MONTGOMERY COUNTY PLANNING BOARD
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

October 7, 2021

Mr. Tim Smith, PE, Administrator
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21202

SUBJECT: **Montgomery Hills MD 97 Design Project Mandatory Referral MR2021033:** Proposed Road, Safety, Pedestrian and Bicycle Improvements, located in the 2020 *Forest Glen/Montgomery Hills Sector Plan*

Dear Mr. Smith:

At its regularly scheduled meeting on September 23, 2021, the Montgomery County Planning Board conducted a Mandatory Referral for the Montgomery Hills MD 97 Design Project. By a vote of 4:0, the Planning Board approved the project with comments, which are provided below:

1. The Planning Board recommends adding improved pedestrian and bicycle facilities on northbound 16th Street between Georgia Avenue and Grace Church consistent with approved Master Plans. This includes the construction of 8-foot-wide two-way separated bike lanes, a 2-foot-wide ped/bike buffer, a 6-foot-wide sidewalk and a 6-foot-wide street buffer. The separated bike lanes should be located at curb level (8 inches above the street) and the sidewalk should be located 3 inches above the separated bike lanes with a rolled curb. This is a critical bike facility recommended in the 2018 approved Montgomery County Bicycle Master Plan to connect bike users along Georgia Avenue with the Woodside Purple Line station (under construction) and into Downtown Silver Spring and points south into Washington, DC. These recommendations were included in the 2018 *Bicycle Master Plan*, the 2017 *Greater Lyttonsville Sector Plan*, and the 2020 *Forest Glen/Montgomery Hills Sector Plan*. While we recognize that this block of 16th Street has major right of way constraints, we also suggest that MDOT SHA reassess the need for the third travel lane on northbound 16th Street, as this could provide needed room for the above bicycle and pedestrian accommodations. Bicycle and pedestrian connectivity through this area should be an equal priority to vehicle throughput, to ensure that logical, connected, and safe facilities can be provided for all modes.

2. The separated bike lanes proposed to use the existing southbound 16th Street carriageway should be truncated and terminated at Luzerne Avenue. A bikeway is not master planned to the west of Luzerne Avenue, and the provision of the separated bike lanes on the south side of 16th Street, as stated in comment #1, is of paramount importance to the development of a cohesive bicycle network in this portion of Silver Spring.

3. The portion of land between 16th Street, MD 97 and Luzerne Avenue, will be conveyed in-fee to M-NCPPC as recommended in the *Forest Glen/Montgomery Hills Sector Plan* prior to substantial completion of the project. The design of the SHA improvements needs to accommodate the construction of a rectangular athletic field and other park amenities by

M-NCPPC. The land conveyance boundary and any project impacts to the future parkland need to be finalized through the Park Construction Permit review process. Planning staff request that unused portions of the southbound 16th Street Right-of-Way be included in that dedication.

4. In general, the provision of narrow sidewalks along arterial roadways with no buffers is incompatible with the Vision Zero/Context Driven/Complete Streets priorities of both MDOT SHA and Montgomery County. Montgomery County is developing a Pedestrian Master Plan, and Planning staff anticipate recommending, as a countywide policy, that new sidewalk construction or retrofits achieve a Pedestrian Level of Comfort score of 2 or better.[1] In the 16th Street context, with a 35 mph posted speed limit and a 5-foot sidewalk, the landscape buffer would need to be at least 8 feet to achieve this condition.

5. The radius provided at the southbound dual right-turn lanes on Georgia Avenue at 16th Street (estimated at 100 feet approximately) should be made tighter than the current design. There is no need to process southbound right turns at a high rate of speed, particularly given that a future park will be located adjacent to this corner. A radius of 50 feet or less is preferred.

6. Modify the west side of Georgia Avenue between Flora Lane and Luzerne Avenue as follows: provide a 6-foot-wide sidewalk, 8-foot-wide separated bike lanes and 6-foot-wide grass buffer. The separated bike lanes should be located at curb level (8 inches above the street) and the sidewalk should be located 3 inches above the separated bike lanes with a rolled curb. While the 6-foot-wide sidewalk (5-foot-wide sidewalk with one-foot-wide buffer) would be substandard for this street type (it would still meet ADA standards), it could be expanded with redevelopment, and the proposed separated bike lanes would have a comfortable level of traffic stress, per Appendix D of the 2018 *Bicycle Master Plan*. This modification would have safety benefits and would result in future design savings with the bike facility not needing to be reconstructed when redevelopment occurs.

7. With regard to complete parcels to be acquired by MDOT SHA (car wash and Shell gas station):

    a. Full width facilities should be provided, including an 8-foot-wide street buffer, 8-foot-wide separated bike lanes, a 3-foot-wide ped/bike buffer, and an 8-foot-wide sidewalk.

    b. Consideration should be given to requiring consolidated access with the adjacent shopping center parcel. Tying continuance of the existing curb cut at station 119+90 with an interparcel access agreement with the owner of the acquired properties should be considered. This is needed if MDOT SHA sells these parcels in the future.

8. The parcel located on the southwest quadrant of the MD 97/Seminary Road intersection has been designed with an extra access onto Columbia Boulevard. This driveway, as shown on plan PS-04, is too close to the intersection of Seminary Road with Columbia Boulevard, and this parcel already has one access point on Columbia Boulevard. This driveway should be removed from the design.

[1] Montgomery County evaluates pedestrian adequacy using a comprehensive methodology called the Pedestrian Level of Comfort (PLOC). This has been developed as part of the ongoing Pedestrian Master Plan and is described in detail in the PLOC methodology documentation. On a scale of 1 (very comfortable) to 4 (undesirable), a PLOC of 2 is defined as somewhat comfortable.

9. The two I-495 on-ramps from northbound MD 97 should have protected crossings (signals) for pedestrians and bicyclists.

10. Remove the island and tighten the turn radius at the intersection of MD 97 and Locust Grove Road.

11. Eliminate the median on Forest Glen Road east of Georgia Avenue and use the space to provide a buffer between the sidewalks and the street.

12. Bike signals should be included in the design for the separated bike lanes.

13. Protected intersections are needed to improve safety for pedestrians and bicyclists where the separated bike lanes and sidepaths intersect with Seminary Place, Seminary Lane and 16th Street.

14. MDOT SHA should coordinate with the Montgomery County Department of Transportation on the proposed floating bus stop on southbound MD 97 at Seminary Road. This coordination is essential to ensure consistency in the development of this new design treatment within Montgomery County given the lack of a definitive Federal standard. Additionally, MCDOT has implemented a floating bus stop successfully on 2nd Avenue in downtown Silver Spring and lessons learned from that experience could apply at this location, particularly in developing accommodations for individuals with visual and physical impairments.

15. The 35-mph design speed used for the MD 97 Montgomery Hills Design Project is inconsistent with the master planned 25 mph target speed. Staff urges MDOT SHA to modify the design to a lower speed threshold and in addressing a response to this comment, MDOT SHA should explain how the target speed of 25 mph will be achieved along this corridor due to specific design elements incorporated into the project, including narrow travel lanes, signal timing and other measures.

The Planning Board appreciates the opportunity to review this project and continue coordinating with MDOT SHA on future projects. If you have questions, please contact Stephen Aldrich at 301-495-4528 or Stephen.Aldrich@montgomeryplanning.org.

Sincerely,

Casey Anderson
Chair

cc: Stephen Aldrich, Master Planner, M-NCPPC
Jason Sartori, Chief, M-NCPPC
Barry Smith, MDOT SHA
MarieFrance Guiteau, MDOT SHA
Matthew Dowdle, MDOT SHA

Enclosure:
M-NCPPC Staff Briefing Staff Report

CA:SA:aj

MONTGOMERY COUNTY PLANNING DEPARTMENT
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

MCPB
Item No.: 4
Date: 09-23-21

Montgomery Hills MD 97 Design Project, Mandatory Referral, MR2021033

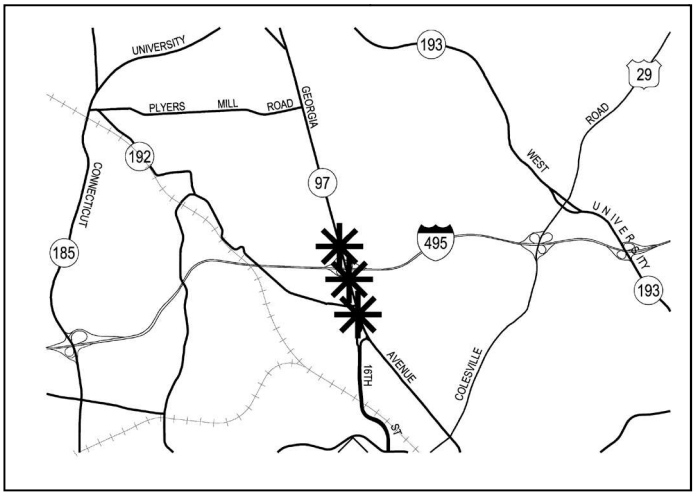
Stephen Aldrich, Master Planner, Stephen.Aldrich@montgomeryplanning.org, 301-495-4528

Jason Sartori, Chief, CP&P, Jason.Sartori@montgomeryplanning.org, 301-495-2172

Completed: 09-17-21

Description

Construction of new roadway, traffic signal, bicycle, and pedestrian improvements on MD 97 (Georgia Avenue) between 16th Street and Forest Glen Road (SHA Contract No. MO2245171) in Silver Spring, Maryland. The project elements are the elimination of the center, reversible travel lane, construction of a raised median, I-495 ramp modifications, traffic signal improvements, and pedestrian and bicycle facility improvements.



- Applicant: Maryland Department of Transportation – State Highway Administration (MDOT SHA)
- Forest Glen/Montgomery Hills Sector Plan (2020)

Staff Recommendation: Approval with Comments

Contents

Summary

The Maryland Department of Transportation – State Highway Administration (MDOT SHA) is proposing to construct major road, pedestrian, bicycle, and transit improvements along MD 97 (Georgia Avenue) through the Montgomery Hills area in Silver Spring. The project includes the following improvements:

- Removal of the existing center, reversible travel lane on MD 97,
- Construction of a center median,
- Closure of the existing 16th Street southbound road alignment/carriageway between MD 97 and Columbia Boulevard/Grace Church Road and reconstruction of the northbound 16th alignment/carriageway to accommodate two-way traffic flow,
- Construction of 8-foot wide two-way separated bike lanes on the west side of MD 97 between Flora Lane and Grace Church Road,
- Sidewalk improvements on MD 97 along the project extents to provide sidewalks compatible with the Americans with Disability Act (ADA) requirements. This includes relocating sidewalks to avoid the placement of utility poles within the sidewalk area,
- Construction of 8-foot wide two-way separated bike lanes on the alignment of the current southbound 16th Street connecting into Columbia Boulevard near Hanover Street,
- Proposed floating bus stop on southbound MD 97 between Seminary Road and Seminary Place,
- Closure of the I-495 loop off-ramp from the Inner Loop to northbound MD 97 (southeast quadrant of interchange),
- Traffic signal and geometric modifications to the existing I-495 off-ramp from the Inner Loop to southbound MD 97 to accommodate all traffic exiting onto MD 97,
- New traffic signal on MD 97 at Flora Lane, and
- Traffic signal improvements on MD 97 at Forest Glen Road, the I-495 ramp signals, Seminary Place, Seminary Lane/Columbia Boulevard, and 16th Street.

The project location is along MD 97 and a portion of 16th Street between Forest Glen Road and Grace Church Road, depicted in Figure 1. The current project, which includes full design cost funding, is listed as Project No. MO2245171. This project is located in the Draft FY22-FY27 MDOT Comprehensive Transportation Program on page SHA-M-9. The planning and design budget listed is $7.9 million; however, this estimate does not include right-of-way, utilities, or construction costs. In the current FY22-FY27 CTP, this project is scheduled for design completion in FY23.

The 30 percent design plan presentation drawings are provided as Attachment A to this report.

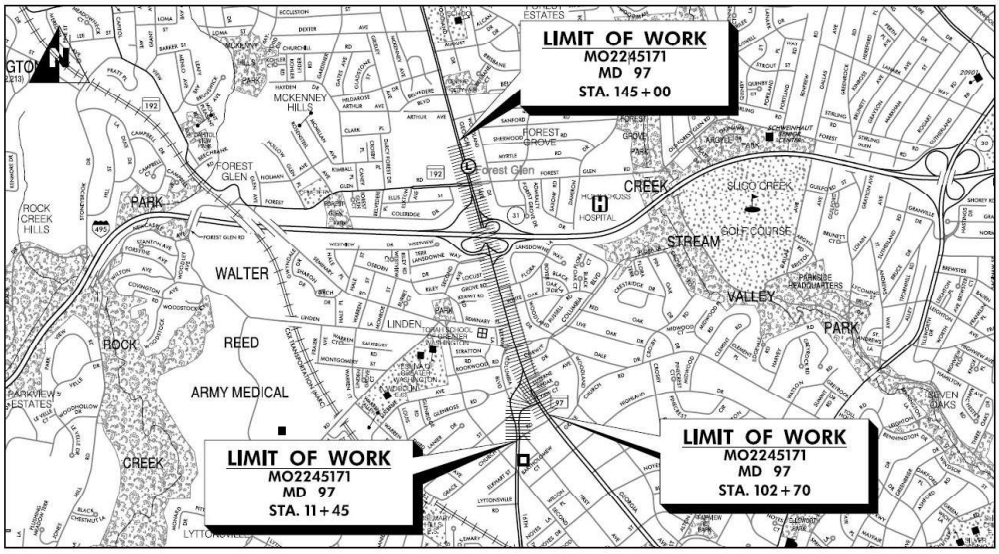


Figure 1: Project Limits and Site Vicinity

Mandatory Referral Review

This proposal for the construction of road, signal, ramp, pedestrian and bicycle improvements is required to undergo the Mandatory Referral review process under the Montgomery County Planning Department's Uniform Standards for Mandatory Referral Review. State law requires all federal, state, and local governments and public utilities to submit proposed projects for a Mandatory Referral review by the Commission. The law requires the Planning Board to review and approve the proposed location, character, grade and extent of any road, park, public way or ground, public (including federal) building or structure, or public utility (whether publicly or privately owned) prior to the project being located, constructed or authorized. This review is typically performed in context with the relevant master plans, guidelines and policies in effect.

Planning staff acknowledges that the implementation of master plan transportation recommendations is a challenge faced by the applicant in developing design plans to convert desired master plan recommendations into engineering design drawings. The design process up to 30/35 percent design typically brings clarity with considerably more detail than considered during a master plan, and issues such as environmental impacts, historic impacts, and construction costs may introduce new factors that need to be weighed in developing a final design solution. It is the intention of the Board that the Mandatory Referral process aids in this process to develop an optimal or at least an improved design solution.

Recommendations

Staff recommends **approval** to transmit the following comments to the Maryland Department of Transportation State Highway Administration:

1. Instead of constructing separated bike lanes on Georgia Avenue (MD 97) between 16th Street (MD 390) and Grace Church Road, the project should be modified as follows:

    a. Northbound 16th Street between Georgia Avenue and Grace Church Road: Shift 16th Street to the north and construct 8-foot wide two-way separated bike lanes, 2-foot wide

ped/bike buffer, 6-foot-wide sidewalk and 6-foot-wide street buffer on the south side of 16th Street. The separated bike lanes should be located at curb level (8 inches above the street) and the sidewalk should be located 3 inches above the separated bike lanes with a rolled curb. This is a critical bike facility recommended in the 2018 approved Montgomery County Bicycle Master Plan to connect bike users along Georgia Avenue with the Woodside Purple Line station (under construction) and into Downtown Silver Spring and points south into Washington DC. These recommendations were included in the 2018 *Bicycle Master Plan*, the 2017 *Greater Lyttonsville Sector Plan*, and the 2020 *Forest Glen/Montgomery Hills Sector Plan*.

b. Georgia Avenue between 16th Street and Grace Church Road: Construct a 6-foot-wide sidewalk with a 6-foot-wide buffer from traffic on the west side of the road.

2. The separated bike lanes proposed to use the existing southbound 16th Street carriageway should be truncated and terminated at Luzerne Avenue. A bikeway is not master planned to the west of Luzerne Avenue, and the provision of the separated bike lanes on the south side of 16th Street, as stated in comment #1, is of paramount importance to the development of a cohesive bicycle network in this portion of Silver Spring.

3. The portion of land between 16th Street, MD 97 and Luzerne Avenue, will be conveyed in-fee to M-NCPPC as recommended in the *Forest Glen/Montgomery Hills Sector Plan* prior to substantial completion of the project. The design of the SHA improvements need to accommodate the construction of a rectangular athletic field and other park amenities by M-NCPPC. The land conveyance boundary and any project impacts to the future parkland need to be finalized through the Park Construction Permit review process. Planning staff request that unused portions of the southbound 16th Street Right-of-Way be included in that dedication.

4. In general, the provision of narrow sidewalks along arterial roadways with no buffers is incompatible with the Vision Zero/Context Driven/Complete Streets priorities of both MDOT SHA and Montgomery County. Montgomery County is developing a Pedestrian Master Plan, and Planning staff anticipate recommending, as a countywide policy, that new sidewalk construction or retrofits achieve a Pedestrian Level of Comfort score of 2 or better.[1] In the 16th Street context, with a 35 mph posted speed limit and a 5-foot sidewalk, the landscape buffer would need to be at least 8 feet to achieve this condition.

5. The radius provided at the southbound dual right-turn lanes on Georgia Avenue at 16th Street (estimated at 100 feet approximately) should be made tighter than the current design. There is no need to process southbound right turns at a high rate of speed, particularly given that a future park will be located adjacent to this corner. A radius of 50 feet or less is preferred.

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9. The two I-495 on-ramps from northbound MD 97 should have protected crossings (signals) for pedestrians and bicyclists.

10. Remove the island and tighten the turn radius at the intersection of MD 97 and Locust Grove Road.

11. Eliminate the median on Forest Glen Road east of Georgia Avenue and use the space to provide a buffer between the sidewalks and the street.

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lower speed threshold and in addressing a response to this comment, MDOT SHA should explain how the target speed of 25 mph will be achieved along this corridor due to specific design elements incorporated into the project, including narrow travel lanes, signal timing and other measures.

Proposed Design

Project Description

The MD 97 Montgomery Hills Project is intended to improve vehicular safety and pedestrian and bicycle accessibility while balancing vehicular mobility. The project is located just north of downtown Silver Spring along a 0.7 mile stretch of MD 97 (Georgia Avenue) that extends from MD 390 (16th Street) to the south to MD 192 (Forest Glen Road) to the north. MD 97 is a closed section roadway with three through-lanes in the northbound (NB) and southbound (SB) directions, with a peak hour reversible lane serving as a two-way left-turn lane during off-peak hours. Left turns are prohibited during peak travel hours. MD 97 consists of a sidewalk on each side of the roadway, most of which is not Americans with Disabilities Act (ADA) compliant. There are numerous businesses along the corridor.

The needs for the corridor are evidenced by community input and data that show crash rates higher than the statewide average for similarly designed roadways. The corridor is an auto-dominated roadway that prioritizes motor vehicle mobility and capacity to the detriment of pedestrian and bicycle access. The community has cited a lack of continuous ADA-compliant pedestrian and bicycle facilities as a safety concern due to the presence of the Forest Glen Metro station, extensive residential network, and the number of key destinations within the corridor. One of the concerns is the existing roadway does not provide bicycle connectivity between the Forest Glen Metro Station and the extensive Silver Spring bicycle network directly to the south. The corridor is included in the Montgomery County Bicycle Master Plan and Montgomery County Planning Department *Forest Glen/Montgomery Hills Sector Plan* as a key bicycle connection. These plans visualize a separated-bike facility between Forest Glen Road and Grace Church Road to provide the necessary bicycle connectivity in the MD 97 corridor.

The MDOT SHA has a planned project to address the MD 97 corridor's need. The project's goals and objectives were determined in the planning phase and summarized in the MDOT Purpose and Need Statement (see Attachment B). The MDOT Purpose and Need Statement identified Measures of Effectiveness (MOEs) consistent with corridor concerns cited by the community, which were validated by engineering data and traffic analysis. The objectives for the MD 97 corridor are as follows:

Objective 1-1: Reduce the overall crash rate by 18 percent, so it is no longer significantly higher than the statewide average for similar roadways

Objective 2-1: Improve each Pedestrian Level of Service (PLOS) segment in the corridor to a level "D."

Objective 2-2: Improve Bicycle Level of Service (BLOS) to a level "C."

Objective 3-1: Ensure vehicular network delay, including latent delay, is no greater than 25 percent higher than the 2040 No-Build condition.

Objective 3-2: For I-495 interchange off-ramps, ensure that the 95th percentile queues are contained within the ramp storage. Where 2040 no-build queues exceed the storage, ensure that queues do not increase beyond the no-build length

The scope of work includes removing the existing center turn/reversible lane and replacing it with a raised landscaped median, providing three to four through lanes on MD 97 in the northbound and southbound

directions. The project also includes a new traffic signal on MD 97 at Flora Lane, relocation of the southbound 16th Street movement, and elimination of the loop off-ramp in the southeast quadrant of the MD 97 and I-495 interchange.

It includes two-way separated bike lanes along southbound MD 97 to meet Objective 2-2 of the MDOT Purpose and Need. The cycle track extends from south of Locust Grove Road to south of 16th Street. It will tie into the existing bicycle/pedestrian bridge that spans across the I-495 interchange ramps.

The design for utility poles for MDOT SHA projects will not be completed until the 90% (Final Design) stage. Currently, the utility pole design is in a very early stage. When MDOT SHA designs sidewalks they design with the intention to stay within ADA standards, such that the sidewalk has a minimum width of 5 feet. This means that all sidewalks are designed such that there is a clear, accessible pathway around utility poles. If there are places where placing a utility pole within the sidewalk cannot be avoided, the design includes a 36-inch passable width or additional width in the area of the pole.

The MDOT SHA has approved the 30% design. Currently, MDOT SHA is working on the post-30% design up to the advertisement and bid opening (100% design completion) that provides for the preparation of final plans, specifications, engineer's cost estimates and permit approvals.

There will be no impacts to parkland or land owned by the M-NCPPC. After the project is completed, MDOT SHA will be donating the land between 16th Street and MD 97 over to Montgomery County to be potentially be used as parkland as described in the *Forest Glen/Montgomery Hills Sector Plan*.

This project is subject to Forest Conservation approval through the Maryland Department of the Environment. This process typically occurs during the 60 percent design phase of the project.

MDOT SHA last held public meetings on this project on December 1, 2015. MDOT SHA did provide a project briefing to the Montgomery County Planning Board on March 21, 2019.

Georgia Avenue (MD 97)

Currently, Georgia Avenue is generally characterized as a six- to eight-lane roadway between 16th Street and Forest Glen Road (MD 192). Typical sections of the major highway include 12-foot lanes with a posted speed limit of 35 mph. Figures 3 through 7 display views of the road at different locations along Georgia Avenue.

Figure 3: Georgia Avenue at 16th Street (Looking North)

Figure 4: Georgia Avenue between 16th Street and Seminary Road/Columbia Boulevard (Looking North)

Figure 5: Georgia Avenue between Seminary Place and Flora Lane (Looking North)

Figure 6: Georgia Avenue approaching I-495 Interchange (Looking North)

Figure 7: Georgia Avenue between I-495 Interchange and Forest Glen Road (Looking North)

16th Street (MD 390)

16th Street (MD 390) is currently a five to six-lane roadway that connects south to the future Woodside Purple Line station, downtown Silver Spring and further south into Washington, DC. The road is divided with a median and typically has three travel lanes in each direction. Between Georgia Avenue and Columbia Boulevard/Grace Church Road, the southbound direction only has two travel lanes. Photos of this portion of 16th Street are shown below in Figures 8 and 9.

Figure 8: Southbound 16th Street between Georgia Avenue and Columbia Boulevard (Looking South)

Figure 9: Northbound 16th Street between Grace Church Road and Georgia Avenue (Looking North)

Proposed Plan View

The project design includes Georgia Avenue from Grace Church Road in the south and Forest Glen Road to the north. The project design on 16th Street extends a short distance from Georgia Avenue south to Grace Church Road. Figures 10 through 19 show the plan view of the proposed design improvements from south to north.

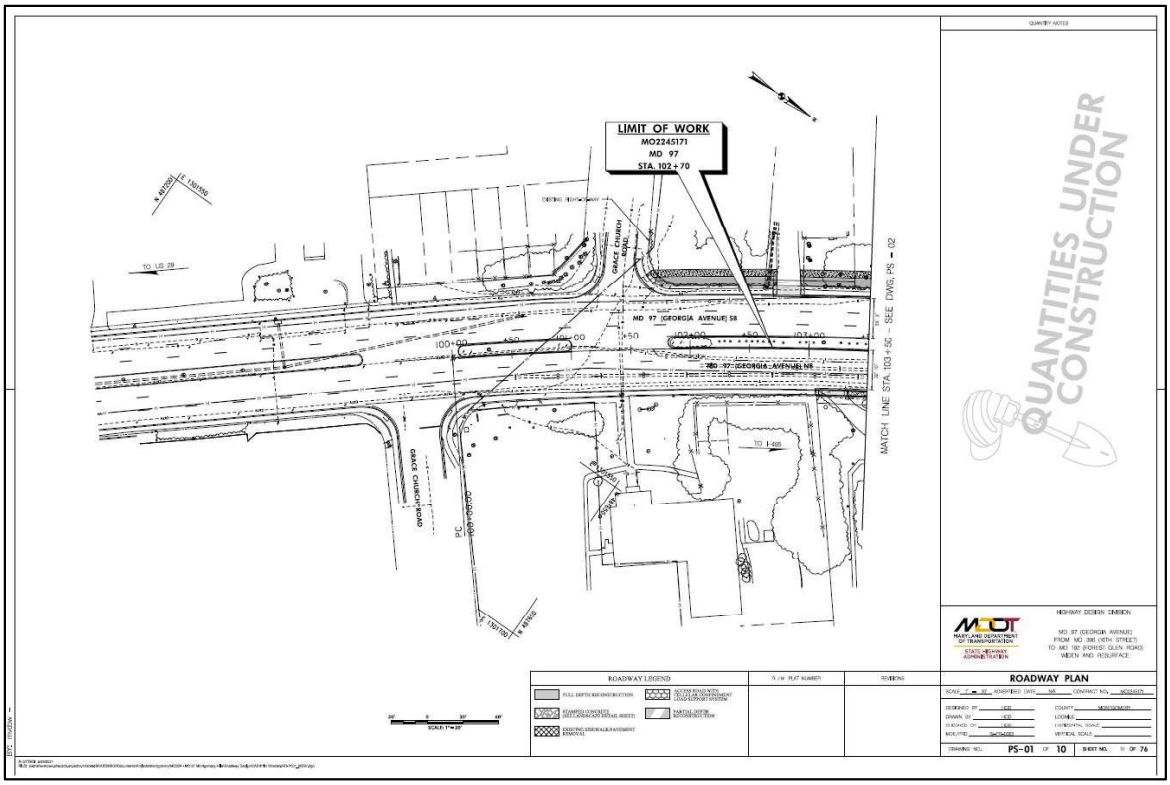


Figure 10: Plan View – South limit past Grace Church Road

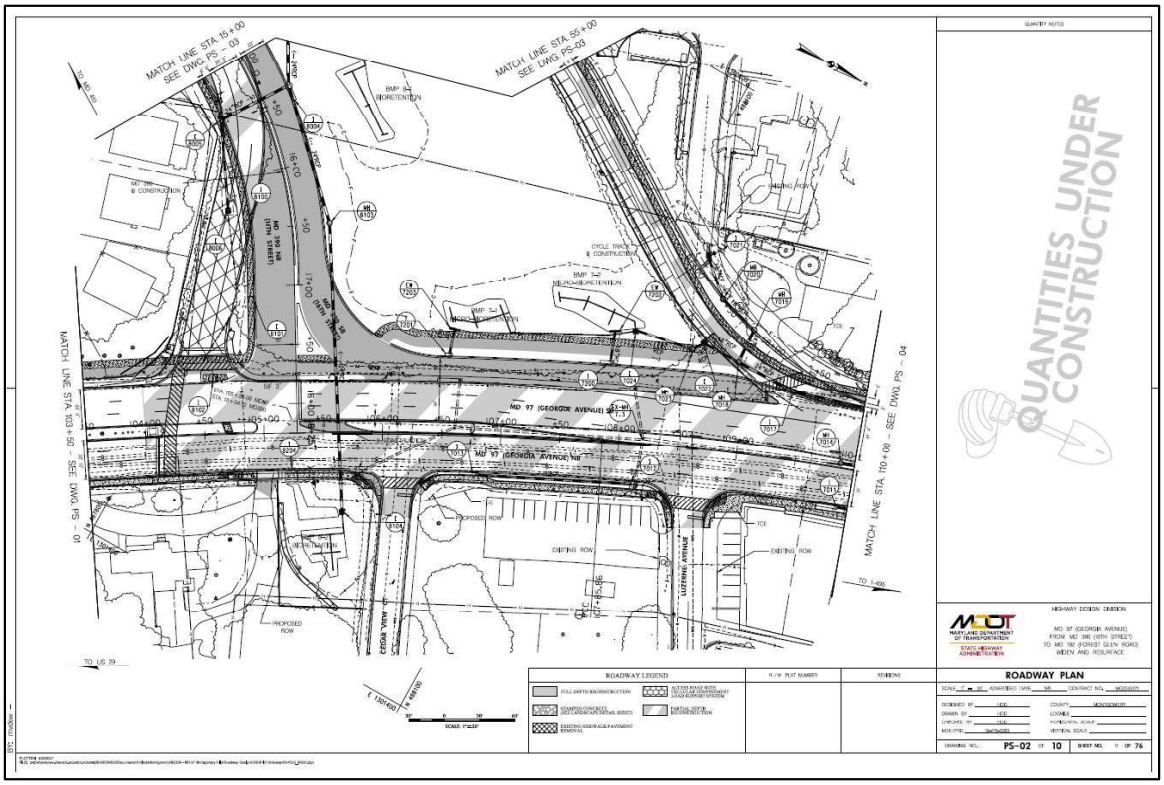


Figure 11: Plan View – Georgia Avenue at 16th Street

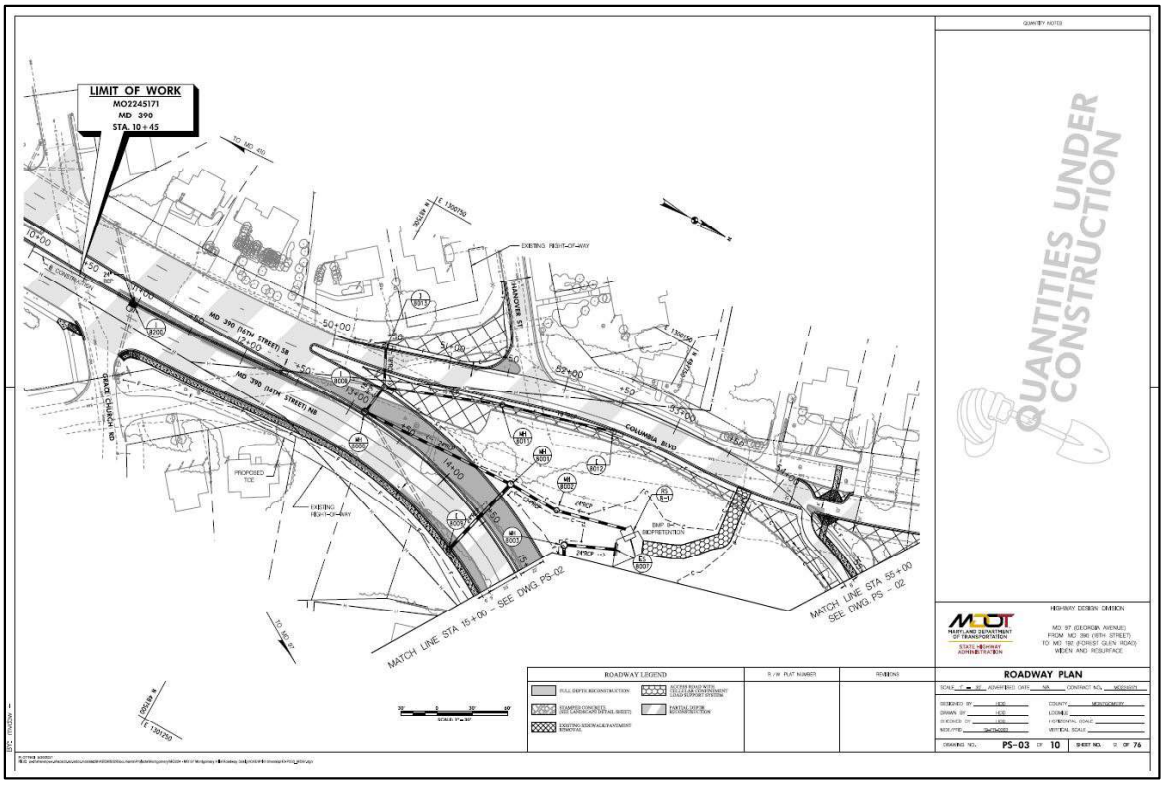


Figure 12: Plan View – 16th Street South to Grace Church Road

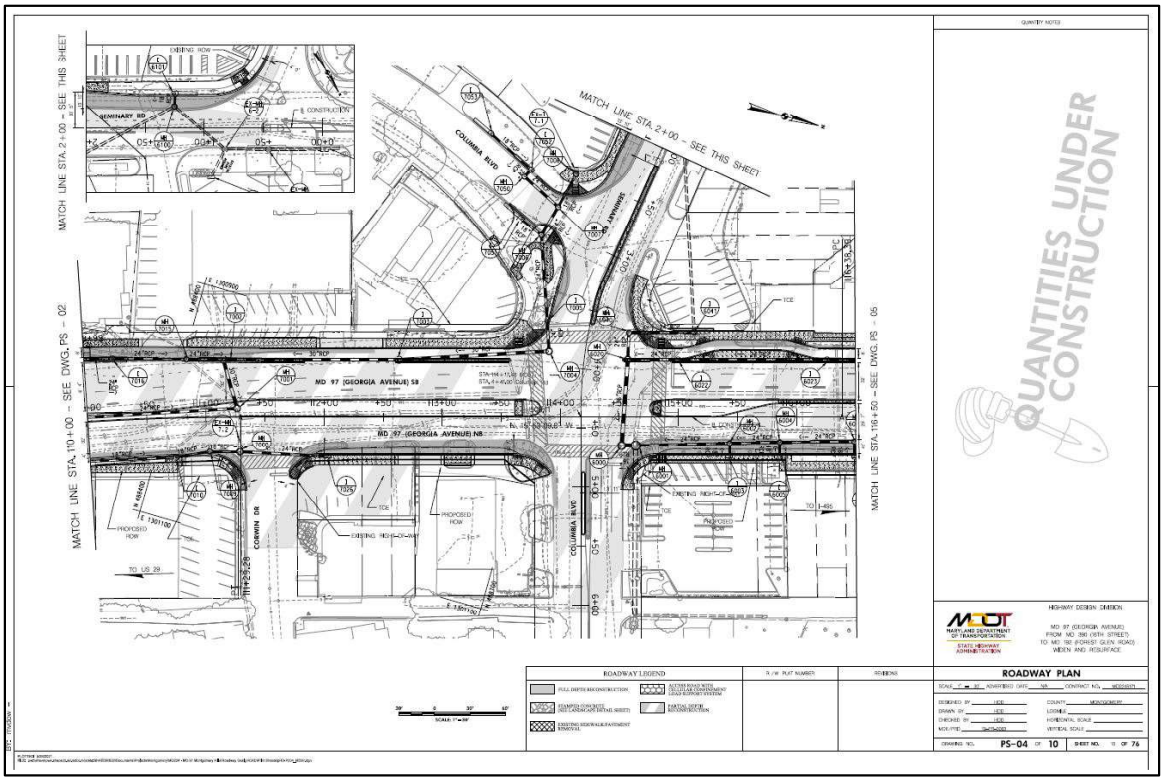


Figure 13: Plan View – Georgia Avenue at Columbia Boulevard/Seminary Road

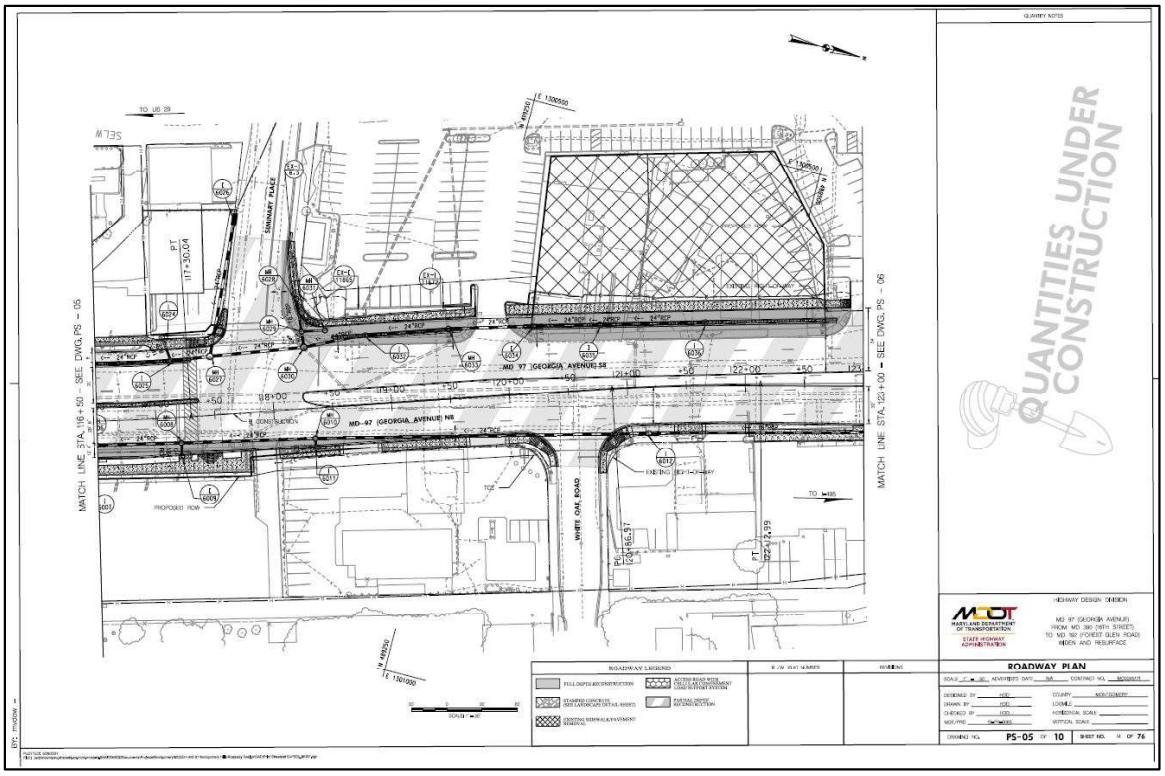


Figure 14: Plan View – Georgia Avenue at Seminary Place and White Oak Road

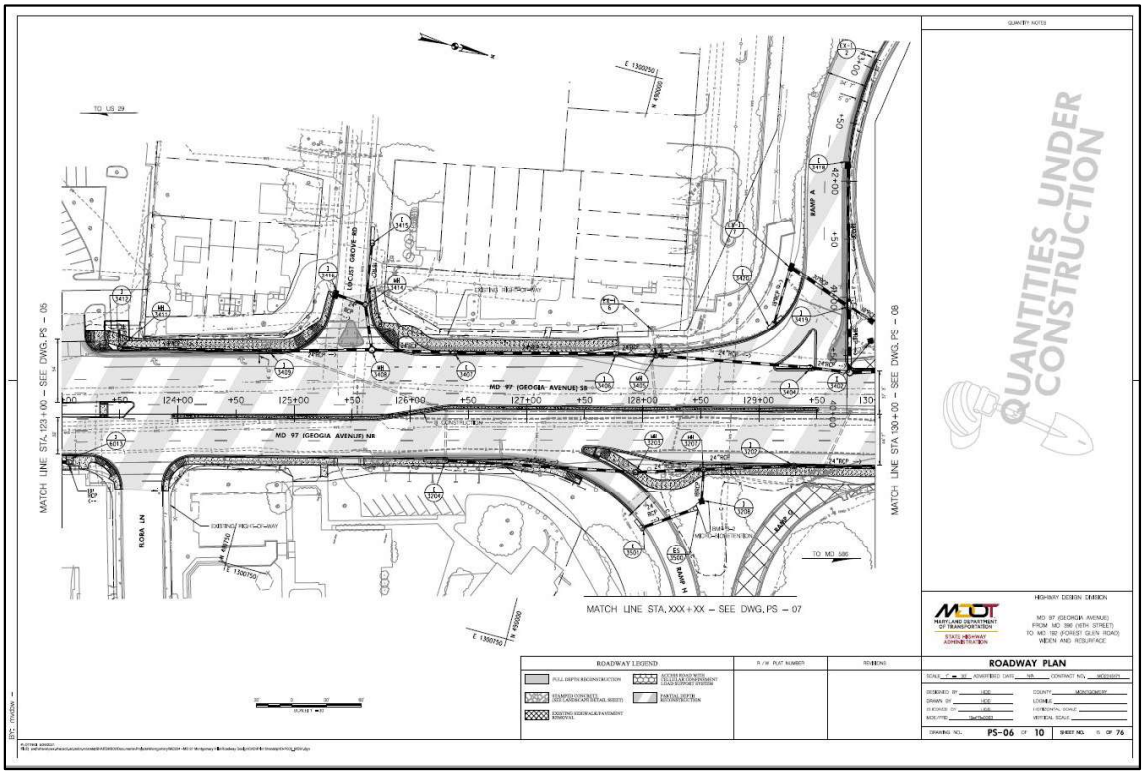


Figure 15: Plan View – Georgia Avenue between Flora Lane and I-495 Inner Loop Signal

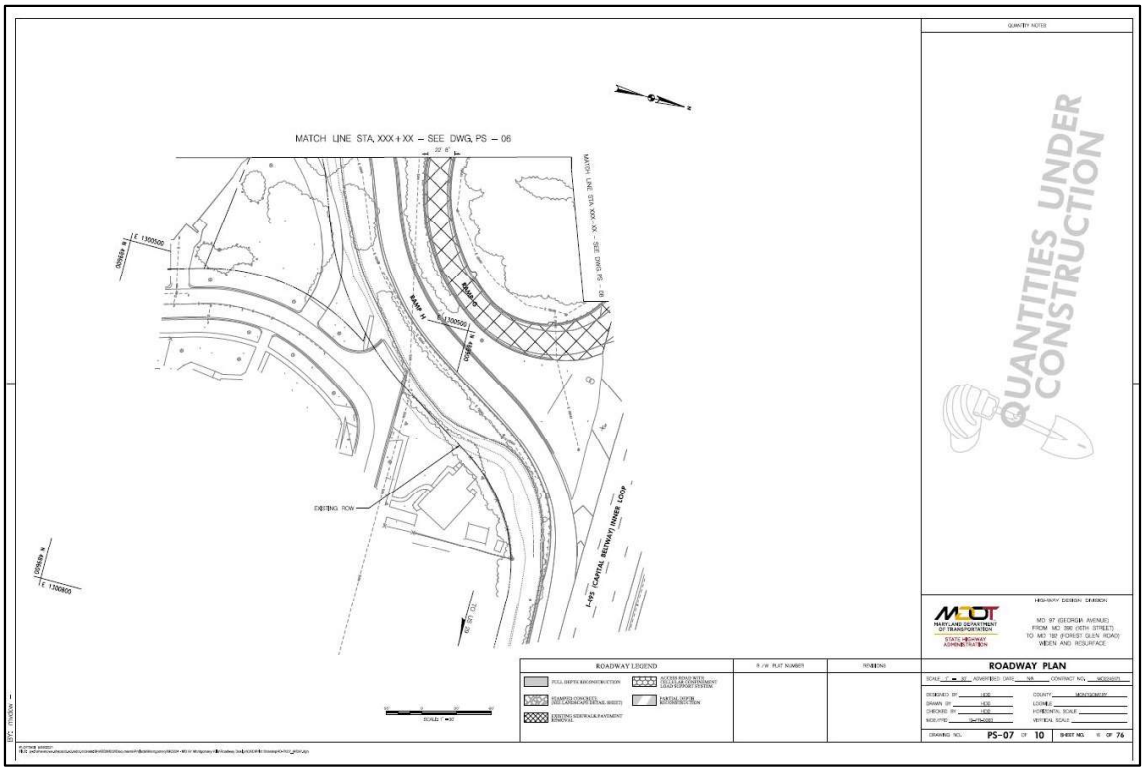


Figure 16: Plan View – I-495 Inner Loop On-Ramp

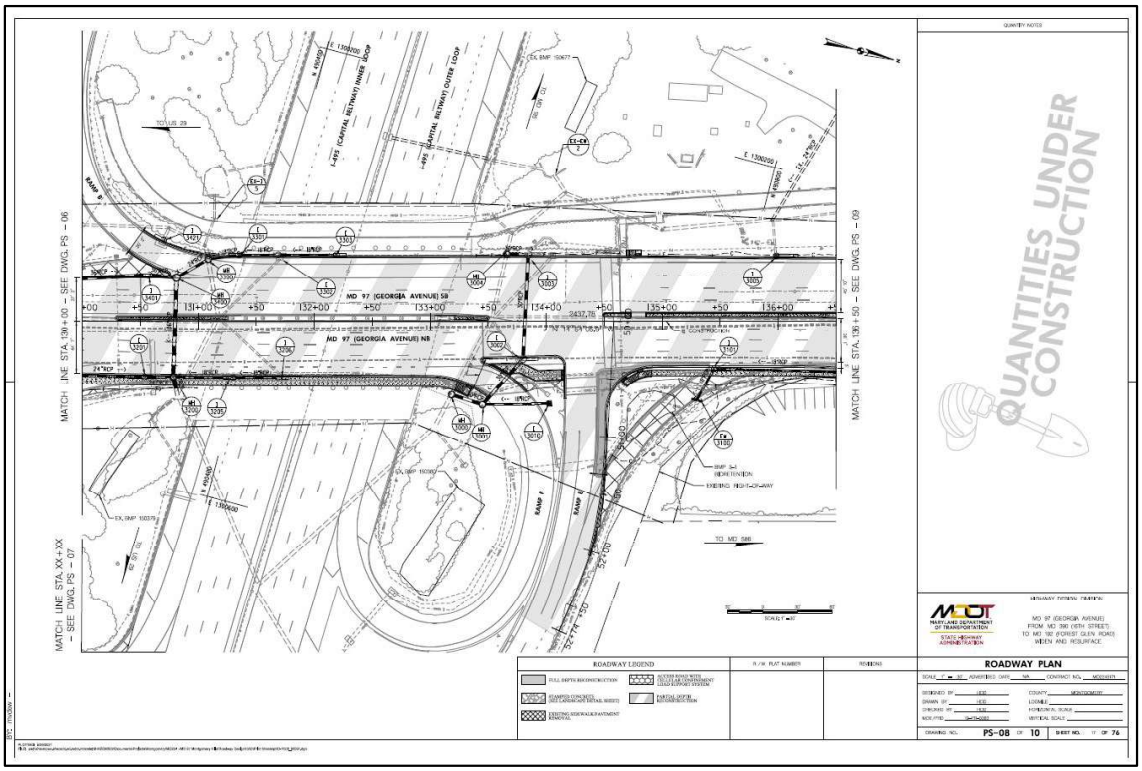


Figure 17: Plan View – I-495 Outer Loop Off-Ramp Signal

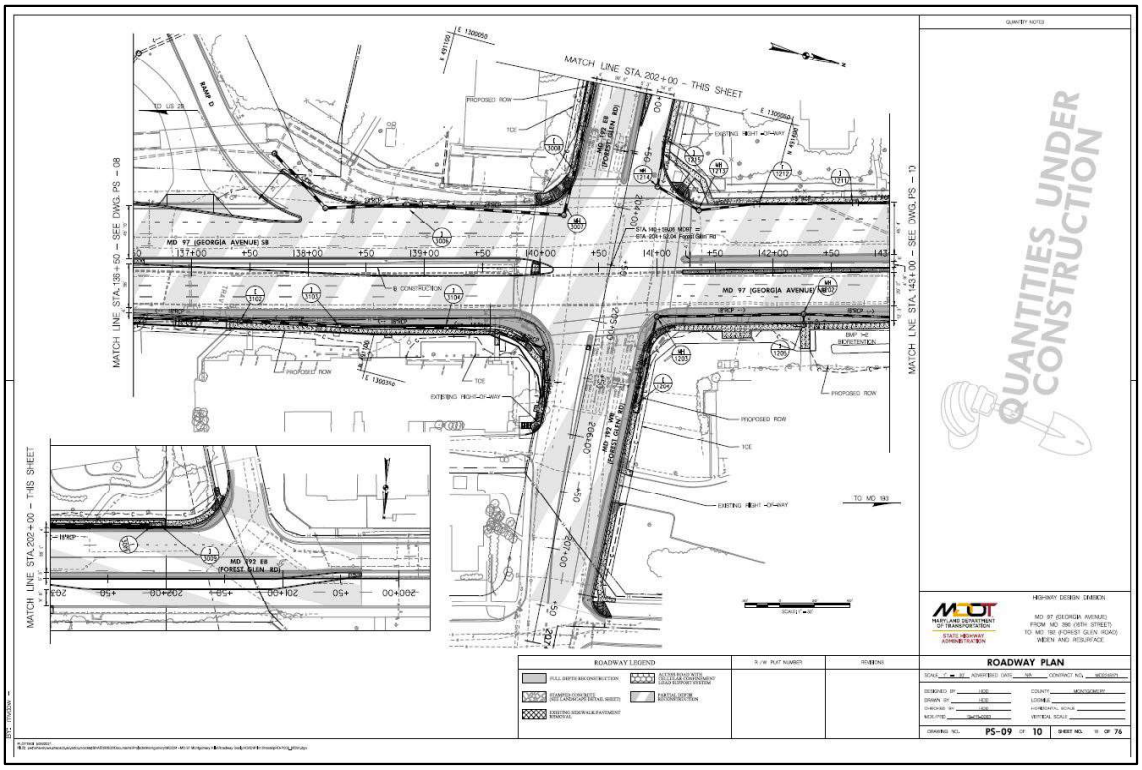


Figure 18: Plan View – Georgia Avenue at Forest Glen Road

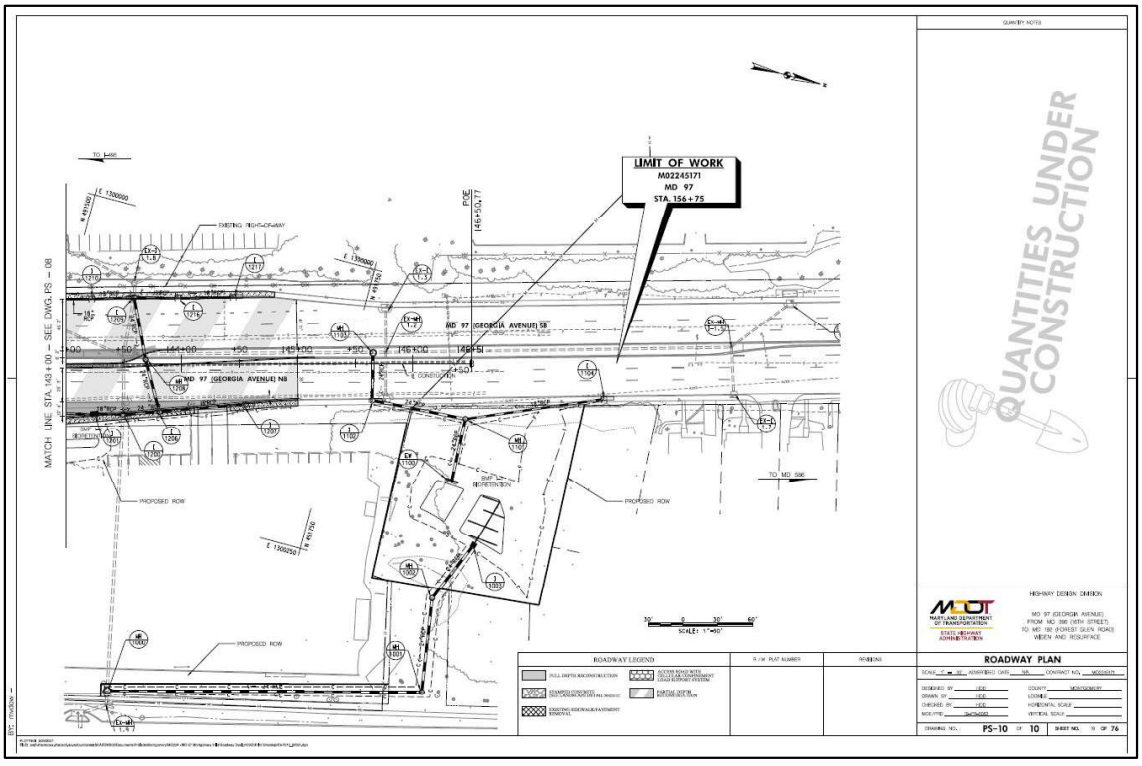


Figure 19: Plan View – Georgia Avenue north of Forest Glen Road

Typical Cross Sections – Georgia Avenue

Figures 20 through 24 show the proposed typical cross sections on Georgia Avenue. Sidewalks are proposed on both sides of Georgia Avenue through the project extents. The sidewalk widths are 5-feet wide with buffers varying from zero to three feet. Bicycle accommodations are provided on the west side of Georgia Avenue with a 10-foot wide sidepath (with no buffer) being provided from the Northern project limits to Flora Lane, and two-way separated bike lanes between Flora Lane and 16th Street.

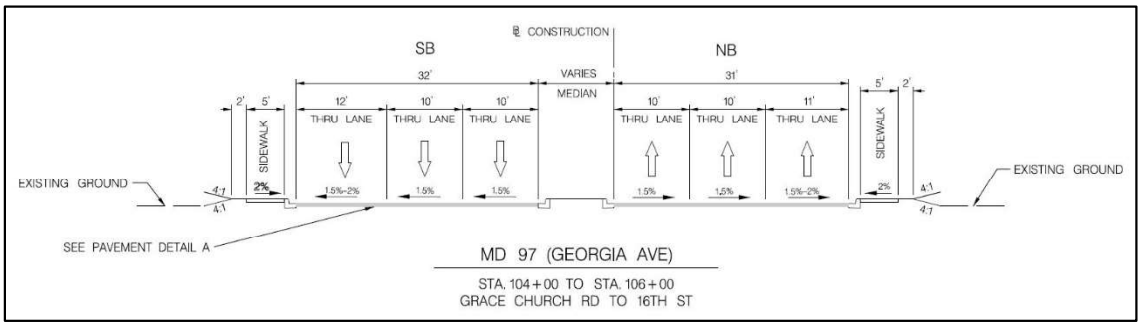


Figure 20: Existing/Proposed Typical Cross Section – South of 16th Street

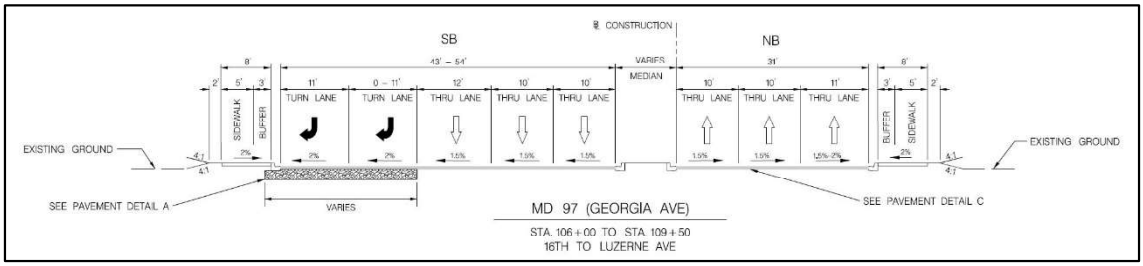


Figure 21: Proposed Typical Cross Section Design – 16th Street to Luzerne Avenue

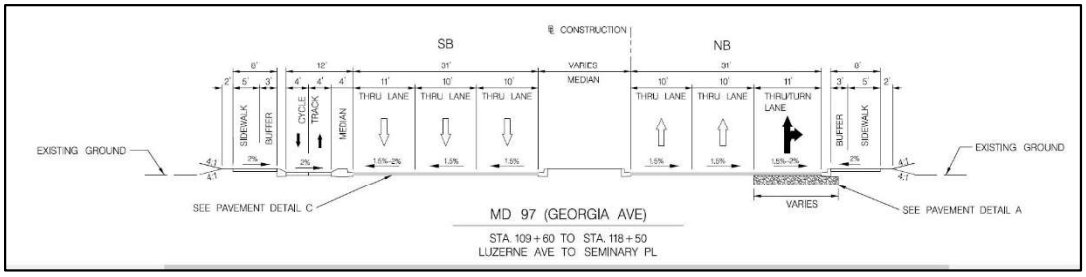


Figure 22: Proposed Typical Cross Section – Luzerne Avenue to Seminary Place

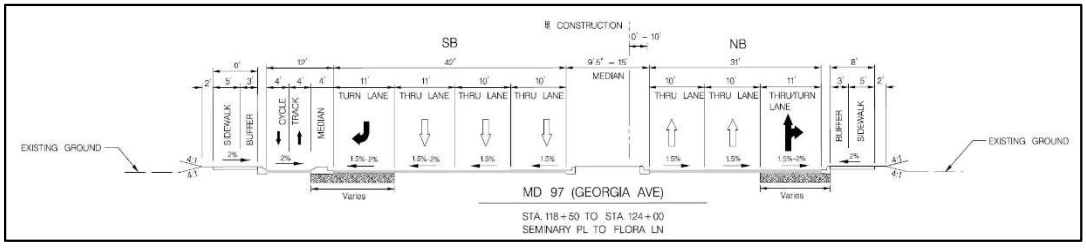


Figure 23: Proposed Typical Cross Section – Seminary Place to Flora Lane

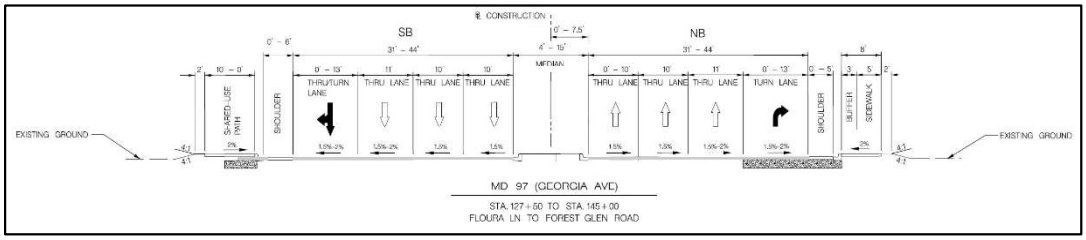


Figure 24: Proposed Typical Cross Section – Flora Lane to Forest Glen Road

Cross Sections on Other Roads

Typical cross sections are also provided for four connecting roadways: 16th Street, Forest Glen Road (East Side), and Forest Glen Road/MD 192 (West Side). These cross sections are displayed in Figures 25 through 28.

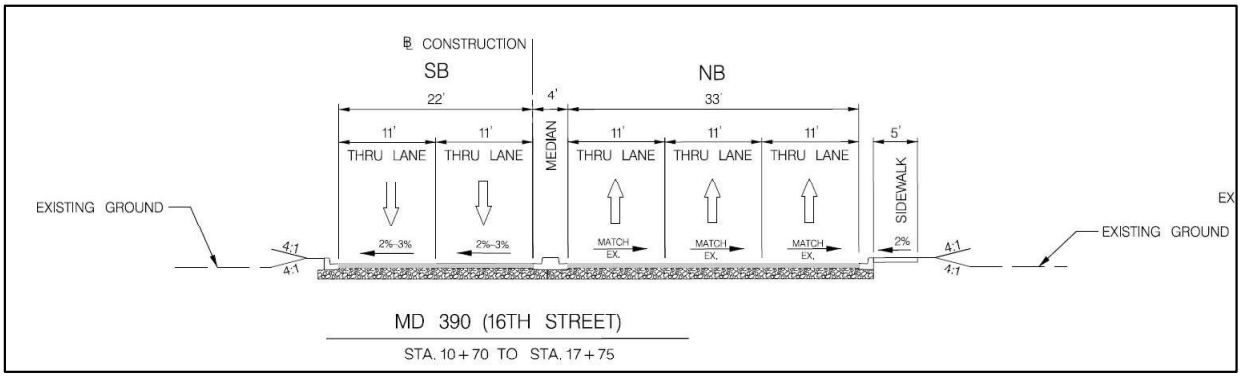


Figure 25: Proposed Cross Section – 16th Street between Georgia Avenue and Grace Church Road

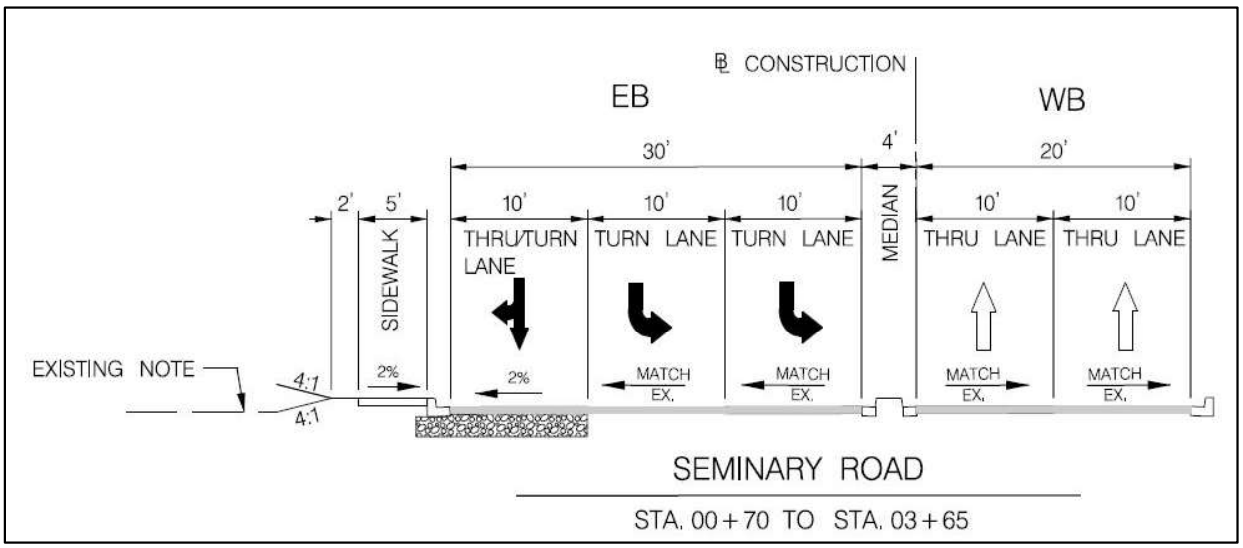


Figure 26: Proposed Cross Section – Seminary Road

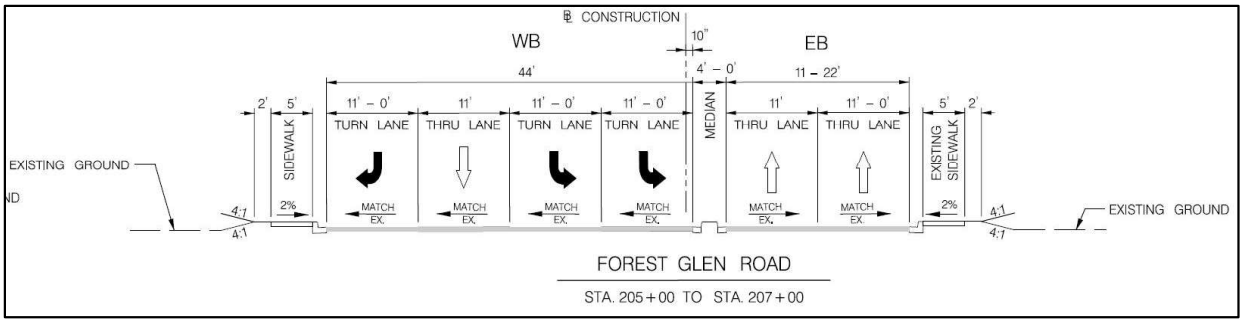


Figure 27: Proposed Cross Section – Forest Glen Road (East Side of MD 97)

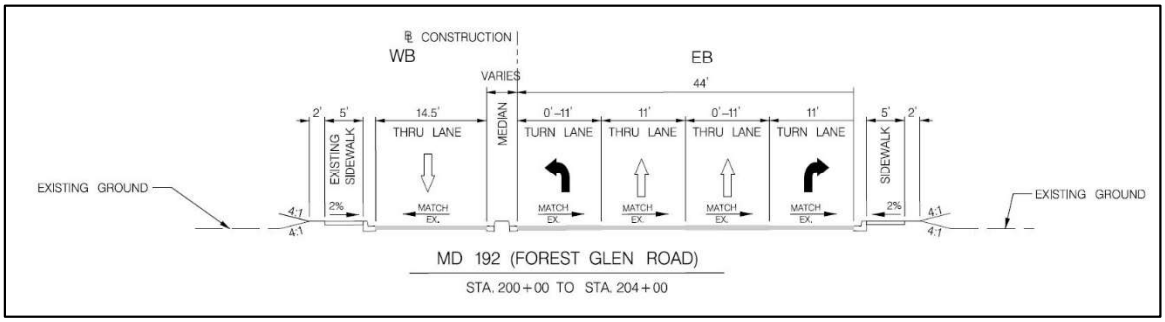


Figure 28: Proposed Cross Section – Forest Glen Road/MD 192 (West Side of MD 97)

Cross Sections for Separated Bike Lane Facilities

Separated bike facilities are being provided along MD 97 between Flora Lane and Grace Church Road, as shown in Figures 22 and 23. In addition, two-way separated bike lanes are also proposed along the alignment of the existing southbound 16th Street carriageway as shown below in Figure 29. These bike lanes connect to Columbia Boulevard midway between Luzerne Avenue and Hanover Street.

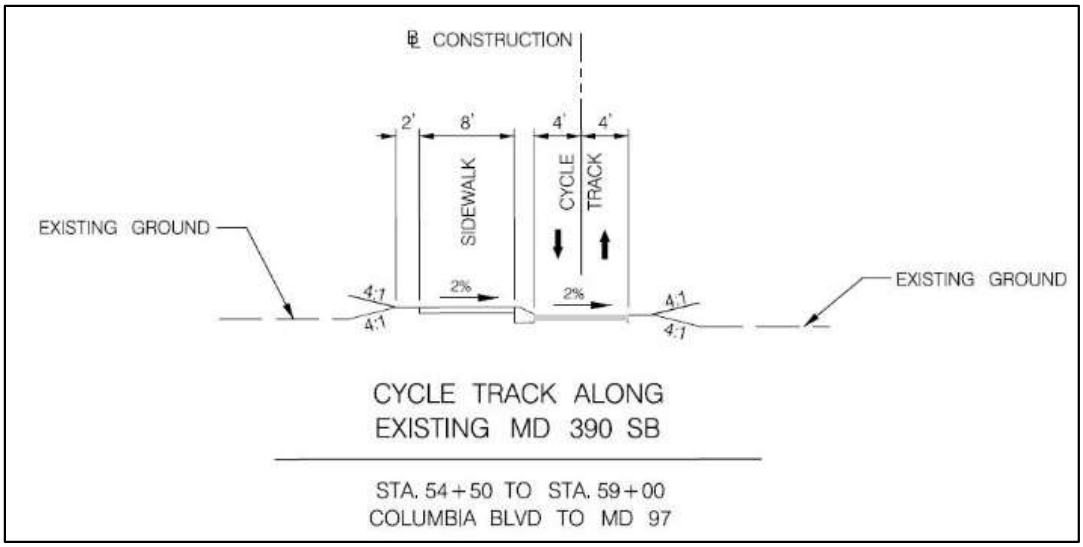


Figure 29: Proposed Cross Section – 16th Street Separated Bike Lanes

Transportation Analysis

Master Plan Conformance – Transportation

The 2018 Bicycle Master Plan recommends the following improvements within the project area:

1. Two-way separated bike lanes along the west side of MD 97 between 16th Street and Landsdowne Way,
2. A sidepath (existing) from Landsdowne Way to Forest Glen Road,
3. Two-way separated bike lanes on the northbound side of 16th Street between MD 97 and Columbia Boulevard,
4. Separated bike lanes along Seminary Road between Columbia Boulevard/Woodland Drive and 2nd Avenue,
5. Sidepath along north and south sides of Forest Glen Road (MD 192) between Georgia Avenue and Darcy Forest Drive/Belvedere Place, and
6. Sidepath along the south side of Forest Glen Road between Georgia Avenue and the Sligo Creek Parkway.

These recommendations were confirmed by the 2020 *Forest Glen/Montgomery Hills Sector Plan*. The project is implementing improvement 1 above, but only between 16th Street and Flora Lane. Improvements 3 through 6 above are not included in the project design. The Sector Plan also recommended wider sidewalks with adequate buffers from vehicular travel.

The 2020 *Forest Glen/Montgomery Hills Sector Plan* identifies Georgia Avenue between 16th Street and Forest Glen Road as a Major Highway with a master planned right of way of 120 feet and master planned target speed of 25 mph. Bus Rapid Transit in mixed traffic is planned for this road segment as well.

16th Street is an existing six-lane Major Highway with a master planned right of way of 120 feet and a master planned target speed of 25 mph. The planned number of lanes shows a reduction from six travel lanes to four travel lanes.

Design Elements – Transportation

Roadway Design: Georgia Avenue will likely be classified as a Town Center Boulevard per the 2020 *Forest Glen/Montgomery Hills Sector Plan* and Planning Board-approved Complete Streets Design Guidelines. The project is consistent with the road recommendations with the exception of the master planned target speed. The project is being designed with a 35 mph design speed, while the Sector Plan calls for a target speed of 25 mph. 16th Street will likely be classified as a Boulevard per the approved Complete Streets Design Guidelines. The project is being designed with a 30 mph design speed, while the Sector Plan calls for a target speed of 25 mph.

Separated Bike Lane Design: There is a mismatch between the project type (a full street reconstruction) and the bikeway type (a "retrofit"-style bikeway) that MDOT SHA proposes to construct on Georgia Avenue, resulting in a missed opportunity to provide a high-quality, "permanent" bikeway for the community. The challenge with "retrofit-style" bikeways is that they:

- are less aesthetically pleasing
- lead to trapped debris in the bikeway, creating hazards and requiring greater maintenance
- provide less separation from traffic at driveways

Additionally, per the 2018 *Bicycle Master Plan*, developers would be required to upgrade the "retrofit" separated bike lanes to "permanent" separated bike lanes as part of their conditions of approval, creating additional expense for redevelopment.

Instead, MDOT SHA should redesign the separated bike lanes as a "permanent" bikeway. The difference between retrofit and permanent bikeways can be seen in Figure 30.

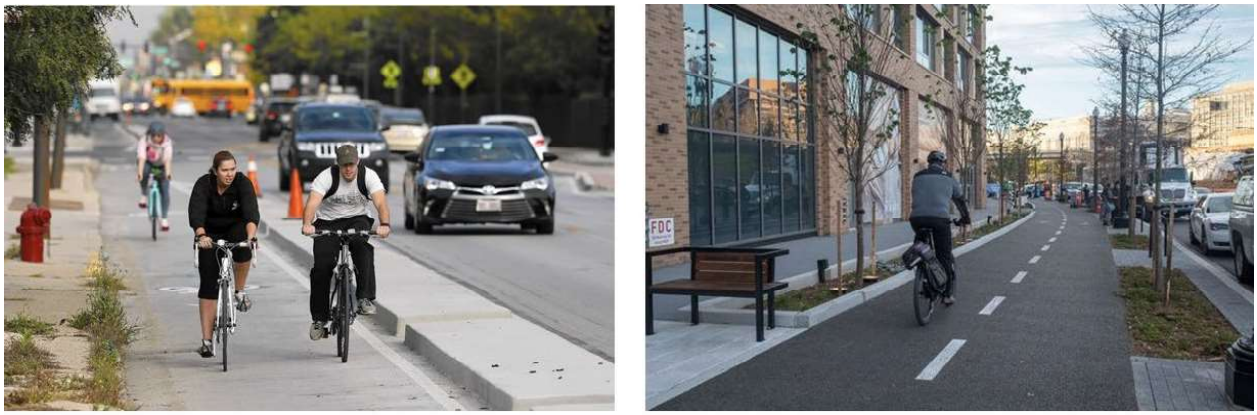


Figure 30: Comparison of "Retrofit" and "Permanent" Separated Bike Lanes

As shown in Figure 31 below, MDOT SHA's proposal includes a 4-foot-wide street buffer, 8-foot-wide two-way separated bike lanes and an 8-foot-wide sidewalk.

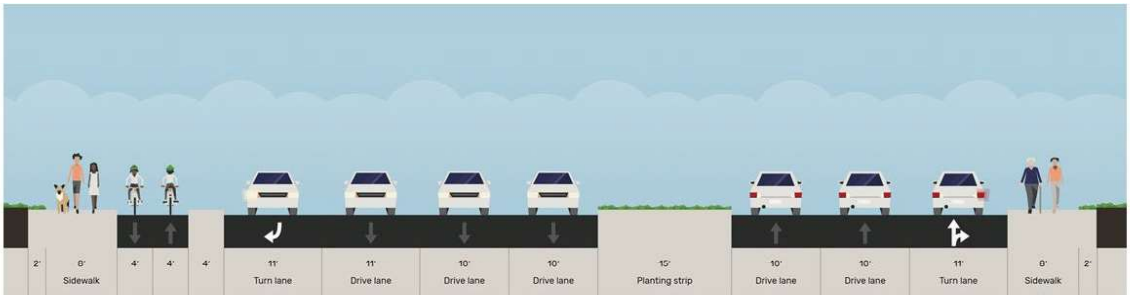


Figure 31: MDOT SHA's Proposed Section on Georgia Avenue

To improve the quality of the separated bike lanes from a "retrofit" to a "permanent" bikeway and to be consistent with the 2020 *Forest Glen/Montgomery Hills Sector Plan* and Complete Streets Design Guide, MDOT SHA should widen the street buffer 2 feet (from 4 feet to 6 feet), raise the separated bike lanes to the same level as the street buffer, reduce the sidewalk width by 2 feet (from 8 ft to 6 ft), and elevate the sidewalk 3 inches above the separated bike lanes using a rolled curb. See Figure 32 below.

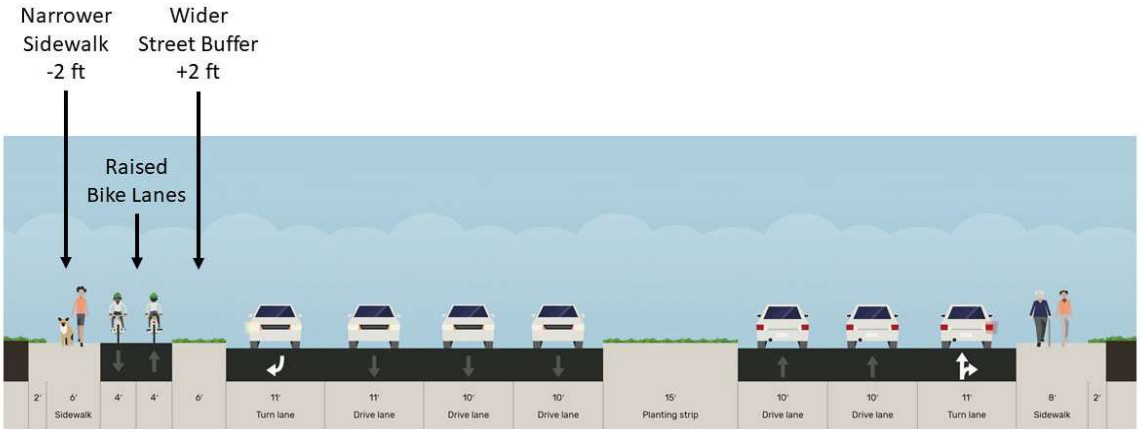


Figure 32: Montgomery Planning's Proposed Section on Georgia Avenue

The separated bike lanes in the southbound lanes of 16th Street are not recommendations by either the 2018 *Bicycle Master Plan* or the 2020 *Forest Glen/Montgomery Hills Sector Plan*. These bike lanes terminate at Columbia Boulevard and do not connect to any other existing or planned bike facility.

Protected Intersections: As currently designed, the project fails to extend the protection of the separated bike lanes through the intersections. To improve intersection safety for pedestrians and bicyclists, the project should be modified to include protected intersections at Seminary Place, Seminary Lane and 16th Street. MDOT SHA has previously stated that separated bike lanes along Georgia Avenue do not require protected intersections as they do not intersect other bikeways, but this is a misunderstanding of the purpose of protected intersections, which is to increase the safety of all intersections, not just those where two bikeways intersect. In this case, protected intersections will slow turning traffic, separate pedestrians from bicyclists, and reduce crossing distances.

Sidepath Design: In general, the sidepath width provided between Flora Lane and Landsdowne Way is 10 feet which is consistent with the 2018 *Bicycle Master Plan* and the Planning Board-approved Complete Streets Design Guidelines. This design does not provide a buffer between the sidepath and the travel lanes, however, it does provide a zero to 6-foot wide shoulder. Shoulders, while they may have safety benefits, are generally not considered as an acceptable buffer between travel lanes and either sidepaths or sidewalks.

Sidewalk Design: In the approved Complete Streets Design Guidelines, a Town Center Boulevard has a default sidewalk width of 10 feet (8 feet minimum). The proposed 5-foot wide sidewalks, while consistent with minimum widths required per the Americans with Disabilities Act (ADA), are deficient per new Montgomery County guidelines.

Historic Resources Analysis

The Maryland Historical Trust (MHT) conducts the Historic Preservation review for MDOT SHA projects. MHT identified four historic resources, two districts and two individual sites. These four resources are designated on the County Locational Atlas of Historic Sites and Districts as part of the Woodside Historic District. Historic Preservation Staff has evaluated the proposed work and determined that the project will have a minimal impact on the resources and does not constitute a 'substantial alteration' as defined by Chapter 24A of County Code. Therefore, this project does not require a Historic Area Work Permit.

Parkland Impacts

While there is currently no parkland affected by the proposed project, MDOT SHA has indicated that they will be donating the land between 16th Street and Georgia Avenue over to the M-NCPPC for use consistent with the recommendations of the 2020 *Forest Glen/Montgomery Hills Sector Plan*. The design of the MDOT SHA improvements needs to accommodate the construction of a rectangular athletic field and other park amenities by M-NCPPC. The land conveyance boundary and any project impacts to the future parkland need to be finalized through the Park Construction Permit review process.

Parks appreciates the effort made by MDOT SHA to revise the stormwater management facilities within this area to allow for as much opportunity for park land as possible while still providing important stormwater management treatment. Parks requests that any new cycling or pedestrian facilities not use the existing 16th Street south pavement, as it is not consistent with Master Plan recommendations.

Park looks forward to working with MDOT SHA to refine the transportation improvements in a manner that maximizes pedestrian and cyclist safety and provides the space for a much need park at this location in accordance with the *Forest Glen/Montgomery Hills Sector Plan*.

Environmental Guidelines

This project is located primarily within the Georgia Avenue right-of-way and within the Sligo Creek watershed, a tributary to the Anacostia River. An analysis of the natural resources of the project study area, which encompasses all the LOD of all considered design alternatives, has been prepared and shows that soils within the project area consist of Glenelg soil series which is characteristically well drained, silt loam soils. These soils are not considered highly erodible or otherwise sensitive or protected according to the Montgomery County Environmental Guidelines. There are no wetlands, streams and/or associated buffers, 100-year floodplains, or rare/threatened/endangered species within the study area.

Two forest stands were observed during the survey of the project area. The forest stands are generally early to mid-successional stands with trees sized between 12 and 24 inches in diameter-at-breast-height (DBH). Both stands were found to contain many invasive plant species, particularly in the form of vine cover. Eleven specimen trees, sized at 30 inches or greater in DBH, were identified and mapped in the inventory.

All of the project alternatives propose impact to one or both forest stands, however the forest stands are presently of low quality and health due to their proximity to their urban surroundings. Forest and individual tree impacts for this project are regulated under the Maryland Reforestation Law and Roadside Tree Law and will be mitigated under these statutes. While the Environmental Guidelines are designed to protect the environmental features by the restriction of development in environmentally sensitive areas, disturbance is allowed for necessary roadway and right-of-way work. In this case, the work is associated with a master plan recommended bikeway, sidewalk improvement, and stormwater facilities. Disturbance has been minimized to avoid major tree and environmental impacts, and the ultimate project will result in improved stormwater treatment as well as increased pedestrian and bicyclist safety. As proposed, the project complies with Chapter 22A, Forest Conservation Law, and is in conformance with the Montgomery County Environmental Guidelines.

Forest Conservation

This Application is subject to Chapter 22A Forest Conservation Law, but is exempt from the requirement to submit a Forest Conservation Plan per 22A-5(e) – "*the requirements of Article II do not apply to…a State,*

County, or municipal highway construction activity that is subject to Section 5-103 of the Natural Resources Article of the Maryland Code, or Section 22A-9."

This Application is for a State highway construction and is subject to review under state reforestation law as stated above.

While the project is exempt, the applicant is still required under section 22A-9 of the County code to:

a) Minimize forest cutting, clearing, and loss of specimen trees to the extent possible while balancing other design, construction, and environmental standards. The constructing agency must make a reasonable effort to minimize the cutting or clearing of trees and other woody plants.

b) If the forest to be cut or cleared for a county highway project equals or exceeds 20,000 square feet, the constructing agency must reforest a suitable area at the rate of one acre of reforestation for each acre of forest cleared.

c) Mitigate for loss of specimen or champion trees. Mitigation amounts are based on the size and character of the tree.

Stormwater Management

The LOD associated with the proposed design alternatives could affect stormwater management from temporary impacts related to construction and from longer term impacts associated with the addition of impervious surfaces required for the project. However, increases are expected to be minimal relative to the existing conditions and would be further minimized through Maryland Department of the Environment required use of approved sediment and erosion control measures during construction and implementation of stormwater environmental site design best management practices upon project completion.

At the time of plan review, final design for all stormwater treatment facilities were not yet available; however, updated design proposals for stormwater management will include both above ground and underground, covered, stormwater management facilities. Areas of underground treatment have been proposed in order to preserve and expand the amount of usable open space along the project boundaries. One particular area in which this has been proposed is the parcel of land bounded by MD 390 (16th Street), Columbia Boulevard, and MD 97. This parcel will be dedicated to Montgomery County Parks upon project completion, which will allow the area to be used for recreation while stormwater treatment is provided via an underground system.

Community Outreach and Notification

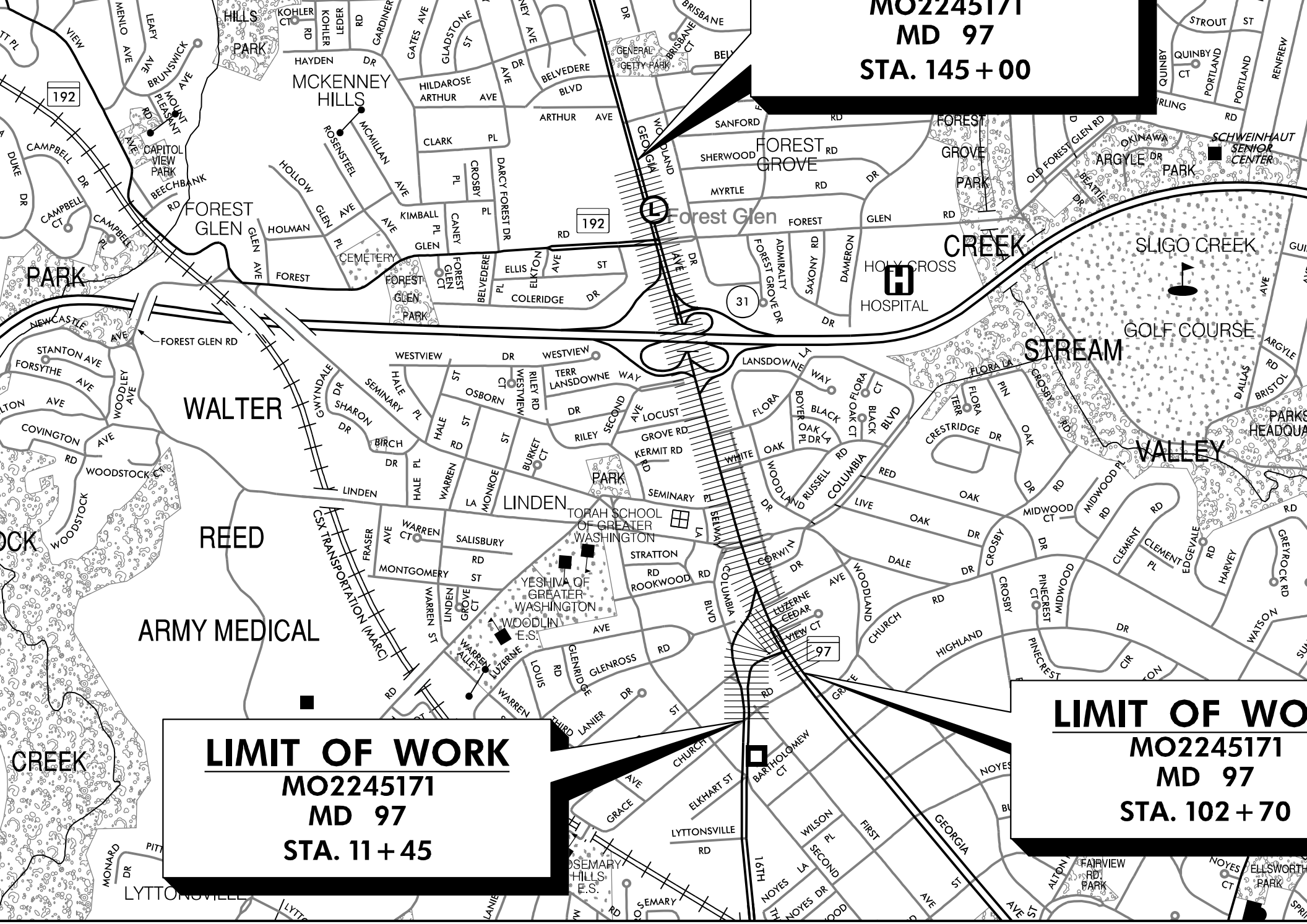
This application was noticed in accordance with the Uniform Standards for Mandatory Referral Review. Throughout the project design process, proposed concepts were presented to key stakeholders, as well as the community. This project last held a Location/Design Public Hearing on December 1, 2015. At that meeting, Alternative 5B with a cycle track option received the greatest public support. Based on that, MDOT SHA initiated a preliminary concept (30% design) of a refined version of that Alternative, which is being revised in this staff report. MDOT SHA did provide a project briefing to the Montgomery County Planning Board on March 21, 2019.

Conclusion

Based on information provided by the applicant and the analysis contained in this report, staff concludes that the proposed MD 97 Montgomery Hills Design project can be designed with some modifications to meet Master Plan and relevant design standards as specified in the Recommendations section of this staff report. Staff recommends approval of the mandatory referral and the transmission of comments to the applicant.

Attachments

A. Proposed Project Plans
B. MDOT SHA Purpose and Need



RY COUNTY – SILVER SPRING – MONTGOMERY HILLS

12	PS–3	ROADWAY PLAN SHEET – MD 390 – STA. 10+
13	PS–4	ROADWAY PLAN SHEET – MD 97 – STA. 110+
14	PS–5	ROADWAY PLAN SHEET – MD 97 – STA. 116+
15	PS–6	ROADWAY PLAN SHEET – MD 97 – STA. 123+
16	PS–7	ROADWAY PLAN SHEET – MD 97 – STA. XXX+
17	PS–8	ROADWAY PLAN SHEET – MD 97 – STA. 130+
18	PS–9	ROADWAY PLAN SHEET – MD 97 – STA. 136+
19	PS–10	ROADWAY PLAN SHEET – MD 97 – STA. 143+

ROADWAY PROFILES

20	HP–1	PROFILE SHEET – MD 97
21	HP–2	PROFILE SHEET – MD 97
22	HP–3	PROFILE SHEET – MD 390

TRAFFIC CONTROL PLANS

23	MTN–01	MAINTENANCE OF TRAFFIC GENERAL NOTES
24–31	MT–01 – MT–08	MAINTENANCE OF TRAFFIC PLANS PHASE 1
32–35	MT–09 – MT–12	MAINTENANCE OF TRAFFIC PLANS PHASE 2
36–38	MT–13 – MT–15	MAINTENANCE OF TRAFFIC PLANS PHASE 3A
39–41	MT–16 – MT–18	MAINTENANCE OF TRAFFIC PLANS PHASE 3B
42–46	MT–19 – MT–23	MAINTENANCE OF TRAFFIC PLANS PHASE 3C
47–52	MT–24 – MT–29	MAINTENANCE OF TRAFFIC PLANS PHASE 4A
53–57	MT–30 – MT–34	MAINTENANCE OF TRAFFIC PLANS PHASE 4B
58	MT–35	MAINTENANCE OF TRAFFIC PLANS PHASE 4C
59–64	MT–36 – MT–41	MAINTENANCE OF TRAFFIC PLANS PHASE 5A
65–69	MT–42 – MT–46	MAINTENANCE OF TRAFFIC PLANS PHASE 5B

SSF	Super Silt Fence
STD.	Standard
STA.	Station
SO.	Single Opening
SY	Square Yards
SWM	Stormwater Management
T	Tangent
T	Telephone
T.C.	Top of Cover
T.G.	Top of Grate
T or TL	Traverse Line
T.M.	Top of Manhole
TRAV.	Traverse
TS	Temporary Swale
T.S.	Top of Slab
T.S.	Topsoil
TYP.	Typical
U.D.	Under Drain
U.G.	Underground
U.P.	Utility Pole
USDA	United States Department of Agriculture
VCL	Vertical Clearance
V.C.L.	Vertical Curve Length
W	Water
W	West
WB	Westbound
WB	Wetland Buffer
W.M.	Water Meter
W.S.	Wrapped Steel
WUS	Waters of the United States
W.V.	Water Valve

ure

Wall Pipe

urve

SOIL BOR
E

DENOTES BORING NUMBER

DENOTES BORING LOCATION

DENOTES DATE BORING WAS DRILLED

DENOTES STANDARD PENETRATION TEST N-VALUE IN BLOWS PER FOOT UNLESS OTHERWISE NOTED

DENOTES WATER DEPTH READING FROM TOP OF BORING (TIME IN HOURS)

CI(2

DENOTES CAVE-IN DEPTH FROM TOP OF BORING (TIME IN HOURS)

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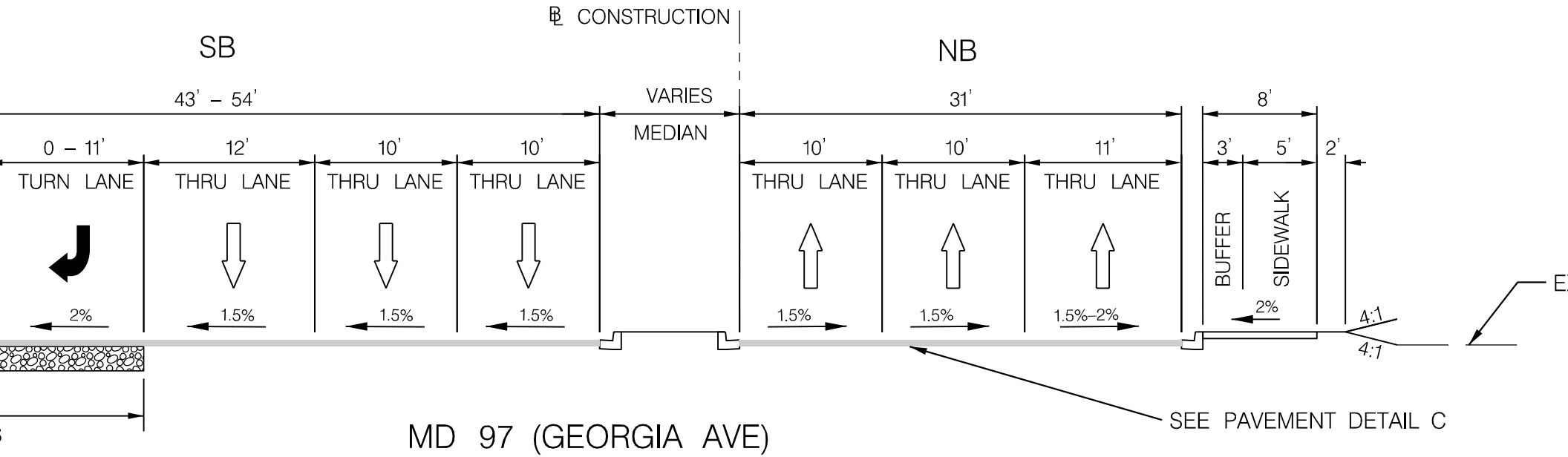
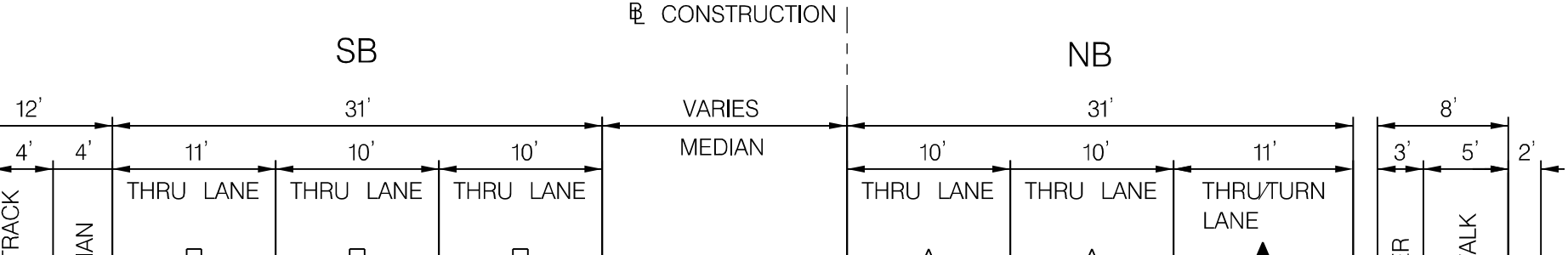
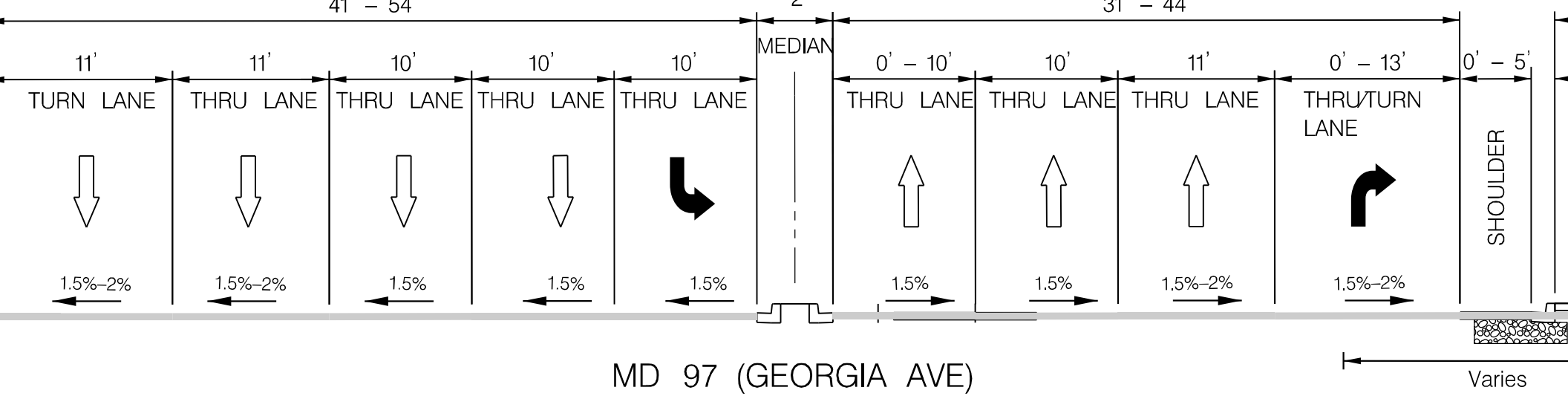
CULVERT



MD 97 (GEORGIA AVE)

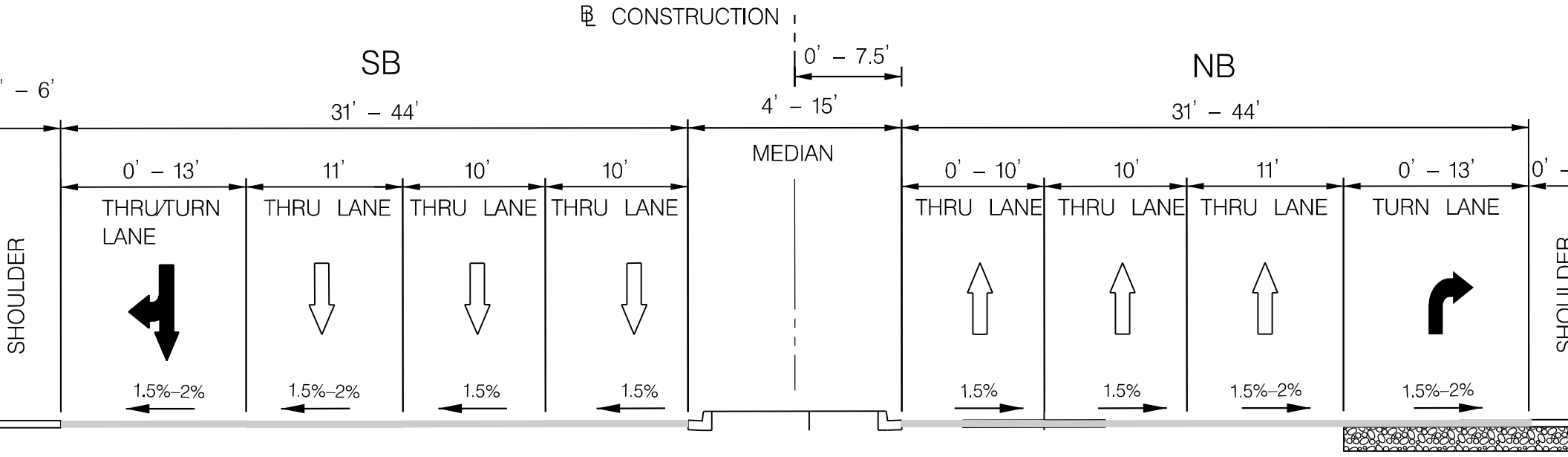
STA. 106+00 TO STA. 109+50
16TH TO LUZERNE AVE



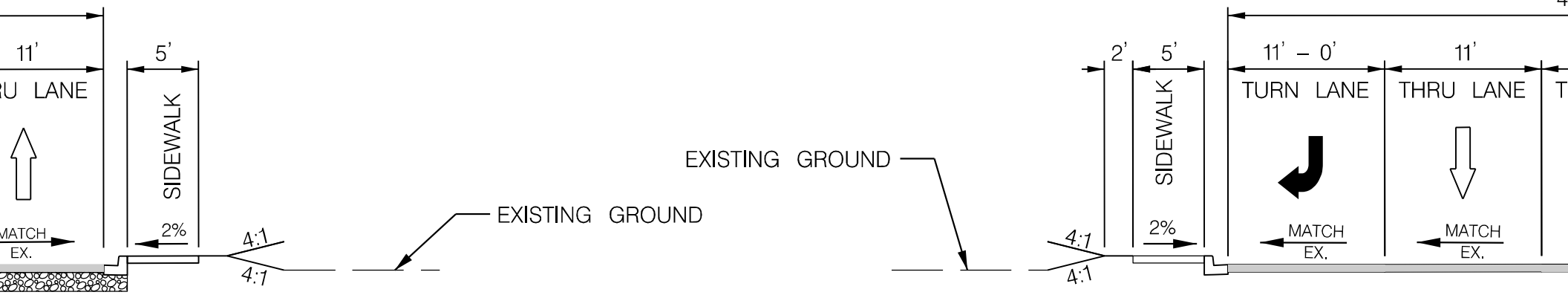


MD 97 (GEORGIA AVE)

STA. 124 + 00 TO STA. 127 + 50
FLORA LN TO FOREST GLEN ROAD



MD 97 (GEORGIA AVE)


11'
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SIDEWALK
MATCH
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4:1
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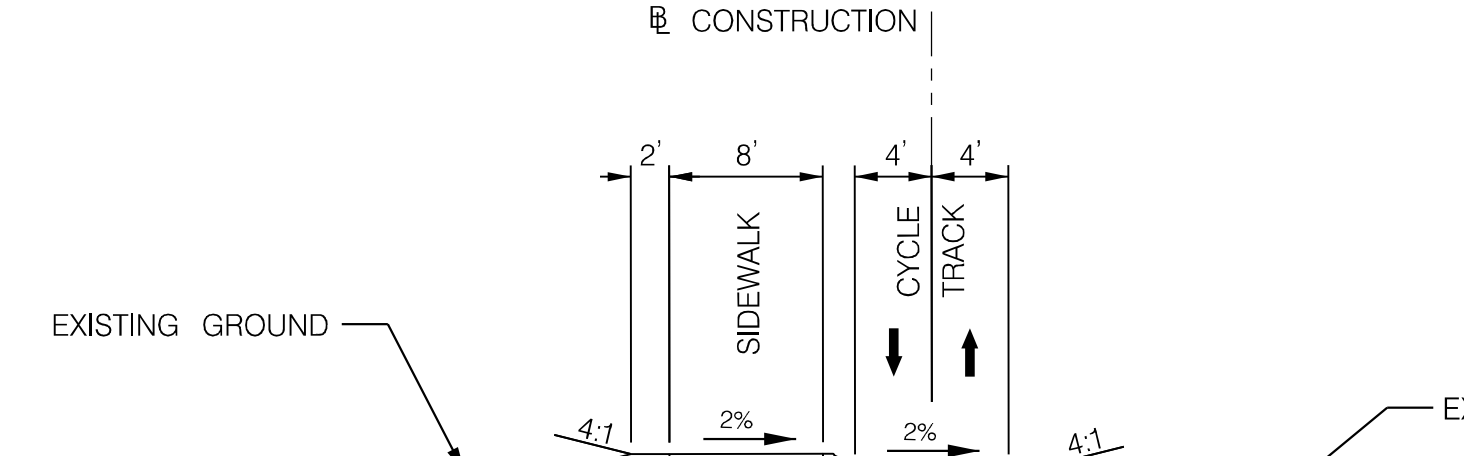
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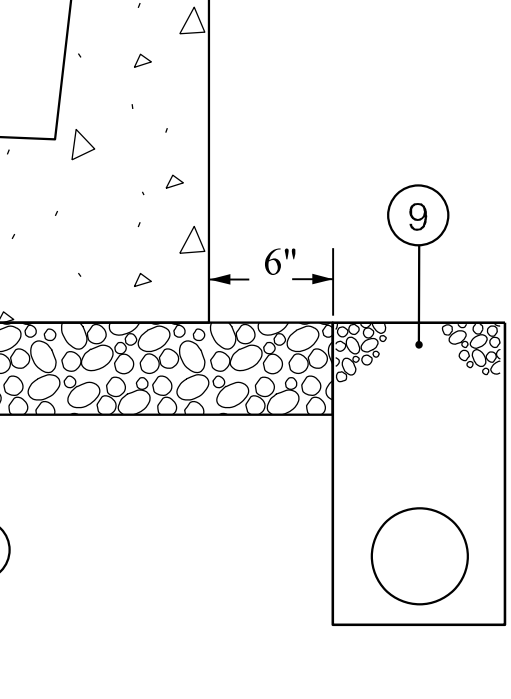


NOTES:

1. FINE MILLING SHALL BE PERFORMED AFTER PATCHING AND WINDENING ARE COMPLETED.

2. INFORMATION FROM CONSTRUCTION HISTORY INDICATE TH PAVEMENT STRUCTURE ON MD 97 WITHIN THE PROJECT LIM

   1.5" TO 3" ASPHALT CONCRETE OVER 9" JOINTED REINFORCE PAVEMENT OVER 6" STONE

3. REFER T0 STANDARDS NO. 578.03 AND 578.03-01 FOR PATCHIN

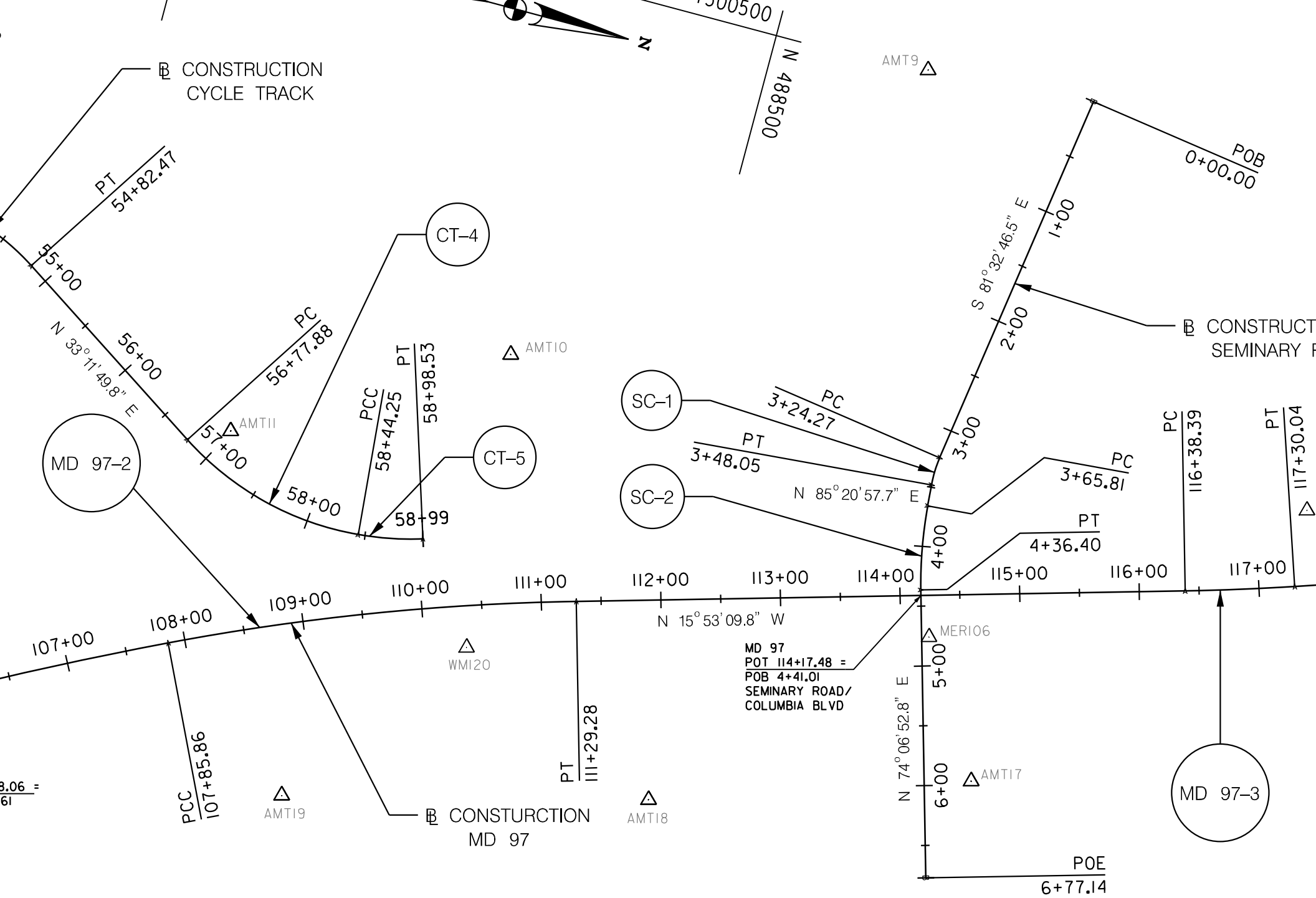
   USE THE FOLLOWING FOR PARTIAL-DEPTH PATCHING:
   5" SUPERPAVE ASPHALT MIX 19.0 mm FOR PARTIAL-DEPTH PA PG64S-22, LEVEL 2 (MIN 2" AND MAX 4" LIFTS) (SEE NOTES 1, 2

   USE THE FOLLOWING FOR FULL-DEPTH PATCHING:
   9" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT TYPE 1 USING MIX NO. 9 (SEE NOTES 1, 2, 6, AND 7)

4. IN AREAS WHERE THE EXISTING PAVEMENT IS BEING REMOV OF CLASS 1 EXCAVATION SHALL BE AT THE BOTTOM OF THE MATERIALS IN THE EXISTING PAVEMENT OR AT THE TOP OF WHICHEVER IS LOWER.

5. PARTIAL-DEPTH PATCHING SHALL BE TO A DEPTH OF 5" OR T THE TOP OF CONCRETE, WHICHEVER OCCURS FIRST.

6. IF THE UNDERLYING BASE MATERIAL IS DETERIORATED, RE UNSUITABLE MATERIAL AND BACKFILL WITH 6" GRADED AG BASE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CYCLE TRACK
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55+00
N 33°11'49.8" E
56+00
PC
56+77.88
CT-4
57+00
58+00
PCC
58+44.25
PT
58+98.53
58+99
CT-5
AMT10
AMT11
MD 97-2
AMT9
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1+00
S 81°32'46.5" E
2+00
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SEMINARY R
SC-1
PC
3+24.27
3+00
SC-2
PT
3+48.05
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PC
3+65.81
PC
116+38.39
PT
117+30.04
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6+77.14
PCC
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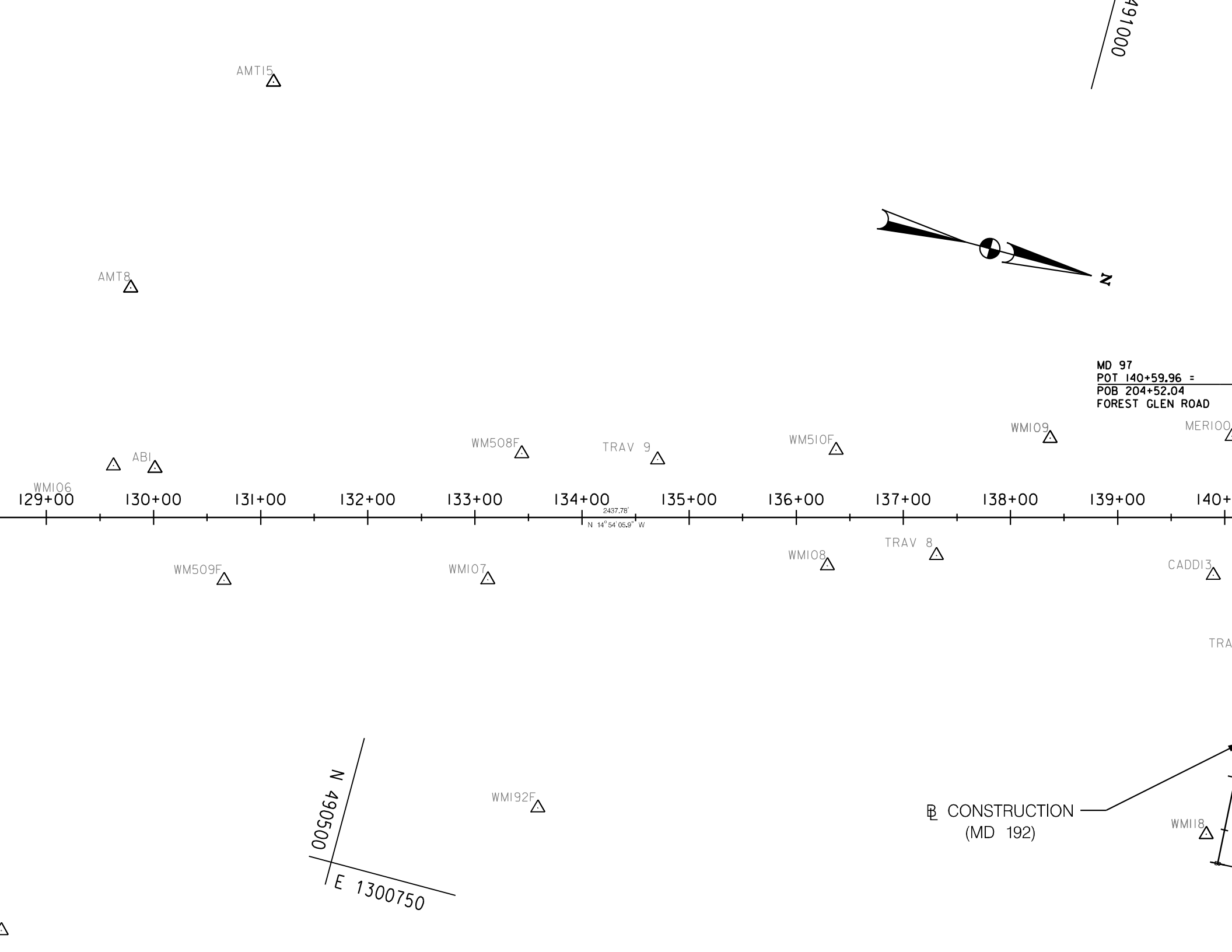
AMT19
PT
111+29.28
AMT18
℄ CONSTURCTION
MD 97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AMT15
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POB 204+52.04
FOREST GLEN ROAD
WMI09
MERI00
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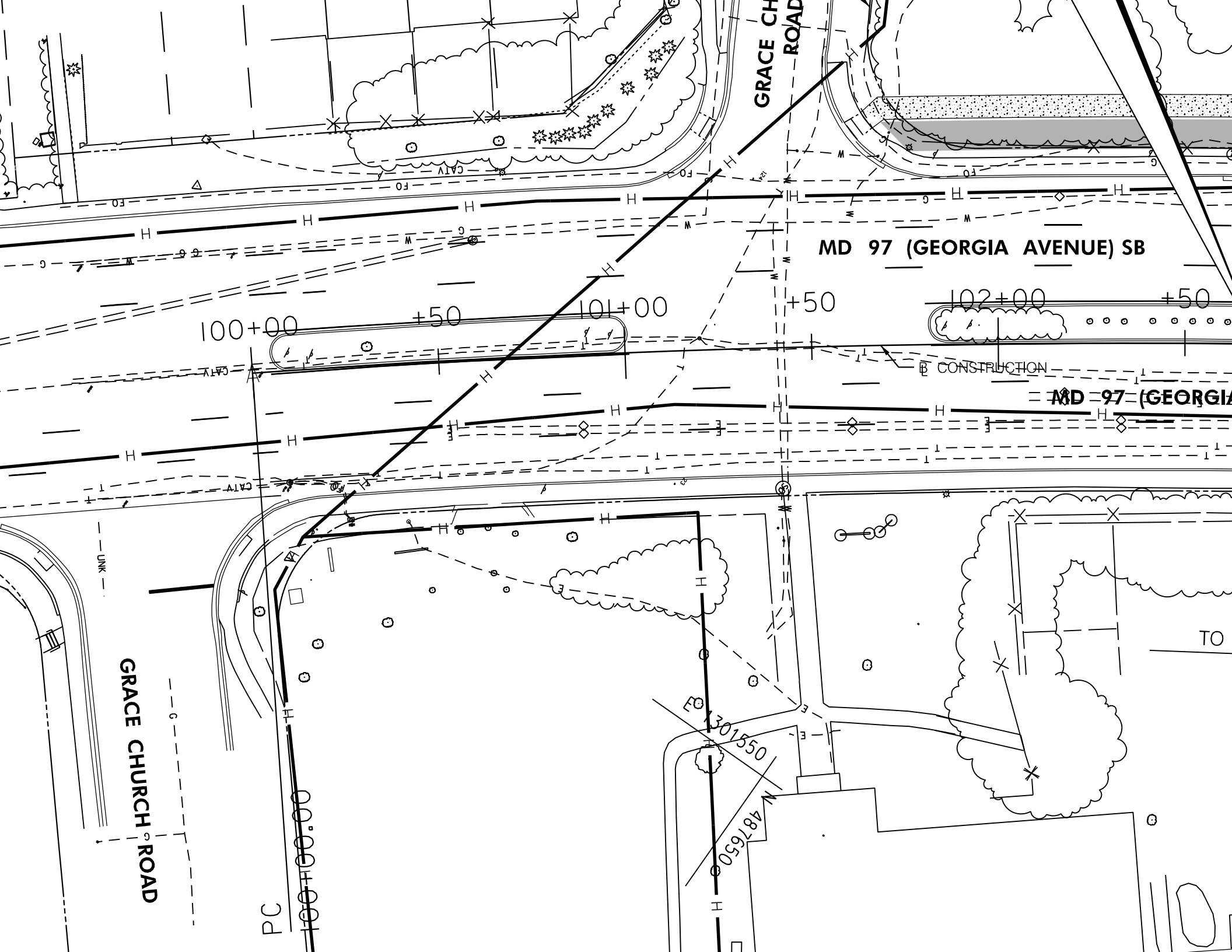
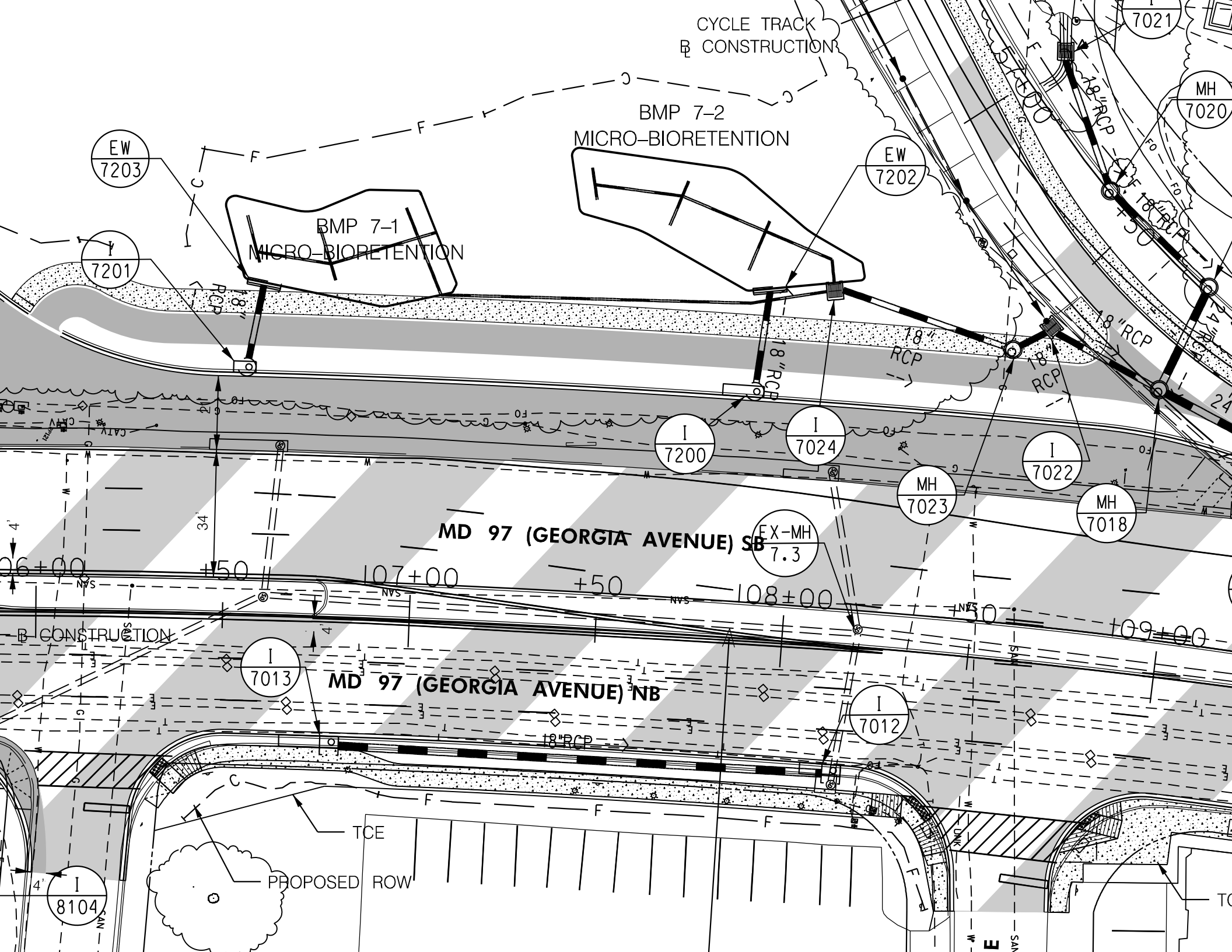
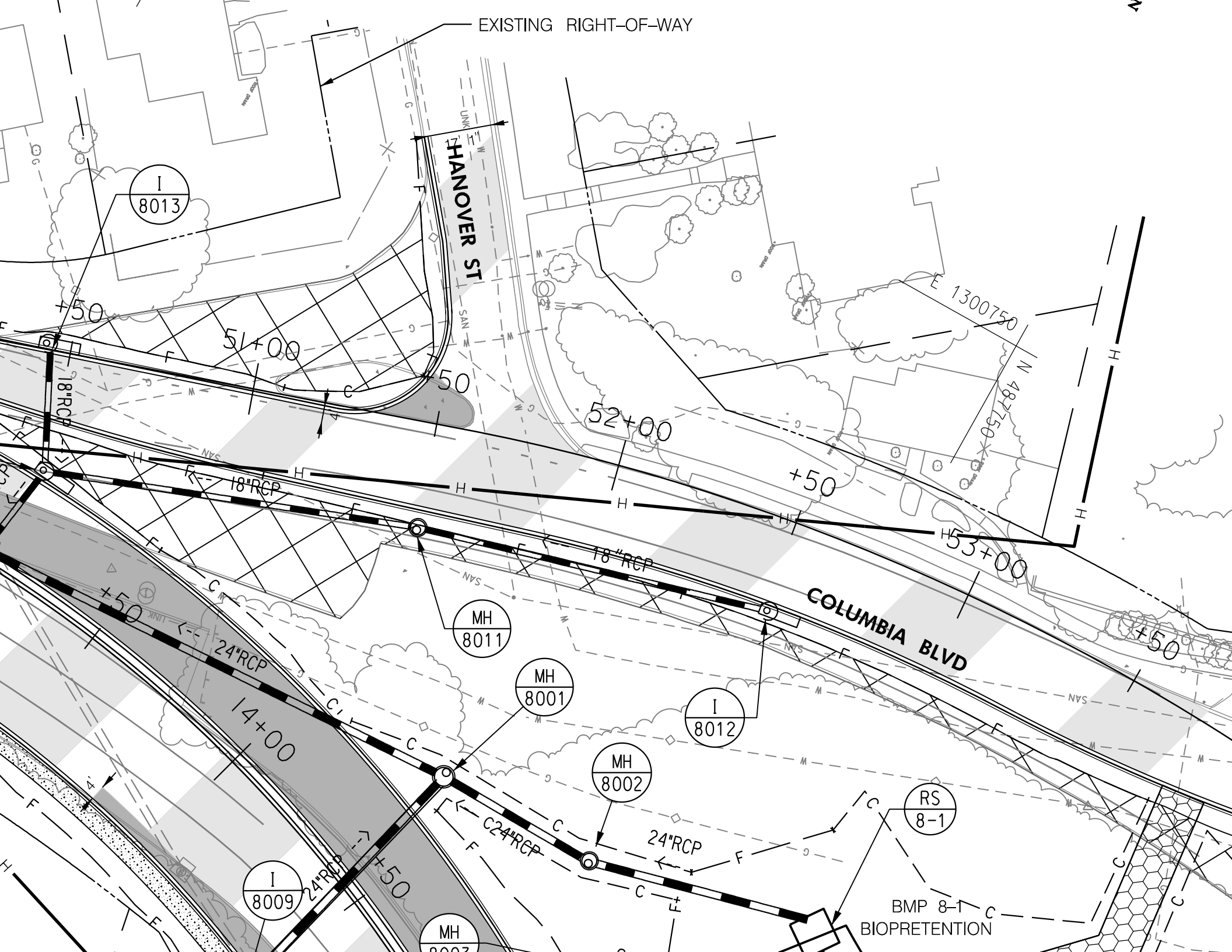
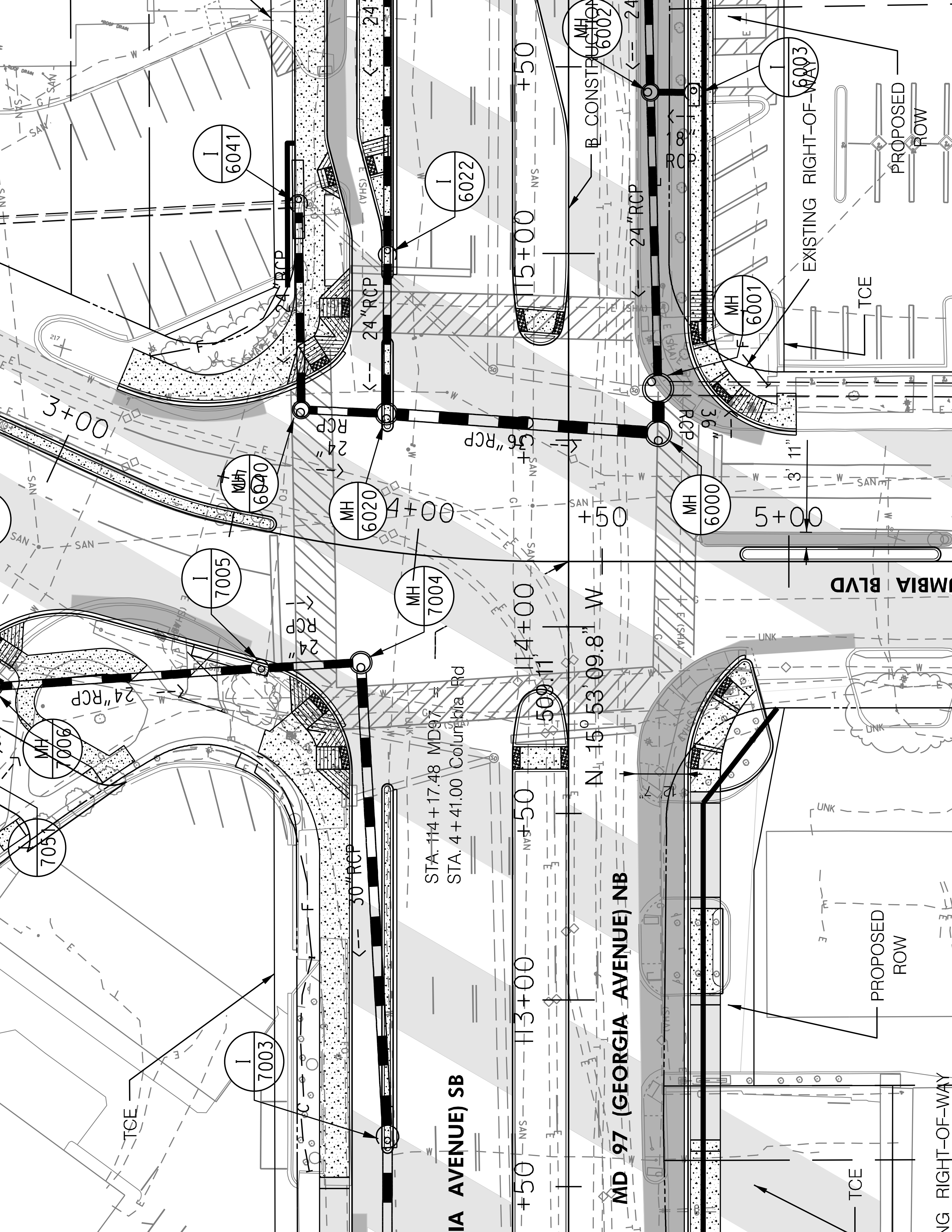
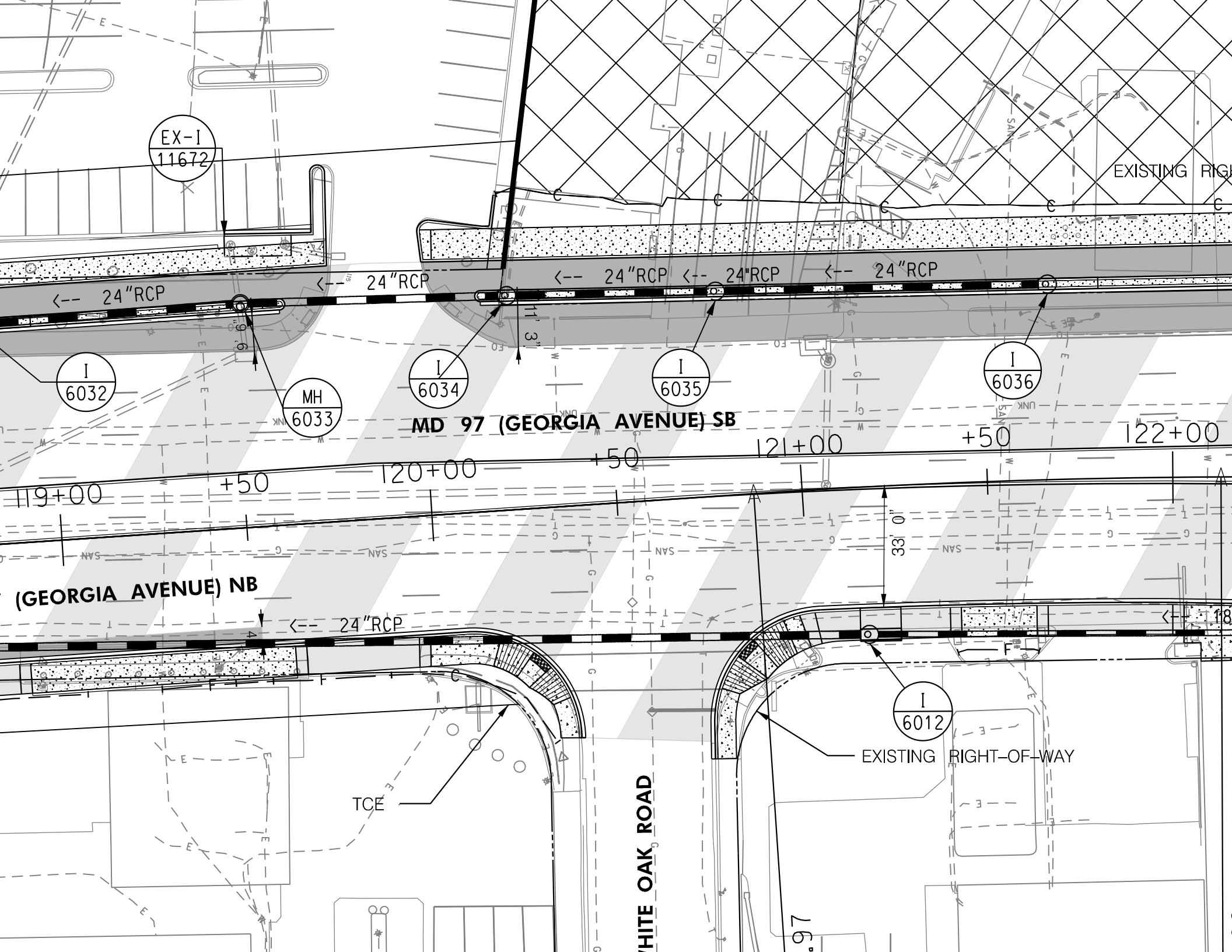
131+00
132+00
133+00
134+00
135+00
136+00
137+00
138+00
139+00
140+
2437.78'
N 14°54'05.9" W
TRAV 8
WMI08
WM509F
WMI07
CADDI3
TRA
N 490500
E 1300750
WMI92F
℄ CONSTRUCTION
(MD 192)
WMII8

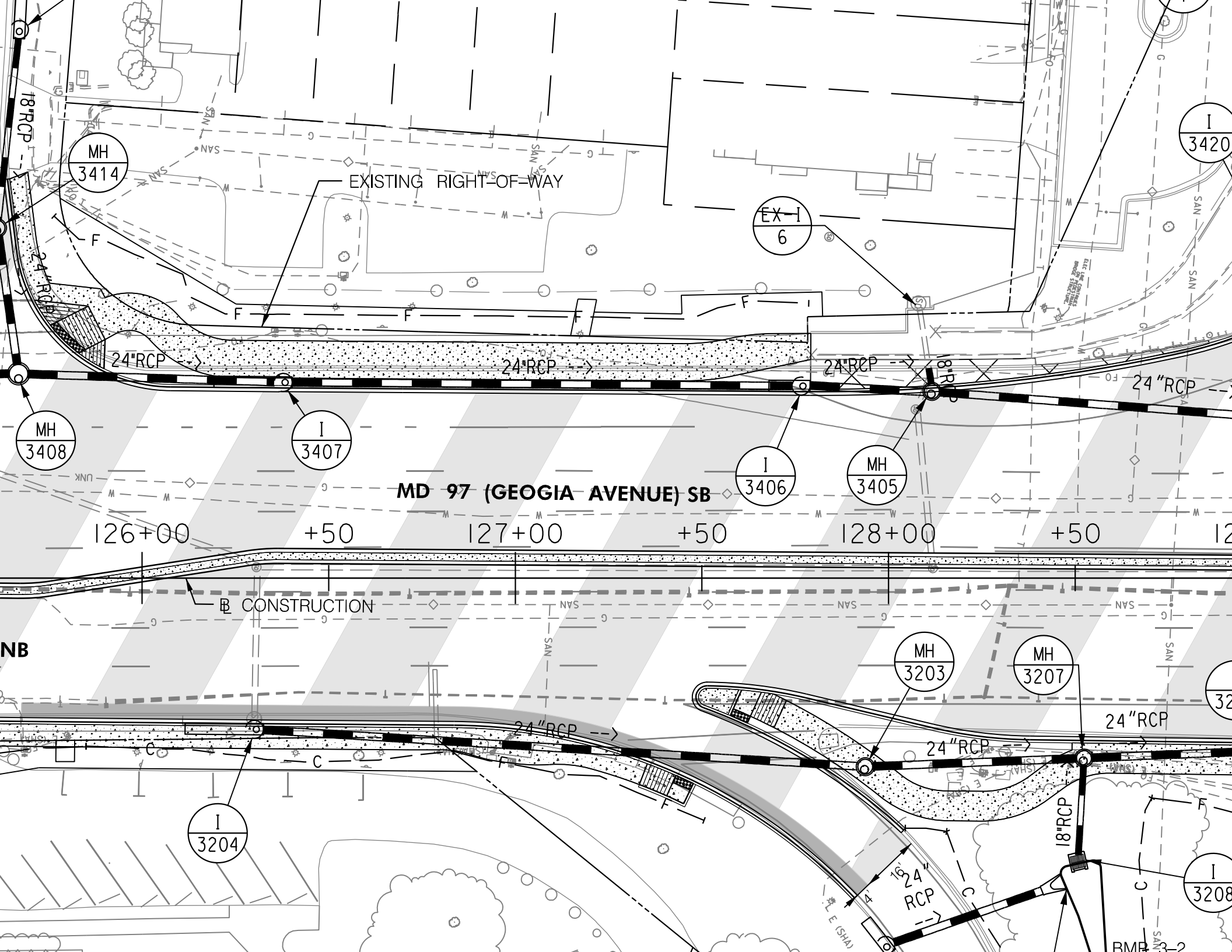

GRACE CHURCH ROAD
MD 97 (GEORGIA AVENUE) SB
100+00
+50
101+00
+50
102+00
+50
CONSTRUCTION
MD 97 (GEORGIA
GRACE CHURCH ROAD
PC
100+00.00
E 1301550
N 487650
TO


CYCLE TRACK
℄ CONSTRUCTION
BMP 7–2
MICRO–BIORETENTION
BMP 7–1
MICRO–BIORETENTION
EW
7203
EW
7202
I
7201
I
7200
I
7024
I
7022
I
7021
MH
7020
MH
7023
MH
7018
EX–MH
7.3
I
7013
I
7012
I
8104
MD 97 (GEORGIA AVENUE) SB
MD 97 (GEORGIA AVENUE) NB
℄ CONSTRUCTION
18"RCP
TCE
PROPOSED ROW
106+00
107+00
108±00
109±00
+50
34'
4'


EXISTING RIGHT-OF-WAY
HANOVER ST
COLUMBIA BLVD
I 8013
I 8012
I 8009
MH 8011
MH 8001
MH 8002
MH 8007
RS 8-1
BMP 8-1
BIOPRETENTION
18"RCP
24"RCP
C24"RCP
51+00
52+00
53+00
14+00
+50
E 1300750
N 487750


MD 97 (GEORGIA AVENUE) NB
IA AVENUE) SB
UMBIA BLVD
STA. 114+17.48 MD97 =
STA. 4+41.00 Columbia Rd
N 15° 53' 09.8" W
500.11'
B CONSTRUCTION
PROPOSED ROW
EXISTING RIGHT-OF-WAY
TCE
24"RCP
36"RCP
30"RCP
18"RCP
MH 6000
MH 6001
MH 6002
MH 6020
MH 6040
MH 7004
MH 7006
I 6003
I 6022
I 6041
I 7005
I 7003
I 7051
3+00
4+00
5+00
13+00
14+00
15+00
+50


EX-I
11672
<-- 24"RCP
<-- 24"RCP
<-- 24"RCP
<-- 24"RCP
<-- 24"RCP
9' 6"
11' 3"
I
6032
MH
6033
I
6034
I
6035
I
6036
MD 97 (GEORGIA AVENUE) SB
119+00
+50
120+00
+50
121+00
+50
122+00
33' 0"
(GEORGIA AVENUE) NB
<-- 24"RCP
<-- 18
I
6012
EXISTING RIGHT-OF-WAY
TCE
WHITE OAK ROAD
97


MH 3414
EXISTING RIGHT-OF-WAY
EX-I 6
I 3420
18"RCP
24"RCP
MH 3408
I 3407
I 3406
MH 3405
MD 97 (GEOGIA AVENUE) SB
126+00
+50
127+00
+50
128+00
+50
℄ CONSTRUCTION
NB
MH 3203
MH 3207
I 3204
16' 24" RCP
I 3208
BMR 3-2

SEE DWG. PS – 08

INNER LOOP

RAMP G

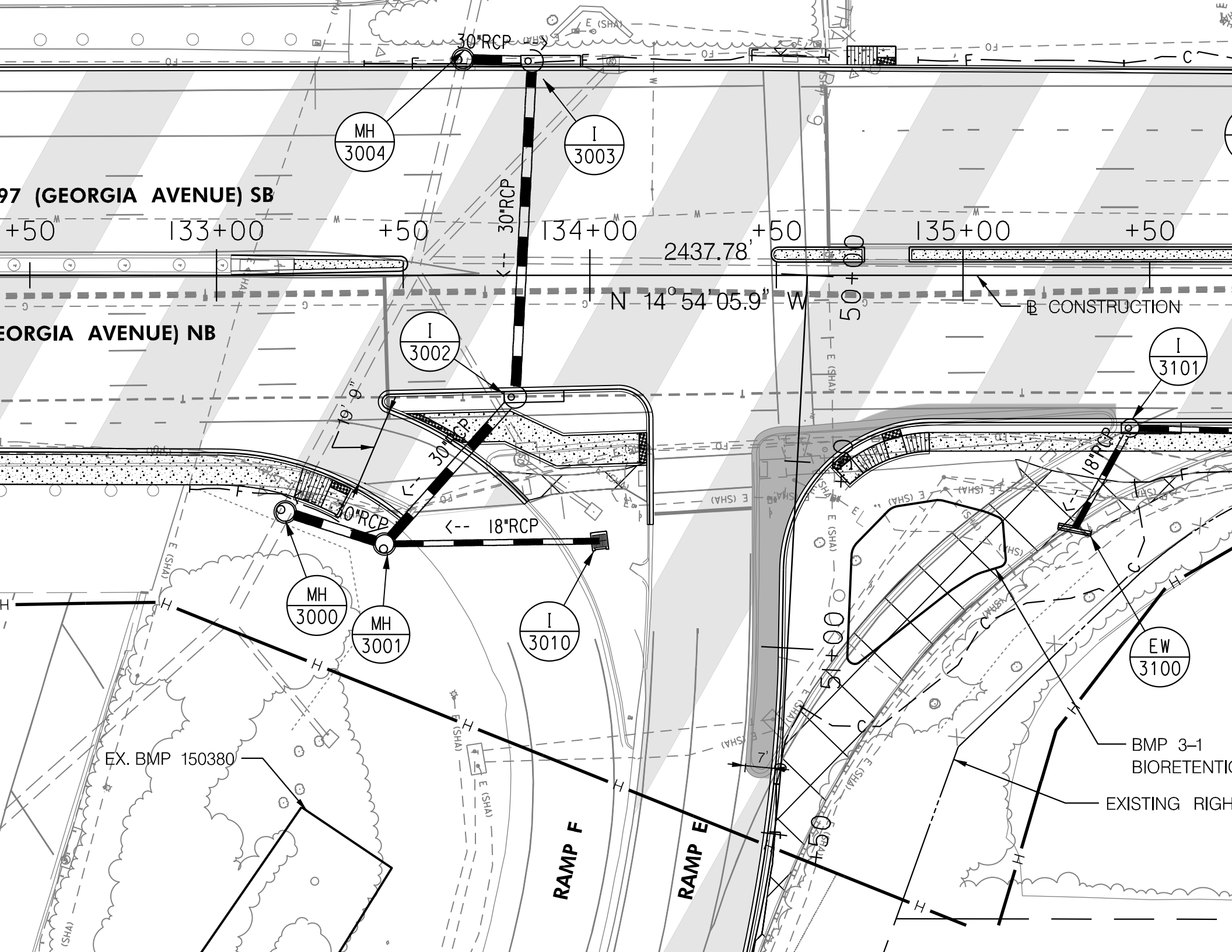
RAMP H

N 489900

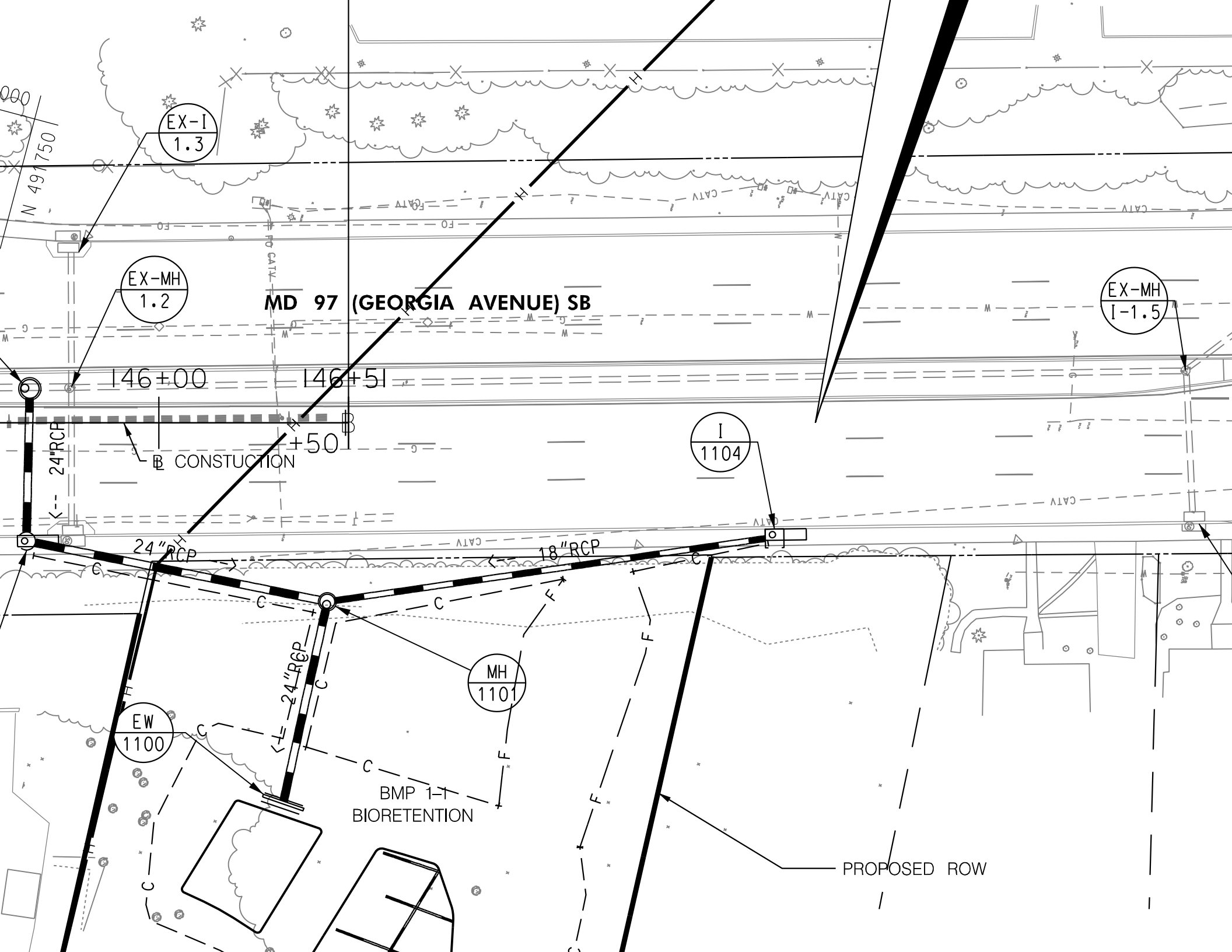
E 1300500

E (SHA)

SAN


30"RCP
MH 3004
I 3003
97 (GEORGIA AVENUE) SB
+50
133+00
+50
30"RCP
134+00
+50
2437.78'
135+00
+50
N 14° 54' 05.9" W
50+00
℄ CONSTRUCTION
EORGIA AVENUE) NB
I 3002
I 3101
19' 9"
30"RCP
18"RCP
MH 3000
MH 3001
I 3010
18"RCP
EW 3100
EX. BMP 150380
RAMP F
RAMP E
BMP 3-1
BIORETENTIO
EXISTING RIGH


MD 97
18"RCP
STA 204+52.04 Forest Glen Rd
141+00
140+00
139+00
+50
MH
1203
I
1204
I
3104
I
3006
18"RCP
MD 192 WB
(FOREST GLEN RD)
205+00
206+00
TCE
EXISTING RIGHT-OF-WAY
EXISTING
℄ CONSTRUCTION
E 1300350
ROOF DRAIN


EX-I
1.3
N 491750
EX-MH
1.2
MD 97 (GEORGIA AVENUE) SB
146+00
146+51
+50
℄ CONSTUCTION
24"RCP
EX-MH
I-1.5
I
1104
24"RCP
18"RCP
MH
1101
EW
1100
24"RCP
BMP 1-1
BIORETENTION
PROPOSED ROW
CATV
FO
W
G
H
C
F

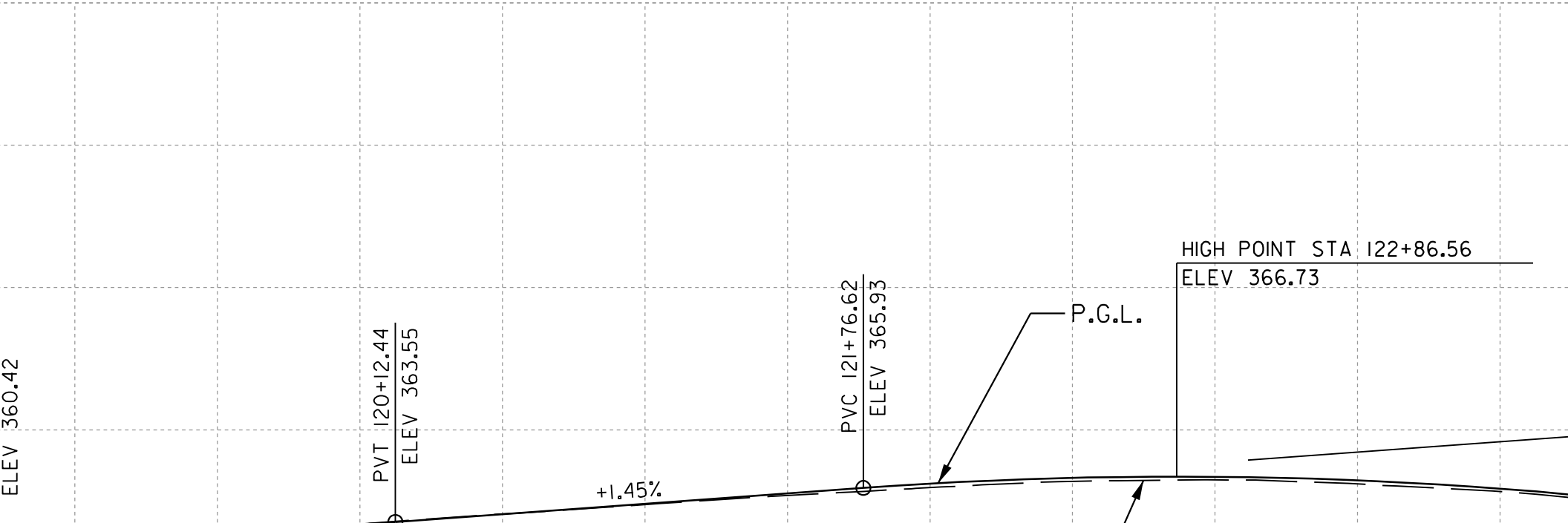
WORK
02245171

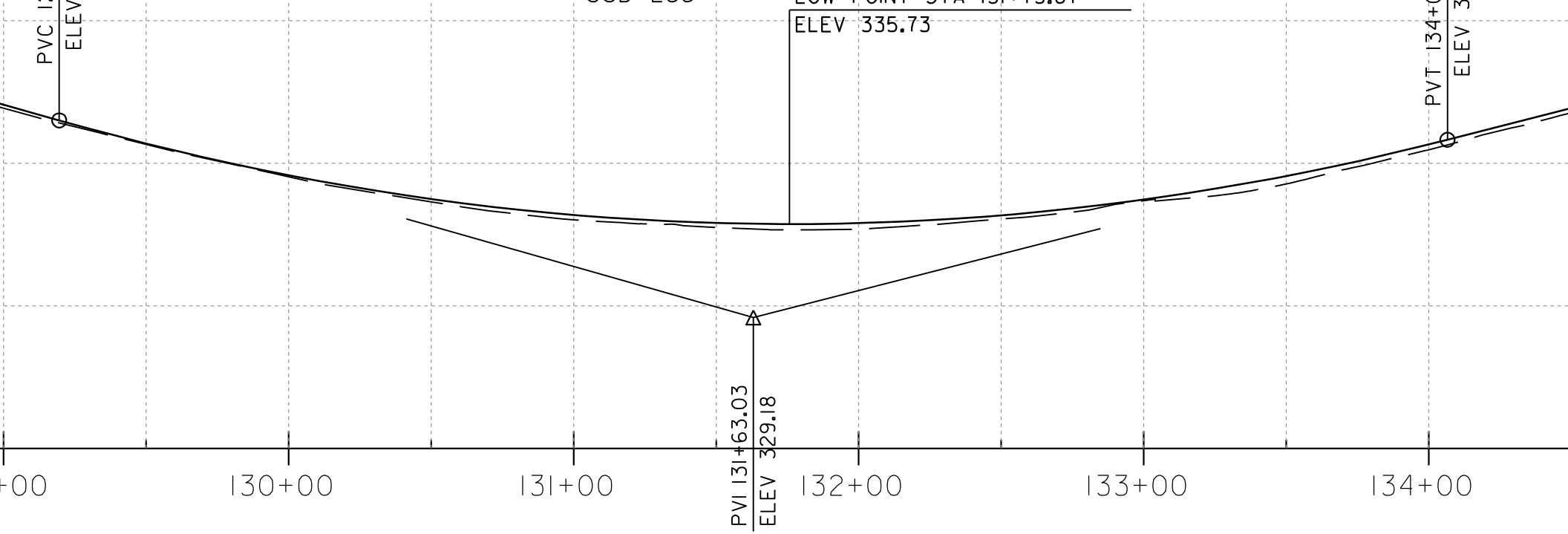
70

105+00 106+00 107+00 108+00 109+00

MD 97 (GEORGIA AVE) P.G.L. PROFILE

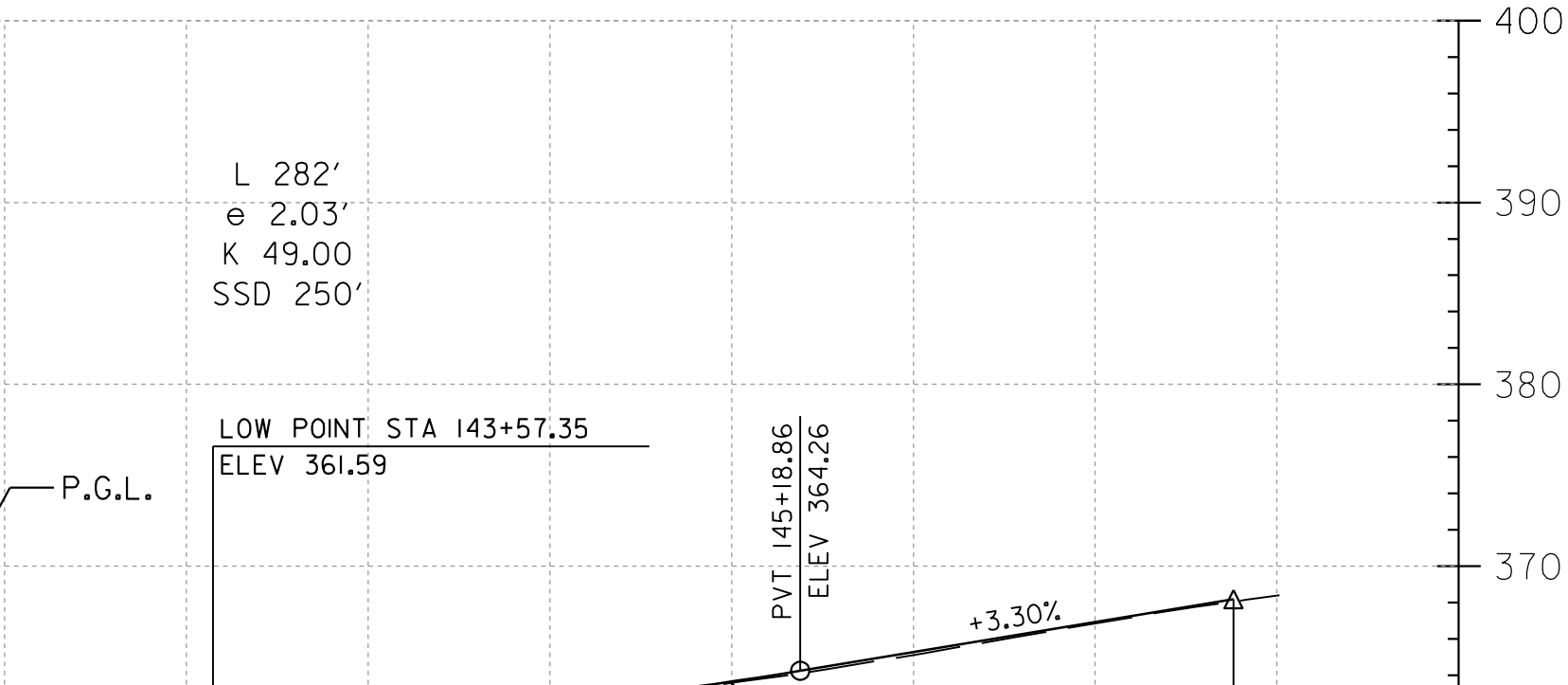
STA. 102+70 TO 114+50

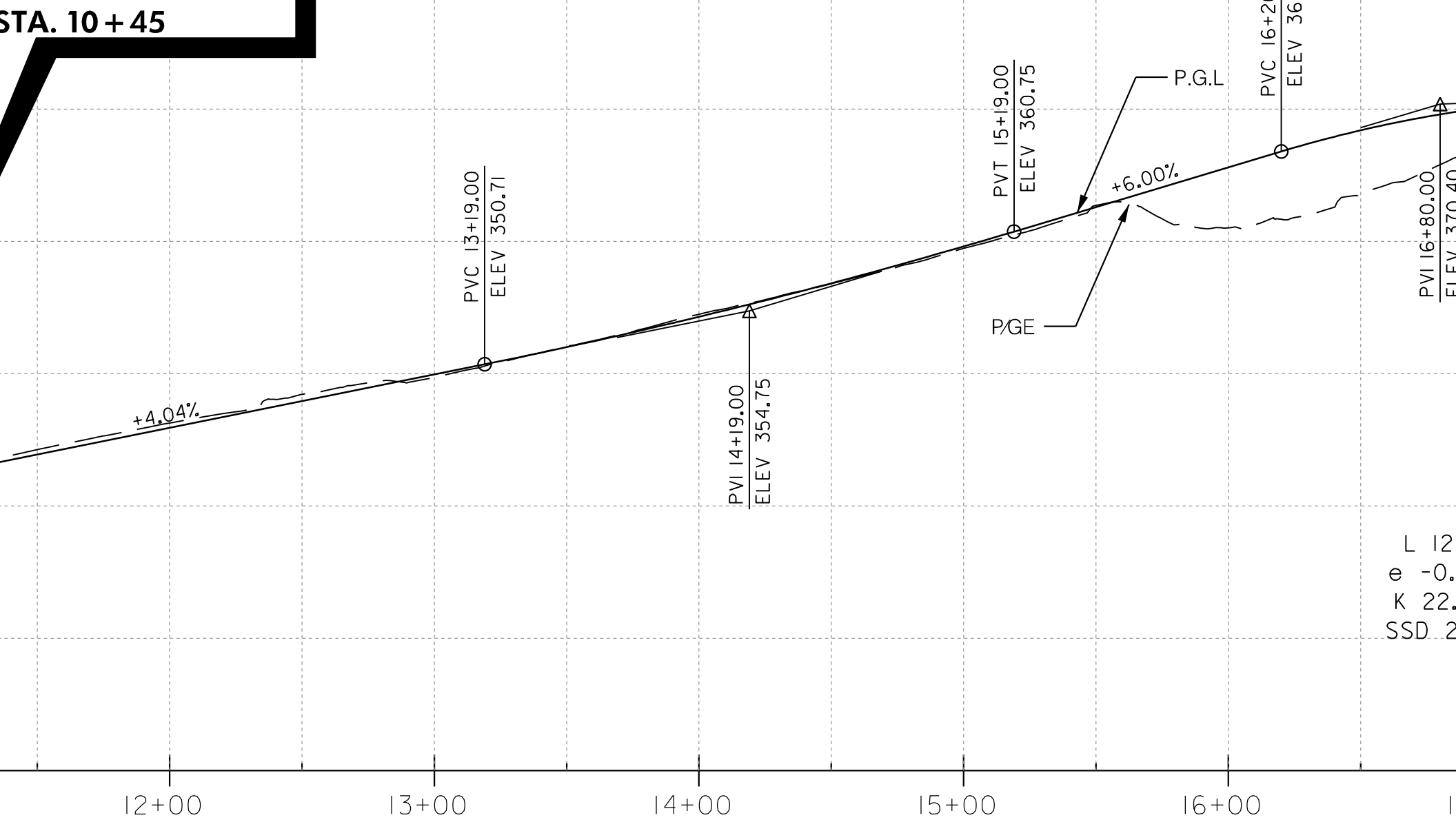




MD 97 (GEORGIA AVE) P.G.L. PROFILE

STA. 125+00 TO 139+00





MD 390 (16TH STREET) P.G.L. PROFILE

STA. 10+45 TO 17+91.97

REMOVAL

NCED WARNING SIGNS AND INFORMATION SIGNS.
K HOURS INSTALL SIGNS AND CHANNELIZATION DEVICES FOR
RE ALONG NORTHBOUND AND SOUTHBOUND MD 97 USING
–04.
CURBED MEDIAN ALONG MD 97 BETWEEN STA. 105 + 30
AND RECONSTRUCT THE PAVEMENT TO PROVIDE A PAINTED
MPLETION OF MEDIAN WORK, REMOVE THE LEFT LANE

K HOURS INSTALL CHANNELIZATION DEVICES FOR RIGHT
TD. NO. MD. 104.04–06) ALONG NORTHBOUND MD 97 AND
D 16TH STREET AS SHOWN ON PLANS.
RY CROSSWALKS AT CROWN DRIVE AND COLUMBIA BLVD.,
SOUTH LEG OF MD 97 AT THE INTERSECTION OF
AS SHOWN ON PLANS.
NG NORTHBOUND MD 97 WILL BE DETOURED ALONG
97 VIA CROSSWALK AT THE INTERSECTION OF NOYES
. PEDESTRIANS NORTH OF THE WORK SHALL BE DETOURED
UND MD 97 VIA CROSSWALKS AT COLUMBIA BLVD.
PROPOSED SIDEWALK, CURB/GUTTER RECONSTRUCTION,
S AND ALL OTHER IMPROVEMENTS ALONG NORTHBOUND
. 103 + 11 TO STA. 108 + 50 AS SHOWN ON PLANS.
URS, CHANNELIZATION DEVICES SHALL BE MOVED OUTSIDE
TO PROVIDE THREE (3) NORTHBOUND THROUGH LANES
E CONSTRUCTION ACTIVITIES FOR THE SWM FACILITY MAY
PEAK HOURS.

7 PAVEMENT WIDENING, STA. 105 + 00 TO STA.
NMENT OF 16TH STREET INTERSECTION)

NCED WARNING SIGNS, INFORMATION SIGNS AND
DEVICES ALONG SOUTHBOUND MD 97 AND ALONG
STREET AS SHOWN ON PLANS.
CROSSWALK AT SB 16TH STREET AND SB MD 97 SPLIT.
AN TRAFFIC TO NB MD 97 SIDEWALK VIA CROSSWALK AT
VARD. CLOSE EXISTING CROSSWALK AT MD 97 AND NB 16TH
EDESTRIAN TO NORTHBOUND SIDEWALK VIA THE
TH STREET.
OSED ROADWAY IMPROVEMENTS AND STORMWATER
THE AREA SEPARATING NORTHBOUND AND SOUTHBOUND
DWAYS AS SHOWN ON PLANS.
MEDIAN ISLAND ALONG NORTHBOUND 16TH STREET

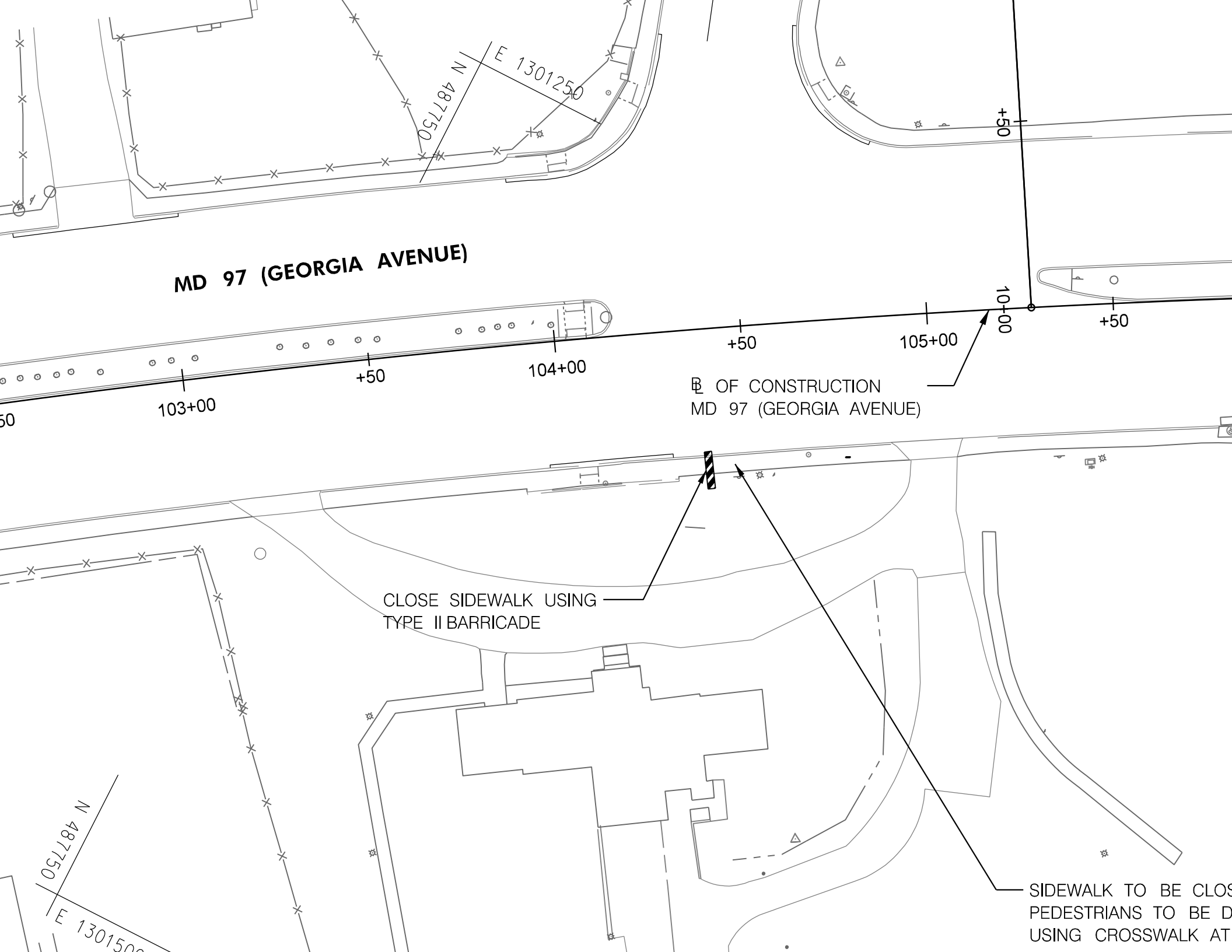
5. CONSTRUCT PROPOSED IMPROVEMENTS ALONG SEMINARY RO
STA. 30 + 50 AND STA. 33 + 70 UNDER RIGHT LANE CLOSURE U
NO. MD 104.04–06.
6. CONSTRUCT PROPOSED MEDIAN ALONG SEMINARY ROAD UN
LANE CLOSURE USING STD. NO. MD 104.04–04.
7. UPON COMPLETION OF IMPROVEMENTS ALONG MD 97 SOUT
SEMINARY, MOVE CONSTRUCTION ACTIVITY TO THE NORTH OI
ROAD.
8. CONSTRUCT PROPOSED IMPROVEMENTS ALONG SOUTHBOUND
BETWEEN STA. 114 + 50 AND STA. 122 + 90.
9. THE EXISTING CANTILEVER STRUCTURES MOUNTED WITH EXIS
REVERSIBLE LANE SIGNS AT STA. 119 + 30 AND 121 + 80 SHALL
MAINTAINED THROUGHOUT THIS PHASE. THESE CANTILEVER ST
SHALL BE REMOVED PRIOR TO BEGINNING TO NEXT PHASE.

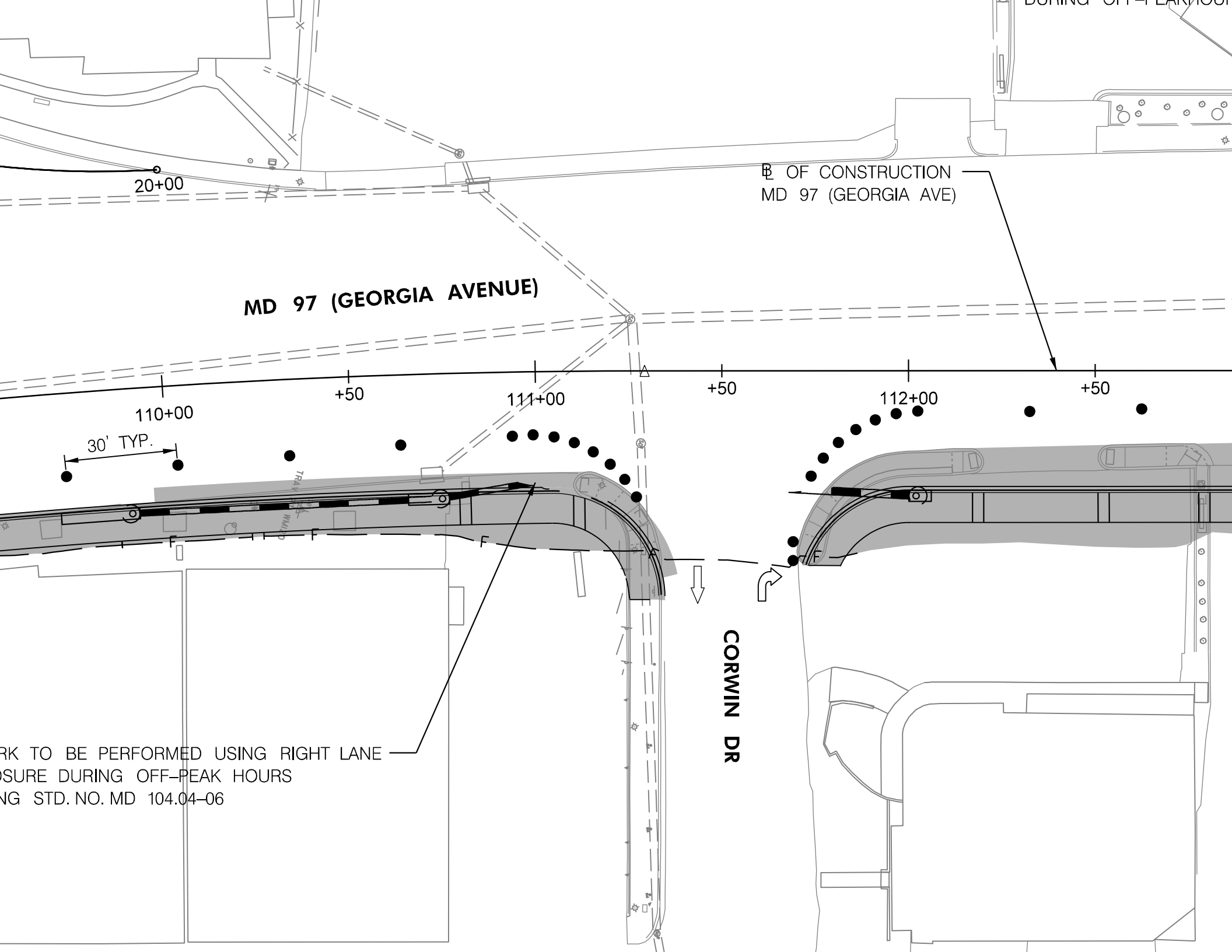
PHASE 4A – (SB MD 97 PAVEMENT WIDENING, STA. 122 + 90
128 + 20, ISLAND RECONSTRUCTION AT THE INTERSECTION
OFF RAMP WITH MD 97 NB)

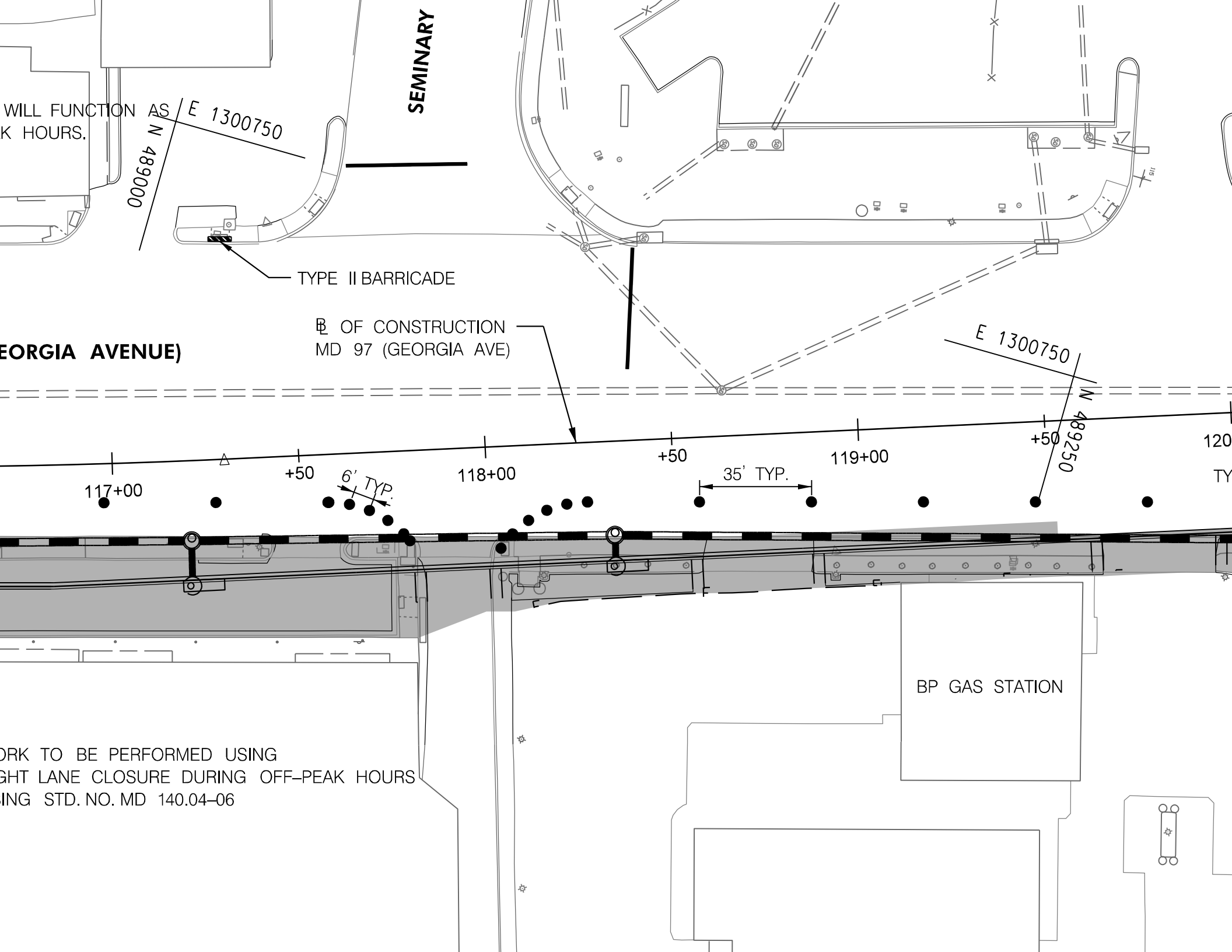
1. DURING NIGHTTIME, INSTALL TEMPORARY PAVEMENT MARKING
ALONG MD 97 AS SHOWN ON PLANS.
2. INSTALL ADVANCED WARNING SIGNS, INFORMATION SIGNS, AN
CHANNELIZATION DEVICES ALONG SOUTHBOUND MD 97 AND
I–495 OFF RAMP.
3. CONSTRUCT PROPOSED IMPROVEMENTS FROM STA. 122 + 90 T
128 + 20 ALONG SOUTHBOUND MD 97. MAINTAIN THREE (3) LA
DIRECTION AT ALL TIMES.
4. CONSTRUCT PROPOSED IMPROVEMENTS ALONG EB I–495 OFF
MD 97.
5. DURING OFF–PEAK HOURS, CONSTRUCT THE PROPOSED CHA
ISLAND UNDER A LEFT LANE CLOSURE USING STD. NO. MD 1
6. THE PROPOSED PIPE CROSSING AT THE ON–RAMP FROM SB
EB I–495 SHALL BE CONSTRUCTED DURING NIGHTTIME UNDE
OPERATION.

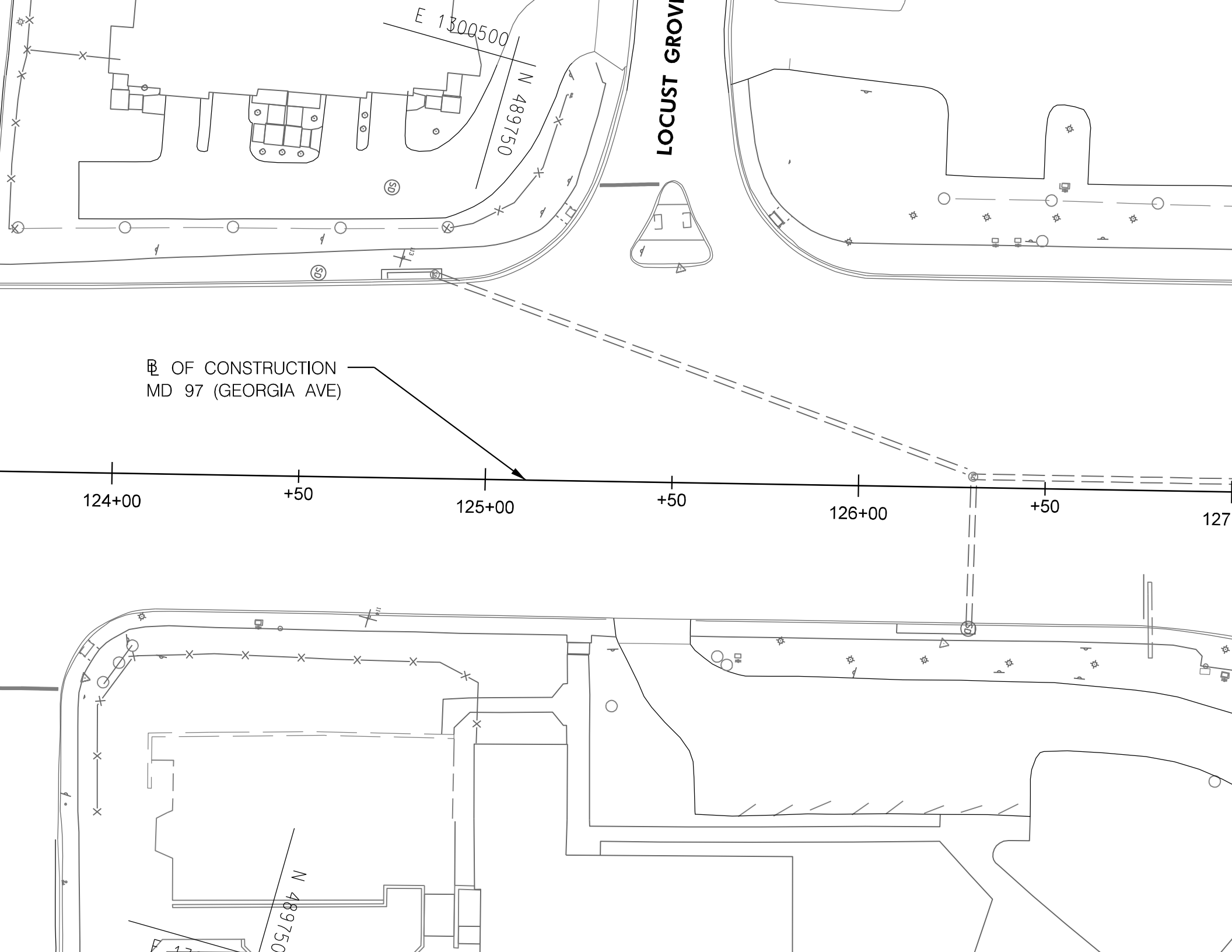
PHASE 4B– (CHANNELIZATION ISLAND AT MD 97/I–495 OFF
INTERSECTION, STA. 40 + 50 TO STA. 41 + 60, SB MD 97 IMPR
BETWEEN STA. 130 + 50 TO STA. 138 + 00)

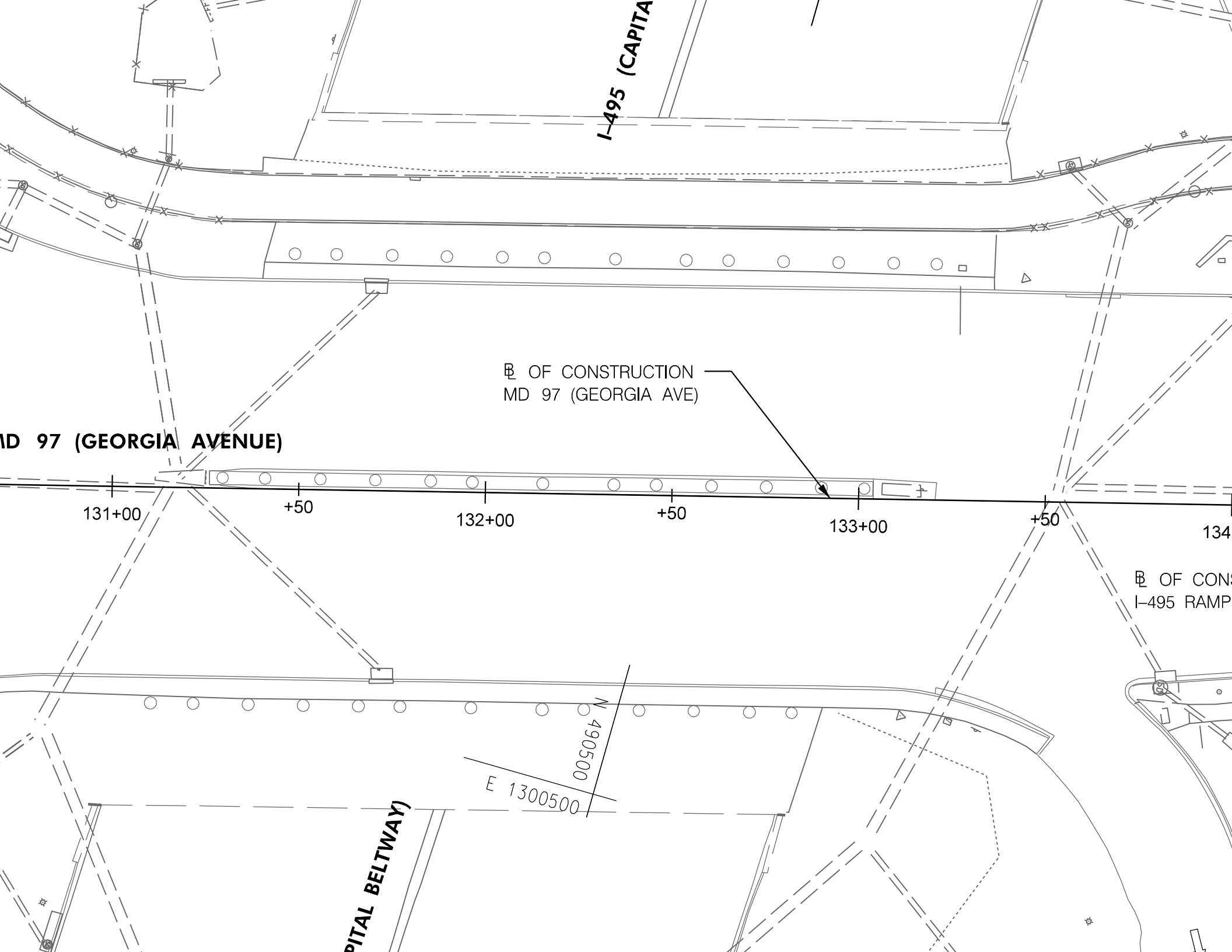
1. PRIOR TO BEGINNING OF THIS PHASE, INSTALL NEW SIGNS A
I–495 TO NOTIFY THE DRIVERS OF THE CLOSURE OF EXISTIN
RAMP TO NB MD 97.
2. CLOSE EXISTING LOOP RAMP FROM EB I–495 TO NB MD 97

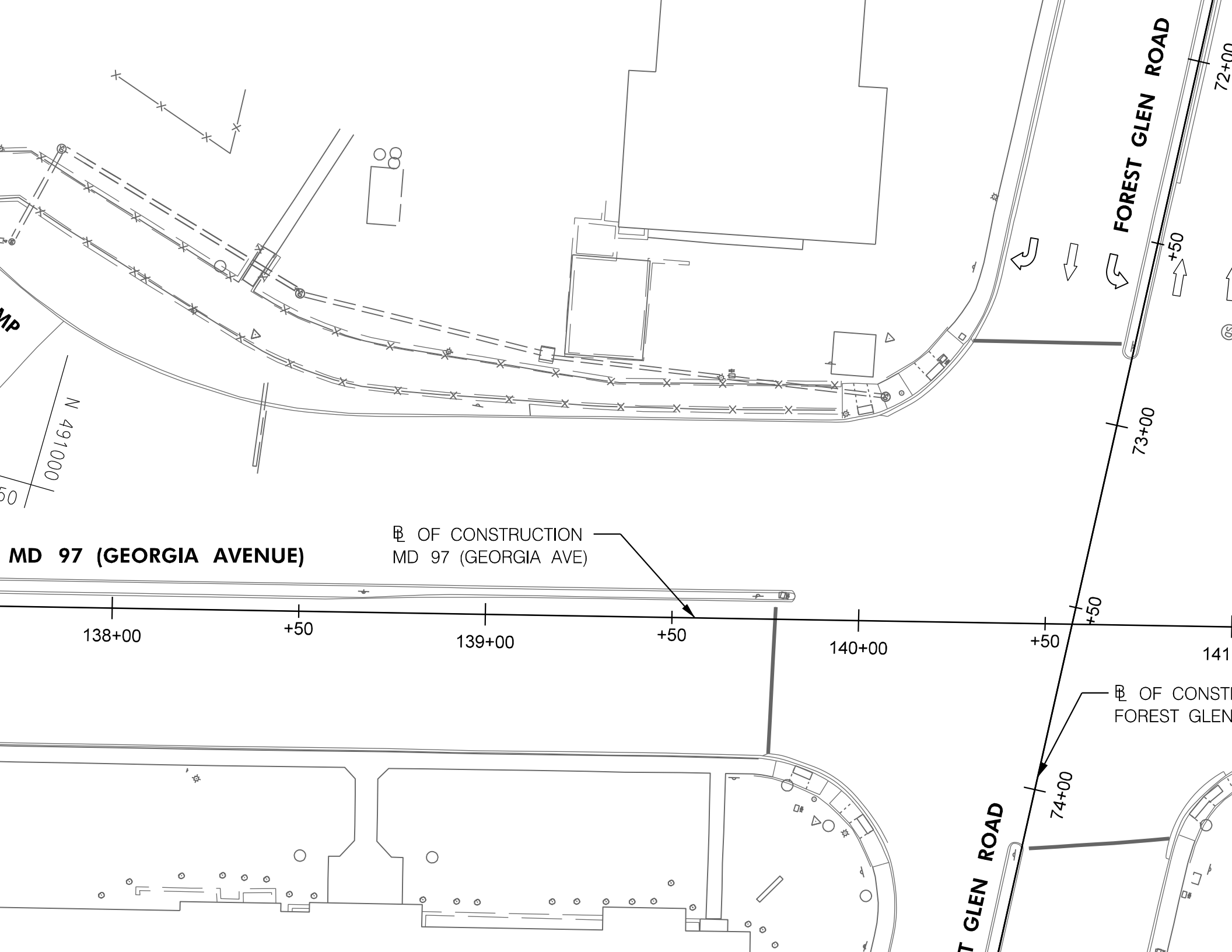

N 48750
E 1301250
MD 97 (GEORGIA AVENUE)
+50
10+00
+50
105+00
+50
104+00
+50
103+00
50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
CLOSE SIDEWALK USING
TYPE II BARRICADE
SIDEWALK TO BE CLOS
PEDESTRIANS TO BE D
USING CROSSWALK AT
N 48750
E 1301500

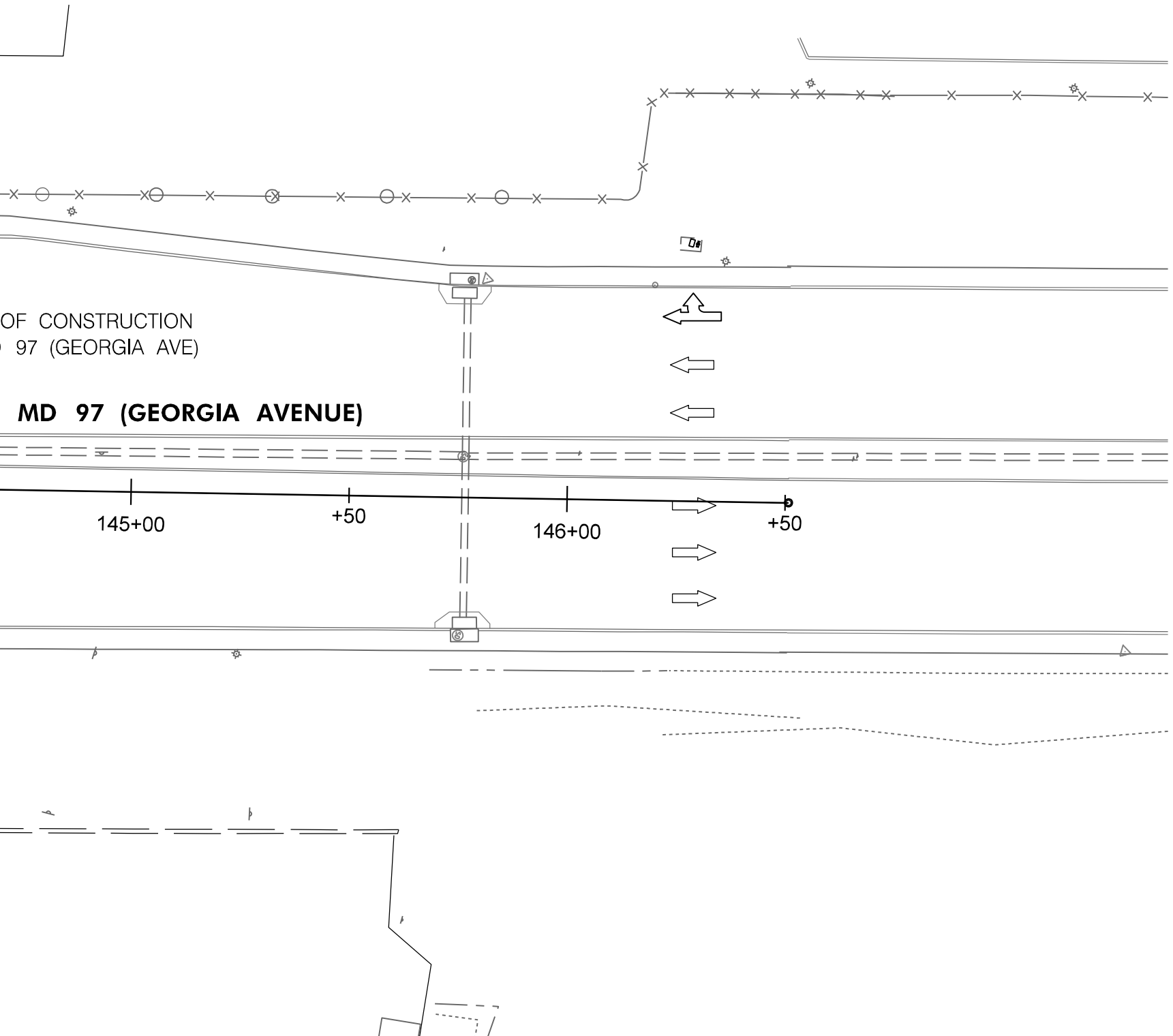

20+00
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
MD 97 (GEORGIA AVENUE)
110+00
+50
111+00
+50
112+00
+50
30' TYP.
CORWIN DR
RK TO BE PERFORMED USING RIGHT LANE
OSURE DURING OFF-PEAK HOURS
NG STD. NO. MD 104.04-06

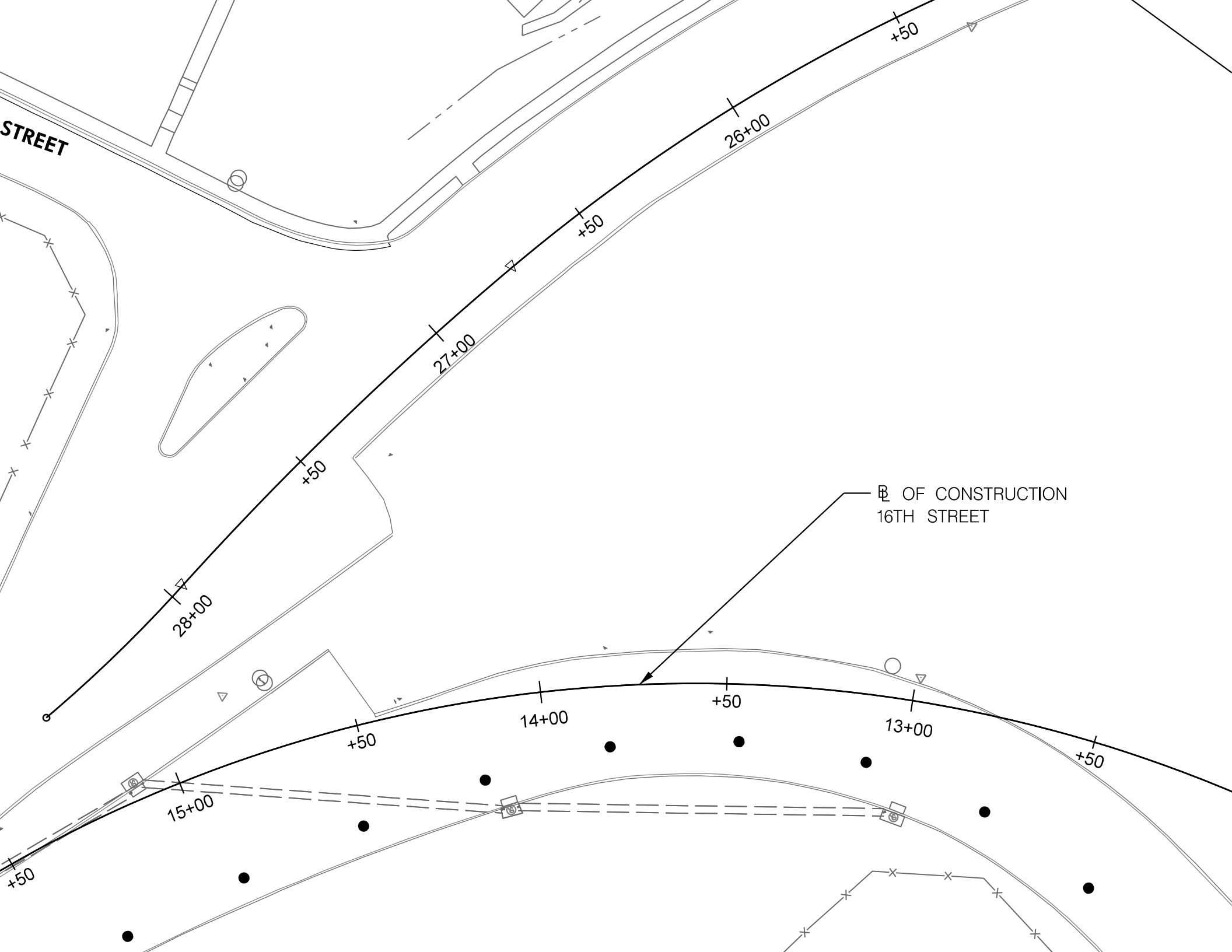

SEMINARY
WILL FUNCTION AS
K HOURS.
E 1300750
N 489000
TYPE II BARRICADE
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
EORGIA AVENUE)
E 1300750
N 489250
117+00
+50
6' TYP.
118+00
+50
35' TYP.
119+00
+50
120
TY
BP GAS STATION
ORK TO BE PERFORMED USING
GHT LANE CLOSURE DURING OFF-PEAK HOURS
SING STD. NO. MD 140.04-06

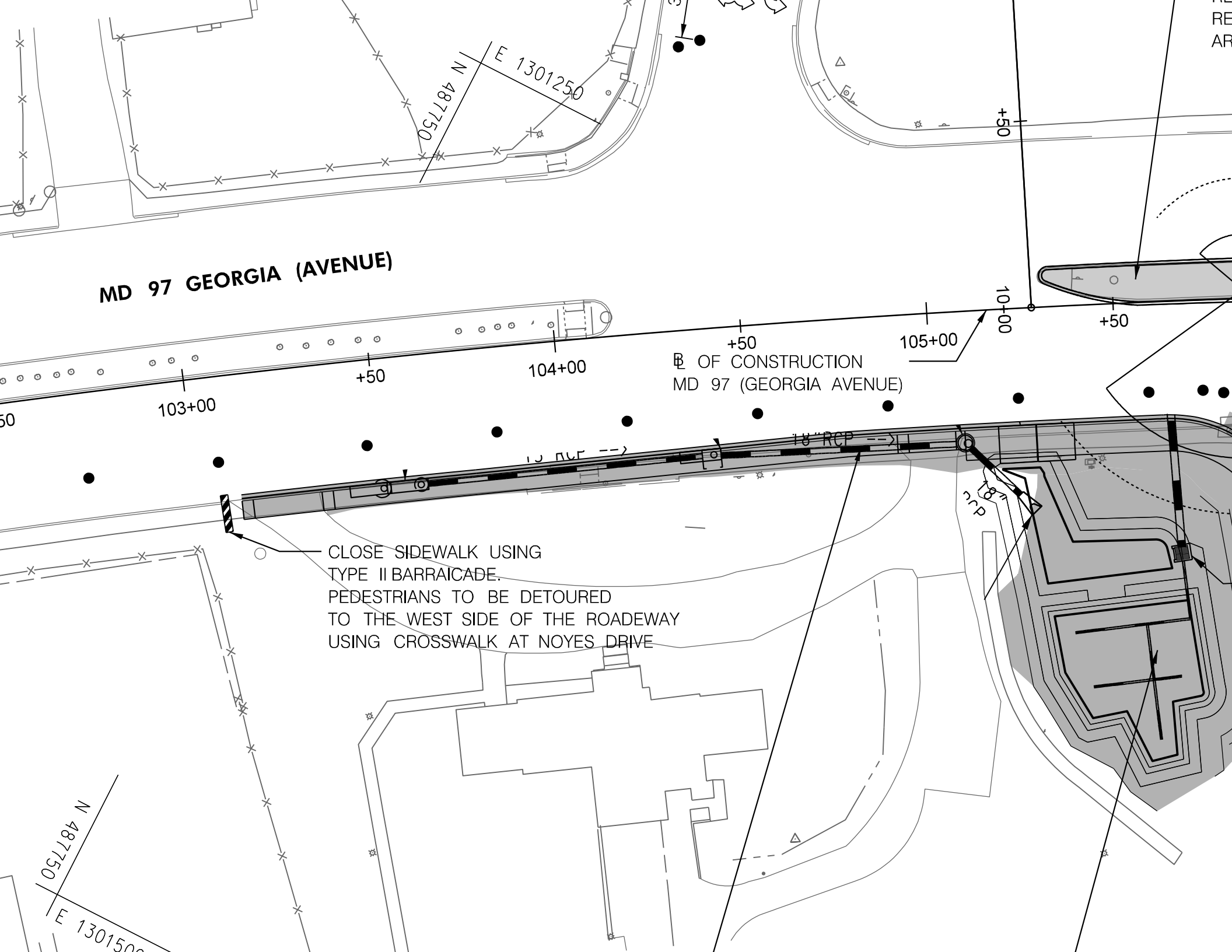

E 1300500
N 489750
LOCUST GROVE
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
124+00
+50
125+00
+50
126+00
+50
127
N 489750

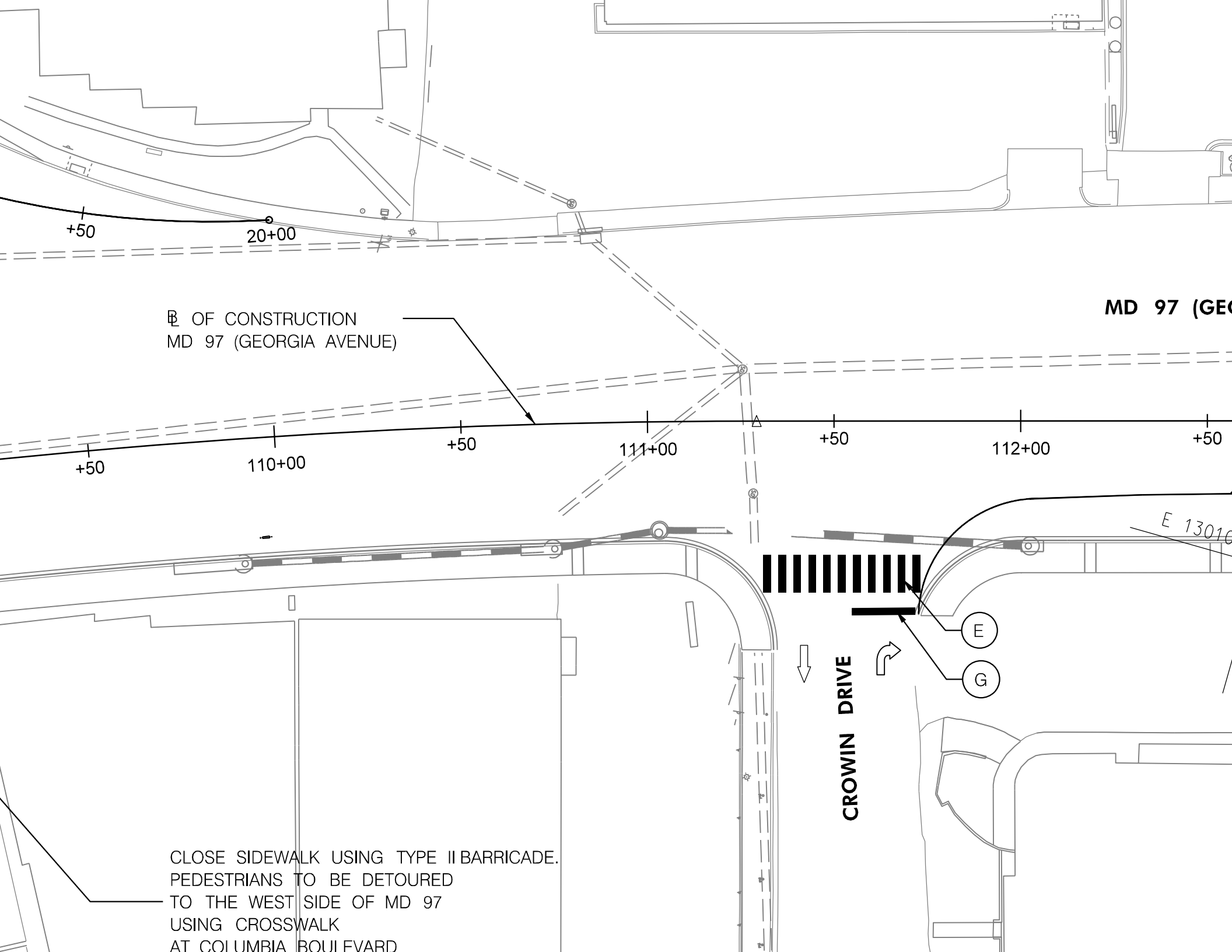

I–495 (CAPITA
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
MD 97 (GEORGIA AVENUE)
131+00
+50
132+00
+50
133+00
+50
134
℄ OF CONS
I–495 RAMP
N 490500
E 1300500
PITAL BELTWAY)

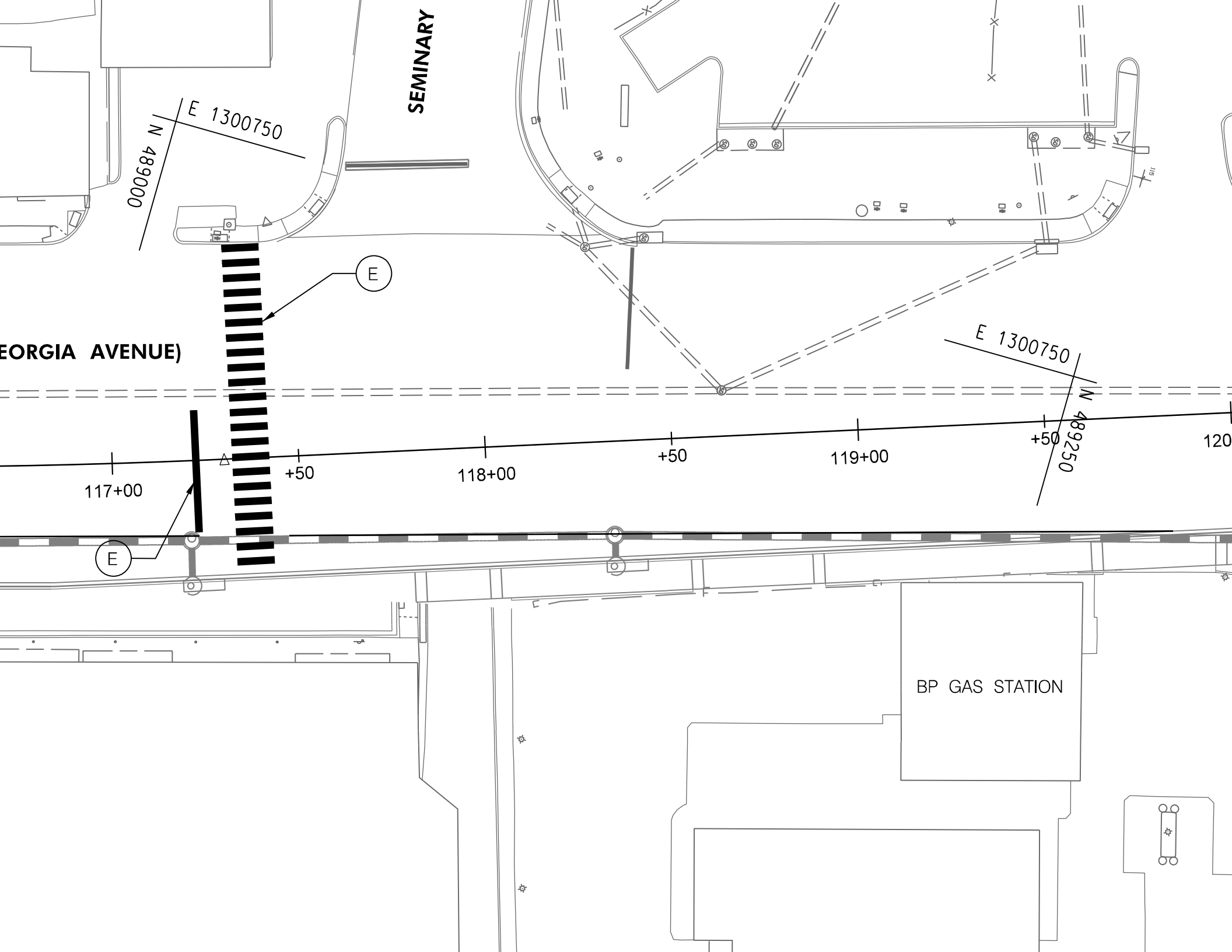

MD 97 (GEORGIA AVENUE)
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
138+00
+50
139+00
+50
140+00
+50
+50
FOREST GLEN ROAD
72+00
+50
73+00
74+00
N 491000

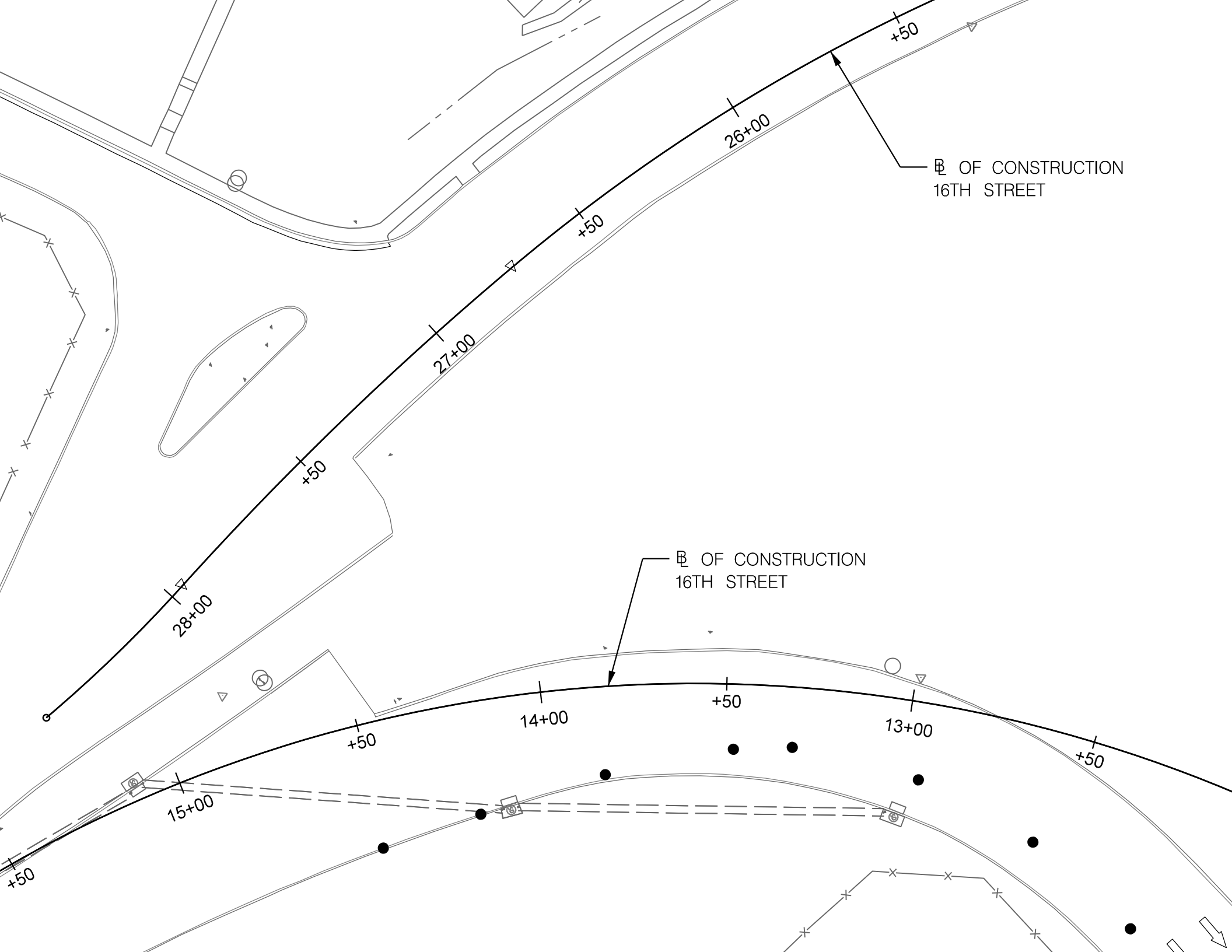

OF CONSTRUCTION
97 (GEORGIA AVE)
MD 97 (GEORGIA AVENUE)
145+00
+50
146+00
+50

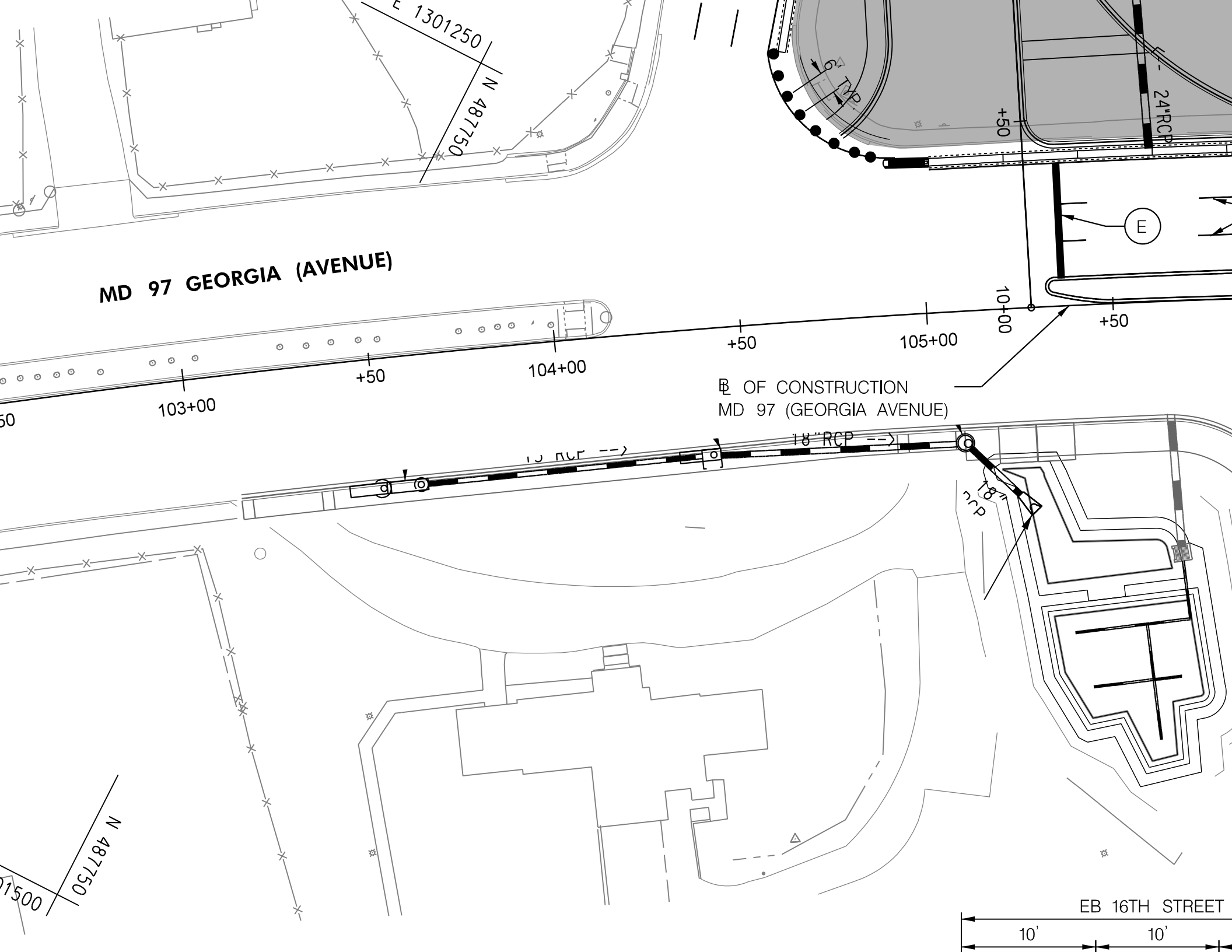

STREET
+50
26+00
+50
27+00
+50
28+00
℄ OF CONSTRUCTION
16TH STREET
+50
14+00
+50
13+00
+50
15+00
+50

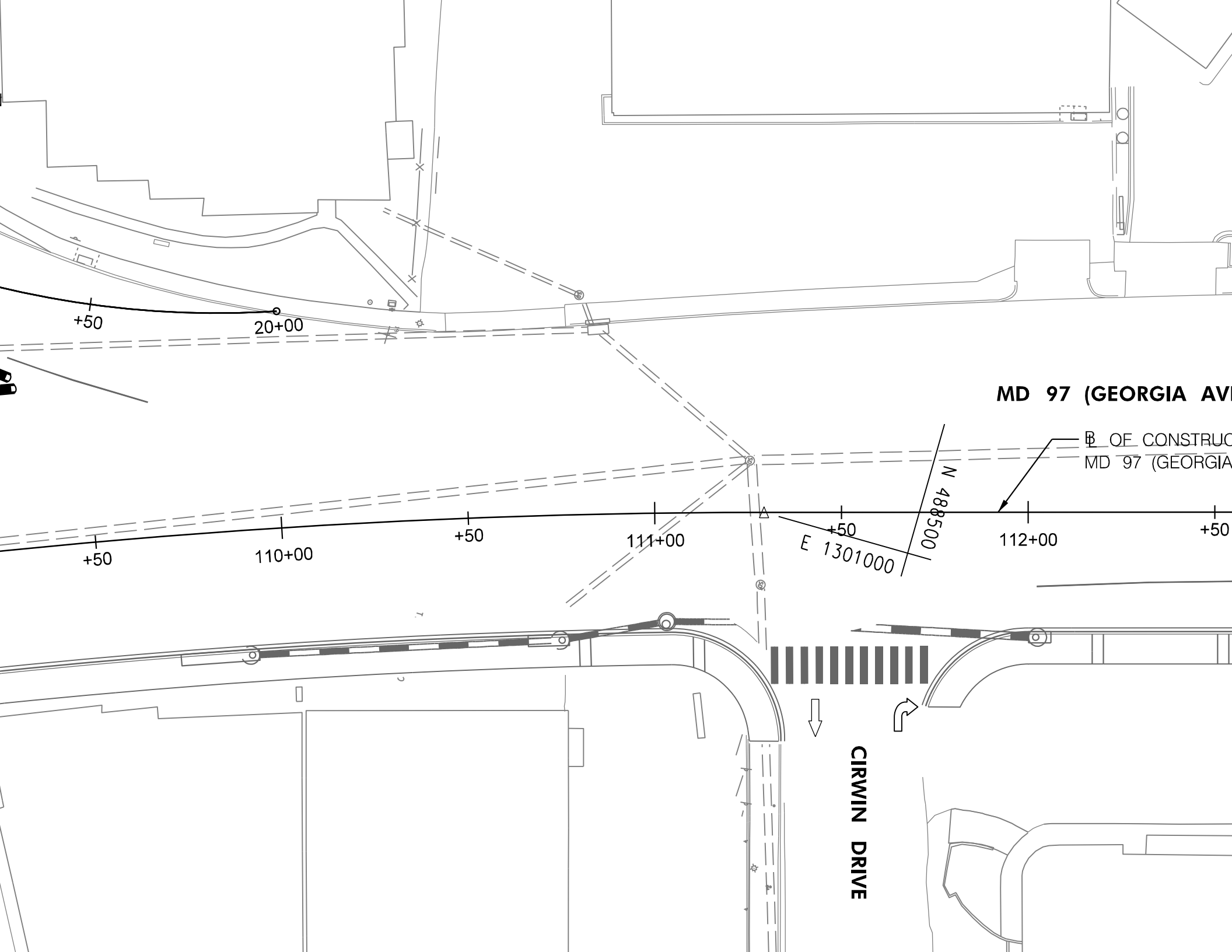

MD 97 GEORGIA (AVENUE)
N 487750
E 1301250
103+00
+50
104+00
+50
105+00
10+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
18" RCP
CLOSE SIDEWALK USING
TYPE II BARRAICADE.
PEDESTRIANS TO BE DETOURED
TO THE WEST SIDE OF THE ROADEWAY
USING CROSSWALK AT NOYES DRIVE
N 487750
E 1301500

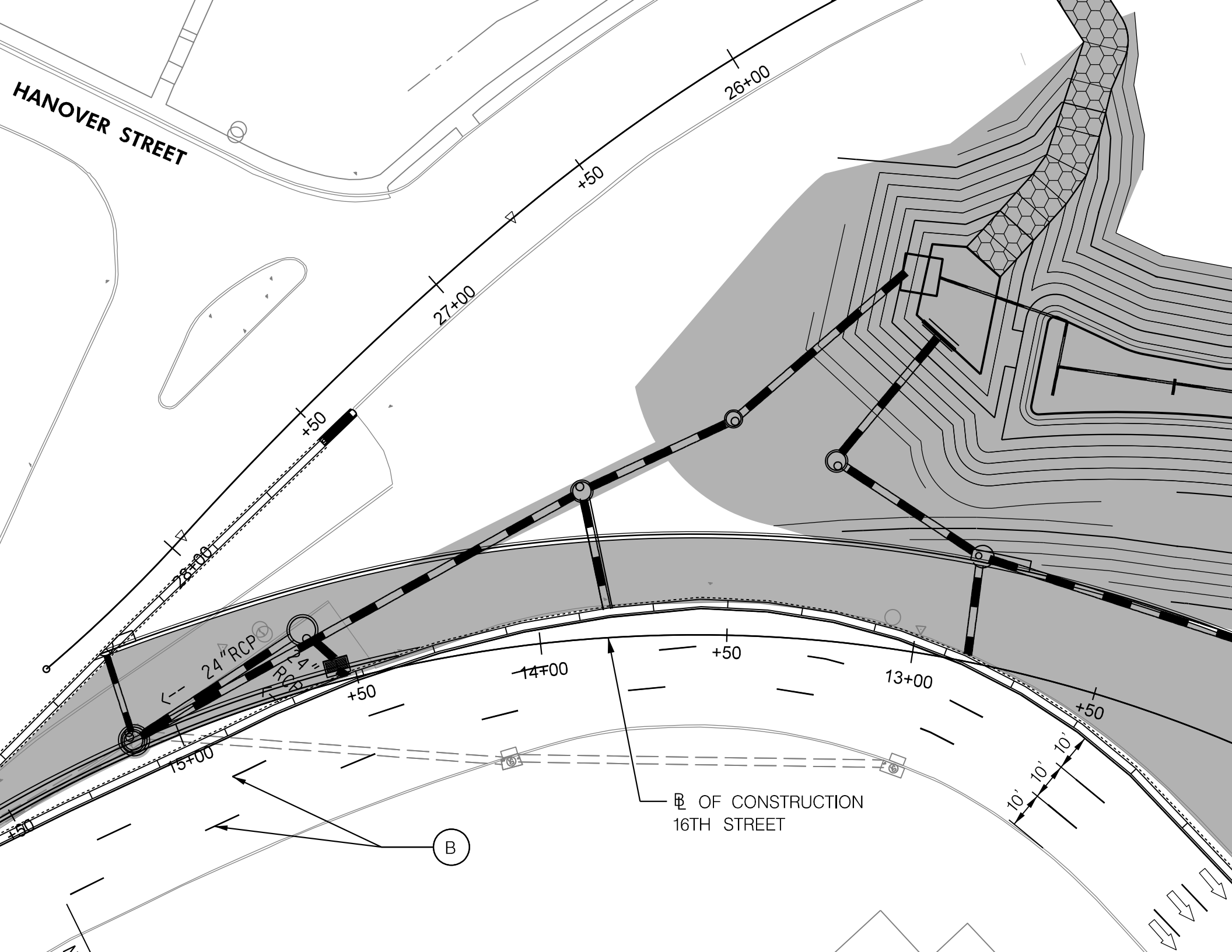

+50
20+00
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
MD 97 (GEO
+50
110+00
+50
111+00
+50
112+00
+50
E 13016
E
G
CROWIN DRIVE
CLOSE SIDEWALK USING TYPE II BARRICADE.
PEDESTRIANS TO BE DETOURED
TO THE WEST SIDE OF MD 97
USING CROSSWALK
AT COLUMBIA BOULEVARD

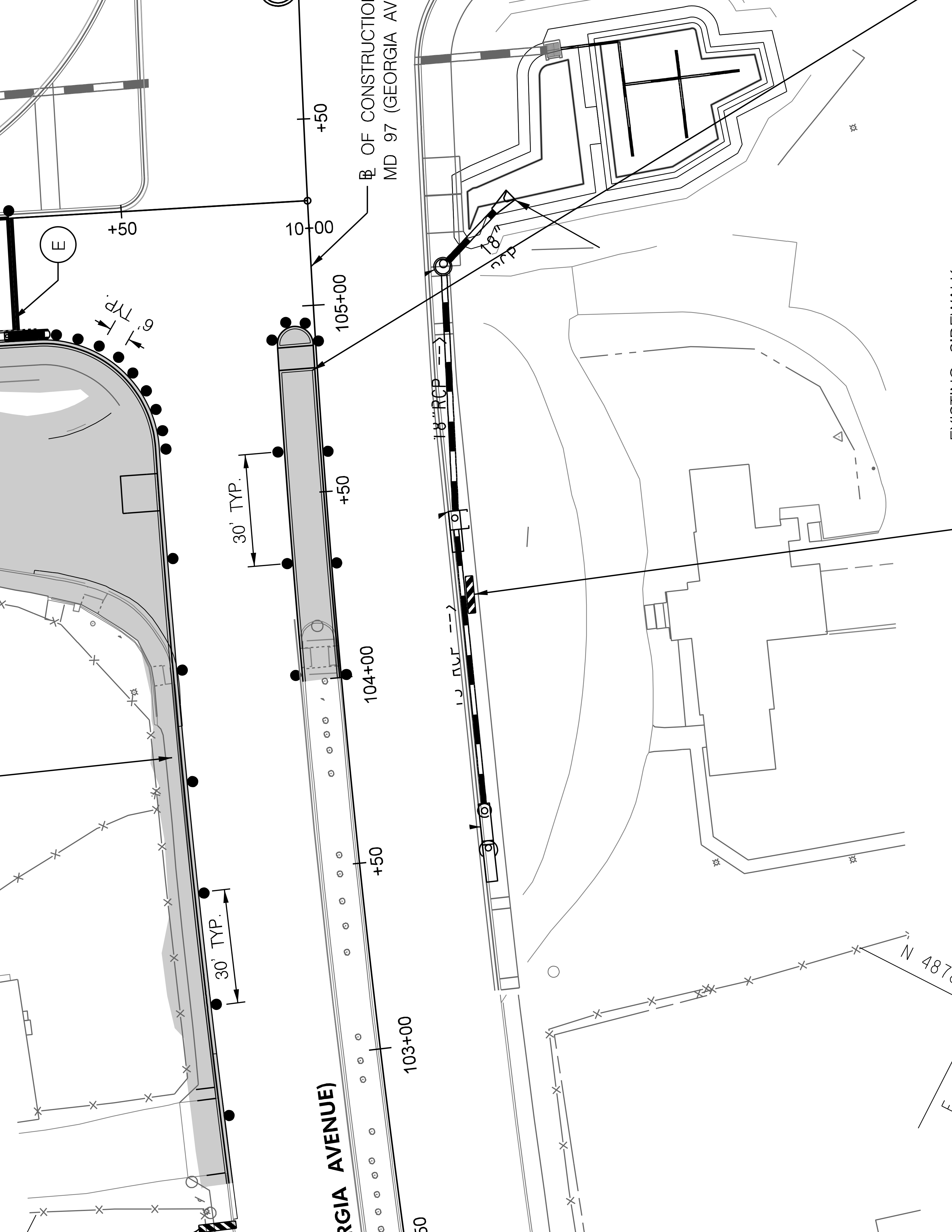

SEMINARY
E 1300750
N 489000
E
EORGIA AVENUE)
E 1300750
N 489250
117+00
+50
118+00
+50
119+00
+50
120
E
BP GAS STATION


+50
26+00
℄ OF CONSTRUCTION
16TH STREET
+50
27+00
+50
28+00
℄ OF CONSTRUCTION
16TH STREET
+50
14+00
+50
13+00
+50
+50
15+00
+50

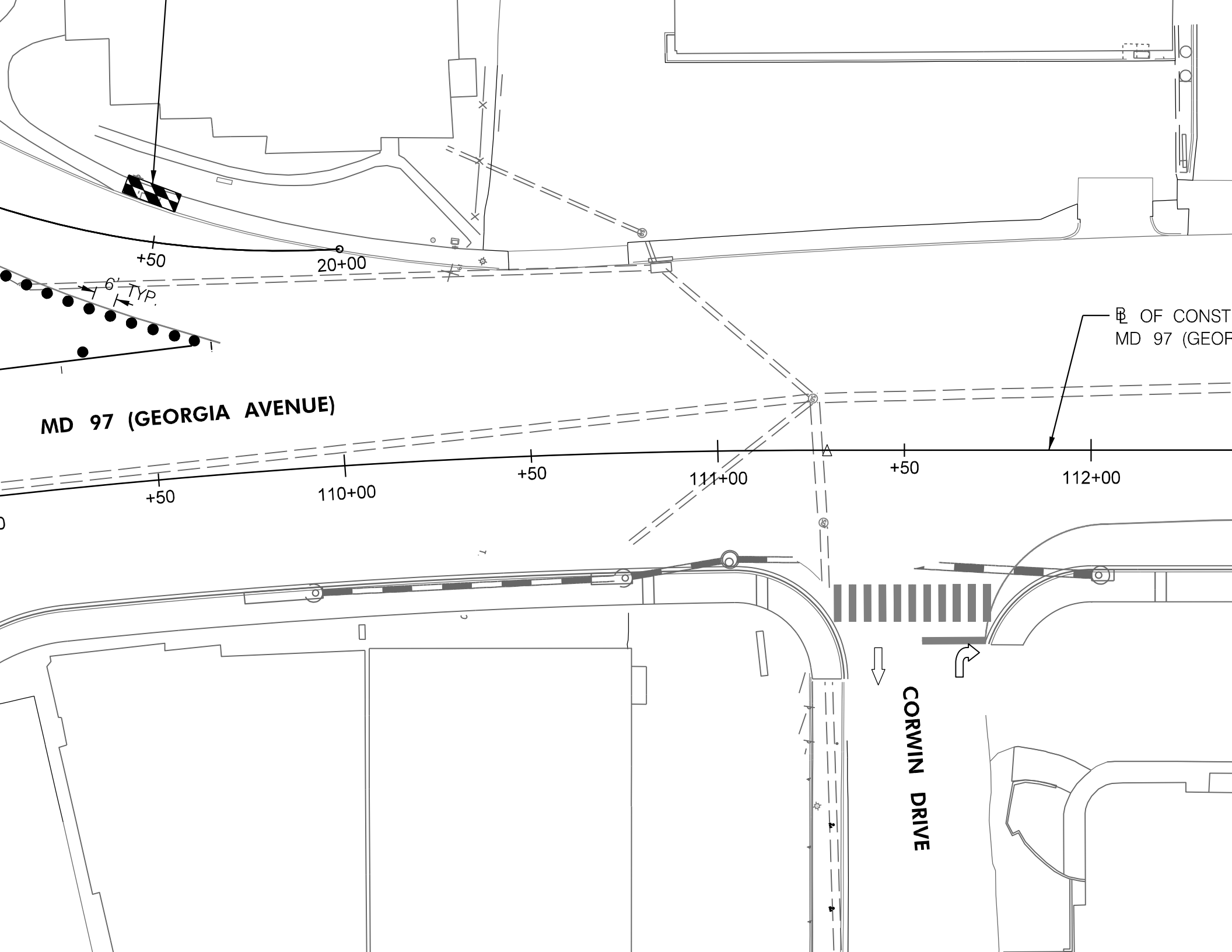

E 1301250
N 487750
MD 97 GEORGIA (AVENUE)
103+00
+50
104+00
+50
105+00
10+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
6' TYP
24"RCP
E
18"RCP
EB 16TH STREET
10'
10'

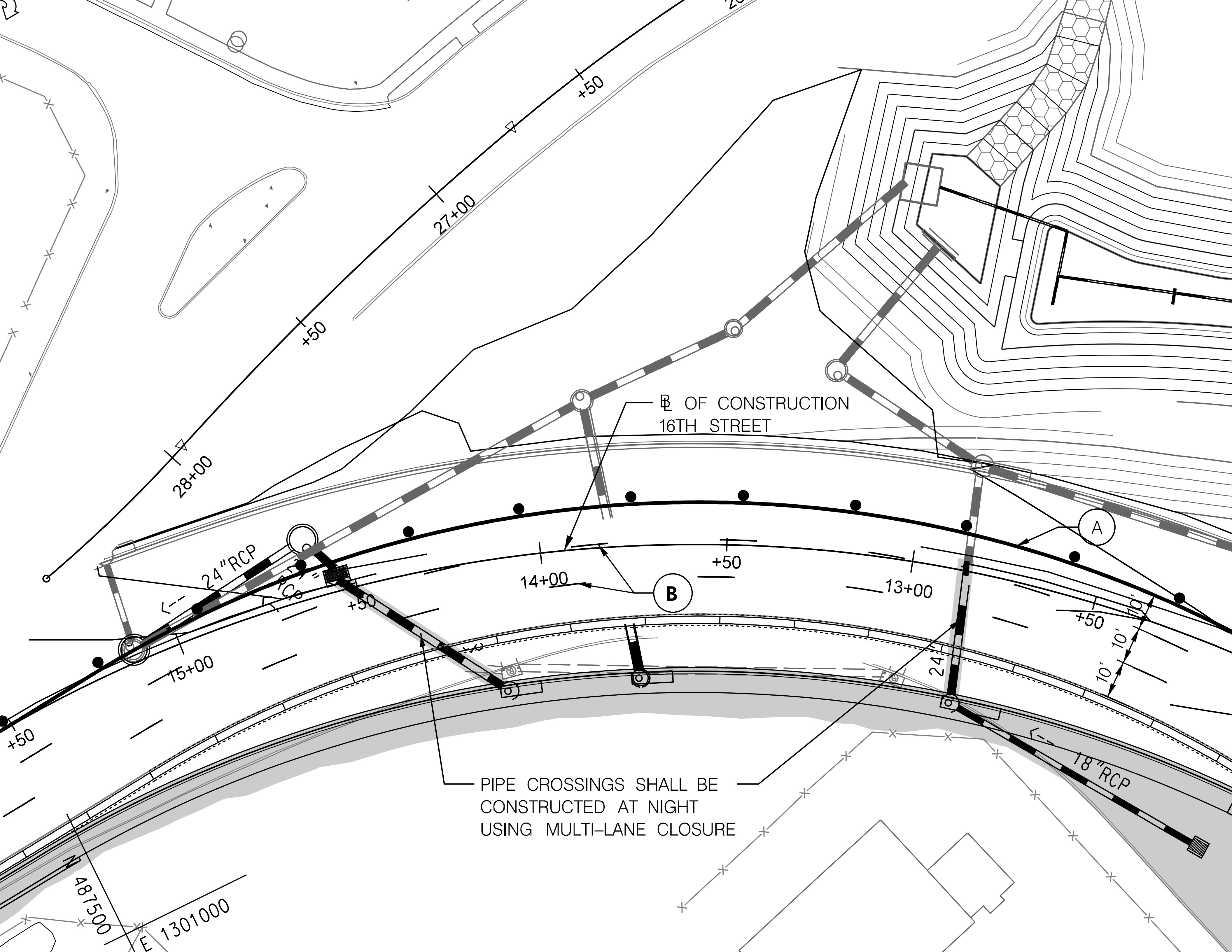

+50
20+00
MD 97 (GEORGIA AV
℄ OF CONSTRUC
MD 97 (GEORGIA
N 488500
E 1301000
+50
110+00
+50
111+00
+50
112+00
+50
CIRWIN DRIVE


HANOVER STREET
26+00
+50
27+00
+50
28+00
24"RCP
14+00
+50
13+00
+50
15+00
+50
℄ OF CONSTRUCTION
16TH STREET
B
10'
10'
10'

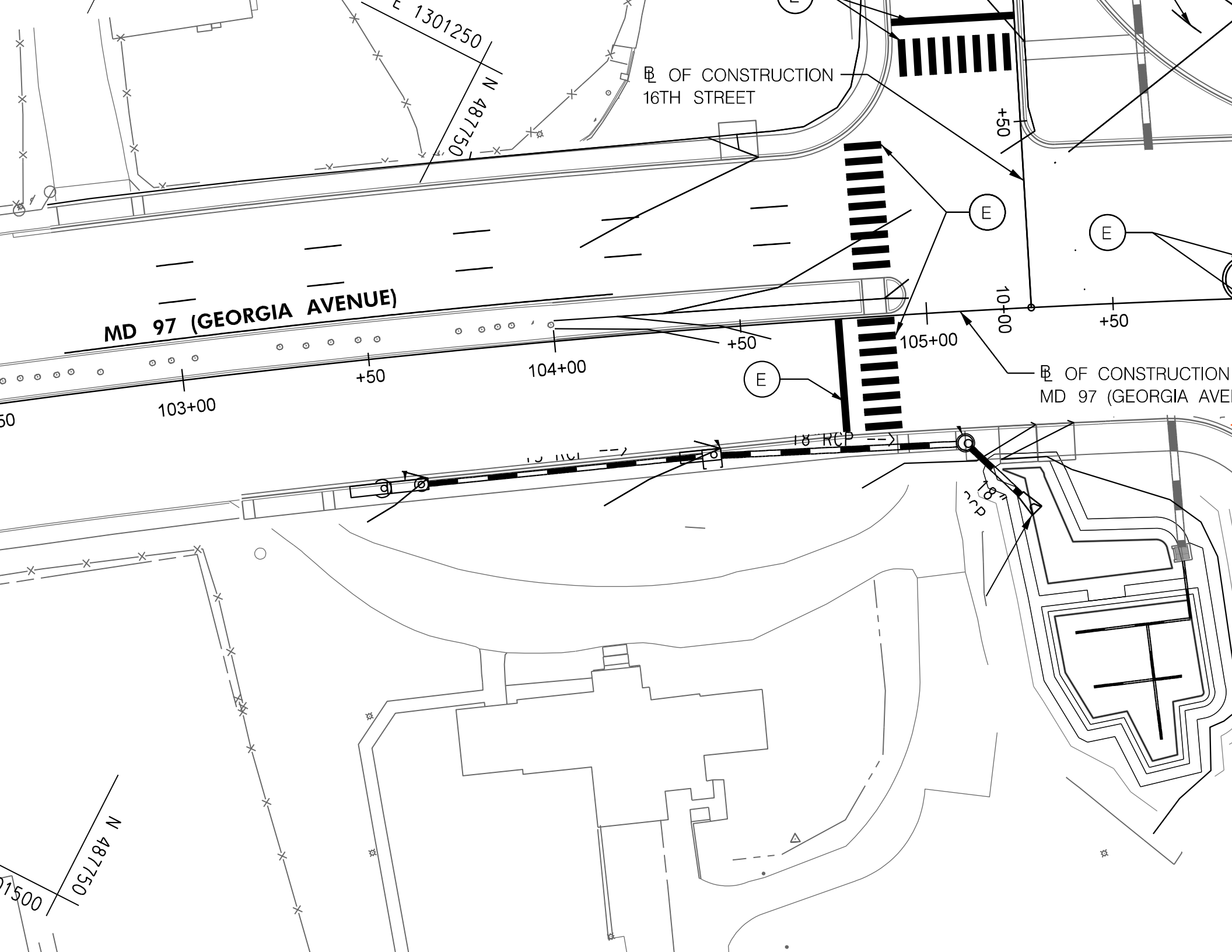


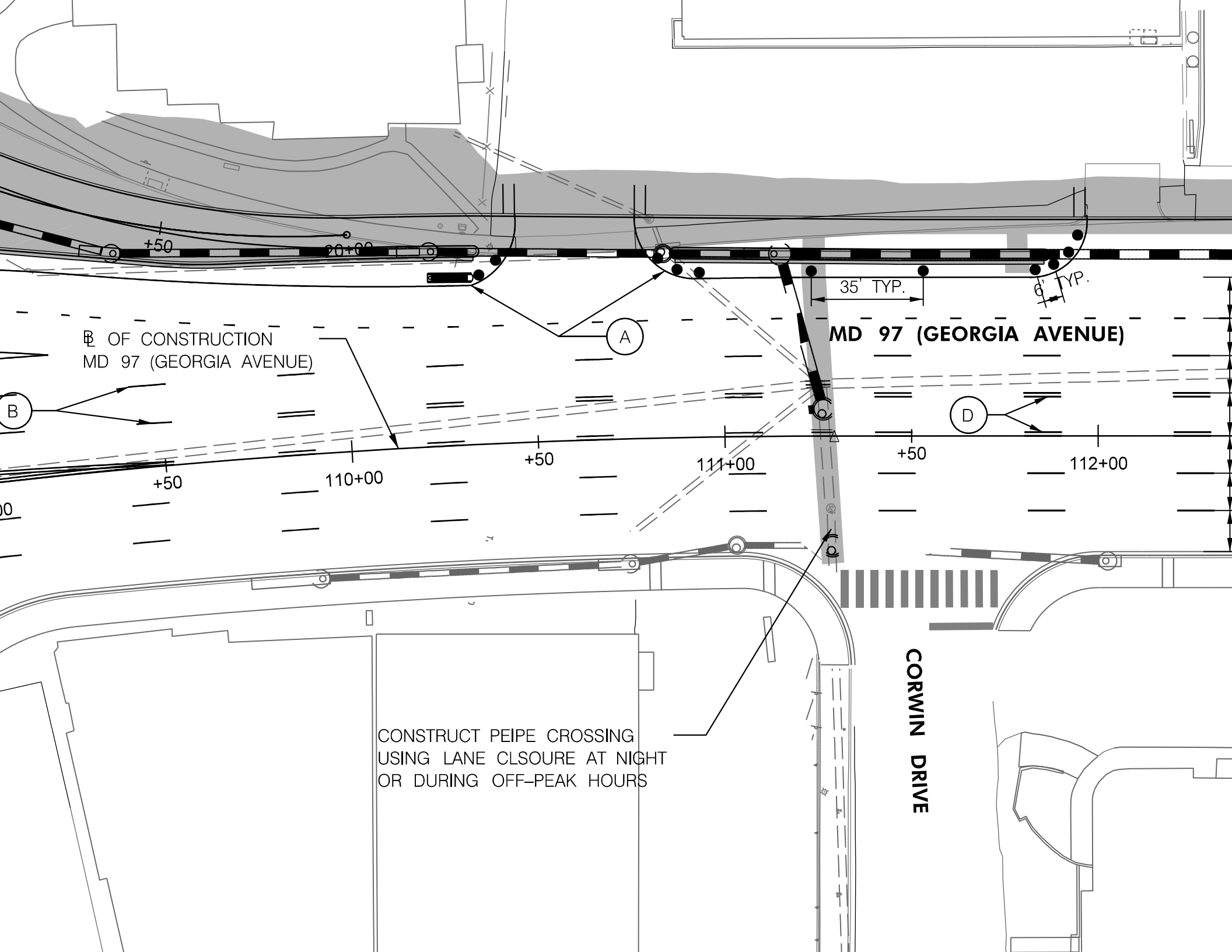
℄ OF CONSTRUCTION
MD 97 (GEORGIA AV
+50
10+00
+50
E
6' TYP.
105+00
+50
30' TYP.
104+00
+50
30' TYP.
103+00
RGIA AVENUE)
18" RCP

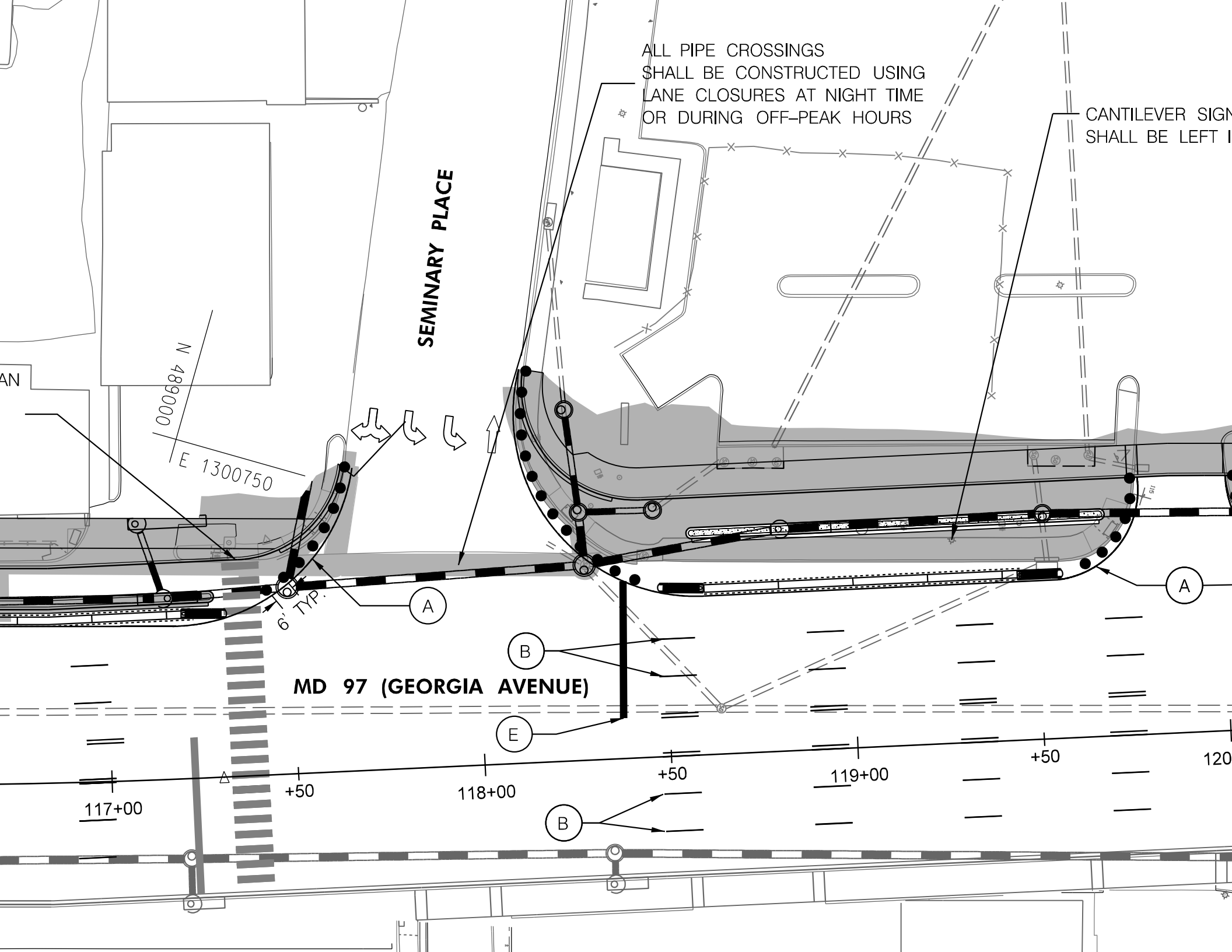

+50
20+00
6' TYP.
℄ OF CONST
MD 97 (GEOR
MD 97 (GEORGIA AVENUE)
+50
110+00
+50
111+00
+50
112+00
CORWIN DRIVE

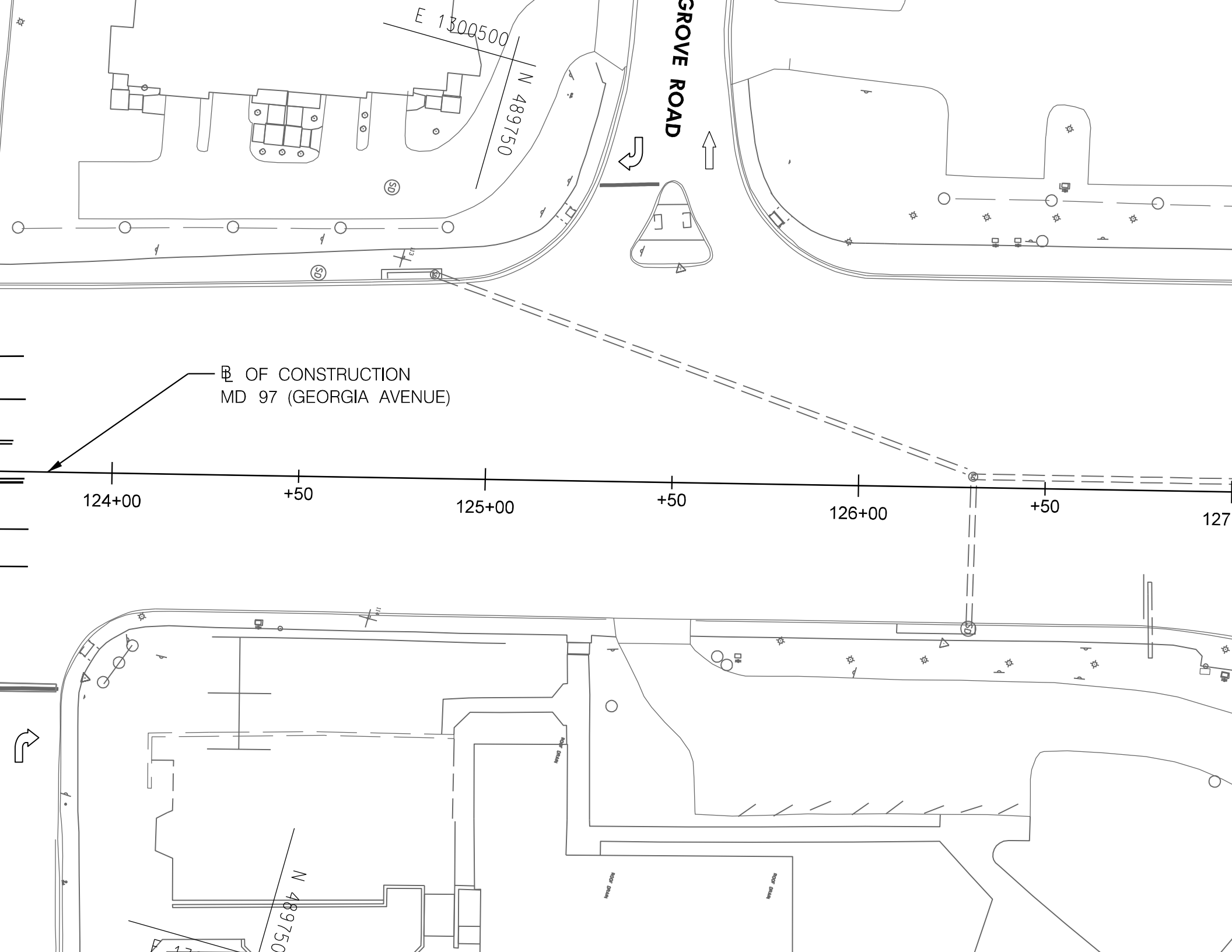


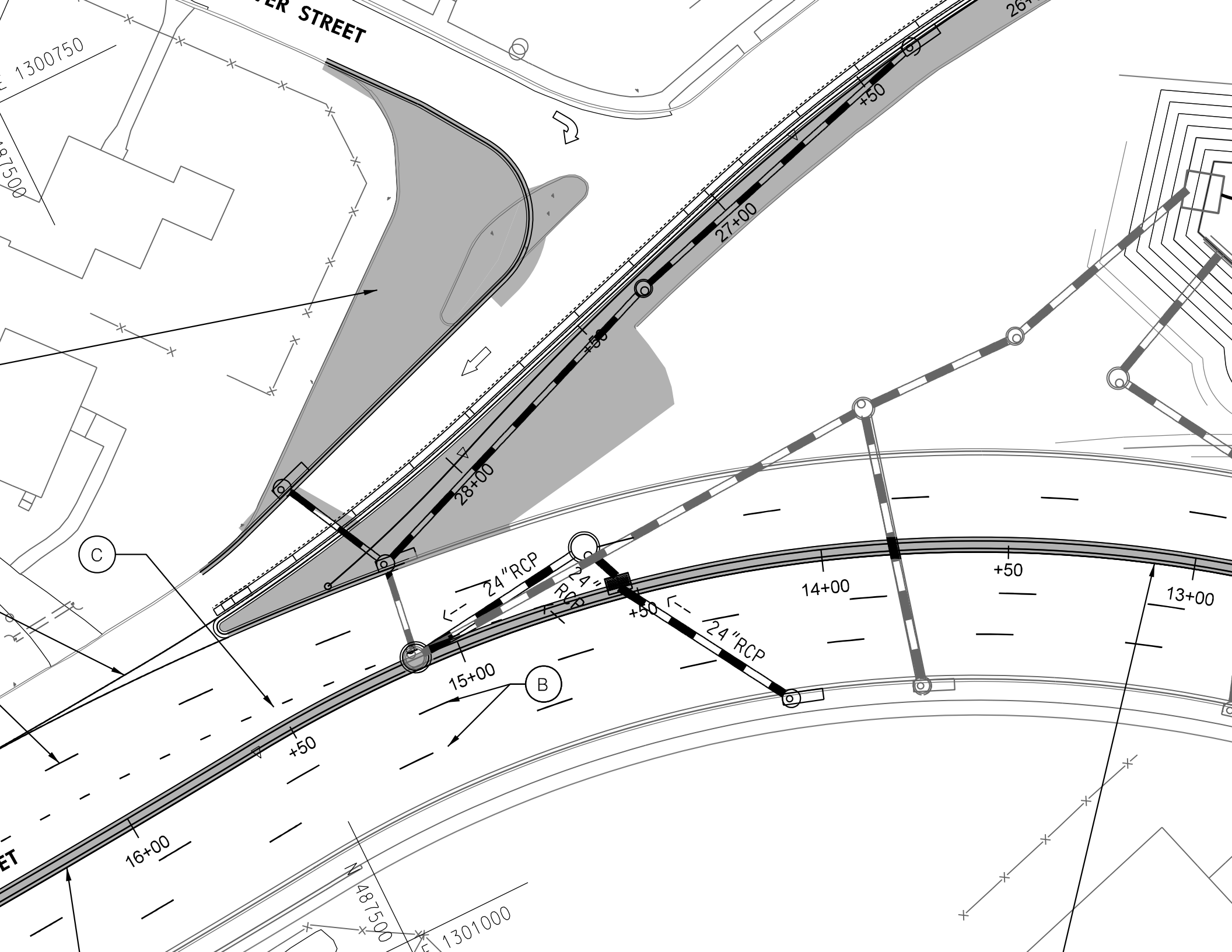
℄ OF CONSTRUCTION
16TH STREET
PIPE CROSSINGS SHALL BE
CONSTRUCTED AT NIGHT
USING MULTI-LANE CLOSURE
A
B
13+00
14+00
15+00
+50
27+00
28+00
24"RCP
18"RCP
24"
10'
N 487500
E 1301000

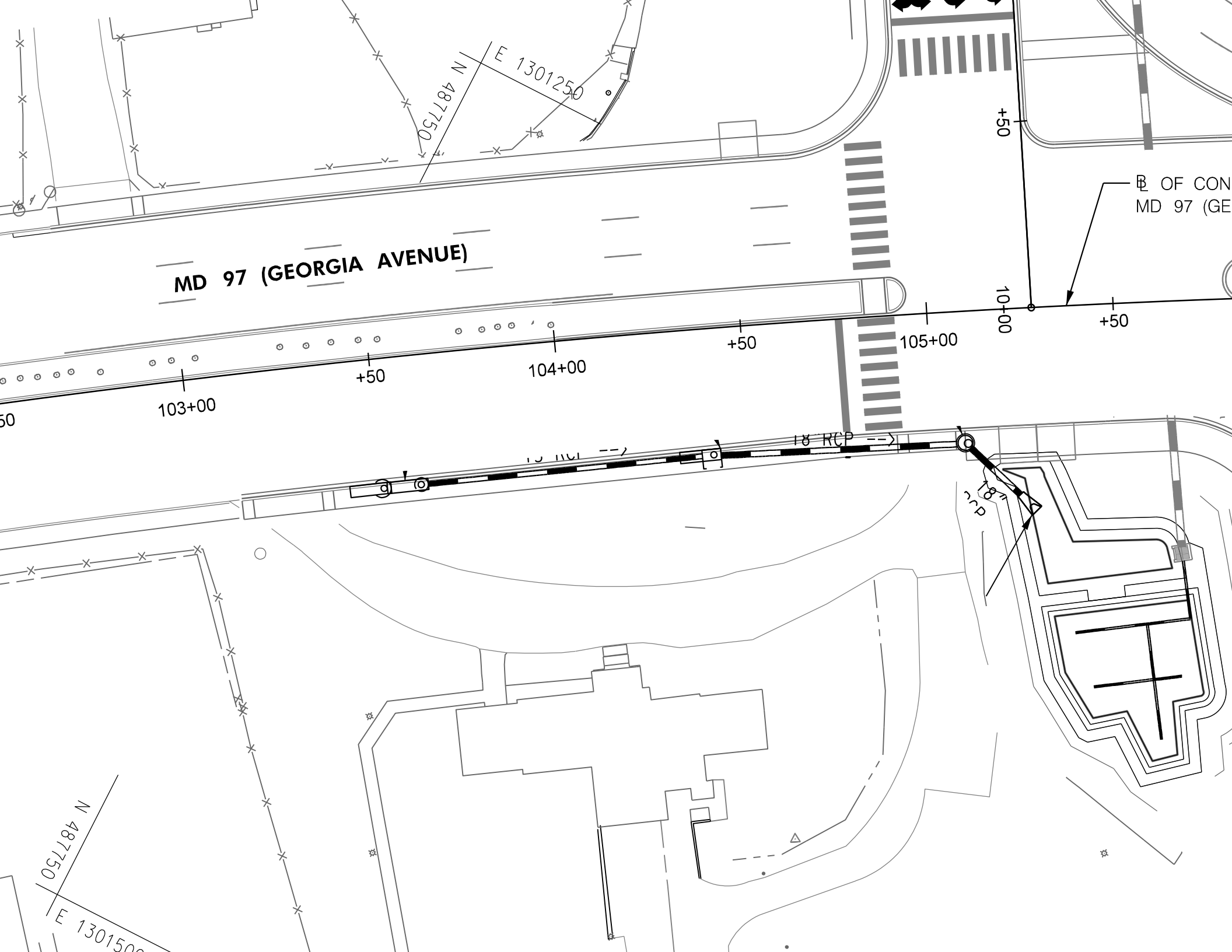

E 1301250
N 487750
℄ OF CONSTRUCTION
16TH STREET
+50
E
E
MD 97 (GEORGIA AVENUE)
103+00
+50
104+00
+50
105+00
10+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE
E
18 RCP
18" RCP
N 487750

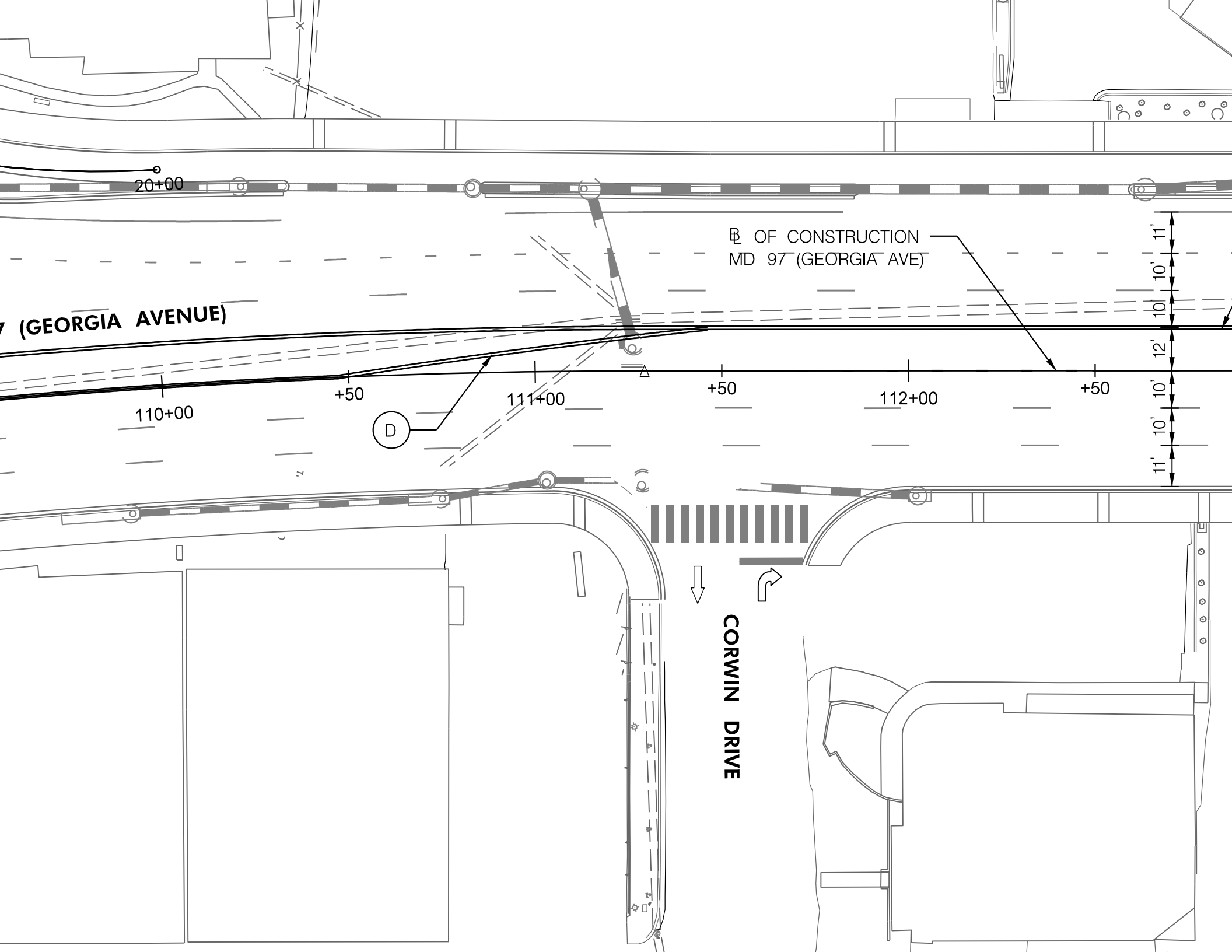

+50
20+00
35' TYP.
6' TYP.
A
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
MD 97 (GEORGIA AVENUE)
B
D
+50
110+00
+50
111+00
+50
112+00
CONSTRUCT PEIPE CROSSING
USING LANE CLSOURE AT NIGHT
OR DURING OFF-PEAK HOURS
CORWIN DRIVE

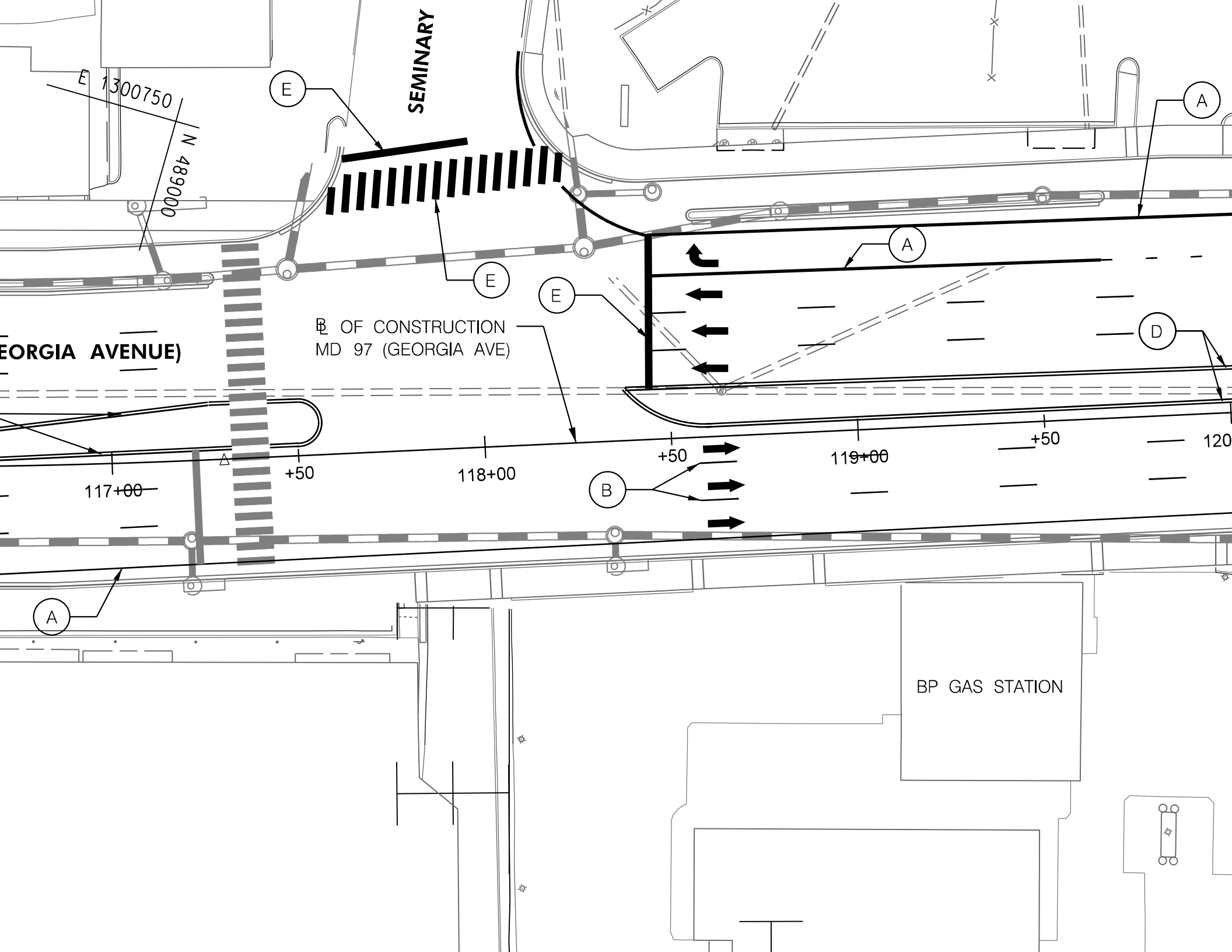

ALL PIPE CROSSINGS
SHALL BE CONSTRUCTED USING
LANE CLOSURES AT NIGHT TIME
OR DURING OFF–PEAK HOURS
CANTILEVER SIGN
SHALL BE LEFT I
SEMINARY PLACE
N 489000
E 1300750
AN
6' TYP.
A
A
B
B
E
MD 97 (GEORGIA AVENUE)
117+00
+50
118+00
+50
119+00
+50
120

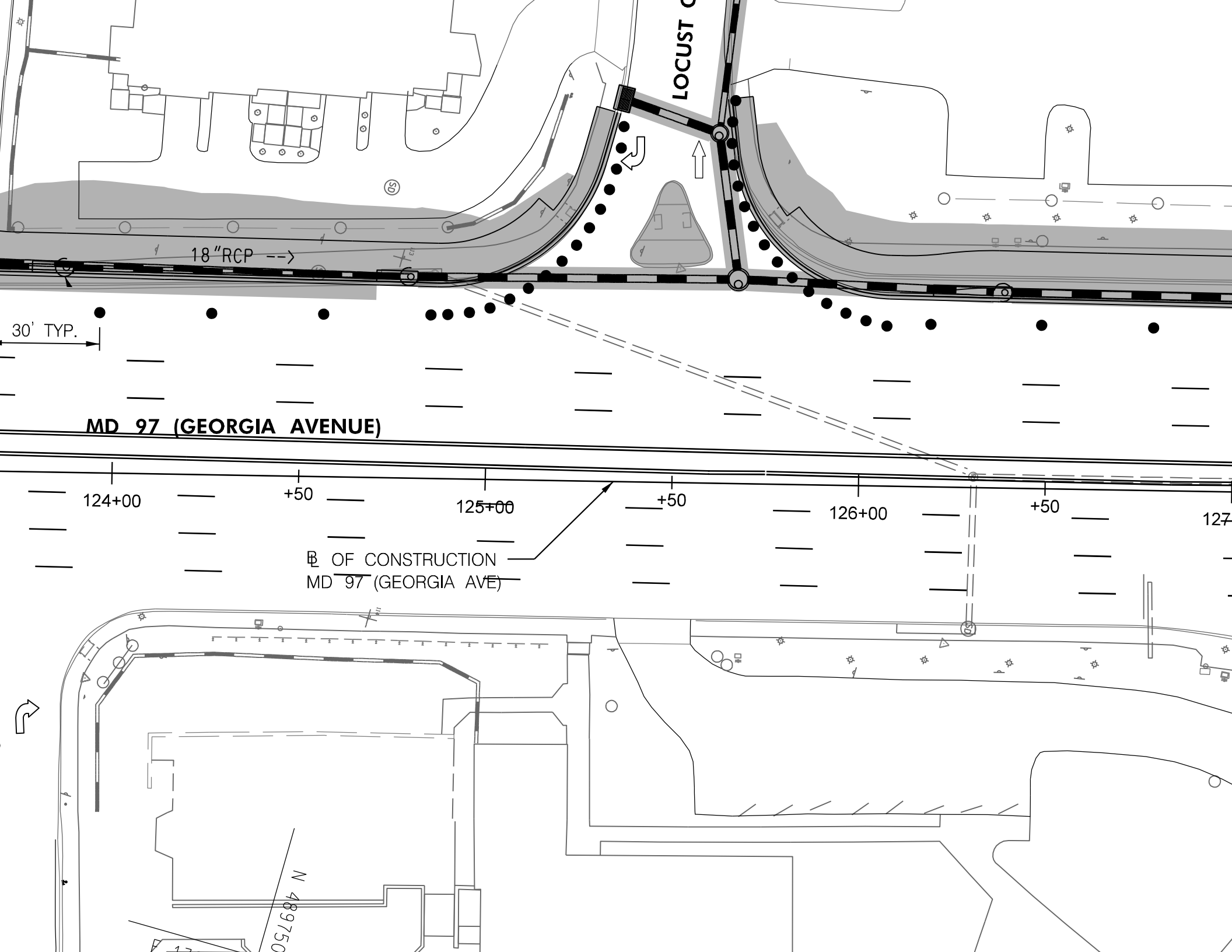

E 1300500
N 489750
GROVE ROAD
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
124+00
+50
125+00
+50
126+00
+50
127
N 489750

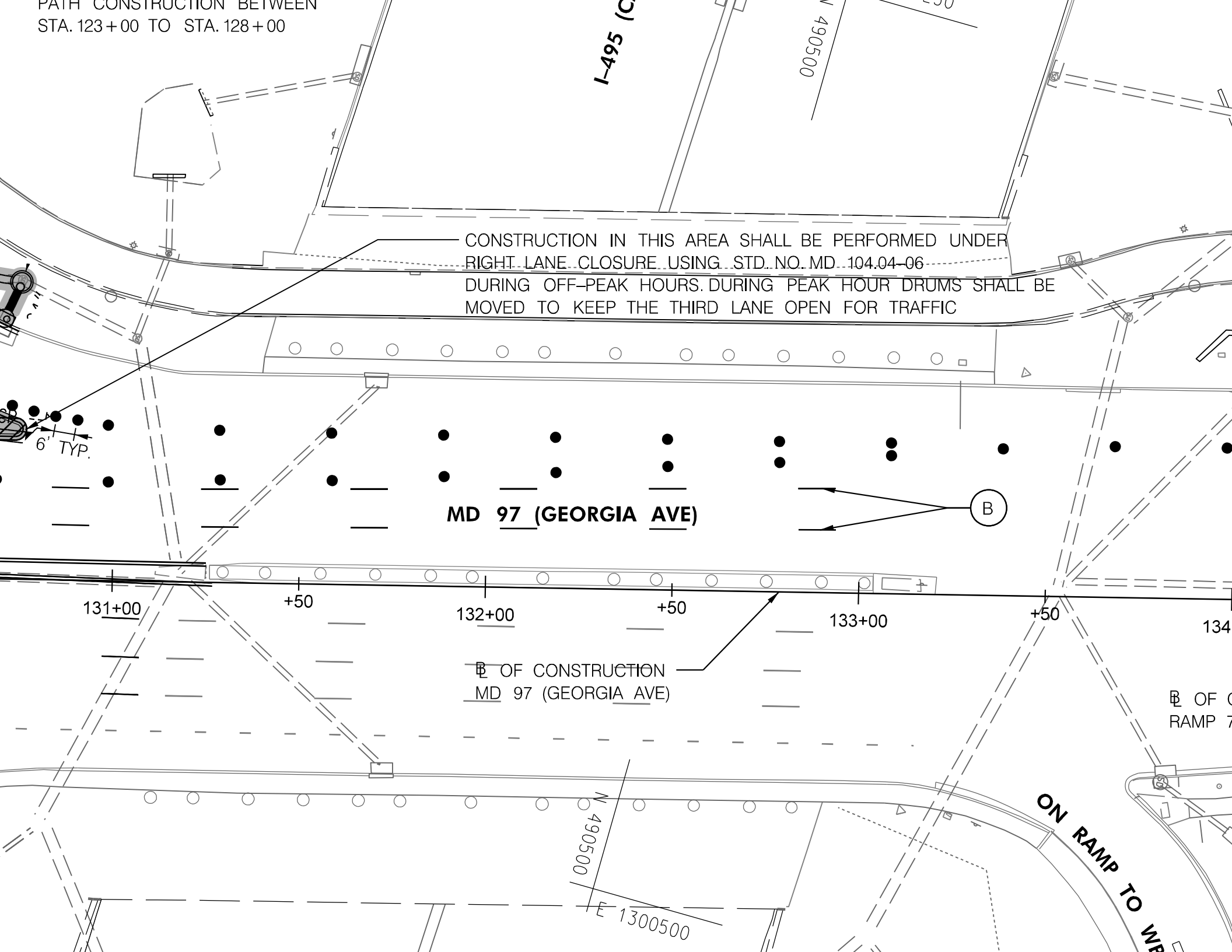

STREET
1300750
487500
+50
27+00
28+00
+50
24"RCP
24"RCP
+50
24"RCP
14+00
+50
13+00
15+00
B
C
+50
16+00
487500
1301000

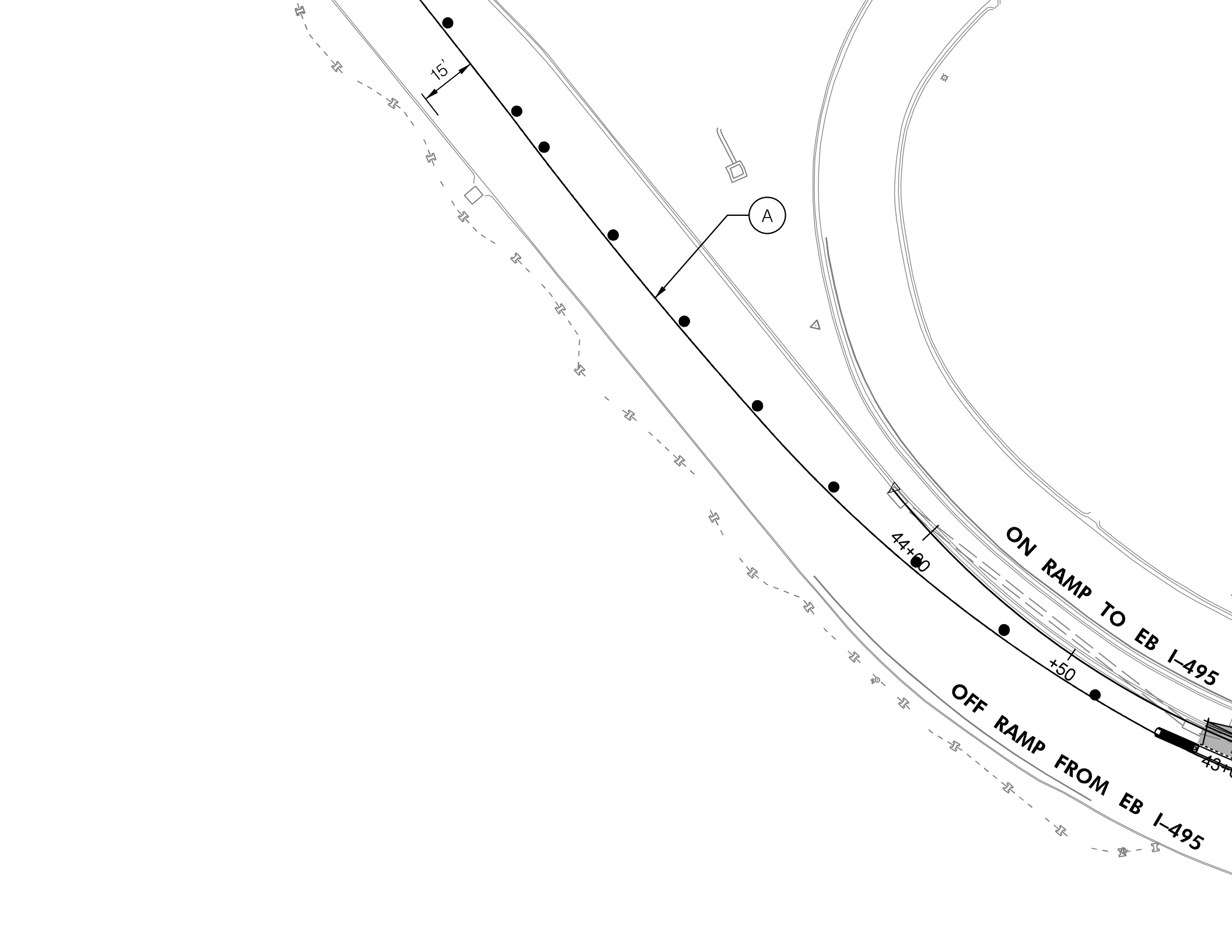

MD 97 (GEORGIA AVENUE)
N 487750
E 1301250
N 487750
E 1301500
103+00
+50
104+00
+50
105+00
10+00
+50
+50
℄ OF CON
MD 97 (GE
18" RCP

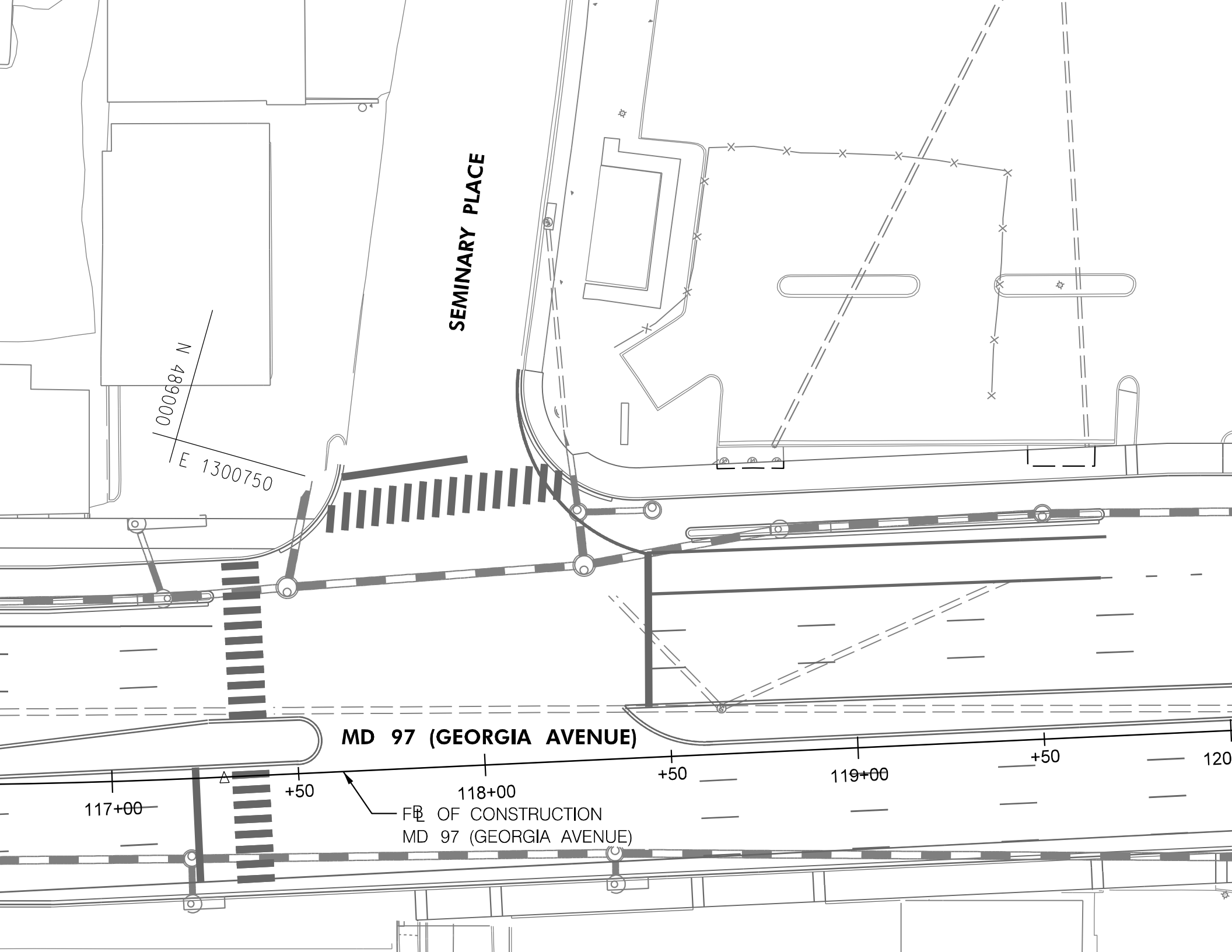

20+00
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
(GEORGIA AVENUE)
110+00
+50
111+00
+50
112+00
+50
D
11'
10'
10'
12'
10'
10'
11'
CORWIN DRIVE

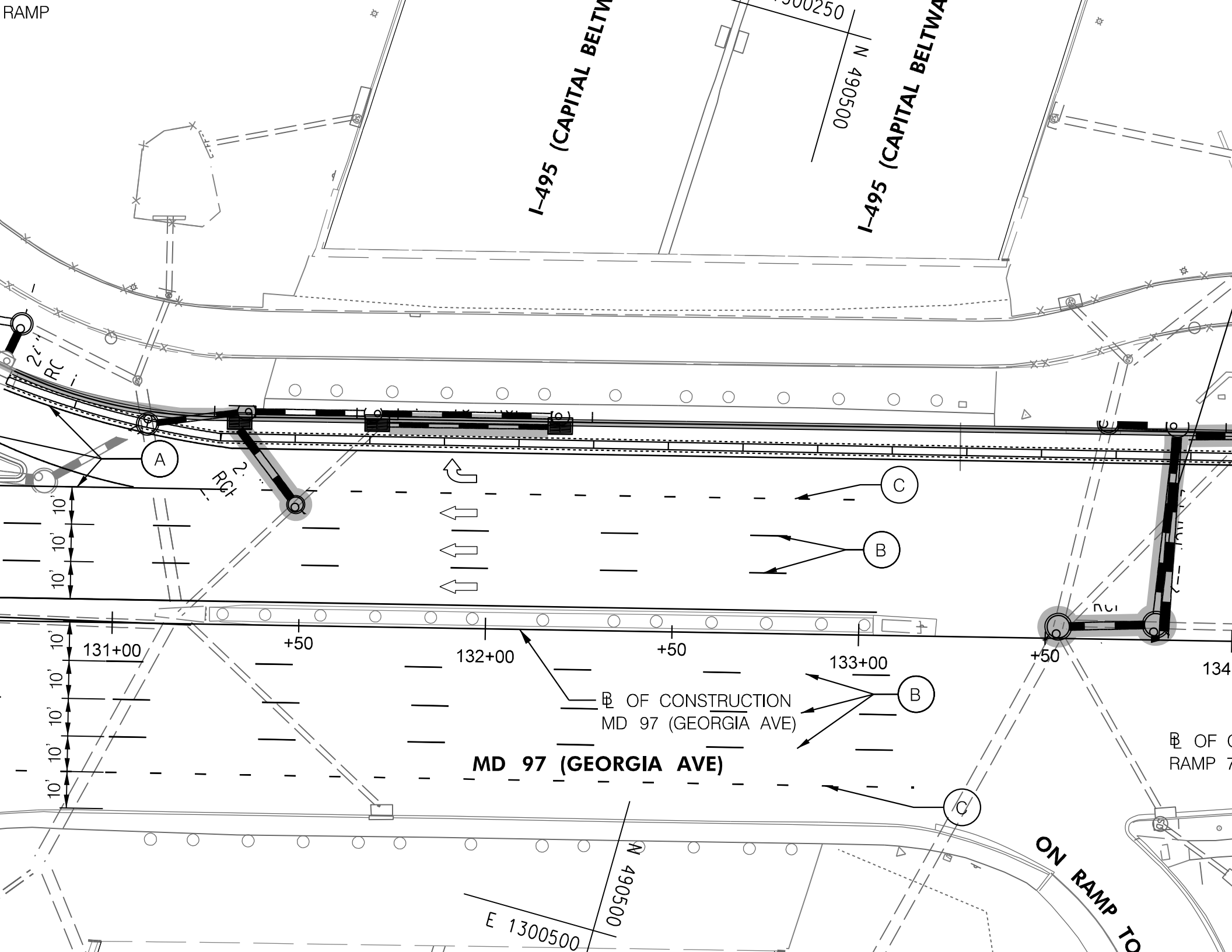

SEMINARY
E 1300750
N 489000
E
E
E
A
A
A
D
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
EORGIA AVENUE)
117+00
+50
118+00
+50
B
119+00
+50
120
BP GAS STATION

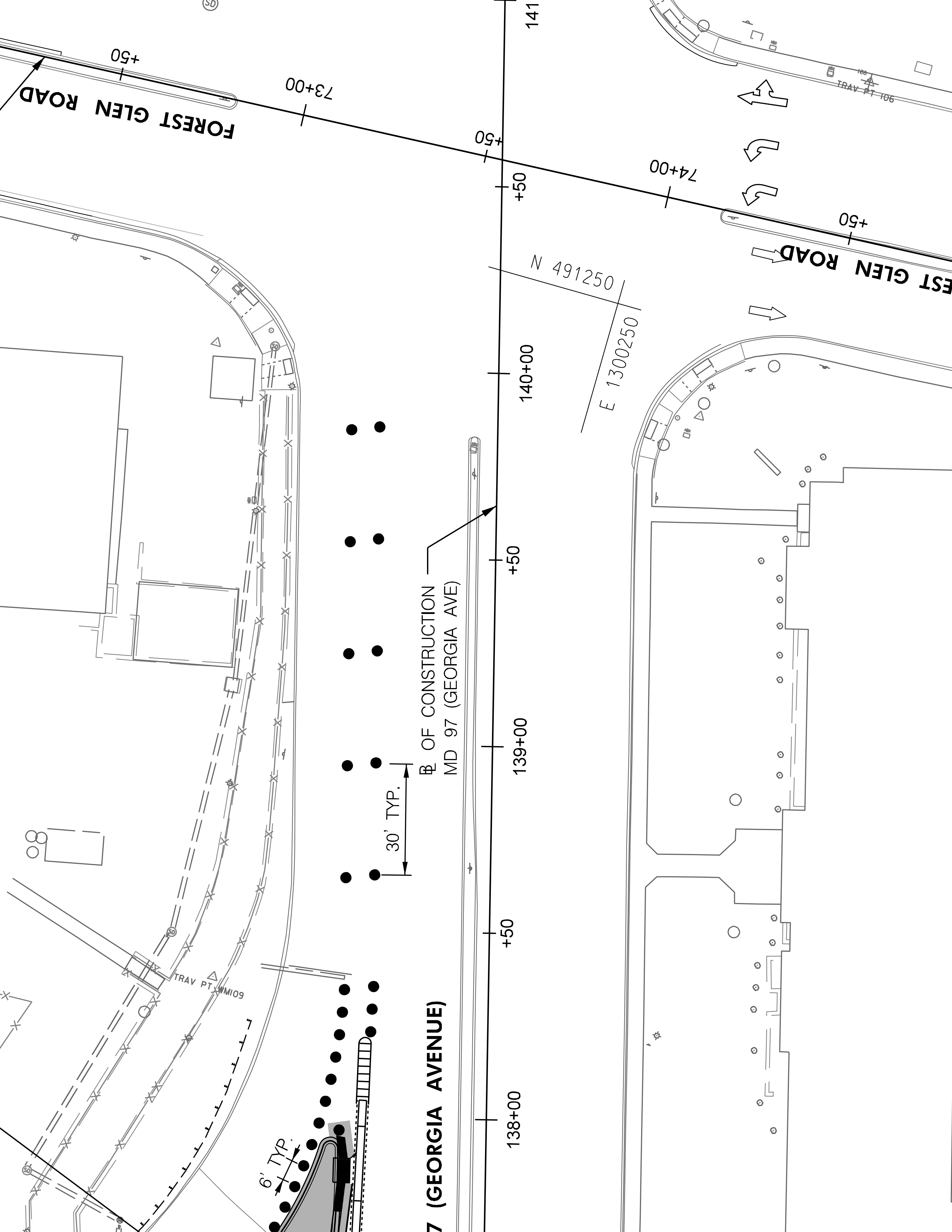

LOCUST
18"RCP -->
30' TYP.
MD 97 (GEORGIA AVENUE)
124+00
+50
125+00
+50
126+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
N 48975

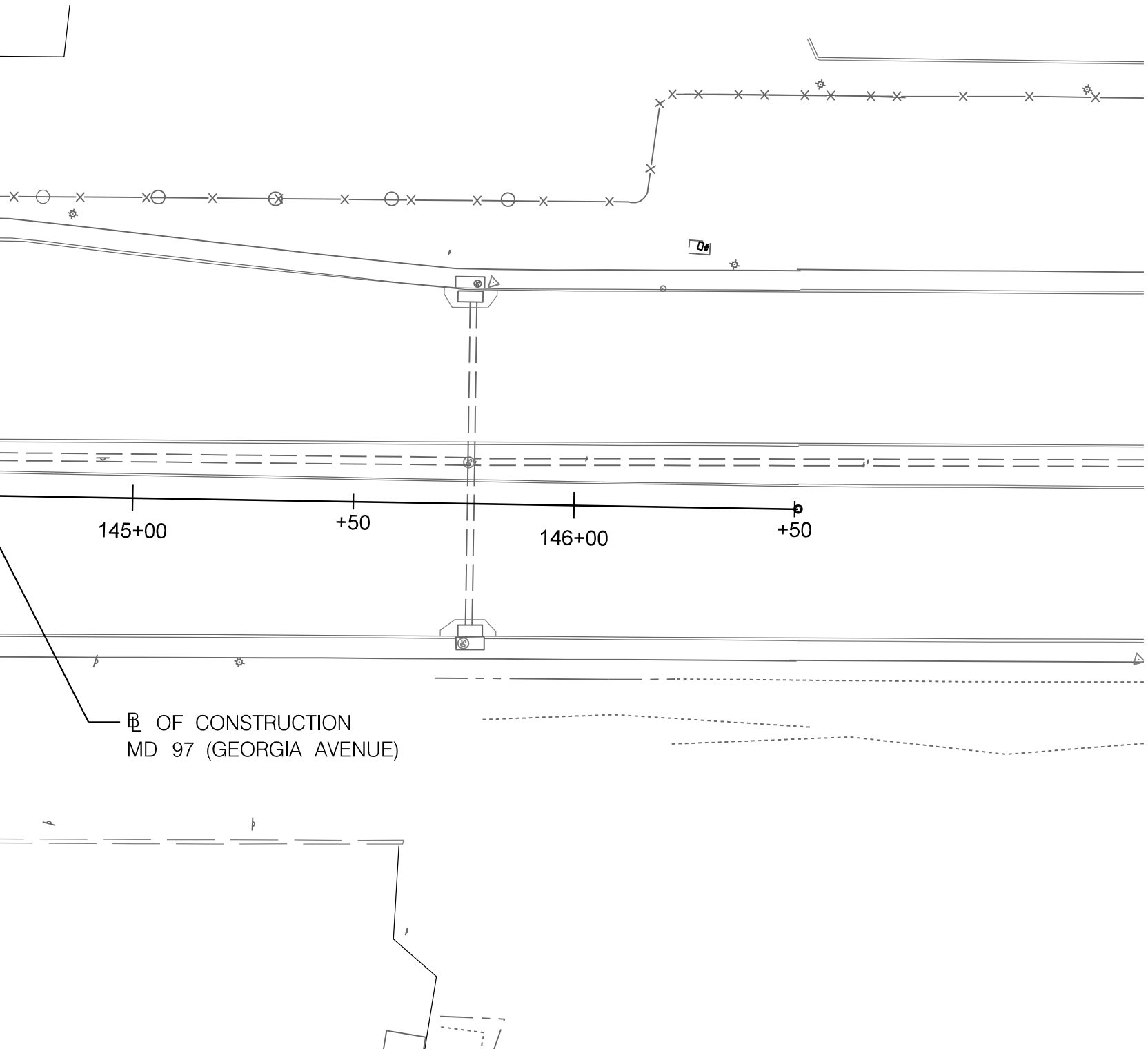

PATH CONSTRUCTION BETWEEN
STA. 123+00 TO STA. 128+00
I-495 (C
N 490500
CONSTRUCTION IN THIS AREA SHALL BE PERFORMED UNDER RIGHT LANE CLOSURE USING STD. NO. MD 104.04-06 DURING OFF-PEAK HOURS. DURING PEAK HOUR DRUMS SHALL BE MOVED TO KEEP THE THIRD LANE OPEN FOR TRAFFIC
6' TYP.
MD 97 (GEORGIA AVE)
B
131+00
+50
132+00
+50
133+00
+50
134
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
℄ OF
RAMP 7
N 490500
E 1300500
ON RAMP TO WB

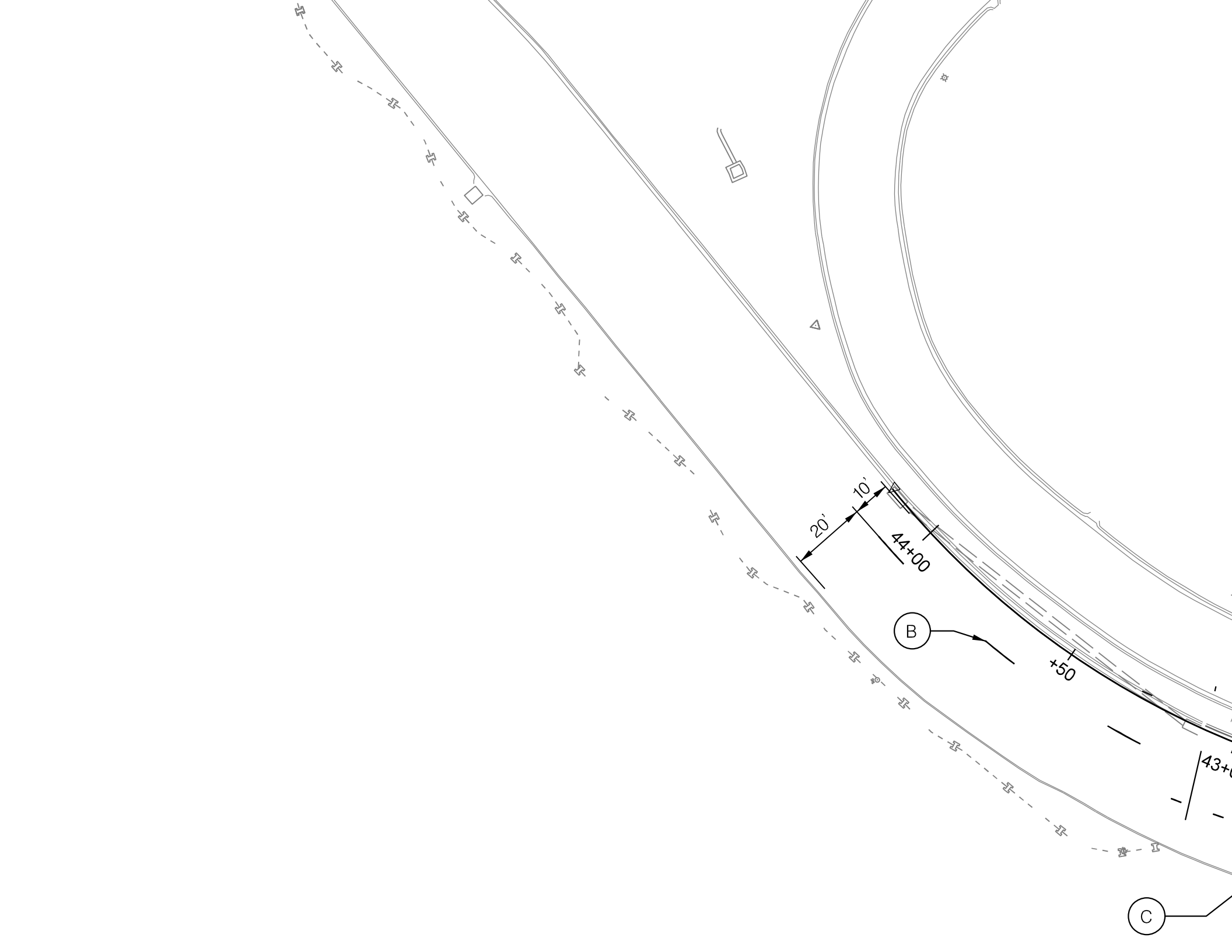

15'
A
44+00
+50
ON RAMP TO EB I-495
OFF RAMP FROM EB I-495


SEMINARY PLACE
N 489000
E 1300750
MD 97 (GEORGIA AVENUE)
117+00
+50
118+00
+50
119+00
+50
120
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)

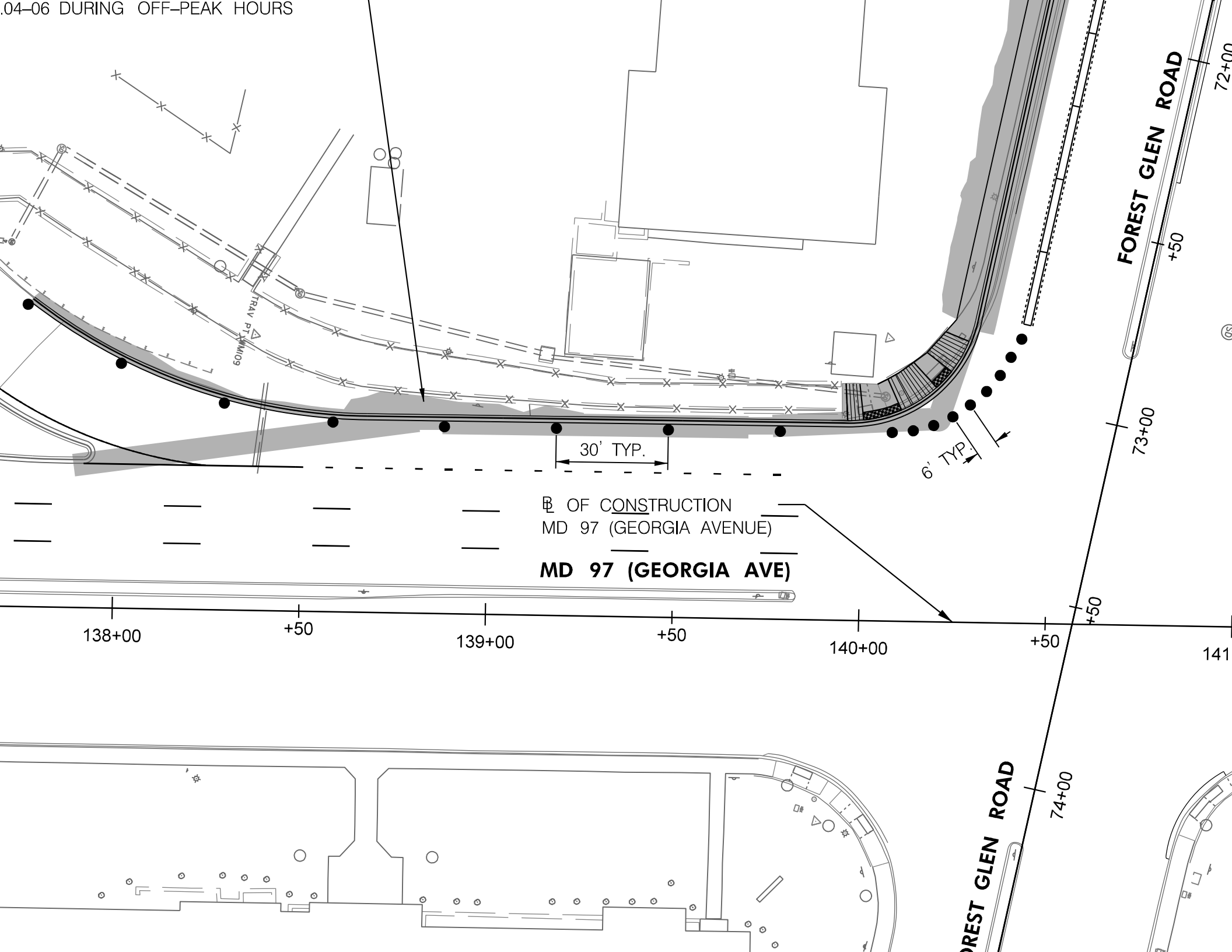

RAMP
I-495 (CAPITAL BELTW
I-495 (CAPITAL BELTWA
N 490500
E 1300250
A
B
C
10'
10'
10'
10'
10'
10'
10'
131+00
+50
132+00
+50
133+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
MD 97 (GEORGIA AVE)
℄ OF
RAMP 7
ON RAMP TO
N 490500
E 1300500

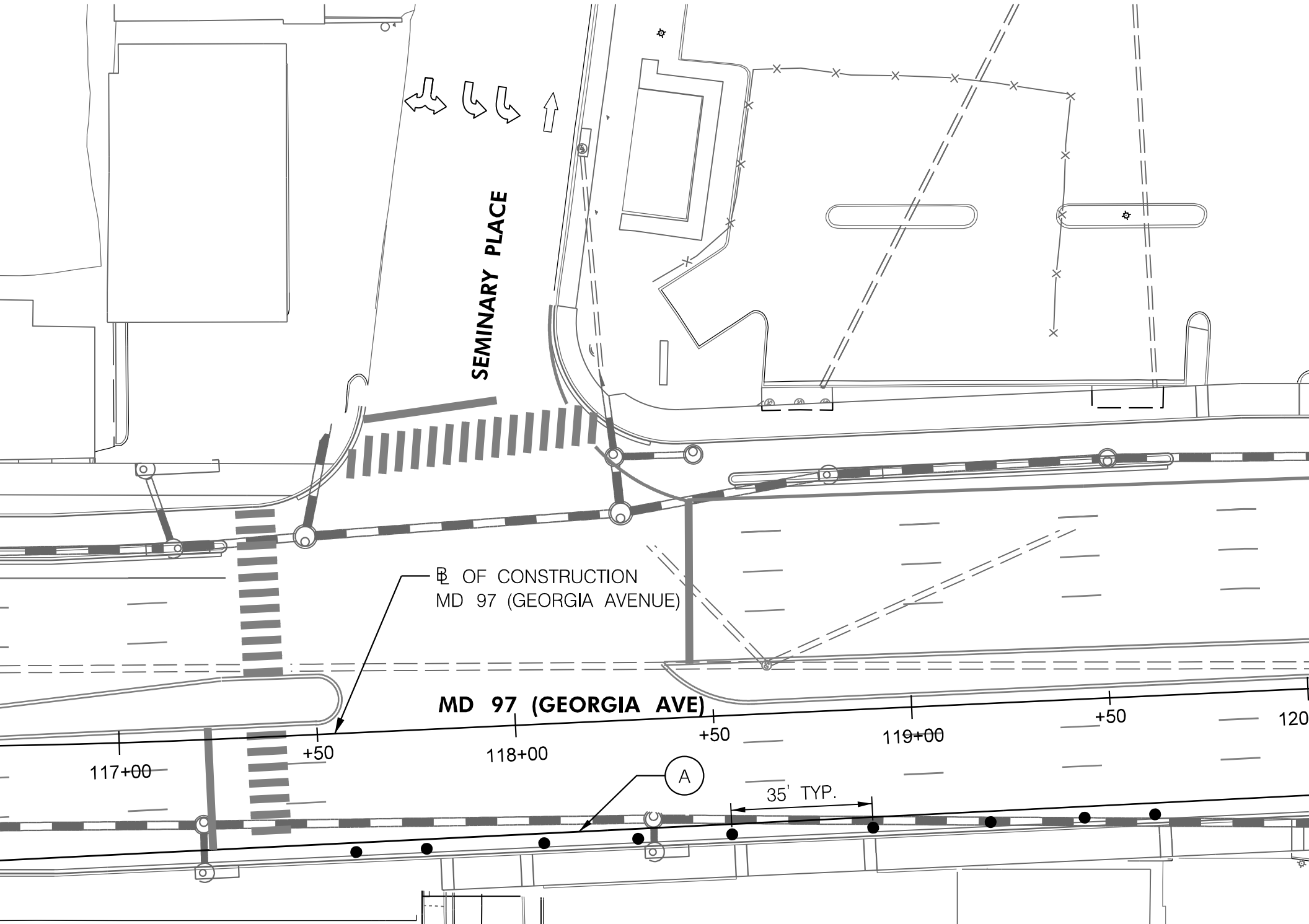

FOREST GLEN ROAD
+50
73+00
+50
74+00
+50
FOREST GLEN ROAD
TRAV PT 106
141
+50
N 491250
E 1300250
140+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVE)
139+00
30' TYP.
+50
TRAV PT MI09
7 (GEORGIA AVENUE)
138+00
6' TYP.

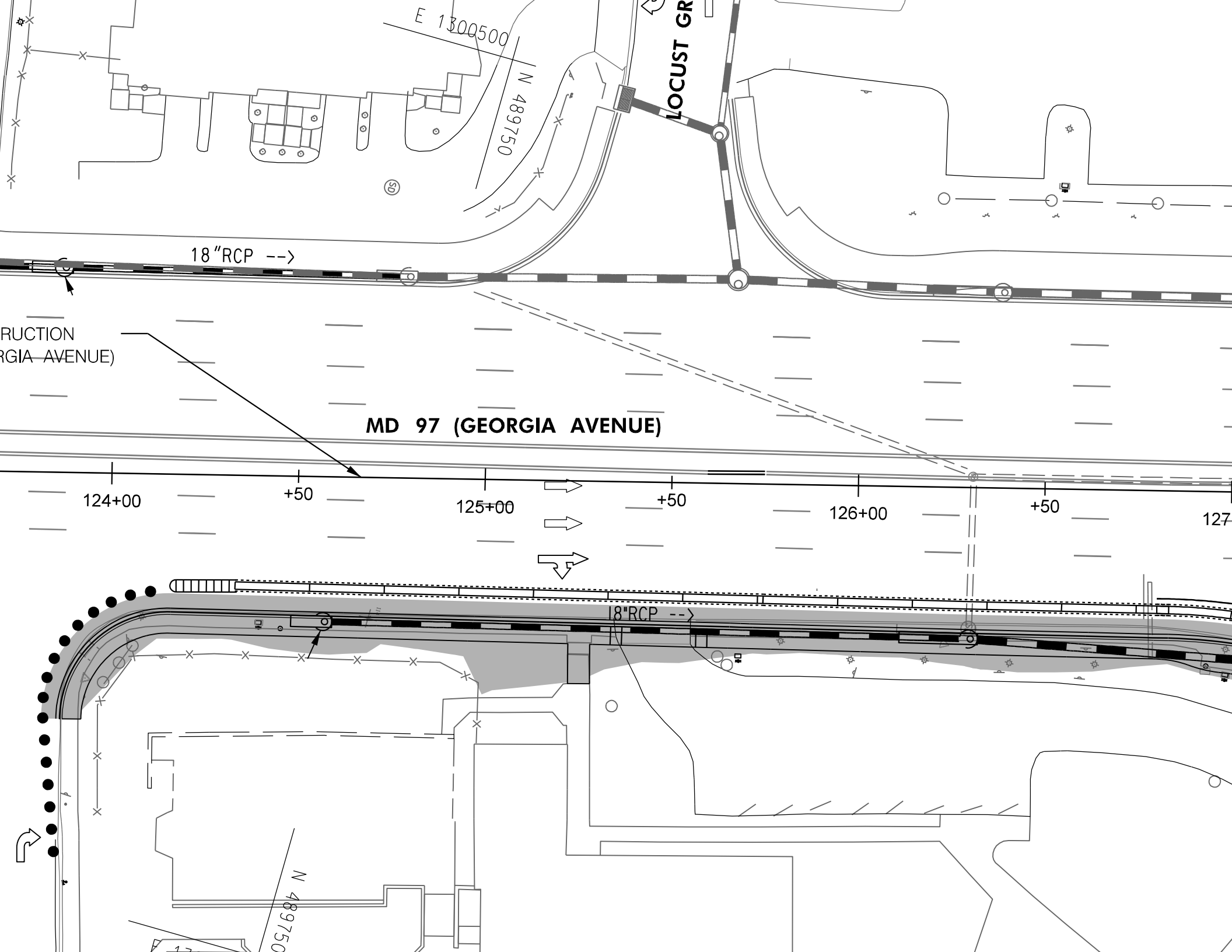

145+00
+50
146+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)

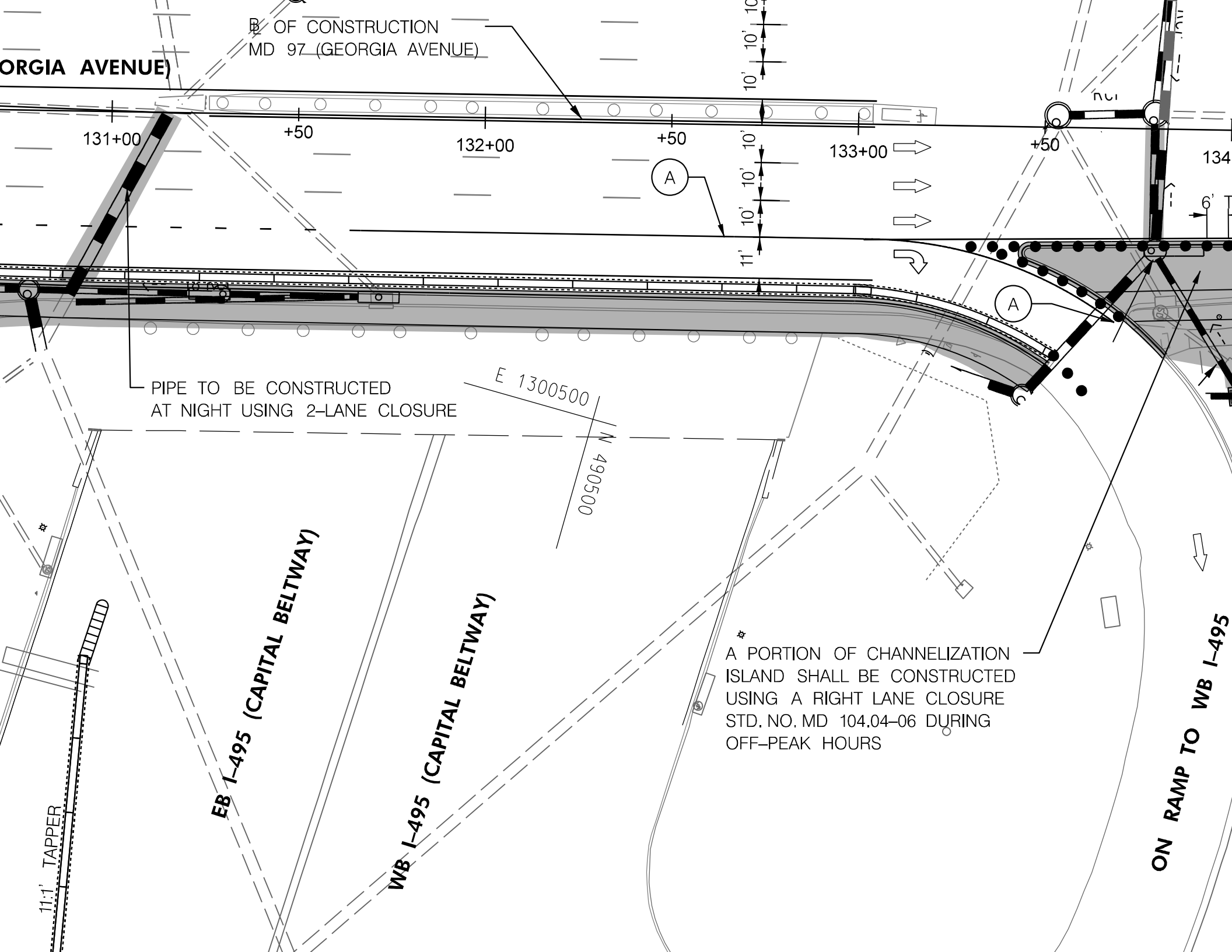

20'
10'
44+00
B
+50
C

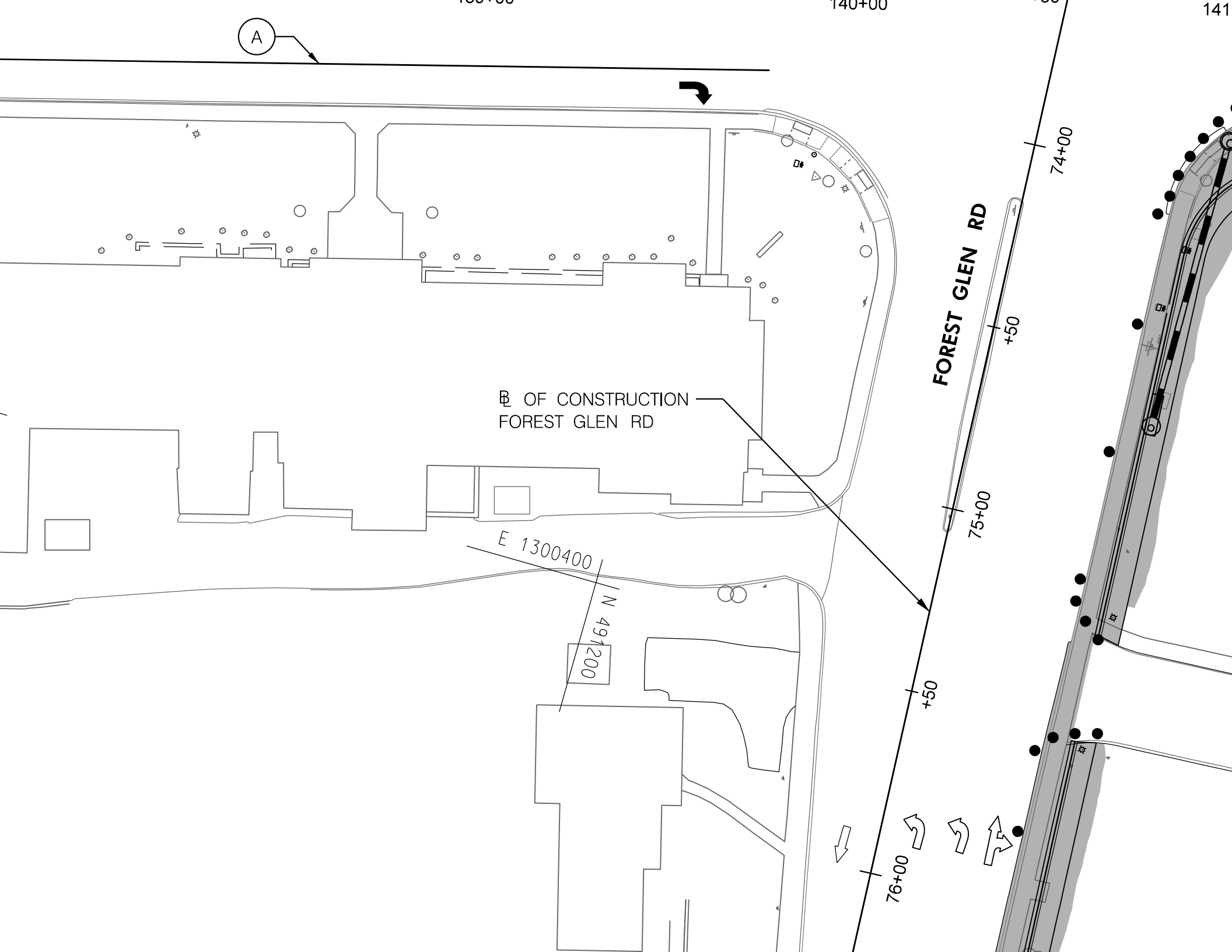
.04–06 DURING OFF–PEAK HOURS

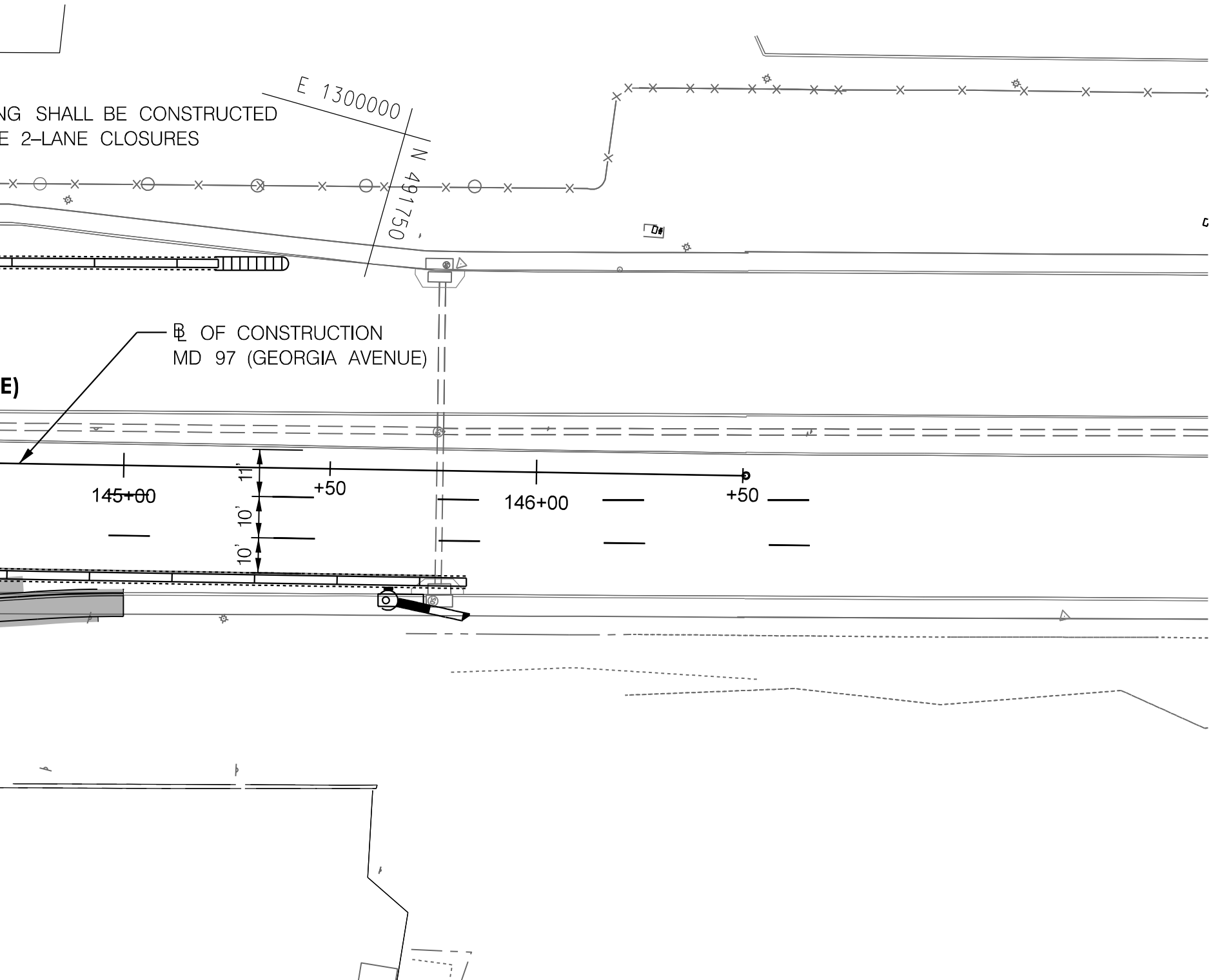


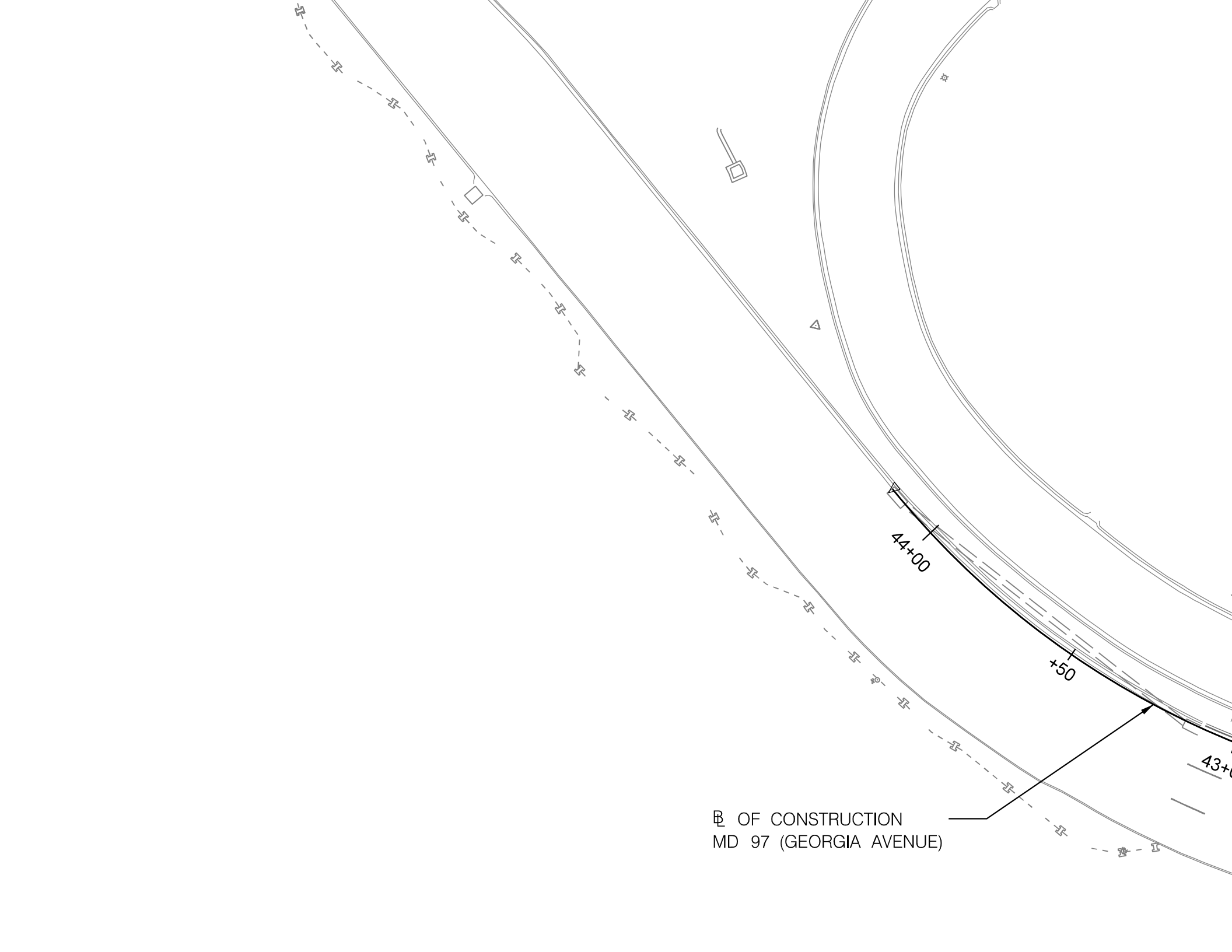

SEMINARY PLACE
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
MD 97 (GEORGIA AVE)
117+00
+50
118+00
+50
119+00
+50
120
A
35' TYP.

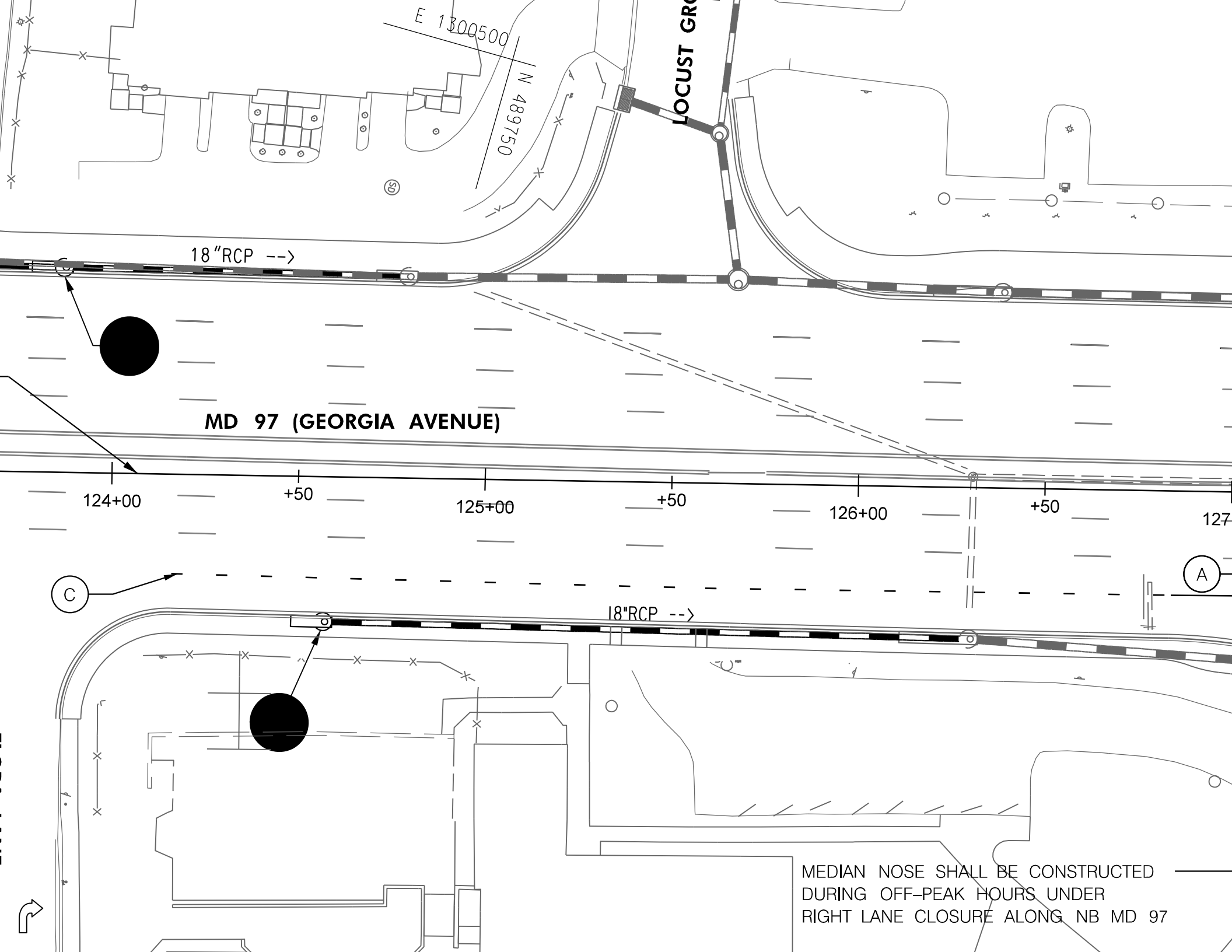

E 1300500
N 489750
LOCUST GR
18"RCP -->
RUCTION
RGIA AVENUE)
MD 97 (GEORGIA AVENUE)
124+00
+50
125+00
+50
126+00
+50
127
18"RCP -->
N 489750

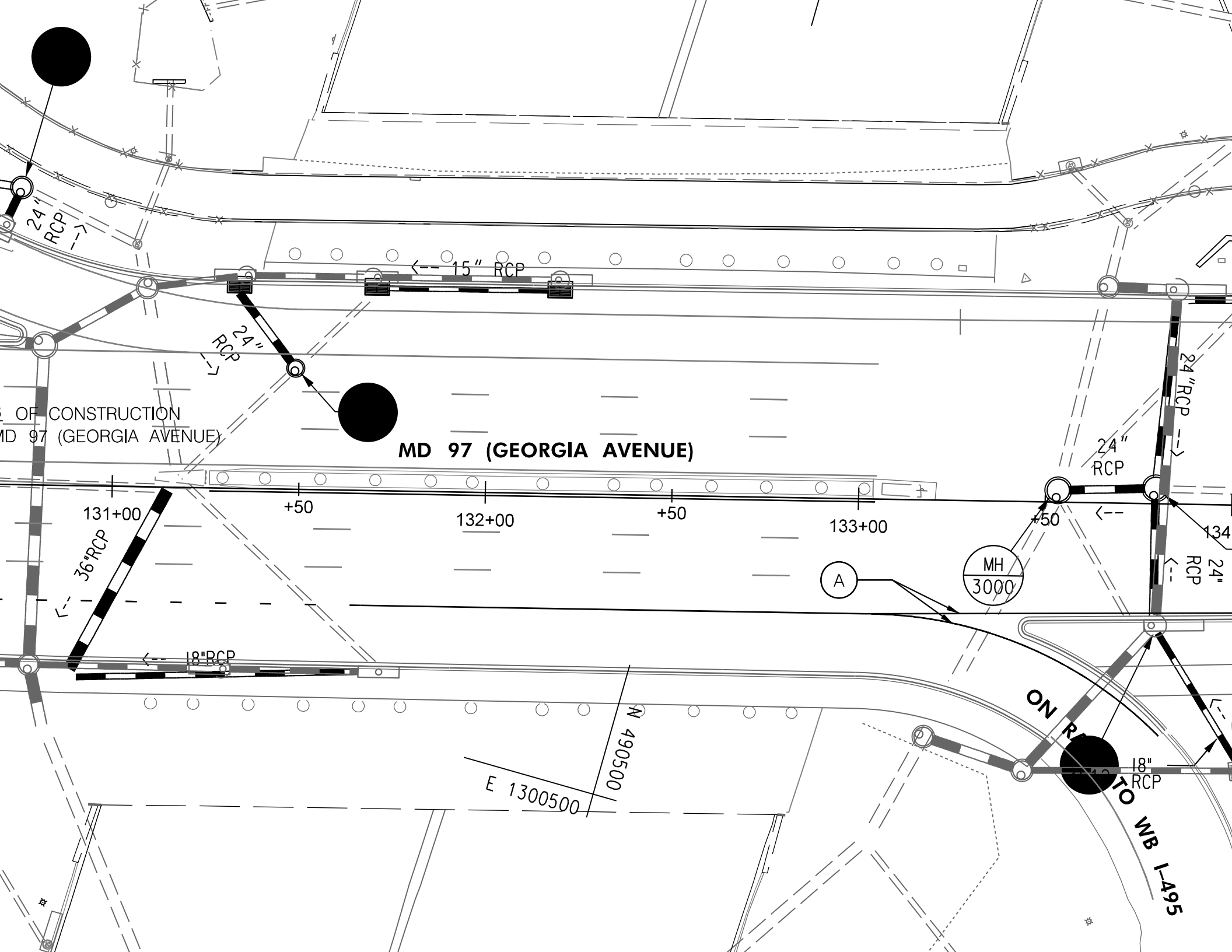

ORGIA AVENUE)
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
131+00
+50
132+00
+50
133+00
+50
134
10'
10'
10'
10'
10'
11'
A
A
6'
PIPE TO BE CONSTRUCTED
AT NIGHT USING 2–LANE CLOSURE
E 1300500
N 490500
EB I–495 (CAPITAL BELTWAY)
WB I–495 (CAPITAL BELTWAY)
A PORTION OF CHANNELIZATION
ISLAND SHALL BE CONSTRUCTED
USING A RIGHT LANE CLOSURE
STD. NO. MD 104.04–06 DURING
OFF–PEAK HOURS
11:1' TAPPER
ON RAMP TO WB I–495

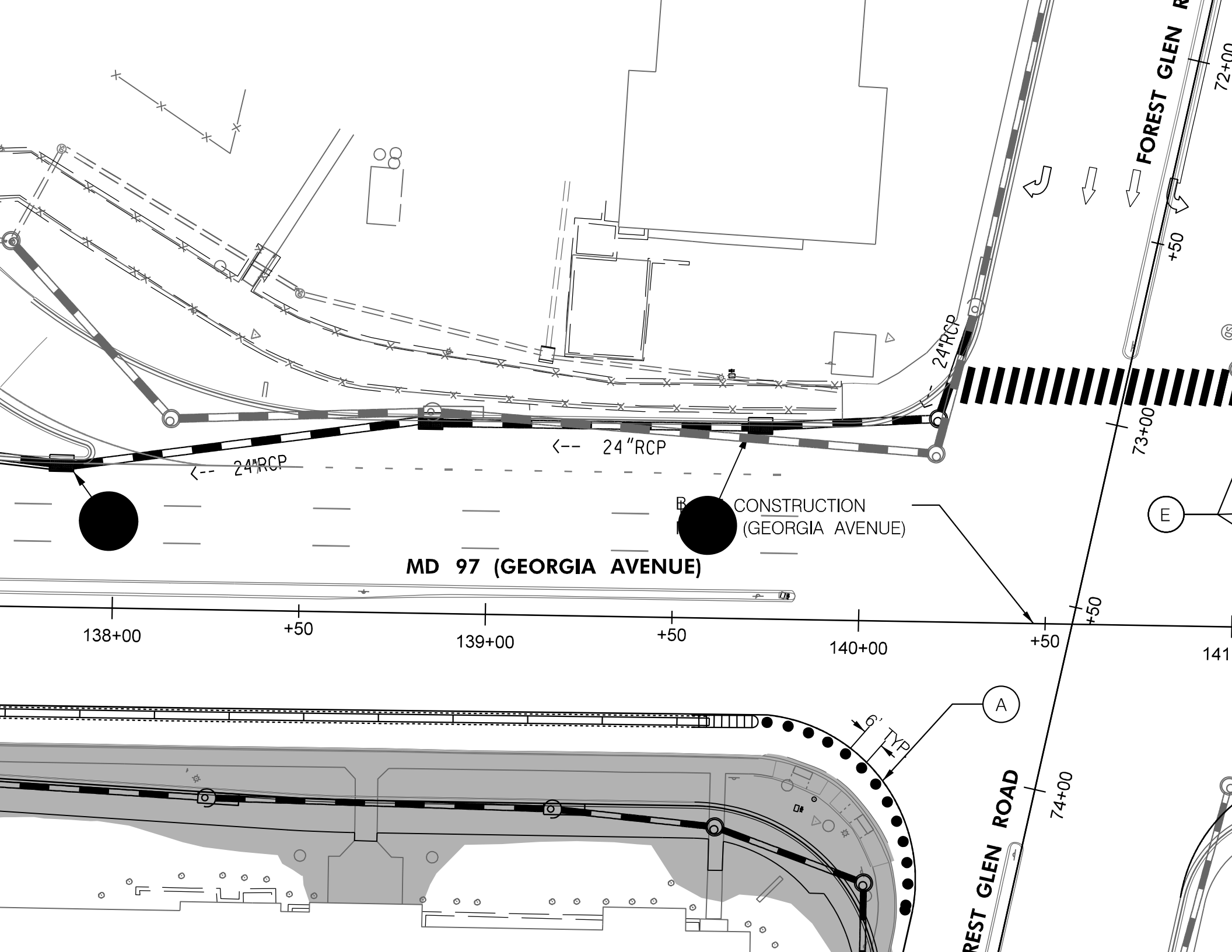

140+00
141
A
74+00
FOREST GLEN RD
+50
℄ OF CONSTRUCTION
FOREST GLEN RD
75+00
E 1300400
N 491200
+50
76+00

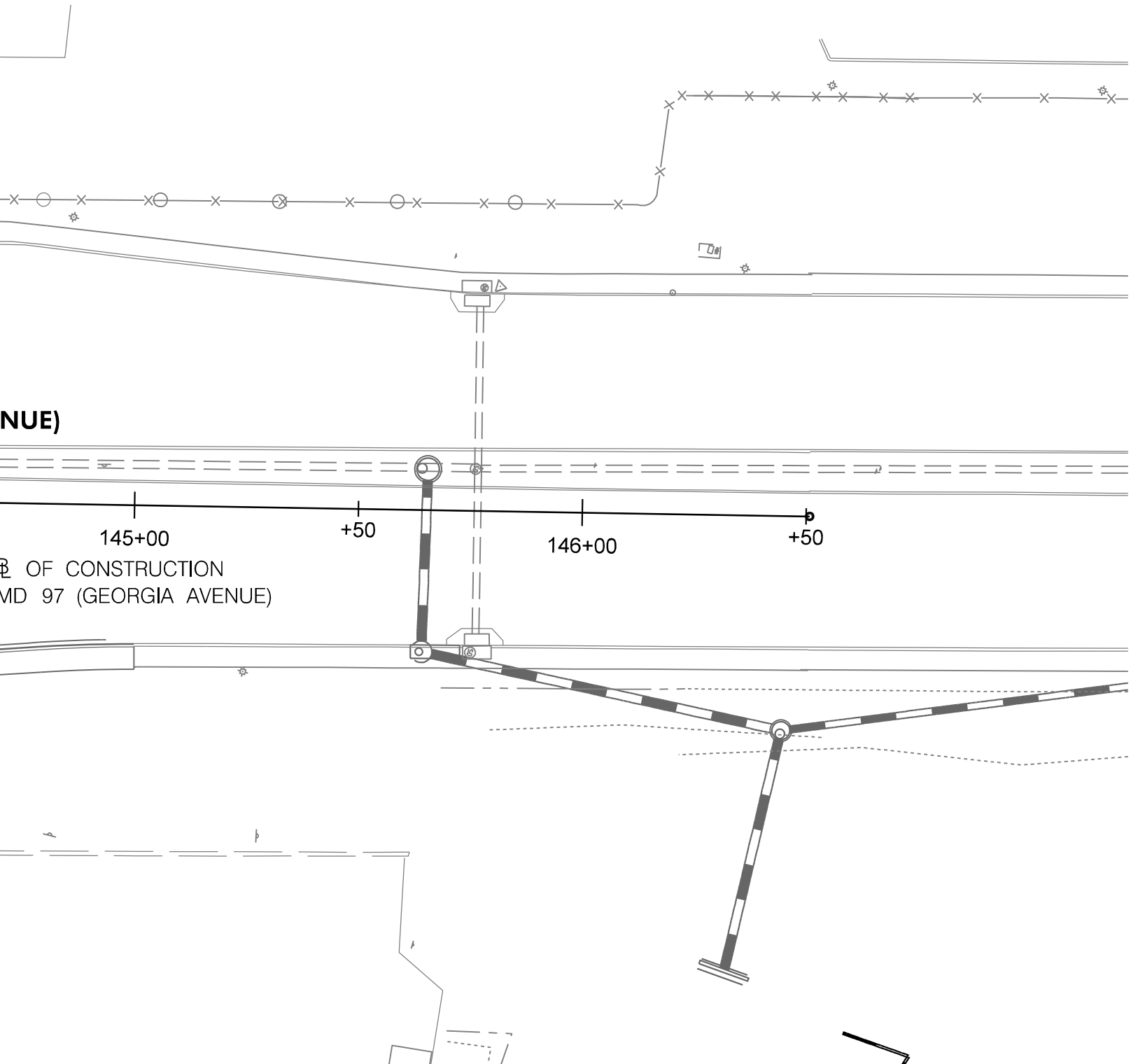

NG SHALL BE CONSTRUCTED
E 2–LANE CLOSURES
E 1300000
N 491750
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
E)
145+00
+50
146+00
+50
11'
10'
10'

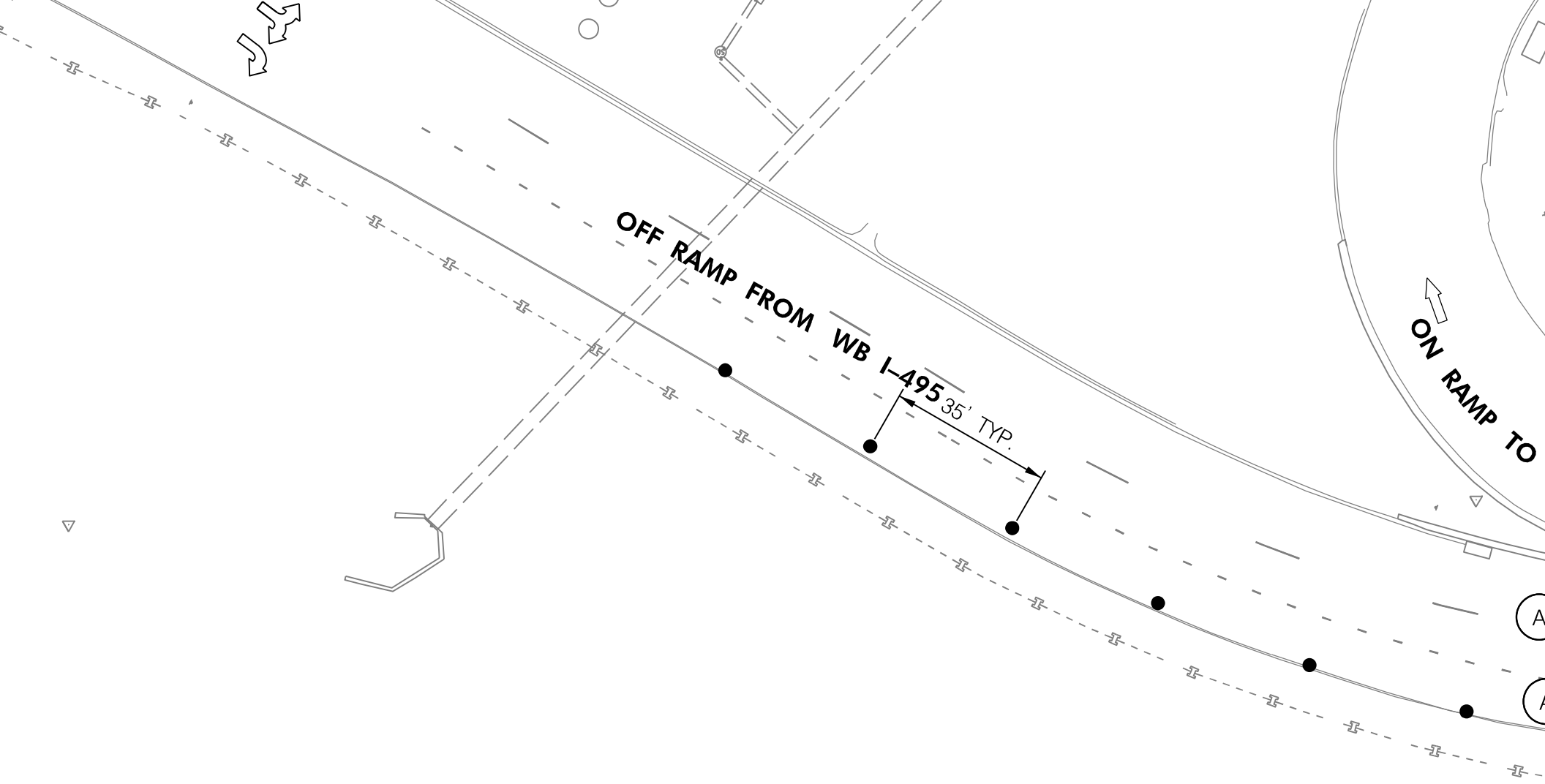

44+00
+50
43+
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)

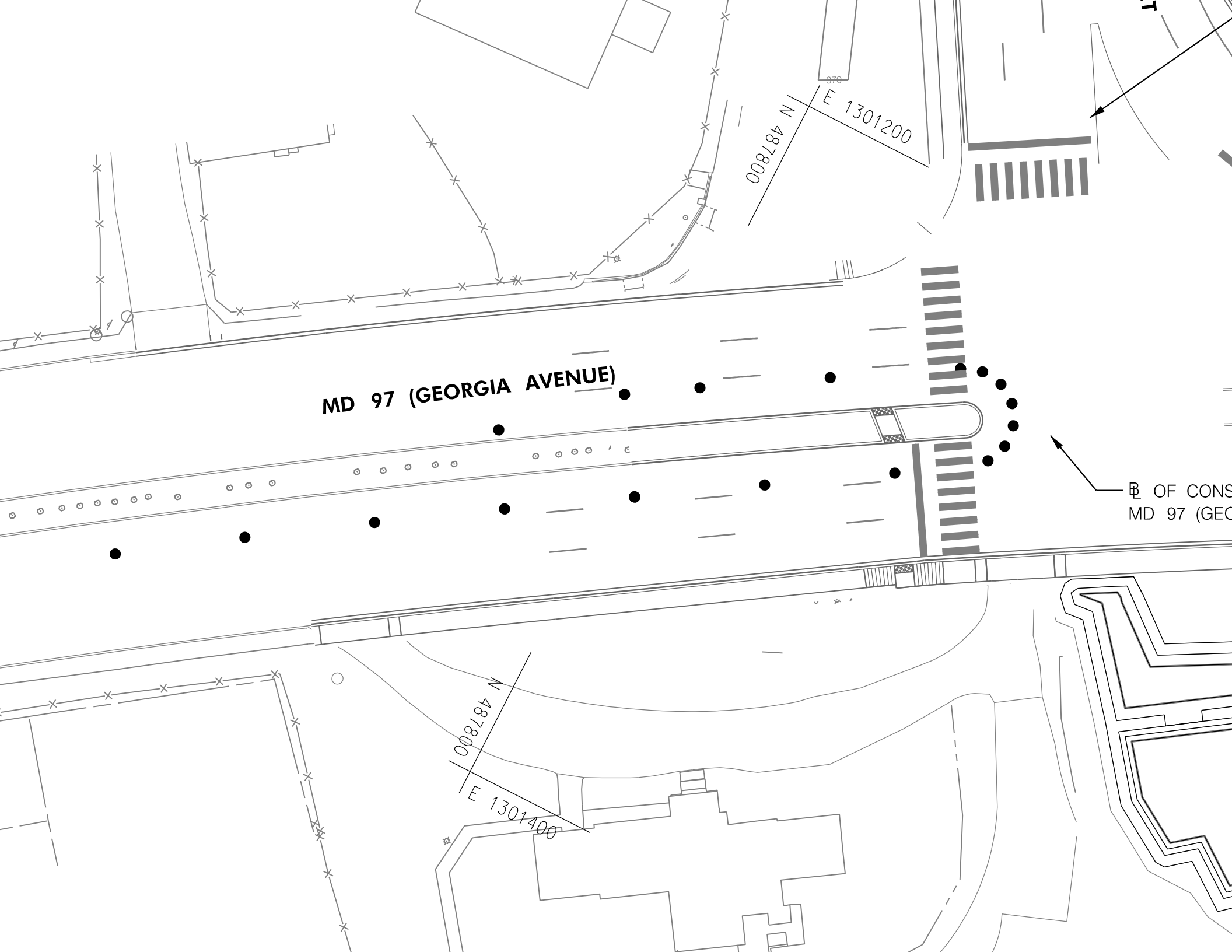

E 1300500
N 489750
LOCUST GRO
18"RCP -->
MD 97 (GEORGIA AVENUE)
124+00
+50
125+00
+50
126+00
+50
127
C
A
18"RCP -->
MEDIAN NOSE SHALL BE CONSTRUCTED
DURING OFF-PEAK HOURS UNDER
RIGHT LANE CLOSURE ALONG NB MD 97

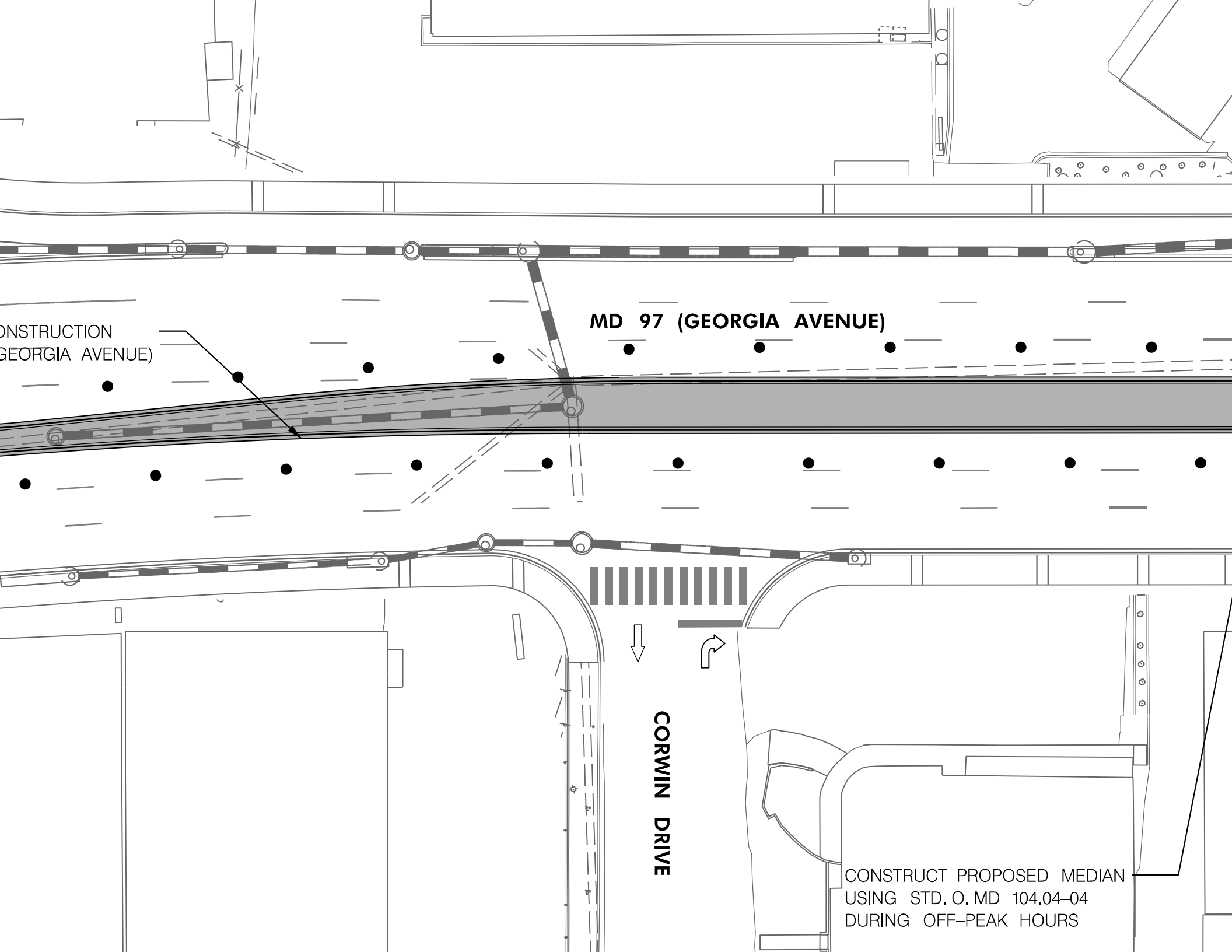

24" RCP
15" RCP
24" RCP
OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
MD 97 (GEORGIA AVENUE)
24" RCP
131+00
+50
132+00
+50
133+00
+50
36"RCP
A
MH
3000
18"RCP
N 490500
E 1300500
18"
RCP
TO WB I-495

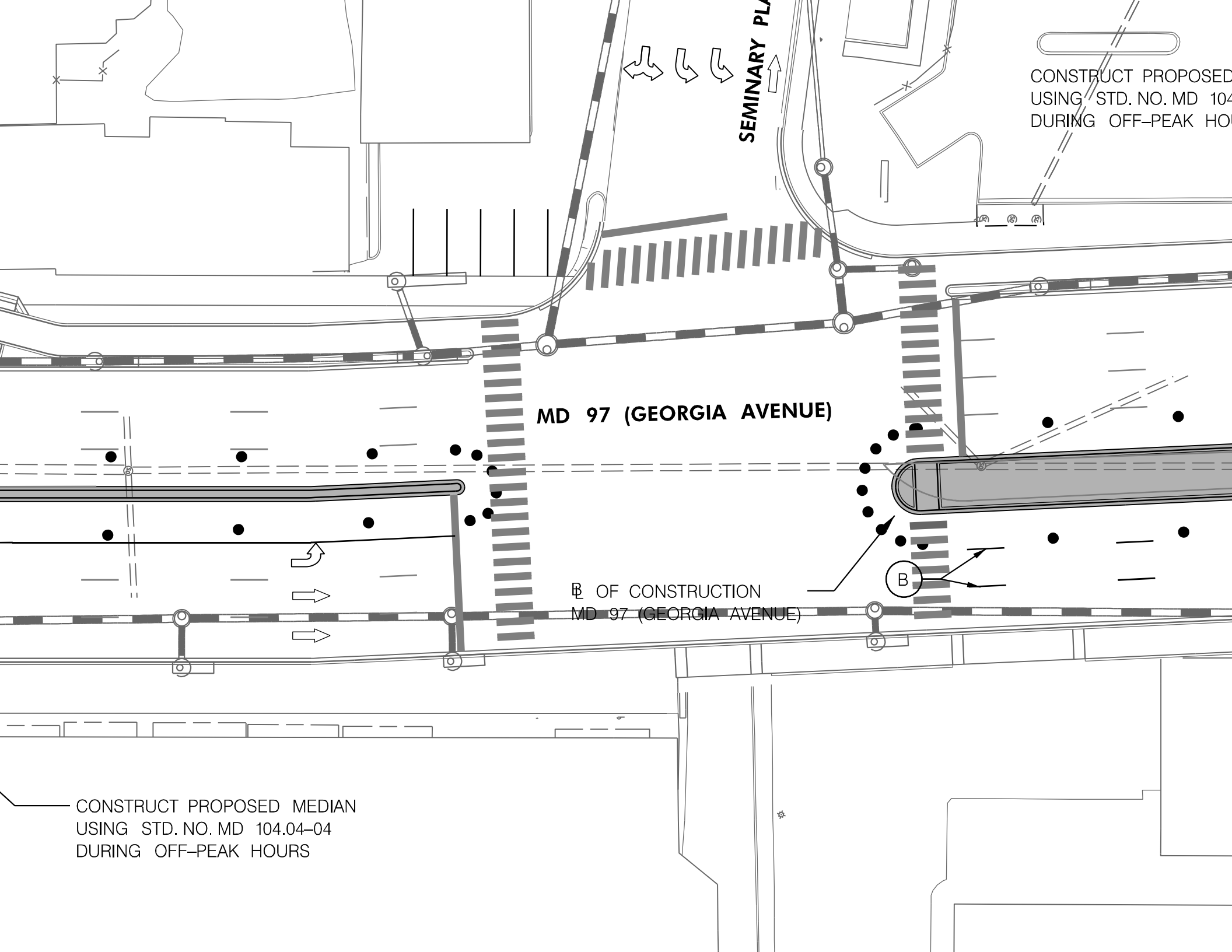

FOREST GLEN R
72+00
+50
24"RCP
73+00
<-- 24"RCP
<-- 24"RCP
CONSTRUCTION
(GEORGIA AVENUE)
MD 97 (GEORGIA AVENUE)
E
138+00
+50
139+00
+50
140+00
+50
+50
141
A
6' TYP
74+00
FOREST GLEN ROAD

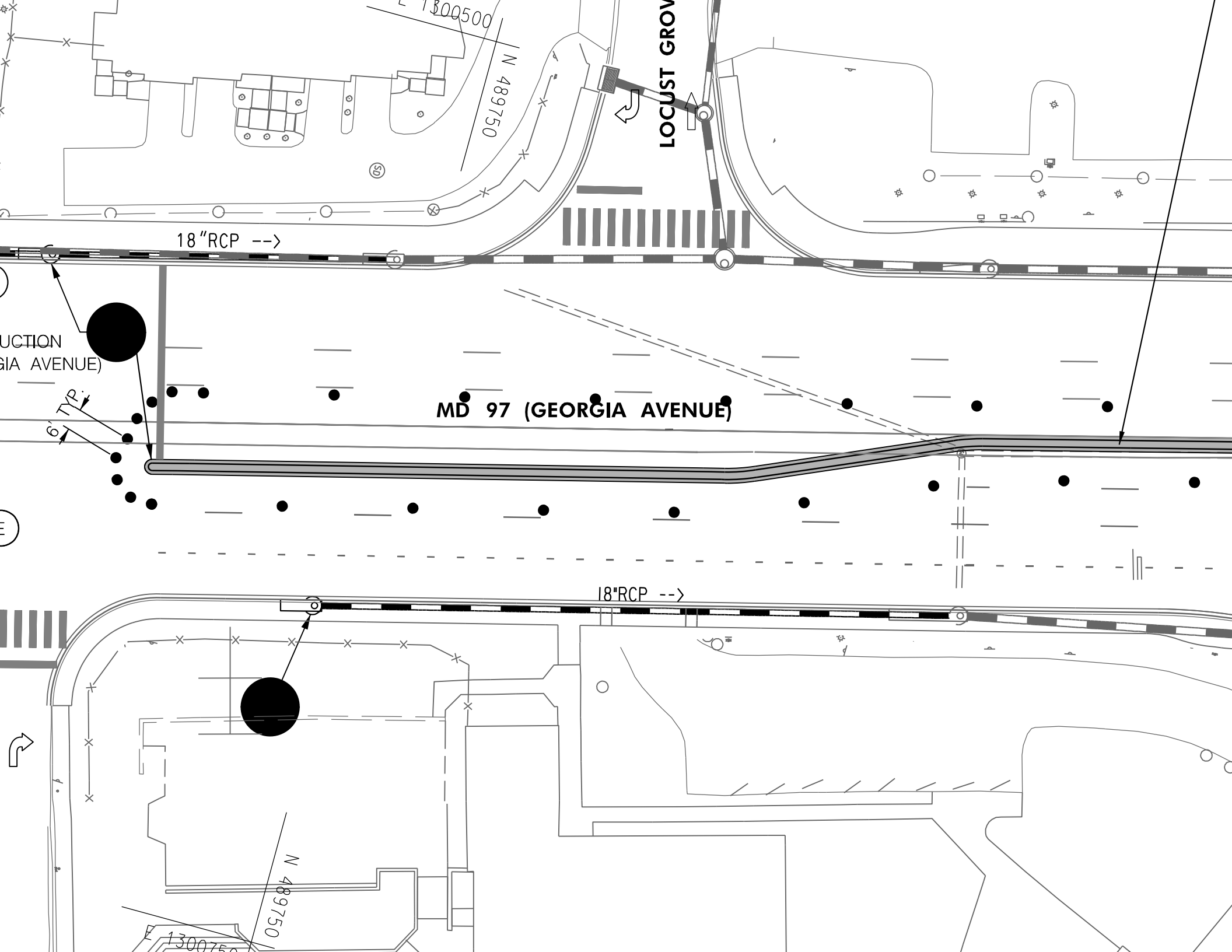

NUE)
145+00
+50
146+00
+50
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)

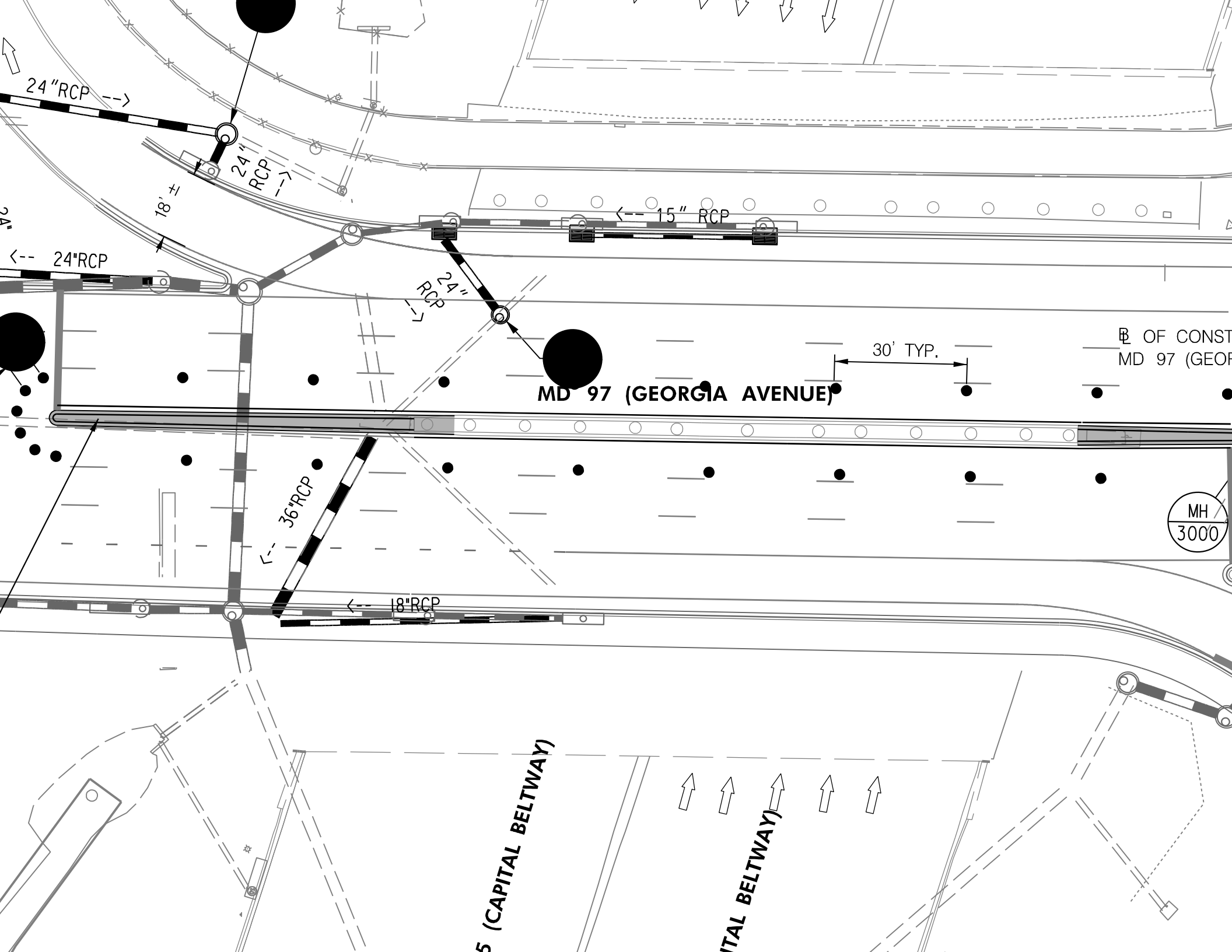

OFF RAMP FROM WB I-495
35' TYP.
ON RAMP TO

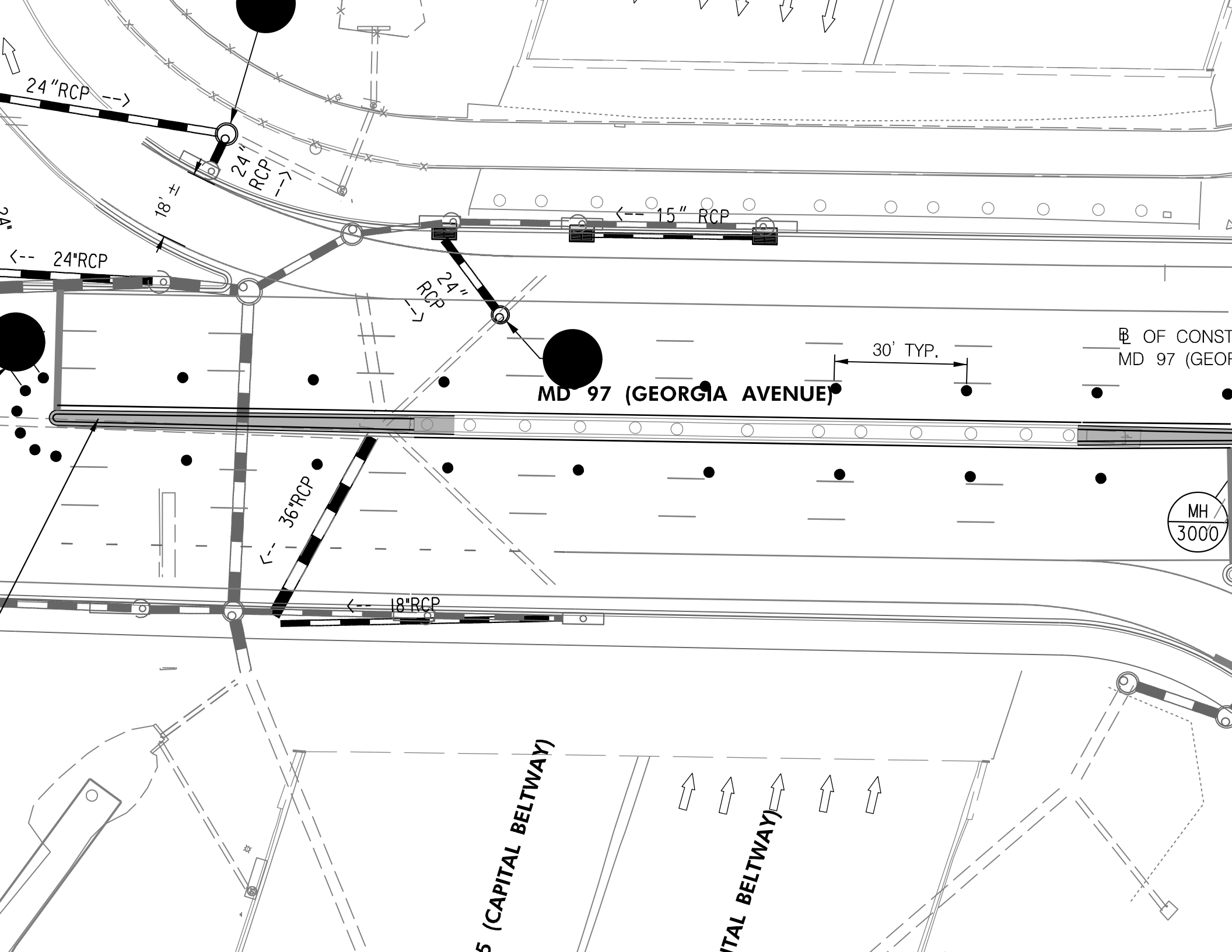

MD 97 (GEORGIA AVENUE)
N 487800
E 1301200
N 487800
E 1301400
℄ OF CONS
MD 97 (GEO

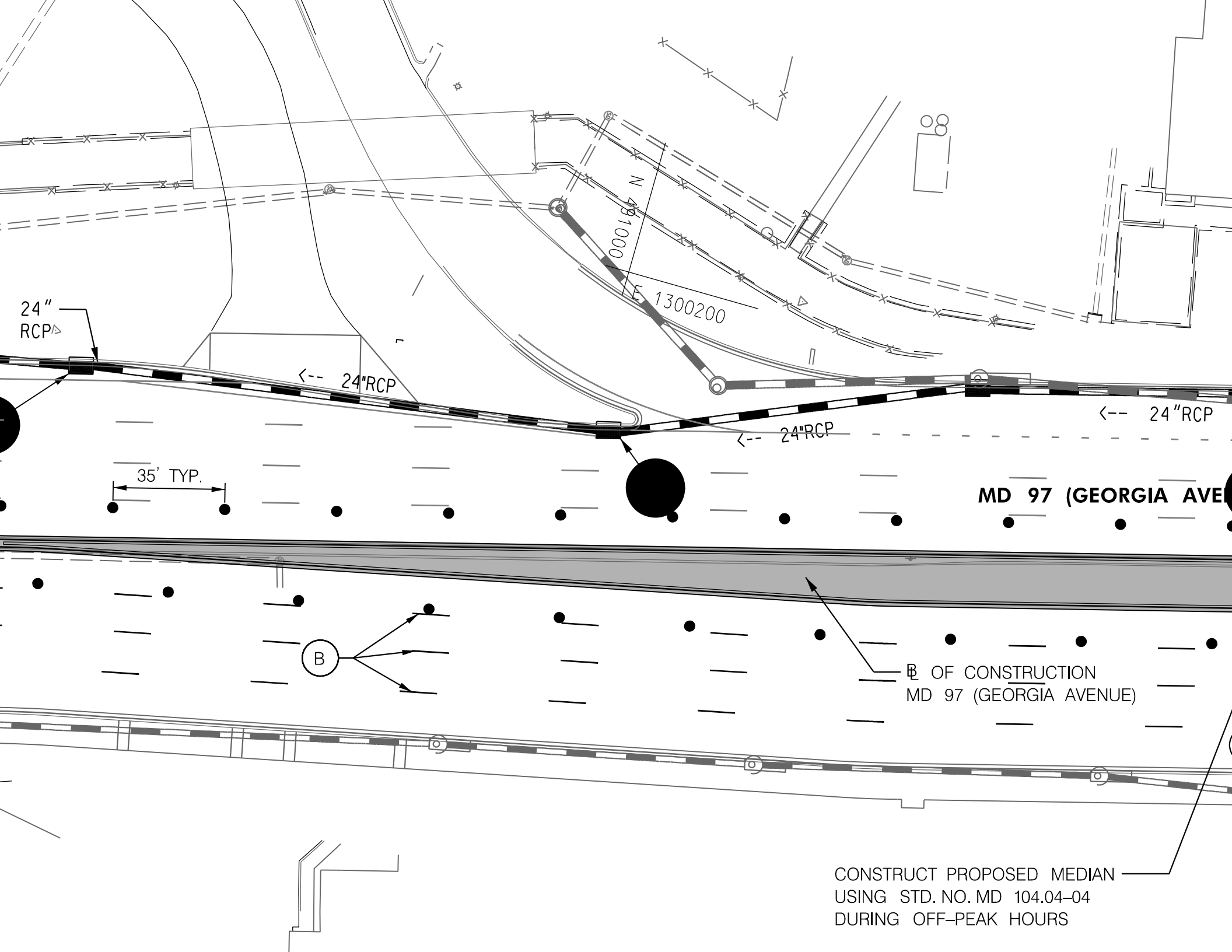

ONSTRUCTION
GEORGIA AVENUE)
MD 97 (GEORGIA AVENUE)
CORWIN DRIVE
CONSTRUCT PROPOSED MEDIAN
USING STD. O. MD 104.04-04
DURING OFF-PEAK HOURS


SEMINARY PL
CONSTRUCT PROPOSED
USING STD. NO. MD 104
DURING OFF–PEAK HO
MD 97 (GEORGIA AVENUE)
℄ OF CONSTRUCTION
MD 97 (GEORGIA AVENUE)
B
CONSTRUCT PROPOSED MEDIAN
USING STD. NO. MD 104.04–04
DURING OFF–PEAK HOURS


LOCUST GROV
E 1300500
N 489750
18"RCP -->
UCTION
GIA AVENUE)
TYP.
6'
MD 97 (GEORGIA AVENUE)
18"RCP -->
N 489750
E 1300750


24"RCP
24" RCP
18' ±
15" RCP
24"RCP
24" RCP
30' TYP.
MD 97 (GEORGIA AVENUE)
36"RCP
18"RCP
MH
3000
(CAPITAL BELTWAY)
(CAPITAL BELTWAY)


24"RCP
24" RCP
18' ±
15" RCP
24"RCP
24" RCP
30' TYP.
MD 97 (GEORGIA AVENUE)
36"RCP
18"RCP
MH
3000
(CAPITAL BELTWAY)
(CAPITAL BELTWAY)


24"
RCP
<-- 24"RCP
<-- 24"RCP
<-- 24"RCP
35' TYP.
N 491000
E 1300200
MD 97 (GEORGIA AVE
B
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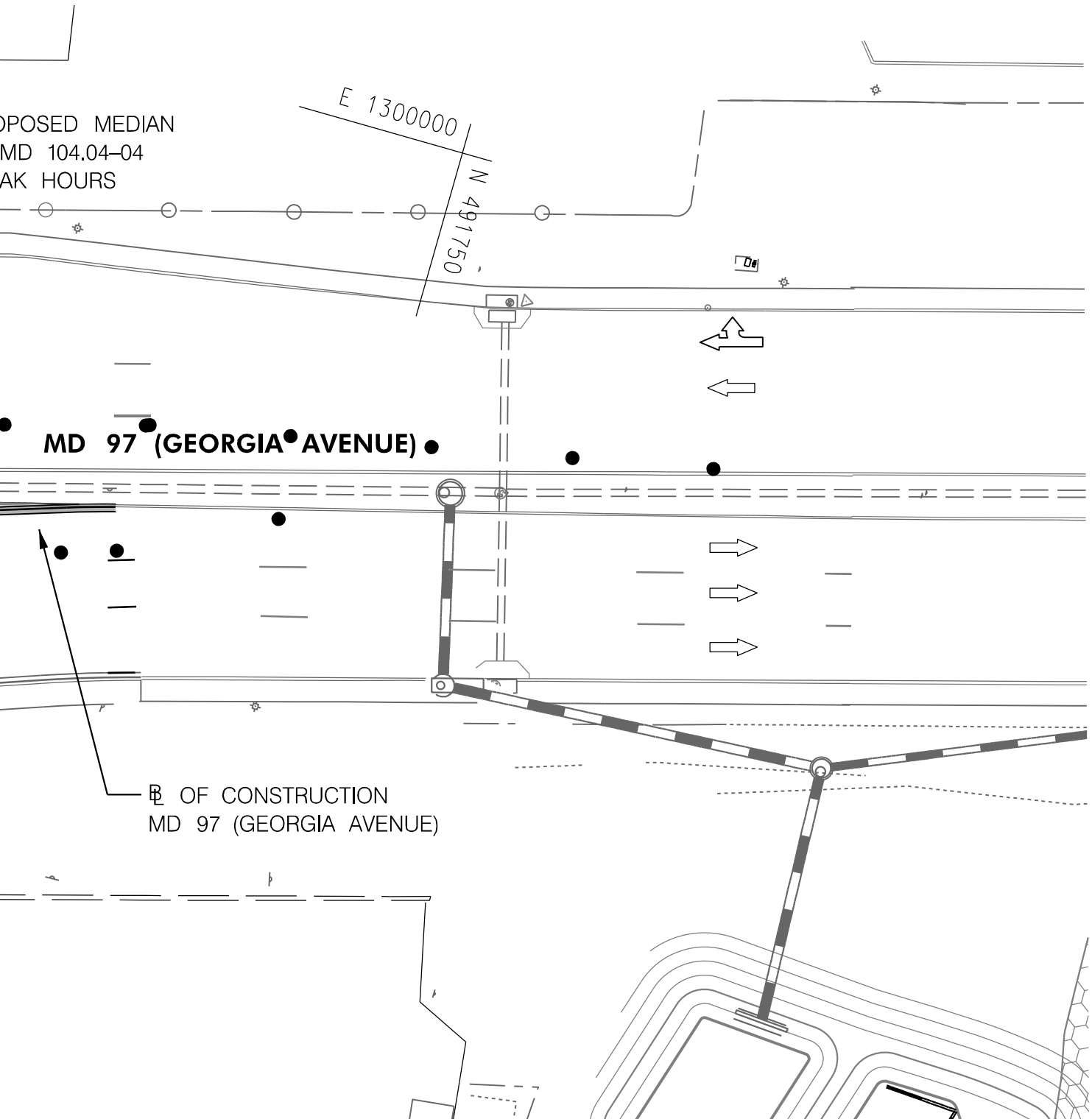
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MD 97 (GEORGIA AVENUE)

MD 97 (Montgomery Hills) Project Planning Study
Purpose & Need

I. Introduction

The Maryland State Highway Administration (SHA) and Montgomery County are conducting a study of potential improvements along Georgia Avenue (MD 97) in Montgomery Hills. The project area encompasses 0.7 mile of MD 97 from Forest Glen Road (MD 192) to 16th Street (MD 390), including an interchange with the Capital Beltway (I-495) (Attachment 1). MD 97 is a major north-south artery that serves commuters, heavy trucks, and local traffic. The study section of MD 97 generally consists of seven lanes: three northbound lanes, three southbound lanes, and a center reversible lane. During off-peak periods this center lane acts as a two-way left-turn lane. The I-495 interchange introduces short acceleration and deceleration lanes. The posted speed limit for this section is 35 miles per hour. The majority of drivers on the corridor are traveling to and from downtown Silver Spring and Washington, D.C., both of which are located south of the project limits. Within the study limits, MD 97 is lined with commercial and office settings and includes medium-density residential neighborhoods, such as Montgomery Hills, and several institutions (Attachment 2). Numerous access points to the businesses and secondary streets cause conflicting turning movements from the MD 97 center lane during off-peak periods.

The study is currently in the Project Planning phase. This document describes the existing conditions along the MD 97 corridor in Montgomery Hills and defines the purpose and need for the proposed project.

II. Project History

The MD 97 Montgomery Hills Project Planning Study is the result of recommendations documented in Maryland-National Capital Park and Planning Commission's (M-NCPPC) *North and West Silver Spring Master Plan,* which was adopted in 2000. The Montgomery Hills Proposed Concept, included in the Master Plan, envisions the future appearance of the corridor as "a landscaped urban boulevard with a center median and wide, unobstructed, tree-lined sidewalks." It also recommends the transformation of the MD 97 corridor into a "pedestrian-friendly urban boulevard with improved local circulation that supports both residents and merchants."

The MD 97 (Montgomery Hills) Project Planning Study, a joint project between SHA and Montgomery County, began in July 2011. Project activities to date include efforts to determine the scope of the proposed project, initial data collection and analysis, and the initiation of the purpose and need process.

III. Purpose

The purpose of the MD 97 Montgomery Hills Project is to establish a balanced approach to transportation within the MD 97 corridor that addresses existing vehicular, pedestrian, and bicycle mobility and safety concerns, while accommodating proposed transit enhancements and establishing a sense of place within the corridor. The mix of local and regional (commuter) traffic, along with current roadway and sidewalk conditions in the study area, create an automobile-dominated environment that is not always conducive to other modes of transportation. As a result, access to local businesses, pedestrian accessibility, bicycle connectivity, and transit utilization have all become major challenges within the project area.

IV. Need for the Project

A. Vehicular Mobility and Traffic

The current typical section along MD 97 between I-495 and MD 390 consists of three 11-foot travel lanes in each direction, an 11-foot center reversible lane, and adjacent sidewalks of varying widths. The reversible lane provides a fourth travel lane southbound in the morning and northbound in the evening during peak periods to accommodate commuters. Although the reversible lane provides additional traffic capacity in the peak direction, it also hinders local mobility and business access by restricting left turns during peak periods. During off-peak hours, the center lane operates as a two-way left-turn lane to accommodate vehicles accessing businesses and neighborhoods. Five intersections along MD 97 within the project area are signalized (from north to south): MD 192, I-495 interchange, Seminary Place, Columbia Boulevard, and northbound MD 390. Along portions of MD 97 north and south of the project area, a center median separates the directional travel lanes.

MD 97 carries more vehicular traffic than any other non-interstate road in Montgomery County due to the project area's close proximity to the I-495/MD 97 interchange, which is one of the busiest interchanges in the state. Heavy traffic generated by the I-495 interchange, coupled with limited merge areas, reduces mobility in the corridor and impedes both local and regional traffic. Vehicular volumes along the corridor and the operating capacity at major intersections are summarized below in tables 1 and 2.

Table 1 shows 2011 existing and 2040 projected No-build Annual Average Daily Traffic (AADT) volumes for MD 97 within the study limits.

Table 1: Annual Average Daily Traffic

MD 97 Segment	2011 Existing	2040 No-Build
North of MD 192	65,000	75,000
MD 192 to I-495	73,000	84,000
I-495 to Seminary Place	81,000	93,000
Seminary Place to Columbia Boulevard	71,000	82,000
Columbia Boulevard to SB MD 390	66,000	76,000
SB MD 390 to NB MD 390	51,000	59,000
South of MD 390	35,000	41,000

Planners often use a simple grading system, referred to as Level of Service (LOS), to characterize the operations at intersections. LOS A means there is no delay or congestion, while LOS F means the intersection is failing and motorists experience long delays and high levels of congestion.

Table 2 shows the existing (2011) and projected (2040) No-build Level of Service at the major intersections within the study area. Several intersections are currently experiencing failing conditions or will fail in 2040 under the no-build condition.

Table 2: ***LOS & Avg. Delay***	**2011 Existing**				**2040 No Build**			
	AM Peak Hour		**PM Peak Hour**		**AM Peak Hour**		**PM Peak Hour**	
	LOS	**Avg. Delay (sec)**	**LOS**	**Avg. Delay (sec)**	**LOS**	**Avg. Delay (sec)**	**LOS**	**Avg. Delay (sec)**
MD 192	F	87	E	64	F	113	F	107
I-495 WB Ramps	B	13	C	28	B	18	D	36
I-495 EB Ramps	E	66	C	24	F	112	C	28
Seminary Place	E	61	B	15	E	77	C	29
Seminary Road / Columbia Blvd.	D	38	C	34	E	58	D	49
MD 390 NB	C	24	C	28	C	26	C	32

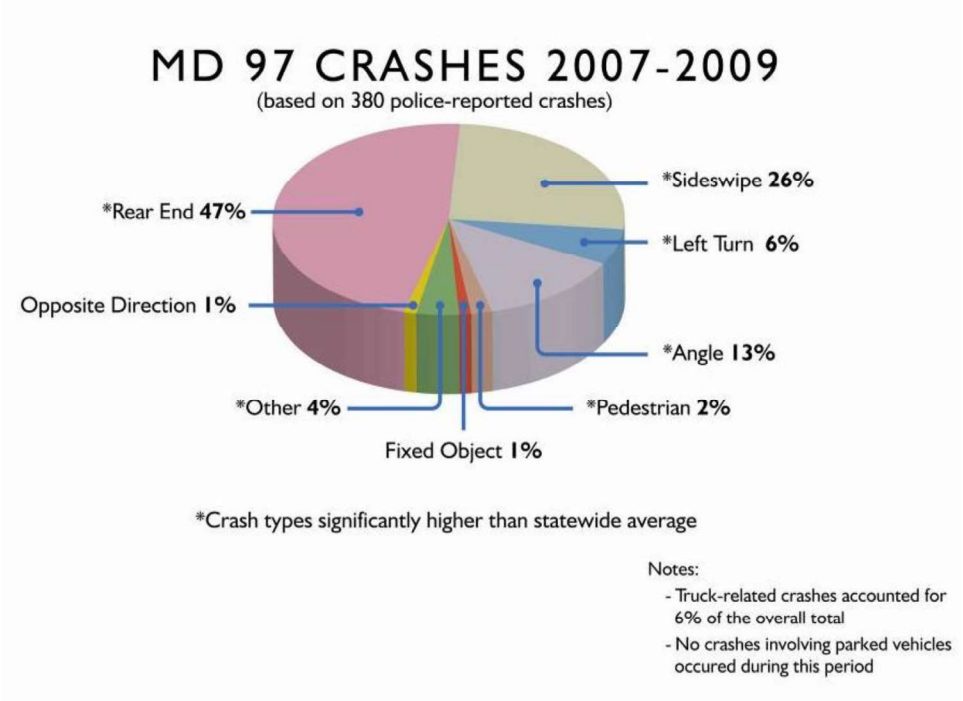
The LOS for each intersection is averaged over all approaches. Therefore, signalized intersections are generally timed to keep traffic moving along MD 97, the side street approaches typically operate at a lower LOS than the overall intersection.

Vehicular mobility in the area is hindered by a series of factors, including traffic volumes, the reversible center lane, numerous commercial access points, and turning restrictions. The most significant contributing factor along the corridor is the heavy volume of traffic, with over 80,000 vehicles traversing the roadway on a daily basis and over 90,000 forecasted through the year 2040. These high volumes impede access to commercial businesses and residential neighborhoods along the corridor and have economic and quality-of-life implications. As traffic volumes increase and intersection LOS deteriorates, these traffic-volume issues will worsen.

B. Safety

Data indicates that 380 police-reported crashes occurred during the three-year period from 2007 through 2009. Approximately 150 of those crashes (40 percent) resulted in injuries, but there were no documented fatalities. Rear-end, sideswipe, left-turn, angle, pedestrian, and truck-related crashes each occurred at a rate significantly higher than the statewide average for those types of crashes on similar roadways. **Figure 1** illustrates the distribution of crashes.

Heavy traffic volumes have the greatest impact on safety along the study corridor, as reflected in the high occurrence of sideswipe and rear-end collisions. Heavy traffic volumes decrease the following distance between vehicles, lessening driver reaction time and resulting in rear-end collisions, which account for almost half of all collisions along the corridor.



The safety of pedestrians, bicyclists, and motorists along the Montgomery Hills corridor is also adversely impacted by a large number of commercial access points and limited access consolidation in both directions. Almost half of all reported crashes resulted from angle and rear end collisions, which are commonly related to turning-movement conflicts and highly congested roadways. More than 25 percent of the crashes involved vehicle sideswipes, which are typically associated with a high volume of merging vehicles and lane changes.

During off-peak periods, the two-way center left-turn lane encourages unmanaged circulation patterns and increases safety concerns, as evidenced by the high proportion of sideswipe, left-turn, and angle crashes which account for just under half of all crashes along the corridor. These types of crashes typically reflect unsafe lane-change and turning-movement conditions. Because the center turn lane allows uncontrolled turning movements, motorists are unable to accurately anticipate when they may have to contend with turning vehicles. Motorists using the two-way center travel lane must make assumptions about the intentions of drivers of oncoming vehicles and determine whether those drivers are turning or continuing on their current paths.

C. Pedestrian and Bicycle Access

Due to the high volume of traffic along MD 97 and the roadway's proximity to a heavily traveled section of I-495, the roadway elements within Montgomery Hills have often supported motorized vehicular movements and capacity, sometimes to the detriment of pedestrian and bicycle mobility throughout the corridor. For approximately the last decade, a growing need for improved pedestrian and bicycle connectivity within the study area has resulted in part from (1) the extensive residential network of communities east and west of MD 97, (2) the presence of the Forest Glen Metro station, and (3) the number of key commercial destinations within the corridor. **Table 3** represents a pedestrian intersection study conducted in 2011 between the hours of 6:00 AM and 5:00 PM.

Table 3: Pedestrian Counts

Montgomery Hills Intersection Pedestrian Counts (2011)		
Pedestrian Counts along MD 97 @	MD 192	1263
	I-495 WB Ramps	89
	I-495 EB Ramps	6
	Seminary Place	418
	Seminary Road / Columbia Blvd.	548
	MD 390 NB	23

Sidewalks along this corridor are generally non-compliant with Americans with Disabilities Act (ADA) standards. Signs and utility poles on sidewalks in both directions along MD 97 present numerous obstacles and pinch points for wheelchair accessibility. Most of the ADA ramps do not meet current state or federal standards, and the pedestrian crossing phases at some signalized intersections are short. These limited crossing times, combined with an existing roadway configuration and few refuge areas, has made crossing MD 97 very difficult for pedestrians.

Sidewalks are typically located directly behind the curb, with little or no buffer separating the sidewalk from travel lanes. This situation requires pedestrians and bicyclists to travel directly adjacent to vehicular traffic, which presents safety concerns and may unnerve users.

The Forest Glen Metro Station at the northern project limit generates pedestrian traffic throughout the corridor. To accommodate this traffic, Montgomery County constructed a pedestrian overpass (over I-495) parallel to MD 97 along the west side of the roadway. No similar accommodations for pedestrians exist on the east side of the roadway, which has a greater number of interchange ramps for pedestrians to contend with and which ultimately leads to a higher number of potential conflicts and safety concerns.

Approximately half of the study area (0.35 mile of the 0.7 mile study area) lacks delineated crossing areas for pedestrians along MD 97, even though several side streets and businesses exist within the study area. Pedestrians traveling northbound on the east side of MD 97 are left with two unenviable choices: backtrack to a safe crossing in the opposite direction, or cross the numerous I-495 interchange ramps that provide inadequate sight distance for vehicles and pedestrians.

Another concern exists on the west side of MD 97, when pedestrians travel southbound to cross MD 390. The crosswalk extends over two lanes of traffic: the right lane (a dedicated right-turn lane), and the middle lane (a right/through lane). When crossing MD 390 at this location, pedestrians have their backs to oncoming traffic and must rely on motorists in the middle lane to signal if they are turning right onto MD 390.

The lack of dedicated bicycle lanes and road-sharing signage or markings has made it difficult for bicyclists to travel through the area. Safety concerns resulting from heavy traffic volumes and the lack of shoulders generally cause bicyclists to avoid the area.

The overall effect on persons walking or biking through the project study area is disorienting and unsettling. Individuals are forced to check constantly for approaching traffic, drivers exiting the access points, and drivers turning from the uncontrolled center turn lane during off-peak periods. This situation, coupled with other deterring factors (such as the lack of a buffer between the travel lanes and the sidewalk), negatively impacts the perception of Montgomery Hills as a walkable, bicycle-friendly community.

D. Transit Accessibility

Transit services on or directly adjacent to MD 97 include the Metro Ride On bus lines, and Washington Metropolitan Area Transit Authority (WMATA) Metrobus lines. The Forest Glen Metro Station at the northern project limit provides local and regional access to Maryland, Virginia, and Washington, D.C. The WMATA bus system primarily provides local access but also provides connections to outlying regions. The Ride On bus system provides local access including routes directly serving neighborhoods.

Transit accessibility within the study corridor is impeded by the high levels of traffic congestion along MD 97 and the lack of adequate pedestrian/bicyclist connectivity throughout the study area. The absence of dedicated bus lanes, queue-jump opportunities, and transit signal prioritization forces buses to operate in mixed traffic, subjects them to the same hindrances encountered by other modes of travel, and results in uncertain transit reliability and headways within the corridor. These conditions negatively affect the timeliness of bus service and may deter some persons from using transit.

Problems with transit accessibility along the corridor have been further exacerbated by certain pedestrian and bicycle access concerns highlighted in Section D. Individuals unable to access a transit connection safely and easily are likely to avoid the connection, use a more accessible location, or drive. For example, there is a pedestrian overpass along the west side of MD 97, which provides good access to the Forest Glen Metro Station. However, the lack of direct ADA access to the transit station, peak-period restrictions on left turns from MD 97 onto Forest Glen Road, and abbreviated signal times for pedestrians crossing MD 97, makes commuter access to the station difficult, especially during peak periods.

E. Establishing a Sense of Place

The project seeks to maintain the character of the community and establish of sense of place along the project corridor. Existing conditions create a disorienting environment for motorists, especially for those exiting and entering I-495. In particular, the reversible center turn lane is a source of apprehension for motorists unfamiliar with the corridor due to cluttered signage and unclear lane markings. Furthermore, deteriorating and insufficient pedestrian and bicycle facilities need to be improved to support the overall enhancement of the corridor envisioned in the *North and West Silver Spring Master Plan*. The use of aesthetic enhancements and upgraded facilities to establish a transportation system that is homogeneous in its appearance throughout the corridor will help to define the character of the community and distinguish it from the

neighboring communities. As a secondary goal, clearly delineated and consolidated access points to businesses, along with the promotion of aesthetics, would also be a key component in increasing the attractiveness of businesses and the corridor as a whole. All of these elements evaluated in consort will not only help to beautify the corridor, but will provide the infrastructure needed to help foster business revitalization, neighborhood cohesion and multimodal connectivity throughout Montgomery Hills.

F. Roadway Deficiencies

The MD 97 Montgomery Hills Corridor plays a major role in Montgomery County's overall transportation network and has for decades been viewed as a vital north-south link and a key connection to the Capital Beltway. As a result, the Montgomery Hills portion of MD 97 carries extremely high volumes of passenger vehicles and trucks, which has resulted in a significant amount of wear and tear on the existing infrastructure. Pavement fatigue is common along the study area corridor with hair line surface cracks, pot holes and larger roadway pavement cracks which are often indicative of a compromised sub grade material. Intersection crosswalk markings are faded in many areas and multiple resurfacing projects have resulted in a reduction in curb reveals at various locations.

MD 97 maintains a fairly consistent 11 foot lane roadway width, but some of MD 97's adjoining side streets have lanes as small as 9 feet in some locations. Deteriorating pavement, faded roadway markings and small lane widths coupled with the high volume of vehicles traveling throughout the study area could potentially result in higher safety concerns and property damage if not properly addressed.

V. Public Outreach

An Informational Public Workshop was held on March 13, 2012 at Woodlin Elementary School where comments were received from citizens on the Purpose and Need for the project. Display boards were used to highlight project purpose, history and timeline, safety and crash data, maps, project needs, and related studies. There were interactive stations for people to write on maps and identify project needs/areas of concern. Comment cards were also provided. More than 90 people attended the meeting.

A majority of the attendees supported some type of improvement along the corridor and seemed encouraged that things were moving forward. The two top concerns identified during the interactive exercises were safety and pedestrian access, but establishing a sense of place received a significant number of votes as well.

VI. Environmental Summary

Land use within the project's defined study area is characterized by dense commercial and institutional settings along MD 97, with medium-density residential use (single-family homes and townhouses) located directly behind the commercial areas. The project area is predominantly urban, comprising community and business-related resources that account for a majority of the environment. Future land use within the study area is expected to remain very similar to the existing land use; with commercial land uses immediately adjacent to MD 97 and predominantly residential land uses in behind the commercial areas.

The local master plan for the study area is the *North and West Silver Spring Master Plan*, which was adopted by the Maryland-National Capital Park and Planning Commission (M-NCPPC) in 2000. The Montgomery Hills Proposed Concept, which is included in the plan, envisions the future appearance of the corridor as "a landscaped urban boulevard with a center median and wide, unobstructed, tree-lined sidewalks." It also recommends the transformation of the MD 97 corridor into a "pedestrian-friendly urban boulevard with improved local circulation that supports both residents and merchants."

The MD 97 Montgomery Hills study area is located entirely within a designated Priority Funding Area (PFA). Therefore, the project is consistent with Maryland's Smart Growth Legislation.

Numerous businesses are located immediately along MD 97 between Locust Grove Road and MD 390 (16th Street). These businesses include free-standing retail stores and several strip shopping centers. Major businesses in the area include Staples, CVS, Sniders Superfoods Market, several gas stations, and the Montgomery Hills Car Wash. A number of businesses, including the gas stations and carwash, are situated immediately adjacent to MD 97. Most of the businesses within the strip shopping centers, with the exception of those within the Montgomery Hills Shopping Center, are set back from the roadway.

Residential neighborhoods within the study area vary in size and housing types, with most composed of moderate-sized single-family homes. Although most of these neighborhoods are located behind the commercial and institutional development immediately along MD 97, one notable exception is a small community of single-family homes and townhomes located west of MD 97, just south of I-495. The townhomes located in the eastern portion of this neighborhood are situated adjacent to MD 97, with no commercial/institutional buffer between them and MD 97. One apartment complex is located in the northwest quadrant of the MD 97/MD 192 intersection at the northern end of the study area.

A preliminary review of census data reveals that there is the potential for minority and low-income populations to exist within the study area for the project. Further outreach and additional research of the demographic and economic characteristics of the study area will be completed as the study progresses and will determine if minority and/or low-income populations are present and how they may be affected by the project.

A number of community facilities are also located within the study area, including three large churches: Montgomery Hills Baptist Church, Calvary Evangelical Lutheran Church (which also hosts the Christ Lutheran Church of the Deaf), and Grace Episcopal Church. Montgomery Hills Baptist Church, Calvary Evangelical Lutheran Church, and Christ Lutheran Church of the Deaf are located in the northeastern portion of the study area. Grace Episcopal Church is located in the southeastern portion. Montgomery Hills Park is a small neighborhood park located along Seminary Road and Seminary Place several hundred feet west of MD 97. A water tower is located just east of Montgomery Hills Park along Seminary Place and a county-owned public parking lot is located on the east side of MD 97 just north of Columbia Boulevard. Silver Spring Volunteer Fire Department Station 19 is located just west of MD 97 at 1945 Seminary Road.

The Forest Glen Metro Station, a community/transit facility, is located in the southwestern quadrant of the MD 97/MD 192 intersection. The Park-and-Ride lot for the Metro station is located just west of the station on the north side of MD 192. An existing pedestrian tunnel connects the park-and-ride to the station.

A preliminary review of the project area was conducted to assess its potential to contain archeological resources. The project area is located in a highly developed urban region and has been impacted by road construction and development. This area was included in two previous archeological investigations; however, no archeological sites were recorded. The soils in the survey area, which are identified as urban land and urban land complexes, are unlikely to contain archeological remains. This preliminary review concluded that the survey area has very low potential for the occurrence of archeological sites.

A preliminary investigation was also conducted to determine if the project area contains standing structures or districts that are listed, eligible, or potentially eligible for inclusion in the National Register of Historic Places (NRHP). There are no properties in the study area that are currently listed in the NRHP. Seven previously identified standing structures or districts were noted within the study area. These include the following: Woodside Historic District (M:36-04); Woodside Park (M:36-18); Montgomery Hills Shopping Center (M:36-23); Louis C. and Charlotte E. Dismer Property (M:36-36); Calvary Evangelical Lutheran Church (M:36-37); Forest Grove Neighborhood (M:36-38); and Woodside Knolls/Carroll Springs (M:36-40). Of these, only the Woodside Historic District has previously been determined eligible for listing in the NRHP. Woodside Knolls/Carroll Springs has previously been determined not eligible for the NRHP and the remaining five properties require a Determination of Eligibility. In addition to the previously identified standing structures and districts, other previously unidentified commercial buildings were noted within the study area and will require additional evaluation.

Coordination with U.S. Fish and Wildlife Service (USFWS) and the Maryland Department of Natural Resources Wildlife and Heritage Service (DNR WHS) has been undertaken to identify any rare, threatened, or endangered species within the study area. The USFWS and DNR WHS indicated that no federal or state rare, threatened or endangered species are known to exist within the project area.

A preliminary investigation revealed that there are no streams, wetlands, or forests within the study area for this project. In addition, the study area is located entirely outside of any 100-year floodplains. There are no green infrastructure hubs or corridors located within the project area. The nearest green infrastructure corridor, Sligo Creek Park, is located approximately 0.5 mile to the east.

Due to anticipated increases in traffic volumes within the project area, increased traffic noise and increased discharge of carbon monoxide (CO) into the air are anticipated. Detailed traffic noise and air quality analyses will be completed once the project alternatives are developed.

There are four gas stations and three dry cleaners located within the study area. These facilities will be studied for potentially generating, handling, and/or storing hazardous materials.

VII. Related Studies

Montgomery County Bus Rapid Transit (BRT) Study

In July 2011, Montgomery County DOT released its Countywide Bus Rapid Transit Feasibility Study, which outlines a 150-mile BRT network of 16 routes throughout the county. Recommended improvements for various segments include dedicated bus lanes, traffic signal prioritization, bus queue jumps, and premium upgraded bus stations.

Although the initial feasibility study does not propose a dedicated bus lane along MD 97 through the Montgomery Hills Study limits, it recommends such amenities north and south of the corridor. For this project, the feasibility study recommends upgraded BRT stations at MD 192, Columbia Boulevard, and MD 390 and proposes transit signal prioritization at applicable intersections.

For a copy of the report go to:
http://www.montgomerycountymd.gov/content/dot/ mcbrtstudyfinalreport110728.pdf

Forest Glen Passageway Feasibility Study

To improve pedestrian access to the Forest Glen Metro Station, Montgomery County DOT is currently evaluating a number of options to address safety concerns, especially concerns related to crossing MD 97 at grade and overall ADA accessibility. Alternatives under consideration include pedestrian/bicyclist bridge alternatives across MD 97 at MD 192, and pedestrian/bicyclist tunnel alternatives under the MD 97 at MD 192 intersection. The county anticipates holding a workshop to present the alternatives to the public in Winter/Spring 2012.

Montgomery County's Seminary Road Project

Montgomery County DOT is conducting a separate project on Seminary Road at Seminary Place/Second Avenue, just west of MD 97. The project involves reducing the number of intersections from six to four and making a number of roadway improvements, including lane reductions, signage modifications, and additional bicycle and parking accommodations. The project is currently on hold pending funding decisions.

Georgia Avenue Study

The Montgomery County Planning Department completed the Georgia Avenue Study in 2008. This study is an urban design analysis of the Georgia Avenue Corridor throughout Montgomery County and contains a design vision for the corridor that is intended to guide future master and sector plans as well as infrastructure improvements. The recommendations within the Georgia Avenue Study will be considered when developing alternatives to address the needs identified for the MD 97 Montgomery Hills Project Planning Study.