



**DEMOLITION NOTES**

- BOHLER ENGINEERING, P.C. IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION.
- 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.
- PRIOR TO STARTING ANY DEMOLITION CONTRACTOR IS RESPONSIBLE FOR:
  - ENSURING THAT COPIES OF ALL APPLICABLE PERMITS AND APPROVALS ARE MAINTAINED ON SITE AND AVAILABLE FOR REVIEW.
  - INSTALLING THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL AND/OR TREE PROTECTION MEASURES PRIOR TO SITE DISTURBANCE.
  - 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.
  - PROTECTING AND MAINTAINING IN OPERATION, ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED DURING ALL DEMOLITION ACTIVITIES.
  - 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.
  - COORDINATION WITH UTILITY COMPANIES REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS MAY BE REQUIRED TO MINIMIZE THE IMPACT ON THE AFFECTED PARTIES.
  - 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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**

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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'
- 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.
- SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT PREPARED BY WHITESTONE ASSOCIATES, INC., DATED OCTOBER 20, 2005; ENTITLED: REPORT OF GEOTECHNICAL INVESTIGATION-PROPOSED COSTCO WHOLESALE SITE-MARYLAND INTERSTATE I-95 AND LITTLE PATUXENT-PARKWAY (MARYLAND ROUTE 175)-COLUMBIA, HOWARD COUNTY, MARYLAND; PROJECT NO.: WPOS-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.
- 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.
- 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.
- PAYMENT 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.
- 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.
- 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 FLOODING. 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.
- 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.
- 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:**

- DEVELOPER/OWNERS PLANS:**
  - 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).
  - 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 #24-4284-0).
  - 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).
  - 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 COLANGELLO

**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.: WPOS-7961  
 ENTITLED:  
 REPORT OF GEOTECHNICAL INVESTIGATION  
 PROPOSED COSTCO WHOLESALE SITE  
 MARYLAND INTERSTATE 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:**

- NO FIRE HYDRANT SHALL BE LOCATED WITHIN 6 FEET OF ANY CURB RETURN, DRIVEWAY, UTILITY POLE, LIGHT POLE, OR ANY OTHER OBSTRUCTION.
- ALL PROPOSED WATER METERS ON-SITE TO BE LOCATED INSIDE OF THE BUILDING.
- ALL WATER MAINS ON SITE SHALL BE D.I.P. (CLASS 52 UNLESS OTHERWISE NOTED).
- 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:**

- 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.
- ALL SANITARY SEWER LINES SHALL BE D.I.P. OR PVC UNLESS OTHERWISE NOTED.
- ALL SANITARY MANHOLES ON-SITE SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.

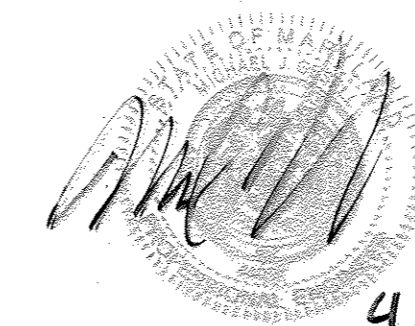
STRUCTURE NO.	DESCRIPTION	INV. IN	INV. OUT	TOP ELEV.
1	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	317.32 (24")	307.44 (24")	323.48
2	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	317.53 (24")	317.43 (24")	323.25
3	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	318.90 (18")	318.40 (24")	323.84
4	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	319.50 (18")	323.84
5	EXISTING MANHOLE (HOWARD CO. STD. G 5.03)	302.74 (36") 299.22 (48")	299.22 (48")	327.00
6	EXISTING MANHOLE (HOWARD CO. STD. G 5.03)	317.22 (30")	299.48 (48")	327.00
7	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	303.77 (36") 324.86 (15")	303.67 (36")	327.38
8	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	322.74 (15") 304.88 (36")	304.78 (36")	326.64
9	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	305.77 (36") 317.55 (18")	305.67 (36")	328.50
10	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	306.72 (36") 319.89 (24") 308.02 (30")	306.62 (36")	328.60
11	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	310.97 (24") 318.30 (24")	310.47 (30")	328.30
12	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	319.01 (24")	318.91 (24")	328.70
13	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	320.01 (24")	319.91 (24")	328.86
14	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	320.56 (24")	320.46 (24")	328.90
15	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	324.91 (8")	324.81 (24")	328.90
16	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	311.65 (24")	311.55 (24")	327.62
17	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	314.00 (24")	313.90 (24")	323.28
18	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	315.72 (15")	314.97 (24")	321.40
19	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	315.19 (10")	316.02 (15")	321.62
20	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	320.97 (24")	320.87 (24")	324.54
21	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	321.04 (24")	324.61
22	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	322.98 (15")	325.73
23	PROP. TYPE 'A-10' INLET (HOWARD CO. STD. SD 4.02)	--	324.94 (15")	327.69
24	PROP. PRECAST MANHOLE (HOWARD CO. STD. G 5.11)	324.11 (15")	312.42 (EX. 36")	327.67
25	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**

- THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
- WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
- A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
- THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- 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.

FOR REVISION 5 (AS-BUILT) ONLY



I HEREBY CERTIFY, BY MY SEAL, THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS "AS-BUILT" PLAN MEET THE APPROVED PLANS AND SPECIFICATIONS.

MICHAEL J. GASELL, #44097, 6/19/17

**MISS UTILITY**



BEFORE YOU DIG CALL 800-485-5777 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 THEREOF 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

**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 CONTRACTOR'S 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.

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION  
 DATE 4/14/07  
 APPROVED: DIVISION OF LAND DEVELOPMENT  
 DIRECTOR  
 DATE 4/16/07  
 APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT  
 DATE

5/26/17 MISS UTILITY STORM DRAIN AS-BUILT

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

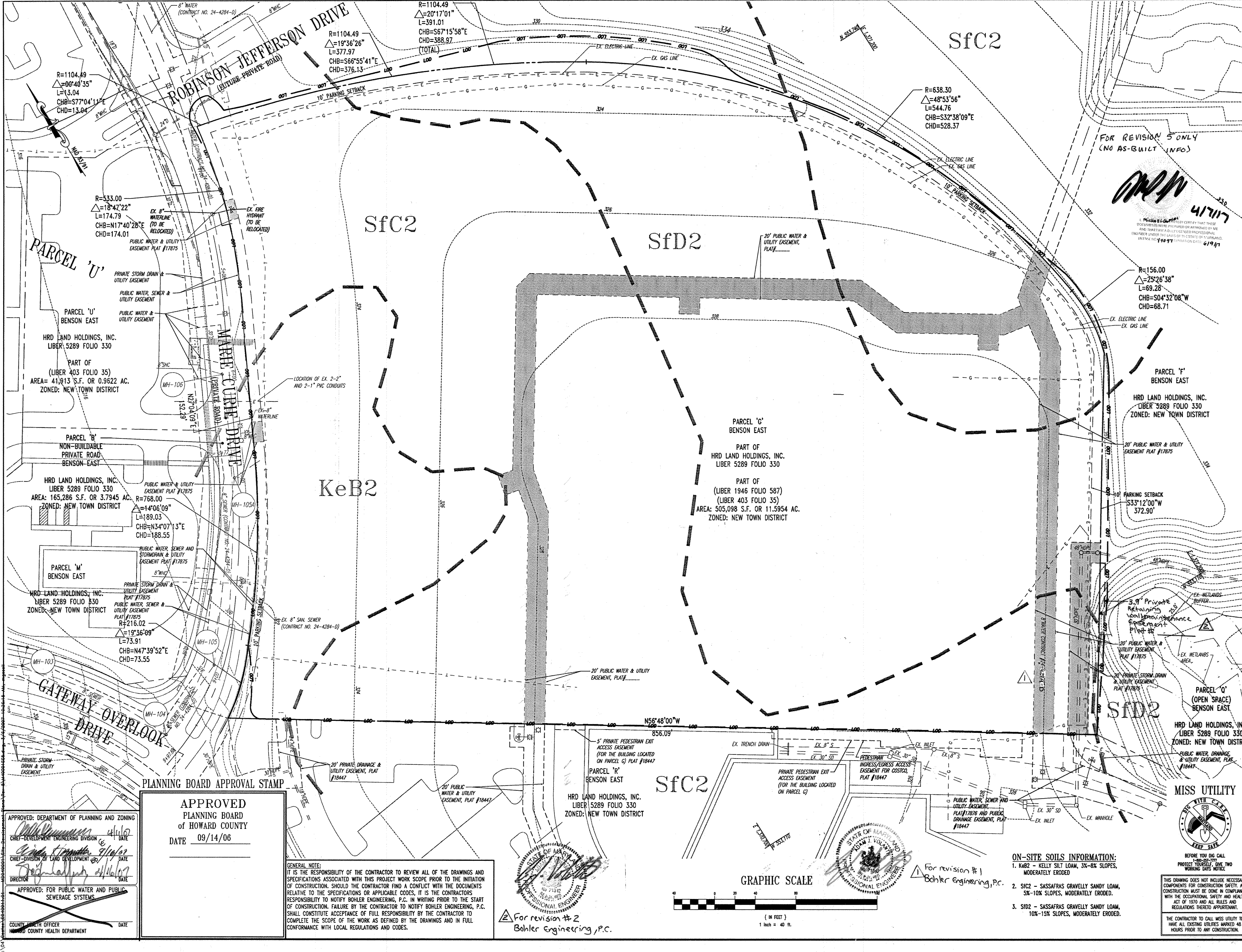
PROJECT: BENSON EAST  
 PARCEL G, ONE STORY RETAIL BUILDING  
 (COSTCO); GATEWAY OVERLOOK  
 SHOPPING CENTER

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

TITLE: GENERAL NOTES

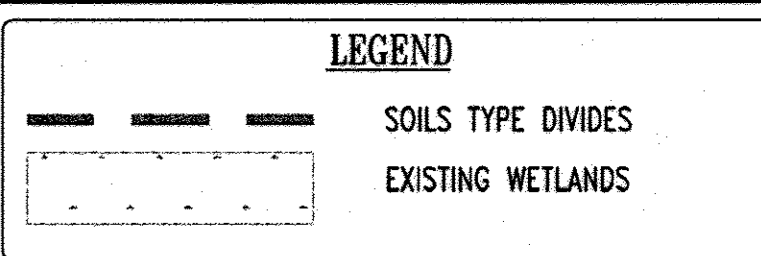
**BOHLER ENGINEERING, P.C.**  
 \*PROFESSIONAL ENGINEERING SERVICES\*  
 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164  
 \*CONTACT: DAVID B. NEMCEK  
 (703) 709-9600 FAX: (703) 709-9601 | WWW.BEENGINEERING.COM

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  
 ADAM J. VOLANTH  
 PROFESSIONAL ENGINEER NO. 21342



- REFERENCE:**
- SOIL SURVEY  
 HOWARD COUNTY, MD  
 PREPARED 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 0055 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, P.C.

- 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  
 SOP-04-163  
 ROADWAY AND STORM DRAIN PLANS PREPARED BY:  
 PATTON, HARRIS, RUST AND ASSOCIATES, P.C.  
 DATED: 8/18/05 REVISED 4/20/06  
 SOP-04-163
  3. REFER TO THE COVER SHEET FOR THE LEGEND.
  4. REFER TO GENERAL NOTES SHEET FOR STANDARD DEMOLITION 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	8/30/07	Revised retaining wall easement	Bohler
1	4/24/07	Revised Public Water contract #5	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 57 GRID PARCEL G & 2 ZONED NEW TOWN

**EXISTING CONDITIONS AND DEMOLITION PLAN**

**BOHLER ENGINEERING, P.C.**  
 PROFESSIONAL ENGINEERING SERVICES  
 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA 20164  
 CONTACT: LAYO B. BOHLER  
 (703) 709-9600 FAX: (703) 709-9501

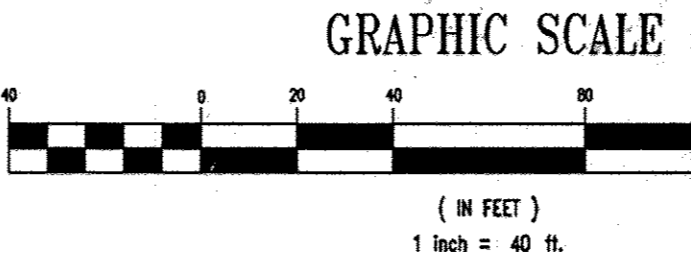
DESIGNED BY: M.J.G./JD  
 DRAWN BY: B.M.H.  
 PROJECT NO.: SD040011.01  
 DATE: 11/22/06  
 SCALE: 1"=40'  
 DRAWING NO.: 3 OF 29

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION  
 CHIEF-DIVISION OF LAND DEVELOPMENT  
 DIRECTOR  
 APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT

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

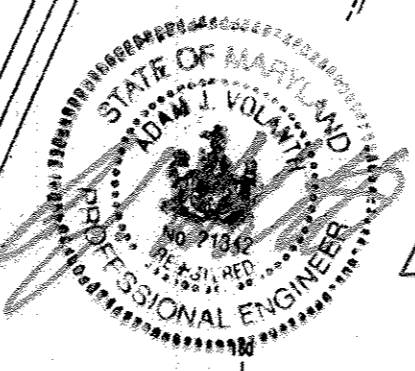
**GENERAL NOTE:**  
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S 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 #2  
 Bohler Engineering, P.C.



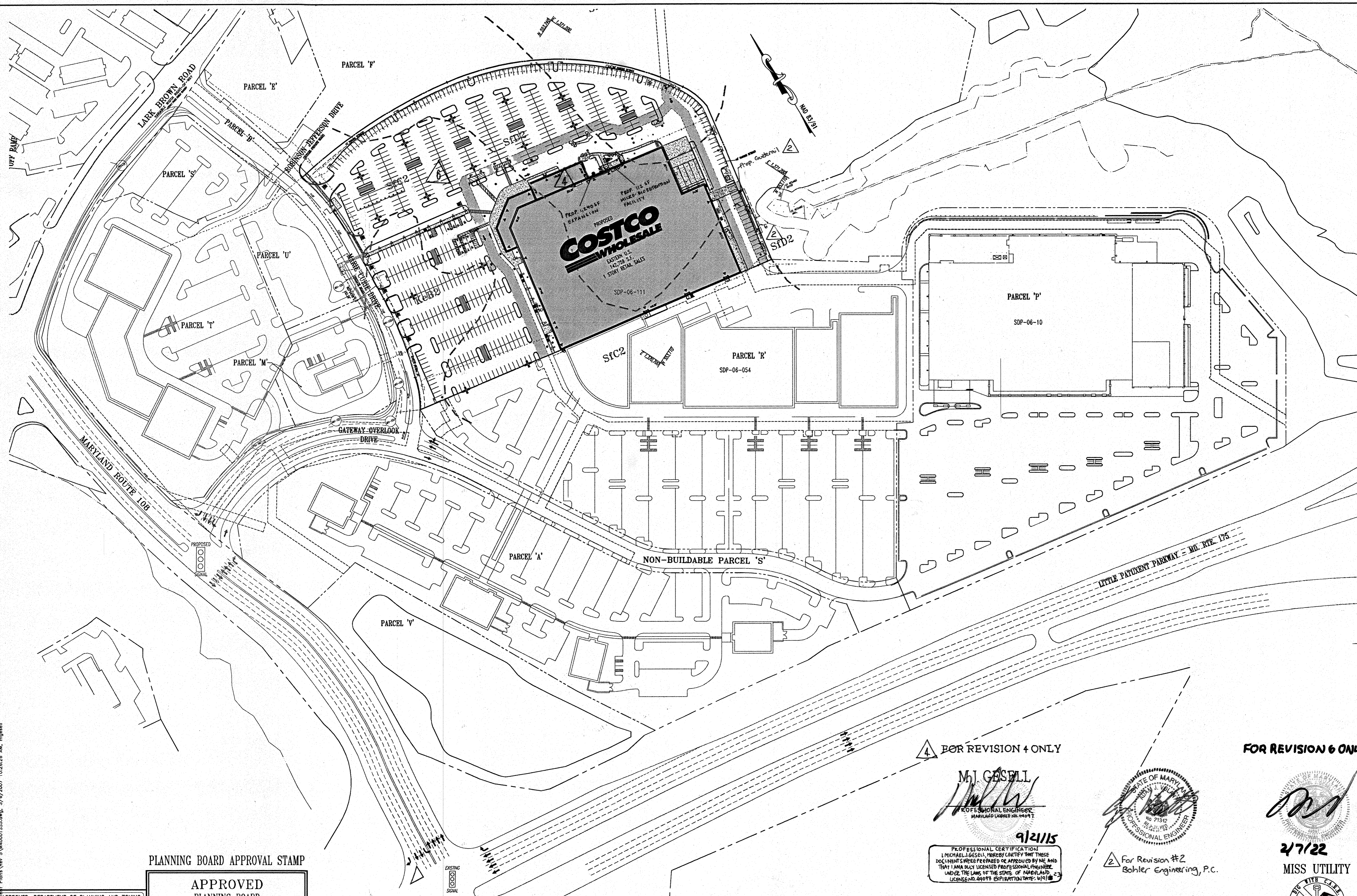
- ON-SITE SOILS INFORMATION:**
1. KeB2 - KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED
  2. Sfc2 - SASSAFRAS GRAVELLY SANDY LOAM, 5%-10% SLOPES, MODERATELY ERODED.
  3. Sfd2 - SASSAFRAS GRAVELLY SANDY LOAM, 10%-15% SLOPES, MODERATELY ERODED.

BEFORE YOU DIG CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.



PLANNING BOARD APPROVAL STAMP

For revision #1  
 Bohler Engineering, P.C.



File No. 5/14/001555.dwg, 3/17/2007 10:28:26 AM, mjsell

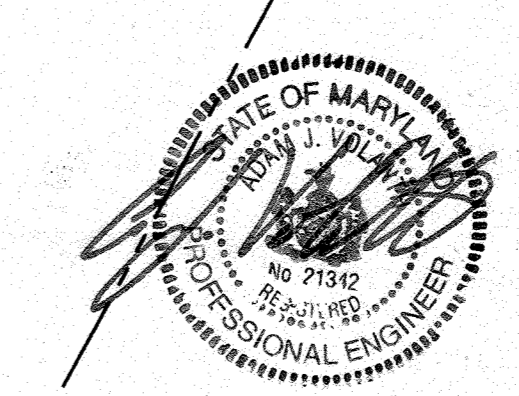
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION  
 DATE 4/16/07  
 CHIEF-DIVISION OF LAND DEVELOPMENT  
 DATE 4/16/07  
 DIRECTOR  
 DATE 4/16/07  
 APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT

**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 CONTRACTOR'S 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.

REV. DATE	DESCRIPTION	BY
6/11/06	ADD Layout Revisions	mjs
		8/1

**FOR REVISION 4 ONLY**  
 M.J. GSELL  
 PROFESSIONAL ENGINEER  
 MARYLAND LICENSE NO. 14497  
 9/21/15  
 PROFESSIONAL CERTIFICATION  
 I, MICHAEL J. GSELL, 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. APPROX. EXPIRATION DATE: 4/31/16

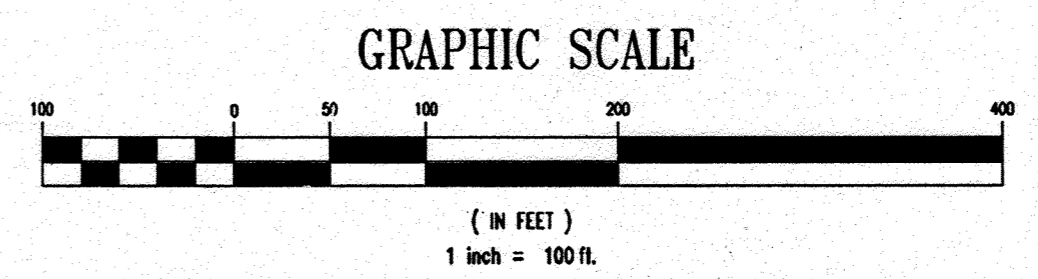


For Revision #2  
 Bohler Engineering, P.C.

**FOR REVISION 6 ONLY**  
 MISS UTILITY  
 2/7/22  
 BEFORE YOU DIG CALL 1-800-257-7777 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE



MISS UTILITY  
 2/7/22



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

FOR REVISION 5 ONLY  
 (NO AS-BUILT INFO)  
 4/7/17

**LEGEND**

	FLOOD PLAIN
	WETLANDS

REV.	DATE	DESCRIPTION	BY
5	2/10/17	MS OUTLINE STORMDRAIN AS-BUILT	Bohler
4	1/10/15	EXPANDED CENTER, ADD MICROBIO FACILITIES	Bohler
2	8/31/07	Revised Retaining Wall	Bohler

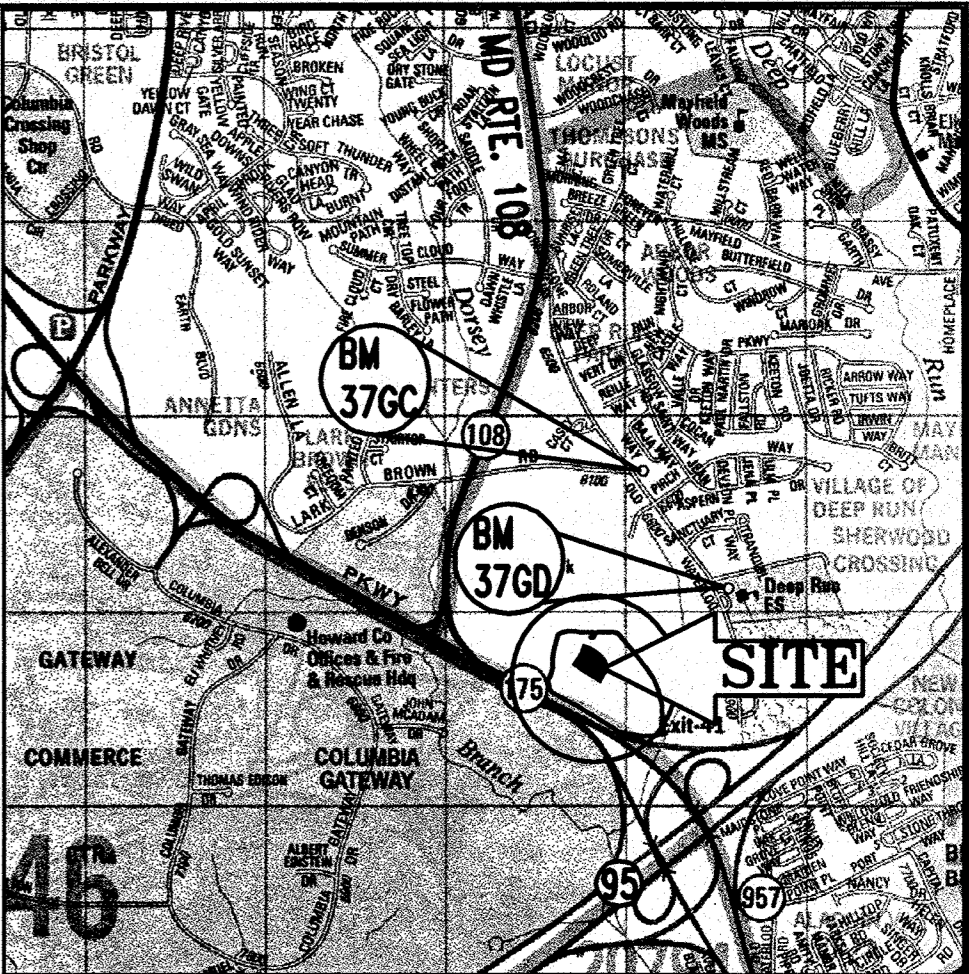
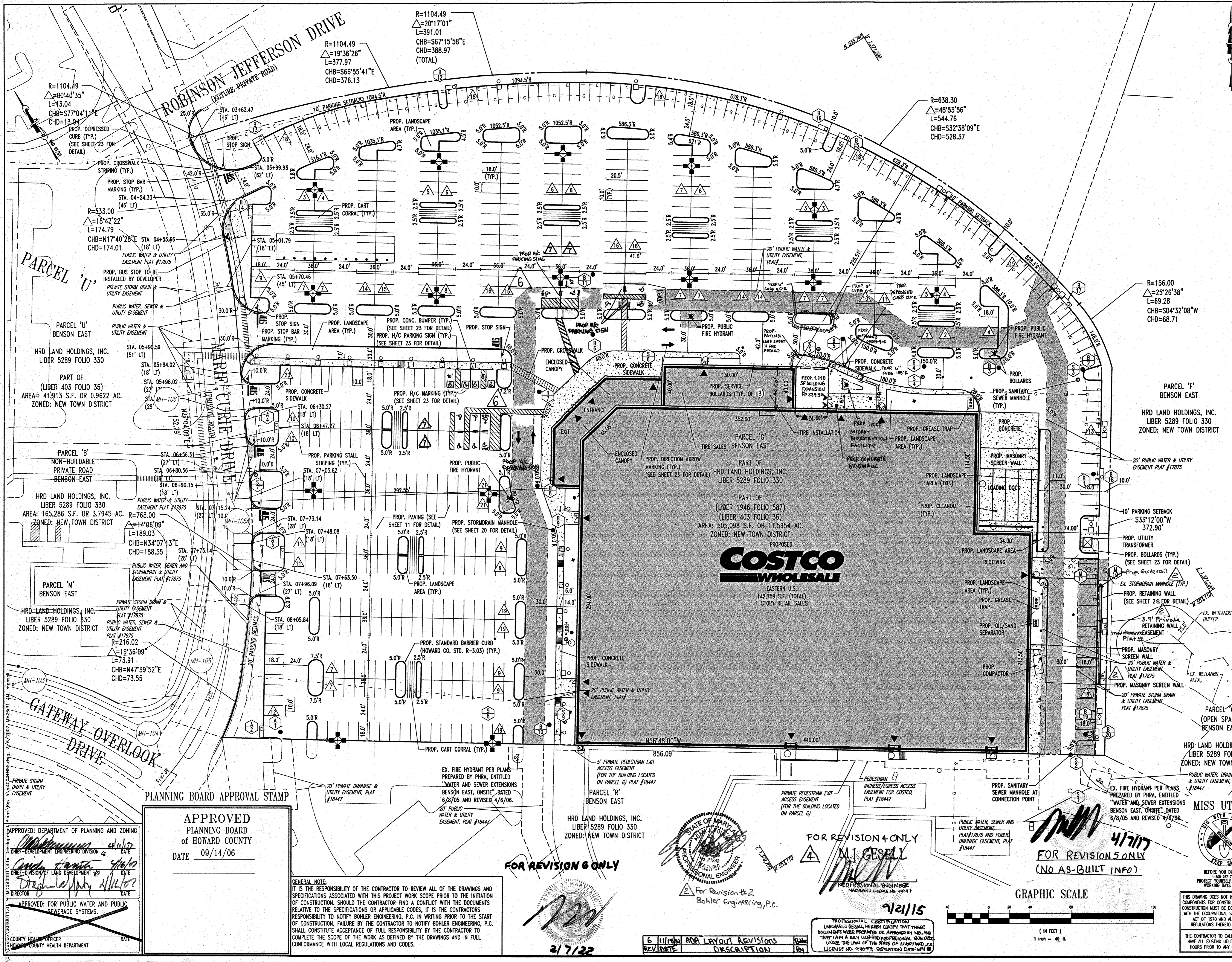
OWNER/DEVELOPER: COSTCO WHOLESALERS CORPORATION  
 C/O PROF TAX DEPARTMENT 1000  
 999 LAKE DRIVE  
 155A BVAH, WA 98021-8990  
 PHONE: (103) 406-0802

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  
 22000 LITTLE PATUXENT DRIVE, SUITE 200 STERLING, VIRGINIA, 20166  
 CONTACT: DAVID B. NEMCEK  
 (703) 709-8900 FAX: (703) 709-9501 WWW.BEENGINEERS.COM

DESIGNED BY: M.J.G./J.D.  
 DRAWN BY: B.M.H.  
 PROJECT NO.: S040011.01  
 DATE: 11/22/06  
 SCALE: 1"=100'  
 DRAWING NO.: 4 OF 29  
 ADAM J. VOLANTH  
 PROFESSIONAL ENGINEER NO. 21342



LOCATION MAP  
 COPYRIGHT: THE MAP PEOPLE  
 PERMIT USE NO. 20620153-5  
 SCALE: 1"=200'

LIMIT OF DISTURBANCE: 4,286.6 SF.

- NOTE**
- THIS PROPERTY IS LOCATED WITHIN THE GATEWAY OVERLOOK STOPPING CENTER.
  - 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
  - REFER TO THE COVER SHEET FOR THE LEGEND.
  - CONSTRUCTION OF MARIE CURIE DRIVE IS TO BE COMPLETED BY THE DEVELOPER. COSTCO IS SOLELY RESPONSIBLE FOR ENTRANCE CONSTRUCTION, SIDEWALK ALONG MARIE CURIE DRIVE TO THE NORTHERN PROPERTY LINE, AND THE BUS STOP PAD.

**BENCHMARK**

GEODETIC SURVEY CONTROL #376D	N 553,250.204
	E 1,372,353.605
	ELEV. 290.931'
	LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL
GEODETIC SURVEY CONTROL #376C	N 553,250.731
	E 1,370,946.348
	ELEV. 331.855'
	LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

5	2/4/17	MB OUTFALL STORM DRAIN AS BUILT	Bohler
4	6/18/16	EXPAND TIRE CENTER, ADD MICROBIO FACILITIES	Bohler
2	8/29/07	Revised Retaining Wall	Bohler
REV.	DATE	DESCRIPTION	BY
OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION			
010 PROP TAX DEPARTMENT 1000			
09A LAKE DRIVE			
ISSAQUAH, WA 98027-0770			
PHONE: (202) 406-0802			
PROJECT: BENSON EAST			
PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER			
AREA:	TAX MAP 37	GRID: 1 & 2	ZONED NEW TOWN
BENSON EAST			
6TH ELECTION DISTRICT			
HOWARD COUNTY, MARYLAND			
TITLE: DETAILED SITE PLAN			

**BOHLER ENGINEERING, P.C.**

PROFESSIONAL ENGINEERING SERVICES  
 25630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20166  
 CONTACT: DAVID B. NEMEC  
 (703) 709-8500 FAX: (703) 709-9501

DESIGNED BY: MJC/JD  
 DRAWN BY: B.M.H.  
 PROJECT NO.: S040011.01  
 DATE: 11/22/06  
 SCALE: 1"=40'  
 DRAWING NO.: 5 OF 29

DATE: 11/22/06

ADAM J. VOLANTI  
 PROFESSIONAL ENGINEER NO. 21342

APPROVED: DEPARTMENT OF PLANNING AND ZONING

DATE: 09/14/06

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER

**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 CONTRACTOR'S 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 6 ONLY**

2/7/22

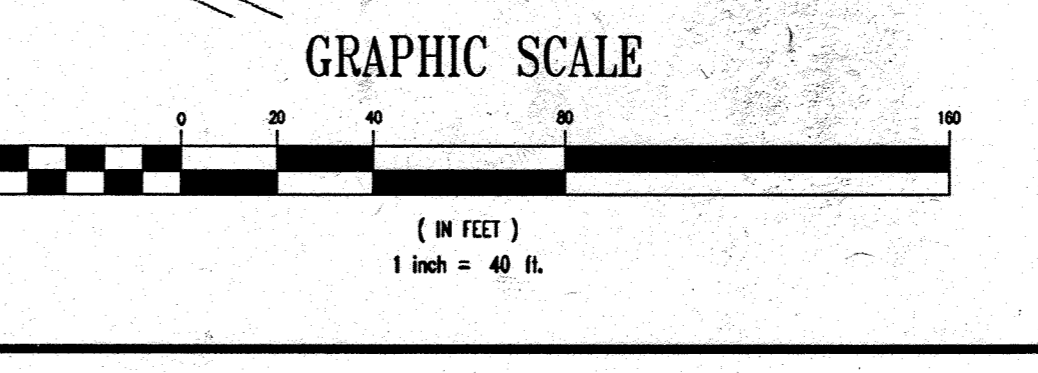
**FOR REVISION 4 ONLY**

M.J. GESELL  
 PROFESSIONAL ENGINEER  
 MARYLAND LICENSE NO. 14047

**FOR REVISION 5 ONLY**  
 (NO AS-BUILT INFO)

4/7/17

MISS UTILITY



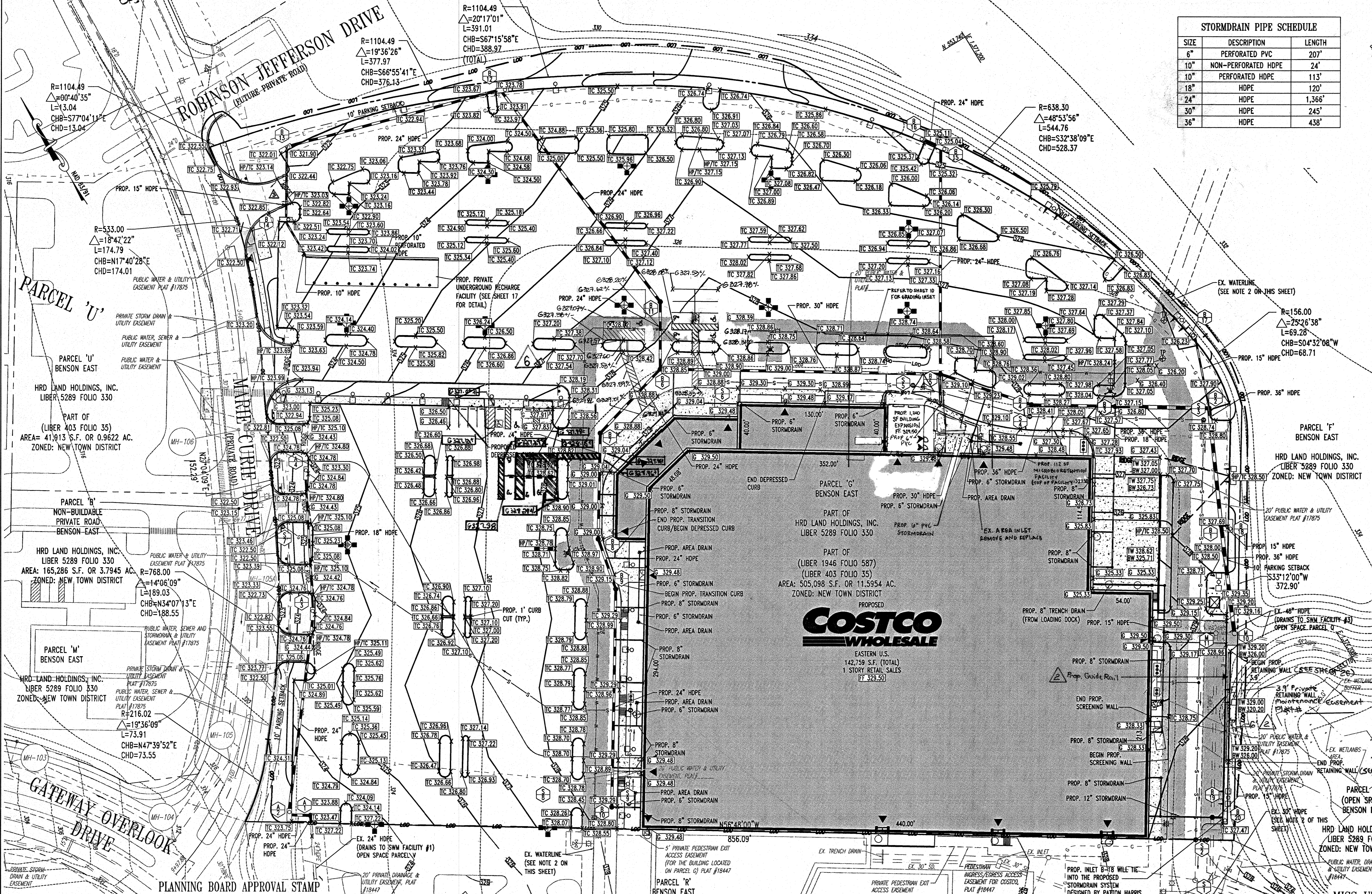
REFORE YOU DIG CALL  
 1-800-955-7777  
 PROJECT YOURSELF, GIVE TWO  
 WORKING DAYS NOTICE

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 THEREOF APPLICABLE.

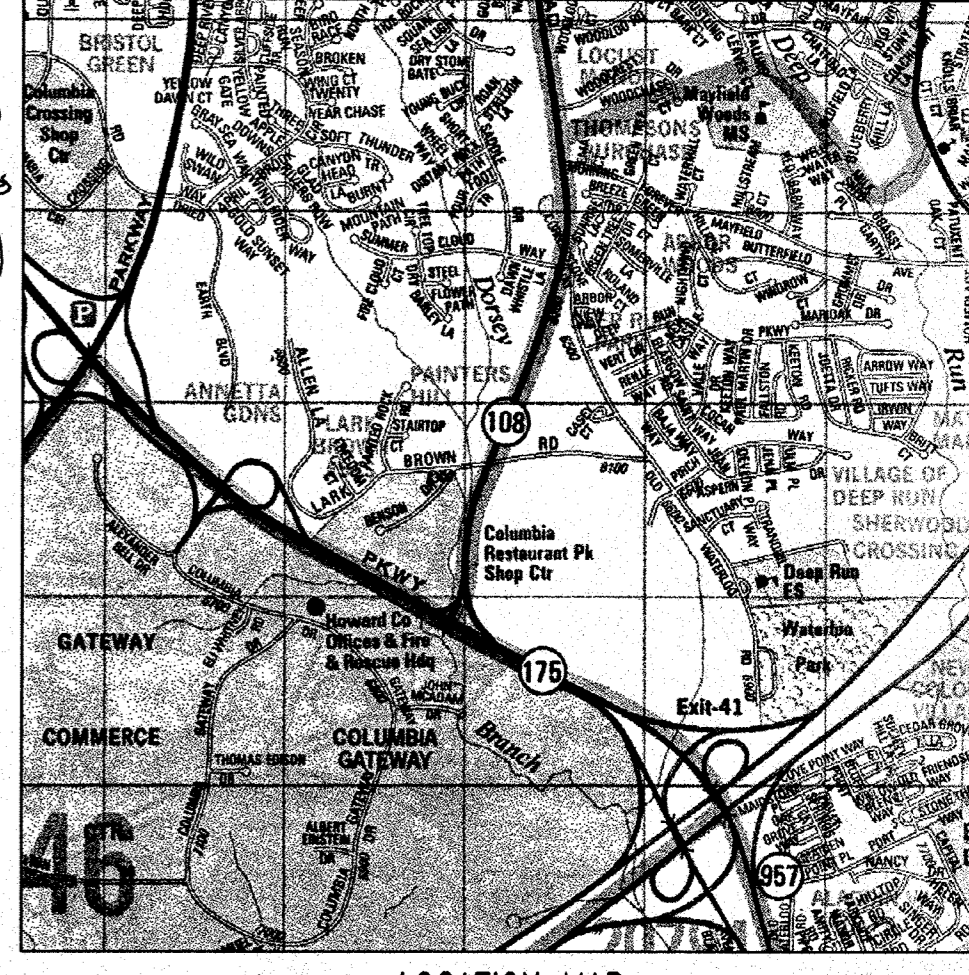
THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

6 UTILITIES AND LAYOUT REVISIONS

REV.	DATE	DESCRIPTION
6	2/7/22	UTILITIES AND LAYOUT REVISIONS



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 AND THE MAP PEOPLE  
 PERMIT USE NO. 20002153-5  
 SCALE: 1"=200'

NO.	REVISION	DATE	BY
1	INITIAL LAYOUT REVISIONS		
2	REVISED		

- NOTE**
- THIS PROPERTY IS LOCATED WITHIN THE GATEWAY OVERLOOK STOPPING CENTER.
  - 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
  - REFER TO THE COVER SHEET FOR THE LEGEND.
  - REFER TO GENERAL NOTES SHEET FOR STANDARD GRADING NOTES.
  - REFER TO GENERAL NOTES SHEET FOR STORMDRAIN STRUCTURE SCHEDULE.

**BENCHMARK**

GEODETIC SURVEY CONTROL #376D  
 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 #376C  
 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

NO.	DATE	DESCRIPTION	BY
5	2/16/17	ADD OUTFALL STORMDRAIN OUTFALL PERMITS	
4	10/16/15	EXPAND TIRE CENTER AND MICRO BIO FACILITIES PERMITS	
3	12-21-11	REVISION STORM DRAIN	
2	8/9/07	REVISED RETAINING WALL	
1			

**OWNER/DEVELOPER:** COSTCO WHOLESALE CORPORATION  
 410 PROP TAX DEPARTMENT 1000  
 999 LAKE DRIVE  
 ISSAQUAH, WA 98027-8990  
 PHONE: (703) 906-6862

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

**AREA:** TAX MAP 57 GRID 1 & 2 ZONED NEW TOWN  
 PARCEL G BENSON EAST  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**GRADING AND DRAINAGE PLAN**

**BOHLER ENGINEERING, P.C.**  
 PROFESSIONAL ENGINEERING SERVICES  
 10500 BAYVIEW DRIVE, SUITE 200 STEELING, VIRGINIA, 20164  
 CONTACT: DAVID B. NEMCEK  
 (703) 708-9500 FAX: (703) 708-9501 E: [dennemce@bohlereng.com](mailto:dennemce@bohlereng.com)

DESIGNED BY: M.J.G./JD  
 DRAWN BY: B.M.H.  
 PROJECT NO.: S040011.01  
 DATE: 11/22/08  
 SCALE: 1"=40'  
 DRAWING NO.: 6 OF 29

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION  
 DATE: 09/14/06

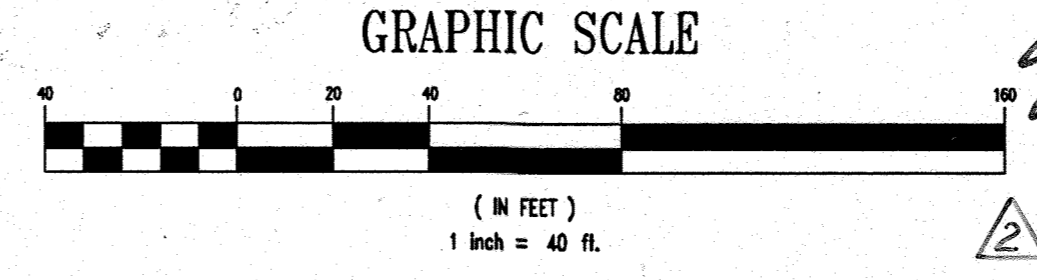
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.  
 COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT

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

**GENERAL NOTE:**  
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FOR REVISION 4 ONLY  
 FOR REVISION 5 ONLY  
 (NO AS-BUILT INFO)

M.J. GIBELL  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 44927  
 9/21/15



FOR REVISION 6 ONLY  
 BOHLER ENGINEERING, P.C.  
 2/7/22



BEFORE YOU DIG CALL  
 800-551-7777  
 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 THEREIN APPROPRIATE.

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

FOR REVISION 6 ONLY

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

UTILITY CONTACT INFORMATION:	
<b>NATURAL GAS &amp; ELECTRIC</b> BALTIMORE GAS AND ELECTRIC 7317 PARKWAY DRIVE SOUTH HANOVER, MD 21076 PHONE: (410) 859-9383	<b>WATER &amp; SANITARY SEWER</b> HOWARD COUNTY PUBLIC WORKS BUREAU OF UTILITIES 8250 OLD MONTGOMERY ROAD COLUMBIA, MD 21045 PHONE: (410) 313-4910
<b>TELEPHONE</b> VERIZON 7133 RUTHERFORD ROAD BALTIMORE, MD 21244 PHONE: (410) 224-5286	<b>EROSION &amp; SEDIMENT CONTROL</b> DEPARTMENT OF INSPECTIONS, LICENSES & PERMITS 3430 COURTHOUSE DRIVE ELLCOTT CITY, MD 21043 PHONE: (410) 313-2455
<b>STORMWATER MANAGEMENT</b> HOWARD COUNTY PLANNING AND ZONING DEPARTMENT 3430 COURTHOUSE DRIVE ELLCOTT CITY, MD 21043 PHONE: (410) 313-2350	<b>PLANNING AND ZONING</b> HOWARD COUNTY PLANNING AND ZONING DEPARTMENT 3430 COURTHOUSE DRIVE ELLCOTT 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  
E 1,370,946.348  
ELEV. 331.855'  
LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY

3 2/16/17 MB OUTFALL STORM DRAIN AS-BUILT BOLLER  
4 6/18/15 EXPAND TIME CENTER AND MICROBIO FACILITIES BOLLER  
2 8/30/07 Revised Retaining Wall Boller  
1 1/24/01 Revised Public Water Contract #5 Boller  
REV. DATE DESCRIPTION

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION  
C/O PROP TAX DEPARTMENT 1000  
999 LAKE DRIVE  
ISSAQUAH, WA 98027-0190  
PHONE: (206) 406-6862

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

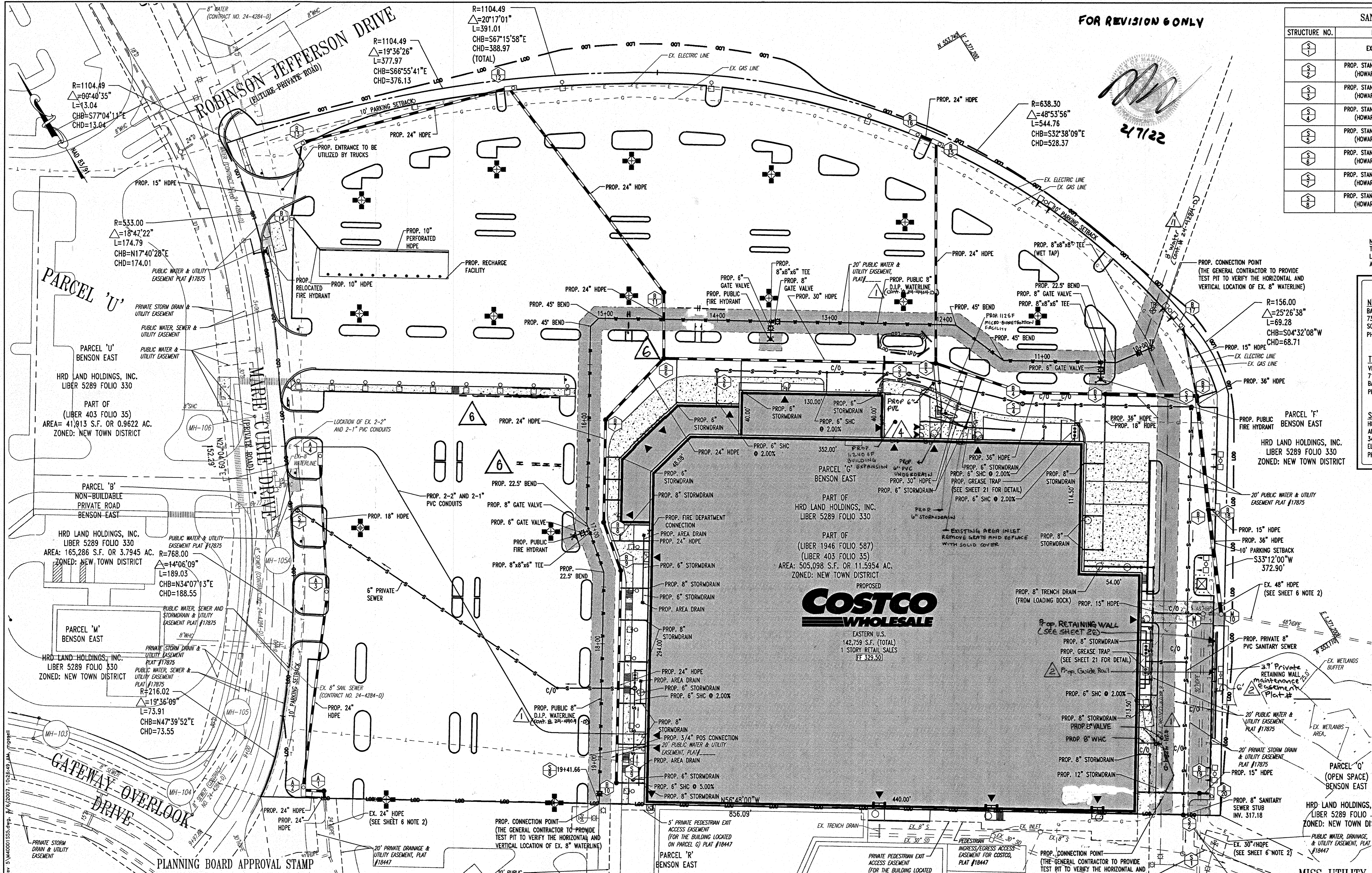
AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN  
BENSON EAST  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: UTILITY PLAN

**BOHLER ENGINEERING, P.C.**

PROFESSIONAL ENGINEERING SERVICES  
22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA 20166  
CONTACT: DAVID B. HANCOCK  
(703) 709-9800 FAX: (703) 709-9501

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



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
4/16/07  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
Candy Hamilton 4/16/07  
CHIEF-DIVISION OF LAND DEVELOPMENT  
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.  
DATE

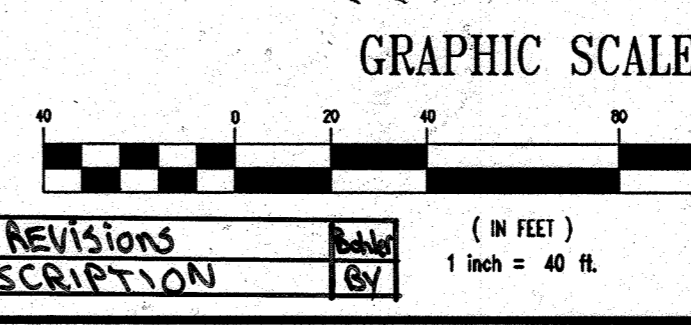
APPROVED  
PLANNING BOARD  
of HOWARD COUNTY  
DATE 09/14/06

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.

STATE OF MARYLAND  
PROFESSIONAL ENGINEER  
7121/15  
For Revision #2  
Bohler Engineering, P.C.

PROFESSIONAL CERTIFICATION  
I, MICHAEL J. GIBSON, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. PLEASE DO NOT WRITE EXPIRATION DATE VALUE.

For revision #1  
Bohler Engineering, P.C.  
FOR REVISION 5 ONLY  
(NO AS BUILT INFO)  
6/11/18 ADD LAYOUT REVISIONS  
REV DATE DESCRIPTION

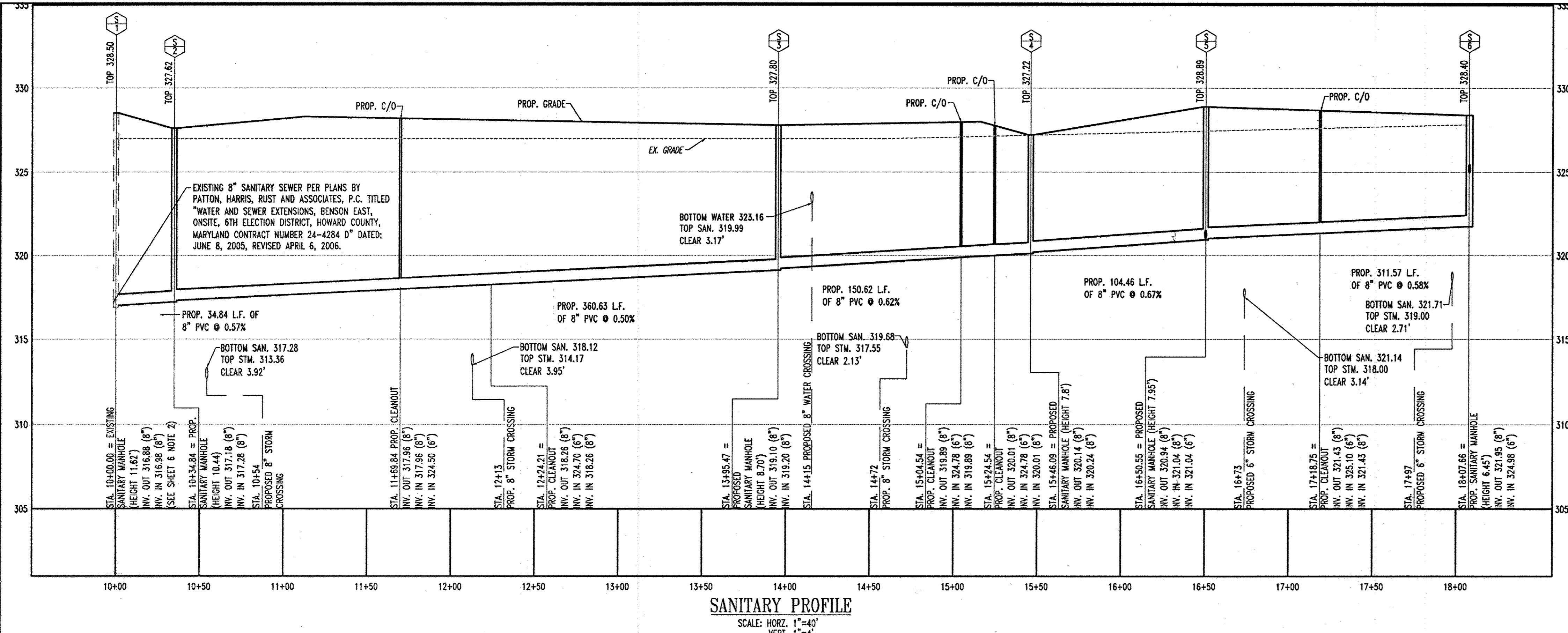


BEFORE YOU DIG CALL  
1-800-392-7777  
PROTECT YOURSELF. GIVE TWO WORKING DAYS NOTICE

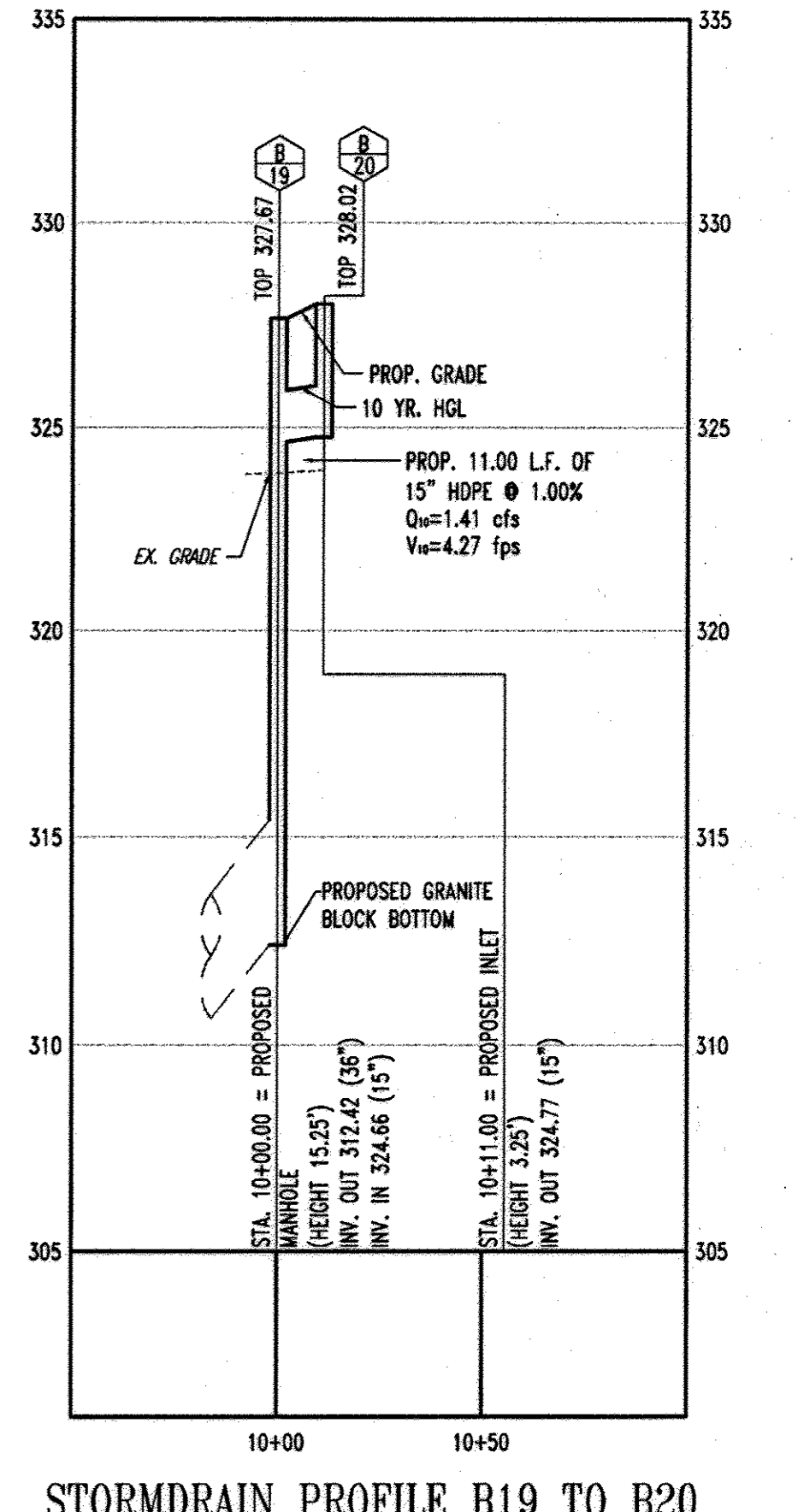
THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THEREOF APPROPRIATE.

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

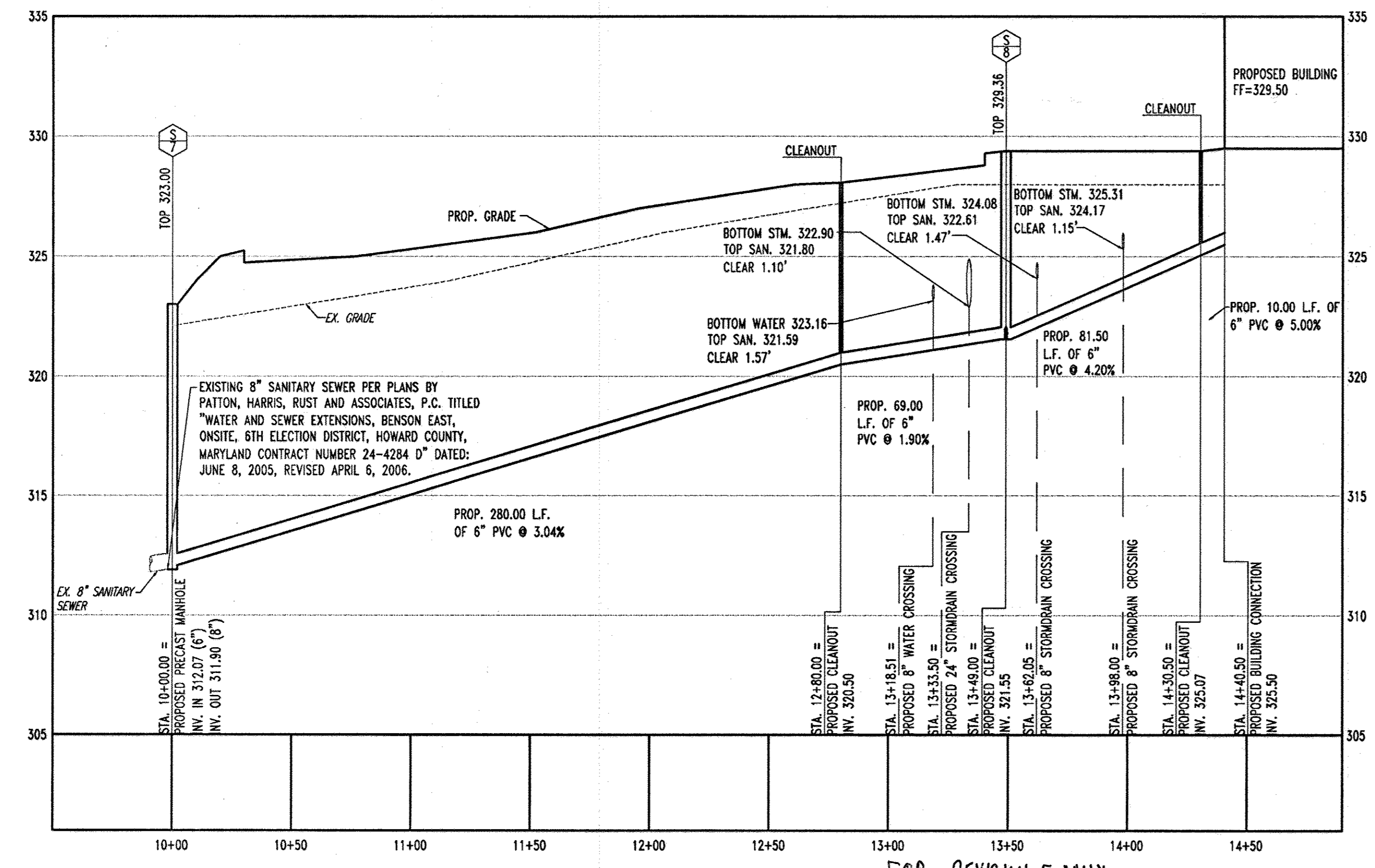
MISS UTILITY



**SANITARY PROFILE**  
SCALE: HORZ. 1"=40'  
VERT. 1"=4'

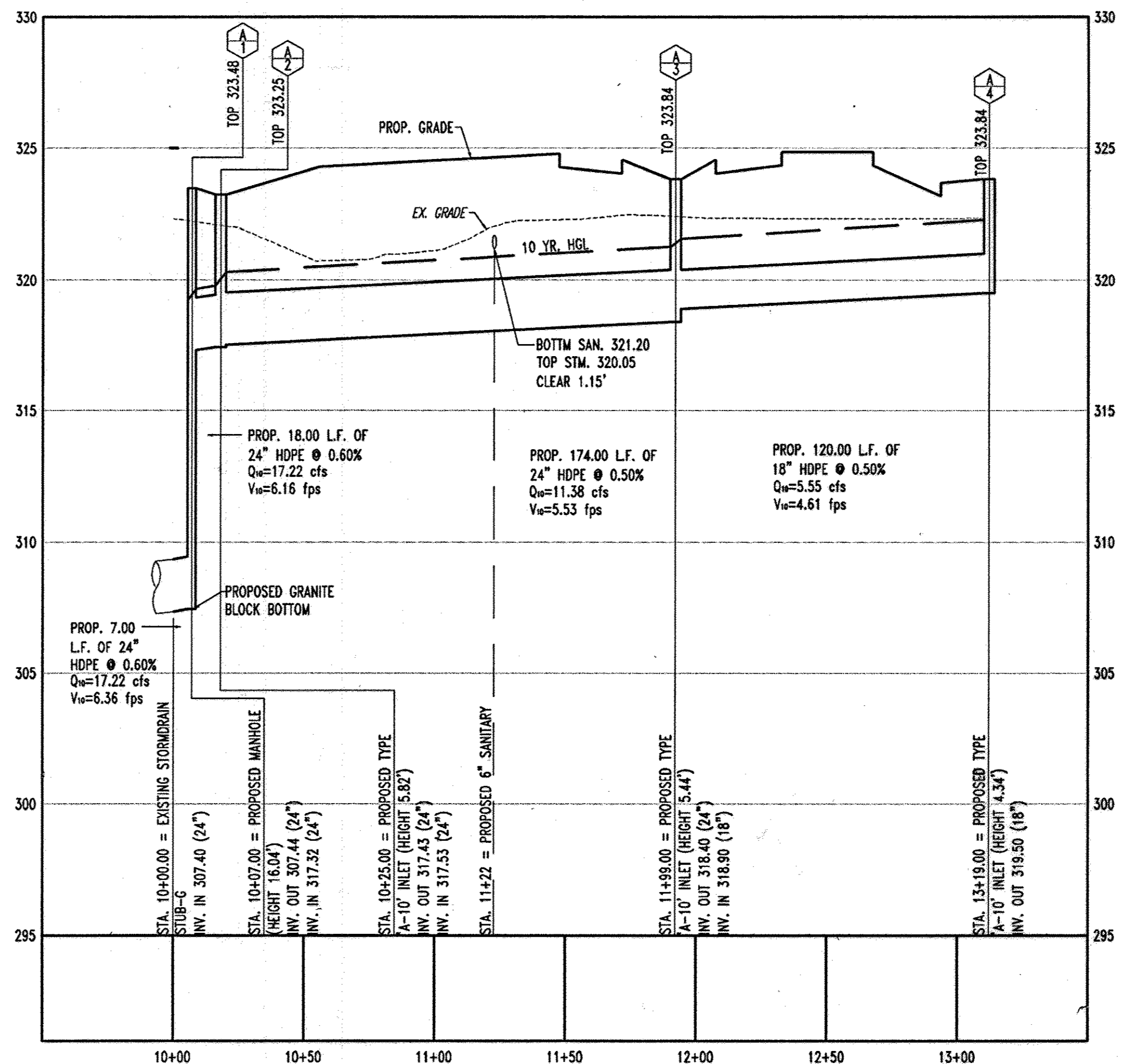


**STORMDRAIN PROFILE B19 TO B20**  
SCALE: HORZ. 1"=40'  
VERT. 1"=4'



**SANITARY PROFILE**  
SCALE: HORZ. 1"=40'  
VERT. 1"=4'

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)



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

GENERAL NOTE:  
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I, MICHAEL J GISELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 44097 EXPIRATION DATE: 6/9/12

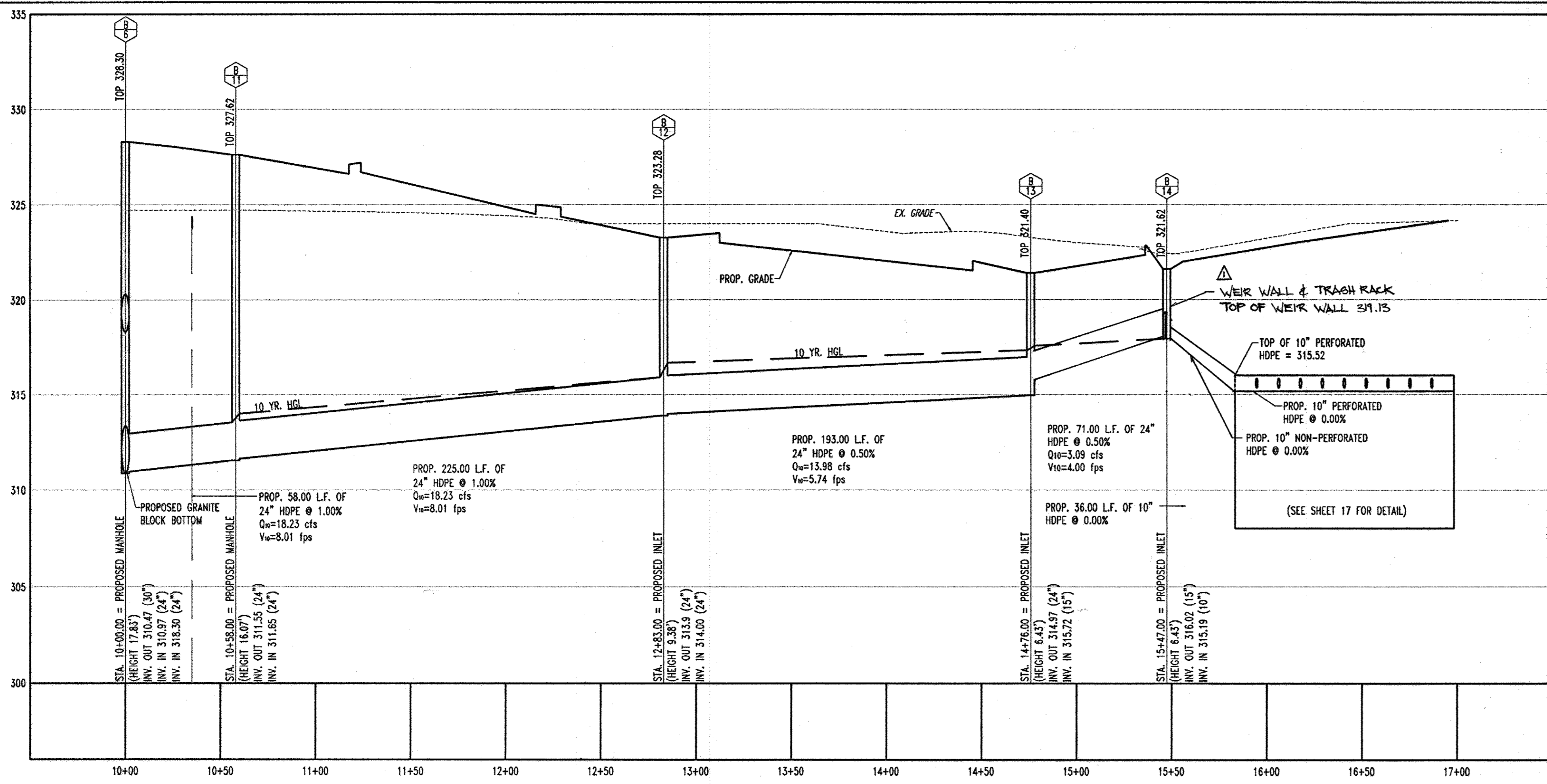


BEFORE YOU DIG CALL  
800-992-7777  
PROTECT YOURSELF GIVE TWO WORKING DAYS NOTICE

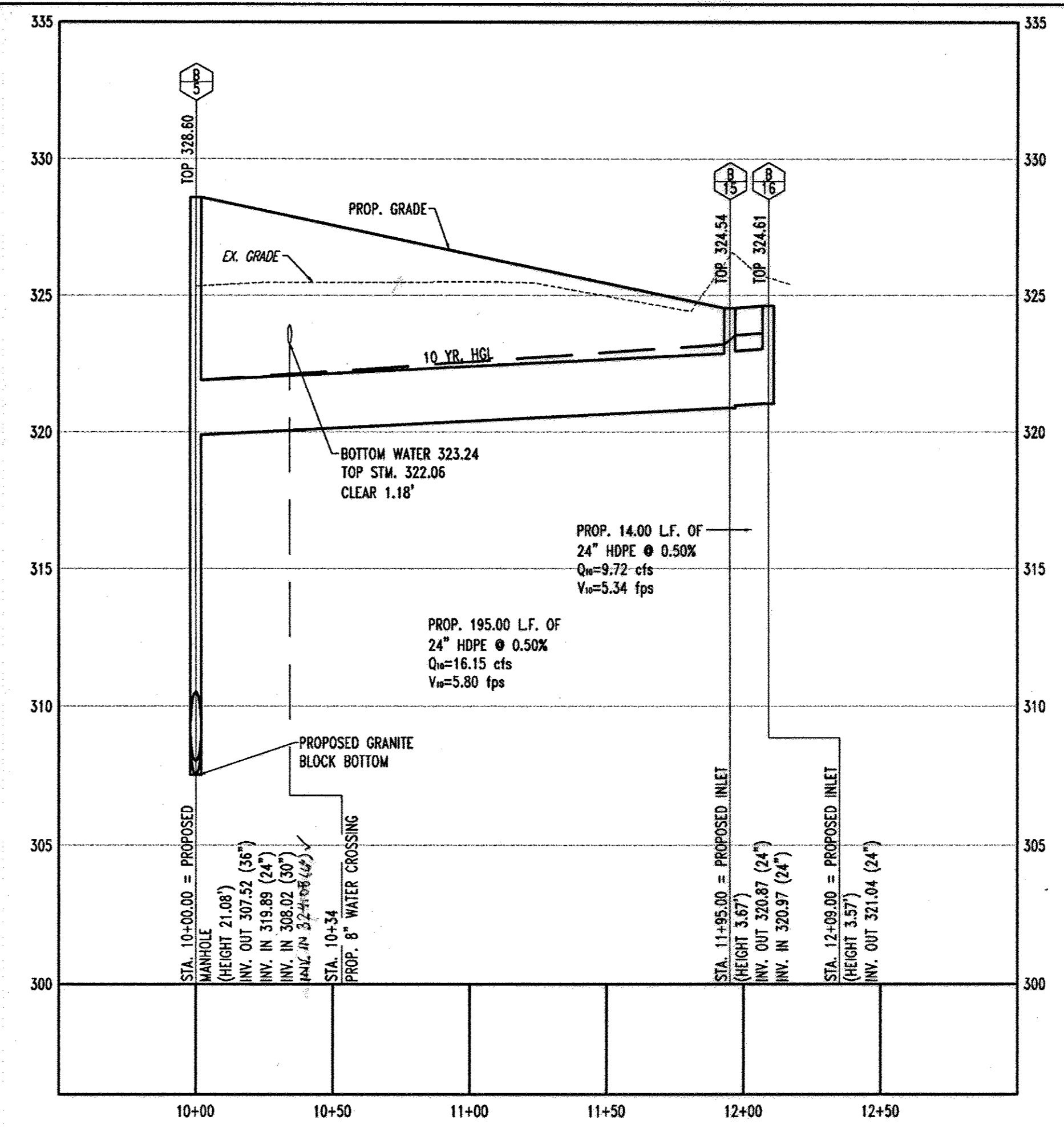
REV.	DATE	DESCRIPTION	BY
5	2/6/17	M.B. OUTFALL STORM DRAIN AS BUILT	
OWNER/DEVELOPER: HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PHONE: (410) 992-6000			
PROJECT: BENSON EAST PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); SHOPPING 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 22630 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164 CONTACT: DAVID B. NEUBECKER (703) 709-9500 FAX: (703) 709-9501			
DESIGNED BY:	MJS/JD	DRAWN BY:	B.M.H.
DATE:		PROJECT NO.:	S040011.01
		DATE:	11/22/06
		SCALE:	AS SHOWN
		DRAWING NO.:	8 OF 29
ADAM J. VOLANTH PROFESSIONAL ENGINEER NO. 21342			

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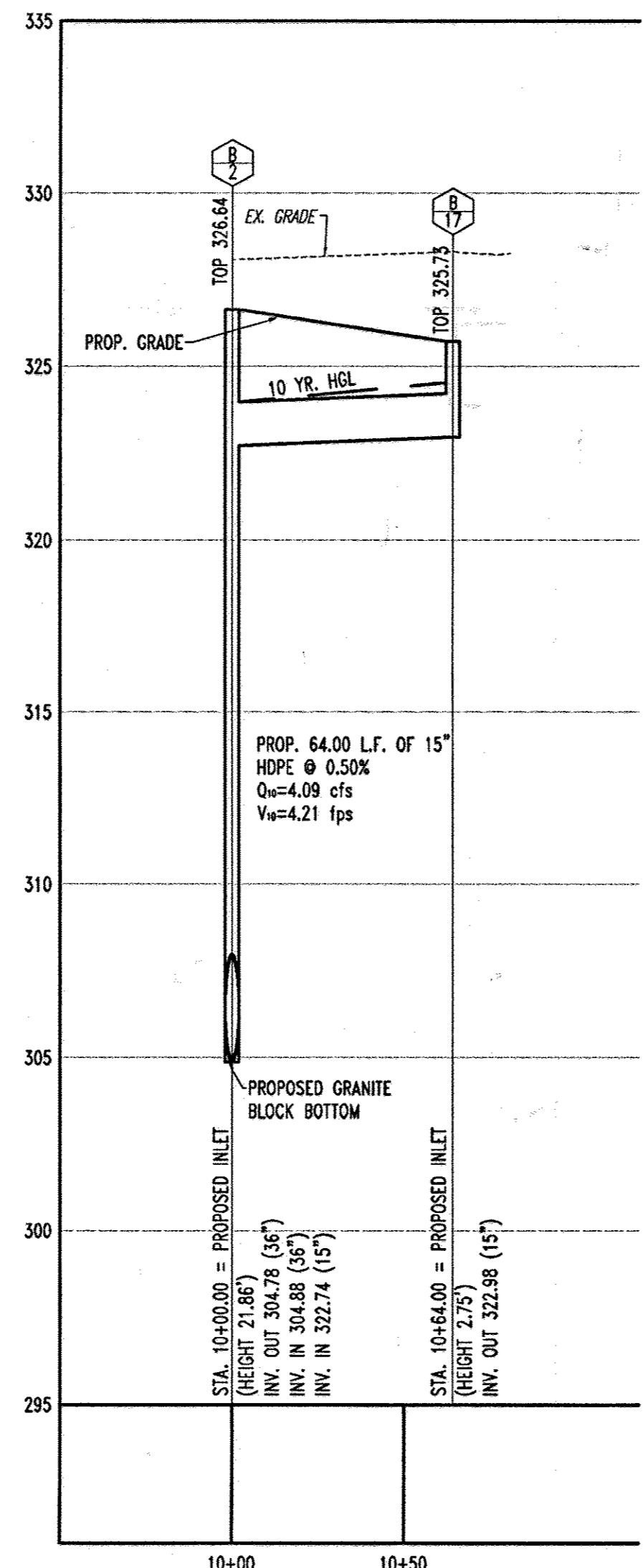




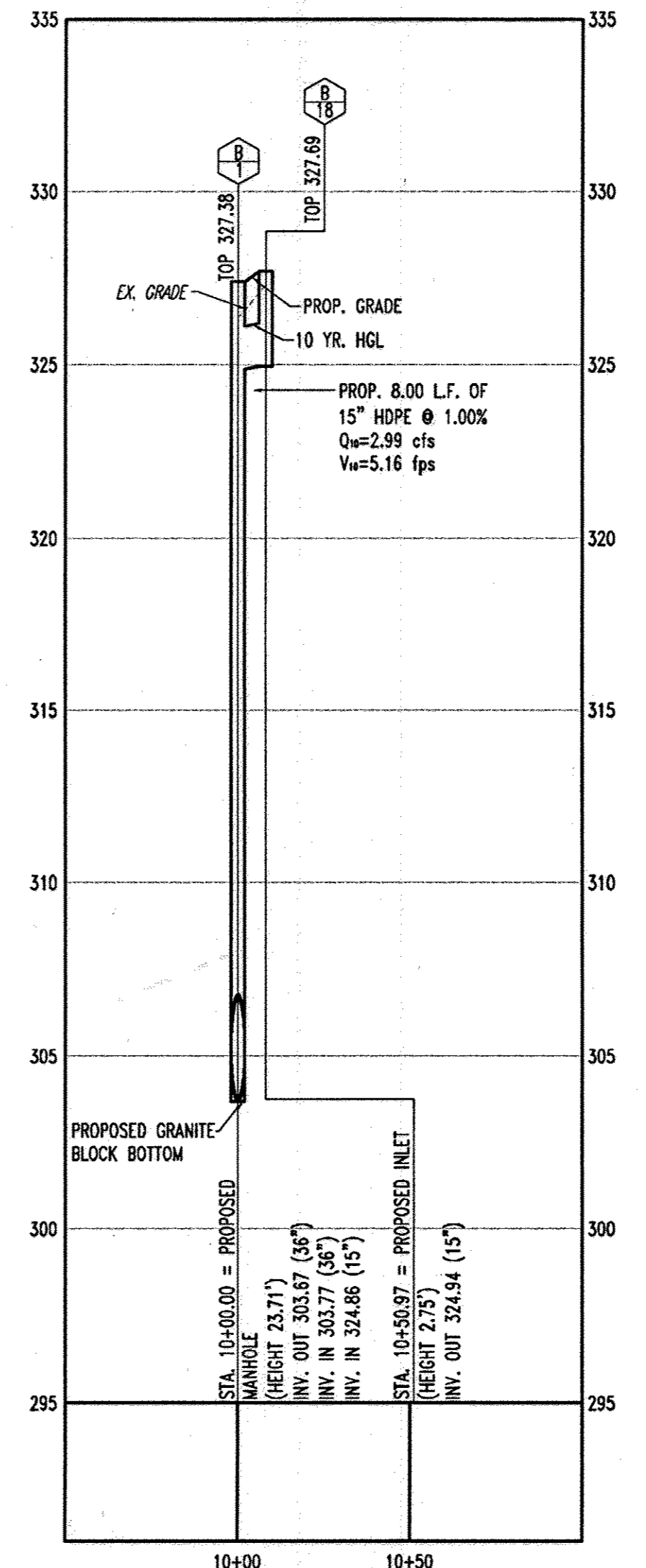
STORMDRAIN PROFILE B6 TO B14  
SCALE: HORIZ. 1"=40'  
VERT. 1"=4'



STORMDRAIN PROFILE B5 TO B16  
SCALE: HORIZ. 1"=40'  
VERT. 1"=4'



STORMDRAIN PROFILE B2 TO B17  
SCALE: HORIZ. 1"=40'  
VERT. 1"=4'



STORMDRAIN PROFILE B1 TO B18  
SCALE: HORIZ. 1"=40'  
VERT. 1"=4'

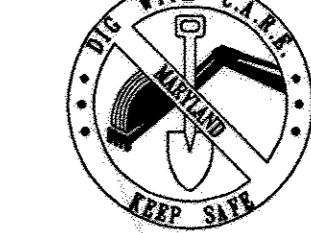
FOR REVISION 5 (AS BUILT) ONLY

*[Signature]*  
4/7/17

I HEREBY CERTIFY, BY MY SEAL, THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS "AS-BUILT" PLAN MEET THE APPROVED PLANS AND SPECIFICATIONS.

MICHAEL J. GESSELL #44897, 6/9/17

MISS UTILITY



BEFORE YOU DIG CALL 1-800-287-2777 PROTECT YOURSELF ONE 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 THEREOF APPURTENANT.  
THE CONTRACTOR TO CALL MISS UTILITY TO HAVE ALL EXISTING UTILITIES MARKED 48 HOURS PRIOR TO ANY CONSTRUCTION.

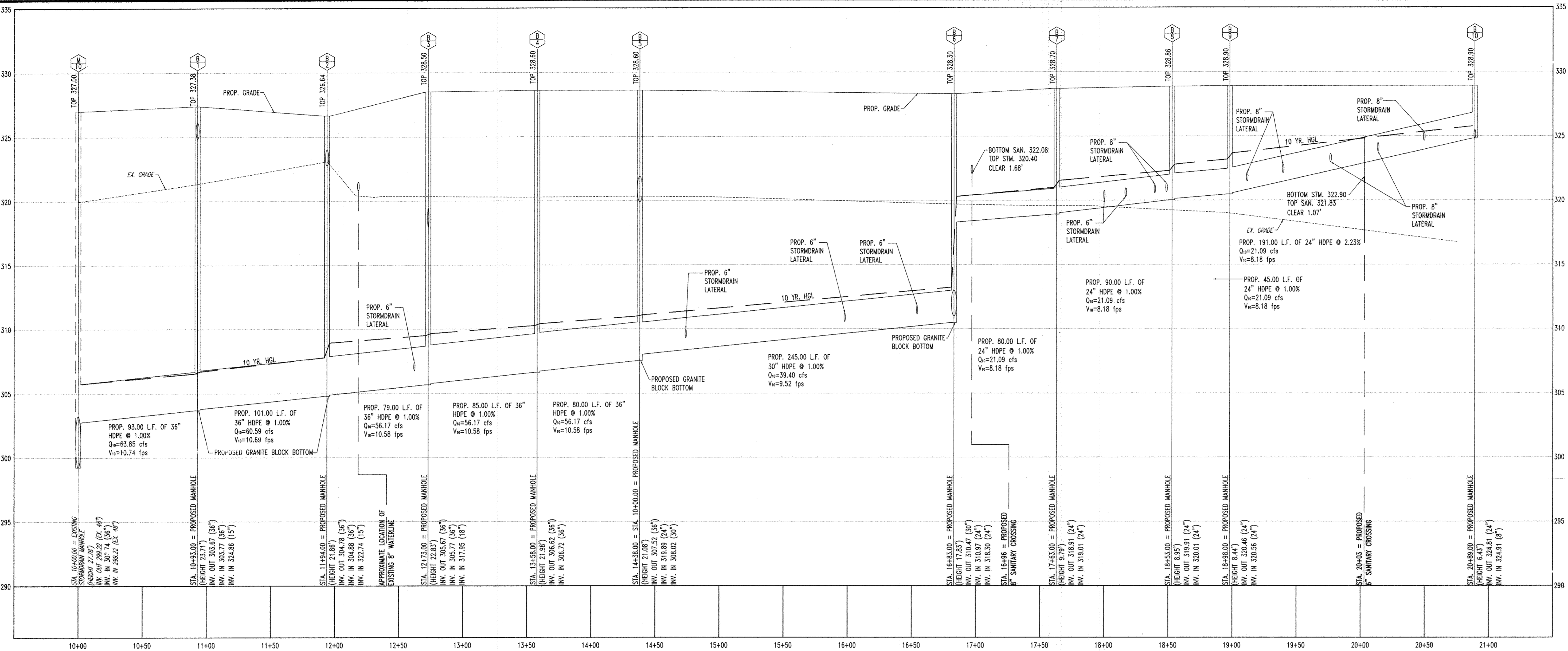
PLANNING BOARD APPROVAL STAMP

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.  
COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT

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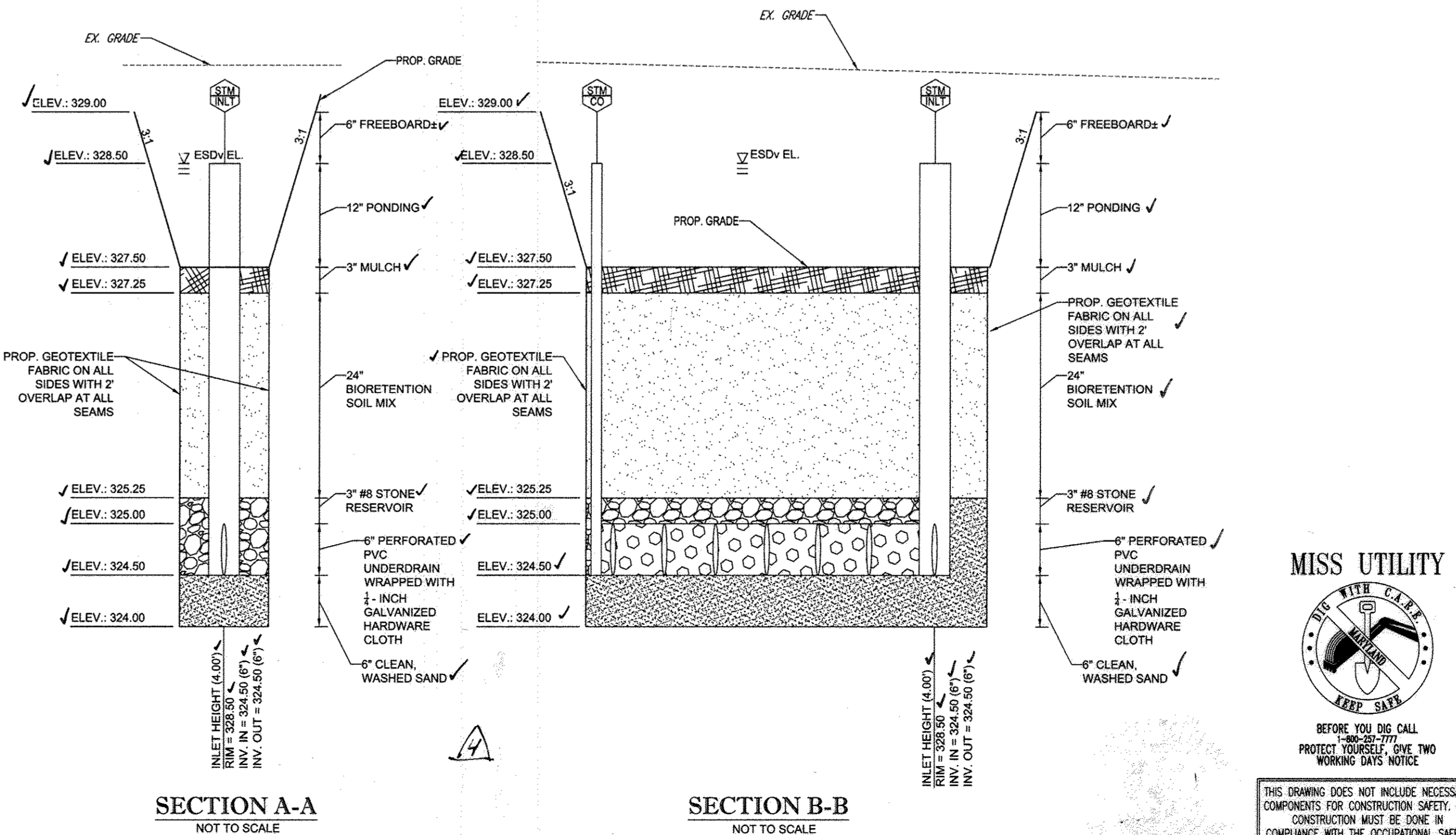
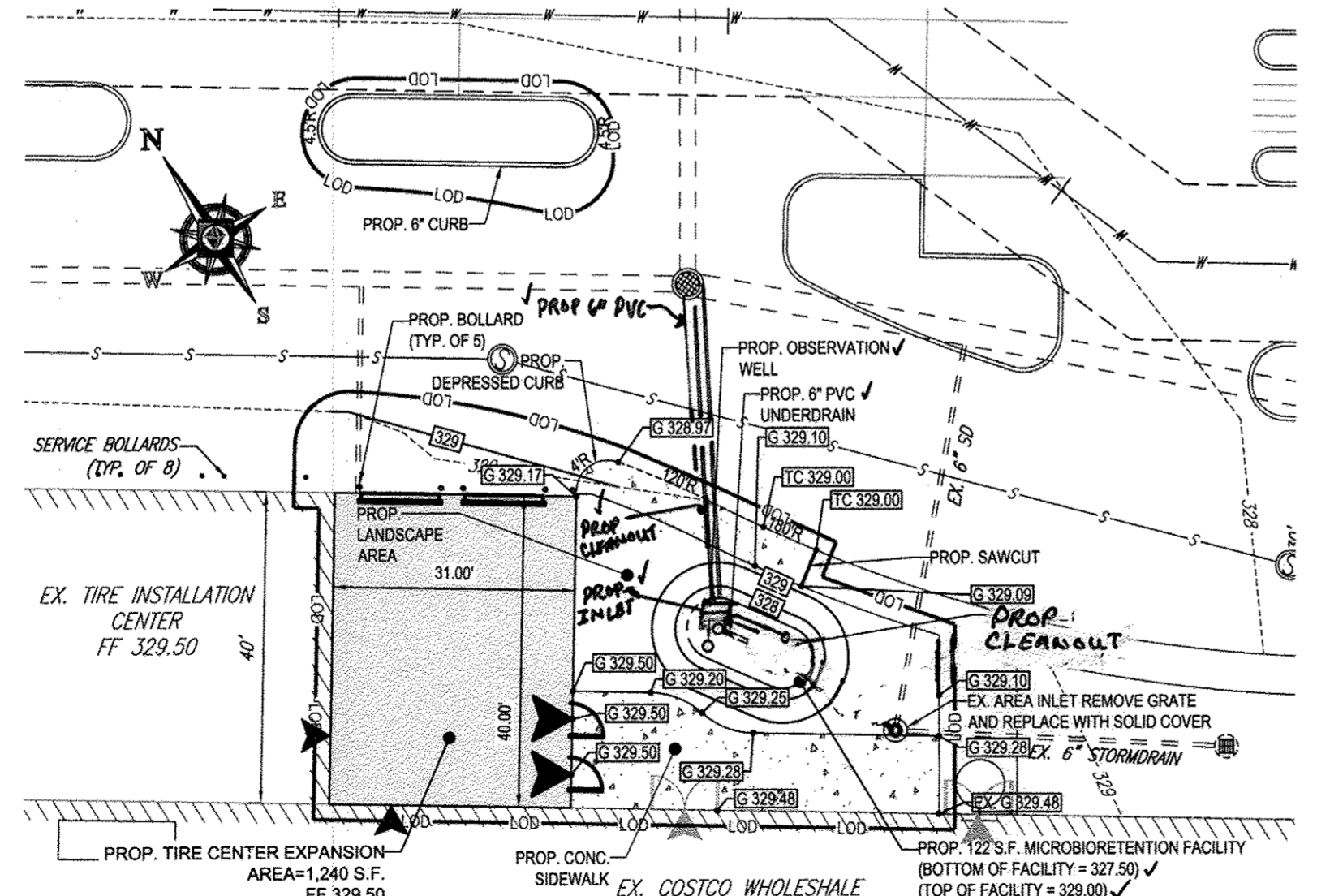
5	2/6/17	MB DUFFALL STORMDRAIN AS-BUILT	
1	12-23-11	ADD WEIR WALL & TRASH RACK	PKA
REV.	DATE	DESCRIPTION	BY
OWNER/DEVELOPER: HRO LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PHONE: (410) 992-6000			
PROJECT: 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. NEMECHE (703) 709-8500 FAX: (703) 709-0501			
DATE:	DESIGNED BY:	M.J.G./J.D.	
DRAWN BY:	B.M.H.		
PROJECT NO.:	S040011.01		
DATE:	11/22/06		
SCALE:	AS SHOWN		
DRAWING NO.:	9 OF 29		
ADAM J. VOLANTH PROFESSIONAL ENGINEER NO. 21342			



FOR REVISION 5 (AS-BUILT) ONLY

*Michael J. Gessell*  
4/17/17

I HEREBY CERTIFY, BY MY SEAL, THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE FACILITIES SHOWN ON THIS "AS-BUILT" PLAN MEET THE APPROVED PLANS AND SPECIFICATIONS.  
MICHAEL J. GESSELL, #44097, 6/9/17



**PLANNING BOARD APPROVAL STAMP**

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
9.7.16  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
K. J. [Signature]  
9.8.16  
CHIEF-DIVISION OF LAND DEVELOPMENT  
V. [Signature]  
4.8.16  
DIRECTOR

**GENERAL NOTE:**  
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**AMENDED SITE DEVELOPMENT PLAN**

5	2-6-17	MG OFFERS STORMDRAIN AS-BUILT	
4	09/17/15	EXPANDED TIRE CENTER, ADD MICROBIO FACILITY	
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

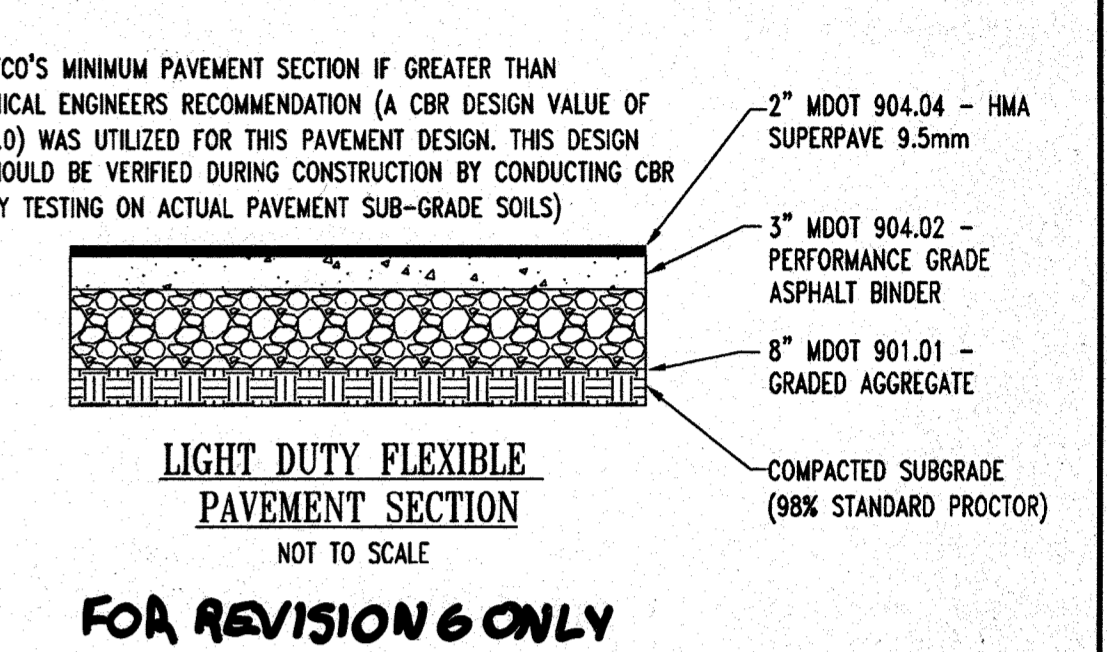
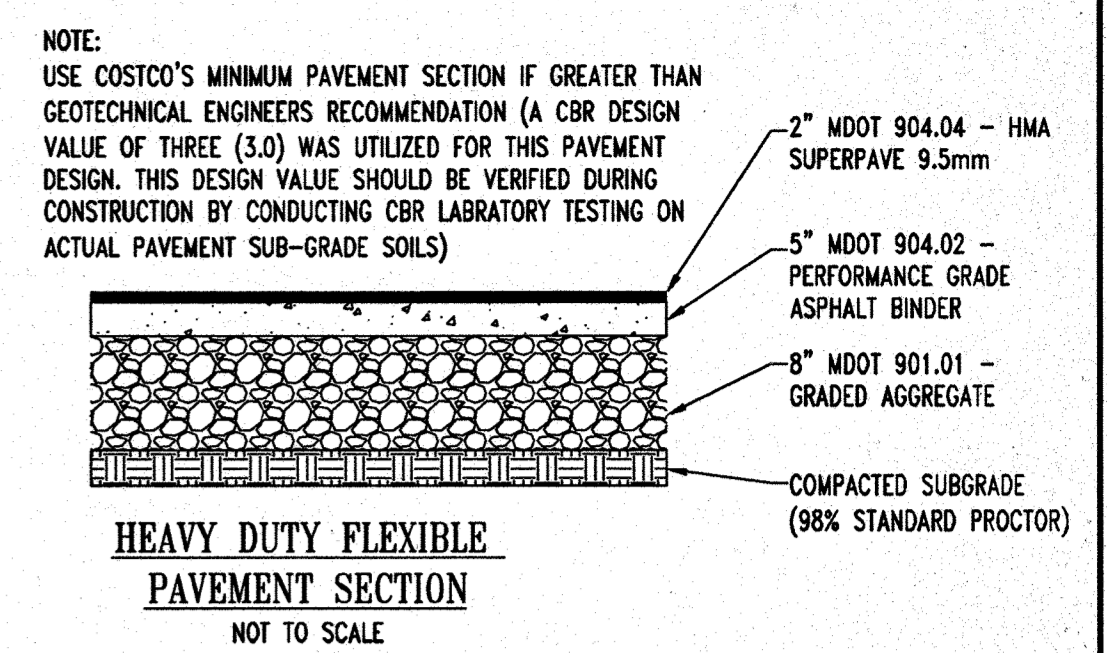
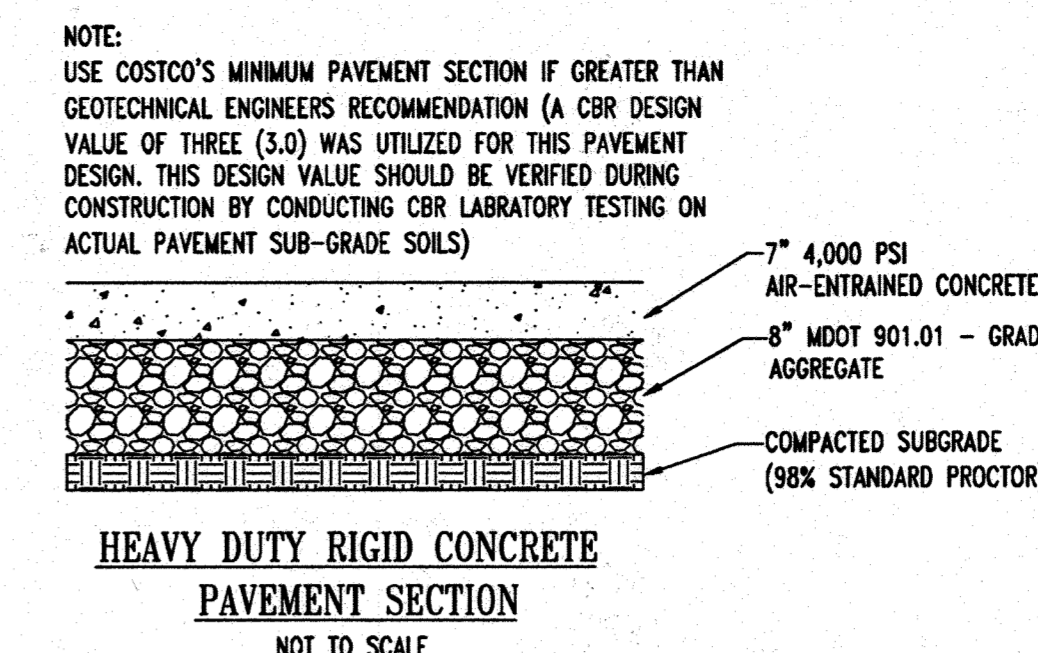
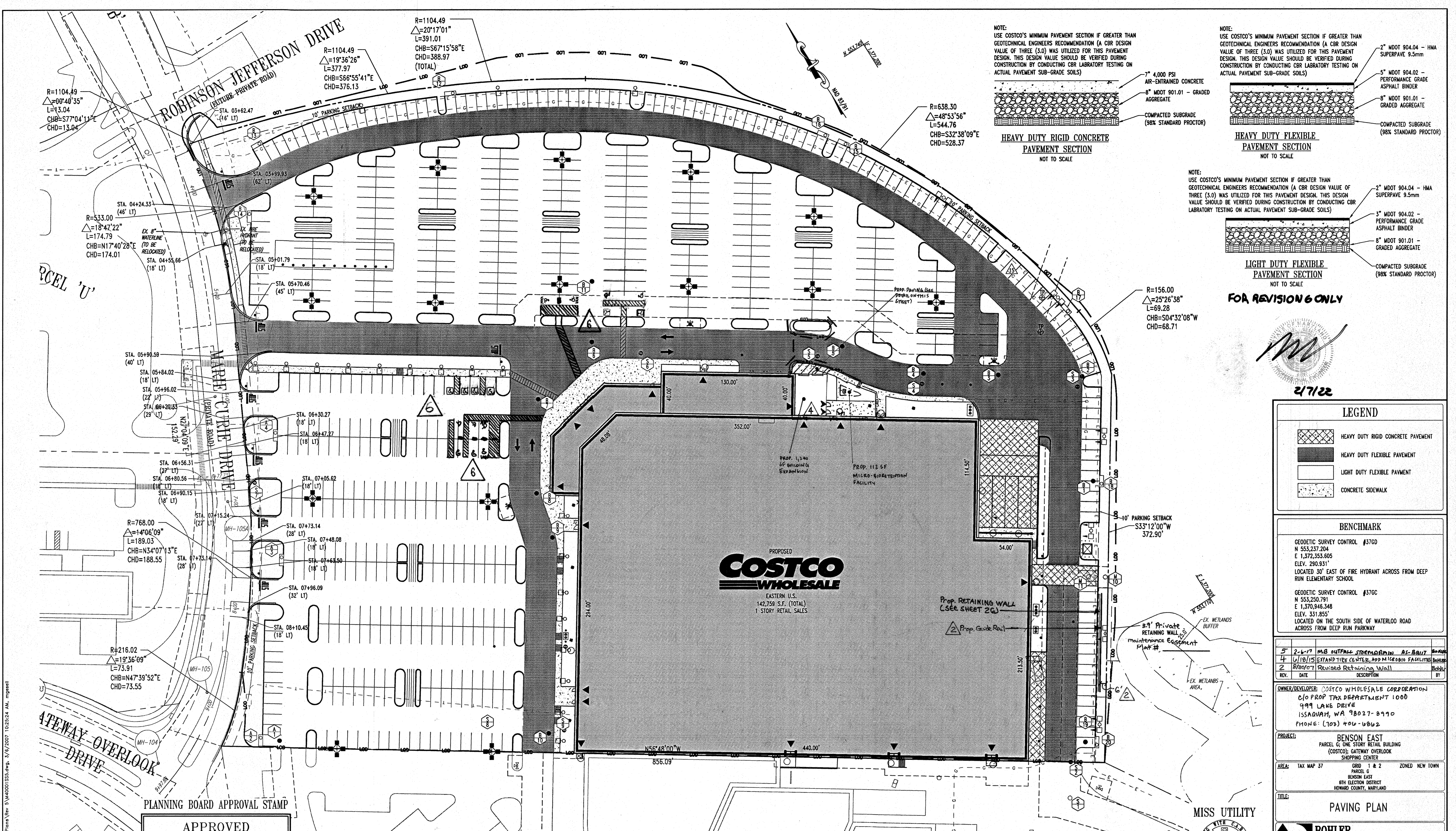
**PROJECT:** BENSON EAST  
PARCEL G, ONE STORY RETAIL BUILDING  
(COSTCO), GATEWAY OVERLOOK  
SHOPPING CENTER.

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

**TITLE:** UTILITY PROFILES

**BOHLER ENGINEERING**  
• PROFESSIONAL ENGINEERING SERVICES •  
• 801 DULANY VALLEY ROAD, SUITE 801 TOWSON, MARYLAND, 21284 •  
• CONTACT: MICHAEL J. GESSELL  
• (410) 821-7900 FAX: (410) 821-7907 • WWW.BEENGINEERS.COM

**DESIGNED BY:** MJG/JD  
**DRAWN BY:** PAB  
**PROJECT NO.:** MD152031  
**DATE:** 09/14/15  
**SCALE:** AS SHOWN  
**DRAWING NO.:** 10 of 29  
PROFESSIONAL ENGINEER NO. 44097



2/1/22

**LEGEND**

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

**BENCHMARK**

GEODETIC SURVEY CONTROL #376D 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 #376C N 553,250.791 E 1,370,948.348 ELEV. 331.855' LOCATED ON THE SOUTH SIDE OF WATERLOO ROAD ACROSS FROM DEEP RUN PARKWAY
--	--

5	2-6-17	MB OUTFALL STREAM/DRAIN AS-BUILT	Bohler
4	11/10/15	EXTEND TIE CENTER AND MICROBIO FACILITIES	Bohler
2	8/8/07	Revised Retaining Wall	Bohler
REV.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION  
 C/O PROP TAX DEPARTMENT 1000  
 999 LAKE DRIVE  
 ISSAQUAH, WA 98027-8990  
 PHONE: (206) 406-0662

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

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

TITLE: PAVING PLAN

**BOHLER ENGINEERING, P.C.**

PROFESSIONAL ENGINEERING SERVICES • 22850 Davis Drive, Suite 200 Sterling, Virginia, 20166 • CONTRACT: DAVID B. BOHLER • (703) 709-9600 FAX: (703) 709-9601 • WWW.BEENGINEERING.COM

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

DATE: \_\_\_\_\_  
 ADAM J. VOLANTH  
 PROFESSIONAL ENGINEER NO. 21542

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

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS. DATE \_\_\_\_\_

HOWARD COUNTY HEALTH DEPARTMENT

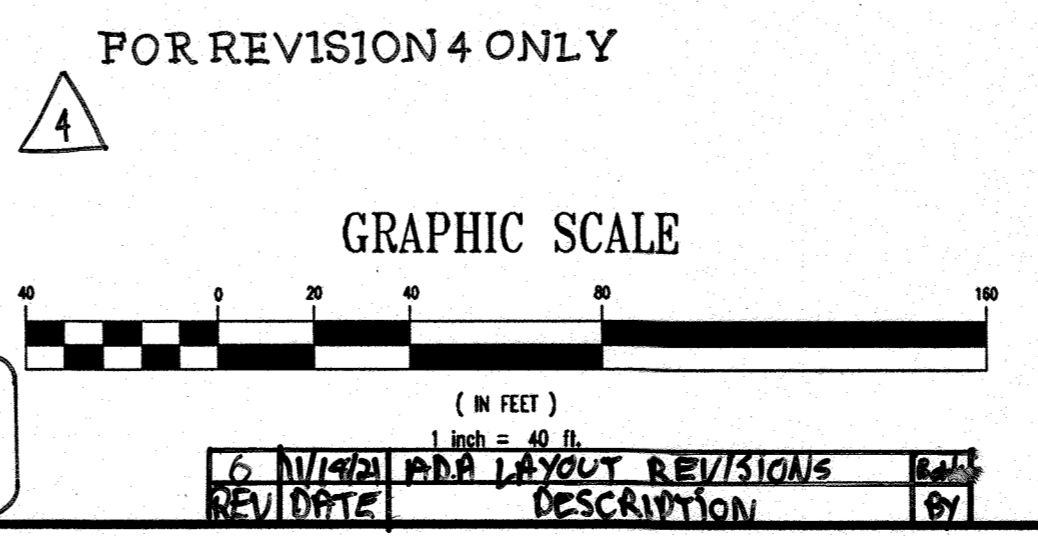
PLANNING BOARD APPROVAL STAMP

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

GENERAL NOTE:  
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M.J. GESELL  
 PROFESSIONAL ENGINEER  
 MARYLAND LICENSE NO. 44977  
 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. 44977, EXPIRATION DATE: 4/1/16, 23



FOR REVISION 5 ONLY (NO AS BUILT INFO)

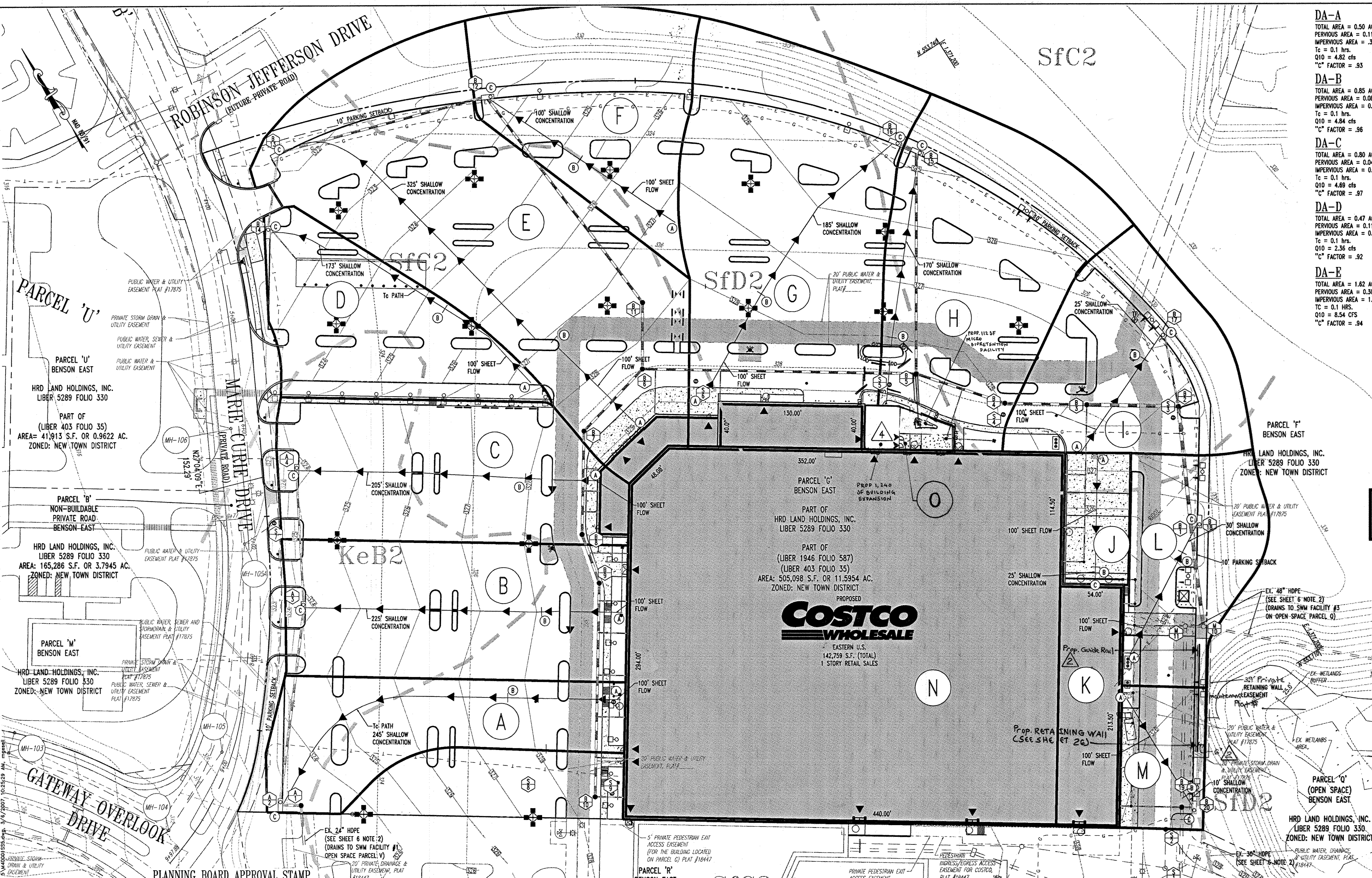
BEFORE YOU DIG CALL  
 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 DAVID B. BOHLER  
 LICENSE NO. 21542

FOR REVISION #2  
 Bohler Engineering, P.C.

MISS UTILITY

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



<b>DA-A</b> 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	<b>DA-F</b> 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	<b>DA-K</b> 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
<b>DA-B</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	<b>DA-G</b> 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	<b>DA-L</b> 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
<b>DA-C</b> 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	<b>DA-H</b> TOTAL AREA = 0.91 AC. PERVIOUS AREA = 0.37 AC. IMPERVIOUS AREA = 0.54 AC. Tc = 0.1 HRS. Q10 = 4.38 CFS "C" FACTOR = .89	<b>DA-M</b> 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
<b>DA-D</b> 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	<b>DA-I</b> 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	<b>DA-N</b> TOTAL AREA = 3.01 AC. PERVIOUS AREA = 0.00 AC. IMPERVIOUS AREA = 3.01 AC. Tc = 0.1 HRS. Q10 = 13.44 CFS "C" FACTOR = .98
<b>DA-E</b> 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	<b>DA-J</b> 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	<b>DA-O</b> TOTAL AREA = 0.04 AC. PERVIOUS AREA = 0.01 AC. IMPERVIOUS AREA = 0.03 AC. Tc = 0.1 HRS. Q10 = 0.44 CFS "C" FACTOR = 0.94

**ON-SITE SOILS INFORMATION:**

- KaB2 - KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED
- SiC2 - SASSAFRAS GRAVELLY SANDY LOAM, 5%-10% SLOPES, MODERATELY ERODED.
- SiD2 - 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

**NOTE: ALL SOILS ARE TYPE B CLASSIFICATION**

**BENCHMARK**

GEODETIC SURVEY CONTROL #376D 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 #376C 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

5' 2-6-17	M.B. OVERLOOK STORMDRAIN AS-BUILT	AS-BUILT
4' 1/18/15	EXPAND TIME CENTER, ADD MICROBIOTIC FACILITIES	AS-BUILT
2' 8/30/13	Revised Retaining Wall	AS-BUILT
REV.	DATE	DESCRIPTION

**OWNER/DEVELOPER:** COSTCO WHOLESALE CORPORATION  
C/O PROP TAX DEPARTMENT 1000  
999 LAKE DRIVE  
ISSAQUAH, WA 98027-8990  
PHONE: (206) 406-6862

**PROJECT:** BENSON EAST  
PARCEL S, 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:** STORMDRAIN DRAINAGE AREA MAP

**BOHLER ENGINEERING, P.C.**

PROFESSIONAL ENGINEERING SERVICES  
22220 DAVIS DRIVE, SUITE 200, STENNIS, VIRGINIA, 20164  
CONTACT: DAVID B. INBERCEK  
(703) 700-9500 FAX: (703) 700-9501 E: [info@bohlereng.com](mailto:info@bohlereng.com)

DESIGNED BY: MJC/JD  
DRAWN BY: B.M.H.  
PROJECT NO.: S04001101  
DATE: 11/22/06  
SCALE: 1"=40'  
DRAWING NO.: 12 OF 29

ADAM J. VOLANIK  
PROFESSIONAL ENGINEER NO. 21342

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF DEVELOPMENT ENGINEERING DIVISION  
CHIEF DIVISION OF LAND DEVELOPMENT  
DIRECTOR

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT

**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 CONTRACTOR'S 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.

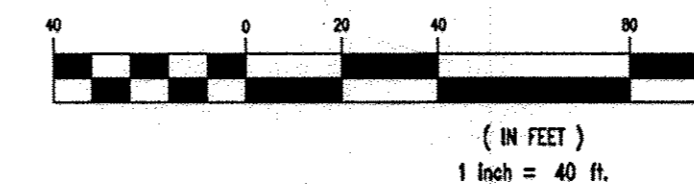
PROFESSIONAL ENGINEER  
M. J. GEHLL  
MARYLAND LICENSE #14947

9/21/15

FOR REVISION 4 ONLY

PROFESSIONAL CERTIFICATE #1100  
MICHAELA GEBELL HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 44017, EXPIRATION DATE 01/11/17

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

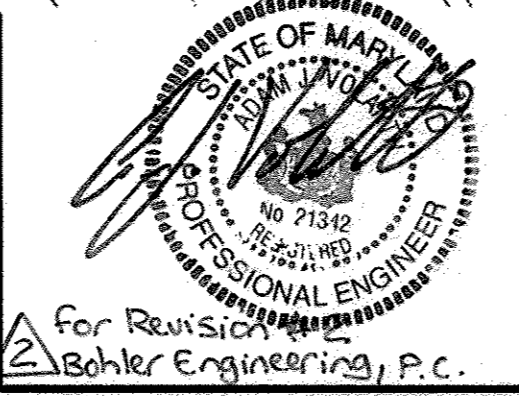
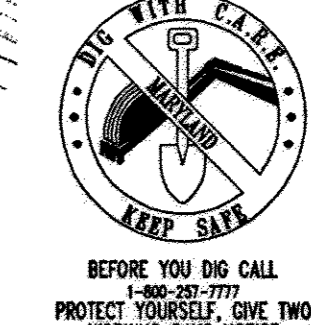


**NOTE:**  
THE TOTAL ONSITE IMPERVIOUS AREA PROPOSED ON THE CONCEPTUAL DRAINAGE AREA DESIGN IS 10.79 ACRES THE TOTAL ONSITE IMPERVIOUS AREA PROPOSED AS PART OF THESE SITE DEVELOPMENT PLANS IS 9.94 ACRES.

BEFORE YOU DIG CALL 1-800-397-7777  
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

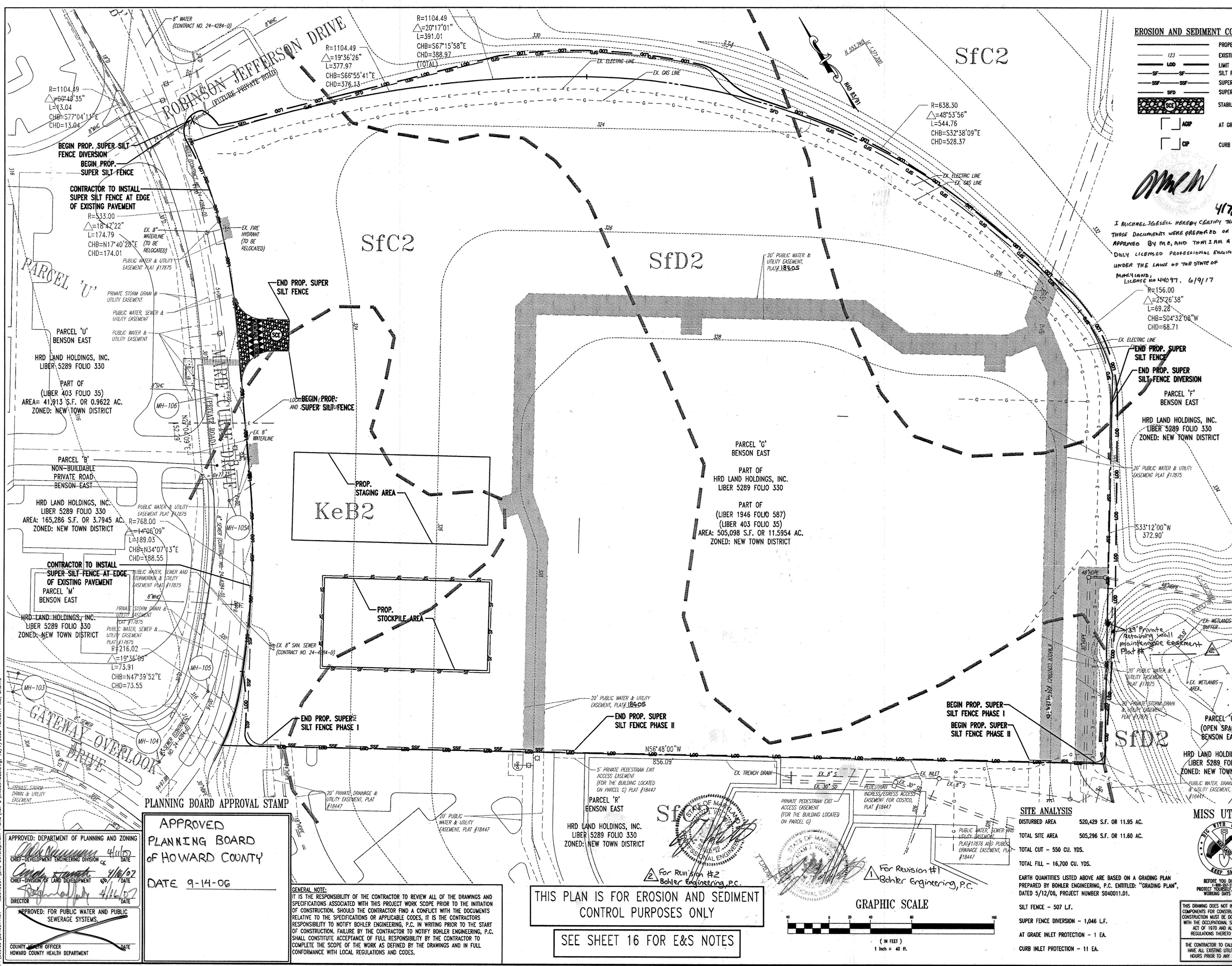
THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THEREOF APPROPRIATE.

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



M. J. GEHLL  
PROFESSIONAL ENGINEER  
MARYLAND LICENSE #14947

GRAPHIC SCALE  
1" = 40'



**EROSION AND SEDIMENT CONTROL LEGEND**

---	PROPERTY LINE
---	EXISTING CONTOUR
---	LIMIT OF DISTURBANCE
---	SILT FENCE
---	SUPER SILT FENCE
---	SUPER FENCE DIVERSION
---	SUPER FENCE DIVERSION
---	STABILIZED CONSTRUCTION ENTRANCE
---	AGIP AT GRADE INLET PROTECTION
---	CP CURB INLET PROTECTION

**ON-SITE SOILS INFORMATION:**

1. KeB2 - KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED
2. Sfc2 - SASSAFRAS GRAVELLY SANDY LOAM, 3%-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

FOR REVISION 5 ONLY (NO-AS-BUILT INFO)

REVIEWED FOR HOWARD COUNTY AND 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 COUNTY CONSERVATION DISTRICT. 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 REQUIREMENT OF THE HOWARD COUNTY CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER: ADAM J. VOLANTH P.E. 12/16/06 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 COUNTY CONSERVATION DISTRICT."

SIGNATURE OF DEVELOPER: 12/16/06 DATE

**NOTES**

1. THE OWNER OF THE SHOPPING CENTER IS RESPONSIBLE FOR ALL ROUGH GRADING AND EROSION AND SEDIMENT CONTROL ON-SITE, 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 SEDIMENTATION NOTES.

**BENCHMARK**

GEODETIC SURVEY CONTROL #37GD
N 553,287.204
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

5	2-6-17	MB OUTFALL STAFFADRAIN AS BUILT	Bohler
2	8/31/07	Revised Retaining Wall	Bohler
1	1/24/07	Revised Public Water Contract #'s	Bohler
REV.	DATE	DESCRIPTION	BY

**OWNER/DEVELOPER:** HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION 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 BENSON EAST 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**TITLE:** EROSION AND SEDIMENT CONTROL PLAN PHASE I

**BOHLER ENGINEERING, P.C.**

PROFESSIONAL ENGINEERING SERVICES  
22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164  
CONTACT: DAVID B. BOHLER  
(703) 709-9500 FAX: (703) 709-9501 E: [info@bohlereng.com](mailto:info@bohlereng.com)

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

ADAM J. VOLANTH  
PROFESSIONAL ENGINEER NO. 21342

**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

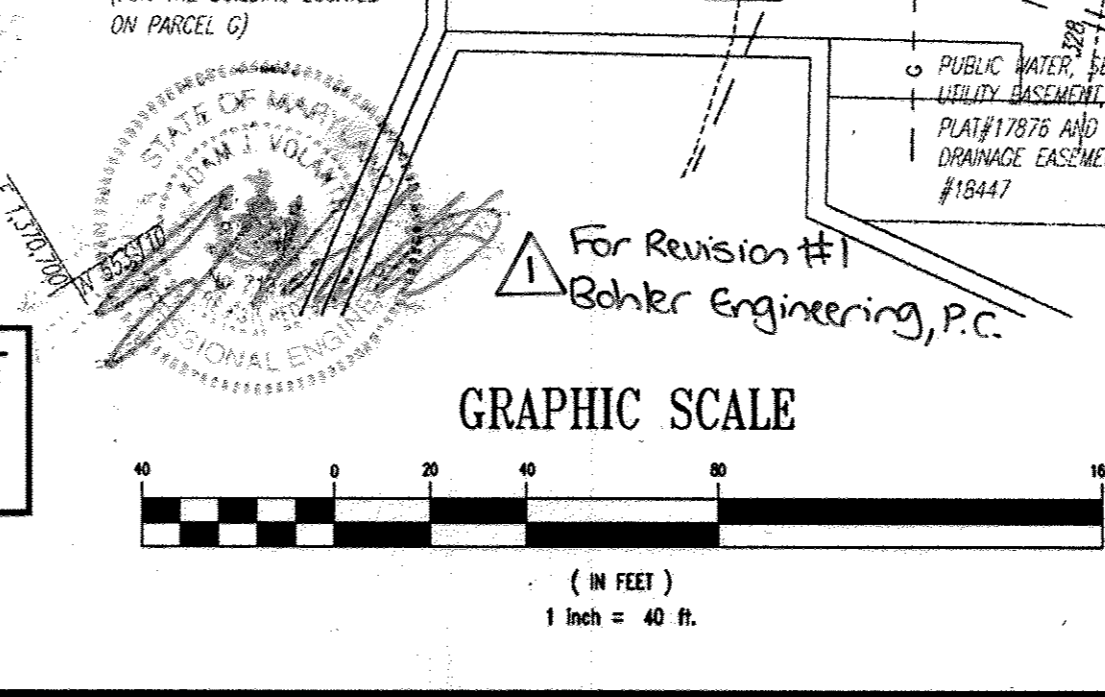
**APPROVED PLANNING BOARD OF HOWARD COUNTY**

DATE 9-14-06

**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 CONTRACTOR'S 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.

**THIS PLAN IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY**

SEE SHEET 16 FOR E&S NOTES



**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 LF.  
SUPER FENCE DIVERSION - 1,046 LF.  
AT GRADE INLET PROTECTION - 1 EA.  
CURB INLET PROTECTION - 11 EA.

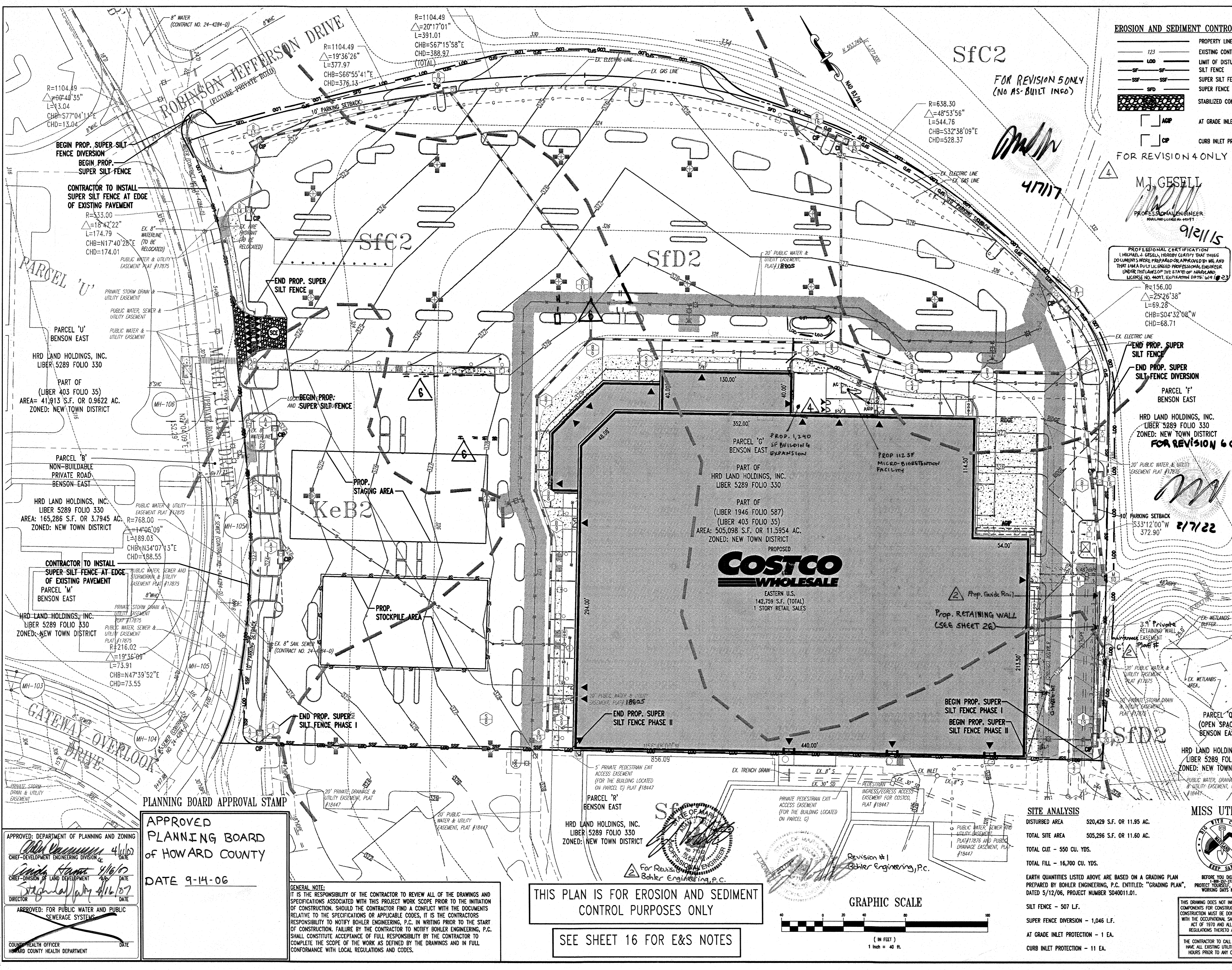
**MISS UTILITY**

BEFORE YOU DIG CALL 800-487-3879  
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 THEREOF APPLICABLE.

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

M:\CA\Castro\SDA0011.01 - M040001\Site Development Plans\Rev. 5\MA0001555.dwg, 12/7/2006 10:06:17 AM, bhms



**EROSION AND SEDIMENT CONTROL LEGEND**

- 123 PROPERTY LINE
- 1000 EXISTING CONTOUR
- 1000 LIMIT OF DISTURBANCE
- 1000 SILT FENCE
- 1000 SUPER SILT FENCE
- 1000 SUPER FENCE DIVERSION
- 1000 STABILIZED CONSTRUCTION ENTRANCE
- AGP AT GRADE INLET PROTECTION
- CP CURB INLET PROTECTION

**ON-SITE SOILS INFORMATION:**  
 1. K6B2 - KELLY SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED.  
 2. S1C2 - SASSAFRAS GRAVELLY SANDY LOAM, 5%-10% SLOPES, MODERATELY ERODED.  
 3. S1D2 - SASSAFRAS GRAVELLY SANDY LOAM, 10%-15% SLOPES, MODERATELY ERODED.

**REFERENCE:**  
 SOIL SURVEY HOWARD COUNTY, MD PREPARED BY: UNITED STATES DEPARTMENT OF AGRICULTURE DATED: JULY 1988

FOR REVISION 4 ONLY

M.J. GESELL  
 PROFESSIONAL ENGINEER  
 MARYLAND LICENSE NO. 94917

PROFESSIONAL CERTIFICATION  
 I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 94917, EXPIRATION DATE: 12/31/23

REVIEWED FOR HOWARD SCD AND MEETS THE TECHNICAL REQUIREMENT	3/15/07
USDA - NATURAL RESOURCES CONSERVATION SERVICE	DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SCD CONSERVATION DISTRICT.	3/15/07
HOWARD SCD	DATE

**ENGINEER'S CERTIFICATE**  
 I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL IS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENT OF THE HOWARD SCD CONSERVATION DISTRICT.

SIGNATURE OF ENGINEER: ADAM J. VOLANTH P.E.  
 DATE: 12/16/06

**DEVELOPER'S CERTIFICATE**  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR EROSION AND SEDIMENT 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 SCD CONSERVATION DISTRICT.

SIGNATURE OF DEVELOPER: [Signature]  
 DATE: 12/17/06

- 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..
  2. REFER TO GENERAL NOTES SHEET FOR ANY APPLICABLE EROSION AND SEDIMENTATION NOTES.

**BENCHMARK**

GEODETIC SURVEY CONTROL #376D	N 553,237.204
	E 1,372,353.805
	ELEV. 290.931'
	LOCATED 30' EAST OF FIRE HYDRANT ACROSS FROM DEEP RUN ELEMENTARY SCHOOL
GEODETIC SURVEY CONTROL #376C	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

3	2-6-77	MS OUTFALL STORMDRAIN AS BUILT	BOHLER
4	11/15/15	EXPAND THE CENTER, ADD MICROBIO FACILITIES	BOHLER
2	8/30/07	Revised Retaining Wall	BOHLER
1	4/24/07	Revised Public Water Contract #5	BOHLER

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION  
 C/O PROP TAX DEPARTMENT 1000  
 999 LALG DRIVE  
 ISSAQUAH, WA 98037-8990  
 PHONE: (703) 406-6862

PROJECT: BENSON EAST  
 PARCEL G, ONE STORY RETAIL BUILDING (COSTCO), GATEWAY OVERLOOK SHOPPING CENTER  
 AREA: TAX MAP 37 PARCEL G 1 & 2 ZONED NEW TOWN BENSON EAST  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**EROSION AND SEDIMENT CONTROL PLAN PHASE II**

**BOHLER ENGINEERING, P.C.**  
 PROFESSIONAL ENGINEERING SERVICES • 228430 DAVIS DRIVE, SUITE 200 SPYGLASS, VIRGINIA, 20184 • CONTACT: DAVID B. BOHLER • (703) 709-9500 FAX: (703) 709-9501 • WWW.BE-INC.COM

12/16/06	DATE	DESIGNED BY: M.J.G./JD
[Signature]	DRAWN BY: B.M.H.	PROJECT NO.: SD04011.01
[Signature]	DATE: 11/22/06	SCALE: 1"=40'
[Signature]	DRAWING NO.: 14	OF 29

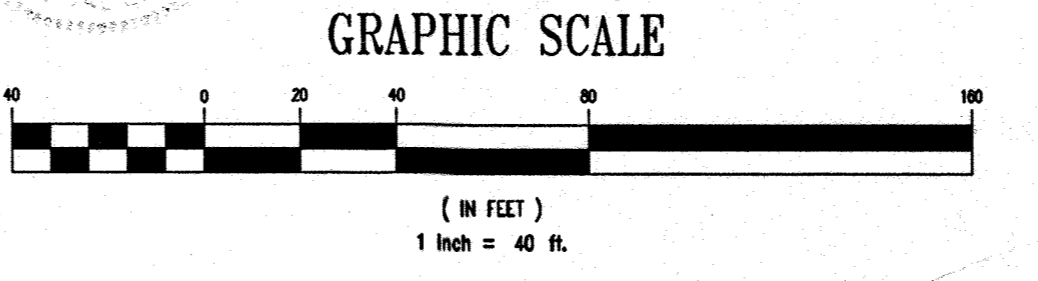
**APPROVED DEPARTMENT OF PLANNING AND ZONING**  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION  
 DATE: 4/16/07  
 CHIEF-DIVISION OF LAND DEVELOPMENT  
 DATE: 4/16/07  
 DIRECTOR  
 DATE: 4/16/07  
 APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT  
 DATE:

**PLANNING BOARD APPROVAL STAMP**  
 APPROVED  
 PLANNING BOARD  
 OF HOWARD COUNTY  
 DATE 9-14-06

**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 CONTRACTOR'S 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.

**THIS PLAN IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY**

**SEE SHEET 16 FOR E&S NOTES**



**SITE ANALYSIS**

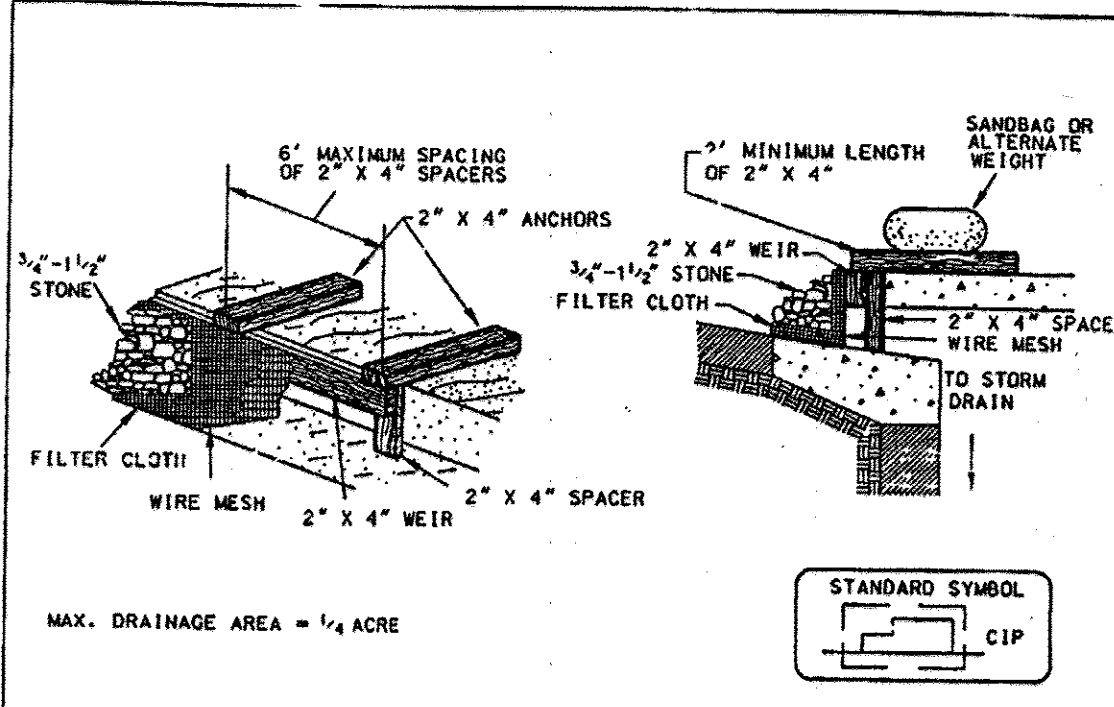
- DISTURBED AREA 520,429 S.F. OR 11.95 AC.
- TOTAL SITE AREA 505,296 S.F. OR 11.60 AC.
- TOTAL CUT - 550 CU. YDS.
- TOTAL FILL - 16,700 CU. YDS.
- EARTH QUANTITIES LISTED ABOVE ARE BASED ON A GRADING PLAN PREPARED BY BOHLER ENGINEERING, P.C. ENTITLED: "GRADING PLAN", DATED 5/12/06, PROJECT NUMBER SD04011.01.
- SILT FENCE - 507 LF.
- SUPER FENCE DIVERSION - 1,046 LF.
- AT GRADE INLET PROTECTION - 1 EA.
- CURB INLET PROTECTION - 11 EA.

**MISS UTILITY**

BEFORE YOU DIG CALL 800-368-5877  
 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 THEREOF APPLICABLE.

FOR REVISION #1  
 BOHLER ENGINEERING, P.C.

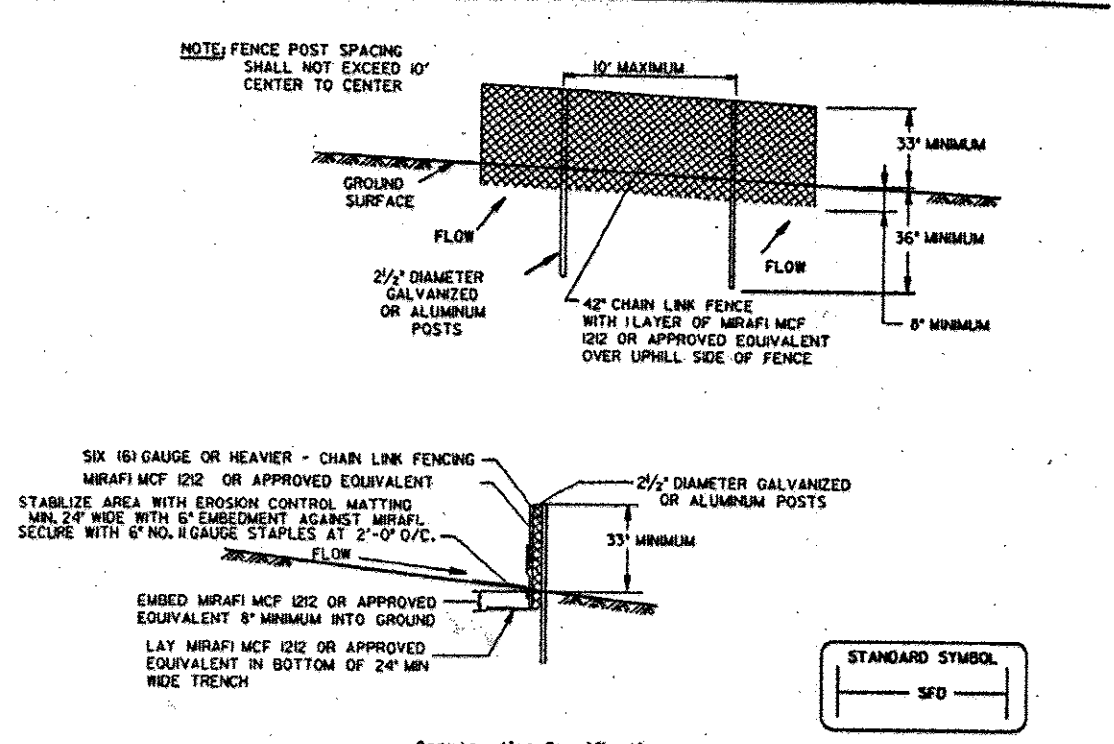
**DETAIL 23C - CURB INLET PROTECTION (COG OR COS INLETS)**



**Construction Specifications**

- 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.
- 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.
- 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).
- 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.
- The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
- 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 1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
- This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
- 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 H-16-33 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

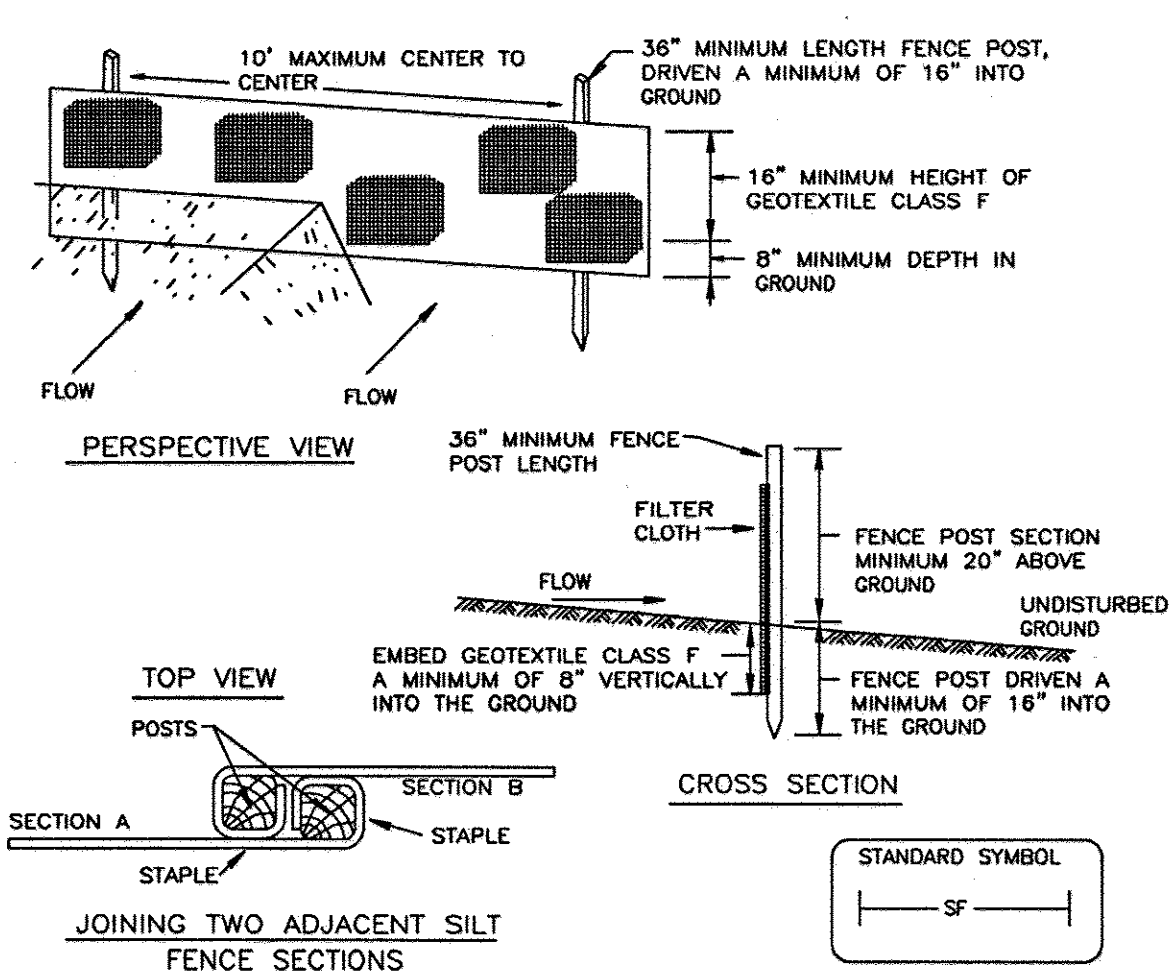


**Construction Specifications**

- Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
- Place 3/4" x 1 1/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-16-34 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**DETAIL 22 - SILT FENCE**



**Construction Specifications**

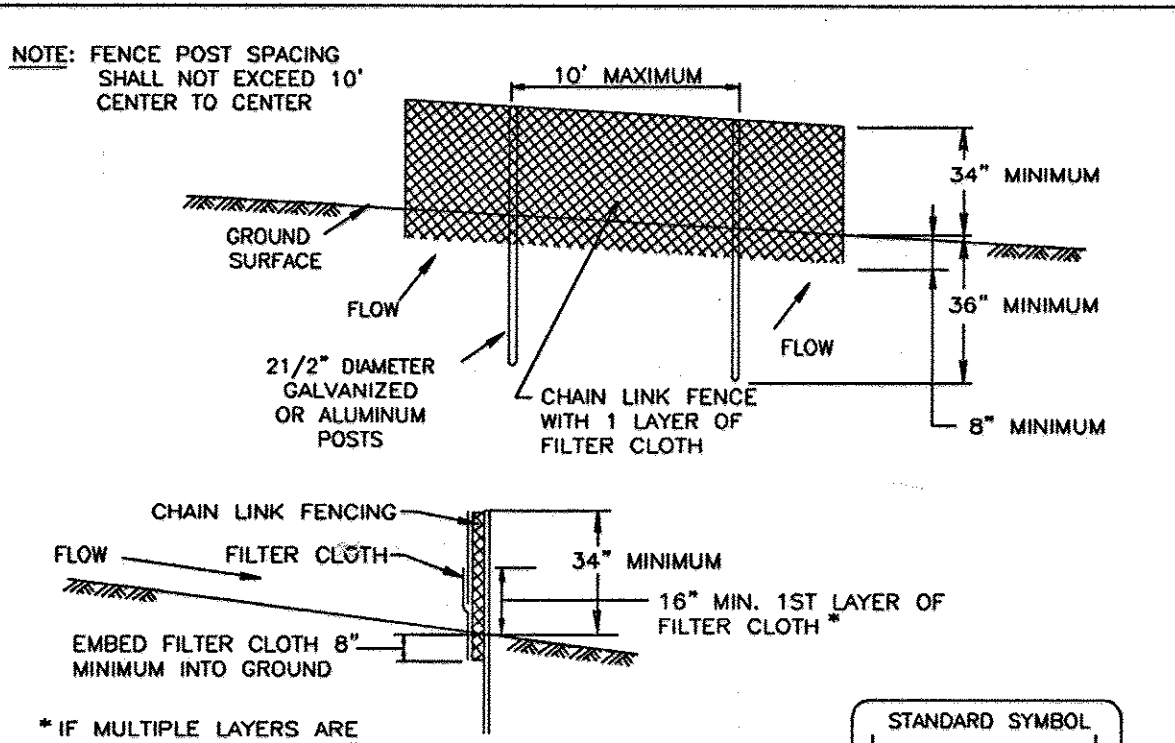
- FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1 1/2" X 1 1/2" SQUARE (MINIMUM) CUT, OR 1 3/4" DIAMETER (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
- GEOTEXTILE SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:

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

- WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.
- SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN 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 33 - SUPER SILT FENCE**



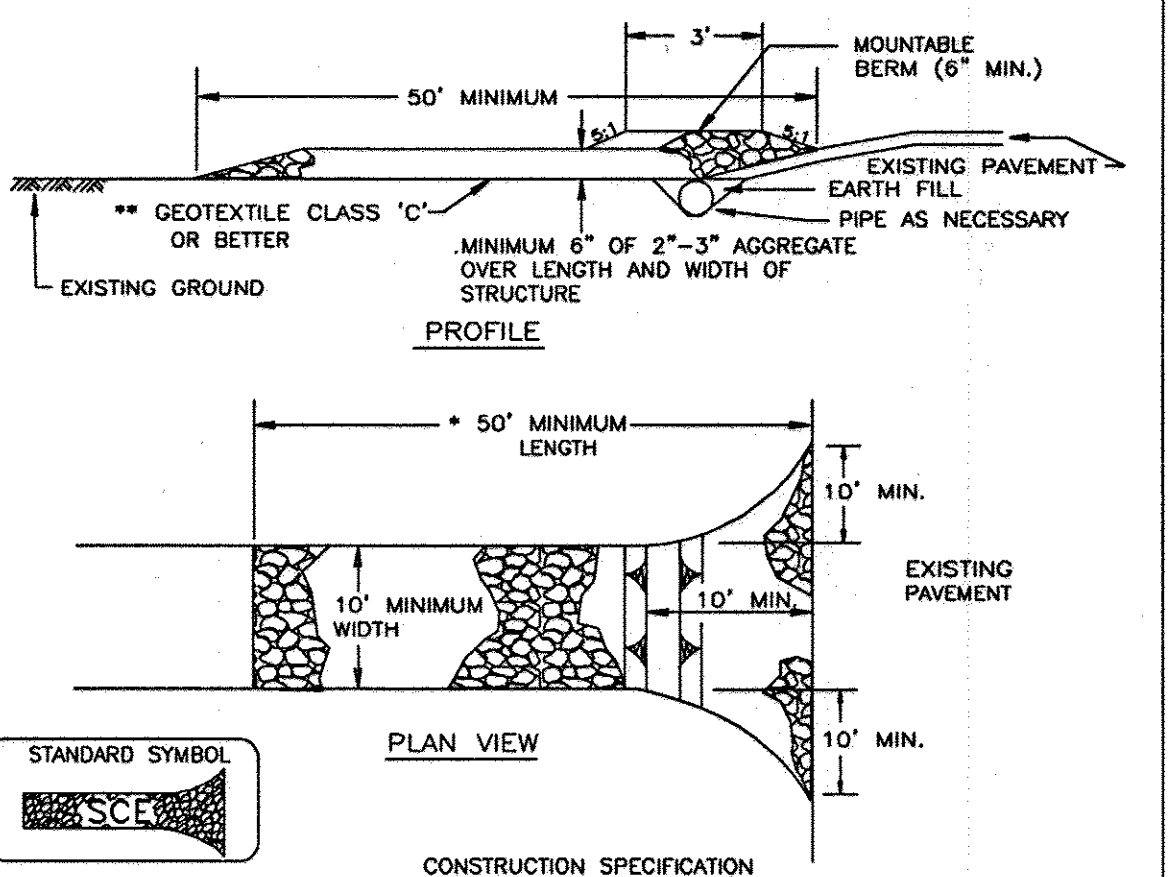
**Construction Specifications**

- Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Detail for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
- 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.
- Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
- Filter cloth shall be embedded a minimum of 8" into the ground.
- When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
- 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.
- 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/ft/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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**DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE**



**Construction Specifications**

- LENGTH - MINIMUM OF 50' (\*30' FOR SINGLE RESIDENCE LOT).
- WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. \*\*THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
- STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
- SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE 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.
- 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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**SILT FENCE**

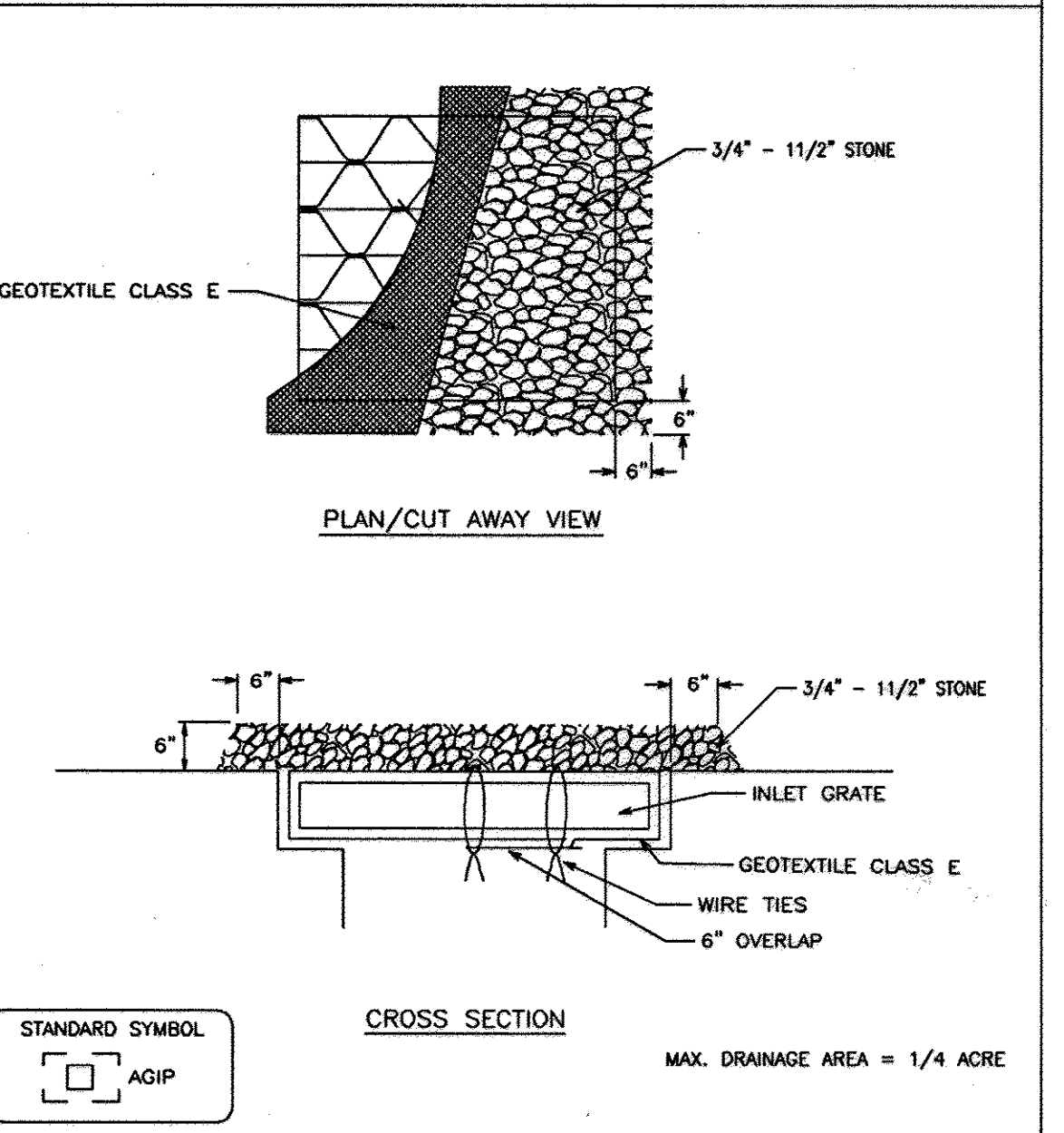
**SILT FENCE DESIGN CRITERIA**

SLOPE STEEPNESS	(MAXIMUM)	(MAXIMUM)
	SLOPE LENGTH	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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**DETAIL 23B - AT GRADE INLET PROTECTION**



**Construction Specifications**

- Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
- Place 3/4" x 1 1/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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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

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

**SEQUENCE OF CONSTRUCTION**

- NOTIFY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR AT 410-313-1855 AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. (1 DAY)
- THE GENERAL CONTRACTOR SHALL NOT COMMENCE ANY LAND DISTURBING ACTIVITIES PRIOR TO OBTAINING A GRADING PERMIT. (1 DAY)
- 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)
- 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)
  - SEVEN CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
  - FOURTEEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE. ALL HARD SURFACE PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORK DAY. (2 DAYS)
- 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)
- 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)
- BEGIN BUILDING CONSTRUCTION. (6 WEEKS)
- INSTALL CURB AND GUTTER AND APPLY BASE STONE FOR ALL PARKING AREAS. (4 WEEKS)
- FLUSH THE PROPOSED STORM DRAIN SYSTEM TO REMOVE ANY SEDIMENT AND CLEAN THE RECEIVING POND. THIS MUST BE INSPECTED AND APPROVED BY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR. (1 DAY)
- AS THE SITE IS BROUGHT TO FINAL GRADE, PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN FOURTEEN (14) DAYS. (2 WEEKS)
- INSTALL ALL PERMANENT LANDSCAPING. (2 WEEKS)
- 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)

**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."

ADAM J. VOLANTH P.E. DATE: 2/7/06

**DEVELOPER'S CERTIFICATE**

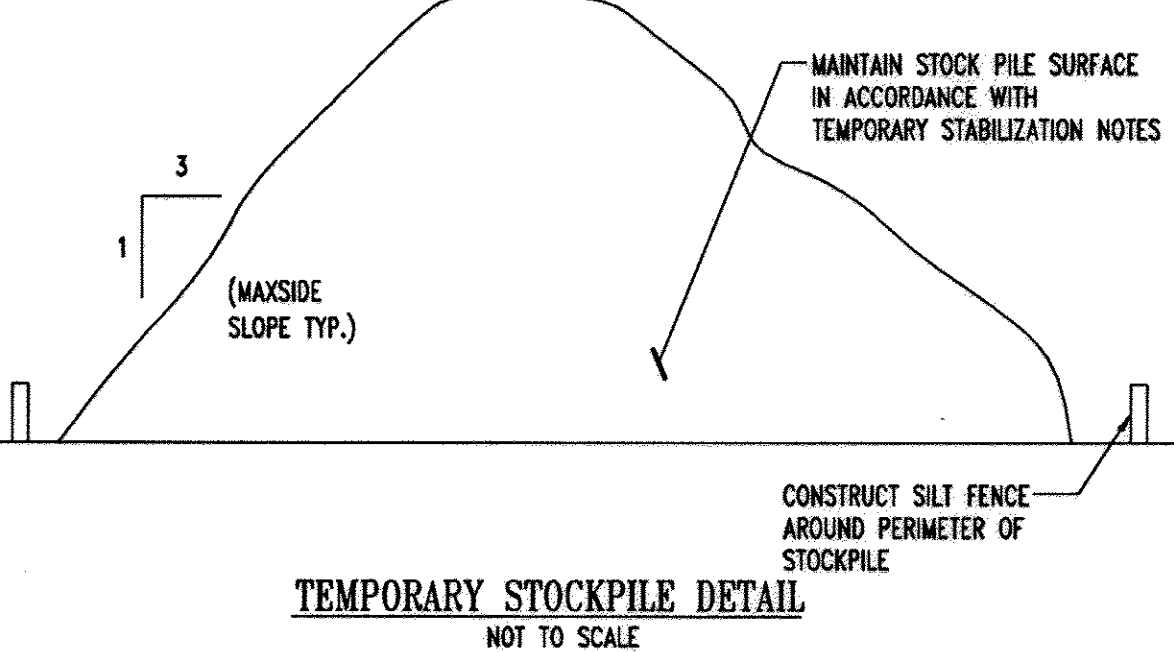
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE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

DATE: 12/19/06

REVIEWED FOR HOWARD SCD AND MEETS THE TECHNICAL REQUIREMENTS

DATE: 2/5/06

DATE: 5/5/06



TEMPORARY STOCKPILE DETAIL NOT TO SCALE

FOR REVISION 5 ONLY (NO AS-BUILT INFO)

4/7/07

I MICHAEL J. GIBELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 44097, EXPIRATION DATE: 6/9/17

**MISS UTILITY**



BEFORE YOU DIG CALL 1-800-251-7777. PROTECT YOURSELF. ONE 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 THEREOF APPLICABLE.

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 DATE 4/16/06

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.  
 COUNTY HEALTH OFFICER DATE 4/16/06

**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 CONTRACTOR'S 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.

**BOHLER ENGINEERING, P.C.**

PROFESSIONAL ENGINEERING SERVICES  
 22850 Davis Drive, Suite 200 Sterling, Virginia, 20166  
 CONTACT: DAVID B. NEMECIK  
 (703) 709-8600 FAX: (703) 709-8501

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

**STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION WITH SOD**

- SPECIFICATIONS:**
- CLASS OF TURFGRASS SOD SHALL BE MARYLAND STATE CERTIFIED, OR MARYLAND STATE APPROVED SOD.
  - 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.
  - 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.
  - 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.
  - SOD SHALL NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
  - SOD SHALL BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPORTED 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 UNSUAL CIRCUMSTANCES WHERE THERE IS INSUFFICIENT TIME FOR A COMPLETE SOIL TEST, FERTILIZER AND LIME MATERIALS MAY BE APPLIED IN AMOUNTS SHOWN UNDER B, BELOW.

- PRIOR TO SODDING, THE SURFACE SHALL BE 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.
- 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.
- 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.  
LAD 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:**
- 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.
  - AFTER THE FIRST WEEK, SOD SHALL BE WATERED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE AND INSURE ESTABLISHMENT.
  - 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.
  - MAINTENANCE OF ESTABLISHED SOD SHOULD FOLLOW SPECIFICATIONS OUTLINED IN TABLE 54-1.

**TOPSOIL CONSTRUCTION AND MATERIAL SPECIFICATIONS**

- 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-SGS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
- TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
  - 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.
  - TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
  - 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 CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
- FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
  - PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.
- TOPSOIL APPLICATION
  - 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.
  - GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBERT 4" - 8" HIGHER IN ELEVATION.
  - 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.
- 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 CONTROL 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:

- 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 AREAFLO FERTILIZER (9 LBS./1000 SQ. FT.)
- 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 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 FLAT 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.

**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**
- THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
    - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
    - 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.
    - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
    - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
  - FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

**CONSTRUCTION AND MATERIAL SPECIFICATIONS**

- 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-SGS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
- TOPSOIL SPECIFICATIONS- SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
  - 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 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.
  - TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
  - 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.

FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

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

FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:

- ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
  - 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.
  - ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
  - TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
  - 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.

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

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

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION, PRIOR TO THE START OF ANY CONSTRUCTION. (313-1855)
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", AND REVISIONS THERETO.
- 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.
- 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.
- 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. C) TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:  
TOTAL SITE AREA - 505,296 S.F. OR 11.60 AC.  
AREA DISTURBED - 520,429 S.F. OR 11.95 AC.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS 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.
- 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**

- 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.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
  - 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
  - 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.
- 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.
- 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**

- ONLY ENOUGH TRENCH WILL BE EXCAVATED THAT CAN BE BACKFILLED DAILY.
- EXCAVATED TRENCH MATERIALS SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
- IMMEDIATELY FOLLOWING PIPE INSTALLATION, THE TRENCH SHALL BE BACKFILLED, COMPACTED AND STABILIZED AT THE END OF EACH WORKING DAY.
- FULL TRENCH COMPACTION IS REQUIRED.
- MULCHING TO HOWARD SCD SPECIFICATIONS OF ALL DISTURBED AREAS AND DAILY ON BACKFILL WILL BE REQUIRED.
- 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.
- STAGING AREAS FOR EQUIPMENT AND SUPPLIES SHALL BE PROTECTED WITH SILT FENCE.
- ANY SEDIMENT CONTROL PRACTICES WHICH ARE DISTURBED DURING UTILITY CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE END OF EACH WORKING DAY.
- ANY DITCHES OR DRAINAGE WALES 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."

12/7/06  
DATE

SIGNATURE OF ENGINEER  
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."

12/17/06  
DATE

SIGNATURE OF DEVELOPER

**UTILITY CONTACT INFORMATION:**

<b>NATURAL GAS AND ELECTRIC</b> BALTIMORE GAS AND ELECTRIC 7317 PARKWAY DRIVE SOUTH HANOVER, MD 21076 PHONE: (410) 859-9383	<b>WATER AND SANITARY SEWER</b> HOWARD COUNTY PUBLIC WORKS BUREAU OF UTILITIES 8250 OLD MONTGOMERY ROAD COLUMBIA, MD 21045 PHONE: (410) 313-4910
<b>TELEPHONE</b> VERIZON 7133 RUTHERFORD ROAD BALTIMORE, MD 21244 PHONE: (410) 224-5286	<b>EROSION AND SEDIMENT CONTROL</b> DEPARTMENT OF INSPECTIONS, LICENSES & PERMITS 3430 COURTHOUSE DRIVE ELLCOTT CITY, MD 21043 PHONE: (410) 313-2455
<b>STORMWATER MANAGEMENT</b> HOWARD COUNTY PLANNING AND ZONING DEPARTMENT 3430 COURTHOUSE DRIVE ELLCOTT CITY, MD 21043 PHONE: (410) 313-2350	<b>PLANNING AND ZONING</b> HOWARD COUNTY PLANNING AND ZONING DEPARTMENT 3430 COURTHOUSE DRIVE ELLCOTT CITY, MD 21043 PHONE: (410) 313-2350

**PERMANENT SEEDING SUMMARY**

NO.	SPECIES	SEED MIXTURE (HARDNESS ZONE 6b) (FROM TABLE 25)		SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-10-10)			LIME RATE
		APPLICATION RATE (LBS./AC.)	SEEDING DATES			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% SERICIA LESPEDEZA	110 3 20	3/1-5/15 5/16-8/14 8/15-11/15						
3	17% WEEPING LOVEGRASS 83% SERICIA LESPEDEZA	4 20	3/1-5/15 5/16-8/14						

**TEMPORARY SEEDING SUMMARY**

NO.	SPECIES	SEED MIXTURE (HARDNESS ZONE 6b) (FROM TABLE 26)		SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-10-10)			LIME RATE
		APPLICATION RATE (LBS./AC.)	SEEDING DATES			N	P205	K20	
1	RYE PLUS BARLEY	150	YEAR ROUND	1"					
2	WEEPING LOVEGRASS	4	5/1-8/14	1/4"=1/2"					
3	ANNUAL RYEGRASS	50	8/15-11/15	1/4"=1/2"					

*FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)*

*MJG*

I, MICHAEL J. GESSELL, 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. 44047, EXPIRATION DATE: 6/19/17

**TEMPORARY SEEDING SUMMARY**

4/12/17

MISS UTILITY

BEFORE YOU DIG CALL  
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 THEREIN APPLICABLE.

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

**PLANNING BOARD APPROVAL STAMP**

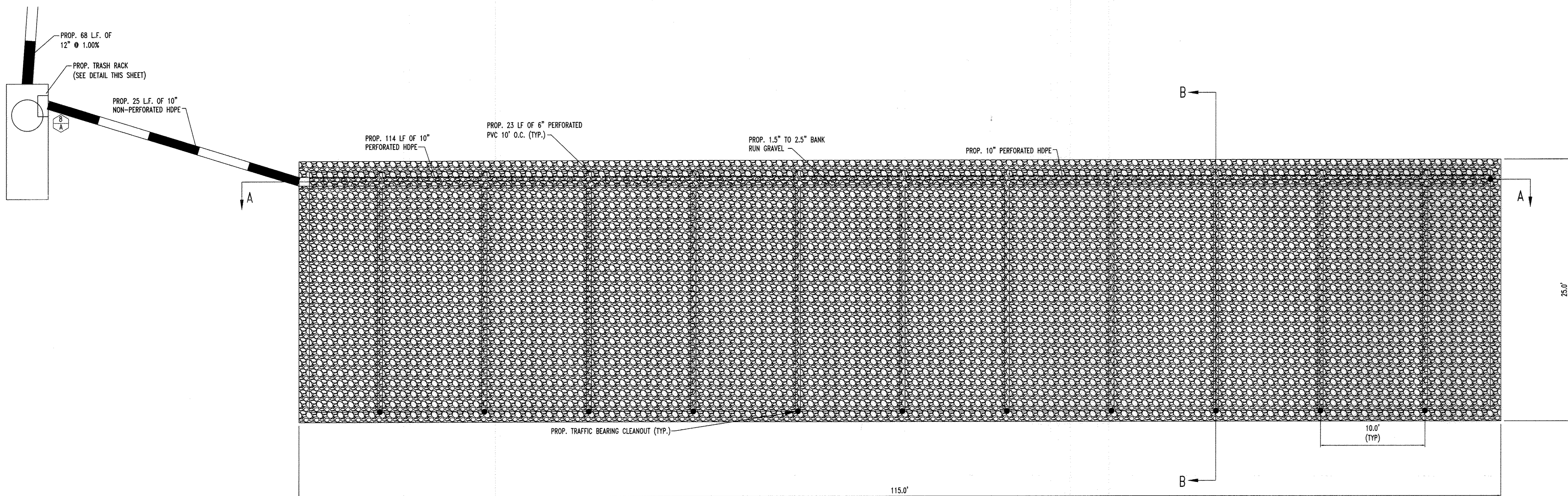
APPROVED  
PLANNING BOARD  
OF HOWARD COUNTY  
DATE 9-14-06

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 CONTRACTOR'S 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.

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
CHIEF-DIVISION OF LAND DEVELOPMENT  
DIRECTOR

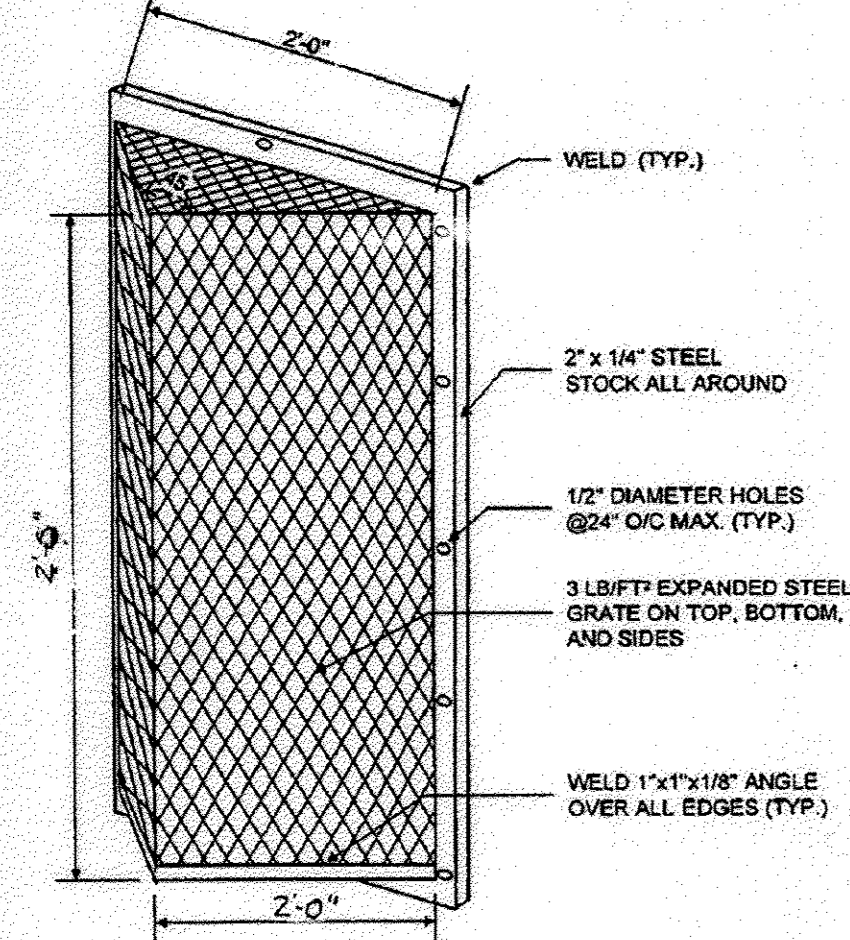
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.  
HOWARD COUNTY HEALTH OFFICER  
HOW





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

Detail 1 Trash Rack Protection for Low Flow Orifice



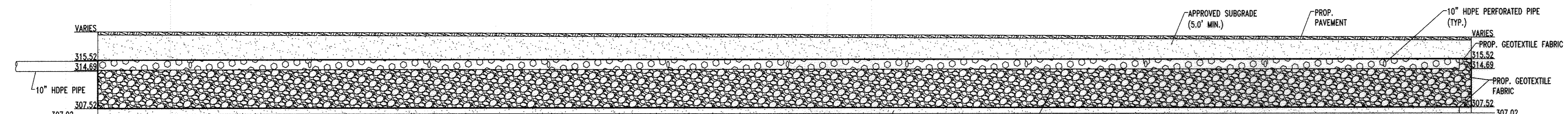
- NOTES FOR TRASH RACK**
- TRASH RACK TO BE CENTERED OVER OPENING.
  - STEEL TO CONFORM TO ASTM A-36.
  - ALL SURFACES TO BE COATED WITH ZRC COLD GALVANIZING COMPOUND AFTER WELDING.
  - TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2\"/>

TRASH RACK DETAIL (NTS)

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 9-11-06  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF-DIVISION OF LAND DEVELOPMENT  
DATE 9-8-06  
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.  
COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT  
DATE



PROFILE VIEW SECTION A-A  
SCALE: HORIZ. 1\"/>

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

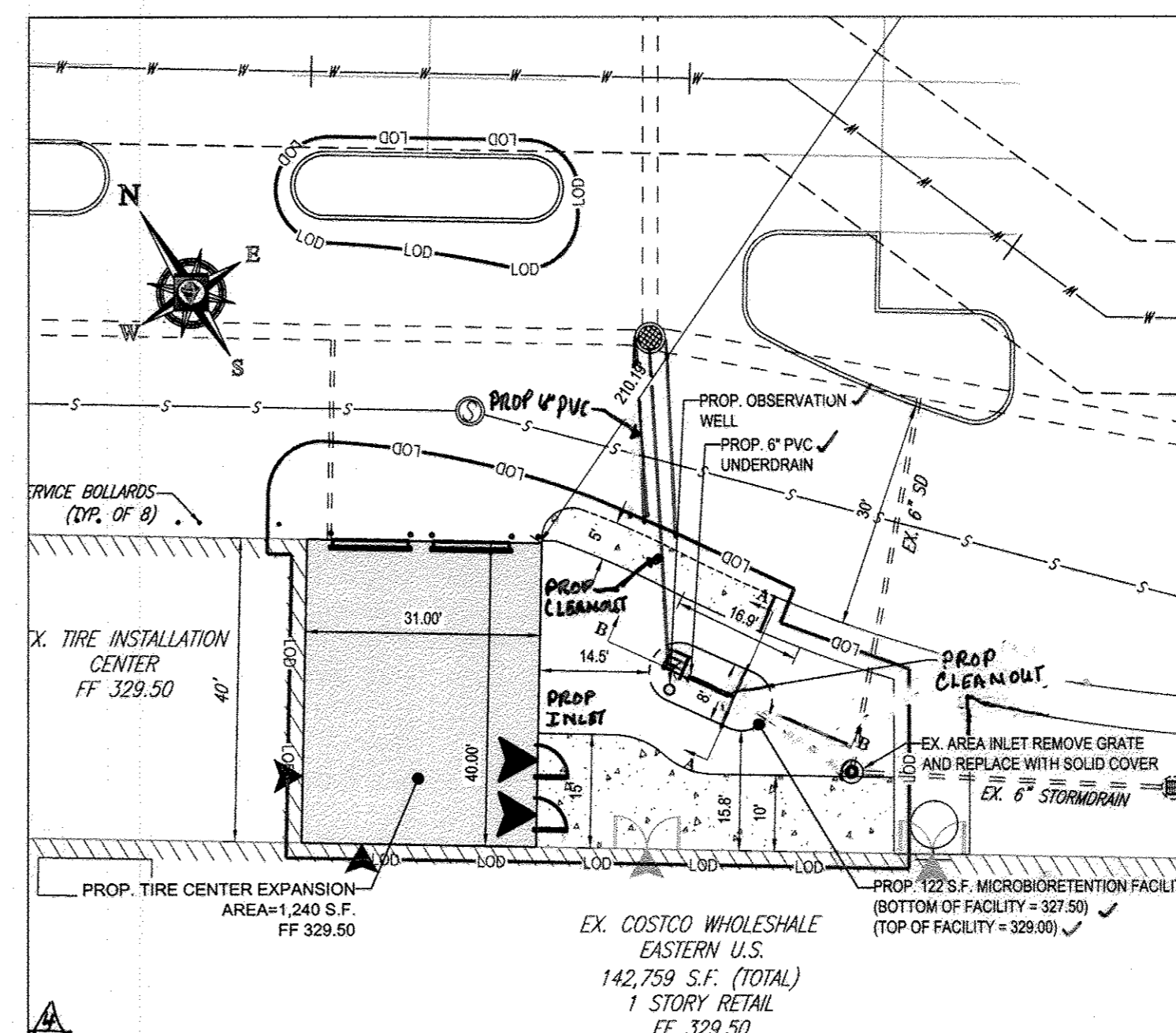
NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

FOR REVISION 5 ONLY  
(AS-BUILT ONLY)

*[Signature]*  
4/10/17

I HEREBY CERTIFY, BY MY SEAL, THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS "AS BUILT" PLAN MEET THE APPROVED PLANS AND SPECIFICATIONS.

MICHAEL J GESELL, # 44097, 6/9/17

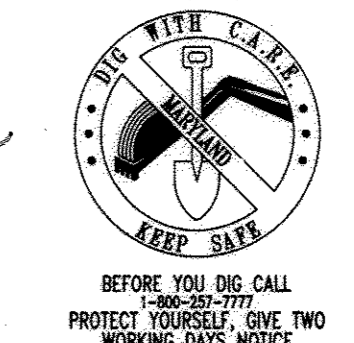


BLOW-UP  
SCALE: 1\"/>

NOTE: SEE SHEET 10 FOR CROSS-SECTIONAL VIEWS A-A & B-B OF MICROBIORETENTION FACILITY  
NOTE: THE STORMWATER MANAGEMENT AGREEMENT HAS BEEN EXECUTED ON

PROFESSIONAL CERTIFICATION  
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 44097, EXPIRATION DATE 8/31/17

MISS UTILITY



BEFORE YOU DIG, CALL 1-800-251-7777. PROTECT YOURSELF, ONE 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 THEREOF APPURTENANT.  
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
5	2-4-17	MB OUTFALL STORMDRAIN AS BUILT	
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 DELAWARE VALLEY ROAD, SUITE 101, TOWSON, MARYLAND, 21284  
CONTACT: MICHAEL J. GESELL  
(410) 821-7900 FAX: (410) 821-7987

DESIGNED BY: MJG/JD  
DRAWN BY: PAB

PROJECT NO.: MD152031  
DATE: 09/14/15  
SCALE: AS SHOWN

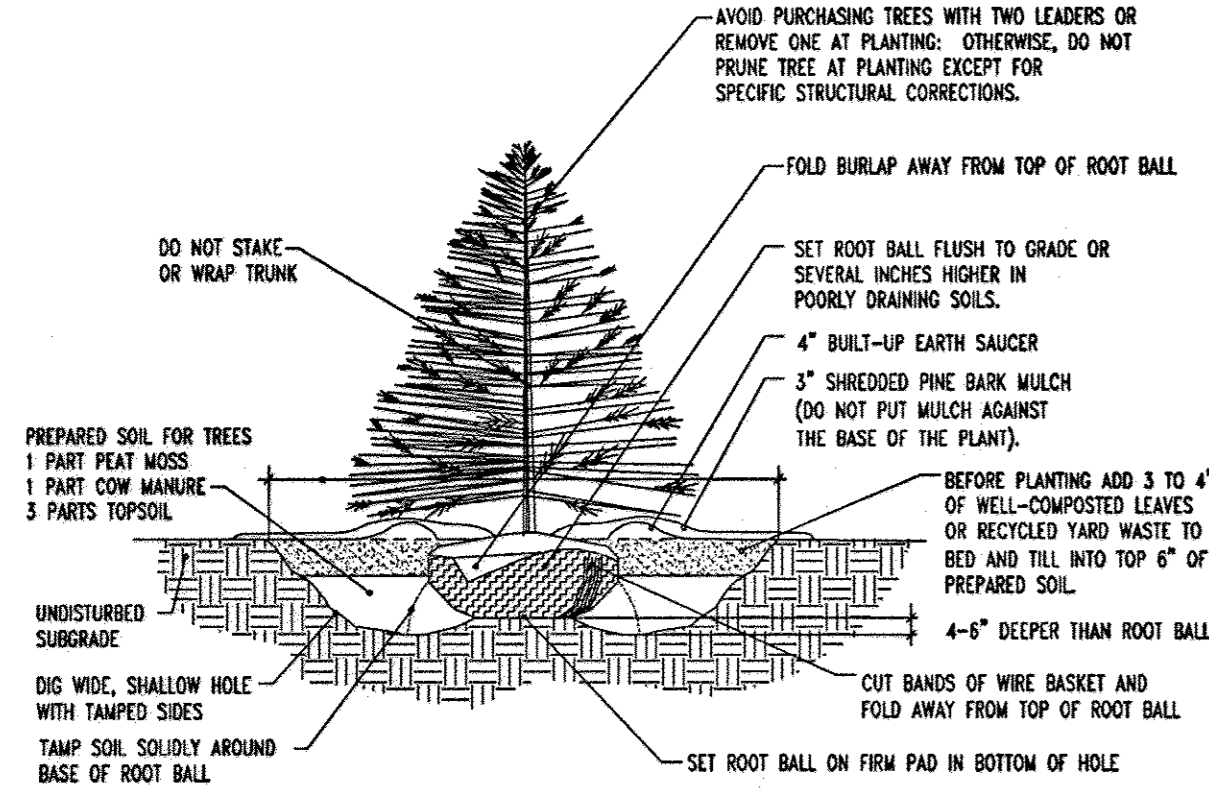
DRAWING NO.: 17 OF 29

MICHAEL J. GESELL  
PROFESSIONAL ENGINEER NO. 44097



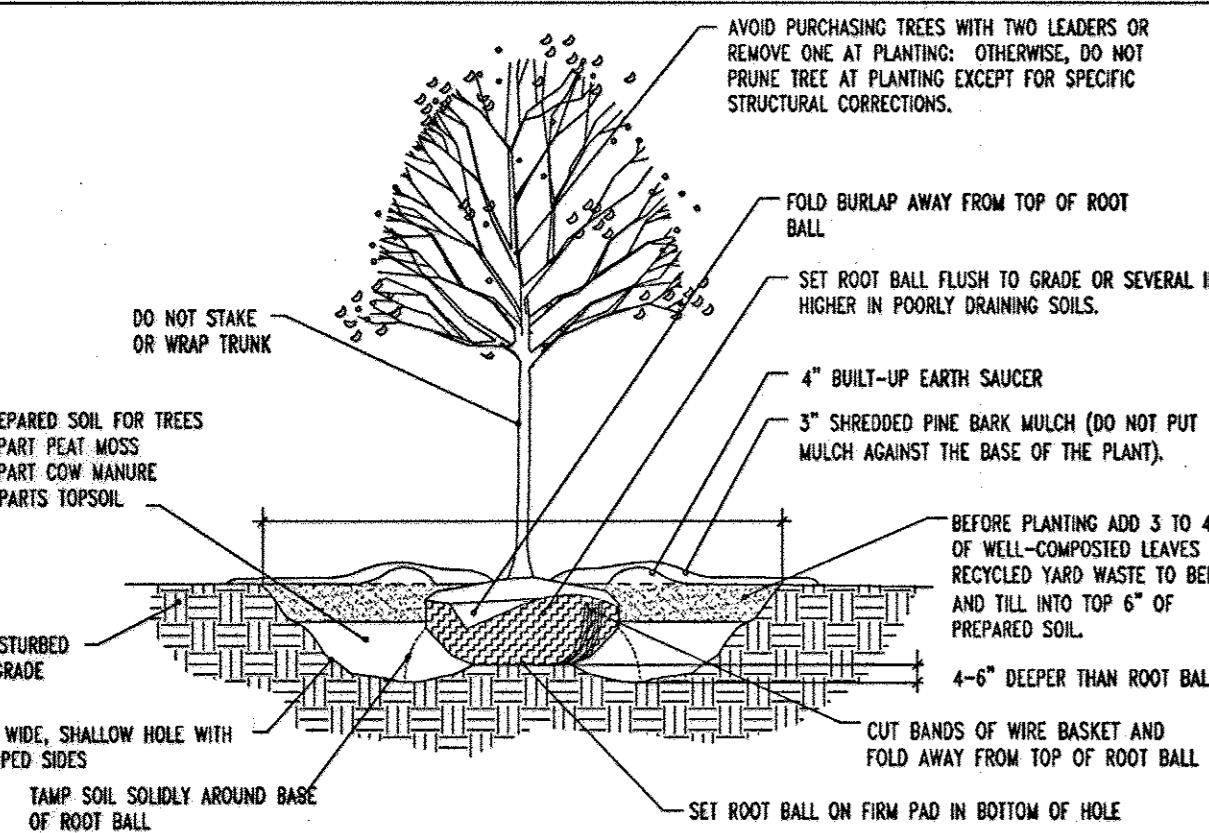
**NOTES FOR DECIDUOUS AND EVERGREEN TREE PLANTINGS:**

- NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
- REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP 1/3 FROM TOP OF ROOT BALL.
- PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
- 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.
- THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUNDED TO AVOID MATING 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.



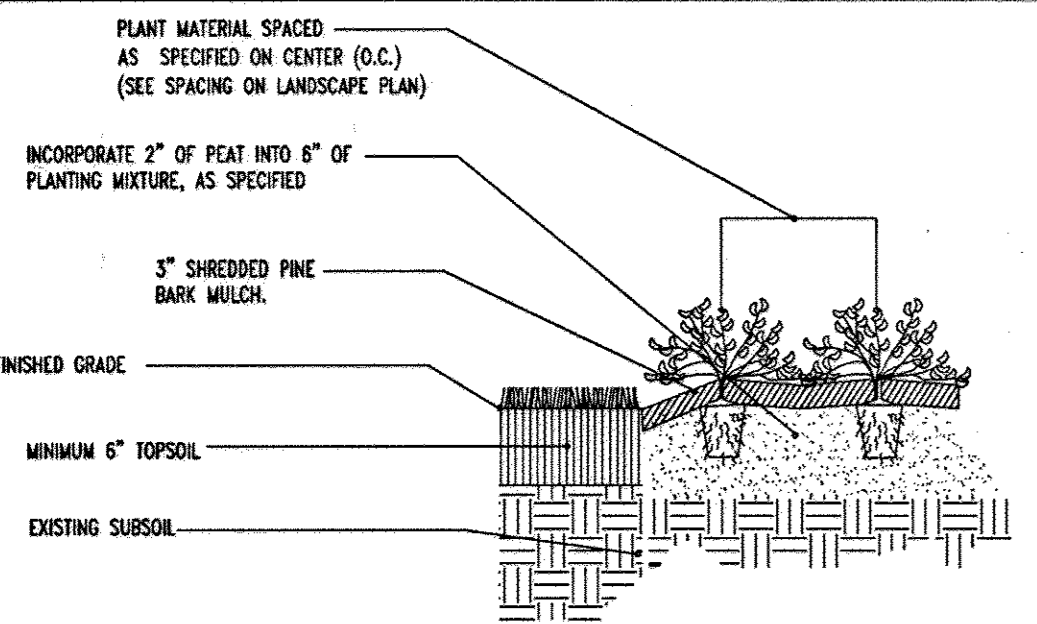
**EVERGREEN TREE PLANTING DETAIL**

NOT TO SCALE



**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.

**SEEDING SPECIFICATIONS**

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

PERENNIAL GRASS	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
- GERMINATION RATES MAY 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

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
DATE 4/15/06  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
DATE 4/16/06  
CHIEF-DIVISION OF LAND DEVELOPMENT  
DATE 4/16/06  
DIRECTOR  
DATE 4/16/06

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT

**LANDSCAPE SPECIFICATIONS**

- SCOPE OF WORK:**  
THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCLUDING: FINISHED GRADE, SOIL PREPARATION, PERMANENT SEEDING OR SOODING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.
- MATERIALS:**  
A. GENERAL - ALL HORTICULTURAL MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.  
B. TOPSOIL - NATURAL, FRAGILE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 6.5-7.5. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETATION, MATTER AND CLAY CLODS.  
C. LAMM - 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 SOODING IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES.  
D. LAMM SEED MIXTURE SHALL BE FRESH, CLEAN WHEAT CROP SEEDS.  
E. SOIL SHALL BE STURDILY ROOTED, WEED AND DISEASE-FREE WITH A UNIFORM THICKNESS. SOIL INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE FEEDED TO HOLD 500 IN PLACE.
- 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.
- FERTILIZER:**  
A. FERTILIZER SHALL BE DELIVERED TO THE SITE MEAD 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.  
B. PRIOR TO 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.
- PLANT MATERIAL:**  
A. 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.  
B. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.  
C. 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.  
D. TREES WITH ABRASSION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1/8" WHICH HAVE NOT BEEN COMPLETELY CALLED, SHALL BE REJECTED.  
E. ALL PLANTS SHALL BE SOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.  
F. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HEART OF GROWTH WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.  
G. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE MATERIAL CHASE 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 MATERIAL CHASE.  
H. VINES SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.  
I. VINE TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

- 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 WORKING DAY. 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.  
C. 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 PROTECTED BY REMOVING 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.  
D. 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.  
E. A FORTY-EIGHT INCH (48") HIGH WOODEN SHAW FENCE OR ORANGE COLORED HIGH-DENSITY "YIP-FENCE", OR APPROVED EQUAL, MOUNTED ON STEAKS 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.  
F. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEANING 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.  
G. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.  
H. SOIL MODIFICATIONS:  
A. CONTRACTOR SHALL ATTEMPT 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.  
D. 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. PINE, HEADS, BACK FLOW PREVENTION, METERS AND CONTROLLERS. ALL SLEEVES IN PAVEMENT AREAS MUST BE SHOWN.  
E. TO INCREASE DRAINAGE, MOIST HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL OPSHUM. 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.  
F. MOISTLY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLEAN LEAVES UP TO 50% OF THE TOTAL MIX.

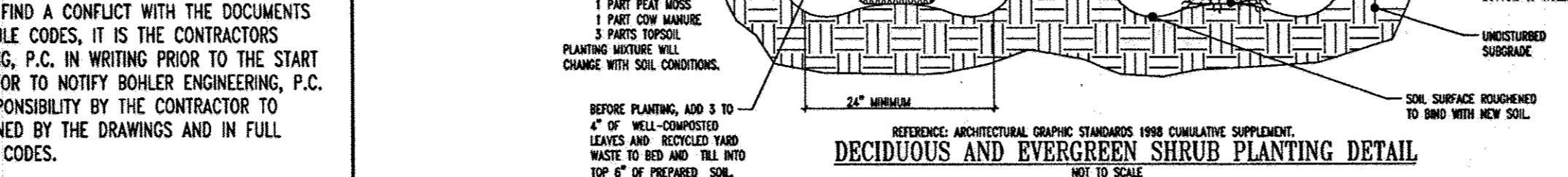
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C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN A GOOD CONDITION AND FREE OF INSECTS AND DISEASE.  
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F. MAINTENANCE (ALTERNATE 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 BOHLER 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 MAINTAINED TO THE APPROVAL OF THE OWNER/OPERATOR.  
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 FROM CONTAMINATION.  
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.

- 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.  
G. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB MULCH AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.  
H. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON THE SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAYS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.  
I. GUARANTEE:  
A. 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 SUCCESSFUL 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 A 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, REGRADING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF EROSION OR BARE AREAS.  
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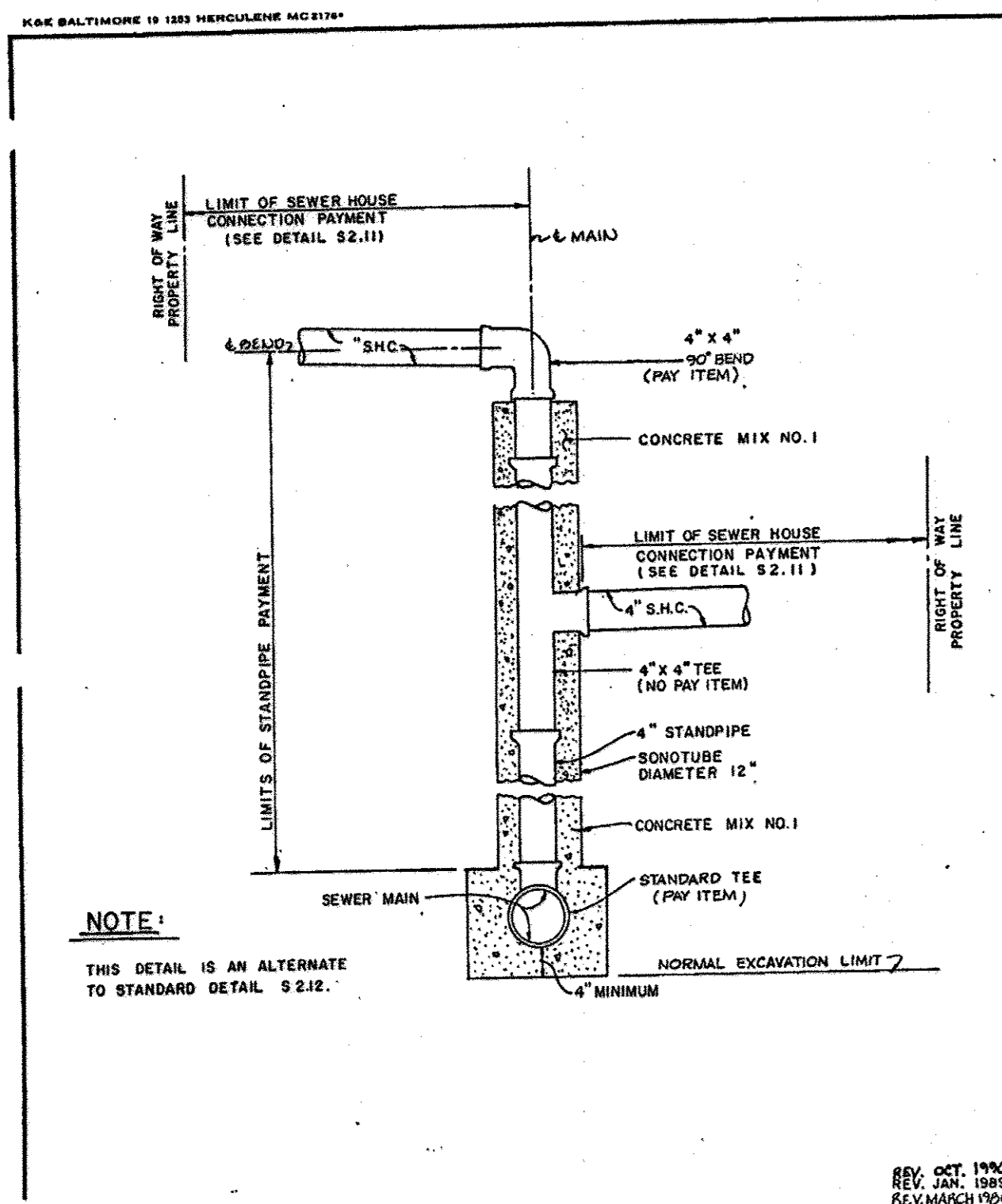


**DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL**

NOT TO SCALE

**GATEWAY OVERLOOK**

- PLANTING SPECIFICATIONS:**  
A. PLANT MATERIALS:  
THE LANDSCAPE CONTRACTOR SHALL FURNISH AND INSTALL AND/OR DIG, BALL, BURLAP AND TRANSPORT ALL OF THE PLANT MATERIALS LIST FOR ON DRAWINGS AND/OR LISTED IN THE PLANT SCHEDULE.  
1. PLANT NAMES:  
PLANT NAMES LISTED 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 NURSERYMEN (HERE-AFTER REFERRED TO AS AAM STANDARDS). ALL PLANTS SHALL BE TYP



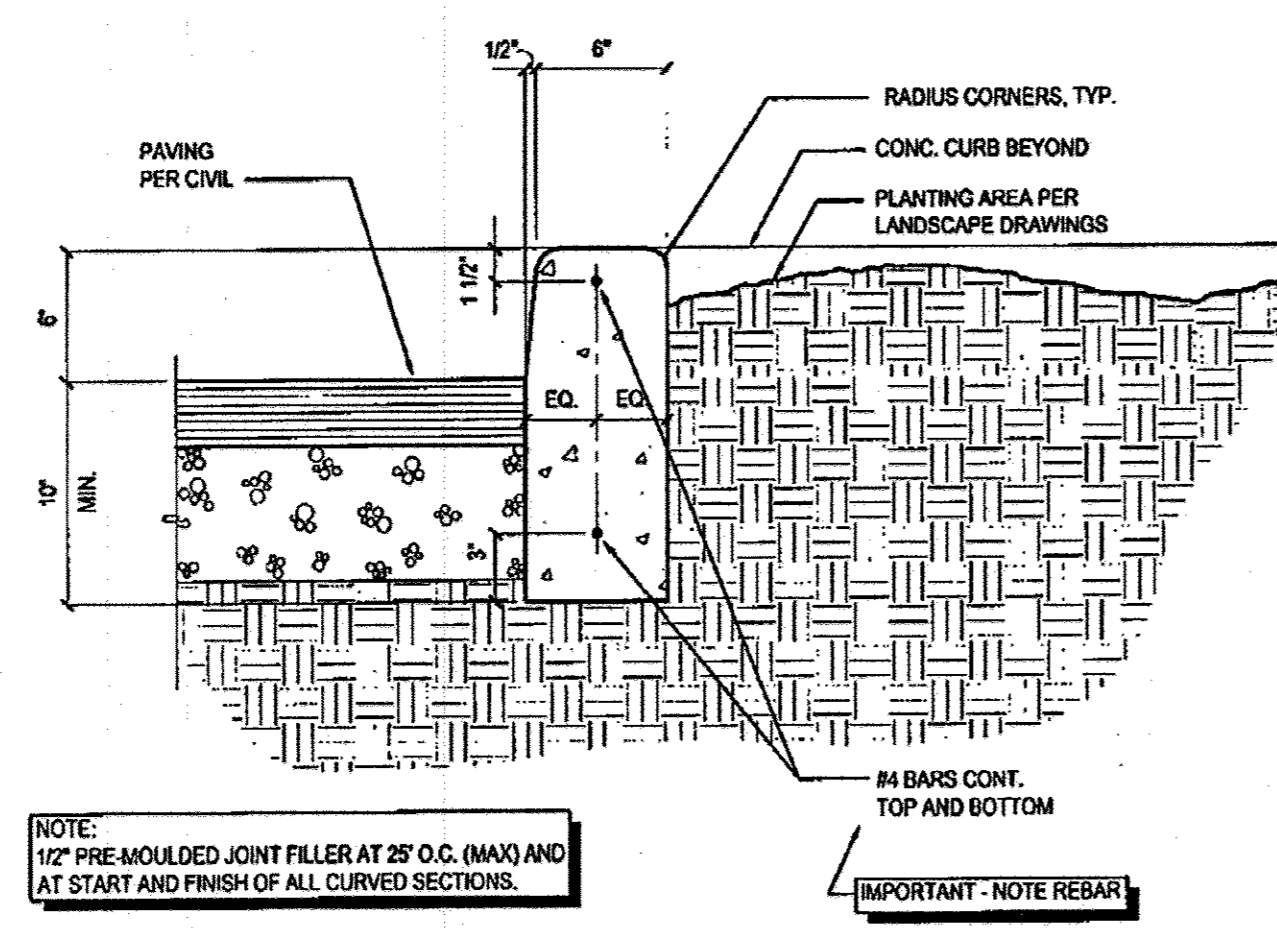
NOTE: THIS DETAIL IS AN ALTERNATE TO STANDARD DETAIL S2.12.

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: [Signature] Chief - Bureau of Engineering

STANDARD SANITARY SEWER DETAIL  
ALTERNATE DOUBLE  
DROP HOUSE CONNECTION  
TYPE "C"

REV. OCT. 1990  
REV. MARCH 1996  
REV. JAN. 1997

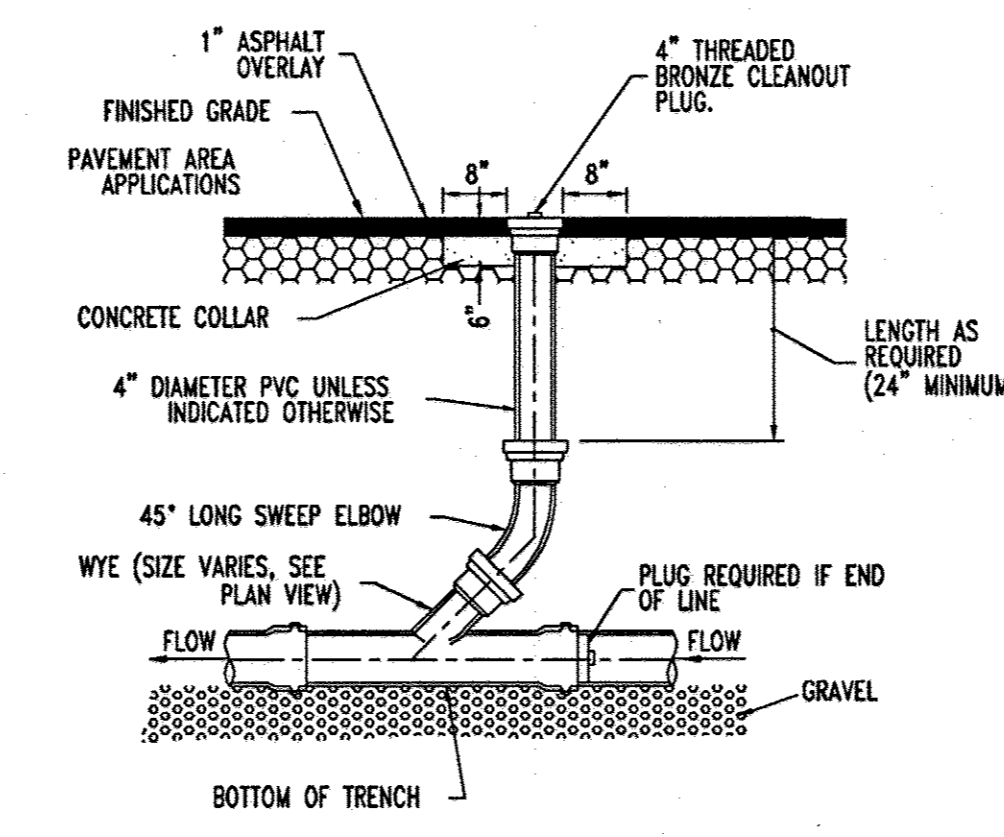
COSTCO WHOLESALE  
DEVELOPMENT REQUIREMENTS



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

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

EXHIBIT K-1-7



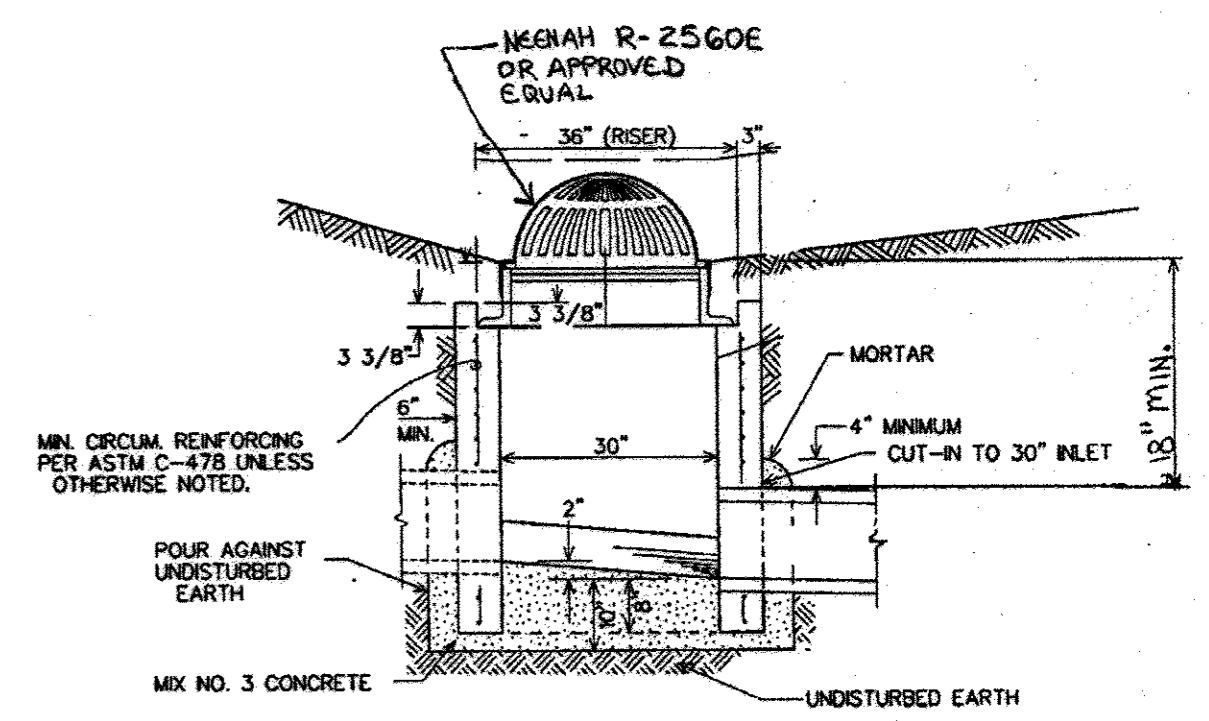
TRAFFIC BEARING SERVICE LINE CLEANOUT  
NOT TO SCALE

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 328-330.

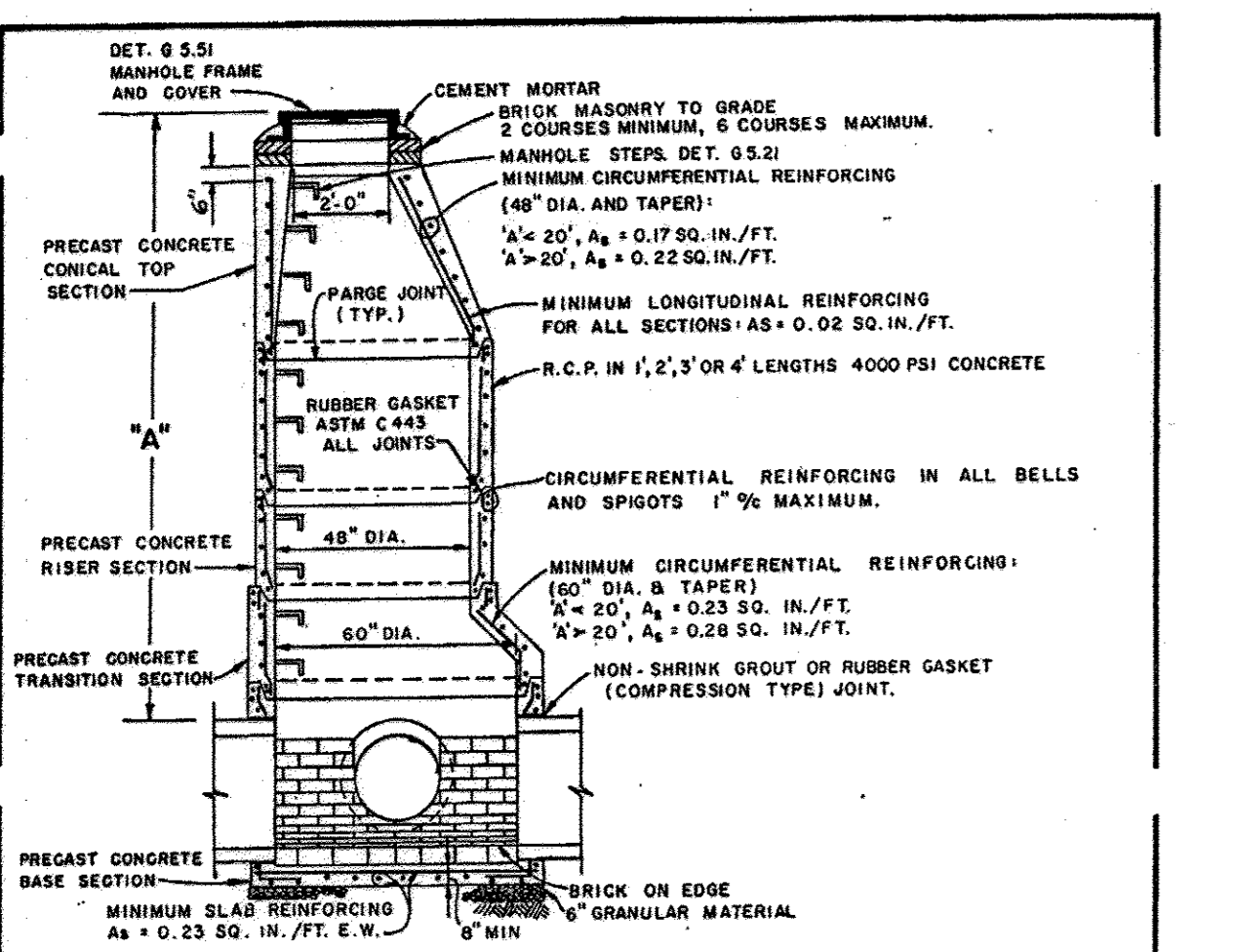
R-2560 Series  
Beehive Grates with Frames

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.	Dimensions in Inches						Frame Reference
	A	B	C	E	F	G	
R-2560-A	12	1	11	10	4	4	R-1791-A
R-2560-B	18	1 1/2	16 1/2	30	8	4	R-1900-A
R-2560-C	22	1 1/2	20	28	4	4 1/2	R-1690
R-2560-D	22	1 1/2	20 1/2	28 1/4	6	4 1/2	R-1791
R-2560-E	22	1 1/2	20	35	9	4 1/2	R-1710
R-2560-F	22	1 1/2	20 1/2	28 1/4	6	7	R-1761
R-2560-G	22	1 1/2	20	35	9	7	R-1710
R-2560-H	22 1/4	1 1/2	21 1/4	34	4	4 1/2	R-1947-A
R-2560-I	22 3/4	1 1/2	21 1/4	34	4	7	R-1947-A
R-2560-J	22 3/4	1 1/2	21	34	9	7	R-1713
R-2560-K	23	1 1/2	21	38	9	7	R-1550-A
R-2560-L	25 1/4	1 1/2	24 1/2	35 1/2	4	8	R-1733-1
R-2560-M	25 1/4	1 1/2	24 1/2	35 1/2	4	9	R-1733-B
R-2560-N	25 1/4	1 1/2	24 1/2	35 1/2	7	8	R-1733
R-2560-O	25 1/4	1 1/2	24 1/2	35 1/2	7	9	R-1733
R-2560-P	25 1/4	1 1/2	24 1/2	35 1/2	8	6	R-1733-A
R-2560-Q	25 1/4	1 1/2	24 1/2	35 1/2	8	9	R-1733-A
R-2560-R	25 1/4	1 1/2	24 1/2	35 1/2	9	8	R-1733-B
R-2560-S	25 1/4	1 1/2	24 1/2	35 1/2	10	8	R-1733-C
R-2560-T	25 1/4	1 1/2	24 1/2	35 1/2	10	9	R-1733-C
R-2560-U	32	1 1/2	30	46	7	4	R-1745-B



AREA DRAIN  
NOT TO SCALE



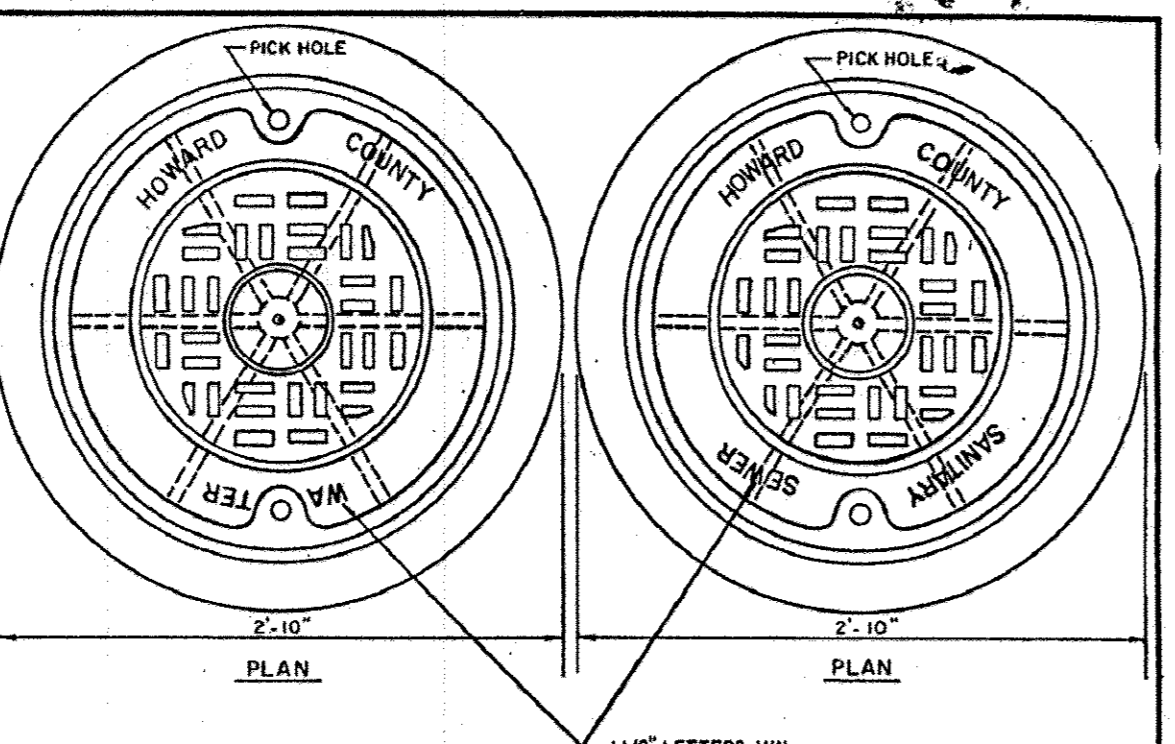
GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES

- MANHOLE BASE SHALL BE BEDDED ON 6-INCH GRANULAR MATERIAL ON FIRM SUBGRADE.
- EXCAVATION BELOW PIPES SHALL BE BACKFILLED WITH GRANULAR OR SELECT MATERIAL 1/3 OF WAY TO TOP OF PIPE.
- CONNECTION BETWEEN MANHOLE WALL AND SEWER SHALL BE NON-SHRINK GROUT OR RUBBER GASKET (COMPRESSION TYPE) JOINT.
- MANHOLE STEPS SHALL BE AS SPECIFIED ON DETAIL 05.21. MANHOLE COVER SHALL BE AS SPECIFIED ON DETAIL 05.21.
- PROVIDE 2 COATS SEAL FOR EPXY COATING, 16 MIL DRY, SANITARY SEWER ONLY. (EXTERIOR SURFACE ONLY)
- PROVIDE PIPE JOINT WITHIN 2'-0" MAXIMUM FROM OUTSIDE OF MANHOLE WALL.
- 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.
- MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C498 EXCEPT AS SHOWN.

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: [Signature] Chief - Bureau of Engineering

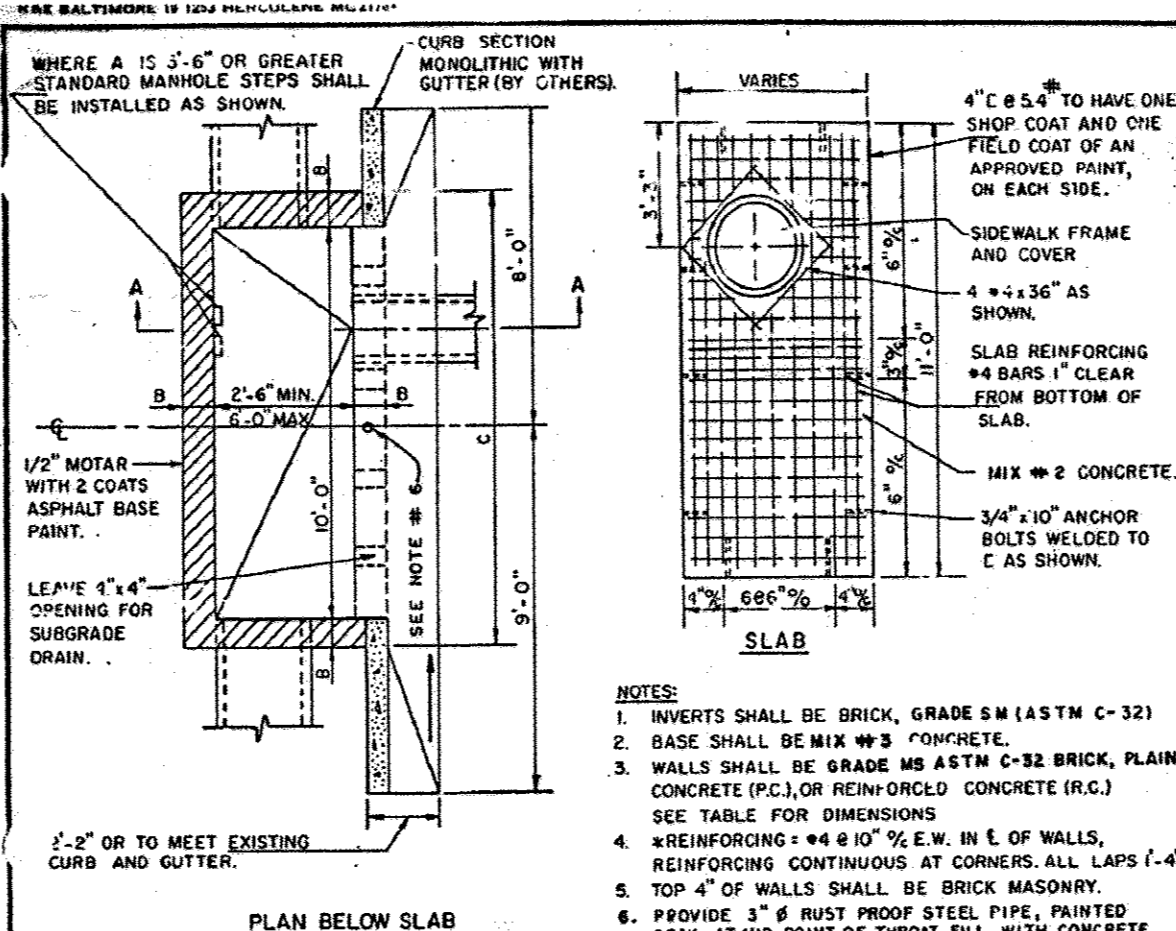
STANDARD PRECAST MANHOLES

REV. OCT. 1970  
REV. JAN. 1999  
REV. JAN. 1999  
REV. JAN. 1999



LETTERING FOR  
MANHOLE COVERS

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: [Signature] Chief - Bureau of Engineering

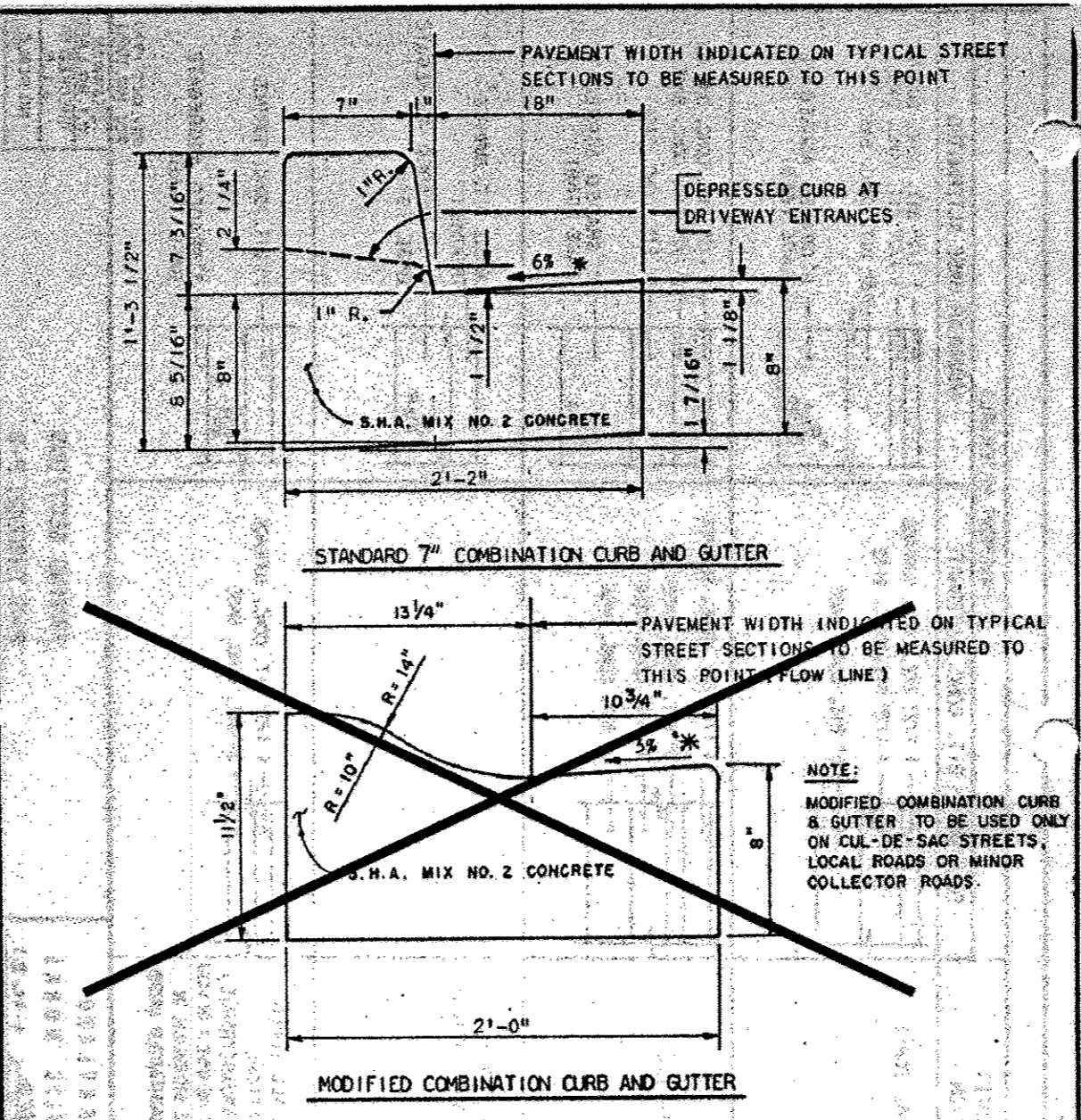


NOTE: 1. INVERTS SHALL BE BRICK, GRADE SS (ASTM C-321)  
2. BASE SHALL BE MIX #2 CONCRETE.  
3. WALLS SHALL BE GRADE SS ASTM C-32 BRICK, PLAIN CONCRETE (P.C.), OR REINFORCED CONCRETE (R.C.)  
4. SEE TABLE FOR DIMENSIONS  
5. REINFORCING #4 @ 12" O.C. IN E OF WALLS, REINFORCING CONTINUOUS AT CORNERS. ALL LAPS 1'-4"  
6. TOP 4" OF WALLS SHALL BE BRICK MASONRY  
7. PROVIDE 3" RUST PROOF STEEL PIPE, FINISHED GRAY, AT MID POINT OF THROAT, FILL WITH CONCRETE.

A	B	C	WALLS
5'-0"	8"	11'-4"	BR OR PC
5'-0"	12"	12'-0"	BR OR PC
5'-0"	8"	11'-4"	R.C.

HOWARD COUNTY, MARYLAND  
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Approved: [Signature] Chief - Bureau of Engineering

TYPE 'A-10' INLET



NOTE: 1. 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.

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: [Signature] Chief - Bureau of Engineering

COMBINATION CURB  
AND GUTTER

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

4/7/12

I, MICHAEL J. BESELL, 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: 6/19/17

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 4/16/07

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
DATE 4/16/07

MISS UTILITY

BEFORE YOU DIG CALL 1-800-251-7777 PROJECT NUMBER OR ONE 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 THEREOF APPROPRIATE.

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

5 2-6-17 MB OUTCALL STORM DRAIN AS-BUILT PHIN

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

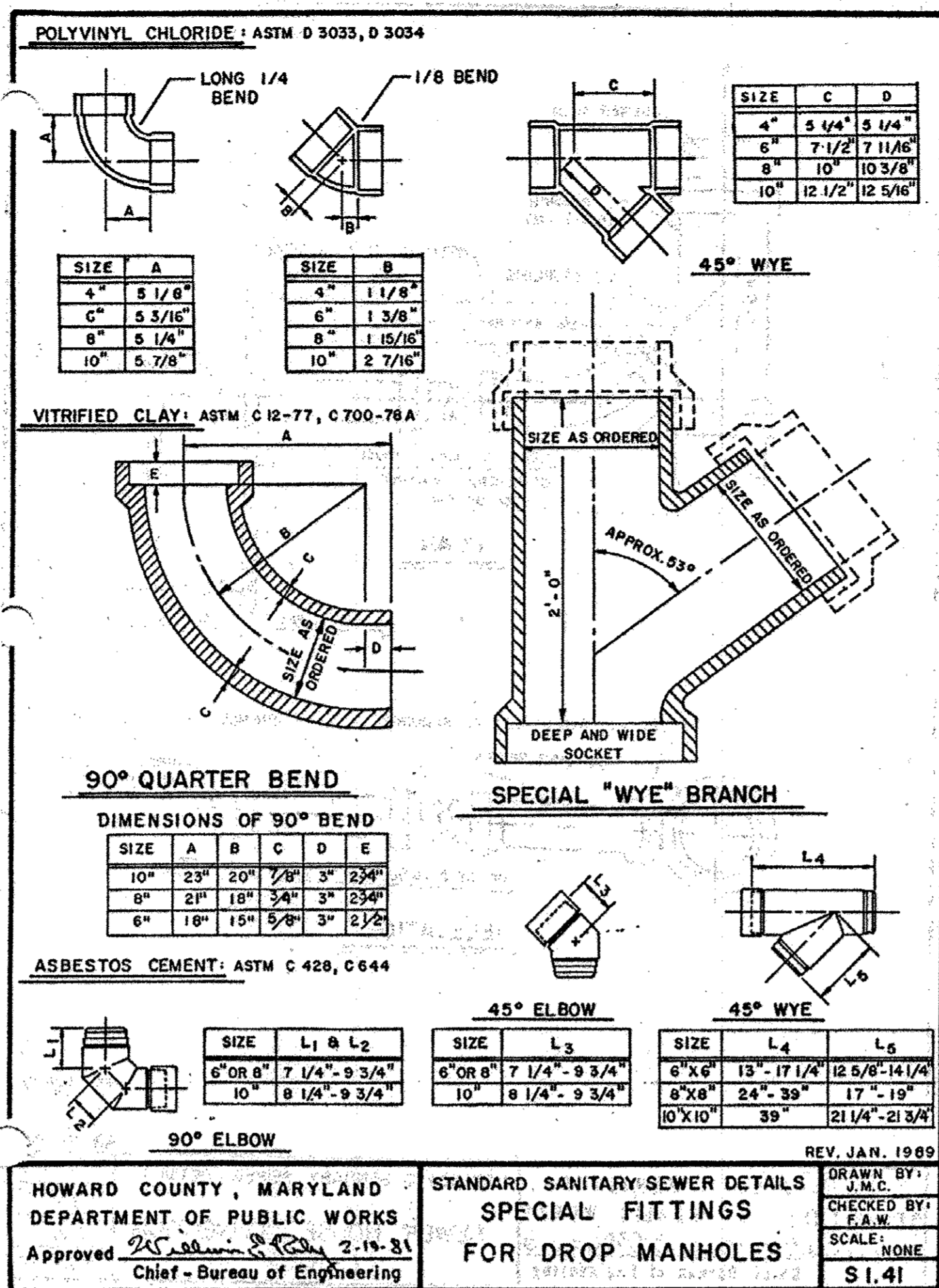
PROJECT: BENSON EAST PARCEL G; ONE STORY RETAIL BUILDING (COSTCO); GATEWAY OVERLOOK SHOPPING CENTER

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

TITLE: STORM DRAIN DETAILS

BOHLER ENGINEERING, P.C.  
PROFESSIONAL ENGINEERING SERVICES • 22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20166 • CONTACT: DAVID B. NEMICKO • (703) 799-9660 FAX: (703) 799-9501 • WWW.BE-INC.COM

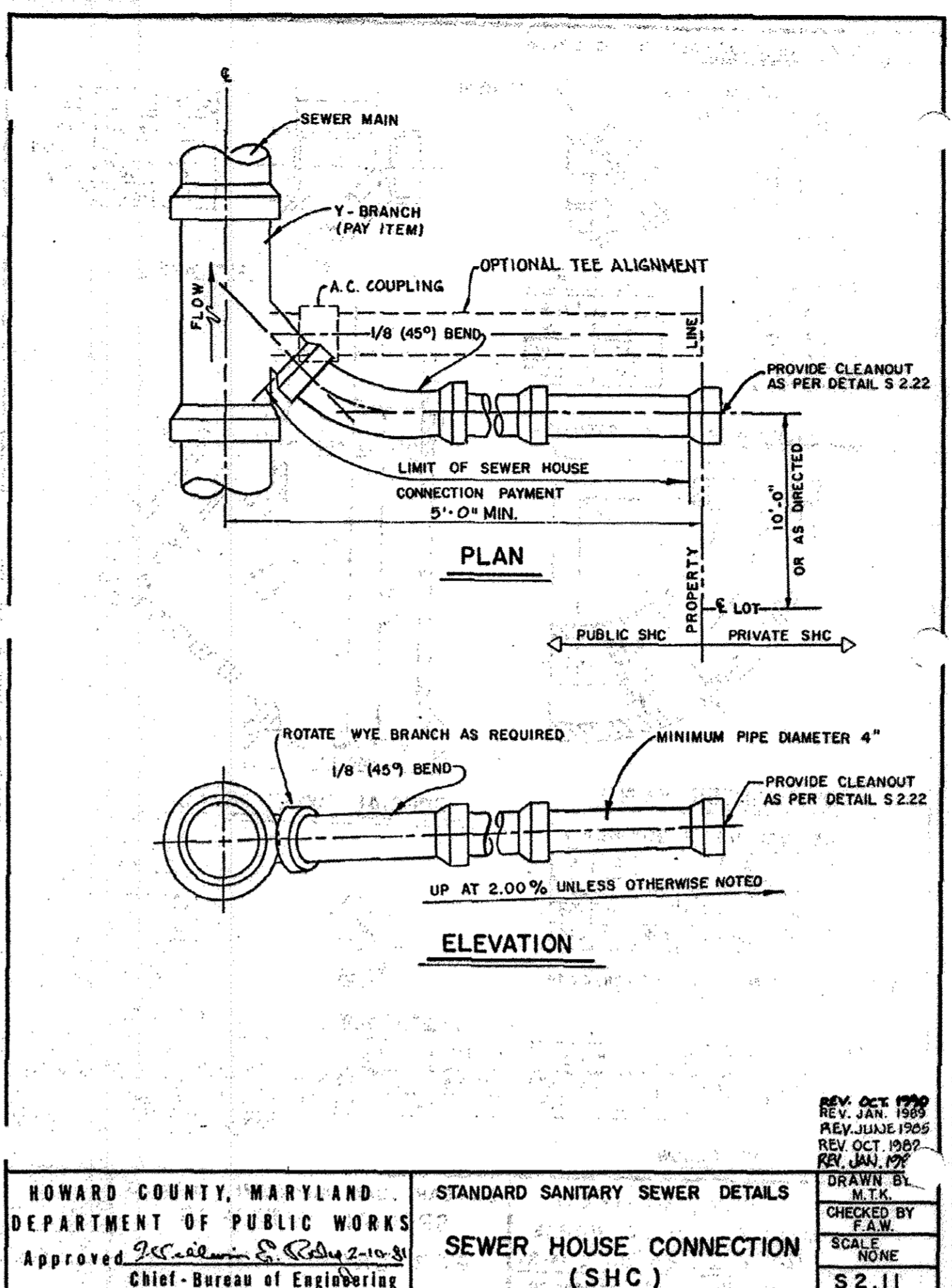
DESIGNED BY: MJS/JD  
DRAWN BY: B.M.H.  
PROJECT NO.: S040011.01  
DATE: 11/22/06  
SCALE: AS SHOWN  
DRAWING NO.: 20 OF 29



HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* 2-19-81  
Chief - Bureau of Engineering

STANDARD SANITARY SEWER DETAILS  
SPECIAL FITTINGS  
FOR DROP MANHOLES

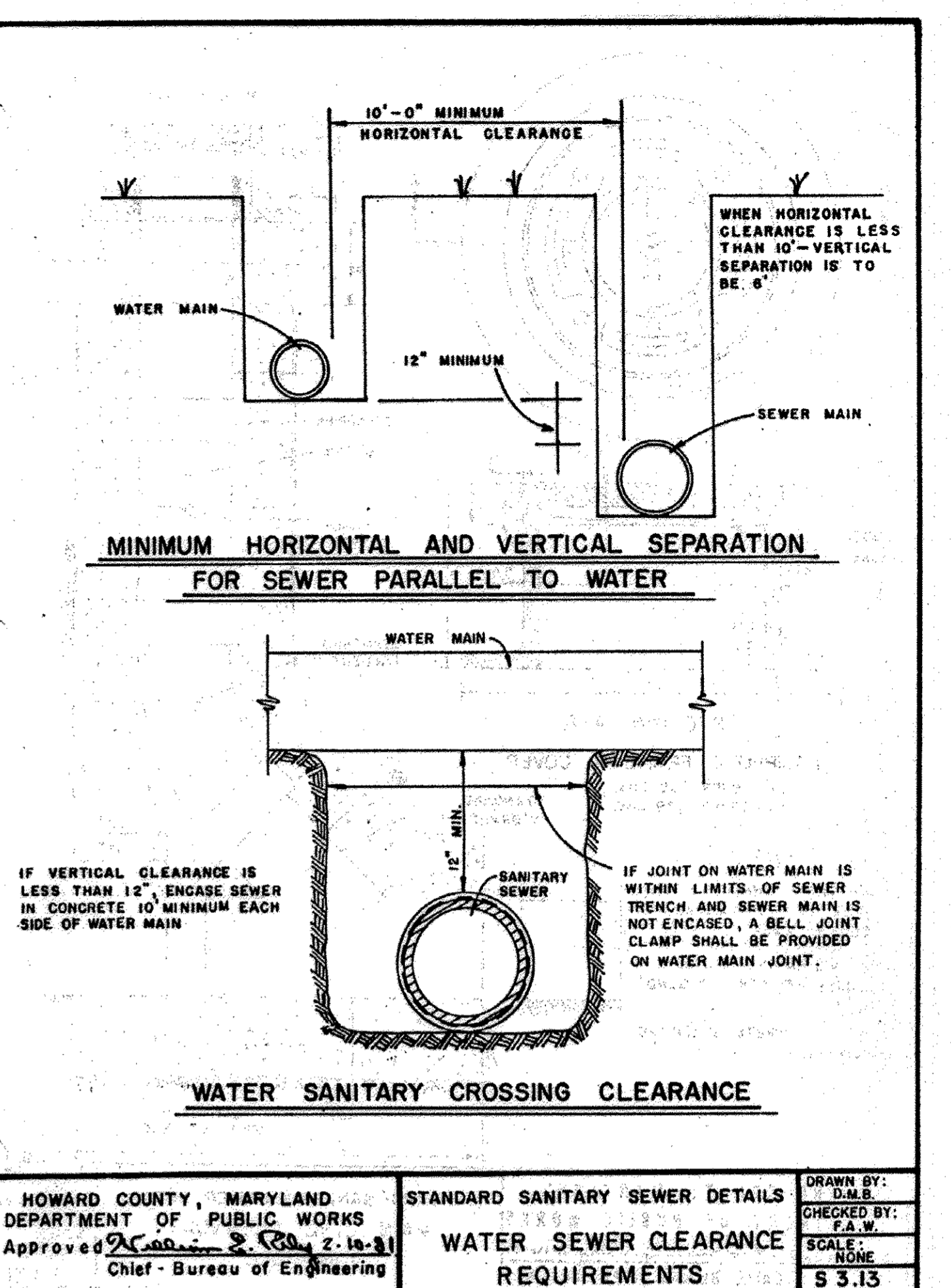
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CHECKED BY: F.A.W.  
SCALE: NONE  
S 1.41



HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* 2-19-81  
Chief - Bureau of Engineering

STANDARD SANITARY SEWER DETAILS  
SEWER HOUSE CONNECTION (SHC)

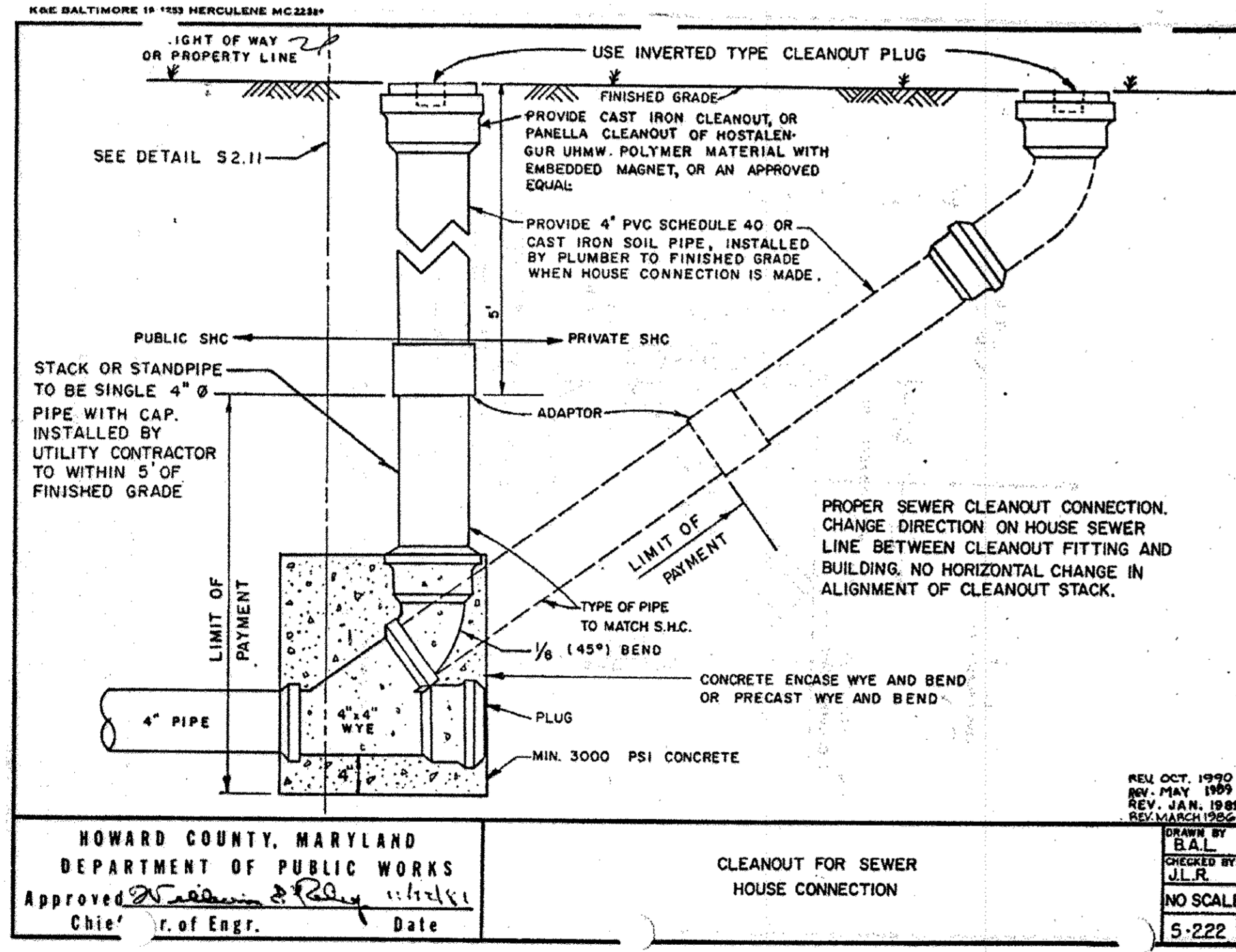
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CHECKED BY: F.A.W.  
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S 2.11



HOWARD COUNTY, MARYLAND  
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Approved: *[Signature]* 2-19-81  
Chief - Bureau of Engineering

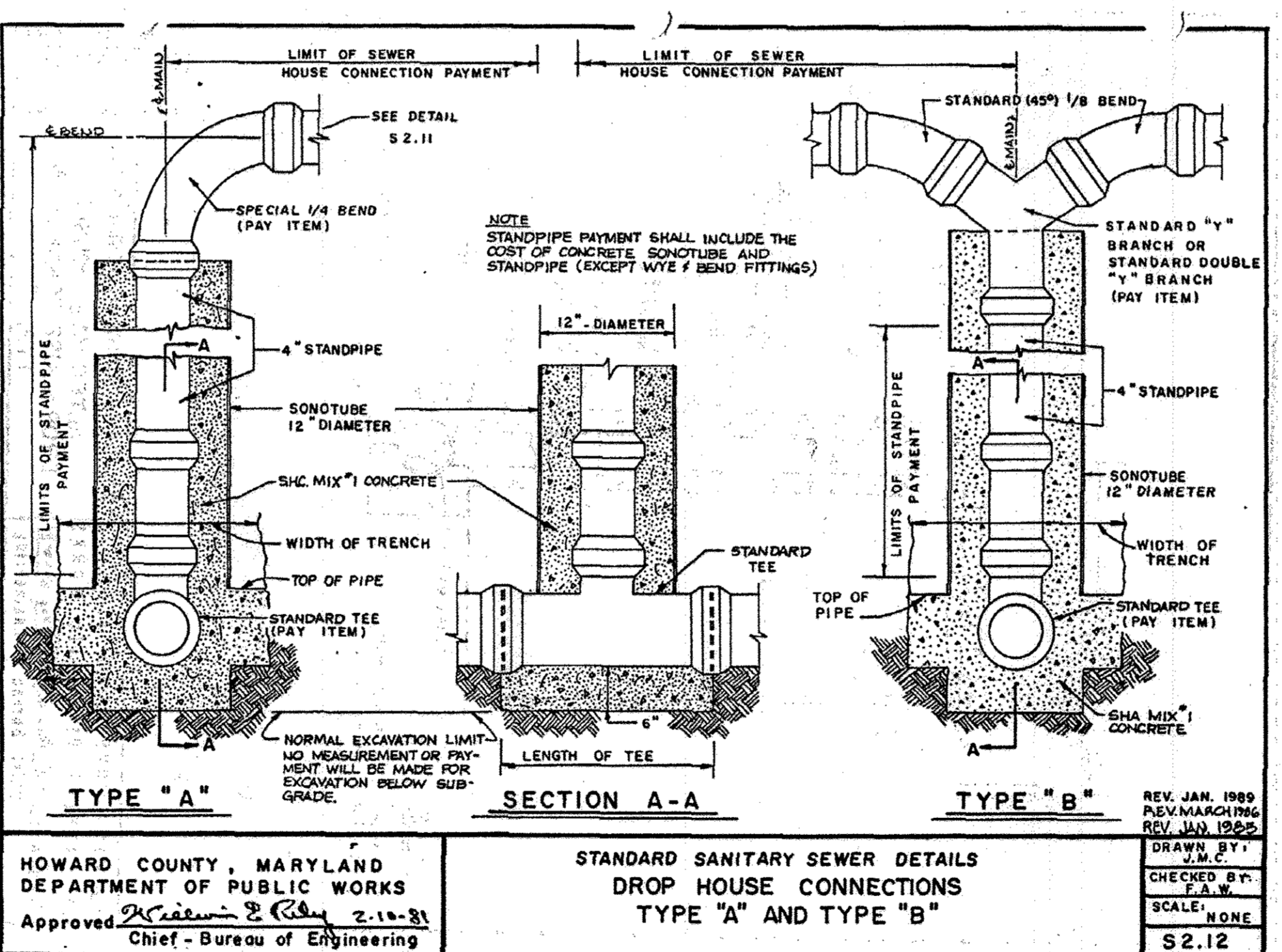
STANDARD SANITARY SEWER DETAILS  
WATER SEWER CLEARANCE REQUIREMENTS

DRAWN BY: D.B.B.  
CHECKED BY: F.A.W.  
SCALE: NONE  
S 3.13



HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* 2-19-81  
Chief - Bureau of Engineering

DATE: 05-22-82



HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* 2-19-81  
Chief - Bureau of Engineering

DRAWN BY: J.M.C.  
CHECKED BY: F.A.W.  
SCALE: NONE  
S 2.12

PLANNING BOARD APPROVAL STAMP

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

*[Signature]*  
4/17/17

I, MICHAEL J. GIBSON, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 44097  
EXPIRATION DATE: 4/17/17

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  
BENSON EAST 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: SANITARY SEWER DETAILS

**BOHLER ENGINEERING, P.C.**  
PROFESSIONAL ENGINEERING SERVICES  
22250 DAVID DUNN, SUITE 200 SYRINGA, VIRGINIA 20184  
CONTACT: DAVID B. NEMCEK  
(703) 709-9000 FAX: (703) 709-9501

DESIGNED BY: M.J.G./JD  
DRAWN BY: B.M.H.  
PROJECT NO.: S040011.01  
DATE: 11/22/06  
SCALE: AS SHOWN  
DRAWING NO.: 21 OF 29  
ADAM J. VOLANTH  
PROFESSIONAL ENGINEER NO. 21342

**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 THEREOF APPROPRIATE.

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

BEFORE YOU DIG CALL 800-951-7771 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE.

**STANDARD WATER DETAILS  
FIRE HYDRANT SETTINGS**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

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

**STANDARD WATER DETAILS  
GRADING FOR FIRE HYDRANTS**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

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

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

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

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

**STANDARD WATER DETAILS  
BUTTRESS FOR TEES**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

DRAWN BY: J.M.C.  
CHECKED BY: F.A.W.  
SCALE: NONE  
W 2.23

**STANDARD WATER DETAILS  
BUTTRESSES AND ANCHORAGES FOR VERTICAL BENDS**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

DRAWN BY: J.M.C.  
CHECKED BY: F.A.W.  
SCALE: NONE  
W 2.22

**STANDARD WATER DETAILS  
METHOD OF RESTRAINING VALVE TO MAIN**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

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

**STANDARD WATER DETAILS  
ALTERNATE METHOD OF RESTRAINING VALVE TO MAIN**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

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

**STANDARD WATER DETAILS  
BUTTRESSES FOR 1/4 BENDS**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: *[Signature]* Chief - Bureau of Engineering

REV. OCT. 1990  
REV. JAN. 1992  
REV. JAN. 1995  
REV. OCT. 1998  
REV. JAN. 1999

DRAWN BY: J.M.C.  
CHECKED BY: F.A.W.  
SCALE: NONE  
W 2.24

**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.

REV.	DATE	DESCRIPTION
5	2-6-17	MB OUTFALL STORM DRAIN AS-BUILT

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  
PARCEL G  
BENSON EAST  
6TH ELECTRON DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: WATER DETAILS

**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

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER  
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.

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

*[Signature]*  
4/17/17

I, MICHAEL J. QUESSELL, HEREBY STATE 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: 6/19/17

**MISS UTILITY**



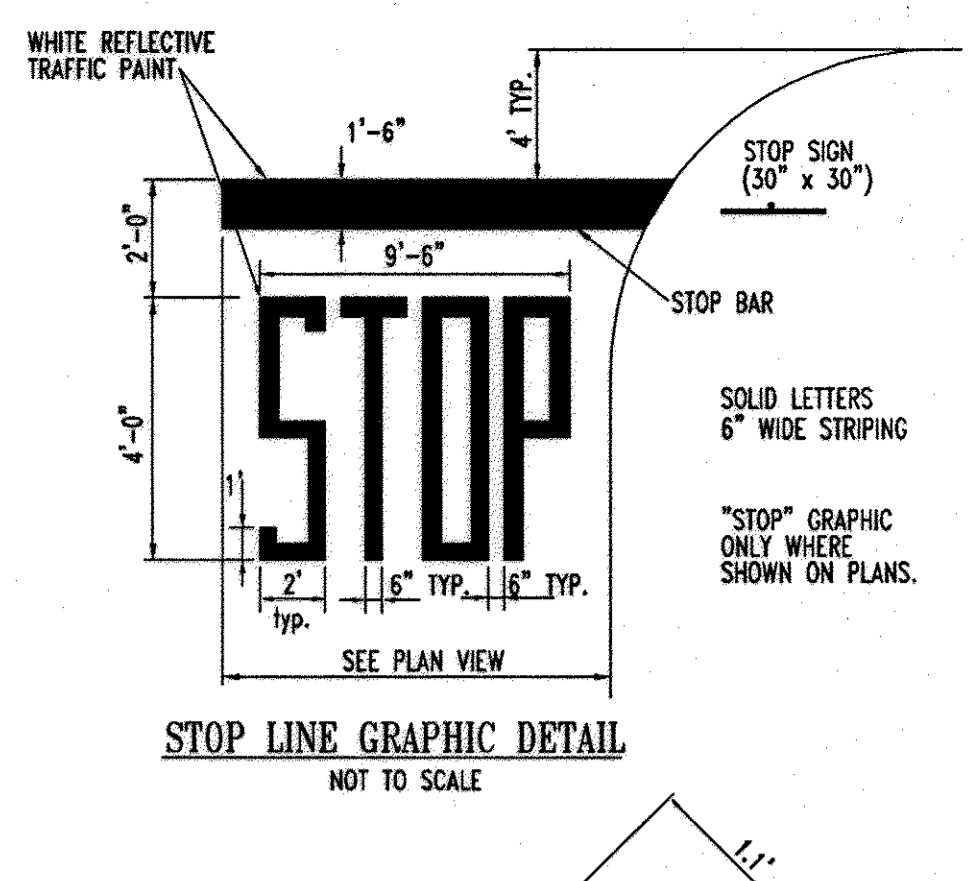
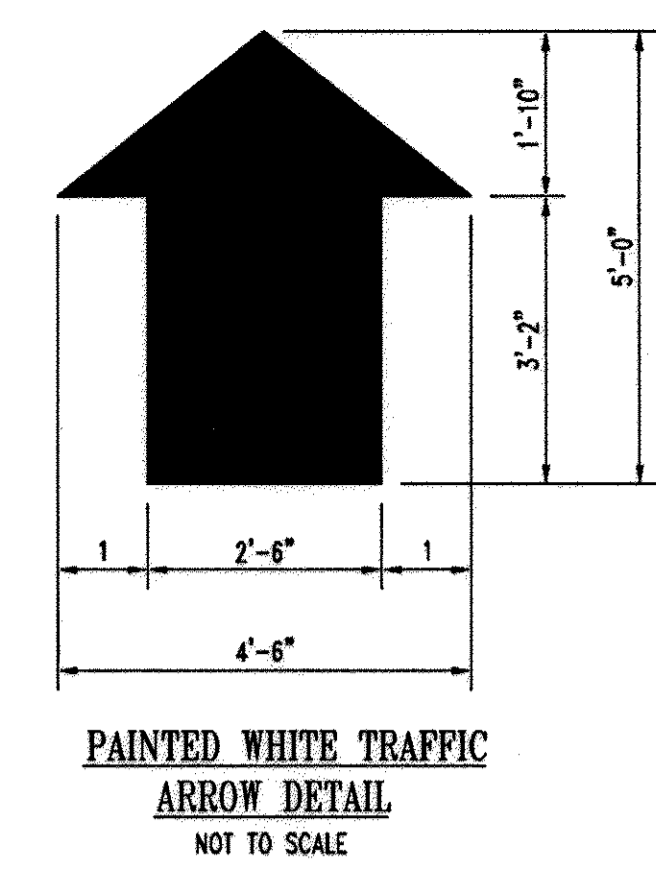
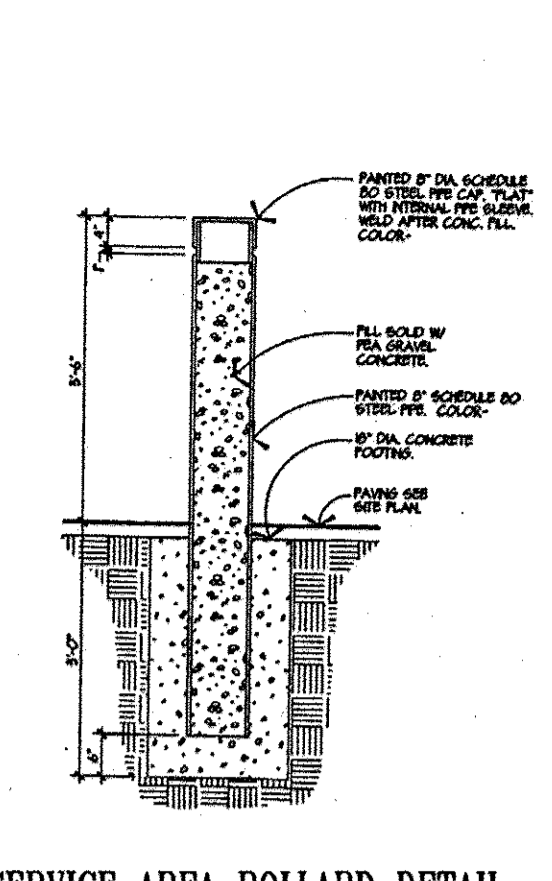
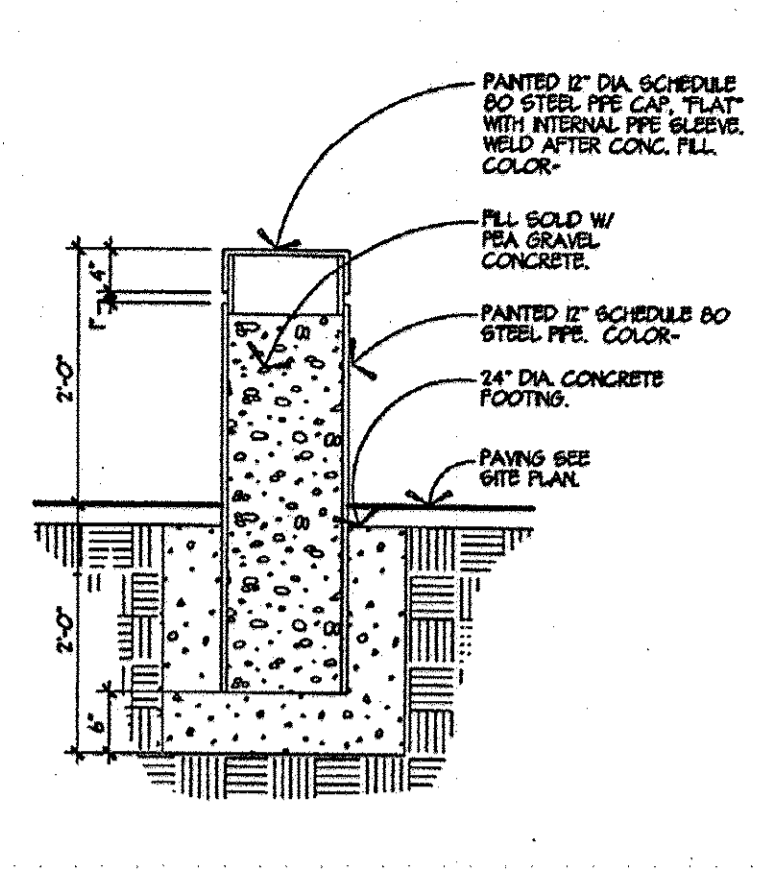
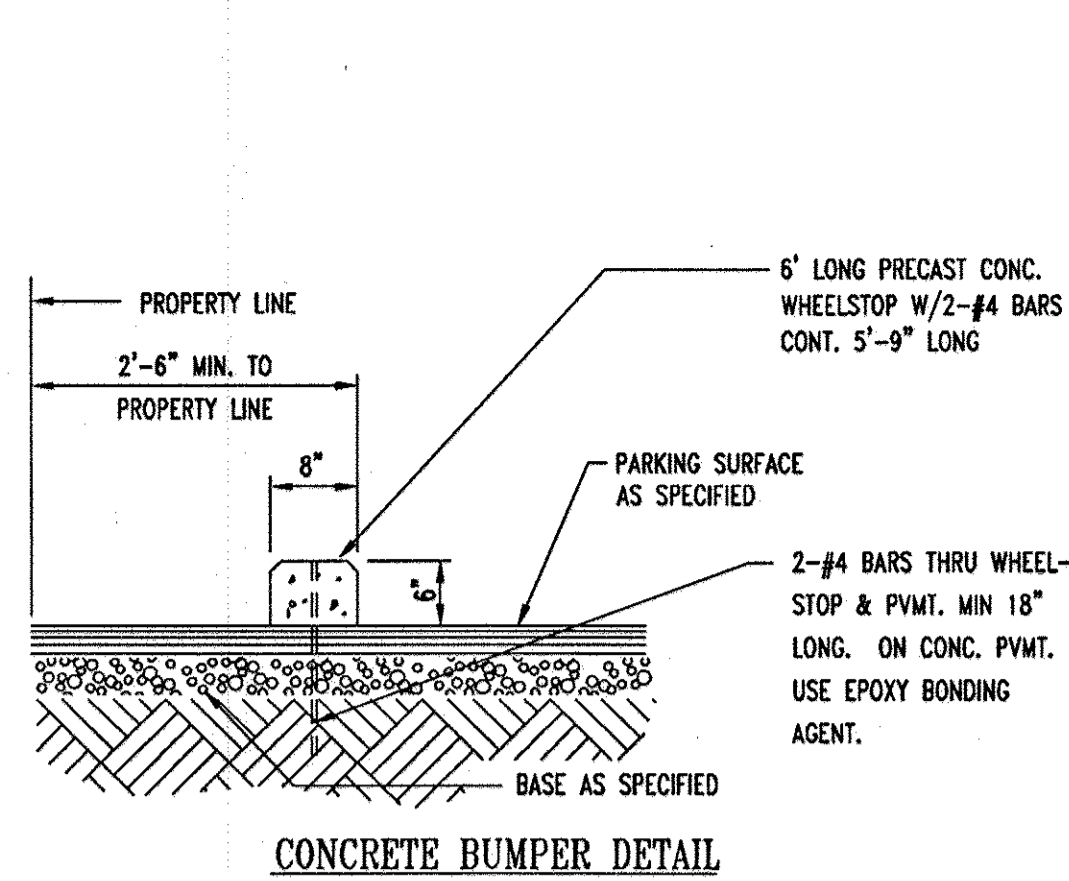
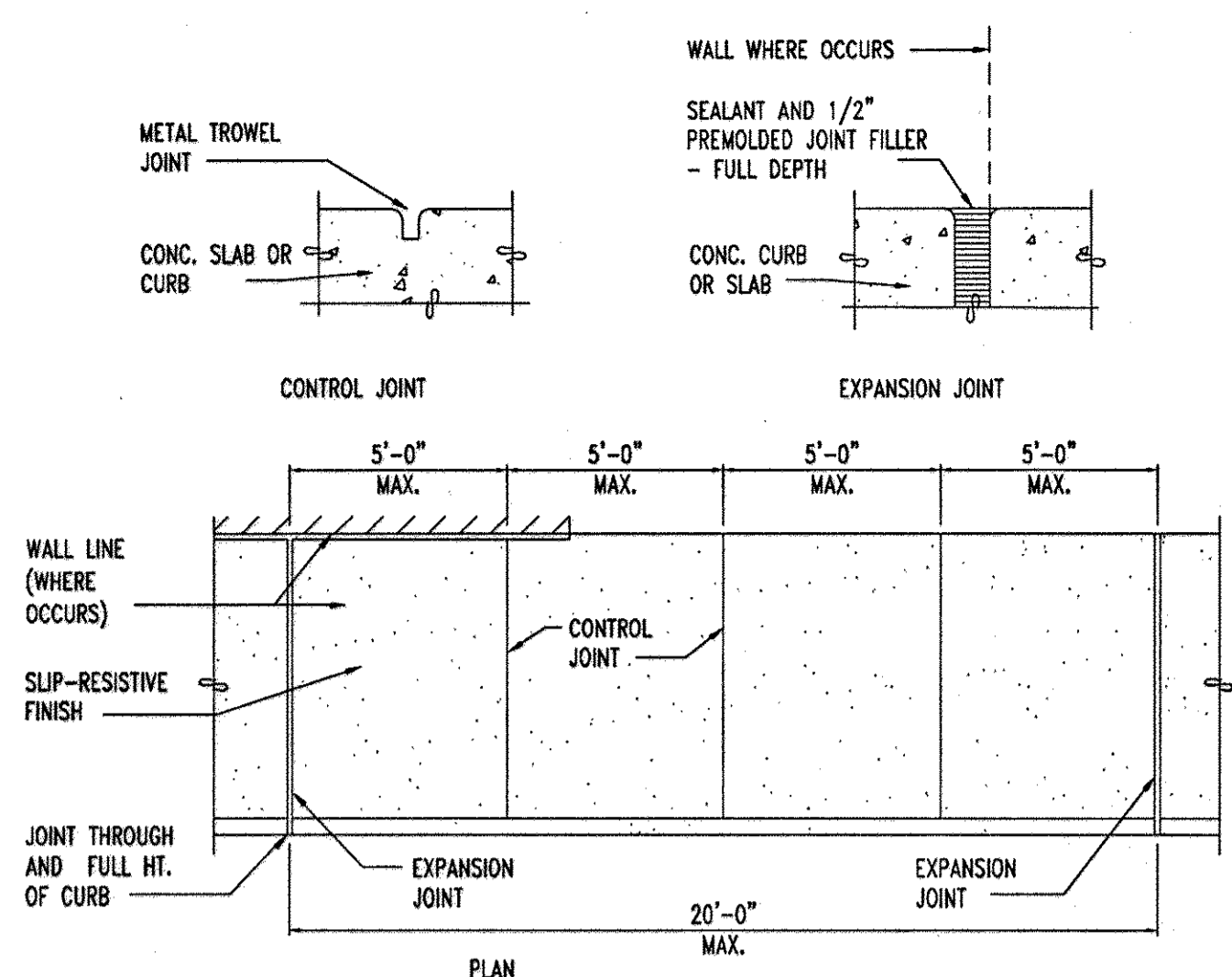
BEFORE YOU DIG CALL  
1-800-33-7777  
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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 THEREOF APPLICABLE.

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

**BOHLER ENGINEERING, P.C.**  
PROFESSIONAL ENGINEERING SERVICES  
22830 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164  
CONTACT: DAVID B. BOHLER  
(703) 708-9500 FAX: (703) 708-9501 | [www.bohlereng.com](http://www.bohlereng.com)

DESIGNED BY: M.J.G./JD  
DRAWN BY: B.M.H.  
PROJECT NO.: S040011.01  
DATE: 11/22/06  
SCALE: AS SHOWN  
DRAWING NO.: 22 of 29  
ADAM J. VOLKHAUF  
PROFESSIONAL ENGINEER NO. 21342



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

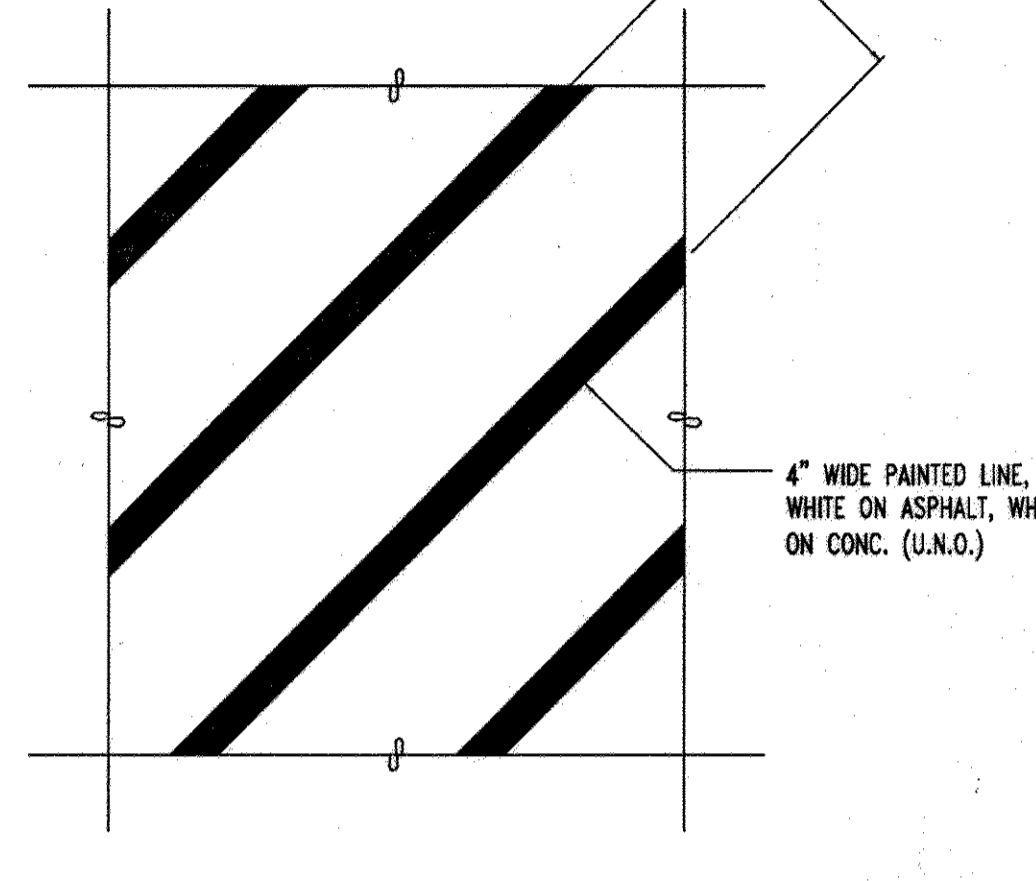
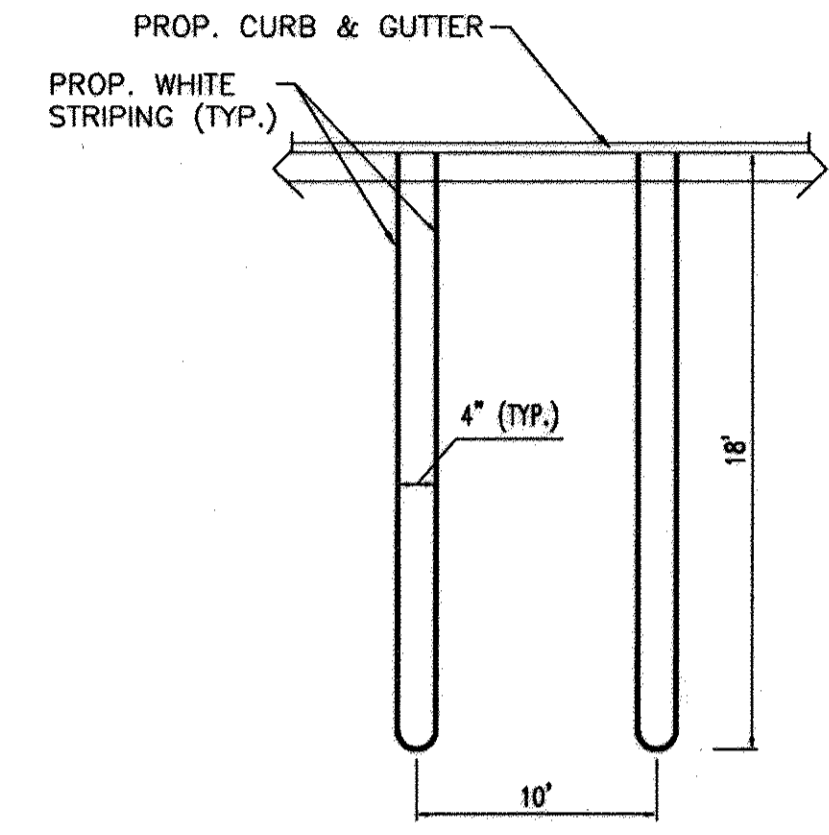
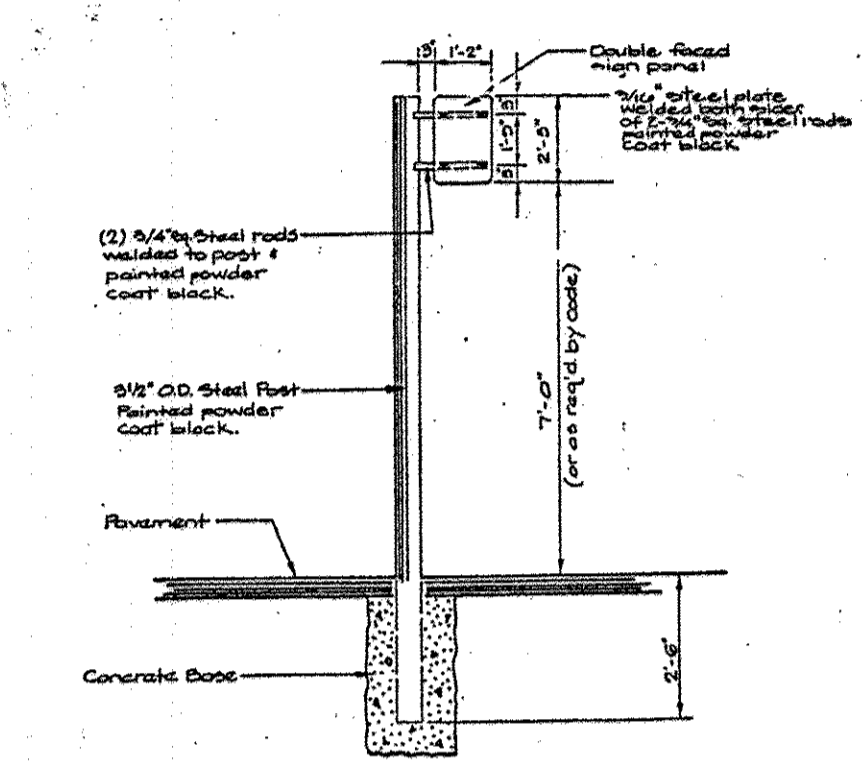
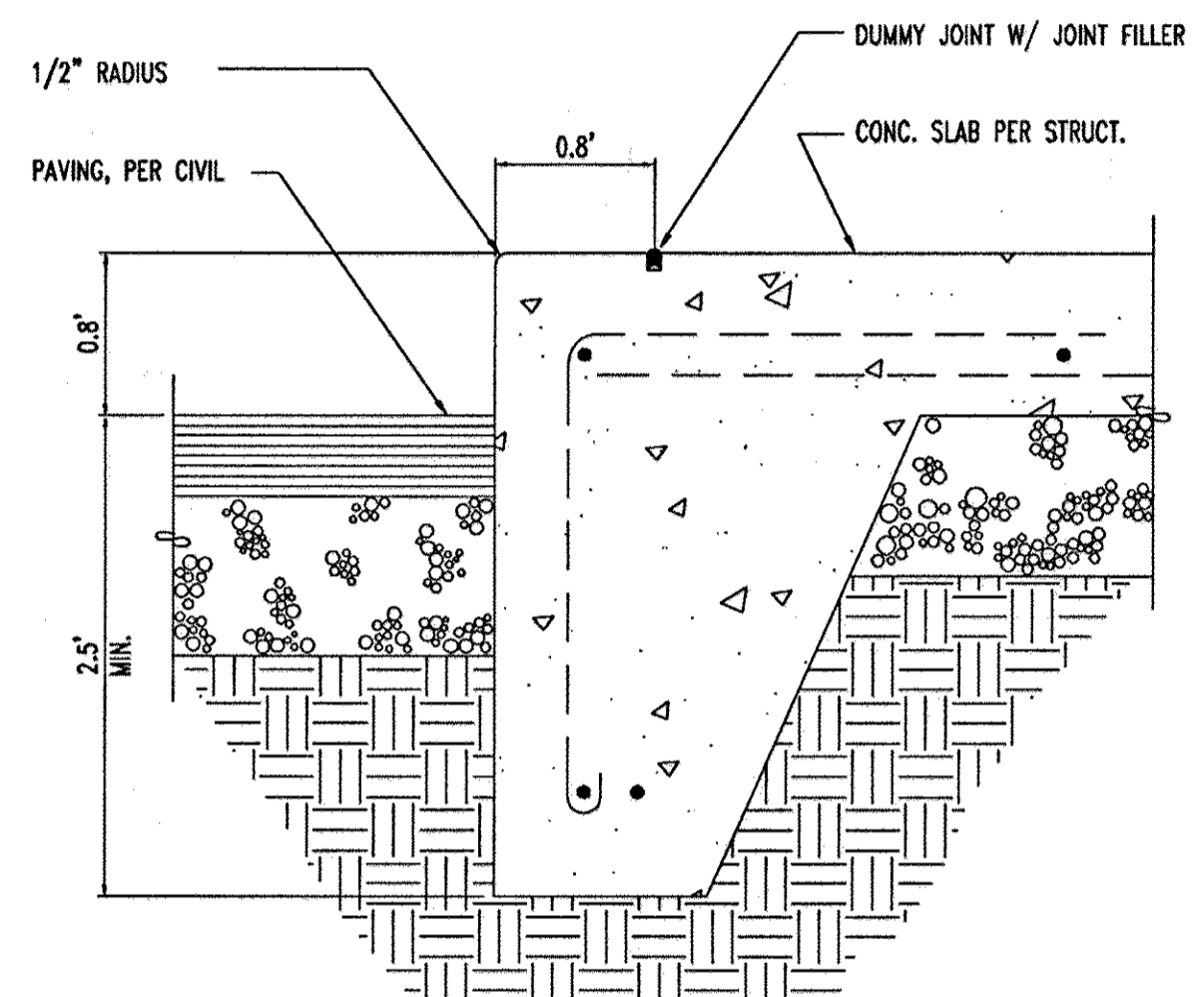
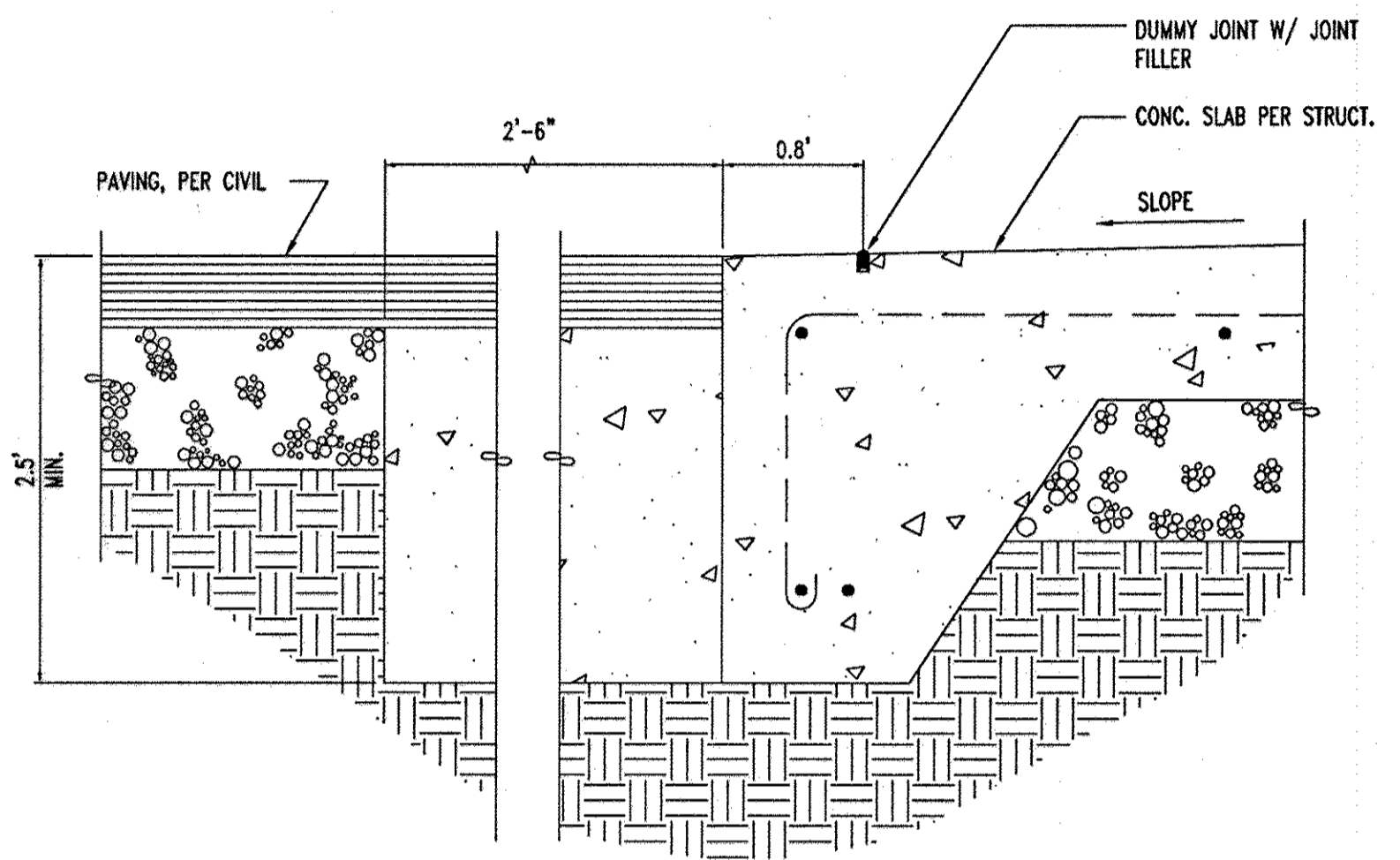
CONCRETE BUMPER DETAIL  
NOT TO SCALE

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



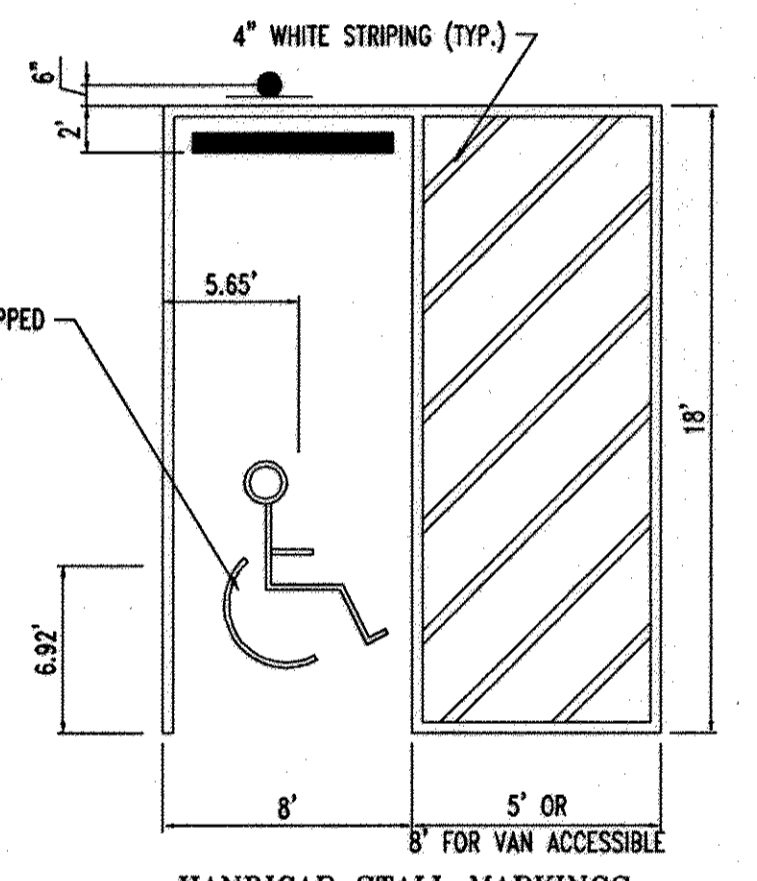
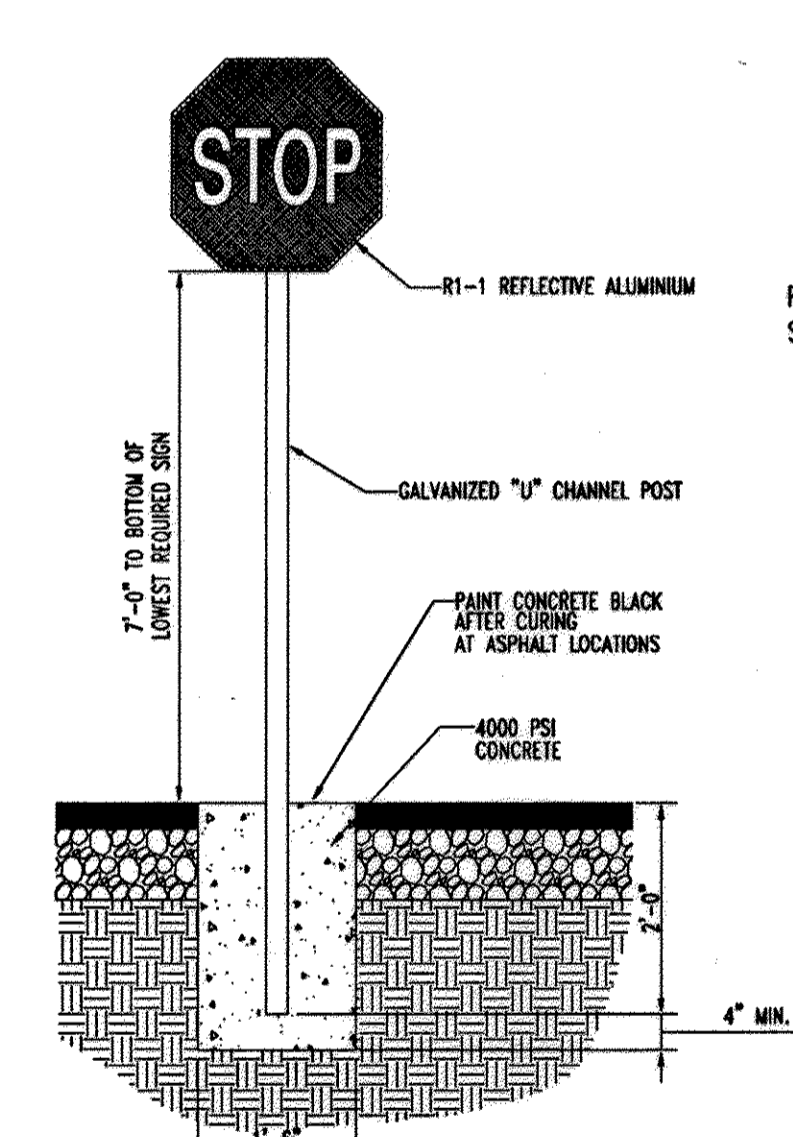
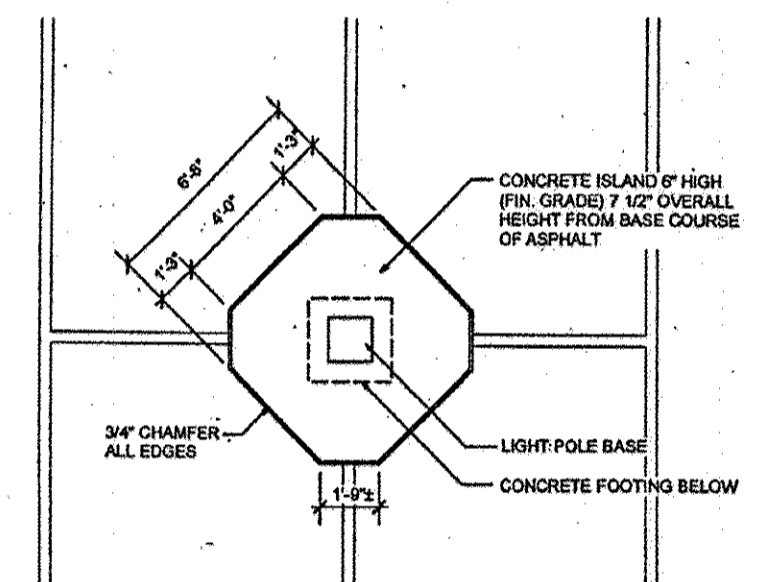
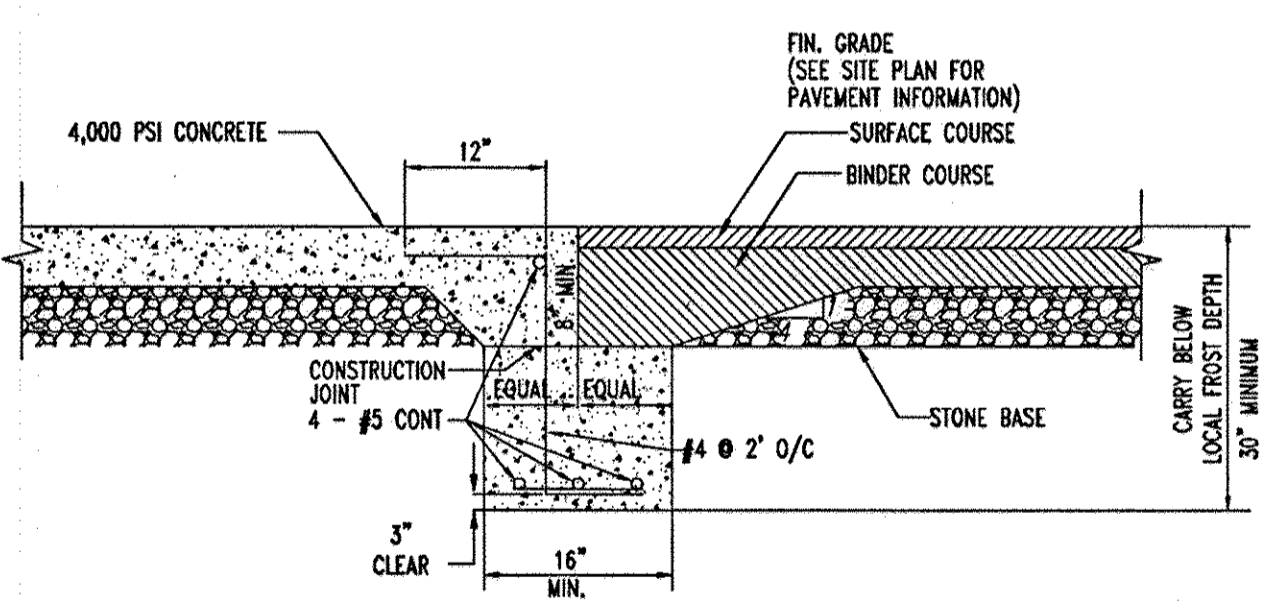
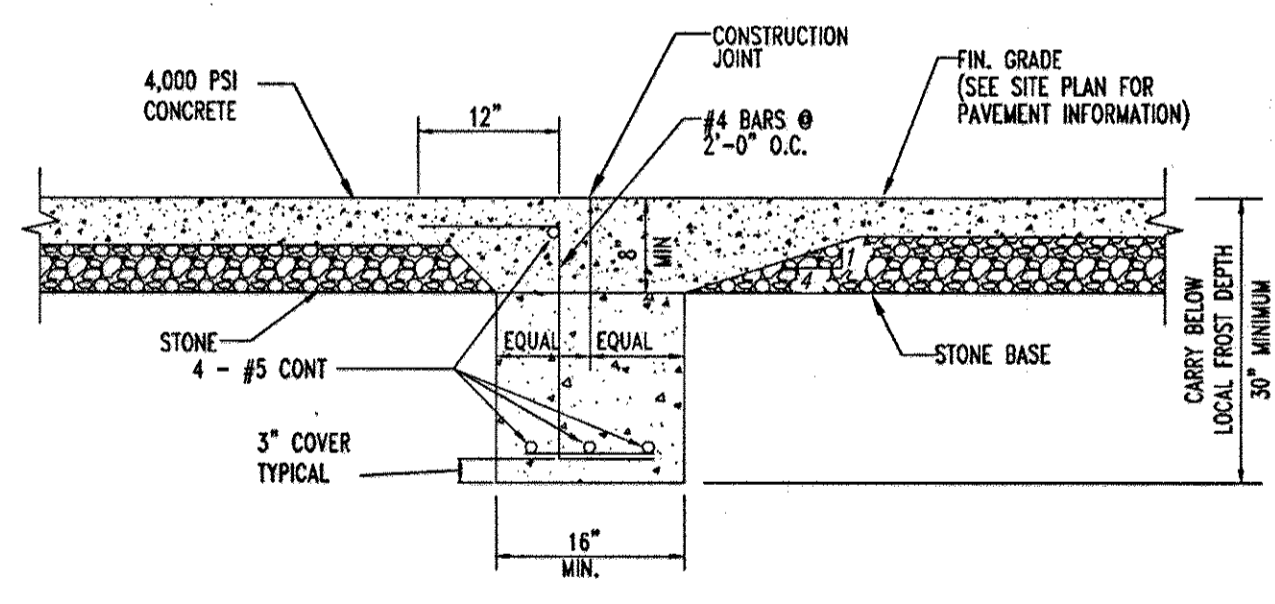
TYPICAL FLUSH CURB DETAIL  
NOT TO SCALE

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\"/>

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

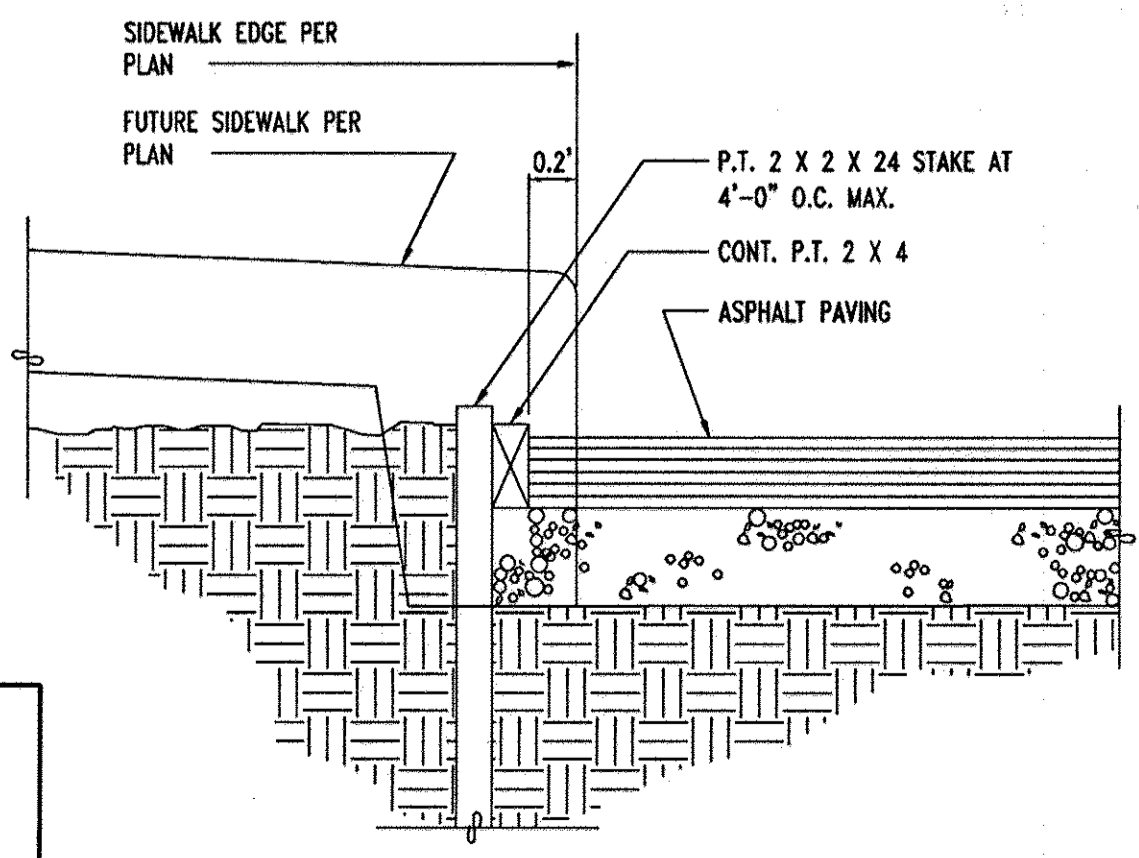
HANDICAP STALL MARKINGS  
NOT TO SCALE

PLANNING BOARD APPROVAL STAMP

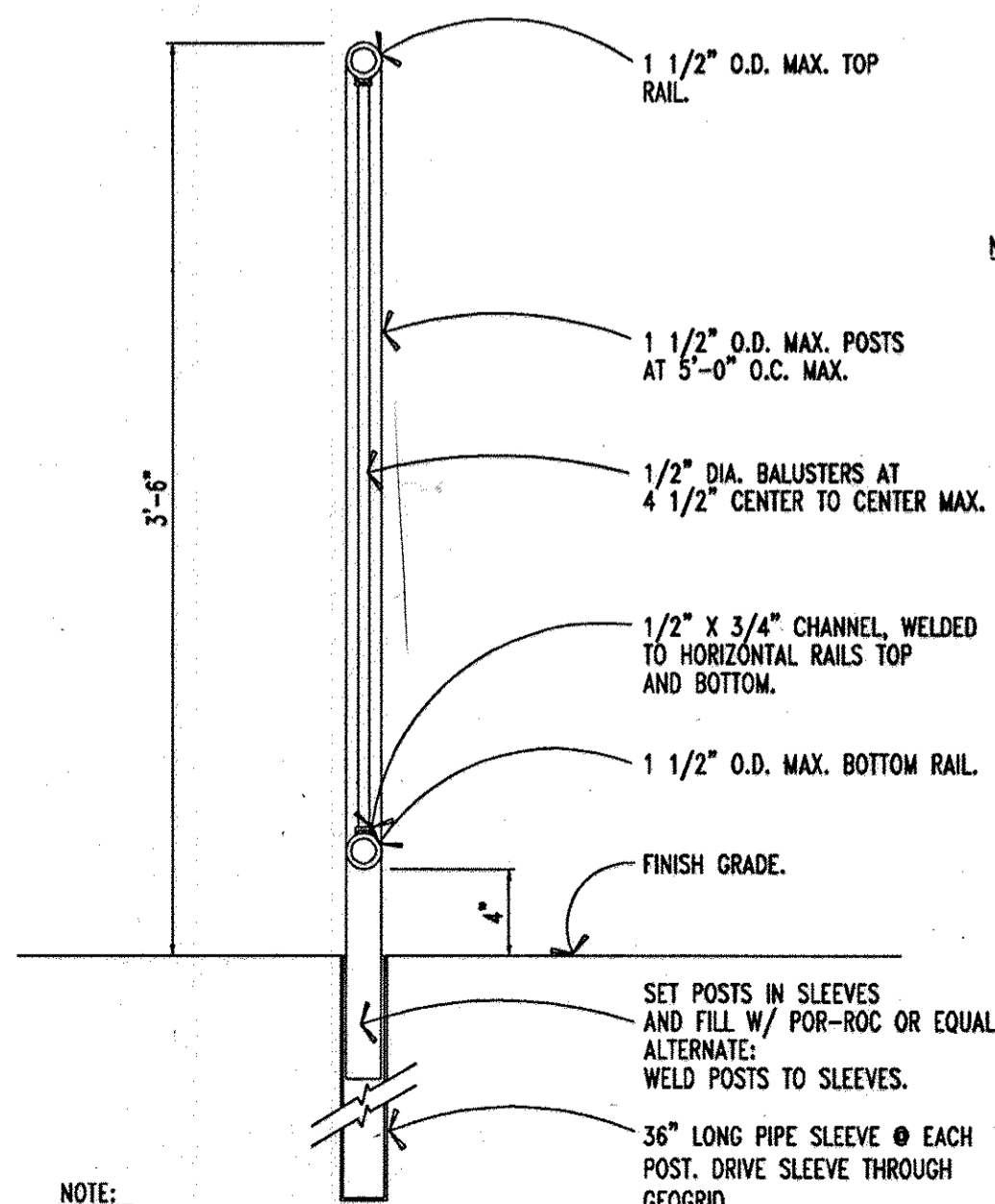
APPROVED  
PLANNING BOARD  
of HOWARD COUNTY  
DATE 09/14/06

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
CHIEF-DIVISION OF LAND DEVELOPMENT  
DIRECTOR  
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT

GENERAL NOTE:  
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TYPICAL TEMPORARY EDGE OF PAVEMENT  
NOT TO SCALE



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

TYPICAL PIPE RAIL DETAIL  
SCALE: 1 1/2\"/>

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 4/9/11

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
5	2-6-17	MB OUTFALL STORMDRAIN AS BUILT	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

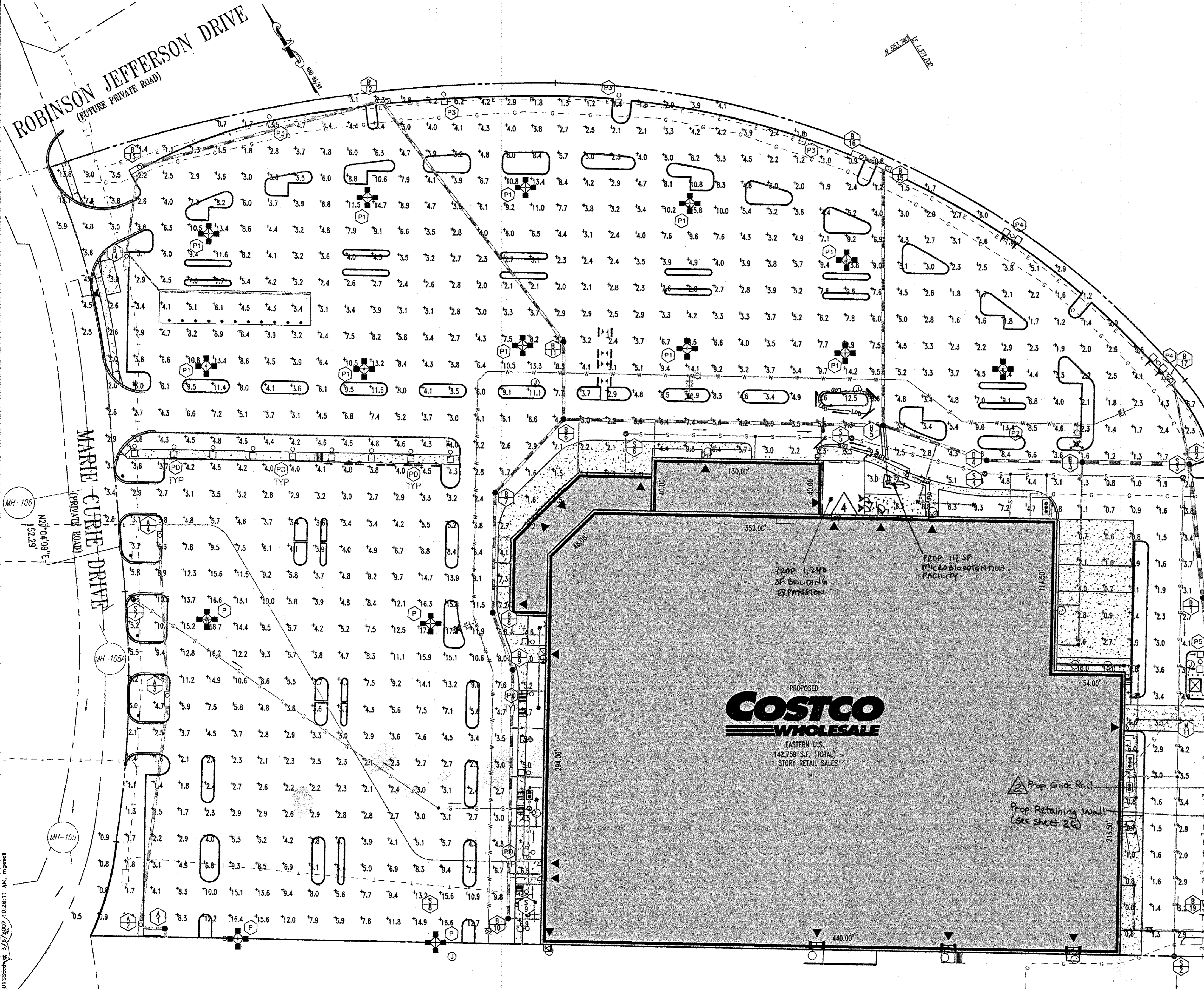
PROJECT: BENSON EAST  
PARCEL G, ONE STORY RETAIL BUILDING  
(COSTCO); GATEWAY OVERLOOK  
SHOPPING CENTER

AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN  
PARCEL G  
BENSON EAST  
5TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: SITE DETAILS

BOHLER ENGINEERING, P.C.  
PROFESSIONAL ENGINEERING SERVICES  
2202510 DAVIS DRIVE, SUITE 200 STRYDOM, VIRGINIA, 20164  
CONTACT: DAVID B. NEMCEK  
(703) 700-8600 FAX: (703) 700-9501

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



LIGHTING FIXTURE SCHEDULE							DEVELOPER
TYPE	MANUFACTURER	NUMBER	LAMPS	MOUNT	WATT	REMARKS	REF. NUMBER
P	EMCO*	ECA-234-3H-1000MH-480V-SC/PTF-3-EC23-DM4090-3.5-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-184-0H-400MH-480V-SC/PTF-3-EC18-DM4090-3.5-BC	1-400W MH	30' POLE	455		P4-4B-30
P2	EMCO*	ECA-184-3H-400MH-480V-SC/PTF-3-EC18-DM4090-3.5-BC	1-400W MH	30' POLE	455		P4-4A-30
P3	EMCO*	ECA-181-3H-400MH-480V-SC/PTF-3-EC18-DM1-3.5-BC	1-400W MH	30' POLE	455		P4-1-30
P4	EMCO*	ECA-182-3H-400MH-480V-SC/PTF-3-EC18-DM2180-3.5-BC	1-400W MH	30' POLE	455		P4-2B-30
P5	EMCO*	ECA-182-FH-400MH-480V-SC/PTF-3-EC18-DM2180-3.5-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'

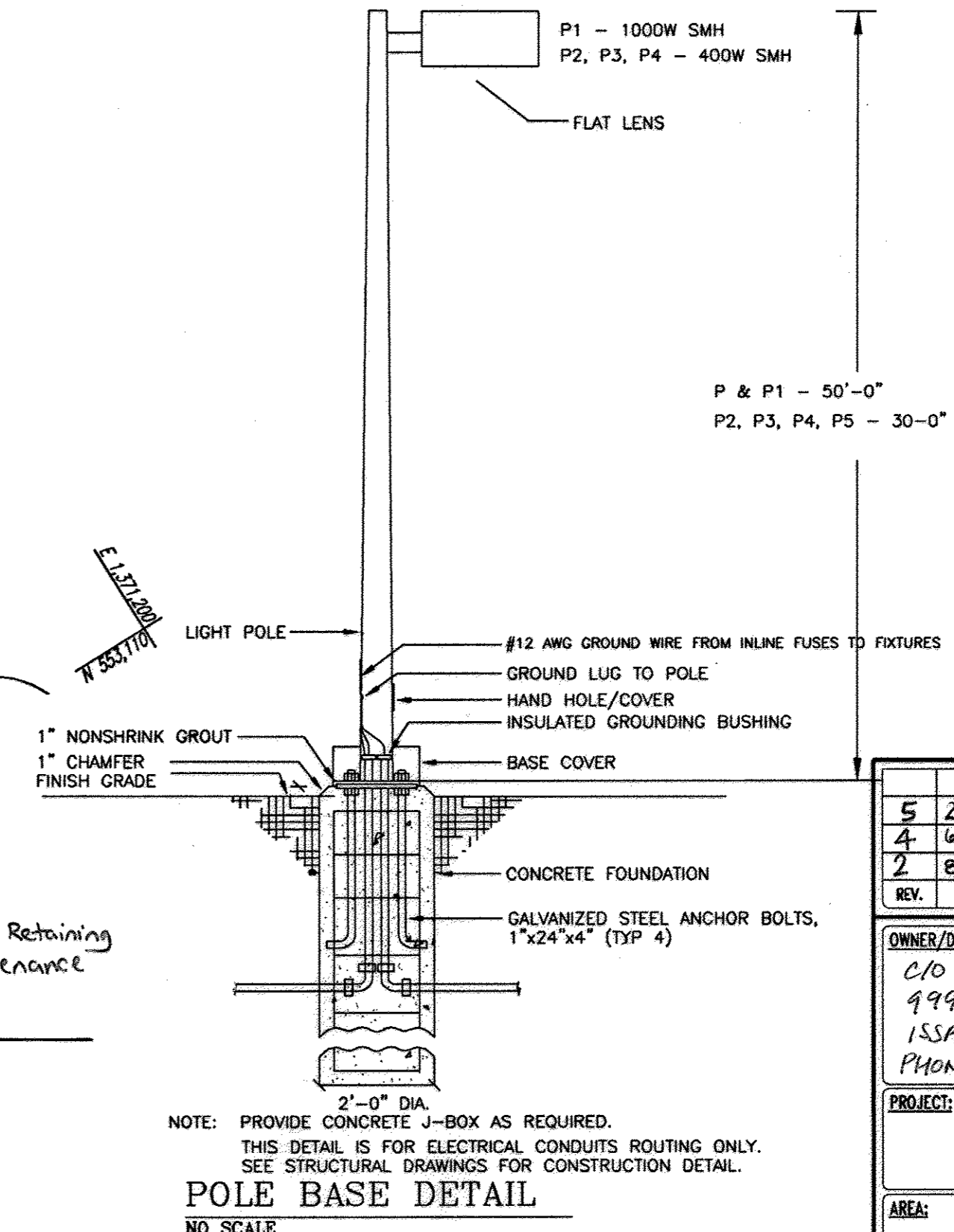
FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

*AMN*  
4/7/07

FOR REVISION 4 ONLY 4

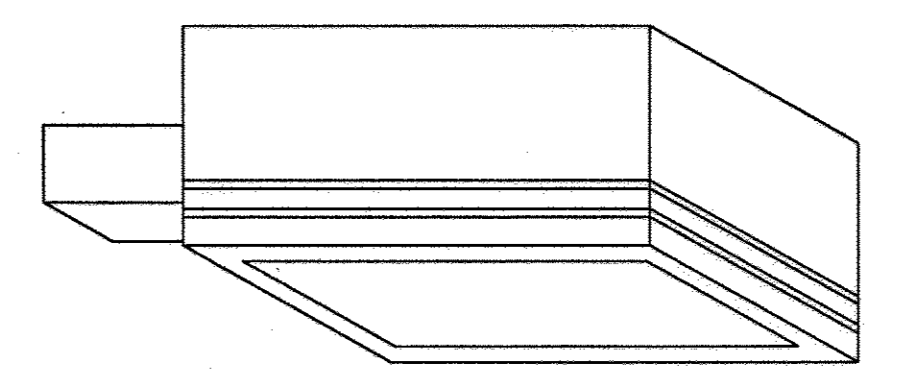
M.J. GESELL  
PROFESSIONAL ENGINEER  
MORNING LICENSE # 44941  
9/2/15

PROFESSIONAL CERTIFICATION  
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR REVIEWED BY ME AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE # 44941. EXPIRES 09/01/15.



POLE BASE DETAIL  
NO SCALE

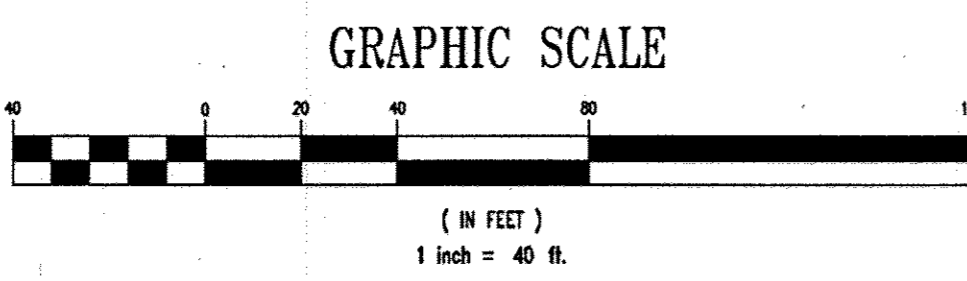
SITE PLAN - MALL  
SCALE: 40'-0" = 1"



TYPICAL WALL PACK DETAIL (B)  
SCALE: NTS

PLANNING BOARD APPROVAL STAMP

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



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  
PROFESSIONAL ENGINEER  
ADAM J. VOLANTH  
No. 7192  
For Revision # 2  
Bohler Engineering, P.C.

MISS UTILITY



BEFORE YOU DIG CALL  
1-800-367-7777  
PROTECT YOURSELF, ONE 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 THEREOF APPLICABLE.  
THE CONTRACTOR TO CALL MISS UTILITY TO  
HAVE ALL EXISTING UTILITIES MARKED 48  
HOURS PRIOR TO ANY CONSTRUCTION.

5	2-4-7	MISS UTILITY SPREAD DRAIN AS BUILT	B.M.H.
4	6/10/15	EXPAND FIRE CENTER, ADD MICROBIO FACILITY	B.M.H.
2	8/26/07	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) 401-6862

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

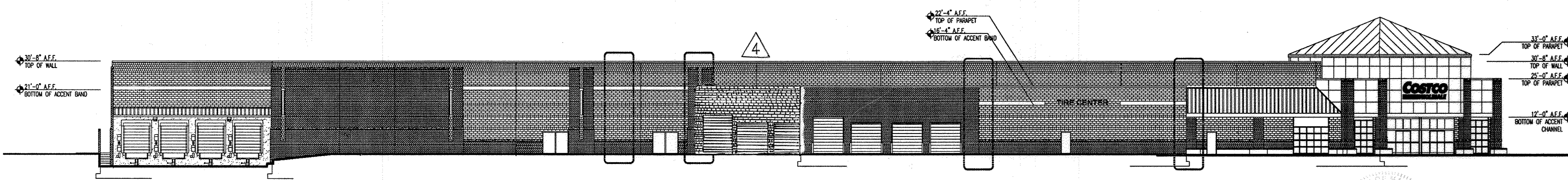
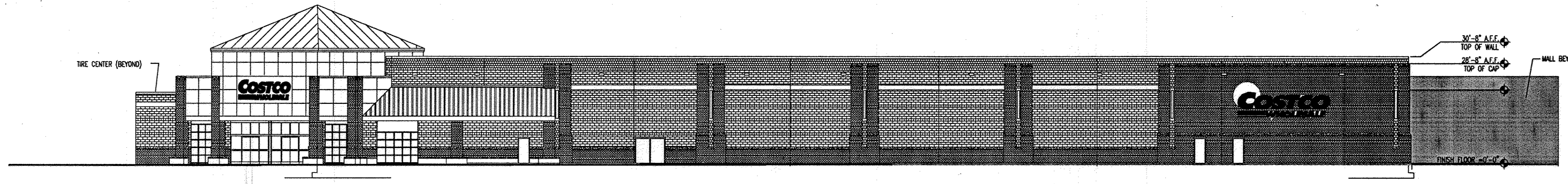
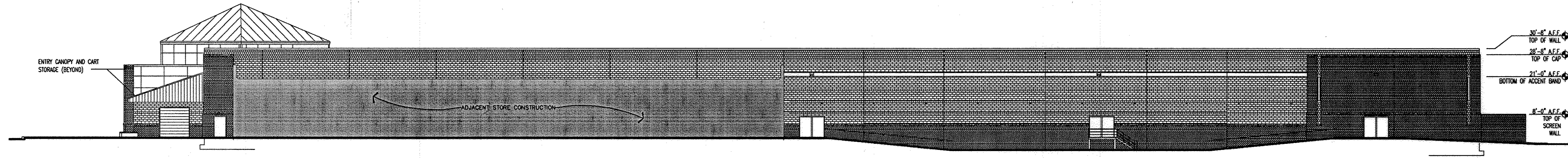
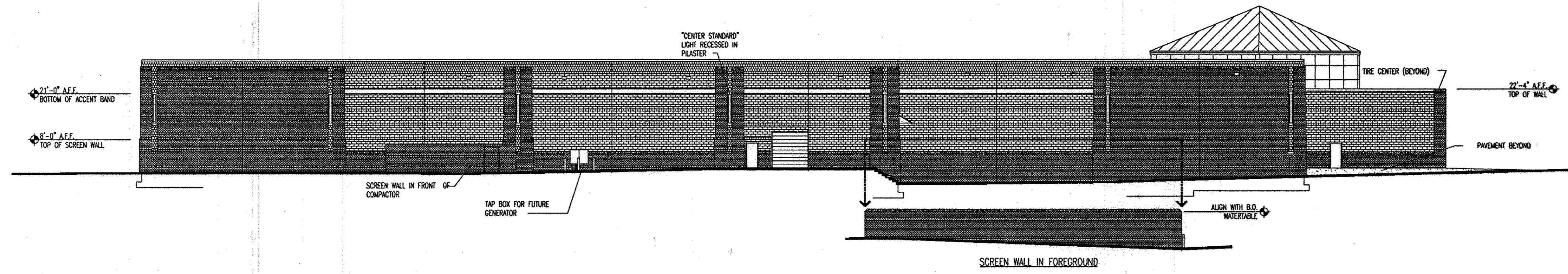
TITLE: LIGHTING PLAN

BOHLER ENGINEERING, P.C.  
PROFESSIONAL ENGINEERING SERVICES  
222520 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164  
CONTACT: DAVID B. NEUBERGER  
(703) 709-9500 FAX: (703) 709-9501 IN ILLINOIS ONLY

DESIGNED BY: M.J.G./JD  
DRAWN BY: B.M.H.  
PROJECT NO.: SD040011.01  
DATE: 11/22/06  
SCALE: 1"=40'  
DRAWING NO.: 24 OF 29

ADAM J. VOLANTH  
PROFESSIONAL ENGINEER NO. 21342





*AMEN*  
41717

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

PLANNING BOARD APPROVAL STAMP

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

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

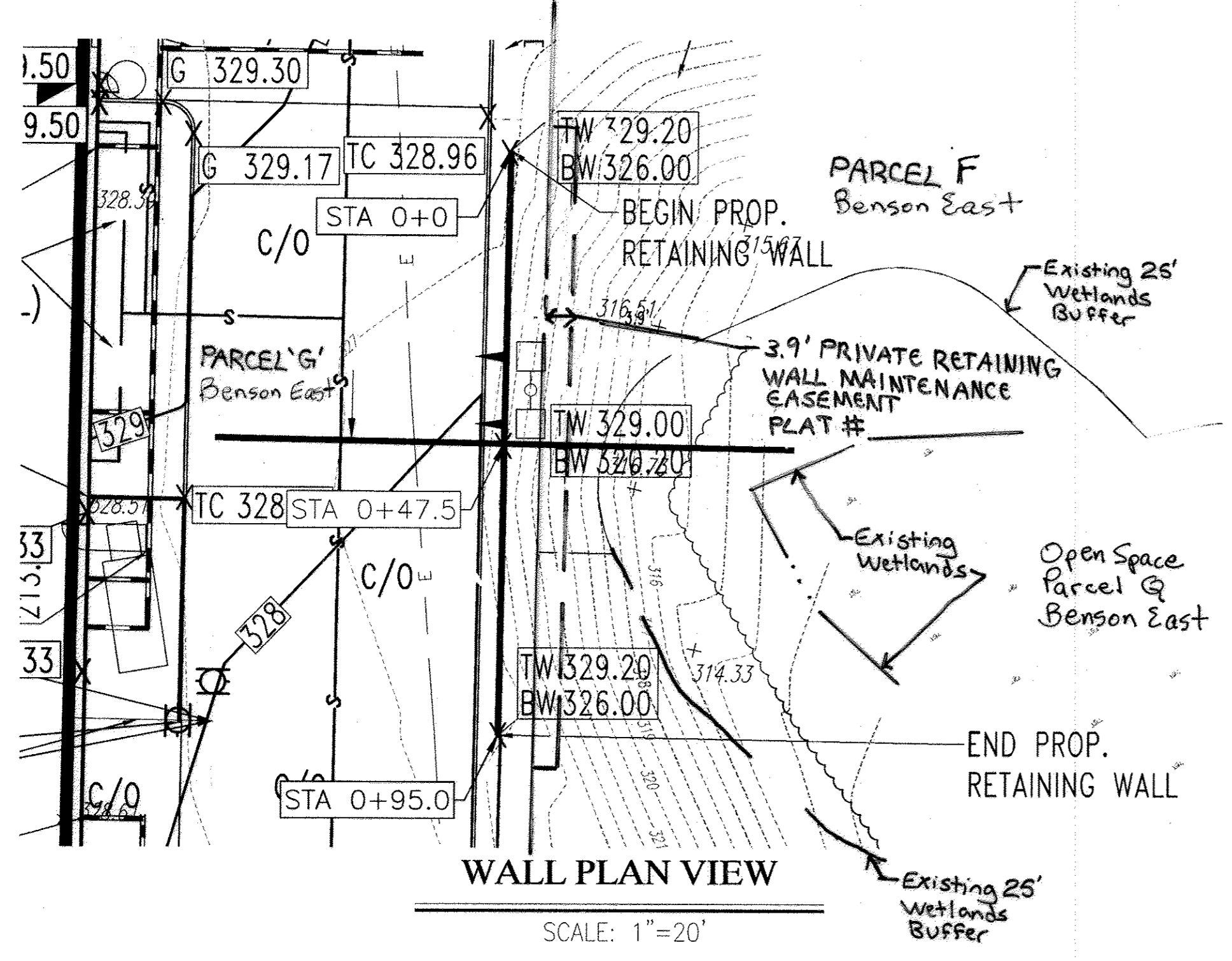
GENERAL NOTE:  
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT 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.

FOR REVISION 4 ONLY

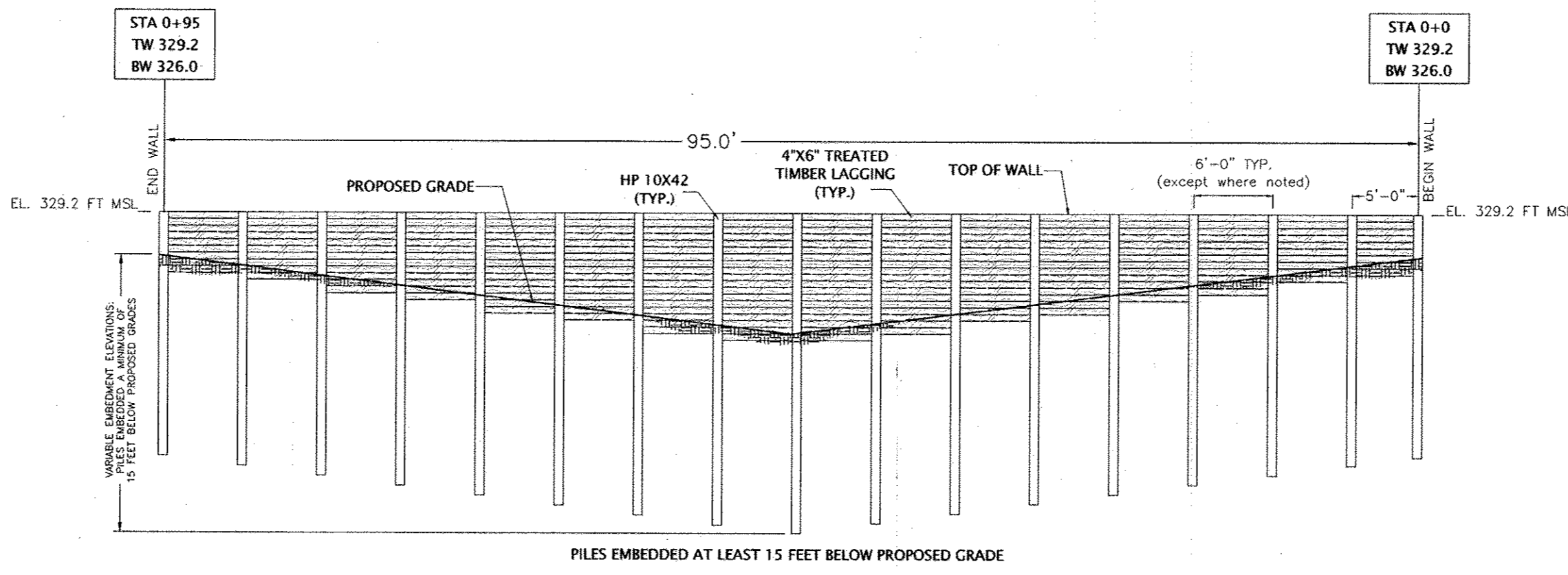
4  
 M.J. GESELL  
 PROFESSIONAL ENGINEER  
 MARYLAND LICENSE NO. 44097  
 9/21/16  
 PRO FESS IO HAIL CERTIFICATION  
 I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 44097, EXPIRATION DATE 6/19/17

5	2-6-17	MB OFFFALL STORM DRAIN AS BUILT	BOHLER
4	4/18/15	expand fire center, add memo's facilities	BOHLER
REV.	DATE	DESCRIPTION	BY
OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION CIO PROP TAX DEPARTMENT 1000 999 LAKE DRIVE ISSAQUAH, WA 98027-8990 PHONE: (703) 406-0862			
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 22850 DAVIS DRIVE, SUITE 300 STERLING, VIRGINIA, 20164 CONTACT: DAVID B. NEMETZ (703) 709-9900 FAX: (703) 709-9901 <a href="http://www.bohlereng.com">www.bohlereng.com</a>			
DATE:	DESIGNED BY:	M.J.G./J.D.	
DATE:	DRAWN BY:	B.M.H.	
DATE:	PROJECT NO.:	S040011.01	
DATE:	SCALE:	11/22/06 N.T.S.	
DATE:	DRAWING NO.:	25 OF 29	
ADAM J. VOLANTH PROFESSIONAL ENGINEER NO. 21342			

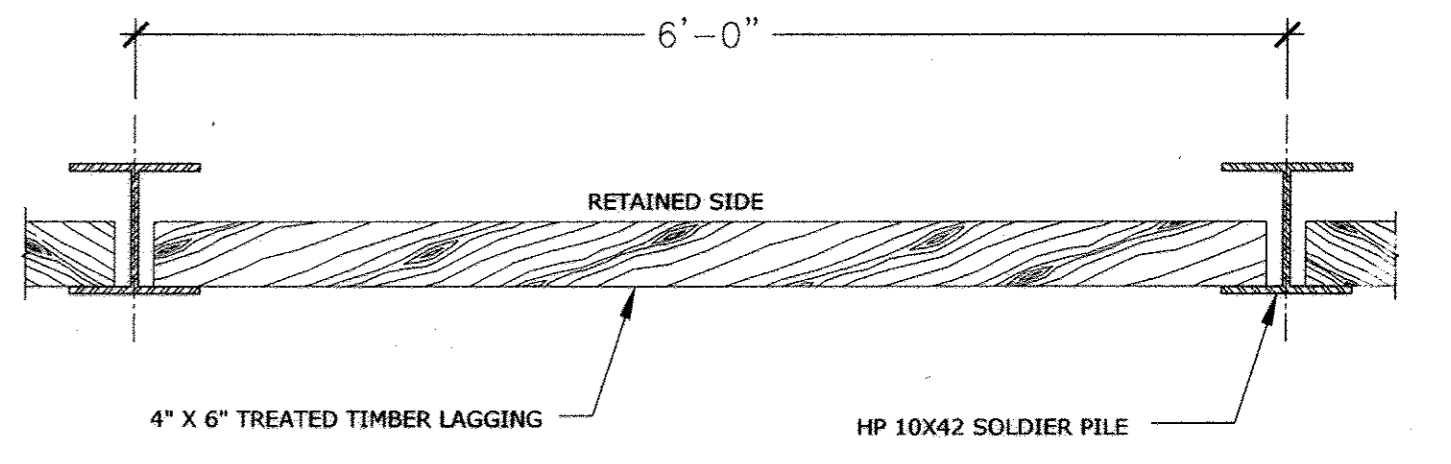
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 44097, EXPIRATION DATE: 6/19/17



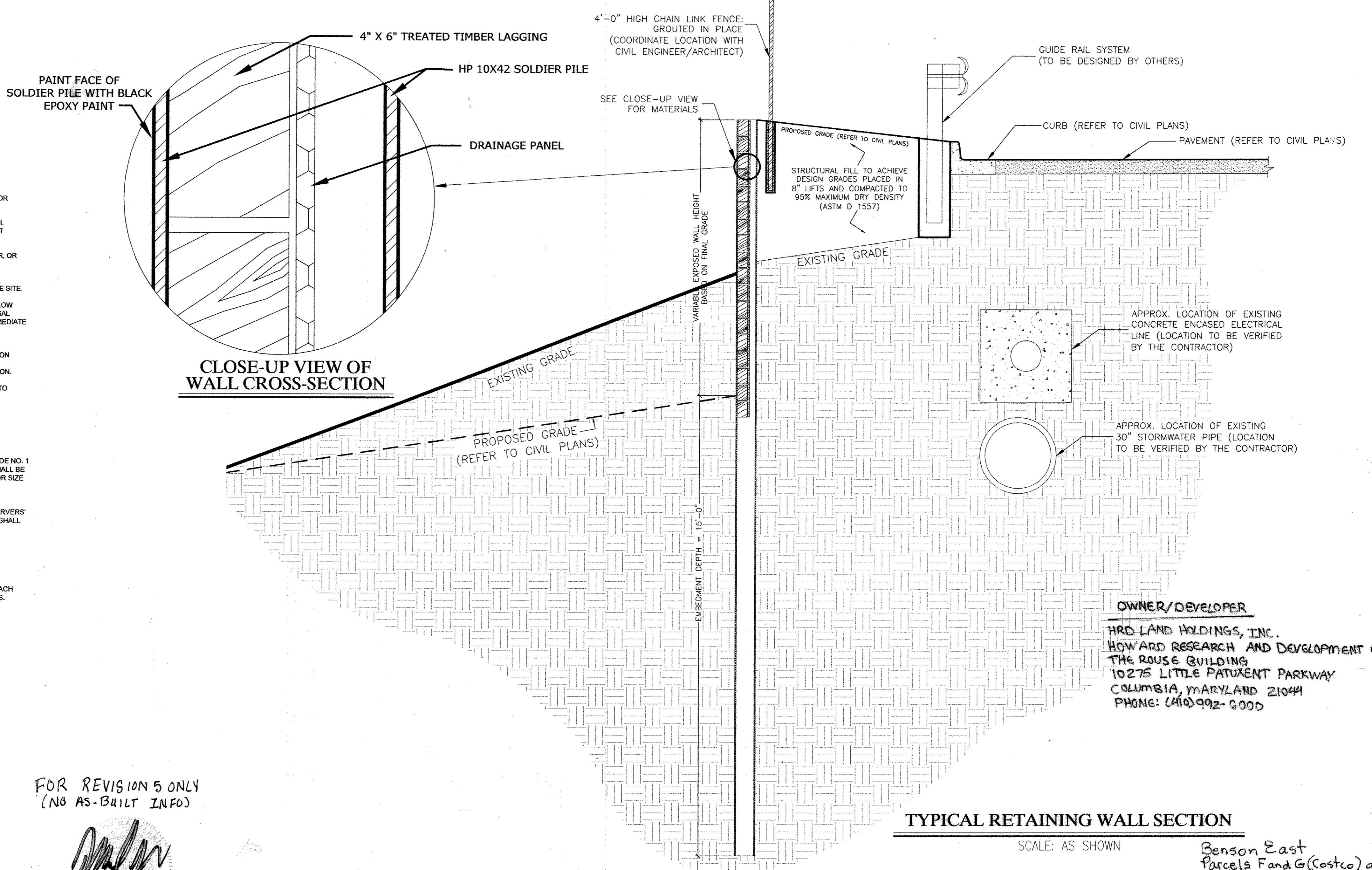
**WALL PLAN VIEW**  
SCALE: 1"=20'



**WALL PROFILE**  
SCALE: 1"=10'



**WALL SECTION PLAN VIEW**



**CLOSE-UP VIEW OF WALL CROSS-SECTION**

**TYPICAL RETAINING WALL SECTION**  
SCALE: AS SHOWN

**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 (SEISMIC)

**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 A36 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 6,7500 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 ACHIEVED.

**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 G1000, OR EQUIVALENT, ON THE RETAINED SIDE OF THE LAGGING TO RELIEVE BUILD UP OF HYDROSTATIC PRESSURES.

**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.

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.

**PLANNING BOARD APPROVAL STAMP**

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 APPROVED: DEPARTMENT OF ENGINEERING  
 APPROVED: DIVISION OF LAND DEVELOPMENT  
 APPROVED: COUNTY HEALTH DEPARTMENT

APPROVED PLANNING BOARD OF HOWARD COUNTY  
 DATE: 09/14/06

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

*[Signature]*

I, MICHAEL J. GIBSON, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 44097, EXPIRATION DATE: 9/9/17

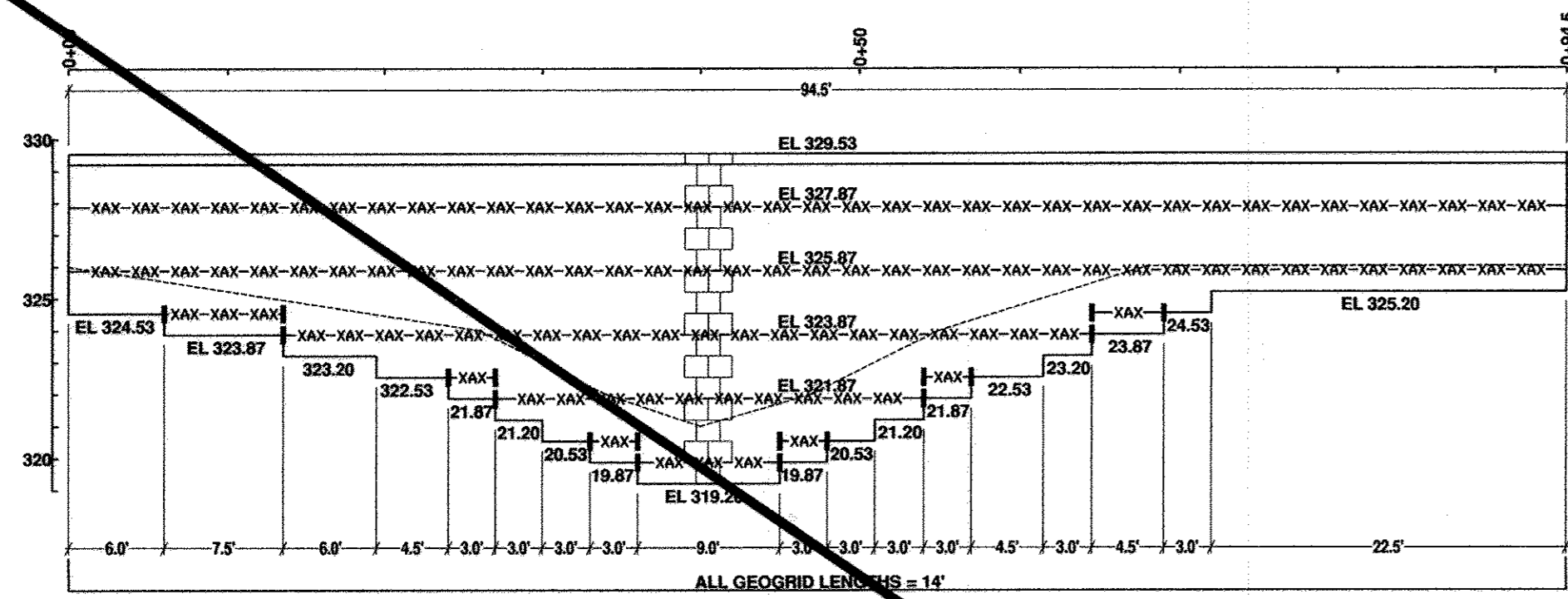
REV	DATE	DESCRIPTION	BY
1	06-20-07	REVISE EMBEDMENT DEPTH	SMG
2	07-13-07	REVISE PER CONTRACTOR'S COMMENTS	SMG
2		Add Retaining Wall Maintenance Easement to Open Space Parcel G and revise retaining wall details	
5	2-6-17	MS OUTFALL STORM DRAIN AS-BUILT	BOHLER

STEPHANIE M. GRAHL, P.E.  
 PROFESSIONAL ENGINEER  
 MARYLAND LICENSE NO. 25842

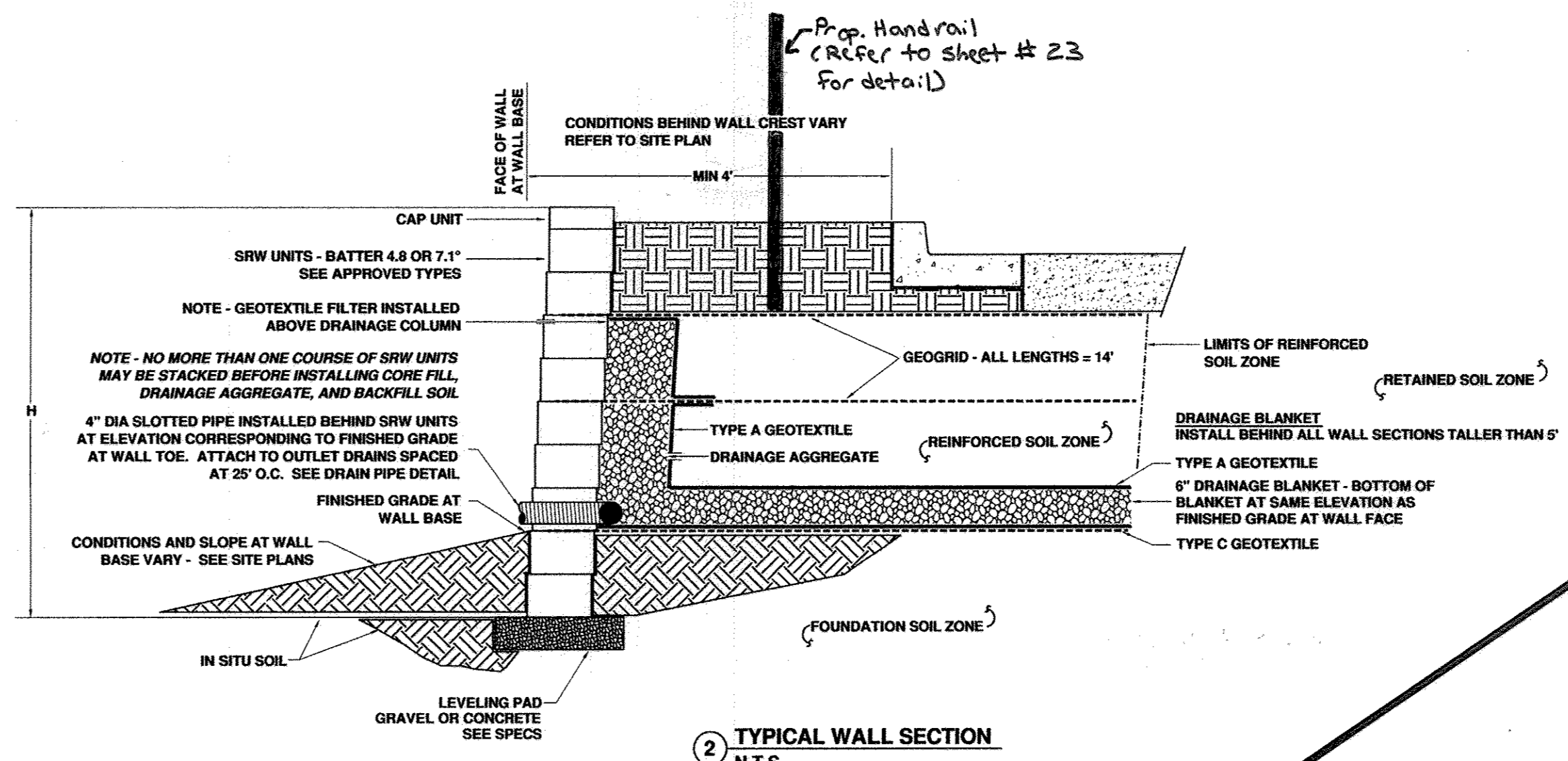
TITLE: SOLDIER PILE & LAGGING RETAINING WALL DESIGN & NOTES  
 CLIENT: BOHLER ENGINEERING, P.C.  
 PROJECT: COSTCO WHOLESALE SITE 1-95 & LITTLE PATUXENT PARKWAY COLUMBIA, HOWARD COUNTY, MARYLAND  
 PROJECT #: WP07-9697  
 BY: RP  
 PROJ. MGR.: JMM  
 DATE: 06-18-07  
 SCALE: As Shown  
 SHEET: 26 OF 29

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

WHITESTONE ASSOCIATES, INC.  
 1600 Manor Drive, Suite 220  
 Chalfont, Pennsylvania 18914  
 Phone (215) 712-2700 Fax (215) 712-2701



1 WALL FRONT ELEVATION VIEW AND REINFORCEMENT SCHEDULE  
HORIZONTAL SCALE: 1" = 10' VERTICAL SCALE: 1" = 5'



2 TYPICAL WALL SECTION  
N.T.S.

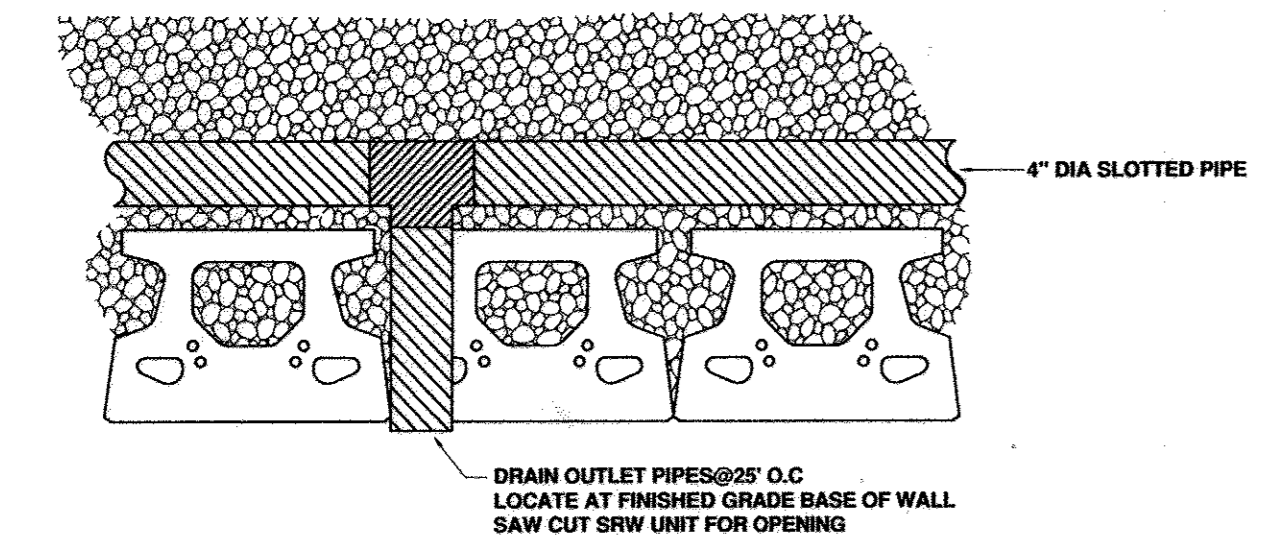
**LEGEND**

- SRW UNITS ILLUSTRATED FOR ELEVATION REFERENCE
- TOP OF WALL (CAP) ELEVATION
- CAP UNITS
- FINISHED GRADE PROFILE
- BOTTOM OF WALL ELEVATION TOP OF LEVELING PAD
- EL XXXX
- GEOSYNTHETIC REINFORCEMENT HUESKER FORTRAC 35 TO MIRAFI 3XT STRATASYSTEMS STRATAGRID 200 TENSAR UT110085E
- TERMINATION OF REINFORCEMENT OR CHANGE IN EMBEDMENT LENGTH

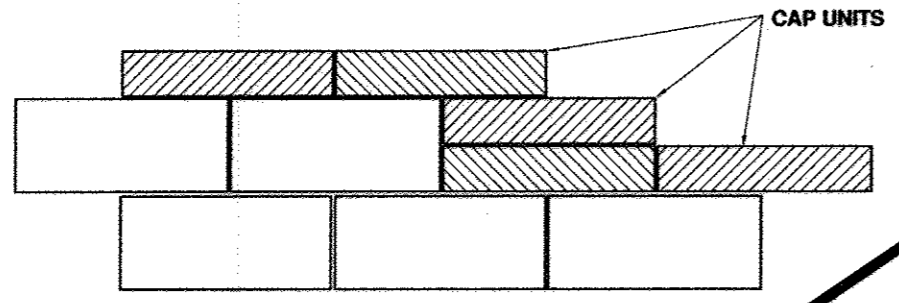
**CONSTRUCTION NOTES**

- A GRAVEL DRAINAGE BLANKET IS REQUIRED AT ALL SECTIONS OF WALL FOR WHICH TOTAL HEIGHT EXCEEDS 5 FT - SEE DETAIL 27-2.
- FILL SOIL INSTALLED IN THE REINFORCED ZONE AT WALL SHALL EXHIBIT THE PHYSICAL PROPERTIES SPECIFIED AT SHEET 26.
- INSITU SOIL IN THE FOUNDATION AND RETAINED ZONES IS ASSUMED TO EXHIBIT  $\phi = 30^\circ$ . OWNER'S INSPECTION ENGINEER SHALL VERIFY THAT THIS ASSUMED SHEAR STRENGTH PARAMETER IS ADEQUATELY CONSERVATIVE.
- 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.

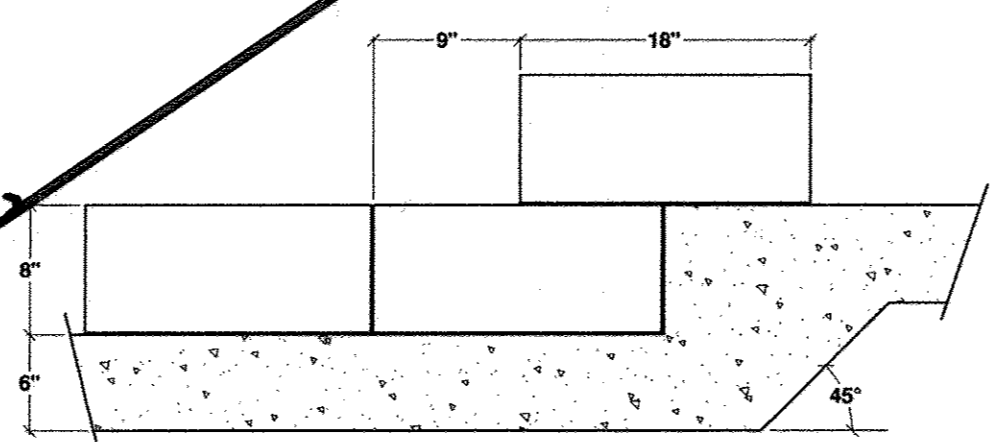
Sheet Not Used



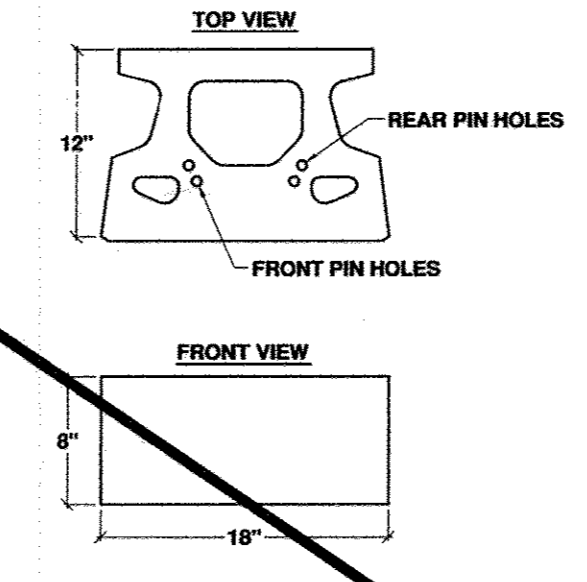
3 DRAIN PIPE DETAIL  
N.T.S.



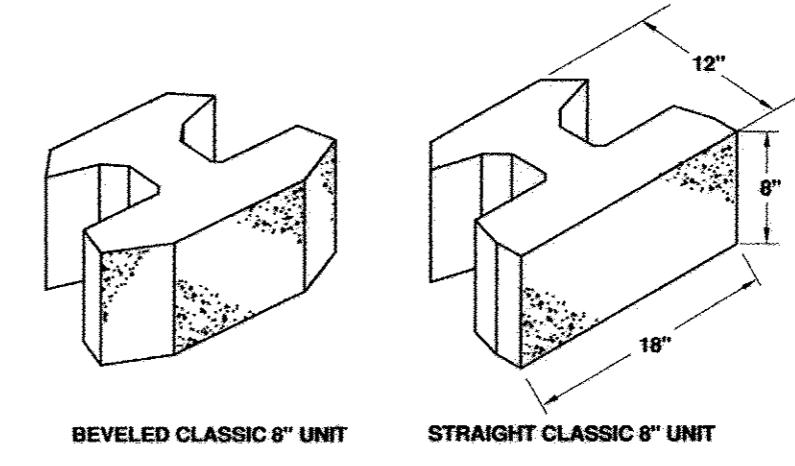
4 CAP UNIT DETAIL  
N.T.S.



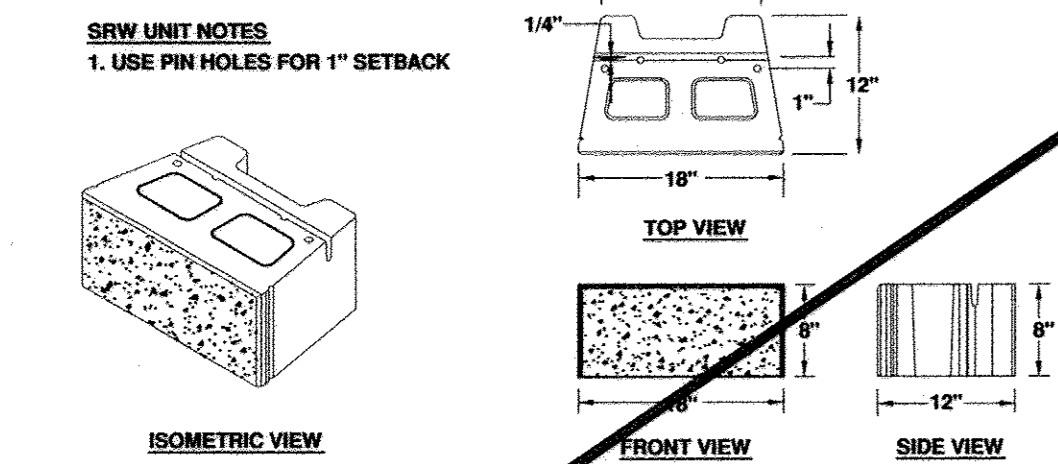
5 TYPICAL LEVELING PAD STEP DETAIL  
N.T.S.



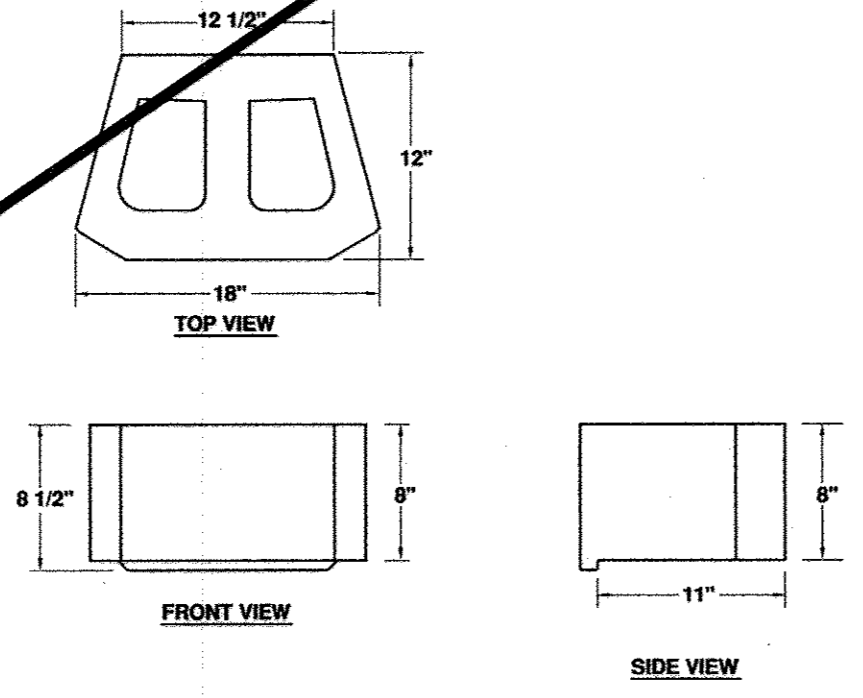
6 KEYSTONE COMPAC SRW UNITS  
N.T.S.



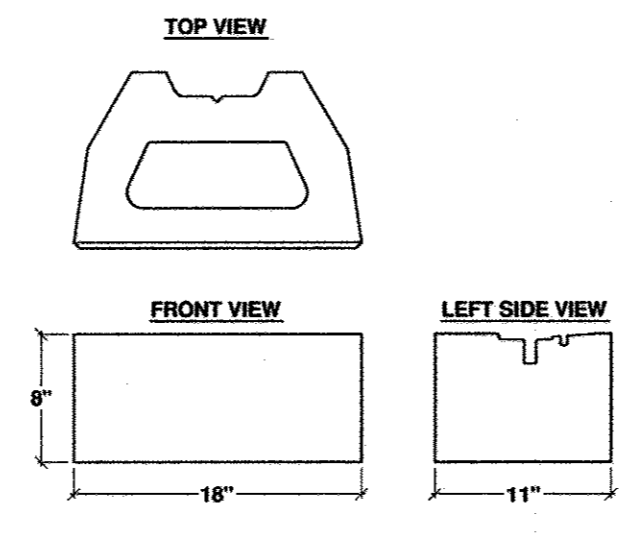
7 ROCKWOOD SRW UNIT  
NOT TO SCALE



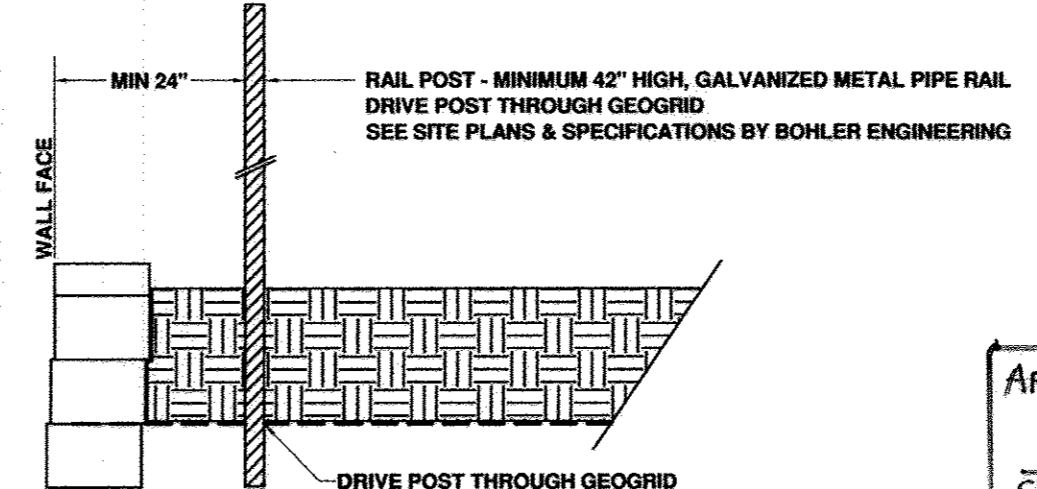
8 VERSALOK SQUARE FOOT UNIT  
NOT TO SCALE



9 ANCHOR DIAMOND PRO SRW UNIT  
NOT TO SCALE



10 MESA STANDARD SRW UNITS  
N.T.S.



11 RAIL POST AT WALL  
N.T.S.

APPROVED DEPARTMENT OF PLANNING AND ZONING  
CHIEF - DEVELOPMENT ENGINEERING 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

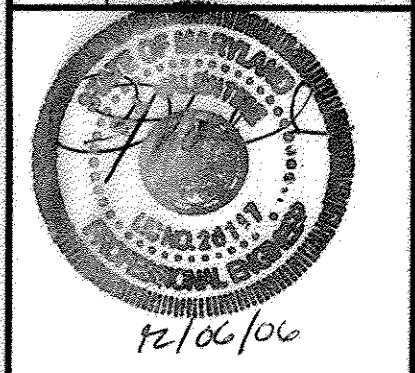
PLANNING BOARD APPROVAL STAMP

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

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE STATE OF MARYLAND LICENSE NO. 44097, EXPIRATION DATE: 6/9/17

REVISIONS	
DATE	DESCRIPTION
07/22/06	ARCHITECTURAL REVIEW COMMENTS
12/06/06	CITY COMMENTS



**R.J. VALENTINE, P.E.**  
Consulting Engineer  
5869 Woodfield Estates Drive  
Alexandria, Virginia 22310  
Tel. 703-924-0683 Fax. 703-924-0682

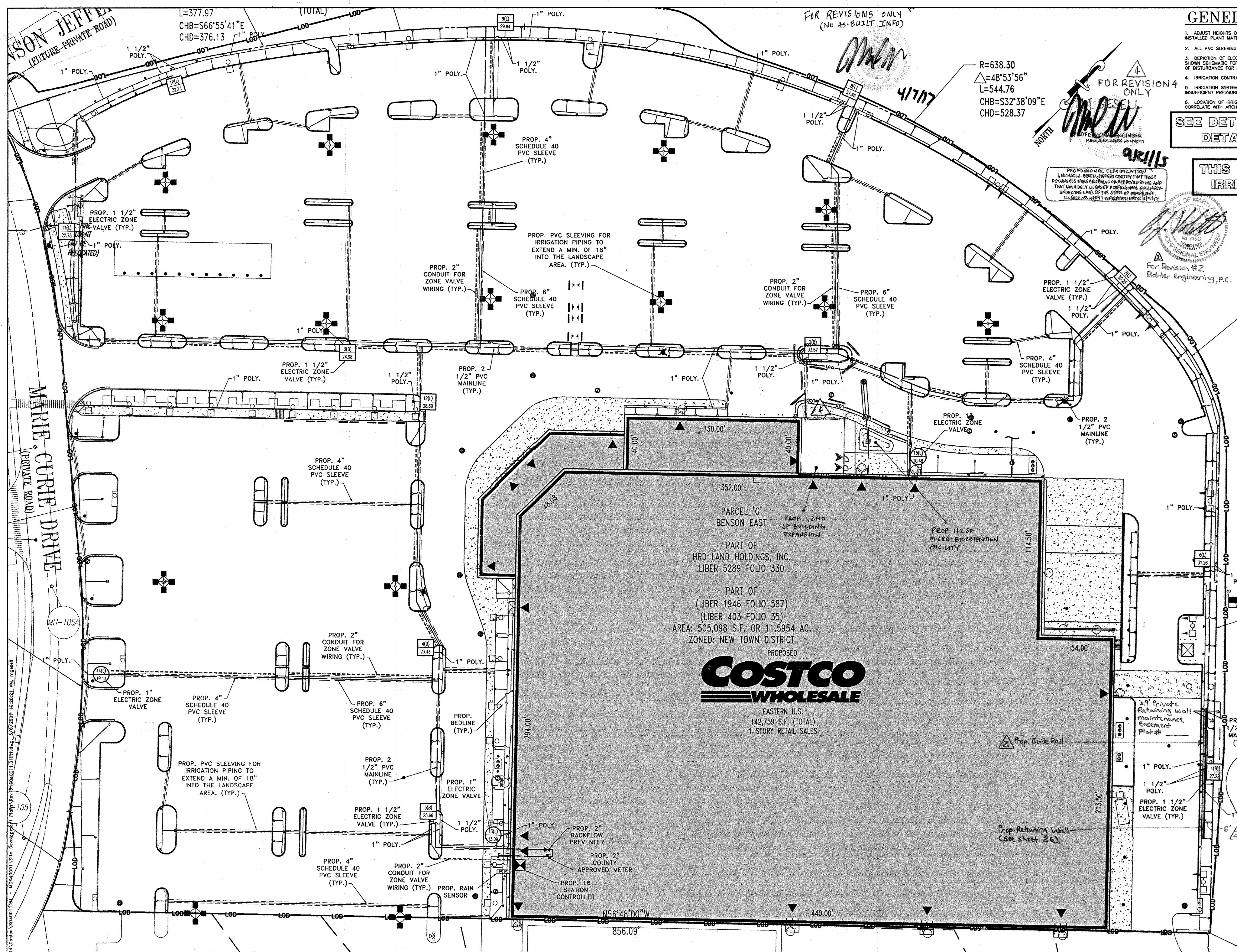
CLIENT:  
**BOHLER ENGINEERING, P.C.**  
22630 Davis Drive, Suite 200  
Sterling, Virginia 20164  
Tel. 703-709-9800

PROJECT:  
**RETAINING WALL  
COSTCO WHOLESALE FACILITY  
COLUMBIA, HOWARD COUNTY, MD**

PROJECT NO: 8029 DRAWN BY: RV CHECKED BY: RV

ORIGINAL ISSUE DATE: 04/28/06  
DRAWING NUMBER:  
**27** OF **29**

SDP 06-111



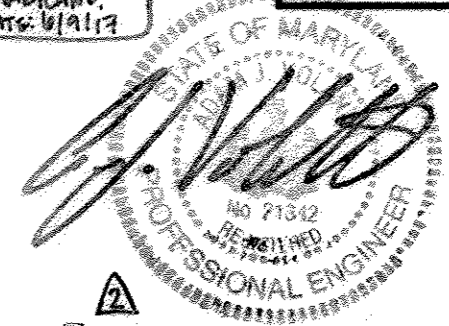
**GENERAL IRRIGATION NOTES**

- ADJUST HEIGHTS OF 4" TALL RAINBIRD MPR SERIES POP UP SPRAY HEADS IN CORRELATION WITH INSTALLED PLANT MATERIAL AND FIELD CONDITIONS.
- ALL PVC SLEEVING SHALL EXTEND 18" INTO PERVIOUS LANDSCAPE AREAS.
- 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.
- IRRIGATION CONTRACTOR TO ENSURE ADEQUATE COVER OVER ALL PIPING.
- 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.
- 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

PROFESSIONAL CERTIFICATION  
 I, ADAM J. VOLANTH, hereby certify that these drawings 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. 44971, Expiration Date: 11/1/13



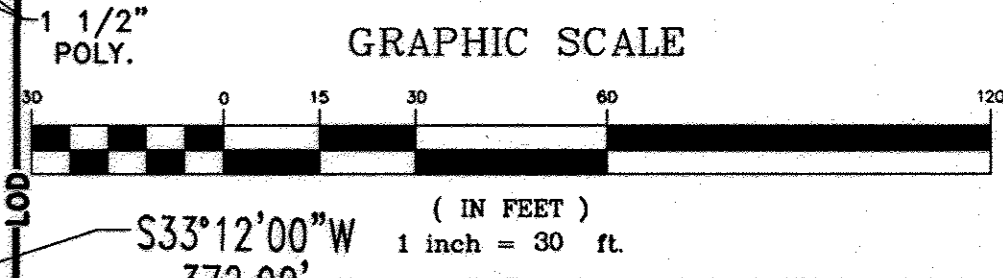
For Revision #2  
 Bohler Engineering, P.C.

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION  
 CHIEF-DIVISION OF LAND DEVELOPMENT  
 DIRECTOR

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

PLANNING BOARD APPROVAL STAMP

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



REV.	DATE	DESCRIPTION	BY
5	2-6-17	MB DUTY FALL STORM DRAIN	MB
4	4/10/15	Expand fire center and microbio facilities	MB
2	2/20/17	Revised Retaining Wall	MB

OWNER/DEVELOPER: COSTCO WHOLESALE CORPORATION  
 C/O PROP TAX DEPARTMENT 1000  
 999 LAKE DRIVE  
 ISSAQUAH, WA 98027-8990  
 PHONE: (703) 406-6802

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

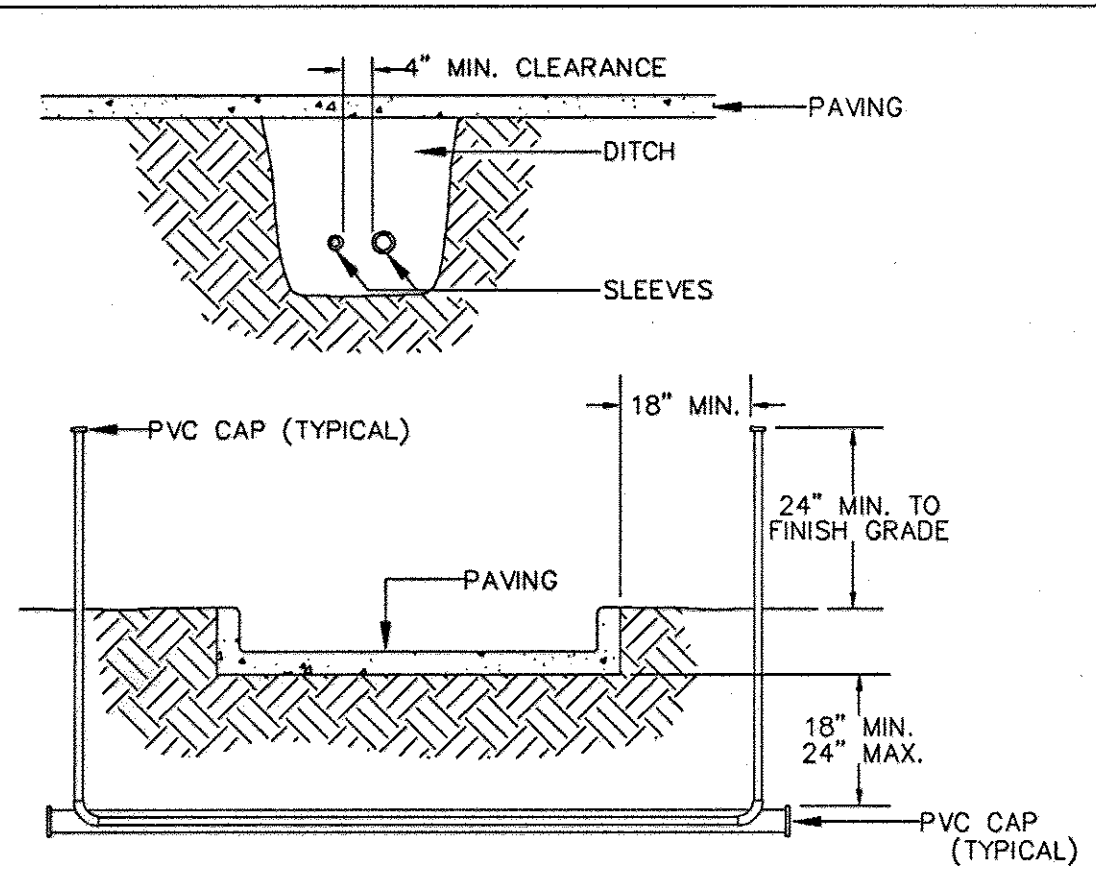
AREA: TAX MAP 37 GRID 1 & 2 ZONED NEW TOWN  
 PARCEL G  
 BENSON EAST  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

IRRIGATION PLAN

**BOHLER ENGINEERING, P.C.**  
 PROFESSIONAL ENGINEERING SERVICES  
 22850 DAVID DRIVE, SUITE 200 STERLING, VIRGINIA, 20164  
 CONTACT: DAVID B. NEUBECK  
 (703) 708-9500 FAX: (703) 708-9501 E: [info@bohlereng.com](mailto:info@bohlereng.com)

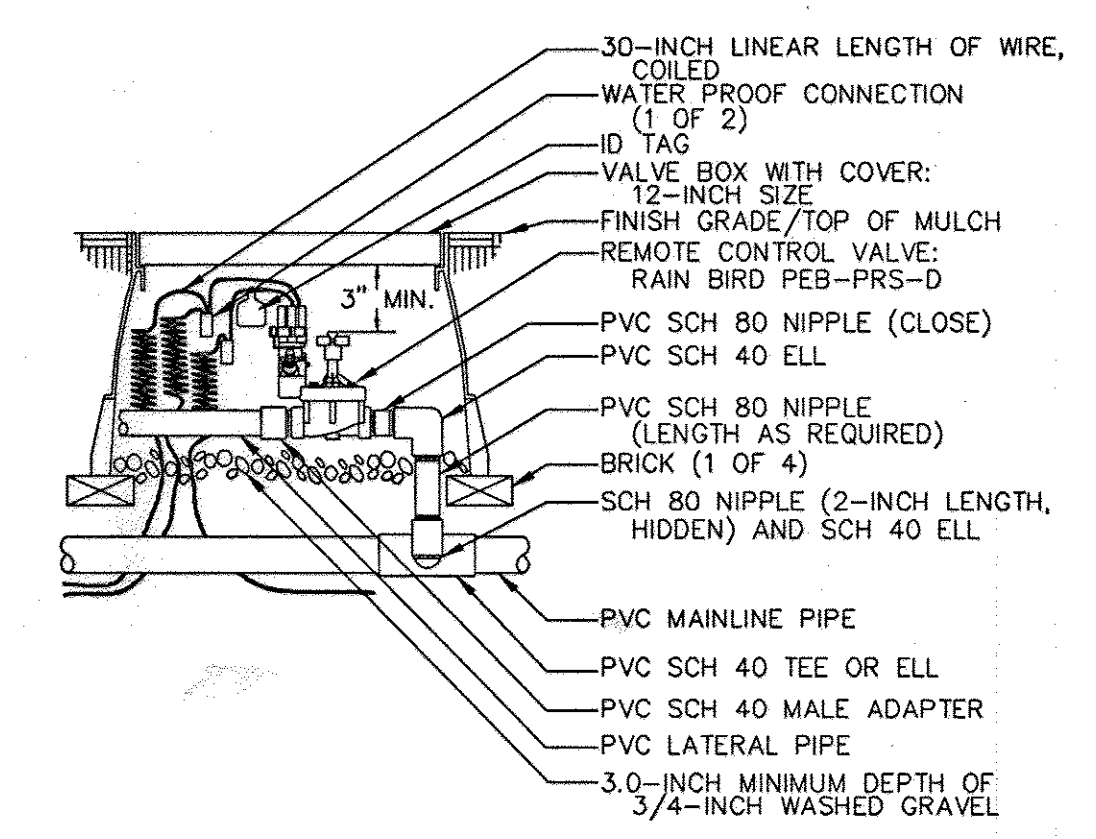
DESIGNED BY: M.J.G./JD  
 DRAWN BY: B.M.H.  
 PROJECT NO.: S040011.01  
 DATE: 11/22/06  
 SCALE: 1"=30'  
 DRAWING NO.: 28 OF 29

SP 06-111

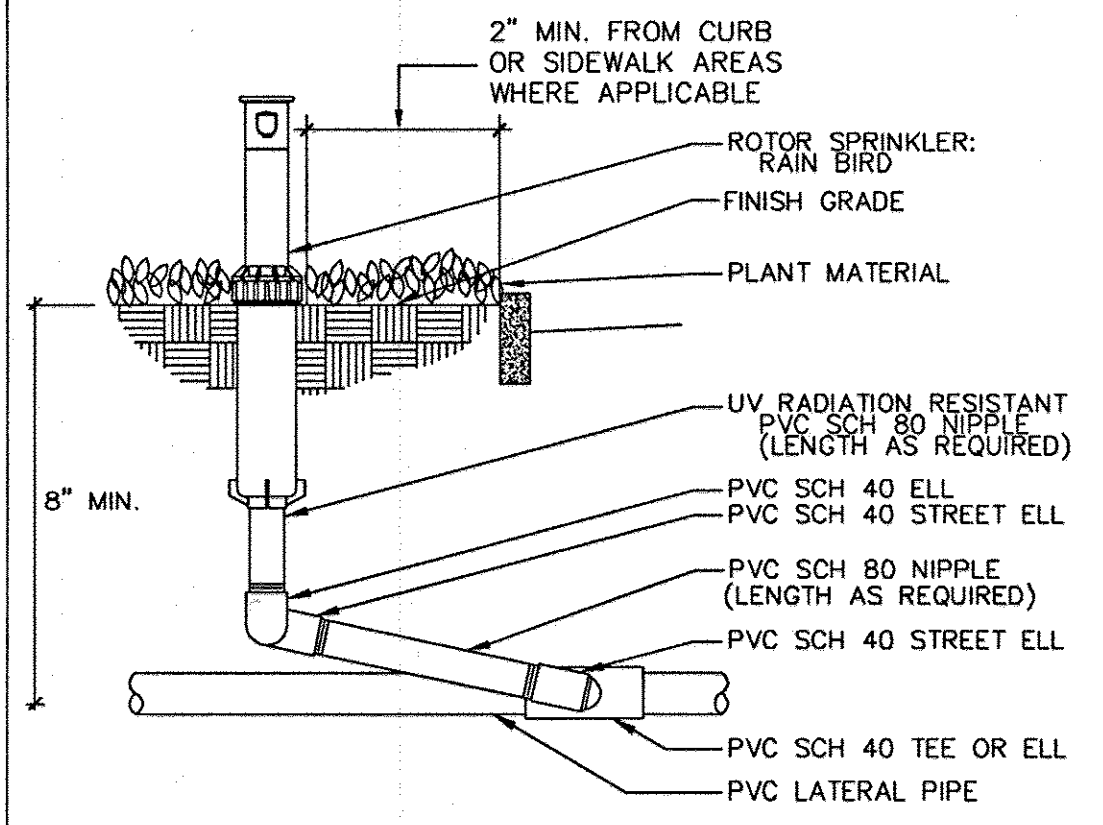


- NOTES:
1. ALL PVC IRRIGATION SLEEVES TO BE CLASS 200 PIPE.
  2. ALL JOINTS TO BE SOLVENT WELDED AND WATER-TIGHT.
  3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
  4. MECHANICALLY TAMP TO 95% PROCTOR.

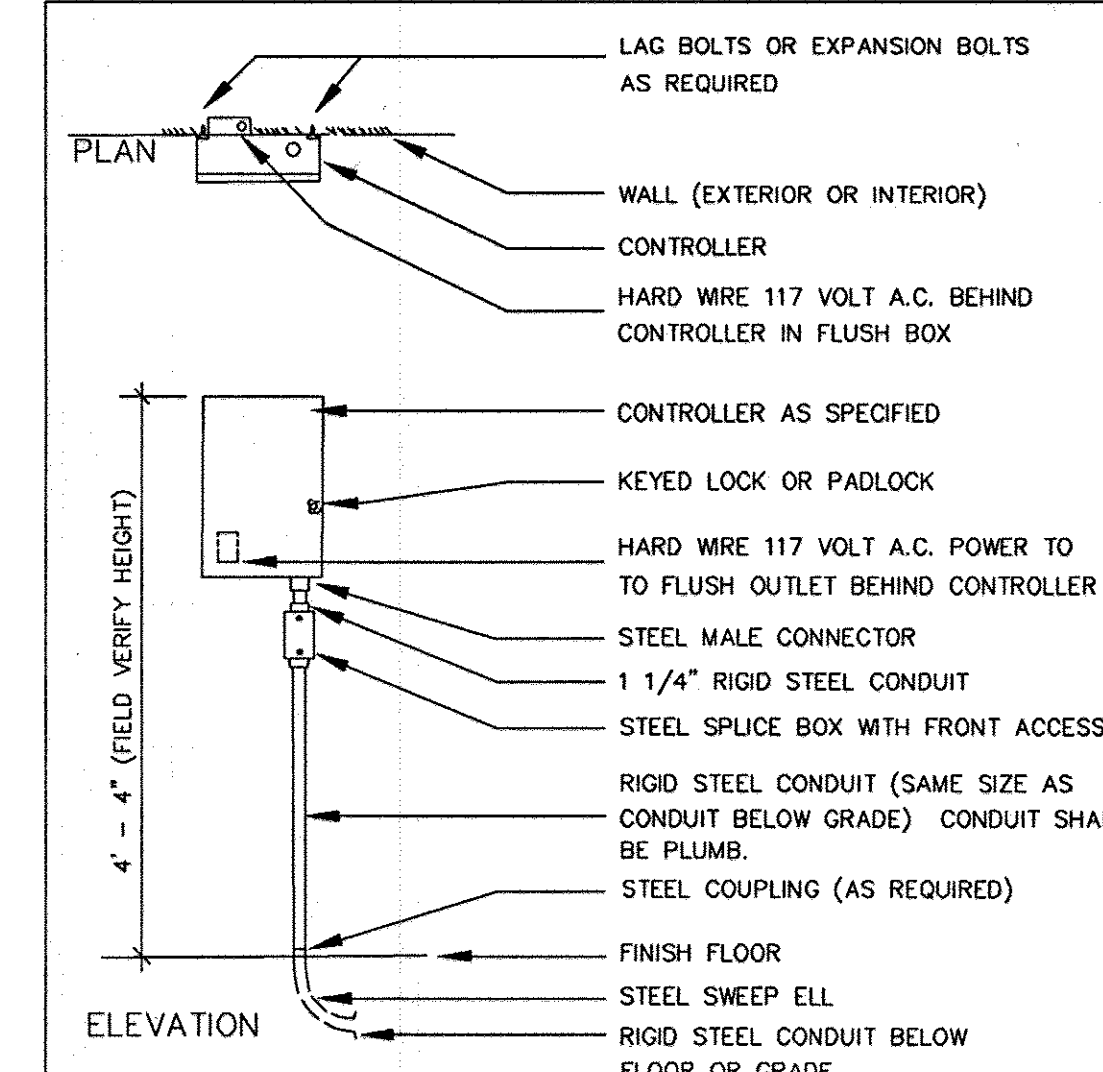
**SLEEVING**  
NOT TO SCALE



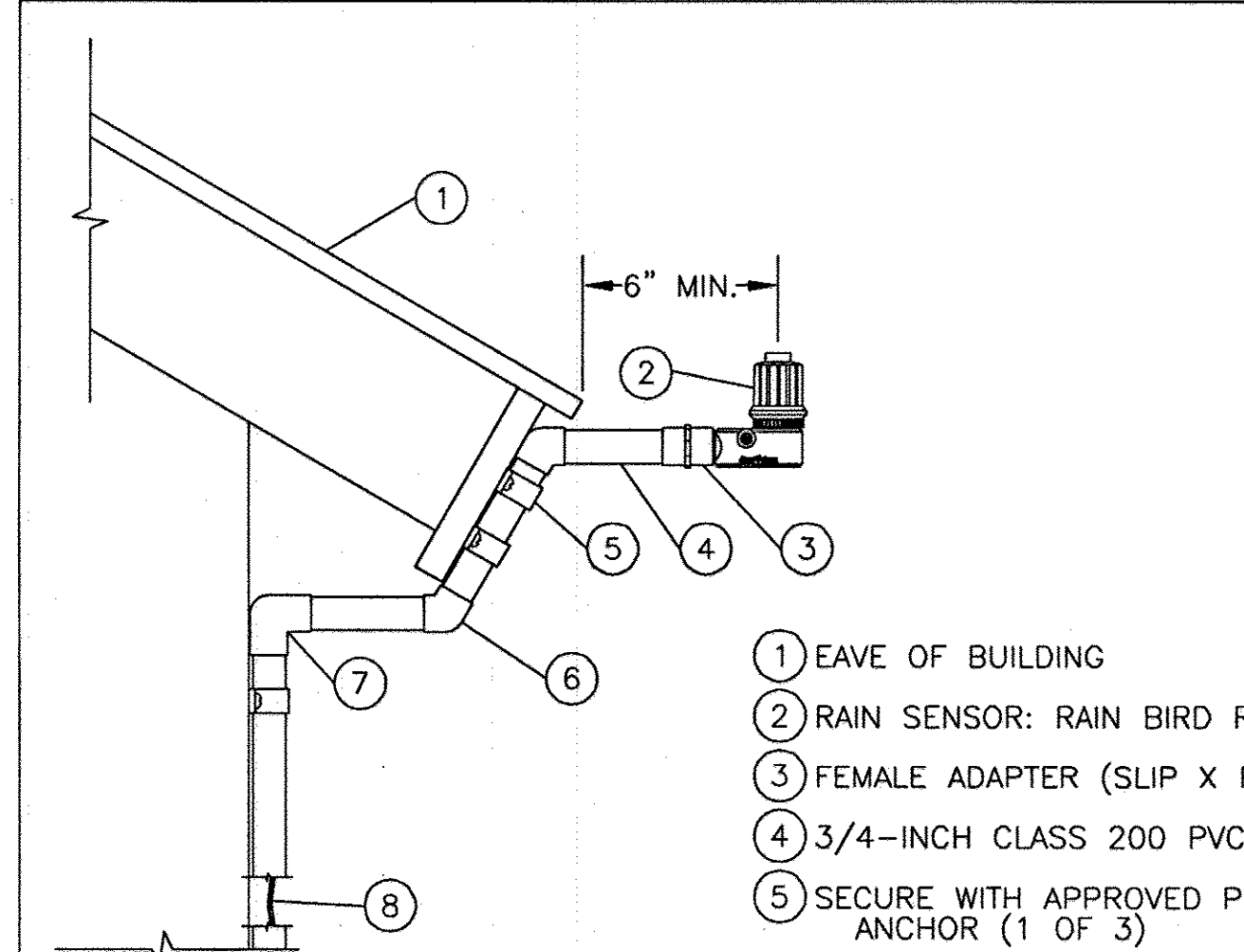
**REMOTE CONTROL VALVE**  
NOT TO SCALE



**3500 SERIES ROTOR**  
NOT TO SCALE



**WALL MOUNTED CONTROLLER**  
NOT TO SCALE



**RAIN SENSOR - RSD - CE<sub>x</sub> ROOF CONDUIT**  
NOT TO SCALE

**IRRIGATION SCHEDULE**

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	☒	RAINBIRD RAINSENSOR W/ROOF CONDUIT (RSD-CE <sub>x</sub> )
3	☒	1" RAINBIRD ELECTRIC ZONE VALVE WITH FLOW CONTROL (100-PEB-PRS-D)
12	☒	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**

- 1.01 SCOPE**
- 1.02 APPLICABLE STANDARDS**
- 1.03 MAINTENANCE AND GUARANTEE**
- 1.04 SUBMITTALS**
- 2.01 GENERAL**
- 2.02 POLY VINYL CHLORIDE PIPE (PVC)**
- 2.03 POLYETHYLENE PIPE**
- 2.04 COPPER TUBING**
- 2.05 COPPER TUBE FITTINGS**
- 2.06 WIRE**
- 2.07 SCHEDULE 40 PVC NIPPLES**
- 3.01 INSTALLATION - GENERAL**
- 3.02 PIPE INSTALLATION**
- 3.03 PVC PIPE AND FITTING ASSEMBLY**
- 3.04 COPPER TUBING AND FITTING ASSEMBLY**
- 3.05 SHRUB SPRAY HEADS (FIXED)**
- 3.06 POP-UP SPRAY HEADS**
- 3.07 VALVES**
- 3.08 WRING**
- 3.09 AUTOMATIC SPRINKLER CONTROLS**
- 3.10 TESTING**
- 3.11 FINAL ADJUSTMENT**

FOR REVISION 5 ONLY  
(NO AS-BUILT INFO)

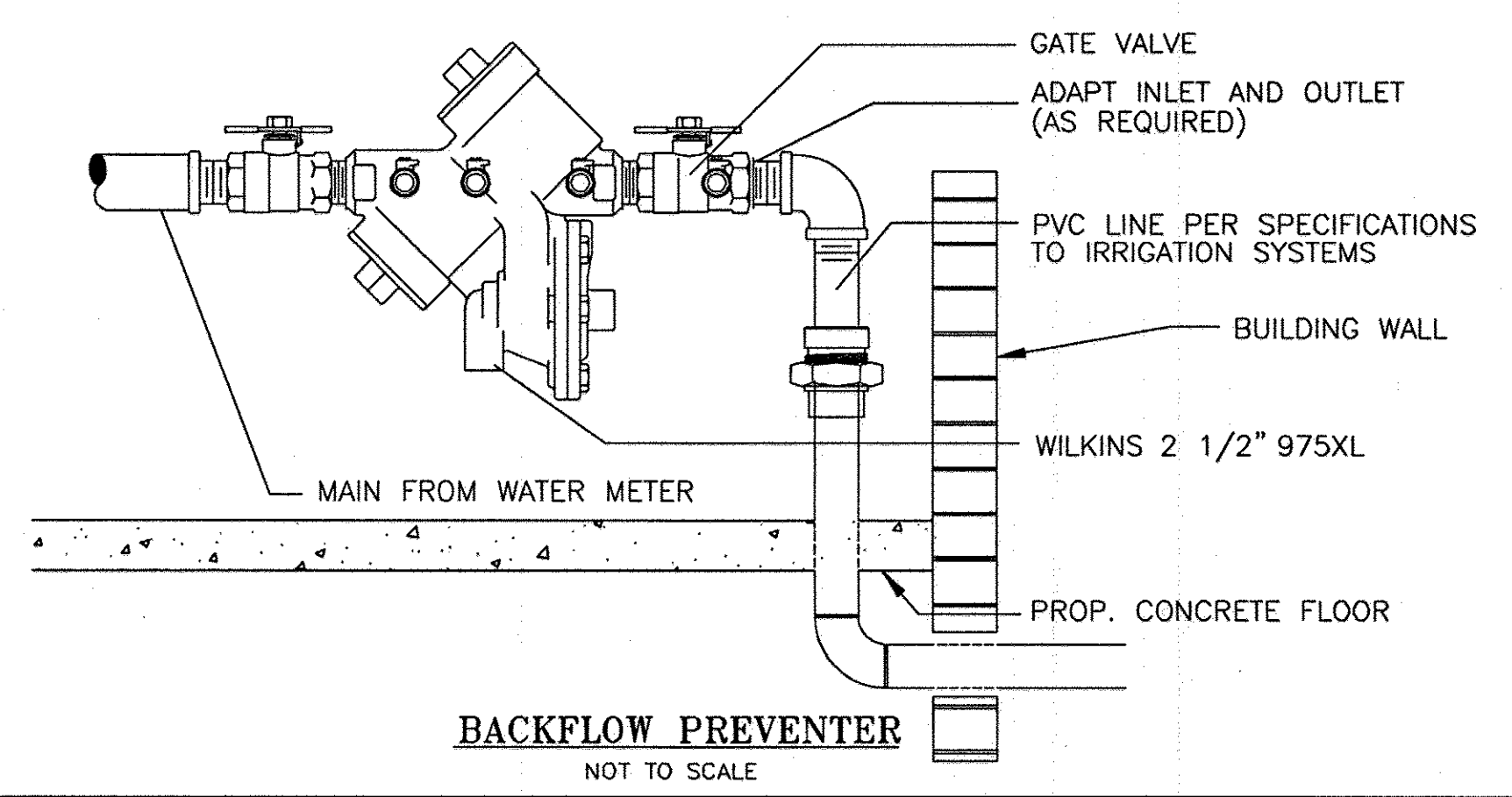
*MJM* 4/7/07

I, MICHAEL J. GSELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE STATE OF MARYLAND.  
LICENSE NO: 44077 EXPIRATION DATE: 6/9/17

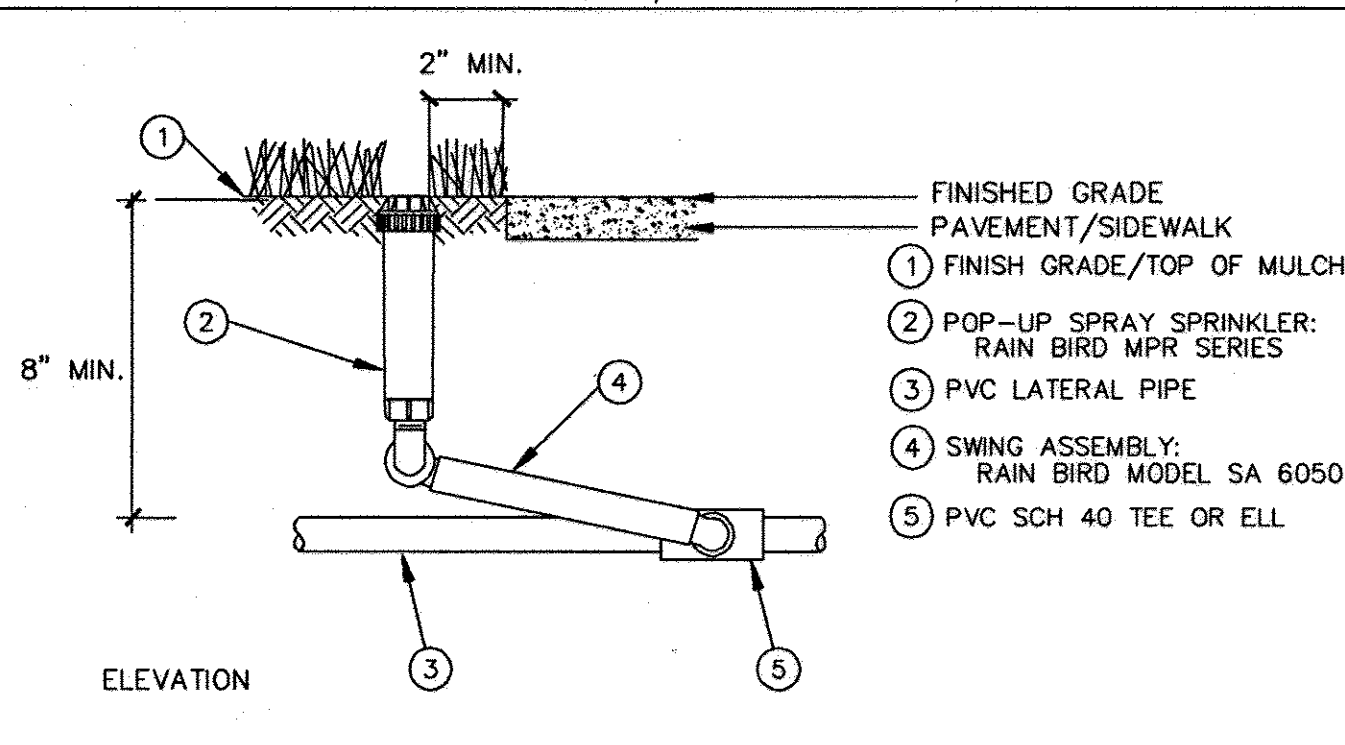
**PLANNING BOARD APPROVAL STAMP**

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF-DEVELOPMENT ENGINEERING DIVISION  
DATE 4/11/07  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF-DIVISION OF LAND DEVELOPMENT  
DATE 4/16/07  
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
DATE



**BACKFLOW PREVENTER**  
NOT TO SCALE



**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 57 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  
22030 DAVIS DRIVE, SUITE 200 STERLING, VIRGINIA, 20164  
CONTACT: DAVID B. BOHLER  
(703) 700-9500 FAX: (703) 700-9501 E: PBOHLER@BOHLER.COM

DESIGNED BY: M.J.G./JD  
DRAWN BY: B.M.H.  
PROJECT NO.: S040011.01  
DATE: 11/22/06  
SCALE: NOT TO SCALE  
DRAWING NO.: 29 OF 29  
ADAM J. VOLANTH  
PROFESSIONAL ENGINEER NO. 21342

SDP 06-111