

SITE DEVELOPMENT PLAN ELKHORN PARK

HOWARD COUNTY CAPITAL PROJECT NO. N3929 HOWARD COUNTY, MARYLAND

SHEET INDEX

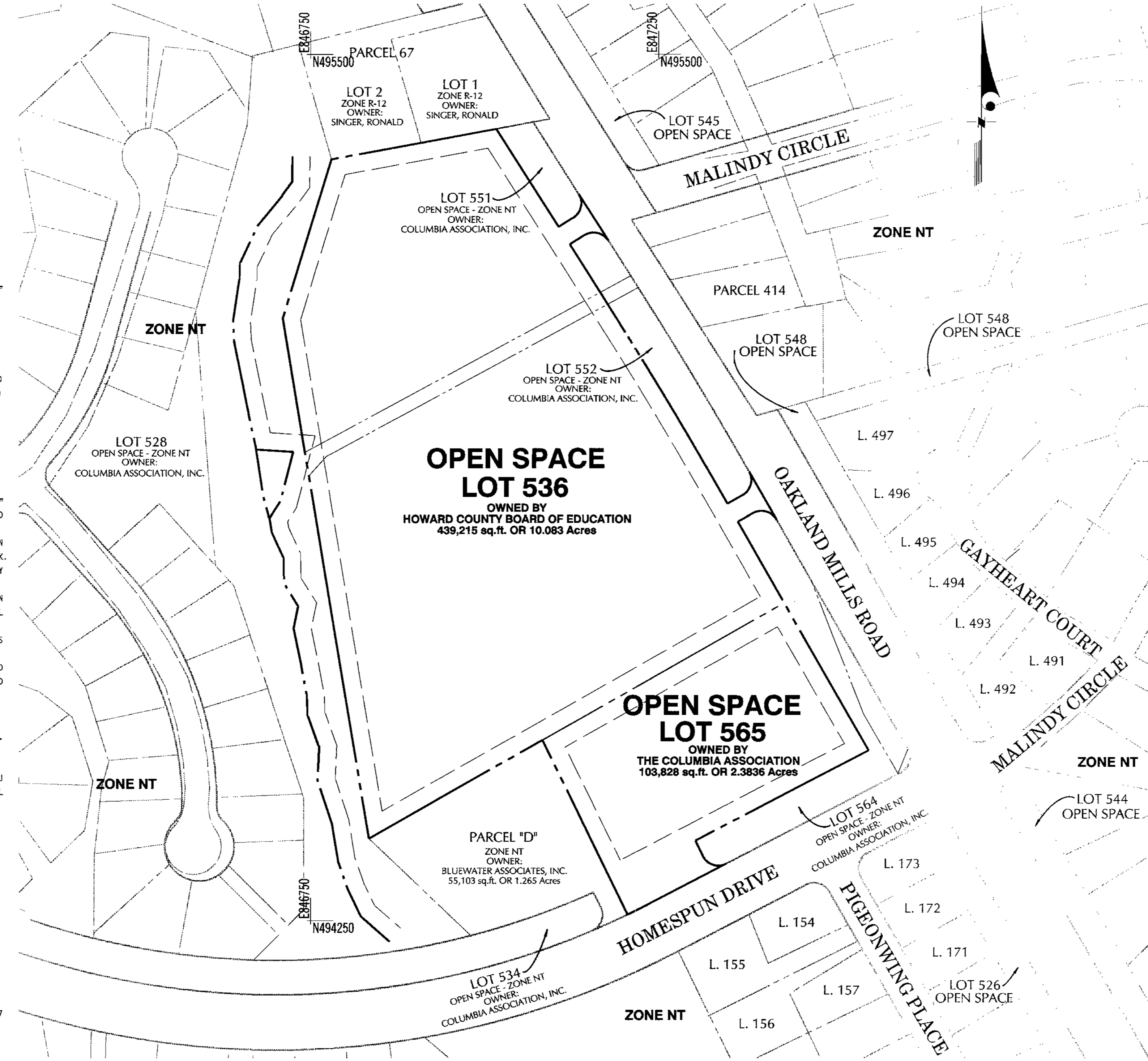
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	SITE DEVELOPMENT PLAN
3	SITE PLAN DETAILS
4	SITE PLAN DETAILS
5	DRAINAGE AREA MAP FOR STORMWATER MANAGEMENT
6	SEDIMENT CONTROL PLAN
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8	SEDIMENT CONTROL DETAILS
9	BIO-RETENTION DETAILS
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11	LANDSCAPE PLAN

SITE DATA

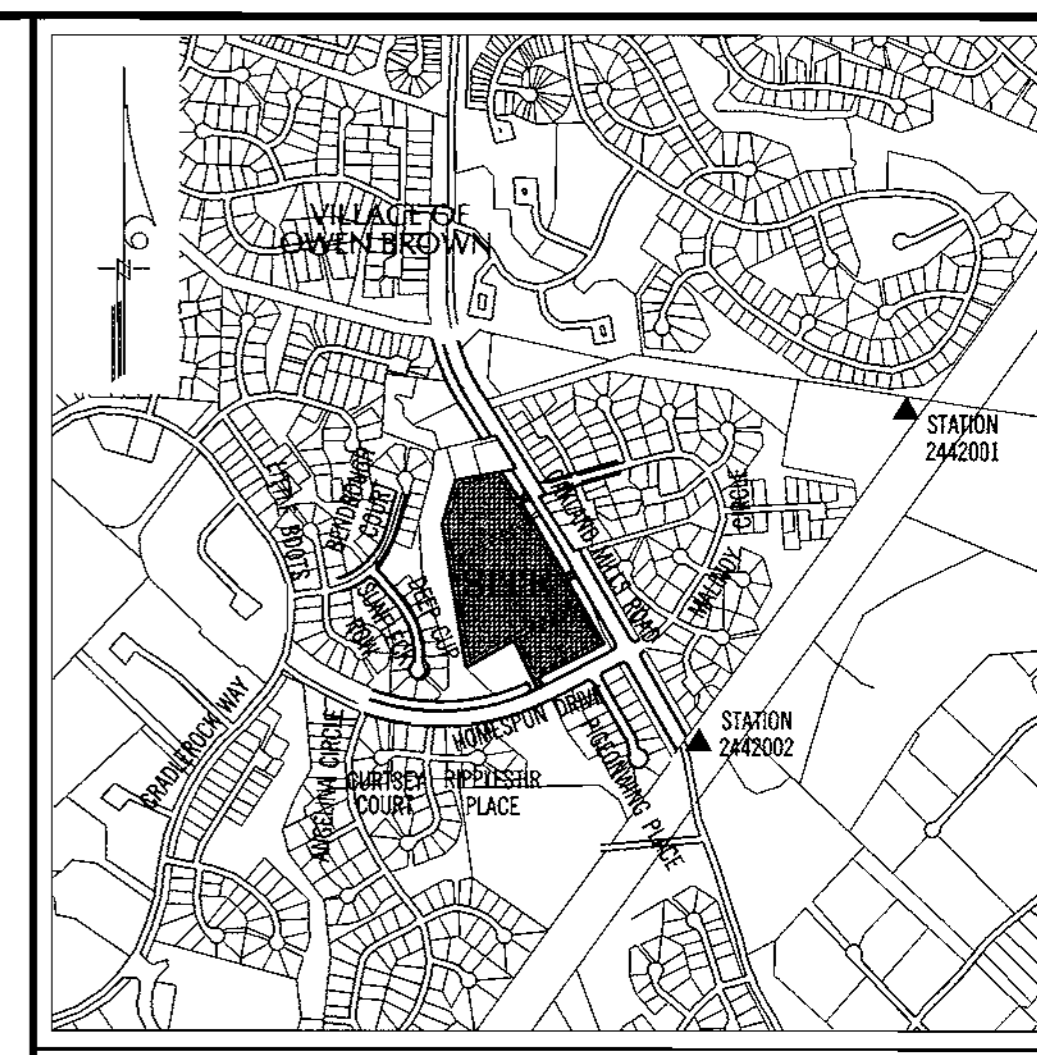
SITE ZONING	LOT 565	NT-OPEN SPACE CREDITED AND NON-CREDITED
	LOT 536	NT-OPEN SPACE CREDITED AND NON-CREDITED
SITE ACREAGE	LOT 565	2.384 AC.
	LOT 536	10.083 AC.
TOTAL GROSS ACREAGE		12.467 ACRES
PROPOSED USE		PUBLIC RECREATION
PARKING PROPOSED		80 SPACES (NUMBER OF SPACES REQUESTED BY HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS)
PARKING AND DRIVEWAYS	LOT 565	6,156 SQ.FT. (0.14 AC.)
	LOT 536	32,754 SQ.FT. (0.75 AC.)
TOTAL DISTURBED AREA		11.4 ACRES
LOT COVERAGE ALLOWED:		10% MAXIMUM
PROPOSED:		2%

GENERAL NOTES

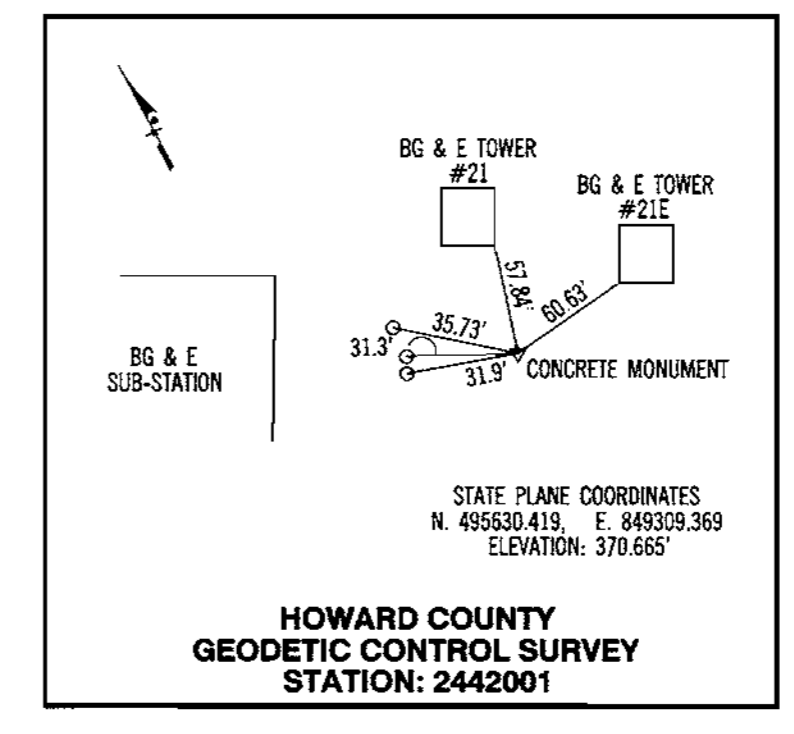
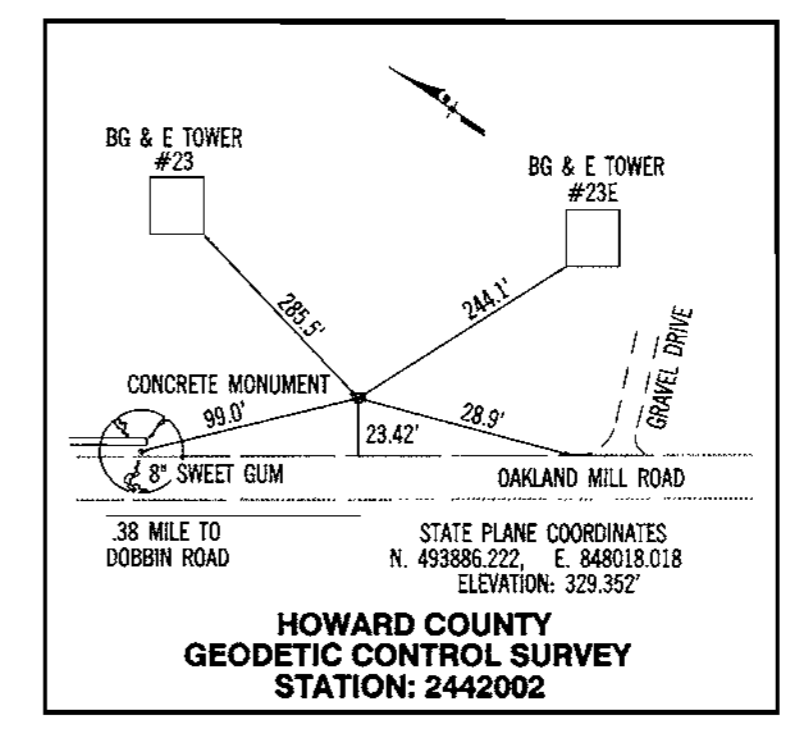
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE INSTALLED PRIOR TO THE PLACEMENT OF ANY PAVING.
- ALL PLAN DIMENSIONS ARE TO THE EDGES OF PAVED SURFACES OR PLAY FIELD BOUNDARIES UNLESS OTHERWISE NOTED.
- 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 NOS. 2442001 AND 2442002 WERE USED FOR THIS PROJECT.
- VERTICAL DATUM: MEAN SEA LEVEL OF U.S.C. & G. SURVEY (1929 ADJUSTMENT)
- TOPOGRAPHY: FIELD RUN SURVEY PERFORMED BY GREENHORNE & O'MARA, INC. APRIL 4, 1992.
- EXISTING UTILITIES SHOWN WERE FIELD SURVEYED IN CONJUNCTION WITH THE TOPOGRAPHIC SURVEY. (SURFACE LOCATIONS ONLY)
- THERE ARE NO PROPOSED WATER OR SEWER CONNECTIONS ASSOCIATED WITH THIS PARK DEVELOPMENT.
- STORMWATER MANAGEMENT QUANTITY CONTROL WAIVER WAS GRANTED ON OCTOBER 7, 1999. A FEE IN LIEU SHALL BE PAID IN THE AMOUNT OF \$22,925.27. WATER QUALITY IS PROVIDED BY BIO-RETENTION FOR ALL PAVED SURFACES.
- THERE IS NO FLOODPLAIN ON THIS SITE.
- THERE ARE NO WETLANDS ON THIS SITE.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- PROJECT BACKGROUND INFORMATION:
SUBDIVISION: VILLAGE OF OWEN BROWN
TAX MAP: #36
SECTION/AREA: 4/1
LOT/PARCEL: 565 & 536
ZONING: NT (NEW TOWN)
ELECTION DISTRICT: 6TH DISTRICT
SITE AREA: 12.4666 ACRES
DZP REFERENCE NUMBER: PLAN PREVIOUSLY SUBMITTED UNDER SDP-97-47 (NOT APPROVED)
FDP: FDP-146-A-I-11
FINAL PLATS: F-74-83C, F-00-134
- REFER TO SIGNED AGREEMENT BETWEEN THE COLUMBIA ASSOCIATION AND HOWARD COUNTY DATED MARCH 14, 1997 CONCERNING THE CONSTRUCTION OF A BALLFIELD, THE INSTALLATION OF PROPOSED LANDSCAPING AND THE CONSTRUCTION OF THE PARK ENTRANCE DRIVE ALL TO BE LOCATED WITHIN THE COLUMBIA ASSOCIATION OPEN SPACE LOTS.
- NO OUTDOOR LIGHTING IS PROPOSED FOR THE PARK.
- CONTRACTOR SHALL ENGAGE THE SERVICES OF A QUALIFIED GEOTECHNICAL ENGINEER TO DETERMINE THE SOIL CAPACITY PRIOR TO PLACING FOOTINGS FOR THE PICNIC PAVILION AND TOILET SHELTER. RESULTS SHALL BE PROVIDED TO THE ENGINEER PRIOR TO PROCEEDING WITH THE PLACEMENT OF FOOTINGS TO INSURE ADEQUATE DESIGN. FOOTINGS HAVE BEEN DESIGNED FOR A SOIL CAPACITY OF 2000 PSF.



LOCATION PLAN
SCALE: 1" = 100'



VICINITY MAP
SCALE: 1" = 1000'



HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

Gregory J. Arthur G.2.00
DIRECTOR DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

William J. ... 6/15/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Chris ... 7/10/00
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
Paul ... 7/10/00
DIRECTOR DATE

SDP-00-35

BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION

ADDRESS CHART	
LOT NUMBER	STREET ADDRESS
565	5260 HOMESPUN DRIVE

PERMIT INFORMATION CHART			
SUBDIVISION NAME	SECT./AREA	LOT #	
VILLAGE OF OWEN BROWN, ELKHORN PARK	4 / 1	565 & 536	
PLAT NO. OR L/F	GRID #	ZONING	TAX MAP No.
F.B. 27, F. 71	22	NT & OS	36
PLAT No.	WT & OS	ELEC. DIST.	CENSUS TR.
18-24-4		6	6067.02
WATER CODE	SEWER CODE		
N/A	N/A		

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE: 5/14/00
Ks

OWNER/DEVELOPER:
DEPARTMENT OF PUBLIC WORKS
3450 COURTHOUSE DRIVE
ELLCOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
10221 WINGOPIN CIRCLE
COLUMBIA, MARYLAND 21044

No.	REVISION	DATE	BY

GREENHORNE & O'MARA, INC.
ENGINEERS ARCHITECTS PLANNERS SCIENTISTS SURVEYORS PHOTOGRAMMETRISTS
ANNAPOLIS, MD. • ATLANTA, GA. • AURORA, CO. • BALTIMORE, MD. • CHARLOTTE, NC. • CHICAGO, IL. • COLUMBIA, SC. • DALLAS, TX. • DENVER, CO. • FORT LAUDERDALE, FL. • FORT MYERS, FL. • FORT WORTH, TX. • GREENBELT, MD. • LEESBURG, VA. • MANASSAS, VA. • MOORESTOWN, NJ. • ORLANDO, FL. • RALEIGH, NC. • ROCKVILLE, MD. • TAMPA, FL. • WALDORF, MD. • WEST PALM BEACH, FL.

COVER SHEET
NEIGHBORHOOD FIELD DEVELOPMENT
ELKHORN PARK - CAPITAL PROJECT N-3929
VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
OPEN SPACE LOTS 565 & 536

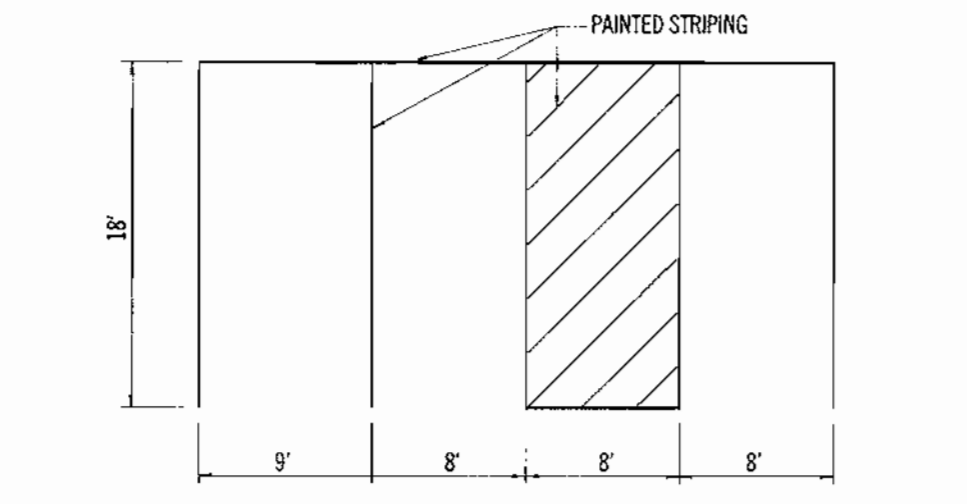
1 OF 11

HOWARD COUNTY, MARYLAND
TAX/ZONE MAP 36

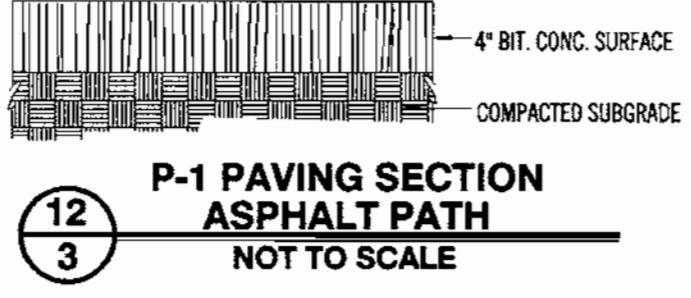
NOV. 1999
DATE

7781-000
PROJ. No.

R-3117-X
FILE No.



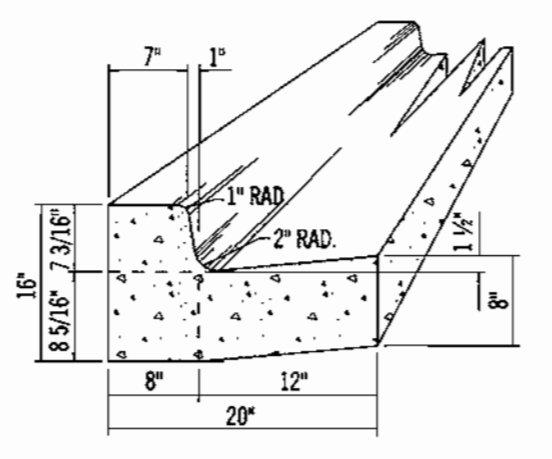
3 STANDARD HANDICAPPED PARKING DETAIL
SCALE: 1"=10'



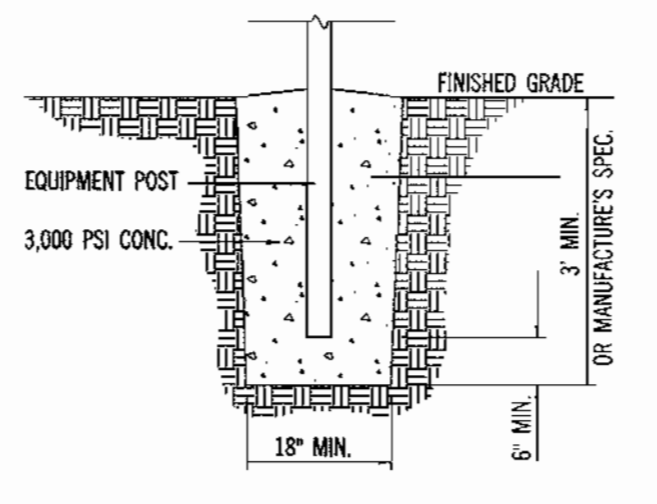
12 P-1 PAVING SECTION ASPHALT PATH
NOT TO SCALE



13 P-1 PAVING SECTION PARKING LOT
NOT TO SCALE

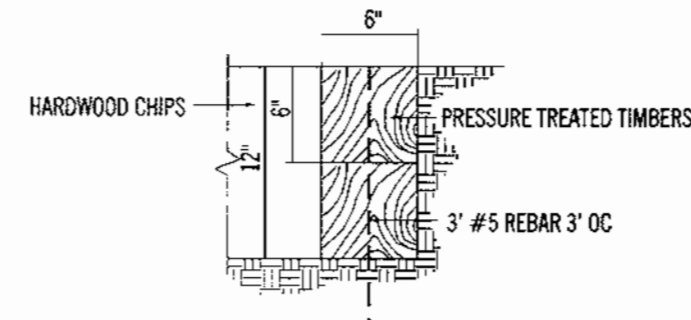


14 STANDARD TYPE A COMBINATION CURB & GUTTER
NOT TO SCALE
(SEE HOWARD COUNTY STANDARD DETAIL R-3.01)

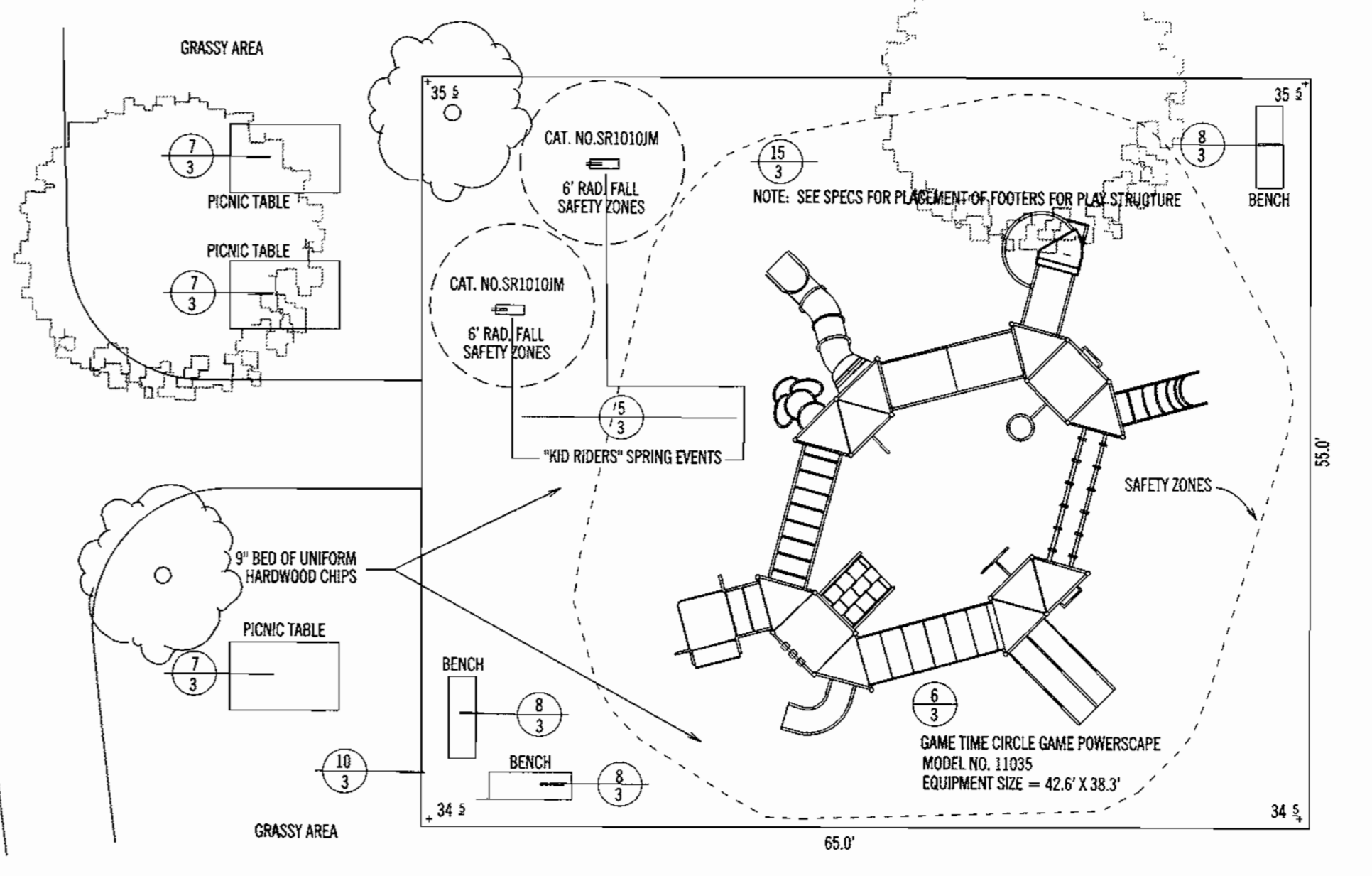


15 STANDARD FOOTER DETAIL
SCALE: 1/2"=1'-0"

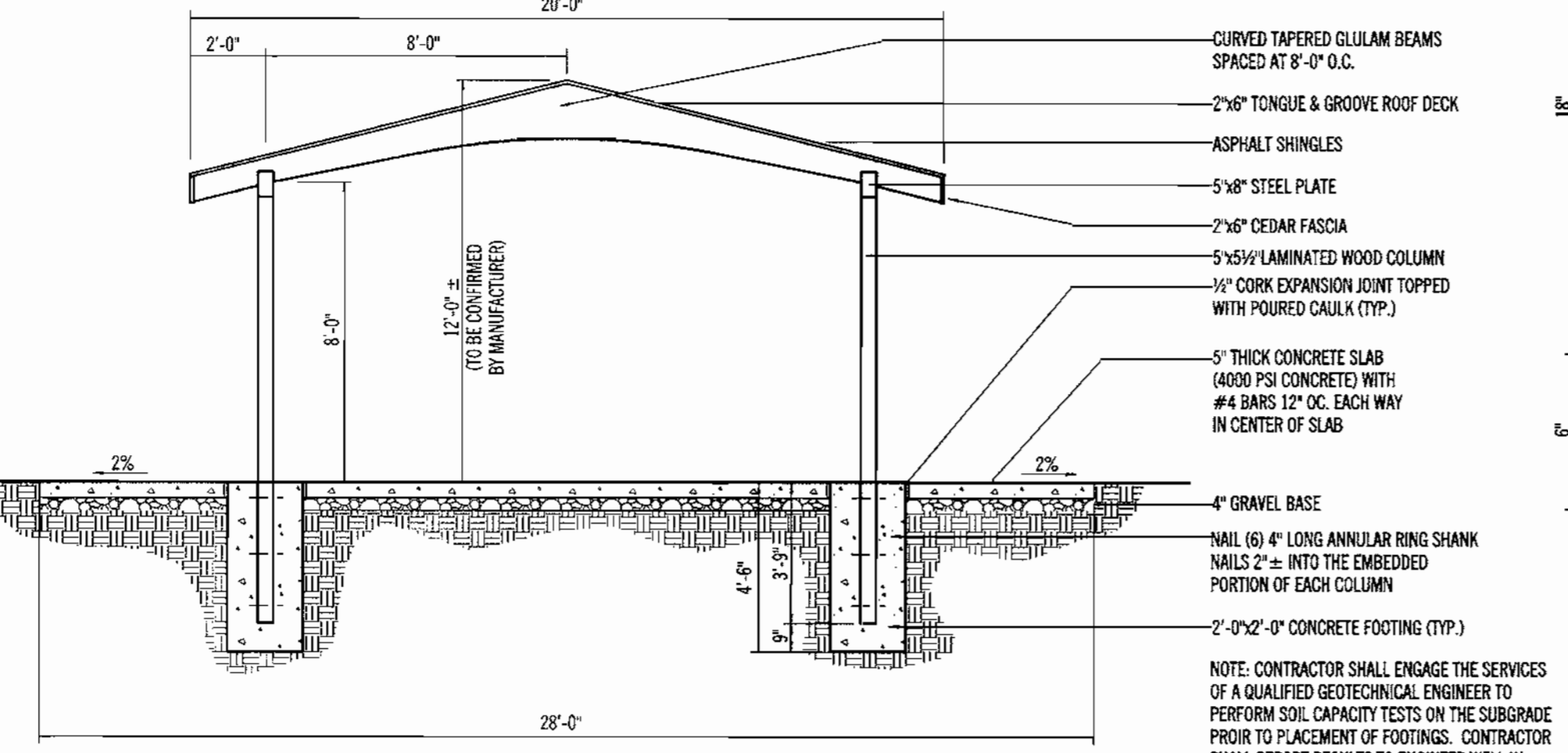
- EQUIPMENT SCHEDULE:**
- 5 KID RIDERS
 - 6 "IRON MOUNTAIN FORGE" MODEL NO. SR101-1M "YELLOW HORSE W/BLUE SEAT" (OR EQUAL)
 - 7 "GAME TIME" CIRCLE GAME POWERSCAPE MODEL NO. 11035 (OR EQUAL)
 - 8 "GAME TIME" MODEL NO. 11035 (OR EQUAL)
 - 9 8' PICNIC TABLE
 - 10 "IRON MOUNTAIN FORGE" MODEL NO. 238-8GT (OR EQUAL)
 - 11 6' BENCH
 - 12 VICTOR STANLEY, INC. UNSLAT 400 SERIES MODEL NO. US-418 IN PPE WOOD
 - 13 MULTILEVEL SHELTERHOUSE GRILL "PILOT ROCK" MODEL NO. L-1500 (OR EQUAL)



10 PLAY AREA SURFACE AND EDGE TREATMENT (TYP.)
SCALE: 1"=1'-0"



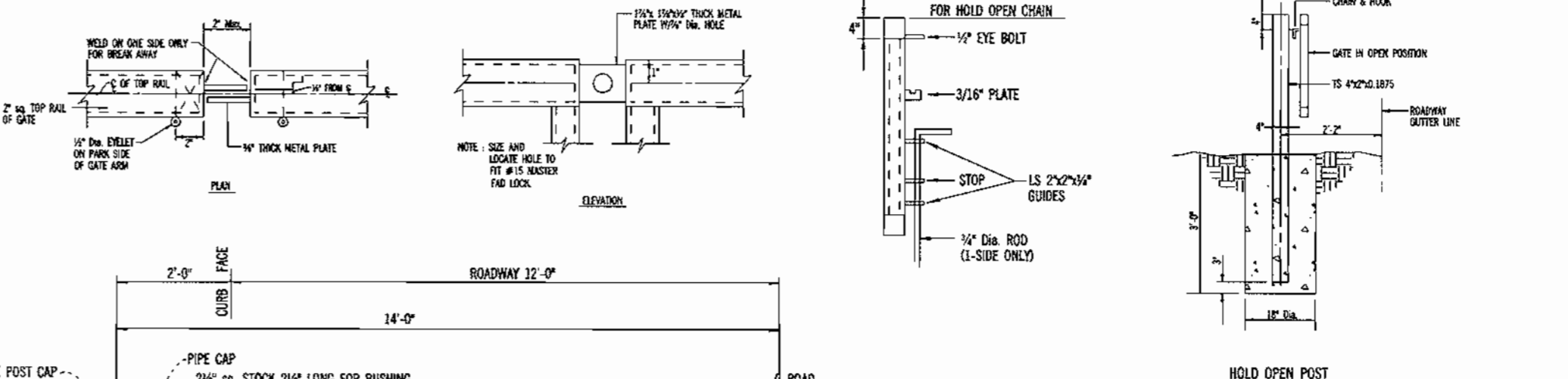
11 MULTI USE PLAY AREA DETAIL PLAN
NOT TO SCALE



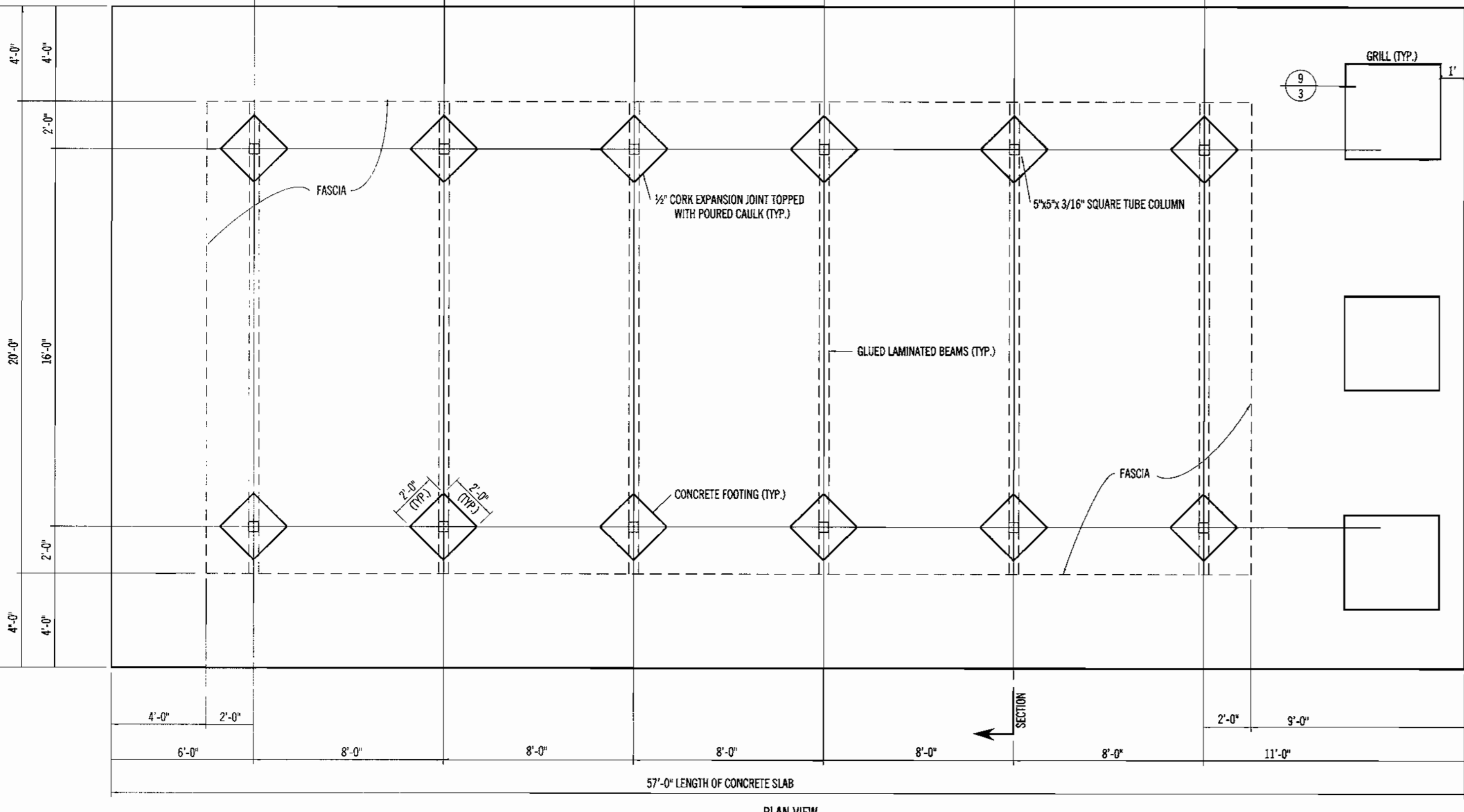
2 PICNIC PAVILLION SECTION
SCALE: 1/2"=1'-0"



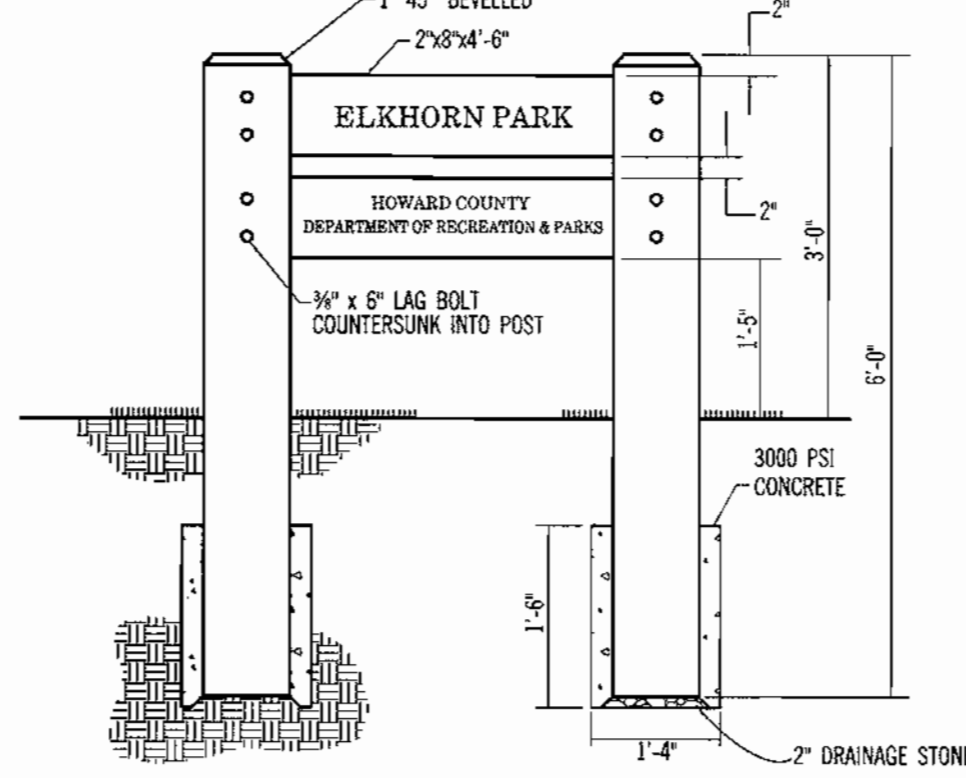
4 HANDICAPPED PARKING SIGN
NOT TO SCALE



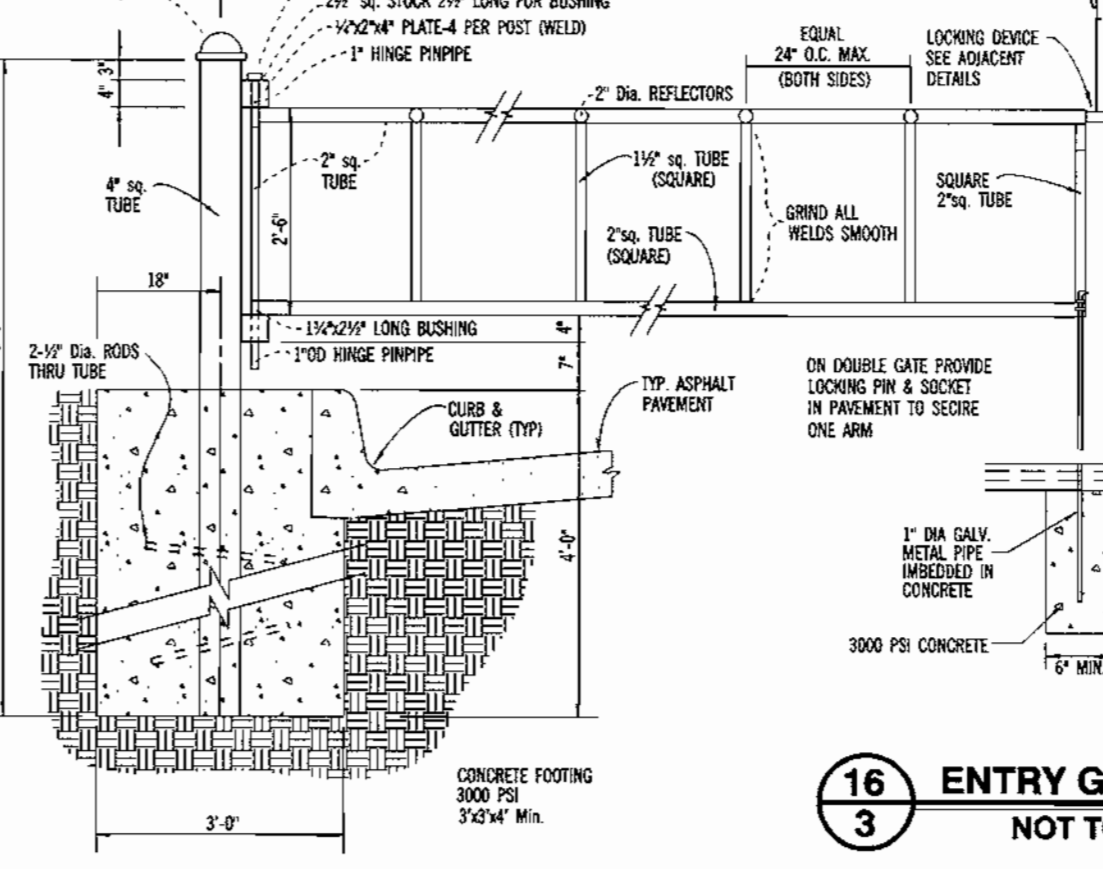
16 ENTRY GATE DETAIL
NOT TO SCALE



3 PICNIC PAVILLION
RECTANGULAR SHELTER MODEL NO. # 8-2044LU "IRON MOUNTAIN FORGE"



1 PARK SIGN DETAIL
NOT TO SCALE



- NOTES:**
1. Gate shall swing in towards park.
 2. Paint entire gate gloss black.
 3. Install white reflective disk - 2" o.c. across top rail at verticals.
 4. Install one (1) 2" O.D. socket in grass on each side of roadway for securing gate in open position. Hook shall be welded to post and eyelet welded to top rail of gate.
 5. Both right & left sides of gate are symmetrical.
 6. Each bushing shall have min. (2) two locking cap screws for adjustments.
 7. Grease all bushings for fittings w/ lithium grease.
 8. Stop to be installed at bottom of each 1" hinge pin pipe after hanging.
 9. All 4" sq. tubing shall have 3/16" wall thickness min.
 10. All metal parts to be primed prior to painting.

HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

Ray J. Arthur 6-2-00
DIRECTOR DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

W. J. ... 6/15/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

... 7/10/00
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 7/10/00
DIRECTOR DATE

SDP-00-35 BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION

APPROVED PLANNING BOARD OF HOWARD COUNTY

DATE: 5/1/2000

NOTE: STRUCTURE SHALL MEET ALL SPECIFICATIONS OF IRON MOUNTAIN FORGE. SUBMIT SHOP DRAWINGS PRIOR TO CONSTRUCTION.

OWNER/DEVELOPER:
DEPARTMENT OF PUBLIC WORKS
3450 COURTHOUSE DRIVE
ELLICOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE
COLUMBIA, MARYLAND 21044



No.	REVISION	DATE	BY

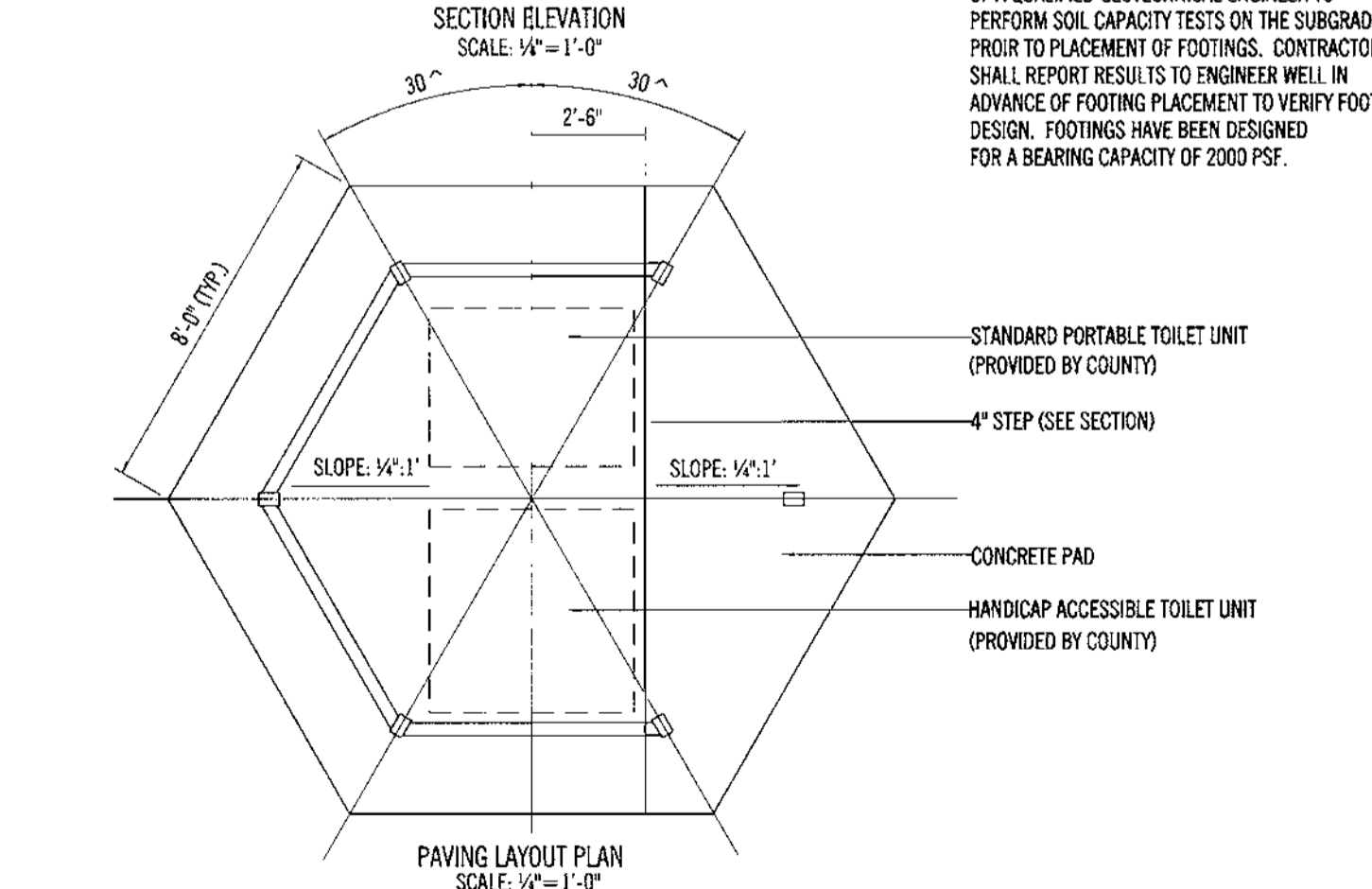
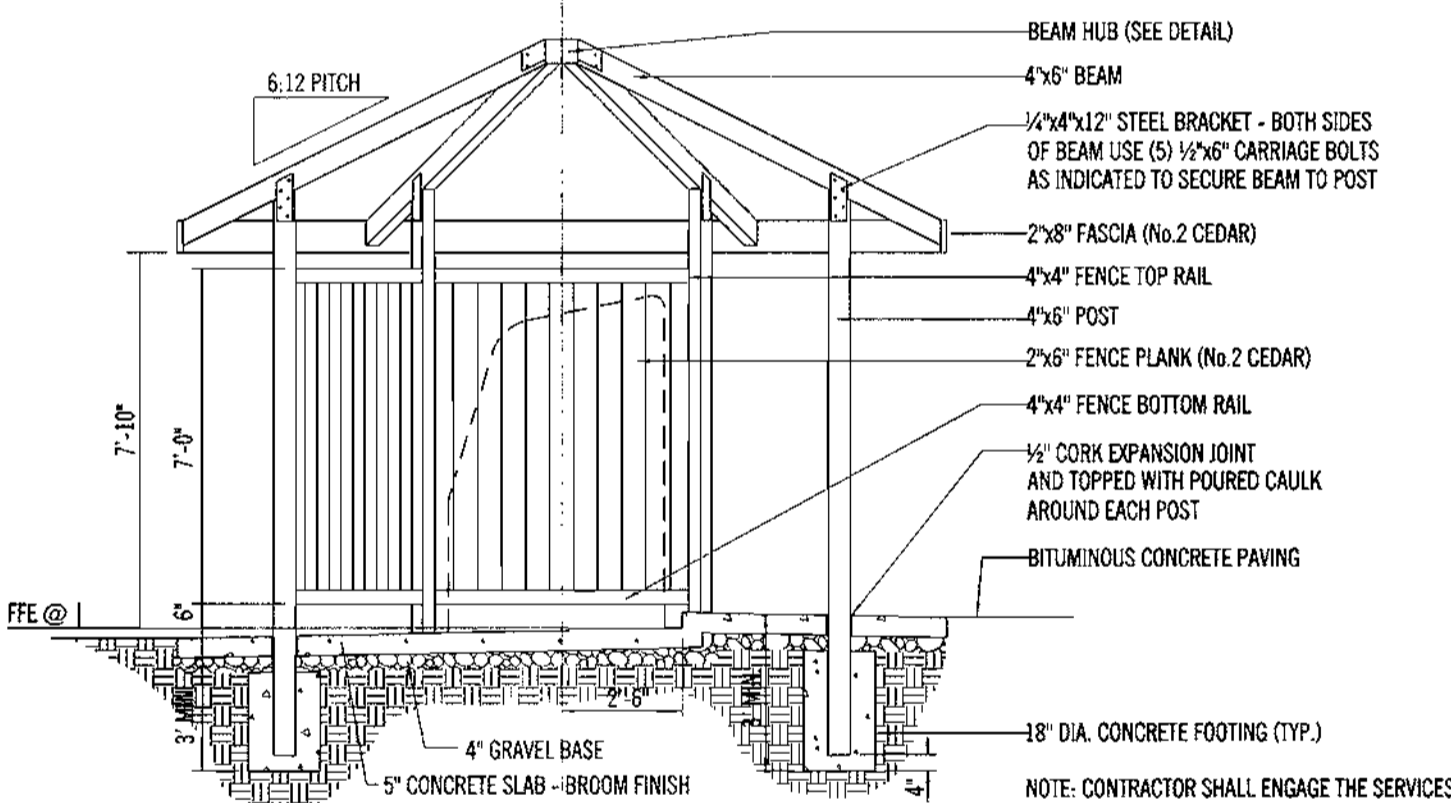
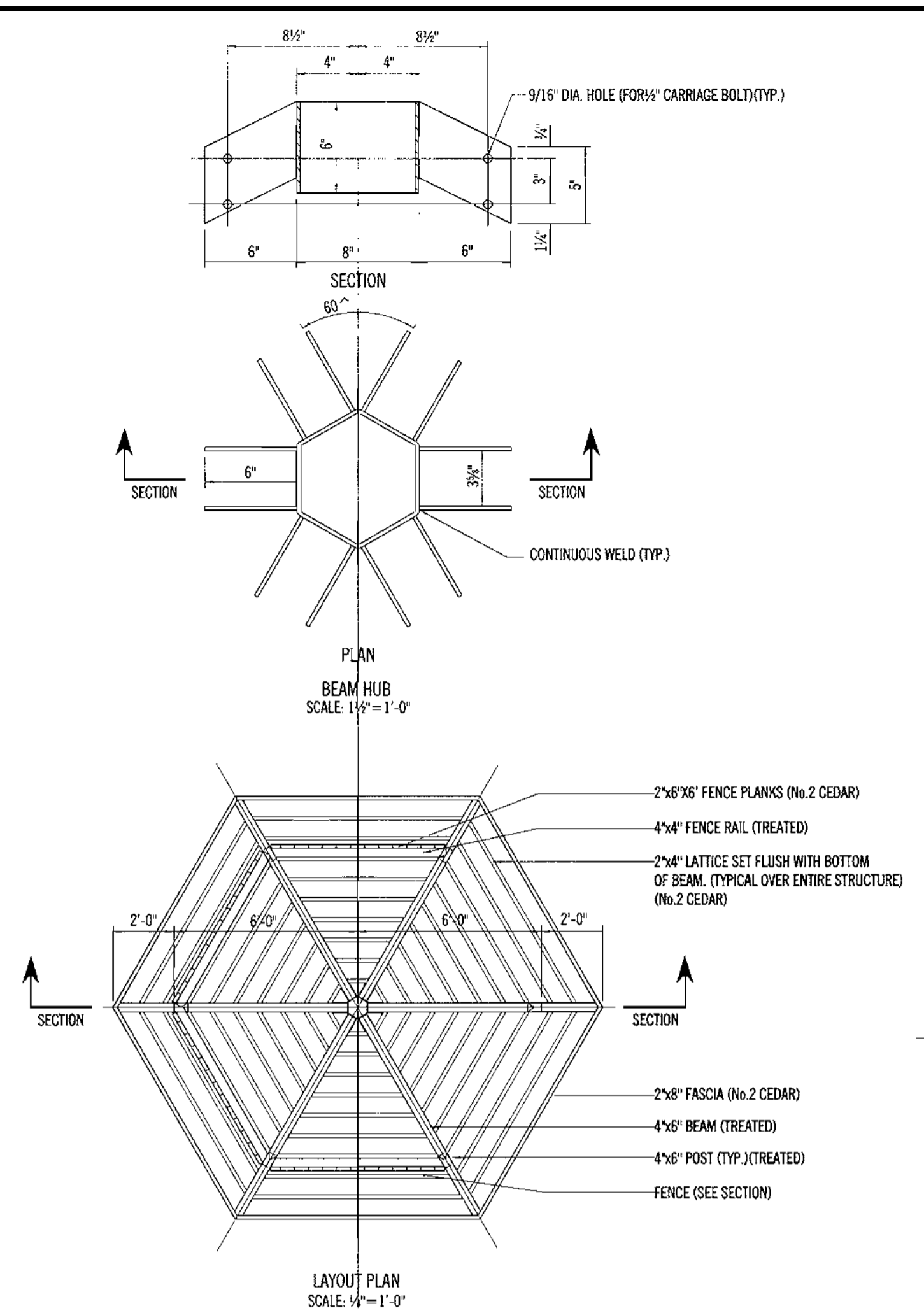
GREENHORNE & O'MARA, INC. 15020 SHADY GROVE ROAD, SUITE 400, ROCKVILLE, MD. 20850 (301) 738-3890

ANNAPOLIS, MD. • ATLANTA, GA. • AURORA, CO. • BALTIMORE, MD. • CULPEPER, VA. • DULUTH, GA. • EXPORT, PA. • FAIRFAX, VA. • FREDERICKSBURG, VA. • GREENBELT, MD. • LEESBURG, VA. • MANASSAS, VA. • MIDDLEBURY, VT. • ORLANDO, FL. • RALEIGH, NC. • ROCKVILLE, MD. • TAMPA, FL. • WALDORF, MD. • WEST PALM BEACH, FL.

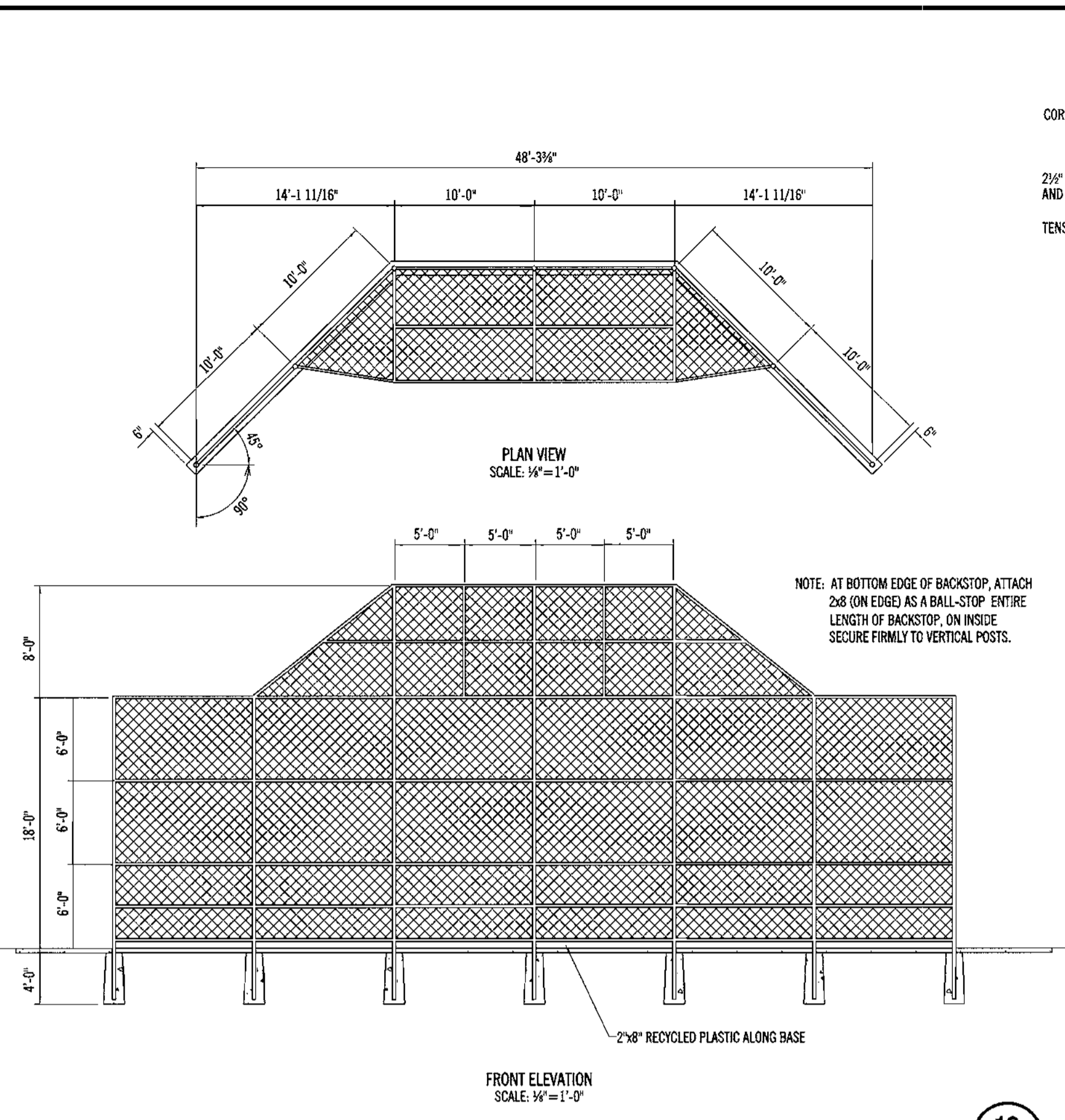
ELKHORN PARK - CAPITAL PROJECT N-3929

SITE PLAN DETAILS
NEIGHBORHOOD FIELD DEVELOPMENT
VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
OPEN SPACE LOTS 565 & 536

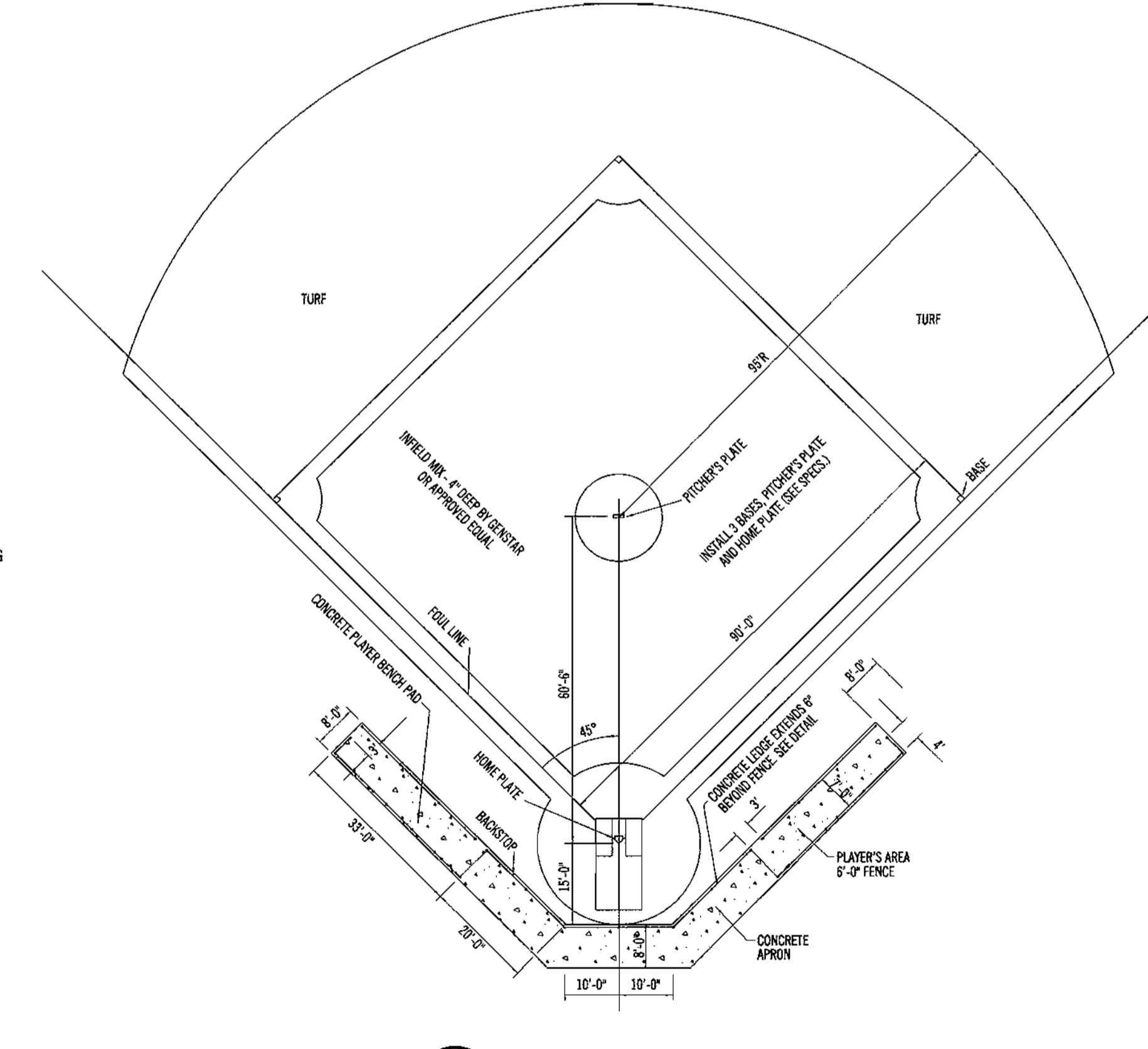
JWC/DESIGN	SCALE	AS SHOWN
MAD/DRAWN	3 OF 11	
CHECKED	SHEET	
DATE	NOV. 1999	R-3117-X
PROJ. No.	7781-000	FILE No.



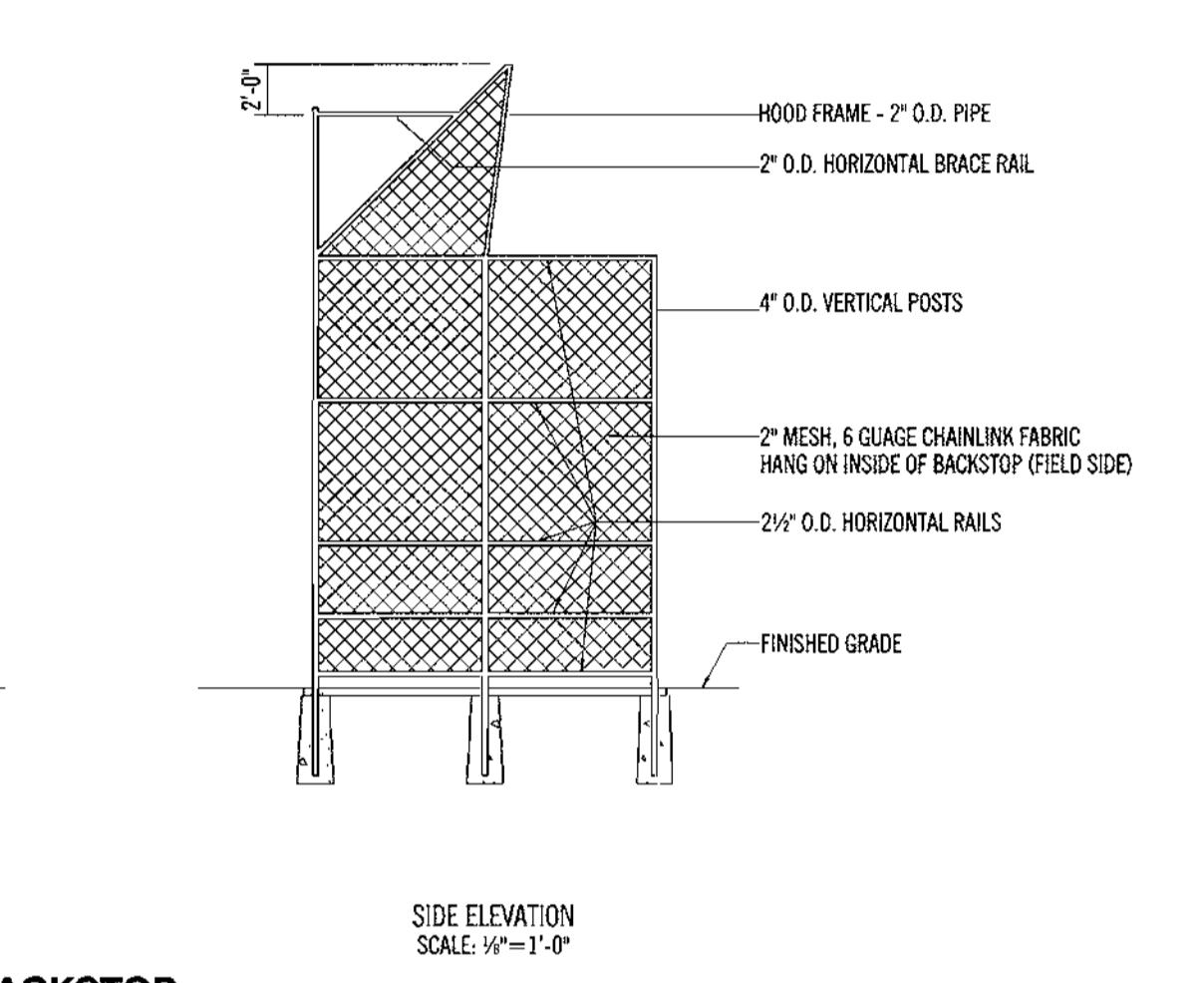
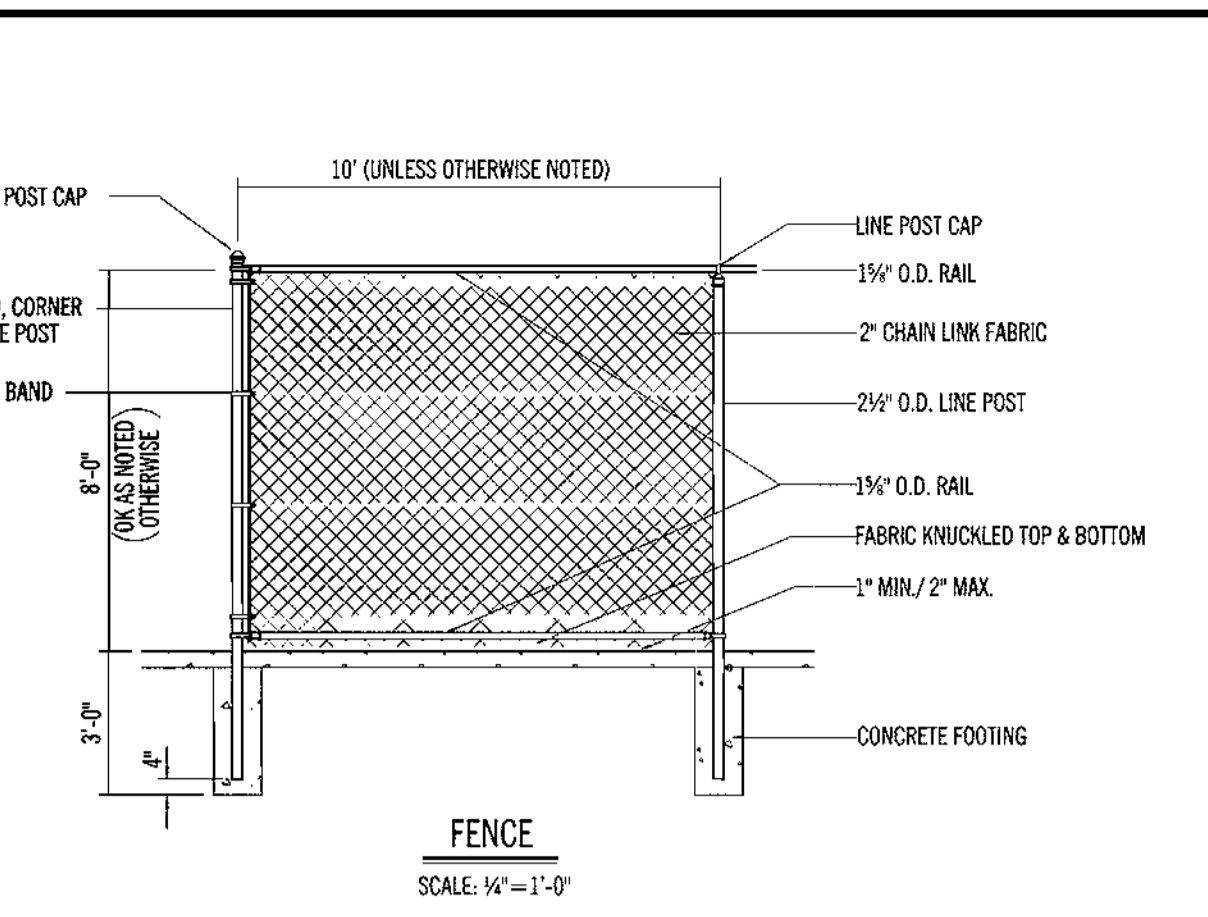
17 PORTABLE TOILET SHELTER
4



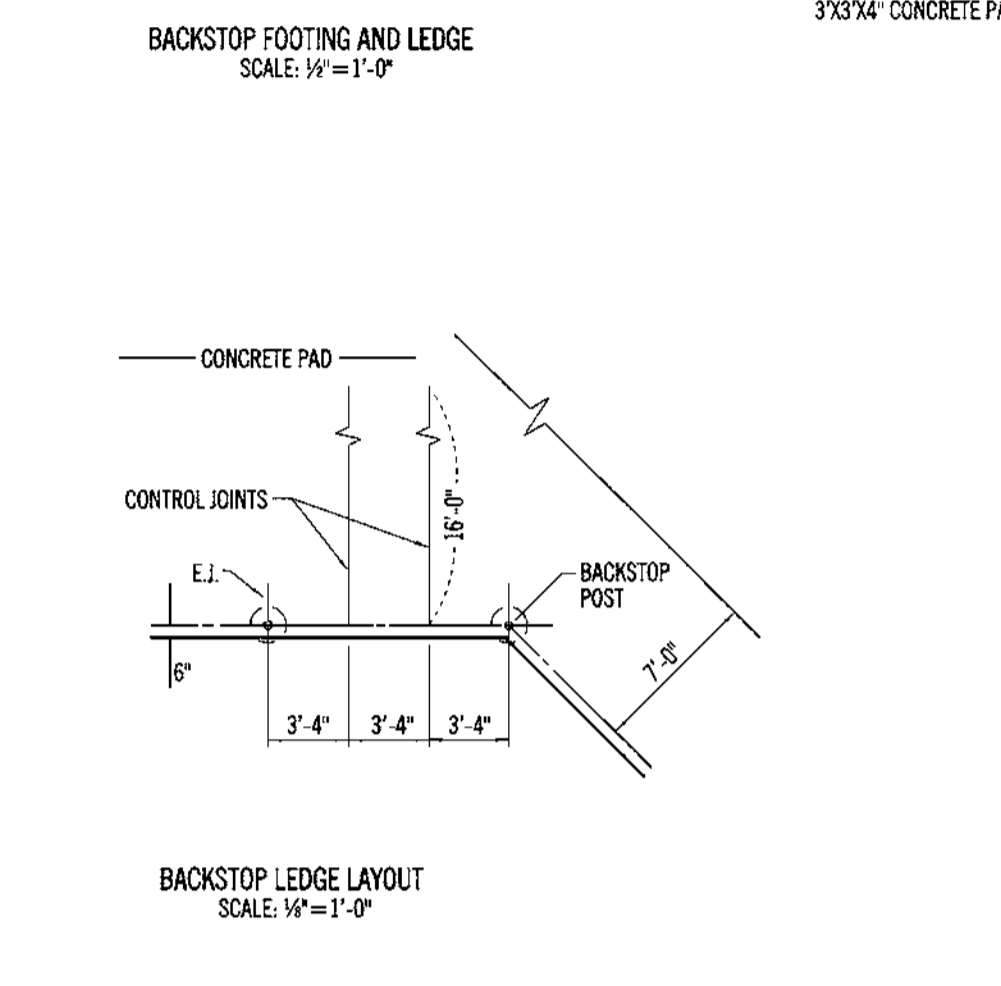
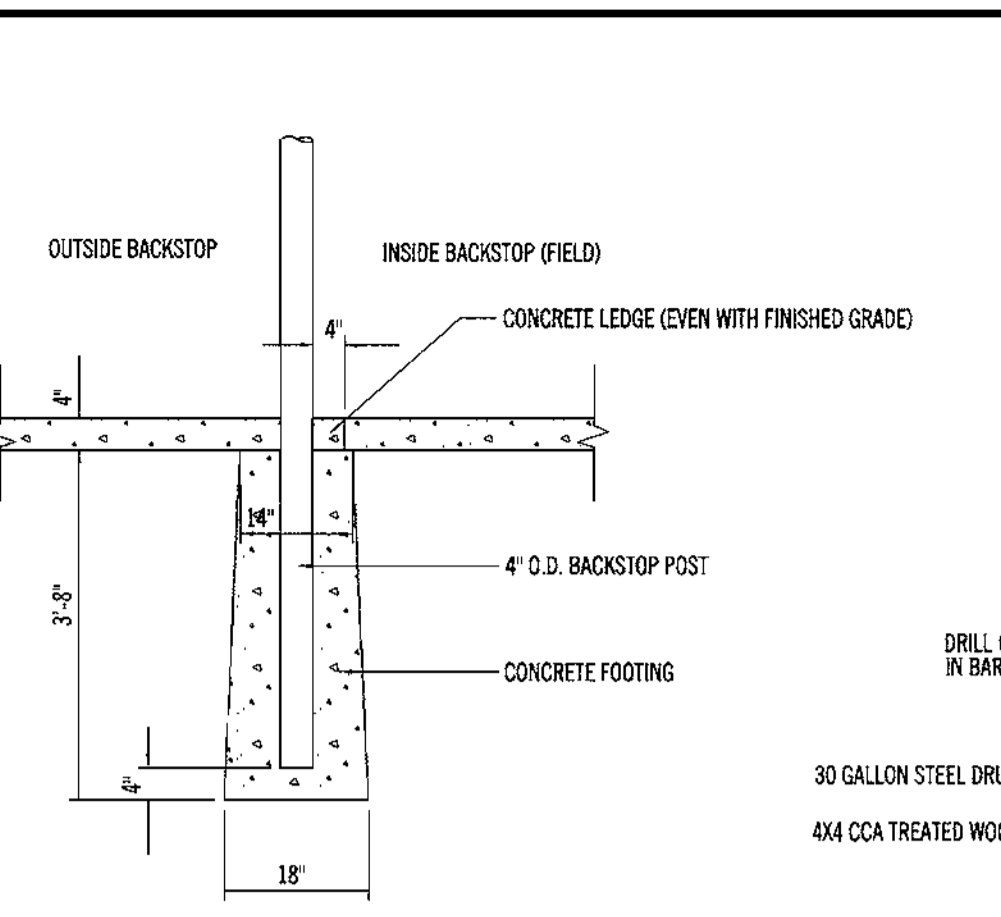
18 BACKSTOP
4



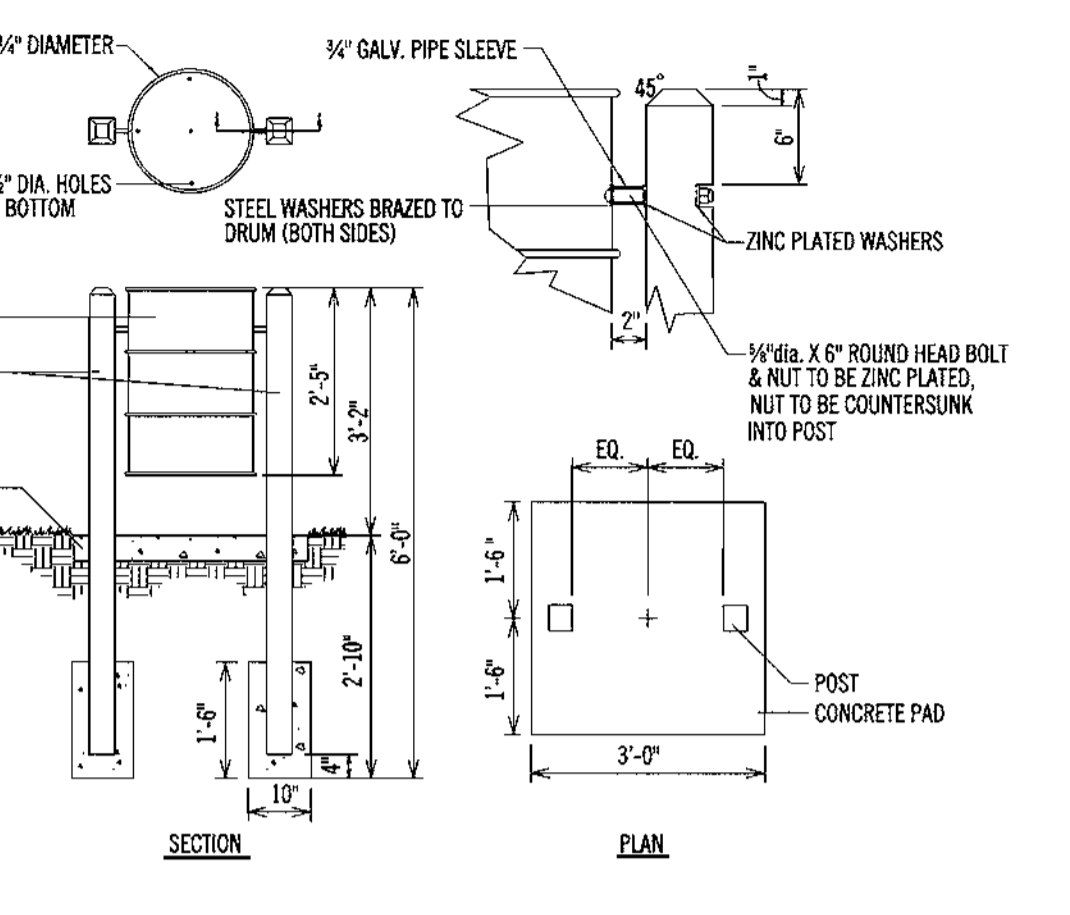
19 INFIELD LAYOUT PLAN
4 NOT TO SCALE



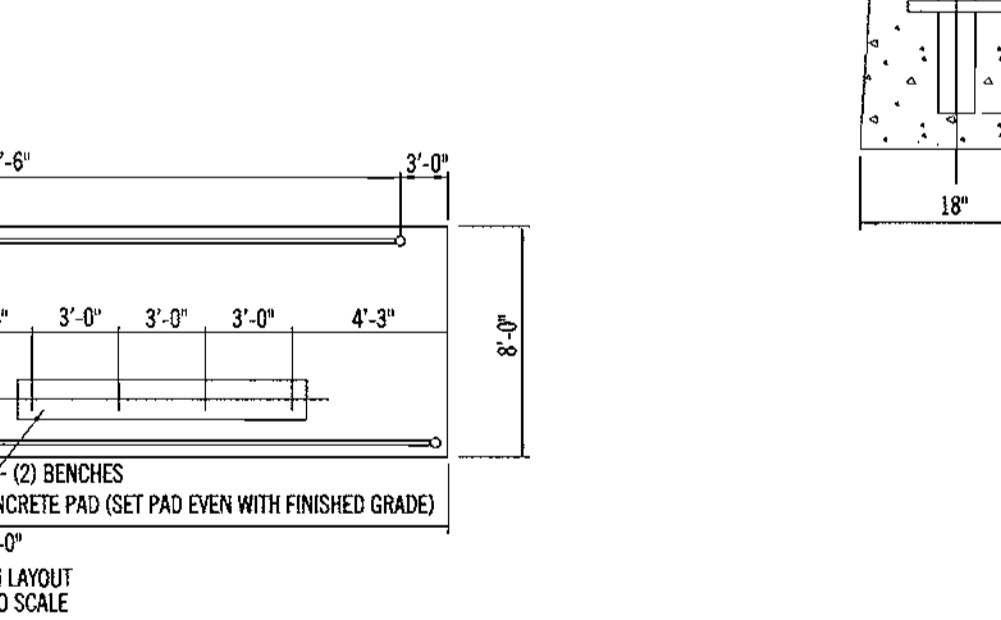
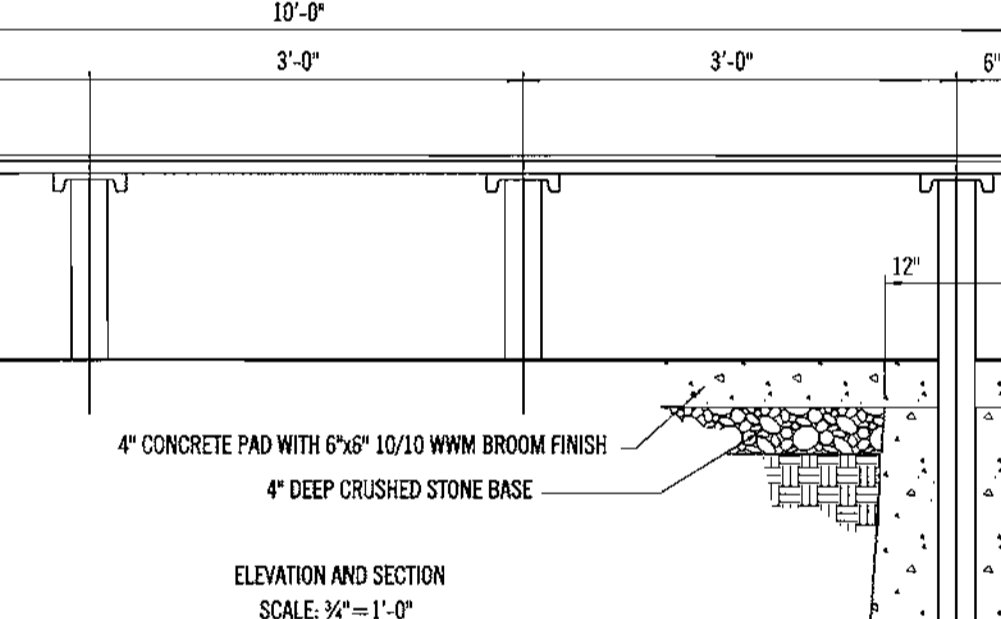
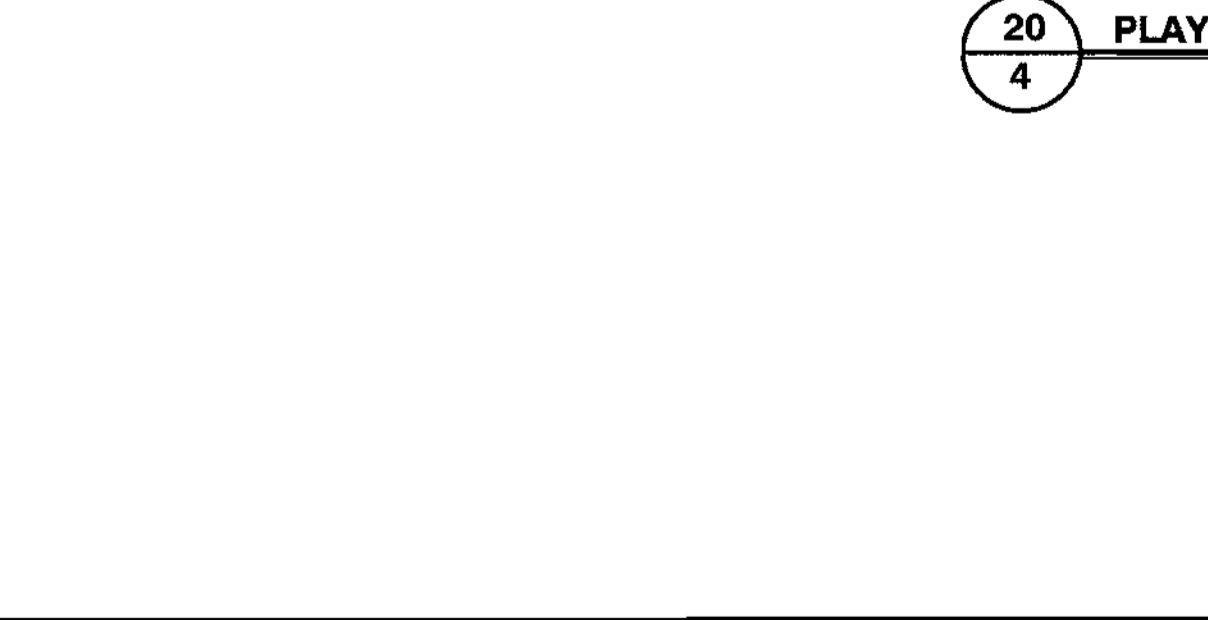
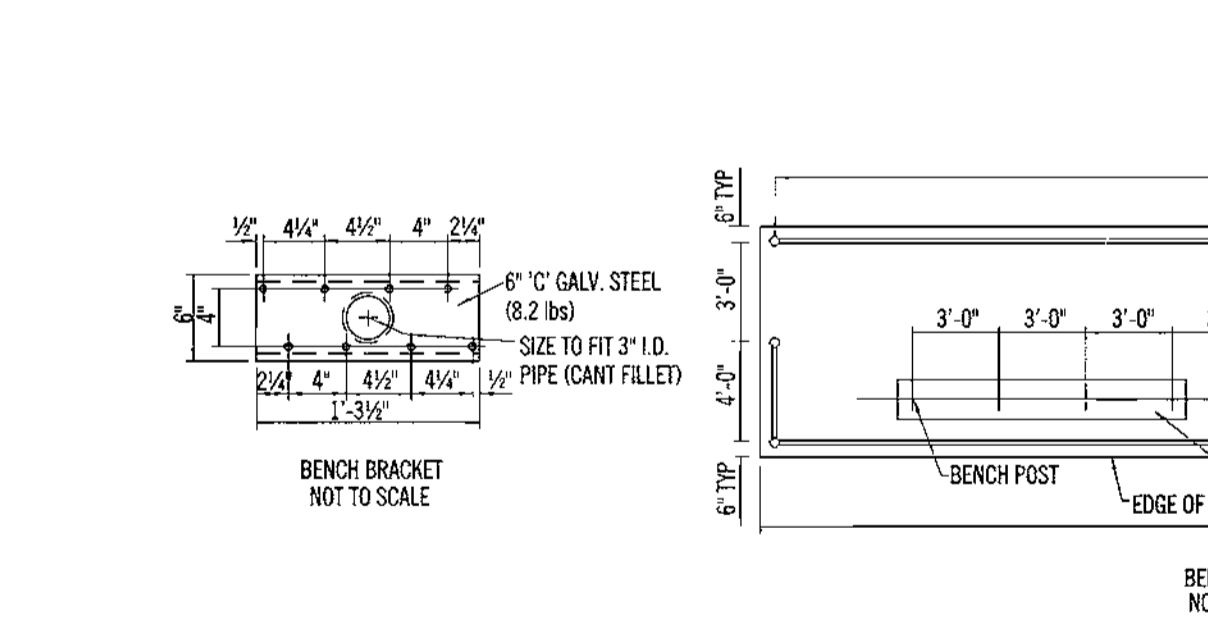
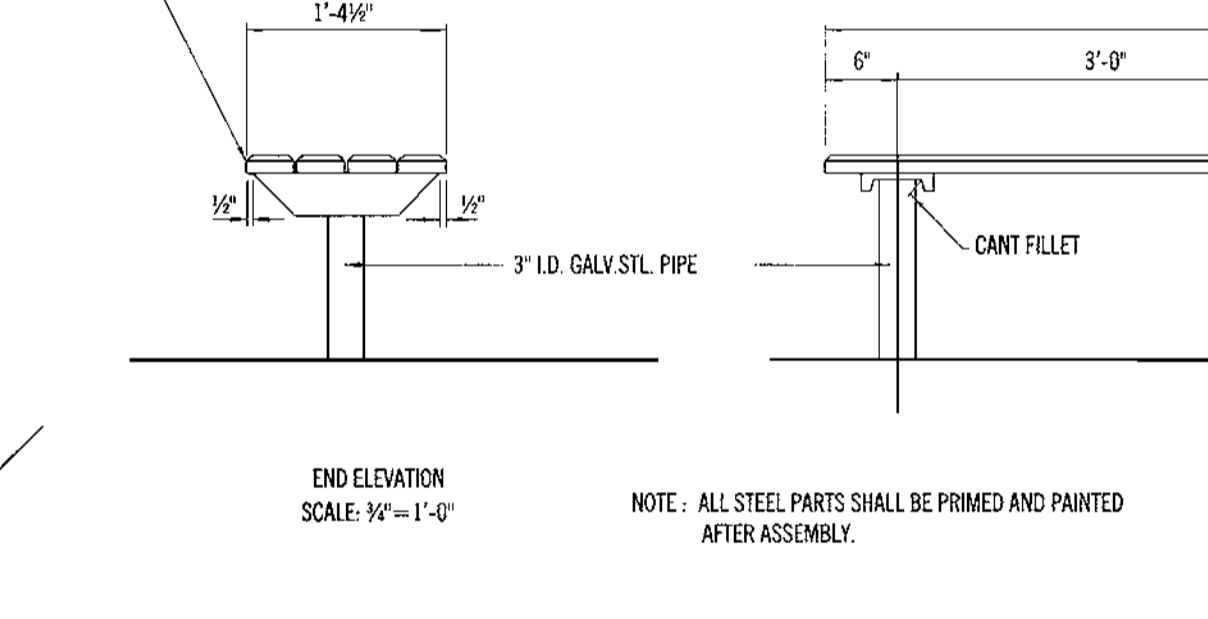
20 PLAYER BENCH AND PAD
4



21 TRASH RECEPTACLE
4 NOT TO SCALE



21 TRASH RECEPTACLE
4 NOT TO SCALE



20 PLAYER BENCH AND PAD
4

HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS			
<i>Gary J. Arthur</i>		6.2.00	
DIRECTOR		DATE	
APPROVED: DEPARTMENT OF PLANNING AND ZONING			
<i>Mark Deussen</i>		6/15/00	
CHIEF, DEVELOPMENT ENGINEERING DIVISION		DATE	
<i>Andy Hamilton</i>		7/14/00	
CHIEF, DIVISION OF LAND DEVELOPMENT		DATE	
<i>Scott Smith</i>		7/14/00	
DIRECTOR		DATE	
BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION			
SDP-00-35			
PERMIT INFORMATION CHART			
SUBDIVISION NAME	SECT./AREA	LOT #	
VILLAGE OF OWEN BROWN, ELKHORN PARK	4 / 1	565 & 536	
PLAT NO. OR L/F	GRID #	ZONING	TAX MAP No.
P.B. 27, P. 71	22	NT & OS	36
ELEC. DIST.		CENSUS TR.	
6		8067.02	
WATER CODE		SEWER CODE	

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE: 5/1/2000

OWNER/DEVELOPER:
DEPARTMENT OF PUBLIC WORKS
3450 COURTHOUSE DRIVE
ELLCOTT CITY, MARYLAND 21043

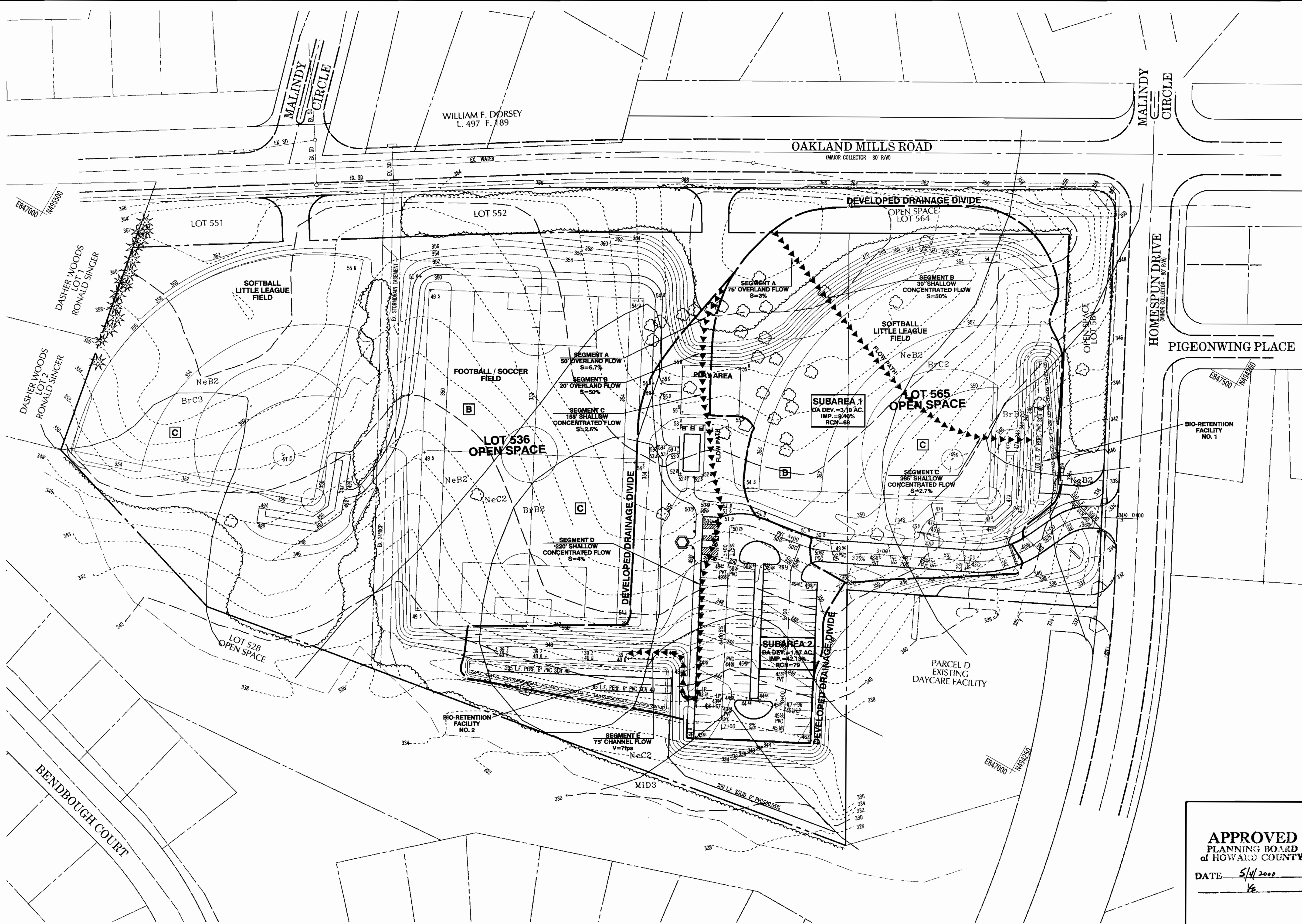
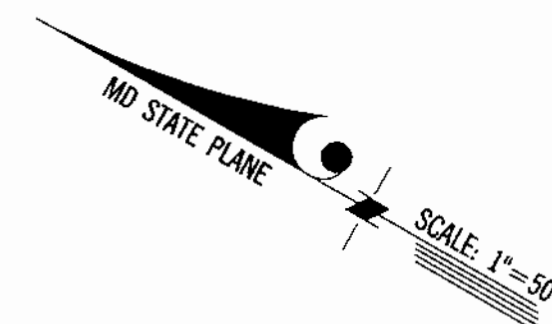
COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE
COLUMBIA, MARYLAND 21044

No.	REVISION	DATE	BY

GREENHORNE & O'MARA, INC. ENGINEERS ARCHITECTS PLANNERS SCIENTISTS SURVEYORS PHOTOGRAMMETRISTS
ANNAPOLIS, MD. • ATLANTA, GA. • AURORA, CO. • BALTIMORE, MD. • CLUPEPER, VA. • DULUTH, GA. • EXPORT, PA. • FAIRFAX, VA. • FREDERICKSBURG, VA. • GREENBELT, MD. • LEESBURG, VA. • MANASSAS, VA. • MOORESTOWN, NJ. • ORLANDO, FL. • RALEIGH, NC. • ROCKVILLE, MD. • TAMPA, FL. • WALDORF, MD. • WEST PALM BEACH, FL.

SITE PLAN DETAILS
NEIGHBORHOOD FIELD DEVELOPMENT
ELKHORN PARK - CAPITAL PROJECT N-3929
VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
OPEN SPACE LOTS 565 & 536

JWC/DESIGN	SCALE	AS SHOWN
MAD/DRAWN	4 OF 11	
CHECKED	SHEET	
NOV. 1999	7781-000	R-3117-X
DATE	PROJ. No.	FILE No.



LEGEND

- EXISTING DRAINAGE DIVIDE
- PROPOSED DRAINAGE DIVIDE
- HYDROLOGIC SOIL GROUP
- DEVELOPED FLOW PATH
- EXISTING FLOW PATH
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- SOIL TYPE BOUNDARY

HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS
Sandy Carter 6-2-00
 DIRECTOR DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Michael... 6/15/00
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
David... 7/14/00
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
... 7/14/00
 DIRECTOR DATE

APPROVED
 PLANNING BOARD
 of HOWARD COUNTY
 DATE 5/4/2000
kg

SDP-00-35 BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION

PERMIT INFORMATION CHART			
SUBDIVISION NAME	VILLAGE OF OWEN BROWN, ELKHORN PARK	SECT./AREA	4 / 1
LOT #	565 & 536		
PLAT NO. OR L/F	P.B. 27, F. 71	ZONING	NT & OS
GRID #	22	TAX MAP No.	36
		ELEC. DIST.	6
		CENSUS TR.	6067.02
WATER CODE		SEWER CODE	

OWNER/DEVELOPER:
 DEPARTMENT OF PUBLIC WORKS
 3450 COURTHOUSE DRIVE
 ELLICOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
 10221 WINCOPIN CIRCLE
 COLUMBIA, MARYLAND 21044



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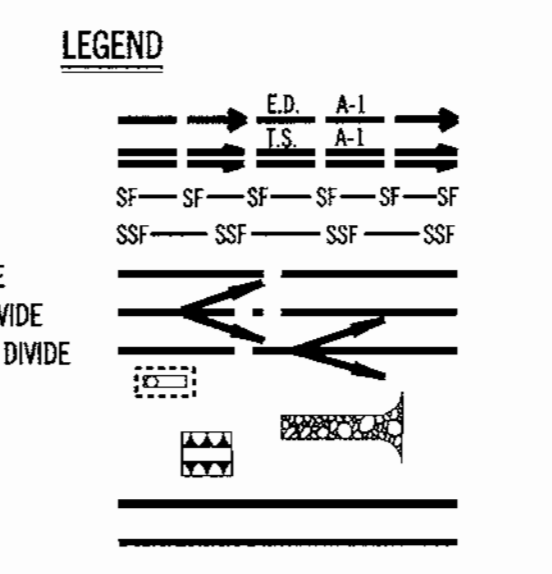
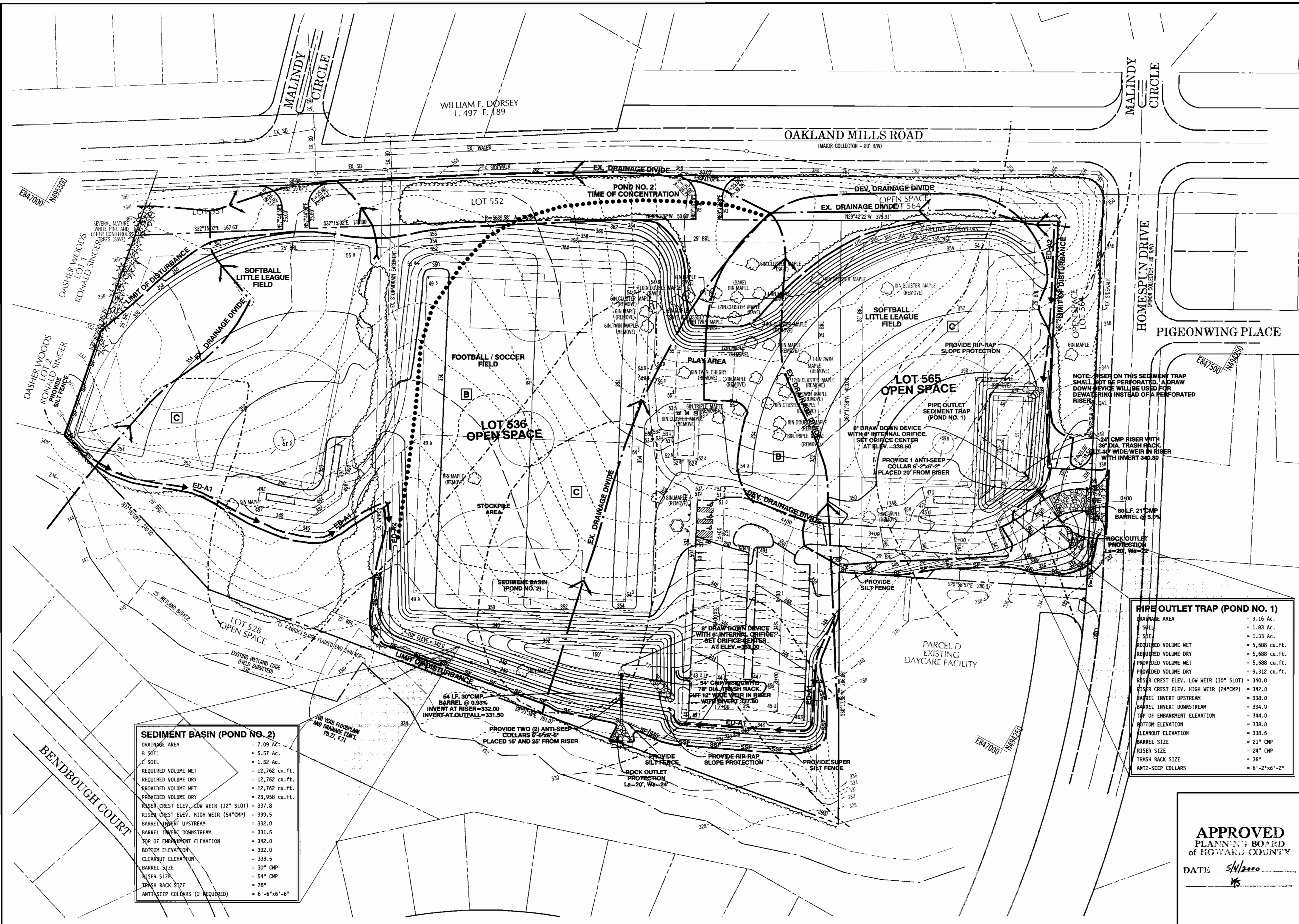
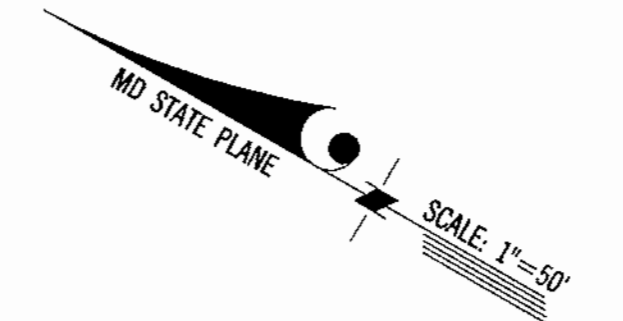
GREENHORNE & O'MARA, INC.
 ENGINEERS ARCHITECTS PLANNERS SCIENTISTS SURVEYORS PHOTOGRAMMETRISTS
 15020 SHADY GROVE ROAD, SUITE 400, ROCKVILLE, MD. 20850 (301) 738-3890
 ANNAPOLIS, MD. • ATLANTA, GA. • AURORA, CO. • BALTIMORE, MD. • CULPEPER, VA. • DULUTH, GA. • EXPORT, PA. • FAIRFAX, VA. • FREDERICKSBURG, VA. • GREENBELT, MD. • LEESBURG, VA. • MANASSAS, VA. • MOORESTOWN, NJ. • ORLANDO, FL. • RALEIGH, NC. • ROCKVILLE, MD. • TAMPA, FL. • WALDORF, MD. • WEST PALM BEACH, FL.

DRAINAGE AREA MAP FOR STORMWATER MANAGEMENT
 NEIGHBORHOOD FIELD DEVELOPMENT
ELKHORN PARK - CAPITAL PROJECT N-3929
 VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
 OPEN SPACE LOTS 565 & 536

ZONE - NT OPEN SPACE
 6th ELECTION DISTRICT

JWC/DESIGN	SCALE	1" = 50'
MAD/DRAWN		5 OF 11
CHECKED	SHEET	
NOV. 1999	7781-000	R-3117-X
DATE	PROJ No.	FILE No.

HOWARD COUNTY, MARYLAND
 TAX/ZONE MAP 36



**THIS PLAN FOR
SEDIMENT CONTROL
ONLY**

SEDIMENT CONTROL		
BY THE DEVELOPER: "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT MANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT." "I ALSO AUTHORIZE THE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT." <i>Ray J. Arthur</i> 5-6-00 SIGNATURE OF DEVELOPER DATE		
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 REQUIREMENT OF THE HOWARD SOIL CONSERVATION DISTRICT." <i>John R. Robinson</i> 6/1/00 SIGNATURE OF ENGINEER DATE		
REVIEWED FOR HOWARD S.C.D.	DATE	
AND MEETS TECHNICAL REQUIREMENTS. <i>Cheryl Simmons</i> 6-8-00 U.S. SOIL CONSERVATION SERVICE DATE		
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT <i>John R. Robinson</i> 6-8-00 HOWARD S.C.D. DATE		
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS <i>Ray J. Arthur</i> 6-2-00 DIRECTOR DATE		
APPROVED, DEPARTMENT OF PLANNING AND ZONING <i>John R. Robinson</i> 6/1/00 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE <i>John R. Robinson</i> 7/1/00 CHIEF, DIVISION OF LAND DEVELOPMENT DATE <i>John R. Robinson</i> 7/1/00 DIRECTOR DATE		
BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION		
SDP-00-35		
PERMIT INFORMATION CHART		
SUBDIVISION NAME VILLAGE OF OWEN BROWN, ELKHORN PARK	SECT./AREA 4 / 1	LOT # 565 & 536
PLAT NO. OR L/F P.B. 27, F. 71	GRID # 22	ZONING NT & OS
TAX MAP No. 36	ELEC. DIST. 6	CENSUS TR. 6067.02
WATER CODE	SEWER CODE	

PIPE OUTLET TRAP (POND NO. 1)	
DRAINAGE AREA	= 3.16 Ac.
SLOPE	= 1.83 Ac.
SLOPE	= 1.33 Ac.
REQUIRED VOLUME WET	= 5,688 cu.ft.
REQUIRED VOLUME DRY	= 5,688 cu.ft.
PROVIDED VOLUME WET	= 5,688 cu.ft.
PROVIDED VOLUME DRY	= 9,312 cu.ft.
RISER CREST ELEV. LOW WEIR (10" SLOT)	= 340.8
RISER CREST ELEV. HIGH WEIR (24" CMP)	= 342.0
BARREL INVERT UPSTREAM	= 338.0
BARREL INVERT DOWNSTREAM	= 334.0
TOP OF EMBANKMENT ELEVATION	= 344.0
BOTTOM ELEVATION	= 338.0
CLEANOUT ELEVATION	= 338.6
BARREL SIZE	= 21" CMP
RISER SIZE	= 24" CMP
TRASH RACK SIZE	= 36"
ANTI-SEEP COLLARS	= 6'-2"x6'-2"

SEDIMENT BASIN (POND NO. 2)	
DRAINAGE AREA	= 7.09 Ac.
B SOIL	= 5.57 Ac.
C SOIL	= 1.52 Ac.
REQUIRED VOLUME WET	= 12,762 cu.ft.
REQUIRED VOLUME DRY	= 12,762 cu.ft.
PROVIDED VOLUME WET	= 12,762 cu.ft.
PROVIDED VOLUME DRY	= 23,958 cu.ft.
RISER CREST ELEV. LOW WEIR (12" SLOT)	= 337.8
RISER CREST ELEV. HIGH WEIR (54" CMP)	= 339.5
BARREL INVERT UPSTREAM	= 332.0
BARREL INVERT DOWNSTREAM	= 331.5
TOP OF EMBANKMENT ELEVATION	= 342.0
BOTTOM ELEVATION	= 332.0
CLEANOUT ELEVATION	= 333.5
BARREL SIZE	= 30" CMP
RISER SIZE	= 54" CMP
TRASH RACK SIZE	= 78"
ANTI-SEEP COLLARS (2 REQUIRED)	= 6'-6"x6'-6"

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE: 5/1/2000
MS

OWNER/DEVELOPER:
DEPARTMENT OF PUBLIC WORKS
3450 COURTHOUSE DRIVE
ELLCOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE
COLUMBIA, MARYLAND 21044

No.	REVISION	DATE	BY

GREENHORNE & O'MARA, INC.
ENGINEERS
ARCHITECTS
PLANNERS
SCIENTISTS
SURVEYORS
PHOTOGRAMMETRISTS
15020 SHADY GROVE ROAD, SUITE 400, ROCKVILLE, MD. 20850 (301) 738-3890
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SEDIMENT CONTROL PLAN
NEIGHBORHOOD FIELD DEVELOPMENT
ELKHORN PARK - CAPITAL PROJECT N-3929
VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
OPEN SPACE LOTS 565 & 536

JWC/DESIGN SCALE 1" = 50'
MAD/DRAWN 6 OF 11
CHECKED SHEET
HOWARD COUNTY, MARYLAND NOV. 1999 7781-000 R-3117-X
TAX/ZONE MAP 36 DATE PROJ No. FILE No.

DETAIL 1 - EARTH DIKE

Construction Specifications

- All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 15'.
- Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
- Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
- All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
- The dike shall be excavated or deepened to flow grade and cross section as required to meet the criteria specified herein and if deep of bank protection or other irregularities which will impede normal flow.
- Fill shall be compacted by earth moving equipment.
- All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
- Inspection and maintenance must be provided periodically and after each rain event.

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

Construction Specifications

- Length - minimum of 50' (4' 30" for single residence lot).
- Width - 10' minimum, should be flared at the existing road to provide a turning radius.
- Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. The plan approval authority may not require single family residences to use geotextile.
- Stone - crushed aggregate (2" to 3"), or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
- Surface Water - all surface water flowing to or diverted toward construction entrances shall be placed through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a malleable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the size is located at a high spot and has no drainage to cover a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
- Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

DETAIL 22 - SILT FENCE

Construction Specifications

- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" square (minimum cut, or 1 1/2" diameter (minimum round) and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
- Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:
 - Tensile Strength 50 lbs/in (min.) Test: HSM 509
 - Tensile Modulus 20 lbs/in (min.) Test: HSM 509
 - Flow Rate 0.3 gal ft / minute (max.) Test: HSM 322
 - Filtering Efficiency 75% (min.) Test: HSM 322
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt Fence shall be inspected after each rainfall event and maintained when bushes occur or when sediment accumulation reached 50% of the fabric height.

DETAIL 10 - RIP-RAP OUTLET SEDIMENT TRAP - ST III

Construction Specifications

- The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
- The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of embankment shall be 4', measured at centerline of embankment.
- All cut and fill slopes shall be 2:1 or flatter.
- Elevation of the top of any dike directing water into trap must equal or exceed the height of trap embankment.
- Storage area provided shall be figured by computing the volume measured from top of excavation. (For storage requirements see Table 10).
- Filter cloth shall be placed over the bottom and sides of the outlet channel prior to placement of stone. Section of fabric must overlap at least 1" with section nearest the entrance placed on top. Fabric shall be embedded at least 6" into existing ground at entrance of outlet channel.
- Stone used in the outlet channel shall be 4" - 7" placed 18" thick.
- Outlet - An outlet shall be provided, which includes a means of conveying the discharge in an erosion free manner to an existing stable channel. Protection against scour at the discharge end shall be provided as necessary.
- Outlet channel must have positive drainage from the trap.
- Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 of the wet storage depth of the trap (ESD of trap). Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
- The structure shall be inspected periodically after each rain and repaired as needed.
- Construction of traps shall be carried out in such a manner that sediment pollution is abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentrated flow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes should be stabilized (see Note) with seed and mulch upon trap completion and monitored and maintained erosion free during the life of the trap.
- The structure shall be dewatered by approved methods, removed and the area stabilized when the drainage area has been properly stabilized.

RIIP-RAP OUTLET SEDIMENT TRAP - ST III

Construction Specifications

- The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
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- The structure shall be dewatered by approved methods, removed and the area stabilized when the drainage area has been properly stabilized.

DETAIL 5 - RIP-RAP INFLOW PROTECTION

Construction Specifications

- Rip-rap lined inflow channels shall be 1" in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3" (min.) bottom width. The channel shall be lined with 4" to 12" rip-rap to a depth of 18".
- Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
- Entrance and exit sections shall be installed as shown on the detail section.
- Rip-rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.
- Gabion Inflow Protection may be used in lieu of Rip-rap Inflow Protection.
- Rip-rap should blend into existing ground.
- Rip-rap Inflow Protection shall be used where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Stone Dike or Temporary Seale Lining criteria.

DETAIL 27 - ROCK OUTLET PROTECTION III

Construction Specifications

- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
- The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
- Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.
- Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
- The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

ROCK OUTLET PROTECTION III

Construction Specifications

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- The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

DETAIL 28 - BENCHED SLOPES

Construction Specifications

- All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.
- All fill shall be placed and compacted in layers not to exceed 8" in thickness.
- Except for approved landfills or nonstructural fills, fill material shall be of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.
- Frozen material or soft, muddy or highly compressible materials shall not be incorporated into fill slopes or structural fills. Fill shall not be placed on a frozen foundation.
- All benches shall be kept free of sediment during all phases of development.
- Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain or other approved methods.
- All graded areas shall be permanently stabilized immediately following finished grading.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- 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).
- 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.
- Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within:
 - 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1.
 - 14 days to all other disturbed or graded areas on the project site.
- 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.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1993 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.
- 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.
- Site Analysis:

Total Area of Site	12.346 acres
Area Disturbed	11.4 acres
Area to be roofed or paved	1.0 acres
Area to be vegetatively stabilized	10.4 acres
Total Cut	56,720 cy.
Total Fill	15,940 cy.

 All excavation to be disposed of off site under an active grading permit.
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- 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.
- Trenches for the construction of utilities is limited to three pipe lengths or that which can be back filled and stabilized within one working day, whichever is shorter.

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:

- Preferred - Apply 2 tons per acre dolomitic limestone (92lbs./1000sq.ft.) and 600lbs. per acre 10-10-10 fertilizer (141lbs./1000sq.ft.). Before seeding, harrow or disk under three inches of soil. At time of seeding, apply 400lbs. per acre 30-0-0 ureaform fertilizer (91lbs./1000sq.ft.).
- Acceptable - Apply 2 tons per acre dolomitic limestone (92lbs./1000sq.ft.) and 1000lbs. per acre 10-10-10 fertilizer (231lbs./1000sq.ft.). Before seeding, harrow or disk into upper three inches of soil.

SEEDING: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60lbs. per acre (1.4lbs./1000sq.ft.) of Kentucky 31 tall fescue. For the period May 1 thru July 31, seed with 60lbs. Kentucky 31 tall fescue per acre and 21lbs. per acre (.05lbs./1000sq.ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) - 2 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 60lbs. per acre of Kentucky 31 tall fescue and mulch with 2 tons per acre of well anchored straw.

MULCHING: Apply 1-1/2 to 2 tons per acre (70 to 90lbs./1000sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5gal./1000sq.ft.) or emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8gal./1000sq.ft.) for anchoring.

MAINTENANCE: Inspect all seeding areas and make needed repairs, replacements, and reseedings.

TEMPORARY SEEDING NOTES
Apply to graded or cleared areas likely to be redisturbed 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 600lbs. per acre 10-10-10 fertilizer (141lbs./1000sq.ft.).

SEEDING: For periods March 1 thru April 30 and from August 15 thru October 15, seed with 2-1/2 bushels per acre of annual rye (3.2lbs./1000sq.ft.). For period May 1 thru August 14, seed with 3lbs. per acre of weeping lovegrass (.07lbs./1000sq.ft.). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

MULCHING: Apply 1-1/2 to 2 tons per acre (70 to 90lbs./1000sq.ft.) of unrotted weed free small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5gal./1000sq.ft.) or emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8gal./1000sq.ft.) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

SEQUENCE OF CONSTRUCTION

- Obtain all permits required for construction and call Miss Utility to mark all existing utilities within the work area. Locate any additional utilities not marked by Miss Utility by using a private locating company. - 1 Week
- Schedule and attend a pre-construction meeting with the assigned inspector from Howard County. Invite the owner and the engineer. Work out all site construction issues prior to beginning work. - 1 Week
- Install stabilized construction entrance and silt fences below proposed sediment traps. Begin trap construction. - 2 Weeks
- Upon completion of trap construction (both traps No. 1 and No. 2) construct all remaining sediment control practices, such as earth dikes and silt fences. - 3 Weeks
- Obtain inspector's approval of the installed devices prior to continuing work. - 3 Days
- Begin site grading. Maintain sediment control devices on a daily basis and make repairs as needed. At the end of each day, reconstruct the earth dike at the top of the fill below the parking lot to direct drainage into the sediment basin (pond No. 2). - 1 Month
- As rough grading is completed, begin utility construction. As work is finished in a given area, install permanent stabilization measures. Begin construction of structures. - 2 Months
- Upon fine grading construct curb and gutter and begin base paving after all utilities are completed. - 1 week
- Upon completion of all work, install all play field appurtenances shown. Stabilize all areas as soon as possible. - 3 Weeks
- Upon complete stabilization of site areas contributing to the sediment traps, obtain inspector's approval to remove traps. Once traps are removed begin construction of bioretention facilities. - 1 Month
- Upon completion of facilities, stabilize any remaining disturbed areas. - 3 Days
- Upon complete stabilization of all areas and establishment of all vegetation, remove remaining sediment control devices after approval of the Inspector.

OWNER/DEVELOPER:

DEPARTMENT OF PUBLIC WORKS
3450 COURTHOUSE DRIVE
ELLCOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE
COLUMBIA, MARYLAND 21044

No.	REVISION	DATE	BY

ENGINEERS ARCHITECTS PLANNERS SCIENTISTS SURVEYORS PHOTOGRAMMETRISTS

GREENHORNE & O'MARA, INC. 15020 SHADY GROVE ROAD, SUITE 400, ROCKVILLE, MD. 20850 (301) 738-3890
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THIS PLAN FOR SEDIMENT CONTROL ONLY

DATE: 5/4/2000

APPROVED PLANNING BOARD OF HOWARD COUNTY

DATE: 5/4/2000

SEDIMENT CONTROL DETAILS

NEIGHBORHOOD FIELD DEVELOPMENT
ELKHORN PARK - CAPITAL PROJECT N-7029
VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
OPEN SPACE LOTS 565 & 536

HOWARD COUNTY, MARYLAND
TAXZONE MAP 36

JWC/DESIGN
MAD/DRAWN
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SCALE AS SHOWN
7 OF 11
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"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT MANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT."

"I ALSO AUTHORIZE THE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF DEVELOPER: *Gay Arthur* DATE: 6-6-00

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 REQUIREMENT OF THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER: *John R. Robertson* DATE: 6/1/00

REVIEWED FOR HOWARD COUNTY S.C.D. AND MEETS TECHNICAL REQUIREMENTS.
SIGNED: *Cheryl Simmons* DATE: 6-8-00
HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS
DIRECTOR: *Gay Arthur* DATE: 6-2-00

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *Cheryl Simmons* DATE: 6/15/00
CHIEF, DIVISION OF LAND DEVELOPMENT: *John R. Robertson* DATE: 7/14/00
DIRECTOR: *John R. Robertson* DATE: 7/14/00

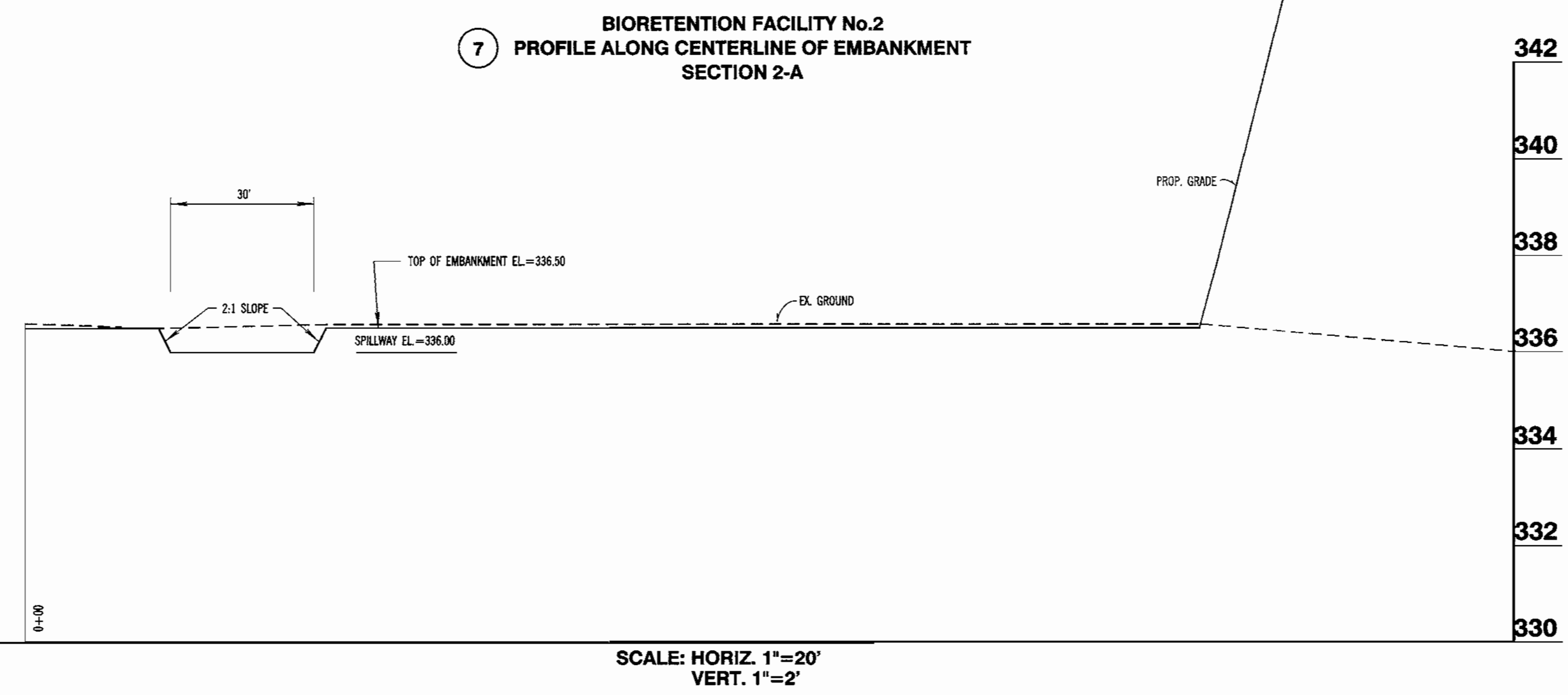
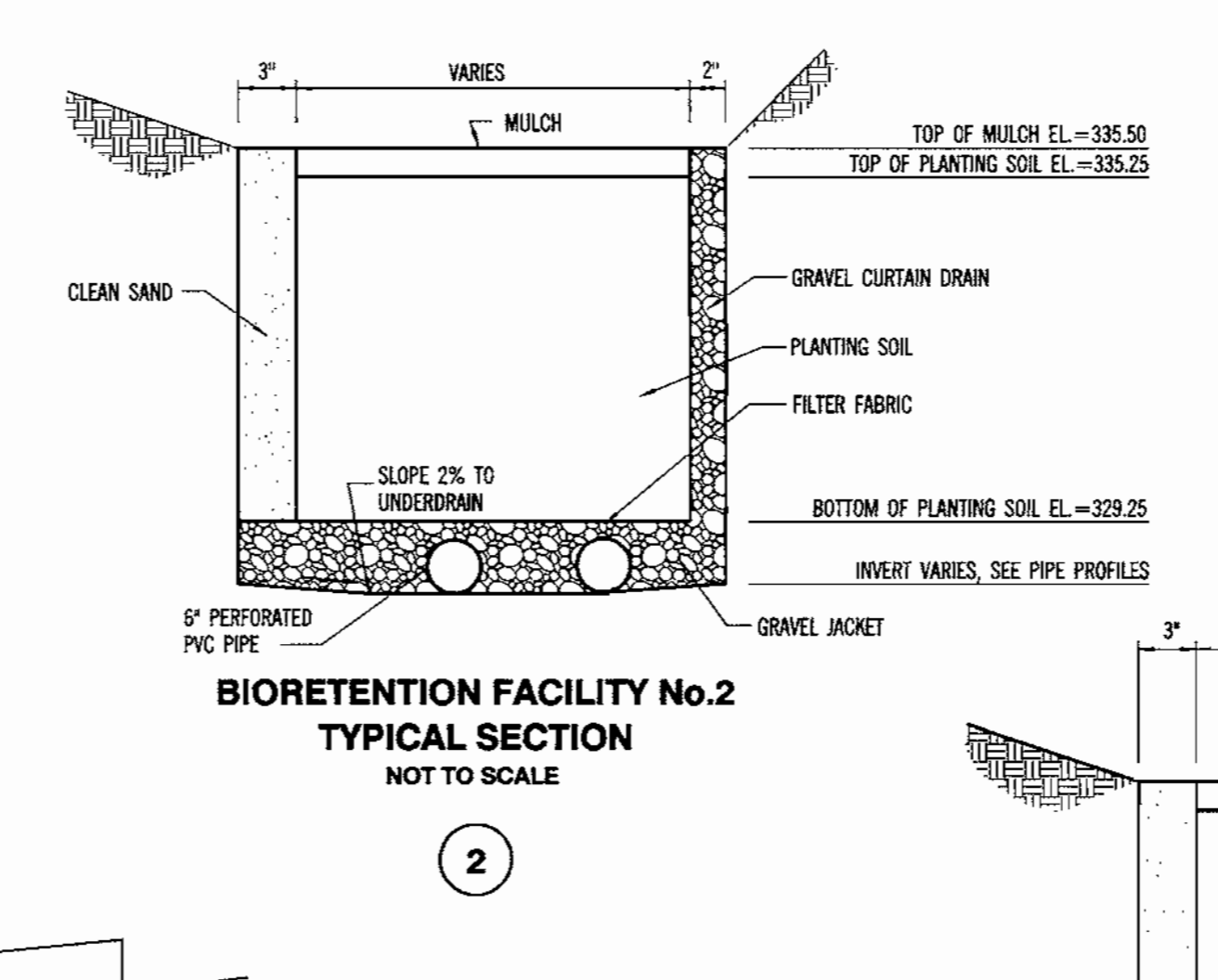
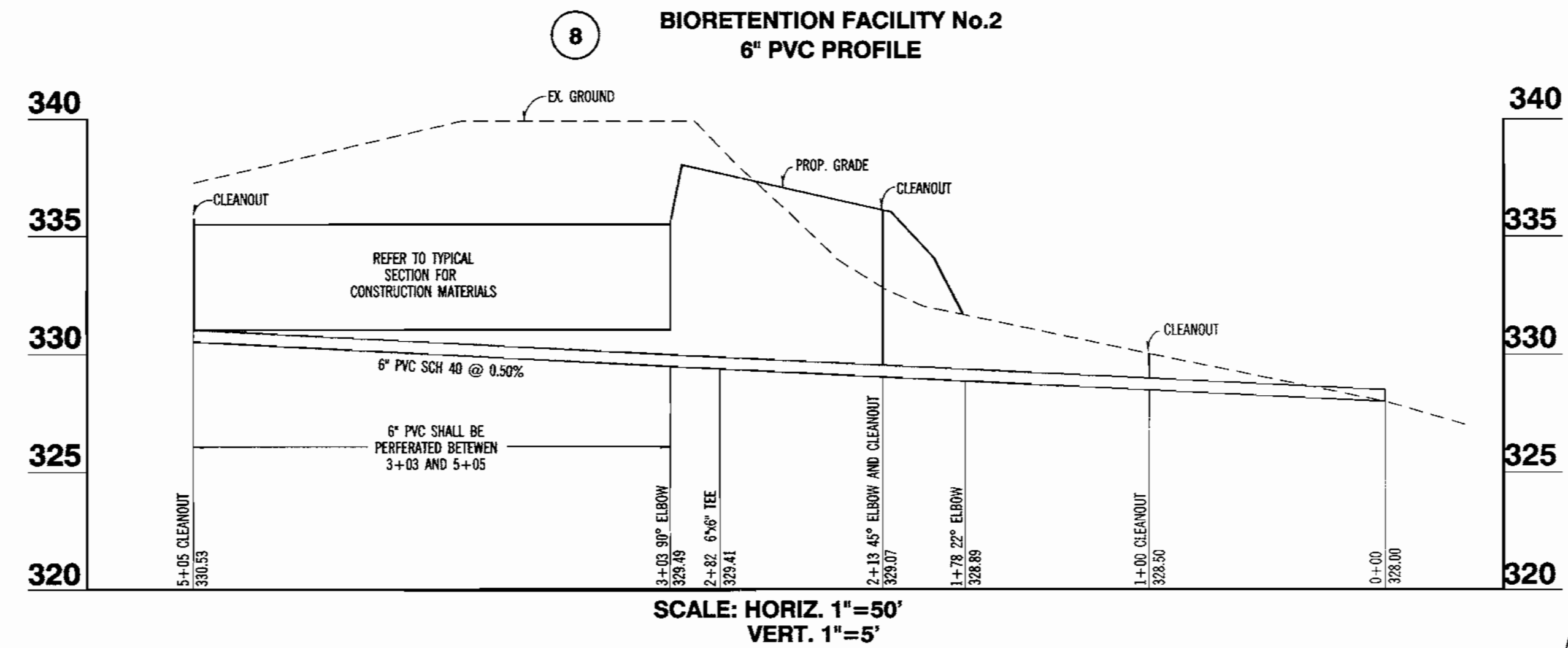
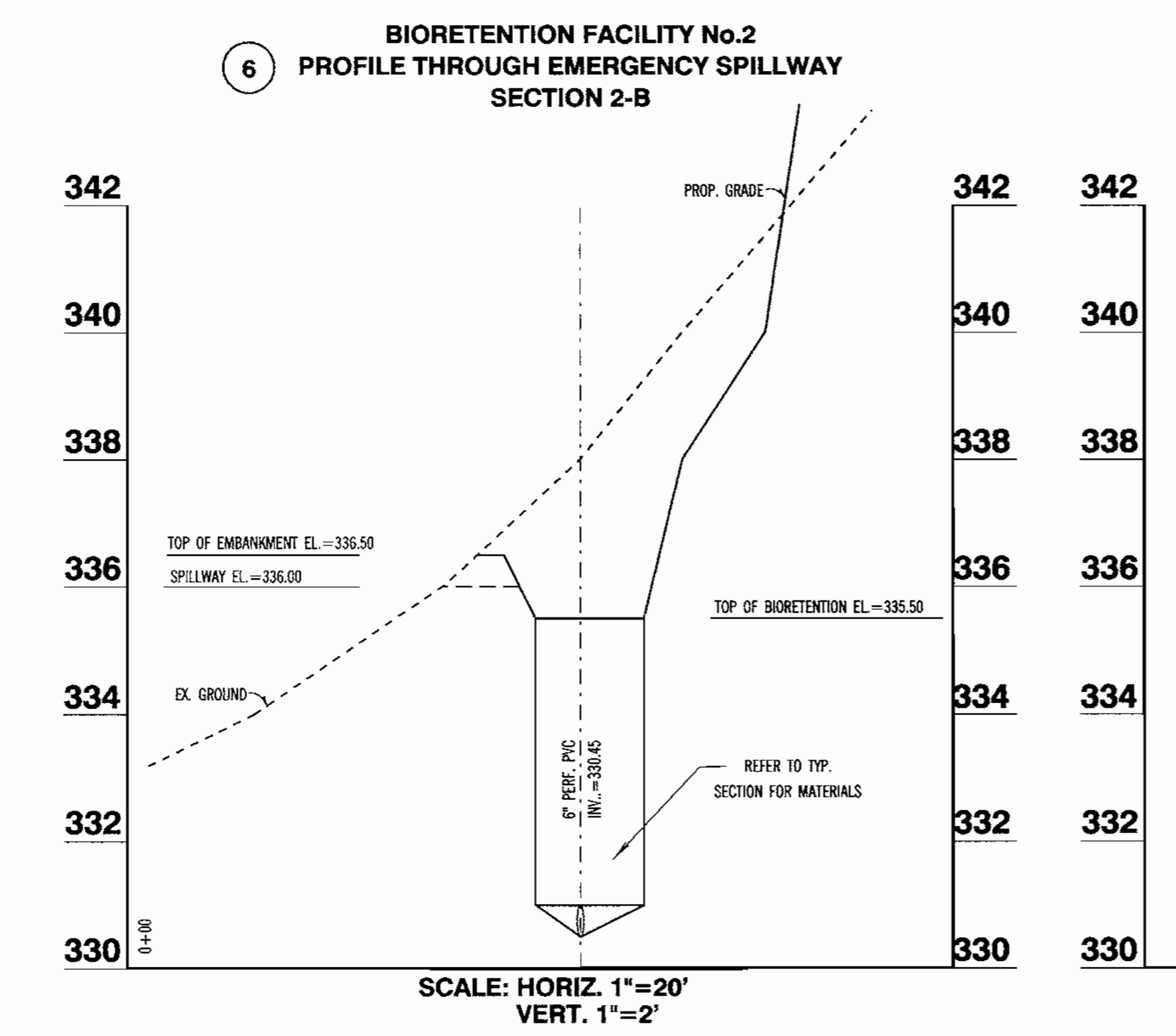
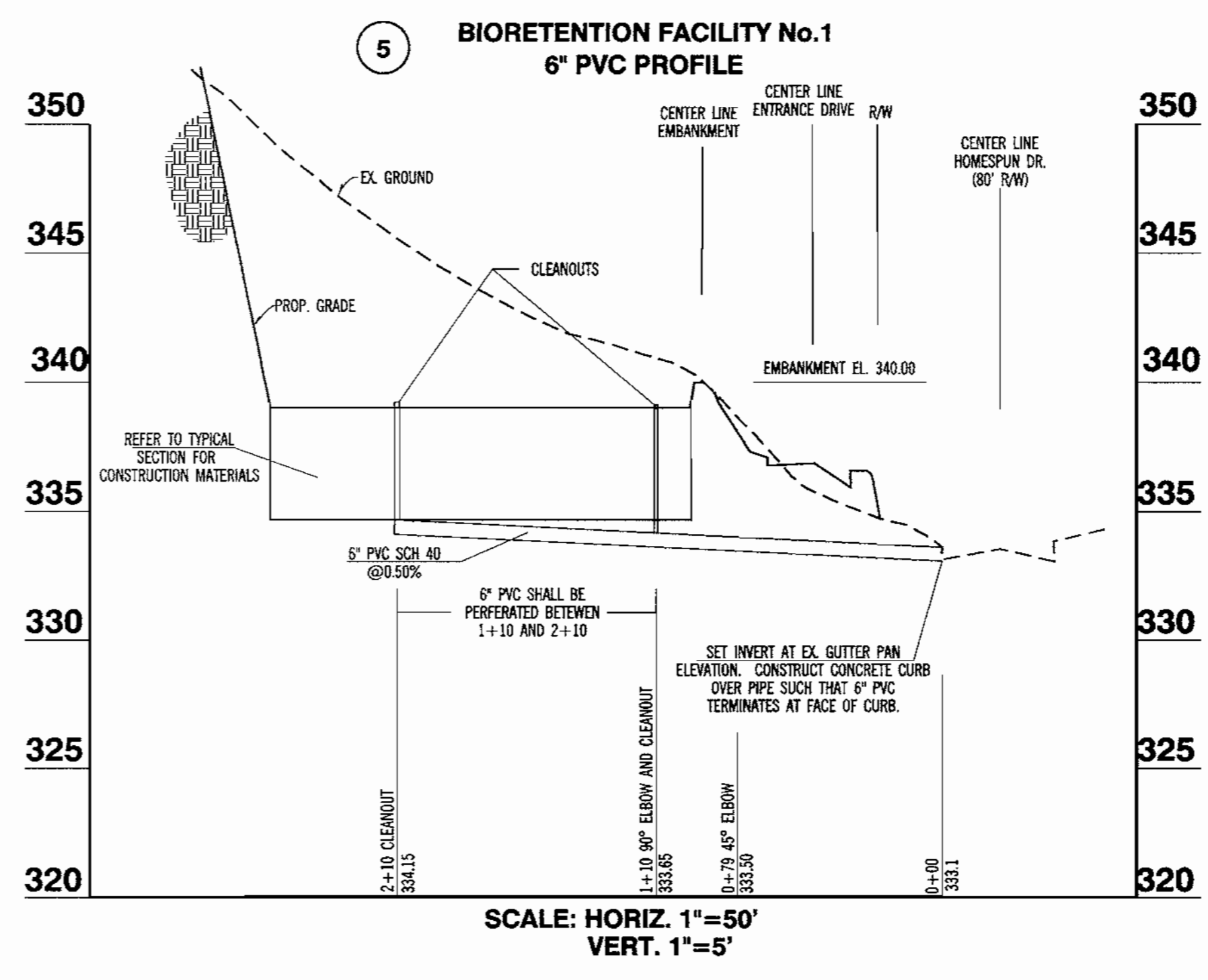
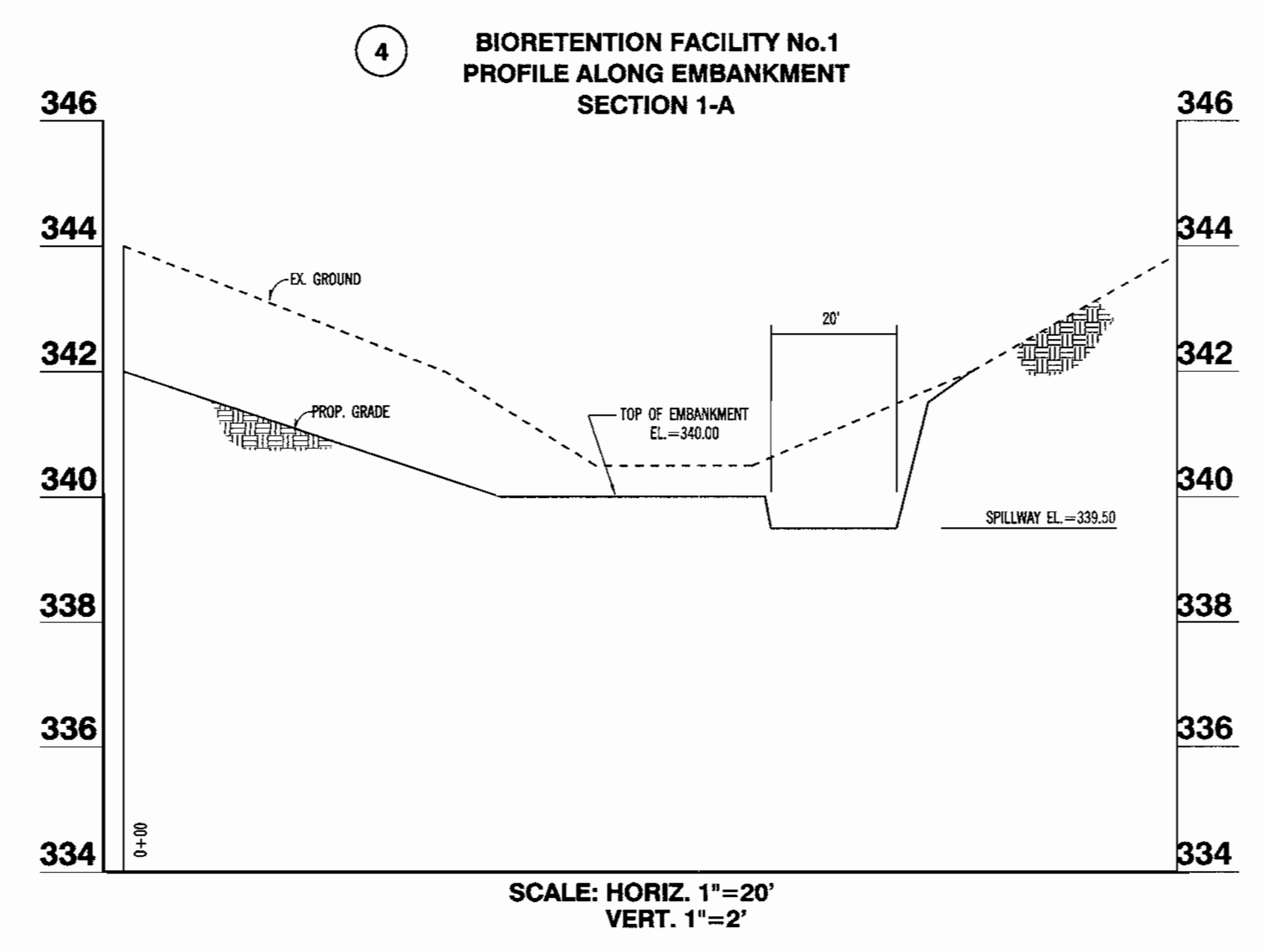
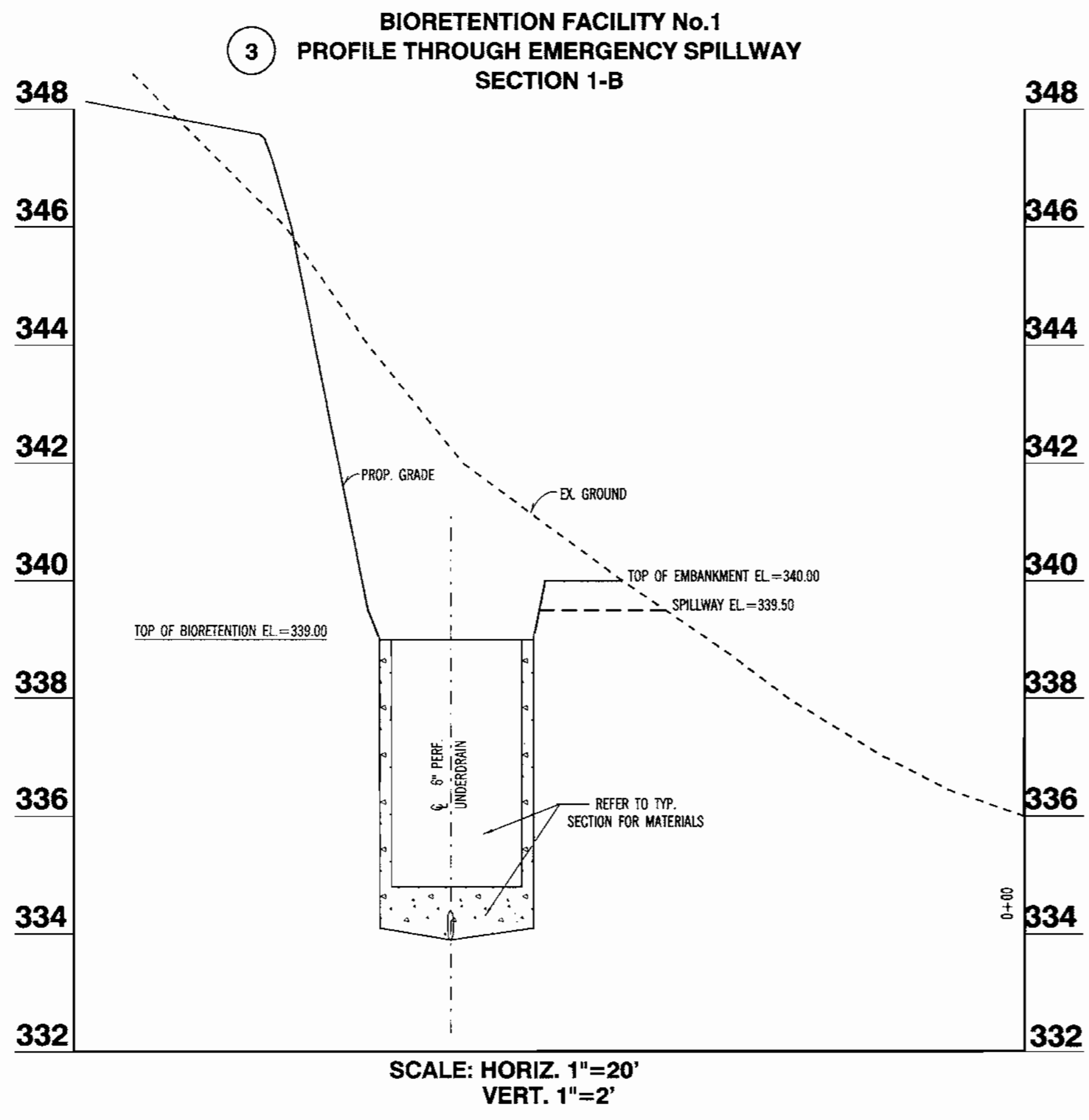
BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION

SDP-00-35

SUBDIVISION NAME	SECT./AREA	LOT #
VILLAGE OF OWEN BROWN, ELKHORN PARK	4 / 1	565 & 536

PLAT NO. OR L/F	GRID	ZONING	TAX MAP No.	ELEC. DIST.	CENSUS TR.
P.B. 27, F. 71	22	NT & OS	36	5	6067.02

WATER CODE _____ SEWER CODE _____



1 BIORETENTION FACILITY No.1
TYPICAL SECTION
NOT TO SCALE

HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS
Greg J. O'Brien 6/2/00
 DIRECTOR DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John P. ... 6/15/00
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Wanda Hamilton 7/19/00
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Greg J. O'Brien 7/10/00
 DIRECTOR DATE

APPROVED
 PLANNING BOARD
 of HOWARD COUNTY
 DATE 5/4/2000
 K

BEFORE BEGINNING CONSTRUCTION, CONTACT
 MISS UTILITY AT 1-800-257-7777 AT LEAST
 48 HOURS PRIOR TO CONSTRUCTION

SDP-00-35

PERMIT INFORMATION CHART			
SUBDIVISION NAME	SECT./AREA	LOT #	
VILLAGE OF OWEN BROWN, ELKHORN PARK	4 / 1	565 & 536	
PLAT NO. OR L/F	GRID #	ZONING	TAX MAP No.
P. 8, 21, F. 71	22	NT & OS	36
ELEC. DIST.	CENSUS TR.		
8	6067.02		
WATER CODE	SEWER CODE		

OWNER/DEVELOPER:
 DEPARTMENT OF PUBLIC WORKS
 3450 COURTHOUSE DRIVE
 ELLICOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
 10221 WINDCOPIN CIRCLE
 COLUMBIA, MARYLAND 21044

Greg J. O'Brien

No.	REVISION	DATE	BY

GO ENGINEERS ARCHITECTS PLANNERS SCIENTISTS SURVEYORS PHOTOGRAMMETRISTS
GREENHORNE & O'MARA, INC. 15020 SHADY GROVE ROAD, SUITE 400, ROCKVILLE, MD. 20850 (301) 738-3890
 ANNAPOLIS, MD • ATLANTA, GA • AURORA, CO • BALTIMORE, MD • CHLIFEPR, VA • DULUTH, GA • EXPORT, PA • FAIRFAX, VA • FREDERICKSBURG, VA • GREENBELT, MD.
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BIO-RETENTION PROFILES
 NEIGHBORHOOD FIELD DEVELOPMENT
ELKHORN PARK CAPITAL PROJECT N-3929
 VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
 OPEN SPACE LOTS 565 & 536

ZONE - NT OPEN SPACE
 6th ELECTION DISTRICT

JWC/DESIGN SCALE AS SHOWN
 TCH/DRAWN 9 OF 11
 CHECKED SHEET
 NOV. 1999 DATE 7781-000 PROJ No. R-3117-X FILE No.

B.3.B SPECIFICATIONS FOR BIORETENTION

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

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, Mugwort, Nuttall's Poison Ivy, Canadian Thistle, Tearthumb, or other noxious weeds.

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

pH range	5.2 - 7.0
organic matter	1.5 - 4%
magnesium	35lb./ac
phosphorus P205	75lb./ac
potassium K2O	85lb./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 tests 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.

COMPACTION

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoers to remove original soil. If bioretention areas are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and storage volumes 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 before back filling the required sand layer. Pump any ponded water before preparing (rototilling) base.

When back filling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When back filling the bioretention facility, place soil in lifts 12" or greater. 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.

PLANT MATERIAL

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

PLANT INSTALLATION

Mulch around individual plants only. Shredded hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

The plant root ball should be planted so 1/8th of the ball is above final grade surface. Root stock of the plant material shall be kept moist during transport and on-site storage. Planting pits shall follow LCA planting guidelines. 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 equally spaced on the outside of the tree ball.

Grasses and legume seed shall be tilled 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 is used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

UNDERDRAINS

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

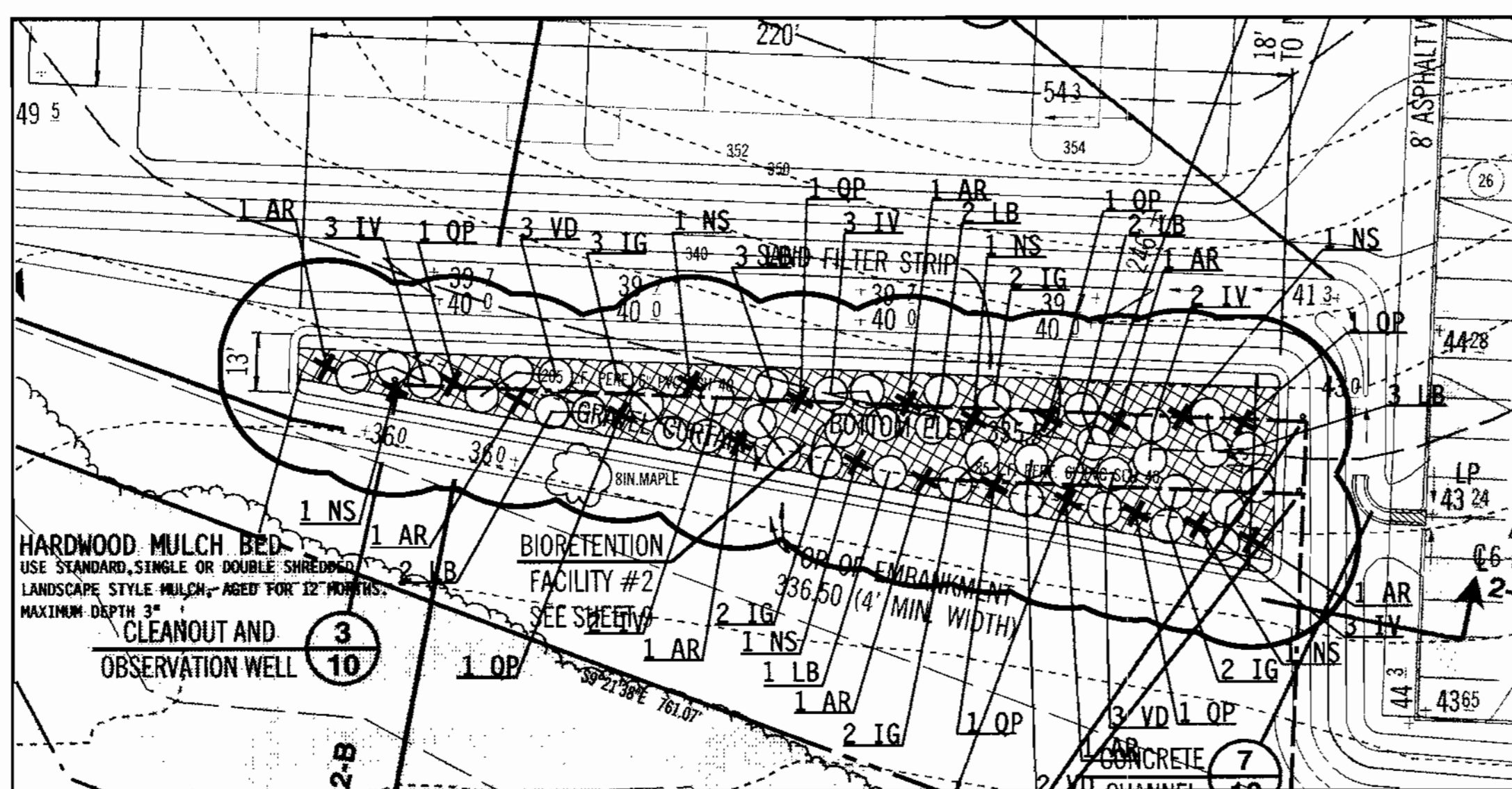
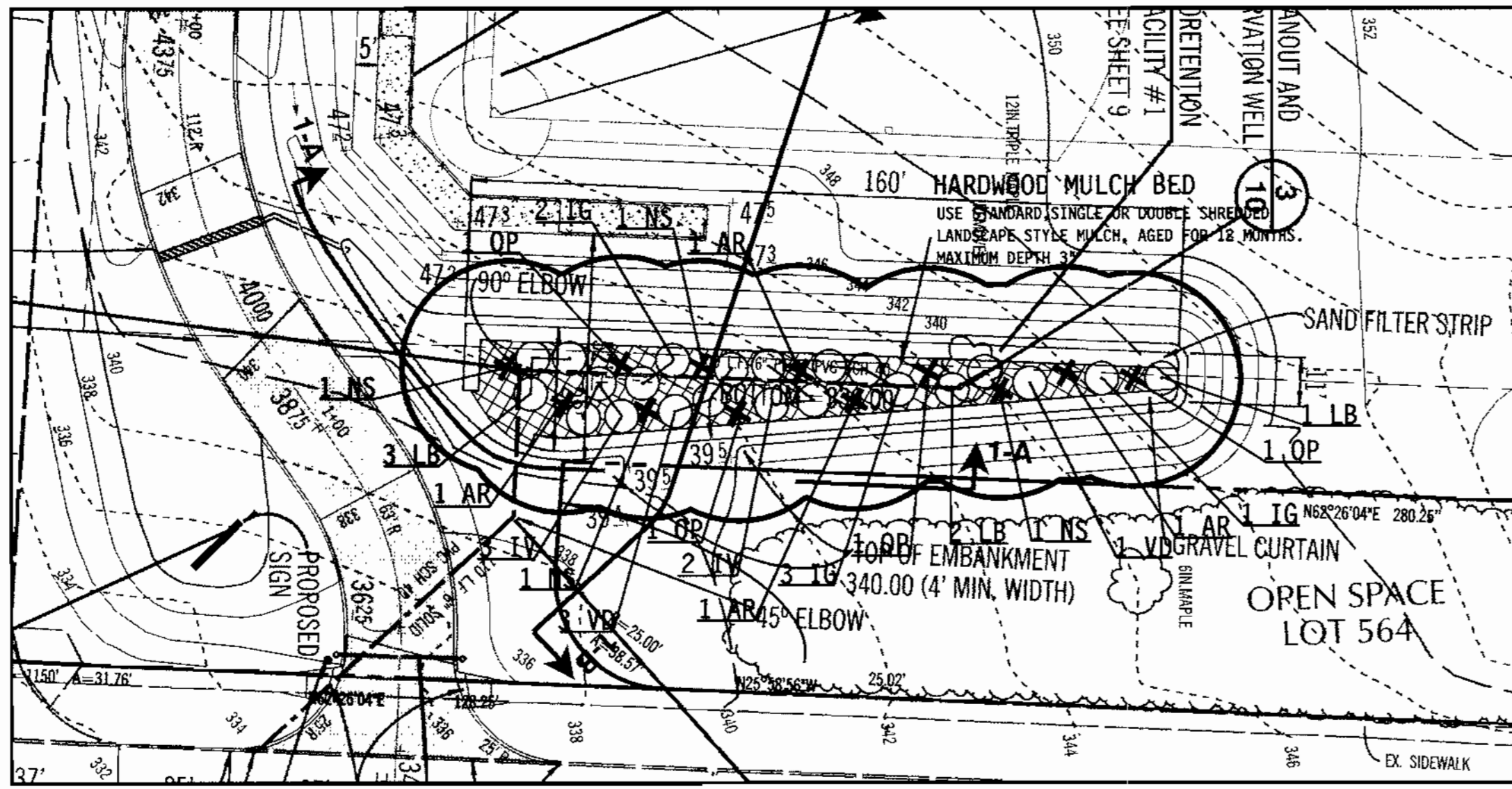
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

MISCELLANEOUS

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

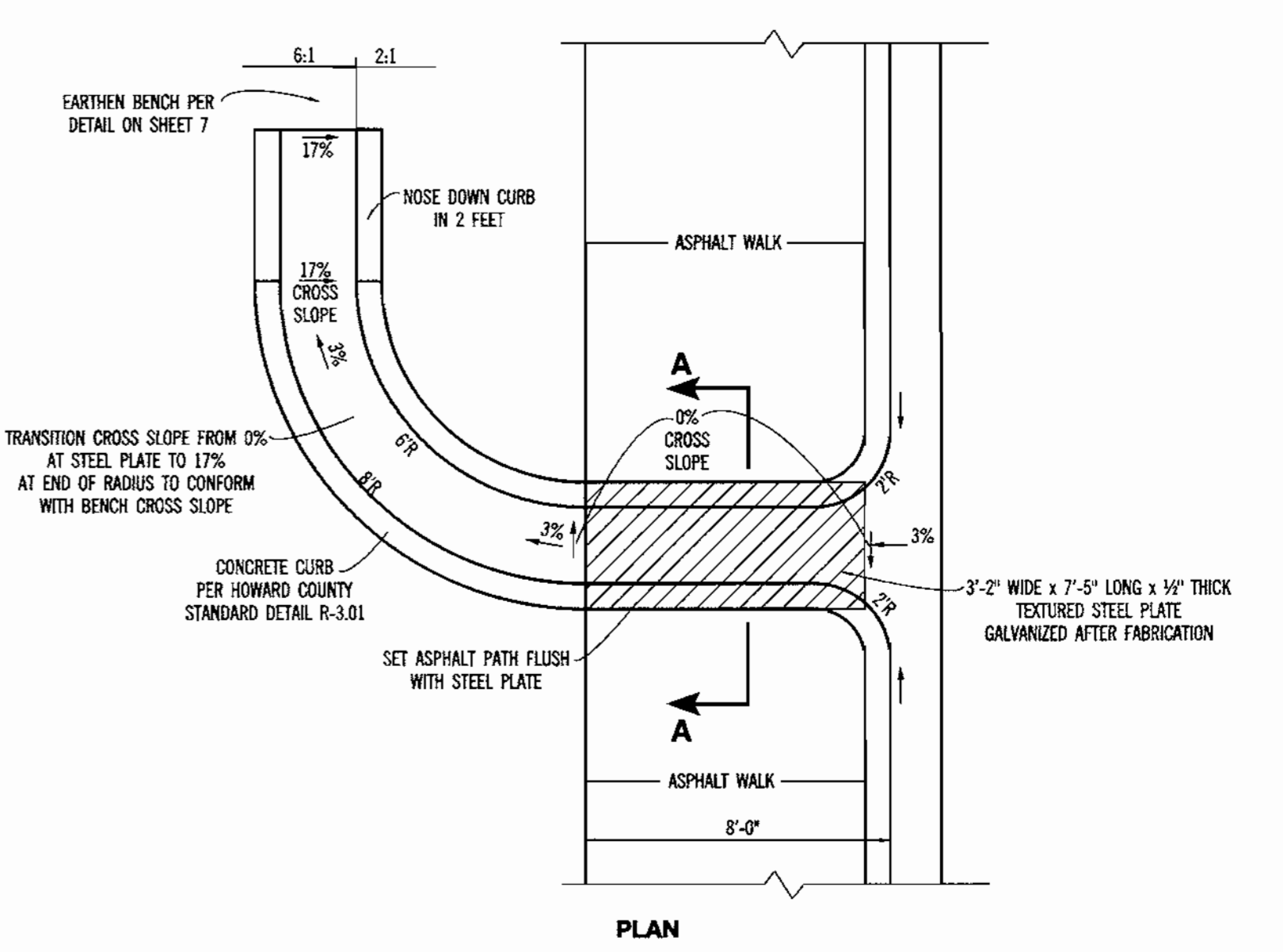
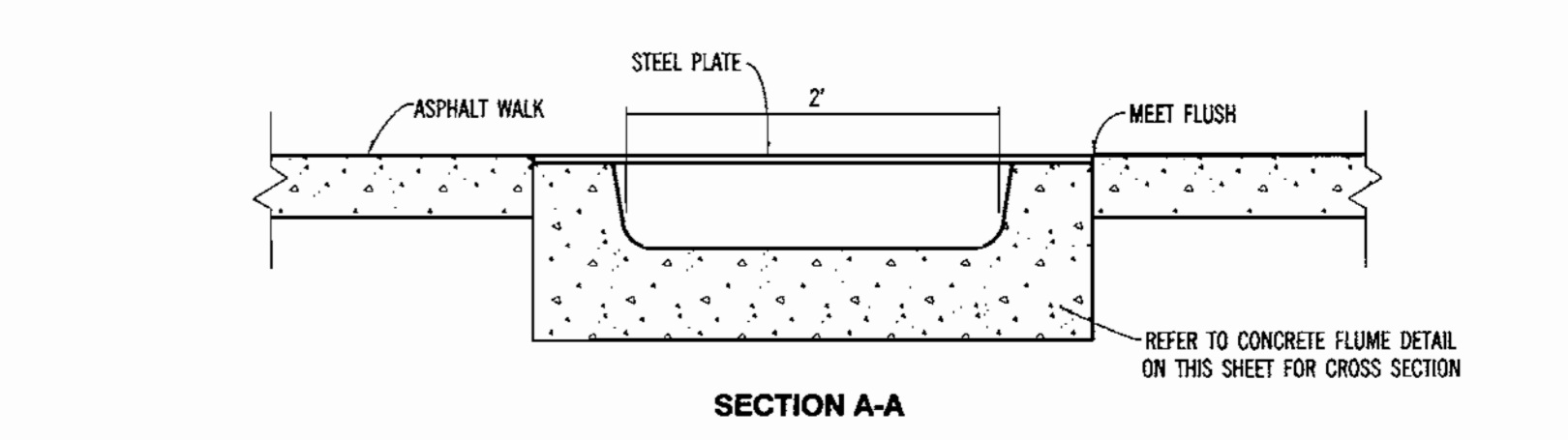
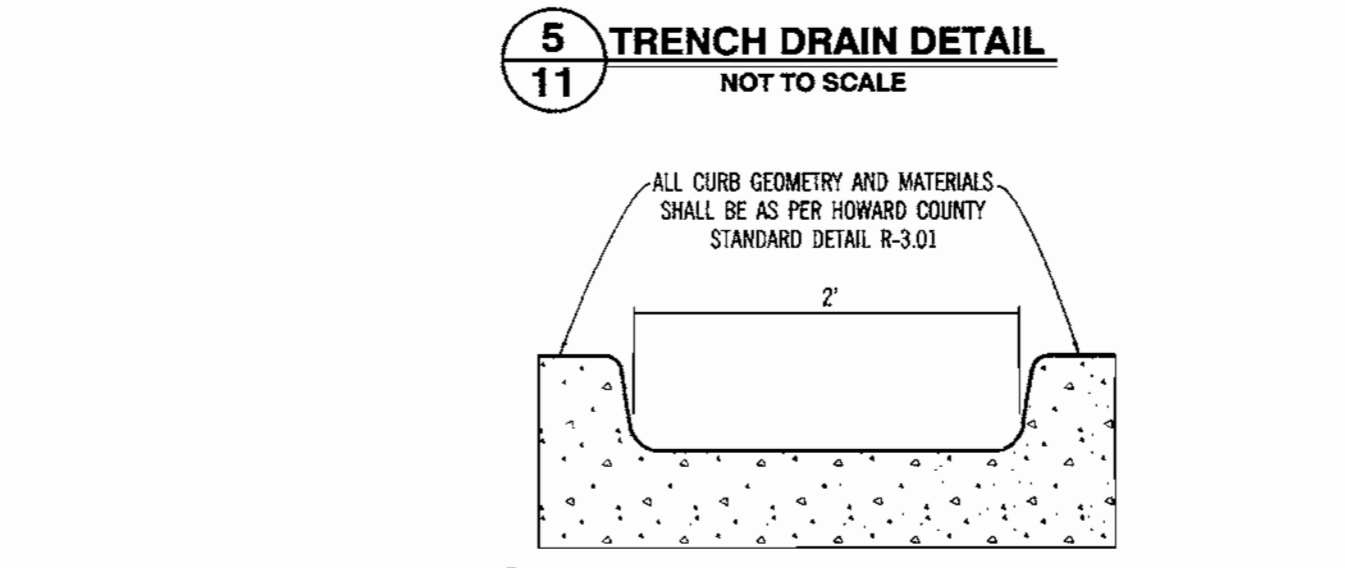
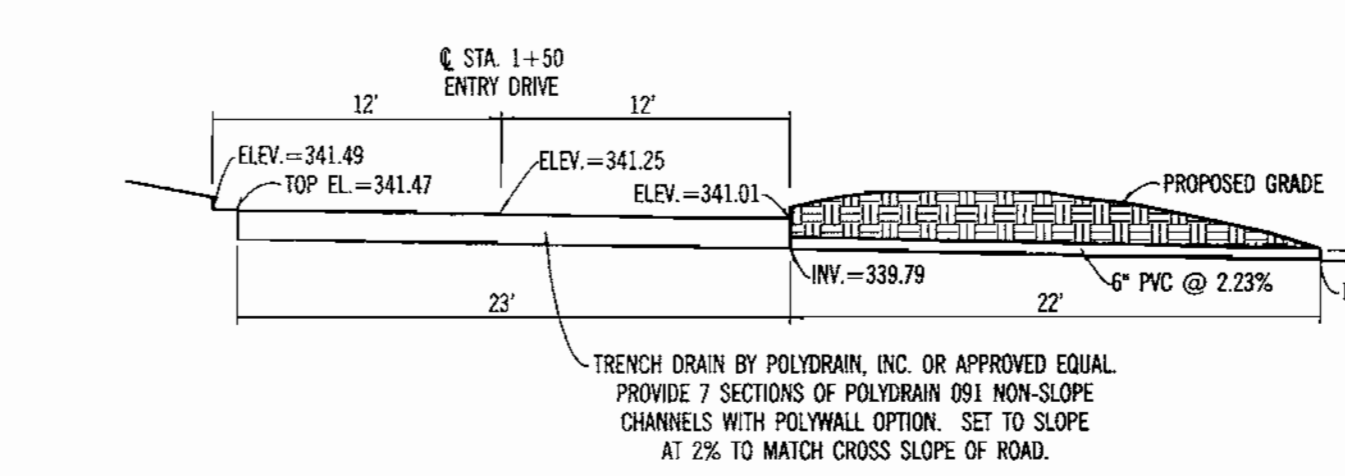
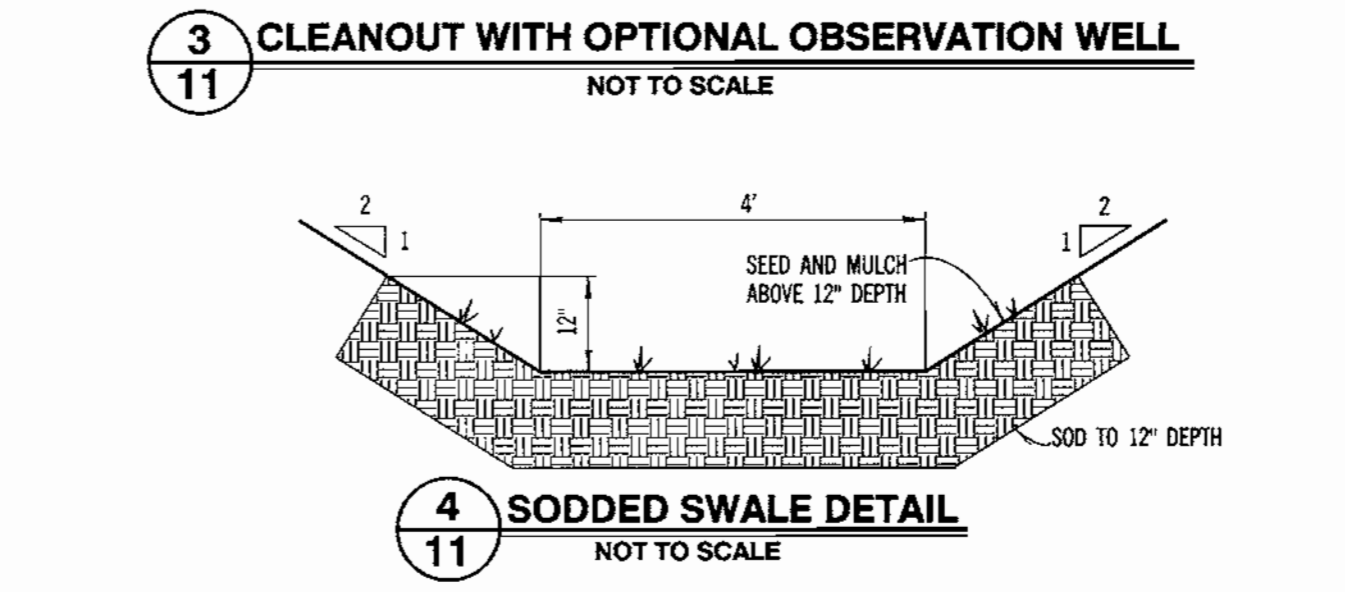
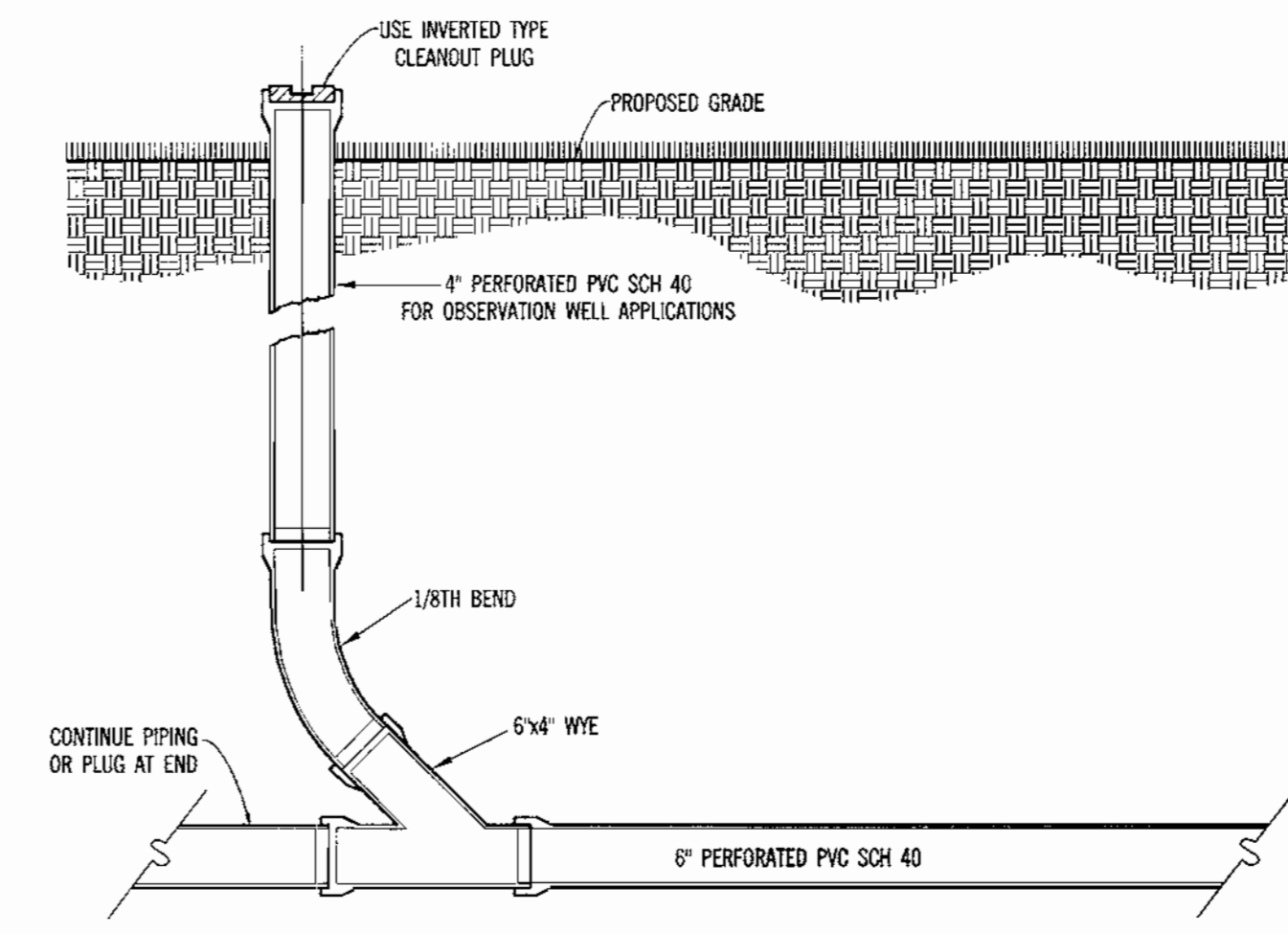
TABLE B-3.2 MATERIALS SPECIFICATIONS FOR BIORETENTION

Material	Specification	Size	Notes
Plantings	see Table X	n/a	planting are site-specific
Planting Soil [4' deep]	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	
Mulch	shredded hardwood	aged 6 months, minimum	
pea gravel diaphragm and curtain drain	pea gravel: ASTM D 448 ornamental stone: washed cobbles	pea gravel: No. 6 stone: 2" to 5"	
geotextile	MDE Class "D" apparent opening size (MSMT 323) grab tensile strength (ASTM D 1682) burst strength (ASTM 3786)	n/a	for use as necessary beneath underdrains only
underdrain travel	AASHTO M-43	0.25" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	6" rigid schedule 40 PVC	3/4" 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: fc = 3500 lb. @ 28 days, normal weight, air-entrained; re-inforcing 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 350.8R/09; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking Sand substitutions such as Diabase and Graystone #10 are not acceptable. No "rock dust" can be used for sand.
sand [1' deep]	AASHTO M-6 or ASTM C-33	0.02" to 0.04"	



OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

- 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.
- Schedule of plant inspection will be twice a year in the 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.
- Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
- Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.



BIORETENTION FACILITY #1

PLANT LIST

TREES	SYMBOL	SCIENTIFIC NAME	COMMON NAME	QUANTITY
AR	AR	ACER RUBRUM	RED MAPLE	4
NS	NS	NYSSA SYLVATICA	BLACK GUM	4
QP	QP	QUERCUS PALUSTRIS	PIN OAK	4

SHRUBS	SYMBOL	SCIENTIFIC NAME	COMMON NAME	QUANTITY
IG	IG	ILEX GLABRA	INKBERRY	6
IV	IV	ILEX VERTICILLATA	WINTERBERRY	6
VD	VD	VIBURNUM DENTATUM	ARROWWOOD	4

BIORETENTION FACILITY #2

PLANT LIST

TREES	SYMBOL	SCIENTIFIC NAME	COMMON NAME	QUANTITY
AR	AR	ACER RUBRUM	RED MAPLE	8
NS	NS	NYSSA SYLVATICA	BLACK GUM	6
QP	QP	QUERCUS PALUSTRIS	PIN OAK	7

SHRUBS	SYMBOL	SCIENTIFIC NAME	COMMON NAME	QUANTITY
IG	IG	ILEX GLABRA	INKBERRY	11
IV	IV	ILEX VERTICILLATA	WINTERBERRY	13
LB	LB	LINDERA BENZOIN	SPICE BUSH	13
VD	VD	VIBURNUM DENTATUM	ARROWWOOD	8

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE: 5/4/2000
KS

HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS
Greg J. O'Brien 6.2.00
DIRECTOR DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John DeWitt 6/15/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Andy Hamilton 7/10/00
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
Paul R. ... 7/10/00
DIRECTOR DATE

SDP-00-35 BEFORE BEGINNING CONSTRUCTION, CONTACT MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION

PERMIT INFORMATION CHART

SUBDIVISION NAME	VILLAGE OF OWEN BROWN, ELKHORN PARK	SECT./AREA	4 / 1	LOT #	565 & 536
PLAT NO. OR L/F	PB 27, F. 71	GRID #	22	ZONING	NT & OS
TAX MAP No.	36	ELEC. DIST.	6	CENSUS TR.	6067.02
WATER CODE		SEWER CODE			

OWNER/DEVELOPER:
DEPARTMENT OF PUBLIC WORKS
3450 COURTHOUSE DRIVE
ELLCOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION
10221 WINCOPIN CIRCLE
COLUMBIA, MARYLAND 21044

No.	REVISION	DATE	BY

GREENHORNE & O'MARA, INC. 15020 SHADY GROVE ROAD, SUITE 400, ROCKVILLE, MD. 20850 (301) 738-3890
ANNAPOLIS, MD. • ATLANTA, GA. • AURORA, CO. • BALTIMORE, MD. • CLIFTOP, VA. • DULUTH, GA. • EXPORT, PA. • FAIRFAX, VA. • FREDERICKSBURG, VA. • GREENBELT, MD. • LEESBURG, VA. • MANASSAS, VA. • MOORESTOWN, NJ. • ORLANDO, FL. • RALEIGH, NC. • ROCKVILLE, MD. • TAMPA, FL. • WALDORF, MD. • WEST PALM BEACH, FL.

ELKHORN PARK - CAPITAL PROJECT N-3929
NEIGHBORHOOD FIELD DEVELOPMENT
VILLAGE OF OWEN BROWN - SECTION 4, AREA 1
OPEN SPACE LOTS 565 & 536

JWC/DESIGN SCALE AS SHOWN
MAD/DRAWN 10 OF 11
CHECKED SHEET
DATE NOV. 1999 PROJ No. 7781-000 R-3117-X FILE No.

