

# ADDENDUM No. 1

## RFP No. 23-59

### East Medical Center Drive Bridge Rehabilitation and Widening Project

**Due: November 16, 2023 at 11:00 A.M. (local time)**

The information contained herein shall take precedence over the original documents and all previous addenda (if any) and is appended thereto. **This Addendum includes fifty (50) pages.**

**The Proposer is to acknowledge receipt of this Addendum No. 1, including all attachments in its Proposal by so indicating in the proposal that the addendum has been received. Proposals submitted without acknowledgement of receipt of this addendum may be considered non-conforming.**

The following forms provided within the RFP Document should be included in submitted proposal:

- Attachment D - Prevailing Wage Declaration of Compliance
- Attachment E - Living Wage Declaration of Compliance
- Attachment G - Vendor Conflict of Interest Disclosure Form
- Attachment H - Non-Discrimination Declaration of Compliance

**Proposals that fail to provide these completed forms listed above upon proposal opening may be rejected as non-responsive and may not be considered for award.**

#### I. CORRECTIONS/ADDITIONS/DELETIONS

Changes to the RFP documents which are outlined below are referenced to a page or Section in which they appear conspicuously. Offerors are to take note in its review of the documents and include these changes as they may affect work or details in other areas not specifically referenced here.

Section/Page(s)	Change
-----------------	--------

Detailed	
----------	--

Specifications	As provided in RFP No. 23-59 Document: City of Ann Arbor Special Provisions
----------------	--

**As updated herein:**

Hemispherical Video Detection Camera; Hemispherical Video Detection System; Hemispherical Video Detection Camera, Rem  
The special provision has been added to provide information on these pay items.

HMA, 3EML; HMA, 5EML; Hand Patching, Modified  
Reference updated from 2012 MDOT Standard Specifications to 2020 MDOT Standard Specifications.

Electrical and Communication Handholes

Reference updated from 2012 MDOT Standard Specifications to  
2020 MDOT Standard Specifications

Streetlight, Remove; Luminaire Installation; Pole Installation; Pole Fit-up  
Reference updated from 2012 MDOT Standard Specifications to  
2020 MDOT Standard Specifications

Plans

As provided alongside RFP No. 23-59 Document:

Plan Sheets: 2021-008-C4, 2021-008-BR1, 2021-008-BR6, 2021-008-BR7, 2021-008-BR8, 2021-008-BR9, 2021-008-BR14, 2021-008-BR15, 2021-008-BR17, 2021-008-BR23, 2021-008-BR27, 2021-008-BR51, 2021-008-BR52

**As updated herein:**

Plan Sheets: 2021-008-C4, 2021-008-BR1, 2021-008-BR6, 2021-008-BR7, 2021-008-BR8, 2021-008-BR9, 2021-008-BR14, 2021-008-BR15, 2021-008-BR17, 2021-008-BR23, 2021-008-BR27, 2021-008-BR51, 2021-008-BR52 (Attached)

*Comment: The intent with this addition was to add the missing detailed specifications. They may not affect specific pay items but are part of City of Ann Arbor Detailed Specifications for the project.*

## II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the RFP. Respondents are directed to take note in its review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: We understand that the City has obtained a design permit from Amtrak but that the City intends for the contractor to obtain the Amtrak construction Permit. As a risk mitigation measure, we would urge the City to obtain all permits required by Amtrak, Norfolk Southern and MDOT for design and construction. Please confirm whether the City will obtain all necessary permits.

Answer 1: The City will be obtaining the Amtrak Construction Permit in their name and will include the chosen Contractor as an additional insured party. Separate permits for Norfolk Southern and MDOT are not required.

Question 2: Notes on drawing 64 state "The train movement and speed information shown in the proposal does not represent a commitment by Amtrak and is subject to change without notice." We could not locate the train movement and speed information for Amtrak or Norfolk Southern within the bid documents. Please provide this information.

Answer 2: Amtrak has not been willing to provide train movement information this far in advance of the Construction timeline.

Question 3: It is understood that this railroad falls into Amtrak, Norfolk Southern, and MDOT jurisdiction. Specifications and guidelines have been provided for Amtrak requirements, but we have not seen anything for N-S or MDOT. Please provide necessary requirements from these agencies.



- Answer 3: Railroad specifications for Norfolk Southern and MDOT are not required for this project. Norfolk Southern only has jurisdiction over underground utilities, for which we are not touching any, and the Amtrak specifications cover all construction activities in the ROW.
- Question 4: Will separate flaggers be required for both Amtrak and Norfolk Southern?
- Answer 4: Flaggers will not be required for Norfolk Southern.
- Question 5: Section 3.1.C of this section provides requirements for working over the Right of Away including providing plans for approval: "Crane rating sheets, demonstrating that cranes are adequate for 150% of the calculated pick weight. That is, the cranes shall be capable of picking 150% of the load, while maintaining normal, recommended factors of safety. The adequacy of the crane for the proposed pick shall be determined by using the manufacturer's published crane rating chart and not the maximum crane capacity." Please confirm that all crane hoisting work within the 100' wide Amtrak ROW will need to meet this requirement.
- Answer 5: Yes, any crane hoisting work within Amtrak's ROW needs to meet the Amtrak requirements.
- Question 6: If the Contractor provides the sufficient notice to the railroad for flaggers and the railroad is unable to provide them in a timely basis, will the Contractor be provided relief for schedule and cost impacts?
- Answer 6: Due to the critical timeliness of this project, the Contractor would be provided relief for the cost impacts, but would not be provided relief for the schedule impacts.
- Question 7: Amtrak will require a Track Inspector to be present during roadbed disturbing activities which are anticipated to be sheet piling and micropile work among possible others. Will the cost of this Track Inspector be paid for by the City?
- Answer 7: The cost of the Track Inspector will be paid for by the City.
- Question 8: Drawing sheet 69 of 155 notes "Exist Permanent Steel Sheeting" at piers 1 and 2. The drawing infers that there is existing sheeting around the pier extension. The drawing shows "Steel Sheet Piling, Temp Left In Place" at the same location. Drawing 80 of 155 also details the 2 rows of sheeting. Please clarify.
- Answer 8: The drawing has been revised to show the existing sheeting only around the existing footing.
- Question 9: The drawing on sheet 69 shows 360 Sft of "Steel Sheet Piling, Temp" in the quantity table. Where is this item utilized in the plans?
- Answer 9: The "Steel Sheet Piling, Temp" pay item is meant to be used at the staging line at each abutment. A call out has been added to the plan view on the General Plan of Structure sheet.
- Question 11: There is not a specification for "Structure Survey During Construction". Please provide specification detailing scope and requirements for structure survey and whether this is to include Amtrak Rail Monitoring during associated operations that may be in roadbed influence zone.

- Answer 11: This SP is on pages 226 through 229 of the RFP. If you are within the influence of the RR while you are surveying the structure, flagging will be required.
- Question 12: The specification states "Price paid shall be payment in full for all labor, material, and equipment required for remedying unforeseen physical conditions and shall be based upon an agreement negotiated and approved prior to beginning this Work." Inclusion of this allowance suggests the City expects some sort of Unforeseen Site Condition. Given that the schedule is compressed, there is minimal time to resolve a potential unforeseen condition including finalizing the scope of the remedy and negotiating the price. Would the city consider waiving the requirement of negotiating the price prior to beginning the remedy work? And if not, will the Contractor be provided a time extension and associated time related overhead reimbursement related to this unforeseen condition?
- Answer 12: Yes, the City would consider waiving the price negotiating requirement prior to beginning the remedy work in certain situations. The Contractor will not be provided a time extension for unforeseen conditions.
- Question 13: Conduit removal is shown in the qty T/O table but not specifically called out on plan. This applies to the following drawings:  
2021-008-MOT34  
2022-008-MOT38  
2021-008-MOT40  
2022-008-MOT42  
2022-008-MOT46  
Please Clarify
- Answer 13: The plan sheets have been updated with callouts for the conduit removals.
- Question 14: Traffic signal plans exist for Fuller Rd at E Med Center Rd for Stage 1, 2,4 and final removal (2021-008-MOT24 Thru 2021-008-MOT32. There are no plans provided for Stage 3. Please provide stage 3 plans.
- Answer 14: The stage 2 layout is in place thru Stage 3 and is removed in Stage 4. There are no changes between Stage 2 and Stage 3, so a separate sheet was not created.
- Question 15: One pedestrian traffic signal is called out to be removed for the widening in 2021-008-MOT34, and a completely new pedestrian traffic signal is called out to be reinstalled on 2021-008-MOT36. Is the intention to install a completely assembly or to relocate the existing ped signal components (Metal Base, Post, Pushbutton, Ped Signal etc...)? Please clarify.
- Answer 15: The items being removed are the pedestal, foundation, and pushbutton. No pedestrian signal is present on the pedestal. Original installation date is unknown so age couldn't be verified. New equipment was proposed due to this.
- Question 16: A grade crossing is necessary to have access to both side of the track. Have provisions for a grade crossing to be installed been made with the railroad? Will this grade crossing be provided by the railroad at no cost to the project or is the cost to be included in the bid? If so, what cost should the bidders include?
- Answer 16: A grade crossing has not been discussed with the railroad. Any costs associated with the grade crossing shall be the responsibility of the Contractor.
- Question 17: The telecommunications plan on sheet 60 indicates installing City of AA conduit in stage 2 up to the stage 2/3 stage line and then completing the conduit in stage 3

to the HH#8. It is our understanding the conduit is currently routed along the Eastern portion of the existing bridge. Given this sequence, we understand that AA telecommunications service will be interrupted from prior to the start of stage 3 construction when it is severed for phase 3 demolition and will not be re-established until the end of stage 3 after traffic has been re-established on the bridge. Please confirm this is the intent.

Answer 17: The City of Ann Arbor is prepared to have telecommunication service be severed during Stage 3 operations. The City intends to install wireless communication between traffic signals to maintain service.

Question 18: The telecommunications plan on sheet 60 indicates new duct bank being installed and connected to existing UM duct bank on both the North and South ends of the bridge. Please confirm that due to the phasing of the project, existing service will be disrupted at the beginning of stage 2 and service will not be re-instated by UM until after stage 2 is complete and there will not be a timing element to when UM must be able to re-instate their service.

Answer 18: UM has made provisions to maintain service through alternate routes throughout the entire construction timeline. There is not a timing element within the project for UM to reconnect their telecommunication lines.

Question 19: The telecommunications plan on sheet 60 indicates new AT&T conduits being installed underneath the bridge deck. Additionally on drawing 58 note 1 indicates contractors to coordinate with AT&T for final location at each end of the bridge. On spec page DS-35 Work Task Note 6 states "Coordinate with AT&T allowing them to complete their conduit connection and install their cable on the west side of East Medical Center Dr. AT&T has estimated needing a full 6 weeks for this task." Please confirm:

- 1) It does not appear that there is an existing AT&T service, and this is a new line. Please confirm this is a new AT&T service and there is not an interruption to an existing service and therefore no critical timing component to make the connection.
- 2) Please confirm that the conduit under the deck is to be furnished and installed by Contractor.
- 3) Please confirm that AT&T will be responsible for furnishing and installing the buried conduit from the bridge abutment to their termination point.
- 4) If confirmed that AT&T is responsible for the furnish and install of conduit noted in point 3 above, please confirm that AT&T can mobilize to install the buried conduit during stage 2 construction and return at a later stage to pull and terminate the fiber after traffic has been established onto the new stage 2 structure.
- 5) Please confirm the portion of 6-week duration for AT&T related to installing the fiber and terminating can be completed while traffic has been put onto new phase 2 structure.

Answer 19: 

1. The existing AT&T service is located within the sidewalk on the east side of the bridge. There is a critical timing component for switch service from the east side to the west side.
2. The conduit under the deck is to be furnished and installed by the Contractor.
3. AT&T will be responsible for furnishing the conduit from the bridge abutments to their termination points.
4. AT&T can mobilize to install the conduit during stage 2 construction. It is intended for AT&T to pull their wiring during stage 2 construction, PRIOR to start of stage 3 demolition.
5. The 6-week time frame for AT&T to pull wiring can take place when traffic is on new Phase 2 structure but must be completed prior to start of Stage 3 demolition.

Question 20: Please provide details for the sign foundations.

Answer 20: Sign foundation details have been added to Sheet 63.

Question 21: Note on drawing sheet 86 states that all excavation, backfill, work and material required shall be included in payment for "Structural Crack, Repair". We suggest that an item be created for this additional, unquantifiable, work scope.

Answer 21: There are pay items in the plans for "Excavation, Fdn" and "Backfill, Structure, CIP". We have adjusted those pay items to cover any excavation and backfill that may be necessary for the structural crack repair.

Question 22: Drawing 2021-008-MOT10 indicates 5 separate areas to have temporary construction fence placed. Please confirm:

1. The 3 eastern most spaces are intended for contractor's use for the full duration of the project.
2. Eastern most space's limits on. It is (indicated to be 927 ft of fence, however on the drawing it only adds to about 400 ft of fence. Please indicate the limits of this fenced in space.

Answer 22: The 927 feet of fence is correct, the eastern limits of the fenced in space are outside the view port limits but will be provided to Contractor during construction.

Question 23: Detailed specification 25 Existing In Situ Soils states "The Contractor shall be aware that soils within the City of Ann Arbor and Washtenaw County contain levels of naturally-occurring, regulated, elemental metals. The city of Ann Arbor is unaware of any previous activities that would have contaminated the existing soils by a hazardous substance as a result of human activity...and becomes the property of the contractor" Additionally, detailed specification 47 states "An area within the project limits has been identified as potential site of soils which include non-hazardous contaminated material. Should the City determine that soils in the project site include non-hazardous contaminated material these materials shall not be used elsewhere or disposed of in a manner inconsistent with this special provision, or applicable federal, state, or local regulations unless otherwise directed by the Engineer." Please provide soil analytical data that shows the levels of regulated metals for purposes of proper waste disposal and PPE.

Answer 23: No soil analytical testing was completing during the geotechnical investigation.

Question 24: There exists several areas of concrete removal required for the construction of permanent works that are not specifically called out on the plans. These include the concrete slope paving in the area of the soil nails, permanent sheet pile walls and the pier wall extensions. There is also a concrete slab /walkway next to Pier 2 that will require partial removal in order to construct the footing extension. Will this removal be paid for under Bid Item 2047011 Sidewalk and Drive, Any Type or Thickness, REM? Please clarify how this work will be paid for.

Answer 24: The concrete slope paving for the soil nail walls, and the existing concrete slab behind pier 2 are already called out in the note for the removal pay item on sheet 69. The conc slope paving behind pier 1 for the soil nail walls should be paid for under the "Structure Rem, Portions" pay item as well. The note has been updated to include that.

Question 25: 2 permanent video detection cameras are going in at the Fuller/E Med Drive intersection, and 1 temp video detection camera is going in at W Med Center Drive. These are denoted on the drawings; however, no specification exists in the current provided Specification Set. Please provide a specification for:  
Hemispherical Video Detection Camera  
Hemispherical Video Detection System  
Hemispherical Video Detection Camera, Rem

Answer 25: Specifications for the Video Detection pay items are attached.

Question 26: Drawing 2021-008-C4 notes there is 365 LF of Conduit, Directional Bore, 1, 3 Inch. This is not denoted anywhere else in the drawing plan set. Please advise where, if intended, 3" conduit is to be directionally bored.

Answer 26: The pay item on sheet 2021-008-C4 has been revised to be Conduit, DB, 1, 3 inch and the quantity has been revised.

Question 27: Drawing 2021-008-MOT46 indicates that 80 LF of conduit is to be removed. Please confirm if the previously installed 1.5" directionally bored conduit routed under W med drive is intended to be removed completely or abandoned in place.

Answer 27: The previously installed 1.5" directionally bored conduit shall be abandoned in place.

Question 28: Street light phasing plan, Note 8 states: UM TO PULL WIRING THROUGH UM SCHEDULE 80 PVC CONDUITS, CONTRACTOR TO COORDINATE WITH UM  
- there are no UM schedule 80 conduits in this drawing. Please confirm if the intention is for UM to pull their lighting cables from the sign to UM HH #6 in the noted schedule 40 conduit.

Street light phasing plan, Note 2 states: CONTRACTOR TO INSTALL SCHEDULE 80 PVC CONDUIT FROM EXISTING CITY OF ANN ARBOR HAND HOLE THROUGH CITY OF ANN ARBOR HH#2 AND TERMINATE IN CITY OF ANN ARBOR HH#4...

- There is no separate cost item for schedule 80 3" conduit on dwg 2021-008-C4. Please clarify if cost for 3" Schedule 80 conduit routed along Fuller Road is to be lumped with the 3" Schedule 40 conduit.

Answer 28: Note 8 has been updated to "...schedule 40 PVC conduits...". Note 2 has been updated to "...schedule 40 PVC conduit...".

Question 29: 2021-008-BR1 notes a 14' wide concrete pad between pier 2 and abutment B. 2021-008-BR6 notes a 6" concrete sidewalk at this same location. Please clarify the intended length / limits of this sidewalk

Answer 29: The callout for the concrete pad/sidewalk behind the pier has been updated on each sheet to be consistent everywhere. The length has been added to sheet 2021-008-BR51.

Question 30: Could the City provide the new Grade Separation agreement signed between Amtrak, Norfolk Southern, U-M, City of Ann Arbor and any other required stakeholders per Michigan Legislature Section 462.319?

Answer 30: A Grade Separation Agreement is not needed. Those only apply in instances where there is a bridge being built in a new location, or in instances where the entire bridge is being reconstructed. Since we are leaving the substructure of the existing bridge in place, this legislation does not apply to our project.

Question 31: Could the City provide the “Letter of No Exceptions” document from Amtrak indicating approval for the project?

Answer 31: Yes, it is now included in this addendum.

Offerors are responsible for any conclusions that they may draw from the information contained in the Addendum.

**NATIONAL RAILROAD PASSENGER CORPORATION**

Engineering Department, 30<sup>th</sup> Street Station, 4<sup>th</sup> Floor South Tower, Box 64  
2955 Market Street, Philadelphia, PA 19104



September 28, 2023

Leigh Merrill  
DLZ Michigan. Inc.  
1425 Keystone Avenue  
Lansing, MI 48911

Subject: **Ann Arbor, MI MDOT-Owned MI Line OH Br. 36.76, East Medical Center Drive  
DLZ Michigan – D-697/MDOT 20-40  
Amtrak Letter of No Exception on Submission 4**

Dear Mr. Merrill:

Amtrak has reviewed the revised submission received on September 11, 2023 and takes no exception to the submission as presented. If the information provided in the submittal changes, revised documents must be submitted to Amtrak for review and approval.

If you have any questions concerning this matter, please let me know.

Sincerely,

A handwritten signature in black ink, appearing to read "David Clapper", with a long horizontal flourish extending to the right.

**David Clapper**  
Manager Engineering Design - Infrastructure

cc: F. Chan- City of Ann Arbor  
B. Mauer- MDOT  
S. Williams- MDOT

CITY OF ANN ARBOR  
SPECIAL PROVISION  
FOR  
**HEMISPHERICAL VIDEO DETECTION, MODIFIED**

AA:YL

1 of 7

11/19

**a. Description.** This work consists of installing or delivery of a new hemispherical video detection system and/or camera which detects vehicles on multiple roadway approaches at an intersection using only video images of vehicle traffic and is compatible with solid state pre-timed, actuated, or adaptive traffic signal control equipment and cabinet environments.

As applicable, this work includes all labor, materials and equipment required to install or furnish the necessary wiring, mounting brackets, mounting hardware, conduit, cable connectors, grounding and any other material required to ensure a complete installation or delivery as specified for a location.

**b. Materials.** Provide materials, as directed by the Engineer, necessary to provide a complete and operating job. Provide materials in accordance with sections 918 and 921 of the Standard Specifications for Construction and this special provision.

1. System Requirements.

A. System Hardware. Provide a hemispherical video detection system by Cubic Gridsmart, or an approved equal, that is composed of these principal items:

(1) Hemispherical camera(s);

(2) A field communications link consisting of a single CAT5e cable between each camera and the video imaging vehicle detection system (VIVDS) processor;

B. System Software. Provide a VIVDS processor that is NEMA TS 2 with a RS 485 synchronous data link control (SDLC) with Performance Plus license, by Cubic Gridsmart, or an approved equal. Ensure the VIVDS processor has at least four processing cores of 2.8 Gigahertz (GHz) or greater, a minimum of 3 Gigabyte (GB) random access memory (RAM), and at least 32 GB of onboard storage.

2. Functional Capabilities.

A. Provide system software that is able to detect either approaching or departing vehicles in multiple traffic lanes and have a minimum of 24 detector outputs per VIVDS processor. Ensure each zone and output is user definable through interactive graphics by drawing arbitrarily shaped polygons using the field setup computer or central control. Ensure the user is able to redefine previously defined detection zones.

B. Ensure the VIVDS processor provides real time vehicle detection (within 500 milliseconds (ms) of vehicle arrival).



C. Ensure the system can detect the presence of vehicles in up to 64 detection zones per camera.

D. Ensure detection zones are sensitive to the direction of vehicle travel and the direction to be detected by each detection zone is user programmable.

E. Ensure the VIVDS processor unit can compensate for minor camera movement (up to 2 percent of the field of view at 400 feet) without falsely detecting vehicles and that the camera movement is measured on the unprocessed video input to the VIVDS processor.

F. Provide a camera that operates while directly connected to VIVDS processor unit.

G. Ensure the video detection system operates with the monitoring equipment (monitor and/or laptop) disconnected or on-line once the detector configuration has been downloaded or saved into the VIVDS processor.

H. Ensure when the monitoring equipment is connected either directly or over Ethernet to the VIVDS processor, it can view vehicle detections in real time as they occur on the field setup computer's color video graphics adapter (VGA) display or the video monitor.

I. Provide a VIVDS processor that supports two (2) omnidirectional view cameras. If equipped with 1 omnidirectional view camera, ensure the VIVDS processor is also capable of simultaneously supporting up to four more traditional view cameras for special needs such as advance detection or underpass detection.

### 3. Vehicle Detection.

#### A. Detection Zone Placement.

(1) Provide a hemispherical video detection system with flexible detection zone placement anywhere within the combined field of view of the image sensors. Ensure that preferred presence detector configurations are arbitrarily shaped polygons, including simple boxes, drawn across lanes of traffic or placed in line with lanes of traffic.

(2) Ensure a single detector is able to replace one or more conventional detector loops.

#### B. Detection Zone Programming.

(1) Ensure that a graphical interface video image of the roadway is used for the placement of detection zones.

(2) Ensure the monitor shows images of the detection zones superimposed outlined or filled, with a visible change indicating detection on the video image of traffic while the VIVDS processor is running verifying proper operation of the detection system. Provide a VIVDS processor with a display that will indicate proper operation of the detection zones with the absence of video.

(3) Ensure the detection zones are created using the mouse or keypad to draw detection zones on the monitor and are capable of being sized and shaped to provide optimal road coverage and detection. Ensure that detector configurations can be uploaded

to the VIVDS processor and that the detector configuration that is currently running can be retrieved from the VIVDS processor.

(4) Ensure that the mouse or keypad can be used to edit previously defined detector configurations so as to fine tune the detection zone placement, size and shape. Ensure that detection continues to operate from the detector configuration that is currently called while fine-tuning is being done.

(5) Ensure that the hemispherical video detection system is sensitive to the direction of vehicle travel with the direction to be detected by each detection zone to be user programmable. Ensure the vehicle detection zone does not activate from cross-street traffic, wrong way traffic, or from a vehicle traveling any direction other than the one specified for detection occupies the detection zone.

(6) Ensure detection zones have the option for the user to define that calls can be made with a side entrance (90 degrees or less angled entrance).

C. Design Field of View. Ensure the hemispherical video detection system can reliably detect vehicle presence in the design field of view. Ensure the design field of view is defined as the sensor view when the image sensor is mounted 30 feet or higher above the roadway, when the camera is adjacent (within 15 feet) to the edge of the nearest vehicle travel lane, and when the length of the detection area is not greater than 5 times the mounting height of the image sensor. Within this design field of view, ensure the VIVDS processor unit is capable of setting up a single detection zone for point detection (equivalent to the operation of a 6 foot by 6 foot inductive loop). Ensure a single camera, placed at the proper mounting height, is able to monitor up to and including 5 traffic lanes simultaneously. Ensure a single omnidirectional camera, placed at the proper mounting height, is able to monitor detection zones in at least 4 intersection approaches.

D. Detection Performance. Ensure detection accuracy of the video detection system is comparable to properly operating inductive loops. Detection accuracy must include the presence of any vehicle in the defined detection zone regardless of the lane, which the vehicle is occupying. Occlusion produced by vehicles in the same or adjacent lanes is not considered a failure of the VIVDS processor, but a limitation of the camera placement. Ensure detection accuracy (a minimum of 95 percent) is enforced for the entire design field of view on a lane by lane and on a time period basis. When specified on the plans, furnish up to 24 continuous hours of recorded video of all installed intersection cameras within the 30 day test period for verification of proper camera placement, field of view, focus, detection zone placement, processor setup and operation. The video from each camera must show vehicle detections for all zones.

#### 4. VIVDS Processor.

A. Provide a VIVDS processor that is shelf mountable.

B. Provide a VIVDS processor that has a modular electrical design.

(1) The VIVDS processor must operate within a range of 89 to 135 volts alternating current (VAC), 60 Hertz (Hz) single phase. Ensure power to the VIVDS processor is from the transient protected side of the AC power distribution system in the traffic control cabinet in which the VIVDS processor is installed.

(2) Ensure communications to the field setup computer are through an Ethernet port. Ensure this port is able to download the real time detection information needed to show detector actuations.

(3) Ensure the VIVDS processor has all network and camera connections at the front of the unit.

(4) Ensure the change log for all software upgrades and/or changes are presented on a readily assessable internet site with unencumbered public access.

(5) The unit software and the supervisor software must include diagnostic software to allow testing the VIVDS functions. This must include the capability to set and clear individual detector outputs and display the status of inputs to enable setup and troubleshooting in the field.

C. Provide camera interface panel capable of being mounted to sidewalls of a controller cabinet for protection of the VIVDS processor and camera CAT5e connection. The panel must consist of, as a minimum, 2 CAT5e cable surge protection connections.

D. Environmental Requirements.

(1) Provide a VIVDS processor that is designed to operate reliably in the adverse environment found in the typical roadside traffic cabinet.

(2) Ensure that the VIVDS processor meets the environmental requirements set forth by the latest NEMA TS1 and TS2 standards as well as the environmental requirements for Type 170, Type 179 and 2070 controllers.

(3) Ensure the operating temperature is from -30 degrees Fahrenheit (F) to +165 degrees F at 0 percent to 95 percent relative humidity, non-condensing.

5. Hemispherical Camera Assembly.

A. Provide a hemispherical camera that:

(1) Uses high resolution, color image sensors as the video source for real time vehicle detection;

(2) Uses cameras that are approved for use with the VIVDS processor unit by the supplier of the hemispherical video detection system.

(3) As a minimum, provides the following capabilities:

(a) Ensure images are produced with a complementary metal-oxide semiconductor (CMOS) sensing element with horizontal resolution of at least 2580 lines and vertical resolution of at least 1920 lines. Ensure images are output in digital format as Motion Joint Photographic Experts Group (MJPEG) image.

- (b) Ensure the useable video and resolvable features in the video image are produced when those features have luminance levels as low 1.0 lux for color, for night use and as high as 10,000 lux during the day.
- (c) Ensure the camera includes an electronic shutter control based upon average scene luminance and is equipped with fixed field of view and fixed focus lens which does not require opening the camera enclosure. Ensure the fixed focus lens is always in focus without any required end-user adjustments.
- B. Provide a camera and lens assembly that is housed in an environmental enclosure that provides the following capabilities:
- (1) Ensure the enclosure is waterproof and dust tight to the latest NEMA 4 specifications.
  - (2) Ensure the enclosure allows the camera to operate satisfactorily over an ambient temperature range from -30 degrees F to +165 degrees F while exposed to precipitation as well as direct sunlight.
  - (3) Ensure the enclosure includes a provision for connection of the CAT5e cable. Ensure input power to the environmental enclosure is included in the Ethernet interface.
  - (4) Provides a thermostatically controlled heater at the front of the enclosure to prevent the formation of ice and condensation. The heater must not interfere with the operation of the camera electronics, and it must not cause interference with the video signal.
  - (5) Ensure the enclosure is light colored or unfinished and is designed to minimize solar heating. Any plastics used in the enclosure must include ultra violet inhibitors.
  - (6) Ensure the total weight of the image sensor in the environmental enclosure is less than 10 pounds.
  - (7) Provides waterproof quick disconnect connectors to the camera for the CAT5e connection.
  - (8) Provides camera mounting hardware that allows for vertical or horizontal mounting to the camera enclosure.
6. Field Communication Link.
- A. Provide a field communications link that supports a two way communications connection from the camera to the VIVDS processor.
- B. In locations where the plans indicate CAT5e cable is required as the primary communications link, ensure this cable is burial grade as well as suitable for above ground direct sunlight applications.
- C. Ensure all connection cables are continuous from the equipment cabinet to the camera connector.

D. Install lightning and transient surge suppression devices on the processor side of the field communications link to protect the peripheral devices. Ensure the suppression devices are all solid state. The devices must present high impedance to, and must not interfere with, the communications lines during normal operation. The suppression devices must not allow the peak voltage on any line to exceed 300 percent of the normal operating peak voltage at any time. The response time of the devices must not exceed 5 nanoseconds.

7. Warranty. Provide materials with a 3 year manufacturer's warranty, transferable to the City of Ann Arbor, that the supplied materials are free from all defects in materials and workmanship. Furnish the warranty and other applicable documents from the manufacturer, and a copy of the invoice showing the date of shipment, to the Engineer prior to acceptance.

**c. Construction.** Install and/or deliver the hemispherical video detection system and/or hemispherical video detection camera as indicated on the plans, in project log, or as directed by the Engineer. All work must comply with sections 819 and 820 of the Standard Specifications for Construction, the applicable "typical" signal construction detail, and this special provision. Storage and/or disposal of the removed material is included and must comply with section 204 of the Standard Specifications for Construction or as directed by the Engineer.

1. Ensure the hemispherical video detection system is installed as recommended by the manufacturer and documented in installation materials provided by the manufacturer.

2. Ensure the camera equipment is not installed until all other signal equipment has been installed and inspected for correctness. Premature installations of camera equipment that need to be moved in order to make the system operate will be moved at the Contractor's cost. This movement will not qualify for extra payment or for time extensions. Deliver the VIVDS processor to the City Signal shop for setup and installation in the controller cabinet.

3. Install the hemispherical video detection system as indicated on the plans which includes the VIVDS processor, hardware, fittings, cable, connectors, grounding and all other material required to complete the work.

4. Install the hemispherical video detection camera as indicated on the plans which includes the video detection camera, enclosure, mounting bracket, hardware, cable, connectors, and other material required to complete the work.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

<b>Pay Item</b>	<b>Pay Unit</b>
Hemispherical Video Detection Camera, Modified .....	Each
Hemispherical Video Detection Processor .....	Each
Hemispherical Video Detection Camera, Rem .....	Each

1. **Hemispherical Video Detection Camera, Modified** includes all labor, equipment, and all material required to furnish and install new hemispherical video detection camera, and SMK (smart mounting kit), as shown on the plans, in project log or as directed by the Engineer. This pay item does not include processor.

2. **Hemispherical Video Detection Processor** includes all labor, equipment, software, license and all material required to deliver a complete and operating VIVDS

processor, as shown on the plans, in project log or as directed by the Engineer. This pay item does not include camera.

3. **Hemispherical Video Detection Camera, Rem** includes removing hemispherical video detection camera from field intersection and delivering camera to City Signal Shop.

CITY OF ANN ARBOR  
SPECIAL PROVISION  
FOR  
**HMA, 3EML**  
**HMA, 5EML**  
**HAND PATCHING, MODIFIED**

DLZ:LCM

1 of 4

11/3/23

**a. DESCRIPTION** - This work shall consist of constructing HMA pavement base, leveling, and wearing courses, and hand patching, in accordance with Division 5 and Section 501 of the 2020 MDOT Standard Specifications, current supplemental MDOT specifications, and the City Standard Specifications, except as modified herein, and as directed by the Engineer.

**b. MATERIALS**

General - The HMA mixtures to be used for this work shall be as follows:

<u>WORK ITEM</u>	<u>THICKNESS</u>	<u>MDOT HMA MIXTURE #</u>
HMA Pavement Wearing	2.0"	5EML
HMA Pavement Leveling	3.0"	3EML
HMA Pavement Base Course	3.0"	3EML
Hand Patching (Permanent)	3"	3EML
Hand Patching (Temporary)	as directed	see note

Binders for the bituminous mixes shall be PG 64-28 or as directed by the Engineer and shall meet the requirements specified in Section 904 of the 2020 MDOT Standard Specifications, and any current supplemental MDOT specifications.

Bond coat shall be an emulsified asphalt Type SS-1h and shall meet the requirements specified in Section 904 of the 2020 MDOT Standard Specifications, and any current supplemental MDOT specifications.

The use of Marshall Mixes and Cold Patch will be acceptable for use in Hand Patching for areas identified as temporary pavement, at the approval of the Engineer.

The Aggregate Wear Index (AWI) number for this project is 260. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

Recycled Asphalt Pavement (RAP) in HMA Mixtures - The use of Recycled Asphalt Pavement (RAP) in HMA mixtures shall be in accordance with Section 501.

02. A. 2 of the 2020 MDOT Standard Specifications, and the City of Ann Arbor Standard Specifications.

**c. CONSTRUCTION METHODS** - All concrete work shall be completed prior to placing HMA mixtures.

The Contractor shall have a 10-foot long straight-edge, backhoe, air-compressor and jackhammer available during all paving operations.

Prior to placing the bond coat, the Contractor shall kill all vegetation (within the area to be paved) by applying an approved weed killer ("Round-Up" by Monsanto, or equal), shall thoroughly clean all joints & cracks in the existing pavement (and any gutter to be overlaid) with compressed air and/or vacuum-type street cleaning equipment to remove all dirt and debris to a depth of at least 1-inch, and shall thoroughly clean the entire surface to be paved, with a Vac-All or similar vacuum-type street cleaning equipment.

MDOT SS-1h bond coat shall be applied at a uniform rate of 0.10 gallons/square yard, on all exposed, existing HMA and concrete surfaces which will come in contact with the new HMA material. The Contractor shall take extra care to avoid covering surfaces which are not to be paved. After September 15, SS-1h bond coat shall not be diluted by more than 25%.

The Contractor shall place HMA wedges using the base, leveling, and wearing mixtures specified herein, as directed by the Engineer, prior to placing the wearing course. Such wedging shall be measured and paid for at the respective unit price of the appropriate HMA Pavement item.

Construction of butt joints, where directed by the Engineer, shall be measured and paid for as "Machine Grading Modified."

The Contractor shall construct the pavement courses to provide the final cross-slopes (crowns) specified by the Engineer.

The Contractor shall construct feather joints, and shall feather the leveling and wearing courses at structures, in drive approaches, and at intersection joints, as directed by the Engineer. Feather joints shall vary the thickness of the asphalt from 0.0-inches to the required full paving thickness (approximately 1½-inches) over a 5-foot to 15-foot distance, or as directed by the Engineer. The Contractor shall rake all large aggregates out of the HMA mixture in feather joints, prior to compaction.

The Contractor shall provide a minimum of two rakers during the placement of all wearing and leveling courses. Further, the Contractor shall provide, when directed by the Engineer, a second "Break-Down" roller in order to achieve the specified asphalt densities.

The Contractor shall provide a minimum of 24-hours' notice to the Engineer prior to paving and shall obtain a "Permit To Pave" from the Engineer in advance of scheduling paving.

The Contractor and Engineer shall carefully observe the paving operation for signs of faulty mixtures. Points of weakness in the surface shall be removed or corrected by the Contractor, at his/her expense, prior to paving subsequent lifts of HMA material. Such corrective action may



include the removal and replacement of thin or contaminated sections of pavement, including sections that are weak or unstable. Once the Contractor or his representative is notified by the Engineer that the material being placed is out of allowable tolerances, or there is a problem with the paving operation, the Contractor shall stop the paving operation at once, and shall not be permitted to continue placing HMA material until again authorized by the Engineer. Substandard work that, in the Engineer's opinion, requires removal and replacement, shall be completed as follows:

1. Remove and replace leveling and/or wearing course areas mixed with foreign materials and defective areas.
2. Sawcut full depth of existing pavement in perpendicular and parallel directions to adjoining surfaces to ensure a quality and aesthetically pleasing repair.
3. Replacement may need to extend beyond the area of repair. Cut out such areas and fill with fresh, hot mix asphalt.
4. Compact by rolling to specified density and smoothness.
5. Sawcut or route new joint and fill with specified Hot Poured Rubber Joint Sealer product.

During the placement of leveling and wearing courses, the speed of the paving machine(s) shall not exceed 50-feet per minute.

The Contractor shall furnish and operate enough materials and equipment so as to keep the paving machine(s) moving continuously at all times. Failure to do so shall be cause for the suspension of the paving operation until the Contractor can demonstrate to the satisfaction of the Engineer, that sufficient resources have been dedicated to perform the work in accordance with the specifications.

Each layer of HMA mixture shall be compacted to between 92 to 96 percent (or as determined acceptable by the Engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula.

- d. MEASUREMENT AND PAYMENT** - Measurement of these HMA paving items shall be by the ton, in place. Unused portions of material loads shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

The bond coat is included in the cost of the HMA Pavement Item.

Corrective action shall be enforced as described at Division 5 of the 2020 MDOT Standard Specifications and will be based on the City's or DDA's testing reports.

All costs for furnishing and operating vacuum-type street cleaning equipment, backhoes, jackhammers, and air compressors shall be included in the bid prices for these items of work or in the item of work "General Conditions."

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
All HMA Pavement Items .....	Ton

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this detailed Specification.

Payment Adjustment In Lieu Of Repair/Replacement - In the case that the work that is installed does not meet the specified quality of materials or installation, the DDA may opt to require the full removal and replacement of the substandard work, or, at their discretion, use the formulas listed below to reduce payment for the work.

A. Pavement Compaction:

1. Pavement

- a. If the daily average in place density is less than 94%, but greater than 93% of the mixture theoretical maximum density (TMD) the paving will be evaluated by the Engineer and Owner and at Owner’s discretion, the unit price of that days paving will be reduced to 90% of full payment.
- b. If the daily average in place density is less than 93% but greater than 92% of the mixture TMD the paving will be evaluated by the Engineer and Owner and at Owner’s discretion may either be removed or the unit price of that days paving will be reduced to 75% of full payment.
- c. If the daily average in place density is less than 92% of the mixture TMD the paving will be removed and replaced at no cost to Owner.

CITY OF ANN ARBOR  
SPECIAL PROVISION  
FOR  
**STREETLIGHT, REMOVE  
LUMINAIRE INSTALLATION  
POLE INSTALLATION  
POLE FIT-UP**

DLZ:LCM

1 of 7

09/16/22

- a. DESCRIPTION** - This work shall include the furnishing, installation and testing of the street lighting fixtures at the locations shown in the plans, and as directed by the Engineer to provide a complete working system ready for use. All work shall be completed in accordance with the National Electric Code (NEC), Section 819 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, and as specified herein.

Any costs associated with the obtaining a permit for the electrical work will be paid for by the Contractor, at no additional expense to the City.

- b. MATERIALS** - The Contractor shall furnish all materials and equipment required to install and place in operation Street Light Fixtures. All materials shall meet the requirements of the current IEEE, NEMA, ANSI Standards as applicable, MDOT 2020 Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, and as specified herein. All electrical components shall be furnished new and be listed by, and bear the label of Underwriter's Laboratories, Inc.

Street light fixtures shall be installed complete with wiring from the base to the luminaires including pole base fuse holders. Wiring installed in lighting standard poles between luminaires and taps in base shall be copper conductors type "XHHW" No. 10 AWG minimum, in conduit.

Cable and wire shall be manufactured by:

Collyer	Hatfield	Reynolds	
Essex	Kaiser	Rome	
Anaconda	General Cable	Okonite	Southwire
Cerro	General Electric	Phelps Dodge	Triangle

Conductors are to match the sizes of the wires being replaced, unless otherwise specified to be larger herein, or directed by the Engineer.

The connection of conductors from size #12 AWG and larger to terminal parts or other conductors shall be made with heavy-duty cast alloy solderless connectors of the pressure double indent type. Tap connectors at light standards shall be multiple aluminum connector with four positions for #2 AWG copper and a 5th position for #12 AWG or larger fixture wire. Connectors shall be Utilco Catalog No. SLC-4-0-1-L with cover for tap block.

Ground rods shall be copper clad steel, and shall be either two 1/2-inch diameter round by

6-foot long rods, or one 5/8-inch diameter round by 8-foot long rod, as shown on the plans.

Fuse holders shall be watertight, in-line, break-away type, 30A, 600V with insulating boots. Install one fast-acting fuse per phase conductor. Fuses shall be five ampere and/or sized for the fixtures being protected.

Provide 20A, 125VAC NEMA type 5-20R ground fault circuit interrupter (GFCI) receptacle with solid-state ground fault sensing and circuit interrupter Class A, Group 1. Per UL standard 943-2003, manufacturer after January 1, 2003 and five milliamperes ground fault trip level. Receptacles must be rated for outdoor use and meet current code requirements for the intended application.

Pole Fit-Up shall use 2-inch hot dipped galvanized ridged metal conduit and sweep (ERMC-S), rated at 350 pounds per 100 linear feet, in conformance with ANSI C80.1. Hold conduit in place with galvanized steel one-hole strap, rated for heavy duty use for exterior applications. All hardware to be hot dipped galvanized steel.

All fasteners shall consist of stainless steel tamperproof screws, bolts, nuts, washers, etc. All anchor bolts and associated washers, nuts, studs, and couplings shall conform to the requirements of the Michigan Department of Transportation 2020 Standard Specifications for Construction, Section 908.14, and shall be galvanized in accordance with ASTM A-153 or as noted on the Drawings.

Prior to beginning construction, the Contractor shall submit to the Engineer product data sheets and Manufacturer's certifications of all wiring, splices, lamps, rods, base plates, anchor bolts, and other parts used in the construction of the light and pole assembly. Certifications shall indicate that all materials meet the minimum requirements of these specifications.

For each submittal or resubmittal, the Contractor shall allow at least 14 calendar days from the date of the submittal to receive the Engineer's acceptance or request for revisions. The Engineer's comments shall be incorporated into the submitted plans, calculations and descriptions. The Engineer's acceptance is required before beginning the work. Resubmittals shall be reviewed and returned to the General Contractor within 14 calendar days. Required revisions will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Contractor shall include time for this entire review process in his/her schedule.

- C. CONSTRUCTION METHODS** - The Contractor shall provide temporary street lighting during the entire construction period, providing the equivalent of half of the current light levels on the street, either through the use of existing streetlights, installed lights as specified, or other temporary equipment and measures.

Remove conduits and wires as indicated in the plans and specifications, and where the

existing wires are replaced by new wires. Unused and unnecessary conduit that is located in undisturbed soils may remain in place.

The Contractor shall provide all labor, materials, tools, equipment, and supervision required for the furnishing and installing of the street lighting fixtures and new GFCI outlets. Connections to equipment, lighting standards, contactors, etc., shall be made in accordance with applicable building and electrical codes and the recommendations from manufacturers of the particular equipment furnished. Any and all additional connections called for by the equipment manufacturer's or otherwise required for the successful operation of the particular equipment furnished shall be installed by the Contractor as part of his Contract with no additional compensation.

The Contractor shall examine all fixtures and poles delivered to jobsite prior to installation to ensure all specification requirements and shop drawing notes & comments have been incorporated by manufacturer. Installation of fixtures signifies Contractor's acceptance and approval of fixtures from manufacturer.

Contractor must provide adequate storage space for all electrical equipment, conduit, and materials delivered to the job site under a weather-protected enclosure. Location of the space must be approved by the Engineer. Equipment set in place in unprotected areas must be provided with temporary protection.

The Contractor shall be responsible for maintenance of, and repair of damage as a result of accident or vandalism to, the light fixtures, bases, luminaries, and all other materials installed, or to be installed, related to, or necessary for the light fixture and pole installation on the project. This shall remain the Contractor's responsibility until the installation is complete, tested, and accepted by the Engineer.

All connections shall be per the manufacturer's recommendation. Where Utilco connections are not used, all joints in outlet or junction boxes shall be taped in such manner that the insulating value of the joint or splice will be at least equal to the insulating value of the conductor to which it is applied.

Wire brush and apply approved corrosion inhibiting compound all connections.

Ground cables shall be #6 AWG, soft drawn, bare, stranded copper wire. Pressure-type connectors shall be used to connect the ground cable to poles and electrical equipment. The cable shall be properly attached to the ground rods.

All fixtures and poles shall be thoroughly and permanently grounded at each location. Grounding shall be in accordance with the latest National Electric Code and as shown on the Drawings, as a minimum. At the disconnect cabinet, the Detroit Edison neutral, the disconnect cabinet, and the ground mat system shall all be permanently grounded together. The

resistance of the ground rod to ground shall not exceed 25 ohms when tested with a megger. In case the resistance is more than 25 ohms, additional or longer ground rods shall be installed.

Install concrete poles foundation where indicated on the drawings. Base of the foundation is to rest on undisturbed subgrade or on 21AA Limestone Aggregate (or pea stone) compacted to not less than 98% of its maximum unit weight. Backfill pole foundation with 21AA Limestone Aggregate (or peas stone) in 6 to 8 inch lifts, compacting each lift as the hole is filled. Precast concrete pole shall be set plumb and in- line with existing poles, with no more than one-half inch deviation from plumb in any direction.

All excavation for main conduit runs shall be of a depth to leave at least 30 inches from the top of the conduit encasement or top of direct buried rigid conduit to grade of top of curb or surrounding terrain. For lateral flexible conduit, the corresponding dimensions shall be 30 inches. The trench shall be graded to handhole and pole location so that the finished conduit run will contain no pockets where water might accumulate or drain into a handhole or pole.

Conduit shall be cut with a hacksaw or other approved tool. The ends shall be square after cutting and the conduit shall be reamed. All conduits must be securely fastened to boxes with locknuts and bushings of an approved make, care being taken that the full number of threads project into the bushings. Rigid galvanized conduit shall be assembled by means of approved threaded galvanized coupling, unions, and fittings. PVC conduit shall be assembled by means of approved threaded or solvent-welded fittings.

Conduits which are installed underground or concealed in concrete, foundations, or other structures, shall be cleared of foreign material and obstructions, after installation and before conductors or pull wire are drawn in, by wire brushing, swabbing and employing an iron or hardwood mandrel which is 1/4" smaller in diameter than the internal diameter of the duct or conduit.

Conduits shall be cut a minimum of 1 inch above the light pole base and not more than 2 inches above the base.

Cable shall be pulled into conduits using a proper cable grip for the purpose. The cable shall be so handled that it is not subjected to excessive strain or kinked when pulled through the conduit. Damaged or kinked cable shall not be used. Where more than one cable is to be installed in a conduit, all cables shall be pulled through simultaneously. Splices in ducts and conduit will not be permitted.

Cables shall be neatly racked and identified on cable racks in all handholes after being formed to their final position. Cables shall be racked slightly higher than the duct entrances so that they will not rest on the edges of the duct. Cables shall be properly tagged in all handholes and poles. All splices and connections shall be made as described herein and as

shown on the details. Where cable is installed but not immediately spliced, the cable ends shall be thoroughly sealed and racked out of the way of possible danger.

Conductors shall not be installed in conduit until all work which might cause damage to the conduits or cables has been completed. Street light conductors shall be installed in continuous lengths from light to light with connections in the base of lights or street light pull boxes. All splices shall be accessible through the pole handhole and shall extend 4"-6" outside the handhole. No splices will be allowed which are inaccessible inside the pole. Street lighting splices required in ground handholes shall be terminated using splice kits that insulate, seal, and protect the splices.

Printed color code phase identification shall be repeated at all connections. The printing of the conductor coding shall be repeated at all connections. The printing of the conductor coding shall adhere to covering and not be readily removed by rubbing.

Where Utilco connections are not used, all joints in outlet or junction boxes shall be taped in such manner that the insulating value of the joint or splice will be at least equal to the insulating value of the conductor to which it is applied.

Pole Fit-Up shall use 2-inch conduit (ERMC-S) from below grade to top of fit up, which is to be 10 feet above grade. Use galvanized ERMC-S sweep and conduit to provide underground feed from fit up to power cabinet. Install threaded conduit fittings between sections pursuant to the NEC. Hold conduit in place on pole with galvanized steel one-hole strap, spaced as need to secure conduit, but not more than 3 feet on center. Secure strap to pole with galvanized lag screws, sized as recommended by manufacturer.

All trenching and backfilling to install electrical work shall be by the Electrical Contractor. When backfilling the trenches under areas to be paved and around street light foundations, the earth must be compacted in place (in 6-8" layers) to 95% of the material's maximum dry density.

Any excess excavated native material that cannot be placed back into the trench from which it came is to be disposed of as detailed in the special provision entitled "Non Hazardous Contaminated Material". Any excess excavated fill material placed as part of this project is to be used or "wasted" on site as directed by the Engineer. If it is unable to be incorporated into the final work, at the sole discretion of the Engineer, the excess excavation shall be disposed of offsite at no additional cost.

The use of equipment, or any part thereof, for purposes other than testing, even with the Engineer's consent, shall not be construed to be an acceptance of the work on the part of the Engineer, nor shall it be construed to obligate the Engineer in any way to accept improper work or defective materials.

Upon completion of the underground work, the Contractor shall grade the work area smooth, filling any trench settlements, eliminating any large piles of earth and cleaning up any debris, or left-over construction materials and disposing of it offsite at an approved manner and location.

All factory finished equipment shall be cleaned at the completion of the work by the Contractor. Equipment showing marks or rust shall be refinished by the Contractor in a manner acceptable to the Engineer.

- d. MEASUREMENT AND PAYMENT** - The cost of providing temporary street lighting as specified herein shall not be paid for separately.

The completed work shall be paid for at the contract unit price for the following contract items (pay items):

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Streetlight, Remove.....	Each
Luminaire Installation .....	Each
Pole Installation.....	Each
Pole Fit-Up .....	Each

**“Streetlight, Remove”** shall be paid for at the Contract unit price each and shall include all labor, equipment, and materials, including, but not limited to excavation of pole foundation, removal of light pole fixture, and attached appurtenances, complete removal of the concrete foundation, and disposal of the light fixtures, poles and attached appurtenances, and backfilling the excavation with MDOT Class II fill, compacted in 6 inch layers to 95 % dry weight density.

**“Luminaire Installation”** shall be paid for at the Contract unit price each and shall include all labor, equipment, and materials, including, but not limited to luminaries, arms, new wiring from the base of the pole to the fixture and outlet, cable splicing, fittings, supports, hangers, connectors, tape, fuses, grounding equipment; new water proof outdoor rated GFCI outlets, and, any other materials required for complete installation of the light fixture and outlet onto the light pole and its foundation; all required testing; and, placing light fixtures and pole assemblies into service.

**“Pole Installation”** shall be paid for at the Contract unit price each and shall include all labor, equipment, and materials including, light pole, foundation, setting pole and anchor bolts and backfill. Install the pole such that the handhole is on the opposite side of vehicle traffic (i.e., a person accessing the handhole would be facing the traffic).

**“Pole Fit-Up”** shall be paid for at the Contract unit price each and shall include all labor,



equipment, and materials, including, but not limited to conduit installed to utility pole, sweeps, underground conduit from pole to power cabinet, hardware, fittings, and all other work and materials to make fit up. Contractor will be considered complete with this pay item once City of Ann Arbor has accepted the fit up for use. This pay item does not include wire, or installation of wire.

CITY OF ANN ARBOR  
SPECIAL PROVISION  
FOR  
**ELECTRICAL AND COMMUNICATION HANDHOLES**

DLZ:LCM

1 of 2

09/16/22

**a. Description.** This work shall consist of furnishing and installing handhole assemblies at the locations shown in the Plans, or as directed by the Engineer. All work shall be completed in accordance with the current National Electric Code (NEC), section 818 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as specified herein.

The Contractor shall excavate all trenches and pits to the required dimensions; sheet, brace, and properly support the adjoining ground or structures where necessary to comply with MIOSHA, Section 104.07.B of the MDOT 2020 Standard Specifications for Construction, and other relevant safety standards.

The work for all items shall include, but not be limited to; pavement saw-cutting; excavation and disposal of excavated material; the furnishing, installation, and removal of sheeting and/or shoring where needed; all items necessary for the protection of the trench and all persons employed in the work during the work day and "after-hours" periods; the furnishing, placement and compaction of approved bedding and backfill materials; additional labor and equipment costs associated with any required nighttime water main work; and any other required items to complete the work as shown on the plans, as detailed in this Detailed Specification, and as directed by the Engineer.

**b. Materials.** All materials shall be new and meet the requirements of the current IEEE, NEMA, ANSI Standards as applicable, and as specified herein.

The Contractor shall submit product data sheets for all conduit, handholes, covers and other parts for Engineer approval prior to ordering materials. The manufacturer "Quazite Composolite," referenced below, is located in Lenoir City, Tennessee.

17 inch x 30 inch handhole assemblies shall consist of two, stacked "Quazite" boxes. The box shall be #PG1730BA18. The cover shall be, #PG1730HA46, a locking heavy-duty bolt-down type with a logo that reads "Traffic Signal" or "Street Lighting" based on their intended use. The total depth of the handhole shall be 18 inches.

If directed by Engineer to stack the handholes for additional depth, the model used for the lower box shall be compatible with those specified herein and meet the same strength requirements.

Provide Granular Material, Cl II in accordance with section 902 of the MDOT 2020 Standard Specifications for Construction.

**C. Construction.** Handholes shall be placed at all junctions of traffic signal or electrical conduit, and as shown on the plans. Maximum distance between any two handholes shall be as shown on the Plans, but in no case shall exceed 500 feet.

Place foundation material consisting of four (4) inches of Granular Material, Cl II compacted to 95% of its maximum unit weight.

Set the handhole or stacked units to the proper depth and elevation.

Connect handholes to new and existing conduits, whether shown on the plans or not. All conduits shall be connected to the handholes in accordance with the latest revision of Article 346 of the National Electrical Code (NEC).

Backfill around the perimeter of the handhole with Granular Material, CI II compacted to 95% of its maximum unit weight.

Handhole Adjust, Any Size includes the vertical adjustment, either upwards or downwards, of an existing handhole to remain to meet proposed pavement grades and slopes.

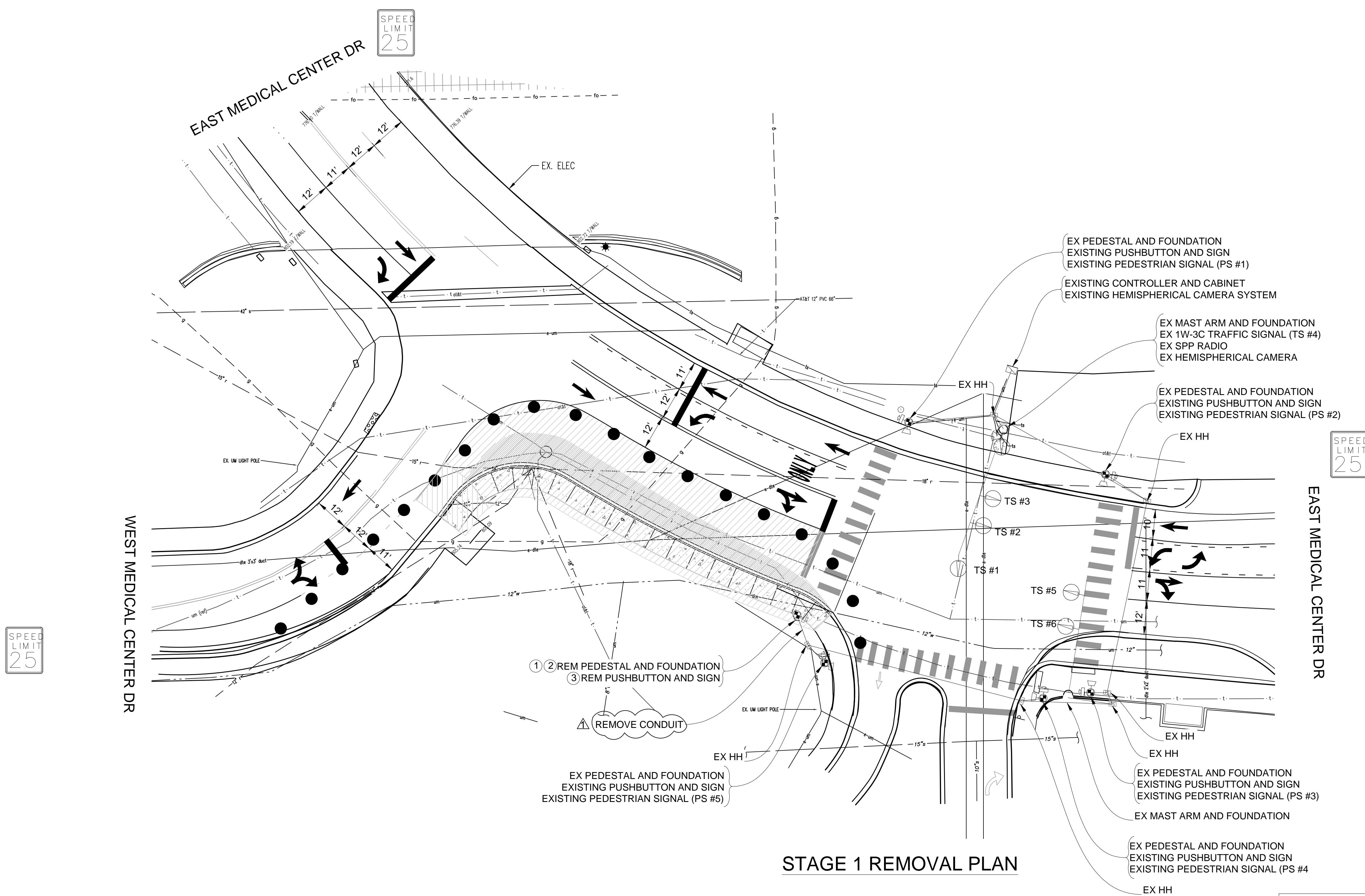
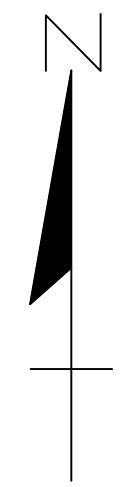
- d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit prices for the following pay items:

<b>Pay Item</b>	<b>Pay Unit</b>
Handhole Assembly, _____ inch x _____ inch	.....Each
Handhole Adjust, Any Size .....	Each

Handhole Assembly, \_\_\_ inch x \_\_\_ inch shall be paid for at their contract unit prices and shall include all labor, equipment, and materials to complete the work as specified herein. The pay item shall also include the excavation and disposal of materials, furnishing, installing and compacting Granular Material, CI II, and all work related to connecting handholes to new and existing conduits, whether shown or not shown on the plans.







**STAGE 1 REMOVAL PLAN**

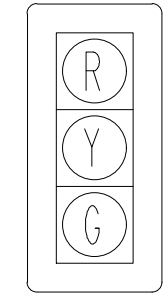
CONTRACTOR TO UTILIZE MOT TYPICAL A FOR INSTALLATION OF TEMPORARY SIGNALS PRIOR TO STAGE 1

TIME OF BAGGING AND UNBAGGING OF TRAFFIC SIGNALS TO BE AS DIRECTED BY THE ENGINEER.

NOTE:  
PLANS HAVE BEEN PREPARED WITHOUT THE AIDE OF RECORD DRAWINGS AND ARE SOLEY BASED ON FIELD OBSERVATIONS. CONDUIT SIZE IS UNKNOWN. CONTRACTOR TO VERIFY ANY CONDUIT AND CABLE ROUTING BEFORE ORDERING ANY MATERIAL OR MAKING ANY CHANGES

**SIGNAL HEADS**

- TS #1
- TS #2
- TS #3
- TS #4
- TS #5
- TS #6



LIST OF MATERIAL		
NO.	ITEM	QUANTITIES
①	Pedestal Fdn, Rem	1 Ea
②	Pedestal, Rem	1 Ea
③	Pushbutton, Rem	1 Ea
	Conduit, Rem	12 Ft

_SIGNALS_	
OPENINGS:	55
CYCLIC WATTS:	733
STEADY WATTS:	45

3 WORKING DAYS!  
**BEFORE YOU DIG**  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

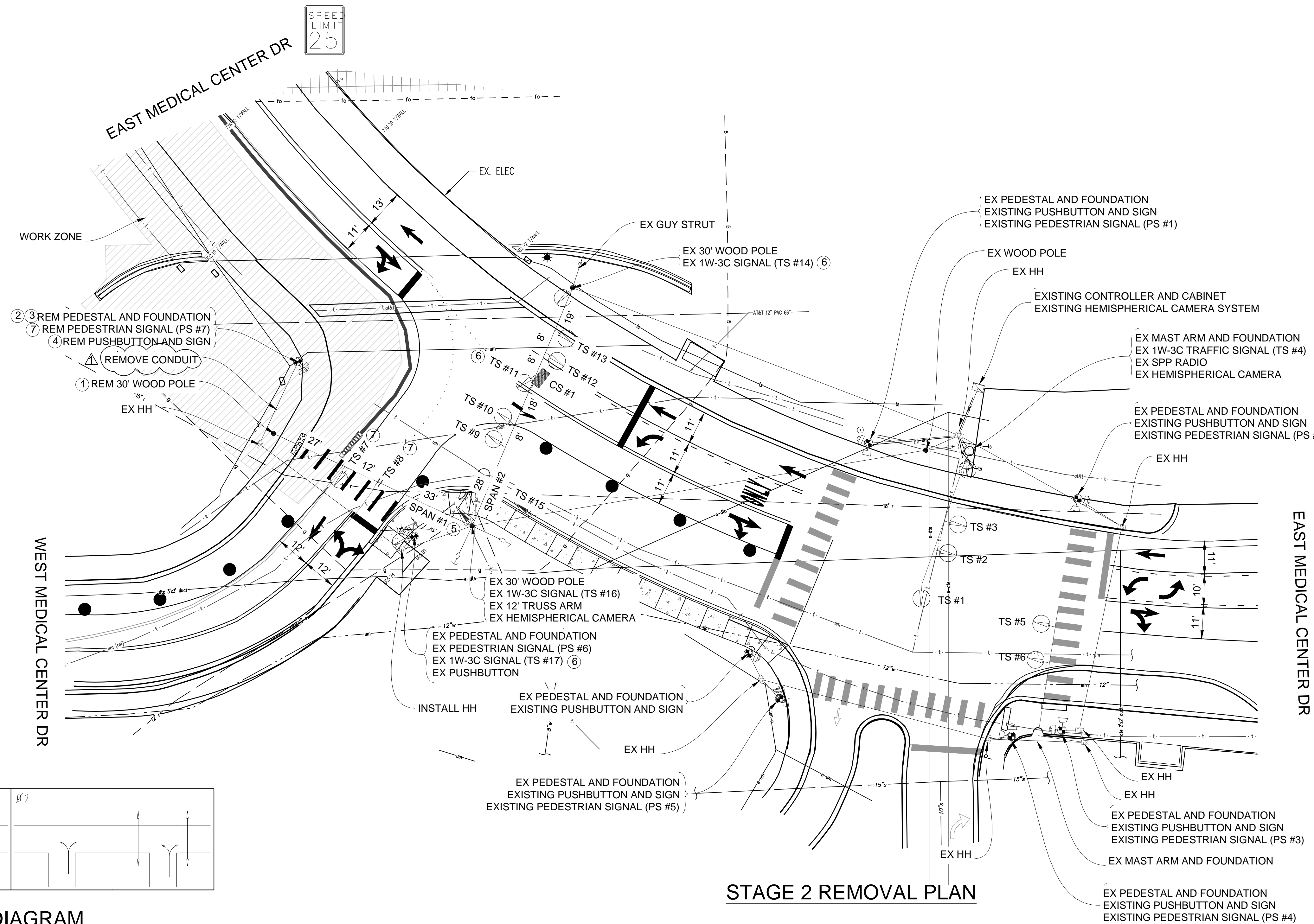
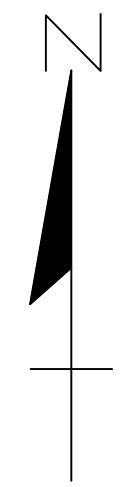
**LEGEND**

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	EXISTING RD. & GRADE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
- - - - -	- S -	- t -	- - - - -	- S -	- - - - -
- CONTOUR	- UTILITY POLE & GUY	- GAS LINE	- LEFT EDGE/RD. GRADE	- STORM SEWER & CAT. BAS.	- SEE ABOVE
- 847 -	- FIRE HYDRANT ASSEMBLY	- CABLE T.V.	- RIGHT EDGE/RD. GRADE	- WATER MAIN W/F.H. ASSEM.	- BENCH MARK
- r -	- LIGHT POLE	- ELECTRIC	- CURB & GUTTER	- CONTOUR	- SURVEY BOOK
- W -	- END SECTION	- SIGN	- EDGE/GRAVEL	- 847 -	- REV. NO.
- W -					- DESCRIPTION

<b>DLZ</b>				
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
ADDENDUM #1		11-3-23	BP	LCM
ORIGINAL ISSUE		10/6/23	INB	LCM

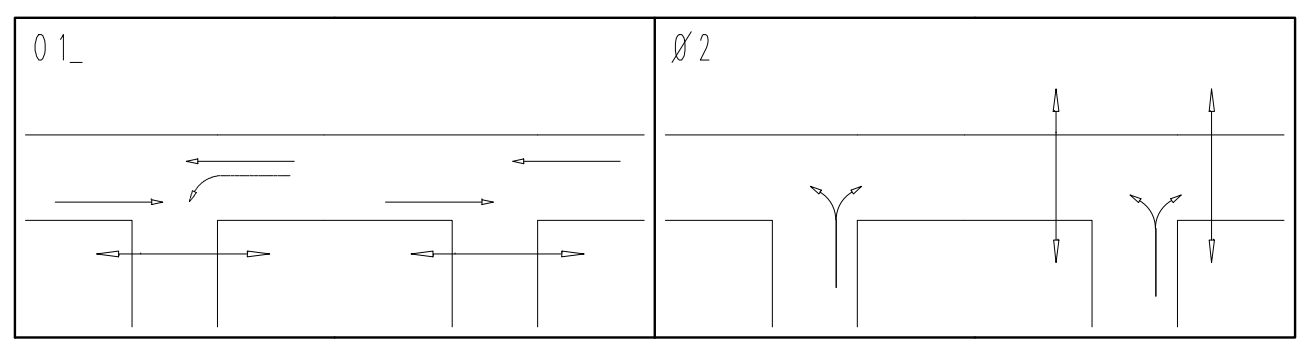
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
E. MEDICAL CENTER DRIVE TRAFFIC SIGNAL PLANS FULLER RD AT E. MED. CENTER RD STAGE 1	
SCALE 1"=20'	INCH 0 1
DRAWING NO. 2021-008-MOT34	
SHEET NO. 38 OF 155	





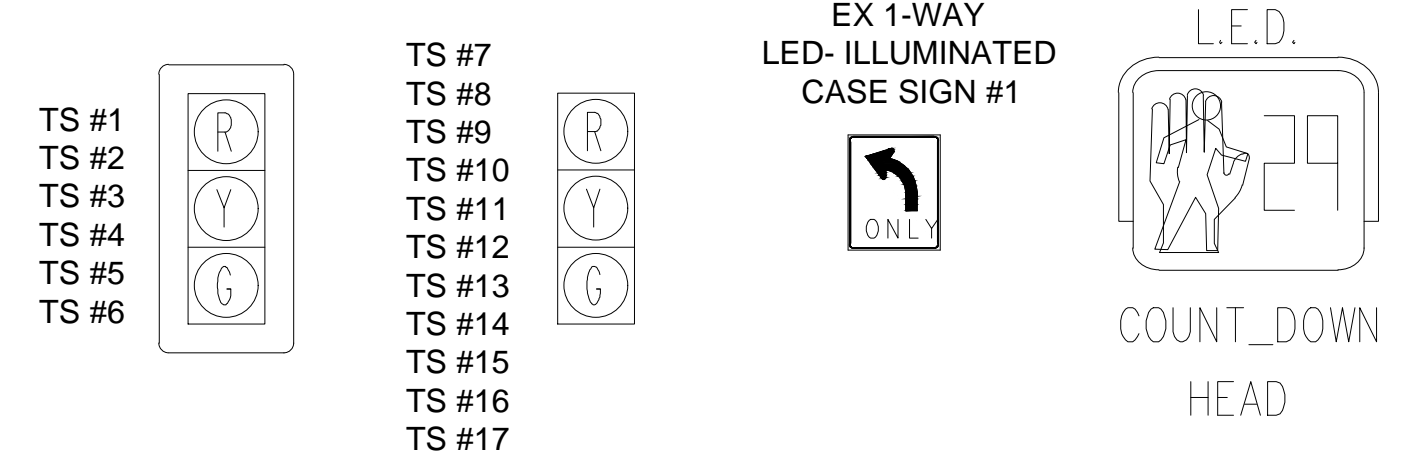
SPEED LIMIT 25

SPEED LIMIT 25



PHASE DIAGRAM

SIGNAL HEADS



LIST OF MATERIAL		
NO.	ITEM	QUANTITIES
1	Wood Pole, Rem	1 Ea.
2	Pedestal Fdn, Rem	1 Ea.
3	Pedestal, Rem	1 Ea.
4	Pushbutton, Rem	1 Ea.
5	Span Wire, Rem	1 Ea.
6	TS Face, Bag, Rem	3 Ea.
7	Remove Traffic Signal (Paid for Under "TS Head, Temp")	3 Ea.
	Conduit, Rem	30 Ft.

CONTRACTOR TO UTILIZE WORK ZONES AND LANE CLOSURES FOR INSTALLATION OF TRAFFIC SIGNALS PRIOR TO STAGE 2

TIME OF REMOVAL OR ADJUSTMENT OF TRAFFIC SIGNALS TO BE AS DIRECTED BY THE ENGINEER

TIME OF BAGGING AND UNBAGGING OF TRAFFIC SIGNALS TO BE AS DIRECTED BY THE ENGINEER.

NOTE: PLANS HAVE BEEN PREPARED WITHOUT THE AIDE OF RECORD DRAWINGS AND ARE SOLELY BASED ON FIELD OBSERVATIONS. CONDUIT SIZE IS UNKNOWN. CONTRACTOR TO VERIFY ANY CONDUIT AND CABLE ROUTING BEFORE ORDERING ANY MATERIAL OR MAKING ANY CHANGES

SIGNALS	
OPENINGS:	52
CYCLIC WATTS:	690
STEADY WATTS:	15

3 WORKING DAYS BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

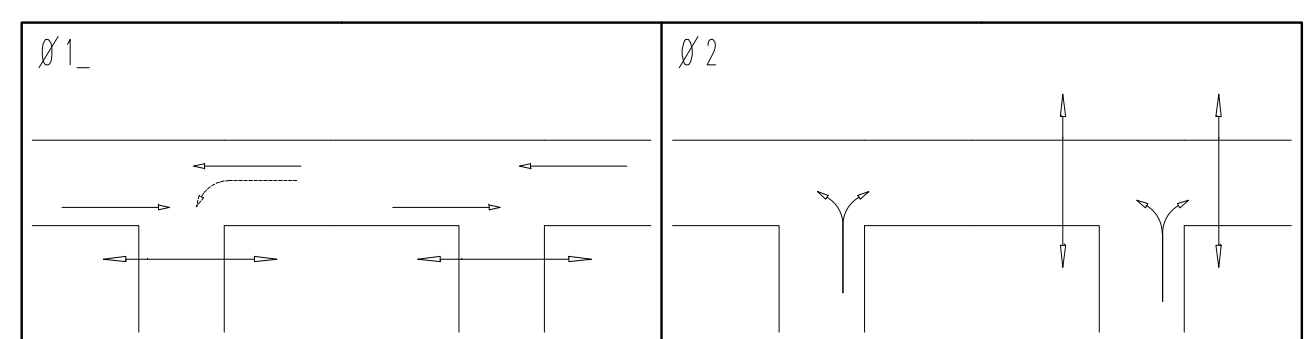
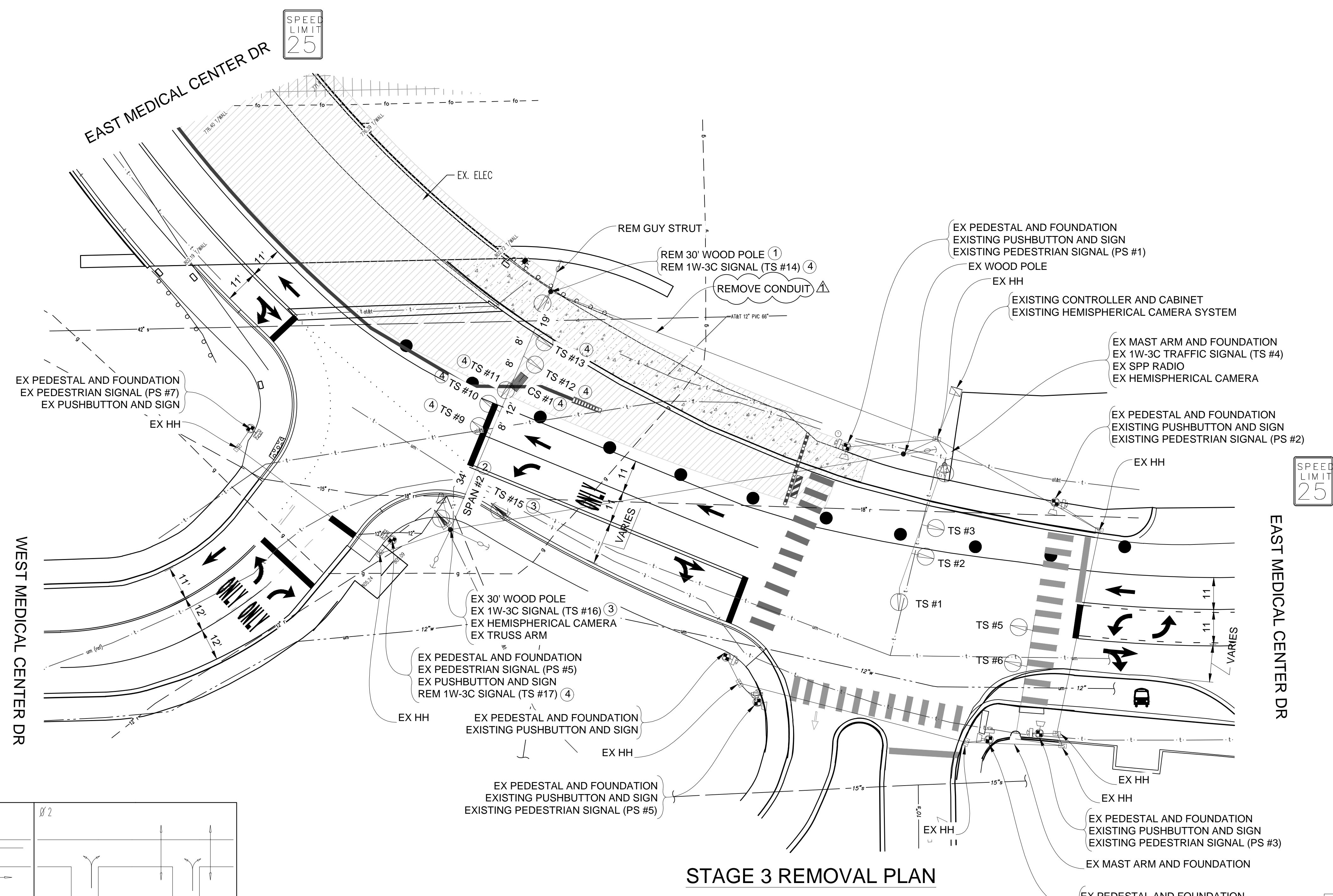
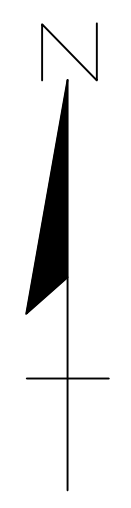
LEGEND

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	EXISTING RD. & GRADE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
CONTOUR	UTILITY POLE & GUY	GAS LINE	LEFT EDGE/RD. GRADE	STORM SEWER & CAT. BAS.	SEE ABOVE
STORM SEWER & CAT. BAS.	FIRE HYDRANT ASSEMBLY	CABLE T.V.	RIGHT EDGE/RD. GRADE	WATER MAIN W/F.H. ASSEM.	BENCH MARK
WATER MAIN & VALVE-IN-WELL	LIGHT POLE	ELECTRIC	CURB & GUTTER	CONTOUR	SURVEY BOOK
WATER MAIN & VALVE-IN-BOX	END SECTION	SIGN	EDGE/GRAVEL	ROAD & GRADE	REV. NO.

DLZ				
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
ADDENDUM #1		11-3-23	BP	LCM
ORIGINAL ISSUE		10/6/23	INB	LCM

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR			
E. MEDICAL CENTER DRIVE TRAFFIC SIGNAL PLANS FULLER RD AT E. MED. CENTER RD STAGE 2			
SCALE	1"=20'	INCH	
DRAWING NO.	2022-008-MOT38		
SHEET NO.	42 OF 155		





PHASE DIAGRAM

STAGE 3 REMOVAL PLAN

LIST OF MATERIAL		
NO.	ITEM	QUANTITIES
①	Wood Pole, Rem	1 Ea.
②	Span Wire, Rem	1 Ea.
③	TS Face, Bag, Rem	2 Ea.
④	Remove Traffic Signal (Paid for Under "TS Head, Temp")	8 Ea.
	Conduit, Rem	160 Ft.

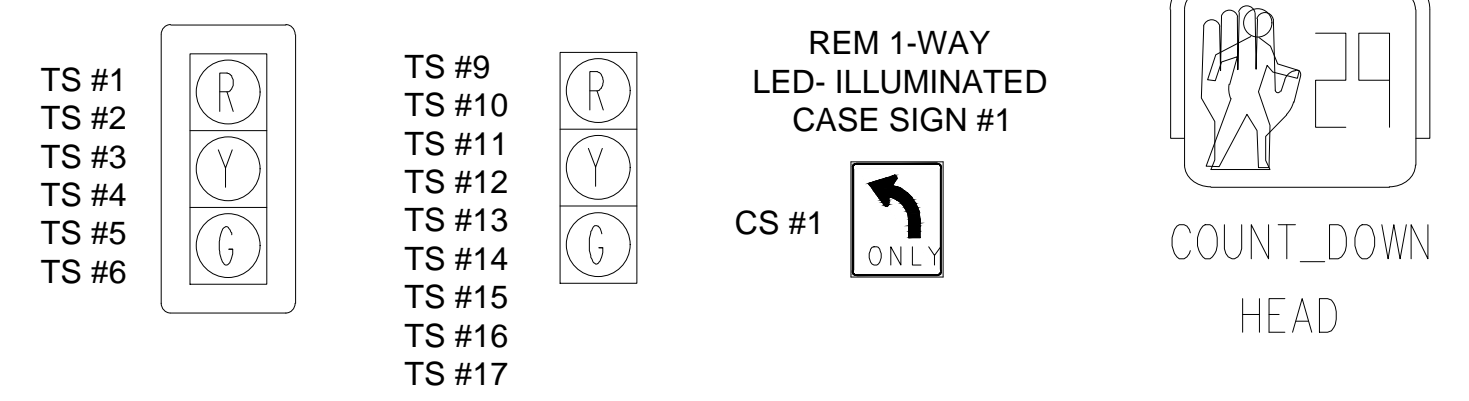
CONTRACTOR TO UTILIZE WORK ZONES AND MOT TYPICAL 163-INT-LD-OUT FOR INSTALLATION OF TRAFFIC SIGNALS PRIOR TO STAGE 3

TIME OF REMOVAL OR ADJUSTMENT OF TRAFFIC SIGNALS TO BE AS DIRECTED BY THE ENGINEER

NOTE: PLANS HAVE BEEN PREPARED WITHOUT THE AIDE OF RECORD DRAWINGS AND ARE SOLEY BASED ON FIELD OBSERVATIONS. CONDUIT SIZE IS UNKNOWN. CONTRACTOR TO VERIFY ANY CONDUIT AND CABLE ROUTING BEFORE ORDERING ANY MATERIAL OR MAKING ANY CHANGES

SIGNALS	
OPENINGS:	46
CYCLIC WATTS:	604
STEADY WATTS:	15

SIGNAL HEADS



3 WORKING DAYS BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

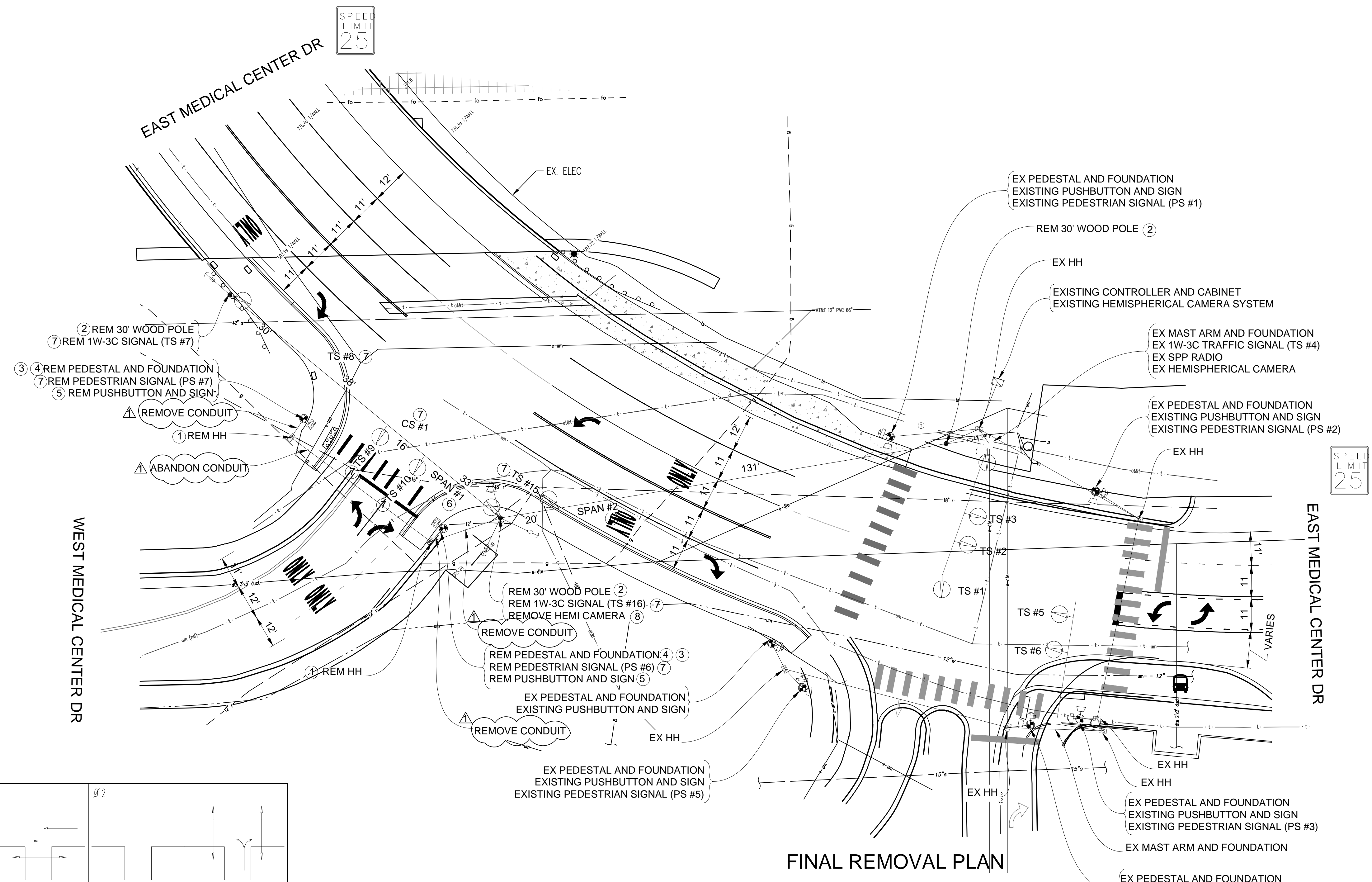
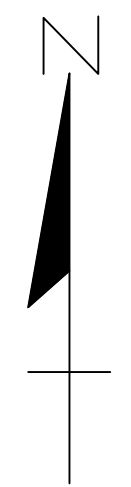
LEGEND

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	EXISTING RD. & GRADE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
CONTOUR	UTILITY POLE & GUY	GAS LINE	LEFT EDGE/RD. GRADE	STORM SEWER & CAT. BAS.	SEE ABOVE
STORM SEWER & CAT. BAS.	FIRE HYDRANT ASSEMBLY	CABLE T.V.	RIGHT EDGE/RD. GRADE	WATER MAIN W/F.H. ASSEM.	BENCH MARK
WATER MAIN & VALVE-IN-WELL	LIGHT POLE	ELECTRIC	CURB & GUTTER	CONTOUR	SURVEY BOOK
WATER MAIN & VALVE-IN-BOX	END SECTION	SIGN	EDGE/GRAVEL	ROAD & GRADE	REV. NO.

<b>DLZ</b>				
ADDENDUM #1	11-3-23	BP	LCM	
ORIGINAL ISSUE	10/6/23	INB	LCM	
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
E. MEDICAL CENTER DRIVE TRAFFIC SIGNAL PLANS FULLER RD AT E. MED. CENTER RD STAGE 3	
SCALE 1"=20'	INCH 0 1
DRAWING NO. 2022-008-MOT42	SHEET NO. 46 OF 155

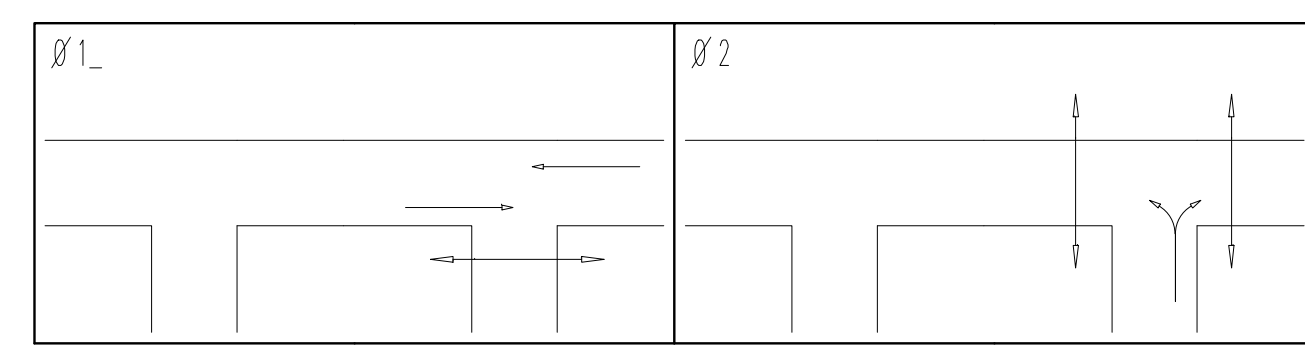




**FINAL REMOVAL PLAN**

CONTRACTOR TO UTILIZE MOT TYPICAL 163-INT-LD-OUT FOR REMOVAL OF TRAFFIC SIGNALS AFTER COMPLETION OF STAGE 3  
 TIME OF REMOVAL OR ADJUSTMENT OF TRAFFIC SIGNALS TO BE AS DIRECTED BY THE ENGINEER

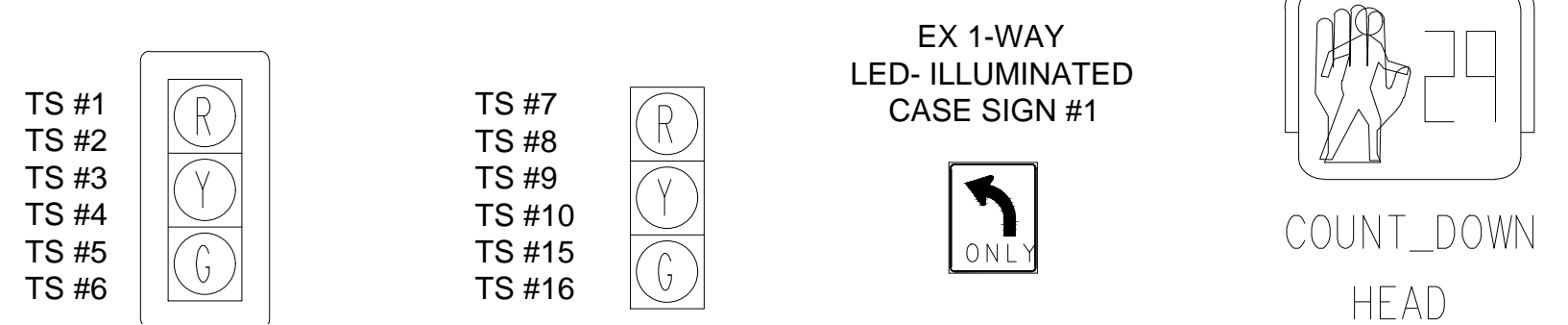
NOTE:  
 PLANS HAVE BEEN PREPARED WITHOUT THE AIDE OF RECORD DRAWINGS AND ARE SOLEY BASED ON FIELD OBSERVATIONS. CONDUIT SIZE IS UNKNOWN. CONTRACTOR TO VERIFY ANY CONDUIT AND CABLE ROUTING BEFORE ORDERING ANY MATERIAL OR MAKING ANY CHANGES



**PHASE DIAGRAM**

LIST OF MATERIAL		
NO.	ITEM	QUANTITIES
①	HH, Rem	2 Ea.
②	Wood Pole, Rem	3 Ea.
③	Pedestal Fdn, Rem	2 Ea.
④	Pedestal, Rem	2 Ea.
⑤	Pushbutton, Rem	2 Ea.
⑥	Span Wire, Rem	2 Ea.
⑦	Rem Traffic Signal (Included in "TS Head, Temp")	9 Ea.
⑧	Hemispherical Video Detection Camera, Rem	1 Ea.
	Conduit, Rem	80 FL.

**SIGNAL HEADS**



3 WORKING DAYS BEFORE YOU DIG  
 CALL MISS DIG  
 800-482-7171  
 (TOLL FREE)

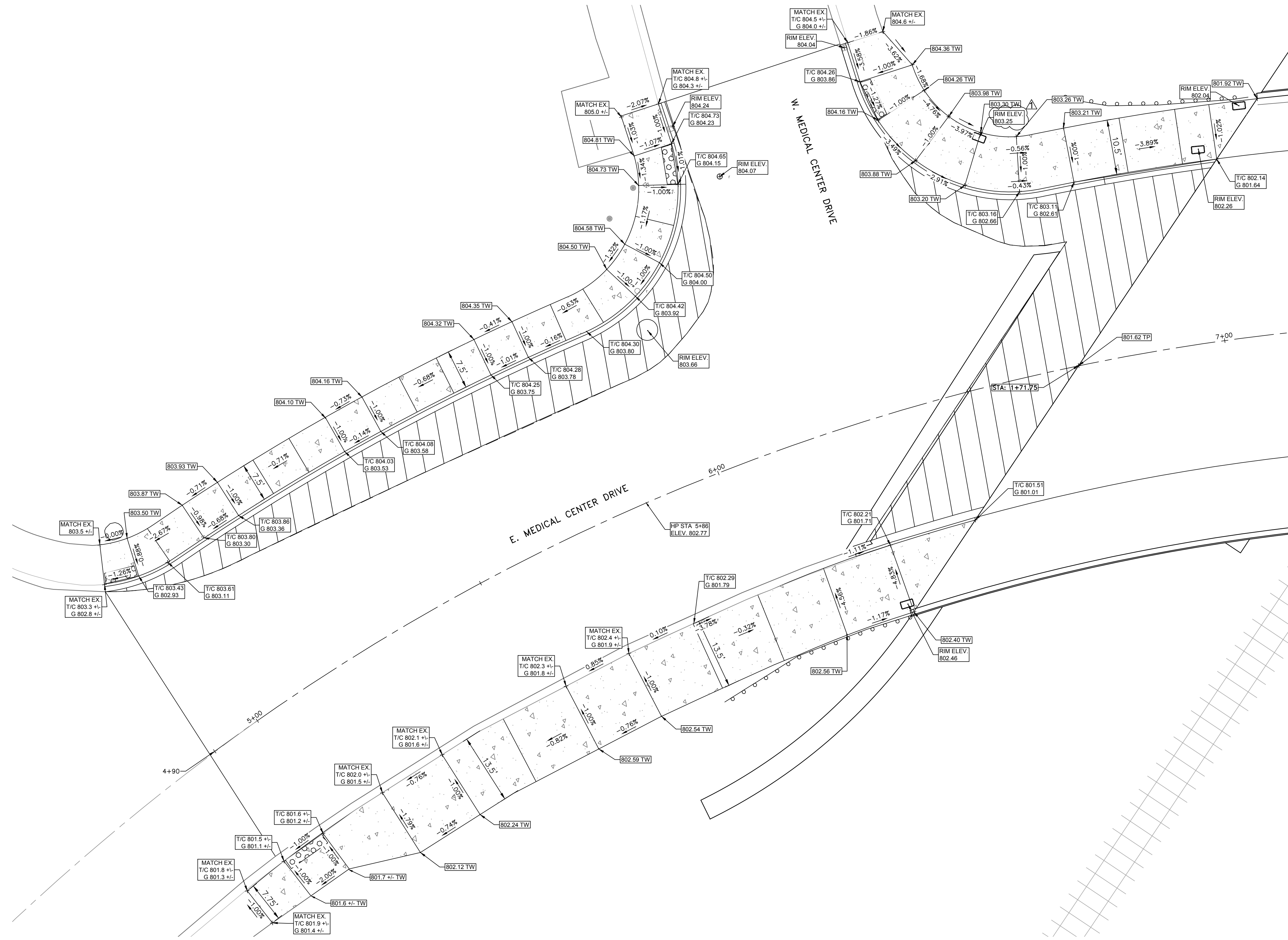
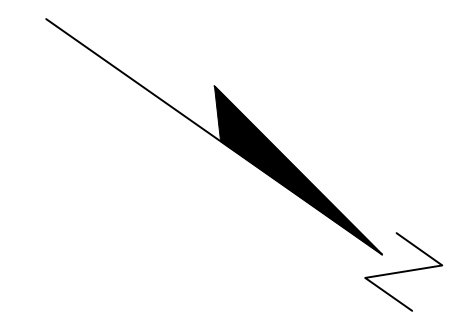
**LEGEND**

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	EXISTING RD. & GRADE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
- - - - -	- S - - - -	- t - - - -	- - - - -	- S - - - -	- - - - -
- CONTOUR	- UTILITY POLE & GUY	- GAS LINE	- LEFT EDGE/RD. GRADE	- STORM SEWER & CAT. BAS.	- SEE ABOVE
- 847	- FIRE HYDRANT ASSEMBLY	- CABLE T.V.	- RIGHT EDGE/RD. GRADE	- WATER MAIN W/F.H. ASSEM.	- BENCH MARK
- r - - - -	- LIGHT POLE	- e - - - -	- CURB & GUTTER	- CONTOUR	- SURVEY BOOK
- W - - - -	- END SECTION	- b - - - -	- EDGE/GRAVEL	- ROAD & GRADE	- REV. NO.
- W - - - -					- DESCRIPTION

<b>DLZ</b>				
ADDENDUM #1	11-3-23	BP	LCM	
ORIGINAL ISSUE	10/6/23	INB	LCM	
REV. NO.		DR. BY	CH. BY	

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR			
E. MED CENTER TRAFFIC SIGNAL PLANS FULLER RD AT E. MED. CENTER RD FINAL REMOVAL			
SCALE	1"=20'	INCH	1
DRAWING NO.	2022-008-MOT46		
SHEET NO.	50 OF 155		





3 WORKING DAYS  
**BEFORE YOU DIG**  
 CALL MISS DIG  
 800-482-7171  
 (TOLL FREE)

**LEGEND**

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
- CONTOUR	- UTILITY POLE & GUY	- GAS LINE	- STORM SEWER & CAT. BAS.	- SEE ABOVE
- STORM SEWER & CAT. BAS.	- FIRE HYDRANT ASSEMBLY	- CABLE T.V.	- WATER MAIN W/F.H. ASSEM.	- BENCH MARK
- WATER MAIN & VALVE-IN-WELL	- END SECTION	- ELECTRIC	- CONTOUR	- SURVEY BOOK
- WATER MAIN & VALVE-IN-BOX		- SIGN	- ROAD @ GRADE	

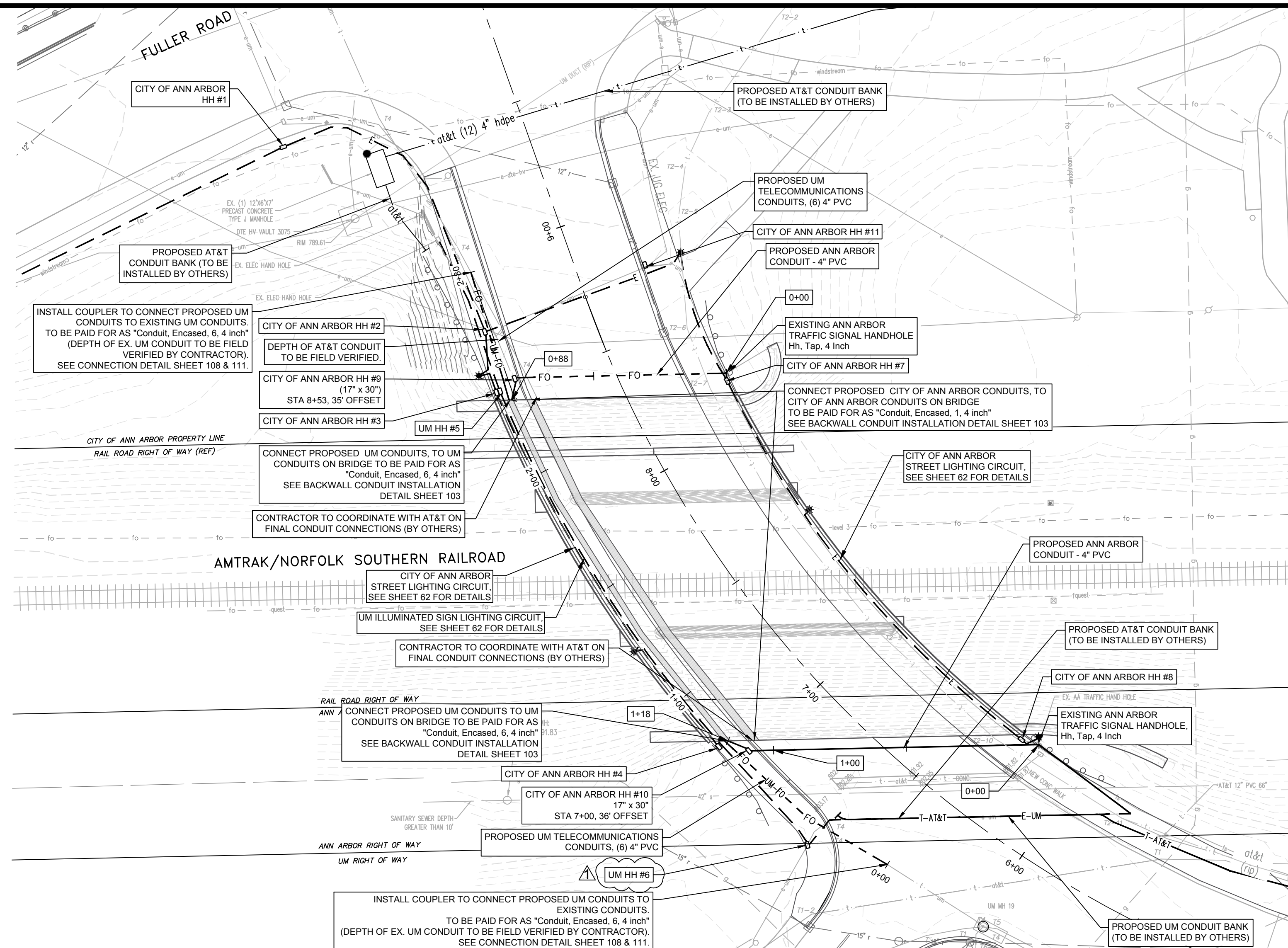
**E. MEDICAL CENTER DRIVE  
 W. MEDICAL CENTER DRIVE**  
 SCALE: 1"=10'

<b>DLZ</b>				
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR				
<b>E. MEDICAL CENTER DRIVE    DETAIL GRADES</b>				
SCALE	1"=10'	INCH	0	1
DRAWING NO.	2021-008-GD1			
SHEET NO.	52	OF	155	

APPROVED BY: LEIGH C. MERRILL P.E., MICHIGAN NO. 6201061025





INSTALL COUPLER TO CONNECT PROPOSED UM CONDUITS TO EXISTING UM CONDUITS. TO BE PAID FOR AS "Conduit, Encased, 6, 4 inch" (DEPTH OF EX. UM CONDUIT TO BE FIELD VERIFIED BY CONTRACTOR). SEE CONNECTION DETAIL SHEET 108 & 111.

CONNECT PROPOSED UM CONDUITS, TO UM CONDUITS ON BRIDGE TO BE PAID FOR AS "Conduit, Encased, 6, 4 inch" SEE BACKWALL CONDUIT INSTALLATION DETAIL SHEET 103

CONTRACTOR TO COORDINATE WITH AT&T ON FINAL CONDUIT CONNECTIONS (BY OTHERS)

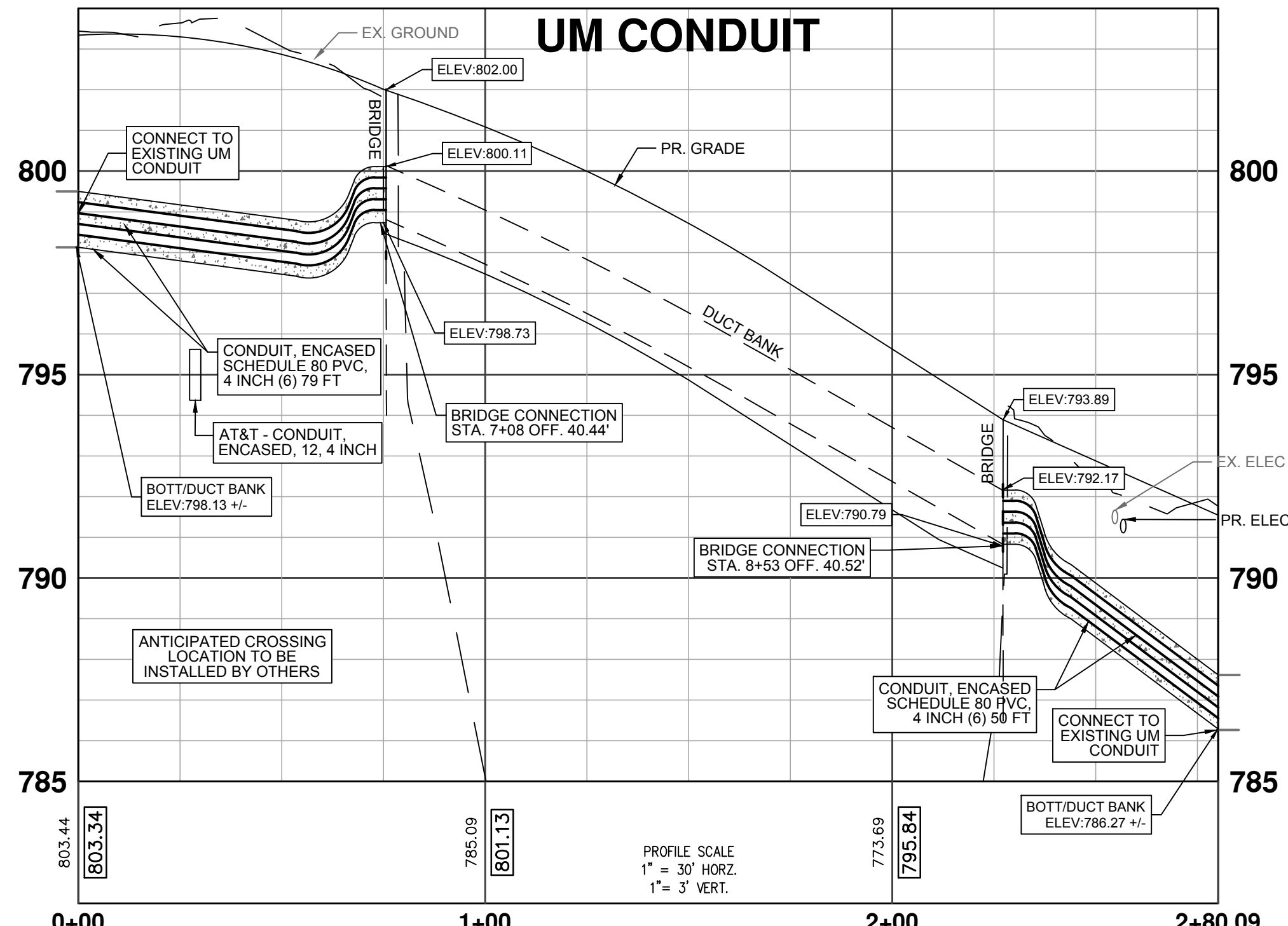
CONNECT PROPOSED CITY OF ANN ARBOR CONDUITS, TO CITY OF ANN ARBOR CONDUITS ON BRIDGE TO BE PAID FOR AS "Conduit, Encased, 1, 4 inch" SEE BACKWALL CONDUIT INSTALLATION DETAIL SHEET 103

CITY OF ANN ARBOR STREET LIGHTING CIRCUIT. SEE SHEET 62 FOR DETAILS

CONTRACTOR TO COORDINATE WITH AT&T ON FINAL CONDUIT CONNECTIONS (BY OTHERS)

CONNECT PROPOSED UM CONDUITS TO UM CONDUITS ON BRIDGE TO BE PAID FOR AS "Conduit, Encased, 6, 4 inch" SEE BACKWALL CONDUIT INSTALLATION DETAIL SHEET 103

INSTALL COUPLER TO CONNECT PROPOSED UM CONDUITS TO EXISTING CONDUITS. TO BE PAID FOR AS "Conduit, Encased, 6, 4 inch" (DEPTH OF EX. UM CONDUIT TO BE FIELD VERIFIED BY CONTRACTOR). SEE CONNECTION DETAIL SHEET 108 & 111.

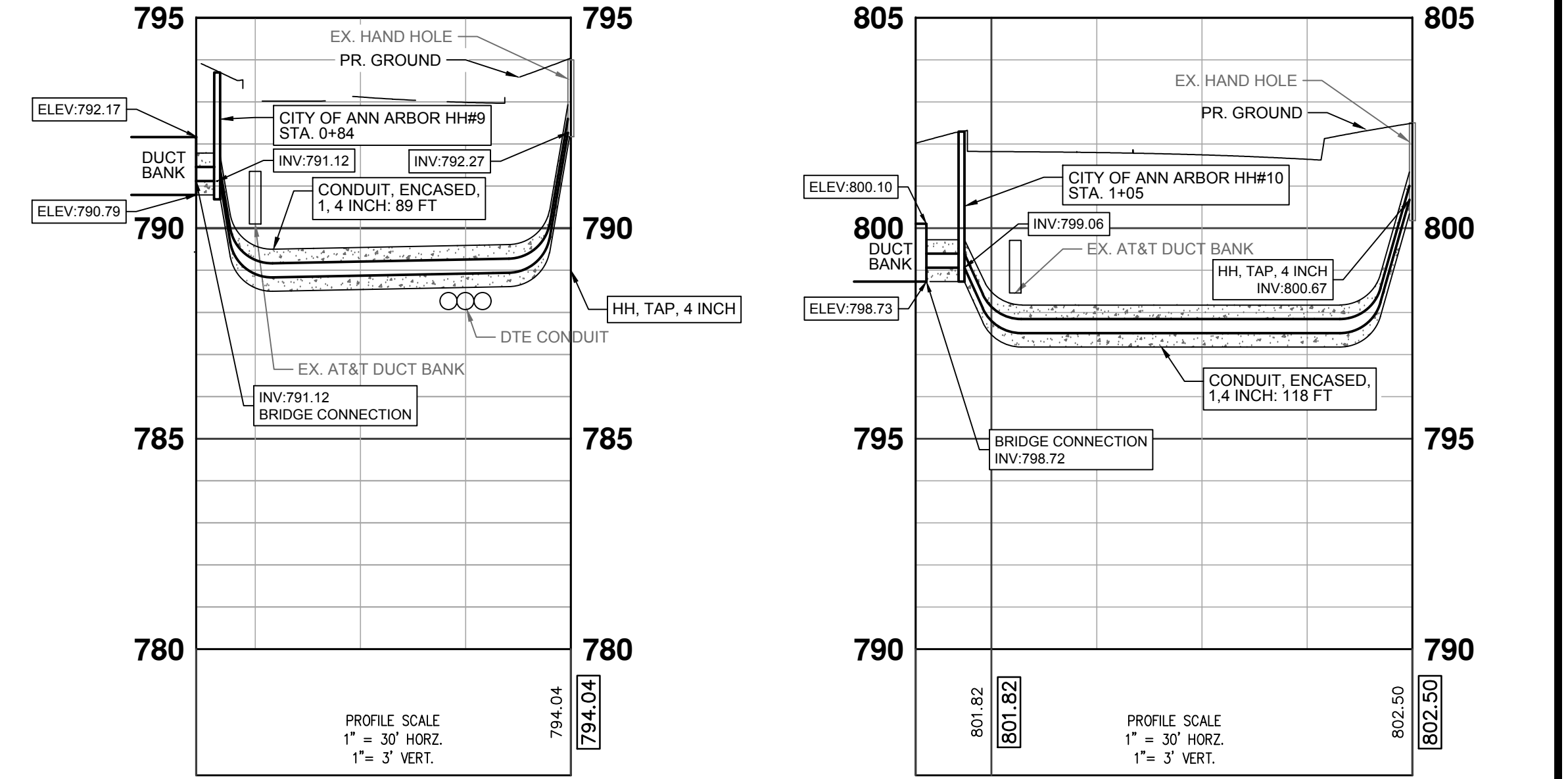


PAY ITEM	DESCRIPTION	UNITS	QUANTITY
8182021	Conduit, Encased, 6, 4 inch	FT	129
8182016	Conduit, Encased, 1, 4 inch	FT	207
8187050	Handhole Assembly, 17 inch x 30 inch	EA	2
8187050	Hh, Tap, 4 inch	EA	2

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

LEGEND		EXISTING TELEPHONE		EXISTING SANITARY SEWER & MANHOLE		EXISTING RD. & GRADE		PROPOSED SANITARY SEWER & MANHOLE		PROPOSED CURB & GUTTER		SEE ABOVE	
EXISTING FENCE	--- --- ---	GAS LINE	t	UTILITY POLE & GUY	S	LEFT EDGE/RD. GRADE	---	STORM SEWER & CAT. BAS.	S	STREET LIGHT CONDUIT	---	BENCH MARK	BM
CONTOUR	847	CABLE T.V.	g	FIRE HYDRANT ASSEMBLY	h	RIGHT EDGE/RD. GRADE	---	WATER MAIN W/F.H. ASSEM.	W	TELECOM. CONDUIT	---	SURVEY BOOK	SB
STORM SEWER & CAT. BAS.	--- ---	ELECTRIC	e	LIGHT POLE	o	CURB & GUTTER	---	CONTOUR	---	LIGHT POLE	---	REV. NO.	REV.
WATER MAIN & VALVE-IN-WELL	W	SIGN	h	END SECTION	]	EDGE/GRAVEL	---	ROAD & GRADE	---	HANDHOLE	---	DESCRIPTION	DESC
WATER MAIN & VALVE-IN-BOX	W											DATE	DATE
												DR. BY	DR. BY
												CH. BY	CH. BY

### ANN ARBOR CONDUIT (NORTH) ANN ARBOR CONDUIT (SOUTH)



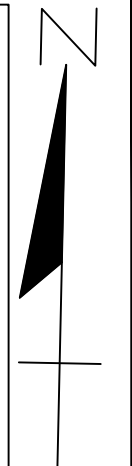
- #### NOTES
- UM TELECOMMUNICATIONS DUCT BANK SHALL CONSIST OF SIX 4" I.D. SCH. 80 PVC CONDUITS, CONCRETE ENCASED. A 3" THICK MINIMUM CONCRETE COVER SHALL PROTECT DUCTS OVER THE ENTIRE LENGTH AND WIDTH OF THE DUCT BANK. FIBER AND INSTALLATION OF FIBER BY OWNER.
  - CITY OF ANN ARBOR TELECOMMUNICATIONS DUCT BANK SHALL CONSIST OF ONE 4" SCH. 80 PVC CONDUIT, CONCRETE ENCASED. A 3" THICK MINIMUM CONCRETE COVER SHALL PROTECT DUCTS OVER THE ENTIRE LENGTH AND WIDTH OF THE CONDUIT. FIBER AND INSTALLATION OF FIBER BY OWNER.
  - CONTACT CITY OF ANN ARBOR REPRESENTATIVE MARC MARENO (734)794-6350 PRIOR TO ACCESSING CITY OF ANN ARBOR HANDHOLES. CONTACT UM-ITS REPRESENTATIVE KEVIN MCLAUGHLIN, PE, RCDD (734) 615-5699 PRIOR TO ACCESSING UM HANDHOLES. CITY OF ANN ARBOR AND/OR UM REPRESENTATIVE TO BE ON-SITE WHEN ACCESSING HANDHOLES.
  - CONTACT UM-ITS REPRESENTATIVE KEVIN MCLAUGHLIN, PE, RCDD (734) 615-5699 FOR INSPECTIONS AND ACCEPTANCE OF DUCT BANK CONSTRUCTION. THE CITY OF ANN ARBOR WILL INSPECT RESTORATION OF DISTURBANCES WITHIN THE PUBLIC RIGHT OF WAY.
  - 17 INCH X 30 INCH HANDHOLE ASSEMBLIES SHALL CONSIST OF TWO, STACKED "QUAZITE" BOXES. THE COVER SHALL BE A LOCKING HEAVY-DUTY BOLT-DOWN TYPE WITH A LOGO THAT READS "TRAFFIC SIGNAL" OR "STREET LIGHTING", BASED ON THEIR INTENDED USE. THE TOTAL DEPTH OF THE HANDHOLE SHALL BE 18 INCHES.
  - DUCT BANKS SHALL BE SUPPORTED ON UNDISTURBED SOIL OR ON PIERS EXTENDING DOWN TO UNDISTURBED SOIL.
  - CHANGES IN DUCT BANK DIRECTION SHALL BE MADE WITH 10' MINIMUM RADIUS WITH MANUFACTURED SWEEPS.
  - DUCT BANKS SHALL BE SLOPED DOWNWARD TOWARD MANHOLES AND AWAY FROM BUILDINGS A MINIMUM OF 6" PER 100'. DUCT BANKS SHALL NOT CONTAIN TRAPS WHERE WATER MAY ACCUMULATE.
  - PULL A SOLID MANDREL AND A STIFF BRISTLED BRUSH THROUGH EACH DUCT TO CLEAN THEM AND INSURE THE ABSENCE OF KINKS AND FLAT SPOTS. A MINIMUM 3-1/4" DIAMETER BY 5' MINIMUM LONG MANDREL SHALL BE USED FOR 4" CONDUIT. THE MANDREL PULL SHALL BE WITNESSED BY THE OWNER'S REPRESENTATIVE. WHEN MANDREL PULLS DETECT CRUSHED, FLATTENED, KINKED, OR OBSTRUCTED DUCTS OR CONDUITS, ADDITIONAL DUCTS OR CONDUITS SHALL BE PROVIDED. TO BE PAID FOR IN "Conduit, Encased, 6, 4 inch" AND "Conduit, Encased, 1, 4 inch".
  - DUCT BANKS SHALL BE MARKED WITH A 6" WIDE RED PLASTIC MARKER STRIP PLACED IN THE BACKFILL APPROXIMATELY 12" ABOVE THE ENTIRE LENGTH OF THE DUCT BANK. TO BE PAID FOR IN "Conduit, Encased, 6, 4 inch" AND "Conduit, Encased, 1, 4 inch".
  - CONDUIT EXPANSION COUPLINGS SHALL BE INSTALLED ON ALL CONDUITS AT EACH END OF THE BRIDGE. DETAIL ON SHEET 111.
  - COPPERHEAD™ COPPER COATED STEEL LOCATING WIRE, (#12 CCS EXTRA HIGH STRENGTH HARD DRAWN 1150# (SOLOSHOT)), OR EQUIVALENT, SHALL BE PLACED OUTSIDE THE DUCT AND INSTALLED WHEN DUCT PULLBACK/ PLACEMENT IS PERFORMED. TRACER WIRE IS NOT TO BE PLACED INSIDE THE DUCT. WHERE MULTIPLE DUCTS ARE PLACED, ONLY 1 TRACER WIRE SHALL BE REQUIRED PER PACKAGE. A MINIMUM OF 60' OF TRACER WIRE SHALL EXTEND FROM THE ENDPPOINT OF THE DUCT AND BE NEATLY COILED AT THE DUCT PATHWAY TERMINATION ENDPPOINT. TO BE PAID FOR IN "Conduit, Encased, 6, 4 inch" AND "Conduit, Encased, 1, 4 inch".
  - #1250 LB. MULE TAPE WITH FOOTAGE MARKINGS OR EQUIVALENT SHALL BE PLACED IN ALL NEW DUCT. A MINIMUM OF 60' OF MULE TAPE SHALL EXTEND FROM THE ENDS OF THE DUCT, COILED AND SECURED TO THE END OF THE DUCT WITH TAPE OR SOME OTHER MEANS. TO BE PAID FOR IN "Conduit, Encased, 6, 4 inch" AND "Conduit, Encased, 1, 4 inch".
  - OPEN DUCTS IN MAN HOLES SHALL BE PLUGGED WITH REMOVABLE PLUGS AFTER MANDREL PROOFING TO PREVENT DIRT AND MOISTURE FROM ENTERING THE DUCTS. TO BE PAID FOR IN "Conduit, Encased, 6, 4 inch" AND "Conduit, Encased, 1, 4 inch".
  - CONTRACTOR TO PROVIDE SCH. 80 PVC EXPANSION JOINT EVERY 100' UNDER THE BRIDGE DECK, AS WELL AS AT EACH END OF THE BRIDGE. SEE SHEET 103 FOR DETAIL. TO BE PAID FOR IN "Conduit, Encased, 6, 4 inch" AND "Conduit, Encased, 1, 4 inch".
  - SWEEP ACCESS ROADS TO ELIMINATE DEBRIS CAUSED BY EQUIPMENT AND CONSTRUCTION ACTIVITIES.

### TELECOMMUNICATIONS PHASING PLAN

- PHASE 1:  
1. CONTRACTOR TO ADJUST ELEVATION OF RIM OF UM MANHOLE #19 TO MATCH ADJACENT ROADWAY GRADE.
- PHASE 2:  
1. CONTRACTOR TO INSTALL CITY OF ANN ARBOR HH#9 AND HH#10.  
2. CONTRACTOR TO INSTALL (1) 4" SCH. 80 PVC CONDUIT FROM HH#9 TO NORTH END OF THE BRIDGE AND FROM HH#10 TO SOUTH END OF THE BRIDGE. CONTRACTOR TO INSTALL (1) 4" SCH. 80 PVC CONDUIT FROM HH#9 TO HH#10 TO THE EAST EDGE OF PHASE 2 CONSTRUCTION. CONDUITS TO BE ENCASED IN CONCRETE PER DETAIL.  
3. CONTRACTOR TO INSTALL (6) 4" ID SCH. 80 PVC UM CONDUITS FROM COUPLERS AT EXISTING UM CONDUITS TO END OF BRIDGE ON NORTH AND SOUTH SIDES OF THE BRIDGE. CONDUITS TO BE ENCASED IN CONCRETE PER DETAIL.  
4. CONTRACTOR TO COORDINATE WITH AT&T CONTRACTOR FOR THE CONSTRUCTION OF THE AT&T CONDUIT CONNECTIONS AT EACH END OF THE BRIDGE.
- PHASE 3:  
1. CONTRACTOR TO INSTALL (1) 4" SCH. 80 PVC CONDUIT FROM THE EAST EDGE OF PHASE 2 CONSTRUCTION TO THE EXISTING CITY OF ANN ARBOR TRAFFIC SIGNAL HANDHOLES NORTH AND SOUTH OF THE BRIDGE.

		PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR			
		E. MEDICAL CENTER DRIVE			
TELECOMMUNICATIONS CONDUIT PLAN		SCALE	1"=30'		
DRAWING NO.		2021-008-UT4			
SHEET NO.		60 OF 155			
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY	APPROVED BY
ADDENDUM #1		11-3-23	DLI	LCM	
ORIGINAL ISSUE		10/6/23	DLI	LCM	





**NOTES**

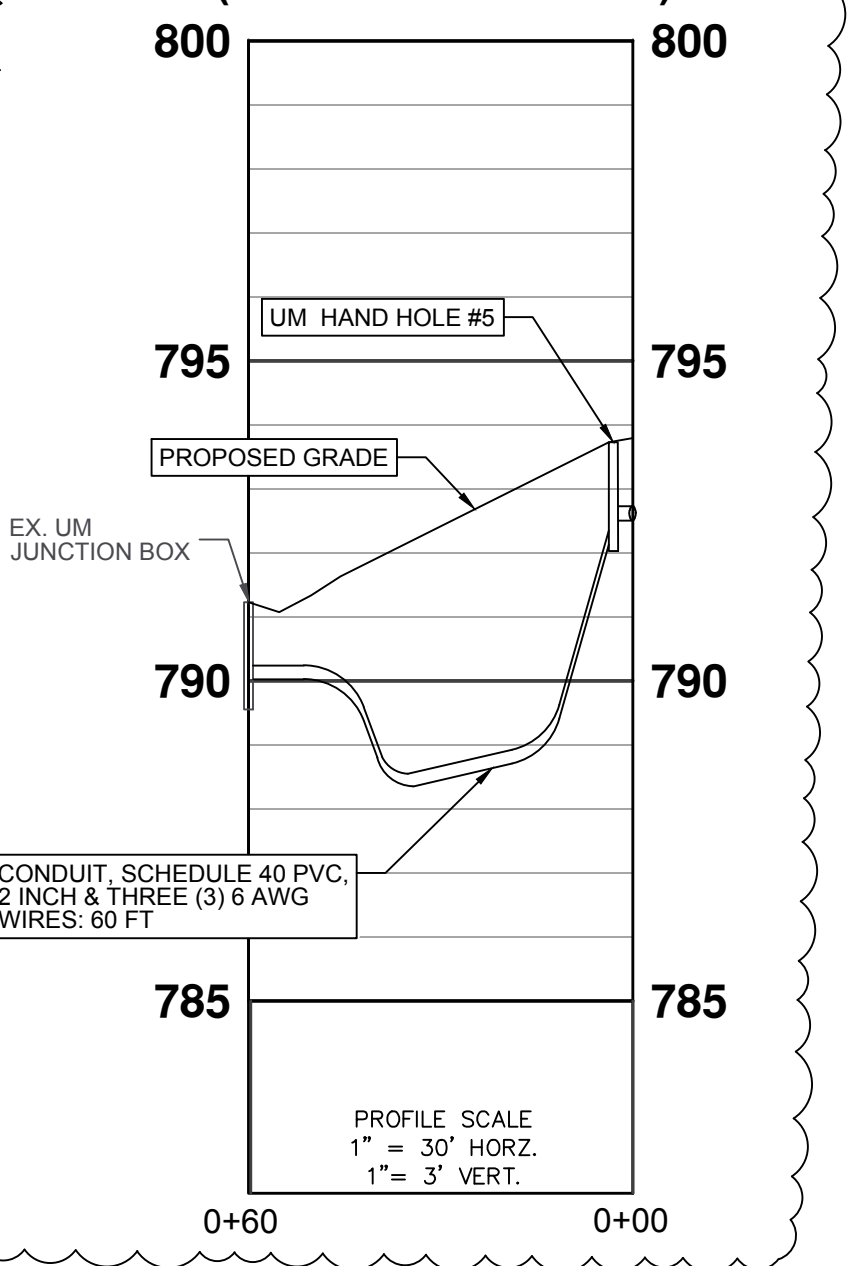
- SEE SHEET 107 FOR CONDUIT DETAILS AT BRIDGE APPROACHES.
- CONDUIT SHALL BE 2 INCH OR 3 INCH SCH. 40 PVC. CONDUITS SHALL BE FITTED WITH EXPANSION JOINTS AT EACH END OF THE BRIDGE, TO BE PAID FOR IN "CONDUIT, SCHEDULE 40 PVC, 2 INCH" AND "CONDUIT, SCHEDULE 40 PVC, 3 INCH".
- ALL STREET LIGHT AND ILLUMINATED SIGN WIRING IN CONDUIT TO BE THREE (3) 6 AWG XLP/USE-2/RHH/RHW-2, IN BLACK, WHITE AND GREEN.
- CONTACT CITY OF ANN ARBOR REPRESENTATIVE MARC MARENO (734)794-6350 PRIOR TO ACCESSING CITY OF ANN ARBOR HANDHOLES. CONTACT UM-ITS REPRESENTATIVE KEVIN MCLAUGHLIN, PE, RCDD (734) 615-5699 PRIOR TO ACCESSING UM HANDHOLES. CITY OF ANN ARBOR AND/OR UM REPRESENTATIVE TO BE ON-SITE WHEN ACCESSING HANDHOLES.
- 17 INCH X 30 INCH HANDHOLE ASSEMBLIES SHALL CONSIST OF TWO, STACKED "QUAZITE" BOXES. THE COVER SHALL BE A LOCKING HEAVY-DUTY BOLT-DOWN TYPE WITH A LOGO THAT READS "TRAFFIC SIGNAL" OR "STREET LIGHTING", BASED ON THEIR INTENDED USE. THE TOTAL DEPTH OF THE HANDHOLE SHALL BE 18 INCHES.
- EXISTING UNIVERSITY OF MICHIGAN MEDICAL CENTER STREET LIGHTS AT PROPOSED LIGHT LOCATIONS L1 THROUGH L5 ARE TO BE REMOVED AND REPLACED WITH CITY OF ANN ARBOR LIGHT POLES, LUMINAIRES AND FOUNDATIONS. THE PROPOSED LIGHTS SHALL BE CONNECTED TO THE CITY OF ANN ARBOR'S EXISTING LIGHTING CIRCUIT.
- CONDUIT FOR BOTH THE ANN ARBOR STREET LIGHT CIRCUIT AND THE UNIVERSITY OF MICHIGAN MEDICAL CENTER ILLUMINATED SIGNS CIRCUIT TO BE INSTALLED IN THE NEW BRIDGE SIDEWALK AS SHOWN. CONTRACTOR SHALL INSTALL NEW WIRES BETWEEN HANDHOLE #5 AND #6 AND RECONNECT THE ILLUMINATED SIGNS CIRCUIT, TO BE PAID FOR IN "CONDUIT, SCHEDULE 40 PVC, 2 INCH" TO BE PAID FOR IN "CONDUIT, SCHEDULE 40 PVC, 2 INCH".
- LOCATE PROPOSED AND EXISTING UNDERGROUND PIPES AND UTILITIES AND PROPOSED GUARDRAIL POSTS PRIOR TO INSTALLING LIGHTING. FIELD ADJUSTMENTS MAY BE NECESSARY AS DIRECTED BY THE ENGINEER.
- COPPERHEAD COPPER COATED STEEL LOCATING WIRE, (#12 CCS EXTRA HIGH STRENGTH HARD DRAWN 1150# (SOLOSHOT)), OR EQUIVALENT, SHALL BE PLACED OUTSIDE THE DUCT OR CONDUIT AND INSTALLED WHEN DUCT/CONDUIT PULLBACK/PLACEMENT IS PERFORMED. TRACER WIRE IS NOT TO BE PLACED INSIDE THE DUCT OR CONDUIT. WHERE MULTIPLE DUCTS ARE PLACED, ONLY 1 TRACER WIRE SHALL BE REQUIRED PER PACKAGE. A MINIMUM OF 60" OF TRACER WIRE SHALL EXTEND FROM THE ENDPOINT OF THE DUCT AND BE NEARLY COILED AT THE DUCT OR CONDUIT PATHWAY TERMINATION ENDPOINT.
- STREET LIGHT POLES SHALL BE SHAKESPEARE AS30-10S1DB01/OPAR6-BK-H WITH THE FOLLOWING SPECIFICATIONS: 30' SMOOTH FINISH, ANCHOR BASE POLE WITH 4" X 12" HANDHOLE, POLE TO BE DRILLED FOR 6" ALUMINUM MAST ARM AND BASE COVER, BASE COVER TO BE 1-PIECE POWDERED COATED BLACK, AND ANCHOR BOLTS TO BE 1" DIAMETER.
- LUMINAIRE TO BE LUMICON LWS-LSL-60-GR-1-T2-OW-7P WITH THE FOLLOWING SPECIFICATIONS: 58 WATT LED STREET LUMINAIRE, 8,201 DELIVERED LUMENS, TYPE II DISTRIBUTION, 120 VOLT-277 VOLT, 3000K COLOR TEMPERATURE, 7-PIN RECEPTACLE, 20K-AMP SURGE SUPPRESSION.

MISCELLANEOUS QUANTITIES THIS SHEET			
PAY ITEM	DESCRIPTION	UNITS	QUANTITY
8182133	Conduit, Schedule 40 PVC, 2 inch	Ft	265
8182135	Conduit, Schedule 40 PVC, 3 inch	Ft	735
8190211	DB Cable, in Conduit, 600V, 1/0C#6	Ft	3241
8197050	Handhole Assembly, 17 inch x 30 inch	Ea	5
8197050	Pole Installation	Ea	5
8197050	Luminaire Installation	Ea	5
8197050	Pole Fit-Up	Ea	5

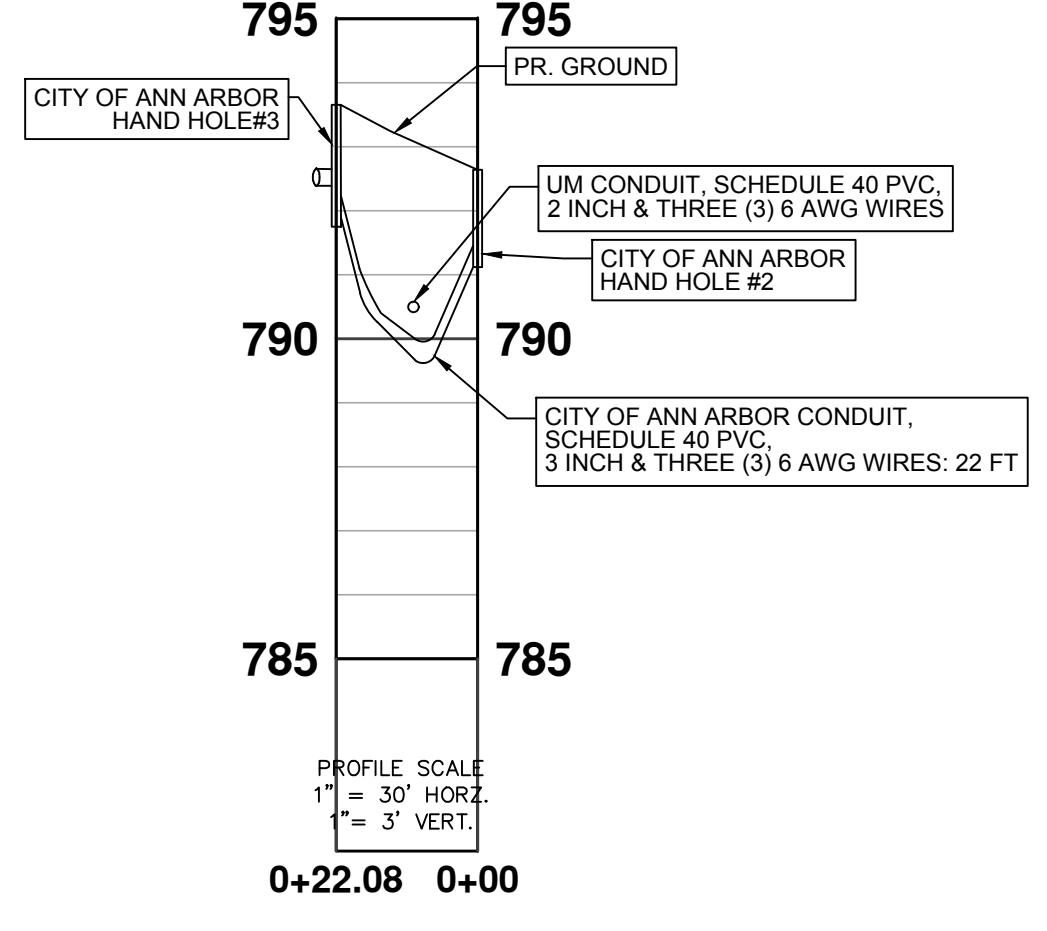
**STREET LIGHT PHASING PLAN**

- PRIOR TO PHASE 1:
- UM TO INSTALL SCHEDULE 40 PVC CONDUIT A TOP AT&T CONDUIT CROSSING E. MEDICAL CENTER DR. SOUTH OF THE BRIDGE TO PROVIDE ELECTRICITY TO THE STREET LIGHTS DURING PHASE 2.
- PHASE 2:
- CONTRACTOR TO INSTALL SCHEDULE 40 PVC CONDUIT FROM EXISTING CITY OF ANN ARBOR HAND HOLE THROUGH CITY OF ANN ARBOR HH#2 AND TERMINATE IN CITY OF ANN ARBOR HH#4.
  - UM TO DISCONNECT WIRING FOR LIGHTS IN BRIDGE AND SIGNS BEFORE CONTRACTOR DEMOLITION. CONTRACTOR TO COORDINATE WORK WITH UM.
  - CONTRACTOR TO INSTALL SCHEDULE 40 PVC CONDUIT AND WIRING FROM CITY OF ANN ARBOR HH#2 TO THE SOUTH THROUGH SIDEWALK AND TERMINATING AT CITY OF ANN ARBOR HH#4. CONTRACTOR TO PULL WIRING THROUGH CONDUIT AND CONNECT TO STREETLIGHTS L1 AND L2.
  - CONTRACTOR TO INSTALL STREET LIGHTS L1 AND L2.
  - CONTRACTOR TO INSTALL SCHEDULE 40 PVC CONDUIT FROM THE EXISTING SOUTH HOSPITAL SIGN TO THE SOUTH THROUGH SIDEWALK AND TERMINATING AT UM HH#6.
  - THE LIGHTED HOSPITAL SIGNS HAVE EXISTING CONDUIT BETWEEN THEM AND A JUNCTION BOX ON EACH SIDE OF THE SOUTH SIGN. CONTRACTOR IS TO PROTECT OR REPLACE IF DAMAGED. CONTRACTOR TO FIELD VERIFY THAT IT IS NOT DAMAGED.
  - UM TO PULL WIRING THROUGH UM SCHEDULE 40 PVC CONDUITS, CONTRACTOR TO COORDINATE WITH UM.
- PHASE 3:
- CONTRACTOR TO DISCONNECT & PULL TEMPORARY STREET LIGHT WIRING ON EAST SIDE.
  - CONTRACTOR TO REMOVE AND SALVAGE STREET LIGHT POLES IF NEW CITY TEMP POLES - UM POLES TO BE DISCARDED.
  - CONTRACTOR TO INSTALL SCHEDULE 40 PVC CONDUIT FROM L3 TO CITY OF ANN ARBOR HH#7. CONTRACTOR TO INSTALL SCHEDULE 40 PVC CONDUIT FROM CITY OF ANN ARBOR HH#7 THROUGH THE SIDEWALK AND TERMINATING AT CITY OF ANN ARBOR HH#8. CONTRACTOR TO PULL WIRE THROUGH CONDUIT AND CONNECT TO PROPOSED STREET LIGHTS L3, L4 AND L5.

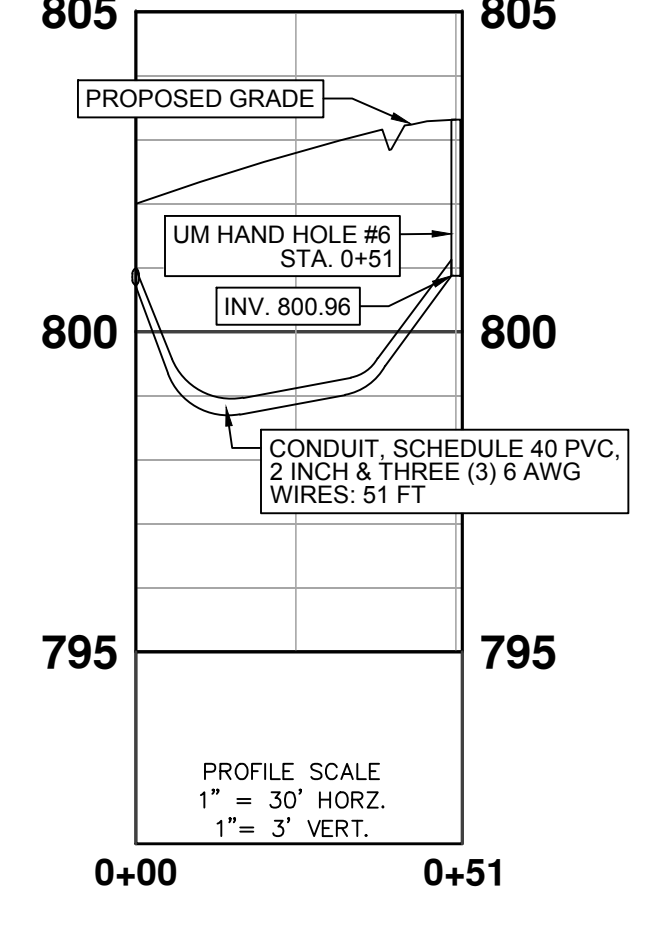
**UM MEDICAL CENTER LIGHTING CIRCUIT CONNECTION (NORTH OF BRIDGE)**



**CITY OF ANN ARBOR LIGHTING CIRCUIT CONNECTION (NORTH OF BRIDGE)**



**UM MEDICAL CENTER LIGHTING CIRCUIT CONNECTION (SOUTH OF BRIDGE)**



**LEGEND**

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	EXISTING RD. C GRADE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
CONTOUR	UTILITY POLE & GUY	GAS LINE	LEFT EDGE/RD. GRADE	STORM SEWER & CAT. BAS.	STREET LIGHT CONDUIT
STORM SEWER & CAT. BAS.	FIRE HYDRANT ASSEMBLY	CABLE T.V.	RIGHT EDGE/RD. GRADE	WATER MAIN W/F.H. ASSEM.	TELECOM. CONDUIT
WATER MAIN & VALVE-IN-WELL	ELECTRIC	ELECTRIC	CURB & GUTTER	CONTOUR	LIGHT POLE
WATER MAIN & VALVE-IN-BOX	END SECTION	SIGN	EDGE/GRAVEL	ROAD C GRADE	HANDHOLE

**DLZ**

ADDENDUM #1	11-3-23	DL	LCM
ORIGINAL ISSUE	10/6/23	DL	LCM
REV. NO.	DESCRIPTION	DATE	DR. BY

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

**EAST MEDICAL CENTER DRIVE**

**STREET LIGHT ELECTRICAL PLAN**

SCALE 1"=20'

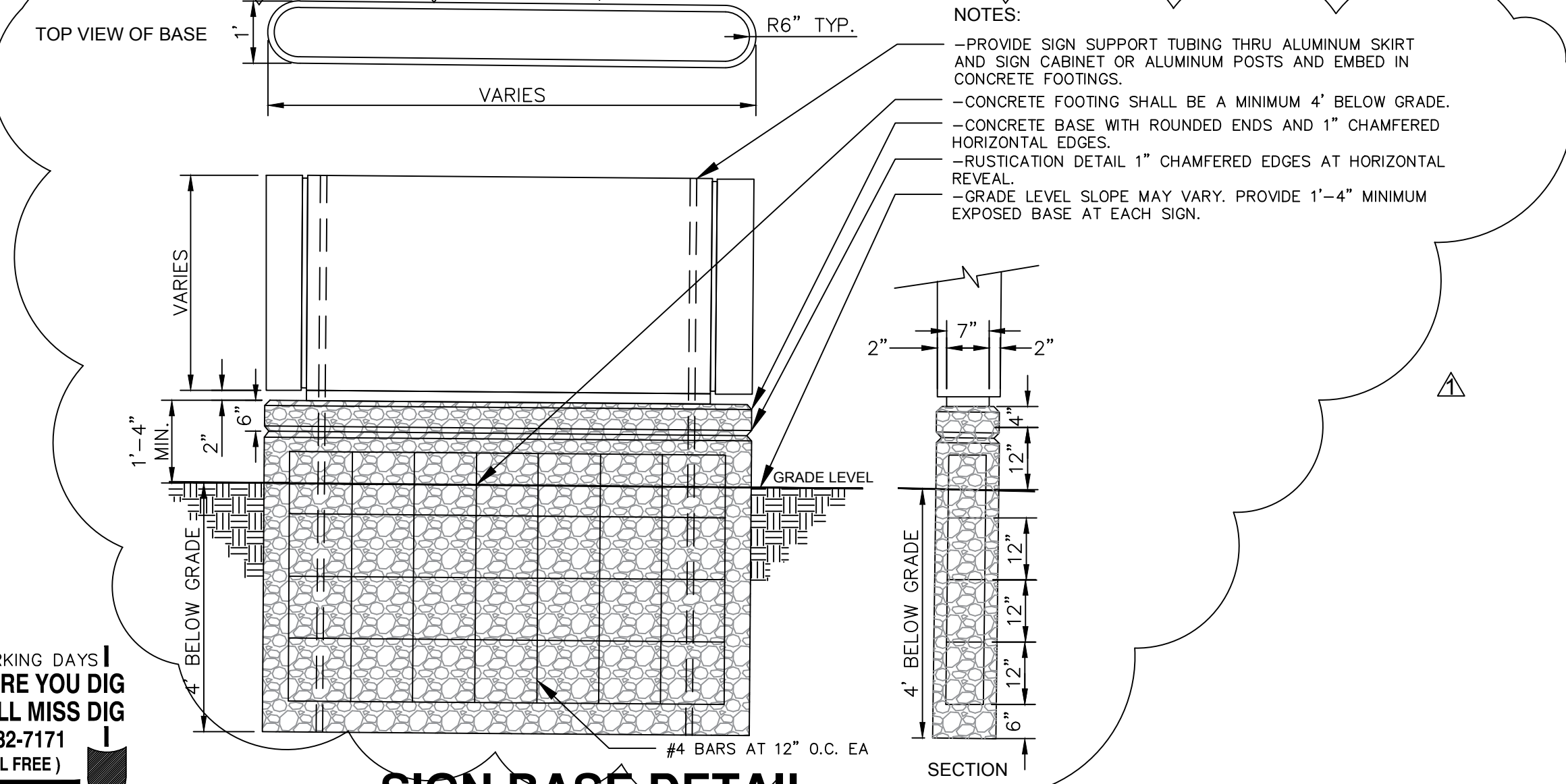
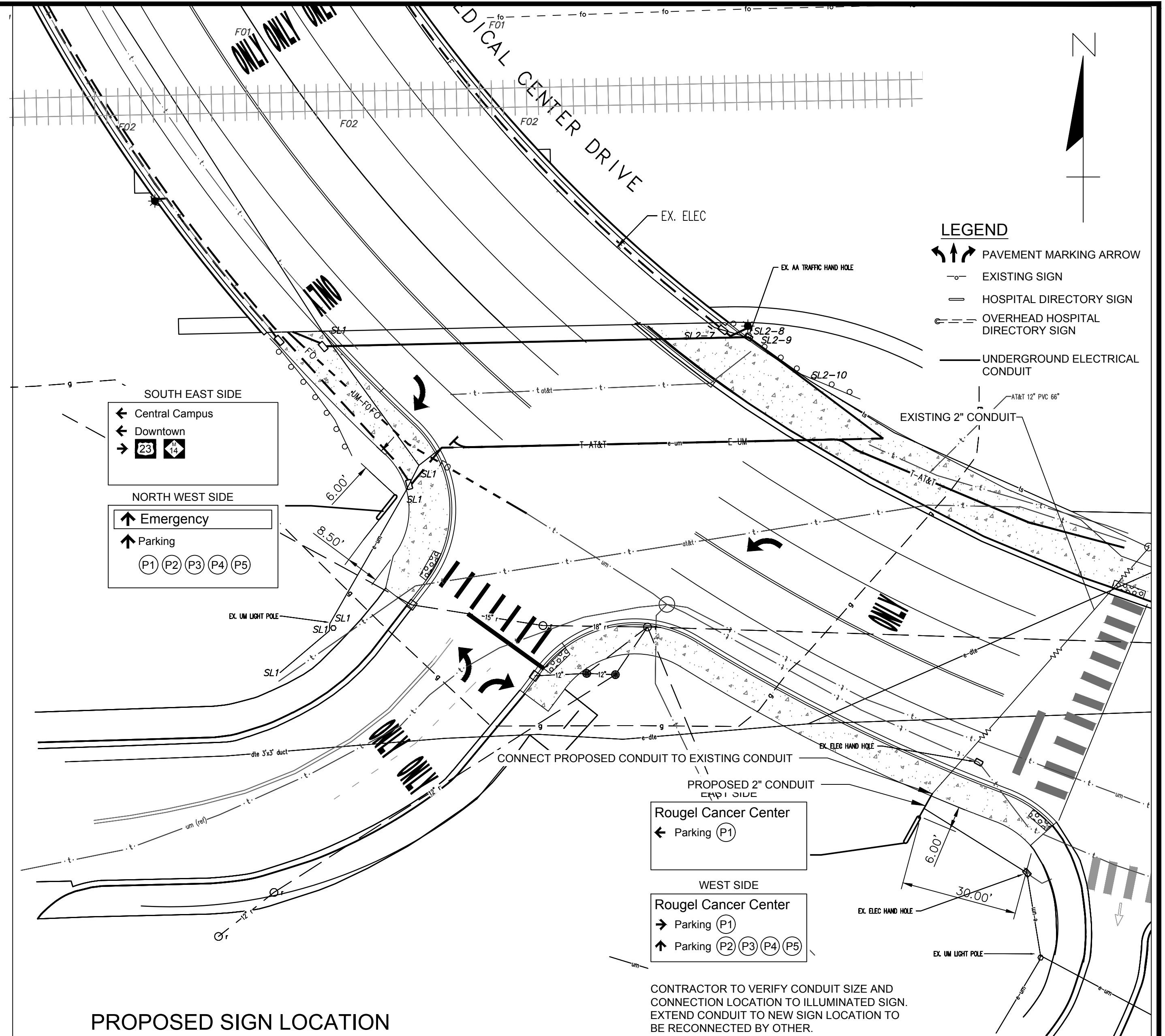
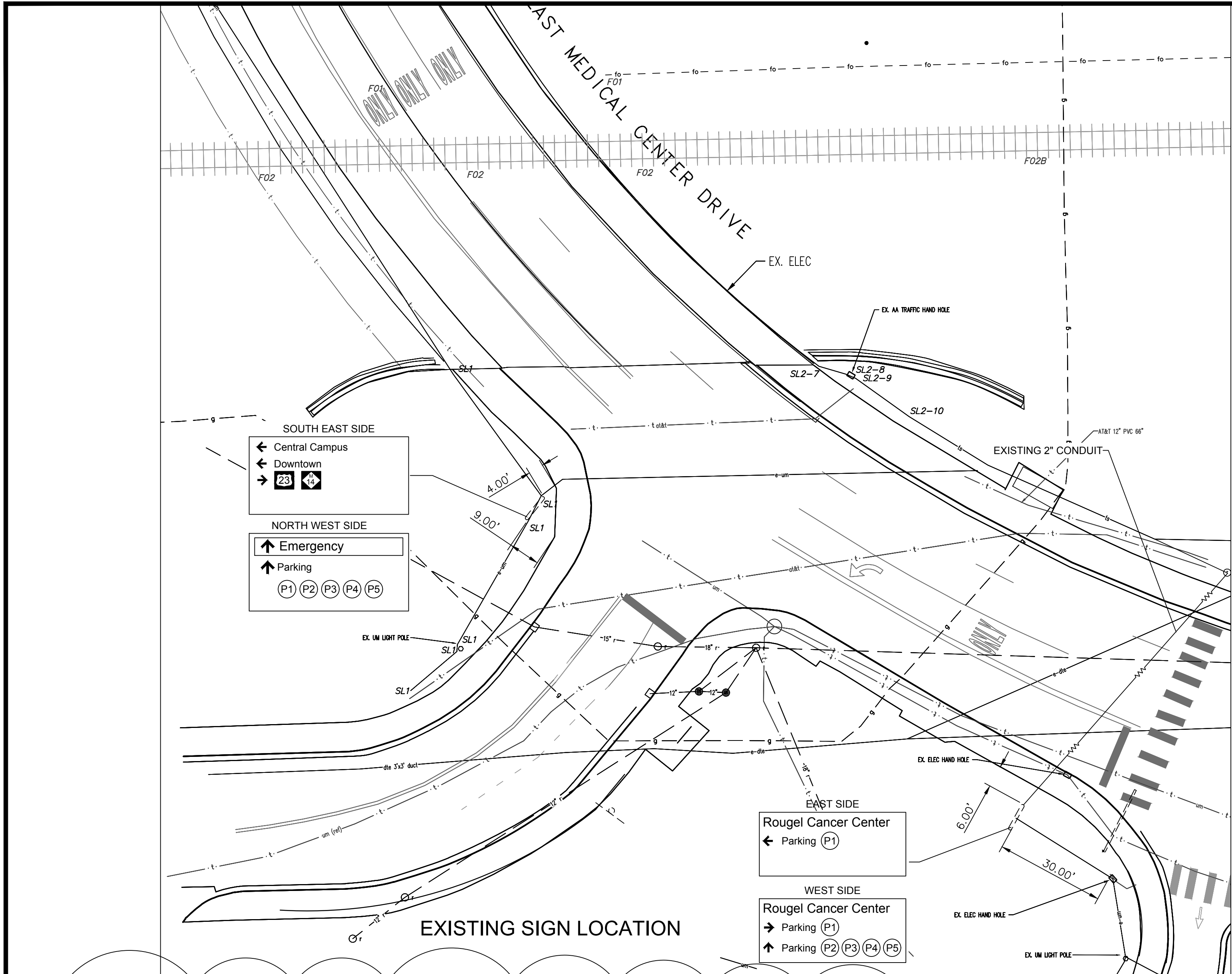
DRAWING NO. 2021-008-UT6

SHEET NO. 62 OF 155

3 WORKING DAYS!  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

X:\Projects\2021\2141\356300 AA - EMCD Bridge\01\_ConstrDocs\CAD\EMCD\_STREET\_LIGHT\_ELECTRICAL\_PLAN





3 WORKING DAYS!  
**BEFORE YOU DIG**  
 CALL MISS DIG  
 800-482-7171  
 (TOLL FREE)

**LEGEND**

EXISTING FENCE	EXISTING SANITARY SEWER & MANHOLE	EXISTING TELEPHONE	EXISTING RD. @ GRADE	PROPOSED SANITARY SEWER & MANHOLE	PROPOSED CURB & GUTTER
CONTOUR	UTILITY POLE & GUY	GAS LINE	LEFT EDGE/RD. GRADE	STORM SEWER & CAT. BAS.	SEE ABOVE
STORM SEWER & CAT. BAS.	FIRE HYDRANT ASSEMBLY	CABLE T.V.	RIGHT EDGE/RD. GRADE	WATER MAIN W/F.H. ASSEM.	BENCH MARK
WATER MAIN & VALVE-IN-WELL	LIGHT POLE	ELECTRIC	CURB & GUTTER	CONTOUR	SURVEY BOOK
WATER MAIN & VALVE-IN-BOX	END SECTION	SIGN	EDGE/GRAVEL	ROAD @ GRADE	REV. NO.

**ESTIMATED QUANTITIES THIS SHEET**

DESCRIPTION	QUANTITY
Conduit, DB, 1, 2 Inch	8 FT
Hospital Sign and Foundation, Relocate	2 Ea

**DLZ**

ADDENDUM #1	11-3-23	DLL	LCM
ORIGINAL ISSUE	10/6/23	DLL	LCM
REV. NO.	DESCRIPTION	DATE	DR. BY
			CH. BY

**PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR**

**E. MEDICAL CENTER DR HOSPITAL SIGN RELOCATION PLAN**

SCALE: 1"=20'

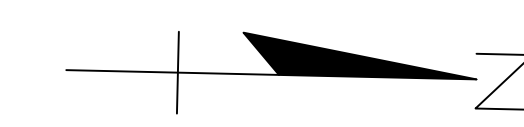
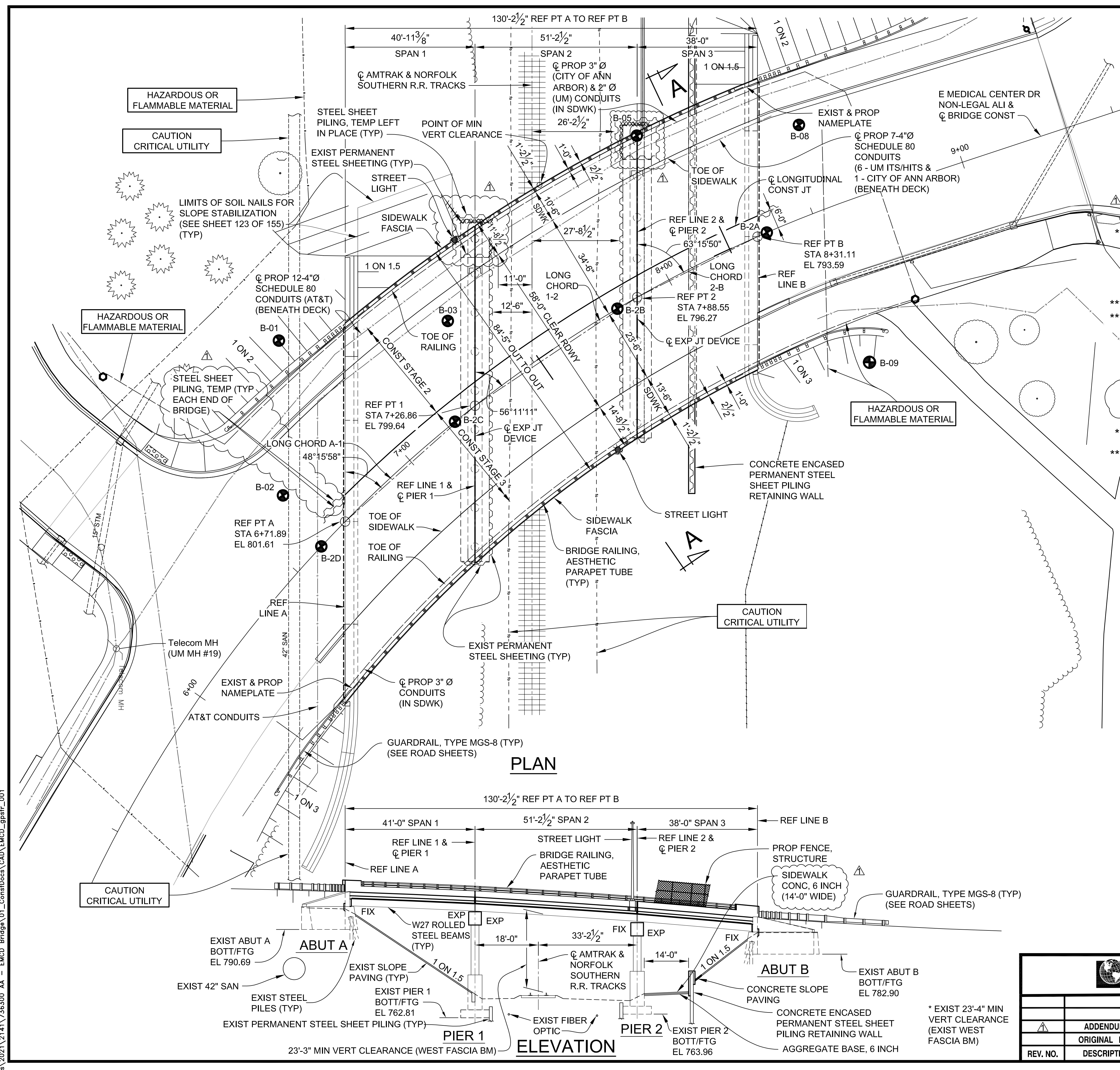
DRAWING NO. 2021-008-UT7

SHEET NO. 63 OF 155

APPROVED BY: \_\_\_\_\_







### ESTIMATED QUANTITIES THIS SHEET

DESCRIPTION	UNITS	CATG 0001	CATG 0002	CATG 0003	TOTAL
Relocation and Site Cleanup	Dlr			15,000	15,000
Structures, Rem Portions (STR 11065)	LSUM	0.9	0.1		1
Backfill, Structure, CIP	Cyd	510500	500	340	1,3401,350
Excavation, Fdn	Cyd	510500	500	400	1,4001,410
Dewatering System, Excavation	Ea		2		2
Steel Sheet Piling, Temp	Sft	360			360
Steel Sheet Piling, Temp, Left in Place	Sft		520		520
False Decking	Sft	20,230			20,230
Railroad Inspection and Flagging	Dlr	180,000	20,000		200,000
Slope Paving Header	Ft		40	87	127
Slope Paving, Conc	Syd		20	30	50
Structure Survey During Construction (STR 11065)	LSUM	1			1
Conduit, Schedule 80, 4 inch, Structure	Ft	2,940			2,940
Conduit, Schedule 40, 2 inch	Ft		160		160
Conduit, Schedule 40, 3 inch	Ft			330	330

\*\* INCLUDES REMOVAL OF EXISTING RAILINGS, SIDEWALKS, DECK, PIER CAPS, PORTIONS OF CRASHWALLS AND ABUTMENTS, PORTIONS OF SLOPE PAVING BEHIND PIERS 2, AND THE EXIST 10'-0" WIDE CONCRETE PAD BEHIND PIER 2, AND THE REMOVAL OF PORTIONS OF THE EXISTING STEEL SHEETING AROUND THE PIERS.

\*\*\* FOR DEWATERING OF PERMANENT STEEL SHEET PILING ENCLOSURES FOR PROPOSED PIER WIDENING.

\*\*\*\* CATG 0002 QUANTITY IS FOR WIDENED PORTIONS OF SLOPE PAVING ON WEST SIDE OF BRIDGE. CATG 0003 QUANTITY IS FOR REPAIRS TO SLOPE PAVING BEHIND PIER 2 AFTER CONSTRUCTION OF CONCRETE ENCASED STEEL SHEET PILING RETAINING WALL.

### NOTES:

THE RECONSTRUCTION DESIGN OF THE SUPERSTRUCTURE, PIER CAPS, AND WIDENED SUBSTRUCTURE UNITS IS BASED ON 1.2 TIMES THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATION HL-93 LOADING WITH THE EXCEPTION THAT THE DESIGN TANDEM PORTION OF THE HL-93 LOAD DEFINITION IS REPLACED BY A SINGLE 60 KIP AXLE LOAD BEFORE APPLICATION OF THIS 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS IMPACT DEFLECTION DOES NOT EXCEED 1/1000 OF SPAN LENGTH. THE ORIGINAL STRUCTURE WAS DESIGNED FOR HS25 LOADING.

FOR DETAILS OF CONCRETE SLOPE PAVING PROTECTION, SEE MDOT STANDARD PLAN B-102-SERIES.

FALSE DECKING INCLUDES THE AREA BOUNDED BY REFERENCE LINES A & B AND OUTSIDE FLANGE FASCIA OF FASCIA BEAMS. THE ESTIMATED AREA IS 9237 SFT DURING REMOVAL AND 10,602 SFT DURING CONSTRUCTION.

INSTALL SHEET PILING USING EITHER AN IMPACT HAMMER OR A VARIABLE MOMENT DRIVER/EXTRACTOR OPERATED TO MINIMIZE VIBRATIONS. DO NOT USE VIBRATORY HAMMERS THAT ARE NOT VARIABLE MOMENT.

SHOES SHALL BE REQUIRED FOR PROP SHEET PILING DUE TO THE ANTICIPATED PRESENCE OF COBBLES/BOULDERS DURING DRIVING.

GROUNDWATER MAY BE PRESENT WITHIN THE PROPOSED STEEL SHEETING ENCLOSURES FOR THE PIER WIDENING. THE COST OF DEWATERING IS INCLUDED IN THE PAY ITEM "DEWATERING SYSTEM, EXCAVATION"

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

<b>DLZ</b>			
ADDENDUM #1	10-30-23	DAF	CLH
ORIGINAL ISSUE	10-6-23	DAF	CLH
REV. NO.	DESCRIPTION	DATE	DR. BY CH. BY

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

## EAST MEDICAL CENTER DRIVE

### GENERAL PLAN OF STRUCTURE

SCALE  
HOR. 1/16"=1'-0"

DRAWING NO.  
**2021-008-BR6**

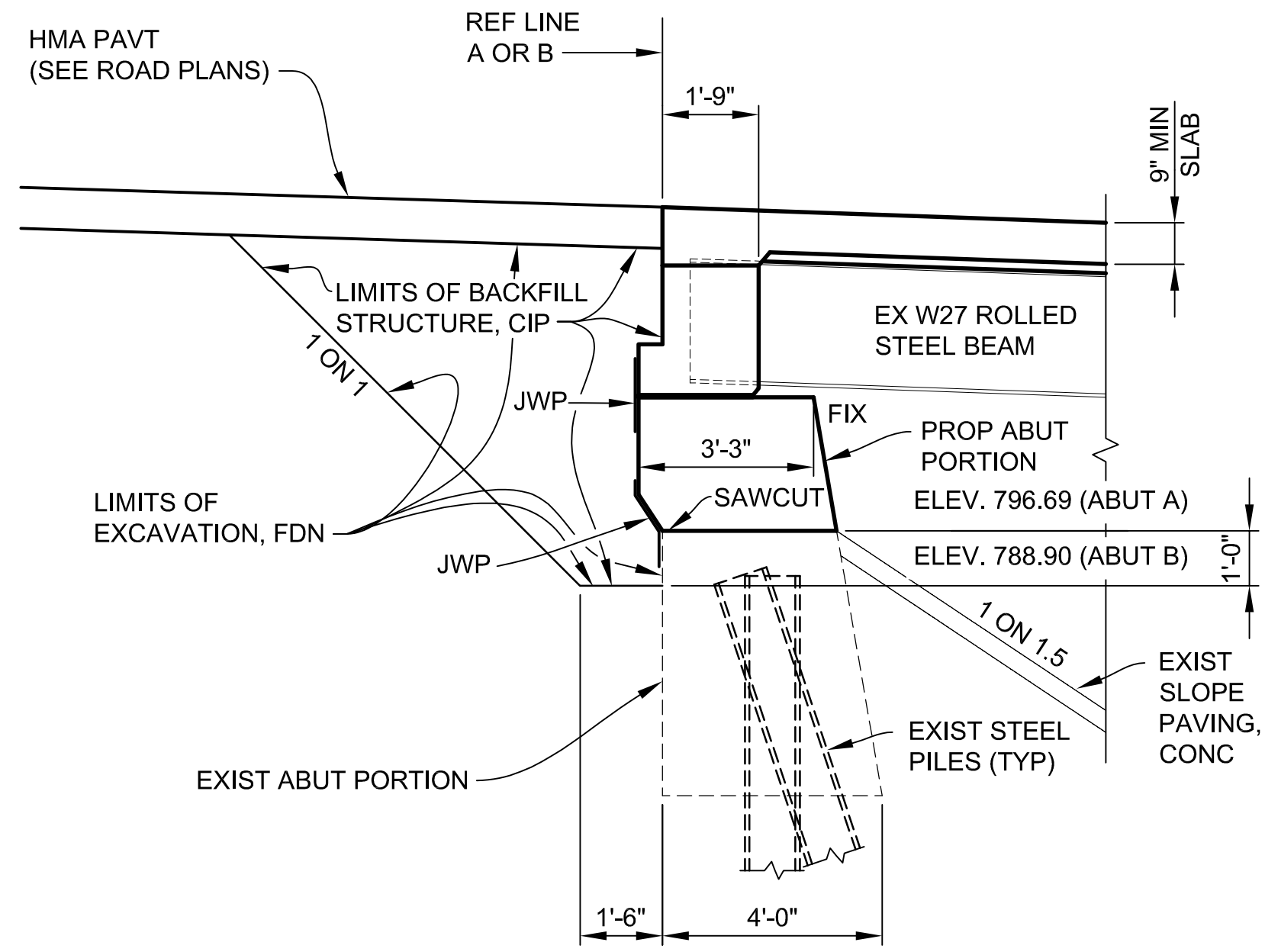
SHEET NO. 69 OF 155

APPROVED BY  
CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734

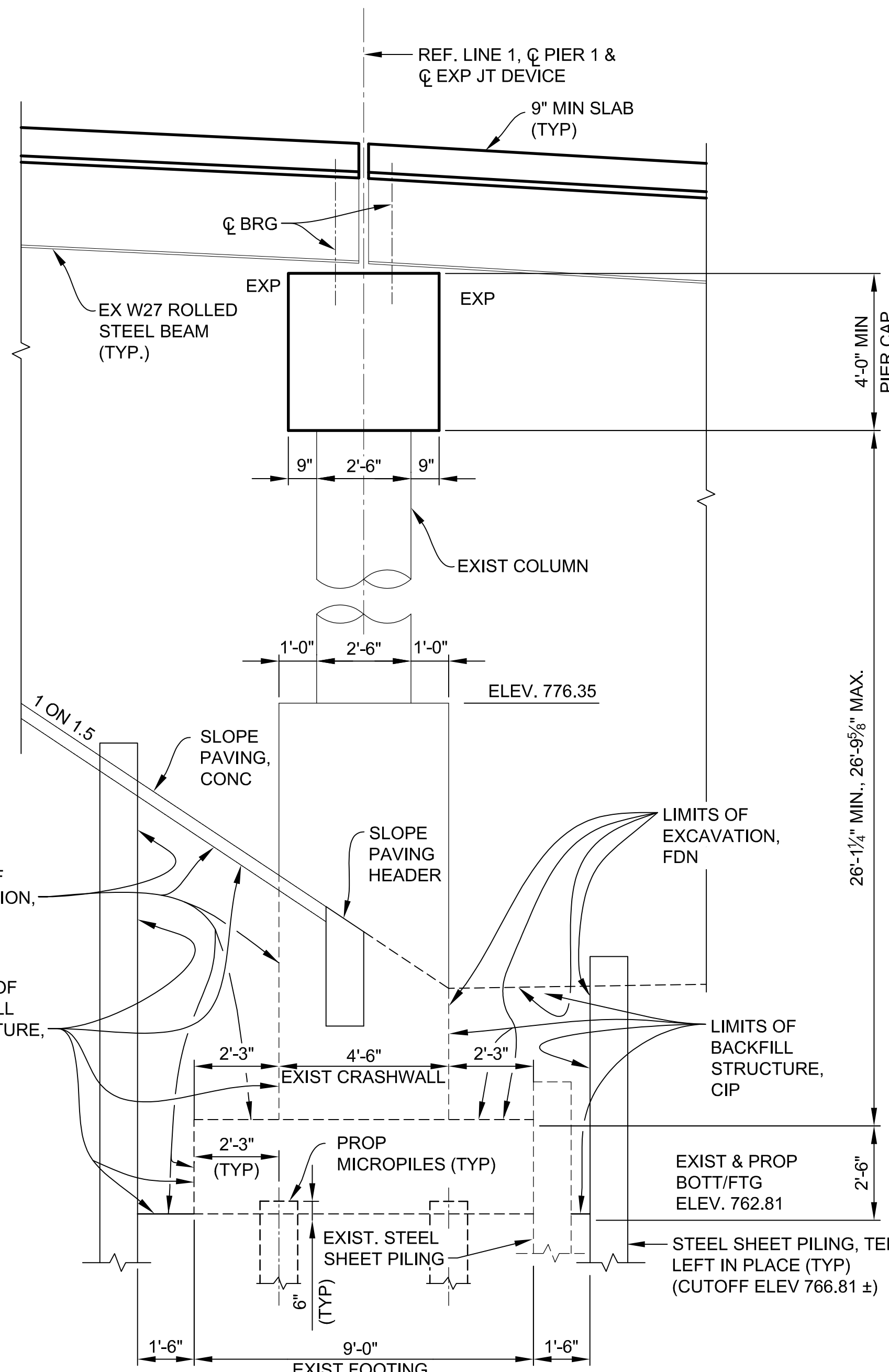
15\_2021\2141\736500\_AA - EMCD\_Bridge\01\_Constr\Draws\CADD\EMCD\_gprfr\_001



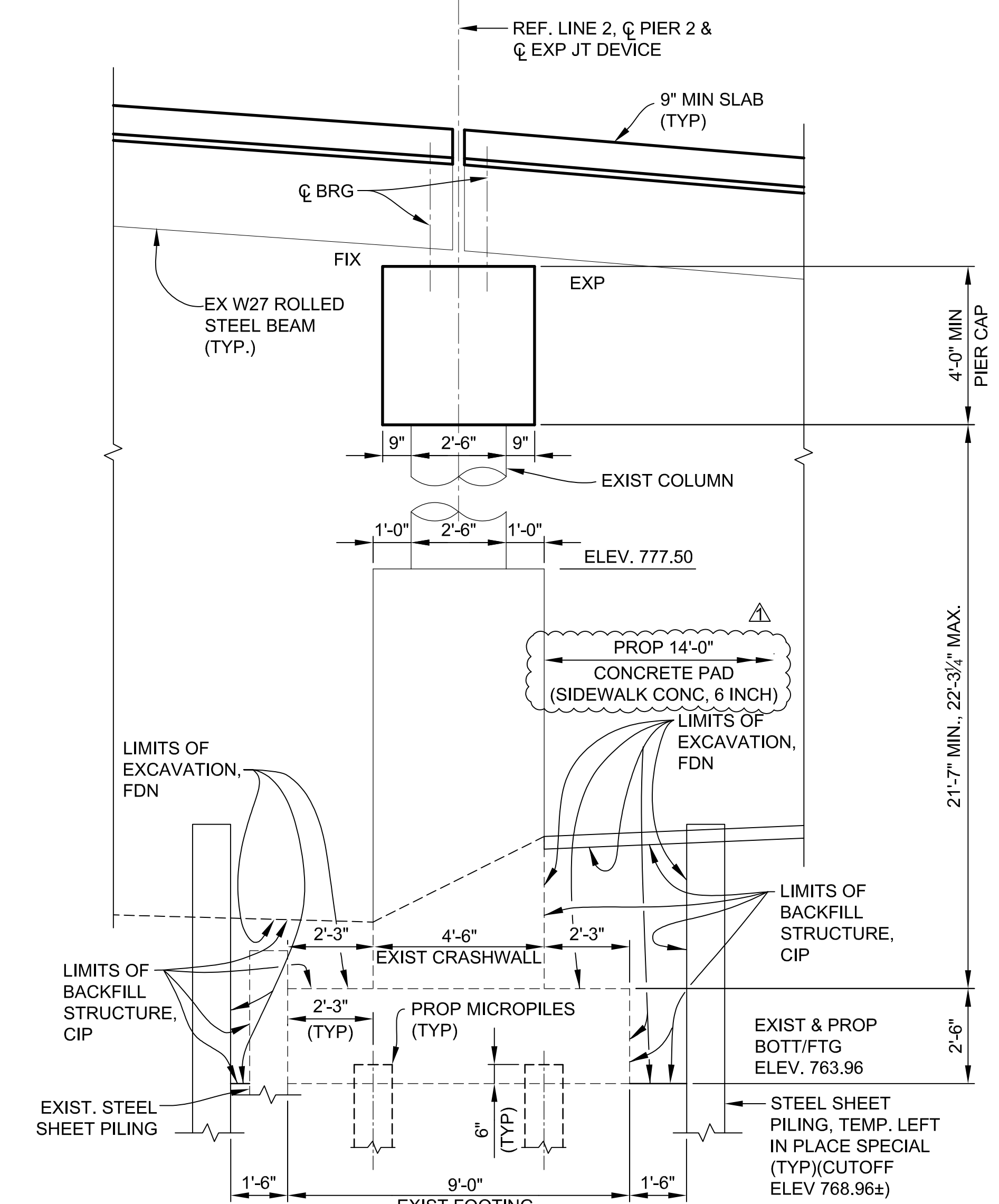




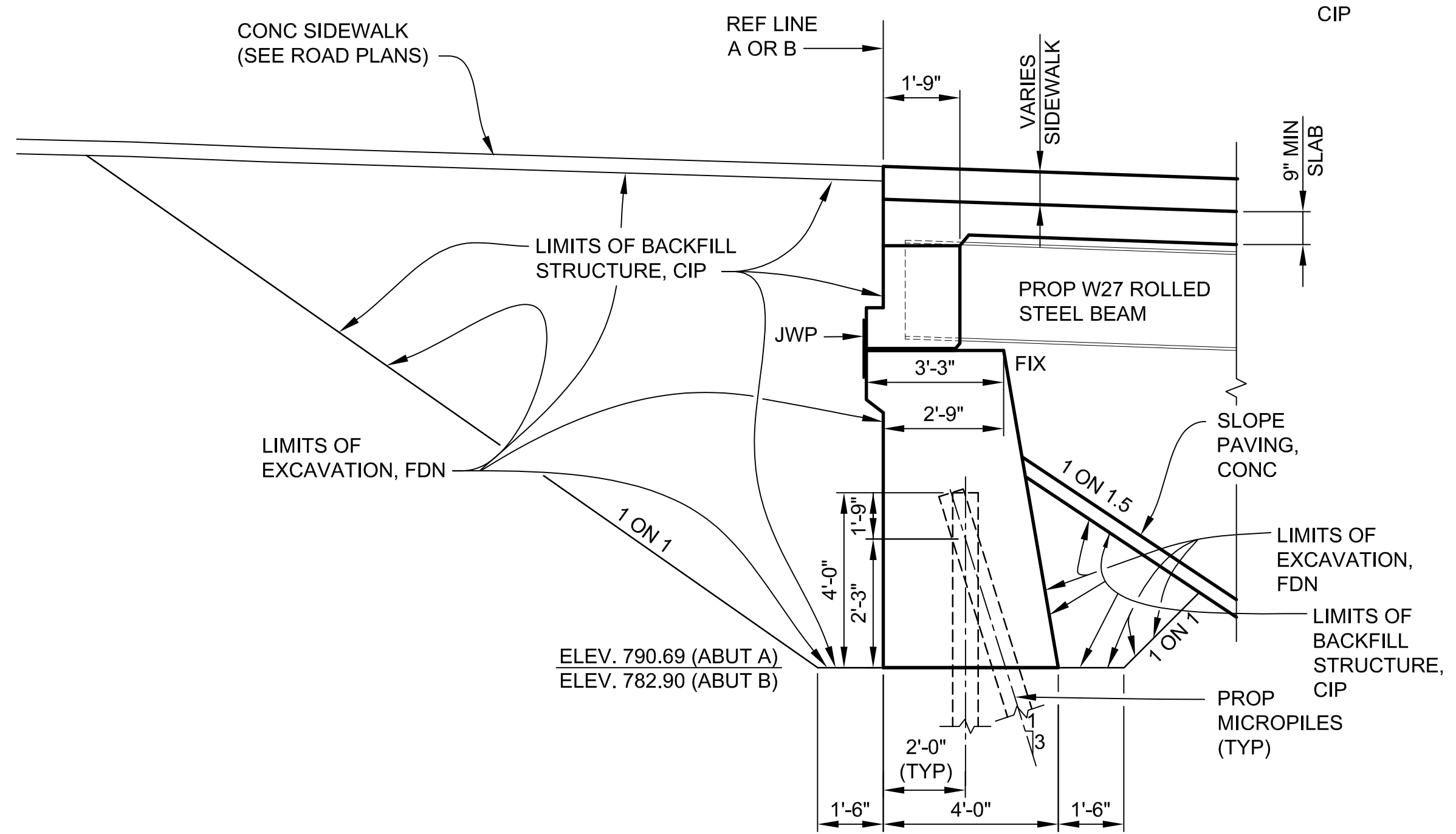
**TYPICAL ABUTMENT SECTION  
(PARTIAL REPLACEMENT)**



**SECTION AT PIER 1**



**SECTION AT PIER 2**



**TYPICAL ABUTMENT SECTION  
(FULL REPLACEMENT)**

3 WORKING DAYS | BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

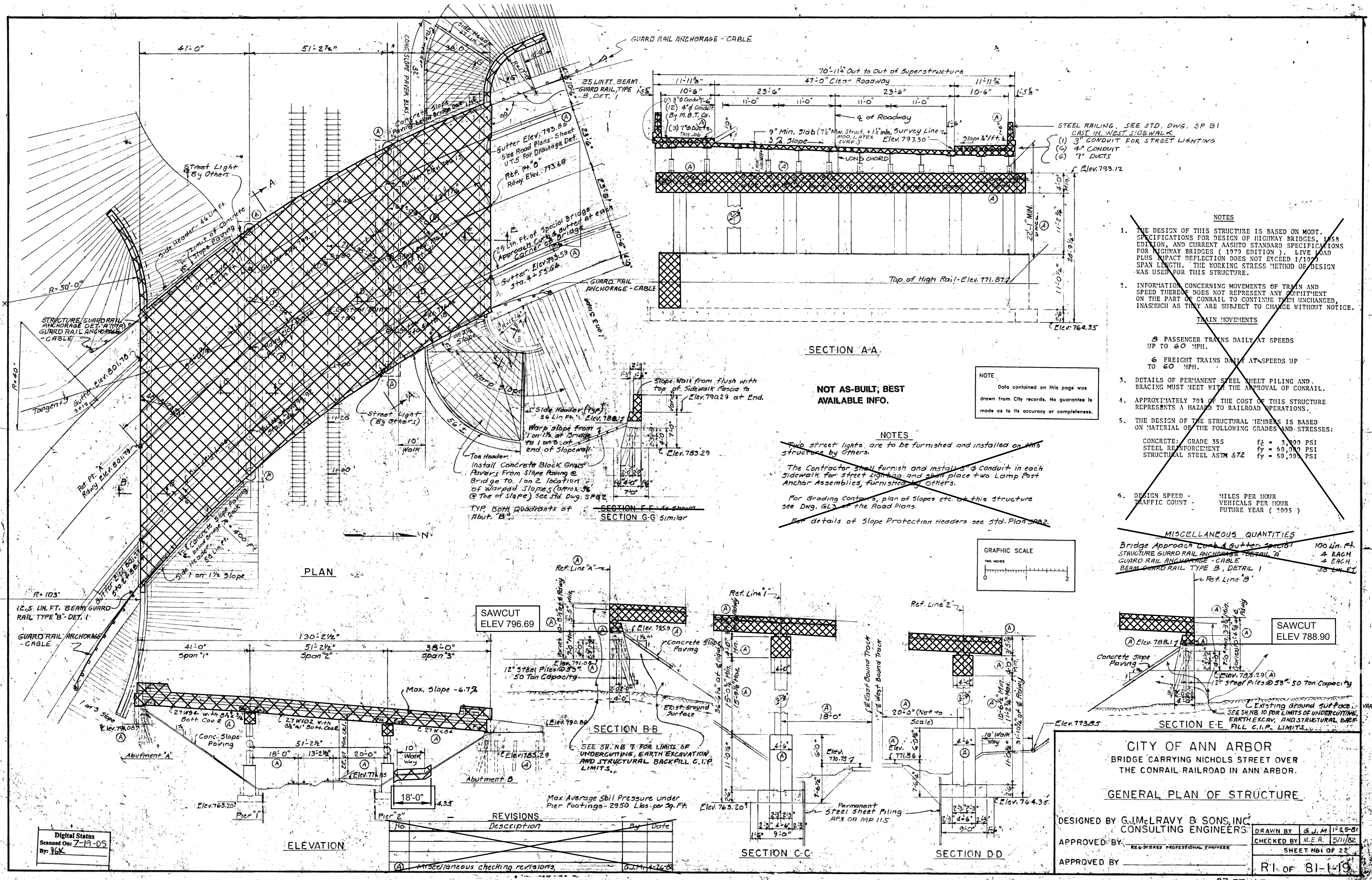
<b>DLZ</b>				
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
	ADDENDUM #1	10-30-23	DAF	CLH
	ORIGINAL ISSUE	10-6-23	DAF	CLH

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
<b>EAST MEDICAL CENTER DRIVE</b>	
<b>GENERAL PLAN OF STRUCTURE</b>	
SCALE HOR. 3/8"=1'-0"	INCH 0 1
DRAWING NO. <b>2021-008-BR8</b>	
SHEET NO. <u>71</u> OF <u>155</u>	

APPROVED BY: CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734

X:\Projects\2021\2141\736300 AA - EMCD Bridge\01\_Constr\Draws\CAD\EMCD\_gpstr\_003





**NOTES:**

REMOVE EXISTING RAILINGS, SIDEWALKS, STRUCTURE LIGHTING, AND DECK. CARE SHALL BE TAKEN TO SALVAGE EXISTING SHEAR DEVELOPERS. WHERE EXISTING SHEAR DEVELOPERS ARE DAMAGED THEY SHALL BE REPLACED IN KIND. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

SAW-CUT THE DECK ON BOTH THE TOP AND BOTTOM SURFACE PRIOR TO DECK REMOVAL PROCEDURES.

EXISTING STRUCTURE NAME PLATES AND TRAFFIC SIGNS SHALL BE SALVAGED, CLEANED AND REINSTALLED ON PROPOSED STRUCTURE. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

REMOVE EXISTING PIER CAPS AND PORTIONS OF THE CRASH WALL. SALVAGE BLAST CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT IN PIER COLUMNS AND EMBED IN PROPOSED PIER CAP. SALVAGE BLAST CLEAN, AND STRAIGHTEN EXISTING HORIZONTAL REINFORCEMENT IN THE CRASH WALL. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

REMOVE PORTIONS OF EXISTING ABUTMENTS. EXISTING REINFORCING STEEL SHALL BE BLAST CLEANED, STRAIGHTENED AND EMBEDDED IN PROPOSED ABUTMENTS. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

EXISTING BEAMS SHALL BE REMOVED AND PLACED ASIDE FOR REHABILITATION AND GALVANIZING. EXISTING DIAPHRAGMS AND CONNECTION PLATES SHALL BE REMOVED. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

REMOVE PORTIONS OF EXISTING SLOPE PAVING BEHIND PIERS 1 AND 2 FOR PLACEMENT OF THE PERMANENT STEEL SHEET PILING WALL, 14" CONCRETE PAD, AND SOIL NAIL WALL. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

PLAN ELEVATIONS REFER TO NAVD88 DATUM. ELEVATION EQUATION: PROP ELEV. = EXIST. PLAN ELEV. - 0.39 FT

THE ONLY ITEMS OF WORK TO BE DONE FROM THIS SHEET ARE IDENTIFIED BY USING THE LEGEND BELOW.

PROPOSED WORK  
 DENOTES REMOVAL PORTIONS

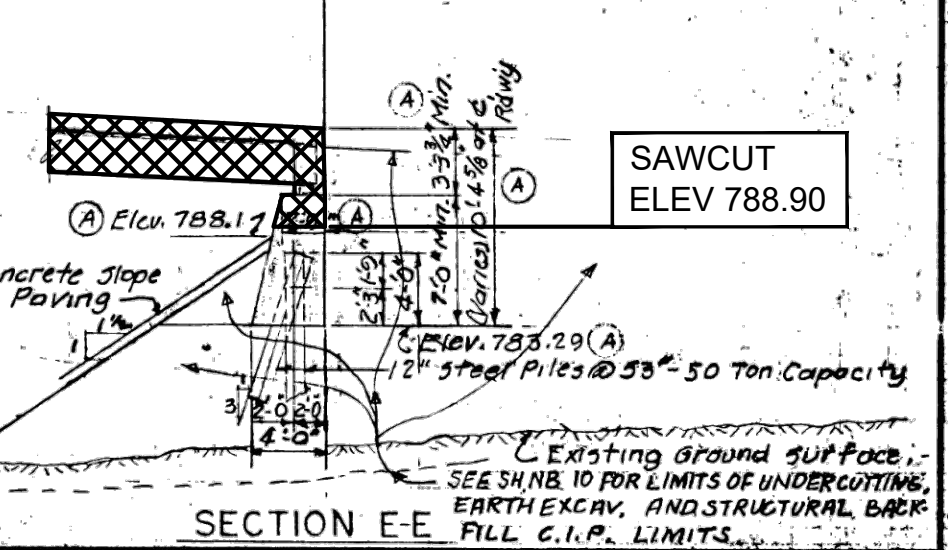
- NOTES**
- THE DESIGN OF THIS STRUCTURE IS BASED ON MODT. SPECIFICATIONS FOR DESIGN OF HIGHWAY BRIDGES, 1988 EDITION, AND CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (1979 EDITION). LIVE LOAD PLUS IMPACT DEFLECTION DOES NOT EXCEED 1/100 SPAN LENGTH. THE WORKING STRESS METHOD OF DESIGN WAS USED FOR THIS STRUCTURE.
  - INFORMATION CONCERNING MOVEMENTS OF TRAIN AND SPEED THEREOF DOES NOT REPRESENT ANY COMMITMENT ON THE PART OF CONRAIL TO CONTINUE THEM UNCHANGED, INASMUCH AS THEY ARE SUBJECT TO CHANGE WITHOUT NOTICE.
- TRAIN MOVEMENTS**
- 5 PASSENGER TRAINS DAILY AT SPEEDS UP TO 60 MPH.
  - 6 FREIGHT TRAINS DAILY AT SPEEDS UP TO 60 MPH.
- DETAILS OF PERMANENT STEEL SHEET PILING AND BRACING MUST MEET WITH THE APPROVAL OF CONRAIL.
  - APPROXIMATELY 70% OF THE COST OF THIS STRUCTURE REPRESENTS A HAZARD TO RAILROAD OPERATIONS.
  - THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES:
 

CONCRETE: GRADE 355	f <sub>c</sub> = 3,000 PSI
STEEL REINFORCEMENT	f <sub>y</sub> = 60,000 PSI
STRUCTURAL STEEL ASTM 572	f <sub>y</sub> = 50,000 PSI
  - DESIGN SPEED - TRAFFIC COUNT -
 

MILES PER HOUR	VEHICLES PER HOUR
FUTURE YEAR ( 2005 )	

**MISCELLANEOUS QUANTITIES**

Bridge Approach Curb & Gutter Section 100 Lin. Ft.  
 STRUCTURE GUARD RAIL INCLUSIVE DETAIL A 4 EACH  
 GUARD RAIL ANCHORAGE CABLE 4 EACH  
 BEAM GUARD RAIL TYPE B, DETAIL 1 30 LIN. FT.



**CITY OF ANN ARBOR**  
 BRIDGE CARRYING NICHOLS STREET OVER THE CONRAIL RAILROAD IN ANN ARBOR.

**GENERAL PLAN OF STRUCTURE**

DESIGNED BY G.J.McLRAVY & SONS, INC.  
 CONSULTING ENGINEERS

APPROVED BY: \_\_\_\_\_  
 REGISTERED PROFESSIONAL ENGINEER

APPROVED BY: \_\_\_\_\_

DRAWN BY G.J.M. 11-29-01  
 CHECKED BY M.E.R. 5/11/02  
 SHEET NO. 1 OF 23  
 R1 OF 81-119

**SECTION A-A**

NOT AS-BUILT, BEST AVAILABLE INFO.

**NOTE:**  
 Data contained on this page was drawn from City records. No guarantee is made as to its accuracy or completeness.

**NOTES**

Two street lights are to be furnished and installed on this structure by others.

The Contractor shall furnish and install a conduit in each sidewalk for street lighting, and shall place two Lamp Post Anchor Assemblies, furnished by others.

For Grading Contour, plan of Slopes etc. of this structure see Dwg. G-3 of the Road Plans.

For details of Slope Protection Headers see Std. Plan 39A2.



**REVISIONS**

No.	Description	By	Date
1	Miscellaneous checking revisions	SM	4-26-05

X:\Projects\2021\2141\736500\_AA - EMCD Bridge\01\_ConstrDocs\CAD\EMCD\_rem\_001

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

ADDENDUM #1	10-30-23	DAF	CLH	
ORIGINAL ISSUE	10-6-23	DAF	CLH	
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY

**PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR**

**EAST MEDICAL CENTER DRIVE**

EXISTING GENERAL PLAN OF STRUCTURE  
 REMOVAL

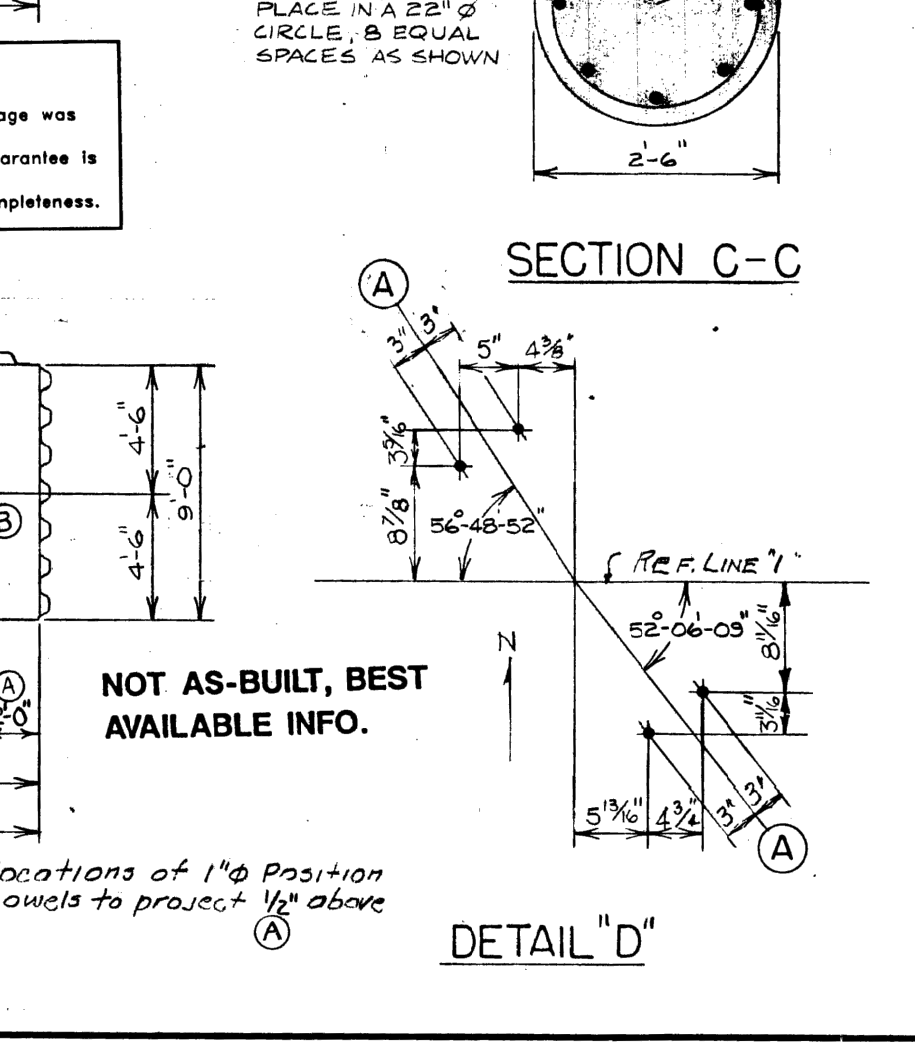
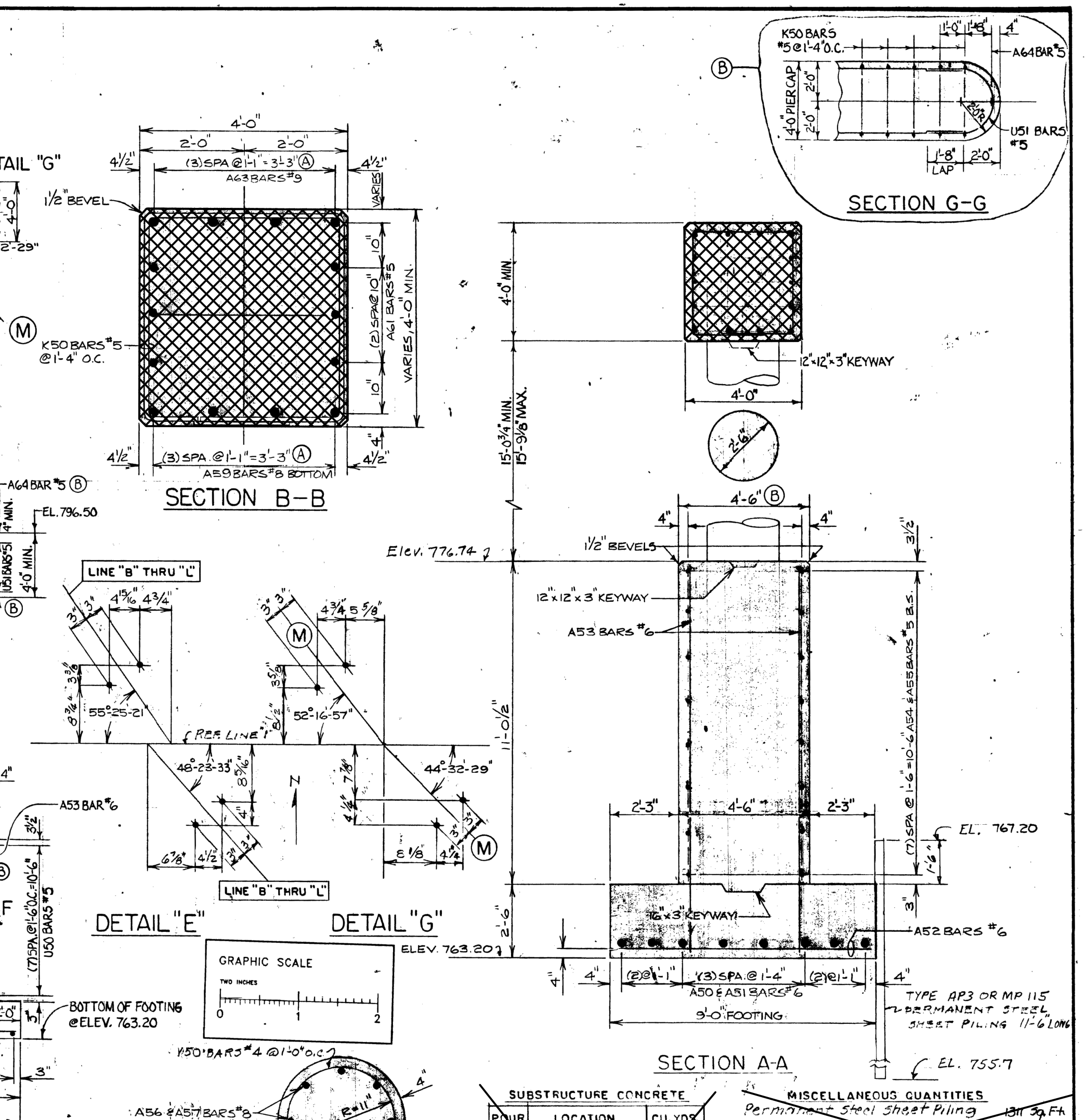
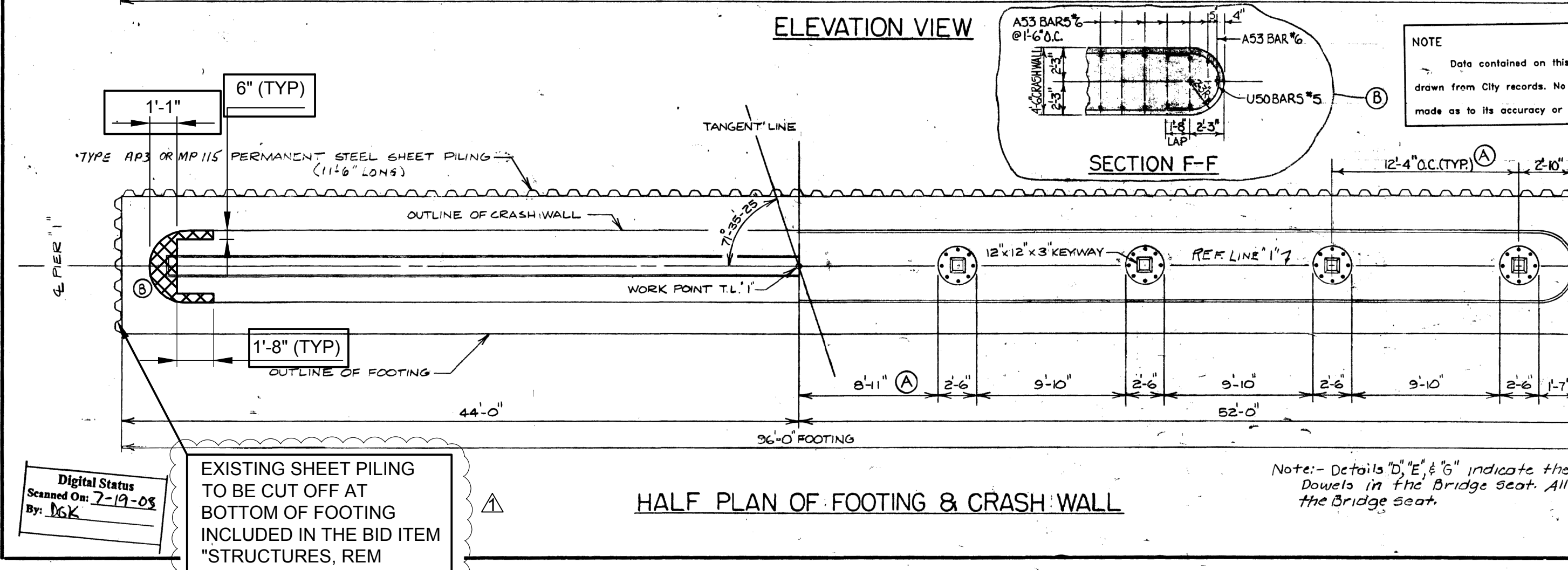
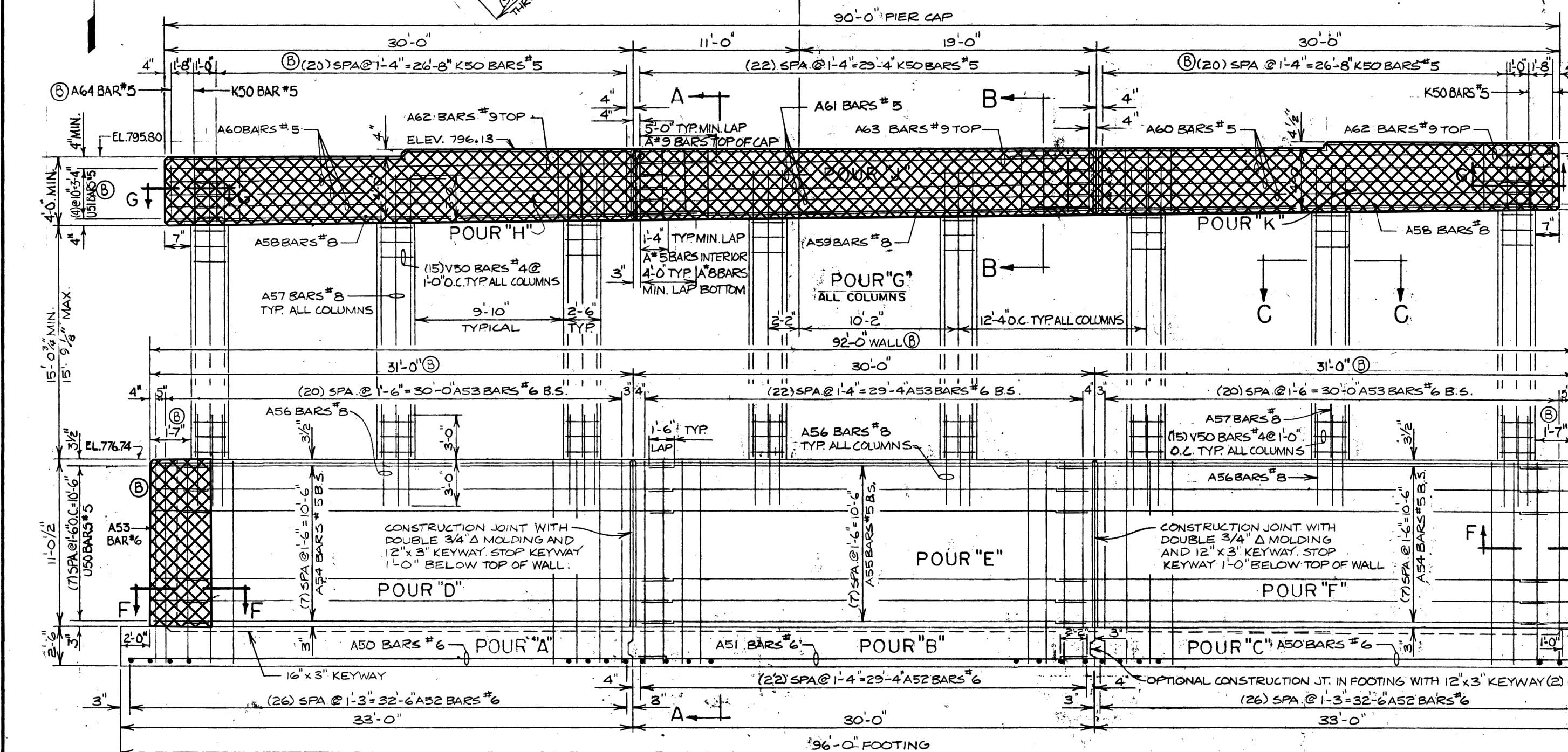
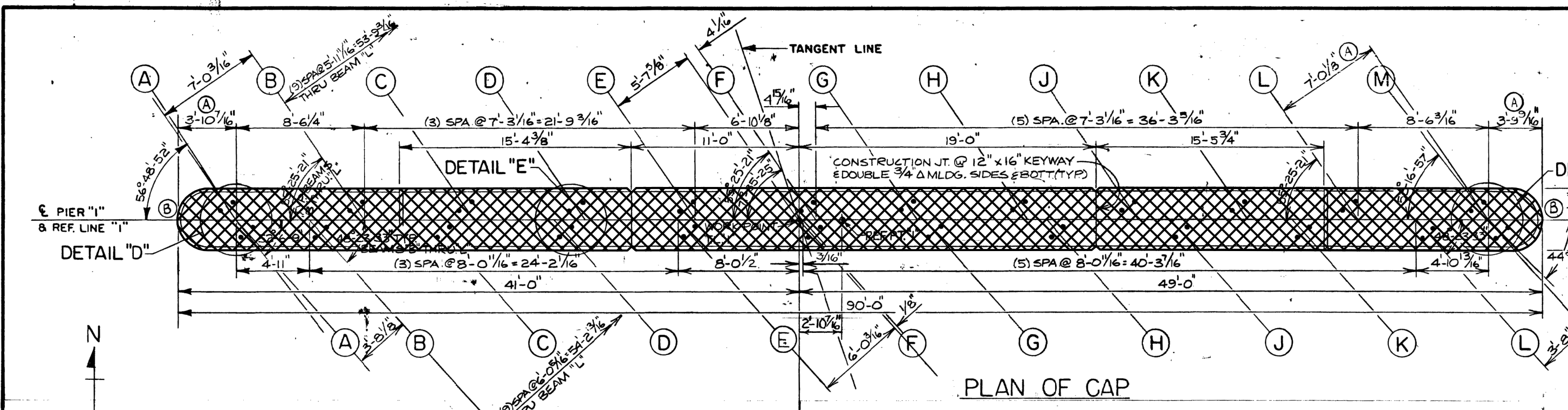
SCALE: NONE 0 INCH 1

DRAWING NO. 2021-008-BR9

SHEET NO. 72 OF 155

APPROVED BY: \_\_\_\_\_  
 CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734





NOTES:  
 REMOVE EXISTING PIER CAPS AND PORTIONS OF THE CRASH WALL. SALVAGE BLAST CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT IN PIER COLUMNS AND EMBED IN PROPOSED PIER CAP. SALVAGE BLAST CLEAN, AND STRAIGHTEN EXISTING HORIZONTAL REINFORCEMENT IN THE CRASH WALL. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".  
 PLAN ELEVATIONS REFER TO NAVD88 DATUM.  
 ELEVATION EQUATION:  
 PROP ELEV. = EXIST. PLAN ELEV. -0.39 FT

THE ONLY ITEMS OF WORK TO BE DONE FROM THIS SHEET ARE IDENTIFIED BY USING THE LEGEND BELOW.

SUBSTRUCTURE CONCRETE		MISCELLANEOUS QUANTITIES	
POUR	LOCATION	CU. YDS	
A	Footing	27.5	Bermant Steel Sheet Piling 131 sq. Ft.
B	Footing	25.0	Protective Sealant Coating for Concrete 360 sq. Ft.
C	Footing	27.5	Low Temperature Protection Substructure Concrete 316.7 cu. Yds.
D	Wall	57.0	
E	Wall	55.2	
F	Wall	57.0	
G	Columns	22.2	
H	Cap	18.0	
J	Cap	18.5	
K	Cap	18.0	
Total		325.3	

CITY OF ANN ARBOR  
 BRIDGE CARRYING NICHOLS STREET OVER THE CONRAIL RAILROAD IN ANN ARBOR

PIER "I" DETAILS

DESIGNED BY G.J. McLRAY & SONS, INC. CONSULTING ENGINEERS  
 APPROVED BY \_\_\_\_\_ REGISTERED PROFESSIONAL ENGINEER  
 APPROVED BY \_\_\_\_\_

DRAWN BY GMC 4/31  
 CHECKED BY M.ROBINSON 3/26/82  
 SHEET NB11 OF 22  
 RI OF 81-1-19

X:\Projects\2021\2141\736500\_AA - EMCD Bridge\01\_Constr\Docs\CAD\EMCD\_rem\_006

Digital Status  
 Scanned On: 7-19-08  
 By: JCK

3 WORKING DAYS  
 BEFORE YOU DIG  
 CALL MISS DIG  
 800-482-7171  
 (TOLL FREE)

REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
ADDENDUM #1	10-30-23	DAF	CLH	
ORIGINAL ISSUE	10-6-23	DAF	CLH	

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

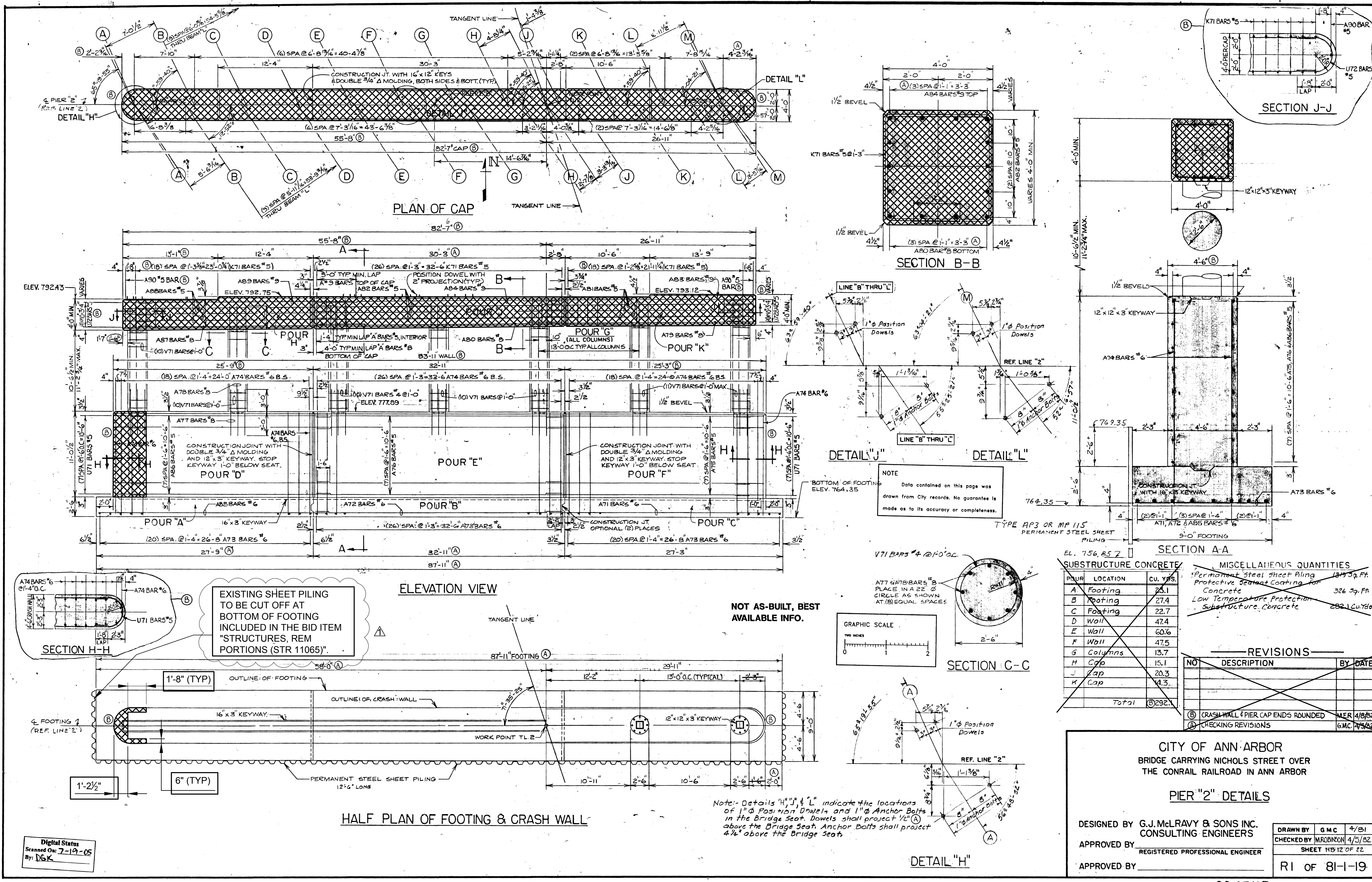
**EAST MEDICAL CENTER DRIVE**  
 EXISTING PIER 1 DETAILS  
 REMOVAL

SCALE NONE 0 INCH 1  
 DRAWING NO. 2021-008-BR14  
 SHEET NO. 77 OF 155

APPROVED BY \_\_\_\_\_  
 CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734



X:\Projects\2021\2141\736500\_AA - EMCD Bridge\01\_Constr\Docs\CAD\EMCD\_rem\_007



**NOTES:**

REMOVE EXISTING PIER CAPS AND PORTIONS OF THE CRASH WALL. SALVAGE BLAST CLEAN, AND STRAIGHTEN EXISTING VERTICAL REINFORCEMENT IN PIER COLUMNS AND EMBED IN PROPOSED PIER CAP. SALVAGE BLAST CLEAN, AND STRAIGHTEN EXISTING HORIZONTAL REINFORCEMENT IN THE CRASH WALL. INCLUDED IN THE BID ITEM "STRUCTURES, REHABILITATION, REM PORTIONS (STR 11065)".

PLAN ELEVATIONS REFER TO NAVD88 DATUM.  
ELEVATION EQUATION:  
PROP ELEV. = EXIST. PLAN ELEV. -0.39 FT

THE ONLY ITEMS OF WORK TO BE DONE FROM THIS SHEET ARE IDENTIFIED BY USING THE LEGEND BELOW.

[White Box] PROPOSED WORK  
 [Hatched Box] DENOTES REMOVAL PORTIONS

EL. 756.857

SUBSTRUCTURE CONCRETE		MISCELLANEOUS QUANTITIES	
POUR	LOCATION	CU. YDS.	
A	Footing	23.1	Permanent Steel Sheet Piling 137.59 Ft.
B	Footing	27.4	Protective Sealant Coating for Concrete 326 Sq. Ft.
C	Footing	22.7	Low Temperature Protection Substructure Concrete 282.1 Cu. Yds.
D	Wall	47.4	
E	Wall	60.6	
F	Wall	47.5	
G	Columns	13.7	
H	Cap	15.1	
J	Cap	20.3	
K	Cap	4.3	
Total		292.2	

**REVISIONS**

NO.	DESCRIPTION	BY	DATE
1	CRASH WALL & PIER CAP ENDS ROUNDED	NER	4/18/22
2	CHECKING REVISIONS	GMC	7/5/22

CITY OF ANN ARBOR  
BRIDGE CARRYING NICHOLS STREET OVER  
THE CONRAIL RAILROAD IN ANN ARBOR

**PIER "2" DETAILS**

DESIGNED BY G.J. McRAVY & SONS INC.  
CONSULTING ENGINEERS

APPROVED BY [Signature]  
REGISTERED PROFESSIONAL ENGINEER

APPROVED BY [Signature]

DRAWN BY GMC 4/21  
CHECKED BY MROBSON 4/25/22  
SHEET 112 OF 22

RI OF 81-19

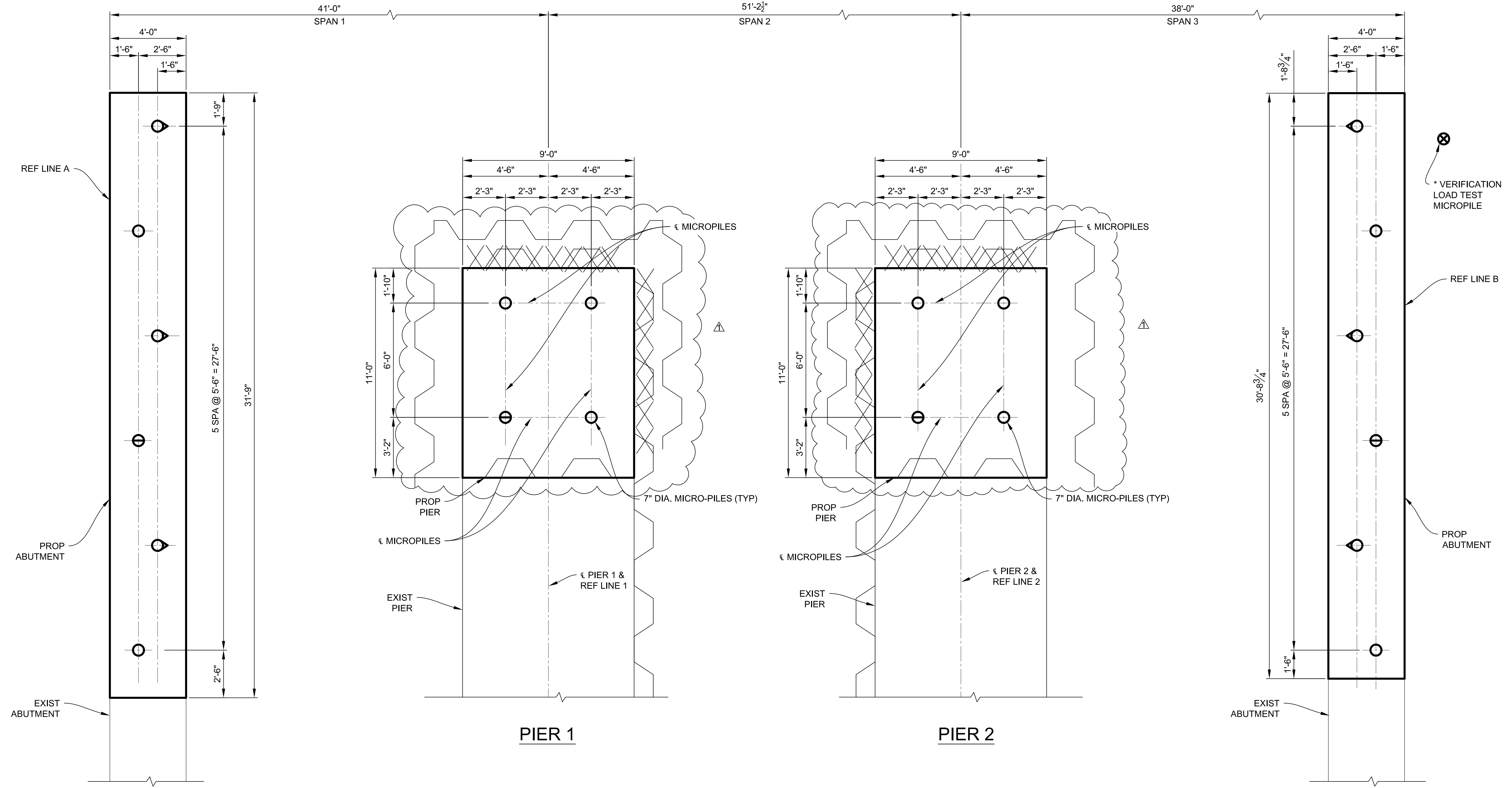
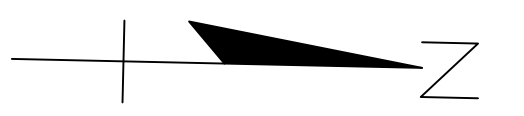
Digital Stamp  
Scanned On: 7-19-05  
By: [Signature]

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
ADDENDUM #1		10-30-23	DAF	CLH
ORIGINAL ISSUE		10-6-23	DAF	CLH

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
<b>EAST MEDICAL CENTER DRIVE</b>	SCALE NONE
<b>EXISTING PIER 2 DETAILS</b>	DRAWING NO.
<b>REMOVAL</b>	<b>2021-008-BR15</b>
APPROVED BY [Signature]	SHEET NO. 78 OF 155

CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734



ESTIMATED QUANTITIES THIS SHEET					
DESCRIPTION	UNITS	CATG 0001	CATG 0002	CATG 0003	TOTAL
Micropile, Type B, Furn and Install, LRFD	Ea		20		20
Micropile, Load Test, Proof, LRFD	Ea		4		4
Micropile, Load Test, Verification, LRFD	Ea		1		1
Micropile Mobilization, LRFD (STR 11065)	LSUM		1		1

\* LOCATION OF VERIFICATION LOAD TEST MICROPILE SHALL BE NEAR, EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

<b>DLZ</b>				
ADDENDUM #1	10-30-23	DAF	CLH	
ORIGINAL ISSUE	10-6-23	DAF	CLH	
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

**EAST MEDICAL CENTER DRIVE**

**MICROPILE PLAN**

DRAWING NO.  
**2021-008-BR17**

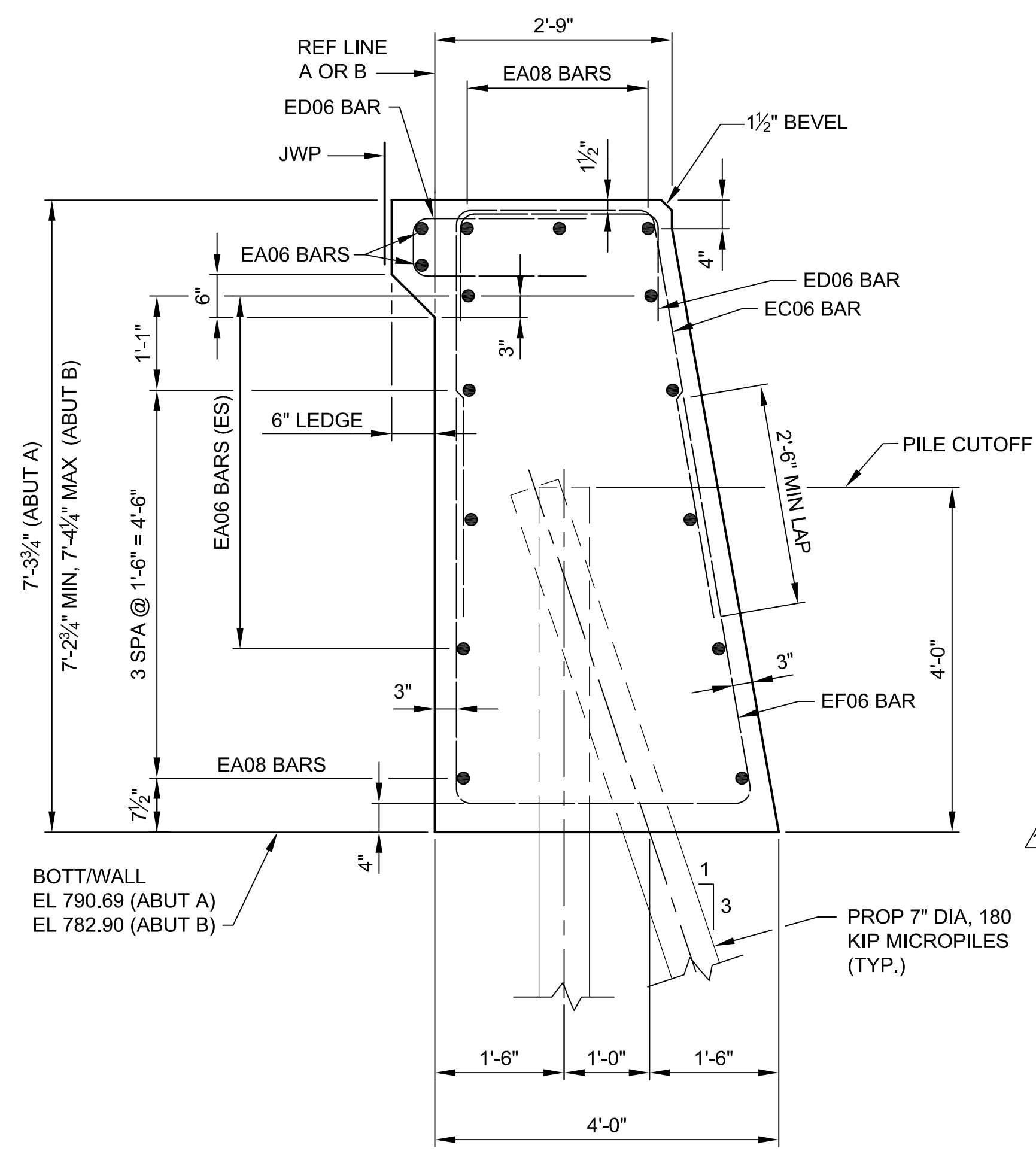
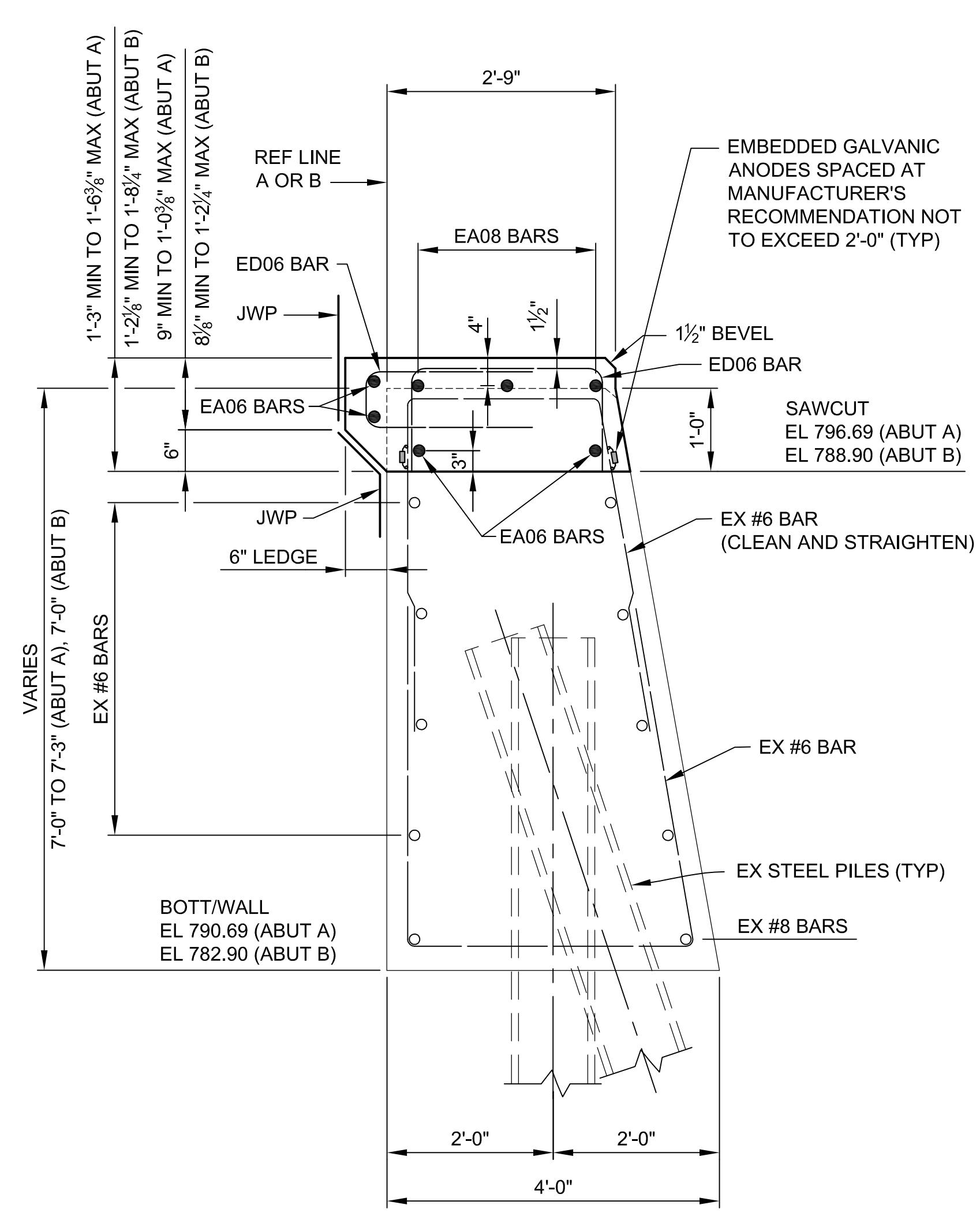
SHEET NO. 80 OF 155

SCALE  
HOR. 3/8"=1'-0"

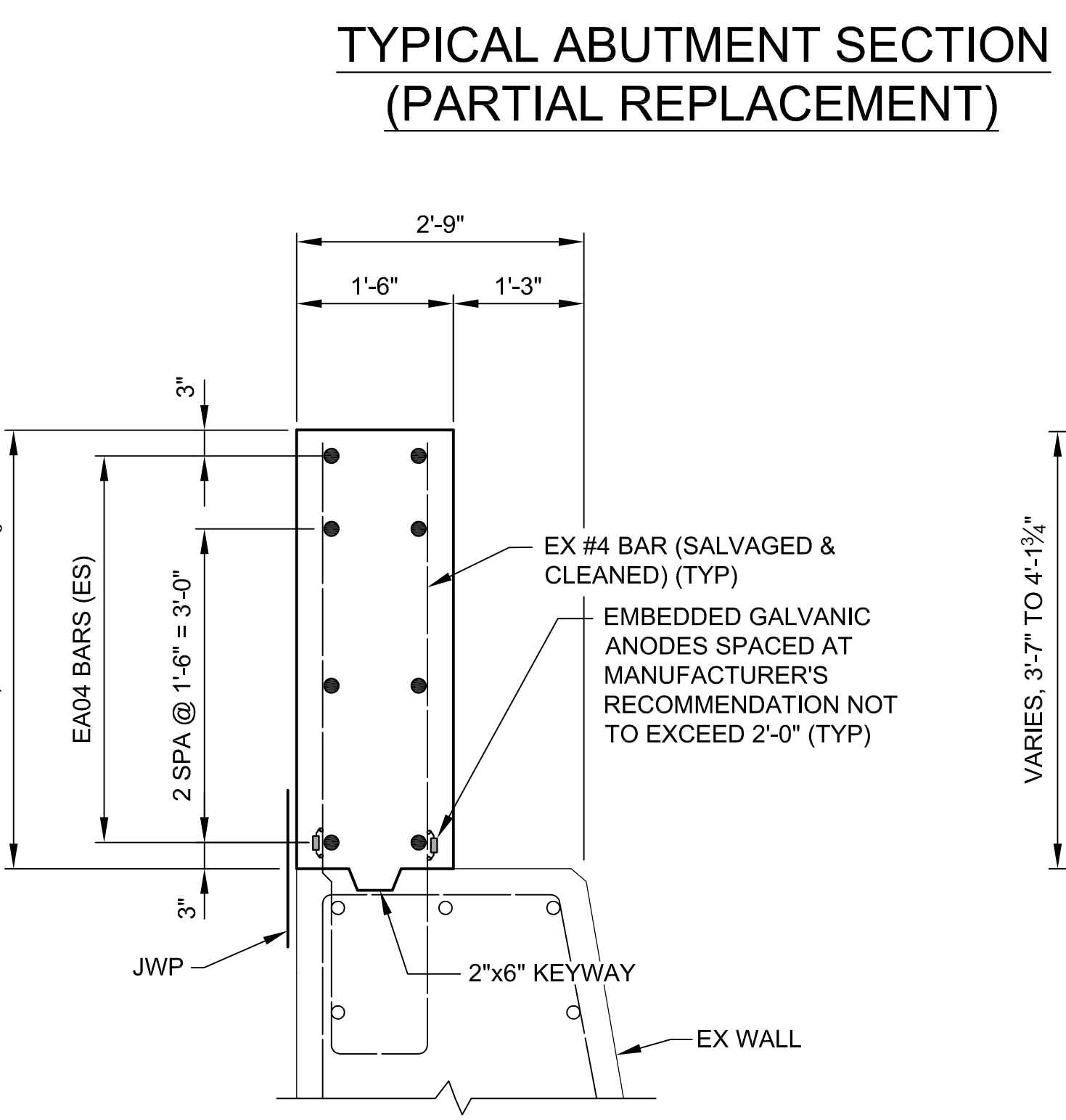
APPROVED BY  
CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734

X:\Projects\2021\2141\756300\_AA - EMCD Bridge\01\_Constr\Draws\CAD\EMCD\_mpile\_001



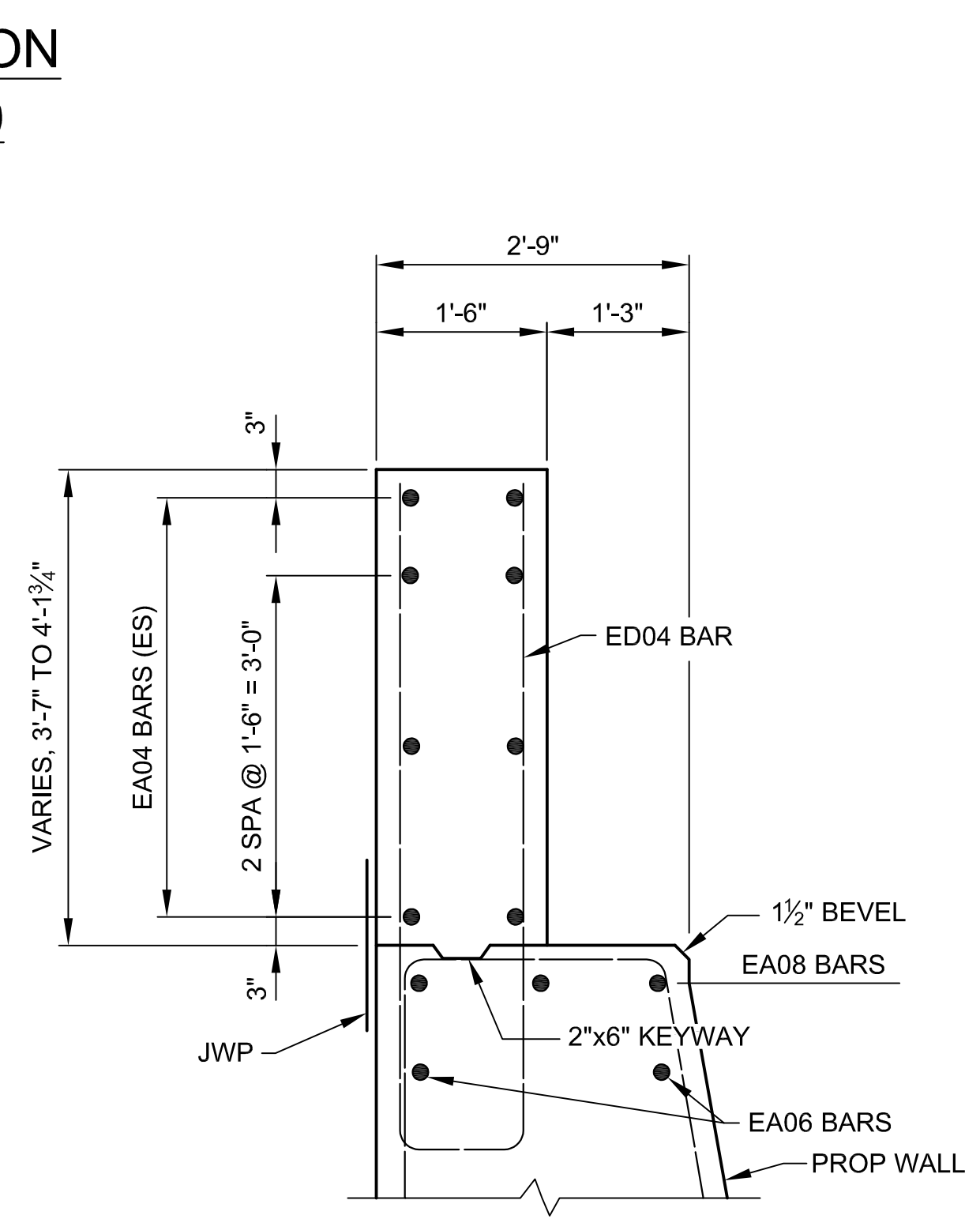


**TYPICAL ABUTMENT SECTION  
(FULL REPLACEMENT)**

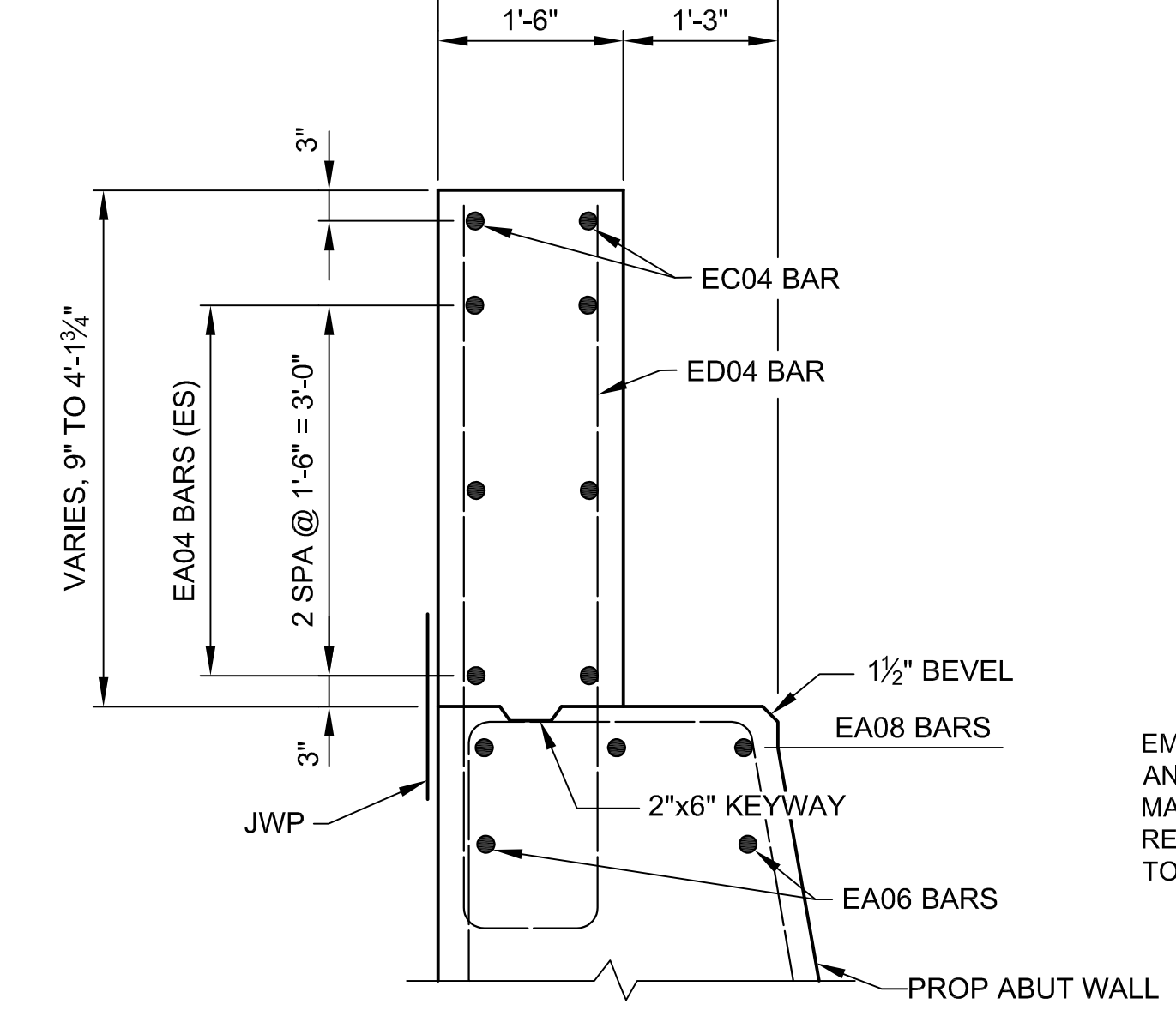


**TYPICAL ABUTMENT SECTION  
(PARTIAL REPLACEMENT)**

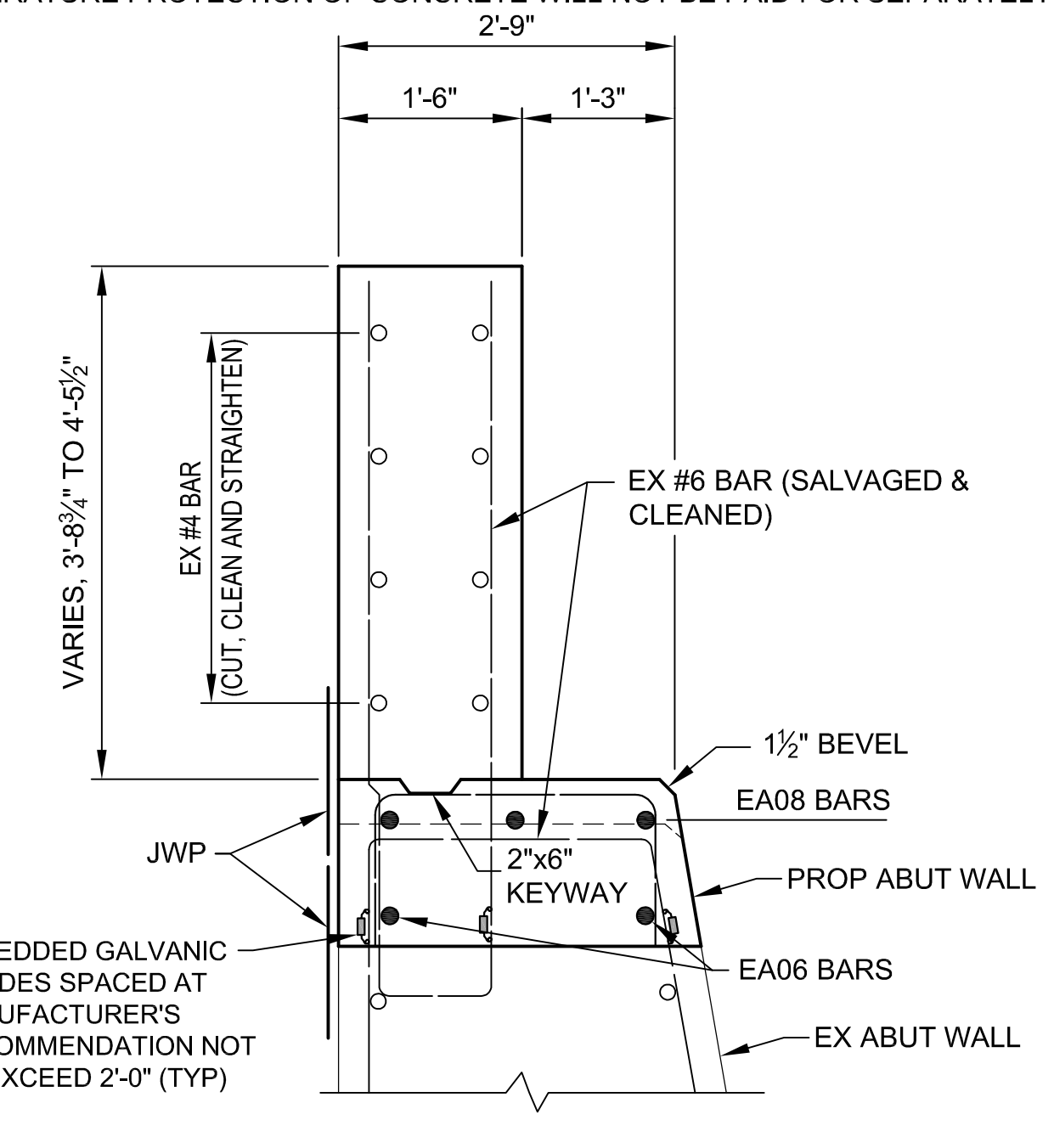
**TYPICAL SLOPEWALL SECTION  
ABUTMENT A (CONSTRUCTION STAGE 3)**



**TYPICAL SLOPEWALL SECTION  
ABUTMENT A (CONSTRUCTION STAGE 2)**



**TYPICAL SLOPEWALL SECTION  
ABUTMENT B (CONSTRUCTION STAGE 2)**



**TYPICAL SLOPEWALL SECTION  
ABUTMENT B (CONSTRUCTION STAGE 3)**

ESTIMATED QUANTITIES THIS SHEET					
DESCRIPTION	UNITS	CATG 0001	CATG 0002	CATG 0003	TOTAL
Substructure Conc	Cyd	30	66		96
Water Repellent Treatment, Penetrating	Syd	1			1
Joint Waterproofing	Sft	770			770
Joint Waterproofing, Expansion	Sft	10			10
Hand Chipping, Other Than Deck	Cft	1			1
Patch, Forming	Sft	3			3
Reinforcement, Mechanical Splice	Ea	14			14
Flushing Cracks, Water	Ft	84			84
Structural Crack, Repr	Ft	84			84
Patching Conc, C-L	Cyd	0.2			0.2
Embedded Galvanic Anode	Ea	275			275

**NOTES**

- NS DENOTES NEAR SIDE.
- FS DENOTES FAR SIDE.
- ES DENOTES EACH SIDE.
- JWP DENOTES JOINT WATERPROOFING.
- EJWP DENOTES EXPANSION JOINT WATERPROOFING.
- REPAIR AREAS/CRACKS SHOWN ARE APPROXIMATIONS BASED ON A BRIDGE INSPECTION THAT TOOK PLACE IN OCTOBER, 2021 AND A FOLLOW-UP INSPECTION IN APRIL, 2023.
- ABUTMENTS SHALL BE SOUNDED PRIOR TO CONSTRUCTION AND ADDITIONAL AREAS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER.
- PENETRATING WATER REPELLENT TREATMENT SHALL BE APPLIED TO THE ABUTMENT REPAIR AREAS AS DIRECTED BY THE ENGINEER.
- INSTALL GALVANIC ANODES ON EXPOSED REBAR ALONG PERIMETER OF REPAIR, SPACED PER MANUFACTURER'S RECOMMENDATIONS (24 INCH MAX).
- A CRACK THAT EXTENDS BELOW THE GROUND LINE SHALL, WITH PRIOR APPROVAL OF THE ENGINEER, BE REPAIRED. ALL EXCAVATION AND BACKFILL, WORK, AND MATERIAL REQUIRED SHALL BE INCLUDED IN PAYMENT FOR "STRUCTURAL CRACK REPR": "EXCAVATION, FDN" AND "BACKFILL, STRUCTURE, CIP".
- FOR BEVEL AND MOLDING DETAILS, SEE MDOT STANDARD PLAN B-103-SERIES.
- FOR MICROPILE QUANTITIES, LAYOUT, AND NOTES, SEE SHEETS 80 & 81 OF 155.
- THE CONTRACTOR MAY ADHESIVE ANCHOR POSITION DOWELS IN HOLES DRILLED IN THE CONCRETE AT ABUTMENTS.
- LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03J OF THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE CONCRETE BID ITEMS.

SUBSTRUCTURE CONCRETE QUANTITIES (CYD)		
POUR	ABUT A	ABUT B
A	3.8	* 29.9
B	4.4	3.4
C	3.5	0.9
D	1.3	* 2.1
E	3.2	4.4
F	2.8	1.9
G	*29.5	0.4
H	* 4.5	
TOTAL	53	43

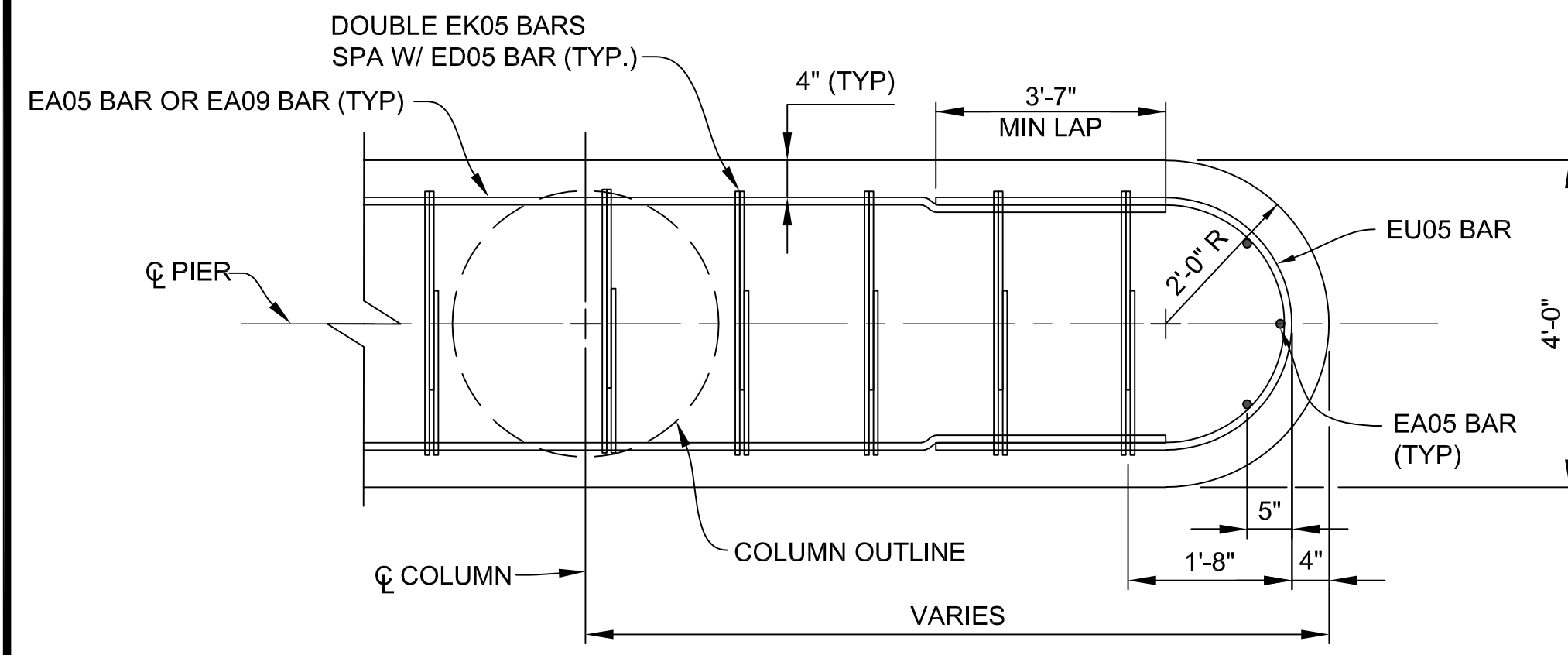
\* DENOTES CATG 0002 (34 CYD @ ABUT A & 32 CYD @ ABUT B), ALL OTHER POURS INCLUDED IN CATG 0001

X:\Projects\2021\2141\735300 AA - EMCD Bridge\01\_ConstrDocs\CAD\EMCD\_sbut\_005

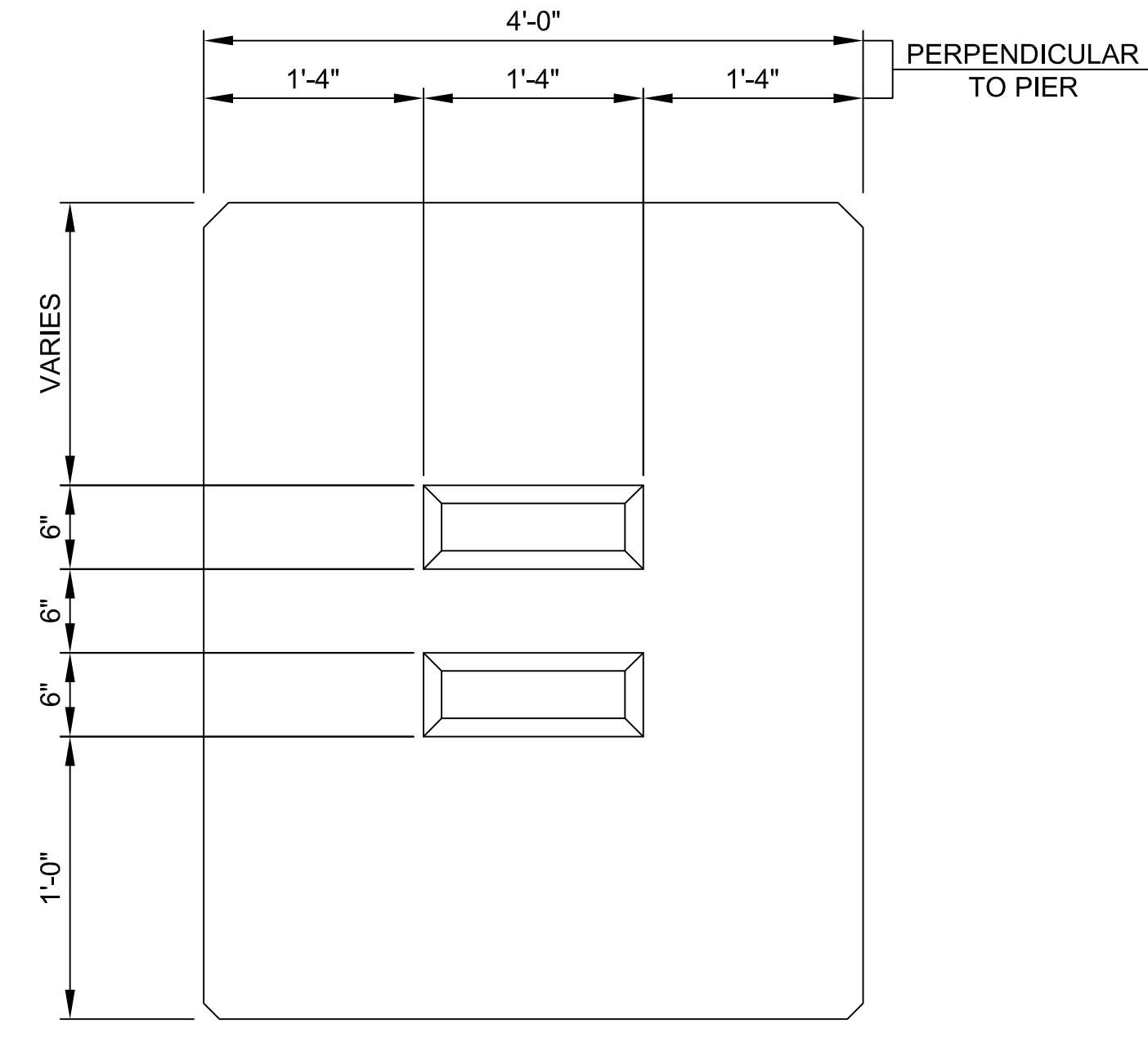
3 WORKING DAYS!  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

<b>CDLZ</b>				
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
	ADDENDUM #1	10-30-23	DAF	CLH
	ORIGINAL ISSUE	10-6-23	DAF	CLH

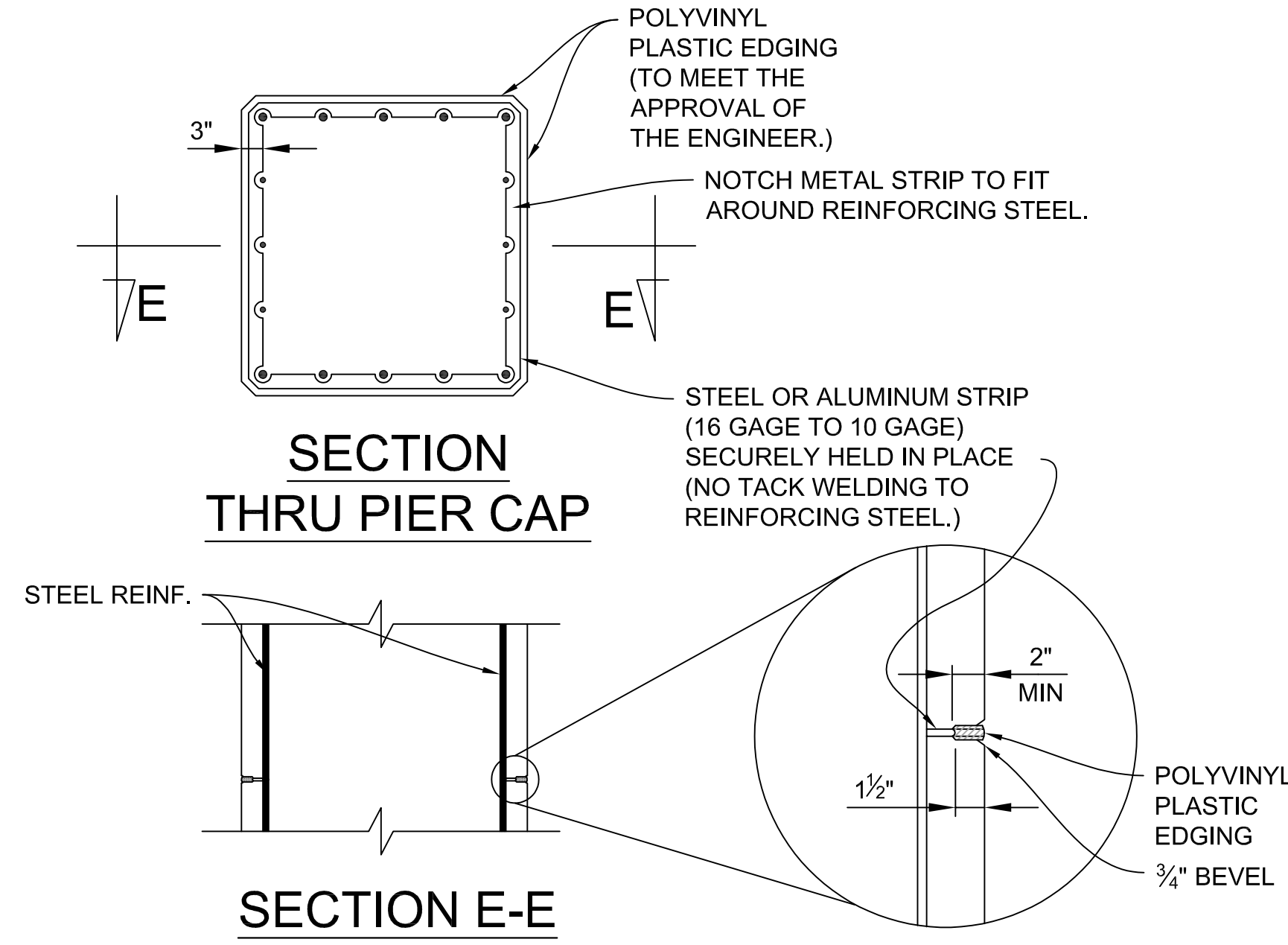
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
<b>EAST MEDICAL CENTER DRIVE</b>	
<b>ABUTMENT DETAILS</b>	
SCALE HOR. 3/4"=1'-0"	INCH 0 1
DRAWING NO. <b>2021-008-BR23</b>	
SHEET NO. <u>86</u> OF <u>155</u>	



TYPICAL CAP END-SECTION



SHEAR KEY DETAIL

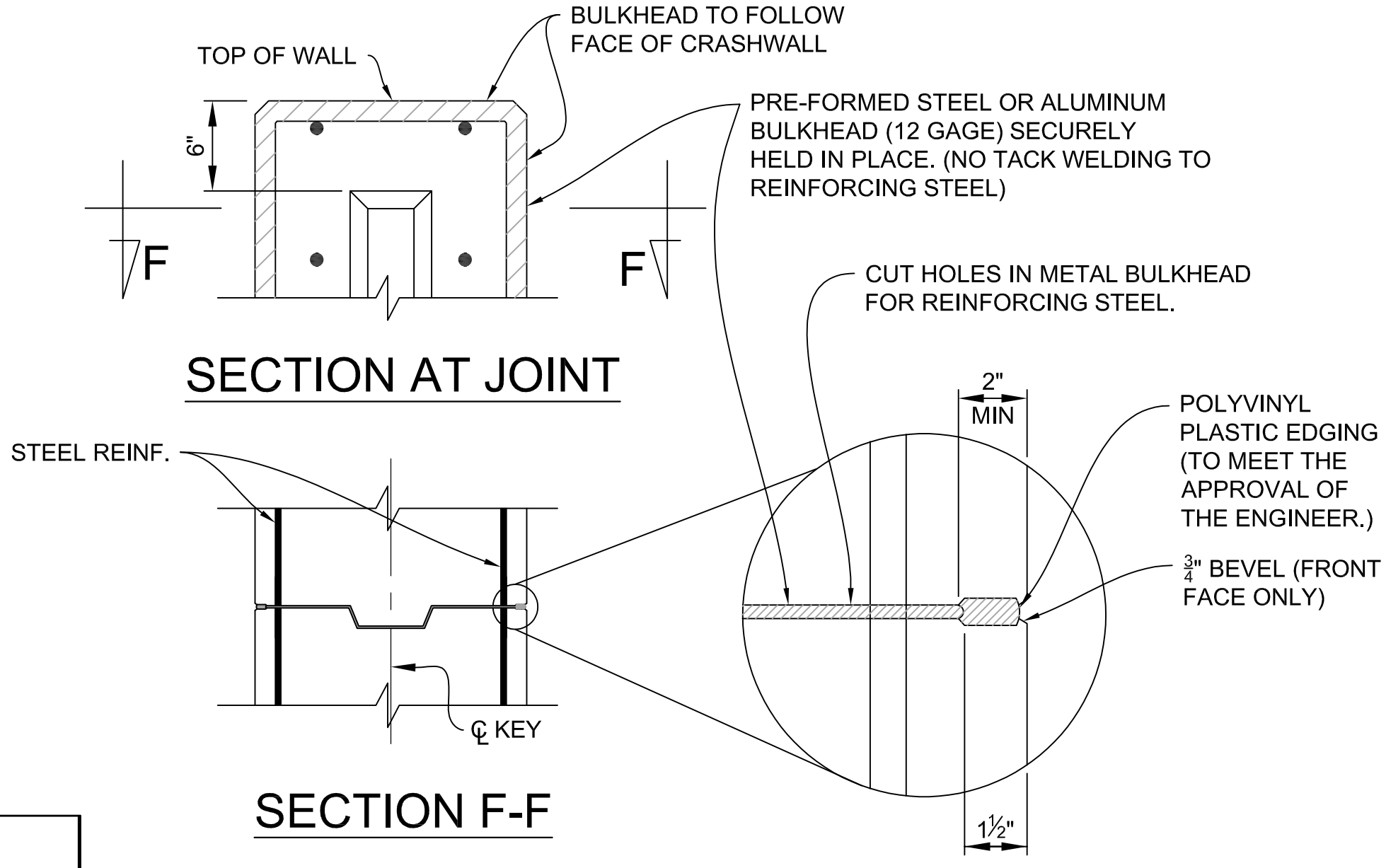


SECTION THRU PIER CAP

SECTION E-E

PIER CAP PARTIAL METAL BULKHEAD DETAILS

NOTES: PARTIAL METAL BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT AT CONTRACTOR'S EXPENSE. CARE IS TO BE USED IN CASTING CONCRETE TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.



SECTION AT JOINT

SECTION F-F

CRASHWALL METAL BULKHEAD DETAILS

NOTES: METAL BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT AT CONTRACTOR'S EXPENSE. CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

SUBSTRUCTURE CONCRETE QUANTITIES (CYD)		
POUR	PIER 1	PIER 2
* A	9.5	9.5
* B	22.5	22.5
* C	3.0	2.0
D	12.0	12.0
E	20.4	18.0
F	17.6	17.0
G	18.0	17.0
TOTAL	103	98

\* DENOTES CATG 0002 (35 CYD @ PIER 1 & 34 CYD @ PIER 2), ALL OTHER POURS INCLUDED IN CATG 0001

NOTES:

REPAIR AREAS/CRACKS SHOWN ARE APPROXIMATIONS BASED ON A BRIDGE INSPECTION THAT TOOK PLACE IN OCTOBER, 2021 AND A FOLLOW-UP INSPECTION IN APRIL, 2023.

PIER COLUMNS AND CRASHWALLS SHALL BE SOUNDED PRIOR TO CONSTRUCTION AND ADDITIONAL AREAS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER.

PENETRATING WATER REPELLENT TREATMENT SHALL BE APPLIED TO THE PIER REPAIR AREAS AS DIRECTED BY THE ENGINEER.

INSTALL GALVANIC ANODES ON EXPOSED REBAR ALONG PERIMETER OF REPAIR, SPACED PER MANUFACTURER'S RECOMMENDATIONS (24 INCH MAX).

⚠ A CRACK THAT EXTENDS BELOW THE GROUND LINE SHALL, WITH PRIOR APPROVAL OF THE ENGINEER, BE REPAIRED. ALL EXCAVATION AND BACKFILL, WORK AND MATERIAL REQUIRED SHALL BE INCLUDED IN PAYMENT FOR "STRUCTURAL CRACK REPR"- "EXCAVATION, FDN" AND "BACKFILL, STRUCTURE, CIP".

APPLY SUBSTRUCTURE HORIZONTAL SURFACE SEALER TO THE TOP HORIZONTAL SURFACE OF PIERS 1 & 2 AFTER THE ELASTOMERIC BEARINGS HAVE BEEN PLACED IN FINAL POSITION ON THE STRUCTURE. CLEAN ACCIDENTALLY COATED VERTICAL SURFACES AT THE CONTRACTOR'S EXPENSE.

APPLY LOW TEMPERATURE PROTECTION OF CONCRETE ACCORDING TO SECTION 706.03J OF THE MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE IS INCLUDED IN THE RELATED ITEMS OF WORK.

FOR MICROPILE QUANTITIES, LAYOUT AND NOTES, SEE SHEETS 80 AND 81 OF 155.

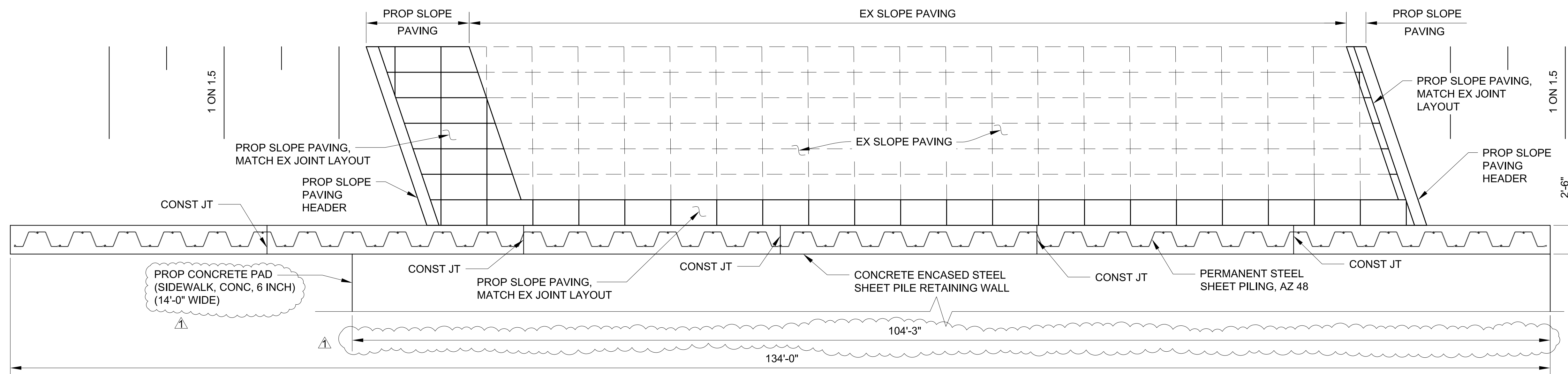
ADJUST BAR SPACING IN FOOTINGS AS NECESSARY TO AVOID MICROPILES.

ESTIMATED QUANTITIES THIS SHEET					
DESCRIPTION	UNITS	CATG 0001	CATG 0002	CATG 0003	TOTAL
Substructure Conc	Cyd	132	69		201
Water Repellent Treatment, Penetrating	Syd	58			58
Substructure Horizontal Surface Sealer (STR 11065)	Syd	93			93
Hand Chipping, Other Than Deck	Cft	129			129
Patch, Forming	Sft	517			517
Adhesive Anchoring of Horizontal Bar, 3/4 inch	Ea		92		92
Adhesive Anchoring of Vertical Bar, 3/4 inch	Ea		8		8
Reinforcement, Mechanical Splice	Ea	32			32
Flushing Cracks, Water	Ft	66			66
Structural Crack, Repr	Ft	66			66
Patching Conc, C-L	Cyd	4.8			4.8
Embedded Galvanic Anode	Ea	280			280

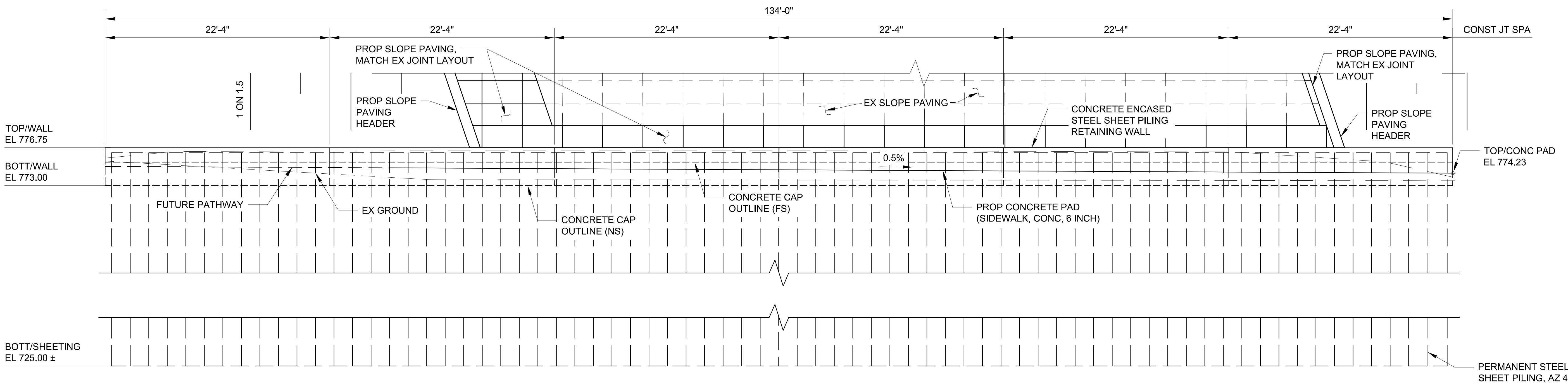
<b>DLZ</b>					PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR				
EAST MEDICAL CENTER DRIVE					SCALE NTS				
PIER DETAILS					INCH 0 1				
DRAWING NO. <b>2021-008-BR27</b>					SHEET NO. <u>90</u> OF <u>155</u>				
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY	APPROVED BY _____				
	ADDENDUM #1	10-30-23	DAF	CLH					
	ORIGINAL ISSUE	10-6-23	DAF	CLH					

X:\Projects\2021\2141\736300\_AA - EMCD Bridge\01\_Constr\Docs\CAD\EMCD\_pier\_004

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)



PLAN



ELEVATION

X:\Projects\2021\2141\736300\_AA - EMCD Bridge\01\_Constr\Draws\CAD\EMCD\_Wall\_001

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)



REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY
ADDENDUM #1		10-30-23	DAF	CLH
ORIGINAL ISSUE		10-6-23	SBV	KJS

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

**EAST MEDICAL CENTER DRIVE**

**RETAINING WALL DETAILS**

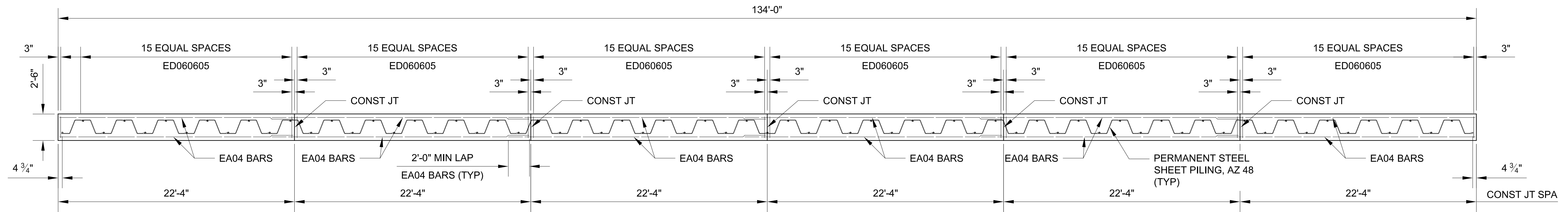
SCALE: 1" = 10'-0"

DRAWING NO. 2021-008-BR50

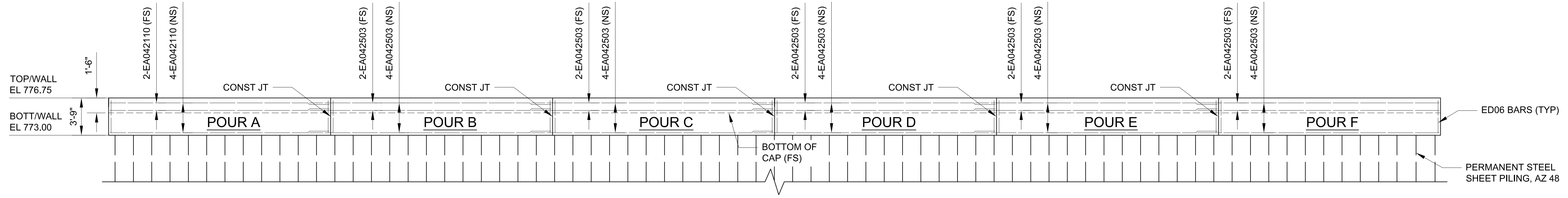
SHEET NO. 114 OF 155

APPROVED BY: \_\_\_\_\_

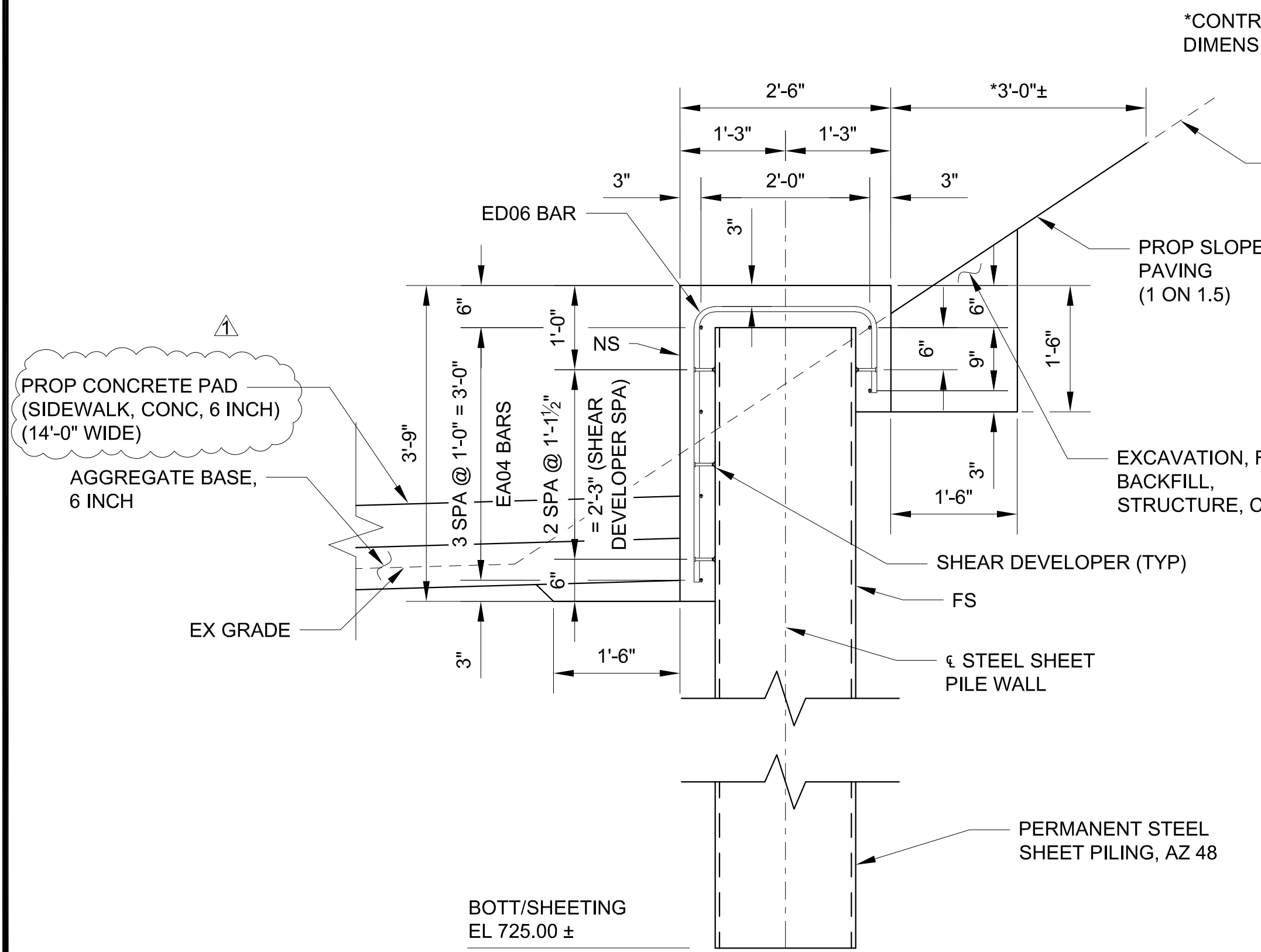
CARRIE L. HAMEL, P.E. MICHIGAN NO. 6201056734



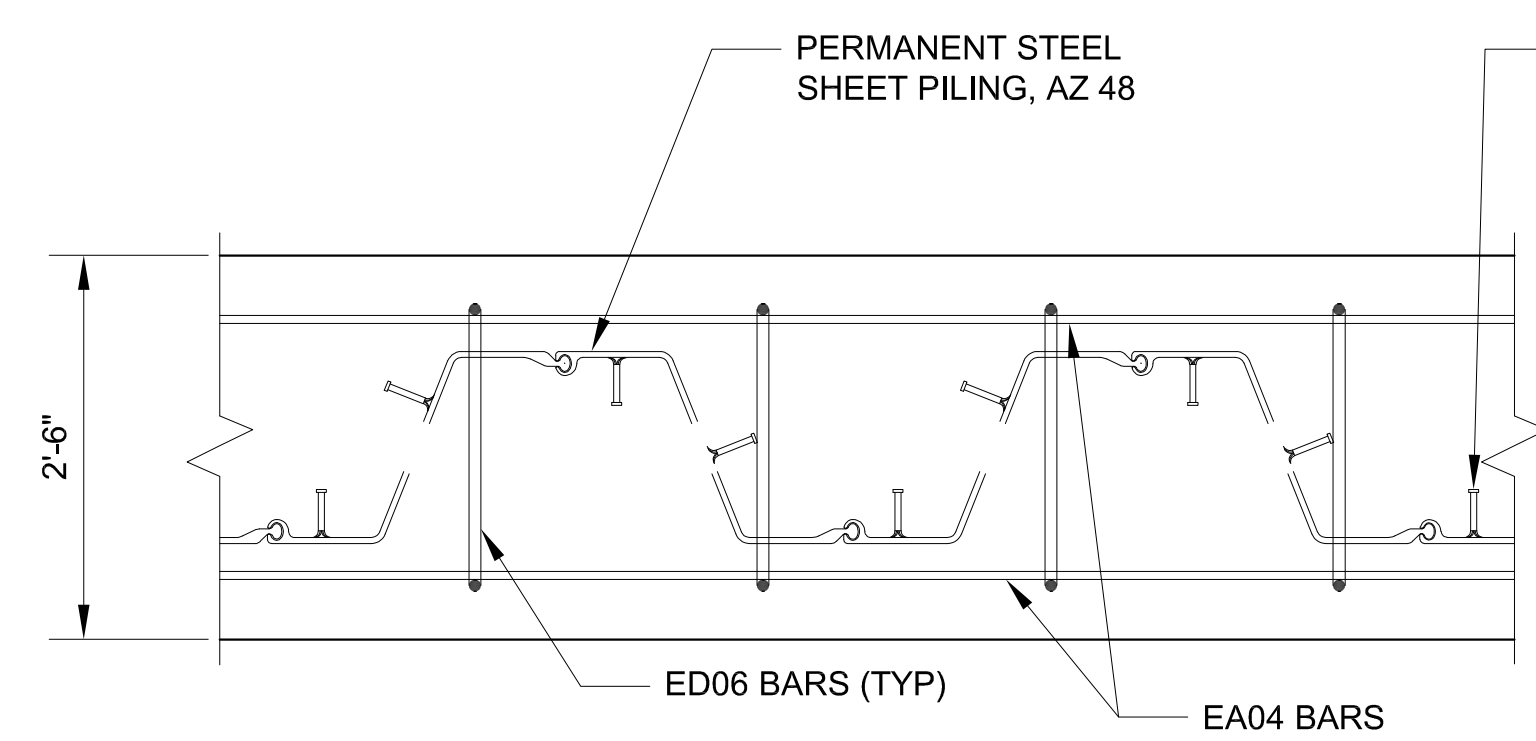
PLAN



ELEVATION



TYPICAL WALL SECTION



PARTIAL PLAN OF CONCRETE CAP

**CONC, GRADE 4500 QUANTITIES\*\***

POUR	CYD
A	5.5
B	5.5
C	5.5
D	5.5
E	5.5
F	5.5
<b>TOTAL</b>	<b>33.0</b>

\*\* FOR INFORMATION ONLY

**ESTIMATED QUANTITIES THIS SHEET**

DESCRIPTION	UNITS	CATG 0001	CATG 0002	CATG 0003	TOTAL
Sand Subbase Course, Class II, CIP	Cyd			35	35
Steel Sheet Piling, Permanent	Sft			6,870	6,870
Conc, Grade 4500	Cyd			33	33
Shear Developers (STR 11065)	LSUM			0.25	0.25
Concrete Sidewalk, 6 inch	Sft			1,880	1,880

**NOTES:**

- NS DENOTES NEAR SIDE.
- FS DENOTES FAR SIDE.
- FOR BEVEL AND MOLDING DETAILS, SEE MDOT STANDARD PLAN B-103 SERIES.
- VERTICAL SURFACES OF THE CONCRETE WALL ENCASUREMENT SHALL BE FORMED AND CAST VERTICAL, AND CENTERED ON THE STEEL SHEET PILING, AFTER BACKFILLING, AS NOTED ABOVE.
- SHEAR DEVELOPERS SHALL BE 3/4" DIAMETER HEADED STUDS AND 3 INCHES IN LENGTH, AND SHALL BE WELDED ALL-AROUND TO THE STEEL SHEET PILING.
- ALL PERMANENT STEEL SHEET PILING SHALL BE AZ 48. WHERE ALLOWED BY THE ENGINEER, SELECT ALTERNATE HOT ROLLED SHEET PILING WITH A NOMINAL SECTION MODULUS OF AT LEAST 89.3 IN<sup>3</sup>/FT.
- PROVIDE HOT ROLLED PERMANENT STEEL SHEET PILING. DO NOT USE COLD ROLLED PILING.
- LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03J OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE WILL NOT BE PAID FOR SEPARATELY BUT WILL BE INCLUDED IN THE BID ITEM "CONC, GRADE 4500".
- SHOES SHALL BE REQUIRED FOR PROP SHEET PILING DUE TO THE ANTICIPATED PRESENCE OF COBBLES/BOULDERS DURING DRIVING.

3 WORKING DAYS BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

<b>DLZ</b>				
ADDENDUM #1	10-30-23	DAF	CLH	
ORIGINAL ISSUE	10-6-23	SBV	KJS	
REV. NO.	DESCRIPTION	DATE	DR. BY	CH. BY

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
<b>EAST MEDICAL CENTER DRIVE</b>	
<b>RETAINING WALL DETAILS</b>	
SCALE NTS	0 INCH 1
DRAWING NO. <b>2021-008-BR51</b>	
SHEET NO. <u>115</u> OF <u>155</u>	

X:\Projects\2021\2141\736300 AA - EMCd Bridge\01\_ConsDocs\CAD\EMCD\_Wall\_002