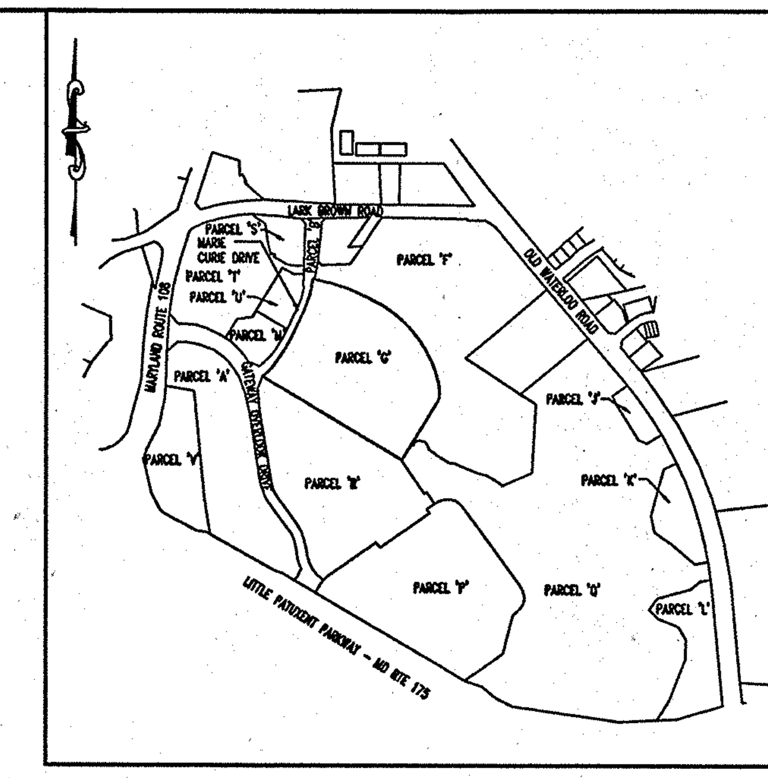
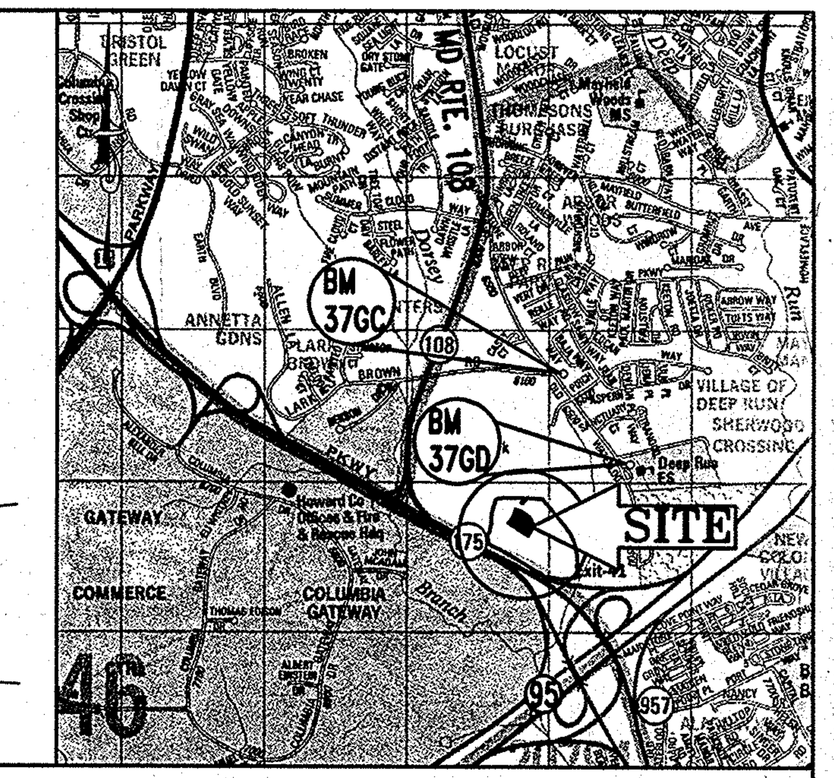
COSTCO WHOLESALE

ONE STORY RETAIL SALES BUILDING
COSTCO WHOLESALE OF COLUMBIA, MARYLAND
GATEWAY OVERLOOK SHOPPING CENTER
PARCEL G, BENSON EAST (F 05-58)



OVERALL PLAN VIEW
SCALE: 1"=700'



LOCATION MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=2000'

LEGEND
FOR ENTIRE PLAN SET
(NOT TO SCALE)

EXISTING		PROPOSED
	ONSITE PROPERTY LINE / R.O.W. LINE	
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	
	EASEMENT LINE	
	SETBACK LINE	
	CONCRETE CURB & GUTTER	TYPICAL SPILL TRANSITION DEPRESSED
	STORM SEWER	
	SANITARY SEWER MAIN	
S	SANITARY SEWER LATERAL	S
W	UG WATER LINE	W
E	UG ELECTRIC LINE	E
G	UG GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UG TELEPHONE LINE	T
C	UG CABLE LINE	C
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 OR 51 / TC 516.00 BC 515.55
516	CONTOUR LINE	123
	HYDRANT	
	SANITARY MANHOLE	
	STORM MANHOLE	
WM	WATER METER	
	WATER VALVE	
GV	GAS VALVE	
GM	GAS METER	
	TYPICAL END SECTION	
OR	HEADWALL OR ENDWALL	OR
	YARD INLET	
	CURB INLET	
	CLEAN OUT	
SAN XXX	SANITARY LABEL	SAN XXX
	STORM LABEL	
	TYPICAL LIGHT	
	ACORN LIGHT	
	TRAFFIC LIGHT	
	UTILITY POLE	
	TYPICAL SIGN	
EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
XX	PARKING COUNTS	#
	ELECTRIC MANHOLE	
	TELEPHONE MANHOLE	
	ELECTRIC BOX	
	ELECTRIC PEDESTAL	
	MONITORING WELL	
TP	TEST PIT	TP
	BENCHMARK	
	BORING	
	UTILITY POLE W/LIGHT	
	POLE LIGHT	
	LIMITS OF DISTURBANCE	LOD LOD

GENERAL NOTES:

1. THE TOPOGRAPHY FOR PARCEL G IS BASED ON A PLAN PREPARED BY PATTON HARRIS RUST AND ASSOCIATES, P.C. ENTITLED "DEVELOPERS MASS GRADING PLAN", DATED JUNE 28, 2005.
2. THE SUBJECT PROPERTY IS ZONED NEW TOWN PER THE HOWARD COUNTY COMPREHENSIVE ZONING PLAN DATED 2/2/04.
3. EXISTING USE: VACANT LOT
   PROPOSED USE: COSTCO WHOLESALE – ONE STORY RETAIL SALES BUILDING.
4. BUILDING HEIGHT: 30'-8"
   **PLEASE REFER TO ARCHITECTURAL BUILDING ELEVATIONS, SHEET 25.
5. REFUSE SHALL BE DISPOSED OF DAILY IN TRASH RECEPTICALS. TRASH REMOVAL WILL BE PRIVATELY CONTRACTED.
6. UTILITIES:
   WATER, PUBLIC – 8" WATER LINE RUNS ON THE WEST SIDE OF THE PROPOSED BUILDING FROM AN 8" STUB FOR THIS SITE. CONTRACT # 24-4284 D.
   AN 8" WATER MAIN IS PROPOSED TO BE LOCATED ON-SITE. CONTRACT NO: 24-4404-D
   SEWER, PUBLIC – AN 8" SANITARY SEWER LINE IS LOCATED ON THE EAST SIDE OF THE PROPOSED BUILDING FROM AN 8" STUB FOR THIS SITE. CONTRACT# 24-4284 D.
   STORM DRAIN – A 30" STORM DRAINAGE LINE IS SITUATED AT THE SOUTHWEST CORNER OF THE BUILDING AND OUTLETS INTO A REGIONAL SWM FACILITY A 24" STORMDRAIN STUB HAS BEEN PROVIDED ON THE SOUTHWEST SIDE OF THE BUILDING.
7. ELECTION DISTRICT: 6
8. DEED REFERENCE:
   PARCEL 482: LIBER 1151, FOLIO 56 LIBER 5289, FOLIO 330
   PARCEL 587: LIBER 9266, FOLIO 229
9. TAX MAP: 37, GRID: 1 & 2, PARCEL: G
10. PROPERTY IS OUTSIDE THE 100-YEAR FLOOD PLAIN (FEMA FIRM# 240044 0038 B MAP 12/4/88).
11. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, MDSHA STANDARDS AND SPECIFICATIONS, AND COSTCO WHOLESALE STANDARD SPECIFICATIONS.
12. 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.
13. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
14. TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
15. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
16. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLAN COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 37GD AND 37GC WERE USED FOR THIS PROJECT.
17. THERE ARE NO WETLANDS OR FLOOD PLAINS LOCATED ON PARCEL G. HOWEVER THERE ARE DESIGNATED WETLANDS JUST OFFSITE APPROXIMATELY 10 FEET EASTERLY. (SEE SHEET 3 FOR LOCATION).
18. THERE ARE NO KNOWN BURIAL GROUNDS ON SITE.
19. THE LOCATION AND ELEVATIONS OF THE EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXISTENCE, LOCATION, AND DEPTH OF EXISTING UTILITIES IN THE WORK AREA AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO BEGINNING WORK.
20. THE CONTRACTOR WILL BE RESPONSIBLE FOR NOTIFYING BOHLER ENGINEERING, P.C. AT (410) 821-7900 IN THE EVENT OF ANY DISCREPANCIES ON THE PLAN OR IN THE RELATIONSHIP OF EXISTING GRADES WITH PROPOSED GRADES PRIOR TO BEGINNING WORK.
21. THE CONTRACTOR SHALL NOTE THAT IN THE CASE OF A DISCREPANCY BETWEEN A SCALED DIMENSION AND A FIGURED DIMENSION SHOWN ON THE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN.
22. CONTRACTOR SHALL CONTACT THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION 24 HOURS IN ADVANCE OF COMMENCEMENT OF WORK AT (410) 313-1880.
23. PUBLIC WATER AND SEWER ARE PROVIDED FOR THIS SITE.
24. EXISTING UTILITIES (PUBLIC WATER & PUBLIC SANITARY SEWER) ARE BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. TITLED "WATER AND SEWER EXTENSION PLANS FOR BENSON EAST", DATED 4/28/05 (CONTRACT #24-4284-D), REVISED 1/10/06.
25. THE TRAFFIC IMPACT STUDY FOR THE OVERALL GATEWAY OVERLOOK SHOPPING CENTER WAS PREPARED BY WELLS & ASSOCIATES, LLC DATED 10/07/02 AND REVISED ON 02/20/03 AND FURTHER REVISED ON 4/13/05.
26. PRELIMINARY PLAN APPROVAL FOR THIS PROJECT WAS GRANTED PRIOR TO 12/31/92 THEREFOR, THIS PROJECT IS EXEMPT FROM FOREST CONSERVATION OBLIGATIONS IN ACCORDANCE WITH SECTION 16.1202(b)(1)(iv) OF THE FOREST CONSERVATION MANUAL.
27. LANDSCAPING IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL SHALL BE PROVIDED AS SHOWN ON THE LANDSCAPE SHEET. SURETY SHALL BE POSTED WITH THE DEVELOPERS AGREEMENT, IN THE AMOUNT OF $83,760.00.
28. OUTDOOR LIGHTING SHALL CONFORM TO SECTION 134 OF THE ZONING REGULATIONS. (SEE SHEET NO. 24 FOR DETAILS)
29. IN ACCORDANCE WITH THE "FINAL DEVELOPMENT PLAN CRITERIA PHASE 240-A BENSON EAST" THERE ARE NO BUILDING SETBACKS WITHIN THE PARCEL.
30. ALL HOWARD COUNTY STORM WATER QUANTITY AND QUALITY REQUIREMENTS WILL BE MET BY AN EX. REGIONAL STORMWATER MANAGEMENT FACILITY COMPLETED UNDER SDP-04-163, DATED OCT. 18, 2004. THE STORMWATER MANAGEMENT FACILITIES PROPOSED FOR THIS SITE ARE ALL PRIVATELY OWNED AND MAINTAINED. WATER QUALITY VOLUME AND CHANNEL PROTECTION WILL BE PROVIDED IN TWO WET PONDS AND ONE MICROPOOL EXTENDED DETENTION POND. NO STORMWATER MANAGEMENT IS PROVIDED FOR RESIDENTIAL USE PARCELS ALONG OLD WATERLOO ROAD. ALL FACILITIES ARE OFFSITE EXCEPT FOR THE UNDERGROUND RECHARGE FACILITY SHOWN ONSITE AND WILL BE PRIVATELY OWNED AND MAINTAINED. ONE MICRO-BIORETENTION FACILITY WILL TREAT RUNOFF FROM THE EXPANSION ROOFDRAIN. (4)
31. A KNOX BOX (FIRE DEPARTMENT ACCESS BOX) IS REQUIRED TO BE PLACED ON THE FRONT OF THE BUILDING. IT SHALL BE PLACED TO THE RIGHT OF THE MAIN ENTRANCE AT A RANGE OF 4-5' IN HEIGHT AND NO MORE THEN 6' LATERALLY FROM THE DOOR. THE BOX SHALL BE ELECTRONICALLY SUPERVISED TO NOTIFY THE OWNER THAT IT IS BEING ACCESSED (INTEGRATED WITH THE FIRE ALARM SYSTEM NFPA-1 10.12.1.)
32. SHARED CROSS ACCESS EASEMENTS SHALL BE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, MD, FOR THIS SITE.
33. THE PLANNING BAORD ON SEPTEMBER 14, 2006, APPROVED THIS SITE DEVELOPMENT PLAN FOR IMPROVEMENTS AS SHOWN AND TO REDUCE THE 10' PARKING SETBACK TO 0' FROM THE SOUTHERN PROPERTY LINE (ABUTTING PARCEL R)

(4) FOR REVISION 4 ONLY
M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 44097
9/21/15

PROFESSIONAL CERTIFICATION
I, MICHAEL J GESELL, 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. 44097 EXPIRATION DATE: 6/9/17

(2) For Revision #2
Bohler Engineering, P.C.

STATE OF MARYLAND – ADAM J. VOLANTH – No 21312 – REGISTERED – PROFESSIONAL ENGINEER

(1) For revision #1
Bohler Engineering, P.C.

STATE OF MARYLAND – ADAM J. VOLANTH – REGISTERED – PROFESSIONAL ENGINEER

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SITE ANALYSIS DATA CHART

A. TOTAL PROJECT AREA: 505,098 S.F. OR 11.60 AC.

B. LIMIT OF DISTURBED AREA: 520,429 S.F. OR 11.95 AC.

C. PRESENT ZONING: NT (NEW TOWN) DISTRICT – EMPLOYMENT CENTER COMMERCIAL (4)

D. PROPOSED USE: COSTCO WHOLESALE – ONE STORY RETAIL SALES BUILDING.

E. FLOOR AREA:

MAIN BUILDING (RETAIL SALES FLOOR AREA)	= 120,767 S.F.
OFFICE AREA/MEZZANINE	= 4,104 S.F.
RECEIVING/STORAGE	= 19,317 S.F.
UTILITY ROOMS	= 1,191 S.F.
TOTAL AREA	= 145,379 S.F.

F. TOTAL NUMBER OF UNITS ALLOWED FOR PROJECT: N/A.

G. TOTAL NUMBER OF UNITS PROPOSED ON SUBMISSION: N/A.

H. MAXIMUM NUMBER OF EMPLOYEES: 175.
MAXIMUM NUMBER OF TENANTS: ONE (1).

I. PARKING SPACES REQUIRED: (4)
NET LEASABLE AREA/RETAIL SALES:
120,767 S.F./1,000 x 5 SPACES = 604 SPACES
NET LEASABLE AREA/OFFICE USE/MEZZANINE:
4,104 S.F. /1,000 x 2 SPACES = 9 SPACES
(NET LEASABLE AREA/RETAIL SALES DOES NOT INCLUDE THE OFFICE AREA STORAGE/RECIEVING AREAS OR UTILITY ROOMS)
TOTAL SPACES REQUIRED = 613 SPACES

J. PARKING SPACES PROVIDED:

CONTRACTOR (10'x18')	= 634 SPACES
HANDICAP (8'x20')	= 16 SPACES
TOTAL	= 650 SPACES

K. GREEN SPACE ON SITE: 1.28 AC. OR 10.8% OF SITE AREA. (4)

L. AREA OF RECREATION OPEN SPACE REQUIRED: N/A.

M. BUILDING COVERAGE ON SITE: 3.31 AC. OR 28.3% OF SITE AREA.

N. APPLICABLE DPZ FILE REFERENCE: F-05-58, SDP-04-163/24-4284-D, F-06 102, S03-05, PB 373 AND FDP-240-A, F-08-046

BENCHMARK

BM 37GD – GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

BM 37GC – GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

APPLICANT

COSTCO WHOLESALE
45940 HORSESHOE DRIVE, SUITE 150
STERLING, VA 20166
ATTN: RUSTY COLLINS
PHONE: (703) 406-6862

ADDRESS CHART

LOT/PARCEL #	STREET ADDRESS
[redacted]	[redacted]
G	6675 Marie Curie Drive

PERMIT INFORMATION CHART

PROJECT NAME:			SECTION/AREA:		LOT/PARCEL #:
BENSON EAST			X		PARCEL G
PLAT RECORDATION:	BLOCK #:	ZONING:	TAX MAP #:	ELECT. DISTR.:	CENSUS TRACT:
17872 TO 17880	20	NEW TOWN	37	6TH	6067.03
WATER CODE:			SEWER CODE:		
D 06			3390000		

REV.	DATE	DESCRIPTION	BY
4	6/18/15	EXPAND TIRE CENTER, ADD MICROBIO FACILITIES	BOHLER
2	8/30/07	Revised Retaining Wall	Bohler
1	4/24/07	Revised Public Water Contract #'s	Bohler

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
COVER SHEET

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

DATE:
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	1 OF 29

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — 4/11/07 — DATE
CHIEF-DIVISION OF LAND DEVELOPMENT — 4/16/07 — DATE
DIRECTOR — 4/16/07 — DATE

~~APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS~~
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

ISSUED FOR CONSTRUCTION

SIGNATURE DATE — SIGNATURE DATE — SIGNATURE DATE
THIS DOCUMENT IS NOT ISSUED BY BOHLER ENGINEERING, P.C. FOR CONSTRUCTION WITHOUT (3) SIGNATURES
BEPC PROJECT # ______ REVISION #/DATE ______

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

PREPARED BY:

BOHLER ENGINEERING, P.C.
22630 DAVIS DRIVE, SUITE 200
STERLING, VIRGINIA 20164
(703) 709-9500

MISS UTILITY
DIG WITH C.A.R.E. – MARYLAND – KEEP SAFE
BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

SDP #06-111

M:\04\Costco\S040011.01 – MD040001\Site Development Plans\Rev 5\M40001C05.dwg, 3/6/2007 10:23:05 AM, mgesell

DEMOLITION NOTES

1. BOHLER ENGINEERING, P.C. IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION.
2. ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AS WELL AS ALL FEDERAL, STATE AND LOCAL REGULATIONS. ANY DISCREPANCIES OR DEVIATIONS SHALL BE IDENTIFIED BY THE CONTRACTOR TO BOHLER ENGINEERING, P.C. IN WRITING FOR RESOLUTION PRIOR TO INITIATION OF SITE ACTIVITY.
3. PRIOR TO STARTING ANY DEMOLITION CONTRACTOR IS RESPONSIBLE FOR/TO:

   A. ENSURING THAT COPIES OF ALL APPLICABLE PERMITS AND APPROVALS ARE MAINTAINED ON SITE AND AVAILABLE FOR REVIEW.

   B. INSTALLING THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL AND/OR TREE PROTECTION MEASURES PRIOR TO SITE DISTURBANCE.

   C. LOCATING (VERTICALLY AND HORIZONTALLY) ALL UTILITIES AND SERVICES, INCLUDING, BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE. THE CONTRACTOR SHALL USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES.

   D. PROTECTING AND MAINTAINING IN OPERATION, ALL ACTIVE SYSTEM THAT ARE NOT BEING REMOVED DURING ALL DEMOLITION ACTIVITIES.

   E. FAMILIARIZING THEMSELVES WITH THE APPLICABLE UTILITY SERVICE PROVIDER AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION REQUIRED FOR THE PROJECT. THE CONTRACTOR SHALL PROVIDE THE OWNER WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTION AND UTILITY COMPANY REQUIREMENTS.

   F. COORDINATION WITH UTILITY COMPANIES REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS MAY BE REQUIRED TO MINIMIZE THE IMPACT ON THE AFFECTED PARTIES.

   G. A COMPLETE INSPECTION FOR CONTAMINANTS BY A LICENSED ENVIRONMENTAL TESTING AGENCY, OF ALL BUILDINGS AND/OR STRUCTURES TO BE REMOVED. SAME SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL ENVIRONMENTAL REGULATIONS. ANY/ALL CONTAMINANTS SHALL BE REMOVED AND DISPOSED OF BY A FEDERALLY LICENSED CONTRACTOR IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. ALL ENVIRONMENTAL WORK INCLUDING HAZARDOUS MATERIAL, SOILS, ASBESTOS, OR OTHER REFERENCED OR IMPLIED HEREIN IS THE SOLE RESPONSIBILITY OF THE OWNER'S ENVIRONMENTAL CONSULTANT.
4. BOHLER ENGINEERING P.C. IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. CONTRACTOR IS TO PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, FOLLOWING ALL THE OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY.
5. THE CONTRACTOR SHALL PROVIDE ALL THE "MEANS AND METHODS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE DEMOLITION CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS OF DAMAGE TO ALL ITEMS THAT ARE TO REMAIN AS A RESULT OF HIS ACTIVITIES. ALL REPAIRS SHALL USE NEW MATERIAL. THE REPAIRS SHALL RESTORE THE ITEM TO THE PRE-DEMOLITION CONDITION.
6. IN THE ABSENCE OF SPECIFICATIONS, THE CONTRACTOR SHALL PERFORM EARTH MOVEMENT ACTIVITIES, DEMOLITION AND REMOVAL OF ALL FOUNDATION WALLS, FOOTINGS, AND OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE IN ACCORDANCE WITH DIRECTION BY OWNER'S STRUCTURAL OR GEOTECHNICAL ENGINEER.
7. EXPLOSIVES SHALL NOT BE USED WITHOUT PRIOR WRITTEN CONSENT OF BOTH THE OWNER AND APPLICABLE GOVERNMENTAL AUTHORITIES. ALL THE REQUIRED PERMITS AND EXPLOSIVE CONTROL MEASURES THAT ARE REQUIRED BY THE FEDERAL, STATE, AND LOCAL GOVERNMENTS SHALL BE IN PLACE PRIOR TO STARTING AN EXPLOSIVE PROGRAM. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES.
8. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH: THE "MANUAL ON UNIFORM TRAFFIC CONTROL," AS WELL AS FEDERAL, STATE, AND LOCAL REGULATIONS WHEN DEMOLITION RELATED ACTIVITIES IMPACT ROADWAYS OR ROADWAY RIGHTS – OF – WAY.
9. CONDUCT DEMOLITION ACTIVITIES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND OTHER ADJACENT FACILITIES. STREET CLOSURE PERMITS MUST BE RECEIVED FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY.
10. DEMOLITION ACTIVITIES AND EQUIPMENT SHALL NOT USE AREAS OUTSIDE THE DEFINED PROPERTY LINE WITHOUT WRITTEN PERMISSION OF THE APPLICABLE PROPERTY OWNER, AND/OR APPROPRIATE GOVERNMENT AGENCY.
11. USE DUST CONTROL MEASURES TO LIMIT AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR IN ACCORDANCE WITH FEDERAL, STATE, AND/OR LOCAL STANDARDS. AFTER THE DEMOLITION IS COMPLETE, ADJACENT STRUCTURES AND IMPROVEMENTS SHALL BE CLEANED OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR "PRE-DEMOLITION" CONDITION.
12. CONTRACTOR IS RESPONSIBLE TO SAFEGUARD SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF UNAUTHORIZED PERSONS AT ANY TIME.
13. THIS DEMOLITION PLAN IS INTENDED TO IDENTIFY THOSE EXISTING ITEMS/CONDITIONS WHICH ARE TO BE REMOVED. IT IS NOT INTENDED TO PROVIDE DIRECTION OTHER THAN THAT ALL METHODS AND MEANS ARE TO BE IN ACCORDANCE WITH STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE.
14. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION WASTES AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL TOWN, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES.

GRADING & UTILITY NOTES

1. LOCATION OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. SANITARY SEWER AND ALL OTHER UTILITY SERVICE CONNECTION POINTS SHALL BE CONFIRMED INDEPENDENTLY BY THE CONTRACTOR IN FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED IMMEDIATELY IN WRITING TO BOHLER ENGINEERING, P.C.. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. ALL PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. ALL UTILITIES AND SERVICES INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE SHALL BE VERTICALLY AND HORIZONTALLY LOCATED. THE CONTRACTOR SHALL USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION AT NO COST TO THE OWNER.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR THE RELATIVE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND IN FULL COMPLIANCE WITH LOCAL REGULATIONS AND CODES.
4. DEFINE AND LOCATE VERTICALLY AND HORIZONTALLY ALL ACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.
5. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AS IDENTIFIED OR REQUIRED FOR PROJECT. THE CONTRACTOR SHALL PROVIDE THE OWNER WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTION AND UTILITY COMPANY REQUIREMENTS.
6. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF SITE PLAN DOCUMENTS AND ARCHITECTURAL DESIGN FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS, GREASE TRAP REQUIREMENTS/DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE UTILITY SERVICE SIZES ARE TO BE DETERMINED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES/SERVICES WITH THE INDIVIDUAL COMPANIES, TO AVOID CONFLICTS AND ENSURE PROPER DEPTHS ARE ACHIEVED. THE JURISDICTION UTILITY REQUIREMENTS SHALL ALSO BE MET, AS WELL AS COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE CONFLICTS EXIST WITH THESE SITE PLANS, BOHLER ENGINEERING, P.C. IS TO BE NOTIFIED PRIOR TO CONSTRUCTION TO RESOLVE SAME.
7. WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS SHALL BE SPECIFIED BY THE LOCAL UTILITY COMPANY. CONTRACTOR'S PRICE FOR WATER SERVICE SHALL INCLUDE ALL FEES AND APPURTENANCES REQUIRED BY THE UTILITY TO PROVIDE A COMPLETE WORKING SERVICE. THE MINIMUM REQUIRED COVER FOR WATERLINES IN HOWARD COUNTY IS 3.50'
8. ALL NEW UTILITIES/SERVICES, INCLUDING ELECTRIC, TELEPHONE, CABLE TV, ETC. ARE TO BE INSTALLED UNDERGROUND. ALL NEW UTILITIES/SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE UTILITY/SERVICE PROVIDER INSTALLATION SPECIFICATIONS AND STANDARDS.
9. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT PREPARE BY WHITESTONE ASSOCIATES, INC.; DATED OCTOBER 20, 2005; ENTITLED: REPORT OF GEOTECHNICAL INVESTIGATION-PROPOSED COSTCO WHOLESALE SITE-MARYLAND INTERSATE I-95 AND LITTLE PATUXENT-PARKWAY (MARYLAND ROUTE 175)-COLUMBIA, HOWARD COUNTY, MARYLAND; PROJECT NO.: WP05-7961. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED AS OUTLINED IN THE GEOTECHNICAL REPORT. MOISTURE CONTENT AT TIME OF PLACEMENT SHALL BE SUBMITTED IN COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER OR OWNER'S REPRESENTATIVE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED AS DIRECTED BY THE GEOTECHNICAL REPORT.
10. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION SHALL BE IN CONFORMANCE WITH THE GEOTECHNICAL REPORT AND SHALL ALSO BE COORDINATED WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS.
11. THE CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST OSHA STANDARDS AND REGULATIONS, OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE "MEANS AND METHODS" REQUIRED TO MEET THE INTENT AND PERFORMANCE CRITERIA OF OSHA, AS WELL AS ANY OTHER ENTITY THAT HAS JURISDICTION FOR EXCAVATION AND/OR TRENCHING PROCEDURES.
12. PAVEMENT SHALL BE SAW CUT IN STRAIGHT LINES TO THE FULL DEPTH OF THE EXISTING PAVEMENT. ALL DEBRIS FROM REMOVAL OPERATIONS SHALL BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS WILL NOT BE PERMITTED.
13. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT TOPS SHALL BE ADJUSTED, IF REQUIRED, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.
14. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 0.75% MINIMUM SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS; 1.0% ON ALL CONCRETE SURFACES; AND 1.5% MINIMUM ON ASPHALT, TO PREVENT PONDING. ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST MUST BE IDENTIFIED TO BOHLER ENGINEERING, P.C. IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITHOUT NOTIFICATION IS DONE SO AT THE CONTRACTOR'S OWN RISK.
15. IN CASE OF DISCREPANCIES BETWEEN PLANS OR RELATIVE TO OTHER PLANS, THE SITE PLAN WILL TAKE PRECEDENCE. IMMEDIATELY NOTIFY BOHLER ENGINEERING, P.C. IN WRITING OF ANY CONFLICTS.
16. CONTRACTOR SHALL BE REQUIRED TO SECURE ALL NECESSARY PERMITS AND APPROVALS FOR ALL OFF-SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. CONTRACTOR SHALL SUPPLY A COPY OF APPROVALS TO BOHLER ENGINEERING, P.C. AND OWNER PRIOR TO INITIATING WORK.

SITE PLAN/DOCUMENT REFERENCES:

1. DEVELOPER/OWNERS PLANS:
   A. BENSON EAST EROSION AND SEDIMENT CONTROL AND LANDSCAPE PLANS PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. DATED 08/03/2004 (SDP-04-163).
   B. WATER AND SEWER EXTENSION PLANS FOR BENSON EAST PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. DATED 6/8/05 REVISED 4/6/06 (CONTRACT #24-4284-D).
   C. ROADWAY AND STORM DRAIN PLANS PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. DATED 8/18/05 REVISED 4/20/06 (REFERENCE #F-05-058).
   D. ALL EXISTING CONDITIONS AND EXISTING TOPOGRAPHY ARE TAKEN FROM THE "DEVELOPER'S CONCEPTUAL GRADING PLAN" PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. DATED 06/28/05.

   CONTACT INFORMATION:
   PATTON, HARRIS, RUST, AND ASSOCIATES, P.C.
   8818 CENTRE PARK DRIVE
   COLUMBIA, MD 21045
   TELEPHONE: (610) 395-7033
   FAX: (610) 395-5811
   CONTACT: DOMENICK COLANGELO

2. SURVEY:
   DATED: 8/02/05
   PROJECT NO.: S040011.01.SR
   ENTITLED:
   ALTA/ACSM LAND TITLE SURVEY
   COSTCO WHOLESALE CORPORATION
   PARCEL 'G', BENSON EAST (UNRECORDED)
   PART OF HRD LAND HOLDINGS, INC.
   LIBER 5289 FOLIO 330
   SIXTH ELECTION DISTRICT
   HOWARD COUNTY, MARYLAND
   PREPARED BY:
   CONTROL POINT ASSOCIATES, INC.
   22630 DAVIS DRIVE, SUITE 200
   STERLING, VA 20164
   PROJECT NO.:S040011.01.SR
   TELEPHONE: (703) 709-9400
   FAX: (703) 904-9797
   CONTACT: KEVIN STEINHILBER, P.L.S.

3. GEOTECHNICAL INFORMATION:
   DATED: 10/20/05
   PROJECT NO.: WP05-7961
   ENTITLED:
   REPORT OF GEOTECHNICAL INVESTIGATION
   PROPOSED COSTCO WHOLESALE SITE
   MARYLAND INTERSATE I-95 AND LITTLE PATUXENT
   PARKWAY (MARYLAND ROUTE 175)
   COLUMBIA, HOWARD COUNTY, MARYLAND
   PREPARED BY:
   WHITESTONE ASSOCIATES, INC.
   1600 MANOR DRIVE, SUITE 220
   CHALFONT, PA 18914
   TELEPHONE: (215) 393-8200
   FAX: (215) 393-8574
   CONTACT: JEFFREY SCHAUMBURG, P.E.

WATER LINE NOTES:

1. NO FIRE HYDRANT SHALL BE LOCATED WITHIN 6 FEET OF ANY CURB RETURN, DRIVEWAY, UTILITY POLE, LIGHT POLE, OR ANY OTHER OBSTRUCTION.
2. ALL PROPOSED WATER METERS ON-SITE TO BE LOCATED INSIDE OF THE BUILDING.
3. ALL WATER MAINS ON SITE SHALL BE D.I.P. (CLASS 52 UNLESS OTHERWISE NOTED.)
4. PLEASE REFER TO "WATER AND SEWER EXTENSIONS PLAN SET" CONTRACT NO. 24-4284-D PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. P.C DATED 6/8/05, REVISED 4/6/06 FOR INFORMATION ON THE EXISTING 10" WATER MAIN ON-SITE.

SANITARY SEWER NOTES:

1. PLEASE REFER TO "WATER AND SEWER PLAN SET" CONTRACT NO. 24-4284-D PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. DATED 6/8/05, REVISED 4/6/06 FOR INFORMATION ON THE EXISTING 8" PUBLIC SANITARY SEWER MAIN ON SITE.
2. ALL SANITARY SEWER LINES SHALL BE D.I.P. OR PVC UNLESS OTHERWISE NOTED.
3. ALL SANITARY MANHOLES ON-SITE SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.

STORMDRAIN STRUCTURE SCHEDULE

STRUCTURE NO.	DESCRIPTION	INV. IN	INV. OUT	TOP ELEV.
A-1	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	317.32 (24")	307.44 (24")	323.48
A-2	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	317.53 (24")	317.43 (24")	323.25
A-3	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	318.90 (18")	318.40 (24")	323.84
A-4	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	319.50 (18")	323.84
M-10	EXISTING MANHOLE (HOWARD CO. STD. G 5.03)	302.74 (36") 299.22 (48")	299.22 (48")	327.00
M-11	EXISTING MANHOLE (HOWARD CO. STD. G 5.03)	317.22 (30")	299.48 (48")	327.00
B-1	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	303.77 (36") 324.86 (15")	303.67 (36")	327.38
B-2	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	322.74 (15") 304.88 (36")	304.78 (36")	326.64
B-3	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	305.77 (36") 317.55 (18")	305.67 (36")	328.50
B-4	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	306.72 (36")	306.62 (36")	328.60
B-5	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	319.89 (24") 308.02 (30")	307.52 (36")	328.60
B-6	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	310.97 (24") 318.30 (24")	310.47 (30")	328.30
B-7	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	319.01 (24")	318.91 (24")	328.70
B-8	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	320.01 (24")	319.91 (24")	328.86
B-9	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	320.56 (24")	320.46 (24")	328.90
B-10	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	324.91 (8")	324.81 (24")	328.90
B-11	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	311.65 (24")	311.55 (24")	327.62
B-12	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	314.00 (24")	313.90 (24")	323.28
B-13	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	315.72 (15")	314.97 (24")	321.40
B-14	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	315.19 (10")	316.02 (15")	321.62
B-15	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	320.97 (24")	320.87 (24")	324.54
B-16	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	321.04 (24")	324.61
B-17	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	322.98 (15")	325.73
B-18	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	324.94 (15")	327.69
B-19	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	324.11 (15")	312.42 (EX. 36")	327.67
B-20	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	324.22 (15")	326.97

NOTE: ALL TOP ELEVATIONS ARE THE RIM ELEVATIONS FOR MANHOLES AND THE THROAT FOR INLETS.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND STORMWATER RECHARGE TRENCHES

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 4/11/07
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE

[signature] 4/16/07
DIRECTOR — DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

MISS UTILITY

BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: GENERAL NOTES

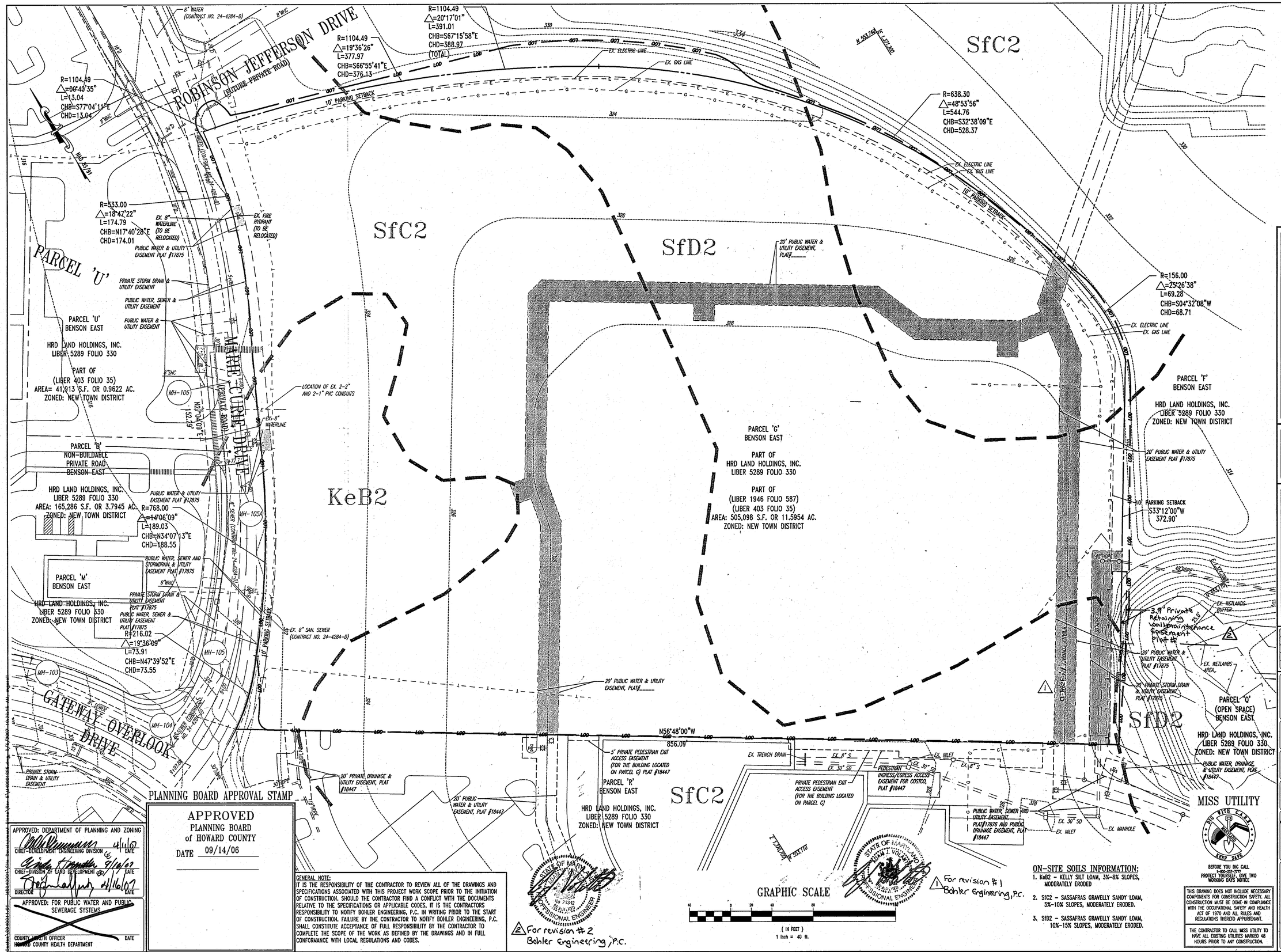
BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

DATE:
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	2 OF 29

SDP #06-111

M:\04\Costco\S040011.01 — HD040001\Site-Development Plans\Rev 5\HD0001C05.dwg, 3/8/2007 10:33:27 AM, mgesell



REFERENCE:

SOIL SURVEY
HOWARD COUNTY, MD
PERPARED BY:
UNITED STATES DEPARTMENT OF AGRICULTURE
DATED: JULY 1968

1. THE MARYLAND DEPARTMENT OF ASSESSMENTS AND TAXATION RECORDS FOR HOWARD COUNTY, MAP NUMBER 37.

2. MAP ENTITLED "FIRM, FLOOD INSURANCE RATE MAP, HOWARD COUNTY, MARYLAND PANEL 35 OF 45", COMMUNITY-PANEL NUMBER 240044 0035 B, PREPARED BY FEDERAL EMERGENCY MANAGEMENT AGENCY, EFFECTIVE DATE DECEMBER 4, 1988.

3. MAP ENTITLED "PLAT OF SURVEY, PORTION OF THE HRD LAND HOLDING, INC. PROPERTY, SIXTH ELECTION DISTRICT, HOWARD COUNTY, MD", PREPARED BY DAFT MCCUNE WALKER, INC., DATED SEPTEMBER 17, 2002 AND UPDATED THROUGH NOVEMBER 23, 2004 (UNRECORDED).

4. MAP ENTITLED "BENSON EAST, PARCELS 'A' THRU 'M' AND OPEN SPACE PARCELS 'N' & 'O', SHEETS 1 THRU 9", DATED JULY 23, 2005, AND PREPARED BY PATTON HARRIS RUST & ASSOCIATES, PC.

NOTE

1. THIS PROPERTY IS LOCATED WITHIN THE GATEWAY OVERLOOK STOPPING CENTER.

2. HOWARD COUNTY REFERENCE NUMBERS:
   SITE PLAN DEVELOPMENT PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: APRIL 22, 2005

   WATER AND SEWER PLANS PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: 6/8/05 REVISED 4/6/06
   SDP-04-163

   ROADWAY AND STORM DRAIN PLANS PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: 8/18/05 REVISED 4/20/06
   SDP-04-163

3. REFER TO THE COVER SHEET FOR THE LEGEND.

4. REFER TO GENERAL NOTES SHEET FOR STANDARD DEMOLITION NOTES.

LEGEND

SOILS TYPE DIVIDES

EXISTING WETLANDS

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
2	8/29/07	Revise retaining wall easement	BOHLER
1	4/24/07	Revised Public water contract #'s	BOHLER

OWNER/DEVELOPER:
HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT:
BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
EXISTING CONDITIONS AND DEMOLITION PLAN

BOHLER ENGINEERING, P.C.
•PROFESSIONAL ENGINEERING SERVICES•
•22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164•
•CONTACT: DAVID B. NEWCOMB
•(703) 709-9500 FAX: (703) 709-9501 | WWW.BOHLERENG.COM

DESIGNED BY: MJC/JD
DRAWN BY: B.M.H.
PROJECT NO.: S040011.01
DATE: 11/22/06
SCALE: 1"=40'
DRAWING NO.: 3 OF 29

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 9/14/07

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 9/14/07

DIRECTOR — DATE 9/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
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2 For revision #2 Bohler Engineering, P.C.

1 For revision #1 Bohler Engineering, P.C.

ON-SITE SOILS INFORMATION:

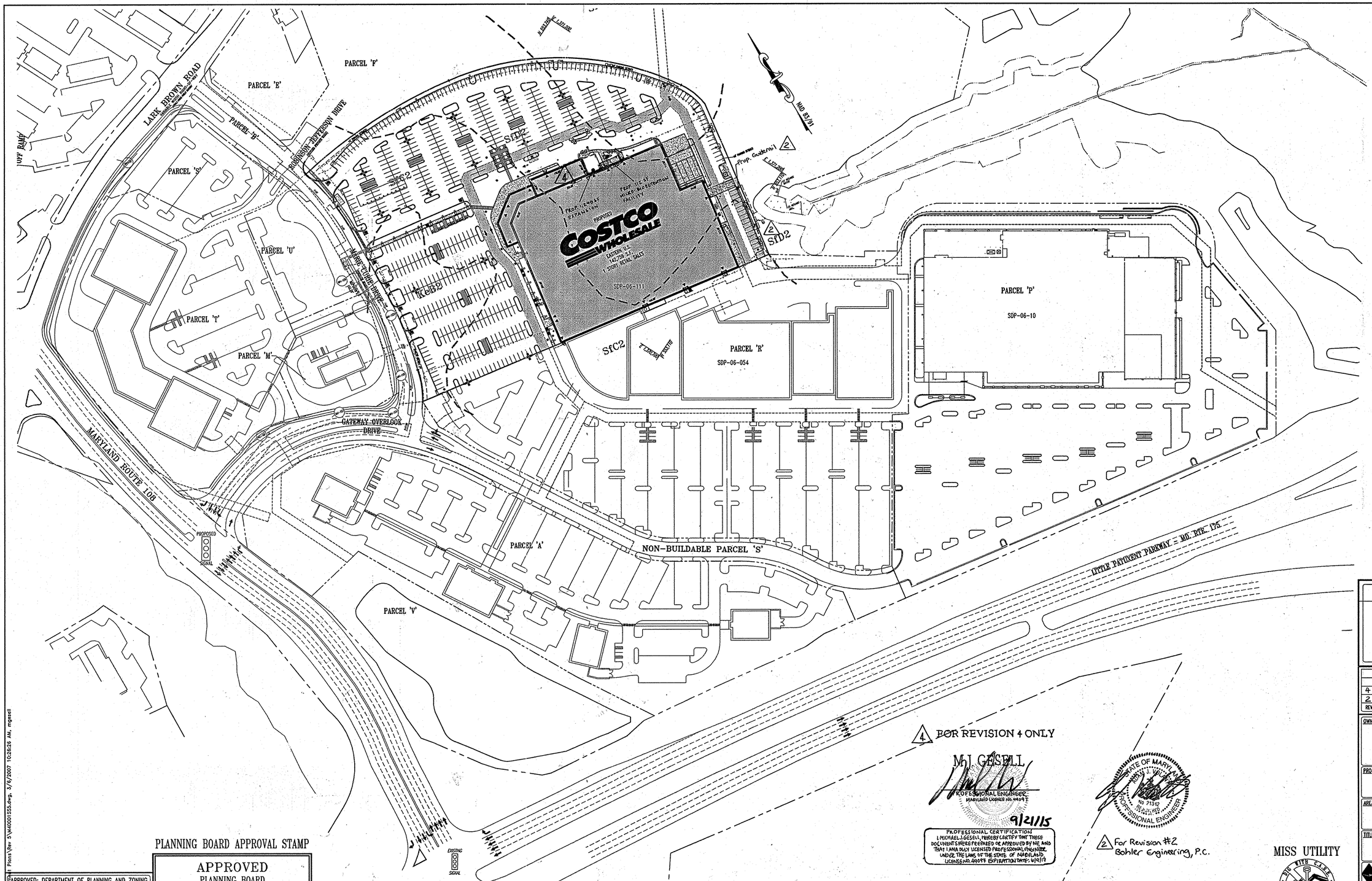
1. KeB2 - KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED
2. SfC2 - SASSAFRAS GRAVELLY SANDY LOAM, 5%-10% SLOPES, MODERATELY ERODED.
3. SfD2 - SASSAFRAS GRAVELLY SANDY LOAM, 10%-15% SLOPES, MODERATELY ERODED.

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL 'MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

SDP #06-111



4 FOR REVISION 4 ONLY

M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 19097
9/21/15

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 19097, EXPIRATION DATE: 9/19/19

STATE OF MARYLAND — ADAM J. VOLANTH — NO. 21342 — REGISTERED PROFESSIONAL ENGINEER

2 For Revision #2
Bohler Engineering, P.C.

MISS UTILITY

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

GRAPHIC SCALE

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

LEGEND

FLOOD PLAIN
WETLANDS

REV.	DATE	DESCRIPTION	BY
4	6/10/15	EXPAND TIRE CENTER, ADD MICRO BIO FACILITIES	BOHLER
2	8/30/07	Revised Retaining Wall	BOHLER

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1060
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN PARCEL G — BENSON EAST 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: OVERALL SITE PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLER.COM

STATE OF MARYLAND — ADAM J. VOLANTH — NO. 21342 — REGISTERED PROFESSIONAL ENGINEER
DATE: 11/22/06

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=100'
DRAWING NO.:	4 OF 29

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

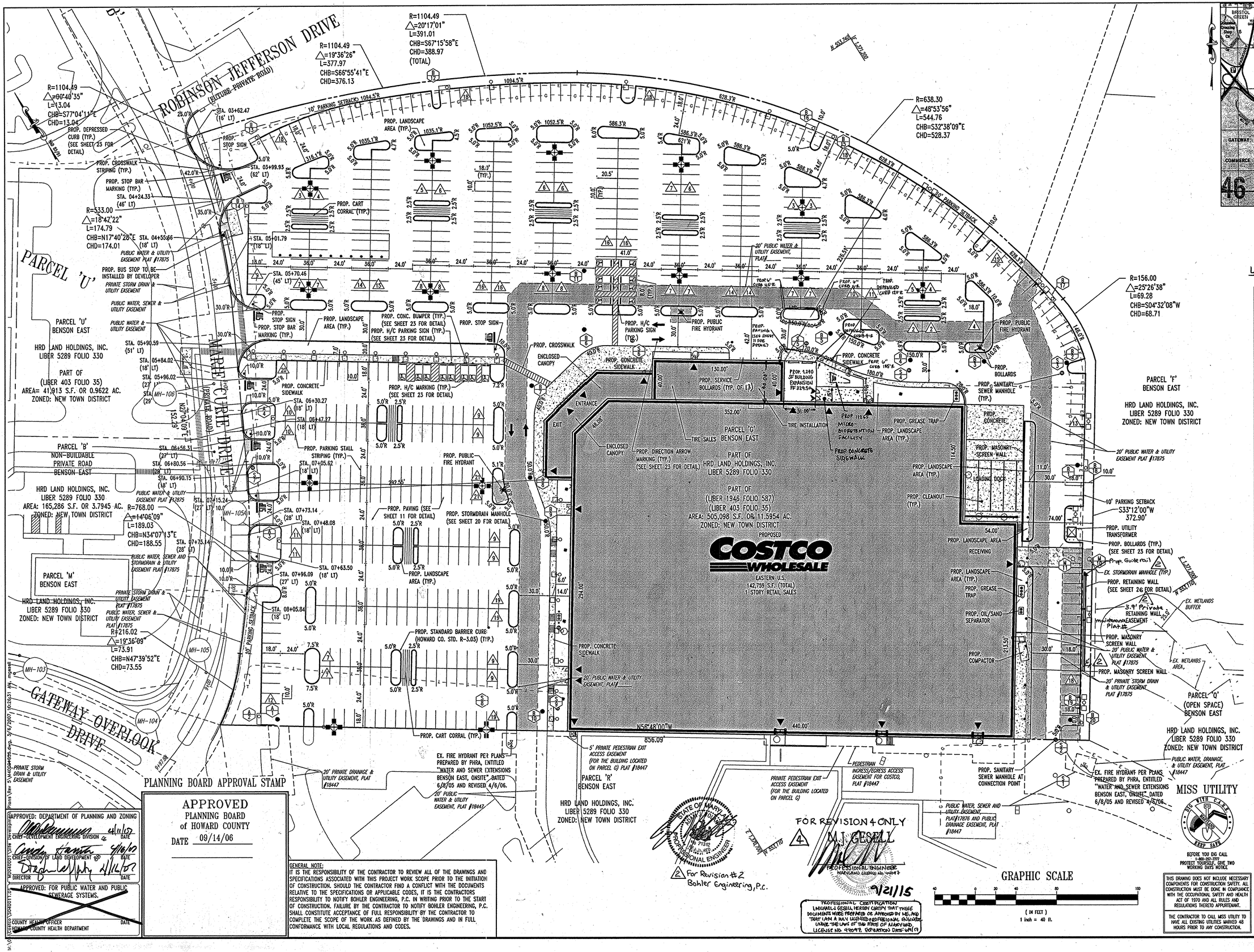
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 11/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 11/16/07
DIRECTOR — DATE 11/16/07

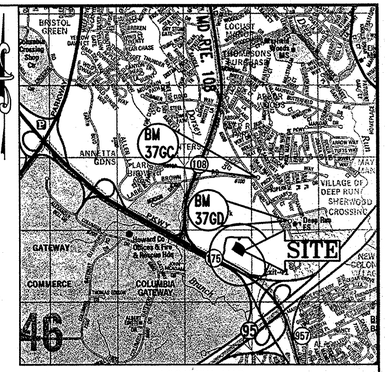
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

M:\CAD\PROJECTS\S040011.01\HOWARD COUNTY\Site Development Plans\Ver. 5\4400011S5.dwg, 3/6/2007 10:26:26 AM, mgesell





LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-S

SCALE: 1"=2000'

LIMIT OF DISTURBANCE: 4,286.6 S.F.

NOTE

1. THIS PROPERTY IS LOCATED WITHIN THE GATEWAY OVERLOOK STOPPING CENTER.
2. HOWARD COUNTY REFERENCE NUMBERS:
   SITE PLAN DEVELOPMENT PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: APRIL 22, 2005

   WATER AND SEWER PLANS PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: 6/8/05 REVISED 4/6/06
   SDP-04-163

   ROADWAY AND STORM DRAIN PLANS PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: 8/18/05 REVISED 4/20/06
   SDP-04-163
3. REFER TO THE COVER SHEET FOR THE LEGEND.
4. CONSTRUCTION OF MARIE CURIE DRIVE IS TO BE COMPLETED BY THE DEVELOPER. COSTCO IS SOLEY RESPONSIBLE FOR ENTRANCE CONSTRICTION, SIDEWALK ALONG MARIE CURIE DRIVE TO THE NORTHERN PROPERTY LINE, AND THE BUS STOP PAD.

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
4	6/18/15	EXPAND TIRE CENTER; ADD MICROBIO FACILITIES	BMLE
2	8/30/07	Revised Retaining Wall	BMLE

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (702) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: DETAILED SITE PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID E. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLERENG.COM

DESIGNED BY: MJG/JD
DRAWN BY: B.M.H.
PROJECT NO.: SD40011.01
DATE: 11/22/06
SCALE: 1"=40'
DRAWING NO.: 5 OF 29

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

SDP #06-111

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/14/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/6/07
DIRECTOR — DATE 9/14/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 21312, EXPIRATION DATE: 9/9/17

BIG WITH CARE
BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

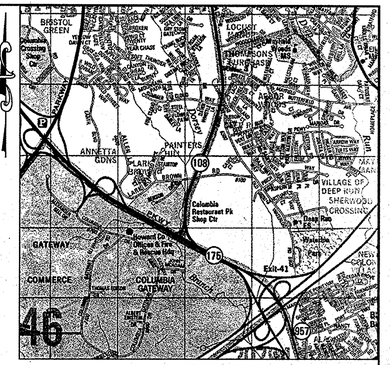
THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

MISS UTILITY

Plotted: 06-NOV-2015 10:26:31 AM mgesell
Plots View: S:\MAC\Projects.dwg, 9/4/2007, 10:26:31 AM, mgesell
Site Design
SD40011.01

STORMDRAIN PIPE SCHEDULE		
SIZE	DESCRIPTION	LENGTH
6"	PERFORATED PVC	207'
10"	NON-PERFORATED HDPE	24'
10"	PERFORATED HDPE	113'
18"	HDPE	120'
24"	HDPE	1,366'
30"	HDPE	245'
36"	HDPE	438'



LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-S
SCALE: 1"=2000'

NOTE

1. THIS PROPERTY IS LOCATED WITHIN THE GATEWAY OVERLOOK STOPPING CENTER.
2. HOWARD COUNTY REFERENCE NUMBERS:
   SITE PLAN DEVELOPMENT PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: APRIL 22, 2005

   WATER AND SEWER PLANS PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: 6/8/05 REVISED 4/6/06
   SDP-04-163

   ROADWAY AND STORM DRAIN PLANS PREPARED BY:
   PATTON, HARRIS, RUST AND ASSOCIATES, P.C.
   DATED: 8/19/05 REVISED 4/20/06
   SDP-04-163
3. REFER TO THE COVER SHEET FOR THE LEGEND.
4. REFER TO GENERAL NOTES SHEET FOR STANDARD GRADING NOTES.
5. REFER TO GENERAL NOTES SHEET FOR STORMDRAIN STRUCTURE SCHEDULE.

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

4	6/16/15	EXPAND TIRE CENTER, ADD MICRO BIO FACILITIES		BOHLER
3	12-21-11	REVISED STORM DRAIN		PWM
2	8/30/07	Revised Retaining Wall		BJH
REV.	DATE	DESCRIPTION		BY

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027- 8990
PHONE: (703)406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: GRADING AND DRAINAGE PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLER.COM

DESIGNED BY: MJG/JD
DRAWN BY: B.M.H.
PROJECT NO.: SD40011.01
DATE: 11/22/06
SCALE: 1"=40'
DRAWING NO.: 6 OF 29

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07
DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

GENERAL NOTE:
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4 FOR REVISION 4 ONLY

MICHAEL J. GESELL
PROFESSIONAL ENGINEER
No. 21342
9/21/15

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 21342, EXPIRATION DATE: 9/11/17

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

STATE OF MARYLAND — ADAM J. VOLANTH — No. 21342 — PROFESSIONAL ENGINEER

2 For Revision #2
Bohler Engineering, P.C.

MISS UTILITY
DIG WITH CARE
MISS UTILITY
KEEP SAFE
BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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SDP #06-111

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SANITARY STRUCTURE SCHEDULE

STRUCTURE NO.	DESCRIPTION	INV. IN	INV. OUT	TOP ELEV.
S 1	EXISTING MANHOLE	316.98 (8")	316.88 (8")	328.50
S 2	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	317.28 (8")	317.18 (8")	327.62
S 3	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	319.20 (8")	319.10 (8")	327.80
S 4	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	319.52 (8")	319.42 (8")	327.22
S 5	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	321.04 (8") 321.04 (6")	320.94 (6")	328.89
S 6	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	324.98 (6")	321.95 (8")	328.40
S 7	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	312.07 (6")	311.90 (6")	323.00
S 8	PROP. STANDARD PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	321.55 (6")	321.55 (6")	329.36

NOTE:
THE PROPOSED SITE WILL UTILIZE A WATER METER LOCATED INSIDE THE BUILDING. PLEASE SEE ARCHITECTURALS FOR SPECIFIC INFORMATION AND DETAILS.

UTILITY CONTACT INFORMATION:

NATURAL GAS & ELECTRIC
BALTIMORE GAS AND ELECTRIC
7317 PARKWAY DRIVE
SOUTH HANOVER, MD 21076
PHONE: (410) 859-9383

WATER & SANITARY SEWER
HOWARD COUNTY PUBLIC WORKS BUREAU OF UTILITIES
8250 OLD MONTGOMERY ROAD
COLUMBIA, MD 21045
PHONE: (410) 313-4910

TELEPHONE
VERIZON
7133 RUTHERFORD ROAD
BALTIMORE, MD 21244
PHONE: (410) 224-5286

EROSION & SEDIMENT CONTROL
DEPARTMENT OF INSPECTIONS, LICENSES & PERMITS
3430 COURTHOUSE DRIVE
ELLICOTT CITY, MD 21043
PHONE: (410) 313-2455

STORMWATER MANAGEMENT
HOWARD COUNTY PLANNING AND ZONING DEPARTMENT
3430 COURTHOUSE DRIVE
ELLICOTT CITY, MD 21043
PHONE: (410) 313-2350

PLANNING AND ZONING
HOWARD COUNTY PLANNING AND ZONING DEPARTMENT
3430 COURTHOUSE DRIVE
ELLICOTT CITY, MD 21043
PHONE: (410) 313-2350

NOTE

1. REFER TO GENERAL NOTES SHEET FOR ANY APPLICABLE UTILITY NOTES.

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
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ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
4	6/18/15	EXPAND TIRE CENTER, ADD MICRODOTO FACILITY	BOHLER
3	8/30/07	Revised Retaining Wall	ADAM
1	4/24/07	Revised Public water Contract #'s	BOHLER

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: UTILITY PLAN

BOHLER ENGINEERING, P.C.
♦PROFESSIONAL ENGINEERING SERVICES♦
♦22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164♦
♦CONTACT: DAVID B. HOMICZ♦
♦(703) 709-9500 FAX: (703) 709-9501♦ WWW.BOHLERENG.COM

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	7 OF 29

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

SDP #06-111

MISS UTILITY
BEFORE YOU DIG CALL 1-800-257-7777 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 19078, EXPIRATION DATE 9/6/07
MICHAEL J. GESELL
PROFESSIONAL ENGINEER
9/21/15

For revision #1 Bohler Engineering, P.C.

For Revision #2 Bohler Engineering, P.C.

4 FOR REVISION 4 ONLY

GENERAL NOTE:
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PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07
DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

M:\0_CERTIFIED\S040011\01\Dwg\Sheets\S040011SDP.dwg, 4/6/2007 10:28:48 AM, miguel
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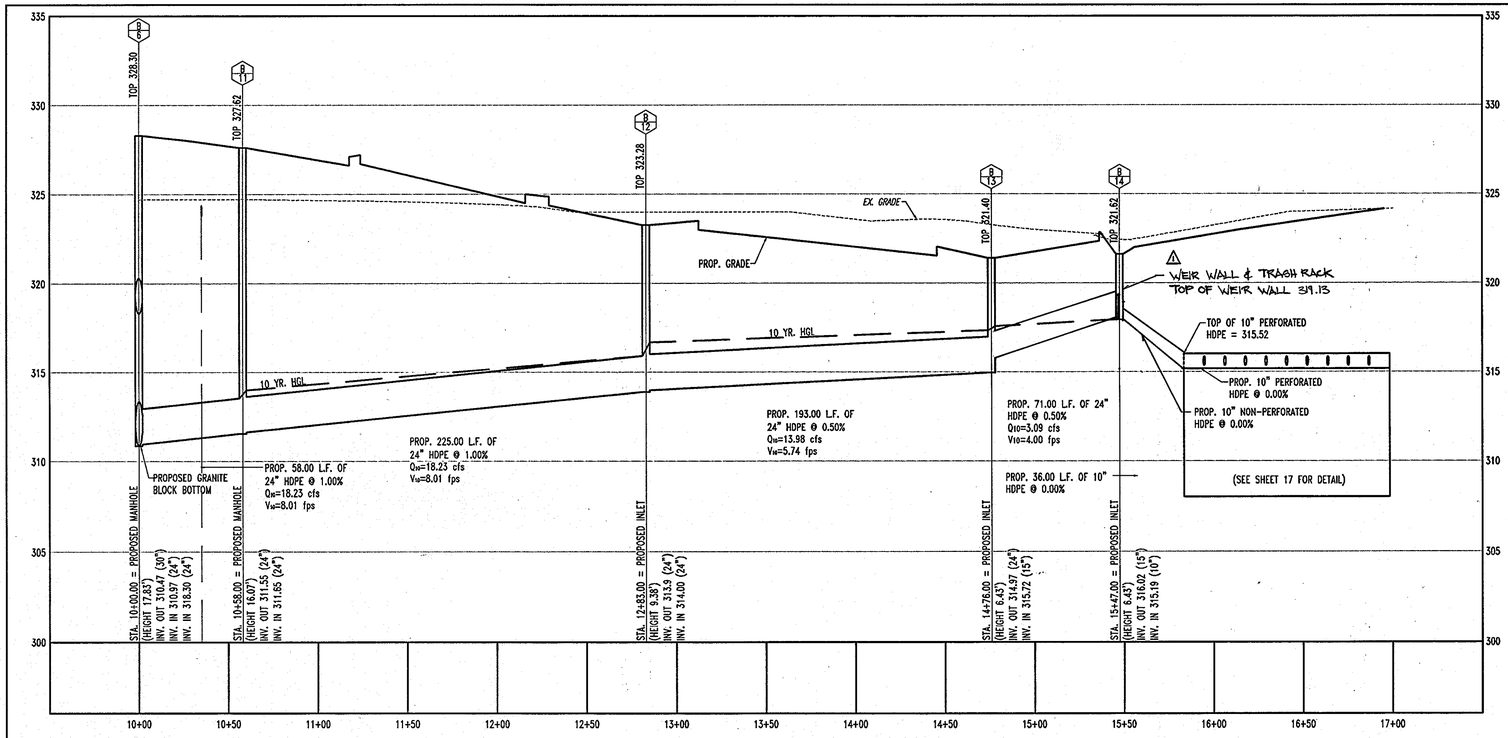
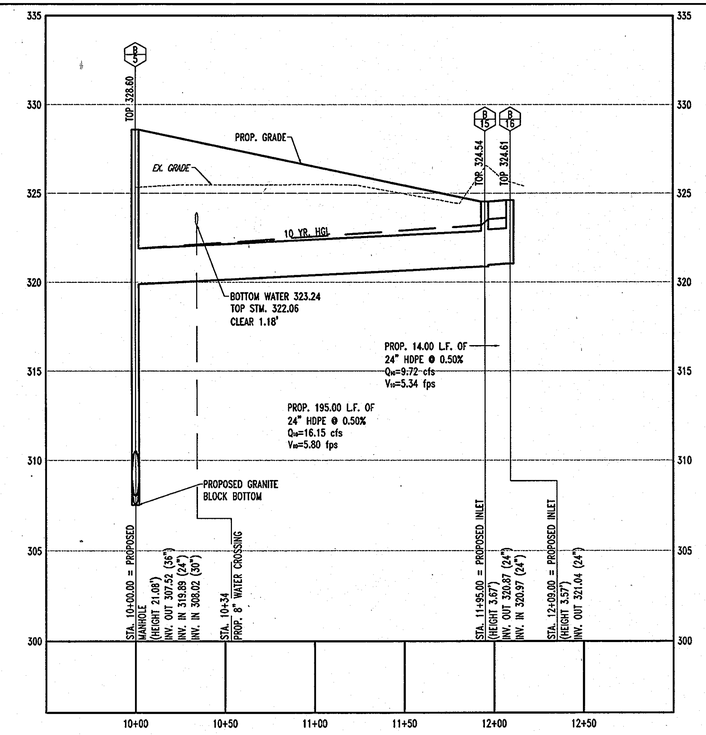
Developer\S040011\01\



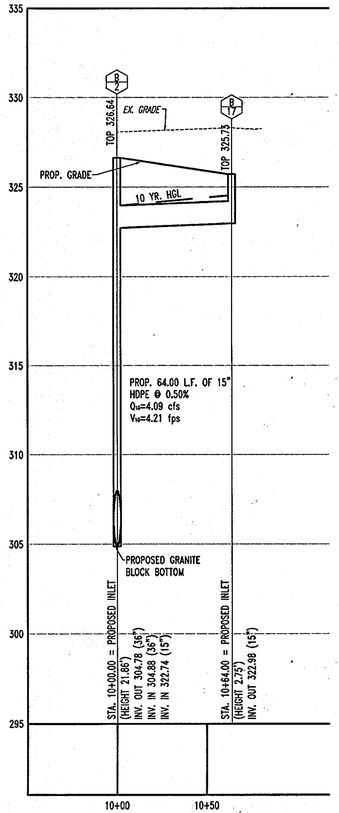
STORMDRAIN PROFILE B6 TO B14

SCALE: HORZ. 1"=40'
VERT. 1"=4'



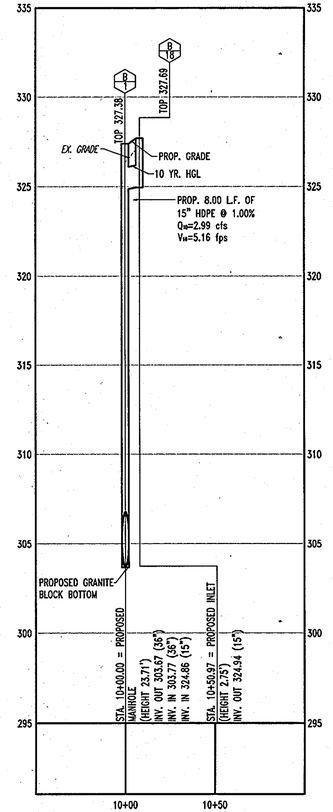
STORMDRAIN PROFILE B5 TO B16

SCALE: HORZ. 1"=40'
VERT. 1"=4'



STORMDRAIN PROFILE B2 TO B17

SCALE: HORZ. 1"=40'
VERT. 1"=4'



STORMDRAIN PROFILE B1 TO B18

SCALE: HORZ. 1"=40'
VERT. 1"=4'

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07

DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
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MISS UTILITY
DIG WITH CARE
MARYLAND
1-800-257-7777
BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY
1	12-21-11	ADD WEIR WALL & TRASH RACK	CHRA

OWNER/DEVELOPER:
HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT:
BENSON EAST
PARCEL C; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL C
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
UTILITY PROFILES

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 • www.bohlereng.com

DATE
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21542

DESIGNED BY:	MJC/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S04001.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	9 OF 29

SDP #06-111

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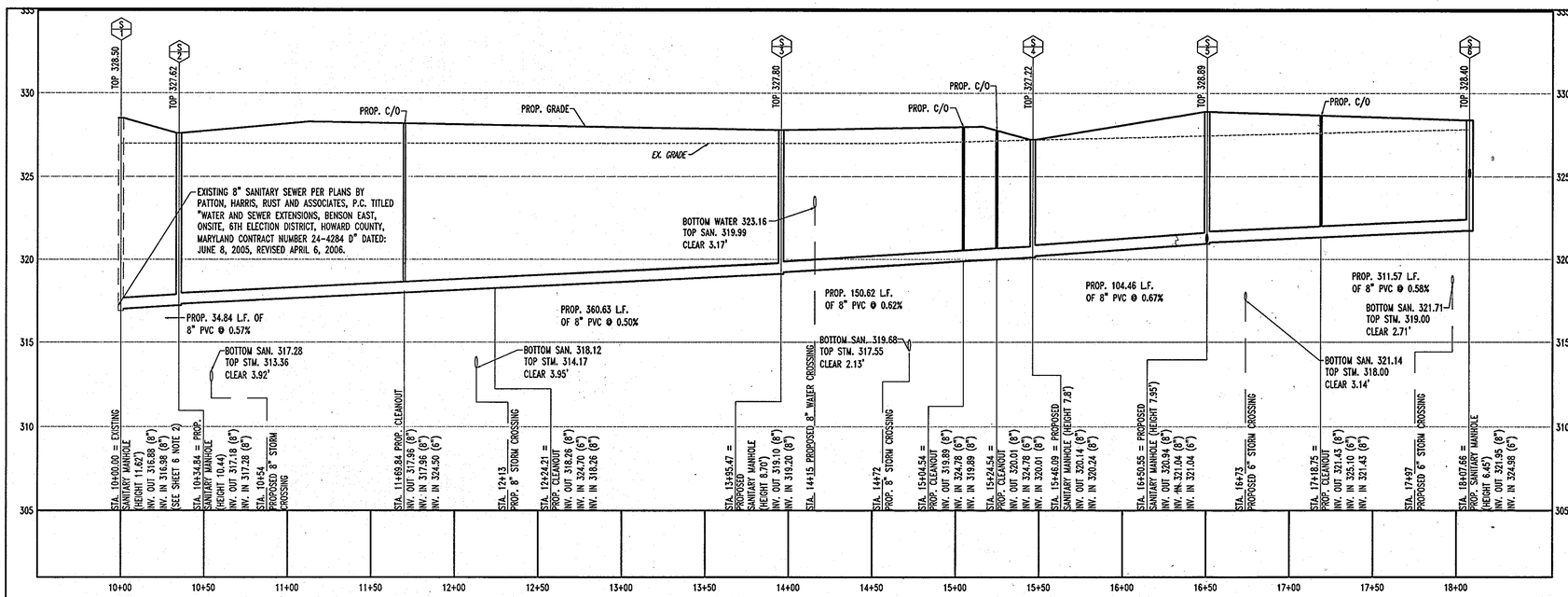
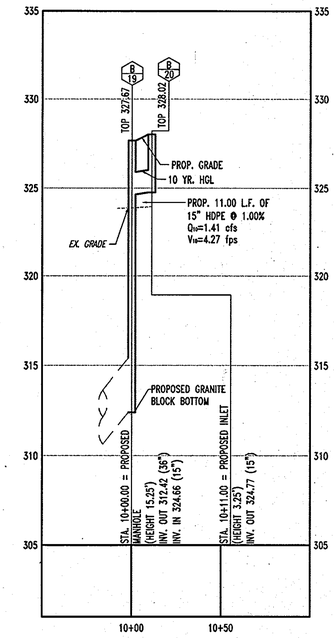


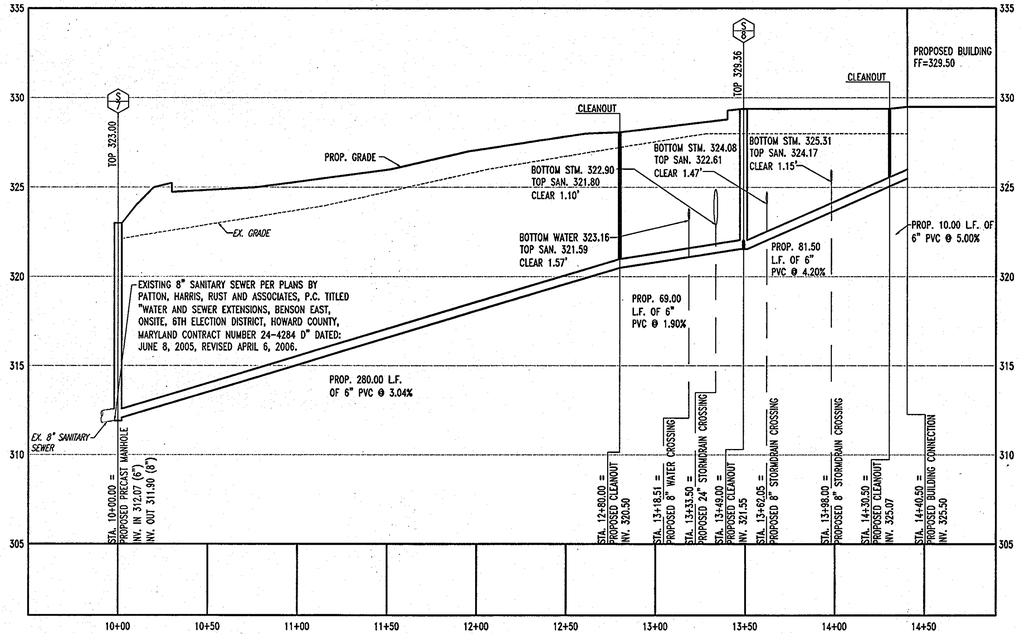
SANITARY PROFILE

SCALE: HORZ. 1"=40'
VERT. 1"=4'



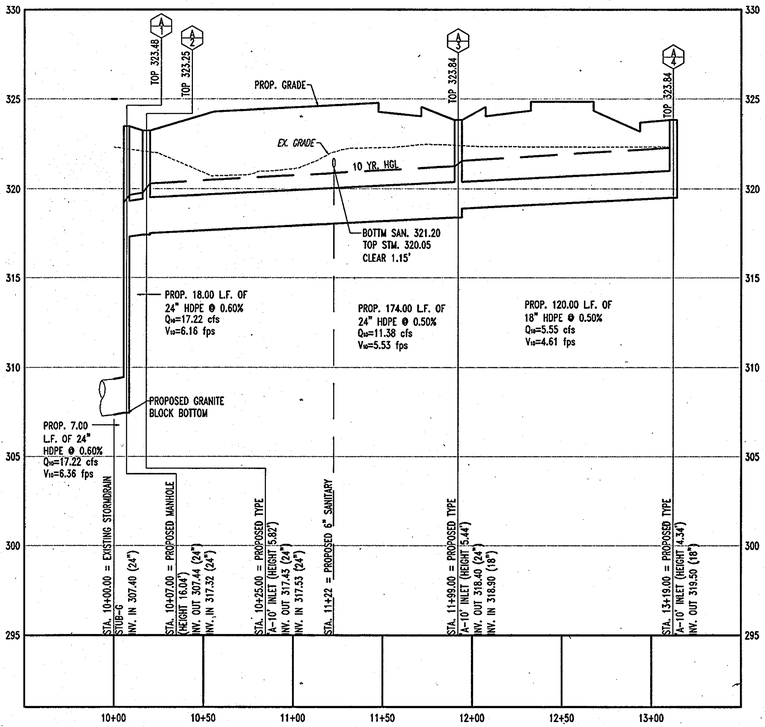
STORMDRAIN PROFILE B19 TO B20

SCALE: HORZ. 1"=40'
VERT. 1"=4'



SANITARY PROFILE

SCALE: HORZ. 1"=40'
VERT. 1"=4'



STORMDRAIN PROFILE EX. A1 TO A4

SCALE: HORZ. 1"=40'
VERT. 1"=4'

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07

DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

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MISS UTILITY

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER:
HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT:
BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
UTILITY PROFILES

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22850 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 | WWW.BOHLER.COM •

DESIGNED BY: MJG/JD
DRAWN BY: B.M.H.
PROJECT NO.: S040011.01
DATE: 11/22/06
SCALE: AS SHOWN
DRAWING NO.: 8 OF 29

DATE:

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

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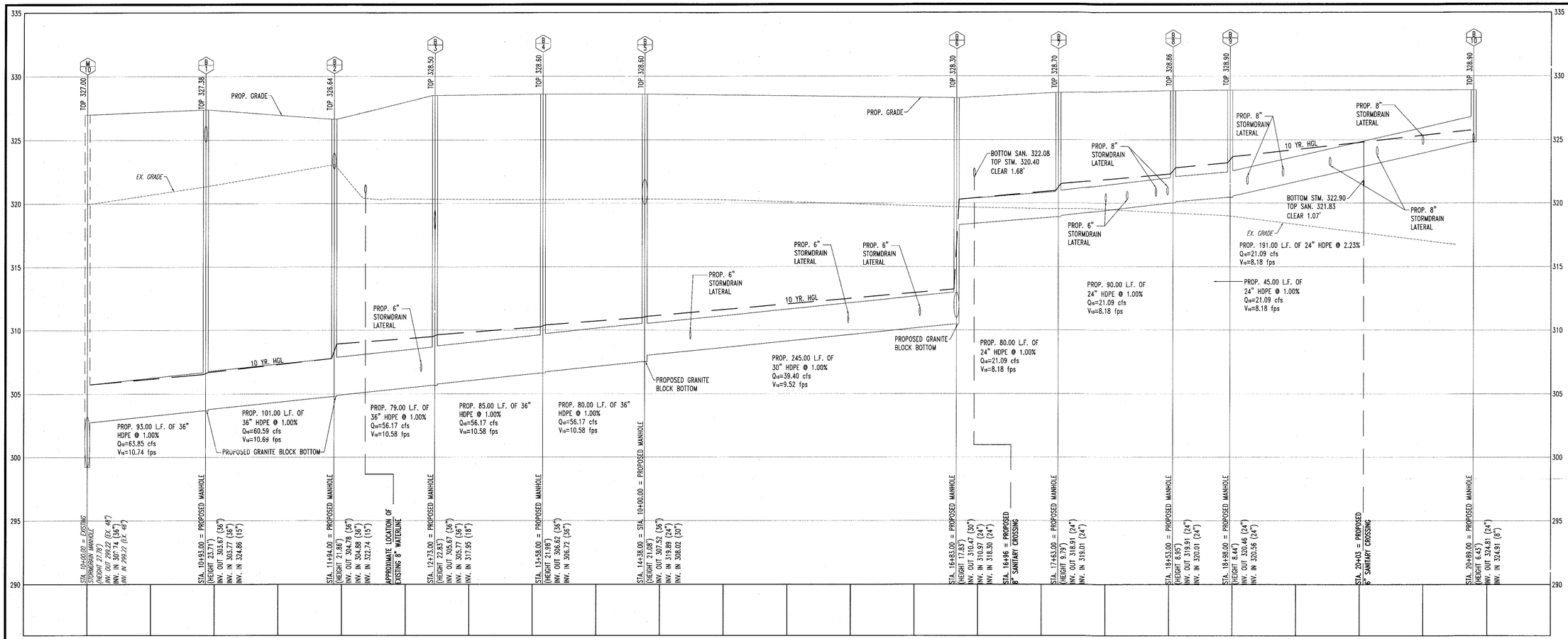
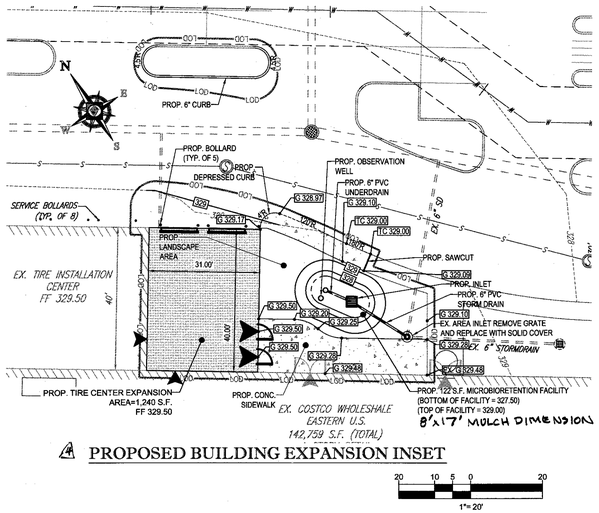
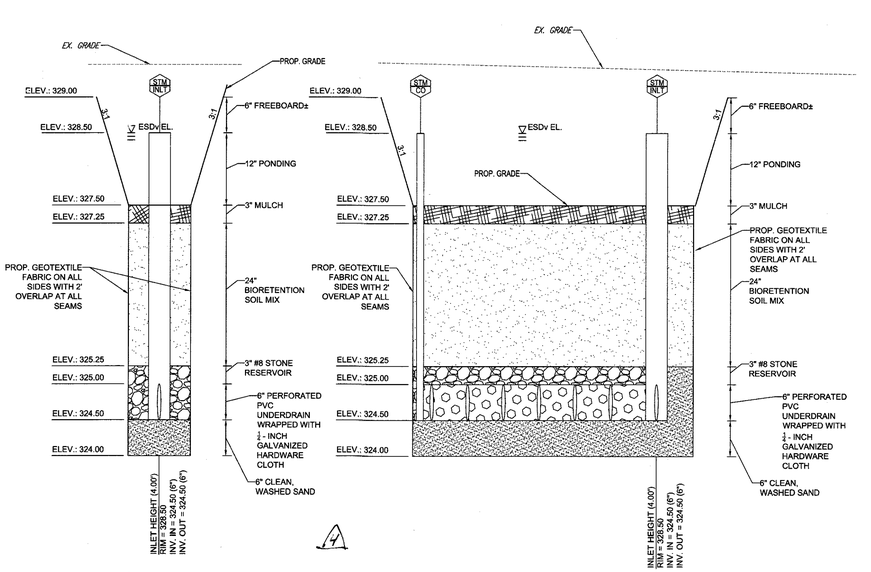


STORMDRAIN PROFILE M10 TO B10

SCALE: HORZ. 1"=40'
VERT. 1"=4'



4 PROPOSED BUILDING EXPANSION INSET



SECTION A-A

NOT TO SCALE

SECTION B-B

NOT TO SCALE

MICRO BIORETENTION #1

NOT TO SCALE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE 9.7.16
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE 9-8-16
DIRECTOR	DATE 9-8-16

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PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 44097, EXPIRATION DATE: 6/9/17

MISS UTILITY
DIG WITH CARE
BEFORE YOU DIG, CALL 1-800-257-7777
PROTECT YOURSELF - GIVE TWO WORKING DAYS' NOTICE

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THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

AMENDED SITE DEVELOPMENT PLAN

REV.	DATE	DESCRIPTION	BY
4	09/17/15	EXPANDED TIRE CENTER, ADD MICROBIO FACILITY	PAB

OWNER/DEVELOPER:
COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT:
BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

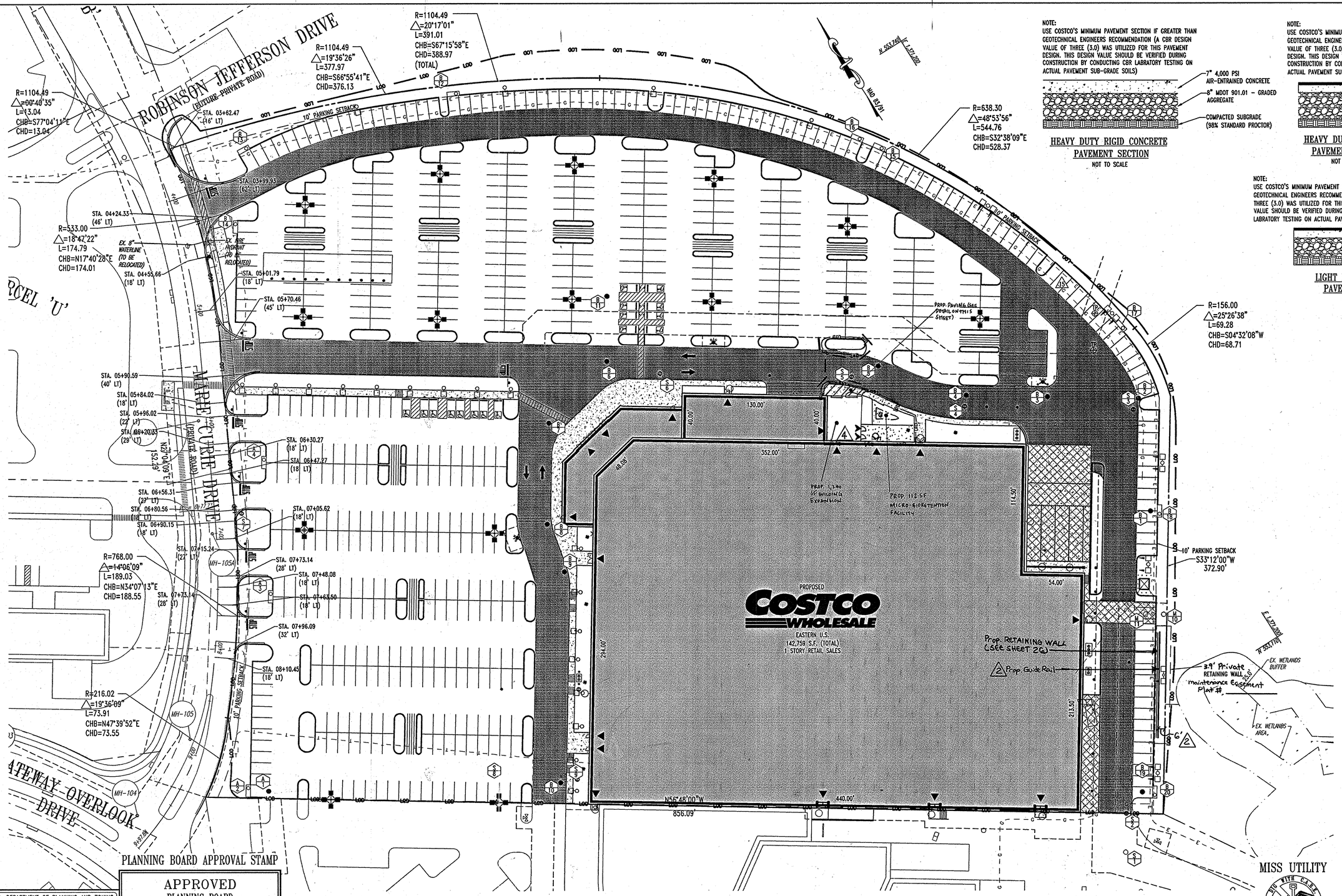
TITLE:
UTILITY PROFILES

BOHLER ENGINEERING
• PROFESSIONAL ENGINEERING SERVICES •
• 901 DULANEY VALLEY ROAD, SUITE 801 TOWSON, MARYLAND, 21204•
• CONTACT: MICHAEL J. GESELL
• (410) 821-7900 FAX: (410) 821-7987 • WWW.BOHLERENG.COM

DATE: 9/17/15
MICHAEL J. GESELL
PROFESSIONAL ENGINEER NO. 44097

DESIGNED BY:	MJG/JD
DRAWN BY:	PAB
PROJECT NO.:	MD152031
DATE:	09/14/15
SCALE:	AS SHOWN
DRAWING NO.:	10 OF 29

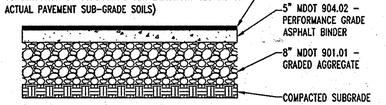
SDP #06-111



NOTE:
USE COSTCO'S MINIMUM PAVEMENT SECTION IF GREATER THAN GEOTECHNICAL ENGINEERS RECOMMENDATION (A CBR DESIGN VALUE OF THREE (3.0) WAS UTILIZED FOR THIS PAVEMENT DESIGN. THIS DESIGN VALUE SHOULD BE VERIFIED DURING CONSTRUCTION BY CONDUCTING CBR LABRATORY TESTING ON ACTUAL PAVEMENT SUB-GRADE SOILS)

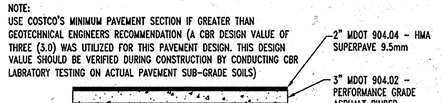
HEAVY DUTY RIGID CONCRETE PAVEMENT SECTION
NOT TO SCALE

NOTE:
USE COSTCO'S MINIMUM PAVEMENT SECTION IF GREATER THAN GEOTECHNICAL ENGINEERS RECOMMENDATION (A CBR DESIGN VALUE OF THREE (3.0) WAS UTILIZED FOR THIS PAVEMENT DESIGN. THIS DESIGN VALUE SHOULD BE VERIFIED DURING CONSTRUCTION BY CONDUCTING CBR LABRATORY TESTING ON ACTUAL PAVEMENT SUB-GRADE SOILS)



HEAVY DUTY FLEXIBLE PAVEMENT SECTION
NOT TO SCALE

NOTE:
USE COSTCO'S MINIMUM PAVEMENT SECTION IF GREATER THAN GEOTECHNICAL ENGINEERS RECOMMENDATION (A CBR DESIGN VALUE OF THREE (3.0) WAS UTILIZED FOR THIS PAVEMENT DESIGN. THIS DESIGN VALUE SHOULD BE VERIFIED DURING CONSTRUCTION BY CONDUCTING CBR LABRATORY TESTING ON ACTUAL PAVEMENT SUB-GRADE SOILS)



LIGHT DUTY FLEXIBLE PAVEMENT SECTION
NOT TO SCALE

LEGEND

- HEAVY DUTY RIGID CONCRETE PAVEMENT
- HEAVY DUTY FLEXIBLE PAVEMENT
- LIGHT DUTY FLEXIBLE PAVMENT
- CONCRETE SIDEWALK

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
4	6/10/15	EXPAND TIRE CENTER, ADD MICROBIO FACILITIES	BOHLER
2	8/30/07	Revised Retaining Wall	BOHLER

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
c/o PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: PAVING PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLER.COM

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	11 OF 29

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07

DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

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MICHAEL J. GESELL — PROFESSIONAL ENGINEER — 9/21/15

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 40917, EXPIRATION DATE: 4/9/17

FOR REVISION 4 ONLY

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

STATE OF MARYLAND — ADAM J. VOLANTH — No. 21342 — PROFESSIONAL ENGINEER

2 For Revision #2 Bohler Engineering, P.C.

MISS UTILITY
BEFORE YOU DIG CALL 1-800-257-7777
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SDP #06-111

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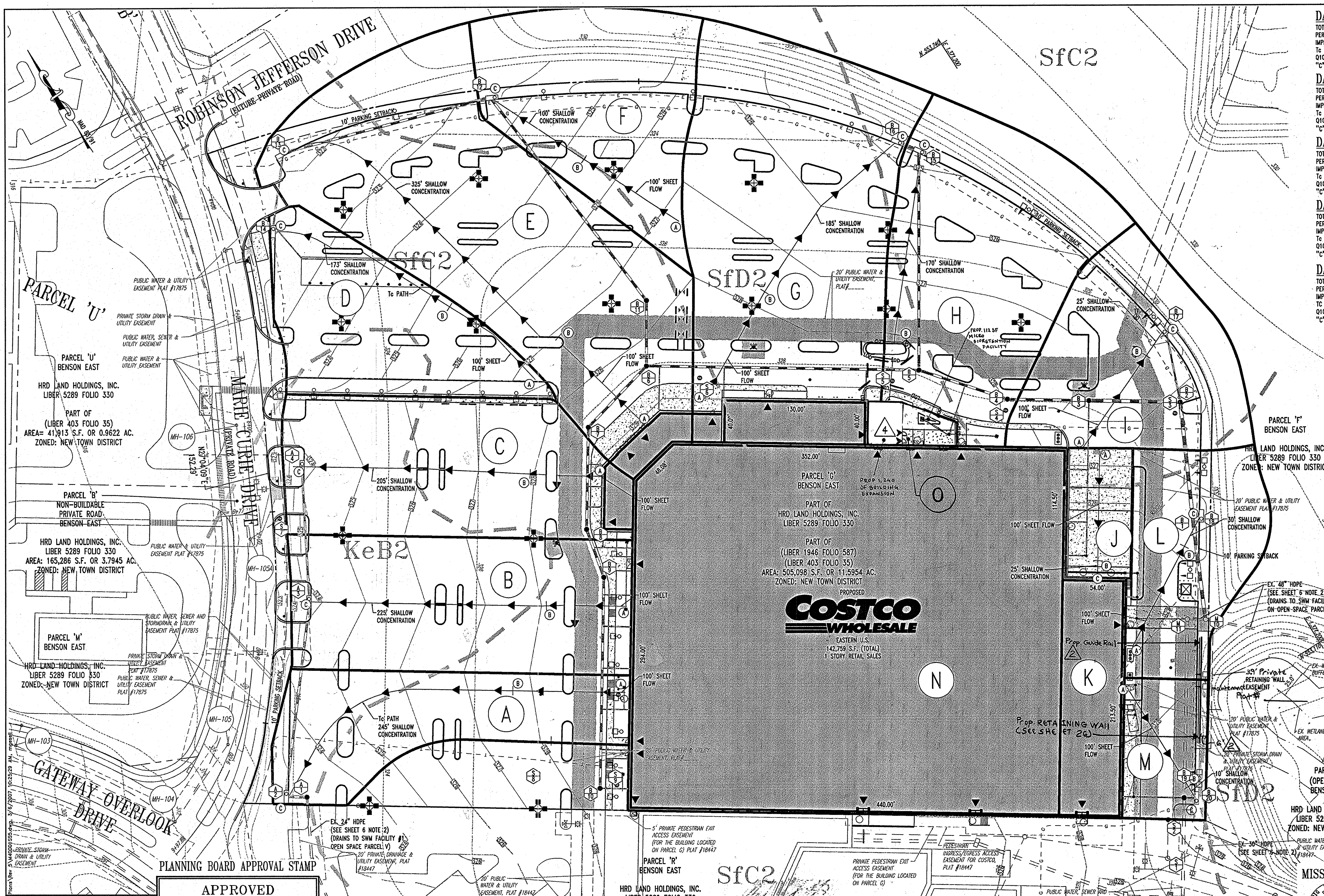
Plans Ver: 5\40001355.dwg, 3/6/2007 10:25:24 AM, mgesell



DA-A
TOTAL AREA = 0.50 AC.
PERVIOUS AREA = 0.11 AC.
IMPERVIOUS AREA = .39 AC.
Tc = 0.1 hrs.
Q10 = 4.82 cfs
"C" FACTOR = .93

DA-B
TOTAL AREA = 0.85 AC.
PERVIOUS AREA = 0.08 AC.
IMPERVIOUS AREA = 0.77 AC.
Tc = 0.1 hrs.
Q10 = 4.84 cfs
"C" FACTOR = .96

DA-C
TOTAL AREA = 0.80 AC.
PERVIOUS AREA = 0.04 AC.
IMPERVIOUS AREA = 0.76 AC.
Tc = 0.1 hrs.
Q10 = 4.69 cfs
"C" FACTOR = .97

DA-D
TOTAL AREA = 0.47 AC.
PERVIOUS AREA = 0.11 AC.
IMPERVIOUS AREA = 0.36 AC.
Tc = 0.1 hrs.
Q10 = 2.36 cfs
"C" FACTOR = .92

DA-E
TOTAL AREA = 1.62 AC.
PERVIOUS AREA = 0.30 AC.
IMPERVIOUS AREA = 1.32 AC.
TC = 0.1 HRS.
Q10 = 8.54 CFS
"C" FACTOR = .94

DA-F
TOTAL AREA = 0.70 AC.
PERVIOUS AREA = 0.37 AC.
IMPERVIOUS AREA = 0.33 AC.
TC = 0.1 HRS.
Q10 = 2.50 CFS
"C" FACTOR = .85

DA-G
TOTAL AREA = 1.45 AC.
PERVIOUS AREA = 0.33 AC.
IMPERVIOUS AREA = 1.12 AC.
TC = 0.1 HRS.
Q10 = 7.32 CFS
"C" FACTOR = .93

DA-H
TOTAL AREA = 0.96 AC.
PERVIOUS AREA = 0.37 AC.
IMPERVIOUS AREA = 0.59 AC.
TC = 0.1 HRS.
Q10 = 4.38 CFS
"C" FACTOR = .89

DA-I
TOTAL AREA = 0.65 AC.
PERVIOUS AREA = 0.26 AC.
IMPERVIOUS AREA = 0.39 AC.
TC = 0.1 HRS.
Q10 = 2.76 CFS
"C" FACTOR = .88

DA-J
TOTAL AREA = 0.16 AC.
PERVIOUS AREA = 0.00 AC.
IMPERVIOUS AREA = 0.16 AC.
TC = 0.1 HRS.
Q10 = 1.03 CFS
"C" FACTOR = .98

DA-K
TOTAL AREA = 0.27 AC.
PERVIOUS AREA = 0.00 AC.
IMPERVIOUS AREA = 0.27 AC.
TC = 0.1 HRS.
Q10 = 1.74 CFS
"C" FACTOR = .98

DA-L
TOTAL AREA = 0.48 AC.
PERVIOUS AREA = 0.22 AC.
IMPERVIOUS AREA = 0.26 AC.
TC = 0.1 HRS.
Q10 = 1.88 CFS
"C" FACTOR = .87

DA-M
TOTAL AREA = 0.22 AC.
PERVIOUS AREA = 0.06 AC.
IMPERVIOUS AREA = 0.16 AC.
TC = 0.1 HRS.
Q10 = 1.12 CFS
"C" FACTOR = .91

DA-N
TOTAL AREA = 3.01 AC.
PERVIOUS AREA = 0.00 AC.
IMPERVIOUS AREA = 3.01 AC.
TC = 0.1 HRS.
Q10 = 19.44 CFS
"C" FACTOR = .98

DA-O
TOTAL AREA = 0.06 AC.
PERVIOUS AREA = 0.01 AC.
IMPERVIOUS AREA = 0.05 AC.
TC = 0.1 HRS.
Q10 = 0.44 CFS
"C" FACTOR = 0.94

4

ON-SITE SOILS INFORMATION:
1. KeB2 – KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED
2. SfC2 – SASSAFRAS GRAVELLY SANDY LOAM, 5%-10% SLOPES, MODERATELY ERODED.
3. SfD2 – SASSAFRAS GRAVELLY SANDY LOAM, 10%-15% SLOPES, MODERATELY ERODED.

REFERENCE:
SOIL SURVEY
HOWARD COUNTY, MD
PERPARED BY:
UNITED STATES DEPARTMENT OF AGRICULTURE
DATED: JULY 1968

NOTE: ALL SOILS ARE TYPE B CLASSIFICATION

BENCHMARK
GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
4	6/18/15	EXPAND TIRE CENTER, ADD MICROBIO FACILITIES.	BOHLER
2	8/30/07	Revised Retaining Wall	Bohler

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
STORMDRAIN DRAINAGE AREA MAP

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

DATE:
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	12 OF 29

NOTE:
THE TOTAL ONSITE IMPERVIOUS AREA PROPOSED ON THE CONCEPTUAL DRAINAGE AREA DESIGN = 10.79 ACRES THE TOTAL ONSITE IMPERVIOUS AREA PROPOSED AS PART OF THESE SITE DEVELOPMENT PLANS = 9.94 ACRES.

MISS UTILITY
DIG WITH C.A.R.E. MARYLAND KEEP SAFE
BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION 4/11/07 DATE
CHIEF-DIVISION OF LAND DEVELOPMENT 4/10/07 DATE
DIRECTOR 4/16/07 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER DATE
HOWARD COUNTY HEALTH DEPARTMENT

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

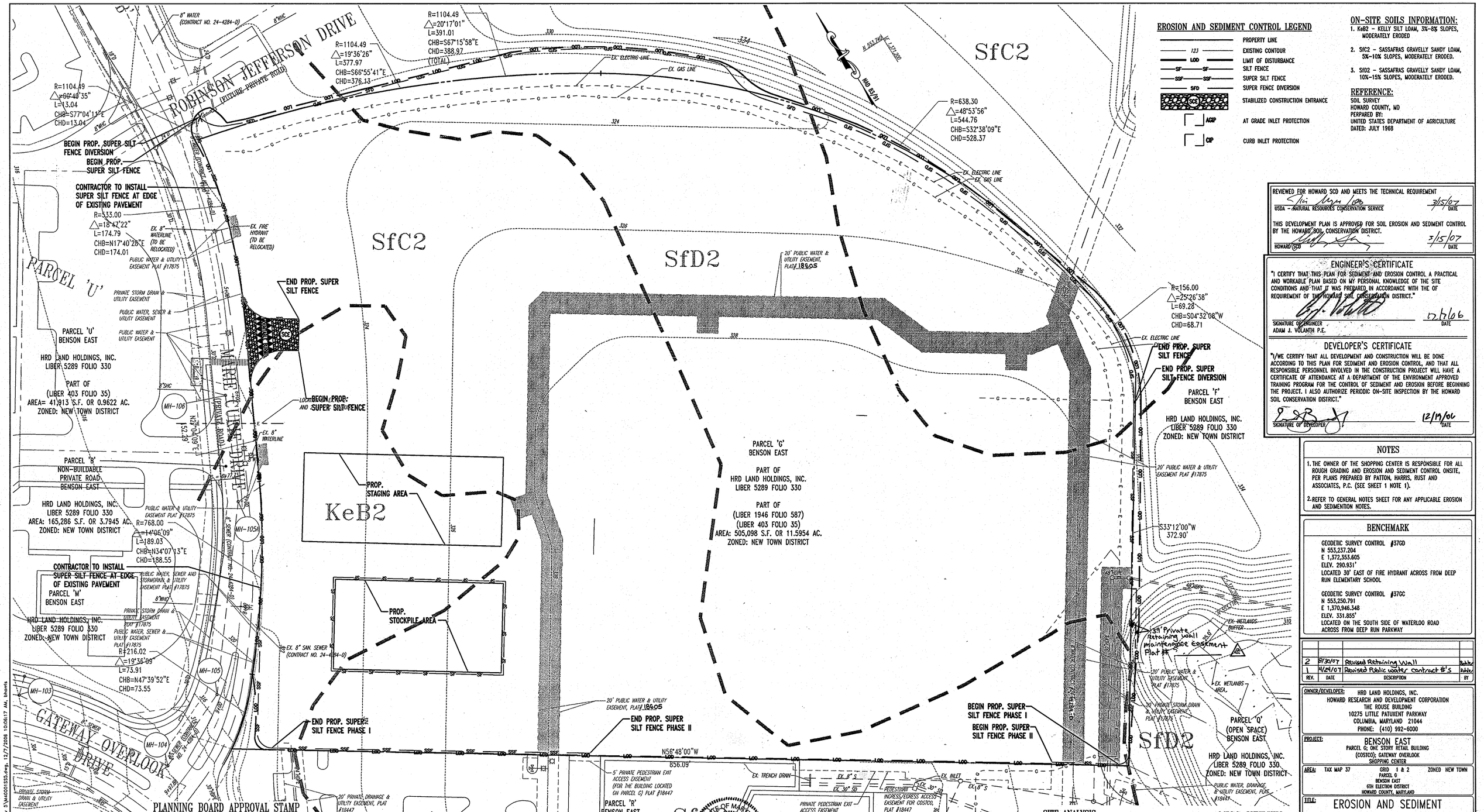
STATE OF MARYLAND ADAM J. VOLANTH No 21342 REGISTERED PROFESSIONAL ENGINEER
2 for Revision #2 Bohler Engineering, P.C.

M.J. GESELL PROFESSIONAL ENGINEER MARYLAND LICENSE No. 44097
9/2/15

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 44097, EXPIRATION DATE 6/9/17

4 FOR REVISION 4 ONLY

M:\04\Costco\S040011.01\MD040001\Site Development Plans\Rev 5\M40001SS5.dwg, 3/6/2007 10:25:29 AM, mgesell



EROSION AND SEDIMENT CONTROL LEGEND

- PROPERTY LINE
- 123 — EXISTING CONTOUR
- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- SFD — SUPER FENCE DIVERSION
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- AGIP — AT GRADE INLET PROTECTION
- CIP — CURB INLET PROTECTION

ON-SITE SOILS INFORMATION:

1. KeB2 – KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED
2. SfC2 – SASSAFRAS GRAVELLY SANDY LOAM, 5%-10% SLOPES, MODERATELY ERODED.
3. SfD2 – SASSAFRAS GRAVELLY SANDY LOAM, 10%-15% SLOPES, MODERATELY ERODED.

REFERENCE:

SOIL SURVEY
HOWARD COUNTY, MD
PREPARED BY:
UNITED STATES DEPARTMENT OF AGRICULTURE
DATED: JULY 1968

REVIEWED FOR HOWARD SCD AND MEETS THE TECHNICAL REQUIREMENT

USDA – NATURAL RESOURCES CONSERVATION SERVICE — 3/15/07 DATE

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

HOWARD SCD — 3/15/07 DATE

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER — 12/6/06 DATE
ADAM J. VOLANTH P.E.

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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 OF DEVELOPER — 12/19/06 DATE

NOTES

1. THE OWNER OF THE SHOPPING CENTER IS RESPONSIBLE FOR ALL ROUGH GRADING AND EROSION AND SEDIMENT CONTROL ONSITE, PER PLANS PREPARED BY PATTON, HARRIS, RUST AND ASSOCIATES, P.C. (SEE SHEET 1 NOTE 1).
2. REFER TO GENERAL NOTES SHEET FOR ANY APPLICABLE EROSION AND SEDIMENTION NOTES.

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
2	5/30/07	Revised Retaining Wall	Bohler
1	4/24/07	Revised Public water contract #'s	Bohler

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: EROSION AND SEDIMENT CONTROL PLAN PHASE I

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 32930 DAVID DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLERENG.COM

12/6/06 DATE

ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	13 OF 29

SITE ANALYSIS

DISTURBED AREA	520,429 S.F. OR 11.95 AC.
TOTAL SITE AREA	505,296 S.F. OR 11.60 AC.
TOTAL CUT – 550 CU. YDS.	
TOTAL FILL – 16,700 CU. YDS.	
EARTH QUANTITIES LISTED ABOVE ARE BASED ON A GRADING PLAN PREPARED BY BOHLER ENGINEERING, P.C. ENTITLED: "GRADING PLAN", DATED 5/12/06, PROJECT NUMBER S040011.01.	
SILT FENCE – 507 L.F.	
SUPER FENCE DIVERSION – 1,046 L.F.	
AT GRADE INLET PROTECTION – 1 EA.	
CURB INLET PROTECTION – 11 EA.	

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

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MISS UTILITY

DIG WITH CARE
MISS UTILITY
KEEP SAFE
BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — 4/16/07 DATE
CHIEF-DIVISION OF LAND DEVELOPMENT — 4/16/07 DATE
DIRECTOR — 4/16/07 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 9-14-06

GENERAL NOTE:
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THIS PLAN IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

SEE SHEET 16 FOR E&S NOTES

2 For Revision #2 Bohler Engineering, P.C.

1 For Revision #1 Bohler Engineering, P.C.

SDP #06-111

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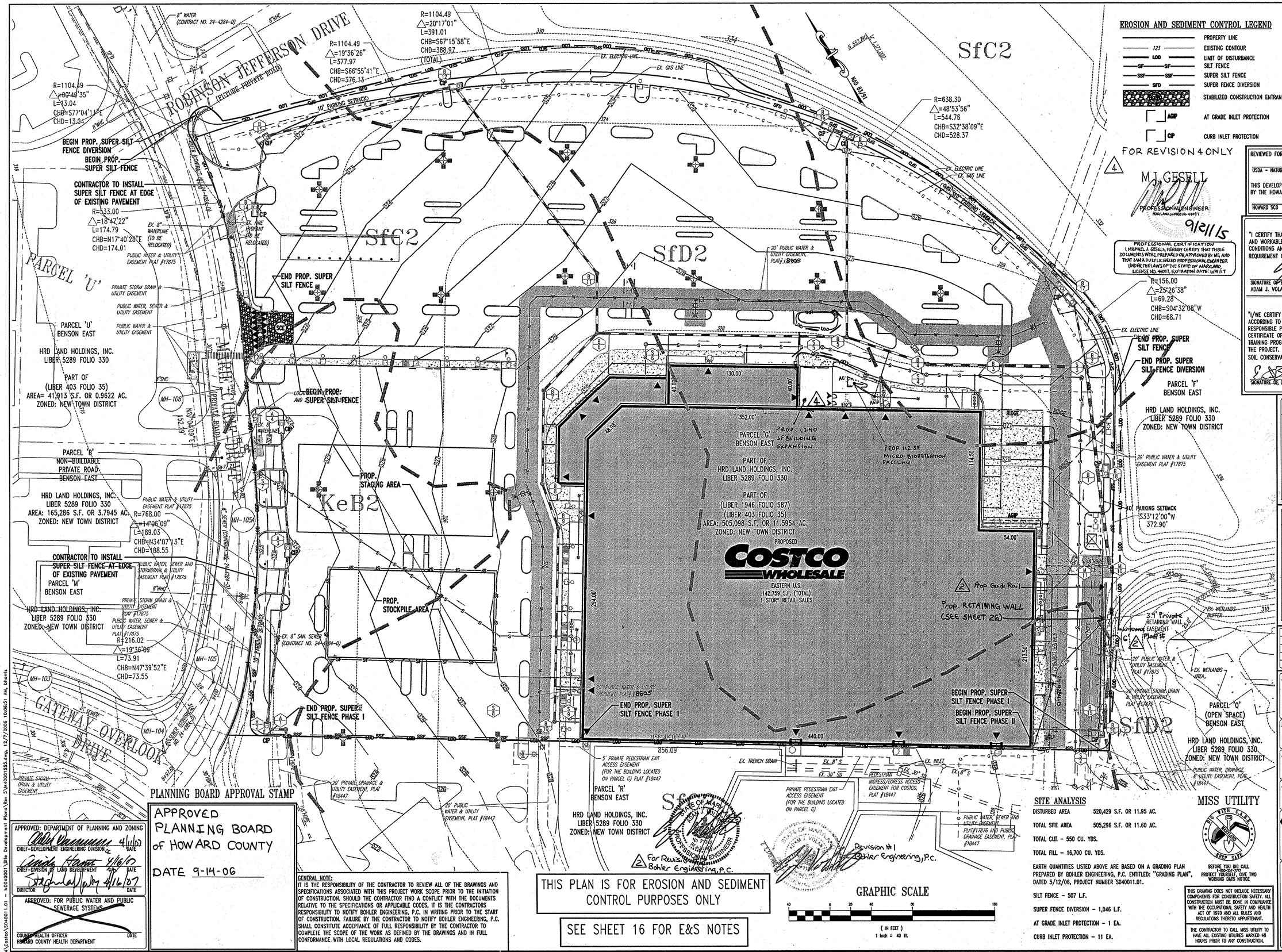

EROSION AND SEDIMENT CONTROL LEGEND

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REFERENCE:

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DATED: JULY 1968

FOR REVISION 4 ONLY

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 18905, EXPIRATION DATE: 9/19/17

MICHAEL J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 18905
9/21/15

REVIEWED FOR HOWARD SCD AND MEETS THE TECHNICAL REQUIREMENT
USDA – NATURAL RESOURCES CONSERVATION SERVICE — 3/15/07 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — 3/15/07 DATE

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER — 12/7/06 DATE
ADAM J. VOLANTH P.E.

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SIGNATURE OF DEVELOPER — 12/12/06 DATE

NOTES

1. THE OWNER OF THE SHOPPING CENTER IS RESPONSIBLE FOR ALL ROUGH GRADING AND DISTURBANCE ON-SITE WHICH IS INVOLVED IN THE EROSION AND SEDIMENT CONTROL PLANS PREPARED BY PATTON, HARRIS, RUST AND ASSOCIATES, P.C..
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GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
4	6/18/15	EXPAND TIRE CENTER, ADD MICRO BIO FACILITIES	BOHLER
3	8/30/07	Revised Retaining wall	Bohler
2	4/24/07	Revised Public water contract #'s	Bohler
1	3/15/07	Revised per SCD comments	Bohler

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: EROSION AND SEDIMENT CONTROL PLAN PHASE II

BOHLER ENGINEERING, P.C.
♦ PROFESSIONAL ENGINEERING SERVICES ♦
♦ 22850 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 ♦
♦ CONTACT: DAVID B. NEMECEK ♦
♦ (703) 709-9500 FAX: (703) 709-9501 ♦ WWW.BOHLERENG.COM

12/7/06 — DATE
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	14 OF 29

SDP #06-111

SITE ANALYSIS

DISTURBED AREA	520,429 S.F. OR 11.95 AC.
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TOTAL CUT – 550 CU. YDS.	
TOTAL FILL – 16,700 CU. YDS.	

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SILT FENCE – 507 L.F.

SUPER FENCE DIVERSION – 1,046 L.F.

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CURB INLET PROTECTION – 11 EA.

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MISS UTILITY

DIG WITH CARE — MARYLAND — KEEP SAFE

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 9-14-06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — 4/16/07 DATE
CHIEF-DIVISION OF LAND DEVELOPMENT — 4/16/07 DATE
DIRECTOR — 4/16/07 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

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2 For Revision Bohler Engineering, P.C.

Revision #1 Bohler Engineering, P.C.

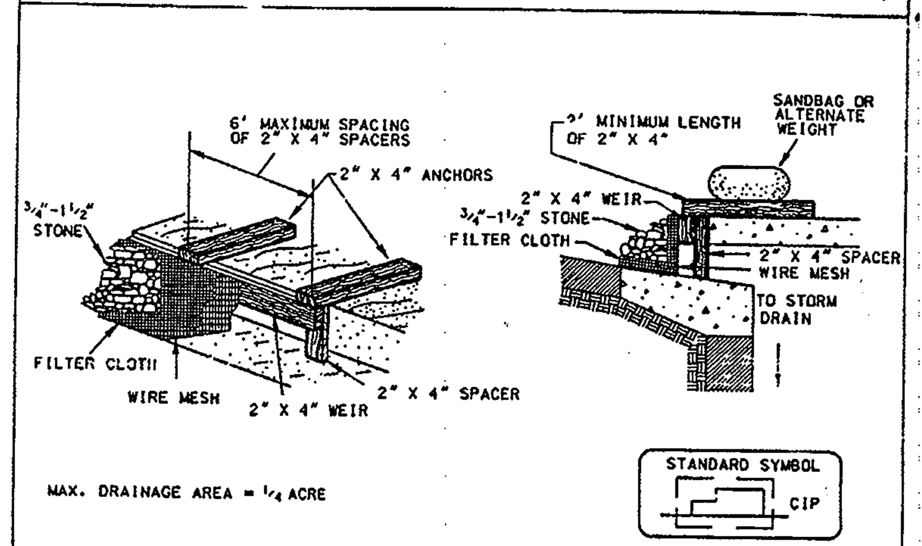
THIS PLAN IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

SEE SHEET 16 FOR E&S NOTES

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

M:\Civil\Costco\S040011.01 - N2004001\Site Development Plans\Rev 2\S040011SS5.dwg, 12/7/2006 10:08:51 AM, bhanis

DETAIL 23C - CURB INLET PROTECTION (COG OR COS INLETS)



MAX. DRAINAGE AREA = 1/4 ACRE

STANDARD SYMBOL CIP

Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.

2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.

3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).

4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.

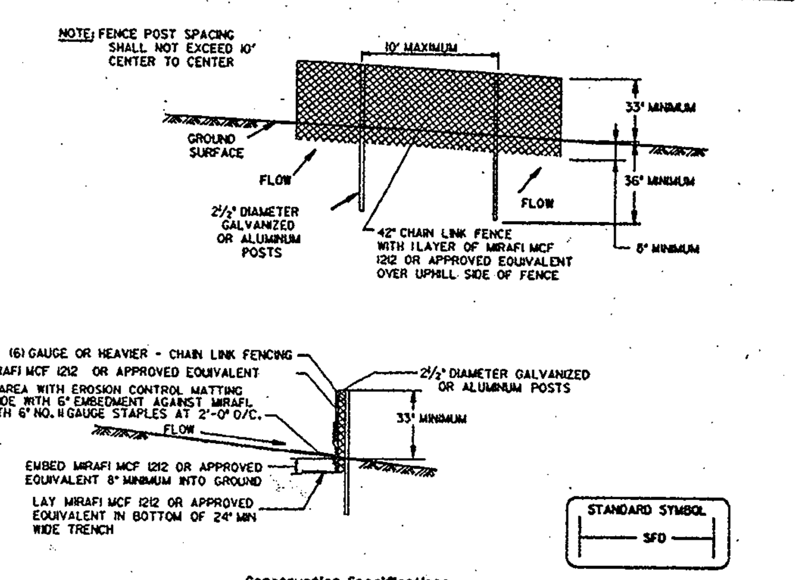
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.

6. Form the 1/2" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4" x 1 1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.

7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.

8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 18 - 6B	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



STANDARD SYMBOL SFD

Construction Specifications

1. Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. The posts do not need to be set in concrete.

3. Chain link fence shall be fastened securely to the fence posts with wire ties or staples. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence. The chain link fencing shall be six (6) gauge or heavier.

4. Mirafi MCF 1212 or approved equivalent shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

5. Mirafi MCF 1212 or approved equivalent shall be embedded a minimum of 8" into the ground.

6. When two sections of Mirafi MCI 1212 or approved equivalent adjoin each other, they shall be overlapped by 6" and folded.

7. Maintenance shall be performed as needed.

8. Maximum flow slope 10.0%.

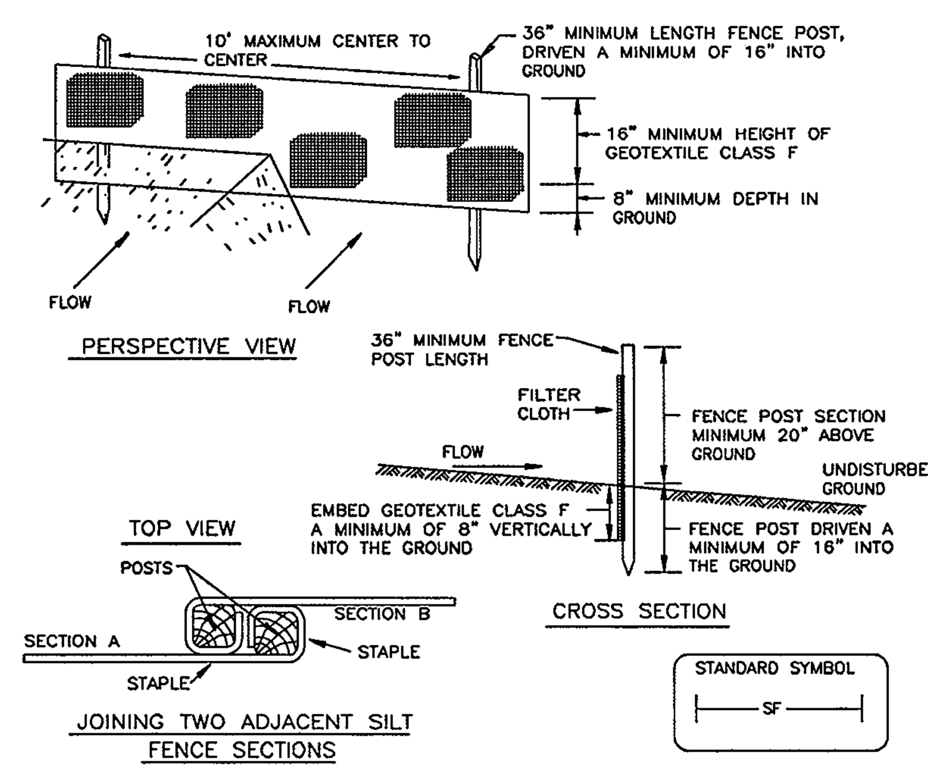
9. Maximum drainage area 5 acres.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

SUPER FENCE DIVERSION

NOT TO SCALE

DETAIL 22 - SILT FENCE



STANDARD SYMBOL SF

CONSTRUCTION SPECIFICATIONS

1. FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 11/2" X 11/2" SQUARE (MINIMUM) CUT, OR 13/4" DIAMETER (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHTING NOT LESS THAN 1.00 POND PER LINEAR FOOT.

2. 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:

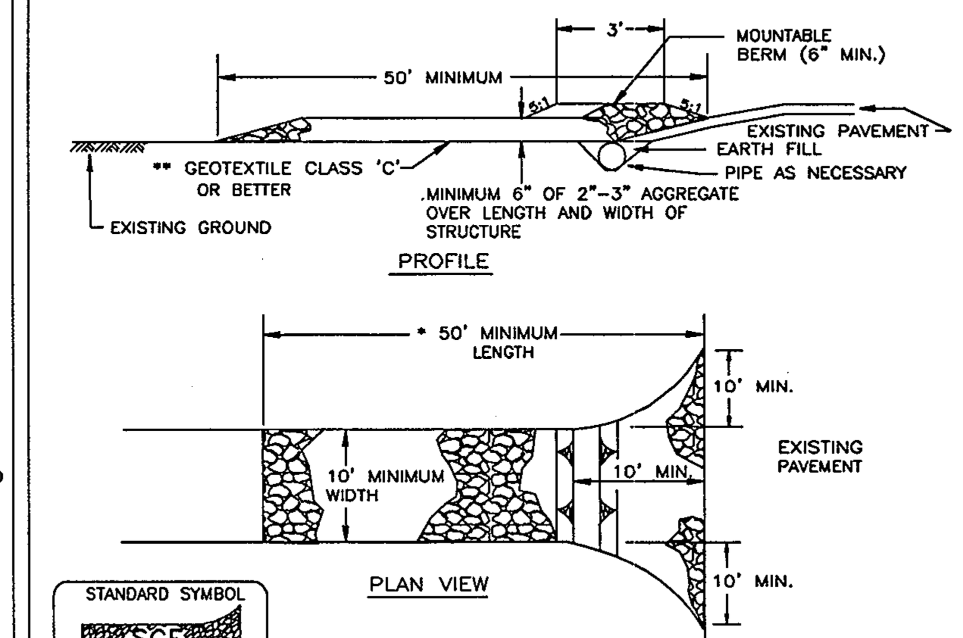
TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL FT² / MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

3. WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.

4. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT.

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

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



STANDARD SYMBOL SCE

CONSTRUCTION SPECIFICATION

1. LENGTH - MINIMUM OF 50' (*30' FOR SINGLE RESIDENCE LOT).

2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

3. 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.

4. 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.

5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE 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 SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY 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.

6. 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.

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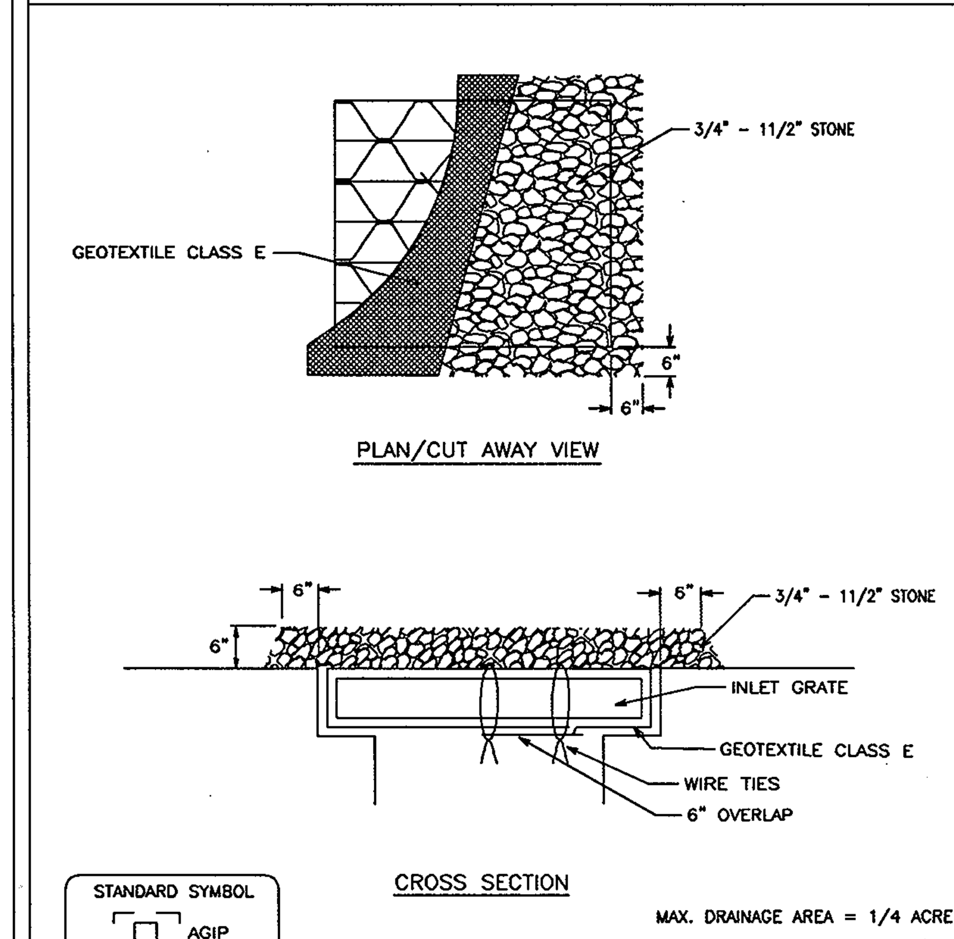
DETAIL 23B - AT GRADE INLET PROTECTION



STANDARD SYMBOL AGIP

MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.

2. Place 3/4" to 11/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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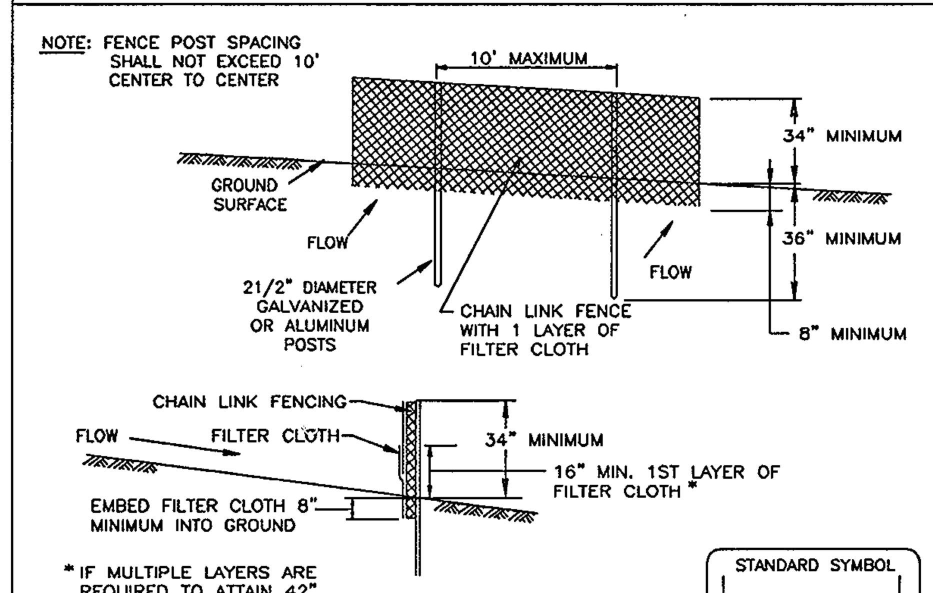
SEQUENCE OF CONSTRUCTION

1. NOTIFY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR AT 410-313-1855 AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. (1 DAY)
2. THE GENERAL CONTRACTOR SHALL NOT COMMENCE ANY LAND DISTURBING ACTIVITIES PRIOR TO OBTAINING A GRADING PERMIT. (1 DAY)
3. THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH COSTCO'S CONSTRUCTION MANAGER AND THE HOWARD COUNTY EROSION AND SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCING ANY LAND DISTURBANCE ACTIVITIES. (1 DAY)
4. ALL AREAS WHICH ARE TO BE DISTURBED SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO CONSTRUCTION. DISTURBED AREAS WITHIN THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED SHALL BE PERMANENTLY OR TEMPORARILY STABILIZED WITHIN: (2 DAYS)
   A. SEVEN CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   B. FOURTEEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE. ALL HARD SURFACE PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORK DAY. (2 DAYS)
6. INSTALL PERIMETER SUPER SILT FENCE AND SUPER FENCE DIVERSION. THIS MUST BE INSPECTED AND APPROVED BY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR. NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT APPROVAL. (2 DAYS)
7. INSTALL UTILITIES AS SHOWN, GENERAL CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY COMPANIES. GENERAL CONTRACTOR SHALL COORDINATE WITH THE RETAINING WALL CONTRACTOR TO ALLOW FOR RETAINING WALL AND ASSOCIATED MATERIALS TO BE INSTALLED. (2 WEEKS)
8. BEGIN BUILDING CONSTRUCTION. (6 WEEKS)
9. INSTALL CURB AND GUTTER AND APPLY BASE STONE FOR ALL PARKING AREAS. (4 WEEKS)
10. FLUSH THE PROPOSED STORM DRAIN SYSTEM TO REMOVE ANY SEDIMENT AND CLEAN THE RECIEVING POND. THIS MUST BE INSPECTED AND APPROVED BY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR. (1 DAY)
11. AS THE SITE IS BROUGHT TO FINAL GRADE, PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN FOURTEEN (14) DAYS. (2 WEEKS)
12. INSTALL ALL PERMANENT LANDSCAPING. (2 WEEKS)
13. AFTER CONSTRUCTION OPERATIONS HAVE ENDED AND ALL DISTURBED AREAS HAVE BEEN STABILIZED, SEDIMENT CONTROL DEVICES CAN BE REMOVED UPON COORDINATION WITH COSTCO'S, AND THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. (2 DAYS)

DETAIL 33 - SUPER SILT FENCE



STANDARD SYMBOL SSF

Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth 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: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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SILT FENCE

SILT FENCE DESIGN CRITERIA

SLOPE STEEPNESS	(MAXIMUM) SLOPE LENGTH	(MAXIMUM) SILT FENCE LENGTH
FLATTER THAN 50:1	UNLIMITED	UNLIMITED
50:1 TO 10:1	125 FEET	1,000 FEET
10:1 TO 5:1	100 FEET	750 FEET
5:1 TO 3:1	60 FEET	500 FEET
3:1 TO 2:1	40 FEET	250 FEET
2:1 AND STEEPER	20 FEET	125 FEET

NOTE: IN AREAS OF LESS THAN 2% SLOPE AND SANDY SOILS (USDA GENERAL CLASSIFICATION SYSTEM, SOIL CLASS A) MAXIMUM SLOPE LENGTH AND SILT FENCE LENGTH WILL BE UNLIMITED. IN THESE AREAS A SILT FENCE MAY BE THE ONLY PERIMETER CONTROL REQUIRED.

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SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

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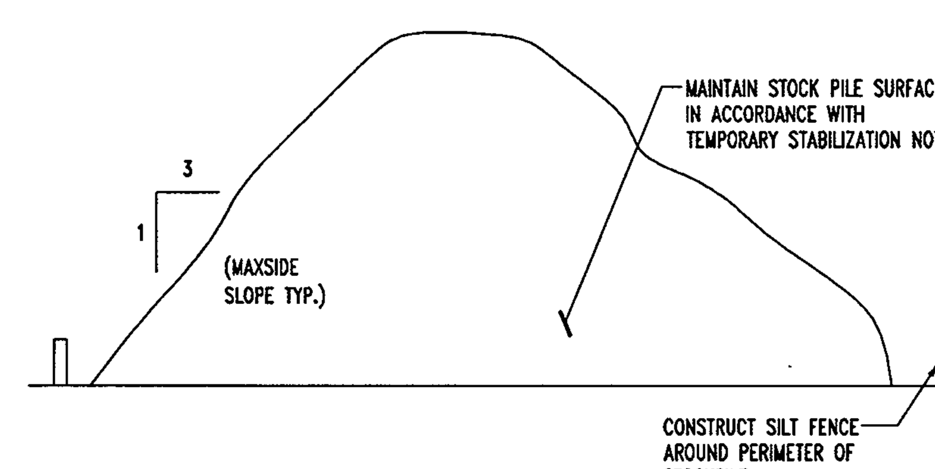


TEMPORARY STOCKPILE DETAIL

NOT TO SCALE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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 THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER ADAM J. VOLANTH P.E. — 12/7/06 DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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 OF DEVELOPER — 12/19/06 DATE

REVIEWED FOR HOWARD SCD AND MEETS THE TECHNICAL REQUIREMENTS

USDA - NATURAL RESOURCES CONSERVATION SERVICE — 3/15/07 DATE

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

HOWARD SCD — 3/15/07 DATE

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

12/7/06 DATE:
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	15 OF 29

MISS UTILITY

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 9-14-06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — 4/11/07 DATE

CHIEF-DIVISION OF LAND DEVELOPMENT — 4/16/07 DATE

DIRECTOR — 4/16/07 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

M:\04\Costco\S040011.01 - MD040001\Site Development Plans\Rev 5\W40001CD5.dwg, 12/18/2006 10:04:16 AM, mgesell

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION WITH SOD

SPECIFICATIONS:

1. CLASS OF TURFGRASS SOD SHALL BE MARYLAND STATE CERTIFIED, OR MARYLAND STATE APPROVED SOD.
2. SOD SHALL BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS SHALL EXCLUDE TOP GROWTH AND THATCH.
3. STANDARD SIZE SECTIONS OF SOD SHALL BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
4. INDIVIDUAL PIECES OF SOD SHALL BE CUT TO THE SUPPLIERS WIDTH AND LENGTH. MAXIMUM ALLOWABLE DEVIATION FROM STANDARD WIDTHS AND LENGTHS SHALL BE 5 PERCENT. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
5. SOD SHALL NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
6. SOD SHALL BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD SHALL BE INSPECTED AND APPROVED PRIOR TO INSTALLATION.

SITE PREPARATION:

FERTILIZER AND LIME APPLICATION RATES SHALL BE DETERMINED BY SOIL TEST. UNDER UNUSUAL CIRCUMSTANCES WHERE THERE IS INSUFFICIENT TIME FOR A COMPLETE SOIL TEST, FERTILIZER AND LIME MATERIALS MAY BE APPLIED IN AMOUNTS SHOWN UNDER B, BELOW.

A. PRIOR TO SODDING, THE SURFACE SHALLBE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

B. WHERE THE SOIL IS ACID OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 2 TONS PER ACRE (100 LBS./1000 SQ. FT.) IN ALL SOILS 1,000 POUNDS PER ACRE OR 25 POUNDS PER 1,000 SQUARE FEET OF 10-10-10 FERTILIZER OR EQUIVALENT SHALL BE UNIFORMLY APPLIED AND MIXED INTO THE TOP 3 INCHES OF SOIL WITH THE REQUIRED LIME.

C. ALL AREAS RECEIVING SOD SHALL BE UNIFORMLY FINE GRADED. HARD PACKED EARTH SHALL BE SCARIFIED PRIOR TO PLACEMENT OF SOD.

SOD INSTALLATION:

A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE THE SOIL SHALL BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING SOD.

B. THE FIRST ROW OF SOD SHALL BE LAID IN A STRAIGHT LINE WITH

EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. INSURE THAT SOD IS NOT

ORDER TO PREVENT VOIDS WHICH COULD CAUSE AIR DRYING OF THE ROOTS.

LAID WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. SECURE THE SOD BY TAMPING AND PEGGING OR OTHER APPROVED METHODS.

D. AS SODDING IS COMPLETED IN ANY ONE SECTION, THE ENTIRE AREA SHALL BE ROLLED OR TAMPED TO INSURE SOLID CONTACT OF ROOTS WITH THE SOIL SURFACE. SOD SHALL BE WATERED IMMEDIATELY AFTER OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD SHALL BE COMPLETED WITHIN EIGHT HOURS.

SOD MAINTENANCE:

A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHALL BE PERFORMED DAILY OR AS OFTEN AS NECESSARY DURING THE FIRST WEEK AND IN SUFFICIENT QUANTITIES TO MAINTAIN MOIST SOIL TO A THE DAY TO PREVENT WILTING.

B. AFTER THE FIRST WEEK, SOD SHALL BE WATERED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE AND INSURE ESTABLISHMENT.

C. FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF SHALL BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED.

D. MAINTENANCE OF ESTABLISHED SOD SHOULD FOLLOW SPECIFICATIONS OUTLINED IN TABLE 54-1.

TOPSOIL CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

i. TOPSOIL SHALL BE LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2' IN DIAMETER.

ii. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

iii. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS PER ACRE (200-400 LBS./1000 SQ. FT.) PRIOR TO PLACEMENT OF TOPSOIL. LIME SHALL BE DISTURBED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

i. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. TOPSOIL APPLICATION

i. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

ii. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.

iii. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

V. THESE TOPSOIL SPECIFICATIONS HAVE BEEN EDITED FROM THE 1994 EROSION AND SEDIMENT CONTROL STANDARDS TO FIT THIS PROJECT. IT IS STILL THE INTENTION TO FOLLOW THE REFERENCED 1994 EROSION AND SEDIMENT CONTROLS STANDARDS IN THEIR ENTIRETY.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREA NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING (UNLESS PREVIOUSLY LOOSENED).

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1. PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ. FT.) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 AREAFORM FERTILIZER (9 LBS./1000 SQ. FT.)
2. ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ. FT.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOILS.

SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS./1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (.05 LBS./1000 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH 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 60 LBS,/ACRE KENTUCKY 31 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 GALS./1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FALT AREA. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GALS./1000 SQ. FT.) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREA LIKELY TO REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING (UNLESS PREVIOUSLY LOOSENED).

SOILS AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ. FT.)

SEEDING: FOR PERIODS MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2 1/3 BU. PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ. FT.). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (.07 LBS./1000 SQ. FT.). FOR THE PERIOD NOVEMBER 16 THROUGH 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 (70-90 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 GALS./1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (8 GALS./1000 SQ. FT.) FOR ANCHORING.

UTILITY CONTACT INFORMATION:

NATURAL GAS AND ELECTRIC
BALTIMORE GAS AND ELECTRIC
7317 PARKWAY DRIVE
SOUTH HANOVER, MD 21076
PHONE: (410) 859-9383

WATER AND SANITARY SEWER
HOWARD COUNTY PUBLIC WORKS BUREAU OF UTILITIES
8250 OLD MONTGOMERY ROAD
COLUMBIA, MD 21045
PHONE: (410) 313-4910

TELEPHONE
VERIZON
7133 RUTHERFORD ROAD
BALTIMORE, MD 21244
PHONE: (410) 224-5286

EROSION AND SEDIMENT CONTROL
DEPARTMENT OF INSPECTIONS, LICENSES & PERMITS
3430 COURTHOUSE DRIVE
ELLICOTT CITY, MD 21043
PHONE: (410) 313-2455

STORMWATER MANAGEMENT
HOWARD COUNTY PLANNING AND ZONING DEPARTMENT
3430 COURTHOUSE DRIVE
ELLICOTT CITY, MD 21043
PHONE: (410) 313-2350

PLANNING AND ZONING
HOWARD COUNTY PLANNING AND ZONING DEPARTMENT
3430 COURTHOUSE DRIVE
ELLICOTT CITY, MD 21043
PHONE: (410) 313-2350

STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. PURPOSE

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATION GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

1. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
   A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
   B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
   C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
   D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
2. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATIION THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

1. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SPECIFIED. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SET FORTH IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
2. TOPSOIL SPECIFICATIONS- SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
   A. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOIL'S AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.
   B. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
   C. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
3. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES.
   A. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION SECTION I-VEGEATIVE STABILIZATION METHODS AND MATERIALS.
4. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
   A. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
      A.1. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 THAN 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
      A.2. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
      A.3. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
      A.4. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
      NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
   B. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.
5. TOPSOIL APPLICATION
   A. WHEN TOP SOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
   B. GRADES ON THE AREAS TO BE TOP SOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.
   C. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4"-8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE RESULTING FROM SURFACE TOP SOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
   D. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
6. ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS COMMERCIAL BELOW:
   A. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
      A.1. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.
      A.2. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.
      A.3. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.
   B. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT THE RATE OF 4LB/1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING. MD-VA, PUB. #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTE. REVISED 1973.

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 "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER 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 THE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7 OF "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, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G) TEMPORARY STABILIZATION WITH MULCH ALONE SHALL 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 SITE AREA - 505,296 S.F. OR 11.60 AC.
   AREA DISTURBED - 520,429 S.F. OR 11.95 AC.
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 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 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 WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

GENERAL NOTES

A. THE DEVELOPER IS RESPONSIBLE FOR THE ACQUISITION OF ALL REQUIRED EASEMENTS, RIGHT AND/OR RIGHTS-OF-WAY PURSUANT TO THE DISCHARGE FROM THE SEDIMENT AND EROSION CONTROL PRACTICES, STORMWATER MANAGEMENT PRACTICES AND THE DISCHARGE OF STORMWATER ONTO OR ACROSS AND GRADING OR OTHER WORK TO BE PERFORMED ON ADJACENT OR DOWNSTREAM PROPERTIES AFFECTED BY THIS PLAN.

B. FOLLOWING INITIAL SOIL DISTURBANCES OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
A) SEVEN (7) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1) AND
B) 14 DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE. THE IN-PLACE SEDIMENT CONTROL MEASURES WILL BE MAINTAINED ON A CONTINUING BASIS UNTIL THE SITE IS PERMANENTLY STABILIZED AND ALL PERMIT REQUIREMENTS ARE MET.

C. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF TWO (2) ACRES, APPROVAL OF THE INSPECTION AGENCY IS REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCES OR GRADING. OTHER GUIDING OR GRADING INSPECTION APPROVALS WILL NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

D. APPROVAL SHALL BE REQUESTED UPON FINAL STABILIZATION OF ALL SITES WITH DISTURBED AREAS IN EXCESS OF TWO (2) ACRES BEFORE REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES.

STANDARDS SEDIMENT CONTROL PLAN NOTES FOR UTILITIES

1. ONLY ENOUGH TRENCH WILL BE EXCAVATED THAT CAN BE BACKFILLED DAILY.
2. EXCAVATED TRENCH MATERIALS SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
3. IMMEDIATELY FOLLOWING PIPE INSTALLATION, THE TRENCH SHALL BE BACKFILLED, COMPACTED AND STABILIZED AT THE END OF EACH WORKING DAY.
4. FULL TRENCH COMPACTION IS REQUIRED.
5. MULCHING TO HOWARD SCD SPECIFICATIONS OF ALL DISTURBED AREAS AND DAILY ON BACKFILL WILL BE REQUIRED.
6. SUPER SILT FENCE OR STRAW BALE DIKES SHALL BE INSTALLED TEMPORARILY IMMEDIATELY DOWNSTREAM OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED LONGER THAN ONE (1) WORKING DAY.
7. STAGING AREAS FOR EQUIPMENT AND SUPPLIES SHALL BE PROTECTED WITH SILT FENCE.
8. ANY SEDIMENT CONTROL PRACTICES WHICH ARE DISTURBED DURING UTILITY CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE END OF EACH WORKING DAY.
9. ANY DITCHES OR DRAINAGE WAYS DISTURBED DURING CONSTRUCTION WILL BE RESTORED TO ORIGINAL CONDITION.

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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 THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER — 12/7/06 DATE
ADAM J. VOLANTH P.E.

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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 OF DEVELOPER — 12/19/06 DATE

REVIEWED FOR HOWARD SCD AND MEETS THE TECHNICAL REQUIREMENTS
USDA - NATURAL RESOURCES CONSERVATION SERVICE — 3/5/07 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — 3/5/07 DATE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 9-14-06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — 4/11/07 DATE
CHIEF-DIVISION OF LAND DEVELOPMENT — 4/16/07 DATE
DIRECTOR — 4/16/07 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

PERMANENT SEEDING SUMMARY

SEED MIXTURE (HARDNESS ZONE 6b) (FROM TABLE 25)					FERTILIZER RATE (10-10-10)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LBS./AC.)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
1	85% TALL FESCUE 10% PER. RYEGRASS 5% KENT. BLUEGRASS	125 15 10	3/1-5/15 5/16-8/14 8/15-11/15	—	90 LBS./AC. (2.0 LBS./ 1,000 S.F.)	175 LBS./AC. (4.0 LBS./ 1,000 S.F.)	175 LBS./AC. (4.0 LBS./ 1,000 S.F.)	2 TONS/AC. (100 LBS./ 1,000 S.F.)
2	83% TALL FESCUE 2% WEEPING LOVEGRASS 15% SERECIA LESPEDEZA	110 3 20	3/1-5/15 5/16-8/14 8/15-11/15	—				
3	17% WEEPING LOVEGRASS 83% SERICIA LESPEPEDEZA	4 20	3/1-5/15 5/16-8/14	—				

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (HARDNESS ZONE 6b) (FROM TABLE 26)					FERTILIZER RATE (10-10-10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LBS./AC.)	SEEDING DATES	SEEDING DEPTHS		
1	RYE PLUS BARLEY	150	YEAR ROUND	1"	600 LBS./AC. (15 LB./ 1,000 S.F.)	2 TONS/AC. (100 LB./ 1,000 S.F.)
2	WEEPING LOVEGRASS	4	5/1-8/14	1/4"=1/2"		
3	ANNUAL RYGRASS	50	8/15-11/15	1/4"=1/2"		

MISS UTILITY

DIG WITH C.A.R.E. MARYLAND KEEP SAFE

BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

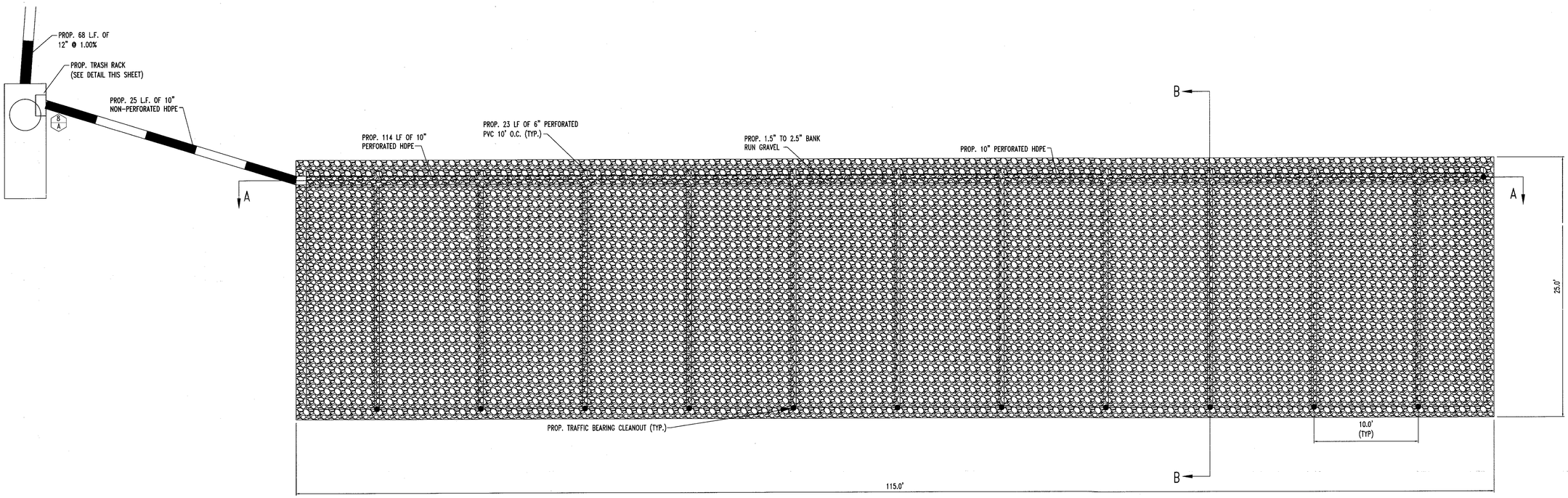
TITLE: EROSION AND SEDIMENT CONTROL NOTES

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

12/7/06 DATE:
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

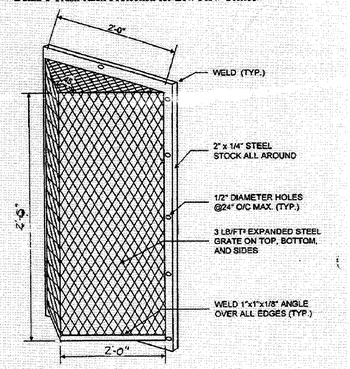
DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	16 OF 29

SDP #06-111



Appendix D.8. Miscellaneous Details for Compliance with Performance Criteria

Detail 1 Trash Rack Protection for Low Flow Orifice

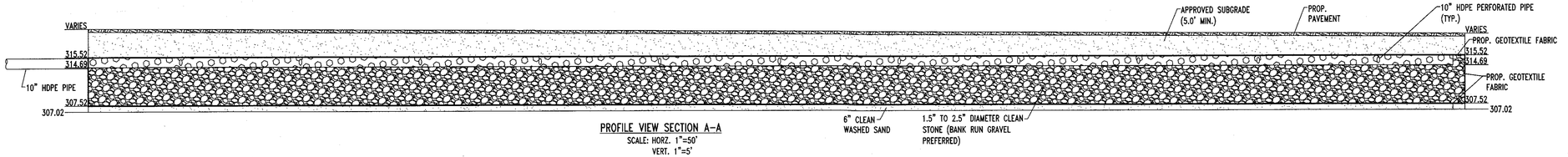


NOTES FOR TRASH RACK

1. TRASH RACK TO BE CENTERED OVER OPENING.
2. STEEL TO CONFORM TO ASTM A-36.
3. ALL SURFACES TO BE COATED WITH ZRC COLD GALVANIZING COMPOUND AFTER WELDING.
4. TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2" MASONRY ANCHORS. TRASH RACK TO BE REMOVABLE.

TRASH RACK DETAIL (NTS)

D.8.2

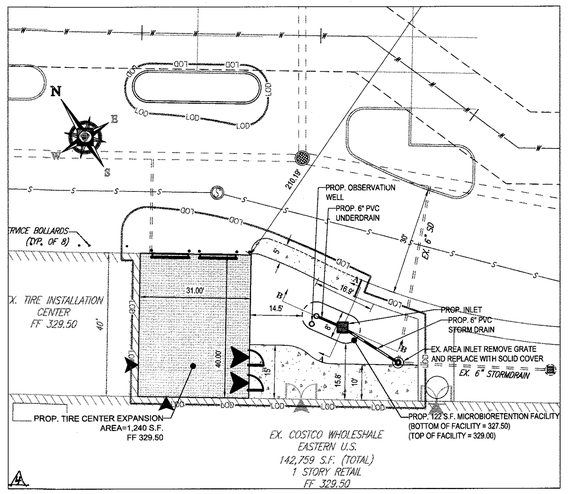


PROFILE VIEW SECTION A-A
SCALE: HORZ. 1"=50'
VERT. 1"=5'

MICRO-BIORETENTION PLANTING SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
DECIDUOUS TREE(S)					
BN	1	BETULA NIGRA	MULTI STEM RIVER BIRCH	12-14'	B+B
DECIDUOUS SHRUB(S)					
IV	18	ITEA VIRGINICA	VIRGINIA SWEETSPIRE	30"	#5 CAN

NOTE: IF ANY DISCREPENCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.



BLOW-UP
SCALE: 1"=20'

NOTE: SEE SHEET 10 FOR CROSS-SECTIONAL VIEWS A-A & B-B OF MICROBIORETENTION FACILITY

NOTE: THE STORMWATER MANAGEMENT AGREEMENT HAS BEEN EXECUTED ON _____.

MISS UTILITY

DIG WITH CARE
MISS UTILITY
KEEP SAFE

BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO
WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 44097, EXPIRATION DATE: 6/9/17

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 9.7.16

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 9-8-16

DIRECTOR — DATE 9-8-16

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

AMENDED SITE DEVELOPMENT PLAN

REV.	DATE	DESCRIPTION	BY
4	09/17/15	EXPANDED TIRE CENTER, ADD MICROBIO FACILITY	PAB

OWNER/DEVELOPER:
COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT:
BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
STORMWATER
MANAGEMENT DETAILS

BOHLER ENGINEERING

• PROFESSIONAL ENGINEERING SERVICES •
• 901 DULANEY VALLEY ROAD, SUITE 801 TOWSON, MARYLAND, 21204•
• CONTACT: MICHAEL J. GESELL
• (410) 821-7900 FAX: (410) 821-7987 | • WWW.BOHLERENG.COM

STATE OF MARYLAND
MICHAEL JOSEPH GESELL
44097
REGISTERED
PROFESSIONAL ENGINEER
9/17/15
MICHAEL J. GESELL
PROFESSIONAL ENGINEER NO. 44097

DESIGNED BY:	MJG/JD
DRAWN BY:	PAB
PROJECT NO.:	MD152031
DATE:	09/14/15
SCALE:	AS SHOWN
DRAWING NO.:	17 OF 29

SDP #06-111

LANDSCAPE SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
DECIDUOUS TREE(S)					
ARAF	48	ACER RUBRUM 'AUTUMN FLAME'	AUTUMN FLAME RED MAPLE	2 1/2-3" CAL.	B+B
GTIK	12	GLEDITSIA TRIACANTHOS INTERMIS 'SKYLINE'	SKYLINE THORNLESS HONEYLOCUST	2 1/2-3" CAL.	B+B
PCA	12	PYRUS CALLERYANA 'ARISTOCRAT'	ARISTOCRAT CALLERY PEAR	2-2 1/2" CAL.	B+B
ZS	49	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2 1/2-3" CAL.	B+B
BN	1	BETULA NIGRA	RIVER BIRCH		B+B
	122				
ORNAMENTAL TREE(S)					
CC	3	CERCIS CANADENSIS	EASTERN REDBUD	2-2 1/2" CAL.	B+B
MZC	18	MALUS X ZUMI 'CALOCARPA'	ZUMI CRABAPPLE	2-2 1/2" CAL.	B+B
PCT	15	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	2-2 1/2" CAL.	B+B
PSK	3	PRUNUS SERRULATA 'KWANZAN'	KWANZAN CHERRY	2-2 1/2" CAL.	B+B
	39				
EVERGREEN TREE(S)					
PIAB	54	PICEA ABIES	NORWAY SPRUCE	6-7'	B+B
PS	16	PINUS STROBUS	EASTERN WHITE PINE	6-7'	B+B
	70				
DECIDUOUS SHRUB(S)					
AXG	19	ABELIA x GRANDIFLORA	GLOSSY ABELIA	18-24"	#3 CAN
EAC	174	EUONYMUS ALATUS 'COMPACTUS'	DWARF WINGED EUONYMUS	30-36"	B+B
IV	18	ITEA VIRGINICA	VIRGINIA SWEETSPIRE		#5CAN
	211				
EVERGREEN SHRUB(S)					
BWG	74	BUXUS MICROPHYLLA 'GREEN VELVET'	GREEN VELVET BOXWOOD	30-36"	B+B
JCSG	427	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	24-30" SPRD.	B+B
TMD	307	TAXUS X MEDIA 'DENSIFORMIS'	DENSIFORMIS YEW	24-30"	B+B
	808				

IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

MICROBIORETENTION PLANTING SCHEDULE IS LOCATED ON SHEET 17

NOTE:

SURETY IN THE AMOUNT OF $83,520.00 FOR 122 SHADE TREES @ $300.00; 39 ORNAMENTAL TREES @ $150.00; 70 EVERGREENS @ $150.00 AND 1019 SHRUBS @ $30.00 SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS SITE PLAN.

FOR REVISION 4 ONLY

4

M.J. GEBELA
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 44017
9/21/15

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. 44017, EXPIRATION DATE 9/21/17

BENCHMARK

GEODETIC SURVEY CONTROL #37GD
N 553,237.204
E 1,372,353.605
ELEV. 290.931'
LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL

GEODETIC SURVEY CONTROL #37GC
N 553,250.791
E 1,370,946.348
ELEV. 331.855'
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

REV.	DATE	DESCRIPTION	BY
4	6/10/15	EXPAND TIRE CENTER, ADD MICRO BIO FACILITIES	BOHLER
3	8/30/07	REVISED RETAINING WALL	BOHLER
2			
1			

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6882

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: LANDSCAPE PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 26830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLERENG.COM

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	18 OF 29

DATE
STATE OF MARYLAND
No. 21342
REGISTERED PROFESSIONAL ENGINEER
ARNOLD JOLLANTE, JR.
PROFESSIONAL ENGINEER NO. 21342

MISS UTILITY
DIG WITH CARE
MARYLAND
811
KNOW SAFE
BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

SCHEDULE B	PARKING LOT INTERNAL LANDSCAPING	
NUMBER OF PARKING SPACES:		650 SPACES
NUMBER OF TREES REQUIRED:	1/20 SPACES	33 SHADE TREES
NUMBER OF TREES PROVIDED:		
SHADE TREE(S):		33 SHADE TREES
OTHER TREE(S): (2:1 SUBSTITUTION)		

"#" INDICATES PLANT MATERIAL UTILIZED TO FULFILL REQUIREMENT

TABLE 1	PERIMETER LANDSCAPE TYPES – BASED ON ADJACENT LAND USE		
LANDSCAPE EDGE TYPE	LANDSCAPE CHARACTER	SHADE TREE(S)/LINEAR FEET	EVERGREEN TREE(S)/LINEAR FEET
A	LIGHT BUFFER	1:60	0
B	MODERATE BUFFER	1:50	1:40
C	HEAVY BUFFER	1:40	1:20
D	SCREEN	1:60	1:10
E	BUFFER – PARKING ADJ. TO ROADWAY	1:40	0

2 For Revision #2 Bohler Engineering, P.C.

STATE OF MARYLAND
No. 21342
REGISTERED PROFESSIONAL ENGINEER

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

GENERAL NOTE:
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PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

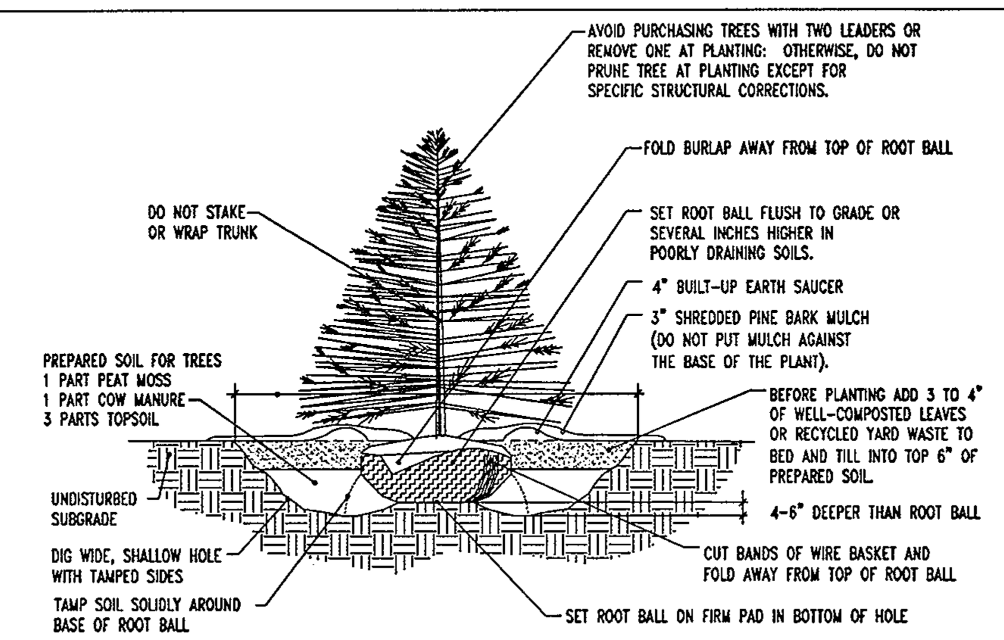
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07
DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

SDP #06-111

NOTES FOR DECIDUOUS AND EVERGREEN TREE PLANTINGS:

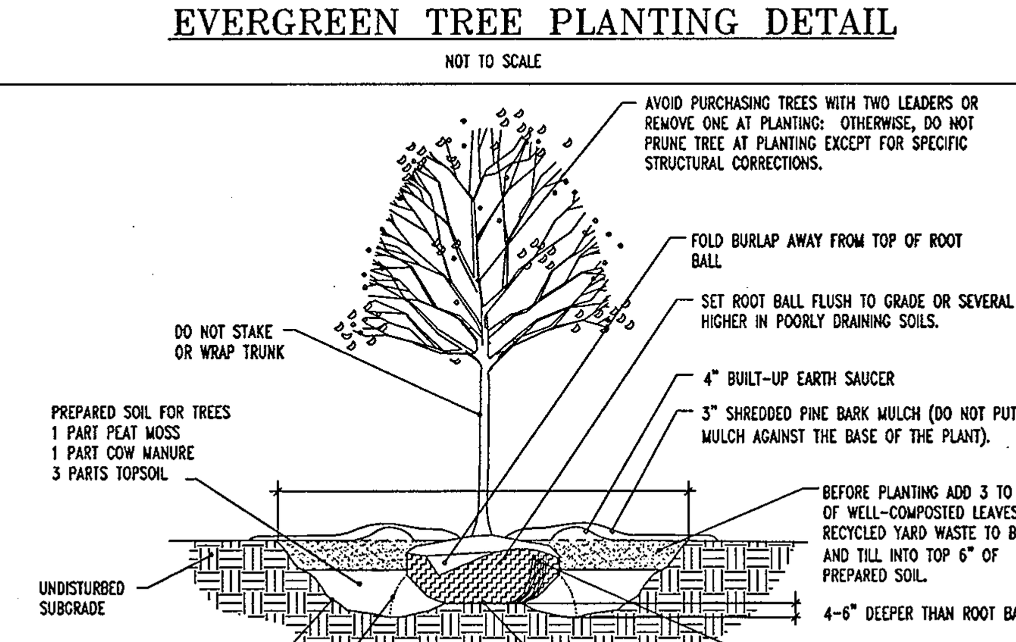
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK 1/3 FROM TOP OF ROOT BALL.
3. PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5. THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

EVERGREEN TREE PLANTING DETAIL

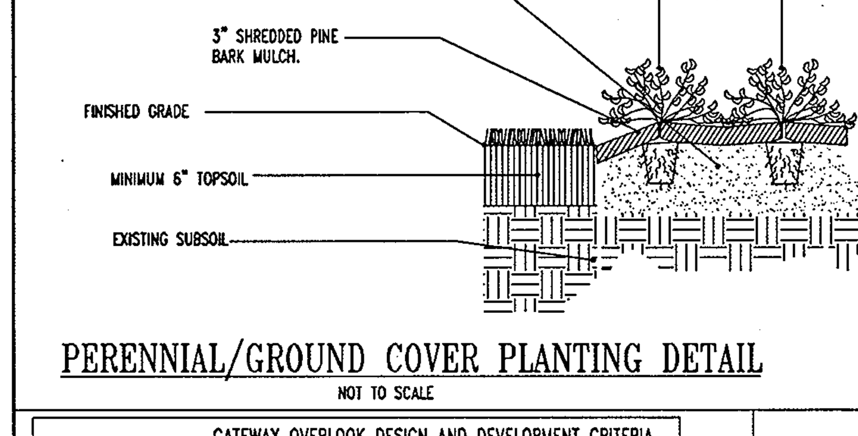
NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



PERENNIAL/GROUND COVER PLANTING DETAIL

NOT TO SCALE

IRRIGATION NOTE:

CONTRACTOR TO PROVIDE AN IRRIGATION DESIGN FOR BOTH LAWN & BED AREAS. DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL. CONTRACTOR TO VERIFY STATIC PRESSURE PRIOR TO DESIGN. CONTRACTOR IS ALSO RESPONSIBLE FOR ANY PRESSURE REDUCING DEVICES REQUIRED TO MEET MAXIMUM PRESSURE REQUIREMENT. SYSTEM DESIGN TO SHOW ALL VALVES, PIPING, HEADS, BACK FLOW PREVENTION, METERS AND CONTROLLERS. ALL SLEEVES IN PAVEMENT AREAS MUST BE SHOWN.

GATEWAY OVERLOOK DESIGN AND DEVELOPMENT CRITERIA

V. LANDSCAPE DESIGN CRITERIA

BASED UPON THE GATEWAY OVERLOOK DESIGN AND DEVELOPMENT CRITERIA THE SUBSTITUTION OF TWO (2) FLOWERING TREES OR TWO (2) EVERGREEN TREES FOR EACH "SHADE TREE" IS REQUIRED FOR 25% TO 50% OF THE REQUIRED NUMBER OF SHADE TREES SHOWN IN THE TABLE.
TOTAL NUMBER OF SHADE TREES REQUIRED: 83

83 X .25 = AT LEAST 21 SHADE TREES MUST BE SUBSTITUTED WITH FLOWERING OR EVERGREEN TREES AT A 2:1 RATIO.
TOTAL NUMBER OF FLOWERING OR EVERGREEN TREES REQUIRED: 42
TOTAL NUMBER OF FLOWERING OR EVERGREEN TREES PROVIDED: 85

NOTES:

1. THIS LANDSCAPE PLAN IS PREPARED TO BE IN CONFORMANCE WITH THE LANDSCAPE DESIGN CRITERIA OF THE GATEWAY OVERLOOK SHOPPING CENTER DESIGN AND DEVELOPMENT CRITERIA.

2. THIS LANDSCAPE PLAN IS BASED ON THE APPROVED CONCEPTUAL LANDSCAPE PLAN FOR THE GATEWAY OVERLOOK SHOPPING CENTER PREPARED BY SLATER ASSOCIATES, INC. DATED 05/18/05 AND A LANDSCAPE PLAN PREPARED BY PATTON, HARRIS, RUST, AND ASSOCIATES, P.C. DATED 08/03/04 (REFERENCE #SDP-04-163).

APPROVED: DEPARTMENT OF PLANNING AND ZONING

4/11/07
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE

4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE

4/16/07
DIRECTOR — DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

M:\05\Costco\S040011.01 - MD040001\Site Development Plans\Rev 5\M40001CD5.dwg, 3/6/2007 10:23:21 AM, mgesell

SEEDING SPECIFICATIONS

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:

PERENNIAL RYEGRASS	1/2 LB/1,000 SQ FT
KENTUCKY BLUEGRASS	1 LB/1,000 SQ FT
RED FESCUE	1 1/2 LBS/1,000 SQ FT
SPREADING FESCUE	1 1/2 LBS/1,000 SQ FT
FERTILIZER (20:10:10)	14 LBS/1,000 SQ FT
MULCH	90 LBS/1,000 SQ FT

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS
A. GENERAL – ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL – NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN – ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM SIX INCH (6") THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES.
I. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
II. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH – ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN.

E. FERTILIZER
I. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
II. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
I. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
II. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
III. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
IV. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
V. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
VI. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
VII. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
VIII. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES
A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS
A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION
A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR 15 FEET FROM THE TRUNK OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS
A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
I. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
II. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
III. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING
A. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING
A. CONTRACTOR SHALL PROVIDE A SIX INCH (6") THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

D. ALL PLANTING AND LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA):
I. 20 POUNDS 'GROW POWER' OR APPROVED EQUAL
II. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING
A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
I. PLANTS: MARCH 15 TO DECEMBER 15
II. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

G. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULOUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBER STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

H. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
I. 1 PART PEAT MOSS
II. 1 PART COMPOSTED COW MANURE BY VOLUME
III. 3 PARTS TOPSOIL BY VOLUME
IV. 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
A) 2 TABLETS PER 1 GALLON PLANT
B) 3 TABLETS PER 5 GALLON PLANT
C) 4 TABLETS PER 15 GALLON PLANT
D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

I. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

J. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

K. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

L. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

M. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

N. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

O. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)
A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING
A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE
A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

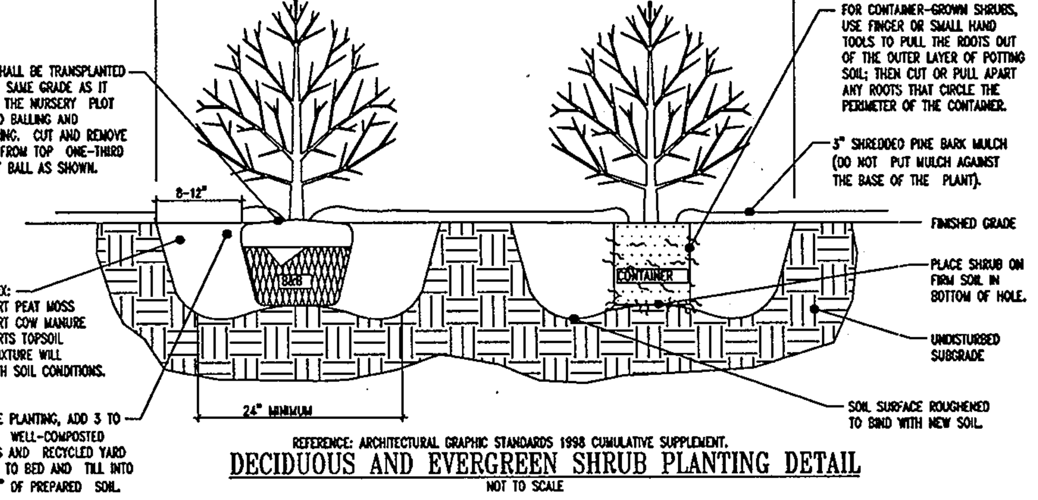
C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP
A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

14. MAINTENANCE (ALTERNATIVE BID):
A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

GATEWAY OVERLOOK

DESIGN AND DEVELOPMENT CRITERIA

PLANTING SPECIFICATIONS
A. PLANT MATERIALS

THE LANDSCAPE CONTRACTOR SHALL FURNISH AND INSTALL AND/OR DIG, BALL, BURLAP AND TRANSPLANT ALL OF THE PLANT MATERIALS CALL FOR ON DRAWINGS AND/OR LISTED IN THE PLANT SCHEDULE.

1. PLANT NAMES

PLANT NAMES USED IN THE PLANT SCHEDULE SHALL CONFORM TO "STANDARDIZED PLANT NAMES," LATEST EDITION.

2. PLANT STANDARDS
ALL PLANT MATERIAL SHALL BE EQUAL TO OR BETTER THAN THE REQUIREMENTS OF THE "USA STANDARD FOR NURSERY STOCK" LATEST EDITION, AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMENT (HERE-AFTER REFERRED TO AS AAN STANDARDS). ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, SHALL HAVE A NORMAL HABIT OF GROWTH AND SHALL BE FIRST QUALITY, SOUND, VIGOROUS, WELL-BRANCHED AND WITH HEALTHY, WELL-FURNISHED ROOT SYSTEM. THEY SHALL BE FREE OF DISEASE, INSECT PESTS AND MECHANICAL INJURIES.

a. ALL PLANTS SHALL BE NURSERY GROWN AND SHALL HAVE BEEN GROWN UNDER THE SAME CLIMATE CONDITIONS AS THE LOCATION OF THIS PROJECT FOR AT LEAST TWO YEARS BEFORE PLANTING. NEITHER HEELED-IN PLANTS NOR PLANTS FROM COLD STORAGE WILL BE ACCEPTED.

3. PLANT MEASUREMENTS

ALL PLANTS SHALL CONFORM TO THE MEASURES SPECIFIED IN THE PLANT SCHEDULE AS APPROVED BY THE ARC.
a. CALIPER MEASUREMENTS SHALL BE TAKEN SIX INCHES (6") ABOVE GRADE FOR TREES UNDER FOUR-INCH (4") CALIPER AND TWELVE INCHES (12") ABOVE GRADE FOR TREES FOUR INCHES (4") IN CALIPER AND OVER.

b. MINIMUM BRANCHING HEIGHT FOR ALL TREES SHALL BE SIX FEET (6') MAXIMUM EIGHT FEET (8').

c. MINIMUM SIZE FOR PLANTING SHADE TREES SHALL BE 3" – 31/2" CALIPER, 14' – 16' IN HEIGHT.

d. MINIMUM SIZE FOR PLANTING MINOR OR INTERMEDIATE FOCUS TREES (PINES, CRABAPPLES, ETC.) SHALL BE 3" – 3 1/2" CALIPER, 10' – 12' IN HEIGHT.

e. MINIMUM SIZE FOR PLANTING SHRUBS SHALL BE 18" – 24" SPREAD UNLESS NOTED OTHERWISE.

f. CALIPER, HEIGHT, SPREAD AND SIZE OF BALL SHALL BE GENERALLY AS FOLLOWS:

CALIPER	HEIGHT	SPREAD	SIZE OF BALL
3" – 3-1/2"	14' – 16'	6' – 8'	32" DIAMETER
3-1/2" – 4"	14' – 16'	8' –10'	36" DIAMETER
4" – 4-1/2"	16' – 18'	8' – 10'	40" DIAMETER
4-1/2" – 5"	16' – 17'	10' – 12'	44" DIAMETER
5" – 5-1/2"	16' –20'	10' – 12'	48" DIAMETER
5-1/2" – 6"	18' – 20'	12' – 14'	52" DIAMETER

ALL PLANT MATERIAL SHALL GENERALLY AVERAGE THE MEDIAN FOR THE SIZE RANGES INDICATED ABOVE AS INDICATED IN THE "AAN STANDARDS"

4. PLANT IDENTIFICATION

LEGIBLE LABELS SHALL BE ATTACHED TO ALL SHADE TREES, MINOR TREES, SPECIMEN SHRUBS AND BUNDLES OR BOXES OF OTHER PLANT MATERIAL GIVING THE BOTANICAL AND COMMON NAMES, SIZE AND QUANTITY OF EACH. EACH SHIPMENT OF PLANTS SHALL BEAR CERTIFICATES OF INSPECTION AS REQUIRED BY FEDERAL, STATE AND COUNTY AUTHORITIES.

5. PLANT INSPECTION

THE ARC MAY, UPON REQUEST BY THE BUILDER OR DEVELOPER, AT LEAST TEN (10) DAYS PRIOR TO THE INSTALLATION OF ANY PROPOSED PLANT MATERIAL AT THE SOURCE OF ORIGIN.

B. PLANTING METHODS

ALL PROPOSED PLANT MATERIALS THAT MEET THE SPECIFICATIONS IN SECTION A (PRECEDING PAGE) ARE TO BE PLANTED IN ACCORDANCE WITH THE FOLLOWING PLANTING METHODS DURING THE PROPER PLANTING SEASONS AS DESCRIBED IN THE FOLLOWING:

1. PLANTING SEASONS

THE PLANTING OF DECIDUOUS TREES, SHRUBS AND VINES SHALL BE FROM MARCH 1ST TO JUNE 15TH AND FROM SEPTEMBER 15TH TO DECEMBER 15TH. PLANTING OF DECIDUOUS MATERIAL MAY BE CONTINUED DURING THE WINTER MONTHS PROVIDING THERE IS NO FROST IN THE GROUND AND FROST-FREE TOPSOIL PLANTING MIXES ARE USED.

THE PLANTING OF EVERGREEN MATERIAL SHALL BE FROM MARCH 15TH TO JUNE 15TH AND FROM AUGUST 15TH TO DECEMBER 1ST. NO PLANTING SHALL BE DONE WHEN THE GROUND IS FROZEN OR EXCESSIVELY MOIST. NO FROZEN OR WET TOPSOIL SHALL BE USED AT ANY TIME.

2. DIGGING

ALL PLANT MATERIAL SHALL BE DUG, BALLED, AND BURLAPPED (B+B) IN ACCORDANCE WITH THE "AAN STANDARDS".

3. EXCAVATION OF PLANT PITS

THE LANDSCAPING CONTRACTOR SHALL EXCAVATE ALL PLANT PITS, VINE PITS, HEDGE TRENCHES AND SHRUB BEDS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

a. LOCATIONS OF ALL PROPOSED PLANT MATERIAL SHALL BE STAKED AND APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT BEFORE ANY OF THE PROPOSED PLANT MATERIAL IS INSTALLED BY THE LANDSCAPE CONTRACTOR

b. ALL PITS SHALL BE GENERALLY CIRCULAR IN OUTLINE, VERTICAL SIDES; DEPTH SHALL NOT BE LESS THAT 6" DEEPER THAN THE ROOT BALL, DIAMETER SHALL NOT BE LESS THAN TWO TIMES THE DIAMETER OF THE ROOT BALL AS SET FORTH IN THE FOLLOWING SCHEDULE.

c. IF AREAS ARE DESIGNATED AS SHRUB BEDS OR HEDGE TRENCHES, THEY SHALL BE EXCAVATED TO AT LEAST 18" DEPTH MINIMUM. AREAS DESIGNATED FOR GROUND COVERS AND VINES SHALL BE EXCAVATED TO AT LEAST 12" IN DEPTH MINIMUM.

d. DIAMETER AND DEPTH OF TREE PITS SHALL GENERALLY BE AS FOLLOWS:

PIT PLANT SIZE	PIT ROOT BALL	DIAMETER	DEPTH
3" – 3-1/2" cal.	32"	64"	28"
3-12" – 4" cal.	36"	72"	32"
4" – 4-1/2" cal.	40"	80"	36"
4-1/2" – 5" cal.	44"	88"	40"
5" – 5-1/2" cal.	48"	96"	44"
5-1/2" – 6" cal.	52"	104"	48"

A 20% COMPACTION FIGURE OF THE SOIL TO BE REMOVED IS ASSUMED AND WILL BE ALLOWED IN CALCULATION OF EXTRA TOPSOIL. THE TABULATED PIT SIZES ARE FOR PURPOSES OF UNIFORM CALCULATION AND SHALL NOT OVERRIDE THE SPECIFIED DEPTHS BELOW THE BOTTOM OF THE ROOT BALLS.

4. STAKING, GUYING AND WRAPPING

ALL PLANT MATERIAL SHALL BE STAKED OR GUYED, AND WRAPPED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

a. STAKES: SHALL BE SOUND WOOD 2" x 2" ROUGH SAWN OAK OR SIMILAR DURABLE WOODS, OR LENGTHS, MINIMUM 7' – 0" FOR MAJOR TREES AND 5' – 0" MINIMUM FOR MINOR TREES.

b. WIRE AND CABLE: WIRE SHALL BE #10 ga. GALVANIZED OR BETHANIZED ANNEALED STEEL WIRED. FOR TREES OVER 3" CALIPER, PROVIDE 5/16" TURN BUCKLES, EYE AND EYE WITH 4" TAKEUP. FOR TREES OVER 5" CALIPER PROVIDE 3/16", 7 STRAND CABLE CADMIUM PLATED STEEL, WITH GALVANIZED "EYE" THIMBLES OF WIRE AND HOSE ON TREES UP TO 3" IN CALIPER.

c. HOSE: SHALL BE NEW, 2 PLY REINFORCED RUBBER HOSE, MINIMUM 1/2" I.D. "PLASTIC LOCK TIES" OR " PAUL'S TREES BRACES" MAY BE USED IN PLACE OF WIRE AND HOSE ON TREES UP TO 3" IN CALIPER.

d. ALL TREES UNDER 3" IN CALIPER AR TO BE PLANTED AND STAKED IN ACCORDANCE WITH THE ATTACHED "TYPICAL TREE STAKING DETAIL". ALL TREES OVER 3" IN CALIPER ARE TO BE PLANTED AND GUYED IN ACCORDANCE WITH THE ATTACHED "TYPICAL TREE GUYING DETAIL".

5. PLANTING PRUNING, EDGING AND MULCHING

a. EACH TREE, SHRUB OR VINE SHALL BE PRUNED IN AN APPROPRIATE MANNER TO ITS PARTICULAR REQUIREMENTS, IN ACCORDANCE WITH ACCEPTED STANDARD PRACTICE. BROKEN OR BRUISED BRANCHES SHALL BE REMOVED WITH CLEAN CUTS FLUSH WITH THE ADJACENT TRUNK OR BRANCHES. ALL CUTS OVER 1" IN DIAMETER SHALL BE PAINTED WITH AN APPROVED ANTISEPTIC TREE WOUND DRESSING.

b. ALL TRENCHES AND SHRUB BEDS SHALL BE EDGED AND CULTIVATED TO THE LINES SHOWN ON THE DRAWING. THE AREAS AROUND ISOLATED PLANTS SHALL BE EDGED AND CULTIVATED TO THE FULL DIAMETER OF THE PIT. SOD WHICH HAS BEEN REMOVED AND STACKED SHALL BE USED TO TRIM THE EDGES OF ALL EXCAVATED AREAS TO THE NEAT LINES OF THE PLANT PIT SAUCERS, THE EDGES OF SHRUB AREAS, HEDGE TRENCHES AND VINE POCKETS.

c. AFTER CULTIVATION, ALL PLANT MATERIALS SHALL BE MULCHED WITH A 2" LAYER OF FINE, SHREDDED PINE BARK, PEAT MOSS, OR ANOTHER APPROVED MATERIAL OVER THE ENTIRE AREA OF THE BED OR SAUCER.

6. PLANT INSPECTION AND ACCEPTANCE

THE ARC SHALL BE RESPONSIBLE FOR INSPECTING ALL PLANTING PROJECTS ON A PERIODIC BASIS TO ASSURE THAT ALL WORK IS PROCEEDING IN ACCORDANCE WITH THE APPROVED PLANS SPECIFICATIONS.

7. PLANT GUARANTEE

ALL PLANT MATERIAL SHALL BE GUARANTEED FOR THE DURATION OF ONE FULL GROWING SEASON, AFTER FINAL INSPECTION AND ACCEPTANCE OF THE WORK IN THE PLANTING PROJECT. PLANTS SHALL BE ALIVE AND IN SATISFACTORY GROWING CONDITION AT THE END OF THE GUARANTEE PERIOD.

a. FOR THIS PURPOSE, THE "GROWING SEASON" SHALL BE THAT PERIOD BETWEEN THE END OF THE "SPRING" PLANTING SEASON, AND THE COMMENCEMENT OF THE "FALL" PLANTING SEASON.

b. GUARANTEE FOR PLANTING PERFORMED AFTER THE SPECIFIED END OF THE "SPRING" PLANTING SEASON, SHALL BE EXTENDED THROUGH THE END OF THE NEXT FOLLOWING "SPRING" PLANTING SEASON.

COMPLIANCE CHART:

SCHEDULE A	PERIMETER LANDSCAPE EDGE – NORTH PROPERTY LINE		
CATEGORY		ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE:	A		NON-RESIDENTIAL TO NON-RESIDENTIAL
LINEAR FEET OF PROPERTY LINE:	1,047 L.F.		
CREDIT FOR EXISTING VEGETATION	NO		
CREDIT FOR WALL, FENCE, OR BERM	NO		
NUMBER OF PLANTS REQUIRED: SHADE TREE(S): 1:60 EVERGREEN TREE(S): SHRUB(S):	 18 0 0		
NUMBER OF PLANTS PROVIDED: SHADE TREE(S): EVERGREEN TREE(S): OTHER TREE(S): (2:1 SUBSTITUTION) SHRUB(S): (10:1 SUBSTITUTION)	 11 0 20 0		
COMMENTS: TWENTY (20) ORNAMENTAL TREES PROPOSED IN LIEU OF TEN (10) SHADE TREES.			
"*" INDICATES PLANT MATERIAL UTILIZED TO FULFILL REQUIREMENT			

SCHEDULE A	PERIMETER LANDSCAPE EDGE – EAST PROPERTY LINE (LOADING AREA)		
CATEGORY		ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE:	C		LOADING AREA TO NON-RESIDENTIAL
LINEAR FEET OF PROPERTY LINE:	373 L.F.		
CREDIT FOR EXISTING VEGETATION	NO		
NUMBER OF PLANTS REQUIRED: SHADE TREE(S): 1:40 EVERGREEN TREE(S): 1:20 SHRUB(S):	 10 19 0		
NUMBER OF PLANTS PROVIDED: SHADE TREE(S): EVERGREEN TREE(S): OTHER TREE(S): (2:1 SUBSTITUTION) SHRUB(S): (10:1 SUBSTITUTION)	 6 27 0 0		
COMMENTS: EIGHT(8) EVERGREEN TREES PROPOSED IN LIEU OF FOUR (4) SHADE TREES.			
"^" INDICATES PLANT MATERIAL UTILIZED TO FULFILL REQUIREMENT			

SCHEDULE A	PERIMETER LANDSCAPE EDGE – WEST PROPERTY LINE		
CATEGORY		ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE:	E	PARKING LOT	
LINEAR FEET OF ROADWAY: FRONTAGE	415 L.F.		
CREDIT FOR EXISTING VEGETATION	NO		
CREDIT FOR WALL, FENCE, OR BERM	NO		
NUMBER OF PLANTS REQUIRED: SHADE TREE(S): 1:40 EVERGREEN TREE(S): SHRUB(S): 1:4	 11 0 110		
NUMBER OF PLANTS PROVIDED: SHADE TREE(S): EVERGREEN TREE(S): OTHER TREE(S): (2:1 SUBSTITUTION) SHRUB(S): (10:1 SUBSTITUTION)	 15 0 0 132		
COMMENTS: NONE			
"x" INDICATES PLANT MATERIAL UTILIZED TO FULFILL REQUIREMENT			

REV.	DATE	DESCRIPTION	BY

MISS UTILITY

DIG WITH C.A.R.E. MARYLAND KEEP SAFE

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:

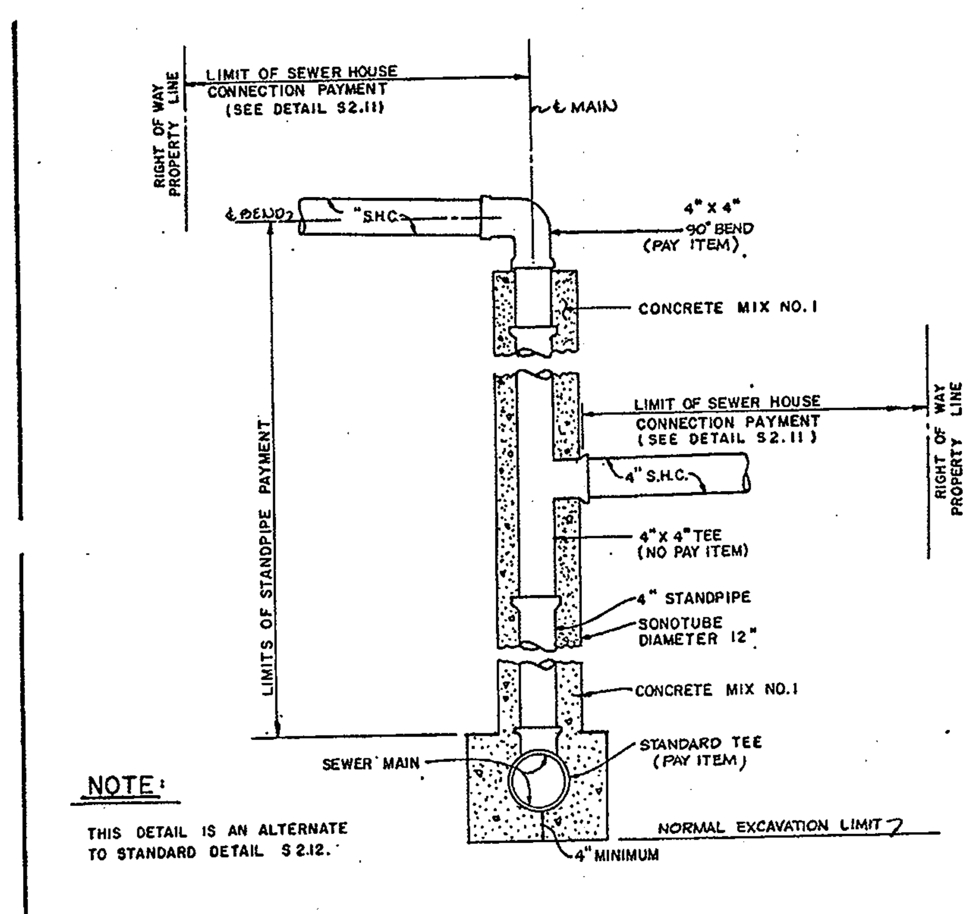
BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

DATE:
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	19 OF 29

SDP #06-111

K&E BALTIMORE 19 1253 HERCULENE MC2176

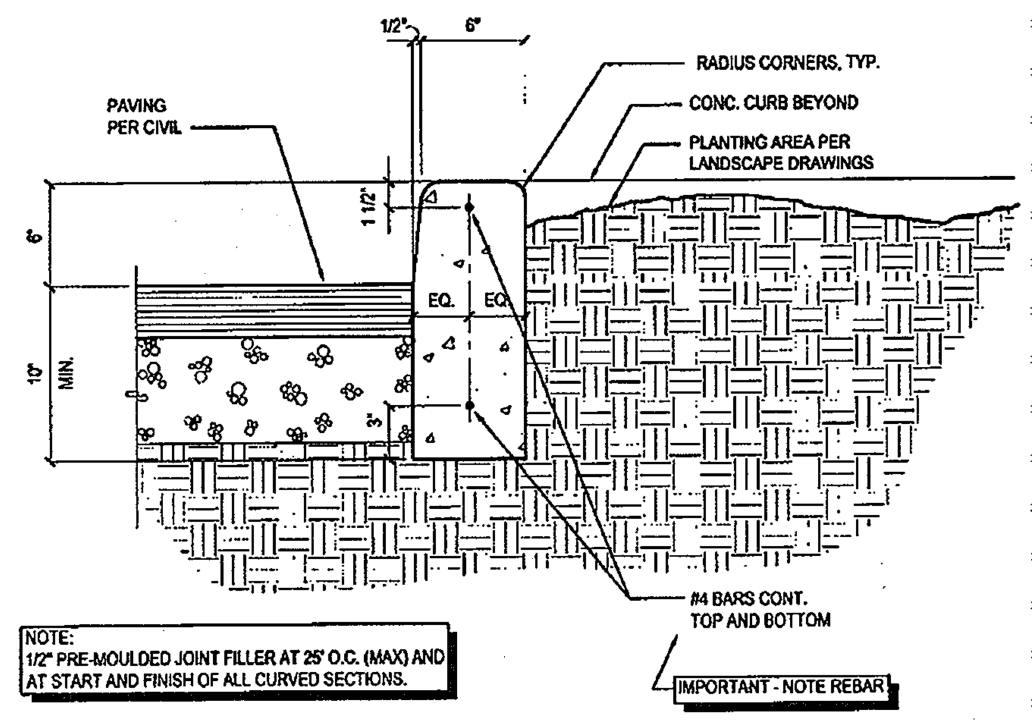


NOTE:
THIS DETAIL IS AN ALTERNATE TO STANDARD DETAIL S2.12.

REV. OCT. 1990
REV. JAN. 1989
REV. MARCH 1986
REV. JAN. 19

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved [signature] 2-10-81 Chief-Bureau of Engineering	STANDARD SANITARY SEWER DETAIL ALTERNATE DOUBLE DROP HOUSE CONNECTION TYPE "C"	DRAWN BY: J.R.K. CHECKED BY: F.A.W. SCALE: NONE S2.13

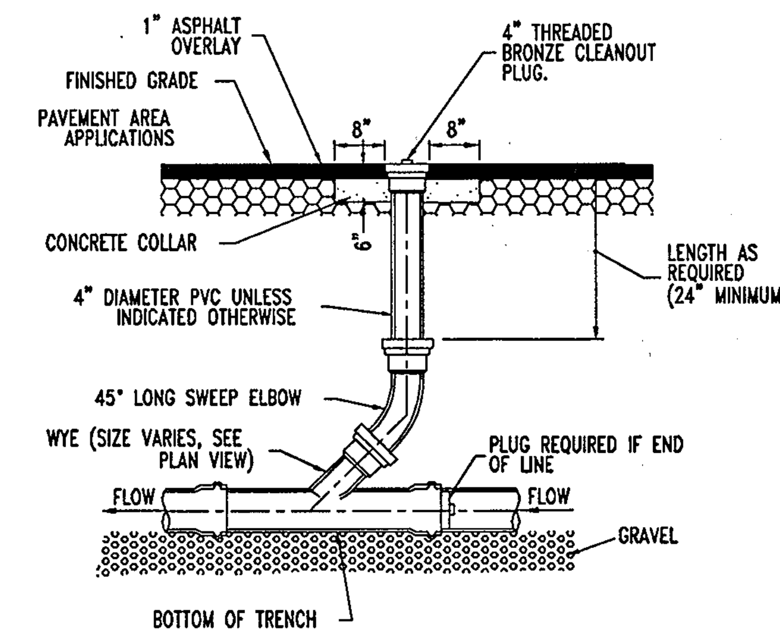
COSTCO WHOLESALE
DEVELOPMENT REQUIREMENTS



NOTE:
1/2" PRE-MOULDED JOINT FILLER AT 25' O.C. (MAX) AND AT START AND FINISH OF ALL CURVED SECTIONS.

7 CAST-IN-PLACE CONC. CURB
SCALE: 1-1/2" = 1'-0"
02770011-1005

EXHIBIT K-1-7



TRAFFIC BEARING SERVICE LINE CLEANOUT
NOT TO SCALE

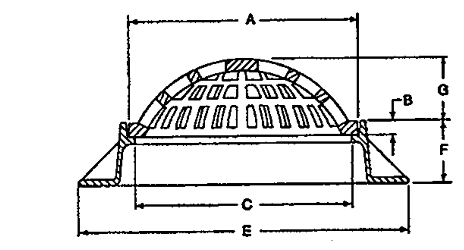
NOTE: When specifying/ordering grates, refer to "CHOOSING THE PROPER INLET GRATE" on pages 108-109. For FREE OPEN AREAS of Neenah Grates, refer to pages 326-330.

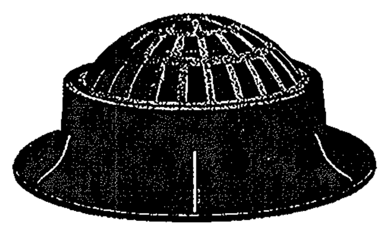
R-2560 Series
Beehive Grates with Frames

Suitable for drainage in circumstances where clogging of a flat grating is a problem. Excellent for roadside or earth ditch catch basins.

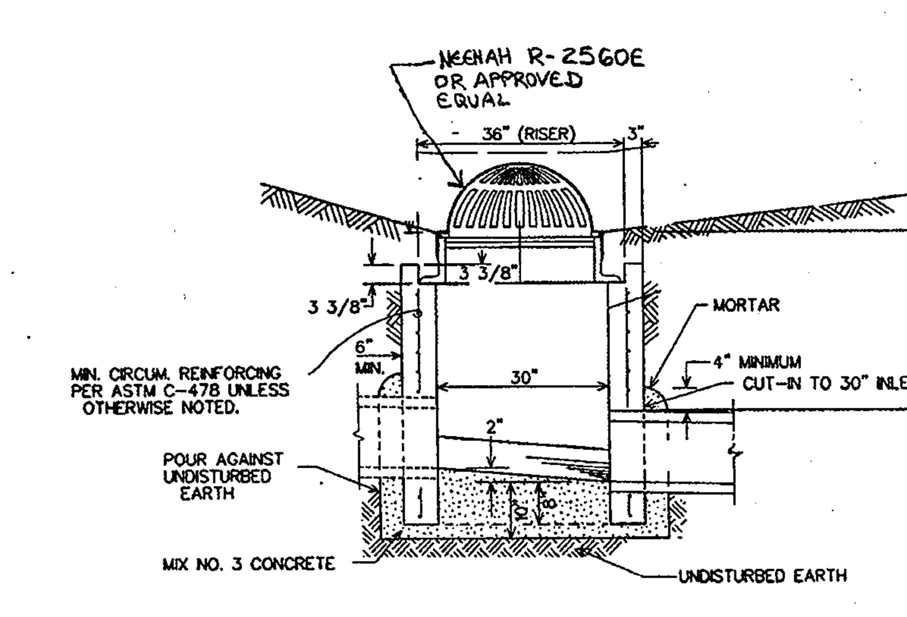
Furnished standard with as-cast bearing surfaces.

Catalog No.	A	B	C	E	F	G	Frame Reference
	Dimensions in Inches						
R-2560-A	12	1	11	19	4	4	R-1791-A
R-2560-C	18	1 1/4	16 1/2	30	8	4	R-1900-A
R-2560-C1	22	1 1/2	20	28	4	4 1/2	R-1690
R-2560-C2	22	1 1/2	20 1/2	28 1/4	6	4 1/2	R-1761
R-2560-D	22	1 1/2	20	35	9	4 1/2	R-1710
R-2560-D1	22	1 1/2	20	28	4	7	R-1690
R-2560-D2	22	1 1/2	20 1/2	28 1/4	6	7	R-1761
R-2560-D3	22	1 1/2	20	35	9	7	R-1710
R-2560-D5	22 3/4	1 1/2	21 1/4	34	4	4 1/2	R-1647-A
R-2560-D6	22 3/4	1 1/2	21	34	9	4 1/2	R-1713
R-2560-D7	22 3/4	1 1/2	21 1/4	34	4	7	R-1647-A
R-2560-D8	22 3/4	1 1/2	21	34	9	7	R-1713
R-2560-E	23	1 1/2	21	36	9	7	R-1550-A
R-2560-EA	25 3/4	7/8	24 1/8	35 1/2	4	6	R-1733-1
R-2560-EB	25 3/4	7/8	24 1/8	35 1/2	4	9	R-1733-1
R-2560-E1	25 3/4	7/8	24 1/8	35 1/2	7	6	R-1733
R-2560-E2	25 3/4	7/8	24 1/8	35 1/2	7	9	R-1733
R-2560-E5	25 3/4	7/8	24 1/8	35 1/2	8	6	R-1733-A
R-2560-E6	25 3/4	7/8	24 1/8	35 1/2	8	9	R-1733-A
R-2560-E7	25 3/4	7/8	24 1/8	35 1/2	9	6	R-1733-B
R-2560-E8	25 3/4	7/8	24 1/8	35 1/2	9	9	R-1733-B
R-2560-E9	25 3/4	7/8	24 1/8	35 1/2	10	6	R-1733-C
R-2560-E10	25 3/4	7/8	24 1/8	35 1/2	10	9	R-1733-C
R-2560-G	32	1 1/2	30	46	7	4	R-1740-B

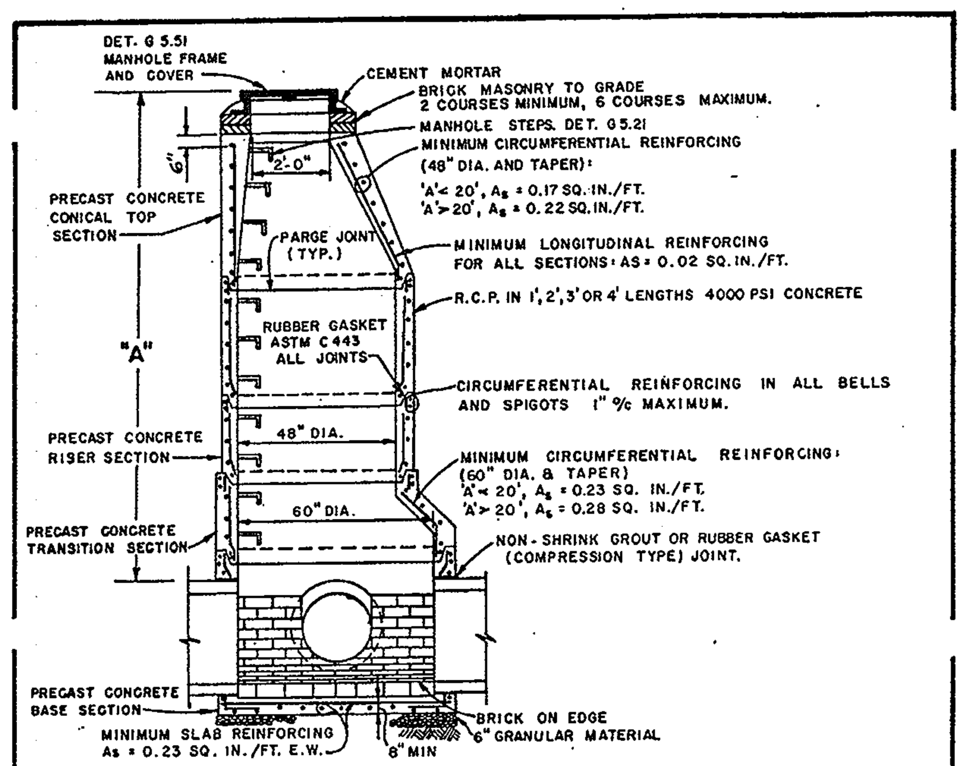




Illustrating R-2560-E



AREA DRAIN
NOT TO SCALE



GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES

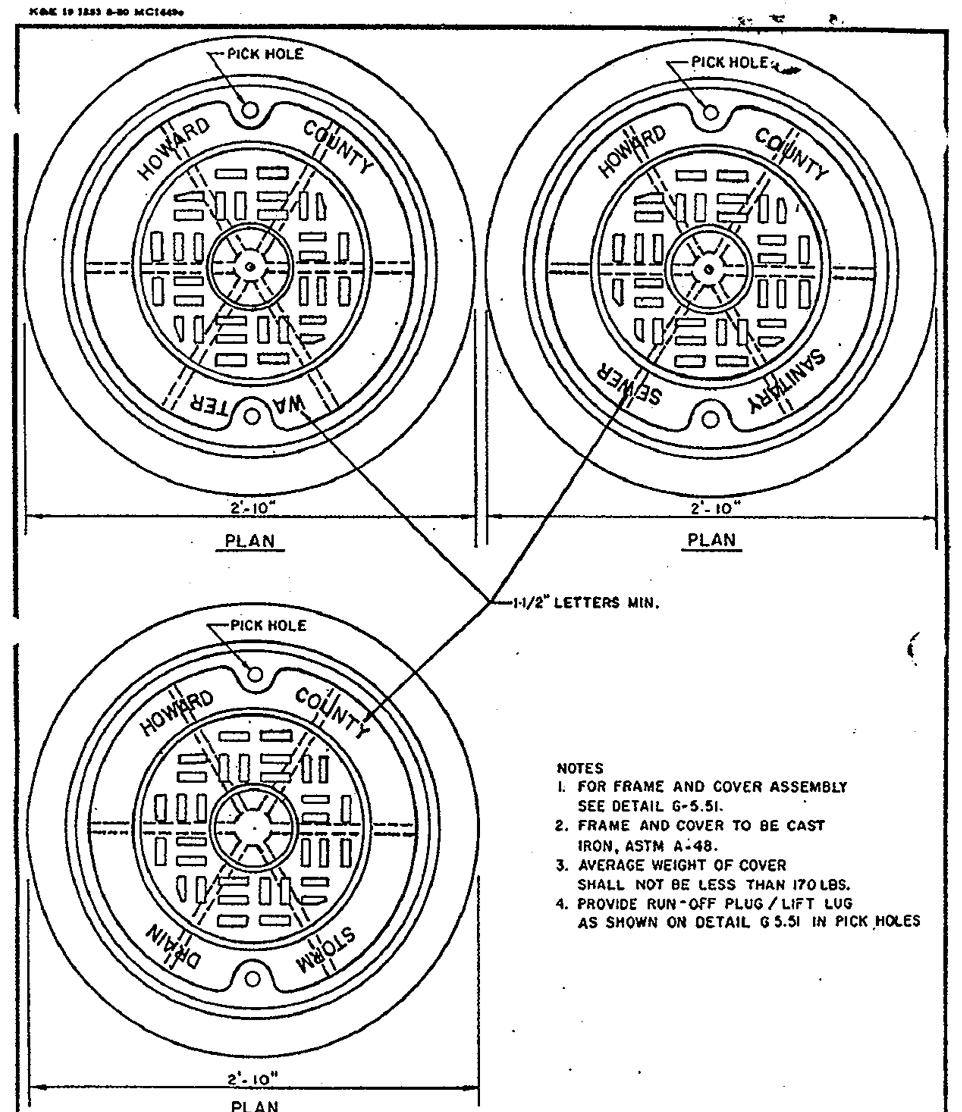
1. MANHOLE BASE SHALL BE BEDDED ON 6-INCH GRANULAR MATERIAL ON FIRM SUBGRADE.
2. EXCAVATION BELOW PIPES SHALL BE BACKFILLED WITH GRANULAR OR SELECT MATERIAL 1/3 OF WAY TO TOP OF PIPE.
3. CONNECTION BETWEEN MANHOLE WALL AND SEWER SHALL BE NON-SHRINK GROUT OR RUBBER GASKET (COMPRESSION TYPE) JOINT.
4. MANHOLE STEPS SHALL BE AS SPECIFIED ON DETAIL G5.21. MANHOLE COVER SHALL BE AS SPECIFIED ON DETAIL G5.51
5. PROVIDE 2 COATS COAL TAR EPOXY COATING, 16 MIL. DRY. SANITARY SEWER ONLY. (EXTERIOR SURFACE ONLY)
6. PROVIDE PIPE JOINT WITHIN 2'-0" MAXIMUM FROM OUTSIDE OF MANHOLE WALL.
7. MANHOLE CHANNELS SHALL BE FORMED TO PROVIDE A SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES. BENCHES SHALL BE TO TOP OF PIPE OR AS SHOWN ON PLANS. MANHOLE CHANNELS AND BENCHES SHALL BE FORMED FROM SEWER BRICK, GRADE SS, ASTM C-32.
8. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C 478 EXCEPT AS SHOWN.

* EXCEPT STORM DRAIN PIPE

REV. MAR. 1986 REV. JAN. 1985
REV. JAN. 1984
REV. JAN. 1982

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved [signature] 2-10-81 Chief-Bureau of Engineering	STANDARD PRECAST MANHOLES	DRAWN BY: J.M.C. CHECKED BY: F.A.W. SCALE: NONE G5.11

K&E 19 1253 8-80 MC1449

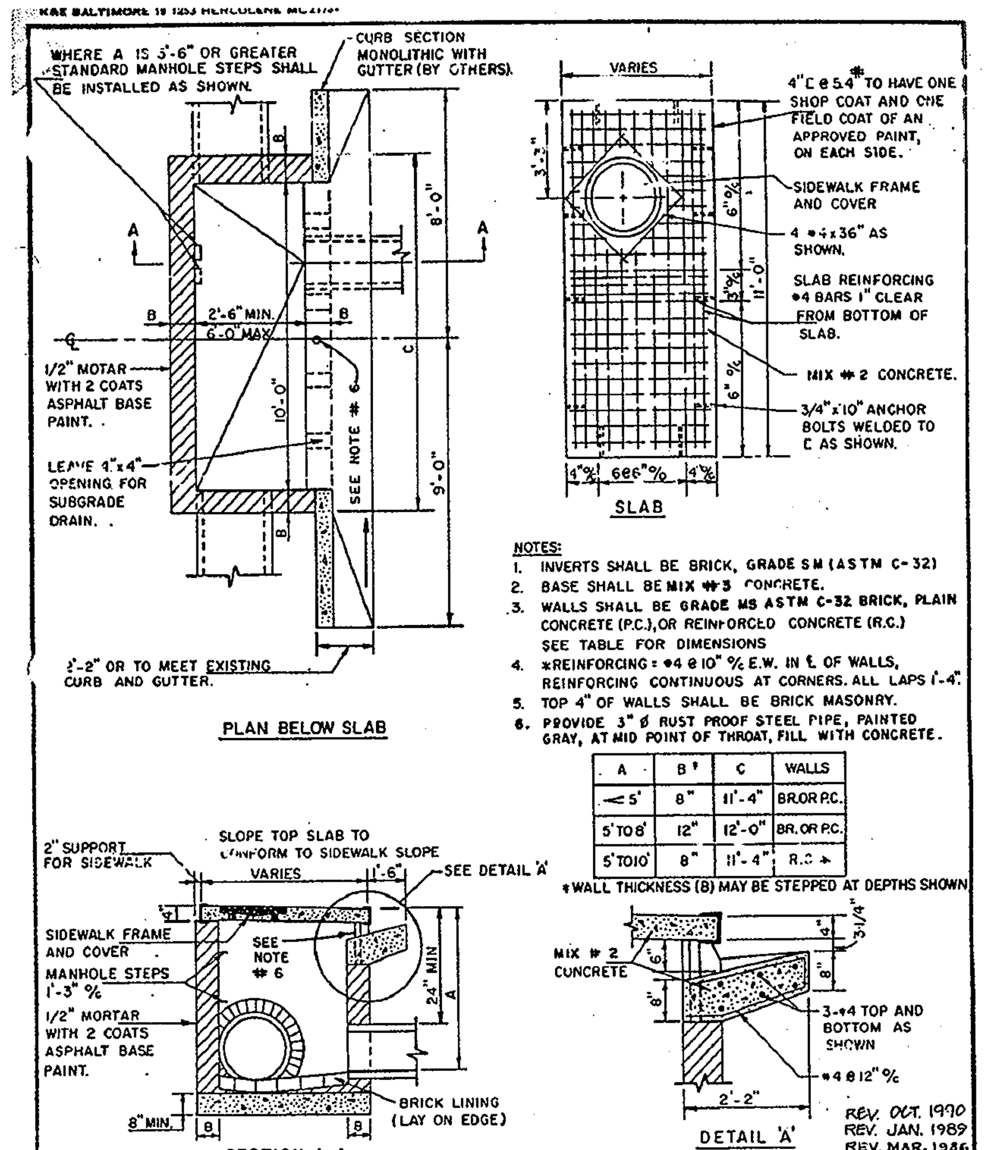


NOTES
1. FOR FRAME AND COVER ASSEMBLY SEE DETAIL G-5.51.
2. FRAME AND COVER TO BE CAST IRON, ASTM A-48.
3. AVERAGE WEIGHT OF COVER SHALL NOT BE LESS THAN 170 LBS.
4. PROVIDE RUN-OFF PLUG / LIFT LUG AS SHOWN ON DETAIL G5.51 IN PICK HOLES

REV. OCT. 1990
REV. OCT. 1987
REV. JAN. 1

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved [signature] Chief-Bureau of Engineering	LETTERING FOR MANHOLE COVERS	DRAWN & A.J.M. CHECKED BY W.H. SCALE NONE G-5.53

K&E BALTIMORE 19 1253 HERCULENE MC2176



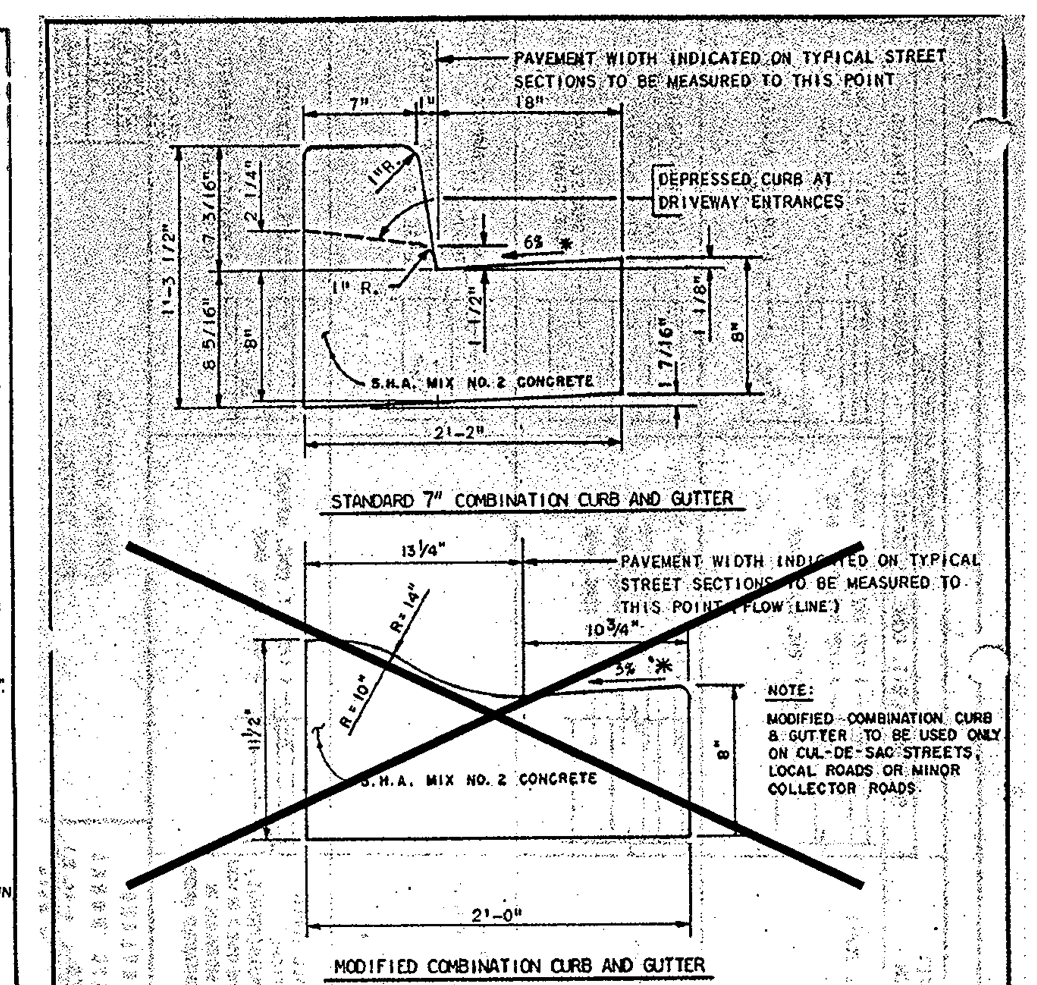
NOTES:
1. INVERTS SHALL BE BRICK, GRADE SM (ASTM C-32)
2. BASE SHALL BE MIX #3 CONCRETE.
3. WALLS SHALL BE GRADE MS ASTM C-32 BRICK, PLAIN CONCRETE (P.C.), OR REINFORCED CONCRETE (R.C.) SEE TABLE FOR DIMENSIONS
4. *REINFORCING: #4 @ 10" % E.W. IN ℄ OF WALLS, REINFORCING CONTINUOUS AT CORNERS. ALL LAPS 1'-4".
5. TOP 4" OF WALLS SHALL BE BRICK MASONRY.
6. PROVIDE 3" Ø RUST PROOF STEEL PIPE, PAINTED GRAY, AT MID POINT OF THROAT, FILL WITH CONCRETE.

A	B*	C	WALLS
< 5'	8"	11'-4"	BR. OR P.C.
5' TO 8'	12"	12'-0"	BR. OR P.C.
5' TO 10'	8"	11'-4"	R.C.*

*WALL THICKNESS (B) MAY BE STEPPED AT DEPTHS SHOWN

REV. OCT. 1990
REV. JAN. 1989
REV. MAR. 1986
REV. OCT. 1982

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved [signature] Chief-Bureau of Engineering	TYPE 'A-10' INLET	DRAWN BY R.K.H. CHECKED BY J.L.R. SCALE NONE SD 4.02



NOTE:
MODIFIED COMBINATION CURB & GUTTER TO BE USED ONLY ON CUL-DE-SAC STREETS, LOCAL ROADS OR MINOR COLLECTOR ROADS.

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB AND GUTTER.

REV. JAN. 1989
REV. JUN. 1987
REV. MAR. 1986

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved [signature] 2-12-81 Chief-Bureau of Engineering	COMBINATION CURB AND GUTTER	DRAWN B W.T. BALLARD CHECKED BY J.L.R. NO SCALE R-3.01

NOTE:
INLETS B-1, B-3, B-5 AND B-6 SHALL BE REINFORCED IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAIL G5.11.

NOTE:
PROPOSED 7" CURB TO BE UTILIZED AT ALL ENTRANCE ONTO MARIE CURIE DRIVE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[signature] 4/11/07
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE
[signature] 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE
[signature] 4/16/07
DIRECTOR — DATE

~~APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS~~
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

MISS UTILITY
DIG WITH C.A.R.E. MARYLAND KEEP SAFE

BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
STORMDRAIN DETAILS

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

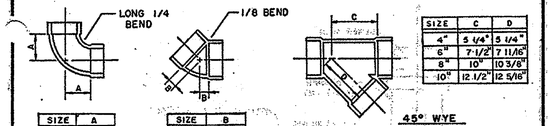
DATE:
STATE OF MARYLAND ADAM J. VOLANTH NO 21342 REGISTERED PROFESSIONAL ENGINEER
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	20 OF 29

SDP #06-111

M:\0...\Costco\S040011.01\M0040001\Site Development Plans\Rev 5\M40001C05.dwg, 3/6/2007 10:23:32 AM, mgesell

POLYVINYL CHLORIDE : ASTM D 3033, D 3034



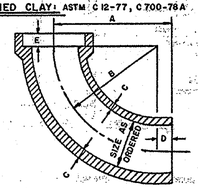
SIZE	A
4"	5 1/8"
6"	5 3/16"
8"	5 1/4"
10"	5 7/8"

SIZE	B
4"	1 1/8"
6"	1 3/8"
8"	1 15/16"
10"	2 7/16"

SIZE	C	D
4"	5 1/4"	5 1/4"
6"	7 1/2"	7 11/16"
8"	10"	10 3/8"
10"	12 1/2"	12 5/16"

45° WYE

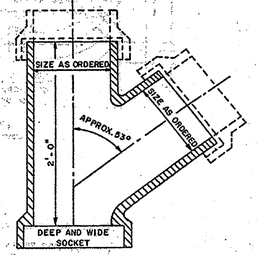
VITRIFIED CLAY: ASTM C 12-77, C 700-76A



90° QUARTER BEND

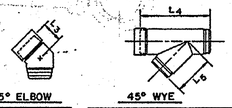
DIMENSIONS OF 90° BEND

SIZE	A	B	C	D	E
10"	23"	20"	7/8"	3"	234°
8"	21"	18"	3/4"	3"	234°
6"	18"	15"	5/8"	3"	2 1/2°



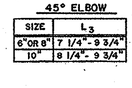
SPECIAL "WYE" BRANCH

ASBESTOS CEMENT: ASTM C 428, C 644



90° ELBOW

SIZE	L1 & L2
6" OR 8"	7 1/4"-9 3/4"
10"	8 1/4"-9 3/4"



45° ELBOW

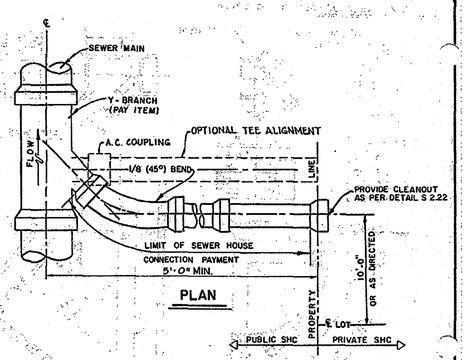
SIZE	L3
6" OR 8"	7 1/4"-9 3/4"
10"	8 1/4"-9 3/4"

45° WYE

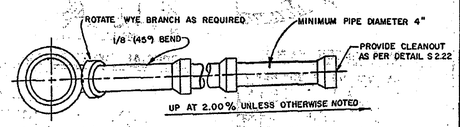
SIZE	L4	L5
6"X6"	13"-17 1/4"	12 5/8"-14 1/4"
8"X8"	24"-39"	17"-19"
10"X10"	39"	21 1/4"-21 3/4"

REV. JAN. 1989

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved J.S. Irwin & R.B. Ray 2-10-81 Chief - Bureau of Engineering	STANDARD SANITARY SEWER DETAILS SPECIAL FITTINGS FOR DROP MANHOLES
	DRAWN BY: V.M.C.
	CHECKED BY: F.A.W.
	SCALE: NONE
	S1.41



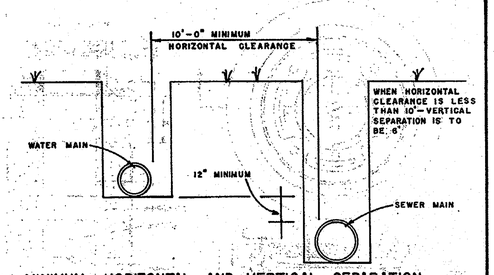
PLAN



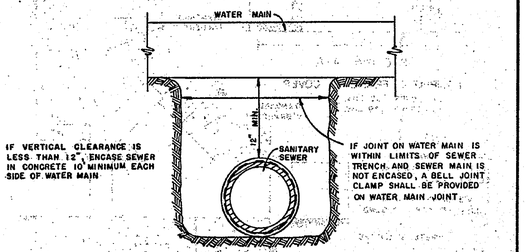
ELEVATION

REV. OCT. 1990
REV. JAN. 1989
REV. JUNE 1985
REV. OCT. 1980
REV. JAN. 1979

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved J.S. Irwin & R.B. Ray 2-10-81 Chief - Bureau of Engineering	STANDARD SANITARY SEWER DETAILS SEWER HOUSE CONNECTION (SHC)
	DRAWN BY: M.T.K.
	CHECKED BY: F.A.W.
	SCALE: NONE
	S2.11



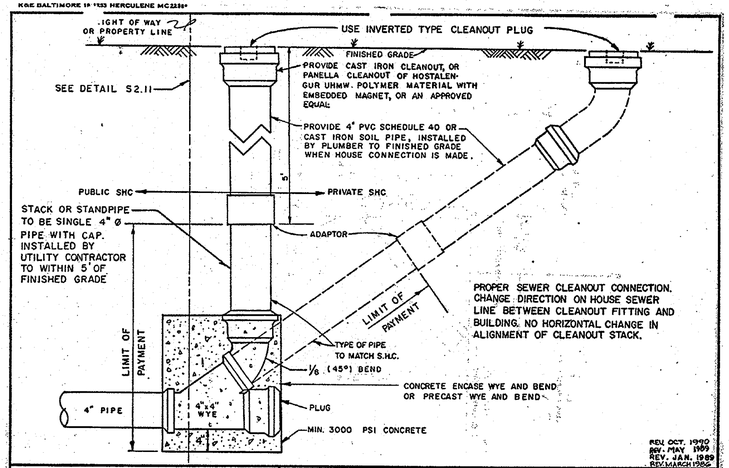
MINIMUM HORIZONTAL AND VERTICAL SEPARATION FOR SEWER PARALLEL TO WATER



WATER SANITARY CROSSING CLEARANCE

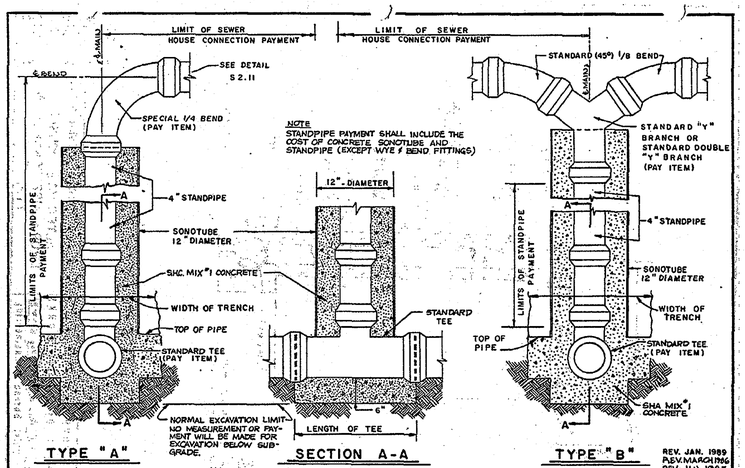
HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved J.S. Irwin & R.B. Ray 2-10-81 Chief - Bureau of Engineering	STANDARD SANITARY SEWER DETAILS WATER SEWER CLEARANCE REQUIREMENTS
	DRAWN BY: D.A.B.
	CHECKED BY: F.A.W.
	SCALE: NONE
	S 3.13

KOE BALTIMORE IP 1133 HERCULENE MC2236+



REV. OCT. 1990
REV. MAY 1989
REV. JAN. 1989
REV. MARCH 1986

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved _____ Date _____ Chief, Bur. of Engr.	CLEANOUT FOR SEWER HOUSE CONNECTION
	DRAWN BY: BAL
	CHECKED BY: J.L.R.
	NO SCALE
	S-222



TYPE "A" SECTION A-A TYPE "B"

REV. JAN. 1989
REV. MAY 1985

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved J.S. Irwin & R.B. Ray 2-10-81 Chief - Bureau of Engineering	STANDARD SANITARY SEWER DETAILS DROP HOUSE CONNECTIONS TYPE "A" AND TYPE "B"
	DRAWN BY: J.M.C.
	CHECKED BY: F.A.W.
	SCALE: NONE
	S2.12

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07

DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

MISS UTILITY

BEFORE YOU DIG CALL 1-80-257-7777. PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

GENERAL NOTE:

THE GENERAL CONTRACTOR SHALL USE ALL HOWARD COUNTY STANDARD DETAILS FOR CONSTRUCTION UNLESS IT IS NOT REQUIRED BY THE COUNTY. THE GENERAL CONTRACTOR SHALL CONTACT AND CONFIRM WITH THE APPROPRIATE COUNTY OFFICIALS PRIOR TO USING ANY COSTCO'S SPECIFIED DETAILS AND INFORM THE SAME TO THE DESIGN ENGINEER.

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER:
HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT:
BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
SANITARY SEWER DETAILS

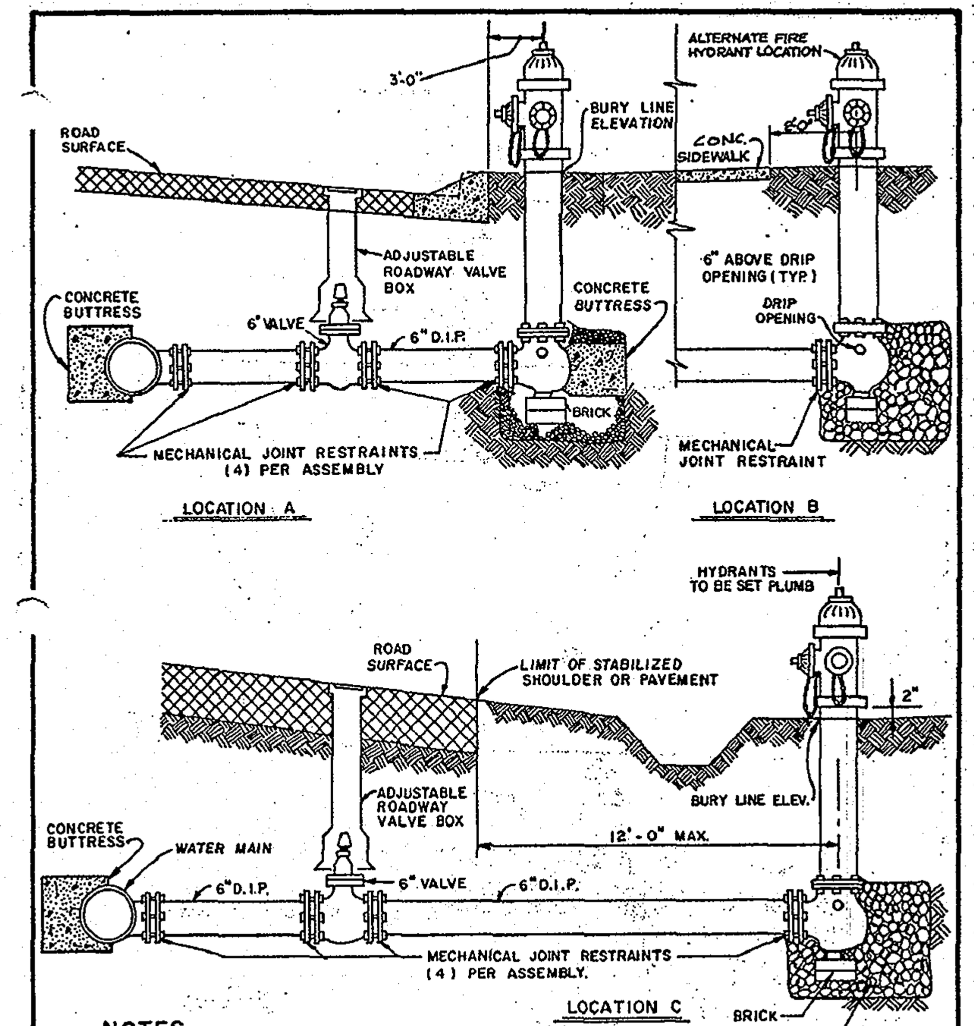
BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLERENG.COM

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	21 OF 29

DATE: STATE OF MARYLAND — ADAM J. VOLANTH — No. 21342 — REGISTERED PROFESSIONAL ENGINEER
ADAM J. VOLANTH
PROFESSIONAL ENGINEER, NO. 21342

SDP #06-111

N:\DATA\Costco\S040011.01_____\S040011.01-Site Development Plans\Dwg\S040011.01-drop-3/6/2007-10:03:58 AM- mgwell



NOTES

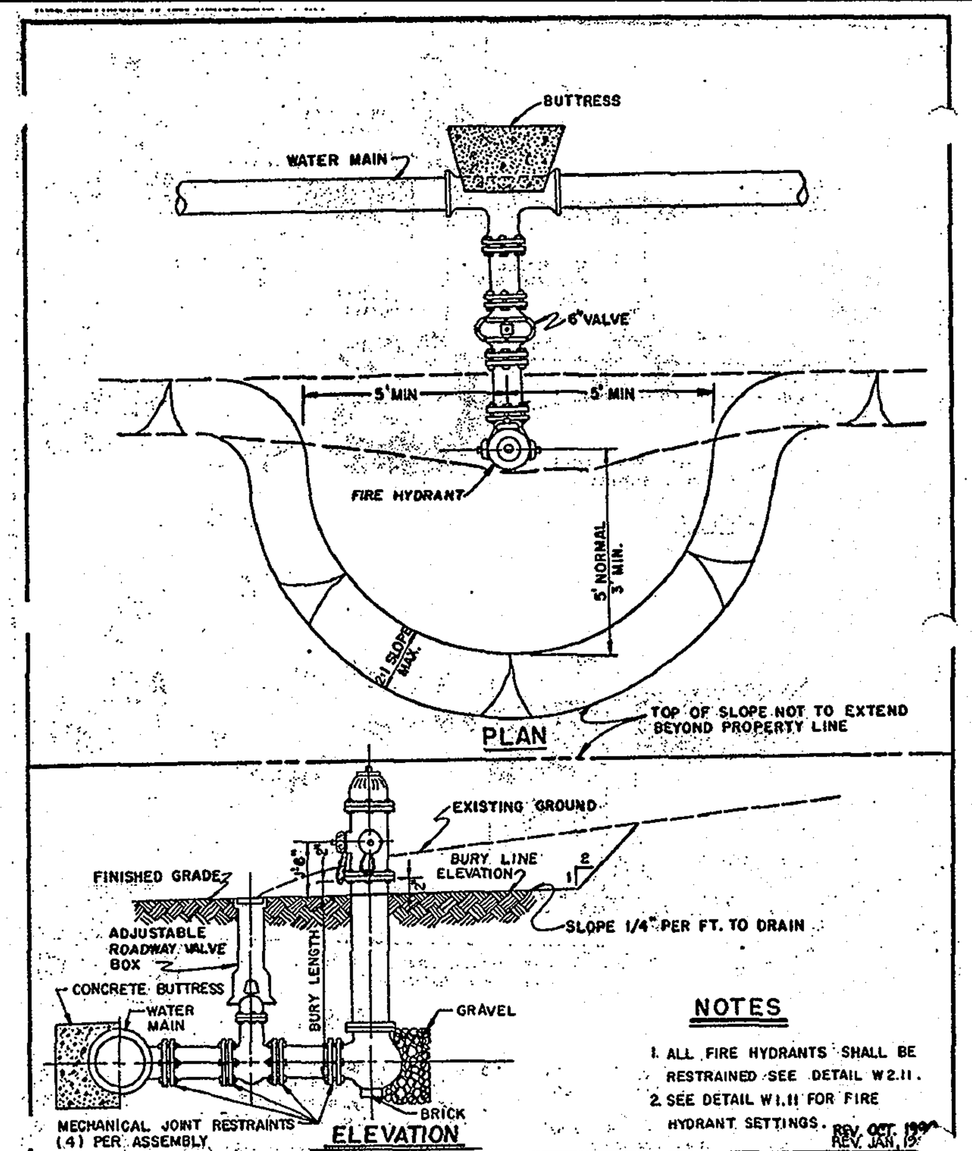
1. PLACE MINIMUM OF 1/3 C.Y. OF 3/4-INCH GRAVEL FULL WIDTH OF TRENCH FOR DRAIN SUMP.
2. WHEN LOCATION 'B' IS USED, PROVIDE 10'x10' R/W FOR FIRE HYDRANTS AS PER DETAIL W-1.13
3. ALL FIRE HYDRANTS SHALL BE RESTRAINED AS PER W 2.11
4. USE PLAIN CONCRETE 3000# FOR ALL CONCRETE BUTTRESSES.

REV. OCT. 1990
REV. JAN. 1989
REV. MARCH 1986
REV. JAN. 1985
REV. OCT. 1982
REV. JAN. 1982

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
FIRE HYDRANT SETTINGS

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W 1.11



NOTES

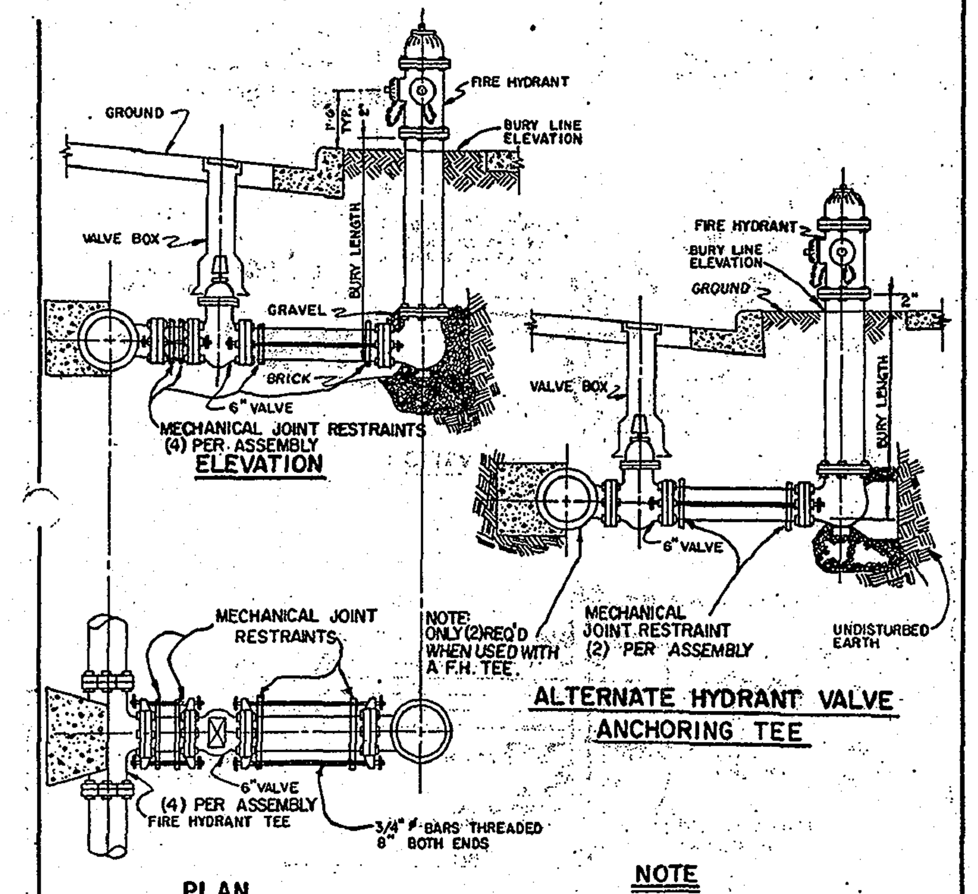
1. ALL FIRE HYDRANTS SHALL BE RESTRAINED SEE DETAIL W2.11.
2. SEE DETAIL W1.11 FOR FIRE HYDRANT SETTINGS.

REV. OCT. 1990
REV. JAN. 1989

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
GRADING FOR FIRE HYDRANTS

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W 1.12



NOTE

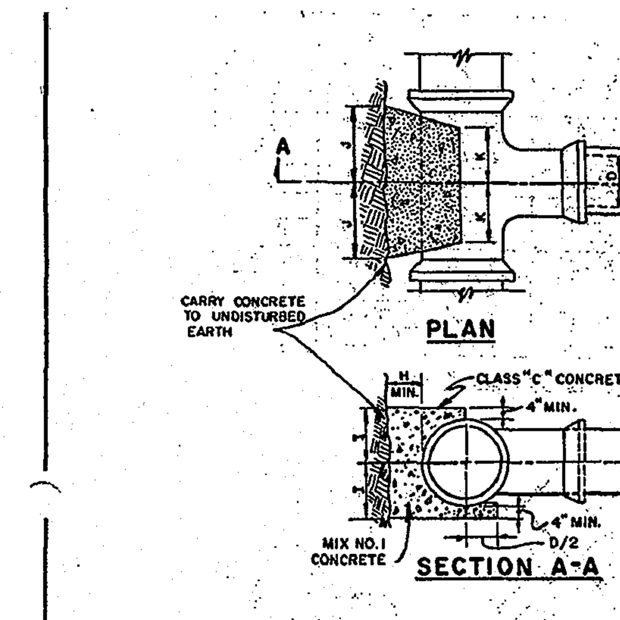
1. APPLY COAL TAR PROTECTIVE COATING TO ALL EXPOSED STEEL PER AWWA; C-203
2. BURY LENGTH = BURY LINE ELEV. (-) F.H. INVERT

REV. OCT. 1990
REV. JAN. 1985
REV. JAN. 1982

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
METHOD OF RESTRAINING FIRE HYDRANT AND VALVE TO MAIN

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W 2.11



MINIMUM DIMENSIONS OF BUTTRESS FOR TEES							
	SIZE OF BRANCH						
D	6"	8"	10"	12"	16"	20"	24"
H	8"	9"	10"	1'-0"	1'-4"	1'-8"	2'-2"
I	10"	1'-1"	1'-4"	1'-7"	2'-2"	2'-8"	3'-2"
J	6"	8"	1'-1"	1'-1"	1'-5"	1'-9"	2'-1"
K	6"	7"	8"	9"	10"	1'-2"	1'-4"

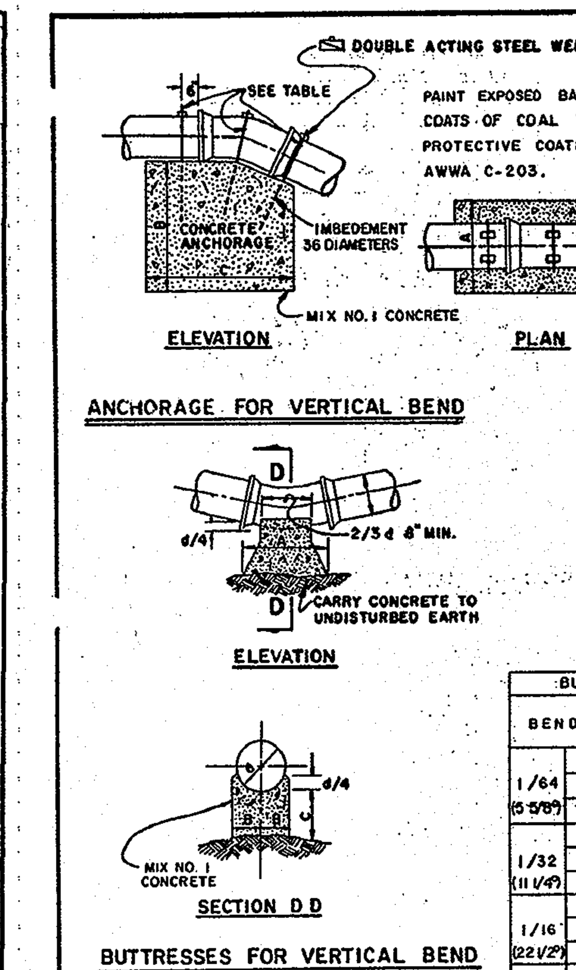
1. AREA OF BEARING = 2J X 2I.
2. BUTTRESS DIMENSIONS ARE BASED ON A WATER PRESSURE OF 150 PSI. AND A MINIMUM SOIL BEARING PRESSURE OF 3000 PSF. WHERE THE ACTUAL FIELD CONDITIONS ARE DIFFERENT, THE AREA OF BEARING SHALL BE INCREASED AS DETERMINED BY THE ENGINEER.

BUTTRESS FOR TEES

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
BUTTRESS FOR TEES

DRAWN BY: M.T.K.
CHECKED BY: F.A.W.
SCALE: NONE
W2.23



PAINT EXPOSED BARS WITH 2 COATS OF COAL TAR PROTECTIVE COATING PER AWWA C-203.

SIZE	REINFORCING BARS			
		1/32	1/16	1/8
6"		3-#4	3-#4	3-#4
8"		3-#4	3-#4	3-#4
10"		3-#4	3-#4	3-#5
12"		3-#4	3-#4	3-#5

ANCHORAGES FOR VERTICAL BENDS					
BEND		SIZE			
		6"	8"	10"	12"
1/32 (11 1/4°)	A	1'-6"	1'-6"	1'-8"	1'-11"
	B	1'-6"	2'-2"	2'-7"	2'-11"
	C	2'-0"	2'-2"	2'-7"	2'-11"
1/16 (22 1/2°)	A	2'-0"	2'-2"	2'-4"	2'-6"
	B	2'-4"	2'-10"	3'-4"	3'-8"
	C	2'-4"	2'-10"	3'-4"	3'-8"
1/8 (45°)	A	2'-0"	2'-5"	2'-8"	3'-0"
	B	3'-0"	3'-7"	4'-2"	4'-8"
	C	3'-0"	3'-7"	4'-2"	4'-8"

BUTTRESSES FOR VERTICAL BENDS								
BEND		SIZE						
		6"	8"	10"	12"	16"	20"	24"
1/64 (5 5/8°)	A						1'-8"	2'-0"
	B						10"	1'-0"
	C						10"	1'-0"
1/32 (11 1/4°)	A	5"	6"	1'-0"	1'-2"	1'-7"	2'-0"	2'-5"
	B	5"	6"	7"	7"	9"	11"	1'-2"
	C	5"	6"	7"	7"	9"	11"	1'-2"
1/16 (22 1/2°)	A	11"	1'-2"	1'-6"	1'-10"	2'-5"	3'-0"	3'-7"
	B	5"	6"	7"	8"	11"	1'-2"	1'-5"
	C	5"	6"	8"	8"	9"	10"	1'-0"
1/8 (45°)	A	1'-5"	1'-10"	2'-4"	2'-10"	3'-9"	4'-8"	5'-7"
	B	7"	8"	10"	11"	1'-3"	1'-7"	1'-11"
	C	7"	8"	10"	11"	1'-3"	1'-7"	1'-11"

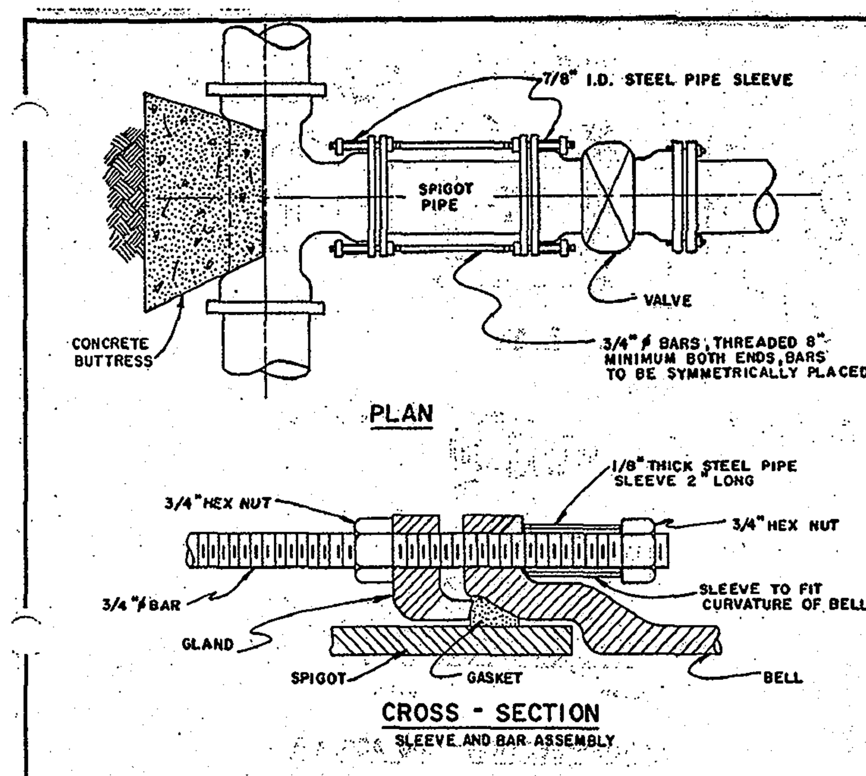
NOTE

ANCHORAGE & BUTTRESS DIMENSIONS ARE BASED ON A STATIC WATER PRESSURE OF 150 PSI. AND A MINIMUM SOIL BEARING PRESSURE OF 3000 P.S.F. WHEN ACTUAL FIELD CONDITIONS ARE DIFFERENT THE AREA OF BEARING SHALL BE INCREASED AS DETERMINED BY THE ENGINEER.

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
BUTTRESSES AND ANCHORAGES FOR VERTICAL BENDS

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W2.22



VALVE SIZE	NUMBER OF 3/4" ∮ BARS REQUIRED	MAX LENGTH OF SPIGOT PIPE
6"	2	27"
8"	2	27"
10"	4	27"
12"	6	27"
14"	8	36"
16"	8	36"
18"	10	36"
20"	12	36"
24"	16	36"

NOTE

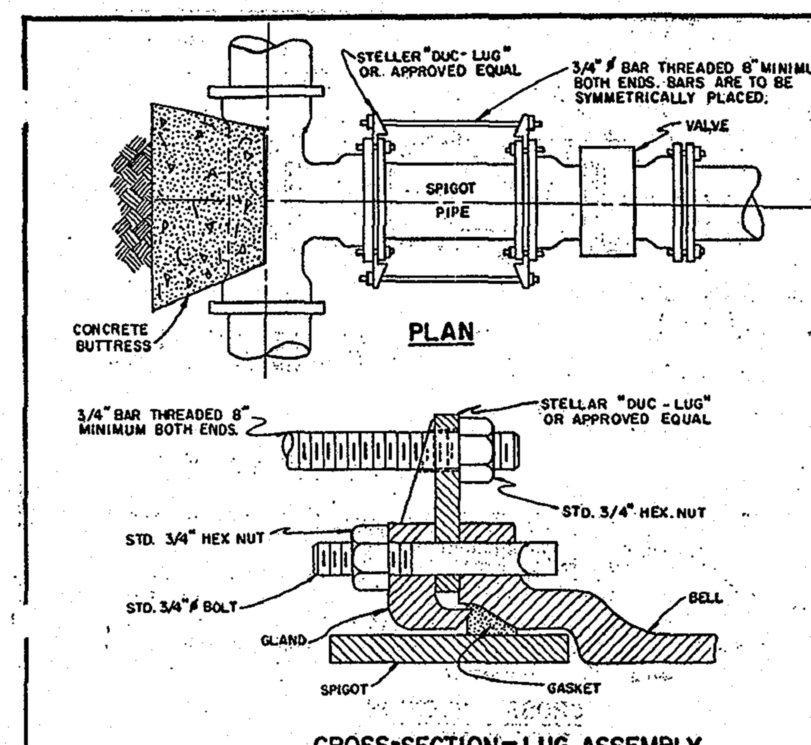
APPLY COAL TAR PROTECTIVE COATING TO ALL EXPOSED STEEL AS PER AWWA C-203.

REV. OCT. 1990
REV. JAN. 1989

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
METHOD OF RESTRAINING VALVE TO MAIN

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W 2.14



VALVE SIZE	NUMBER OF 3/4 ∮ BARS REQUIRED	MAX. LENGTH OF SPIGOT PIPE
6"	2	27"
8"	2	27"
10"	4	27"
12"	6	27"
14"	8	36"
16"	8	36"
18"	10	36"
20"	12	36"
24"	16	36"

NOTE

APPLY COAL TAR PROTECTIVE COATING TO ALL EXPOSED STEEL PER AWWA C-203.

REV. OCT. 1990

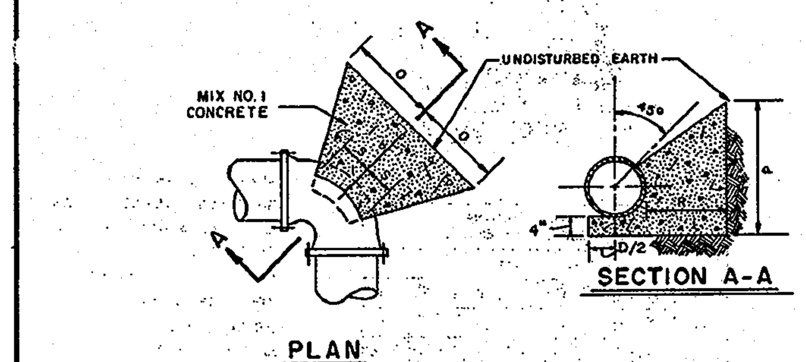
HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
ALTERNATE METHOD OF RESTRAINING VALVE TO MAIN

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W 2.15

DIA.	O	P	R	S
6"	1'-2"	1'-2"	1'-8"	5"
8"	1'-7"	1'-6"	1'-8"	6"
10"	1'-8"	2'-1"	1'-8"	6"
12"	2'-0"	2'-6"	1'-11"	7"
14"	2'-8"	2'-6"	1'-11"	9"
16"	2'-10"	3'-0"	2'-2"	10"
18"	3'-1"	3'-6"	2'-6"	1'-0"
20"	3'-6"	3'-10"	2'-10"	1'-0"
24"	4'-8"	4'-0"	3'-0"	1'-0"
30"	5'-9"	5'-0"	3'-10"	1'-2"
36"	6'-10"	6'-0"	4'-10"	1'-2"

AREA OF BEARING = 2xOxP



NOTE

BUTTRESS DIMENSIONS ARE BASED ON A STATIC WATER PRESSURE OF 150 PSI. AND A MINIMUM SOIL BEARING PRESSURE OF 3000 PSF. WHEN ACTUAL FIELD CONDITIONS ARE DIFFERENT THE AREA OF BEARING SHALL BE INCREASED AS DETERMINED BY THE ENGINEER.

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved (signature) 2-10-81
Chief - Bureau of Engineering

STANDARD WATER DETAILS
BUTTRESSES FOR 1/4 BENDS

DRAWN BY: J.M.C.
CHECKED BY: F.A.W.
SCALE: NONE
W2.24

GENERAL NOTE:

THE GENERAL CONTRACTOR SHALL USE ALL HOWARD COUNTY STANDARD DETAILS FOR CONSTRUCTION UNLESS IT IS NOT REQUIRED BY THE COUNTY. THE GENERAL CONTRACTOR SHALL CONTACT AND CONFIRM WITH THE APPROPRIATE COUNTY OFFICIALS PRIOR TO USING ANY COSTCO'S SPECIFIED DETAILS AND INFORM THE SAME TO THE DESIGN ENGINEER.

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
(signature) 4/11/07
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE
(signature) 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE
(signature) 4/16/07
DIRECTOR — DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

GENERAL NOTE:

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

MISS UTILITY

BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

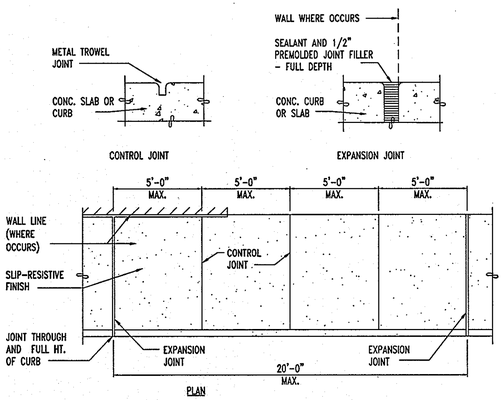
TITLE:
WATER DETAILS

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

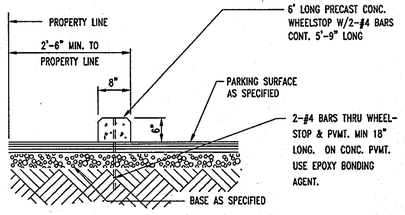
STATE OF MARYLAND
ADAM J. VOLANTH
No 21342
REGISTERED PROFESSIONAL ENGINEER
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	AS SHOWN
DRAWING NO.:	22 OF 29

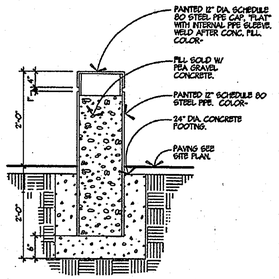
SDP #06-111



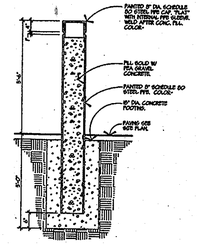
TYPICAL ON-SITE WALKS (EXCEPT AT ENTRANCE CANOPY)
NOT TO SCALE



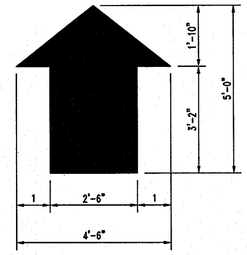
CONCRETE BUMPER DETAIL
NOT TO SCALE



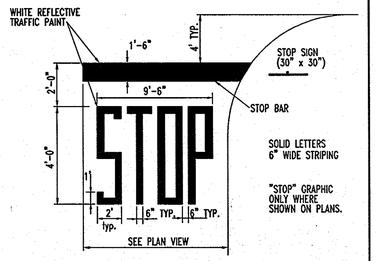
PEDESTRIAN BOLLARD DETAIL
NOT TO SCALE



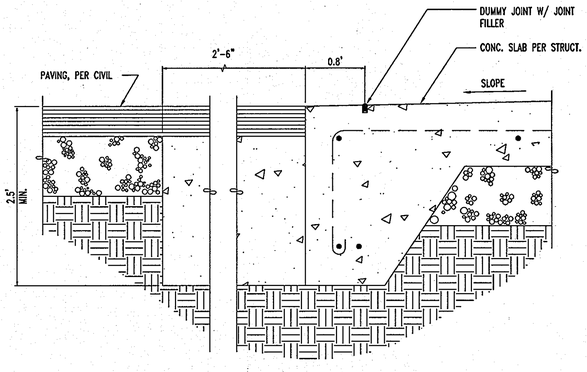
SERVICE AREA BOLLARD DETAIL
NOT TO SCALE



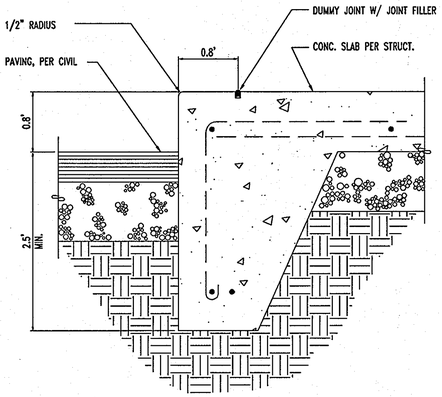
PAINTED WHITE TRAFFIC ARROW DETAIL
NOT TO SCALE



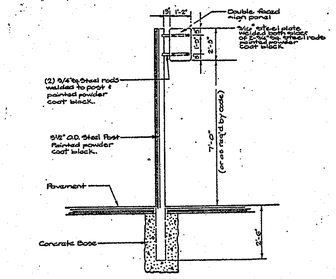
STOP LINE GRAPHIC DETAIL
NOT TO SCALE



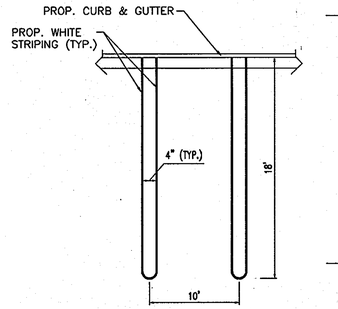
TYPICAL FLUSH CURB DETAIL
NOT TO SCALE



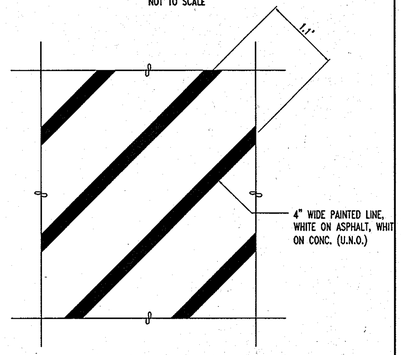
TYPICAL EDGE OF SIDEWALK DETAIL
NOT TO SCALE



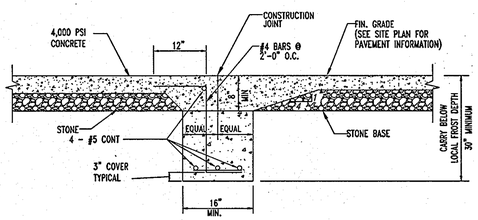
Post & Sign Panel Detail For Parking Restriction Sign
No Scale



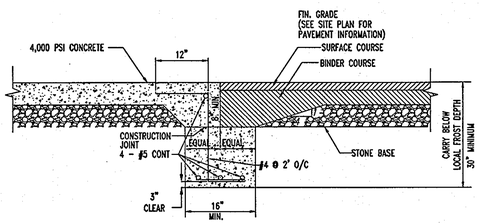
TYPICAL PARKING SPACE DETAIL
NOT TO SCALE



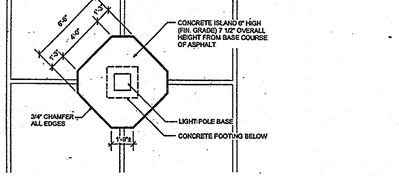
TYPICAL PAINTED STRIPE DETAIL
NOT TO SCALE



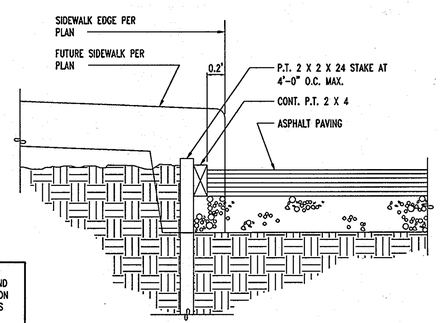
BUILDING SLAB/CONCRETE PAVEMENT JOINT DETAIL
NOT TO SCALE



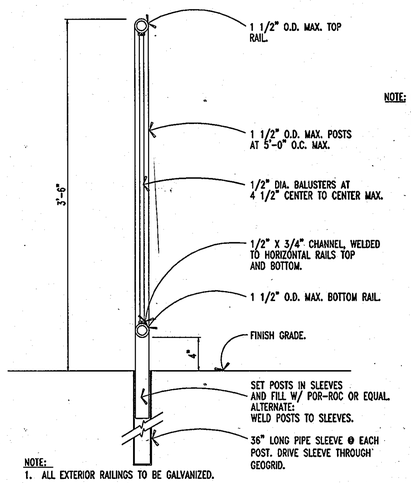
CONCRETE/ASPHALT JOINT DETAIL
NOT TO SCALE



6'-6" CONCRETE LIGHT POLE ISLAND
NOT TO SCALE

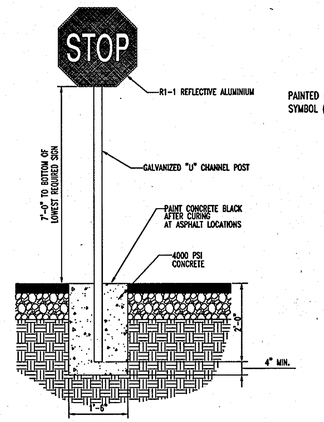


TYPICAL TEMPORARTY EDGE OF PAVEMENT
NOT TO SCALE



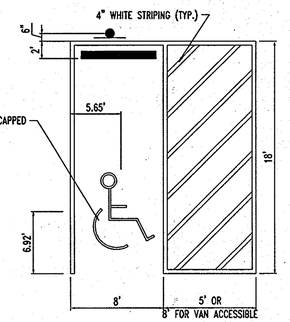
NOTE:
1. ALL EXTERIOR RAILINGS TO BE GALVANIZED.
2. ALL RAIL WELDS TO BE GROUND SMOOTH WITH NO GRIND MARKS. PRIME THE ENTIRE ASSEMBLY WITH SHOP PRIMER READY FOR FIELD PAINTING.

TYPICAL PIPE RAIL DETAIL
SCALE: 1 1/2" = 1'-0"



NOTE: DETAIL PROVIDED BY OTHERS. BOHLER ENGINEERING DOES NOT CERTIFY STRUCTURAL INTEGRITY OR DIMENSIONS. FINAL STRUCTURAL DESIGN TO BE PROVIDED BY STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.

STOP SIGN DETAIL
NOT TO SCALE



HANDICAP STALL MARKINGS
NOT TO SCALE

MISS UTILITY

DIG WITH CARE
MISS UTILITY
KEEP SAFE

BEFORE YOU DIG CALL 1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07
DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

GENERAL NOTE:
THE GENERAL CONTRACTOR SHALL USE ALL HOWARD COUNTY STANDARD DETAILS FOR CONSTRUCTION UNLESS IT IS NOT REQUIRED BY THE COUNTY. THE GENERAL CONTRACTOR SHALL CONTACT AND CONFIRM WITH THE APPROPRIATE COUNTY OFFICIALS PRIOR TO USING ANY COSTCO'S SPECIFIED DETAILS AND INFORM THE SAME TO THE DESIGN ENGINEER.

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER:
HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT:
BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
SITE DETAILS

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • www.bohler.com

DATE
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJC/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	
DRAWING NO.:	23 OF 29

SDP #06-111

I:\Projects\S040011.001 * BOHLER\S040011SHE.DWG Plotted By: Plotted On: 3/6/2007 10:28:41 AM, mgnell

ROBINSON JEFFERSON DRIVE
(FUTURE PRIVATE ROAD)

MARIE CURIE DRIVE
(PRIVATE ROAD)

MH-106

MH-105A

MH-105

N 553,240

E 1,271,000

N 553,710

E 1,270,700

PROP. 1,240 SF BUILDING EXPANSION

PROP. 112 SF MICROBIOFFTENTION FACILITY

PROPOSED
COSTCO WHOLESALE
EASTERN U.S.
142,759 S.F. (TOTAL)
1 STORY RETAIL SALES

2 Prop. Guide Rail

Prop. Retaining Wall (See sheet 2C)

3.9' Private Retaining Wall Maintenance Easement Plat #

130.00'
352.00'
40.00'
40.08'
114.58'
54.00'
215.50'
440.00'
294.00'

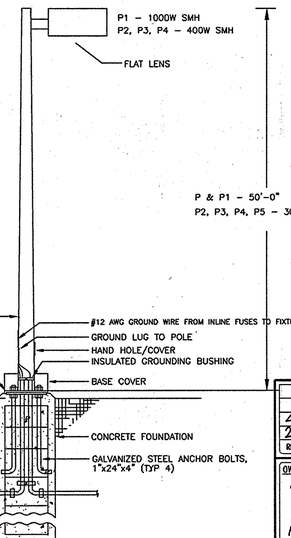
TYP

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	NUMBER	LAMPS	MOUNT	WATT	REMARKS	DEVELOPER REF. NUMBER
P	EMCO*	ECA-234-3H-1000MH-480V-SC/PTF-3-EC23-DM4090-SC/KWI RTSP50-11.0-7-xx-3.5-BC	1-1000W MH	50' POLE	1070	ROUND TAPERED STEEL EPOXY ENAMEL POLE TO MATCH FIXTURE. NUMBER OF HEADS SHALL BE PER PLAN. SEE SHEET SE-1. FIXTURE SHALL BE POWDER PAINTED, ELECTRO-STATIC APPLICATION. PROVIDE POLE BASE COVER. ROTATE OPTICS PER ARROW ON PLAN. POLE AND FIXTURES SHALL BE COLOR SW 6255 'MORNING FOG'	P1-4A-50
P1	EMCO*	ECA-184-QH-400MH-480V-SC/PTF-3-EC18-DM4090-SC/KWI RTSP30-8.0-11-xx-3.5-BC	1-400W MH	30' POLE	455		P4-4B-30
P2	EMCO*	ECA-184-3H-400MH-480V-SC/PTF-3-EC18-DM4090-SC/KWI RTSP30-8.0-11-xx-3.5-BC	1-400W MH	30' POLE	455		P4-4A-30
P3	EMCO*	ECA-181-3H-400MH-480V-SC/PTF-3-EC18-DM1-SC/KWI RTSP30-8.0-11-xx-3.5-BC	1-400W MH	30' POLE	455		P4-1-30
P4	EMCO*	ECA-182-3H-400MH-480V-SC/PTF-3-EC18-DM2180-SC/KWI RTSP30-8.0-11-xx-3.5-BC	1-400W MH	30' POLE	455		P4-2B-30
P5	EMCO*	ECA-182-FH-400MH-480V-SC/PTF-3-EC18-DM2180-SC/KWI RTSP30-8.0-11-xx-3.5-BC	1-400W MH	30' POLE	455		P4-2C-30
PD	LUMEC*	175MH-VR214-PC-C-RR5-277-1-APR4F-10-WHTX	1-175W MH	10' POLE	250	ROUND STRAIGHT ALUMINUM ENAMEL POLE TO MATCH FIXTURE. NUMBER OF HEADS SHALL BE PER PLAN. SEE SHEET SE-1. FIXTURE SHALL BE POWDER PAINTED, ELECTRO-STATIC APPLICATION. POLE AND FIXTURES SHALL BE COLOR WHITE	P17-1-10

*VERIFY POLES & FIXTURES MATCH DEVELOPMENT 'CENTER STANDARD'.

FOR REVISION 4 ONLY (4)



NOTE: PROVIDE CONCRETE J-BOX AS REQUIRED.
THIS DETAIL IS FOR ELECTRICAL CONDUITS ROUTING ONLY. SEE STRUCTURAL DRAWINGS FOR CONSTRUCTION DETAIL.

POLE BASE DETAIL
NO SCALE

M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 14987
9/21/15

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, 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. 14987, EXPIRATION DATE 6/9/17

REV.	DATE	DESCRIPTION	BY
4	6/10/15	expand fire center, add microbio facilities	MJG/JD
2	8/30/07	REVISED RETAINING WALL	B.M.H.

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL C
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: LIGHTING PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLER.COM

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=40'
DRAWING NO.:	24 OF 29

DATE: MARY MACKIE
STATE OF MARYLAND
ADAM J. VOLANTE
No. 21342
REGISTERED
PROFESSIONAL ENGINEER
ADAM J. VOLANTE
PROFESSIONAL ENGINEER NO. 21342

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07
DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

NOTE:
THIS PLAN PREPARED BY;
T.E. INC.
830 N. RIVERSIDE DRIVE, SUITE 200
RENTON, WA 98055
PHONE: (206) 241-2012
FAX: (206) 241-3101
PROJECT NO.: 05-297

STATE OF MARYLAND
ADAM J. VOLANTE
No. 21342
REGISTERED
PROFESSIONAL ENGINEER
For Revision #2
Bohler Engineering, P.C. (2)

SITE PLAN _ MALL
SCALE: 40'-0" = 1"

TYPICAL WALL PACK DETAIL (B)
SCALE: NTS

MISS UTILITY
DIG WITH CARE
MARYLAND
811
BEFORE YOU DIG CALL
1-800-257-7777
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

SDP #06-111

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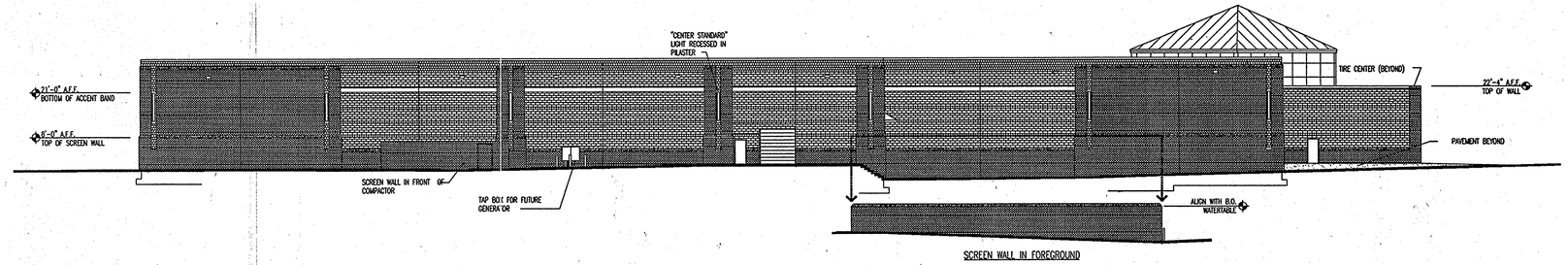
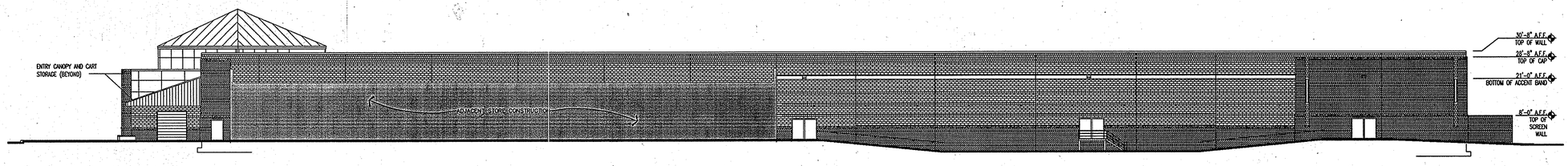
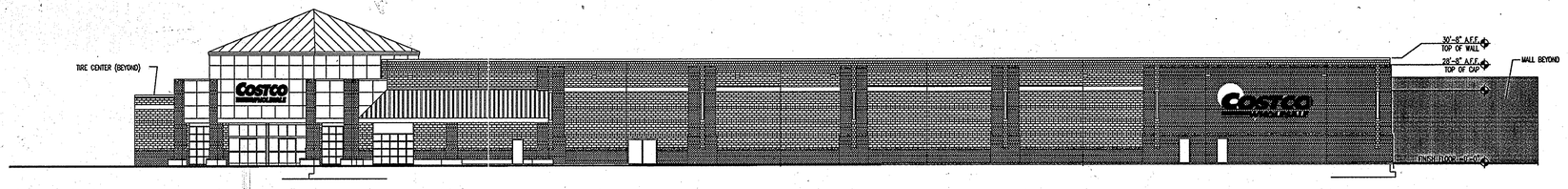
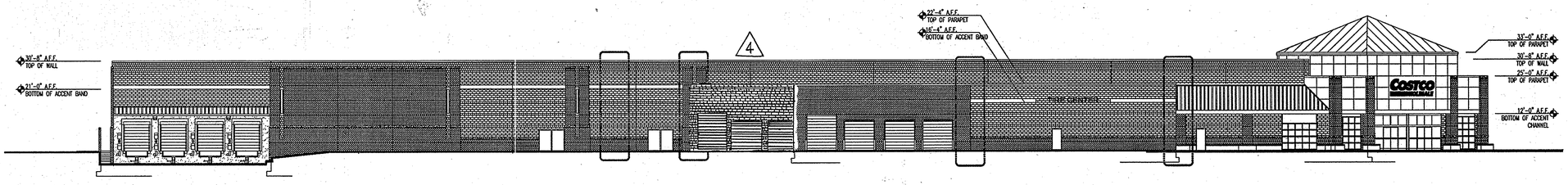


SCREEN WALL IN FOREGROUND







PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/11/07

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 7/16/07

DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING, P.C. IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY BOHLER ENGINEERING, P.C. SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

FOR REVISION 4 ONLY

4

M.J. OESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE #19087

9/21/16

PROFESSIONAL CERTIFICATION
I, MICHAEL J. OESELL, 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. 19087, EXPIRATION DATE 9/9/17

REV.	DATE	DESCRIPTION	BY
4	6/18/15	expand tire center, add micro/mo facilities	BOHLER

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
C/O PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ARCHITECTURAL ELEVATIONS

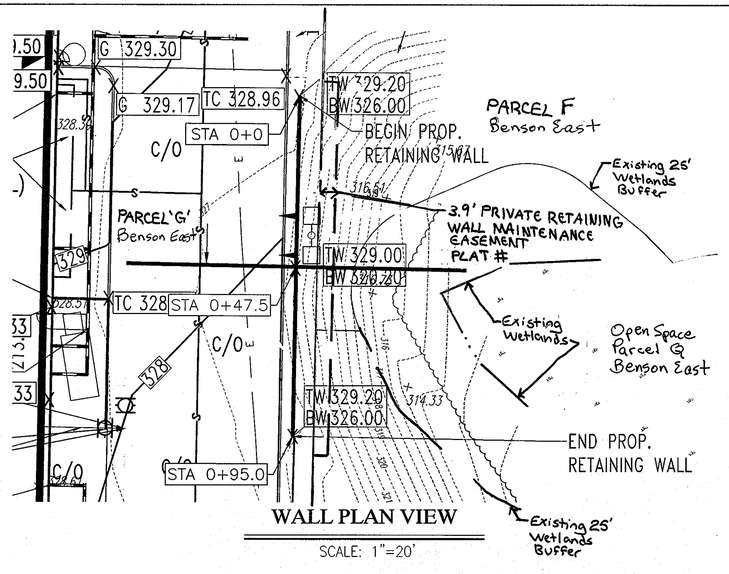
BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9601 | WWW.BOHLERENG.COM

DATE: 11/22/06
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	N.T.S.
DRAWING NO.:	25 OF 29

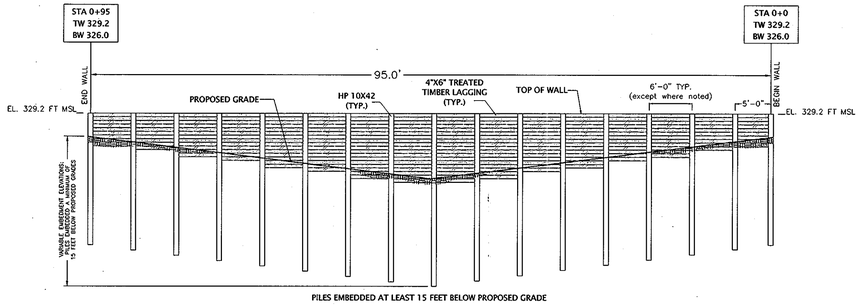
SDP #06-111

I:\VAULTED\S040011\Site Development\Plans\New SVU40001126.dwg, 9/6/2007 10:23:46 AM, mgesell



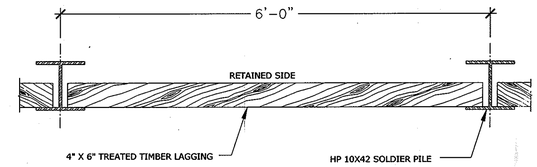
WALL PLAN VIEW

SCALE: 1"=20'



WALL PROFILE

SCALE: 1"=10'



WALL SECTION PLAN VIEW

GENERAL NOTES:

1. PLAN IS FOR CONSTRUCTION OF THE PROPOSED RETAINING WALL ON SITE.
2. ALL CONSTRUCTION SHALL BE PERFORMED IN A SAFE, WORKMANLIKE MANNER, IN COOPERATION WITH THE OTHER TRADES, AND IN ACCORDANCE WITH ALL LOCAL AND FEDERAL CODES AND REGULATIONS.
3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD BEFORE STARTING FABRICATION OR CONSTRUCTION. CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER IMMEDIATELY IF ANY DISCREPANCIES OCCUR FROM THE ORIGINAL DESIGN CONDITIONS.
4. THESE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ANY APPLICABLE SPECIFICATIONS, ARCHITECTURAL AND MECHANICAL DRAWINGS.
5. APPROVAL OF SHOP DRAWINGS SHALL NOT RELIEVE CONTRACTOR OF ANY CONTRACT REQUIREMENTS EVEN IF SUCH ITEMS ARE NOT SHOWN ON SHOP DRAWINGS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE PERMITS PRIOR TO CONSTRUCTION.
7. CONTRACTOR SHALL MAINTAIN STABLE EXCAVATIONS DURING RETAINING WALL EXCAVATIONS PER OSHA STANDARDS
8. THE RETAINING WALL DESIGN INCORPORATES THE FOLLOWING FACTORS OF SAFETY (F.S.):

   F.S. FOR OVERTURNING = 2.0
   F.S. FOR GLOBAL STABILITY = 1.3 (STATIC); 1.1 (SEISMC)

SOIL NOTES:

1. THIS RETAINING WALL DESIGN IS BASED ON SUBSURFACE CONDITIONS OBSERVED IN TEST BORINGS PERFORMED BY WHITESTONE ASSOCIATES, INC.
2. LOCATION OF EXISTING UTILITY LINES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO PILE DRIVING ACTIVITIES.
3. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ENGINEER AT LEAST 24 HOURS PRIOR TO BACKFILLING BEHIND THE WALL TO ACHIEVE DESIGN GRADES.
4. STRUCTURAL FILL PLACED TO ACHIEVE DESIGN GRADES SHALL BE PLACED IN 8-INCH THICK LIFTS AND COMPACTED TO 95% MAXIMUM DRY DENSITY AND 2% OF OPTIMUM MOISTURE CONTENT PER ASTM D1557.
5. STRUCTURAL FILL SHALL CONSIST OF GRANULAR MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3 INCHES AND 5 TO 15 PERCENT OF MATERIAL FINER THAN THE #200 SIEVE. THE MATERIAL SHALL BE FREE OF CLAY LUMPS AND DELETERIOUS MATERIAL.
6. STRUCTURAL FILL SHALL BE COMPACTED WITH A LIGHT, HAND-HELD COMPACTOR. HEAVY COMPACTORS AND GRADING EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE WITHIN A ZONE MEASURED AT A 45-DEGREE ANGLE FROM THE BASE OF THE WALL DURING BACKFILLING TO AVOID DEVELOPING EXCESSIVE TEMPORARY AND/OR LONG-TERM LATERAL SOIL PRESSURES.

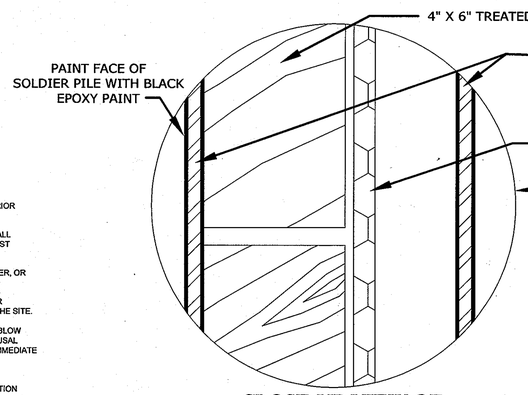
PILE NOTES:

1. STEEL SHOP DRAWINGS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO DELIVERY OF STEEL ON SITE.
2. SOLDIER PILES SHALL CONSIST OF HP 10X42 STEEL, SPACED AS NOTED. STEEL SHALL CONFORM TO ASTM A35 AND ASTM A6. SOLDIER PILES SHALL BE DRIVEN TO AT LEAST 15 FEET BELOW THE TOP OF THE PROPOSED SLOPE.
3. THE SOLDIER PILES SHALL BE DRIVEN WITH AN MKT 983 DOUBLE-ACTING AIR HAMMER, OR EQUIVALENT, WITH A MANUFACTURER'S RATED ENERGY OF APPROXIMATELY 8,7500 FOOT-POUNDS. ALTERNATIVE HAMMERS MAY BE CONSIDERED TO DRIVE THE PILES PROVIDED THAT A WAVE EQUATION ANALYSIS PROGRAM (WEAP) RESULT OR OTHER SUITABLE ANALYSIS IS SUBMITTED TO THE ENGINEER PRIOR TO MOBILIZATION TO THE SITE.
4. TIPS OF PILES MUST REACH THE PROPOSED EMBEDMENT DEPTH REGARDLESS OF BLOW COUNTY RECORDED IN THE OVERLYING MATERIAL. PILES WHICH ENCOUNTER REFUSAL BEFORE REACHING THE PROPOSED BEARING DEPTH SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
5. CONSTRUCTION TOLERANCES:
   (A) THE CENTER OF THE SOLDIER PILE SHALL BE WITHIN 1.5 INCHES OF PLAN STATION AT THE TOP OF THE WALL AND 0.5 INCHES AT THE GROUND SURFACE.
   (B) THE TOP OF THE SOLDIER PILE SHALL BE WITHIN ±1 INCH OF THE PLAN ELEVATION.
6. INSPECTION SHOULD BE MAINTAINED BY THE ENGINEER DURING PILE INSTALLATION TO RECORD DRIVING RESISTANCE, ELEVATIONS, AND TO CONFIRM THAT THE REQUIRED INSTALLATION CRITERIA IS ACHEIVED.

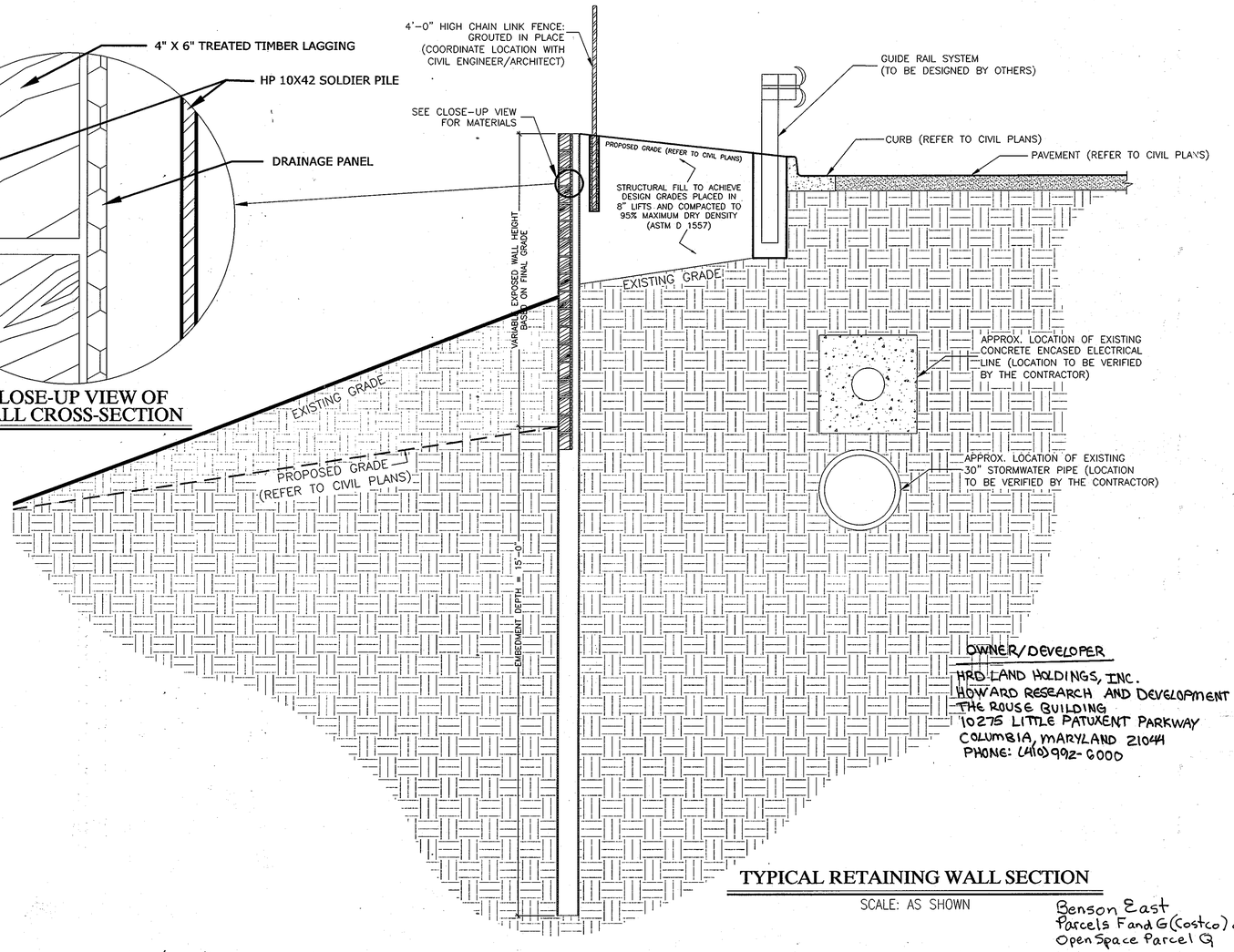
LAGGING NOTES:

1. TIMBER LAGGING SHALL CONSIST OF PRE-TREATED, DENSE SOUTHERN PINE, GRADE NO. 1 AND HAVE A MINIMUM ALLOWABLE BENDING STRESS OF 1,600 PSI. THE TIMBER SHALL BE ROUGH CUT OR SURFACED AND SHALL MEET THE APPLICABLE REQUIREMENTS FOR SIZE AND GRADING ACCORDING TO ASTM D 245 AND THE SOUTHERN PINE INSPECTION BUREAU.
2. LAGGING SHALL BE TREATED IN ACCORDANCE WITH THE AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA) STANDARD T1(LATEST REVISION). CUT LAGGING SECTIONS SHALL BE TREATED IN ACCORDANCE WITH AWPA STANDARD M4 FOR THE CARE OF PRESERVATIVE TREATED WOOD PRODUCTS.
3. TIMBER LAGGING, INSTALLED BELOW THE ORIGINAL GROUND SURFACE, SHALL BE PLACED FROM THE TOP DOWN AS THE EXCAVATION PROCEEDS. AT LEAST ONE COURSE OF LAGGING SHALL EXTEND BELOW THE PROPOSED GRADE.
4. INSTALL TIMBER LAGGING WITH A MINIMUM BEARING DISTANCE OF 3 INCHES ON EACH PILE FLANGE. GAPS BETWEEN THE LAGGING SHALL BE NO WIDER THAN 0.5 INCHES.
5. INSTALL A DRAINAGE PANEL, SUCH AS TENCATE MIRAFI G100N, OR EQUIVALENT, ON THE RETAINED SIDE OF THE LAGGING TO RELIEVE BUILD UP OF HYDROSTATIC PRESSURES.

CONTRACTOR SHALL VISIT SITE TO VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO SUBMISSION OF BID. ANY DISCREPANCIES OF ACTUAL FIELD CONDITIONS WITH THESE CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO ENGINEERS ATTENTION PRIOR TO SUBMISSION OF BID. CONTRACTOR SHALL CONTACT OWNER TO OBTAIN ACCESS TO PROPERTY FOR PRE-BID SITE INSPECTION.



CLOSE-UP VIEW OF WALL CROSS-SECTION



TYPICAL RETAINING WALL SECTION

SCALE: AS SHOWN

Benson East
Parcels F and G (Costco) and
Open Space Parcel Q

OWNER/DEVELOPER

HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410)992-6000

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/25/06
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 9/25/06
DIRECTOR — DATE 9/26/06

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

REV	DATE	DESCRIPTION	BY
1	06-20-07	REVISE EMBEDMENT DEPTH	SMG
2	07-13-07	REVISE PER CONTRACTOR'S COMMENTS ;	SMG
2		– Add Retaining Wall Maintenance Easement to Open Space Parcel Q and to Revise retaining wall details	

STEPHANIE M. CRAHL, P.E.
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 25842

TITLE: SOLDIER PILE & LAGGING RETAINING WALL DESIGN & NOTES

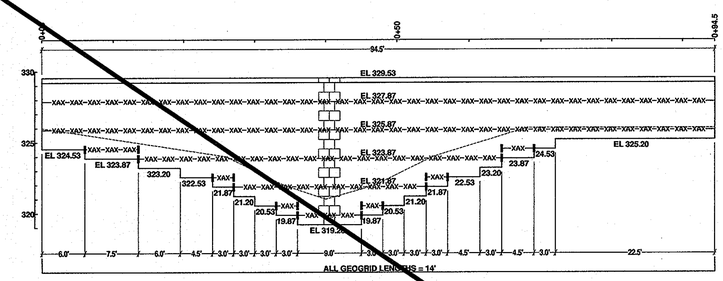
CLIENT: BOHLER ENGINEERING, P.C.

PROJECT: COSTCO WHOLESALE SITE
I-95 & LITTLE PATUXENT PARKWAY
COLUMBIA, HOWARD COUNTY, MARYLAND

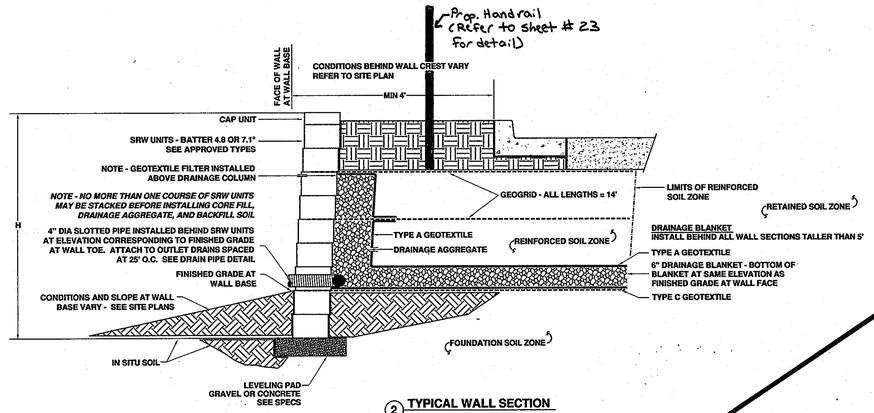
WHITESTONE ASSOCIATES, INC.
1600 Manor Drive, Suite 220
Chalfont, Pennsylvania 18914
Phone (215) 712-2700 Fax (215) 712-2701

PROJECT #:	BY:	PROJ. MGR.:	DATE:	SCALE:	SHEET:
WP07-9697	RP	JMM	06-18-07	As Shown	26 OF 29

SDP #06-111



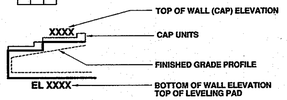
1 **WALL FRONT ELEVATION VIEW AND REINFORCEMENT SCHEDULE**
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 5'



2 **TYPICAL WALL SECTION**
N.T.S

LEGEND

SRW UNITS ILLUSTRATED FOR ELEVATION REFERENCE



—XAX—XAX—XAX—XAX— GEOSYNTHETIC REINFORCEMENT
HUESKER FORTRAC 35
TC MIRAFI 3XT
STRATASYSTEMS STRATAGRID 200
TENSAR UX1100MSE

XAX—XAX—XAX—XAX—XAX TERMINATION OF REINFORCEMENT OR CHANGE IN EMBEDMENT LENGTH

CONSTRUCTION NOTES

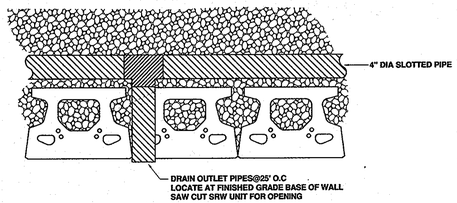
1. A GRAVEL DRAINAGE BLANKET IS REQUIRED AT ALL SECTIONS OF WALL FOR WHICH TOTAL HEIGHT EXCEEDS 5 FT - SEE DETAIL 27-2.

2. FILL SOIL INSTALLED IN THE REINFORCED ZONE AT WALL SHALL EXHIBIT THE PHYSICAL PROPERTIES SPECIFIED AT SHEET 26.

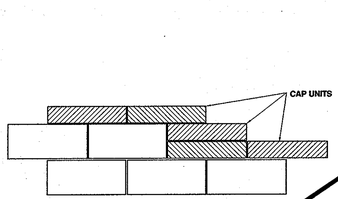
3. INSITU SOIL IN THE FOUNDATION AND RETAINED ZONES IS ASSUMED TO EXHIBIT ϕ' = 30°. OWNER'S INSPECTION ENGINEER SHALL VERIFY THAT THIS ASSUMED SHEAR STRENGTH PARAMETER IS ADEQUATELY CONSERVATIVE.

4. SOIL AT THE FOUNDATION ZONE SHALL EXHIBIT A MINIMUM ALLOWABLE BEARING PRESSURE OF 2000 PSF. SOFT AND UNSUITABLE SOIL SHALL BE EXCAVATED AND REPLACED WITH COMPACTED STRUCTURAL FILL AT THE DIRECTION AND UNDER THE SUPERVISION OF THE OWNER'S INSPECTION ENGINEER.

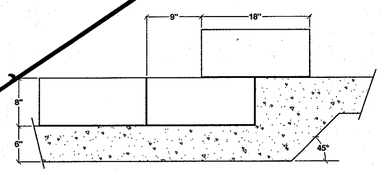
Sheet Not Used



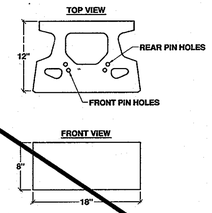
3 **DRAIN PIPE DETAIL**
N.T.S



4 **CAP UNIT DETAIL**
N.T.S

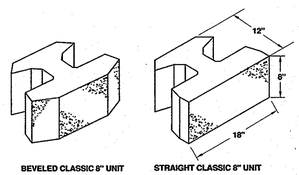


5 **TYPICAL LEVELING PAD STEP DETAIL**
N.T.S



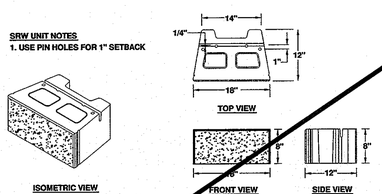
NOTE - INSTALL CONNECTOR PINS IN REAR HOLES FOR A FACE BATTER OF 7.1°

6 **KEYSTONE COMPAC SRW UNITS**
N.T.S



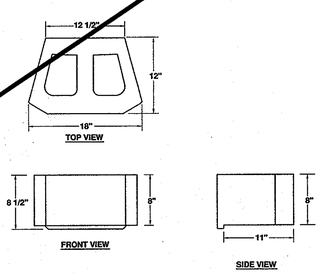
NOTE 1 - EITHER BEVELED OR STRAIGHT UNIT MAY BE USED
NOTE 2 - UNITS THAT ARE 7 1/2" HIGH MAY NOT BE USED

7 **ROCKWOOD SRW UNIT**
NOT TO SCALE



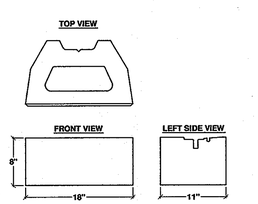
NOTE - INSTALL CONNECTOR PINS IN REAR HOLES FOR A FACE BATTER OF 7.1°

8 **VERSA-LOK SQUARE FOOT UNIT**
NOT TO SCALE



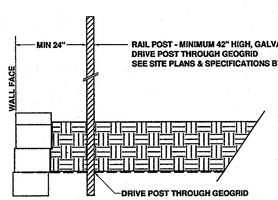
NOTE - EITHER BEVELED OR STRAIGHT UNIT MAY BE USED

9 **ANCHOR DIAMOND PRO SRW UNIT**
NOT TO SCALE



NOTE 1 - AGGREGATE CORE FILL IS REQUIRED FOR MESA SRW UNIT
NOTE 2 - INSTALL MESA UNITS FOR 4.8° FACE BATTER

10 **MESA STANDARD SRW UNITS**
N.T.S



11 **RAIL POST AT WALL**
N.T.S

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 9-14-06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF - DEVELOPMENT ENGINEERING DIVISION — DATE 4/4/07
CHIEF - DIVISION OF LAND DEVELOPMENT — DATE 4/6/07
DIRECTOR — DATE 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — DATE

REVISIONS

DATE	DESCRIPTION
07/22/06	ARCHITECTURAL REVIEW COMMENTS
12/06/06	CITY COMMENTS

STATE OF MARYLAND — No. 26117 — PROFESSIONAL ENGINEER
12/06/06

R.J. VALENTINE, P.E.
Consulting Engineer
5869 Woodfield Estates Drive
Alexandria, Virginia 22310
Tel. 703-924-0683 Fx. 703-924-0682

CLIENT:

BOHLER ENGINEERING, P.C.
22630 Davis Drive, Suite 200
Sterling, Virginia 20164
Tel. 703-709-9500

PROJECT:

RETAINING WALL
COSTCO WHOLESALE FACILITY
COLUMBIA, HOWARD COUNTY, MD

PROJECT No: 6029 | DRAWN BY: RJV | CHECKED BY: RJV

ORIGINAL ISSUE DATE: 04/28/06

DRAWING NUMBER:
27 OF 29

SDP 06-111

GENERAL IRRIGATION NOTES

1. ADJUST HEIGHTS OF 4" TREL RAINBIRD MPR SERIES POP UP SPRAY HEADS IN CORRELATION WITH INSTALLED PLANT MATERIAL AND FIELD CONDITIONS.
2. ALL PVC SLEEVING SHALL EXTEND 18" INTO PERVIOUS LANDSCAPE AREAS.
3. DEPICTION OF ELECTRIC ZONE VALVES, PVC MAINLINE, AND POLYETHYLENE LATERAL LINES ARE SHOWN SCHEMATIC FOR CLARITY PURPOSES. VALVES AND PIPING SHALL BE INSTALLED WITHIN THE LIMIT OF DISTURBANCE FOR OTHER WORK AND IN CORRELATION WITH FIELD CONDITIONS.
4. IRRIGATION CONTRACTOR TO ENSURE ADEQUATE COVER OVER ALL PIPING.
5. IRRIGATION SYSTEM REQUIRES A MINIMUM OF 55 PSI TO FUNCTION PROPERLY. IF THERE IS INSUFFICIENT PRESSURE AT THE POINT OF CONNECTION, A BOOSTER PUMP MAY BE REQUIRED.
6. LOCATION OF IRRIGATION COMPONENTS WITHIN THE BUILDING ARE SHOWN SCHEMATIC AND SHOULD CORRELATE WITH ARCHITECTURAL PLAN SET.

SEE DETAIL SHEET FOR SCHEDULE, DETAILS, & SPECIFICATIONS

THIS PLAN TO BE UTILIZED FOR IRRIGATION PURPOSES ONLY

4 FOR REVISION 4 ONLY

PROFESSIONAL CERTIFICATION
I, MICHAEL J. OGELL, 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. 21312, EXPIRATION DATE: 9/14/08

STATE OF MARYLAND — MICHAEL J. OGELL — NO. 21312 — REGISTERED PROFESSIONAL ENGINEER

2 For Revision #2 Bohler Engineering, P.C.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/11/07
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4/16/07
DIRECTOR — DATE 4/12/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

REV.	DATE	DESCRIPTION	BY
4	6/18/15	Expand tire center; add microbio facilities	BOHLER
2	8/30/07	Revised Retaining Wall	Bohler

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION
c/o PROP TAX DEPARTMENT 1000
999 LAKE DRIVE
ISSAQUAH, WA 98027-8990
PHONE: (703) 406-6862.

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 PARCEL G ZONED NEW TOWN
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: IRRIGATION PLAN

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID H. NEMECEK •
• (703) 709-9500 FAX: (703) 709-9501 • WWW.BOHLER.COM

STATE OF MARYLAND — ADAM J. VOLANTE — NO. 21342 — REGISTERED PROFESSIONAL ENGINEER — DATE:

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	1"=30'
DRAWING NO.:	28 OF 29

SDP 06-111

L=377.97
CHB=S66°55'41"E
CHD=376.13 (TOTAL)

R=638.30
Δ=48°53'56"
L=544.76
CHB=S32°38'09"E
CHD=528.37

PARCEL 'G'
BENSON EAST

PART OF
HRD LAND HOLDINGS, INC.
LIBER 5289 FOLIO 330

PART OF
(LIBER 1946 FOLIO 587)
(LIBER 403 FOLIO 35)
AREA: 505,098 S.F. OR 11.5954 AC.
ZONED: NEW TOWN DISTRICT

PROPOSED
COSTCO WHOLESALE
EASTERN U.S.
142,759 S.F. (TOTAL)
1 STORY RETAIL SALES

PROP. 1250 SF BUILDING EXPANSION

PROP. 112 SF MICRO-BIORETENTION FACILITY

PROP. 4" SCHEDULE 40 PVC SLEEVE (TYP.)

PROP. 1 1/2" ELECTRIC ZONE VALVE (TYP.)

PROP. PVC SLEEVING FOR IRRIGATION PIPING TO EXTEND A MIN. OF 18" INTO THE LANDSCAPE AREA. (TYP.)

PROP. 2" CONDUIT FOR ZONE VALVE WIRING (TYP.)

PROP. 6" SCHEDULE 40 PVC SLEEVE (TYP.)

PROP. 2 1/2" PVC MAINLINE (TYP.)

PROP. 1" ELECTRIC ZONE VALVE

PROP. 16 STATION CONTROLLER

PROP. 2" BACKFLOW PREVENTER

PROP. 2" COUNTY APPROVED METER

PROP. RAIN SENSOR

PROP. 1 1/2" ELECTRIC ZONE VALVE

PROP. 2" CONDUIT FOR ZONE VALVE WIRING (TYP.)

PROP. 4" SCHEDULE 40 PVC SLEEVE (TYP.)

PROP. 6" SCHEDULE 40 PVC SLEEVE (TYP.)

PROP. BEDLINE (TYP.)

PROP. 2 1/2" PVC MAINLINE (TYP.)

PROP. 1 1/2" ELECTRIC ZONE VALVE (TYP.)

PROP. 4" SCHEDULE 40 PVC SLEEVE (TYP.)

PROP. 2 1/2" PVC MAINLINE (TYP.)

39' Private Retaining wall maintenance Easement Plat #

Prop. Guide Rail

Prop. Retaining Wall (See sheet 2 of 3)

1" POLY.

1 1/2" POLY.

LOD

130.00'
352.00'
294.00'
54.00'
114.50'
213.50'
48.08'
40.00'
40.00'
440.00'
N56°48'00"W
856.09'
S33°12'00"W
370.00'

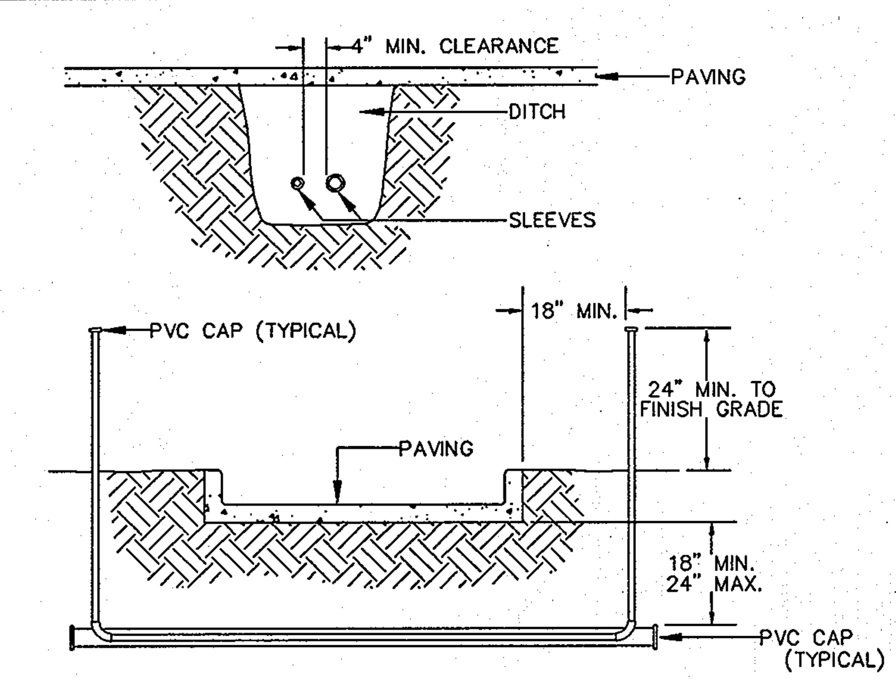
MARIE CURIE DRIVE (PRIVATE ROAD)

MH-105A

105

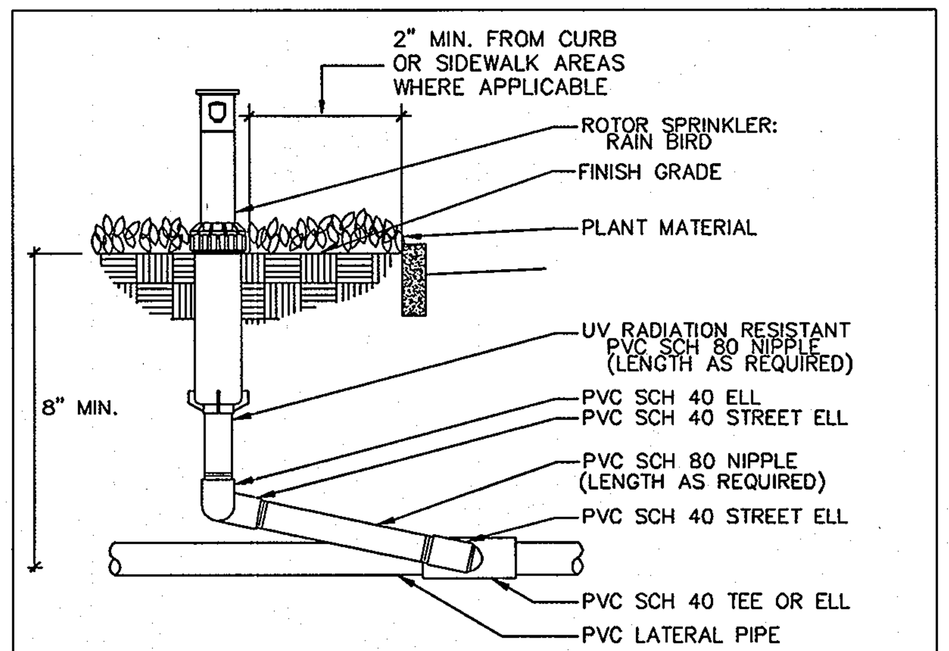
(FUTURE PRIVATE ROAD)

M:\04\Costco\S040011\Site Development Plan\Ver 3\S040011_01BH.dwg, 3/6/2007 4:08:21 AM, mgissel



NOTES:
1. ALL PVC IRRIGATION SLEEVES TO BE CLASS 200 PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
4. MECHANICALLY TAMP TO 95% PROCTOR.

SLEEVING
NOT TO SCALE



3500 SERIES ROTOR
NOT TO SCALE

IRRIGATION SCHEDULE

KEY: ZONE NUMBER; L=LAWN ZONE, B=BED ZONE; GALLONAGE

QUANTITY	SYMBOL	DESCRIPTION
1		RAINBIRD INDOOR 16 STATION CONTROLLER (ESP-16LXi PLUS)
1		WILKINS REDUCED PRESSURE 2" RPZ BACKFLOW PREVENTER (975XL)
1		2" COUNTY APPROVED WATER METER
1	RS	RAINBIRD RAINSENSOR W/ROOF CONDUIT (RSD-CEx)
3	ZONE GPM	1" RAINBIRD ELECTRIC ZONE VALVE WITH FLOW CONTROL (100-PEB-PRS-D)
12	ZONE GPM	1 1/2" RAINBIRD ELECTRIC ZONE VALVE WITH FLOW CONTROL (150-PEB-PRS-D)
2630±L.F.		2 1/2" PVC MAINLINE CLASS 200 IPS PLASTIC PIPE
------		POLYETHYLENE SDR-PRESSURE RATED TUBE (SIZE AS NOTED)
770 ±L.F.		6" SCHEDULE 40 PVC SLEEVE
2015±L.F.		4" SCHEDULE 40 PVC SLEEVE
1190±L.F.		2" CONDUIT
1		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 5' RADIUS (1804-5Q)
3		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 5' RADIUS (1804-5H)
59		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 8' RADIUS (1804-8Q)
82		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 8' RADIUS (1804-8H)
24		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 10' RADIUS (1804-10Q)
172		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 10' RADIUS (1804-10H)
16		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 12' RADIUS (1804-12Q)
28		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 12' RADIUS (1804-12H)
41		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 15' RADIUS (1804-15Q)
11		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 15' RADIUS (1804-15H)
1		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 15' RADIUS (1804-15TQ)
1		RAINBIRD MPR SERIES POP UP SPRAY HEAD – 15' RADIUS (1804-15F)
22		RAINBIRD MPR SERIES SPECIAL PATTERN SPRAY HEAD – 4'x30' (1804-15SST)
36		RAINBIRD MPR SERIES SPECIAL PATTERN SPRAY HEAD – 4'x15' (1804-15EST)
19		RAINBIRD 3500 SERIES ROTOR – NOZZLE .75/17' RADIUS (3504-PC)
3		RAINBIRD 3500 SERIES ROTOR – NOZZLE 1.0/21' RADIUS (3504-PC)
3		RAINBIRD 3500 SERIES ROTOR – NOZZLE 1.5/23' RADIUS (3504-PC)
4		RAINBIRD 3500 SERIES ROTOR – NOZZLE 2.0/27' RADIUS (3504-PC)
1		RAINBIRD 5000 SERIES ROTOR – NOZZLE 4.0/40' RADIUS (5004-PC)

IRRIGATION CONTRACTOR SHALL UTILIZE RAINBIRD COMPONENTS LISTED ABOVE OR APPROVED EQUAL. SCHEDULE EXCLUDES FITTINGS, SOLVENT CEMENTS, ELECTRICAL WIRE, AND MISCELLANEOUS IRRIGATION COMPONENTS.

IRRIGATION SPECIFICATIONS

PART 1 – GENERAL

1.01 SCOPE

A. Provide complete sprinkler installation as detailed and specified herein, including furnishing all labor, materials, and equipment for the proper installation. Work includes but is not limited to:
1. Trenching and backfill.
2. Automatic controlled system.
3. Upon completion of installation, supply drawings showing details of construction including location of mainline piping, manual and automatic valves, electrical supply to valves, and specifically exact location of automatic valves.

B. NOTE: All sleeves as shown on plans will be furnished by General Contractor. Meter and power source to be provided by General Contractor.

1.02 APPLICABLE STANDARDS

A. ASTM
B. D2464 – Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings Threaded, Schedule 40
C. D2466 – Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings Socket Type, Schedule 40
D. D2564 – Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings
E. Standard recommended practice for:
1. D2855 – Making Solvent – Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

1.03 MAINTENANCE AND GUARANTEE

A. Materials and workmanship shall be fully guaranteed for one (1) year after final acceptance.

B. Provide maintenance of system, including raising and lowering of heads to compensate for lawn growth, cleaning and adjustment of heads, raising and lowering of shrub heads to compensate for shrub growth, for one (1) year after completion of installation.

C. Contractor shall blowout, close and open the system once during the guarantee system.

D. Guarantee is limited to repair and replacement of defective materials or workmanship, including repair of backfill settlement.

1.04 SUBMITTALS

A. Use of materials differing in quality, size, or performance from those specified will only be allowed upon written approval of Owner/Landscape Architect. The decision will be based on comparative ability of material or article to perform fully all purposes of mechanics and general design considered to be possessed by item specified.

Bidders desiring to make a substitution for specified sprinklers shall submit manufacturer's catalog sheet showing full specification of each type of sprinkler proposed as a substitute, including discharge in GPM maximum allowable operating pressure at sprinkler.

Approval of substitute sprinkler shall not relieve Contractor of his responsibility to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system.

B. It is the responsibility of the Irrigation Contractor to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system. If Irrigation Contractor notes any problems in head spacing or potential coverage, it is his responsibility to notify the Landscape Architect in writing, before proceeding with work. Irrigation Contractor guarantees 100% coverage of all areas to be irrigated.

C. Contractor to furnish an as built drawing of entire system for review prior to acceptance.

1.05 TESTING

A. Perform testing required with other trades, including earthwork, paving, and plumbing, to avoid unnecessary cutting, patching and boring.

1.06 COORDINATION

A. Coordinate installation with other trades, including earthwork, paving, and plumbing, to avoid unnecessary cutting, patching and boring.

PART 2 – PRODUCTS

2.01 GENERAL

A. Sprinkler Mains: Sprinkler Mains are that portion of piping from water source to operating valves. This portion of piping is subject to surges, being a closed portion of sprinkler system. Hydrant lines are considered a part of sprinkler main.

B. Lateral Piping: Lateral piping is that portion of piping from operating valve to sprinkler heads. This portion of piping is not subject to surges, being an "open end" portion of sprinkler system.

2.02 POLY VINYL CHLORIDE PIPE (PVC)

A. PVC pipe shall be manufactured in accordance with commercial standards noted herein.

B. Marking and Identification: PVC pipe shall be continuously and permanently marked with the following information: manufacturer's name, pipe size, type of pipe, and material, SDR number, product standard number, and the NSF (National Sanitation Foundation) seal.

C. PVC Pipe Fittings: Shall be of the same material as the PVC pipe specified and shall be compatible with PVC pipe furnished.

2.03 POLYETHYLENE PIPE

A. Polyethylene pipe to be manufactured and supplied in accordance with commercial standards by a reputable dealer.

2.04 COPPER TUBING

A. Hard, straight, lengths of domestic manufacture only. No copper tube of foreign extrusion or any so-called irrigation tubing (thin wall) shall be used.

2.05 COPPER TUBE FITTINGS

A. Cast brass or wrought copper, sweat-solder type.

2.06 WIRE

A. Type UF with 4-64" insulation which is Underwriter's Laboratory approved for direct underground burial when used in a National Electric Code Class II Circuit (30 volts AC or less).

2.07 SCHEDULE 80 PVC NIPPLES

A. Composed of Standard Schedule 40 PVC Fittings and PVC meeting noted standards. No clamps or wires may be used. Nipples for heads and shrub risers, where applicable, to be nominal one-half (1/2") inch diameter by eight (8") inches long.

B. Polyethylene nipples six (6") inches long to be used on all pop-up spray heads.

2.08 MATERIALS – See Irrigation Plan

A. Sprinkler heads in lawn area as specified on plan.
B. PVC Pipe: Class 200, SPR 21
Copper Tubing (City Connection): Type "M"
24V Wire: Size 14, Type U.F.
C. Electric valves to be all plastic construction as indicated on plans.
D. Refer to drawing for backflow prevention requirements and flow valve. Coordinate exact location with Landscape Architect.

PART 3 EXECUTION

3.01 INSTALLATION – GENERAL

A. Contractor is to verify pressure and flow rates prior to beginning installation. System shall be designed at 55psi. Contractor to provide any pressure reducing valves or booster pumps to achieve static pressure as stated.
B. Staking: Before installation is started, place a stake where each sprinkler is to be located, in accordance with drawing. Staking shall be approved by Landscape Architect before proceeding.
C. Excavations: Excavations are unclassified and include earth, loose rock, rock or any combination thereof, in wet or dry state. Backfill trenches with material that is suitable for compaction and contains no lumps, clods, rock, debris, etc. Special backfill specifications, if furnished take preference over this general specification.
D. Backfill: Flood or hand-tamp to prevent after settling. Hand rake trenches and adjoining area to leave grade in as good or better condition than before installation.
E. Piping Layout: Piping layout is diagrammatic. Route piping around trees and shrubs in such a manner as to avoid damage to plantings. Do not dig within ball of newly planted trees or shrubs.

3.02 PIPE INSTALLATION

A. Sprinkler Mains: Install a four (4") inch minimum width trench with a minimum of twelve (12") inches of cover.
B. Lateral Piping: Install a four (4") inch wide minimum trench deep enough to allow for installation of sprinkler heads and valves, but in no case, with less than eight (8") inches of cover.
C. Trenching: Remove lumber, rubbish, and large rocks from trenches. Provide firm, uniform bearing for entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Remove foreign matter or dirt from inside of pipe before welding, and keep piping clean by approved means during and after laying of pipe.

3.03 PVC PIPE AND FITTING ASSEMBLY

A. Solvent: Use only solvent recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings of dirt, dust and moisture before applying solvent.
B. PVC to metal connection: Work metal connections first. Use a non-hardening pipe dope such as Permatex No. 2 on threaded PVC adapters into which pipe may be welded.

3.04 COPPER TUBING AND FITTING ASSEMBLY

A. Clean pipe and fitting thoroughly and lightly sand pipe connections to remove residue from pipe. Attach fittings to tubing in an approved manner using 50-50 soft solid core solder.

3.05 SHRUB SPRAY HEADS (FIXED)

A. Shrub Spray Heads: Supply in accordance with materials list, with nozzling in accordance with drawings. Drawings indicate size of nozzling and degree of arc. Determine correct degree of arc of nozzle (if conditions warrant) by area to be covered and by wind conditions that may affect coverage.
B. Height: Install heads on PVC Schedule 80 risers sufficiently high to water under shrubs and plants, or as directed by the Landscape Architect.

3.06 POP-UP SPRAY HEADS

A. Supply pop-up spray heads in accordance with materials list and plan. Attach sprinkler to lateral piping with a semi-flexible polyethylene nipple not less than tree (3") inches or more than six (6") inches long.

3.07 VALVES

A. Supply valves in accordance with materials list and sized according to drawings. Install valves in a level position in accordance with Manufacturer's Specifications. See plan for typical installation of electric valve, valve box.

3.08 WIRING

A. Supply wiring from the automatic sprinkler controls to the valves. No conduit will be required for U.F. wire unless otherwise noted on the plan. Wire shall be tucked under the piping.

B. A separate wire is required from the control to each electric valve. A common neutral wire is also required from each control to each of the valves served by each particular control.

C. Bundle multiple wires and tape them together at ten (10') foot intervals. Install ten (10") inch expansion coil at not more than one hundred (100') foot intervals. Make splices waterproof.

3.09 AUTOMATIC SPRINKLER CONTROLS

A. Supply in accordance with Irrigation Plan. Install according to manufacturer's recommendations.

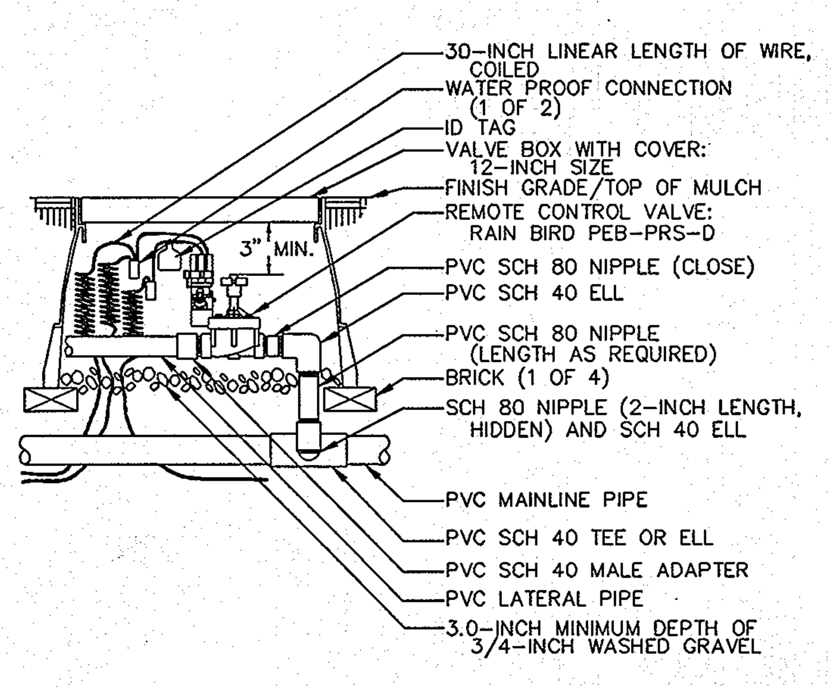
3.10 TESTING

A. Sprinkler Mains: Test sprinkler main only for a period of twelve (12) to fourteen (14) hours under normal pressure. If leaks occur, replace joint or joints and repeat test.

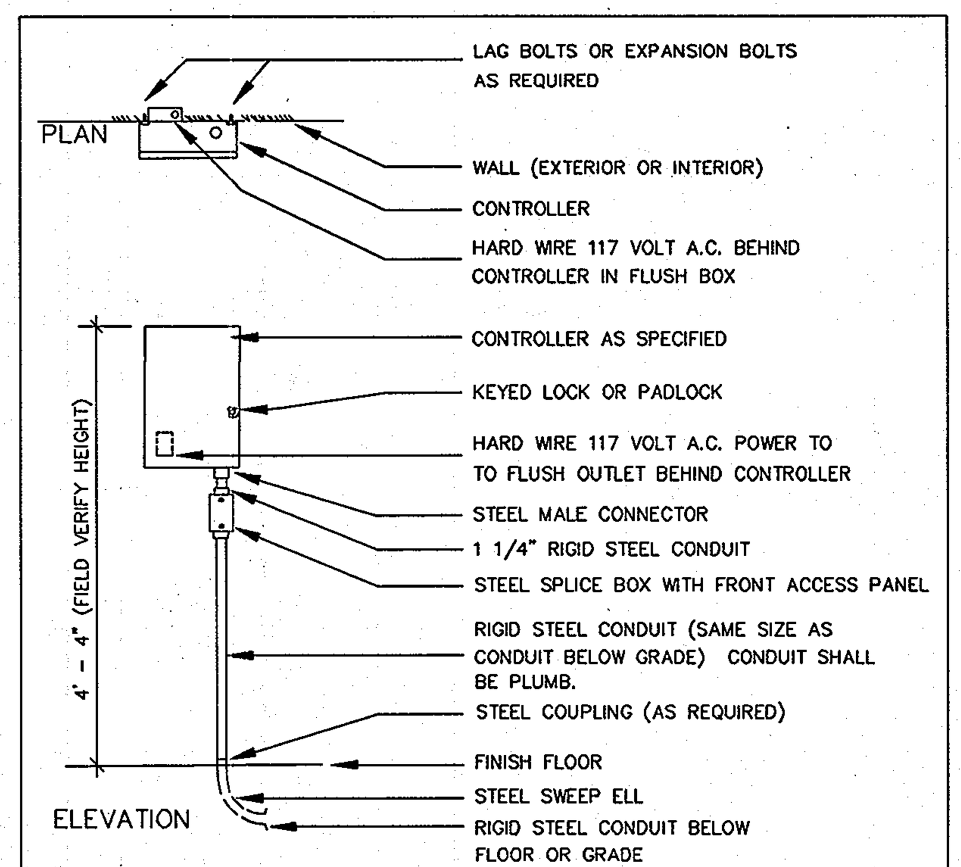
B. Complete tests prior to backfilling. Sufficient backfill material may be placed in trenches between fittings to insure stability of line under pressure. In each case, leave fittings and couplings open to visual inspection for full period of test.

3.11 FINAL ADJUSTMENT

A. After installation has been completed, make final adjustment of sprinkler system in preparation for Landscape Architect's final inspection. Completely flush system to remove debris from lines and turning on system. Check sprinklers for proper operation and proper alignment for direction of flow. Check each section of spray heads for operating pressure and balance to other sections by use of flow adjustment and top of each valve. Check nozzling for proper coverage. Prevailing wind conditions may indicate that arch of angle of spray should be other than shown on drawings. In this case, change nozzles to provide correct coverage.



REMOTE CONTROL VALVE
NOT TO SCALE



WALL MOUNTED CONTROLLER
NOT TO SCALE

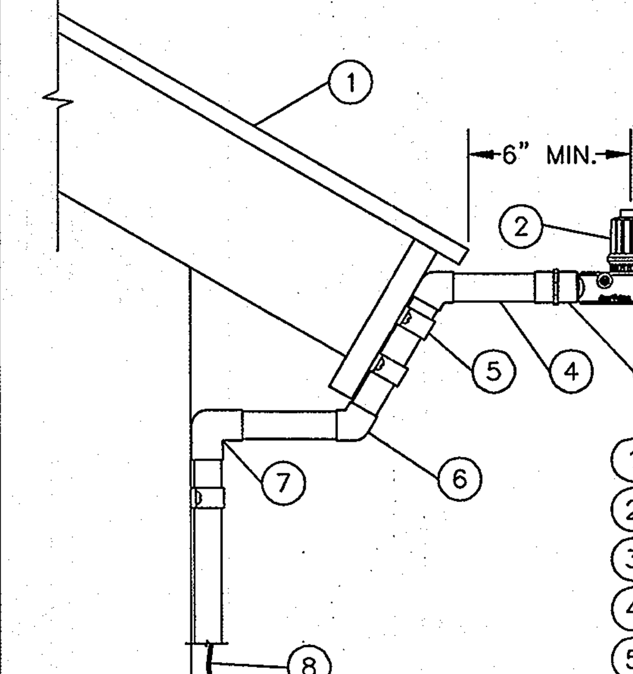
PLANNING BOARD APPROVAL STAMP

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[signature] 4/11/07
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
[signature] 4/16/07
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
[signature] 4/16/07
DIRECTOR DATE

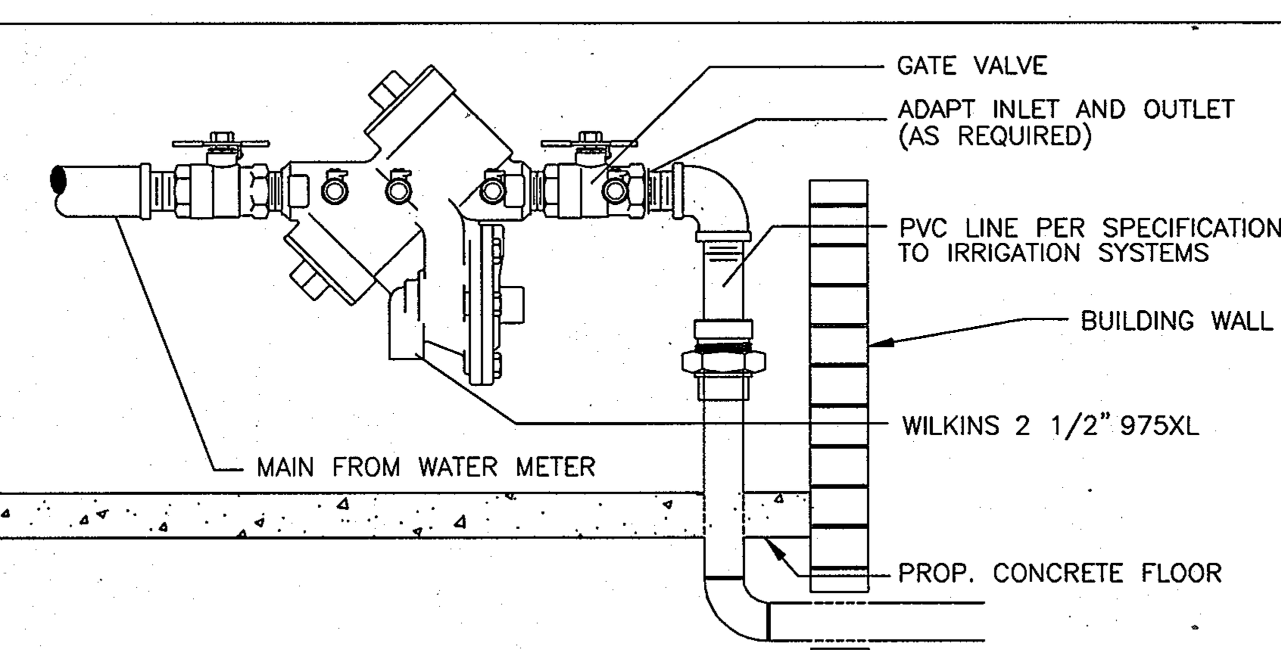
~~APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS~~
COUNTY HEALTH OFFICER DATE
HOWARD COUNTY HEALTH DEPARTMENT

M:\04\Costco\S040011.01\MD040001\Site Development Plans\Rev 5\S040011.01IR1.dwg, 3/6/2007 10:28:18 AM

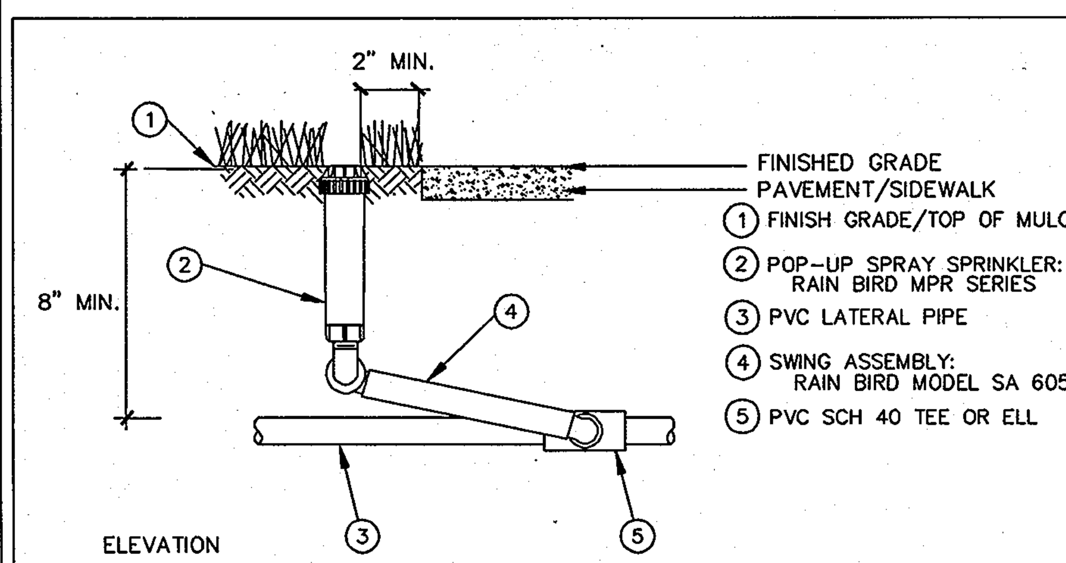


1. EAVE OF BUILDING
2. RAIN SENSOR: RAIN BIRD RSD-CEx
3. FEMALE ADAPTER (SLIP X FIPT)
4. 3/4-INCH CLASS 200 PVC PIPE
5. SECURE WITH APPROVED PIPE ANCHOR (1 OF 3)
6. 45° EL (SLIP X SLIP) (1 OF 2)
7. 90° EL (SLIP X SLIP)
8. WIRE TO IRRIGATION CONTROLLER

RAIN SENSOR – RSD – CEx ROOF CONDUIT
NOT TO SCALE



BACKFLOW PREVENTER
NOT TO SCALE



1. FINISH GRADE/TOP OF MULCH
2. POP-UP SPRAY SPRINKLER: RAIN BIRD MPR SERIES
3. PVC LATERAL PIPE
4. SWING ASSEMBLY: RAIN BIRD MODEL SA 6050
5. PVC SCH 40 TEE OR ELL

POP-UP SPRAY SPRINKLER
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6000

PROJECT: BENSON EAST
PARCEL G; ONE STORY RETAIL BUILDING
(COSTCO); GATEWAY OVERLOOK
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN
PARCEL G
BENSON EAST
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: IRRIGATION DETAILS

BOHLER ENGINEERING, P.C.
• PROFESSIONAL ENGINEERING SERVICES •
• 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 •
• CONTACT: DAVID B. NEMECEK
• (703) 709-9500 FAX: (703) 709-9501 | • WWW.BOHLERENG.COM

STATE OF MARYLAND
ADAM J. VOLANTH
No 21342
REGISTERED PROFESSIONAL ENGINEER
ADAM J. VOLANTH
PROFESSIONAL ENGINEER NO. 21342

DESIGNED BY:	MJG/JD
DRAWN BY:	B.M.H.
PROJECT NO.:	S040011.01
DATE:	11/22/06
SCALE:	NOT TO SCALE
DRAWING NO.:	29 OF 29

SDP 06-111