

WSSC CONTRACT NO. BRCRLR5355D12

Responses to DEP- MCO Questions

Backyard Sewer Alignment Option

TAKOMA PARK PHASE 2 WATER AND SEWER MAIN
REHABILITATION – EASTERN AVENUE FROM WALNUT
AVENUE TO JUST SOUTH OF 1st AVENUE

PREPARED BY: THE WILSON T. BALLARD COMPANY
3-2-2018

Introduction

The Takoma Park Water and Sewer Main Replacement Phase II project involves replacing aging water and sewer facilities that are located in the back yards of properties along Eastern Avenue in Takoma Park, Montgomery County, Maryland. The Montgomery County Department of Environmental Protection requested that WSSC provide information regarding the proposed sewer main construction. The following report reflects the use of the horizontal directional drill (HDD) method of construction for installation of a new backyard gravity sewer main to replace the existing backyard gravity sewer main. The existing backyard water main is planned to be replaced with a new water main in Eastern Avenue. The water main construction is not included in this report.

As preparation for this report, a 30% design of the sewer main installation utilizing the HDD method was developed (*Refer Appendix A - Design Drawings*). The 30% design is supported by topographical survey of the project site, geotechnical investigations, existing utility location and investigations, site visits, property research, and a study of the existing hydrology.

Category and Impact Evaluation

(Requested by the Department of Environmental Protection, Montgomery County)

A. Disturbance Area

Approximately 0.52 Acres (22,867 SF) of ground surface area disturbance will occur. The disturbance area will be contained within the temporary and permanent construction easement limits.

The construction activities that result in ground disturbances include but may not be limited to:

- Construction access as described in C., below.
- Horizontal directional drill (HDD) staging areas located at both ends of the segment of pipeline to be installed via HDD. The drill entry staging area is comprised of an area approximately 20' x 40'. This staging area generally includes the workspace, drill rig, generator (power source), drilling mud storage containers, water tanks, mud pit, mud recycler, etc. The drill exit is a smaller staging area, approximately 10' x 20', which contains a mud pit, workspace for changing tools (drill heads), excavator for lifting, etc.
- Manhole installations will include a 20' x 20' workspace with an open excavation approximately 10' x 10' to a depth that varies from 12' to 25'. The workspace will allow for the contractor to store the manhole segments, excavate, stockpile spoils (excavated materials), and provide a safe work area.
- Sewer service (lateral) connections will include a 10' wide workspace varying in length from the new sewer main to the proposed cleanout location at the permanent easement boundary. This workspace will allow the contractor to excavate a trench for new lateral and cleanout installation, stockpile spoils, and provide a safe work area. The depth of the excavation at these locations will vary based upon the depth of the new sanitary sewer.
- Open-cut pipeline installation will occur at each end of the HDD installations to allow the new pipe to level out and connect to the new manholes. The open-cut pipeline activities will require workspace for the contractor to excavate the trench, stockpile spoils, stage materials, and provide a safe work area.

B. Excavation area, size and depth

Approximately 2,000 square feet of surface area will to be excavated for various purposes as described below:

- Manhole Installation – Estimated 10' x 10' (depths vary for each manhole and range from 12' to 25'). A manhole is a concrete junction structure used to connect two pieces of sewer main pipe. The manhole is approximately 5 feet in diameter and located below the ground with a round 24" or 30" diameter metal cover at ground level for access.
 - Manhole 1 – 48" diameter manhole with a 24" diameter cover at ground level, located in the 1st Avenue paper street. Approximately 13' excavation depth.
 - Manhole 2 – 60" diameter manhole with a 30" diameter cover at ground level, located in the backyard of 6729 Eastern Avenue. Approximately 25' excavation depth.
 - Manhole 3 – 48" diameter manhole with a 24" diameter cover at ground level, located in the backyard of 6757 Eastern Avenue. Approximately 14' excavation depth.
 - Manhole 4 – 48" diameter manhole with a 24" diameter cover at ground level, located in the backyard of 6621 Eastern Avenue. Approximately 12' excavation depth.
 - Manhole 5 – 48" diameter manhole with a 24" diameter cover at ground level, located in the backyard of 6621 Eastern Avenue. Approximately 12' excavation depth.
- Lateral Connections – Estimated 3' x 12'+/- (depth varies for each lateral from 5' to 20'). A lateral connection is an underground sewer service pipe from a home or building to a sewer main. Lateral connections are typically 4" to 6" in diameter. There will be one lateral connection at each property. Excavation will occur from the new sewer main to approximately the edge of the easement.
- Manhole Interconnections – Estimated 5' x 30' (depth varies for each location from 5' to 20'). Manhole interconnections are the locations where the sewer main pipe connects to the manhole.
- HDD Pipe String Side – Estimated 5' x 120'± in order to pull the proposed piping through the HDD sections without over stressing the pipe material (depth varies from 0' to 10' – train is tapered at a 16-degree angle) (*Refer Appendix B, Picture 2*). This is a ramp cut into the ground that allows the new pipe to be slid down to the horizontal hole drilled by the HDD rig.

The contractor will be required to clear and grub some areas of the jobsite, this will clear the ground of debris and may result in 6"-12" of excavation:

- HDD Rig Placement – Estimated 20' x 40' area to level ground for rig placement. The HDD Rig is the piece of equipment used for trenchless installation of sewer main pipe (*Refer Appendix B, Picture 1*). A fairly level area is needed to safely operate this equipment and as the area proposed to operate this equipment is already somewhat level, minimal leveling will be needed (*Refer Appendix A, Sheets 12-17*).

C. Construction access points

Access to the proposed sewer installation work area will be from the public right of way on 1st Avenue in either direction and from proposed temporary construction easements located at 6745/6741 Eastern Avenue and 6617 Eastern Avenue as indicated by the attached design drawings (*Refer Appendix A, Sheet 12 of design drawing*). The feasible access points will be 10 feet wide and provide clear access to the WSSC permanent and temporary easements. The access points will be matted (6-inch thick timber mats) to minimize surface disturbance. Upon removal of the mats the ground surface will be restored to preconstruction condition (*Refer Appendix B, Picture 3 for timber mats*).

D. Construction equipment

It is anticipated that the sewer main installation will utilize the following (or equivalent) equipment at a minimum:

- Excavator - CAT 316 or similar (for lateral connections, MH Installation and Interconnections) - *Refer Appendix B, Picture 4.*
- Excavator - CAT 305 or similar (for light grading, site prep) - *Refer Appendix B, Picture 5.*
- Skidsteer Tracked Loader (for light grading, site prep) - *Refer Appendix B, Picture 6.*
- Dump Truck
- Utility Truck (pickup, flat bed, and/or box truck for delivering supplies)
- HDD Rig – Ditch Witch JT10 - *Refer Appendix B, Picture 7.*
- Trench Compactor/Roller - *Refer Appendix B, Picture 8.*
- Timber Rig Mats - *Refer Appendix B, Picture 3.*

The contractor may select different model equipment based on the availability at the time of construction so long as sound level is no louder than 104dB.

E. Temporary access paths/Roads

Proposed temporary access paths are indicated on the 30% drawings (*Refer Appendix A*). Access paths are needed to allow equipment, workers, and supplies to safely reach the excavation areas described in B., above. The access paths will be matted (6-inch thick timber mats) to minimize surface disturbance. Upon removal of the mats the ground surface will be restored to preconstruction condition (*Refer Appendix B, Picture 3 for timber mats*).

F. Spoil sites

Minimal spoils are expected as a result of this project. All temporary spoils will be contained within the permanent and temporary easements, will be on the uphill side of the trench, and will be properly fenced with temporary erosion control measures. Excess materials at the completion of the project will be hauled off and disposed of properly by the contractor. Hauling of materials may be on-going throughout the duration of the project. All spoil piles will have necessary erosion control devices to prevent material migration and pollution. A typical top soil and soil stockpile detail and photo have been provided in *Appendix B. See Picture 9.*

G. Silt and Sediment Control

Sediment control measures will be installed within the project area. Anticipated sediment control measures include silt fencing (*Refer Appendix B, Picture 10*), super silt fencing (*Refer Appendix B, Picture 11*) and stabilized construction entrance(s) (*Refer Appendix B, Picture 12*). Sediment control plans and details will be included with the plan set for issuance of a sediment control permit.

H. Tree Loss/Protection

The following five tree removals are identified on the 30% design plans (*Refer Appendix A*) for the sewer main installation utilizing the HDD construction method:

- *Plan Sheet 16, 6701 Eastern Avenue, 16" Elm*
- *Plan Sheet 17, 6633 Eastern Avenue, 28" White Oak*
- *Plan Sheet 17, 6625 Eastern Avenue, 12" Norway Maple*
- *Plan Sheet 17, 6621 Eastern Avenue, 20"/12" Twin Stem Mulberry*
- *Plan Sheet 17, 6621 Eastern Avenue, 12" Mulberry*

Trees located within the permanent and temporary easements that are not identified for removal on the final plans will remain and will be protected throughout the duration of construction per the requirements below.

Tree protection (*Refer Appendix B, Picture 13*) will be a requirement of the construction contract. Tree protection fencing will be installed and maintained throughout the duration of construction. Open excavation, which will remove tree roots, will be located, as possible, in areas where it will cause the least disturbance to trees.

I. Construction Mitigation

WSSC will work with The City of Takoma Park which may require the planting of trees to mitigate for trees which will be removed. Ground Protection (matting), erosion control (silt fence), tree protection (fencing), and final restoration will all lessen construction impacts.

J. Rehabilitation Plan

i. Vegetation

After the completion of construction, easements (both temporary and permanent) will be restored back to original or better condition, with grass established in the areas which receive enough sunlight to support growth. Tilling, top soil, and fertilizers will be utilized to help establish the new grass.

ii. Improvements

Removal and replacement of sheds, retaining walls, fences, etc. will be agreed upon by WSSC and the property owner through the ongoing easement agreement process.

Fences located at the following addresses will need to be temporarily removed during construction and reset after construction is complete:

- 6761 Eastern Avenue
- 6737 Eastern Avenue
- 6729 Eastern Avenue
- 6725 Eastern Avenue
- 6713 Eastern Avenue
- 6705 Eastern Avenue
- 6635 Eastern Avenue
- 6633 Eastern Avenue
- 6631 Eastern Avenue
- 6625 Eastern Avenue

iii. Soil compaction

Soil compaction will be mitigated through the use of:

- Timber rig mats on access paths (*Refer Appendix B, Picture 3*).
- Low ground pressure equipment (e.g. tracks or wide tires on off road equipment).
- Placement and tillage of top soil following the completion of the work to ensure the site is restored to equal or better condition and suitable for grass turf establishment, where possible.

K. Riparian/wetland areas

Riparian or wetland areas are not located within the project area.

Summary

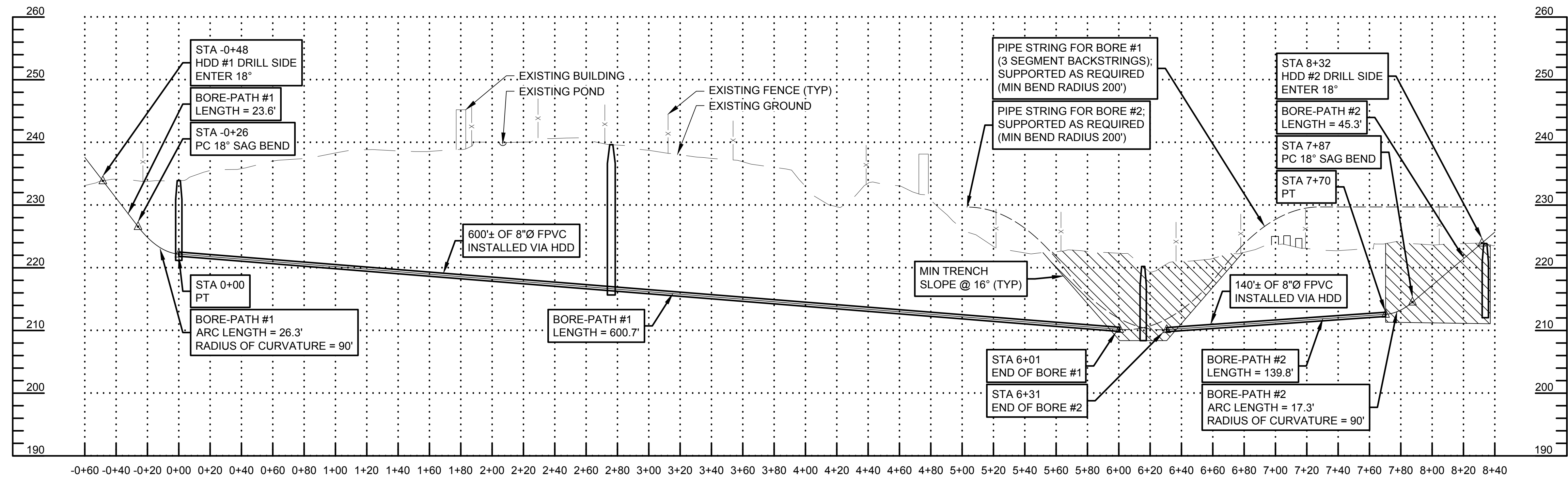
As is this case with any construction project, there will be impacts to the community and environment. The horizontal directional drill (HDD) method of construction does not eliminate impacts; however, as discussed in this report and shown on the drawings in Appendix A, it minimizes impacts to the extent possible for construction.

APPENDIX A

Design Drawings



PLAN
SCALE: 1"=40'
SEE PLAN AND PROFILE
DETAILS ON SHEETS 13-17



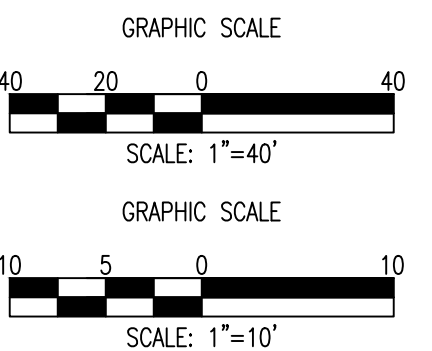
PROFILE OF HDD INSTALLATION

SCALE: 1"=40" HORZ.
1"=10" VERT.

LIMITS OF OPEN EXCAVATION

NOTES:

- CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING FENCES, GARDEN BEDS, STRUCTURES, ETC.
- CONTRACTOR SHALL REMOVE AND REPLACE IN KIND AS REQUIRED AS A LAST OPTION.
- CONTRACTOR SHALL FIELD LOCATE ALL EXISTING SHC PRIOR TO CONSTRUCTION. THE PROPOSED BORE-PATH SHALL BE A MINIMUM OF 5' BELOW THE EXISTING INVERT OF THE SHC.



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PIPELINE DESIGN DIVISION

DATE DIVISION MANAGER

WATER INFRASTRUCTURE SECTION

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SERVICE AREA 495A

HHG = 500'

LHG = 410'

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PHONE: (410) 363-0150
CONTACT: JEFF ZIEGENFUSS

WATER AND SEWER MAIN REPLACEMENTS/RELOCATIONS

TAKOMA PARK, MONTGOMERY COUNTY, MARYLAND

SLIGO CREEK MINI DRAINAGE BASIN NO. 11

WHEATON ELECTION DISTRICT NO. 13

TAKOMA PARK, MONTGOMERY COUNTY, MARYLAND

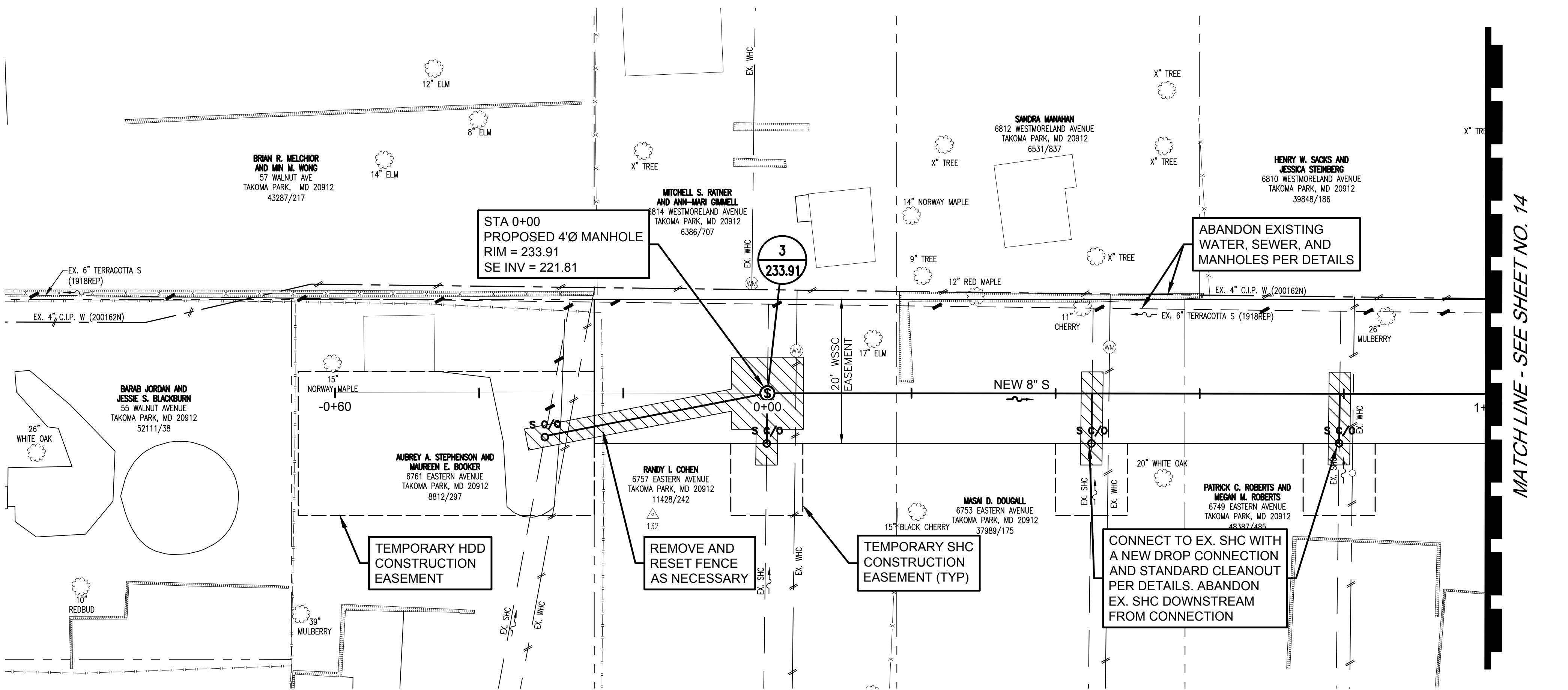
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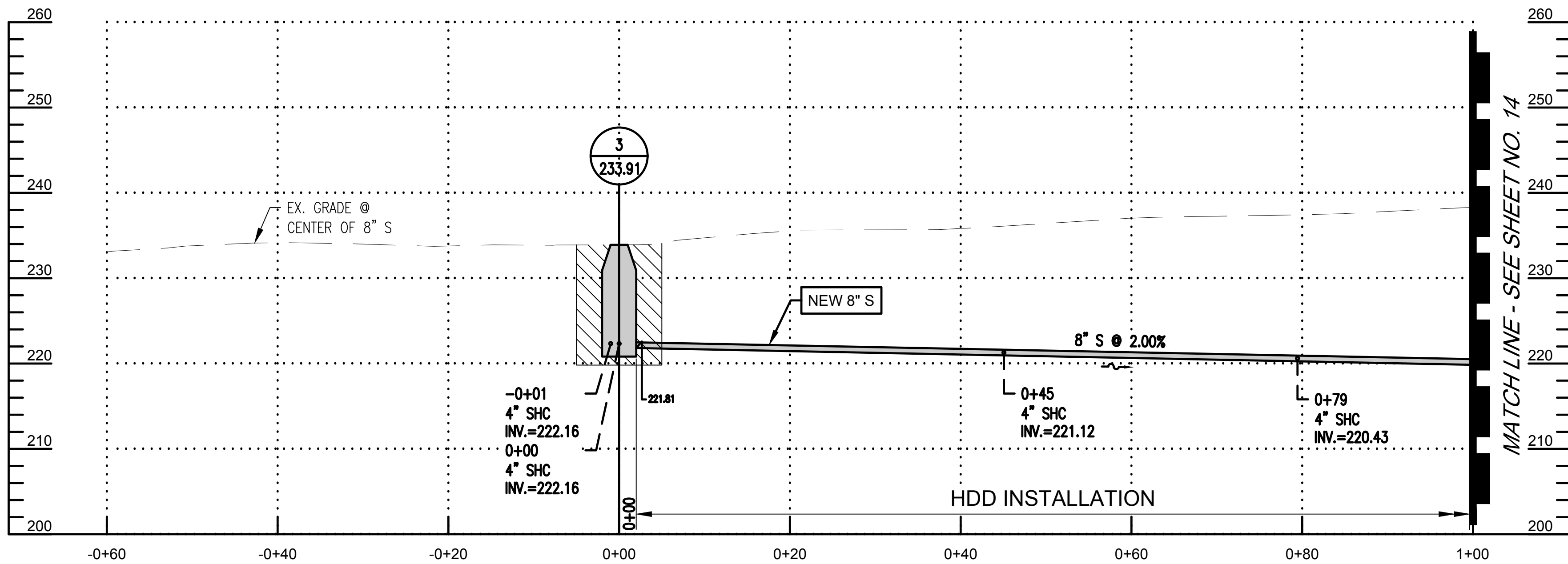
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PLAN
SCALE: 1"=10'



PROFILE
SCALE: 1"=10' HORZ.
1"=10' VERT.

SERVICE AREA 495A
HHG = 500'
LHG = 410'

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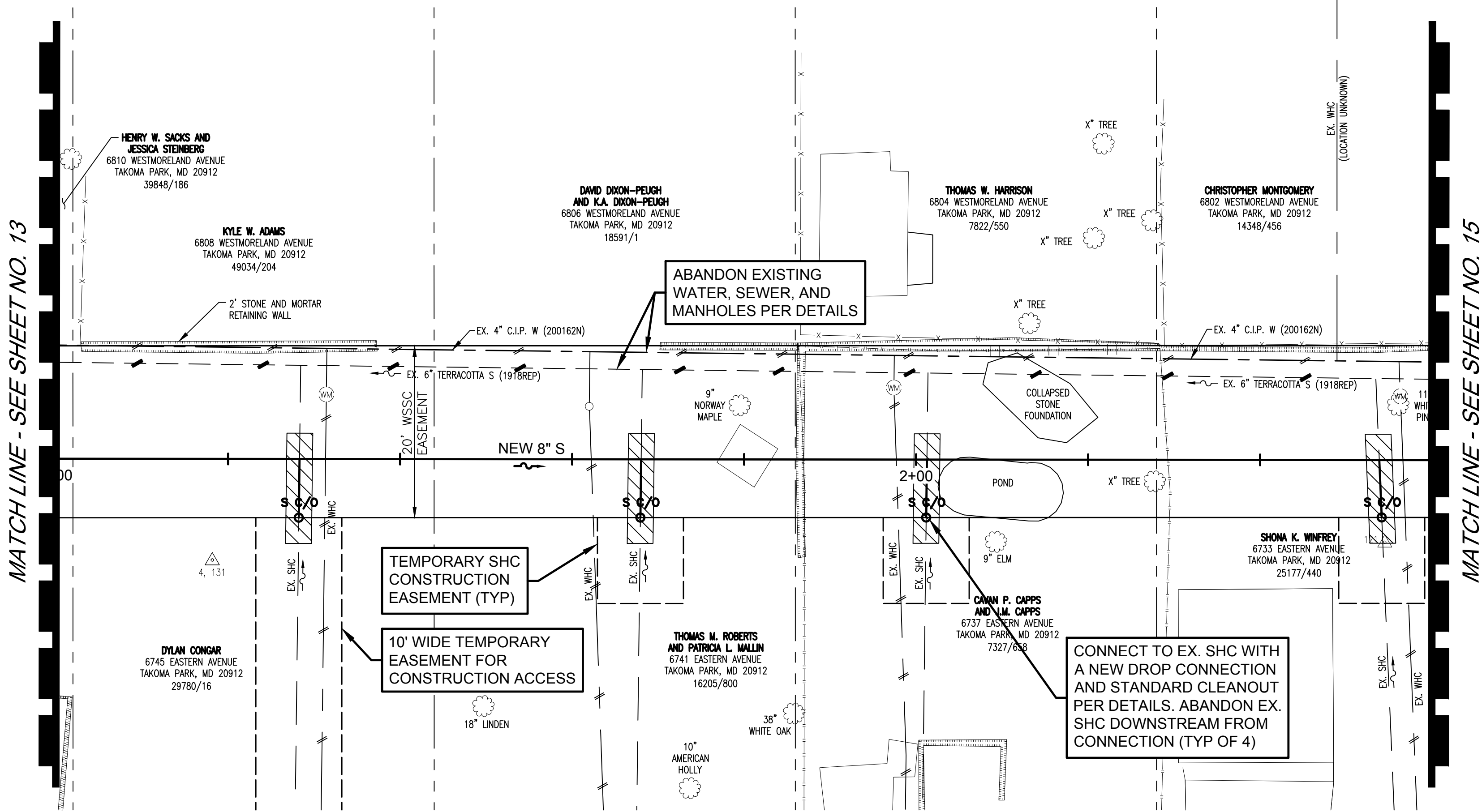


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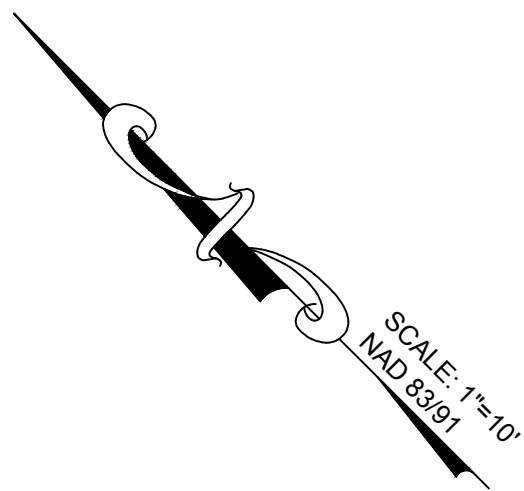
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TAKOMA PARK PHASE 2
TAKOMA PARK, MONTGOMERY COUNTY, MARYLAND

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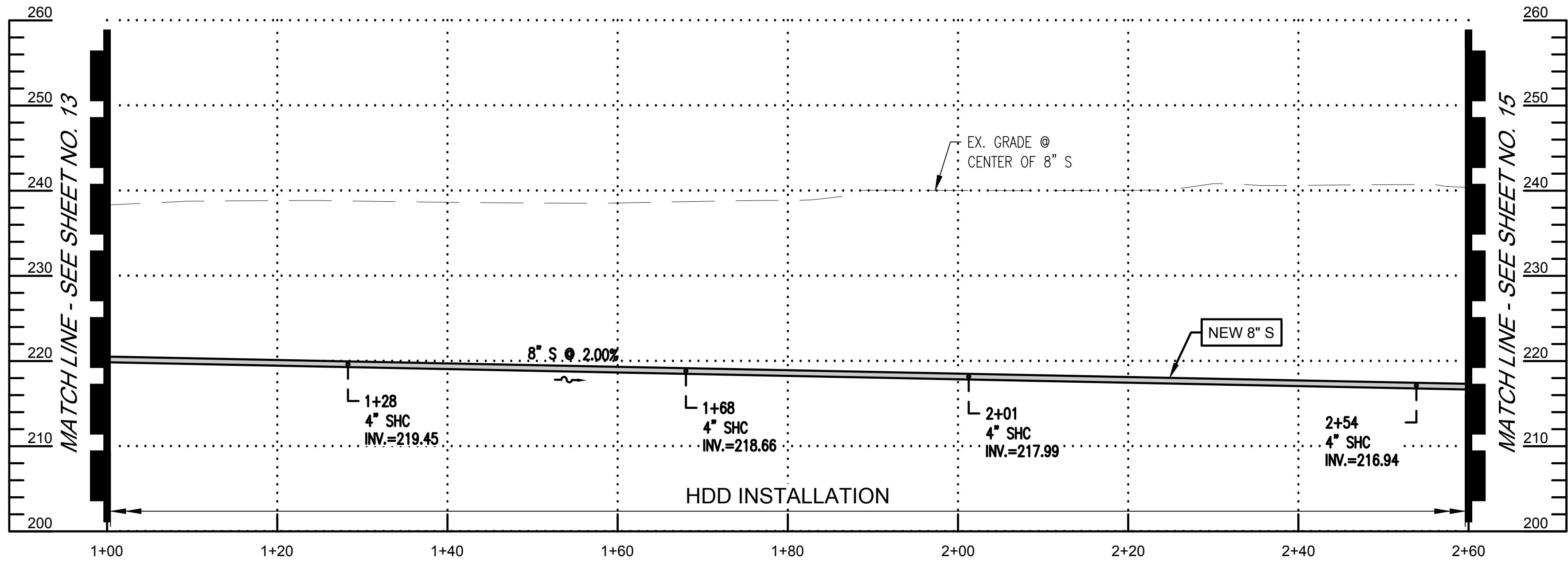


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SCALE: 1"=10'



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PROFILE

SCALE: 1"=10' HORZ.
1"=10' VERT.

NOTE:

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SERVICE AREA 495A

HHG = 500'

LHG = 410'



LIMITS OF OPEN EXCAVATION

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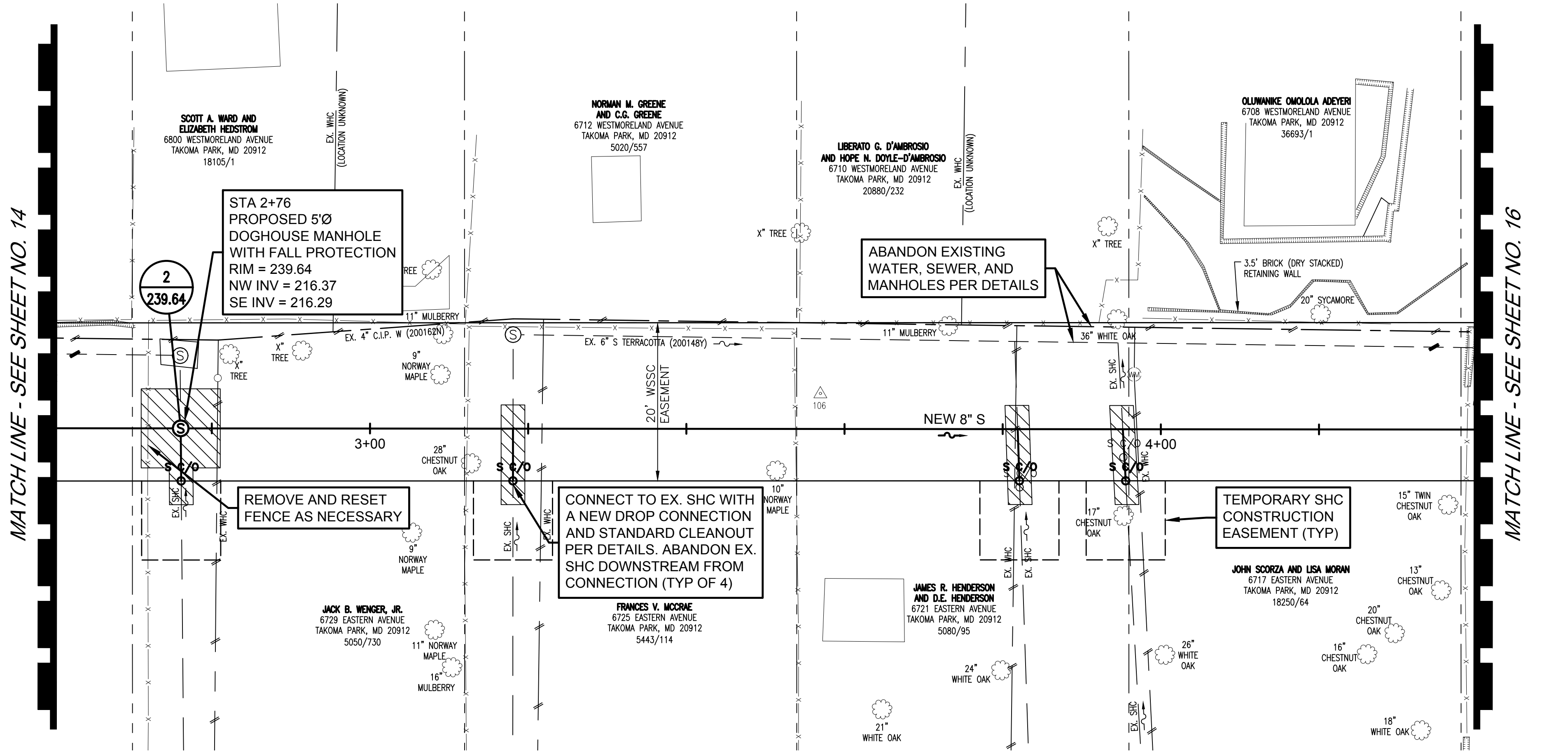
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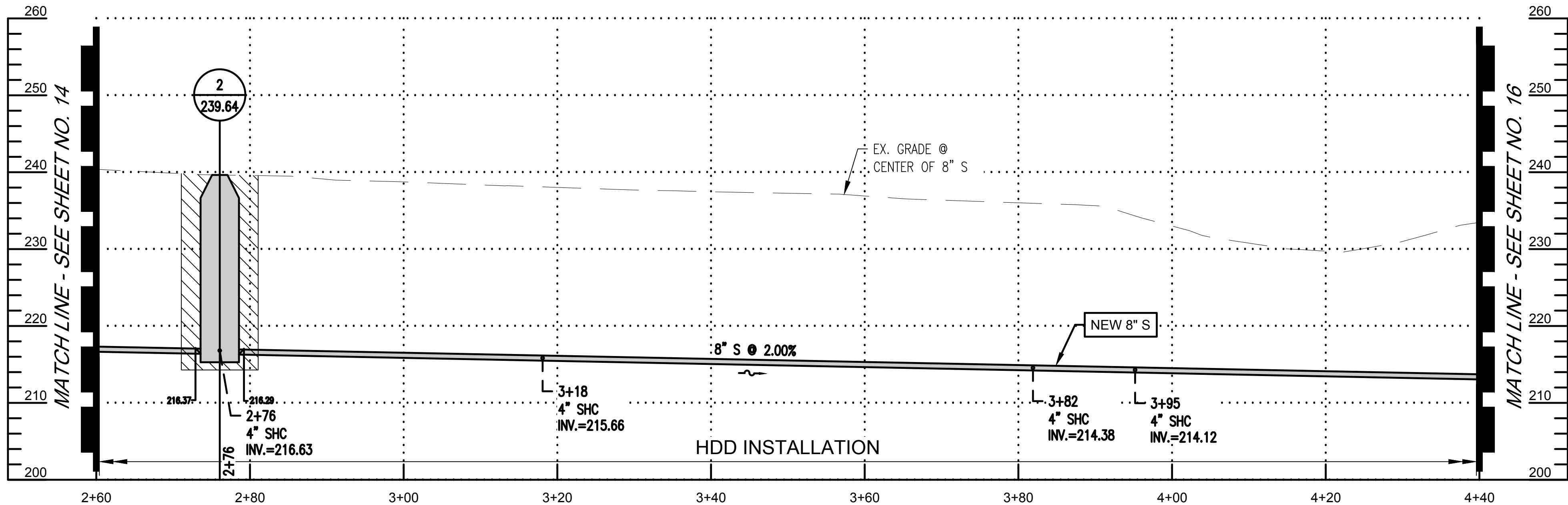
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PROFILE
SCALE: 1"=10' HORZ.
1"=10' VERT.

NOTE:
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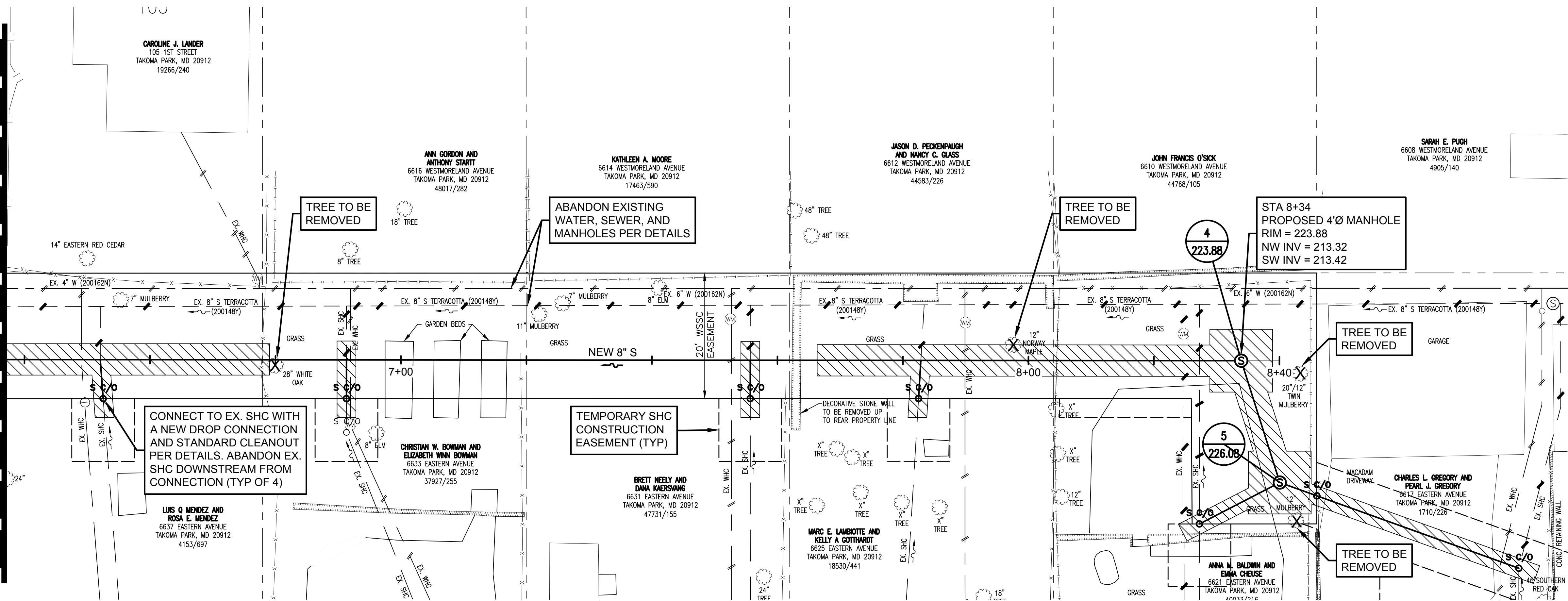
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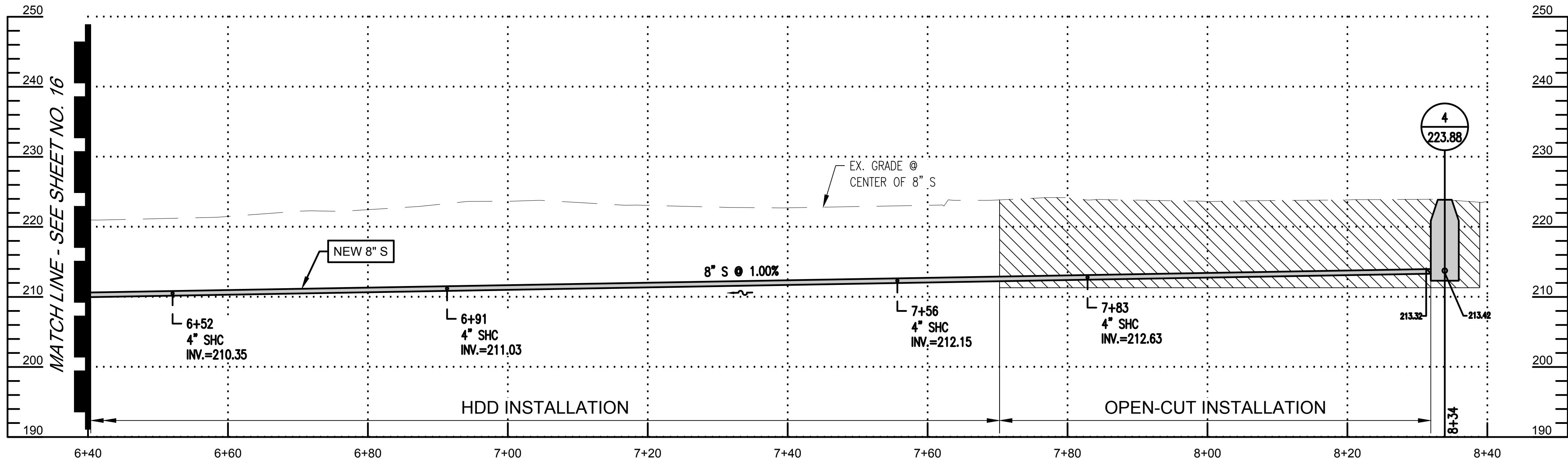
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- NOTES:
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WATER AND SEWER MAIN REPLACEMENTS/RELOCATIONS

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APPENDIX B

Pictures and Typical Details



Picture 1 – Horizontal Directional Drilling (HDD) Rig



Picture 2 – HDD Pipe String



Picture 3 – Excavator on timber mats



Picture 4 – Excavator – CAT 316



Picture 5 – Excavator – CAT 305



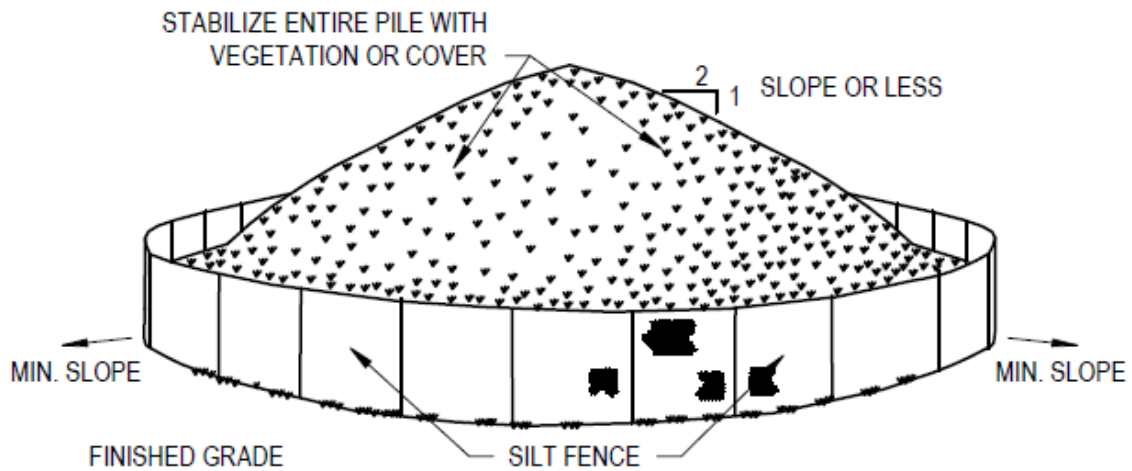
Picture 6 – Skidsteer Tracked Loader



Picture 7 – Ditch Witch JT10 HDD Machine



Picture 8 - Remote Trench Compactor/Roller



INSTALLATION NOTES

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2:1.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH REINFORCED SILT FENCING, THEN STABILIZED WITH VEGETATION OR COVERED.

TOPSOIL AND SOIL STOCKPILE

NOT TO SCALE



Picture 9 - Typical top soil and soil stockpile detail and photo



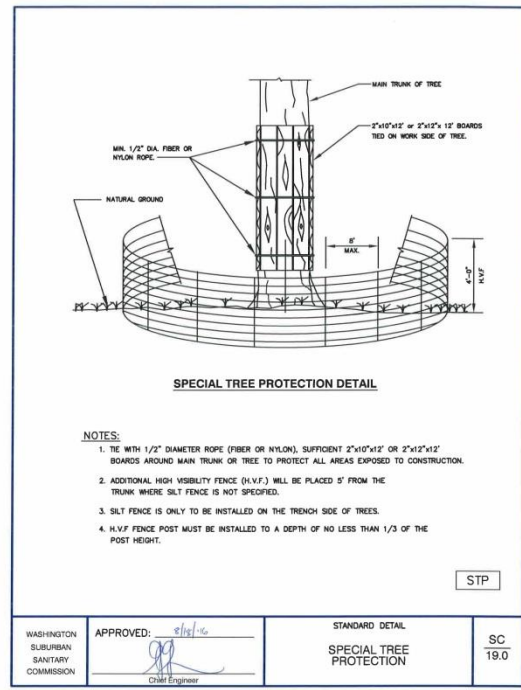
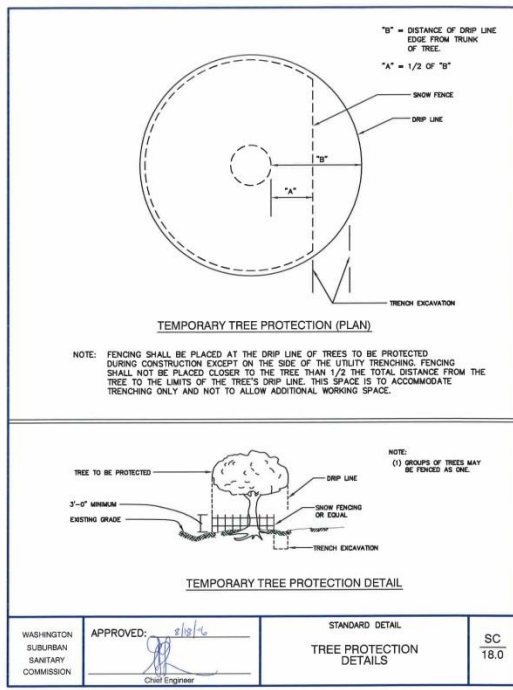
Picture 10 – Silt Fence



Picture 11 – Super Silt Fence



Picture 12 – Stabilized Construction Entrance



TREE PROTECTION DETAILS



Picture 13 - Typical tree protection details and photo