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- GENERAL NOTES**
- All construction shall be performed in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable or as specified.
  - The Contractor shall notify the Department of Public Works / Bureau of Engineering/ Construction Inspection Division at (410) 318-1880 at least five (5) working days prior to the start of work.
  - The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 318-1880 at least five (5) working days prior to the start of work.
  - The contractor shall test pit existing utilities at least five (5) days before starting work shown on these drawings to verify their location and elevation. The contractor shall notify the engineer immediately if location of utilities is other than shown.
  - Approximate locations of existing utilities are based solely on available records and field surveys. Contractor shall verify the locations of any utilities which may be impacted by the work. The contractor shall take all necessary precautions to protect the existing utilities and maintain uninterrupted service. Any damage incurred due to contractor's operation shall be repaired immediately at the contractor's expense.
  - Traffic control devices, markings and signing shall be in accordance with the latest edition of the Maryland Edition of the Manual of Uniform Traffic Control Devices (MUTCD). Pavement patching, striping, sign replacement in US, Route 1 shall be done in accordance with District Office Permit.
  - All plan dimensions are to the face of curb unless otherwise noted. Numerically written dimensions take precedence over scale dimensions.
  - Any damage caused by the Contractor to existing public right-of-way, existing paving, existing curbs and gutters, existing utilities, etc. shall be repaired at the Contractor's expense.
  - All fill areas shall be compacted to a minimum of 95% of the maximum dry density as determined and verified in accordance with AASHTO T-180.
  - The project site is located within the Metropolitan District.
  - The subject property is zoned M-2 per the 2004 Comprehensive Zoning Plan and the 02/02/04 Comp Use Zoning Amendments.
  - Public water to be utilized. (Contract No.24-4668-D, Little Patuxent River Watershed)
  - Public sewer to be utilized. (Contract No.24-4668-D, Little Patuxent River Watershed)
  - All hydraulic data is for the 10-year storm unless otherwise noted.
  - Storm water management is provided by Environmental Site Design (Bioretention, Green Roof, porous concrete paving) that will be publicly maintained.
  - Electric, gas, cable and telephone lines designed by others.
  - The existing topography within the limit of disturbance is based on a field run survey by Shandberger and Lane, dated September 2007. The courses and coordinates shown thereon are based on the following Howard County monuments:  

Point	Northing	Easting	Elevation
4TF6	532305.0449	1362485.1294	186.433
4TFD	535271.4131	1365054.1235	201.251
  - The coordinates shown hereon are based upon the Howard County geodetic control which is based upon the Maryland State plane coordination system. Howard County monument no 4TF6 and 4TFD were used for this project.
  - There is no 100-year floodplain on this site. Existing wetlands are shown with associated stream, stream buffer, and wetland buffer. Wetlands delineation was performed by Eco-Science Professionals, Inc. on May 30, 2008. The plan indicates a proposed stream relocation.
  - There are no known cemeteries or burial grounds on this site.
  - A Forest Stand Delineation was prepared by Eco Science Professionals dated 2/27/04.
  - Forest Conservation: This project complies with the requirements of Section 16.1200 of the Howard County Code for Forest Conservation by payment of a Fee-in-lieu. Forest conservation requirements will be met by payment of a fee-in-lieu in the amount of \$68,607.00.
  - The landscape plan has been prepared in accordance with Section 16.124 of the Howard County Code and of the Howard County Landscape Manual. Proposed planting calculations can be found on sheet 21. Alternative Compliance will be used where strict compliance with the Landscape Manual is not possible. Alternative Compliance requests are noted in the charts on sheet 27, and in the written request for Alternative Compliance. This is a County project; Landscaping Surety is not required.
  - 85th percentile speed study was prepared by the Traffic Group dated 4/12/08.
  - No grading removal of vegetative cover of trees, paving and new structures shall be permitted within the required wetlands, streams, or their buffers, forest conservation easement areas and 100 year floodplain, except as approved by Howard County in HP 10-126 and the Maryland Department of the Environment.
  - The subsurface exploration and geotechnical engineering analysis for this project is contained in reports prepared by EGS, dated 10/22/04.
  - The proposed Building will have an automatic sprinkler system and an inside water meter.
  - Signage at the street and on the building identifying the address is required.
  - No landscaping shall be planted within 15 feet of each side of the Fire Department Connection (FDC)
  - All existing structures are to be removed. (See Note 43).
  - All sign posts used for traffic control signs installed in the County right-of-way shall be mounted on a 2" galvanized steel, perforated, square tube post (4 gages) inserted into a 2-1/2" galvanized steel perforated square tube sleeve (12 gages) - 9' long. A galvanized steel pole cap shall be mounted on top of each post.
  - Proposed street lights in Corridor Road shall be 30' High, 250w High pressure sodium. On-site parking lot and pathway lighting shall be 14' High, 100w High pressure sodium. All exterior light fixtures shall be oriented to direct light towards and downwards on-site away from all adjoining public roads in accordance with Section 134 of the Howard County Zoning Regulations.
  - This project is subject to Howard County Council Resolution 99-2010, dated July 24, 2010, which approved the following requests:  
    - A 3 foot minimum structure and use setback from Route 1 and Route 32 rights of way and the Corridor Road right of way for a primary fire station structure.
    - A 0 foot minimum structure and use setback from Route 1 and Route 32 rights of way for parking uses.
    - A 0 foot minimum structure and use setback from Corridor Road right of way for parking uses.
    - A 0 foot minimum structure and use setback for pathways and sidewalks connecting the parking lots to the fire station.
    - A 0 foot minimum structure and use setback for the front entrance patio wall from the Corridor Road right of way.
    - A 0 foot minimum structure and use setback for the dumpster wall from the Route 32 right of way.
    - A 0 foot minimum structure and use setback for the BSE transformer from the Route 32 and Route 1 rights of way. See also Layout Plan sheets 4 and 5 of 33.
  - Plat 10-126 was approved 4/24/10 to fill the existing stream, wetlands and buffers, and grade steep slopes (Section 16.116(a) and (b)) to clear existing plant communities, including forests (Section 16.117(a)) and to remove specimen trees and other forest impacts (Section 16.120(a)(1)). Five conditions of approval were listed for HP-10-126:  
    - The stream is relocated and restored in accordance with the stream mitigation plan provided with this waiver request. The stream mitigation plan must become part of the signed site plan sheet set for SDP-10-084.
    - To further increase diversity, add at least one additional understory species (shrub or small tree) to the stream mitigation planting plan. This can replace some of the Shadblow and/or a fern of the proposed larger trees; an overall increase in the number of plantings is not needed.
    - The portion of the forest being retained was found to be of lower quality in the Forest Stand Delineation. To improve the condition of the retained forest, remove the invasive species, control the vines, and remove any junk and debris from the stand, as recommended in the Forest Stand Delineation Report.
    - Approval of these distances is subject to approval by MDE for the permit requested under tracking number #200862276, and all other required permits. Proof of approval for SDP-10-126 shall be submitted to DPZ-01-D prior to receiving signature approval of the Site Development Plan. The limit of disturbance shall be the minimum necessary for the proposed site improvements.
    - Compliance with the SRC agency comments for SDP-10-084.
  - The project is subject to the Howard County Green Buildings Law set forth in Title 3, Subtitle 10 of the Howard County Code.
  - This project has been registered with the USGBC as Savage Fire Station Project ID 1000002368.
  - A Letter of Authorization from the State of Maryland, Department of the Environment, Water Management Administration has been issued, permitting relocation of the intermittent stream channel and associated impacts to the intermittent stream channel, non-tidal wetlands, and regulated buffer, per Authorization number 04-NY-0228/2004062241. The authorization is effective July 12, 2010, with an expiration date July 12, 2013.
  - This project is subject to a Purchase Agreement with the Maryland State Highway Administration to purchase the excess right-of-way adjacent to the site for parking.
  - The Design Advisory Panel reviewed and held a meeting for this project on 12/4/09, Plan # 04-04.
  - This SDP is subject to the Amended Fifth Edition of the Subdivision and Land Development Regulations per Council Bill No. 45-2009 and the Amended Third Edition of the Zoning Regulations per Council Bill No. 75-2008. Development or construction on this property must comply with setback and buffer regulations in effect at the time of submission of the site development plan, or as approved by the Howard County Council.
  - Parcels 899 and 944 will be combined into a single parcel and easements will be modified and shown on Plat F-11-013, Plat # 21880.
  - Design Manual waivers were approved for this project 3/25/2010:  
 Volume I Section 3.5 and 3.2.7.1 to use ESD for design and to locate the bioretention facility within 5' of the property line.  
 Volume II Section 2.5.2.1 and 2.3.3.1 to maintain intersection sight distance and sloping sight distance.  
 Volume IV Standard Detail R103 Paver to the typical section for a major collector.  
 Additional Design Manual waivers were approved 1/24/2010:  
 Volume I Section 5.1.1 to eliminate the woody vegetation requirement setback for Bio Retention Facility #1 and to allow pervious concrete pavement to be placed over fill.
  - The Maryland Historical Trust has identified as an archaeological site, the Healy House, number 1840266 on the Maryland Inventory of Historical Properties. A phase I archaeological study of the site by EAC Archaeological dated 1/23/10 was completed. As part of the review of the phase I study, a phase 2 study was required. Work on this study is ongoing and will be forwarded to MHT for review upon completion. Removal of the existing foundations shall not be done until approval from the Maryland Historical Trust and Maryland State Highway Administration has been obtained.
  - The Maryland Department of Transportation, State Highway Administration, has conditionally approved the work shown on SDP 10-084 that affects the state highway properties, per a letter dated August 4, 2010, contingent upon local agency approval of sign and see, and provision of a copy of the Joint Federal/State permit, and approval of the Maryland Historical Trust prior to any work on SH4 around land where Healy House is located.
  - Use and Occupancy permits for the Community Room cannot be issued until the State Highway Administration and the Maryland Historical Trust approval letters, allowing for the removal of the Healy house foundations, and construction of the satellite parking lot on the State Highway Administration property is complete to provide the minimum parking required for the Community Room.

**SITE ANALYSIS DATA CHART**

- General Data:
  - Present Zoning: M-2 (Manufacturing, Heavy)
  - Applicable DPZ File References: F-34-T6, NP-10-126, DAP Plan R01-04
  - Proposed Use of Site or Structure: Volunteer Fire Station
  - Proposed Water and Sewer Systems: Public Water and Public Sewer
  - Water and Sewer Contract No.: 24-4668-D
- Area Tabulation:
  - Total Parcel Area (Gross Area): 152,914 SF (3.50 Ac.)
  - Net Area: 3,50 Ac.
  - Area of this Plan Submission: 238,500 SF (5.50 Ac.)
  - Limit of Disturbed Area: 530 AC (238,500 SF)
  - Area of 100 Year Floodplain: NA
  - Area of 25% + Greater Slopes: 0.10 Ac.
  - Building Coverage 21,384 SF 14% of Gross Area
- Open Space: None Required
- PARKING ANALYSIS:
 

Floor space per floor of proposed use on site:	
Floor 1: 12,021 SF	
Floor 2: 11,664 SF	
Apparatus Bays: 4,443 SF	
Total 33,844 SF	

Maximum number of employees on the largest shift: 12

PARKING REQUIRED:

1 per employee for Largest Shift	= 12 spaces
Community Room - Maximum Occupancy 200 people	= 67 spaces
1 space per 3 people	= 67 spaces
Total Parking Spaces Required:	= 146 spaces

PARKING PROVIDED:

Regular Parking Spaces:	= 112 spaces
5 Van Accessible HC, 4 Reg. HC:	= 9 spaces
Total Parking Spaces Provided:	= 121 spaces

\* 25 spaces provided on land to be purchased by HCO.

DATE	REVISION
9/29/11	REVISED NO. OF PARKING SPACES

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*Brian for Peter Bilenson* 11/7/2011  
 County Health Officer  
 Howard County Health Department

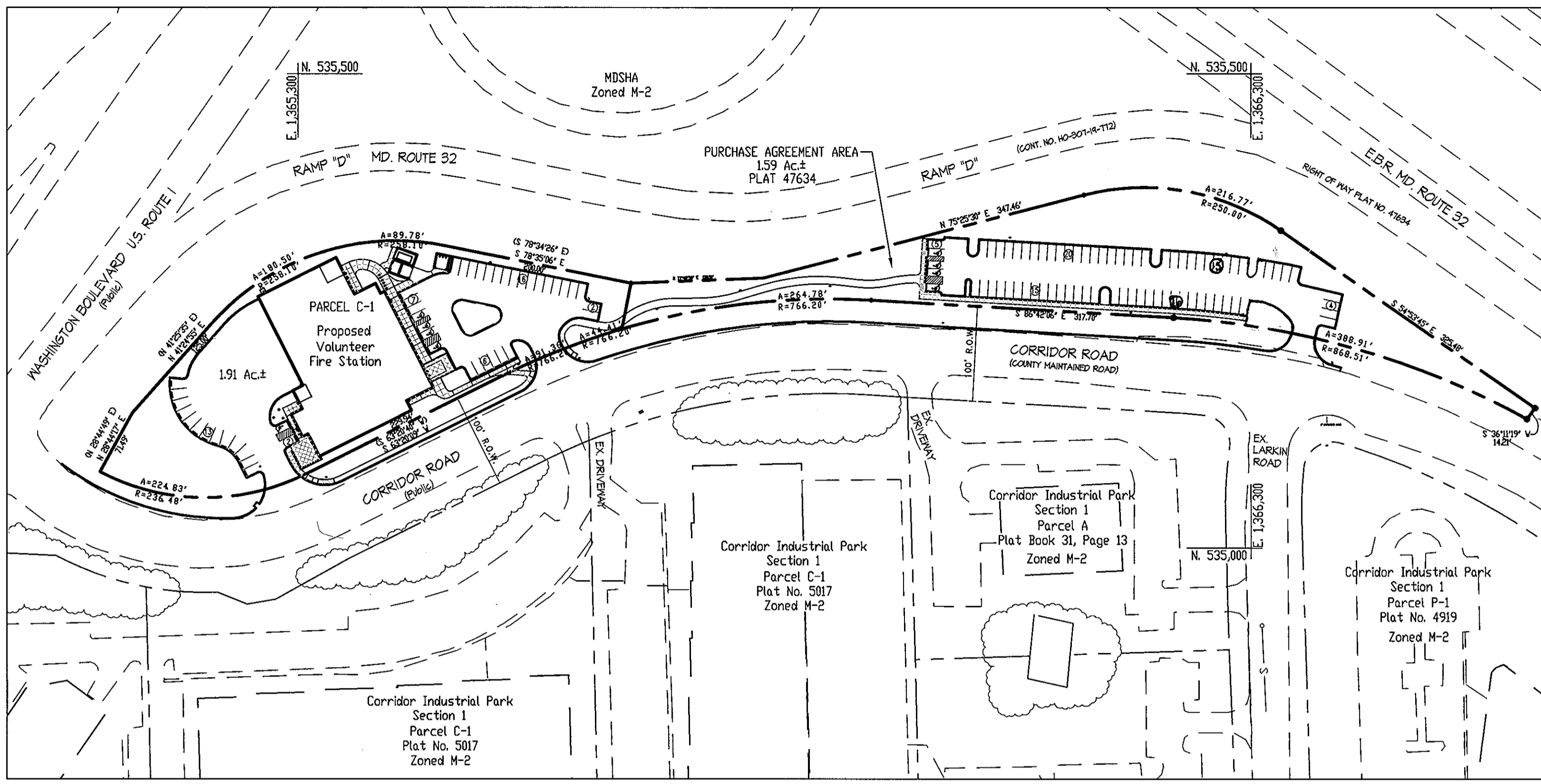
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Walter J. DeLoach* 12/12/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

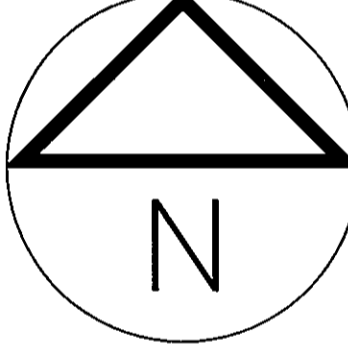
*Walter J. DeLoach* 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas J. Smith* 1/12/11  
 DIRECTOR

# Capital Project No. F-5971



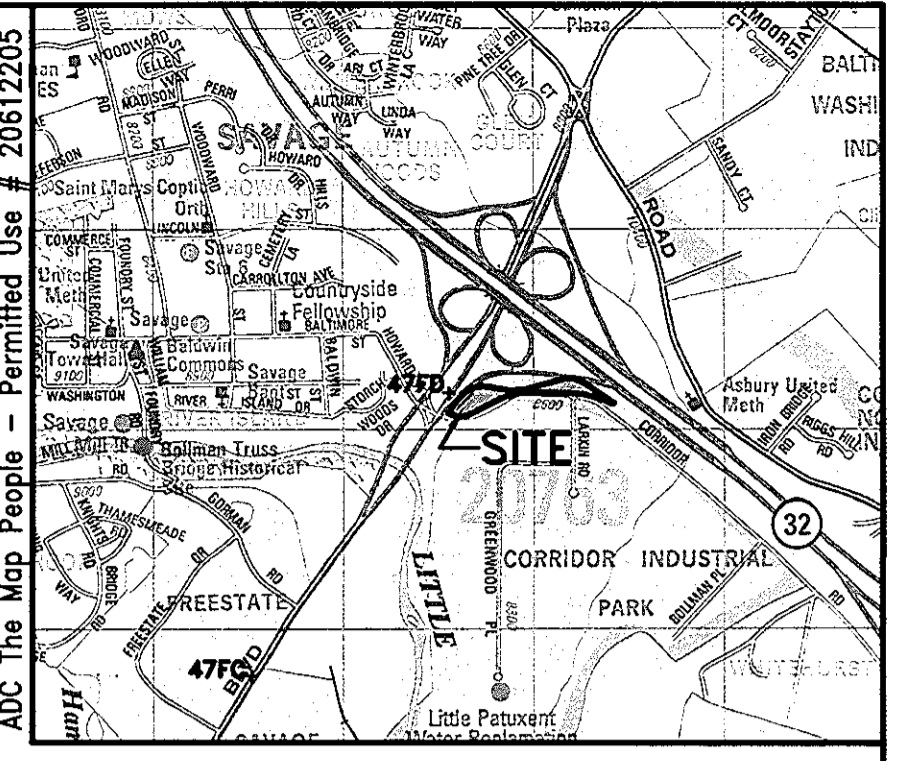
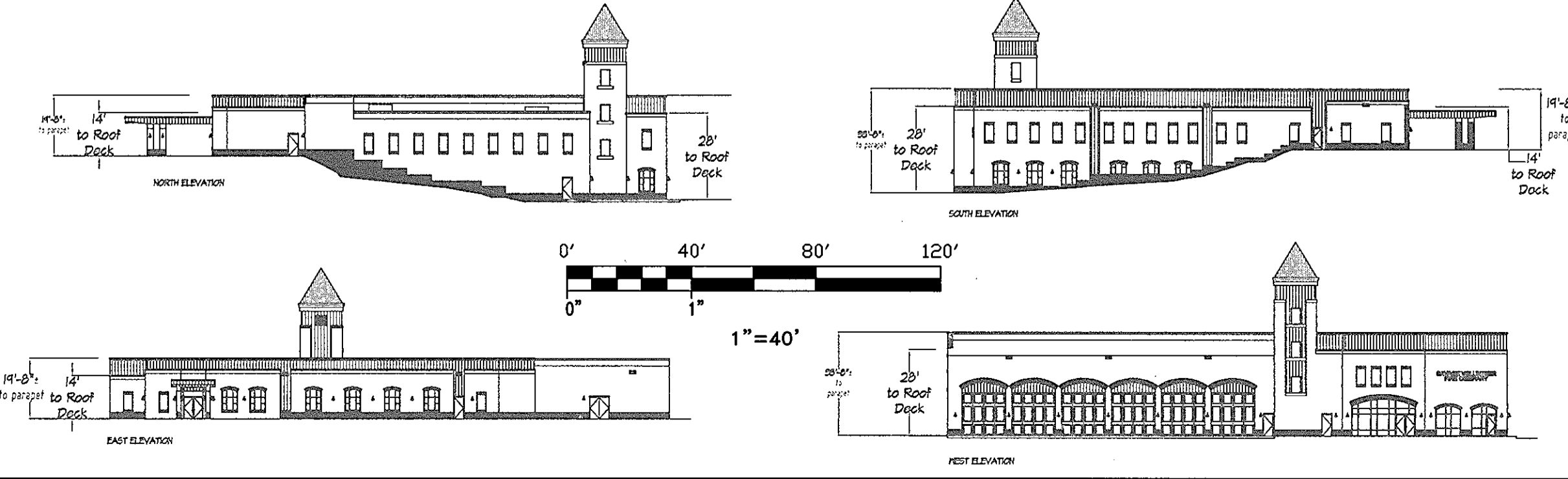
Overall Plan 1' = 100'



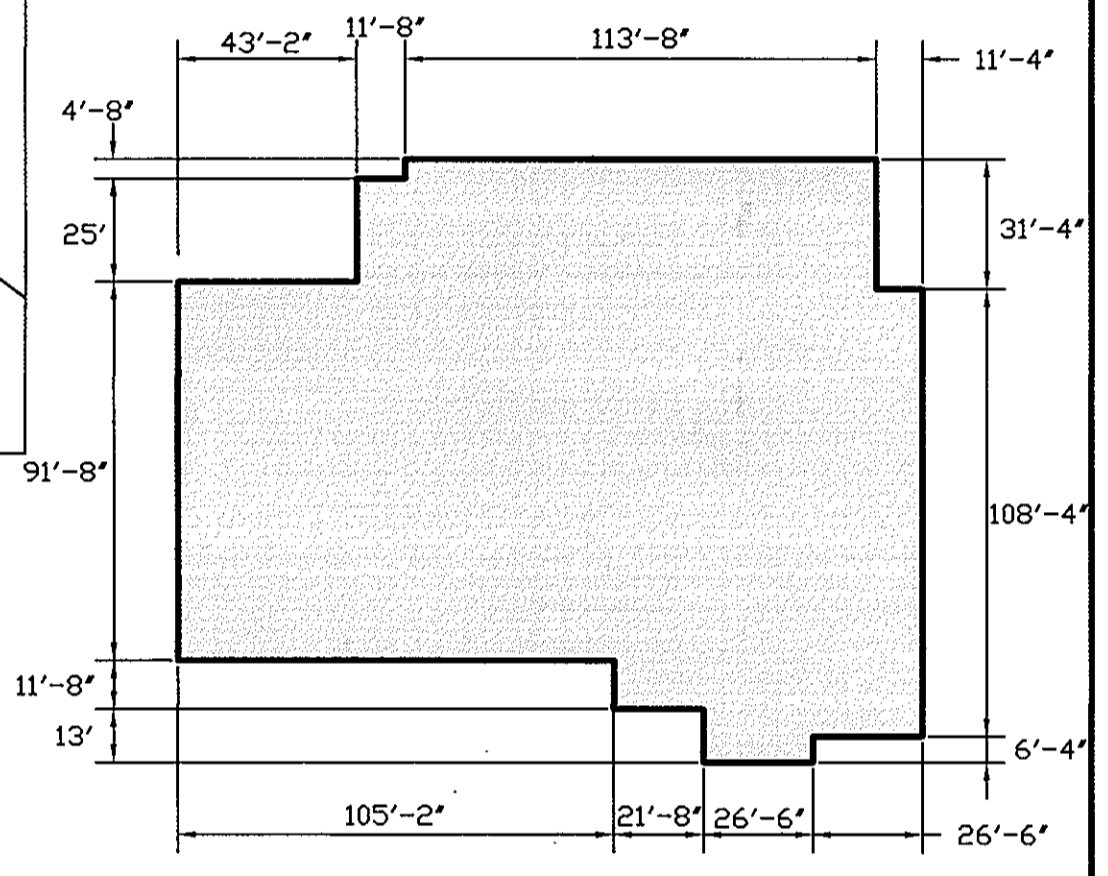
# Site Development Plan for Corridor Industrial Park, Section 1, Parcel C-1 Savage Volunteer Fire Station

Savage, Maryland

PARCEL C-1



Vicinity Map - Scale: 1" = 2000'  
 Map 5053 Grid K-9 and Map 5054 Grid A-9



Building Plan View

ADDRESS CHART

PARCEL	DESCRIPTION
C-1	8521 CORRIDOR RD

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303 P. 410.321.7600  
 Towson, Maryland, 21284 F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

Corridor Industrial Park, Section 1, Parcel C-1 Savage Volunteer Fire Station  
 Savage, Maryland

Cover Sheet

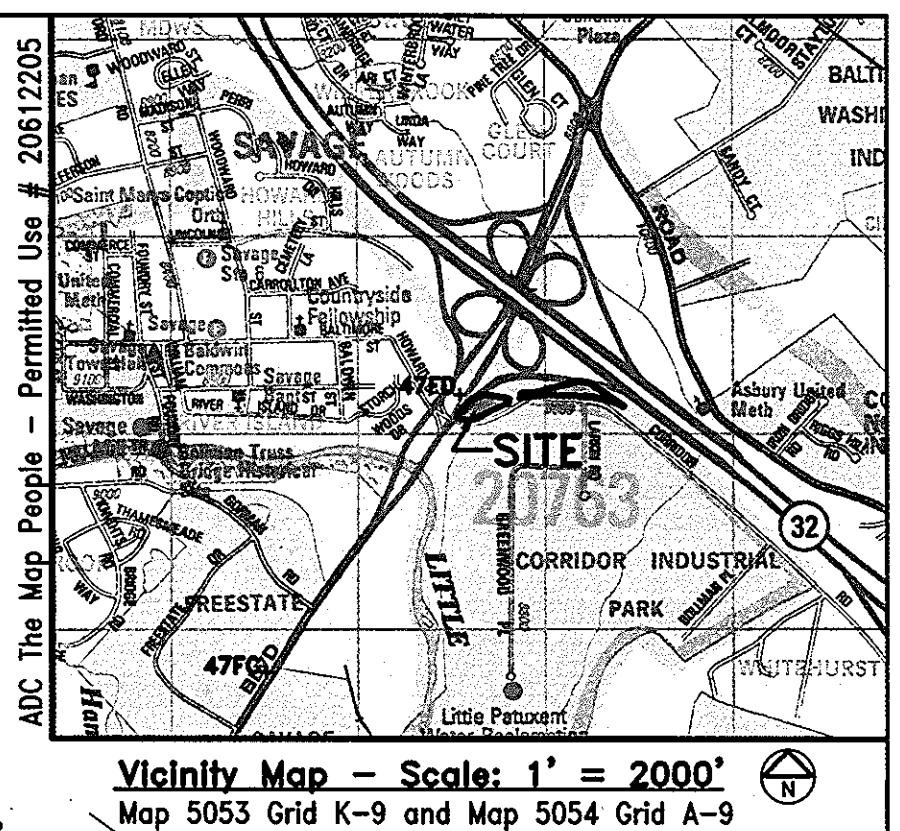
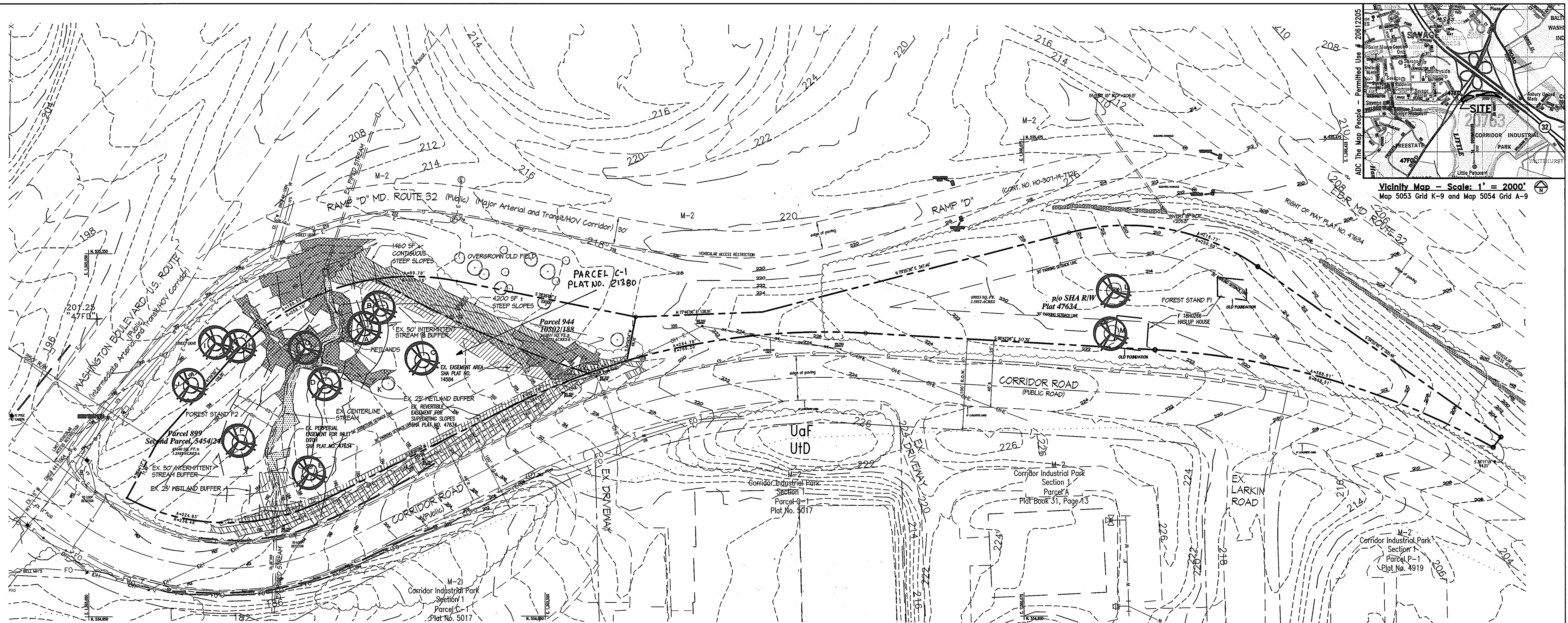
DATE	12/12	ZONE	M-2	DATE	12/12/10
PROJECT	18,12	MAP	47	PROJECT	67H
PLAT	21380	DATE	10/22/2010	PROJECT	606902

OWNER AND DEVELOPER:  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 4250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-313-6194

ENGINEER:  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21284  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

Date: 10/22/2010  
 Proj. #: 08016  
 AS SHOWN

1 of 33



**SURVEY INFORMATION AND DATUM**  
 The existing topography within the limit of disturbance is taken from field run survey prepared by Shanabarger and Lane, dated September 18, 2007.

The courses and coordinates shown hereon are based on Howard Co Geodetic Control, which are based on Maryland State Plane Coordinate System, NAD 83 (Horizontal control) and NAVD83 (Vertical Control). Howard County Traverse Points were used, as noted below:

Point	Northing	Easting	Elevation
41 FC	532305.0496	1362485.1291	186.433
41 FD	535271.4137	1365054.1235	201.251

**EXISTING VEGETATION:**  
 The specimen trees were not surveyed and are shown in their approximate locations based on visual review.

**FOREST STAND DESCRIPTIONS**

KEY	COMMUNITY TYPE	ACREAGE	DOMINANT VEG.	CONDITION	Ave SIZE	AGE
F1	Disturbed Mesic	1.45:	Acer rubrum, Prunus serotina, Liriodendron tulipifera Ulmus rubra, Rosa multiflora, Rubus phoenicolasius, Toxicodendron radicans, Lonicera japonica, Vitis sp.	Fair/Poor	6-12" CAL.	20-30 YRS
F2	Mixed Oak	1.80:	Quercus alba, Quercus falcata, Acer rubrum, Fagus grandifolia, Nyssa sylvatica, Kalmia latifolia	Fair/Good	20-30" CAL.	70-85 YRS

**KEY SPECIES**

KEY	SPECIES	SIZE	CONDITION
A	White Oak	33" cal	F. Good
B	S. Red Oak	30" cal	Fair
C	White Oak	30" cal	Fair
D	White Oak	35" cal	Poor
E	Tulip Poplar	36" cal	Fair
F	White Oak	40" cal	F. Good
G	White Oak	39" cal	Fair
H	White Oak	38" cal	Fair
I	White Oak	32" cal	Poor
J	Scarlet Oak	35" cal	Fair
K	White Oak	29" cal	Fair
L	Linden	29" cal	Fair
M	Walnut	21" cal	Fair

- Notes:**
- No rare, threatened, or endangered species or their habitat were observed within the study area.
  - Surrounding land use consists primarily of industrial development.
  - Property is zoned M-2.
  - Project site is approximately 3.50 acres.
  - Forest Stand Delineation - Forest stand field work was performed by Eco-Science Professionals, Inc. on February 12, 2004.
  - Wetland Delineation - Wetland delineation field work was performed by Eco-Science Professionals, Inc. on May 30, 2008.

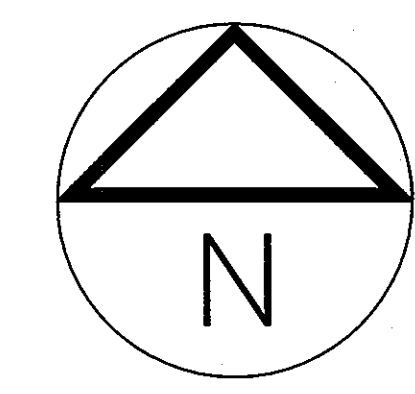
- Soils Notes:**
- Soils on site include UoF - Udorthents, Highway, 0-65% slopes
  - Udorthents are not identified as hydric soils.

**WETLAND SYSTEM**  
 Cowardin Symbol: R4SBI/PFO6A  
 Dominant Vegetation: Magnolia virginiana, Yiburnum dentatum, Impatiens capensis

**SOILS INFORMATION**  
 UoF - Udorthents, Highway, 0-65% slopes  
 This soil group is on uplands and is highly disturbed. Udorthents are not identified as hydric soils.

**FOREST PRODUCTIVITY - HOWARD COUNTY, MD**

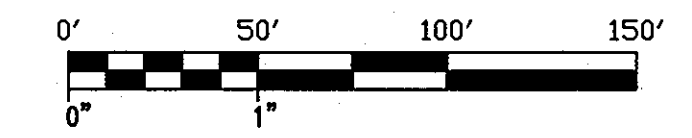
Map unit symbol and Soil Name	Common Trees	Site Index	Vol Wood Fiber	Trees to Manage
UoF - Udorthents, Highway, 0-65% slopes	---	---	---	---



**COUNCIL RESOLUTION 99-2010**  
 APPROVED REDUCED STANDARD SETBACKS

**NOTE:** REMOVAL OF THE HASLUP HOUSE FOUNDATIONS SHALL NOT BE DONE UNTIL APPROVAL FROM THE MARYLAND HISTORICAL TRUST AND MARYLAND STATE HIGHWAY ADMINISTRATION IS OBTAINED.

- EXISTING CONDITIONS**
- Building
  - Contour
  - Fence
  - Forest Area
  - Property Line
  - Stream Line
  - Spot Elevation
  - Streambank
  - Water Line
  - Specimen Tree
  - Wetland
  - Slope 15-24%
  - Slope 25% for more than 10 vertical ft
  - Slope >25% less than 10 vertical ft
  - Ex. Wetland
- EXISTING UTILITIES**
- Sanitary Line
  - Sanitary Cleanout
  - Sanitary Manhole
  - Water Valve
  - Water Meter
  - Fire Dept Connection
  - Fire Hydrant
  - Gas Molehole
  - Underground Gas Line
  - Utility Pole
  - Overhead Electric Line
  - Underground Electric Line
  - Underground Fiber Optic Service



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*B. Wilson for Peter Bilenson* 1/7/2011  
 County Health Officer  
 Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Alan Williams* 12/17/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Veronica J. Butler* 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas J. Butler* 1/12/11  
 DIRECTOR

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303  
 Towson, Maryland, 21284  
 P: 410.321.7600  
 F: 410.321.7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park, Section 1, Parcel C-1**  
 Savage Volunteer Fire Station  
 Savage, Maryland

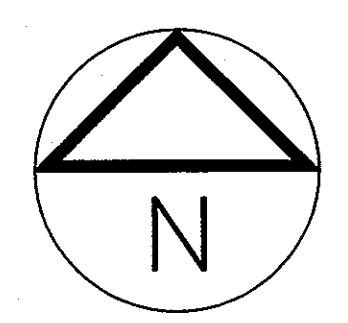
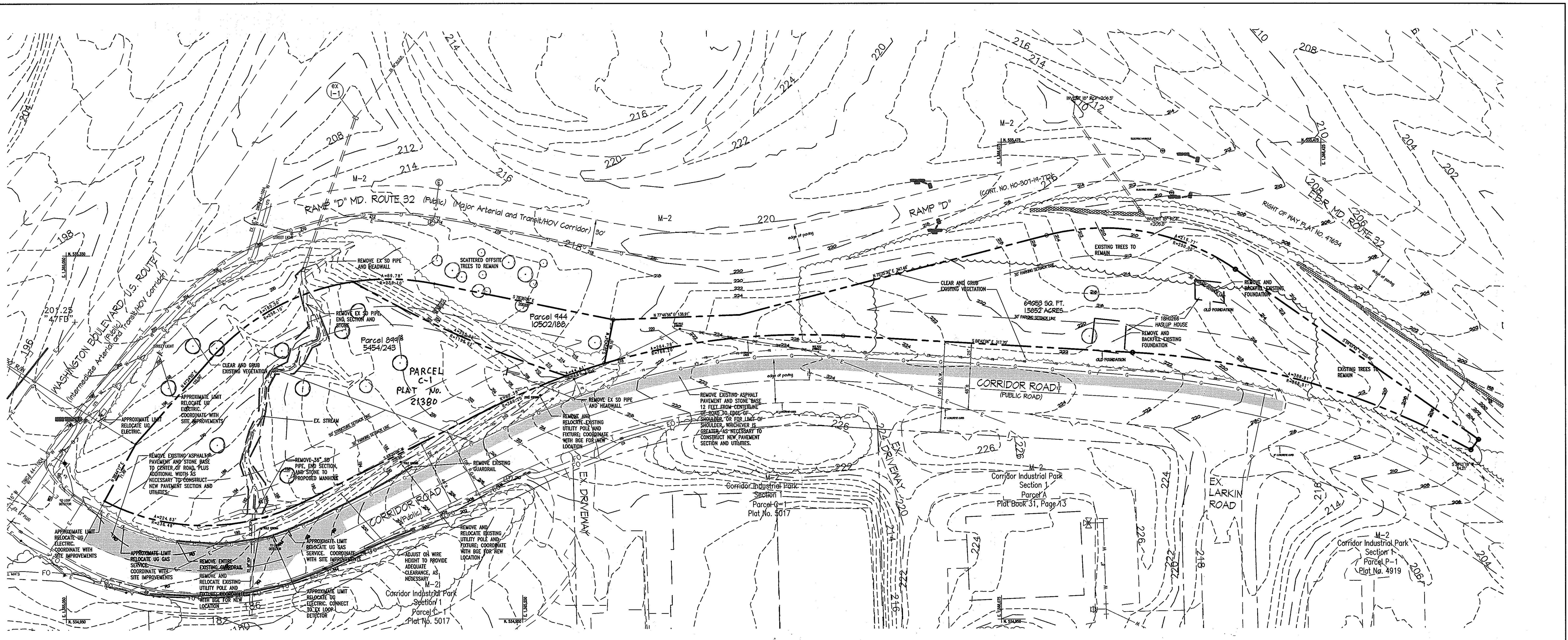
**Existing Conditions, Wetlands, and Forest Stand Delineation Plan**

DATE	ZONE	DRAWING	PROJECT	CONTRACT
01/12	M-2	47	10502/188	678902

PLAT: 21380

Date: 10/22/2010  
 Proj. #: 08016  
 Scale: 1"=50'

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**LEGEND**

Sawcut and Remove Existing Pavement

**GENERAL NOTES:**

EXISTING CONDITIONS SHOWN HEREON ARE FROM THE BEST AVAILABLE RECORDS INCLUDING FIELD SURVEY, FIELD OBSERVATION, AND DOCUMENTATION. THE CORRECTNESS AND COMPLETENESS OF THE INFORMATION SHOWING EXISTING CONDITIONS IS NOT GUARANTEED. BEFORE BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE GENERAL ACCURACY OF THE EXISTING CONDITIONS SHOWN ON THE PLAN, INCLUDING INFORMATION REGARDING UTILITIES IDENTIFIED BY MISS UTILITY, AND SHALL NOTIFY THE INSPECTOR OF ANY DISCREPANCIES OR CONDITIONS WHICH MAY CAUSE CONFLICTS WITH THE PROPOSED IMPROVEMENTS.

IN GENERAL, ALL EXISTING IMPROVEMENTS WITHIN THE PROPERTY BOUNDARIES ARE TO BE REMOVED. CERTAIN UTILITIES IN THE ROAD RIGHT-OF-WAY SHALL BE REMOVED AND/OR RELOCATED AND THE CONTRACTOR SHALL VERIFY DEMOLITION WORK IN THE RIGHT-OF-WAY WITH THE INSPECTOR PRIOR TO BEGINNING WORK.

THE CONTRACTOR SHALL REMOVE ALL DEBRIS, TRASH, AND EXTRANEOUS MATERIAL, WHETHER OR NOT RESULTING FROM HIS WORK EFFORTS FROM WITHIN THE LIMIT OF WORK AND DISPOSE OF IT OFFSITE IN AN APPROVED FACILITY AS PART OF THIS CONTRACT.

ALL AREAS OF ASPHALT TO BE REMOVED SHALL BE SAWCUT.

CLEAR AND GRUB AS NECESSARY TO CONSTRUCT IMPROVEMENTS. SEE FOREST CONSERVATION PLAN FOR ADDITIONAL INFORMATION REGARDING TREE REMOVAL AND PROTECTION.

PROPOSED SANITARY SEWER AND WATER CONNECTIONS EXTEND BEYOND THE LIMITS OF THIS SHEET. PROPOSED SEWER EXTENDS SOUTHWEST ALONG THE TRAVEL LANE OF WASHINGTON BOULEVARD (ROUTE 1) TO CONNECT WITH THE EXISTING SEWER. SEE PUBLIC UTILITY DRAWINGS FOR LIMITS OF EXTENSION AND ASSOCIATED WORK.

SEE NOTES ON DRAWING 1 FOR ADDITIONAL REQUIREMENTS.



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park, Section 1, Parcel C-1**  
Savage Volunteer Fire Station  
Savage, Maryland

**Demolition Plan**

OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION 707 WIRTH CALVEY STREET BALTIMORE, MD 21202 410-545-0300	PROJECT: 5434/243 10502/188	PLAT: 21380
DATE: 10/12/11	ZONE: M-2	DATE: 10/12/11
DATE: 10/12/11	DATE: 10/12/11	DATE: 10/12/11

OWNER AND DEVELOPER  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-313-6194

ENGINEER  
Tesseract SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB  
410-321-1600

Date: 10/22/2010  
Proj. #: 08016  
Scale: 1"=50'

**3 of 33**

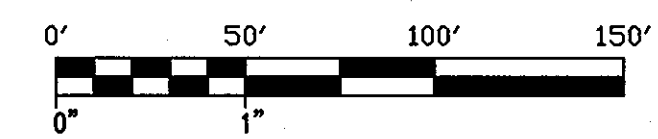
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
*Peter Bailewson* 10/20/11  
County Health Officer  
Howard County Health Department

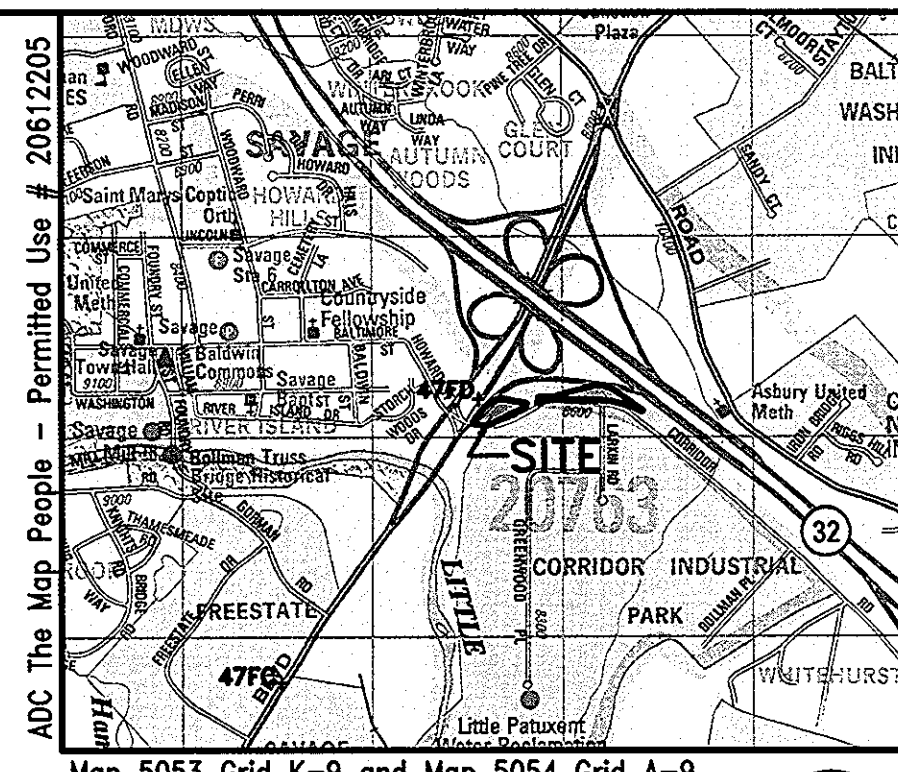
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*David D. ...* 10/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*...* 11/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*...* 11/12/11  
DIRECTOR

NOTE: REMOVAL OF THE HASLUP HOUSE FOUNDATIONS SHALL NOT BE DONE UNTIL APPROVAL FROM THE MARYLAND HISTORICAL TRUST AND MARYLAND STATE HIGHWAY ADMINISTRATION IS OBTAINED.





Vicinity Map  
Scale: 1" = 2000'

**LEGEND**

**EXISTING CONDITIONS**

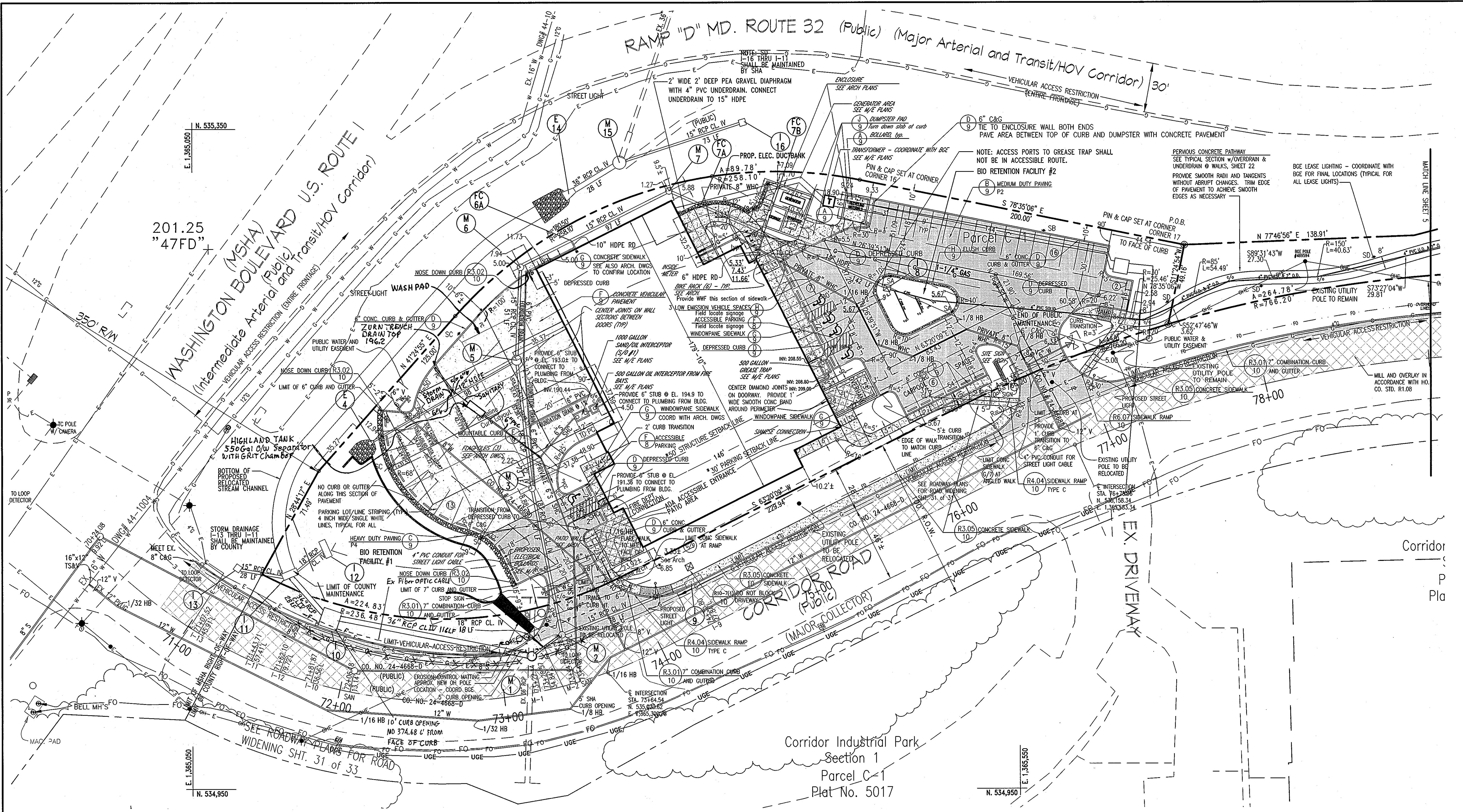
- Building
- Contour
- Fence
- Paved Area
- Property Line
- Sewer Line
- Spot Elevation
- Stormdrain
- Water Line
- Spedman Tree
- Woods line
- Ex. Wetland

**EXISTING UTILITIES**

- Sanitary Line
- Sanitary Cleanout
- Sanitary Manhole
- Water Line
- Water Valve
- Water Meter
- Fire Dept. Connection
- Fire Hydrant
- Gas Manhole
- Underground Gas Line
- Utility Pole
- Overhead Electric Lines
- Underground Electric Lines
- Underground Fiber Optic Service

**PROPOSED CONDITIONS**

- Concrete Pavement
- Asphalt Pavement
- Proposed Building
- Proposed Storm Drain
- Proposed Sanitary Sewer
- Proposed Water Line
- Site Light
- Street Light



**2/7/12** Added curb opening & relocated storm drainage  
**9/29/11** ADDED OUTSIDE WASH PAD AREA, O/W SEPARATOR & ASSOCIATED DRAINS

DATE REVISION

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

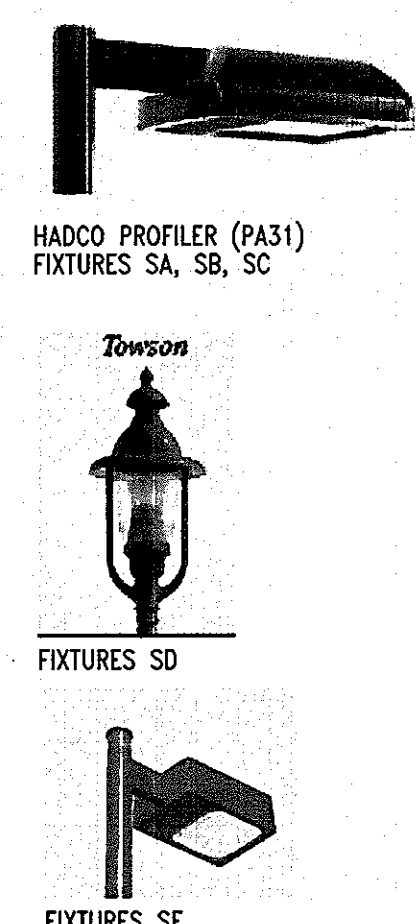
*B. Wilson for Peter Brilevson* 1/7/2011  
 County Health Officer  
 Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*John DeMunn* 12/17/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Kate Schuchman* 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas E. Butler* 1/12/11  
 DIRECTOR



**LIGHTING FIXTURES**

SYMBOL	LOCATION	TYPE	STYLE	HEIGHT	SHIELD	LUMENS	COLOR
SA	PARKING LOT	METAL HALIDE	HADCO PROFILER PA31 TYPE 3 OPTICS, SINGLE ARM	20' POLE	FULL CUT OFF	23,000, 250W	BRONZE
SB	PARKING LOT	METAL HALIDE	HADCO PROFILER PA31 TYPE 4 OPTICS, SINGLE ARM	20' POLE	FULL CUT OFF	13,000, 150W	BRONZE
SC	PARKING LOT	METAL HALIDE	HADCO PROFILER PA31 FORWARD THROW OPTICS, SINGLE ARM	20' POLE	FULL CUT OFF	23,000, 250W	BRONZE
SD	PATHWAY	METAL HALIDE	BGE LEASE LIGHT	12' POLE		8500	BRONZE
SE	PARKING LOT	METAL HALIDE	BGE LEASE LIGHT	23' POLE		36,800	BRONZE
	STREET LIGHTS	HIGH PRESSURE SODIUM	COBRA /12' ARM	30' POLE	CUT OFF	250 WATT	

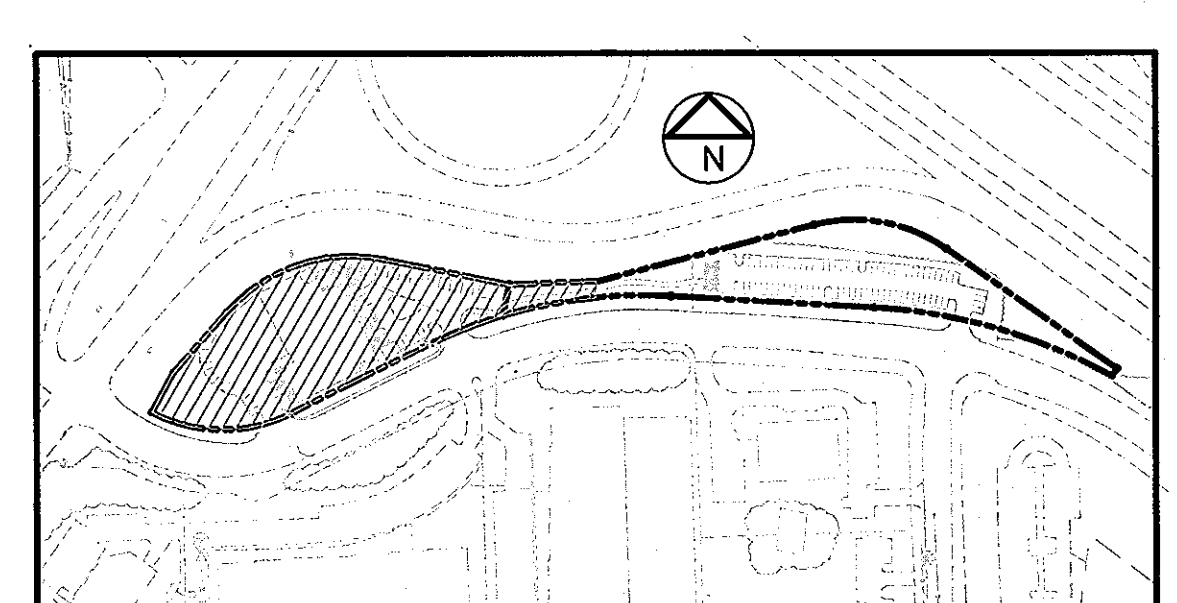
**PROPOSED PUBLIC STREET LIGHTS:**

STATIONS	OFFSET
74+14	37' LEFT
77+05	35' LEFT
80+78	30' LEFT
84+84	30' LEFT

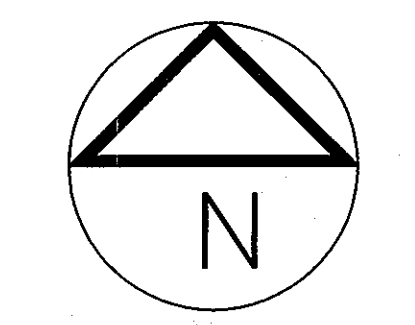
\* COUNCIL RESOLUTION 99-2010 APPROVED REQUESTS FOR REVISED STRUCTURE AND USE SETBACKS. SEE ALSO NOTE 33 ON SHEET 1 OF 33.

This project is subject to Howard County Council Resolution 99-2010, dated July 21, 2010, which approved the following requests:

- A 3 foot minimum structure and use setback from Route 1 and Route 32 rights of way and the Corridor Road right of way for a primary fire station structure,
- A 0 foot minimum structure and use setback from Route 1 and Route 32 rights of way for parking uses,
- A 0 foot minimum structure and use setback from Corridor Road right of way for parking uses,
- A 0 foot minimum structure and use setback for pathways and sidewalks connecting the parking lots to the fire station,
- A 0 foot minimum structure and use setback for the front entrance patio wall from the Corridor Road right of way,
- A 0 foot minimum structure and use setback for the dumpster wall from the Route 32 right of way,
- A 0 foot minimum structure and use setback for the BGE transformer from the Route 32 and Route 1 rights of way.



Key Sheet  
Scale: 1"=300'



OWNER  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 107 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-545-0300

OWNER AND DEVELOPER  
 HOWARD COUNTY, MD  
 4250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-319-6194

ENGINEER  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE., SUITE 303  
 TOWSON, MD 21280  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave. Suite 303  
 Towson, Maryland, 21284  
 p. 410.321.7600  
 f. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park, Section 1, Parcel C-1 Savage Volunteer Fire Station Savage, Maryland**

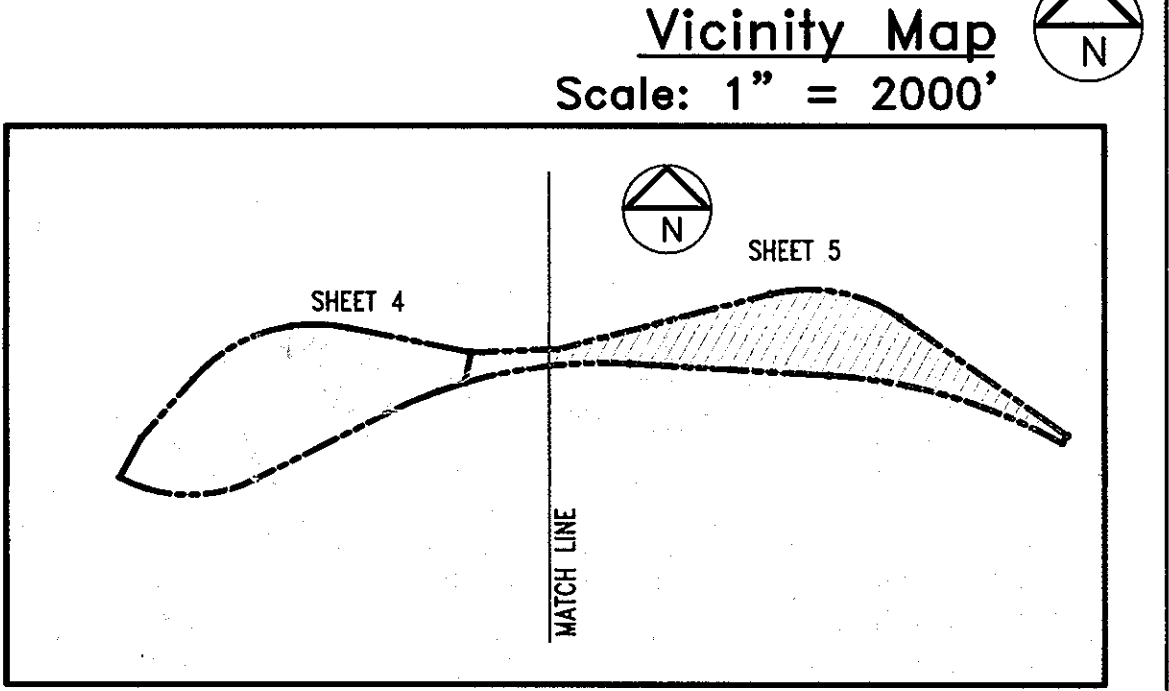
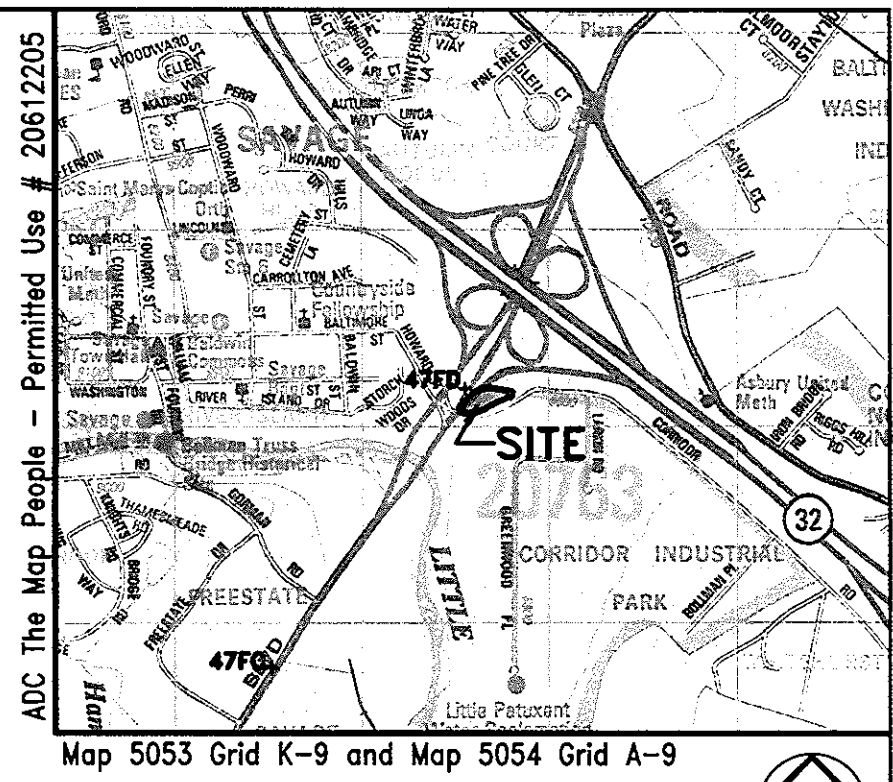
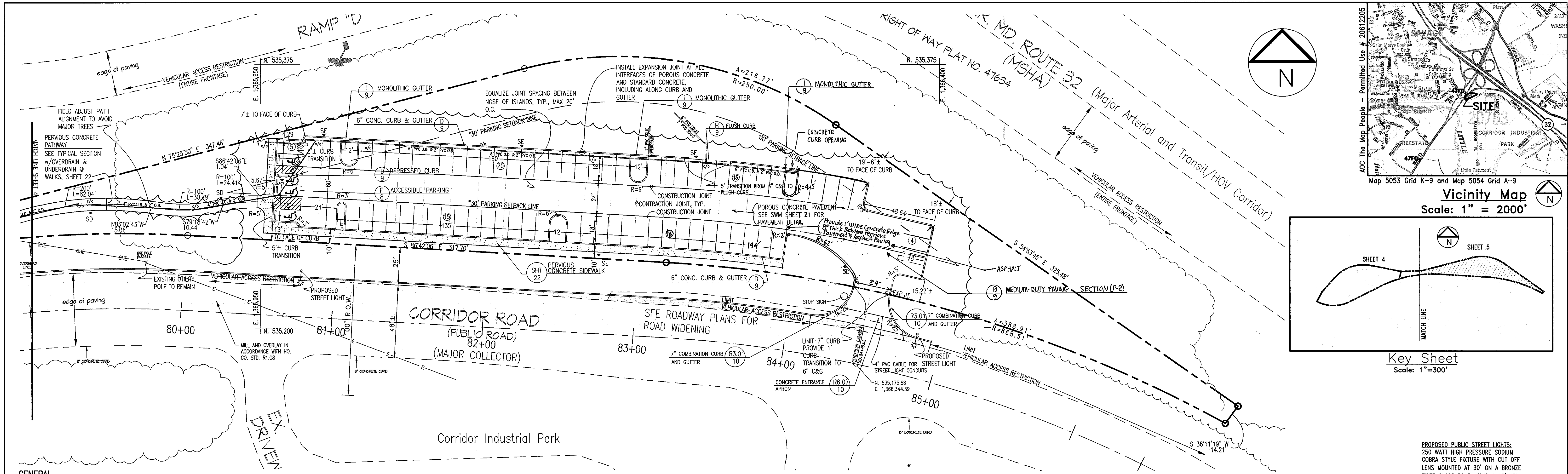
**Site and Layout Plan**

12/17/10	18,12	C-1	47	6TH	21380	606902
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DATE: 10/22/2010  
 Proj. #: 08016  
 Scale: 1"=30'

**4 of 33**

SDP 10-084



**GENERAL**

HEADINGS AND SUBHEADINGS. The headings and subheadings contained in these General Notes are for the convenience of the reader only and shall not limit the responsibility of the Contractor to abide by all terms and conditions of all the General Notes and all other terms and conditions of the construction plans and specifications.

DRAWING TITLES: The Contractor shall use the appropriate site drawing for a given type of site work, even though another drawing might show the work. For example, proposed walks and contours will appear on the Planting Plan, but the contractor shall NOT use that drawing to layout walks or for grading. The Planting Plan shall be used only for Planting (and other issues explicitly related to planting and addressed by the plan). Likewise, final grading shall be based on the "Grading Plan (or if there is no such title, the "Site Plan"), and not on the Sediment Control Plan. Before beginning work, the Contractor shall carefully review all site drawings; if there is any question about which drawing is an appropriate drawing for a particular type of work, the Contractor shall submit a written request for clarification to Tesseract.

**STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS.** If the drawings or specifications are silent as to the type, strength or quality of materials, tolerances, or construction procedures related to a site improvement shown on the drawings or generally required for site construction, then the requirements for the material, tolerance or procedure shall be in accordance with the latest Howard County standard details and specifications.

**REPAIR AND REPLACEMENT OF DAMAGE CAUSED BY CONTRACTOR AND SUBCONTRACTORS.** In the event that the Contractor or any of his subcontractors damage any existing curb, gutter, paving, utilities, sidewalks, trees, shrubs, lawns, or any other existing conditions (not indicated to be demolished), or any newly installed proposed improvement, the contractor shall repair and replace said damage to owner's satisfaction, at contractor's sole cost and expense.

**EXISTING CONDITIONS NOT GUARANTEED; VERIFICATION REQUIRED**

**EXISTING INFORMATION AND CONDITIONS NOT GUARANTEED. VERIFY CONDITIONS AND TEST PIT EXISTING UTILITIES.** The correctness and completeness of the information showing existing conditions is not guaranteed. Before beginning construction, the contractor shall perform the following tasks:

**BENCHMARKS.** Preserve and protect permanent benchmarks and control points during construction operations. Temporary benchmarks and control points shall not be cut into or permanently marked on site improvements or trees.

**VERIFICATION OF CONDITIONS AND COMPUTATIONS.** Before beginning stake-out computations, field-verify the coordinates and elevations of key boundary corners and topographic features upon which the layout of proposed improvements is based. Compute the layout of all proposed improvements in accordance with the dimensions and graphic representations on the drawings. Before beginning site clearing, provide a preliminary stakeout of buildings, roads, parking lots, and limit-of-disturbance, and provide the Owner with the opportunity to observe the completed preliminary stake-out before proceeding with work.

**"MEASURE TWICE, CUT ONCE".** Throughout construction, the Contractor's superintendent shall continually check the accuracy of the stake-out, proposed excavations, grading, structures, utilities, concrete forms, and other site improvements before each component of the work begins.

**DIMENSIONS.** Unless otherwise noted on the drawing, all dimensions shown on the site drawings follow these conventions:

**STORM DRAIN SYSTEM, SANITARY SYSTEM, AND WATER SYSTEM**

**TEST PITTING.** For the purposes of this contract, excavation of utility trenches does not constitute test pitting. See Test Pitting note on this sheet.

**APPEARANCE OF UTILITY STRUCTURES AN ESSENTIAL PART OF CONTRACT.** The finish, color, location, orientation, and elevation of utility structures and appurtenances are an integral part of the design and the finished appearance is an essential part of the construction contract. Finish and color shall be as specified, or if not specified as is customary by industry standards. Vertical elements, such as fire hydrants and light poles, shall be plumb. Utility locations shall be as shown on the plan. The base of fire hydrants and light poles bases, as well as the top of manholes and inlets, shall be flush with finished grade. Square or rectangular inlets shall be set square with nearby straight lines, exactly as shown in plan view. The fact that a utility is "functional" does not satisfy these aesthetic requirements.

**STORM DRAIN STRUCTURES ALIGNMENTS SHALL MATCH CURBS & WALKS.** Before the utility contractor installs storm drain structures, the Contractor's surveyor shall set stakes on both sides of the curb inlets to establish curb of curb and top of curb, and the edge and elevation of curbs and walks located within 10 feet of the structure. The horizontal and vertical alignment of inlets, inlet curb pieces and manholes shall match adjoining curbs and walks.

**DARK GRAY RIP RAP AND STONE REQUIRED.** Rip rap and other stone that will remain as a permanent site improvement shall be dark gray.

**ADJUSTMENT FOR FINAL GRADE.** All existing and proposed utility appurtenances shall be adjusted for final grade.

**CLEAN OUTS.** All clean outs (SAN & S.D.) shall be 4" flush mounted bronze top with recessed keyway on 4" D.I.P. pipe set vertically (2' min. length). If in town areas, clean-outs shall be set flush with grade to prevent damage from mowers. There shall be a "boot-type" clean out for roof drains at the building.

**COMPLIANCE WITH CODES; UTILITY CERTIFICATION.** The Contractor shall supply all materials, equipment and labor necessary to complete the proposed water lines, sanitary sewer system, and storm drain system as required by all applicable governmental codes and manufacturer's requirements. This note applies whether or not the plans show every fitting, bend, clean-out, valve, box, vault, buttress, or other appurtenance or measure which is required by governmental laws and regulations, or manufacturer's requirements. The Contractor shall employ a professional engineer, registered in the State of Maryland, to certify, on a form provided by the Owner, that all proposed sanitary sewers, water lines and storm drains shown herein were installed in accordance with these plans, and all applicable building and plumbing codes.

**PROPOSED PUBLIC STREET LIGHTS:**  
250 WATT HIGH PRESSURE SODIUM  
COBRA STYLE FIXTURE WITH CUT OFF  
LENS MOUNTED AT 30' ON A BRONZE  
FIBER GLASS POLE USING A 12' ARM

STATIONS	OFFSET
74+14	37' LEFT
77+05	35' LEFT
80+78	30' LEFT
84+84	30' LEFT

**ABBREVIATIONS (not alphabetical):**

PROP	Proposed*	DIP	Ductile iron pipe, class 54**
EX	Existing	PVC	Polyvinyl chloride pipe, schedule 40**
BIT	Bituminous	HDPE	High Density Polyethylene Pipe **
CONC	Concrete	CMP	Corrugated Metal Pipe, aluminumized**
MH	Manhole	RCP	Reinforced concrete pipe, class IV**
SD	Storm Drain	C&G	Concrete curb & gutter
I	Inlet	SWM	Storm Water Management
C/O	Clean-out	HW	Invert Elevation
SAN	Sanitary Sewer	FF	Finished floor elevation
FH	Fire Hydrant	BF	Basement floor elevation
TC	Top of curb	BC	Bottom of curb
TS	Top of step	BS	Bottom of step
TB	Top of Boulder	BB	Bottom of Boulder
TW	Top of Wall	BW	Bottom of Wall
PC	Point of Curvature	PS	Parking space
PT	Point of Tangency	HC	Handicapped parking space
PI	Point of Intersection	TYP	Typical

\*Proposed means work included in the base contract unless accompanied by the phrases "N.I.C." or "By Others."  
\*\*Unless otherwise noted on these drawings.

**REPAIR AND REPLACEMENT OF DAMAGE CAUSED BY CONTRACTOR AND SUBCONTRACTORS.** In the event that the Contractor or any of his subcontractors damage any existing curb, gutter, paving, utilities, sidewalks, trees, shrubs, lawns, or any other existing conditions (not indicated to be demolished), or any newly installed proposed improvement, the contractor shall repair and replace said damage to owner's satisfaction, at contractor's sole cost and expense.

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**OWNER AND DEVELOPER**  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-313-6194

**ENGINEER**  
TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21282  
CONTACT: JEFFREY SCHNAB  
410-321-7600

**LIMIT OF DISTURBANCE IS NOT A "LIMIT OF CONTRACT".** The Limit of Disturbance is not a "Limit of Contract." All work shown on the drawings and referred to in the specifications is part of the contract. Work outside the L.O.D. that is part of the contract includes, but is not limited to: (i) areas of existing pavement to be removed, repaired, or resurfaced where the subgrade will not be exposed; (ii) lawn areas to be maintained and reconditioned as part of the contract, but which are not otherwise disturbed; and (iii) trees that require maintenance, pruning and possibly removal, and removal of trash, whether or not generated by the Contractor.

**TEST PITTING DEFINED:** For the purposes of this contract, excavation of utility trenches does not constitute test pitting. Test pitting is a separate operation completed at least seven days before utility installation is scheduled to begin. Test pitting means excavation to expose existing utilities in two situations: (i) where proposed improvements cross existing utilities (pipes, lines, structures, appurtenances) and (ii) where proposed utilities are designed to connect to existing utilities. Test pitting includes recording the type, size, location and elevation of the exposed utilities, and faxing and mailing the record to Tesseract and the Owner. The record may be a legible hand-written field sketch.

**PROCEDURES FOR DEMOLITION**

**SAW CUTTING ASPHALT PAVEMENT.** All asphalt pavement to be removed shall be saw cut in straight lines approved by the owner. Points at which the lines to be saw cut will intersect shall be drilled so that the saw cut lines do not pass through the intersecting point.

**REMOVAL OF CONCRETE CURB, CURB & GUTTER, AND PAVEMENTS TO NEAREST JOINT.** When removal of concrete curb, curb & gutter, sidewalk, and other concrete pavement is expressly required by the drawings or is required to construct or install utilities or any other site improvement, remove the entire section of concrete to the closest expansion joint beyond the required work. The base contract shall include said removal and replacement at no additional cost to the owner.

**REMOVAL WASTE FROM OWNER'S PROPERTY:** Remove all construction debris from the Owner's property in a lawful manner.

**WALLS**  
Walls shall be plumb and the top of wall shall be a smooth line consisting of straight lines and transitions.

**SITE LIGHTING AND OTHER UTILITY SYSTEMS**  
Site lighting, electric service, gas, propane service, and telecommunications systems, as well as chilled water and steam lines, are not designed by Tesseract Sites, Inc. The purpose of showing such utilities on the civil drawings is to coordinate their location with other site improvements in order to avoid conflicts with water lines, sanitary sewers, storm drains, road and parking lot layout, walls, fences, landscaping and other improvements. The civil drawings shall be the controlling source for the layout of all utility lines and appurtenances. The contractor shall coordinate the requirements of the electrical and telecommunication drawings, and mechanical and plumbing drawings, with the civil drawings, and shall likewise coordinate the location and timing of installation of utilities that are installed by other private utility companies or vendors, whether or not such utilities are part of the contract. Before staking out any utility in a location different than is shown on the civil drawings, send a sketch showing the alternative alignment to Tesseract Sites, Inc. for review and comment. Utilities and utility appurtenances that are installed in conflict with the proposed location of other site improvements (including parking spaces) shall be removed and reinstalled in the correct location. Site lighting shall be installed as shown on the civil drawings to avoid conflicts with parking lot layout and other site improvements; lighting in the parking lot pavement shall be installed at the intersection of four parking spaces; lighting located adjacent to roads and parking lots shall be 3' from the face of curbs unless otherwise indicated by controlling authorities; and lighting along walks shall be 2' from the edge of walk.

**ROADS, PARKING LOTS, AND PAVEMENTS**

**PAVEMENTS.** Concrete and masonry pavements and the surface course of asphalt pavements shall not be installed until successful completion, testing and approval of the subgrade and underground utilities, and completion of all work that might damage the finished surface of the pavement. Final pavement surfaces shall be uniform in color and finish, free of defects, discoloration, and patches. Refer to stormwater management drawings for specific protections and procedures for porous pavement surfaces.

**Tesseract**  
TESSERACT SITES, INC.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284  
P. 410.321.7600  
F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS**

*B. J. Peterson* 1/7/2011  
County Health Officer  
Howard County Health Department

**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING**

*Cheryl Williams* 12/12/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Walt DeWilde* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Dennis J. Butler* 1/12/11  
DIRECTOR

RECORD LOG AND AS-BUILT INFORMATION. Maintain a log of layout control work and an updated survey of as-built conditions showing the size, type, location and elevation of site improvements including building corners and slab elevations, utilities (including the size, type, slope, and invert elevations of pipes), curbs, parking lot and road elevations, walk and wall alignments and elevations, and the location and elevation of other site amenities and improvements. Notify Owner immediately when deviations from required lines and levels exceed allowable tolerances. Provide a copy of the updated as-built survey each month.

9/29/11 Revised layout & Deleted 5 Spaces  
DATE REVISION

**AESTHETICS ARE MATERIAL PART OF CONTRACT**

The final appearance and aesthetics of all site improvements are essential and material parts of the contract. Site improvements that are fully functional, but which deviate from the design and the aesthetic requirements of the drawings and specifications do NOT constitute substantial completion of the contract. All site improvements shall comply with graphic representations, notes and specifications regarding vertical and horizontal alignment, spacing, color, and finishes. Specific aesthetic requirements are set forth in these General Notes regarding: (i) Grading; (ii) Utilities and Rip-Rap; (iii) Pavements; (iv) Walls; and (v) Plants.

**STAKE-OUT PROCEDURES AND AS-BUILT SURVEYS**

**STAKE-OUT BY LICENSED SURVEYOR.** Stakeout of all sediment control measures, buildings, structures, utilities, grading, roads, curbs, walks, walls, and fences shall be performed under the direction of a professional surveyor licensed in the state of Maryland with proven capability and experience on similar projects.

**STAKE-OUT BY LICENSED SURVEYOR.** Stakeout of all sediment control measures, buildings, structures, utilities, grading, roads, curbs, walks, walls, and fences shall be performed under the direction of a professional surveyor licensed in the state of Maryland with proven capability and experience on similar projects.

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**COMPLIANCE WITH CODES; UTILITY CERTIFICATION.** The Contractor shall supply all materials, equipment and labor necessary to complete the proposed water lines, sanitary sewer system, and storm drain system as required by all applicable governmental codes and manufacturer's requirements. This note applies whether or not the plans show every fitting, bend, clean-out, valve, box, vault, buttress, or other appurtenance or measure which is required by governmental laws and regulations, or manufacturer's requirements. The Contractor shall employ a professional engineer, registered in the State of Maryland, to certify, on a form provided by the Owner, that all proposed sanitary sewers, water lines and storm drains shown herein were installed in accordance with these plans, and all applicable building and plumbing codes.

**ROADS, PARKING LOTS, AND PAVEMENTS**

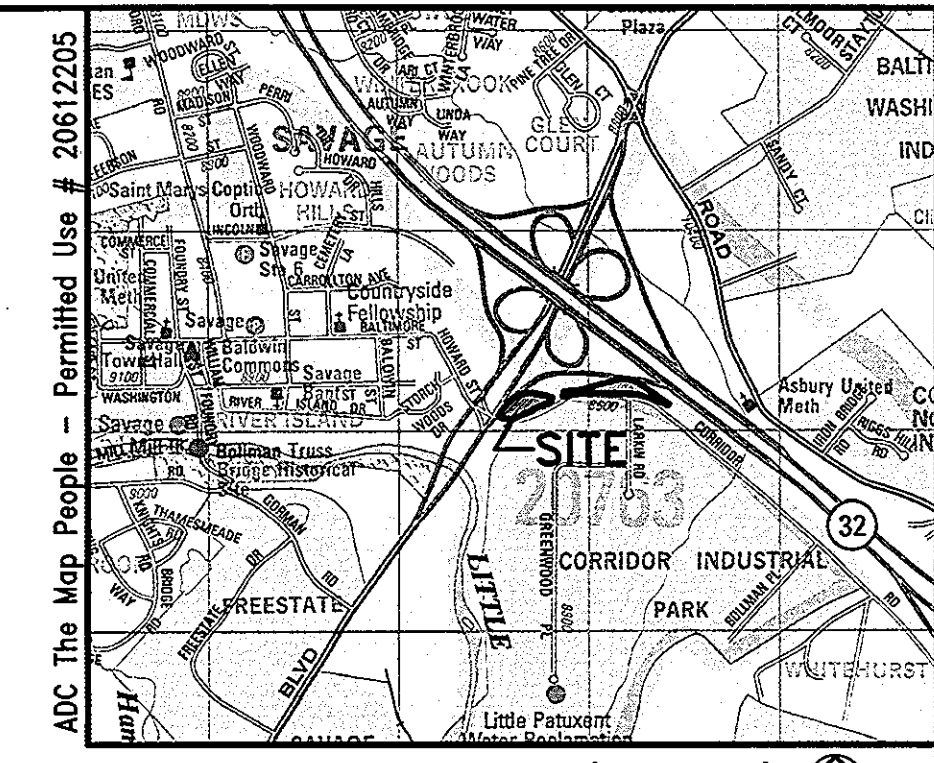
**PAVEMENTS.** Concrete and masonry pavements and the surface course of asphalt pavements shall not be installed until successful completion, testing and approval of the subgrade and underground utilities, and completion of all work that might damage the finished surface of the pavement. Final pavement surfaces shall be uniform in color and finish, free of defects, discoloration, and patches. Refer to stormwater management drawings for specific protections and procedures for porous pavement surfaces.

**Corridor Industrial Park, Section 1, Parcel C-1**  
Savage Volunteer Fire Station  
Savage, Maryland

**Site and Layout Plan**

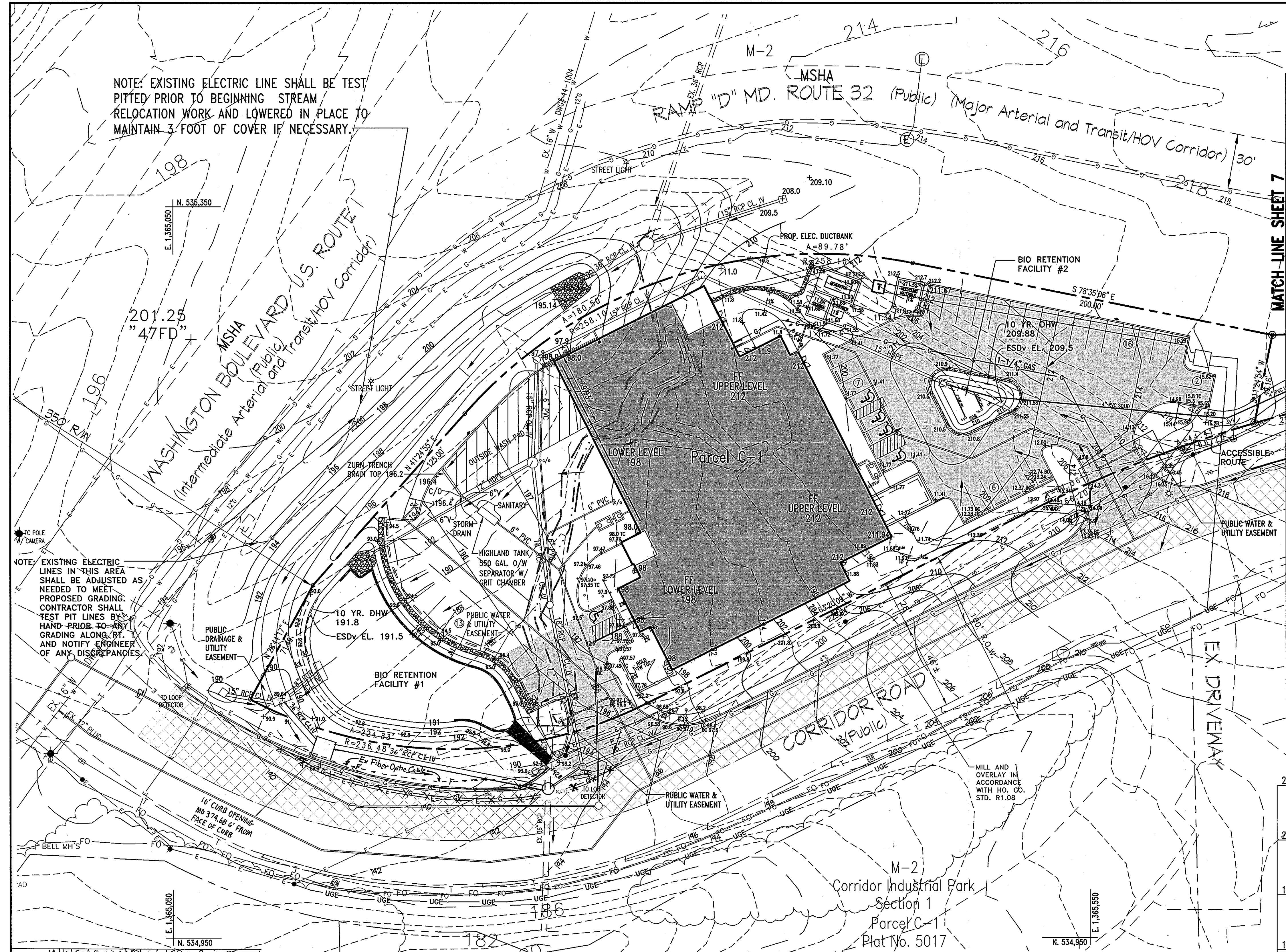
DATE: 1/8/12	ZONE: M-2	PARCEL MAP: 47	ELECTRICTY: 6TH	PROJECT NO: 21380	DATE: 10/22/2010
<p>* COUNCIL RESOLUTION 99-2010 APPROVED REQUESTS FOR REVISED STRUCTURE AND USE SETBACKS. SEE ALSO NOTE 33 ON SHEET 1 OF 33.</p> <p>This project is subject to Howard County Council Resolution 99-2010, dated July 29, 2010, which approved the following requests:</p> <ol style="list-style-type: none"> <li>1. A 3 foot minimum structure and use setback from Route 1 and Route 32 rights of way and the Corridor Road right of way for a primary fire station structure,</li> <li>2. A 0 foot minimum structure and use setback from Route 1 and Route 32 rights of way for parking uses,</li> <li>3. A 0 foot minimum structure and use setback from Corridor Road right of way for parking uses,</li> <li>4. A 0 foot minimum structure and use setback for pathways and sidewalks connecting the parking lots to the fire station,</li> <li>5. A 0 foot minimum structure and use setback for the front entrance patio wall from the Corridor Road right of way,</li> <li>6. A 0 foot minimum structure and use setback for the dumpster wall from the Route 32 right of way,</li> <li>7. A 0 foot minimum structure and use setback for the BGE transformer from the Route 32 and Route 1 rights of way.</li> </ol>					<p>Scale: 1"=30'</p> <p><b>5 of 33</b></p>

SDP 10-084



Vicinity Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9

NOTE: EXISTING ELECTRIC LINE SHALL BE TEST PITTED PRIOR TO BEGINNING STREAM RELOCATION WORK AND LOWERED IN PLACE TO MAINTAIN 3' FOOT OF COVER IF NECESSARY.



**EARTHWORK & GRADING**

ALL EXCAVATION IS UNCLASSIFIED; ACHIEVING PROPOSED GRADES IS PART OF LUMP SUM. The Lump Sum contract price includes: excavation to required subgrade of all materials, whether wet or dry, natural or man-made, regardless of the character; all stripping and stockpiling of topsoil; grading; haul-off of excess earth, topsoil and unsuitable materials; on-site and off-site borrow; protecting soils from moisture and drying soils; and placement and compaction; all aspects of earthwork shall be completed as necessary to achieve the final grades indicated by the contours and spot elevations shown on the Final Grading Plan.

GENERAL REQUIREMENTS. Grading shall achieve positive drainage away from buildings and toward drainage facilities (swales, gutters, inlets, etc.) and aesthetically pleasing vertical curves and lines. Transitions between existing and proposed pavement shall be smooth and joints flush. The profile slope (longitudinal slope) of roads, curbs, and walks shall be formed by series of straight lines and parabolic vertical curves that transition smoothly into the next line; a series of broken tangents (lines with differing slopes) is not an acceptable method of forming roads, curbs or walks. Likewise, the graded slopes shall be rounded at top and bottom:



MINIMUM & MAXIMUM SLOPES ON UNPAVED AREAS. Unless expressly noted otherwise on the plan, unpaved areas shall have a minimum slope of 2% and a maximum slope of 3:1.

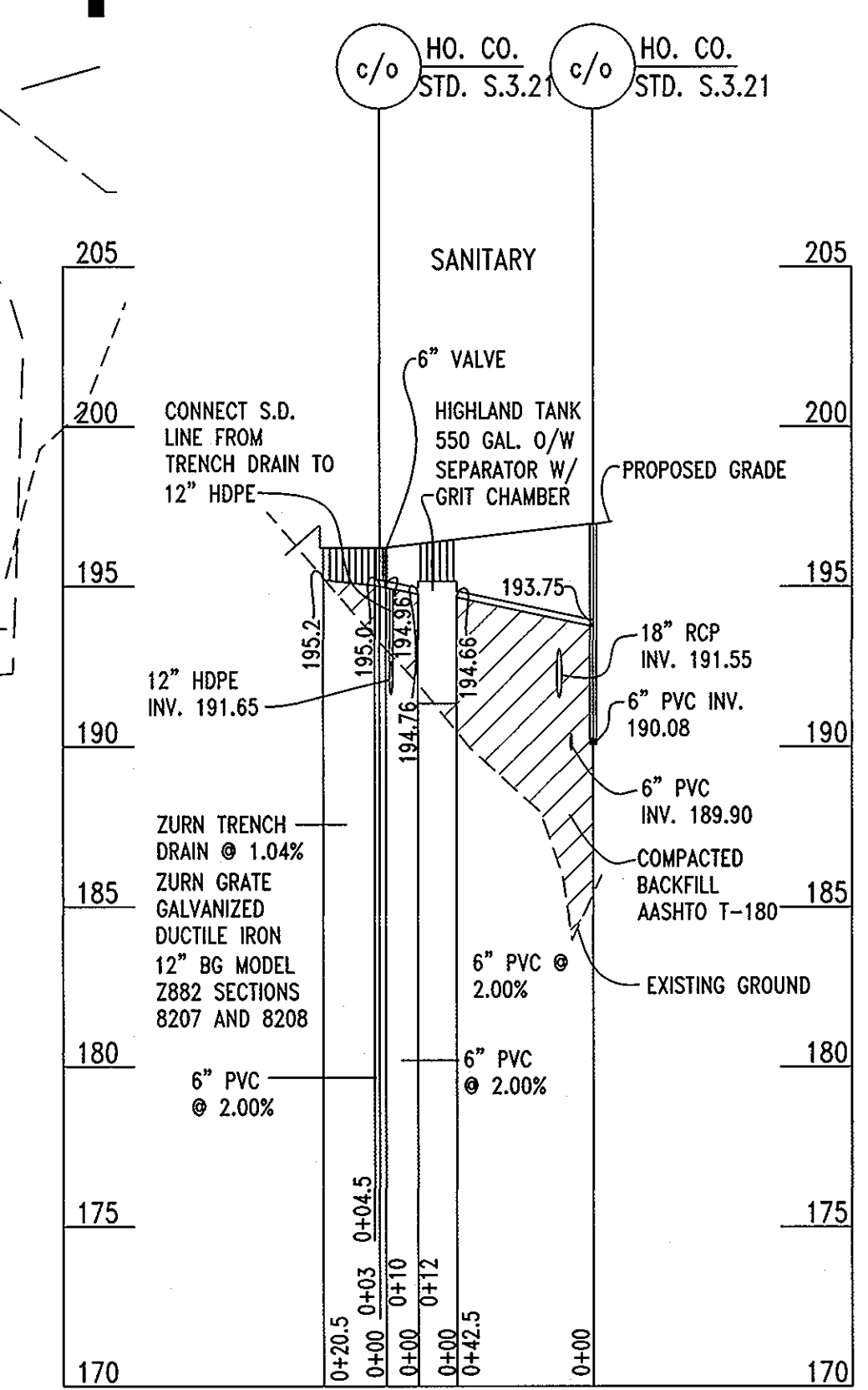
MINIMUM SLOPES ON PAVEMENTS: Unless otherwise expressly noted on the plan (by arrow with the percent slope labeled), all proposed asphalt pavement shall have minimum slope of 1.7% and all concrete pavement shall have a minimum slope of 1% in the direction indicated by proposed contours.

MAXIMUM SLOPES FOR WALKS AND PATHS: The longitudinal slopes of walks, paths and other pedestrian surfaces shall not exceed 5% and the cross slope of all paths shall be 2.0%.

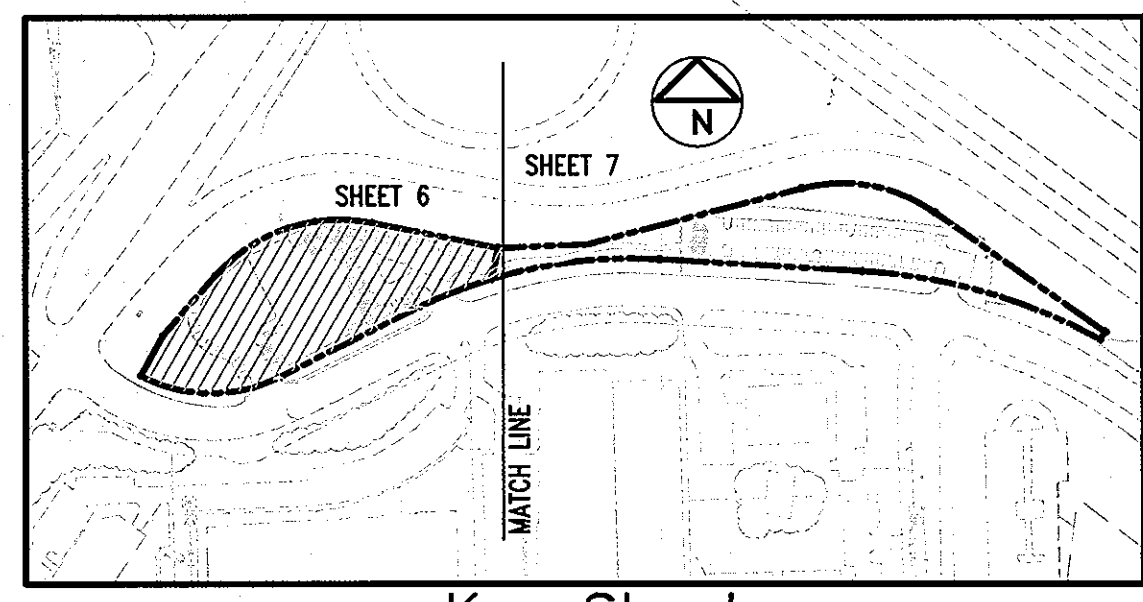
DRAINAGE ACROSS WALKS AND PATHS: All unpaved surfaces adjacent to the high side of the paved surface shall be 3/4" higher than the paved surface to prevent water from accumulating along the edge of the path and all unpaved surfaces along the lower side of a paved surface shall be 1/2" lower than the paved surface to permit free drainage off the paved surface.

TOLERANCES: While achieving the design intent (aesthetic and functional) of the grading required by the Final Grading Plan and the General Notes, the grading tolerance for lawn and other unpaved areas is 0.1' elevation, for curbs and pavements is 0.05' elevation.

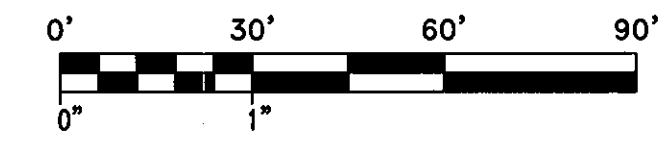
NOTE: EXISTING ELECTRIC LINES IN THIS AREA SHALL BE ADJUSTED AS NEEDED TO MEET PROPOSED GRADING. CONTRACTOR SHALL TEST PIT LINES BY HAND PRIOR TO ANY GRADING ALONG RT. AND NOTIFY ENGINEER OF ANY DISCREPANCIES.



NOTES: VALVE TO SANITARY LINE SHALL REMAIN CLOSED AND VALVE TO S.D. LINE SHALL REMAIN OPEN EXCEPT WHEN VEHICLES ARE WASHED, THEN THE VALVE SHALL BE CLOSED ON THE S.D. LINE AND OPENED ON THE SANITARY.  
WHEN WASHING HAS BEEN COMPLETED VALVE TO SANITARY LINE SHALL BE CLOSED AND VALVE TO S.D. SHALL BE OPENED.



THE PURPOSE OF THE REVISED SDP IS TO ADD A DESIGNATED OUTSIDE WASH AREA FOR THE FIRE APPARATUS AND PROVIDE THE REQUIRED COLLECTION AND TREATMENT SYSTEM FOR THE WASH WATER, AND TO PROVIDE AN AREA WHERE THE FIRE DEPARTMENT CAN TEST THEIR HOSES IN THE EAST PARKING LOT BY REPLACING A PORTION OF THE PERVIOUS CONCRETE PAVING WITH ASPHALT AND REDUCING THE PARKING AREA BY 5 SPACES. DUE TO EXTENSIVE CHANGES TO SOME DETAILS AND PROFILES AND FOR CLARITY WE HAVE REQUESTED SUBSTITUTE SHEETS FOR SHEETS 6, 22, & 24.



2/7/12	Added Curb Opening & Relocated Storm Drainage
9/29/11	ADDED OUTSIDE WASH PAD AREA, O/W SEPARATOR & ASSOCIATED NOTES & PROFILES
DATE REVISION	
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS	
County Health Officer Howard County Health Department	DATE 9/11
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/20/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/02/11
DIRECTOR	DATE 11/11

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave. Suite 303  
Towson, Maryland, 21284 P. 410.321.7600 F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Revised Site Development Plan**  
Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland  
**Grading Plan**

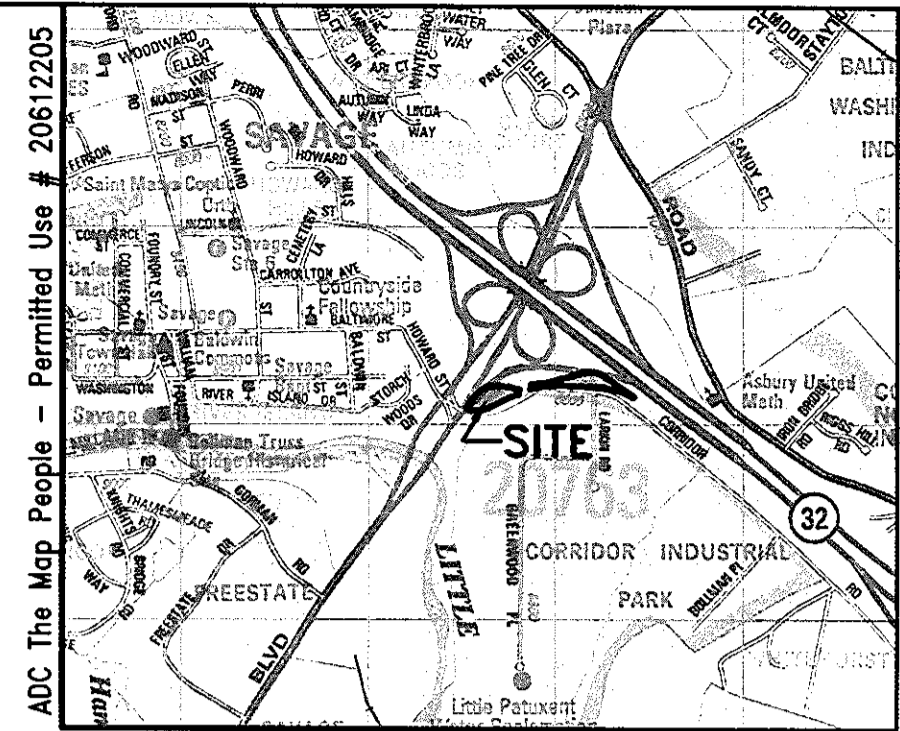
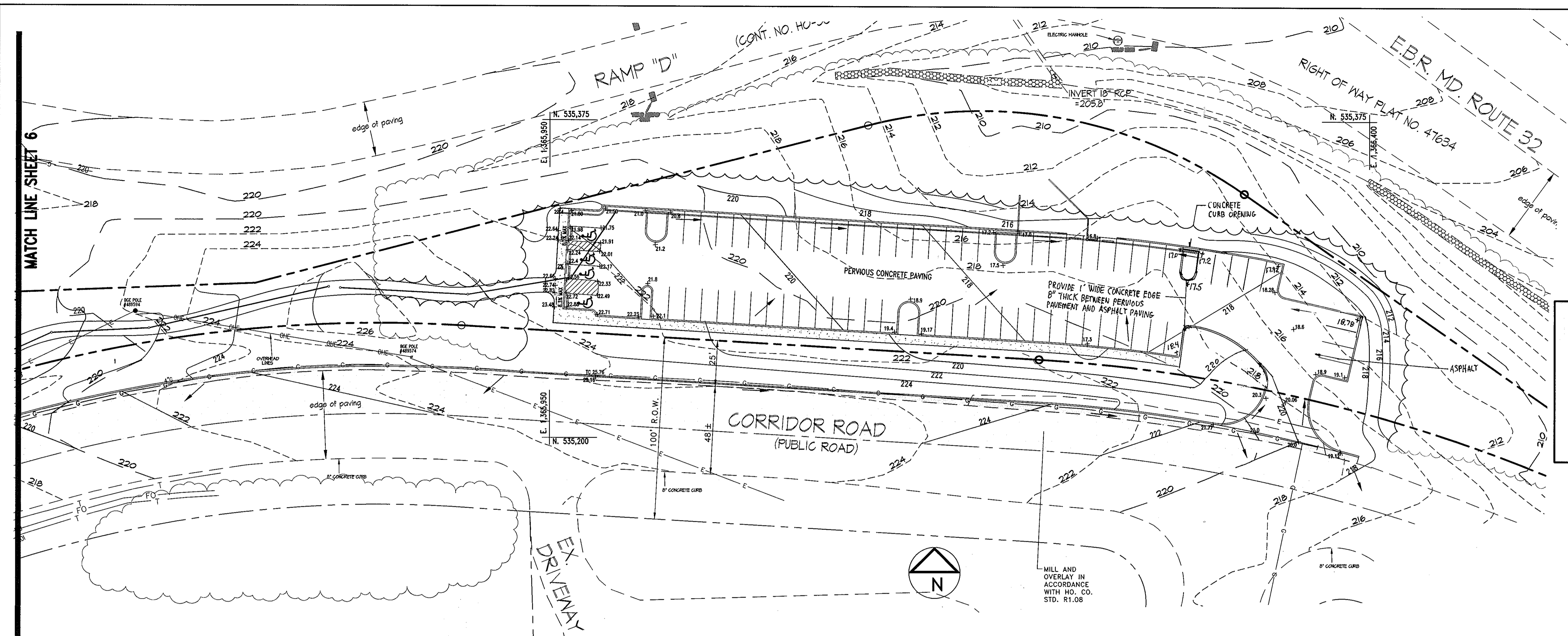
PROJECT: C-1	DATE: 10/20/11	PLAT: 21380
DATE: 10/20/11	DATE: 10/20/11	DATE: 10/20/11
DATE: 10/20/11	DATE: 10/20/11	DATE: 10/20/11

OWNER AND DEVELOPER  
MARYLAND STATE HIGHWAY ADMINISTRATION  
107 NORTH CALVERT STREET  
BALTIMORE, MD 21202  
410-545-0300

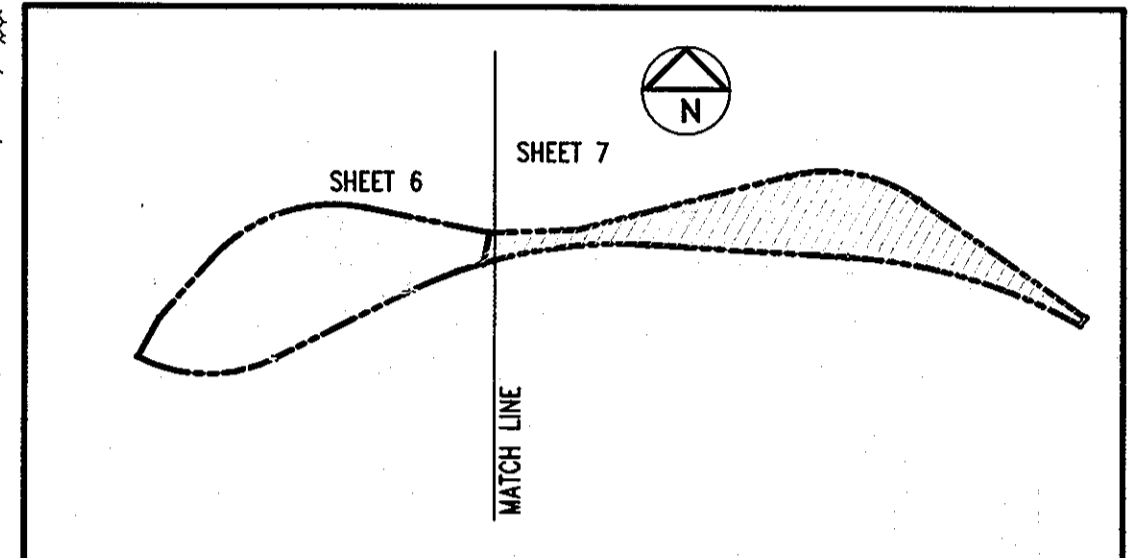
ENGINEER  
Tesseract Sites, Inc.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21202  
CONTACT: JEFFREY SCHNAB  
410-321-7600

Date: 1/28/2011  
Proj. #: 08016  
Scale: 1"=30'

**6 of 33**



Vicinity Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9



Key Sheet  
Scale: 1" = 300'

9/29/11 REVISED PARKING LOT LAYOUT Deleted 55 spaces  
DATE REVISION

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

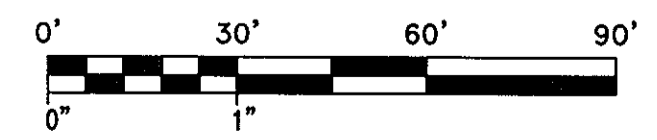
*Patricia A. Bielewicz* 11/7/2011  
County Health Officer  
Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*John J. Damm* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*W. J. Schenk* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas J. Butler* 1/12/11  
DIRECTOR



OWNER  
MARYLAND STATE HIGHWAY ADMINISTRATION  
707 NORTH CALVERT STREET  
BALTIMORE MD 21202  
410-545-0300

OWNER AND DEVELOPER  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-313-6134

ENGINEER  
TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB  
410-321-7600

TESSERACT SITES, INC.  
401 Washington Ave. Suite 303  
Towson, Maryland, 21284  
P: 410.321.7600  
F: 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

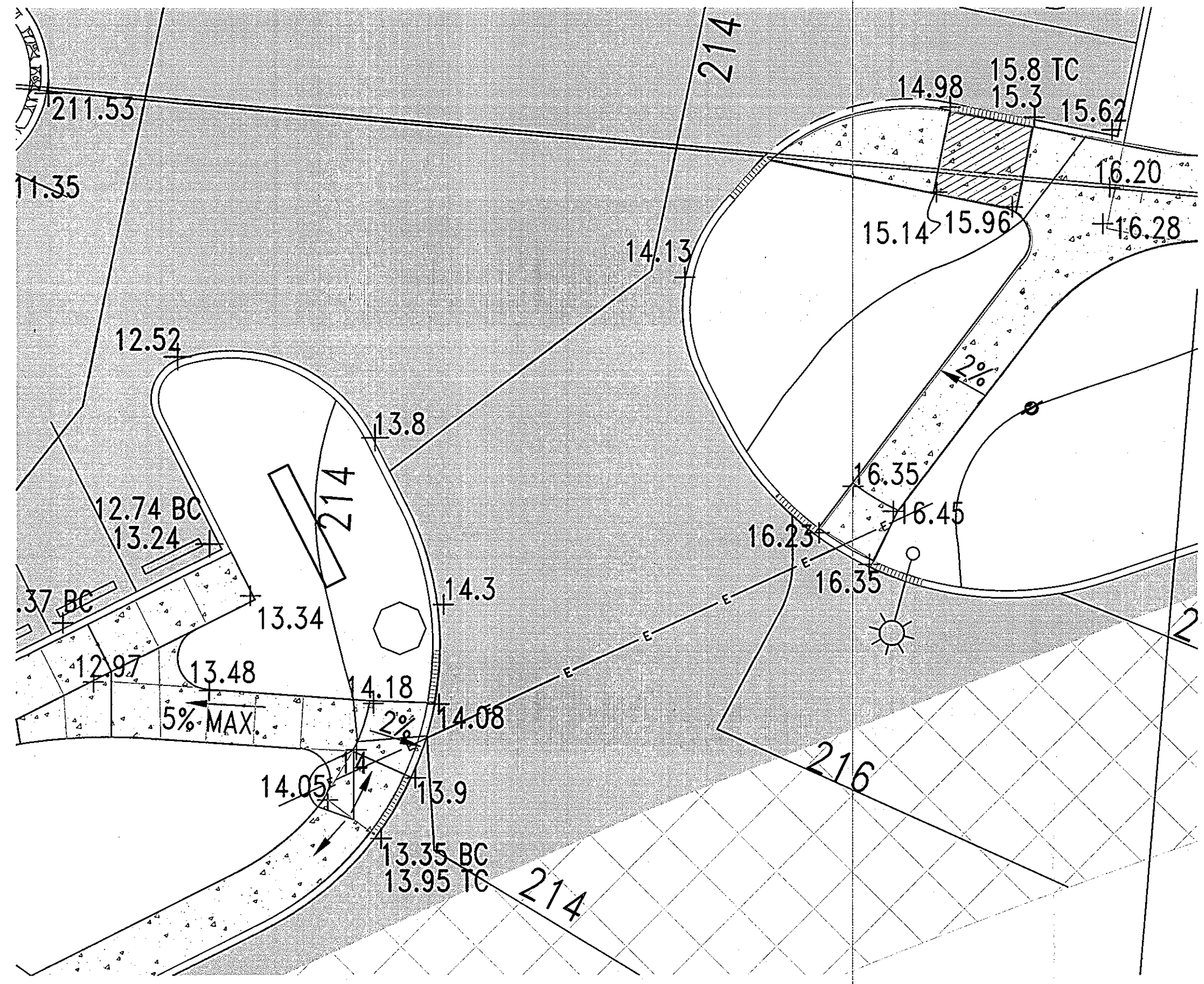
**Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland**

**Grading Plan**

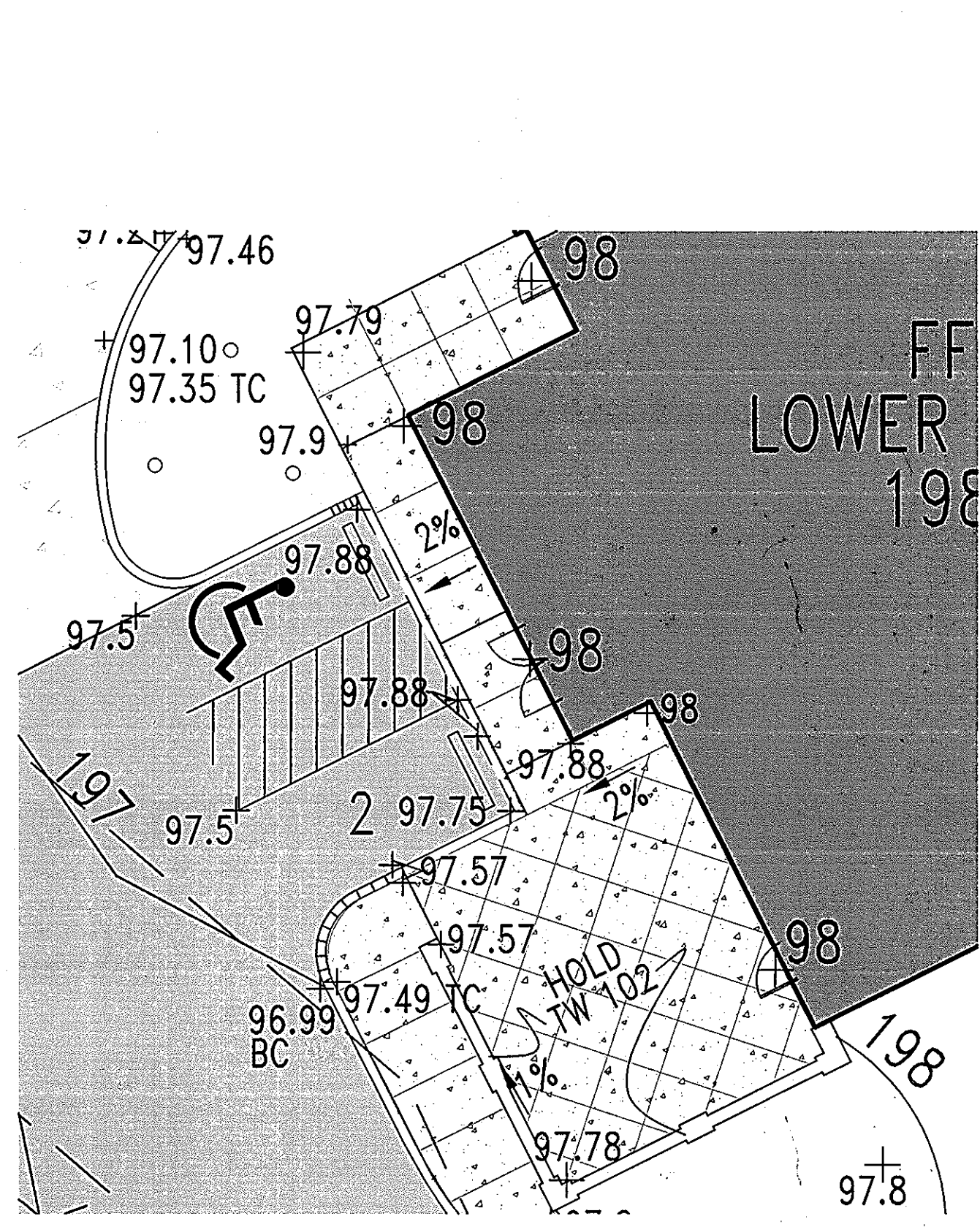
LOT/PARCEL: C-1	LIBRARY: 5454/243 102502/188	PLANS: 21380
OWNER: 18,12	ZONE: M-2	PROJECT/DATE: 6TH 606902

Date: 10/22/2010  
Proj. #: 08016  
Scale: 1" = 30'

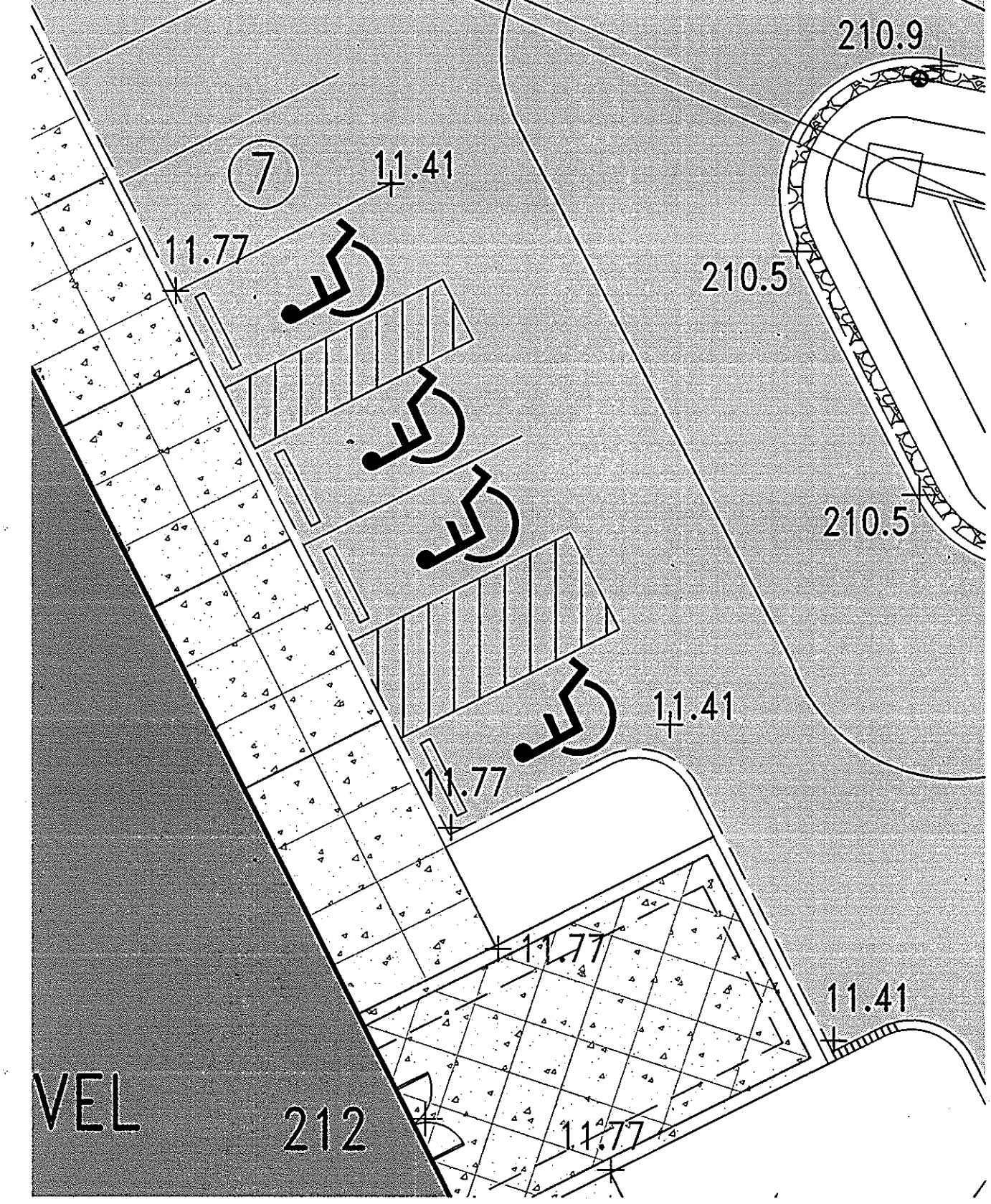
7 of 33



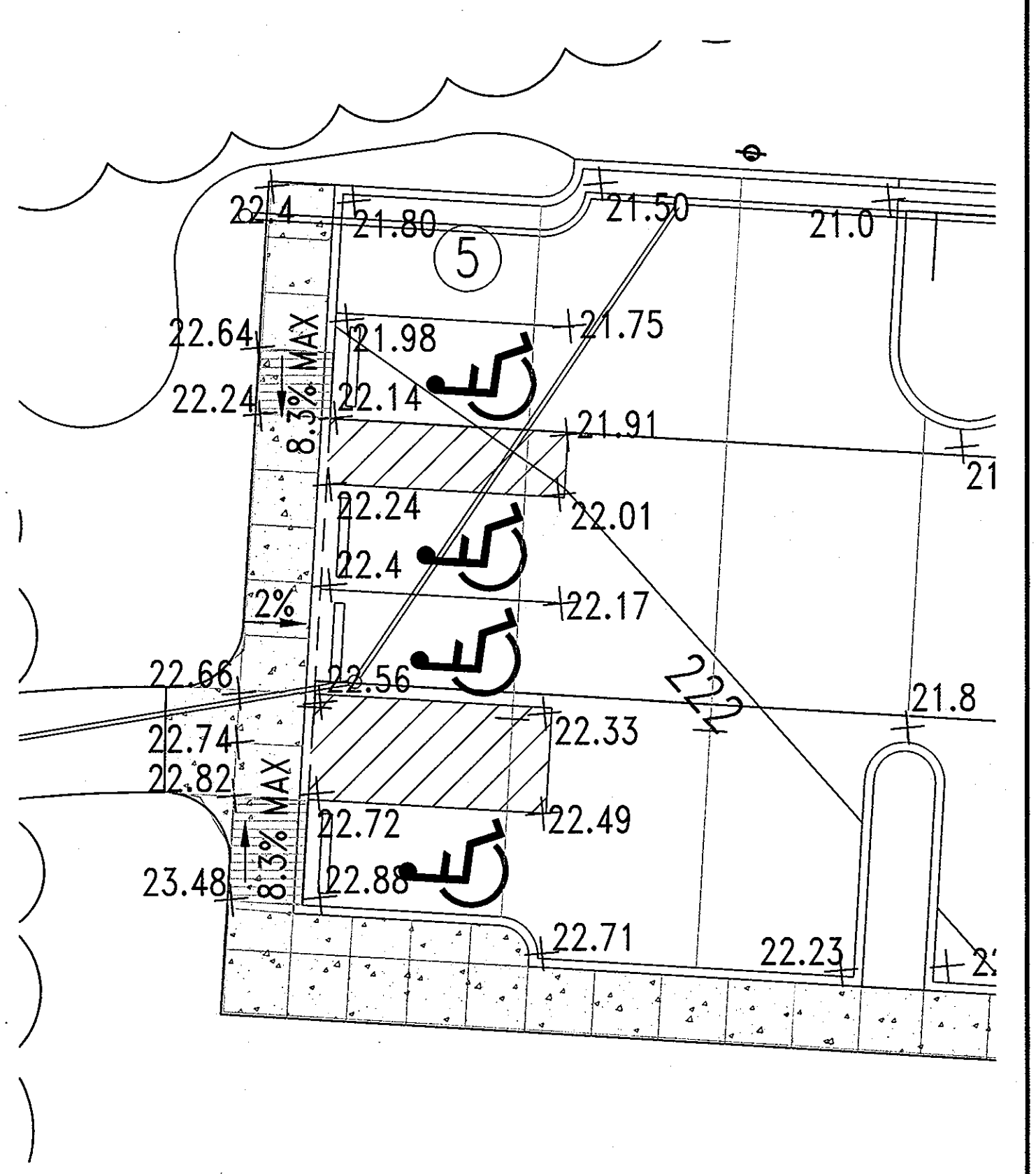
**A** Handicap Ramp Northwest Parking Entrance 1" = 10'



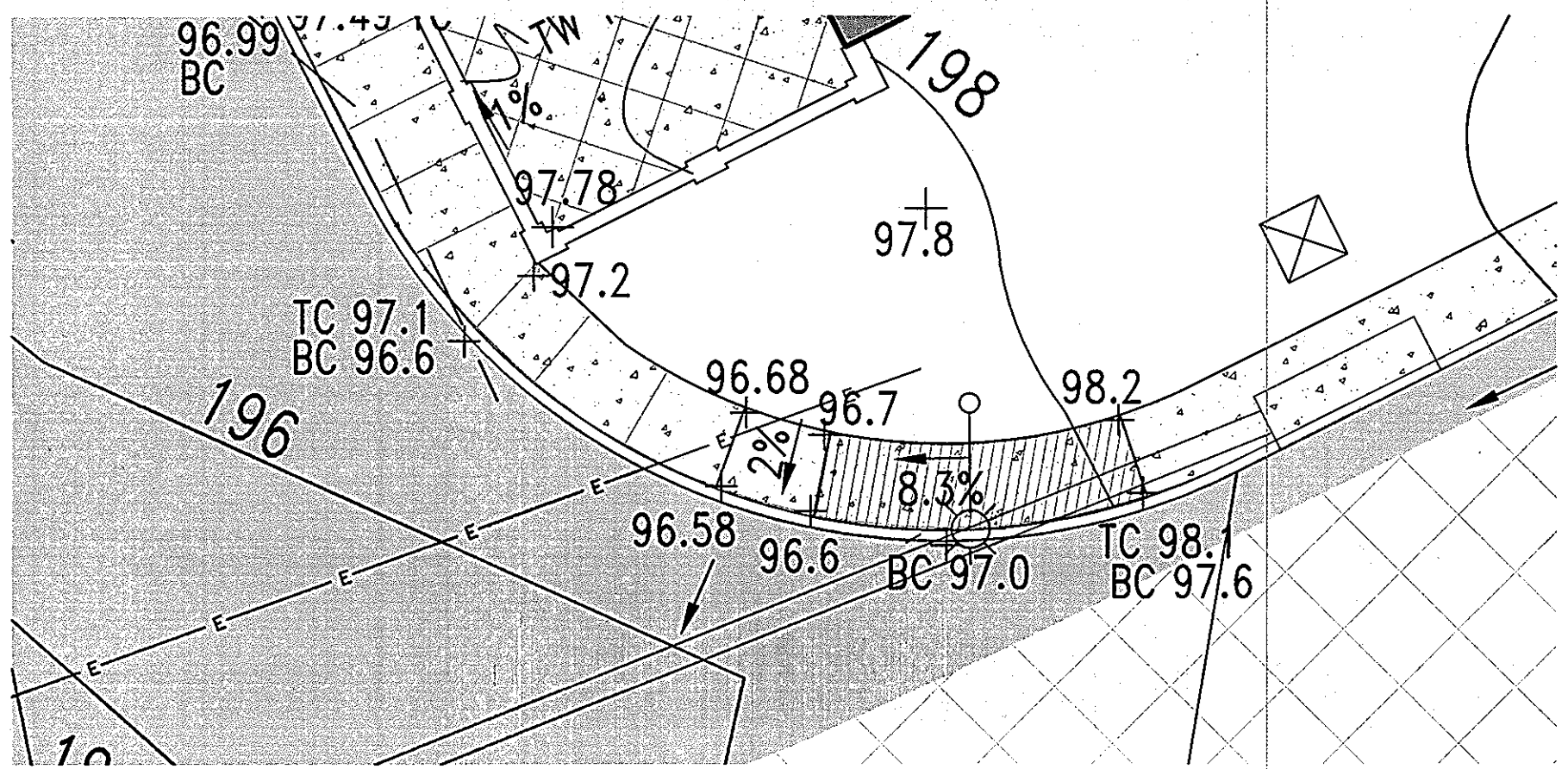
**B** Accessible Parking Northwest Building Entrance 1" = 10'



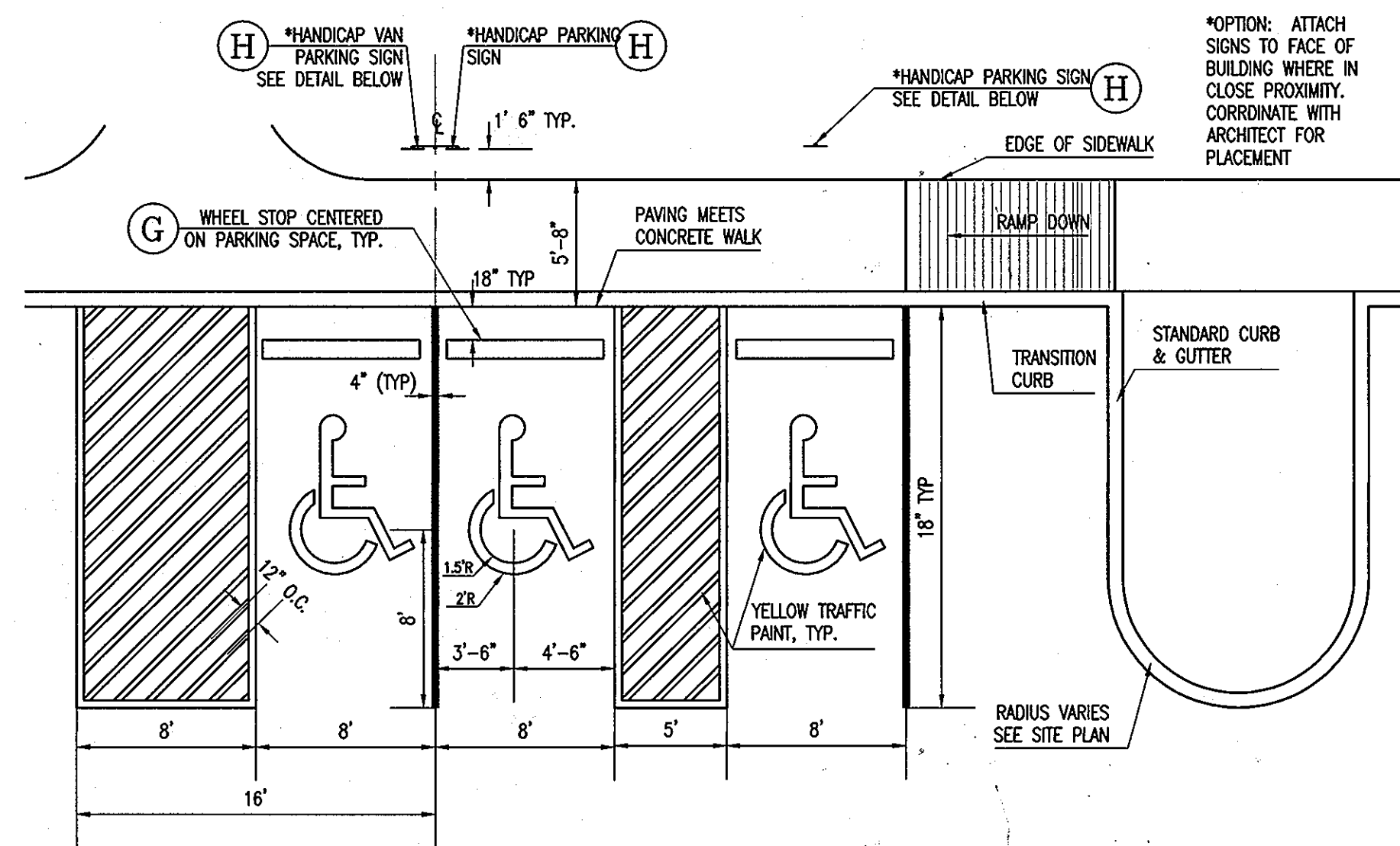
**C** Accessible Parking Northeast Building Entrance 1" = 10'



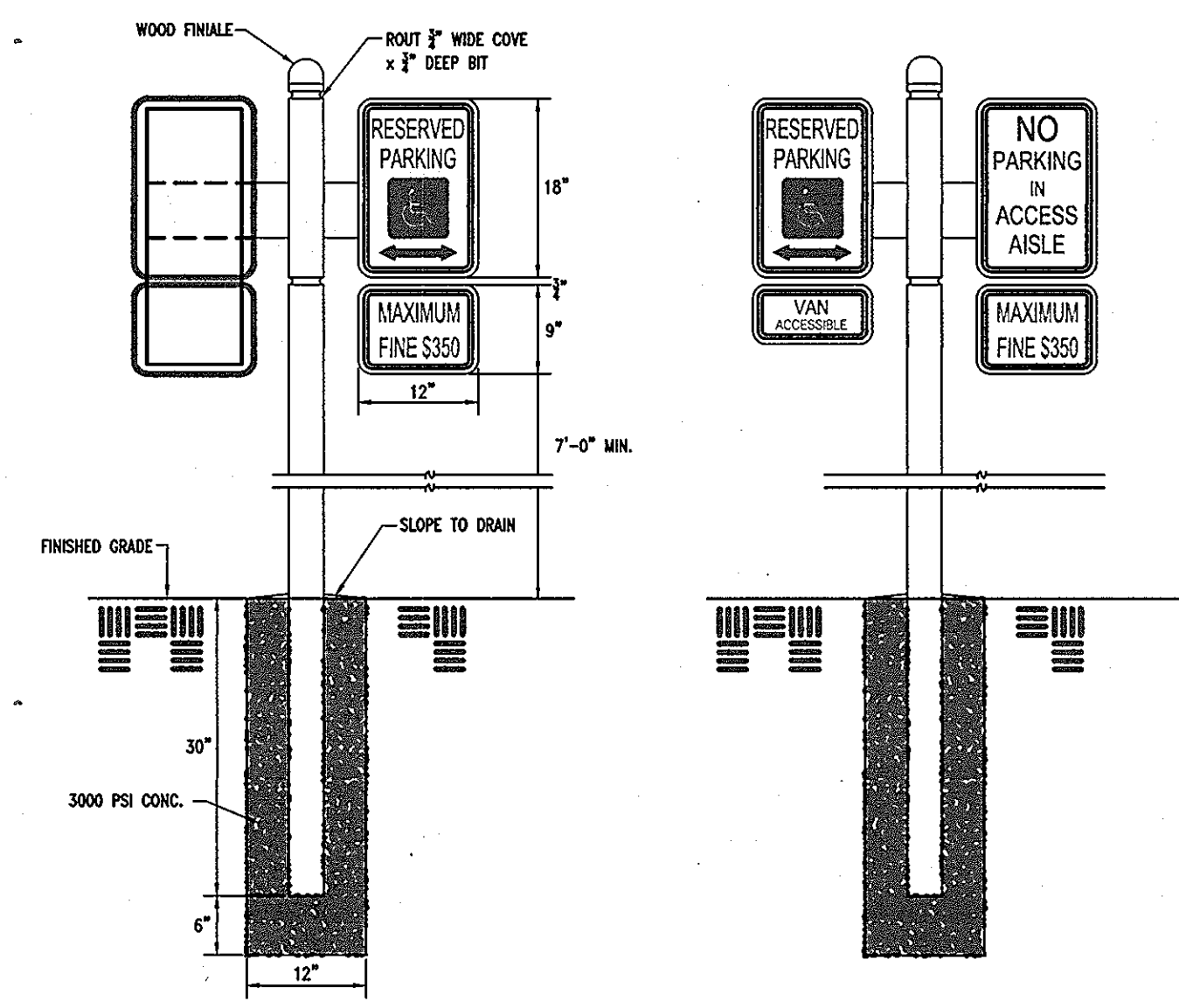
**D** Accessible Parking Park and Ride Lot 1" = 10'



**E** Handicap Ramp Northeast Parking Entrance 1" = 10'



**F** Accessible Parking Typical: Van & Standard NOT TO SCALE



**H** Handicap Parking Signs NOT TO SCALE

SIGN SIZE	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	I	J	K	L
STD.	12	18	1/2	1	2	2	1	6	2	4		

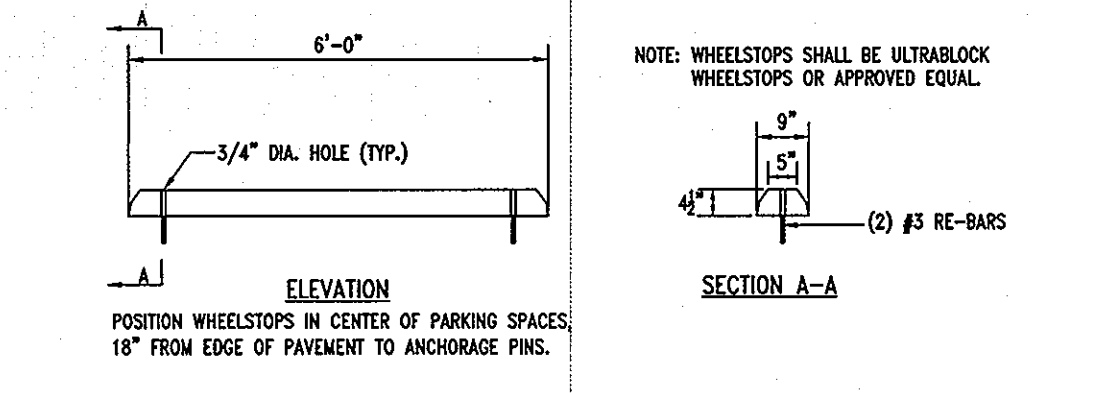
SIGN SIZE	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	I	J	K	L
STD.	5	4	3	1	4	1	3					

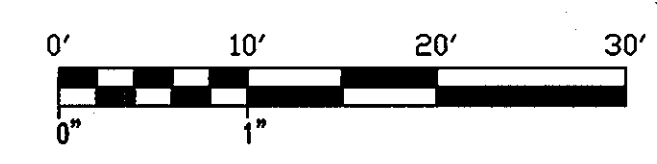
SIGN SIZE	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	I	J	K	L
STD.	12	9	7	3	1	28	1	1	1	1	1	1

COLORS - HANDICAP AND FINE SIGN  
 LEGEND AND BORDER - GREEN  
 WHITE SYMBOL ON BLUE  
 BACKGROUND  
 BACKGROUND - WHITE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
*B. Wilson for Peter Brilenson* 1/7/2011  
 County Health Officer  
 Howard County Health Department  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*John D. ...* 12/17/10  
 CHIEF, DEVELOPING ENGINEERING DIVISION  
*Verd ...* 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
*Thomas ...* 1/12/11  
 DIRECTOR



**G** PreCast Concrete Wheelstop NOT TO SCALE



**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303  
 Towson, Maryland, 21284  
 P. 410.321.7609  
 F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland

Site Details

DATE/PROJECT: C-1	DATE/REV: 5/24/2011	DATE: 2/13/10
DATE: 1/18/12	DATE: M-2	DATE: 6/7/11

OWNER AND DEVELOPER: HOWARD COUNTY, MD  
 4250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-319-6191

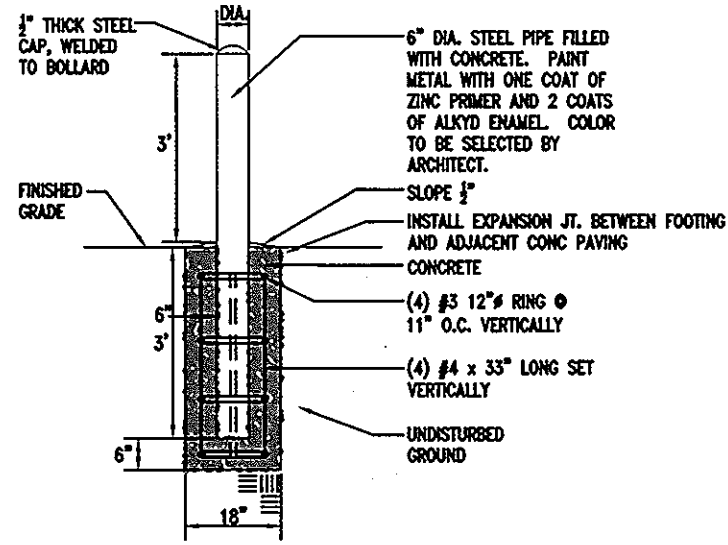
ENGINEER: TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21202  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

Date: 10/22/2010  
 Proj. #: 08016  
 Scale: AS SHOWN

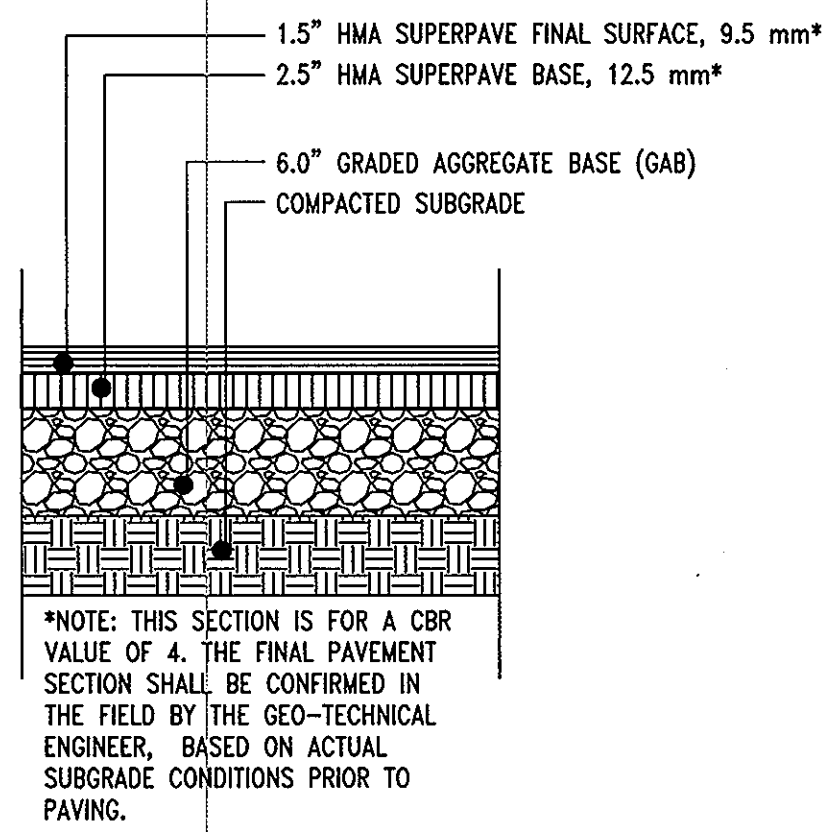
**8 of 33**



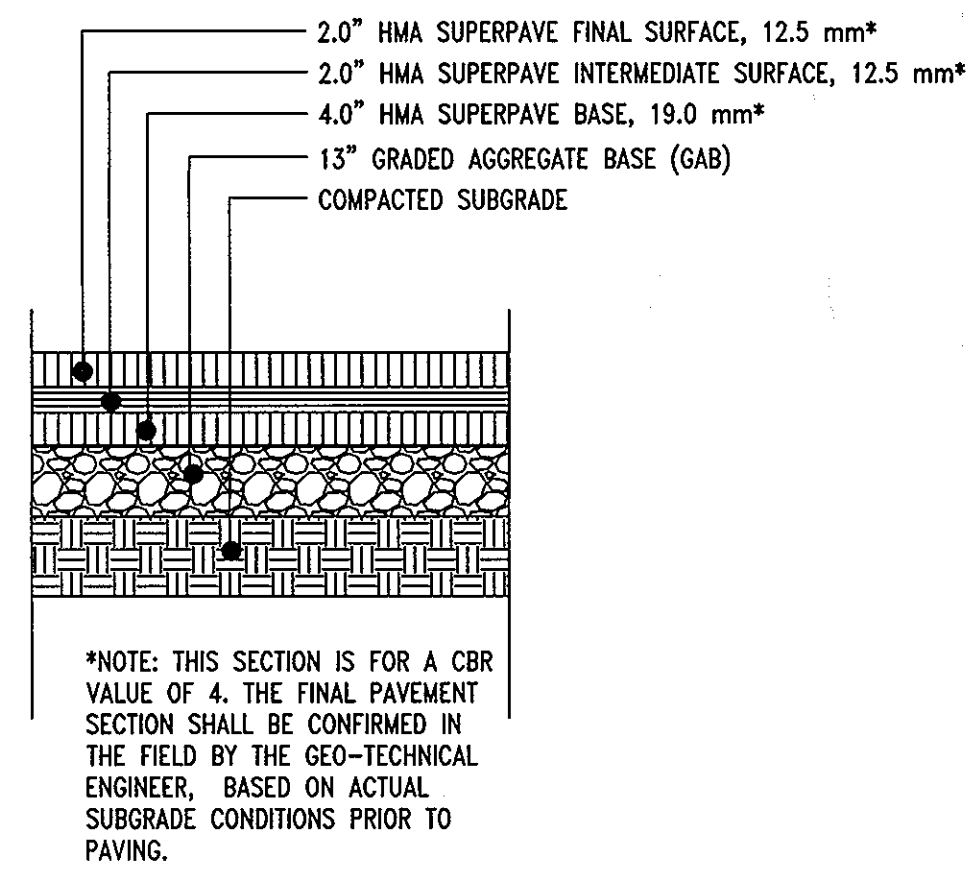
REINFORCEMENT	QUANTITY	SIZE	DIMENSION	SPACING
HORIZONTAL	4	#4	12" LONG	EQUAL
VERTICAL	4	#4	12" LONG	EQUAL



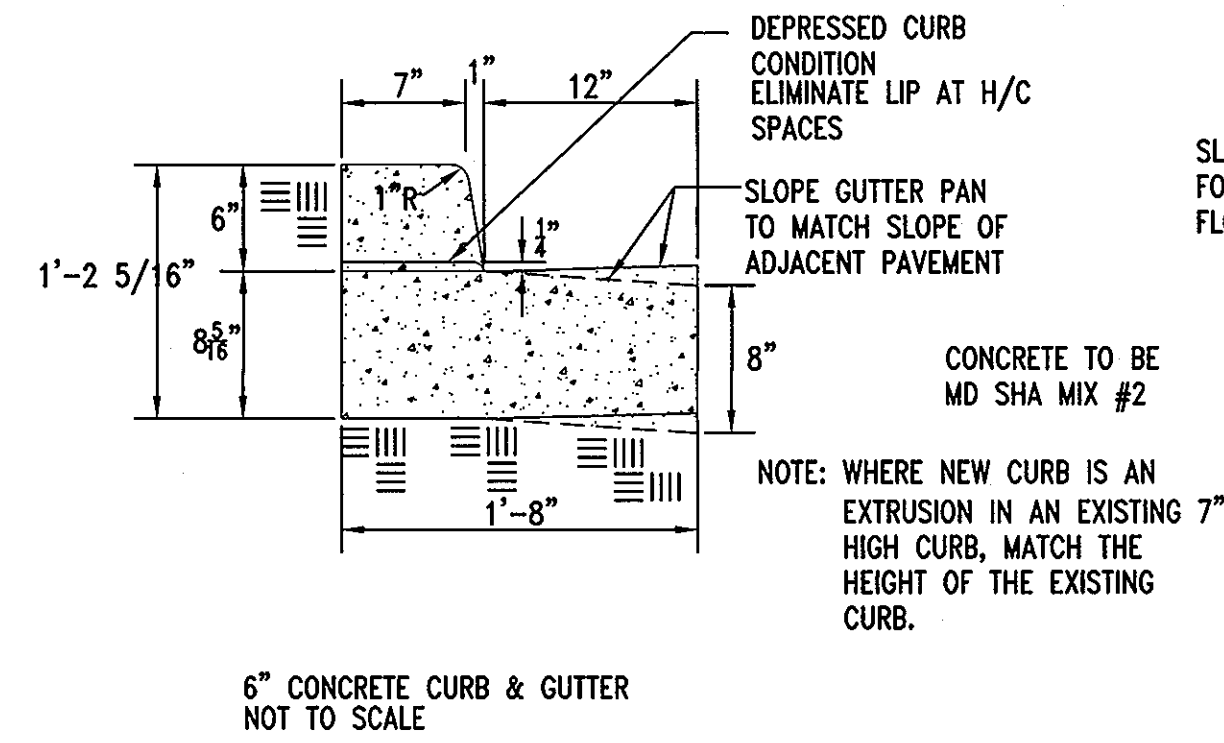
**A** Bollard  
NOT TO SCALE



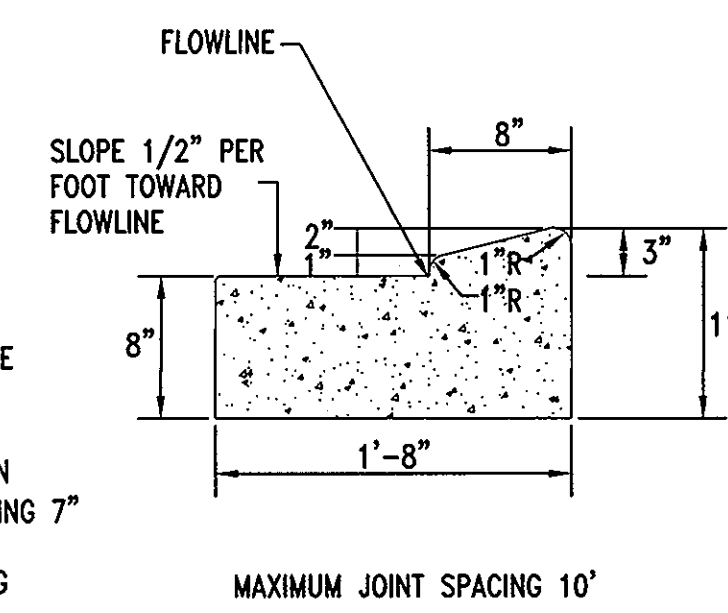
**B** Medium-duty Paving Section (P2)  
NOT TO SCALE  
COMPACTION LEVEL 1  
BINDER TYPE PG 64-22



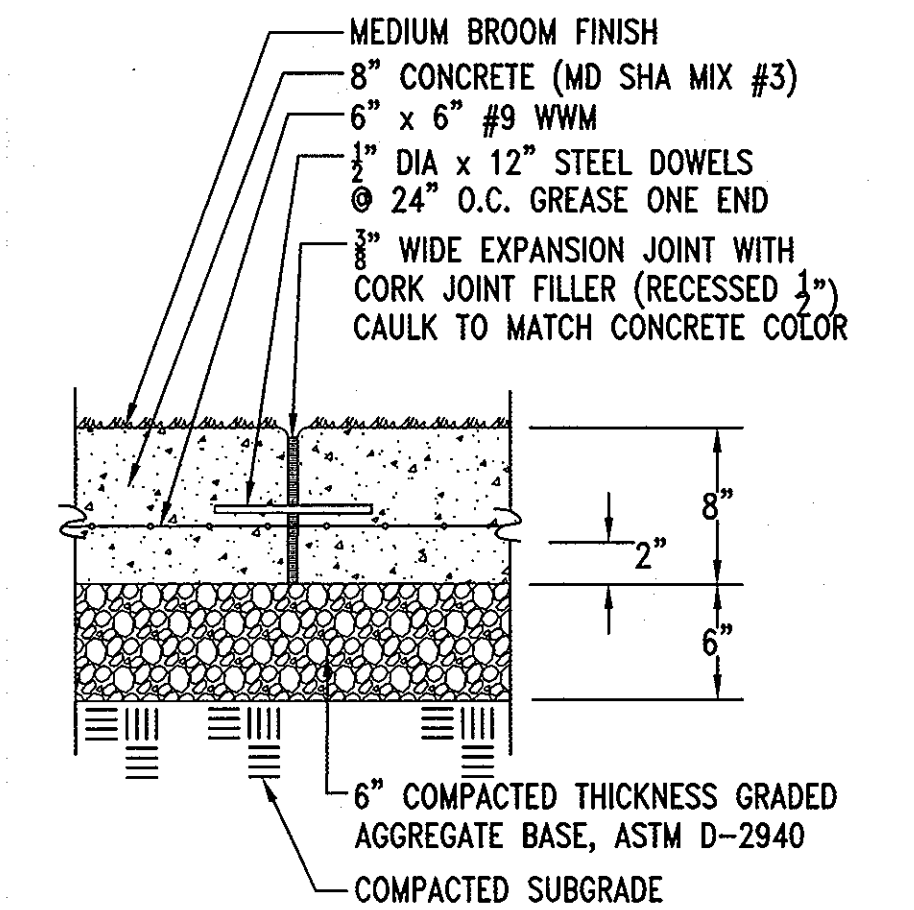
**C** Heavy Duty Paving Section (P4)  
NOT TO SCALE  
COMPACTION LEVEL 1  
BINDER TYPE PG 64-22



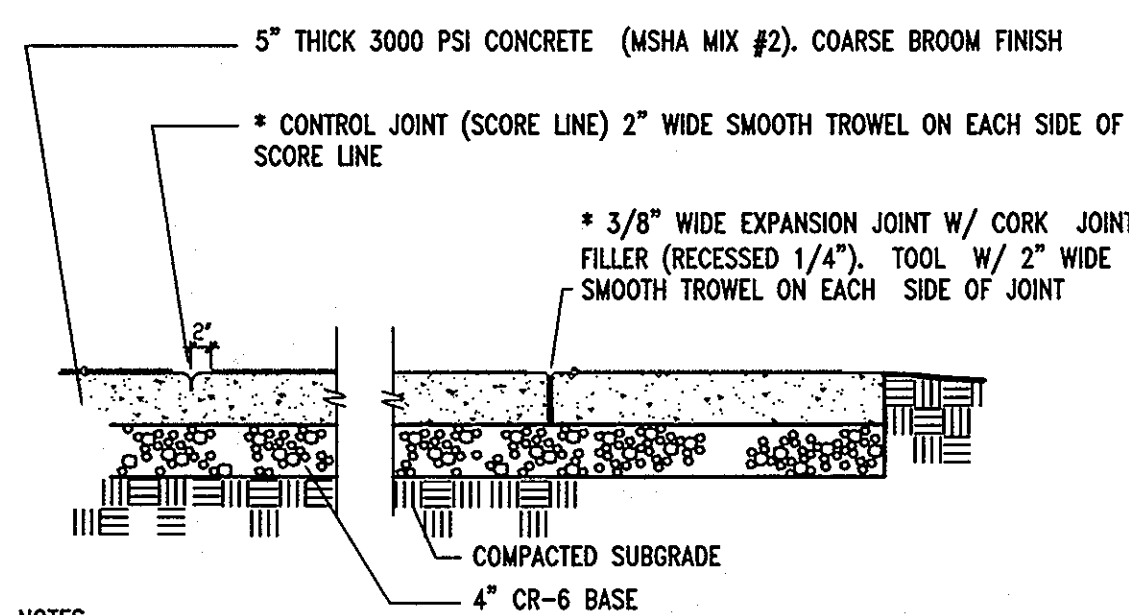
**D** 6" Curb and Gutter  
Full Height and Depressed Curb  
for on-site applications



**E** Mountable Curb and Gutter  
for on-site applications  
PER MD STATE HWY ADMIN. STD DETAIL 620.02-01 TYPE C  
NOT TO SCALE



**F** Concrete Vehicular Pavement  
NOT TO SCALE  
NOTE: REFER TO MD 572.22 DETAIL FOR DOWEL INSTALLATION, TYP.

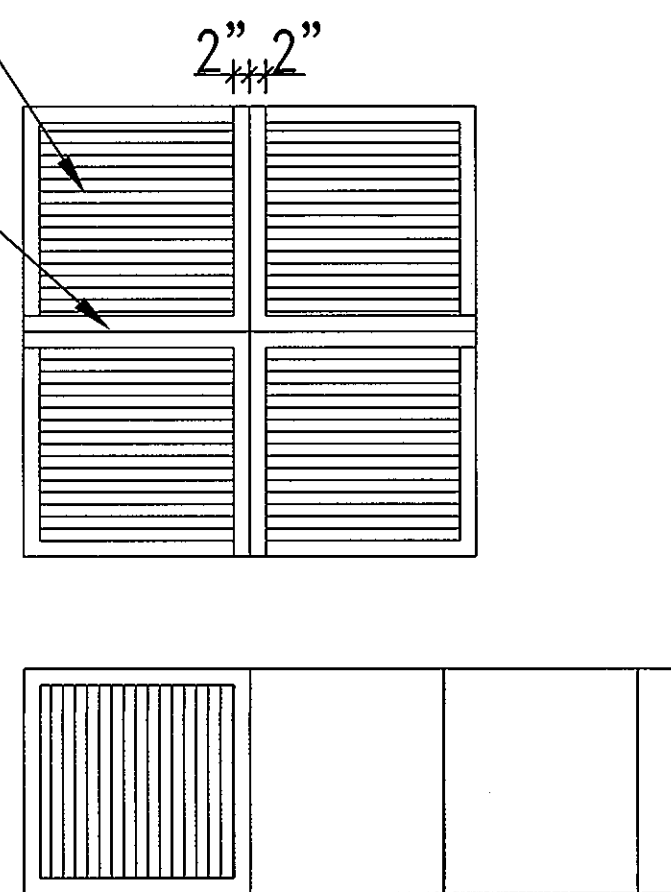


- NOTES
- EXPANSION JOINTS ACROSS THE SIDEWALK APPROXIMATELY 16' APART.
  - 1/2" PRE-FORMED CORK MATERIAL IN EXPANSION JOINTS TO BE 1/4" BELOW SURFACE OF SIDEWALK.
  - CONCRETE TO BE MD SHA MIX 2 (3000 PSI)
  - WHEN SIDEWALK ABUTS BACK OF STREET CURB, WALK SHALL BE 1/4" ABOVE TOP OF CURB WITH 1/2" PRE-FORMED CORK EXPANSION JOINT BETWEEN THEM.
  - WHERE INTEGRAL COLOR IS CALLED FOR ON THE PLANS, CONTRACTOR SHALL SUBMIT FULL RANGE SAMPLES FROM THE SELECTED PIGMENT SUPPLIER FOR COLOR SELECTION AND APPROVAL BY THE ARCHITECT

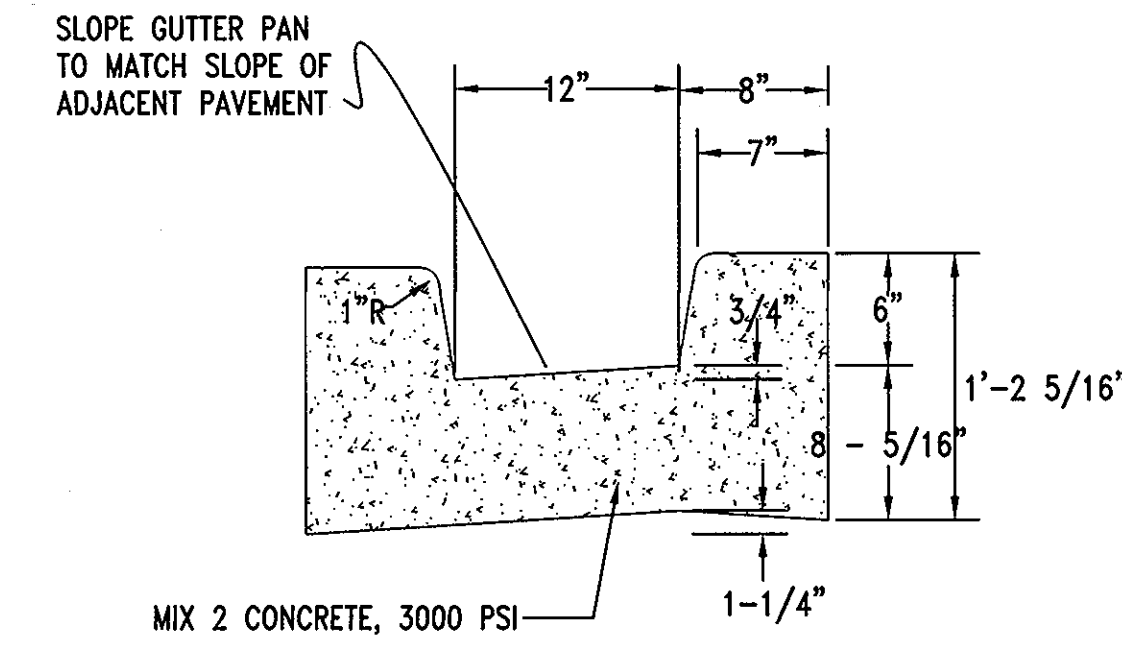
\* SEE SITE PLAN ENLARGEMENTS FOR SCORING PATTERNS. BEFORE POURING CONCRETE, CONFIRM SCORING PATTERN TO TESSERACT SITES, INC. THE SCORING PLAN SHALL SHOW EXPANSION JOINTS HIGHLIGHTED IN RED AND CONTROL JOINTS HIGHLIGHTED IN YELLOW.

CONSTRUCTION JOINTS: THE EDGE OF EACH CONCRETE POUR SHALL COINCIDE WITH AND BECOME AN EXPANSION JOINT. NO OTHER CONSTRUCTION JOINT IS PERMITTED.

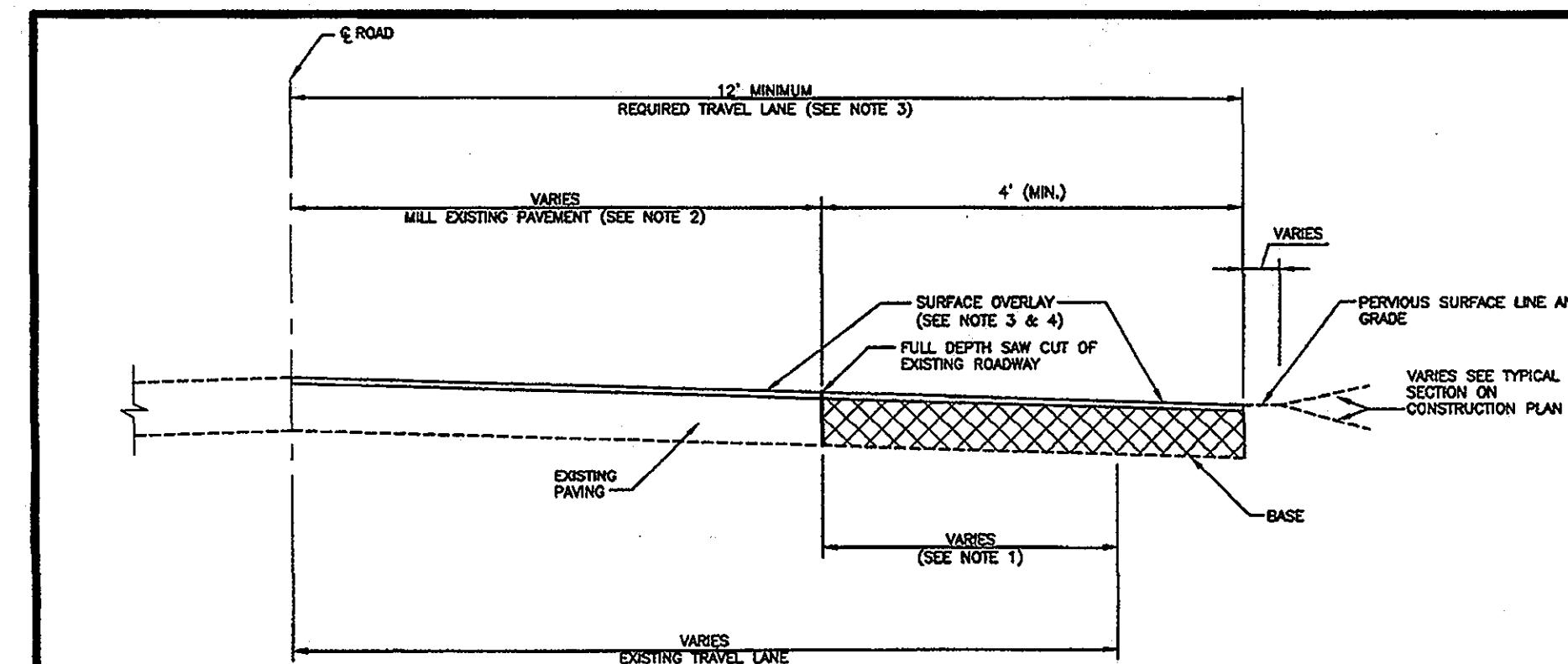
**G** Concrete Sidewalk - Windowpane  
NOT TO SCALE



**H** Curb-Flush  
PER HOWARD COUNTY DPW DETAIL R-3.07  
NOT TO SCALE

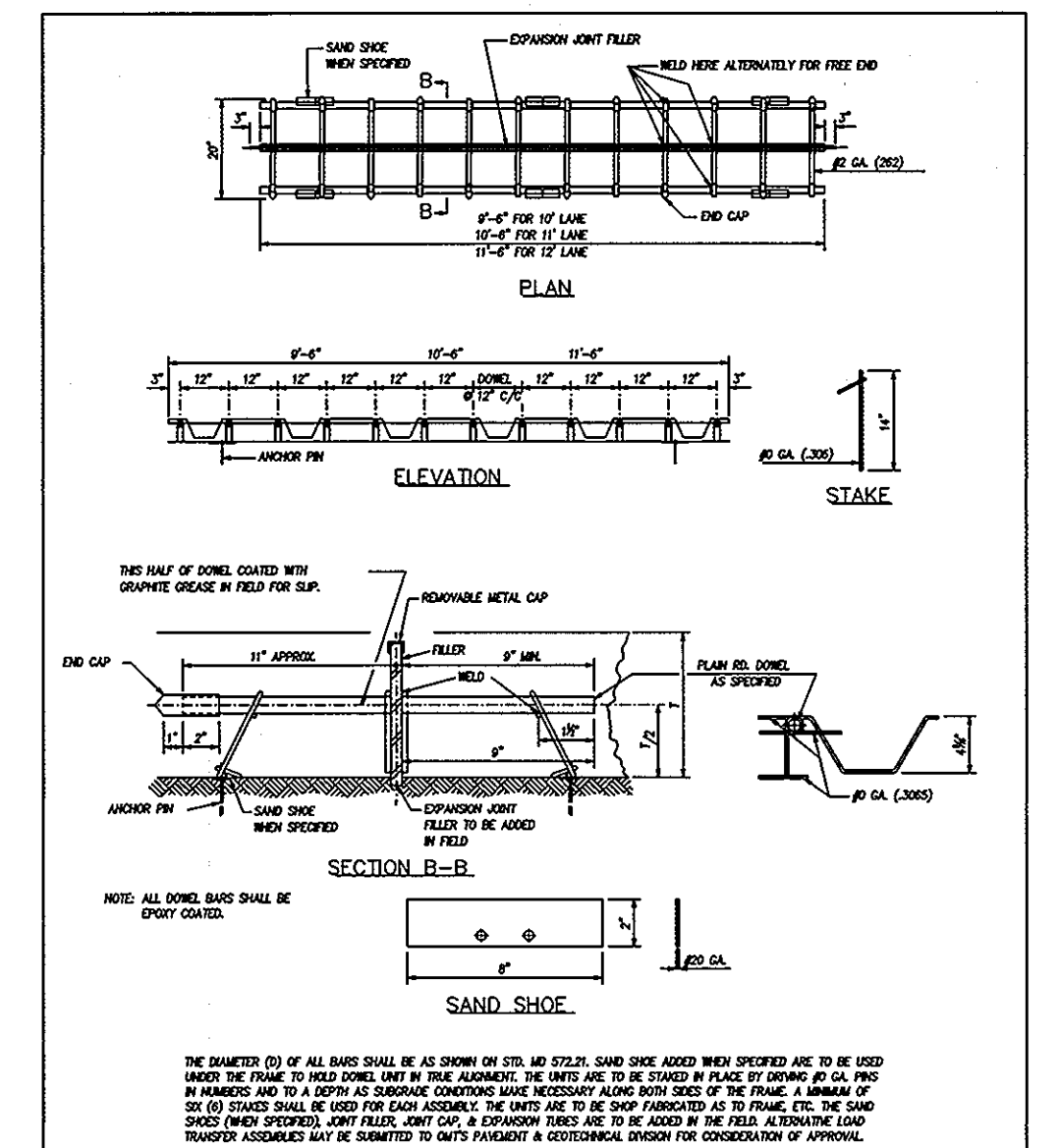


**I** MONOLITHIC GUTTER  
NOT TO SCALE

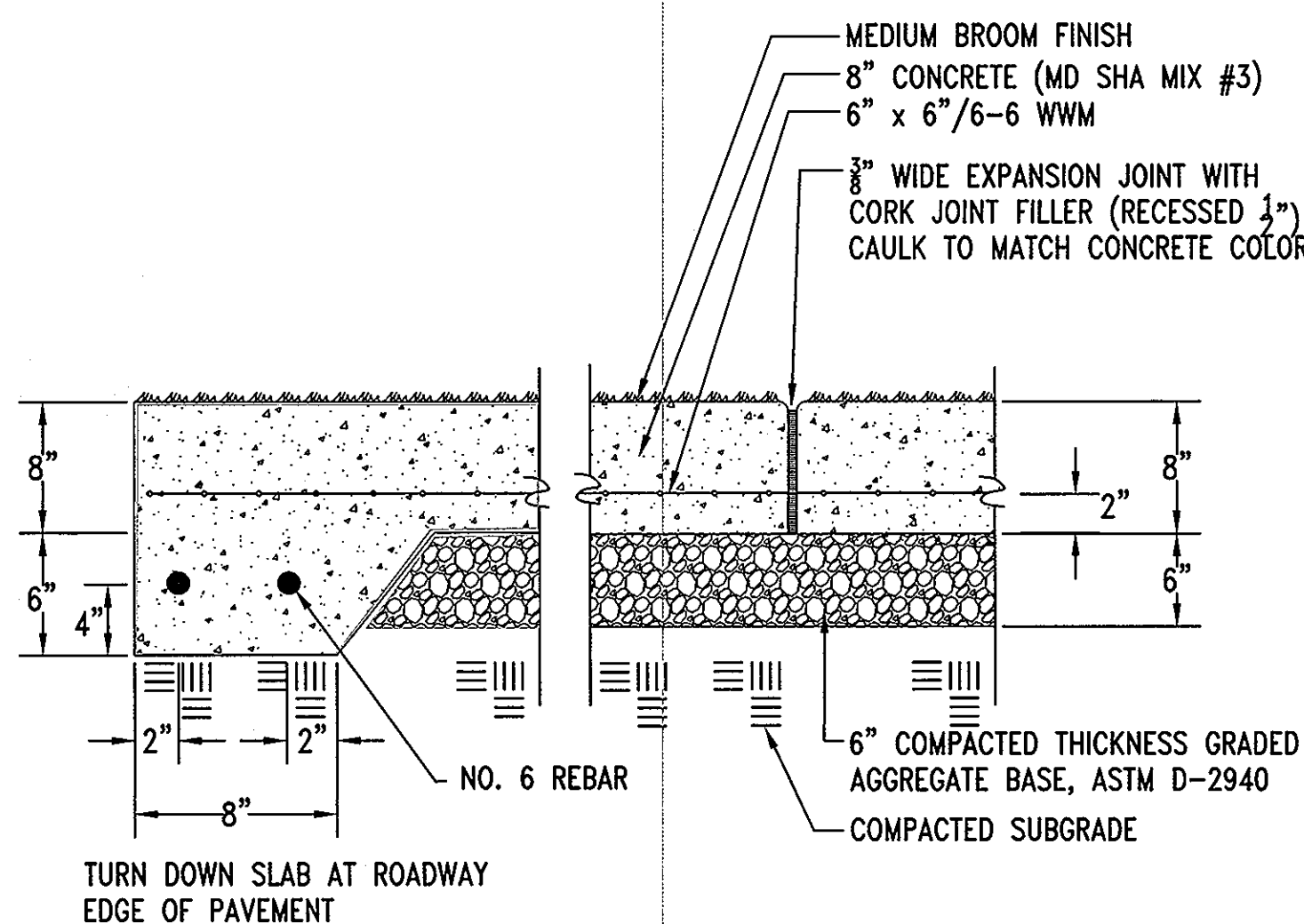


- NOTES:
- WHEN EXISTING TRAVEL LANE IS LESS THAN THE REQUIRED 12' LANE CONTRACTOR SHALL REMOVE A MINIMUM OF 1" FULL DEPTH OF THE EXISTING ROADWAY. IF CURB AND GUTTER IS INSTALLED, PROVIDE A MINIMUM OF 4" OF WEDGING FROM FACE OF GUTTER PAN.
  - THE EXISTING PAVEMENT TO BE RESURFACED SHALL BE MILLED AT DEPTH OF 1 1/2" (MINIMUM).
  - THE RESURFACING SHALL BE PLACED TO THE CENTERLINE OF THE ROADWAY.
  - RESURFACING COURSE TO BE EQUAL TO THE SURFACE COURSE OF THE TYPICAL PAVEMENT SECTION.

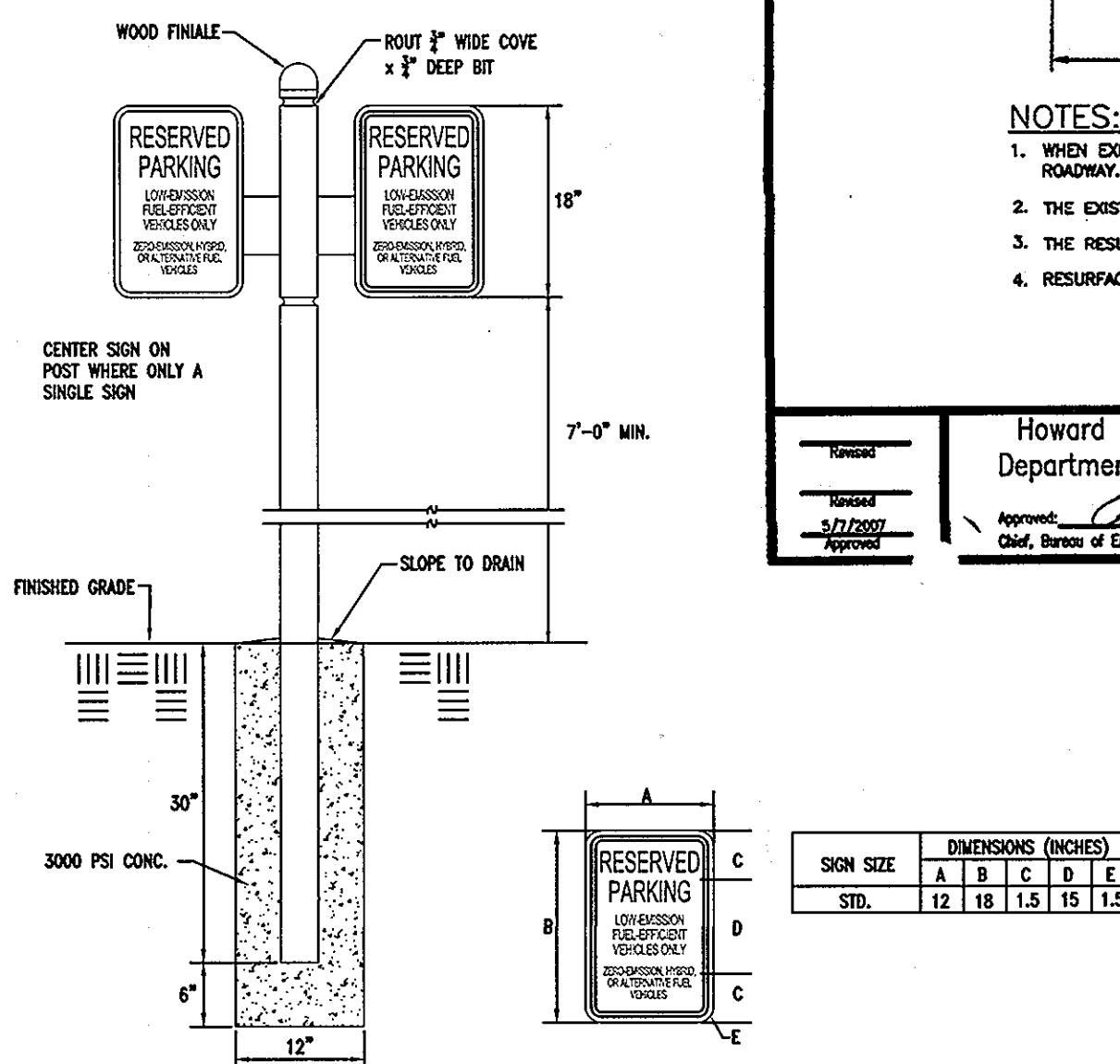
Howard County, Maryland  
Department of Public Works  
Existing Roadway  
Widening Strip  
Detail  
R-1.08



Maryland Department of Transportation  
STATE HIGHWAY ADMINISTRATION  
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES  
REINFORCED CONCRETE PAVEMENT  
LOAD TRANSFER ASSEMBLY -  
EXPANSION JOINTS  
STANDARD NO. MD 572.22



**J** Dumpster Pad  
NOT TO SCALE

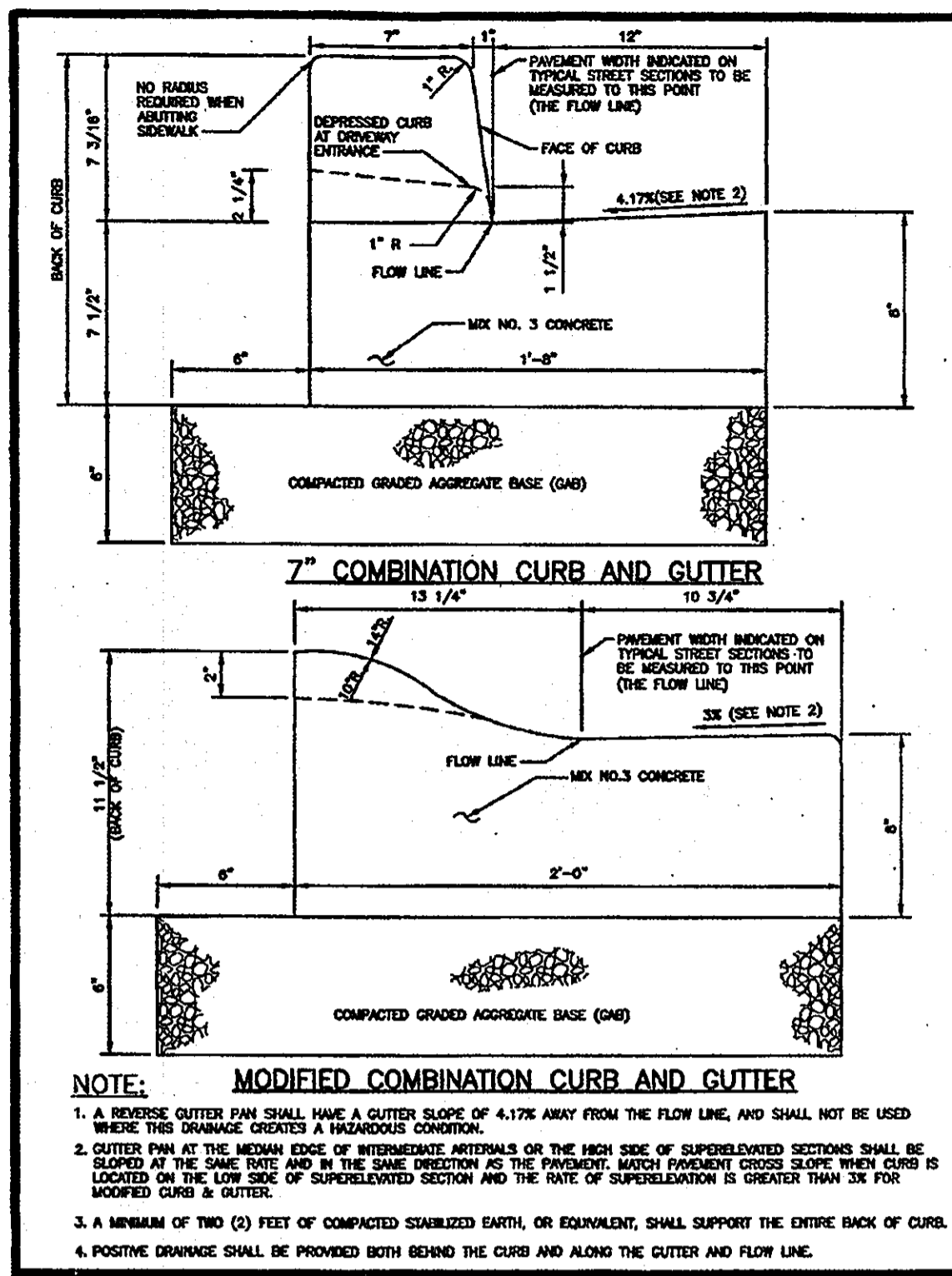


**H** Reserved Parking Signs - Low Emission Vehicles  
NOT TO SCALE

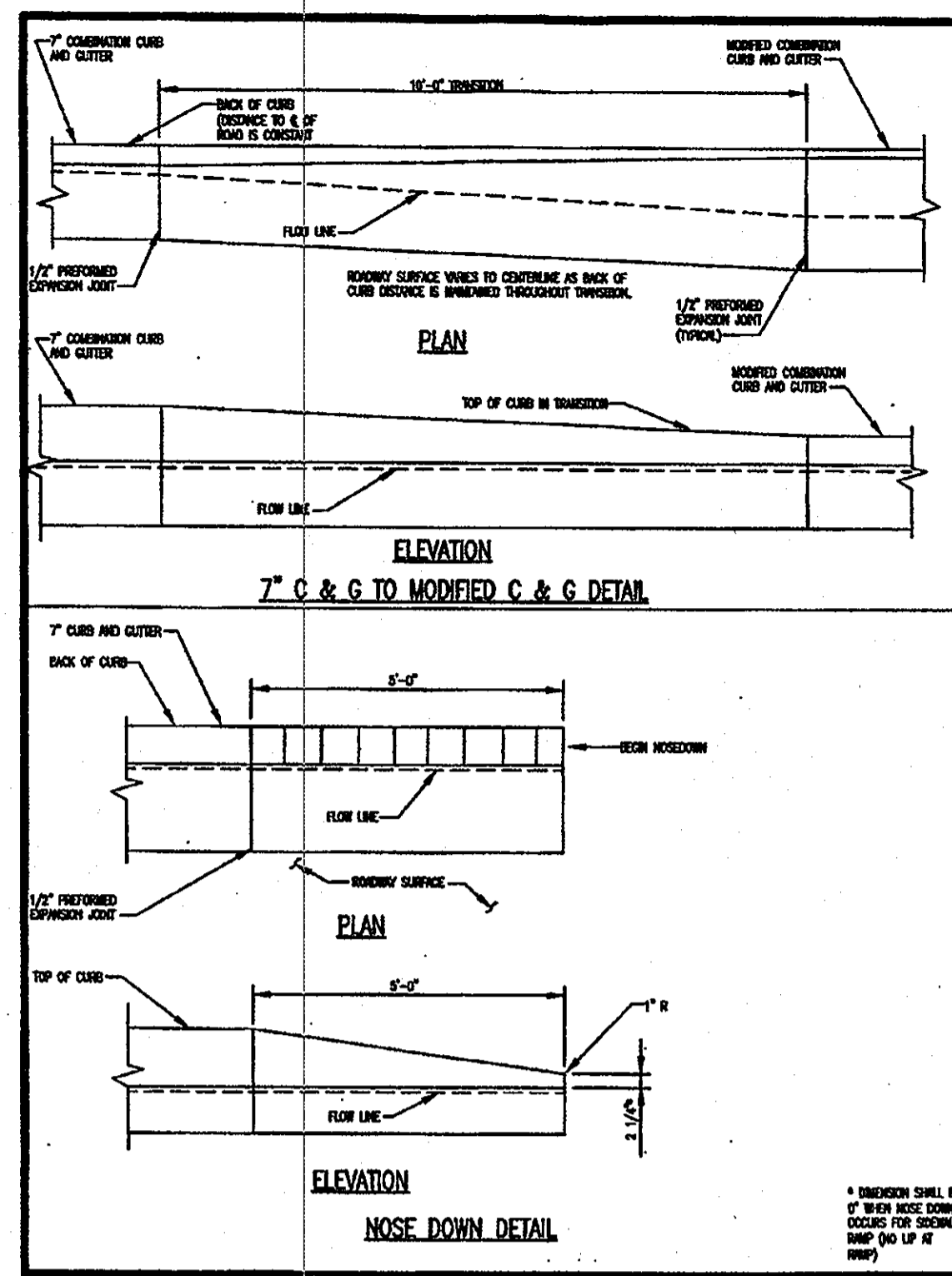
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
*Peter B. Silen* 1/2/2011  
County Health Officer  
Howard County Health Department  
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*David Williams* 1/2/2011  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*Keith Shadlock* 1/14/11  
CHIEF, DIVISION OF LAND DEVELOPMENT  
*Thomas E. Butler* 1/14/11  
DIRECTOR

OWNER  
MARYLAND STATE HIGHWAY ADMINISTRATION  
101 NORTH CALVERT STREET  
BALTIMORE, MD 21202  
410-545-0300  
OWNER AND DEVELOPER  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-313-6194  
ENGINEER  
TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB  
410-321-7600

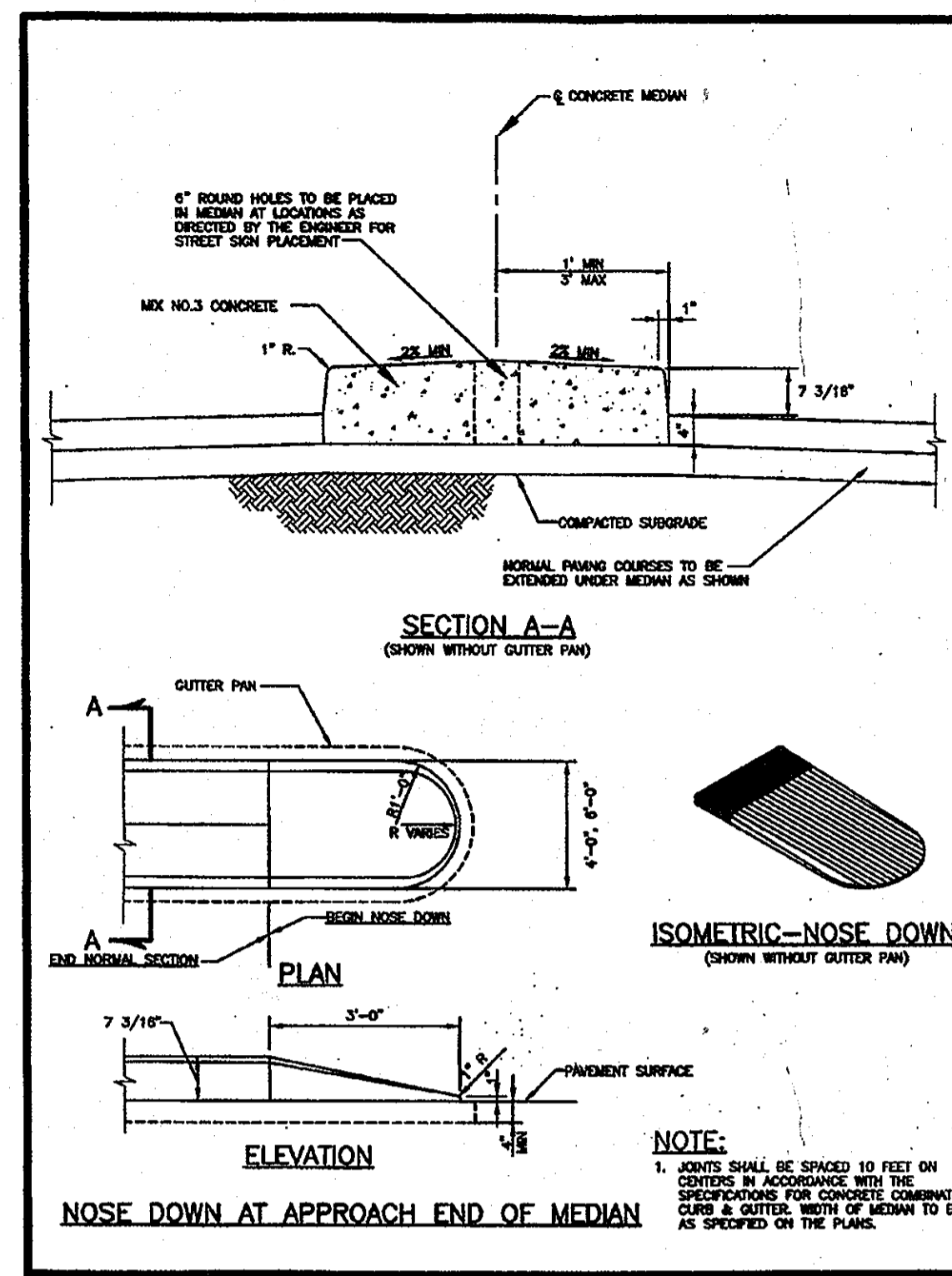
**Tesseract**  
TESSERACT SITES, INC.  
401 Washington Ave. Suite 303  
Towson, Maryland, 21286  
P. 410.321.7600  
F. 410.321.7601  
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.  
Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland  
Site Details  
LEAD/HAZARDOUS: C-1  
LEAD/HAZARDOUS: 5454/243  
LEAD/HAZARDOUS: 10502/188  
DATE: 10/12  
ZONE: M-2  
ELECTRICAL: 6TH  
CONTRACT: 606902  
Date: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN  
9 of 33  
SDP 10-084



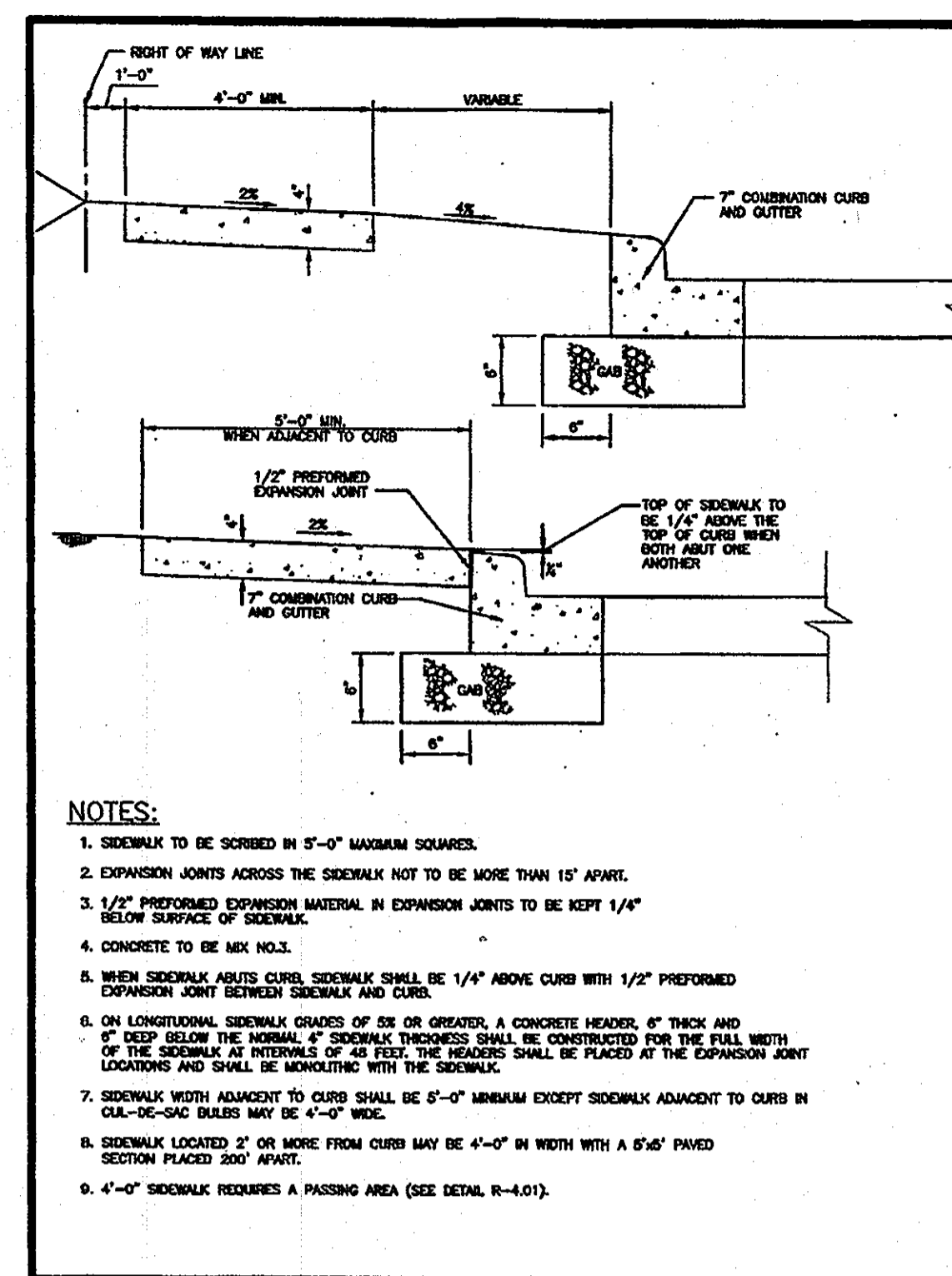
Project: Howard County, Maryland Department of Public Works	Detail: CURB AND GUTTER 7\"/>
Sheet: R-3.01	



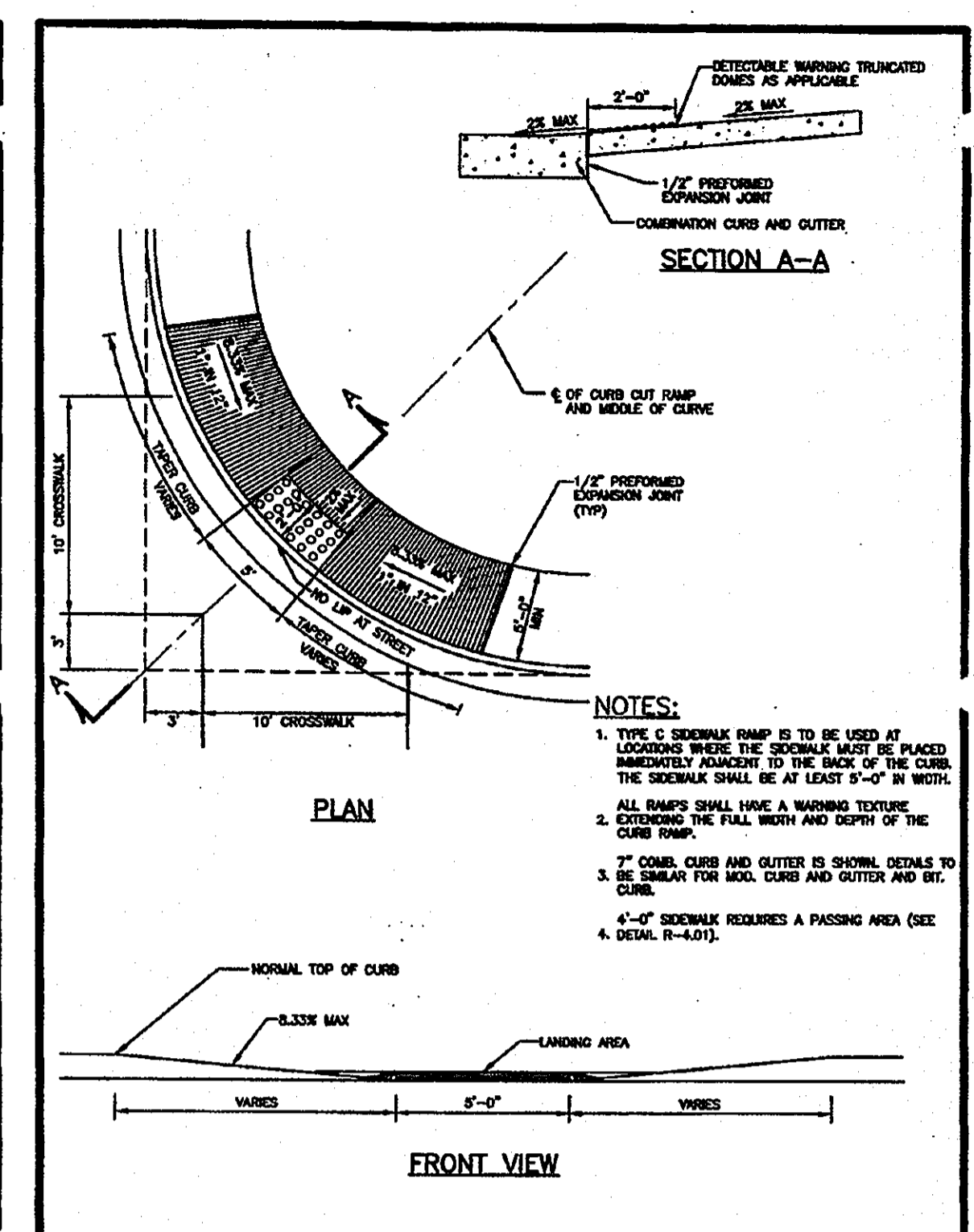
Project: Howard County, Maryland Department of Public Works	Detail: CURB AND GUTTER 7\"/>
Sheet: R-3.02	



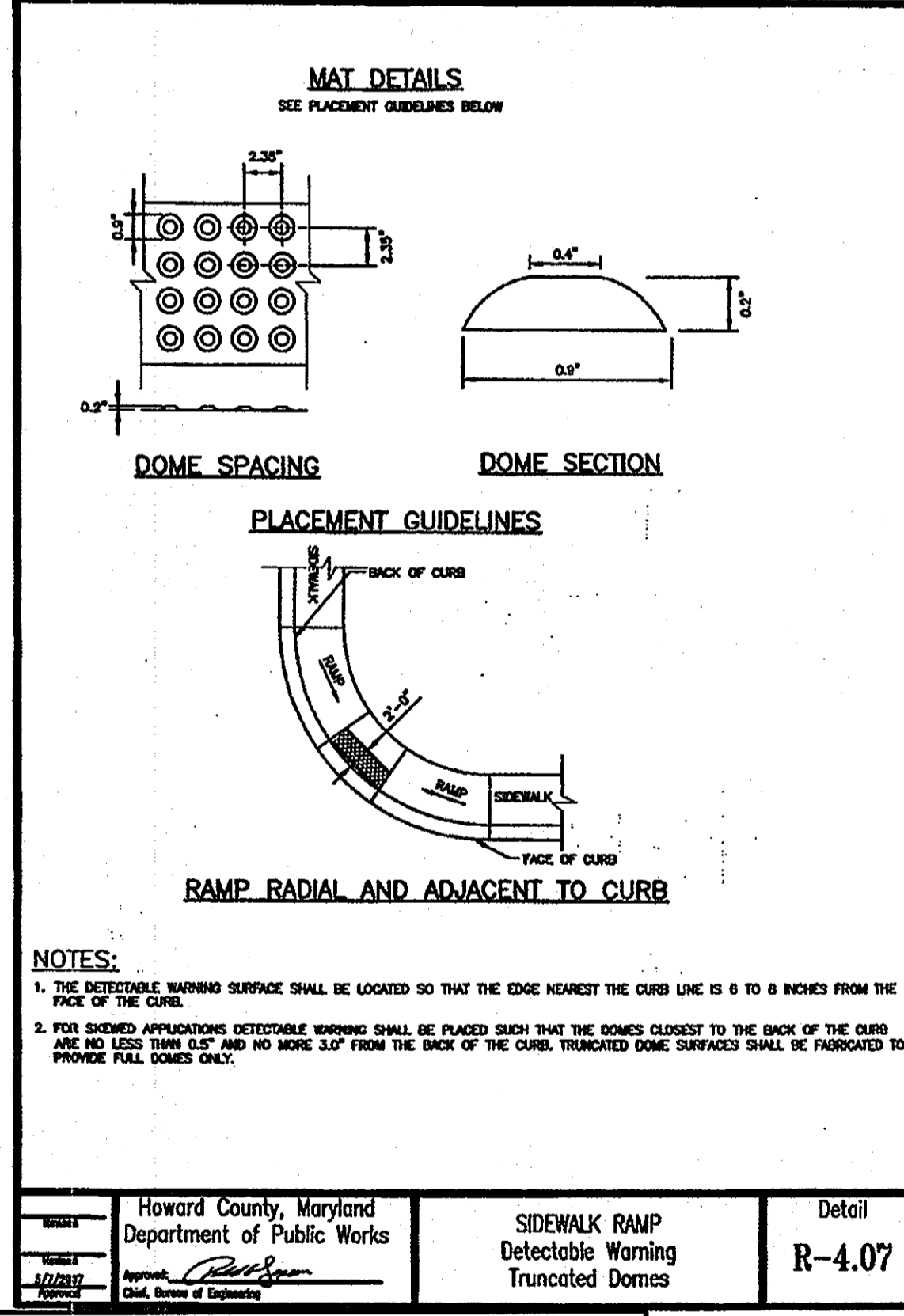
Project: Howard County, Maryland Department of Public Works	Detail: Monoolithic Concrete Median
Sheet: R-3.04	



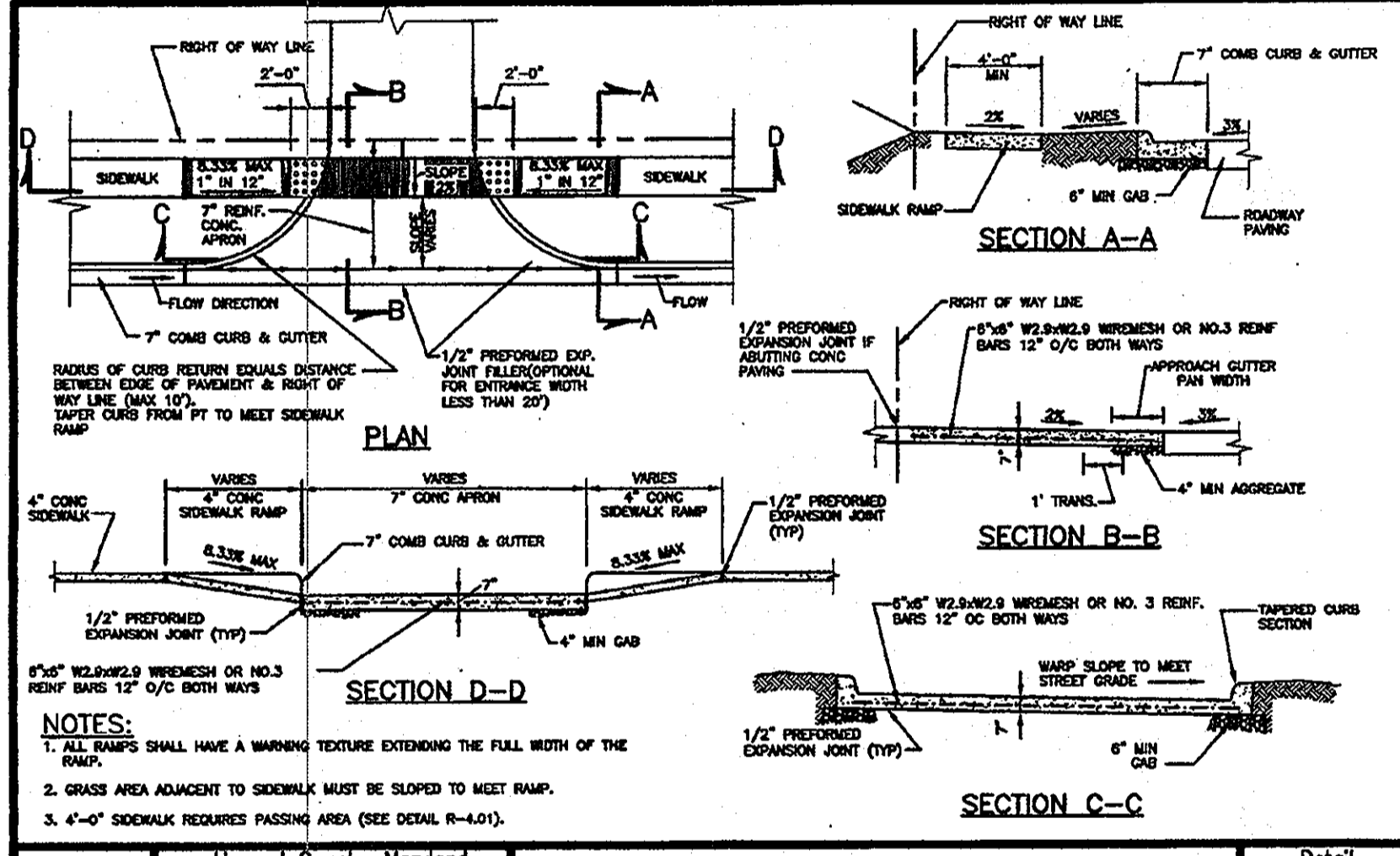
Project: Howard County, Maryland Department of Public Works	Detail: Concrete Sidewalk
Sheet: R-3.05	



Project: Howard County, Maryland Department of Public Works	Detail: SIDEWALK RAMP Type C
Sheet: R-4.04	



Project: Howard County, Maryland Department of Public Works	Detail: SIDEWALK RAMP Detectable Warning Truncated Domes
Sheet: R-4.07	



Project: Howard County, Maryland Department of Public Works	Detail: COMMERCIAL-INDUSTRIAL-APARTMENT Entrance Concrete Apron
Sheet: R-6.07	

# DO NOT BLOCK DRIVEWAY ENTRANCE

\* SPACING BETWEEN "DO" AND "NOT" REDUCED TO FIT  
\*\* ALTERNATE MESSAGE FOR LINE 3

SIGN SIZE	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
STD	24	30	3/8	5/8	4-1/2	6*	3-1/2	8*	2-1/2	4*	1-1/2

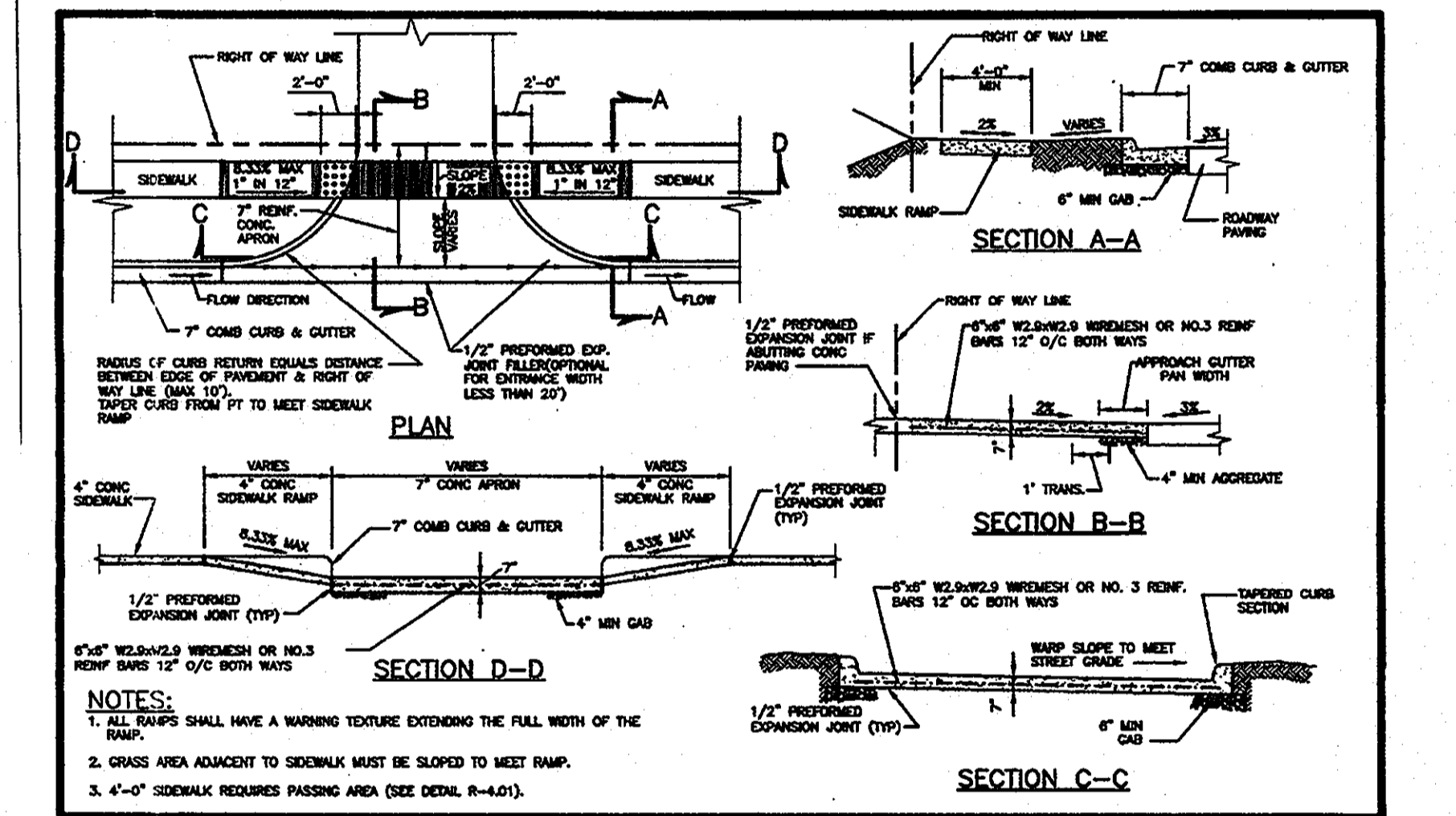
REFERENCES: MUTCD SECTION - 2B.45

COLORS: LEGEND - BLACK, BACKGROUND - WHITE

APPROVED: *[Signature]* Director - Office of Traffic and Safety

Maryland Department of Transportation  
STATE HIGHWAY ADMINISTRATION  
MARYLAND STANDARD HIGHWAY SIGNS  
DO NOT BLOCK DRIVEWAY ENTRANCE

SIGN NUMBER: R10-7(1)



Project: Howard County, Maryland Department of Public Works	Detail: COMMERCIAL-INDUSTRIAL-APARTMENT Entrance Concrete Apron
Sheet: R-6.07	

## Tesseract

TESSERACT SITES, INC.

401 Washington Ave, Suite 303  
Towson, Maryland, 21284

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

### Site Details

OWNER AND DEVELOPER:  
HOWARD COUNTY, MD  
9250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-913-6194

ENGINEER:  
TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21202  
CONTACT: JEFFREY SCHWAB  
410-321-7600

Date: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN

# 10 of 33

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

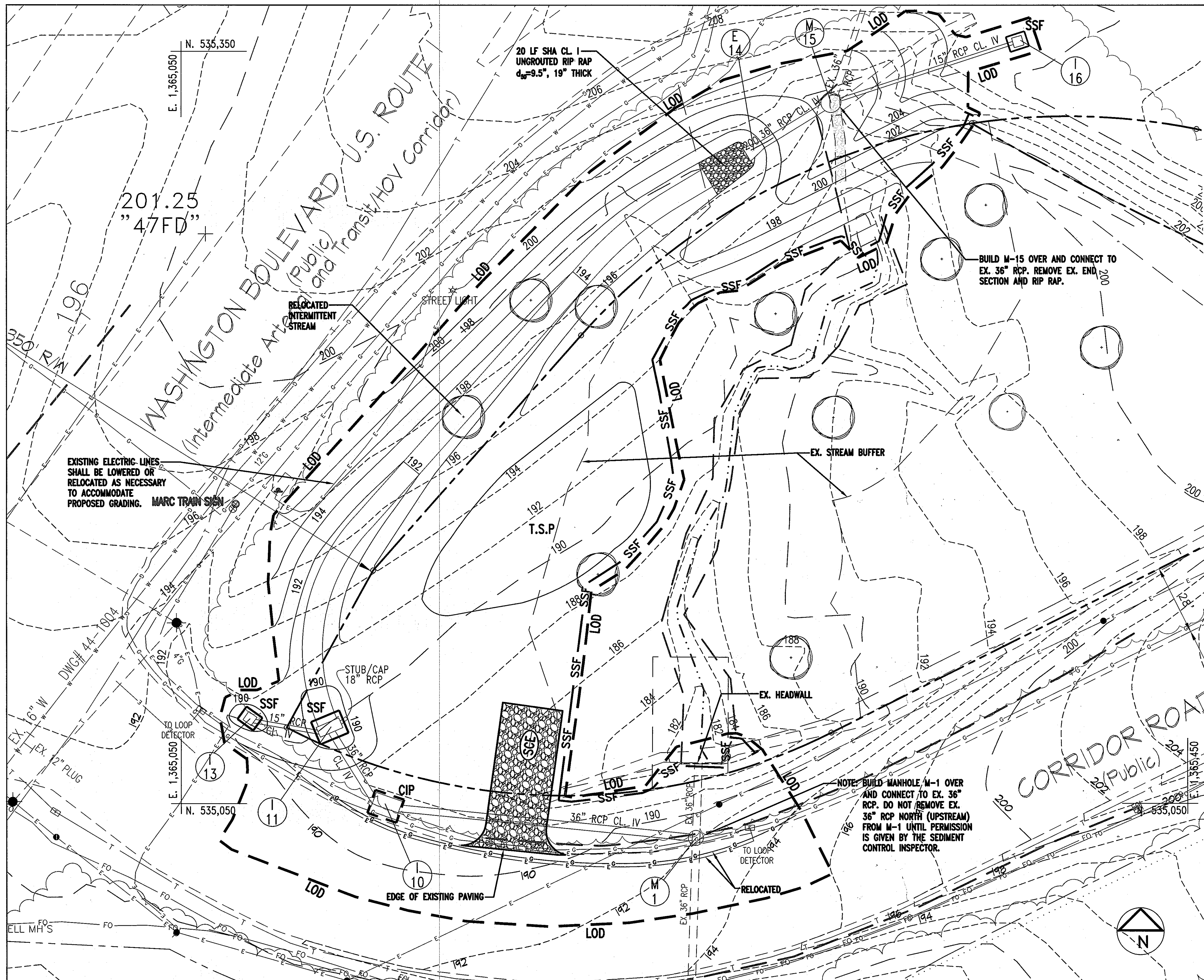
*[Signature]* 11/7/2011  
County Health Officer  
Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*[Signature]* 12/12/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 11/21/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 11/21/11  
DIRECTOR



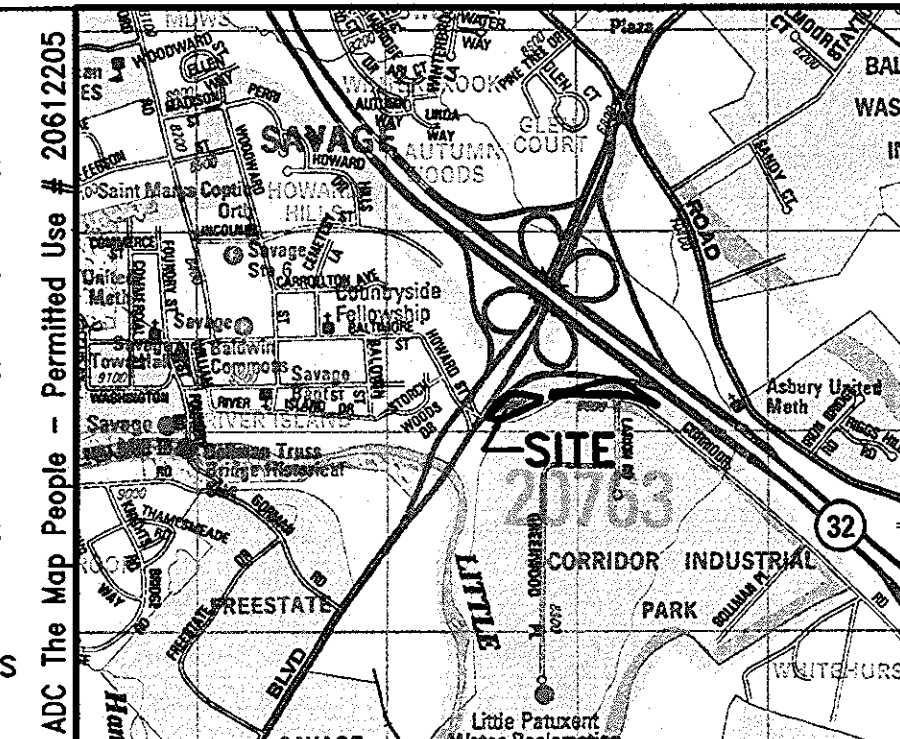
**PHASE 1 SEQUENCE**

- 1.) OBTAIN GRADING PERMIT, SHA UTILITY PERMIT, AND JOINT FEDERAL STATE PERMIT. 7 DAYS
- 2.) CLEAR & GRUB ONLY THAT AREA REQUIRED TO INSTALL PROPOSED SEDIMENT AND EROSION MEASURES. 2 DAYS
- 3.) INSTALL SEDIMENT & EROSION CONTROL MEASURES AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB REMAINING AREA WITHIN L.O.D. FOR PHASE 1. 2 DAYS
- 4.) RELOCATE EXISTING ELECTRIC AND GAS MAINS AND IMMEDIATELY STABILIZE AREAS DISTURBED BY THIS PROCESS. 7 DAYS
- \*5.) INSTALL STORM DRAINAGE M-1 THROUGH 1-13, AND IMMEDIATELY STABILIZE DISTURBED AREAS & INSTALL INLET PROTECTION. 14 DAYS
- 6.) EXCAVATE TO CREATE THE "RELOCATED INTERMITTENT STREAM" (AREA BETWEEN I-11 AND E-14) AND TEMPORARILY STOCKPILE MATERIAL IN AREA SHOWN. 7 DAYS
- 7.) FINE GRADE RELOCATED STREAM AND STABILIZE STREAM BOTTOM AND BANKS WITH SOD. 7 DAYS
- 8.) IN THE AREA WHERE M-15 WILL BE INSTALLED, REMOVE THE EXISTING END SECTION AND EXISTING RIP RAP. THEN INSTALL STORM DRAINAGE E-14 TO I-16 AND NEW RIP RAP. 7 DAYS
- 9.) AFTER EXISTING STREAM RELOCATION IS FUNCTIONAL, REMOVE EXISTING HEADWALL AND 36" RCP TO M-1. 2 DAYS
- 10.) STABILIZE REMAINING DISTURBED AREAS IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS. 7 DAYS
- 11.) UPON STABILIZATION OF THE SITE AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT & EROSION CONTROL MEASURES AND STABILIZE AREAS DISTURBED BY THIS PROCESS. 7 DAYS
- 12.) PROCEED TO PHASE II SEQUENCE.

**HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES**

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:
 

Total Area of Site	3.50 Acres
Area Disturbed	5.50 Acres (LOD polyline)
Area to be roofed* or paved	3.82 Acres (calculated)
*0.494 ac is a green roof	
Area to be vegetatively stabilized	1.68 Acres (measured)
Total Cut	4,300 Cu. Yds.
Total Fill	28,000 Cu. Yds.
Offsite waste/borrow area location:	To Be Determined.
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.



Vicinity Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9

**LEGEND**

- Silt Fence — SF —
- Super Silt Fence — SSF —
- Super Silt Fence with Tree Protection Flagging — SSF TP —
- At Grade Inlet Protection — ACIP —
- Curb Inlet Protection — CIP —
- Standard Inlet Protection — SIP —
- Super Silt Fence Inlet Protection — SSF IP —
- Limit of Disturbance — LOD —
- Temporary Stockpile Area — T.S.P. —
- Stabilized Construction Entrance — SCE —
- Ex. Contours — 196, 200, 196
- Prop. Contour — 196

Phase 1 Limit of Disturbance: 43,520 S.F. = 1.00 Ac.

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave. Suite 303  
Towson, Maryland, 21284  
P. 410.321.7600  
F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/08/10.

**Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland**

**Sediment & Erosion Control Plan  
(Phase 1)**

PROJECT: 0-1	DATE: 04/23/13	PLANS: 21380
DATE: 10/12/12	ZONE: M-2	DATE: 10/22/12

OWNER AND DEVELOPER:  
HOWARD COUNTY, MD  
9250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-313-6191

ENGINEER:  
TESSERACT SITES, INC.  
401 WASHINGTON AVE., SUITE 303  
TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB  
410-321-7600

Date: 10/22/2010  
Proj. #: 08016  
Scale: 1"=20'

**11 of 33**

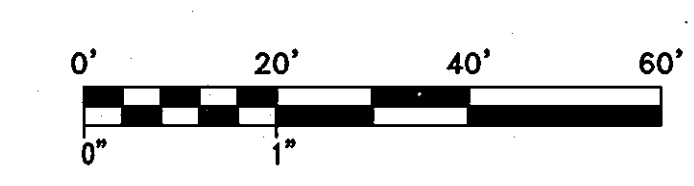
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 [Signature] 10/27/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 10/27/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 10/27/10  
 DIRECTOR

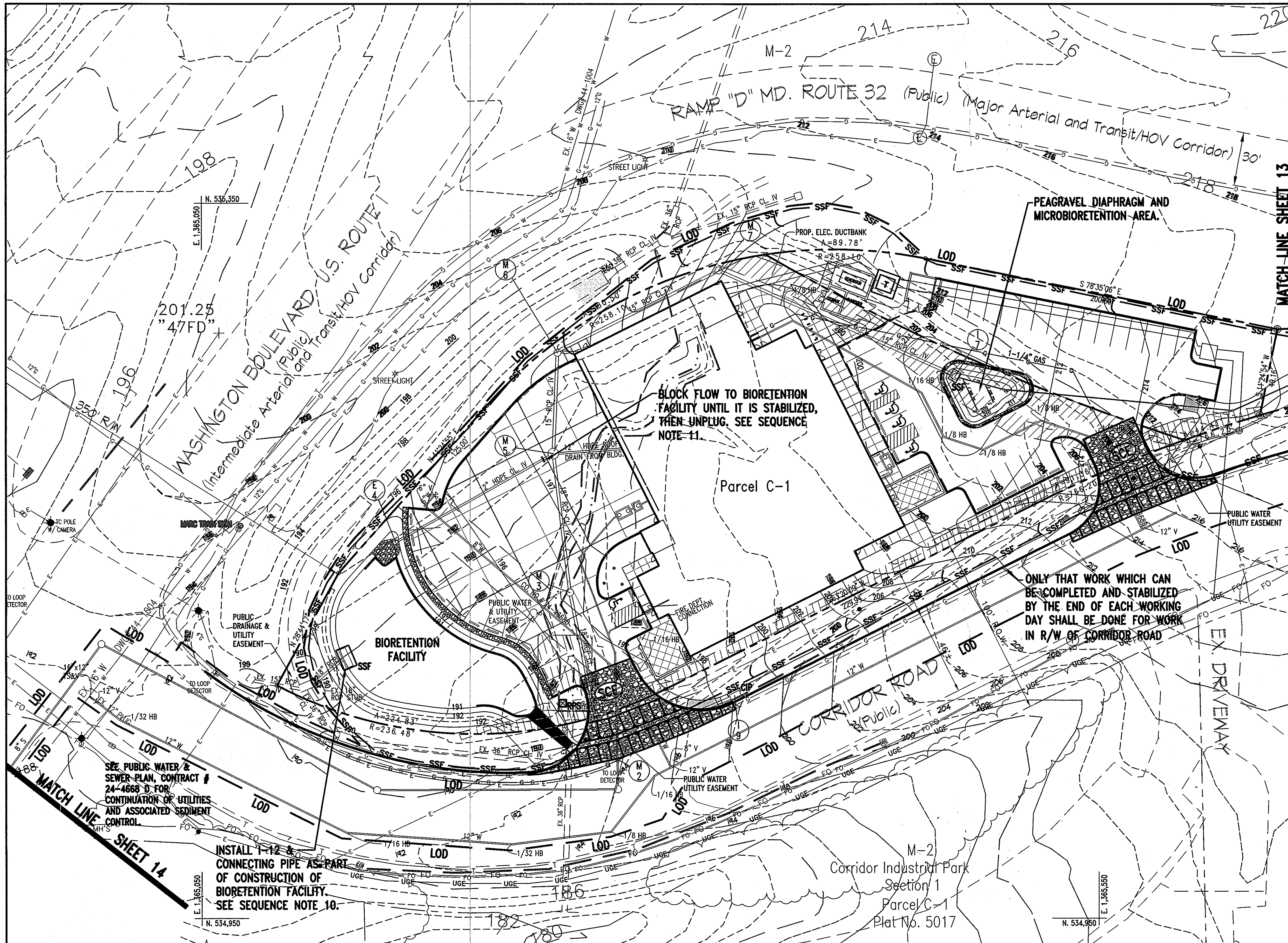
BY THE DEVELOPER:  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."  
 [Signature] 10/27/10  
 SIGNATURE OF THE DEVELOPER  
 David Loudermilk

BY THE ENGINEER:  
 "I CERTIFY THAT HIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT."  
 [Signature] 10/27/10  
 SIGNATURE OF THE ENGINEER  
 Jeffrey Schwab P.E.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature] 10/27/10  
 HOWARD SOIL CONSERVATION DISTRICT

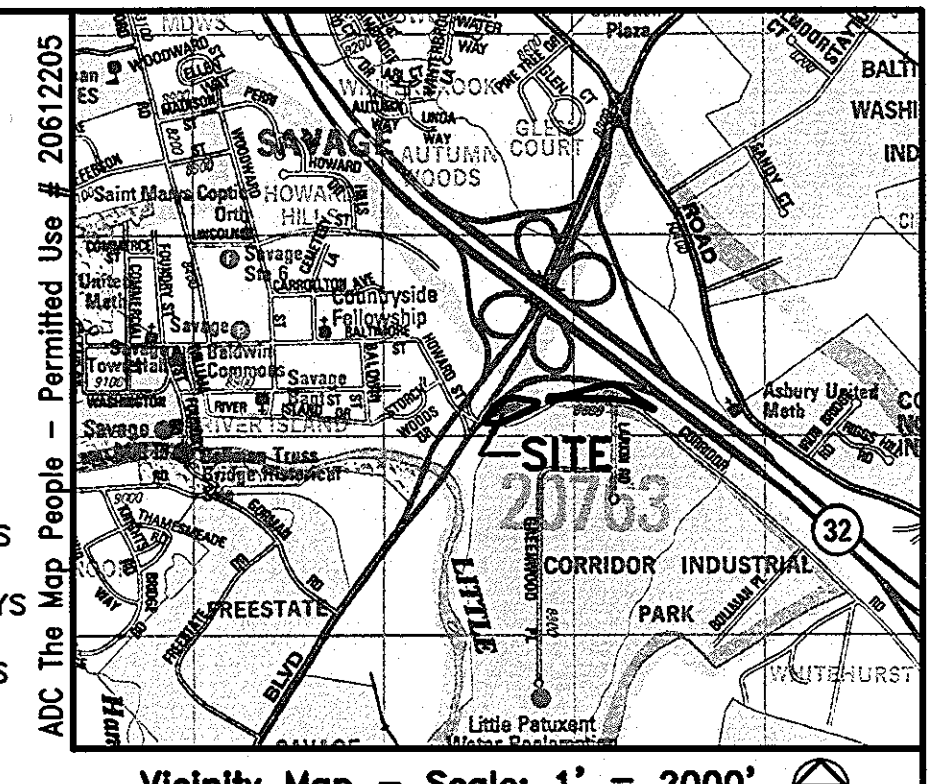
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 [Signature] 11/7/2011  
 County Health Officer  
 Howard County Health Department





**PHASE 2 SEQUENCE**

- 1.) WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CLEAR & GRUB ONLY THAT AREA REQUIRED TO INSTALL PHASE 2 PROPOSED SEDIMENT AND EROSION MEASURES. 7 DAYS
- 2.) INSTALL PHASE 2 SEDIMENT CONTROL MEASURES (SHOWN ON THIS SHEET AND ON SHEET 13) AND TREE PROTECTION FENCE. 7 DAYS
- 3.) WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB AREA WITHIN L.O.D. FOR PHASE 2. 2 DAYS
- 4.) ROUGH GRADE SITE. 21 DAYS
- 5.) BEGIN BUILDING CONSTRUCTION; CONSTRUCT BUILDING. 180 DAYS
- 6.) INSTALL THE PARKING LOT SHOWN ON SHEET 13 (INCLUDING POROUS PAVEMENT AND ALL STORM WATER MANAGEMENT COMPONENTS ASSOCIATED WITH THIS PARKING LOT) AND FINE GRADE AND STABILIZE THE DISTURBED AREA AROUND THE PARKING LOT IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS. 14 DAYS
- 7.) INSTALL UTILITIES (EXCEPT FOR I-12 & CONNECTING PIPE), DURING INSTALLATION OF STORM DRAIN SYSTEM, INSTALL TEMPORARY CAP/BLOCK IN 12" HDPE TO PREVENT DRAINAGE FROM M-5 TO THE BIORETENTION FACILITY. 90 DAYS
- 8.) INSTALL ALL REMAINING CURB & GUTTER AND PAVEMENTS SHOWN ON THIS SHEET. 45 DAYS
- 9.) FINE GRADE AND STABILIZE ALL REMAINING DISTURBED AREAS OTHER THAN THE STORM WATER MANAGEMENT FACILITIES' AREAS. 7 DAYS
- 10.) WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, INSTALL REMAINING STORM WATER MANAGEMENT FACILITIES (PEAGRAVEL DIAPHRAGM, MICRO-BIORETENTION, AND BIORETENTION AREA, INCLUDING STORM DRAIN INLET I-12 AND PIPE TO I-11); FINE GRADE AND STABILIZE IN ACCORDANCE WITH THE APPROVED STORM WATER MANAGEMENT DRAWINGS. 30 DAYS
- 11.) WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, UNBLOCK THE 18" HDPE SO THAT DRAINAGE MAY FLOW FROM M-5 TO BIORETENTION FACILITY. 1 DAY
- 12.) UPON STABILIZATION OF THE SITE AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT & EROSION CONTROL MEASURES AND STABILIZE AREAS DISTURBED BY THIS PROCESS. 7 DAYS



Vicinity Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9

**LEGEND**

- Silt Fence — SF
- Super Silt Fence — SSF
- Super Silt Fence with Tree Protection Fencing — SSF TP
- At Grade Inlet Protection — AGIP
- Curb Inlet Protection — CIP
- Standard Inlet Protection — SIP
- Super Silt Fence Inlet Protection — SSF
- Limit of Disturbance — LOD
- Temporary Stockpile Area — T.S.P
- Stabilized Construction Entrances w/ Mountable Berm — SCE
- Ex. Contours — —
- Prop. Contour — 196

Phase 1 Limit of Disturbance: 43,500 S.F. = 1.0 Ac.  
Phase 2 Limit of Disturbance: 195,000 S.F. = 4.5 Ac.  
Total Limit of Disturbance: 238,500 S.F. = 5.5 Ac.

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284  
P: 410.321.7600  
F: 410.321.7601

Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

**Sediment & Erosion Control Plan (Phase 2)**

LOT/PHASE: C-1	PERMIT NO: 10502/188	PLAT: 21380
DATE: 10/12/10	DATE: 10/12/10	DATE: 10/12/10

DATE: 10/22/2010  
PROJECT #: 08016  
SCALE: 1"=30'  
**12 of 33**

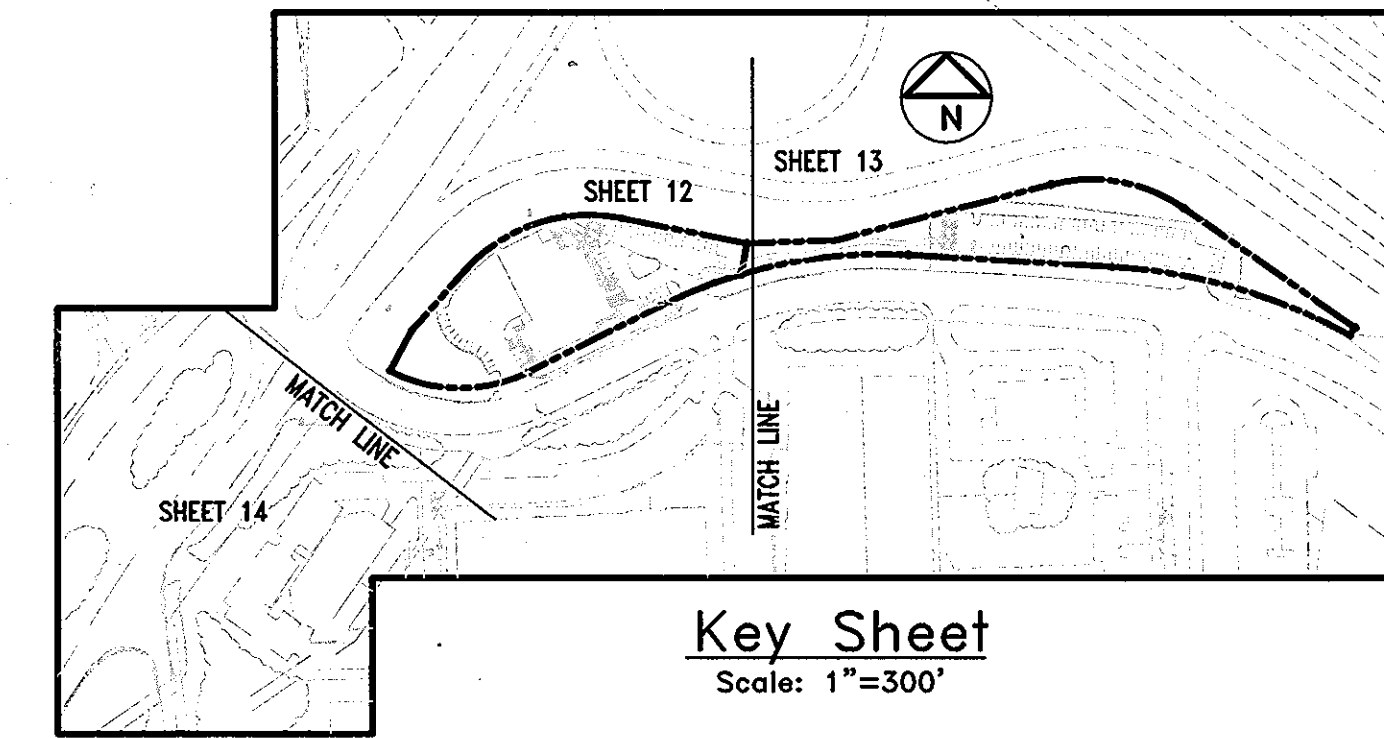
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
B. Wilson for Peter B. Jensen 11/7/2011  
County Health Officer  
Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
[Signature] 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
[Signature] 11/21/10  
CHIEF, DIVISION OF LAND DEVELOPMENT  
[Signature] 1/12/11  
DIRECTOR

BY THE DEVELOPER:  
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."  
[Signature] 10/27/10  
SIGNATURE OF THE DEVELOPER  
David Loudermilk

BY THE ENGINEER:  
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT."  
[Signature] 10/27/10  
SIGNATURE OF THE ENGINEER  
Jeffrey L. Schwab P.E.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
[Signature] 12/14/10  
HOWARD SOIL CONSERVATION DISTRICT

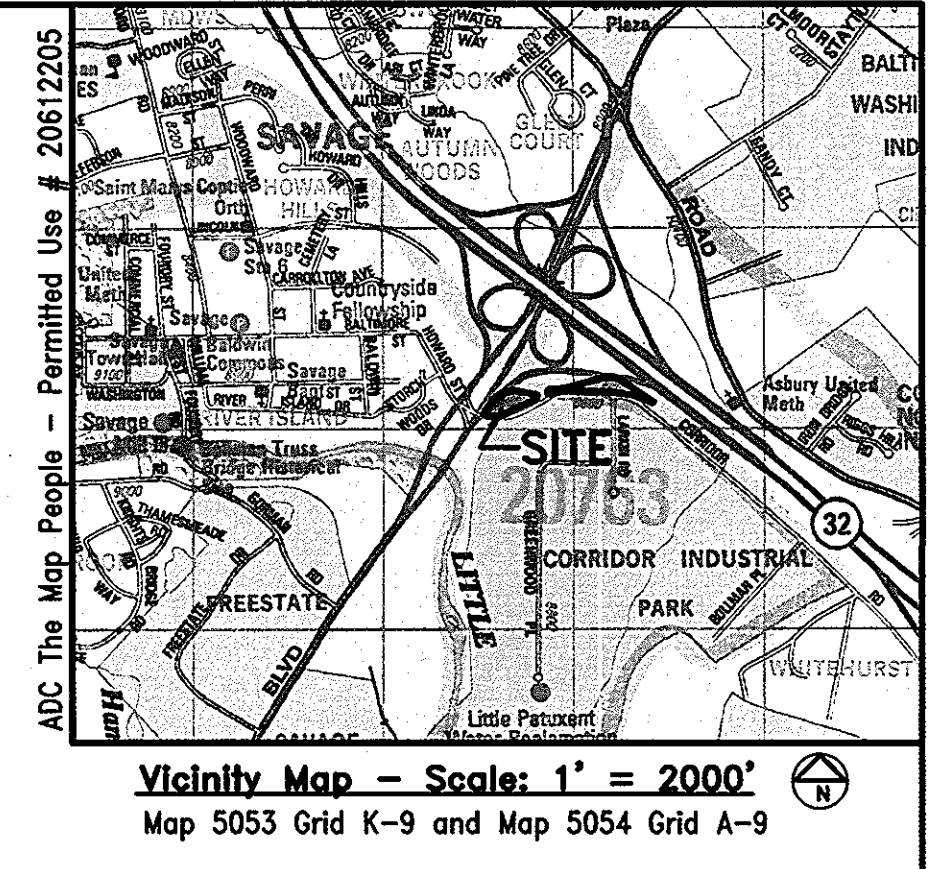
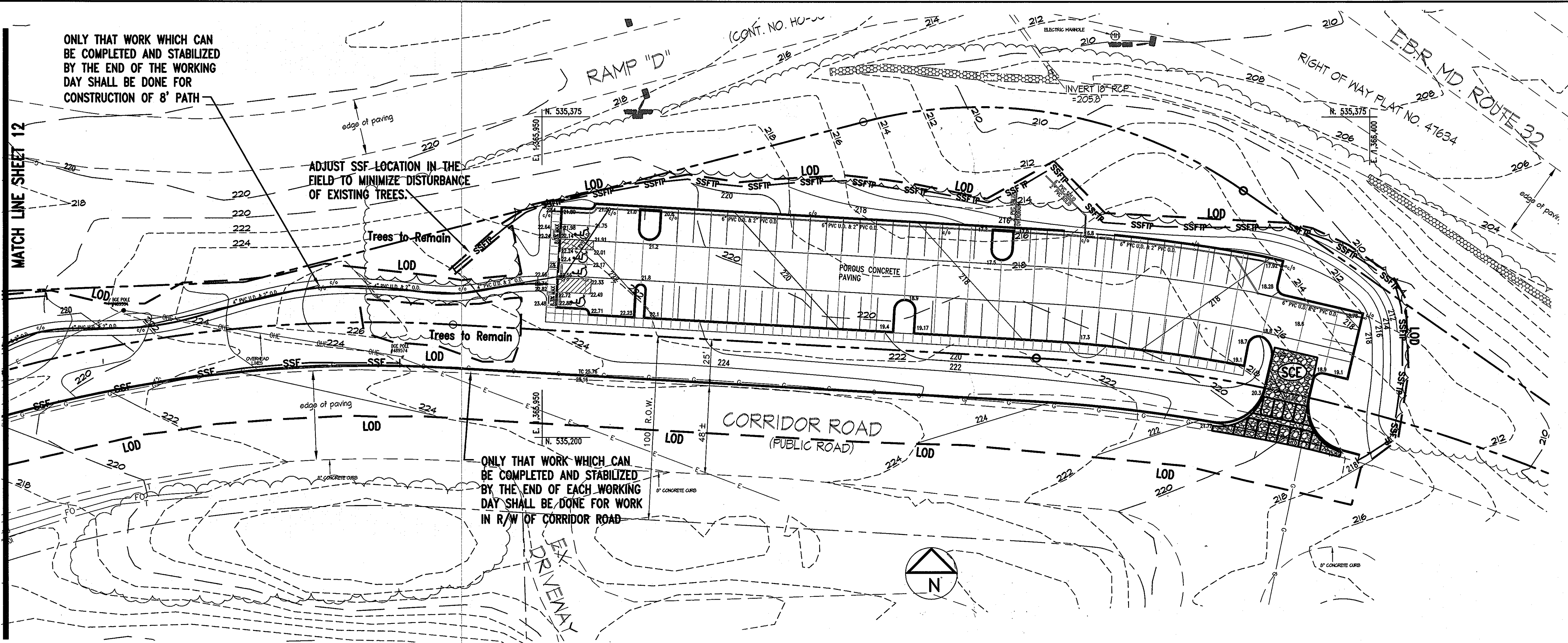


ONLY THAT WORK WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF THE WORKING DAY SHALL BE DONE FOR CONSTRUCTION OF 8' PATH

ADJUST SSF LOCATION IN THE FIELD TO MINIMIZE DISTURBANCE OF EXISTING TREES.

ONLY THAT WORK WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY SHALL BE DONE FOR WORK IN R/W OF CORRIDOR ROAD

MATCH LINE SHEET 12



**HOWARD SOIL CONSERVATION DISTRICT**

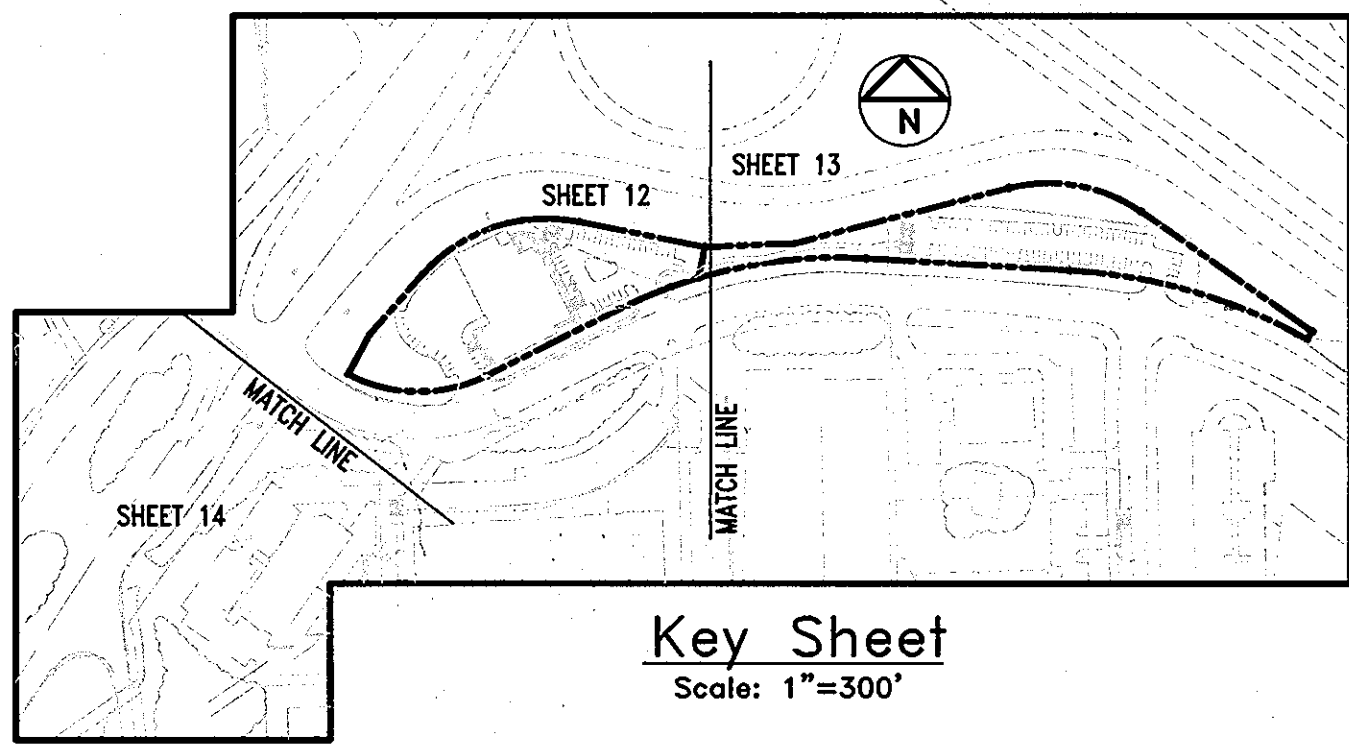
**PERMANENT SEEDING NOTES**

- Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.
- Seedbed Preparation:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.
- Soil Amendments:** In lieu of soil test recommendations, use one of the following schedules:
  1. Preferred -- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq. ft.)
  2. Acceptable -- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.
- Seeding** -- For the periods March 1 -- April 30, and August 1 -- October 15, seed with 60 lbs/acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 -- July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (.05 lbs/1000 sq. ft.) of weeping lovegrass. During the period of October 16 -- February 28, protect site by:
  - Option 1 -- Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring.
  - Option 2 -- Use sod. Option 3 -- Seed with 60 lbs/acre Kentucky 30 Tall Fescue and mulch with 2 tons/acre well anchored straw.
- Mulching** -- Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.
- Maintenance** -- Inspect all seeding areas and make needed repairs, replacements and reseeds.

**TEMPORARY SEEDING NOTES**

- Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.
- Seedbed preparation:** -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.
- Soil Amendments:** -- Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).
- Seeding:** -- For periods March 1 -- April 30 and from August 15 -- October 15, seed with 2-1/2 bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1 -- August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq. ft.). For the period November 16 -- February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.
- Mulchings:** -- Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8 gal/1000 sq. ft.) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.



**LEGEND**

- Silt Fence — SF
- Super Silt Fence — SSF
- Super Silt Fence with Tree Protection Fencing — SSF TP
- At Grade Inlet Protection — AGIP
- Curb Inlet Protection — CIP
- Standard Inlet Protection — SIP
- Super Silt Fence Inlet Protection — SSF
- Limit of Disturbance — LOD
- Temporary Stockpile Area — T.S.P.
- Stabilized Construction Entrance w/ Mountable Berm — SCE
- Ex. Contours — 196
- Prop. Contour — 196

See sheet 13 for Limit of Disturbance areas

**Tesseract**  
TESSERACT SITES, INC.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284 P. 410.321.7600 F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland**

**Sediment & Erosion Control Plan  
(Phase 2)**

LOT/PROJECT: C-1	LIBRARY: 5454/243	PLANS: 21380
DATE: 18.12	ZONE: M-2	ISSUE NO: 6TH

Date: 10/22/2010  
Proj. #: 08016  
Scale: 1"=30'

**13 of 33**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*[Signature]* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 1/12/11  
DIRECTOR

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

*[Signature]* 10/27/10  
SIGNATURE OF THE DEVELOPER  
David Loudermilk

BY THE ENGINEER:

"I CERTIFY THAT HIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT."

*[Signature]* 12/14/10  
SIGNATURE OF THE ENGINEER  
Jeffrey L. Schwab P.E.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 12/14/10  
HOWARD SOIL CONSERVATION DISTRICT

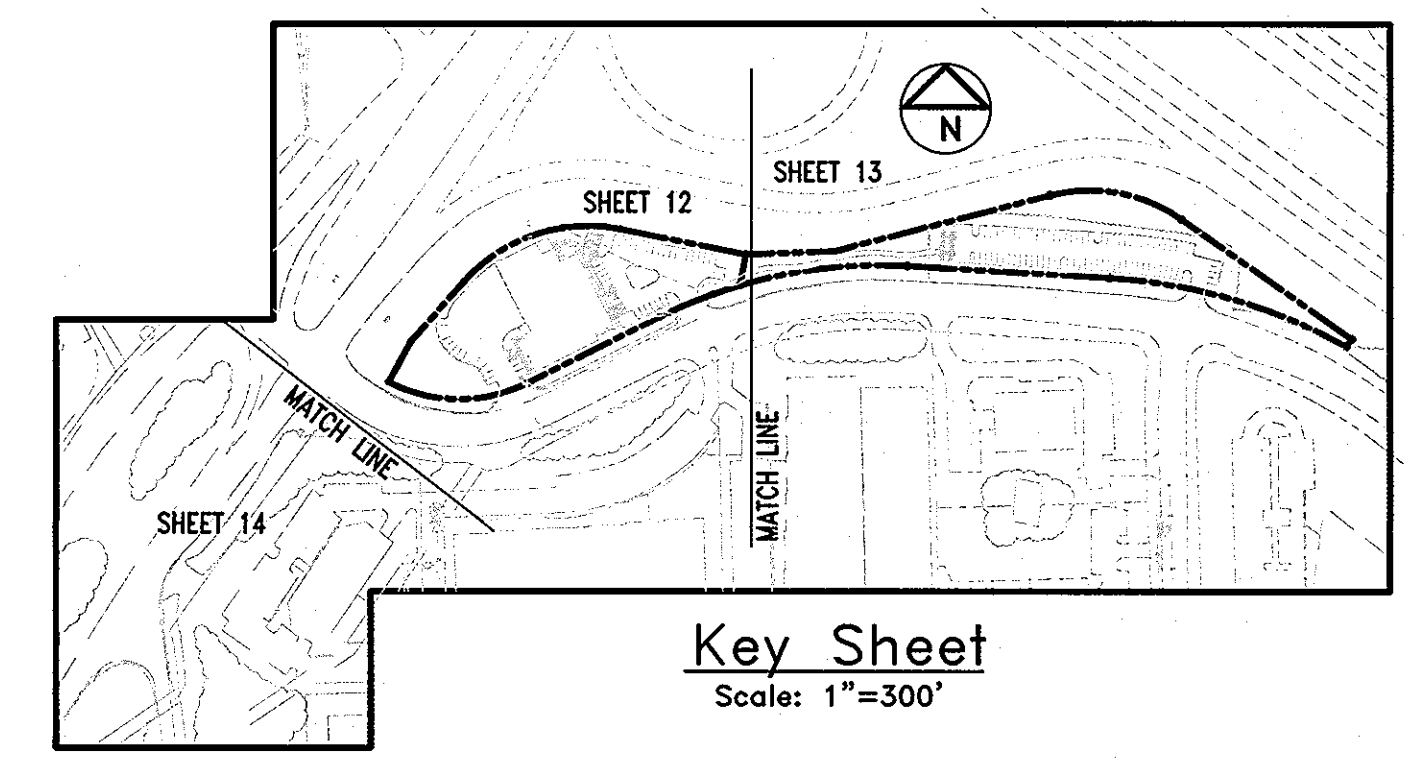
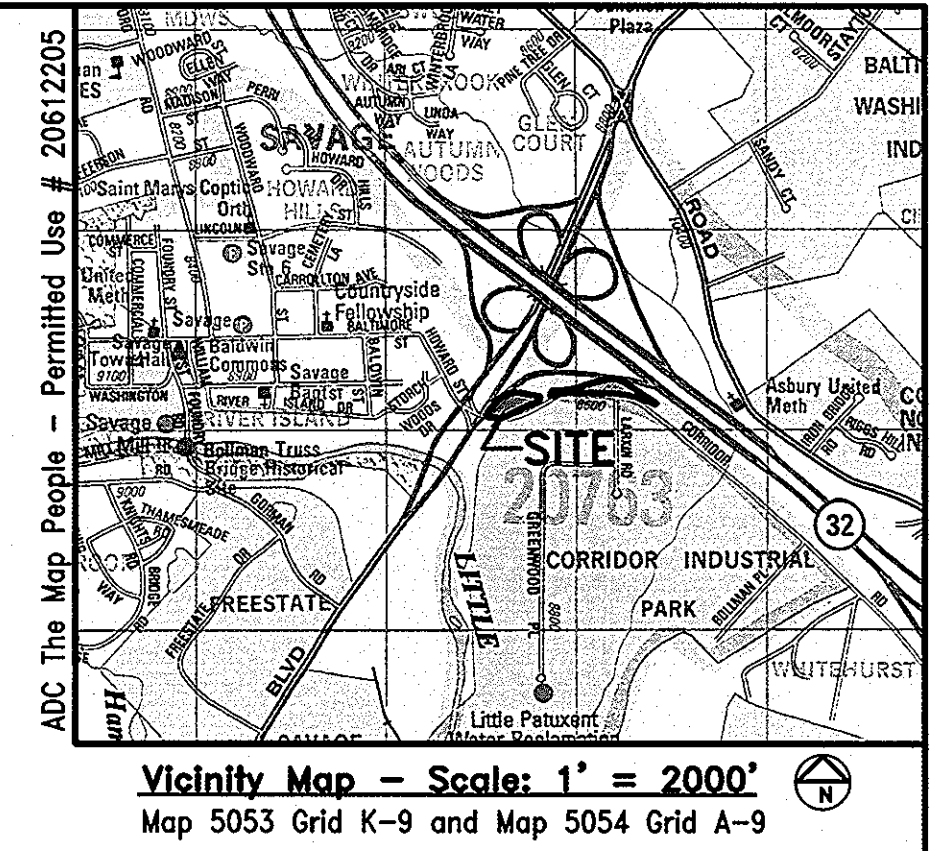
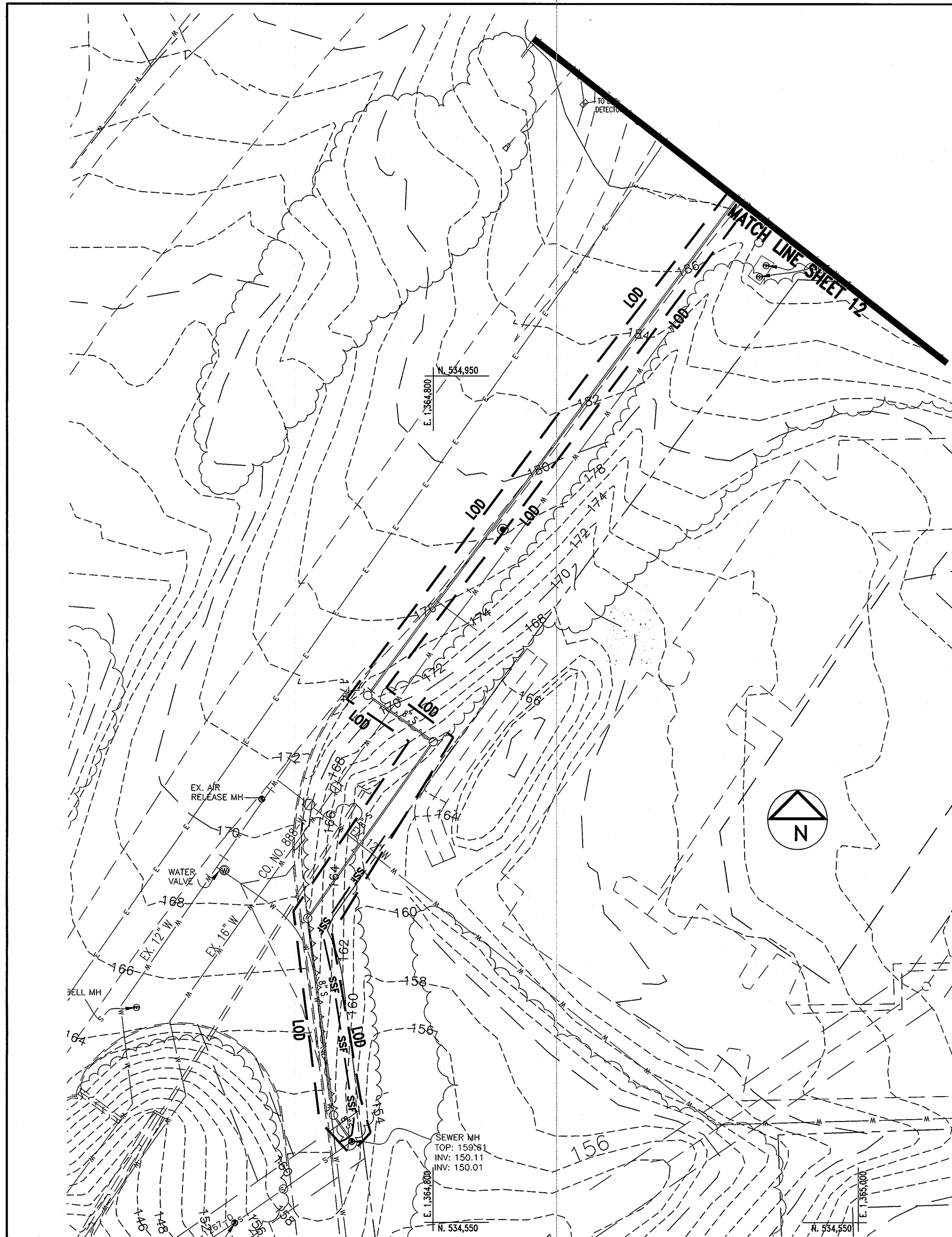
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*[Signature]* 1/7/2011  
County Health Officer  
Howard County Health Department

OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK 410-319-6194

OWNER AND DEVELOPER: TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB 410-321-7600





See sheet 13 for Limit of Disturbance areas

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303  
 Towson, Maryland, 21284  
 P: 410.321.7600  
 F: 410.321.7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland**

**Sediment & Erosion Control Plan  
 (Phase 2)**

LOT/PARCEL: C-1	LIBRARY FILE: 5454/263	PLAT: 21380
DATE: 18,12	DATE: 10/22/10	DATE: 6/06/02

OWNER AND DEVELOPER  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 4250 BENDIX ROAD  
 COLLEMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-319-6194

ENGINEER  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21282  
 CONTACT: JEFFREY SCHWAB  
 410-521-7600

Date: 10/22/2010  
 Proj. #: 08016  
 Scale: 1"=30'

**14 of 33**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*William D. ...* 12/17/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Vest ...* 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas ...* 1/10/11  
 DIRECTOR DATE

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

*David Loudermilk* 10/27/10  
 SIGNATURE OF THE DEVELOPER DATE  
 David Loudermilk

BY THE ENGINEER:

"I CERTIFY THAT HIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT."

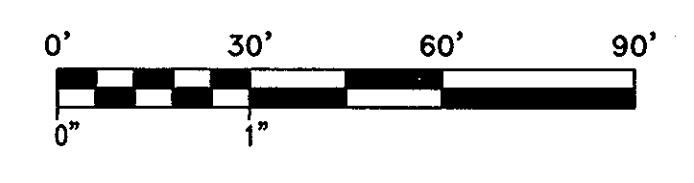
*Jeffrey U. Schwab* 10/27/10  
 SIGNATURE OF THE ENGINEER DATE  
 Jeffrey U. Schwab P.E.

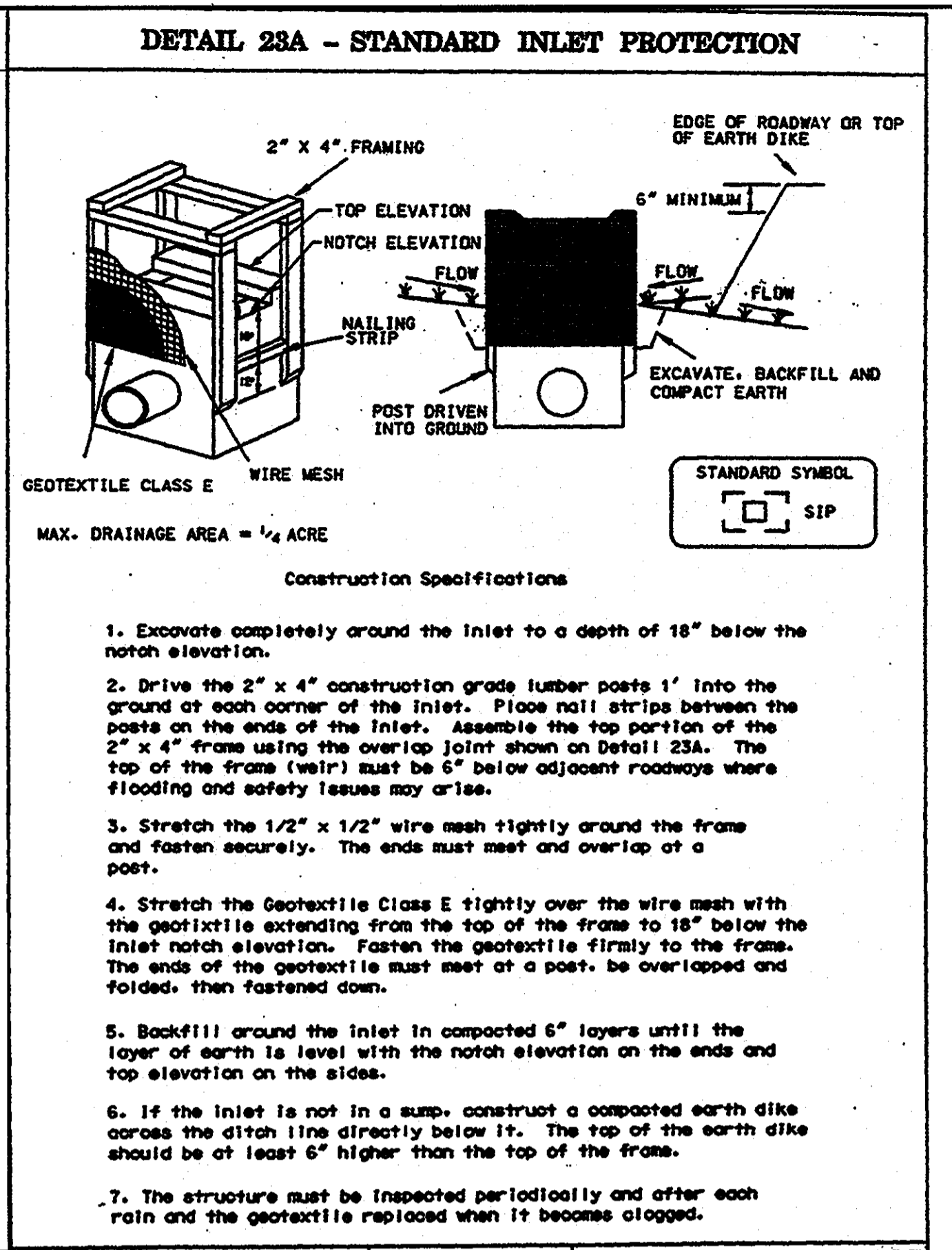
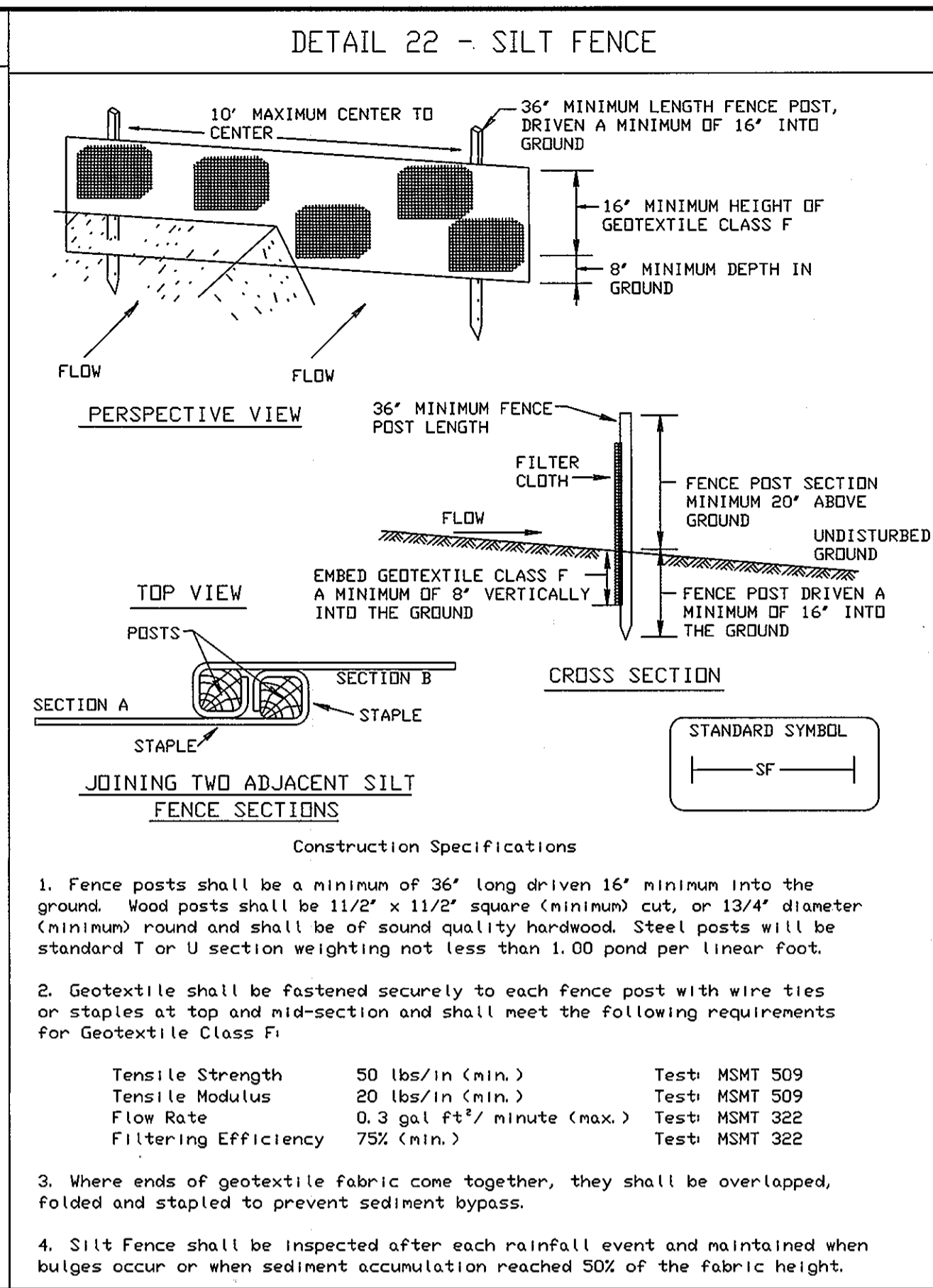
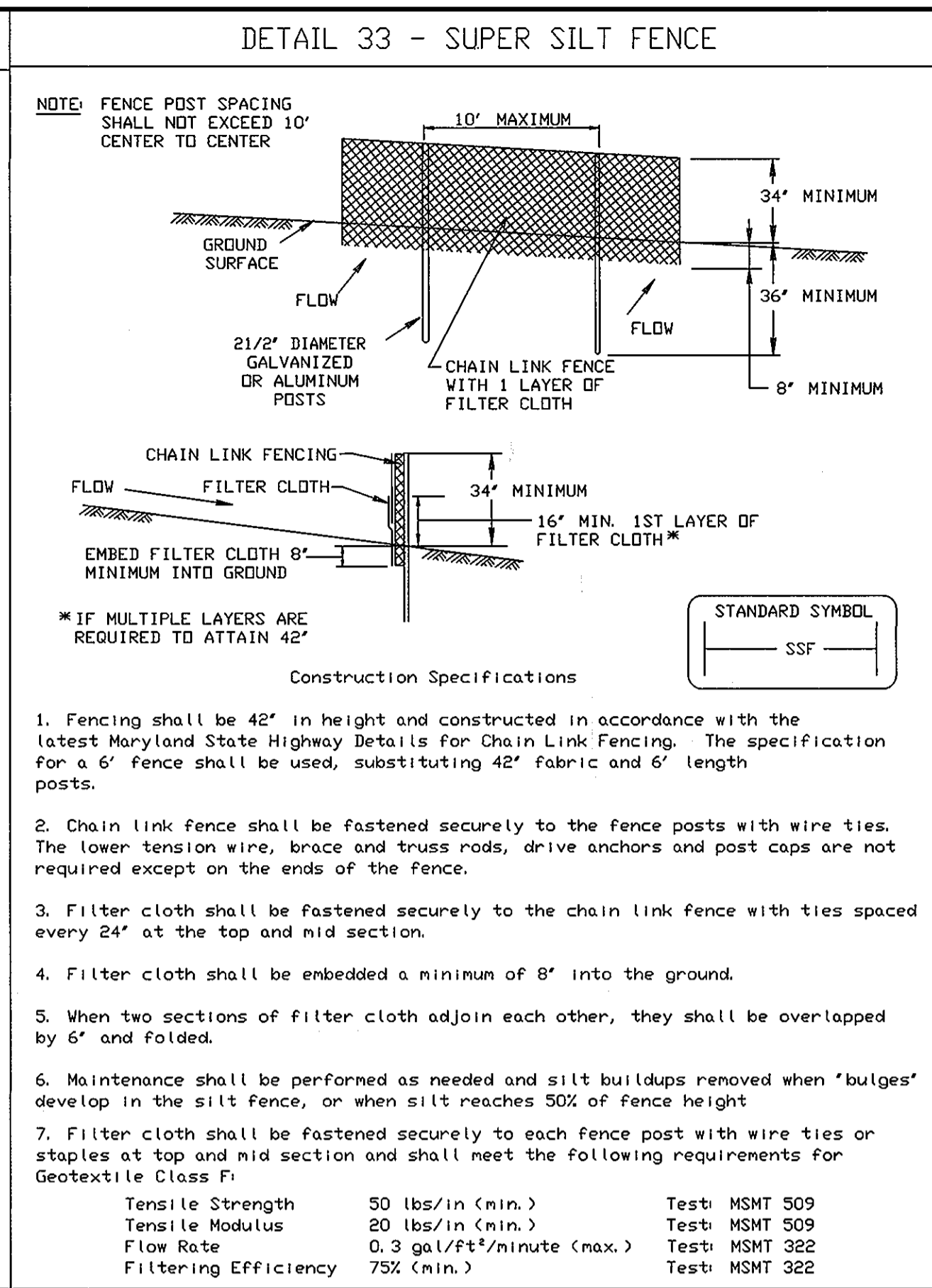
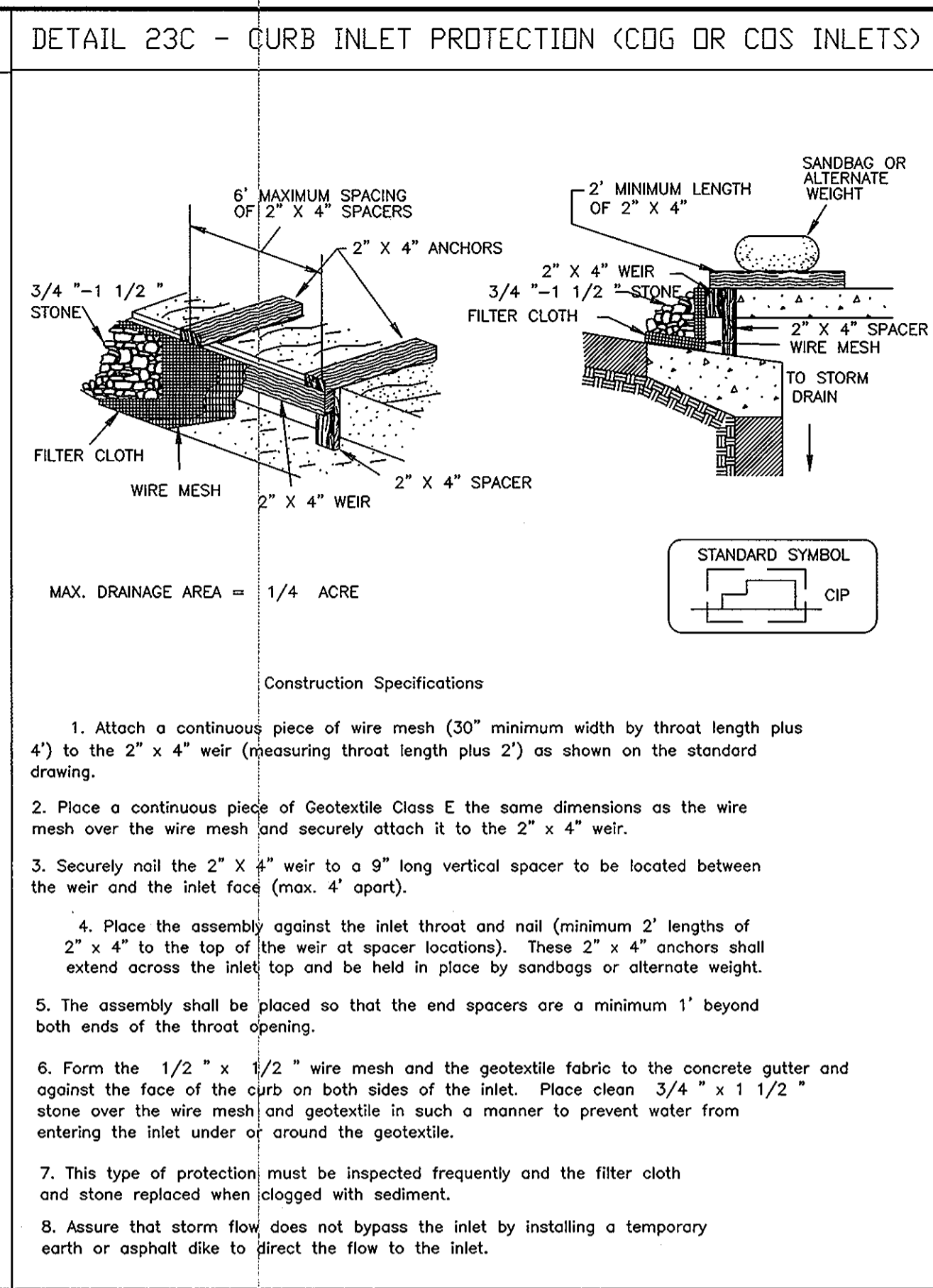
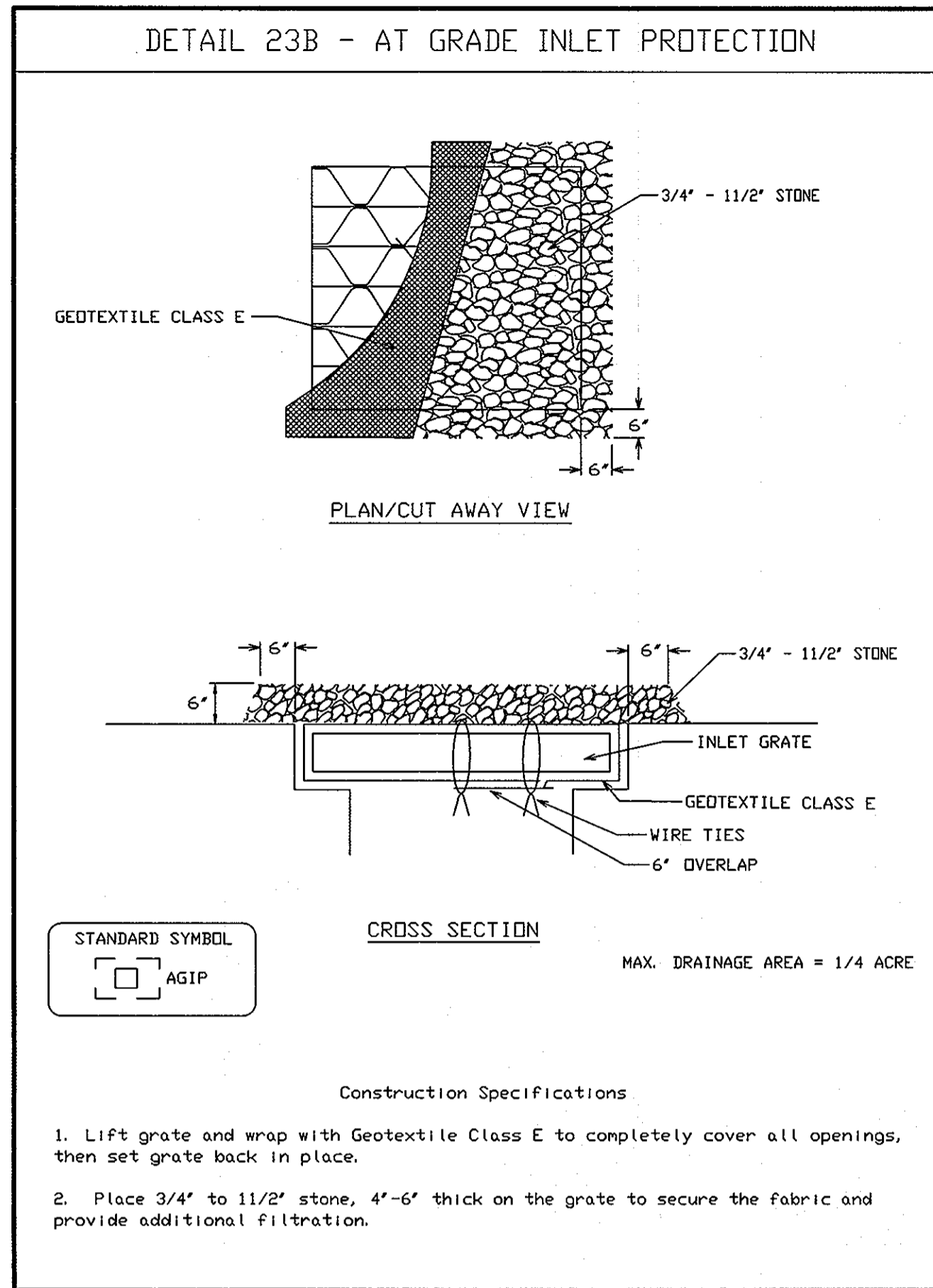
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*John R. Roberts* 12/14/10  
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*Balton for Peter Baileason* 1/7/2011  
 County Health Officer DATE  
 Howard County Health Department





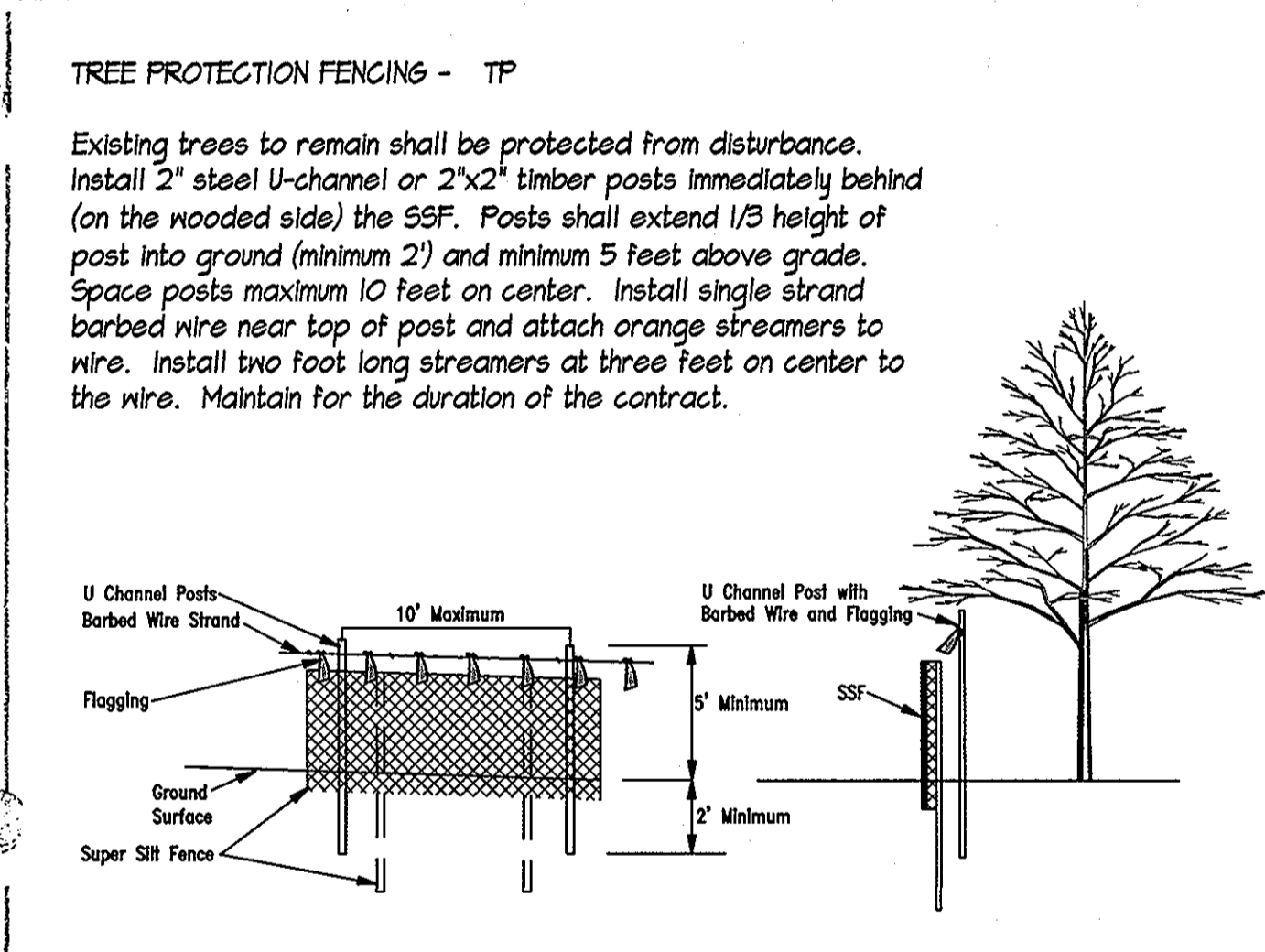
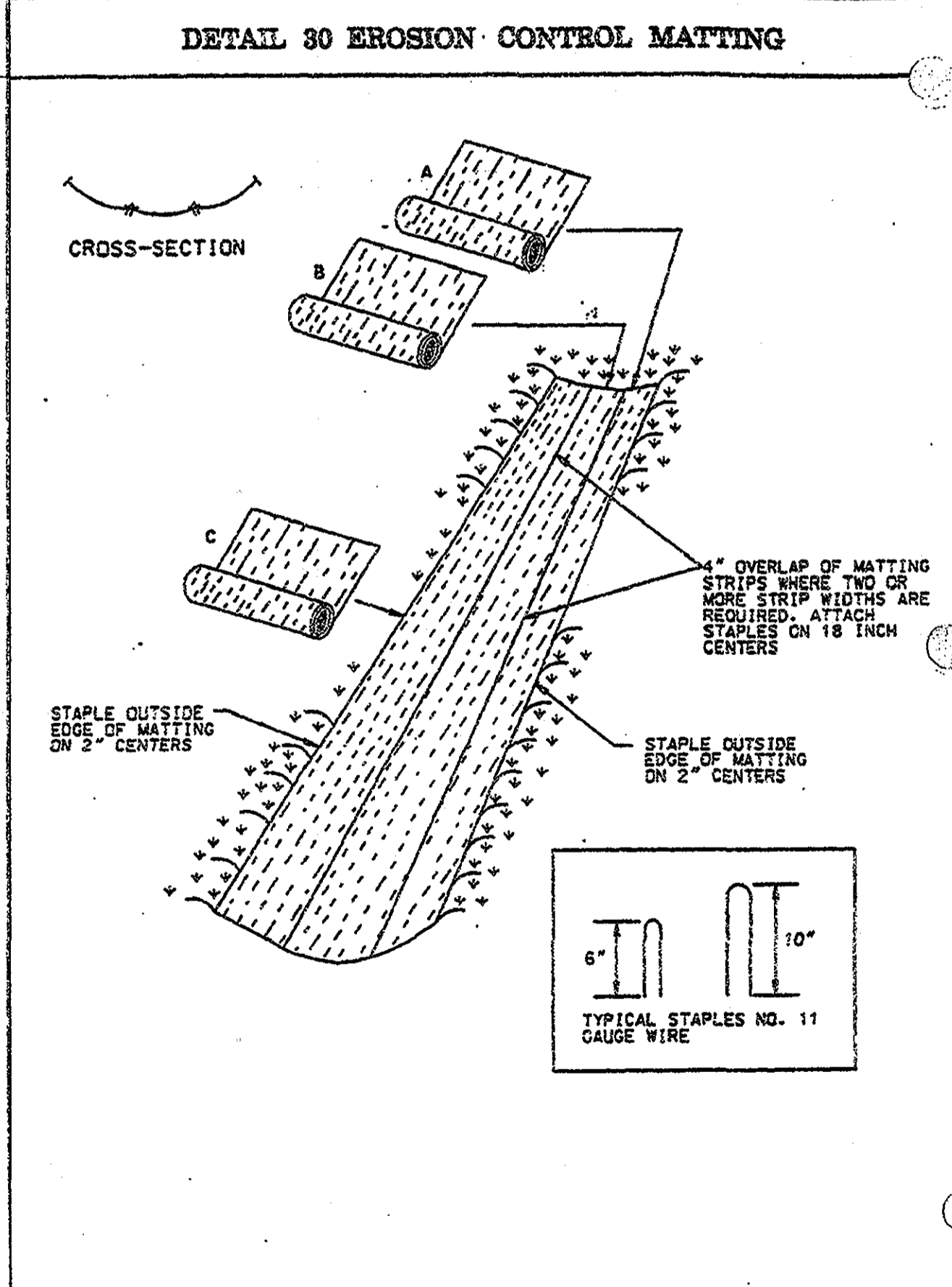
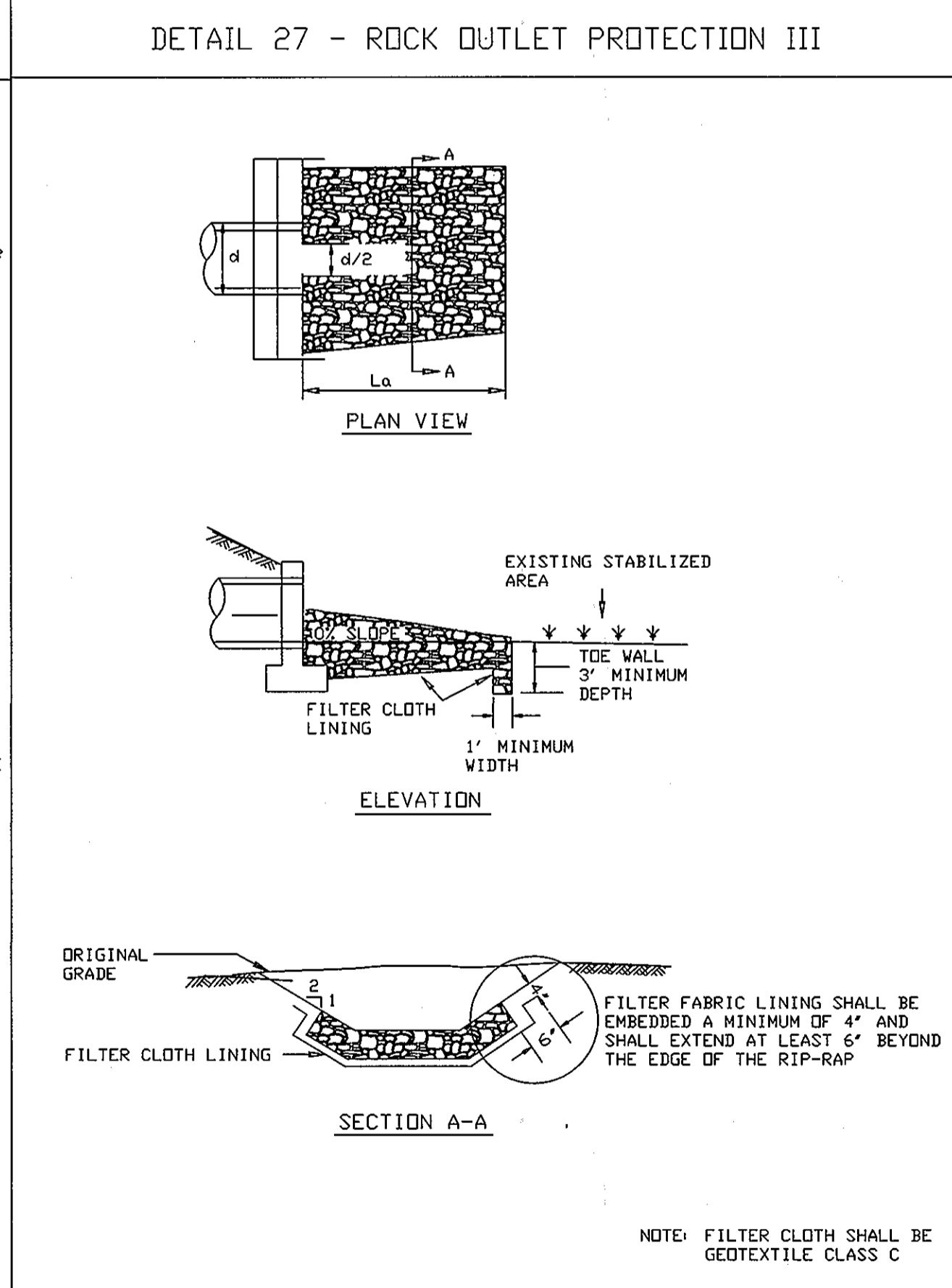
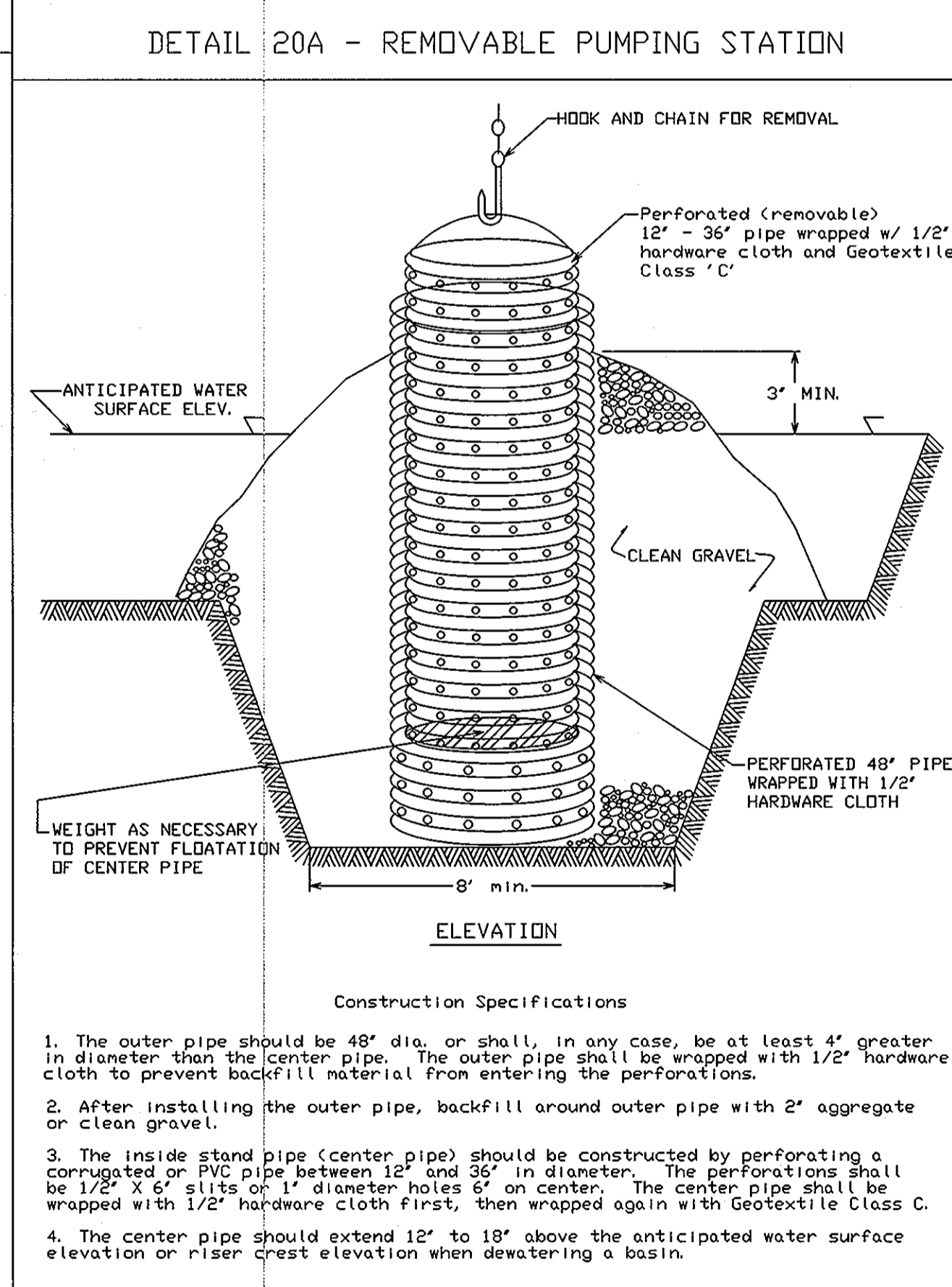
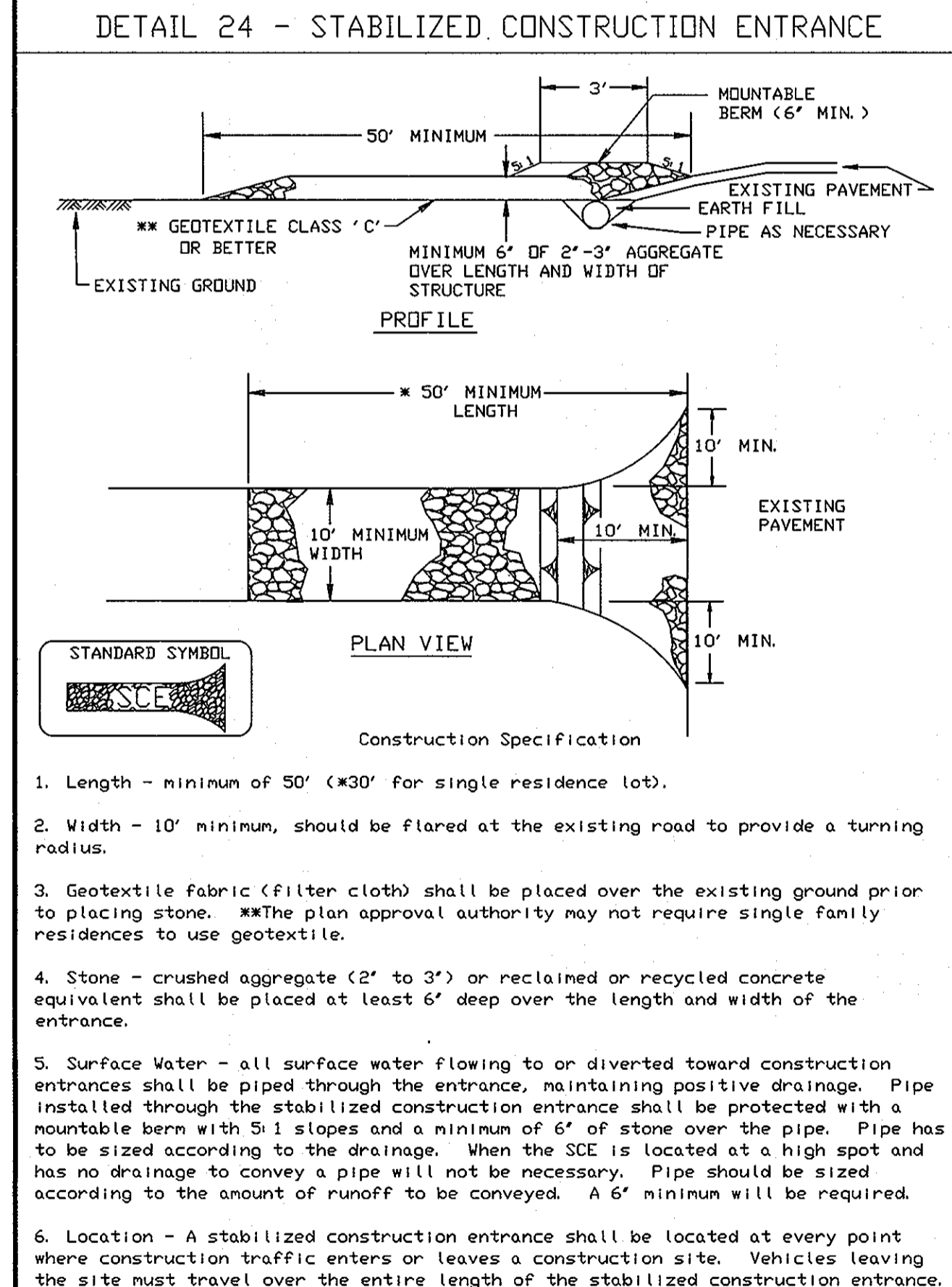
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-16-5A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-16-5B MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE H-26-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-15-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-28-5 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-17-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE B-12-5 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-18-10 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE G-22-2 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-28-5 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*John J. ...* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*...* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*...* 1/12/11  
DIRECTOR

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

*David Loudermilk* 10/27/10  
SIGNATURE OF THE DEVELOPER  
David Loudermilk

BY THE ENGINEER:

"I CERTIFY THAT HIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT."

*Jeffrey I. Schwab* 10/27/10  
SIGNATURE OF THE ENGINEER  
Jeffrey I. Schwab

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*John R. Robertson* 12/14/10  
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*William P. Peter Beilenson* 1/7/2011  
County Health Officer  
Howard County Health Department

OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION 701 HAYES CALVERT STREET BALTIMORE, MD 21242 410-545-0300

OWNER AND DEVELOPER: HOWARD COUNTY, MD 4250 BENOIX ROAD COLUMBIA, MD 21045 CONTACT: DAVID LOUDERMILK 410-519-6194

ENGINEER: TESSERACT SITES, INC. 401 WASHINGTON AVE, SUITE 303 TOWSON, MD 21286 CONTACT: JEFFREY SCHWAB 410-321-7600

**Tesseract**  
TESSERACT SITES, INC.

401 Washington Ave, Suite 303  
Towson, Maryland, 21286  
P: 410.321.7600  
F: 410.321.7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

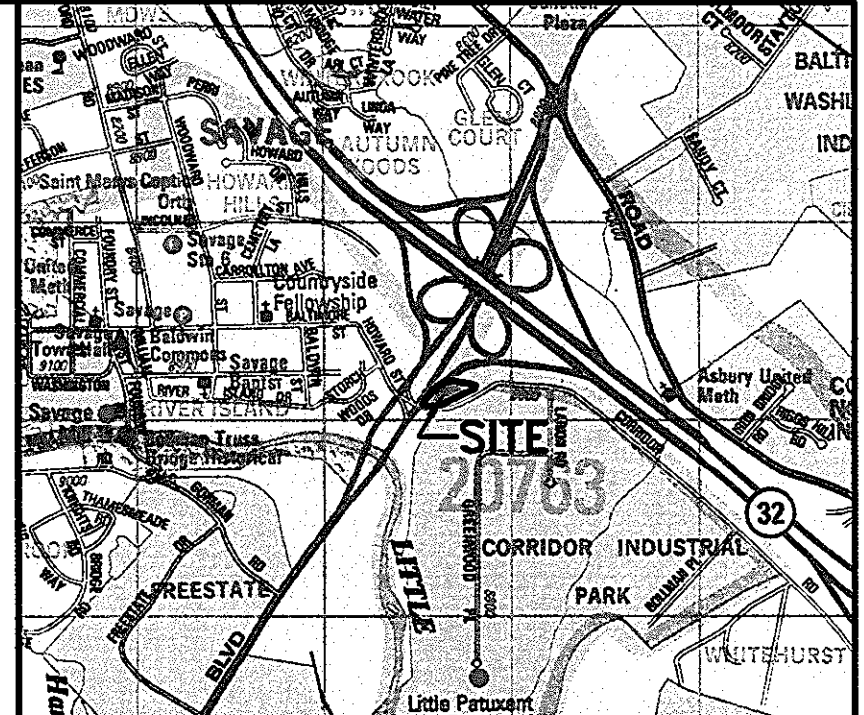
Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

**Sediment & Erosion Control Details**

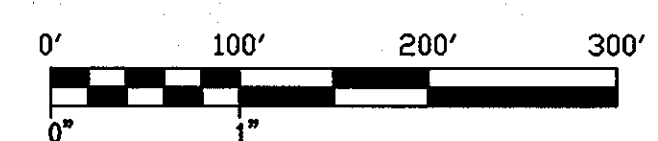
PROJECT: C-1	LIBRARY/FILE: 14230/243	PLANS: 21380
DATE: 12/12	DATE: 10/02/10	DATE: 6/08/02

DATE: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN

**15 of 33**



Map 5053 Grid K-9 and Map 5054 Grid A-9  
 Vicinity Map  
 Scale: 1" = 2000'



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
*By Debra for Peter Brilenson* 1/7/2011  
 County Health Officer  
 Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*John P. ...* 1/7/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Kate ...* 1/11/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas E. ...* 1/12/10  
 DIRECTOR

OWNER:  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 707 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-518-0300

OWNER AND DEVELOPER:  
 HOWARD COUNTY, MD  
 1250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-315-6134

ENGINEER:  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE., SUITE 303  
 TOWSON, MD 21286  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303  
 Towson, Maryland, 21286  
 P. 410.321.7600  
 F. 410.321.7699

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

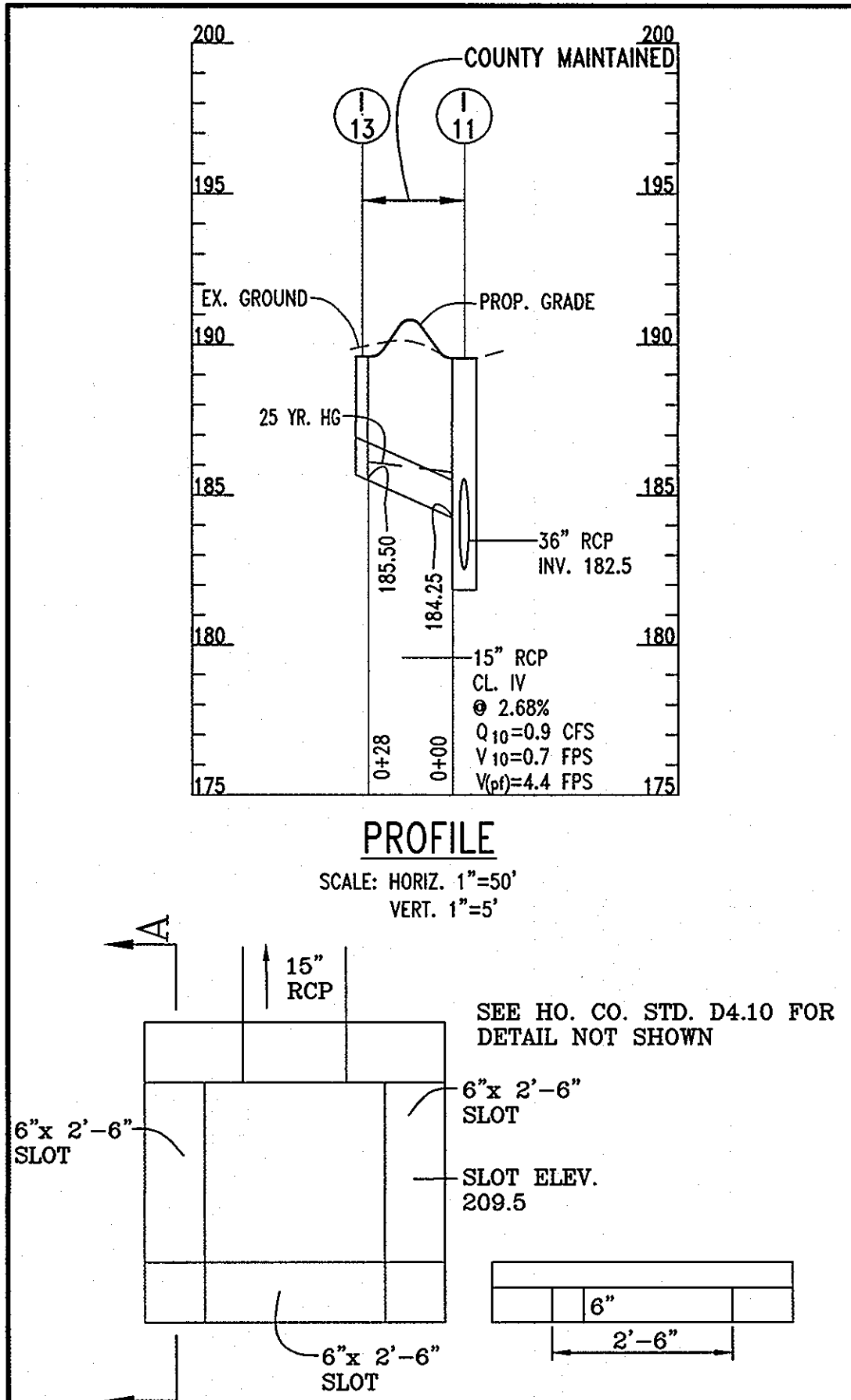
Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland

Storm Drain Drainage Area Map

DATE: 10/22/2010
Proj. #: 08016
Scale: 1"=100'

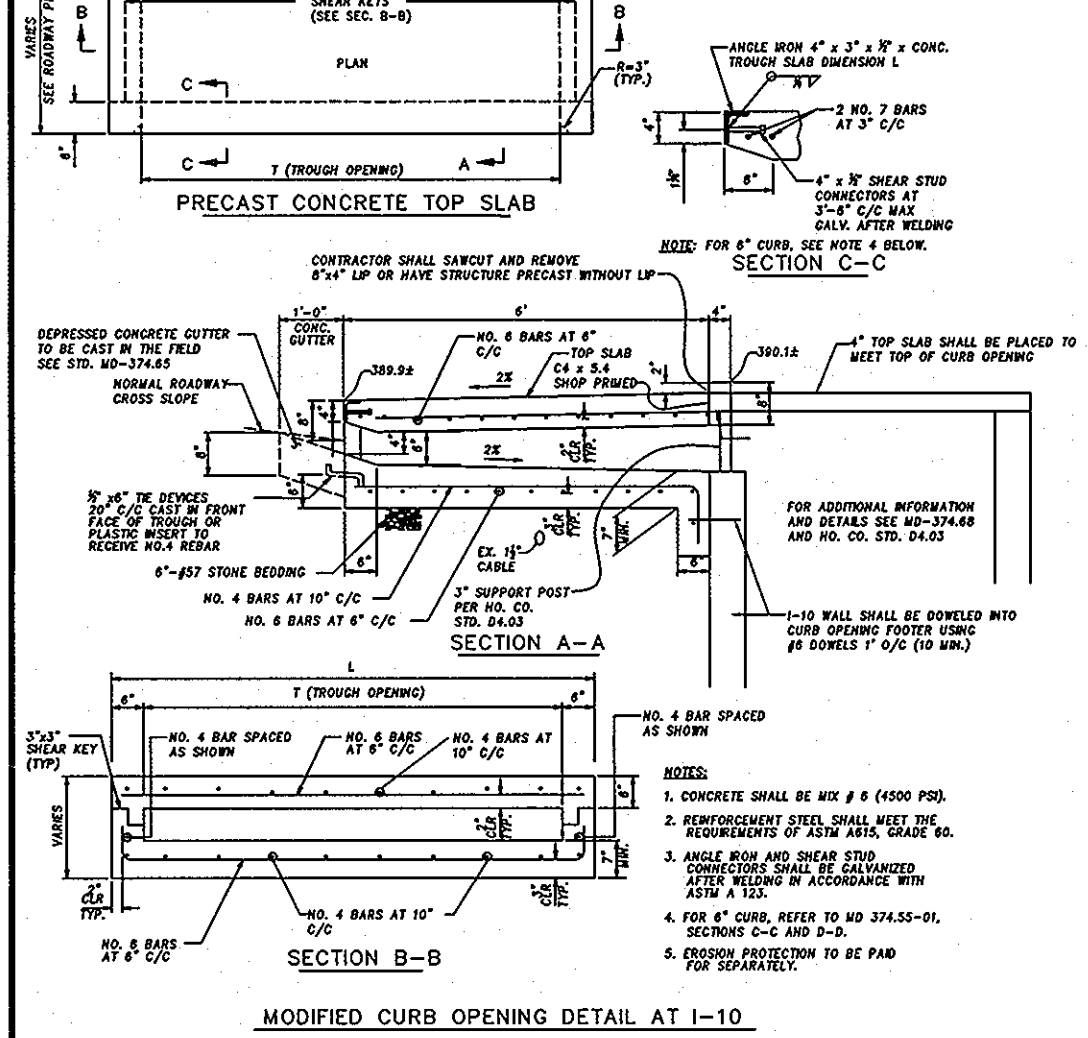
16 of 33





STRUCTURE SCHEDULE (SHA)

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
M-15	PRECAST MH 96" DIA	203.0	EX. 196.94 198.69	195.32	SEE PLAN	SHA STD. MD 384.09
E-14	CONC. END SECTION 36" DIA.	-	195.18	195.14	SEE PLAN	SHA STD. MD 368.01
I-16	K-INLET (SINGLE OPENING)	208.0	-	204.0	SEE PLAN	SHA STD. MD 378.11



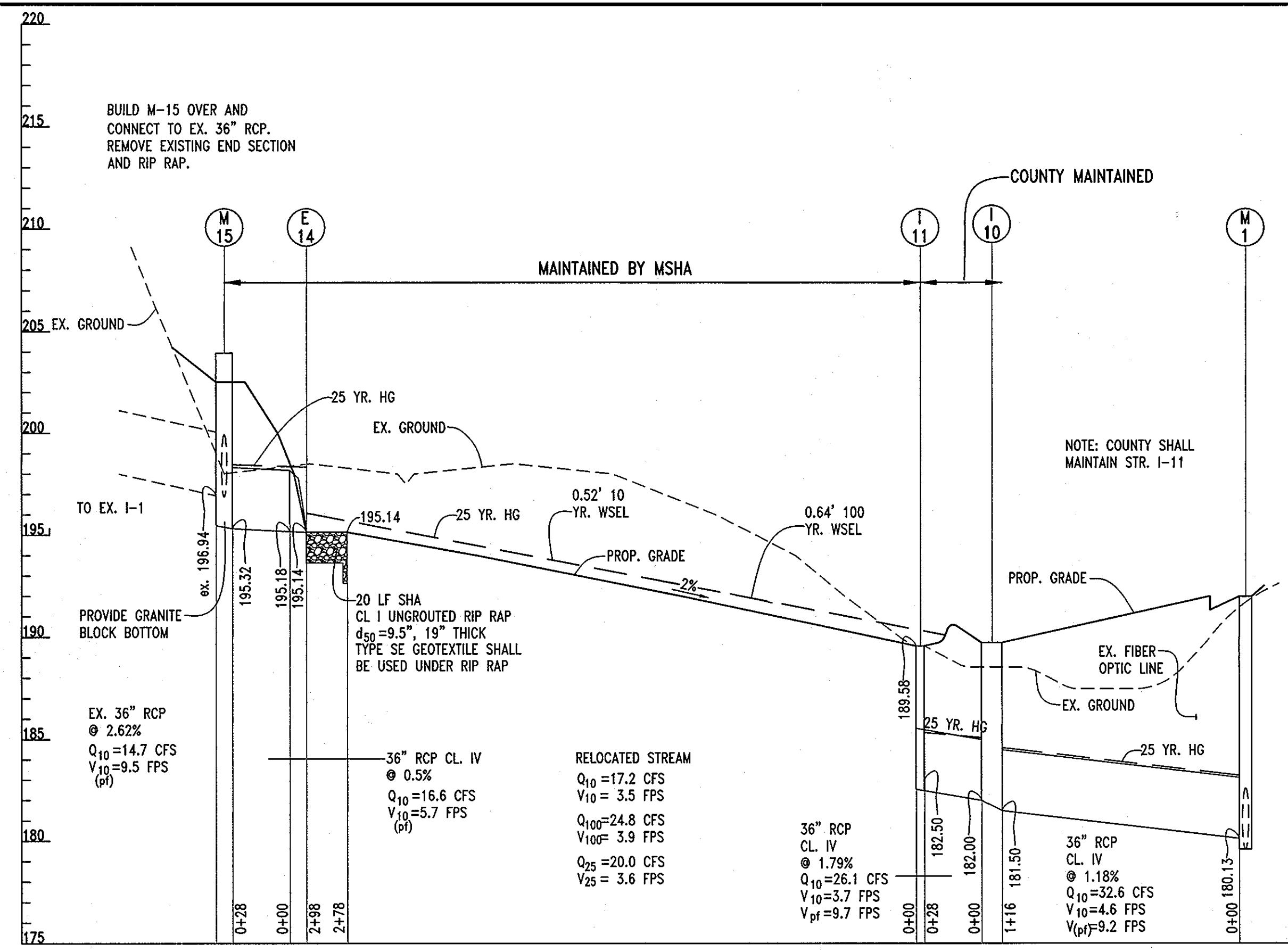
12/27/11 ADDED CURB OPENING & RELOCATED STORM DRAIN LINES I-11 TO M-1 & M-2 TO M-1 ALL SHEETS.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

County Health Officer  
Howard County Health Department

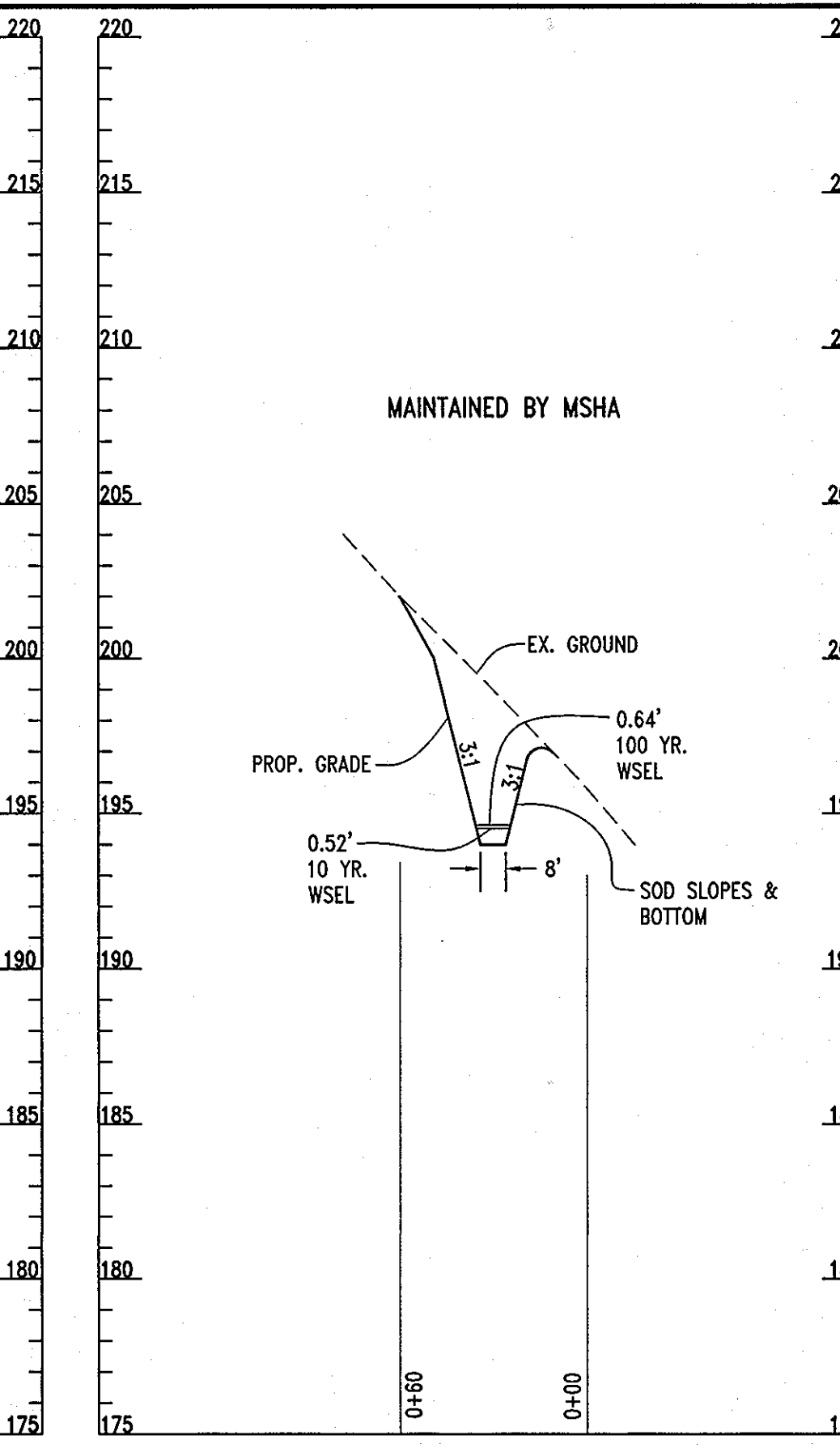
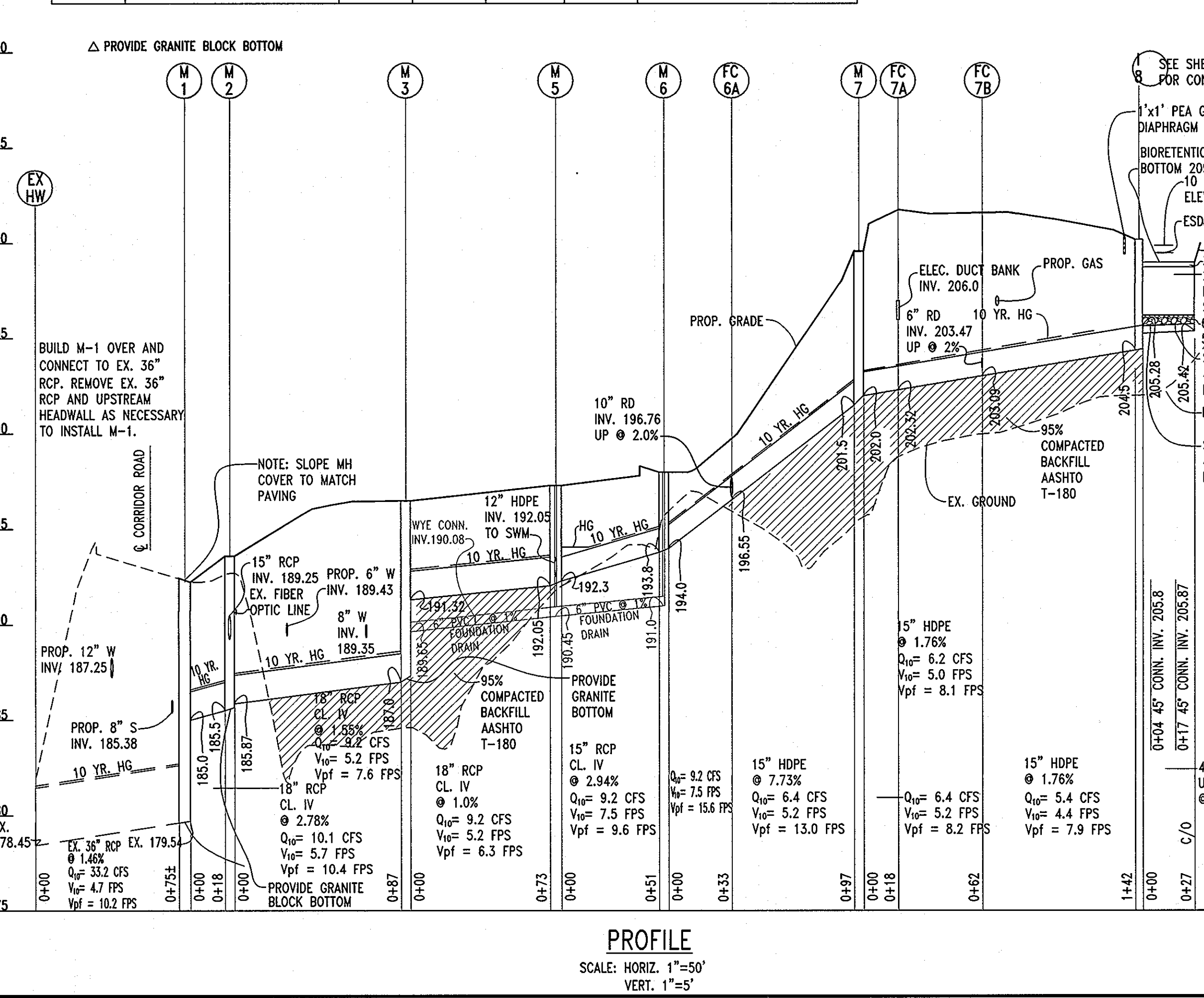
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR



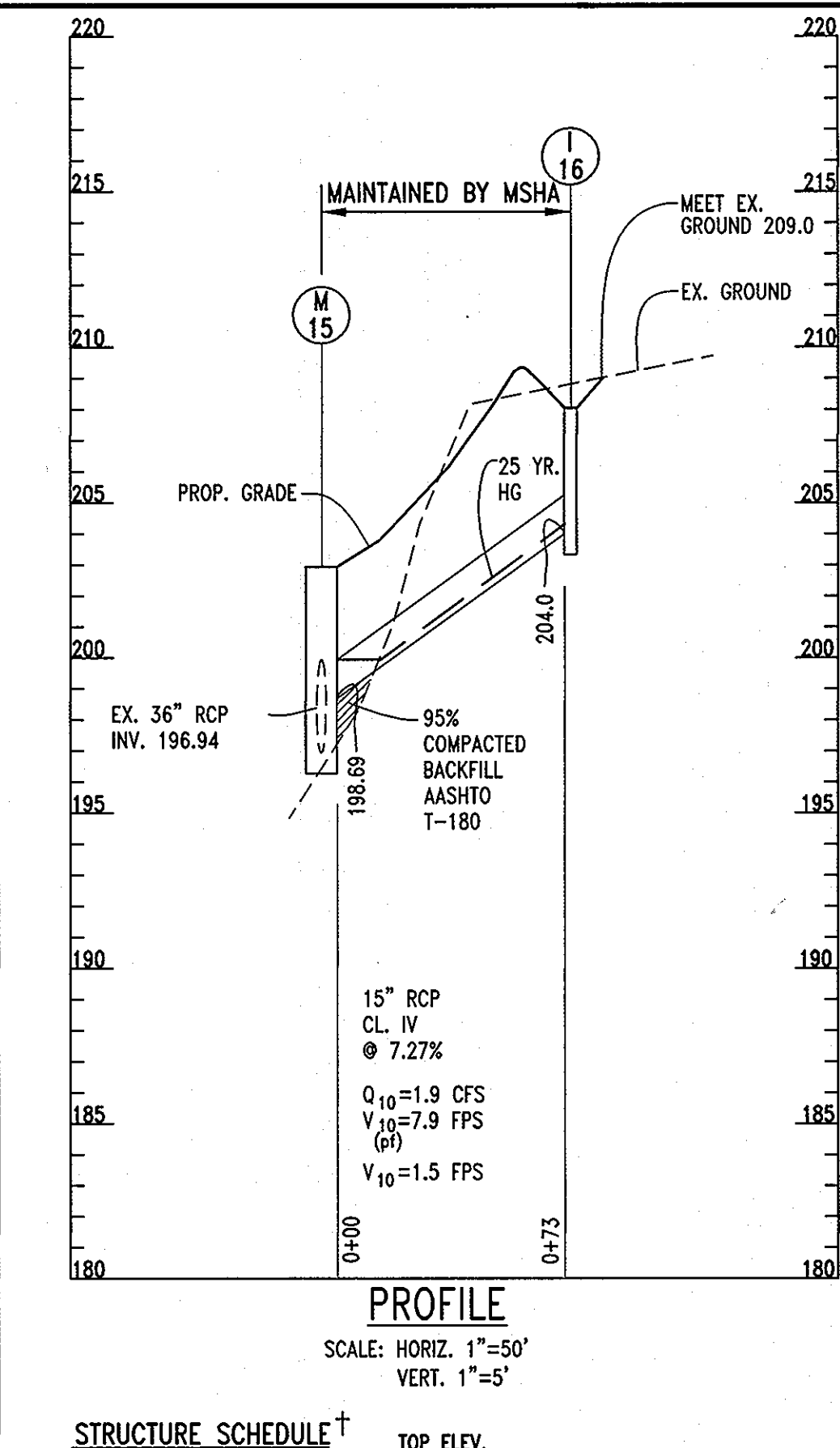
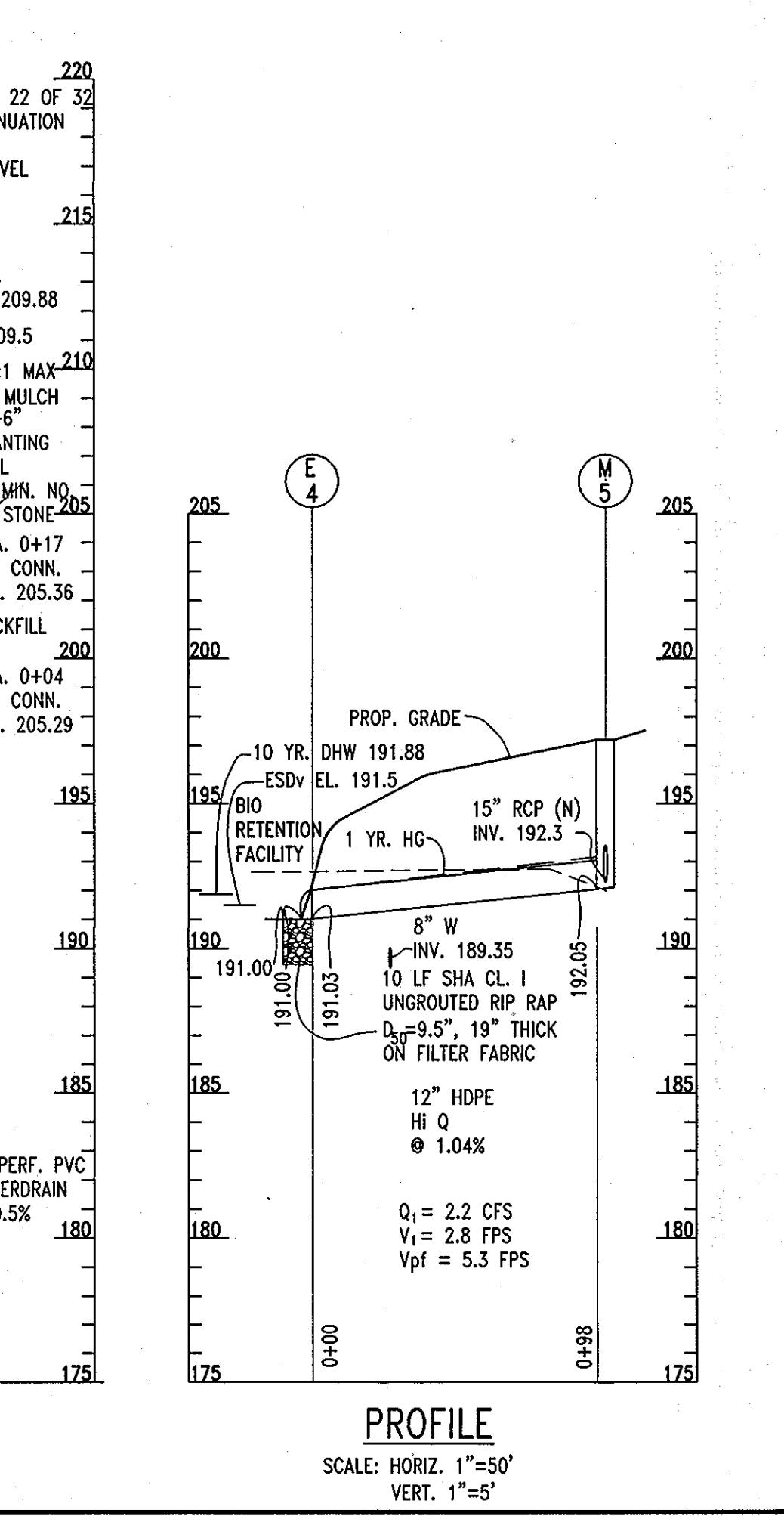
STRUCTURE SCHEDULE (SHA)

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
M-15	PRECAST MH 96" DIA	203.0	EX. 196.94 198.69	195.32	SEE PLAN	SHA STD. MD 384.09
E-14	CONC. END SECTION 36" DIA.	-	195.18	195.14	SEE PLAN	SHA STD. MD 368.01
I-16	K-INLET (SINGLE OPENING)	208.0	-	204.0	SEE PLAN	SHA STD. MD 378.11



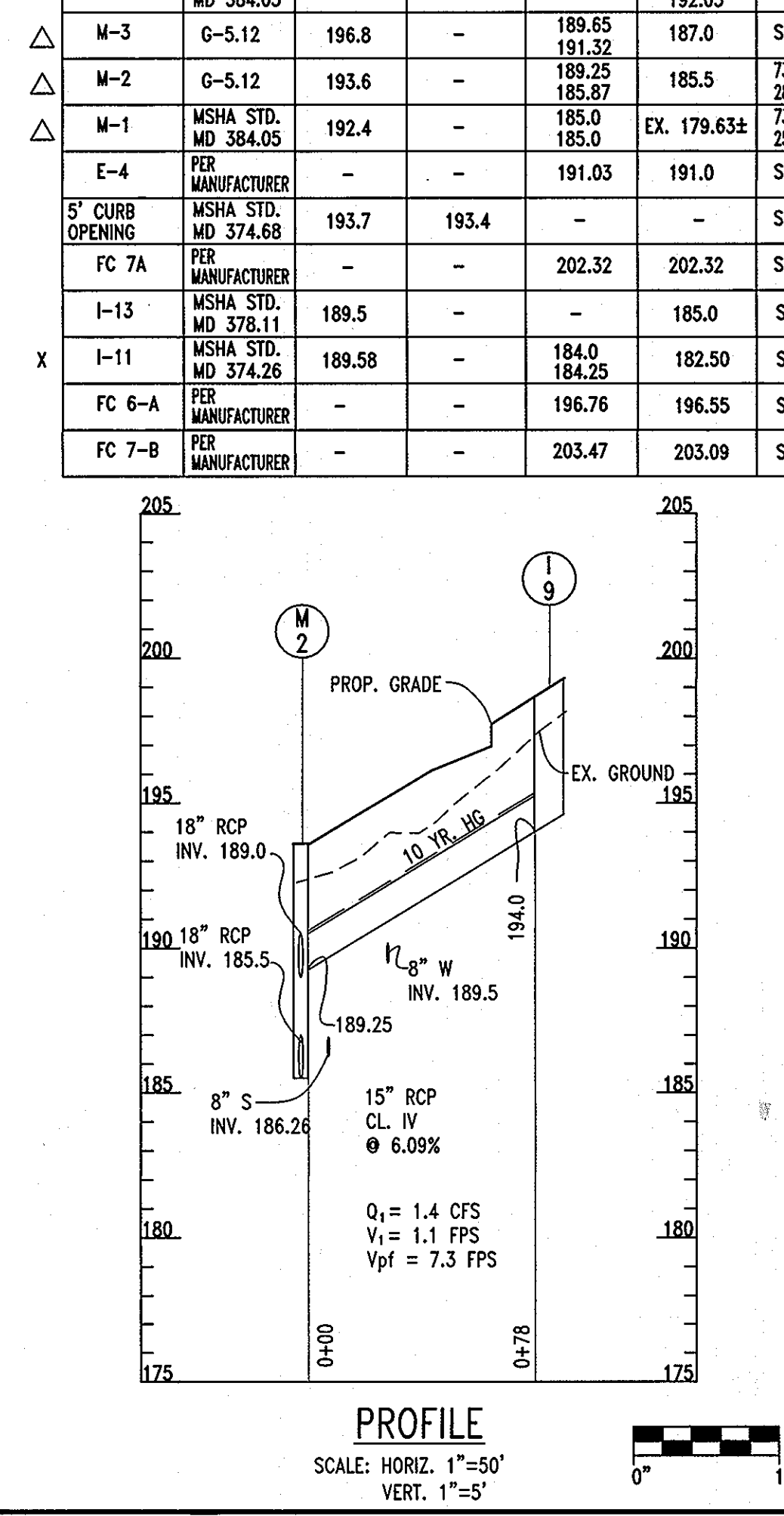
STRUCTURE SCHEDULE (SHA)

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
M-15	PRECAST MH 96" DIA	203.0	EX. 196.94 198.69	195.32	SEE PLAN	SHA STD. MD 384.09
E-14	CONC. END SECTION 36" DIA.	-	195.18	195.14	SEE PLAN	SHA STD. MD 368.01
I-16	K-INLET (SINGLE OPENING)	208.0	-	204.0	SEE PLAN	SHA STD. MD 378.11



STRUCTURE SCHEDULE (SHA)

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
M-15	PRECAST MH 96" DIA	203.0	EX. 196.94 198.69	195.32	SEE PLAN	SHA STD. MD 384.09
E-14	CONC. END SECTION 36" DIA.	-	195.18	195.14	SEE PLAN	SHA STD. MD 368.01
I-16	K-INLET (SINGLE OPENING)	208.0	-	204.0	SEE PLAN	SHA STD. MD 378.11



PIPE SCHEDULE (SHA)

SIZE	TYPE	LF
15"	RCP CL. IV	73
36"	RCP CL. IV	28

PIPE SCHEDULE

SIZE	TYPE	LF
6"	PVC	124
12"	HDPE	98
15"	HDPE	239
15"	RCP CL. IV	157
18"	RCP CL. IV	175
36"	RCP CL. IV	149

† INVERTS SHALL BE FULLY DEVELOPED EXCEPT FOR M-1, M-2, & M-5  
 Δ PROVIDE GRANITE BLOCK BOTTOM  
 \* MODIFIED SEE DETAIL  
 # DIVERSION STRUCTURE SEE DETAIL  
 □ PROVIDE SLOTS IN 3 SIDES SEE DETAIL FOR MODIFIED SLOTS  
 X STANDARD INLET FRAME & GRATE SHA STD. MD 379.05

STRUCTURE SCHEDULE (SHA)

NO.	HO.CO. DET	UPPER EL.	LOWER EL.	INV. IN.	INV. OUT.	LOCATION	TYPE
I-9	D-4.03	199.79	199.07	-	194.0	6 STA. 74+35.95 CORRIDOR ROAD 26' LT.	A-10 INLET W=2'-6"
I-10	D-4.03	189.9	-	182.0	181.5	6 STA. 71+82.23 CORRIDOR ROAD 32.82' LT.	A-10 INLET W=6'-0"
I-8	D-4.10	210.33	-	205.78	204.5	SEE PLAN	D INLET 2'-6" SQ.
I-12	D-4.04	192.50	-	185.5	184.5	SEE PLAN	A-10 INLET W=6'-0"
M-7	G-5.12	209.5	-	202.0	201.5	SEE PLAN	PRECAST MH 48" RD
M-6	G-5.12	198.0	-	194.0	193.8	SEE PLAN	SHALLOW PRECAST MH 48" RD
M-5	MSHA STD. MD 384.05	197.3	-	192.3	192.05	SEE PLAN	PRECAST MH 72" RD
M-3	G-5.12	196.8	-	187.0	187.0	SEE PLAN	SHALLOW PRECAST MH 48" RD
M-2	G-5.12	193.6	-	189.25	185.5	73+45.71 CORRIDOR ROAD 28.64' LT.	PRECAST MH 48" RD
M-1	MSHA STD. MD 384.05	192.4	-	185.0	EX. 179.63	73+22.29 CORRIDOR ROAD 25.70' LT.	PRECAST MH 72" RD
E-4	PER MANUFACTURER	-	-	191.03	191.0	SEE PLAN	HOPE END SECT. 12" DIA.
5' CURB OPENING	MSHA STD. MD 374.68	193.7	193.4	-	-	SEE PLAN	-
FC 7A	PER MANUFACTURER	-	-	202.32	202.32	SEE PLAN	15" x 6" HOPE T
I-13	MSHA STD. MD 378.11	189.5	-	-	185.0	SEE PLAN	K-INLET (SINGLE OPENING)
I-11	MSHA STD. MD 374.26	189.58	-	184.0	182.50	SEE PLAN	PRECAST TRIPLE WR-INLET
FC 6-A	PER MANUFACTURER	-	-	196.76	196.55	SEE PLAN	15" x 10" HOPE T
FC 7-B	PER MANUFACTURER	-	-	203.47	203.09	SEE PLAN	15" x 6" HOPE T

OWNER  
MARYLAND STATE HIGHWAY ADMINISTRATION  
1201 NORTH CALVERT STREET  
BALTIMORE, MD 21202  
410-545-0800

OWNER AND DEVELOPER  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-313-6194

ENGINEERS  
TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB  
410-321-1600

**Tesseract**  
TESSERACT SITES, INC.

401 Washington Ave, Suite 303  
Towson, Maryland, 21286  
p. 410.321.7600  
f. 410.321.7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

REVISED SITE DEVELOPMENT PLAN  
Storm Drainage Profiles

DATE: 1/28/2011  
Proj. #: 08016  
Scale: AS SHOWN

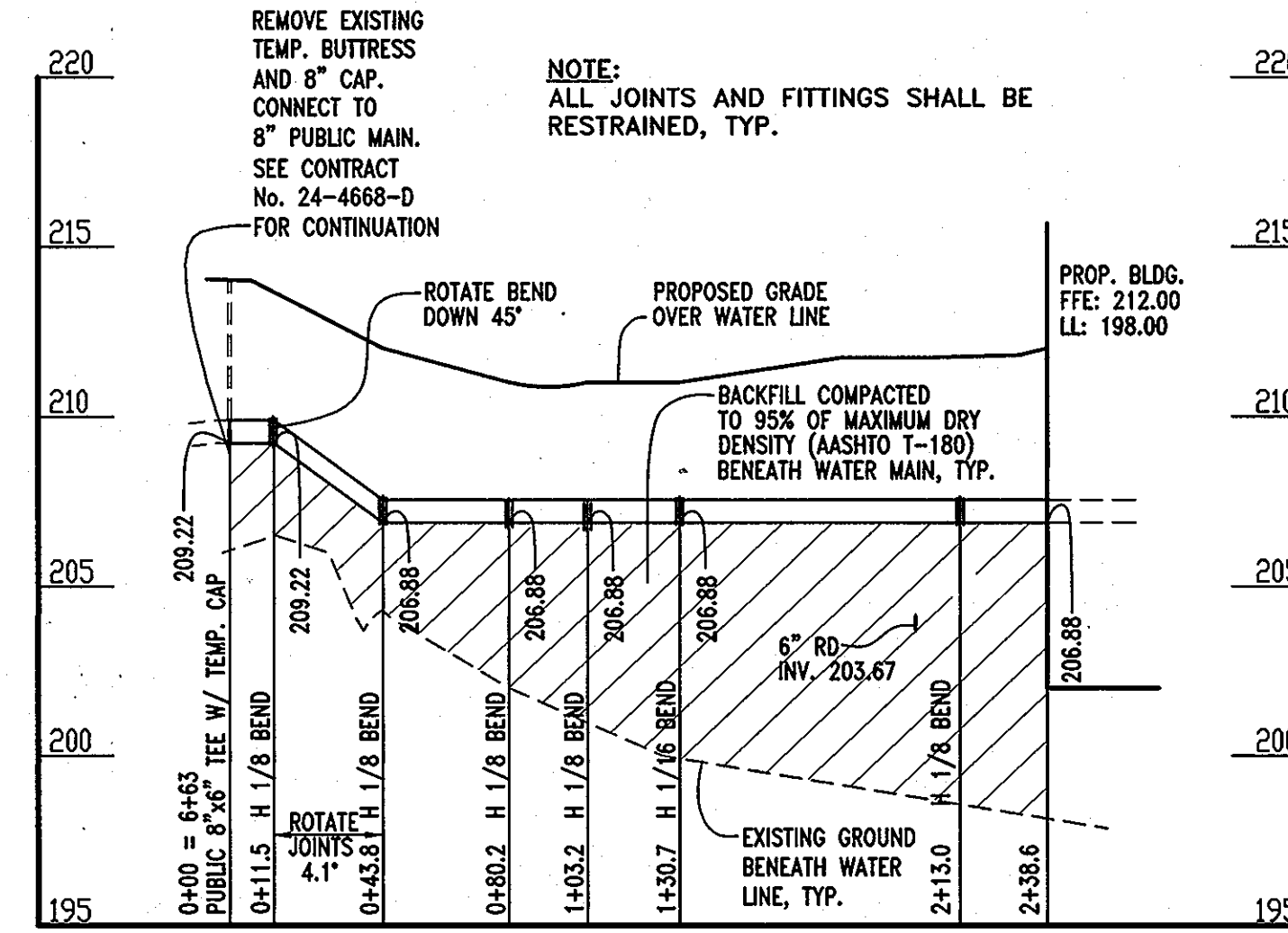
17 of 33

LEED 2009 for New Construction and Major Renovation	
Category	Points Available
1.1.1 Construction Activity Pollution Prevention	1
1.1.2 Construction Waste Management	1
1.1.3 Construction Material Sourcing	1
1.1.4 Construction Water Management	1
1.1.5 Construction Air Quality	1
1.1.6 Construction Erosion Control	1
1.1.7 Construction Stormwater Management	1
1.1.8 Construction Dust Control	1
1.1.9 Construction Noise Control	1
1.1.10 Construction Light Pollution Control	1
1.1.11 Construction Fuel Efficiency	1
1.1.12 Construction Energy Efficiency	1
1.1.13 Construction Greenhouse Gas Emissions	1
1.1.14 Construction Indoor Air Quality	1
1.1.15 Construction Thermal Comfort	1
1.1.16 Construction Acoustic Performance	1
1.1.17 Construction Daylighting	1
1.1.18 Construction Water Efficiency	1
1.1.19 Construction Energy Performance	1
1.1.20 Construction Greenhouse Gas Emissions	1
1.1.21 Construction Indoor Air Quality	1
1.1.22 Construction Thermal Comfort	1
1.1.23 Construction Acoustic Performance	1
1.1.24 Construction Daylighting	1
1.1.25 Construction Water Efficiency	1
1.1.26 Construction Energy Performance	1
1.1.27 Construction Greenhouse Gas Emissions	1
1.1.28 Construction Indoor Air Quality	1
1.1.29 Construction Thermal Comfort	1
1.1.30 Construction Acoustic Performance	1
1.1.31 Construction Daylighting	1
1.1.32 Construction Water Efficiency	1
1.1.33 Construction Energy Performance	1
1.1.34 Construction Greenhouse Gas Emissions	1
1.1.35 Construction Indoor Air Quality	1
1.1.36 Construction Thermal Comfort	1
1.1.37 Construction Acoustic Performance	1
1.1.38 Construction Daylighting	1
1.1.39 Construction Water Efficiency	1
1.1.40 Construction Energy Performance	1
1.1.41 Construction Greenhouse Gas Emissions	1
1.1.42 Construction Indoor Air Quality	1
1.1.43 Construction Thermal Comfort	1
1.1.44 Construction Acoustic Performance	1
1.1.45 Construction Daylighting	1
1.1.46 Construction Water Efficiency	1
1.1.47 Construction Energy Performance	1
1.1.48 Construction Greenhouse Gas Emissions	1
1.1.49 Construction Indoor Air Quality	1
1.1.50 Construction Thermal Comfort	1
1.1.51 Construction Acoustic Performance	1
1.1.52 Construction Daylighting	1
1.1.53 Construction Water Efficiency	1
1.1.54 Construction Energy Performance	1
1.1.55 Construction Greenhouse Gas Emissions	1
1.1.56 Construction Indoor Air Quality	1
1.1.57 Construction Thermal Comfort	1
1.1.58 Construction Acoustic Performance	1
1.1.59 Construction Daylighting	1
1.1.60 Construction Water Efficiency	1
1.1.61 Construction Energy Performance	1
1.1.62 Construction Greenhouse Gas Emissions	1
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1.1.66 Construction Daylighting	1
1.1.67 Construction Water Efficiency	1
1.1.68 Construction Energy Performance	1
1.1.69 Construction Greenhouse Gas Emissions	1
1.1.70 Construction Indoor Air Quality	1
1.1.71 Construction Thermal Comfort	1
1.1.72 Construction Acoustic Performance	1
1.1.73 Construction Daylighting	1
1.1.74 Construction Water Efficiency	1
1.1.75 Construction Energy Performance	1
1.1.76 Construction Greenhouse Gas Emissions	1
1.1.77 Construction Indoor Air Quality	1
1.1.78 Construction Thermal Comfort	1
1.1.79 Construction Acoustic Performance	1
1.1.80 Construction Daylighting	1
1.1.81 Construction Water Efficiency	1
1.1.82 Construction Energy Performance	1
1.1.83 Construction Greenhouse Gas Emissions	1
1.1.84 Construction Indoor Air Quality	1
1.1.85 Construction Thermal Comfort	1
1.1.86 Construction Acoustic Performance	1
1.1.87 Construction Daylighting	1
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1.1.89 Construction Energy Performance	1
1.1.90 Construction Greenhouse Gas Emissions	1
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1.1.92 Construction Thermal Comfort	1
1.1.93 Construction Acoustic Performance	1
1.1.94 Construction Daylighting	1
1.1.95 Construction Water Efficiency	1
1.1.96 Construction Energy Performance	1
1.1.97 Construction Greenhouse Gas Emissions	1
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1.1.100 Construction Acoustic Performance	1

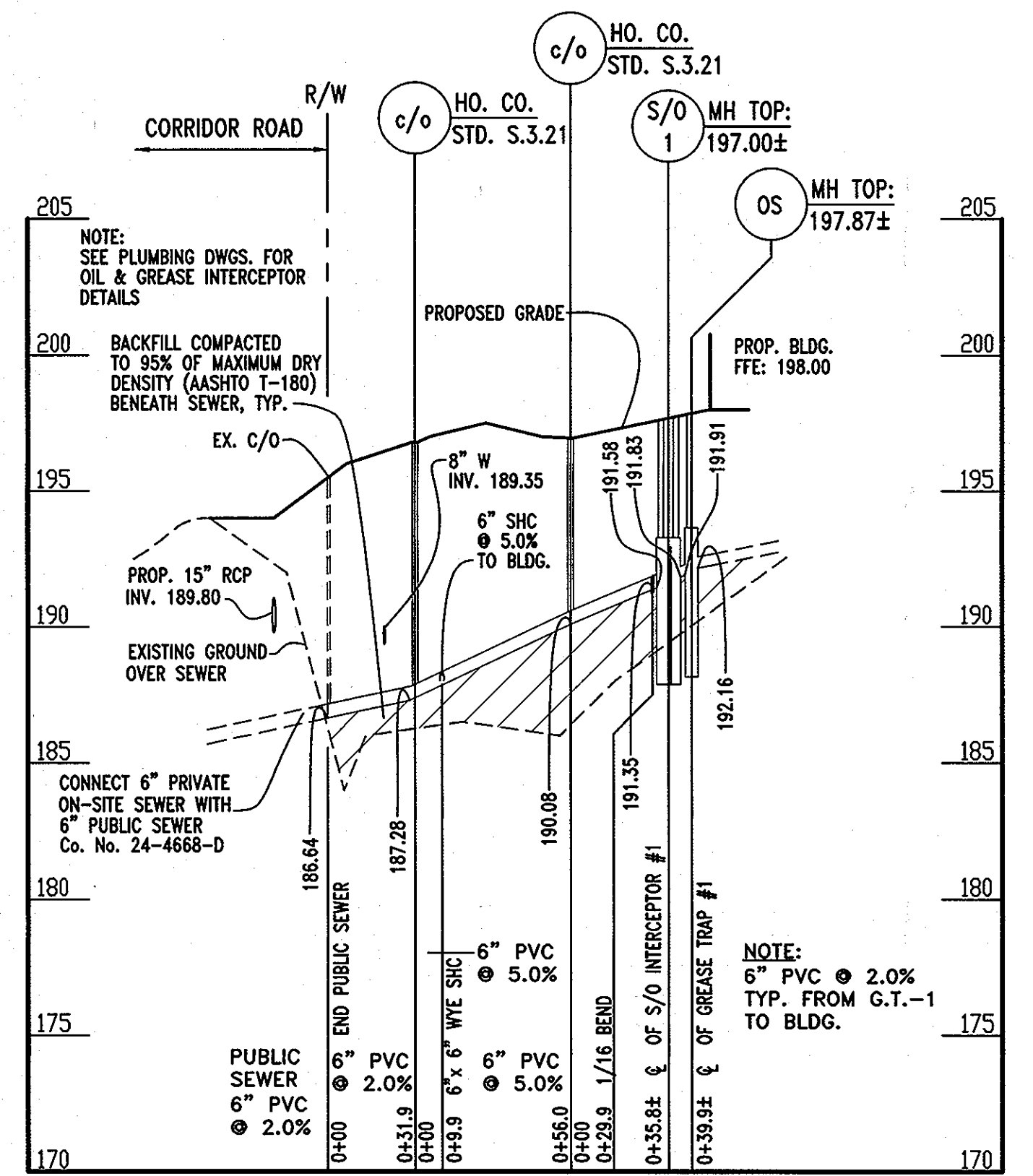
LEED 2009 for New Construction and Major Renovation	
Category	Points Available
2.1.1 Construction Activity Pollution Prevention	1
2.1.2 Construction Waste Management	1
2.1.3 Construction Material Sourcing	1
2.1.4 Construction Water Management	1
2.1.5 Construction Air Quality	1
2.1.6 Construction Erosion Control	1
2.1.7 Construction Dust Control	1
2.1.8 Construction Noise Control	1
2.1.9 Construction Light Pollution Control	1
2.1.10 Construction Fuel Efficiency	1
2.1.11 Construction Energy Efficiency	1
2.1.12 Construction Greenhouse Gas Emissions	1
2.1.13 Construction Indoor Air Quality	1
2.1.14 Construction Thermal Comfort	1
2.1.15 Construction Acoustic Performance	1
2.1.16 Construction Daylighting	1
2.1.17 Construction Water Efficiency	1
2.1.18 Construction Energy Performance	1
2.1.19 Construction Greenhouse Gas Emissions	1
2.1.20 Construction Indoor Air Quality	1
2.1.21 Construction Thermal Comfort	1
2.1.22 Construction Acoustic Performance	1
2.1.23 Construction Daylighting	1
2.1.24 Construction Water Efficiency	1
2.1.25 Construction Energy Performance	1
2.1.26 Construction Greenhouse Gas Emissions	1
2.1.27 Construction Indoor Air Quality	1
2.1.28 Construction Thermal Comfort	1
2.1.29 Construction Acoustic Performance	1
2.1.30 Construction Daylighting	1
2.1.31 Construction Water Efficiency	1
2.1.32 Construction Energy Performance	1
2.1.33 Construction Greenhouse Gas Emissions	1
2.1.34 Construction Indoor Air Quality	1
2.1.35 Construction Thermal Comfort	1
2.1.36 Construction Acoustic Performance	1
2.1.37 Construction Daylighting	1
2.1.38 Construction Water Efficiency	1
2.1.39 Construction Energy Performance	1
2.1.40 Construction Greenhouse Gas Emissions	1
2.1.41 Construction Indoor Air Quality	1
2.1.42 Construction Thermal Comfort	1
2.1.43 Construction Acoustic Performance	1
2.1.44 Construction Daylighting	1
2.1.45 Construction Water Efficiency	1
2.1.46 Construction Energy Performance	1
2.1.47 Construction Greenhouse Gas Emissions	1
2.1.48 Construction Indoor Air Quality	1
2.1.49 Construction Thermal Comfort	1
2.1.50 Construction Acoustic Performance	1
2.1.51 Construction Daylighting	1
2.1.52 Construction Water Efficiency	1
2.1.53 Construction Energy Performance	1
2.1.54 Construction Greenhouse Gas Emissions	1
2.1.55 Construction Indoor Air Quality	1
2.1.56 Construction Thermal Comfort	1
2.1.57 Construction Acoustic Performance	1
2.1.58 Construction Daylighting	1
2.1.59 Construction Water Efficiency	1
2.1.60 Construction Energy Performance	1
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2.1.62 Construction Indoor Air Quality	1
2.1.63 Construction Thermal Comfort	1
2.1.64 Construction Acoustic Performance	1
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2.1.69 Construction Indoor Air Quality	1
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2.1.71 Construction Acoustic Performance	1
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2.1.73 Construction Water Efficiency	1
2.1.74 Construction Energy Performance	1
2.1.75 Construction Greenhouse Gas Emissions	1
2.1.76 Construction Indoor Air Quality	1
2.1.77 Construction Thermal Comfort	1
2.1.78 Construction Acoustic Performance	1
2.1.79 Construction Daylighting	1
2.1.80 Construction Water Efficiency	1
2.1.81 Construction Energy Performance	1
2.1.82 Construction Greenhouse Gas Emissions	1
2.1.83 Construction Indoor Air Quality	1
2.1.84 Construction Thermal Comfort	1
2.1.85 Construction Acoustic Performance	1
2.1.86 Construction Daylighting	1
2.1.87 Construction Water Efficiency	1
2.1.88 Construction Energy Performance	1
2.1.89 Construction Greenhouse Gas Emissions	1
2.1.90 Construction Indoor Air Quality	1
2.1.91 Construction Thermal Comfort	1
2.1.92 Construction Acoustic Performance	1
2.1.93 Construction Daylighting	1
2.1.94 Construction Water Efficiency	1
2.1.95 Construction Energy Performance	1
2.1.96 Construction Greenhouse Gas Emissions	1
2.1.97 Construction Indoor Air Quality	1
2.1.98 Construction Thermal Comfort	1
2.1.99 Construction Acoustic Performance	1
2.1.100 Construction Daylighting	1

George Benson, P.E., CBCP, LEED AP  
Principal

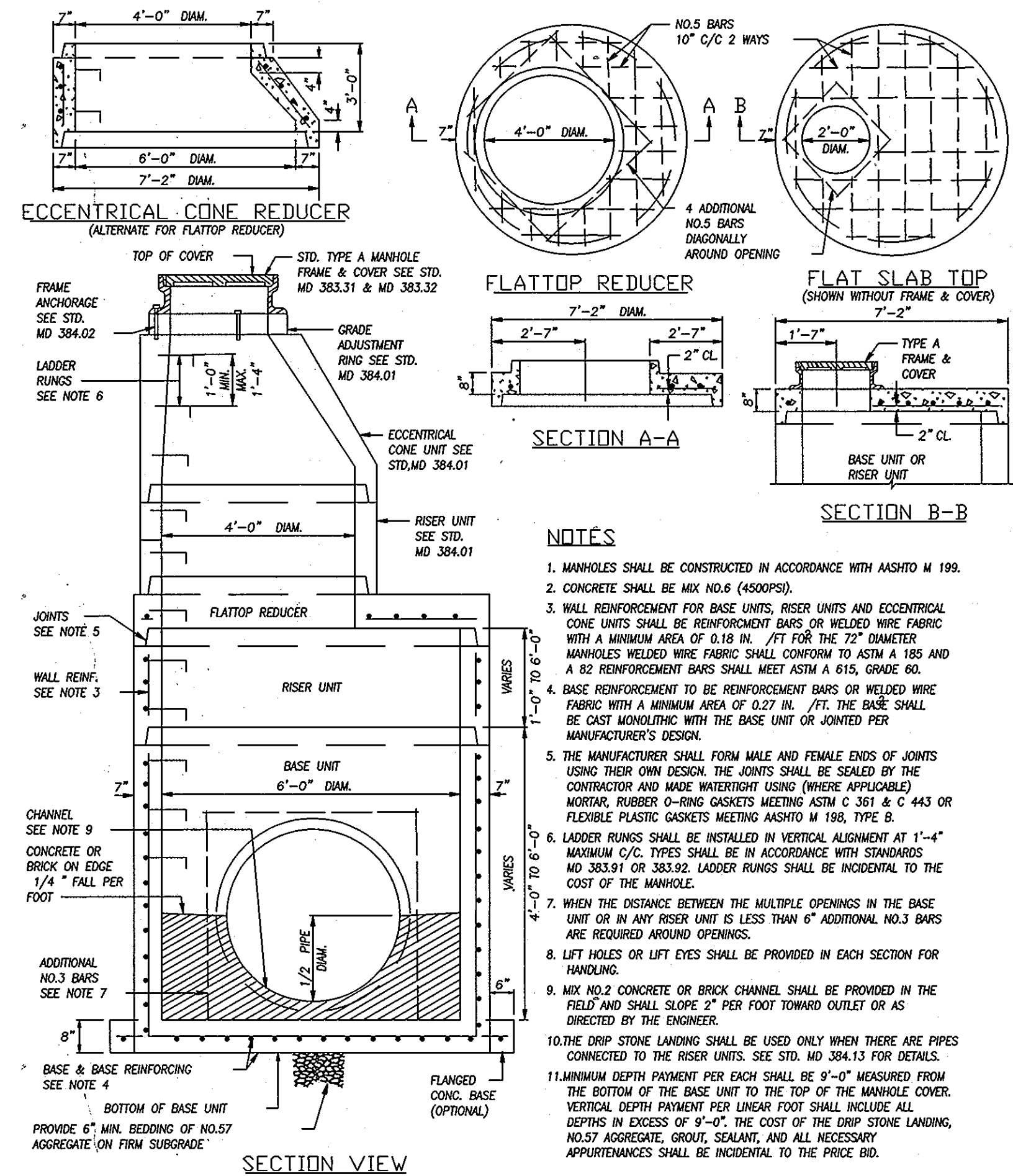
George Benson, P.E., CBCP, LEED AP  
Principal



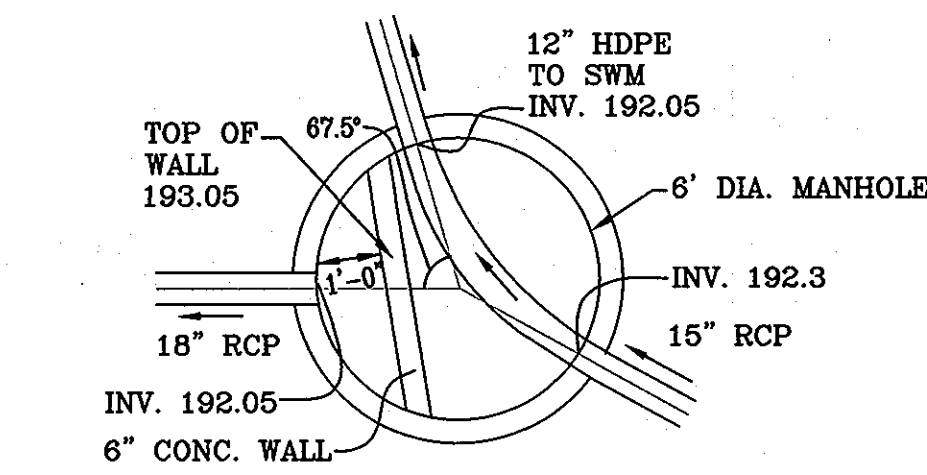
8" ON-SITE WATER PROFILE (PRIVATE)



6" ON-SITE SANITARY SEWER PROFILE (PRIVATE)



- NOTES**
- MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASHTO M 199.
  - CONCRETE SHALL BE MIX NO.6 (4500PSI).
  - WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS AND ECCENTRIC CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.18 IN. <sup>2</sup>/FT. FOR THE 72" DIAMETER MANHOLES WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A 82 REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
  - BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.27 IN. <sup>2</sup>/FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINED PER MANUFACTURER'S DESIGN.
  - THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 & C 443 OR FLEXIBLE PLASTIC GASKETS MEETING ASHTO M 199, TYPE B.
  - LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAXIMUM C/C. TYPES SHALL BE IN ACCORDANCE WITH STANDARDS MD 383.01 OR 383.02. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
  - WHEN THE DISTANCE BETWEEN THE MULTIPLE OPENINGS IN THE BASE UNIT OR IN ANY RISER UNIT IS LESS THAN 6" ADDITIONAL NO.3 BARS ARE REQUIRED AROUND OPENINGS.
  - LET HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
  - MIX NO.2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
  - THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD. MD 384.13 FOR DETAILS.
  - MINIMUM DEPTH PAYMENT PER EACH SHALL BE 9'-0" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 9'-0". THE COST OF THE DRIP STONE LANDING, NO.57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.



MANHOLE M5 - DIVERSION MANHOLE  
NOT TO SCALE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
*Brian P. Peterson* 1/7/2010  
County Health Officer  
Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*John DeLeonardis* 1/7/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Kevin DeLeonardis* 1/21/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas J. Scullin* 1/21/11  
DIRECTOR

- PRIVATE ON-SITE WATER MAIN GENERAL NOTES**
- All water mains shall be PVC C900 Water Main.
  - Tops of all water mains shall have a minimum of 3'-6" of cover unless otherwise noted.
  - Valves adjacent to tees shall be strapped to tees.
  - All pipe and fittings shall have restrained joints, typ.
  - The Contractor shall not operate any water main valves on the existing public water system.
  - All water house connections shall be for inside meter setting unless otherwise noted on the drawings or in the specifications.
- PRIVATE ON-SITE SEWER GENERAL NOTES**
- All sewer pipe shall be SDR 35 (ASTM D3034) P.V.C. unless otherwise noted.
  - All manholes shall be 4'-0" inside diameter unless otherwise noted. Precast Manhole Ho. Co. Std. No. G5.12 to be used.

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284  
p. 410.321.7600  
f. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park, Section 1, Parcel C-1**  
Savage Volunteer Fire Station  
Savage, Maryland

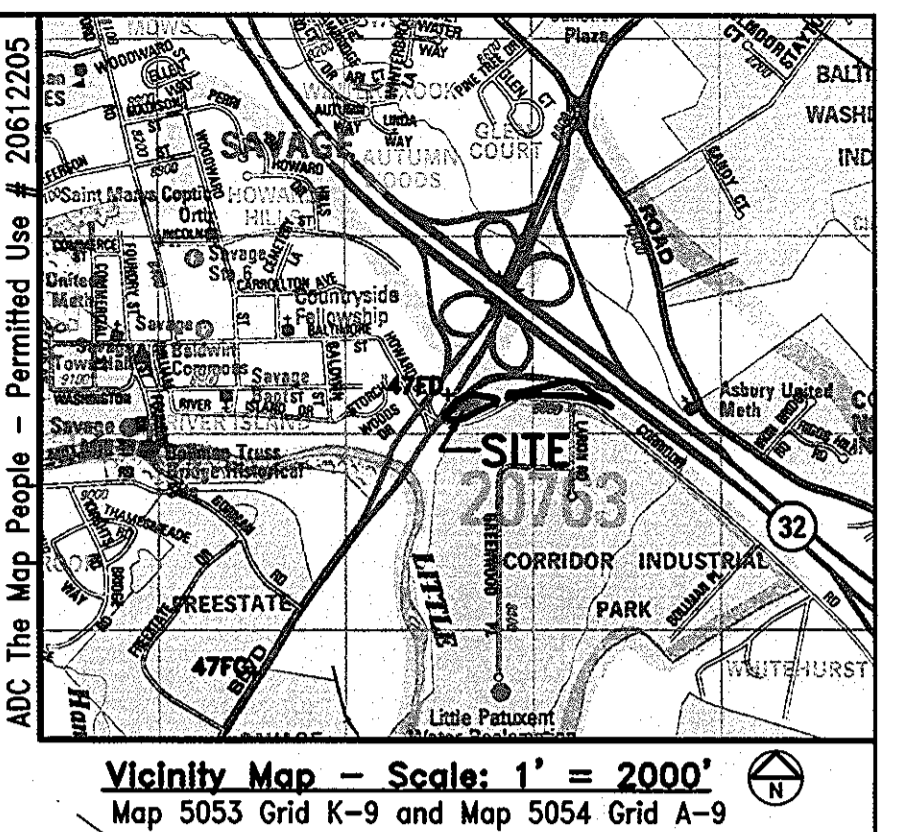
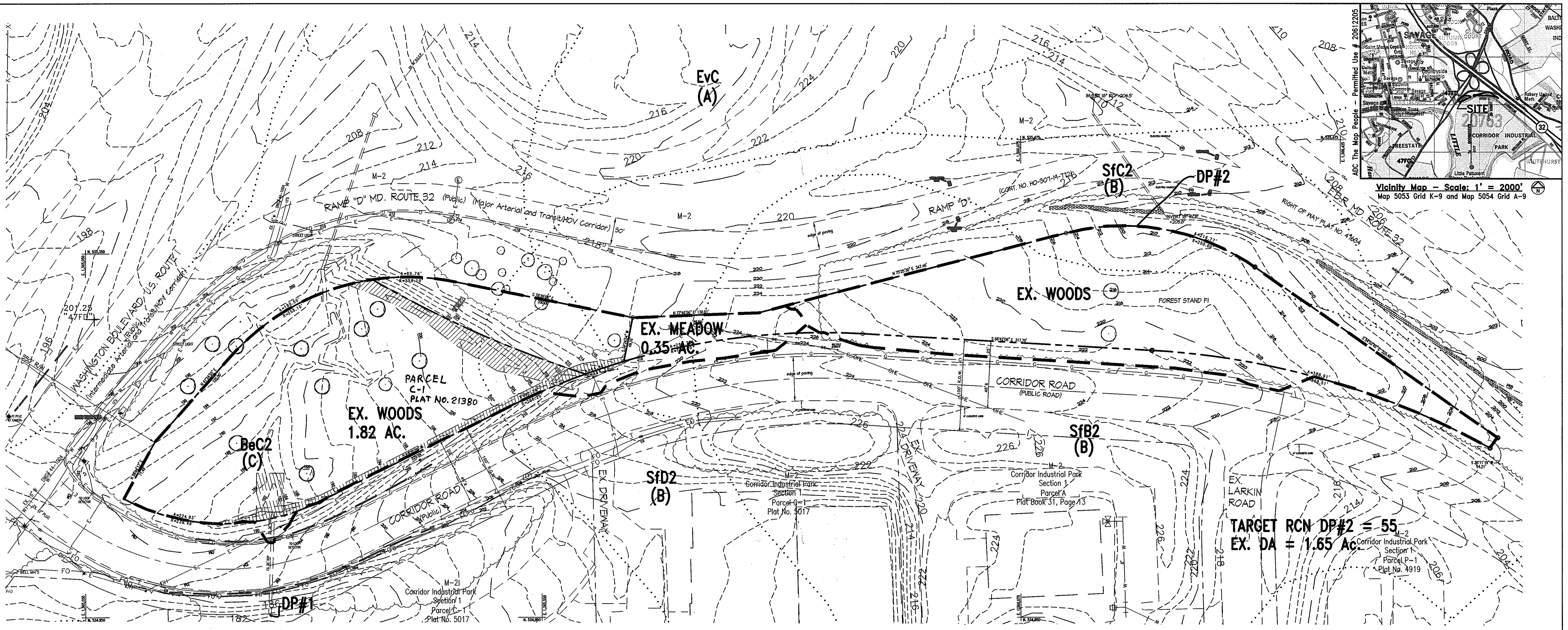
**Water and Sewer Profiles**

PROJECT: C-1	DATE: 1/21/11	SCALE: AS SHOWN
DATE: 1/21/11	DATE: 1/21/11	DATE: 1/21/11

Date: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN

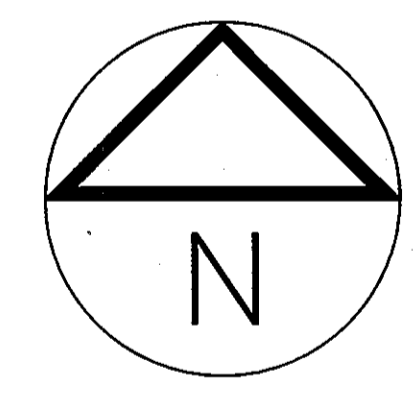
**18 of 33**

SDP 10-084



EX. DA DP#1 = 2.17 AC.  
TARGET RCN = 66

TARGET RCN DP#2 = 55  
EX. DA = 1.65 AC.



EXISTING CONDITIONS	
Building	[Symbol]
Outline	[Symbol]
Fence	[Symbol]
Prop. Area	[Symbol]
Property Line	[Symbol]
Center Line	[Symbol]
Spot Elevation	[Symbol]
Stream	[Symbol]
Water Line	[Symbol]
Specimen Tree	[Symbol]
Woods Line	[Symbol]
Slope 15-24%	[Symbol]
Slope 25% or more	[Symbol]
Slope >25% less than 10 vertical feet	[Symbol]
Ex. Wetland	[Symbol]

EXISTING UTILITIES	
Sanitary Sewer	[Symbol]
Sanitary Sewer	[Symbol]
Water Line	[Symbol]
Water Valve	[Symbol]
Water Meter	[Symbol]
Fire Dept Connection	[Symbol]
Fire Hydrant	[Symbol]
Gas Mainline	[Symbol]
Underground Gas Line	[Symbol]
Utility Pole	[Symbol]
Overhead Electric Line	[Symbol]
Underground Electric Line	[Symbol]
Underground Fiber Optic Service	[Symbol]



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
*Howard County Health Department*  
 County Health Officer  
 Howard County Health Department  
 DATE: 1/17/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Howard County Department of Planning & Zoning*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 1/17/11

*Howard County Department of Planning & Zoning*  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1/12/11

*Howard County Department of Planning & Zoning*  
 DIRECTOR  
 DATE: 1/12/11

OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION  
 707 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-345-0300

OWNER AND DEVELOPER: TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21286  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303  
 Towson, Maryland, 21286  
 P. 410-321-7600  
 F. 410-321-7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland**

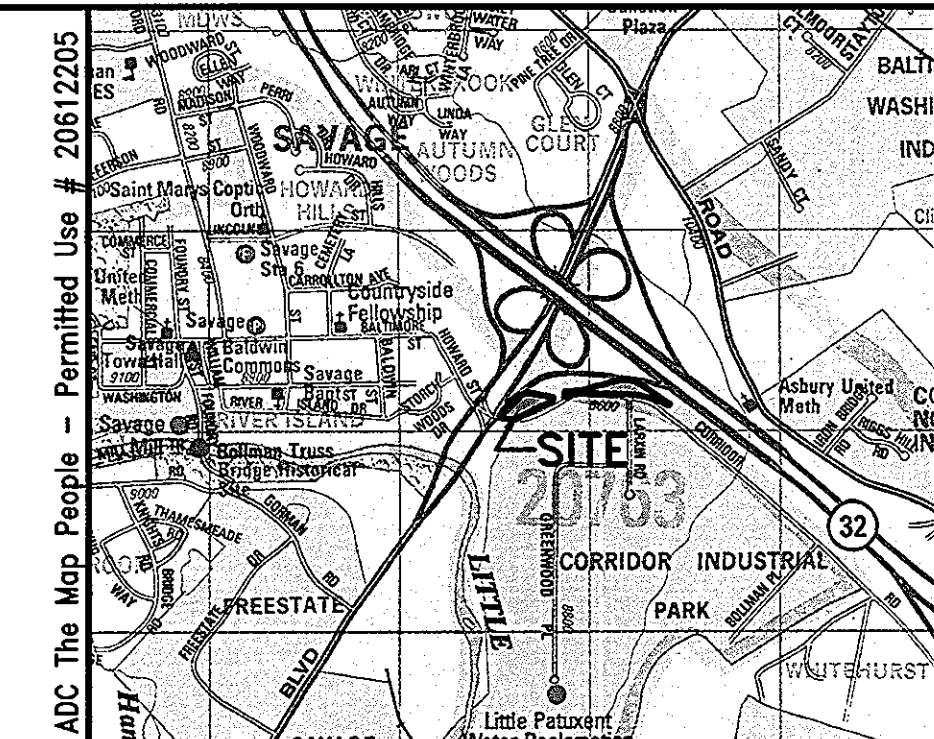
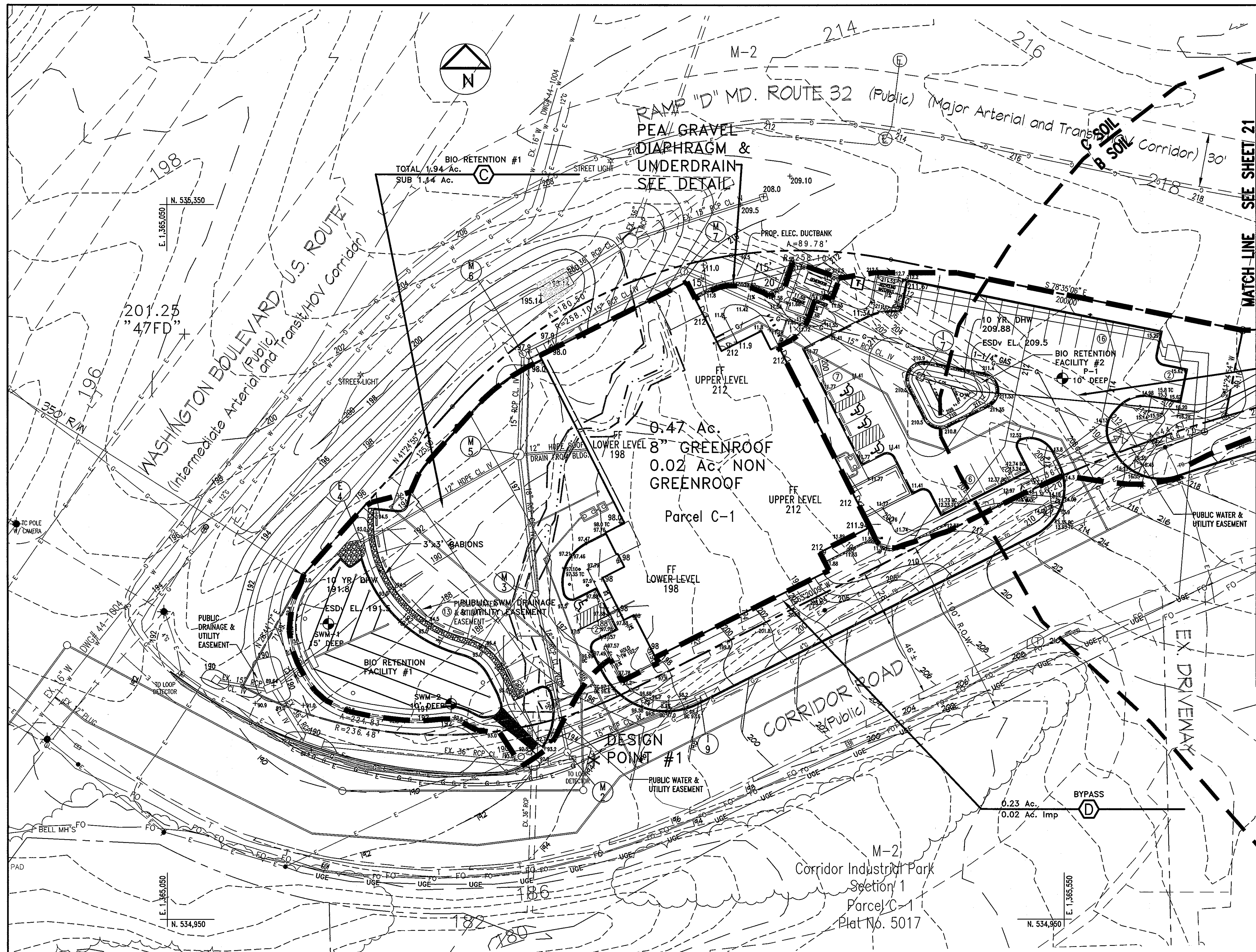
*Existing SWM DA Map*

LOT/PARCEL: C-1	LEGAL: 545/243 1050/188	PLAT: 21380
GRID: 18,12	ZONE: M-2	DATE: 10/22/10
		PROJ. #: 08016
		SCALE: 1"=50'

STATE OF MARYLAND  
 DEPARTMENT OF PLANNING & ZONING

**19 of 33**

SDP 10-084



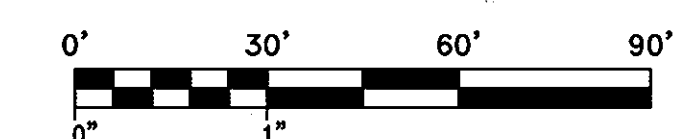
Locality Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9

FACILITY AND DESIGN POINT SUMMARIES

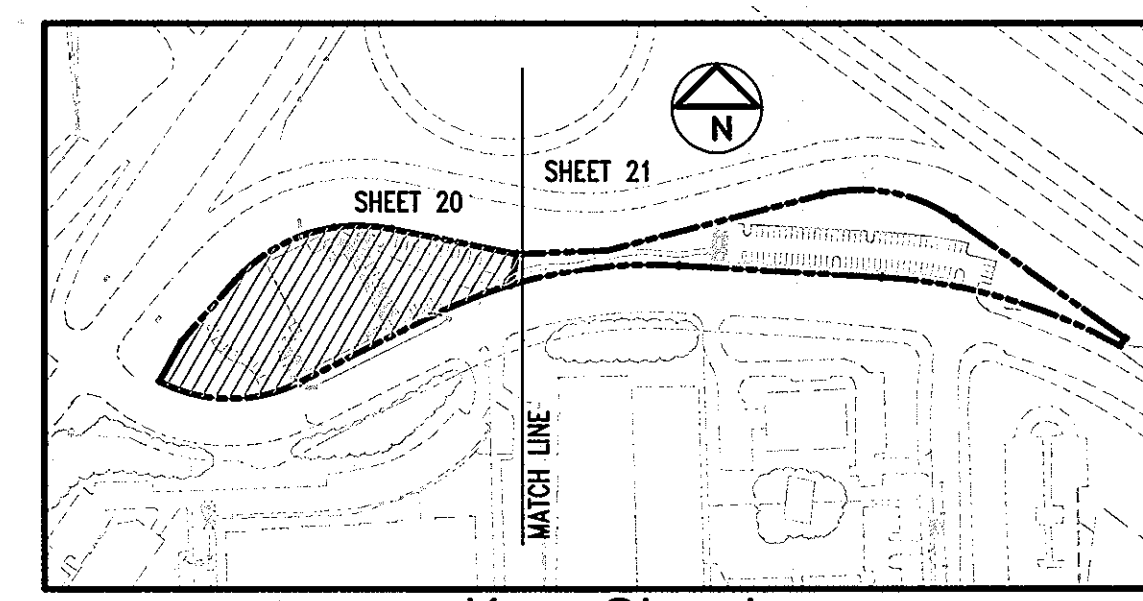
DESIGN POINT SUMMARY

DP	Target RCN	DA	Prop RCN	Prop RCN w/ adj	Pe	ESDv feet	ESDv Prev
#1	66	2.17 ac	88	83	1.8"	6098 cf	6116 cf
#2	55	1.65 ac	75	58	1.0"	359 cf	#

# Met by Pervious Concrete Paving curve number reduction and additional storage for impervious area



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 Approved by Peter Brakerson, County Health Officer, Howard County Health Department, 1/7/2011  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 Approved by [Signature], Chief, Development Engineering Division, 12/17/10  
 Approved by [Signature], Chief, Division of Land Development, 1/12/11  
 Approved by [Signature], Director, 1/12/11



Key Sheet  
Scale: 1"=300'

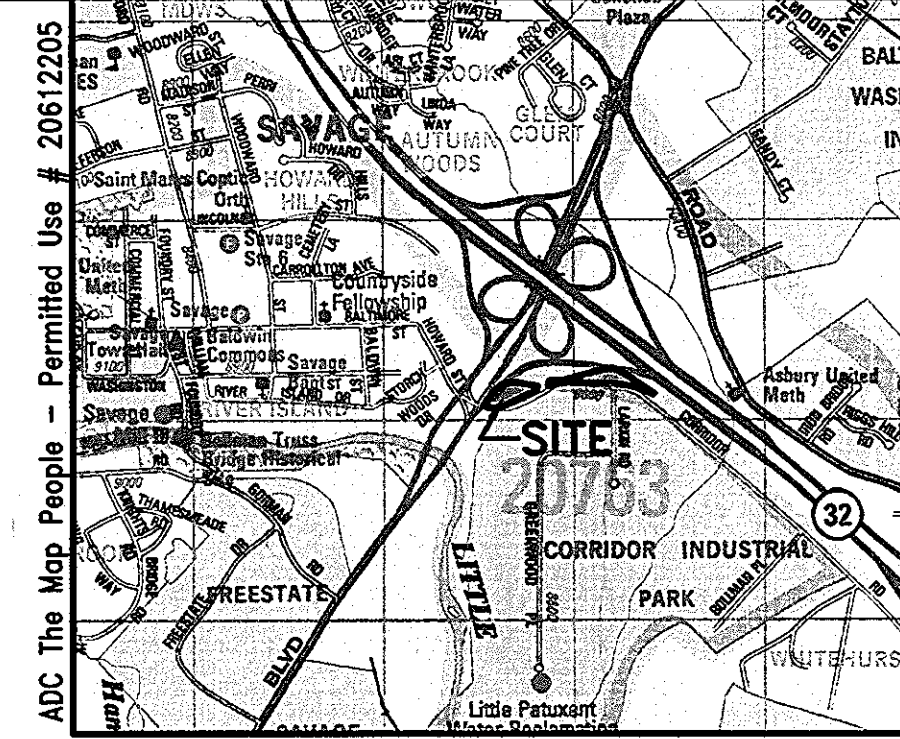
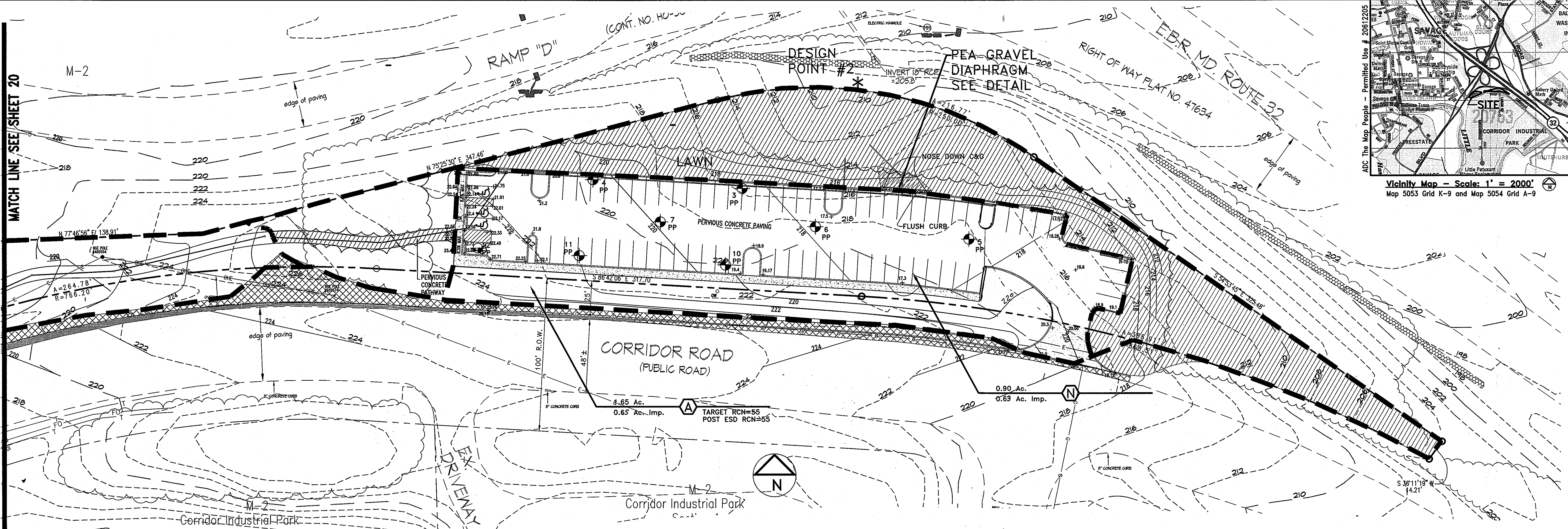
OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION, 107 NORTH CALVERT STREET, BALTIMORE, MD 21202  
 OWNER AND DEVELOPER: HOWARD COUNTY, MD, 4250 BENDIX ROAD, COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK, 410-313-6194  
 ENGINEER: TESSERACT SITES, INC., 401 WASHINGTON AVE, SUITE 303, TOWSON, MD 21286  
 CONTACT: JEFFREY SCHNAB, 410-321-1600

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave. Suite 303, P. 410.321.7600  
 Towson, Maryland, 21284, F. 410.321.7601  
 Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

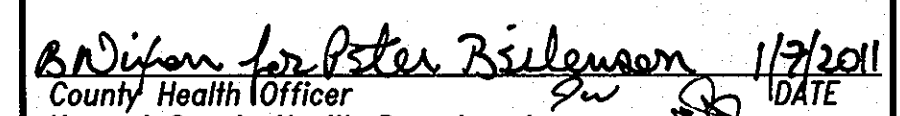

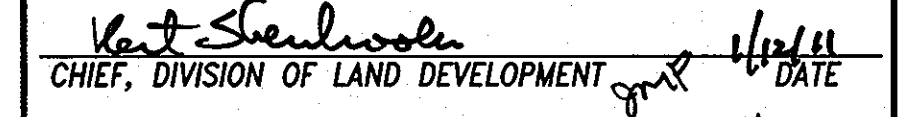

Corridor Industrial Park, Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland  
 Proposed Conditions  
 Stormwater Management DA Map

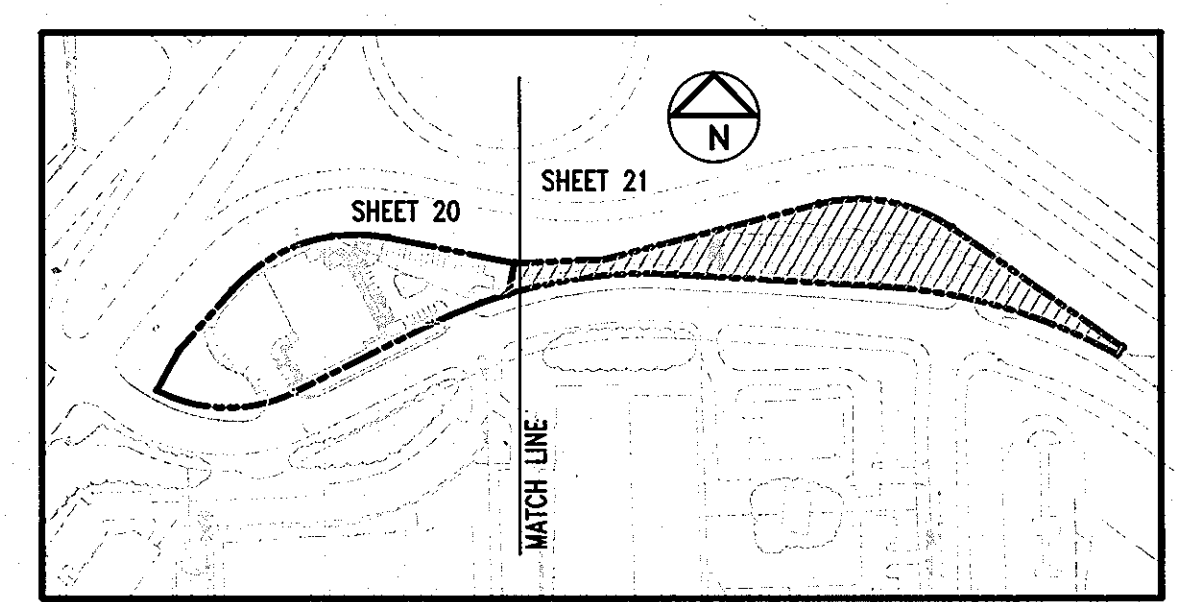
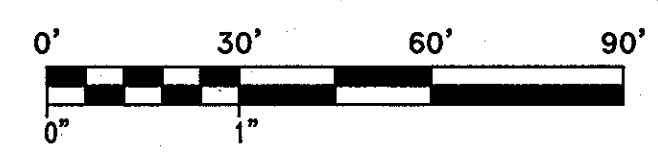
DATE: 10/22/2010  
 PROJ. #: 08016  
 SCALE: 1"=30'

20 of 33



Vicinity Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9

9/29/11	Revise Parking Lot Layout & adjust Impervious Area
DATE	REVISION
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS	
 County Health Officer Howard County Health Department	
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING	
 CHIEF, DEVELOPMENT ENGINEERING DIVISION	
 CHIEF, DIVISION OF LAND DEVELOPMENT	
 DIRECTOR	




Key Sheet  
Scale: 1"=300'

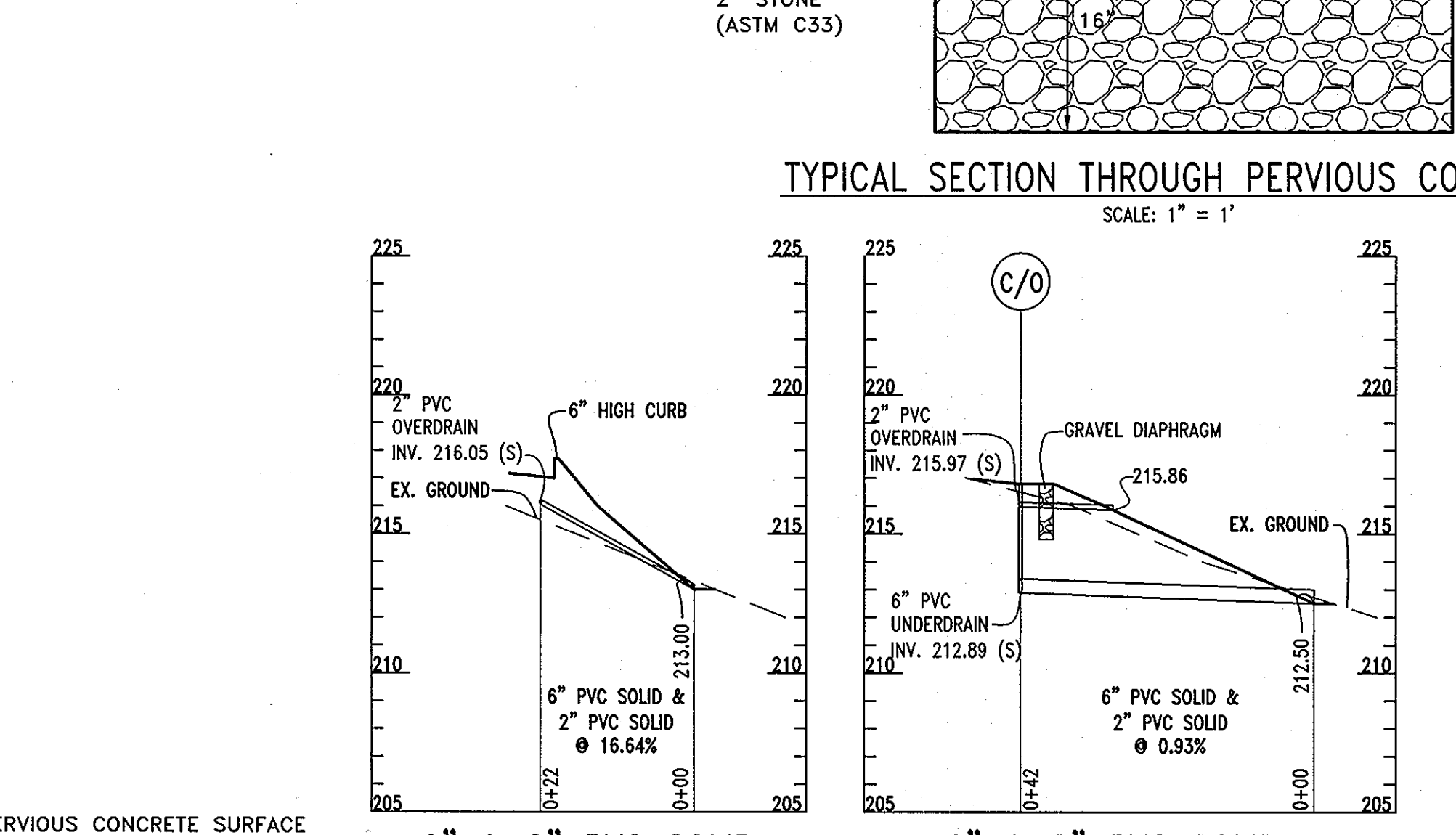
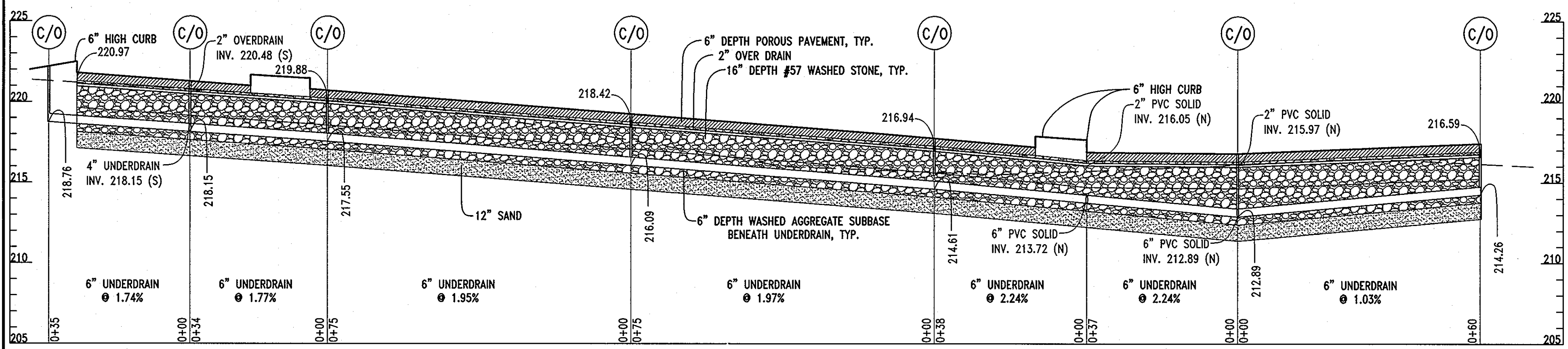
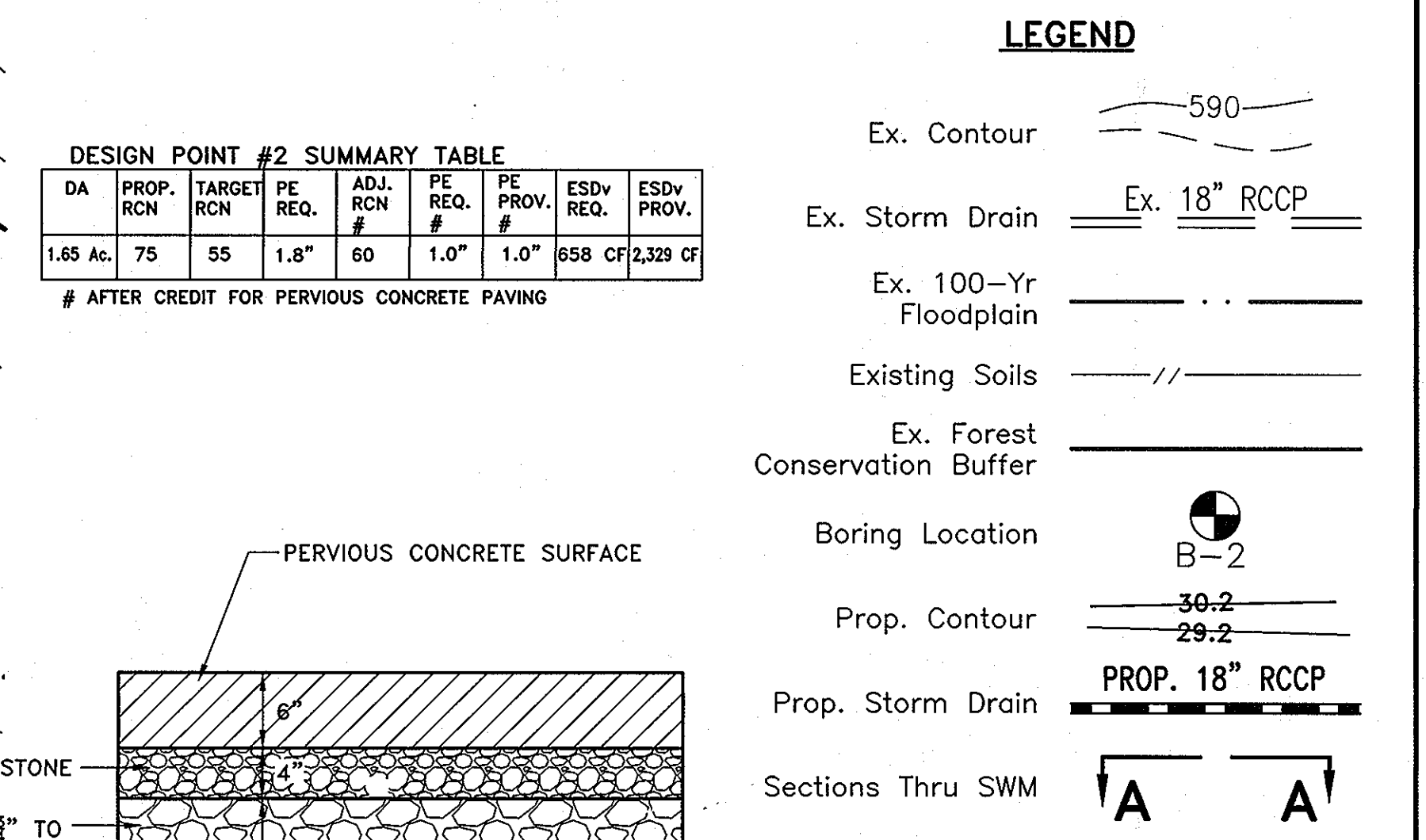
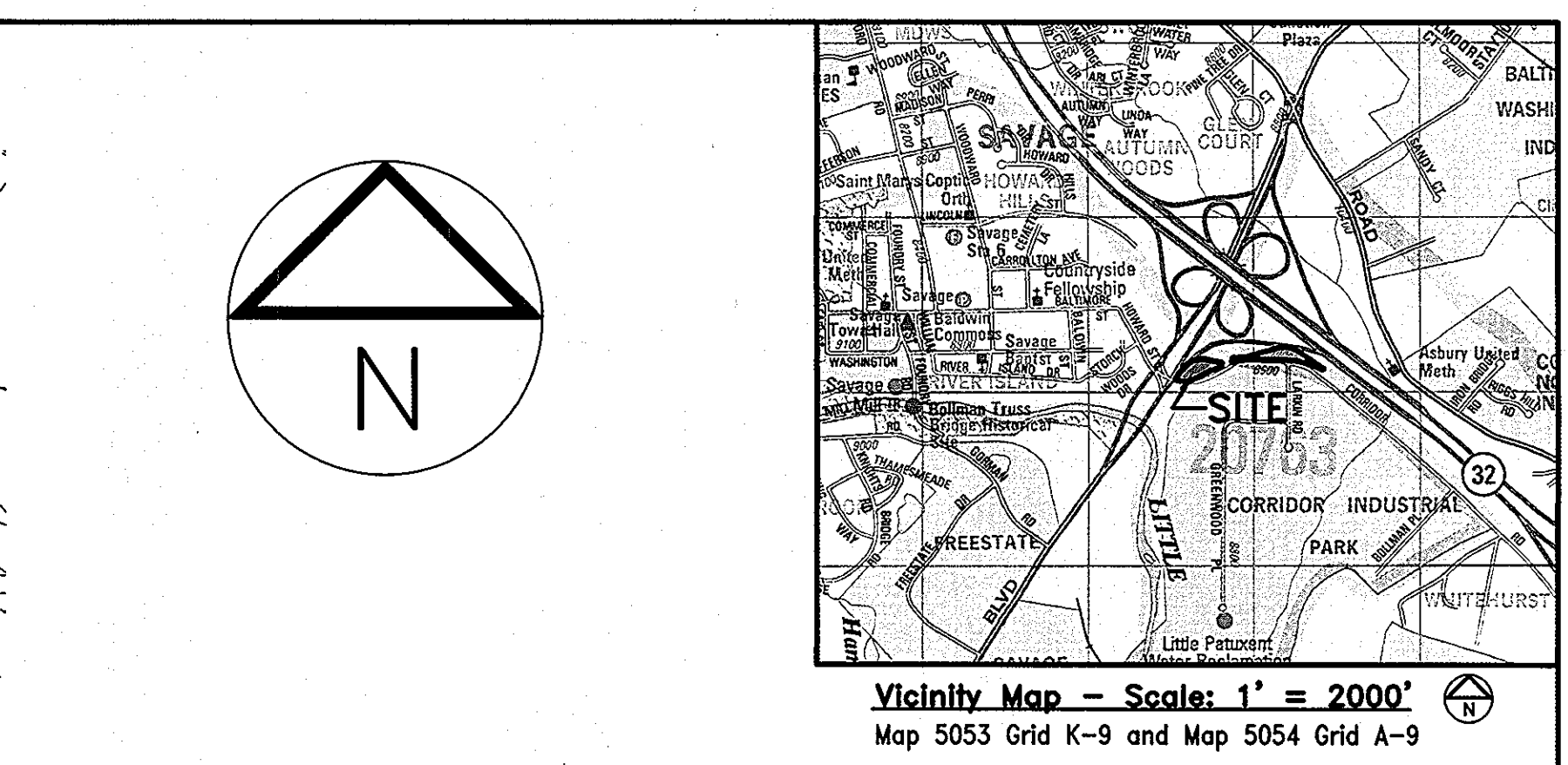
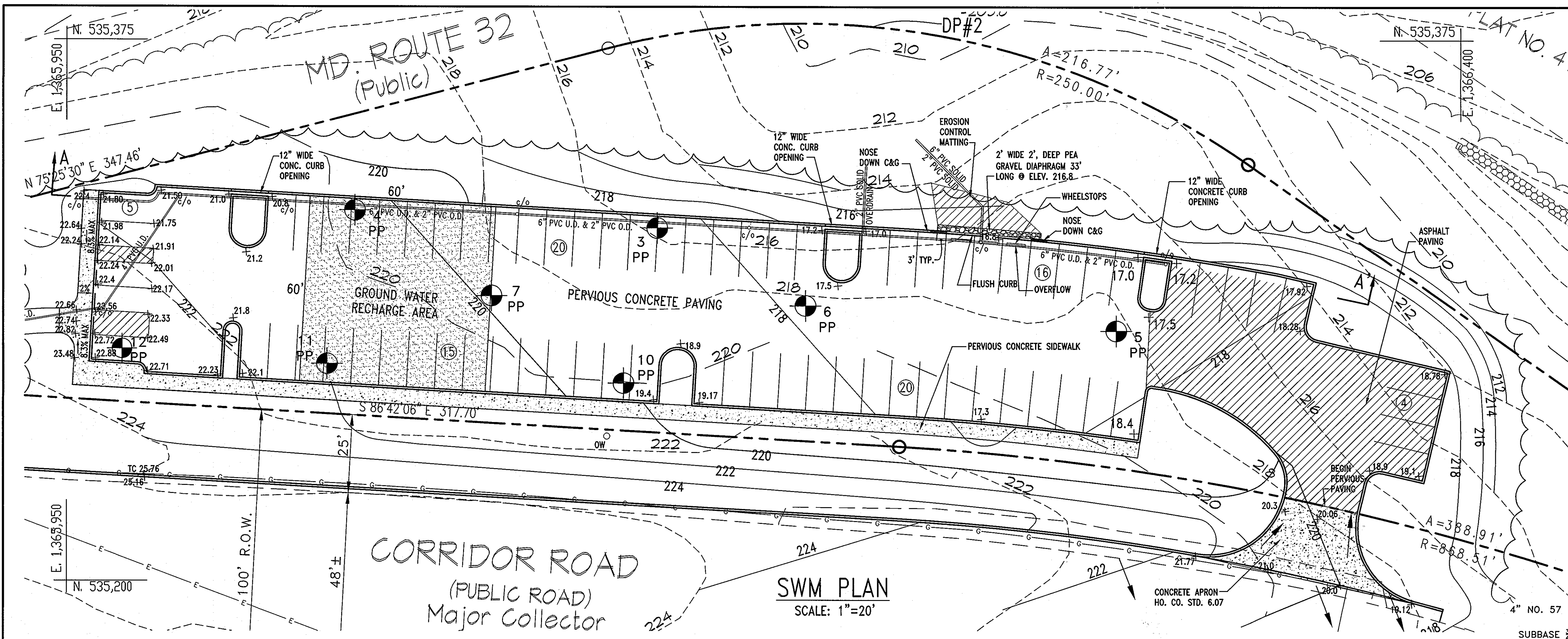


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

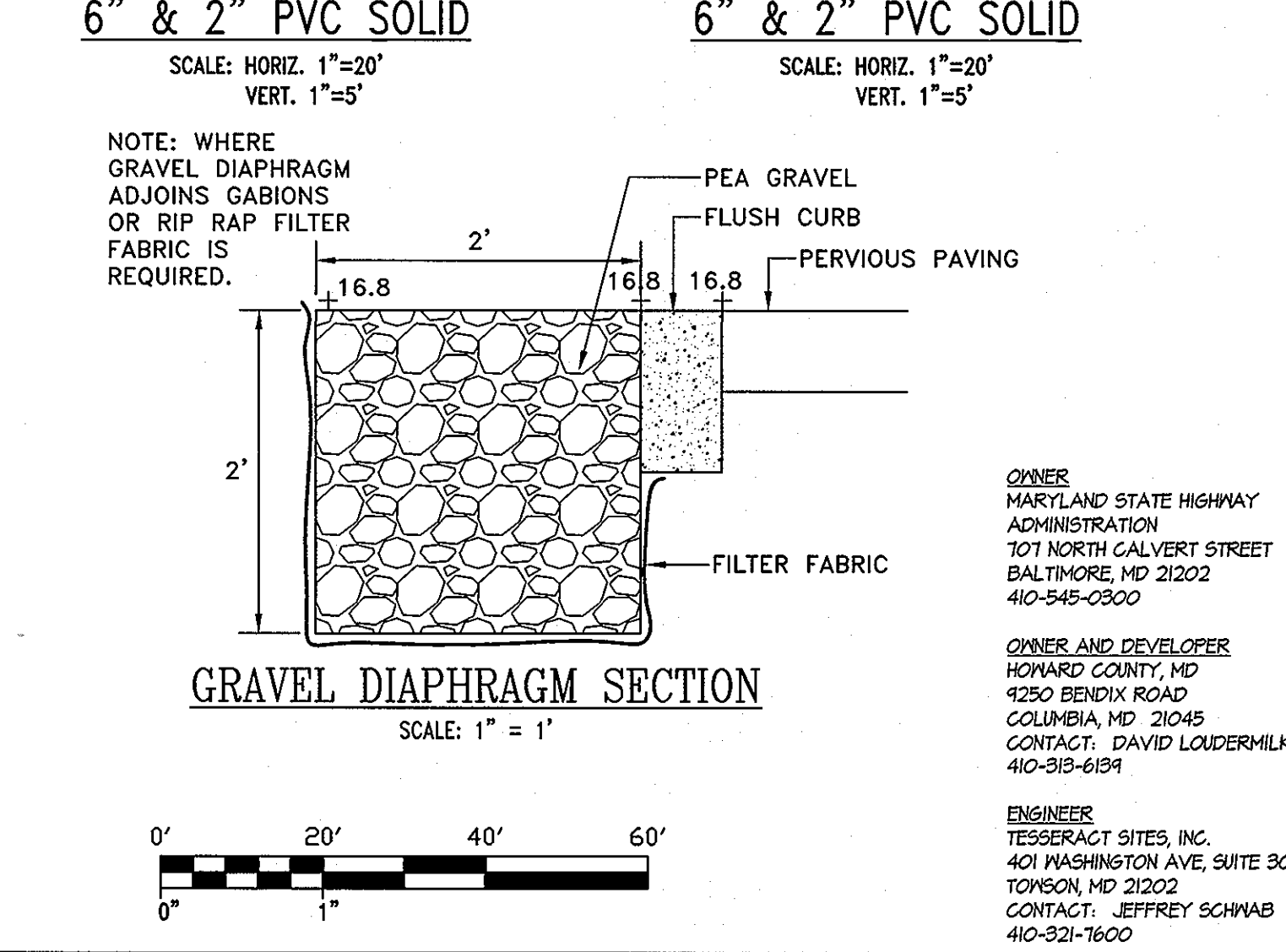
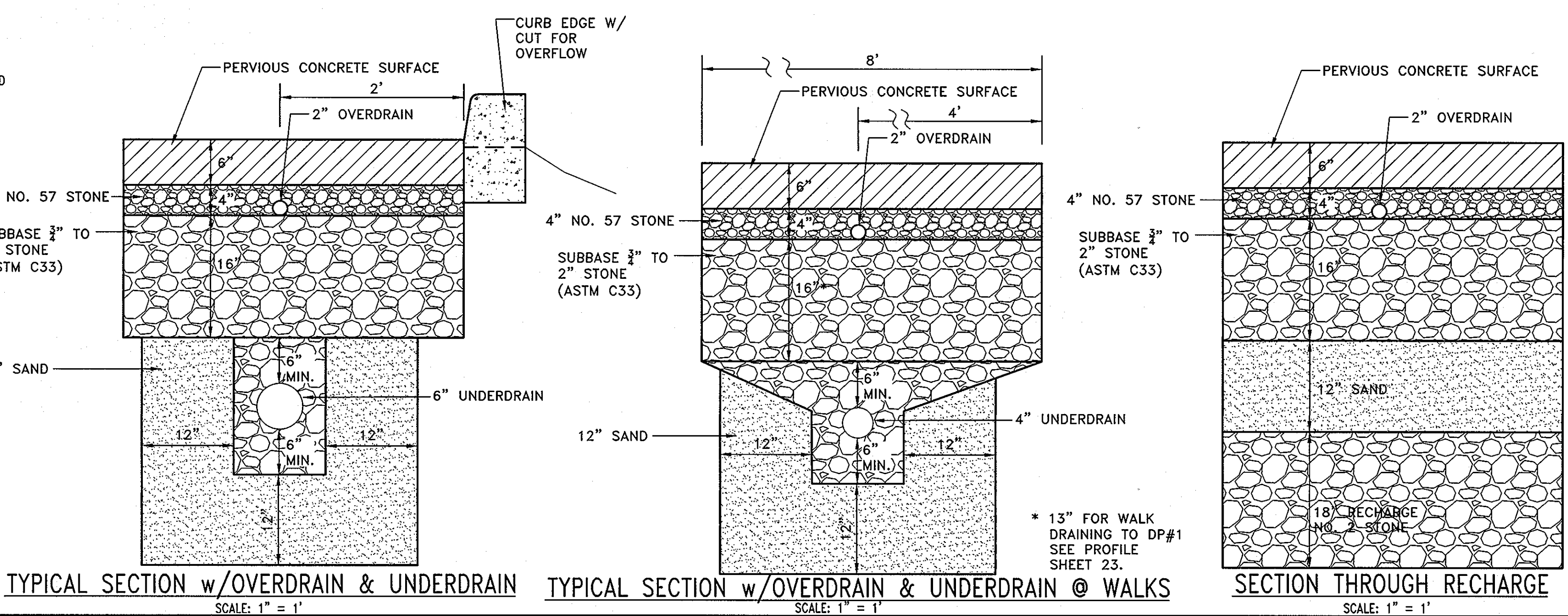
Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland  
Proposed Conditions  
Stormwater Management DA Map

LOT/PARCEL: C-1	DEVELOPER: 767 NORTH CALVERT STREET BALTIMORE, MD 21202 410-545-0300	PLANS: 21380
GRID: 18, 12	ZONE: M-2	DATE: 10/22/2010

DATE: 10/22/2010  
 PROJ. #: 08016  
 SCALE: 1"=30'  
  
 ENGINEER: TESSERACT SITES, INC., 401 WASHINGTON AVE, SUITE 303, TOWSON, MD 21282. CONTACT: JEFFREY SCHWAB, 410-321-7600.



THE PURPOSE OF THE REVISED SDP IS TO ADD A DESIGNATED OUTSIDE WASH AREA FOR THE FIRE APPARATUS AND PROVIDE THE REQUIRED COLLECTION AND TREATMENT SYSTEM FOR THE WASH WATER, AND TO PROVIDE AN AREA WHERE THE FIRE DEPARTMENT CAN TEST THEIR HOSES IN THE EAST PARKING LOT BY REPLACING A PORTION OF THE PERVIOUS CONCRETE PAVING WITH ASPHALT AND REDUCING THE PARKING AREA BY 5 SPACES. DUE TO EXTENSIVE CHANGES TO SOME DETAILS AND PROFILES AND FOR CLARITY WE HAVE REQUESTED SUBSTITUTE SHEETS FOR SHEETS 6, 22, & 24.



9/29/11 REVISED SECTIONS & PROFILES, LIMITS, REDUCED PARKING

DATE REVISION

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

County Health Officer  
Howard County Health Department

DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION 10/20/11 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 11/11/11 DATE

DIRECTOR 11/11/11 DATE

**Tesseract**  
TESSERACT SITES, INC.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284  
P. 410.321.7600  
F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Revised Site Development Plan**  
Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

**SWM Pervious Concrete Paving**

DATE	ISSUED FOR	DATE	ISSUED FOR
10/20/11	10502/188	11/11/11	606902

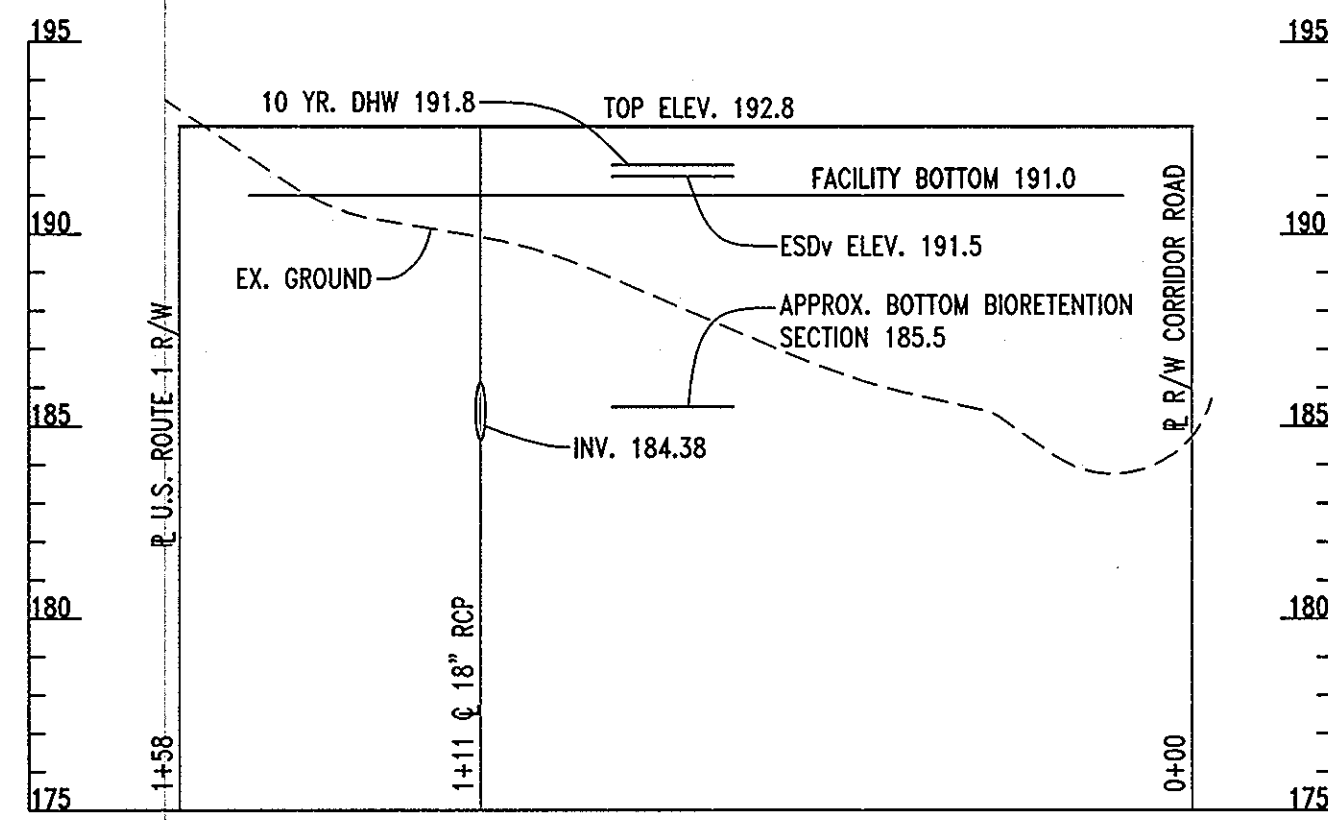
OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION  
707 NORTH GALVERT STREET  
BALTIMORE, MD 21202  
410-545-0800

OWNER AND DEVELOPER: HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-319-6194

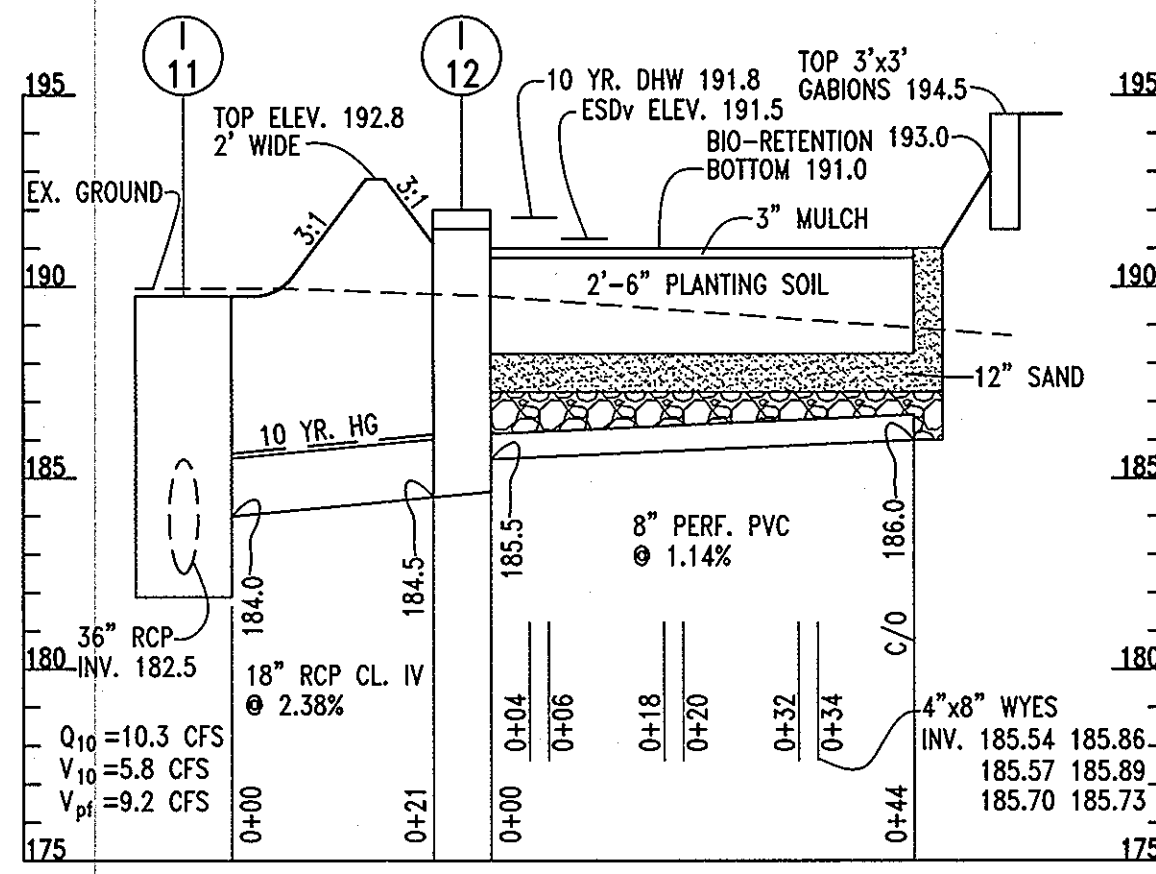
ENGINEER: TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21284  
CONTACT: JEFFREY SCHNAB  
410-321-1600

Date: 1/28/2011  
Proj. #: 08016  
Scale: 1"=20'

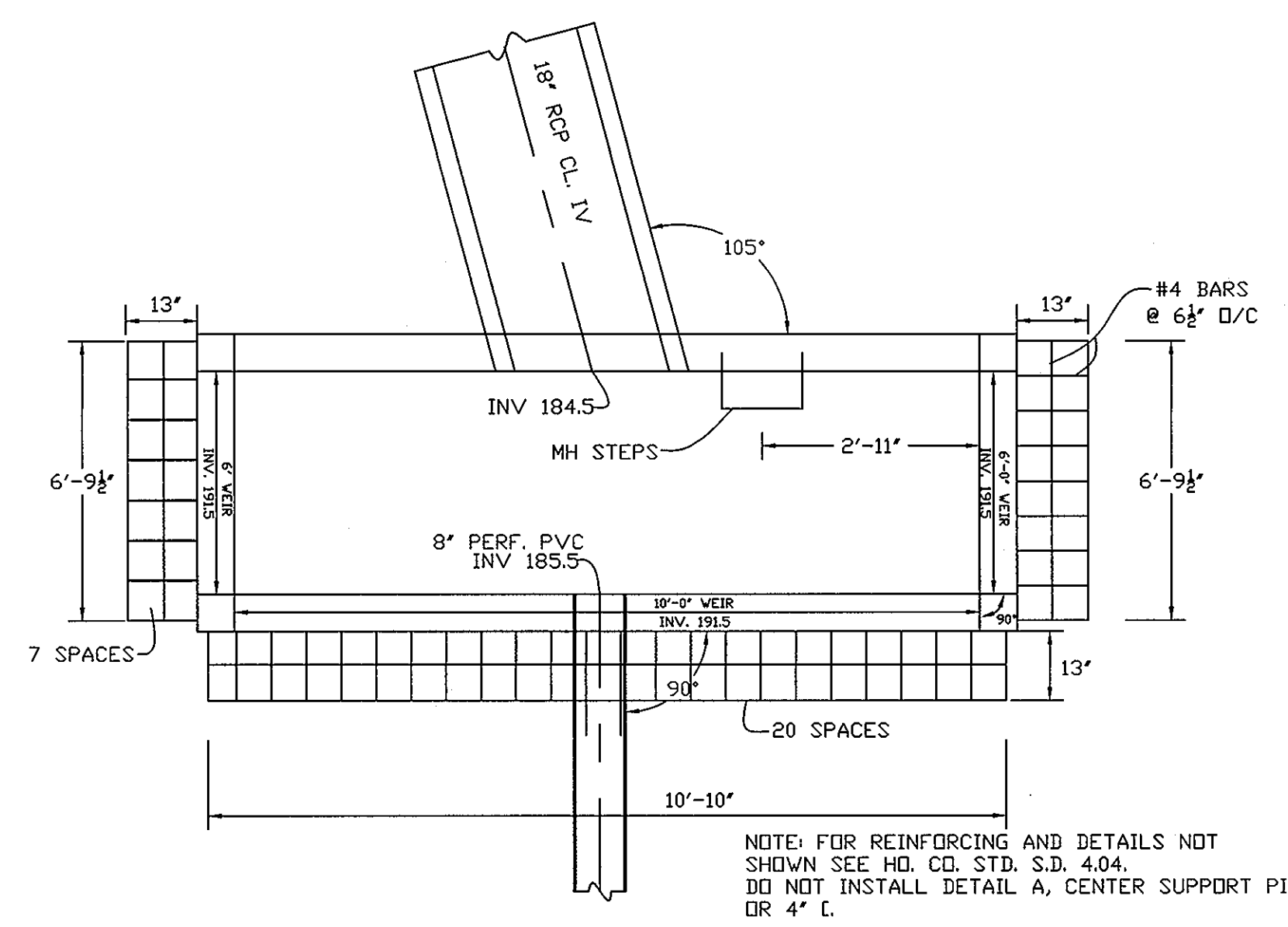
**22 of 33**



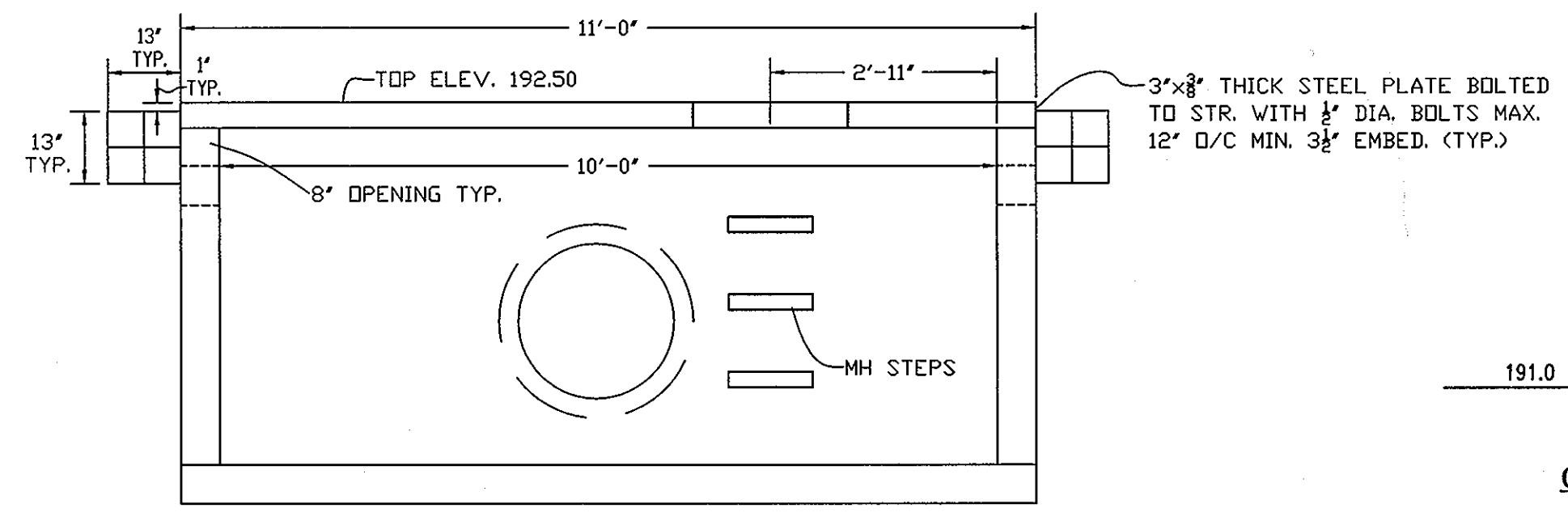
**CENTERLINE PROFILE BIO-RETENTION FACILITY**  
SCALE: HORIZ. 1"=30'  
VERT. 1"=5'



**OVERFLOW FOR BIO-RETENTION FACILITY**  
SCALE: HORIZ. 1"=20'  
VERT. 1"=5'



**STRUCTURE I-12**  
NOT TO SCALE

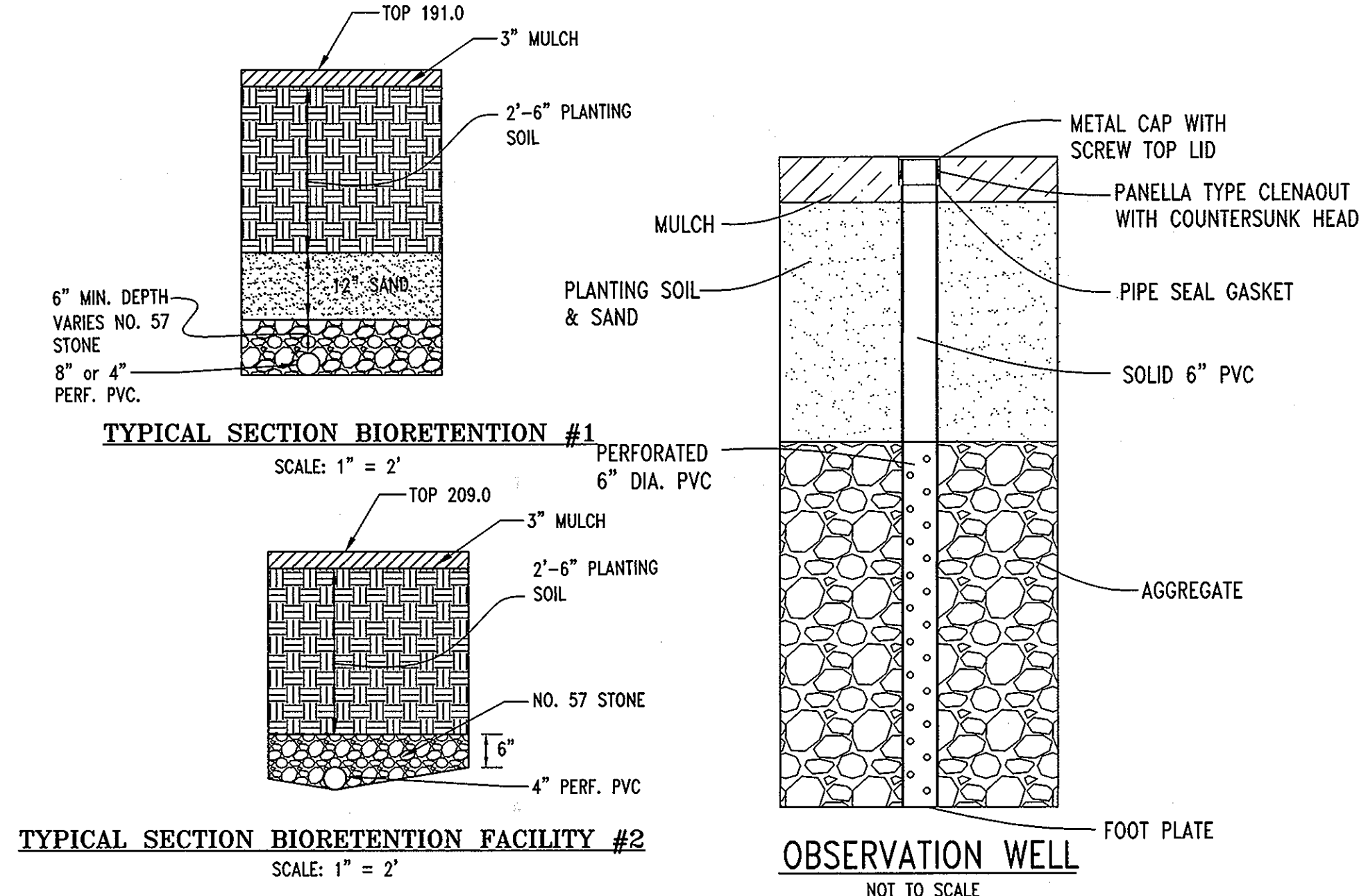


**STRUCTURE I-12**  
NOT TO SCALE

**TRASH RACK NOTES**

1. ALL MATERIALS SHALL BE HOT DIPPED GALVANIZED.
2. #4 BARS SHALL BE WELDED AT CROSS-POINTS AND WHERE BAR MEETS STEEL CONNECTION PLATE.
3. TRASH RACK SHALL BE PAINTED BATTLESHIP GREY.

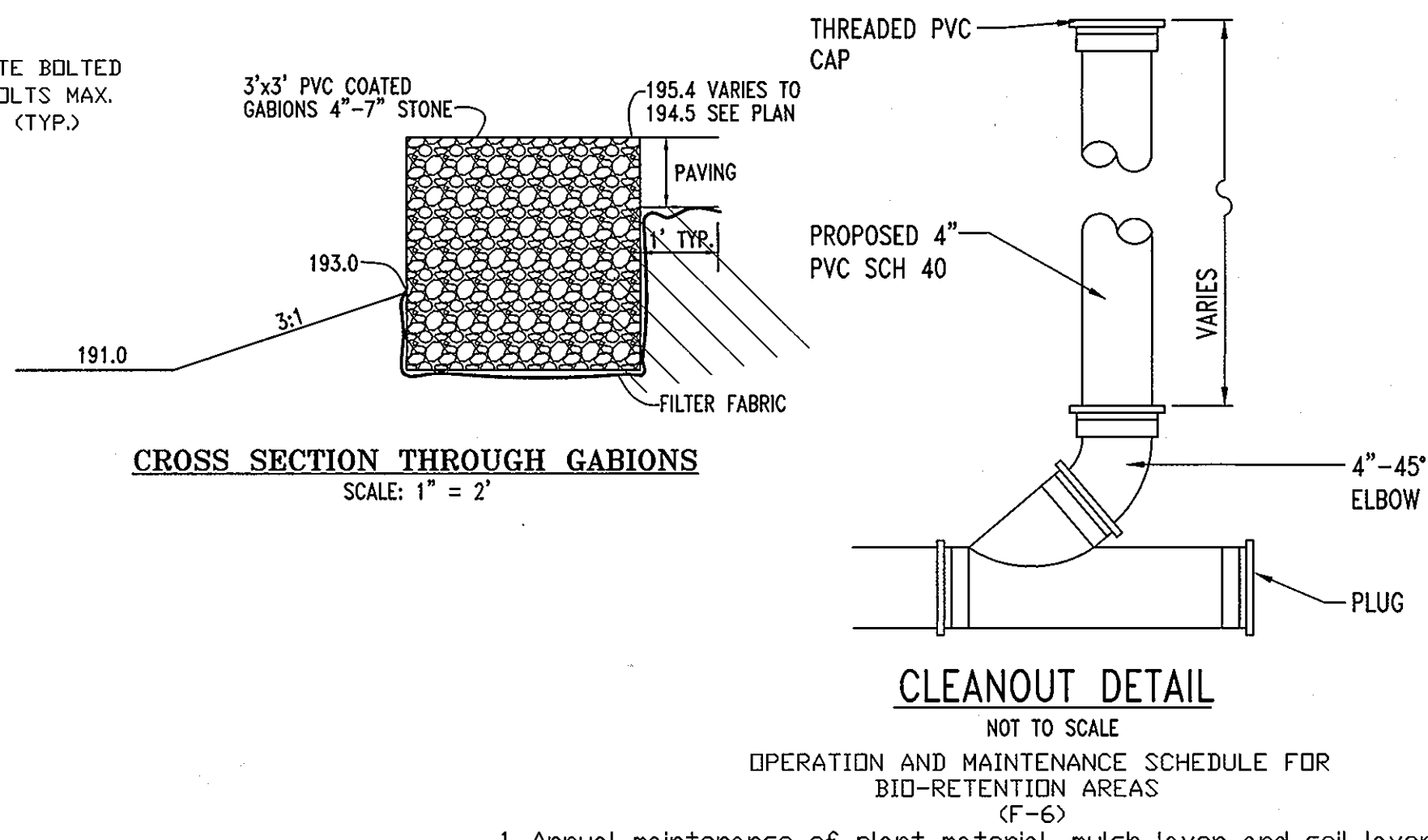
NOTE: CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR PRECAST INLET FOR REVIEW AND APPROVAL BY HOWARD COUNTY PRIOR TO FABRICATION OF I-12



**TYPICAL SECTION BIORETENTION #1**  
SCALE: 1" = 2'

**TYPICAL SECTION BIORETENTION FACILITY #2**  
SCALE: 1" = 2'

**OBSERVATION WELL**  
NOT TO SCALE



**CROSS SECTION THROUGH GABIONS**  
SCALE: 1" = 2'

**CLEANOUT DETAIL**  
NOT TO SCALE

**OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (F-6)**

1. Annual maintenance of plant material, mulch layer and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning.
2. Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment, treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
3. Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
4. Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.

CLIENT		JOB #		BORING #		SHEET	
Edmades & Stromdahl		5246		SWM-1		1 of 1	
PROJECT NAME		ARCHITECT-ENGINEER		DATE		SCALE	
Savage Fire Station		Howard County, Maryland		09/18/09		AS SHOWN	
SITE LOCATION		CORRIDOR ROAD AND WASHINGTON BLVD		DATE OF BORING		7.2'	
HOWARD COUNTY, MARYLAND		BORING STARTED		09/18/09		DATE OF BORING	
DESCRIPTION OF MATERIAL		LOSS OF CONSOLIDATION		BORING METHOD		HSA	
TOPSOIL DEPTH 4"		SURFACE ELEVATION		212.80		END OF BORING @ 10.00'	
1 SS 18 10 Silty SAND, Grayish Tan to Tan, Moist, Medium Dense to Very Dense, (SM) [Loam]		2 SS 18 12 Silty SAND, Brown and Gray, Moist, Medium Dense to Dense, (SM) [Loam]		3 SS 18 14 SILT, Trace Sand, Grey, Moist, Very Shif, (ML)		4 SS 18 12 SILT, Trace Sand, Grey, Moist, Very Shif, (ML), Dense, (SM)	

CLIENT		JOB #		BORING #		SHEET	
Edmades & Stromdahl		5246		SWM-2		1 of 1	
PROJECT NAME		ARCHITECT-ENGINEER		DATE		SCALE	
Savage Fire Station		Howard County, Maryland		09/18/09		AS SHOWN	
SITE LOCATION		CORRIDOR ROAD AND WASHINGTON BLVD		DATE OF BORING		6.9'	
HOWARD COUNTY, MARYLAND		BORING STARTED		09/18/09		DATE OF BORING	
DESCRIPTION OF MATERIAL		LOSS OF CONSOLIDATION		BORING METHOD		HSA	
TOPSOIL DEPTH 4"		SURFACE ELEVATION		186.40		END OF BORING @ 10.00'	
1 SS 18 8 Silty SAND, Grayish Tan and Brown, Moist, Medium Dense, (SM) [Loam]		2 SS 18 12 Silty SAND, Grayish Tan and Brown, Moist, Medium Dense, (SM) [Loam]		3 SS 18 10 Silty SAND, Trace Clay, Tan, Moist, Very Shif, (ML) [Silt Loam]		4 SS 18 16 Silty SAND, Trace Clay, Tan, Moist, Very Shif, (ML) [Silt Loam]	

**OWNER**  
MARYLAND STATE HIGHWAY ADMINISTRATION  
707 NORTH CALVEAT STREET  
BALTIMORE, MD 21202  
410-543-0300

**OWNER AND DEVELOPER**  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
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410-319-6184

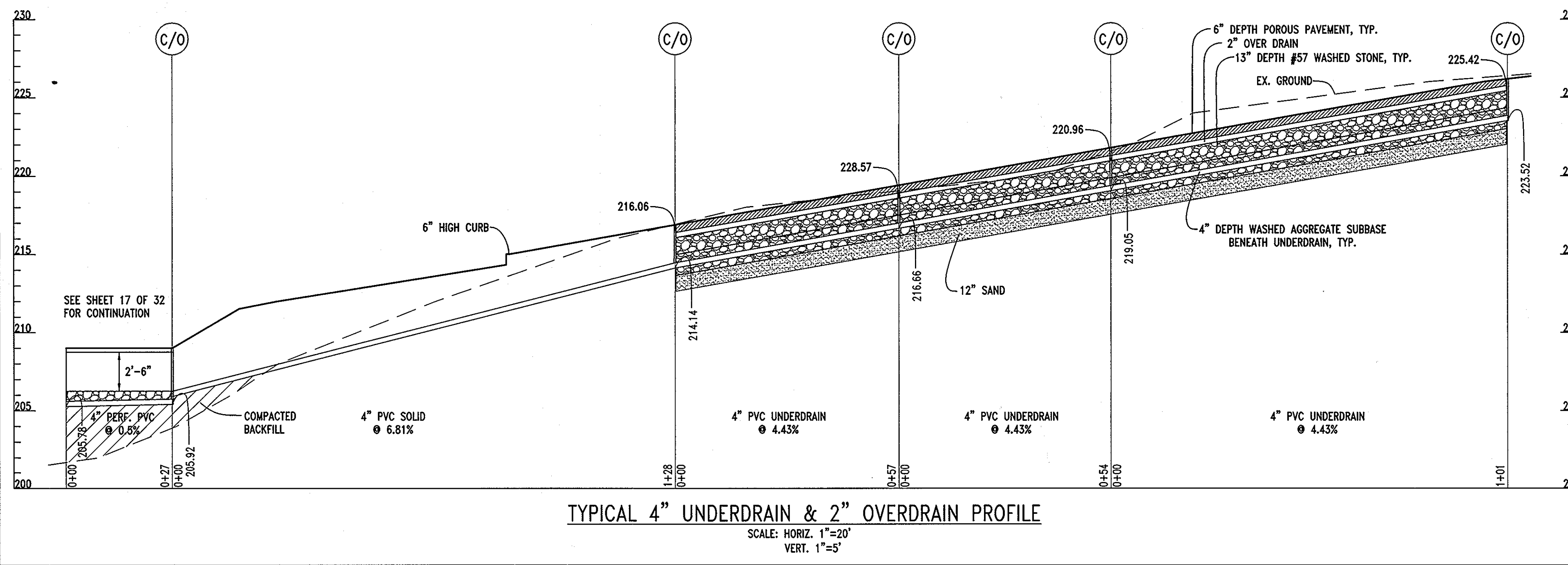
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TOWSON, MD 21286  
CONTACT: JEFFREY SCHWAB  
410-321-7600

**APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS**  
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County Health Officer  
Howard County Health Department

**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING**  
*Jeffrey Schwab* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**APPROVED: DIVISION OF LAND DEVELOPMENT**  
*Kevin Sheehy* 4/21/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

**APPROVED: DIRECTOR**  
*Thomas E. Butler* 1/12/11  
DIRECTOR



**TYPICAL 4" UNDERDRAIN & 2" OVERDRAIN PROFILE**  
SCALE: HORIZ. 1"=20'  
VERT. 1"=5'

CLIENT		JOB #		BORING #		SHEET	
Edmades & Stromdahl		5246		SWM-1		1 of 1	
PROJECT NAME		ARCHITECT-ENGINEER		DATE		SCALE	
Savage Fire Station		Howard County, Maryland		09/18/09		AS SHOWN	
SITE LOCATION		CORRIDOR ROAD AND WASHINGTON BLVD		DATE OF BORING		7.6'	
HOWARD COUNTY, MARYLAND		BORING STARTED		09/18/09		DATE OF BORING	
DESCRIPTION OF MATERIAL		LOSS OF CONSOLIDATION		BORING METHOD		HSA	
TOPSOIL DEPTH 4"		SURFACE ELEVATION		212.80		END OF BORING @ 10.00'	
1 SS 18 12 Silty SAND, Brown and Gray, Moist, Medium Dense to Dense, (SM) [Loam]		2 SS 18 12 Silty SAND, Brown and Gray, Moist, Medium Dense to Dense, (SM) [Loam]		3 SS 18 14 SILT, Trace Sand, Grey, Moist, Very Shif, (ML)		4 SS 18 12 SILT, Trace Sand, Grey, Moist, Very Shif, (ML), Dense, (SM)	

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401 Washington Ave, Suite 303  
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F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park, Section 1, Parcel C-1 Savage Volunteer Fire Station**  
Savage, Maryland  
**SWM Bioretention Details & Profiles**

PROJECT: C-1  
DATE: 12/12/10  
JOB: M-2  
DATE: 10/22/2010  
PROJECT: 21380  
DATE: 10/22/2010  
JOB: M-2  
DATE: 10/22/2010  
PROJECT: 21380  
DATE: 10/22/2010

Date: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN

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TABLE B.3.2 MATERIALS SPECIFICATIONS FOR BIORETENTION			
Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil [2.5' to 4' deep]	sand 35%-60%, silt 30-55%, clay 10-25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood		aged 6 months, minimum
geotextile	Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.375" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
poured in place concrete (if required)	MSHA Mix No. 3; f'c = 3500psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
sand [1' deep]	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

**B.3.B Specifications for Bioretention**

**1. Material Specifications**

The allowable materials to be used in bioretention area detailed in Table B.3.2.

**2. Planting Soil**

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

pH range	5.2 - 7.0
organic matter	1.5 - 4% (by weight)
magnesium	35lb./ac
phosphorus (phosphate - P2O5)	75 lb./ac
potassium (potash - K2O)	85 lb./ac
soluble salts	not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional testes of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the top soil was excavated.

Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

**3. Compaction**

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoists to remove original soil. If bioretention rubber tires with large lugs or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to restructure the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

**4. Plant Material**

Recommended plant material for bioretention areas can be found in Appendix A, Section A.2.3.

**5. Plant Installation**

Mulch should be placed to a uniform thickness of 2" to 3". Shredded hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention areas during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Root stock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grading surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be easily spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend soil. Rototill urea fertilizer at a rate of 2 pounds per 100 square feet.

**6. Underdrains**

Underdrains are to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes are not terminating in an observation well shall be capped.

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%.

**7. Miscellaneous**

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Development Engineering Division  
 Chief, Division of Land Development  
 Director

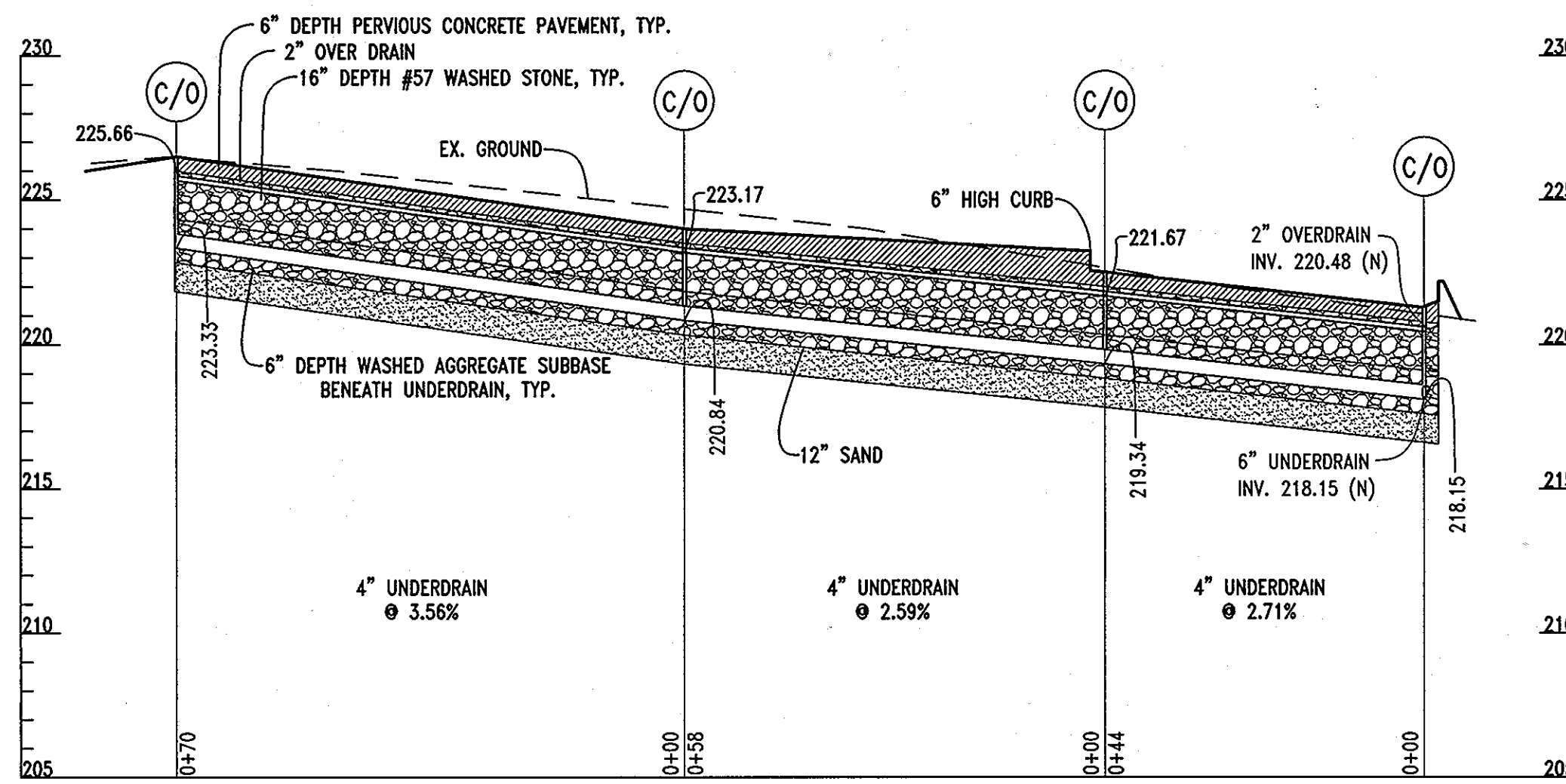
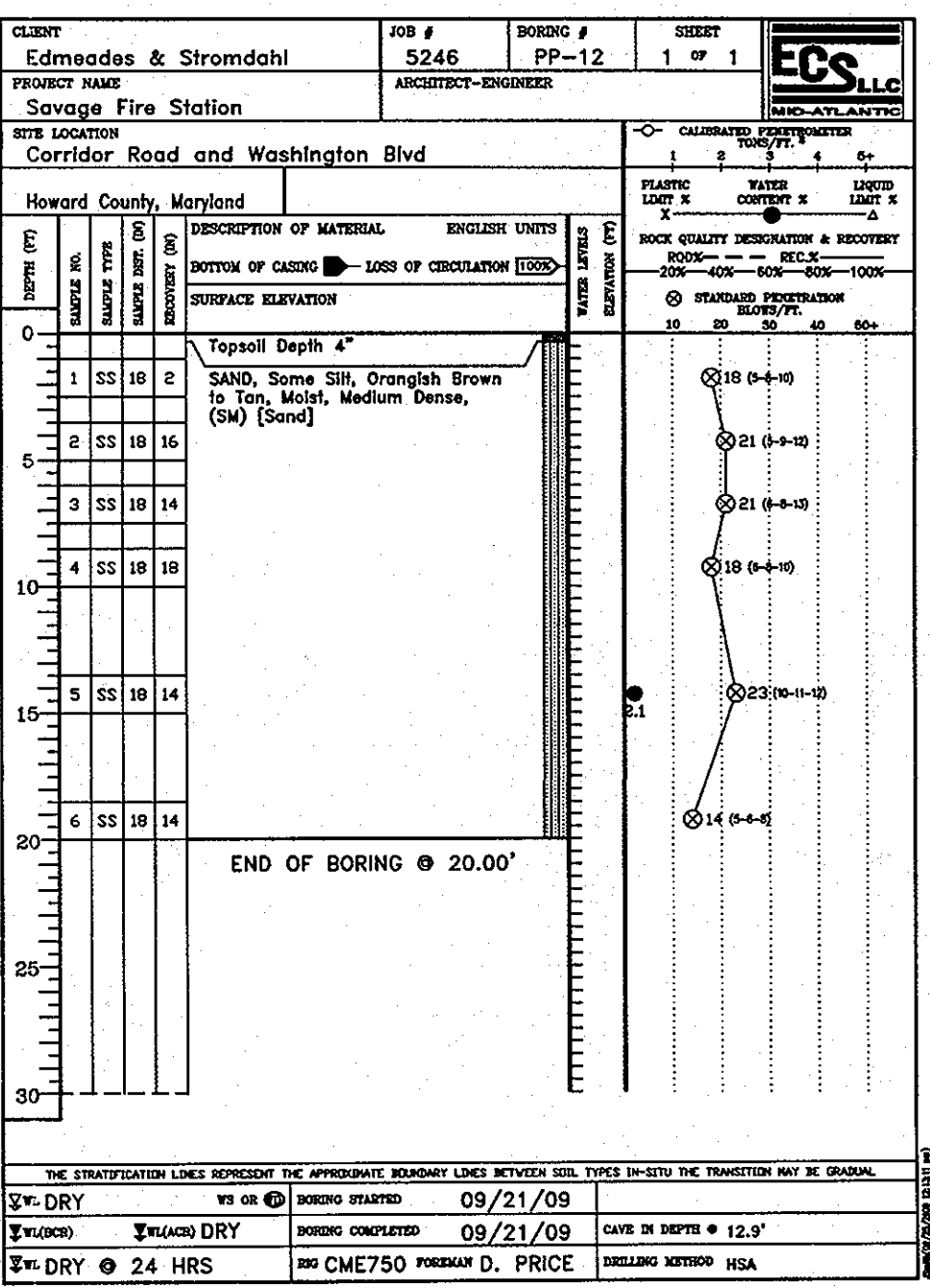
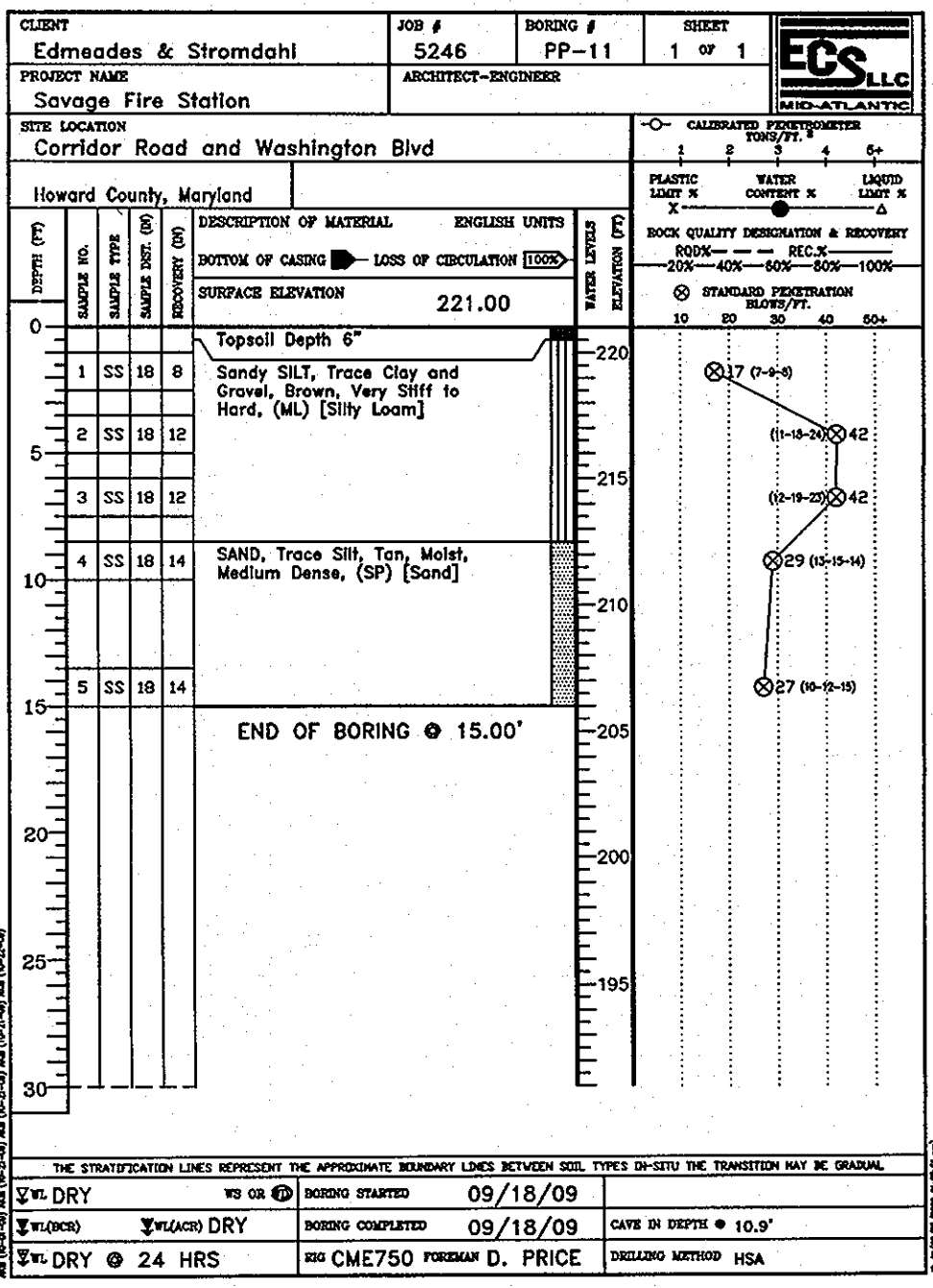
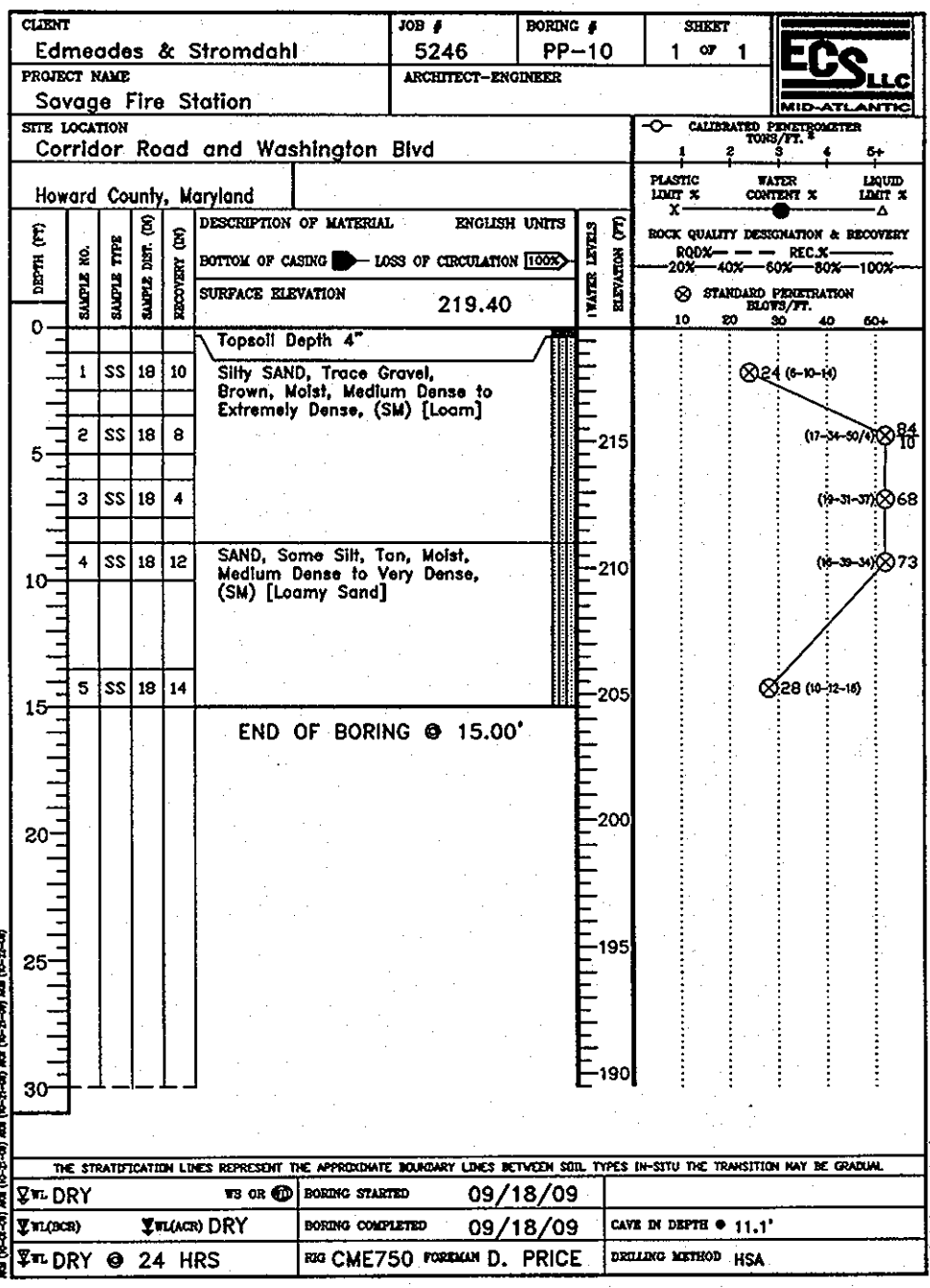
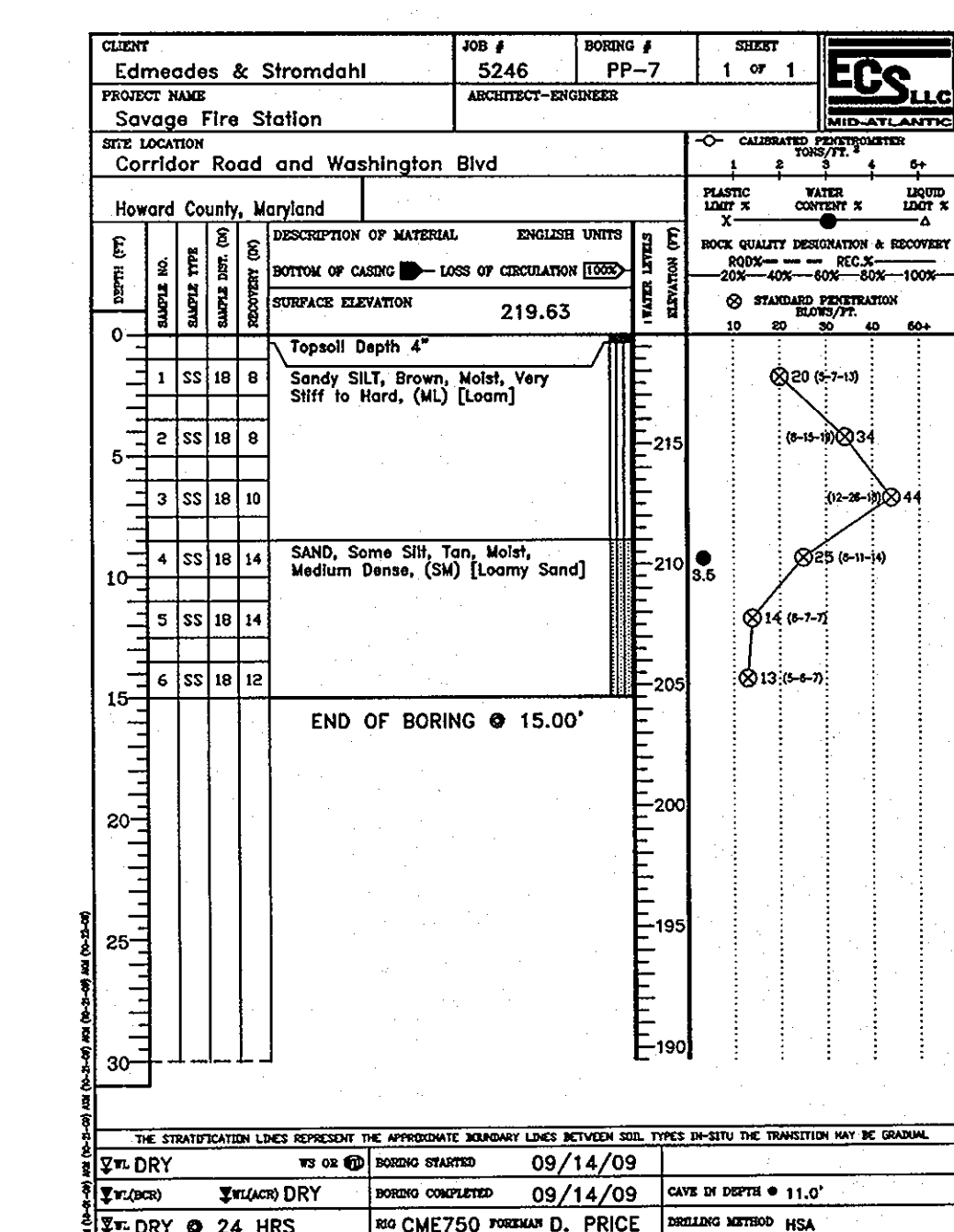
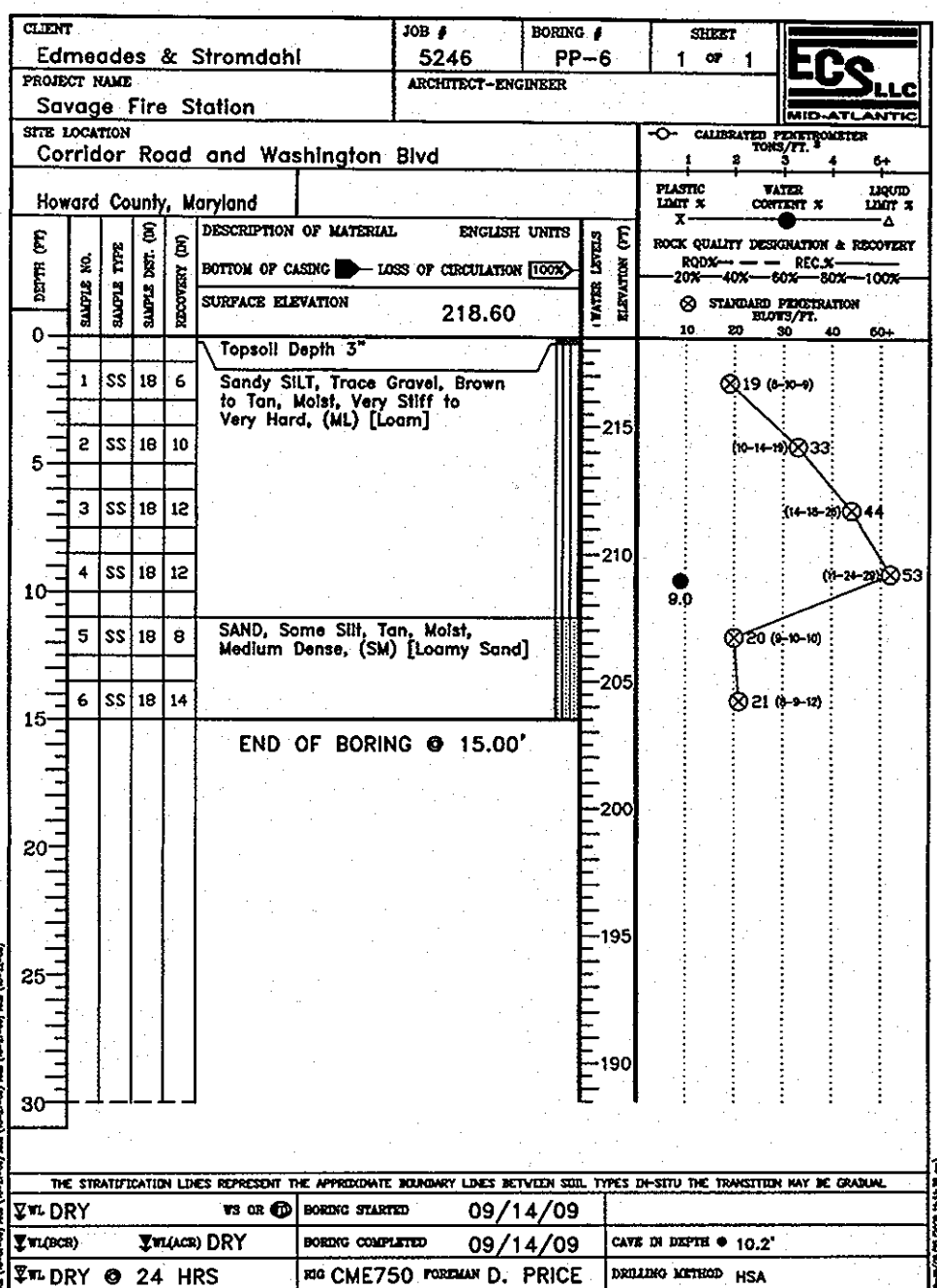
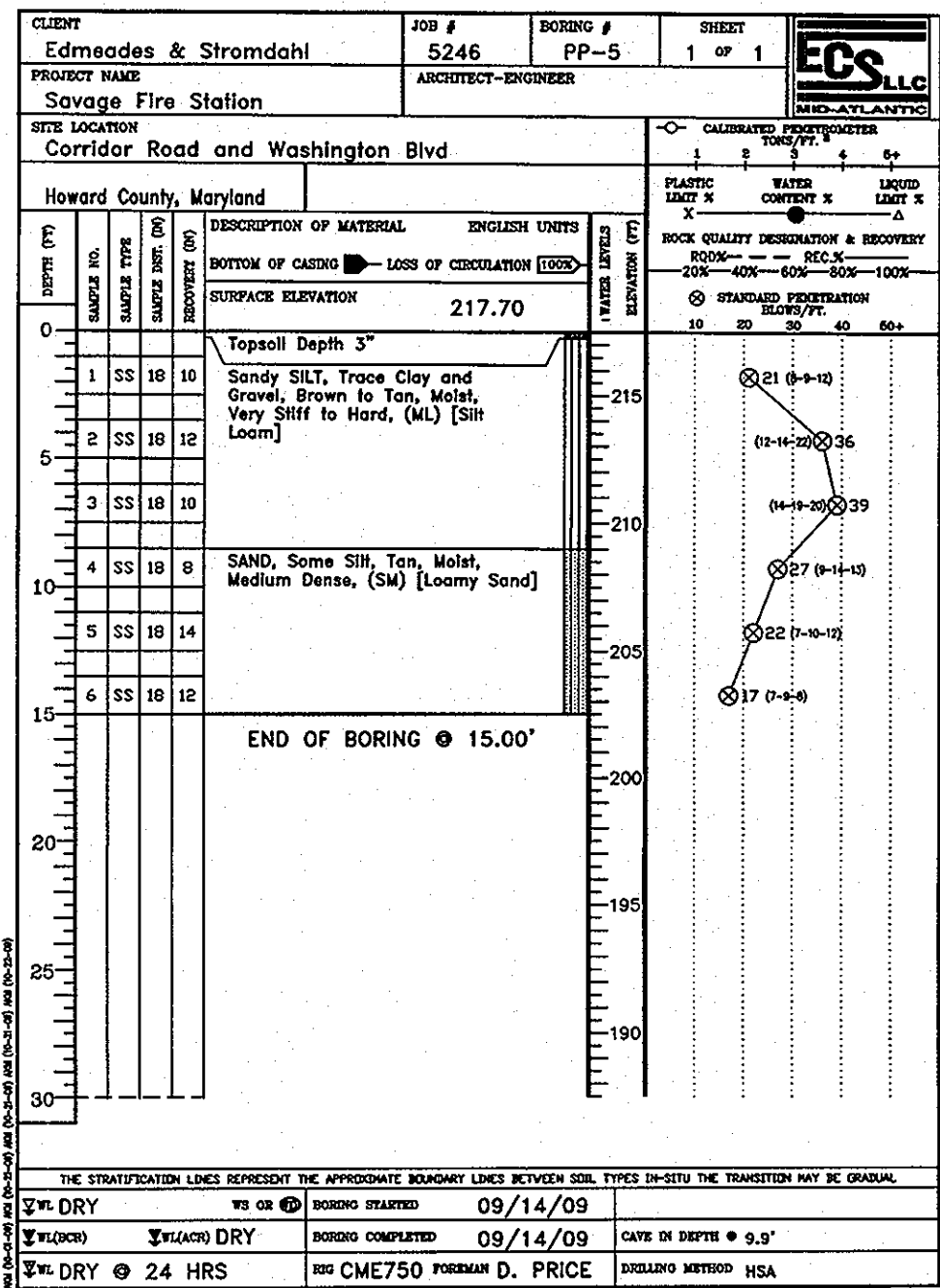
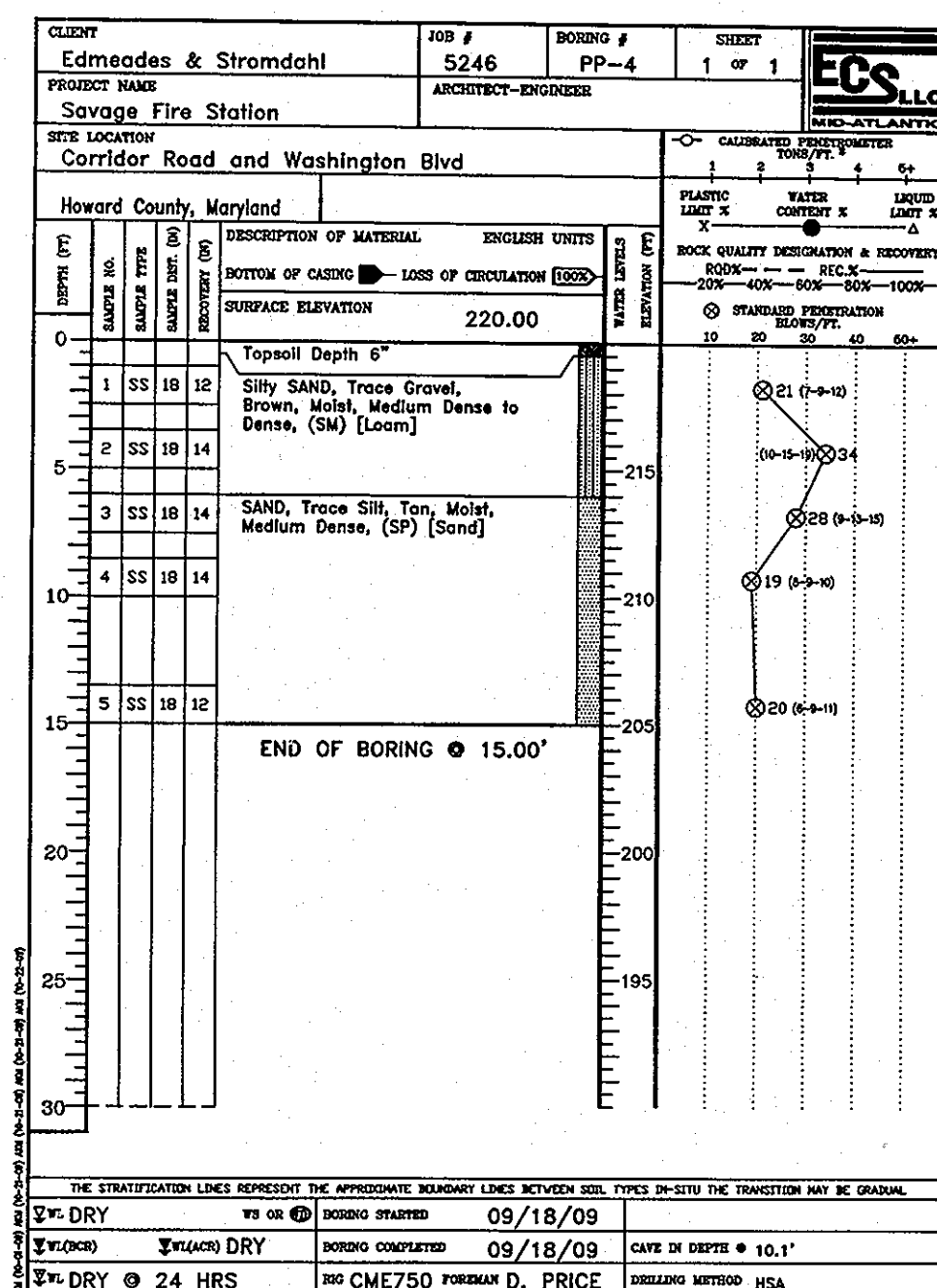
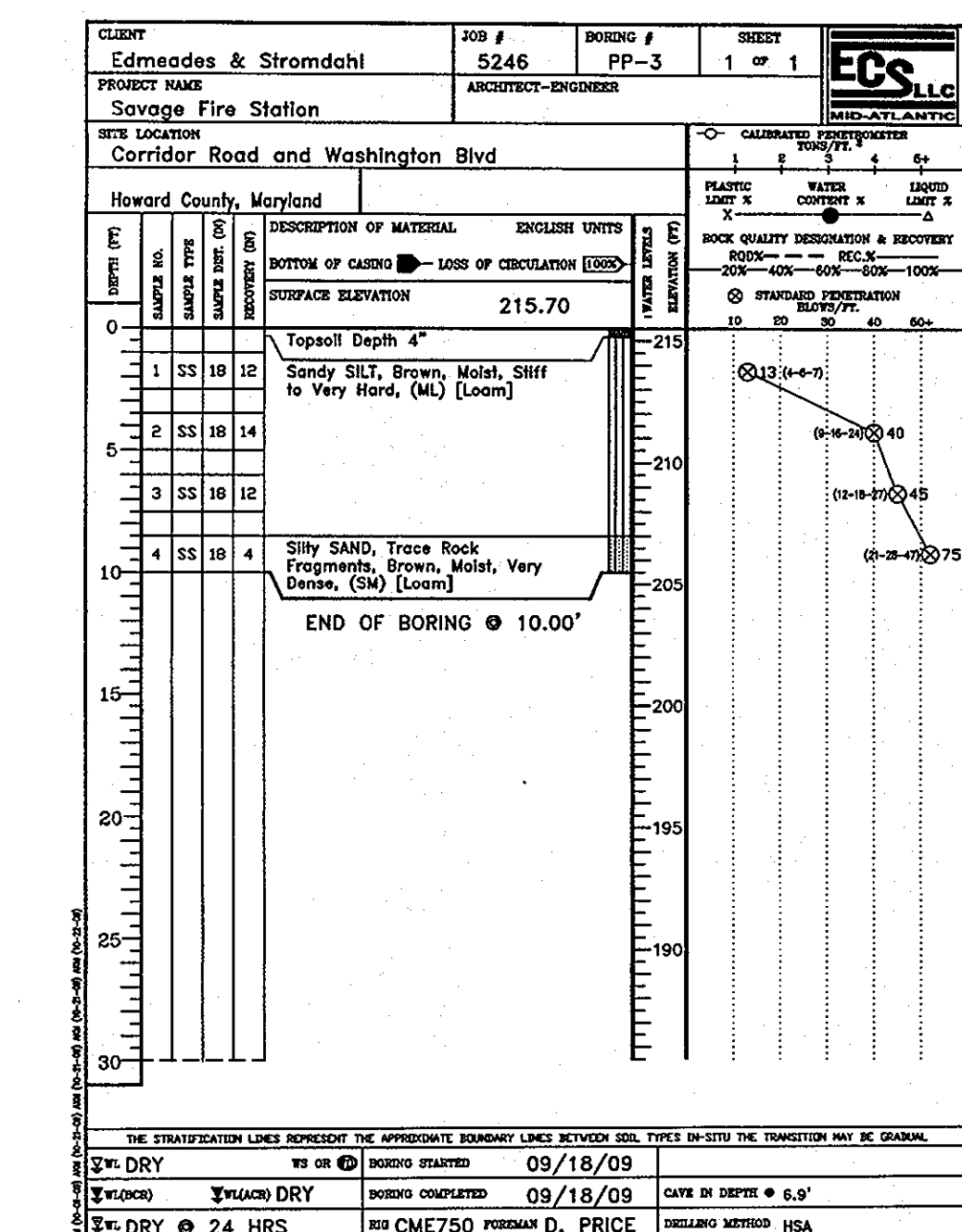
9/29/11 REVISED PROFILE OF 4" UNDER DRAIN & 2" OVER DRAIN  
 DATE REVISION  
 APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

County Health Officer  
 Howard County Health Department

OWNER  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 1071 NORTH CALVERT STREET  
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 410-545-0300

OWNER AND DEVELOPER  
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TYPICAL 4" UNDERDRAIN & 2" OVERDRAIN PROFILE

SCALE: HORIZ. 1"=20'  
 VERT. 1"=5'

THE PURPOSE OF THE REVISED SDP IS TO ADD A DESIGNATED OUTSIDE WASH AREA FOR THE FIRE APPARATUS AND PROVIDE THE REQUIRED COLLECTION AND TREATMENT SYSTEM FOR THE WASH WATER, AND TO PROVIDE AN AREA WHERE THE FIRE DEPARTMENT CAN TEST THEIR HOSES IN THE EAST PARKING LOT BY REPLACING A PORTION OF THE PVIOUS CONCRETE PAVING WITH ASPHALT AND REDUCING THE PARKING AREA BY 5 SPACES. DUE TO EXTENSIVE CHANGES TO SOME DETAILS AND PROFILES AND FOR CLARITY WE HAVE REQUESTED SUBSTITUTE SHEETS FOR SHEETS 6, 22, & 24.

**Tesseract**  
 TESSERACT SITES, INC.  
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 Towson, Maryland, 21286  
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 F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

Revised Site Development Plan  
 Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland  
 SWM Bioretention Borings & Notes

DATE: 9/29/11  
 REVISION: 11/01/11  
 DATE: 11/11/11

DATE: 1/28/2011  
 Proj. #: 08016  
 Scale: n/a

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# CONSTRUCTION SPECIFICATIONS

1. SCOPE: This specification provides the requirements for construction of pervious concrete pavement. All requirements of the Howard County Design Manual Volume IV Standard Specifications for Construction and Materials (HoCo) and the Maryland State Highway Administration Standard Specifications for Construction and Materials (MSHA), latest edition, shall apply as modified herein. See Project Specifications for additional information.

## 2. SUBMITTALS

- A. As required by HoCo and MSHA and noted herein.
- B. Contractor Qualifications, related to construction of pervious concrete pavement.
- C. Concrete Manufacturer's qualifications, related to manufacture of pervious concrete product.
- D. Design Mixture (proportions and density), for pervious concrete pavement.
- E. Operation and Maintenance Data: For pervious concrete pavement.
- F. Materials certificates: For cementitious materials and Admixtures.
- G. Materials test reports:
  - 1) Provide separate reports for coarse and fine aggregates indicating type, source, grading, dry-rodded unit weight, and void content.
  - 2) Pervious concrete product, to verify compliance with specified performance criteria
- H. Test panel results.
- I. Joint plan; distinguish between different joints by color or labelling.
- J. Field Quality Control Reports.

## 3. QUALITY ASSURANCE

- A. Pervious Concrete Contractor:
  - 1) The installation crew shall have a minimum of two years of documented successful experience installing pervious concrete pavement for vehicular use, and
  - 2) The pervious concrete contractor shall submit evidence of a minimum of 2 successful pervious concrete projects for vehicular use, each greater than 1,000 sq ft. Submit project name, address, owner name and address and contact information.
  - 3) The installation crew shall have no less than one National Ready Mixed Concrete Association (NRMCA) certified Pervious Concrete Craftsman, who shall be on site, supervising all concrete placement and finishing, or  
The crew shall have no less than three NRMCA certified Pervious Concrete Installers, or The crew shall have no less than one NRMCA certified Installer and three NRMCA certified Pervious Concrete Technicians.
- B. Concrete Manufacturer: A firm experienced in successfully manufacturing ready-mix pervious concrete products. Manufacturer shall be certified according to NRMCA's "Certification of Ready Mix Concrete Production Facilities," with a minimum of two years documented experience in providing pervious concrete products.
- C. Testing Agency: Personnel conducting field tests for pervious concrete shall be qualified, at a minimum, as NRMCA certified Pervious Concrete Technician, or equivalent.
- D. Test Panel: Provide minimum 10' x 20' test panel, full depth including concrete, stone base, and required subgrade condition, using the mixture proportions, materials, and equipment proposed for the project. Panel shall demonstrate typical joints, finish, color, curing, and standard of workmanship. Test panel for quality requirements.
  - 1) Test Fresh Density in accordance with ASTM 1688. Sample per ASTM 172.
    - a. Fresh density shall be ±5 lb/cu ft. of specified fresh density.
    - 2) Test Hardened Density in accordance with ASTM C140, paragraph 9.3. Core per ASTM C42.
    - 3) Test Thickness in accordance with ASTM C174, using the average from three cores.
      - a. Average compacted thickness shall not be more than 1/4 inch less than specified thickness, with no single core exceeding 1/2 inch less than specified thickness.
      - b. Average compacted thickness shall not be more than 1 1/2 greater than specified thickness.
- E. Preinstallation Conference: Conduct conference at project site a minimum of 2 weeks in advance of commencing pervious concrete installation and discuss issues relating to construction of pervious concrete, including but not limited to, materials, transport, placement, curing, and testing. At a minimum, the meeting shall include the design engineer, general contractor, the pervious concrete subcontractor, the pervious concrete foreman, the testing agency representative, the owner's representative.

## 4. PRODUCTS

- A. Subbase Materials: uniformly graded, ASTM #57, rounded or crushed.
- B. Concrete Materials:
  - 1) Aggregate:
    - a. ASTM D448 and ASTM C33, uniformly graded. Provide aggregate from a single source.
    - b. Single size coarse aggregate ASTM #8 or #67, rounded or crushed. There shall be little or no fine aggregate.
  - 2) Portland Cement: ASTM C 150, gray portland cement Type I or Type II. Cement may be supplemented with Fly Ash (per ASTM C 618), Ground Granulated Blast-Furnace Slag (per ASTM C989, Grade 100 or 120), or Silica Fume (per ASTM C1240).
  - 3) Admixtures: shall be in accordance with ASTM C494. Admixtures may be used to facilitate production and placement of pervious concrete upon approval of the Engineer.
  - 4) Water: Potable.
- C. Steel Reinforcement: shall not be used with pervious concrete.
- D. Joint Material: Isolation joint material shall comply with ASMT D994, D1751, or D1752. Expansion joint material shall comply with specifications for standard concrete materials.
- E. Curing Materials: Moisture retaining cover shall be clear or white opaque polyethylene film, 6 mil, ASTM C 171.
- F. Concrete Mixture: Select design mix in accordance with ACI 211.3 "Guide for Selecting Proportions for No-Slump Concrete." Mix shall meet the following criteria.
  - 1) Density/Unit Weight (in place) 100-120 lb/cu ft.
  - 2) Portland Cement Content 600 lb/cu yd.
  - 3) Water/Cement Ratio 0.24-0.34 (by mass)
  - 4) Fine/Coarse Aggregate Ratio There shall be little to no fine aggregate.
  - 5) Void Ratio 15-35%
  - 6) Air entrainment shall be used to improve resistance to freeze/thaw.
  - 7) Hydration stabilizers are recommended.
- G. Concrete Mixing: Mixing and delivery time are very critical for pervious concrete materials. Begin mixing immediately after addition of cement to aggregate.

## 5. EXECUTION

- H. SUBGRADE: Examine the subgrade and verify it's acceptability prior to proceeding with installation of subbase and pervious concrete pavement.
  - 1) Subgrade shall comply with requirements for dimensional, grading, and elevation tolerances.
  - 2) Subgrade shall be compacted to MAXIMUM 95% Standard Proctor (90-92% Modified Proctor).
  - 3) Test subgrade permeability in accordance with ASTM D3385 prior to placing concrete. Subgrade shall meet minimum percolation rate of 1/2 inch per hour.
  - 4) Subgrade shall not be muddy, saturated, or frozen.
- I. SUBBASE
  - 1) Install aggregate in maximum 6 inch lifts. Place stone in a manner that does not disturb or compact the soil bed. Material shall be deposited within thirty feet of its final placement location. Movement (pushing) of material more than thirty feet from the location where it is deposited will not be permitted. Lightly compact with equipment, minimizing equipment movement over aggregate. Install to grades indicated.
  - 2) Keep clean from soil and other contaminants.
- J. SETTING FORMWORK
  - 1) Formwork for pervious concrete may vary from formwork for conventional concrete.
  - 2) Set, align, and brace forms so that the hardened concrete meets the tolerances specified. Install forms to allow continuous progress of work so forms can remain in place at least 24 hours after concrete placement.
  - 3) Concrete placement width shall not exceed 20 feet unless otherwise specified.

## D. BATCHING, MIXING, AND DELIVERY

- 1) Place mixture in accordance with NRMCA Pervious Concrete Contractor Certification guidelines.
- 2) Mixture proportioning shall be tightly controlled to meet specified criteria. Aggregate water content during mixing must be monitored carefully.
  - a. Addition of water at the discharge point is permitted to bring workability up to a level that is acceptable to the contractor without causing paste drain.
- 3) Mixture typically should be completely discharged within one hour of mixing. This timeframe may be increased slightly upon addition of hydration stabilizing admixtures. Placement shall be continuous. Pervious pavement mixtures typically cannot be pumped. Discharge is slowed due to low slump and several mixers may be necessary working simultaneously.

## E. CONCRETE PLACEMENT

- 1) Before placing concrete, inspect formwork installation and items to be embedded or cast-in.
- 2) Remove snow, ice, or frost from subbase surface. Do not place concrete on frozen surfaces.
- 3) Moisture subbase to provide a uniform dampened condition at the time concrete is placed.
  - a. Moistness is more critical for pervious concrete than with conventional concrete construction. Failure to provide a moist subbase will result in a reduction in strength of the pavement. Subbase shall be in a wet condition immediately prior to placing concrete.
- 4) Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
  - a. Refer to NRMCA publications for recommended methods of spreading pervious concrete material. Deposit concrete as close to its final location as practical. Limit pulling and shoveling of concrete that may reduce voids.
  - b. Do not allow foot traffic on the fresh concrete. Do not contaminate mix.
- 6) Strike off must be performed quickly. Strike off between forms using a form-riding paving machine or vibrating screed. Other strike-off devices may be used upon prior approval of the engineer.
- 7) Compact using a weighted steel pipe roller or motorized or hydraulically actuated rotating tube screed that spans the full width of the section placed and exerts a vertical pressure of 10 psi on the concrete. Do not use internal vibration. Compact along slab edges with hand tools.
  - a. Finish Pavement shall comply with the following tolerances:  
Elevation: +3/4 in., -0 in.  
Thickness: + 1 1/2 in., - 1/4 in.  
Contraction Joint Depth: +1/4 in., -0 in.

## F. FINISHING

- 1) Finish pavement to the elevations and thicknesses specified.
  - a. Do not use steel trowels or power finishing equipment.
- 2) Edge top surface to a radius of not less than 1/4 inch.

## G. JOINTING

- 1) Construct joints as indicated in the Construction Documents.
  - a. Spacing between Contraction joints shall not exceed 20 feet. Depth shall be 1/4 to 1/3 of pavement thickness.
  - b. Contraction joints may be saw cut or tooled. Tool joints to specified depth and width immediately after concrete is compacted. Do not put weight on adjacent concrete surfaces during construction of joints. A specially designed weighted rolling jointer with a blade is frequently used. Saw cut joints 1/8" width after concrete has hardened sufficiently to prevent aggregate from being dislodged and soon enough to prevent pavement cracking. Only remove curing materials as necessary to construct joint and replace as quickly as possible.
  - c. Construction joints be evenly spaced across the pavement width as generally indicated on the construction documents, unless otherwise approved in advance by the engineer. No additional joint locations shall be permitted.
- 2) Use Isolation joints where pavement abuts fixed objects and adjacent to standard concrete products. Extend through the full depth of the pavement. Fill entire isolation joint with joint material.
- 3) Align joints of adjacent pavement panels. Align joints of curb within 1/4 inch of adjacent joints in pavement panel.
- 4) Joints shall be perpendicular with edges of pavement panels, unless otherwise indicated.

## H. FIELD QUALITY CONTROL AND ACCEPTANCE

- 1) Tests of samples of concrete shall be performed according to the following requirements:
  - a. Fresh Density: ASTM C1688  
Obtain 1 cu ft. composite samples for testing in accordance with ASTM C172  
Measure a minimum of one fresh density test during each day's placement.
  - b. Hardened Density: ASTM C140, para. 9.3  
Measure as an average from three cores from each lot of 5000 sq ft of pavement, obtained not less than seven days after placement of concrete. Remove cores in accordance with ASTM C42. Select core locations in accordance with ASTM D3665.
  - c. Thickness: Use cores obtained for Hardened Density tests. Thickness shall be an average of the thickness of the 3 cores.
  - d. Void: ASTM C 172.  
Test per each 100 cy of material.
- 2) Pervious concrete finished product shall be in accordance with approved test panel results, within the following tolerances:
  - a. Fresh Concrete Density ±5 lb/cu ft. of specified fresh density
  - b. Hardened Concrete Density within 3% of approved hardened density of test panel
  - c. Fresh Void Ratio ±2% of submitted fresh void content
  - d. Hardened Void Ratio maximum 2% less than design void content
  - e. Hardened concrete compacted thickness: no more than 1/4 inch less or 1 1/2 inch more than specified thickness
- 3) Concrete paving shall be considered defective if it does not pass tests and inspections.
- 4) Cores holes shall be filled with concrete or preblended grout.

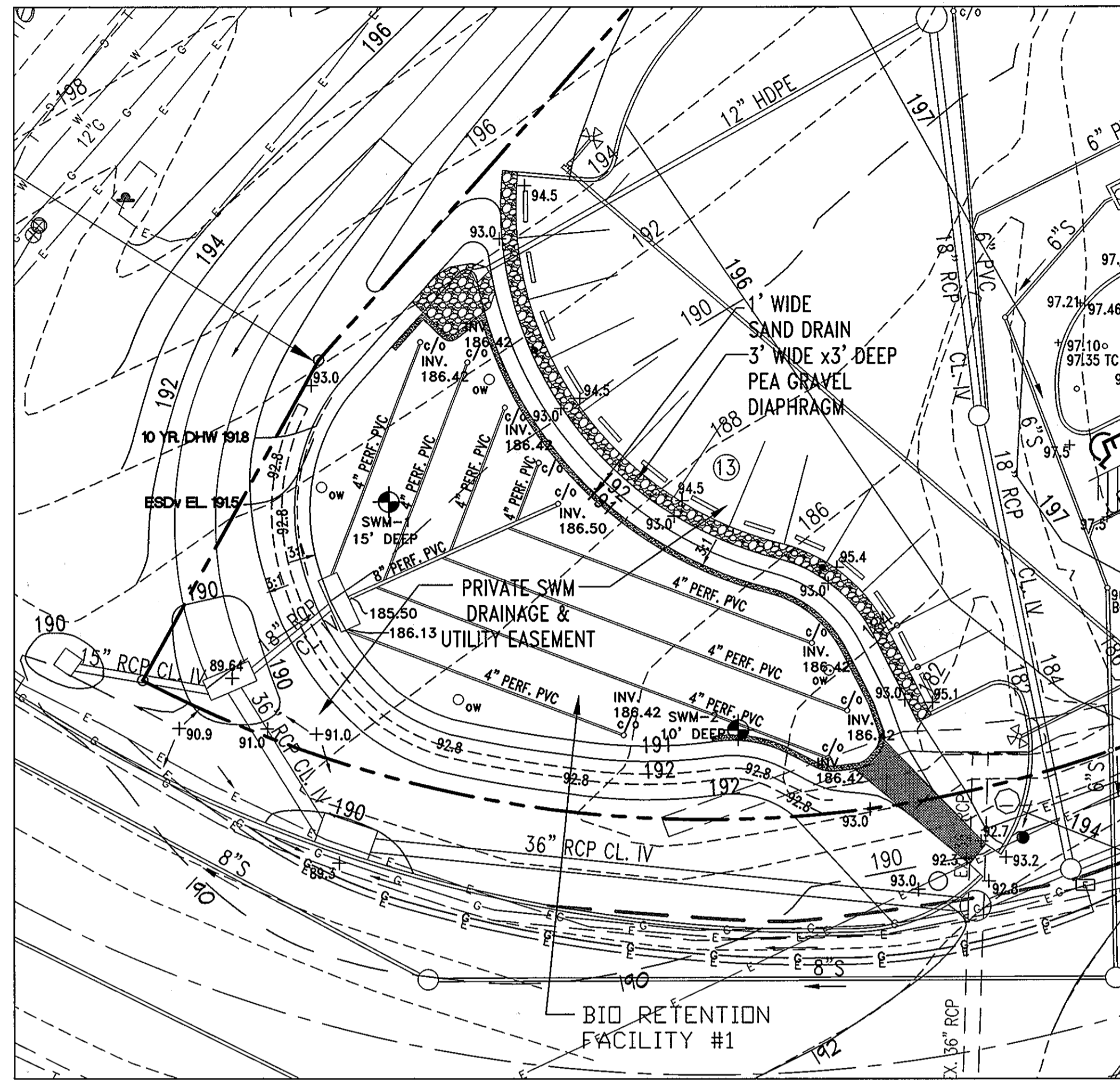
## Protection of Work

Completed pervious concrete work shall be protected from construction and other activities. No storage of materials, vehicular traffic or other use shall be permitted on the pervious concrete surface prior to Final Acceptance.

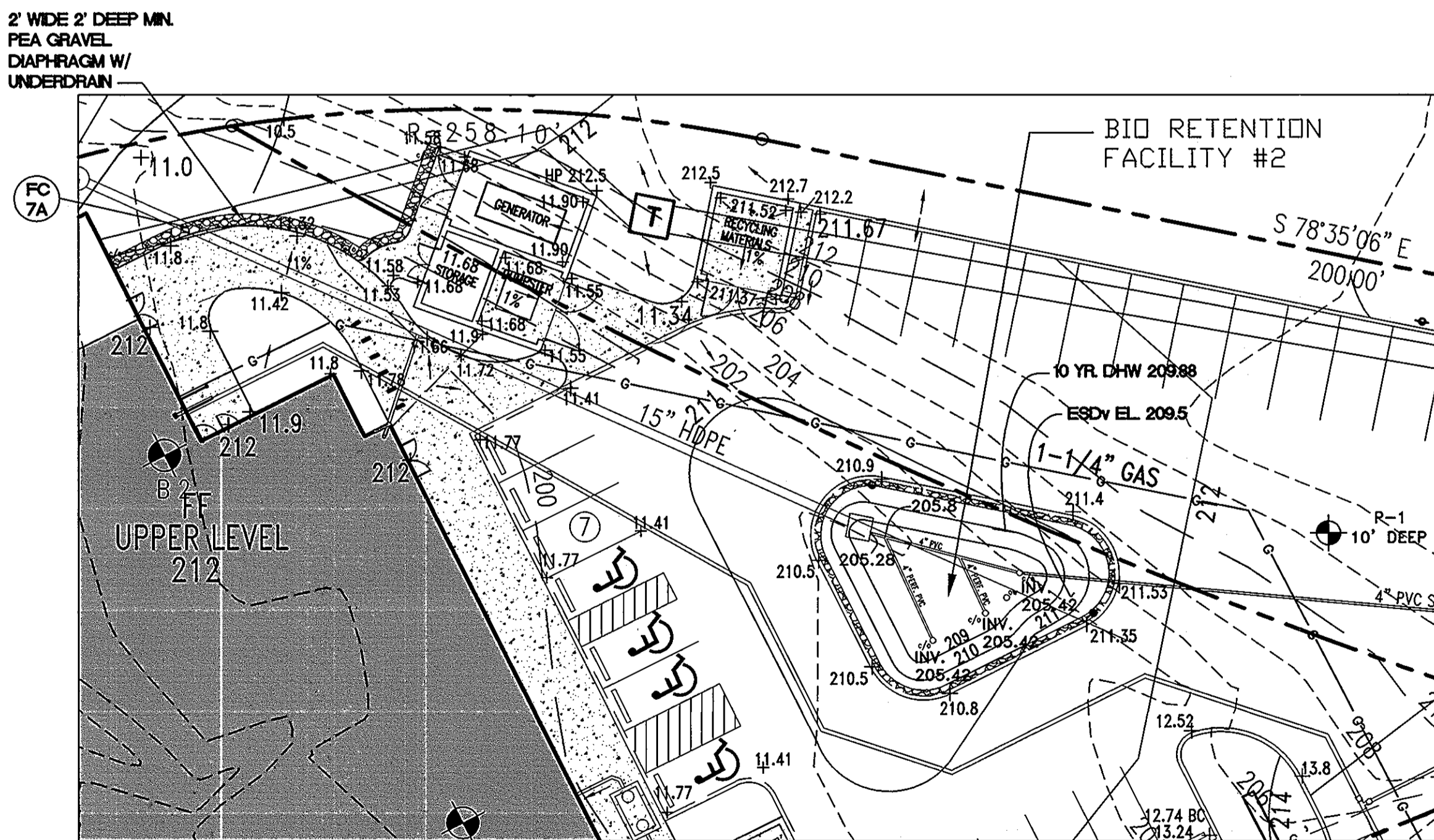
## Operation and Maintenance Schedule Pervious Concrete Paving

Proper maintenance is critical to the continued function of pervious pavement. Clogging of pores and improper repairs will severely damage the ability of the product to perform its intended function. The following minimum maintenance schedule should be incorporated to maintain surface porosity and minimize potential problems:

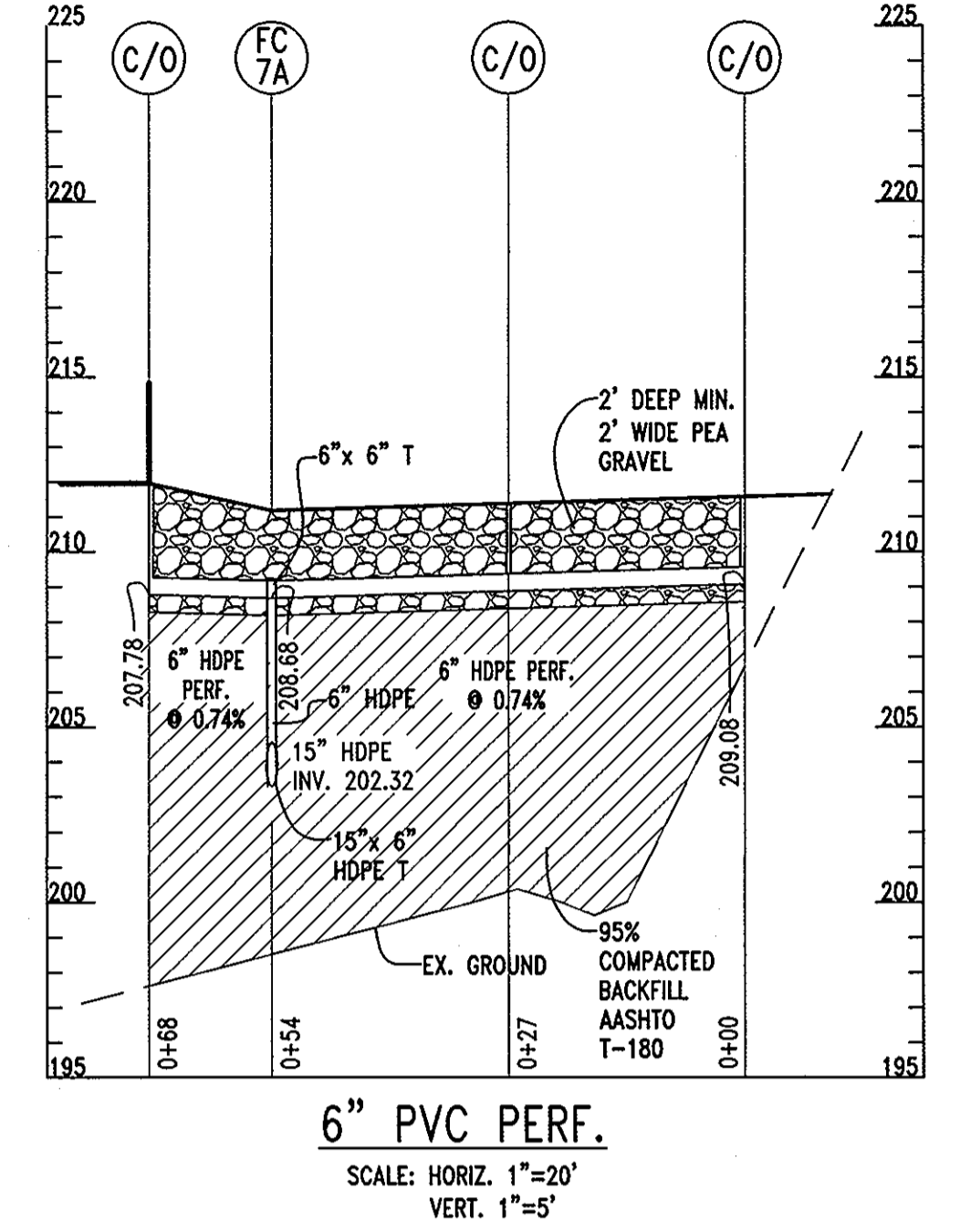
- Ensure that paving is thoroughly cleaned of debris after each mowing of adjacent lawns and on a weekly basis in the Fall to remove leaf litter. Do not use a cleaning method that pushes material down into pores. Washing or compressed air units should not be used to perform surface cleaning.
- Vacuum cleaning is recommended for all cleaning and should be performed twice annually, at a minimum, using commercial cleaning units.
- Ensure that the paving is clear of sediments. Inspect monthly and stabilize adjacent eroded areas as they become evident.
- Inspect annually for raveling or surface damage and correct as needed.
- Drainage pipes, inlets, stone edge drains and other structures within or draining to the subbase should be cleaned out at regular intervals.
- Deicers should be used in moderation. Deicers should be non-toxic and should be applied as calcium magnesium acetate or as pretreated salt. Snow plowing should be done carefully with blades set one inch above the pavement surface. Plowed snow piles and snow melt should not be directed to permeable pavement.



**SWM BIO RETENTION #1 F-6**  
HAZARD CLASS A  
Scale: 1"=20'



**SWM BIO RETENTION #2 F-6**  
HAZARD CLASS A  
Scale: 1"=20'



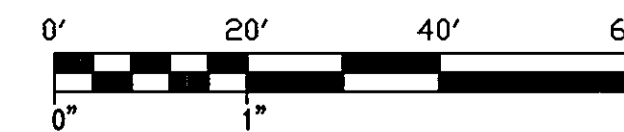
Facility	Pc	DA	Prop RCN	Prop RCN w/dj	ESDv req	ESDv Prov	Temp Storage req	Temp Storage Prov
Bio Ret #1	1.8*	1.94 ac*	88	83	5602cu**	5602 cu	4202 cf	8302 cf
Bio Ret #2	1.8*	0.8 ac	88	83	514 cu #	514 cu	386 cf	775 cf

\* Includes 0.8 ac from bio retention facility #2  
# Maximum provided based on area of filter  
\*\* Includes ESDv for Bypass area

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 [Signature] 12/17/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 1/15/11  
 DIRECTOR

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 [Signature] 1/7/2011  
 County Health Officer  
 Howard County Health Department

NO ELECTRICAL CONDUIT SHALL RUN THROUGH THE PERVIOUS PAVEMENT SECTION



## Tesseract

TESSERACT SITES, INC.  
 401 Washington Ave. Suite 303  
 Towson, Maryland, 21284 P. 410.321.7600 F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland**

**Pervious Concrete Pavement  
 Details and Specifications**

PROJECT: C-1	DATE: 10/22/2010
DATE: 10/22/2010	PROJECT: C-1
DATE: 10/22/2010	PROJECT: C-1

OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION  
 101 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-545-0300

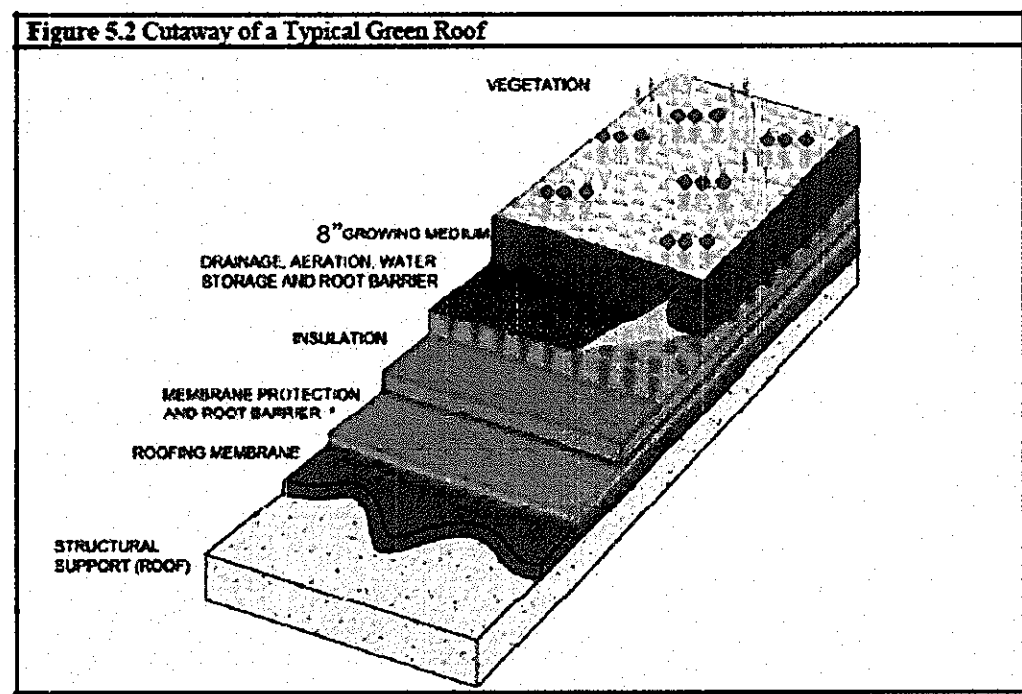
OWNER AND DEVELOPER: HOWARD COUNTY, MD  
 4250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUVERMILK  
 410-513-6184

ENGINEER: TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21284  
 CONTACT: JEFFREY SCHNAB  
 410-321-7600

25 of 33

**Treatment:** Green roof systems shall meet the following conditions:

- Planting media shall be non-soil engineered mixes conforming to the specifications found in Appendix B.4. Media layers should be between two to six inches thick. Dual media systems may be applied where green roof assemblies are four inches or thicker.
- Individual layers (e.g., root barriers, drainage mats, separation geotextiles) shall conform to the specifications found in Appendix B.4.



**Structure:**

- The roof structure shall be capable of bearing the maximum predicted dead and live loads associated with green roof systems. Standardized media weights and procedures (e.g., ASTM E-2397-05, E-2399-05) shall be used to establish the dead load bearing capacity of the roof.
- Green roofs with pitches steeper than 2:12 shall include supplemental measures (e.g., slope bars, rigid stabilization panels, reinforcing mesh) to enhance stability and prevent media sliding.

**Construction Criteria:**

The following items should be addressed during construction of projects with green roofs:

- Waterproofing Installation:** Measures shall be taken to prevent membrane damage during green roof installation. Any flaws, irregularities, or conditions that may cause leaks or roof damage shall be identified and repaired. The waterproofing membrane should be visually inspected and tested for water tightness prior to installation of the planting mix.
- Slope Stabilization Measures:** Where required, slope stabilization measures should be placed prior to green roof installation. In some situations, slope stabilization may be integrated into the roof structure.
- Green Roof Installation:** Green roof systems should be installed according to the manufacturer's instructions. Generally, root-barrier layers, walkways, and irrigation systems should be installed first.

**Inspection:**

The following certifications shall be required during construction:

- Prior to placement of the waterproofing, drainage, and treatment materials, certification that the constructed roof meets the load bearing capacity specified on the approved plans.
- After its installation and prior to placement of the planting media and stock, certification regarding the water tightness of the waterproofing membrane.
- Regular inspections shall be made during the following stages of construction:
  - During placement of the waterproofing membrane.
  - During placement of the drainage system.
  - During placement of the planting media.
  - Upon installation of the plant material.
  - Before issuing use and occupancy approvals (new construction only).
  - During the second growing season to ensure adequate vegetation survival.

**Maintenance Criteria Schedule Green Roof**

The green roof system shall be operated and maintained in accordance with the recommendations of the green roof system distributor, and the information provided herein.

- Weeding** - At a minimum, remove unwanted plant material on an annual basis.
- Replacement of Plant Material** - Replace failed plant material when the affected area exceeds five percent (5%) of the planted roof area.
- Irrigation** - At a minimum, newly installed plant material shall be irrigated for the first growing season. Saturate the green roof at least once a week. After vegetation is established and following the first growing season, irrigation should be provided periodically during dry periods.
- Fertilization** - Slow release fertilizer shall be applied in the spring on an annual basis.
- Drainage Inspections** - Inspect downspouts and drainage channels and courses for clogs and other problems after each significant rainfall.
- Inspection for Leaks** - Inspect the green roof area for leaks after each significant rainfall.

**B.4.A Green Roof Specifications**

**1. Material Specifications**

Because there is significant variation in green roof assemblies and methods, providing comprehensive specifications is not feasible. Material specifications for green roofs will vary based on each roofing system and specific information should be obtained from the appropriate manufacturer or retailer. The following information and specifications, which include acceptable materials for generic applications, is not exclusive or limiting.

**2. Planting Media**

Planting media should be a soil-like mixture with an organic content of 15% or less. The grain size distribution is necessary for to attain proper moisture content, permeability, nutrient management and non-capillary porosity, and soil structure. Grain size guidelines vary for single and dual media green roof assemblies.

The planting media shall be tested and meet the following criteria:

- Non-Capillary Pore Space at Field Capacity, 0.333 bar (TMECC 03.01, A)  $\geq 15\%$  (volume)
- Moisture Content at Field Capacity (TMECC 03.01, A)  $\geq 12\%$  (volume)
- Maximum Media Water Retention (FLL)  $\geq 30\%$  (volume)
- Alkalinity, CaCO<sub>3</sub> equivalents (MSA)  $\leq 2.5\%$
- Total Organic Matter by Wet Combustion (MSA)  $\leq 3-15\%$  (dry wt.)
- pH (RCSTP) 6.5 - 8.0
- Soluble Salts (DTPA saturated media extraction - RCSTP)  $\leq 6$  mmhos/cm
- Cation Exchange Capacity (MSA)  $\geq 10$  meq/100 g
- Saturated Hydraulic Conductivity (FLL):
  - Single Media Assemblies  $\geq 0.05$  in/min
  - Dual Media Assemblies  $\geq 0.30$  in/min
- Mineral Fraction Grain Size Distribution (ASTM D422):

	Single Media	Dual Media
Clay Fraction (2 micron)	0	0
% Passing #200 Sieve	$\leq 5\%$	5 - 15%
% Passing #60 Sieve	$\leq 10\%$	10 - 25%
% Passing #18 Sieve	5 - 50%	20 - 50%
% Passing 1/4 inch Sieve	20 - 70%	55 - 90%
% Passing 3/8 inch Sieve	75 - 100%	90 - 100%

**3. Green Roof Layers**

Root Barriers - should be thermoplastic membranes with minimum thickness of 30 mils. Membranes certified for use as root barriers are recommended. However, only FLL currently offers a recognized certification test. Many FLL-certified materials are locally available.

Granular Drainage Media - should be a non-carbonate mineral aggregate meeting the following specifications:

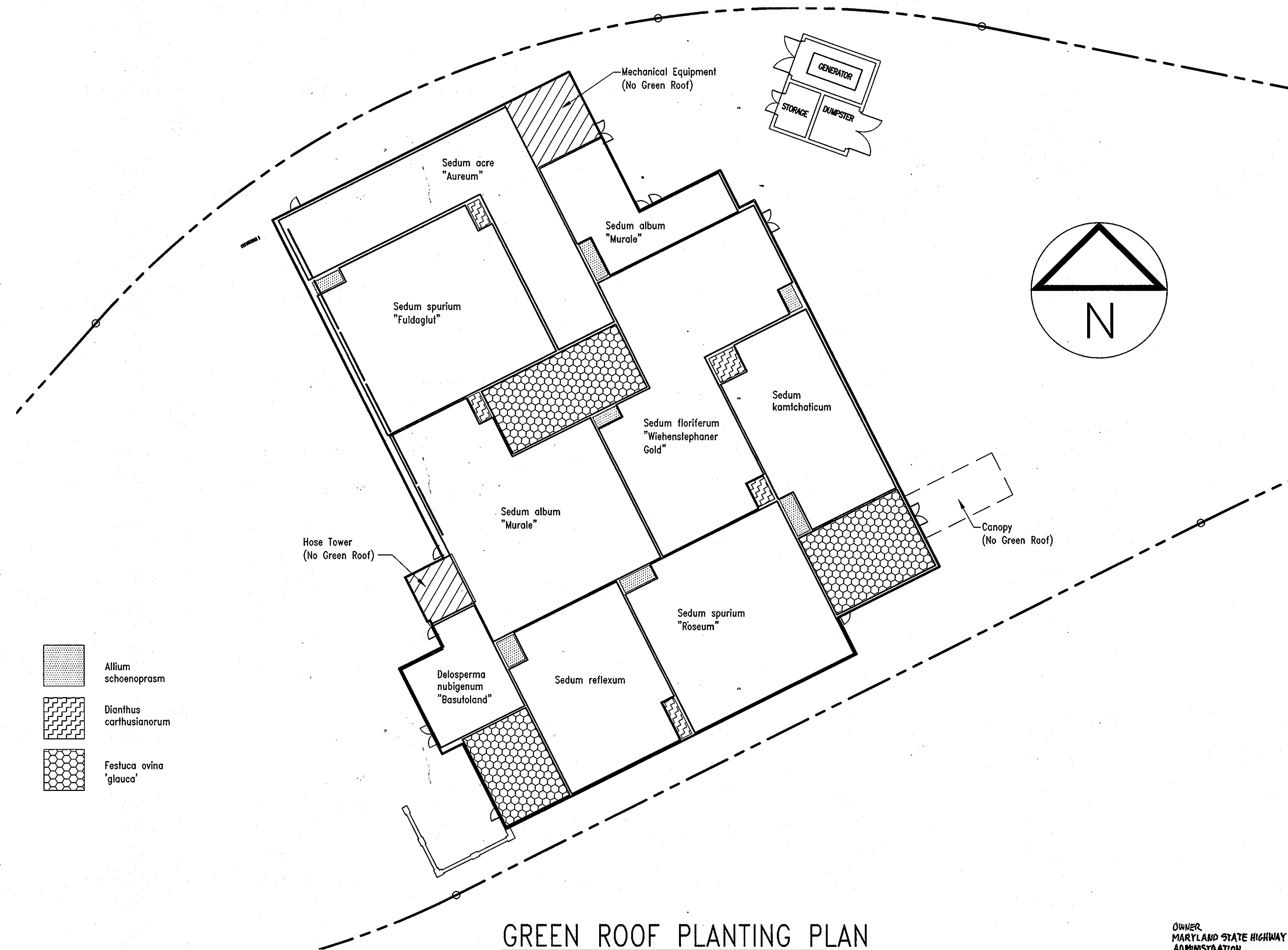
- Saturated Hydraulic Conductivity  $\geq 25$  inches/minute
- Total Organic Matter (by wet combustion)  $\leq 1\%$
- Abrasion Resistance (ASTM C131-96)  $\leq 25\%$  loss
- Soundness (ASTM C88 or T103 or T103-91)  $\leq 5\%$  loss
- Porosity (ASTM C29)  $\geq 25\%$
- Alkalinity, CaCO<sub>3</sub> equivalents (MSA)  $\leq 1\%$
- Grain Size Distribution (ASTM C136)
  - Percent Passing #18 Sieve  $\leq 1\%$
  - Percent Passing #18 Sieve  $\leq 30\%$
  - Percent Passing 3/8 inch Sieve  $\leq 80\%$

Separation Fabric - should be a lightweight, non-woven geotextile that is easily penetrated by roots while providing a durable separation between drainage and growth media layers. Separation fabrics should meet the following:

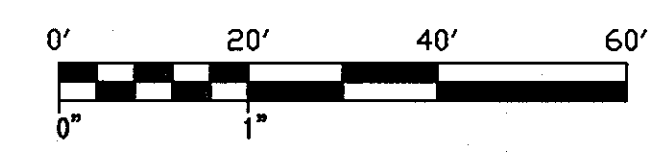
- Unit Weight (ASTM D3776)  $\leq 4.25$  ounces per square yard
- Grab Tensile Strength (ASTM D4632)  $\leq 90$  lbs.
- Mullen Burst Strength (ASTM D4632)  $\geq 155$  lbs/inch
- Permittivity (ASTM D4491)  $\geq 2$  sec-1

QUAN	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	COND.
280		Allium schoenoprasum	Chives	quart	12" oc.
1470		Delosperma nubigenum 'Basutoland'	Delosperma	plug	.....
224		Dianthus carthusianorum	Garden Pink	pint	12" oc.
2055		Festuca ovina 'Glaucia'	Dwarf Blue Fescue	pint	12" oc.
4630		Sedum acre 'Aureum'	-	plug	.....
7060		Sedum album 'Murale'	-	plug	.....
6110		Sedum floriferum 'Wiehensephaner Gold'	-	plug	.....
3130		Sedum kamtschaticum	-	plug	.....
3450		Sedum reflexum	-	plug	.....
5050		Sedum spurium 'Fudaglut'	-	plug	.....
4720		Sedum spurium 'Roseum'	-	plug	.....

Plugs shall be a minimum 2 inches deep x 1 1/2 inches square. Planting configuration and quantities may be adjusted to accommodate pre-planted tray modules, as necessary. Sedum may be blended rather than planted as individual plant areas.



**GREEN ROOF PLANTING PLAN**  
SCALE: 1"=20'  
0.47 AC GREEN ROOF, 8 INCHES THICK



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 B. Wilson for Peter B. Silenow, 1/7/2011  
 County Health Officer  
 Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 [Signature] 12/17/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 1/12/11  
 DIRECTOR DATE

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave., Suite 303  
 Towson, Maryland, 21284  
 P. 410.321.7600  
 F. 410.321.7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland  
**Green Roof**  
 Details and Specifications

PROJECT: C-1	ISSUE NO: 0543/243 10/22/188	DATE: 21380
DATE: 18,12	ZONE: M-2	MAP: 47
ELECTRICTY: 67H	GENUS TRACT: 606902	

OWNER AND DEVELOPER  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 707 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-543-0800

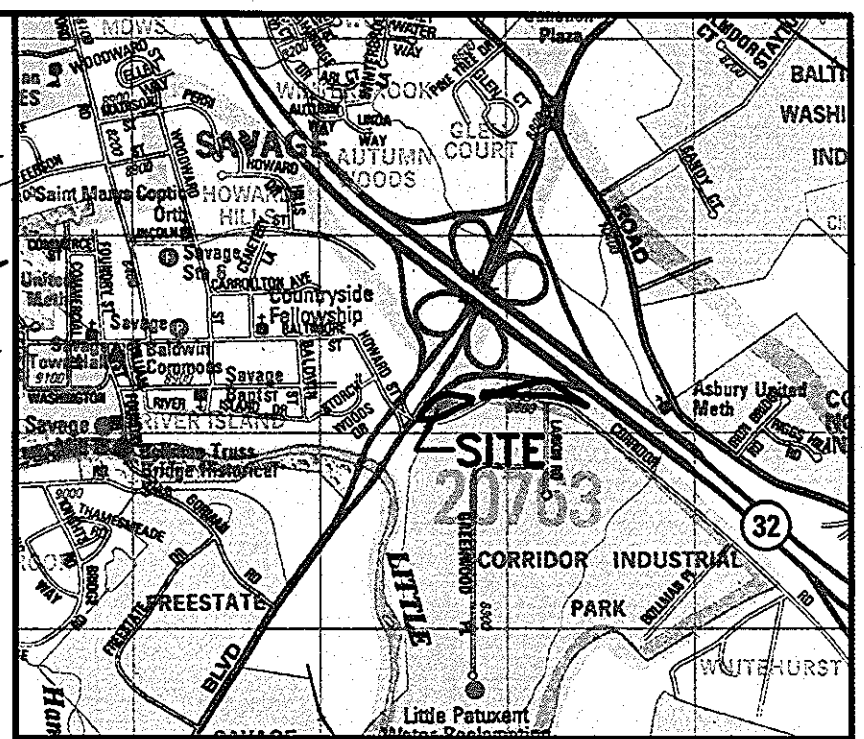
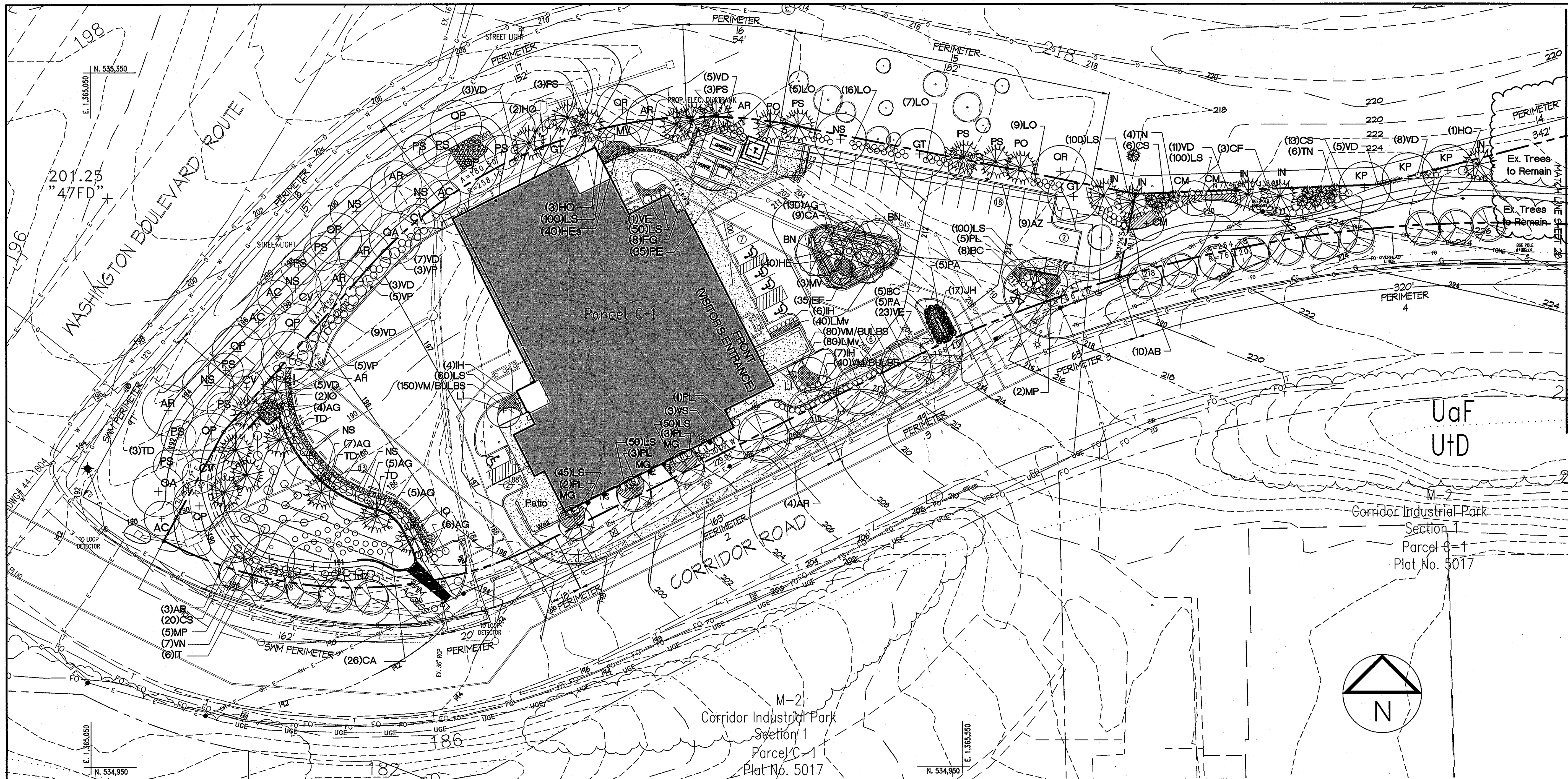
OWNER: DAVID LOUDERMILK  
 410-318-6184

ENGINEER  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21202  
 CONTACT: JEFFREY SCHNAB  
 410-321-7600

Date: 10/22/2010  
 Proj. #: 08016  
 Scale: n/g

**26 of 33**

SDP 10-084



Vicinity Map - Scale: 1" = 2000'  
 Map 5053 Grid K-9 and Map 5054 Grid A-9

**LEGEND**

- Prop. Street Tree
- Prop. Internal Parking Lot Tree
- Prop. Shade Tree
- Prop. Flowering Tree
- Prop. Evergreen
- Prop. Hedge/shrubs
- Ex. Treeline
- Ex. Specimen Tree
- Ex. Shade Tree (non-specimen)

0' 30' 60' 90'

Locations of existing specimen trees shown are approximate.

Requests will be submitted for relief for the following conditions:

- A Perimeter Landscape Edge as little as 0' and generally between 5 and 10' wide, in lieu of the specified 20' wide Landscape Perimeter
- Stormwater Management within the Landscape Perimeter
- Sidewalks, interior drives, and utility lines running parallel with the Landscape Perimeter and constraining more than 25% of the Landscape Perimeter
- Relocation of Perimeter Landscaping to various areas throughout the site

**SCHEDULE A - PERIMETER LANDSCAPING**

Perimeter	1*	2*	3*	4*	5*	6*	7*	8*	9*	10*	11*	12*	13*	14*	15*	16*	17*	18*	TOTAL
Linear ft Edge (ft/w)	38	163	164	320	388	18	31	190	14	220	122	213	158	342	182	54	152	157	
Credit (Ex Veg) Linear Feet	N	N	N	N	N	N	N	Y	Y	N	Y	N	Y	N	N	N	N	N	
Credit (wall, fence, berm) - Linear ft	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	
Plants Required																			
Shade	1	3	4	5	10	0	1	0	0	0	3	0	4	6	5	1	3	4	59
Ornamental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Evergreen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Shrubs	7	-	41	-	37	5	-	-	-	-	31	0	40	-	46	-	-	39	246
Plants Provided																			
Shade	-	-	-	1	1	1	1	-	-	2	-	2	5	4	1	3	1	1	22
Ornamental	-	-	-	3	10	-	-	-	-	-	-	-	-	-	-	-	-	-	16
Evergreen	-	-	-	7	10	-	1	-	-	5	-	4	15	4	3	4	1	1	37
Shrubs	4	18	35	7	97	5	3	-	-	14	-	40	3	37	5	41	1	1	314

**FOOTNOTES:**

Perimeter 1 Substitution of 12 LF wall for 3 shrubs; Alternative Compliance for 1 shade tree requested due to reduced building, parking, and sidewalk setbacks and utility conflicts, and need for adequate sight triangles, and for 3 shrubs

Perimeter 2 10:1 substitution of 10 shrubs for one shade tree; Alternative Compliance requested for 2 shade and 4 evergreen due to reduced building setback and utility conflicts

Perimeter 3 2:1 substitution of 2 ornamental trees for one Shade tree; Alternative Compliance requested for 3 shade trees due to reduced setbacks and utility conflicts, and for 6 shrubs due to signage and sight lines to sign

Perimeter 4 Alternative Compliance for 4 shade trees requested due to limitations from existing utilities and narrow property width

Perimeter 5 2:1 substitution of 10 Ornamental for 5 Shade Trees, 10:1 substitution of 40 shrubs for 4 Shade tree

Perimeter 11 2:1 substitution of 2 Evergreens for 1 Shade, and Alternative Compliance for 2 Evergreens in place of 17 shrubs

Perimeter 13 2:1 substitution of 4 Evergreen for 2 Shade

Perimeter 14 2:1 substitution of 2 ornamental for 1 shade tree

Perimeter 15 Substitution of 2 Evergreens for 1 Shade; Alternative Compliance requested for substitution of 1 Evergreen for 10 shrubs

Perimeter 16 Alternative Compliance requested for 2 evergreens due to reduced dumpster area setback

Perimeter 18 Alternative Compliance requested for 3 shade trees due to reduced parking setback and adjacent off-site plantings

**DEVELOPER'S/BUILDER'S CERTIFICATE**

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Subdivision and Land Development Regulations and the Landscape Manual. I/we further certify that upon completion a Letter of Landscaping Installation, accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name: David Loudermilk Date: 12/10

**APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS**

*B. Wilson* 1/7/2011  
 County Health Officer  
 Howard County Health Department

**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING**

*Kevin ...* 12/10/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Kevin ...* 1/12/11  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas ...* 1/12/11  
 DIRECTOR

**SCHEDULE B - PARKING LOT INTERNAL LANDSCAPING**

REQUIRED	PROVIDED
Number of Parking Spaces	128
Number of Trees Required @ 1/20	6
Number of Trees Provided	5
Shade Trees	1 (2 Cm trees)
Other (2:1)	4
Total	5
Add Planting Provided: 1 Ornamental, 9 Shrubs	

**SCHEDULE D - STORMWATER MANAGEMENT AREA LANDSCAPING**

REQUIRED	PROVIDED
Linear Feet of Perimeter	400
Number of Trees Required	
Shade Trees	8
Evergreen Trees	10
Plants Provided	
Shade Trees	6
Evergreen Trees	9
Shrubs (10:1)	87 shrubs
10:1 Substitution of 20 shrubs for 2 Shade Trees, and 10:1 Substitution of 10 shrubs for 1 Evergreen	

**TOTAL PLANTING (EXCLUDING STREET TREES)**

PROVIDED

33 Shade Trees @ \$300 = \$9,900  
 45 Evergreen Trees @ \$150 = \$6,750  
 20 Ornamental Trees @ \$150 = \$3,000  
 401 Shrubs @ \$30 = \$12,030  
 Total Bond Amount = \$31,680

**STREET TREES**

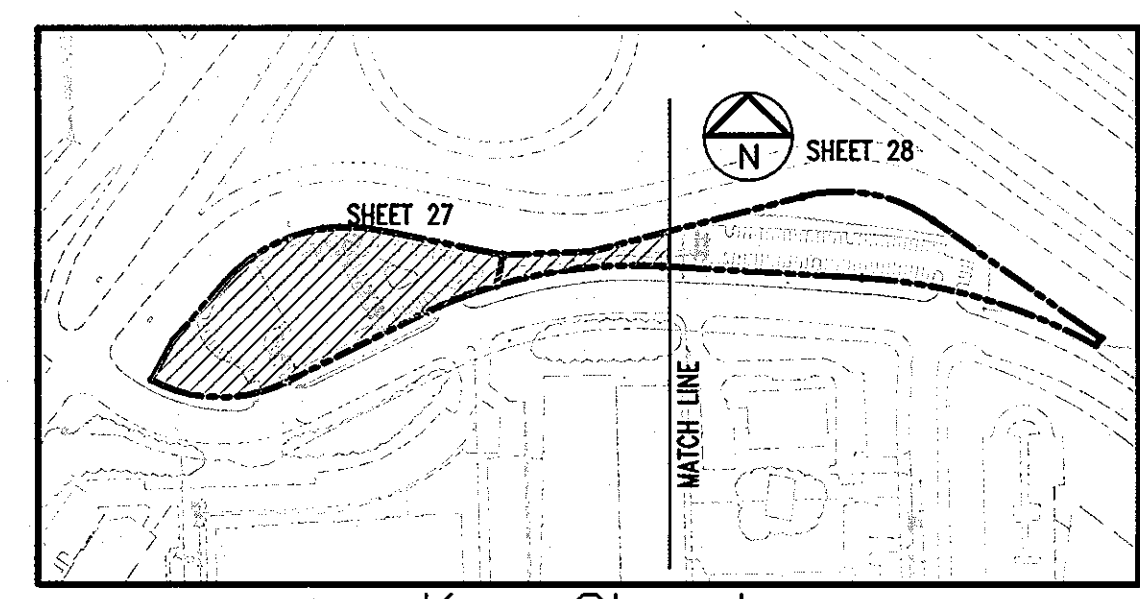
Required:

Corridor Road 1474 LF @ 30' for small trees or 40' for (g)med trees  
 Route 1 Ramp NONE

Credit for Existing Trees to Remain (Onsite and within RW):  
 Corridor Road 271 LF

Total Required  
 844 LF Large/Med Trees - 180 LF Trees to Remain @ 1/40 = 17 Trees  
 630 LF Small Trees - 90 LF Trees to Remain @ 1/30 = 18 Trees

Provided:  
 Medium or Large Trees 16  
 Small Trees 18  
 Alternative compliance requested for one large tree.



Key Sheet  
 Scale: 1" = 300'

OWNER AND DEVELOPER  
 HOWARD COUNTY, MD  
 4250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-318-6194

CLIENT  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 101 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-548-0300

ENGINEER  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21286  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave. Suite 303 P. 410.321.7600  
 Towson, Maryland, 21286 F. 410.321.7601

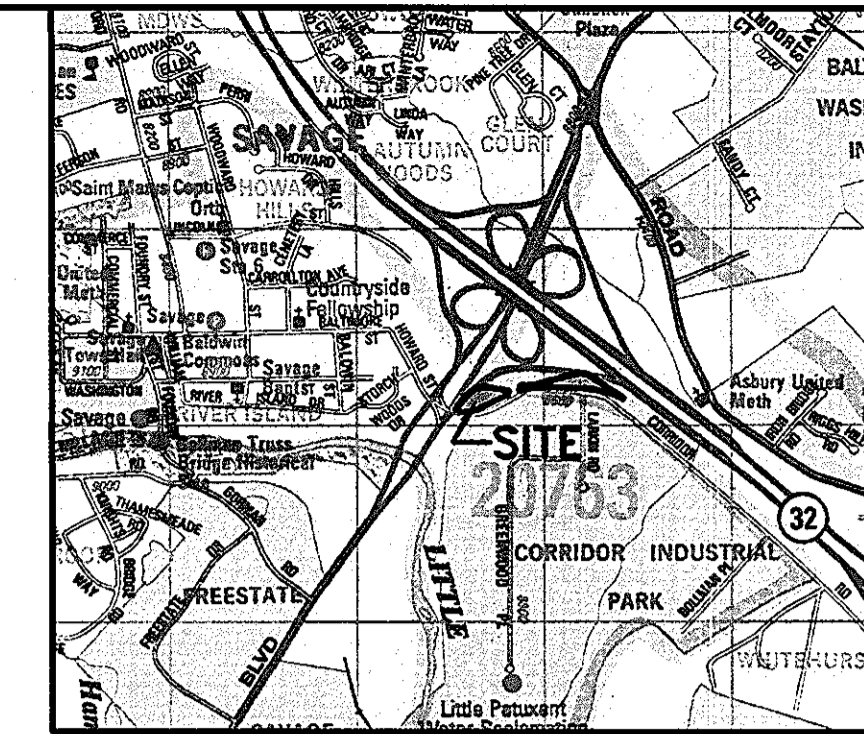
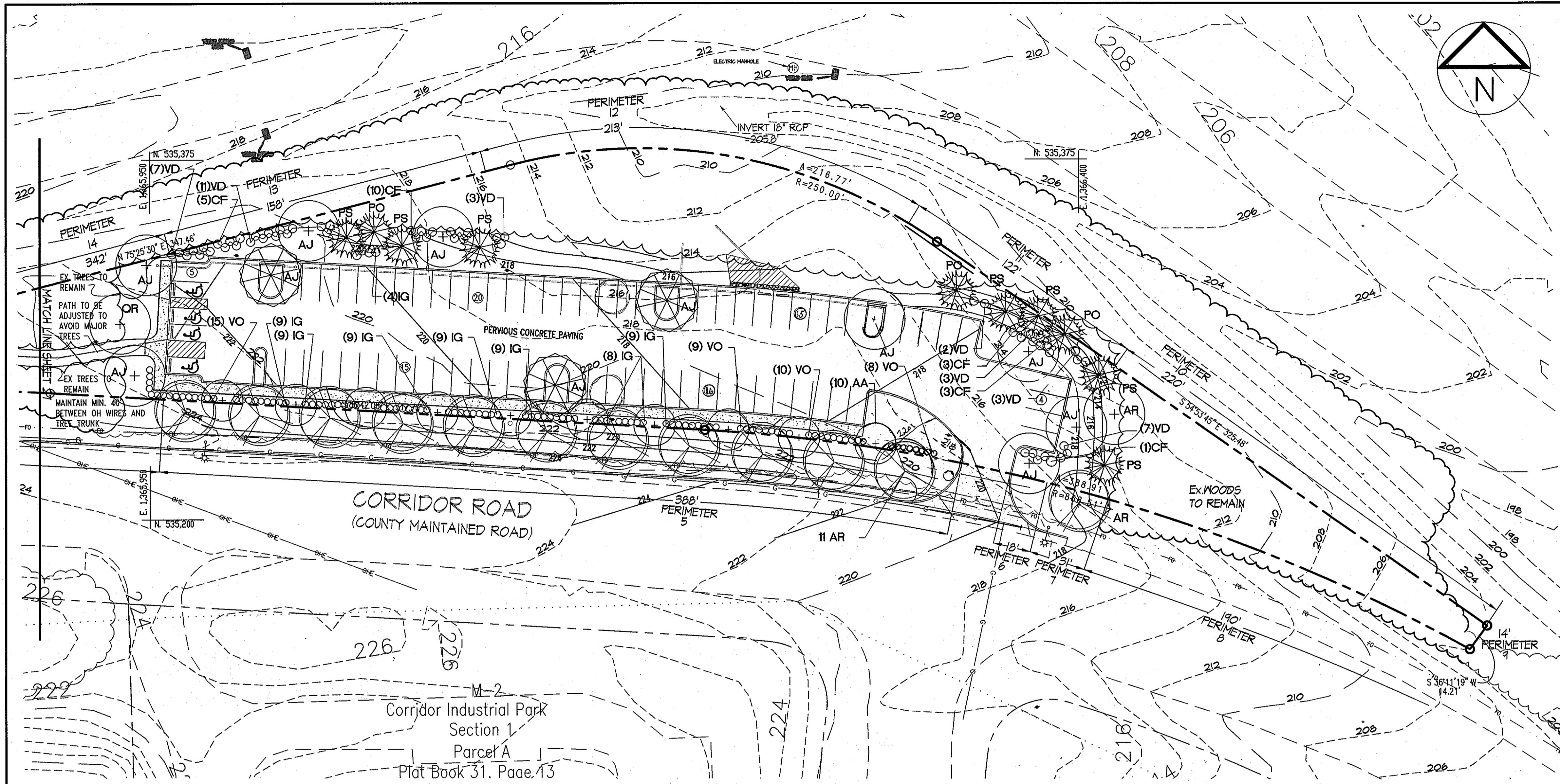
Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland

**Landscape Plan**

LOT/Parcel	Zone	Area	Perimeter	Area
C-1	M-2	5454/243	10502/188	213 80
18,12	M-2	14206	674	606902

Date: 10/22/2010  
 Proj. #: 08016  
 Scale: 1" = 30'

**27 of 33**



Vicinity Map - Scale: 1" = 2000'  
Map 5053 Grid K-9 and Map 5054 Grid A-9

**LEGEND**

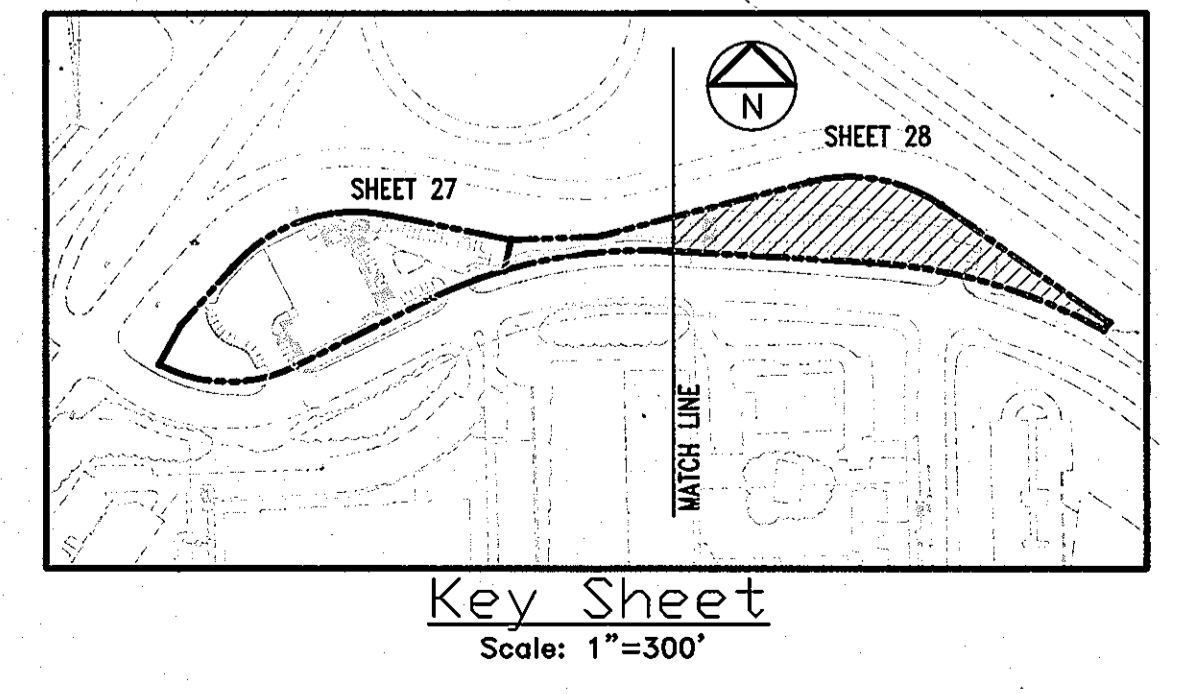
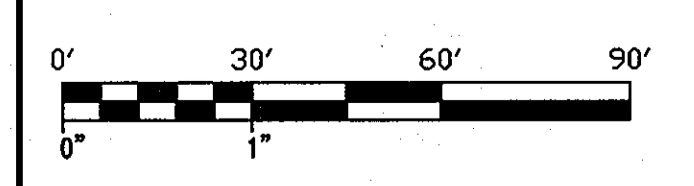
- Prop. Street Tree
- Prop. Internal Parking Lot Tree
- Prop. Shade Tree
- Prop. Flowering Tree
- Prop. Evergreen
- Prop. Hedge/shrubs
- Ex. Treeline
- Ex. Speciman Tree
- Ex. Shade Tree (non-speciman)

9/29/11	Revised Parking Lot Layout & Adj. Landscaping
DATE	REVISION
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS	
 County Health Officer Howard County Health Department	
1/7/2011	DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING	
 CHIEF, DEVELOPMENT ENGINEERING DIVISION	
12/17/10	DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT	
1/12/11	DATE
 DIRECTOR	
1/12/11	DATE

**DEVELOPER'S/BUILDER'S CERTIFICATE**

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Subdivision and Land Development Regulations and the Landscape Manual. I/we further certify that upon completion a Letter of Landscape Installation, accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name: David Loudermilk Date: 10/29/10



**OWNER**  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 707 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-545-0306

**OWNER AND DEVELOPER**  
 HOWARD COUNTY, MD  
 4250 BENDIX ROAD  
 COLUMBIA, MD 21045  
 CONTACT: DAVID LOUDERMILK  
 410-318-6194

**ENGINEER**  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21286  
 CONTACT: JEFFREY SCHWAB  
 410-521-7600

**Tesseract**  
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 Towson, Maryland, 21284  
 P. 410.321.7600  
 F. 410.321.7601

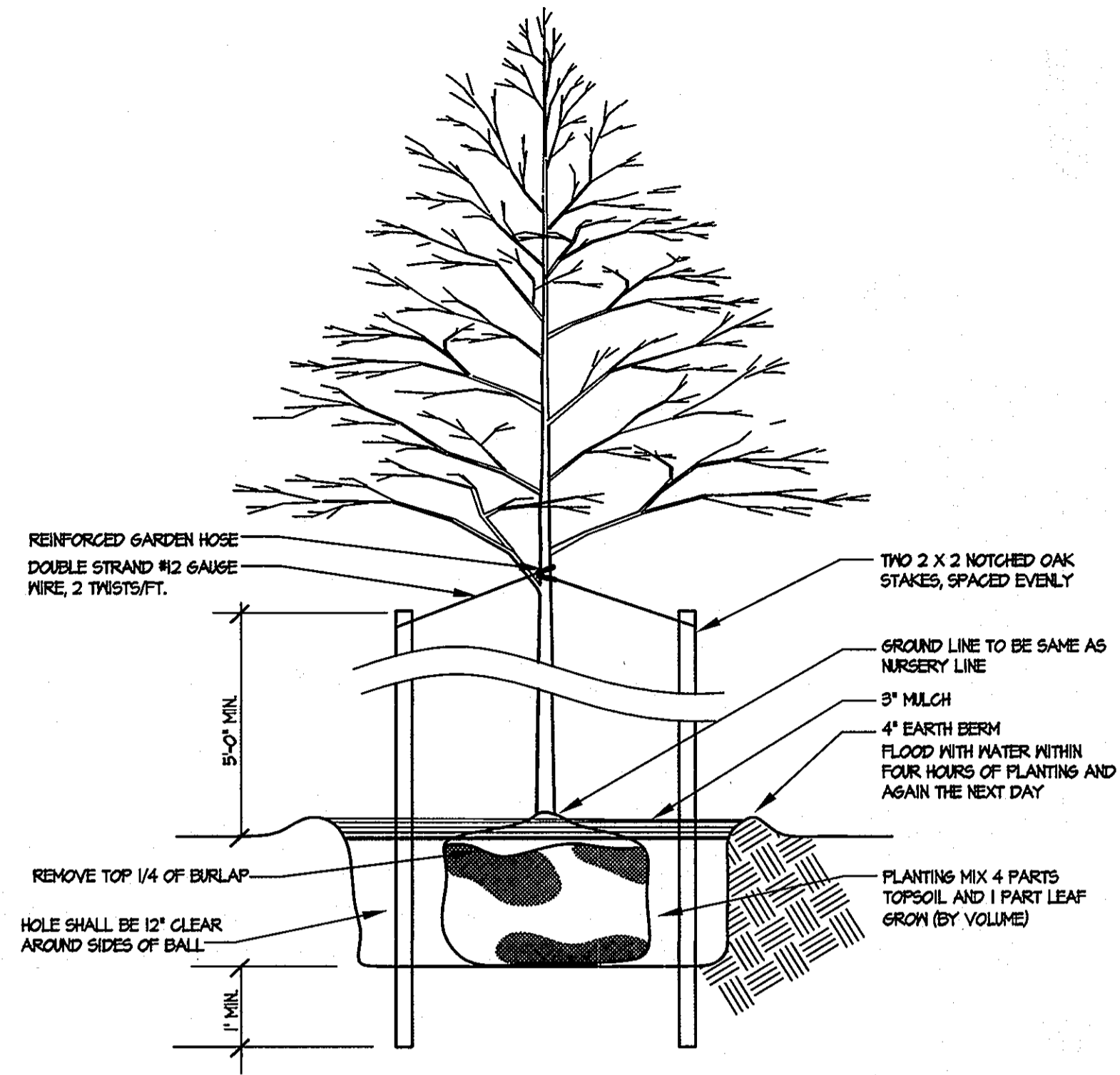
Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland

**Landscape Plan**

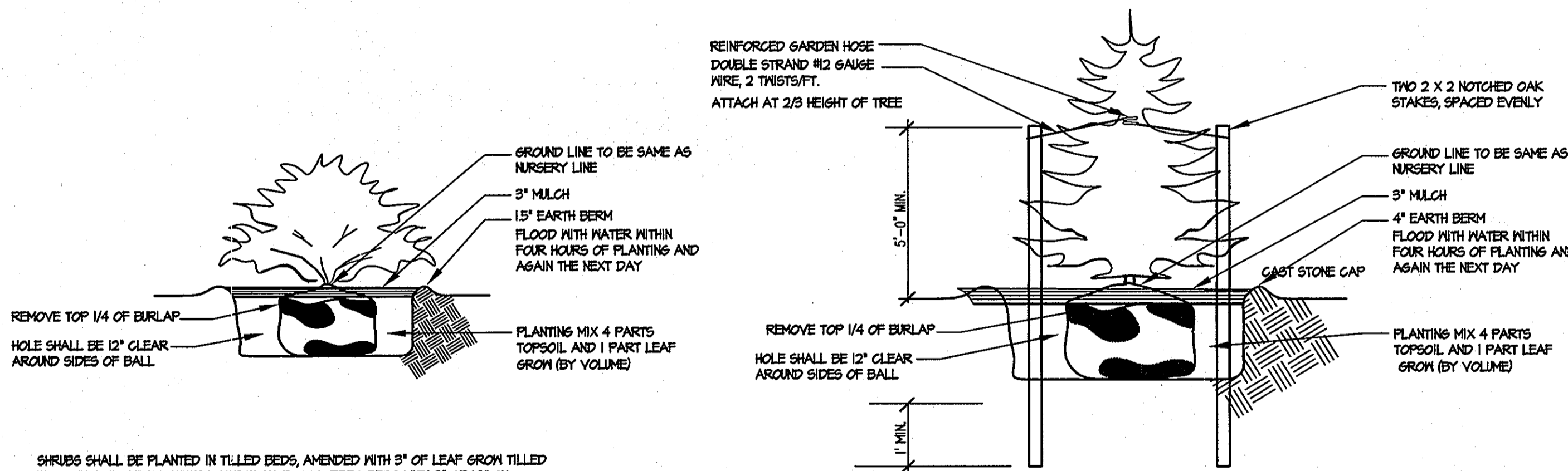
OWNER: C-1	DATE: 10/22/2010	PLANS: 21380
DATE: 10/22/2010	SCALE: 1"=300'	PROJECT: 08016

Date: 10/22/2010  
 Proj. #: 08016  
 Scale: 1"=300'

**28 of 33**



DECIDUOUS TREE PLANTING DETAIL  
WATER AND MAINTAIN PLANTS IN ACCORDANCE WITH THE SPECIFICATIONS. NOT TO SCALE



SHRUB PLANTING DETAIL

NOT TO SCALE

EVERGREEN TREE PLANTING DETAIL

WATER AND MAINTAIN PLANTS IN ACCORDANCE WITH THE SPECIFICATIONS. NOT TO SCALE

PLANT LIST			
PERIMETER PLANTING			
SYM	QUANT.	NAME	SIZE
<b>SHADE TREES</b>			
AJ	8	ACER RUBRUM 'JAMESTOWN' Jamestown Seedless Red Maple	2 1/2" - 3" CAL., B & B Full Head
AR	4	ACER RUBRUM 'OCTOBER GLORY' October Glory Red Maple	2 1/2" - 3" CAL., B&B Full Head
GT	3	GLEDTISIA TRIACANTHOS INERMIS 'SHADEMASTER' Thornless Honeylocust	2 1/2" - 3" CAL., B&B
KP	3	KOELREUTERIA PANICULATA Golden RainTree	2 1/2" - 3" CAL., B&B
NS	1	NYSSA SYLVATICA Black Gum	2 1/2-3" CAL., B&B
QR	3	QUERCUS RUBRA Red Oak	2 1/2-3" CAL., B&B
<b>ORNAMENTAL TREES</b>			
AA	10	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' Serviceberry	8'-10' HT., B&B, Multi Stem
CM	3	CORNUS MAS 'GOLDEN GLORY' Corneliancherry Dogwood	8' - 10' HT., B & B, Multi Stem
LI	1	LAGERSTROMIA INDICA 'NATCHEZ' White Cape Myrtle	8'-10' HT., B&B, Multi Stem, Full
MP	2	MALUS 'PRARIEFIRE' Prariefire red Crabapple	8'-10' HT., B&B, Full
<b>EVERGREEN TREES</b>			
IN	5	ILEX 'NELLIE STEVENS' Nellie Stevens Holly	8' HT., B&B Full
IO	1	ILEX OPACA 'SATYR HILL' Satyr Hill American Holly	8' - 10' HT., B&B Full
PO	5	PICEA OMORIKA Serbian Spruce	8' HT., B&B
PS	16	PINUS STROBUS White Pine	8' HT., B&B
TN	10	THUJA OCCIDENTALIS 'NIGRA' Nigra Arborvitae	8' HT., B&B Full, 7 o.c.
<b>SHRUBS</b>			
AG	8	ABELIA GRANDIFLORA Glossy Abelia	30-36" ht., B&B/Cont., 4' oc
BC	13	BERBERIS 'CRIMSON PYGMY' Crimsen Pygmy Barberry	24" ht., 30" o.c.
CF	25	CALYCANTHUS FLORIDUS Sweetshrub	36" ht., 4' o.c.
HQ	2	HYDRANGEA QUERCIFOLIA 'SNOW QUEEN' Oak Leaf Hydrangeas	36" ht., 5' o.c.
IG	66	ILEX GLABRA COMPACTA Compact Inkberry	30" ht., 3' o.c.
LO	37	LIGUSTRUM OVALIFOLIUM California Privet	30" ht., 3' o.c.
PL	14	PRUNUS LAUROCERASUS 'OTTO LUYKEN' Otto Luyken Cherry Laurel	30-36" ht., 3' o.c.
VD	68	VIBURNUM DENTATUM Arrowwood Viburnum	30" ht., 4' o.c.
VE	23	VIBURNUM 'ESKIMO' Eskimo Viburnum	30" ht., 4' oc
VS	3	VIBURNUM PLICATUM TOMENTOSUM 'SHASTA' Shasta Doublefile Viburnum	36-42" ht., 5' o.c.
VO	42	VIBURNUM OPULUS 'COMPACTUM' Dwarf European Cranberrybush Viburnum	30" ht., 3' o.c.
VP	13	VIBURNUM PRAGENSE Prague Viburnum	36" ht., 5' o.c.
<b>GRASSES AND GROUNDCOVERS</b>			
JH	17	JUNIPERUS HORIZONTALIS PRINCE OF WALES Green Creeping Juniper	1 gal., 3' oc
PA	10	PENNISETUM ALOPECUROIDES HAMELIN Dwarf Fountain Grass	1 gal., 2' oc

PLANT LIST			
BIORETENTION FACILITY PLANT LIST			
AG	19	ABELIA GRANDIFLORA Glossy Abelia	30-36" ht., B&B/Cont., 4' oc
AR	3	ACER RUBRUM 'OCTOBER GLORY' October Glory Red Maple	2 1/2" - 3" CAL., B&B Full Head
CA	35	CLETHRA ALNIFOLIA 'HUMMINGBIRD' Hummingbird Summersweet	18" - 24" SPD., B&B/Cont., 3.5' o.c.
CS	20	CORNUS SERICEA Red Osier Dogwood	36" ht., B&B/Cont., 4' o.c.
EF	35	Eupatorium Scitulosum Joe Pye Weed	1 gal., 18" o.c.
IO	2	ILEX OPACA 'SATYR HILL' Satyr Hill American Holly	8' - 10' HT., B&B Full
IT	6	ITEA VIRGINICA 'HENRY'S GARNET' Sweetspire	30" - 36" HT., B&B/Cont., 6' o.c.
NS	2	NYSSA SYLVATICA Black Gum	2 1/2-3" CAL., B&B
OP	1	QUERCUS PALUSTRIS Pin Oak	2 1/2 - 3" CAL., B&B
TD	6	TAXODIUM DISTICHUM Bald Cypress	6' HT., B&B
WN	7	VIBURNUM NUDUM 'WINTERHUR' Winterhur Withered	5 gal., 10' o.c.
<b>STREET TREES*</b>			
AB	10	ACER BUERGERIANUM 'STREETWISE' Trident Maple	2 1/2" CAL., B & B, Single leader
AR	16	ACER RUBRUM 'OCTOBER GLORY' October Glory Red Maple	2 1/2" - 3" CAL., B&B Full Head
MG	3	MAGNOLIA 'GALAXY' Galaxy upright Magnolia	8'-10' HT., B&B, Full
MP	5	MALUS 'PRARIEFIRE' Prariefire red Crabapple	8'-10' HT., B&B, Full
<b>PARKING LOT TREES</b>			
AJ	3	ACER RUBRUM 'JAMESTOWN' Jamestown Seedless Red Maple	2 1/2" - 3" CAL., B & B Full Head
LI	1	LAGERSTROMIA INDICA 'TOWNHOUSE' White Cape Myrtle	8'-10' HT., B&B, Multi Stem, Full
MV	3	MAGNOLIA VIRGINIANA 'MOONGLOW' Sweetbay Magnolia	8'-10' HT., B&B, Multi-stem
BN	2	BETULA NIGRA River Birch	2 1/2" - 3" CAL., B & B, Multi-stem

- Notes:
- The Contractor shall be responsible for maintenance and care of required landscaping and landscape beds until Final Acceptance and completion of the one-year warranty period. Maintenance shall include weeding, refreshing mulch, watering, pest and disease control, and all other efforts related to maintaining healthy plant materials, and clean plant beds. Following Final Acceptance and completion of the warranty period, the owner, tenant and/or their agents shall be responsible for maintenance of the required landscaping, including both plant materials, berms, and screen wall. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All other required landscaping shall be permanently maintained in good condition and when necessary, repaired or replaced.
  - At the time of installation, all shrubs and other plantings herewith listed and approved for this site, shall be of the proper height requirements in accordance with the Howard County Landscaping Manual. In addition, no substitutions or relocation of required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviation from this approved Landscape plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to applicable plans and certificates.
  - Should any tree designated for preservation for which landscaping credit is given die prior to release of bonds, the owner will be required to replace the tree with the equivalent species or with a tree which will obtain the same height, spread and growth characteristics. The replacement tree must be a minimum of three (3) inches in caliper and installed as required in the Howard Landscape Manual.
  - The landscape plan has been prepared in accordance with Section 16.124 of the Howard County Code and the Howard County Landscape Manual.

NOTE: Due to overhead power lines along Corridor Road, understory trees are provided per BGE requirements. The number of trees is based upon a 30' spacing per the Landscape Manual.

PLANT LIST - OFFSITE STREAM PLANTING

Quan	Key	Scientific Name	Common Name	Size	Comments
<b>Major Deciduous Trees</b>					
4	AC	Amelanchier canadensis	Shadblow	8' ht. Cal.	Multi-stem
4	AR	Acer rubrum	Red Maple	2" Cal.	
4	CV	Chionanthus virginicus	Fringe tree	8' ht. Cal.	
9	PS	Prunus serotina	Black Cherry	1 1/2" Cal.	
4	NS	Nyssa sylvatica	Black Tupelo	2" Cal.	
2	QA	Quercus alba	White Oak	2" Cal.	
6	QP	Quercus rubra	Pin Oak	2" Cal.	

PLANT LIST

ADDITIONAL PLANTING					
AG	130	ACORUS GRAMINEUS 'OGON' Variegated Japanese Sweet Flag		1 gal, 2' oc	
AZ	9	AZALEA DELAWARE VALLEY WHITE		3 GAL, 3' oc	
CS	19	CORNUS STOLONIFERA Redwig Dogwood		24-30" HT., B&B/Cont., 4' oc	
CA	35	CLETHRA ALNIFOLIA 'HUMMINGBIRD' Hummingbird Summersweet		18" - 24" SPD., B&B/Cont., 3.5' o.c.	
FG	8	FOTHERGILLA GARDENII Dwarf Fothergilla		24" ht, B&B/Cont., 3' oc	
HE	40	HEMEROCALLIS 'HYPERION' Yellow, fragrant daylily		1 gal., 24" o.c.	
HES	40	HEUCHERA 'STOPLIGHT' GREEN VARIEGATED LEAF CORAL BELL		1 GAL, 1' OC	
HQ	4	HYDRANGEA QUERCIFOLIA 'SNOW QUEEN' Oak Leaf Hydrangea		30" ht., 5' oc	
IH	17	ILEX CRENATA HELLERI Heller Holly		3 gal, 30" oc	
LMW	120	LIRIOPE MUSCARI VARIEGATA Variegated leaf Monkeygrass		1 GAL, 12" OC	
LS	555	LIRIOPE SPICATA Spreading Monkeygrass		1 GAL, 12" OC	
MV	1	MAGNOLIA VIRGINIANA 'MOONGLOW' Sweetbay Magnolia		8-10' HT., B&B, Multi-stem	
PE	25	PENNISETUM ALOPECUROIDES Fountain Grass		1 gal, 2' oc	
VD	23	VIBURNUM DENTATUM Arrowwood Viburnum		30" ht., 4' o.c.	
VE	1	VIBURNUM 'ESKIMO' Periwinkle		30" HT, B&B, CONT	
VM	270	VINCA MINOR Periwinkle		2 1/4" pot, 12" oc	
	100	NARCISSUS 'POET'S DAFFODIL'		Random Spacing	

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

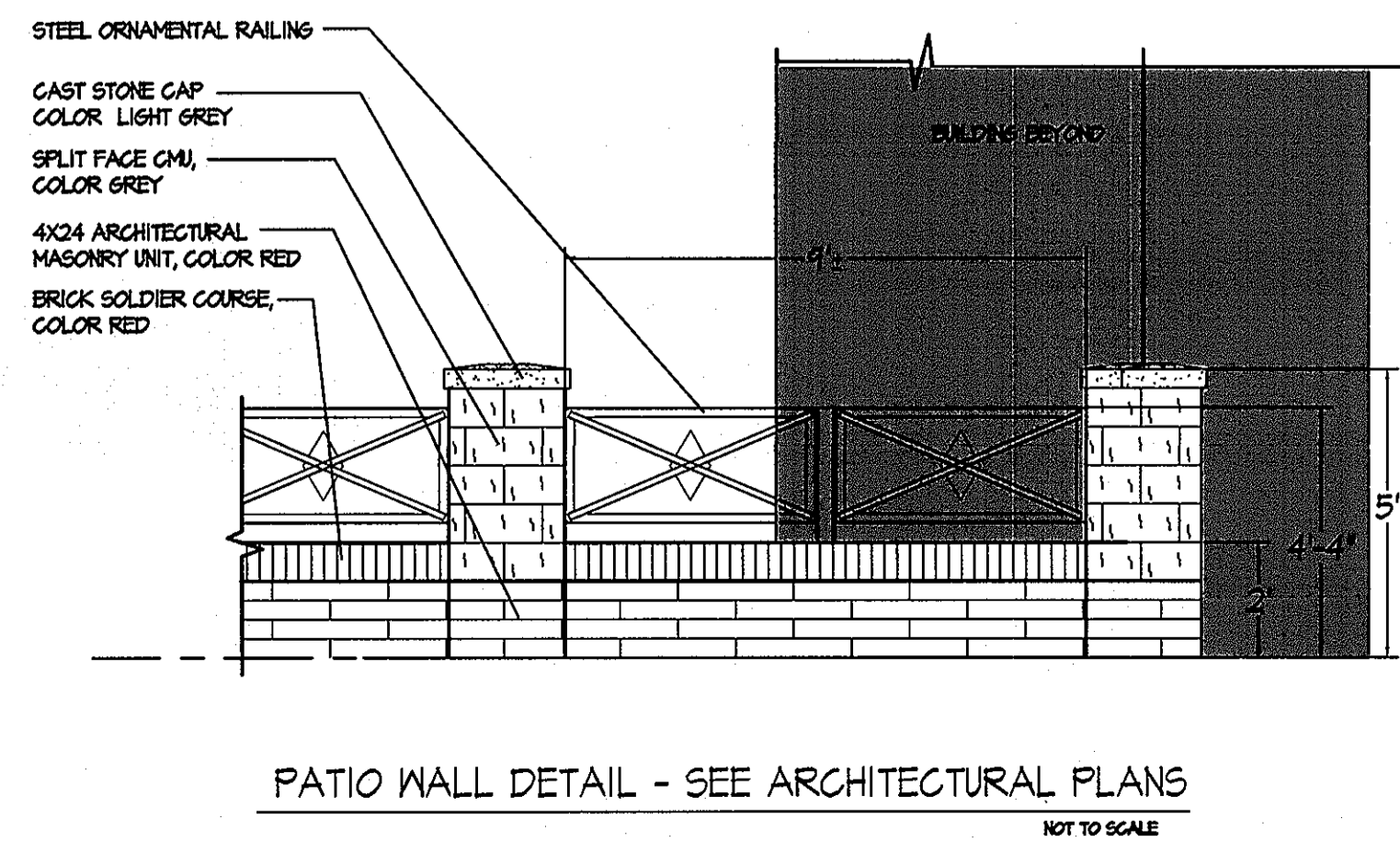
*B. Wilson for Peter B. Silen* 1/13/11  
County Health Officer  
Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Mr. [Signature]* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Keith [Signature]* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Thomas E. [Signature]* 1/16/11  
DIRECTOR



PATIO WALL DETAIL - SEE ARCHITECTURAL PLANS  
NOT TO SCALE

DEVELOPER'S/BUILDER'S CERTIFICATE

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Subdivision and Land Development Regulations and the Landscape Manual. I/we further certify that upon completion a Letter of Landscape Installation, accompanied by an executed one-year guarantee of plant materials, will be submitted to the Department of Planning and Zoning.

*David Loudermilk* 1/27/11  
Name: David Loudermilk Date: 1/27/11

Rev 4-6-10 per BGE

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284  
p. 410.321.7600  
f. 410.321.7601

Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

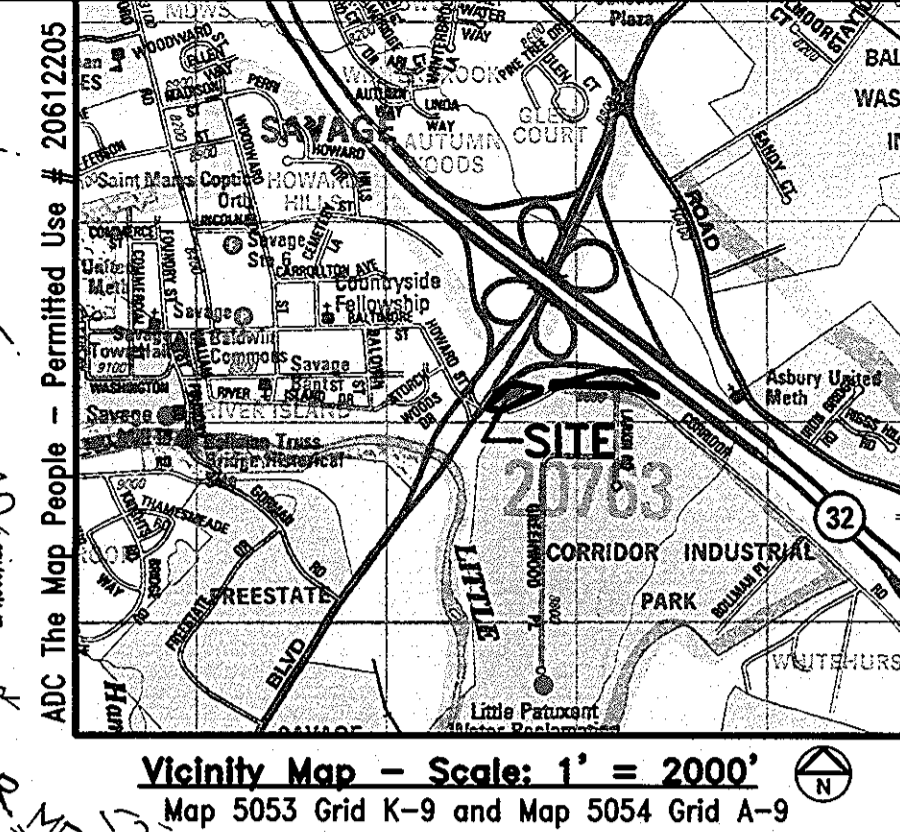
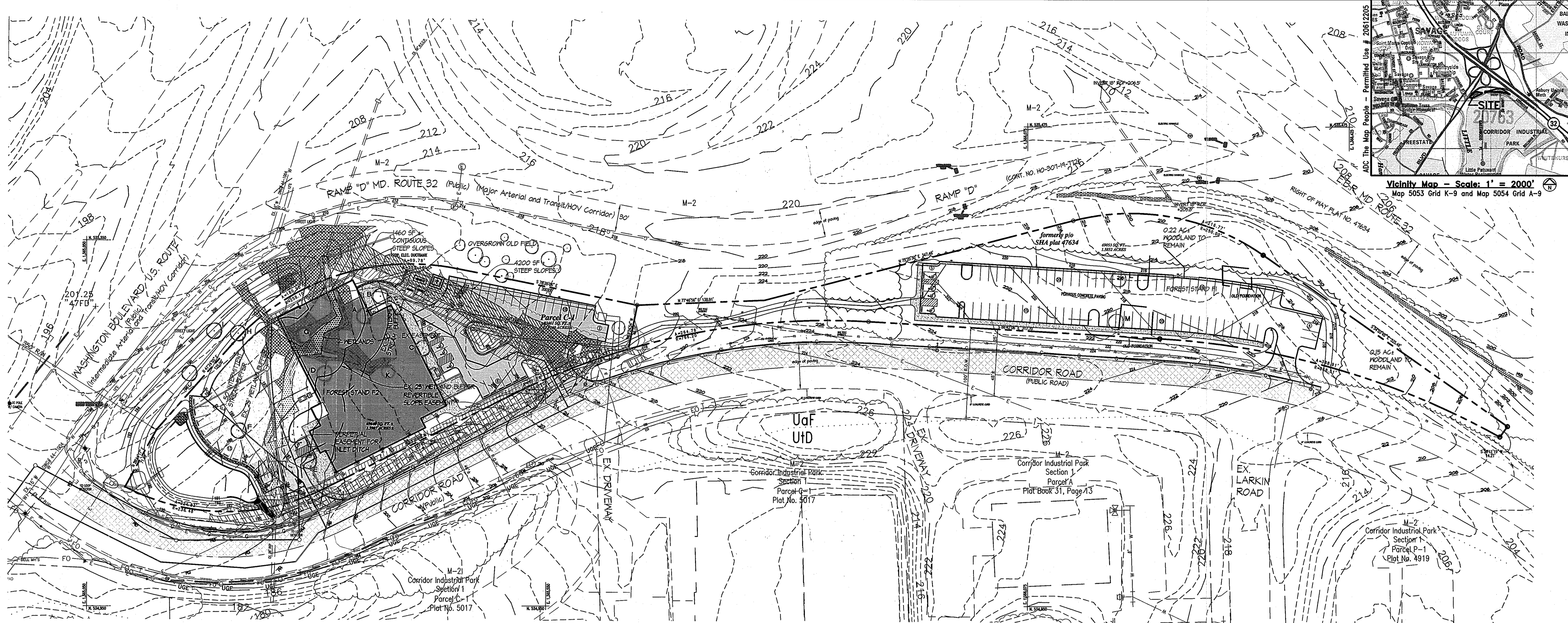
**Landscape Details**

DATE: 12/17/10  
PROJECT: 21380  
SCALE: AS SHOWN

Date: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN

29 of 33

SOP 16-084



- GENERAL NOTES**
- GROSS TRACT AREA: 3.50 ACRES
  - NET TRACT AREA: 3.50 ACRES
  - THERE IS NO PROPOSED OPEN SPACE FOR THIS DEVELOPMENT.
  - ALL EXISTING VEGETATION WILL BE REMOVED EXCEPT FOR SMALL PATCHES NORTH AND EAST OF THE POROUS PAVING PARKING LOT.
  - FOREST CONSERVATION REQUIREMENTS WILL BE MET THROUGH PAYMENT OF A "FEE IN LIEU."

**FOREST CONSERVATION WORKSHEET**

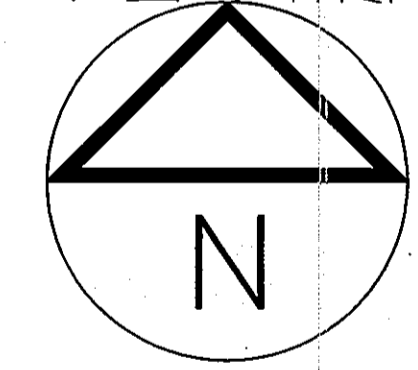
<b>I. BASIC SITE DATA</b>	
Gross Site Area	3.5 Acres
Area within 100 Year Floodplain	0.0
Area within Agricultural Use or Preservation Parcel	0.0
Net Tract Area	3.5 Acres
Land Use Category - Institutional	20%
<b>II. INFORMATION FOR CALCULATIONS</b>	
A. Net Tract Area	3.5
B. Reforestation Threshold (20% x 3.5)	0.7
C. Afforestation Minimum (15% x 3.5)	0.5
D. Existing Forest on Net Tract Area	3.3 Ac
E. Forest to be Cleared	3.3
F. Forest Areas to be Retained	0.0

<b>IV. REFORESTATION CALCULATIONS</b>	
A. Net Tract Area	3.5 Acres
B. Reforestation Threshold	0.7
C. Existing Forest on Net Tract Area	3.3
D. Forest Areas to be Cleared	3.3
E. Forest Areas to be Retained	0.0
F. Forest Areas Cleared ABOVE Reforestation Threshold	2.6
G. Forest Areas Cleared BELOW Reforestation Threshold	0.7
<b>Alternative 2</b>	
If forest areas to be retained are less than the reforestation threshold (if F is less than B), the following calculations apply:	
Reforestation for clearing above threshold	2.6 x 1/4 = 0.7
Reforestation for clearing below threshold	0.7 x 2 = 1.4
Total Reforestation Required	2.1
Since clearing occurred below the threshold, no forest retention credit can be applied.	

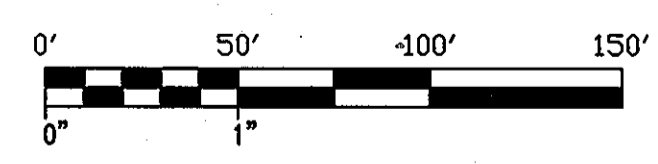
**INVASIVE SPECIES REMOVAL**

In accordance with the terms of the Waiver Petition 10-126, the Contractor shall remove invasive species from the existing woodland area to remain on the property. Work shall be performed under the supervision of a Maryland licensed Arborist. The contractor shall remove the following invasive species, either by physical removal or chemical elimination, as directed by the arborist. Removal work shall be performed in a manner that does not damage or destroy desirable plant material that is to remain.

- Rosa multiflora
- Lonicera japonica
- Allium vineale



- EXISTING CONDITIONS**
- Building
  - Contour
  - Fence
  - Panel Line
  - Property Line
  - Sewer Line
  - Spot Elevation
  - Stormdrain
  - Water Line
  - Specimen Tree
  - Woods Line
  - Slopes 15-24.9%
  - Slopes 25% or more
  - Slopes 25% or more than 10 vertical ft
  - Ex. Wetland
- EXISTING UTILITIES**
- Sanitary Line
  - Sanitary Manhole
  - Water Line
  - Water Valve
  - Water Meter
  - Fire Dept Connection
  - Fire Hydrant
  - Gas Manhole
  - Underground Gas Line
  - Utility Pole
  - Overhead Electric Line
  - Underground Electric Line
  - Underground Fiber Optic Service



THIS PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BY PAYMENT OF A FEE-IN-LIEU TO MEET FOREST CONSERVATION REQUIREMENTS.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*B. Wilson for Peter Biselenow* 11/7/2011  
County Health Officer  
Howard County Health Department

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*David L. ...* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*...* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*...* 1/12/11  
DIRECTOR

OPTION I: FEE-IN-LIEU	FOREST CONSERVATION DATA SUMMARY
FILE NUMBER: SDP 10-084	Project/Subdivision Name: Savage Volunteer Fire Station
FEE-IN-LIEU AMOUNT: 2.1 ac x 49560 x \$0.75 = \$60,607	Net Tract Area: 3.50 acres
COMMENT: Fee-in-Lieu for 2.1 acres of Reforestation	

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave, Suite 303  
Towson, Maryland, 21284  
p. 410.321.7600  
f. 410.321.7601

Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland

**Forest Conservation Plan**

LOT/PARCEL: C-1	LIBRARY/PROJECT: 504/243	PLAT: 21380
DATE: 10/22/2010	PROJECT #: 08016	SCALE: 1"=50'

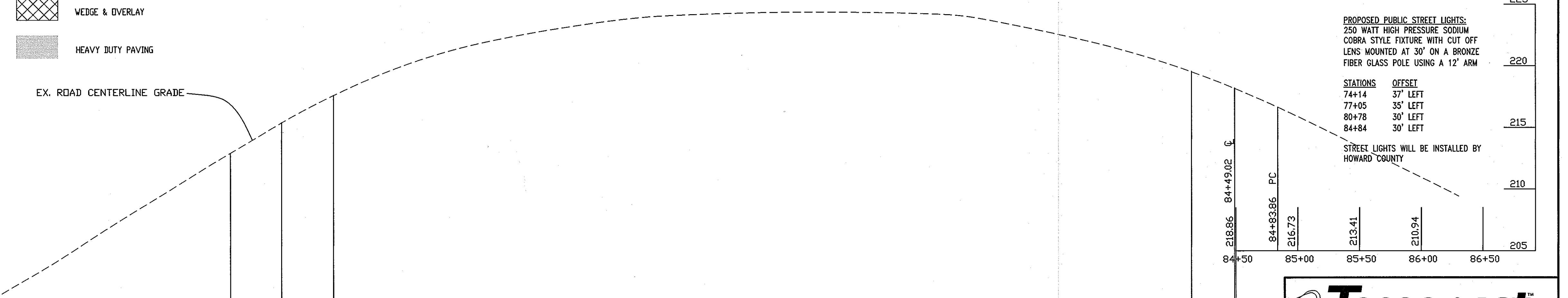
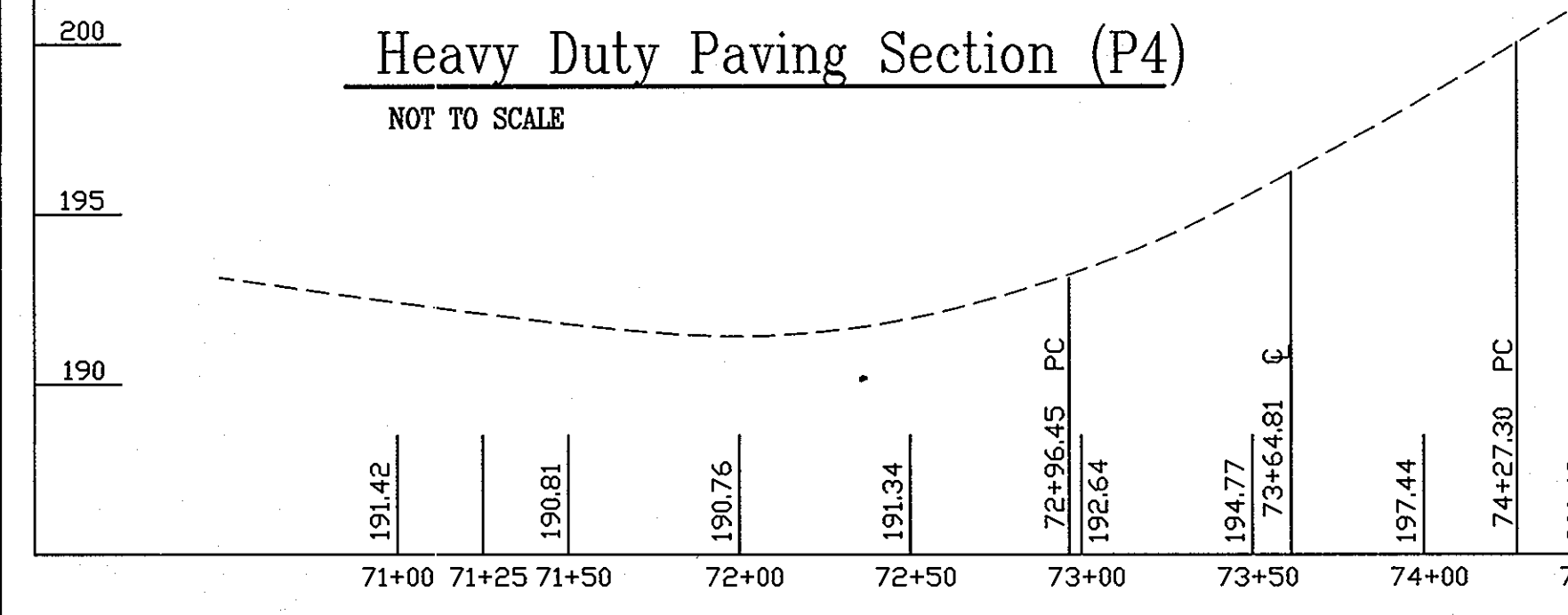
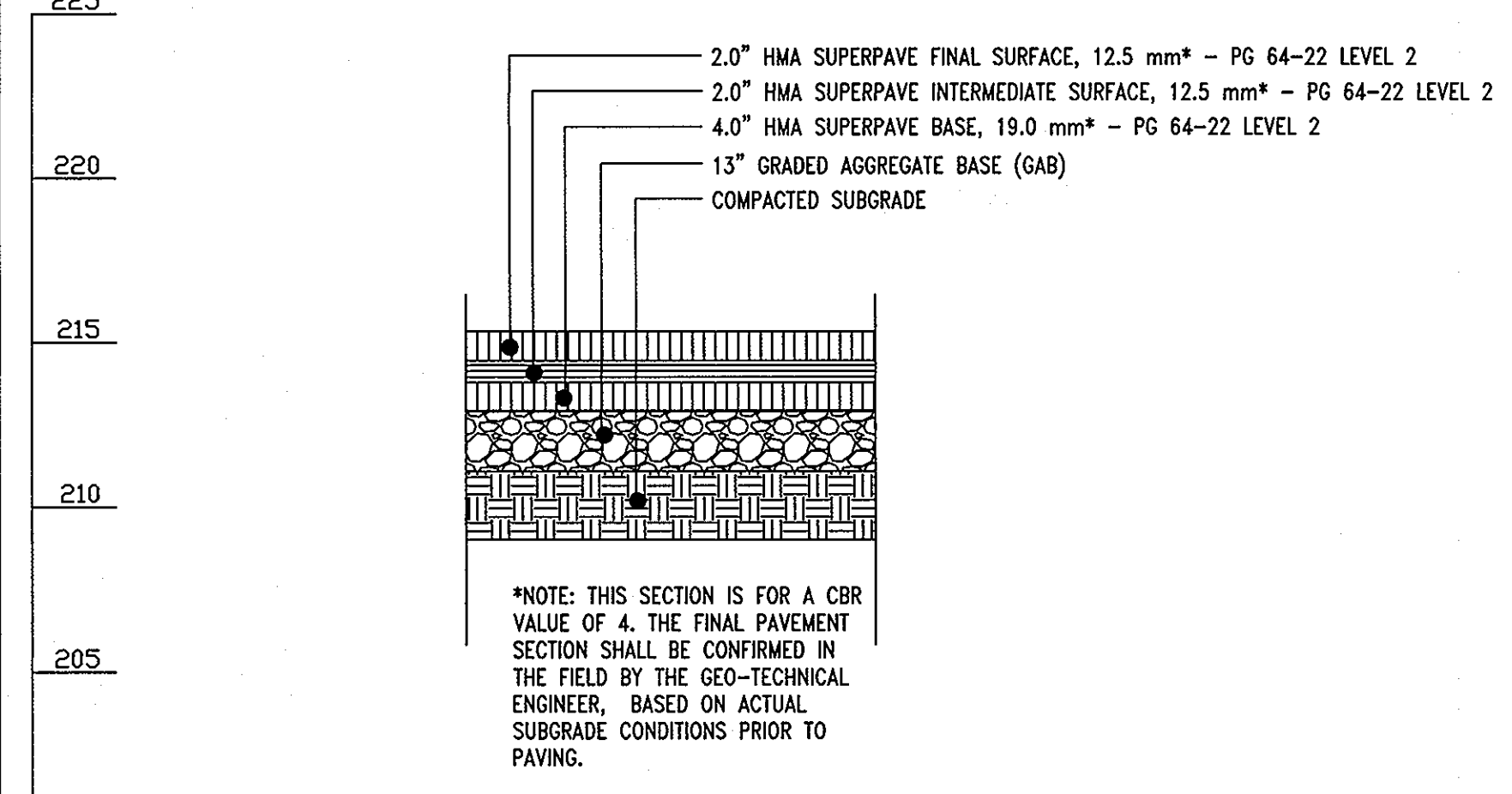
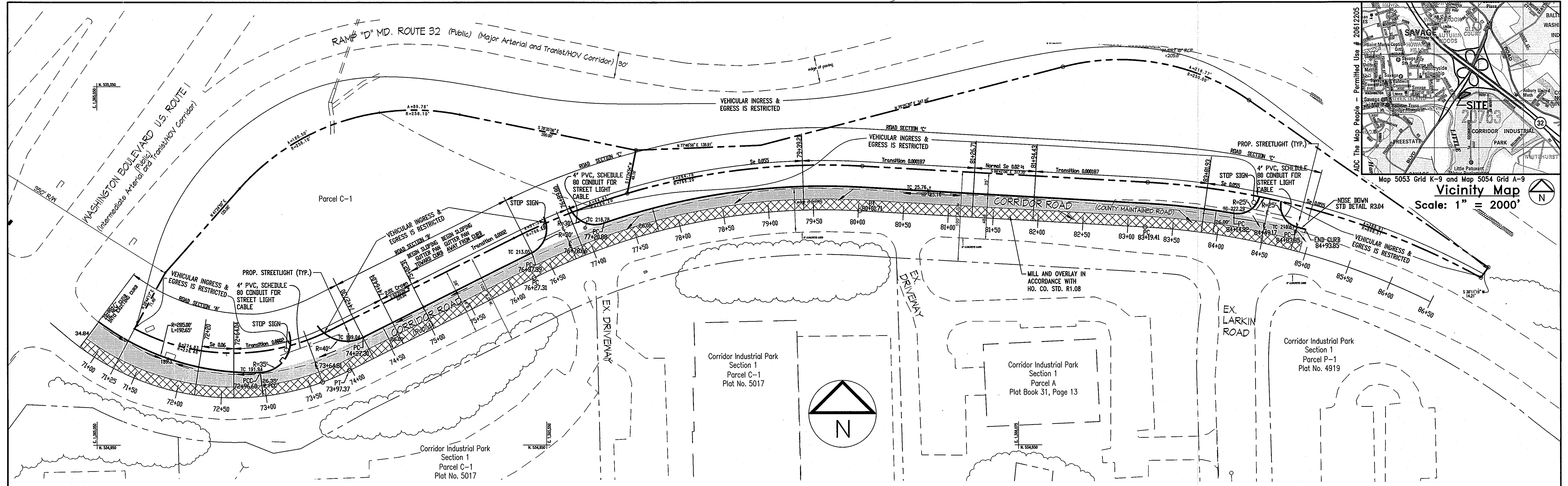
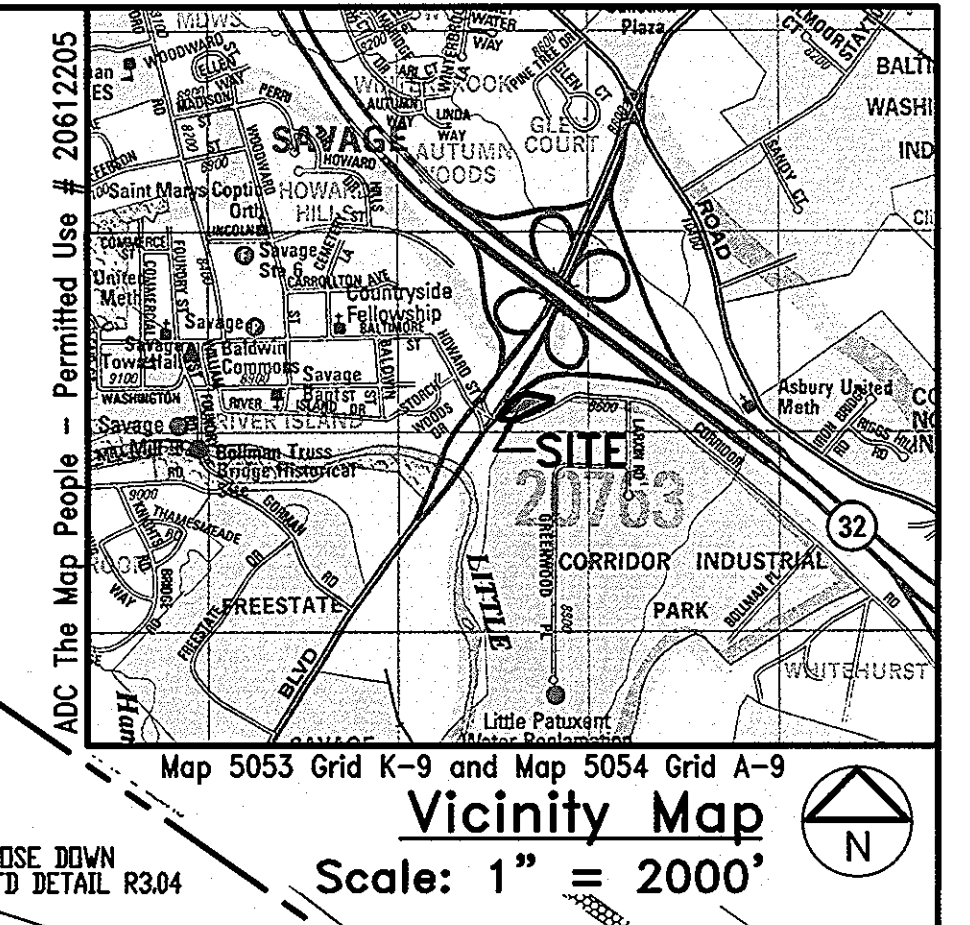
OWNER: MARLAND STATE HIGHWAY ADMINISTRATION  
401 WASHINGTON AVE, SUITE 303  
BALTIMORE, MD 21202  
410-945-0300

OWNER AND DEVELOPER: TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21202  
CONTACT: DAVID LOUDERMILK  
410-321-6194

ENGINEER: TESSERACT SITES, INC.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21202  
CONTACT: JEFFREY SCHNAB  
410-321-7600

STATE OF MARYLAND  
REGISTERED LANDSCAPE ARCHITECT

**30 of 33**



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 Chief, Development Engineering Division  
 Date: 12/1/10

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 County Health Officer  
 Date: 11/2/11

THE STATIONING, RATES OF SUPERELEVATION, AND TRANSITION STATIONS THAT ARE SHOWN ON THIS PLAN ARE BASED ON ROAD DRAWING F-84-176.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 County Health Officer  
 Date: 11/7/2011

OWNER AND DEVELOPER  
 MARYLAND STATE HIGHWAY ADMINISTRATION  
 107 NORTH CALVERT STREET  
 BALTIMORE, MD 21202  
 410-545-0300

OWNER  
 C-1

LEAD/FRP  
 5454/243  
 10502/188

DATE  
 10/12

ZONE  
 M-2

DESIGN/DATE  
 47

REVISION/DATE  
 6TH

PROJECT NO.  
 606902

DATE: 10/22/2010  
 PROJ. #: 08016  
 SCALE: 1"=50'

ENGINEER  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE, SUITE 303  
 TOWSON, MD 21286  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

**Tesseract**  
 TESSERACT SITES, INC  
 401 Washington Ave. Suite 303  
 Towson, Maryland, 21204  
 P. 410.321.7600  
 F. 410.321.7601

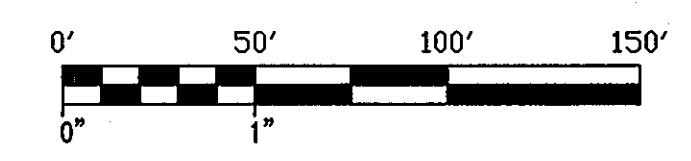
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

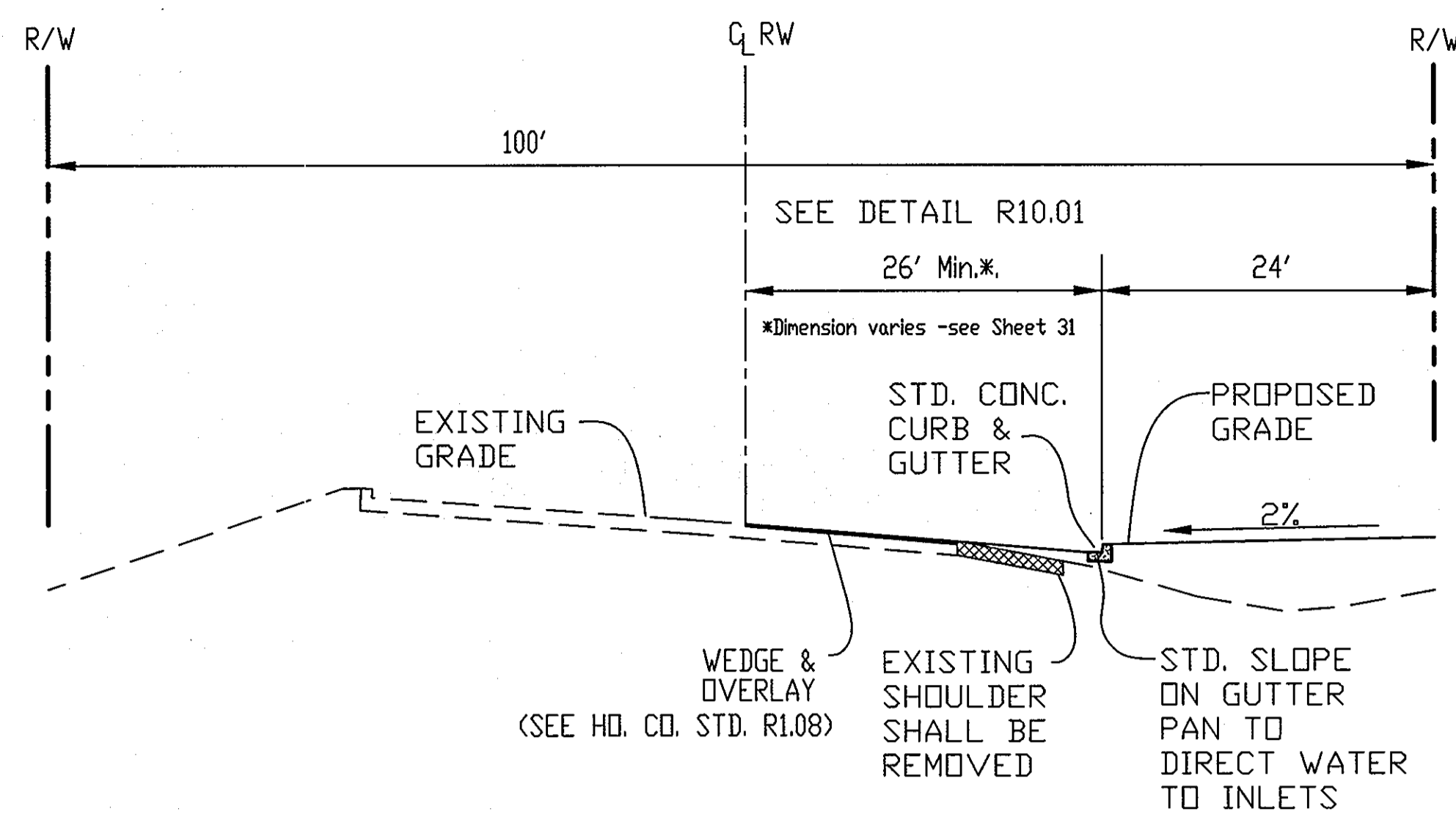
Corridor Industrial Park,  
 Section 1, Parcel C-1  
 Savage Volunteer Fire Station  
 Savage, Maryland

Road Widening Plan

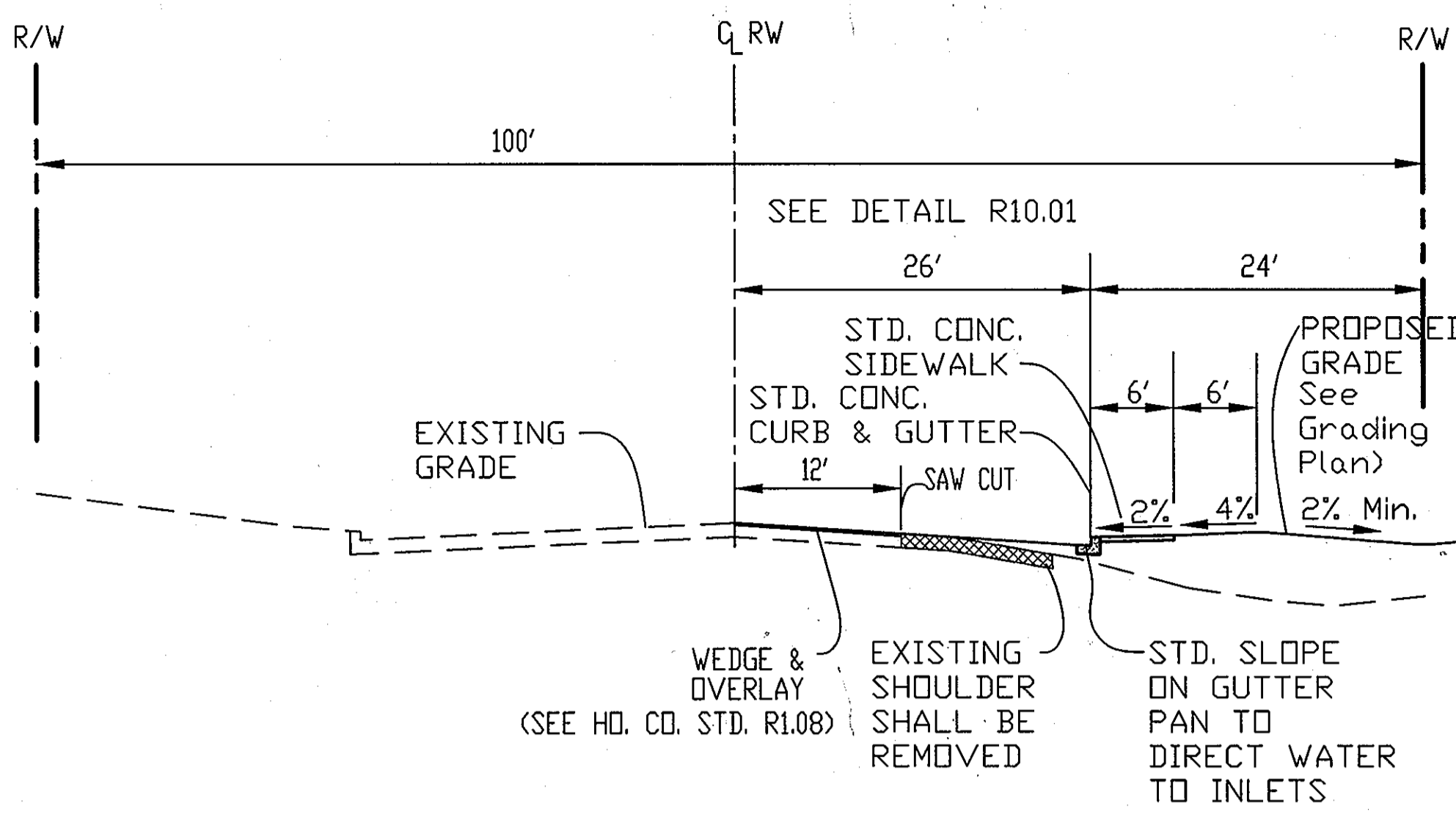
DATE: 10/22/2010  
 PROJ. #: 08016  
 SCALE: 1"=50'

31 of 33

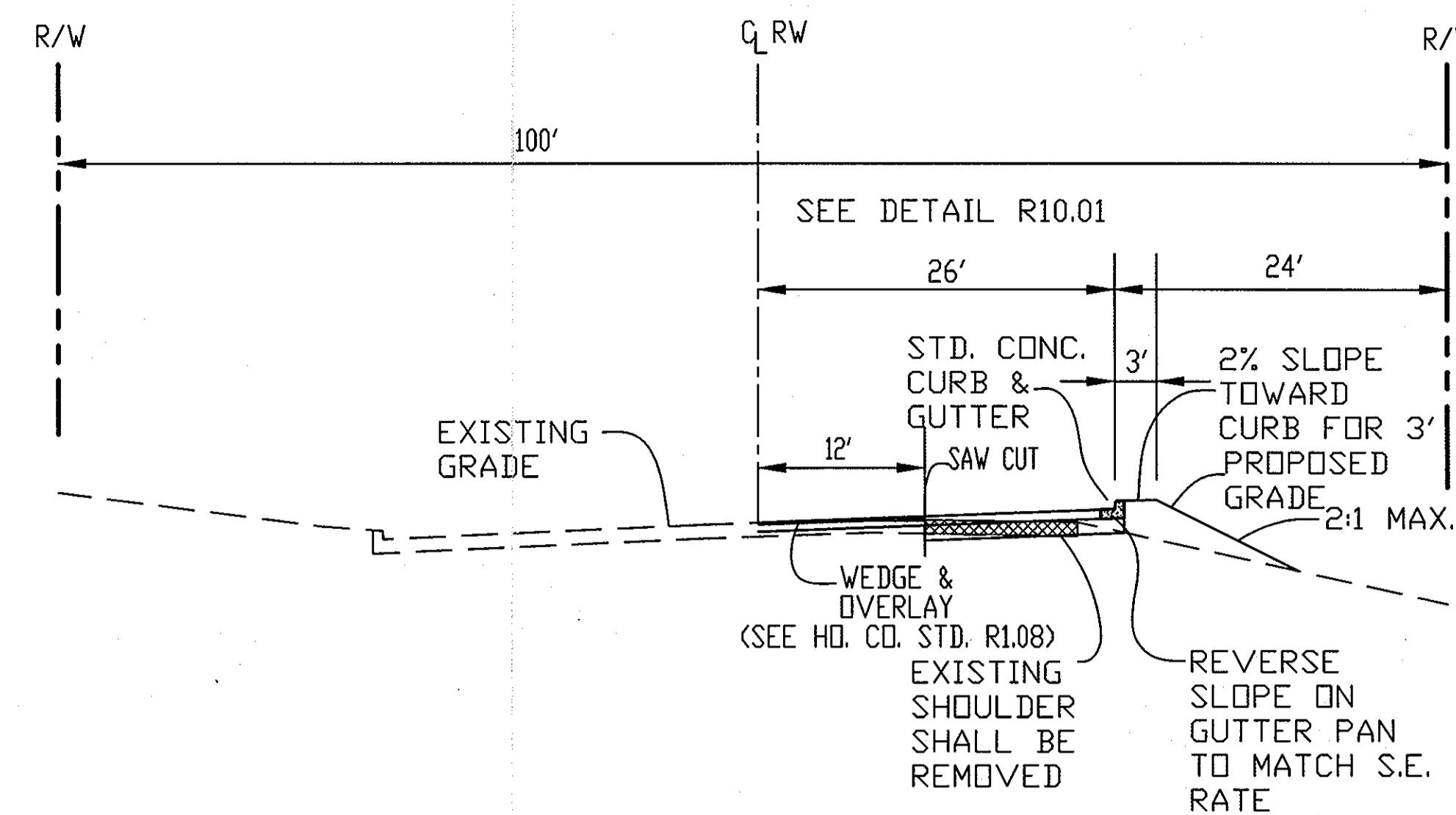




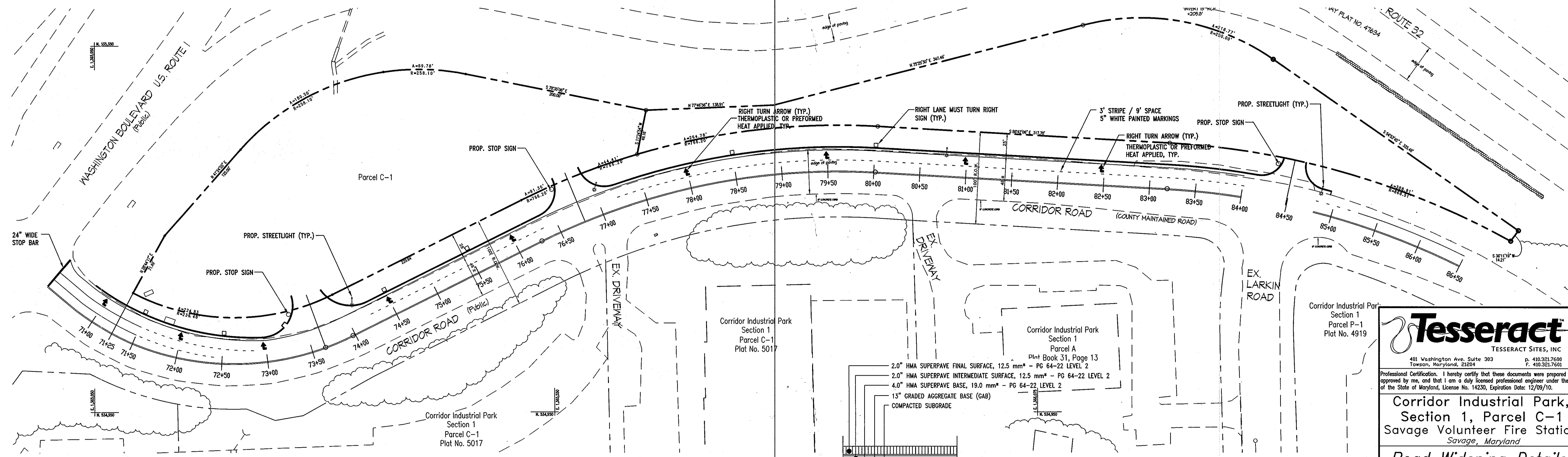
**CORRIDOR ROAD - TYPICAL SECTION 'A'**  
 FROM STA 70+80 TO 74+27.30  
 MAJOR COLLECTOR  
 ZONED M-2  
 DESIGN SPEED 40 MPH



**CORRIDOR ROAD - TYPICAL SECTION 'B'**  
 FROM STA 74+27.30 TO 76+37.39  
 MAJOR COLLECTOR  
 ZONED M-2  
 DESIGN SPEED 40 MPH

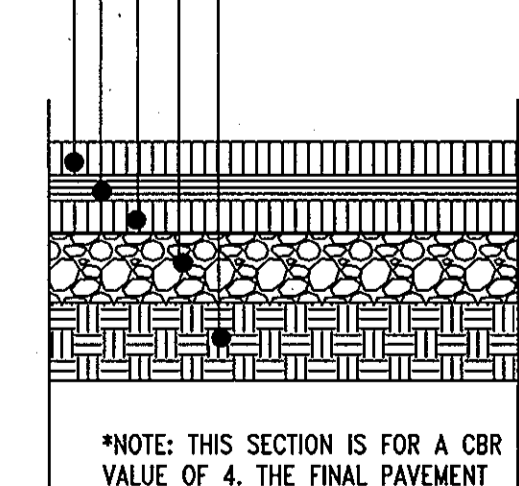


**CORRIDOR ROAD - TYPICAL SECTION 'C'**  
 FROM STA 76+37.39 TO 84+93  
 MAJOR COLLECTOR  
 ZONED M-2  
 DESIGN SPEED 40 MPH



**Road Striping Plan**  
 SCALE: 1"=50'

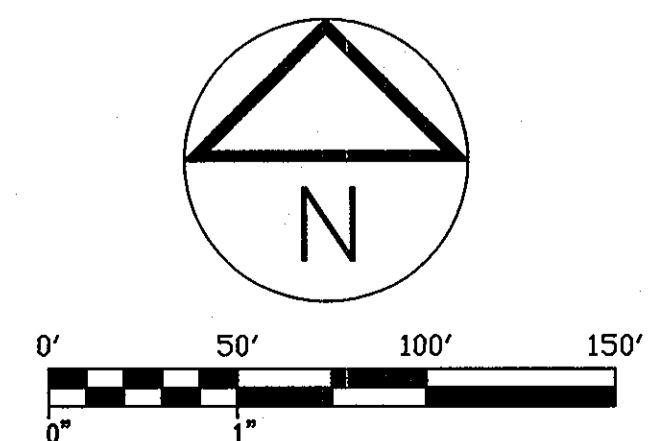
- 2.0" HMA SUPERPAVE FINAL SURFACE, 12.5 mm\* - PG 64-22 LEVEL 2
- 2.0" HMA SUPERPAVE INTERMEDIATE SURFACE, 12.5 mm\* - PG 64-22 LEVEL 2
- 4.0" HMA SUPERPAVE BASE, 19.0 mm\* - PG 64-22 LEVEL 2
- 13" GRADED AGGREGATE BASE (GAB)
- COMPACTED SUBGRADE



**Heavy Duty Paving Section (P4)**  
 NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 [Signature] 12/17/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 [Signature] 11/20/11  
 County Health Officer DATE  
 Howard County Health Department



**Tesseract**  
 TESSERACT SITES, INC.  
 401 Washington Ave, Suite 303  
 Towson, Maryland, 21284  
 P: 410-321-7600  
 F: 410-321-7601

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park, Section 1, Parcel C-1**  
 Savage Volunteer Fire Station  
 Savage, Maryland

**Road Widening Details**

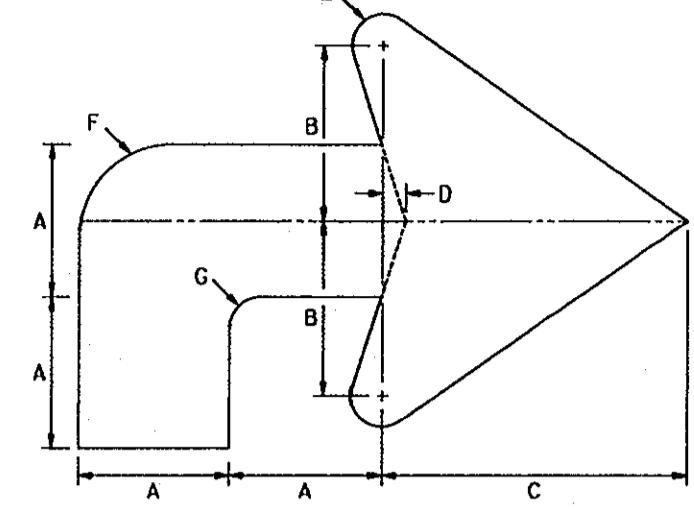
PROJECT: C-1	DATE: 10/22/2010
CONTRACT: 18,12	PROJ. #: 08016
ZONE: M-2	SCALE: 1"=10'
DATE: 11/22/11	

OWNER AND DEVELOPER:  
 HOWARD COUNTY, MD  
 9250 BENDIX ROAD  
 COLUMBIA, MD 21048  
 CONTACT: DAVID LOUDERMILK  
 410-315-6134

ENGINEER:  
 TESSERACT SITES, INC.  
 401 WASHINGTON AVE., SUITE 303  
 TOWSON, MD 21202  
 CONTACT: JEFFREY SCHWAB  
 410-321-7600

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NOTE: ARROW SHALL NOT BE USED ON SIGNS ALONG MAINLINE SECTIONS OF EXPRESSWAYS/FREEWAYS.

CAPITAL LETTER SIZE	DIMENSIONS (INCHES)						
	A	B	C	D	E	F	G
6/4 IN.	2-1/2	2-7/8	5-1/16	3/8	1/2	1-1/2	1/2
8/6 IN.	3-1/2	4	7-1/8	9/16	11/16	2	3/4
10.67 IN.	4-3/8	5-5/8	9-7/8	3/4	1	3	1
13.33 IN.	5-3/4	6-5/8	11-1/16	7/8	1-1/8	3-1/2	1-1/8
16 IN.	7	8	14-3/16	1-1/16	1-3/8	4-1/4	1-1/2
20 IN.	8	9-3/16	16-1/4	1-1/4	1-5/8	4-3/4	1-3/4

REFERENCES  
MD MUTCD SECTION - 2D.08

APPROVED: *Tom Hicks* (signature on file)  
DIRECTOR - OFFICE OF TRAFFIC AND SAFETY

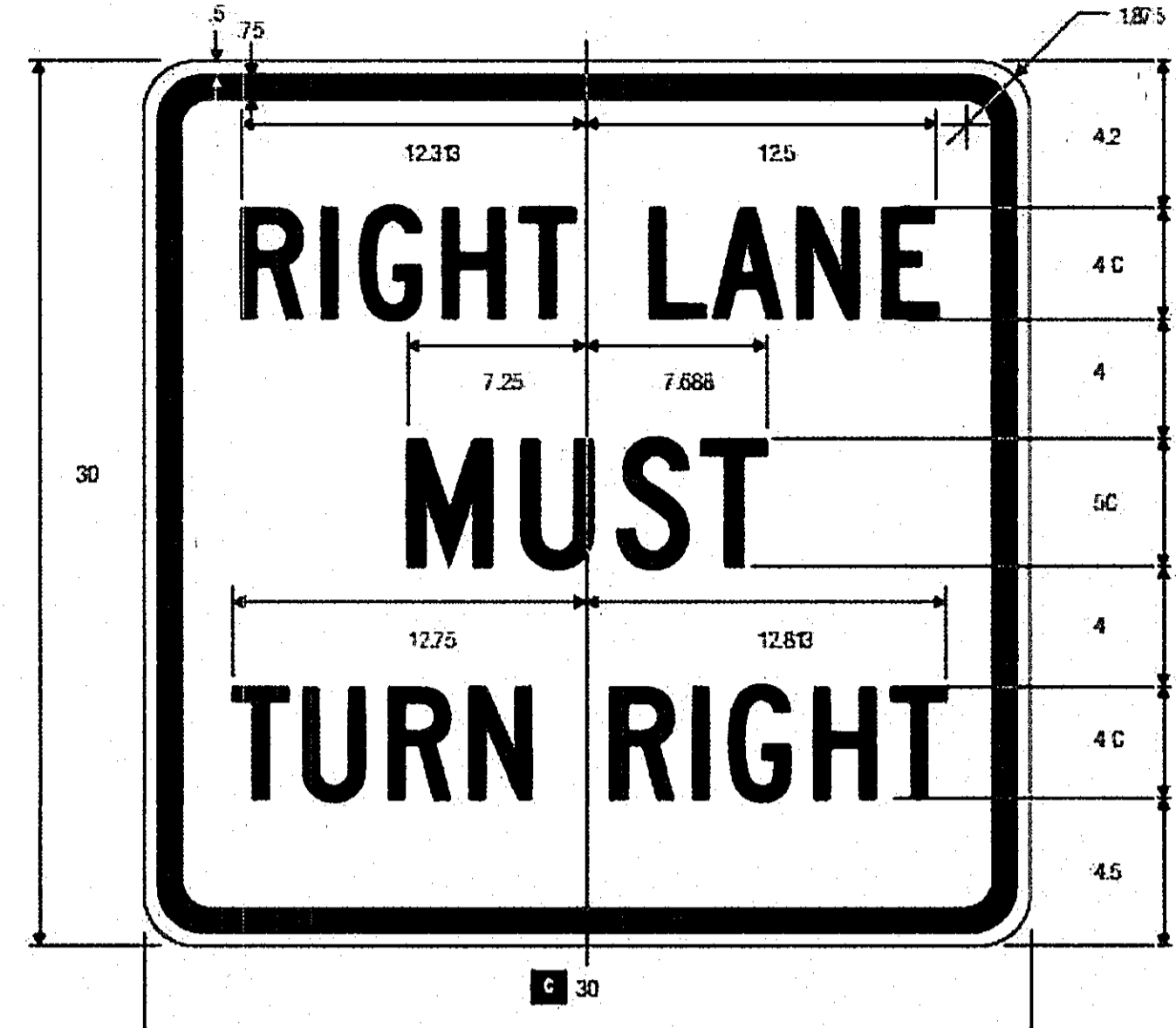
APPROVAL: SHA (STATE HIGHWAY ADMINISTRATION) FEDERAL HIGHWAY ADMINISTRATION

REVISION: NONE

Maryland Department of Transportation  
**STATE HIGHWAY ADMINISTRATION**  
MARYLAND STANDARD HIGHWAY SIGNS

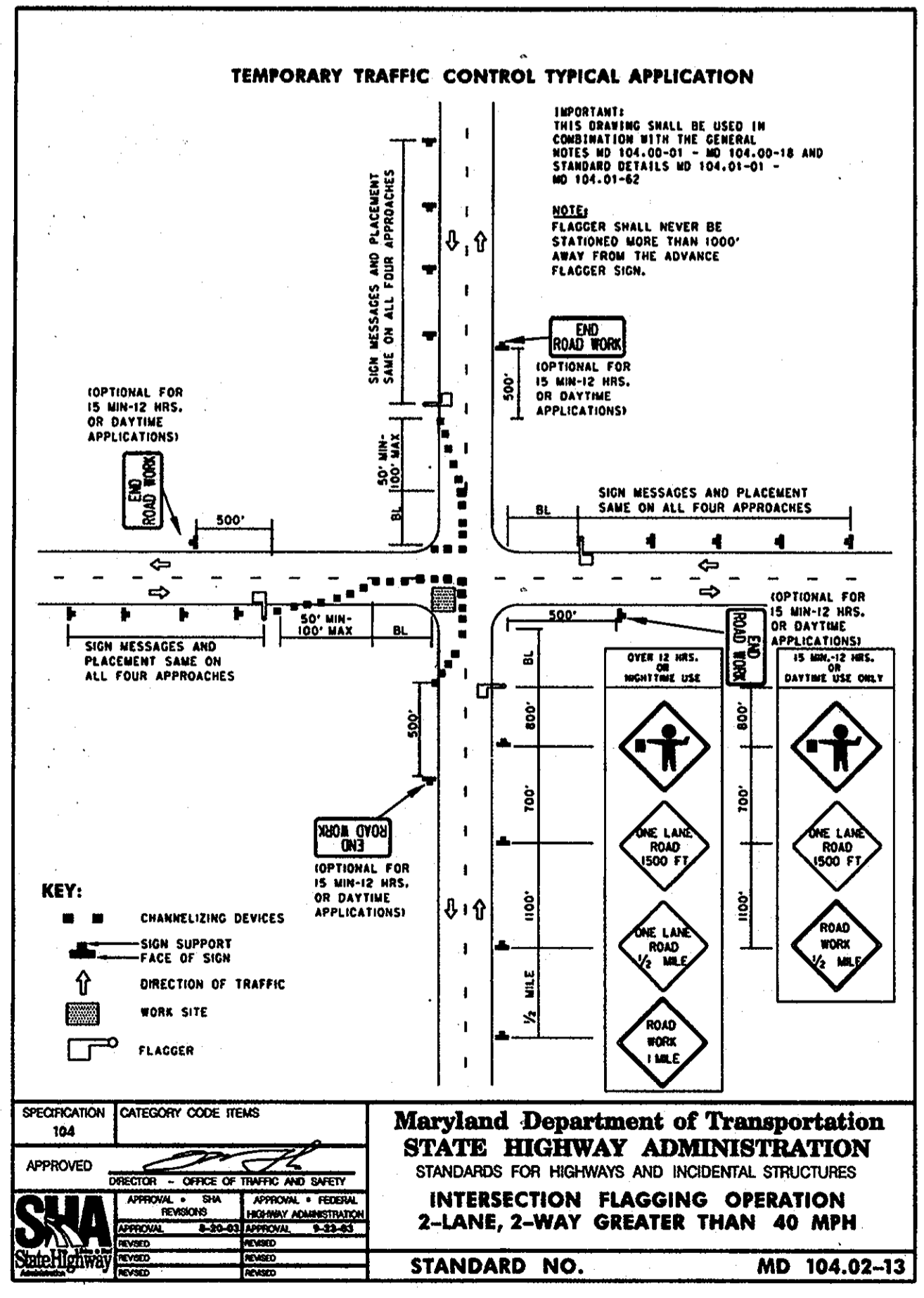
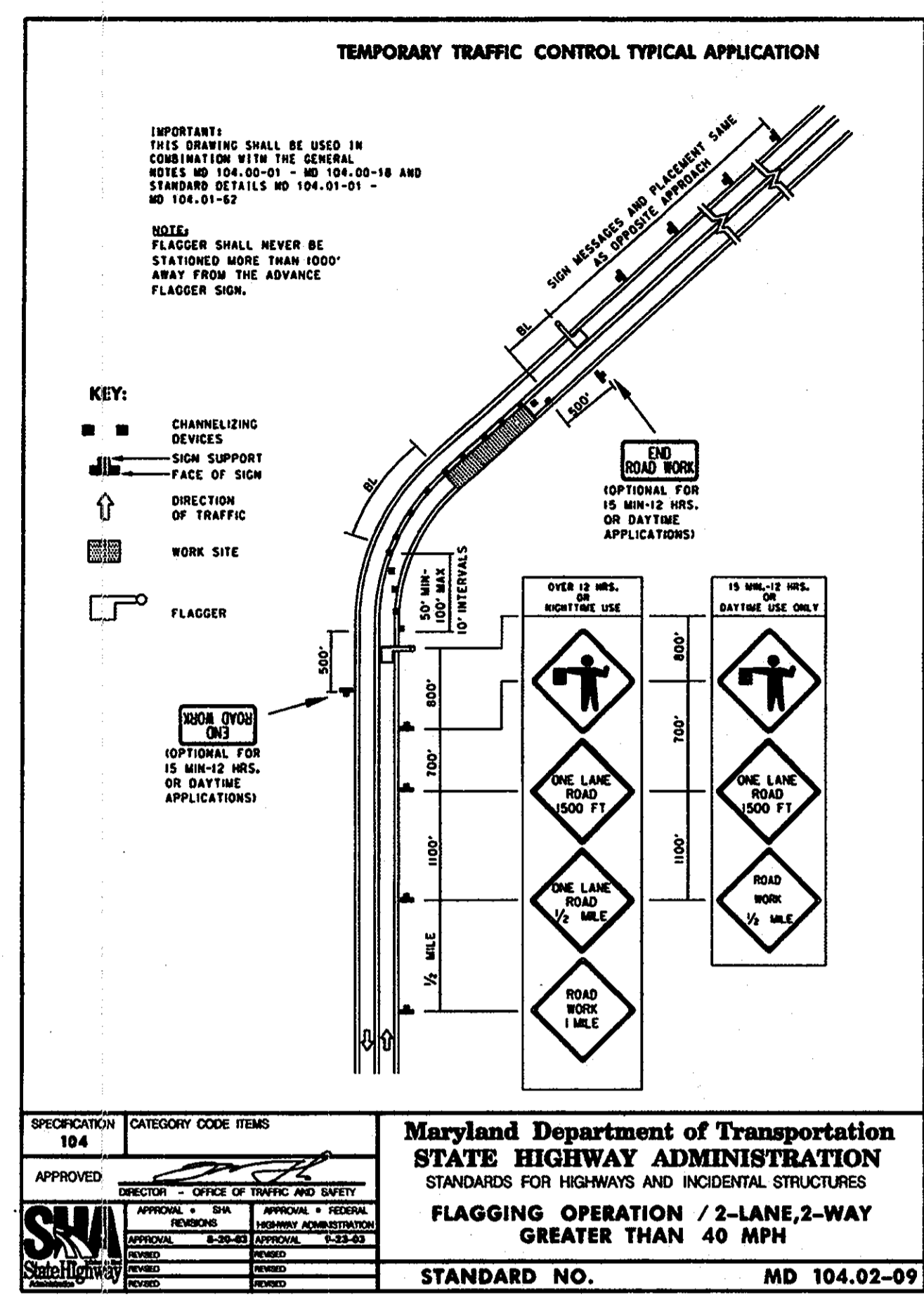
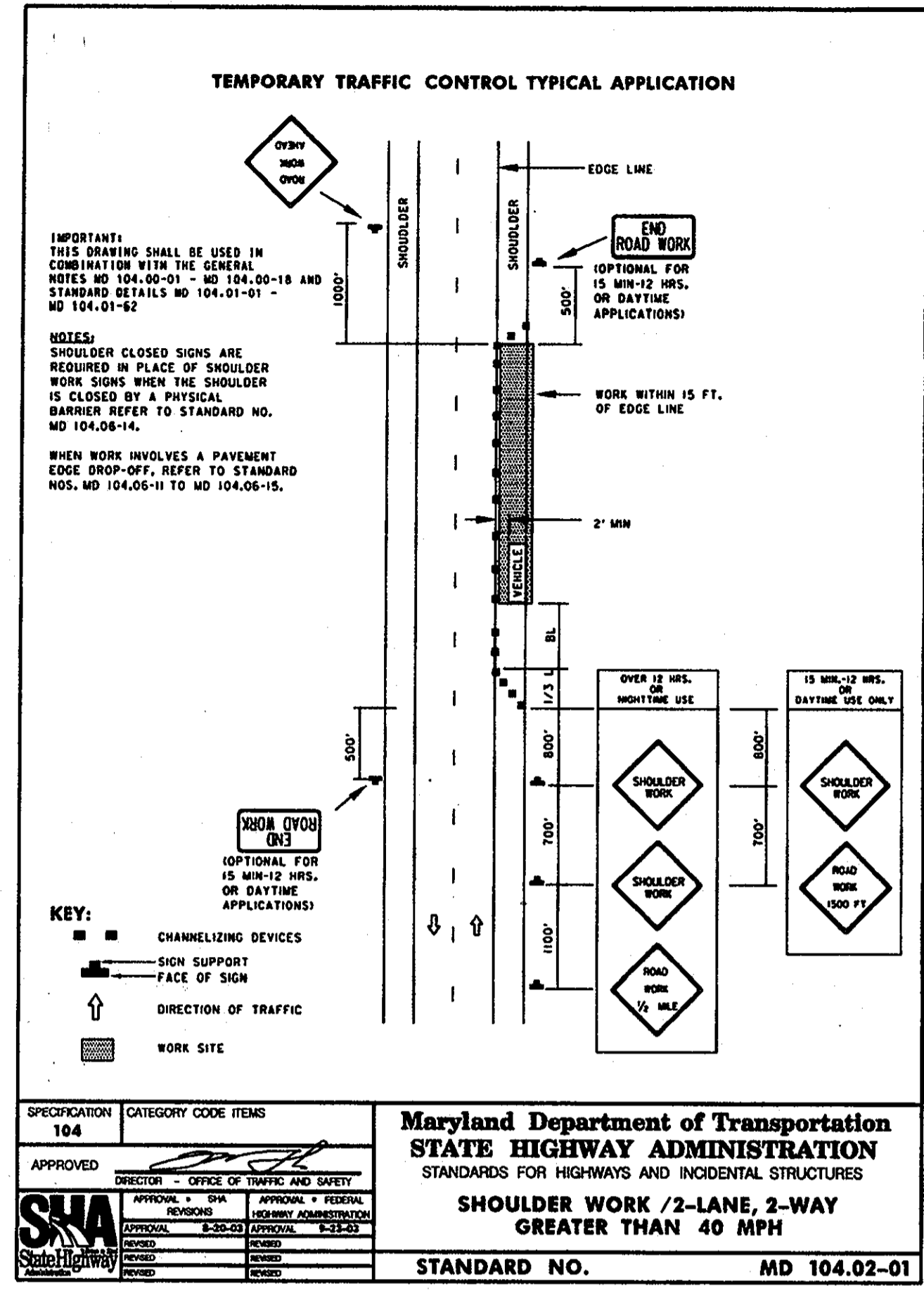
**ARROW DETAILS - ADVANCE GUIDE**

SIGN NUMBER: R3-7R  
ARROWDET-2



R3-7R  
MANDATORY MOVEMENT LANE CONTROL

COLORS: LEGEND - BLACK  
BACKGROUND - WHITE (RETROREFLECTIVE)



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*John P. ...* 12/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Keith Shelton* 1/12/11  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas J. ...* 1/16/11  
DIRECTOR DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

*Robert P. ...* 1/7/2011  
County Health Officer DATE  
Howard County Health Department

**Tesseract**  
Tesseract Sites, Inc.  
401 Washington Ave. Suite 303  
Towson, Maryland, 21284  
P. 410.321.7600  
F. 410.321.7601

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/10.

**Corridor Industrial Park,  
Section 1, Parcel C-1  
Savage Volunteer Fire Station  
Savage, Maryland**

**Road Widening Details**

OWNER: MARYLAND STATE HIGHWAY ADMINISTRATION  
707 DEATH CALVERT STREET  
BALTIMORE, MD 21302  
410-545-0300

OWNER AND DEVELOPER:  
HOWARD COUNTY, MD  
4250 BENDIX ROAD  
COLUMBIA, MD 21045  
CONTACT: DAVID LOUDERMILK  
410-315-6194

ENGINEER:  
Tesseract Sites, Inc.  
401 WASHINGTON AVE, SUITE 303  
TOWSON, MD 21282  
CONTACT: JEFFREY SCHWAB  
410-321-7600

DATE: 10/22/2010  
Proj. #: 08016  
Scale: AS SHOWN

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SDP 10-084