



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.

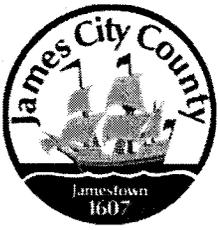
BMP NUMBER: YR007

DATE VERIFIED: April 18, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 10, 2010
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jo Anna Ripley, Stormwater
PO: 270712
RE: Files Approved for Scanning

General File ID or BMP ID: YR007

PIN: 3330100031

Subdivision, Tract, Business or Owner

Name (if known):

Richardson, Philip O Limited Liability Partnership

Property Description:

Was Tarmac Mid Atlantic

Site Address:

5301 Mooretown Road

(For internal use only)

Box 9

Drawer: 5

Agreements: (in file as of scan date)

Y

Book or Doc#:

608

Page:

840-842

Comments

34A

VA031/Williamsburg FILE - TARMAC CONCRETE PLANT

DECLARATION OF COVENANTS

BOOK 608 PAGE 840

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 19th day of February, 1993, between Tarmac Mid-Atlantic, Inc., and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: 5301 Mooretown Road, Tax Parcel (33-3) (1-31), Further described in Exhibit A attached and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

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 runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public rights-of-way to the FACILITY 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 FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY 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 FACILITY 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 FACILITY.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. 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 FACILITY.

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

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 19th day of February, 1993.

COVENANTOR(S)
TARMAC MID-ATLANTIC, INC.

By: [Signature]
John D. Carr

ATTEST:

[Signature: Susan D. Bantelimer]
(Assistant) Secretary

COVENANTOR(S)

ATTEST:

STATE OF VIRGINIA
CITY/COUNTY OF Norfolk

I hereby certify that on this 19th day of February 1993, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of Norfolk, aforesaid personally appeared before me John D. Carr, President of Tarmac Mid-Atlantic, Inc.
(Name of Acknowledging Party)

and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 19th day of February, 1993.

[Signature: Willard H. Jolley]
Notary Public

My Commission expires: 08-31-95

Approved as to form:

[Signature: Leo P. Rogers]

0261U
Revised 3/91

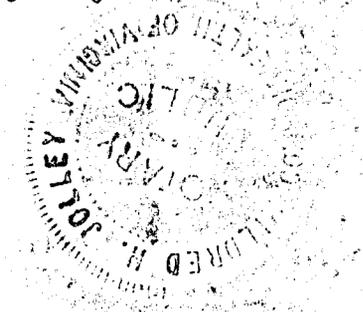


EXHIBIT A

All that certain tract or parcel of land situated in the Berkeley District of James City County, Virginia and described as; beginning at an iron rod on the westerly right-of-way of Mooretown Road (Route 603) corner to this parcel and to parcel "B", owned by Benson Phillips Company, Inc. thence along the westerly right-of-way of Mooretown Road (Route 603) on a curve to the left having a radius of 520.77' and a length of 178.79' to a point, thence S00°10'00"W 286.08' to a point, thence along a curve to the left having a radius of 669.71' and a length of 179.62' to a point, thence S15°12'00"E 18.06' to an iron rod on the right-of-way of Mooretown Road, corner to this property and Mr. Jump, thence along the line of Jump, S75°10'23"W 142.54' to an iron rod, corner with this property, and Jump, and being on the easterly right-of-way of the CSX Railroad, thence along the right-of-way of CSX Railroad N13°10'W 901.33' to an iron rod, on the right-of-way of CSX Railroad corner to this property and to parcel "B", thence along parcel "B", owned by Benson Phillips Company, Inc. S61°55'30"E 392.89' to an iron rod the point of beginning. Said parcel contains 3.731 acres and is as shown on a plat prepared by AES Consulting Engineers, dated July 23, 1992.

VIRGINIA: City of Williamsburg and County of James City, to Wit:

In the Clerk's office of the Circuit Court of the City of Williamsburg and County of James City the

17 day of March, 1993 This Declaratory
Declaratory was presented with certificate annexed and
 admitted to record at 3:43 o'clock
 Teste: Helene S. Ward, Clerk
 by [Signature]
 Deputy Clerk



FILE -

Tarmac Mid-Atlantic, Inc.
P.O. Box 2016 • Norfolk, VA 23501 • 804-858-6500
FAX: 804-855-2919

February 25, 1993

Mr. Michael A. Freda
Planner
Dept. of Development Management
James City County
101 E. Mounts Bay Road
Williamsburg, VA 23187-3627



Re: Case No. SP-90-92 Tarmac - Ready Mix Concrete Plant

Dear Mr. Freda:

Please find enclosed an executed inspection and maintenance agreement between James City County and Tarmac Mid-Atlantic, Inc. This agreement will satisfy Condition No. 4 for the establishment of a "More Restricted Nonconforming Use" listed under General Notes in Tarmac's site plan.

If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Richard D. Pluta".

Richard D. Pluta
Director of Technical Services

/pt

Encl.

cc: John Carr
Hardy Johnson

VDOT LANDSCAPING REQUIREMENT

DUE TO FUTURE SIGHT DISTANCE PROBLEMS, NO BUSHES EXCEEDING 18" AND ALL TREES MUST BE TRIMMED AND LIMBED TO A MAXIMUM HEIGHT OF 6' WITHIN THE MEDIANS.

PLANTING SCHEDULE

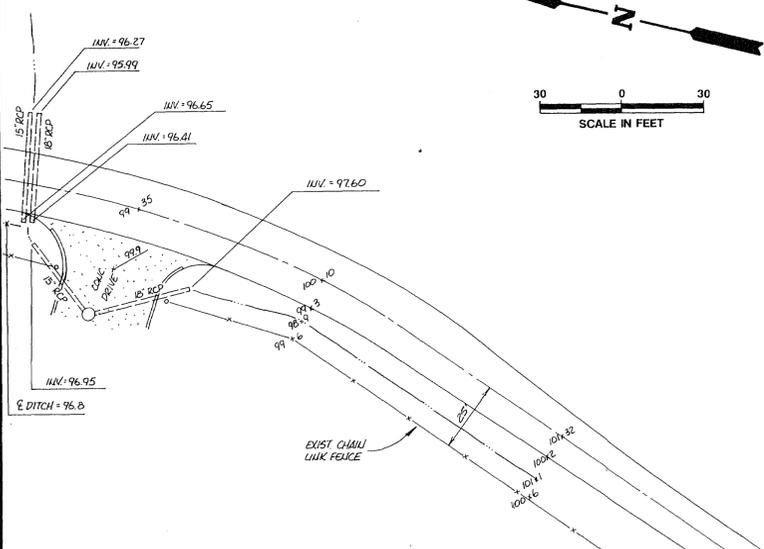
KEY NO.	BOTANICAL NAME	COMMON NAME	CALLER	HEIGHT	COMMENTS
AR 5	ACER RUBRUM	RED MAPLE	2-1/2"		B & B
AS 17	ACER SACCHARUM	SUGAR MAPLE	2-1/2"		B & B
FP 9	FRAXINUS PENNSYLVANICA	CITRIN ASH	2-1/2"		B & B
QP 5	QUERCUS PALUSTRIS	PIN OAK	2-1/2"		B & B
TD 7	TAXODIUM DISTICHUM	BALD CYPRESS	1-1/2"		B & B
LCB 10	ILEX CORNUTA 'BURFORDI'	BURFORD HOLLY	1-1/4"	8'	
PT 19	PLINUS TILIA	LOBLOLLY PINE	1-1/4"	8'	
CK 12	CORNUS KUSA	KUSA DOGWOOD	1-1/4"	8'	
LI 16	LAGERSTROEMIA INDICA	CRAPE MYRTLE	M.S.	8'	M.S. - MULTISTEM
PC 7	PIRANUS CERASIFERA	PURPLELEAF FLOM	1-1/4"	8'	
SHRUBS					
MR 68	MYRTICA CERIFERA	WAX MYRTLE		48"	
JH 4	JUNIPERUS HORIZONTALIS	BLUE PACIFIC JUNIPER		48"	
PF 167	PHOTINIA FRASERI	FRASER PHOTINIA		48"	
CL 100	CUPRESSOCYPRIS LEYLANDII	LEYLAND CYPRESS		48"	MODIFICATION

NOTES:

ALL REQUIRED PLANTINGS SHALL CONFORM WITH THE MOST RECENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERIES AND SHALL BE PLANTED IN ACCORDANCE WITH THE MOST RECENT EDITION OF GUIDELINES FOR PLANTING LANDSCAPE TREES AND SHRUBS PUBLISHED BY THE VIRGINIA COOPERATIVE EXTENSION SERVICE, VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY.

LANDSCAPE CALCULATIONS

	TREES	SHRUBS
PERIMETER AREA =	40,804 S.F.	102
BUILDING AREA =	1,000 S.F.	25
PARKING LOT =	20 SPACES	4
REQUIRED PROVIDED	106	339
REQUIRED PROVIDED	107	339



SITE STATISTICS

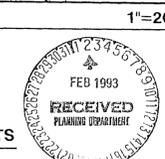
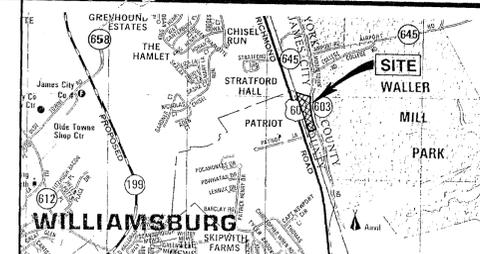
	EXISTING		PROPOSED	
	S.F.	%	S.F.	%
AREA UNDER BUILDING	162,510	100.00	162,510	100.00
IMPERVIOUS (INCLUDES PARKING, DRIVES, PLANT STRUCTURE, WASTE AREAS)	112,910	69.48	96,934	59.65
LANDSCAPED OPEN SPACE	49,600	30.52	65,576	40.23

LIGHTING NOTES

- LIGHTING SHALL BE ADJUSTED OR HAVE GLARE SHIELDS INSTALLED IF IT OBJECTIONABLY GLARES ONTO ADJACENT PROPERTY.
- LOW HEIGHT LIGHTING (PARKING LOT AND SECURITY) WILL GENERALLY OPERATE DURING HOURS OF DARKNESS.
- HIGH HEIGHT LIGHTING WILL OPERATE ONLY DURING NIGHTTIME OPERATION OF PLANT.

GENERAL NOTES

- PROPERTY IS ZONED M-1 PARCEL IS (33-3) (1-31) A SUBDIVISION PLAT IS CURRENTLY FILED BY TARMAC AND IS UNDER REVIEW.
- THE ZONING ADMINISTRATOR HAS MADE THE FOLLOWING DETERMINATION WITH RESPECT TO THIS PROPERTY:
ESTABLISHMENT OF THE "MORE RESTRICTED NONCONFORMING USE" ON THIS PROPERTY SHALL BE SUBJECT TO THE FOLLOWING CONDITIONS:
 - YOU MUST FILE AND GAIN APPROVAL OF THE REBUDIVISION OF PARCELS (1-22), (1-23), AND (1-31), FOUND ON JAMES CITY REAL ESTATE TAX MAP (31-3) IN A MANNER AS SHOWN APPROXIMATELY ON THE CONCEPTUAL PLAN #3, DATED JANUARY 1992, SO AS TO ELIMINATE THE PROPERTY LINE BETWEEN PARCELS 22 AND 23 WHICH BISECTS THE EXISTING BUILDINGS.
 - YOU MUST FILE AND GAIN APPROVAL OF A SITE PLAN IN ACCORDANCE WITH ARTICLE II OF THE ZONING ORDINANCE. LANDSCAPING AND SCREENING AS REQUIRED BY THE ORDINANCE MUST BE PROVIDED, UNLESS MODIFICATIONS OR SUBSTITUTIONS ARE APPROVED BY THE PLANNING DIRECTOR AND COMMISSION.
 - THE SITE PLAN MUST PROVIDE DRAINAGE DETAILS WITH RUNOFF CONTROLLED FROM ALL IMPERVIOUS SURFACES. RUNOFF CONTROL FACILITIES SUFFICIENTLY SIZED FOR NO DISCHARGE (CONTROL OF A 25 YEAR STORM OF 24 HOUR DURATION) FOR ALL WASH AREAS, WASTE STORAGE AREAS, AND CEMENT STORAGE AND LOADING AREAS SHALL BE PROVIDED. STORMWATER FROM THE REMAINING AREAS OF THE SITE SHALL BE CONTROLLED AS REQUIRED FOR QUANTITY AND QUALITY IMPROVEMENTS.
 - AN INSPECTION AND MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE COUNTY AND OWNER FOR THE RUNOFF CONTROL FACILITIES. THE AGREEMENT SHALL ADDRESS THE OWNERS RESPONSIBILITY TO MONITOR ANY STORMWATER DISCHARGE AND TREAT THE PH IF LEVELS EXCEED PERMITTED REQUIREMENTS OF THE STATE WATER CONTROL BOARD.
 - THE OWNER SHALL FURNISH EVIDENCE OF COMPLIANCE WITH ANY REQUIRED NPDES PERMIT, OR EVIDENCE THAT NONE IS REQUIRED FOR ANY DISCHARGE.
 - THE SITE PLAN SHALL INDICATE CONNECTION TO PUBLIC WATER AND SEWER.
 - THE PRIOR USE OF THIS PROPERTY WAS FOR A CONCRETE PLANT AND A WASTE CONCRETE DUMP.
 - ALL UTILITIES TO BE UNDERGROUND.
 - THE TWO STORY CONTROL BUILDING CONTAINS BATHROOM AND ELECTRIC EQUIPMENT ON FIRST STORY AND OPERATIONS CONTROL ON SECOND STORY. BUILDING TYPE IS F-2 FACTORY AND INDUSTRIAL-LOW AND CONSTRUCTION IS 5B COMBUSTIBLE UNPROTECTED.
 - PARKING REQUIREMENT - MAX 11 EMPLOYEES INCLUDING TRUCK DRIVERS - 6 SPACES REQUIRED/12 SPACES PROVIDED



INDEX OF SHEETS

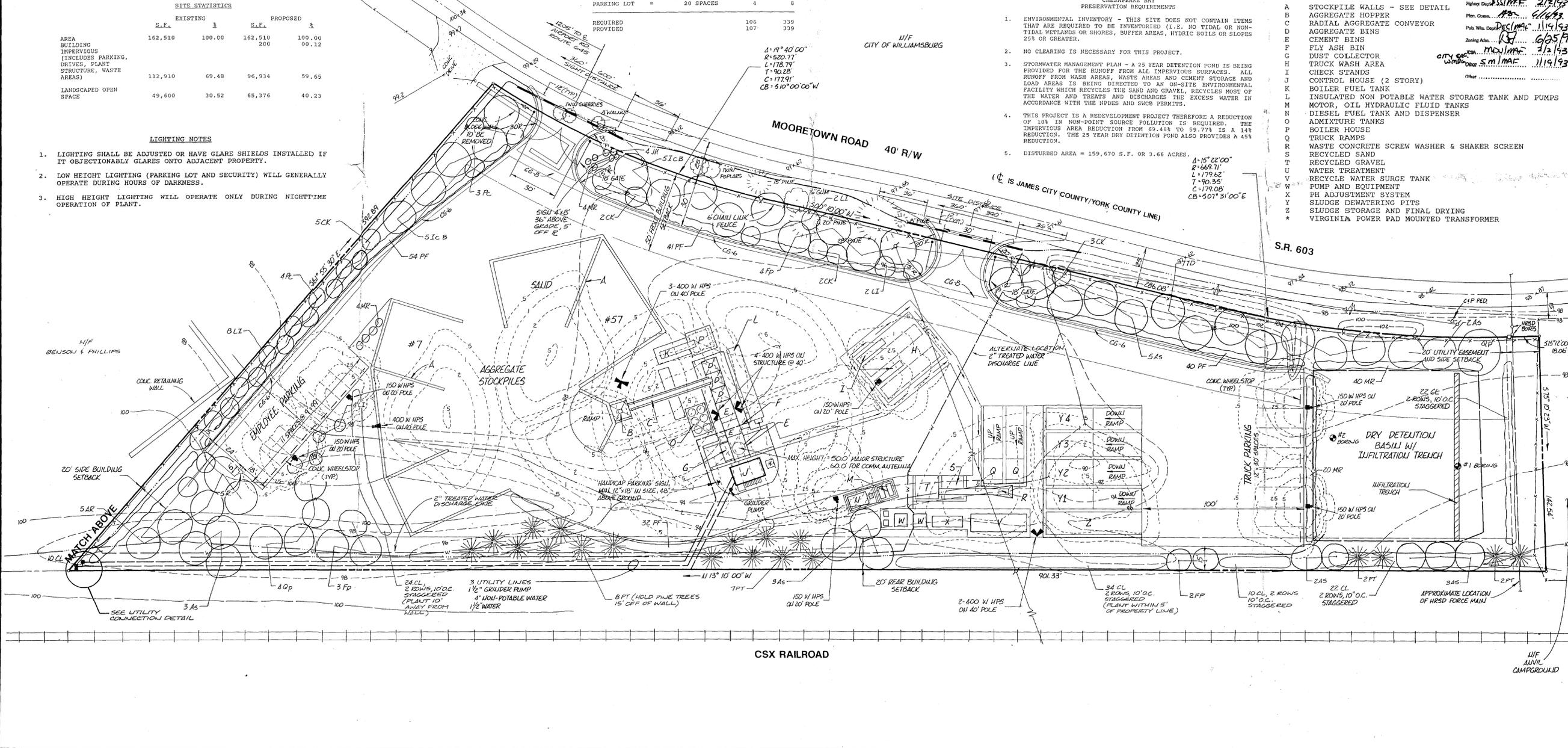
- SITE, UTILITIES AND LANDSCAPING PLAN
 - GRADING AND EROSION CONTROL PLAN
 - NOTES AND DETAILS
- SD-4 STANDARD GRINDER PUMP NOTES AND DETAILS**

COUNTY OF JAMES CITY FINAL SITE PLAN

APPROVALS	DATE
Proj. Dir. <i>R.M. IMAE</i>	11/15/93
Health Dept. <i>J.M. IMAE</i>	9/13/92
Highway Dept. <i>J.M. IMAE</i>	2/2/92
Plan. Comm. <i>A.P.</i>	6/16/93
Pub. Works Dept. <i>Declinae</i>	11/14/93
Zoning Adm. <i>BS</i>	6/25/93
City Eng. <i>M.S. IMAE</i>	3/2/93
Water Dept. <i>S.M. IMAE</i>	11/19/93

LEGEND

- A STOCKPILE WALLS - SEE DETAIL
- B AGGREGATE HOPPER
- C RADIAL AGGREGATE CONVEYOR
- D AGGREGATE BINS
- E CEMENT BINS
- F FLY ASH BIN
- G DUST COLLECTOR
- H TRUCK WASH AREA
- I CHECK STANDS
- J CONTROL HOUSE (2 STORY)
- K BOILER FUEL TANK
- L INSULATED NON POTABLE WATER STORAGE TANK AND PUMPS
- M MOTOR, OIL HYDRAULIC FLUID TANKS
- N DIESEL FUEL TANK AND DISPENSER
- O ADMIXTURE TANKS
- P BOILER HOUSE
- Q TRUCK RAMPS
- R WASTE CONCRETE SCREW WASHER & SHAKER SCREEN
- S RECYCLED SAND
- T RECYCLED GRAVEL
- U WATER TREATMENT
- V RECYCLE WATER SURGE TANK
- W BOILER EQUIPMENT
- X PH ADJUSTMENT SYSTEM
- Y SLUDGE DEWATERING PITS
- Z SLUDGE STORAGE AND FINAL DRYING
- * VIRGINIA POWER PAD MOUNTED TRANSFORMER



NO.	DATE	REVISION / COMMENT / NOTE

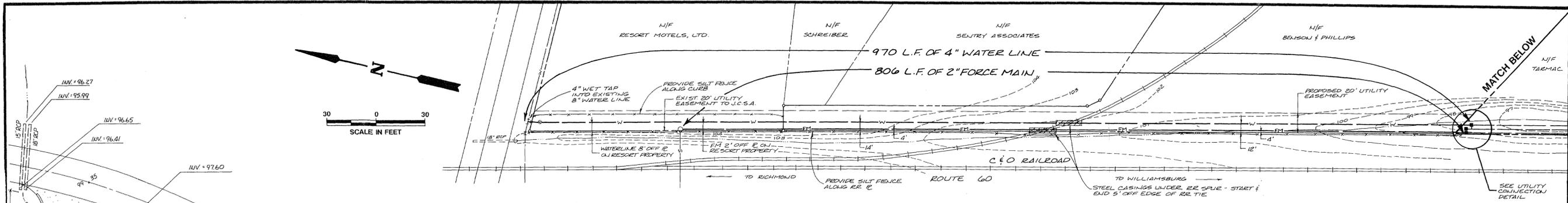


5248 Old Towne Road, Suite 1
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Fax (804) 220-8994

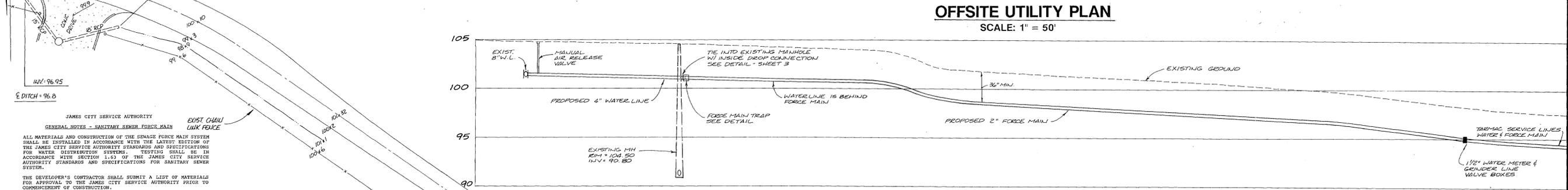


SITE, UTILITY AND LANDSCAPING PLAN
TARMAC - WILLIAMSBURG PLANT
OWNER/DEVELOPER: TARMAC MID-ATLANTIC, INC.
JAMES CITY COUNTY VIRGINIA

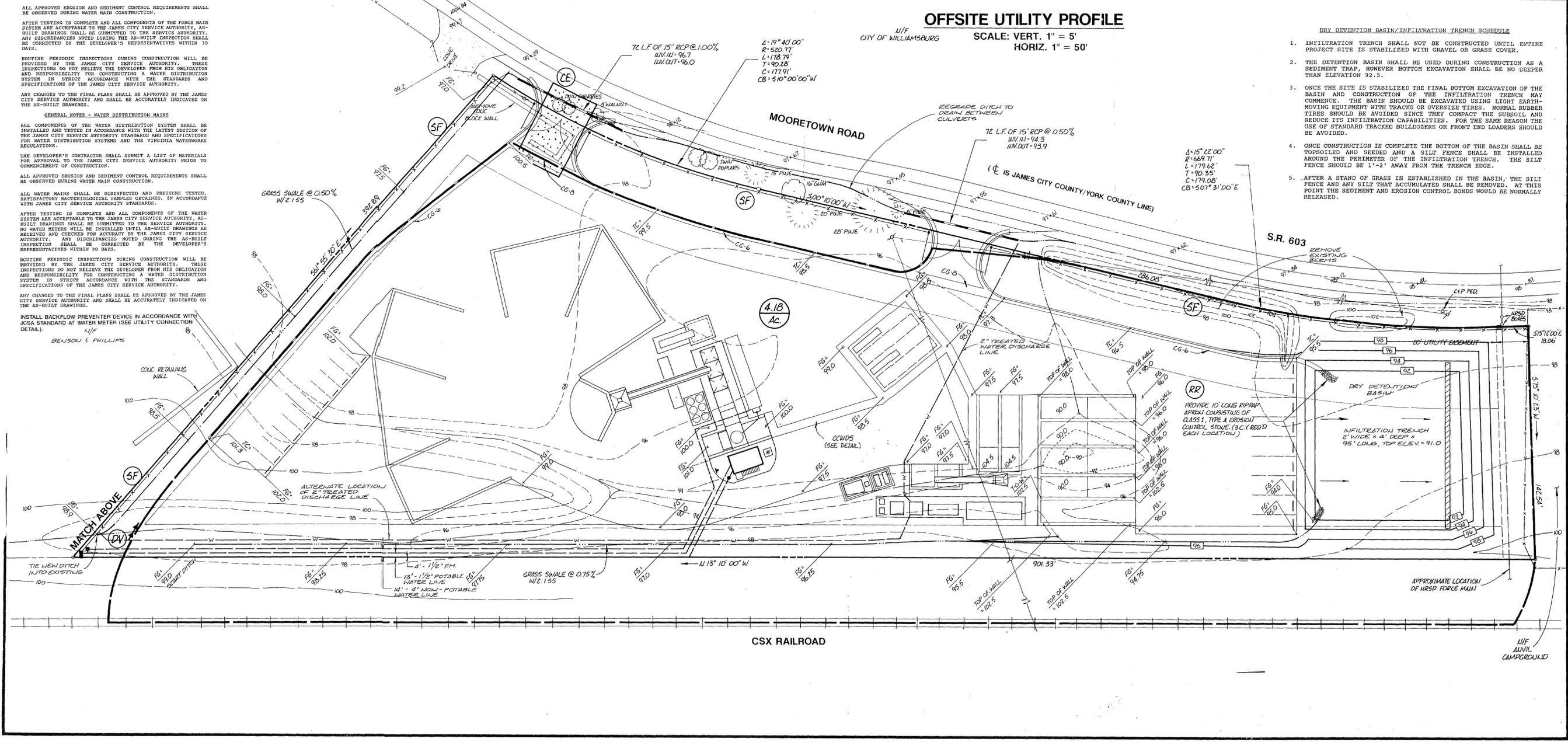
Designed RAC	Drawn BJU
Scale 1"=30'	Date SEPT. 1992
Project No. 7770	
Drawing No. 1	



OFFSITE UTILITY PLAN
SCALE: 1" = 50'



OFFSITE UTILITY PROFILE
SCALE: VERT. 1" = 5'
HORIZ. 1" = 50'



- DRY DETENTION BASIN/INFILTRATION TRENCH SCHEDULE**
- INFILTRATION TRENCH SHALL NOT BE CONSTRUCTED UNTIL ENTIRE PROJECT SITE IS STABILIZED WITH GRAVEL OR GRASS COVER.
 - THE DETENTION BASIN SHALL BE USED DURING CONSTRUCTION AS A SEDIMENT TRAP, HOWEVER BOTTOM EXCAVATION SHALL BE NO DEEPER THAN ELEVATION 92.5.
 - ONCE THE SITE IS STABILIZED THE FINAL BOTTOM EXCAVATION OF THE BASIN AND CONSTRUCTION OF THE INFILTRATION TRENCH MAY COMMENCE. THE BASIN SHOULD BE EXCAVATED USING LIGHT EARTH-MOVING EQUIPMENT WITH TRACKS OR OVERSIZE TIRES. NORMAL RUBBER TIRES SHOULD BE AVOIDED SINCE THEY COMPACT THE SUBSOIL AND REDUCE ITS INFILTRATION CAPABILITIES. FOR THE SAME REASON THE USE OF STANDARD TRACKED BULLDOZERS OR FRONT END LOADERS SHOULD BE AVOIDED.
 - ONCE CONSTRUCTION IS COMPLETE THE BOTTOM OF THE BASIN SHALL BE TOPSOILED AND SEEDED AND A SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF THE INFILTRATION TRENCH. THE SILT FENCE SHOULD BE 1'-2' AWAY FROM THE TRENCH EDGE.
 - AFTER A STAND OF GRASS IS ESTABLISHED IN THE BASIN, THE SILT FENCE AND ANY SILT THAT ACCUMULATED SHALL BE REMOVED. AT THIS POINT THE SEDIMENT AND EROSION CONTROL BONDS WOULD BE NORMALLY RELEASED.

JAMES CITY SERVICE AUTHORITY
GENERAL NOTES - SANITARY SEWER FORCE MAIN

ALL MATERIALS AND CONSTRUCTION OF THE SEWER FORCE MAIN SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS FOR WATER DISTRIBUTION SYSTEMS. TESTING SHALL BE IN ACCORDANCE WITH SECTION 1.63 OF THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS FOR SANITARY SEWER SYSTEMS.

THE DEVELOPER'S CONTRACTOR SHALL SUBMIT A LIST OF MATERIALS FOR APPROVAL TO THE JAMES CITY SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.

ALL APPROVED EROSION AND SEDIMENT CONTROL REQUIREMENTS SHALL BE OBSERVED DURING WATER MAIN CONSTRUCTION.

AFTER TESTING IS COMPLETE AND ALL COMPONENTS OF THE FORCE MAIN SYSTEM ARE ACCEPTABLE TO THE JAMES CITY SERVICE AUTHORITY, AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE SERVICE AUTHORITY. ANY DISCREPANCIES NOTED DURING THE AS-BUILT INSPECTION SHALL BE CORRECTED BY THE DEVELOPER'S REPRESENTATIVES WITHIN 30 DAYS.

ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE JAMES CITY SERVICE AUTHORITY. THESE INSPECTIONS DO NOT RELIEVE THE DEVELOPER FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING A WATER DISTRIBUTION SYSTEM IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE JAMES CITY SERVICE AUTHORITY.

ANY CHANGES TO THE FINAL PLANS SHALL BE APPROVED BY THE JAMES CITY SERVICE AUTHORITY AND SHALL BE ACCURATELY INDICATED ON THE AS-BUILT DRAWINGS.

GENERAL NOTES - WATER DISTRIBUTION MAINS

ALL COMPONENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE LATEST EDITION OF THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS FOR WATER DISTRIBUTION SYSTEMS AND THE VIRGINIA WATERWORKS REGULATIONS.

THE DEVELOPER'S CONTRACTOR SHALL SUBMIT A LIST OF MATERIALS FOR APPROVAL TO THE JAMES CITY SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.

ALL APPROVED EROSION AND SEDIMENT CONTROL REQUIREMENTS SHALL BE OBSERVED DURING WATER MAIN CONSTRUCTION.

ALL WATER MAINS SHALL BE DISINFECTED AND PRESSURE TESTED. SATISFACTORY BACTERIOLOGICAL SAMPLES OBTAINED, IN ACCORDANCE WITH JAMES CITY SERVICE AUTHORITY STANDARDS.

AFTER TESTING IS COMPLETE AND ALL COMPONENTS OF THE WATER SYSTEM ARE ACCEPTABLE TO THE JAMES CITY SERVICE AUTHORITY, AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE SERVICE AUTHORITY. NO WATER METERS WILL BE INSTALLED UNTIL AS-BUILT DRAWINGS ARE RECEIVED AND CHECKED FOR ACCURACY BY THE JAMES CITY SERVICE AUTHORITY. ANY DISCREPANCIES NOTED DURING THE AS-BUILT INSPECTION SHALL BE CORRECTED BY THE DEVELOPER'S REPRESENTATIVES WITHIN 30 DAYS.

ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE JAMES CITY SERVICE AUTHORITY. THESE INSPECTIONS DO NOT RELIEVE THE DEVELOPER FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING A WATER DISTRIBUTION SYSTEM IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE JAMES CITY SERVICE AUTHORITY.

ANY CHANGES TO THE FINAL PLANS SHALL BE APPROVED BY THE JAMES CITY SERVICE AUTHORITY AND SHALL BE ACCURATELY INDICATED ON THE AS-BUILT DRAWINGS.

INSTALL BACKFLOW PREVENTER DEVICE IN ACCORDANCE WITH JCSA STANDARD AT WATER METER (SEE UTILITY CONNECTION DETAIL).

N/F BENSON & PHILLIPS

NO.	DATE	REVISION / COMMENT / NOTE	BY
1	12/27/92	GENERAL REVISED	RAC



5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994

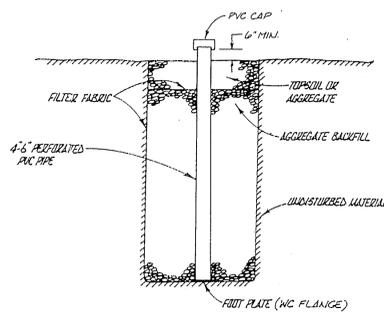


GRADING AND EROSION CONTROL PLAN
TARMAC - WILLIAMSBURG PLANT
OWNER/DEVELOPER: TARMAC MID-ATLANTIC, INC.
JAMES CITY COUNTY VIRGINIA

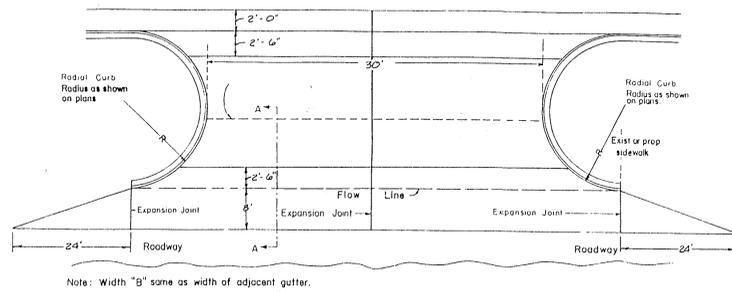
Designed RAC	Drawn BJU
Scale 1"=30'	Date SEPT. 1992
Project No. 7770	
Drawing No. 2	

The purpose of the erosion control measures shown on these plans shall be to preclude the transport of all waterborne sediments resulting from construction activities from entering onto adjacent properties or State waters. If field inspection reveals the inadequacy of the plan to confine sediment to the project site, appropriate modifications will be made to correct any plan deficiencies.

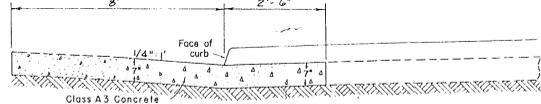
- All erosion and sediment control measures shall be installed and maintained in accordance with the "Virginia Erosion and Sediment Control Handbook". The contractor shall be thoroughly familiar with all applicable measures contained therein which may be pertinent to this project.
- All points of construction ingress and egress shall be protected by a temporary construction entrance to prevent tracking of mud onto public right-of-ways. An entrance permit from VDOT is required prior to any construction activities within State right-of-ways.
- Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment on-site must be constructed as a first step in grading and be made functional before upslope land disturbance takes place. Earthen structures such as dams, dikes, and diversions must be seeded and mulched immediately after installation. An on-site pre-construction meeting will be held between the Department of Public Works and the Contractor to identify those measures to be initially installed.
- Maintenance of all erosion and sediment control measures shall be accomplished in accordance with the "Virginia Erosion and Sediment Control Handbook". Maintenance will include the repair of measures damaged by any subcontractor including those of the public utility companies. At the pre-construction meeting, the contractor will supply Public Works with the name of the individual who will be responsible for ensuring maintenance of installed measures on a daily basis.
- Surface flows over cut and fill slopes shall be controlled by either redirecting flows from transverse the slopes or by installing mechanical devices to safely lower water down slope without causing erosion. A temporary fill diversion (Std. & Spec. 1.16) shall be installed prior to the end of each working day.
- Sediment control measures may require minor field adjustments at time of construction to insure their intended purpose is accomplished. Department of Public Works approval will be required for other deviations from the approved plans.
- The contractor shall strip and pile topsoil at the locations shown on the plan or as directed by the engineer. Silt fence shall be placed at the toe of the stockpile after stripping of topsoil is complete.
- The contractor shall complete drainage facilities within 30 days following completion of rough grading at any point within the project. The installation of drainage facilities shall take precedence over all underground utilities. Outfall ditches from drainage structures shall be stabilized immediately after construction of same. This includes installation of erosion control stone where required. Any drainage outfalls required for a street must be completed before street grading begins.
- Permanent or temporary soil stabilization must be applied to all denuded areas within 7 days after final grade is reached on any portion of the site. Soil stabilization must be applied to denuded areas which may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. Soil stabilization measures include vegetative establishment, mulching and the early application of gravel base material on areas to be paved.
- No more than 300' of sanitary sewer, storm sewer, or waterline area to be open at one time. Following installation of any portion of these items, all disturbed areas are to be immediately stabilized (i.e., the same day).
- If disturbed area stabilization is to be accomplished during the months of December, January, or February, stabilization shall consist of mulching in accordance with Specification 1.75. Seeding will then take place as soon as the season permits.
- The term Seeding, Final Vegetative Cover or Stabilization, on this site plan shall mean the successful germination and establishment of a stable grass cover from a properly prepared seedbed containing the specified amounts of seed, lime, and fertilizer in accordance with Specification 1.66, Permanent Seeding. Irrigation shall be required as necessary to ensure establishment of grass cover.
- All slopes steeper than 3:1 shall require the use of erosion control blankets such as excelsior blankets to aid in the establishment of a vegetative cover. Installation shall be in accordance with Specification 1.75, Mulching and Manufacturer's Instructions.
- Inlet protection in accordance with Specification 1.08 of the Virginia Sediment and Erosion Control Handbook shall be provided for all storm drain inlets as soon as practical following construction of same.
- Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.
- Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3%.
- Temporary erosion control measures are not to be removed until all disturbed areas are stabilized. After stabilization is complete, all measures shall be removed within 30 days. Trapped sediment shall be spread and seeded.
- Off-site waste or borrow areas shall be approved by James City County prior to the import of any borrow or export of any waste to or from the project site.
- All paved and/or piped outfalls will be constructed before road grading and utility installation begins.
- A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
- A preconstruction conference shall be held on-site between the County, the Developer, the Project Engineer and the Contractor prior to issuance of a Land Disturbing Permit. The Contractor shall submit a narrative plan to the County prior to the preconstruction conference detailing the sequence of construction for the project, including installation of erosion control measures.
- All roadways and shoulders shall be stabilized with at least six inches of crusher run aggregate after grading. Crusher run aggregate shall be the material specified in Section 206 of the Virginia Department of Transportation, Road and Bridge Specifications.



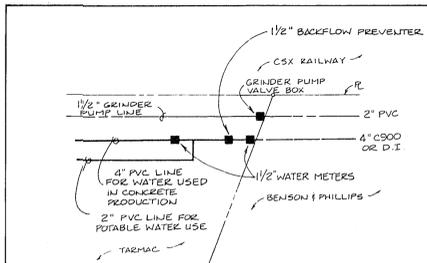
OBSERVATION WELL DETAIL
FOR INFILTRATION DITCH
N.T.S.



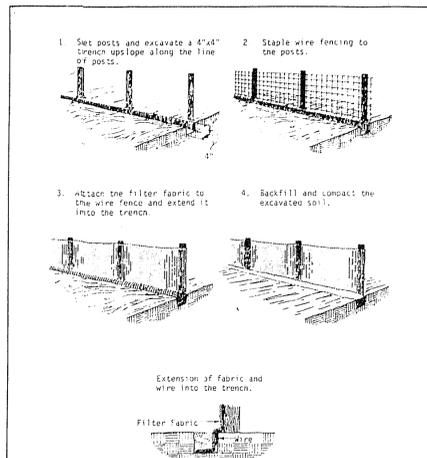
Note: Width "B" same as width of adjacent gutter.



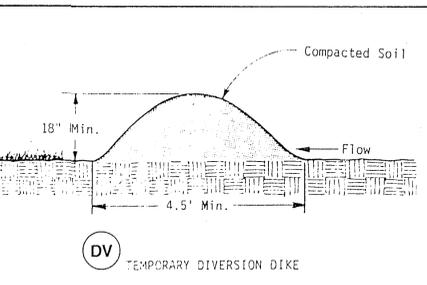
SECTION A-A
MODIFIED CG-10A
STANDARD CONNECTION FOR STREET INTERSECTIONS
TO BE USED ONLY WHEN MAIN ROADWAY PAVEMENT IS OTHER THAN REINFORCED CONCRETE



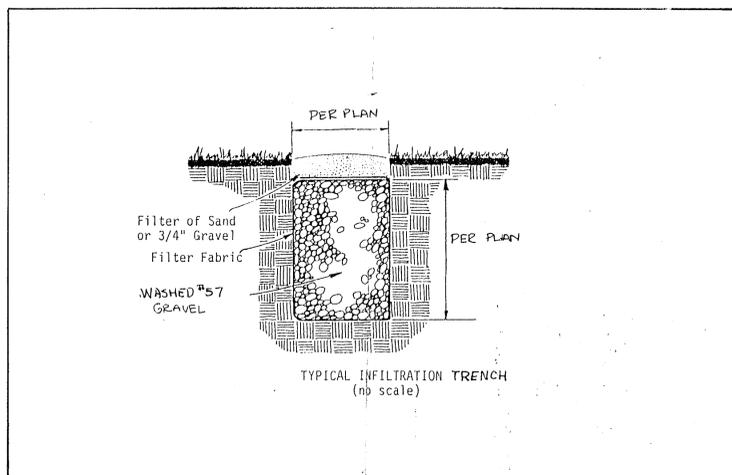
DETAIL OF UTILITY CONNECTIONS
N.T.S.



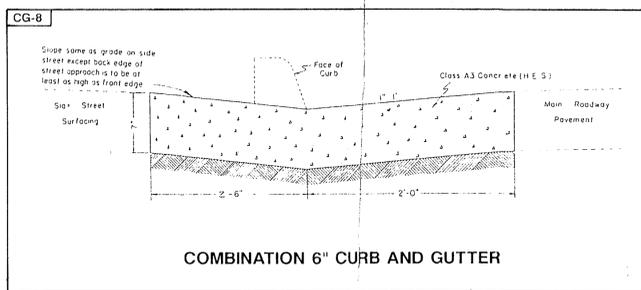
CONSTRUCTION OF A SILT FENCE



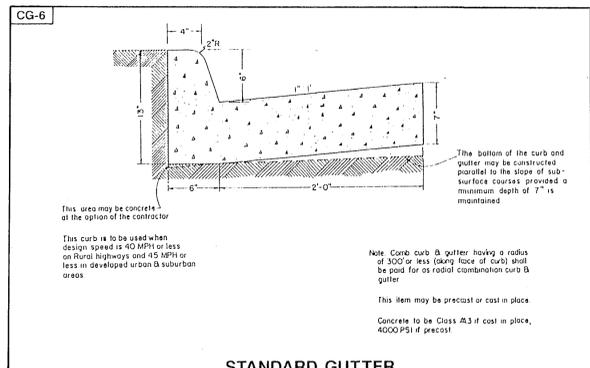
TEMPORARY DIVERSION DIKE



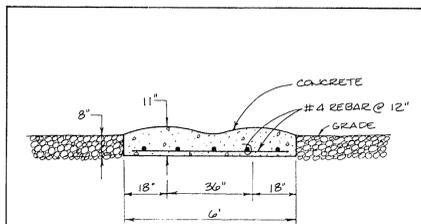
TYPICAL INFILTRATION TRENCH
(no scale)



COMBINATION 6" CURB AND GUTTER



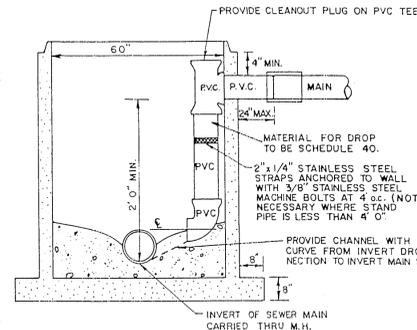
STANDARD GUTTER



SECTION A-A
CONCRETE CONTAMINATED WATER
DIRECTIONAL SWALE
SCALE: 1"=3'

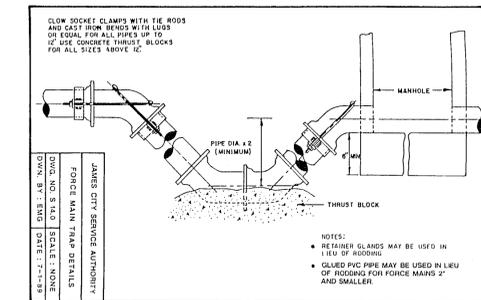
CONSTRUCTION NOTES:

- ALL PIPE MATERIAL SHALL BE PVC SCHEDULE 40 TO COUPLING
- CROWN OF MAIN AND C OF DROP 90° TO MATCH.
- PLACEMENT OF DROP NOT TO CONFLICT WITH STEPS.
- BOTTOM 90° BEND TO BE AT 45° TO DOWNSTREAM FLOW.

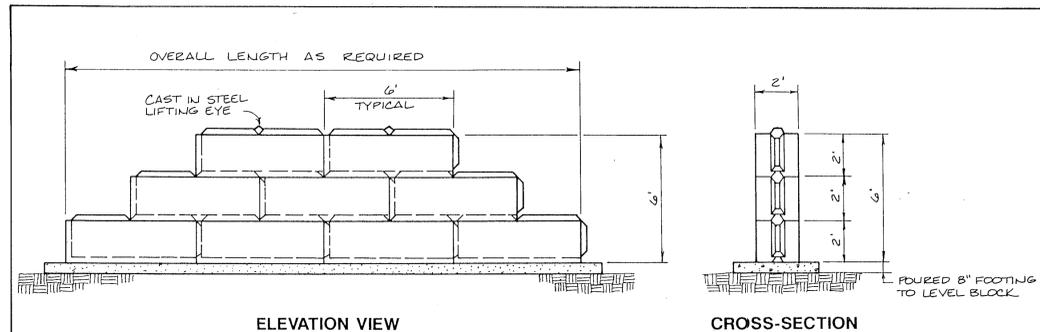


NOTE: EXTENDED BASE IS OPTIONAL.

JAMES CITY SERVICE AUTHORITY
GRINDER FORCE MAIN
INSIDE DROP CONNECTION
DWG. NO. S 5.3 SCALE: NONE
DWN. BY: SMS DATE: 1-8-91



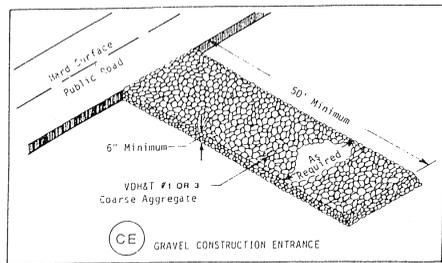
NOTES:
• RETAINER CLAMPS MAY BE USED IN LIEU OF HOODS FOR FORCE MAINS 2" AND SMALLER.
• CLAMPED PVC PIPE MAY BE USED IN LIEU OF HOODS FOR FORCE MAINS 2" AND SMALLER.



ELEVATION VIEW

CROSS-SECTION

STOCKPILE SEPARATION AND CONTAINMENT WALL
6' x 2' x 2' PRECAST CONCRETE KEYS UNITS
SCALE: 1/4" = 1'-0"



GRAVEL CONSTRUCTION ENTRANCE

NO.	DATE	REVISION / COMMENT / NOTE	BY

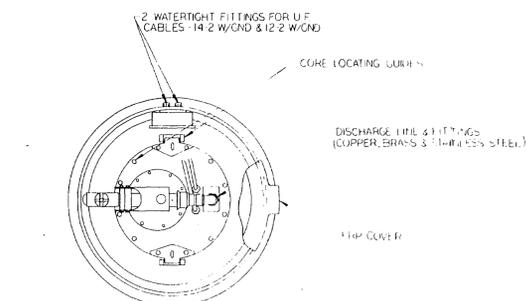
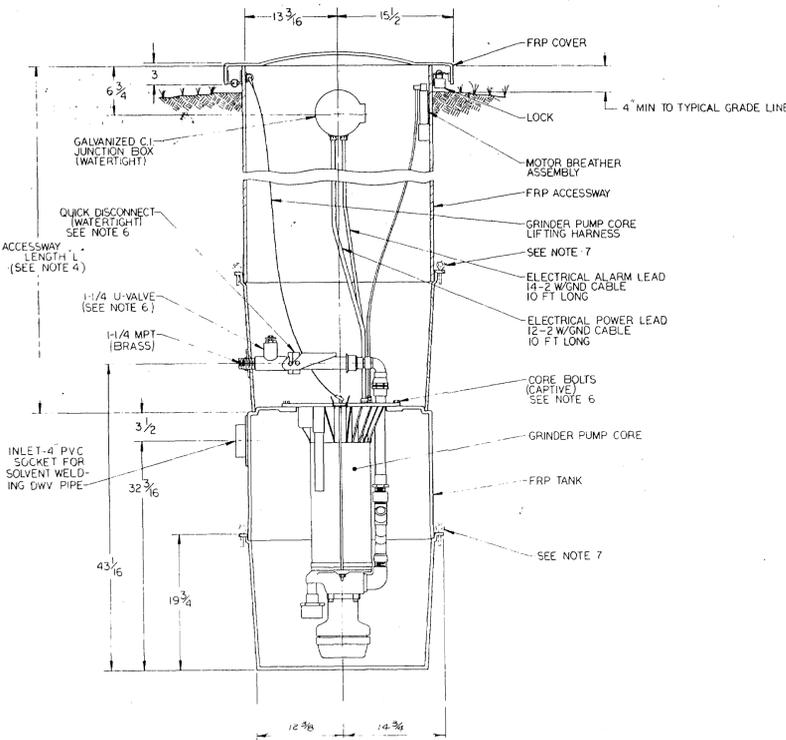


5248 Old Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994



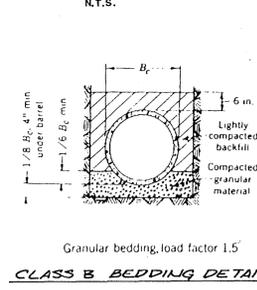
NOTES AND DETAILS
TARMAC - WILLIAMSBURG PLANT
OWNER/DEVELOPER: TARMAC MID-ATLANTIC, INC.
JAMES CITY COUNTY VIRGINIA

Designed	Drawn
Scale NOTED	Date SEPT., 1992
Project No.	7770
Drawing No.	3



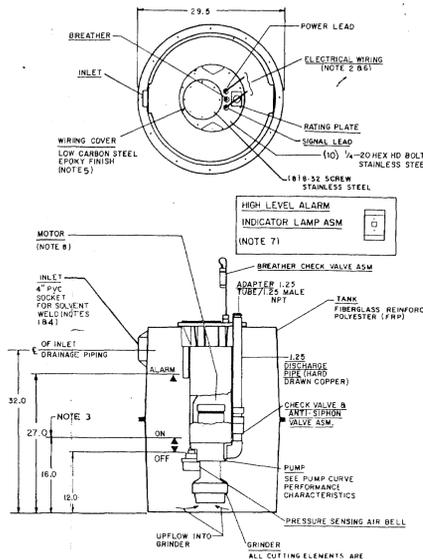
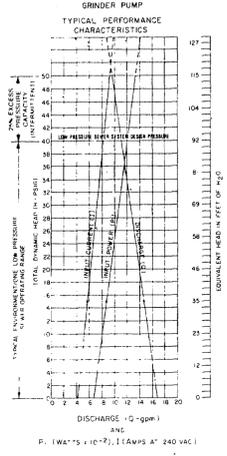
- NOTES:**
- ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
 - DO NOT SCALE DRAWING.
 - DISCHARGE LINE TO BE BELOW FROST LINE.
 - SERIES 2: L - 18" SERIES 6: SPECIFY "L" REQ'D AVAILABLE FROM 3" TO 10" IN ONE FOOT INCREMENTS.
 - ALL JOINTS IN TANK AND ACCESSWAY ARE MANUFACTURED AND FACTORY TESTED FOR WATER-TIGHT INTEGRITY.
 - CORE BOLTS CAN BE REMOVED AND U-VALVE & QUICK DISCONNECT CAN BE OPERATED FROM GRADE USING WEX WRENCH (FURNISHED).
 - FOUR (4) LIFTING EYES PROVIDED, LOCATION WILL DEPEND UPON ACCESSWAY LENGTH.
 - ALL DIMENSIONS & SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
 - ALL FRP PARTS TO BE AVOCADO GREEN.

GRINDER PUMP DETAILS



CLASS B BEDDING DETAIL

GRINDER PUMP MODEL GP 210



- NOTES:**
- Can be adapted to any system of DWV piping dictated by local codes including cast iron, copper and non-metallics.
 - Use fittings appropriate for wiring material which should be per applicable codes. All fittings must be water-tight.
 - Exact turn-on level depends on in-flow rate during time delay interval after pressure switch closes.
 - Interior of tank (wet well) is vented through inlet drainage piping per installation instructions.
 - Cover is suitably gasketed and bolted in order to make weather tight.
 - Ten feet of type UF cable, pre-wired and connected with water-tight wiring connections is provided for both power and signal connections. Other lengths of materials available on special order. See note 2.
 - High level alarm indicator lamp furnished on wall plate 2 1/4 x 4 1/4 inches. Fits standard wall box (by others). Install at most obvious location on premises and connect per wiring diagram in installation instructions. Audible alarm (not furnished) may be paralleled with circuit. Lamp signal circuit contact rating is 15 amp at 120 vac.
 - One horsepower, single phase capacitor-start induction motor with integral automatic reset thermal overload protection. 240 volt, 60 hertz.
 - All dimensions are in inches. Do not scale drawing.
 - Specifications and drawings are subject to change without notice.

ENVIRONMENT/ONE MODEL FARRELL GP-210

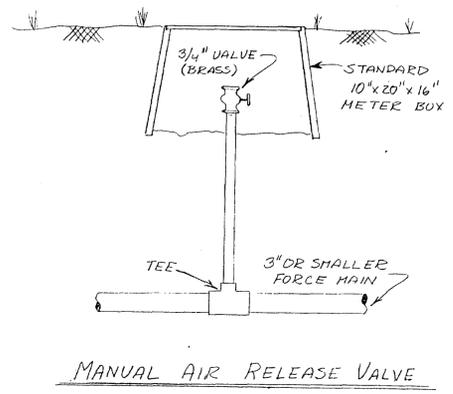
DESIGNED FOR A BROAD VARIETY OF APPLICATIONS WHERE FLOWS RANGE UP TO 500 gpd. CAN PUMP DOMESTIC WASTEWATER MORE THAN A MILE THROUGH 1 1/2 INCH PVC PRESSURE PIPE OR PROVIDE LIFTS UP TO 80 FEET.

PUMP	SEMI-POSITIVE DISPLACEMENT TYPE; 15 gpm @ 0 FT TDH; 11 gpm @ 81 FT TDH; EASILY HANDLES TEMPORARY LOADS 40% ABOVE THE 81 FT NOMINAL DESIGN HEAD
TANK	60 GAL; NON-CORROSIVE, HEAVY-DUTY, REINFORCE FIBERGLASS; SUITABLE FOR INDOOR USE; INTEGRAL FIBERGLASS ACCESS WAYS AVAILABLE FOR A VARIETY OF OUTDOOR APPLICATIONS
GRINDER	TWO HARDENED STAINLESS STEEL CUTTERS ROTATING AT MOTOR SPEED IN PRECISION RELATIONSHIP TO HARDENED ALLOY SHEDDING RING PRODUCE A FINELY DIVIDED SLURRY
PIPING CONNECTIONS	INLET FOR 4 INCH DWV PIPE; DISCHARGE IS 1 1/4 INCH MPT
MOTOR	1 HP, 1725 RPM, HIGH-TORQUE, CAPACITOR-START, 240 VOLT, 60 HERTZ, 8 AMP, 1 PHASE; WITH INTEGRAL, AUTOMATIC RESET, THERMAL PROTECTOR
CONTROLS	NON-POULING STATIC SENSOR AND PRESSURE SWITCH SYSTEM HAS NO MOVING PARTS IN CONTACT WITH SEWAGE; COMPLETELY SELF-CONTAINED -- NO EXTERNAL PANELS NEEDED
CHECK VALVES	TWO PROVIDED: ONE INTEGRAL ON DISCHARGE PIPE INSIDE TANK, ONE FOR SEWER SYSTEM USE BETWEEN PRESSURE MAIN AND GRINDER PUMP; FULL-PORTED, NON-CLOGGING, CLOPPER TYPE
ANTI-SIPHON VALVE	INTEGRAL ON DISCHARGE PIPE INSIDE TANK
ALARM	HIGH LEVEL INDICATOR LIGHT FURNISHED FOR REMOTE DISPLAY. REMOTE DISPLAY WITH AUDIBLE ALARM TO BE PROVIDED. ALARM SYSTEM TO BE PROVIDED WITH BACK-UP POWER SUPPLY.

JAMES CITY SERVICE AUTHORITY GENERAL NOTES - GRINDER PUMP SYSTEMS

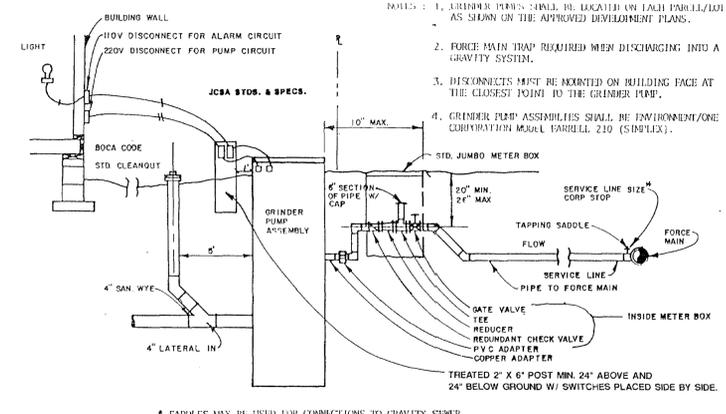
The following notes are a supplement to the James City Service Authority General Notes for Sanitary Sewers:

- Grinder pumps accepted by the James City Service Authority shall be environment/one, Model: Farrell GP-210.
- The pump is to be a semi-positive displacement type; 15 GPM at 0 FT TDH; 11 GPM at 81 FT TDH.
- The tank shall be 60 gallon, non-corrosive, heavy-duty, reinforced fiberglass, suitable for indoor use; integral fiberglass access included.
- The grinder shall consist of two hardened stainless steel cutters rotating at motor speed in precision relationship to hardened alloy shedding ring to produce a finely divided slurry.
- Piping connections: Inlet for 4-inch lateral; discharge is 1-1/4-inch mpt.
- The motor shall be 1 HP, 1725 RPM, high-torque, capacitor-start, 240 volt, 60 Hertz, 8 amp, 1 phase; with integral, automatic reset, thermal protector.
- The controls shall be non-fouling static sensor and pressure switch system with no moving parts in contact with sewage; self-contained unit.
- Two check valves shall be provided: one integral on discharge pipe inside tank; one for sewer system use between pressure main and grinder pump. Check valves shall be full-ported, non-clogging, clapper type.
- An anti-siphon valve shall be included on the discharge pipe inside the tank.
- High water level, power failure and pump alarms shall be provided. A remote panel with an alarm test function shall also be provided; as shall a remote display with audible alarm. The alarm system shall be provided with a back-up supply. The individual alarm systems for the grinder pumps will not be connected to the James City Service Authority central alarm system.
- Electric testing shall be performed by the electrical subcontractor (a Master Electrician) in the presence of the James City County electrical inspector. Testing will be to assure that the station operates as intended and to comply with all possible other requirements relating to successful operation as outlined in the Virginia Sewerage Regulations.
- The control console an alarm system shall be located on an inside wall of the building in an accessible and visible location as close to the grinder pump as possible.
- The wet well of the grinder pump shall be vented through the building plumbing system as required by the BOCA plumbing code.
- A disconnect shall be provided adjacent to the pump per NEC code. The pump controls are located in the top housing of the core unit inside a waterproof access cover. They may also be located adjacent to the disconnect, in a NEMA-4 box.
- All electrical equipment must be UL listed.
- All equipment shall be tested in accordance with the NEC.
- The force main shall be schedule 40 pvc pipe (ASTM D 2665) or class 160 PVC pipe (ASTM D 2241).
- Schedule 40 solvent welded joints shall be made in accordance with manufacturer's recommendations or in accordance with ASTM D 1855.
- Class 160 pipe shall be gasketed joints. Rubber gasket shall be in accordance with ASTM 1869.
- Thrust restraint shall be provided for gasketed type piping at all bends, tees and changes of direction.
- Force main piping shall be tested at 60 PSI for 30 minutes. Leakage shall not exceed limits established by the Virginia Sewerage Regulations.



MANUAL AIR RELEASE VALVE

- NOTES:**
- GRINDER PUMPS SHALL BE LOCATED ON EACH PARALLEL/180 AS SHOWN ON THE APPROVED DEVELOPMENT PLANS.
 - FORCE MAIN TRAP REQUIRED WHEN DISCHARGING INTO A GRAVITY SYSTEM.
 - DISCONNECTS MUST BE MOUNTED ON BUILDING FACE AT THE CLOSEST POINT TO THE GRINDER PUMP.
 - GRINDER PUMP ASSEMBLIES SHALL BE ENVIRONMENT/ONE COMBINATION MODEL FARRELL 210 (SINGLE).



TYPICAL GRINDER PUMP INSTALLATION NOT TO SCALE

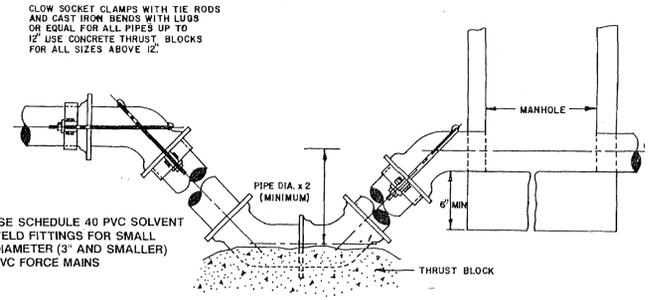
GRINDER PUMP FORCE MAIN PIPING

- MATERIALS - SCHEDULE 40 PVC PIPE (ASTM D 2665) OR CLASS 160 PVC PIPE (ASTM D 2241).
- JOINTS -
 - SCHEDULE 40 SOLVENT WELDED JOINTS SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS OR IN ACCORDANCE WITH ASTM D 1855.
 - CLASS 160 PIPE SHALL BE GASKETED JOINTS. RUBBER GASKET SHALL BE IN ACCORDANCE WITH ASTM 1869.
- THRUST RESTRAINT SHALL BE PROVIDED FOR GASKETED TYPE PIPING AT ALL BENDS, TEES AND CHANGES OF DIRECTION. ONE CUBIC FOOT THRUST BLOCKS SHALL BE PROVIDED FOR LINES THREE INCHES AND SMALLER.
- FORCE MAIN PIPING SHALL BE TESTED AT 50 PSI FOR 30 MINUTES. LEAKAGE SHALL NOT EXCEED:

$$L = \frac{ND(P)^{1/2}}{3700}$$

WHERE L = ALLOWABLE LEAKAGE IN GPH
 N = NUMBER OF JOINTS
 D = PIPE DIAMETER IN INCHES
 P = TEST PRESSURE IN PSI

- GRINDER PUMP ELECTRICAL NOTES**
- POWER COMES FROM THE MAIN PANELBOARD LOCATED IN THE BUILDING.
 - ONE 20 AMP, 240 VOLT, SINGLE PHASE ELECTRICAL CIRCUIT IS PROVIDED FOR THE PUMP AND CONTROLS (120 VOLTS).
 - A DISCONNECT SHALL BE PROVIDED ADJACENT TO THE PUMP PER NEC CODE. THE PUMP CONTROLS ARE LOCATED IN THE TOP HOUSING OF THE CORE UNIT INSIDE A WATERPROOF ACCESS COVER. ALTERNATELY THEY CAN BE LOCATED ADJACENT TO THE DISCONNECT, IN A NEMA 4X BOX (WATER-TIGHT AND CORROSION RESISTANT).
 - ALL ELECTRICAL EQUIPMENT MUST BE UL LISTED.
 - ALL EQUIPMENT SHALL BE TESTED IN ACCORDANCE WITH THE NEC.



NOTE: USE SCHEDULE 40 PVC SOLVENT WELD FITTINGS FOR SMALL DIAMETER (3" AND SMALLER) PVC FORCE MAINS

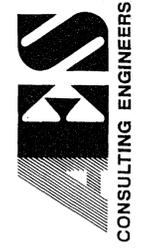
NOTE: RETAINER GLANDS MAY BE USED IN LIEU OF RODDING.

FORCE MAIN TRAP DETAILS NOT TO SCALE

NO.	DATE	REVISION / COMMENT / NOTE
1		ISSUED TYPICAL PIPING INSTALLATION
2		REVISED TYPICAL PIPING INSTALLATION
3		REVISED GRINDER PUMP INSTALLATION



5248 Old Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (804) 253-0040
 Fax (804) 220-8994



STANDARD GRINDER PUMP NOTES & DETAILS

Designed	Drawn
Scale	Date
N.T.S.	9/89
Project No.	
Drawing No.	
SD-4	

Option 1

STAGE / STORAGE TABLE

R to res

#####

: 1. RESERVOIR No = 1. 2. RESERVOIR NAME = POND #1.....

: 3. S = Ks * Z^b

: Ks = 0..... b = 0.....

: START ELEV = 0..... INCREMENT = 0...

STAGE ft	ELEVATION ft	CO AREA sq ft	INC STORAGE cu ft	TOT STORAGE cu ft
4	0.00	190.....	304	304
5	1.00	11310...	5750	6054
6	2.00	12915...	12112	18166
7	3.00	24380...	18647	36813
8	0.00	0.....	0	0
9	0.00	0.....	0	0
10	0.00	0.....	0	0
11	0.00	0.....	0	0
12	0.00	0.....	0	0
13	0.00	0.....	0	0
14	0.00	0.....	0	0

#####

Change item number: 0

DY to cc

DY POND WITH INFILTRATION TRENCH

PER SOIL PROFILE DESCRIPTIONS IN THE POND PERFORMED BY LARRY W. MADISON, SC, SOIL SCIENTIST, THE INFILTRATION RATE IS 30 MIN/IN WITH 3' OF HEAD, THIS EQUALS 2 IN/HR.

$$\text{RELEASE RATE} = \frac{(2 \text{ IN/HR}) \left(\frac{1 \text{ FT}}{12 \text{ IN}} \right) (9425 \text{ FT}^2)}{(60 \text{ MIN/HR}) (60 \text{ SEC/MIN})} = \underline{0.44 \text{ CFS}} = q_0$$

- FIND CRITICAL STORM DURATION \rightarrow 2 YR STORM

$$D.A. = 4.18 \text{ IN} \quad C = 0.70 \quad t_c = 15 \text{ MIN.}$$

$$a = 126.3 \quad b = 17.3$$

$$T_c = \sqrt{\frac{2CA^2 (b - \frac{a}{4})}{q_0}} - b = \sqrt{\frac{2(0.70)(4.18)(126.3)(17.3 - \frac{126.3}{4})}{0.44}} - 17.3$$

$$T_c = 133.57 \text{ MIN.}$$

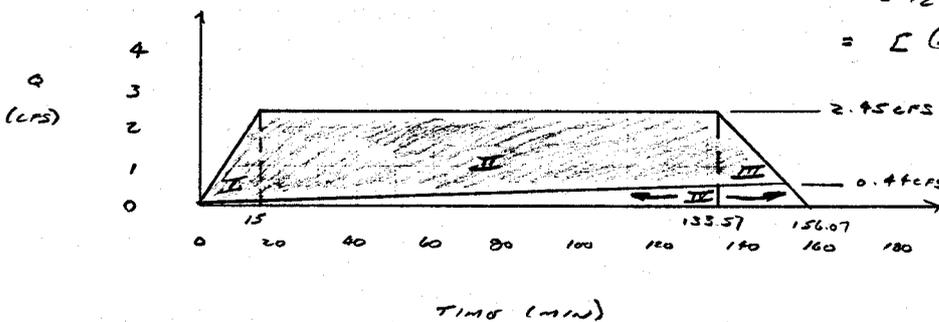
SOLVE FOR q_0 USING CRITICAL STORM

$$q_0 = (0.70)(4.18) \left(\frac{126.3}{17.3 + 133.57} \right) = \underline{2.45 \text{ CFS}}$$

$$\text{STORAGE VOLUME} = \text{I} + \text{II} + \text{III} - \text{IV} = \left[\frac{1}{2}(15)(2.45) + (118.57)(2.45) + \frac{1}{2}(22.50)(2.45) - \frac{1}{2}(156.07)(0.44) \right] 60$$

$$= \left[(8.38) + (290.50) + (27.56) - (34.32) \right] 60$$

$$= \underline{18,126 \text{ CF}} = \underline{671 \text{ CY}}$$



- FIND CRITICAL STORM DURATION \rightarrow 10 YR STORM

$$a = 201.0 \quad b = 23.9$$

$$T_c = \sqrt{\frac{2(0.70)(4.18)(201.0)(23.9 - \frac{201.0}{4})}{0.44}} - 23.9$$

$$T_c = 208.19 \text{ MIN}$$

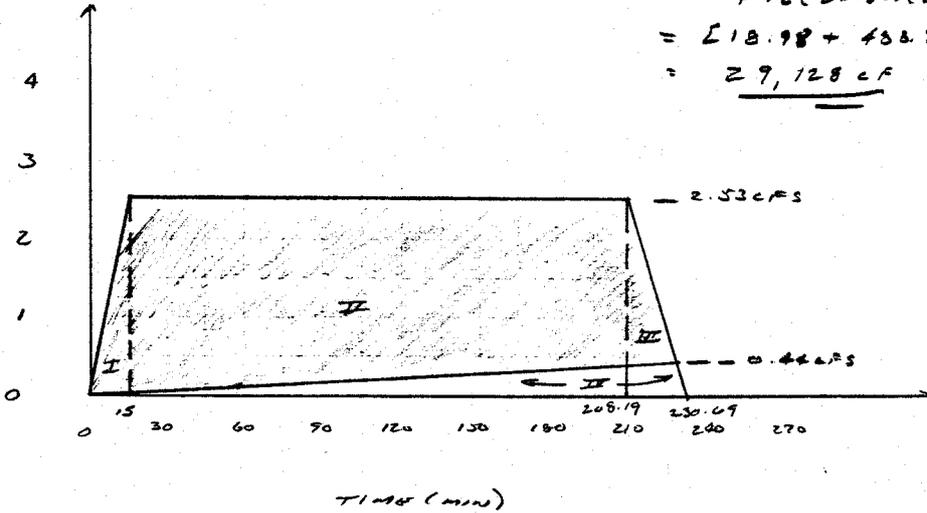
SOLVE FOR q_0 USING CRITICAL STORM

$$q_0 = (0.70)(4.18) \left(\frac{201.0}{23.9 + 208.19} \right) = \underline{2.53 \text{ CFS}}$$

DRY POND WITH INFILTRATION TRENCH

$$\begin{aligned} \text{STORAGE VOLUME} &= I + II + III - IV = \left[\frac{1}{2}(15)(2.53) + (193.19)(2.53) \right. \\ &\quad \left. + \frac{1}{2}(22.50)(2.53) - \frac{1}{2}(230.69)(0.44) \right] 60 \\ &= [18.98 + 488.77 + 28.46 - 50.75] 60 \\ &= \underline{\underline{29,128 \text{ CF}}} = \underline{\underline{1079 \text{ CY}}} \end{aligned}$$

Q
(cfs)



POND STORES 2 YR POST-DEVELOPMENT STORM @ ELEVATION \approx 95.00'
 BASED ON A RELEASE RATE OF 0.44 CFS DERIVED FROM THE
 SOIL PROFILE DESCRIPTIONS BY LARRY W. MADISON SR.
 WHEN THE 10 YR POST-DEVELOPMENT STORM OCCURS, THE HIGH WATER
 ELEVATION IS APPROXIMATELY 95.60'. THIS WILL FLOOD PART OF THE
 PARKING LOT, BUT NOTHING OF ANY CONCERN. CONSEQUENTLY, WE FEEL
 THE POND WILL ADEQUATELY STORE AND DISCHARGE THE 10 YR
 STORM.

DARYL LOOK

HYDRAULIC REPORT FOR

TARMAC CONCRETE PLANT

JOB NO. 7770

SYSTEM 1

FROM POND #1

prepared by:

AES CONSULTING ENGINEERS
5248 Olde Towne Rd, Suite 1
Williamsburg, VA. 23188

DATE: 09/01/92

Run date: 09-14-1992
 File: A:7770-1.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 0.0 / HT = 12 / WID = 12 / N = .013 / L = 104 / JLC = 1.1

SS#1-1 TO SS#1-2. / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	89.42	0.27	89.40	0.00	89.42	3.55	-.9	0.00
UPSTRM	89.92	0.28	89.90	0.00	89.92	3.60	7.29	0.00

Drainage area (ac) = 0	Slope of invert (%) = 0.481
Runoff coefficient = 0	Slope energy grade line (%) = 0.481
Time of conc (min) = 1	Critical depth (in) = 0.27
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 0	Confluence angle (deg) = 0
Default Q (cfs) = 0	Natural ground elev (ft) = 98.2
Line capac. (cfs) = 2.5 ✓	Line storage (cuft) = 0

LINE 2 / Q = 0.0 / HT = 12 / WID = 12 / N = .013 / L = 225 / JLC = 1.1

SS#1-2 TO SS#1-3. / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	89.92	0.28	89.90	0.00	89.92	4.11	7.29	0.01
UPSTRM	90.96	0.28	90.94	0.00	90.96	3.60	5.55	0.00

Drainage area (ac) = 0	Slope of invert (%) = 0.462
Runoff coefficient = 0	Slope energy grade line (%) = 0.462
Time of conc (min) = 0	Critical depth (in) = 0.27
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 0	Confluence angle (deg) = 90
WARNING! JLC of Line 1 too small.	
Line capac. (cfs) = 2.4	Line storage (cuft) = 1

LINE 3 / Q = 6.1 / HT = 12 / WID = 12 / N = .013 / L = 15 / JLC = .9

SS#1-3 SPILLWAY.. / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	91.91	11.65	90.94	7.86	92.87	4.02	5.55	0.78
UPSTRM	93.19	12.00	91.00	7.79	94.14	0.00	.75	0.79

Drainage area (ac)	=	0	Slope of invert (%)	=	0.400
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.779
Time of conc (min)	=	0	Critical depth (in)	=	11.65
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	6.1	Confluence angle (deg)	=	-56
Default Q (cfs)	=	6.12	Natural ground elev (ft)	=	92.75
Line capac. (cfs)	=	2.3	Line storage (cuft)	=	12

DRY POND WITH INFILTRATION TRUNCH

PLU-DEVELOPMENT

D.A. = 4.18 AC C = 0.50 t_c = 20 MIN
 FOR 2 YR STORM a = 126.3 b = 17.3
 $I_2 = \frac{a}{b + t_c} = \frac{126.3}{17.3 + 20} = 3.39 \text{ IN/HR}$

$Q_c = (0.50)(3.39)(4.18) = \underline{7.09 \text{ CFS}} = q_0$

- FIND CRITICAL STORM DURATION → 2 YR STORM

D.A. = 4.18 AC C = 0.70 t_c = 15 MIN
 a = 126.3 b = 17.3

$T_c = \sqrt{\frac{2CAQ_c(b + t_c)}{q_0}} - b = \sqrt{\frac{2(0.70)(4.18)(126.3)[17.3 - 15]}{7.09}} - 17.3$

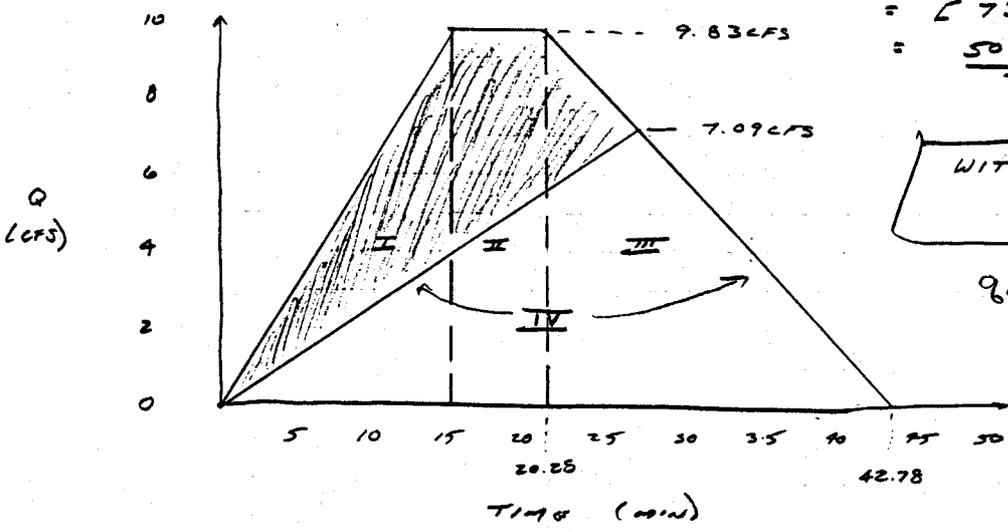
T_c = 20.28 MIN

q₀ PRE

SOLVE FOR q₀ USING CRITICAL STORM

$q_0 = (0.70)(4.18) \left(\frac{126.3}{17.3 + 20.28} \right) = \underline{9.83 \text{ CFS}}$

STORAGE VOLUME = I + II + III - IV = [1/2(15)(9.83) + (5.28)(9.83) + 1/2(22.50)(9.83) - 1/2(42.78)(7.09)] 60
 = [73.73 + 51.90 + 110.59 - 151.66] 60
 = 5074 CF = 188 CY



WITH NO RELEASE
 VOLUME = 14,175 CF = 525 CY

q₀ = 0.1
 need 19,500 ft³
 elev = 95.2

- FIND CRITICAL STORM DURATION → 10 YR STORM

a = 201.0 b = 23.9

$T_c = \sqrt{\frac{2(0.70)(4.18)(201.0)[23.9 - 15]}{7.09}} - 23.9 = 33.92 \text{ MIN}$
 need ≈ 0

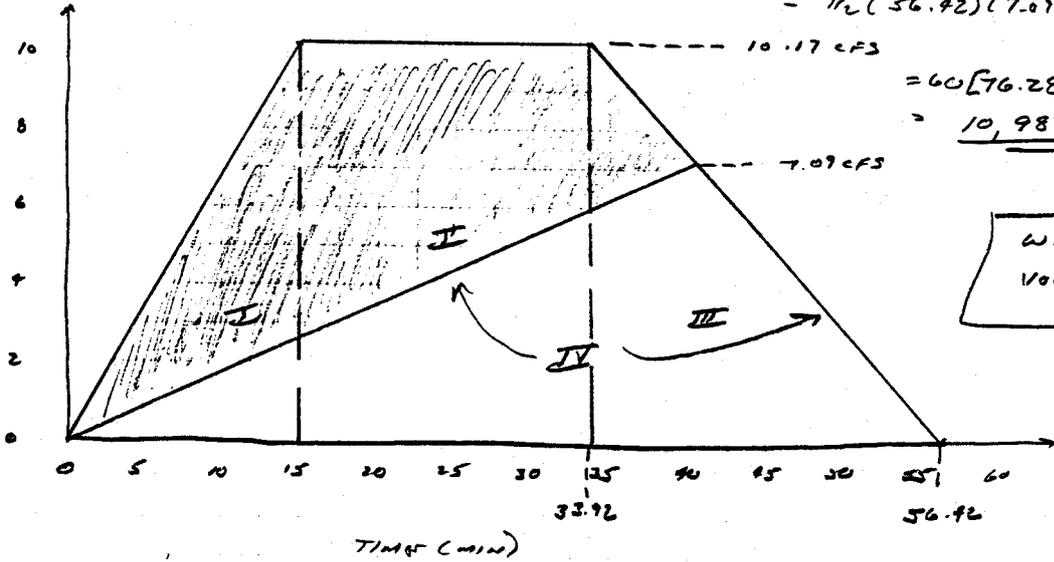
TARMAC CONCRETE PLANT

2)

SOLVE FOR Q_c USING CRITICAL STORM

$$Q_c = (0.70)(4.18) \left(\frac{201.0}{23.9 + 33.92} \right) = 10.17 \text{ CFS}$$

$$\text{STORM VOLUME} = \text{I} + \text{II} + \text{III} - \text{IV} = \left[\frac{1}{2}(15)(10.17) + (18.92)(10.17) + \frac{1}{2}(22.5)(10.17) - \frac{1}{2}(56.92)(7.07) \right] 60$$



$$= 60 [76.28 + 192.42 + 114.42 - 200.0] = \underline{10,987 \text{ CF}} = \underline{407 \text{ CY}}$$

WITH NO RELEASE
VOLUME = 22,987 CF = 851 CY

$q = 0.28 \text{ cfs}$
 $V = 28,700 \text{ ft}^3$
elev 95.6

— FIND CRITICAL STORM DURATION @ 25 YR STORM

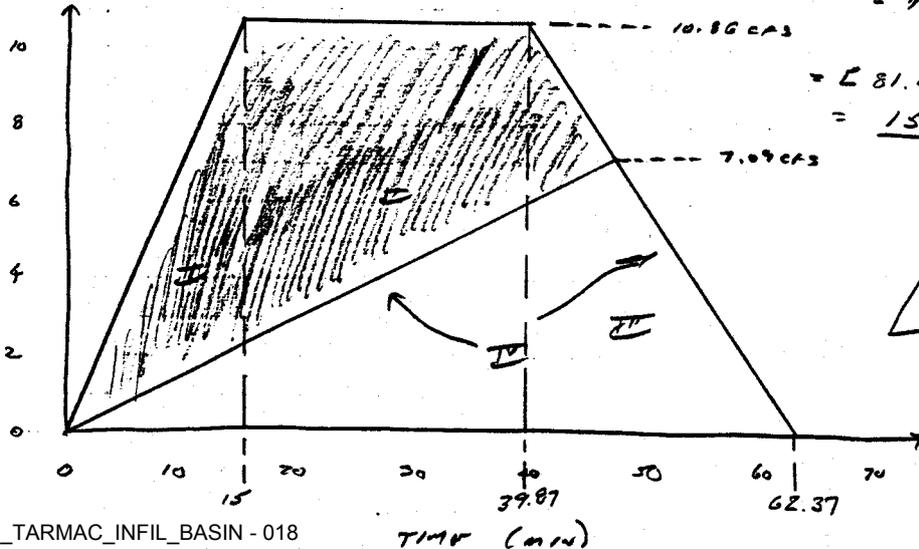
$$R = 240.3 \quad D = 24.9$$

$$T_c = \sqrt{\frac{2(0.70)(4.18)(240.3)(24.9)^{1.5}}{7.07}} - 24.9 = 39.87 \text{ MIN}$$

SOLVE FOR Q_c USING CRITICAL STORM

$$Q_c = (0.70)(4.18) \left(\frac{240.3}{24.9 + 39.87} \right) = 10.86 \text{ CFS}$$

$$\text{STORM VOLUME} = \text{I} + \text{II} + \text{III} - \text{IV} = \left[\frac{1}{2}(15)(10.86) + (24.97)(10.86) + \frac{1}{2}(22.50)(10.86) - \frac{1}{2}(62.37)(7.07) \right] 60$$



$$= [81.45 + 270.09 + 122.18 - 221.10] 60 = \underline{15,157 \text{ CF}} = \underline{561 \text{ CY}}$$

WITH NO RELEASE
VOLUME = 28,423 CF = 1053 CY

35,000 ft³

TARMAC CONCRETE PLANT

EXISTING POND VOLUME = 16,957 CF

2 YR ARI - DBV. FEOW = 7.09 CFS

- but it is not being released 3)

WITH 24 HR, 25 HR POST-DBV, STORM RELYING 2 YR ARI-DBV, POND WILL STORE THIS VOLUME @ ELEVATION 94.85'

PER SOIL PROFILE DESCRIPTIONS IN THE POND PERFORMED BY LARRY W. MADISON, SR, SOIL SCIENTIST, THE INFILTRATION RATE IS 1.5 INCHES / HR.

1.5 IN/HR INFILTRATION RATE IS GREATER THAN RELEASES 7.09 CFS DURING ARI DISCHARGE, - No

CONSEQUENTLY, POND SHOULD STORE THE 25 YR POST-DBV STORM AND INFILTRATE OUT IN ABOUT 15 HOURS ± (AT LEAST 1 DAY)

95 x 2 = 190 SF

$\frac{1.5''}{hr} = \frac{.125' / hr}{3600} \times 190 = .007 \text{ cfs}$



$f = \frac{1.5 \text{ in}}{hr} \times \frac{1 \text{ ft}}{12 \text{ in}} \times \frac{1 \text{ hr}}{3600 \text{ sec}}$

$q = f \times A = 190 \times \dots = .007 \text{ cfs}$

or $q = f \times (90 \times 90) = 0.28 \text{ cfs}$

Option 1

STAGE / STORAGE TABLE

R to res

#####

: 1. RESERVOIR No = 1. 2. RESERVOIR NAME = POND #1.....

: 3. S = Ks * Z^b

: Ks = 0..... b = 0.....

: START ELEV = 0..... INCREMENT = 0...

STAGE	ELEVATION	CO AREA	INC STORAGE	TOT STORAGE
ft	ft	sq ft	cu ft	cu ft
: 4	0.00	93.00.	0.....	0
: 5	1.00	94.00.	10770...	5385
: 6	2.00	95.00.	12375...	11572
: 7	0.00	0.00.	0,23,000 = 200x115	17,688
: 8	0.00	0.00.	0.....	0
: 9	0.00	0.00.	0.....	0
: 10	0.00	0.00.	0.....	0
: 11	0.00	0.00.	0.....	0
: 12	0.00	0.00.	0.....	0
: 13	0.00	0.00.	0.....	0
: 14	0.00	0.00.	0.....	0

#####

Change item number: 0

DY to cc

DAKRYL COOK

HYDROLOGIC REPORT FOR

TARMAC CONCRETE PLANT

JOB NO. 7770

DRY DETENTION POND

DESIGN TYPE 3

prepared by:

AES CONSULTING ENGINEERS
5248 Olde Towne Rd, Suite 1
Williamsburg, VA. 23188

DATE: 09/01/92

KEY DETENTION POND

PRE-DEVELOPMENT

DRAINAGE AREA = 4.18 AC

CH = 85

POST-DEVELOPMENT

DRAINAGE AREA = 4.18 AC

CH = 86

30% red. in poll. levels.

WATER QUALITY IS OBTAINED BY STORING FIRST FLUSH VOLUME

FIRST FLUSH VOLUME = (1 IN) (RV) (D.A.)

R1: (9. IMP) 0.9 TO 0.05

R2: (70%) (0.9) TO 0.05 = 0.68

59.77% imp.

limited to 60%
by ord.

$$VOL. = \frac{(1 \text{ IN}) (0.68) (4.18 \text{ AC}) (43,560 \frac{\text{FT}^2}{\text{AC}})}{12 \text{ IN/FT}} = \underline{10,318 \text{ FT}^3}$$

THIS STORAGE OCCURS @ ELEVATION 92.75'

SIZE ORIFICES TO RELEASE WATER QUALITY VOLUME (1")

IN 24 HRS.

$$\frac{10,318 \text{ FT}^3}{(24 \text{ HRS}) (60 \text{ MIN/HR}) (60 \text{ SEC/MIN})} = 0.1194 \text{ CFS}$$

$$q = 0.69 \sqrt{2gh}$$

$$h = 92.75 - 91.00 = 1.75 \text{ FT}$$

$$q = 32.2 \text{ FT/SEC}^2$$

$$q = 0.1194 \text{ CFS}$$

$$0.1194 = 0.69 \sqrt{2(32.2)(1.75)}$$

$$q = 0.0187 = \frac{nd^2}{4}$$

$$d = 0.1545 \text{ FT} = 1.85 \text{ IN.}$$

USE 1.85 IN ORIFICES

HYDROLOGIC REPORT

PRE-DEV 2 YR. STORM...
 TARMAC CONCRETE PLANT.
 MOORETOWN RD.....

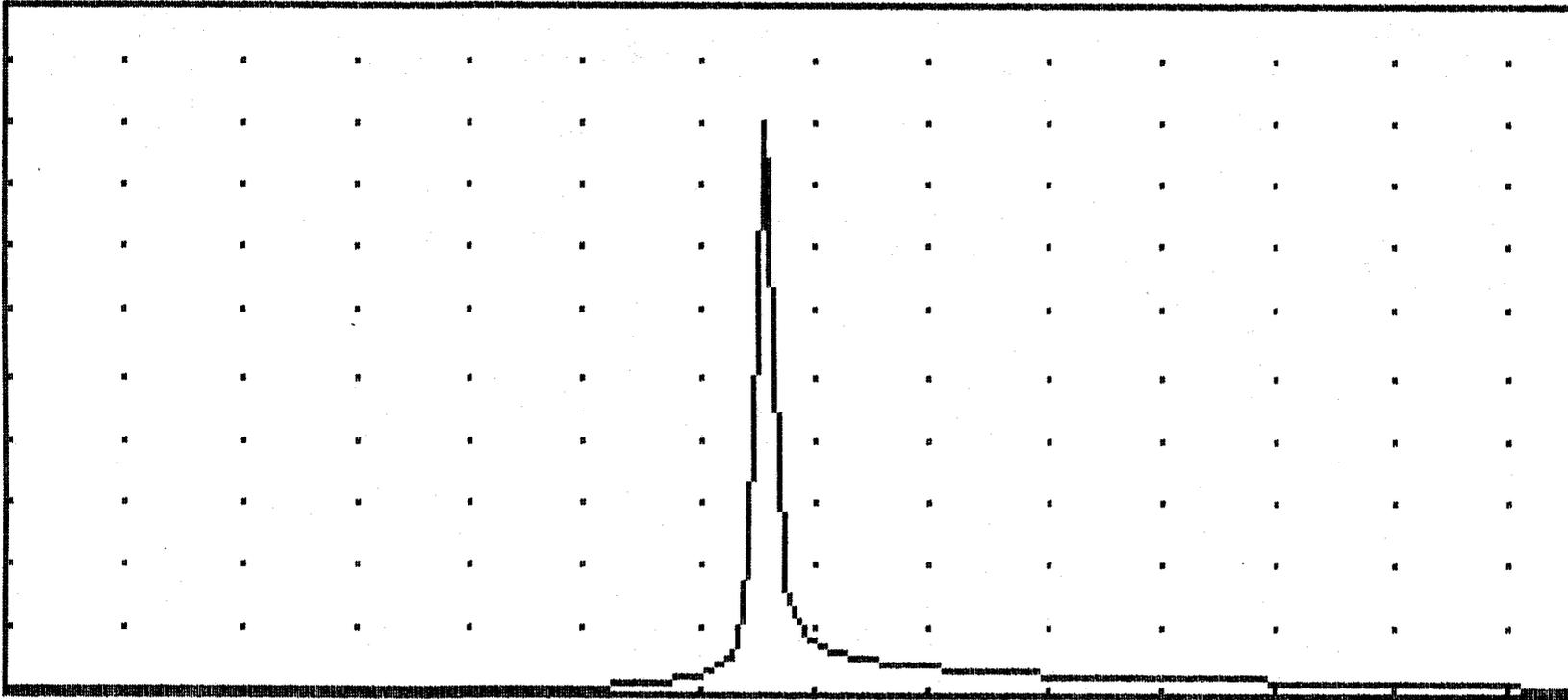
Hyd. No. 1

Hydrograph type = S.C.S. RUNOFF	Peak discharge = 9.01 cfs
Storm frequency = 2 yr	Time interval = 10 min
Basin area = 4.18 ac	Basin curve No. = 85
Ave basin slope = 2.5 %	Hydraulic len = 500 ft
Basin lag = 5.9 min	Time of concen = 9.81 min
Total precip. = 2.90 in	Distribution = S.C.S. II

HYDROGRAPH DISCHARGE TABLE

TIME--OUTFLOW		TIME--OUTFLOW		TIME--OUTFLOW		TIME--OUTFLOW	
(hrs	cfs)	(hrs	cfs)	(hrs	cfs)	(hrs	cfs)
11.50	0.51	11.67	1.41	11.83	4.49	12.00	9.01
12.17	4.75	12.33	1.58	12.50	1.22	12.67	0.94

Qp = 9.0 S.C.S. RUNOFF To = 0



HGU = 110 min 1 VGU = 1.0 cfs

**[F1] Scr [F2] Prt [F3] Edt [F4] Menu
[F5] S dn [F6] S up [F7] En1 [F8] Red**

HYDROLOGIC REPORT

POST-DEV 25 YR STORM.
 TARMAC CONCRETE PLANT.
 MOORETOWN RD.....

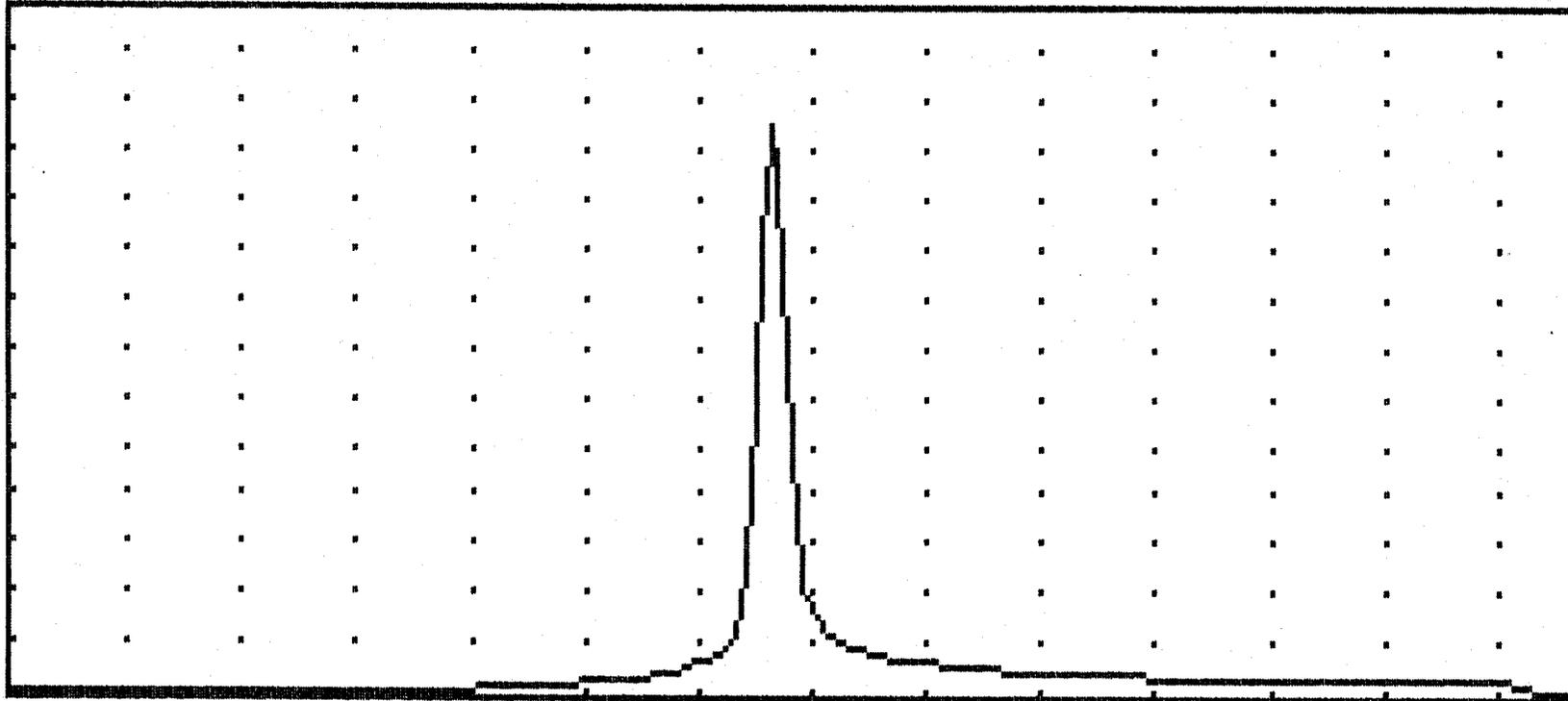
Hyd. No. 3

Hydrograph type = S.C.S. RUNOFF	Peak discharge = 11.50 cfs
Storm frequency = 25 yr	Time interval = 10 min
Basin area = 4.18 ac	Basin curve No. = 86
Ave basin slope = 1.5 % <i>v 2.5</i>	Hydraulic len = 700 ft <i>v 500</i>
Basin lag = 9.6 min <i>v 5.9</i>	Time of concn = 15.99 min <i>v 9.8</i>
Total precip. = 4.80 in	Distribution = S.C.S. II

HYDROGRAPH DISCHARGE TABLE

TIME--OUTFLOW (hrs cfs)	TIME--OUTFLOW (hrs cfs)	TIME--OUTFLOW (hrs cfs)	TIME--OUTFLOW (hrs cfs)
11.50 0.99	11.67 1.72	11.83 4.36	12.00 9.44
12.17 11.50	12.33 8.10	12.50 4.57	12.67 2.03
12.83 1.60	13.00 1.33	13.17 1.16	13.33 1.04

Qp = 11.5 S.C.S. RUNOFF To = 0



HGU = 110 min 3 VGU = 1.0 cfs

**[F1] Scr [F2] Prt [F3] Edt [F4] Menu
[F5] S dn [F6] S up [F7] En1 [F8] Red**

HYDROLOGIC REPORT

25 YR STORM.....
 THROUGH STRUCTURE.....
 NO SPILLWAY.....

Hyd. No. 4

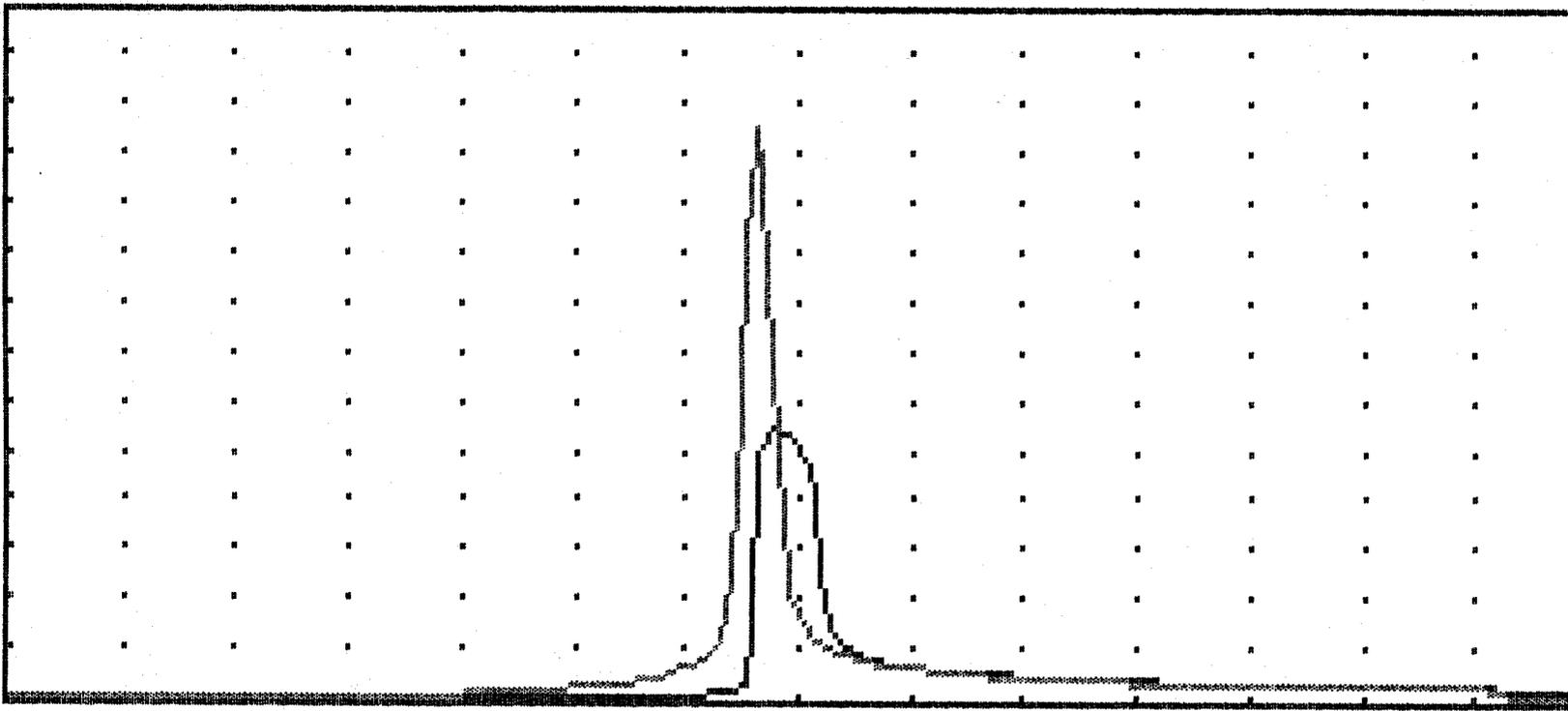
Hydrograph type = RESERVOIR ROUTE Peak discharge = 5.44 cfs
 Storm frequency = 25 yr Time interval = 10 min
 Inflow hyd. no. = 3 Reservoir no. = 1

HYDROGRAPH DISCHARGE TABLE

TIME hrs	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-0 (i) cfs	2S/dt+0 (j) cfs	OUTFLOW cfs
11.67	1.72	4.36	15.99	16.13	0.07
11.83	4.36	9.44	21.91	22.07	0.08
12.00	9.44	11.50	35.17	35.71	0.27
12.17	11.50	8.10	46.14	56.11	4.99
12.33	8.10	4.57	55.01	65.74	5.37
12.50	4.57	2.03	56.80	67.68	5.44
12.67	2.03	1.60	52.86	63.41	5.28
12.83	1.60	1.33	46.49	56.49	5.00
13.00	1.33	1.16	40.01	49.42	4.71
13.17	1.16	1.04	37.81	42.50	2.34
13.33	1.04	0.95	37.22	40.02	1.40
13.50	0.95	0.87	37.02	39.21	1.10
Maximum outflow (cfs) =					5.44
Maximum storage (cu ft) =					18672
Maximum elevation (ft) =					93.57

*calcs say
 2.1 is line cap.*

Qp = 5.4 RESERVOIR ROUTE To = 0



HGU = 110 min 4 VGU = 1.0 cfs

[F1] Scr [F2] Prt [F3] Edt [F4] Menu

[F5] S dn [F6] S up [F7] En1 [F8] Red

HYDROLOGIC REPORT

100 YR STORM.....
 TARMAC CONCRETE PLANT:
 MOORETOWN RD.....

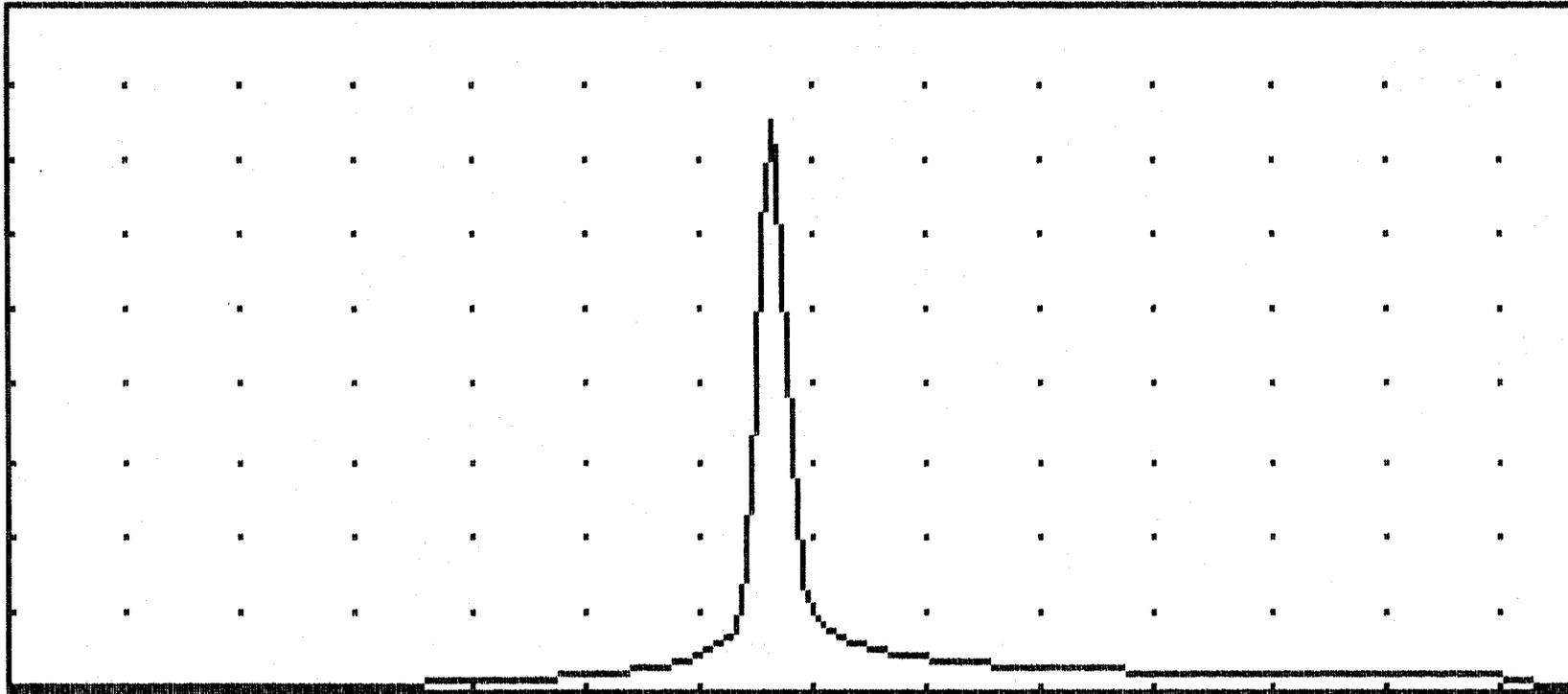
Hyd. No. 5

Hydrograph type = S.C.S. RUNOFF	Peak discharge = 14.98 cfs
Storm frequency = 100 yr	Time interval = 10 min
Basin area = 4.18 ac	Basin curve No. = 86
Ave basin slope = 1.5 %	Hydraulic len = 700 ft
Basin lag = 9.6 min	Time of concen = 15.99 min
Total precip. = 5.90 in	Distribution = S.C.S. II

HYDROGRAPH DISCHARGE TABLE

TIME--OUTFLOW (hrs cfs)	TIME--OUTFLOW (hrs cfs)	TIME--OUTFLOW (hrs cfs)	TIME--OUTFLOW (hrs cfs)
10.83 0.73	11.00 0.84	11.17 0.96	11.33 1.12
11.50 1.38	11.67 2.36	11.83 5.86	12.00 12.42
12.17 14.98	12.33 10.47	12.50 5.87	12.67 2.59
12.83 2.04	13.00 1.69	13.17 1.47	13.33 1.32
13.50 1.20	13.67 1.10	13.83 1.01	14.00 0.93

$Q_p = 15.0$ S.C.S. RUNOFF $T_o = 0$



HGU = 110 min 5 VGU = 2.0 cfs

[F1] Scr [F2] Prt [F3] Edt [F4] Menu
[F5] S dn [F6] S up [F7] En1 [F8] Red

HYDROLOGIC REPORT

100 YR STORM.....
 THROUGH STRUCT.....
 NO SPILLWAY.....

Hyd. No. 6

Hydrograph type = RESERVOIR ROUTE Peak discharge = 6.12 cfs
 Storm frequency = 100 yr Time interval = 10 min
 Inflow hyd. no. = 5 Reservoir no. = 1

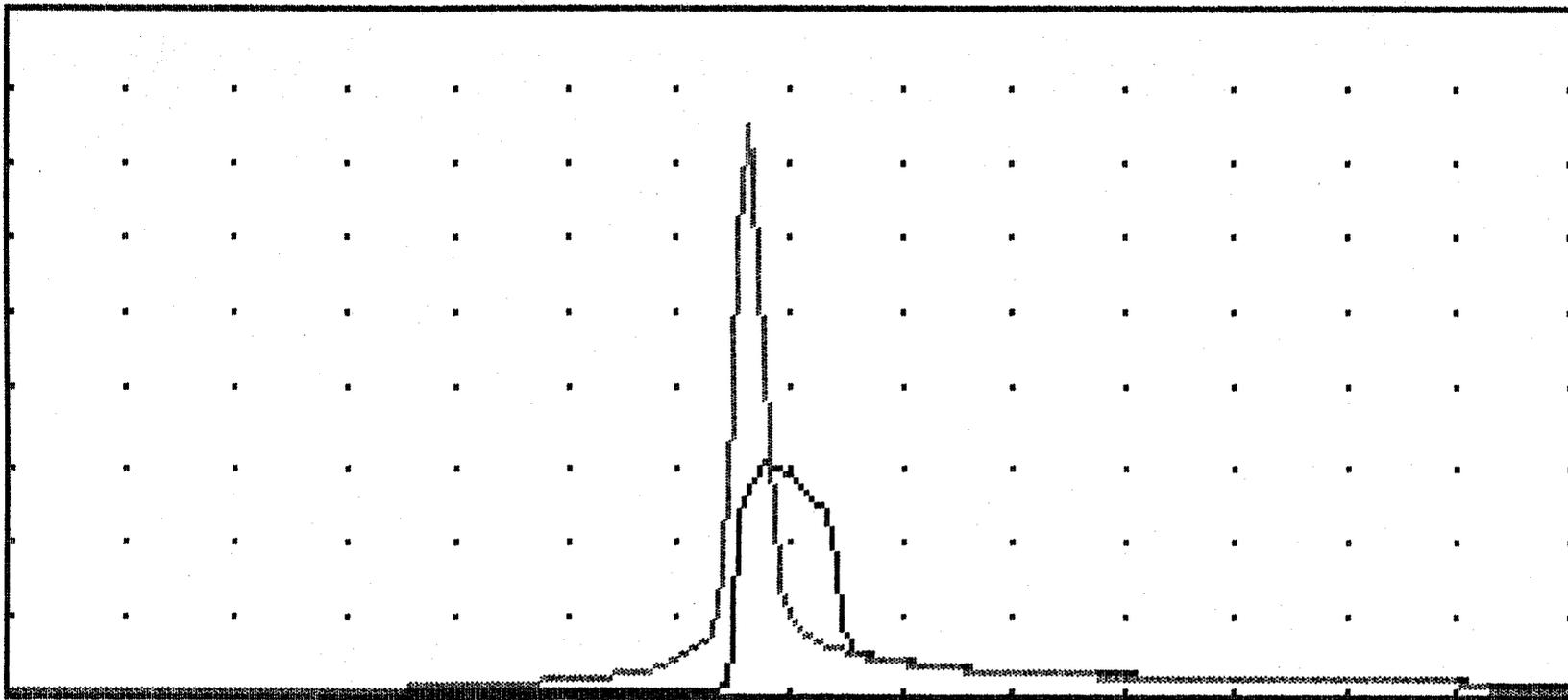
HYDROGRAPH DISCHARGE TABLE

TIME hrs	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-0 (i) cfs	2S/dt+0 (j) cfs	OUTFLOW cfs
11.00	1.12	1.00	18.43	18.57	0.07
11.10	1.12	1.00	20.78	20.99	0.08
11.20	1.12	1.00	24.36	24.42	0.08
11.30	1.12	1.00	32.40	32.55	0.09
11.40	1.12	1.00	41.16	41.00	0.09
11.50	1.12	1.00	57.62	57.66	0.47
12.00	1.12	1.00	71.09	71.06	0.99
12.10	1.12	1.00	75.19	75.04	1.12
12.20	1.12	1.00	71.64	71.64	1.17
12.30	1.12	1.00	64.76	64.76	1.47
12.40	1.12	1.00	57.54	57.54	1.87
12.50	1.12	1.00	43.46	43.46	2.44
13.00	1.12	1.00	33.31	33.31	3.16
13.10	1.12	1.00	28.11	28.11	3.96
13.20	1.12	1.00	23.77	23.77	4.81
13.30	1.12	1.00	20.08	20.08	5.71
13.40	1.12	1.00	16.97	16.97	6.65
13.50	1.12	1.00	14.43	14.43	7.62
14.00	0.93	0.87	11.57	11.57	8.62

too large

Maximum outflow (cfs) = 6.12
 Maximum storage (cu ft) = 24393
 Maximum elevation (ft) = 94.12

Qp = 6.1 RESERVOIR ROUTE To = 0



HGU = 110 min 6 VGU = 2.0 cfs

**[F1] Scr [F2] Prt [F3] Edt [F4] Menu
[F5] S dn [F6] S up [F7] En1 [F8] Red**

Option 1 STAGE / STORAGE TABLE R to res

1. RESERVOIR No = 1. 2. RESERVOIR NAME = POND #1.....

3. $S = K_s * Z^b$
 $K_s = 0$ START ELEV = 0..... $b = 0$ INCREMENT = 0....

	STAGE ft	ELEVATION ft	CD AREA sq ft	INC STORAGE cu ft	TOT STORAGE cu ft
4	0.00	91.00.	0.	0	0
5	1.00	92.00.	8174.	4087	4087
6	2.00	93.00.	9473.	8823	12910
7	3.00	94.00.	10771.	10122	23032
8	4.00	95.00.	12376.	11573	34605
9	0.00	0.00.	0.	0	0
10	0.00	0.00.	0.	0	0
11	0.00	0.00.	0.	0	0
12	0.00	0.00.	0.	0	0
13	0.00	0.00.	0.	0	0
14	0.00	0.00.	0.	0	0

Change item number: 0 DY to co

Reservoir No. 1 OUTLET STRUCTURES
 CULVERT STRUC A. $Q=C_oA[2gh/k]^0.5$ CULVERT STRUC B. $Q=C_oA[2gh/k]^0.5$

- | | |
|------------------------------|----------------------------------|
| 1. WIDTH (in) = 12. | 9. WIDTH (in) = 1.8 |
| 2. HEIGHT (in) = 12. | 10. HEIGHT (in) = 1.8 |
| 3. No. BARRELS = 1. | 11. No. BARRELS = 1. |
| 4. INVERT ELEV. = 91..... | 12. INVERT ELEV. = 91..... |
| 5. $C_o = 0.60$ | 13. $C_o = 0.60$ |
| 6. CULVERT LENGTH (ft) = 15. | 14. CULVERT LENGTH (ft) = 6... |
| 7. CULVERT SLOPE (%) = .4 | 15. CULVERT SLOPE (%) = 0.... |
| 8. MANNING'S N-VALUE = .013 | 16. MANNING'S N-VALUE = .013 |
| | 17. MULTI-STAGE OPTION ? (Y/N) Y |
- outlet is much larger*

- | | |
|-----------------------------------|-----------------------------------|
| WEIR STRUCTURE A. $Q=C_wLH^{EXP}$ | WEIR STRUCTURE B. $Q=C_wLH^{EXP}$ |
| 18. CREST LENGTH (ft) = 12.5664 | 23. CREST LENGTH (ft) = 0..... |
| 19. CREST ELEVATION = 92.75.. | 24. CREST ELEVATION = 0..... |
| 20. $C_w = 3.00$ | 25. $C_w = 3.00$ |
| 21. EXP = 1.50 | 26. EXP = 1.50 |
| 22. MULTI-STAGE OPTION ? (Y/N) Y | 27. MULTI-STAGE OPTION ? (Y/N) N |

Change item number: 0 DY to co

FAX MAIL

AES Consulting Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
TELEPHONE NO. (804) 253-0040
FAX NO. (804) 220-8994

SEND TO

NAME Darryl Cook FAX NO. _____
OFFICE JCC - Code Compliance

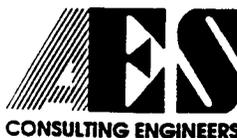
SENT BY

NAME Rich Costello PROJECT NO. _____
SENT BY RAE DATE 9/28 TIME 3:30
TOTAL PAGES INCLUDING THIS PAGE 3

PLEASE CONTACT AES AT 804/253-0040 IF ANY PROBLEMS OCCUR WITH THIS TRANSMISSION.

MESSAGE

Darryl,
Attached is Madson's letter. Original
ground is 98. Pond bottom will be raised
to 93. Trench will be 3'-4' deep 2' wide and
100 feet long. Additional cals will have
to be performed but I believe this will
work. If necessary pond can be made
larger in ~~area~~ area but shallower in depth.



FILE

TRANSMITTAL

DATE: September 3, 1992

TO: CODE COMPLIANCE, Darryl Cook+
VDOT(2)*
REAL ESTATE ASSESSMENTS
HEALTH DEPT.-JCC SANITARIANS
CITY OF WILLIAMSBURG>

JCSA
FIRE
WAYLAND BASS#

FROM: Mike Freda, Planner

SUBJECT: SP-90-92. Tarmac-Ready Mix Concrete Plant

ITEMS ATTACHED: Site plan
+hydraulic report, BMPs
*hydraulic report, checklist
>hydraulic report
#BMPs

INSTRUCTIONS: Please review and comment or initial if approved.

RETURN REQUIRED BY: September 14, 1992

AGENCY'S COMMENTS:

This site lies outside the design service area of the City of Williamsburg's storm sewer system along Richmond Road. This system does not have any excess capacity to serve this project. Therefore, the drainage from this project to this area of Richmond Road is not acceptable.

Steve Martin 9/10/92
CITY ENGINEER

TABLE 3

WORKSHEET FOR BMP POINT SYSTEM

TARMAC - WILLIAMSBURG PLANT

REDEVELOPED SITE - MUST 10% REDUCTION IN POLL.

A. STRUCTURAL BMP POINT ALLOCATION

BMP	REDUCTION BMP Points	Fraction of Site Served by BMP	TOTAL REDUCTION IN POLLUTANTS -Weighted BMP Points
DRY POND	30% 45%	x 100%	30% 45%
(DESIGN TYPE 3)		x	
		x	
		x	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:			

B. NATURAL OPEN SPACE CREDIT

Fraction of Site	Natural Open Space Credit	Points for Natural Open Space
	x (0.1 per 1%)	

C. TOTAL WEIGHTED POINTS

Structural BMP Points	+	Natural Open Space Points	=	TOTAL
-----------------------	---	---------------------------	---	-------

* FOR REDEVELOPED SITES, A 10% REDUCTION IN POLLUTANTS IS ALL THAT IS REQUIRED, WE MET PROVIDING A DESIGN TYPE 3 DRY POND FOR THE ENTIRE SITE WHICH IS EQUIVALENT TO A 45% REDUCTION IN POLLUTANTS.

File-

Larry W. Madison and Associates, Inc.

P.O. Box 791

Chester, Virginia 23831

Phone: (804) 796-3911

TARMAC CONCRETE PLANT

LARRY W. MADISON, SR., CPSS
JAMES E. BELSHAN, CPSS

*Demarcation
Soils
Report
mkl*

September 28, 1992

Mr. Richard Costello
A.E.S.
5248 Olde Towne Road, Suite 1
Williamsburg, VA 23188

RE: Soil Permeability Profiles for TARMAC, Williamsburg Plant

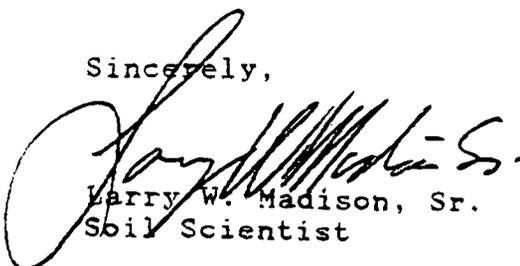
Dear Mr. Costello:

Enclosed please find soil profile descriptions and locations for the above referenced project. The soil at the referenced locations will have a soil permeability rate of 30 minutes per inch with a three foot head and 45 minutes per inch with a six inch head at six feet below the ground surface. A restrictive clay layer was observed at 96 inches in boring #2. Seasonal water table was observed at 90 inches in boring #1, and 96 inches in boring #2.

It is my recommendation that infiltration would work best at 6 to 7 feet below the existing soil surface for the planned detention basin.

Should you have any questions, please do not hesitate to contact me.

Sincerely,


Larry W. Madison, Sr.
Soil Scientist

LWM/mkl

Date of Evaluation 9/17/92

PROFILE DESCRIPTION
SOIL EVALUATION REPORT

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Tarmac - Williamsburg Plant

Hole #	Horizon	Depth (inches)	Description of: Color; Texture; Etc.
1	Fill	0-11	Yellowish-brown and pale brown; sandy loam.
	A&E	11-18	Yellowish-brown; sandy loam.
	B	18-24	Strong brown; sandy clay loam.
	B	24-90	Strong brown mottled with yellowish-red and yellowish-brown; light sandy clay loam.
	C	90-108	Brownish-yellow mottled with yellowish-red, yellowish-brown and few pale yellow to gray; sandy loam.
2	Fill	0-16	Yellowish-brown and pale brown; gravelly sandy loam.
	B	16-24	Yellowish-brown; sandy loam.
	B	24-96	Strong brown mottled with yellowish-red and yellowish-brown; sandy clay loam to light sandy clay loam.
	C	96-108	Brownish-yellow mottled with red, yellowish-brown and gray; heavy clay loam.

Date Record Created:

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Wednesday, March 10, 201
1:56:48 PM

WATERSHED YR
 BMP ID NO 007
 PLAN NO SP-90-92
 TAX PARCEL (33-3)(1-31)
 PIN NO 33301000031
 CONSTRUCTION DATE 6/1/1993
 PROJECT NAME Tarmac - Williamsburg Plant
 FACILITY LOCATION 5301 Mooretown Road
 CITY-STATE Williamsburg, VA
 CURRENT OWNER Titan Virginia Ready Mic LLC
 OWNER ADDRESS P.O. Box 2016
 OWNER ADDRESS 2
 CITY-STATE-ZIP CODE Norfolk, VA 23501
 OWNER PHONE
 MAINT AGREEMENT Yes
 EMERG ACTION PLAN No

MAINTENANCE PLAN

No
 SITE AREA acre 3.7
 LAND USE COMM
 old BMP TYP Infiltration Basin
 JCC BMP CODE C3 Infiltration Basin .5
 POINT VALUE 10

SVC DRAIN AREA acres 4.2

SERVICE AREA DESCR NONE

IMPERV AREA acres
 RECV STREAM YORK RIVER TRIB

EXT DET-WQ-CTRL No

WTR QUAL VOL acre-ft 0.2
 CHAN PROT CTRL No
 CHAN PROT VOL acre-ft 0.3

SW/FLOOD CONTROL No

GEOTECH REPORT No

CTRL STRUC DESC PPVC Pipe

CTRL STRUC SIZE inches 6

OTLT BARRL DESC NONE

OTLT BARRL SIZE inch 0

EMERG SPILLWAY No

DESIGN HW ELEV 91

PERM POOL ELEV

2-YR OUTFLOW cfs 9.83

10-YR OUTFLOW cfs 10.17

REC DRAWING No

CONSTR CERTIF No

LAST INSP DATE Inspected by:

INTERNAL RATING

MISC/COMMENTS

Get Last BMP No

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Additional Comments:

