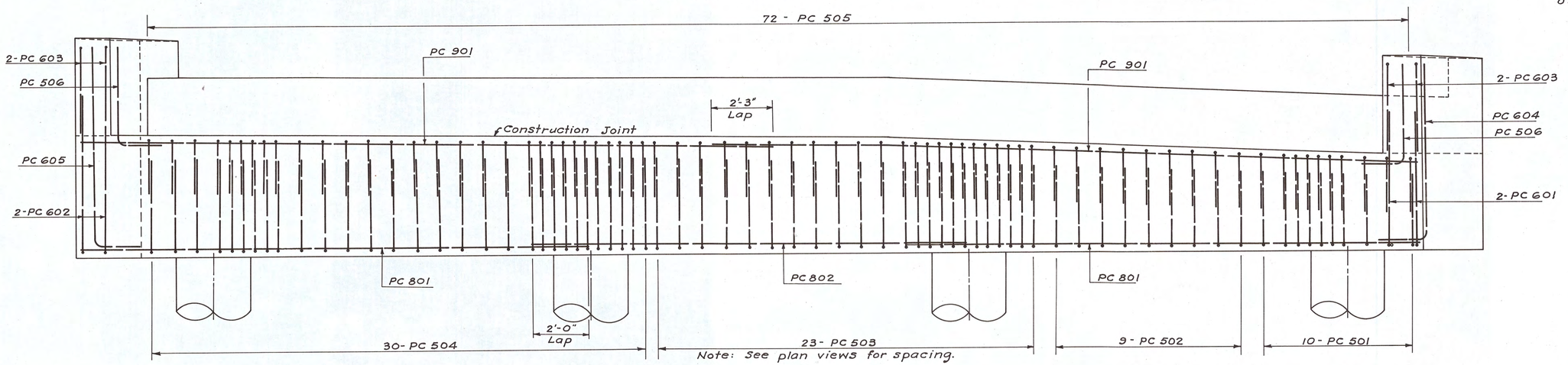
PLAN: REINFORCEMENT AT LEVEL OF SEAT FOR B17-36 BEAMS



SOUTH ELEVATION

Note: For clarity, only reinf. in upper beam seat shown this elevation. See North Elevation for remainder of reinf.

Note: All reinforcing steel shall be placed with 2" clear unless otherwise noted.



NORTH ELEVATION

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SOUTH PIER REINFORCING DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

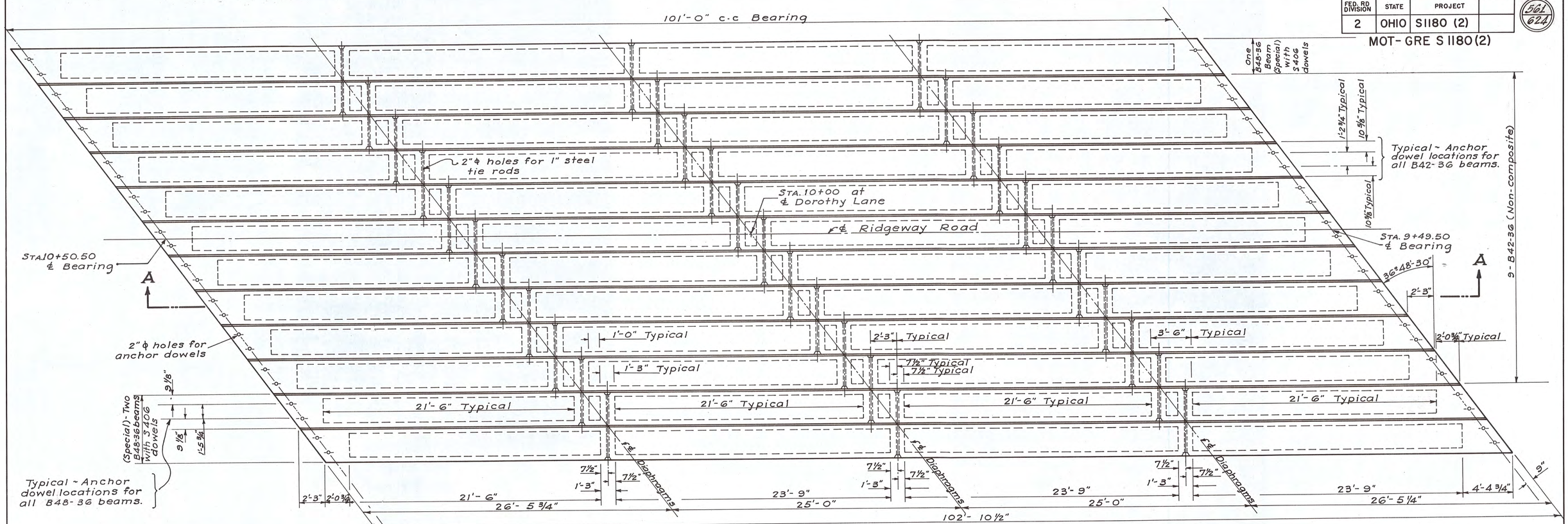
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S 1180(2)

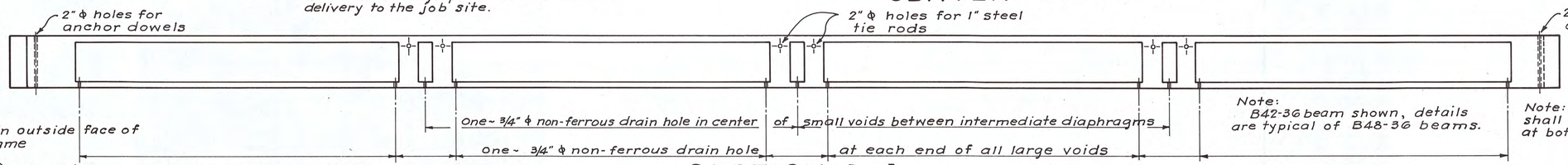
561
624



Note: All precast beams shall be available for inspection by the consultant at least 30 days prior to the date of delivery to the job site.

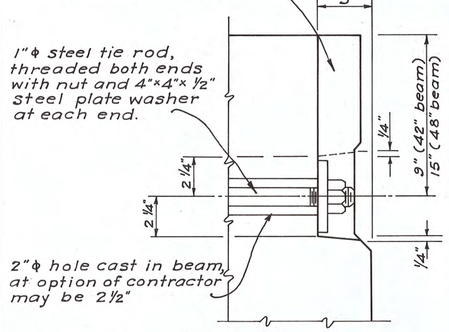
PLAN: PRESTRESSED CONCRETE BEAMS CENTER SPAN

Note: Access holes shall be provided as required to permit placement of washer and nuts. If the contractor elects to thread beams over rods projecting from beams previously placed access holes will not be required.

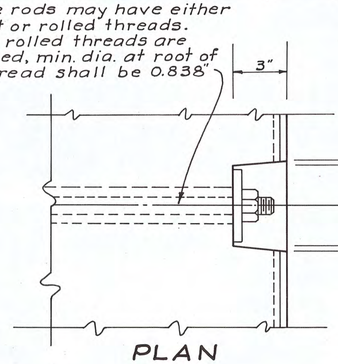


SECTION A-A

Access hole, (not permitted in outside face of outside beams) to be filled same as shear keys in beams



SECTION

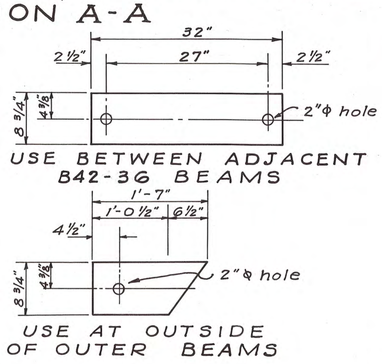


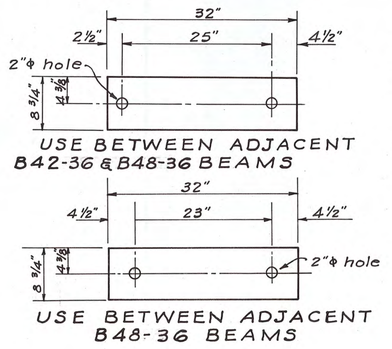
PLAN

DETAIL ~ TIE RODS

Note: After tie rods are tightened, fill recesses in outside beams flush with face of beam with non-shrinking, non-staining Portland Cement Mortar. The general finish and the color of the motar after curing shall match the exterior finish and color of the precast beam.

Note: Each tie rod shall be the equivalent of a 1"ϕ mild steel rod as per Sec. M-7.4, tightened to 18,000 pounds. Tension may be applied by a torque of approx. 300 ft.-lbs with the threads lubricated.





DETAIL ~ ELASTOMERIC BEARING PADS

Note: All elastomeric bearing pads for 42" & 48" beams shall be of 50 hardness and shall be 1¾" thick uncompressed. Pads shall conform to A.S.T.M. requirements referred to in Sec. M-10.29.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SUPERSTRUCTURE CENTER SPAN DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

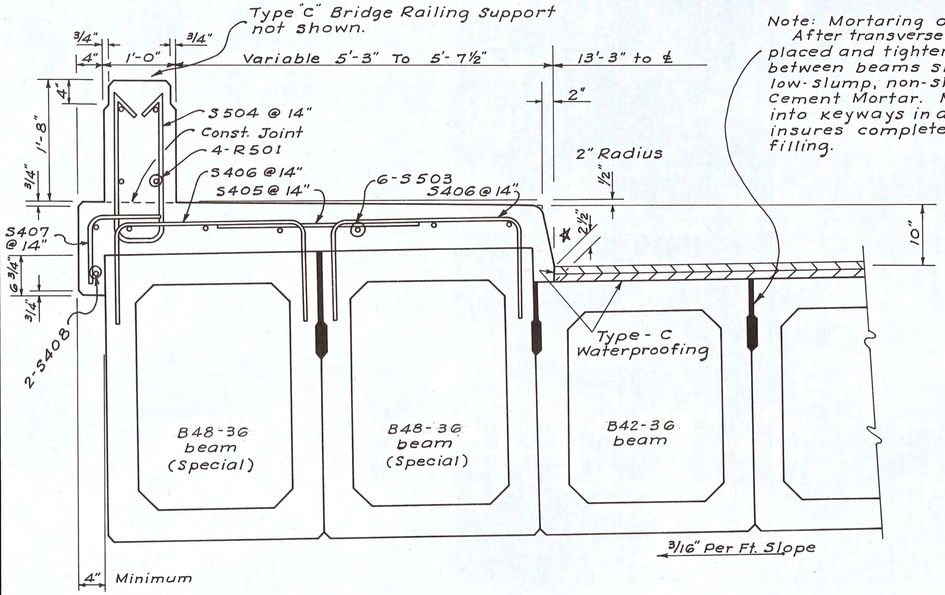
MONTGOMERY COUNTY — DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P. N. S.	E.G.W.	R.L.B.	

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180 (2)

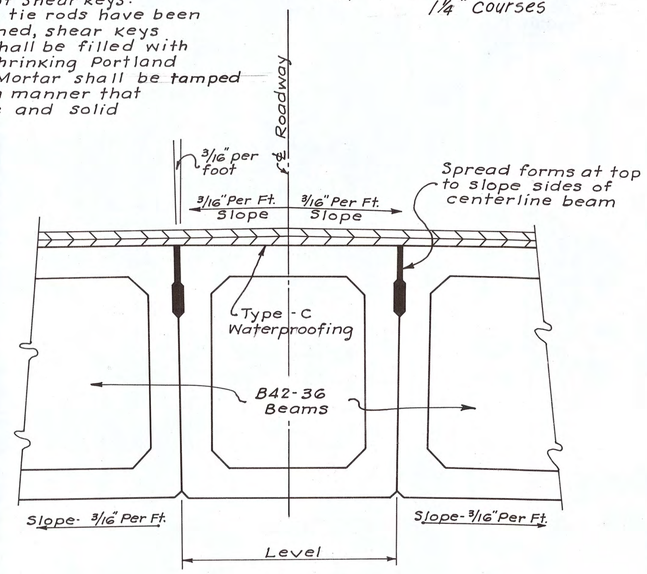
562
624



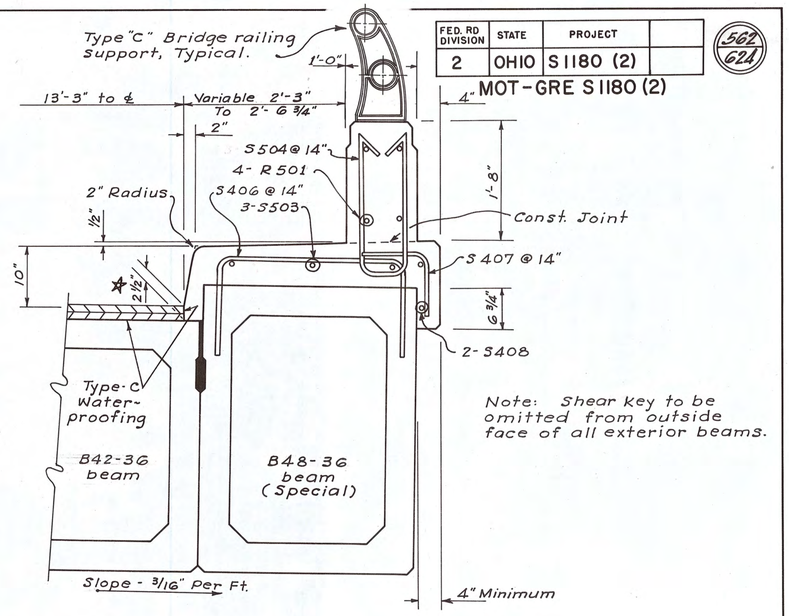
SECTION AT SIDEWALK

Note: Mortaring of shear keys: After transverse tie rods have been placed and tightened, shear keys between beams shall be filled with low-slump, non-shrinking Portland Cement Mortar. Mortar shall be tamped into keyways in a manner that insures complete and solid filling.

★ To be placed in two 1¼" courses



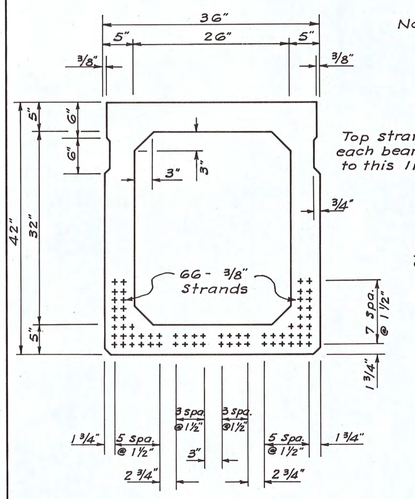
SECTION AT CENTERLINE



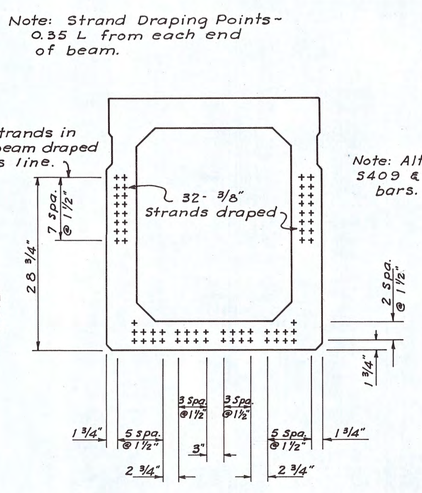
Note: Shear key to be omitted from outside face of all exterior beams.

SECTION AT SAFETY CURB

Note: See details above for extra reinforcement for sidewalk and safety curb, omitted this section for sake of clarity.

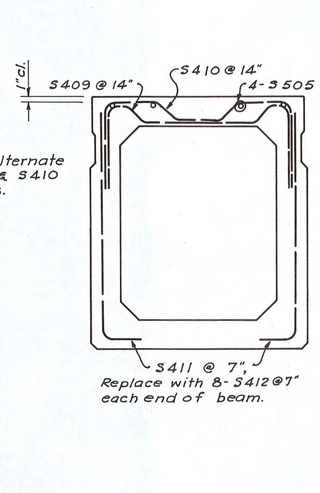


STRAND ARRANGEMENT MID-POINT OF BEAM



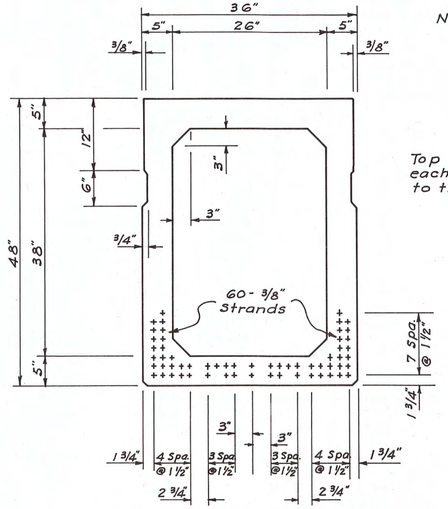
Note: Strand Draping Points- 0.35 L from each end of beam.

STRAND ARRANGEMENT END OF BEAM



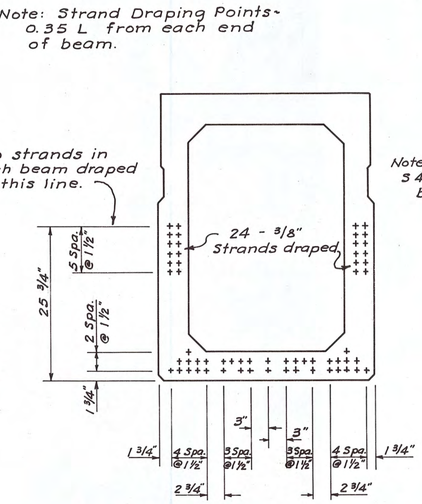
Note: Alternate S409 & S410 bars.

WEB REINFORCEMENT

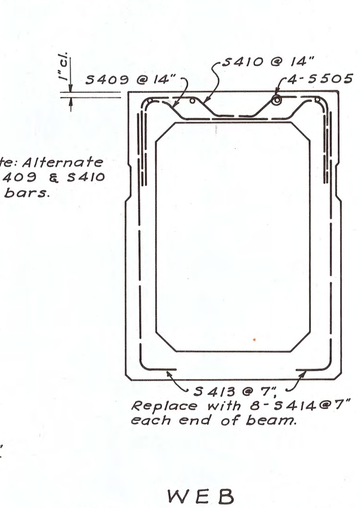


STRAND ARRANGEMENT MID-POINT OF BEAM

Note: Strand Draping Points- 0.35 L from each end of beam.



STRAND ARRANGEMENT END OF BEAM



Note: Alternate S409 & S410 bars.

WEB REINFORCEMENT

DETAILS ~ BEAMS B42-36
NON-COMPOSITE WITH DRAPED STRANDS

Note: Initial tension in 3/8" strands~ 14,000 lbs. each.

DETAILS ~ BEAMS B48-36
NON-COMPOSITE WITH DRAPED STRANDS

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SUPERSTRUCTURE CENTER SPAN DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

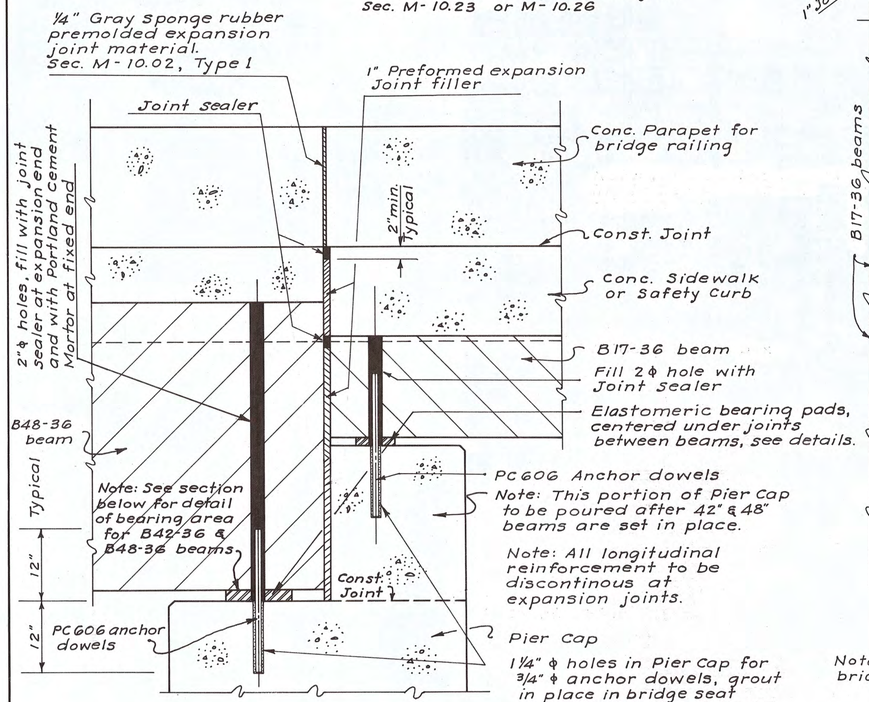
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

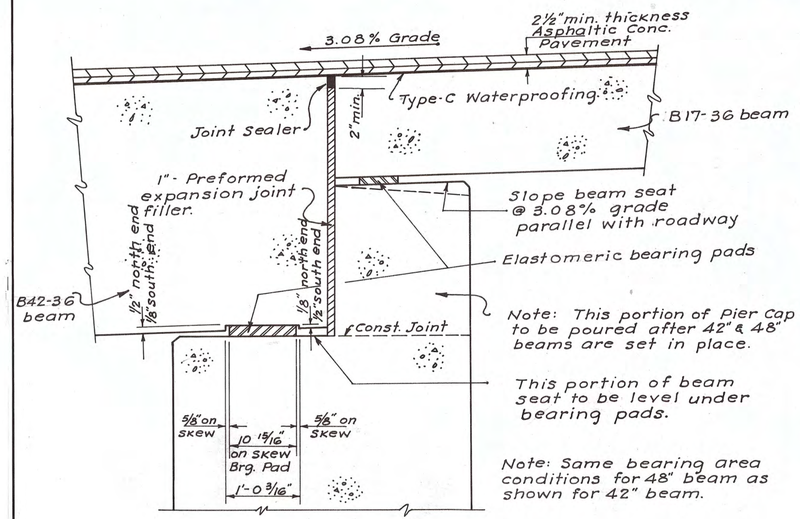
563
624

MOT-GRE S 1180 (2)



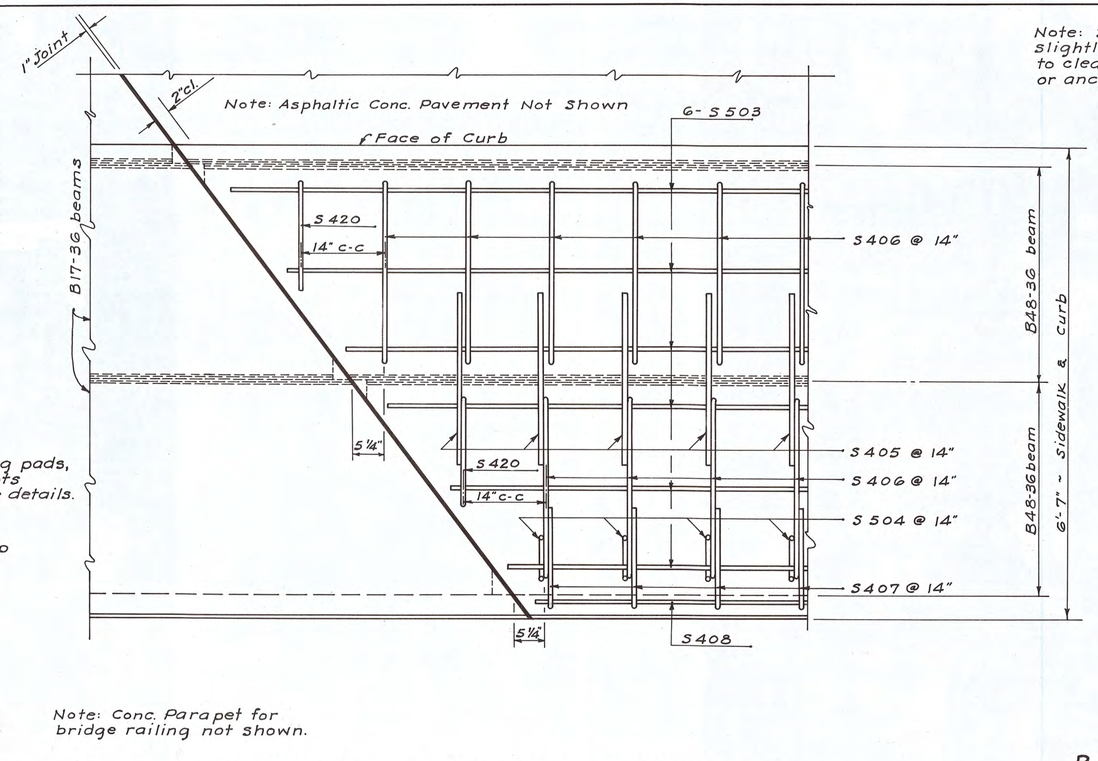
SECTION AT SIDEWALK

BEARING AND TRANSVERSE JOINT DETAILS AT PIER CAP



Note: Same bearing area conditions for 48" beam as shown for 42" beam.

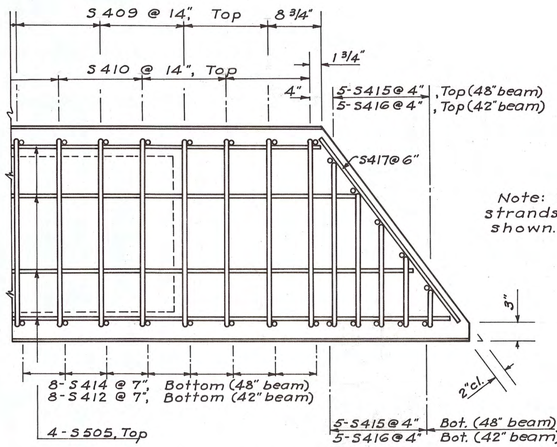
SECTION AT SIDEWALK



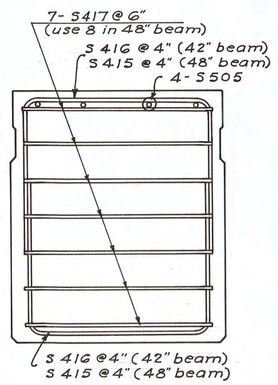
Note: Conc. Parapet for bridge railing not shown.

REINFORCEMENT FOR SIDEWALK AT SKEWED END

Note: Elastomeric bearing pads and PC 606 anchor dowels shall be included with prestressed beams for payment.



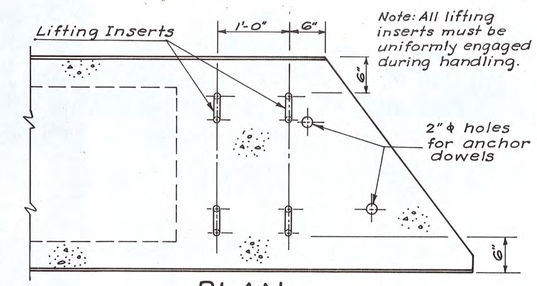
PLAN
B42-36 & B48-36 BEAM



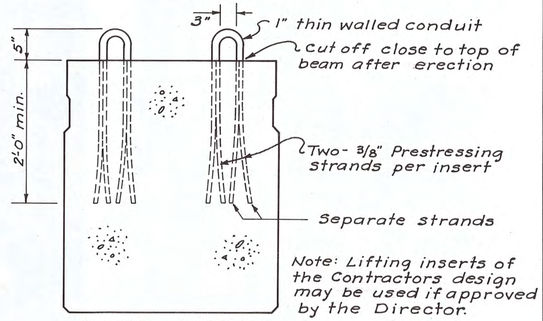
END ELEVATION
B42-36 BEAM

DETAIL ~ BEAM END BLOCK

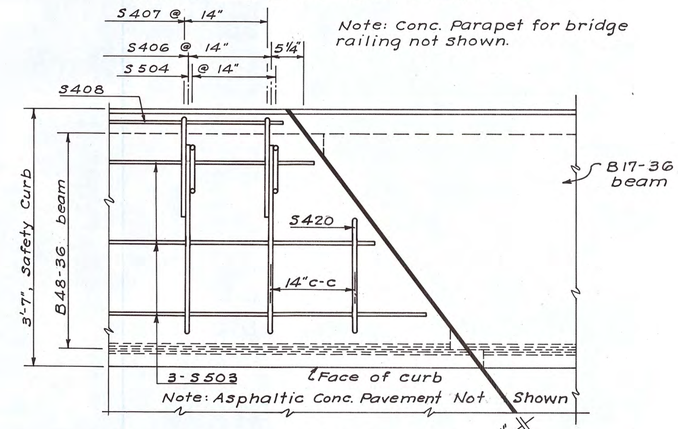
Note: Shift lifting inserts slightly where necessary to clear reinforcement or anchor dowel holes.



PLAN



END VIEW
BEAM LIFTING INSERTS
B42-36 & B48-36 BEAMS



REINFORCEMENT FOR SAFETY CURB AT SKEWED END

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SUPERSTRUCTURE CENTER SPAN DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

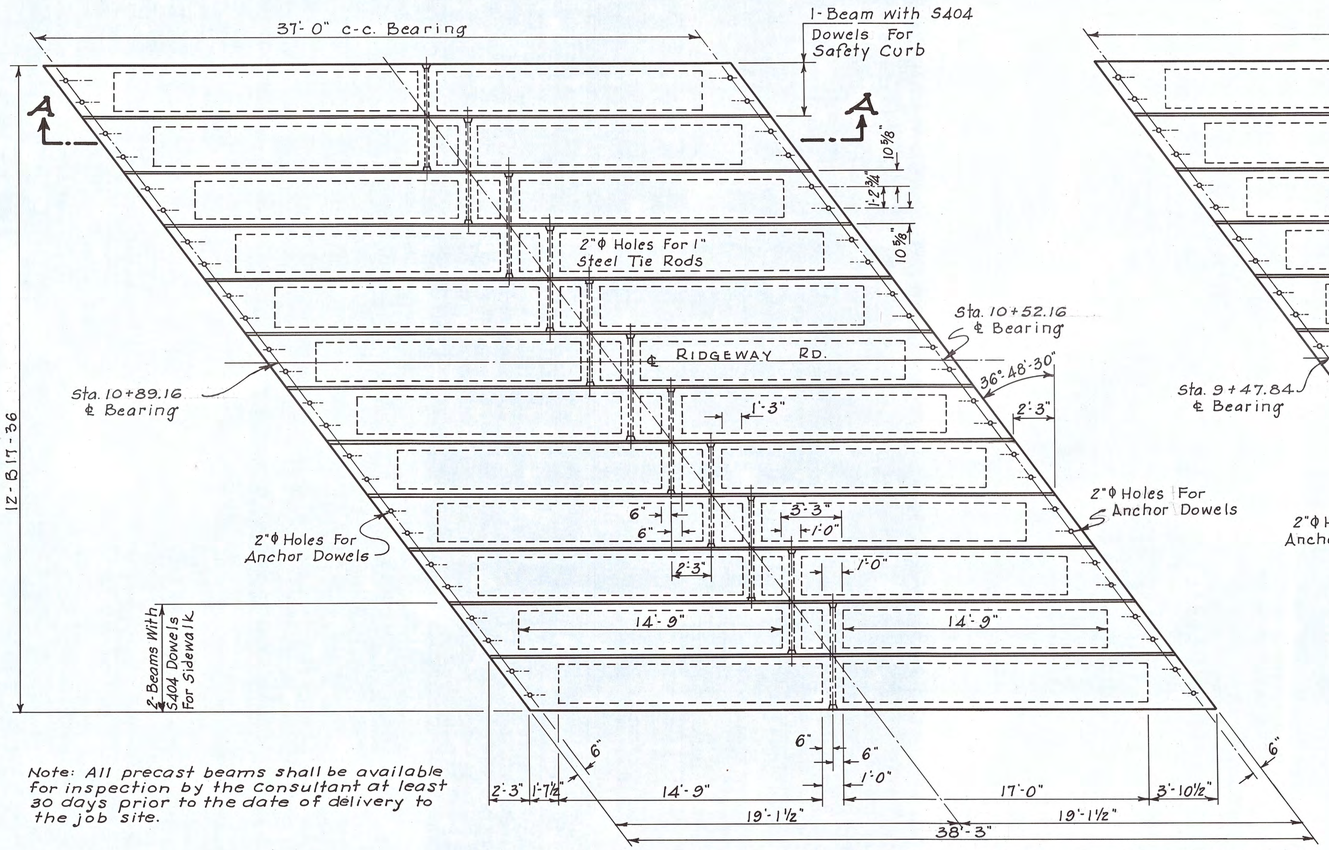
MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

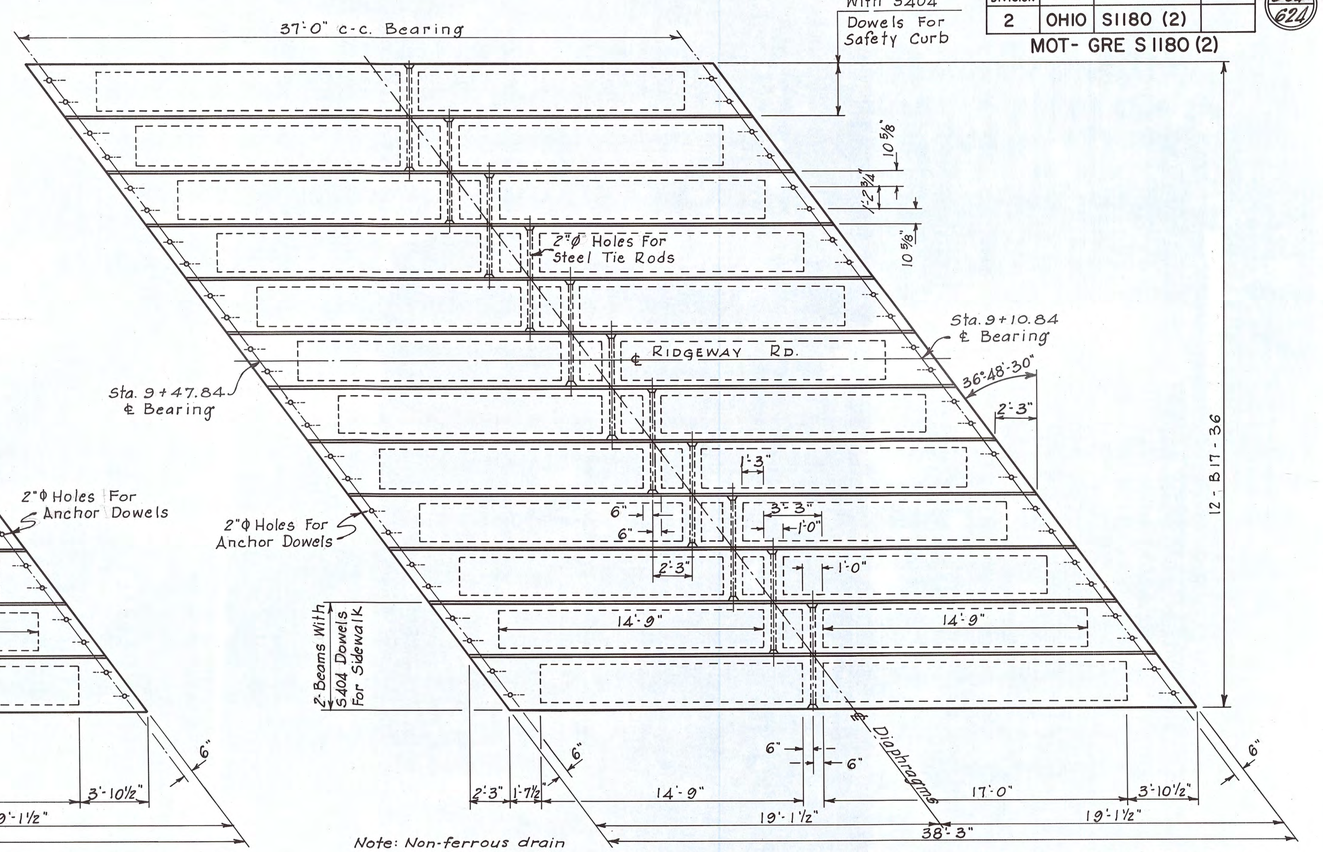
MOT- GRE S 1180 (2)

564
624



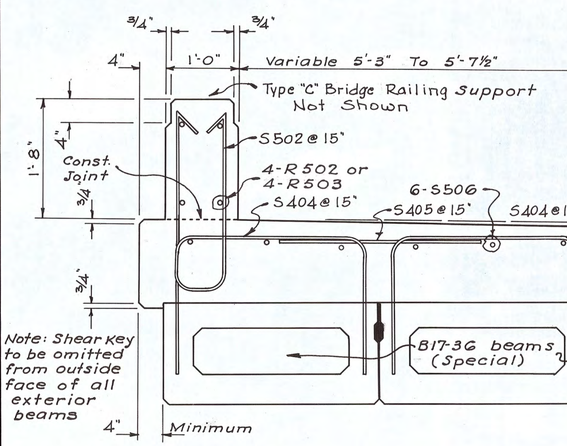
Note: All precast beams shall be available for inspection by the Consultant at least 30 days prior to the date of delivery to the job site.

PLAN - PRESTRESSED CONCRETE BEAMS NORTH SPAN



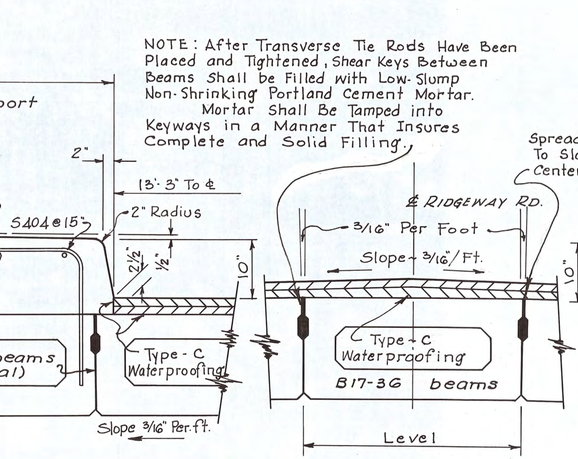
Note: Non-ferrous drain holes shall not exceed 1" in diameter at bottom surface of beam

PLAN - PRESTRESSED CONCRETE BEAMS - SOUTH SPAN

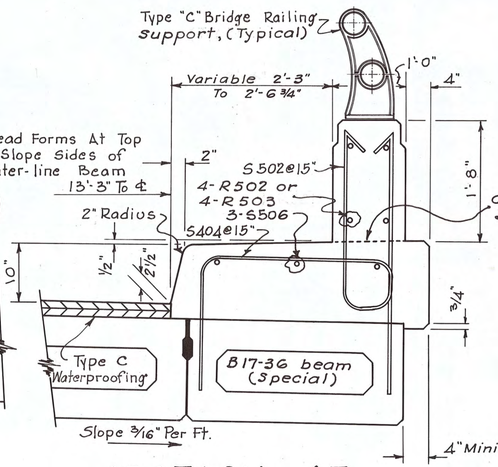


SECTION AT SIDEWALK

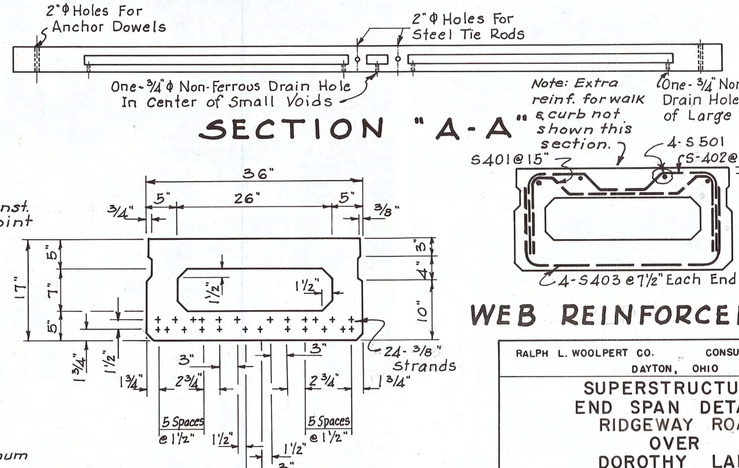
NOTE: After Transverse Tie Rods Have Been Placed and Tightened, Shear Keys Between Beams Shall be Filled with Low-Slump Non-Shrinking Portland Cement Mortar. Mortar Shall Be Tamped into Keyways in a Manner That Insures Complete and Solid Filling.



SECTION AT CENTERLINE



SECTION AT SAFETY CURB



WEB REINFORCEMENT

Note: Initial tension in ⅜" strands - 14,000 lbs. each.

STRAND ARRANGEMENT B17-36 BEAMS

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SUPERSTRUCTURE END SPAN DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

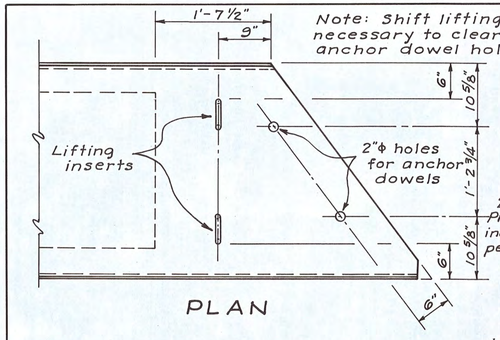
MONTGOMERY COUNTY — DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

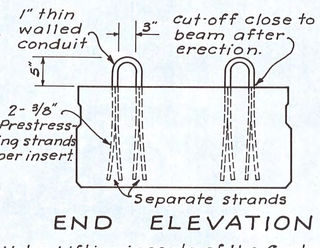
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180(2)

565
624



PLAN

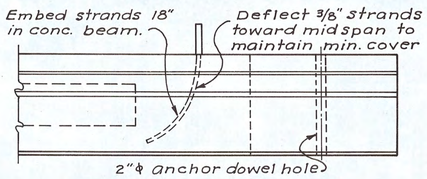


END ELEVATION

Note: Shift lifting inserts slightly where necessary to clear reinforcement or anchor dowel holes.

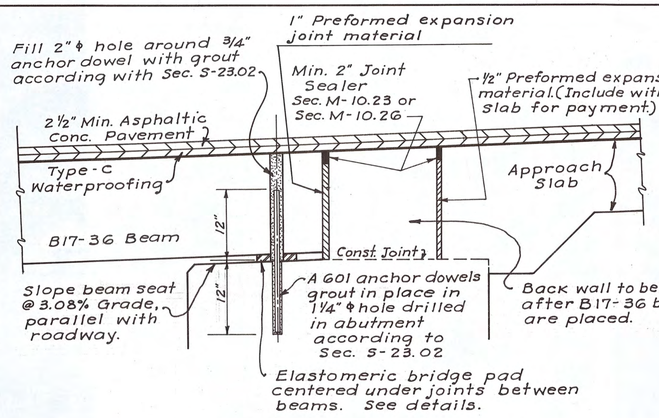
Note: Lifting inserts of the Contractors design may be used if approved by the Director.

Note: All lifting inserts must be uniformly engaged during handling.



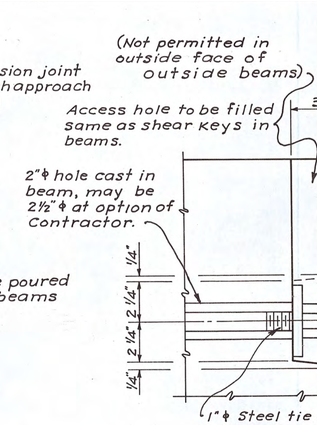
SIDE ELEVATION

BEAM LIFTING INSERTS

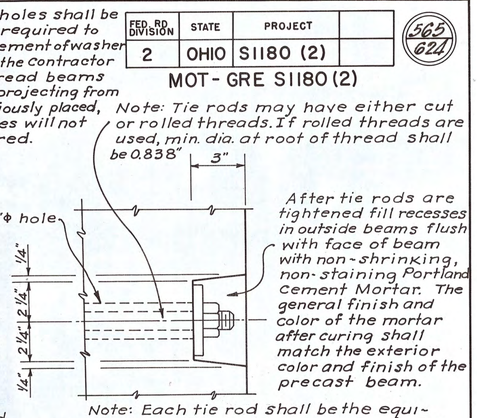


Note: Elastomeric Bearing Pads and A 601 anchor dowels shall be included with Prestressed Beams for payment.

BEARING AND TRANSVERSE JOINT DETAILS AT ABUTMENTS



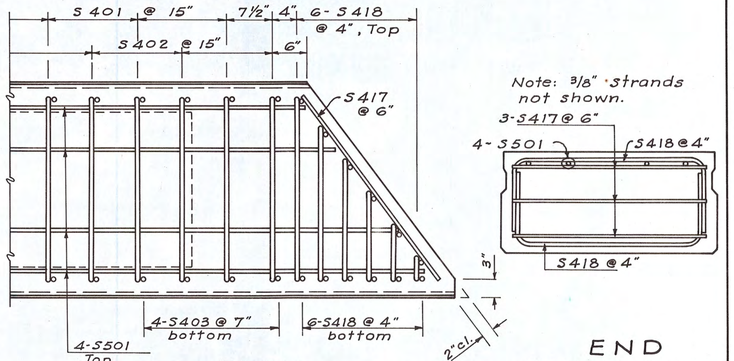
SECTION



Note: Each tie rod shall be the equivalent of a 1"ϕ mild steel rod as per Sec. M-7.4, tightened to 18,000 pounds. Tension may be applied by a torque of approx. 300 Ft. LBs. with the threads lubricated.

PLAN

DETAIL - TIE RODS

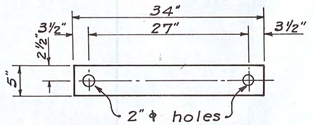


PLAN

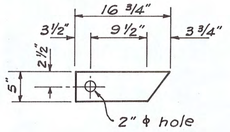
END ELEVATION

DETAIL - BEAM END BLOCK

Note: Elastomeric Bearing Pads for B17-36 beams shall be of 50 hardness and shall be ½" thick uncompressed. Pads shall conform to A.S.T.M. Requirements referred to in Sec. M-10.29.

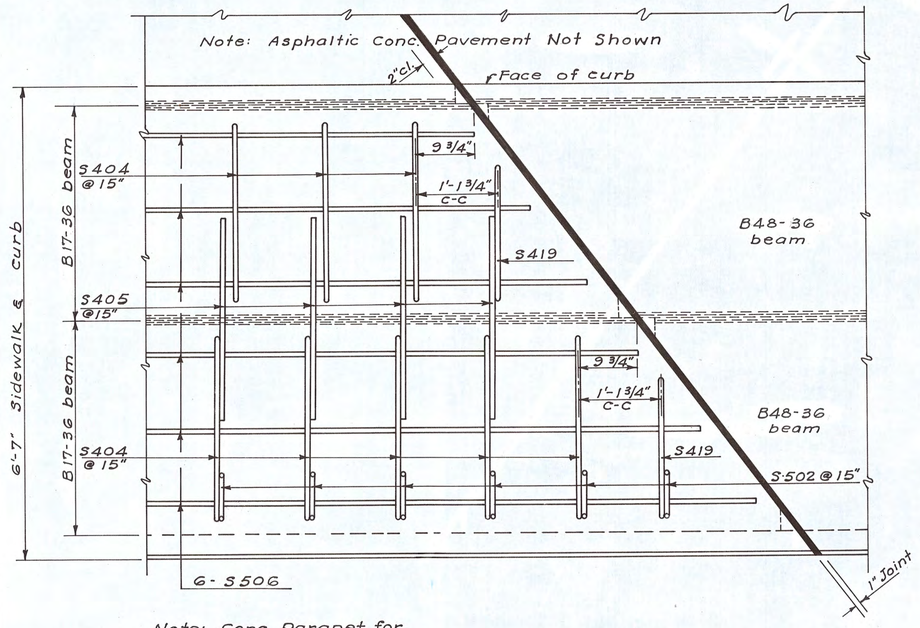


USE BETWEEN ADJACENT B17-36 BEAMS



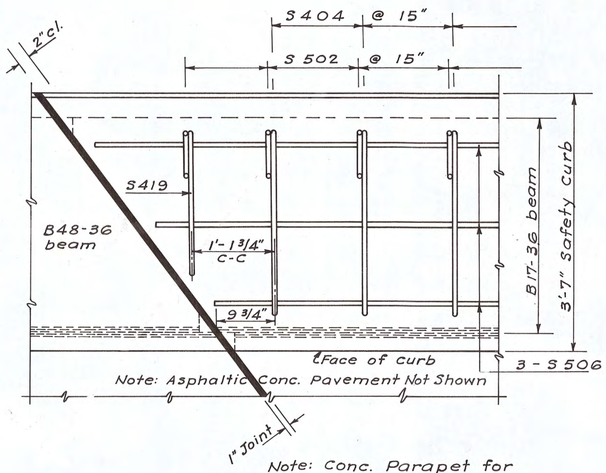
USE AT OUTSIDE OF OUTER BEAMS

ELASTOMERIC BEARING PADS



Note: Conc. Parapet for bridge railing not shown.

REINFORCEMENT FOR SIDEWALK AT SKEWED END



Note: Conc. Parapet for bridge railing not shown.

REINFORCEMENT FOR SAFETY CURB AT SKEWED END

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

SUPERSTRUCTURE END SPAN DETAILS RIDGEWAY ROAD OVER DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed	Drawn	Checked	Reviewed
		P.N.S.	E.G.W.	R.L.B.	

LOCATION MAP

LATITUDE: 39°42'15" LONGITUDE: 84°10'38"

SCALE IN MILES

0 1 2 3

RIDGEWAY ROAD BRIDGE REHABILITATION PROJECT NO. 03-904B OPWC #CD11G

INDEX OF SHEETS:

2002 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

FEDERAL PROJECT NO.

PID NO.

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT

RIDGEWAY ROAD

1 / 19

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

PLAN PREPARED BY:

LJB Inc. • 3100 Research Blvd. • P.O. Box 20246
Dayton, OH 45420-0246
(937) 259-5000 tel • (937) 259-5100 fax • ljbinc.com

ENGINEERS SEAL:

STATE OF OHIO MARK P. HENDERSON E-50163 REGISTERED PROFESSIONAL ENGINEER

SIGNED: Mark P. Henderson
DATE: 9-9-04

ENGINEERS SEAL:

STATE OF OHIO GABRIEL K. BITAR 58251 REGISTERED PROFESSIONAL ENGINEER

SIGNED Gabriel Bitar
DATE: 9-9-04

STANDARD CONSTRUCTION DRAWINGS

BP-3.1	7-16-04					AS-1-81	7-19-02	864	7-11-00
						PSBD-1-93	7-19-02		
CB-2.2	7-19-02								
MH-1.2	7-19-02								
MT-101.60	10-18-02								

SUPPLEMENTAL SPECIFICATIONS

SPECIAL PROVISIONS

CITY OF KETTERING
3600 Shroyer Road Kettering, Ohio 45429-2799
(937) 296-2436 www.ketteringoh.org

APPROVED Albert E. Fullenkamp PE,PS
DATE 9-9-2004 PUBLIC SERVICE DIRECTOR/ CITY ENGINEER

SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, TOPSOIL, PROCESSED	75 CU.YD.
659, SEEDING AND MULCHING (HYDROSEED)	675 SQ.YD.
659, REPAIR SEEDING AND MULCHING (HYDOSEED)	34 SQ.YD.
659, INTER-SEEDING	34 SQ.YD.
659, COMMERCIAL FERTILIZER	0.01 TON
659, WATER	0.42 M.GAL.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

UTILITIES

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

GAS
VECTERN ENERGY DELIVERY OF OHIO (GAS)
6500 CLYO ROAD
CENTERVILLE, OHIO 45459
CHUCK KANOY (P) 937-312-2533 (F) 937-312-2530

TELEPHONE
KMC TELECOM
2870 MAIN STREET
MORAINE, OHIO 45439
MR. SEAN JOHNSTON (P) 937-535-2004 (F) 937-535-4013

AMERITECH
3233 WOODMAN DRIVE
DAYTON, OHIO 45420
ART LAZAR (P) 937-296-3888 (F) 937-296-7095

ELECTRIC
DP&L - ELECTRIC
1900 DRYDEN ROAD
DAYTON, OHIO 45401
MARK EDSAL (P) 937-331-4860

DP & L- TRANSMISSIONS
1900 DRYDEN ROAD
DAYTON, OHIO 45401
GREGORY TOKAR (P) 937-331-4647

DP & L- ENERGY (STREET LIGHTS)
1065 WOODMAN DRIVE
DAYTON, OHIO 45432
ROBIN LIVESAY (P) 937-259-7192 (F) 937-259-7867

SANITARY AND WATER
MONTGOMERY COUNTY SANITARY DEPARTMENT
1850 SPAULDING ROAD
DAYTON, OHIO 45432
CHARLES SCHAFFER (P) 937-781-2629 (F) 937-297-0952

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.

WHILE AN ATTEMPT HAS BEEN MADE TO LOCATE THE EXACT UTILITY LOCATION ON THE PLANS, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN DIGGING IN THE AREA OF A SUSPECTED UTILITY AS THE ACTUAL UTILITY LOCATIONS MAY DIFFER FROM THOSE MARKED ON THE PLANS

IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AT 1-800-362-2764 2 WORKING DAYS PRIOR TO DIGGING.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

CONSTRUCTION NOISE

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, ANY POWER-OPERATED CONSTRUCTION-TYPE DEVICE SHALL NOT BE OPERATED BETWEEN THE HOURS OF 9:00PM AND 7:00AM UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. IN ADDITION, ANY SUCH DEVICE SHALL NOT BE OPERATED AT ANY TIME IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON N.G.S. DATUM.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

TERM ENGINEER

THE TERM "ENGINEER" IN THESE PLANS, UNLESS SPECIFIED OTHERWISE, SHALL MEAN THE CITY OF KETTERING ENGINEER, OR THE INSPECTOR ON SITE.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

ALL CONSTRUCTION, UNLESS OTHERWISE SPECIFIED, SHALL BE IN ACCORDANCE WITH THE CITY OF KETTERING STANDARDS AND SPECIFICATIONS. THE CURRENT CONSTRUCTION AND MATERIAL SPECIFICATIONS OF THE OHIO DEPARTMENT OF TRANSPORTATION ARE MADE A PART OF THE SPECIFICATIONS AND WILL GOVERN UNLESS OTHERWISE SPECIFIED.

STANDARD DRAWINGS

THE CONTRACTOR SHALL FIRST REFERENCE THE CITY OF KETTERING STANDARD DRAWINGS, AND ONLY IN THE EVENT THAT AN ITEM IS NOT COVERED BY THE CITY STANDARDS, SHALL THEN REFERENCE THE O.D.O.T. STANDARD DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE STANDARD CONSTRUCTION DRAWINGS.

PRE-CONSTRUCTION MEETING

FOLLOWING THE AWARD OF THE CONTRACT, AND BEFORE STARTING ANY WORK, THE CONTRACTOR AND HIS SUPERINTENDENT SHALL MEET WITH THE ENGINEER FOR A PRE-CONSTRUCTION MEETING. THE PURPOSE OF SUCH IS FOR REVIEWING THE SITE, ANY RESTRICTIONS AND REGULATIONS GOVERNING THE WORK.

ANY SCHEDULES, REQUESTS, PAPERS, APPROVALS, SUBMITTALS, SHOP DRAWINGS, CHANGES, ETC. AS CALLED FOR IN THE CONTRACT DOCUMENTS SHALL BE DONE AT THIS TIME UNLESS OTHERWISE DIRECTED.

COOPERATION WITH UTILITY COMPANIES

WHILE WORK OF THIS CONTRACT IS BEING PERFORMED, THE UTILITY COMPANIES MAY BE WORKING IN THE AREA ADJUSTING AND RESETTING EXISTING FACILITIES. THE CONTRACTOR SHALL FULLY COOPERATE WITH UTILITY COMPANIES SO THAT THE ENTIRE WORK IS COMPLETED IN A MANNER CONSISTENT WITH GOOD CONSTRUCTION PRACTICES. THE CONTRACTOR, UTILITIES AND ENGINEER SHALL DISCUSS THE NECESSARY CONSTRUCTION SCHEDULES TO COMPLETE THE PROJECT AT THE PRE-CONSTRUCTION MEETING.

MATERIALS AND WORKMANSHIP

UNLESS OTHERWISE SPECIFIED, ALL MATERIALS SHALL BE NEW AND BOTH WORKMANSHIP AND MATERIALS SHALL BE OF THE FIRST QUALITY, PROPER AND SUFFICIENT FOR THE PURPOSE CONTEMPLATED. THE CONTRACTOR SHALL FURNISH, IF SO REQUIRED, SATISFACTORY EVIDENCE AS TO THE KIND OF QUALITY OF MATERIALS AND WORKMANSHIP. ALL ITEMS OF EQUIPMENT AND/OR MATERIALS PROPOSED FOR SUBSTITUTION MUST BE APPROVED BY THE ENGINEER IN WRITING AND SHALL BE EQUAL OR BE SUPERIOR TO THE ITEMS SPECIFIED IN THE CONTRACT DOCUMENTS. IF SAID SUBSTITUTION PROPOSED BY THE CONTRACTOR FOR A SPECIFIED ITEM REQUIRED ENGINEERING REVISIONS, THE EXPENSE OF SUCH REVISIONS SHALL BE PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

PERMITS, FEES AND NOTICES

THE CONTRACTOR SHALL OBTAIN, AT HIS EXPENSE, ANY AND ALL PERMITS AND INSPECTIONS REQUIRED FOR THE PROSECUTION OF THE WORK BY LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS.

CONSTRUCTION STAKES

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PRESERVATIONS OF ALL STAKES AND MARKS AND, IF ANY HAVE BEEN CARELESSLY OR WILLFULLY DESTROYED OR DISTURBED BY THE CONTRACTOR, THE COST OF REPLACING THEM WILL BE CHARGED AGAINST HIM. IN THE EVENT THAT CONSTRUCTION LAYOUT STAKES ARE PROVIDED BY THE CITY, THE CITY WILL REQUIRE AT LEAST TWO DAYS NOTICE OF A NEED FOR ANY STAKING. HOWEVER, REQUESTS WILL BE ACTED UPON AS SOON AS SCHEDULING PERMITS.

INSPECTION

REQUESTS FOR INSPECTION SHALL BE MADE FOUR (4) HOURS PRIOR TO REQUIREMENT BY CALLING THE CITY OF KETTERING ENGINEERING DEPARTMENT AT (937) 296-2436.

ENVIRONMENTAL PROTECTION

EXTREME CARE SHALL BE TAKEN BY THE CONTRACTOR AS TO DISTURB AS LITTLE AS POSSIBLE OF THE NATURAL ENVIRONMENT WITHIN THE WORK AREA AND RIGHT-OF-WAY. THE CONTRACTOR SHALL CONTROL EROSION AND SEDIMENTATION DURING CONSTRUCTION AS PER THE CITY OF KETTERING ORDINANCE AND KEEP HARD SURFACE PAVEMENT FREE OF MUD, DIRT, GRAVEL, AND STONE.

ESTIMATED QUANTITIES

QUANTITIES SHOWN IN THE QUANTITY SHEET ARE BASED ON ESTIMATES FROM THE PLANS. ACTUAL QUANTITIES WILL BE BASED ON CALCULATED FIELD MEASUREMENTS AND/OR ACCEPTED RECEIPTS (MATERIAL TICKETS).

EXISTING STORM SEWER

THE CONTRACTOR SHALL USE CARE NOT TO DAMAGE ANY EXISTING STORM STRUCTURE (CONDUIT, HEADWALL, CATCH BASIN, MANHOLE, OR EMBANKMENT) THAT IS TO REMAIN IN PLACE. IN THE EVENT THAT A STORM STRUCTURE IS DAMAGED, IT WILL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR TO FIX OR REPLACE THAT STRUCTURE TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL BEAR ALL COSTS OF THAT REPAIR OR REPLACEMENT.

ANY STORM SEWER STRUCTURE THAT IS CALLED OUT AS TO BE ABANDONED, MAY BE REMOVED IN THE EVENT THAT ITS PRESENCE IN THE GROUND WILL INTERFERE WITH THE CONTRACTOR'S ABILITY TO CONSTRUCT THE JOB, AT THE APPROVAL OF THE ENGINEER.

MAINTENANCE OF SEWER FLOWS AND CHANNEL FLOWS

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO MAINTAIN AT ALL TIMES SEWER FLOWS THROUGH EXISTING FACILITIES TO REMAIN IN PLACE AND THROUGH EXISTING FACILITIES TO BE REPLACED UNTIL NEW FACILITIES ARE COMPLETED. ANY ADDITIONAL COST INVOLVED IN MAINTAINING THESE FLOWS BY PUMPING OR BY ANY OTHER MEANS APPROVED BY THE ENGINEER SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RESPECTIVE ITEMS.

OSHA

IT IS A CONDITION OF THIS CONTRACT, AND SHALL BE MADE A CONDITION OF EACH SUBCONTRACT ENTERED INTO PURSUANT TO THIS CONTRACT, THAT THE CONTRACTOR AND ANY SUBCONTRACTOR SHALL NOT REQUIRE ANY LABORER OR MECHANIC EMPLOYED IN THE PERFORMANCE OF THE CONTRACT TO WORK IN SURROUNDING OR UNDER WORKING CONDITIONS WHICH ARE UNSANITARY, HAZARDOUS, OR DANGEROUS TO HIS/HER HEALTH OR SAFETY, AS DETERMINED UNDER CONSTRUCTION SAFETY AND HEALTH STANDARD AND REGULATIONS (TITLE 29, CODE OR FEDERAL REGULATIONS, PART 1926, FORMERLY PART 1518 AS REVISED FROM TIME TO TIME) THE CONTRACTOR SHALL CONSTRUCT OR ERECT ALL SAFETY DEVICES OR APPURTENANCES, REQUIRED BY FEDERAL OR STATE LAWS FOR CONTRACTOR'S EMPLOYEE SAFETY PRIOR TO THE OWNER'S PERSONNEL PERFORMING REQUIRED SURVEY WORK, INSPECTION OR TESTING IN AN AFFECTED AREA.

DUST CONTROL

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

K-616, WATER	8 M.GAL.

STREET NAMES AND TRAFFIC SIGNS

ALL CITY STREET NAME SIGNS AND TRAFFIC SIGNS TO BE DISTURBED BY CONSTRUCTION SHALL BE CAREFULLY REMOVED BY THE CONTRACTOR AND SET ASIDE FOR LATER PICKUP BY THE CITY OF KETTERING. PAYMENT FOR THIS OPERATION SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM K-201 CLEARING AND GRUBBING.

CALCULATED JMD
CHECKED GKB

GENERAL NOTES

RIDGEWAY ROAD

REMOVAL OF EXISTING FLEXIBLE PAVEMENT AND NON-RIGID PAVEMENT

REMOVAL OF EXISTING FLEXIBLE PAVEMENT INCLUDES THE REMOVAL OF DRIVEWAYS CONSTRUCTED OF GRAVEL AND/OR ASPHALT, REMOVAL AND DISPOSAL OF ASPHALT FROM CONCRETE CURB GUTTER PLATES, INCLUDING BRICK, STONE, ETC. IN AREAS WHERE EMBANKMENT OR FILL ARE TO BE CONSTRUCTED AND IN AREAS OUTSIDE OF THE NEW PAVEMENT LIMITS, THE FLEXIBLE PAVEMENTS SHALL BE REMOVED AS FOLLOWS:

EMBANKMENT AND FILLS - THE ASPHALT SURFACE SHALL BE REMOVED, THE BASE MATERIAL SCARIFIED FOR FULL DEPTH, MIXED WITH SUFFICIENT SOIL, AND RECOMPACTED TO INSURE THE ELIMINATION OF ANY PLANES OF SEPARATION BETWEEN THE EMBANKMENT AND THE EXISTING PAVEMENT. EXCAVATION MATERIAL, IF SUITABLE, MAY BE REUSED AS EMBANKMENT BUT DOES NOT QUALIFY FOR TOP SOIL.

OUTSIDE OF NEW PAVEMENT - THE ASPHALT SURFACE SHALL BE REMOVED, THE BASE MATERIAL SCARIFIED AND SUFFICIENT MATERIAL REMOVED TO ALLOW FOUR INCHES OF TOP SOIL TO SPREAD OVER THE AREA AND PROPERLY BLENDED INTO THE SURROUNDING TOPOGRAPHY.

THE AREAS TO BE TREATED AS SPECIFIED ABOVE ARE SHOWN ON THE PLANS OR MAY BE AS DIRECTED BY THE ENGINEER. PAYMENT FOR SCARIFICATION AND THE REMOVAL OF ASPHALT AND BASE MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM K-203A, EXCAVATION.

ASPHALT PAVING

MAINLINE ASPHALT PAVEMENT SHALL BE PLACED FIRST AND THEN SIDE-STREET PAVEMENT TO BE PLACED TO MEET MAINLINE GRADES UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WHERE PROPOSED PAVEMENT IS TO BUTT THE EXISTING PAVEMENT, THE EXISTING PAVEMENT IS TO BE SAW CUT AND THE JOINT IS TO BE SEALED WITH APPROVED BITUMINOUS MATERIAL. COST OF SAW CUTTING TO BE INCLUDED IN COST FOR ASPHALT.

CONCRETE EXPANSION JOINTS

ALL CONCRETE EXPANSION JOINT MATERIAL TO BE USED SHALL BE ½" PRO FLEX VINYL EXPANSION JOINT MATERIAL OR EQUAL. OTHER ALTERNATIVE MATERIALS REQUIRE APPROVAL OF THE ENGINEER. THE COST OF EXPANSION JOINT MATERIAL AND INSTALLATION SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICE BID FOR THE RESPECTIVE CONCRETE ITEMS.

WORK HOURS

ALLOWED WORK HOURS ARE FROM SUNRISE TO SUNSET, EXCLUDING SUNDAYS OR KETTERING HOLIDAYS. A SPECIAL PERMIT IS REQUIRED TO WORK EXTENDED HOURS.

TRAILER STORAGE AREA

CONTRACTOR MAY USE WAYSIDE COURT FROM RIDGEWAY ROAD TO HILLSIDE AVENUE AS STORAGE AREA FOR TRAILER AND EQUIPMENT PERTAINING TO THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN STORAGE AREA IN A NEAT AND TIDY MANNER AND SHALL REPAIR ANY DAMAGE TO THE AREA AT NO COST TO THE OWNER.

ITEM K-201 - CLEARING AND GRUBBING

THIS BID ITEM SHALL INCLUDE THE REMOVAL OF ANY BRUSH OR TREES LESS THAN 12" IN DIAMETER REQUIRED TO CONSTRUCT THIS PROJECT. AN EFFORT SHOULD BE MADE TO SAVE TREES/BRUSH WHEN POSSIBLE. THE CITY OF KETTERING RESERVES THE RIGHT TO REQUEST THE ORIGINAL LUMP SUM BID ITEM, K-201 - CLEARING AND GRUBBING. THIS BID ITEM SHALL ALSO INCLUDE THE REMOVAL & SALVAGE OF ALL EXISTING TRAFFIC SIGNS AND SUPPORT POSTS WITHIN THE PROJECT LIMITS. REFER TO LANDSCAPE PLAN SHEET FOR DESCRIPTION OF LANDSCAPING SITE PREPARATION WORK TO BE PAID FOR UNDER THIS ITEM.

ITEM K-203A - EXCAVATION

THE QUANTITY SHOWN IN THE GENERAL SUMMARY FOR ITEM K-203A - EXCAVATION HAS BEEN INCLUDED AS A CONTINGENCY QUANTITY.

THE FOLLOWING ESTIMATED QUANTITY HAVE BEEN INCLUDED IN THE GENRAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER

K-203A - EXCAVATION 10 C.Y.

ITEM K-203A - ROADWAY EXCAVATION AND EMBANKMENT

THE QUANTITY SHOWN IN THE GENERAL SUMMARY FOR ITEM K-203A - ROADWAY EXCAVATION AND EMBANKMENT HAS BEEN INCLUDED AS A CONTINGENCY QUANTITY.

THE FOLLOWING ESTIMATED QUANTITY HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER

K-203A - ROADWAY EXCAVATION AND EMBANKMENT 10 C.Y.

ITEM K-448 - ASPHALT CONCRETE

NO PLANT TESTING, JOB MIX FORMULA, OR QUALITY CONTROL REPORTS ARE REQUIRED FOR THIS ITEM. THE QUANTITY OF MATERIAL MEASURED FOR PAYMENT SHALL BE THE ACTUAL NUMBER OF TONS COMPACTED IN PLACE AS DETERMINED BY PLANT DELIVERY TICKETS. PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER TON.

ITEM K-604 - YARD INLET

THE PROJECT HAS BEEN DESIGNED TO AVOID YARD INLETS. FIELD CONDITIONS MAY REQUIRE THE INSTALLATION OF YARD INLETS AT A FEW LIMITED LOCATIONS, PRIMARILY AT CONSTRUCTION LIMIT AREAS. ANY EXISTING YARD INLETS OR NEW YARD INLETS SHALL BE CONNECTED TO THE STORM SEWER SYSTEM WHERE POSSIBLE. WHERE NOT FEASIBLE, YARD INLETS SHALL BE DISCHARGED THROUGH CURBING. CITY OF KETTERING STANDARDS SHALL APPLY IN ALL CASES. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE CONTINGENCY QUANTITY FOR ITEM K-604 - YARD INLET.

ALL REINFORCING STEEL USED IN BRIDGE STRUCTURE SHALL BE EPOXY COATED.

ITEM 614 - MAINTENANCE OF TRAFFIC

IN ADDITION TO THE REQUIREMENTS AS INDICATED IN THE 'OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES', AND PERTINENT ITEMS OF KETTERING'S CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE FOLLOWING REQUIREMENTS SHALL APPLY.

IT IS THE INTENTION OF THE CITY TO PERFORM THE REQUIRED WORK WITH THE LEAST INCONVENIENCE, AND THE MAXIMUM SAFETY TO THE CONTRACTOR AND THE TRAVELING PUBLIC. ANY VARIANCE FROM THESE MAINTENANCE OF TRAFFIC NOTES SHALL BE APPROVED, IN ADVANCE, IN WRITING BY THE ENGINEER.

TRAFFIC IS TO BE MAINTAINED IN A UNIFORM PATTERN THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT AND IS NOT TO BE SUBJECTED TO CONSTANT LANE SHIFTS. THE CONTRACTOR SHALL ARRANGE OPERATIONS SO AS TO MINIMIZE INTERFERENCE TO THE CONTINUOUS FLOW OF TRAFFIC.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSTING ALL TEMPORARY SIGNS NECESSARY TO ADVISE MOTORISTS OF ROAD CONSTRUCTION, LANE CLOSURES, ROAD CLOSURES, AND ANY OTHER CONDITIONS DEEMED APPROPRIATE BY THE ENGINEER.

DURING ALL HOURS WHEN TRAFFIC CONTROL DEVICES ARE USED, THE CONTRACTOR SHALL EMPLOY AT LEAST ONE QUALIFIED PERSON TO CONTINUOUSLY MONITOR THE RESTRICTED AREAS AND TRAFFIC CONTROL IN ORDER TO PROVIDE A SAFE FACILITY FOR THE TRAVELING PUBLIC. THE CONTRACTOR SHALL HAVE AVAILABLE ALL TOOLS AND MATERIALS NECESSARY TO PERFORM THIS FUNCTION AT ALL TIMES.

BEFORE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF A PERSON OR PERSONS WHO CAN BE CONTACTED 24 HOURS A DAY BY THE CITY OF KETTERING. THIS PERSON OR PERSONS SHALL BE RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN THE TRAVELED PAVEMENT SAFELY.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL LOCAL DRIVES IN THE PROJECT AREA THROUGHOUT THE DURATION OF THE PROJECT. CONTRACTOR SHALL COORDINATE DURATION OF CLOSURES AND DETOUR ROUTES WITH THE CITY OF KETTERING ENGINEER'S OFFICE.

PHASE A CONSTRUCTION: ALL WORK EXCLUDING REMOVAL OR INSTALLATION OF BRIDGE BEAMS. THE FOLLOWING REQUIREMENTS SHALL BE FOLLOWED DURING PHASE A CONSTRUCTION:

WHILE THE BRIDGE IS CLOSED, RIDGEWAY ROAD SHALL BE CLOSED FROM OAK KNOLL DRIVE TO AVON WAY. HOWEVER, ACCESS TO LOCAL DRIVEWAYS SHALL BE MAINTAINED DURING THE ROAD CLOSURE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL FOR ROAD CLOSURES.

ON DOROTHY LANE A MINIMUM OF ONE LANE SHALL BE KEPT OPEN IN BOTH DIRECTIONS AT ALL TIMES (EXCEPT DURING PHASE B). BOTH EASTBOUND LANES SHALL BE OPEN FROM 6:00 A.M. TO 8:00 A.M. AND FROM 4:00 P.M. TO 6:00 P.M., MONDAY THROUGH FRIDAY. ALL LANES SHALL BE KEPT OPEN SATURDAY AND SUNDAY, WHENEVER POSSIBLE, AS DETERMINED BY THE PROJECT ENGINEER.

PHASE B CONSTRUCTION: REMOVAL OR INSTALLATION OF BRIDGE BEAMS. THE FOLLOWING REQUIREMENTS SHALL BE FOLLOWED DURING PHASE B CONSTRUCTION:

DOROTHY LANE MAY BE CLOSED TO THROUGH TRAFFIC WHILE BRIDGE BEAMS ARE BEING REMOVED OR PLACED. ACCEPTABLE HOURS FOR CLOSING DOROTHY LANE TO THROUGH TRAFFIC ARE WORKDAYS 7:00 P.M. TO 6:00 A.M. THE CONTRACTOR SHALL NOTIFY THE CITY OF KETTERING AT LEAST TEN (10) WORKING DAYS PRIOR TO ANY CLOSURE OF DOROTHY LANE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL RELATING TO ROAD CLOSURES. THE CITY OF KETTERING WILL PROVIDE SIGNING FOR THE DETOUR ROUTE DURING PHASE B CONSTRUCTION.

NO WORK SHALL BE PERFORMED AND EXISTING LANES SHALL BE OPEN TO TRAFFIC ON DOROTHY LANE DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

FOURTH OF JULY
LABOR DAY

KETTERING HAS AN ANNUAL LABOR DAY WEEKEND HOLIDAY AT HOME PARADE AND FESTIVAL. THE CONTRACTOR SHALL COORDINATE CLOSELY WITH THE CITY OF KETTERING TO MINIMIZE CONSTRUCTION AND INCONVENIENCES TO THE PUBLIC DURING THE LABOR DAY WEEKEND, BEGINNING AT 9:00 A.M. ON THE SATURDAY PRIOR TO LABOR DAY THROUGH 9:00 A.M. ON THE TUESDAY AFTER LABOR DAY.

ALL LABOR AND MATERIALS NECESSARY TO MAINTAIN LOCAL TRAFFIC AND PROVIDE NECESSARY SIGNS SHALL BE PAID FOR UNDER THE LUMP SUM ITEM 614 - MAINTENANCE OF TRAFFIC.

CALCULATED JMD
CHECKED GKB

GENERAL NOTES

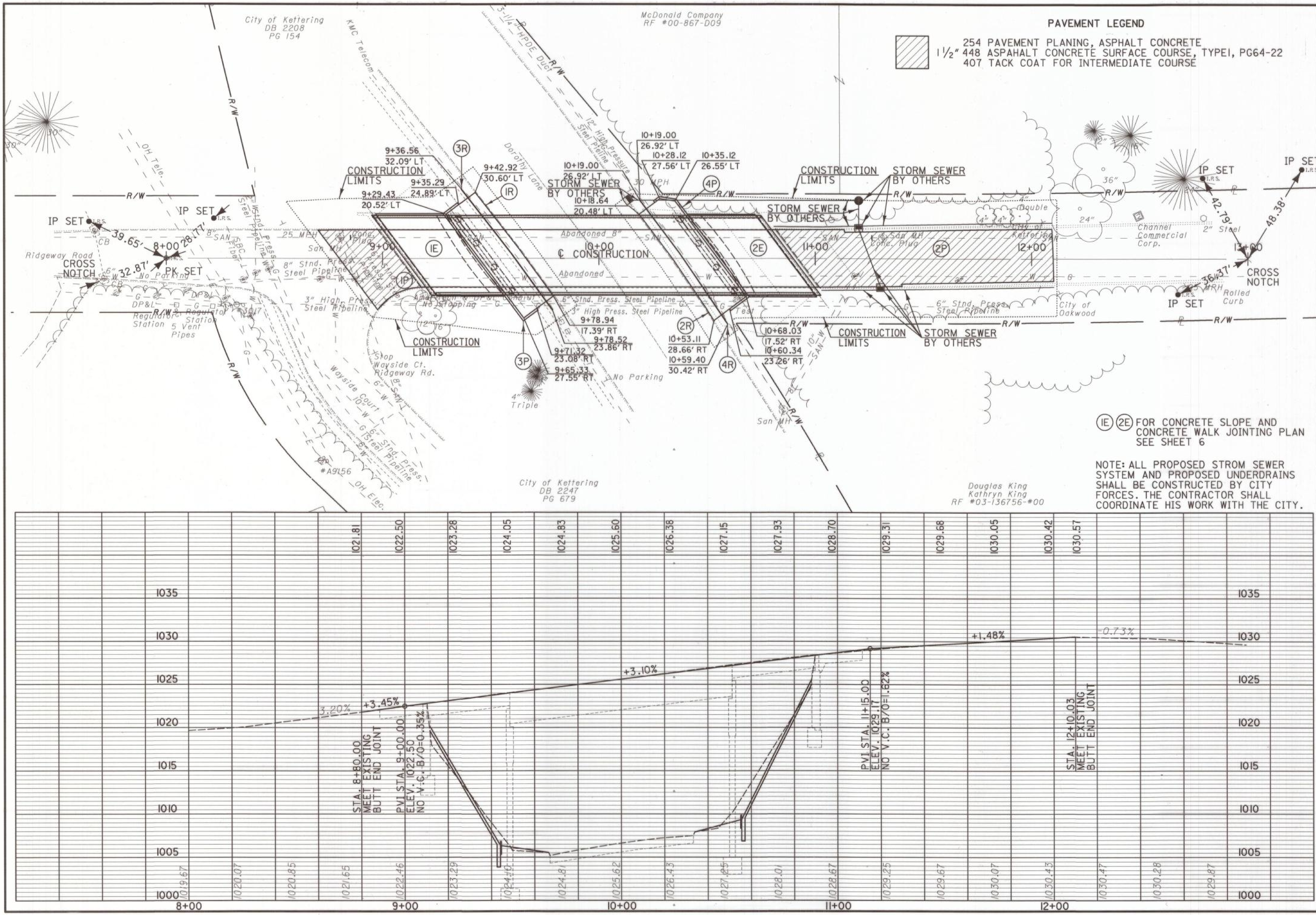
RIDGEWAY ROAD

SHEET NUMBER	REF NO.	TOTAL THIS SHEET	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
							ROADWAY	
			K-201		LUMP	LUMP	CLEARING AND GRUBBING	
			K-203A		20	C.Y.	EXCAVATION	
			K-203A		10	C.Y.	ROADWAY EXCAVATION AND EMBANKMENT	
	1R & 2R		608	10000	2056	S.F.	4" CONCRETE WALK	
	3R & 4R		625	25502	280	FT.	CONDUIT, 3", 725.05	
							EROSION CONTROL	
	1E & 2E		601	21001	265	S.Y.	CONCRETE SLOPE PROTECTION, AS PER PLAN	
			659	00300	75	C.Y.	TOPSOIL, PROCESSED	
			659	10000	675	S.Y.	SEEDING AND MULCHING (HYDROSEED)	
			659	14000	34	S.Y.	REPAIR SEEDING AND MULCHING (HYDROSEED)	
			659	15000	34	S.Y.	INTER-SEEDING	
			659	20000	0.01	TON	COMMERCIAL FERTILIZER	
			K-659		0.42	M.GAL.	WATER	
							DRAINAGE	
			K-604		1	EACH	YARD INLET	
							PAVEMENT	
	1P & 2P		254	01000	425	S.Y.	PAVEMENT PLANING, ASPHALT CONCRETE	
	1P & 2P		407	14000	21	GAL.	TACK COAT FOR INTERMEDIATE COURSE @ 0.05 GAL./S.Y.	
	1P & 2P		448	47020	18	TON	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22	
	3P & 4P		609	26000	149	FT.	CURB, MISC.:SLOPE PROTECTION TOE, AS PER PLAN	
							MISCELLANEOUS	
			614	11000	LUMP	LUMP	MAINTAINING TRAFFIC	

CALCULATED: JMD
CHECKED: GKB

GENERAL SUMMARY

RIDGEWAY ROAD



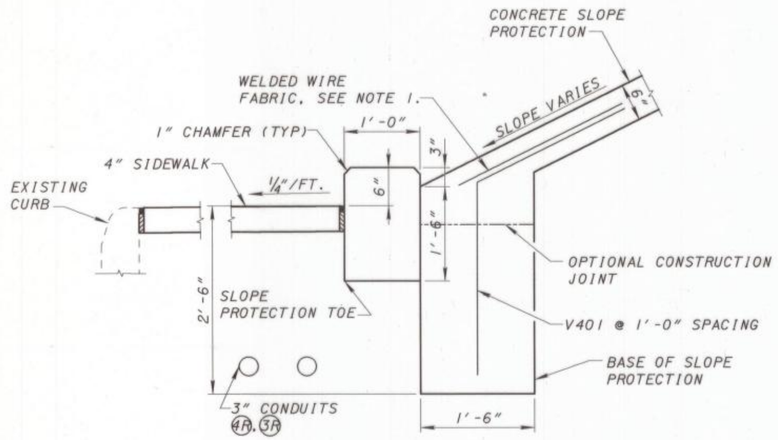
CALCULATED JMD

CHECKED GKB

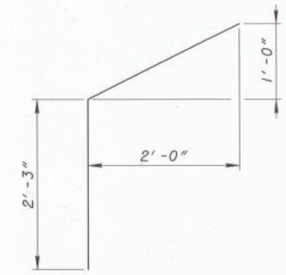
RIDGEWAY ROAD PLAN AND PROFILE STA. 8+00 TO STA. 13+00

RIDGEWAY ROAD

5/19



SECTION THROUGH CONCRETE SLOPE PROTECTION TOE



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CONCRETE SLOPE PROTECTION NOTES:

1. THE CONCRETE SLOPE PROTECTION SHALL BE REINFORCED WITH WELDED WIRE FABRIC EQUIVALENT TO NO.3 ROUND BARS, SPACED AT 12" CENTERS IN TWO DIRECTIONS. THE FABRIC SHALL BE PLACED MIDWAY BETWEEN THE TOP AND BOTTOM OF THE 6" SLAB.

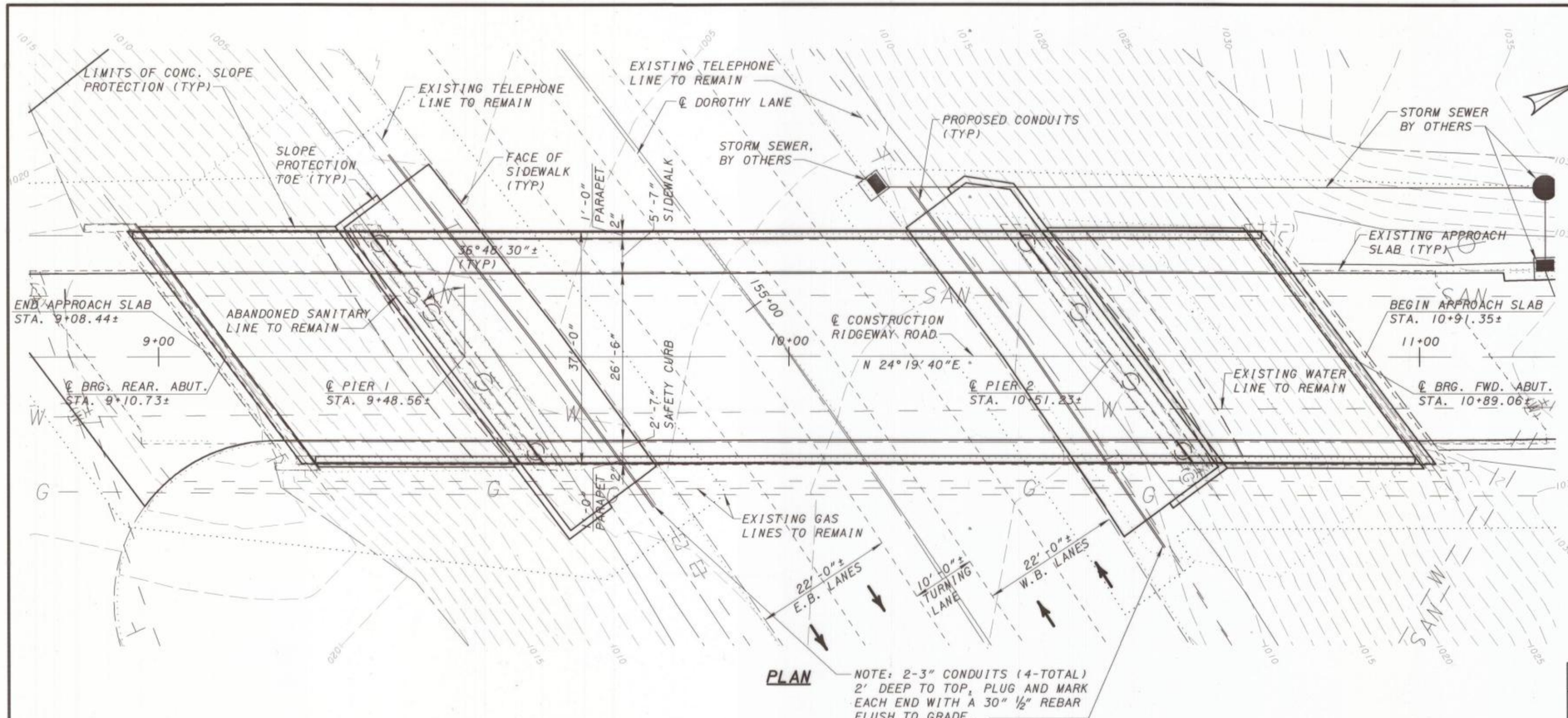
2. ALL MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE 6" CONCRETE SLOPE PROTECTION AND BASE SHALL BE INCLUDED IN ITEM 601: CONCRETE SLOPE PROTECTION, AS PER PLAN.

3. THE CONCRETE SLOPE PROTECTION SHALL ADHERE TO SECTION 601.07 OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS, UNLESS NOTED OTHERWISE IN THE PLANS.

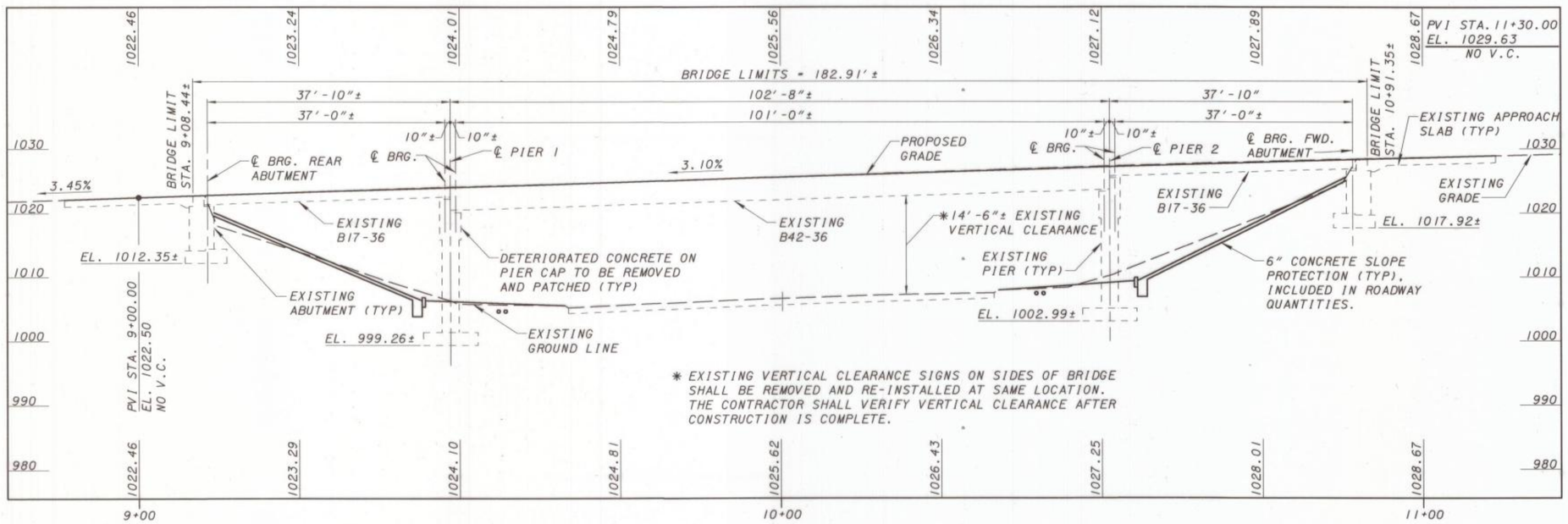
4. WHERE EXCAVATION AND/OR EMBANKMENT IS NECESSARY TO PLACE SLOPE PROTECTION, THE FINAL GRADE SHALL BE COMPACTED PRIOR TO PLACING SLOPE PROTECTION. THIS EXCAVATION, EMBANKMENT, AND COMPACTION SHALL BE INCLUDED IN ITEM 601: CONCRETE SLOPE PROTECTION, AS PER PLAN.

5. ALL EXPOSED SURFACES OF THE CONCRETE SLOPE PROTECTION SHALL BE SEALED USING EPOXY-URETHANE SEALER CONFORMING TO CMS SUPPLEMENTAL SPECIFICATION 864. SEALER COLOR SHALL MATCH FEDERAL COLOR NO. 36628 (GREY) AND SHALL BE COORDINATED WITH THE CITY ENGINEER'S OFFICE OF KETTERING. THE COST OF THE CONCRETE SEALER SHALL BE INCLUDED IN ITEM 601: CONCRETE SLOPE PROTECTION, FOR PAYMENT.

6. FOR SLOPE PROTECTION AND 4" SIDEWALK, CONTRACTOR SHALL SUBMIT JOINTING PLAN FOR ENGINEER'S APPROVAL. JOINTING SHALL BE TYPICALLY AT MINIMUM 4'-0" SPACING AND SHALL BE NEAT AND AESTHETICALLY PLEASING IN APPEARANCE.



PLAN



* EXISTING VERTICAL CLEARANCE SIGNS ON SIDES OF BRIDGE SHALL BE REMOVED AND RE-INSTALLED AT SAME LOCATION. THE CONTRACTOR SHALL VERIFY VERTICAL CLEARANCE AFTER CONSTRUCTION IS COMPLETE.

PROFILE

NOTES:

1. EARTHWORK LIMITS SHOWN ARE APPROXIMATE. SEE ROADWAY PLANS FOR ADDITIONAL INFORMATION.
2. FOR BENCHMARK INFORMATION, SEE ROADWAY PLANS.
3. FOR RIGHT OF WAY INFORMATION, SEE ROADWAY DETAILS.

EXISTING STRUCTURE

TYPE: THREE SPAN PRESTRESSED REINFORCED CONCRETE NON-COMPOSITE BOX BEAM SUPERSTRUCTURE WITH REINFORCED CONCRETE SUBSTRUCTURE
SPANS: 37'-0"±, 101'-0"±, 37'-0"± C/C BEARINGS
ROADWAY: 26'-6"± F/F OF CURBS, SIDEWALK (WEST) VARIES FROM 5'-3"± TO 5'-7½"±, SAFETY CURB (EAST) VARIES FROM 2'-3"± TO 2'-6¾"±
LOADING: S15-60 (HS15 EQUIVALENT)
ALIGNMENT: TANGENT
CROWN: 3/16" PER FOOT±
SKEW: 36°48'30"± RIGHT FORWARD
WEARING SURFACE: ASPHALT CONCRETE
APPROACH SLABS: AS-1-54 (20'-0" LONG)
DATE BUILT: 1965
STRUCTURE FILE NUMBER: 5763096

PROPOSED STRUCTURE

PROPOSED WORK: SIX NEW MIDSPAN NON-COMPOSITE PRESTRESSED CONCRETE BOX BEAMS WITH NEW SIDEWALK AND SAFETY CURB, NEW RAILINGS, AND NEW ASPHALT CONCRETE WEARING SURFACE, ON EXISTING REINFORCED CONCRETE SUBSTRUCTURE.
SPANS: 37'-0"±, 101'-0"±, 37'-0"± C/C BEARINGS
ROADWAY: 26'-6" F/F OF CURBS, 5'-7" SIDEWALK (WEST), 2'-7" SAFETY CURB (EAST)
LOADING: HS15
ALIGNMENT: TANGENT
CROWN: 3/16" PER FOOT
SKEW: 36°48'30"± RIGHT FORWARD
WEARING SURFACE: ASPHALT CONCRETE
LATITUDE: 39°42'18"N
LONGITUDE: 84°10'30"E

L.J.B. Inc. - 3100 Research Blvd. - P.O. Box 20246
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(937) 259-5000 tel - (937) 259-5100 fax - ljbinc.com

DATE 08-04
REVISED MPH
DRAWN JAL
DESIGNED DWS
CHECKED DWW
REVISED
STRUCTURE FILE NUMBER 5763096

MONTGOMERY COUNTY
STA. 9+08.44± TO
STA. 10+91.35±

SITE PLAN
BRIDGE NO. KET-RDGWY-0.36
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

1 / 13

7 / 19

GENERAL NOTES

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS: PSBD-1-93, REVISED 7-19-02 AND BR-2-98, REVISED 7-19-02 AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION: 864, DATED 7-11-00

DESIGN SPECIFICATIONS: THE MODIFICATIONS TO THIS STRUCTURE CONFORM TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS 2002, AND THE ODOT BRIDGE DESIGN MANUAL.

CONSTRUCTION AND MATERIAL SPECIFICATIONS: STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, DATED JANUARY 1, 2002.

DESIGN LOADING: HS15-44
DUE TO EXISTING BEAM CAPACITY, NO FWS WAS USED.
NO ADDITIONAL DEADLOAD OR FWS SHALL BE PERMITTED.

DESIGN DATA:

CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 P.S.I.(SUPERSTRUCTURE)
CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I.(SUBSTRUCTURE)
REINFORCING STEEL - ASTM A615 OR A996
GRADE 60 MINIMUM YIELD STRENGTH 60,000 P.S.I.

CONCRETE FOR PRESTRESSED BEAMS:
COMPRESSIVE STRENGTH (FINAL) - 5500 PSI
COMPRESSIVE STRENGTH (RELEASE) - 4000 PSI

PRESTRESSING STRAND:
AREA = 0.153 SQ.IN. DIAMETER = ½"
ULTIMATE STRENGTH = 270 KSI
INITIAL STRESS = 202.5 KSI (LOW RELAXATION STRANDS)

BEAM PROTECTION METHOD:
WATERPROOFING AND ASPHALT CONCRETE OVERLAY

EXISTING STRUCTURE VERIFICATION: DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 AND 105.02.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE CITY WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED IN THE FIELD.

EXISTING BRIDGE PLANS: EXISTING BRIDGE PLANS MAY BE INSPECTED AT THE CITY ENGINEERS OFFICE OF KETTERING, 3600 SHROYER ROAD, KETTERING, OHIO

ITEM 202: PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

DESCRIPTION: THIS WORK SHALL CONSIST OF REMOVAL OF ALL BRIDGE SIDEWALKS, SAFETY CURB, RAILING, THE PIER CAP ENDS, AND SIX CENTERSPAN PRESTRESSED CONCRETE BEAMS. CARE SHALL BE TAKEN DURING REMOVAL OPERATIONS TO PROTECT PORTIONS OF THE EXISTING STRUCTURE THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE.

(CONTINUED IN NEXT COLUMN)

(CONTINUED FROM PREVIOUS COLUMN)

PROTECTION OF TRAFFIC: PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN) ADJACENT TO AND/OR UNDER THE STRUCTURE AT LEAST 7 DAYS BEFORE CONSTRUCTION BEGINS. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. ALL COSTS ASSOCIATED WITH THIS TRAFFIC PROTECTION WILL BE INCLUDED WITH ITEM 202 FOR PAYMENT.

CENTERSPAN BEAM REMOVAL: CARE SHALL BE TAKEN DURING BEAM REMOVAL TO AVOID DAMAGING BEAMS WHICH ARE TO REMAIN. BEAMS DAMAGED BY THE CONTRACTOR'S REMOVAL OPERATIONS SHALL, AT NO COST TO THE PROJECT, BE REPLACED OR REPAIRED. PROPOSED REPAIRS, DEVELOPED BY A REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED IN WRITING FOR REVIEW AND APPROVAL BY THE CITY.

END SPAN SIDEWALK/SAFETY CURB REMOVAL: CARE SHALL BE TAKEN DURING REMOVAL OF SIDEWALK AND SAFETY CURB TO AVOID DAMAGING THE REINFORCING STEEL EXTENDING OUT OF THE EXISTING BI7-36 BEAMS. THIS REINFORCING STEEL SHALL BE CLEANED AND STRAIGHTENED TO BE USED IN NEW CONSTRUCTION. REINFORCING STEEL OR BEAMS DAMAGED BY THE CONTRACTOR'S REMOVAL METHODS SHALL BE REPLACED OR REPAIRED AT NO COST TO THE PROJECT.

PAYMENT: THIS WORK SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF 202, AND TO THE SATISFACTION OF THE ENGINEER.

ITEM 519: PATCHING CONCRETE STRUCTURES, AS PER PLAN: A CONTINGENCY QUANTITY OF 300 SQUARE FEET HAS BEEN INCLUDED WITH THIS ITEM TO BE USED AS DIRECTED BY THE ENGINEER FOR PATCHING ANY DETERIORATED AREAS ON THE TOP AND BOTTOM OF THE EXISTING BOX BEAMS TO REMAIN. PAYMENT FOR QUANTITIES PATCHED WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 519: PATCHING CONCRETE STRUCTURES, AS PER PLAN. PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURED WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

ITEM 515: KEYWAY GROUT FOR PRESTRESSED CONCRETE BOX BEAMS, AS PER PLAN: THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO REMOVE THE EXISTING SHEAR KEY GROUT AND REPLACE WITH NEW GROUT AS SPECIFIED IN STANDARD DRAWING PSBD-1-93. ALL LOOSE AND OR DETERIORATED GROUT, AS DETERMINED BY THE ENGINEER SHALL BE REMOVED AND REPLACED.

ITEM 864: SEALING OF CONCRETE SURFACE (EPOXY-URETHANE), AS PER PLAN: THIS ITEM SHALL INCLUDE THE SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS DETAILED IN THE PLANS AS WELL AS ALL EXPOSED SURFACES OF THE EXISTING ABUTMENTS AFTER RECONSTRUCTION IS COMPLETE. SEALER COLORS SHALL MATCH FEDERAL COLOR NO. 37722 (LIGHT GREY) AND FEDERAL COLOR NO. 36628 (GREY). COLOR NO. 37722 SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE CONCRETE RAILING AS WELL AS THE SIDEWALK/SAFETYCURB FASCIA OVERHANGS. COLOR NO. 36628 SHALL BE APPLIED TO ALL EXPOSED AREAS OF THE BOX BEAMS, PIERS AND ABUTMENTS. THE SEALER COLORS SHALL BE COORDINATED WITH THE CITY ENGINEER'S OFFICE OF KETTERING. THE CONTRACTOR SHALL SUPPLY SEALING COLOR STRIPS TO THE CITY ENGINEER'S OFFICE FOR APPROVAL.

CUT LINE CONSTRUCTION JOINT PREPARATION: SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH, BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

BEARING PAD SHIMS: PLACE 1/8" THICK PREFORMED BEARING PAD SHIMS, PLAN AREA 8¾ INCHES BY 8¾ INCHES, UNDER THE ELASTOMERIC BEARING PADS WHERE REQUIRED FOR PROPER BEARING. FURNISH TWO SHIMS PER BEAM. THE CITY WILL MEASURE THIS ITEM BY THE TOTAL NUMBER SUPPLIED. THE CITY WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516-1/8" PREFORMED BEARING PADS. ANY UNUSED SHIMS WILL BECOME THE PROPERTY OF THE CITY.

ITEM 517: RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN: ALL TWIN STEEL TUBE RAILING MEMBERS, BASE PLATES, POSTS, AND HARDWARE SHALL BE PAINTED "GLOSSY BLACK" WITH ONE COAT EPOXY PRIMER AND TWO COATS URETHANE FINISH. THE REINFORCING STEEL IN THE CONCRETE PARAPET IS INCLUDED IN THE EPOXY COATED REINFORCING STEEL QUANTITY. PAYMENT FOR THE PARAPET REINFORCING STEEL SHALL BE INCLUDED IN ITEM 509.

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Dayton, OH 45420-0246
(937) 259-5800 tel • (937) 259-5100 fax l2binc.com

DESIGNED DWS | DRAWN MHD | REVIEWED | CHECKED DWW | REVISED | DATE 08-04 | STRUCTURE FILE NUMBER 5763096

GENERAL NOTES
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

2 / 13

8 / 19

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	AS PER PLAN SHEET NUMBER
202	LUMP		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN				LUMP	2 / 13
202	539	SQ.YD.	WEARING COURSE REMOVED				539	
407	80	GALLON	TACK COAT			80		
407	27	GALLON	TACK COAT FOR INTERMEDIATE COURSE			27		
448	58	TON	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, PG64-22			58		
448	46	TON	ASPHALT CONCRETE SURFACE COURSE, TYPE IH			46		
509	10553	POUND	EPOXY COATED REINFORCING STEEL		943	9610		
510	48	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT		48			
511	70	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE			70		
511	6	CU.YD.	CLASS C CONCRETE, PIER CAP		6			
512	517	SQ.YD.	TYPE 3 WATERPROOFING			517		
515	3	EACH	PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM BRIDGE MEMBER, LEVEL I, B42-36			3		
515	3	EACH	PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM BRIDGE MEMBER, LEVEL I, B42-36 (MODIFIED)			3		
515	LUMP		KEYWAY GROUT FOR PRESTRESSED CONCRETE BOX BEAMS, AS PER PLAN			LUMP		2 / 13
516	12	EACH	1/8" PREFORMED BEARING PADS			12		
516	24	EACH	ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES ONLY (NEOPRENE)			24		
516	283	SQ.FT.	1" PREFORMED EXPANISON JOINT FILLER		61	222		
516	110	FT.	JOINT SEALER, 705.11			110		
516	15	SQ.FT.	1/2" PREFORMED EXPANSION JOINT FILLER	15				
516	133	FT.	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM			133		
517	360	FT.	RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN			360		2 / 13
519	300	SQ.FT.	PATCHING CONCRETE STRUCTURES, AS PER PLAN			300		2 / 13
519	300	SQ.FT.	PATCHING CONCRETE STRUCTURE, MISC.: PIER CAPS		300			
864	190	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY)			190		
864	1400	SQ.YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	60	190	1150		2 / 13

QUANTITIES COMPUTED BY: DWS 08-04
QUANTITIES CHECKED BY: AMM 08-04

PROPOSED WORK: THE PROPOSED WORK SHALL CONSIST OF BUT NOT BE LIMITED TO THE FOLLOWING:

1. REMOVE THE EXISTING ASPHALT CONCRETE WEARING SURFACE ON THE BRIDGE DECK.
2. REMOVE THE EXISTING BRIDGE RAILINGS, SIDEWALK, AND SAFETY CURB.
3. REMOVE SIX EXISTING CENTERSPAN BOX BEAMS, AS SHOWN IN THE TYPICAL SECTION, ALONG WITH ELASTOMERIC BEARINGS.
4. REMOVE DETERIORATED PIER CAP CONCRETE AND PATCH PIER CAPS.
5. INSTALL SIX NEW CENTERSPAN BOX BEAMS, AS SHOWN IN THE TYPICAL SECTION, ALONG WITH NEW ELASTOMERIC BEARINGS.
6. REMOVE AND REPLACE GROUT IN EXISTING SHEAR KEYS. REPAIR THE TOP AND BOTTOM OF THE EXISTING BEAMS USING TROWELLABLE MORTAR, IF REQUIRED. REMOVE AND REPLACE JOINT SEALER AT JOINTS.
7. APPLY TYPE 3 WATERPROOFING, AS DETAILED IN PLANS.
8. INSTALL NEW SIDEWALK, SAFETY CURB, AND BRIDGE RAILING.
9. PLACE ASPHALT CONCRETE WEARING SURFACE ON BRIDGE DECK, AND INSTALL POLYMER MODIFIED ASPHALT EXPANSION JOINTS.
10. SEAL CONCRETE SURFACES AS DETAILED IN THE PLANS.

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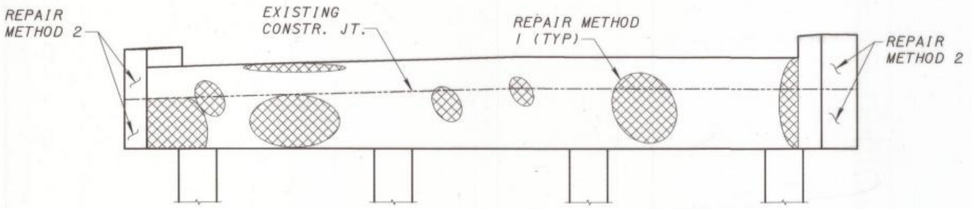
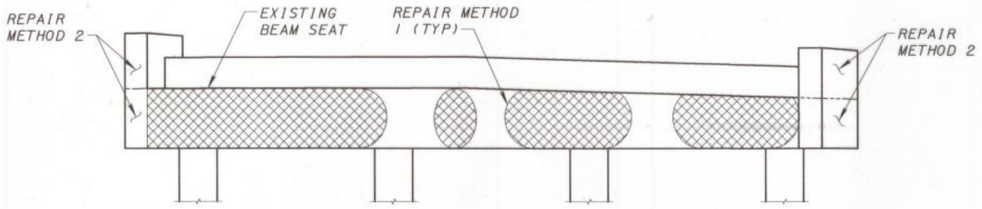
ESTIMATED QUANTITIES
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

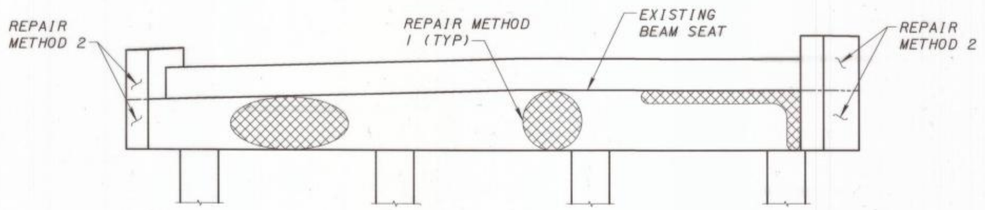
KET-RDGWY-1.36



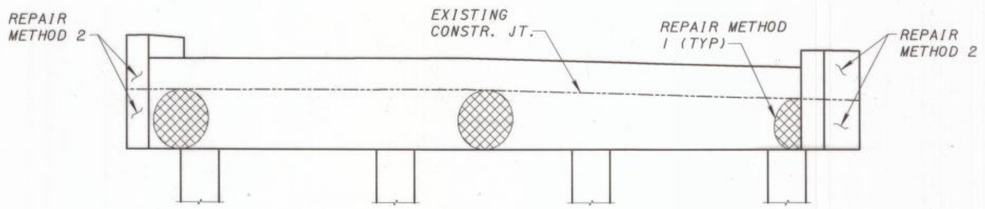
PIER 1 - SOUTH ELEVATION



PIER 1 - NORTH ELEVATION



PIER 2 - SOUTH ELEVATION



PIER 2 - NORTH ELEVATION

LEGEND OF CONCRETE REPAIRS

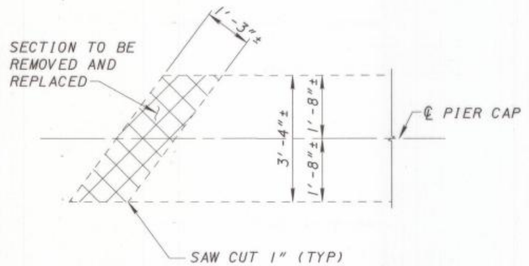
- PROBABLE AREA IN NEED OF REPAIR

REPAIR METHOD 1, CONCRETE PATCHING:

1. THIS ITEM IS APPLICABLE FOR PATCHING PIER CAP FACES. PAYMENT FOR QUANTITIES PATCHED WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 519: PATCHING CONCRETE STRUCTURE, MISC: PIER CAPS.
2. THE ENGINEER SHALL SOUND ALL APPLICABLE CONCRETE SURFACES AND OUTLINE ALL DELAMINATED AND SPALLED AREAS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL AREAS DESIGNATED BY THE ENGINEER IN ACCORDANCE WITH ITEM 519: PATCHING CONCRETE STRUCTURE, MISC: PIER CAPS. SPECIAL CARE SHALL BE EXERCISED TO AVOID UNDERMINING THE BEARINGS; IF NECESSARY, THE FOUR INCH MINIMUM DEPTH CRITERION SPECIFIED IN 519.03 MAY BE WAIVED BY THE ENGINEER. THE COMPLETED PATCHES SHALL HAVE A NEAT, UNIFORM APPEARANCE MEETING THE SATISFACTION OF THE PROJECT ENGINEER.

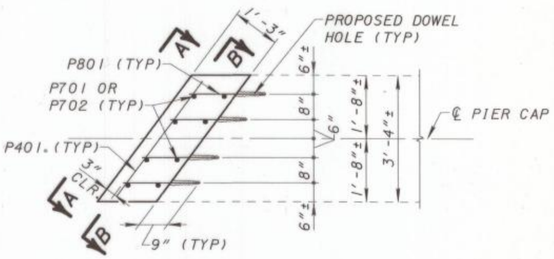
REPAIR METHOD 2, PIER CAP ENDS:

1. REMOVE PIER CAP END CONCRETE AS DETAILED ON THIS SHEET. THIS REMOVAL SHALL BE INCLUDED IN ITEM 202: PORTIONS OF STRUCTURE REMOVED, AS PER PLAN, FOR PAYMENT.
2. RECONSTRUCT PIER CAP ENDS UP TO THE LOWER BEAM SEAT. AFTER THE NEW CENTER SPAN BEAMS ARE SET, RECONSTRUCT THE PIER CAP END UP TO THE TOP OF THE BEAMS. THIS RECONSTRUCTION SHALL BE INCLUDED IN ITEM 511: CLASS C CONCRETE, PIER CAP, FOR PAYMENT.
3. FOR RECONSTRUCTION, REFER TO PIER CAP END DETAILS, THIS SHEET.



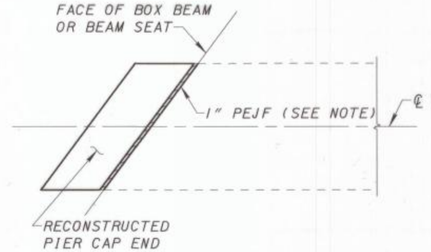
PIER CAP END CONCRETE REMOVAL

(THIS SECTION SHALL EXTEND FROM THE BOTTOM OF THE PIER CAP TO THE TOP OF THE BOX BEAMS)



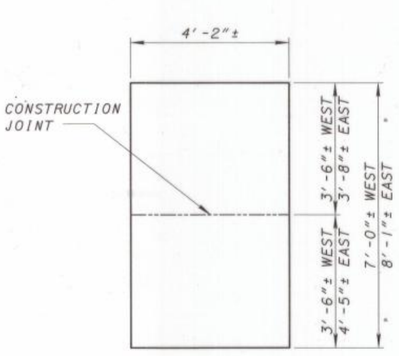
PIER CAP END CONCRETE RECONSTRUCTION

(THIS SECTION SHALL EXTEND FROM THE BOTTOM OF THE PIER CAP TO THE TOP OF THE BOX BEAMS)

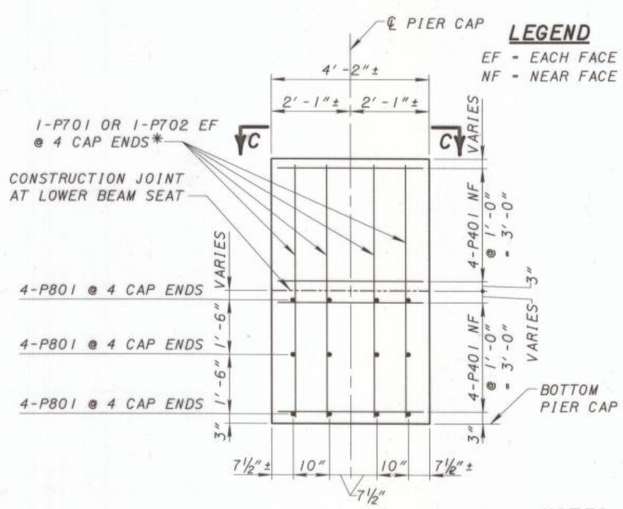


VIEW C-C

NOTE: ALSO PLACE PEJF BETWEEN TOP OF PIER CAP END AND SIDEWALK/SAFETY CURB OVERHANG.



VIEW A-A



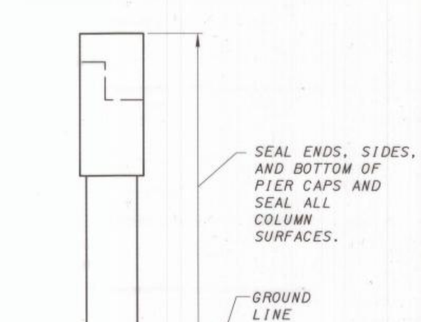
*P701 @ WEST CAP ENDS
P702 @ EAST CAP ENDS

SECTION B-B

(ALONG SKEW)

LEGEND

EF - EACH FACE
NF - NEAR FACE



LIMITS OF SEALING OF CONCRETE SURFACES

(EPOXY-URETHANE)

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 2/13.
2. FOR REINFORCING STEEL LIST, SEE SHEET 12/13.

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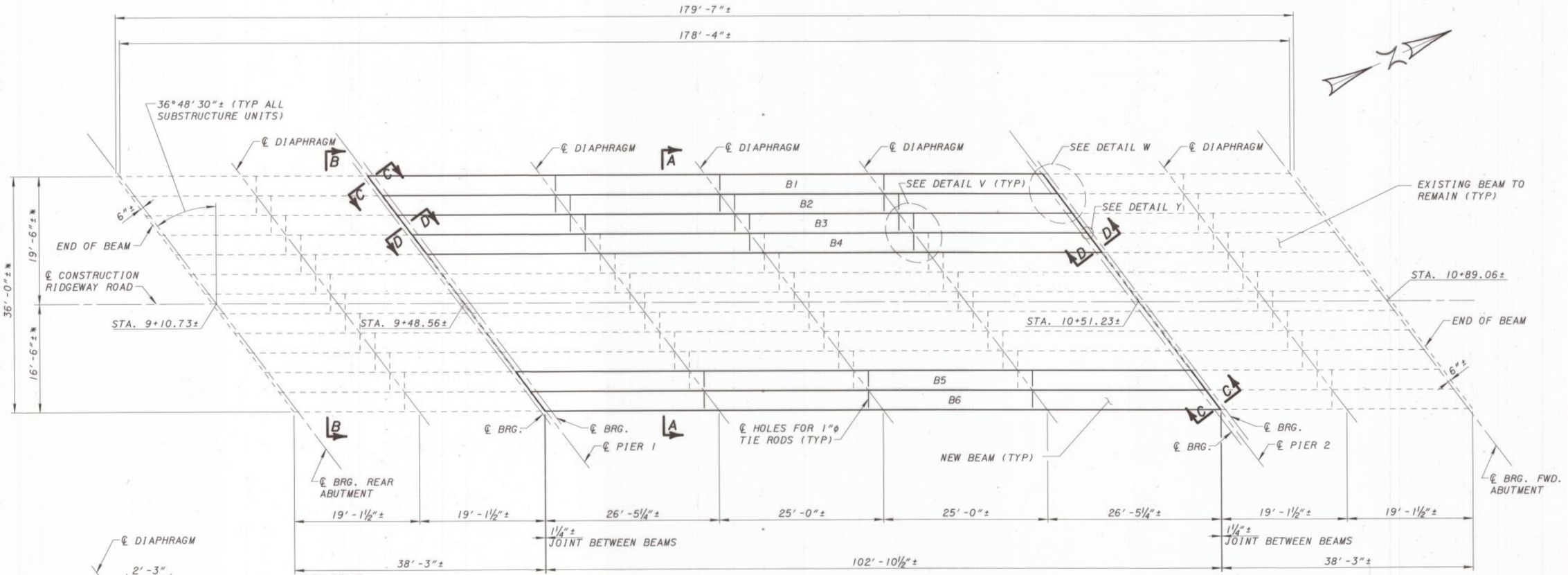
PIER DETAILS
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

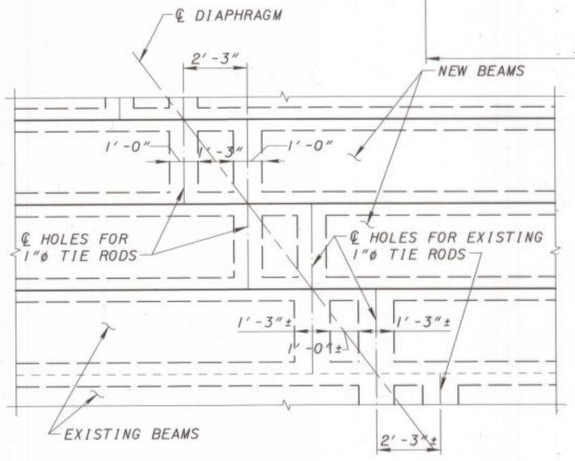
4/13

10/19



PLAN

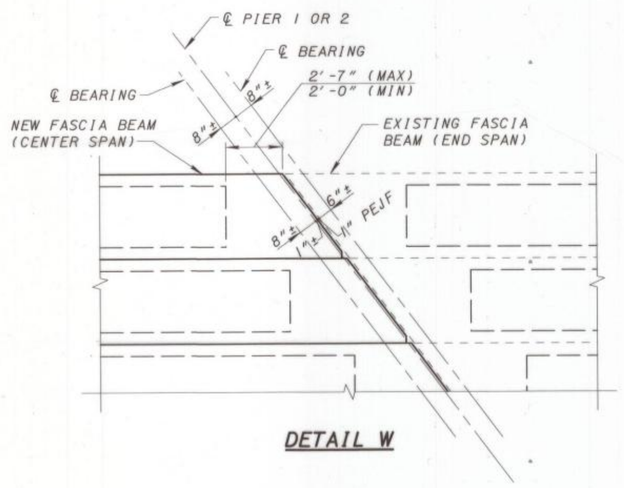
* PLUS FIT-UP



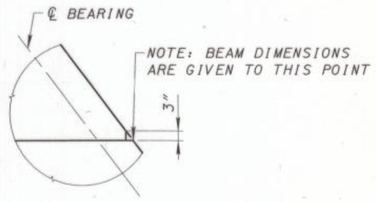
DETAIL V

TIE ROD NOTES:

1. THE TIE RODS EXTENDING OUT OF THE EXISTING BEAMS TO REMAIN, SHALL BE CLEANED AND REUSED.
2. TO MATCH THE TIE ROD ELEVATION ON THE EXISTING BEAMS, THE CENTERLINE OF THE TIE ROD SHALL BE 9" VERTICALLY FROM THE TOP OF BOX BEAM.



DETAIL W



DETAIL Y

(TYP ACUTE CORNER FOR NEW BOX BEAMS)

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 2 / 13 .
2. FOR MILD REINFORCING AND STRAND PATTERN OF NEW BEAMS, SEE SHEET 7 / 13 .
3. FOR DOWEL HOLES IN ENDS OF NEW BEAMS, PLACEMENT AND DETAILS OF LAMINATED ELASTOMERIC BEARINGS, SEE SHEET 7 / 13 .
4. FOR SECTION A-A AND SECTION B-B, SEE SHEET 6 / 13 .
5. FOR DEFLECTION AND CAMBER DIAGRAM, SEE SHEET 8 / 13 .
6. FOR ADDITIONAL NOTES AND DETAILS REGARDING PRESTRESSED CONCRETE BOX BEAMS, SEE STD. DWG. PSBD-1-93.
7. FABRICATOR'S SHOP DRAWINGS SHALL SHOW COMPLETE DETAILS OF REINFORCING BARS IN BOX BEAMS.
8. FOR SECTION C-C, AND SECTION D-D, SEE SHEET 9 / 13 .

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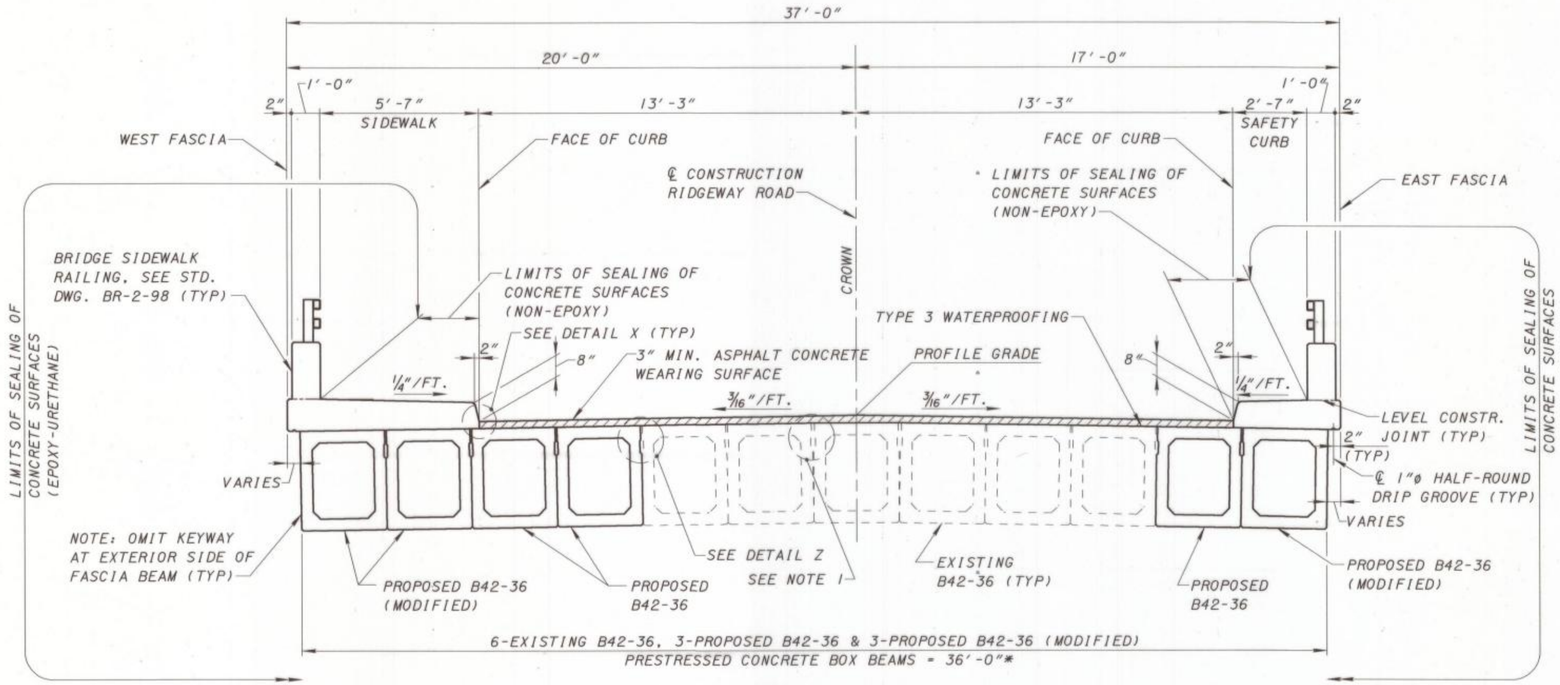
FRAMING PLAN
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

5 / 13

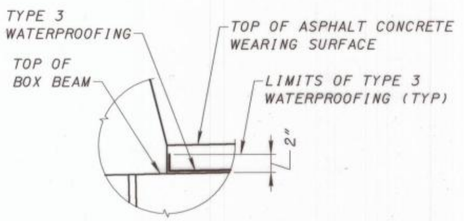
11 / 19



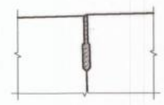
TYPICAL SECTION A-A AT CENTER SPAN

* PLUS FIT-UP

NOTE: BOTTOM OF BOX BEAMS TO BE SEALED WITH EPOXY-URETHANE

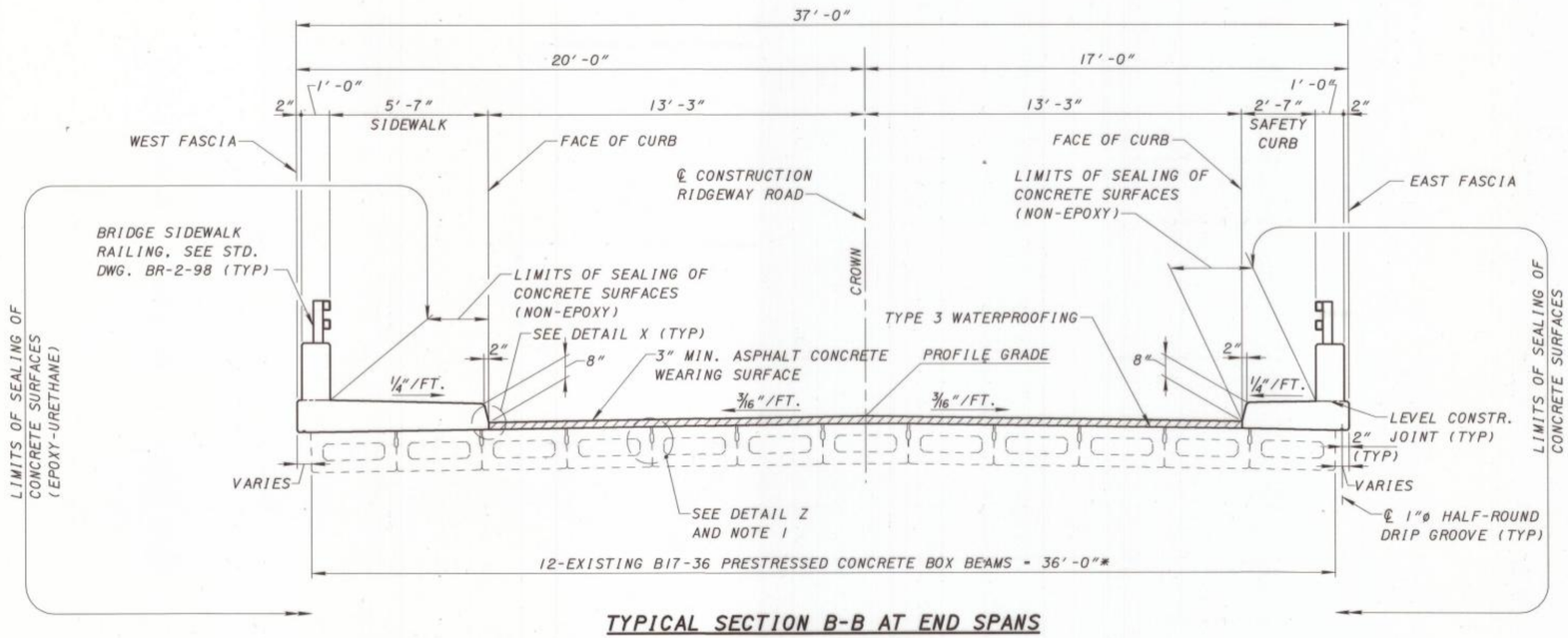


DETAIL X



DETAIL Z

SHEAR KEY SHALL BE MORTARED TO A FINISHED PLANE BETWEEN THE TOP EDGES OF THE ADJACENT BEAMS WHERE VERTICAL OFFSET (WITHIN TOLERANCE) OCCURS. REFER TO STANDARD DRAWING PSBD-1-93 FOR MORTAR SPECIFICATIONS.



TYPICAL SECTION B-B AT END SPANS

* PLUS EXISTING FIT-UP

NOTE: BOTTOM OF BOX BEAMS TO BE SEALED WITH EPOXY-URETHANE

NOTES:

1. ALL LOOSE AND/OR DETERIORATED GROUT SHALL BE REMOVED FROM EXISTING KEYWAYS BY USE OF WATER UNDER PRESSURE, SAND BLASTING OR OTHER APPROVED MEANS. THE ENGINEER SHALL DETERMINE THE LIMITS OF GROUT REMOVAL. SURFACES OF KEYWAYS SHALL BE PREPARED IN ACCORDANCE WITH STD. DWG. PSBD-1-93.
2. FOR GENERAL NOTES, SEE SHEET 2 / 13 .
3. FOR SUPERSTRUCTURE DETAILS, SEE SHEETS 7 / 13 , 8 / 13 , AND 9 / 13 .
4. FOR DETAILS OF THE FRAMING PLAN, SEE SHEET 5 / 13 .

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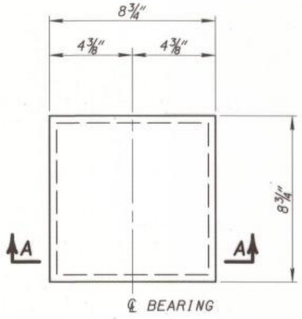
TYPICAL SECTIONS
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

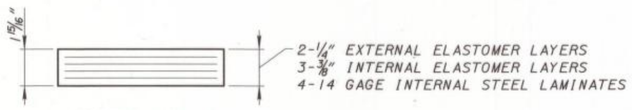
KET-RDGWY-1.36

6 / 13

12 / 19



BEARING PLAN

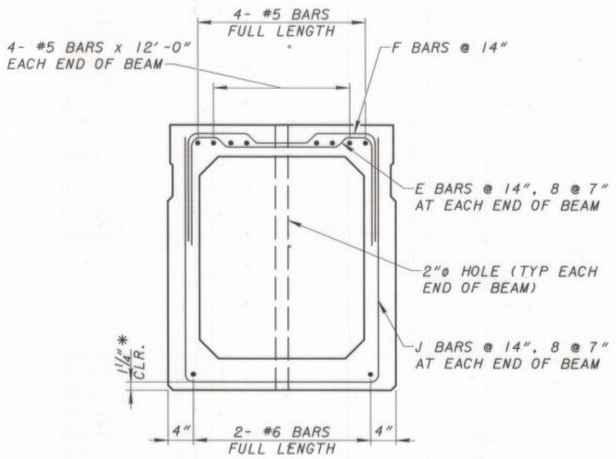


SECTION A-A

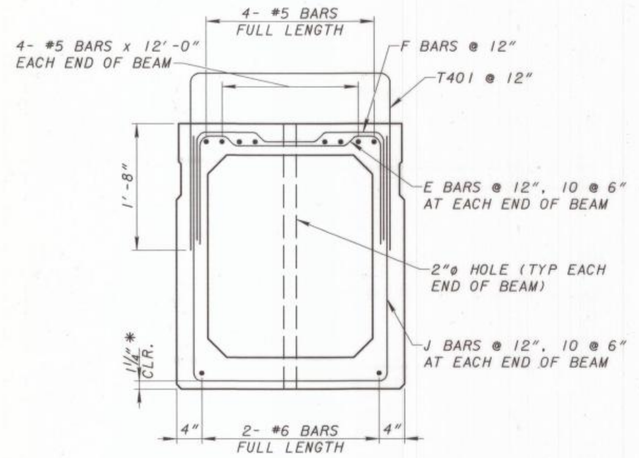
ELASTOMERIC BEARINGS

LIVE LOAD REACTION: 7.6 KIPS
DEAD LOAD REACTION: 28.6 KIPS
MAXIMUM DESIGN LOAD: 36.2 KIPS

ELASTOMERIC BEARINGS: THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.6.6 (METHOD A) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.



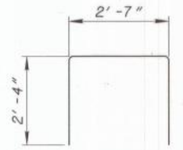
B42x36 MILD REINFORCING
(BEAMS B3, B4, B5)



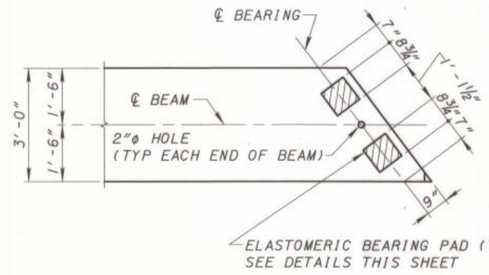
MODIFIED B42x36 MILD REINFORCING
(BEAMS B1, B2, B6)

* ADJUST FOR BEVELED BEAM ENDS, SEE DETAILS THIS SHEET

NOTE: SEE STD. DWG. PSBD-1-93, SHEET 3 OF 4 FOR SIZE AND DIMENSIONS OF BENT BARS "E", "F", AND "J".

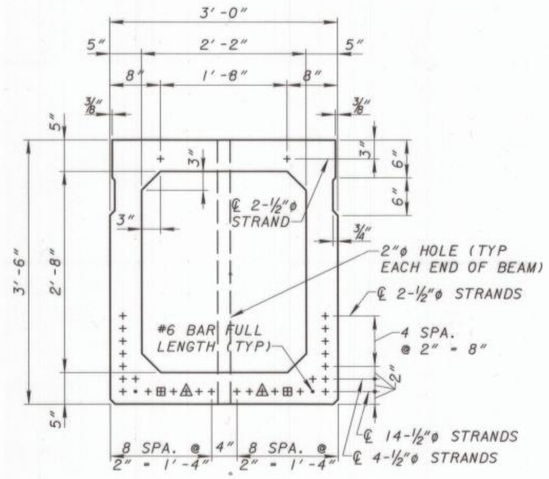


T401
(EPOXY-COATED)



BEARING PAD PLACEMENT PLAN

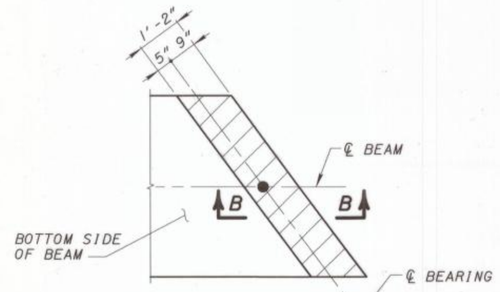
TIE ROD NOTE:
1. TO MATCH THE TIE ROD ELEVATION ON THE EXISTING BEAMS, THE CENTERLINE OF THE TIE ROD SHALL BE 9" VERTICALLY FROM THE TOP OF BOX BEAM.



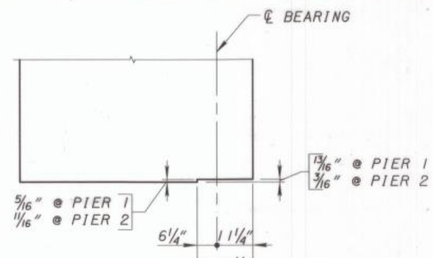
B42x36 AND MODIFIED B42x36 STRAND PATTERN

⊞ = DEBOND STRAND 4'-0" FROM EACH END OF BEAM

△ = DEBOND STRAND 2'-0" FROM EACH END OF BEAM



BEVELING OF B42x36 AND MODIFIED B42x36 ENDS



SECTION B-B

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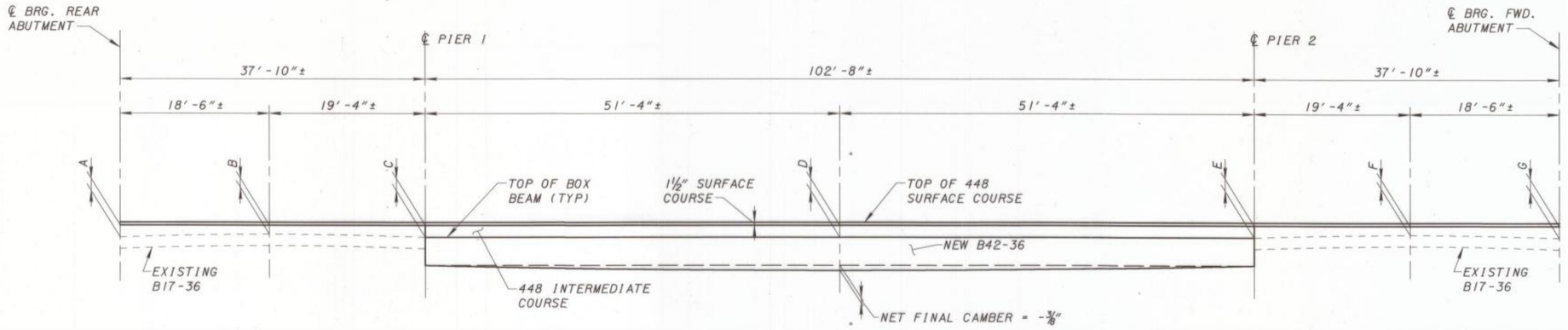
DMW		5763096	

SUPERSTRUCTURE DETAILS (1 OF 3)
BRIDGE NO. KET-RDGWY-0.36
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

7 / 13

13 / 19



DEFLECTION AND CAMBER NOTES FOR NEW CENTER SPAN BOX BEAMS

CALCULATED CAMBER AT THE TIME OF RELEASE IS ½ INCHES.

CALCULATED CAMBER AT THE TIME OF PAVING IS ¾ INCHES.

LONG TERM CAMBER IS 1⅜ INCHES.

CALCULATED DEFLECTION DUE TO DEAD LOAD APPLIED AFTER THE BEAMS ARE SET (WEIGHT OF SURFACE COURSE, PARAPETS, SIDEWALKS, ETC.) IS 1⅛ INCHES.

THE VERTICAL CURVE ADJUSTMENT TO THE TOPPING THICKNESS AT MIDSPAN IS 0 INCHES UPWARD.

CENTER SPAN CAMBER/448 INTERMEDIATE COURSE THICKNESS DIAGRAM

ASPHALT CONCRETE SURFACE COURSE SHALL CONSIST OF A VARIABLE THICKNESS OF 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, PG64-22 AND A 1½" THICKNESS OF 448 ASPHALT CONCRETE SURFACE COURSE, TYPE IH. PLACE THE 448 INTERMEDIATE COURSE IN TWO OPERATIONS. THE FIRST PORTION OF THE COURSE SHALL BE OF 1½" UNIFORM THICKNESS. FEATHER THE SECOND PORTION OF THE COURSE TO PLACE THE SURFACE PARALLEL TO AND 1½" BELOW FINAL PAVEMENT SURFACE ELEVATION.

448 INTERMEDIATE COURSE THICKNESS TABLE

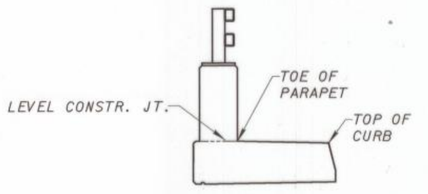
	A	B	C	D	E	F	G
WEST CURBLINE	2¾"	1¾"	1¾"	2⅛"	1¾"	1⅛"	1⅝"
CENTERLINE	2¾"	1⅞"	2"	2⅜"	2"	1¼"	1⅝"
EAST CURBLINE	2⅞"	1¾"	1¾"	2⅛"	1¾"	1"	1⅜"

NOTE: DIMENSIONS "B", "D", AND "F" INCLUDE ANTICIPATED DEFLECTION DUE TO DEAD LOAD DEFLECTION OF ASPHALT CONCRETE WEARING SURFACE.

SIDEWALK/SAFETY CURB ELEVATIONS

LOCATION	TOE OF WEST PARAPET	TOP OF WEST CURB	TOP OF EAST CURB	TOE OF EAST PARAPET
℄ BRG. REAR ABUTMENT	1023.02	1023.03	1023.66	1023.76
½	1023.62	1023.63	1024.25	1024.35
℄ BRG. PIER 1	1024.17	1024.18	1024.80	1024.90
℄ BRG. PIER 1	1024.22	1024.23	1024.85	1024.95
¼	1025.07	1025.08	1025.70	1025.81
½	1025.88	1025.89	1026.52	1026.62
¾	1026.64	1025.65	1027.27	1027.37
℄ BRG. PIER 2	1027.35	1027.36	1027.99	1028.08
℄ BRG. PIER 2	1027.40	1027.41	1028.04	1028.14
½	1027.99	1028.00	1028.63	1028.73
℄ BRG. FWD. ABUTMENT	1028.55	1028.56	1029.18	1029.28

NOTE:
ELEVATIONS GIVEN ARE AT TOP OF CONCRETE BEFORE CONCRETE PLACEMENT AND HAVE BEEN ADJUSTED FOR ESTIMATED DEFLECTION DUE TO WEIGHT OF CONCRETE SIDEWALK, PARAPET, AND PAVEMENT.



GENERAL ELEVATION DETAIL

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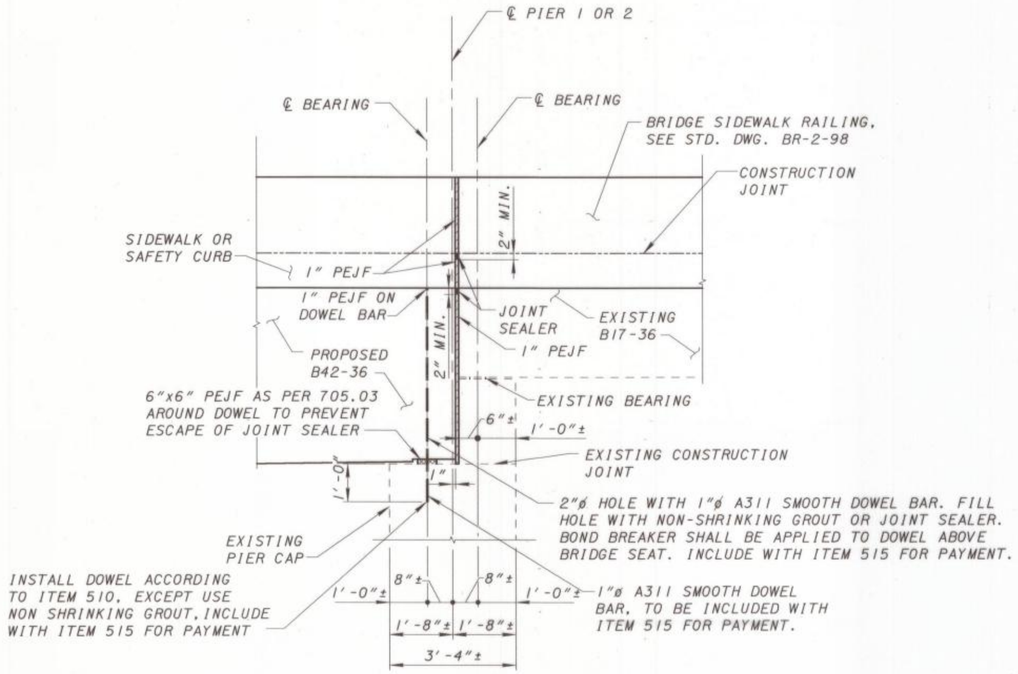
SUPERSTRUCTURE DETAILS (2 OF 3)
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

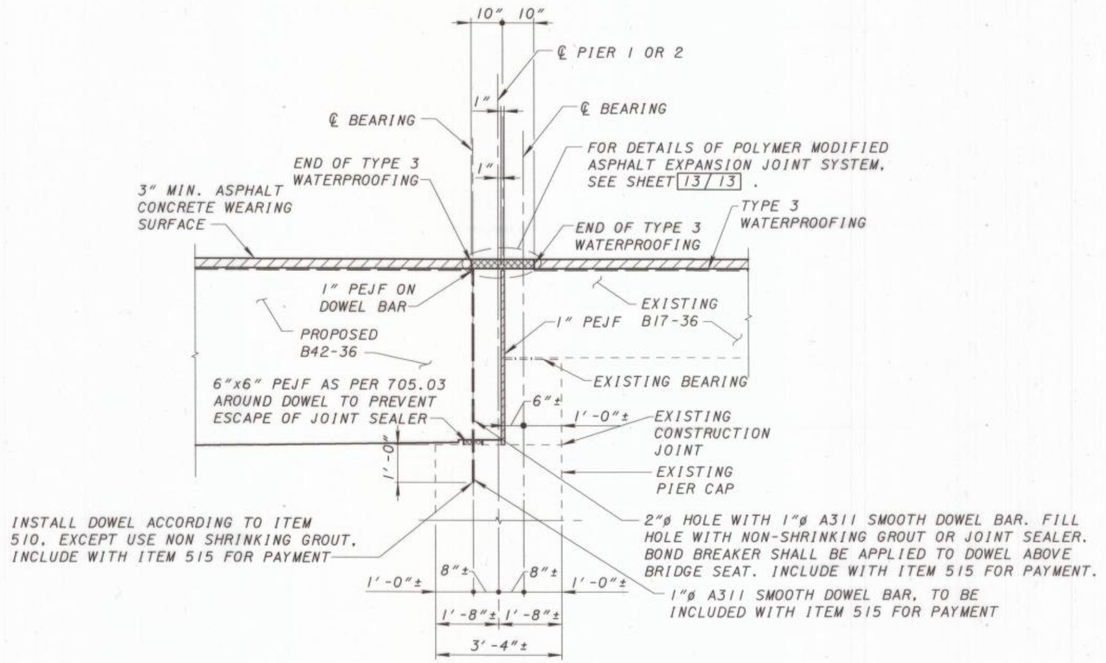
KET-RDGWY-1.36

8 / 13

14 / 19

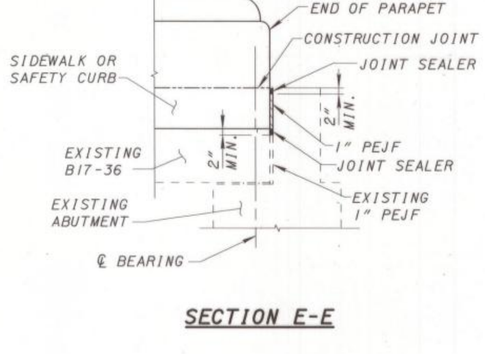


SECTION C-C

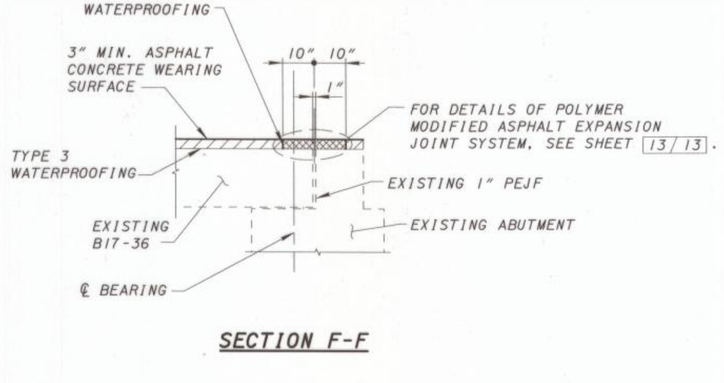


SECTION D-D

NOTE: 2"ø HOLE SHALL BE FILLED WITH JOINT SEALER AT EXPANSION PIER AND NON-SHRINKING GROUT AT FIXED PIER. CONTRACTOR TO DETERMINE WHICH PIER IS FIXED IN FIELD BASED ON EXISTING BEAMS TO REMAIN.



SECTION E-E



SECTION F-F

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 2/13.
2. FOR LOCATION OF SECTION C-C AND SECTION D-D, SEE FRAMING PLAN, SEE SHEET 5/13.
3. FOR LOCATION OF SECTION E-E AND SECTION F-F, SEE SIDEWALK, SAFETY CURB AND PARAPET DETAILS, SHEET 10/13.

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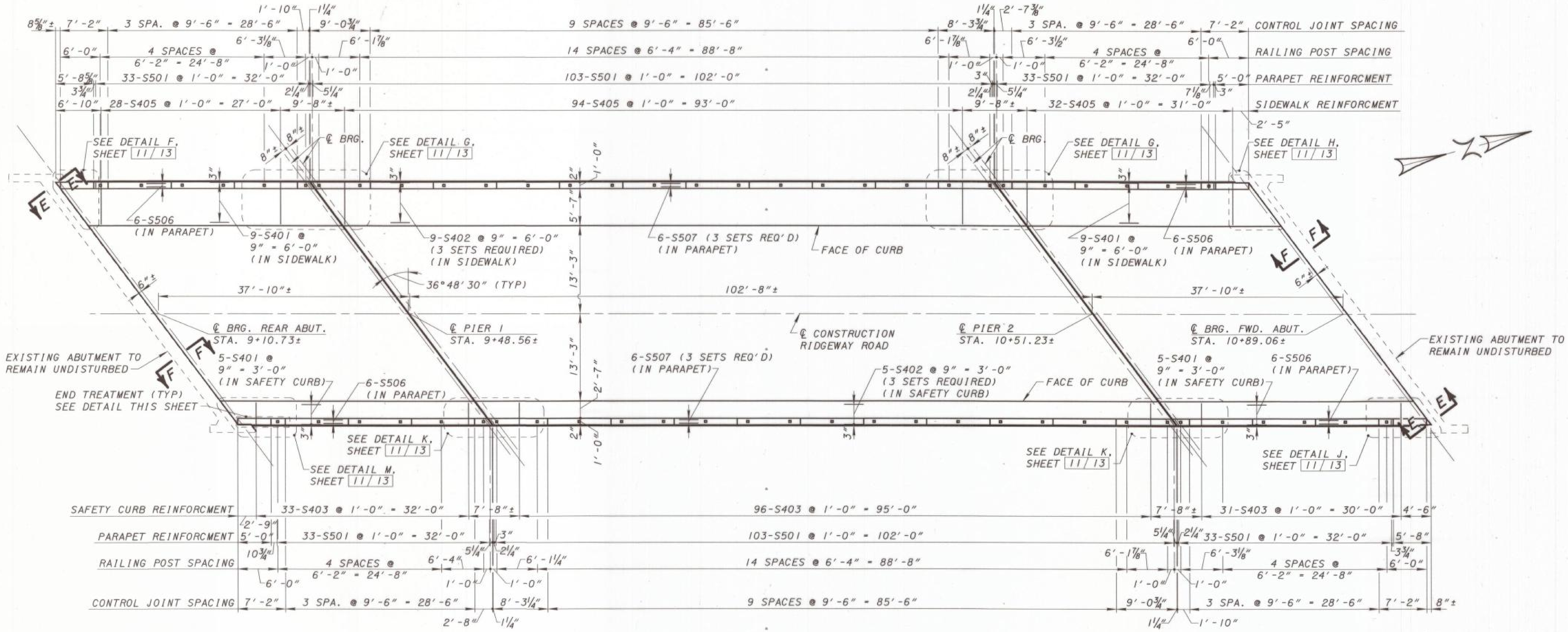
SUPERSTRUCTURE DETAILS (3 OF 3)
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

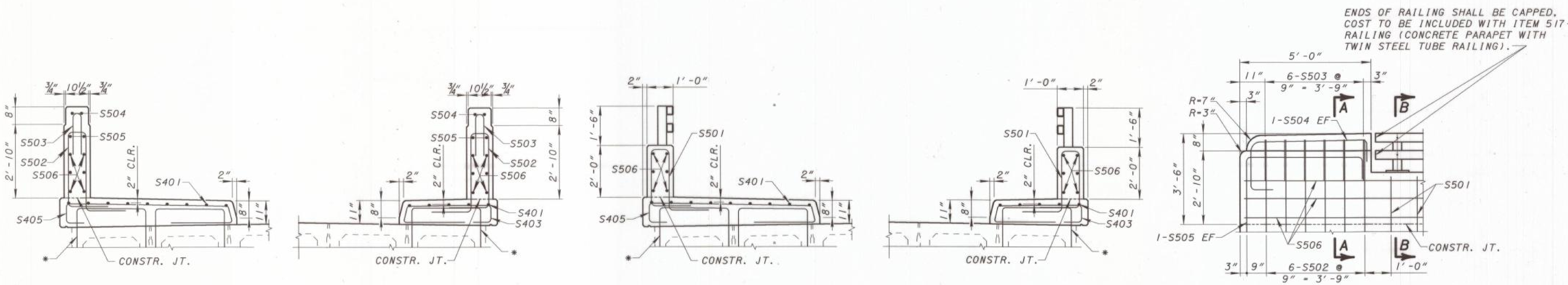
KET-RDGWY-1.36

9/13

15/19



PLAN



SECTION A-A (SIDEWALK)

SECTION A-A (SAFETY CURB)

SECTION B-B (SIDEWALK)

SECTION B-B (SAFETY CURB)

TYPICAL END TREATMENT

* THE EXISTING #4 BARS EXTENDING OUT OF THE EXISTING ENDSPAN B17-36 BEAMS SHALL BE CLEANED AND STRAIGHTENED TO BE USED IN NEW CONSTRUCTION.

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 2/13.
2. FOR REINFORCING STEEL LIST, SEE SHEET 12/13.
3. FOR SECTION E-E AND SECTION F-F, SEE SHEET 9/13.
4. LAP LENGTHS ON #4 BARS SHALL BE 2'-0". LAP LENGTHS ON #5 BARS SHALL BE 2'-6".

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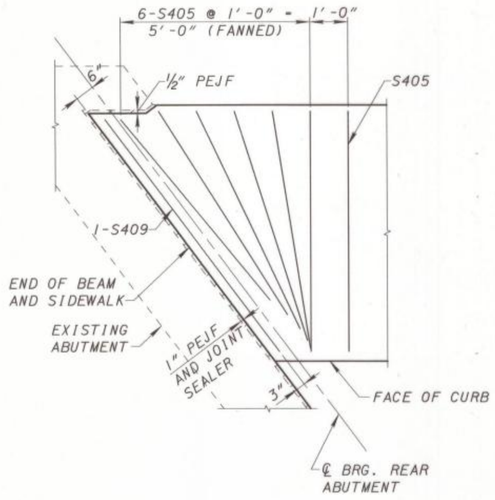
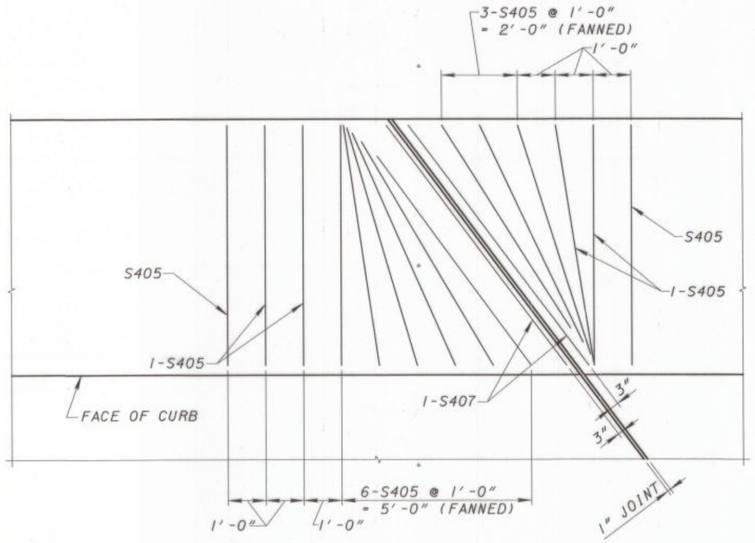
SIDEWALK, SAFETY CURB AND PARAPET DETAILS
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

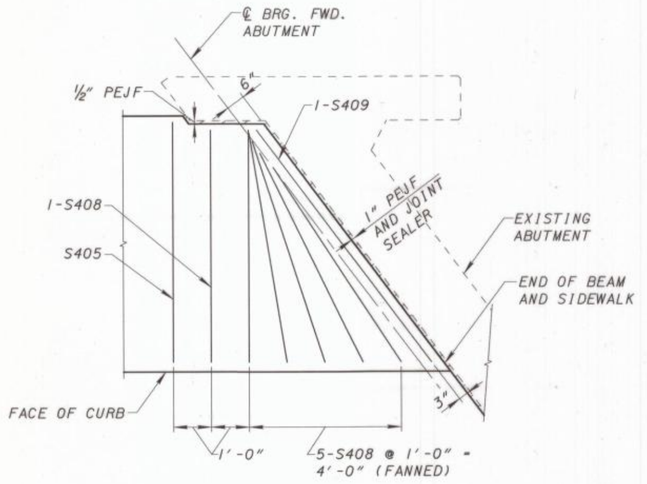
KET-RDGWY-1.36



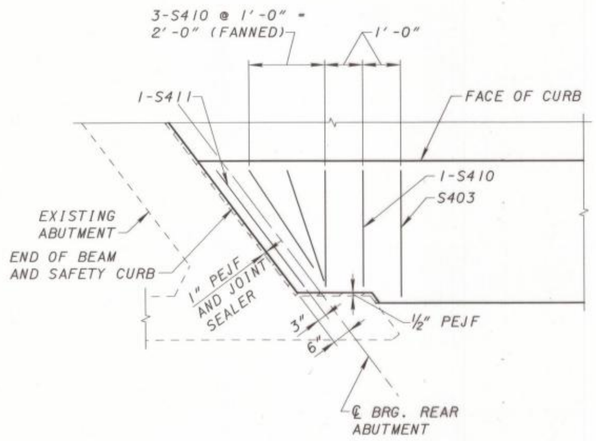
DETAIL F



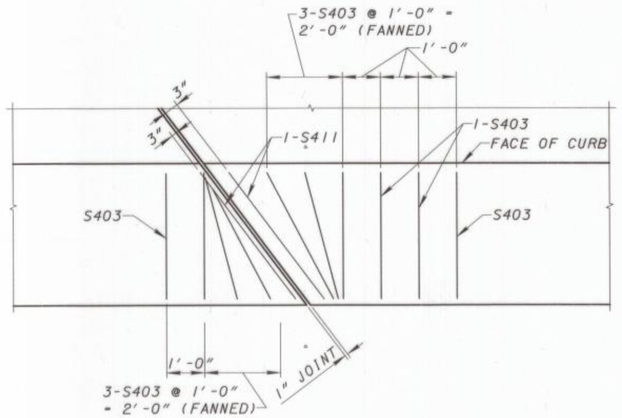
DETAIL G



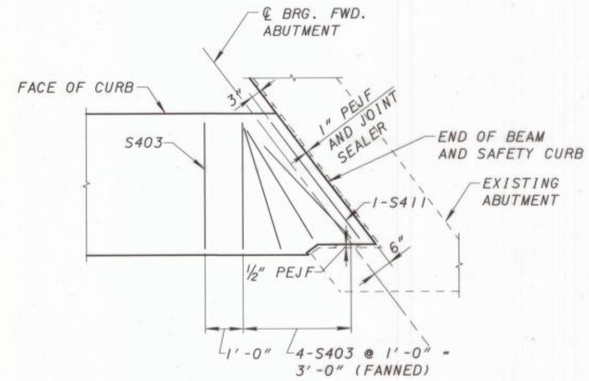
DETAIL H



DETAIL M



DETAIL K



DETAIL J

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 2/13.
2. FOR REINFORCING STEEL LIST, SEE SHEET 12/13.

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SIDEWALK AND SAFETY CURB DETAILS

BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

11/13

17/19

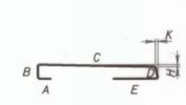
SAFETY CURB, SIDEWALK, AND PARAPET

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	F	G	H	K	O	R
S401	28	37'-10"	708	STR.											
S402	42	35'-6"	996	STR.											
S403	180	7'-5"	892	1	7"	9"	3'-4"	8"	2'-2"			1"	2"		
S404	BAR MARK NOT USED														
S405	186	10'-5"	1294	1	7"	9"	6'-4"	8"	2'-2"			1"	2"		
S406	BAR MARK NOT USED														
S407	4	12'-7"	34	1	7"	9"	8'-6"	8"	2'-2"			1"	2"		
S408	6	10'-2"	41	1	7"	9"	6'-1"	8"	2'-2"			1"	2"		
S409	2	12'-0"	16	1	7"	9"	7'-9"	8"	2'-2"			1"	2"		
S410	4	7'-1"	19	1	7"	9"	3'-0"	8"	2'-2"			1"	2"		
S411	6	7'-10"	31	1	7"	9"	3'-9"	8"	2'-2"			1"	2"		
S501	338	8'-0"	282	5		2'-4"	2'-6"	1'-6"	1'-6"	8"					
S502	24	9'-8"	242	5		3'-2"	3'-4"	1'-6"	1'-6"	8"					
S503	24	3'-8"	92	2		1'-5"	10 1/4"							6 1/2"	3 1/4"
S504	8	7'-6"	63	4			SEE BENDING DIAGRAM								
S505	8	8'-5"	70	3		10"	4'-8"	3'-2"							
S506	24	37'-10"	947	STR.											
S507	36	35'-10"	1345	STR.											
		TOTAL	9610												

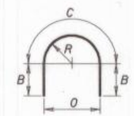
PIER CAP ENDS

P401	32	3'-10"	82	STR.											
P701	16	6'-7"	215	STR.											
P702	16	7'-8"	251	STR.											
P801	48	3'-1"	395	6	13 1/2"	2'-0"									
		TOTAL	943												

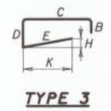
BENDING DIAGRAMS



TYPE 1



TYPE 2



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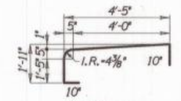

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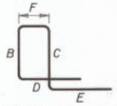
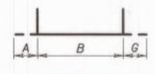


TYPE 5



TYPE 6

NOTES

1. All reinforcing steel bars shall be epoxy coated.
2. All dimensions are out to out of bar.
3. Dimensions "A" and "G" are standard bend dimensions. Refer to Section 509.05 of the CMS.
4. Radius dimension "R" is to the outside of the bar.

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REINFORCING STEEL LIST
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

12/13

18/19

GENERAL NOTES AND DETAILS FOR POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM

ITEM SPECIAL - POLYMER-MODIFIED ASPHALT EXPANSION JOINT SYSTEM

THIS ITEM WILL BE USED TO SEAL THE EXPANSION/CONTRACTION JOINTS AS PER THESE DETAILS AND THE MANUFACTURER'S REQUIREMENTS USING A POLYMER-MODIFIED ASPHALT SYSTEM. THE PRIME CONTRACTOR WILL OBTAIN THE SERVICES OF ONE OF THE FOLLOWING APPROVED APPLICATORS WHO WILL FURNISH AND INSTALL THE NEW BRIDGE EXPANSION JOINT SYSTEM AFTER ALL PAVING ON THE AFFECTED BRIDGE(S) HAS BEEN COMPLETED.

D.S. BROWN COMPANY
P.O. BOX 158
300 E. CHERRY STREET
N. BALTIMORE, OH 45872-0158
TEL: (419) 257-3561

LINEAR DYNAMICS, INC.
RD #2 BOX 311
MUNCY, PA 17756
TEL: (717) 546-6041

HARRIS SPECIALTY CHEMICALS, INC.
10245 CENTURION PARKWAY, N.
JACKSONVILLE, FL 32256
TEL: (904) 996-6000

INFASTRUCTURE SYSTEMS, INC.
830 E. HIGGINS ROAD
SUITE 111M
CHICAGO, IL 60173-4792
TEL: (708) 706-9230

MATERIALS:

BRIDGING PLATE:

MILD STEEL 1/8" OR 1/4" THICK PLATE, 8" WIDE OR 18 GAUGE ALUMINUM, 8" WIDE.

BINDER:

TYPE:	POLYMER MODIFIED ASPHALT
SOFTENING POINT:	180 DEGREES F. MIN.
FLOW:	3 mm. MAX. AT 140 DEGREES F.
PENETRATION:	9 mm. MAX. AT 77 DEGREES F. 1 mm. MIN AT 0 DEGREES F. ASTM D 3407
DUCTILITY:	40 cm. MIN. ASTM D 113
RESILIENCE:	60% MIN. AT 77 DEGREES F.
TENSILE ADHESION:	700% MIN.
SPECIFIC GRAVITY:	1.10 ± 0.05
POURING TEMP:	350 - 390 DEGREES F.

AGGREGATE:

TYPE:	CRUSHED, DOUBLE WASHED, AND DRIED GRANITE OR BASALT
GRADATION	THE GRADATION OF THE AGGREGATE VARIES BY MANUFACTURER AND WILL BE AS PER THE MANUFACTURER'S RECOMMENDATIONS FOR THE SYSTEM BEING USED ON THIS PROJECT.

BACKER ROD:

THE BACKER SHALL BE A CLOSED CELL FOAM EXPANSION JOINT FILLER CAPABLE OF WITHSTANDING THE PLACEMENT TEMPERATURE OF THE POLYMER MODIFIED ASPHALT.

INSTALLATION PROCEDURES:

SAWING AND SURFACE PREPARATION:

AFTER ALL PAVING OPERATIONS ARE COMPLETE, THE OVERLAY IS TO BE TRANSVERSELY SAW CUT FULL DEPTH NO LESS THAN TWO INCHES DEEP (20" CENTERED OVER JOINT OPENING, UNLESS OTHERWISE NOTED). REMOVE ALL MATERIAL, INCLUDING WATER-PROOFING MATERIAL, BETWEEN SAW CUTS. THOROUGHLY CLEAN AND DRY EXPOSED CONCRETE, STEEL, AND CUT SURFACES USING COMPRESSED AIR AND A HOT COMPRESSED AIR (HCA) LANCE. THE LANCE MUST PRODUCE A FLAME RETARDED AIR STREAM TEMPERATURE OF 3000 DEGREES F. AT A VELOCITY OF 3,000 FEET PER SECOND WITH 15 PSIG CHAMBER PRESSURE. IF THERE IS AN INTERRUPTION DUE TO WEATHER OR OTHER CAUSES, THE OPERATION WILL BE REPEATED WITH THE HCA LANCE IMMEDIATELY BEFORE THE BINDER COAT OPERATION. ALSO, 6 INCHES OF THE ROAD SURFACE ON EITHER SIDE OF THE JOINT WILL BE DRIED SO THAT A SUITABLE SURFACE FOR BITUMEN ADHESION IS OBTAINED.

SEALING OF EXPANSION JOINT: (PRE-STRESSED BOX OR CONCRETE SLAB)

THE EXPANSION JOINT GAP IS TO BE SEALED AND A BRIDGING PLATE CENTERED ALONG IT. A VERY NARROW GAP WILL BE SEALED BY POURING HOT BINDER INTO THE GAP. GAPS OF 1/8" OR MORE WILL FIRST BE FILLED WITH AN APPROPRIATELY SIZED BACKER ROD. THE BACKER ROD WILL BE INSTALLED SO THAT IT IS BETWEEN 1/8" AND 1-1/8" BELOW THE TOP OF THE EXISTING GAP. THE GAP WILL THEN BE FILLED WITH BINDER.

BOND BREAKER:

SPREAD BINDER OVER SURFACE AREA WHERE THE METAL BRIDGING PLATE WILL BE PLACED. CENTER THE BRIDGING PLATE OVER THE EXISTING JOINT AND BED INTO THE HOT BINDER. BUTT JOINT THE BRIDGING PLATES TO ACCOMODATE THE ENTIRE JOINT LENGTH. SPIKE HOLES WILL BE DRILLED AT 1 FOOT INTERVALS ALONG THE LONGITUDINAL CENTERLINE OF THE PLATES. SECURE BRIDGING PLATE WITH NAILS OR SPIKES. SEAL BUTT JOINTS WITH HOT BINDER AND ALLOW BINDER TO SETUP BEFORE NEXT OPERATION. WHEN ALUMINUM BRIDGING PLATES ARE USED, ONLY THE BINDER IS REQUIRED TO SECURE THE INDIVIDUAL PLATES.

BINDER COAT:

SEAL ALL PREPARED, EXPOSED SURFACES OF THE JOINT WITH BINDER. POUR THE HOT BINDER OVER THE FLOOR AREA OF THE JOINT AND SPREAD TO COAT ALL EXPOSED SURFACES. THE BINDER WILL BE A MINIMUM OF 1/32" THICK ON THE BOTTOM OF THE JOINT CAVITY, WITH POOLS OF GREATER THICKNESS WHERE SURFACE IRREGULARITIES EXIST. THE BINDER APPLICATION TEMPERATURE WILL BE BETWEEN 350 AND 390 DEGREES F. THE BINDER WILL NOT BE ALLOWED TO BE HEATED ABOVE 410 DEGREES F. NOR ALLOWED TO EXCEED 390 DEGREES F. FOR MORE THAN 1 HOUR. A DOUBLE JACKETED OIL MELTER WILL BE USED TO HEAT THE BINDER. THE MELTER WILL BE EQUIPPED WITH A CONTINUOUS AGITATION SYSTEM, TEMPERATURE CONTROLS, AND A CALIBRATED THERMOMETER. ALSO A SYSTEM FOR ACCURATELY MEASURING THE WEIGHTS OF THE BINDER AND THE AGGREGATE WILL BE REQUIRED.

BUILD-UP OF JOINT LAYERS:

AGGREGATE PREPARATION:

HEAT THE AGGREGATE TO A TEMPERATURE OF 275 TO 325 DEGREES F., WITH A SUITABLE ROTATING DRUM WITH ATTACHED HEAT SOURCE OR A HOT COMPRESSED AIR LANCE, TO REMOVE DUST AND MOISTURE.

AGGREGATE PROPORTION AND LAYER THICKNESS:

MIX THE AGGREGATE WITH THE BINDER SUCH THAT THE MINIMUM AGGREGATE CONTENT BY WEIGHT WILL BE 68%. THE HEATED AGGREGATE AND BINDER WILL BE COMBINED IN LAYERS, UNLESS PATENTED INSTALLATION REQUIRES DIFFERENTLY, NOT LESS THAN 3/4 OF AN INCH NOR EXCEEDING 2-1/2 INCHES. THE THICKNESS OF EACH LAYER CAN BE VARIED WITHIN THESE LIMITS, TO ACHIEVE THE REQUIRED JOINT THICKNESS (MIN. 2 INCHES). THE OBJECTIVE IS TO COAT EACH STONE AND FILL THE VOIDS WHILE AVOIDING AN EXCESS OF BINDER. THIS WILL ACHIEVE THE MAXIMUM CONTENT OF STONE CONSISTENT WITH ALL STONES BEING COATED WITH BINDER. RAKE THE MIXTURE TO MIX AND LEVEL.

THE TOP LAYER THICKNESS WILL VARY BETWEEN 1/2 INCH AND ONE (1) INCH. IN PREPARING THE TOP LAYER, THE RATIO OF AGGREGATE TO BINDER WILL BE APPROXIMATELY 6:1 BY WEIGHT. OVERFILL THE TOP LAYER AND COMPACT TO THE LEVEL OF THE ADJACENT SURFACES USING A ROLLER OR VIBRATORY PLATE COMPACTOR. IMMEDIATELY AFTER COMPLETION OF THE COMPACTION, POUR SUFFICIENT BINDER OVER THE JOINT TO FILL THE SURFACE VOIDS AND COAT THE SURFACE STONE. DUST THE FINISHED JOINT WITH A FINE, DRY AGGREGATE TO PREVENT TACKINESS.

MAINTENANCE OF TRAFFIC:

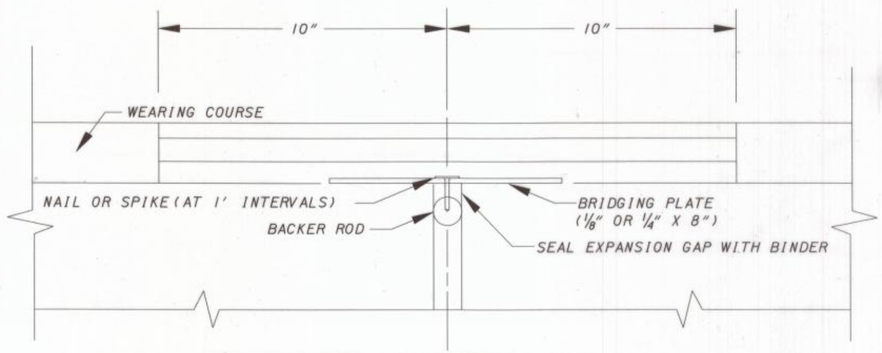
IF NECESSARY TO FACILITATE TRAFFIC MAINTENANCE, THE JOINT WILL BE INSTALLED IN TWO (2) HALF-WIDTH PHASES. DURING PHASE 1 APPROXIMATELY HALF OF THE TOTAL JOINT WILL BE INSTALLED. DURING PHASE 2, A MINIMUM OF TWO (2) INCHES OF THE PHASE 1 JOINT WILL BE REMOVED, AT OR NEAR THE CENTERLINE, WITH THE REMAINDER OF THE JOINT INSTALLED. IN ALL CASES, OPERATIONS WILL BE SCHEDULED SO THAT ALL LANES CAN BE OPEN TO TRAFFIC DURING ALL NON-WORKING HOURS.

TESTING:

CERTIFICATION WILL BE SUPPLIED FOR EACH PROJECT SHOWING BINDER COMPLIANCE WITH REQUIRED PROPERTIES. A ONE QUART SAMPLE OF BINDER WILL BE RETRIEVED FROM EACH BRIDGE FOR FURTHER TESTING.

PAYMENT:

PAYMENT FOR ALL THE ABOVE WILL BE AT THE UNIT PRICE BID PER LINEAR FOOT OF SEALED JOINT IN PLACE FOR ITEM 516, POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM. THIS WILL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.



TYPICAL PRESTRESSED BOX BEAM
OR
CONCRETE SLAB JOINT

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POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM
BRIDGE NO. KET-RDGWY-0136
RIDGEWAY ROAD OVER DOROTHY LANE

KET-RDGWY-1.36

13/13

19/19

BRIDGE LOAD RATING SUMMARY REPORT
OFFICE OF STRUCTURAL ENGINEERING
OHIO DEPARTMENT OF TRANSPORTATION

SFN	BRIDGE NUMBER		DISTRICT
5763096	MOT-RDGWY-0136		7 ()
ORIGINAL CONSTRUCTION YEAR	**REHABILITATION YEAR**	**OVERALL STRUCTURE LENGTH**	**FEATURE INTERSECTED**
1965	2005	183 ft	1N36 (DOROTHY LANE)
SPECIAL ASSUMPTIONS & COMMENTS	3 SPAN PRESTRESSED NON-COMPOSITE BOX BEAM; 37'-0", 101'-0", 37'-0" C/C BRGS; ACWS = 3.5"; LL DF FOR SINGLE LANE=0.2651(G01),0.2518(G02&G03); DESIGN LOAD=S15-60(G01&G02),HS15(G03); PERFORM RATING FOR HS20 AND OHIO LEGAL LOADS; G01=B17-36 (END SPANS); G02=B42-36(MIDDLE SPAN); G03=B42x36 (REHAB MIDDLE SPAN)		

	PLEASE SELECT ON RIGHT, WHERE APPROPRIATE, BY USING THE DROP DOWN ARROW BUTTON
LOAD RATING PURPOSE:	8 - Update Analysis Model and Software
***(708)* LOAD RATING SOFTWARE:**	3 - AASHTO BrR (VIRTIS)
SOFTWARE VERSION:	6.8.3
***(709)* RATING SOURCE:**	1 - Plan information available for load rating analysis
***(63)(65)* RATING METHOD:**	6 - Load Factor (LF) rating reported by rating factor (RF)
***(31)* ORIGINAL DESIGN LOADING:**	3 - HS15

STRUCTURE RATING SUMMARY

OHIO LEGAL VEHICLES			
Loading Type	**GVW (Tons)**	**Operating Rating RF**	**Legal Weight (Tons)**
2F1	15	2.261	**15.00**
3F1	23	1.552	**23.00**
4F1	27	1.431	**27.00**
5C1	40	1.610	**40.00**
SPECIALIZED HAULING VEHICLES (SHV)			
SU4	27	1.408	**27.00**
SU5	31	1.341	**31.00**
SU6	34.75	1.209	**34.75**
SU7	38.75	1.140	**38.75**
EMERGENCY VEHICLES (EV) *Check box if this is an NBI bridge* ☑			
EV2	28.75	1.454	**28.75**
EV3	43	0.929	**39.95**

DESIGN VEHICLE		
Loading Type	**Design Rating - RF**	
	Operating	**Inventory**
HS20 Loading	1.333	0.798
Overall Legal Posting Rating	95%	
Posting Recommendation	EV Posting Recommended	

Sign Posting Recommendation:

EMERGENCY VEHICLE WEIGHT LIMIT
2 AXLE 29 T
3 AXLE 40 T

AGENCY/FIRM/OFFICE	Office of Structural Engineering, ODOT	REPORT DATE:	1/16/2019

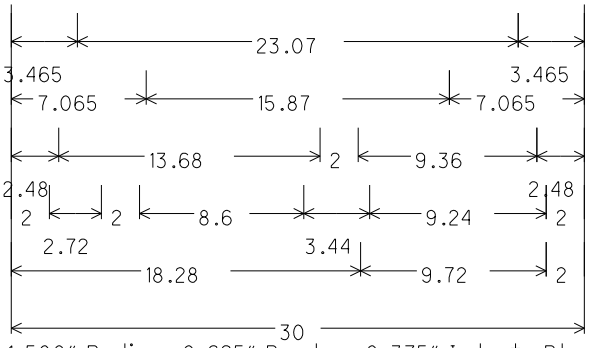
RATED BY	PE NUMBER	PHONE NUMBER	EMAIL
Molly Brown	---	614-728-3080	Molly.Brown@dot.ohio.gov
REVIEWED BY	**PE NUMBER**	**PHONE NUMBER**	**EMAIL**
Omar Abu-Hajar	57465	614-387-1257	Omar.Abu-Hajar@dot.ohio.gov

STANDARD SIGN DESIGN

ODOT - OFFICE OF TRAFFIC OPERATIONS			
DATE: 01/18/19	COLORS: BLACK ON WHITE	SERIES: REGULATORY	CODE NO.: R12-H7

DRAFT...

30″ x 30″
(Page 1 of 2)



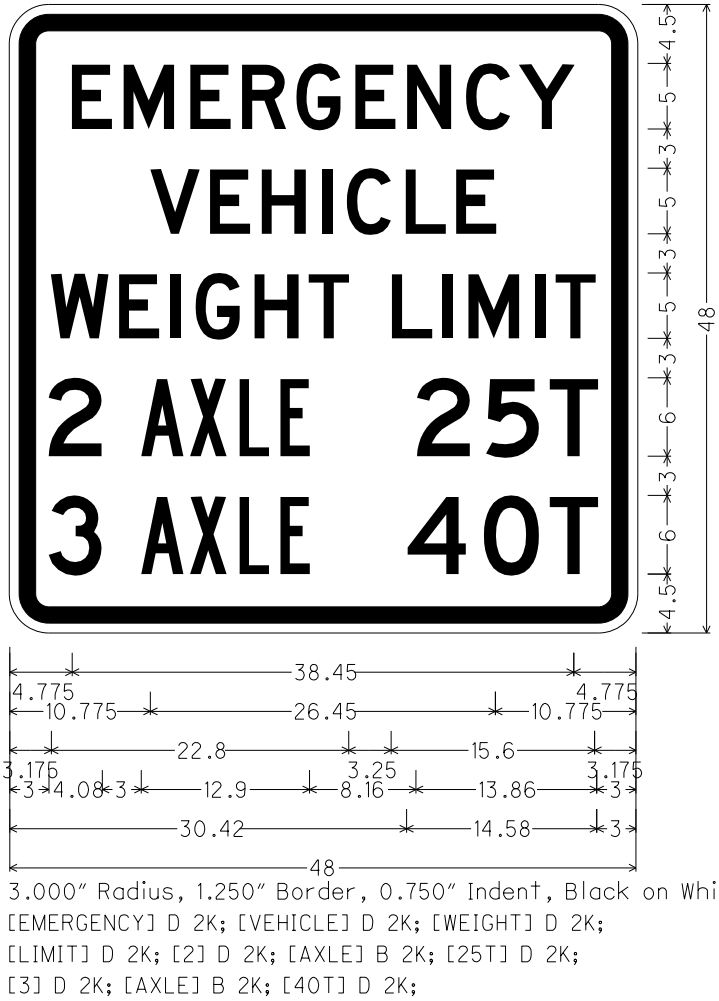
1.500″ Radius, 0.625″ Border, 0.375″ Indent, Black on White;
[EMERGENCY] D 2K;
[VEHICLE] D 2K; [WEIGHT] D 2K;
[LIMIT] D 2K; [2] D 2K;
[AXLE] B 2K; [25T] D 2K;
[3] D 2K; [AXLE] B 2K;
[40T] D 2K;

STANDARD SIGN DESIGN

ODOT - OFFICE OF TRAFFIC OPERATIONS			
DATE: 01/18/19	COLORS: BLACK ON WHITE	SERIES: REGULATORY	CODE NO.: R12-H7

DRAFT....

48" x 48"
(Page 2 of 2)

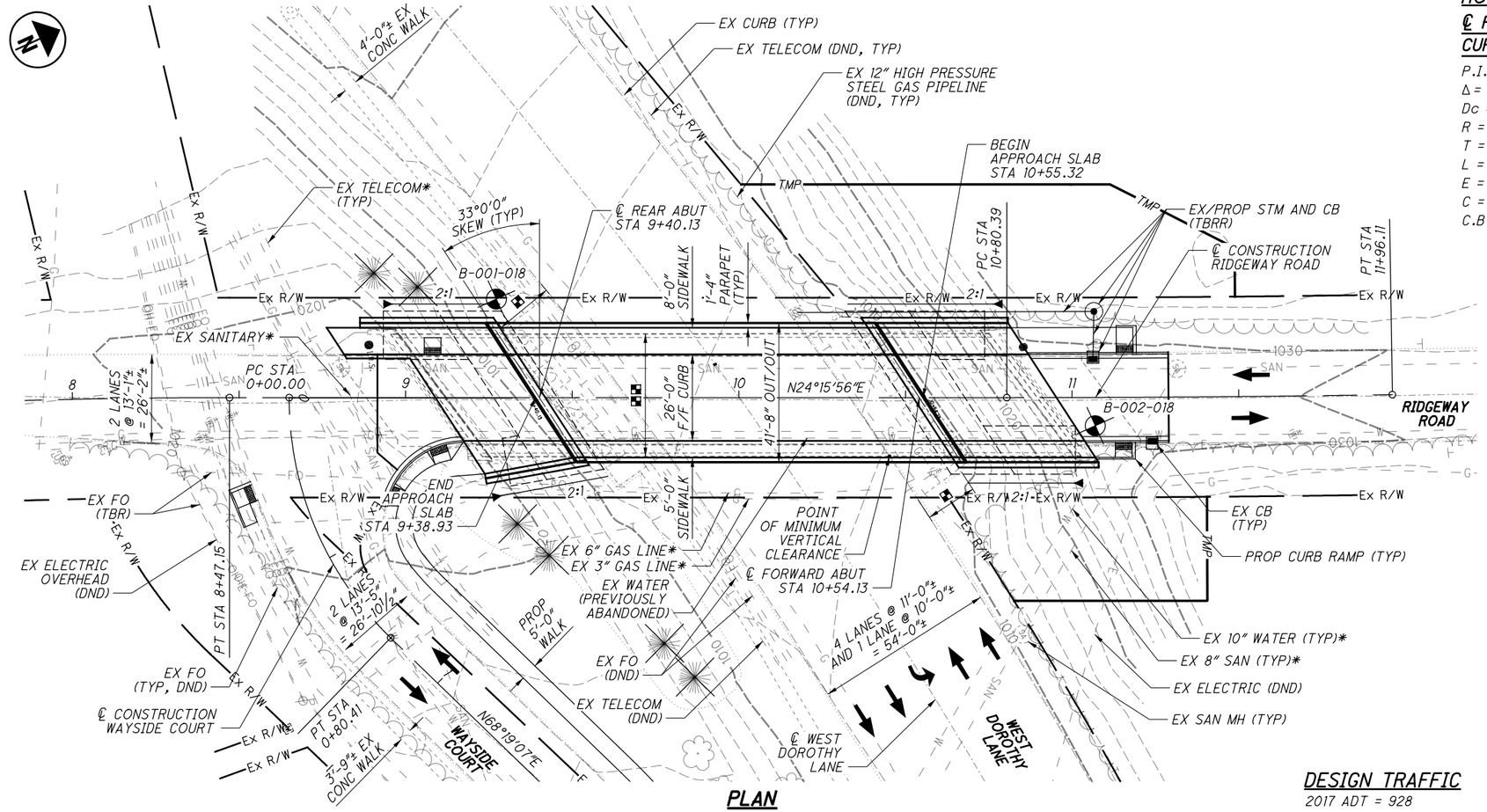


3.000" Radius, 1.250" Border, 0.750" Indent, Black on White;
[EMERGENCY] D 2K; [VEHICLE] D 2K; [WEIGHT] D 2K;
[LIMIT] D 2K; [2] D 2K; [AXLE] B 2K; [25T] D 2K;
[3] D 2K; [AXLE] B 2K; [40T] D 2K;

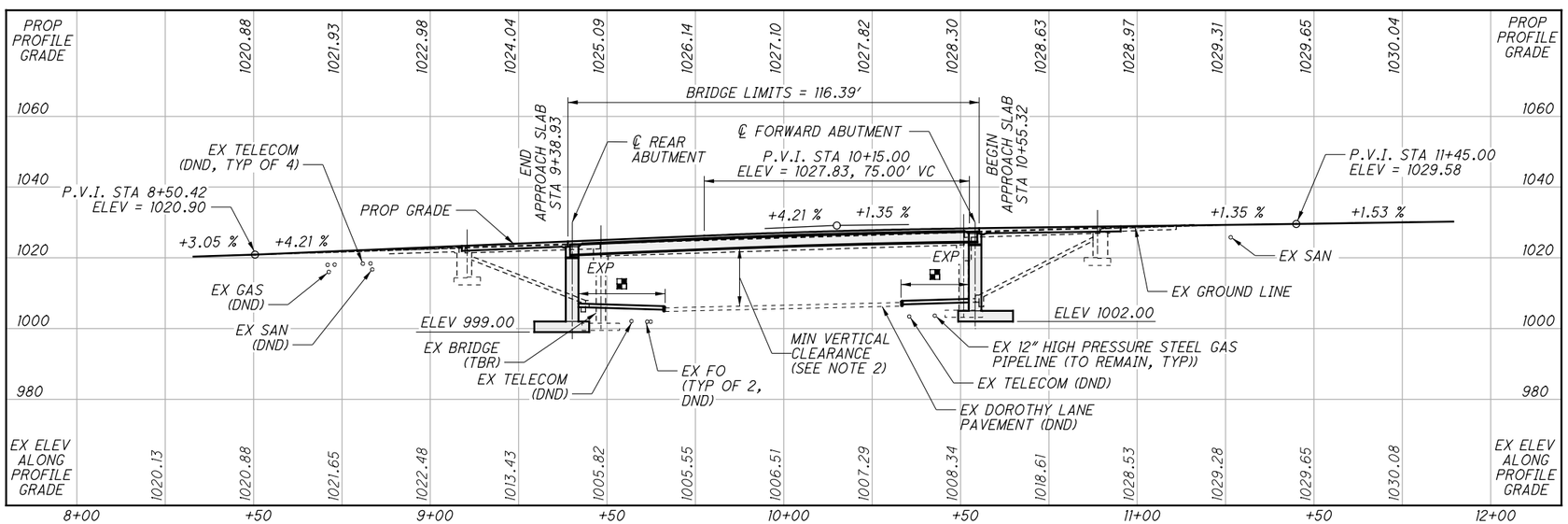
EMH&T

APPENDIX B:

MOT-RDGWY-0137 Structure Alternative Exhibits



PLAN



PROFILE ALONG CENTERLINE CONSTRUCTION RIDGEWAY ROAD

HORIZONTAL CURVE DATA

℄ RIDGEWAY RD CURVE NO 1	℄ WAYSIDE COURT CURVE NO 1	℄ RIDGEWAY RD CURVE NO 2
P.I. STA 7+01.68	P.I. STA 0+42.52	P.I. STA 11+38.25
Δ = 7° 34' 29" (RT)	Δ = 46° 04' 18" (LT)	Δ = 0° 53' 14" (LT)
Dc = 2° 35' 59"	Dc = 57° 17' 45"	Dc = 0° 46' 00"
R = 2,203.87'	R = 100.00'	R = 7,473.42'
T = 145.89'	T = 42.52'	T = 57.86'
L = 291.36'	L = 80.41'	L = 115.72'
E = 4.82'	E = 8.66'	E = 0.22'
C = 291.15'	C = 78.26'	C = 115.72'
C.B. = N 20° 28' 42" E	C.B. = S 88° 38' 44" E	C.B. = N 23° 49' 19" E

NOTES

1. EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
2. MINIMUM VERTICAL CLEARANCE 15'-6" REQUIRED:
   ALTERNATIVE 1A - 15'-11½" PROVIDED
   ALTERNATIVE 1B - 15'-11" PROVIDED
   ALTERNATIVE 1C - 15'-10½" PROVIDED

LEGEND

- BORING LOCATION
- ▪ - MINIMUM HORIZONTAL CLEARANCE = 17'-7½"± (REAR ABUTMENT) 15'-6"± (FORWARD ABUTMENT)
- ▪▪ - EX BRIDGE (TBR)
- * - DISPOSITION TO BE DETERMINED
- - EX TREE TO BE REMOVED

EXISTING STRUCTURE

TYPE: THREE SPAN PRESTRESSED REINFORCED NON-COMPOSITE BOX BEAM SUPERSTRUCTURE SUPPORTED ON REINFORCED CONCRETE STUB ABUTMENTS AND CAP AND COLUMN PIERS

SPANS: 37'-0"±, 101'-0"±, 37'-0"± C/C BEARINGS
ROADWAY: 26'-6"± TOE/TOE CURB, 5'-7"± SIDEWALK (WEST) 2'-7"± SAFETY CURB (EAST)
LOADING: HS15
SKEW: 36°48'30"± RF
APPROACH SLABS: AS-1-54 (20'-0"± LONG)
ALIGNMENT: TANGENT
CROWN: 3/16" PER FOOT
STRUCTURAL FILE NUMBER: 5763096
DATE BUILT: 1965
REHABILITATION: 2005
DISPOSITION: TO BE REPLACED

PROPOSED STRUCTURE

TYPE: SINGLE SPAN STEEL PLATE GIRDER (GRADE 50W) WITH COMPOSITE REINFORCED CONCRETE DECK SUPERSTRUCTURE SUPPORTED ON REINFORCED CONCRETE WALL TYPE SEMI-INTEGRAL ABUTMENTS

SPAN: 114'-0" C/C BEARINGS
ROADWAY: 26'-0" TOE/TOE CURB, 8'-0" SIDEWALK (WEST), 5'-0" SIDEWALK (EAST)
LOADING: HL-93 WITH 60 PSF FWS
SKEW: 33°00'00" RF
APPROACH SLABS: 30'-0" LONG (SOUTH), 40'-0" LONG (NORTH) (AS-1-15 AND AS-2-15)
ALIGNMENT: TANGENT
CROWN: 0.016 FT/FT, NORMAL
COORDINATES: LATITUDE 39°42'16.57" N
LONGITUDE 84°10'37.53" W

DESIGN AGENCY
EMH&T
Engineers, Architects, Planners, Surveyors, Scientists, Economists
5500 New Albany Road, Columbus, Ohio 43054
614.775.4500 www.emht.com

DESIGNED	DRAWN	REVIEWED	DATE
TDA	TDA	CAS	01/16/19
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RJE	-	TBD	

MONTGOMERY COUNTY
STA. 9+38.93
STA. 10+55.32

SITE PLAN - ALTERNATIVE 1A, 1B, 1C

MOT RIDGEWAY ROAD BRIDGE
PID No. 108706

BRIDGE NO. MOT-RDGWY-0137
RIDGEWAY ROAD OVER WEST DOROTHY LANE

1 / 2

1 / 2

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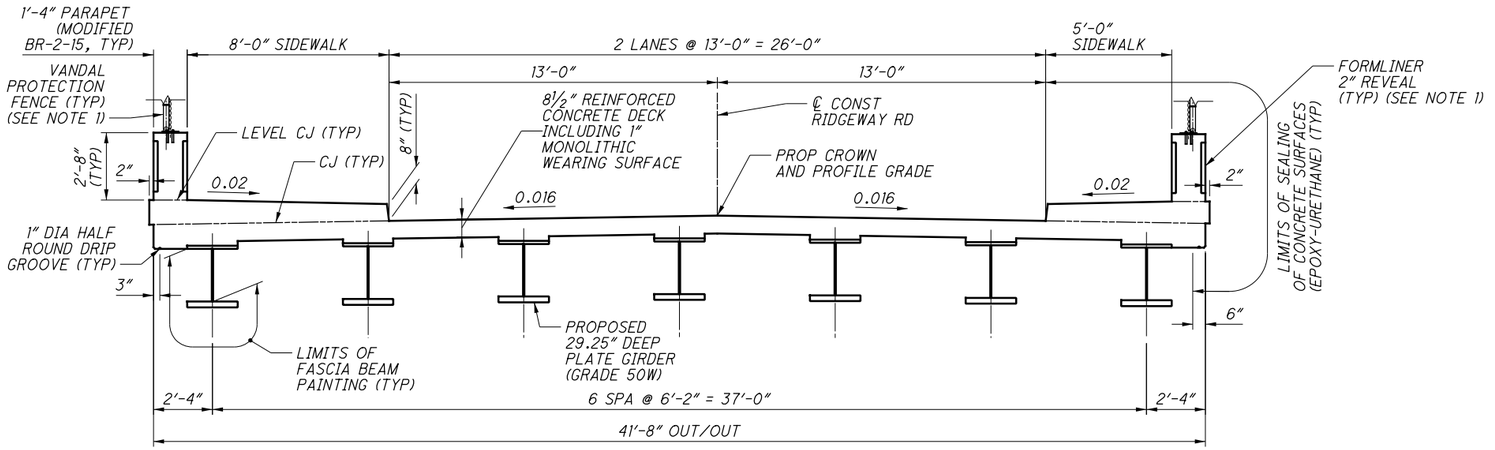
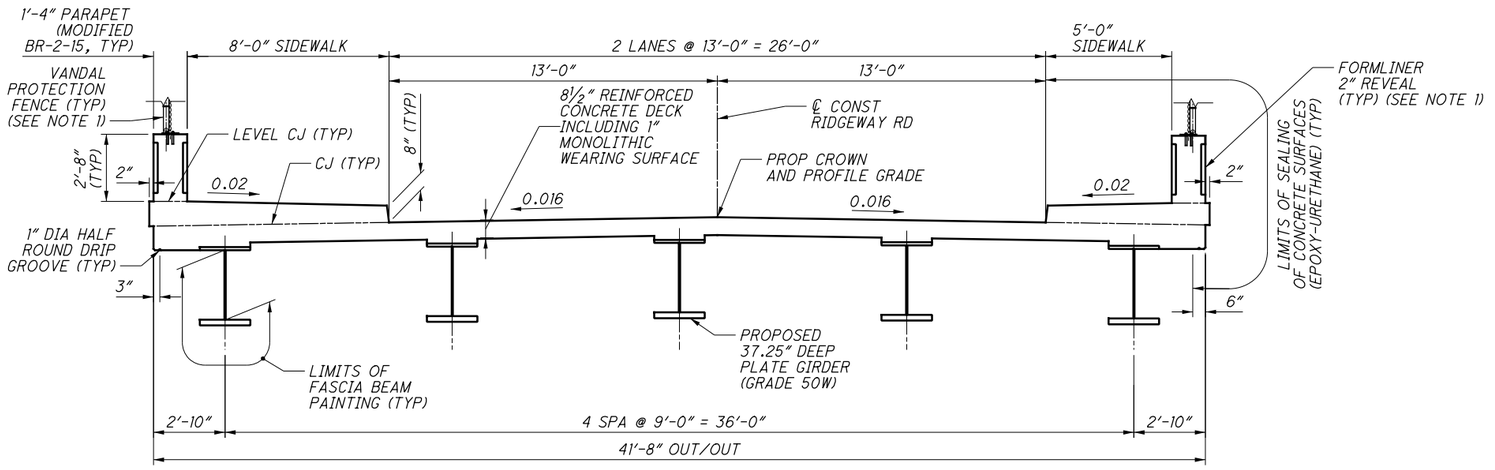
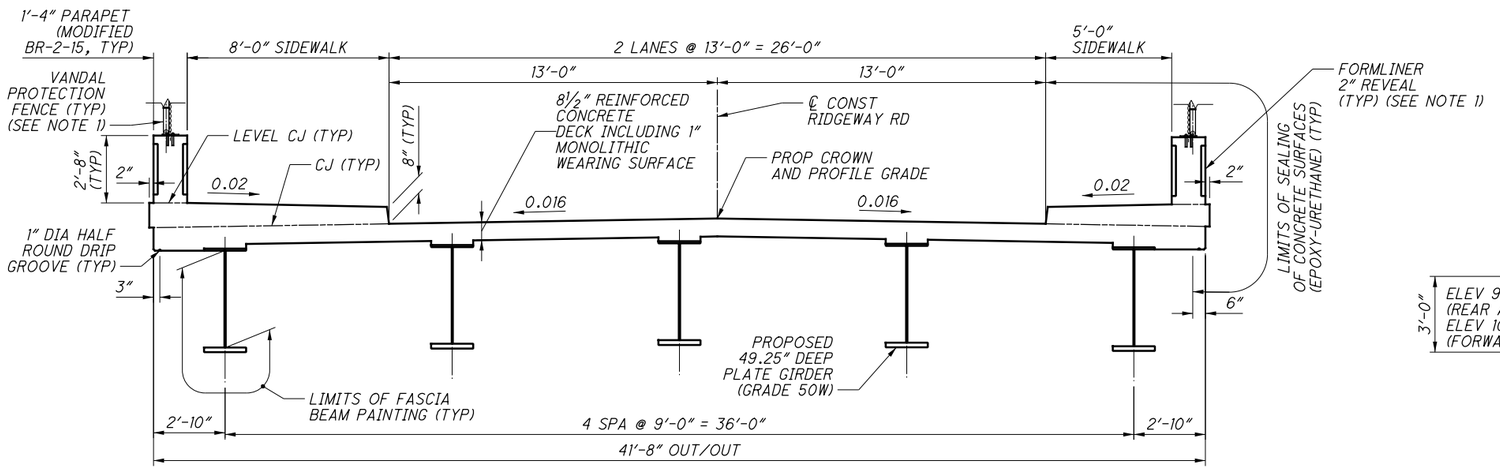


TYPICAL TRANSVERSE SECTION - ALTERNATIVE 1A



TYPICAL TRANSVERSE SECTION - ALTERNATIVE 1B

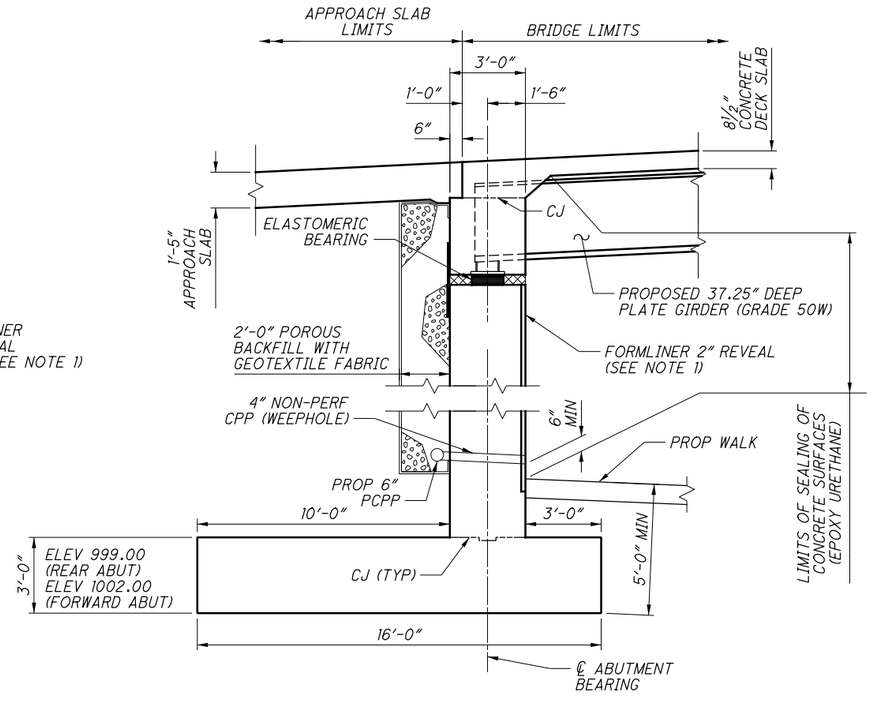


TYPICAL TRANSVERSE SECTION - ALTERNATIVE 1C

SUPERSTRUCTURE DEPTH			
ITEM	BRIDGE DEPTH		
	ALT 1A	ALT 1B	ALT 1C
SLAB INCLUDING WEARING SURFACE	8.50"	8.50"	8.50"
HAUNCH (BOTTOM OF SLAB TO TOP OF TOP FLANGE)	2.00"	2.00"	2.00"
STEEL GIRDER	29.50"	37.25"	49.25"
TOP OF WEARING SURFACE TO BOTTOM OF BOTTOM FLANGE (INCH)	40.00"	47.75"	59.75"
TOP OF WEARING SURFACE TO BOTTOM OF BOTTOM FLANGE (FEET)	3.33'	3.98'	4.98'

NOTES

1. STANDARD FORMLINER AND VANDAL PROTECTION FENCE DESIGN AND LIMITS SHOWN FOR STRUCTURE TYPE STUDY. SPECIFIC STYLE, DESIGN, AND LOCATIONS WILL BE DETERMINED IN DETAILED DESIGN.



TYPICAL ABUTMENT SECTION

DESIGN AGENCY
EMH&T
Engineers | Architects | Surveyors | Planners
5500 New Albany Road, Columbus, Ohio 43054
614.775.4500 | www.emht.com

DESIGNED	DRAWN	REVIEWED	DATE
TDA	TDA	CAS	01/16/19
CHECKED	REVISED		STRUCTURE FILE NUMBER
RJE			TBD

TYPICAL SECTIONS - ALTERNATIVE 1A, 1B, & 1C

MOT RIDGEWAY ROAD BRIDGE
PID No. 108706

BRIDGE NO. MOT-RDGWY-0137
RIDGEWAY ROAD OVER WEST DOROTHY LANE

2 / 2

2
2

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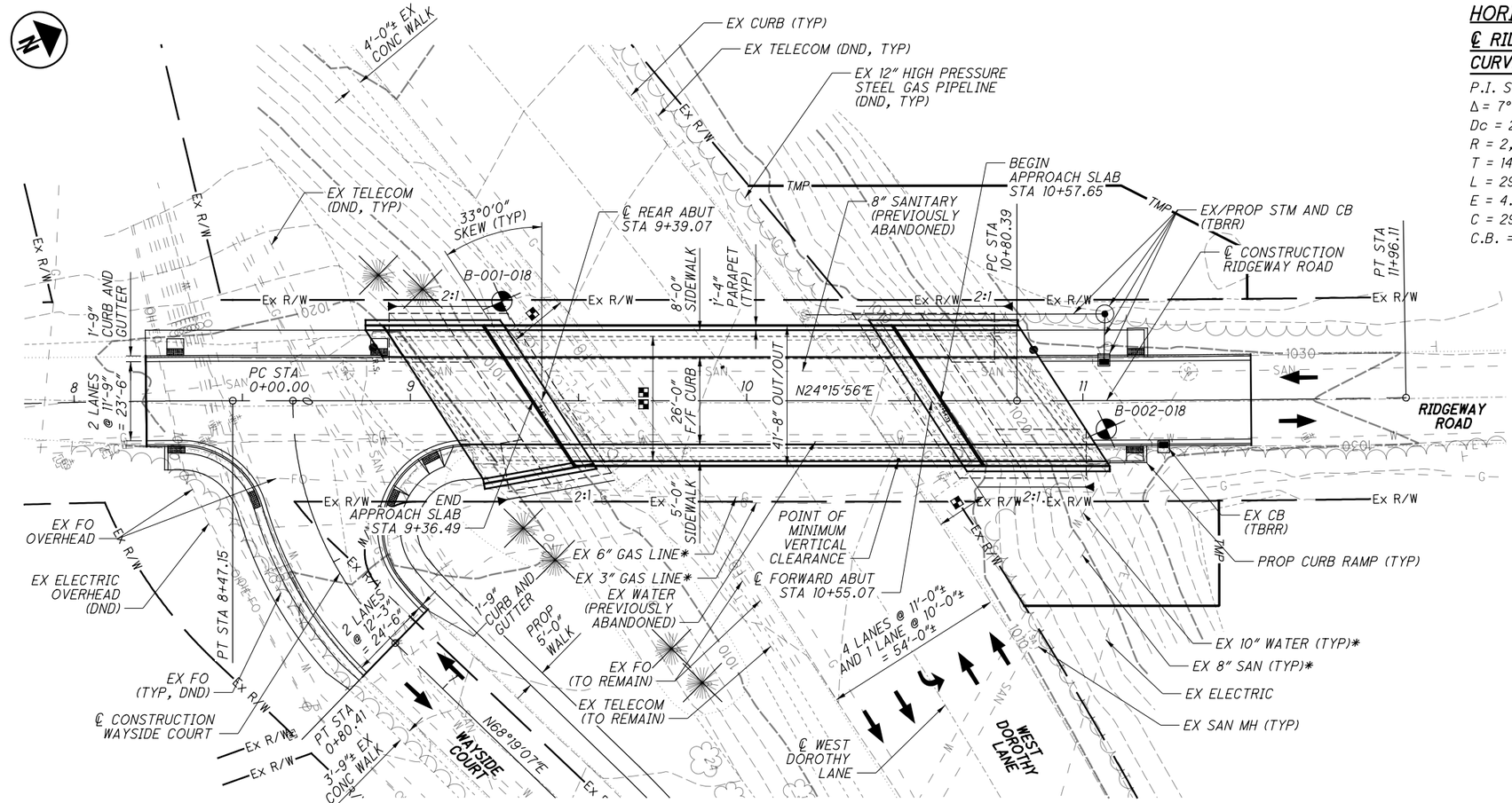

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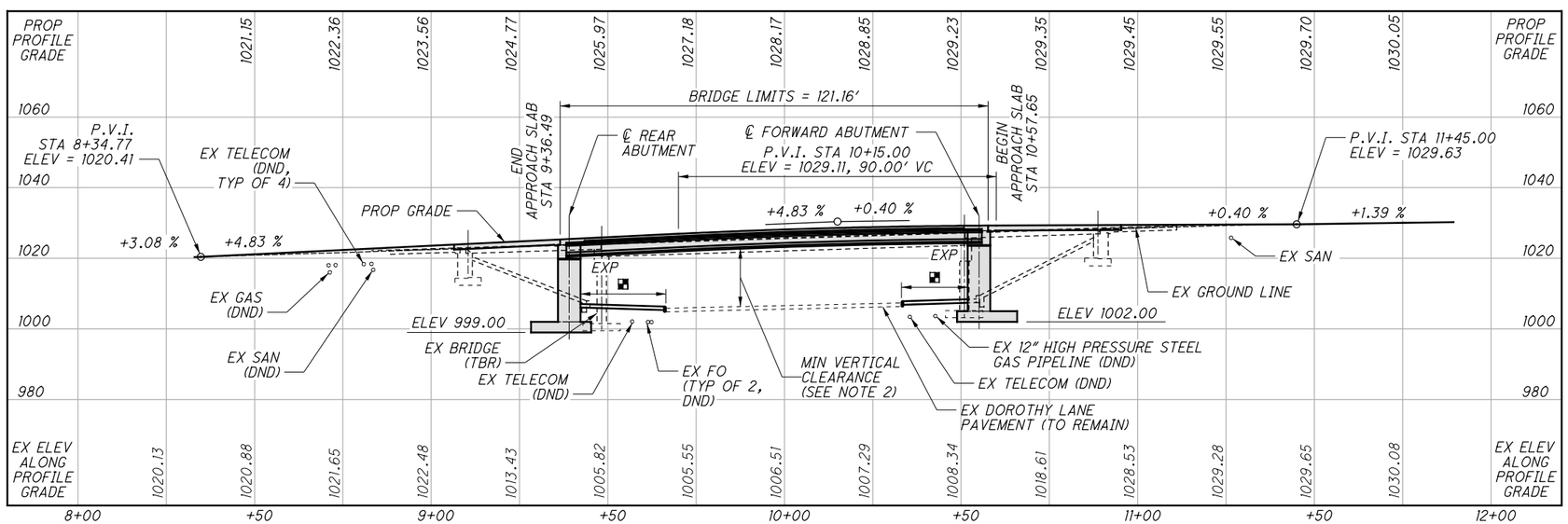

PROFILE ALONG CENTERLINE CONSTRUCTION RIDGEWAY ROAD

HORIZONTAL CURVE DATA

℄ RIDGEWAY RD CURVE NO 1	℄ WAYSIDE COURT CURVE NO 1	℄ RIDGEWAY RD CURVE NO 2
P.I. STA 7+01.68	P.I. STA 0+42.52	P.I. STA 11+38.25
Δ = 7° 34' 29" (RT)	Δ = 46° 04' 18" (LT)	Δ = 0° 53' 14" (LT)
Dc = 2° 35' 59"	Dc = 57° 17' 45"	Dc = 0° 46' 00"
R = 2,203.87'	R = 100.00'	R = 7,473.42'
T = 145.89'	T = 42.52'	T = 57.86'
L = 291.36'	L = 80.41'	L = 115.72'
E = 4.82'	E = 8.66'	E = 0.22'
C = 291.15'	C = 78.26'	C = 115.72'
C.B. = N 20° 28' 42" E	C.B. = S 88° 38' 44" E	C.B. = N 23° 49' 19" E

DESIGN TRAFFIC

2017 ADT = 928

NOTES

1. EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
2. MINIMUM VERTICAL CLEARANCE 15'-6" REQUIRED:
   ALTERNATIVE 2A - 15'-10¼" PROVIDED
   ALTERNATIVE 2B - 15'-10¼" PROVIDED

LEGEND

- BORING LOCATION
- - MINIMUM HORIZONTAL CLEARANCE = 17'-5½"± (REAR ABUTMENT) 15'-1½"± (FORWARD ABUTMENT)
- - EX BRIDGE (TBR)
- * - DISPOSITION TO BE DETERMINED
- - EX TREE TO BE REMOVED

EXISTING STRUCTURE

TYPE: THREE SPAN PRESTRESSED REINFORCED NON-COMPOSITE BOX BEAM SUPERSTRUCTURE SUPPORTED ON REINFORCED CONCRETE STUB ABUTMENTS AND CAP AND COLUMN PIERS

SPANS: 37'-0"±, 101'-0"±, 37'-0"± C/C BEARINGS
ROADWAY: 26'-6"± TOE/TOE CURB, 5'-7"± SIDEWALK (WEST) 2'-7"± SAFETY CURB (EAST)
LOADING: HS15
SKEW: 36°48'30"± RF
APPROACH SLABS: AS-1-54 (20'-0"± LONG)
ALIGNMENT: TANGENT
CROWN: 3/16" PER FOOT
STRUCTURAL FILE NUMBER: 5763096
DATE BUILT: 1965
REHABILITATION: 2005
DISPOSITION: TO BE REPLACED

PROPOSED STRUCTURE

TYPE: SINGLE SPAN STEEL PRESTRESSED CONCRETE BEAM WITH COMPOSITE REINFORCED CONCRETE DECK SUPPORTED ON REINFORCED CONCRETE WALL TYPE SEMI-INTEGRAL ABUTMENTS

SPAN: 116'-0" C/C BEARINGS
ROADWAY: 26'-0" TOE/TOE CURB, 8'-0" SIDEWALK (WEST), 5'-0" SIDEWALK (EAST)
LOADING: HL-93 WITH 60 PSF FWS
SKEW: 33°00'00" RF
APPROACH SLABS: 30'-0" LONG (SOUTH), 38'-0" LONG (NORTH) (AS-1-15 AND AS-2-15)
ALIGNMENT: TANGENT
CROWN: 0.016 FT/FT, NORMAL
COORDINATES: LATITUDE 39°42'16.57" N
LONGITUDE 84°10'37.53" W

DESIGN AGENCY
EMH&T
Engineers, Architects & Surveyors
5500 New Albany Road, Columbus, Ohio 43054
614.775.4500 www.emht.com

DESIGNED	DRAWN	REVIEWED	DATE
TDA	TDA	CAS	01/16/19
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RJE	-	TBD	

MONTGOMERY COUNTY
STA. 9+36.49
STA. 10+57.65

SITE PLAN - ALTERNATIVE 2A & 2B
BRIDGE NO. MOT-RDGWY-0137
RIDGEWAY ROAD OVER WEST DOROTHY LANE

MOT RIDGEWAY ROAD BRIDGE
PID No. 108706

1/2
1/2

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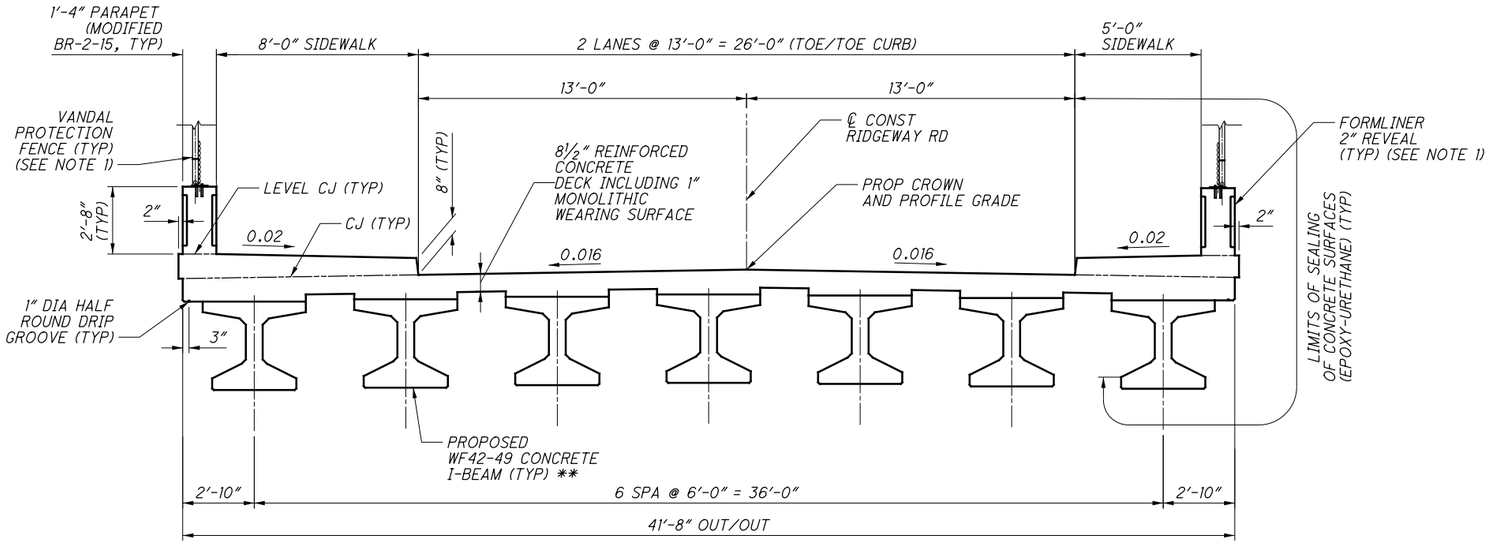
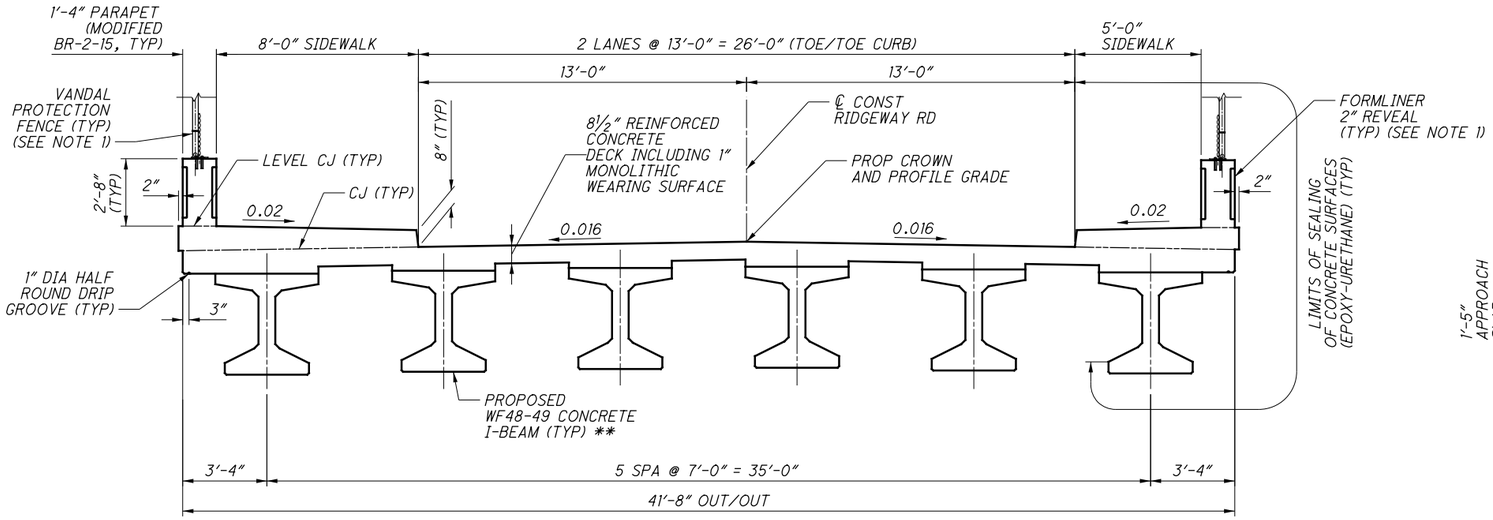


TYPICAL TRANSVERSE SECTION - ALTERNATIVE 2A

SUPERSTRUCTURE DEPTH		
ITEM	BRIDGE DEPTH	
	ALT 2A	ALT 2B
SLAB INCLUDING WEARING SURFACE	8.50"	8.50"
HAUNCH (BOTTOM OF SLAB TO TOP OF TOP FLANGE)	2.00"*	2.00"*
CONCRETE BEAM	42.00"	48.00"
TOP OF WEARING SURFACE TO BOTTOM OF BOTTOM FLANGE (INCH)	52.50"	58.50"
TOP OF WEARING SURFACE TO BOTTOM OF BOTTOM FLANGE (FEET)	4.38'	4.88'



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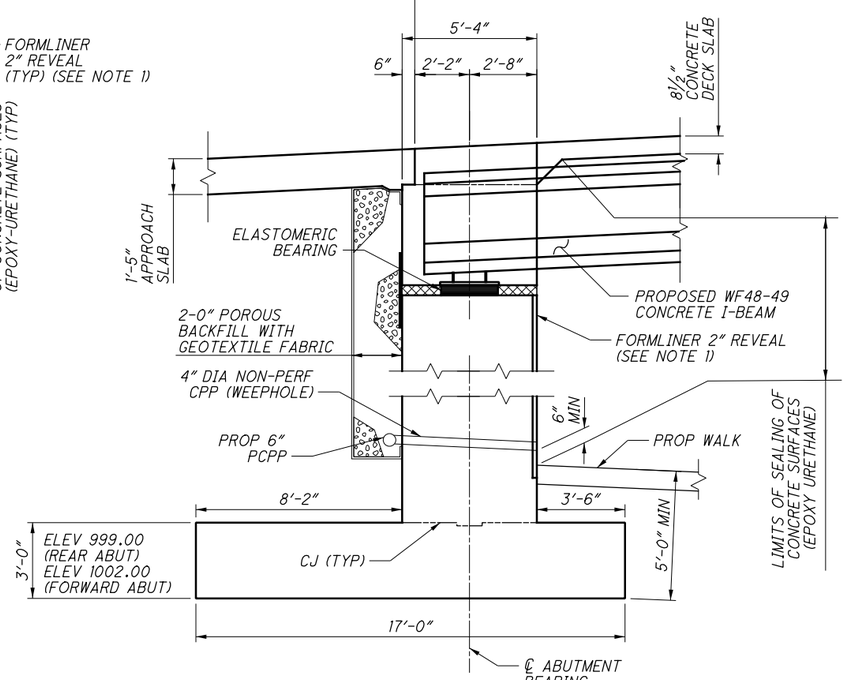

TYPICAL ABUTMENT SECTION

(ALTERNATIVE 2B ABUTMENT SHOWN, ALTERNATIVE 2A SIMILAR)

NOTES

1. STANDARD FORMLINER AND VANDAL PROTECTION FENCE DESIGN AND LIMITS SHOWN FOR STRUCTURE TYPE STUDY. SPECIFIC STYLE, DESIGN, AND LOCATIONS WILL BE DETERMINED IN DETAILED DESIGN.

LEGEND

* - MINIMUM EXPECTED HAUNCH. HAUNCH THICKNESS WILL VARY WITH BEAM CAMBER.

** - F'CI = 7 KSI, F'C = 9 KSI

DESIGN AGENCY: EMH&T

DESIGNED	DRAWN	REVIEWED	DATE
TDA	TDA	CAS	01/16/19
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RJE		TBD	

TYPICAL SECTIONS - ALTERNATIVE 2A & 2B

BRIDGE NO. MOT-RDGWY-0137

RIDGEWAY ROAD OVER WEST DOROTHY LANE

MOT RIDGEWAY ROAD BRIDGE PID No. 108706

2 / 2

2 / 2

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EMHT

APPENDIX C:

Preliminary Initial and Life-Cycle Cost Opinion

STRUCTURE CONSTRUCTION COST ESTIMATE COMPARISON: MOT-RDGWY-0137

MOT-Ridgeway Road Bridge (PID 108706) - Structure Type Study - January 16, 2019

				Alt 1A: 7 - 29.5" Deep Steel (50W) Plate Girders			Alt 1B: 5 - 37.25" Deep Steel (50W) Plate Girders			Alt 1C: - 5 - 49.25" Deep Steel (50W) Plate Girders			Alt 2A: 7 - WF42-49 Concrete I-Beams			Alt 2B: 7 - WF48-49 Concrete I-Beams		
ITEM	**ITEM EXT.**	**DESCRIPTION**	**UNIT**	**UNIT COST**	**QTY**	**TOTAL COST**	**UNIT COST**	**QTY**	**TOTAL COST**	**UNIT COST**	**QTY**	**TOTAL COST**	**UNIT COST**	**QTY**	**TOTAL COST**	**UNIT COST**	**QTY**	**TOTAL COST**
202	11003	Structure Removed, Over 20 Foot Span, As Per Plan	LS	-	LS	$ 167,000		LS	$ 167,000		LS	$ 167,000		LS	$ 167,000		LS	$ 167,000
503	21300	Unclassified Excavation	LS	-	LS	$ 57,000	-	LS	$ 57,000	-	LS	$ 57,000	-	LS	$ 57,000	-	LS	$ 57,000
509	10000	Epoxy Coated Reinforcing Steel	LB	$ 1.05	157,515	$ 165,391	$ 1.05	159,690	$ 167,675	$ 1.05	163,290	$ 171,455	$ 1.05	176,220	$ 185,031	$ 1.05	177,930	$ 186,827
511	34446	Class QC2 Concrete with QC/QA, Bridge Deck	CY	$ 775.00	229	$ 177,475	$ 775.00	234	$ 181,350	$ 775.00	244	$ 189,100	$ 760.00	302	$ 229,520	$ 760.00	308	$ 234,080
511	44112	Class QC1 Concrete with QC/QA, Abutment not Including Footing	CY	$ 550.00	402	$ 221,100	$ 550.00	408	$ 224,400	$ 550.00	414	$ 227,700	$ 550.00	210	$ 115,500	$ 550.00	210	$ 115,500
511	45602	Class QC4 Mass Concrete, Substructure with QC/QA	CY	-	-	-	-	-	-	-	-	-	$ 575.00	362	$ 208,150	$ 575.00	362	$ 208,150
511	46512	Class QC1 Concrete with QC/QA, Footing	CY	$ 375.00	336	$ 126,000	$ 375.00	336	$ 126,000	$ 375.00	336	$ 126,000	$ 375.00	348	$ 130,500	$ 375.00	348	$ 130,500
513	10280	Structural Steel Members, Level 4	LB	$ 2.05	320,000	$ 656,000	$ 2.25	225,500	$ 507,375	$ 2.40	178,900	$ 429,360	-	-	-	-	-	-
514	00060	Field Painting Structural Steel, Intermediate Coat	SF	$ 6.90	1,929	$ 13,310	$ 6.90	2,076	$ 14,324	$ 6.90	2,304	$ 15,898	-	-	-	-	-	-
514	00066	Field Painting Structural Steel, Finish Coat	SF	$ 5.33	1,929	$ 10,282	$ 5.33	2,076	$ 11,065	$ 5.33	2,304	$ 12,287	-	-	-	-	-	-
515	15080	Draped Strand Prestressed Concrete Bridge I-Beam Members, Level 3, Type WF42-49	Each	-	-	-	-	-	-	-	-	-	$ 47,600.00	7	$ 333,200	-	-	-
515	15090	Draped Strand Prestressed Concrete Bridge I-Beam Members, Level 3, Type WF48-49	Each	-	-	-	-	-	-	-	-	-	-	-	-	$ 49,500.00	6	$ 297,000
515	20000	Intermediate Diaphragms	Each	-	-	-	-	-	-	-	-	-	$ 2,000.00	18	$ 36,000	$ 2,100.00	15	$ 31,500
516	44201	Elastomeric Bearing with Internal Laminates and Load Plate (Neoprene), As Per Plan	EACH	$ 1,200.00	14	$ 16,800	$ 1,200.00	10	$ 12,000	$ 1,200.00	10	$ 12,000	$ 1,400.00	14	$ 19,600	$ 1,400.00	12	$ 16,800
517	76300	Railing, Misc.: Concrete Parapet	FT	$ 250.00	377	$ 94,250	$ 250.00	377	$ 94,250	$ 250.00	377	$ 94,250	$ 250.00	382	$ 95,500	$ 250.00	382	$ 95,500
526	30011	Reinforced Concrete Approach Slabs with QC/QA (T=17"), As Per Plan	SY	$ 275.00	332	$ 91,300	$ 275.00	332	$ 91,300	$ 275.00	332	$ 91,300	$ 260.00	323	$ 83,980	$ 260.00	323	$ 83,980
607	39900	Vandal Protection Fence, 6' Straight, Coated Fabric	FT	$ 75.00	233	$ 17,459	$ 75.00	233	$ 17,459	$ 75.00	233	$ 17,459	$ 75.00	242	$ 18,174	$ 75.00	242	$ 18,174
		Roadway Costs (See Note 2)	**LS**	-	**LS**	**$ 100,000**		**LS**	**$ 180,000**		**LS**	**$ 190,000**		**LS**	**$ 190,000**		**LS**	**$ 190,000**
		Maintenance of Traffic/Traffic Control/Street Lighting	**LS**	-	**LS**	**$ 33,000**		**LS**	**$ 33,000**		**LS**	**$ 33,000**		**LS**	**$ 33,000**		**LS**	**$ 33,000**
		Incidentals	**LS**	-	**LS**	**$ 125,000**		**LS**	**$ 125,000**		**LS**	**$ 125,000**		**LS**	**$ 125,000**		**LS**	**$ 125,000**
			INITIAL SUB-TOTAL			**$ 2,071,366**			**$ 2,009,197**			**$ 1,958,808**			**$ 2,027,155**			**$ 1,990,011**
			INFLATION TO JULY 1, 2021 = **8.2%**			$ 169,852			$ 164,754			$ 160,622			$ 166,227			$ 163,181
			20% CONTINGENCY			$ 389,273			$ 376,839			$ 366,762			$ 380,431			$ 373,002
			GRAND TOTAL			**$ 2,630,491**			**$ 2,550,791**			**$ 2,486,192**			**$ 2,573,813**			**$ 2,526,193**
			LIFE CYCLE COST (See Later Spreadsheets)			**$ 3,544,000**			**$ 3,403,000**			**$ 3,337,000**			**$ 3,309,000**			**$ 3,252,000**

Notes:

1. Unit costs are from the ODOT Estimator software, previous project bid history, and coordination with the Office of Estimating and material manufacturers.
2. Roadway cost includes: embankment, sidewalk, pavement, and drainage.
3. Not included in this cost estimate are Landscaping, Right of Way, private utility relocations, and advanced aesthetics

LIFE CYCLE COST ANALYSIS: MOT-RDGWY-0137

MOT-Ridgeway Road Bridge (PID 108706) - Structure Type Study - January 16, 2019

Alt 1A: 7 - 29.5" Deep Steel (50W) Plate Girders

Discount Rate = 1.60%

Event	Period	PWF	2019 Cost	2021 Cost	PWF Cost
Initial Construction Cost	0	1.000	$ 2,460,639	$ 2,662,412	$ 2,662,412
Seal Deck, Patch Deck, and Overlay	20	0.728	$ 68,163	$ 73,753	$ 53,691
Structural Steel Painting/Repairs*	25	0.672	$ 23,592	$ 25,526	$ 17,165
Seal Deck, Patch Deck, and Overlay	35	0.574	$ 68,163	$ 73,753	$ 42,315
Sealing, Deck Replacement, Approach Slab Replacement, and Structural Steel Painting**	50	0.452	$ 790,893	$ 855,747	$ 386,954
Seal Deck, Patch Deck, and Overlay	70	0.329	$ 68,163	$ 73,753	$ 24,278
Structural Steel Painting/Repairs**	75	0.304	$ 168,345	$ 182,150	$ 55,386
Seal Deck, Patch Deck, and Overlay	85	0.259	$ 68,163	$ 73,753	$ 19,134
Superstructure Replacement	100	0.204	$ 1,278,778	$ 1,383,638	$ 282,912
		Life Cycle Cost (Rounded) =			**$ 3,544,000**

* Painting Fascia Beams ** Assume Grade 50W steel beams require painting at Years 50 and 75

Alt 1B: 5 - 37.25" Deep Steel (50W) Plate Girders

Discount Rate = 1.60%

Event	Period	PWF	2019 Cost	2021 Cost	PWF Cost
Initial Construction Cost	0	1.000	$ 2,386,037	$ 2,581,692	$ 2,581,692
Seal Deck, Patch Deck, and Overlay	20	0.728	$ 68,163	$ 73,753	$ 53,691
Structural Steel Painting/Repairs*	25	0.672	$ 25,389	$ 27,471	$ 18,473
Seal Deck, Patch Deck, and Overlay	35	0.574	$ 68,163	$ 73,753	$ 42,315
Sealing, Deck Replacement, Approach Slab Replacement, and Structural Steel Painting**	50	0.452	$ 753,923	$ 815,745	$ 368,866
Seal Deck, Patch Deck, and Overlay	70	0.329	$ 68,163	$ 73,753	$ 24,278
Structural Steel Painting/Repairs**	75	0.304	$ 134,790	$ 145,842	$ 44,346
Seal Deck, Patch Deck, and Overlay	85	0.259	$ 68,163	$ 73,753	$ 19,134
Superstructure Replacement	100	0.204	$ 1,132,522	$ 1,225,389	$ 250,555
		Life Cycle Cost (Rounded) =			**$ 3,403,000**

* Painting Fascia Beams ** Assume Grade 50W steel beams require painting at Years 50 and 75

Alt 1C: - 5 - 49.25" Deep Steel(50W) Plate Girders

Discount Rate = 1.60%

Event	Period	PWF	2019 Cost	2021 Cost	PWF Cost
Initial Construction Cost	0	1.000	$ 2,325,569	$ 2,516,266	$ 2,516,266
Seal Deck, Patch Deck, and Overlay	20	0.728	$ 68,163	$ 73,753	$ 53,691
Structural Steel Painting/Repairs*	25	0.672	$ 28,185	$ 30,496	$ 20,507
Seal Deck, Patch Deck, and Overlay	35	0.574	$ 68,163	$ 73,753	$ 42,315
Sealing, Deck Replacement, Approach Slab Replacement, and Structural Steel Painting**	50	0.452	$ 769,203	$ 832,277	$ 376,342
Seal Deck, Patch Deck, and Overlay	70	0.329	$ 68,163	$ 73,753	$ 24,278
Structural Steel Painting/Repairs**	75	0.304	$ 146,463	$ 158,473	$ 48,187
Seal Deck, Patch Deck, and Overlay	85	0.259	$ 68,163	$ 73,753	$ 19,134
Superstructure Replacement	100	0.204	$ 1,068,045	$ 1,155,625	$ 236,290
		Life Cycle Cost (Rounded) =			**$ 3,337,000**

* Painting Fascia Beams ** Assume Grade 50W steel beams require painting at Years 50 and 75

Alt 2A: 7 - WF42-49 Concrete I-Beams

Discount Rate = 1.60%

Event	Period	PWF	2019 Cost	2021 Cost	PWF Cost
Initial Construction Cost	0	1.000	$ 2,407,586	$ 2,605,008	$ 2,605,008
Seal Deck, Patch Deck, and Overlay	20	0.728	$ 74,573	$ 80,688	$ 58,740
Seal Deck, Patch Deck, and Overlay	35	0.574	$ 74,573	$ 80,688	$ 46,294
Sealing, Deck Replacement, Approach Slab Replacement	50	0.452	$ 654,164	$ 707,806	$ 320,058
Seal Deck, Patch Deck, and Overlay	70	0.329	$ 74,573	$ 80,688	$ 26,561
Seal Deck, Patch Deck, and Overlay	85	0.259	$ 74,573	$ 80,688	$ 20,934
Superstructure Replacement	100	0.204	$ 1,045,635	$ 1,131,377	$ 231,332
		Life Cycle Cost (Rounded) =			**$ 3,309,000**

Alt 2B: 7 - WF48-49 Concrete I-Beams

Discount Rate = 1.60%

Event	Period	PWF	2019 Cost	2021 Cost	PWF Cost
Initial Construction Cost	0	1.000	$ 2,363,013	$ 2,556,780	$ 2,556,780
Seal Deck, Patch Deck, and Overlay	20	0.728	$ 74,761	$ 80,892	$ 58,889
Seal Deck, Patch Deck, and Overlay	35	0.574	$ 74,761	$ 80,892	$ 46,411
Sealing, Deck Replacement, Approach Slab Replacement	50	0.452	$ 653,003	$ 706,549	$ 319,490
Seal Deck, Patch Deck, and Overlay	70	0.329	$ 74,761	$ 80,892	$ 26,628
Seal Deck, Patch Deck, and Overlay	85	0.259	$ 74,761	$ 80,892	$ 20,986
Superstructure Replacement	100	0.204	$ 1,008,491	$ 1,091,187	$ 223,115
		Life Cycle Cost (Rounded) =			**$ 3,252,000**

EMHT

APPENDIX D:

Preliminary Geotechnical Report

Structure Foundation Exploration Report

Ridgeway Road Bridge Replacement
PID No. 108706
January 15, 2019
Terracon Project No. N4185275

Prepared for:
EMH&T Inc.
5500 New Albany Road
Columbus, Ohio

Prepared by:
Terracon Consultants, Inc.
Columbus, Ohio

January 15, 2019

EMH&T, Inc.
5500 New Albany Road
Columbus, Ohio 43054

Attn: Mr. Craig A. Schrader, P.E.

Phone: [614] 775 4632
Email: cschrader@emht.com

Re: Structure Foundation Exploration Report
Ridgeway Road Bridge Replacement
Kettering, Ohio
Terracon Project No. N4185275

Dear Mr. Schrader:

Terracon Consultants, Inc. (Terracon) has completed the structure foundation exploration for the above referenced project. This study was performed in general accordance with our proposal number PN4185275 dated July 30, 2018 which was authorized by EMH&T, Inc. (EMH&T) via a Task Order number 600 dated October 22, 2018.

This report presents the findings of our subsurface exploration and the results of our foundation analyses performed for the proposed replacement of the existing Ridgeway Road bridge located in Kettering, Ohio.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the structure foundation exploration, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Mehrdad Rowhanizadeh, P.E., P.M.P
Senior Geotechnical Engineer

for
Kevin M. Ernst, P.E.
Principal/Office Manager

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APPENDICES

EXECUTIVE SUMMARY

This report presents the findings of the structure foundation exploration performed for the proposed replacement of the existing bridge located along Ridgeway Road over West Dorothy Lane in Kettering, Ohio. We understand that two structure types including a single span concrete beam bridge, and a single span steel beam bridge will be studied as main superstructure alternatives proposed for this project. The superstructure of both alternatives will be supported on concrete wall type abutments. The new structure will maintain the existing horizontal and vertical alignments. The proposed replacement structure is anticipated to include new foundation elements, abutments and deck.

A total of two (2) borings were performed for this geotechnical exploration identified as Borings B-001-0-18 and B-002-0-18. Boring B-001-0-18 encountered approximately 3 inches of topsoil at the ground surface. Boring B-002-0-18 encountered a pavement section consisting of 4.5 inches of asphalt concrete underlain by fill to a depth of approximately 3.5 feet. The fill materials consisted of medium dense granular soils described as gravel with sand (A-1-b).

Beneath the topsoil, pavement, and fill, the natural materials in the borings typically consisted of medium dense to very dense granular soils including gravel with sand, gravel, coarse and fine sand, gravel with sand, silt, and clay, sandy silt, and gravel with sand and silt (A-1-b, A-1-a, A-3a, A-2-6, A-2-4, A-4a), and a thin layer of stiff cohesive soils described as silty clay (A6-b). Bedrock was not encountered within the borings to the depths explored.

Groundwater was encountered during drilling of borings B-001-0-18, and B-002-0-18 at depths of approximately 48.0 and 18.5 feet below the existing ground surface, respectively, corresponding to elevations about 956 and 1009.5 feet. In addition, groundwater had been encountered during drilling (1963) in the historic Boring #1 at elevation of approximately 998 feet. Groundwater was not observed in the historic Borings #2, #3, and #4 to their termination depths, corresponding to elevations approximately 974, 971, and 978 feet, respectively.

Based on the conditions encountered at the site, and the requirements outlined in Section 202.2.3 of ODOT Bridge Design Manual (BDM), it is recommended that shallow foundation system be used for support of the proposed structure. Structural loading information was not available at the time of this report. Using the available information, and considering the subsurface conditions encountered at the boring locations, we recommend that the shallow foundations be designed for a nominal bearing resistance of 24,000 psf with a resistance factor of ϕ_b = 0.45, corresponding to a factored bearing resistance of 10,800 psf. This nominal bearing resistance assumes a minimum embedment depth of 5 feet.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The

section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

STRUCTURE FOUNDATION EXPLORATION REPORT
RIDGEWAY ROAD BRIDGE
(PID NO. 108706)

Terracon Project No. N4185275
January 15, 2019

1.0 INTRODUCTION

A structure foundation exploration has been completed for the proposed replacement of the existing bridge located along Ridgeway Road over West Dorothy Lane in Kettering, Ohio. The existing structure is a 3-span concrete beam bridge with a concrete deck supported on spread footings. The bridge has a total length of approximately 176 feet and was originally designed in 1963.

We understand that two structure types including a single span concrete beam bridge, and a single span steel beam bridge will be studied as main superstructure alternatives for this project. The superstructure of both alternatives will be supported on concrete wall type abutments. The new structure will maintain the existing horizontal and vertical alignments. The proposed replacement structure is anticipated to include new foundation elements, abutments and deck.

As of this report's preparation, the structural drawings and structural loading information of the new bridge structure were not available. However, we have had the opportunity to discuss the project with you, and to review the "Site Plan" prepared by EMH&T, dated January 16, 2019, the "Structure Foundation Investigation" prepared by Bowser-Morner Testing Labs, dated November 11, 1963, the "General Plan and Elevation" prepared by Ralph L. Woolpert Co., dated 1963, and the "Site Plan" prepared by LJB Inc., dated August 2004. In addition, we have also reviewed the available geologic and geotechnical information in our files for the general site vicinity.

1.1 Site Location and Description

ITEM	DESCRIPTION
Location	The project site is located along Ridgeway Road over West Dorothy Lane in Kettering, Ohio. The approximate coordinates of the site are 39.704491, -84.177271.
Existing improvements	The existing structure is a 3-span concrete beam bridge with a concrete deck supported on spread footings. The bridge has a total length of approximately 176 feet and was originally designed in 1963.

Existing topography	As of this report's preparation, a topographic map was not available for the project site. However, the information obtained from the GPS readings taken during our site reconnaissance visit, and publically available maps (Google Earth) indicated that the surface elevations of Ridgeway Road at the north and south abutments are approximately 1028 and 1022 feet, respectively. The surface elevations of West Dorothy Lane at the north and south abutments are approximately 1005 and 1003 feet, respectively.

1.2 Project Description

ITEM	DESCRIPTION
Site layout	See Appendix C: Preliminary Site Layout
Proposed construction	As of this report's preparation, the structural drawings and structural loading information of the new bridge structure were not available. However, we understand that two structure types including a single span concrete beam bridge, and a single span steel beam bridge will be studied as main superstructure alternatives for this project. The superstructure of both alternatives will be supported on concrete wall type abutments. The new structure will maintain the existing horizontal and vertical alignments. The proposed replacement structure is anticipated to include new foundation elements, abutments and deck.
Grading	A topographic map was not available at the time of this report. We understand that the new structure will maintain the existing horizontal and vertical alignments.

Should the proposed construction differ from the information and assumptions presented above, we should be notified in order to review our recommendations and make modifications, if necessary.

2.0 RECONNAISSANCE

The proposed site is located along Ridgeway Road over West Dorothy Lane in Kettering, Ohio. At the time of our site reconnaissance visit on November 16, 2018, the existing Ridgeway Road was observed to be a two-lane, asphalt paved roadway aligned in a north-to-south orientation, traversing primarily residential properties. The existing West Dorothy Lane was observed to be a four-lane, asphalt paved roadway aligned in a west-to-east orientation. Guardrails line both sides of Ridgeway Road at the bridge structure. The overhead electric and telephone lines are located at the south abutment paralleling Wayside Circuit. Several underground utilities were marked at the south and north abutment areas. At the existing structure, surface drainage is directed into the existing stormwater system.

3.0 GENERAL GEOLOGY

The project site is located within the glaciated portion of the state. According to the Quaternary Geology of Ohio map, the site is mapped in area of flat to undulating ground moraine, generally consisting of silty loam glacial till of the Late Wisconsinan period. Original near-surface soils at the site are from the Fox Silt Loam Soil Series described as stratified calcareous sandy outwash. These soils formed in thin loess and in loamy alluvium or just in loamy alluvium overlying stratified calcareous sandy outwash on outwash plains, stream terraces, valley trains, kames, and glacial moraines.

Moraine soils are derived from a glacially formed accumulation of unconsolidated glacial debris and can include cobbles and boulders dispersed within the typical silt, sand, and gravel matrix. Cobbles and boulders within the granular strata are anticipated and should be considered in the design plans.

Based on the Bedrock Geology Map of Ohio, bedrock at the site generally consists of interbedded limestone, dolomite and shale of the Upper Ordovician period.

4.0 EXPLORATION

4.1 Field Exploration

A total of two (2) borings were performed on December 3, and December 4, 2018; designated as B-001-0-18 and B-002-0-18. The borings were performed in general accordance with the most recent Ohio Department of Transportation (ODOT) Specifications for Geotechnical Explorations (SGE) Type E1 bridge borings. The approximate locations of the borings are illustrated on the attached Boring Location Plan (Exhibit A-2), and summarized in the following table.

Boring Number	Surface Elevation [1] (Feet)	Latitude [1]	Longitude [1]	Boring Depth (feet)
B-001-0-18	1004	39.704491	-84.177271	50.0
B-002-0-18	1028	39.704904	-84.176898	70.0

1. The survey information was not available as of this report's preparation. The borings locations and elevations were obtained from the GPS readings taken by Terracon during boring layout.

The boring locations were located in the field prior to drilling operations by Terracon personnel using existing site features as references. The survey information was not available as of this report's preparation. Ground surface elevations and borings coordinates presented in the preceding table, and on the boring logs presented in Appendix A, were obtained from the GPS

readings taken during our site reconnaissance visit. The location and elevation information should be considered accurate only to the degree implied by the means and methods used to define them.

The borings were drilled with a track-mounted rotary drill rig utilizing a 3¼-inch I.D. continuous flight hollow stem auger to advance the boreholes between sampling attempts. As requested, split-barrel samples were obtained at the boring locations at 2.5-foot intervals in Borings B-001-0-18, and B-002-0-18 to depths of approximately 20, and 40 feet below the existing ground surface, respectively, and at 5-foot intervals thereafter to the boring termination depths.

In the split-barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound automatic hammer with a free fall of 30 inches, is the standard penetration resistance value (SPT-N). This value is corrected to an equivalent (60 percent) energy ratio (N_{60}) utilizing the hammer efficiency energy ratio.

In the field, the samples recovered at the boring locations were examined and field logs were prepared indicating the conditions encountered at each location. Representative portions of samples obtained during the field exploration were preserved in sealable glass jars and delivered to our laboratory for additional examination and testing.

Following the completion of drilling, the boreholes were sealed with a cement-bentonite grout. Where borings penetrated the existing pavement surface, the roadway surface was repaired using cold mixed asphalt patch.

4.2 Laboratory Testing Program

As part of the testing program, all samples were examined in the laboratory by a geologist and a geotechnical engineer. Soil samples were classified in general accordance with ODOT SGE Section 600 Laboratory Testing based on the texture and plasticity of the soils.

Visual soil classification was performed on all recovered soil samples. Atterberg limits, moisture content, and grain size analysis testing were performed on selected soil samples to obtain accurate information. The results of lab testing are shown on the boring logs and presented in the appendix of this report.

5.0 FINDINGS

Boring logs have been prepared based on the information obtained from the field logs prepared at the time of drilling, the visual examination performed in the laboratory, and the laboratory testing

results. Soil classification was performed in general accordance with the current ODOT SGE. The following sections summarize the subsurface conditions encountered at the boring locations.

5.1 Soil Conditions

Boring B-001-0-18 encountered approximately 3 inches of topsoil at the ground surface. Boring B-002-0-18 was performed within the existing drive lanes of Ridgeway Road and encountered a pavement section consisting of 4.5 inches of asphalt concrete. Boring B-002-0-18 encountered fill to a depth of approximately 3.5 feet. The fill materials consisted of medium dense granular soils described as gravel with sand (A-1-b).

Beneath the topsoil, pavement, and fill, the natural materials in the borings typically consisted of medium dense to very dense granular soils including gravel with sand, gravel, coarse and fine sand, gravel with sand, silt, and clay, sandy silt, and gravel with sand and silt (A-1-b, A-1-a, A-3a, A-2-6, A-2-4, A-4a), and a thin layer of stiff cohesive soils described as silty clay (A6-b).

5.2 Bedrock

Bedrock was not encountered in the borings to the depths explored.

5.3 Groundwater

Groundwater was encountered during drilling of borings B-001-0-18, and B-002-0-18 at depths of approximately 48.0 and 18.5 feet below the existing ground surface, respectively, corresponding to elevations about 956 and 1009.5 feet. In addition, groundwater was encountered during drilling in the historic Boring #1 at elevation of approximately 998 feet. Groundwater was not observed in the historic Borings #2, #3, and #4 to their termination depths, corresponding to elevations approximately 974, 971, and 978 feet, respectively.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, the level of water in the creek, and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

6.0 ANALYSES AND RECOMMENDATIONS

As of this report's preparation, the structural drawings and structural loading information of the new bridge structure were not available. However, we understand that two structure types including a single span concrete beam bridge, and a single span steel beam bridge will be studied as main

superstructure alternatives for this project. The superstructure of both alternatives will be supported on concrete wall type abutments. The new structure will maintain the existing horizontal and vertical alignments. The proposed replacement structure is anticipated to include new foundation elements, abutments and deck. Based on an evaluation of the subsurface conditions encountered at the site, it is recommended that a shallow foundation system be employed for support of the proposed bridge.

6.1 Shallow Foundation

Based on the subsurface conditions encountered at the site, and the requirements outlined in Section 202.2.3 of ODOT Bridge Design Manual (BDM), it is recommended that shallow foundation system be used for support of the proposed structure.

The proposed shallow foundations/strip footings should bear upon or within native granular soils with a minimum SPT N-value of 30. We recommend that the shallow foundations be designed for a nominal bearing resistance of 24,000 psf with a resistance factor of ϕ_b = 0.45, corresponding to a factored bearing resistance of 10,800 psf. This nominal bearing resistance assumes a minimum embedment depth of 5 feet. The top of footings should be embedded at least 1 foot from the nearest soil surface. We estimate that total settlements will be on the order of up to 1 inch or less. Please note that the recommended bearing resistance is preliminary and Terracon should review it once the structural loads and foundations sizes are available. All shallow foundations should have elevation reference monuments per ODOT BDM. These monuments allow for the measurement of footing elevations/settlements during and after construction to monitor the performance of the shallow foundations.

The coefficient of base friction recommended for contact between the concrete and granular foundation soils is 0.45 with a resistance factor of ϕ_T = 0.8. We do not recommend using passive earth pressures in design of permanent retaining walls and/or bridge abutments due to the potential for erosion, or possibility of removal of the soils in front of the wall in the future. However, If there is no potential for erosion and removal of the soils in front of the retaining walls/foundations is not possible, a coefficient of passive earth pressure of K_p=3.25 and a resistance factor of ϕ_{ep}=0.5 can be used for the sliding analysis.

In areas where individual foundations are stepped down and founded at different elevations, it is important to provide a minimum slope of 1H:1V between the bottom edges of each foundation at their closest point.

The base of all foundation excavations should be free of water and soft soils prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed, saturated, or frozen, the affected soil should be removed prior to placing concrete. Place a lean concrete (mud mat) over the bearing soils if the excavations must remain open overnight or for an extended period of time.

Subgrade preparation for the new foundations should be performed in accordance with ODOT CMS Items 203 and 204. Prior to subgrade preparation, perform clearing and grubbing, including removal of stumps and roots, in accordance with ODOT CMS Item 201. Remove existing pavement and base materials as well as other structures or obstructions, as necessary, in accordance with ODOT CMS Item 202. The subgrade should be stripped of any topsoil, organics, or other deleterious or unsuitable materials. It is recommended that the geotechnical engineer be retained to observe and test the soil foundation bearing materials.

6.2 Lateral Earth Pressures

Retaining walls, and excavation support systems must be designed to withstand lateral earth pressures, as well as hydrostatic pressure, that may develop behind the structures. The magnitude of lateral earth pressure varies on the basis of soil type, permissible wall movement, and type of the backfill.

In order to minimize lateral earth pressures, the zone behind the structures should be effectively drained. For effective drainage, a zone of porous backfill (ODOT CMS Item 518.03) should be used directly behind the structures for a minimum thickness of 2 feet in accordance with ODOT CMS Item 518.05. The granular zone should be designed to drain to either weepholes or a pipe, to alleviate the build-up of hydrostatic pressures against the walls.

The type of backfill beyond the free-draining granular zone will govern the pressure to be used for structural design. Pressures of a relatively low magnitude will be generated by granular backfill materials, whereas cohesive backfill materials will result in the development of higher lateral pressures. Therefore, it is recommended that granular backfill be utilized whenever possible. Granular backfill behind structures should be placed and compacted in accordance with ODOT CMS Item 203.

Retaining walls that are fixed and unable to rotate or deflect will be subjected to at-rest earth pressure conditions. Earth pressure distributions should be based on the mobilization of active earth pressure conditions for retaining walls that are free to deflect or rotate. Retaining walls exerting a force on the soil (such as soil in front of the footing on the face side of the wall) are subject to a passive resistance. We do not recommend using passive earth pressures in design of permanent retaining walls and/or bridge abutments due to the potential for erosion, or possibility of removal of the soils in front of the wall in the future.

The tables presented below include the recommended unfactored and factored equivalent fluid unit weights for walls subject to the mobilization of both at-rest and active earth pressure conditions as described above. A load factor of 1.5 has been used for the determination of the factored equivalent fluid unit weights. The values presented in the following table assume a flat backslope behind the walls, and that the backfill material will not be subject to any additional load (such as uniformly distributed soil surcharge near the top and immediately behind the face of the

wall). Two cases have been considered for backfill behind the wall: a two-foot wide zone of granular porous backfill with filter fabric, and backfilling with a wedge of granular material.

For a two-foot wide zone of granular porous backfill, the earth pressure was calculated assuming an angle of internal friction of 26 degrees, a moist soil unit weight of 125 pcf, and a soil/concrete interface friction angle of 18 degrees.

Wall Type	Pressure Distribution	Unfactored Equivalent Fluid Weight (pcf)	Factored Equivalent Fluid Weight (pcf)	Earth Pressure Coefficient
Cantilever Retaining Wall – Free Head	Active	49	73	K_a = 0.39
Rigid Retaining Wall – Fixed Head	At-rest[1]	70	105	K_o = 0.56

1. Due to the fixity condition at the top of the wall, it is recommended that the triangular pressure distribution should be converted into a uniform or rectangular pressure distribution along the height of the wall.

For a wedge of granular material, the earth pressure was computed assuming an angle of internal friction of 34 degrees, a moist soil unit weight of 120 pcf, and a soil/concrete interface friction angle of 24 degrees.

Wall Type	Pressure Distribution	Unfactored Equivalent Fluid Weight (pcf)	Factored Equivalent Fluid Weight (pcf)	Earth Pressure Coefficient
Cantilever Retaining Wall Free Head	Active	34	51	K_a = 0.28
Rigid Retaining Wall Fixed Head	At-rest[1]	53	79	K_o = 0.44

1. Due to the fixity condition at the top of the wall, it is recommended that the triangular pressure distribution should be converted into a uniform or rectangular pressure distribution along the height of the wall.

The earth pressure values presented in the preceding tables assume that provisions for positive gravity drainage will be provided, and that the abutments and walls will be backfilled with free-draining coarse aggregate, such as ODOT No. 57 stone.

We do not recommend using passive earth pressures in design of permanent retaining walls and/or bridge abutments due to the potential for erosion, or possibility of removal of the soils in front of the wall in the future.

6.3 Seismic Site Classification

Code Used	Site Classification
AASHTO LRFD Bridge Design Specifications, Eight Edition, 2017 [1]	C [2]

1. In general accordance with Section 3.10.3 of the AASHTO LRFD Bridge Design Specifications, Eight Edition, 2017.
2. AASHTO LRFD Bridge Design Specifications, requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. Borings for this study extended to a maximum depth of approximately 70 feet and this seismic site class definition considers that competent soils continue below the maximum depth of the subsurface exploration. Additional exploration to deeper depths could be performed to confirm the conditions below the current depth of exploration. Alternatively, a geophysical exploration could be utilized in order to attempt to justify a higher seismic site class. The current scope requested does not include the required 100-foot soil profile determination.

6. 4 Construction Considerations

All site work should conform to local codes and to the latest ODOT Construction and Material Specifications (CMS), including that all structure removal, excavation and embankment preparation and construction should follow ODOT CMS Item 200 (Earthwork).

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, and backfilling of any excavations into the completed subgrade.

6.4.1 Earthwork Considerations

Subgrade preparation for the new foundations, pavement, shoulder areas, and embankments should be performed in accordance with ODOT CMS Items 203 and 204. Prior to subgrade preparation, perform clearing and grubbing, including removal of stumps and roots, in accordance with ODOT CMS Item 201. Remove existing pavement and base materials as well as other structures or obstructions, as necessary, in accordance with ODOT CMS Item 202. The subgrade should be stripped of any topsoil, organics, or other deleterious or unsuitable materials.

All embankment materials should be spread and compacted in accordance with Items 203.06 and 203.07 and subgrade materials should be spread and compacted in accordance with Items 204.07 and 204.03. Frozen materials should not be incorporated into any new fill nor should new fill, pavement materials, or structures be placed on top of frozen materials. Material to be utilized as borrow should be restricted to conform to Item 203.02R and 203.3 for embankment construction and Item 204.2 for subgrade. Clay with high plasticity should not be used for the embankment.

Earthwork, including subgrade preparation should be performed in accordance with respective items in Section 200 of the current ODOT CMS. Consideration may be given to using the in-situ soils or from the local borrow sources. However, the material may require moisture adjustments to achieve proper compaction. Potentially, chemical treatment may be used for any borrow materials and existing embankment soil with high moisture contents. Chemical treatment should be performed in accordance with ODOT Item 205.

If applicable, it is recommended that any benching required for embankment construction for the project be performed in accordance with "A. General Case: Special Benched Embankment Construction" of ODOT Geotechnical Bulletin 2 (GB-2).

6.4.2 Grading and Drainage

During construction, site grading should be developed to direct surface water flow away from, or around, the site. Exposed subgrades should be sloped to provide positive drainage so that saturation of subgrades is avoided. Surface water should not be permitted to accumulate on the site.

Final surrounding grades should be sloped away from the proposed embankments on all sides to prevent ponding of water. Due to the nature of the soil profile, trapped water infiltration or groundwater seepage may be encountered, particularly after periods of precipitation. In such an event, sump and pumping methods may be used for temporary dewatering.

6.4.4 Excavation Considerations

As a minimum, all excavations should be sloped or braced as required by Occupational Health and Safety Administration (OSHA) regulations to provide stability and safe working conditions. Reference to OSHA 29CFR, Part 1926, Subpart P should be included in the job specifications. current OSHA excavation and trench safety standards.

The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required, to maintain stability of both the excavation sides and bottom. Slope heights, slope inclinations and/or excavation depths should in no case exceed those specified in local, state or federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

Under no circumstances should the information provided in this report be interpreted to mean that Terracon is responsible for construction site safety or the contractor's activities. Construction site safety is the sole responsibility of the contractor, who shall also be solely responsible for the means, methods, and sequencing of the construction operations.

6.4.5 Groundwater Considerations

Groundwater was encountered during drilling in Boring B-001-0-18, performed at the south abutment, at elevation of approximately 956 feet. Groundwater was not observed in the historic Borings #3, and #4, performed at the south abutment, to elevations approximately 971, and 987

feet, respectively. Groundwater was also encountered during drilling in Boring B-002-0-18, and the historic Boring #1, performed at the north abutment, at elevations of approximately 1009.5, and 998 feet, respectively. Groundwater was not observed in the historic Borings #2, performed at the north abutments, to elevation of approximately 974 feet.

Considering our subsurface explorations findings and the depth of excavation expected to facilitate the proposed construction, we do not expect the static groundwater table to be encountered during earthwork operations. However, isolated pockets of perched water may be encountered within granular materials and at the transition zones to fine grained materials. If groundwater encountered during construction, proper groundwater control should be employed and maintained to prevent disturbance to excavation bottoms, and to prevent the possible development of a quick or "boiling" condition where silts and/or fine sands are encountered. It is preferable that the groundwater level, if encountered, be maintained at least 5 feet below the deepest excavation. Any seepage or groundwater encountered during foundation excavation should be able to be controlled by pumping from temporary sumps. However, additional measures may be required depending on seasonal fluctuations of the groundwater level. Note that determining and maintaining actual groundwater levels during construction is the responsibility of the contractor

7.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon should also be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

This Geotechnical Engineering Report has been prepared to present the findings of our exploration and present our recommendations pertaining to proposed structure. The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

APPENDIX A

FIELD EXPLORATION INFORMATION

APPROXIMATE BORING LOCATION

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: MR	Project No. N4185275
Drawn by: YH	Scale: N.T.S.
Checked by: MR	File Name: N4185275 SLP
Approved by: YSR	Date: January, 2019

Terracon
Consulting Engineers & Scientists
800 Morrison Road Columbus, Ohio 43230
PH. (614) 863-3113 FAX. (614) 863-0475

BORING LOCATION PLAN

Ridgeway Road Bridge Replacement
Kettering, OH

Exhibit

APPROXIMATE BORING LOCATION

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: MR	Project No. N4185275
Drawn by: YH	Scale: N.T.S.
Checked by: MR	File Name: N4185275 BLP
Approved by: KME	Date: January, 2019

Terracon
Consulting Engineers & Scientists
800 Morrison Road Columbus, Ohio 43230
PH. (614) 863-3113 FAX. (614) 863-0475

BORING LOCATION PLAN

Ridgeway Road Bridge Replacement
Kettering, OH

Exhibit

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 1/10/19 11:39 - N:\PROJECTS\2018\N4185275\WORKING FILES\GINT FILES\YH FINAL\N4185275 RIDGEWAY ROAD BRI_ODOT.GP.

PROJECT: RIDGEWAY RD. BRIDGE	DRILLING FIRM / OPERATOR: C. STAR / MJ	DRILL RIG: CME 55 LC TRACK	STATION / OFFSET:	EXPLORATION ID B-001-018
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: TERRACON / JS	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: N/A	ELEVATION: 1004.0 (MSL) EOB: 50.0 ft.	PAGE 1 OF 2
START: 12/4/18 END: 12/4/18	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.6	LAT / LONG: 39.704491, -84.177271	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1004.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
Topsoil = 3"	1003.8																	
VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, DAMP		1	3 3 5	11	100	SS-1	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
@1' - 5' medium dense		2																
		3																
		4	5 5 3	11	100	SS-2	-	25	29	23	- 23 -		NL	NP	-	10	A-1-b (0)	
		5																
@6' - 7.5' dense		6	5 11 16	39	100	SS-3	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
		7																
		8																
		9	12 19 19	54	100	SS-4	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
		10																
		11	9 24 22	66	100	SS-5	-	46	22	19	- 13 -		NL	NP	-	6	A-1-b (0)	
		12																
		13																
		14	4 8 41	70	100	SS-6	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
		15																
		16																
		17	24 29 34	90	100	SS-7	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
		18																
		19	36 34 15	70	17	SS-8	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
		20																
		21																
		22																
		23																
		24	50/4"	-	0	SS-9	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
		25																
		26																
		27																
		28																
		29	50/1"	-	100	SS-10	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	

PID:	SFN:	PROJECT: RIDGEWAY RD. BRIDGE	STATION / OFFSET:	START: 12/4/18	END: 12/4/18	PG 2 OF 2	B-001-018

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, DAMP *(continued)*	974.0	31 32 33 34 35 36 37 38	50/4"	-	100	SS-11	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
DENSE TO VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS**, TRACE SAND, TRACE SILT, DAMP	965.5	39 40 41 42 43	10 17 16	47	100	SS-12	-	67	19	8	-	6 -	NP	NP	NP	3	A-1-a (0)	
		44 45 46 47	29 21 19	57	100	SS-13	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
	955.5	W 48																
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, MOIST	954.0	49 EOB 50	9 7 13	29	100	SS-14	-	7	55	34	-	4 -	NP	NP	NP	19	A-1-b (V)	

NOTES: FREE WATER WAS OBSERVED AT 48 FEET DURING DRILLING. DRY CAVE-IN AT 42 FEET

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH BENTONITE GROUT

PROJECT: RIDGEWAY RD. BRIDGE	DRILLING FIRM / OPERATOR: C. STAR / MJ	DRILL RIG: CME 55 LC TRACK	STATION / OFFSET:
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: TERRACON / JS	HAMMER: CME AUTOMATIC	ALIGNMENT:
PID: SFN:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: N/A	ELEVATION: 1028.0 (MSL) EOB: 70.0 ft.
START: 12/3/18 END: 12/3/18	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85.6	LAT / LONG: 39.704904, -84.176898

EXPLORATION ID B-002-018

PAGE 1 OF 3

MATERIAL DESCRIPTION AND NOTES	ELEV. 1028.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
Asphalt = 4.5"	1027.6																	
MEDIUM DENSE, LIGHT BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, DRY **, FILL**	1024.5	1	11 8 5	19	100	SS-1	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS**, TRACE CLAY, DAMP		4	7 4 5	13	100	SS-2	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
@6' very dense		6	50/1"	-	100	SS-3	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		9	9 7 6	19	100	SS-4	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
	1012.0	11	6 9 9	26	100	SS-5	-	62	20	9	9	-	NL	NP	-	4	A-1-a (0)	
		14	5 6 4	14	22	SS-6	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, MOIST	1009.5 W	17	2 2 2	6	100	SS-7	1.50	-	-	-	-	-	-	-	-	-	A-6b (V)	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, WET	1007.0	19	2 3 6	13	100	SS-8	-	-	-	-	-	-	-	-	-	-	A-3a (V)	
VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND, SILT, AND CLAY**, DAMP	1004.5	22	10 21 23	63	100	SS-9	-	-	-	-	-	-	-	-	-	-	A-2-6 (V)	
VERY DENSE, BROWN, **SANDY SILT**, TRACE GRAVEL, DAMP	1002.0	24	13 20 23	61	100	SS-10	-	9	9	26	56	-	-	-	-	15	A-4a (5)	
DENSE TO VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT**, DAMP		27	15 20 23	61	100	SS-11	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
		29	8 16 14	43	100	SS-12	1.50	60	7	11	22	-	18	10	8	7	A-2-4 (0)	

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 1/10/19 11:39 - N:\PROJECTS\2018\N4185275\WORKING FILES\GINT FILES\YH FINAL\N4185275 RIDGEWAY ROAD BRI_ODOT.GP.

PID:	SFN:	PROJECT: RIDGEWAY RD. BRIDGE	STATION / OFFSET:	START: 12/3/18	END: 12/3/18	PG 2 OF 3	B-002-018

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	998.0																	
	997.0																	
VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS**, TRACE SAND, TRACE SILT, DAMP		31	35 37 50/4"	-	0	SS-13	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		32																
		33																
		34	9 20 20	57	100	SS-14	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		35																
		36																
		37	10 20 18	54	100	SS-15	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		38																
@38.5' - 40' dense		39	35 17 12	41	100	SS-16	-	76	12	6	-	6 -	-	-	-	2	A-1-a (0)	
		40																
		41																
		42																
		43																
		44	18 29 21	71	100	SS-17	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		45																
		46																
		47																
		48																
@48.5' - 50' dense		49	8 12 15	39	100	SS-18	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		50																
		51																
		52																
		53																
	974.5																	
DENSE, BROWN, **COARSE AND FINE SAND**, DAMP		54	11 14 16	43	100	SS-19	-	-	-	-	-	-	-	-	-	-	A-3 (V)	
		55																
		56																
		57																
		58																
	969.5																	
DENSE TO VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS**, DAMP		59	15 16 23	56	100	SS-20	-	67	21	6	-	6 -	NL	NP	-	2	A-1-a (0)	
		60																
		61																

PID:	SFN:	PROJECT: RIDGEWAY RD. BRIDGE	STATION / OFFSET:	START: 12/3/18	END: 12/3/18	PG 3 OF 3	B-002-018

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
DENSE TO VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS**, DAMP *(continued)*	965.9	63																
		64	7 11 11	31	100	SS-21	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
		65																
		66																
		67																
		68																
		69	8 10 12	31	100	SS-22	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
	958.0	EOB 70																

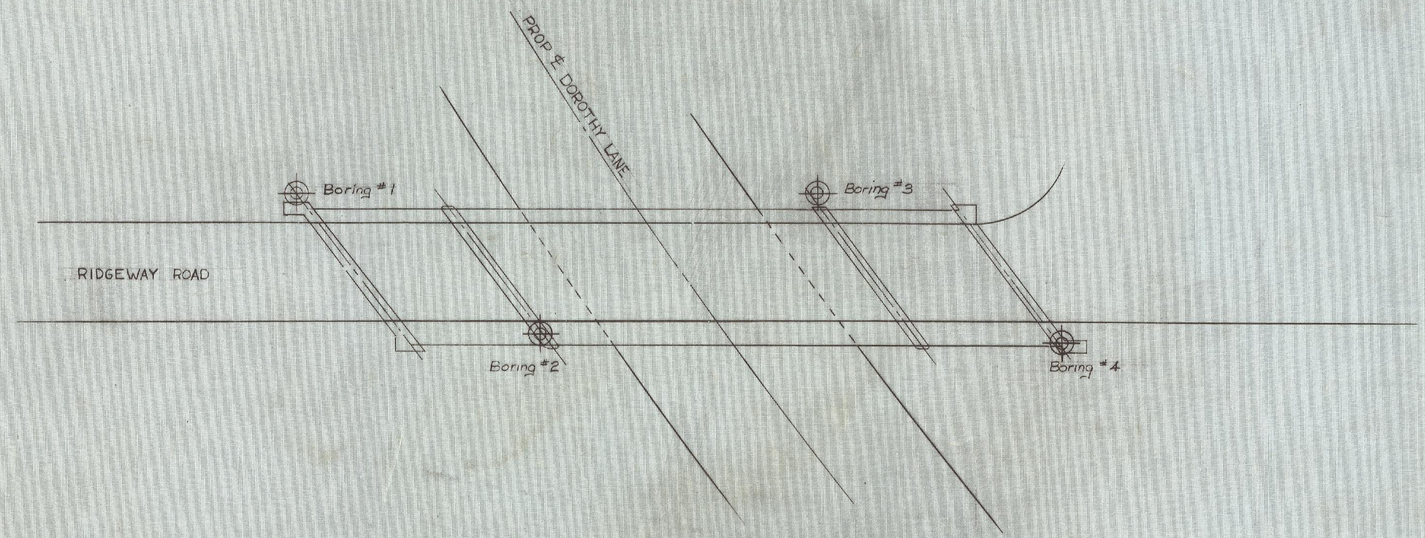
NOTES: OFFSET 6 FEET FROM BRIDGE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH BENTONITE GROUT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

MOT-GRE S1180(2)

1/2



BOWSER-MORNER TESTING LABS

Dayton Ohio

STRUCTURE FOUNDATION INVESTIGATION
RIDGEWAY ROAD
OVER DOROTHY LANE
Kettering Ohio

CHECKED BY	REVIEWED BY	DATE
K.T.	A.D.	11-11-63

APPENDIX B

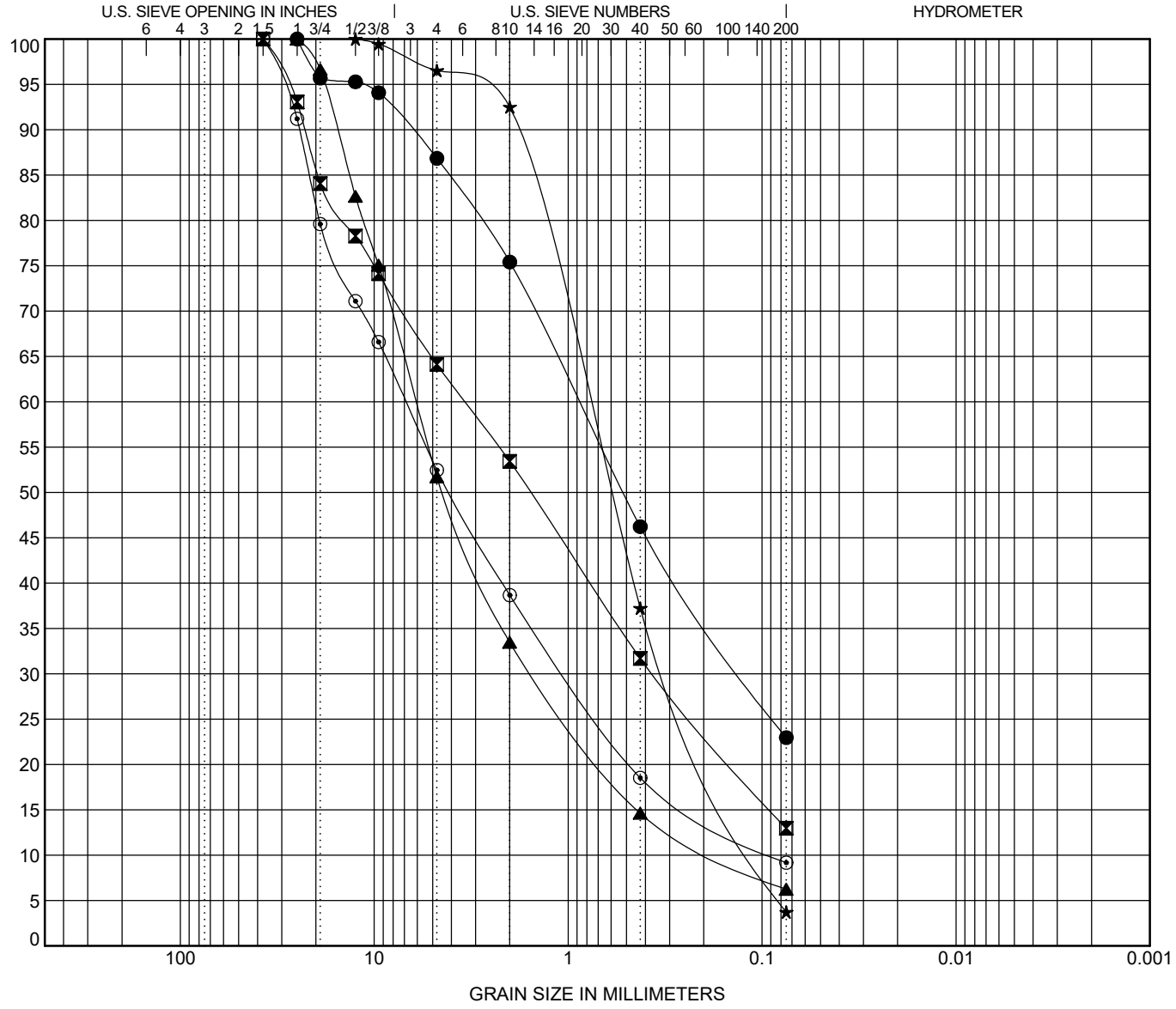
LABORATORY TESTING RESULTS

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT RIDGEWAY RD. BRIDGE **PID**

OGE NUMBER N4185275 **PROJECT TYPE** STRUCTURE FOUNDATION



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-001-018	3.5	**A-1-b ~ SILTY SAND(SM)**	**NL**	**NP**	**--**
⊠	B-001-018	11.0	**A-1-b ~ SILTY SAND with GRAVEL(SM)**	**NL**	**NP**	**--**
▲	B-001-018	38.5	**A-1-a ~ WELL-GRADED GRAVEL with SILT and SAND(GW-GM)**	**NL**	**NP**	**--**
★	B-001-018	48.5	**A-1-b ~ WELL-GRADED SAND(SW)**	**NL**	**NP**	**--**
⊙	B-002-018	11.0	**A-1-a ~ WELL-GRADED GRAVEL with SILT and SAND(GW-GM)**	**NL**	**NP**	**--**

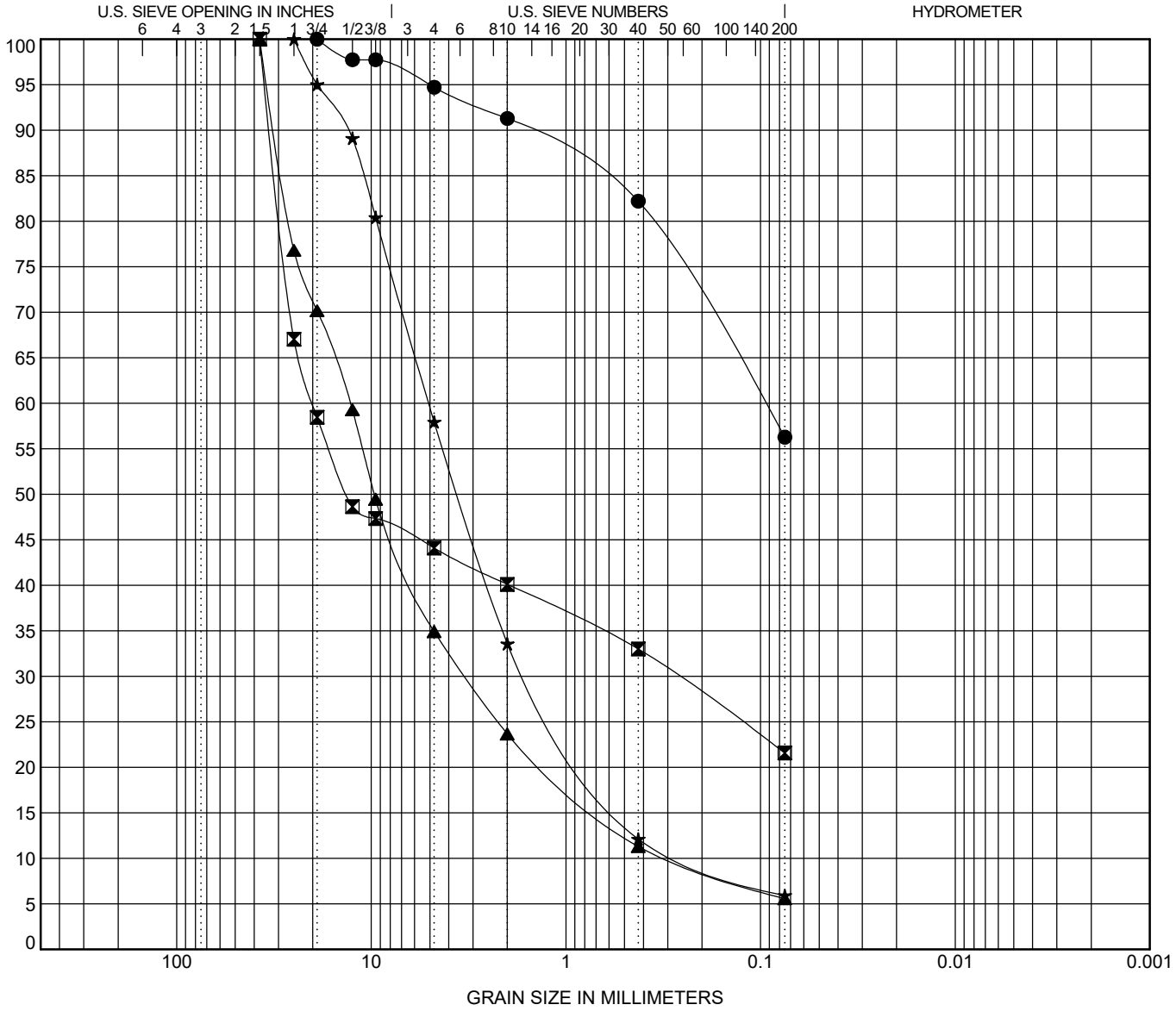
Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-001-018	3.5	**6.426**	**0.519**	**0.127**		**25**	**29**	**23**	**23**			
⊠	B-001-018	11.0	**22.773**	**1.567**	**0.363**		**46**	**22**	**19**	**13**			
▲	B-001-018	38.5	**15.571**	**4.38**	**1.505**	**0.163**	**67**	**19**	**8**	**6**		**2.28**	**37.21**
★	B-001-018	48.5	**1.865**	**0.608**	**0.292**	**0.104**	**7**	**55**	**34**	**4**		**1.02**	**7.75**
⊙	B-002-018	11.0	**24.297**	**4.07**	**1.027**	**0.087**	**62**	**20**	**9**	**9**		**1.75**	**78.67**

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT RIDGEWAY RD. BRIDGE **PID** 03-904C

OGE NUMBER N4185275 **PROJECT TYPE** STRUCTURE FOUNDATION



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification		ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-002-018	23.5	**A-4a Sandy Silt (ML)**	NL	NP	--
⊠	B-002-018	28.5	**A-2-4 ~ CLAYEY GRAVEL with SAND(GC)**	**18**	**10**	**8**
▲	B-002-018	38.5	**A-1-a~ WELL-GRADED GRAVEL with SILT and SAND(GW-GM)**	NL	NP	--
★	B-002-018	58.5	**A-1-a ~ WELL-GRADED SAND with SILT and GRAVEL(SW-SM)**	**NL**	**NP**	**--**

	Specimen Identification		D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-002-018	23.5	**1.605**				**9**	**9**	**26**	**56**			
⊠	B-002-018	28.5	**33.16**	**13.254**	**0.269**		**60**	**7**	**11**	**22**			
▲	B-002-018	38.5	**31.486**	**9.644**	**3.255**	**0.286**	**76**	**12**	**6**	**6**		**2.88**	**44.87**
★	B-002-018	58.5	**13.3**	**3.582**	**1.544**	**0.234**	**67**	**21**	**6**	**6**		**2.01**	**21.59**

GRAIN SIZE - OH DOT.GDT - 12/20/18 09:59 - N:\PROJECTS\2018\N4185275\WORKING FILES\N4185275 RIDGEWAY ROAD BRI_ODOT.GPJ

APPENDIX C
SUPPORTING INFORMATION

APPENDIX A.1 - ODOT Quick Reference for Visual Description of Soils

1) STRENGTH OF SOIL:

Non-Cohesive (granular) Soils - Compactness	
Description	**Blows Per Ft.**
Very Loose	≤ 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 – 50
Very Dense	> 50

2) COLOR :

If a color is a uniform color throughout, the term is single, modified by an adjective such as light or dark. If the predominate color is shaded by a secondary color, the secondary color procedes the primary color. If two major and distinct colors are swirled throughout the soil, the colors are modified by the term "mottled"

3) PRIMARY COMPONENT

Use **DESCRIPTION** from ODOT Soil Classification Chart on Back

Cohesive (fine grained) Soils - Consistency

Description	Qu (TSF)	Blows Per Ft.	Hand Manipulation
Very Soft	<0.25	<2	Easily penetrates 2" by fist
Soft	0.25-0.5	2 - 4	Easily penetrates 2" by thumb
Medium Stiff	0.5-1.0	5 - 8	Penetrates by thumb with moderate effort
Stiff	1.0-2.0	9 - 15	Readily indents by thumb, but not penetrate
Very Stiff	2.0-4.0	16 - 30	Readily indents by thumbnail
Hard	>4.0	>30	Indent with difficulty by thumbnail

4) COMPONENT MODIFIERS:

Description	Percentage By Weight
Trace	0% - 10%
Little	10% - 20%
Some	20% - 35%
"And"	35% -50%

5) Soil Organic Content

Description	% by Weight
Slightly Organic	2% - 4%
Moderately Organic	4% - 10%
Highly Organic	> 10%

6) Relative Visual Moisture

Description	Criteria	
	Cohesive Soil	**Non-cohesive Soils**
Dry	Powdery; Cannot be rolled; Water content well below the plastic limit	No moisture present
Damp	Leaves very little moisture when pressed between fingers; Crumbles at or before rolled to $^1/_8$"; Water content below plastic limit	Internal moisture, but no to little surface moisture
Moist	Leaves small amounts of moisture when pressed between fingers; Rolled to $^1/_8$" or smaller before crumbling; Water content above plastic limit to -3% of the liquid limit	Free water on surface, moist (shiny) appearance
Wet	Very mushy; Rolled multiple times to $^1/_8$" or smaller before crumbles; Near or above the liquid limit	Voids filled with free water, can be poured from split spoon.

CLASSIFICATION OF SOILS

Ohio Department of Transportation

(The classification of a soil is found by proceeding from top to bottom of the chart.
The first classification that the test data fits is the correct classification.)

SYMBOL	DESCRIPTION	Classifcation AASHTO	Classifcation OHIO	$LL_O/LL \times 100$*	% Pass #40	% Pass #200	Liquid Limit (LL)	Plastic Index (PI)	Group Index Max.	REMARKS
	Gravel and/or Stone Fragments	A-1-a			30 Max.	15 Max.		6 Max.	0	Min. of 50% combined gravel, cobble and boulder sizes
	Gravel and/or Stone Fragments with Sand	A-1-b			50 Max.	25 Max.		6 Max.	0	
F.S.	Fine Sand	A-3			51 Min.	10 Max.	NON-PLASTIC		0	
	Coarse and Fine Sand	--	A-3a			35 Max.		6 Max.	0	Min. of 50% combined coarse and fine sand sizes
	Gravel and/or Stone Fragments with Sand and Silt	A-2-4				35 Max.	40 Max.	10 Max.	0	
		A-2-5					41 Min.			
	Gravel and/or Stone Fragments with Sand, Silt and Clay	A-2-6				35 Max.	40 Max.	11 Min.	4	
		A-2-7					41 Min.			
	Sandy Silt	A-4	A-4a	75 Min.		36 Min.	40 Max.	10 Max.	8	Less than 50% silt sizes
	Silt	A-4	A-4b	75 Min.		50 Min.	40 Max.	10 Max.	8	50% or more silt sizes
	Elastic Silt and Clay	A-5		75 Min.		36 Min.	41 Min.	10 Max.	12	
	Silt and Clay	A-6	A-6a	75 Min.		36 Min.	40 Max.	11 - 15	10	
	Silty Clay	A-6	A-6b	75 Min.		36 Min.	40 Max.	16 Min.	16	
	Elastic Clay	A-7-5		75 Min.		36 Min.	41 Min.	$\leq$LL-30	20	
	Clay	A-7-6		75 Min.		36 Min.	41 Min.	>LL-30	20	
	Organic Silt	A-8	A-8a	74 Max.		36 Min.				W/o organics would classify as A-4a or A-4b
	Organic Clay	A-8	A-8b	74 Max.		36 Min.				W/o organics would classify as A-5, A-6a, A-6b, A-7-5 or A-7-6

MATERIAL CLASSIFIED BY VISUAL INSPECTION

Sod and Topsoil

Pavement or Base

Uncontrolled Fill (Describe)

Bouldery Zone

P Peat

* Only perform the oven-dried liquid limit test and this calculation if organic material is present in the sample.

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

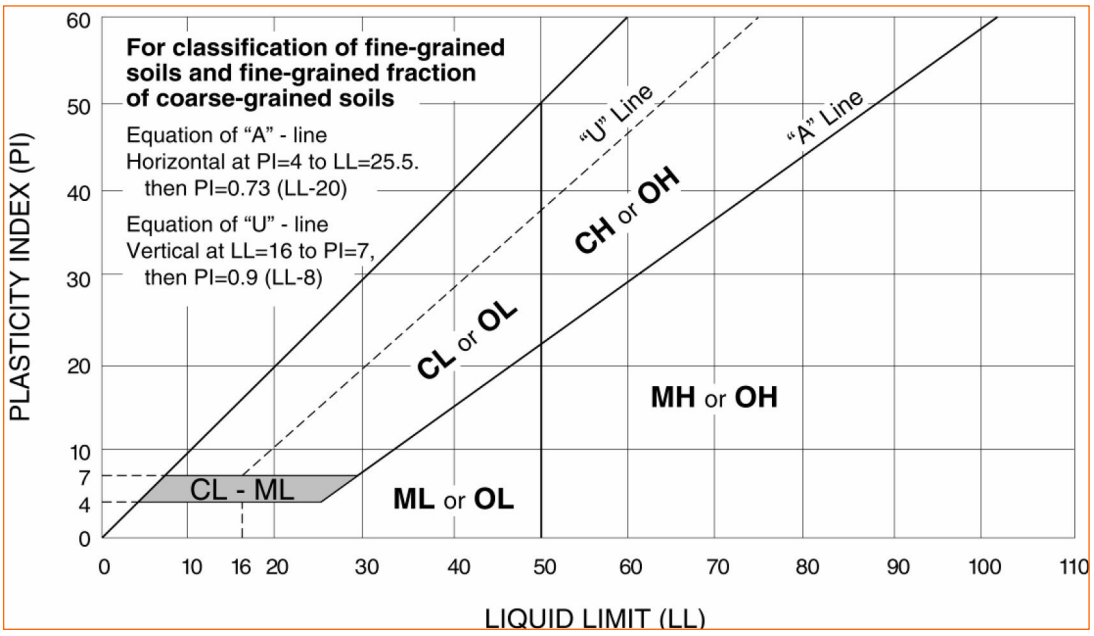
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

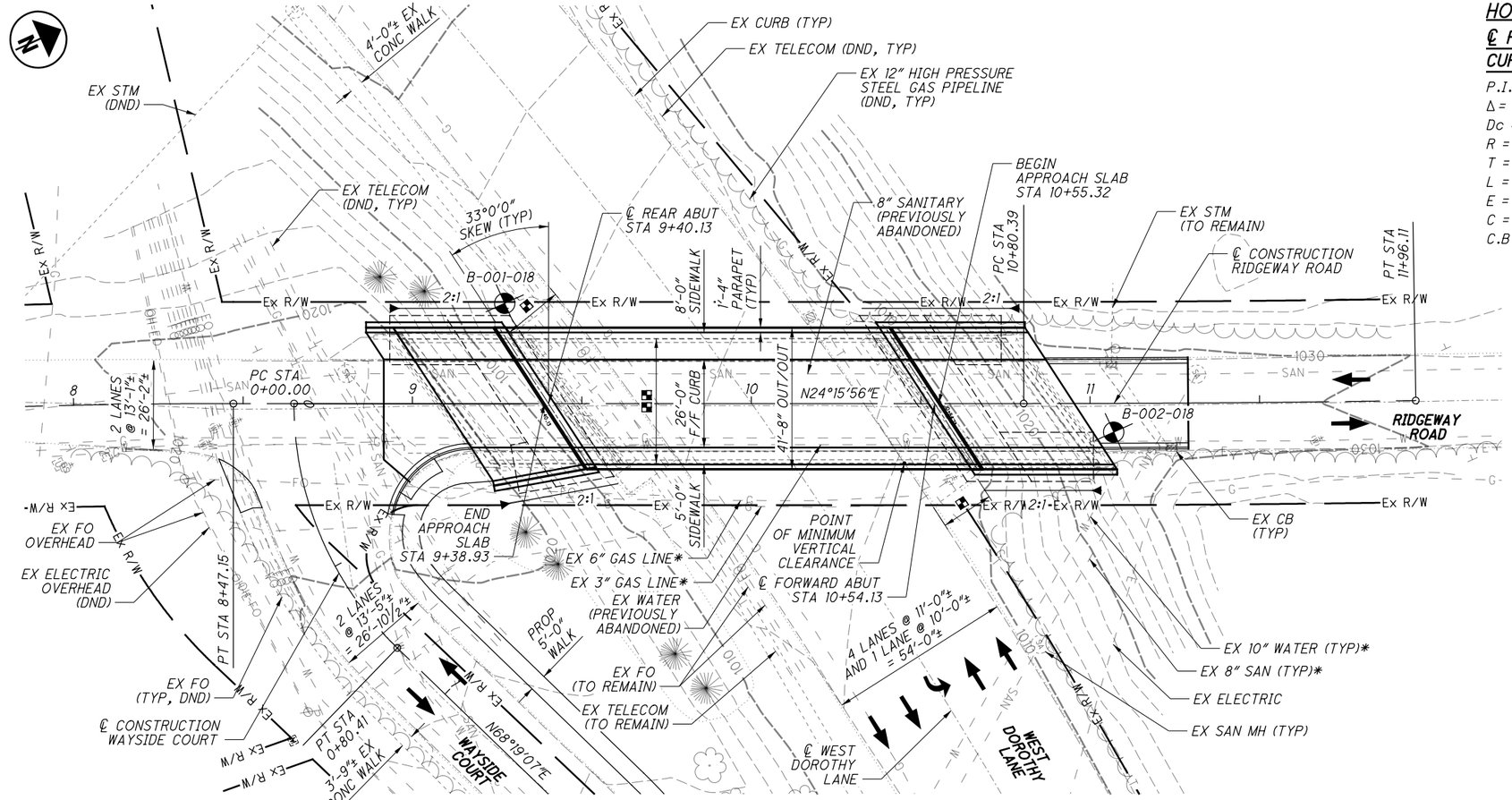
[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

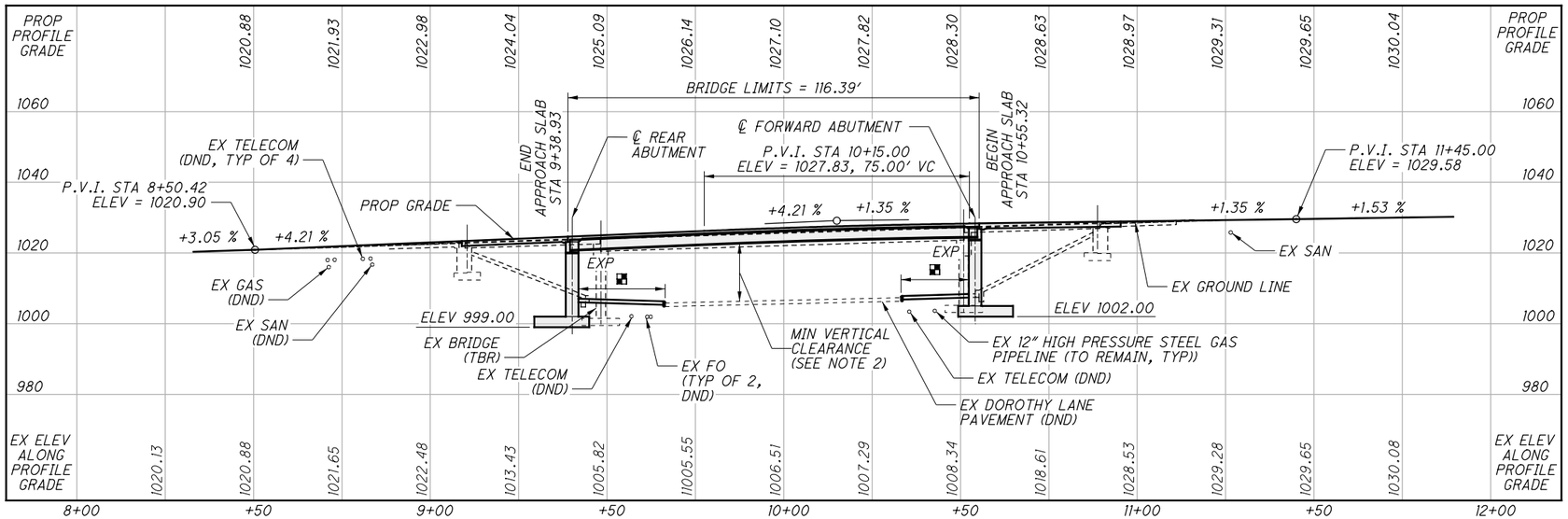
[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.





PLAN



PROFILE ALONG CENTERLINE CONSTRUCTION RIDGEWAY ROAD

HORIZONTAL CURVE DATA

℄ RIDGEWAY RD CURVE NO 1	℄ WAYSIDE COURT CURVE NO 1	℄ RIDGEWAY RD CURVE NO 2
P.I. STA 7+01.68	P.I. STA 11+38.25	P.I. STA 0+42.52
Δ = 7° 34′ 29″ (RT)	Δ = 0° 53′ 14″ (LT)	Δ = 46° 04′ 18″ (LT)
Dc = 2° 35′ 59″	Dc = 0° 46′ 00″	Dc = 57° 17′ 45″
R = 2,203.87′	R = 7,473.42′	R = 100.00′
T = 145.89′	T = 57.86′	T = 42.52′
L = 291.36′	L = 115.72′	L = 80.41′
E = 4.82′	E = 0.22′	E = 8.66′
C = 291.15′	C = 115.72′	C = 78.26′
C.B. = N 20° 28′ 42″ E	C.B. = N 23° 49′ 19″ E	C.B. = S 88° 38′ 44″ E

DESIGN TRAFFIC

2017 ADT = 928

NOTES

1. EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
2. MINIMUM VERTICAL CLEARANCE 15′-6″ REQUIRED:
   ALTERNATIVE 1A - 15′-11½″ PROVIDED
   ALTERNATIVE 1B - 15′-11″ PROVIDED
   ALTERNATIVE 1C - 15′-10½″ PROVIDED

LEGEND

- BORING LOCATION
- ■ - MINIMUM HORIZONTAL CLEARANCE = 17′-7½″± (REAR ABUTMENT) 15′-6″± (FORWARD ABUTMENT)
- ■■ - EX BRIDGE (TBR)
- * - DISPOSITION TO BE DETERMINED

EXISTING STRUCTURE

TYPE: THREE SPAN PRESTRESSED REINFORCED NON-COMPOSITE BOX BEAM SUPERSTRUCTURE SUPPORTED ON REINFORCED CONCRETE STUB ABUTMENTS AND CAP AND COLUMN PIERS

SPANS: 37′-0″±, 101′-0″±, 37′-0″± C/C BEARINGS
ROADWAY: 26′-6″± TOE/TOE CURB, 5′-7″± SIDEWALK (WEST) 2′-7″± SAFETY CURB (EAST)
LOADING: HS15
SKEW: 36°48′30″± RF
APPROACH SLABS: AS-1-54 (20′-0″± LONG)
ALIGNMENT: TANGENT
CROWN: 3/16″ PER FOOT
STRUCTURAL FILE NUMBER: 5763096
DATE BUILT: 1965
REHABILITATION: 2005
DISPOSITION: TO BE REPLACED

PROPOSED STRUCTURE

TYPE: SINGLE SPAN STEEL PLATE GIRDER (GRADE 50W) WITH COMPOSITE REINFORCED CONCRETE DECK SUPERSTRUCTURE SUPPORTED ON REINFORCED CONCRETE WALL TYPE SEMI-INTEGRAL ABUTMENTS

SPAN: 114′-0″ C/C BEARINGS
ROADWAY: 26′-0″ TOE/TOE CURB, 8′-0″ SIDEWALK (WEST), 5′-0″ SIDEWALK (EAST)
LOADING: HL-93 WITH 60 PSF FWS
SKEW: 33°00′00″ RF
APPROACH SLABS: 30′-0″ LONG (SOUTH), 40′-0″ LONG (NORTH) (AS-1-15 AND AS-2-15)
ALIGNMENT: TANGENT
CROWN: 0.016 FT/FT, NORMAL
COORDINATES: LATITUDE 39°42′16.57″ N
LONGITUDE 84°10′37.53″ W

DESIGN AGENCY
EMH&T
Engineers • Architects • Surveyors • Scientists
5500 New Albany Road, Columbus, Ohio 43054
Phone: (614) 775-4500 www.emht.com

DRAWN	REVIEWED	DATE
TDA	CAS	01/16/19
DESIGNED	CHECKED	REVISED
TDA	RJE	-

STRUCTURE FILE NUMBER TBD

MONTGOMERY COUNTY
STA. 9+38.93
STA. 10+55.32

SITE PLAN - ALTERNATIVE 1A, 1B, 1C
BRIDGE NO. MOT-RDGWY-0137
RIDGEWAY ROAD OVER WEST DOROTHY LANE

MOT RIDGEWAY ROAD BRIDGE
PID No. 108706

1/2
1/2

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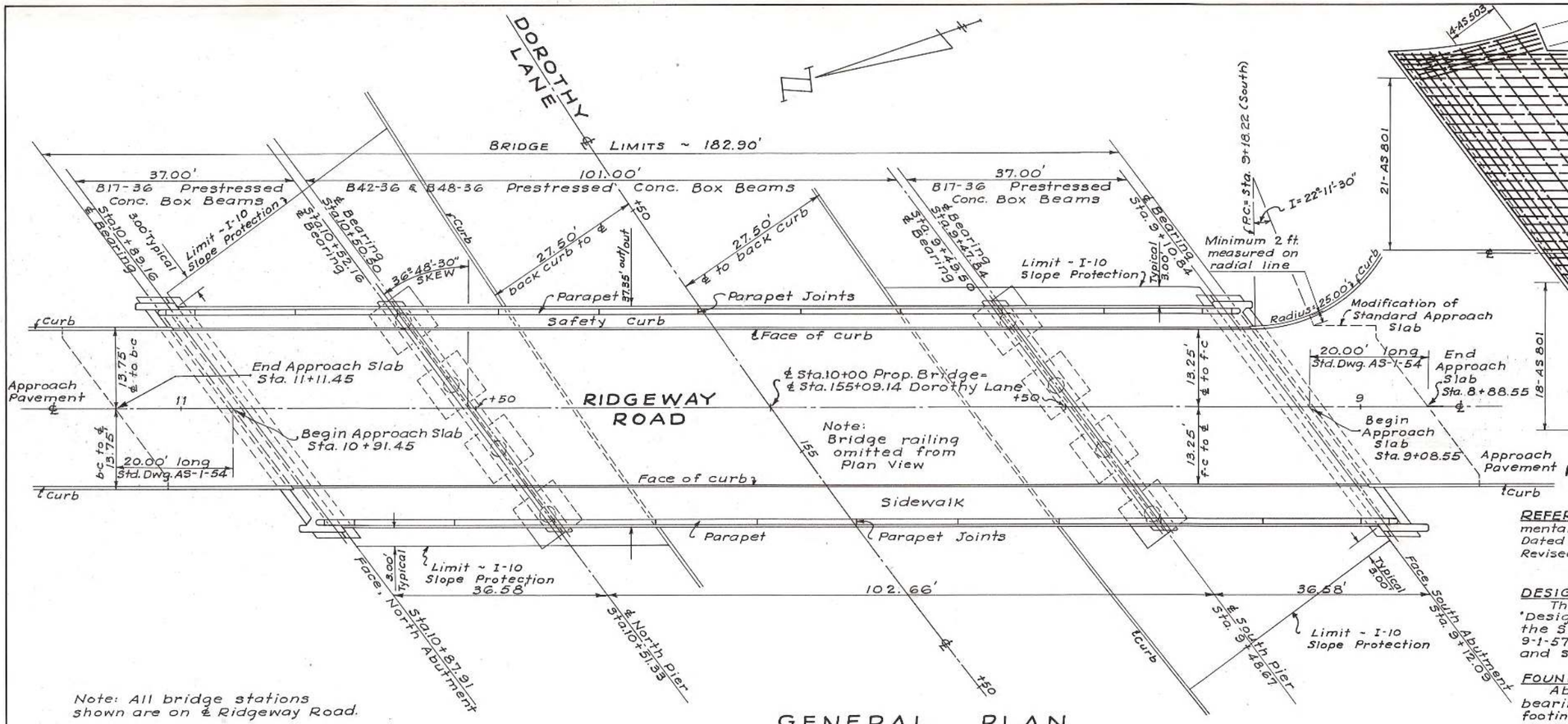
FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S1180 (2)	

544
624

MOT - GRE S1180 (2)



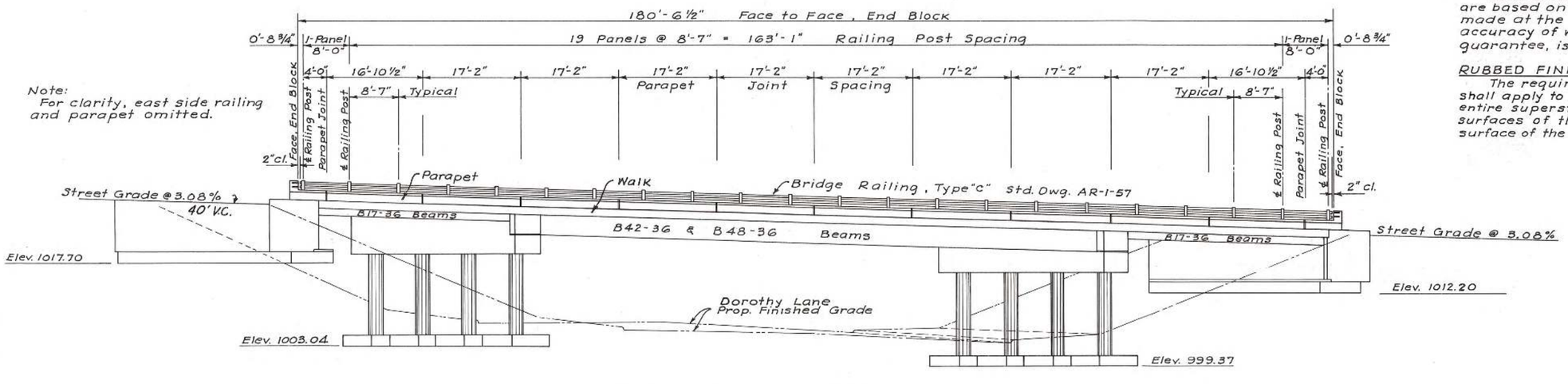
Note: All bridge stations shown are on ℄ Ridgeway Road.

GENERAL PLAN

Note: Reinforcing for north end approach slab similar except for AS 805 and AS 503 bars.

Standard 20' approach slab, AS-1-54, Modified as shown.

REINFORCING DETAIL ~ SOUTH APPROACH SLAB



Note: For clarity, east side railing and parapet omitted.

WEST ELEVATION

~ STRUCTURAL NOTES ~

REFERENCE: Reference shall be made to Supplemental Specifications Nº S-105, Revised 1-22-62 and S-101 Dated 7-12-62 and to Standard Drawings Nº AR-1-57, Revised 4-2-62 and AS-1-54, Revised 7-5-62

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, Dated 9-1-57, together with current revisions thereof and supplements thereto.

FOUNDATION BEARING PRESSURE: Abutment footings are designed for a maximum bearing pressure of 1.55 Tons per square foot and footings under piers for a maximum bearing pressure of 2.92 Tons per square foot. Design bearing pressures under abutments and pier footings were selected as such that will produce estimated negligible settlements. Abutment elevations have been established according to estimated settlements of these structures.

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of soil sampling soundings made at the site. This sounding information, the accuracy of which the State of Ohio does not guarantee, is included in these plans.

RUBBED FINISH: The requirements of Sec. S-1.22, Rubbed Finish, shall apply to the exposed concrete surfaces of the entire superstructure and substructure except the surfaces of the prestressed beams and the top surface of the walk and safety curb.

RALPH L. WOOLPERT CO. CONSULTING ENGINEERS
DAYTON, OHIO

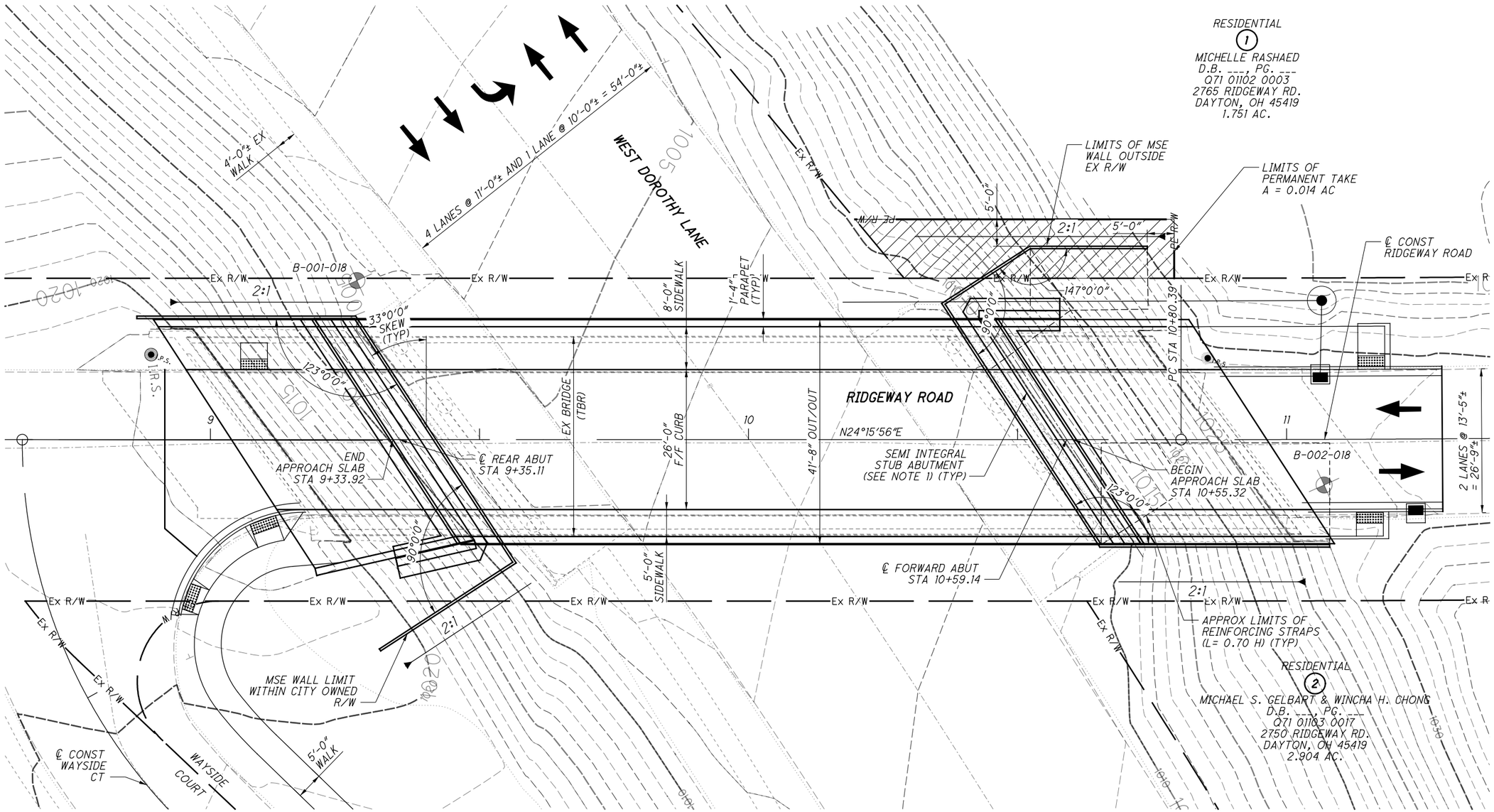
GENERAL PLAN AND ELEVATION RIDGEWAY ROAD OVER DOROTHY LANE

MONTGOMERY COUNTY DOROTHY LANE

PRESENT TOPOGRAPHY		PROPOSED WORK			
Surveyed	Drawn	Designed P.N.S.	Drawn E.G.W.	Checked R.L.B.	Reviewed

APPENDIX E:

MSE Wall Layout Exhibit



PLAN

(UTILITIES NOT SHOWN FOR CLARITY)

NOTE:

1. MSE WALL SUPPORTED ABUTMENTS WOULD FACILITATE PILES PLACED THROUGH THE MSE WALL FILL AND DRIVEN IN TO UNDERLYING SOILS. THE GEOTECHNICAL ENGINEER INDICATED DRIVING PILES AT THE ABUTMENT LOCATIONS WOULD BE DIFFICULT DUE TO THE DENISTY OF THE EXISTING SOILS.

DESIGN AGENCY
EMH&T
Engineers • Architects • Surveyors • Scientists
5500 New Albany Road, Columbus, Ohio 43054
Phone: 614.775.4500 www.emht.com

DESIGNED	DRAWN	REVIEWED	DATE
TDA	TDA	CAS	01/16/19
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RJE	-	TBD	

MONTGOMERY COUNTY
STA. 9+38.93
STA. 10+55.32

MSE WALL EXHIBIT
BRIDGE NO. MOT-RDGWY-0137
RIDGEWAY ROAD OVER WEST DOROTHY LANE

MOT RIDGEWAY ROAD BRIDGE
PID No. 108706

1 / 1

1 / 1

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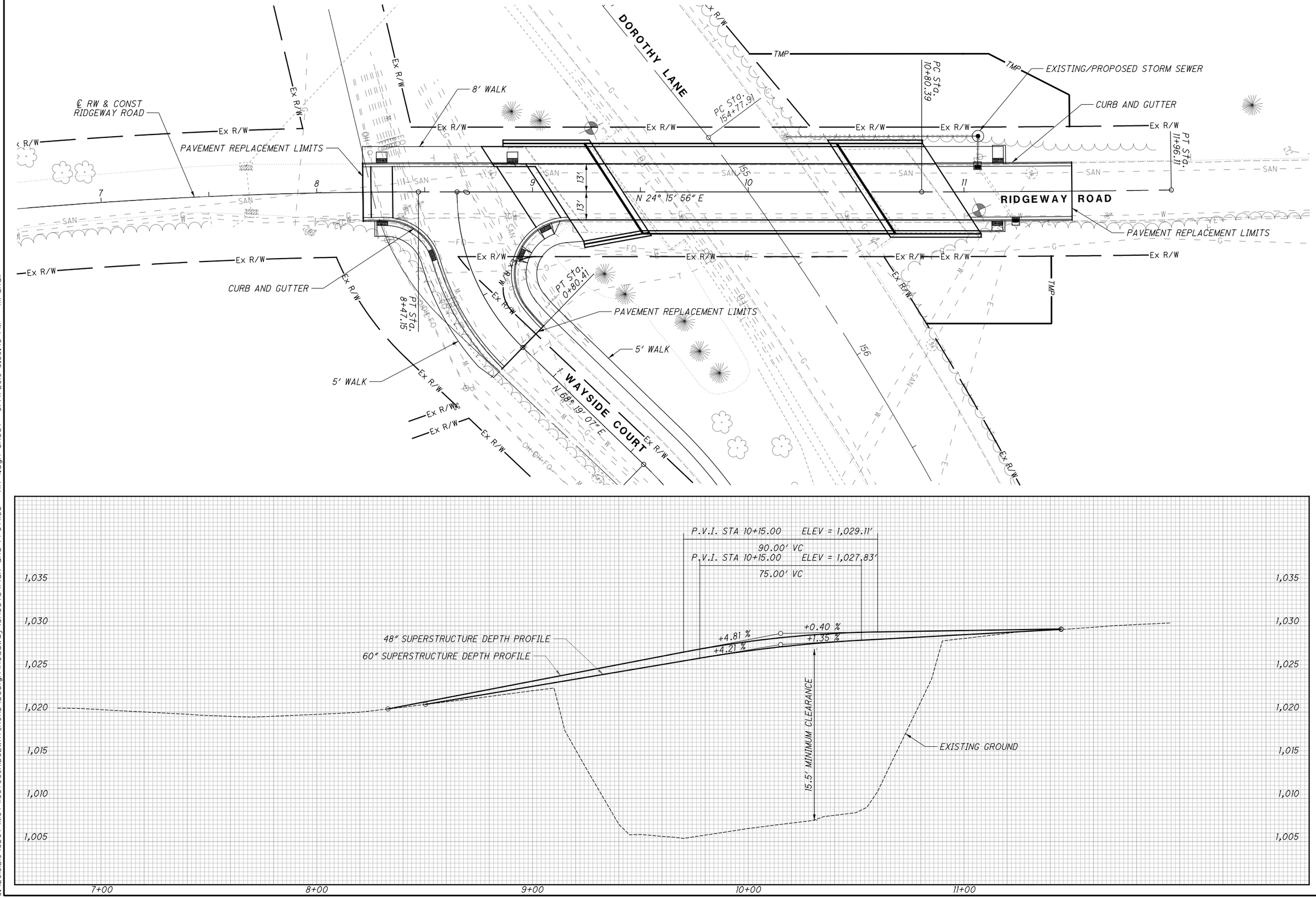
APPENDIX F:

Roadway and Pedestrian Exhibits



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED | CHECKED

PLAN AND PROFILE
RIDGEWAY ROAD - ALTERNATIVE 1

MOT-RIDGEWAY ROAD BRIDGE

1

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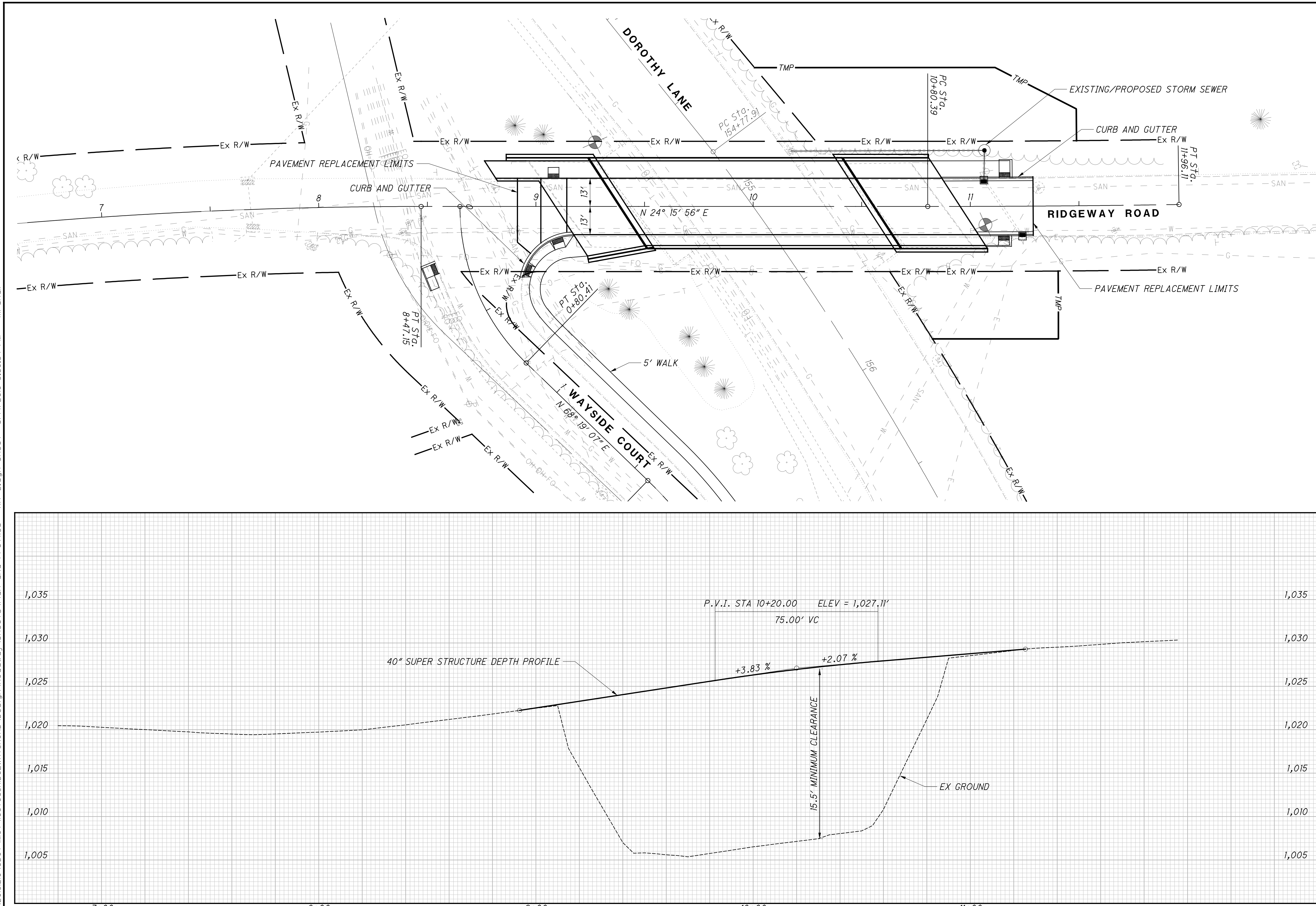

0 10 20 40
HORIZONTAL SCALE IN FEET

CALCULATED
CHECKED

PLAN AND PROFILE
RIDGEWAY ROAD - ALTERNATIVE 2

MOT-RIDGEWAY ROAD BRIDGE

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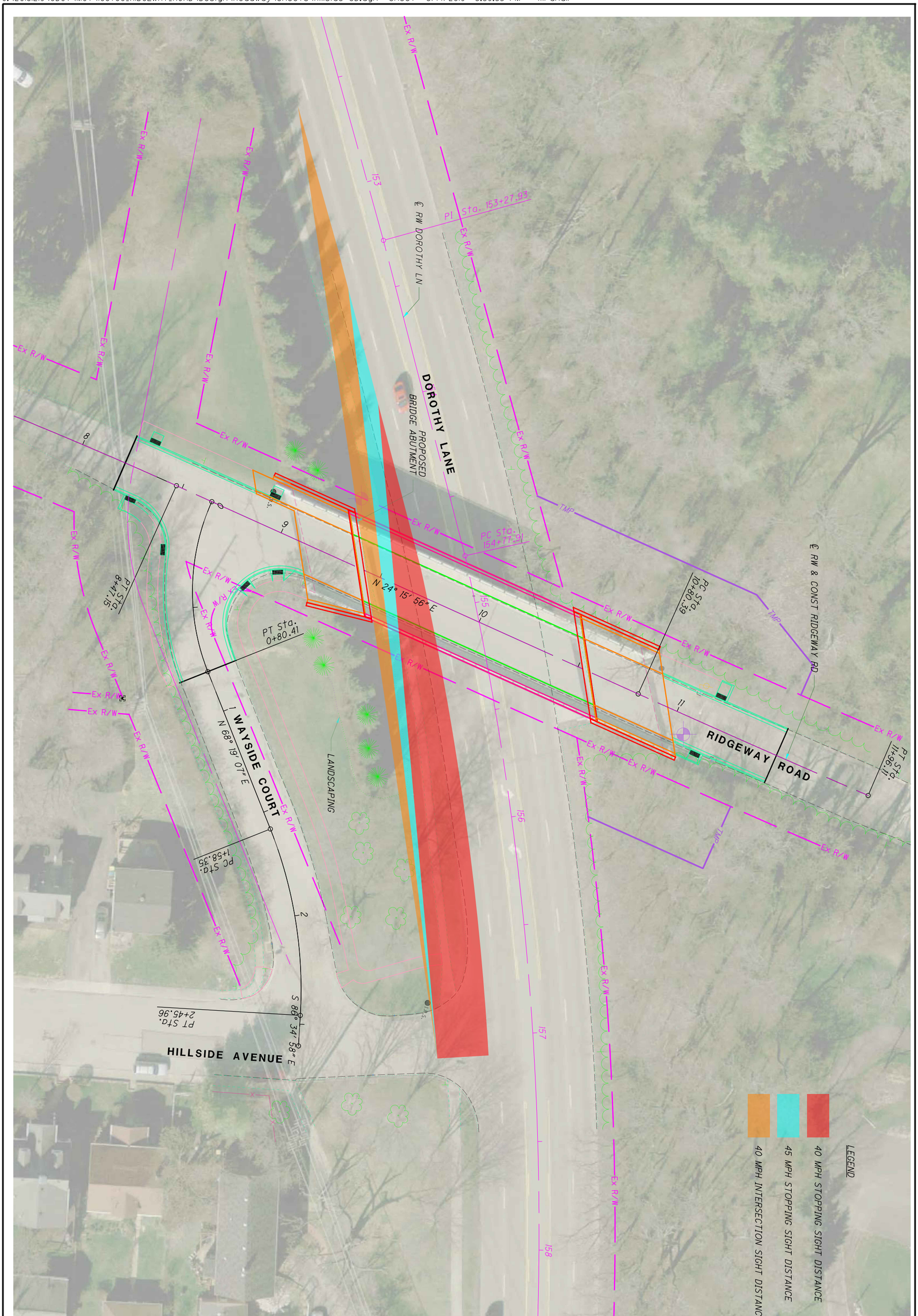

	MOT-RIDGEWAY ROAD BRIDGE	SIGHT DISTANCE EXHIBIT HILLSIDE AVENUE	CALCULATED / CHECKED; 0 10 20 40 HORIZONTAL SCALE IN FEET; N

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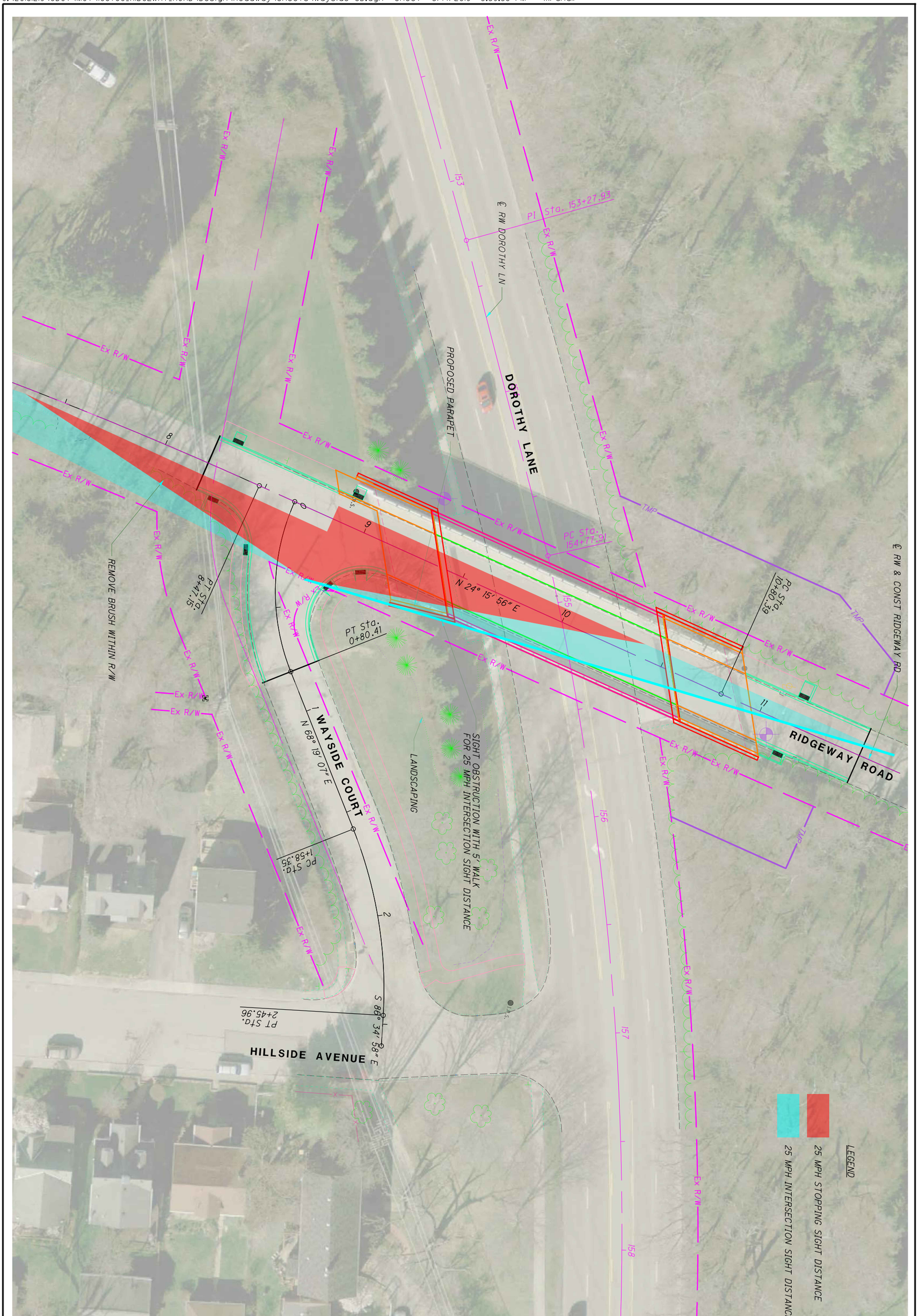

	MOT-RIDGEWAY ROAD BRIDGE	SIGHT DISTANCE EXHIBIT WAYSIDE COURT	CALCULATED / CHECKED; 0 10 20 40 HORIZONTAL SCALE IN FEET; N

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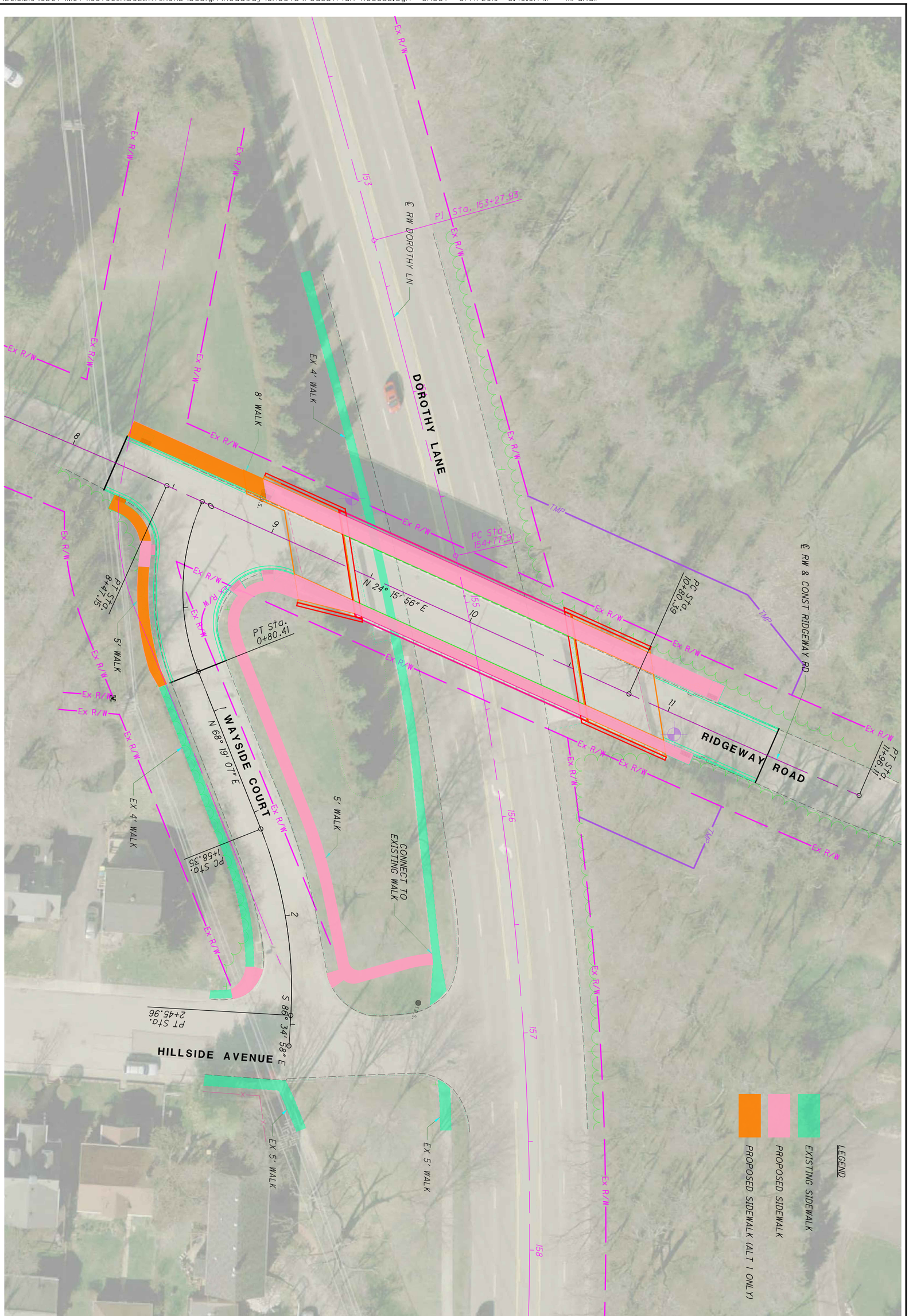

	MOT-RIDGEWAY ROAD BRIDGE	PEDESTRIAN ACCESS EXHIBIT RIDGEWAY ROAD	CALCULATED / CHECKED	0 10 20 40 HORIZONTAL SCALE IN FEET

APPENDIX G:

Utility Information

LEGEND

* - DISPOSITION TO BE DETERMINED

NOTE

1. UTILITIES WITH PURPLE LINE TYPES WERE DRAWN FROM RECORD PLANS AND NOT FIELD LOCATED

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED | CHECKED

PROJECT AREA UTILITIES
RIDGEWAY ROAD

MOT-RIDGEWAY ROAD BRIDGE

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UTILITY COORDINATION LOG

UTILITY CONTACT INFORMATION
HAM-71-8.03, PID 105090

Utility	Contact (Main)	Contact (Alternate)		Notes
AT&T - Ohio	AT&T (Telephone)			responded to oups request field marked
	3233 Woodman Drive			10/14/18 response with plans
	Kettering, OH 45420			
	Contact: Mary Fisher			
	Phone: (937) 296-3650			
	MF4624@att.com			
AT&T - Transmission	AT&T (formerly SBC)			
	3233 Woodman Dr.			responded to 12/7/18 oups field marked
	Dayton, OH 45420			12/19/18 recvd email response
	Phone: 937.296.3894; Cell: 937.546.2294			
	Contact: Jesse Wead			
	Jw1291@att.com			
Cincinnati Bell	Cincinnati Bell (aerial)	Cincinnati Bell (underground)	Cincinnati Bell Telephone	
	221 East Fourth St.	221 East Fourth St.	Product Strategy (Conduit)	12/7/18 responded to oups ticket field marked
	Building 121-900	Building 121-900	221 E. Fourth St. #121-900	
	Cincinnati, OH 45201	Cincinnati, OH 45201	Cincinntati, OH 45201	
	Contact: Mike Williams, Eng.	Contact: Mark Conner	513-565-7163	
	Phone: 513.565.6024	Phone: 513.565.7043; Cell: 513.382.5740	tim.seestedt@cinbell.com	
	mike.williams@cinbell.com	Mark.conner@cinbell.com		
Charter Communications (Spectrum)	Spectrum (Cable)	Spectrum (Cable)		Recvd email 10/31/18 with plans
	3691 Turner Rd	3691 Turner Rd		
	Dayton, Ohio 45415	Dayton, Ohio 45415		Note: Spectrum is 172' north of the bridge limits.
	Contact: Chris Booksh	Contact: Tara Williamson		No Impacts expected.
	Phone: (937) 425-8854	Phone:		
	christopher.booksh@charter.com	Tara.Williamson@charter.com		
City of Kettering	City of Kettering (Storm, Fiber Optic)			10/15/18 Received Historic Plans
	3600 Shroyer Road			
	Kettering, OH 45429			
	Contact: Steve Bergstresser			
	Phone: (937) 296-2436			
	Steven.Bergstresser@ketteringoh.org			
City of Oakwood	City of Oakwood			Recvd plans 10/31/18
	Norbert S. Klopsch, City Mgr.			
	30 Park Avenue			
	Oakwood, OH 45419			
	(937) 298-0600			
	klopsch@oakwood.oh.us			
Dayton Power and Light	Dayton Power & Light (Electric)			Recvd plans 11/2/18
	1900 Dryden Road			
	Dayton OH 45401			
	Contact: Barry Lucas			
	Phone: (937) 331-3178			
	Barry.Lucas@aes.com			
Miami Valley Lighting	Miami Valley Lighting (Street Lights)			Responded to oups request 12/7/18 field marked
	1065 Woodman Drive			
	Dayton, OH 45432			
	Contact: Robyn Livesay			
	Phone: (937) 259-7192			
	Robyn.Livesay@aes.com			
Montgomery Co Environ Services Water & Sanitary	Montgomery County Environmental Services (Water, Sanitary)			
	1850 Spaulding Road			10/18 Responded with as builts
	Kettering, OH 45432			11/18 Responded with as-builts.
	Contact: Ed Schlaack			12/7/18 Responded with as-builts
	Phone: (937) 781-2632			
	Schlaacke@mcohio.org			
Vectren Energy - Distrubution	Vectren Energy - GAS Distribution	Vectren (Gas)		Recvd plans 11/2/18
	6500 Clyo Road	2345 E. Main Street		
	Centerville OH, 45459	Danville, IN 46122		
	Contact: Gregory Fishman, PE	Phone: (317) 718-3639		
	Phone: 937.312.2521	publicproject@vectren.com		
	gfishman@vectren.com	Contact: Public Project Coordinator		
Vectren Energy - Transmission	Vectren Energy - GAS Transmission	Vectren (Gas)		Recvd email 10/31/18
	6500 Clyo Road	2345 E. Main Street		
	Centerville OH, 45459	Danville, IN 46122		
	Contact: Don Specht	Contact: Public Project Coordinator		
	Phone: 937-312-2533; Cell#: 937-313-7315	Phone: (317) 718-3639		
	dspecht@Vectren.com	publicproject@vectren.com		
Windstream Ohio	Windstream Communications			10/15/18 response
	2165 SR 133 South			12/7/18 responded to oups, marked in field
	Blanchester, OH 45107			
	Contact: Leon Taylor			
	Phone: 937.725.5358			
	Leon.taylor@windstream.com			

UTILITY COORDINATION LOG

Utility: City of Kettering
PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
City of Kettering (Storm, Fiber Optic) Steven Bergstresser 3600 Shroyer Rd Kettering OH 45429 937-296-2436 steven.bergstresser@kettingoh.org		10/30/2018	Emailed for record plans
		12/18/2018	Emailed 2nd request for record plans

UTILITY COORDINATION LOG

Utility: ATT - Ohio
PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Mary Fisher 3233 Woodman Dr Kettering, OH 45420 937-296-3650 mf4624@att.com		10/30/2018	Emailed request for record plans.
		12/18/2018	Emailed 2nd request for record plans.

UTILITY COORDINATION LOG

Utility: ATT - Transmission

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Jesse Wead 3233 Woodman Dr Dayton OH 45420 937-296-3894 C: 937-546-2294 jw1291@att.com		10/30/2018	Emailed request for record plans.
		12/18/2018	Emailed 2nd request for record plans.
		12/18/2018	Recvd email response from Jesse Wead

UTILITY COORDINATION LOG

Utility: Charter Communications

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Spectrum (Cable) Chris Booksh 3691 Turner Rd Dayton OH 45415 937-425-8854 christopher.booksh@charter.com		10/30/2018	Emailed for record plans
		10/31/2018	Recvd Email: The attachmentment shows the only location of Spectrum lines related to this bridge work. We only have a small underground coax line 172' north of the bridge and nothing within the project zone to the south. Please send me more detailed project limit plans once you get them and I can confirm whether or not our line will be affected.
Spectrum (Cable)			
3691 Turner Rd			
Dayton, Ohio 45415			
Contact: Tara Williamson			
Phone:			
Tara.Williamson@charter.com			

UTILITY COORDINATION LOG

Utility: Cincinnati Bell

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Mike Williams (aerial) 221 E. Fourth St. 121-900 Cincinnati, OH 45201 513-565-6024 mike.wiliams@cinbell.com Mark Conner (underground) 513-565-7043 C: 513-382-5740		10/30/2018	Emailed request for record plans.
Tim Seestedt		12/18/2018	Emailed 2nd request for record plans.
Product Strategy (Conduit)		12/31/2018	Recvd Email from Tim
221 E Fourth St #121-900			
Cincinnati, OH 45201			
513-565-7164			
tim.seestedt@cinbell.com			

UTILITY COORDINATION LOG

Utility: DP&L
PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Dayton Power & Light (Elect)		10/30/2018	Emailed for record plans
1900 Dryden Road		11/2/2018	Recvd Email: I have enclosed a marked overview of DP&L 3 phase 12Kv overhead electric distribution under-build below 3 phase 69Kv transmission lines in this project area, underground 3 phase 12Kv , and a key to symbols
Dayton OH 45401		12/18/2018	
Contact: Bill Ward			
Phone: (937)			
william.ward@aes.com			

UTILITY COORDINATION LOG

Utility: Miami Valley Lighting

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Miami Valley Lighting (St Lights)		10/30/2018	Emailed for record plans
1065 Woodman Drive		12/18/2018	Emailed 2nd request for record plans
Dayton, OH 45432			
Contact: Robyn Livesay			
Phone: (937) 259-7192			
Robyn.Livesay@aes.com			

UTILITY COORDINATION LOG

Utility: Mo. County Water - Sanitary

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Montgomery County Environmental Services (Water, Sanitary)		10/30/2018	Emailred request for record plans.
1850 Spaulding Road		12/18/2018	Emailed 2nd request for record plans
Kettering, OH 45432		12/28/2019	Email from Ed that as-builts were sent twice.
Contact: Ed Schlaack		10/18 & 12/18	Received as builts
Phone: (937) 781-2632			
Schlaacke@mcohio.org			

UTILITY COORDINATION LOG

Utility: City of Oakwood

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
City of Oakwood		10/30/2018	Emailed for record plans
Norbert S. Klopsch, City Mgr.		10/31/2018	Received Record Plans
30 Park Avenue			
Oakwood, OH 45419			
(937) 298-0600			
klopsch@oakwood.oh.us			

UTILITY COORDINATION LOG

Utility: Vectren - Gas

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Vectren Energy - GAS Dist		10/30/2018	Emailed for record plans
6500 Clyo Road		11/2/2018	Emailed recvd: Vectren has Gas Distribution pipelines within the construction limits of the above referenced project. Attached is the map showing our gas mains in the area of the future construction.
Centerville OH, 45459	CAS	1/3/2019	Phone call with Gregory Fishman regarding project scope and potential impacts. He mentioned he does not want to relocate facilities, expecially the 12" dia high pressure along Dorothy. Stated Vectren would perform pothole if needed to confirm locations of facilities once plans (Stage 1) are complete.
Contact: Gregory Fishman, PE			
Phone: 937.312.2521			
gfishman@vectren.com			
Vectren (Gas)			
2345 E. Main Street			
Danville, IN 46122			
Phone: (317) 718-3639			
publicproject@vectren.com			
Contact: Public Project Coord			

UTILITY COORDINATION LOG

Utility: Vectren - Transmission

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Vectren Energy - GAS Transm		10/30/2018	Emailed for record plans
6500 Clyo Road		10/31/2018	Email Recvd: Vectren has no Gas Transmission pipelines within the construction limits of the above referenced project. Vectren's Gregory Fishman will be reviewing for any existing Vectren Gas Distribution mains within the construction limits and will reply back to you soon. Attached is a screen shot of Vectren GIS which indicates the approximate location of Vectren's gas facilities in the area of the above referenced project. For exact location of Vectren's gas facilities please call OUPS for physical markings for design.
Centerville OH, 45459			
Contact: Don Specht			
Phone: 937-312-2533; Cell#: 937-313-7315			
dspecht@Vectren.com			
Vectren (Gas)			
2345 E. Main Street			
Danville, IN 46122			
Contact: Public Project Coord			
Phone: (317) 718-3639			
publicproject@vectren.com			

UTILITY COORDINATION LOG

Utility: Windstream Ohio

PID: 108706

Utility Company (Contact)	Consultant (Personnel)	Date	Description and Comments
Windstream Communications		10/30/2018	Emailed request for record plans
2165 SR 133 South		12/18/2018	Emailed 2nd request for record plans
Blanchester, OH 45107			
Contact: Leon Taylor			
Phone: 937.725.5358			
Leon.taylor@windstream.com			

APPENDIX H:

Draft Public Involvement Meeting Notice Letter

xxxxx xx, 2019

City of Kettering
3600 Shroyer Road
Kettering, Ohio 45429-2799

RE: Public Meeting
Ridgeway Road Bridge Replacement (Kettering Project # 03-904C)
ODOT Project MOT-Ridgeway Road Bridge Replacement (PID # 108706)

Date: xxxxx xx, 2019
Time: x:xx pm to x:xx pm
Location: Charles I. Lathrem Center
2900 Glengarry Drive
Kettering, OH 45420

Contacts:

Steven Bergstresser, Assistant City Manager / City Engineer
City of Kettering
Phone: 937-296-2412
Email: Steven.Bergstresser@ketteringoh.org

Tricia Bishop, Environmental Coordinator
Ohio Department of Transportation
Phone: 937-497-6721
Email: tricia.bishop@dot.ohio.gov

The City of Kettering, in cooperation with the Ohio Department of Transportation (ODOT), is hosting an Open House Meeting to provide interested parties an opportunity to review and comment on the planned Ridgeway Road Bridge Replacement project scheduled in 2021. The project will demolish the existing bridge and a new bridge will be constructed which provides access to all modes of traffic, increases the vertical clearance over West Dorothy Lane, and increases the sight distance at the adjacent Wayside and Hillside and intersections. Additional improvements associated with this project include public art features at the bridge as part of Kettering's CitySites Public Art Program. Funding through ODOT's Municipal Bridge Program has been acquired to make this project possible. Staff from the City of Kettering, ODOT, and the Consultant Engineering and Design Team will be available to answer questions and take your comments regarding the proposed improvements.

At x:xx pm, the project team will provide a brief project update, followed by an opportunity for citizens to make public statements or ask question publicly, if they choose. Citizens desiring to make public statements will be asked to limit their statements to less than five minutes. Following the public presentation and forum, citizens will be provided an opportunity to speak one-on-one with members of the project team.

We encourage you to stop by and discuss the project with us. If you are unable to attend, but would like to provide comments or have questions, please return the enclosed comment form or contact the individuals listed above.

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 12/11/2015, and executed by FHWA and ODOT.

Mailed x/x/xx

CITY OF KETTERING
ENGINEERING DEPARTMENT

Comment Form
Ridgeway Road Bridge Replacement (Kettering Project # 03-904C)
(MOT-Ridgeway Road Bridge Replacement, PID 108706)
Public Meeting xxxxx, xx 2019

Please use this form to provide comments regarding the proposed County Line Road Widening Project. Comments may be handed in at the public meeting, submitted by email, mail or telephone to the individuals listed below. Please provide comments by **xxxxx, xx 2019**.

Contact:

Steven Bergstresser, P.E.
Assistant City Manager/City Engineer
Phone: 937-296-2412
Email: Steven.Bergstresser@ketteringoh.org

City of Kettering Engineering
3600 Shroyer Road
Kettering, Ohio 45429O

Tricia Bishop
ODOT Environmental Coordinator
Phone: 937-497-6721
Email: tricia.bishop@dot.ohio.gov

ODOT District 7
1001 St. Marys Avenue
Sidney, Ohio 45365

Comments Submitted by*: **Name:** _____

Address: _____

_____

_____

*Contact information is not required, but will ensure you are included on the response to comments and allow us to contact you if additonal information is needed.

What is your interest in the proposed project? (check all that apply)

- ☐ I own or rent property in the vicinity of the project
- ☐ I work in the vicinity of the project
- ☐ I use the bridge to travel to and from work
- ☐ I use the bridge to travel to and from my residence
- ☐ I am a pedestrian and/or cyclist and use the bridge for recreation
- ☐ Other (please describe) _____

_____

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 12/11/2015, and executed by FHWA and ODOT.

The project is being undertaken to replace the existing bridge which is in poor condition. The project also provides an opportunity to improve overall safety at the project site. Are there other issues within the roadway corridor that you feel should be considered under this project?

The project will require temporary closure of Ridgeway Road over West Dorothy Lane, including the Ridgeway Road - Wayside Court intersection, during construction. Please provide any concerns you have regarding the access limitations provided during construction:

Section 106 Consulting Party Status: The project will be evaluated to determine if it will affect historic properties, as required under Section 106 of the National Historic Preservation Act of 1966. If you are concerned regarding the project's effect on historic properties and would like to participate as a Section 106 consulting party, please check the appropriate box below. Consulting parties work together to discuss options, provide multiple viewpoints, and strive to seek common agreement on the incorporation of historic preservation values into the project. (For additional information, contact Tricia Bishop at 937-497-6721.)

- ☐ I request consulting party status as a local resident interested in the history of my area
- ☐ I request consulting party status because: _____

Other comments:

INFORMATION BROCHURE TO BE PROVIDED WHICH ANSWERS "COMMON" QUESTIONS RELATED TO SCOPE, COST, IMPACTS, ETC.

FINAL FORMAT AND CONTENT TO BE FINALIZED WITH CITY AND ODOT INPUT

EMHT

APPENDIX I:

Preliminary Right of Way Exhibit

MOT-RIDGEWAY ROAD BRIDGE

SECTION 35 & 36, TOWNSHIP 2, RANGE 6, M.R.S
CITY OF KETTERING
CITY OF OAKWOOD
VAN BUREN TOWNSHIP
MONTGOMERY COUNTY, OHIO

RESIDENTIAL
(1)
MICHELLE RASHAED
I.N.: 2018-00008872
Q71 01102 0003
2765 RIDGEWAY RD.
DAYTON, OH 45419
1.751 AC.

RESIDENTIAL
(2)
MICHAEL S. GELBART & WINCHA H. CHONG
I.N.: 2011-00034406
Q71 01103 0017
2750 RIDGEWAY RD.
DAYTON, OH 45419
2.904 AC.

EXEMPT
(3)
CITY OF KETTERING
VOL. 2208, PG. 154
DOROTHY LN.
DAYTON, OH 45429

EXEMPT
(4)
CITY OF KETTERING
VOL. 2247, PG. 679
N64 03410 0208
DOROTHY LN.
DAYTON, OH 45429

RESIDENTIAL
(5)
RUSSELL BERNICE R. AND JOHN THOMAS
I.N.: 2016-00004822
N64 03410 0022
3001 RIDGEWAY RD.
DAYTON, OH 45419
1.0746 AC.

RESIDENTIAL
(6)
DEAN DAVID E AND JULIE W
I.N.: 1991-00023041
N64 03410 0025
3000 RIDGEWAY RD.
DAYTON, OH 45419
0.470 AC.

RESIDENTIAL
(7)
SMITH SHARON G
I.N.: 2002-00013014
N64 00311 0001
3017 HILLSIDE AVE.
DAYTON, OH 45429
0.1428 AC.

ROW NOTE:

TEMPORARY EASEMENT LIMITS ARE BASED ON WORST CASE SCENARIO FOR THE BRIDGE CONSTRUCTION AND EXISTING BRIDGE DEMOLITION. THIS ASSUMES TEMPORARY SHORING WILL NOT BE USED. REDUCING THE WORK LIMITS BY UTILIZING TEMPORARY SHORING WILL BE COORDINATED WITH ODOT AND THE CITY DURING FINAL DESIGN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1-T	MICHELLE RASHAED	1			Q71 01102 0003	1.7510	0.000	0.096	0.000	0.096					TO CONSTRUCT BRIDGE ABUTMENT		
2-T	MICHAEL S. GELBART & WINCHA H. CHONG	1			Q71 01103 0017	2.9040	0.000	0.048	0.000	0.048					TO CONSTRUCT BRIDGE ABUTMENT		

HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED
CHECKED

PRELIMINARY ROW EXHIBIT
MOT-RIDGEWAY ROAD BRIDGE

1 / 1

J:\2018\29\ODOT\MOT\108706_RIDGEWAY_ROAD\Design\Roadway\Sheets\ROW Exhibit.dgn Sheet 3/14/2019 3:44:27 PM mrahall