



CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: WC034

DATE VERIFIED: November 20, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

Date: April 5, 2012
To: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
From: Leah Hardenbergh
PO: 110426
Re: Files Approved for Scanning

General File ID or BMP ID: WC034
PIN: 1340100037
Owner Name (if known): CHILD DEVELOPMENT RESOURCES (CDR)
Legal Property Description: 3 1 AC BEECHWOOD COMPANY
Site Address: 150 POINT O'WOODS

(For internal use only):

Box # 52

Agreements (in file as of scan date): Y **Book or Doc #:** DB 5171 p 167 / 090024467

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

- ① As-built plan
- ② Completed construction certification
- ③ Construction Plan
- ④ Design Calculations
5. Watershed Map
- ⑥ Maintenance Agreement
- ⑦ Correspondence with owners
- ⑧ Inspection Records
9. Enforcement Actions
10. Geotechnical Reports



Return to:
JCC Attorney's Office
101-C Mount's Bay Road
Williamsburg, VA 23185
(757) 253-6612

COUNTY OF JAMES CITY, VIRGINIA

COPY

DECLARATION OF COVENANTS
INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

Please type or print legibly in black ink. Covenantor(s) should submit this form to the JCC Environmental Division, 101-E Mounts Bay Road, Williamsburg, VA 23185.

THIS DECLARATION OF COVENANTS, made this 20 day of August, 2009, between W. Barry Bryant, and all successors in interest, ("COVENANTOR(S)"), owner(s) of the following property:

Parcel Identification Number: 1240100036, 1240100037, 1240100037A
Legal Description: PT of Pierces, Toano Canning Factory, PT Toano Canning Factory
Project or Subdivision Name: Bryant Contracting Office Complex
Document/Instrument No. 000018630, 050023264 or Deed Book 517, Page No. 167, and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

I (We), the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, monitoring, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.

Instrument # 090024467
Recorded on Aug. 25, 2009

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S) responsibilities for the SYSTEM. The COVENANTOR(S) shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

IN WITNESS WHEREOF, the COVENANTOR(S) has executed this DECLARATION OF COVENANTS as of the date first above written.

COVENANTOR(S)

[Signature]
Signature

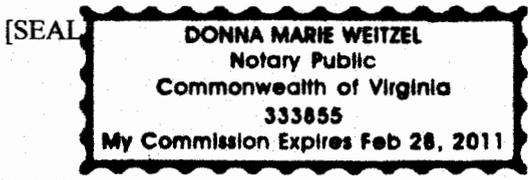
W. Barry Bryant, President
Print Name and Title

ACKNOWLEDGMENT

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City, to wit:

I hereby certify that on this 20 day of August, 2009, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared W. Barry Bryant and did acknowledge the foregoing instrument to be his/her Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 20 day of Aug., 2009.



Donna Marie Weitzel
Notary Public
Notary Registration Number: 333855
My Commission expires: Feb. 28, 2011

Approved as to form:

[Signature]
Asst. County Attorney

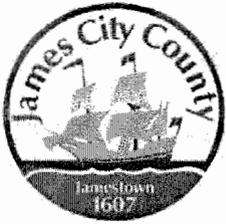
This Declaration of Covenants prepared by:

Signature: [Signature] Print Name and Title: W. Barry Bryant President

Address: P.O. Box 1000 Towns VA. 23168

Phone Number: 757-566-0400

Drainage1_pre_doc
(Revised 9-5-08)



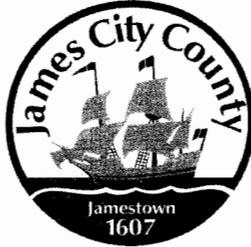
**James City County Environmental Division
Stormwater Management/BMP Record Drawing &
Construction Certification Review
Tracking Form**

Project Name: BRYANT CONTRACTING OFFICE COMPLEX BMP # 2
County Plan No.: E+S-01-07
Stormwater Management Facility: EXTENDED DRY DETENTION BASIN
BMP Phase #: I II III
 Information Package Received. Date/By: 3/12/2010 - M. MAJDESKI
 Completeness Check:
 Record Drawing Date/By: 3/2/10 - PHILIP GOERING
 Construction Certification Date/By: 3/2/10 - BRENT SHANKLES
 RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001 Only)
 Insp/Maint Agreement # / Date: 09024467 / 8/20/09
 BMP Maintenance Plan Location: ON AS-BUILT DRAWING
 Other: _____
 Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
 Yes No Location: PLAN REVIEW COMMENTS
 Assign County BMP ID Code #: Code: VC 034
 Preliminary Input/Log into Division's "As-Built Tracking Log"
 Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
 Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
 Active Project File Review (correspondence, H&H, design computations, etc.)
 Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.)
 Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
 Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
 Final Inspection (FI) Performed Date: 4/20/10
 Record Drawing (RD) Review Date: 4/20/10
 Construction Certification (CC) Review Date: 4/22/10
 Actions:
 No comments.
 Comments. Letter Forwarded. Date: 4/21/10 - EMAIL
 Record Drawing (RD)
 Construction Certification (CC)
 Construction-Related (CR)
 Site Issues (SI)
 Other: _____
 Second Submission:
 Reinspection (if necessary): 10/10/10 - OK - ISSUES CORRECTED IN FIELD
 Acceptable for SWM Purposes (RD/CC/CR/Other). OK to proceed with bond release.
 Complete "Surety Request Form".
 Check/Clean active file of any remaining material and finish "As-Built" file.
 Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
 Copy Final Inspection Report into County BMP Inspection Program file.
 Obtain Digital Photographs of BMP and save into County BMP Inventory. 12/1/10
 Request mylar/reproducible from As-Built plan preparer. supplied by plan preparer 12/20/10
 Complete "As-built Tracking Log".
 Last check of BMP Access Database (County BMP Inventory).
 Add BMP to JCC Hydrology & Hydraulic database (optional).
 Add BMP to Municipal BMP list (if a County-owned facility)
 Add BMP to PRIDE BMP ratings database.

Final Sign-Off

Inspector: [Signature] Date: 12/21/10
Chief Engineer: [Signature] Date: 12/21/10

*** See separate checklist, if needed.



Environmental Division

MAR 11 2010

RECEIVED

James City County, Virginia
Environmental Division

Stormwater Management / BMP Facilities
Record Drawing and Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMP's shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMP's. Erosion and sediment control policy and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction. Currently there are over 20 water quality type BMP's accepted by the County.)

Section 1 - Site Information:

Project Name: Bryant contracting office complex
Structure/BMP Name: BMP # 2
Project Location: 7754 Richmond Rd., Toano, VA
BMP Location: Northwest quadrant of property
County Plan No.: SP - 0106 - 2008

Project Type: [] Residential [x] Business Tax Map/Parcel No.: (12-4) (1-36)&(1-37) PIN# 12401000036 +
[] Commercial [] Office BMP ID Code (if known): 124 01 0000 37
[] Institutional [] Industrial Zoning District:: M-2
[] Public [] Roadway Land Use: Industrial
[] Other Site Area (sf or acres): 21.642 acres

Brief Description of Stormwater Management/BMP Facility:

BMP #2 has been designed as a 4 point James City County Extended Dry Detention BMP to treat 11 acres of runoff

Nearest Visible Landmark to SWM/BMP Facility: Bryant Contracting storage building and Charlie's Antiques

Nearest Vertical Ground Control (if known):

[] JCC Geodetic Ground Control [] USGS [x] Temporary [] Arbitrary [] Other
Station Number or Name: Spike in Popular
Datum or Reference Elevation: 96.66
Control Description:
Control Location from Subject Facility:

Section 2 - Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: Summer 2008
Facility Monitored by County Representative during Construction: Yes No Unknown
Name of Site Work Contractor Who Constructed Facility: Bryant Contracting Inc.
Name of Professional Firm Who Routinely Monitored Construction: Bryant Contracting Inc.
Date of Completion for SWM/BMP Facility: Summer 2008
Date of Record Drawing/Construction Certification Submittal: 3/10/2010

(Note: Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Environmental Division prior to final inspection, acceptance and bond or surety release.)

Section 3 - Owner / Designer / Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*

Name: Bryant Contracting Inc.
Mailing Address: P.O. Box 1000 Toano Virginia 23168
Business Phone: (757) 566-0400 Fax: (757) 566-8155
Contact Person: W. Barry Bryant Title: President

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater Management / BMP facility.)*

Firm Name: H.L.Philip Goering, P.E.
Mailing Address: 3001 Sweet Gum Ln.
Williamsburg, VA 23185
Business Phone: (757) 328-5498
Fax: _____
Responsible Plan Preparer: H.L.Philip Goering, P.E
Title: owner
Plan Name: BMP #2 addendum to E&S #001-07
Firm's Project No. _____
Plan Date: 10/5/07
Sheet No.'s Applicable to SWM/BMP Facility: 1 / _____ / _____ / _____ / _____

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*

Name: Bryant Contracting Inc.
Mailing Address: P.O. Box 1000 Toano Virginia 23168
Business Phone: (757) 566-0400
Fax: (757) 566-8155
Contact Person: W. Barry Bryant
Site Foreman/Supervisor: Wayne Hammond
Specialty Subcontractors & Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: (Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)

Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

Record Drawing Certification

Firm Name: H.L.Philip Goering, P.E.
 Mailing Address: 3001 Sweet Gum Ln.
Williamsburg, VA 23185
 Business Phone: (757) 328-5498
 Fax: _____

Name: H.L.Philip Goering, P.E.
 Title: Owner

Signature: *H.L. Goering*
 Date: 09 MARCH 2010

Construction Certification

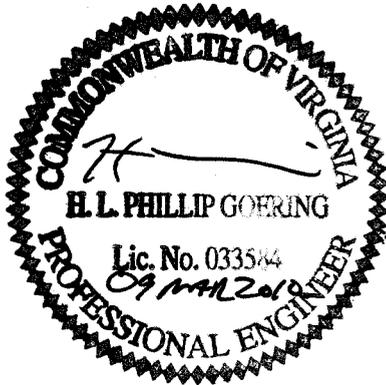
Firm Name: Bryant Contracting Inc.
 Mailing Address: P.O. Box 1000
Toano Virginia 23168
 Business Phone: (757) 566-0400
 Fax: (757) 566-8155

Name: Brett Shankles, P.E.
 Title: Company Engineer

Signature: *Brett Shankles*
 Date: 3/8/2010

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management / BMP facility. The facility appears to conform with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

I hereby certify to the best of my knowledge and belief that this Stormwater Management/BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.



 (Seal)
 Virginia Registered Professional Engineer
 or Certified Land Surveyor

 (Seal)
 Virginia Registered
 Professional Engineer

Section 5 - Record Drawing and Construction Certification Requirements and Instructions:

- PreConstruction Meeting - Provides an opportunity to review SWM / BMP facility construction, maintenance and operation plans and address any questions regarding construction and/or monitoring of the structure. The design engineer, certifying professionals (if different), Owner/Applicant, Contractor and County representative(s) are encouraged to attend the preconstruction meeting. Advanced notice to the Environmental Division is requested. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meetings held for the project.
- A fully completed ***STORMWATER MANAGEMENT / BMP FACILITIES, RECORD DRAWING and CONSTRUCTION CERTIFICATION FORM*** and ***RECORD DRAWING CHECKLIST***. All applicable sections shall be completed in their entirety and certification statements signed and sealed by the registered professional responsible for individual record drawing and/or construction certification.
- The Record Drawing shall be prepared by a Registered Professional Engineer or Certified Land Surveyor for the drainage system of the project including any Best Management Practices.
- Construction Certification. Construction of Stormwater Management / BMP facilities which contain impoundments, embankments and related engineered appurtenances including subgrade preparation, compacted soils, structural fills, liners, geosynthetics, filters, seepage controls, cutoffs, toe drains, hydraulic flow control structures, etc. shall be visually observed and monitored by a Registered Professional Engineer or his/her authorized representative. The Engineer must certify that the structure, embankment and associated appurtenances were built in accordance with the approved design plan, specifications and stormwater management plan and standard accepted construction practice and shall submit a written certification and/or drawings to the Environmental Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation may be required by the Environmental Division to substantiate the certification, if specifically requested. The Engineer shall have the authority and responsibility to make minor changes to the approved plan, in coordination with the assigned County inspector, in order to compensate for unsafe or unusual conditions encountered during construction such as those related to bedrock, soils, groundwater, topography, etc. as long as changes do not adversely affect the integrity of the structure(s). Major changes to the approved design plan or structure must be reviewed and approved by the original design professional and the James City County Environmental Division.
- Record Drawing and Construction Certifications are required within **thirty (30) days** of the completion of Stormwater Management / BMP facility construction. Submittals must be reviewed and accepted by James City County Environmental Division prior to final inspection, acceptance and bond/surety release.

Dual Purpose Facilities - Completion of construction also includes an interim stage for Stormwater Management / BMP facilities which serve dual purpose as temporary sediment basins during construction and as permanent stormwater management / BMP facilities following construction, once development and stabilization are substantially complete. For these dual purpose facilities, construction certification is required once the temporary sediment basin phase of construction is complete. Final record drawing and construction certification of additional permanent components is required once permanent facility construction is complete.

Interim Construction Certification is required for those dual purpose embankment-type facilities that are generally ten (10) feet or greater in dam height (*) and may not be converted, modified or begin function as a permanent SWM / BMP structure for a period generally ranging from six (6) to eighteen (18) months or more from issuance of a Land Disturbance permit for construction.

Interim or final record drawing and construction certifications are not required for temporary sediment basins which are designed and constructed in accordance with current minimum standards and specifications for temporary sediment basins per the Virginia Erosion and Sediment Control Handbook (VESCH); have a temporary service life of less than eighteen (18) months; and will be removed completely once associated disturbed areas are stabilized, unless a distinct hazard to the public's health, safety and welfare is determined by the Environmental Division due to the size or presence of the structure or due to evidence of improper construction.

(*Note: Dam Height as referenced above is generally defined as the vertical distance from the natural bed of the stream or waterway at the downstream toe of the embankment to the top of the embankment structure in accordance with 4VAC50-20-30, Virginia Impoundment Structure Regulations and the Virginia Dam Safety Program.)

- ☑ Record Drawings shall provide, at a minimum, all information as shown within these requirements and the attached **RECORD DRAWING CHECKLIST** specific to the type of SWM/BMP facility being constructed. Other additional record data may be formally requested by the James City County Environmental Division. *(Note: Refer to the current edition of the James City County Guidelines for Design and Construction of Stormwater Management BMP's manual for a complete list of acceptable BMP's. Currently there are over 20 acceptable water quality type BMP's accepted by the County.)*
- ☑ Record Drawings shall consist of blue/black line prints and a reproducible (mylar, sepia, diazo, etc.) set of the approved stormwater management plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject SWM / BMP facility. The set shall indicate "**RECORD DRAWING**" in large text in the lower right hand corner of each sheet with record elevations, dimensions and data drawn in a clearly annotated format and/or boxed beside design values. Approved design plan values, dimensions and data shall not be removed or erased. Drawing sheet revision blocks shall be modified as required to indicate record drawing status. Elevations to the nearest 0.1' are sufficiently accurate except where higher accuracy is needed to show positive drainage. Certification statements as shown in Section 4 of the Record Drawing and Construction Certification Form, *or similar forms thereof*, and professional signatures and seals, with dates matching that of the record drawing status in the revision or title block, are also required on all associated record drawing plans, prints or reproducibles.
- ☑ Submission Requirements. Initial and subsequent submissions for review shall consist of a minimum of one (1) blue/black line set for record drawings and one copy of the construction certification documents with appropriate transmittal. Under certain circumstances, it is understood that the record drawing and construction certification submissions may be performed by different professional firms. Therefore, record drawing submission may be in advance of construction certification or vice versa. Upon approval and prior to release of bond/surety, final submission shall include one (1) reproducible set of the record drawings, one (1) blue/black line set of the record drawings and one (1) copy of the construction certification. Also for current and/or future incorporation into the County BMP database and GIS system, it is requested that the record drawings also be submitted to the Environmental Division on a diskette or CD-ROM in an acceptable electronic file format such as *.dxf, *.dwg, etc. or in a standard scanned and readable format. The electronic file requirement can be discussed and coordinated with Environmental Division staff at the time of final submission.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

I. Methods and Presentation: (Required for all Stormwater Management / BMP facilities.)

- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
- XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
- XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).
- XX 4. All plan sheet revision blocks modified to indicate date and record drawing status.
- XX 5. All plan sheets have certification statements and certifying professional's signature and seal.

II. Minimum Standards: (Required for all Stormwater Management / BMP facilities, as applicable.)

- XX 1. All requirements of Section I (Methods and Presentation) apply to this section.
- XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.
- XX 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.
- XX 4. Top widths, berm widths and embankment side slopes.
- XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.
- XX 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.
- XX 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.
- XX 8. Elevation of the principal spillway crest or outlet crest of the structure.

- XX 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.
- XX 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.
- XX 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.
- XX 12. Type, location, size and number of anti-seep collars or documentation of other methods utilized for seepage control. **May need to obtain this information during construction.**
- NA 13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. **May need to obtain this information during construction.**
- XX 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- XX 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.
- NA 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- NA 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- XX 18. Maintenance plan taken from approved design plan transposed onto record drawing set.
- NA 19. Fencing location and type, if applicable to facility.
- XX 20. BMP vicinity properly cleaned of stockpiles and construction debris.
- XX 21. No visual signs of erosion or channel degradation immediately downstream of facility.
- XX 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VIII. Group F - Extended Dry Detention (Includes F-1 Timber Walls; and F-2 Dry Extended Detention with Forebay)

- xx F1. All requirements of Section II, Minimum Standards, apply to Group F facilities.
- xx F2. Basin bottom has positive slope and drainage from all basin inflow points to the riser (or outflow) location.
- NA F3. Timber wall BMP used in intermittent stream only. (ie. Prohibited in perennial streams.)
- NA F4. Forebay provided approximately 20 ft. upstream of the facility. Forebays generally 4 to 6 feet in depth.
- xx F5. A reverse slope pipe, vertical stand pipe or mini-barrel and riser was provided to prevent clogging.
- xx F6. Principal spillway and outlet barrel provided consisting of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- xx F7. Mini-barrel and riser, if used, contains a removable trash rack to reduce clogging.
- xx F8. Low flow orifice, if used, has a minimum diameter of three (3) inches or two (2) inches if internal orifice control was utilized and a small, cage type external trash rack.
- NA F9. Timbers properly reinforced or concrete footing provided if soil conditions were prohibitive.
- NA F10. Timber wall cross members extended to a minimum depth of two (2) feet below ground elevation.
- NA F11. Protection against erosion and scour from the low flow orifice and weir-flow trajectory provided.
- NA F12. Stilling basin or standard outlet protection provided at principal spillway outlet.
- xx F13. Adequate, direct access provided to the facility. Access corridor to facility is at least ten (10) feet wide, slope is less than twenty (20) percent and appropriate stabilization provided for equipment and vehicle use. Access extends to forebay, standpipe and timber wall, as applicable.
- NA F14. No visual signs of undercutting of timber walls or clogging of the low orifice were present.
- xx F15. No visual signs of erosion or channel degradation immediately downstream of facility.
- xx F16. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, as defined in the Code of Virginia, for the design of a project. The design shall be in accordance with the applicable provisions of the Code of Virginia, and the design shall be in accordance with the applicable provisions of the Code of Virginia, and the design shall be in accordance with the applicable provisions of the Code of Virginia.

Professional Engineer Certification
 Name: H.L. Phillip Goering, P.E.
 License No.: 033584
 Expiration Date: 12/31/10

Professional Engineer Certification
 Name: Brett T. Shankles, P.E.
 License No.: 043007
 Expiration Date: 12/31/10

Professional Engineer Certification
 Name: H.L. Phillip Goering, P.E.
 License No.: 033584
 Expiration Date: 12/31/10

Professional Engineer Certification
 Name: Brett T. Shankles, P.E.
 License No.: 043007
 Expiration Date: 12/31/10

ENVIRONMENTAL INVENTORY:

RESOURCE	DISTURBED	
	NO	YES/ACREAGE
TIDAL WETLANDS	X	
TIDAL SHORES	X	
RPA WETLANDS	X	
100' BUFFER	X	
RMA WETLANDS	X	
100-YR FLOOD PLAIN	X	
25% SLOPES		X/0.12

LEGEND:

- ☒ Communications Box
- ohw = Overhead Wire
- ⊞ Water Meter
- ⊙ Sewer Clean Out
- ⊕ Power Pole
- ⊖ Light Pole
- IR# = Iron Rod Found
- IRS = Iron Rod Set
- IPF = Iron Pipe Found
- IPS = Iron Pipe Set
- Bollards
- ⊙ Well
- (P) PROPOSED
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING GRAVEL
- EXISTING CONCRETE
- EXISTING HOUSE
- PROPOSED BMP DRAINAGE AREA

NOTES:

- CONSTRUCTION RECORD DRAWINGS AND A CONSTRUCTION CERTIFICATION WILL BE REQUIRED BY THE COUNTY FOR REVIEW AND APPROVAL PRIOR TO THE RELEASE OF PROJECT POSTED BOND/SURETY.
- THE CONTRACTOR SHALL CONTACT MS. UTILITY (1-800-552-7001) FOR UTILITY LOCATION AND MARKING SERVICES PRIOR TO ANY EARTHWORK ACTIVITIES TO ENSURE PROTECTION OF ALL UNDERGROUND UTILITIES.
- THIS PROJECT IS LOCATED WITHIN THE WARE CREEK WATERSHED.
- ANY AND ALL WASTE MATERIALS AND SPILLS GENERATED IN CONNECTION WITH THIS PROJECT SHALL BE DISPOSED OF AT A STATE-APPROVED FACILITY IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- THE PARCELS ASSOCIATED WITH THIS PROJECT ARE LOCATED IN FLOOD ZONE "X", PER FEMA FIRM PANEL 510201 0020 B.
- REFER TO COUNTY E & S PLAN # E&S-001-07.
- THE RESPONSIBLE LAND DISTURBER FOR THIS PROJECT IS BARRY BRYANT (CONTACT # 757-566-0400).

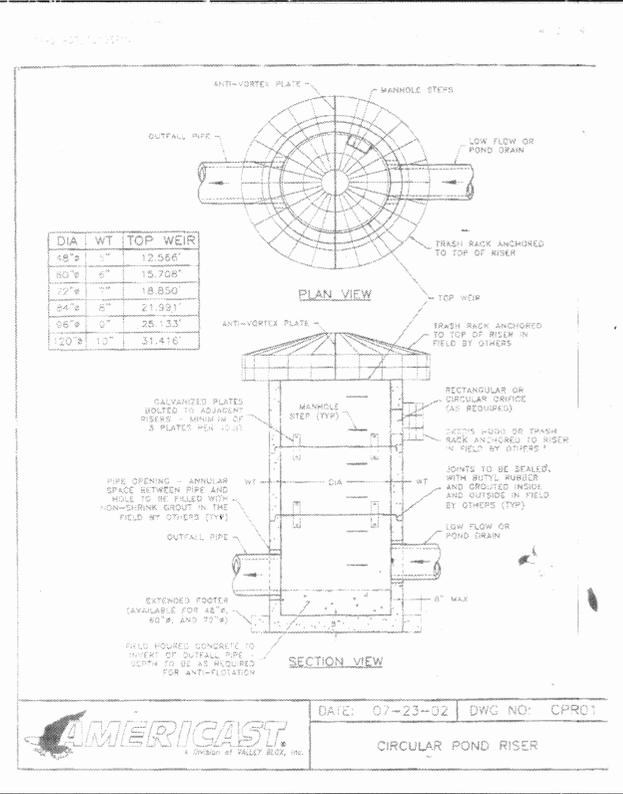
SITE INVENTORY:

- DISTURBED AREA ESTIMATE: 0.9 AC.
- ACCESS ROADS: 0.21 AC.
- BUILDINGS: 0.41 AC.
- COVERED/CANOPY: 0.08 AC.
- GRAVE/CONC. YARD: 4.3 AC.
- ASSUMED IMP. COVER AT BUILD-OUT OF FRONT PARCEL: 3.92 AC. @ 0.6 = 2.35 AC.
- IMP. COVER IN ADJACENT BRYANT PARCEL: 0.76 AC.
- TOTAL IMPERVIOUS AREA: 8.11 AC.

PROPERTY LINE & CURVE DATA:

NO.	DELTA ANGLE	CHORD DIRECTION	TANGENT	RADIUS	ARC LENGTH	CHORD LENGTH
C1	01°47'17"	S 74°45'34" E	45.59	2921.43	91.17	91.17
C2	01°21'06"	S 80°19'41" E	34.46	2921.43	68.92	68.92
C3	02°06'53"	S 89°01'04" E	53.92	2921.39	107.83	107.82

NUMBER	DIRECTION	DISTANCE
L1	S 62°56'08" E	105.41'
L2	N 87°37'48" E	105.41'
L3	S 88°49'25" W	80.00'
L4	S 64°36'21" E	55.90'
L5	S 88°49'25" W	61.78'
L6	S 89°46'22" W	7.90'



AMERICAST
 A DIVISION OF VALLEY BUILT, INC.
 DATE: 07-23-02 DWG NO: CPR01
 CIRCULAR POND RISER

BMP #2 Maintenance Plan --- E&S Plan 001-007 & SP-0106-008

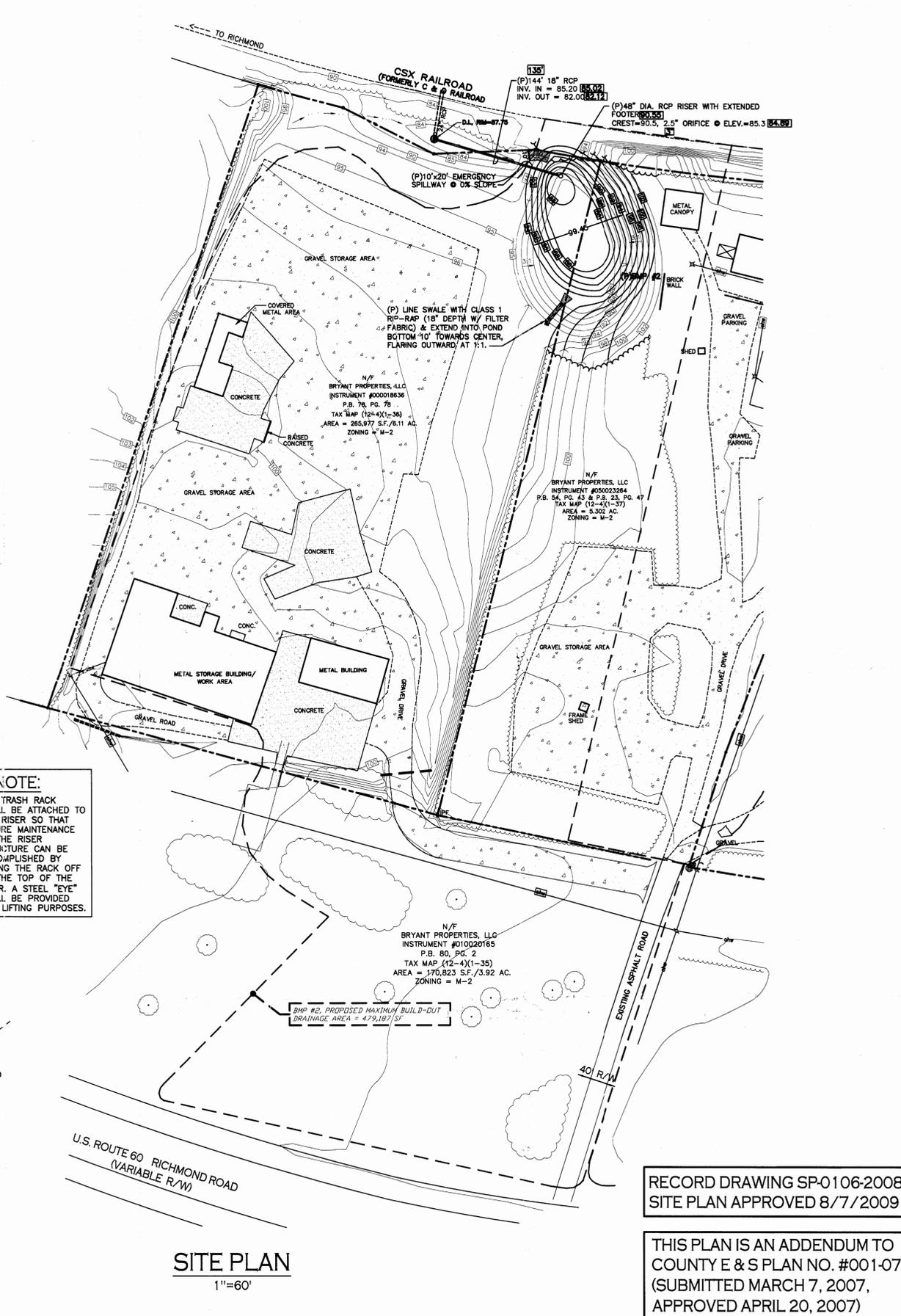
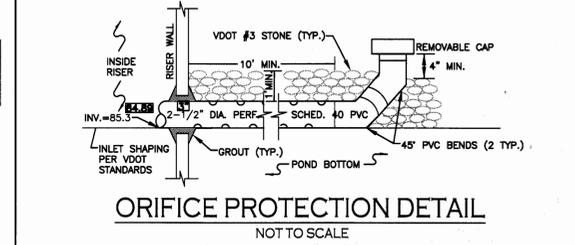
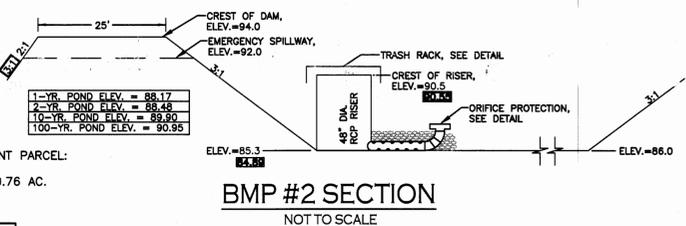
BRYANT PROPERTIES

The following inspections will occur annually and after major rainfall events

- Inlet (#3 stone) and outlet (RipRap) controls
- Concrete riser
- Outflow pipe and connection to riser structure
- Dam faces

The following maintenance operations will occur when required

- Repair any facilities that are identified during inspections
- Remove debris and trash from facility after major rainfall events
- Pond will be mowed at regular intervals to provide a consistent appearance with surrounding grassy areas
- Denuded areas will be repaired as required



NO	DATE	REVISIONS / COMMENTS
1	10/5/07	ADDENDUM TO COUNTY PLAN NO. #001-07 (SUBMITTED MARCH 7, 2007)
2	12/19/07	APPROVED APRIL 20, 2007
3	3/7/10	REVISOR TO ADDRESS COUNTY REVIEW COMMENTS DATED 11/05/2007

H.L. Phillip Goering, P.E.
 3001 Sweet Gum Lane
 Williamsburg, VA 23185
 ph: (757) 328-5498

7778 RICHMOND ROAD
 BRYANT PROPERTIES, LLC
 VIRGINIA
 JAMES CITY COUNTY

RECORD DRAWING SP-0106-2008
 SITE PLAN APPROVED 8/7/2009

THIS PLAN IS AN ADDENDUM TO
 COUNTY E & S PLAN NO. #001-07
 (SUBMITTED MARCH 7, 2007,
 APPROVED APRIL 20, 2007)

SITE PLAN & DETAILS
 PROJECT #: 0501A
 DRAWING 1 OF 1
 DATE: 05 OCTOBER 2007

REVISED January 02, 2008 per JCC Environmental Division Review Comments (dated November 05, 2007)

REVISED December 07, 2009 per As-Built Conditions

Stormwater Management Summary – E&S Plan 001-07
Bryant Properties

BMP #2 has been designed as a supplement to James City County (JCC) Environmental Division E&S Plan 001-07, approved April 20, 2007. It has also been designed to accommodate future development.

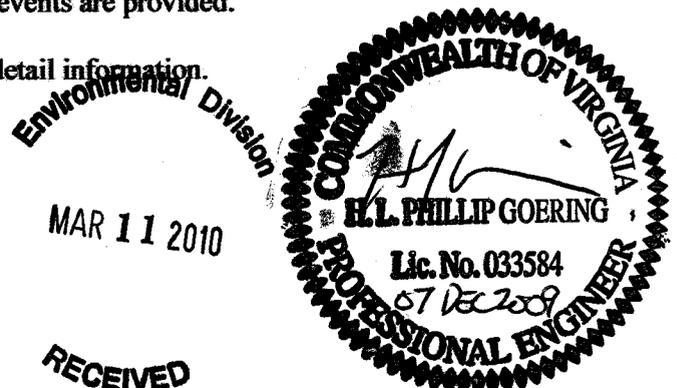
A breakdown of existing and proposed conditions for Bryant Properties and the contributing drainage area of BMP #2 was contained in the Stormwater Management Master Plan, dated January 02, 2008. Revised calculations resulting in the required drainage areas for each BMP, weighted BMP points, and the estimated post-development James City County point totals are contained in this document.

The actual minimum pond requirements as described in the County Code, are described in the Stormwater Management Pond Design table, dated December 07, 2009 (attached). Also contained in this table is the estimated BMP #2 drawdown time, based on routing calculations. Upon review of this document and the previously described Stormwater Management Master Plan, one will recognize that BMP#2 has been designed as a 4-point James City County Extended Detention BMP to treat 11 acres of runoff. The pond volume to the crest of riser was originally sized to accommodate only 5 acres of drainage (50,820 cu. ft., based on five acres with 2.8 inches of rainfall). But, when the entire 11 acres were routed through pond, the maximum stage achieved for the 1-year storm was approximately 40% of the storage volume available at the crest of riser. In other words, all 11 acres of drainage area could be routed through the pond without topping the crest of riser at the designed storage volume (50,908 cu. ft.). Therefore, during discussions with Bill Cain, it was agreed that since the pond as designed could accommodate the 11 acres of runoff at the storage volume sized for 5 acres, all 11 acres could count towards meeting the JCC 10 point criteria.

However, upon review of as-built record drawings, the volume to the crest of riser is actually only 24,367 cu. ft. and equates to 2.4 acres of runoff during the 1-year storm of 2.8 inches. Yet, the 11 acres was still adequately handled by the pond and the 1-year storm volume is still below the crest of riser. Therefore, per conversations with Bill Cain on December 04, 2009, the 11 acres still count towards the JCC 10 point criteria and the achieved total of 10.86 points (as shown on the approved Stormwater Management Master Plan, dated December 18, 2007) is still valid.

As supporting information, BMP #2 Stage-Storage-Discharge relationships and routing calculations for the 1, 2, 10, 25, and 100-year storm events are provided.

Please refer to the drawings for additional plan and detail information.



Calculated by: H LPG
 Date: 17-Aug-08
 Revised 10/24/2008
 5/31/2009
 12/7/2009*

Project No: 0501a
 Bryant Properties

STORMWATER MANAGEMENT POND DESIGN
E&S Plan # 001-07

Extended Dry Detention Basins:

	Drainage Area to Pond for Treatment (ac.)	JCC 1-Yr Rainfall (in.)	Storage Volume Required at Crest of Riser (ft^3)	Max. Volume Stored During 1-Yr Storm from Routing Computations (ft^3)	Peak Discharge Rate of 1- Yr Storm from Routing Computations (cfs)	Minimum Drawdown of Required Volume (hrs.)	Minimum Drawdown Duration of 1-Yr Storm Volume (hrs.)
BMP #1	15	2.8	152,460	33,939	0.624	122.1	15.1
BMP #2	11	2.8	111,804	18379*	0.451*	86.2*	11.3*

Calculated By: HLPG Date: 9/8/2007

PROJECT NO. 0501a
PROJECT DESC. Site Plan

REVISED: 12/7/2009

Bryant Properties

STORMWATER MANAGEMENT POND DESIGN
BMP #2

BASIN STORAGE VOLUME:					PRINCIPAL SPILLWAY:				STAGE-DISCHARGE-STORAGE:										
ELEV.	AREA (FT)	SUM (A1+A)/2	VOL. (CU.FT)	SUM VOL. (CU.FT)	RISER	ORIFICE DIA. (IN)	BARREL DIA. (IN)	BARREL LEN. (FT)	ELEV.	STAGE (FT)	H _{ES} (FT)	Q _{ES} (CFS)	H _p (FT) -or- Hr (FT)	Q _p (CFS)	H _o (FT)	Q _o (CFS)	SUM Q (CFS)	TOTAL STORAGE (FT^3)	
85	0	-	-	-	48	3	18	144	85	0	-	-	-	-	-	-	-	-	
86	4876	2438	2438	2438	BARREL AREA, A (SQ.FT) = 1.76625				86	1	-	-	-	-	0.875	0.22	0.22	2438	
88	6432	5654	11308	13746	ORIFICE AREA, A (SQ.FT) = 0.04906				87	2	-	-	-	-	1.875	0.32	0.32	7043	
90	8242	7337	14674	28420	n = 0.013				88	3	-	-	-	-	2.875	0.40	0.40	13100	
92	10458	9350	18700	47120	C = 0.6				89	4	-	-	-	-	3.875	0.47	0.47	20347	
94	12815	11637	23273	70393	Q = CA(84.4*H _o) ^{0.5}				89.5	4.5	-	-	-	-	4.375	0.49	0.49	24367	
					BARREL INV.OUT = 82.1				C.R.	90	5	-	-	0.5	14	4.875	0.52	14.5	28630
					CORRECTION FACTOR = 0.83				INV. OF E.S.	91	6	-	-	8.2	19.7	5.875	0.57	19.7	37846
					(FROM VESCH, TABLE 3.14-A)				TOP OF DAM	92	7	-	-	9.2	20.9	6.875	0.62	20.9	47916
					EMERGENCY SPILLWAY:				93	8	1	42	10.2	22	7.875	0.66	64	58781	
					WIDTH (FT) = 10				94	9	2	201	11.2	23.0	8.875	0.70	224	70393	
					SIDE SLOPES (H:V) = 1:1														
					LONGITUDINAL SLOPE (%) = 0														
					Q = 9.739WH ^{3/2}														
STORAGE ALGORITHM:																			
Z1 =	1	S1 =	2438	S2/S1 =	28.8733														
Z2 =	9	S2 =	70393	Z2/Z1 =	9.0														
b = (ln(S2/S1))/(ln(Z2/Z1))		Ks = S2/(Z2 ^b)		S(CU.FT)=Ks(Z ^b)															
b =	1.531	Ks =	2438.00																

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = ¹ YEAR
DRAINAGE AREA (ACRES) = 11
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2
HYDRAULIC LENGTH (FT) = 600
IMPERVIOUS SURFACE (%) = 75
HYDRAULIC LENGTH MODIFIED (%) = 30
COMPOSITE CURVE NUMBER = 93
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .063 HOURS
TIME OF CONCENTRATION ADJUSTED IS .106 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 30 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.025	2.092
.051	6.449
.076	13.181
.101	19.064
.127	23.892
.152	27.547
.178	29.874
.203	28.089
.228	23.354
.254	15.712
.279	9.496
.304	4.777
.33	1.6
.355	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.22	2438
2	.32	7043
3	.4	13100
4	.47	20347
4.5	.49	24367

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS) (C.F.S.)

0.000	0.009
0.025	0.044
0.051	0.124
0.076	0.228
0.101	0.271
0.127	0.321
0.152	0.355
0.178	0.389
0.203	0.415
0.228	0.431
0.254	0.442
0.279	0.448
0.304	0.450
0.330	0.451 - PEAK DISCHARGE
0.355	0.450
0.381	0.450
0.406	0.450
0.431	0.449
0.457	0.449
0.482	0.448
0.507	0.448
0.533	0.448
0.558	0.447
0.584	0.447
0.609	0.446
0.634	0.446
0.660	0.446
0.685	0.445
0.710	0.445
0.736	0.444
0.761	0.444
0.786	0.444
0.812	0.443
0.837	0.443
0.863	0.442
0.888	0.442
0.913	0.442
0.939	0.441
0.964	0.441

MAXIMUM OUTFLOW IS .451 C.F.S.
MAXIMUM STAGE IS 3.728572 FT.
MAXIMUM STORAGE IS 18379 CUBIC FEET

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 11
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2
HYDRAULIC LENGTH (FT) = 600
IMPERVIOUS SURFACE (%) = 75
HYDRAULIC LENGTH MODIFIED (%) = 30
COMPOSITE CURVE NUMBER = 93
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .063 HOURS
TIME OF CONCENTRATION ADJUSTED IS .106 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 39 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.025	2.767
.051	8.519
.076	17.388
.101	25.092
.127	31.371
.152	36.076
.178	39.014
.203	36.594
.228	30.372
.254	20.413
.279	12.324
.304	6.194
.33	2.073
.355	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.22	2438
2	.32	7043
3	.4	13100
4	.47	20347
4.5	.49	24367
5	14.5	28630
6	19.7	37846

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.011
0.025	0.058
0.051	0.163
0.076	0.248
0.101	0.304
0.127	0.350
0.152	0.395
0.178	0.429
0.203	0.459
0.228	0.475
0.254	0.483
0.279	0.487
0.304	0.488
0.330	0.489 ← PEAK DISCHARGE
0.355	0.488
0.381	0.488
0.406	0.488
0.431	0.488
0.457	0.487
0.482	0.487
0.507	0.487
0.533	0.487
0.558	0.487
0.584	0.486
0.609	0.486
0.634	0.486
0.660	0.486
0.685	0.485
0.710	0.485
0.736	0.485
0.761	0.485
0.786	0.485
0.812	0.484
0.837	0.484
0.863	0.484
0.888	0.484
0.913	0.483
0.939	0.483
0.964	0.483

MAXIMUM OUTFLOW IS .489 C.F.S.
MAXIMUM STAGE IS 4.475 FT.
MAXIMUM STORAGE IS 24165 CUBIC FEET

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 10 YEAR
DRAINAGE AREA (ACRES) = 11
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2
HYDRAULIC LENGTH (FT) = 600
IMPERVIOUS SURFACE (%) = 75
HYDRAULIC LENGTH MODIFIED (%) = 30
COMPOSITE CURVE NUMBER = 93
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .063 HOURS
TIME OF CONCENTRATION ADJUSTED IS .106 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 68 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.025	4.918
.051	15.105
.076	30.763
.101	44.25
.127	55.123
.152	63.149
.178	68.011
.203	63.565
.228	52.621
.254	35.315
.279	21.291
.304	10.686
.33	3.571
.355	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.22	2438
2	.32	7043
3	.4	13100
4	.47	20347
4.5	.49	24367
5	14.5	28630
6	19.7	37846
7	20.9	47916

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE

OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.020
0.025	0.102
0.051	0.237
0.076	0.311
0.101	0.374
0.127	0.433
0.152	0.480
0.178	12.002
0.203	16.335
0.228	17.723
0.254	18.255 — PEAK DISCHARGE
0.279	18.141
0.304	17.587
0.330	16.794
0.355	15.950
0.381	15.149
0.406	13.916
0.431	10.284
0.457	7.600
0.482	5.616
0.507	4.151
0.533	3.067
0.558	2.267
0.584	1.675
0.609	1.238
0.634	0.915
0.660	0.676
0.685	0.500
0.710	0.490
0.736	0.490
0.761	0.489
0.786	0.489
0.812	0.489
0.837	0.489
0.863	0.488
0.888	0.488
0.913	0.488
0.939	0.488
0.964	0.488

MAXIMUM OUTFLOW IS 18.255 C.F.S.
 MAXIMUM STAGE IS 5.722115 FT.
 MAXIMUM STORAGE IS 35285 CUBIC FEET

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009
 BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 25 YEAR
 DRAINAGE AREA (ACRES) = 11
 AVERAGE SLOPE OF DRAINAGE AREA (%) = 2
 HYDRAULIC LENGTH (FT) = 600
 IMPERVIOUS SURFACE (%) = 75
 HYDRAULIC LENGTH MODIFIED (%) = 30
 COMPOSITE CURVE NUMBER = 93
 SLOPE ADJUSTMENT FACTOR = 1
 PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .063 HOURS
 TIME OF CONCENTRATION ADJUSTED IS .106 HOURS
 THE PEAK DISCHARGE FROM THIS WATERSHED IS 78 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.025	5.627
.051	17.277
.076	35.173
.101	50.567
.127	62.955
.152	72.07701
.178	77.574
.203	72.461
.228	59.96
.254	40.231
.279	24.249
.304	12.168
.33	4.066
.355	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.22	2438
2	.32	7043
3	.4	13100
4	.47	20347
4.5	.49	24367

5	14.5	28630
6	19.7	37846
7	20.9	47916
8	64	58781

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.023
0.025	0.117
0.051	0.247
0.076	0.327
0.101	0.395
0.127	0.455
0.152	4.108
0.178	16.062
0.203	18.581
0.228	19.800
0.254	19.935 ← PEAK DISCHARGE
0.279	19.916
0.304	19.788
0.330	19.218
0.355	18.253
0.381	17.336
0.406	16.465
0.431	15.638
0.457	14.852
0.482	12.452
0.507	9.202
0.533	6.801
0.558	5.026
0.584	3.714
0.609	2.745
0.634	2.028
0.660	1.499
0.685	1.108
0.710	0.819
0.736	0.605
0.761	0.490
0.786	0.490
0.812	0.489
0.837	0.489
0.863	0.489
0.888	0.489
0.913	0.489
0.939	0.488
0.964	0.488

MAXIMUM OUTFLOW IS 19.935 C.F.S.
MAXIMUM STAGE IS 6.195833 FT.
MAXIMUM STORAGE IS 39818 CUBIC FEET

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

BRYANT POND #2 RE-DESIGN POST DEVEL 07 DEC 2009

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 100 YEAR
DRAINAGE AREA (ACRES) = 11
AVERAGE SLOPE OF DRAINAGE AREA (%) = 2
HYDRAULIC LENGTH (FT) = 600
IMPERVIOUS SURFACE (%) = 75
HYDRAULIC LENGTH MODIFIED (%) = 30
COMPOSITE CURVE NUMBER = 93
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .063 HOURS
TIME OF CONCENTRATION ADJUSTED IS .106 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 97 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

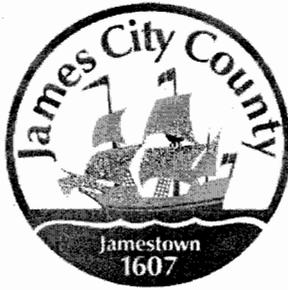
(HOURS)	(C.F.S.)
0,0	
.025	7.037
.051	21.594
.076	43.941
.101	63.126
.127	78.53
.152	89.833
.178	96.598
.203	90.16001
.228	74.565
.254	50.014
.279	30.137
.304	15.118
.33	5.05
.355	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.22	2438
2	.32	7043
3	.4	13100
4	.47	20347
4.5	.49	24367
5	14.5	28630
6	19.7	37846
7	20.9	47916
8	64	58781
9	224	70393

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.029
0.025	0.146
0.051	0.267
0.076	0.352
0.101	0.427
0.127	0.486
0.152	16.004
0.178	19.741
0.203	20.419
0.228	20.872
0.254	26.007 - PEAK DISCHARGE
0.279	24.970
0.304	20.882
0.330	20.684
0.355	20.460
0.381	20.238
0.406	20.019
0.431	19.803
0.457	19.181
0.482	18.218
0.507	17.302
0.533	16.433
0.558	15.608
0.584	14.823
0.609	12.312
0.634	9.098
0.660	6.724
0.685	4.969
0.710	3.672
0.736	2.714
0.761	2.005
0.786	1.482
0.812	1.095
0.837	0.809
0.863	0.598
0.888	0.490
0.913	0.490
0.939	0.489
0.964	0.489

MAXIMUM OUTFLOW IS 26.007 C.F.S.
MAXIMUM STAGE IS 7.118492 FT.
MAXIMUM STORAGE IS 49203 CUBIC FEET



April 21, 2010

Barry Bryant, President
Bryant Contracting Inc.
7754 Richmond Road
Toano, VA 23168

Re: Bryant Contracting Site BMP Number Two

Dear Mr. Bryant,

The Environmental Division has reviewed the record drawing and construction certification information as submitted to our office for the BMP at the above referenced project. The record drawing provides as-built information for the Dry Pond located within the Bryant Contracting Site located at 7754 Richmond Road in Toano, Virginia.

Based on our review of the project and a concurrent field inspection performed on April 20, 2010 the following items must be addressed prior to release of the developer's surety instrument for the drainage and stormwater management facilities and proceeding with closing out the project:

Inspection Maintenance Agreement:

Based on a review of our active file and records for the project the James City County Environmental Division required a Declaration of Covenants to be executed with the County for the BMP facility for this project. After a review of county records, the aforementioned documents are satisfactory.

Construction Certification:

The Construction Certification information and status for the pond is as follows:

Bryant Contracting BMP 2-WC034 (Dry Pond), Dated 3/9/10 Construction Certification;
Satisfactory

Record Drawing:

The Record Drawing information and status for the pond is as follows:

Bryant Contracting BMP 2-WC034 (Dry Pond) Dated 3/9/10; Record Drawing; Satisfactory

Construction-Related:

Bryant Contracting BMP 2 Dry Pond - WC034:

-Repair minor erosion along the eastern interior slopes of the pond and re-stabilize the area.

Once this work has been satisfactorily completed, contact our office so that a re-inspection of the facility may be performed. It is then that the final release of surety and closing out the project may be performed. After the above items are adequately addressed, one reproducible and one blue/black line set of the record drawings must be submitted to the Environmental Division per county requirements.

If you have any further comments or questions, please feel free to contact me at 253-6839, or the Chief Engineer, Bill Cain at (757) 253-6702.

Sincerely,



Michael Majdeski
Senior Environmental Inspector
JCC Environmental Division
(757) 253-6839
mmajdeski@james-city.va.us

MPM

CC: Bill Cain, Chief Engineer; JCC Environmental Division

P.O. Box 1000 • 7754 Richmond Road • Toano, VA. 23168-1000
Tele: (757) 566-0400 • Fax: (757) 566-8155

Date: March 10, 2010

To: James City County
Environmental Division
Att: Bill Cain
P. O. Box 8784
101-E Mounts Bay Road
Williamsburg, VA 23187-8784

RE: Bryant Contracting Complex
Record Drawing for BMP#2

SP-0106-2008

The following items are being transmitted:

Via: Mail Overnight XXX Hand-delivery Fax Area code Fax Number

Pages	Copies	Description
1	1	Record Drawing for BMP#2 plan
8	1	Record Drawing and Construction Certification Forms
17	1	Storm Water Management Summary Revised 12/07/2009
5	1	MacWrap exterior joint seal used on 18"RCP outfall pipe in addition to standard gaskets
2	1	Trash Rack Product Data

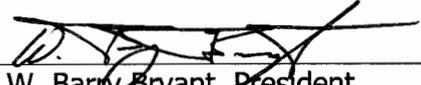
Environmental Division
MAR 11 2010
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These items are transmitted as checked below:

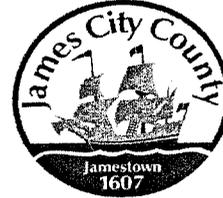
- | | |
|--|--|
| <input type="checkbox"/> For your use | <input type="checkbox"/> Approved as submitted |
| <input type="checkbox"/> As Requested | <input type="checkbox"/> Approved as noted |
| <input checked="" type="checkbox"/> For approval | <input type="checkbox"/> For your review and comment |
| <input type="checkbox"/> For progress estimate payment | <input type="checkbox"/> Other <input type="text"/> |

Remarks:

Copy To: File

Signed: 
Name/Title: W. Barry Bryant, President

ENVIRONMENTAL - STORMWATER
TRANSMITTAL



COUNTY PLAN NO: E+S-01-07

BMP ID CODE: WC034

WATERSHED: WARE Creek

- ENTIRE RECORD FILE
 - ASBUILTS
 - CONSTRUCTION CERTIFICATION
 - COMPUTATIONS
 - OTHER: MYLAR INCLUDED
- _____
- _____
- _____

NAME: Mike MASTESKI

SIGNATURE: [Signature]

DATE: 12/21/10



James City County Environmental Division Stormwater Management / BMP Inspection Report Detention and Retention Pond Facilities

County BMP ID Code (if known): WC034

Name of Facility: BRYANT CONTRACTING BMP No.: 2 of 2 Date: 4/13/2010

Location: ADJACENT TO ROUTE 60 AND ANTIQUE SHOP, TOANO VA

Name of Owner: BRYANT CONTRACTING

Name of Inspector: M. MATJESKI

Type of Facility: DRY DETENTION BASIN

Weather Conditions: SUNNY 68° Type: Final Inspection County BMP Inspection Program Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

- O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
- Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
- Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:				
Grass Height		✓		
Vegetation Condition		✓		
Tree Growth	✓			
Erosion		✓		MINOR EROSION ISSUES
Trash & Debris	✓			
Seepage	✓			
Fencing or Benches	✓			
Interior Landscaping/Planted Areas: <input type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input type="checkbox"/> Naturally Established Vegetation				
Vegetated Conditions	✓			
Trash & Debris	✓			
Floating Material				N/A
Erosion	✓			
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: <input type="checkbox"/> Permanent Pool (Retention Basin) <input type="checkbox"/> Shallow Marsh (Detention Basin) <input checked="" type="checkbox"/> None, Dry (Detention Basin)				
Shoreline Erosion				
Algae				
Trash & Debris				
Sediment				
Aesthetics				
Other				
Inflows (Describe Types/Locations):				
Condition of Structure	✓			
Erosion	✓			
Trash and Debris	✓			
Sediment	✓			
Outlet Protection	✓			
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type):				
Condition of Structure	✓			
Corrosion	✓			
Trash and Debris	✓			
Sediment	✓			
Vegetation	✓			
Other				
Principal Outlet Structure - Barrel, Conduit, etc. :				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris	✓			
Erosion/Sediment	✓			
Outlet Protection	✓			
Other				
Emergency Spillway (Overflow): N/A				
Vegetation				
Lining				
Erosion				
Trash & Debris				
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other				
Surrounding Perimeter Conditions:				
Land Uses	✓			
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			
Access /Maintenance Roads or Paths	✓			GOOD ACCESS
Other				
Remarks:				
<ul style="list-style-type: none"> - MINOR SIDE SLOPE EROSION - MINOR NON-VEGETATIVE AREAS ON EAST SIDE OF POND 				
Overall Environmental Division Internal Rating: <u>3/5</u>				
Signature: <u>Kevin P. Mc</u>			Date: <u>4/20/10</u>	
Title: <u>SR. ENVIRONMENTAL INSPECTOR</u>				

SWMPProg\BMP\ColnspProg\InspForms\DetRet.wpd

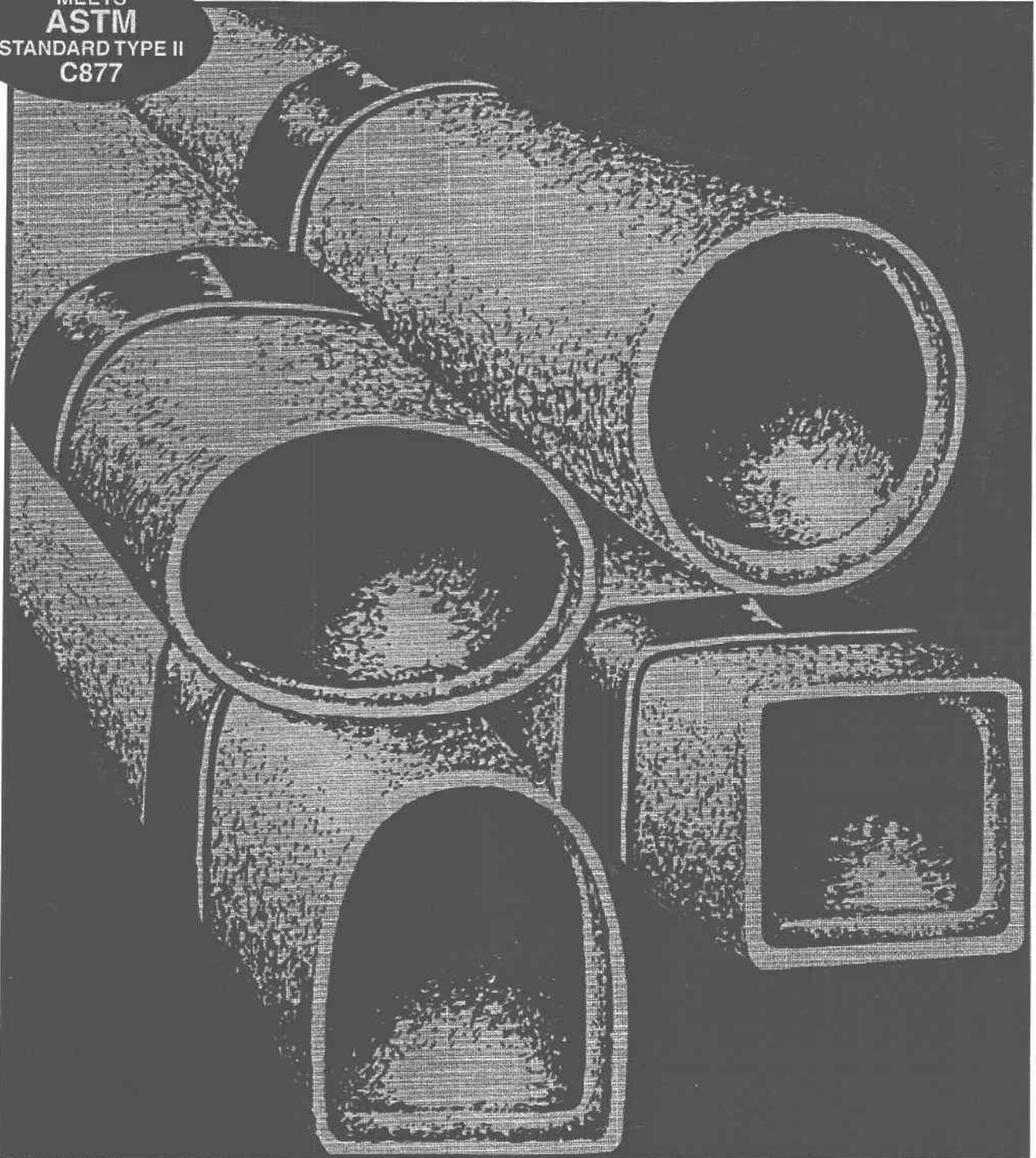


MACWRAP

an exterior joint seal for

ROUND, ARCHED, ELLIPTICAL, CULVERT PIPE

MEETS
ASTM
STANDARD TYPE II
C877



Enviro

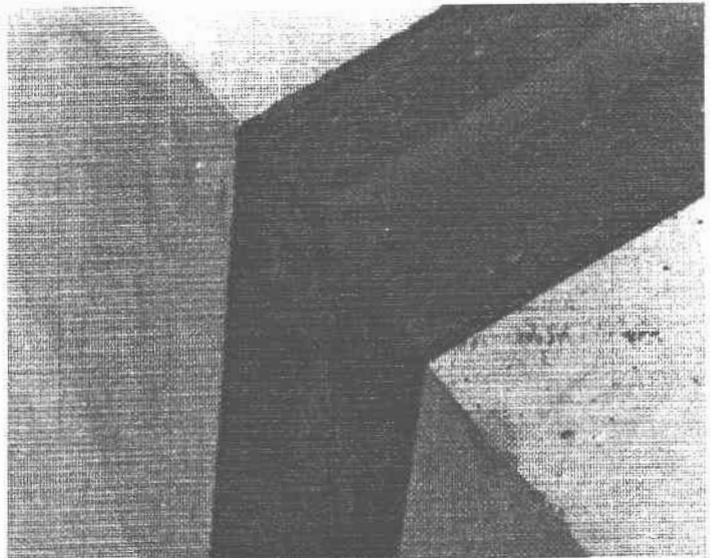
MAR 11 2010



MACWRAP

provides a permanent watertight barrier.

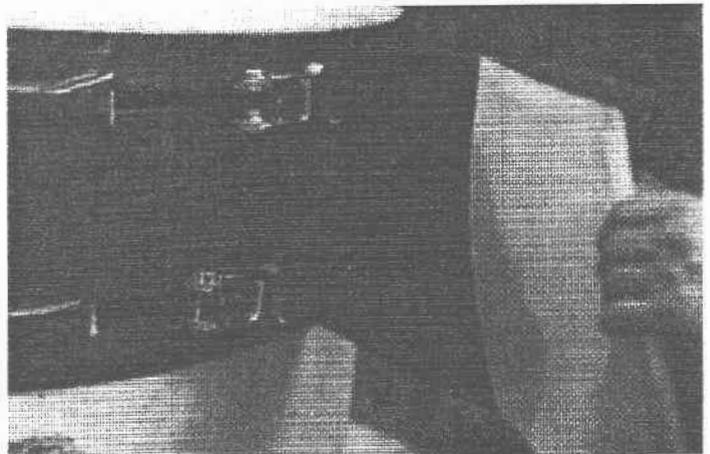
MacWrap consists of a specially formulated rubberized mastic that flows into the concrete and becomes a part of the pipe wall.



MACWRAP

is positively sealed to the pipe with steel compression bands.

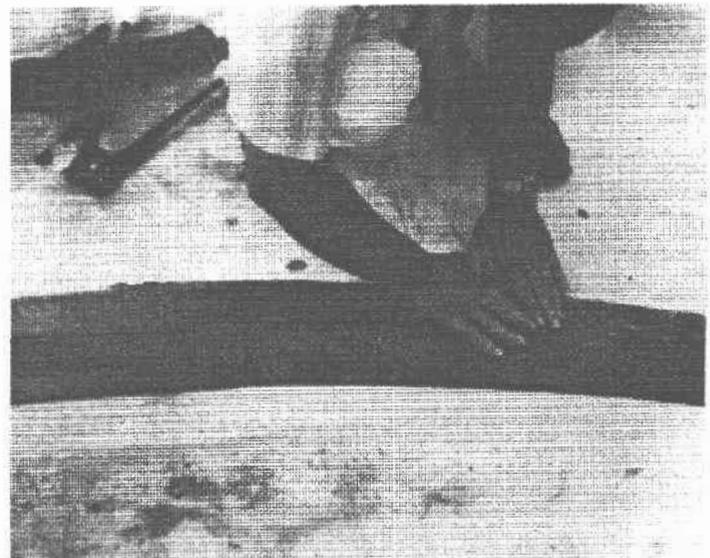
MacWrap collar is secured around the pipe with steel compression bands on each side of the joint. These bands compress the mastic undersurface of the collar into the surface of the pipe wall, providing a positive seals.



MACWRAP

is strong.

MacWrap is manufactured with an internal reinforcing, woven polypropylene, that makes MacWrap puncture and shear resistant.



MACWRAP

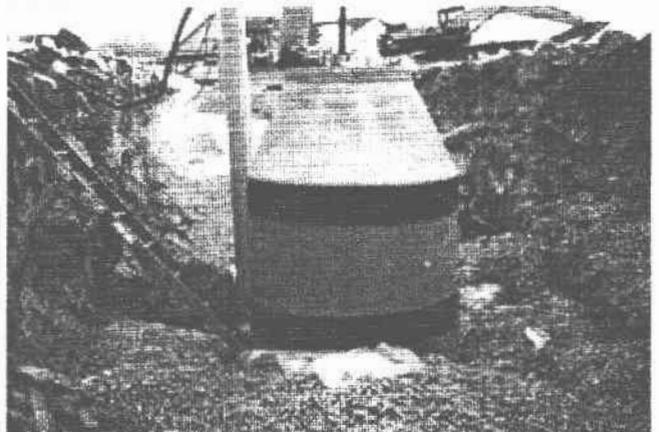
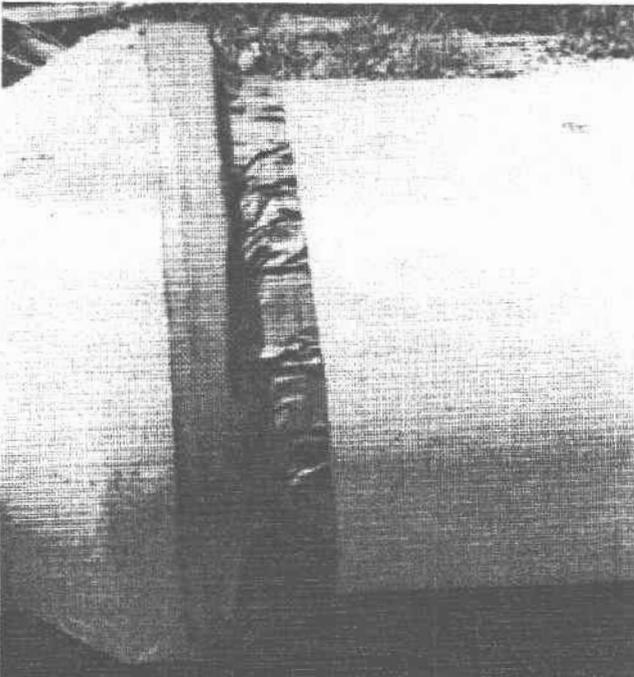
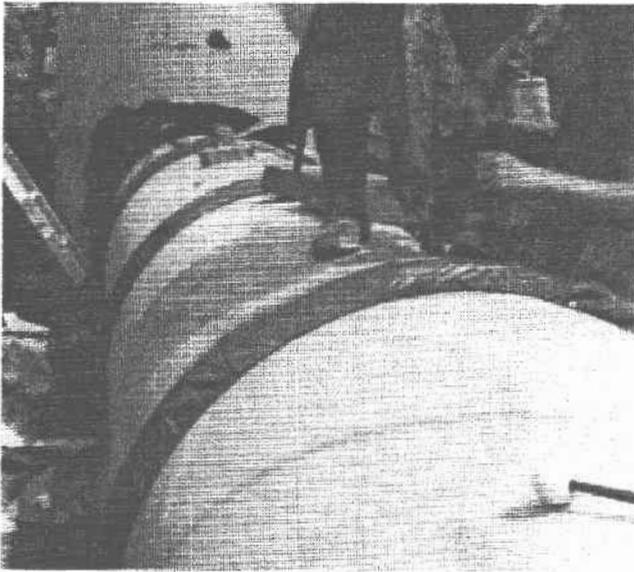
is permanent.

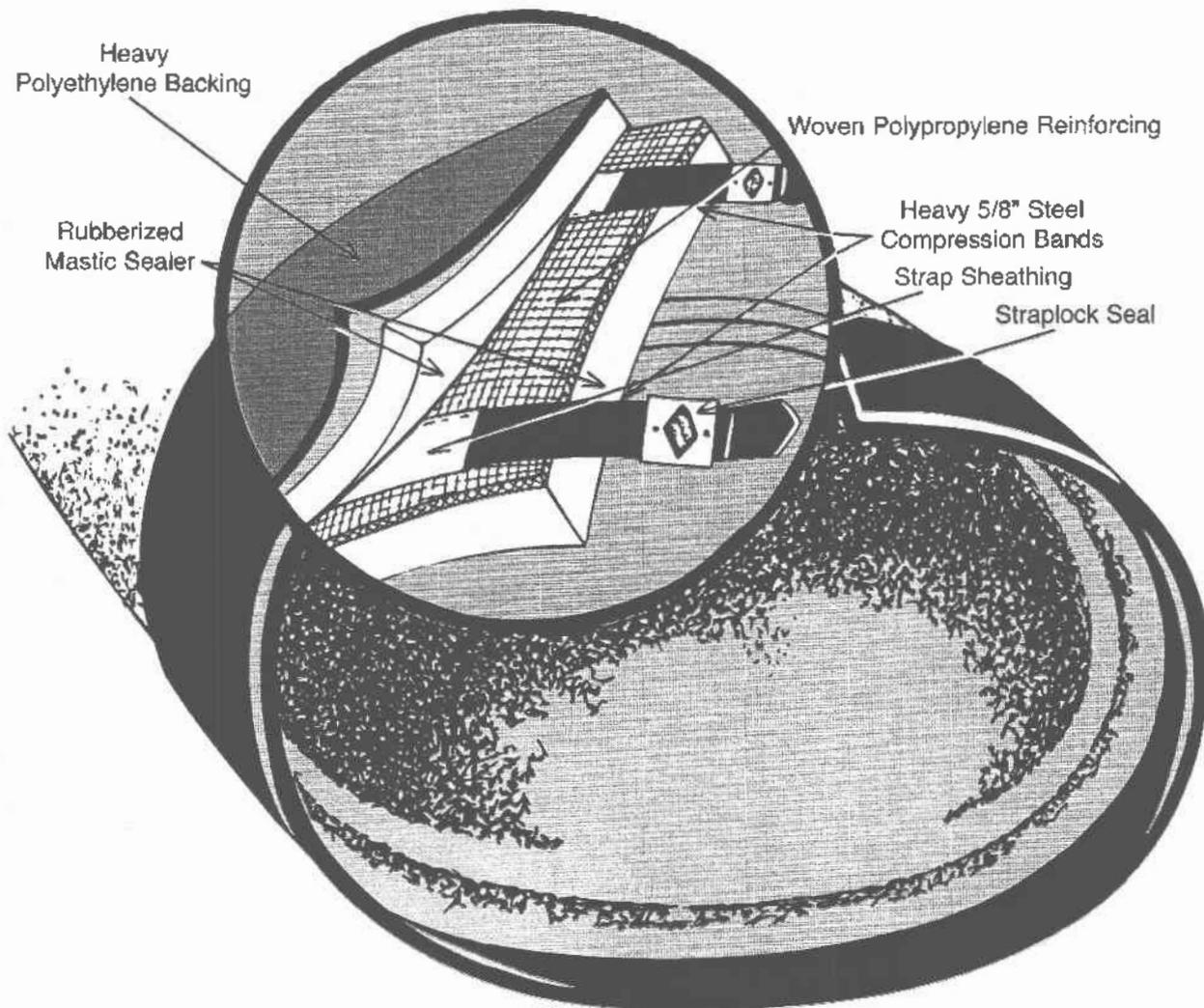
The MacWrap collar is highly resistant to acids and alkalines. When the joint is finished the steel compression bands are embedded within the collar and are protected from corrosion.



MACWRAP

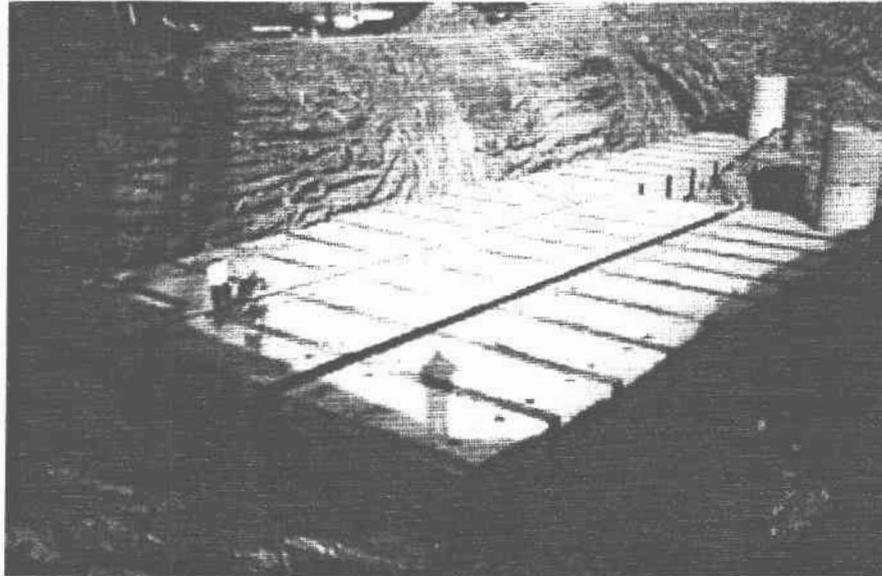
COLLARS ARE USED ON ROUND PIPE; ELLIPTICAL PIPE; BOX CULVERTS; ARCHED PIPE; TONGUE AND GROVE JOINTS; BELL AND SPIGOT JOINTS; AS A MATTER OF FACT, THERE ARE FEW JOINTS THAT CAN'T BE SEALED WITH A MAC WRAP EXTERIOR PIPE JOINT COLLAR.





The MacWrap collar is made with an outer cover of impervious and chemical resistant polyethylene. With a layer of specially formulated rubberized mastic that is reinforced with a tough, high strength, shear and puncture resistant internal polypropylene reinforcing fabric. Steel compression bands are sheathed in isolation tubes allowing the bands to tension inside the mastic and around the pipe.

TYPICAL PROPERTIES			
Polyethylene Backing -	Tensile strength, min, psi	- 4,000	-D882, Method A
	Elongation at break, min, %	-100	-D882, Method A
	Tear resistance, min, psi	-1,500	-D624, Die C
	Water absorption, max, %	-0.01	-D570
	Reinforcing Mesh Element-	Tensile strength, min, lb, in.	
	Warp 75		
	Fill 75		
	Elongation at break, min, %		
	Warp 20		
	Fill 20		



Sample Specification for Mac Wrap External Joint Seal For Concrete Pipe

All pipe joints shall be installed with an exterior joint collar. The joint collar shall be Mac Wrap Exterior Joint Seal as manufactured by Mar Mac Construction Products Company or an approved equal and shall be installed according to the manufacturer's recommendations. The collar shall consist of a band (*)" wide. The band shall have an outer cover of polyethylene with an under layer of rubberized mastic that is reinforced with a woven polypropylene. There shall be a peelable protective release film against the mastic that is removed when the collar is applied to the joint. Within the collar two steel compression bands 5/8" wide shall be located a minimum of 3/4" from each edge of the band. The straps shall be in tubes that isolate them from the mastic and allow them to slip freely when tightened around the pipe. The collar shall be designed so that when it is applied around the joint the ends overlap at least 6". When the straps are secured, the work closure flap shall completely cover the straps protecting them from moisture and corrosion. A bell hole shall be dug under the joint. The collar shall be placed around the pipe, mastic side to the joint, and the protective release film shall be removed. The steel strap shall be secured with preinstalled ratchets or proper tools. The closing flap shall cover all remaining exposed straps, completing the joint.

*9" width is usually wide enough for pipe with smooth outside walls in diameters up through 78" I.D. 12" and 14" widths are used on full bell joints and box culverts, depending on the pipe and bell size.

Other quality products for the construction industry by Mar-Mac Construction Products, Co.

- Mar-Mac Grout Bands forms for grouting pipe joints
- Filter fabric jackets, custom fit, stay-in-place filtration to stop silt and soil from entering the joint.
- Custom jointing products for above ground, contaminated soils, and repairs.

Environmental Division

MAR 11 2010

PO Box 4386 Winchester, VA 22604
Toll Free: 877.877.5727 * Fax: 540.722.2219

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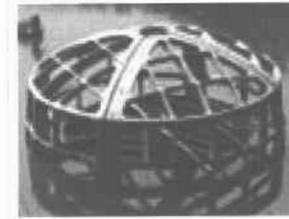
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Round Series Trash Racks

Our round series racks are the perfect water screening solution for round structures made out of concrete, metal or HDPE pipe. Like all Plastic Solutions products, these fiberglass reinforced, UV stabilized HDPE trash racks will never rust, are a fraction of the weight of re-bar racks, are *maintenance free*, cost less and are covered by a *limited one year warranty*.



We pride ourselves on our innovative and broad-reaching fabrication abilities; our professional staff has the answers for your questions and the expertise to make your design a reality!

Round Series Trash Rack Files

24" Metal or Plastic Riser: [CAD](#) [PDF](#)

Concrete Riser: [CAD](#) [PDF](#)

36" Metal or Plastic Riser: [CAD](#) [PDF](#)

Concrete Riser: [CAD](#) [PDF](#)

48" Metal or Plastic Riser: [CAD](#) [PDF](#)

Concrete Riser: [CAD](#) [PDF](#)

60" Metal or Plastic Riser: [CAD](#) [PDF](#)

Concrete Riser: [CAD](#) [PDF](#)

Metal or Plastic Riser Cut Sheet: [PDF](#)

Concrete Riser Cut Sheet: [PDF](#)

Metal and HDPE pipe kit installation instructions.

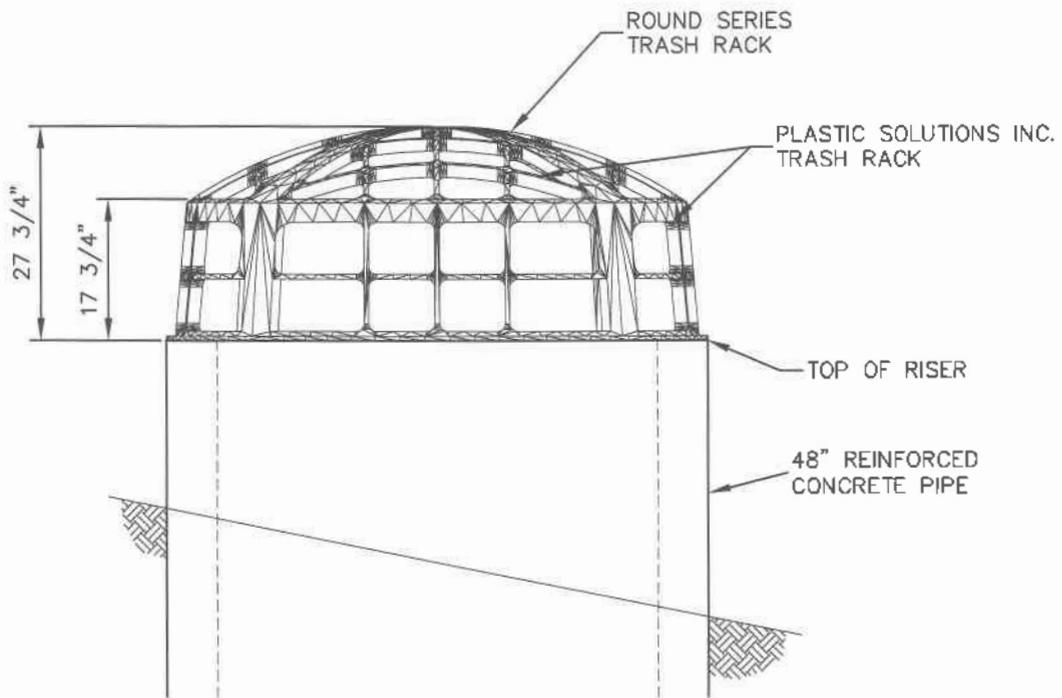
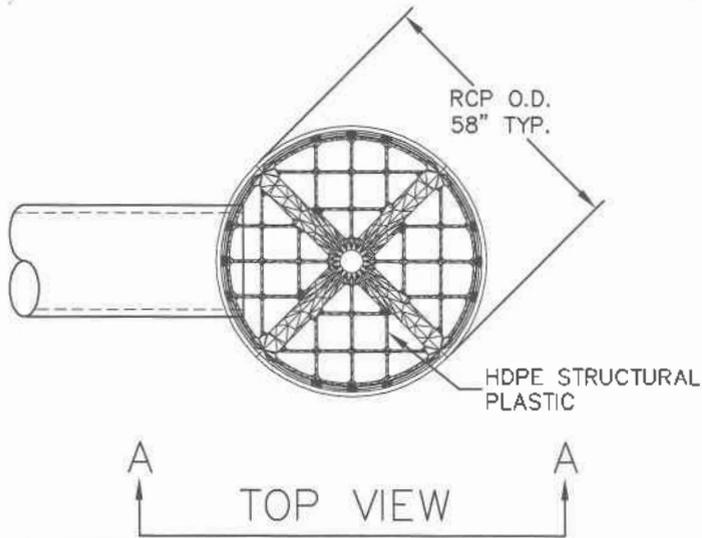
Interested in purchasing a trash rack? Please see our distributor page for more information.

A free CAD viewing application, [DWG TrueView](#), may be downloaded via the AutoDesk Web site.

A free PDF viewing application, [Adobe Reader](#), may be downloaded via the Adobe Web site.



Developed by Corner Web Studio 2008



ELEV. A-A

PART NO	48" ROUND SERIES TRASH RACK WITH CONCRETE RISER		240 McGhee Road P.O. Box 4386 Winchester, VA 22604 540-722-4694 www.plastic-solution.com
RS-48			