DREYER'S GRAND ICE CREAM
SITE DEVELOPMENT PLAN
PARCELS 509, 420, 302, 271, 241

GENERAL NOTES

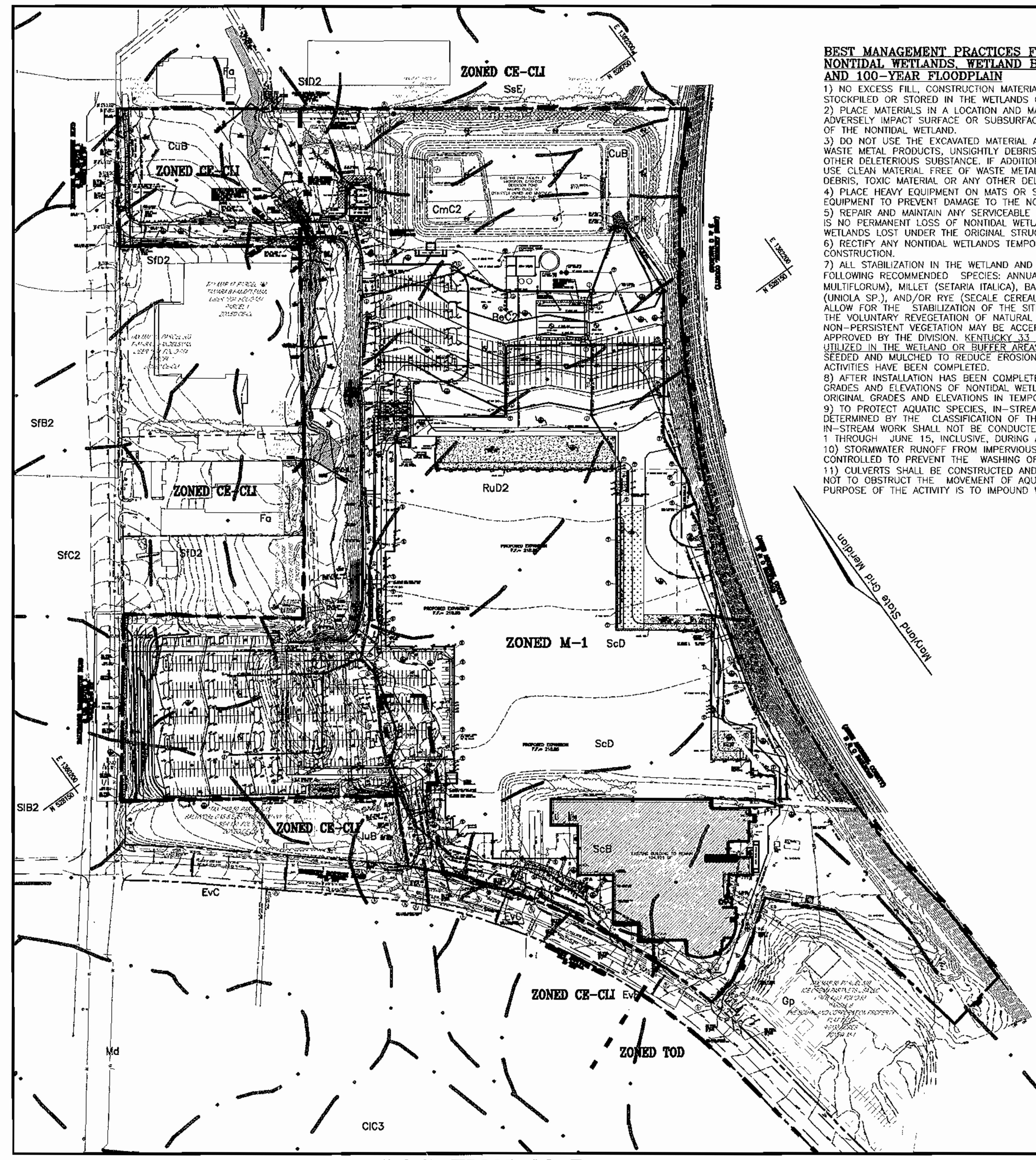
1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications, if applicable.
2. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work.
3. The contractor is to notify the following utilities or agencies at least five days before starting work on these drawings:

Miss Utility	1-800-257-7777
Verizon Telephone company:	1-410-954-6281
Howard County Bureau of Utilities:	313-2366
AT&T Cable Location Division:	393-3553
B.G.&E. Co. Contractor Services:	850-4620
B.G.&E. Co. Underground Damage Control:	787-4620
State Highway Administration:	531-5533

4. Site analysis:
   - Area of Parcel: 48.49 Ac.
   - Present Zoning: M-1, CE-CLI
   - Proposed Use : Expand existing Nestle's Ice Cream Facility, add associated parking & loading areas, provide improvements along Rte 1.
   - Building Area: 558,550 sf.
   - Building Coverage On Site: 12.82 Ac. or 26.44% of Gross Area
   - Paved Parking Lot/Area On Site: 16.67 Ac. or 34.38% of Gross Area
   - Area of Landscape Island: 0.74 Ac. or 1.53% of Gross Area
   - Limit of Disturbed Area: 36.82 Ac. or or 75.93% of Gross Area
   - Cut: 10,000 sf. Fill: 10,000 sf.
5. Project background:
   - Location : Laurel, MD.; Tax Map 47 & 50, Block 5, Parcel 509, 271, 341, 420, 302 & 293
   - Zoning : M-1, CE-CLI
   - Subdivision : N/A
   - Section/Area : N/A
   - Site Area : 48.49 Ac.
   - DPZ references : SDP-04-144, F 05-107 (plats 17462-66)
6. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to start of work.
7. Any damage to public right-of-ways, paving, or existing utilities will be corrected at the contractor's expense.
8. Existing utilities located from Road Construction Plans, Field Surveys, Public Water and and Sewer Extension Plans and available record drawings. Approximate location of existing utilities are shown for the contractors information. Contractor shall locate existing utilities well in advance of construction activities and take all necessary precautions to protect the existing utilities and to maintain uninterrupted service. Any damage incurred due to contractor's operation shall be repaired immediately at the contractor's expense.
9. All reinforced concrete for storm drain structures shall have a minimum of 28 days strength of 3,500 p.s.i.
10. Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
11. Estimates of earthwork quantities are provided soley for the purpose of calculating fees.
12. Soil compaction specifications, requirements, methods and materials are to be in accordance with the recommendations of the project Geotechnical Engineer. Geotechnical Engineer to confirm acceptability of proposed paving section, based on soil test prior to construction.
13. The existing topography is taken from field run survey with two foot contour intervals prepared by Frederick Ward and Associates, dated May 22, 2001, from the mass grading approved under SDP-04-144, and topographic survey prepared by Harms (SDP-01-59). The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System.
14. A noise study is not required for this project.
15. For paving section details, see sheet 7, C6.1. The geotechnical engineer to confirm paving section prior to construction.
16. All curb and gutter to be Howard County Standard Detail 3.01 unless otherwise noted. (Detail on sheet 7, C6.1)
17. Contractor responsible to construct all handicap ramps and handicap access in accordance with current ADA requirements.
18. Where drainage flows away from curb, contractor to reverse the gutter pan.
19. All elevations are to flowline/bottom of curb unless otherwise noted.
20. All dimensions are to face of curb unless otherwise noted.
21. Public water provided by Cont. 1-W, Cont. 44-1639, and private on-site water. Public sewer provided by Cont. 112-S, Cont. 242-S, and private on-site sewer.
22. Stormwater management quantity is provided by the existing stormwater management micropool pond, which provides Cpv and Wqv (REF: SDP-04-144). The proposed strone trench provides Rev. The proposed Bio-Retention facility provides Wqv. The proposed stormwater management system and water quality system are to be privately owned and maintained by Nestle Ice Cream Company, Inc.
23. All exterior lighting to conform to section 134 of the Howard County Zoning Regulations. (Detail on Sheet 7, C6.1)
24. Geotechnical report prepared by Engineering Consulting Services, LTD. dated May 14, 2004.
25. This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and Landscape Manual.
26. Any existing street trees damaged or destroyed during construction will be replaced by the contractor.
27. Perimeter Landscaping in accordance with Section 16.124 of the Howard County Code and Landscape Manual, shall be provided as shown on the approved landscape plan. Financial surety in the amount of $42,270 for the 122 shade trees, 31 evergreen trees and 34 shrubs shall be posted with the Developer's Agreement.
28. The wetlands shown on this plan were delineated by Eco-Science Professionals, Inc. dated May 16, 2004.
29. Traffic study prepared by The Traffic Group dated August 3, 2004 [redacted]
30. This plan is subject to compliance with the Amended Fifth Edition of the Subdivision Regulations, per Council Bill 45-2003, and the Amended Zoning Regulations, per Council Bill 75-2003.
31. Floodplain analysis prepared by Robert H. Vogel Engineering, Inc. dated July 2004 [redacted]
32. The existing building on Parcel # 509 is to remain, but no additions or alterations are allowed unless in compliance with the Zoning Regulations.
33. Reference WP-05-037, approved December 2, 2004, to waive Section 16.115, which prohibits disturbance to floodplain areas; Section 16.116, which prohibits disturbance to wetland areas and streams/stream buffers; and Section 16.119(f), which prohibits access onto intermediate arterial roads for non-residential developments. Approval is subject to the following conditions:
    1. The Petitioner shall utilize an 84" RCP in the design of the stream crossing for the internal roadway, or whatever design is approved by DED/DPW.
    2. The petitioner shall comply with all SHA requirements for design of the access onto Route 1.
34. All trash dumpsters and compactors are internal to the building, unless notes otherwise.
35. Total parking spaces provided is 733, with 14 of those spaces being handicapped.
36. Howard County DPZ has determined that the steep slope disturbance for the storm drain installation is "necessary".
37. Forest conservation obligation to be provided by six on-site forest conservation easements totaling 5.28 acrees (229,997 SF x $0.20 = $45,999.00 Surety), and by an off-site forest conservation easement of 9.20 acres (400,752 SF x $0.50 = $200,376.00 Surety) located on Buildable Preservation Parcel A in the Fox Creek Subdivision (See Sheets 30-32/L1.9-L1.11), and by a fee-in-lieu payment of $5,445.00 for the remaining 0.25 ac. The total Forest Conservation surety in the amount of $246,375 will be posted with the Developer's Agreement.
38. Contractor to test pit to determine vertical and horizontal location of all existing utilities at crossings and all tie in locations prior to construction. Should any conflict arise, contractor should contact the engineer before installation of any proposed utility shown on this plan.
39. This plan is subject to MDE Application Tracking Number 200560820.
40. Foundation soil shall be examined by a soil engineer to assure the actual foundation soil strength meets or exceeds assumed design strengths.
41. The proposed construction of the retaining walls shall be performed under the observation of a Maryland Registered Professional Engineer.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05



LOCATION MAP
SCALE: 1"=200'

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
3) DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE.
4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS IN EXCESS OF NONTIDAL WETLANDS LOST UNDER THE ORIGINAL STRUCTURE OR FILL.
6) RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7) ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUIN MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 33 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF NONTIDAL WETLANDS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

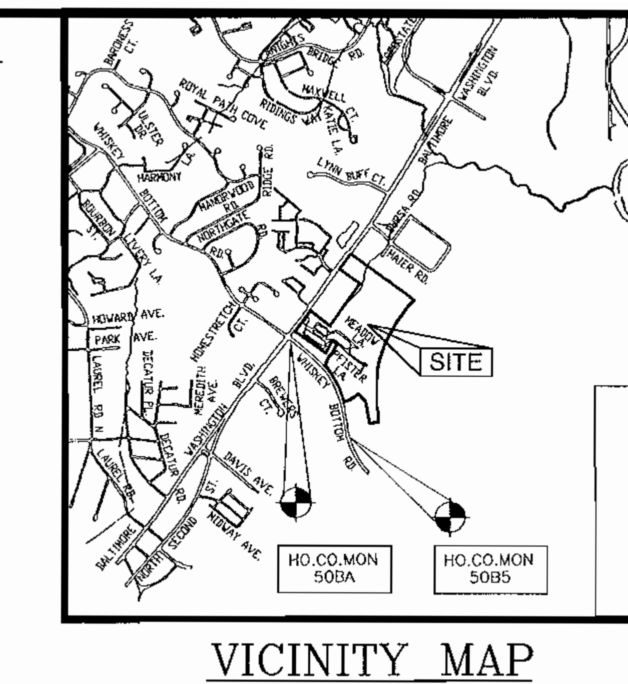
LEGEND

- Existing Contour (382)
- Proposed Contour (82)
- Existing Spot Elevation 382.56
- Proposed Spot Elevation +82.53
- Direction of Flow
- Existing Trees to Remain
- Light Poles
- Soil Type M1B2 / M1D3
- Concrete

BENCHMARKS

HOWARD COUNTY BENCHMARK 50BA
N 527561.678 E 1359772.604 ELEV. 249.737

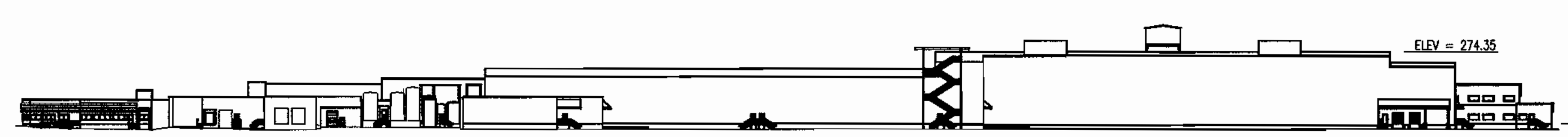
HOWARD COUNTY BENCHMARK 50B5
N 524999.375 E 1357925.748 ELEV. 178.195



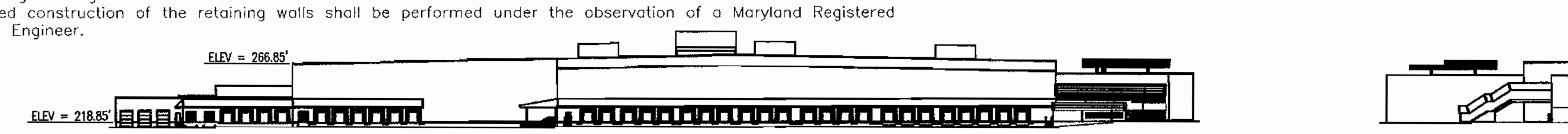
VICINITY MAP
SCALE: 1"=2000'

SHEET INDEX

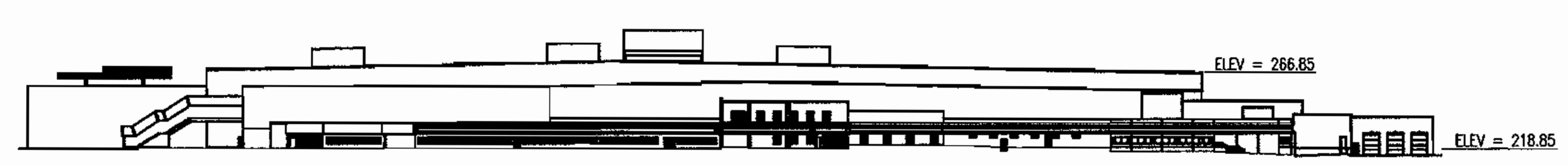
DESCRIPTION	DWG. NO.	SHEET NO.
COVER SHEET	C0.2	1 of 38
SITE LAYOUT PLAN	C3.1	2 of 38
SITE LAYOUT PLAN	C3.2	3 of 38
SITE LAYOUT PLAN	C3.3	4 of 38
SITE LAYOUT PLAN	C3.4	5 of 38
SITE LAYOUT PLAN	C3.5	6 of 38
SITE DETAILS	C6.5	7 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.5	8 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.6	9 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.7	10 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.8	11 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.9	12 of 38
SEDIMENT CONTROL NOTES AND DETAILS	C6.6	13 of 38
STORM DRAIN DRAINAGE AREA MAP	C5.0	14 of 38
STORM DRAIN PROFILES	C5.1	15 of 38
STORM DRAIN PROFILES	C5.2	16 of 38
STORM DRAIN INLET DETAILS	C5.3	17 of 38
WATER PROFILES	C5.4	18 of 38
WATER PROFILES	C5.5	19 of 38
SEWER PROFILES	C5.6	20 of 38
SEWER PROFILES	C5.7	21 of 38
STORMWATER MANAGEMENT DETAILS	C6.7	22 of 38
STORMWATER MANAGEMENT NOTES	C6.8	23 of 38
LANDSCAPE PLAN, NOTES AND DETAILS	L1.3	24 of 38
LANDSCAPE PLAN	L1.4	25 of 38
LANDSCAPE PLAN	L1.5	26 of 38
FOREST CONSERVATION PLAN	L1.6	27 of 38
FOREST CONSERVATION PLAN	L1.7	28 of 38
FOREST CONSERVATION PLAN	L1.8	29 of 38
OFF-SITE FOREST MITIGATION PLAN	L1.9	30 of 38
OFF-SITE FOREST MITIGATION PLAN	L1.10	31 of 38
ROAD IMPROVEMENTS PLAN	C6.9	32 of 38
ROAD IMPROVEMENTS PLAN	C6.10	33 of 38
RETAINING WALL #1 PLAN AND PROFILE	C6.11	34 of 38
RETAINING WALL #2 PLAN AND PROFILE	C6.12	35 of 38
RETAINING WALL #3 & #4 PLAN AND PROFILE	C6.13	36 of 38
RETAINING WALL NOTES AND DETAILS	C6.14	37 of 38
RETAINING WALL SPECIFICATIONS	C6.15	38 of 38



EAST

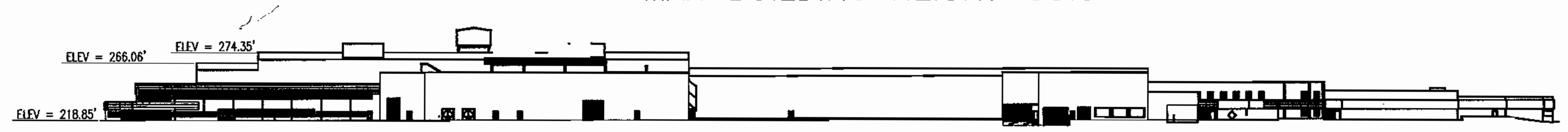


NORTH



SOUTH

MAX BUILDING HEIGHT=55.5'



WEST

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

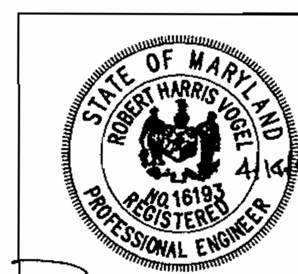
NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
509, 271, 341 420, 302 & 293	9090 WHISKEY BOTTOM ROAD

PERMIT INFORMATION CHART					
SUBDIVISION NAME: N/A			SECTION/AREA: N/A	PARCEL NUMBER: 509, 271, 341 420, 302 & 293	
DEED REF.*	BLOCK NO.	ZONE	TAX/ZONE	ELECT. DIST.	CENSUS TR.
324/499, 6329/142, 4913/89, 286/351, & 1934/54	5	M-1, CE-CLI	47 & 50	6th	6069.02
WATER CODE: C04			SEWER CODE: 7101800		

* see F 05-107, plats # 17462-17466



ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

Dreyer's FAMILY FAVORITE

COVER SHEET

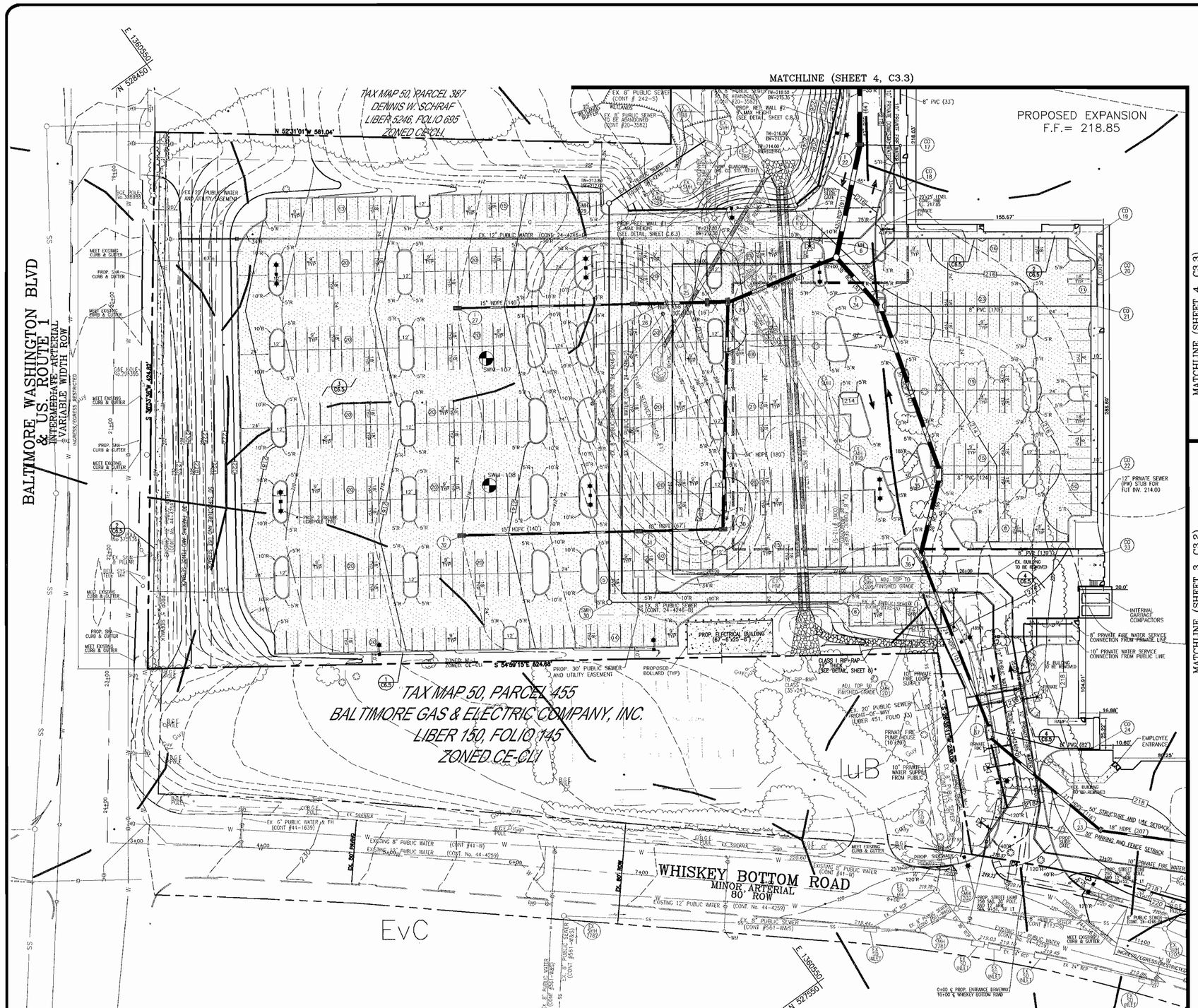
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801·531·8585 • FAX 801·531·8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC. AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C0.2

HO. CO. DPZ SHEET: 1 OF 38

SDP-05-40



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING STREET TREES (F-04-____)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPE (>25%)
- LIGHT DUTY PAVING
- HEAVY DUTY PAVING
- PUBLIC 100 YR FLOODPLAIN

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C3.1

HO. CO. DPZ SHEET:
2 OF 38

SDP-05-40

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/7/05

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

MATCHLINE (SHEET 4, C3.3)

MATCHLINE (SHEET 2, C3.1)

PROPOSED EXPANSION
F.F.= 218.85

ScD

ScB

EXISTING BUILDING TO REMAIN
104,926 SF

EvC

EvB

Gp

(ANNE ARUNDEL COUNTY)
B & O RAILROAD

Maryland State Grid Meridian

WHISKEY BOTTOM ROAD
MINOR ARTERIAL
80' ROW

TAX MAP 50, PARCEL 509
ICE CREAM PARTNERS USA LLC
LIBER 4913, FOLIO 89
PARCEL B
THE SOUTHLAND CORPORATION PROPERTY
PLAT 10207
9.0133 ACRES
ZONED: M-1

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/3/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED
PROFESSIONAL ENGINEER
4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786

136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

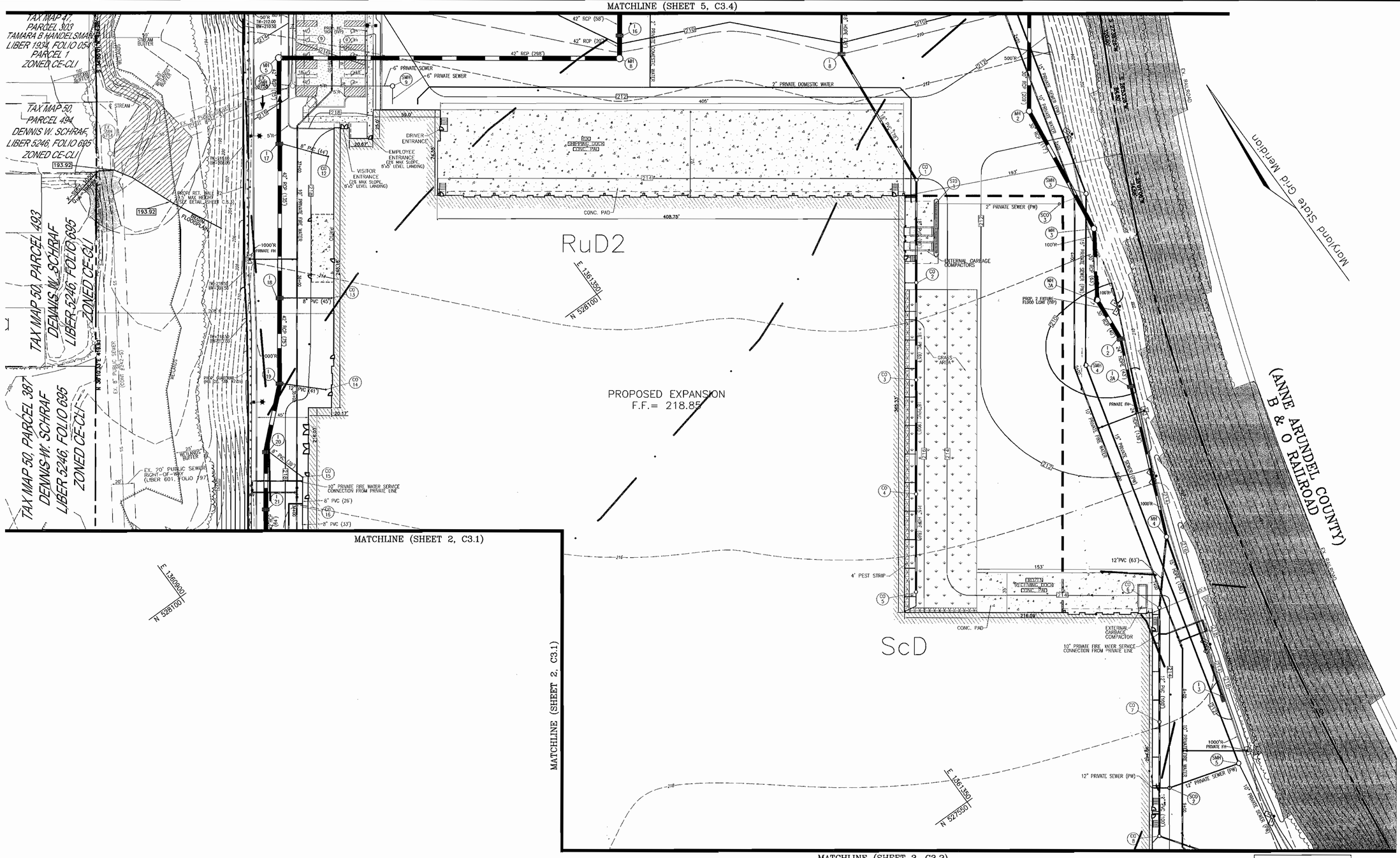
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C3.2

HO. CO. DPZ SHEET:
3 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND ROBERT HARRIS VOGEL 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

RL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

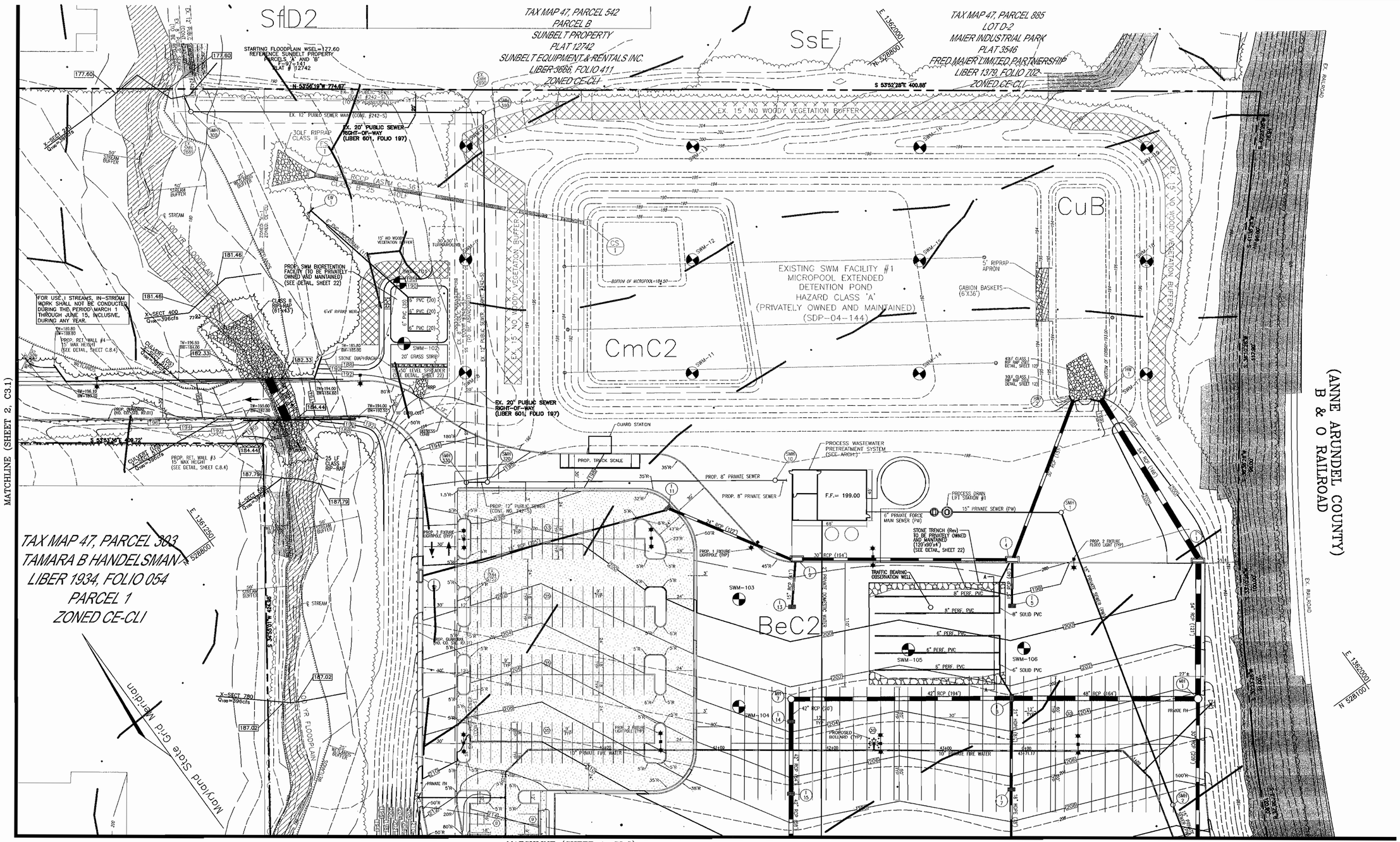
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C3.3

HO. CO. DPZ SHEET: 4 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 18193 — REGISTERED PROFESSIONAL ENGINEER — 5-24-05

ROBERT H. VOGEL, PE No. 18193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

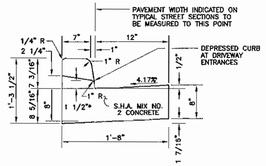
SCALE: 1"=40'

©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C3.4

HO. CO. DPZ SHEET: 5 OF 38

SDP-05-40

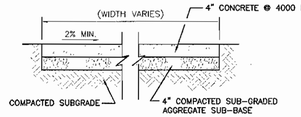


*NOTE : DEPRESSED CURB IN HANDICAP ACCESSIBLE AREAS SHALL HAVE A 0.0417'(1/2") RISE FROM PAVING TO TOP OF CURB.

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIAL 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.

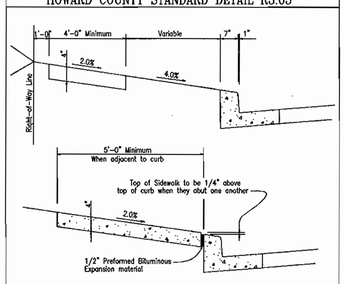
STANDARD COMBINATION CURB AND GUTTER
HOWARD COUNTY STANDARD R-3.01
(NOT TO SCALE)

1 CURB AND GUTTER DETAIL



HO. CO. STD. R-3.05
TYPICAL SIDEWALK DETAIL
(N.T.S.)

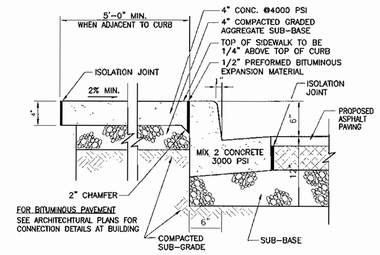
CONCRETE SIDEWALK
HOWARD COUNTY STANDARD DETAIL R3.05



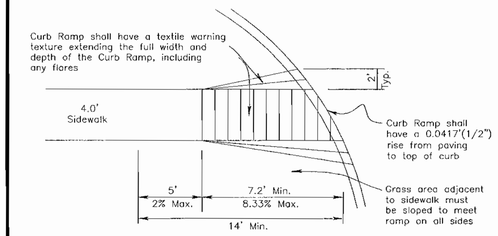
Construction Specifications

1. Sidewalk to be scribed in 5'-0" maximum squares.
2. Expansion joints across the sidewalk not to be more than 15' apart.
3. 1/2" Preformed Bituminous Expansion material in expansion joints to be kept 1/4" below surface of sidewalk.
4. Concrete to be mix number 2.
5. Where sidewalk abuts curb, sidewalk shall be 1/4" above curb with 1/2" Preformed Bituminous Expansion material between sidewalk and curb.
6. On longitudinal sidewalk grades of 5% or greater, a concrete header, 6" thick and 6" deep below the normal 4" sidewalk thickness shall be constructed for the full width of the sidewalk at intervals of 48 feet. The headers shall be placed at expansion joint locations and shall be monolithic with the curb.
7. Sidewalk width adjacent to curb shall be 5'-0" minimum except sidewalk adjacent to curb at cul-de-sac bulbs may be 4'-0" wide.
8. Sidewalks adjacent to or more from curb may be 4'-0" in width with a 5'x5' paved section placed 200' apart.

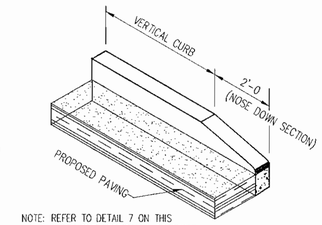
2 SIDEWALK DETAILS



HO. CO. STD. R-3.05
TYPICAL SIDEWALK AT BUILDING
(N.T.S.)

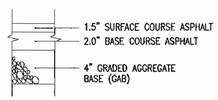


HANDICAP RAMP
NOT TO SCALE



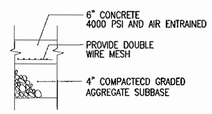
NOTE: REFER TO DETAIL 7 ON THIS SHEET FOR VERTICAL CURB DETAIL.

CONCRETE CURB – NOSE DOWN
NOT TO SCALE



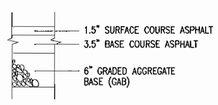
* PAVING SECTIONS ARE SUBJECT TO REVISIONS BY GEOTECHNICAL ENGINEER

3 REGULAR DUTY PAVING DETAIL



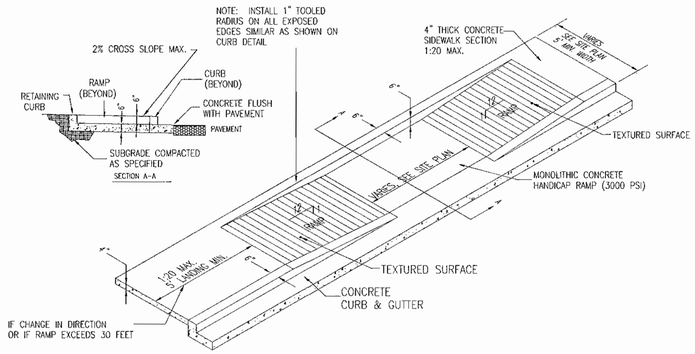
* PAVING SECTIONS ARE SUBJECT TO REVISIONS BY GEOTECHNICAL ENGINEER

5 HEAVY DUTY CONCRETE PAVING

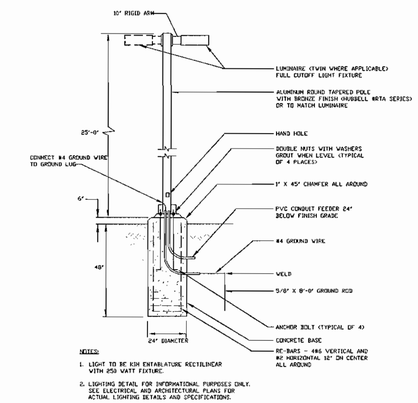


* PAVING SECTIONS ARE SUBJECT TO REVISIONS BY GEOTECHNICAL ENGINEER

4 HEAVY DUTY PAVING DETAIL

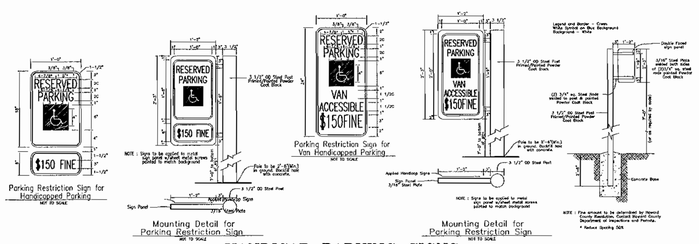


SIDEWALK HANDICAP RAMP DETAIL
NOT TO SCALE

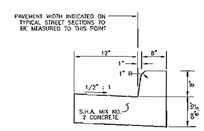


NOTES:
1. LIGHT TO BE ICH ENTABLATURE RECTILINEAR WITH 250 WATT FIXTURE.
2. LIGHTING DETAIL FOR INFORMATIONAL PURPOSES ONLY. SEE ELECTRICAL AND ARCHITECTURAL PLANS FOR ACTUAL LIGHTING DETAILS AND SPECIFICATIONS.

POLE BASE DETAIL
(NOT TO SCALE)



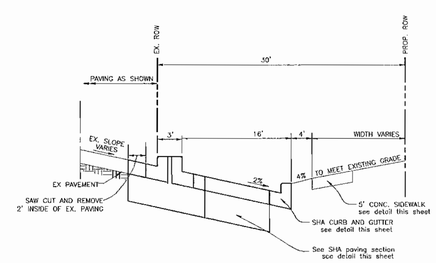
HANDICAP PARKING SIGNS
(NOT TO SCALE)



MD. TYPE 'A' CONCRETE COMBINATION CURB AND GUTTER

MD. NO. 620.02
NOT TO SCALE

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIAL 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.



WIDENING DETAIL
US. RTE. 1
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/4/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE DETAILS

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786

136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

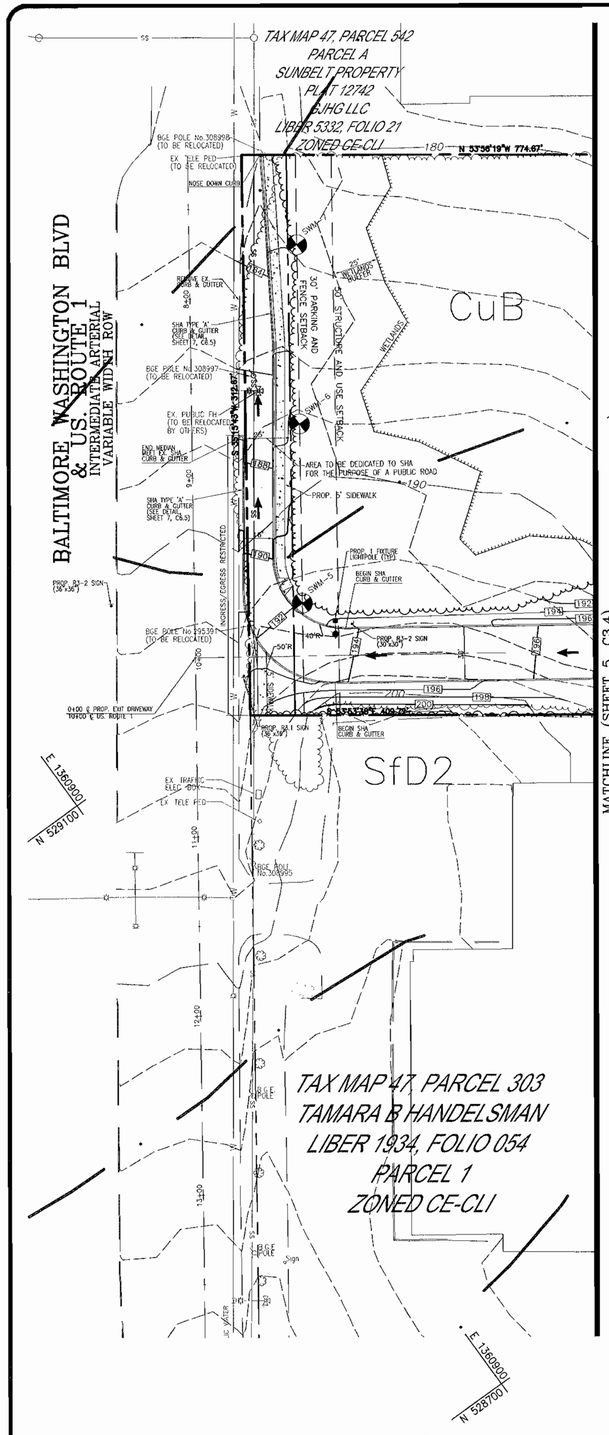
SCALE: 1"=40'

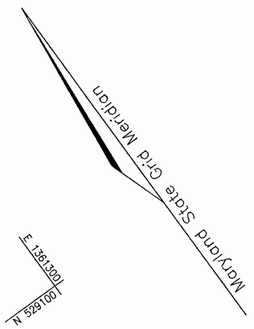
© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.5

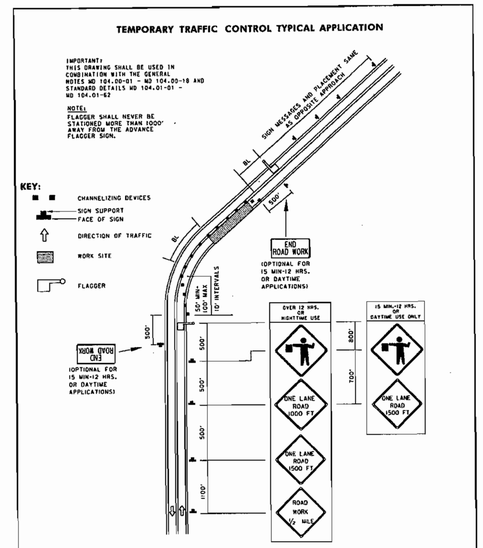
HO. CO. DPZ SHEET:
7 OF 38

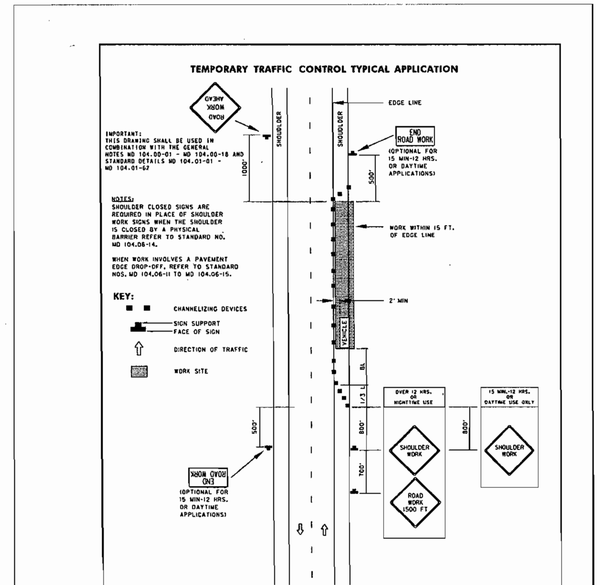
SDP-05-40





MATCHLINE (SHEET 5, C3.4)





APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01105
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 • FAX 801-531-8586

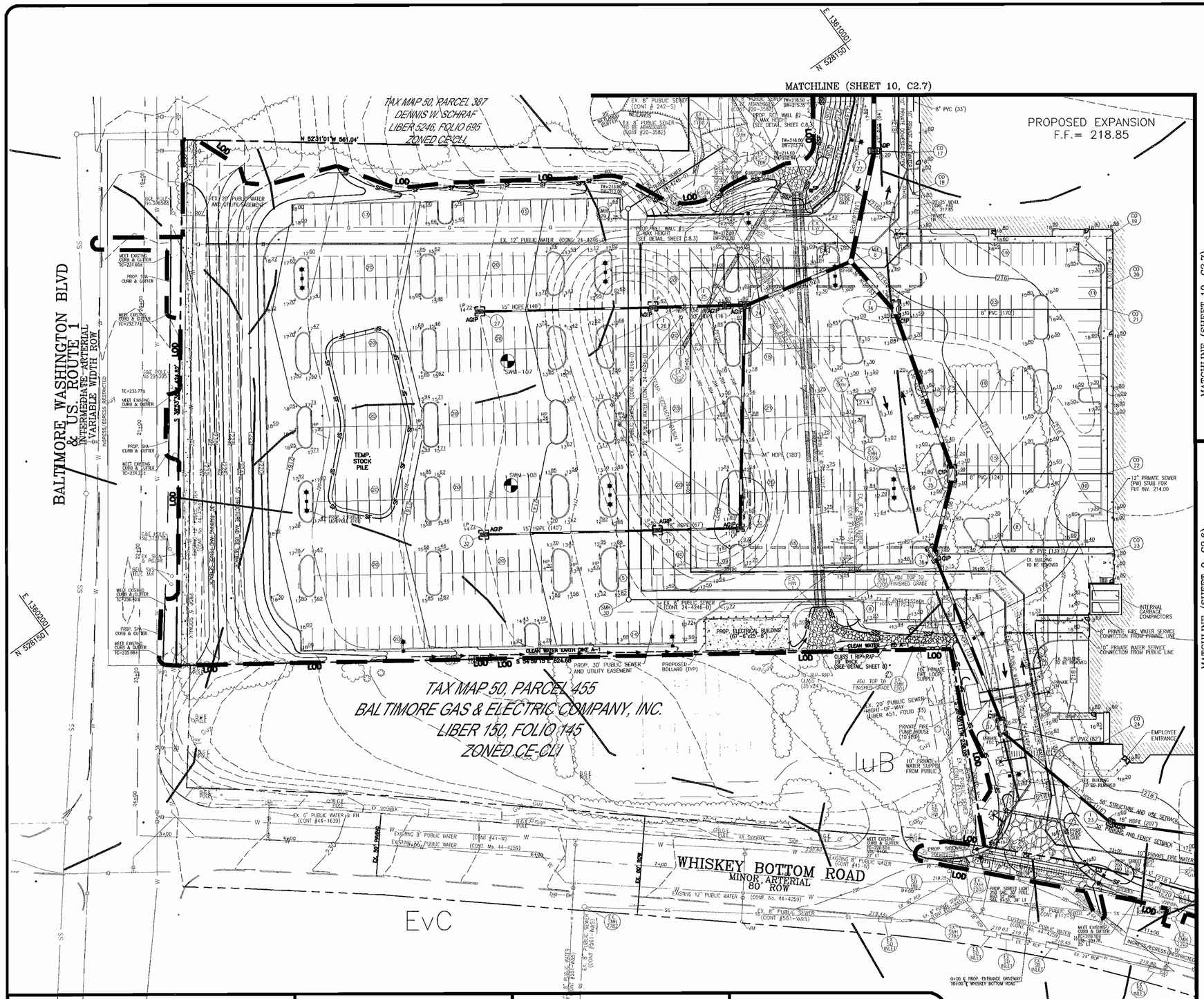
SCALE: 1"=40'

© THE DENNIS GROUP LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C3.5

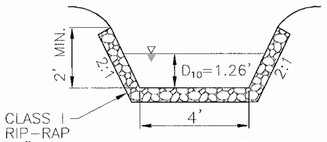
HO. CO. DPZ SHEET:
6 OF 38

SDP-05-40



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING STREET TREES (F-04-___)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- M1B2 / M1D3 — SOILS BOUNDARY
- PROPOSED SIDEWALK
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPE (>25%)
- PUBLIC 100 YR FLOODPLAIN
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- CIP — CURB INLET PROTECTION
- AGIP — AT GRADE INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE



RIP-RAP SWALE TYPICAL SECTION

Q_{10}=88.0 CFS

V_{10}=10.7 FPS

REL.	DATE	BY	APP	RELEASED FOR ...

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC

PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

136 SOUTH MAIN STREET
SALT LAKE CITY, UT 84101
801-531-8585 • FAX 801-531-8586

1391 MAIN STREET
SPRINGFIELD MASSACHUSETTS
413-787-1785 • FAX 413-787-1786

SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C2.5

HO. CO. DPZ SHEET:
8 OF 38

SDP-05-40

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/26/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 4-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

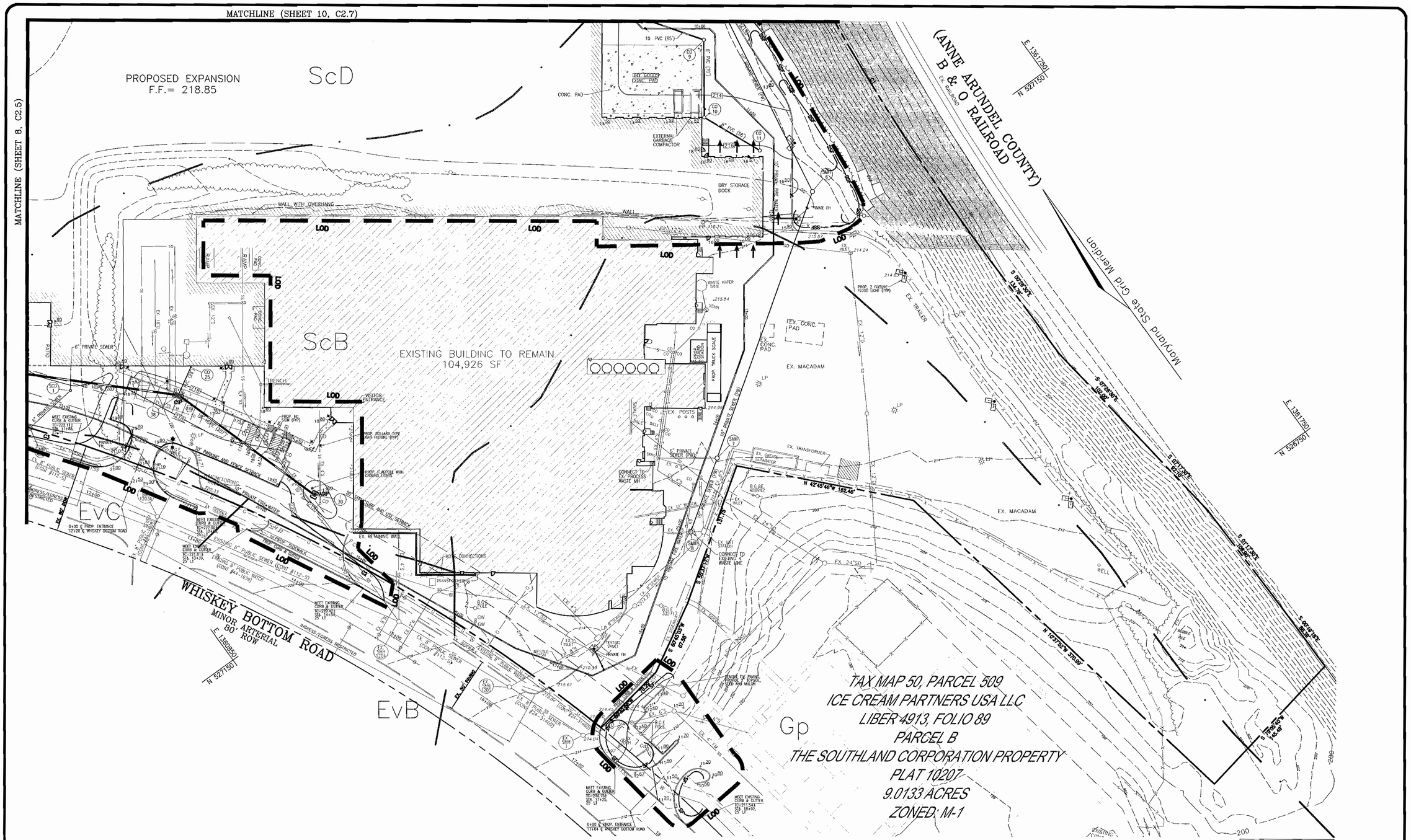
DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/21/05

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

HOWARD S.C.D. — DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER — DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 FINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE. No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

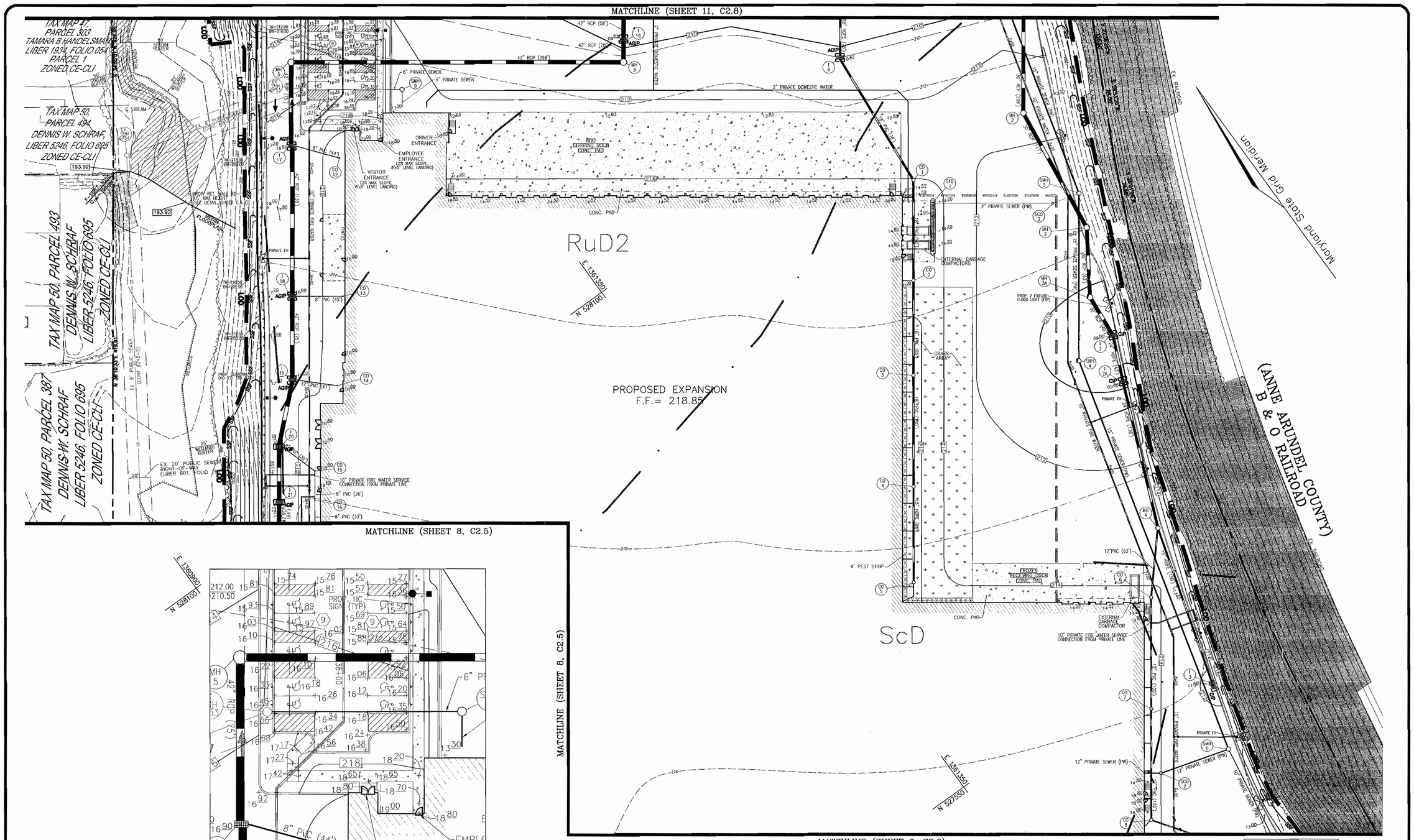
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, ITS ITS AFFILIATED COMPANIES AND SUBSIDIES. ITS USE IS ONLY FOR THE PURPOSE FOR WHICH IT WAS PREPARED AND IS NOT TO BE USED FOR ANY OTHER PURPOSE. THIS DATA, NOR SHALL SUCH INFORMATION BE REPRODUCED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C2.6

HO. CO. DPZ SHEET: 9 OF 38

SDP-05-40



EMPLOYEE ENTRANCE HANDICAPPED ACCESS

SCALE: 1"=20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/5/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

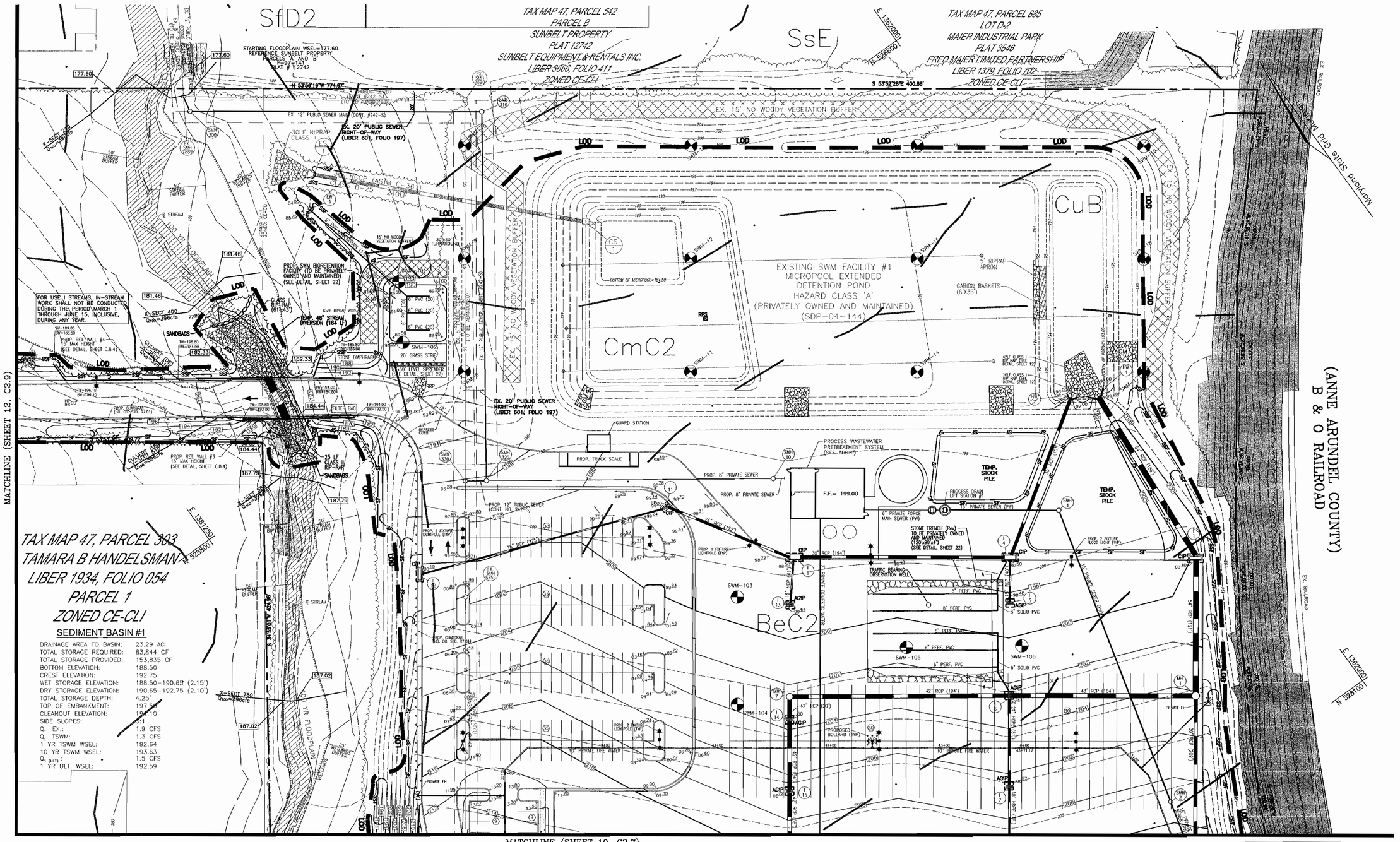
SCALE: 1"=40'

©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C2.7

HO. CO. DPZ SHEET: 10 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER (Robert Harris, Atty. in fact)	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

1391 MAIN STREET
SPRINGFIELD MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786

136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

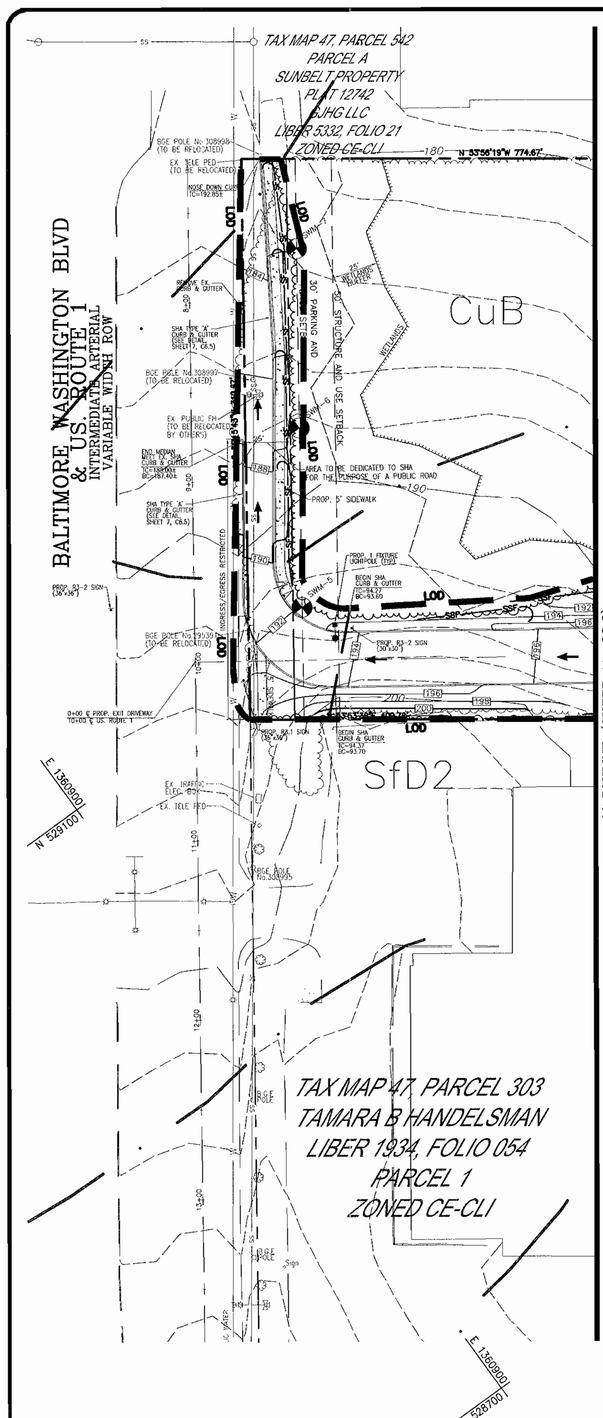
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

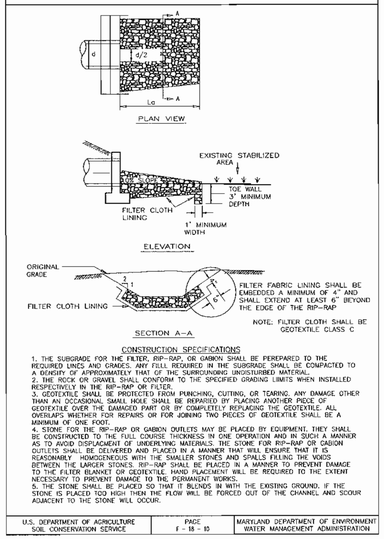
DRAWING NO.
C2.8

HO. CO. DPZ SHEET: 11 OF 38

SDP-05-40



DETAIL 27 – ROCK OUTLET PROTECTION III

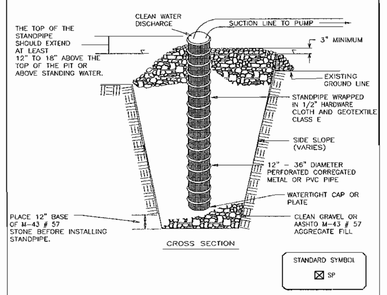


CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PEREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
3. GEOTEXTILE SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE SHALL BE A MINIMUM OF ONE FOOT.
4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

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

DETAIL 20B – SUMP PIT



Construction Specifications

1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.

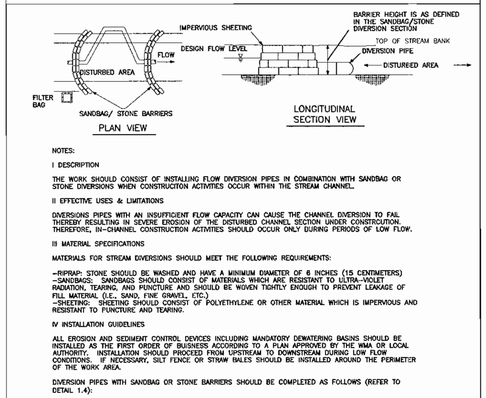
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" slits or 1" diameter holes.

3. A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.

4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3" minimum above the anticipated standing water elevation.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 13 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1.4: DIVERSION PIPE



NOTES:

I DESCRIPTION

THE WORK SHOULD CONSIST OF INSTALLING FLOW DIVERSION PIPES IN COMBINATION WITH SANDBAG OR STONE DIVERSIONS WHEN CONSTRUCITON ACTIVITIES OCCUR WITHIN THE STREAM CHANNEL.

II EFFECTIVE USES & LIMITATIONS

DIVERSIONS PIPES WITH AN INSUFFICIENT FLOW CAPACITY CAN CAUSE THE CHANNEL DIVERSION TO FAIL THEREBY RESULTING IN SEVERE EROSION OF THE DISTURBED CHANNEL SECTION UNDER CONSTRUCTION. THEREFORE, IN-CHANNEL CONSTRUCTION ACTIVITIES SHOULD OCCUR ONLY DURING PERIODS OF LOW FLOW.

III MATERIAL SPECIFICATIONS

MATERIALS FOR STREAM DIVERSIONS SHOULD MEET THE FOLLOWING REQUIREMENTS:

-RIPRAP: STONE SHOULD BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES (15 CENTIMETERS)
-SANDBAGS: SANDBAGS SHOULD CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND SHOULD BE WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (I.E., SAND, FINE GRAVEL, ETC.).
-SHEETING: SHEETING SHOULD CONSIST OF POLYETHYLENE OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.

IV INSTALLATION GUIDELINES

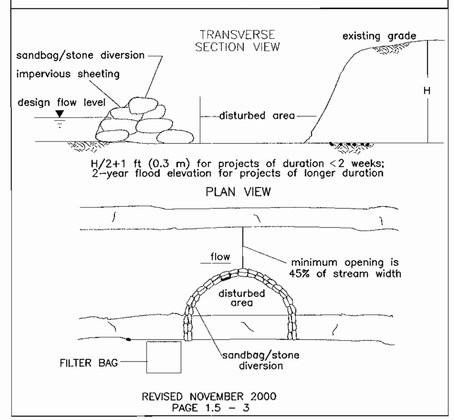
ALL EROSION AND SEDIMENT CONTROL DEVICES INCLUDING MANDATORY DEWATERING BASINS SHOULD BE INSTALLED AS THE FIRST ORDER OF BUSINESS ACCORDING TO A PLAN APPROVED BY THE WMA OR LOCAL AUTHORITY. INSTALLATION SHOULD PROCEED FROM UPSTREAM TO DOWNSTREAM DURING LOW FLOW CONDITIONS. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.

DIVERSION PIPES WITH SANDBAG OR STONE BARRIERS SHOULD BE COMPLETED AS FOLLOWS (REFER TO DETAIL 1.4):

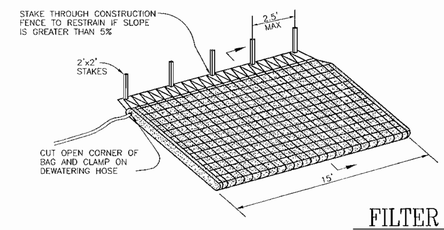
1. SANDBAG/STONE BARRIERS SHOULD BE SIZED AND INSTALLED AS DETAILED IN MDWC 1.5 SANDBAG/STONE DIVERSION. THE MATERIALS SHOULD BE SIZED TO WITHSTAND BASEFLOW VELOCITIES.
2. ALL EXCAVATED MATERIAL SHOULD BE DEPOSITED AND STABILIZED IN AN APPROVED AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE AUTHORIZED BY THE WMA.
3. SEDIMENT-LADEN WATER FROM THE CONSTRUCTION AREA SHOULD BE PUMPED TO A DEWATERING BASIN.
4. THE DIVERSION PIPE SHOULD HAVE A MINIMUM CAPACITY SUFFICIENT TO CONVEY THE 2-YEAR FLOW FOR PROJECTS WITH A DURATION OF TWO WEEKS OR GREATER. FOR PROJECTS OF SHORTER DURATION, THE CAPCITY OF THE PIPE CAN BE REDUCED ACCORDINGLY.
5. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.4-2	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1.5: SANDBAG/STONE DIVERSION

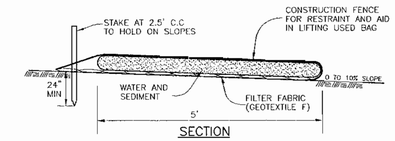


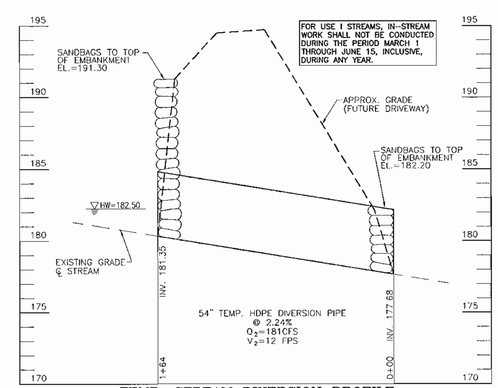
REVISED NOVEMBER 2000
PAGE 1.5 – 3



FILTER BAG DETAIL

(NOT TO SCALE)





TEMP. STREAM DIVERSION PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTRO PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST

DRAWING NO.
C2.9

HO. CO. DPZ SHEET:
12 OF 38

SDP-05-40

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/23/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/6/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA–NATURAL RESOURCES CONSERVATION SERVICE	DATE 6/21/05

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

HOWARD S.C.D.	DATE 6/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05
ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

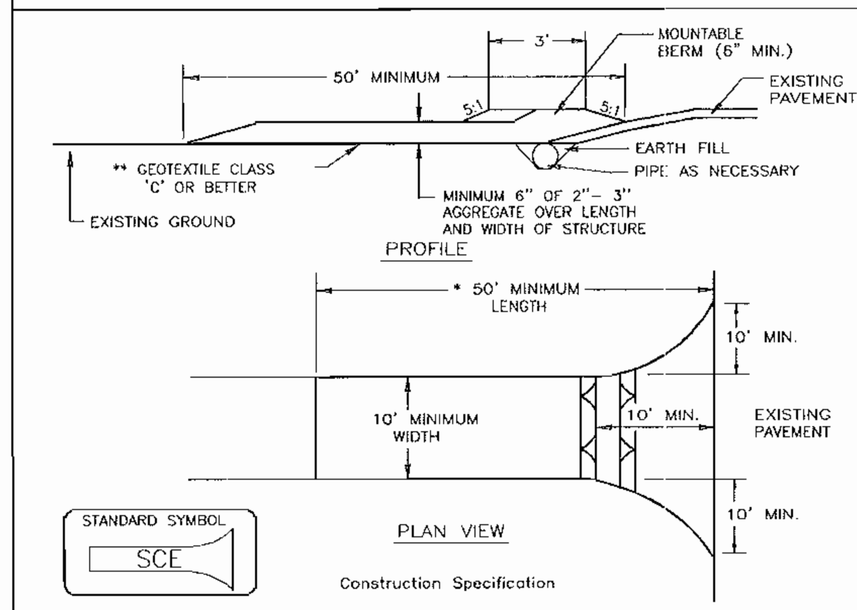
NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

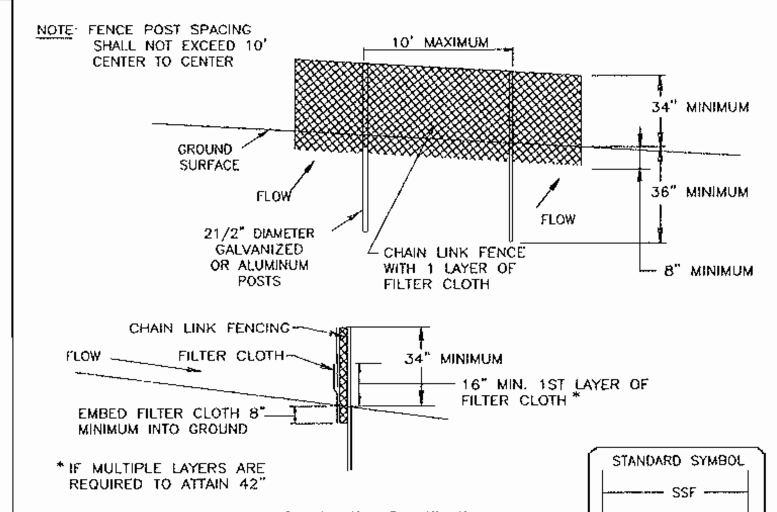


Construction Specification

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

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

DETAIL 33 – SUPER SILT FENCE



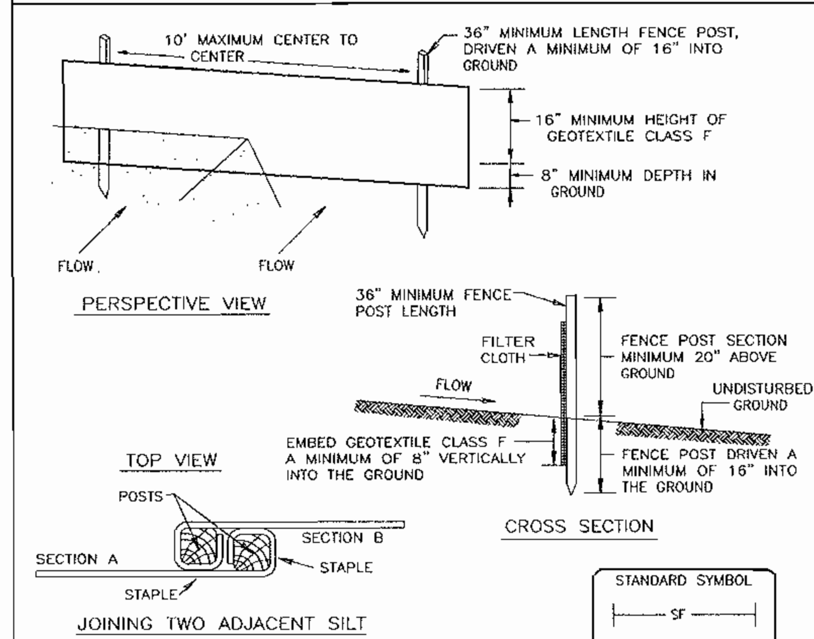
Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

DETAIL 22 – SILT FENCE



Construction Specifications

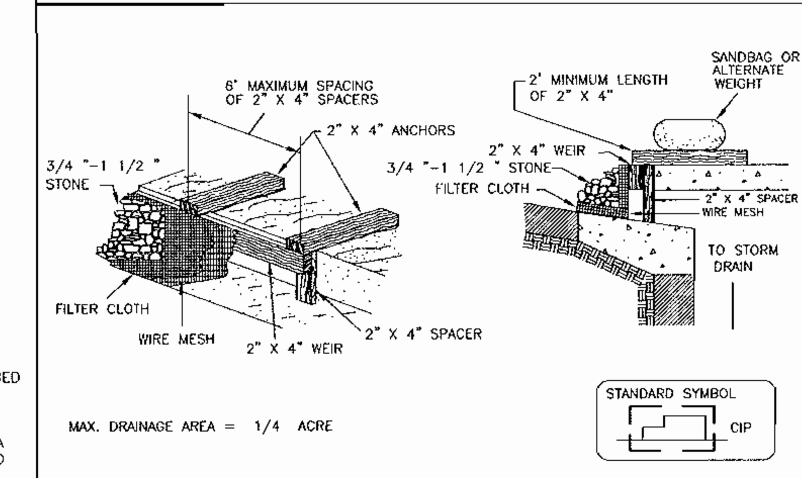
1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft /minute (max.)	Test: MSMT 322
Filtering Eggeciency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reaches 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 23C – CURB INLET PROTECTION (COG OR COS INLETS)



MAX. DRAINAGE AREA = 1/4 ACRE

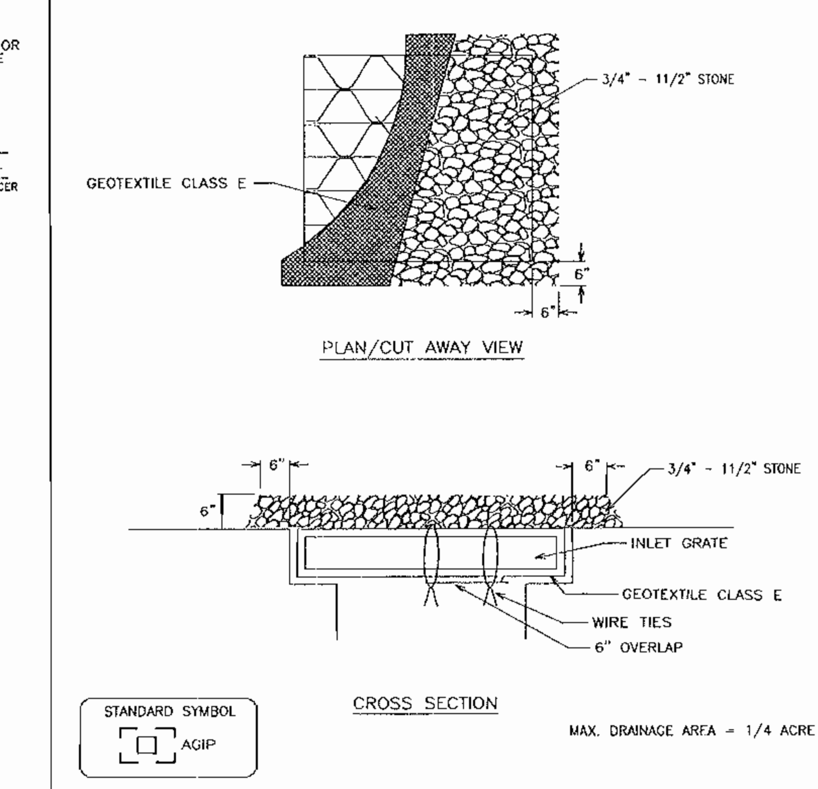
STANDARD SYMBOL CIP

Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.
2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
6. Form the 1/2 " x 1/2 " wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4 " x 1 1/2 " stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

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

DETAIL 23B – AT GRADE INLET PROTECTION



STANDARD SYMBOL AGIP

CROSS SECTION

MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 11/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of

1) Preferred-Apply 2 tons per acre dolomitic limestone (92 lbs/ 100 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 the time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)
2) Acceptable-Apply 2 tons per acre dolomatic limestone (92 lbs/ 1000 sq.ft.) and apply 1000 lbs. per acre 10-10-10- fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper

SEEDING: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs/1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. 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 thru February 28, protect site by: Option (1) 2 tons per acre 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

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

MAINTENANCE: Inspect all seeded areas and make needed repairs,

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: Apply 600 lbs. per acre 10-10-10 fertilizer

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

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

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT

SEQUENCE OF CONSTRUCTION	DURATION
1. Obtain grading permit. MDE Tracking #200560820.	1 DAY
2. For Use I streams, in-stream work shall not be conducted during the period of March 1 through June 15, inclusive, during any year.	
3. Notify Howard County at least 48 hours before starting any work. Sediment and erosion controls from SDP-04-144 to be utilized.	1 DAY
4. Construct Stabilized Construction Entrance and install tree protection devices.	3 DAYS
5. Clear and grub for sediment control devices only.	1 WEEK
6. Install silt fences and super silt fences.	1 WEEK
7. With inspector's approval, construct culvert and stabilize immediately.	2 WEEKS
8. Culvert to be constructed during a 5-day clear (no-precipitation) period. MDE Permit required prior to construction.	2 WEEKS
9. With inspector's approval, Contractor to first grade area to establish positive flow to basin. As grading continues, the contractor is to maintain positive flow to the basin at all times. Employ dust control measures as needed.	2 WEEKS
10. Stabilize all temporary swales, side ditches, or berms. See details and specifications for incremental stabilization.	1 WEEK
11. With Inspector's approvals, install utilities, paving, and begin building construction. Temporarily block inlets to recharge volume trench.	12 MONTHS
12. With inspector's approval with contributing drainage areas stabilized, convert sediment basin #1 to final stormwater management by excavating bottom of basin to design bottom. Remove dewatering devices from pond and install pond drains. Upon removal of sediment basin #2, install gabion chute. Construction to be performed as shown on approved SWM plans.	2 WEEKS

NOTES:
Due to the difficulty of maintaining internal earth dikes, contractor shall limit grading and fill to area between super silt fence and dike.
During grading and after each rainfall, contractor will inspect and provide necessary maintenance to the Sediment Control measures on this plan.
Following initial soil disturbances or redisturbance permanent or temporary stabilization shall be completed within:
A. 7 calendar days for all perimeter Sediment Control Structures, Dikes, Swales and all slopes greater than 3:1.
B. 14 calendar days for all other disturbed areas.

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

Placement of topsoil over a prepared subsoil prior to

To provide a suitable soil medium for vegetable growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter
a. The texture of the exposed subsoil/parent material
b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
c. The original soil to be vegetated contains
d. The soil is so acidic that treatment with

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland

II. Topsoil Specifications – Soil to be used as topsoil
i. 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 a 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 that 1 and 1/2" in
ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison
iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/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

II. For sites having disturbed areas under 5 acres:
i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

iii. For sites having disturbed areas over 5 acres:
i. On soil meeting topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
a. pH for topsoil shall be between 6.0 and 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.
b. Organic content of topsoil shall be not less than 1.5 percent by weight.
c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
d. No sod or seed shall be placed on soil 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.

ii. Place topsoil (if required) and apply soil ammendments specified in 20.0 Vegetative Stabilization-Section I-Vegetative Stabilization Methods and Materials.

V. Topsoil Application
i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.
iii. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
iv. Topsoil shall not be place while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

SEDIMENT CONTROL NOTES

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

Total Area	48.49 Acres
Area Disturbed	36.82 Acres
Area to be roofed or paved	29.34 Acres
Area to be vegetatively stabilized	7.48 Acres
Total Cut	10,000 CY
Total Fill	10,000 CY
Offsite waste/borrow area location	N/A

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.
12. During grading and after each rainfall, the contractor shall inspect and provide the necessary maintenance on the sediment and erosion control measures shown hereon.
13. Following initial soil disturbance or redisturbance permanent or temporary stabilization shall be complied with:
A. 7 calendar days for all perimeter sediment control structures, dikes, swales, ditch perimeter slopes slopes and all slopes greater than 3:1.
B. 14 calendar days for all other disturbed areas.

* To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05
ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

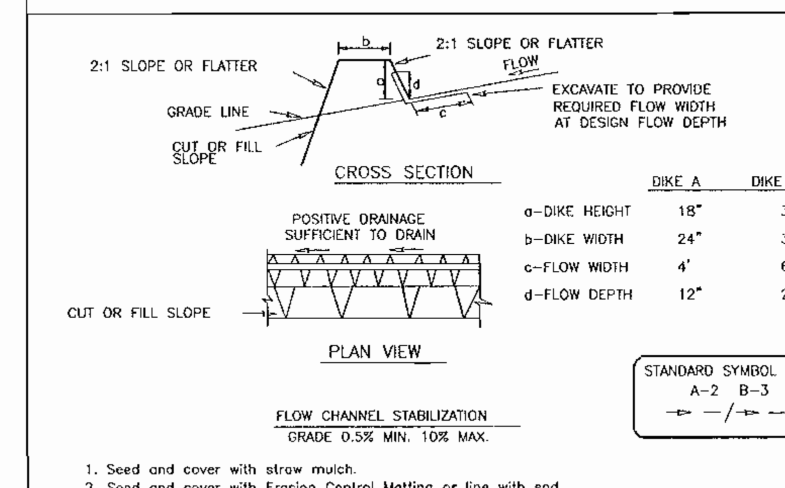
PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

DETAIL 1 – EARTH DIKE



	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

STANDARD SYMBOL A-2 B-3

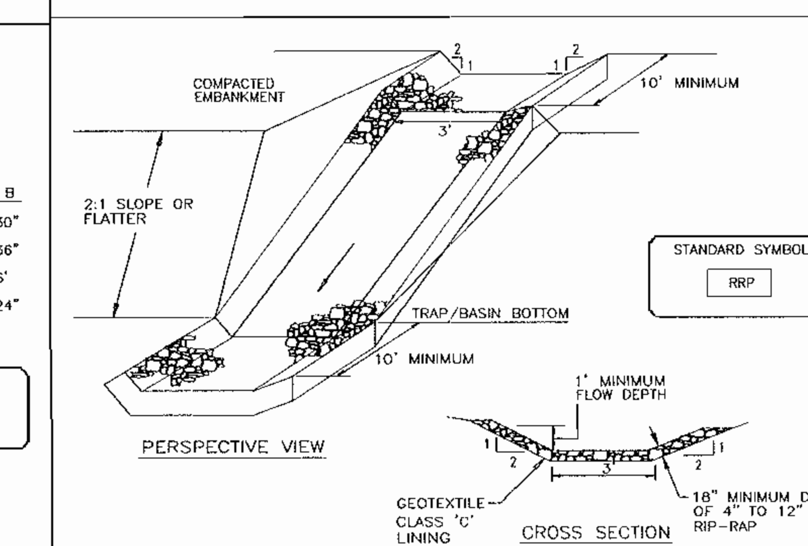
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A - 1 - 6	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 5 – RIP-RAP INFLOW PROTECTION



Construction Specifications

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B - 6 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

30.0 DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movements where on and off-site damage is likely without treatment.

Specifications

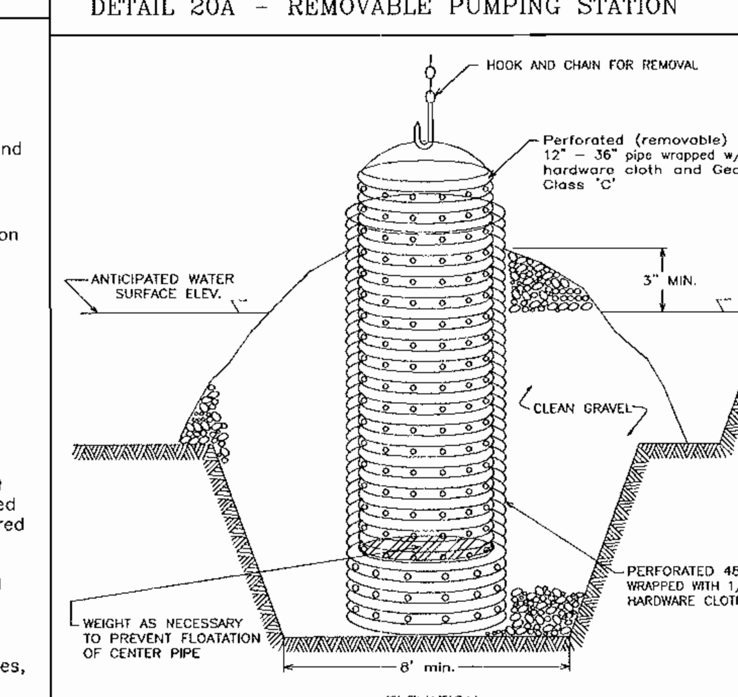
Temporary Methods:

1. Mulches – See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
2. Vegetative Cover – See standards for temporatry vegatative cover.
3. Tillage – To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12" apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation – This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers – Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
6. Calcium Chloride – Apply at rates that will keep surface moist. May need retreatment.

Permanent Methods

1. Permanent Vegatation – See standards for permenant vegatative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
2. Topsoiling – Covering with less erosive soil materials. See standards for topsoiling.
3. Stone – Cover surface with crushed stone or coarse gravel.

DETAIL 20A – REMOVABLE PUMPING STATION



ELEVATION

Construction Specifications

1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 12 - 4	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/25/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/2/05

DIRECTOR — DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/21/05

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

HOWARD S.C.D. — DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER — DATE 4-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 4/14/05

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

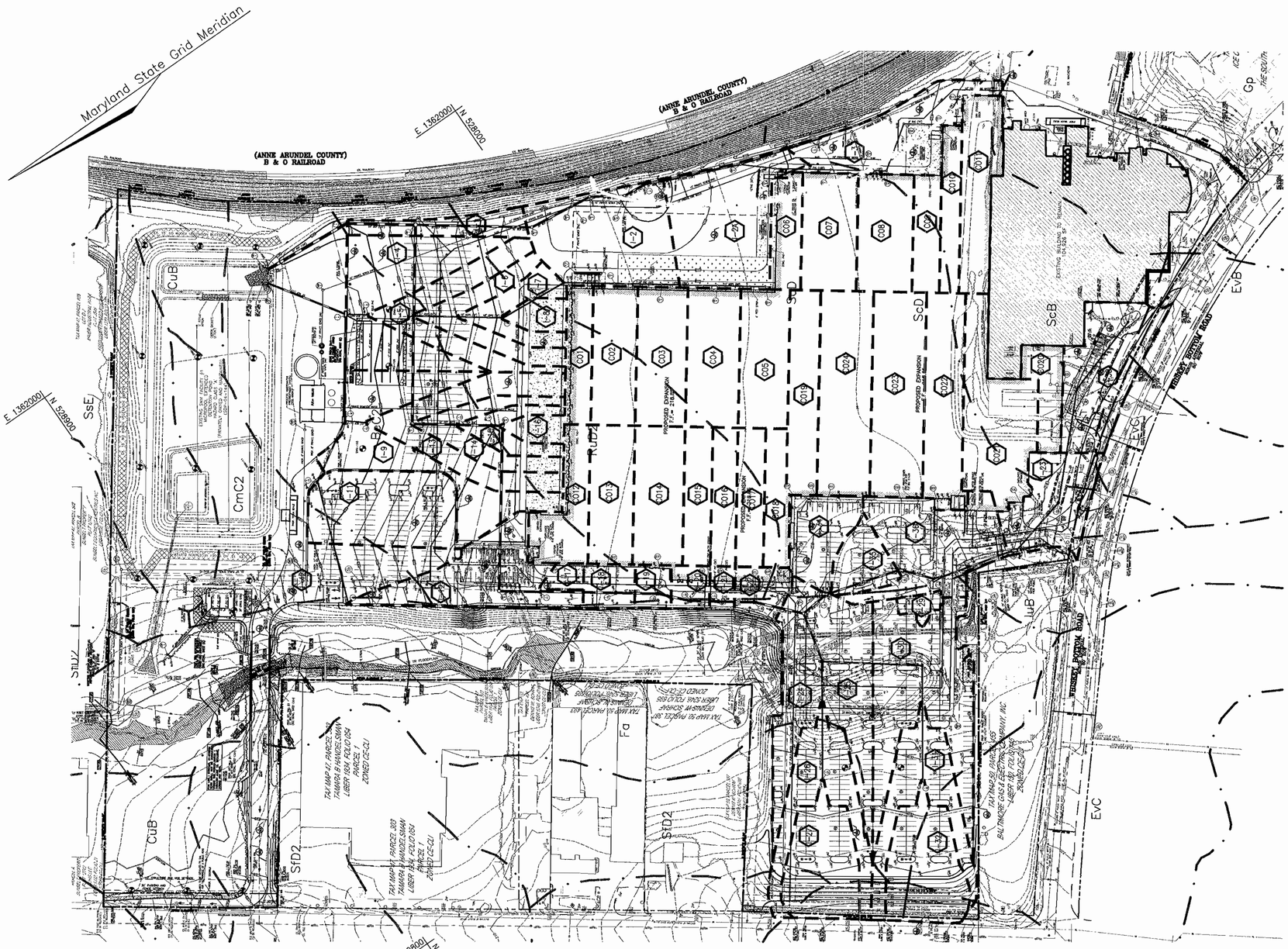
SEDIMENT CONTROL DETAILS

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET SPRINGFIELD, MASSACHUSETTS 01103 413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET SALT LAKE CITY, UTAH 84101 801·531·8585 • FAX 801·531·8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.6

PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (ac) (A)	"C" FACTOR (C)	% IMPERVIOUS (P)
	I-1	M-2	A	0.26	0.87	100
	I-2	M-2	B	1.92	0.74	80
	I-2A	M-2	B	0.96	0.87	100
	I-3	M-2	C	0.72	0.87	100
	I-4	M-2	D	0.91	0.87	100
	I-5	M-2	E	0.47	0.87	100
	I-6	M-2	F	0.67	0.87	100
	I-7	M-2	G	0.27	0.87	100
	I-8	M-2	H	0.13	0.87	100
	I-9	M-2	I	1.01	0.87	100
	I-11	M-2	K	0.80	0.87	100
	I-12	M-2	L	0.61	0.87	100
	I-13	M-2	M	0.58	0.87	100
	I-14	M-2	N	0.32	0.87	100
	I-15	M-2	O	0.20	0.87	100
	I-16	M-2	P	0.26	0.87	100
	I-17	M-2	Q	0.07	0.87	100
	I-18	M-2	R	0.17	0.87	100
	I-19	M-2	S	0.17	0.87	100
	I-20	M-2	T	0.12	0.87	100
	I-21	M-2	U	0.10	0.87	100
	I-22	M-2	V	0.11	0.87	100
	I-23	M-2	W	0.33	0.87	20
	I-24	M-2	X	0.72	0.31	0
	I-25	M-2	Y	0.72	0.87	100
	I-26	M-2	Z	0.57	0.81	91
	I-27	M-2	AA	0.58	0.65	67
	I-28	M-2	BB	0.08	0.33	19
	I-29	M-2	CC	0.06	0.87	100
	I-30	M-2	DD	1.22	0.87	100
	I-31	M-2	EE	0.55	0.78	86
	I-32	M-2	FF	0.36	0.64	64
	I-33	M-2	GG	0.10	0.35	20
	I-34	M-2	HH	0.40	0.87	100
	I-35	M-2	II	0.25	0.87	100
	I-36	M-2	JJ	0.80	0.87	100
	I-37	M-2	KK	0.55	0.59	57
	I-38	M-2	LL	0.75	0.45	35



STORM DRAIN DRAINAG AREA MAP
SCALE: 1"=100'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/7/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
PROFESSIONAL ENGINEER
5/14/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORM DRAIN DRAINAGE AREA MAP

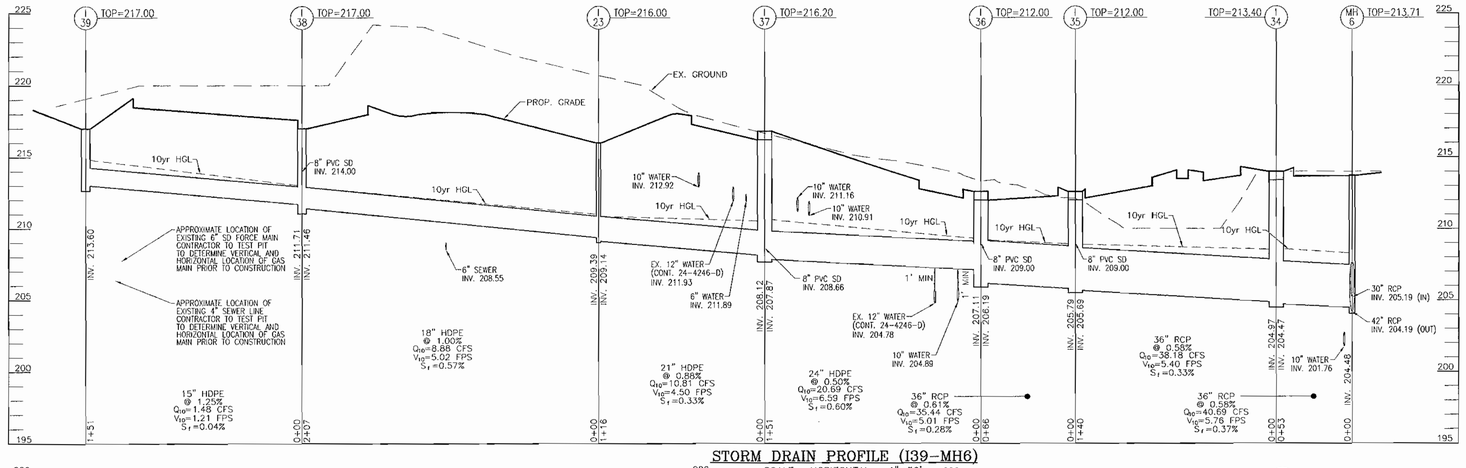
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED. NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C5.0

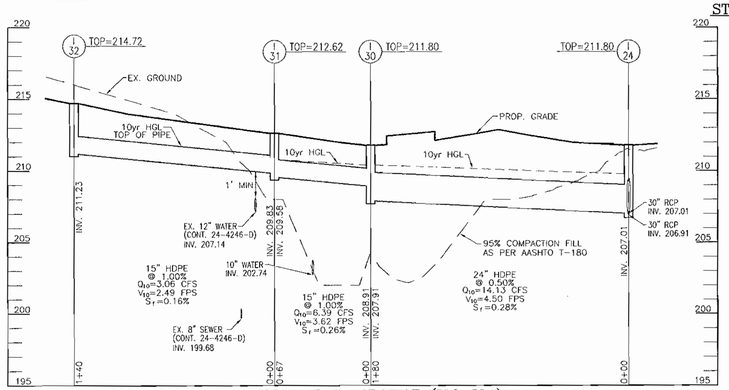
HO. CO. DPZ SHEET:
14 OF 38

SDP-05-40



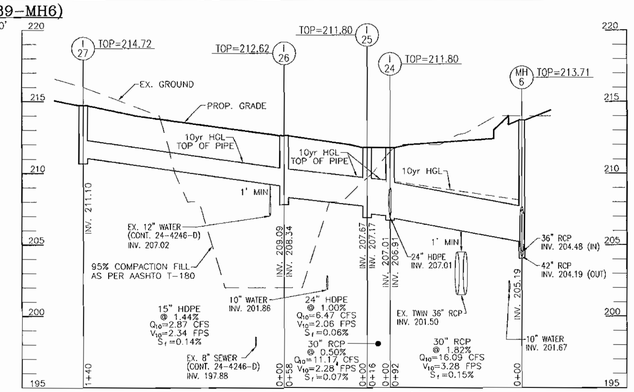
STORM DRAIN PROFILE (I39-MH6)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



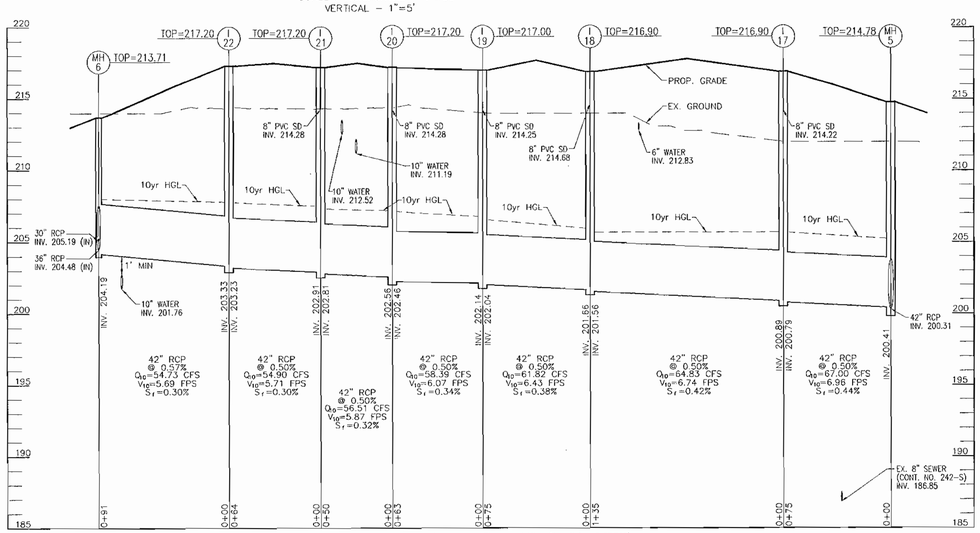
STORM DRAIN PROFILE (I32-I24)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



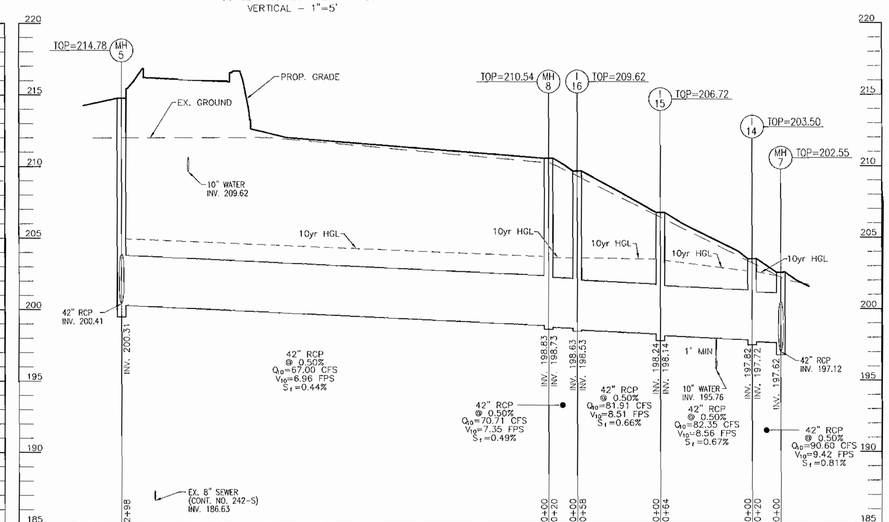
STORM DRAIN PROFILE (I27-MH6)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE (MH6-MH5)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE (MH5-MH7)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

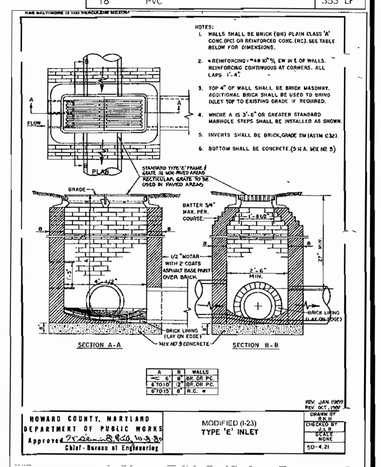
STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	COMMENTS
I-1	TYPE 'A-10' INLET	N 528274 E 1361945	200.10	194.12	194.02	HO. CO. STD SD-4.02
I-2	DOUBLE TYPE 'S' COMB. INLET (NORMAL)	N 527799 E 1361897	209.00	201.35	200.85	MODIFIED HO. CO. STD SD-4.33 ("A"-SHEET 17)
I-2A	DOUBLE TYPE 'S' COMB. INLET (NORMAL)	N 527760 E 1361680	209.86	201.97	201.87	MODIFIED HO. CO. STD SD-4.33 ("A"-SHEET 17)
I-3	DOUBLE TYPE 'S' COMB. INLET (PARALLEL)	N 574492 E 1361584	211.80		205.48	HO. CO. STD SD-4.34
I-4	TYPE 'A-10' INLET	N 528370 E 1361812	197.50	195.03/193.86	193.76/192.96	HO. CO. STD SD-4.02
I-5	DOUBLE TYPE 'S' INLET	N 528338 E 1361789	198.48		195.40	HO. CO. STD SD-4.23
I-6	MODIFIED DOUBLE TYPE 'S' INLET	N 528272 E 1361740	202.53	198.39/196.15	196.05/192.96	MODIFIED HO. CO. STD SD-4.23 ("B"-SHEET 17)
I-7	DOUBLE TYPE 'S' INLET	N 528207 E 1361693	206.57	200.17	199.92	HO. CO. STD SD-4.23
I-8	DOUBLE TYPE 'S' INLET	N 528144 E 1361647	210.41	205.00	202.08	HO. CO. STD SD-4.23
I-9	TYPE 'A-10' INLET	N 528483 E 1361658	198.50	196.07/195.36	194.82	HO. CO. STD SD-4.02
I-11	DOUBLE TYPE 'S' COMB. INLET (NORMAL)	N 528587 E 1361593	199.00	196.68	195.93	MODIFIED HO. CO. STD SD-4.33 ("B"-SHEET 17)
I-12	TYPE 'A-10' INLET	N 528665 E 1361382	200.15		197.81	HO. CO. STD SD-4.02
I-13	DOUBLE TYPE 'S' INLET	N 528451 E 1361631	199.64		196.28	HO. CO. STD SD-4.23
I-14	DOUBLE TYPE 'S' INLET	N 528370 E 1361571	203.50	197.82	197.72	HO. CO. STD SD-4.23
I-15	DOUBLE TYPE 'S' INLET	N 528318 E 1361533	206.72	198.24	198.14	HO. CO. STD SD-4.23
I-16	DOUBLE TYPE 'S' INLET	N 528271 E 1361499	209.62	198.63	198.53	HO. CO. STD SD-4.23
I-17	DOUBLE TYPE 'S' INLET	N 528370 E 1361203	216.90	210.07/200.89	200.79	HO. CO. STD SD-4.23
I-18	DOUBLE TYPE 'S' INLET	N 528261 E 1361124	216.90	211.66/201.66	201.56	HO. CO. STD SD-4.23
I-19	DOUBLE TYPE 'S' INLET	N 528200 E 1361080	217.00	214.25/202.14	202.04	HO. CO. STD SD-4.23
I-20	DOUBLE TYPE 'S' INLET	N 528158 E 1361035	217.20	214.28/202.56	202.46	HO. CO. STD SD-4.23
I-21	DOUBLE TYPE 'S' INLET	N 528118 E 1361005	217.20	214.29/202.91	202.81	HO. CO. STD SD-4.23
I-22	DOUBLE TYPE 'S' INLET	N 528066 E 1360968	217.20	203.33	203.23	HO. CO. STD SD-4.23
I-23	TYPE 'E' INLET	N 527516 E 1360802	216.00	209.39	209.14	MODIFIED HO. CO. STD SD-4.21 (SEE SHEET 15)
I-24	DOUBLE TYPE 'S' INLET	N 528027 E 1360810	211.80	207.61/207.01	206.91	HO. CO. STD SD-4.23
I-25	DOUBLE TYPE 'S' INLET	N 528037 E 1360797	211.80	207.67	207.17	HO. CO. STD SD-4.23
I-26	DOUBLE TYPE 'S' INLET	N 528068 E 1360750	212.62	208.44	208.34	HO. CO. STD SD-4.23
I-27	DOUBLE TYPE 'S' INLET	N 528149 E 1360634	214.72		211.10	HO. CO. STD SD-4.23
I-30	DOUBLE TYPE 'S' INLET	N 527884 E 1360701	211.80	208.91	207.91	HO. CO. STD SD-4.23
I-31	DOUBLE TYPE 'S' INLET	N 527992 E 1360646	212.62	209.83	208.58	HO. CO. STD SD-4.23
I-32	DOUBLE TYPE 'S' INLET	N 528002 E 1360531	214.72		211.23	HO. CO. STD SD-4.23
I-34	TYPE 'A-10' INLET	N 527952 E 1360907	213.40	204.85	204.75	HO. CO. STD SD-4.02
I-35	TYPE 'A-10' INLET	N 527818 E 1360865	212.00	209.00/205.79	205.69	HO. CO. STD SD-4.02
I-36	TYPE 'A-10' INLET	N 527776 E 1360815	212.00	209.00/207.11	206.19	HO. CO. STD SD-4.02
I-37	TYPE 'A-10' INLET	N 527629 E 1360777	216.20	211.96/208.12	207.87	HO. CO. STD SD-4.02
I-38	DOUBLE TYPE 'S' COMB. INLET (PARALLEL)	N 527571 E 1360950	217.00	212.71/211.71	211.46	MODIFIED HO. CO. STD SD-4.34 (SEE SHEET 16)
I-39	TYPE 'E' INLET	N 527516 E 1360802	217.00		213.60	MD. 381.01
MH-1	84" DIAM. PRECAST MANHOLE	N 528176 E 1361873	204.21	196.73/195.53	194.73	MD. 384.07
MH-2	5'-0" STANDARD PRECAST MANHOLE	N 528007 E 1361750	212.30	198.45	198.35	HO. CO. STD. G-5.13
MH-3	5'-0" STANDARD PRECAST MANHOLE	N 527891 E 1361735	210.75	199.72	199.62	HO. CO. STD. G-5.13
MH-3A	5'-0" STANDARD PRECAST MANHOLE	N 527839 E 1361701	209.61	200.45	200.35	HO. CO. STD. G-5.13
MH-4	4'-0" STANDARD PRECAST MANHOLE	N 527635 E 1361628	212.72	210.93/203.98	203.23	HO. CO. STD. G-5.12
MH-5	72" DIAM. PRECAST MANHOLE	N 528431 E 1361247	214.78	200.41	200.31	MD. 384.05
MH-6	5'-0" STANDARD PRECAST MANHOLE	N 528005 E 1360900	213.71	205.19/204.48	204.19	HO. CO. STD. G-5.12
MH-7	72" DIAM. PRECAST MANHOLE	N 528386 E 1361583	202.55	197.62	197.12	MD. 384.05
MH-8	72" DIAM. PRECAST MANHOLE	N 528255 E 1361487	210.54	198.83	198.73	MD. 384.05
HW-1	TYPE 'A' HEADWALL	N 528439 E 1361959	199.00		193.00	HO. CO. STD SD-5.11
HW-2	TYPE 'A' HEADWALL	N 528453 E 1361938	197.00		193.00	HO. CO. STD SD-5.11
EW-1	TYPE 'C' ENDWALL (USE 12" SPECS.)	N 528439 E 1361959	184.00		185.75	HO. CO. STD SD-5.21

NOTE : 1. Top elevations are at flowline for Type 'A-10' and Double Type 'S' Comb. Inlets at center top of grate for Double Type 'S' Inlets and top of Manhole cover for Precast Manholes.
2. For top slab slopes see grading plan.
3. See Architectural plans for roof drain details.

PIPE SCHEDULE

SIZE	TYPE	LENGTH
15"	HDPE	648 LF
18"	HDPE	285 LF
21"	HDPE	197 LF
24"	HDPE	568 LF
15"	RCP	306 LF
24"	RCP	122 LF
30"	RCP	879 LF
36"	RCP	259 LF
42"	RCP	1207 LF
48"	RCP	164 LF
54"	RCP	287 LF
84"	RCP CLASS IV	40 LF
6"	PVC (SOLID)	240 LF
6"	PVC (PERFORATED)	420 LF
8"	PVC (SOLID)	923 LF
8"	PVC (PERFORATED)	220 LF
10"	PVC	85 LF
12"	PVC	263 LF
15"	PVC	86 LF
18"	PVC	353 LF



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/6/05

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS · SURVEYORS · PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORM DRAIN PROFILES

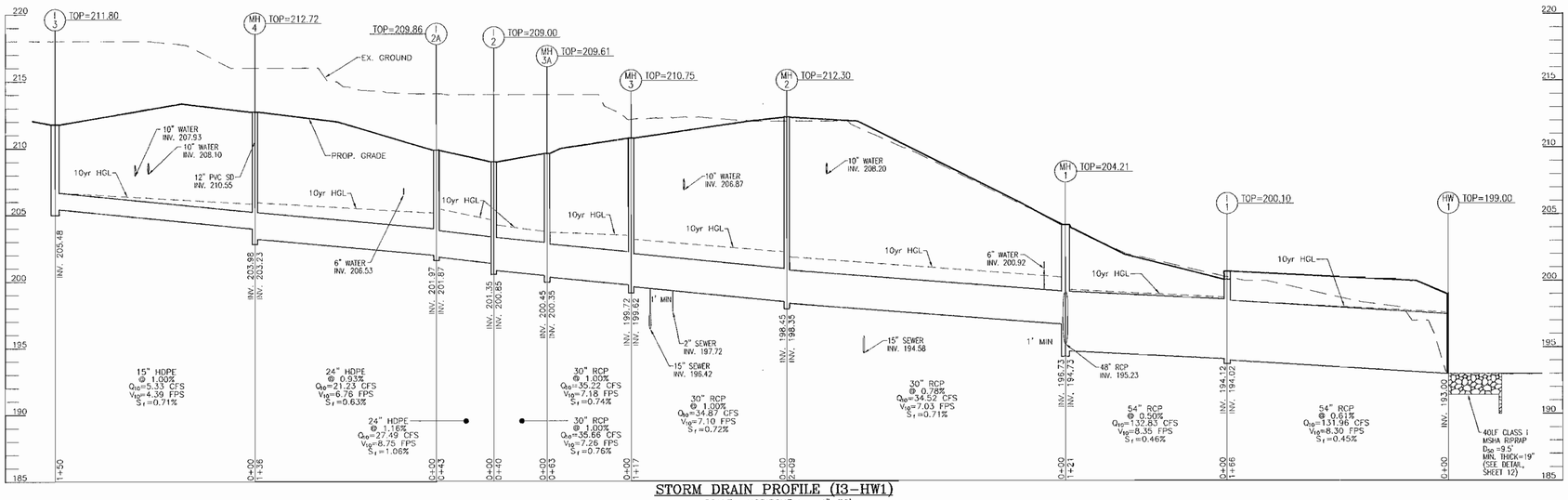
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786
1391 MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C5.1

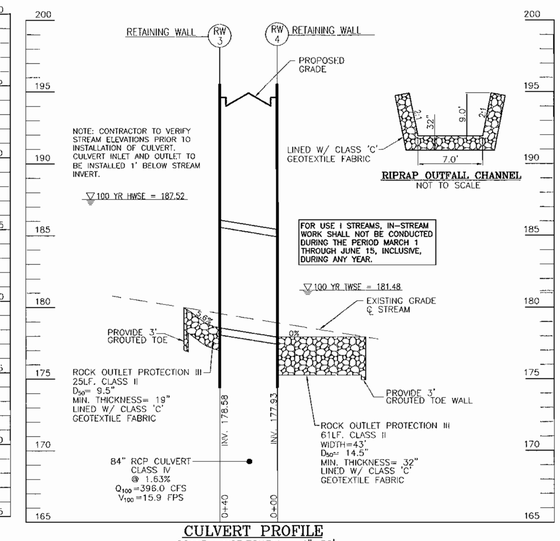
HO. CO. DPZ SHEET:
15 OF 38

SDP-05-40



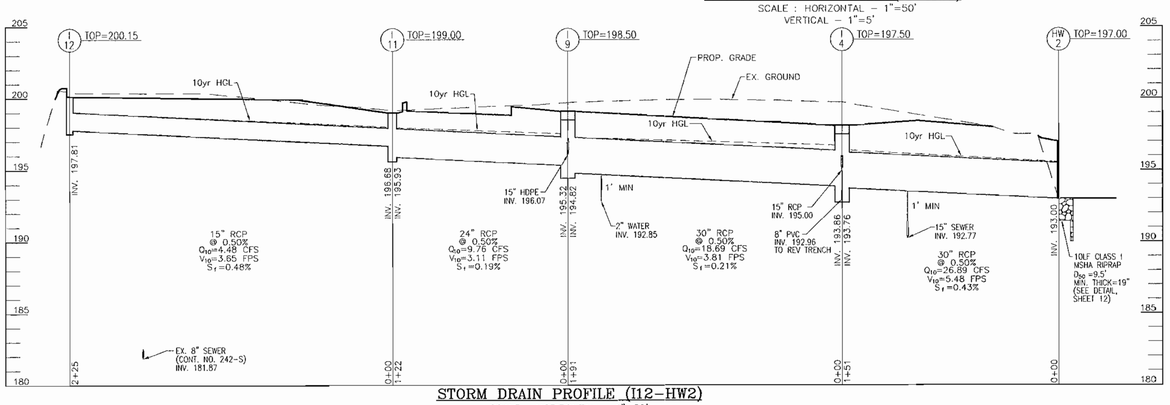
STORM DRAIN PROFILE (I3-HW1)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



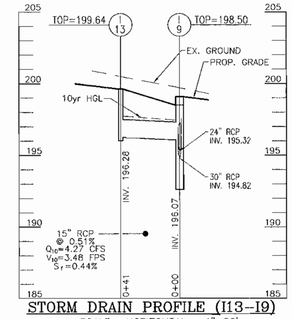
CULVERT PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



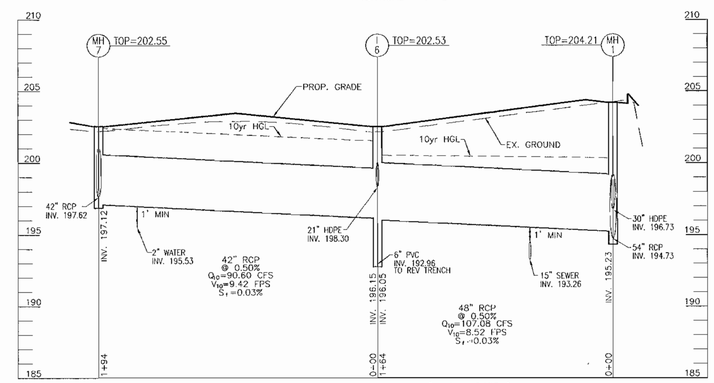
STORM DRAIN PROFILE (I12-HW2)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



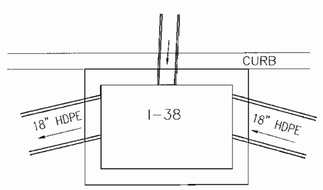
STORM DRAIN PROFILE (I13-I9)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



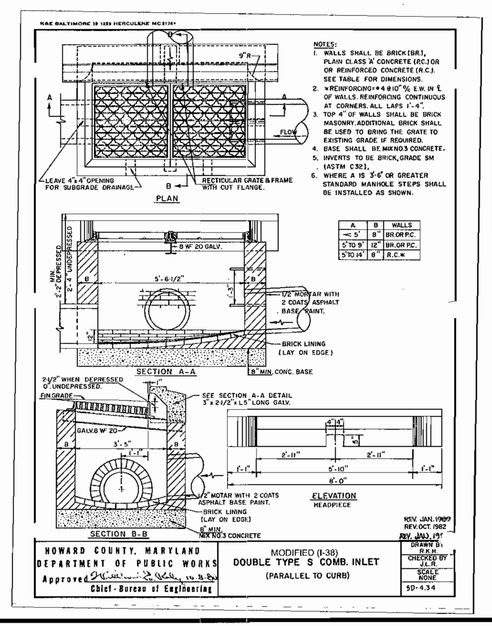
STORM DRAIN PROFILE (MH7-MH1)

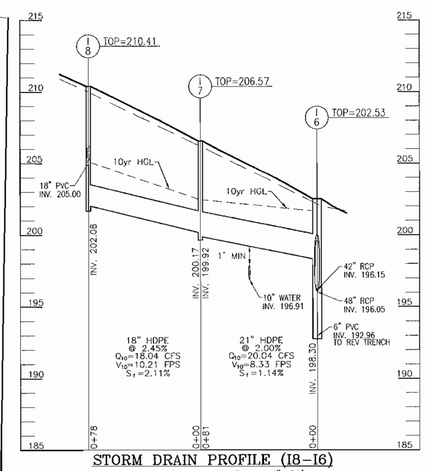
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



DOUBLE TYPE 'S' COMBINATION (PARALLEL TO CURB) FLOW THROUGH INLET (8" P.C. WALLS)

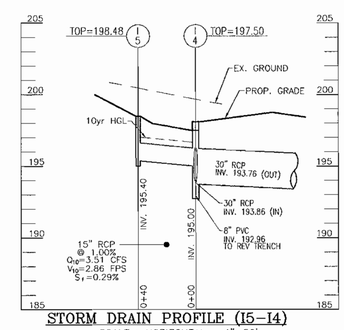
SCALE: 1"=3'





STORM DRAIN PROFILE (I8-I6)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE (I5-I4)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORM DRAIN PROFILES

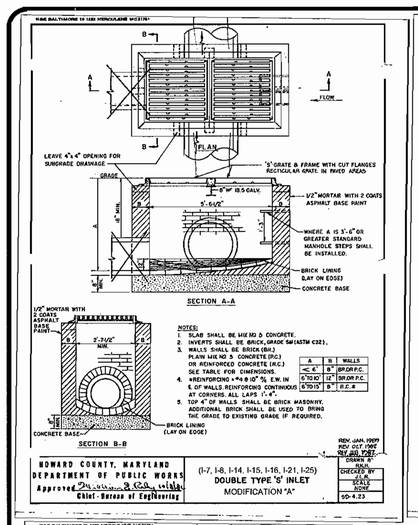
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

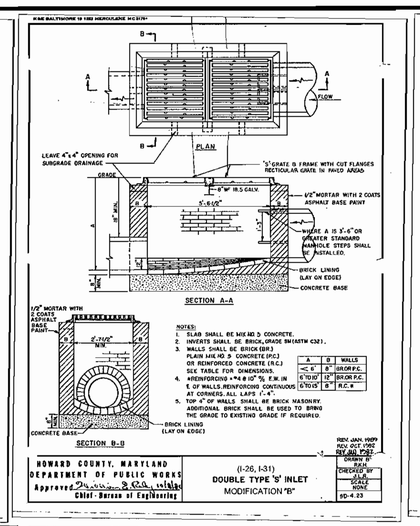
©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

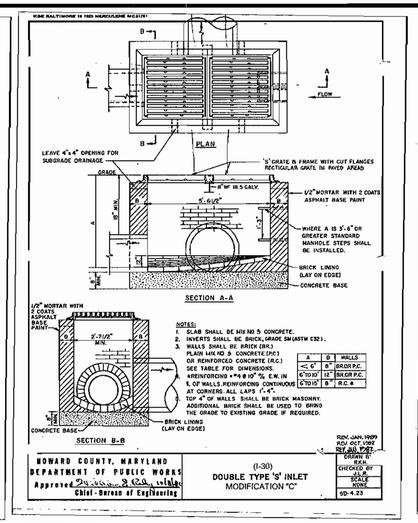
DRAWING NO.
C5.2

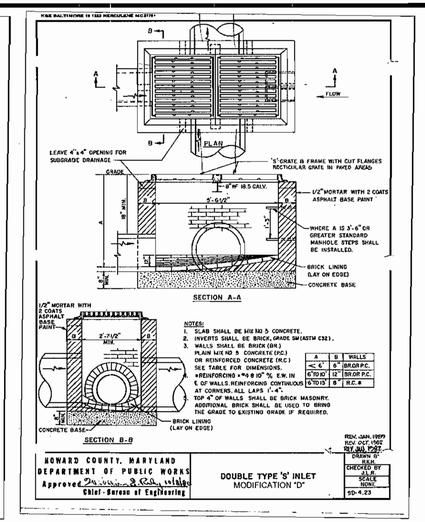
HO. CO. DPZ SHEET:
16 OF 38

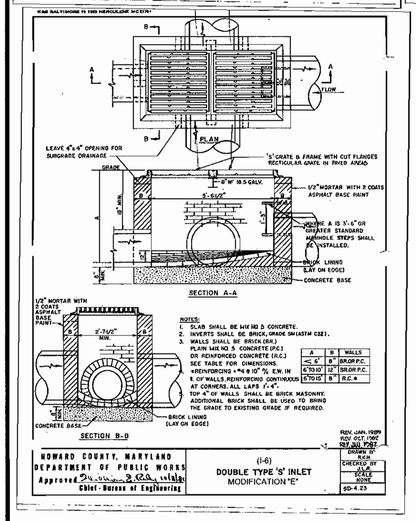
SDP-05-40

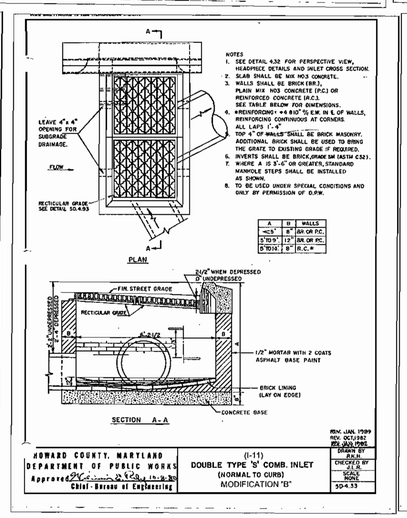


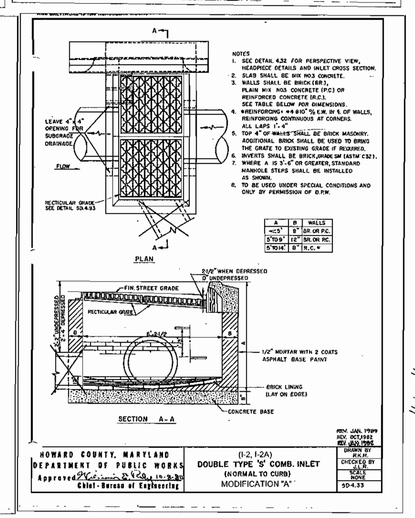


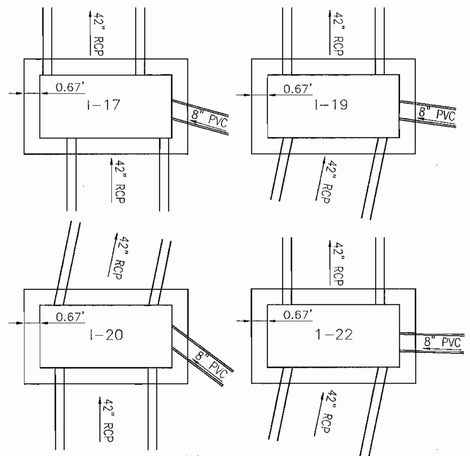




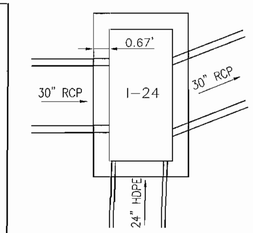




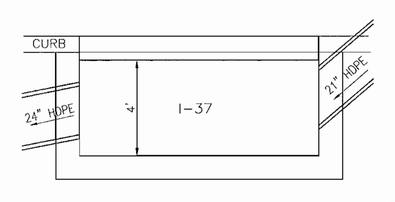


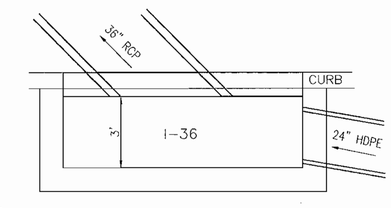


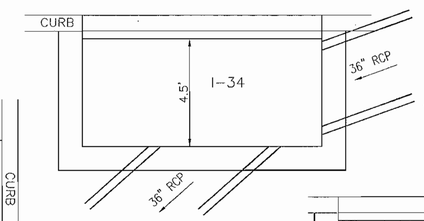
DOUBLE TYPE 'S' FLOW THROUGH INLETS
(8" R.C. WALLS)
SCALE: 1"=3'

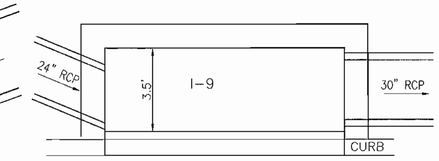


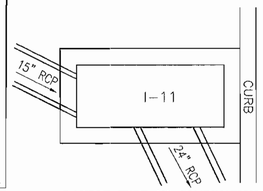
DOUBLE TYPE 'S' FLOW THROUGH INLET
(8" P.C. WALLS)



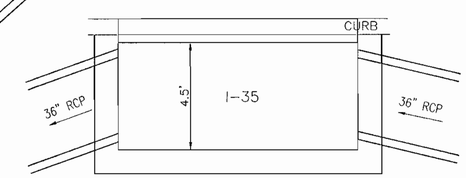




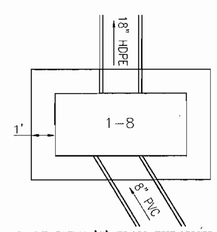




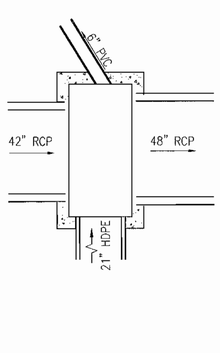
DOUBLE TYPE 'S' COMBINATION
(NORMAL TO CURB)
FLOW THROUGH INLET
(8" P.C. WALLS)
SCALE: 1"=3'

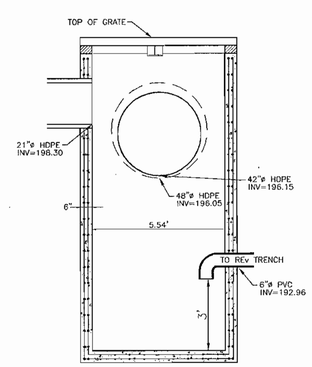


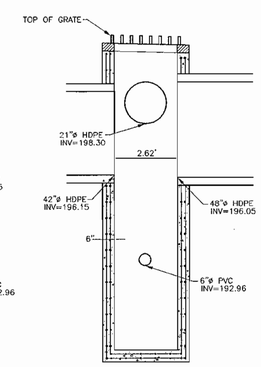
A-10 INLETS
SCALE: 1"=3'



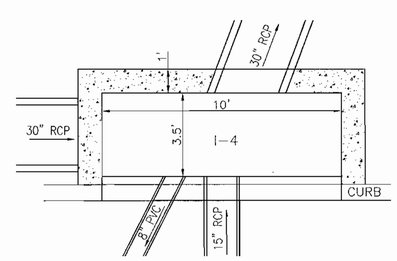
DOUBLE TYPE 'S' FLOW THROUGH INLET
(12" P.C. WALLS)
SCALE: 1"=3'

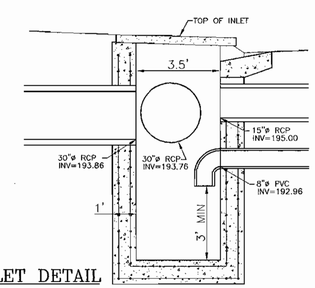






I-6 DIVERSION INLET DETAIL
SCALE: 1"=3'





I-4 DIVERSION INLET DETAIL
SCALE: 1"=3'

STATE OF MARYLAND
ROBERT HARRISTON VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
5/4/05
ROBERT H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORM DRAIN INLET DETAILS

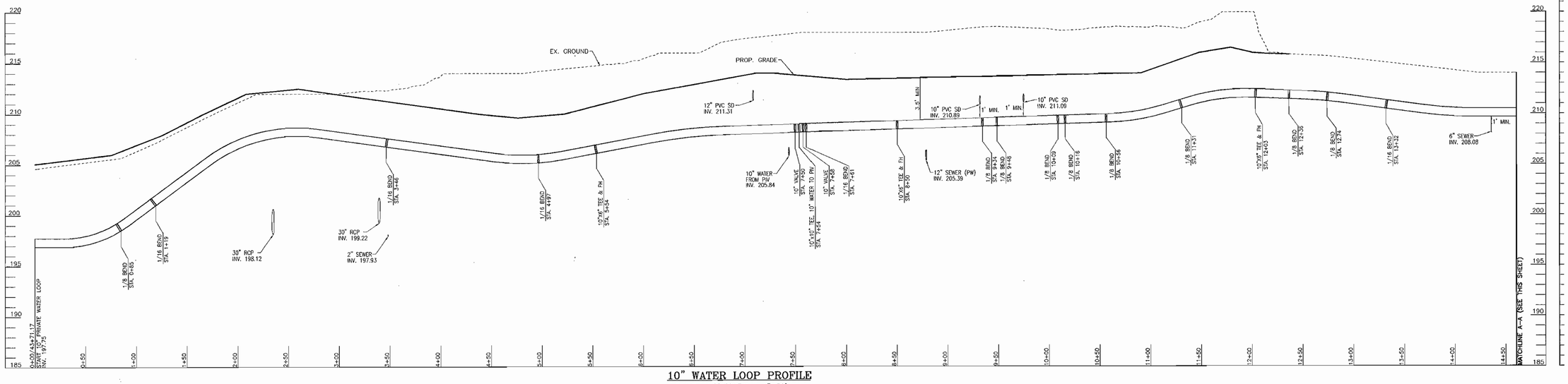
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 • FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C5.3

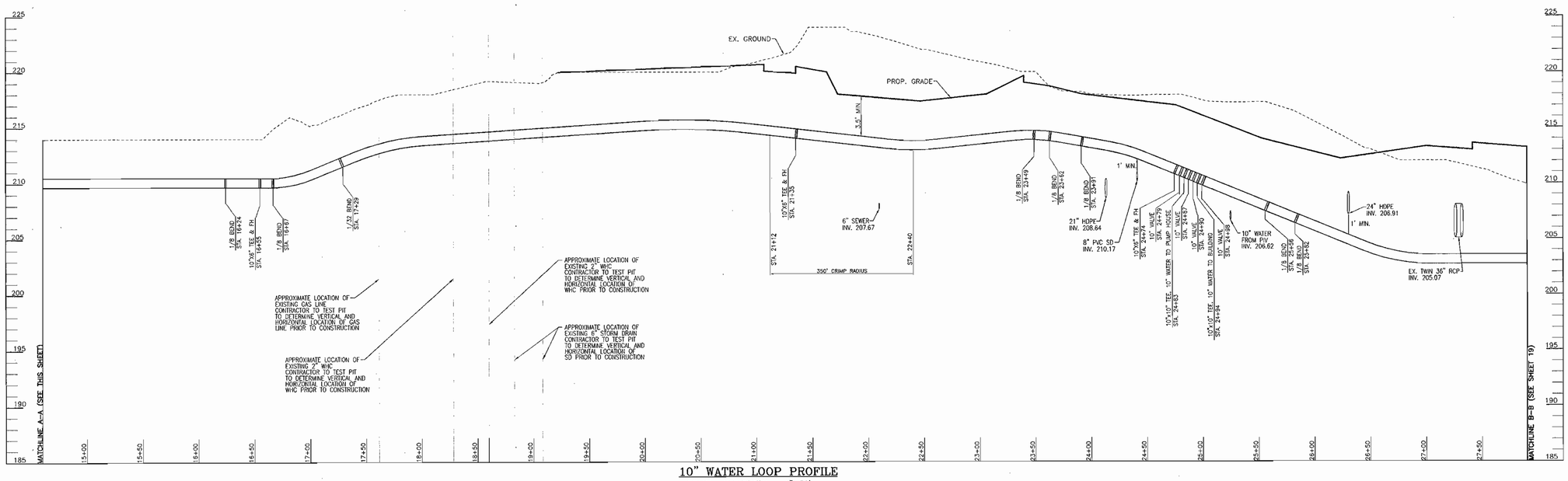
HO. CO. DPZ SHEET:
17 OF 38

SDP-05-40



10" WATER LOOP PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



10" WATER LOOP PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/7/05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/14/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

WATER PROFILES

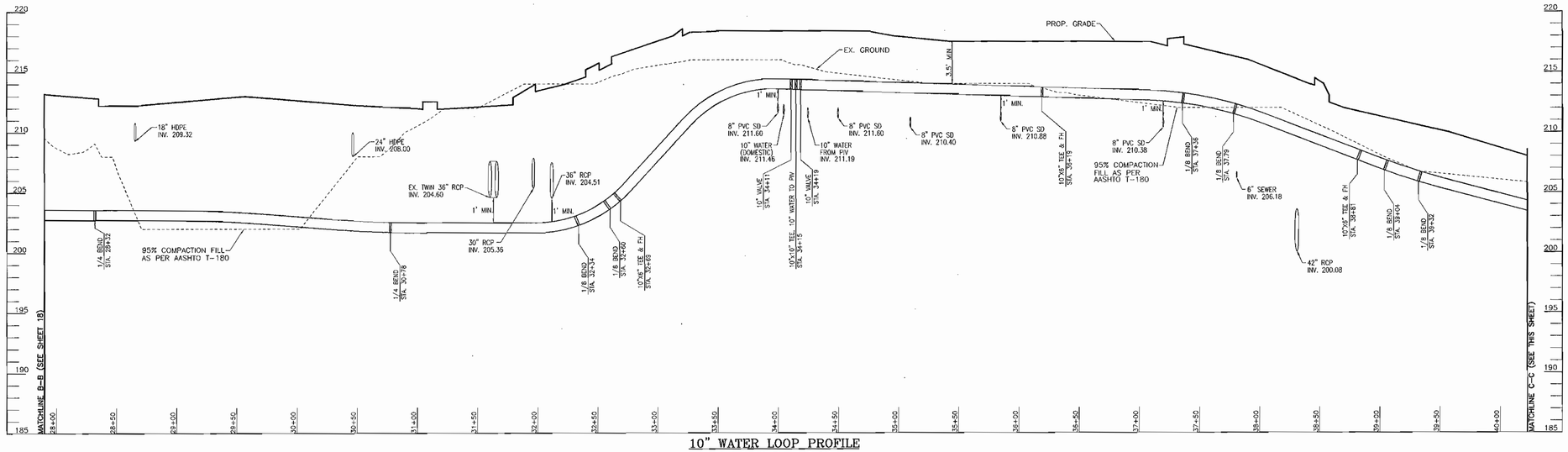
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785, FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585, FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED SOLELY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

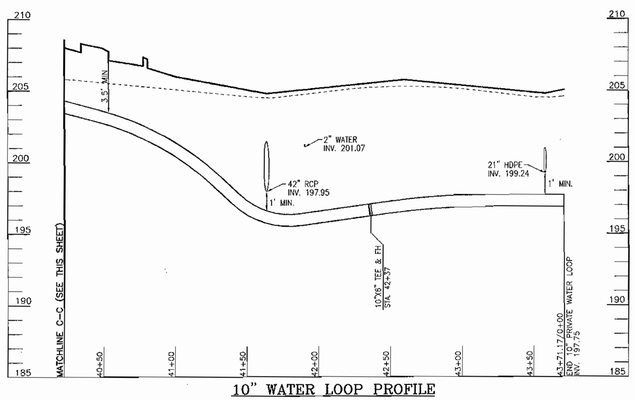
DRAWING NO.
C5.4

HO. CO. DPZ SHEET:
18 OF 38

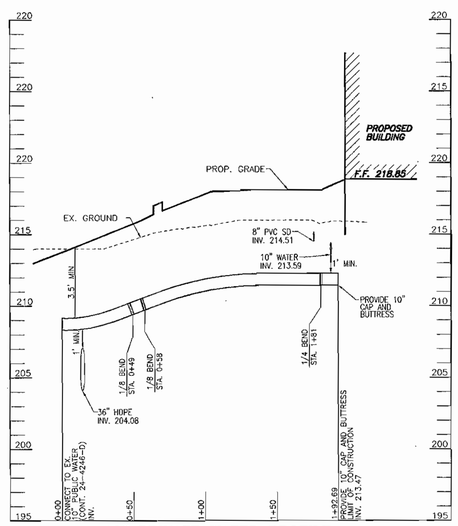
SDP-05-40



10" WATER LOOP PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



10" WATER LOOP PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



10" PRIVATE WATER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

WATER PROFILES

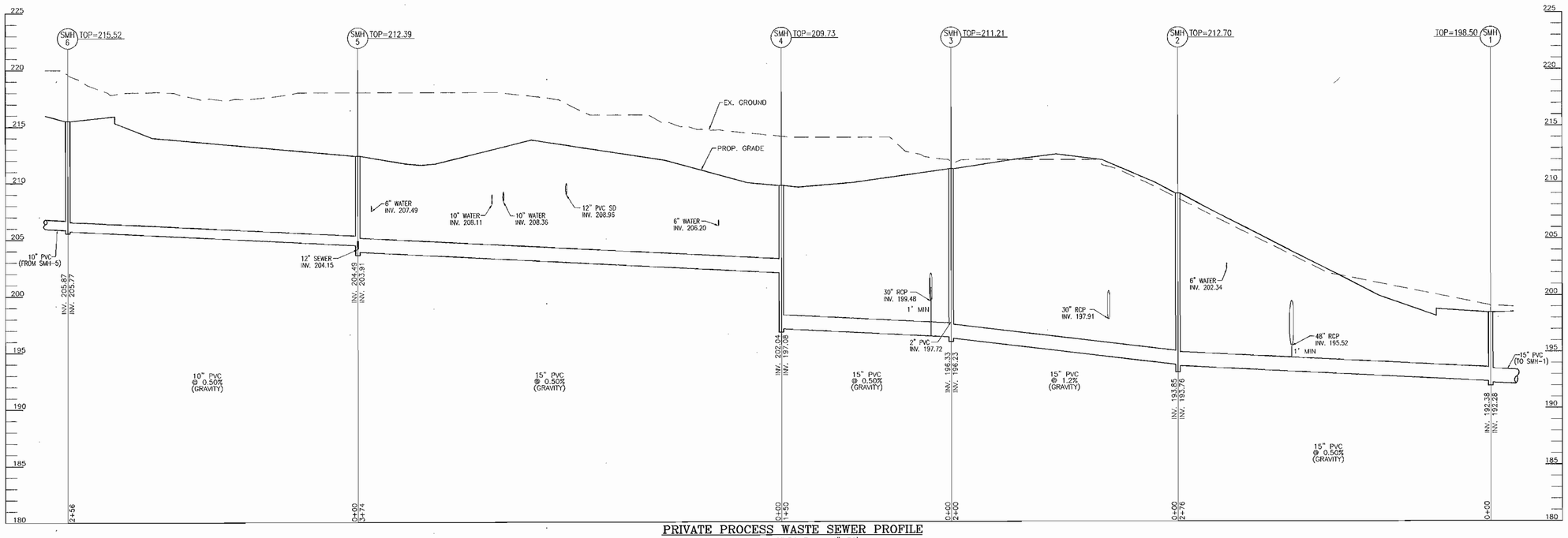
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 , FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 , FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC. AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C5.5

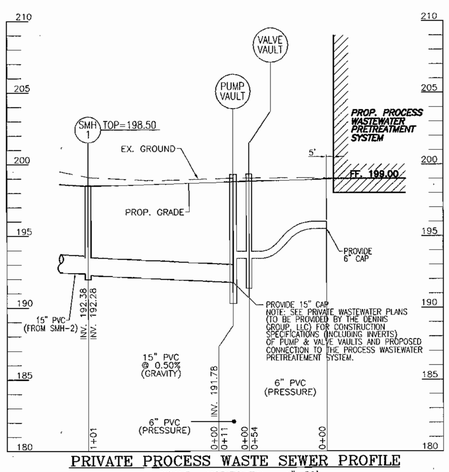
HO. CO. DPZ SHEET:
19 OF 38

SDP-05-40



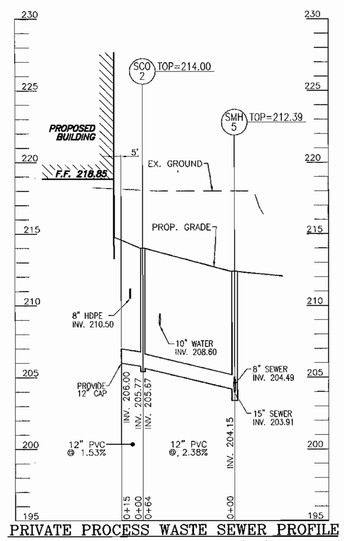
PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



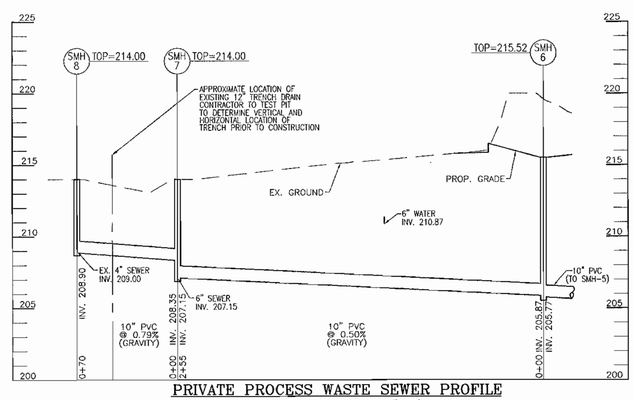
PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



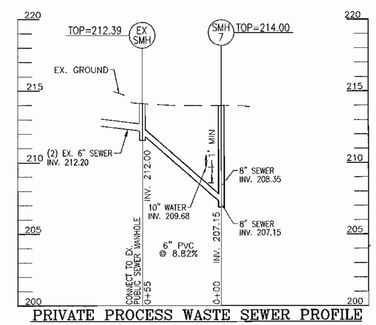
PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/26/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PEISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.6961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SEWER PROFILES

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

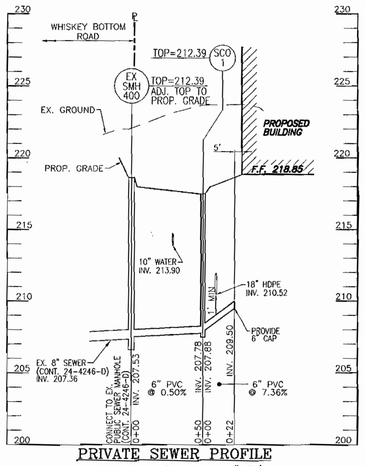
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C5.6

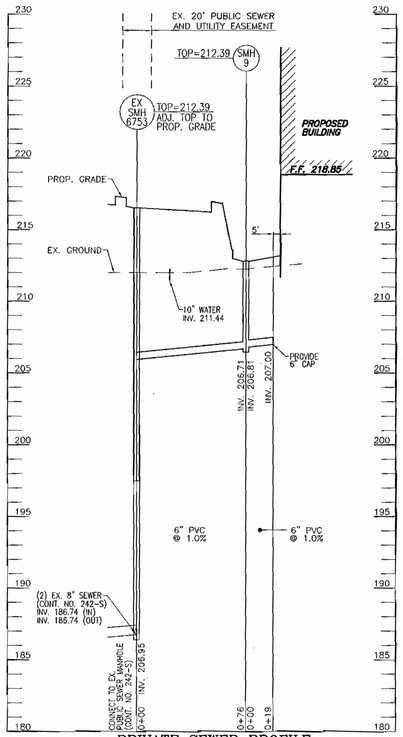
HO. CO. DPZ SHEET:
20 OF 38

SDP-05-40



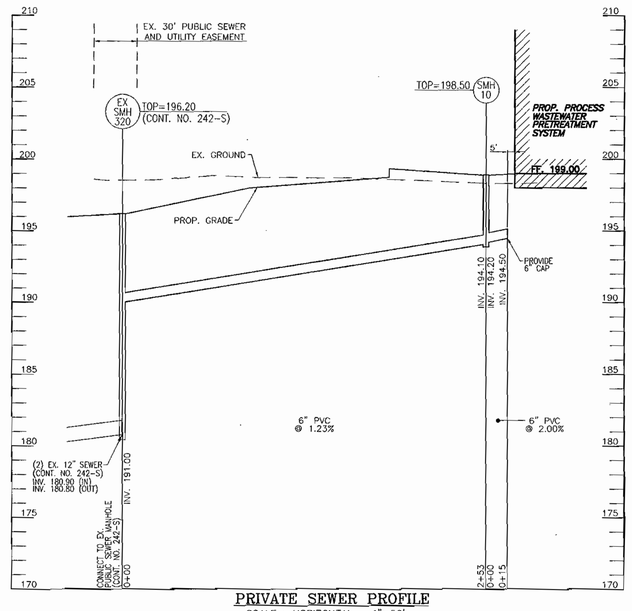
PRIVATE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



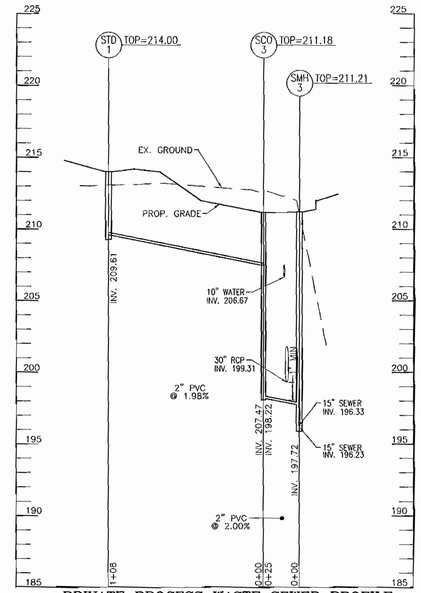
PRIVATE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/7/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND ROBERT HARRIS VOGEL No 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SEWER PROFILES

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

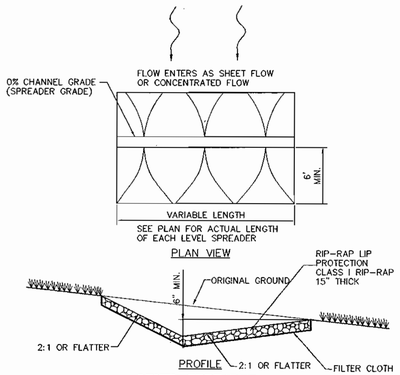
SCALE: 1"=40'

©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT IS TO BE KEPT IN CONFIDENCE AND ORIGINAL WORK USED, NOR SHALL SUCH INFORMATION BE REPRODUCED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC AND SHALL BE RETURNED UPON REQUEST.

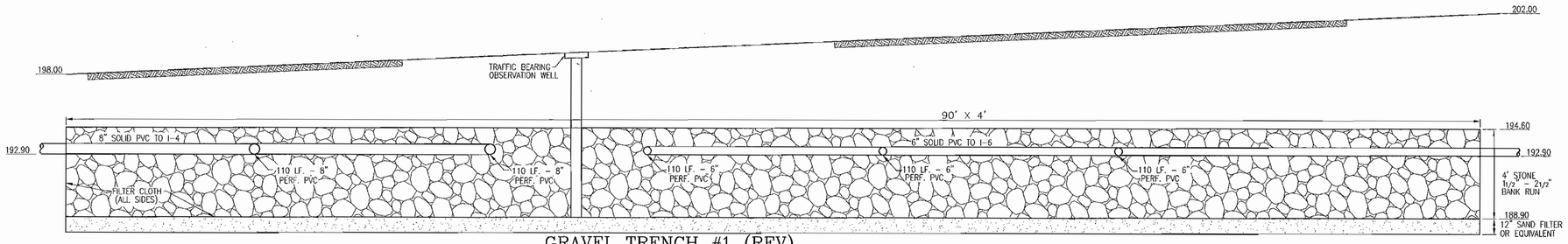
DRAWING NO.
C5.7

HO. CO. DPZ SHEET:
21 OF 38

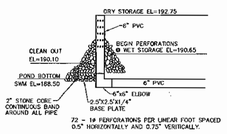
SDP-05-40



LEVEL SPREADER
NOT TO SCALE



GRAVEL TRENCH #1 (REV)
SECTION A-A
SCALE: 1"=4'



TEMP. SEDIMENT BASIN#1 DEWATERING DEVICE WITH 6" PERFORATED RISER
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. Perforations in the draw-down device may not extend into the wet storage.
2. The total area of the perforations must be greater than 2 times the area of the internal orifice.
3. The perforated portion of the draw-down device shall be wrapped in 1/2" hardware cloth and geotextile fabric. Filter fabric lining shall be embedded a minimum of 4" and shall extend at least 6" beyond the edge of the rip-rap. Geotextile Class C.
4. Provide support of draw-down device to prevent sagging and floatation. An acceptable preventative measure is to stake both sides of draw-down device with 1" steel angle, or 1" by 4" square or 2" round wooden posts set 3' minimum into the ground then joining them to the device by wrapping with 12 gauge minimum wire.

SEDIMENT BASIN #1

DRAINAGE AREA TO BASIN:	23.29 AC
TOTAL STORAGE REQUIRED:	83,844 CF
TOTAL STORAGE PROVIDED:	153,835 CF
BOTTOM ELEVATION:	188.50
CREST ELEVATION:	192.75
WET STORAGE ELEVATION:	188.50–190.65 (2.15')
DRY STORAGE ELEVATION:	190.65–192.75 (2.10')
TOTAL STORAGE DEPTH:	4.25'
TOP OF EMBANKMENT:	197.50
CLEANOUT ELEVATION:	191.10
SIDE SLOPES:	3:1
Q_i EX.:	1.9 CFS
Q_i TSWM:	1.3 CFS
1 YR TSWM WSEL:	192.64
10 YR TSWM WSEL:	193.63
$Q_{i\ (ULT)}$:	1.5 CFS
1 YR ULT. WSEL:	192.59

SWM POND SUMMARY

	1 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	74.9 c.f.s	161.5 c.f.s.	233.6 c.f.s.
FLOW OUT OF POND	1.5 c.f.s.	64.6 c.f.s.	82.8 c.f.s.
W.S. ELEVATION	192.59	193.93	194.93
STORAGE VOLUME	3.65 AC FT	5.94 AC FT	8.13 AC FT

WQv	Cpv
1.67 Ac.Ft.	3.23 Ac.Ft.

CONDITION	CN	tc	RUNOFF Qa 1YR STORM	Q 1YR	Q 10YR	Q 100YR
		HR.	INCHES	CFS	CFS	CFS
EXISTING	75	0.35	0.71	16.1	63.2	108.2
IMPROVED	93	0.10				

SUMMARY TABLE AREA 1 (SITE)

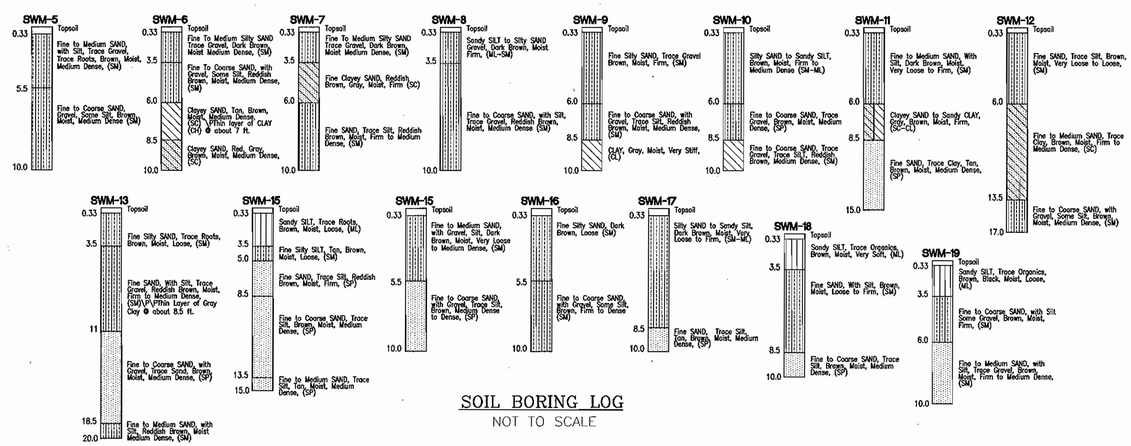
AREA 26.65 AC.	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	1.67 AC.FT.	N/A	1.67 AC. FT.	50% OF WQv PROVIDED IN WET POOL
2	RECHARGE VOLUME REV	0.39 AC.FT. OR 4.93 AC.	0	0.39 AC. FT.	PROVIDED BY GRAVEL TRENCH
3	CHANNEL PROTECTION VOLUME CPV	3.23 AC.FT.	N/A	3.23 AC.FT.	MICROPOOL EXTENDED DETENTION
4	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
5	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: SWM PROVIDED BY MICROPOOL EXTENDED DETENTION FACILITY

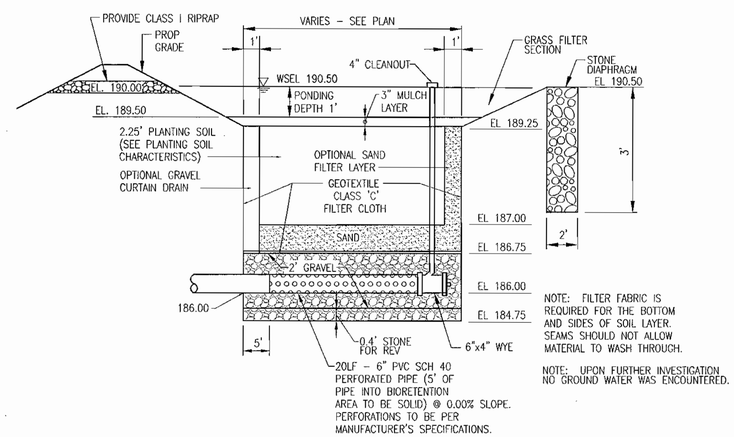
SUMMARY TABLE AREA 1 (DRIVEWAY)

AREA 0.87 AC.	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	0.0689 AC.FT.	N/A	0.0689 AC. FT.	PROVIDED IN BIO-RETENTION FACILITY
2	RECHARGE VOLUME REV	0.0152 AC.FT.	0	0.0152 AC. FT.	PROVIDED BY GRAVE UNDER BIO-RETENTION
3	CHANNEL PROTECTION VOLUME CPV	0	N/A	0	$Q_i \leq$ 2.0 CFS
4	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
5	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: SWM PROVIDED BY MICROPOOL EXTENDED DETENTION FACILITY



SOIL BORING LOG
NOT TO SCALE



NOTE: FILTER FABRIC IS REQUIRED FOR THE BOTTOM AND SIDES OF SOIL LAYER. SEAMS SHOULD NOT ALLOW MATERIAL TO WASH THROUGH.

NOTE: UPON FURTHER INVESTIGATION NO GROUND WATER WAS ENCOUNTERED.

DETAIL - BIORETENTION AREA
NOT TO SCALE

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED
PROFESSIONAL ENGINEER
4/15/05

ROBERT H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES / CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/15/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORMWATER MANAGEMENT DETAILS

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC. AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.7

HO. CO. DPZ SHEET:
22 OF 38

SDP-05-40

Geotechnical Construction Recommendations

Cut-Off Trench and Impervious Core Construction

According to the site grading plan, cut-off trenches and impervious cores will be required at the east and west sides of the proposed SWM pond.

In accordance with Maryland Code 378 requirements, the cutoff trench should extend at least 4 feet below the principal spillway pipe, have a minimum width of 4 feet, and have side slopes of 1H: 1V, or flatter. The impervious core should extend vertically upword from the cutoff trench to the 10-year stormwater surface elevation. Fill materials for the cutoff trench and impervious core construction should consist of GC, SC, CL, or CH soil types, having at least 30 percent by weight passing the No. 200 sieve.

Fill materials for the cut-off trench and impervious core should be placed in 8-inch loose lifts and compacted to at least 95 percent of the maximum dry density in accordance with the Standard Proctor test method, ASTM D-698. We recommend that moisture contents at the time of construction should generally be within the range of the optimum moisture content to 3 percentage points wet of the optimum moisture content. Placement and compaction of the cutoff trench and impervious core fill materials should be monitored by the Geotechnical Engineer on a full-time basis to ensure that fill materials are being placed and compacted in accordance with plans and specifications.

General Embankment Construction

According to the plans provided, it appears that the SWM pond is to be constructed to a configuration of 3H:1V, primarily in a cut situation. However, embankments will be required at the east and west sides of the pond with a maximum of 7.5 feet of fill at the northeastern corner of the pond. The results of the borings indicated that the cut slopes should be suitable for the proposed 3H:1V. The fill slopes planned at 3H:1V should consist of embankment fill as recommended below.

Embankment soils placed outside the limits of the cut-off trench and impervious core should consist of soils classified as CL, ML, SC, SM, SC-SP, or SM-SP in accordance with ASTM D-2487. Soils of these types should be readily available from excavated materials associated with the pond construction, although car will need to be exercised to ensure that the materials do not contain excessive amounts of organics.

Summary of SWM Pond Design

Based on the subsurface conditions encountered at the site and our review of the proposed Stormwater Management Plan, it is our opinion that the design for the proposed SWM ponds and embankments, with modifications as recommended herein, is in general accordance with Maryland Code 378 requirements with regard to geotechnical considerations. Careful observation of soil conditions exposed during construction will be needed to ensure that measures are taken to provide necessary improvement of soil conditions, especially in the areas of cut slopes and in areas of structural support.

Subgrade Preparation

Subgrade preparation in proposed embankment areas should generally include the removal of any soft, loose, or otherwise unsuitable materials from areas that are to receive fill. We recommend that the removal of unsuitable materials should extend at least 5 feet beyond the areas to receive fill, unless otherwise recommended by the Geotechnical Engineer.

Prior to the placement of any embankment fill materials, an authorized representative of the Geotechnical Engineer should examine the subgrade soils to verify that they are suitable. The exposed soils should be thoroughly proofrolled by a vehicle having an axle weight of at least 10 tons, such as a loaded tandem-axle dump truck. This procedure is intended to assist in identifying any localized unstable or yielding materials. In the event that unstable or yielding areas are encountered during the proofrolling operations, the subgrade should be either thoroughly densified in-place, disced/aerated and recompacted, or undercut to firm ground and replaced with controlled, compacted fill.

Fill Placement and Compaction

Prior to placement of compacted fill, representative bulk samples (about 50 pounds) should be taken off the proposed fill soils and laboratory tests should be conducted to determine Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships for compaction. In general, any materials to be used as structural fill should consist of those materials previously described in the previous sections pertaining to Cut-off Trench and Impervious Core Construction and General Embankment Construction. Materials acceptable for use in engineered fills should be free of organic matter (less than 3 percent by weight) and debris, containing no rocks greater than 4 inches in their largest dimension. Any off-site borrow soils, if required, should meet the same material requirements and should be approved by the Geotechnical Engineer.

The on-site soils generally should be acceptable for re-use as embankment fill, with the restrictions previously addressed. As previously mentioned, there appears to be an insufficient quantity of the on-site soils suitable for use in the construction f the cutoff trenches and impervious cores. This material will need to be imported to the project site. Bulk samples should be taken of the proposed impervious soils and submitted to the Geotechnical Engineer for approval prior to the importation of this material to the site.

Based on the results of the field testing program conducted for this site, and visual and laboratory classifications of the samples obtained, the on-site soils are generally considered to be suitable for re-use as embankment fill. Considering the laboratory test results, existing moisture contents for some of the on-site soils may be greater than the optimum moisture content. Therefore, drying of the soils by aeration or by chemical methods such as quick lime or cement should be anticipated to reduce the moisture content of the on-site soils in order to achieve the required compaction. Any materials proposed for use as structural fill should be approved by the Geotechnical Engineer or his authorized representative.

Due to the textural variations of the on-site soils, variations in moisture-density relationships should be anticipated. Such changes must be determined in the field by the Geotechnical Engineer, or his authorized representative, during the earthwork operations and treated appropriately.

All general embankment fill should be placed in loose lifts which do not exceed 8 inches in thickness, and should be compacted to at least 95 percent of the maximum dry density, as determined by the Standard Proctor compaction test method (ASTM D-698). Generally, the moisture content of the fill materials for the embankment should be maintained within ± 2 percentage points of the optimum moisture content for the fill materials, as determined by ASTM D-698.

Fill materials for the cut-off trench and imperious core should be placed in loose lifts which do no exceed 8 inches in thickness, and should be compacted to at least 95 percent of the maximum dry density, as determined by the Standard Proctor compaction test method (ASTM D-698). Relative to clayey soils placed in the cut-off trench and impervious core, it will be desirable to maintain field moisture contents within the range of optimum moisture content to 3 percentage points wet of optimum moisture content, to aid in obtaining relatively low coefficients of permeability.

Any embankment fill placed on slopes steeper than 5H:1V should be adequately benched into the existing slope. Benches should be a minimum of 5 feet wide and should have heights no greater than 3 feet or the drum height of the roller, whichever is less.

The footprint of the proposed embankment should be well defined, including the limits of the fill zones at the time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified Soil Technician to determine that the minimum compaction requirements are being achieved. A minimum of one compaction test per lift and every 2,500 square foot lift area should be made. The elevation and location of the tests should be clearly identified at the time of fill placements.

At the end of each work day, all fill areas should be graded to facilitate positive drainage of any free water associated with precipitation and surface run-off, and sealed by use of a smooth-drum roller to limit infiltration of surface water.

Fill materials should not be placed on frozen soils for frost-heaved soils and/or on soils that have been saturated by precipitation. All frozen or frost-heaved soils should be removed prior to placement of controlled and compacted fill. Borrow fill materials shall not contain frozen materials at the time of placement.

If any problems are encountered during the earthwork operations, or if site conditions deviate from those encountered during our subsurface investigation, the Geotechnical Engineer should be notified immediately.

Construction Considerations

Because of the presence of fines, the on-site soils will be sensitive to moisture and disturbance. Construction activities in the presence of excess moisture can lead to softening of the subgrade soil loss of bearing capacity. Therefore it will be prudent to schedule earthwork operations during the warmer and drier seasons (typically late spring to early fall). Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas. It is advisable to designate haul roads and traffic areas to limit the areas of disturbance and prevent construction traffic from excessively degrading the sensitive subgrade soils, especially any moisture sensitive soils containing high percentages of silt and clay.

A firm working surface should be established prior to construction of new fills. The moisture content of the fill soils at the time of placement should be carefully controlled to ensure that the required compaction effort can be achieved without excessive pumping or movement of the fill mass. In the event that the earthwork operations are accomplished during the cooler and wetter periods of the year, delays and additional costs should be anticipated since any reduction of soil moisture would have to be accomplished by mechanical manipulation in order to achieve the specified compaction.

Groundwater was not encountered during drilling at any of the borings performed for the SWM Pond during this investigation. It appears that groundwater will not impact construction of the pond embankments and during undercutting and backfilling operations. However, should any perched water be encountered, it should be managed easily by using ditches, sumps and pumps.

Some of the soils at this site could be sensitive to moisture and could become difficult to work if exposed to excessive moisture and construction activity. Therefore, surface water runoff should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped at a grade of 1 to 2 percent to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade should be sealed by rolling the surface with a smooth drum roller. Sealing the surface should also facilitate positive drainage of surface runoff to stormwater collection facilities.

Some cuts or excavation associated with construction may require forming or bracing, slope flattening or other physical measures to control sloughing and/or prevent slope failures. An examination of the applicable codes (e.g. OSHA) should be made by the appropriate contractor to ensure that adequate protection of the excavations and trench walls is provided.

Soils at this site contain fines and are considered erodible. The Contractor should provide and maintain good site drainage during earthwork operations to help maintain the integrity of the surface soils. All erosion and sedimentation shall be controlled in accordance with sound engineering practice and current local requirements.

Appendix B.3. Construction Specifications for Sand Filters, Bioretention and Open Channels

Specifications for Bioretention

1. Material Specifications

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

2. Planting Soil

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

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

pH range 5.2 - 7.0
organic matter 1.5 - 4% (by weight)
magnesium 35 lb./ac
phosphorus (phosphate - P 205 75 lb./ac
potassium (potash - K 20) 85 lb./ac
soluble salts nit to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional test of organic matter, and soluble salts. A textural analysis shall be performed for each location where the top soil was excavated.

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

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

3. Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use hoes to remove original soil. If bioretention areas are excavated using loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tire. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

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

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

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

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

4. Plant Material

Recommended plant material for bioretention areas can be found in Appendix A, Section A.2.3. of the 2000 Maryland Stormwater Design Manual.

5. Plant Installation

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

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

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

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

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds of nitrogen per 1000 square feet.

6. Underdrains

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

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

7. Miscellaneous

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

DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:

These standards apply to removal and discharge of water from any excavated area or sediment trap or basin at any construction site. Given the unique conditions at any particular construction site, any or all of the practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.

Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should identify procedures for dewatering sediment traps and basins prior to elimination of the last sediment control facility on the site or prior to conversion of sediment control facilities to stormwater management facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may require innovative dewatering designs. Dewatering measures not referenced in this standard may be used with the consent of the approval authority.

Dewatering of Excavated Areas

A. Designers shall specify on plans, and in sequences of construction included on plans, practices for dewatering of excavated areas. Plan reviewers shall check to see that procedures for dewatering are included on plans.
B. In all cases, water removed from excavated areas shall be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps, basins and filter bags, in addition to the practices in this section.

Approved Practices for Dewatering of Excavated Areas

1. Pumping of water to an existing sediment basin, filter bag or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
2. Pumping of water to an existing sediment basin, filter bag or trap such that the entire volume of water from the area to be dewatered can be managed without exceeding the design outflow from the sediment control structure.
3. Removable Pumping Station. Standards and specifications for Removable Pumping Station are on Detail 20A.
4. Use of a Sump Pit. Standards and specifications for a sump pit are on Detail 20B.
5. Sediment Tank. Standards and specifications for a sump pit are on Detail 21.

Dewatering of Sediment Traps and Basins

Designers shall specify on plans, and in sequences of construction included on plans, the practices for dewatering of traps and basins. Plan reviewers shall check to see that procedures for dewatering to be used are included on plans. In all cases, water removed from traps and basins shall be discharged so that it passes through a sediment control device prior to entering receiving waters.

Approved Practices for Dewatering of Traps and Basins

1. Removable pumping station.
2. Use of a Sump Pit.
3. Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner water is pumped the suction hose will lower and eventually encounter sediment laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water prior to discharge to receiving waters. When floating suction hoses are used, personnel shall be assigned to monitor pumping operations to ensure that sediment pollution is abated. Pumping sediment laden water into the waters of the State without filtration is strictly forbidden.
4. Vegetative buffers- The maintenance of areas of existing vegetation adjacent to wetlands, streams, and other areas of significant natural resource value in connection with sediment control practices noted in this manual can ensure that such areas are not adversely affected by grading and construction of by stormwater runoff once construction is complete. The maintenance of such areas adjacent to streams is particularly important because they lessen the impact of sedimentation of fish and other aquatic species, and provide food such as leaves and twigs for aquatic organisms, particularly in headwater streams. The width for such areas needed for in order to provide adequate protection is dependent on the type of area to be protected, the type of vegetation in the buffer, the slope present, the ability of the soils in the buffer to absorb water, the size distribution of the incoming sediment, and the rate of runoff. However, research studies have shown that the maintenance of a buffer of 100 feet in width in areas with low to moderate slopes should generally provide adequate protection.

POND BOTTOM SOIL CONDITIONS

If broken rock fragments are encountered at finished pond bottom, under cut a minimum of 12" below basin grade and to a horizontal distance of at least 18" beyond each edge of the broken rock and ~~backfill with fine-grained ML or CL soils compacted to a firm condition.~~ This procedure should be performed under the supervision of the project Geotechnical Engineer.

In order to lower the infiltration rate into the sands with gravel, it is recommmended that the sands with gravel be undercut and replaced with a minimum of 12 inches of soils classified as SM per ASTM D-2487 or Sandy Loam per USDA classification. The fill soil should be compacted to at least 95 percent of its maximum dry density per ASTM D-698.

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

NOTE: CONTRACTOR SHALL ENSURE THAT THE S.W.M. FACILITY IS WATERTIGHT.

1. ALL PIPE CONNECTIONS AT STRUCTURES SHALL BE CEMENTED TO ENSURE WATERTIGHT CONNECTION.
2. ALL ACCMP PIPE JOINTS SHALL USE 12" WIDE HUGGER BAND WITH "O" RING GASKETS.
3. TEES AND ELBOWS TO BE FACTORY FABRICATED WELDS, ONE PIECE.
4. TRENCH BEDDING TO BE IN ACCORDANCE WITH RECOMMMENDATIONS FROM THE GEOTECHNICAL ENGINEER IN THE FIELD.
5. PROVIDE WATERTIGHT JOINTS AT ALL PIPE CONNECTIONS. (FOR REINFORCED CONCRETE PIPE, ASTM C-361, RUBBER GASKET PIPE).

OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, NRCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

MATERIALS SPECIFICATIONS FOR BIO-RETENTION			
MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SPECIFICATION	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL (2.5' TO 4' DEEP)	SAND 35-60% SILT 30-55% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	PEA GRAVEL: ASTM-D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL NO. 6 STONE: 2" TO 5"	
GEOTEXTILE	CLASS "C"-APPARENT OPENING SIZE (ASTM-D-4751), GRAB TENSILE STRENGTH (ASTM-D-4632), PUNCTURE RESISTACE (ASTM-D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	0.375" TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OOR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	3/8" PERF. @ 6" O.C., 4 HOLES PER ROW; MIN. OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; f'c=3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING (H-10 OR H-20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND (1' DEEP)	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT EXTENDED DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY

ROUTINE MAINTENANCE

1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 5/25/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 6/2/05
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/2/05
DIRECTOR — DATE

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

[signature] 4/21/05
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

[signature] 4/21/05
HOWARD S.C.D. — DATE

BY THE DEVELOPER:

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

[signature], Attorney-in-fact 4-14-05
SIGNATURE OF DEVELOPER — DATE

BY THE ENGINEER:

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

[signature] 4/14/05
SIGNATURE OF ENGINEER — DATE

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET, SPRINGFIELD, MASSACHUSETTS 01103, 413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET, SALT LAKE CITY, UTAH 84101, 801·531·8585 • FAX 801·531·8586

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

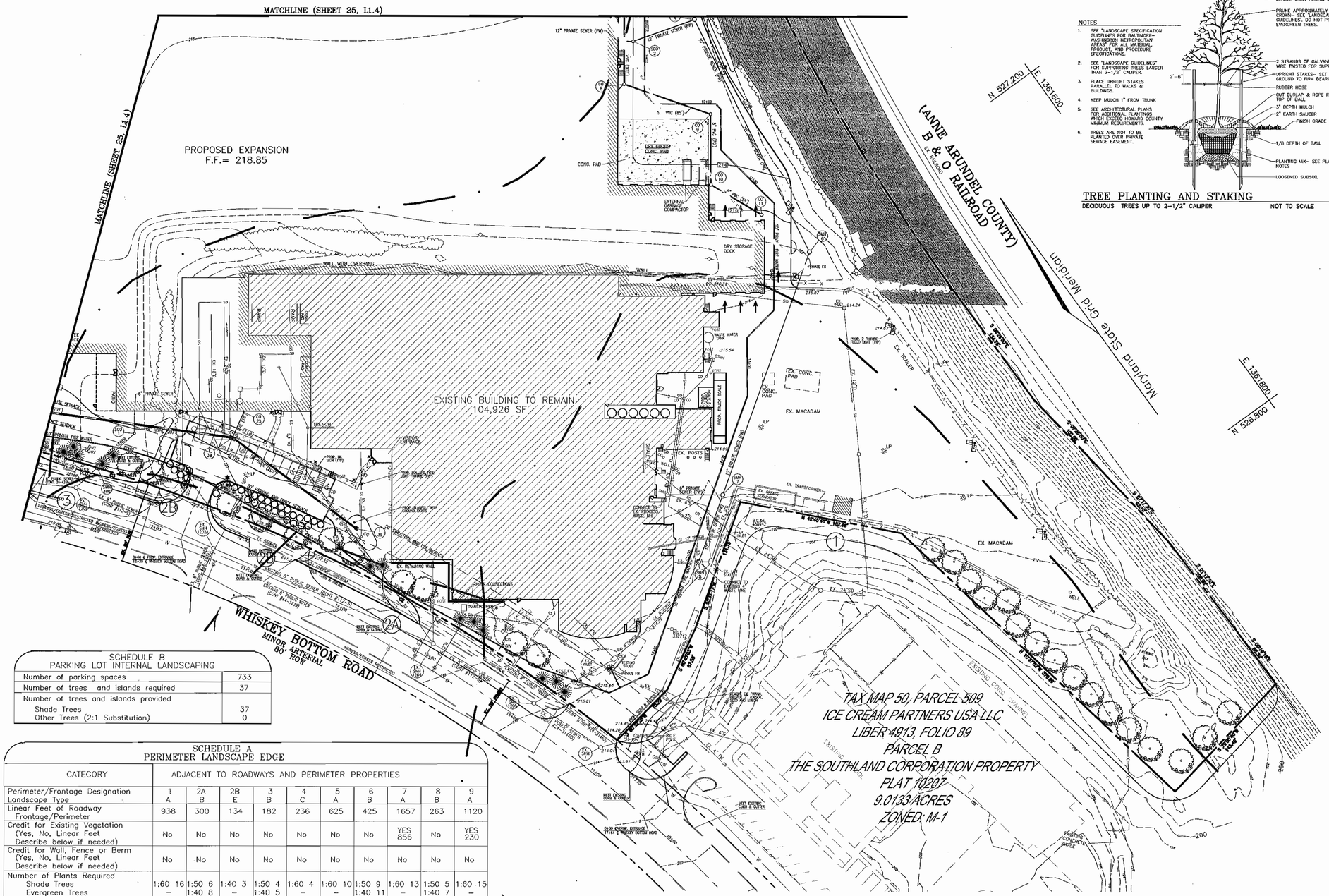
Dreyer's — FAMILY FAVORITE

STORMWATER MANAGEMENT NOTES

SCALE: 1"=40'
0 10' 20' 40' 80'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.8

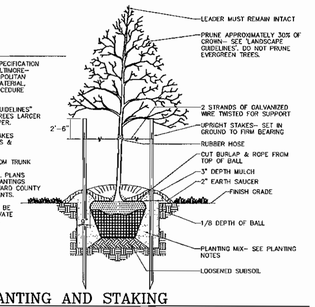


LANDSCAPE PLAN

SCALE: 1"=50'

NOTES:

1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.

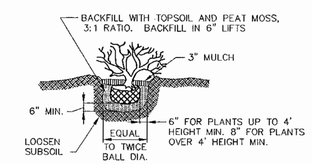


TREE PLANTING AND STAKING

DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE

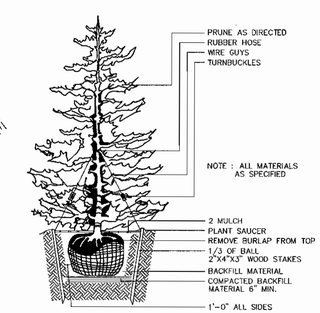
LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- M1B2 / M1D3 — SOILS BOUNDARY
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED LIGHT POLE
- QP / AR — PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- TD — PROPOSED SHRUBS
- 2 — LANDSCAPE PERIMETER



SHRUB PLANTING DETAIL

NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

Number of parking spaces	733
Number of trees and islands required	37
Number of trees and islands provided	
Shade Trees	37
Other Trees (2:1 Substitution)	0

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES									
Perimeter/Frontage Designation Landscape Type	1 A	2A B	2B E	3 B	4 C	5 A	6 B	7 A	8 B	9 A
Linear Feet of Roadway Frontage/Perimeter	938	300	134	182	236	625	425	1657	263	1120
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	YES 856	No	YES 230
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	No	No	No
Number of Plants Required										
Shade Trees	1:60 16	1:50 6	1:40 3	1:50 4	1:60 4	1:60 10	1:50 9	1:60 13	1:50 5	1:60 15
Evergreen Trees	–	1:40 8	–	1:40 5	–	–	1:40 11	–	1:40 7	–
Shrubs	–	–	1:4 34	–	–	–	–	–	–	–
Number of Plants Provided										
Shade Trees	16	6	3	4	4	10	9	13	5	15
Evergreen Trees	–	8	–	5	–	–	11	–	7	–
Other Trees (2:1 Substitution)	–	–	–	–	–	–	–	–	–	–
Shrubs (10:1 Substitution)	–	–	34	–	–	–	–	–	–	–
Describe Plant Substitution Credits Below if needed)										

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $42,270.00 FOR THE REQUIRED 122 SHADE TREES, 31 EVERGREEN TREES AND 34 SHRUBS.
3. SWM LANDSCAPING IS NOT REQUIRED FOR THIS SITE SINCE THE SWM FACILITY IS NOT VISIBLE FROM A PUBLIC ROAD.

LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	85	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2" -3"Cal.	B & B
PS	31	Pinus strobus Eastern White Pine	6' - 8' Ht.	B & B
QP	37	Quercus Phellos Willow Oak	2 1/2" -3"Cal.	B & B
TD	34	Taxus media 'Densiformis' Densiformis Yew	2 1/2' -3' Ht.	B & B

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/1/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Robert H. Vogel Attorney-in-Fact — SIGNATURE OF DEVELOPER — DATE 04-14-05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR DISCLOSED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
L1.3

HO. CO. DPZ SHEET:
24 OF 38

SDP-05-40

STREET TREE PLANT SCHEDULE				
KEY	QUAN.	BOTANICAL NAME / COMMON NAME	SIZE	CAT
QA	19	Quercus acutissima / Sawtooth Oak	2 1/2"-3" Cal.	B & B

BIORETENTION PLANTING REQUIREMENTS			
NBR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	2500 SF	57	57

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT).

SCHEDULE D - STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	191 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, 100%*
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(0 BUFFER) 0 SHADE TREES 0 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES	SEE BIORETENTION PLANT LIST*

*SURETY FOR BIORETENTION PROVIDED IN THE DED COST ESTIMATE

BIORETENTION PLANTING SCHEDULE				
KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	3	CLADRASTIS LUTEA 'SMOTCHSHADE' SMOTCHSHADE YELLOWWOOD	1 1/2"-2" CAL	B & B
	5	ILEX CRENATA COMPACTA DWARF INKBERRY	3 GALLON	CONT
	16	VIBURNUM TOMENTOSUM AMERICAN HORSEBUD CRANBERRY	3 GALLON	CONT
	16	KALMIA LATIFOLIA MOUNTAIN LAUREL	5 GALLON	CONT
	15	RHODODENDRON MAX. 'GLACIER' OR 'WHITE HORSEBUD' GLACIER OR WHITE ROSEBUD HARDY AZALEA	3 GALLON	CONT
	665	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — Attorney in fact — DATE 4-14-05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET, SALT LAKE CITY, UT 84101, 801-531-8585, FAX 801-531-8586
1391 MAIN STREET, SPRINGFIELD, MASSACHUSETTS 01103, 413-787-1785, FAX 413-787-1786

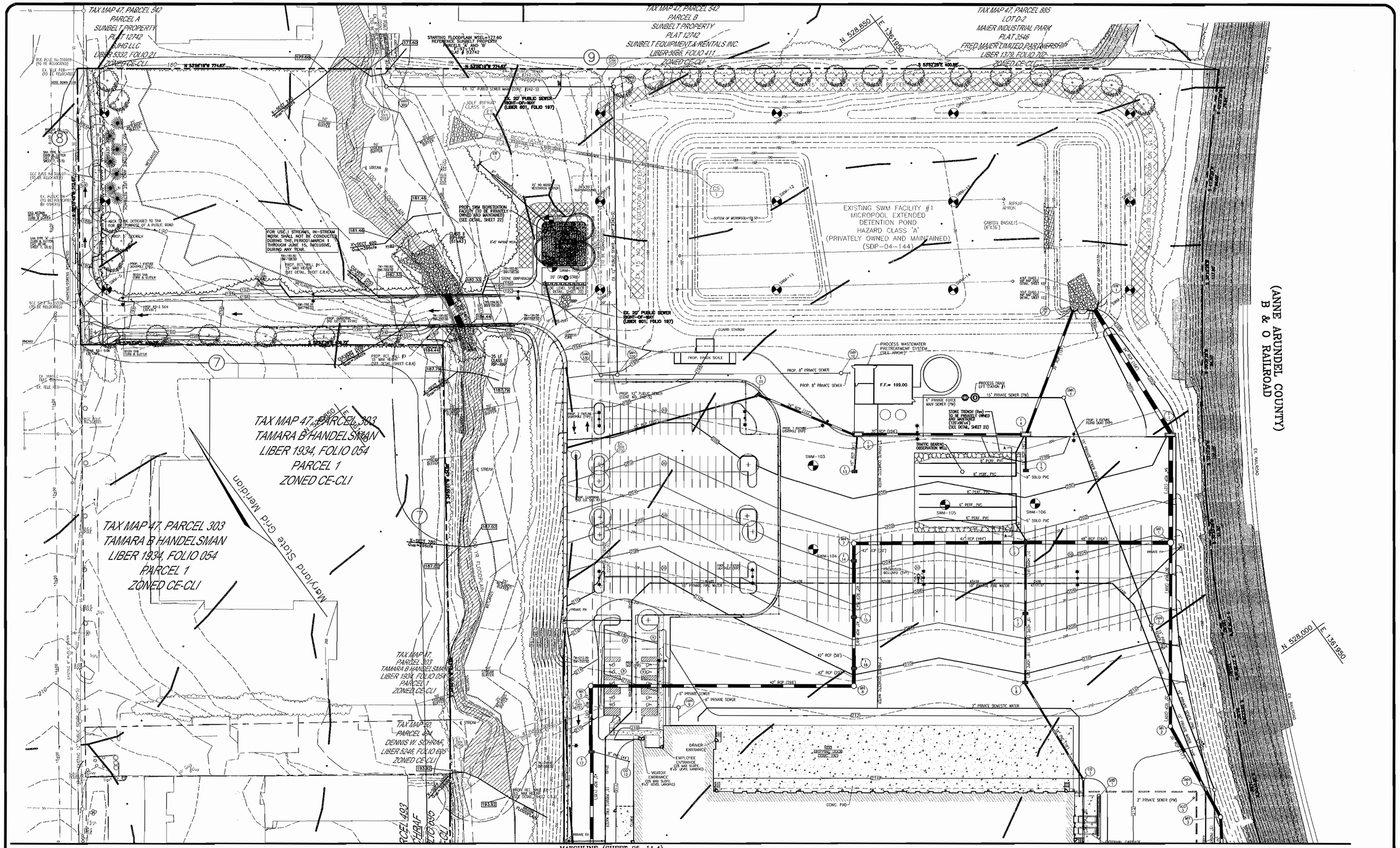
SCALE: 1"=40'
0 10 20 40 80

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED. NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO ANY OTHER PERSON OR ENTITY ACCORDING TO THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
L1.4

SHEET 25 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 04.14.05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

THE DENNIS GROUP, LLC
PLANNING ▲ ENGINEERING ▲ CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 ▲ FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 ▲ FAX 801-531-8586

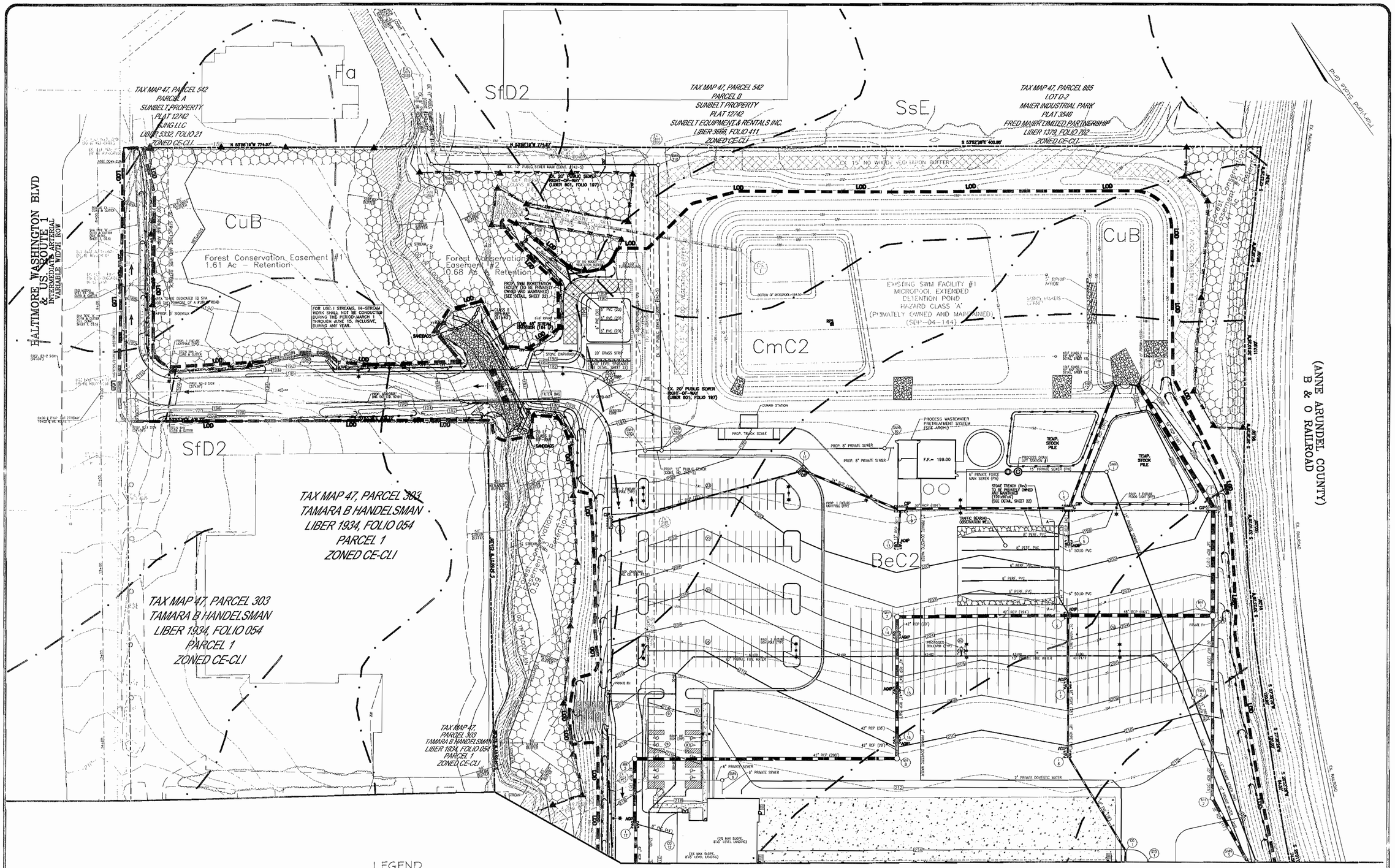
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP L.L.C. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC. AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
L1.5

HO. CO. DPZ SHEET:
26 OF 38

SDP-05-40



LEGEND

Forest Conservation Easement

FCE Signage

TPF Tree Protection Fence

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/4/05

Forest Conservation Plan by:

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
8318 FORREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL. (410) 750-1150 FAX (410) 750 7350
EMAIL: EXPLORATIONRES@CS.COM

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PETERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.9961

REV.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9030 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FOREST CONSERVATION PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 . FAX 413-787-1786

SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 . FAX 801-531-8586

SCALE: 1"=50'

© THE DENNIS GROUP, L.L.C.
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, IN WHOLE OR IN PART, FOR ANY OTHER PURPOSE WHATSOEVER, OR IN WHOLE OR IN PART TO ANY THIRD PARTY IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC. AND SHALL BE RETURNED UPON REQUEST

DRAWING NO.
L1.6

NO. CO. DPZ SHEET:
27 OF 38

SDP-05-40

N:\Dwgs\dwg\DRGY\R50611\0\vol\F 527.dwg, 6/13/2005 11:46:16 AM, mrlyh

MANAGEMENT NOTES FOR RETENTION AREAS

[illegible] to the conditions, schedules and [illegible] approved sediment control and erosion plan.

2. After the boundaries of the retention area have been staked and flagged and before any disturbance has taken place on-site, a preconstruction meeting at the construction site shall take place. The developer, contractor or project manager, and appropriate County inspectors shall attend.

3. Tree protection for all retention areas:

a. All retention areas within 50 feet of proposed construction activities shall be protected by highly visible, well anchored temporary protection devices (silt fence or blaze orange plastic mesh).

b. All protection devices shall be in place prior to any grading or land clearing.

c. All protection devices shall be properly maintained and shall remain in place until construction has ceased.

d. Attachment of signs, fencing or other objects to trees is prohibited.

e. No equipment, machinery, vehicles, materials or excessive pedestrian traffic shall be allowed within protected areas.

f. If the critical root zone (see detail) is affected by construction activities such as grade change, digging for foundations and roads or utility installation:

a. Prune roots with a clean cut using proper pruning equipment (see root pruning detail).

b. Water and fertilize as needed.

5. During construction phase, monitor and correct condition of retained trees for: soil compaction, root injury, flood conditions, drought conditions and other stress signs.

6. Post-Construction Phase:

a. Inspect existing trees (e.g. to the perimeter of disturbed limits for evidence of soil compaction, root injury, limb injury, or other stress signs and correct with proper management techniques such as root or limb pruning, soil aeration, fertilization, crown reduction or watering. Inspection and evaluation shall be performed by a licensed arborist.

b. Inspect for dead or dying trees or limbs which may pose safety hazard and remove.

c. No burial of discarded materials will occur onsite within the conservation areas.

d. No burning within 100 feet of wooded area.

e. All temporary forest protection structures will be removed after construction.

f. Following completion of construction, prior to use, the County inspector shall inspect the entire area.

LEGEND

- Forest Conservation Easement Afforestation Area
- △ FCE Signage
- TPF — Tree Protection Fence

ROOT PRUNING

1. Retention areas shall be set prior to construction
2. Boundaries of retention areas shall be flagged, and location of trench shall be specified by ERI Qualified Professional.
3. Roots shall be cut cleanly with root pruning equipment. Where roots 1" are found, trenching shall be done by air spade or hand tools. Roots >1" shall be cut with a hand saw.
4. Trench shall be immediately backfilled with soil removed or high organic content soil.
5. Any other techniques shall be approved by the ERI Qualified Professional before implementation.

CRITICAL ROOT ZONE

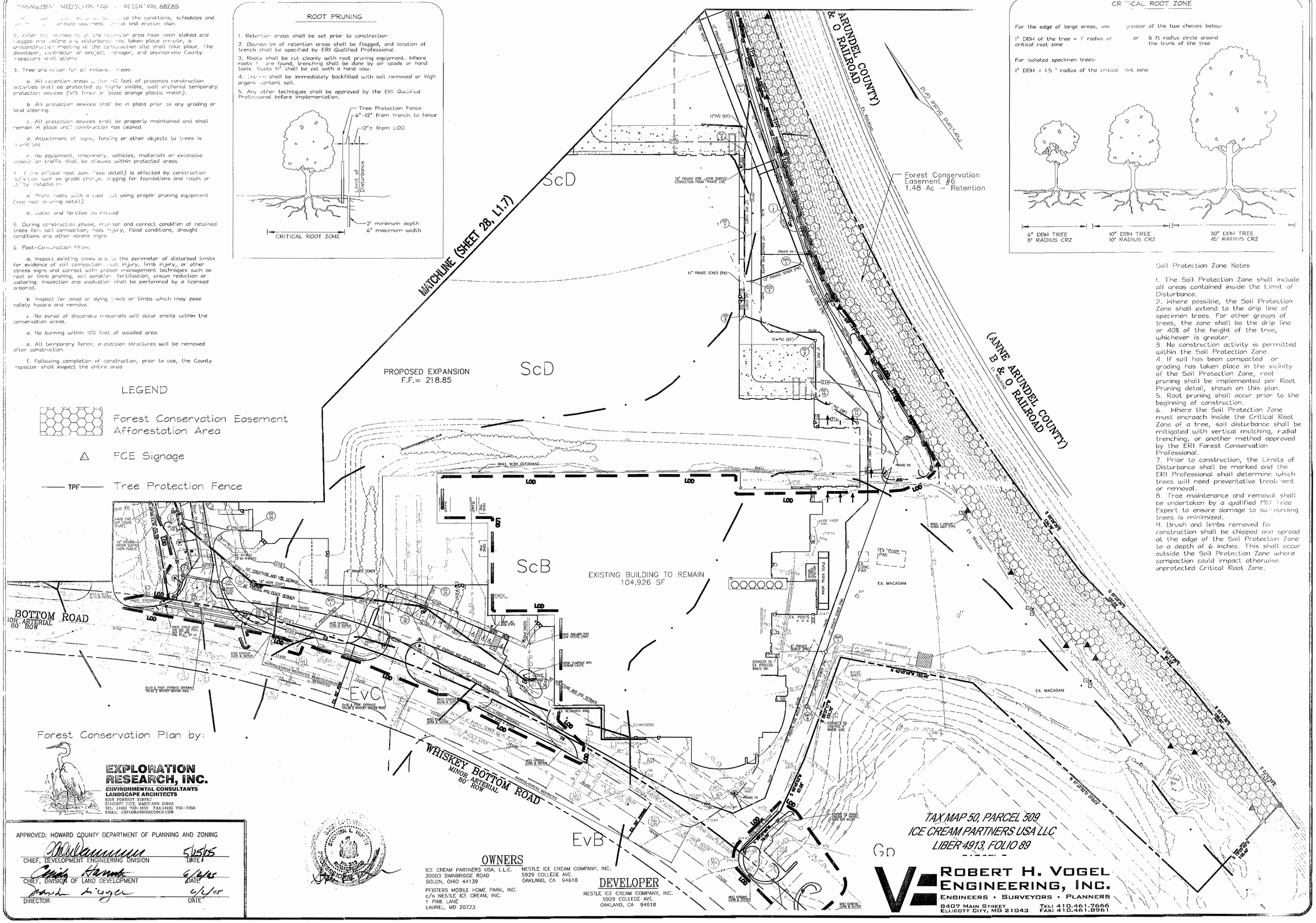
For the edge of large areas, use greater of the two choices below:

1" DBH of the tree = 1' radius of critical root zone

or 8 ft radius circle around the trunk of the tree

For isolated specimen trees:

1" DBH = 1.5 ' radius of the critical root zone



Soil Protection Zone Notes

1. The Soil Protection Zone shall include all areas contained inside the Limit of Disturbance.
2. Where possible, the Soil Protection Zone shall extend to the drip line of specimen trees. For other groups of trees, the zone shall be the drip line or 40% of the height of the tree, whichever is greater.
3. No construction activity is permitted within the Soil Protection Zone.
4. If soil has been compacted or grading has taken place in the vicinity of the Soil Protection Zone, root pruning shall be implemented per Root Pruning detail, shown on this plan.
5. Root pruning shall occur prior to the beginning of construction.
6. Where the Soil Protection Zone must encroach inside the Critical Root Zone of a tree, soil disturbance shall be mitigated with vertical mulching, radial trenching, or another method approved by the ERI Forest Conservation Professional.
7. Prior to construction, the Limits of Disturbance shall be marked and the ERI Professional shall determine which trees will need preventative treatment or removal.
8. Tree maintenance and removal shall be undertaken by a qualified MD Tree Expert to ensure damage to surrounding trees is minimized.
9. Brush and limbs removed for construction shall be chipped and spread at the edge of the Soil Protection Zone to a depth of 6 inches. This shall occur outside the Soil Protection Zone where compaction could impact otherwise unprotected Critical Root Zone.

Forest Conservation Plan by:

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
8318 FORREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX:(410) 750-7356
EMAIL: EXPLORATIONRES@CS.COM

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/24/05
DIRECTOR	DATE 6/27/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.9961

REV.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9930 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FOREST CONSERVATION PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 . FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 . FAX 801-531-8586

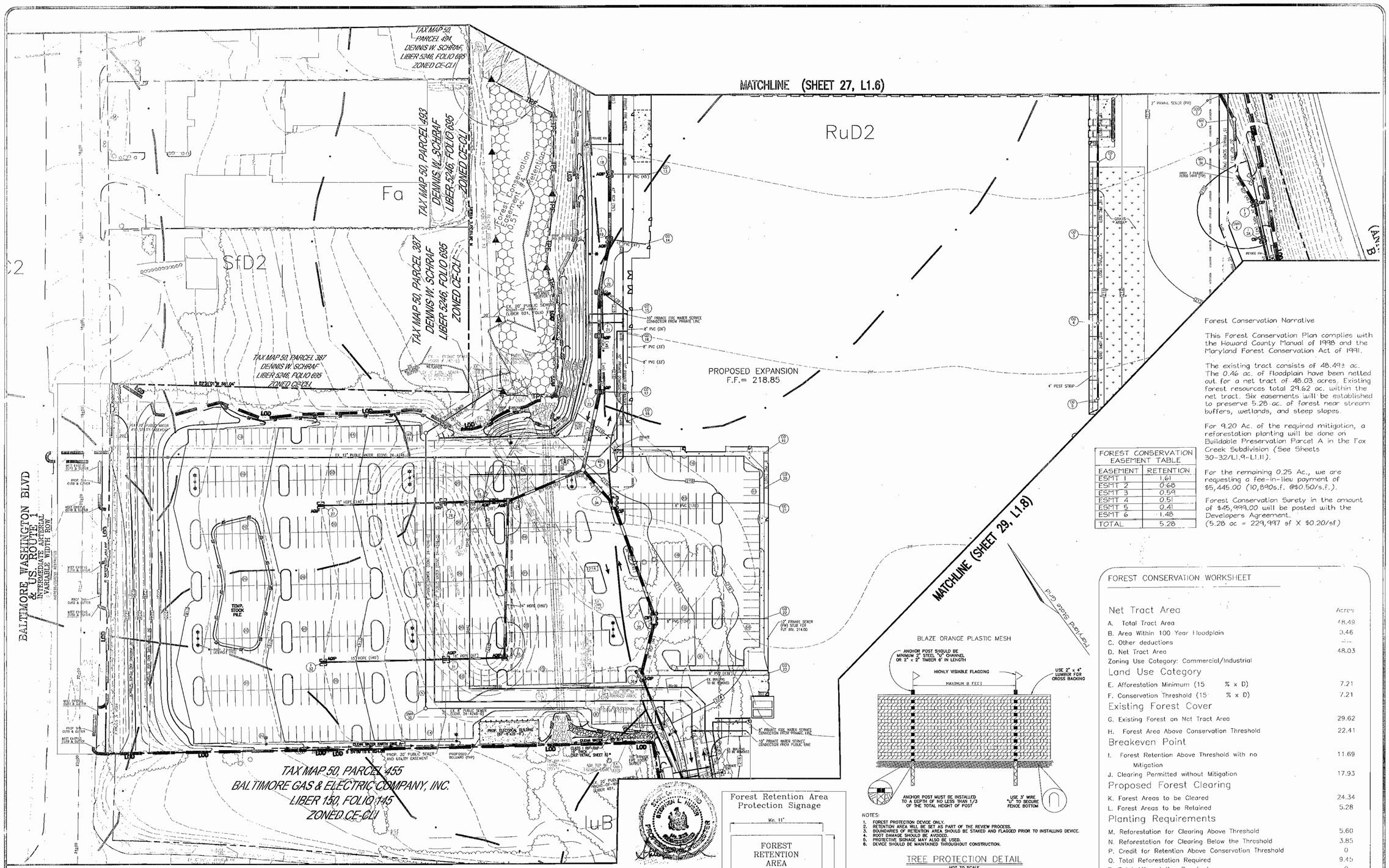
SCALE: 1"=50'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR DISCLOSED TO OTHERS WITHOUT WRITTEN CONSENT OF THE DENNIS GROUP LLC OR IN PART TO OTHERS EXCEPT TO THE EXTENT REQUIRED BY THE TERMS OF ANY AGREEMENT UNDER WHICH THIS DOCUMENT IS LOANED WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
L1.8

HO. CO. DPZ SHEET:
29 OF 38

SDP-05-40



FOREST CONSERVATION EASEMENT TABLE	
EASEMENT	RETENTION
ESMT 1	1.61
ESMT 2	0.68
ESMT 3	0.59
ESMT 4	0.51
ESMT 5	0.41
ESMT 6	1.48
TOTAL	5.28

Forest Conservation Narrative

This Forest Conservation Plan complies with the Howard County Manual of 1998 and the Maryland Forest Conservation Act of 1991.

The existing tract consists of 48.49± ac. The 0.46 ac. of floodplain have been netted out for a net tract of 48.03 acres. Existing forest resources total 29.62 ac. within the net tract. Six easements will be established to preserve 5.28 ac. of forest near stream buffers, wetlands, and steep slopes.

For 9.20 Ac. of the required mitigation, a reforestation planting will be done on Buildable Preservation Parcel A in the Fox Creek Subdivision (See Sheets 30-32/L1.9-L1.11).

For the remaining 0.25 Ac., we are requesting a fee-in-lieu payment of $5,445.00 (10,890s.f. @$0.50/s.f.).

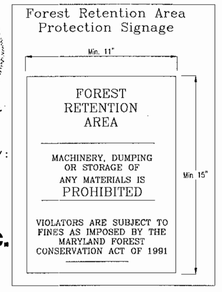
Forest Conservation Surety in the amount of $45,999.00 will be posted with the Developers Agreement.
(5.28 ac = 229,997 sf X $0.20/sf)

FOREST CONSERVATION WORKSHEET	
Net Tract Area	Acres
A. Total Tract Area	48.49
B. Area Within 100 Year Floodplain	0.46
C. Other deductions	---
D. Net Tract Area	48.03
Zoning Use Category: Commercial/Industrial	
Land Use Category	
E. Afforestation Minimum (15 % x D)	7.21
F. Conservation Threshold (15 % x D)	7.21
Existing Forest Cover	
G. Existing Forest on Net Tract Area	29.62
H. Forest Area Above Conservation Threshold	22.41
Breakeven Point	
I. Forest Retention Above Threshold with no Mitigation	11.69
J. Clearing Permitted without Mitigation	17.93
Proposed Forest Clearing	
K. Forest Areas to be Cleared	24.34
L. Forest Areas to be Retained	5.28
Planting Requirements	
M. Reforestation for Clearing Above Threshold	5.60
N. Reforestation for Clearing Below the Threshold	3.85
P. Credit for Retention Above Conservation Threshold	0
Q. Total Reforestation Required	9.45
R. Total Afforestation Required	0
S. Total Reforestation and Afforestation Requirement	9.45

NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL
NOT TO SCALE

Forest Retention Area Protection Signage



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

LEGEND

Forest Conservation Easement

FCE Signage

TPF Tree Protection Fence

Forest Conservation Plan by:

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
8318 FOREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL. (410) 750-8150 FAX (410) 750-7350
EMAIL: EXPLORATIONRESINCS.COM

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLA
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410-4
FAX: 410-4

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9050 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FOREST CONSERVATION PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

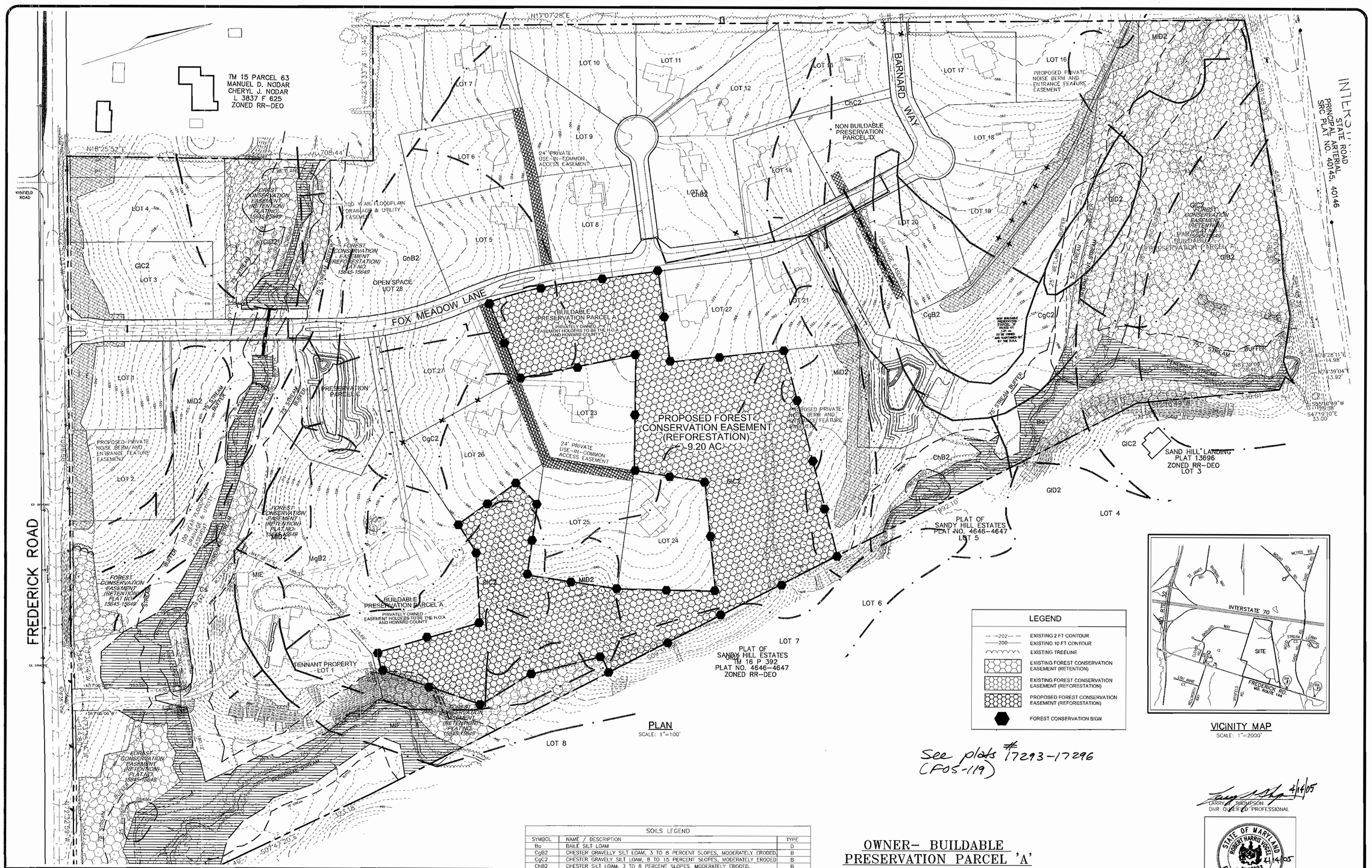
SCALE: 1"=50'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION EXCLUSIVE TO THE DENNIS GROUP, LLC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE DIVULGED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC. AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
L1.7

HO. CO. DPZ SHEET:
28 OF 38

SDP-05-40



PLAN
SCALE: 1"=100'

LEGEND	
202	EXISTING 2 FT CONTOUR
200	EXISTING 10 FT CONTOUR
	EXISTING TREELINE
	EXISTING FOREST CONSERVATION EASEMENT (RETENTION)
	EXISTING FOREST CONSERVATION EASEMENT (REFORESTATION)
	PROPOSED FOREST CONSERVATION EASEMENT (REFORESTATION)
	FOREST CONSERVATION SIGN

VICINITY MAP
SCALE: 1"=2000'

See plats #17293-17296
(F05-119)

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	TYPE
Ba	BAILE SILT LOAM	D
CgB2	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED.	B
CgC2	CHESTER GRAVELY SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED.	B
ChC2	CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELT ERODED.	B
Cs	COMUS SILT LOAM.	B
GlB2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED.	B
GlC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED.	B
GlD2	GLENELG LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED.	B
GnB2	GLENVILLE SILT LOAM,3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MlD2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATLY ERODED.	B
MlE	MANOR LOAM, 25 TO 45 PERCENT SLOPES.	B
MgB2	MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B

NOTE:
-HOWARD SOIL SURVEY, MAP NUMBER 8

OWNER- BUILDABLE PRESERVATION PARCEL 'A'

RICHARD W. TENNANT
MARY L. TENNANT (DECEASED)
12256 FREDERICK ROAD
ELLICOTT CITY, MARYLAND
21042

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 4-14-05

LARRY A. THOMPSON
DNR QUALIFIED PROFESSIONAL
4/14/05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4-14-05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

OFF-SITE PLANTING PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 • FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED IN WHOLE OR IN PART, OR INFORMATION FURNISHED IN WHOLE OR IN PART TO OTHERS IN ANY MANNER INCONSISTENT WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
L1.9

HO. CO. DPZ SHEET:
30 OF 38

SDP-05-40

FOREST CONSERVATION NARRATIVE

THIS FOREST CONSERVATION PLAN WAS PREPARED IN ACCORDANCE WITH THE HOWARD COUNTY FOREST CONSERVATION MANUAL.

THIS PLAN PROVIDES OFF-SITE PLANTING FOR DREYERS GRAND ICE CREAM. REQUIRED PLANTING IS 9.45 ACRES AND WILL BE FULFILLED BY PLANTING 9.20 ACRES WITHIN A FOREST CONSERVATION EASEMENT LOCATED ON THE FOX CREEK SUBDIVISION, PRESERVATION PARCEL A, TAX MAP 15; AND BY A FEE-IN-LIEU PAYMENT OF $5,4550.00 FOR THE REMAINING 0.25 ACRES.

THE 9.20 ACRE PLANTING AREA IS LOCATED ON PRESERVATION PARCEL A AND BORDERS LOTS 22-26 AND PRESERVATION PARCEL B. THE AREA IS CONTIGUOUS WITH AN EXISTING FOREST RETENTION EASEMENT ONSITE AND TREELINE ON THE ADJACENT PROPERTY. THIS AREA WILL EXPAND THE EXISTING FOREST HABITAT WHICH INCLUDES WETLANDS AND A PERRENIAL STREAM AND WILL PROVIDE A BUFFER BETWEEN THE EXISTING DEVELOPMENT AND ENVIRONMENTALLY SENSITIVE AREAS.

PLANTINGS SHALL OCCUR USING THE STOCK SIZE SHOWN ON THE PLANTING SCHEDULE. HOWEVER IF DUE TO SEASONAL VARIABILITY THE PRESCRIBED SIZE OR SPECIES ARE NOT AVAILABLE, SUBSTITUTIONS MAY BE MADE IF APPROVED BY HOWARD COUNTY PRIOR TO INSTALLATION.

THE TOTAL FOREST CONSERVATION OBLIGATION MEET ON THIS SITE IS 9.20 ACRES, WITH A TOTAL FOREST CONSERVATION SURETY AMOUNT OF $200,376.00. (400,752 SF X $0.50 = $200,376.00)

PLANT SELECTION AND DENSITY SPACING REQUIREMENTS

PLANTING MATERIAL SIZE AND DENSITY PLANTING:

PLANTING SIZE AND DENSITY MAY VARY WITH A COMBINATION OF PLANTING STOCK WHICH WILL BE DETERMINED AT THE TIME OF PLANTING. PLANTING QUANTITY AND SPACING ARE BASED ON SQUARE FOOTAGE CREDIT, WHICH VARIES BY MATERIAL SIZE. A TOTAL OF 43,560 SFOF PLANTING CREDIT MUST BE FULFILLED FOR EACH ACRE PLANTED. THIS CREDIT CAN BE FULFILLED WITH ANY COMBINATION OF MATERIAL SIZE IN ACCORDANCE WITH THE FOLLOWING CHART.

PLANT MATERIAL SIZE TABLE

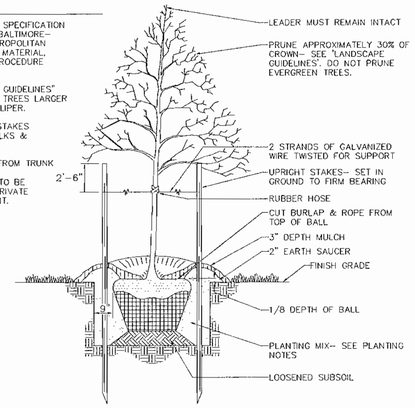
MATERIAL SIZE	SPACING	TPA	SF CREDIT PER PLANT	COMMENTS
2" CALIPER TREES	20' X 20'	100	435.6	B & B
1" CALIPER TREES	15' X 15'	200	217.8	B & B
SEEDLINGS OR WHIPS	11' X 11'	350	125	CONTAINER 1-3 GAL. W/ TREE SHELTERS
SEEDLINGS	8' X 8'	700	62	BARE ROOT OR CONTAINER GROWN

FOREST CONSERVATION EASEMENT: 9.20 AC (200 TPA)

QTY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	SPACING	NOTES
263	ACER RUBRUM	RED MAPLE	1" CAL.	15' O.C.	1" CAL. BALLED AND BURLAPED
263	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	1" CAL.	15' O.C.	
263	PLATANUS OCCIDENTALIS	SYCAMORE	1" CAL.	15' O.C.	
263	QUERCUS PALUSTRIS	PIN OAK	1" CAL.	15' O.C.	
263	CERCIS CANADENSIS	REDBUD	1" CAL.	15' O.C.	
263	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	1" CAL.	15' O.C.	
262	PINUS TAEDA	LOBLOLLY PINE	1" CAL.	15' O.C.	
1840	TOTAL PLANTINGS				

NOTES

1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



TREE PLANTING AND STAKING

TREES UP TO 2--1/2" CALIPER NOT TO SCALE

LONG TERM FOREST MANAGEMENT

PLANTED AREAS MAY BE MANAGED FOR AESTHETICS, WILDLIFE, TIMBER PRODUCTS AND WATERSHED PROTECTION IN ACCORDANCE WITH SOUND FOREST MANAGEMENT PRACTICES. CONTROL OF INVASIVES SUCH AS MULTIFLORA ROSE AND HONEYSUCKLE WILL BE CRUCIAL DURING THE ESTABLISHMENT YEARS. A FOREST MANAGEMENT PLAN SHOULD BE DEVELOPED BY A MARYLAND REGISTERED FORESTER FOR RECOMMNEDATIONS BEYOND THE INITIAL 5-YEAR ESTABLISHMENT PERIOD.

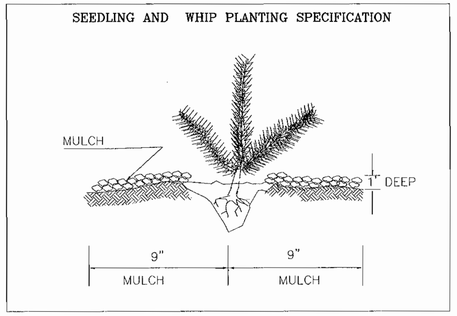
REFORESTATION MONITORING NOTES

1. MONTHLY VISITS DURING THE FIRST GROWING SEASON ARE TO ASSESS THE SUCESS OF THE PLANTINGS AND TO DETERMINE IF SUPPLEMENTAL WATERING, PEST CONTROL OR OTHER ACTIONS ARE NECESSARY. EARLY SPRING VISITS WILL DOCUMENT WINTER KILL AND AUTUMN VISITS WILL DOCUMENT SUMMER KILL.
2. THE MINIMUM SURVIVAL RATE SHALL BE 75% OF THE TOTAL NUMBER OF TREES PLANTED PER ACRE AT THE END OF THE TWO YEAR MAINTENANCE PERIOD. WILD TREE SEEDLINGS FROM NATURAL REGENERATION ON THE PLANTING SITE MAY BE COUNTY UP TO 50% TOWARD THE TOTAL SURVIVAL NUMBER IF THEY ARE HEALTHY NATIVE SPECIES AT LEAST 12 INCHES TALL.
3. SURVIVAL WILL BE DETERMINED BY A STRATIFIED RANDOM SAMPLE OF THE PLANTINGS. THE SPECIES COMPOSITION OF THE SAMPLE POPULATION SHOUD BE PROPERTIONATE TO THE AMOUNT OF EACH SPECIES IN THE ENTIRE PLANTING TO BE SAMPLED.
4. EFFECTIVE MONITORING WILL ASSESS PLANT SURVIVABILITY DURING THE FIRST GROWING SEASON AND MAKE RECOMMENDATIONS FOR REINFORCEMENT PLANTING IF REQUIRED AT THE TIME.

REFORESTATION AREA PLANTING NOTES

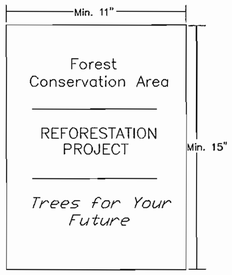
1. INTIAL PLANTING INSPECTION AND CERTIFICATION REQUIRED.
2. REFORESTATION AREAS MAY BE PLANTED AS SOON AS REASONABLE TO DO SO. LATE WINTER – EARLY SPRING PLANTINGS ARE PREFERRED. EARLIEST PLANTING DATES WILL VARY FROM YEAR TO YEAR BUT PLANTING MAY GENERALLY BEGIN AS SOON AS THE GROUND IS NO LONGER FROZEN. ALTERNATE PLANTING DATES MAY BE CONSIDERED AS CONDITIONS WARRANTS.
3. SOIL AMENDMENTS AND FERTILIZATION RECOMMENDATIONS WILL BE MADE BASED UPON THE RESULTS OF SOIL ANALYSIS FOR NITROGEN, PHOSPHORUS, POTASSIUM, ORGANIC MATTER CONTENT AND PH. I IF REQUIRED, FERTILIZER WILL BE PROVIDED USING A SLOW RELEASE, SOLUBLE 16-8-16 ANALYSIS DESIGNED TO LAST 5-8 YEARS CONTAINED IN POLYETHYLENE PERFORATED BAGS SUCH AS MANUFACTURED BY ADCO WORKS, P.O. BOX 310 HOLLINS, NY 11423 OR APPROVED EQUAL.
4. PLANT MATERIALS SHALL BE PLANTED IN ACCORDANCE WITH THE PLANTING DIAGRAM, PLANTING DETAILS AND PLANTING SCHEDULE.
5. PLANT STOCK MUST BE PROTECTED FROM DESICCATION AT ALL TIMES PRIOR TO PLATING. MATERIALS HELD FOR PLANTING SHALL BE MOISTENED AND PLACED IN COOL SHADED AREAS UNTIL READY FOR PLACEMENT.
6. PLANTING MATERIALS SHALL BE NURSERY GROWN AND INSPECTED PRIOR TO PLANTING. PLANTS NOT CONFORMING TO THE AMERICAN STANDARDS FOR NURSERY STOCK SPECIFICATIONS FOR SIZE, FORM, VIGOR, OR ROOTS, OR DUE TO TRUNK WOUNDS, BREAKAGE, DESICCATION, INSECT OR DISEASE MUST BE REPLACED.
7. ALL STOCK TO BE CONTAINER GROWN WITH DEER REPELLENT TABLETS IN GROWING MEDIUM SUCH AS "REPELLEX."
8. NEWLY PLANTED TREES MAY REQUIRE WATERING AT LEAST ONCE PER WEEK DURING THE FIRST GROWING SEASON DEPENDING ON RAINFALL IN ORDER TO GET ESTABLISHED. THE INITIAL PLANTING OPERATION SHOULD ALLOW FOR WATERING DURING INSTALLATION TO COMPLETELY SOAK BACKFILL MATERIALS.
9. MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALCOHOL.
10. PLANTING HOLES SHOULD BE EXCAVATED TO A MINIMUM DIAMETER OF 2.5 TO 3 TIMES THE DIAMETER OF THE ROOT BALL OR CONTAINER. MECHANICAL AUGURING IS PREFERRED WITH SCARIFICATION OF THE SIDES OF EACH HOLE.

SEEDLING AND WHIP PLANTING SPECIFICATION



NOTE: 1). PLANT MIX TO BE 1/3 PIONEER & 2/3 MID TO LATE SUCCESSIONAL SPECIES
2). PLANT LARGER STOCK AND EVERGREENS AROUND PERIMETER TO PROTECT INTERIOR SMALLER STOCK.
3). WHEN SHRUBS ARE SPECIFIED, PLANT THEM IN CLUSTERS.
4). DO NOT PLANT TREES IN A GRID PATTERN.

REFORESTATION PROTECTION SIGNAGE



NOTE:
1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED APPROXIMATELY 100' FEET APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/3/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 4-14-05

LARRY V. THOMPSON
DNR QUALIFIED PROFESSIONAL — 4/15/05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

OFF-SITE PLANTING NOTES AND DETAILS

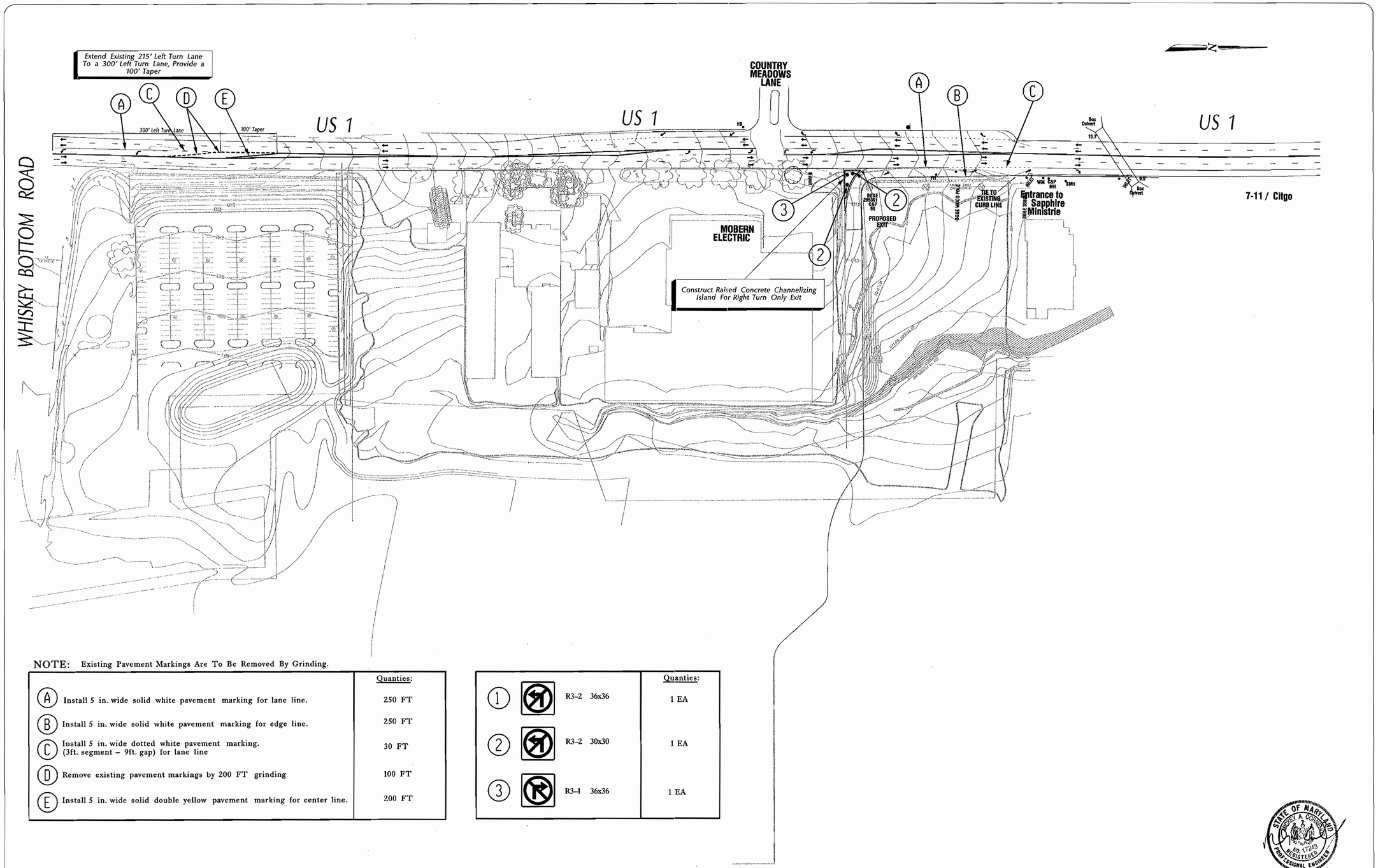
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET, SPRINGFIELD, MASSACHUSETTS 01103, 413-787-1785, FAX 413-787-1786
136 SOUTH MAIN STREET, SALT LAKE CITY, UTAH 84101, 801-531-8585, FAX 801-531-8586

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC AND SHALL BE RETURNED UPON REQUEST

DRAWING NO.
L1.10

HO. CO. DPZ SHEET:
31 OF 38

SDP-05-40



NOTE: Existing Pavement Markings Are To Be Removed By Grinding.

		Quanties:
A	Install 5 in. wide solid white pavement marking for lane line.	250 FT
B	Install 5 in. wide solid white pavement marking for edge line.	250 FT
C	Install 5 in. wide dotted white pavement marking. (3ft. segment – 9ft. gap) for lane line	30 FT
D	Remove existing pavement markings by 200 FT grinding	100 FT
E	Install 5 in. wide solid double yellow pavement marking for center line.	200 FT

			Quanties:
1		R3-2 36x36	1 EA
2		R3-2 30x30	1 EA
3		R3-1 36x36	1 EA

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/25/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/2/05

DIRECTOR — DATE 6/2/05

2003-0917\dryers-sign&mark-A12-14.dgn

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

Robert H. Vogel Engineering, Inc.
Engineers · Surveyors · Planners
8407 Main Street
Ellicott City, Maryland 21043
Tel: 410.461.7666 Fax: 410.461.8961

STATE OF MARYLAND — ROBERT A. CORNELIUS — No. 17243 — REGISTERED PROFESSIONAL ENGINEER

REL.	DATE	BY	APP.	RELEASED FOR ...

9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 Main Street
Springfield, Massachusetts 01103
413-787-1785 FAX 413-787-1786
135 South Main Street
Salt Lake City, Utah 84101
801-531-8585 FAX 801-531-8586

The Traffic Group

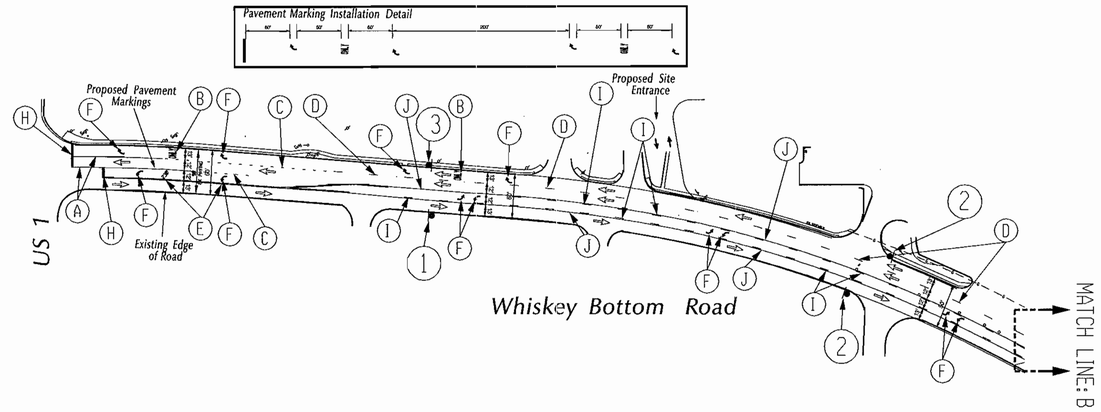
SCALE: 1"=80'
0 10' 20' 40' 80'

©THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC. AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.9

HO. CO. DPZ SHEET:
32 OF 38

SDP-05-40



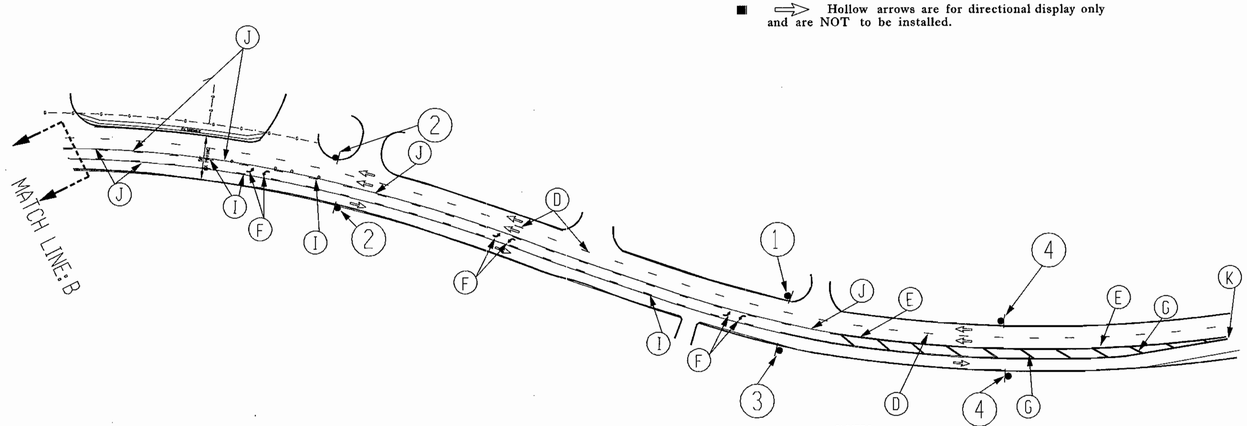
Legend:

- (A) Install 5 in. wide solid white pavement marking for lane line.
- (B) Install white preformed pavement marking symbol "ONLY"
- (C) Install 5 in. wide dotted white pavement marking. (2ft. segment – 6ft. gap) for lane line (Puppy Tracks)
- (D) Install 5 in. wide white pavement marking. (10ft. segment – 30ft. gap) for lane line
- (E) Install 5 in. wide solid double yellow pavement marking for center line.
- (F) Install white preformed pavement marking arrow.
- (G) Install 12 in. wide solid yellow pavement marking for hatch area. (25' apart at 45 angle)
- (H) Install 24 in. wide white pavement marking for stop bar. (If Applicable)
- (I) Install 5 in. wide yellow pavement marking. (10ft. segment – 30ft. gap) for lane line
- (J) Install 5 in. wide solid yellow pavement marking for center LTL line.
- (K) Tie into existing

Sign	Sign No.#	Size	Quantity
(1) BEGIN CENTER LANE ONLY	R3-9b		2
(2) CENTER LANE ONLY	R3-9b	36" x 48"	4
(3) END CENTER LANE ONLY	R3-9b		2
(4) Remove existing sign (see note for additional signs to be removed)			

NOTES:

- Contractor must contact Howard County Department of Public Works Traffic Engineer (410-313-5752) 72 hours before beginning any work.
- All pavement markings and signage shall be layed-out in field and /or approved by Howard County Department of Public Works Traffic Engineer (410-313-5752) prior to installation.
- All existing signs to be removed will be determined in the field by Howard County Department of Public Works Traffic Engineer.
- Existing pavement markings will be removed by grinding method.
- Pavement markings to be Thermo-Plastic or Howard County approved preformed pavement marking tape.
- Sign Posts: All sign post used for traffic control signs installed in the county Right-of-Way shall be mounted on a 2" galvanized steel, perforated, square tube post (14 gauge) inserted into a 2-1/2" galvanized steel, perforated, square tube sleeve (12 gauge) -3" long. A galvanized steel pole cap shall be mounted on top of each post.
- ⇨ Hollow arrows are for directional display only and are NOT to be installed.



OWNERS

DEVELOPER

Robert H. Vogel Engineering, Inc.
Engineers · Surveyors · Planners
6487 Main Street
Ellicott City, Maryland 21043
Tel: 410.465.7666 Fax: 410.465.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/25/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/2/05

DIRECTOR — DATE 6/2/05

2003-0917\dryers-sign&mark-B(v-7).dgn

REL.	DATE	BY	APP.	RELEASED FOR ...

9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

1391 Main Street
Springfield, Massachusetts 01103
413-787-1785 FAX 413-787-1786

135 South Main Street
Salt Lake City, Utah 84101
801-531-8585 FAX 801-531-8586

The Traffic Group

SCALE: 1"=80'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC, AND SHALL BE RETURNED UPON REQUEST.

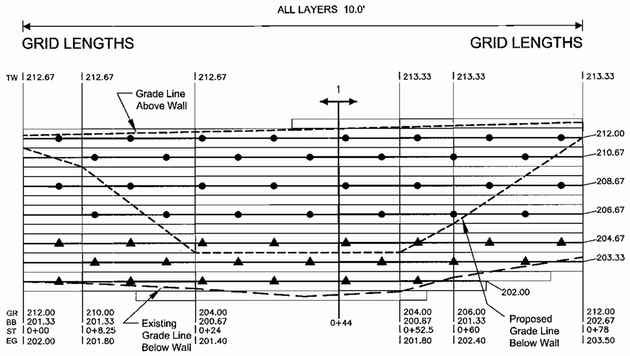
STATE OF MARYLAND — MICKEY A. CORNELIUS — NO. 17243 — REGISTERED PROFESSIONAL ENGINEER

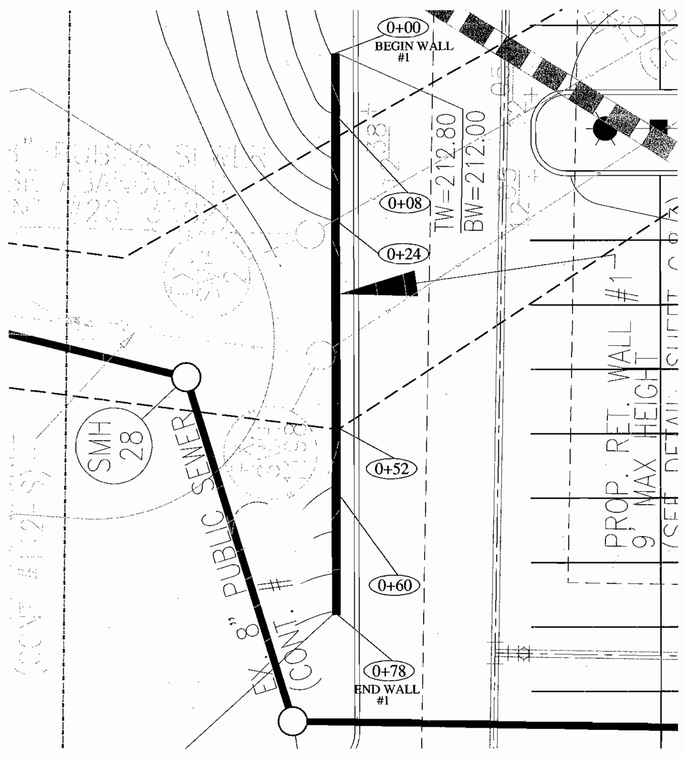
DRAWING NO.
C6.10

HO. CO. DPZ SHEET:
33 OF 38

SDP-05-40

WALL #1 (by parking lot at end of wetlands)



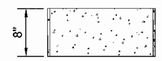


SCALE: 1" = 10'

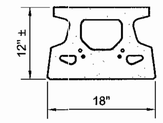
TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION
EG = EXISTING GRADE

GRID KEY: MIRAFI 3XT —●—
MIRAFI 5XT —▲—

SCALE: HORIZONTAL 1" = 10'
VERTICAL 1" = 5'



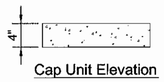
Compac II Elevation



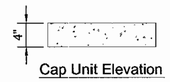
Compac II Plan

Compac II Unit

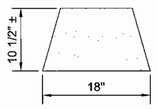
* Dimensions May Vary by Region



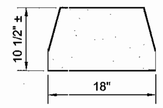
Cap Unit Elevation



Cap Unit Elevation



Cap Unit Plan



Cap Unit Plan

Universal Cap Unit Option

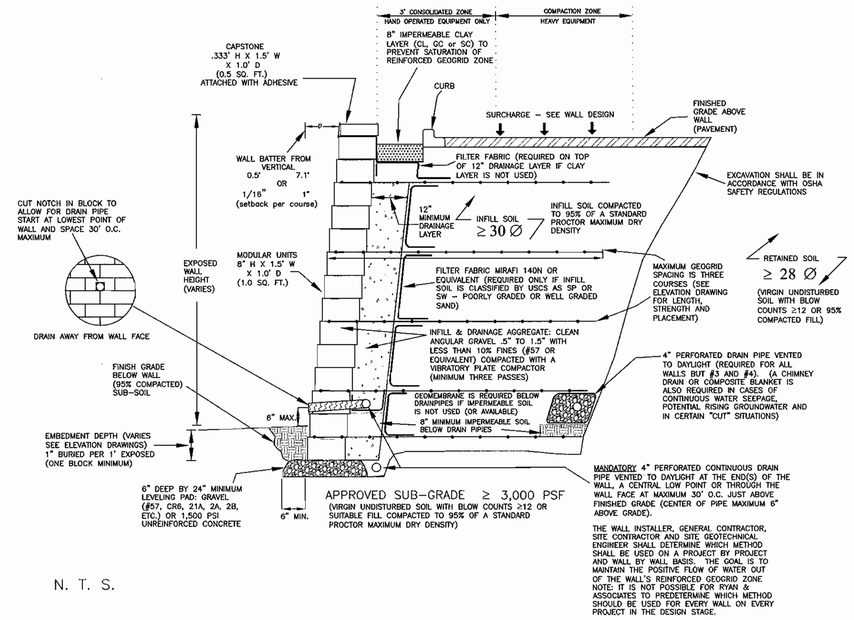
* Dimensions & Availability Will Vary by Region

Straight Split Cap Unit Option

* Dimensions & Availability Will Vary by Region

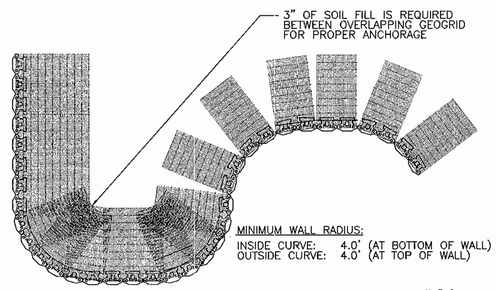
KEYSTONE COMPAC

WALL SECTION WITH SURCHARGE



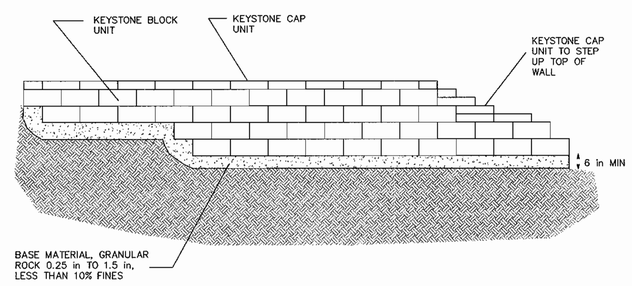
N. T. S.

REINFORCEMENT PLACEMENT FOR INSIDE AND OUTSIDE CURVES



GEOGRID INSTALLATION ON CURVES

N. T. S.



KEYSTONE STEP DOWN TYPICAL DETAIL

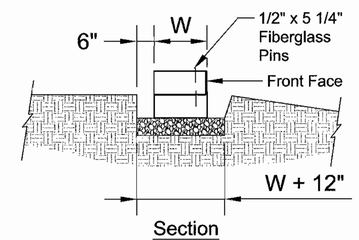
MATERIAL ESTIMATE*:				BLOCK :	Keystone Compac II		GEOGRID:	Mirafi 3XT, 5XT & 7XT		
WALL	TOTAL SQ. FT.	(1.0 S.F.) BLOCK	(.5 S.F.) CAPS**	PINS	SQ YDS 3XT GRID	SQ YDS 5XT GRID	SQ YDS 7XT GRID	CU. YDS. DRAIN GRAVEL	CU. YDS. LEVELING PAD GRAVEL	FT. WALL LENGTH
1	972	945	54	1,786	400	285	0	57	6	78
2	5,056	4,860	392	8,980	2,675	1,520	0	299	43	555
3	1,096	1,080	72	1,989	505	255	125	65	8	98
4	3,117	3,015	204	5,685	1,400	840	285	184	20	259
Totals	10,241	9,880	722	18,440	4,980	2,900	410	605	77	990

* Ryan & Associates is not responsible for extras or shortages based on this take-off. It is the contractor's responsibility to verify the accuracy of this design by reviewing the site/ grading plan for this project.

** Includes one extra cap per step down on top of the wall for double capping.

revised 04/01/2005

Totals include 2% extra for block and caps, 15% for geogrid and 5% for gravel.



Section

Leveling Pad Detail

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/3/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21586 — REGISTERED PROFESSIONAL ENGINEER — 04/04/05

William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	04/01/05	JWP	DKS	Revise Sheet Number, Take-off and Load Table

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
1391 MAIN STREET
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8383 • FAX 801-531-8586

SCALE: 1"=40'

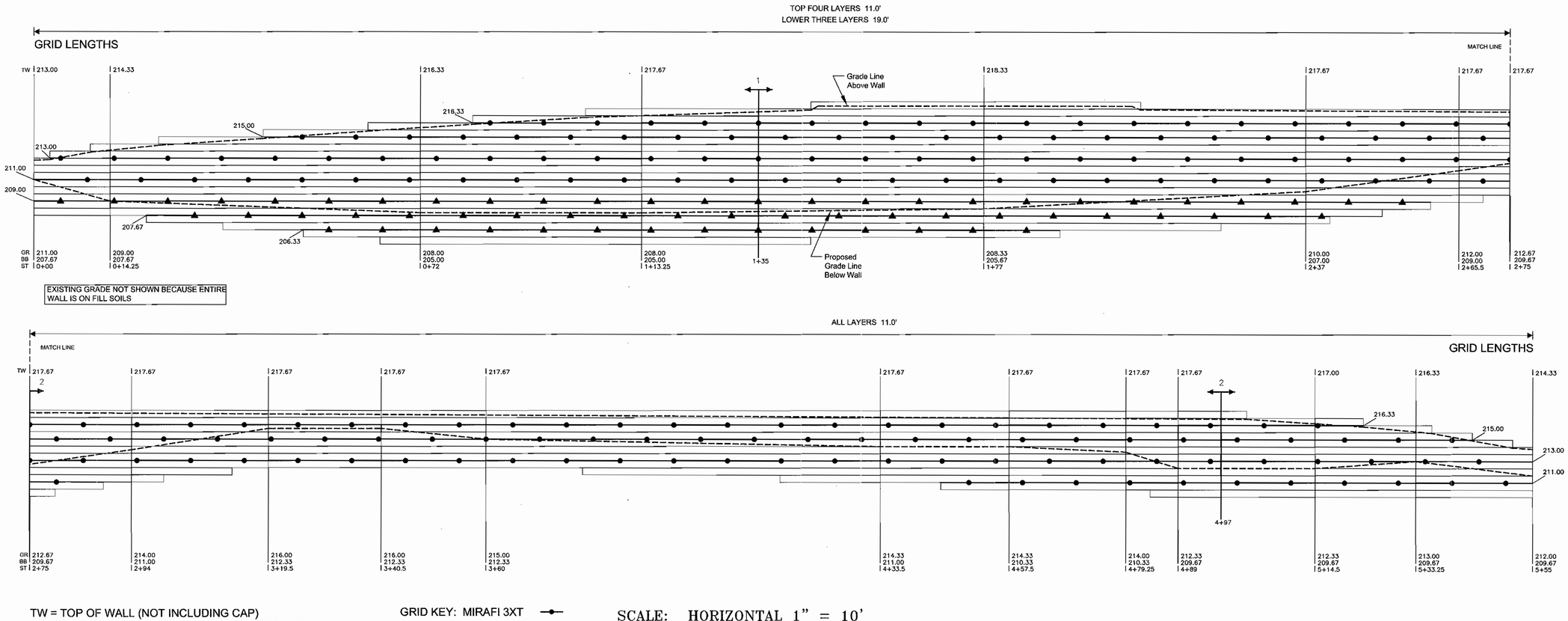
© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED. SUCH SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.11

HO. CO. DPZ SHEET:
34 OF 38

SDP-05-40

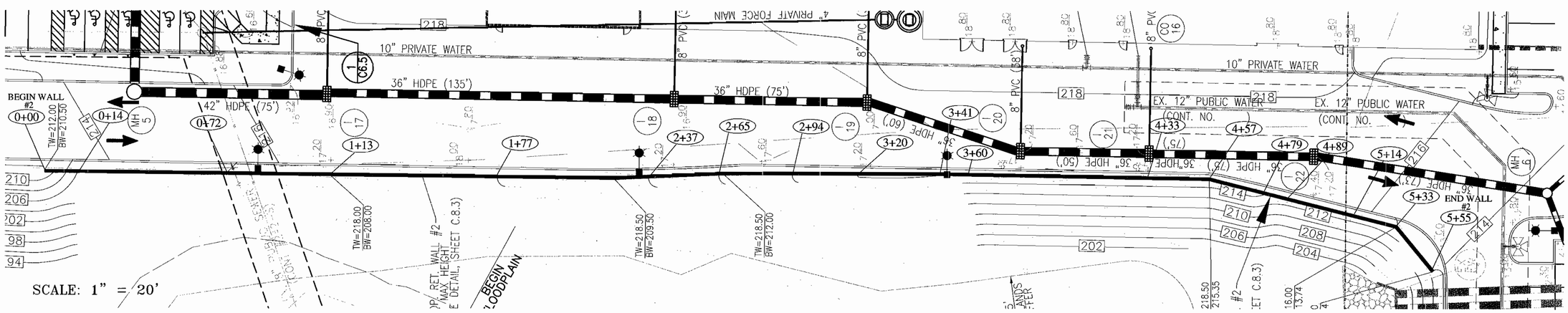
WALL #2 (between wetlands & proposed building)



TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION
EG = EXISTING GRADE

GRID KEY: MIRAFI 3XT
MIRAFI 5XT

SCALE: HORIZONTAL 1" = 10'
VERTICAL 1" = 5'



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND
WILLIAM KEITH RYAN
No. 21586
REGISTERED PROFESSIONAL ENGINEER

William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	04/01/05	JWP	DKS	Revise Sheet Number, Take-off and Load Table

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8385 • FAX 801-531-8386
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786

SCALE: 1"=40'

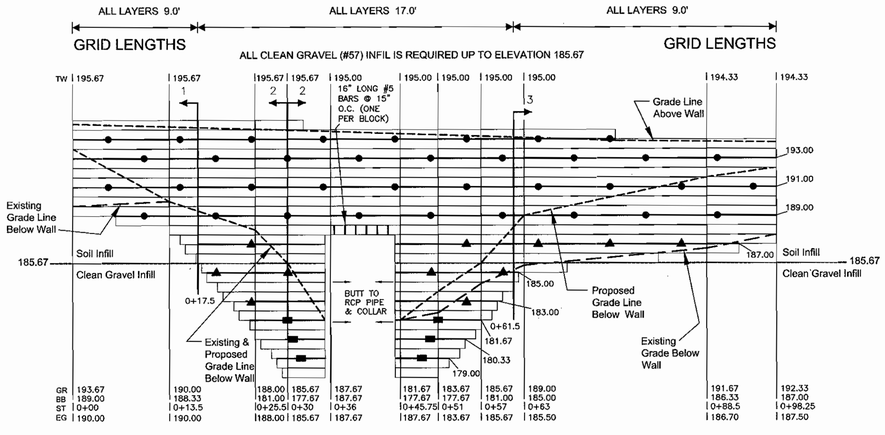
© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED. NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS FURNISHED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC, AND SHALL BE RETURNED UPON REQUEST.

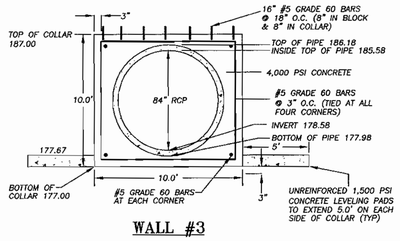
DRAWING NO.
C6.12

HO. CO. DPZ SHEET:
35 OF 38

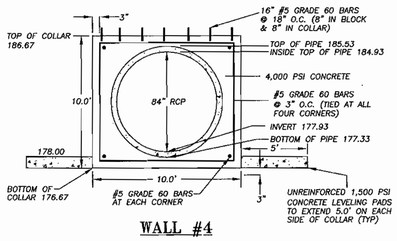
SDP-05-40

WALL #3 (S of exit road)

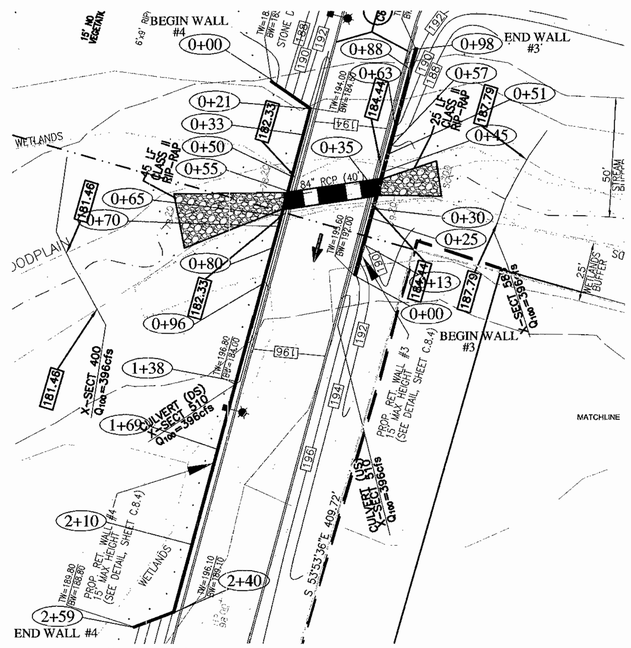




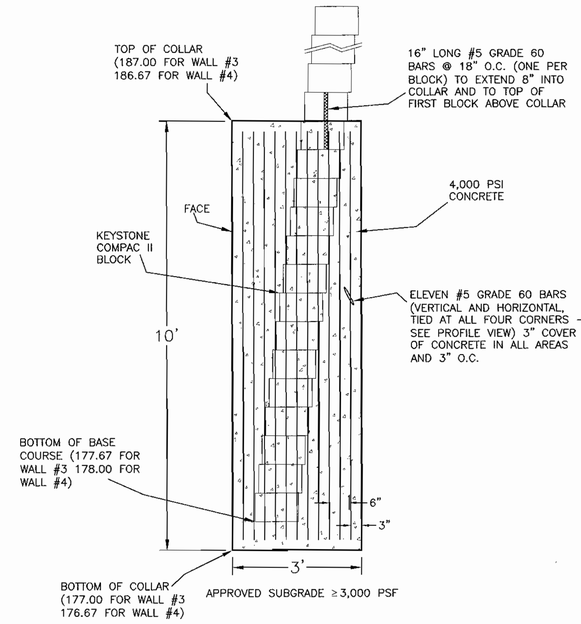
WALL #3



WALL #4

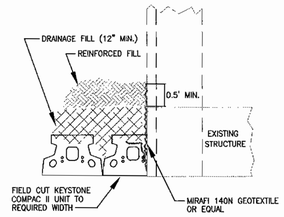


SCALE: 1" = 30'



CROSS SECTION VIEW OF COLLAR

N.T.S.

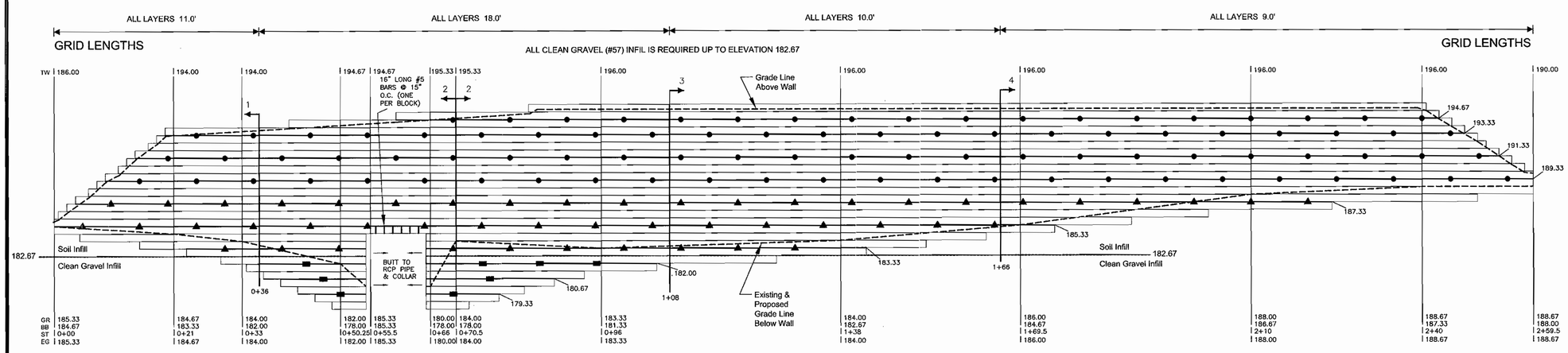


ABUTMENT DETAIL (PLAN VIEW)

AT SIDES AND ABOVE WALL

NTS

WALL #4 (S of exit road)



TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION
EG = EXISTING GRADE

GRID KEY: MIRAFI 3XT
MIRAFI 5XT
MIRAFI 7XT

SCALE: HORIZONTAL 1" = 10'
VERTICAL 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/3/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21586 — REGISTERED PROFESSIONAL ENGINEER

William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	01-27-05	JWP	DKS	REVISED COLLAR DETAILS
1	04/01/05	JWP	DKS	Revise Sheet Number, Take-off and Load Table

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801-531-8585 • FAX 801-531-8586

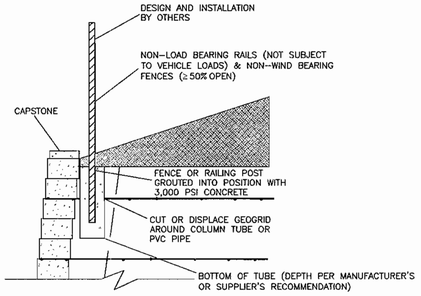
SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC. IT IS PROVIDED FOR REVIEW AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR CONVEYED. COPIES, IF MADE, SHALL BE REPRODUCED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.13

HO. CO. DPZ SHEET: 36 OF 38

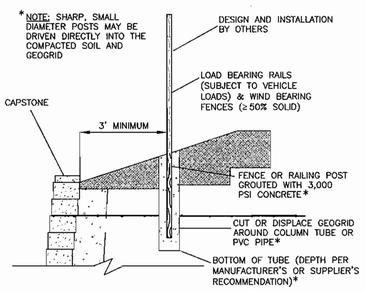
SDP-05-40



NON-LOAD BEARING & NON-WIND BEARING

(INSTALLED BEHIND WALL)

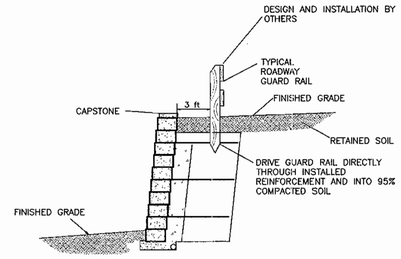
N.T.S.



LOAD BEARING & WIND BEARING

(INSTALLED BEHIND WALL)

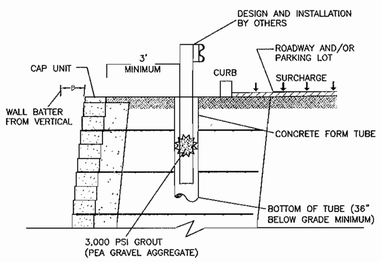
N.T.S.



GUARDRAIL DETAIL

DRIVEN THROUGH GEOGRID

N.T.S.

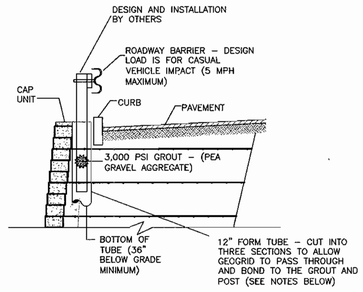


NOTE:

1. GALVANIZED POSTS MAY BE DRIVEN DIRECTLY THROUGH THE COMPACTED SOIL AND GEOGRID (SEE DETAIL ABOVE RIGHT)
2. IF POSTS ARE SQUARE (SUCH AS 4X4 WOOD) CONCRETE FORM TUBES MUST BE PLACED DURING WALL CONSTRUCITON AND THE POSTS GROUTED IN LATER.
3. BLUNT POSTS MAY NOT BE DRIVEN INTO GEOGRID AFTER WALL CONSTRUCTION IS COMPLETE.

GUARDRAIL DETAIL

N.T.S.



NOTE:

THE CONCRETE FORM TUBE SHALL:
- BE 12" IN DIAMETER MINIMUM
- INTERSECT TWO GEOGRID LAYERS VERTICALLY
- BE CUT INTO SEGMENTS TO ALLOW THE GEOGRID TO PASS CONTINUOUSLY FROM THE FACE OF THE WALL, THROUGH THE FORM TUBE, THROUGH THE 12" DRAINAGE LAYER AND INTO THE REINFORCED SOIL ZONE – BE A MINIMUM OF 36" BELOW GRADE TO ELIMINATE ANY FROST CONCERNS
- BE GROUTED WITH 3,000 PSI CONCRETE (WITH PEA GRAVEL AGGREGATE) AFTER THE POST INSTALLATION

THE GEOGRID SHALL:
- PASS CONTINUOUSLY THROUGH THE CUT SECTION OF THE CONCRETE FORM TUBE
- BE CUT TO ALLOW THE POST TO BE INSTALLED AFTER THE WALL IS CONSTRUCTED (THE GEOGRID LEFT PENETRATING THE TUBE WILL BOND WITH THE GROUT TO CREATE A UNIFIED MASS WITH THE POST AND TRANSFER THE LOAD TO THE REINFORCED SOIL)
- BE KEPT TAUT WITHOUT ANY SLACK

GUARDRAIL WITH IMPACT LOAD

N.T.S.

RYAN & ASSOCIATES' SCOPE OF WORK FOR THIS PROJECT DOES NOT INCLUDE FENCE OR RAILING DESIGNS (CALCULATIONS). THESE DETAILS HAVE BEEN PROVIDED ONLY TO SHOW TYPICAL INTERACTIONS OF FENCES AND RAILINGS WITH SEGMENTAL WALLS. THE OWNER, GENERAL CONTRACTOR AND/OR WALL INSTALLER WILL NEED TO VERIFY THE SIZE AND TYPE OF FENCE OR RAILING THAT IS NEEDED TO BE IN ACCORDANCE WITH THE MUNICIPALITY'S REQUIREMENTS.

CROSS SECTION DETAILS & FACTORS OF SAFETY:

SECTION	STATION	TOTAL HEIGHT	LOAD APPLIED	SLIDING minimum 1.50	OVERTURNING minimum 2.00	BEARING CAPACITY minimum 2.50	BEARING PRESSURE PSF	GLOBAL STABILITY minimum 1.30
WALL #1								
1	References Entire Wall	8.67'	300 PSF LIVE LOAD	1.68	3.30	5.44	2,374	1.67
WALL #2								
1	0+00 TO 2+75	12.67'	300 PSF LIVE LOAD	3.01	11.91	12.10	1,956	1.32
2	2+75 TO 5+55	8.00'	300 PSF LIVE LOAD	2.52	8.27	11.92	1,319	1.31
WALL #3								
1	0+00 TO 0+17.5	10.00'	300 PSF LIVE LOAD	1.78	3.91	6.35	1,797	2.50
2	0+17.5 TO 0+61.5	18.00'	300 PSF LIVE LOAD	2.19	5.29	6.29	2,970	1.48
3	0+61.5 TO 0+98	10.67'	300 PSF LIVE LOAD	1.71	3.53	5.68	1,965	1.48
WALL #4								
1	0+00 TO 0+36	12.67'	300 PSF LIVE LOAD	1.68	3.30	4.92	2,374	1.63
2	0+36 TO 1+08	17.33'	300 PSF LIVE LOAD	2.39	6.33	7.23	2,781	1.63
3	1+08 TO 1+66	14.00'	300 PSF LIVE LOAD	1.72	3.39	4.80	2,598	1.63
4	1+66 TO 2+59	11.33'	300 PSF LIVE LOAD	1.64	3.20	5.07	2,145	1.63
WALL #5								
1	0+00 TO 1+17	12.67'	300 PSF LIVE LOAD	3.03	10.69	10.82	1,970	1.31
2	1+17 TO 2+66	15.33'	300 PSF LIVE LOAD	2.58	7.79	8.56	2,414	1.31
3	2+66 TO 3+39	12.67'	300 PSF LIVE LOAD	2.92	10.69	10.82	1,195	1.31

GENERAL NOTES

1. SOIL PARAMETERS: Ryan & Associates (RA) has reviewed the "Subsurface Exploration and Geotechnical Engineering Analyses" dated 03/03/2004 and the "Supplemental Subsurface Exploration and Geotechnical Engineering Analyses" dated 05/14/2004 for this site prepared by ECS, Ltd. Based on these reports the soils vary widely and are classified by USCS as CH (fat clay), CL (lean clay), ML (sandy silt/silt), SC (clayey sand), SM (silty sand), SP (poorly graded sand) and SW (well graded sand). Although the sandy soils are predominant, a conservative internal angle of friction of 28° was used for the foundation soils (the walls' sub-grades) and the retained soils (the soils behind the walls' reinforced geogrid zones and extending to distances that are twice the walls' exposed heights) in the event fine-grained soils are encountered under or behind the walls. This is for worst case CL or ML soil types. CH, MH (elastic silt) and OH/OL/PT (organic) soils are not acceptable for the foundation and retained zones (CH is present on this site but is limited to one small lense in the borings so it should not be a major factor). If these unsuitable soils are encountered in the foundation or retained zones they must be removed and replaced with soils that meet or exceed the design friction angle of 28°. An internal angle of friction of 30° was used for the infill soils (the walls' reinforced geogrid zones). Therefore all soils used for wall backfill must be classified by USCS as gravel (GC, GM, GP or GW) or sand (SC, SM, SP or SW). The infill soil must also meet the following requirements: maximum of 45% passing the #200 sieve (minimum of 55% retained on the #200 sieve), maximum optimum moisture of 20%, minimum dry unit weight of 105 PCF and maximum liquid limit of 40. Since proctor tests were not provided an assumed unit weight of 125 PCF was used (maximum wet density for the foundation and retained soils and maximum wet density less 5% for 95% compaction for the compacted infill soils). The site geotechnical engineer will need to do standard proctor tests to determine the actual soil density and moisture. Fluctuations of 5 PCF higher or lower will not affect these designs, however if the unit weight varies by more than 5 PCF RA must be notified so that the cross sections can be rerun to verify that all factors of safety are still met. No cohesion was used in any of the calculations.

2. BEARING CAPACITY: The sub-grades (the soils under the walls' gravel leveling pads and the soils under the walls' reinforced geogrid zones) must be tested by the site geotechnical engineer prior to wall construction and have minimum allowable bearing capacities of 3,000 PSF. The actual bearing pressure exerted by each specific wall section is shown on the "Cross Section Details and Factors of Safety" table so that the site geotechnical engineer may determine specifically how to handle any areas where low bearing capacity soils are encountered on an individual wall section basis. Areas of the sub-grades that do not meet these maximum pressures will require undercutting and/or geogrid reinforcing. The sub-grades must be virgin (natural undisturbed soil with blow counts ≥12) or suitable fill (≥28°) compacted to 95% of a standard proctor maximum dry density.

3. GEOGRIDS: These walls were designed with Mirafi 3XT, 5XT & 7XT geogrids, which have LTDS (Long Term Design Strengths) of 1558, 2234 & 2961 respectively. All geogrid substitutions must have prior approval of RA.

4. BLOCK SYSTEM: These designs are valid only for the Keystone Compac II block system. Each segmental wall system has unique dimensions, connection devices and interacts differently with geogrids; therefore other block types may not be substituted without a partial or complete redesign.

5. CONSTRUCTION OVERSIGHT: The construction of these walls must be performed under the observation/review of a Maryland Registered Professional Engineer or their designated representative to ensure that they are built in accordance with the RA Structural Notes and Specifications. All wall construction must be certified by a registered professional geotechnical/structural engineer.

6. GLOBAL STABILITY: Global stability analyses were performed for the highest/most critical section of all walls. The analyses were performed on G-Slope design software and the geogrid layers were lengthened (if required) until factors of safety of 1.30 were met for external stability. A factor of safety of 1.50 was also met for internal stability (geogrid rupture). Walls #3 & #4 were also analyzed for rapid draw down events (1.0' above the 100 year flood elevations) and factors of safety of 1.1 were met. Copies of the global analyses are included in the 81/2" X 11" submittal.

7. CULVERT/PIPE INTERSECTING THE WALLS (Walls #3 & #4): An 84" RCP (reinforced concrete pipe) is proposed under the roadway between Walls #3 & #4 and will be intersecting these two walls. Since this is a structural pipe it should be able to be worked around without additional means of support, however it should be verified by the pipe manufacturer that it can withstand the maximum load exerted by these walls which is 2,970 PSF. For ease of construction, 10.0' X 10.0' cast in place concrete collars shall be built around the pipe. Details have been provided with proposed top elevations that coincide with top of block elevations to eliminate the horizontal cutting of blocks. Three #5 grade 60 bars shall be placed 3" O.C. (3" in from the front and the back of the structure and 3" apart). They shall have 3" of cover (from bottom, sides and top). There shall be 16" long Grade 60 reinforcing bars placed vertically where the walls pass over the collar. They shall be spaced at 1.5' O.C. and extend from the top of the blocks a minimum of 8" into the concrete. See the graphic details of the collar/pipe structures for clarification.

8. WATER APPLICATIONS: The lower portions of Walls #3 & #4 must be built as "water applications" up to 1.0' above the 100 year flood plain elevations (as noted on the profiles for these two walls). This dictates the following: clean gravel (#57 or equivalent: .5" to 1.5" with less than 10% fines) must be used for the entire reinforced geogrid zones (there is a line on the profile drawings for these walls showing the elevation to which gravel infill must be used) and filter fabric (Mirafi 140N or equivalent) must encase the buried blocks, the leveling pads and the entire reinforced geogrid zones. The filter fabric must also be laid horizontally across the top of the gravel infill where the transition to soil is made (to prevent the downward migration of fines).

9. FILTER FABRIC: Filter fabric (Mirafi 140N or equivalent) is required between the 12" gravel drainage layer and the compacted infill soils for all walls (as shown on the typical wall section) since the site soils on this project are sandy (non-cohesive soils can slough into and clog the drainage layer).

10. EMBEDMENT/EXISTING GRADE ELEVATIONS: Wall embedment varies from one to sixteen blocks. The exact amount of buried blocks can be determined by subtracting the "BB" elevations from the "GR" elevations on the RA profile drawings. RA has met the civil engineer's proposed grades at the bases of the walls (labeled as "GR" elevations), but has buried enough blocks so that all walls except Wall #2 (see note 21 below) are situated on virgin soils (the "BB" elevations go a minimum of one course below virgin grade elevations). A grade line showing existing site elevations is shown on all walls (except in cases where the existing and proposed elevations are the same as the existing grades and they run together).

11. CIVIL PLANS: This design package is based on civil plans prepared by Robert H. Vogel Engineering, Inc (RVE). RA has inserted portions of the RVE plans to show the RA wall numbering and stationing.

12. SPECIFICATIONS: Construction and materials must conform to the attached "Ryan & Associates segmental retaining wall specifications and installation guidelines for Keystone".

13. WALL PROFILES: The elevation drawings were done to represent the grade changes necessary on the civil plans and were done in exact block course increments of .667' (8"). Minor field changes may be necessary by the wall installer. Lineal footage may be added or subtracted as needed if the wall heights are equal to or less than the design heights. If the wall installer needs to construct the walls to heights that exceed the design sections, RA must be notified and higher cross sections must be provided before proceeding. The cap height of .333' (4") is not shown on the profile drawings however its height may have been used in some cases to achieve the desired TW elevations.

14. WALL BATTER: These walls were designed with the blocks having no batter (0.0°). This was done so that the 0.5° near vertical batter (front pin position: 1/16" setback per block course) may be used if desired and will allow for some construction tolerances. However, the 7.1° batter (rear pin position: 1" setback per block course) is strongly recommended by RA since it is more conservative (yields higher factors of safety) and allows for more construction tolerances. If the near vertical batter is used the wall installer should lay the base courses tilted back a minimum of 1/4" to compensate for movement during construction (from compaction equipment and the geogrid losing its slack) to ensure that the walls do not go beyond vertical (have negative batters). If the 7.1° batter is used it is important for the wall installer and the civil engineer/surveyor to predetermine the walls' batters during stake out. The bases of the walls will need to be moved forward if there are critical dimensions that need to be met on the high side of the walls.

15. MANDATORY REAR DRAINPIPES (Walls #1, #2 & #5): Rear drainpipes are required at the backs of all the walls' reinforced geogrid zones except for Walls #3 & #4 (since they are "water applications" and have gravel infill at the bottom). These rear drainpipes are in addition to the mandatory 4" drainpipes at the fronts of the walls (within the gravel leveling pads or behind the at grade courses– depending on which drainpipe position is exercised). The rear drainpipes shall be surrounded by a minimum of 6" of clean gravel (#57 or equivalent) and shall have perpendicular solid pipes that run forward and connect to the front drainage system with crosses or tees.

16. SPECIAL HOWARD COUNTY RETAINING WALL SPECIFICATIONS:
a. Retaining walls shall only be constructed under the observation of a Registered Professional Engineer and a (NICET, WACEL, or equivalent) certified soils technician.
b. The required bearing pressure beneath the footing of the wall shall be verified in the field by a certified soils technician. Testing documentation shall be provided to the Howard County Inspector prior to the start of construction. The required test procedure shall be the Dynamic Cone Penetrometer Test ASTM STP-399.
c. The suitability of the fill material shall be confirmed by the on-site soils technician. Each eight inch lift must be compacted to 95% Standard Proctor Density and the testing report shall be made available to the Howard County Inspector upon completion of the construction.
d. For walls over ten feet in height, one soil boring is required every 100 feet along the length of the wall, copies of the boring reports shall be provided to the Howard County Inspector prior to the start of construction.

17. DESIGN SOFTWARE: Internal and external wall calculations were performed with Keywall design software (version 3.1.6). A table has been included ("Cross Section Details and Factors of Safety") which has the following information: section location (area of wall referenced), total wall height, loads applied, factors of safety (for sliding, overturning, bearing capacity and global stability) and bearing pressure (the weight exerted by the wall structure: the block and the reinforced geogrid zone). Factors of safety of 1.5 were also met for: geogrid pullout (from the soil and from the block), geogrid overstress (geogrid rupture) and connection (block to geogrid). Copies of these calculations are included in the 81/2" X 11" submittal.

18. SEPARATE 81/2" X 11" SUBMITTAL: These 24" X 36" sheets were done in conjunction with an 81/2" X 11" submittal. The 81/2" X 11" submittal has the structural cross section calculations and global stability analyses.

19. TANGENT ANGLES– Walls #2 & #4: The angle points as drawn on the civil plans on Walls #2 and #4 must be built as radii (inside curves) or inside corners (blocks interlocked and overlapped in accordance with Keystone construction guidelines for 90° corners). Continuous vertical joints are not permitted.

20. LIGHT POST FOUNDATIONS: There are light post foundations proposed directly behind Wall #2 (three locations: 0+83, 2+32 & 3+54) and Wall #5 (two locations: 1+29 & 2+94). Based on information obtained by RA (via email from The Dennis Group), the foundations are 2' diameter, extend 9' below grade, extend 3' above grade and have 35' poles attached to them. These post foundations must extend a minimum of 4' below the bases of the walls ("BB" elevations) so that they do not impact (impose loads) on them and must be a minimum of 2' behind the walls. The area between the posts and the walls must be filled with all clean gravel (#57 or equivalent). Concrete form tubes (or some other type of round form such as pipes) must be placed during wall construction and the geogrid worked around (looped over) them. Four of the five locations do not meet the depth criterion (only station 3+54 of Wall #2 appears to be in conformance) and will need to be substantially deepened to meet the 4' beyond bottom of wall requirement. If it is not possible to extend the depth of these posts so that they are 4' below the "BB" elevations, a structural design will need to be done (steel reinforced concrete with an L-shaped "foot") that will allow the wind loads to be transferred to the reinforced soil masses (under the pavement). RA can provide these design services for an additional fee (from the MD office).

21. FILL SOILS– Wall #2: Wall #2 is entirely on fill soils (it rests on a "fill slope"). It is imperative that the existing brush/vegetation and topsoil are stripped down to suitable sub-soils ((28°) and that the slope is constructed in controlled lifts that are compacted to 95% of a standard proctor maximum dry density as supervised by the site geotechnical engineer prior to wall construction.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND – WILLIAM K. RYAN – No. 21586 – PROFESSIONAL ENGINEER

William K. Ryan

Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	04/01/05	JWP	DKS	Revise Sheet Number, Take-off and Load Table

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8383 • FAX 801-531-8586

SCALE: 1"=40'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP, LLC OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE PUBLISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP, LLC AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.

C6.14

HO. CO. DPZ SHEET: 37 OF 38

SDP-05-40

SPECIFICATIONS FOR SEGMENTAL RETAINING WALL SYSTEMS

PART 1: GENERAL

1.01 Description

A. Work includes furnishing and installing segmental retaining wall (SRW) Units to the lines and grades designated on the Final Design prepared by Ryan & Associates (RA). Also included are furnishing and installing appurtenant materials required for construction of the retaining wall as shown on the RA Final Design.

1.02 Reference Standards

A. ASTM C 140– Sampling and Testing Concrete Masonry Units
B. ASTM D 4595– Tensile Properties of Geotextiles by the Wide-Width Strip Method.
C. ASTM D 5262– Test Method for Evaluating the Unconfined Creep Behavior of Geo- Grids
D. GRI:GG1– Single Rib Geogrid Tensile Strength
E. GRI:GG5– Geogrid Pullout
F. ASTM D 698– Moisture Density Relationship for Soils, Standard Method
G. ASTM D 422– Gradation of Soils
H. ASTM 4318– Atterberg Limits of Soil
I. ASTM 3034– Specification for Polyvinyl Chloride (PVC) Plastic Pipe
J. ASTM D 1248– Specification for Corrugated Plastic Pipe

1.03 Design Standards

A. The following factors of safety have been met in this design: Sliding 1.5, Overturning 2.0, Bearing Capacity 2.0, Geogrid Overstress 1.5, Geogrid Connection (between the block and the geogrid) and Geogrid Pullout 1.5 (from the block and from the soil).

1.04 Scope of Work

A. The retaining wall design engineer's (Ryan & Associates) scope consists of preparing the wall design and professionally sealing to enable the contractor to obtain the necessary permits and properly construct the wall. The design considers the internal and local stability of the reinforced soil mass and is in accordance with acceptable engineering practice and these specifications. Services outside this scope such as responding to the owner's engineering firm (civil, structural, geotechnical or otherwise), provision of quality control testing & inspection, investigation of failed or non-conforming walls or any other services may be provided on a time & materials basis or for a negotiated fee. The scope of work for Ryan & Associates (RA) on this project does not include the preparation of a grading plan, surveying, wall stakeout or any other civil engineering.

1.05 Contractor's Responsibility

A. This design has been done in an effort to achieve the required grade changes shown on the civil plans for the project or the owner's (or wall installer's) desired grade changes (in the case of design build projects). The wall installer must verify the accuracy of these grades (elevations) by comparing them to the civil plans or actual field conditions prior to wall construction. The civil plans and actual field conditions govern and their grades must always be met. The lineal footage of the wall and the TW/BW elevations must be checked. If an error is discovered, RA shall be notified immediately and revisions will be provided. RA will not be responsible for correcting a wall that is being built or has been built incorrectly due to this design not being checked for accuracy prior to wall construction.

PART 2: MATERIALS & DESIGN PARAMETERS

2.01 Segmental Retaining Wall Units

A. SRW Units shall be machine formed, Portland Cement concrete blocks specifically designed for retaining wall applications. The SRW Unit currently approved for this project is:

Keystone Compac II as manufactured by Betco Block & Products

NOTE: Where Keystone specifications and reference documents conflict with these specifications the RA specifications hold precedence.

B. SRW Units shall be sound and free of cracks or other defects that would interfere with the proper placing of the units or significantly impair the strength or permanence of the structure. Cracking or excessive chipping may be grounds for rejection. Units showing cracks longer than 1/2 inch shall not be used within the wall. Units showing chips visible at a distance of 30 feet from the wall shall not be used within the wall.

C. Concrete used to manufacture SRW Units shall have a minimum 28 days compressive strength of 3,000 PSI and a maximum moisture absorption rate, by weight, of 8% as determined in accordance with ASTM C 140. Compressive strength test specimens shall conform to the saw-cut coupon provisions of Section 5.2.4 of ASTM C 140 with the following exception: Coupon shall be taken from the least dimension of the unit of a size and shape representing the geometry of the unit as a whole.

D. SRW Units molded dimensions shall not differ more than ± 1/8 inch from that specified, except height which shall be ± 1/16 inch as measured in accordance with ASTM C 140.

2.02 Geosynthetic Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids as indicated on the RA Final Design. No geogrid substitutions shall be permitted without the prior approval of RA (a partial redesign may be necessary if geogrids are substituted). NOTE: it is always acceptable to substitute a higher strength geogrid (of the same manufacturer) for a lower strength geogrid.

2.03 Connectors

A. Shear connectors shall be 1/2 inch diameter thermoset isopthalic polyester resin-pultruded fiberglass reinforcement rods or equivalents to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to +100 degrees F. These connectors shall be capable of holding the geogrid in the proper design position during geogrid pre-tensioning and backfilling. The pins have several positions. The rear pin position results in a 1" setback and a 7.1° batter and the center pin position results in a near vertical setback with an approximate positive batter of 0.5°. The batter for which RA designed this wall will be stated in the RA Final Design General Notes and on the structural cross sections. It is always acceptable to change from the near vertical batter to 7.1° since it is more conservative (yields higher factors of safety); however the cross sections will need to be revised

2.04 Leveling Pad

A. Material for the leveling pad shall consist of compacted gravel or unreinforced concrete. Typical gravels used for this leveling pad are #57, CR6, 21A, 2A modified, 2B, RC6, RC57, etc. Lean un-reinforced concrete with a strength of 1,500 PSI may also be used for the leveling pad.

2.05 Drainage Aggregate

A. Drainage aggregate shall be clean angular gravel (#57 or equivalent) with a size of 1/2 inch to 1 1/2 inches and less than 10% fines (passing the #200 sieve). Rounded "pea gravel" type aggregate is not permissible since it does not have the necessary frictional properties. Recycled gravel may be used if it meets the above criterion.

2.06 Drainage Pipe

A. The drainage collection pipe shall be a 4 inch perforated or slotted PVC or corrugated HDPE pipe.

2.07 Infill Soils: the reinforced geogrid zone

A. The soils used must meet or exceed the friction angle stated in the RA Final Design (in the General Notes, on the typical wall section and on the structural cross sections). The reinforced material shall be free of debris and organic material (i.e.– no plants, roots, sod, top soil, trash, wood, etc.). The infill soil shall not consist of CH (fat clay), MH (elastic silt) or OH/OL/PT (organic) soils. All soils used for wall infill must always meet the following requirements, regardless of the friction angle: maximum liquid limit of 40, maximum optimum moisture of 20%, maximum of 75% passing the #200 sieve (minimum of 25% retained on the #200 sieve) and minimum dry unit weight of 105 PCF. Soil moisture must be within (2% of optimum to obtain proper compaction results (no exceptions).

B. Rocks may be used as infill material as long as they have a maximum size of 6 inches and a mean diameter of 3 inches. Recycled concrete is permissible for infill except with certain polyester geogrids in water applications. In the case of water applications the geogrid manufacturer shall be consulted to see if the alkali in the recycled material will cause corrosive damage to their geogrid.

C. Select gravel (classified by USCS as GP or GW) is normally an acceptable substitution in the event suitable soils (those meeting RA's and the site geotechnical engineer's requirements) are not readily available or if there are difficulties due to frost or moisture levels. However, the unit weights of gravel can vary widely (clean gravel is typically 90–100 PCF and "crusher run" gravel is typically 130–140 PCF) so RA must be notified so that revised sections can be run prior to making any substitutions. In some cases clean gravel actually requires longer geogrid lengths because of its extremely light unit weight.

D. Asphalt tailings (blacktop millings) are only acceptable for wall infill if authorized in writing by the municipality (county, township, etc.) and/or regulatory authority since they may be a potential environmental hazard. These materials must also meet the requirements for the backfill soils in the RA Final Design; therefore RA must be given a proctor test and gradation (sieve analysis) for approval prior to wall construction.

2.09 Foundation Soils: the soils under the wall's gravel leveling pad and the soils under the reinforced geogrid zone

A. The foundation soils (wall sub-grade) must meet or exceed the minimum allowable bearing capacity stated in the RA Final Design (in the General Notes and on the typical wall section). The sub-grade must be virgin (natural undisturbed soil with blow counts ≥12) or suitable fill (friction angle ≥ the RA Final Design requirement) compacted to 95% of a standard proctor maximum dry density. If highly plastic soils (CH or MH) or organic soils (OH, OL, or PT) are encountered in the sub-grade they must be removed and replaced with suitable soil or gravel that is placed in controlled lifts and compacted to 95% of a standard proctor maximum dry density. If the organic or plastic soils extend so deep that they cannot be totally removed, they shall be undercut a minimum of 4' and replaced with suitable soils or gravel. It must be emphasized that the wall's sub-grade is not only the soils under the leveling pad, but also includes all soils under the entire reinforced geogrid zone. Therefore, the foundation soils extend from 6" in front of the base block to the back of the reinforced geogrid zone (back edge of the lowest geogrid layer).

2.10 Soil Investigation

A. RA recommends that every retaining wall design be preceded by an in-situ soil investigation by a licensed geotechnical engineer. However, if the owner and/or wall installer elects not to have an investigation conducted RA may assume soil design parameters based on: published data by the Soil Conservation Service (soil maps), a verbal description by the owner and/or wall installer or by RA's previous experience in certain geographic areas. It must be understood that the owner and/or wall installer bears full responsibility to the election not to have a soil investigation performed.

2.11 Site History & Information

A. Many factors other than soil information affect the performance and design of the retaining wall. RA relies on information provided by the owner and/or wall installer when designing a retaining wall. RA bears no responsibility if the owner and/or wall installer omit critical information required to properly design the wall. Information critical to wall design from the site consist of: topographic features (such as slopes), soil types, utilities, storm water management, structures (including buildings, other existing or proposed walls, swimming pools, etc.), site geological phenomenon, groundwater, loads with the wall's zone of influence (such as driveways, patios, roadways, sidewalks, etc.) and any other readily known site factors that could potentially impact the RA Final Design.

PART 3: CONSTRUCTION

3.01 Inspection

A. RA considers all retaining walls to be critical structures, meaning most walls require a considerable financial investment by the owner and failure of a wall will negatively impact a property both financially and from a public safety perspective. The owner or owner's representative is responsible for verifying that the wall installer meets all of the requirements of the RA Final Design (as stated in these specifications and the project's General Notes). This includes all submittals for materials and design, qualifications and proper installation of the wall system. All walls with an exposed height of 4 feet or greater, or those which require a building permit, must have the construction monitored and the completed wall certified by a licensed geotechnical/structural engineer registered in the jurisdiction of the project. Additionally, after the wall has been completed it is highly recommended that it be surveyed to establish the wall's current horizontal and vertical alignment.

B. The wall installer's field construction supervisor shall have demonstrated experience and be qualified to direct all work at the site.

C. RA provides construction review on some retaining wall projects. RA verifies general compliance with the RA Final Design; however, it is the wall installer's ultimate responsibility to construct the structure properly in accordance with the RA Final Design. RA's liability is limited to the amount of our fees for the scope of work provided for the wall designs and construction oversight.

3.02 Excavation

A. The wall installer shall excavate to the lines and grades shown on the RA Final Design and the project's civil plans. The wall installer shall take precautions to minimize over-excavation. Over-excavation shall be filled with compacted soil (friction angle ≥RA design parameters) or gravel as directed by the site geotechnical engineer.

B. The wall installer shall verify the location of existing structures and utilities prior to excavation. The wall installer shall ensure that all surrounding structures are protected from the effects of wall excavation. Excavation support (shoring), if required, is the responsibility of the wall installer. All excavation must be conducted in accordance with OSHA (federal) and state safety regulations. All work to construct the wall must be in accordance with 29CFR1926 sub-part P (OSHA Excavation Safety Requirements).

3.03 Foundation Preparation

A. Following excavation, the foundation soils (under the wall's gravel leveling pad and under the wall's reinforced geogrid zone) shall be examined by the site geotechnical engineer to assure that the actual foundation soil strength meets or exceeds the minimum allowable bearing capacity in the RA Final Design (stated in the General Notes and shown on the typical wall section). Soils that do not meet the required strength shall be removed and replaced with approved select structural fill or gravel and be compacted to 95% of a standard proctor maximum dry density for the full depth.

B. In cases of poor bearing capacity, deep fill soils, or when groundwater is encountered it may not be possible or practical to undercut to suitable soils. As an alternative, gravel, geogrid reinforcing (or a combination of both) or a concrete footing may be utilized to meet the required soil bearing capacity. RA can provide a supplemental sub-grade design for an additional fee (it is not within RA's original scope of work for this project). However, it is the site geotechnical engineer's ultimate responsibility to ensure that the sub-grade meets or exceeds that specified by RA for this project (stated in the RA Final Design). The site geotechnical engineer must add a minimum factor of safety of 2.0 to the RA specified capacity (i.e. if RA requires 2,500 PSF the actual field ultimate bearing capacity must meet or exceed 5,000 PSF).

3.04 Leveling Pad Construction

A. The leveling pad shall be placed so that its top elevation is the same as the bottom of block ("BB") elevation on the RA Final Design profile drawing. It shall have a minimum thickness of 6 inches and a minimum width of 2 feet (for 12" wide blocks). The leveling pad should, at a minimum, extend laterally at least a distance of 6 inches from the toe and heel of the lower most SRW Unit. The leveling pad must have a minimum width of 30 inch for 18 inch wide blocks and a minimum width of 36 inch for 21.5 inch wide blocks.

B. The leveling pad material shall be compacted to 95% of a standard proctor maximum dry density with a vibratory plate compactor to provide a firm level-bearing surface on which to place the first course of SRW Units. A thin layer (not to exceed 1/2 inch) of well-graded sand or stone dust may be used to smooth the top of the leveling pad.

3.05 SRW Unit Installation

A. All SRW Units shall be installed at the proper elevation and orientation as shown on the RA Final Design profile drawing and in conjunction with the project's civil plans. The SRW Units shall be installed in general accordance with the manufacturer's recommendations (RA's Final Design shall govern in any conflict between the two requirements).

B. The first course of SRW Units shall be placed on the leveling pad. The units shall be leveled side-to-side, front-to-rear and with adjacent units, and aligned to ensure intimate contact with the leveling pad. The first course is the most important for accurate and acceptable results. Alignment may be done by means of a string line or an offset from the base line to the backs of the blocks. SRW units shall have a minimum 4 inch overlap of units on each successive course so that the wall is interlocked and continuous. No horizontal gaps greater than 1/4 inch between the faces of adjacent units are permitted.

C. Because the wall has a setback, its batter must be predetermined during the stake out process by the civil engineer/surveyor and wall installer. If there are critical dimensions that must be met on the high side of the wall then the base (at the toe) will need to be moved forward to compensate.

D. Lay out of curves and corners shall be installed in accordance with the civil plans and the RA Final Design. Construction techniques for curves and corners shall be in accordance with the SRW manufacturer's installation guidelines. In general, all tangent angles shown on the civil drawings should be changed into radii (inside and outside curves) to enhance the wall's strength and appearance. Continuous vertical joints are not permitted. Inside and outside 90(corners may be constructed without compromising the wall's integrity if they are properly built. Inside corners should be constructed so that the SRW Units interlock and overlap (according to the manufacturer's recommendations) and outside corners should incorporate special corner blocks when possible. If special outside corner blocks are not available from the block manufacturer for this project then the manufacturer's guidelines for building structural outside corners shall be followed. Outside corners must be built so that the blocks interlock and overlap. If gluing is necessary (when there is not a positive connection from clips, lips, lugs, pins, etc.) only industrial grade adhesives or sealants designed for concrete-to-concrete applications may be used (adhesives designed for plastic or wood applications are not acceptable).

E. Clean all excess debris from the tops of the SRW Units and install the next course.

F. Repeat procedures to the extent of wall height.

G. A ±2° construction tolerance is permitted horizontally for wall batter (block setback). In no case shall a wall go beyond vertical (have a negative batter). Some block systems have an optional near vertical batter (typically 0.5(). If the wall is to be built with a near vertical batter, the base course should be laid so that it is tilted back a minimum of 1/4 inch to compensate for movement that will likely occur from compaction equipment and from the geogrid losing its slack. Walls shall be built level from left to right (not with grade), however a +1.5 inch tolerance over a 10 foot distance is permitted vertically (as checked from left to right along the wall).

H. Embedment shall be a minimum of 1 inch buried for every 1 foot of exposed wall height with one block minimum when the front slope is 4:1 or greater (more level). Walls constructed on 3:1 front slopes or less (more steep) require additional buried blocks. See the profile drawing in the RA Final Design for the exact amount of embedment (the amount of buried block can be determined at each wall station by subtracting the "BB" elevations from the "GR" elevations).

3.06 Geogrid Reinforcement Placement

A. All geogrid reinforcement shall be installed at the proper elevation, length (measured from the face of block) and strength as shown on the profile drawing and structural cross section(s) in the RA Final Design. Partial geogrid coverage is not acceptable: no gaps shall be present between geogrid layers. 100% coverage is required, however it is not necessary to overlap the geogrid pieces (overlapping the geogrid may be detrimental since it will likely cause a "bump" in the wall). The geogrid shall be laid horizontally on the compacted infill soil and on top of the concrete SRW Units. The geogrid must be embedded into the SRW Units to the face. The wall installer shall verify that the orientation of the geogrid is in accordance with the geogrid manufacturer's recommendations. The highest strength direction of the geogrid must be perpendicular to the wall face (the geogrid must not be laid parallel to the wall– cannot be rolled out with the wall). The geogrid must be level (cannot be going "down hill" or "up hill").

B. Geogrid reinforcement layers shall be one continuous piece for their entire embedment length. Overlapping of the geogrid in the design strength direction (perpendicular to the wall face) is not permitted.

C. Tracked construction equipment shall not be operated directly on the geogrid. A minimum of 6 inches of backfill is required prior to operation of tracked vehicles over the geogrid. Turning should be kept to a minimum. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 5 MPH).

D. The geogrid shall be in tension and free of wrinkles prior to placement of the infill soil. Nominal tension shall be applied to the geogrid and secured in place with staples, stakes or by hand until it is covered by 6 inches of infill soil.

E. For inside & outside corners and inside & outside curves the geogrid shall be placed according to the manufacturer's instructions to provide total geogrid coverage. On outside corners the geogrid should be shifted up or down one course and alternated so that the geogrid comes into the reinforced geogrid zone from both legs of the 90° angle. Geogrid layers should never be placed on top of one another: there must be a minimum of 3 inches of compacted infill soil between geogrid layers.

3.07 Wall Drainage

A. Drainage aggregate (clean gravel such as #57 or approved equivalent) shall be installed behind the entire wall face from the first course below grade to one course from the top of the wall. The drainage gravel shall be placed to a minimum thickness of 12 inches behind the SRW Units. Drainage gravel shall also fill all voids between and within (if hollow) the SRW Units. SRW Units must be filled with drainage aggregate in one course lifts (SRW Units may not be stacked in two or three course lifts and then have the gravel dumped in from the top through multiple courses). An impermeable clay layer (CL, GC or SC) shall be placed on top of the 12" drainage layer. If clayey soils are not readily available, a layer of filter fabric (Mirafi 140N or equivalent) shall be placed on top of the gravel (below the topsoil) to prevent the downward migration of fines.

B. A continuous drainpipe is mandatory and shall be vented to daylight in one of two ways. The continuous drainpipe may run to the end(s) of the wall or to a central low point of the wall. Or, the continuous drainpipe may be vented through the wall face at maximum intervals of 30 feet on center (no more than 6 inches above finished grade). The pipe must maintain gravity flow of water outside the reinforced geogrid zone. Water must drain to an outlet and have positive flow. If a pipe is run below grade, it shall daylight into a storm sewer manhole or along a slope at an elevation lower than the lowest point of the pipe within the drainage aggregate. When drainpipes are daylighted at the end(s) of a wall they must be visible and unobstructed. The drainpipes should be checked by the owner on a regular basis to ensure that they remain open (not blocked, filled in, grown over, pinched). Only one method of venting to daylight is required (end/central low point or through wall face), not both.

C. Rear drainpipes are required in the following situations: when groundwater can rise and approach within 1 foot of the wall's sub-grade and for walls that have an exposed height of 10.0' or greater in "cut" situations (since the potential exists for water to enter the interface between the reinforced geogrid zone and the retained zone). This rear drainpipe shall be surrounded by a minimum of 12 inches (6 inches on each side) of clean gravel (#57 or equivalent) and surrounded with filter fabric to prevent the migration of fines. The rear drainpipe must vent to daylight or be directed to a storm sewer manhole (see instructions for front drainpipe in section 3.07B above).

D. Chimney drains (a second 12 inch layer of drainage aggregate within the rear 1 foot of the reinforced geogrid zone or directly behind the reinforced geogrid zone) must be installed when groundwater is present or likely (to an elevation that is a minimum of 1 foot above predicted levels as given by the site geotechnical engineer), when stated in the RA Final Design or when required by the site geotechnical engineer.

E. All drainage zone aggregate shall be compacted with a vibratory plate compactor (minimum of three passes).

3.08 Backfill Placement

A. The infill soils shall be placed as shown in the RA Final Design in the maximum compacted lift thickness of 10 inches and shall be compacted to a minimum of 95% of a standard proctor (or 93% of a modified proctor) maximum dry density (ASTM D 698) at a moisture content within 2% of optimum. The backfill shall be placed and spread in such a manner as to eliminate wrinkles or movement of the geogrid and the SRW units. Compaction testing shall be done at 25%, 50%, 75% and 100% of the wall height or as specified by the site geotechnical engineer.

B. Only a vibratory plate or small-scale vibratory smooth drum compactor equipment shall be allowed within 3 feet of the front of the wall face. Compaction within the 3 feet behind the wall face shall be achieved by at least three (3) passes of the lightweight mechanical plate compactor or roller. Heavy equipment (such as track hoes, ride on rollers, pans, etc.) must be kept back a minimum of 3 feet from the rear of the wall.

C. At the end of each day's operation, the wall installer shall slope the last level of backfill away from the wall facing to direct water runoff away from the wall face.

D. At completion of wall construction if final grading, paving, landscaping and/or storm drainage installation adjacent to the wall is not placed immediately after wall completion, temporary grading shall be provided to ensure that water runoff is not allowed to collect or pond behind the wall until final construction adjacent to the wall is completed.

E. Filter fabric (Mirafi 140N or equivalent) is required when the infill soil is classified as poorly graded sand (SP) or well graded sand (SW) since these soils are non-cohesive and could potentially slough, clogging the gravel drainage layer. Filter fabric is optional between the 12 inch gravel drainage layer and the compacted infill soil if the backfill soils are clayey (CL or SC), gravelly (GC, GM, GP or GW) or silty (ML or SM).

3.09 SRW Caps

A. SRW caps shall be properly aligned and glued (for safety reasons) to the underlying SRW Units with a flexible high-strength concrete adhesive or sealant designed for "concrete to concrete" applications (not for plastic or wood). Rigid adhesive or mortar is not acceptable.

3.10 Wall Geometry

A. It is acceptable to modify the wall's configuration (angles to curves, corners to curves, etc.) from the civil plan layout as long as the RA design height is not exceeded and the loads do not increase (slopes do not get steeper, surcharges do not get greater, etc.).

B. Some projects, such as "design build", will require the wall installer to change the wall length and height as needed to meet the field conditions (since there may not be a specific grading plan). This is acceptable, but the wall height in the RA Final Design must not be exceeded. If the wall must be built to a height that exceeds the design, RA must be notified and a revised (taller) cross section provided prior to wall construction.

3.11 Water Applications

A. When walls are installed in water applications (such as storm water ponds, streams, bulkheads, areas adjacent to flood plains, etc.) all clean gravel must be used as infill up to 1 foot above the 100 year flood elevation, the high water level or the top of berm/spillway. This gravel must be free draining and have less than 10% fines (#57 or approved equivalent). Filter fabric (Mirafi 140N or approved equivalent) must go in front of the buried block, under the leveling pad, under the reinforced geogrid zone, behind the reinforced geogrid zone (vertically up to the extent of the gravel infill) and on top of the gravel infill (horizontally). This is required to prevent the migration of fines into the gravel infill. Rip rap is required in front of the bottom three courses on walls installed in tidal waters or waters subject to wave action. Rip rap is also required when indicated on the civil plans and where pipes with active water flow exit through the wall (to prevent scour).

B. Walls installed in ponds that hold water for extended periods of time may require special precautions. If the foundation soils (sub-grade) are not free-draining (classified by uses as GP, GW, SP or SW) the following shall be done to prevent the wall's sub-grade from being compromised: an 8" impermeable clay layer (soils classified by USCS as CL, GC or SC) must be placed as the final 8" of soil (in front of the first block below grade). The clay layer shall extend forward from the base of the wall a minimum of 20' laterally into the pond. This will ensure that any water seepage does not intersect a 45° slope (1:1) downward from the front edge of the wall's leveling pad.

3.12 Responsibilities of the Site Geotechnical Engineer (construction oversight)

A. The site geotechnical engineer's responsibilities include, but are not limited to, verifying the following: sub-grade bearing capacity (must meet or exceed that stated in the RA Final Design); soil friction angles (foundation, infill and retained); soil compaction (>95% of a standard proctor or >92% of a modified proctor maximum dry density); geogrid type (manufacturer and strength), length, coverage, orientation and elevation; placement of drainage aggregate (12" minimum); placement and proper flow of drainpipes; wall geometry (wall must not exceed height of RA Final Design); site geometry (slopes and surcharges must be equal to or less than the RA Final Design and the civil plans); construction techniques (must be in accordance with previously stated procedures); water management (placement of swales, clay layers/geomembranes, flow of surface water to inlets, etc.) and all other activity that may impact the wall's integrity. RA must be notified if actual field conditions differ from the Final Design parameters and/or if there are activities on site that are not in accordance with these Specifications.

B. Field changes to the RA Final Design must be approved by RA in writing. Request(s) for design changes/field modifications must be made to RA in writing prior to RA issuing a written response. All correspondence must be documented with formal written response. These additional services are not included in RA's original scope of work and design fee. Therefore, a contract modification/change order must be signed by RA and the client prior to these additional services being provided.

3.13 Rails, Fences & Other Structures

A. The scope of RA for this project does not include fence or railing designs. Typical details have been given to provide general guidelines for the installation of fences, guide rails and railings behind walls. RA cannot give specific details because the type, placement and height of fences and rails varies widely and because the requirements are different depending on the municipality and regulatory authority. RA can provide a project specific fence or rail detail and structural design for an additional fee if given exact information (material type and size and manufacturer's specifications and installation guidelines).

B. Open fences and railings not subject to wind loads (minimum of 50% open and maximum of 50% solid) may be placed directly behind the wall or in the wall (can be placed in the blocks only if they are a hollow system and if the cores and web alignment will accept the posts) as long as they are not subject to vehicular impact. Solid or semi-solid fences that are subject to wind loads must be kept back a minimum of 3 feet from the rear of the wall to prevent loading of the wall.

C. Guide rails subject to vehicular impact must be kept back a minimum of 3 feet from the rear of the wall to prevent loading of the wall. Guide rails may be placed closer than this 3 foot minimum only if a barrier (such as curbing, wheel stops, etc.) is in place to prevent vehicular impact (the overhang of vehicles must be considered when determining this).

D. Light post foundations, sign foundations and similar structures subject to wind loads must be kept back a minimum of 3 feet from the rear of the wall to prevent loading of the wall.

E. In cases where these 3 foot minimum distances cannot be met due to restraints on the site, additional analyses will need to be done to determine methods of stabilization. RA can provide these designs for an additional fee.

3.14 Storm Structures & Utilities

A. Reinforced Concrete Pipes (RCP) may pass through the leveling pad or wall structure without additional means of support (it should be verified from the pipe manufacturer that the pipe can withstand a load equal to or greater than that exerted by the wall– as stated in the RA Final Design General Notes under "Bearing Capacity". The SRW units may be cut to fit around the pipe and the voids filled with non-shrink grout or type "M" mortar. A concrete collar may be cast around the structure if desired for ease of construction and aesthetic considerations. When a collar is cast, the top of the collar must line up with an even block course to maintain proper alignment, neat workmanship and to eliminate horizontal cutting of blocks.

B. The wall may not bear on plastic or steel pipes (such as ADS, CMP, HDPE, PVC, SLCPP, etc.) or utilities (such as electric, gas, phone lines, sewer or water lines, etc.). Grade beams or lintels must be used to bridge these non-load bearing structures. If a specific grade beam or lintel is not specified in the RA Final Design, RA shall be consulted to determine the size, strength and reinforcing of the grade beam or lintel. If these non-load bearing pipes or utilities are located at minimum of 42 inches below the wall's leveling pad then a grade beam or lintel is not necessary.

C. Concrete storm structures may be located behind a wall and be within the reinforced geogrid zone as dictated by the project's civil drawings. If the structure(s) cannot be moved out of the reinforced geogrid zone and the geogrid cannot be installed to its full design length the following shall apply. On small structures (such as collection boxes, concrete pipes less than 18 inches, inlets, manholes, etc.) it is acceptable to shorten the geogrid from the design length and meet the structure. The area between the wall and structure where the geogrid has been shortened must be filled with gravel (#57 or equivalent) and not soils. The gravel must be placed in maximum loose lifts of 10" and be compacted with a minimum of three passes by a vibratory plate compactor. For tall narrow structures the geogrid should be "looped" around the structures for additional lateral support. On large structures and in cases where pipes parallel the wall for long distances, RA shall be consulted to determine the impact on the wall before allowing this to be done.

D. The wall's integrity may be compromised if pipes or structures burst or develop leaks and allow water or fluids to saturate the reinforced geogrid zone. RA is not responsible for wall failure that results from pipes or structures that burst or leak and allow water or fluids to saturate the reinforced geogrid zone. To prevent damage to the wall structure a bed of clean gravel shall be placed under all pipes (minimum of 6" deep) and shall extend up to the "spring line" (half way up). Positive flow of the gravel must be maintained away from the wall structure.

3.15 Construction Adjacent to Completed Wall

A. The owner or owner's representative is responsible for ensuring that construction adjacent to the wall by others does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of three feet behind the back of the wall face. Equipment with wheel loads in excess of 150 PSF live load shall not be operated with 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the general contractor or owner to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.

B. Care must be taken when installing appurtenances (such as generators, transformers, etc.) or utilities within the reinforced geogrid zone of the wall. The compaction integrity of the reinforced geogrid zone must be maintained, both below and beside (around) the appurtenance or utility. Neglecting to do so may cause hydrostatic pressure and wall failure.

3.16 Storm Water Management & Slopes

A. The segmental retaining wall is not a storm water management structure. The wall can accommodate the rainfall above the reinforced geogrid zone but not the watershed (including the retained zone). Therefore it is absolutely essential that surface water be prevented from entering (and ultimately saturating) the reinforced geogrid zone. This is usually accomplished by the site engineer (owner's civil engineer) grading the surface behind the wall to direct surface water to swales that divert the water around the wall ends, to inlets or over the top of the wall through scuppers. If water is directed to the wall (such as applications with back slopes), the top 8 inches of compacted fill over the reinforced geogrid zone must have impermeable soil (such as CL, GC or SC). If clayey soils are not readily available an underlying geomembrane (geosynthetic liner) may also be used. This geomembrane shall be Mirafi G200N, Stratadrain or equivalent. It shall extend downward vertically a minimum of 3 feet behind the reinforced geogrid zone, be laid horizontally on top of the reinforced geogrid zone with a maximum slope of 10:1 and extend forward into the 12 inch gravel drainage layer.

B. The site geotechnical engineer is responsible for verifying the stability of slopes on the project. RA's scope includes only wall the design, not the evaluation of back slopes (above walls) or front slopes (at the base of walls). RA performs global stability analyses on walls that rest on major front slopes, however only the wall is analyzed, not the actual slopes above or below the wall. It is the responsibility of the site geotechnical engineer to determine if the site soils are able to sustain the proposed grades. If not, they shall determine and specify the additional reinforcement that is necessary to provide the proper slope stability and prevent erosion.

C. The general contractor, owner, site contractor and/or wall installer must provide for proper wall drainage to prevent the buildup of hydrostatic pressures over the service life of the structure. In the event additional water is introduced into the general wall area, either above or below grade, the RA Final Design will be invalid (the exception is "water applications" where clean gravel is used for infill and it is wrapped in filter fabric and the design intent is for the wall to be interacting with water).

D. Drains for other structures (such as downspouts, roof drains, sump pumps, etc.) must flow through the wall. They cannot be connected to the wall's drainage system or discharge into the wall's reinforced geogrid zone.

3.17 Parking Lots & Roadways

A. If a paved parking lot or roadway is proposed above the wall it must be properly maintained and have proper surface water management. Typically curbing is installed to catch and divert the surface water runoff to inlets or ponds. All joints between the asphalt and the curbing must be sealed to prevent water from seeping into the wall's reinforced geogrid zone. The owner must regularly (semi-annually) inspect the pavement for cracks and repair them immediately if discovered. If cracks remain open they could allow surface water runoff or melting snow to saturate the wall's reinforced geogrid zone or retained zone which can lead to wall failure.

B. RA makes an effort to keep the topmost layer of geogrid two or three courses down from the top of the wall when there is pavement above. This is done so that the geogrid is properly embedded in sub-soils and not lying on top (since there is the depth of the granular sub-base material and the pavement depth to account for). Also, in many cases, RA designs the wall with the "TW" elevation high enough so that the back of the curb is covered (normally required by the civil engineer and required for support of the curbing). Therefore, the top layer of geogrid in some cases must be cut during pavement and/or curb installation (especially when a wall steps continuously on top). It is acceptable to cut the topmost layer of geogrid only if it is at the same elevation as the pavement or curbing (since if this is the case the wall is not absorbing a lateral load– only holding back "dead space" between the pavement or curbing and itself). However, the second layer of geogrid down from the top must never be cut.

C. If snow is plowed/pushed and stored above a wall it can not exceed a height of 5'. If there are definite plans for storage of accumulated snow before the wall is built, RA, upon request, can design the wall to accommodate more than 5' of snow (additional geogrid will be required). Snow melt must not be allowed to saturate the wall's reinforced geogrid zone.

3.18 Post Construction Responsibilities

A. Retaining walls are a substantial financial investment. Therefore it is in the owner's best interest that a wall maintenance budget be established within the overall property management budget to monitor and provide preventative maintenance. Retaining wall maintenance, at a minimum, should consist of: checking drainage, inspecting for settling and surveying to verify alignment and batter. This service should be by qualified personnel under the supervision of a licensed geotechnical/structural engineer. RA can provide this service for an additional fee.

B. RA SHOULD BE NOTIFIED AS SOON AS REASONABLY POSSIBLE IF THE RETAINING WALL EXHIBITS CONDITIONS CONTRARY TO THE RA FINAL DESIGN SO THAT RA MAY BE CONSULTED TO PROTECT THE OWNER'S INVESTMENT.

END OF SECTION Revised 10-11-04

The information contained herein is proprietary and is the sole property of RA. It is only intended for use on this project. Reuse of these drawings, sketches, and design computations in any manner is strictly prohibited without written approval from RA. Any other use is subject to penalty of law. (c)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Signature	Title	Date
[signature]	CHIEF, DEVELOPMENT ENGINEERING DIVISION	5/25/05
[signature]	CHIEF, DIVISION OF LAND DEVELOPMENT	6/2/05
[signature]	DIRECTOR	6/1/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND – WILLIAM K. RYAN – No. 21586 – REGISTERED PROFESSIONAL ENGINEER
William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	04/01/05	JWP	DKS	Revise Sheet Number, Take-off and Load Table

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801·531·8585 • FAX 801·531·8586

SCALE: 1"=40'
0 10' 20' 40' 80'

© THE DENNIS GROUP, LLC
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO THE DENNIS GROUP LLC, OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF THE DENNIS GROUP LLC, AND SHALL BE RETURNED UPON REQUEST.

DRAWING NO.
C6.15

SPECIFICATIONS FOR SEGMENTAL RETAINING WALL SYSTEMS

PART 1: GENERAL

1.01 Description

A. Work includes furnishing and installing segmental retaining wall (SRW) Units to the lines and grades designated on the Final Design prepared by Ryan & Associates (RA). Also included are furnishing and installing appurtenant materials required for construction of the retaining wall as shown on the RA Final Design.

1.02 Reference Standards

A. ASTM C 140– Sampling and Testing Concrete Masonry Units
B. ASTM D 4595– Tensile Properties of Geotextiles by the Wide–Width Strip Method.
C. ASTM D 5262– Test Method for Evaluating the Unconfined Creep Behavior of Geo– Grids
D. GRI:GG1– Single Rib Geogrid Tensile Strength
E. GRI:GG5– Geogrid Pullout
F. ASTM D 698– Moisture Density Relationship for Soils, Standard Method
G. ASTM D 422– Gradation of Soils
H. ASTM 4318– Atterberg Limits of Soil
I. ASTM 3034– Specification for Polyvinyl Chloride (PVC) Plastic Pipe
J. ASTM D 1248– Specification for Corrugated Plastic Pipe

1.03 Design Standards

A. The following factors of safety have been met in this design: Sliding 1.5, Overturning 2.0, Bearing Capacity 2.0, Geogrid Overstress 1.5, Geogrid Connection (between the block and the geogrid) and Geogrid Pullout 1.5 (from the block and from the soil).

1.04 Scope of Work

A. The retaining wall design engineer's (Ryan & Associates) scope consists of preparing the wall design and professionally sealing to enable the contractor to obtain the necessary permits and properly construct the wall. The design considers the internal and local stability of the reinforced soil mass and is in accordance with acceptable engineering practice and these specifications. Services outside this scope such as responding to the owner's engineering firm (civil, structural, geotechnical or otherwise), provision of quality control testing & inspection, investigation of failed or non–conforming walls or any other services may be provided on a time & materials basis or for a negotiated fee. The scope of work for Ryan & Associates (RA) on this project does not include the preparation of a grading plan, surveying, wall stakeout or any other civil engineering.

1.05 Contractor's Responsibility

A. This design has been done in an effort to achieve the required grade changes shown on the civil plans for the project or the owner's (or wall installer's) desired grade changes (in the case of design build projects). The wall installer must verify the accuracy of these grades (elevations) by comparing them to the civil plans or actual field conditions prior to wall construction. The civil plans and actual field conditions govern and their grades must always be met. The lineal footage of the wall and the TW/BW elevations must be checked. If an error is discovered, RA shall be notified immediately and revisions will be provided. RA will not be responsible for correcting a wall that is being built or has been built incorrectly due to this design not being checked for accuracy prior to wall construction.

PART 2: MATERIALS & DESIGN PARAMETERS

2.01 Segmental Retaining Wall Units

A. SRW Units shall be machine formed, Portland Cement concrete blocks specifically designed for retaining wall applications. The SRW Unit currently approved for this project is:

Keystone Compac II as manufactured by Betco Block & Products

NOTE: Where Keystone specifications and reference documents conflict with these specifications the RA specifications hold precedence.

B. SRW Units shall be sound and free of cracks or other defects that would interfere with the proper placing of the units or significantly impair the strength or permanence of the structure. Cracking or excessive chipping may be grounds for rejection. Units showing cracks longer than 1/2 inch shall not be used within the wall. Units showing chips visible at a distance of 30 feet from the wall shall not be used within the wall.

C. Concrete used to manufacture SRW Units shall have a minimum 28 days compressive strength of 3,000 PSI and a maximum moisture absorption rate, by weight, of 8% as determined in accordance with ASTM C 140. Compressive strength test specimens shall conform to the saw–cut coupon provisions of Section 5.2.4 of ASTM C 140 with the following exception: Coupon shall be taken from the least dimension of the unit of a size and shape representing the geometry of the unit as a whole.

D. SRW Units molded dimensions shall not differ more than ± 1/8 inch from that specified, except height which shall be ± 1/16 inch as measured in accordance with ASTM C 140.

2.02 Geosynthetic Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids as indicated on the RA Final Design. No geogrid substitutions shall be permitted without the prior approval of RA (a partial redesign may be necessary if geogrids are substituted). NOTE: it is always acceptable to substitute a higher strength geogrid (of the same manufacturer) for a lower strength geogrid.

2.03 Connectors

A. Shear connectors shall be 1/2 inch diameter thermoset isopthalic polyester resin–pultruded fiberglass reinforcement rods or equivalents to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to +100 degrees F. These connectors shall be capable of holding the geogrid in the proper design position during geogrid pre–tensioning and backfilling. The pins have several positions. The rear pin position results in a 1" setback and a 7.1° batter and the center pin position results in a near vertical setback with an approximate positive batter of 0.5°. The batter for which RA designed this wall will be stated in the RA Final Design General Notes and on the structural cross sections. It is always acceptable to change from the near vertical batter to 7.1° since it is more conservative (yields higher factors of safety); however the cross sections will need to be revised

2.04 Leveling Pad

A. Material for the leveling pad shall consist of compacted gravel or unreinforced concrete. Typical gravels used for this leveling pad are #57, CR6, 21A, 2A modified, 2B, RC6, RC57, etc. Lean un–reinforced concrete with a strength of 1,500 PSI may also be used for the leveling pad.

2.05 Drainage Aggregate

A. Drainage aggregate shall be clean angular gravel (#57 or equivalent) with a size of 1/2 inch to 1 1/2 inches and less than 10% fines (passing the #200 sieve). Rounded "pea gravel" type aggregate is not permissible since it does not have the necessary frictional properties. Recycled gravel may be used if it meets the above criterion.

2.06 Drainage Pipe

A. The drainage collection pipe shall be a 4 inch perforated or slotted PVC or corrugated HDPE pipe.

2.07 Infill Soils: the reinforced geogrid zone

A. The soils used must meet or exceed the friction angle stated in the RA Final Design (in the General Notes, on the typical wall section and on the structural cross sections). The reinforced material shall be free of debris and organic material (i.e.– no plants, roots, sod, top soil, trash, wood, etc.). The infill soil shall not consist of CH (fat clay), MH (elastic silt) or OH/OL/PT (organic) soils. All soils used for wall infill must always meet the following requirements, regardless of the friction angle: maximum liquid limit of 40, maximum optimum moisture of 20%, maximum of 75% passing the #200 sieve (minimum of 25% retained on the #200 sieve) and minimum dry unit weight of 105 PCF. Soil moisture must be within (2% of optimum to obtain proper compaction results (no exceptions).

B. Rocks may be used as infill material as long as they have a maximum size of 6 inches and a mean diameter of 3 inches. Recycled concrete is permissible for infill except with certain polyester geogrids in water applications. In the case of water applications the geogrid manufacturer shall be consulted to see if the alkali in the recycled material will cause corrosive damage to their geogrid.

C. Select gravel (classified by USCS as GP or GW) is normally an acceptable substitution in the event suitable soils (those meeting RA's and the site geotechnical engineer's requirements) are not readily available or if there are difficulties due to frost or moisture levels. However, the unit weights of gravel can vary widely (clean gravel is typically 90–100 PCF and "crusher run" gravel is typically 130–140 PCF) so RA must be notified so that revised sections can be run prior to making any substitutions. In some cases clean gravel actually requires longer geogrid lengths because of its extremely light unit weight.

D. Asphalt tailings (bicktop millings) are only acceptable for wall infill if authorized in writing by the municipality (county, township, etc.) and/or regulatory authority since they may be a potential environmental hazard. These materials must also meet the requirements for the backfill soils in the RA Final Design; therefore RA must be given a proctor test and gradation (sieve analysis) for approval prior to wall construction.

2.09 Foundation Soils: the soils under the wall's gravel leveling pad and the soils under the reinforced geogrid zone

A. The foundation soils (wall sub–grade) must meet or exceed the minimum allowable bearing capacity stated in the RA Final Design (in the General Notes and on the typical wall section). The sub–grade must be virgin (natural undisturbed soil with blow counts ≥12) or suitable fill (friction angle ≥ the RA Final Design requirement) compacted to 95% of a standard proctor maximum dry density. If highly plastic soils (CH or MH) or organic soils (OH, OL, or PT) are encountered in the sub–grade they must be removed and replaced with suitable soil or gravel that is placed in controlled lifts and compacted to 95% of a standard proctor maximum dry density. If the organic or plastic soils extend so deep that they cannot be totally removed, they shall be undercut a minimum of 4' and replaced with suitable soils or gravel. It must be emphasized that the wall's sub–grade is not only the soils under the leveling pad, but also includes all soils under the entire reinforced geogrid zone. Therefore, the foundation soils extend from 6" in front of the base block to the back of the reinforced geogrid zone (back edge of the lowest geogrid layer).

2.10 Soil Investigation

A. RA recommends that every retaining wall design be preceded by an in–situ soil investigation by a licensed geotechnical engineer. However, if the owner and/or wall installer elects not to have an investigation conducted RA may assume soil design parameters based on: published data by the Soil Conservation Service (soil maps), a verbal description by the owner and/or wall installer or by RA's previous experience in certain geographic areas. It must be understood that the owner and/or wall installer bears full responsibility to the election not to have a soil investigation performed.

2.11 Site History & Information

A. Many factors other than soil information affect the performance and design of the retaining wall. RA relies on information provided by the owner and/or wall installer when designing a retaining wall. RA bears no responsibility if the owner and/or wall installer omit critical information required to properly design the wall. Information critical to wall design from the site consist of: topographic features (such as slopes), soil types, utilities, storm water management, structures (including buildings, other existing or proposed walls, swimming pools, etc.), site geological phenomenon, groundwater, loads with the wall's zone of influence (such as driveways, patios, roadways, sidewalks, etc.) and any other readily known site factors that could potentially impact the RA Final Design.

PART 3: CONSTRUCTION

3.01 Inspection

A. RA considers all retaining walls to be critical structures, meaning most walls require a considerable financial investment by the owner and failure of a wall will negatively impact a property both financially and from a public safety perspective. The owner or owner's representative is responsible for verifying that the wall installer meets all of the requirements of the RA Final Design (as stated in these specifications and the project's General Notes). This includes all submittals for materials and design, qualifications and proper installation of the wall system. All walls with an exposed height of 4 feet or greater, or those walls require a building permit, must have the construction monitored and the completed wall certified by a licensed geotechnical/structural engineer registered in the jurisdiction of the project. Additionally, after the wall has been completed it is highly recommended that it be surveyed to establish the wall's current horizontal and vertical alignment.

B. The wall installer's field construction supervisor shall have demonstrated experience and be qualified to direct all work at the site.

C. RA provides construction review on some retaining wall projects. RA verifies general compliance with the RA Final Design; however, it is the wall installer's ultimate responsibility to construct the structure properly in accordance with the RA Final Design. RA's liability is limited to the amount of our fees for the scope of work provided for the wall designs and construction oversight.

3.02 Excavation

A. The wall installer shall excavate to the lines and grades shown on the RA Final Design and the project's civil plans. The wall installer shall take precautions to minimize over–excavation. Over–excavation shall be filled with compacted soil (friction angle ≥RA design parameters) or gravel as directed by the site geotechnical engineer.

B. The wall installer shall verify the location of existing structures and utilities prior to excavation. The wall installer shall ensure that all surrounding structures are protected from the effects of wall excavation. Excavation support (shoring), if required, is the responsibility of the wall installer. All excavation must be conducted in accordance with OSHA (federal) and state safety regulations. All work to construct the wall must be in accordance with 29CFR1926 sub–part P (OSHA Excavation Safety Requirements).

3.03 Foundation Preparation

A. Following excavation, the foundation soils (under the wall's gravel leveling pad and under the wall's reinforced geogrid zone) shall be examined by the site geotechnical engineer to assure that the actual foundation soil strength meets or exceeds the minimum allowable bearing capacity in the RA Final Design (stated in the General Notes and shown on the typical wall section). Soils that do not meet the required strength shall be removed and replaced with approved select structural fill or gravel and be compacted to 95% of a standard proctor maximum dry density for the full depth.

B. In cases of poor bearing capacity, deep fill soils, or when groundwater is encountered it may not be possible or practical to undercut to suitable soils. As an alternative, geonet, geogrid reinforcing (or a combination of both) or a concrete footing may be utilized to meet the required soil bearing capacity. RA can provide a supplemental sub–grade design for an additional fee (it is not within RA's original scope of work for this project). However, it is the site geotechnical engineer's ultimate responsibility to ensure that the sub–grade meets or exceeds that specified by RA for this project (stated in the RA Final Design). The site geotechnical engineer must add a minimum factor of safety of 2.0 to the RA specified capacity (i.e. if RA requires 2,500 PSF the actual field ultimate bearing capacity must meet or exceed 5,000 PSF).

3.04 Leveling Pad Construction

A. The leveling pad shall be placed so that its top elevation is the same as the bottom of block ("BB") elevation on the RA Final Design profile drawing. It shall have a minimum thickness of 6 inches and a minimum width of 2 feet (for 12" wide blocks). The leveling pad should, at a minimum, extend laterally at least a distance of 6 inches from the toe and heel of the lower most SRW Unit. The leveling pad must have a minimum width of 30 inch for 18 inch wide blocks and a minimum width of 36 inch for 21.5 inch wide blocks.

B. The leveling pad material shall be compacted to 95% of a standard proctor maximum dry density with a vibratory plate compactor to provide a firm level–bearing surface on which to place the first course of SRW Units. A thin layer (not to exceed 1/2 inch) of well–graded sand or stone dust may be used to smooth the top of the leveling pad.

3.05 SRW Unit Installation

A. All SRW Units shall be installed at the proper elevation and orientation as shown on the RA Final Design profile drawing and in conjunction with the project's civil plans. The SRW Units shall be installed in general accordance with the manufacturer's recommendations (RA's Final Design shall govern in any conflict between the two requirements).

B. The first course of SRW Units shall be placed on the leveling pad. The units shall be leveled side–to–side, front–to–rear and with adjacent units, and aligned to ensure intimate contact with the leveling pad. The first course is the most important for accurate and acceptable results. Alignment may be done by means of a string line or an offset from the base line to the backs of the blocks. SRW units shall have a minimum 4 inch overlap of units on each successive course so that the wall is interlocked and continuous. No horizontal gaps greater than 1/4 inch between the faces of adjacent units are permitted.

C. Because the wall has a setback, its batter must be predetermined during the stake out process by the civil engineer/surveyor and wall installer. If there are critical dimensions that must be met on the high side of the wall then the base (at the toe) will need to be moved forward to compensate.

D. Lay out of curves and corners shall be installed in accordance with the civil plans and the RA Final Design. Construction techniques for curves and corners shall be in accordance with the SRW manufacturer's installation guidelines. In general, all tangent angles shown on the civil drawings should be changed into radii (inside and outside curves) to enhance the wall's strength and appearance. Continuous vertical joints are not permitted. Inside and outside 90(corners may be constructed without compromising the wall's integrity if they are properly built. Inside corners should be constructed so that the SRW Units interlock and overlap (according to the manufacturer's recommendations) and outside corners should incorporate special corner blocks when possible. If special outside corner blocks are not available from the block manufacturer for this project then the manufacturer's guidelines for building structural outside corners shall be followed. Outside corners must be built so that the blocks interlock and overlap. If gluing is necessary (when there is not a positive connection from clips, lips, lugs, pins, etc.) only industrial grade adhesives or sealants designed for concrete–to–concrete applications may be used (adhesives designed for plastic or wood applications are not acceptable).

E. Clean all excess debris from the tops of the SRW Units and install the next course.

F. Repeat procedures to the extent of wall height.

G. A ±2° construction tolerance is permitted horizontally for wall batter (block setback). In no case shall a wall go beyond vertical (have a negative batter). Some block systems have an optional near vertical batter (typically 0.5(). If the wall is to be built with a near vertical batter, the base course should be laid so that it is tilted back a minimum of 1/4 inch to compensate for movement that will likely occur from compaction equipment and from the geogrid losing its slack. Walls shall be built level from left to right (not with grade), however a +1.5 inch tolerance over a 10 foot distance is permitted vertically (as checked from left to right along the wall).

H. Embedment shall be a minimum of 1 inch buried for every 1 foot of exposed wall height with one block minimum when the front slope is 4:1 or greater (more level). Walls constructed on 3:1 front slopes or less (more steep) require additional buried blocks. See the profile drawing in the RA Final Design for the exact amount of embedment (the amount of buried block can be determined at each wall station by subtracting the "BB" elevations from the "GR" elevations).

3.06 Geogrid Reinforcement Placement

A. All geogrid reinforcement shall be installed at the proper elevation, length (measured from the face of block) and strength as shown on the profile drawing and structural cross section(s) in the RA Final Design. Partial geogrid coverage is not acceptable: no gaps shall be present between geogrid layers. 100% coverage is required, however it is not necessary to overlap the geogrid pieces (overlapping the geogrid may be detrimental since it will likely cause a "bump" in the wall). The geogrid shall be laid horizontally on the compacted infill soil and on top of the concrete SRW Units. The geogrid must be embedded into the SRW Units to the face. The wall installer shall verify that the orientation of the geogrid is in accordance with the geogrid manufacturer's recommendations. The highest strength direction of the geogrid must be perpendicular to the wall face (the geogrid must not be laid parallel to the wall– cannot be rolled out with the wall). The geogrid must be level (cannot be going "down hill" or "up hill").

B. Geogrid reinforcement layers shall be one continuous piece for their entire embedment length. Overlapping of the geogrid in the design strength direction (perpendicular to the wall face) is not permitted.

C. Tracked construction equipment shall not be operated directly on the geogrid. A minimum of 6 inches of backfill is required prior to operation of tracked vehicles over the geogrid. Turning should be kept to a minimum. Rubber–tired equipment may pass over the geogrid reinforcement at slow speeds (less than 5 MPH).

D. The geogrid shall be in tension and free of wrinkles prior to placement of the infill soil. Nominal tension shall be applied to the geogrid and secured in place with staples, stakes or by hand until it is covered by 6 inches of infill soil.

E. For inside & outside corners and inside & outside curves the geogrid shall be placed according to the manufacturer's instructions to provide total geogrid coverage. On outside corners the geogrid should be shifted up or down one course and alternated so that the geogrid comes into the reinforced geogrid zone from both legs of the 90° angle. Geogrid layers should never be placed on top of one another: there must be a minimum of 3 inches of compacted infill soil between geogrid layers.

3.07 Wall Drainage

A. Drainage aggregate (clean gravel such as #57 or approved equivalent) shall be installed behind the entire wall face from the first course below grade to one course from the top of the wall. The drainage gravel shall be placed to a minimum thickness of 12 inches behind the SRW Units. Drainage gravel shall also fill all voids between and within (if hollow) the SRW Units. SRW Units must be filled with drainage aggregate in one course lifts (SRW Units may not be stacked in two or three course lifts and then have the gravel dumped in from the top through multiple courses). An impermeable clay layer (CL, GC or SC) shall be placed on top of the 12" drainage layer. If clayey soils are not readily available, a layer of filter fabric (Mirafi 140N or equivalent) shall be placed on top of the gravel (below the topsoil) to prevent the downward migration of fines.

B. A continuous drainpipe is mandatory and shall be vented to daylight in one of two ways. The continuous drainpipe may run to the end(s) of the wall or to a central low point of the wall. Or, the continuous drainpipe may be vented through the wall face at maximum intervals of 30 feet on center (no more than 6 inches above finished grade). The pipe must maintain gravity flow of water outside the reinforced geogrid zone. Water must drain to an outlet and have positive flow. If a pipe is run below grade, it shall daylight into a storm sewer manhole or along a slope at an elevation lower than the lowest point of the pipe within the drainage aggregate. When drainpipes are daylighted at the end(s) of a wall they must be visible and unobstructed. The drainpipes should be checked by the owner on a regular basis to ensure that they remain open (not blocked, filled in, grown over, pinched). Only one method of venting to daylight is required (end/central low point or through wall face), not both.

C. Rear drainpipes are required in the following situations: when groundwater can rise and approach within 1 foot of the wall's sub–grade and for walls that have an exposed height of 10.0' or greater in "cut" situations (since the potential exists for water to enter the interface between the reinforced geogrid zone and the retained zone). This rear drainpipe shall be surrounded by a minimum of 12 inches (6 inches on each side) of clean gravel (#57 or equivalent) and surrounded with filter fabric to prevent the migration of fines. The rear drainpipe must vent to daylight or be directed to a storm sewer manhole (see instructions for front drainpipe in section 3.07B above).

D. Chimney drains (a second 12 inch layer of drainage aggregate within the rear 1 foot of the reinforced geogrid zone or directly behind the reinforced geogrid zone) must be installed when groundwater is present or likely (to an elevation that is a minimum of 1 foot above predicted levels as given by the site geotechnical engineer), when stated in the RA Final Design or when required by the site geotechnical engineer.

E. All drainage zone aggregate shall be compacted with a vibratory plate compactor (minimum of three passes).

3.08 Backfill Placement

A. The infill soils shall be placed as shown in the RA Final Design in the maximum compacted lift thickness of 10 inches and shall be compacted to a minimum of 95% of a standard proctor (or 93% of a modified proctor) maximum dry density (ASTM D 698) at a moisture content within 2% of optimum. The backfill shall be placed and spread in such a manner as to eliminate wrinkles or movement of the geogrid and the SRW units. Compaction testing shall be done at 25%, 50%, 75% and 100% of the wall height or as specified by the site geotechnical engineer.

B. Only a vibratory plate or small–scale vibratory smooth drum compactor equipment shall be allowed within 3 feet of the front of the wall face. Compaction within the 3 feet behind the wall face shall be achieved by at least three (3) passes of the lightweight mechanical plate compactor or roller. Heavy equipment (such as track hoes, ride on rollers, pans, etc.) must be kept back a minimum of 3 feet from the rear of the wall.

C. At the end of each day's operation, the wall installer shall slope the last level of backfill away from the wall facing to direct water runoff away from the wall face.

D. At completion of wall construction if final grading, paving, landscaping and/or storm drainage installation adjacent to the wall is not placed immediately after wall completion, temporary grading shall be provided to ensure that water runoff is not allowed to collect or pond behind the wall until final construction adjacent to the wall is completed.

E. Filter fabric (Mirafi 140N or equivalent) is required when the infill soil is classified as poorly graded sand (SP) or well graded sand (SW) since these soils are non–cohesive and could potentially slough, clogging the gravel drainage layer. Filter fabric is optional between the 12 inch gravel drainage layer and the compacted infill soil if the backfill soils are clayey (CL or SC), gravelly (GC, GM, GP or GW) or silty (ML or SM).

3.09 SRW Caps

A. SRW caps shall be properly aligned and glued (for safety reasons) to the underlying SRW Units with a flexible high–strength concrete adhesive or sealant designed for "concrete to concrete" applications (not for plastic or wood). Rigid adhesive or mortar is not acceptable.

3.10 Wall Geometry

A. It is acceptable to modify the wall's configuration (angles to curves, corners to curves, etc.) from the civil plan layout as long as the RA design height is not exceeded and the loads do not increase (slopes do not get steeper, surcharges do not get greater, etc.).

B. Some projects, such as "design build", will require the wall installer to change the wall length and height as needed to meet the field conditions (since there may not be a specific grading plan). This is acceptable, but the wall height in the RA Final Design must not be exceeded. If the wall must be built to a height that exceeds the design, RA must be notified and a revised (taller) cross section provided prior to wall construction.

3.11 Water Applications

A. When walls are installed in water applications (such as storm water ponds, streams, bulkheads, areas adjacent to flood plains, etc.) all clean gravel must be used as infill up to 1 foot above the 100 year flood elevation, the high water level or the top of berm/spillway. This gravel must be free draining and have less than 10% fines (#57 or approved equivalent). Filter fabric (Mirafi 140N or approved equivalent) must go in front of the buried block, under the leveling pad, under the reinforced geogrid zone, behind the reinforced geogrid zone (vertically up to the extent of the gravel infill) and on top of the gravel infill (horizontally). This is required to prevent the migration of fines into the gravel infill. Rip rap is required in front of the bottom three courses on walls installed in tidal waters or waters subject to wave action. Rip rap is also required when indicated on the civil plans and where pipes with active water flow exit through the wall (to prevent scour).

B. Walls installed in ponds that hold water for extended periods of time may require special precautions. If the foundation soils (sub–grade) are not free–draining (classified by uses as GP, GW, SP or SW) the following shall be done to prevent the wall's sub–grade from being compromised: an 8"impermeable clay layer (soils classified by USCS as CL, GC or SC) must be placed as the final 8" of soil (in front of the first block below grade). The clay layer shall extend forward from the base of the wall a minimum of 20' laterally into the pond. This will ensure that any water seepage does not intersect a 45° slope (1:1) downward from the front edge of the wall's leveling pad.

3.12 Responsibilities of the Site Geotechnical Engineer (construction oversight)

A. The site geotechnical engineer's responsibilities include, but are not limited to, verifying the following: sub–grade bearing capacity (must meet or exceed that stated in the RA Final Design); soil friction angles (foundation, infill and retained); soil compaction (>95% of a standard proctor or >92% of a modified proctor maximum dry density); geogrid type (manufacturer and strength), length, coverage, orientation and elevation; placement of drainage aggregate (12" minimum); placement and proper flow of drainpipes; wall geometry (wall must not exceed height of RA Final Design); site geometry (slopes and surcharges must be equal to or less than the RA Final Design and the civil plans); construction techniques (must be in accordance with previously stated procedures); water management (placement of swales, clay layers/geomembranes, flow of surface water to inlets, etc.) and all other activity that may impact the wall's integrity. RA must be notified if actual field conditions differ from the Final Design parameters and/or if there are activities on site that are not in accordance with these Specifications.

B. Field changes to the RA Final Design must be approved by RA in writing. Request(s) for design changes/field modifications must be made to RA in writing prior to RA issuing a written response. All correspondence must be documented with formal written response. These additional services are not included in RA's original scope of work and design fee. Therefore, a contract modification/change order must be signed by RA and the client prior to these additional services being provided.

3.13 Rails, Fences & Other Structures

A. The scope of RA for this project does not include fence or railing designs. Typical details have been given to provide general guidelines for the installation of fences, guide rails and railings behind walls. RA cannot give specific details because the type, placement and height of fences and rails varies widely and because the requirements are different depending on the municipality and regulatory authority. RA can provide a project specific fence or rail detail and structural design for an additional fee if given exact information (material type and size and manufacturer's specifications and installation guidelines).

B. Open fences and railings not subject to wind loads (minimum of 50% open and maximum of 50% solid) may be placed directly behind the wall or in the wall (can be placed in the blocks only if they are a hollow system and if the cores and web alignment will accept the posts) as long as they are not subject to vehicular impact. Solid or semi–solid fences that are subject to wind loads must be kept back a minimum of 3 feet from the rear of the wall to prevent loading of the wall.

C. Guide rails subject to vehicular impact must be kept back a minimum of 3 feet from the rear of the wall to prevent loading of the wall. Guide rails may be placed closer than this 3 foot minimum only if a barrier (such as curbing, wheel stops, etc.) is in place to prevent vehicular impact (the overhang of vehicles must be considered when determining this).

D. Light post foundations, sign foundations and similar structures subject to wind loads must be kept back a minimum of 3 feet from the rear of the wall to prevent loading of the wall.

E. In cases where these 3 foot minimum distances cannot be met due to restraints on the site, additional analyses will need to be done to determine methods of stabilization. RA can provide these designs for an additional fee.

3.14 Storm Structures & Utilities

A. Reinforced Concrete Pipes (RCP) may pass through the leveling pad or wall structure without additional means of support (it should be verified from the pipe manufacturer that the pipe can withstand a load equal to or greater than that exerted by the wall– as stated in the RA Final Design General Notes under "Bearing Capacity". The SRW units may be cut to fit around the pipe and the voids filled with non–shrink grout or type "M" mortar. A concrete collar may be cast around the structure if desired for ease of construction and aesthetic considerations. When a collar is cast, the top of the collar must line up with an even block course to maintain proper alignment, neat workmanship and to eliminate horizontal cutting of blocks.

B. The wall may not bear on plastic or steel pipes (such as ADS, CMP, HDPE, PVC, SLCPP, etc.) or utilities (such as electric, gas, phone lines, sewer or water lines, etc.). Grade beams or lintels must be used to bridge these non–load bearing structures. If a specific grade beam or lintel is not specified in the RA Final Design, RA shall be consulted to determine the size, strength and reinforcing of the grade beam or lintel. If these non–load bearing pipes or utilities are located at minimum of 42 inches below the wall's leveling pad then a grade beam or lintel is not necessary.

C. Concrete storm structures may be located behind a wall and be within the reinforced geogrid zone as dictated by the project's civil drawings. If the structure(s) cannot be moved out of the reinforced geogrid zone and the geogrid cannot be installed to its full design length the following shall apply. On small structures (such as collection boxes, concrete pipes less than 18 inches, inlets, manholes, etc.) it is acceptable to shorten the geogrid from the design length and meet the structure. The area between the wall and structure where the geogrid has been shortened must be filled with gravel (#57 or equivalent) and not soils. The gravel must be placed in maximum loose lifts of 10" and be compacted with a minimum of three passes by a vibratory plate compactor. For tall narrow structures the geogrid should be "looped" around the structures for additional support. On large structures and in cases where pipes parallel the wall for long distances, RA shall be consulted to determine the impact on the wall before allowing this to be done.

D. The wall's integrity may be compromised if pipes or structures burst or develop leaks and allow water or fluids to saturate the reinforced geogrid zone. RA is not responsible for wall failure that results from pipes or structures that burst or leak and allow water or fluids to saturate the reinforced geogrid zone. To prevent damage to the wall structure a bed of clean gravel shall be placed under all pipes (minimum of 6" deep) and shall extend up to the "spring line" (half way up). Positive flow of the gravel must be maintained away from the wall structure.

3.15 Construction Adjacent to Completed Wall

A. The owner or owner's representative is responsible for ensuring that construction adjacent to the wall by others does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of three feet behind the back of the wall face. Equipment with wheel loads in excess of 150 PSF live load shall not be operated with 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the general contractor or owner to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.

B. Care must be taken when installing appurtenances (such as generators, transformers, etc.) or utilities within the reinforced geogrid zone of the wall. The compaction integrity of the reinforced geogrid zone must be maintained, both below and beside (around) the appurtenance or utility. Neglecting to do so may cause hydrostatic pressure and wall failure.

3.16 Storm Water Management & Slopes

A. The segmental retaining wall is not a storm water management structure. The wall can accommodate the rainfall above the reinforced geogrid zone but not the watershed (including the retained zone). Therefore it is absolutely essential that surface water be prevented from entering (and ultimately saturating) the reinforced geogrid zone. This is usually accomplished by the site engineer (owner's civil engineer) grading the surface behind the wall to direct surface water to swales that divert the water around the wall ends, to inlets or over the top of the wall through scuppers. If water is directed to the wall (such as applications with back slopes), the top 8 inches of compacted fill over the reinforced geogrid zone must have impermeable soil (such as CL, GC or SC). If clayey soils are not readily available an underlying geomembrane (geosynthetic liner) may also be used. This geomembrane shall be Mirafi G200N, Stratadrain or equivalent. It shall extend downward vertically a minimum of 3 feet behind the reinforced geogrid zone, be laid horizontally on top of the reinforced geogrid zone with a maximum slope of 10:1 and extend forward into the 12 inch gravel drainage layer.

B. The site geotechnical engineer is responsible for verifying the stability of slopes on the project. RA's scope includes only wall the design, not the evaluation of back slopes (above walls) or front slopes (at the base of walls). RA performs global stability analyses on walls that rest on major front slopes, however only the wall is analyzed, not the actual slopes above or below the wall. It is the responsibility of the site geotechnical engineer to determine if the site soils are able to sustain the proposed grades. If not, they shall determine and specify the additional reinforcement that is necessary to provide the proper slope stability and prevent erosion.

C. The general contractor, owner, site contractor and/or wall installer must provide for proper wall drainage to prevent the buildup of hydrostatic pressures over the service life of the structure. In the event additional water is introduced into the general wall area, either above or below grade, the RA Final Design will be invalid (the exception is "water applications" where clean gravel is used for infill and it is wrapped in filter fabric and the design intent is for the wall to be interacting with water).

D. Drains for other structures (such as downspouts, roof drains, sump pumps, etc.) must flow through the wall. They cannot be connected to the wall's drainage system or discharge into the wall's reinforced geogrid zone.

3.17 Parking Lots & Roadways

A. If a paved parking lot or roadway is proposed above the wall it must be properly maintained and have proper surface water management. Typically curbing is installed to catch and divert the surface water runoff to inlets or ponds. All joints between the asphalt and the curbing must be sealed to prevent water from seeping into the wall's reinforced geogrid zone. The owner must regularly (semi–annually) inspect the pavement for cracks and repair them immediately if discovered. If cracks remain open they could allow surface water runoff or melting snow to saturate the wall's reinforced geogrid zone or retained zone which can lead to wall failure.

B. RA makes an effort to keep the topmost layer of geogrid two or three courses down from the top of the wall when there is pavement above. This is done so that the geogrid is properly embedded in sub–soils and not lying on top (since there is the depth of the granular sub–base material and the pavement depth to account for). Also, in many cases, RA designs the wall with the "TW" elevation high enough so that the back of the curb is covered (normally required by the civil engineer and required for support of the curbing). Therefore, the top layer of geogrid in some cases must be cut during pavement and/or curb installation (especially when a wall steps continuously on top). It is acceptable to cut the topmost layer of geogrid only if it is at the same elevation as the pavement or curbing (since if this is the case the wall is not absorbing a lateral load– only holding back "dead space" between the pavement or curbing and itself). However, the second layer of geogrid down from the top must never be cut.

C. If snow is plowed/pushed and stored above a wall it can not exceed a height of 5'. If there are definite plans for storage of accumulated snow before the wall is built, RA, upon request, can design the wall to accommodate more than 5' of snow (additional geogrid will be required). Snow melt must not be allowed to saturate the wall's reinforced geogrid zone.

3.18 Post Construction Responsibilities

A. Retaining walls are a substantial financial investment. Therefore it is in the owner's best interest that a wall maintenance budget be established within the overall property management budget to monitor and provide preventative maintenance. Retaining wall maintenance, at a minimum, should consist of: checking drainage, inspecting for settling and surveying to verify alignment and batter. This service should be by qualified personnel under the supervision of a licensed geotechnical/structural engineer. RA can provide this service for an additional fee.

B. RA SHOULD BE NOTIFIED AS SOON AS REASONABLY POSSIBLE IF THE RETAINING WALL EXHIBITS CONDITIONS CONTRARY TO THE RA FINAL DESIGN SO THAT RA MAY BE CONSULTED TO PROTECT THE OWNER'S INVESTMENT.

END OF SECTION Revised 10–11–04

The information contained herein is proprietary and is the sole property of RA. It is only intended for use on this project. Reuse of these drawings, sketches, and design computations in any manner is strictly prohibited without written approval from RA. Any other use is subject to penalty of law. (c)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/23/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717–262–4242 fax 717–262–4245
29 South Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND — WILLIAM KEITH RYAN — No. 21586 — PROFESSIONAL ENGINEER
William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-06	DAE	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE UNITS (PROJECT ENGINEER)

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

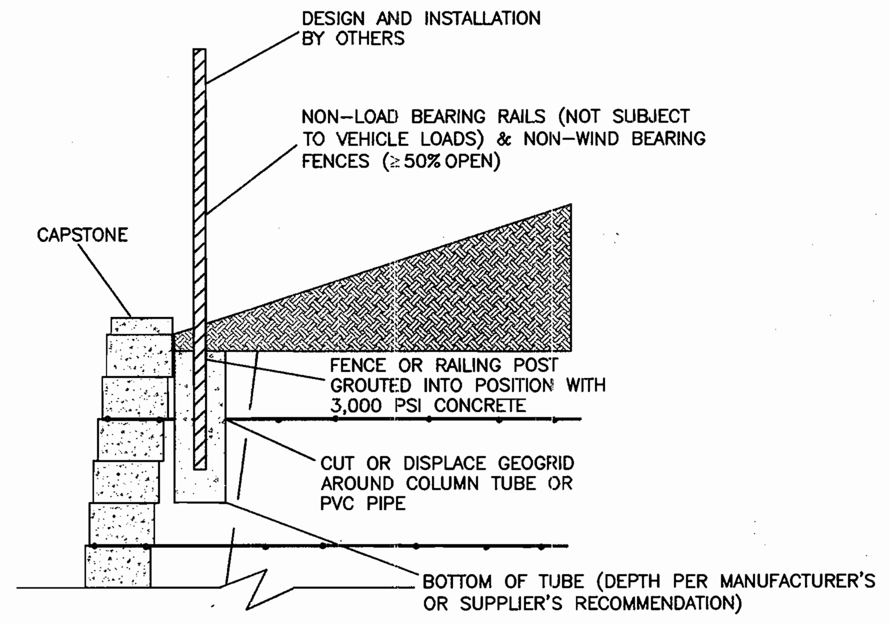
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786

SCALE: 1"=40'
0 20' 30' 40' 80'

DRAWING NO.
C6.15

HO. CO. DPZ SHEET: 38 OF 38

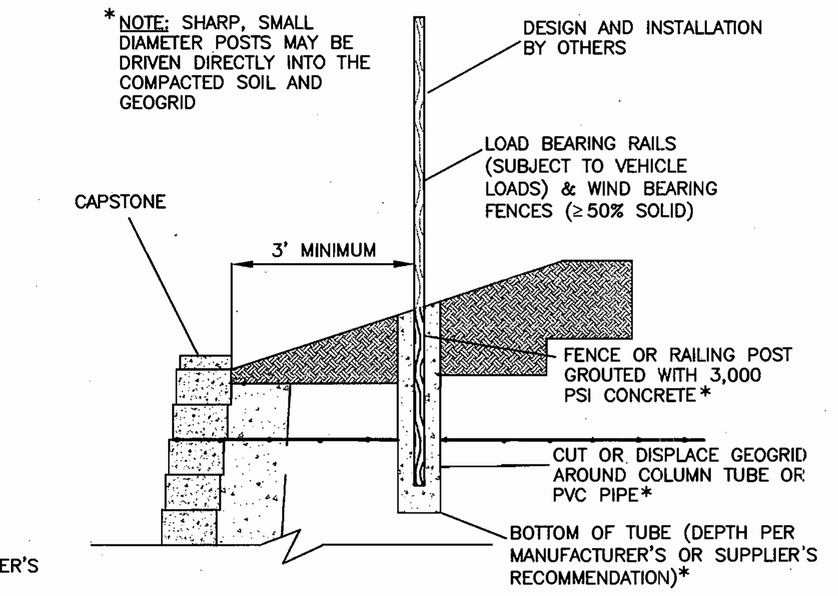
SDP-05-40



NON-LOAD BEARING & NON-WIND BEARING

(INSTALLED BEHIND WALL)

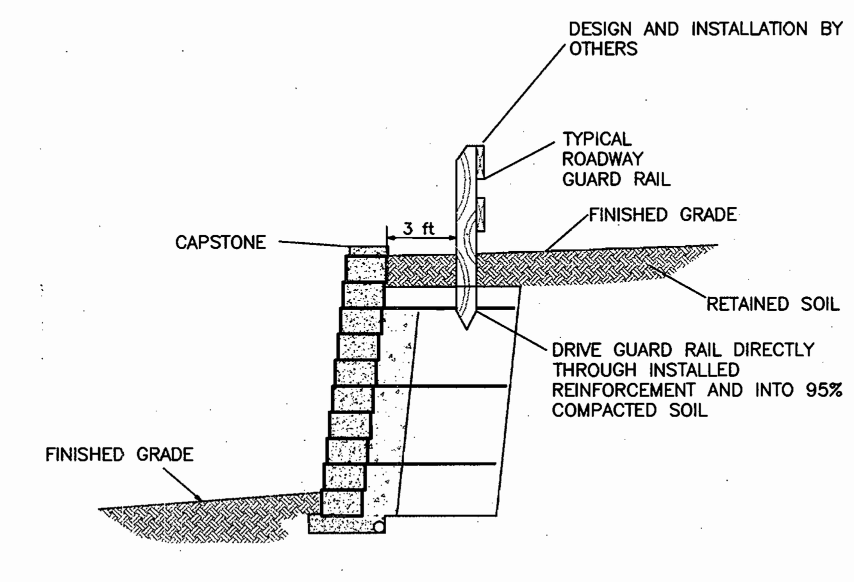
N.T.S.



LOAD BEARING & WIND BEARING

(INSTALLED BEHIND WALL)

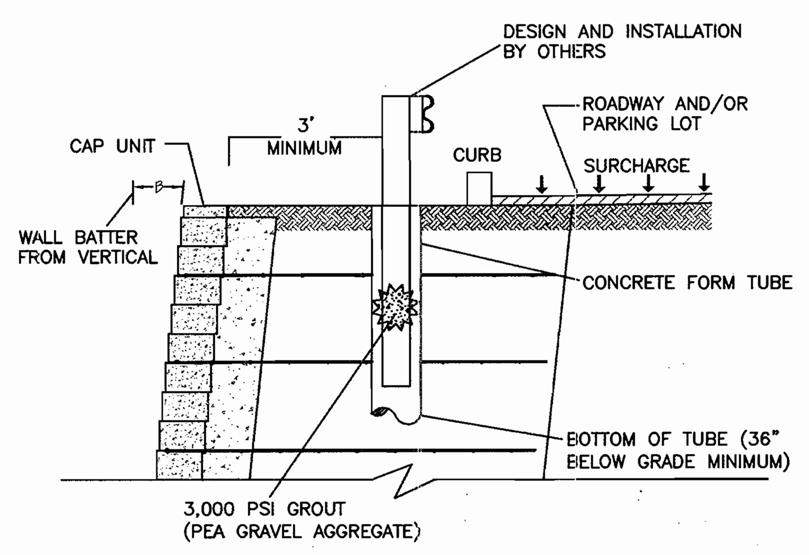
N.T.S.



GUARDRAIL DETAIL

DRIVEN THROUGH GEOGRID

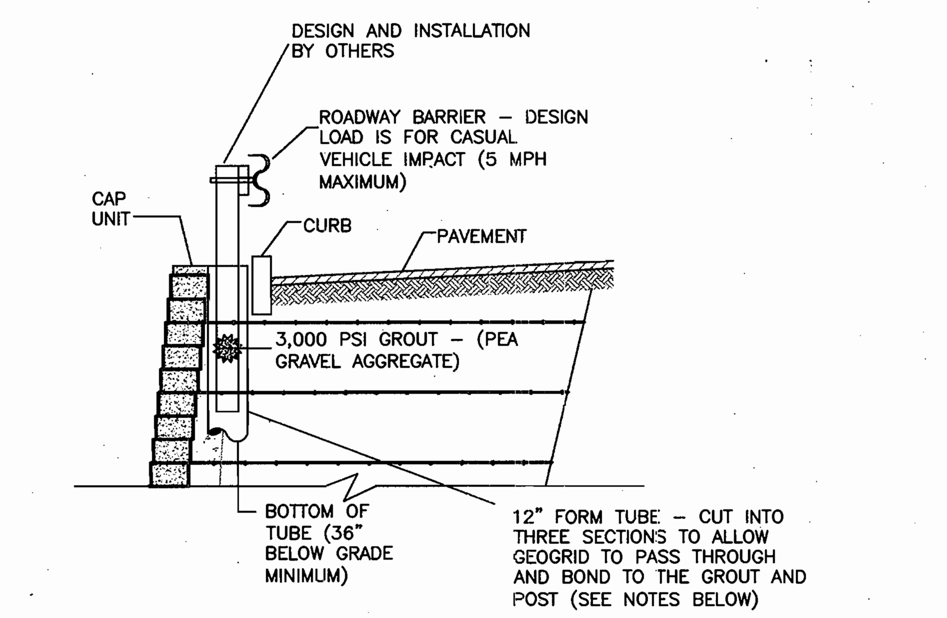
N.T.S.



NOTE:
1. GALVANIZED POSTS MAY BE DRIVEN DIRECTLY THROUGH THE COMPACTED SOIL AND GEOGRID (SEE DETAIL ABOVE RIGHT)
2. IF POSTS ARE SQUARE (SUCH AS 4X4 WOOD) CONCRETE FORM TUBES MUST BE PLACED DURING WALL CONSTRUCITON AND THE POSTS GROUTED IN LATER.
3. BLUNT POSTS MAY NOT BE DRIVEN INTO GEOGRID AFTER WALL CONSTRUCTION IS COMPLETE.

GUARDRAIL DETAIL

N.T.S.



NOTE:

THE CONCRETE FORM TUBE SHALL:
- BE 12" IN DIAMETER MINIMUM
- INTERSECT TWO GEOGRID LAYERS VERTICALLY
- BE CUT INTO SEGMENTS TO ALLOW THE GEOGRID TO PASS CONTINUOUSLY FROM THE FACE OF THE WALL, THROUGH THE FORM TUBE, THROUGH THE 12" DRAINAGE LAYER AND INTO THE REINFORCED SOIL ZONE – BE A MINIMUM OF 36" BELOW GRADE TO ELIMINATE ANY FROST CONCERNS
- BE GROUTED WITH 3,000 PSI CONCRETE (WITH PEA GRAVEL AGGREGATE) AFTER THE POST INSTALLATION

THE GEOGRID SHALL:
- PASS CONTINUOUSLY THROUGH THE CUT SECTION OF THE CONCRETE FORM TUBE
- BE CUT TO ALLOW THE POST TO BE INSTALLED AFTER THE WALL IS CONSTRUCTED (THE GEOGRID LEFT PENETRATING THE TUBE WILL BOND WITH THE GROUT TO CREATE A UNIFIED MASS WITH THE POST AND TRANSFER THE LOAD TO THE REINFORCED SOIL)
- BE KEPT TAUT WITHOUT ANY SLACK

GUARDRAIL WITH IMPACT LOAD

N.T.S.

RYAN & ASSOCIATES' SCOPE OF WORK FOR THIS PROJECT DOES NOT INCLUDE FENCE OR RAILING DESIGNS (CALCULATIONS). THESE DETAILS HAVE BEEN PROVIDED ONLY TO SHOW TYPICAL INTERACTIONS OF FENCES AND RAILINGS WITH SEGMENTAL WALLS. THE OWNER, GENERAL CONTRACTOR AND/OR WALL INSTALLER WILL NEED TO VERIFY THE SIZE AND TYPE OF FENCE OR RAILING THAT IS NEEDED TO BE IN ACCORDANCE WITH THE MUNICIPALITY'S REQUIREMENTS.

CROSS SECTION DETAILS & FACTORS OF SAFETY:

SECTION	STATION	TOTAL HEIGHT	LOAD APPLIED	SLIDING minimum 1.50	OVERTURNING minimum 2.00	BEARING CAPACITY minimum 2.50	BEARING PRESSURE PSF	GLOBAL STABILITY minimum 1.30
WALL #1								
1	References Entire Wall	8.67'	300 PSF LIVE LOAD	1.68	3.30	5.44	2,374	1.67
WALL #2								
1	0+00 TO 2+75	12.67'	300 PSF LIVE LOAD	3.01	11.91	12.10	1,956	1.32
2	2+75 TO 5+55	8.00'	300 PSF LIVE LOAD	2.52	8.27	11.92	1,319	1.31
WALL #3								
1	0+00 TO 0+17.5	10.00'	300 PSF LIVE LOAD	1.78	3.91	6.35	1,797	2.50
2	0+17.5 TO 0+61.5	18.00'	300 PSF LIVE LOAD	2.19	5.29	6.29	2,970	1.48
3	0+61.5 TO 0+98	10.67'	300 PSF LIVE LOAD	1.71	3.53	5.68	1,965	1.48
WALL #4								
1	0+00 TO 0+36	12.67'	300 PSF LIVE LOAD	1.68	3.30	4.92	2,374	1.63
2	0+36 TO 1+08	17.33'	300 PSF LIVE LOAD	2.39	6.33	7.23	2,781	1.63
3	1+08 TO 1+66	14.00'	300 PSF LIVE LOAD	1.72	3.39	4.80	2,598	1.63
4	1+66 TO 2+59	11.33'	300 PSF LIVE LOAD	1.64	3.20	5.07	2,145	1.63
WALL #5								
1	0+00 TO 1+17	12.67'	300 PSF LIVE LOAD	3.03	10.69	10.82	1,970	1.31
2	1+17 TO 2+66	15.33'	300 PSF LIVE LOAD	2.58	7.79	8.56	2,414	1.31
3	2+66 TO 3+39	12.67'	300 PSF LIVE LOAD	2.92	10.69	10.82	1,195	1.31

GENERAL NOTES

1. SOIL PARAMETERS: Ryan & Associates (RA) has reviewed the "Subsurface Exploration and Geotechnical Engineering Analyses" dated 03/03/2004 and the "Supplemental Subsurface Exploration and Geotechnical Engineering Analyses" dated 05/14/2004 for this site prepared by ECS, Ltd. Based on these reports the soils vary widely and are classified by USCS as CH (fat clay), CL (lean clay), ML (sandy silt/silt), SC (clayey sand), SM (silty sand), SP (poorly graded sand) and SW (well graded sand). Although the sandy soils are predominant, a conservative internal angle of friction of 28° was used for the foundation soils (the walls' sub-grades) and the retained soils (the soils behind the walls' reinforced geogrid zones and extending to distances that are twice the walls' exposed heights) in the event fine-grained soils are encountered under or behind the walls. This is for worst case CL or ML soil types. CH, MH (elastic silt) and OH/OL/PT (organic) soils are not acceptable for the foundation and retained zones (CH is present on this site but is limited to one small lense in the borings so it should not be a major factor). If these unsuitable soils are encountered in the foundation or retained zones they must be removed and replaced with soils that meet or exceed the design friction angle of 28°. An internal angle of friction of 30° was used for the infill soils (the walls' reinforced geogrid zones). Therefore all soils used for wall backfill must be classified by USCS as gravel (GC, GM, GP or GW) or sand (SC, SM, SP or SW). The infill soil must also meet the following requirements: maximum of 45% passing the #200 sieve (minimum of 55% retained on the #200 sieve), maximum optimum moisture of 20%, minimum dry unit weight of 105 PCF and maximum liquid limit of 40. Since proctor tests were not provided an assumed unit weight of 125 PCF was used (maximum wet density for the foundation and retained soils and maximum wet density less 5% for 95% compaction for the compacted infill soils). The site geotechnical engineer will need to do standard proctor tests to determine the actual soil density and moisture. Fluctuations of 5 PCF higher or lower will not affect these designs, however if the unit weight varies by more than 5 PCF RA must be notified so that the cross sections can be rerun to verify that all factors of safety are still met. No cohesion was used in any of the calculations.

2. BEARING CAPACITY: The sub-grades (the soils under the walls' gravel leveling pads and the soils under the walls' reinforced geogrid zones) must be tested by the site geotechnical engineer prior to wall construction and have minimum allowable bearing capacities of 3,000 PSF. The actual bearing pressure exerted by each specific wall section is shown on the "Cross Section Details and Factors of Safety" table so that the site geotechnical engineer may determine specifically how to handle any areas where low bearing capacity soils are encountered on an individual wall section basis. Areas of the sub-grades that do not meet these maximum pressures will require undercutting and/or geogrid reinforcing. The sub-grades must be virgin (natural undisturbed soil with blow counts ≥12) or suitable fill (≥28°) compacted to 95% of a standard proctor maximum dry density.

3. GEOGRIDS: These walls were designed with Mirafi 3XT, 5XT & 7XT geogrids, which have LTDS (Long Term Design Strengths) of 1558, 2234 & 2961 respectively. All geogrid substitutions must have prior approval of RA.

4. BLOCK SYSTEM: These designs are valid only for the Keystone Compac II block system. Each segmental wall system has unique dimensions, connection devices and interacts differently with geogrids; therefore other block types may not be substituted without a partial or complete redesign.

5. CONSTRUCTION OVERSIGHT: The construction of these walls must be performed under the observation/review of a Maryland Registered Professional Engineer or their designated representative to ensure that they are built in accordance with the RA Structural Notes and Specifications. All wall construction must be certified by a registered professional geotechnical/structural engineer.

6. GLOBAL STABILITY: Global stability analyses were performed for the highest/most critical section of all walls. The analyses were performed on G-Slope design software and the geogrid layers were lengthened (if required) until factors of safety of 1.30 were met for external stability. A factor of safety of 1.50 was also met for internal stability (geogrid rupture). Walls #3 & #4 were also analyzed for rapid draw down events (1.0' above the 100 year flood elevations) and factors of safety of 1.1 were met. Copies of the global analyses are included in the 81/2" X 11" submittal.

7. CULVERT/PIPE INTERSECTING THE WALLS (Walls #3 & #4): An 84" RCP (reinforced concrete pipe) is proposed under the roadway between Walls #3 & #4 and will be intersecting these two walls. Since this is a structural pipe it should be able to be worked around without additional means of support, however it should be verified by the pipe manufacturer that it can withstand the maximum load exerted by these walls which is 2,970 PSF. For ease of construction, 10.0' X 10.0' cast in place concrete collars shall be built around the pipe. Details have been provided with proposed top elevations that coincide with top of block elevations to eliminate the horizontal cutting of blocks. Three #5 grade 60 bars shall be placed 3" O.C. (3" in from the front and the back of the structure and 3" apart). They shall have 3" of cover (from bottom, sides and top). There shall be 16" long Grade 60 reinforcing bars placed vertically where the walls pass over the collar. They shall be spaced at 1.5' O.C. and extend from the top of the blocks a minimum of 8" into the concrete. See the graphic details of the collar/pipe structures for clarification.

8. WATER APPLICATIONS: The lower portions of Walls #3 & #4 must be built as "water applications" up to 1.0' above the 100 year flood plain elevations (as noted on the profiles for these two walls). This dictates the following: clean gravel (#57 or equivalent: .5" to 1.5" with less than 10% fines) must be used for the entire reinforced geogrid zones (there is a line on the profile drawings for these walls showing the elevation to which gravel infill must be used) and filter fabric (Mirafi 140N or equivalent) must encase the buried blocks, the leveling pads and the entire reinforced geogrid zones. The filter fabric must also be laid horizontally across the top of the gravel infill where the transition to soil is made (to prevent the downward migration of fines).

9. FILTER FABRIC: Filter fabric (Mirafi 140N or equivalent) is required between the 12" gravel drainage layer and the compacted infill soils for all walls (as shown on the typical wall section) since the site soils on this project are sandy (non-cohesive soils can slough into and clog the drainage layer).

10. EMBEDMENT/EXISTING GRADE ELEVATIONS: Wall embedment varies from one to sixteen blocks. The exact amount of buried blocks can be determined by subtracting the "BB" elevations from the "GR" elevations on the RA profile drawings. RA has met the civil engineer's proposed grades at the bases of the walls (labeled as "GR" elevations), but has buried enough blocks so that all walls except Wall #2 (see note 21 below) are situated on virgin soils (the "BB" elevations go a minimum of one course below virgin grade elevations). A grade line showing existing site elevations is shown on all walls (except in cases where the existing and proposed elevations are the same as the existing grades and they run together).

11. CIVIL PLANS: This design package is based on civil plans prepared by Robert H. Vogel Engineering, Inc (RVE). RA has inserted portions of the RVE plans to show the RA wall numbering and stationing.

12. SPECIFICATIONS: Construction and materials must conform to the attached "Ryan & Associates segmental retaining wall specifications and installation guidelines for Keystone".

13. WALL PROFILES: The elevation drawings were done to represent the grade changes necessary on the civil plans and were done in exact block course increments of .667' (8"). Minor field changes may be necessary by the wall installer. Lineal footage may be added or subtracted as needed if the wall heights are equal to or less than the design heights. If the wall installer needs to construct the walls to heights that exceed the design sections, RA must be notified and higher cross sections must be provided before proceeding. The cap height of .333' (4") is not shown on the profile drawings however its height may have been used in some cases to achieve the desired TW elevations.

14. WALL BATTER: These walls were designed with the blocks having no batter (0.0°). This was done so that the 0.5° near vertical batter (front pin position: 1/16" setback per block course) may be used if desired and will allow for some construction tolerances. However, the 7.1° batter (rear pin position: 1" setback per block course) is strongly recommended by RA since it is more conservative (yields higher factors of safety) and allows for more construction tolerances. If the near vertical batter is used the wall installer should lay the base courses tilted back a minimum of 1/4" to compensate for movement during construction (from compaction equipment and the geogrid losing its slack) to ensure that the walls do not go beyond vertical (have negative batters). If the 7.1° batter is used it is important for the wall installer and the civil engineer/surveyor to predetermine the walls' batters during stake out. The bases of the walls will need to be moved forward if there are critical dimensions that need to be met on the high side of the walls.

15. MANDATORY REAR DRAINPIPES (Walls #1, #2 & #5): Rear drainpipes are required at the backs of all the walls' reinforced geogrid zones except for Walls #3 & #4 (since they are "water applications" and have gravel infill at the bottom). These rear drainpipes are in addition to the mandatory 4" drainpipes at the fronts of the walls (within the gravel leveling pads or behind the at grade courses– depending on which drainpipe position is exercised). The rear drainpipes shall be surrounded by a minimum of 6" of clean gravel (#57 or equivalent) and shall have perpendicular solid pipes that run forward and connect to the front drainage system with crosses or tees.

16. SPECIAL HOWARD COUNTY RETAINING WALL SPECIFICATIONS:
a. Retaining walls shall only be constructed under the observation of a Registered Professional Engineer and a (NICET, WACEL, or equivalent) certified soils technician.
b. The required bearing pressure beneath the footing of the wall shall be verified in the field by a certified soils technician. Testing documentation shall be provided to the Howard County Inspector prior to the start of construction. The required test procedure shall be the Dynamic Cone Penetrometer Test ASTM STP-399.
c. The suitability of the fill material shall be confirmed by the on-site soils technician. Each eight inch lift must be compacted to 95% Standard Proctor Density and the testing report shall be made available to the Howard County Inspector upon completion of the construction.
d. For walls over ten feet in height, one soil boring is required every 100 feet along the length of the wall, copies of the boring reports shall be provided to the Howard County Inspector prior to the start of construction.

17. DESIGN SOFTWARE: Internal and external wall calculations were performed with Keywall design software (version 3.1.6). A table has been included ("Cross Section Details and Factors of Safety") which has the following information: section location (area of wall referenced), total wall height, loads applied, factors of safety (for sliding, overturning, bearing capacity and global stability) and bearing pressure (the weight exerted by the wall structure: the block and the reinforced geogrid zone). Factors of safety of 1.5 were also met for: geogrid pullout (from the soil and from the block), geogrid overstress (geogrid rupture) and connection (block to geogrid). Copies of these calculations are included in the 81/2" X 11" submittal.

18. SEPARATE 81/2" X 11" SUBMITTAL: These 24" X 36" sheets were done in conjunction with an 81/2" X 11" submittal. The 81/2" X 11" submittal has the structural cross section calculations and global stability analyses.

19. TANGENT ANGLES– Walls #2 & #4: The angle points as drawn on the civil plans on Walls #2 and #4 must be built as radii (inside curves) or inside corners (blocks interlocked and overlapped in accordance with Keystone construction guidelines for 90° corners). Continuous vertical joints are not permitted.

20. LIGHT POST FOUNDATIONS: There are light post foundations proposed directly behind Wall #2 (three locations: 0+83, 2+32 & 3+54) and Wall #5 (two locations: 1+29 & 2+94). Based on information obtained by RA (via email from The Dennis Group), the foundations are 2' diameter, extend 9' below grade, extend 3' above grade and have 35' poles attached to them. These post foundations must extend a minimum of 4' below the bases of the walls ("BB" elevations) so that they do not impact (impose loads) on them and must be a minimum of 2' behind the walls. The area between the posts and the walls must be filled with all clean gravel (#57 or equivalent). Concrete form tubes (or some other type of round form such as pipes) must be placed during wall construction and the geogrid worked around (looped over) them. Four of the five locations do not meet the depth criterion (only station 3+54 of Wall #2 appears to be in conformance) and will need to be substantially deepened to meet the 4' beyond bottom of wall requirement. If it is not possible to extend the depth of these posts so that they are 4' below the "BB" elevations, a structural design will need to be done (steel reinforced concrete with an L-shaped "foot") that will allow the wind loads to be transferred to the reinforced soil masses (under the pavement). RA can provide these design services for an additional fee (from the MD office).

21. FILL SOILS– Wall #2: Wall #2 is entirely on fill soils (it rests on a "fill slope"). It is imperative that the existing brush/vegetation and topsoil are stripped down to suitable sub-soils ((28°) and that the slope is constructed in controlled lifts that are compacted to 95% of a standard proctor maximum dry density as supervised by the site geotechnical engineer prior to wall construction.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION	5/25/05 DATE
[signature] CHIEF, DIVISION OF LAND DEVELOPMENT	6/2/05 DATE
[signature] DIRECTOR	6/3/05 DATE

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-06	DZ	RHV	REUSE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING ▲ ENGINEERING ▲ CONSTRUCTION MANAGEMENT
1391 MAIN STREET SPRINGFIELD, MASSACHUSETTS 01103 413·787·1785 ▲ FAX 413·787·1786
136 SOUTH MAIN STREET SALT LAKE CITY, UTAH 84101 801·531·8585 ▲ FAX 801·531·8586

SCALE: 1"=40'

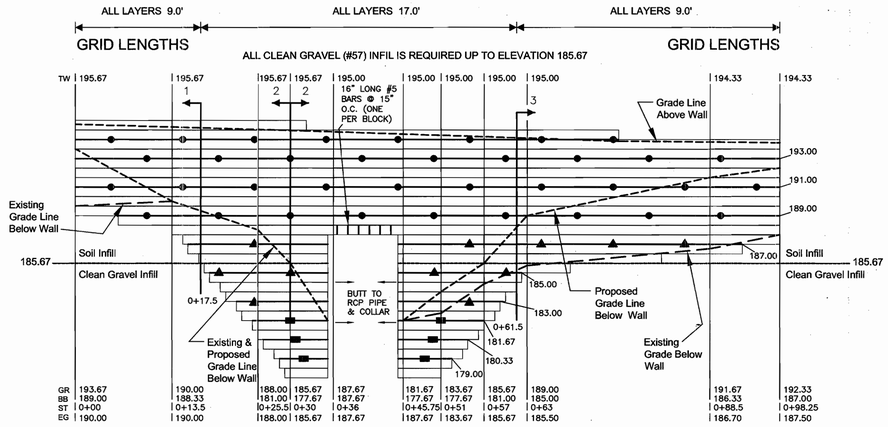
0 10' 20' 40' 80'

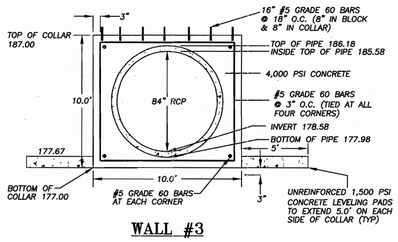
DRAWING NO.
C6.14

HO. CO. DPZ SHEET: 37 OF 38

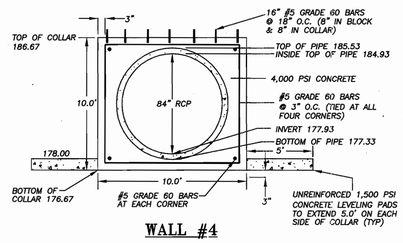
SDP-05-40

WALL #3 (S of exit road)

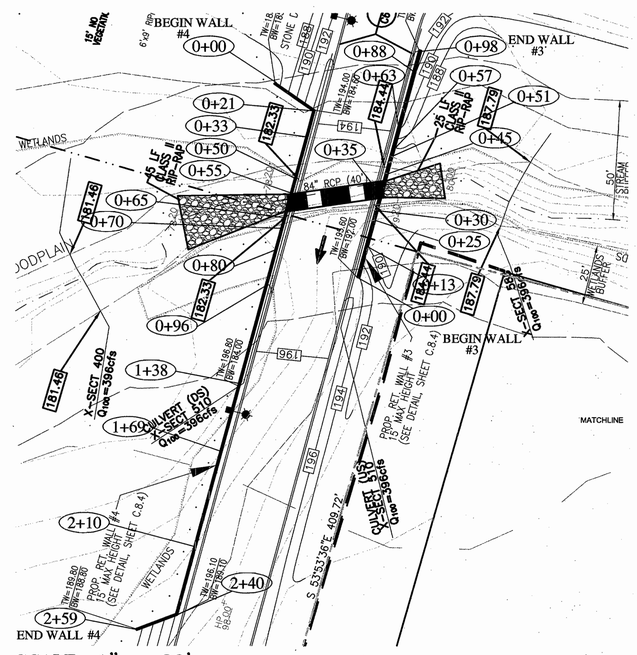


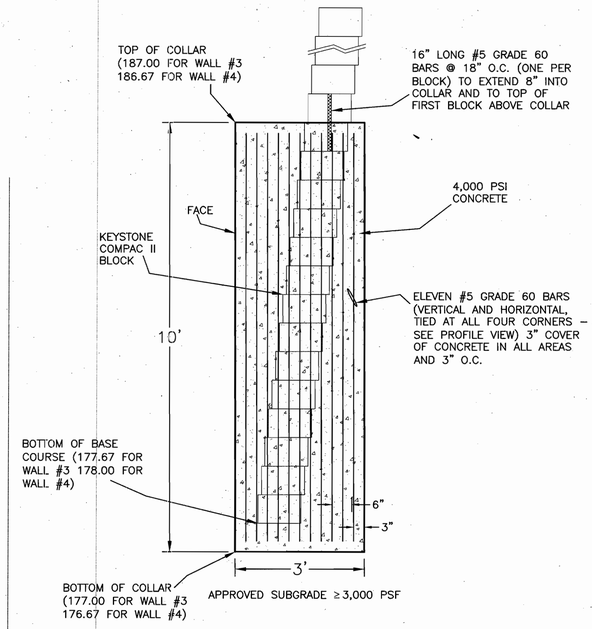


WALL #3



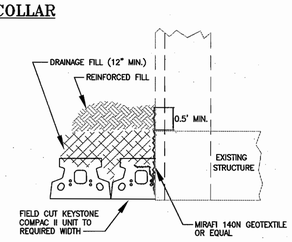
WALL #4





CROSS SECTION VIEW OF COLLAR

N.T.S.

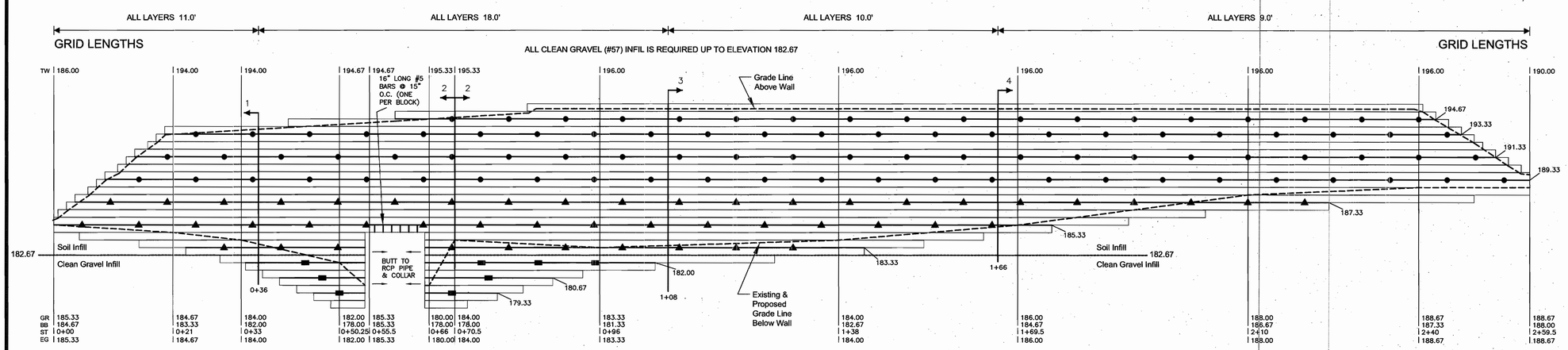


ABUTMENT DETAIL (PLAN VIEW)

AT SIDES AND ABOVE WALL

NTS

WALL #4 (S of exit road)



TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION
EG = EXISTING GRADE

GRID KEY: MIRAFI 3XT
MIRAFI 5XT
MIRAFI 7XT

SCALE: HORIZONTAL 1" = 10'
VERTICAL 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/3/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21586 — REGISTERED PROFESSIONAL ENGINEER

William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR ...
1	05-26-05	DJE	RHV	RESUBMIT PLAN TO SHOW RETAINING WALL FILES AND REVISE DETAILS PER COUNTY COMMENTS.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

Dreyer's

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

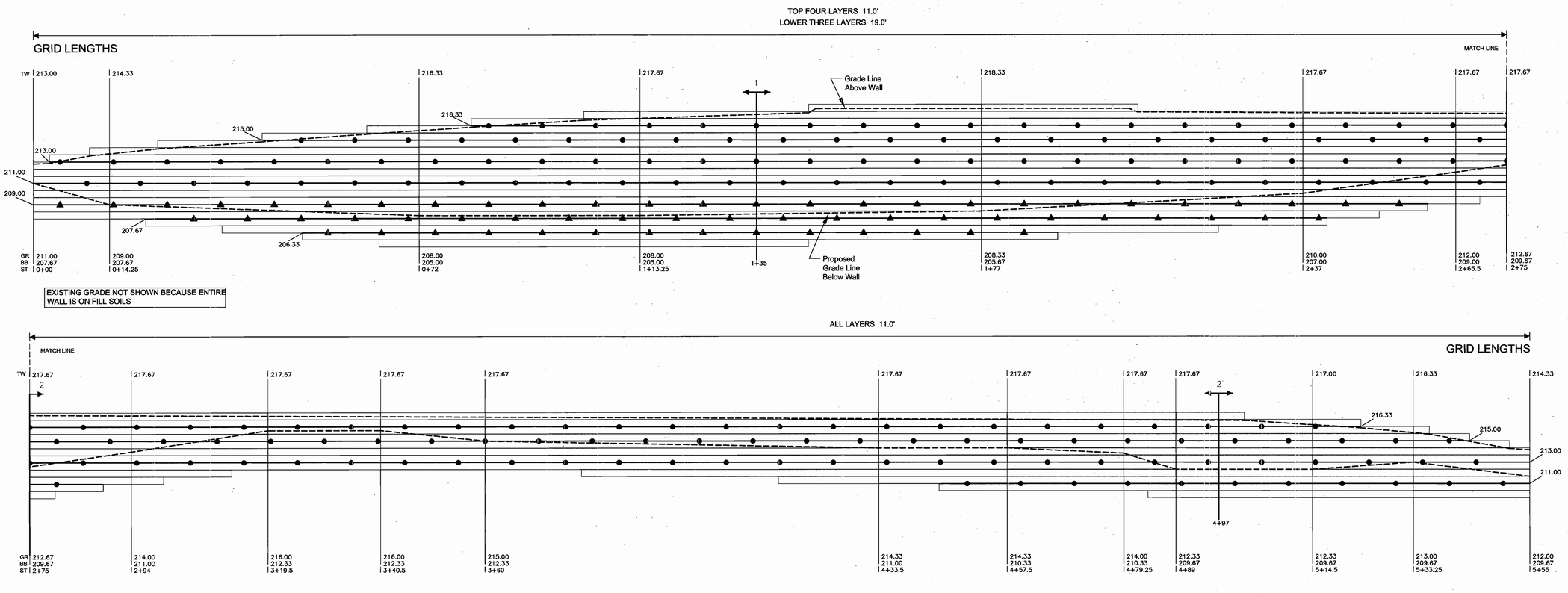
SCALE: 1"=40'

DRAWING NO.
C6.13

HO. CO. DPZ SHEET: 36 OF 38

SDP-05-40

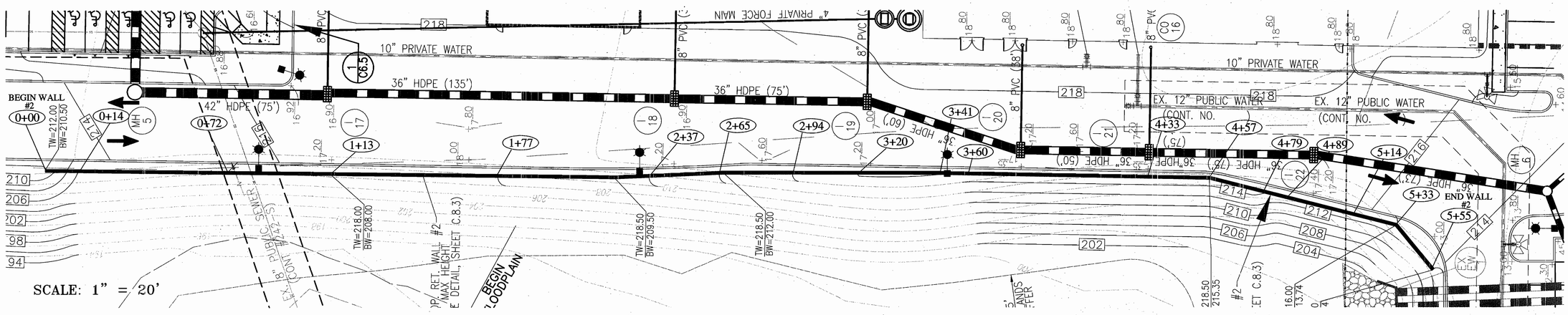
WALL #2 (between wetlands & proposed building)



TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION
EG = EXISTING GRADE

GRID KEY: MIRAFI 3XT
MIRAFI 5XT

SCALE: HORIZONTAL 1" = 10'
VERTICAL 1" = 5'



SCALE: 1" = 20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	5/25/05 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	6/2/05 DATE
DIRECTOR	6/2/05 DATE

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND
WILLIAM K. RYAN
NO. 21586
REGISTERED PROFESSIONAL ENGINEER
04/04/05
William K. Ryan
Professional Engr. No. 21586

OWNERS
ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139
NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618
PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER
NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR ...
1	05-25-06	DR	RHE	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

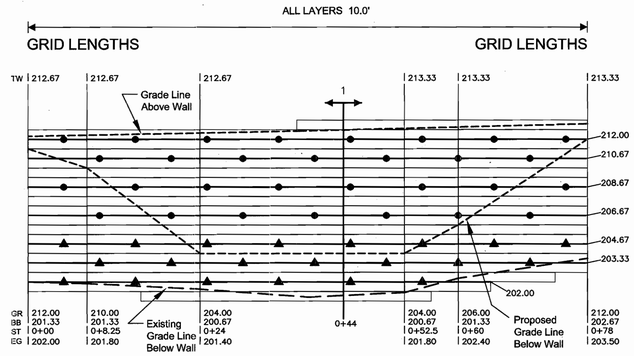
DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

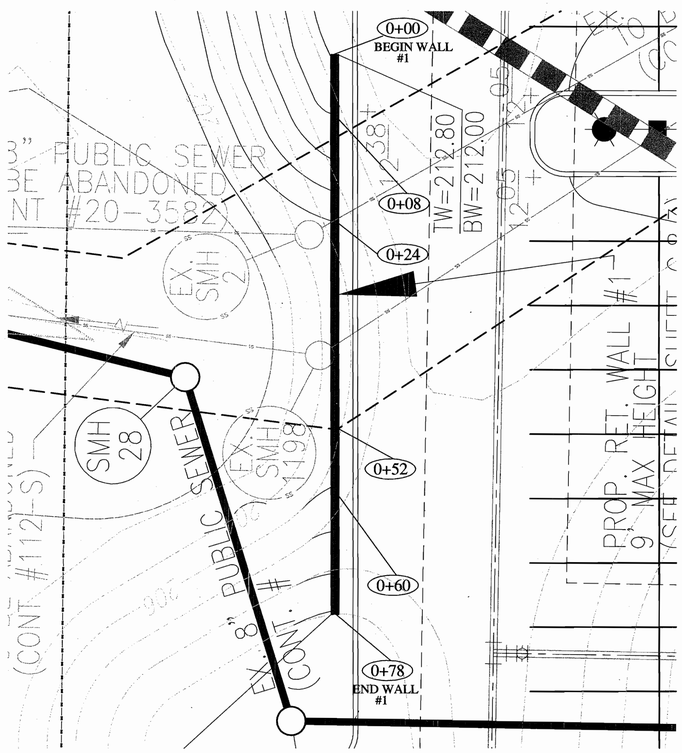
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C6.12
HO. CO. DPZ SHEET: 35 OF 38
SDP-05-40

WALL #1 (by parking lot at end of wetlands)

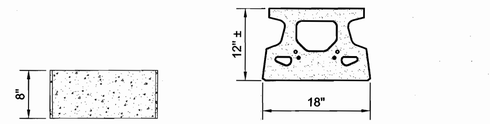




SCALE: 1" = 10'

TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION
EG = EXISTING GRADE

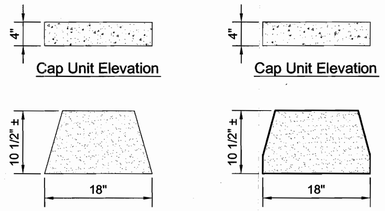
GRID KEY: MIRAFI 3XT
MIRAFI 5XT



Compac II Elevation

Compac II Plan

Compac II Unit
* Dimensions May Vary by Region



Cap Unit Elevation

Cap Unit Elevation

Cap Unit Plan

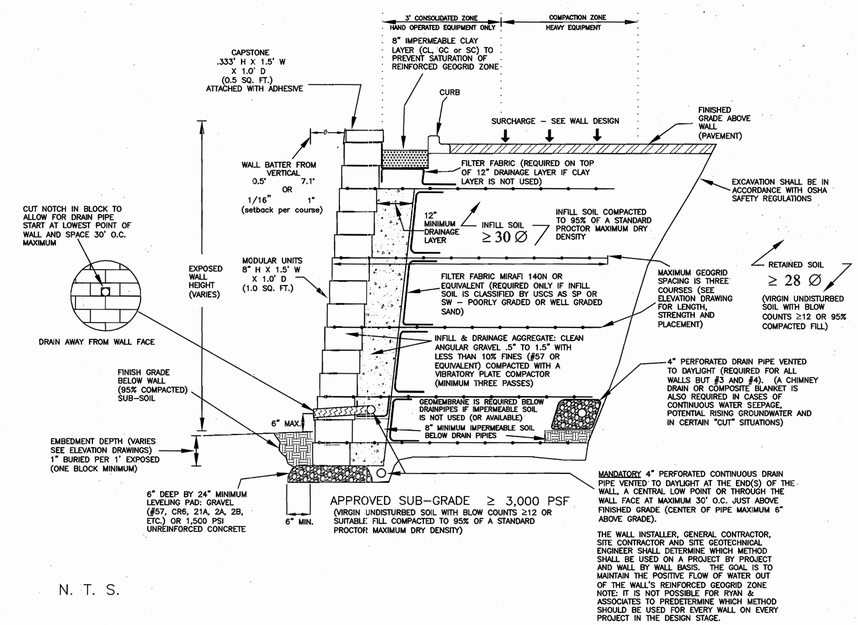
Cap Unit Plan

Universal Cap Unit Option
* Dimensions & Availability Will Vary by Region

Straight Split Cap Unit Option
* Dimensions & Availability Will Vary by Region

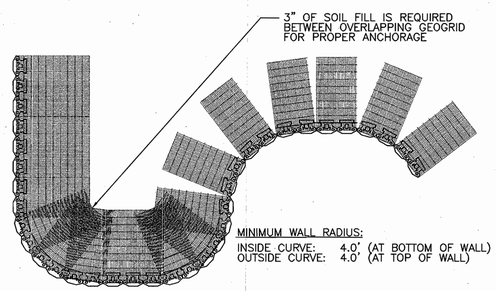
KEYSTONE COMPAC

WALL SECTION WITH SURCHARGE



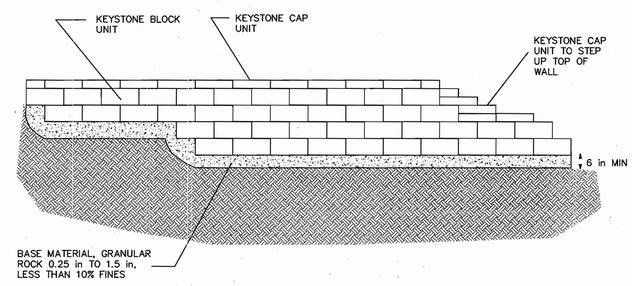
N. T. S.

REINFORCEMENT PLACEMENT FOR INSIDE AND OUTSIDE CURVES



GEOGRID INSTALLATION ON CURVES

N. T. S.



KEYSTONE STEP DOWN TYPICAL DETAIL

MATERIAL ESTIMATE*:		BLOCK : Keystone Compac II					GEOGRID: Mirafi 3XT, 5XT & 7XT			
WALL	TOTAL SQ. FT.	(1.0 S.F.) BLOCK	(.5 S.F.) CAPS**	PINS	SQ YDS 3XT GRID	SQ YDS 5XT GRID	SQ YDS 7XT GRID	CU. YDS. DRAIN GRAVEL	CU. YDS. LEVELING PAD GRAVEL	FT. WALL LENGTH
1	972	945	54	1,786	400	285	0	57	6	78
2	5,056	4,860	392	8,980	2,675	1,520	0	299	43	555
3	1,096	1,060	72	1,989	505	255	125	65	8	98
4	3,117	3,015	204	5,685	1,400	840	285	184	20	259
Totals	10,241	9,880	722	18,440	4,980	2,900	410	605	77	990

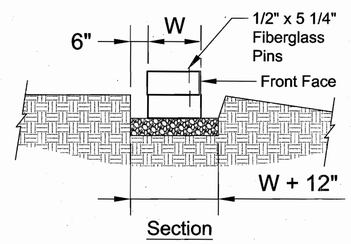
* Ryan & Associates is not responsible for extras or shortages based on this take-off. It is the contractor's responsibility to verify the accuracy of this design by reviewing the site/ grading plan for this project.

** Includes one extra cap per step down on top of the wall for double capping.

revised 04/01/2005

Totals include 2% extra for block and caps, 15% for geogrid and 5% for gravel.

SCALE: HORIZONTAL 1" = 10'
VERTICAL 1" = 5'



Section

Leveling Pad Detail

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-262-4242 fax 717-262-4245
29 South Main Street, Suite A
Chambersburg, PA 17201

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21586 — REGISTERED PROFESSIONAL ENGINEER — 04/04/05

William K. Ryan
Professional Engr. No. 21586

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05/25/06	DR	PAN	REVISED PLAN TO SHOW 15-FOOT PLANTING PAD BELOW GRADE (PARKING LOT LANDSCAPING).

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

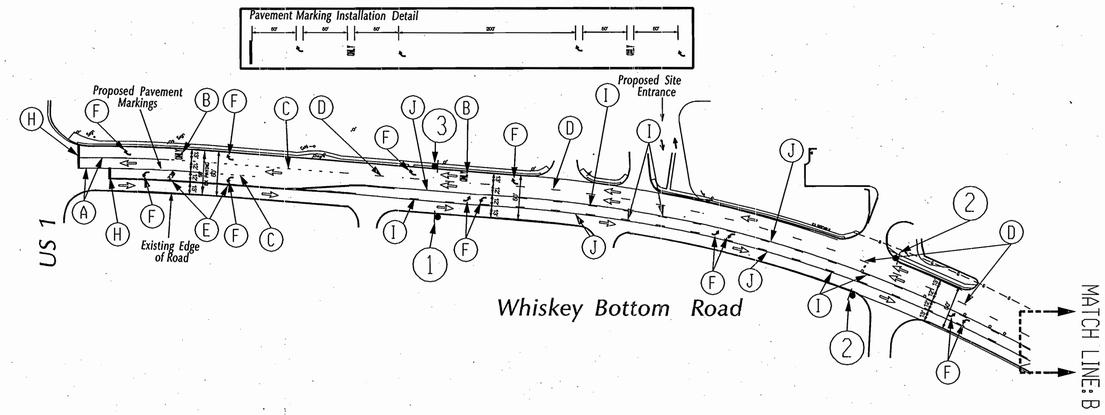
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C6.11

HO. CO. DPZ SHEET: 34 OF 38

SDP-05-40



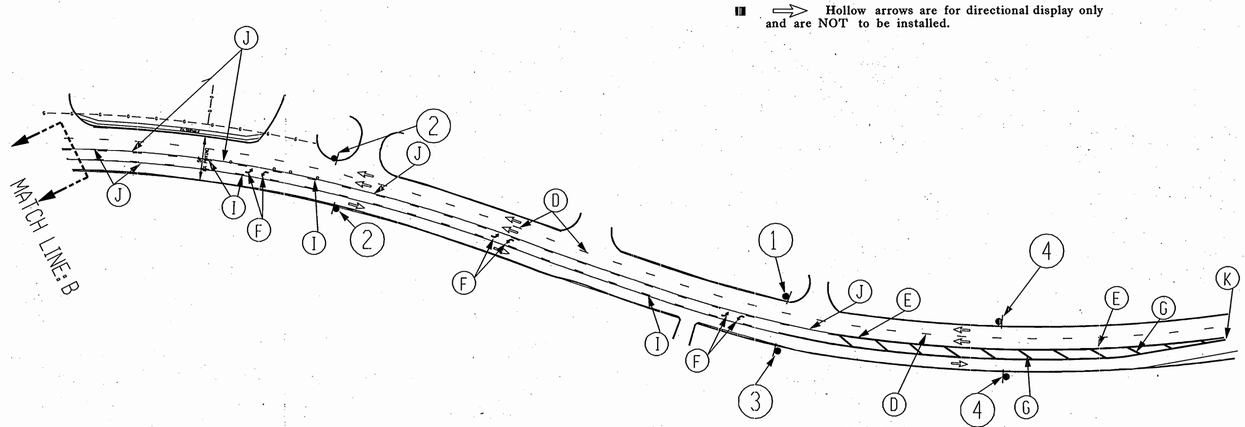
Legend:

(A)	Install 5 in. wide solid white pavement marking for lane line.
(B)	Install white preformed pavement marking symbol "ONLY"
(C)	Install 5 in. wide dotted white pavement marking. (2ft. segment – 6ft. gap) for lane line (Puppy Tracks)
(D)	Install 5 in. wide white pavement marking. (10ft. segment – 30ft. gap) for lane line
(E)	Install 5 in. wide solid double yellow pavement marking for center line.
(F)	Install white preformed pavement marking arrow.
(G)	Install 12 in. wide solid yellow pavement marking for hatch area. (25' apart at 45 angle)
(H)	Install 24 in. wide white pavement marking for stop bar. (If Applicable)
(I)	Install 5 in. wide yellow pavement marking. (10ft. segment – 30ft. gap) for lane line
(J)	Install 5 in. wide solid yellow pavement marking for center L/TL line.
(K)	Tie into existing

	Sign	Sign No.#	Size	Quantity
(1)	BEGIN CENTER LANE ONLY	R3-9b		2
(2)	CENTER LANE ONLY	R3-9b	36" x 48"	4
(3)	END CENTER LANE ONLY	R3-9b		2
(4)	Remove existing sign (see note for additional signs to be removed)			

NOTES:

- Contractor must contact Howard County Department of Public Works Traffic Engineer (410-313-5752) 72 hours before beginning any work.
- All pavement markings and signage shall be layed-out in field and /or approved by Howard County Department of Public Works Traffic Engineer (410-313-5752) prior to installation.
- All existing signs to be removed will be determined in the field by Howard County Department of Public Works Traffic Engineer.
- Existing pavement markings will be removed by grinding method.
- Pavement markings to be Thermo-Plastic or Howard County approved preformed pavement marking tape.
- Sign Posts: All sign post used for traffic control signs installed in the county Right-of-Way shall be mounted on a 2" galvanized steel, perforated, square tube post (14 gauge) inserted into a 2-1/2" galvanized steel, perforated, square tube sleeve (12 gauge) -3" long. A galvanized steel pole cap shall be mounted on top of each post.
- ⇨ Hollow arrows are for directional display only and are NOT to be installed.



OWNERS

ICE CREAM PARTNERS USA L.L.C.
30803 SHAKER/CE ROAD
SOLON, OHIO 44139

PETERS MOBILE HOME PARK INC.
c/o NESTLE ICE CREAM, INC.
1 FORE LANE
LAUREL, MD 20723

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

Robert H. Vogel Engineering, Inc.
Engineers - Surveyors - Planners
6437 Main Street
Ellicott City, Maryland 21043
Tel: 410.461.7666 Fax: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

2003-0917\dryers-sign&mark-B(v-7).dgn

REL.	DATE	BY	APP.	RELEASED FOR ...
1	5/25/05	DZ	RHV	REVISED PLAN TO STUDY VEHICULAR FACILITIES & SERVICE VARIOUS FACILITY INFORMATION

9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 Main Street, Springfield, Massachusetts 01103, 413-787-1785 FAX 413-787-1786
135 South Main Street, Salt Lake City, Utah 84101, 801-531-8585 FAX 801-531-8586

The Traffic Group

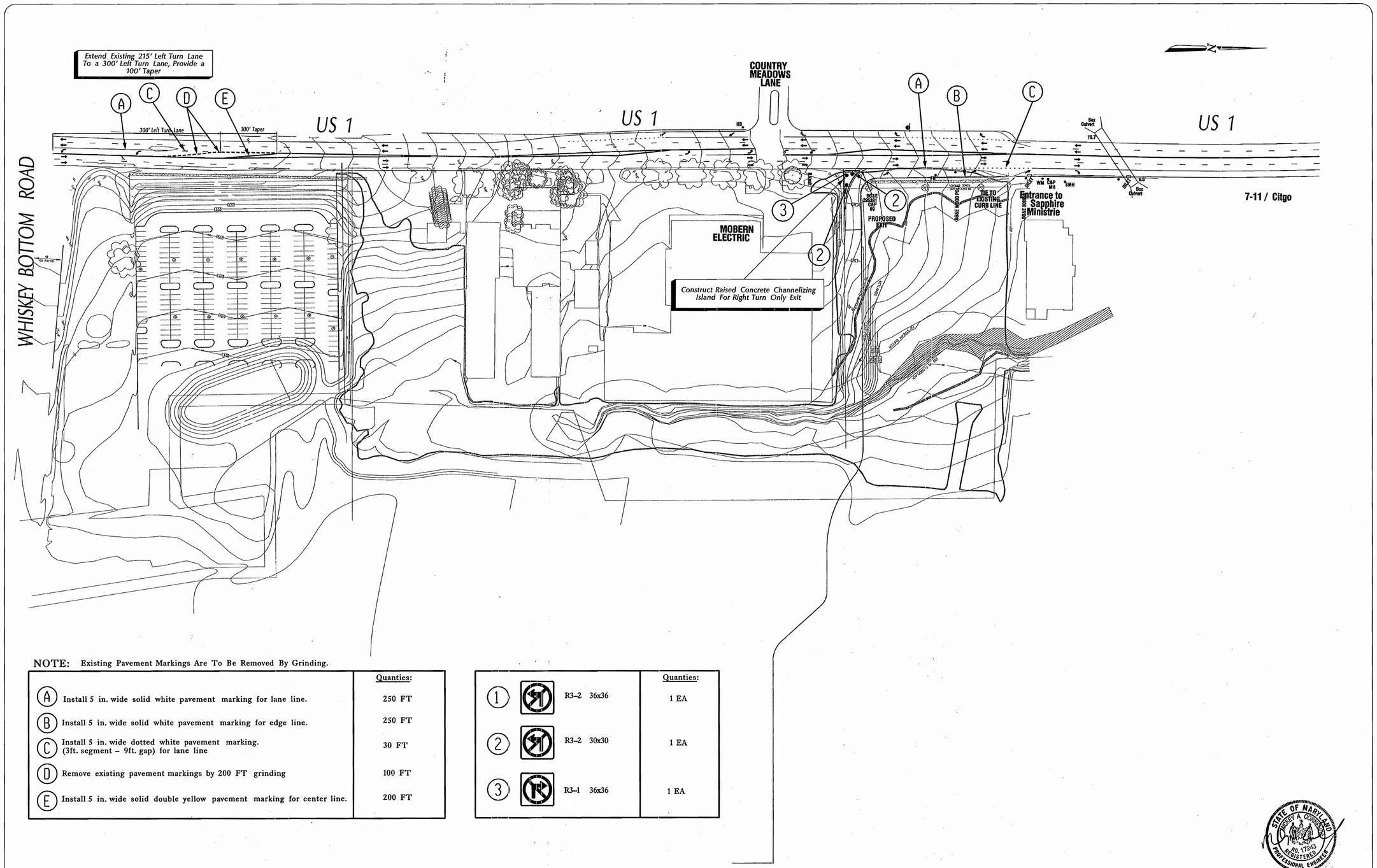
SCALE: 1"=80'

STATE OF MARYLAND — ROBERT A. CONNELLY — No. 17240 — REGISTERED PROFESSIONAL ENGINEER

DRAWING NO.
C6.10

HO. CO. DPZ SHEET:
33 OF 38

SDP-05-40



NOTE: Existing Pavement Markings Are To Be Removed By Grinding.

		Quanties:
A	Install 5 in. wide solid white pavement marking for lane line.	250 FT
B	Install 5 in. wide solid white pavement marking for edge line.	250 FT
C	Install 5 in. wide dotted white pavement marking. (3ft. segment – 9ft. gap) for lane line	30 FT
D	Remove existing pavement markings by 200 FT grinding	100 FT
E	Install 5 in. wide solid double yellow pavement marking for center line.	200 FT

			Quanties:
1		R3-2 36x36	1 EA
2		R3-2 30x30	1 EA
3		R3-1 36x36	1 EA

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

2003-0917\dryers-sign&mark-A12-14.dgn

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

Robert H. Vogel Engineering, Inc.
Engineers · Surveyors · Planners
8407 Main Street
Ellicott City, Maryland 21043
Tel: 410.461.7666 Fax: 410.461.8961

STATE OF MARYLAND
ROBERT A. CORRIGAN
No. 17243
REGISTERED
PROFESSIONAL ENGINEER

REL.	DATE	BY	APP.	RELEASED FOR ...
1	5-25-05	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITIES AS PER UNIFIED UTILITIES INFORMATION

9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 Main Street
Springfield, Massachusetts 01103
413-787-1785 FAX 413-787-1786
135 South Main Street
Salt Lake City, Utah 84101
801-531-8585 FAX 801-531-8586

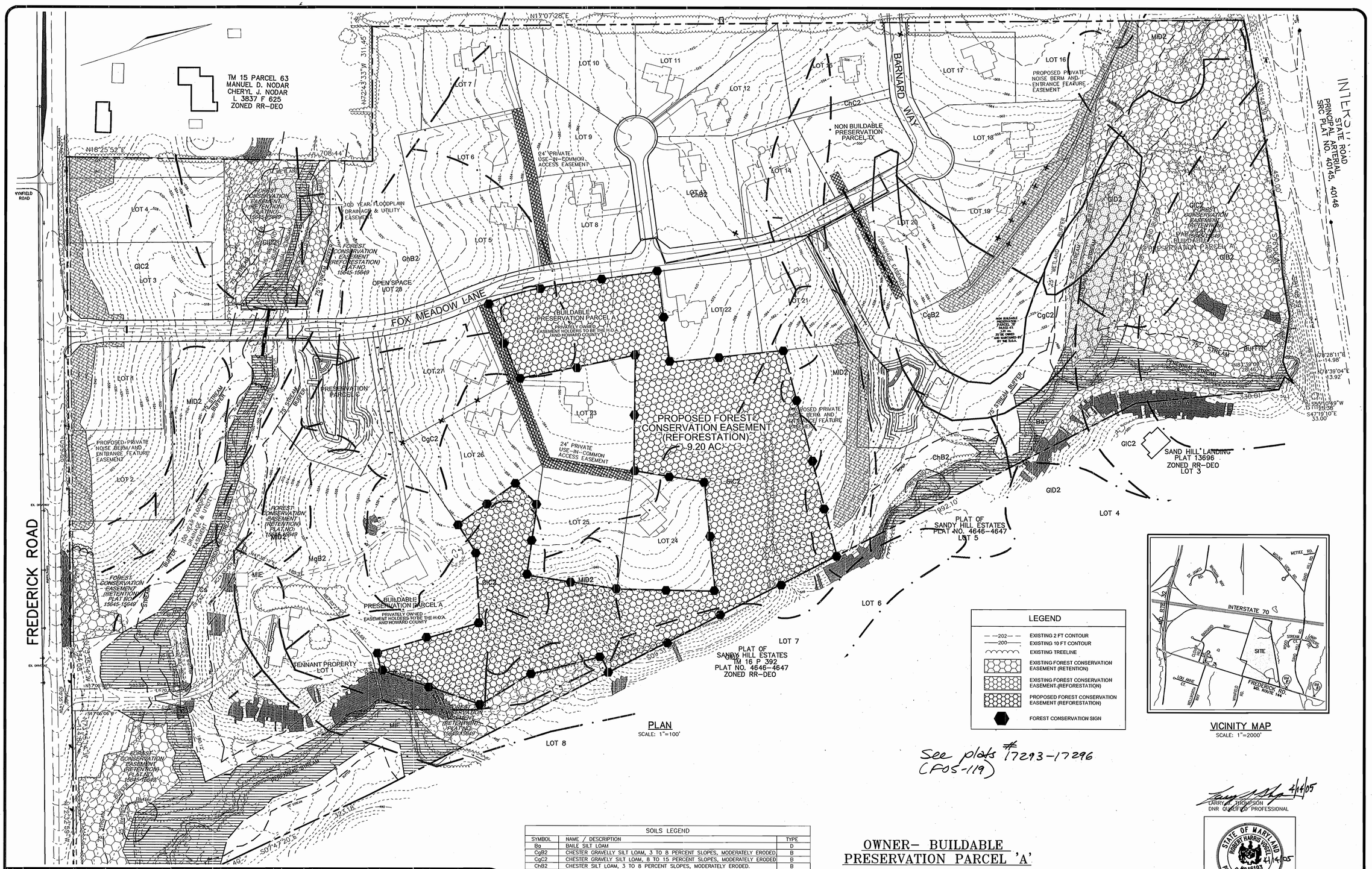
The Traffic Group

SCALE: 1"=80'
0 10' 20' 40' 80'

DRAWING NO.
C6.9

HO. CO. DPZ SHEET:
32 OF 38

SDP-05-40



PLAN
SCALE: 1"=100'

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- EXISTING TREELINE
- EXISTING FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING FOREST CONSERVATION EASEMENT (REFORESTATION)
- PROPOSED FOREST CONSERVATION EASEMENT (REFORESTATION)
- FOREST CONSERVATION SIGN

See plats #17293-17296 (F05-119)

VICINITY MAP
SCALE: 1"=2000'

LARRY W. THOMPSON
DNR QUALIFIED PROFESSIONAL
4/14/05

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05

ROBERT H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 4-14-05

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	TYPE
Ba	BAILE SILT LOAM	D
CgB2	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
CgC2	CHESTER GRAVELY SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED.	B
ChC2	CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELT ERODED.	B
Cs	COMUS SILT LOAM.	B
GIB2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED.	B
GIC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED.	B
GID2	GLENELG LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED.	B
GnB2	GLENVILLE SILT LOAM,3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MID2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED.	B
MIE	MANOR LOAM, 25 TO 45 PERCENT SLOPES.	B
MgB2	MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B

NOTE:
-HOWARD SOIL SURVEY, MAP NUMBER 8

OWNER- BUILDABLE PRESERVATION PARCEL 'A'

RICHARD W. TENNANT
MARY L. TENNANT (DECEASED)
12256 FREDERICK ROAD
ELLICOTT CITY, MARYLAND
21042

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	5-25-05	DZ	RHV	REVISED PLAN TO SHOW VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

OFF-SITE PLANTING PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

DRAWING NO.
L1.9

HO. CO. DPZ SHEET:
30 OF 38

SDP-05-40

MANAGEMENT NOTES FOR FOREST RETENTION AREAS

1. All proposed activities shall adhere to the conditions, schedules and terms of the approved sediment control and erosion plan.

2. After the boundaries of the retention area have been staked and flagged and before any disturbance has taken place on-site, a preconstruction meeting at the construction site shall take place. The developer, contractor or project manager, and appropriate County inspectors shall attend.

3. Tree protection for all retained areas:

a. All retention areas within 50 feet of proposed construction activities shall be protected by highly visible, well anchored temporary protection devices (silt fence or blaze orange plastic mesh).

b. All protection devices shall be in place prior to any grading or land clearing.

c. All protection devices shall be properly maintained and shall remain in place until construction has ceased.

d. Attachment of signs, fencing or other objects to trees is prohibited.

e. No equipment, machinery, vehicles, materials or excessive pedestrian traffic shall be allowed within protected areas.

4. If the critical root zone (see detail) is affected by construction activities such as grade change, digging for foundations and roads or utility installation:

a. Prune roots with a clean cut using proper pruning equipment (see root pruning detail)

b. Water and fertilize as needed.

5. During construction phase, monitor and correct condition of retained trees for: soil compaction, root injury, flood conditions, drought conditions and other stress signs.

6. Post-Construction Phase

a. Inspect existing trees around the perimeter of disturbed limits for evidence of soil compaction, root injury, limb injury, or other stress signs and correct with proper management techniques such as root or limb pruning, soil aeration, fertilization, crown reduction or watering. Inspection and evaluation shall be performed by a licensed arborist.

b. Inspect for dead or dying trees or limbs which may pose safety hazard and remove.

c. No burial of discarded materials will occur onsite within the conservation areas.

d. No burning within 100 feet of wooded area.

e. All temporary forest protection structures will be removed after construction.

f. Following completion of construction, prior to use, the County inspector shall inspect the entire area.

LEGEND

Forest Conservation Easement Afforestation Area

FCE Signage

TPF Tree Protection Fence

ROOT PRUNING

1. Retention areas shall be set prior to construction

2. Boundaries of retention areas shall be flagged, and location of trench shall be specified by ERI Qualified Professional.

3. Roots shall be cut cleanly with root pruning equipment. Where roots 1" are found, trenching shall be done by air spade or hand tools. Roots >1" shall be cut with a hand saw.

4. Trench shall be immediately backfilled with soil removed or high organic content soil.

5. Any other techniques shall be approved by the ERI Qualified Professional before implementation.

CRITICAL ROOT ZONE

For the edge of large areas, use the greater of the two choices below:

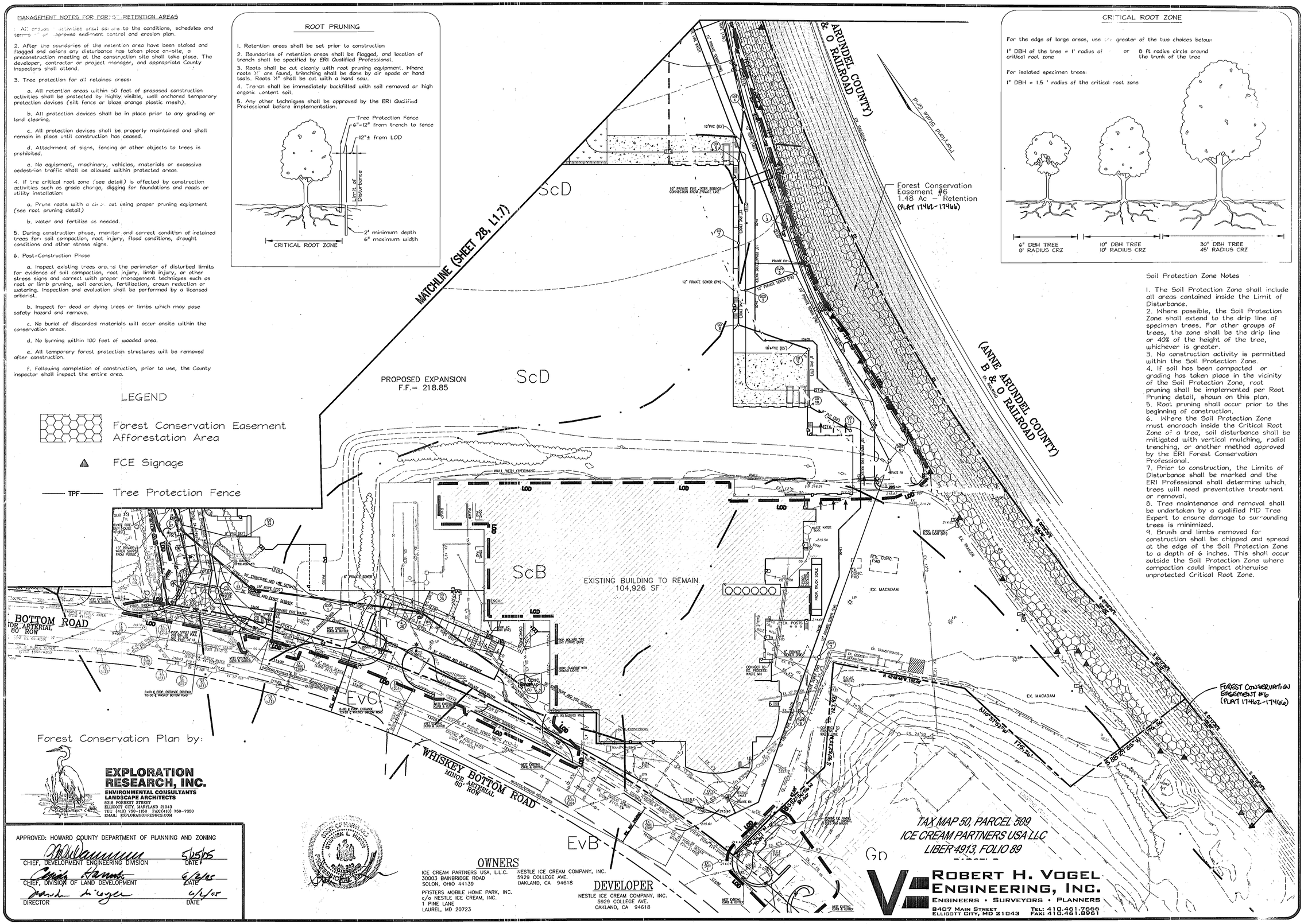
1" DBH of the tree = 1' radius of critical root zone or 8 ft radius circle around the trunk of the tree

For isolated specimen trees:

1" DBH = 1.5 ' radius of the critical root zone

Soil Protection Zone Notes

1. The Soil Protection Zone shall include all areas contained inside the Limit of Disturbance.
2. Where possible, the Soil Protection Zone shall extend to the drip line of specimen trees. For other groups of trees, the zone shall be the drip line or 40% of the height of the tree, whichever is greater.
3. No construction activity is permitted within the Soil Protection Zone.
4. If soil has been compacted or grading has taken place in the vicinity of the Soil Protection Zone, root pruning shall be implemented per Root Pruning detail, shown on this plan.
5. Root pruning shall occur prior to the beginning of construction.
6. Where the Soil Protection Zone must encroach inside the Critical Root Zone of a tree, soil disturbance shall be mitigated with vertical mulching, radial trenching, or another method approved by the ERI Forest Conservation Professional.
7. Prior to construction, the Limits of Disturbance shall be marked and the ERI Professional shall determine which trees will need preventative treatment or removal.
8. Tree maintenance and removal shall be undertaken by a qualified MD Tree Expert to ensure damage to surrounding trees is minimized.
9. Brush and limbs removed for construction shall be chipped and spread at the edge of the Soil Protection Zone to a depth of 6 inches. This shall occur outside the Soil Protection Zone where compaction could impact otherwise unprotected Critical Root Zone.



Forest Conservation Plan by:

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
8318 FORREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX: (410) 750-7350
EMAIL: EXPLORATIONRES@CS.COM

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND
STEPHEN L. BRAUN
No. 9858
PROFESSIONAL ENGINEER

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DB	RHV	PRELIMINARY PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9080 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FOREST CONSERVATION PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786

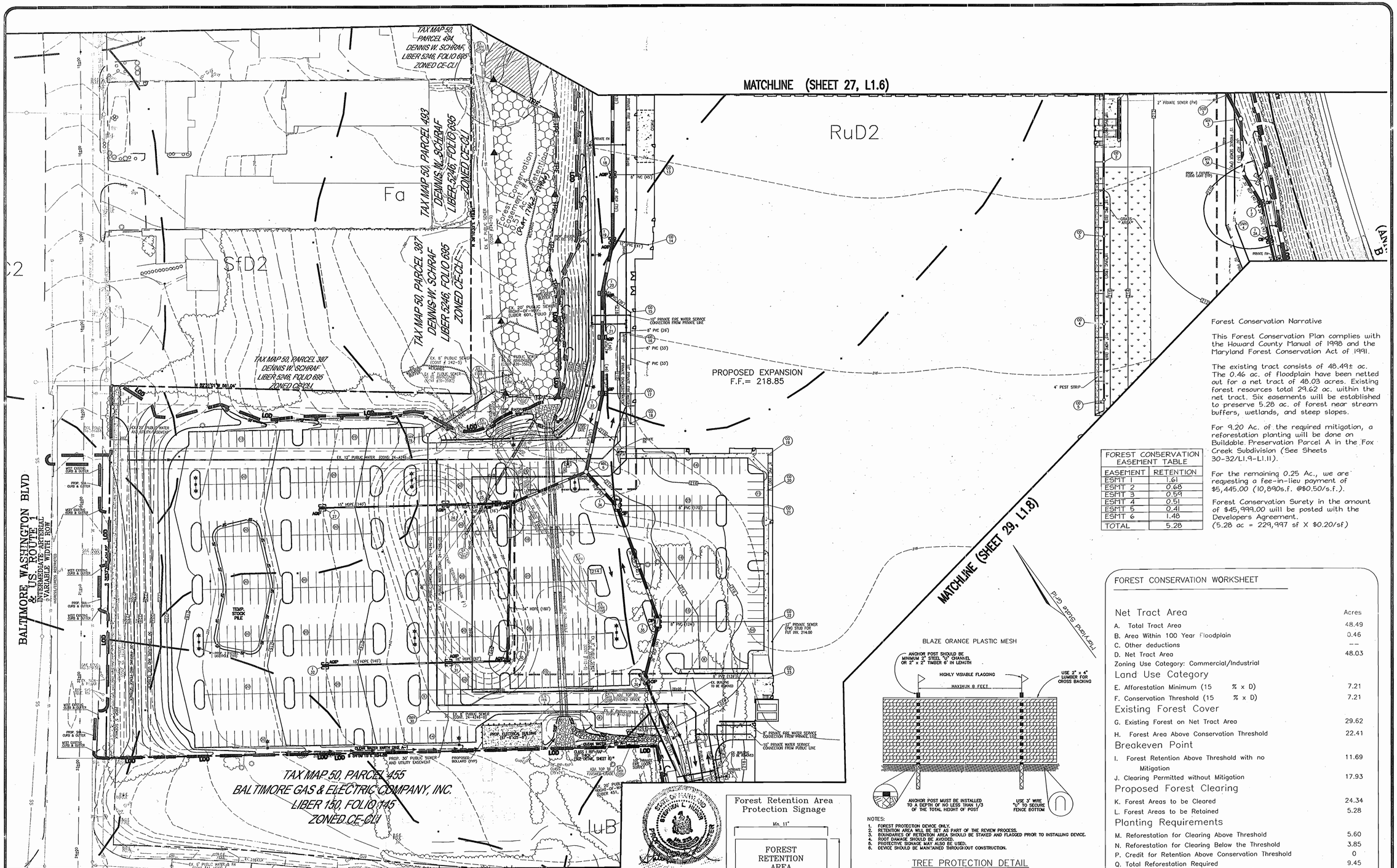
SCALE: 1"=50'
0 25 50 100

DRAWING NO.
L1.8

HO. CO. DPZ SHEET: 29 OF 38

SDP-05-40

N:\Dreyers\dwg\2002\YLRS0411050\CP_S29.dwg, 4/13/2005 11:47:51 AM, mdyb



FOREST CONSERVATION EASEMENT TABLE	
EASEMENT	RETENTION
ESMT 1	1.61
ESMT 2	0.68
ESMT 3	0.59
ESMT 4	0.51
ESMT 5	0.41
ESMT 6	1.48
TOTAL	5.28

Forest Conservation Narrative

This Forest Conservation Plan complies with the Howard County Manual of 1998 and the Maryland Forest Conservation Act of 1991.

The existing tract consists of 48.49± ac. The 0.46 ac. of floodplain have been netted out for a net tract of 48.03 acres. Existing forest resources total 29.62 ac. within the net tract. Six easements will be established to preserve 5.28 ac. of forest near stream buffers, wetlands, and steep slopes.

For 9.20 Ac. of the required mitigation, a reforestation planting will be done on Buildable Preservation Parcel A in the Fox Creek Subdivision (See Sheets 30-32/L1.9-L1.11).

For the remaining 0.25 Ac., we are requesting a fee-in-lieu payment of $5,445.00 (10,890s.f. @$0.50/s.f.).

Forest Conservation Surety in the amount of $45,999.00 will be posted with the Developers Agreement.
(5.28 ac = 229,997 sf X $0.20/sf)

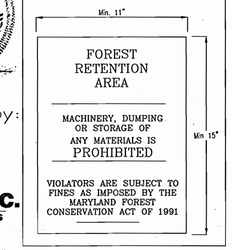
NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL
NOT TO SCALE

FOREST CONSERVATION WORKSHEET

	Acres
Net Tract Area	
A. Total Tract Area	48.49
B. Area Within 100 Year Floodplain	0.46
C. Other deductions	--
D. Net Tract Area	48.03
Zoning Use Category: Commercial/Industrial	
Land Use Category	
E. Afforestation Minimum (15 % x D)	7.21
F. Conservation Threshold (15 % x D)	7.21
Existing Forest Cover	
G. Existing Forest on Net Tract Area	29.62
H. Forest Area Above Conservation Threshold	22.41
Breakeven Point	
I. Forest Retention Above Threshold with no Mitigation	11.69
J. Clearing Permitted without Mitigation	17.93
Proposed Forest Clearing	
K. Forest Areas to be Cleared	24.34
L. Forest Areas to be Retained	5.28
Planting Requirements	
M. Reforestation for Clearing Above Threshold	5.60
N. Reforestation for Clearing Below the Threshold	3.85
P. Credit for Retention Above Conservation Threshold	0
Q. Total Reforestation Required	9.45
R. Total Afforestation Required	0
S. Total Reforestation and Afforestation Requirement	9.45

Forest Retention Area Protection Signage



LEGEND

Forest Conservation Easement

▲ FCE Signage

—TPF— Tree Protection Fence

Forest Conservation Plan by:

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
6318 FOREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX:(410) 750-7350
EMAIL: EXPLORATIONRESINC@CS.COM

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.4
FAX: 410.4

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DB	RHV	RELEASE PLAN TO SHOW REMOVAL FACILITIES AND RELOCATE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9080 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FOREST CONSERVATION PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8383 • FAX 801-531-8386

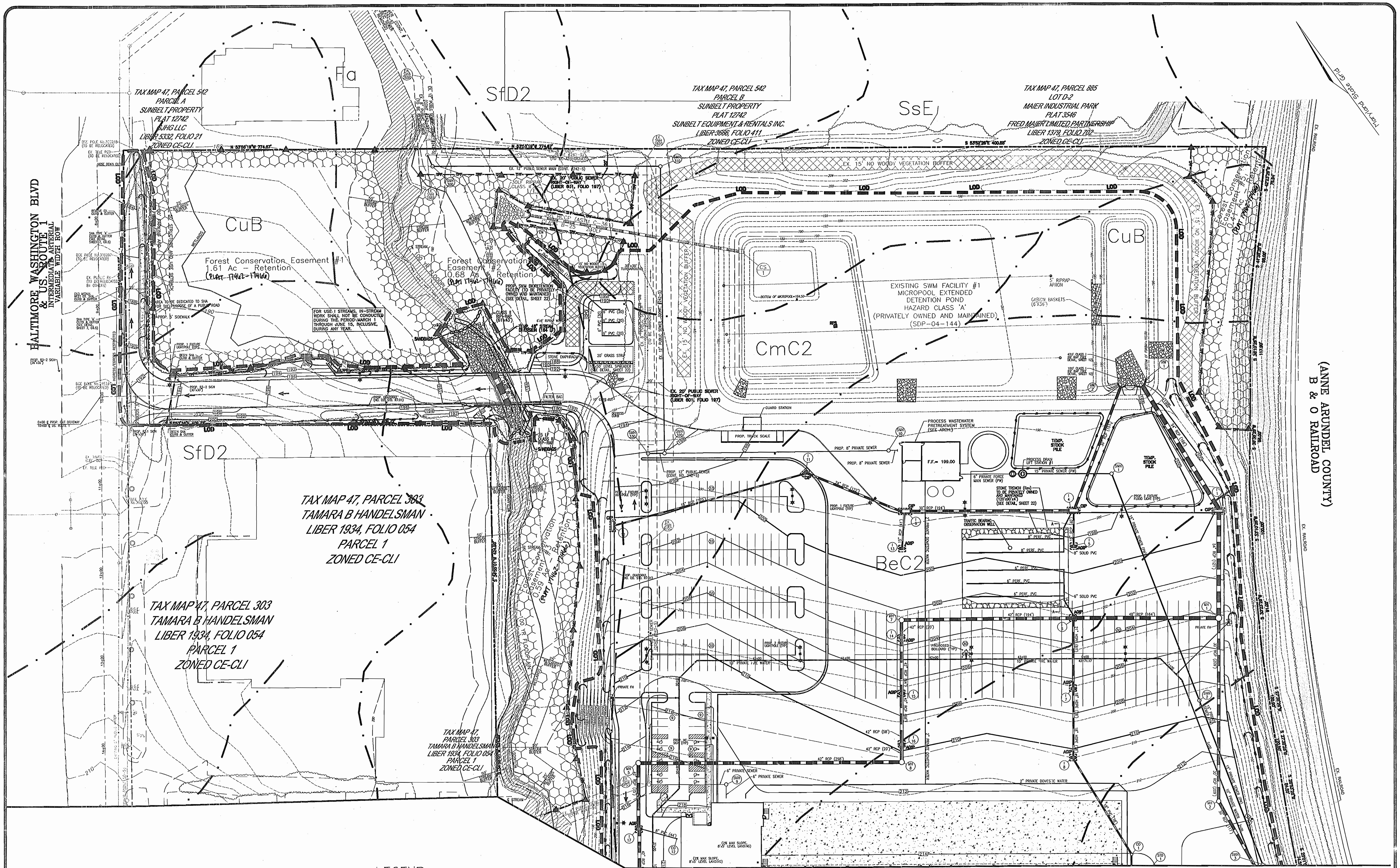
SCALE: 1"=50'

DRAWING NO.
L1.7

NO. CO. DPZ SHEET:
28 OF 38

SDP-05-40

N:\Dwgs\dwg\DREYERS\01103\CP S28.dwg,4/13/2005 11:47:42 AM, andyb



MATCHLINE (SHEET 28, L1.7)

LEGEND

(hatch)	Forest Conservation Easement
▲	FCE Signage
—— TPF ——	Tree Protection Fence

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Signature	Date
CHIEF, DEVELOPMENT ENGINEERING DIVISION	5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	6/2/05
DIRECTOR	6/2/05

Forest Conservation Plan by:

EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
8318 FORREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX:(410) 750-7350
EMAIL: EXPLORATIONRES@CS.COM

STEPHEN L. HUBER – REGISTERED PROFESSIONAL FORESTER No. 383

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	5-25-06	DZ	RHY	REVISE PLANS TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FOREST CONSERVATION PLAN

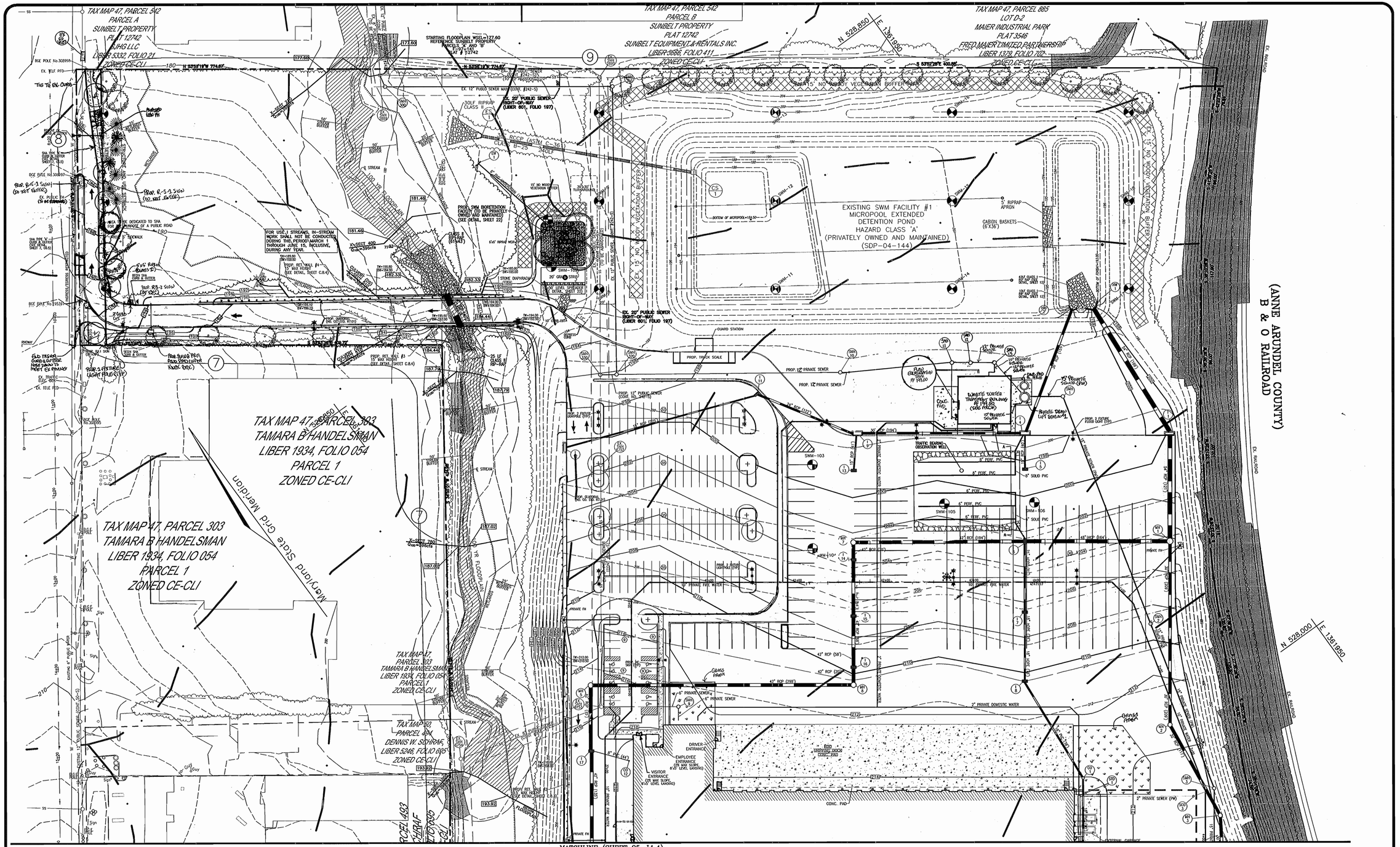
THE DENNIS GROUP, LLC
PLANNING . ENGINEERING . CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413·787·1785 . FAX 413·787·1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801·531·8585 . FAX 801·531·8586

SCALE: 1"=50'

DRAWING NO.
L1.6
HO. CO. DPZ SHEET: 27 OF 38

SDP-05-40

N:\Dreyers\dwg\DREYERS041105\FCP S27.dwg, 4/13/2005 11:46:16 AM, andyb



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Robert H. Vogel, Attorney-in-fact 04-14-05
SIGNATURE OF DEVELOPER DATE

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE. No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DJK	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
L1.5

HO. CO. DPZ SHEET:
26 OF 38

SDP-05-40

STREET TREE PLANT SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
QA	19	Quercus acutissima Sawtooth Oak	2 1/2"-3" Col.	B & B

BIORETENTION PLANTING REQUIREMENTS			
NBR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	2500 SF	57	57

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT).

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	191 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, 100%*
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(8 BUFFER) 0 SHADE TREES 0 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES	SEE BIORETENTION PLANT LIST*

*SURETY FOR BIORETENTION PROVIDED IN THE DEO COST ESTIMATE

BIORETENTION PLANTING SCHEDULE				
KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	3	QUERCUS LUTEA "SWEETSHADE" SWEETSHADE YELLOWWOOD	1 1/2"-2" CAL	B & B
	6	ILEX GLABRA COMPACTA DWARF INKBERRY	3 GALLON	CONT
	18	VACCINIUM VITIS-IDEA AMERICAN MOUNTAIN CRANBERRY	5 GALLON	CONT
	16	KALMIA LATIFOLIA MOUNTAIN LAUREL	5 GALLON	CONT
	16	RHODODENDRON HY. 'GLACIER' OR 'WHITE ROSEBUD' GLACIER OR WHITE ROSEBUD HYBRID AZALEA	3 GALLON	CONT
	666	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" PCT	1' O.C.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Robert Hwan, Attorney in fact — SIGNATURE OF DEVELOPER — DATE 6-14-05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/19/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-05-06	DJ	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY LOCATIONS.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

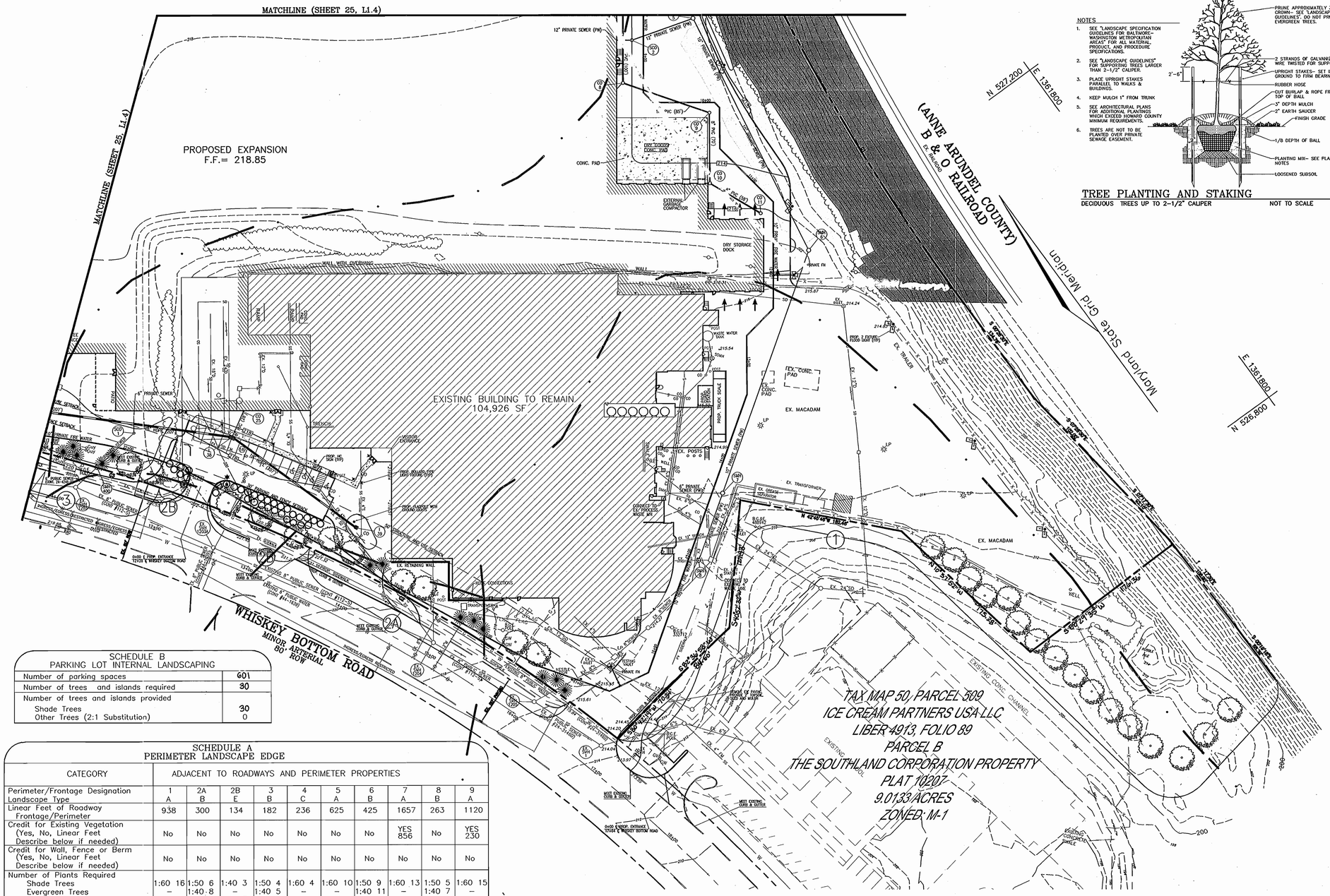
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
L1.4

HO. CO. DPZ SHEET: 25 OF 38

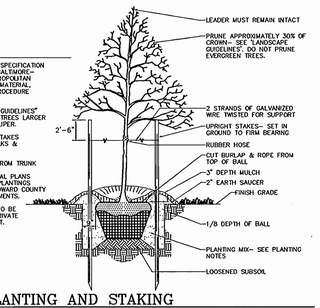
SDP-05-40



LANDSCAPE PLAN
SCALE: 1"=50'

NOTES:

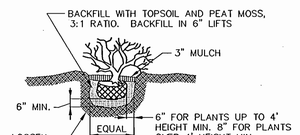
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK.
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



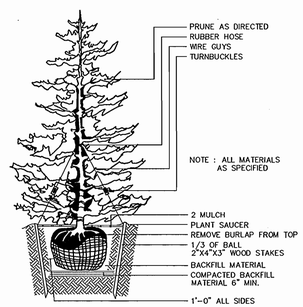
TREE PLANTING AND STAKING
DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED LIGHT POLE
- PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- PROPOSED SHRUBS
- LANDSCAPE PERIMETER



SHRUB PLANTING DETAIL
NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

Number of parking spaces	601
Number of trees and islands required	30
Number of trees and islands provided	
Shade Trees	30
Other Trees (2:1 Substitution)	0

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES									
Perimeter/Frontage Designation Landscape Type	1 A	2A B	2B E	3 B	4 C	5 A	6 B	7 A	8 B	9 A
Linear Feet of Roadway Frontage/Perimeter	938	300	134	182	236	625	425	1657	263	1120
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	YES 856	No	YES 230
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	No	No	No
Number of Plants Required										
Shade Trees	1:60 16	1:50 6	1:40 3	1:50 4	1:60 4	1:60 10	1:50 9	1:60 13	1:50 5	1:60 15
Evergreen Trees	–	1:40 8	–	1:40 5	–	–	1:40 11	–	1:40 7	–
Shrubs	–	–	1:4 34	–	–	–	–	–	–	–
Number of Plants Provided										
Shade Trees	16	6	3	4	4	10	9	13	5	15
Evergreen Trees	–	8	–	5	–	–	11	–	7	–
Other Trees (2:1 Substitution)	–	–	–	–	–	–	–	–	–	–
Shrubs (10:1 Substitution)	–	–	34	–	–	–	–	–	–	–
Describe Plant Substitution Credits Below if needed)										

LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	85	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2" -3"Cal.	B & B
PS	31	Pinus strobus Eastern White Pine	6' - 8' Ht.	B & B
QP	30	Quercus Phellos Willow Oak	2 1/2" -3"Cal.	B & B
TD	34	Taxus media 'Densiformis' Densiformis Yew	2 1/2' -3' Ht.	B & B

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $42,270.00 FOR THE REQUIRED 122 SHADE TREES, 31 EVERGREEN TREES AND 34 SHRUBS.
3. SWM LANDSCAPING IS NOT REQUIRED FOR THIS SITE SINCE THE SWM FACILITY IS NOT VISIBLE FROM A PUBLIC ROAD.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/23/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — Robert Lewis, Attorney-in-fact — DATE 04-14-05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5-4-05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	5-25-06	DZ	RHV	REVISED PLAN TO SHOW 48" GULLY PIPE AND ADDITIONAL VARIOUS FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801-531-8585 • FAX 801-531-8586

DRAWING NO.
L1.3

HO. CO. DPZ SHEET: 24 OF 38

SDP-05-40

Geotechnical Construction Recommendations

Cut-Off Trench and Impervious Core Construction

According to the site grading plan, cut-off trenches and impervious cores will be required at the east and west sides of the proposed SWM pond.

In accordance with Maryland Code 378 requirements, the cutoff trench should extend at least 4 feet below the principal spillway pipe, have a minimum width of 4 feet, and have side slopes of 1H: 1V, or flatter. The impervious core should extend vertically upward from the cutoff trench to the 10-year stormwater surface elevation. Fill materials for the cutoff trench and impervious core construction should consist of GC, SC, CL, or CH soil types, having at least 30 percent by weight passing the No. 200 sieve.

Fill materials for the cut-off trench and impervious core should be placed in 8-inch loose lifts and compacted to at least 95 percent of the maximum dry density in accordance with the Standard Proctor test method, ASTM D-698. We recommend that moisture contents at the time of construction should generally be within the range of the optimum moisture content to 3 percentage points wet of the optimum moisture content. Placement and compaction of the cutoff trench and impervious core fill materials should be monitored by the Geotechnical Engineer on a full-time basis to ensure that fill materials are being placed and compacted in accordance with plans and specifications.

General Embankment Construction

According to the plans provided, it appears that the SWM pond is to be constructed to a configuration of 3H:1V, primarily in a cut situation. However, embankments will be required at the east and west sides of the pond with a maximum of 7.5 feel of fill at the northeastern corner of the pond. The results of the borings indicated that the cut slopes should be suitable for the proposed 3H:1V. The fill slopes planned at 3H:1V should consist of embankment fill as recommended below.

Embankment soils placed outside the limits of the cut-off trench and impervious core should consist of soils classified as CL, ML, SC, SM, SC-SP, or SM-SP in accordance with ASTM D-2487. Soils of these types should be readily available from excavated materials associated with the pond construction, although car will need to be exercised to ensure that the materials do not contain excessive amounts of organics.

Summary of SWM Pond Design

Based on the subsurface conditions encountered at the site and our review of the proposed Stormwater Management Plan, it is our opinion that the design for the proposed SWM ponds and embankments, with modifications as recommended herein, is in general accordance with Maryland Code 378 requirements with regard to geotechnical considerations. Careful observation of soil conditions exposed during construction will be needed to ensure that measures are taken to provide necessary improvement of soil conditions, especially in the areas of cut slopes and in areas of structural support.

Subgrade Preparation

Subgrade preparation in proposed embankment areas should generally include the removal of any soft, loose, or otherwise unsuitable materials from areas that are to receive fill. We recommend that the removal of unsuitable materials should extend at least 5 feet beyond the areas to receive fill, unless otherwise recommended by the Geotechnical Engineer.

Prior to the placement of any embankment fill materials, an authorized representative of the Geotechnical Engineer should examine the subgrade soils to verify that they are suitable. The exposed soils should be thoroughly proofrolled by a vehicle having an axle weight of at least 10 tons, such as a loaded tandem-axle dump truck. This procedure is intended to assist in identifying any localized unstable or yielding materials. In the event that unstable or yielding areas are encountered during the proofrolling operations, the subgrade should be either thoroughly densified in-place, disced/aerated and recompacted, or undercut to firm ground and replaced with controlled, compacted fill.

Fill Placement and Compaction

Prior to placement of compacted fill, representative bulk samples (about 50 pounds) should be taken off the proposed fill soils and laboratory tests should be conducted to determine Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships for compaction. In general, any materials to be used as structural fill should consist of those materials previously described in the previous sections pertaining to Cut-off Trench and Impervious Core Construction and General Embankment Construction. Materials acceptable for use in engineered fills should be free of organic matter (less than 3 percent by weight) and debris, containing no rocks greater than 4 inches in their largest dimension. Any off-site borrow soils, if required, should meet the same material requirements and should be approved by the Geotechnical Engineer.

The on-site soils generally should be acceptable for re-use as embankment fill, with the restrictions previously addressed. As previously mentioned, there appears to be an insufficient quantity of the on-site soils suitable for use in the construction f the cutoff trenches and impervious cores. This material will need to be imported to the project site. Bulk samples should be taken of the proposed impervious soils and submitted to the Geotechnical Engineer for approval prior to the importation of this material to the site.

Based on the results of the field testing program conducted for this site, and visual and laboratory classifications of the samples obtained, the on-site soils are generally considered to be suitable for re-use as embankment fill. Considering the laboratory test results, existing moisture contents for some of the on-site soils may be greater than the optimum moisture content. Therefore, drying of the soils by aeration or by chemical methods such as quick lime or cement should be anticipated to reduce the moisture content of the on-site soils in order to achieve the required compaction. Any materials proposed for use as structural fill should be approved by the Geotechnical Engineer or his authorized representative.

Due to the textural variations of the on-site soils, variations in moisture-density relationships should be anticipated. Such changes must be determined in the field by the Geotechnical Engineer, or his authorized representative, during the earthwork operations and treated appropriately.

All general embankment fill should be placed in loose lifts which do not exceed 8 inches in thickness, and should be compacted to at least 95 percent of the maximum dry density, as determined by the Standard Proctor compaction test method (ASTM D-698). Generally, the moisture content of the fill materials for the embankment should be maintained within ± 2 percentage points of the optimum moisture content for the fill materials, as determined by ASTM D-698.

Fill materials for the cut-off trench and imperious core should be placed in loose lifts which do no exceed 8 inches in thickness, and should be compacted to at least 95 percent of the maximum dry density, as determined by the Standard Proctor compaction test method (ASTM D-698). Relative to clayey soils placed in the cut-off trench and impervious core, it will be desirable to maintain field moisture contents within the range of optimum moisture content to 3 percentage points wet of optimum moisture content, to aid in obtaining relatively low coefficients of permeability.

Any embankment fill placed on slopes steeper than 5H:1V should be adequately benched into the existing slope. Benches should be a minimum of 5 feet wide and should have heights no greater than 3 feet or the drum height of the roller, whichever is less.

The footprint of the proposed embankment should be well defined, including the limits of the fill zones at the time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified Soil Technician to determine that the minimum compaction requirements are being achieved. A minimum of one compaction test per lift and every 2,500 square foot lift area should be made. The elevation and location of the tests should be clearly identified at the time of fill placements.

At the end of each work day, all fill areas should be graded to facilitate positive drainage of any free water associated with precipitation and surface run-off, and sealed by use of a smooth-drum roller to limit infiltration of surface water.

Fill materials should not be placed on frozen soils for frost-heaved soils and/or on soils that have been saturated by precipitation. All frozen or frost-heaved soils should be removed prior to placement of controlled and compacted fill. Borrow fill materials shall not contain frozen materials at the time of placement.

If any problems are encountered during the earthwork operations, or if site conditions deviate from those encountered during our subsurface investigation, the Geotechnical Engineer should be notified immediately.

Construction Considerations

Because of the presence of fines, the on-site soils will be sensitive to moisture and disturbance. Construction activities in the presence of excess moisture can lead to softening of the subgrade soil loss of bearing capacity. Therefore it will be prudent to schedule earthwork operations during the warmer and drier seasons (typically late spring to early fall). Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas. It is advisable to designate haul roads and traffic areas to limit the areas of disturbance and prevent construction traffic from excessively degrading the sensitive subgrade soils, especially any moisture sensitive soils containing high percentages of silt and clay.

A firm working surface should be established prior to construction of new fills. The moisture content of the fill soils at the time of placement should be be carefully controlled to ensure that the required compaction effort can be achieved without excessive pumping or movement of the fill mass. In the event that the earthwork operations are accomplished during the cooler and wetter periods of the year, delays and additional costs should be anticipated since any reduction of soil moisture would have to be accomplished by mechanical manipulation in order to achieve the specified compaction.

Groundwater was not encountered during drilling at any of the borings performed for the SWM Pond during this investigation. It appears that groundwater will not impact construction of the pond embankments and during undercutting and backfilling operations. However, should any perched water be encountered, it should be managed easily by using ditches, sumps and pumps.

Some of the soils at this site could be sensitive to moisture and could become difficult to work if exposed to excessive moisture and construction activity. Therefore, surface water runoff should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped at a grade of 1 to 2 percent to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade should be sealed by rolling the surface with a smooth drum roller. Sealing the surface should also facilitate positive drainage of surface runoff to stormwater collection facilities.

Some cuts or excavation associated with construction may require forming or bracing, slope flattening or other physical measures to control sloughing and/or prevent slope failures. An examination of the applicable codes (e.g. OSHA) should be made by the appropriate contractor to ensure that adequate protection of the excavations and trench walls is provided.

Soils at this site contain fines and are considered erodible. The Contractor should provide and maintain good site drainage during earthwork operations to help maintain the integrity of the surface soils. All erosion and sedimentation shall be controlled in accordance with sound engineering practice and current local requirements.

Appendix B.3. Construction Specifications for Sand Filters, Bioretention and Open Channels

Specifications for Bioretention

1. Material Specifications

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

2. Planting Soil

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

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

pH range 5.2 – 7.0
organic matter 1.5 – 4% (by weight)
magnesium 35 lb./ac
phosphorus (phosphate – P 20) 75 lb./ac
potassium (potash – K 20) 85 lb./ac
soluble salts nit to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional test of organic matter, and soluble salts. A textural analysis shall be performed for each location where the top soil was excavated.

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

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

3. Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use hoes to remove original soil. If bioretention areas are excavated using loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tire. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

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

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

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

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

4. Plant Material

Recommended plant material for bioretention areas can be found in Appendix A, Section A.2.3. of the 2000 Maryland Stormwater Design Manual.

5. Plant Installation

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

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

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

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

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds of nitrogen per 1000 square feet.

6. Underdrains

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

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

7. Miscellaneous

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

DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:

These standards apply to removal and discharge of water from any excavated area or sediment trap or basin at any construction site. Given the unique conditions at any particular construction site, any or all of the practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.

Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should identify procedures for dewatering sediment traps and basins prior to elimination of the last sediment control facility on the site or prior to conversion of sediment control facilities to stormwater management facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may require innovative dewatering designs. Dewatering measures not referenced in this standard may be used with the consent of the approval authority.

Dewatering of Excavated Areas

A. Designers shall specify on plans, and in sequences of construction included on plans, practices for dewatering of excavated areas. Plan reviewers shall check to see that procedures for dewatering are included on plans.
B. In all cases, water removed from excavated areas shall be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps, basins and filter bags, in addition to the practices in this section.

Approved Practices for Dewatering of Excavated Areas

1. Pumping of water to an existing sediment basin, filter bag or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
2. Pumping of water to an existing sediment basin, filter bag or trap such that the entire volume of water from the area to be dewatered can be managed without exceeding the design outflow from the sediment control structure.
3. Removable Pumping Station. Standards and specifications for Removable Pumping Station are on Detail 20A.
4. Use of a Sump Pit. Standards and specifications for a sump pit are on Detail 20B.
5. Sediment Tank. Standards and specifications for a sump pit are on Detail 21.

Dewatering of Sediment Traps and Basins

Designers shall specify on plans, and in sequences of construction included on plans, the practices for dewatering of traps and basins. Plan reviewers shall check to see that procedures for dewatering to be used are included on plans. In all cases, water removed from traps and basins shall be discharged so that it passes through a sediment control device prior to entering receiving waters.

Approved Practices for Dewatering of Traps and Basins

1. Removable pumping station.
2. Use of a Sump Pit.
3. Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner water is pumped the suction hose will lower and eventually encounter sediment laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water prior to discharge to receiving waters. When floating suction hoses are used, personnel shall be assigned to monitor pumping operations to ensure that sediment pollution is abated. Pumping sediment laden water into the waters of the State without filtration is strictly forbidden.
4. Vegetative buffers– The maintenance of areas of existing vegetation adjacent to wetlands, streams, and other areas of significant natural resource value in connection with sediment control practices noted in this manual can ensure that such areas are not adversely affected by grading and construction of by stormwater runoff once construction is complete. The maintenance of such areas adjacent to streams is particularly important because they lessen the impact of sedimentation of fish and other aquatic species, and provide food such as leaves and twigs for aquatic organisms, particularly in headwater streams. The width for such areas needed for in order to provide adequate protection is dependent on the type of area to be protected, the type of vegetation in the buffer, the slope present, the ability of the soils in the buffer to absorb water, the size distribution of the incoming sediment, and the rate of runoff. However, research studies have shown that the maintenance of a buffer of 100 feet in width in areas with low to moderate slopes should generally provide adequate protection.

POND BOTTOM SOIL CONDITIONS

If broken rock fragments are encountered at finished pond bottom, under cut a minimum of 12" below basin grade and to a horizontal distance of at least 18" beyond each edge of the broken rock and ~~backfill with fine-grained ML or CL soils compacted to a firm condition.~~ This procedure should be performed under the supervision of the project Geotechnical Engineer.

In order to lower the infiltration rate into the sands with gravel, it is recommmended that the sands with gravel be undercut and replaced with a minimum of 12 inches of soils classified as SM per ASTM D-2487 or Sandy Loam per USDA classification. The fill soil should be compacted to at least 95 percent of its maximum dry density per ASTM D-698.

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

NOTE: CONTRACTOR SHALL ENSURE THAT THE S.W.M. FACILITY IS WATERTIGHT.

1. ALL PIPE CONNECTIONS AT STRUCTURES SHALL BE CEMENTED TO ENSURE WATERTIGHT CONNECTION.
2. ALL ACCMP PIPE JOINTS SHALL USE 12" WIDE HUGGER BAND WITH "O" RING GASKETS.
3. TEES AND ELBOWS TO BE FACTORY FABRICATED WELDS, ONE PIECE.
4. TRENCH BEDDING TO BE IN ACCORDANCE WITH RECOMMMENDATIONS FROM THE GEOTECHNICAL ENGINEER IN THE FIELD.
5. PROVIDE WATERTIGHT JOINTS AT ALL PIPE CONNECTIONS. (FOR REINFORCED CONCRETE PIPE, ASTM C-361, RUBBER GASKET PIPE).

OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, NRCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT EXTENDED DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY

ROUTINE MAINTENANCE

1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES

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

MATERIALS SPECIFICATIONS FOR BIO-RETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SPECIFICATION	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL (2.5' TO 4' DEEP)	SAND 35-60% SILT 30-55% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	PEA GRAVEL: ASTM-D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL NO. 6 STONE: 2" TO 5"	
GEOTEXTILE	CLASS "C"-APPARENT OPENING SIZE (ASTM-D-4751), GRAB TENSILE STRENGTH (ASTM-D-4632), PUNCTURE RESISTACE (ASTM-D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	0.375" TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OOR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	3/8" PERF. @ 6" O.C., 4 HOLES PER ROW: MIN. OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; fc=3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND – DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING (H-10 OR H-20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND (1' DEEP)	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 5/25/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 6/2/05
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/2/05
DIRECTOR — DATE

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

[signature] 4/21/05
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

[signature] 4/21/05
HOWARD S.C.D. — DATE

BY THE DEVELOPER:

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

[signature], Attorney-in-fact 4-14-05
SIGNATURE OF DEVELOPER — DATE

BY THE ENGINEER:

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

[signature] 4/14/05
SIGNATURE OF ENGINEER — DATE

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-06	DZ	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES & REVISE VARIOUS FACILITY INFORMATION

Dreyer's
DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORMWATER MANAGEMENT NOTES

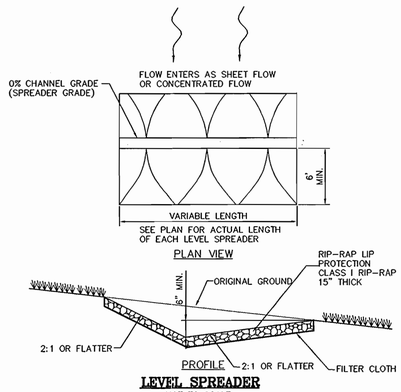
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET, SPRINGFIELD, MASSACHUSETTS 01103, 413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET, SALT LAKE CITY, UTAH 84101, 801·531·8585 • FAX 801·531·8586

SCALE: 1"=40'
0 10' 20' 40' 80'

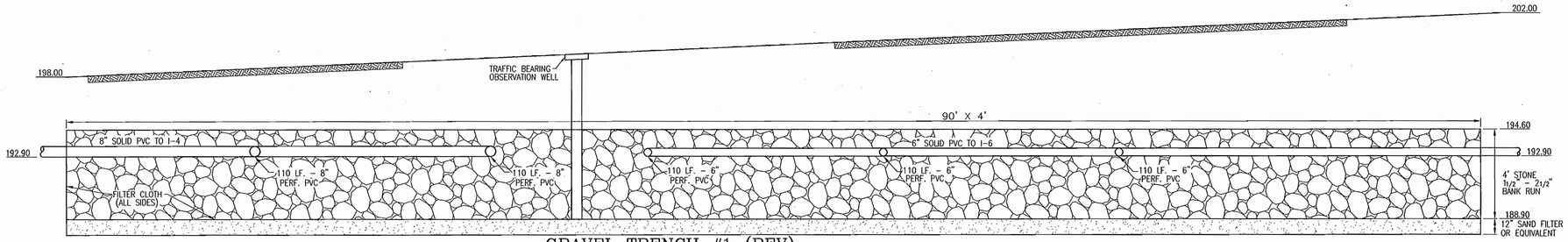
DRAWING NO.
C6.8

HO. CO. DPZ SHEET: 23 OF 38

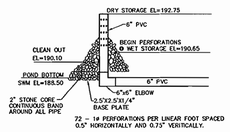
SDP-05-40



LEVEL SPREADER
NOT TO SCALE



GRAVEL TRENCH #1 (REV)
SECTION A-A
SCALE: 1"=4'



TEMP. SEDIMENT BASIN#1 DEWATERING DEVICE WITH 6" PERFORATED RISER
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. Perforations in the draw-down device may not extend into the wet storage.
2. The total area of the perforations must be greater than 2 times the area of the internal orifice.
3. The perforated portion of the draw-down device shall be wrapped in 1/2" hardware cloth and geotextile fabric. Filter fabric lining shall be embedded a minimum of 4" and shall extend at least 6" beyond the edge of the rip-rap. Geotextile Class C.
4. Provide support of draw-down device to prevent sagging and floatation. An acceptable preventative measure is to stake both sides of draw-down device with 1" steel angle, or 1' by 4" square or 2" round wooden posts set 3' minimum into the ground then joining them to the device by wrapping with 12 guage minimum wire.

SEDIMENT BASIN #1

DRAINAGE AREA TO BASIN:	23.29 AC
TOTAL STORAGE REQUIRED:	83,844 CF
TOTAL STORAGE PROVIDED:	153,835 CF
BOTTOM ELEVATION:	188.50
CREST ELEVATION:	192.75
WET STORAGE ELEVATION:	188.50-190.65 (2.15')
DRY STORAGE ELEVATION:	190.65-192.75 (2.10')
TOTAL STORAGE DEPTH:	4.25'
TOP OF EMBANKMENT:	197.50
CLEANOUT ELEVATION:	191.10
SIDE SLOPES:	3:1
Q_1 EX.:	1.9 CFS
Q_1 TSWM:	1.3 CFS
1 YR TSWM WSEL:	192.64
10 YR TSWM WSEL:	193.63
$Q_{1\ (ULT)}$:	1.5 CFS
1 YR ULT. WSEL:	192.59

SWM POND SUMMARY

	1 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	74.9 c.f.s	161.5 c.f.s.	233.6 c.f.s.
FLOW OUT OF POND	1.5 c.f.s.	64.6 c.f.s.	82.8 c.f.s.
W.S. ELEVATION	192.59	193.93	194.93
STORAGE VOLUME	3.65 AC FT	5.94 AC FT	8.13 AC FT

WQv	Cpv
1.67 Ac.Ft.	3.23 Ac.Ft.

CONDITION	CN	tc	RUNOFF Qa 1YR STORM	Q 1YR	Q 10YR	Q 100YR
		HR.	INCHES	CFS	CFS	CFS
EXISTING	75	0.35	0.71	16.1	63.2	108.2
IMPROVED	93	0.10				

SUMMARY TABLE AREA 1 (SITE)

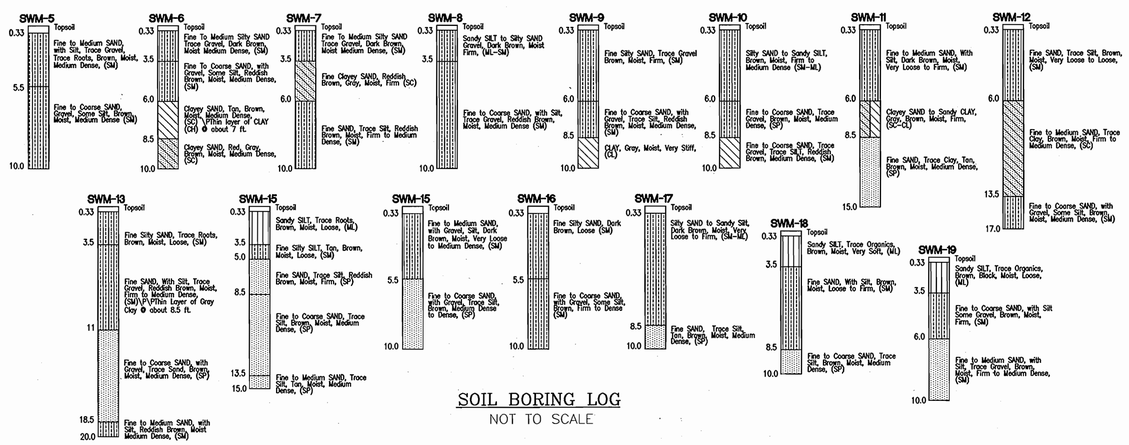
AREA 26.65 AC.	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	1.67 AC.FT.	N/A	1.67 AC. FT.	50% OF WQv PROVIDED IN WET POOL
2	RECHARGE VOLUME REV	0.39 AC.FT. OR 4.93 AC.	0	0.39 AC. FT.	PROVIDED BY GRAVEL TRENCH
3	CHANNEL PROTECTION VOLUME CPV	3.23 AC.FT.	N/A	3.23 AC.FT.	MICROPOOL EXTENDED DETENTION
4	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
5	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: SWM PROVIDED BY MICROPOOL EXTENDED DETENTION FACILITY

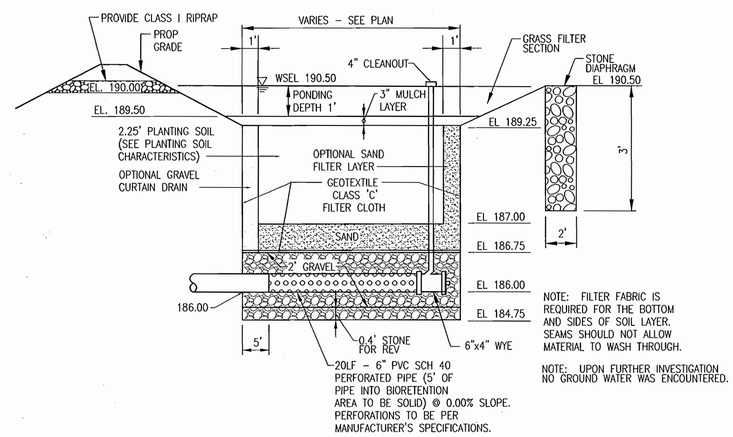
SUMMARY TABLE AREA 1 (DRIVEWAY)

AREA 0.87 AC.	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	0.0689 AC.FT.	N/A	0.0689 AC. FT.	PROVIDED IN BIO-RETENTION FACILITY
2	RECHARGE VOLUME REV	0.0152 AC.FT.	0	0.0152 AC. FT.	PROVIDED BY GRAVE UNDER BIO-RETENTION
3	CHANNEL PROTECTION VOLUME CPV	0	N/A	0	$Q_1 \leq$ 2.0 CFS
4	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
5	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: SWM PROVIDED BY MICROPOOL EXTENDED DETENTION FACILITY



SOIL BORING LOG
NOT TO SCALE



NOTE: FILTER FABRIC IS REQUIRED FOR THE BOTTOM AND SIDES OF SOIL LAYER. SEAMS SHOULD NOT ALLOW MATERIAL TO WASH THROUGH.

NOTE: UPON FURTHER INVESTIGATION NO GROUND WATER WAS ENCOUNTERED.

DETAIL - BIORETENTION AREA
NOT TO SCALE

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/20/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/6/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	5-25-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT CONDITIONS AND FACILITY INFORMATION. VARIOUS

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

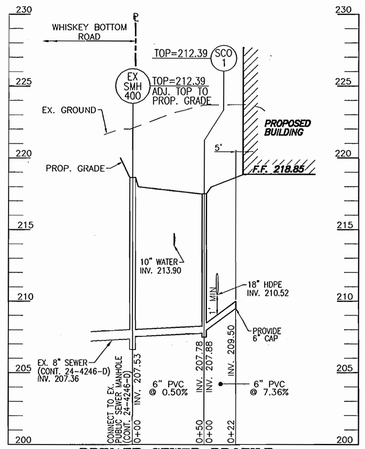
STORMWATER MANAGEMENT DETAILS

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786

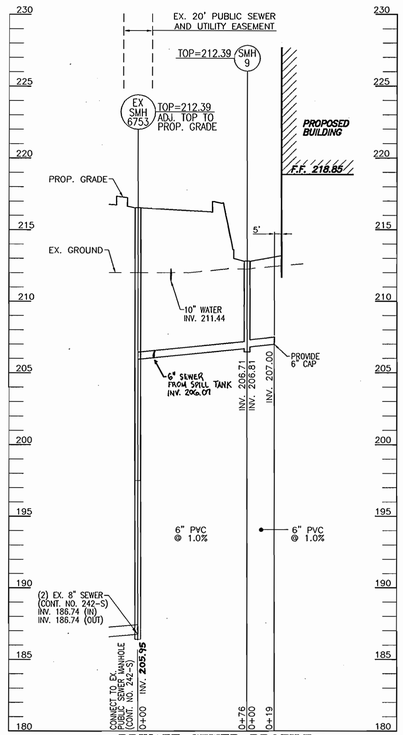
DRAWING NO.
C6.7

HO. CO. DPZ SHEET:
22 OF 38

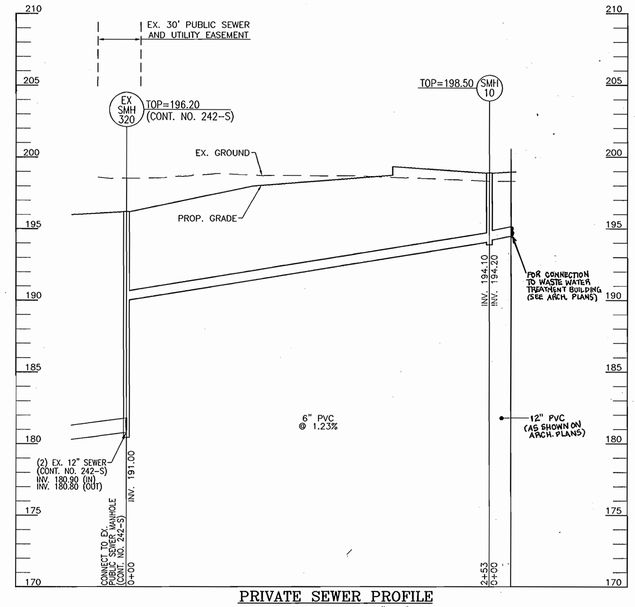
SDP-05-40



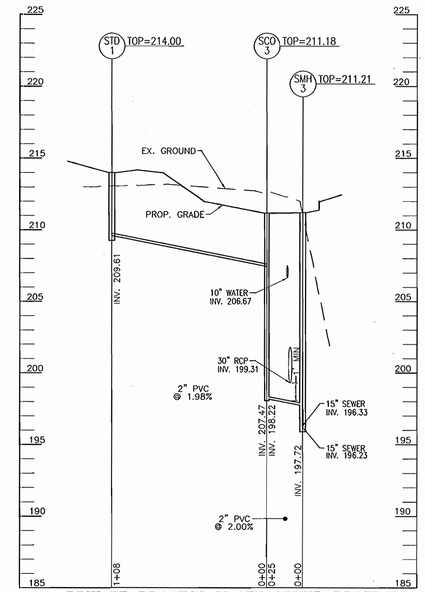
PRIVATE SEWER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



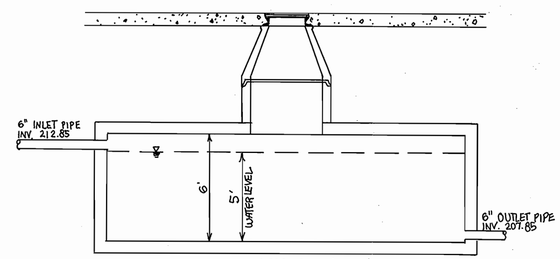
PRIVATE SEWER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



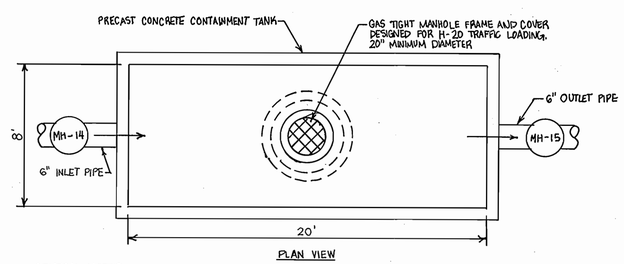
PRIVATE SEWER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE PROCESS WASTE SEWER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



SECTION VIEW



PLAN VIEW

GENERAL NOTES

1. THE STRUCTURE CHAMBER SHALL BE PRECAST. THE MANUFACTURER SHALL FURNISH DETAILED STAMPED DESIGN DRAWINGS SHOWING THE REINFORCING STEEL, CONCRETE DESIGN, STRUCTURAL MEMBERS, AND MANHOLE ASSEMBLIES. THE STRUCTURE SHALL BE RATED FOR H-20 LOADING.
2. THE PRECAST STRUCTURE SHALL BE WATERTIGHT. ALL PENETRATIONS SHALL BE AS MANUFACTURED BY LINK, SEAL, OR EQUAL.
3. TANK SHALL BE ACCESSIBLE FOR INSPECTION AND MAINTENANCE. NO STRUCTURES SHALL BE CONSTRUCTED DIRECTLY UPON OR ABOVE THE GREASE INTERCEPTOR ACCESS LOCATIONS, INLET AND OUTLET SHALL BE ACCESSIBLE FOR INSPECTION AND MAINTENANCE.
4. BACKFILL AROUND THE STRUCTURE SHALL BE PLACED IN SUCH A MANNER AS TO PREVENT DAMAGE TO THE TANK.

UNDERGROUND EMERGENCY NH3 SPILL TANK (10,000 GAL)
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/06
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/06
DIRECTOR	DATE 6/8/06

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND ROBERT HARRY VOGEL NO. 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT PROFILES (AS PER HOWARD COUNTY DPW&ES COMMENTS)

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SEWER PROFILES

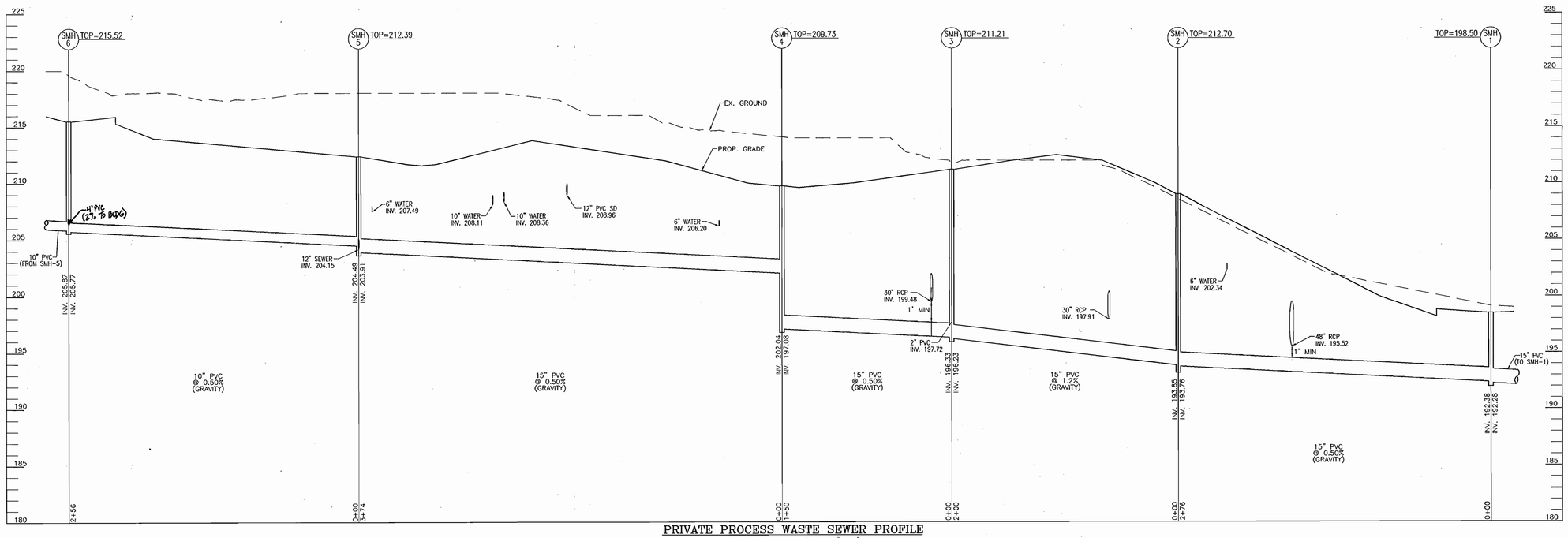
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-537-8585, FAX 801-537-8586
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786

SCALE: 1"=40'

DRAWING NO.
C5.7

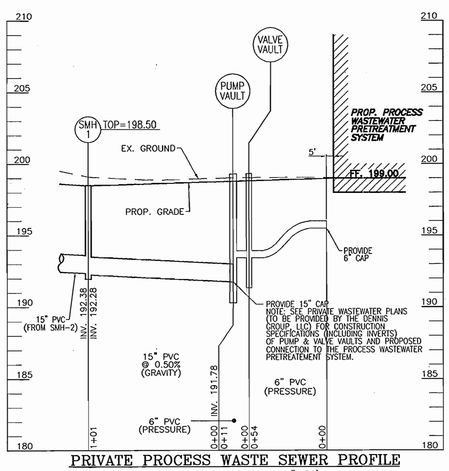
HO. CO. DPZ SHEET:
21 OF 38

SDP-05-40



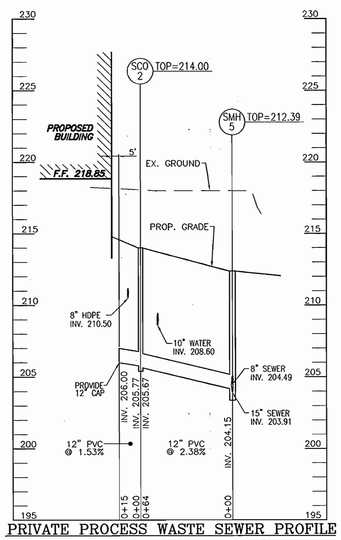
PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



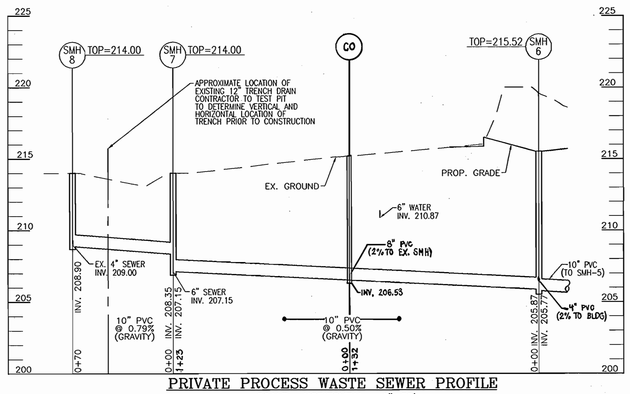
PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



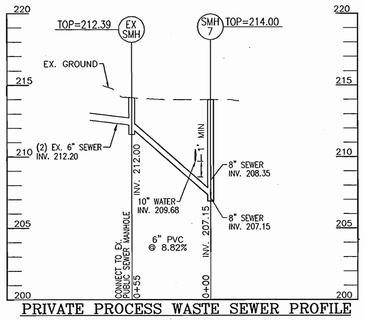
PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



PRIVATE PROCESS WASTE SEWER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/3/05
DIRECTOR	DATE 6/7/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 6/9/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-06	DZ	RHV	REVISED PLAN TO SHOW "AS-BUILT" CONDITIONS & ERRORS, VARIOUS TECHNICAL CORRECTIONS

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SEWER PROFILES

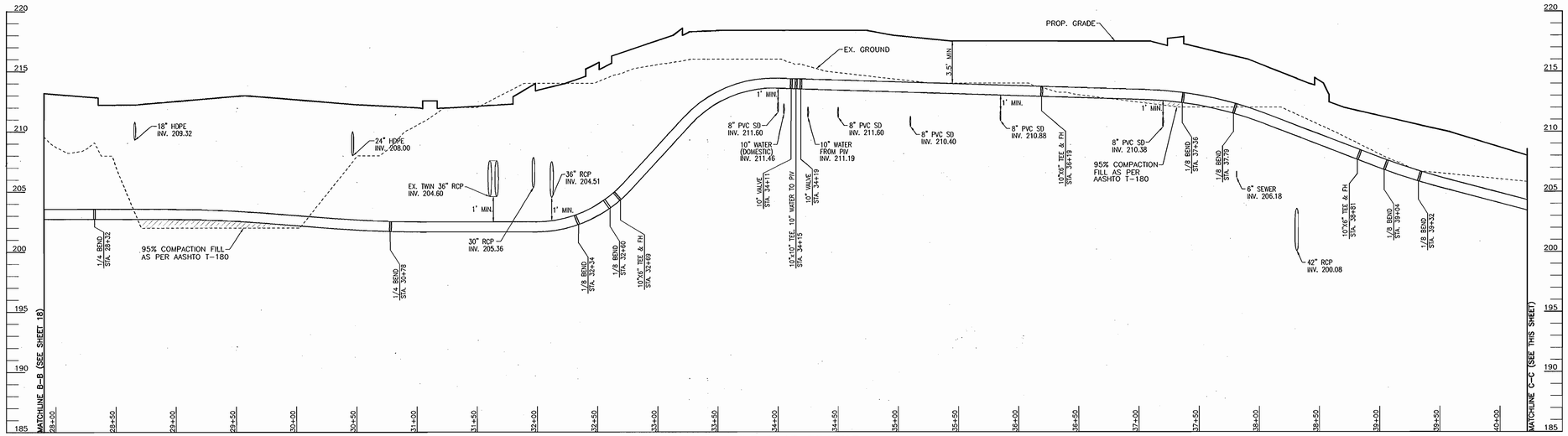
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786

SCALE: 1"=40'

DRAWING NO.
C5.6

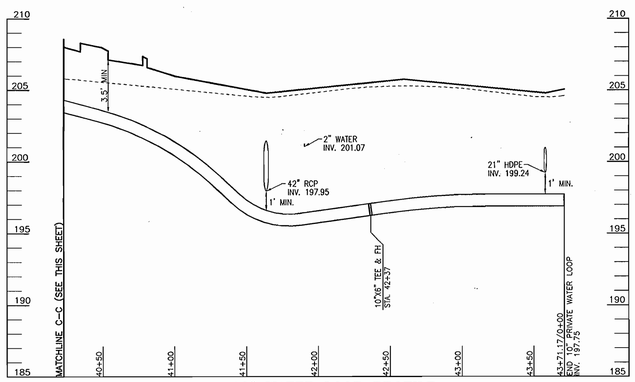
HO. CO. DPZ SHEET:
20 OF 38

SDP-05-40



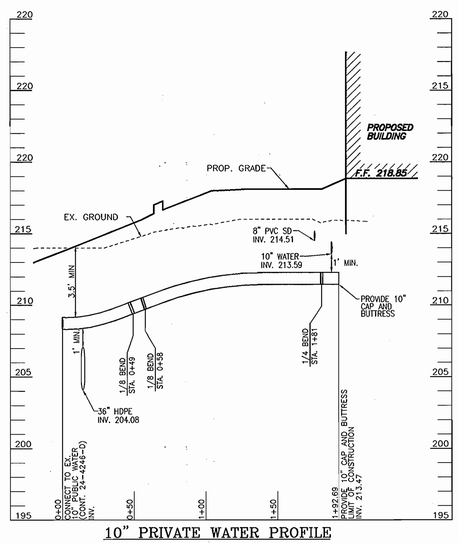
10" WATER LOOP PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



10" WATER LOOP PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



10" PRIVATE WATER PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/4/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

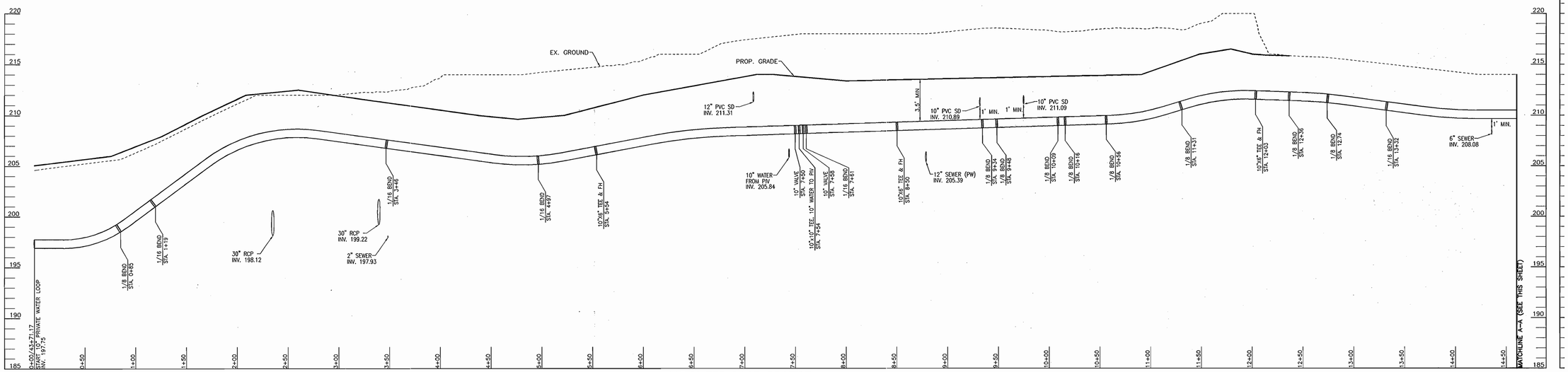
WATER PROFILES

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 • FAX 801-531-8586

DRAWING NO.
C5.5

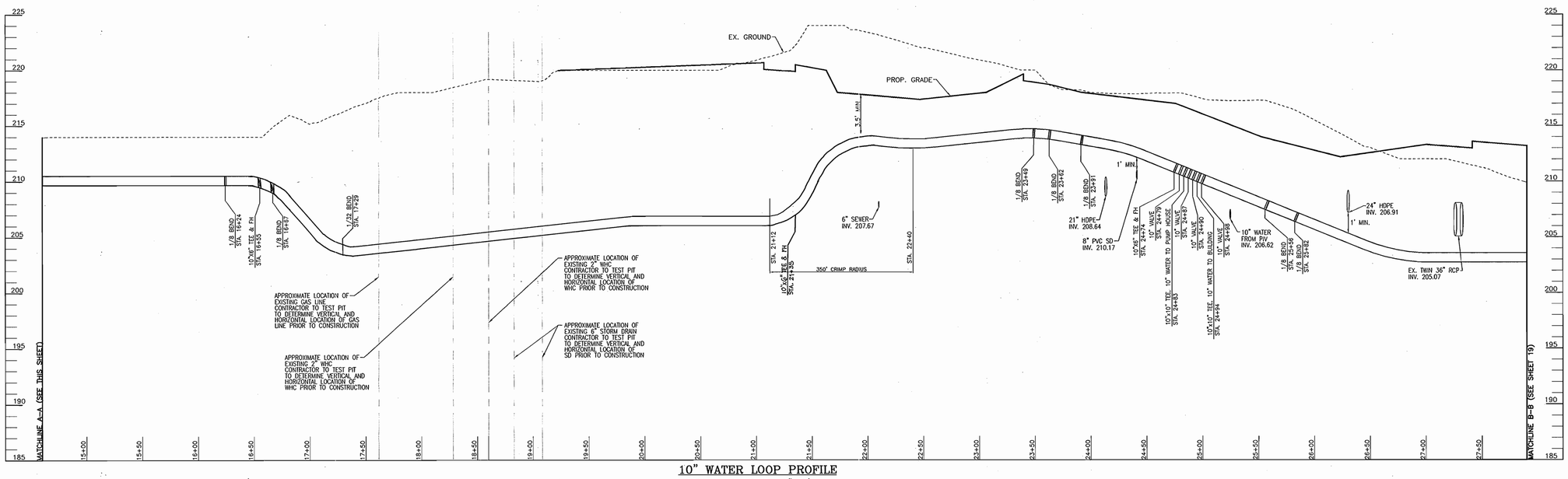
HO. CO. DPZ SHEET:
19 OF 38

SDP-05-40



10" WATER LOOP PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



10" WATER LOOP PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 6/1/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-05-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITIES & REVISE VARIOUS FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

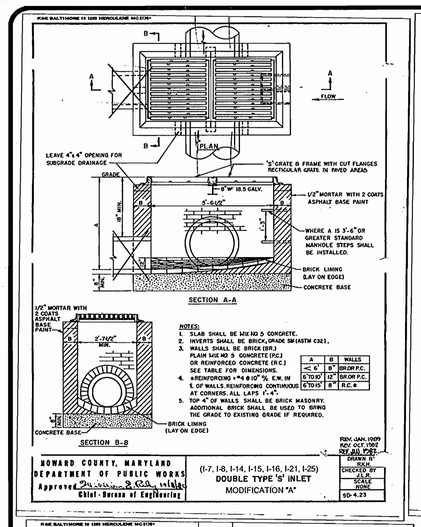
WATER PROFILES

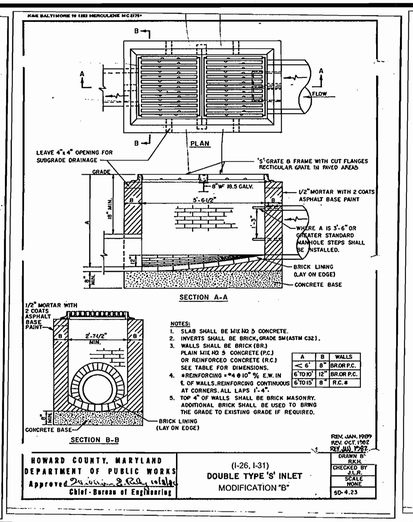
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785, FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585, FAX 801-531-8586

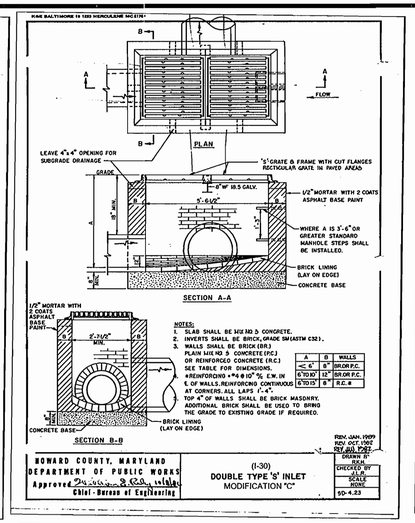
DRAWING NO.
C5.4

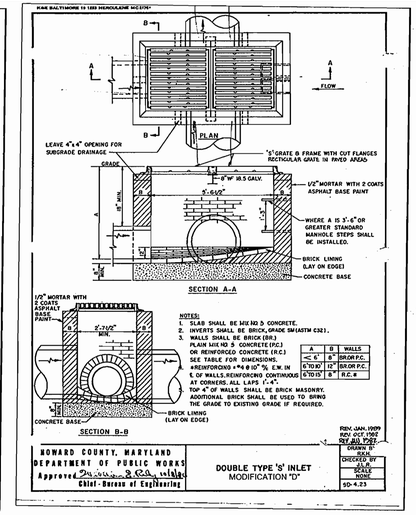
HO. CO. DPZ SHEET:
18 OF 38

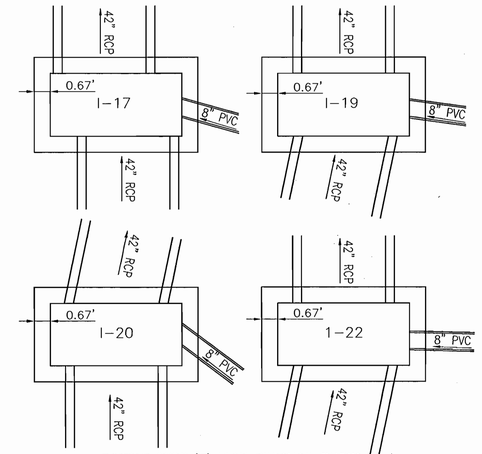
SDP-05-40



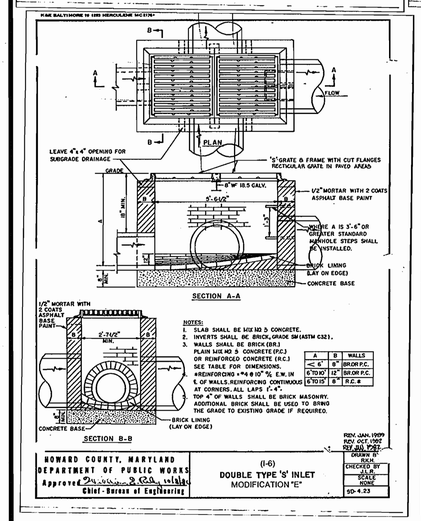


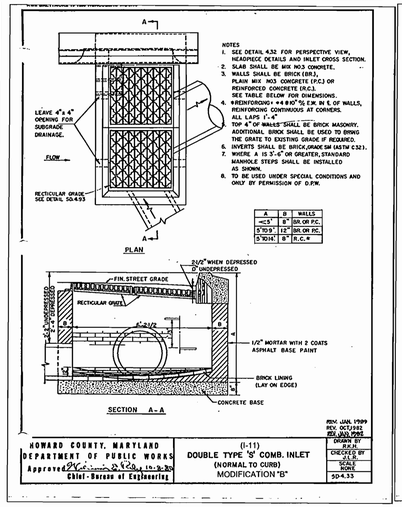


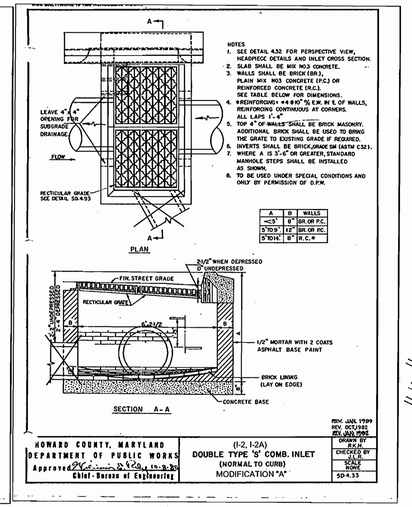


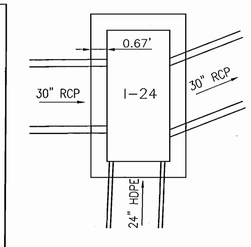


DOUBLE TYPE 'S' FLOW THROUGH INLETS
(8" R.C. WALLS)
SCALE: 1"=3'

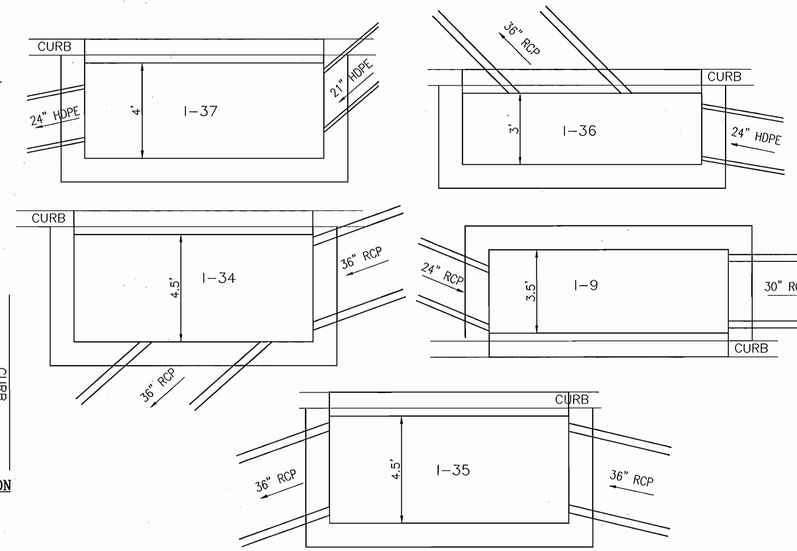




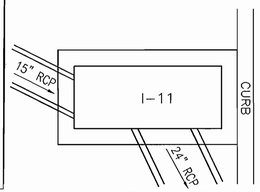




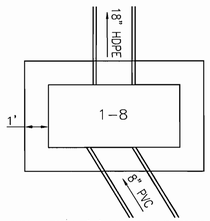
DOUBLE TYPE 'S'
FLOW THROUGH INLET
(8" P.C. WALLS)



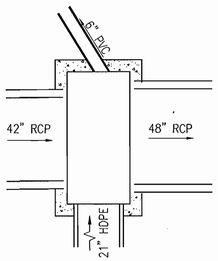
A-10 INLETS
SCALE: 1"=3'

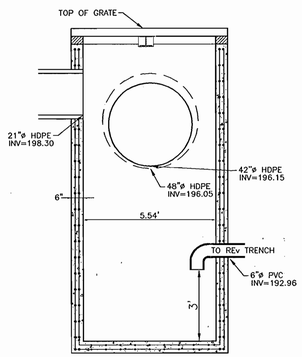


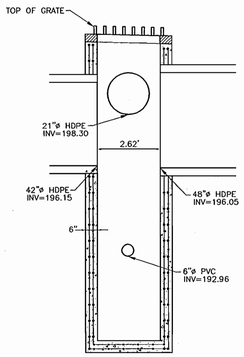
DOUBLE TYPE 'S' COMBINATION
(NORMAL TO CURB)
FLOW THROUGH INLET
(8" P.C. WALLS)
SCALE: 1"=3'



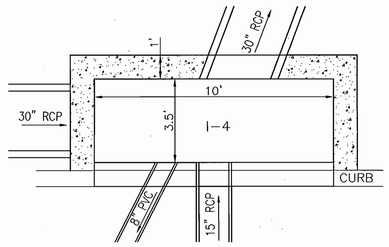
DOUBLE TYPE 'S' FLOW THROUGH INLET
(12" P.C. WALLS)
SCALE: 1"=3'

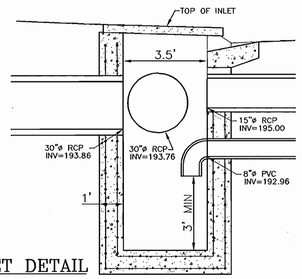






I-6 DIVERSION INLET DETAIL
SCALE: 1"=3'





I-4 DIVERSION INLET DETAIL
SCALE: 1"=3'

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DZ	RHV	REVISED PLAN TO SHOW VARIOUS FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

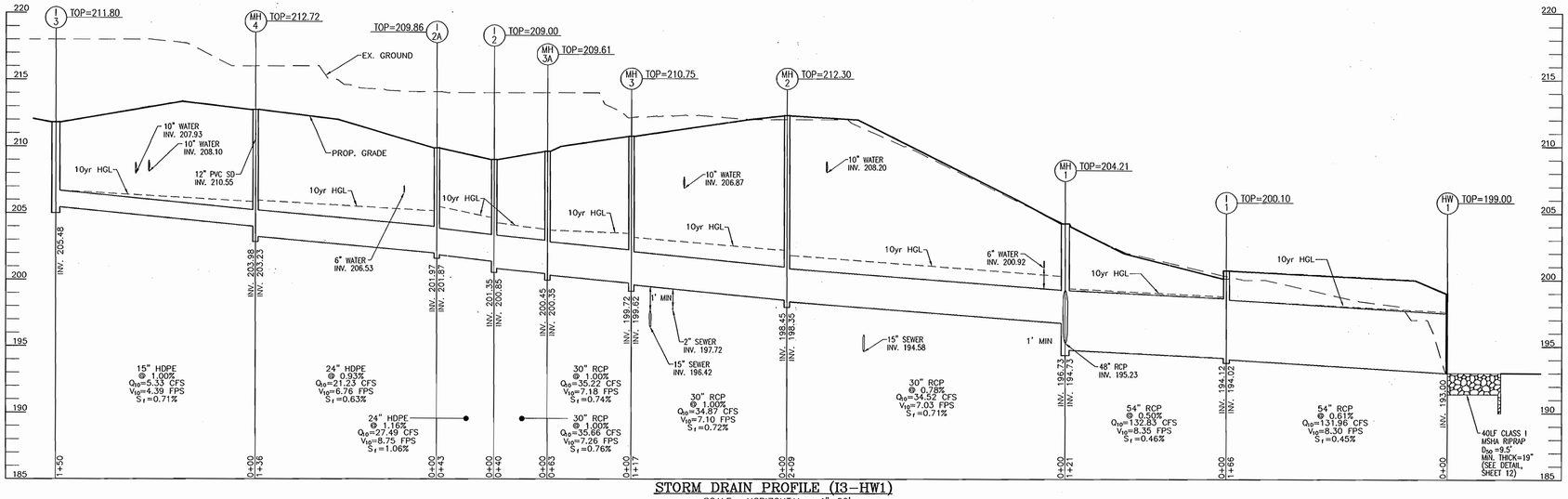
STORM DRAIN INLET DETAILS

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8583 • FAX 801-531-8586

DRAWING NO.
C5.3

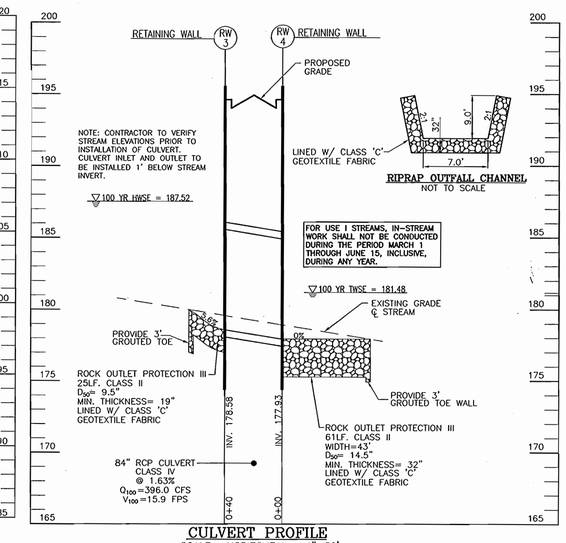
HO. CO. DPZ SHEET:
17 OF 38

SDP-05-40



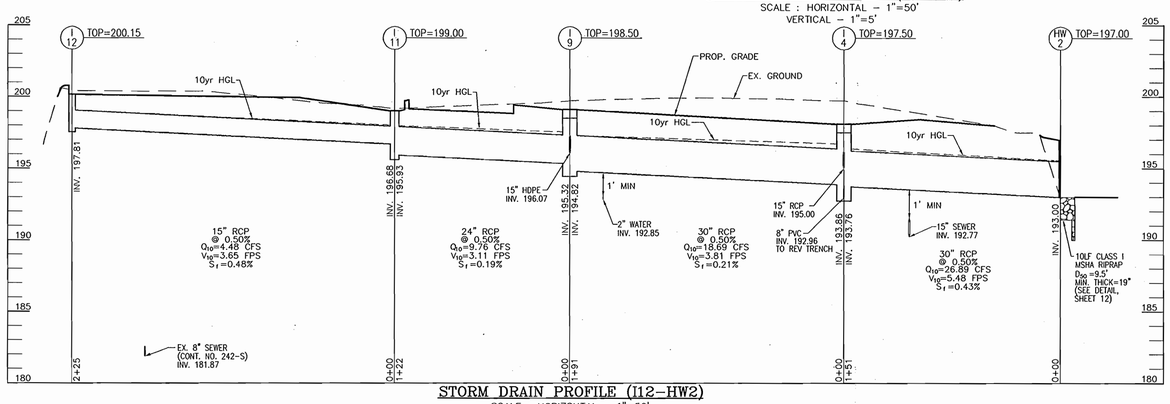
STORM DRAIN PROFILE (I3–HW1)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



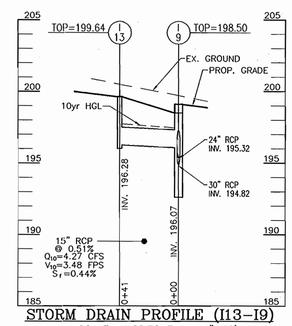
CULVERT PROFILE

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



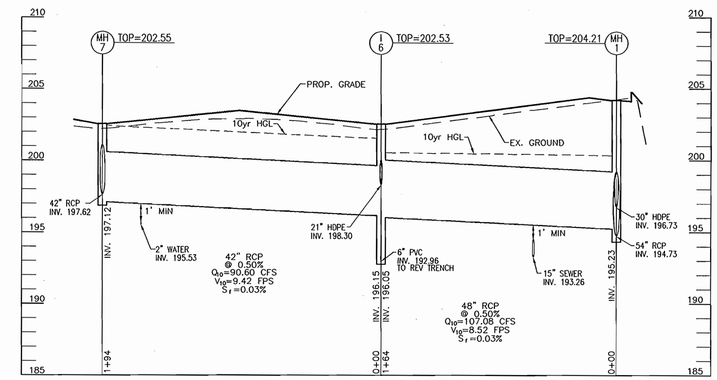
STORM DRAIN PROFILE (I12–HW2)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



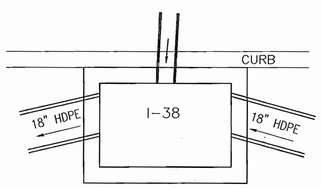
STORM DRAIN PROFILE (I13–I9)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

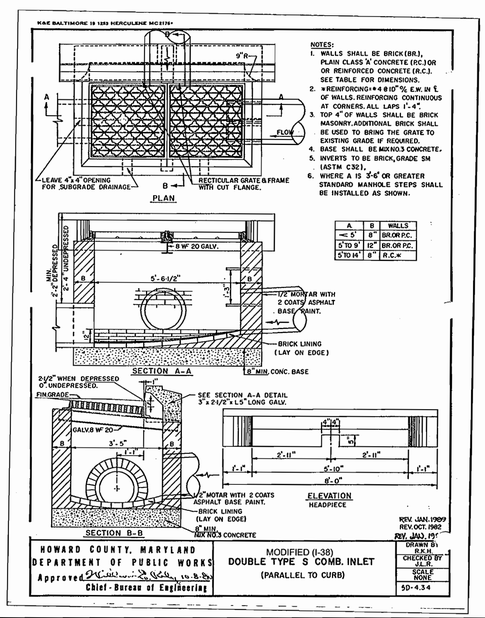


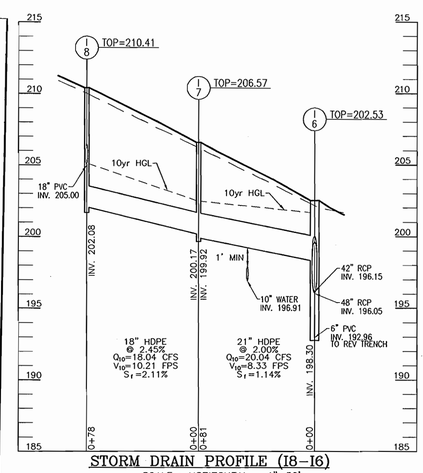
STORM DRAIN PROFILE (MH7–MH1)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



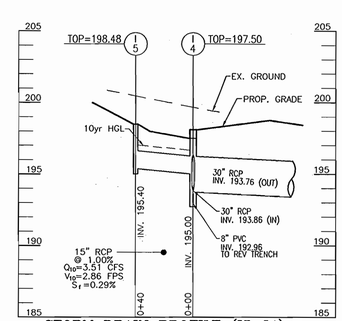
DOUBLE TYPE 'S' COMBINATION
(PARALLEL TO CURB)
FLOW THROUGH INLET
(8" P.C. WALLS)
SCALE: 1"=5'





STORM DRAIN PROFILE (I8–I6)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE (I5–I4)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 4/4/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-05	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

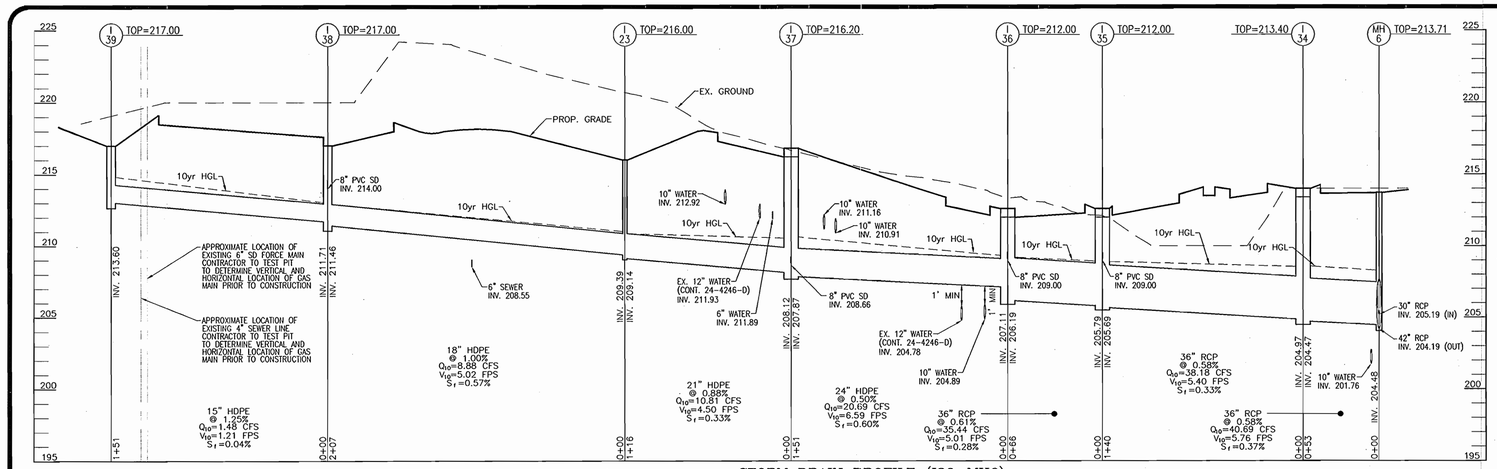
STORM DRAIN PROFILES

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413.787.1765 • FAX 413.787.1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801.531.8383 • FAX 801.531.8586

DRAWING NO.
C5.2

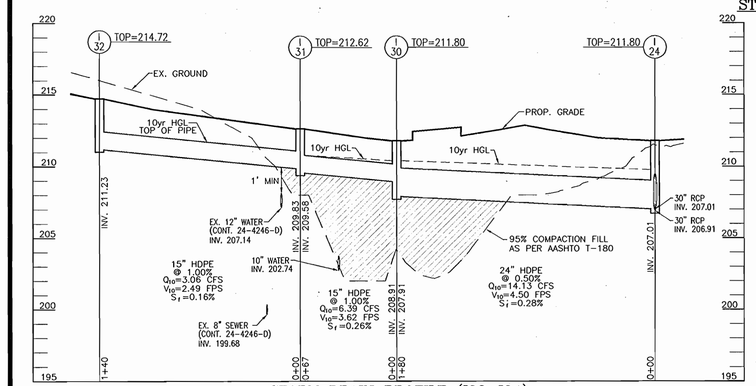
HO. CO. DPZ SHEET:
16 OF 38

SDP-05-40



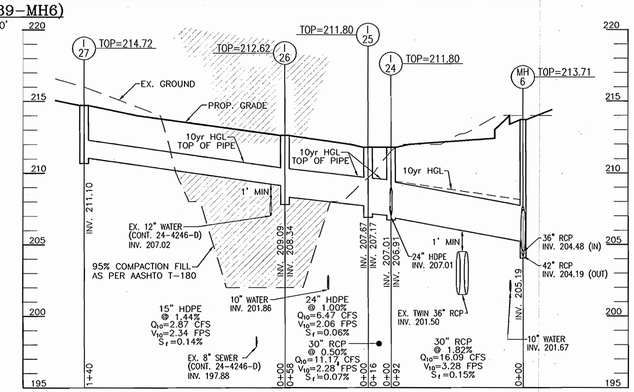
STORM DRAIN PROFILE (I39-MH6)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



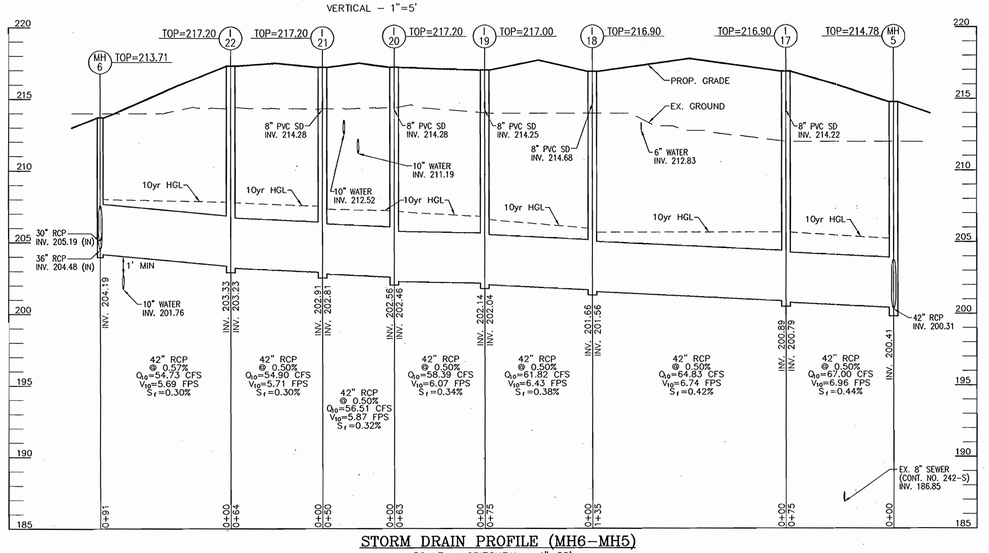
STORM DRAIN PROFILE (I32-I24)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



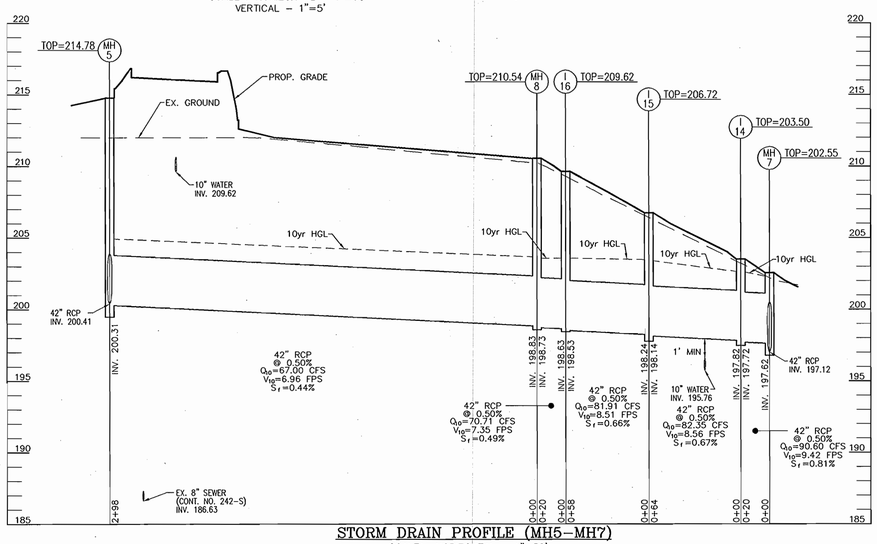
STORM DRAIN PROFILE (I27-MH6)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE (MH6-MH5)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE (MH5-MH7)

SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

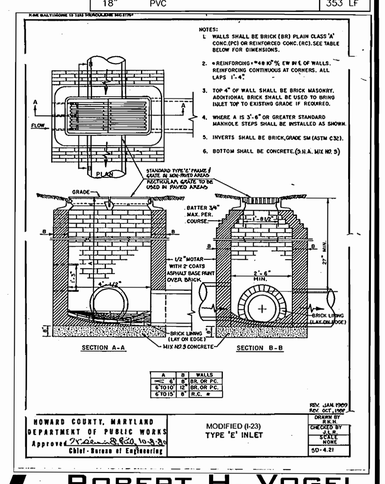
STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	COMMENTS
I-1	TYPE 'A-10' INLET	N 528274 E 1361945	200.10	194.12	194.02	HO. CO. STD SD-4.02
I-2	DOUBLE TYPE 'S' COMB. INLET (NORMAL)	N 527789 E 1361697	209.00	201.35	200.85	MODIFIED HO. CO. STD SD-4.33 ("A"-SHEET 17)
I-2A	DOUBLE TYPE 'S' COMB. INLET (NORMAL)	N 527760 E 1361680	209.86	201.97	201.87	MODIFIED HO. CO. STD SD-4.33 ("A"-SHEET 17)
I-3	DOUBLE TYPE 'S' COMB. INLET (PARALLEL)	N 574492 E 1361584	211.80		205.48	HO. CO. STD SD-4.34
I-4	TYPE 'A-10' INLET	N 528370 E 1361812	197.50	195.00 / 193.86	193.76 / 192.96	HO. CO. STD SD-4.02
I-5	DOUBLE TYPE 'S' INLET	N 528338 E 1361789	198.48		195.40	HO. CO. STD SD-4.23
I-6	MODIFIED DOUBLE TYPE 'S' INLET	N 528272 E 1361740	202.53	198.30 / 196.15	198.05 / 192.96	MODIFIED HO. CO. STD SD-4.23 ("B"-SHEET 17)
I-7	DOUBLE TYPE 'S' INLET	N 528207 E 1361693	206.57	200.17	199.92	HO. CO. STD SD-4.23
I-8	DOUBLE TYPE 'S' INLET	N 528144 E 1361647	210.41	205.00	202.08	HO. CO. STD SD-4.23
I-9	TYPE 'A-10' INLET	N 528483 E 1361658	198.50	196.07 / 195.37	194.82	HO. CO. STD SD-4.02
I-11	DOUBLE TYPE 'S' COMB. INLET (NORMAL)	N 528587 E 1361593	199.00	196.68	195.93	MODIFIED HO. CO. STD SD-4.33 ("B"-SHEET 17)
I-12	TYPE 'A-10' INLET	N 528665 E 1361382	200.15		197.81	HO. CO. STD SD-4.02
I-13	DOUBLE TYPE 'S' INLET	N 528451 E 1361631	199.64		196.28	HO. CO. STD SD-4.23
I-14	DOUBLE TYPE 'S' INLET	N 528370 E 1361571	203.50	197.82	197.72	HO. CO. STD SD-4.23
I-15	DOUBLE TYPE 'S' INLET	N 528318 E 1361533	206.72	198.24	198.14	HO. CO. STD SD-4.23
I-16	DOUBLE TYPE 'S' INLET	N 528271 E 1361499	209.62	198.63	198.53	HO. CO. STD SD-4.23
I-17	DOUBLE TYPE 'S' INLET	N 528370 E 1361203	216.90	214.22 / 209.59	200.79	HO. CO. STD SD-4.23
I-18	DOUBLE TYPE 'S' INLET	N 528261 E 1361124	216.90	214.22 / 201.66	201.56	HO. CO. STD SD-4.23
I-19	DOUBLE TYPE 'S' INLET	N 528200 E 1361080	217.00	214.22 / 202.14	202.04	HO. CO. STD SD-4.23
I-20	DOUBLE TYPE 'S' INLET	N 528158 E 1361035	217.20	214.28 / 202.56	202.46	HO. CO. STD SD-4.23
I-21	DOUBLE TYPE 'S' INLET	N 528118 E 1361005	217.20	214.28 / 202.91	202.81	HO. CO. STD SD-4.23
I-22	DOUBLE TYPE 'S' INLET	N 528066 E 1360968	217.20	203.33	203.23	HO. CO. STD SD-4.23
I-23	TYPE 'E' INLET	N 527516 E 1360802	216.00	209.39	209.14	MODIFIED HO. CO. STD SD-4.21 (SEE SHEET 15)
I-24	DOUBLE TYPE 'S' INLET	N 528027 E 1360810	211.80	207.91 / 207.01	206.91	HO. CO. STD SD-4.23
I-25	DOUBLE TYPE 'S' INLET	N 528037 E 1360797	211.80	207.67	207.17	HO. CO. STD SD-4.23
I-26	DOUBLE TYPE 'S' INLET	N 528068 E 1360750	212.62	208.44	208.34	HO. CO. STD SD-4.23
I-27	DOUBLE TYPE 'S' INLET	N 528149 E 1360634	214.72		211.10	HO. CO. STD SD-4.23
I-30	DOUBLE TYPE 'S' INLET	N 527884 E 1360701	211.80	208.91	207.91	HO. CO. STD SD-4.23
I-31	DOUBLE TYPE 'S' INLET	N 527992 E 1360646	212.62	209.83	208.58	HO. CO. STD SD-4.23
I-32	DOUBLE TYPE 'S' INLET	N 528002 E 1360531	214.72		211.23	HO. CO. STD SD-4.23
I-34	TYPE 'A-10' INLET	N 527952 E 1360907	213.40	204.85	204.75	HO. CO. STD SD-4.02
I-35	TYPE 'A-10' INLET	N 527818 E 1360865	212.00	209.00 / 205.79	205.69	HO. CO. STD SD-4.02
I-36	TYPE 'A-10' INLET	N 527776 E 1360815	212.00	209.00 / 207.11	206.19	HO. CO. STD SD-4.02
I-37	TYPE 'A-10' INLET	N 527629 E 1360777	216.20	211.85 / 208.12	207.87	HO. CO. STD SD-4.02
I-38	DOUBLE TYPE 'S' COMB. INLET (PARALLEL)	N 527371 E 1360950	217.00	214.00 / 211.71	211.46	MODIFIED HO. CO. STD SD-4.34 (SEE SHEET 16)
I-39	TYPE 'E' INLET	N 527516 E 1360802	217.00		213.60	MD. 381.01
MH-1	84" DIAM. PRECAST MANHOLE	N 528176 E 1361873	204.21	196.23 / 195.53	194.73	MD. 384.07
MH-2	5'-0" STANDARD PRECAST MANHOLE	N 528007 E 1361750	212.30	198.45	198.35	HO. CO. STD. G-5.13
MH-3	5'-0" STANDARD PRECAST MANHOLE	N 527891 E 1361735	210.75	199.72	199.62	HO. CO. STD. G-5.13
MH-3A	5'-0" STANDARD PRECAST MANHOLE	N 527839 E 1361701	209.61	200.45	200.35	HO. CO. STD. G-5.13
MH-4	4'-0" STANDARD PRECAST MANHOLE	N 527635 E 1361628	212.72	210.58 / 203.98	203.23	HO. CO. STD. G-5.12
MH-5	72" DIAM. PRECAST MANHOLE	N 528431 E 1361247	214.78	200.41	200.31	MD. 384.05
MH-6	5'-0" STANDARD PRECAST MANHOLE	N 528005 E 1360900	213.71	205.19 / 204.48	204.19	HO. CO. STD. G-5.12
MH-7	72" DIAM. PRECAST MANHOLE	N 528386 E 1361583	202.55	197.62	197.12	MD. 384.05
MH-8	72" DIAM. PRECAST MANHOLE	N 528255 E 1361487	210.54	198.83	198.73	MD. 384.05
HW-1	TYPE 'A' HEADWALL	N 528439 E 1361959	199.00		193.00	HO. CO. STD SD-5.11
HW-2	TYPE 'A' HEADWALL	N 528453 E 1361938	197.00		193.00	HO. CO. STD SD-5.11
EW-1	TYPE 'C' ENDWALL (USE 12" SPECS.)	N 528439 E 1361959	184.00		185.75	HO. CO. STD SD-5.21

NOTE : 1. Top elevations are at flowline for Type 'A-10' and Double Type 'S' Comb. Inlets at center top of grate for Double Type 'S' Inlets and top of Manhole cover for Precast Manholes.
2. For top slab slopes see grading plan.
3. See Architectural plans for roof drain details.

PIPE SCHEDULE

SIZE	TYPE	LENGTH
15"	HDPE	648 LF
18"	HDPE	285 LF
21"	HDPE	197 LF
24"	HDPE	568 LF
15"	RCP	306 LF
24"	RCP	122 LF
30"	RCP	879 LF
36"	RCP	259 LF
42"	RCP	1207 LF
48"	RCP	164 LF
54"	RCP	287 LF
84"	RCP CLASS IV	40 LF
6"	PVC (SOLID)	240 LF
6"	PVC (PERFORATED)	420 LF
8"	PVC (SOLID)	923 LF
8"	PVC (PERFORATED)	220 LF
10"	PVC	85 LF
12"	PVC	263 LF
15"	PVC	86 LF
18"	PVC	353 LF



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/5/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/8/05

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
I	05-25-05	DZ	RHV	REVISED PLAN TO INCLUDE AS-BUILT FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORM DRAIN PROFILES

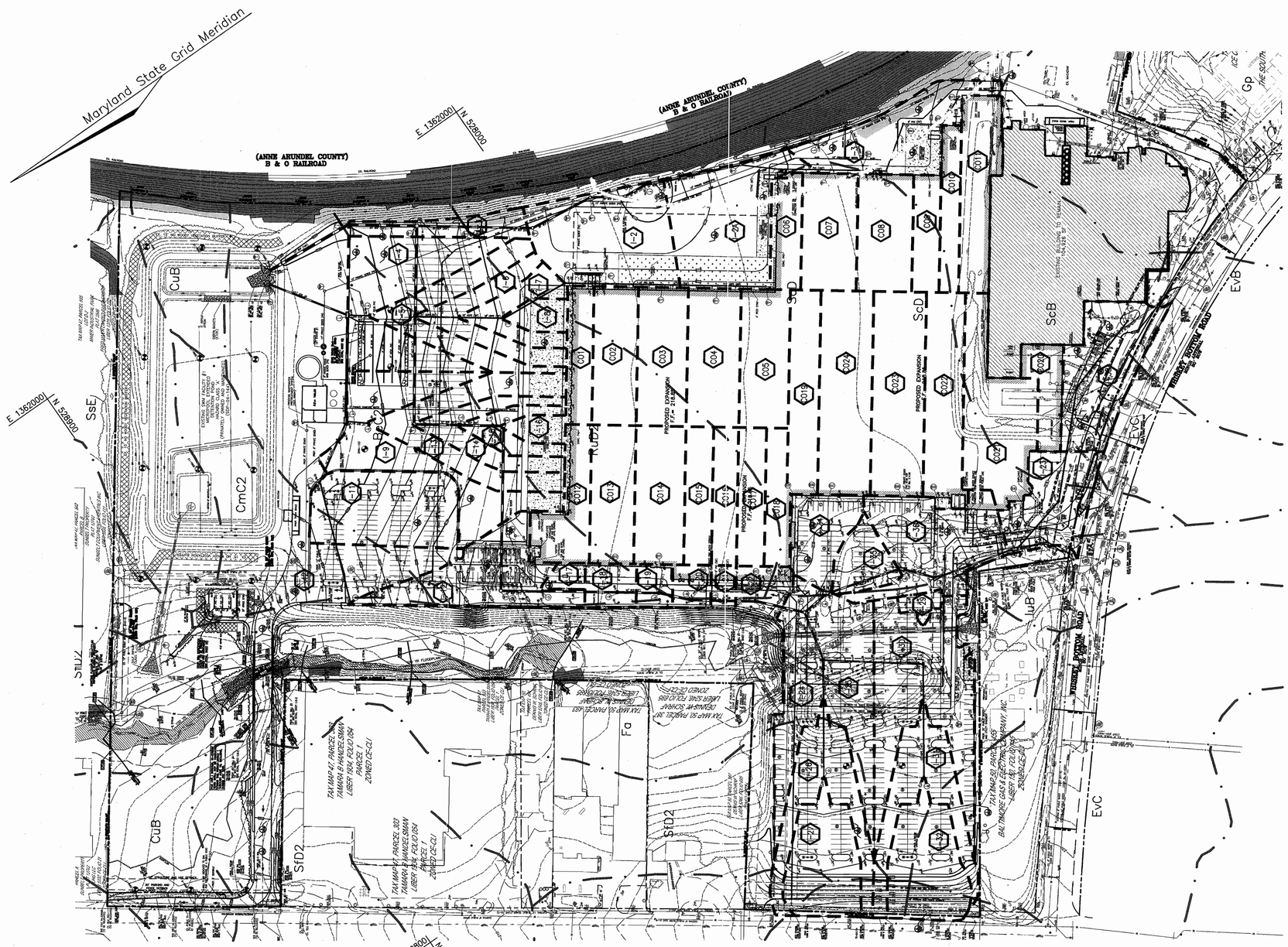
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
1391 MAIN STREET
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8383 • FAX 801-531-8586

DRAWING NO.
C5.1

HO. CO. DPZ SHEET:
15 OF 38

SDP-05-40

PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (ac) (A)	"C" FACTOR (C)	% IMPERVIOUS (P)
	I-1	M-2	A	0.26	0.87	100
	I-2	M-2	B	1.92	0.74	80
	I-2A	M-2	B	0.96	0.87	100
	I-3	M-2	C	0.72	0.87	100
	I-4	M-2	D	0.91	0.87	100
	I-5	M-2	E	0.47	0.87	100
	I-6	M-2	F	0.67	0.87	100
	I-7	M-2	G	0.27	0.87	100
	I-8	M-2	H	0.13	0.87	100
	I-9	M-2	I	1.01	0.87	100
	I-11	M-2	K	0.80	0.87	100
	I-12	M-2	L	0.61	0.87	100
	I-13	M-2	M	0.58	0.87	100
	I-14	M-2	N	0.32	0.87	100
	I-15	M-2	O	0.20	0.87	100
	I-16	M-2	P	0.26	0.87	100
	I-17	M-2	Q	0.07	0.87	100
	I-18	M-2	R	0.17	0.87	100
	I-19	M-2	S	0.17	0.87	100
	I-20	M-2	T	0.12	0.87	100
	I-21	M-2	U	0.10	0.87	100
	I-22	M-2	V	0.11	0.87	100
	I-23	M-2	W	0.33	0.87	20
	I-24	M-2	X	0.72	0.31	0
	I-25	M-2	Y	0.72	0.87	100
	I-26	M-2	Z	0.57	0.81	91
	I-27	M-2	AA	0.58	0.65	67
	I-28	M-2	BB	0.08	0.33	19
	I-29	M-2	CC	0.06	0.87	100
	I-30	M-2	DD	1.22	0.87	100
	I-31	M-2	EE	0.55	0.78	86
	I-32	M-2	FF	0.36	0.64	64
	I-33	M-2	GG	0.10	0.35	20
	I-34	M-2	HH	0.40	0.87	100
	I-35	M-2	II	0.25	0.87	100
	I-36	M-2	JJ	0.80	0.87	100
	I-37	M-2	KK	0.55	0.59	57
	I-38	M-2	LL	0.75	0.45	35



STORM DRAIN DRAINAG AREA MAP
SCALE: 1"=100'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No 16193
REGISTERED
PROFESSIONAL ENGINEER
5/4/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
I	05-05-05	DZ	RHV	REVISED PLAN TO SHOW As-Built FACILITIES & REVISED PHASE(1) IMPERVIOUS.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

STORM DRAIN DRAINAGE AREA MAP

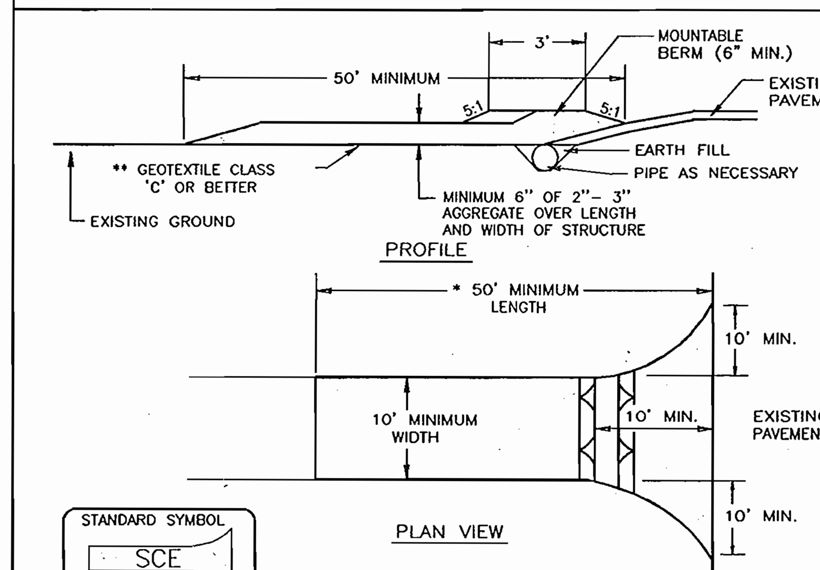
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

DRAWING NO.
C5.0

HO. CO. DPZ SHEET:
14 OF 38

SDP-05-40

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

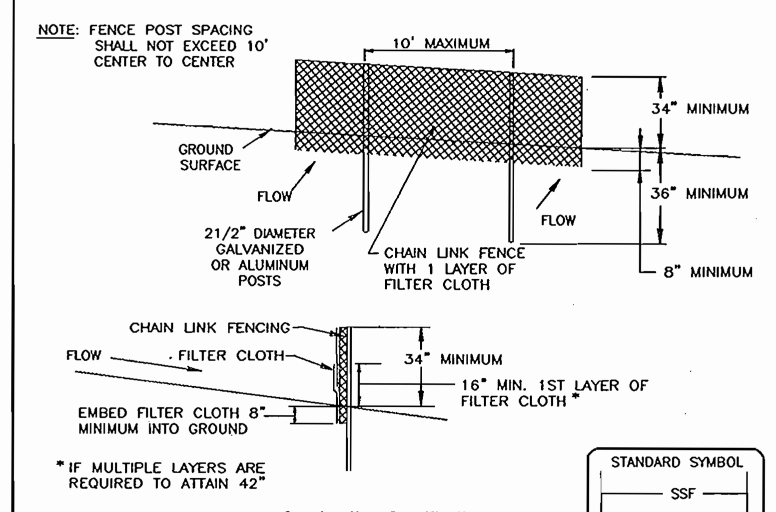


Construction Specification

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

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

DETAIL 33 – SUPER SILT FENCE



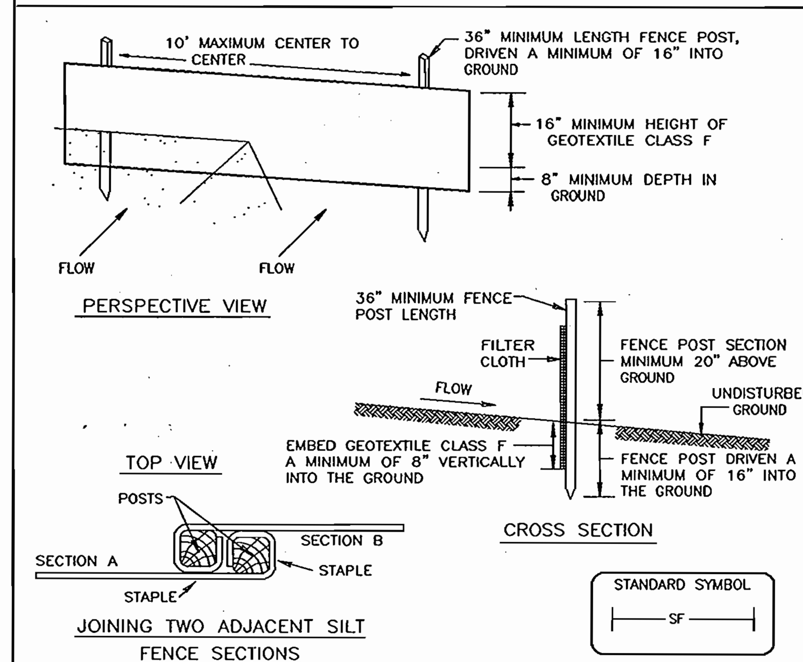
Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

DETAIL 22 – SILT FENCE



Construction Specifications

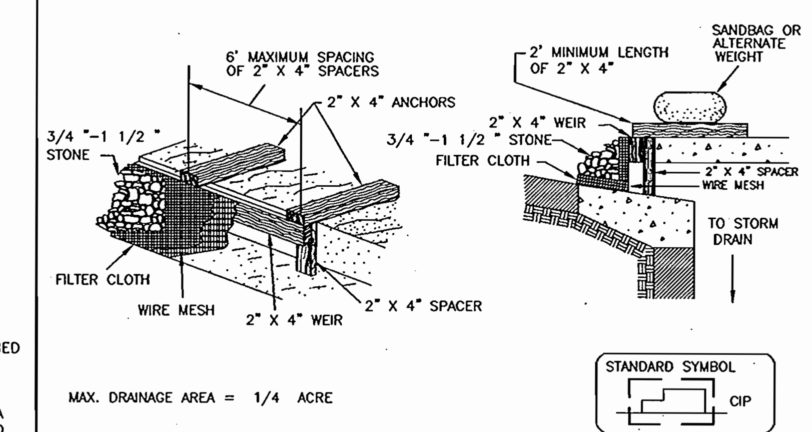
1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft /minute (max.)	Test: MSMT 322
Filtering Eggeciency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reaches 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 23C – CURB INLET PROTECTION (COG OR COS INLETS)

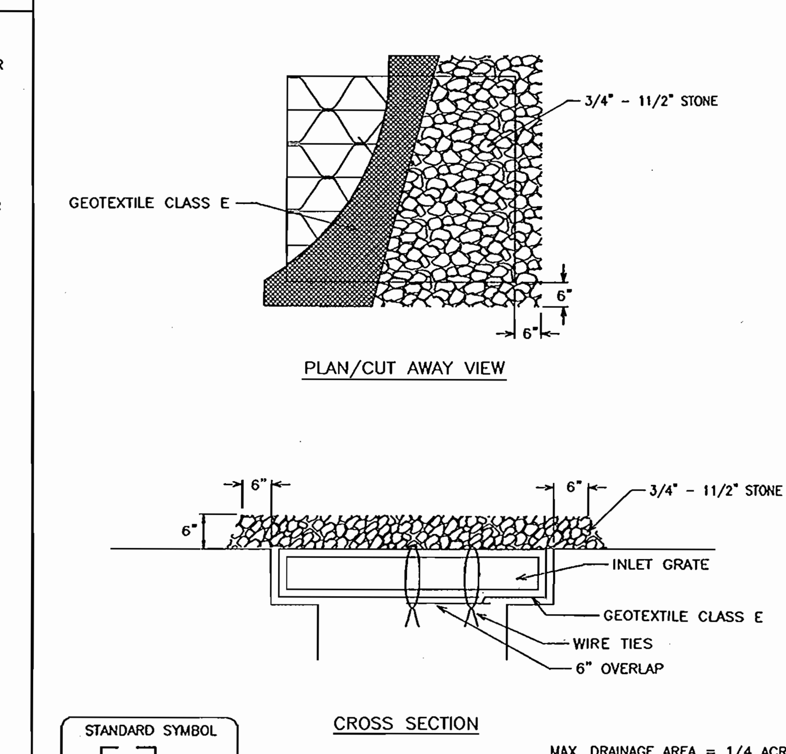


Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.
2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
6. Form the 1/2 " x 1/2 " wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4 " x 1 1/2 " stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

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

DETAIL 23B – AT GRADE INLET PROTECTION



Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 11/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of

1) Preferred-Apply 2 tons per acre dolomitic limestone (92 lbs/100 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 the time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)
2) Acceptable-Apply 2 tons per acre dolomatic limestone (92 lbs/1000 sq.ft.) and apply 1000 lbs. per acre 10-10-10- fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper

SEEDING: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs/1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. 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 thru February 28, protect site by: Option (1) 2 tons per acre 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

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

MAINTENANCE: Inspect all seeded areas and make needed repairs,

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: Apply 600 lbs. per acre 10-10-10 fertilizer

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

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

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

Placement of topsoil over a prepared subsoil prior to

To provide a suitable soil medium for vegetable growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter
a. The texture of the exposed subsoil/parent material
b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
c. The original soil to be vegetated contains
d. The soil is so acidic that treatment with

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland

II. Topsoil Specifications – Soil to be used as topsoil
i. 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 a 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 that 1 and 1/2" in
ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison
iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/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

II. For sites having disturbed areas under 5 acres:
i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

iii. For sites having disturbed areas over 5 acres:
i. On soil meeting topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
a. pH for topsoil shall be between 6.0 and 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.
b. Organic content of topsoil shall be not less than 1.5 percent by weight.
c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
d. No sod or seed shall be placed on soil 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.

ii. Place topsoil (if required) and apply soil ammendments specified in 20.0 Vegetative Stabilization–Section I–Vegetative Stabilization Methods and Materials.

V. Topsoil Application
i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.
iii. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
iv. Topsoil shall not be place while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

SEDIMENT CONTROL NOTES

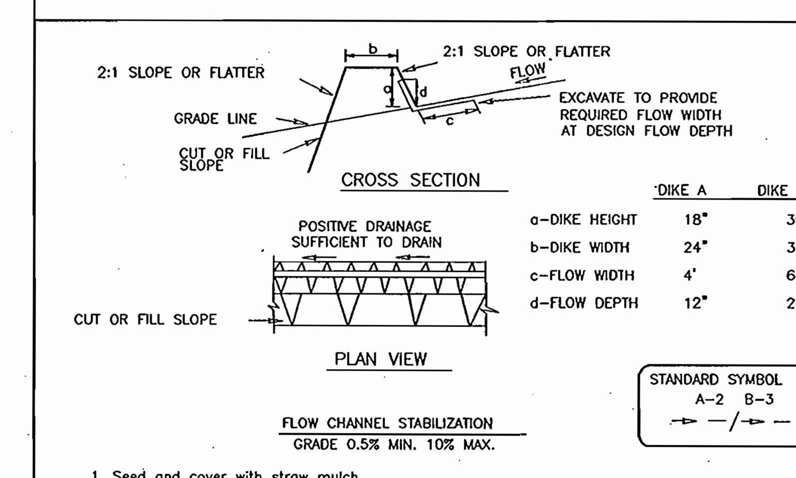
1. A minimum of 48 hours notice must be given to the Howard County Department of Inspection, License and Permits Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetation and structural practices are to be installed according to the provisions of this plan and are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

Total Area	48.49 Acres
Area Disturbed	36.82 Acres
Area to be roofed or paved	29.34 Acres
Area to be vegetatively stabilized	7.48 Acres
Total Cut	10,000 CY
Total Fill	10,000 CY
Offsite waste/borrow area location	N/A

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.
12. During grading and after each rainfall, the contractor shall inspect and provide the necessary maintenance on the sediment and erosion control measures shown hereon.
13. Following initial soil disturbance or redisturbance permanent or temporary stabilization shall be complied with:
A. 7 calendar days for all perimeter sediment control structures, dikes, swales, ditch perimeter slopes slopes and all slopes greater than 3:1.
B. 14 calendar days for all other disturbed areas.

* To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit

DETAIL 1 – EARTH DIKE



	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

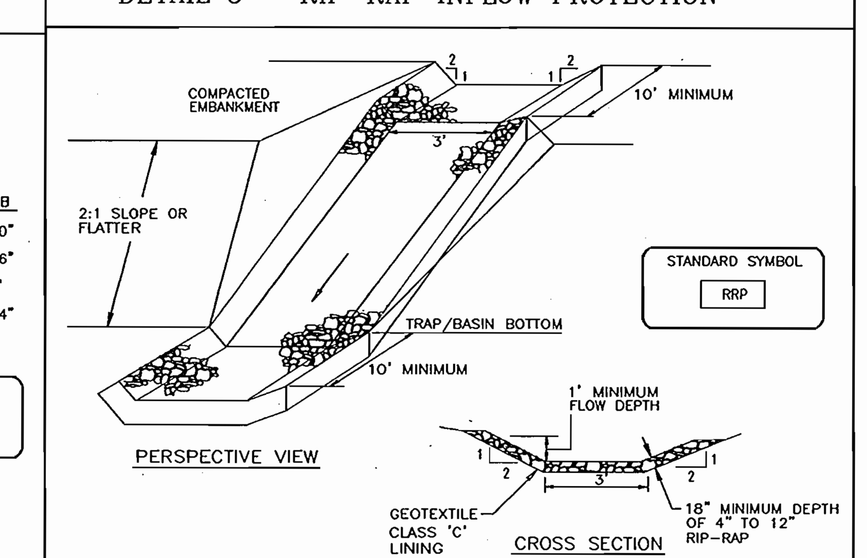
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A - 1 - 6	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 5 – RIP-RAP INFLOW PROTECTION



Construction Specifications

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B - 6 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

30.0 DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movements where on and off-site damage is likely without treatment.

Specifications

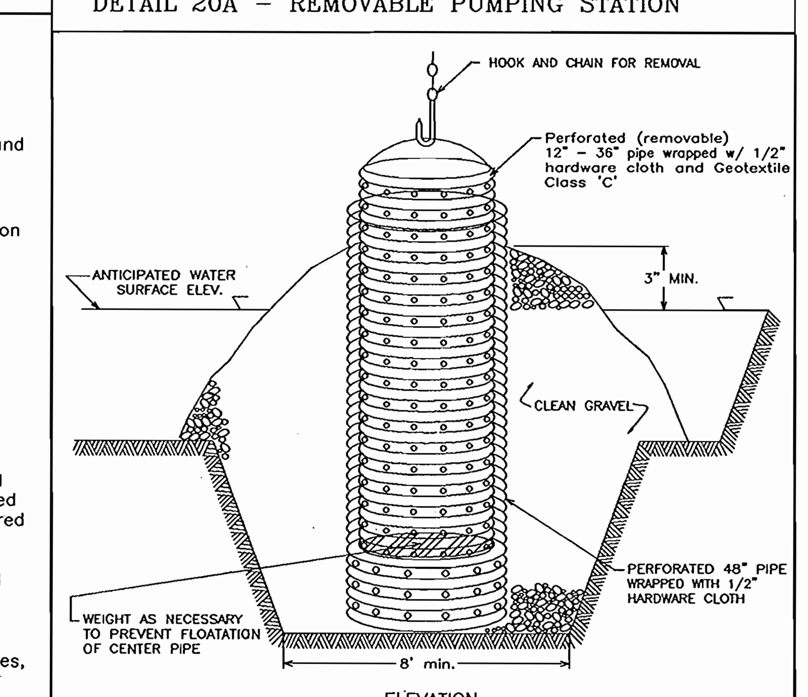
Temporary Methods:

1. Mulches – See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
2. Vegetative Cover – See standards for temporatry vegatative cover.
3. Tillage – To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12" apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation – This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers – Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
6. Calcium Chloride – Apply at rates that will keep surface moist. May need retreatment.

Permanent Methods

1. Permanent Vegatation – See standards for permenant vegatative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
2. Topsoiling – Covering with less erosive soil materials. See standards for topsoiling.
3. Stone – Cover surface with crushed stone or coarse gravel.

DETAIL 20A – REMOVABLE PUMPING STATION



Construction Specifications

1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 12 - 4	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEQUENCE OF CONSTRUCTION

SEQUENCE OF CONSTRUCTION	DURATION
1. Obtain grading permit. MDE Tracking #200560820.	1 DAY
2. For Use I streams, in-stream work shall not be conducted during the period of March 1 through June 15, inclusive, during any year.	
3. Notify Howard County at least 48 hours before starting any work. Sediment and erosion controls from SDP-04-144 to be utilized.	1 DAY
4. Construct Stabilized Construction Entrance and install tree protection devices.	3 DAYS
5. Clear and grub for sediment control devices only.	1 WEEK
6. Install silt fences and super silt fences.	1 WEEK
7. With inspector's approval, construct culvert and stabilize immediately.	2 WEEKS
8. Culvert to be constructed during a 5-day clear (no-precipitation) period. MDE Permit required prior to construction.	2 WEEKS
9. With inspector's approval, Contractor to first grade area to establish positive flow to basin. As grading continues, the contractor is to maintain positive flow to the basin at all times. Employ dust control measures as needed.	2 WEEKS
10. Stabilize all temporary swales, side ditches, or berms. See details and specifications for incremental stabilization.	1 WEEK
11. With Inspector's approvals, install utilities, paving, and begin building construction. Temporarily block inlets to recharge volume trench.	12 MONTHS
12. With inspector's approval with contributing drainage areas stabilized, convert sediment basin #1 to final stormwater management by excavating bottom of basin to design bottom. Remove dewatering devices from pond and install pond drains. Upon removal of sediment basin #2, install gabion chute. Construction to be performed as shown on approved SWM plans.	2 WEEKS

NOTES:
Due to the difficulty of maintaining internal earth dikes, contractor shall limit grading and fill to area between super silt fence and dike.
During grading and after each rainfall, contractor will inspect and provide necessary maintenance to the Sediment Control measures on this plan.
Following initial soil disturbances or redisturbance permanent or temporary stabilization shall be completed within:
A. 7 calendar days for all perimeter Sediment Control Structures, Dikes, Swales and all slopes greater than 3:1.
B. 14 calendar days for all other disturbed areas.

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05
ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/25/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/2/05

DIRECTOR — DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/21/05

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

HOWARD S.C.D. — DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER — DATE 4-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 4/14/05

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	5-25-06	DK	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

FAMILY FAVORITE Dreyer's

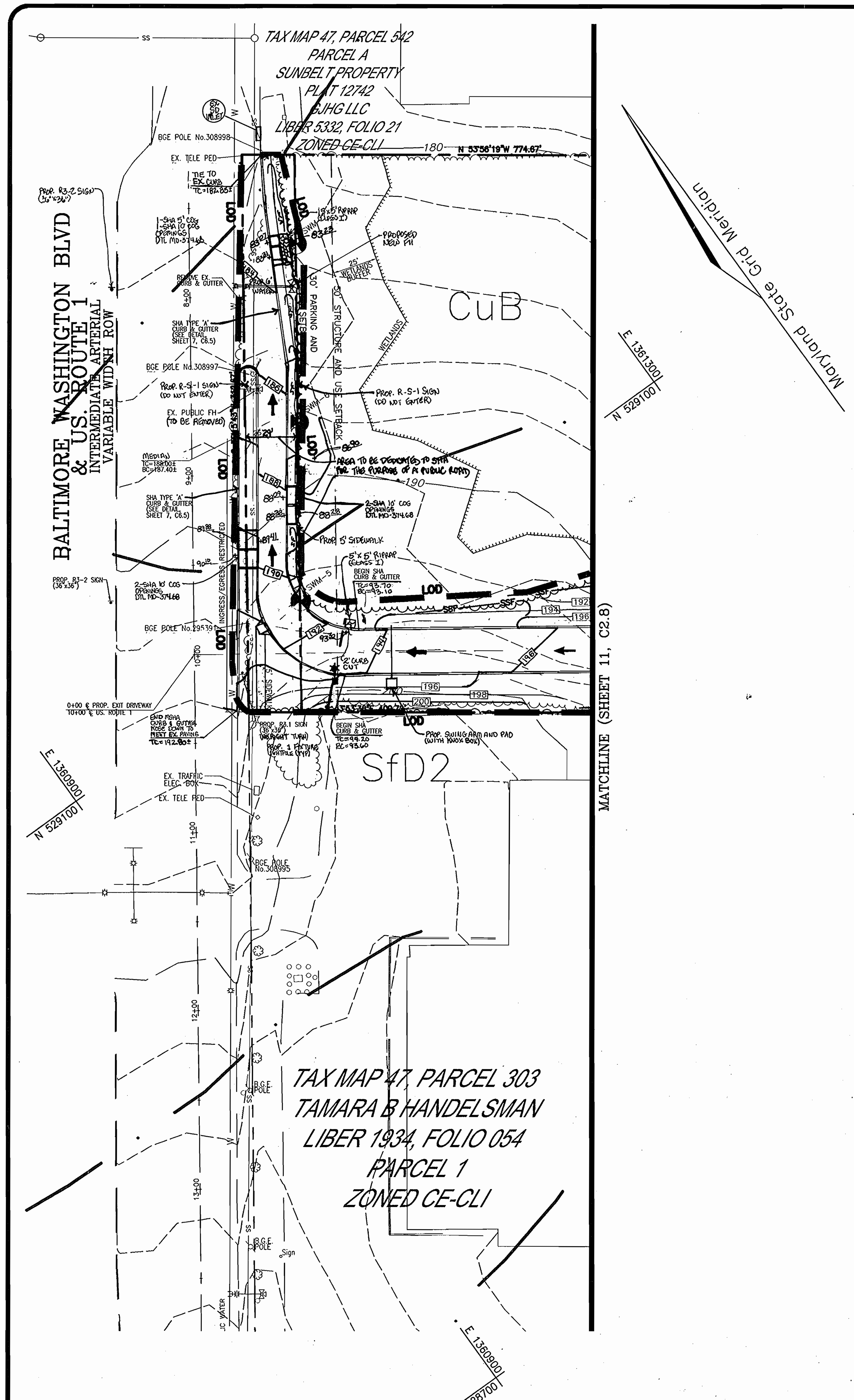
SEDIMENT CONTROL DETAILS

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801·531·8585 • FAX 801·531·8586

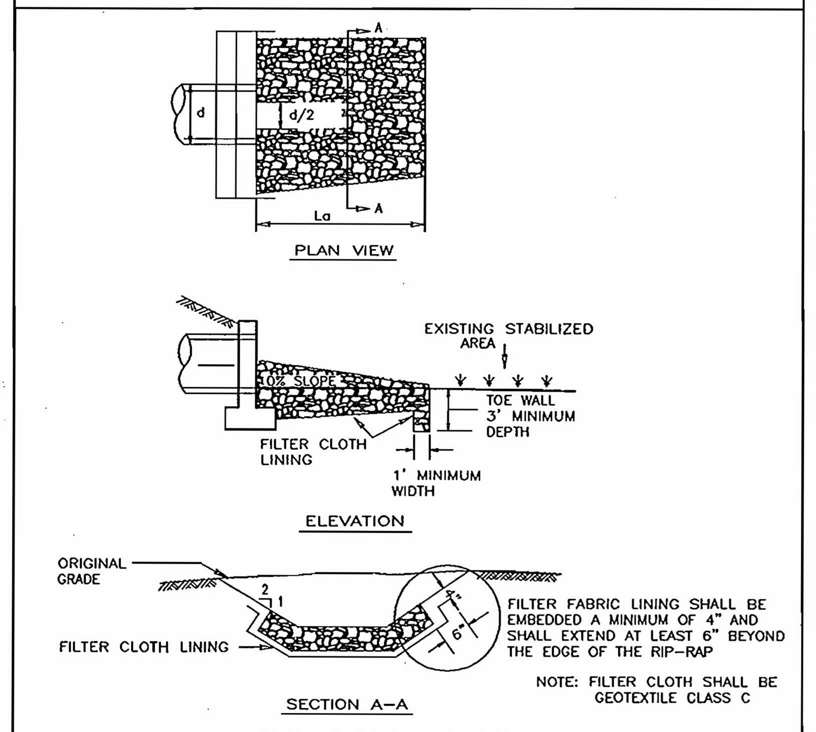
DRAWING NO.
C6.6

HO. CO. DPZ SHEET: 13 OF 38

SDP-05-40



DETAIL 27 – ROCK OUTLET PROTECTION III

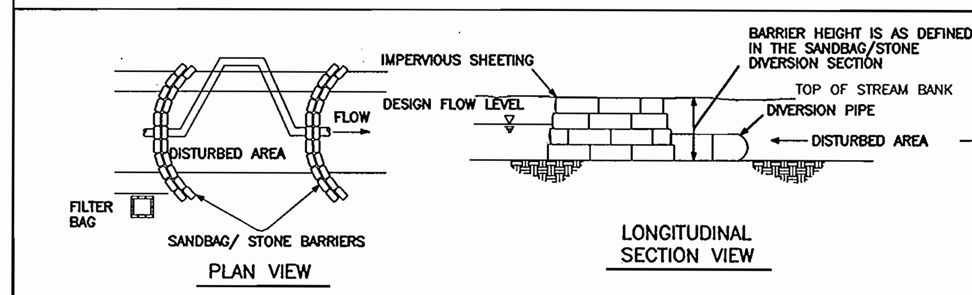


CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PEREPARED TO THE REQUIRED LINES AND GRADES. ANY FILLL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
3. GEOTEXTILE SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPARIED BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE SHALL BE A MINIMUM OF ONE FOOT.
4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACMENT OF UNDERLYING MATERIALS. THE STONE FOR RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

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

DETAIL 1.4: DIVERSION PIPE



NOTES:

I DESCRIPTION

THE WORK SHOULD CONSIST OF INSTALLING FLOW DIVERSION PIPES IN COMBINATION WITH SANDBAG OR STONE DIVERSIONS WHEN CONSTRUCITON ACTIVITIES OCCUR WITHIN THE STREAM CHANNEL.

II EFFECTIVE USES & LIMITATIONS

DIVERSIONS PIPES WITH AN INSUFFICIENT FLOW CAPACITY CAN CAUSE THE CHANNEL DIVERSION TO FAIL THEREBY RESULTING IN SEVERE EROSION OF THE DISTURBED CHANNEL SECTION UNDER CONSTRCUTION. THEREFORE, IN-CHANNEL CONSTRUCTION ACTIVITIES SHOULD OCCUR ONLY DURING PERIODS OF LOW FLOW.

III MATERIAL SPECIFICATIONS

MATERIALS FOR STREAM DIVERSIONS SHOULD MEET THE FOLLOWING REQUIREMENTS:

–RIPRAP: STONE SHOULD BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES (15 CENTIMETERS)
–SANDBAGS: SANDBAGS SHOULD CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND SHOULD BE WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (I.E., SAND, FINE GRAVEL, ETC.)
–SHEETING: SHEETING SHOULD CONSIST OF POLYETHYLENE OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.

IV INSTALLATION GUIDELINES

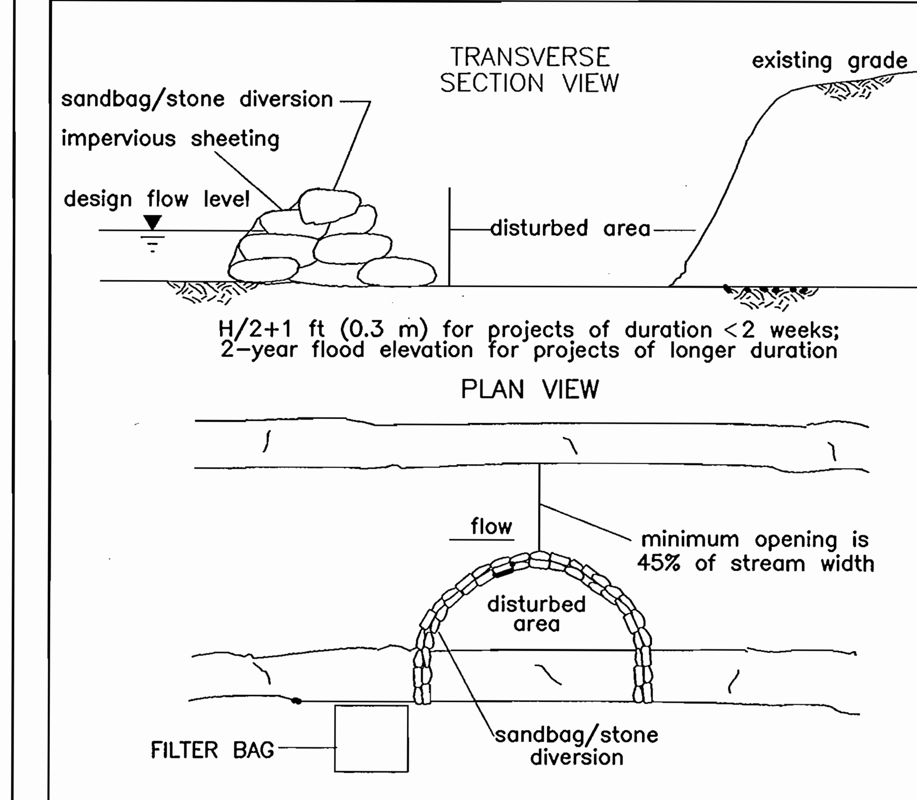
ALL EROSION AND SEDIMENT CONTROL DEVICES INCLUDING MANDATORY DEWATERING BASINS SHOULD BE INSTALLED AS THE FIRST ORDER OF BUISNESS ACCORDING TO A PLAN APPROVED BY THE WMA OR LOCAL AUTHORITY. INSTALLATION SHOULD PROCEED FROM UPSTREAM TO DOWNSTREAM DURING LOW FLOW CONDITIONS. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.

DIVERSION PIPES WITH SANDBAG OR STONE BARRIERS SHOULD BE COMPLETED AS FOLLOWS (REFER TO DETAIL 1.4):

1. SANDBAG/STONE BARRIERS SHOULD BE SIZED AND INSTALLED AS DETAILED IN MGWC 1.5 SANDBAG/STONE DIVERSION. THE MATERIALS SHOULD BE SIZED TO WITHSTAND BASEFLOW VELOCITIES.
2. ALL EXCAVATED MATERIAL SHOULD BE DEPOSITED AND STABILIZED IN AN APPROVED AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE AUTHORIZED BY THE WMA.
3. SEDIMENT-LADEN WATER FROM THE CONSTRUCTION AREA SHOULD BE PUMPED TO A DEWATERING BASIN.
4. THE DIVERSION PIPE SHOULD HAVE A MINIMUM CAPACITY SUFFICIENT TO CONVEY THE 2-YEAR FLOW FOR PROJECTS WITH A DURATION OF TWO WEEKS OR GREATER. FOR PROJECTS OF SHORTER DURATION, THE CAPCITY OF THE PIPE CAN BE REDUCED ACCORDINGLY.
5. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMTER OF THE WORK AREA.
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

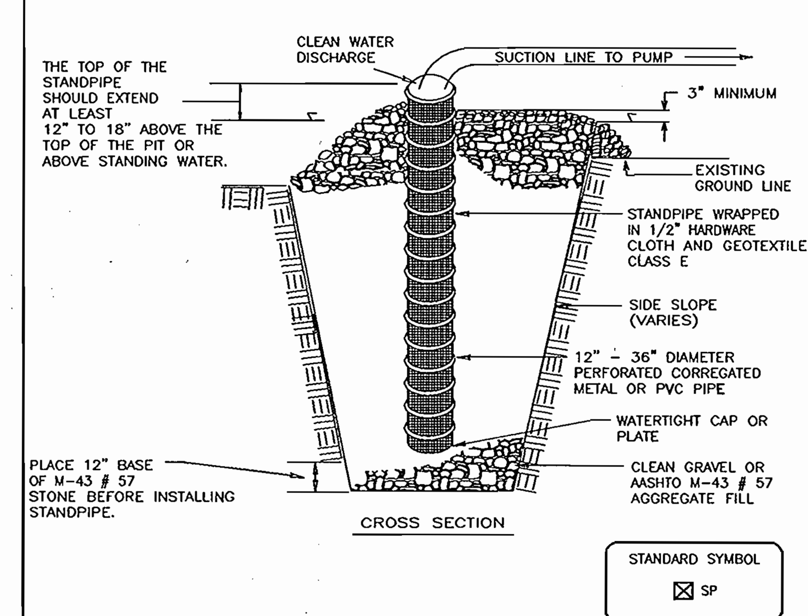
TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.4–2	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1.5: SANDBAG/STONE DIVERSION



REVISED NOVEMBER 2000
PAGE 1.5 – 3

DETAIL 20B – SUMP PIT



Construction Specifications

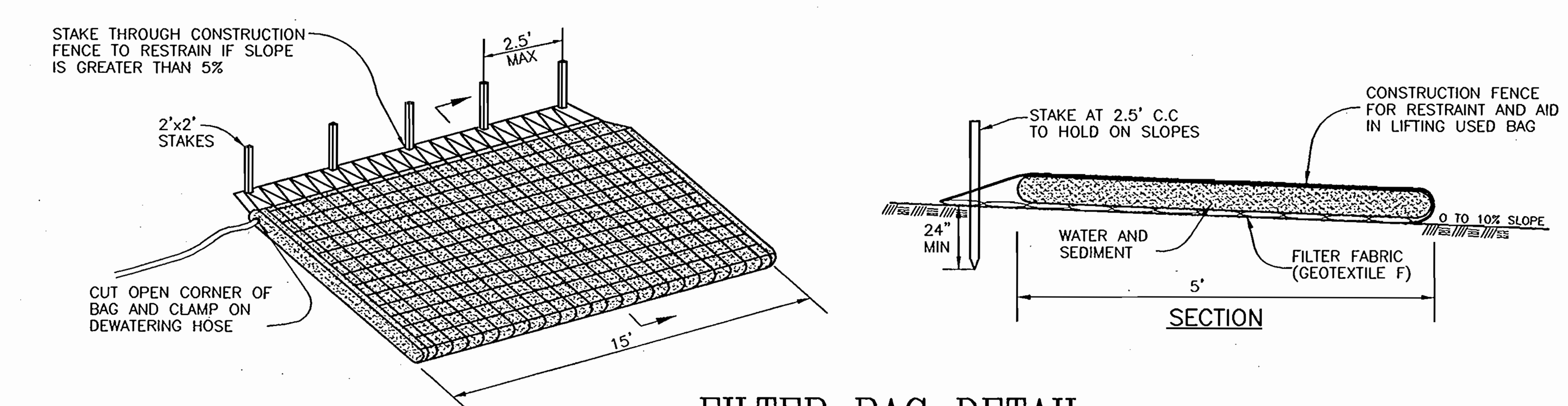
1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.

2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" slits or 1" diameter holes.

3. A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.

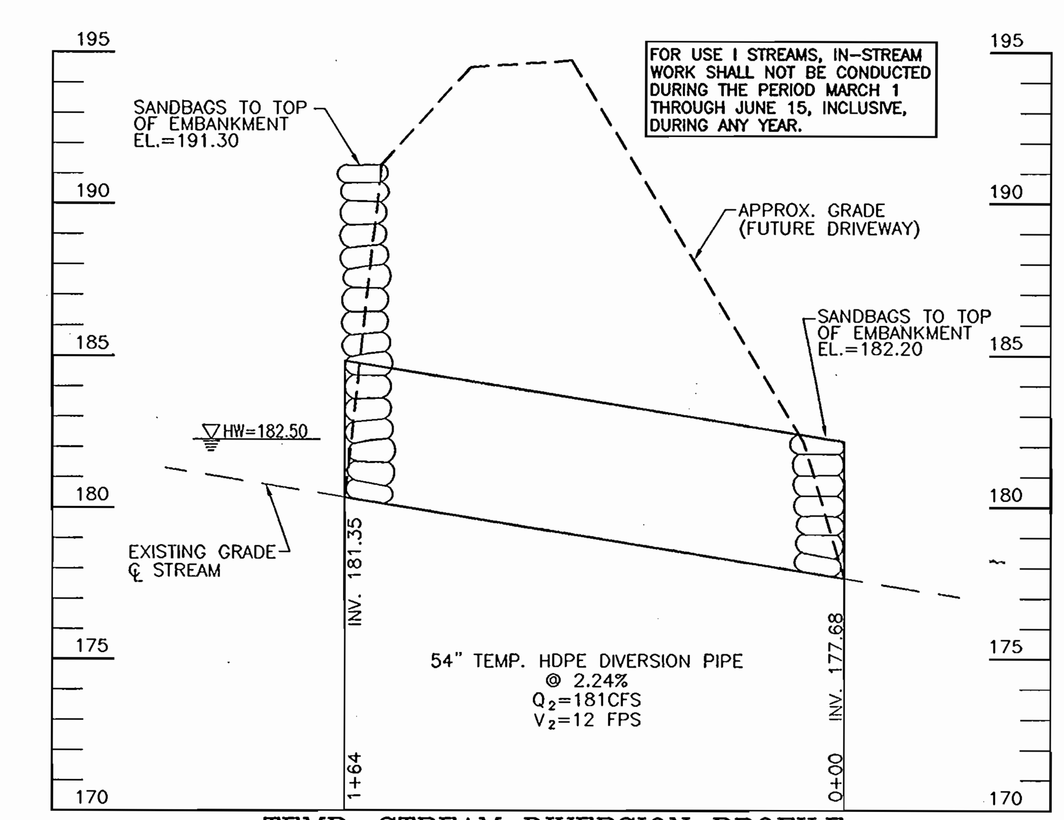
4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3" minimum above the anticipated standing water elevation.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 13 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



FILTER BAG DETAIL

(NOT TO SCALE)



TEMP. STREAM DIVERSION PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/25/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/2/05

DIRECTOR — DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/21/05

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

HOWARD S.C.D. — DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER — DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 4/14/05

OWNERS

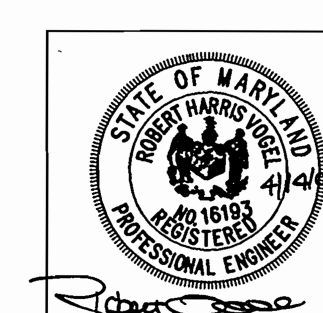
ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618



ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	05-25-06	DF	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTRO PLAN

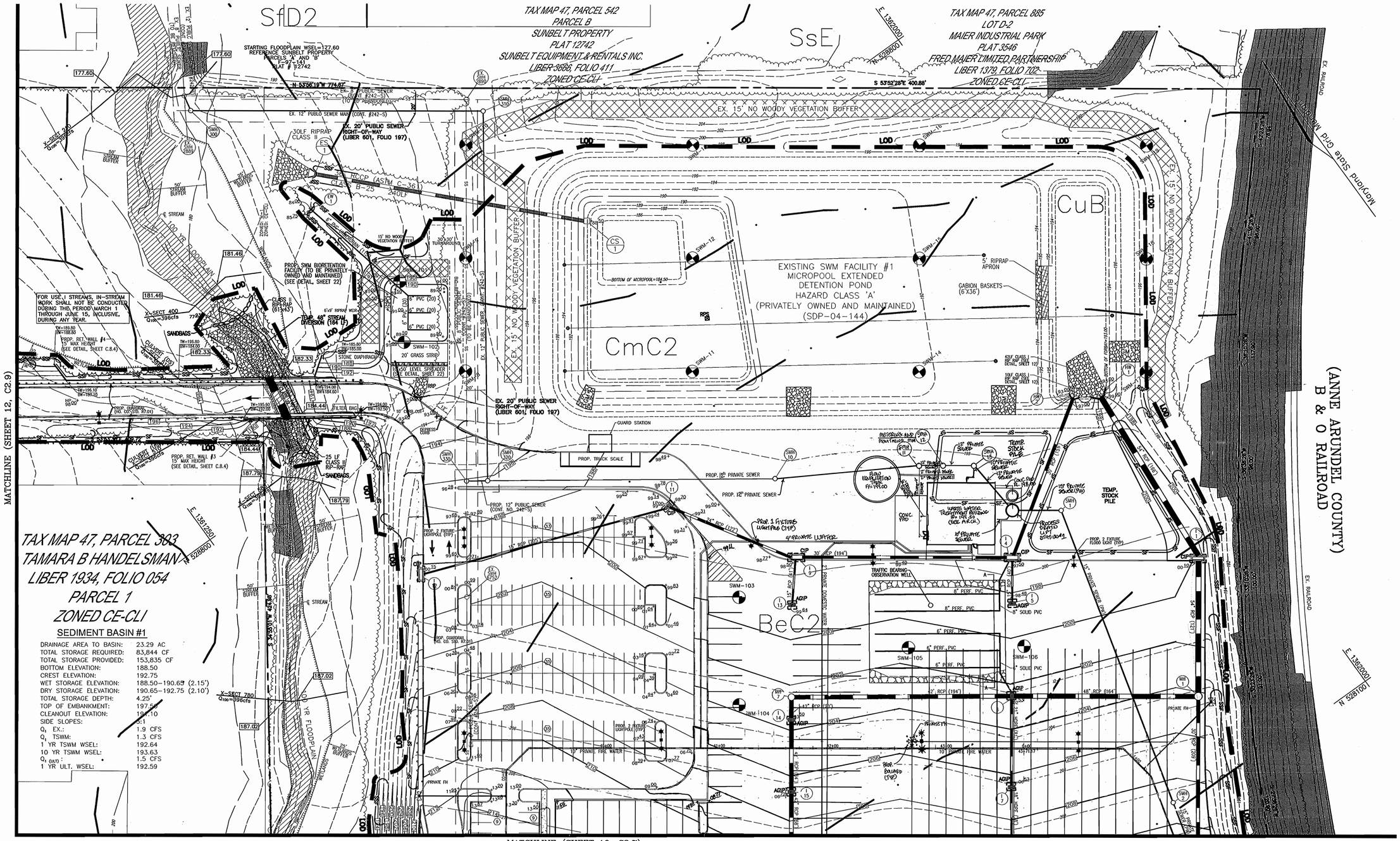
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801·531·8585 • FAX 801·531·8586

SCALE: 1"=40'
0 10' 20' 40' 80'

DRAWING NO.
C2.9

HO. CO. DPZ SHEET: 12 OF 38

SDP-05-40



REL.	DATE	BY	APP.	RELEASED FOR:
1	05-25-05	DZ	RHV	RELEASE PLANS TO SHLD AS-BUILT FACILITIES AND REVISE UNFILMED FACILITY DESIGNATIONS.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413-787-1783 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801-531-8583 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C2.8

HO. CO. DPZ SHEET: 11 OF 38

SDP-05-40

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/16/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043 — TEL: 410.461.7666 — FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/21/05

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

HOWARD S.C.D. — DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER — DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 4/14/05

OWNERS

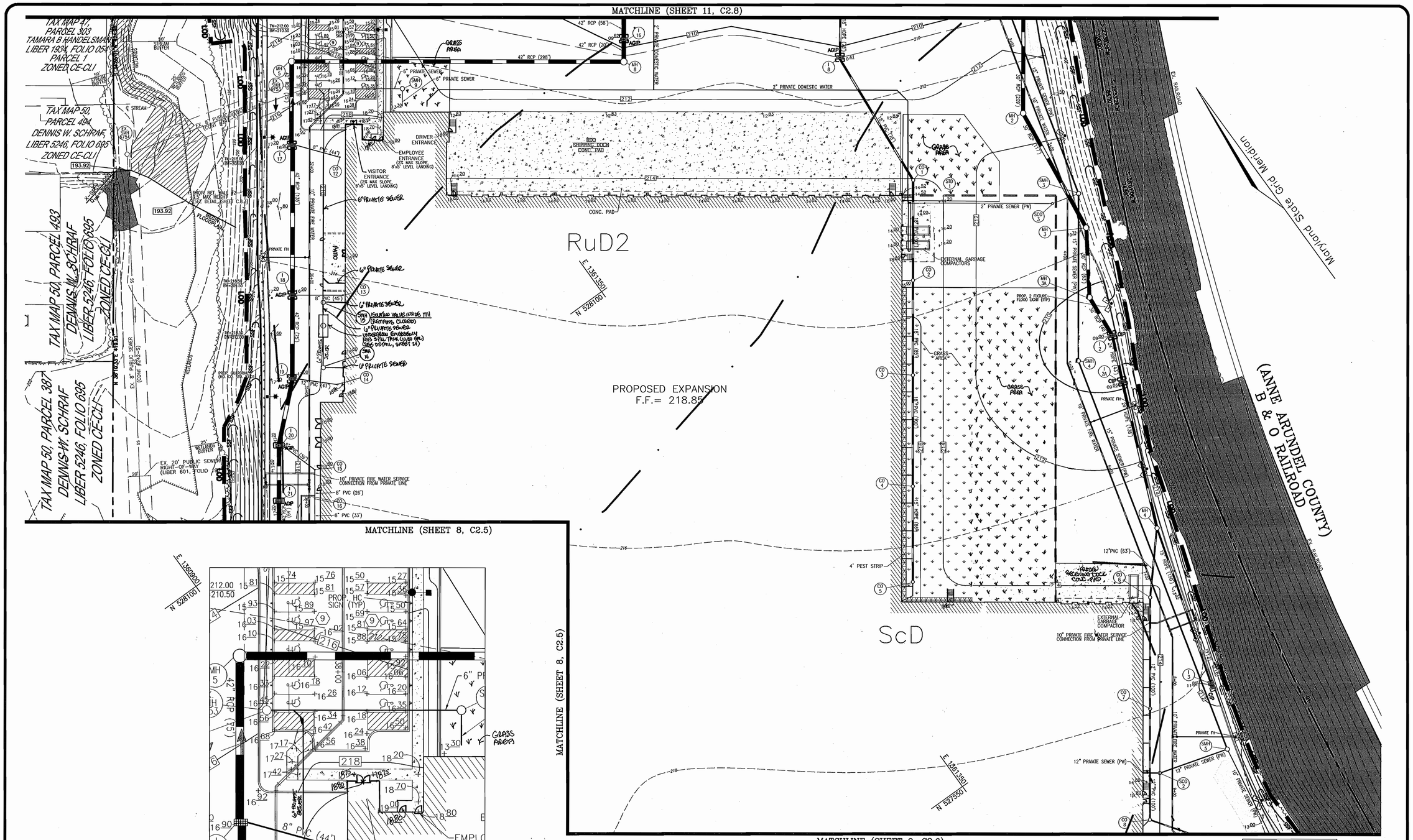
ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618



EMPLOYEE ENTRANCE HANDICAPPED ACCESS

SCALE: 1"=20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND ROBERT HARRIS VOGEL 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05

ROBERT H. VOGEL, P.E. No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DJS	RJW	RELEASE (R.A.) TO SHD. FOR FINAL PLANS AND REVISE VARIANCE PROVISITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

SPRINGFIELD MASSACHUSETTS 01103
1391 MAIN STREET
413.787.1785 • FAX 413.787.1786

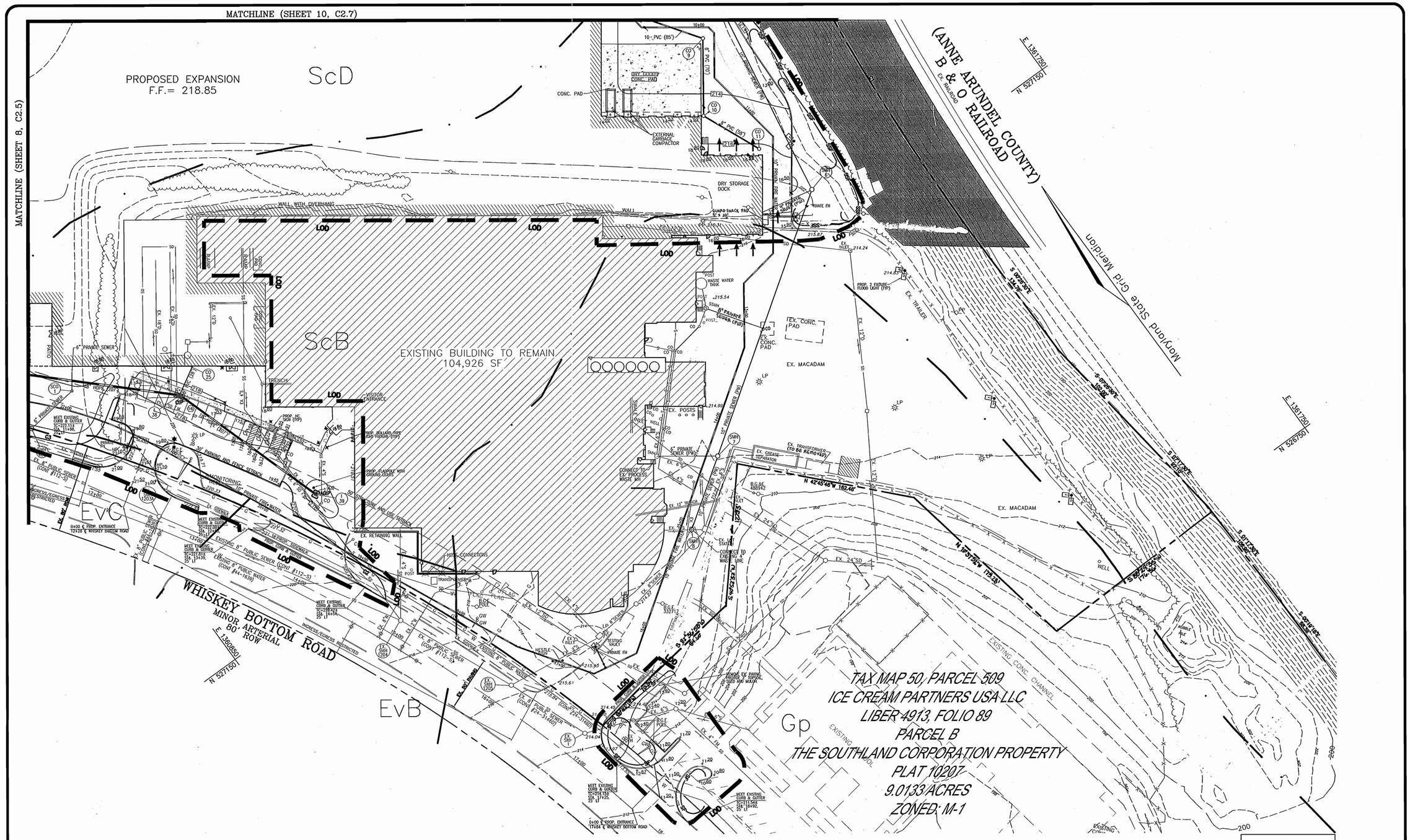
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801.531.8383 • FAX 801.531.8586

SCALE: 1"=40'

DRAWING NO.
C2.7

HO. CO. DPZ SHEET:
10 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 04-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-05-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT INFORMATION & REVISE VARIOUS QUALITY

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

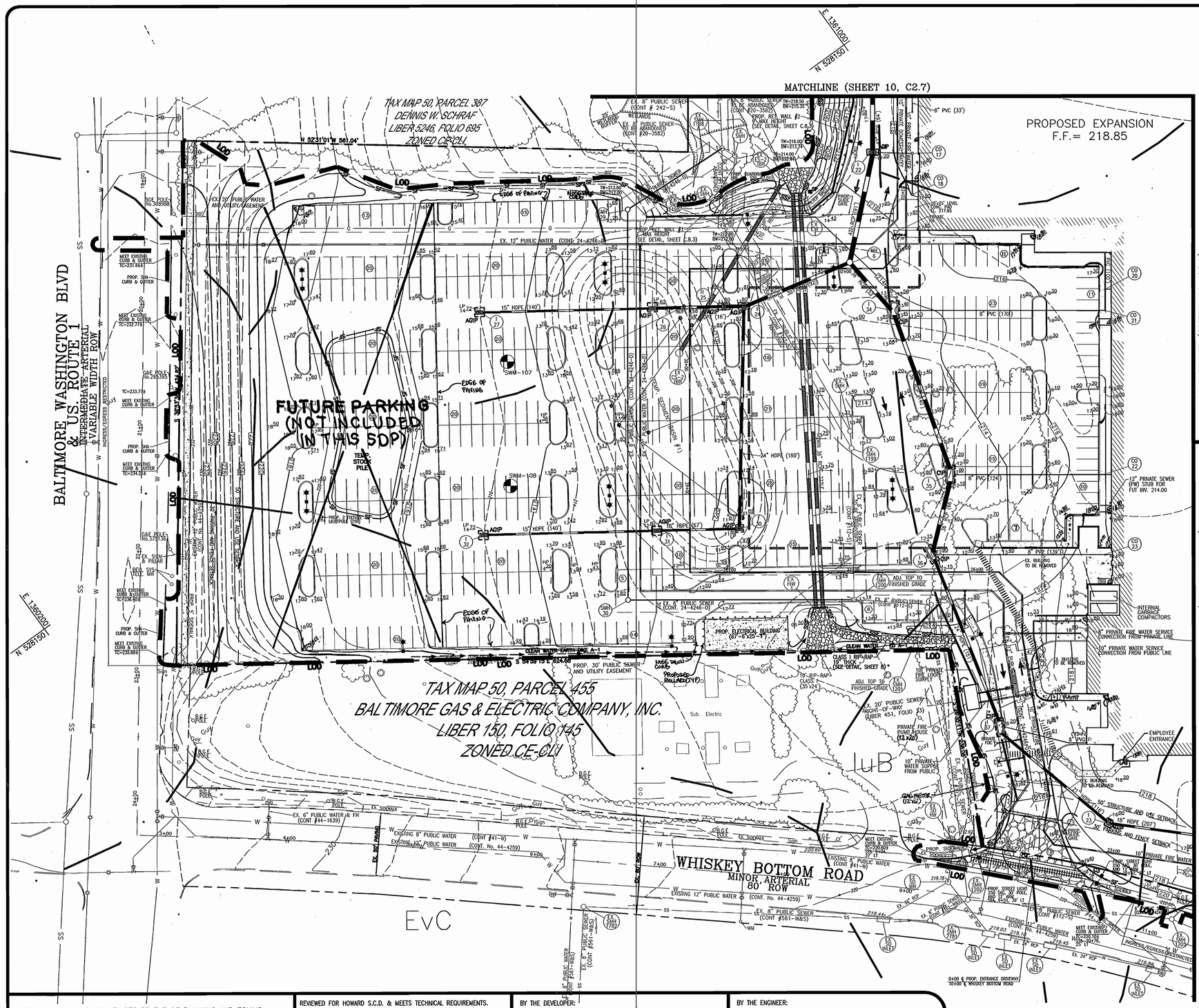
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C2.6

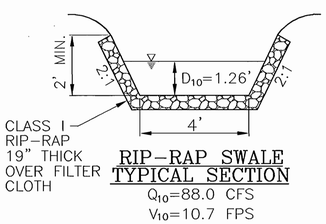
HO. CO. DPZ SHEET:
9 OF 38

SDP-05-40



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING STREET TREES (F-04-___)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- M1B2 / M1D3 — SOILS BOUNDARY
- PROPOSED SIDEWALK
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPE (>25%)
- PUBLIC 100 YR FLOODPLAIN
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- CIP — CURB INLET PROTECTION
- AGIP — AT GRADE INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE



RIP-RAP SWALE TYPICAL SECTION

Q_{10}=88.0 CFS

V_{10}=10.7 FPS

REL.	DATE	BY	APP.	RELEASED FOR
1	05	RHV		REVISE PLAN TO SHOW REVISED PROPOSED BLDG. REVISE VARIOUS PROJECT INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE GRADING AND SEDIMENT CONTROL PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103 — 1391 MAIN STREET — 413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101 — 136 SOUTH MAIN STREET — 801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043 — TEL: 410.461.7666 — FAX: 410.461.8961

DRAWING NO.
C2.5

HO. CO. DPZ SHEET:
8 OF 38

SDP-05-40

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/5/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

USDA-NATURAL RESOURCES CONSERVATION SERVICE	DATE 4/21/05

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

HOWARD S.C.D.	DATE 4/21/05

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER	DATE 4-14-05

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER	DATE 4/14/05

OWNERS

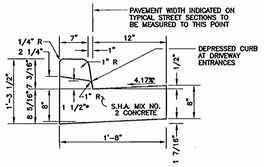
ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

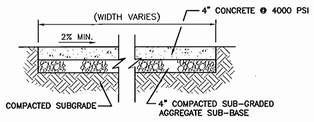


*NOTE : DEPRESSED CURB IN HANDICAP ACCESSIBLE AREAS SHALL HAVE A 0.0417'(1/2") RISE FROM PAVING TO TOP OF CURB.

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIAL 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.

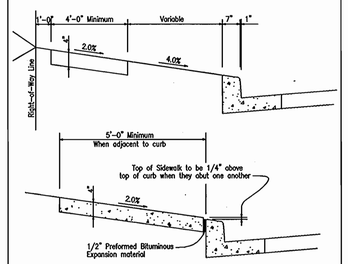
STANDARD COMBINATION CURB AND GUTTER
HOWARD COUNTY STANDARD R-3.01
(NOT TO SCALE)

1 CURB AND GUTTER DETAIL



HO. CO. STD. R-3.05
TYPICAL SIDEWALK DETAIL
(N.T.S.)

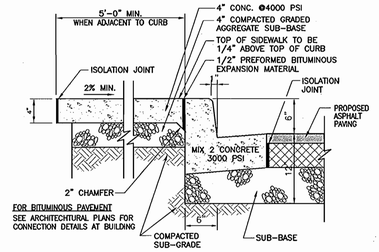
CONCRETE SIDEWALK
HOWARD COUNTY STANDARD DETAIL R3.05



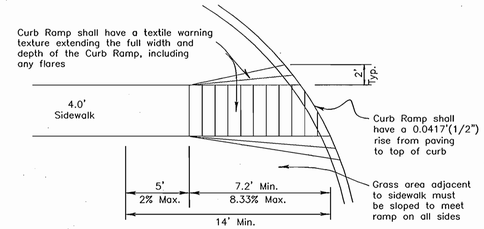
Construction Specifications

1. Sidewalk to be scribed in 5'-0" maximum squares.
2. Expansion joints across the sidewalk not to be more than 15' apart.
3. 1/2" Preformed Bituminous Expansion material in expansion joints to be kept 1/4" below surface of sidewalk.
4. Concrete to be mix number 2.
5. Where sidewalk abuts curb, sidewalk shall be 1/4" above curb with 1/2" Preformed Bituminous Expansion material between sidewalk and curb.
6. On longitudinal sidewalk grades of 5% or greater, a concrete header 6" thick and 6" deep below the normal sidewalk thickness shall be constructed for the full width of the sidewalk at intervals of 40 feet. The headers shall be placed at expansion joint locations and shall be monolithic with the curb.
7. Sidewalk width adjacent to curb shall be 5'-0" minimum except sidewalk adjacent to curb in cul-de-sac bulbs may be 4'-0" wide.
8. Sidewalk located 2' or more from curb may be 4'-0" in width with a 5'x5' paved section placed 200' apart.

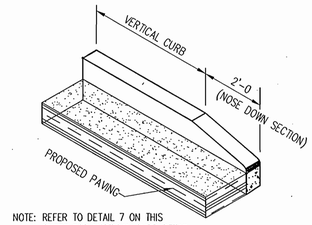
2 SIDEWALK DETAILS



HO. CO. STD. R-3.05
TYPICAL SIDEWALK AT BUILDING
(N.T.S.)

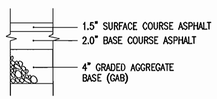


HANDICAP RAMP
NOT TO SCALE



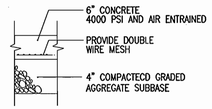
NOTE: REFER TO DETAIL 7 ON THIS SHEET FOR VERTICAL CURB DETAIL.

CONCRETE CURB - NOSE DOWN
NOT TO SCALE



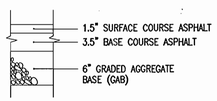
* PAVING SECTIONS ARE SUBJECT TO REVISIONS BY GEOTECHNICAL ENGINEER

3 REGULAR DUTY PAVING DETAIL



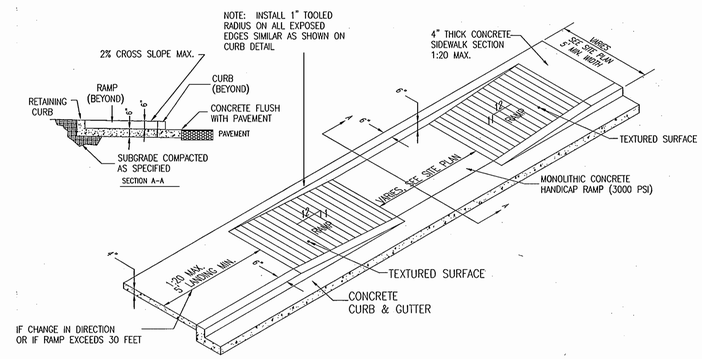
* PAVING SECTIONS ARE SUBJECT TO REVISIONS BY GEOTECHNICAL ENGINEER

5 HEAVY DUTY CONCRETE PAVING

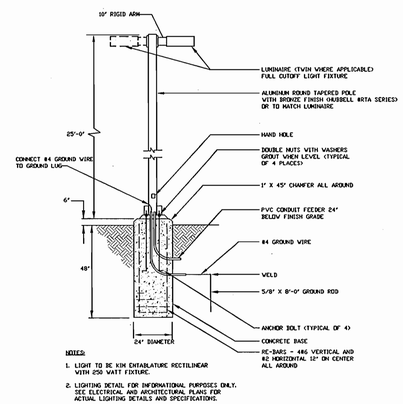


* PAVING SECTIONS ARE SUBJECT TO REVISIONS BY GEOTECHNICAL ENGINEER

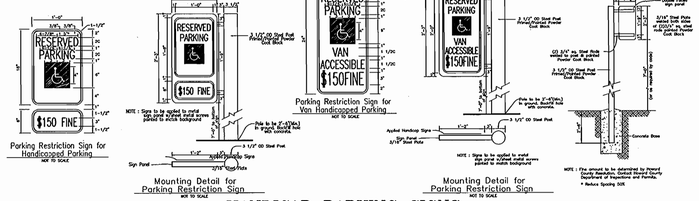
4 HEAVY DUTY PAVING DETAIL



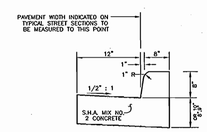
SIDEWALK HANDICAP RAMP DETAIL
NOT TO SCALE



POLE BASE DETAIL
(NOT TO SCALE)



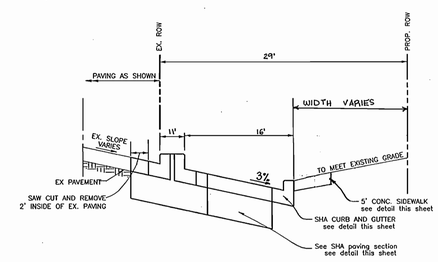
HANDICAP PARKING SIGNS
(NOT TO SCALE)



MD. TYPE 'A' CONCRETE COMBINATION CURB AND GUTTER

MD. NO. 620.02
NOT TO SCALE

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIAL 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.



WIDENING DETAIL
US. RTE. 1
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/6/05

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 4/14/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
I	05-25-05	DZ	RHV	REVISED PLAN TO SHOW REVISIONS VARIOUS LOCATIONS

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE DETAILS

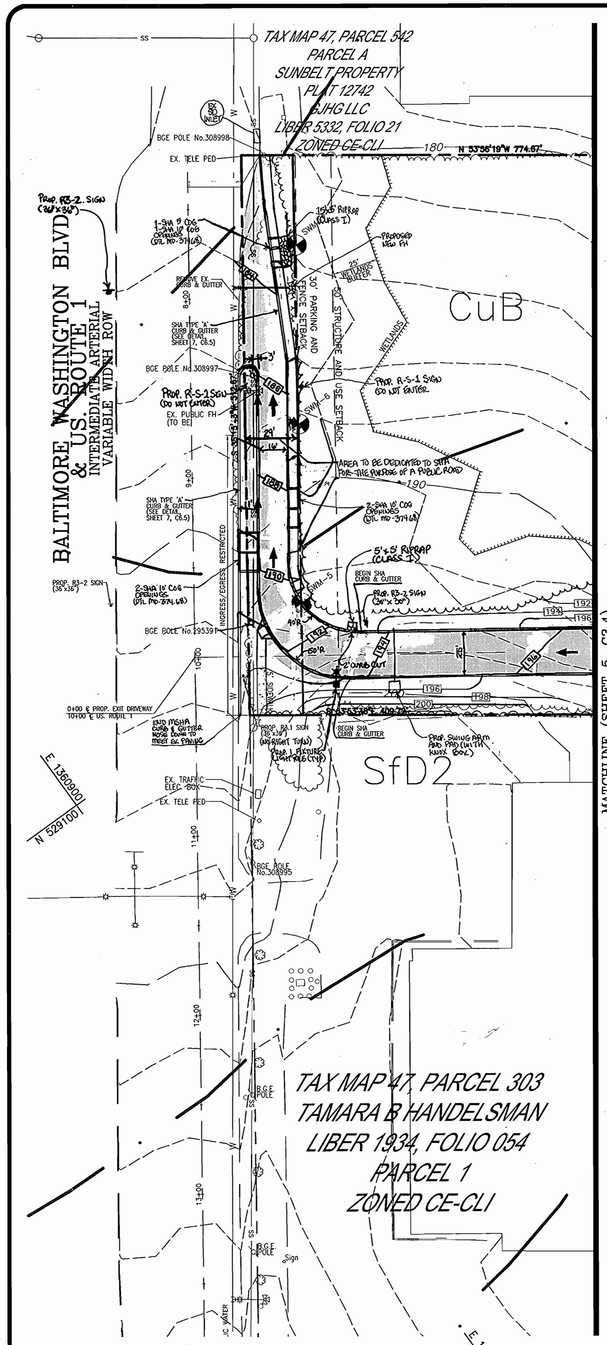
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786

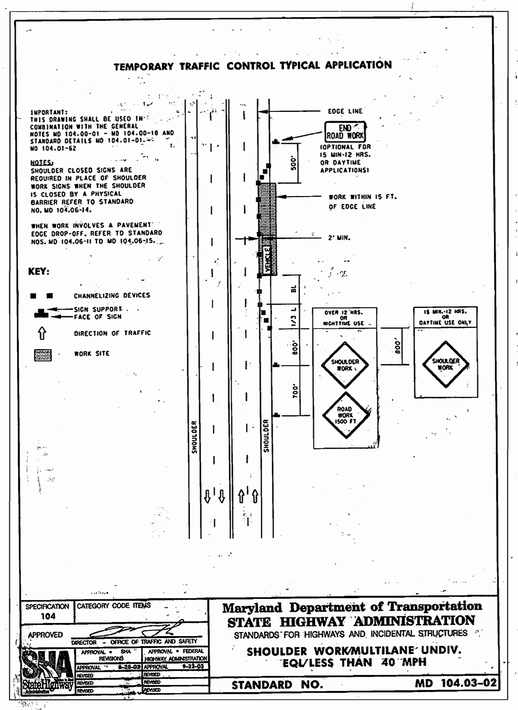
SCALE: 1"=40'
0 10' 20' 40' 80'

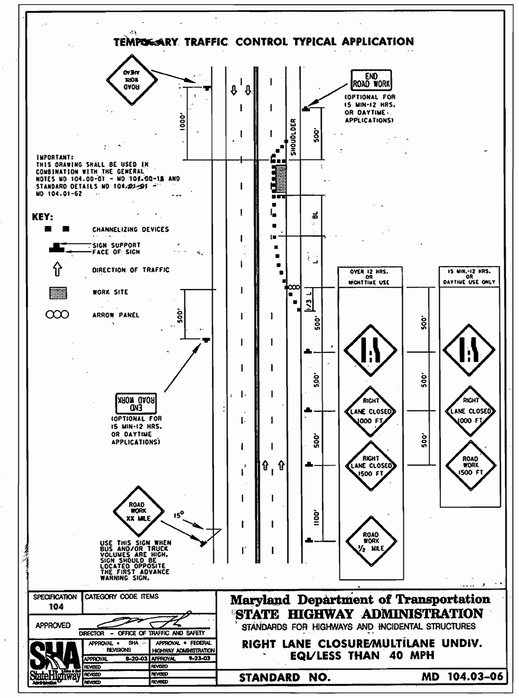
DRAWING NO.
C6.5

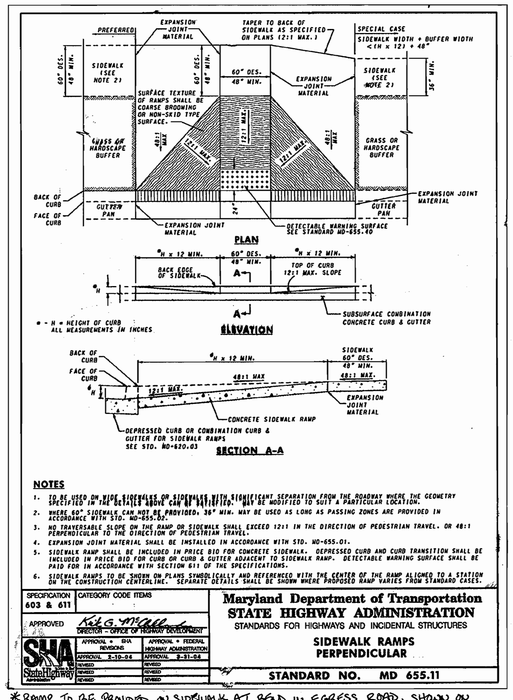
HO. CO. DPZ SHEET:
7 OF 38

SDP-05-40









*RAMP TO BE PROVIDED ON SIDEWALK AT BEAD IN EGRESS ROAD, SHOWN ON THIS SHEET.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/7/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED
PROFESSIONAL ENGINEER
4/4/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DJE	RHV	REVISE PLAN TO STAND AS-BUILT FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

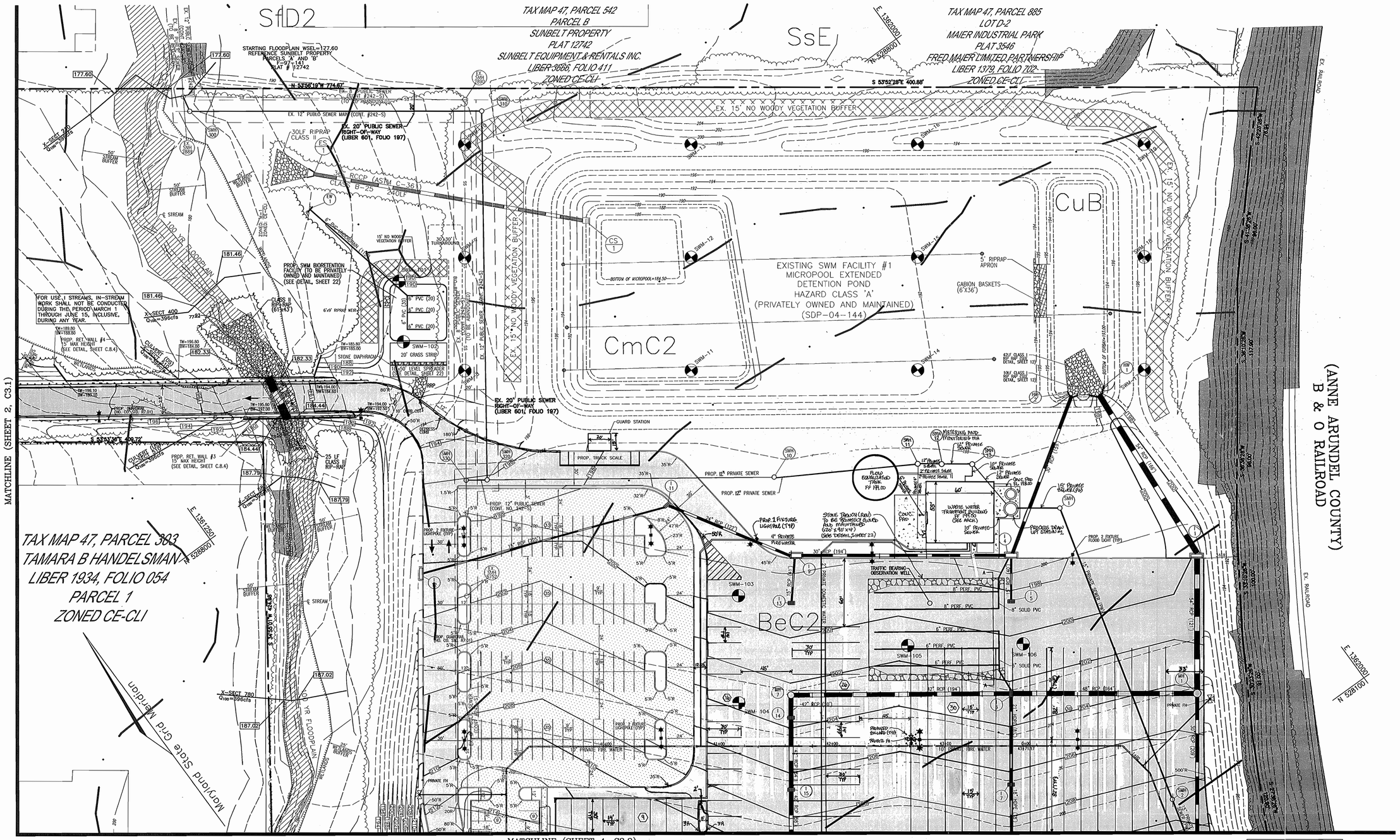
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C3.5

HO. CO. DPZ SHEET:
6 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/4/05

ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DJE	RHV	REVISE PLAN TO SHOW RE-ZONE FACILITIES AND REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

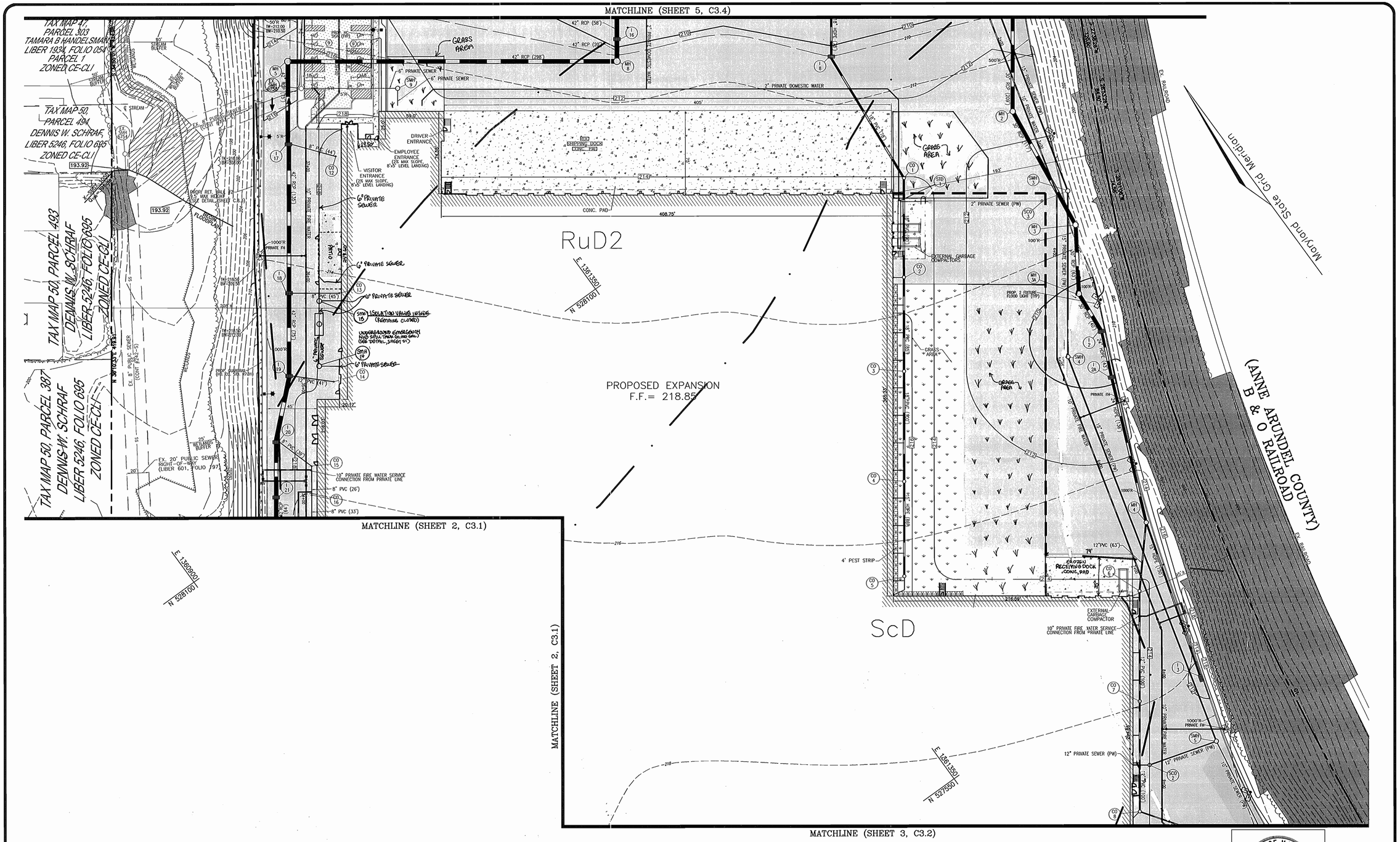
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 • FAX 801-531-8386

SCALE: 1"=40'

DRAWING NO.
C3.4

HO. CO. DPZ SHEET:
5 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/3/05
DIRECTOR	DATE 6/6/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-05	DJZ	RHV	REVISE PLAN TO SHOW AS-BUILT FACILITIES AND REVISE UNITS FACILITY INFORMATION

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785, FAX 413-787-1786
SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585, FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C3.3

HO. CO. DPZ SHEET:
4 OF 38

SDP-05-40

MATCHLINE (SHEET 4, C3.3)

MATCHLINE (SHEET 2, C3.1)

PROPOSED EXPANSION
F.F.= 218.85

ScD

ScB

EXISTING BUILDING TO REMAIN
104,926 SF

EvG

EvB

Gp

WHISKEY BOTTOM ROAD
MINOR ARTERIAL
80' ROW

(ANNE ARUNDEL COUNTY)
B & O RAILROAD

Maryland State Grid Meridian

TAX MAP 50, PARCEL 509
ICE CREAM PARTNERS USA LLC
LIBER 4913, FOLIO 89
PARCEL B
THE SOUTHLAND CORPORATION PROPERTY
PLAT 10207
9.0133 ACRES
ZONED: M-1

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/06
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/7/05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER
6/14/05

ROBERT H. VOGEL, PE No. 16193

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-06	DZ	RHV	REVISED PLAN TO SHOW PC BUILT FACILITY, ADDED VARIOUS FACILITY IMPROVEMENTS

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

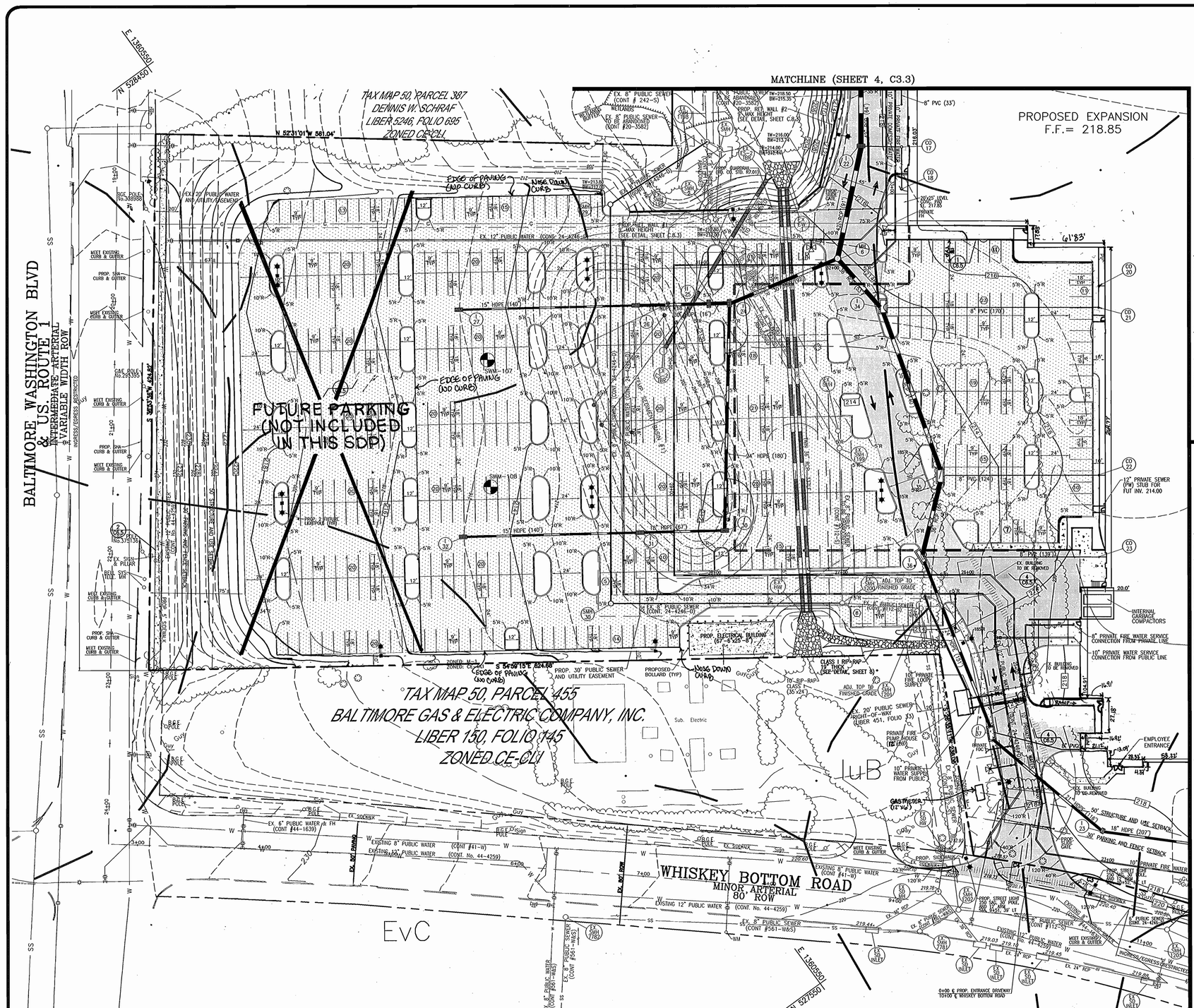
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C3.2

HO. CO. DPZ SHEET:
3 OF 38

SDP-05-40



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING STREET TREES (F-04-___)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- M1B2 M1D3 SOILS BOUNDARY
- PROPOSED SIDEWALK
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPE (>25%)
- LIGHT DUTY PAVING
- HEAVY DUTY PAVING
- PUBLIC 100 YR FLOODPLAIN

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-06	DZE	RAN	RELEASE PLANS TO SHA'S RE-BUILT AGENCIES AND REVISE VARIOUS PROJECT LABEL/NOTING.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

THE DENNIS GROUP, LLC

PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT

SPRINGFIELD, MASSACHUSETTS 01103
1391 MAIN STREET
413-787-1785 • FAX 413-787-1786

SALT LAKE CITY, UTAH 84101
136 SOUTH MAIN STREET
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

0 10' 20' 40' 80'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/6/05
DIRECTOR	DATE 6/7/05

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED
PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DRAWING NO.
C3.1

HO. CO. DPZ SHEET:
2 OF 38

SDP-05-40

DREYER'S GRAND ICE CREAM
SITE DEVELOPMENT PLAN
PARCELS 509, 420, 302, 271, 241

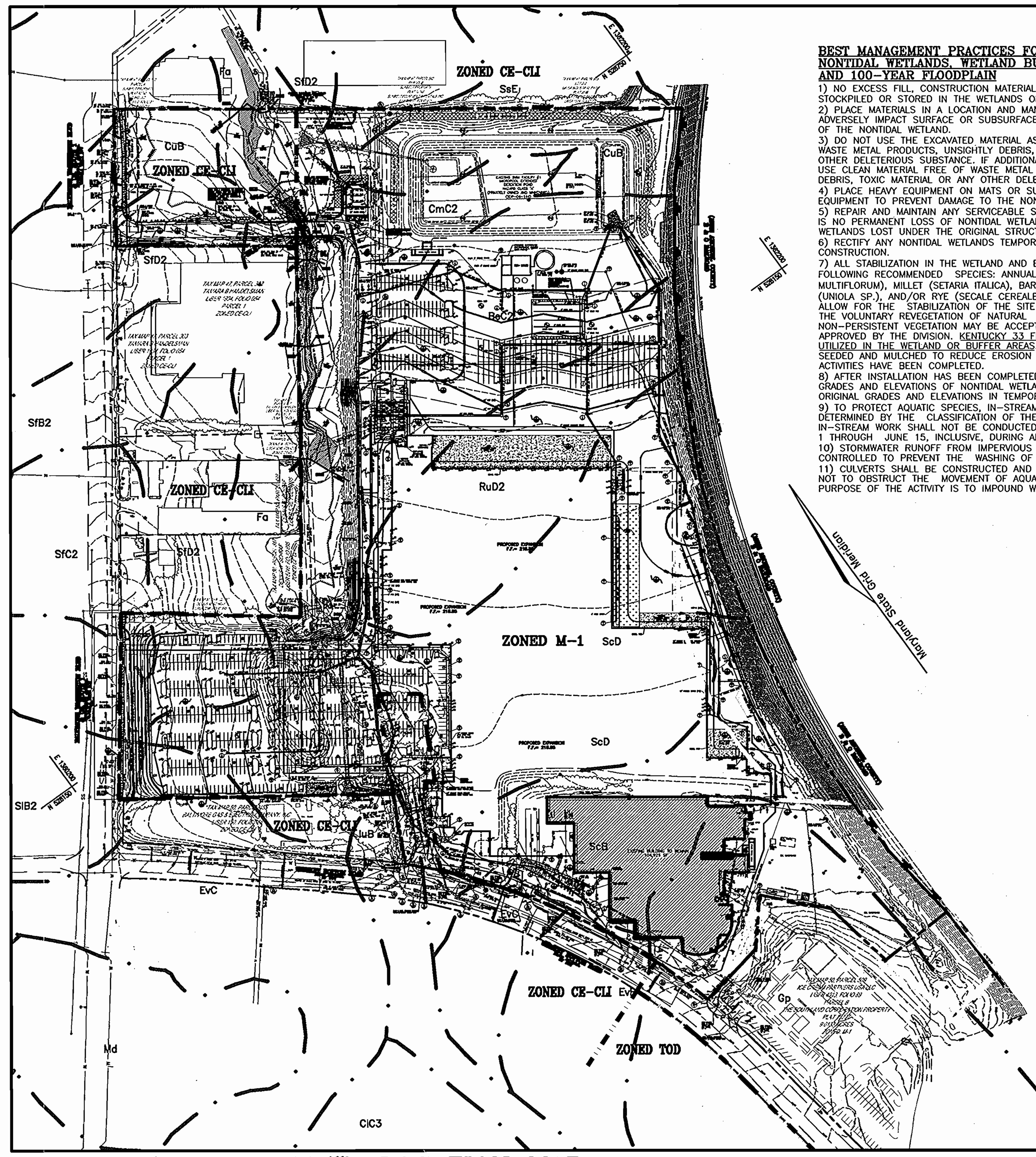
GENERAL NOTES

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications, if applicable.
2. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work.
3. The contractor is to notify the following utilities or agencies at least five days before starting work on these drawings:

Miss Utility	1-800-257-7777
Verizon Telephone company:	1-410-954-6281
Howard County Bureau of Utilities:	313-2366
AT&T Cable Location Division:	393-3553
B.G.&E. Co. Contractor Services:	850-4620
B.G.&E. Co. Underground Damage Control:	787-4620
State Highway Administration:	531-5533

4. Site analysis:
   Area of Parcel: 48.49 Ac.
   Present Zoning: M-1, CE-CLI
   Proposed Use : Expand existing Nestle's Ice Cream Facility, add associated parking & loading areas, provide improvements along Rte 1.
   Building Area: 558,550 sf.
   Building Coverage On Site: 12.82 Ac. or 26.44% of Gross Area
   Paved Parking Lot/Area On Site: 16.67 Ac. or 34.38% of Gross Area
   Area of Landscape Island: 0.74 Ac. or 1.53% of Gross Area
   Limit of Disturbed Area: 36.82 Ac. or or 75.93% of Gross Area
   Cut: 10,000 sf. Fill: 10,000 sf.
5. Project background:
   Location : Laurel, MD.; Tax Map 47 & 50, Block 5, Parcel 509, 271, 341, 420, 302 & 293
   Zoning : M-1, CE-CLI
   Subdivision : N/A
   Section/Area : N/A
   Site Area : 48.49 Ac.
   DPZ references : SDP-04-144, F05-107 (plats 17462-66)
6. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to start of work.
7. Any damage to public right-of-ways, paving, or existing utilities will be corrected at the contractor's expense.
8. Existing utilities located from Road Construction Plans, Field Surveys, Public Water and and Sewer Extension Plans and available record drawings. Approximate location of existing utilities are shown for the contractors information. Contractor shall locate existing utilities well in advance of construction activities and take all necessary precautions to protect the existing utilities and to maintain uninterrupted service. Any damage incurred due to contractor's operation shall be repaired immediately at the contractor's expense.
9. All reinforced concrete for storm drain structures shall have a minimum of 28 days strength of 3,500 p.s.i.
10. Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
11. Estimates of earthwork quantities are provided soley for the purpose of calculating fees.
12. Soil compaction specifications, requirements, methods and materials are to be in accordance with the recommendations of the project Geotechnical Engineer. Geotechnical Engineer to confirm acceptability of proposed paving section, based on soil test prior to construction.
13. The existing topography is taken from field run survey with two foot contour intervals prepared by Frederick Ward and Associates, dated May 22, 2001, from the mass grading approved under SDP-04-144, and topographic survey prepared by Harms (SDP-01-59). The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System.
14. A noise study is not required for this project.
15. For paving section details, see sheet 7, C6.1. The geotechnical engineer to confirm paving section prior to construction.
16. All curb and gutter to be Howard County Standard Detail 3.01 unless otherwise noted. (Detail on sheet 7, C6.1)
17. Contractor responsible to construct all handicap ramps and handicap access in accordance with current ADA requirements.
18. Where drainage flows away from curb, contractor to reverse the gutter pan.
19. All elevations are to flowline/bottom of curb unless otherwise noted.
20. All dimensions are to face of curb unless otherwise noted.
21. Public water provided by Cont. 1-W, Cont. 44-1639, and private on-site water. Public sewer provided by Cont. 112-S, Cont. 242-S, and private on-site sewer.
22. Stormwater management quantity is provided by the existing stormwater management micropool pond, which provides Cpv and Wqv (REF: SDP-04-144). The proposed strone trench provides Rev. The proposed Bio-Retention facility provides Wqv. The proposed stormwater management system and water quality system are to be privately owned and maintained by Nestle Ice Cream Company, Inc.
23. All exterior lighting to conform to section 134 of the Howard County Zoning Regulations. (Detail on Sheet 7, C6.1)
24. Geotechnical report prepared by Engineering Consulting Services, LTD. dated May 14, 2004.
25. This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and Landscape Manual.
26. Any existing street trees damaged or destroyed during construction will be replaced by the contractor.
27. Perimeter Landscaping in accordance with Section 16.124 of the Howard County Code and Landscape Manual, shall be provided as shown on the approved landscape plan. Financial surety in the amount of $42,270 for the 122 shade trees, 31 evergreen trees and 34 shrubs shall be posted with the Developer's Agreement.
28. The wetlands shown on this plan were delineated by Eco-Science Professionals, Inc. dated May 16, 2004.
29. Traffic study prepared by The Traffic Group dated August 3, 2004 [redacted]
30. This plan is subject to compliance with the Amended Fifth Edition of the Subdivision Regulations, per Council Bill 45-2003, and the Amended Zoning Regulations, per Council Bill 75-2003.
31. Floodplain analysis prepared by Robert H. Vogel Engineering, Inc. dated July 2004 [redacted]
32. The existing building on Parcel # 509 is to remain, but no additions or alterations are allowed unless in compliance with the Zoning Regulations.
33. Reference WP-05-037, approved December 2, 2004, to waive Section 16.115, which prohibits disturbance to floodplain areas; Section 16.116, which prohibits disturbance to wetland areas and streams/stream buffers; and Section 16.119(f), which prohibits access onto intermediate arterial roads for non-residential developments. Approval is subject to the following conditions:
    1. The Petitioner shall utilize an 84" RCP in the design of the stream crossing for the internal roadway, or whatever design is approved by DED/DPW.
    2. The petitioner shall comply with all SHA requirements for design of the access onto Route 1.
34. All trash dumpsters and compactors are internal to the building, unless notes otherwise.
35. Total parking spaces provided is 601, with 14 of those spaces being handicapped. (SEE NOTE #42)
36. Howard County DPZ has determined that the steep slope disturbance for the storm drain installation is "necessary".
37. Forest conservation obligation to be provided by six on-site forest conservation easements totaling 5.28 acrees (229,997 SF x $0.20 = $45,999.00 Surety), and by an off-site forest conservation easement of 9.20 acres (400,752 SF x $0.50 = $200,376.00 Surety) located on Buildable Preservation Parcel A in the Fox Creek Subdivision (See Sheets 30-32/L1.9-L1.11), and by a fee-in-lieu payment of $5,445.00 for the remaining 0.25 ac. The total Forest Conservation surety in the amount of $246,375 will be posted with the Developer's Agreement.
38. Contractor to test pit to determine vertical and horizontal location of all existing utilities at crossings and all tie in locations prior to construction. Should any conflict arise, contractor should contact the engineer before installation of any proposed utility shown on this plan.
39. This plan is subject to MDE Application Tracking Number 200560820.
40. Foundation soil shall be examined by a soil engineer to assure the actual foundation soil strength meets or exceeds assumed design strengths.
41. The proposed construction of the retaining walls shall be performed under the observation of a Maryland Registered Professional Engineer.
42. THE FACILITY WILL EMPLOY A TOTAL OF 630 EMPLOYEES ONCE FULLY OPERATIONAL IN 2009. THE NUMBER OF SPACES PROVIDED WILL BE MORE THAN SUFFICIENT TO PROVIDE AMPLE PARKING FOR BOTH EMPLOYEES AND VISITORS. THE BREAKDOWN OF EMPLOYEES BY SHIFT IS AS FOLLOWS:

	2004	2005	2006	2007	2008	2009
SHIFT 1 (6am-2pm)	104	133	200	242	252	262
SHIFT 2 (2pm-10pm)	88	120	182	202	212	223
SHIFT 3 (10pm-6am)	60	66	117	125	135	145



LOCATION MAP
SCALE: 1"=200'

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
3) DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE.
4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS IN EXCESS OF NONTIDAL WETLANDS LOST UNDER THE ORIGINAL STRUCTURE OR FILL.
6) RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7) ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 33 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF NONTIDAL WETLANDS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

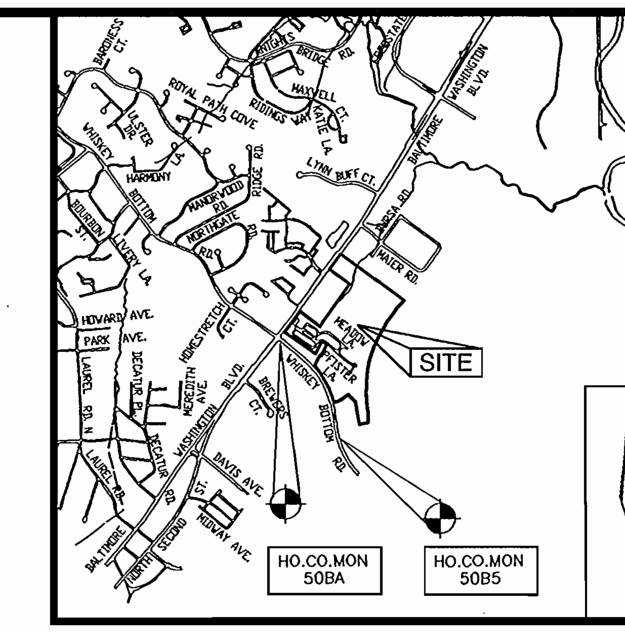
LEGEND

Existing Contour
Proposed Contour
Existing Spot Elevation
Proposed Spot Elevation
Direction of Flow
Existing Trees to Remain
Light Poles
Soil Type
Concrete

BENCHMARKS

HOWARD COUNTY BENCHMARK 50BA
N 527561.678 E 1359772.604 ELEV. 249.737

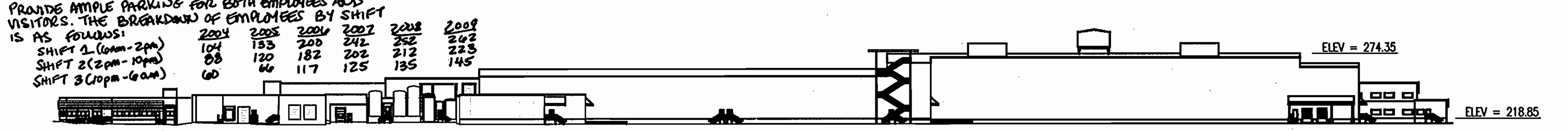
HOWARD COUNTY BENCHMARK 50B5
N 524999.375 E 1357925.748 ELEV. 178.195



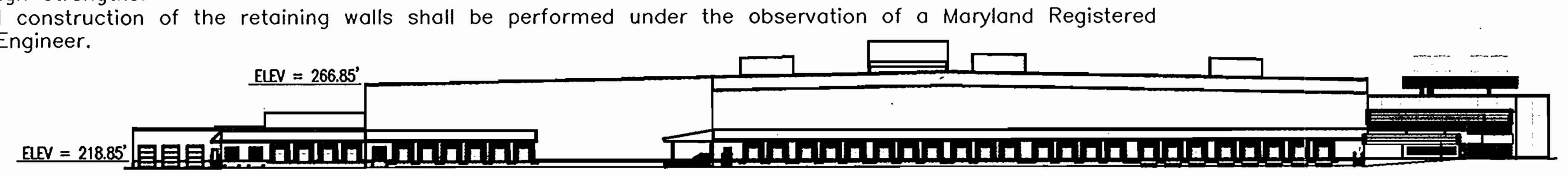
VICINITY MAP
SCALE: 1"=2000'

SHEET INDEX

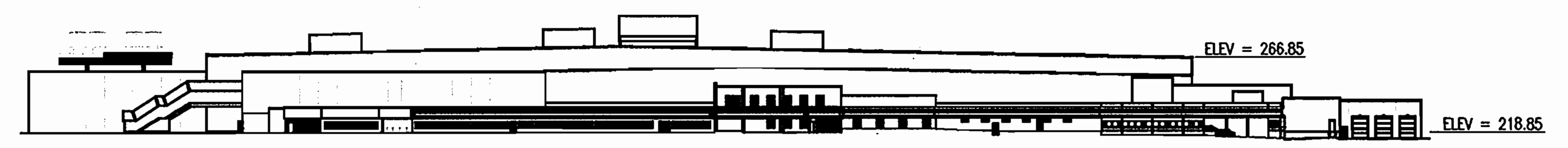
DESCRIPTION	DWG. NO.	SHEET NO.
COVER SHEET	C0.2	1 of 38
SITE LAYOUT PLAN	C3.1	2 of 38
SITE LAYOUT PLAN	C3.2	3 of 38
SITE LAYOUT PLAN	C3.3	4 of 38
SITE LAYOUT PLAN	C3.4	5 of 38
SITE LAYOUT PLAN	C3.5	6 of 38
SITE DETAILS	C6.5	7 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.5	8 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.6	9 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.7	10 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.8	11 of 38
GRADING AND SEDIMENT CONTROL PLAN	C2.9	12 of 38
SEDIMENT CONTROL NOTES AND DETAILS	C6.6	13 of 38
STORM DRAIN DRAINAGE AREA MAP	C5.0	14 of 38
STORM DRAIN PROFILES	C5.1	15 of 38
STORM DRAIN PROFILES	C5.2	16 of 38
STORM DRAIN INLET DETAILS	C5.3	17 of 38
WATER PROFILES	C5.4	18 of 38
WATER PROFILES	C5.5	19 of 38
SEWER PROFILES	C5.6	20 of 38
SEWER PROFILES	C5.7	21 of 38
STORMWATER MANAGEMENT DETAILS	C6.7	22 of 38
STORMWATER MANAGEMENT NOTES	C6.8	23 of 38
LANDSCAPE PLAN, NOTES AND DETAILS	L1.3	24 of 38
LANDSCAPE PLAN	L1.4	25 of 38
LANDSCAPE PLAN	L1.5	26 of 38
FOREST CONSERVATION PLAN	L1.6	27 of 38
FOREST CONSERVATION PLAN	L1.7	28 of 38
FOREST CONSERVATION PLAN	L1.8	29 of 38
OFF-SITE FOREST MITIGATION PLAN	L1.9	30 of 38
OFF-SITE FOREST MITIGATION PLAN	L1.10	31 of 38
ROAD IMPROVEMENTS PLAN	C6.9	32 of 38
ROAD IMPROVEMENTS PLAN	C6.10	33 of 38
RETAINING WALL #1 PLAN AND PROFILE	C6.11	34 of 38
RETAINING WALL #2 PLAN AND PROFILE	C6.12	35 of 38
RETAINING WALL #3 & #4 PLAN AND PROFILE	C6.13	36 of 38
RETAINING WALL NOTES AND DETAILS	C6.14	37 of 38
RETAINING WALL SPECIFICATIONS	C6.15	38 of 38



EAST

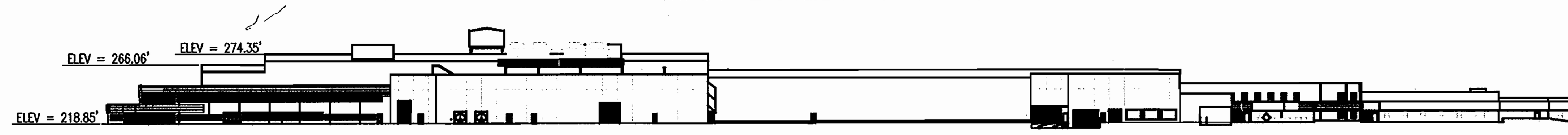


NORTH



SOUTH

MAX BUILDING HEIGHT=55.5'



WEST

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
509, 271, 341, 420, 302 & 293	9090 WHISKEY BOTTOM ROAD

PERMIT INFORMATION CHART					
SUBDIVISION NAME: N/A		SECTION/AREA: N/A		PARCEL NUMBER: 509, 271, 341, 420, 302 & 293	
DEED REF.*	BLOCK NO.	ZONE	TAX/ZONE	ELECT. DIST.	CENSUS TR.
324/499, 6329/142, 4913/89, 286/351, & 1934/54	5	M-1, CE-CLI	47 & 50	6th	6069.02
WATER CODE: C04			SEWER CODE: 7101800		

*see F 05-107, plats #17462-17466

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/4/05

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET, SPRINGFIELD, MASSACHUSETTS 01103, 413·787·1785 • FAX 413·787·1786
136 SOUTH MAIN STREET, SALT LAKE CITY, UTAH 84101, 801·531·8585 • FAX 801·531·8586

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	5-11-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITIES & REVISE VARIOUS FACILITY INFORMATION.

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

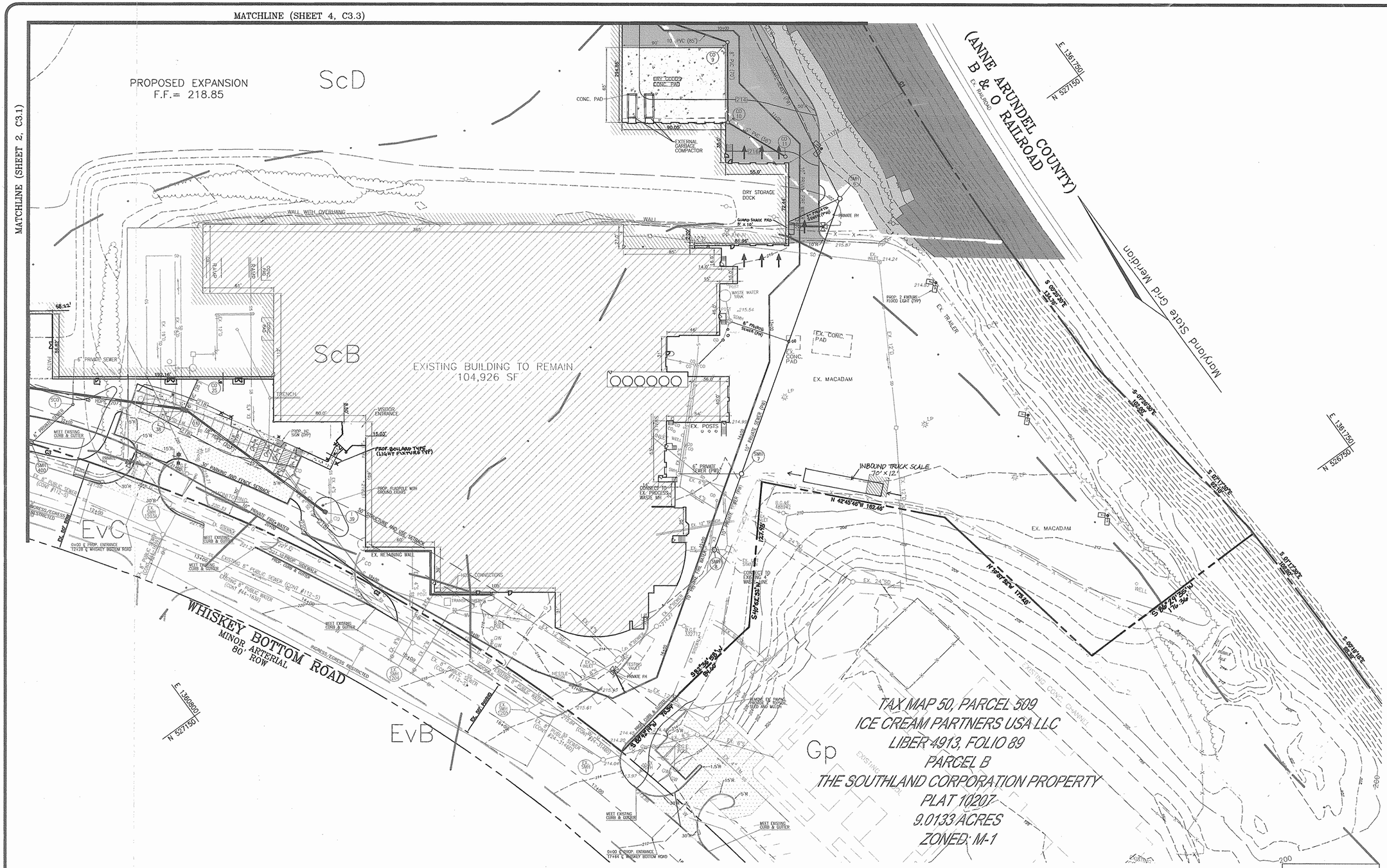
Dreyer's — FAMILY FAVORITE

COVER SHEET

DRAWING NO.
C0.2

HO. CO. DPZ SHEET: 1 OF 38

SDP-05-40



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED
PROFESSIONAL ENGINEER
4/14/05
ROBERT H. VOGEL, PE No. 16193

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-25-06	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITIES AND DEVISE VARIOUS FACILITY INFORMATION
2	11-28-07			ADD INBOUND TRUCK SCALE

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

SITE LAYOUT PLAN

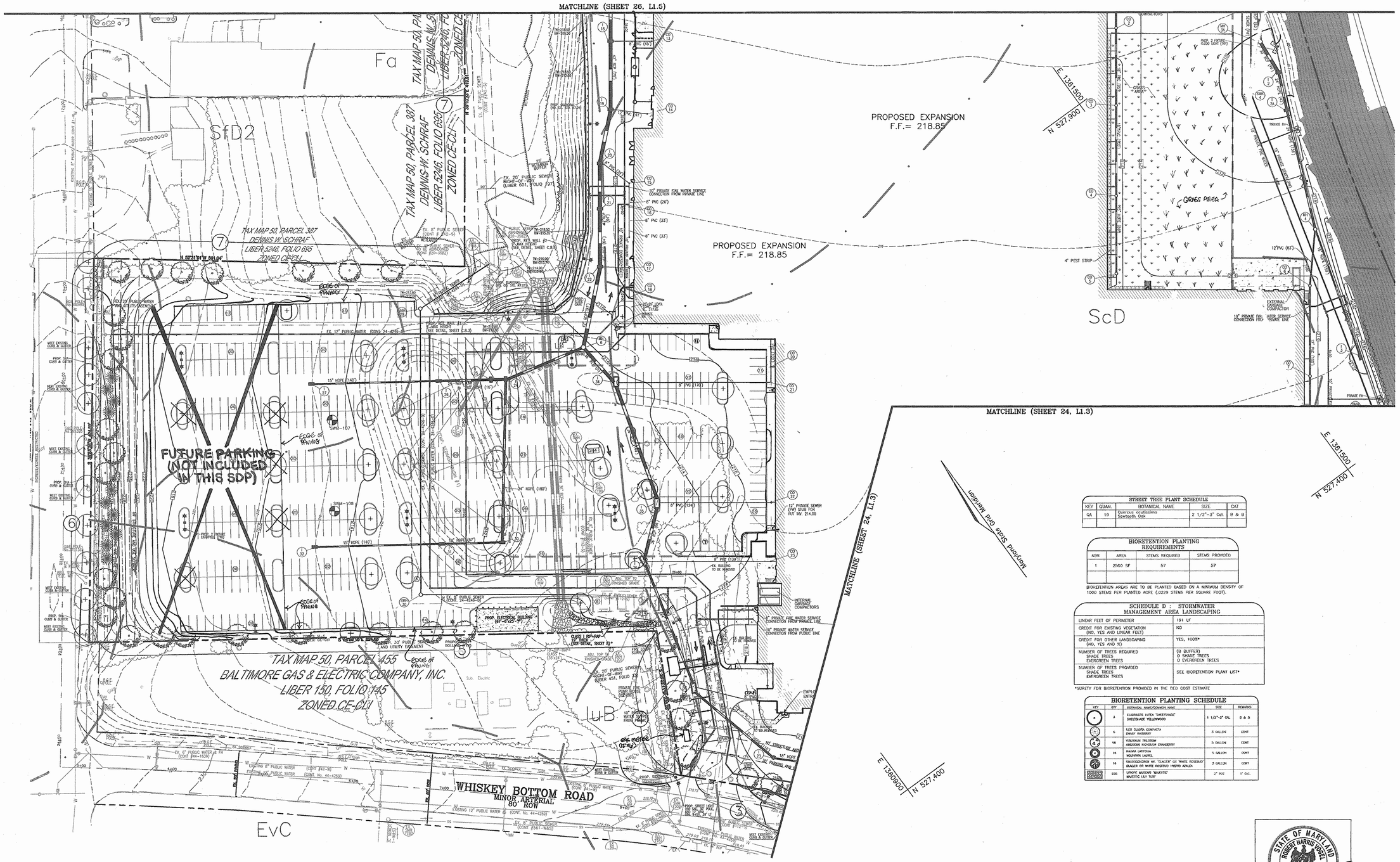
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
C3.2

HO. CO. DPZ SHEET:
3 OF 38

SDP-05-40



STREET TREE PLANT SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	CAT.
QA	19	Quercus acutissima Sawtooth Oak	2 1/2"-3" Cal.	B & B

BIORETENTION PLANTING REQUIREMENTS			
NDR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	2560 SF	57	57

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT).

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	191 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, WOODS*
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(0 BUFFER) 0 SHADE TREES 0 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES	SEE BIORETENTION PLANT LIST*

*SURETY FOR BIORETENTION PROVIDED IN THE BID COST ESTIMATE

BIORETENTION PLANTING SCHEDULE				
KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	3	CLADRASTIS LUTEA "SMEETHWOOD" SMEETHAGE YELLOWWOOD	1 1/2"-3" CAL.	B & B
	5	ILEX GLABRA COMPACTA DWARF INKBERRY	3 GALLON	CONT
	16	VICIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
	16	KALMIA LATIFOLIA MOUNTAIN LAUREL	5 GALLON	CONT
	16	RHODODENDRON HY. "GLACIER" OR "WHITE ROSEBUD" GLACIER OR WHITE ROSEBUD HYBRID AZALEA	3 GALLON	CONT
	666	LIRIOPE MUSCARI "MAJESTIC" MAJESTIC LILY TURF	2" POT	1' O.C.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 4-14-05

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 4/14/05

ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR
1	05-05-06	DZ	RHV	REVISE PLAN TO SHOW REBUILT FACILITIES AND REVISE VARIOUS
2	12-21-07	RHV	RHV	PROVIDE INFORMATION, REVISE CHANGES AND RELOCATE FENCE

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

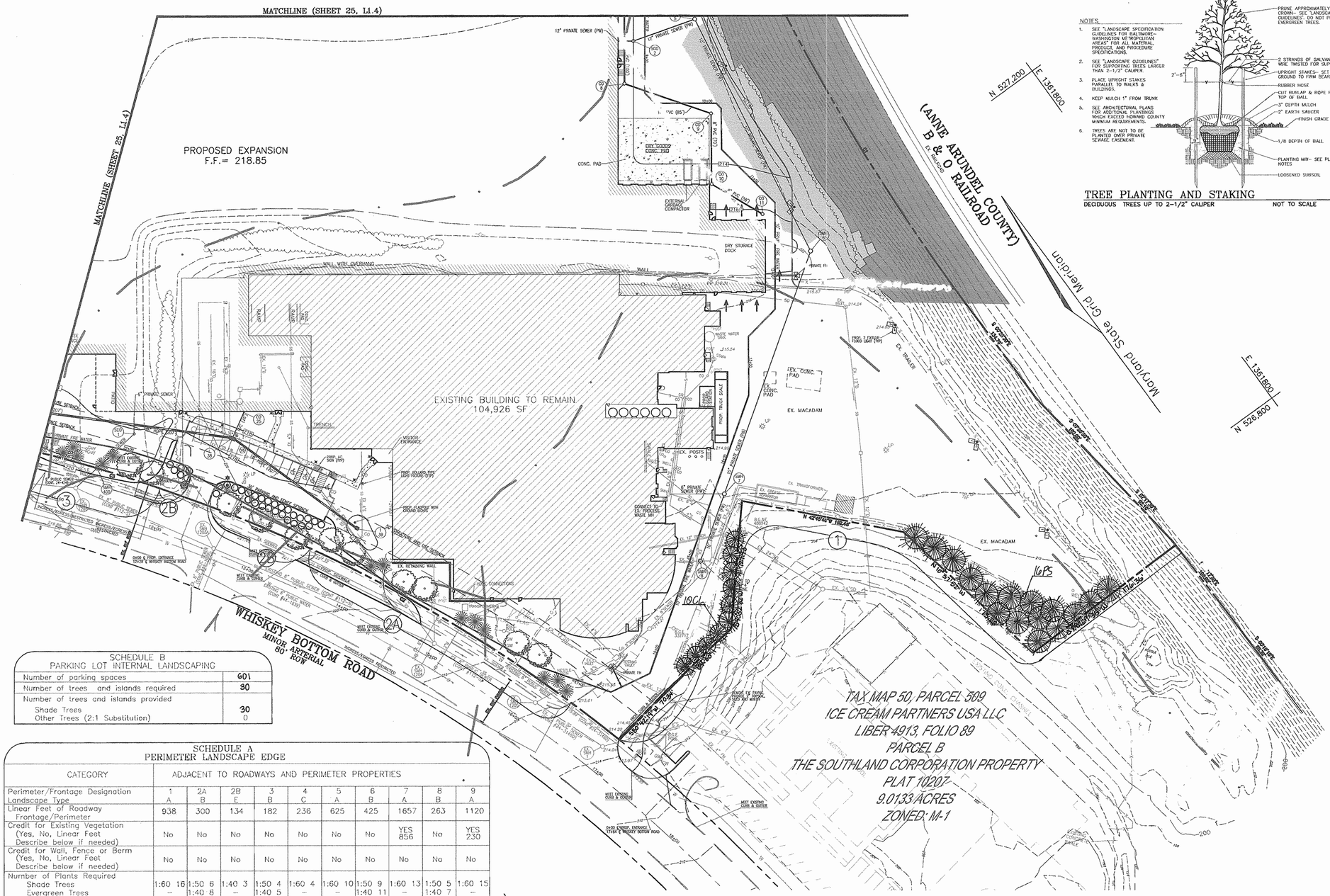
THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

SCALE: 1"=40'

DRAWING NO.
L1.4

HO. CO. DPZ SHEET: 25 OF 38

SDP-05-40



LANDSCAPE PLAN
SCALE: 1"=50'

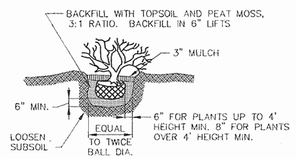
NOTES:

1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK.
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.

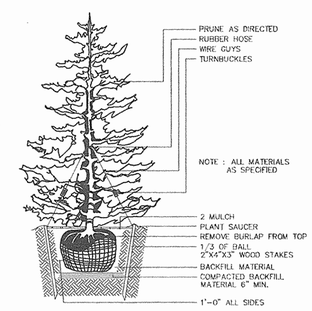
TREE PLANTING AND STAKING
DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- M1B2 / M1D3 — SOILS BOUNDARY
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED LIGHT POLE
- QP / AR — PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- TD — PROPOSED SHRUBS
- 2 — LANDSCAPE PERIMETER



SHRUB PLANTING DETAIL
NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

Number of parking spaces	601
Number of trees and islands required	30
Number of trees and islands provided	
Shade Trees	30
Other Trees (2:1 Substitution)	0

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES									
Perimeter/Frontage Designation Landscape Type	1 A	2A B	2B E	3 B	4 C	5 A	6 B	7 A	8 B	9 A
Linear Feet of Roadway Frontage/Perimeter	938	300	134	182	236	625	425	1657	263	1120
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	YES 856	No	YES 230
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	No	No	No
Number of Plants Required Shade Trees Evergreen Trees Shrubs	 1:60 16 – –	 1:50 6 1:40 8 –	 1:40 3 – 1:4 34	 1:50 4 1:40 5 –	 1:60 4 – –	 1:60 10 – –	 1:50 9 1:40 11 –	 1:60 13 – –	 1:50 5 1:40 7 –	 1:60 15 – –
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 Substitution) Shrubs (10:1 Substitution) Describe Plant Substitution Credits Below if needed)	 16 – – –	 6 8 – –	 3 – – 34	 4 5 – –	 4 – – –	 10 – – –	 9 11 – –	 13 – – –	 5 7 – –	 15 – – –

LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	69	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2" -3"Cal.	B & B
PS	47	Pinus strobus Eastern White Pine	6' - 8' Ht.	B & B
QP	30	Quercus Phellos Willow Oak	2 1/2" -3"Cal.	B & B
TD	34	Taxus media 'Densiformis' Densiformis Yew	2 1/2' -3' Ht.	B & B
CL	10	CUPRESSOCYPARIS LEYLANDII LELAND CYPRESS	5'-6' HT	B&B

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $42,270.00 FOR THE REQUIRED 122 SHADE TREES, 31 EVERGREEN TREES AND 34 SHRUBS.
3. SWM LANDSCAPING IS NOT REQUIRED FOR THIS SITE SINCE THE SWM FACILITY IS NOT VISIBLE FROM A PUBLIC ROAD.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 5/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/05
DIRECTOR	DATE 6/2/05

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Robert Lewis Attorney-in-fact — 04-14-05
SIGNATURE OF DEVELOPER — DATE

OWNERS

ICE CREAM PARTNERS USA, L.L.C.
30003 BAINBRIDGE ROAD
SOLON, OHIO 44139

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

PFISTERS MOBILE HOME PARK, INC.
c/o NESTLE ICE CREAM, INC.
1 PINE LANE
LAUREL, MD 20723

DEVELOPER

NESTLE ICE CREAM COMPANY, INC.
5929 COLLEGE AVE.
OAKLAND, CA 94618

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 6/2/05
ROBERT H. VOGEL, PE No. 16193

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

REL.	DATE	BY	APP.	RELEASED FOR . . .
1	5-25-05	DZ	RHV	REVISED PLAN TO SHOW AS-BUILT FACILITY INSTALLATION VARIOUS
2	12-21-07	RHV	RHV	REVISE LANDSCAPE SCHEDULE

DREYER'S GRAND ICE CREAM
9090 WHISKEY BOTTOM ROAD
LAUREL, MD 20723

LANDSCAPE PLAN

THE DENNIS GROUP, LLC
PLANNING • ENGINEERING • CONSTRUCTION MANAGEMENT
1391 MAIN STREET
SPRINGFIELD, MASSACHUSETTS 01103
413-787-1785 • FAX 413-787-1786
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101
801-531-8585 • FAX 801-531-8586

DRAWING NO.
L1.3

HO. CO. DPZ SHEET: 24 OF 38

SDP-05-40