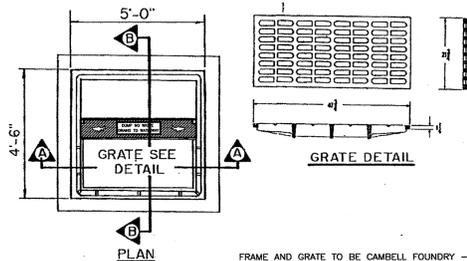


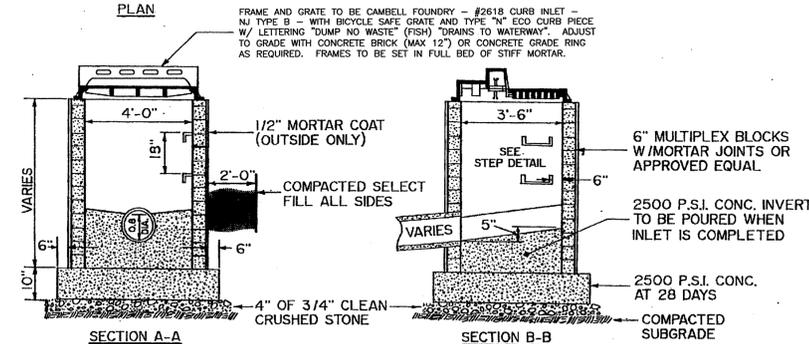
**GENERAL STORM SEWER NOTES**

1. ALL PRECAST DRAINAGE STRUCTURES SHALL CONTAIN REINFORCING STEEL AND BE DESIGNED FOR HS-20 LOADING.
2. SHOP DRAWINGS OF ALL PRECAST DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. ALL PRECAST STRUCTURES SHALL COMPLY WITH THE NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST REVISION.
3. ALL REINFORCED CONCRETE PIPE SHALL BE CLASS III PIPE UNLESS OTHERWISE NOTED ON THE PLANS.
4. ALL JOINTS SHALL BE MORTARED WITH 2:1 SAND MORTAR UNLESS OTHERWISE NOTED ON THE PLANS.
5. ANY DRAINAGE STRUCTURE THAT IS TO BE LEFT UNCOVERED FOR MORE THAN 8 HOURS SHALL BE PROTECTED WITH BARRICADES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES OR OSHA STANDARDS.
6. CONDUIT OUTLET PROTECTION SHALL BE INSTALLED PRIOR TO THE CONSTRUCTION OF ANY PIPE RUN.
7. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS CONSTRUCTION OF STORM SEWER PROGRESSES IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION.
8. ALL STORM SEWER CONSTRUCTION SHALL BEGIN AT THE LOWEST ELEVATION.
9. NO STORM SEWER SHALL BE CONSTRUCTED IN ADVANCE OF THE STORM WATER DETENTION BASIN CONSTRUCTION.
10. ALL STORM SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, LATEST REVISION



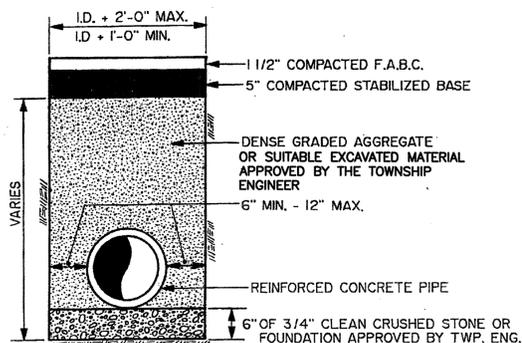
**NOTES**

1. INLETS 0' TO 8' DEEP SHALL BE SINGLE WALL CONSTRUCTION (6"). INLETS 8' TO 12' DEEP SHALL BE DOUBLE WALL CONSTRUCTION (12").
2. WHERE INLET DEPTH IS 4' OR GREATER, OR IF PIPE SIZE IS 24" OR GREATER, A INLET SAFETY BAR SHALL BE PROVIDED.



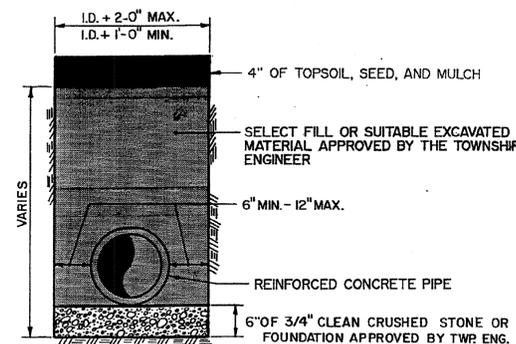
**TYPE 'B' INLET**

NOT TO SCALE



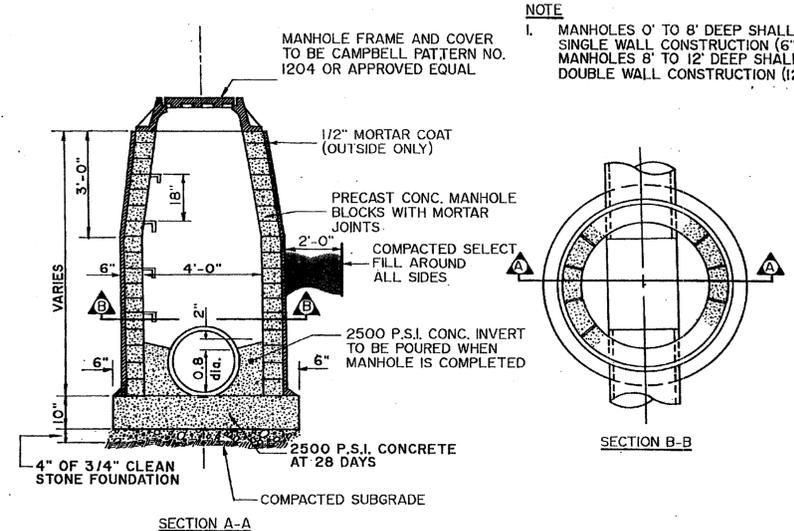
**TYPICAL STORM SEWER TRENCH ROADWAY**

NOT TO SCALE



**TYPICAL STORM SEWER TRENCH LAWN OR EASEMENT AREA**

NOT TO SCALE

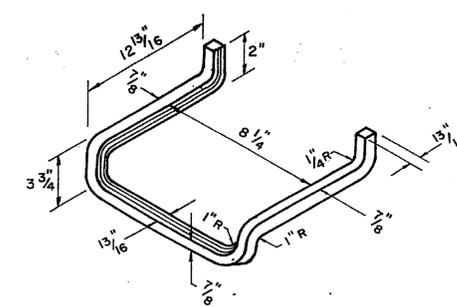


**STORM SEWER MANHOLE**

NOT TO SCALE

**NOTE**

1. MANHOLES 0' TO 8' DEEP SHALL BE SINGLE WALL CONSTRUCTION (6"). MANHOLES 8' TO 12' DEEP SHALL BE DOUBLE WALL CONSTRUCTION (12").

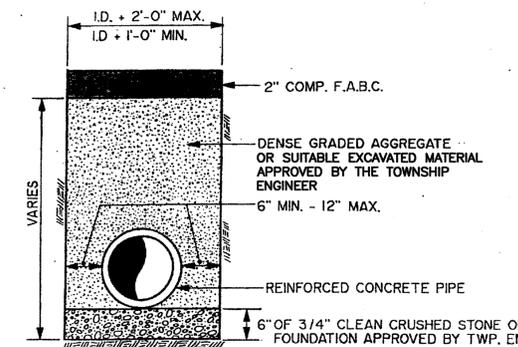


**NOTES**

1. STEPS TO BE EXTRUDED OF 6061-T6 ALUMINUM.
2. STEPS SHALL BE PROVIDED AT 18" ON CENTER.

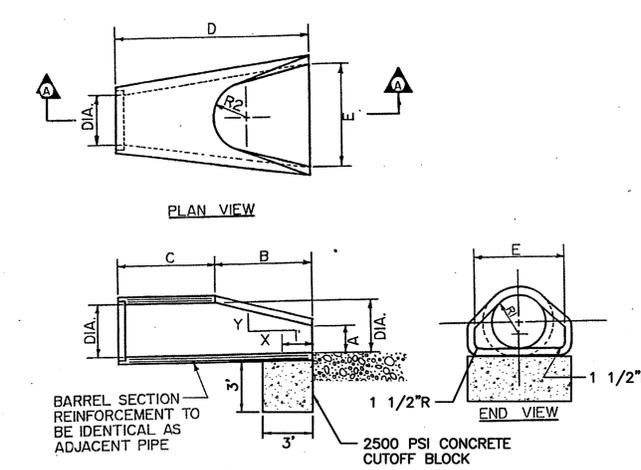
**STEP DETAIL**

NOT TO SCALE



**TYPICAL STORM SEWER TRENCH DRIVEWAY**

NOT TO SCALE



BARREL SECTION REINFORCEMENT TO BE IDENTICAL AS ADJACENT PIPE

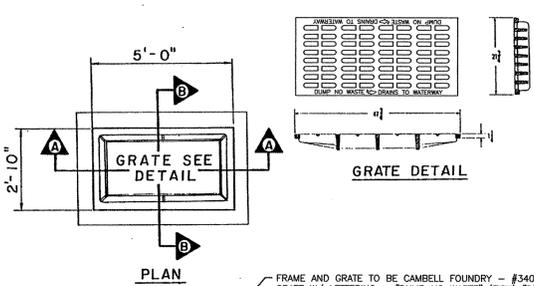
**SECTION A-A**

DIA.	A	B	C	D	E	R1	R2	X:Y
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"	12 1/2"	1"	3d
18"	9"	2'-3"	3'-10"	6'-1"	3'-0"	15 1/2"	12"	3d
21"	9"	2'-11"	3'-2"	6'-1"	3'-6"	16 1/8"	13"	3d
24"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	16 13/16"	14"	3d
27"	10 1/2"	4'-0"	2'-1 1/2"	6'-1 1/2"	4'-6"	18 3/16"	14 1/2"	3d
30"	1'-0"	4'-6"	1'-7 1/2"	6'-4 1/2"	5'-0"	18 1/2"	15"	3d
36"	1'-3"	5'-3"	2'-10"	8'-1"	6'-0"	24 8/16"	20"	3d
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	28 1/2"	22"	3d

THE ABOVE CHART IS FOR REFERENCE ONLY. DIMENSIONS MAY VARY WITH DIFFERENT MANUFACTURERS

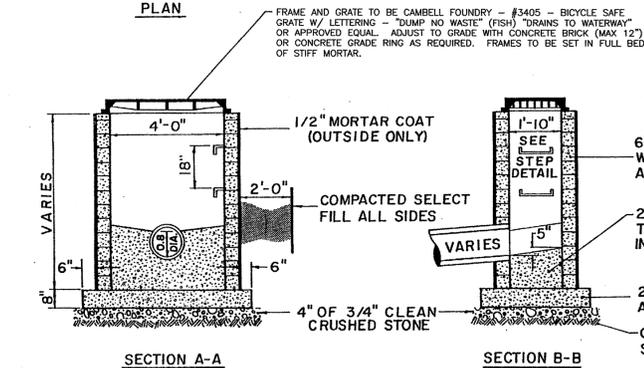
**OUTLET FLARED END SECTION**

NOT TO SCALE



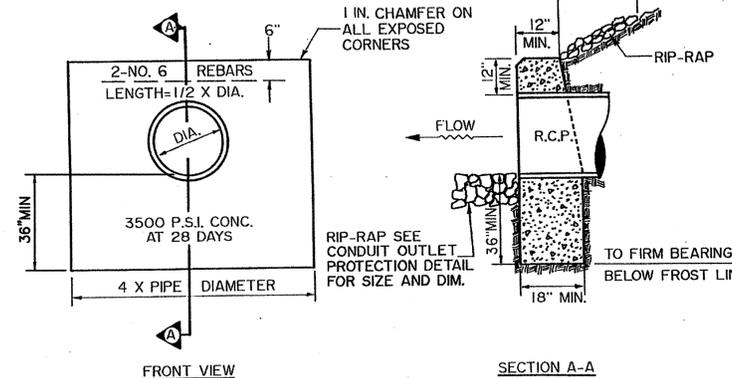
**NOTES**

1. INLETS 0' TO 8' DEEP SHALL BE SINGLE WALL CONSTRUCTION (6"). INLETS 8' TO 12' DEEP SHALL BE DOUBLE WALL CONSTRUCTION (12").



**TYPE 'A' INLET**

NOT TO SCALE



**CONCRETE HEADWALL**

NOT TO SCALE

**NOTES**

1. FOR ARCH AND ELLIPTICAL PIPE, THE WIDTH OF THE HEADWALL SHALL BE EQUAL TO 3 X RISE + SPAN.
2. ALL EXPOSED CONC. SURFACES SHALL BE RUBBED TO REMOVE FORM MARKS.
3. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL). THE ENDS OF THE HEADWALL SHALL BE SET 2 X DIA. OFF THE C. OF THE CONTROLLING PIPE.

1.) NJDEP COMMENTS 10/09/02  
 2.) TWP COMMENTS 09/17/04  
 3.) SCS/TWP COMMENTS 11/05/04  
 4.) TWP COMMENTS 06/17/05  
 5.) FINAL SUBMISSION 05/30/12  
 6.) ELKS COMMENTS 07/20/12  
 7.) SHEET NO. 11/20/12

**MENLO ENGINEERING ASSOCIATES, INC.**  
 CIVIL ENGINEERS, LAND SURVEYORS AND PROFESSIONAL PLANNERS  
 261 CLEVELAND AVENUE HIGHLAND PARK, NEW JERSEY 08904  
 PHONE: (732) 846-8585 FAX: (732) 846-9439  
 CERTIFICATE OF AUTHORIZATION: 246A27851900

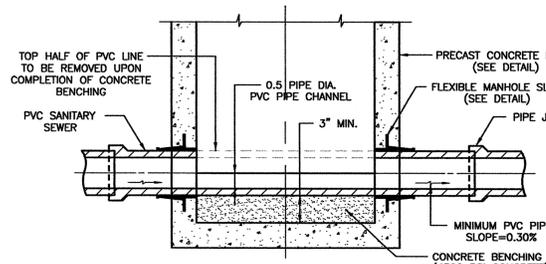
**BRIAR CLIFFE**  
 TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY  
 PRELIMINARY MAJOR SUBDIVISION  
**CONSTRUCTION DETAILS-1**  
 BLOCK 78.01 LOT 15, BLOCK 78.02 LOTS 6-9, BLOCK 78.03 LOTS 2-7 &  
 BLOCK 78.05 LOT 1 TAX MAP SHEET No. 20 13.69 ACRES±

DRWN. BY JAG DATE OF ISSUE JUNE 11, 2002 SCALE: AS NOTED  
 DSGN. BY WAL CAD # 2000048DE1  
 CHKD. BY ARC REV. 7.) NOVEMBER 20, 2012 JOB # 2000.048  
 APPRD. BY ARC DWG # DE-1

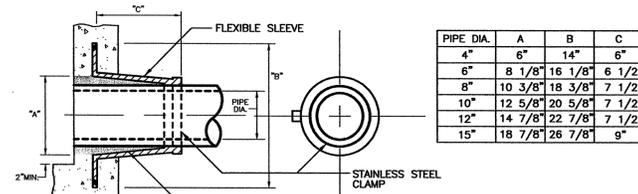
THIS DRAWING IS FOR PERMIT PURPOSES ONLY. THIS BOX HAS BEEN CHECKED AND DATED.

THIS WORK PREPARED UNDER MY PROFESSIONAL SUPERVISION BY R. COCO PROFESSIONAL ENGINEER/LAND SURVEYOR NJ P.E.#28264



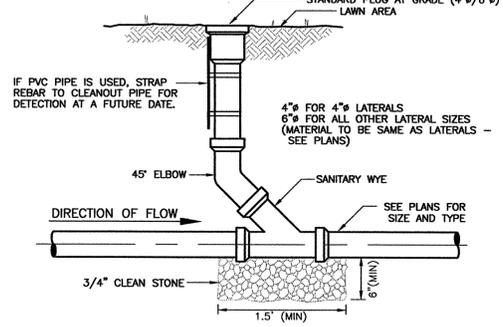


**SANITARY SEWER PVC SLIP-LINED MANHOLE DETAIL**  
N.T.S.

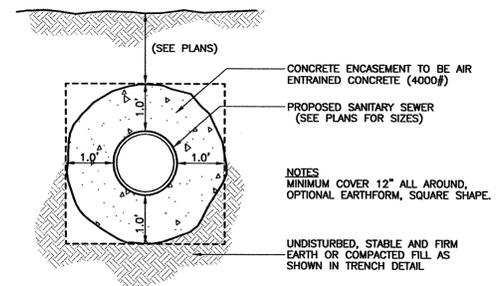


**FLEXIBLE MANHOLE SLEEVE**  
N.T.S.

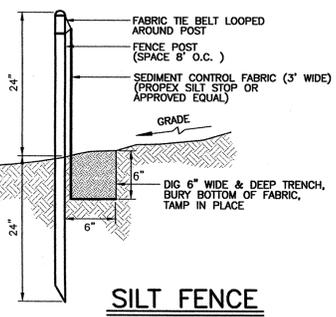
**NOTES:**  
1) ALL CONSTRUCTION SHALL MEET STANDARD SPECIFICATIONS, THE LATEST EDITION.  
2) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST OSHA STANDARDS.



**CLEANOUT (IN-LINE)**  
N.T.S.



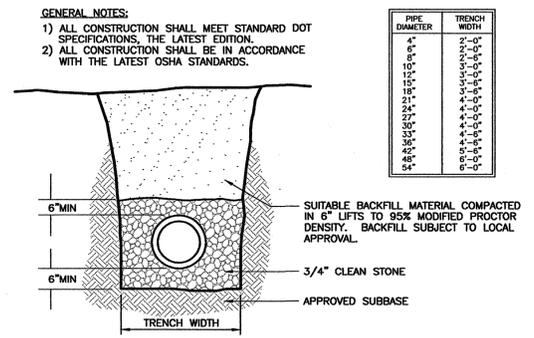
**CONCRETE ENCASUREMENT (TYPICAL)**  
N.T.S.



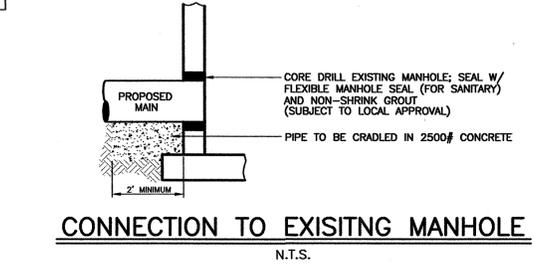
**SILT FENCE**  
N.T.S.



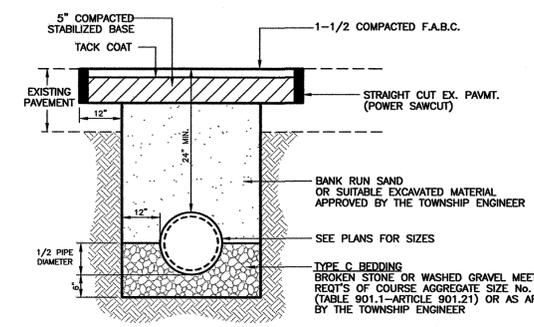
**SIGN DETAIL**  
N.T.S.



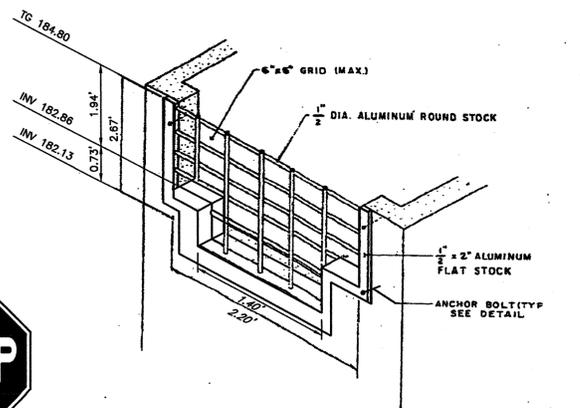
**TRENCH DETAIL 'A' (SANITARY SEWER)**  
N.T.S.



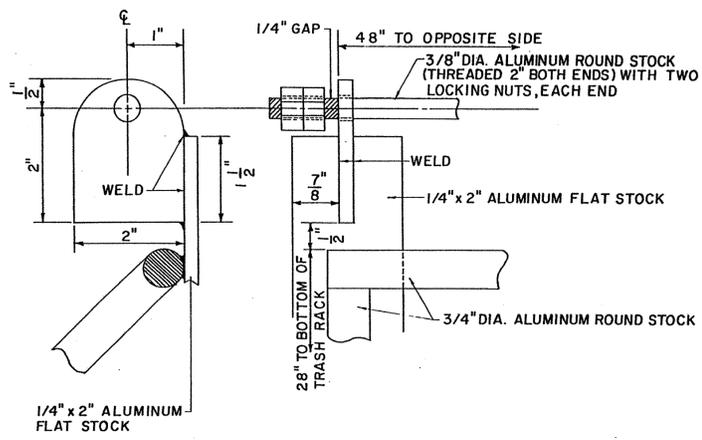
**CONNECTION TO EXISTING MANHOLE**  
N.T.S.



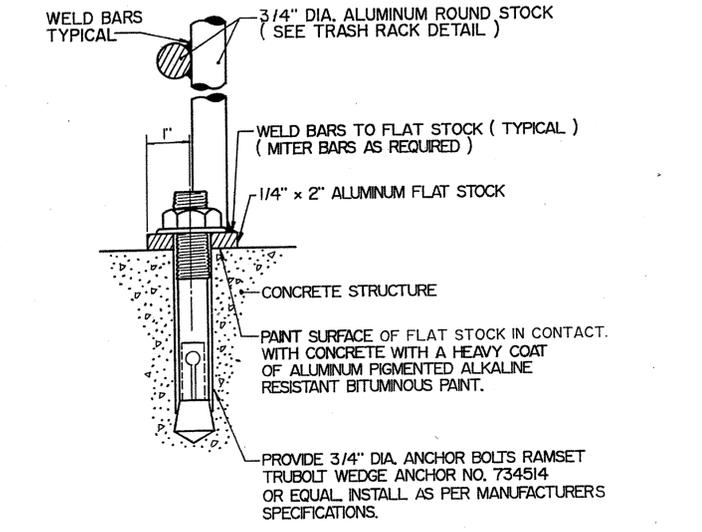
**TRENCH AND BEDDING DETAIL (EXISTING PAVED ROAD)**  
N.T.S.



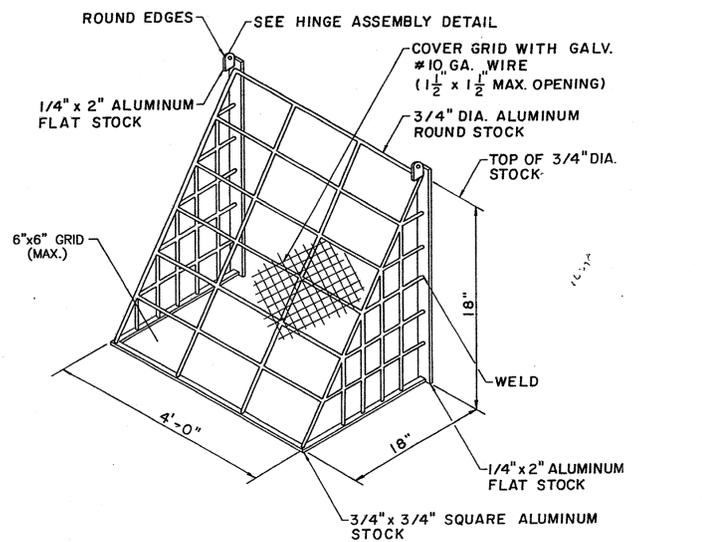
**WEIR TRASH RACK ON TWO SIDES**  
NOT TO SCALE



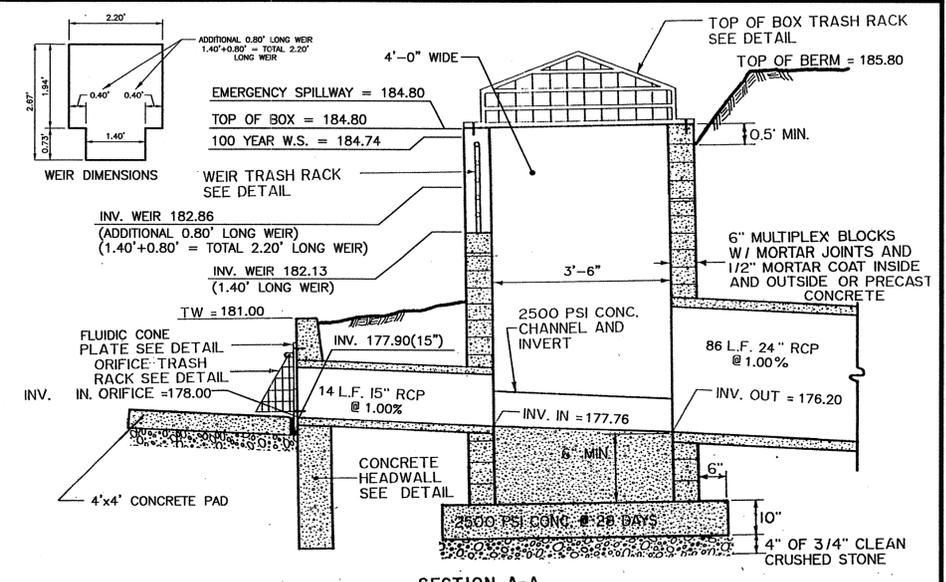
**HINGE ASSEMBLY**  
NOT TO SCALE



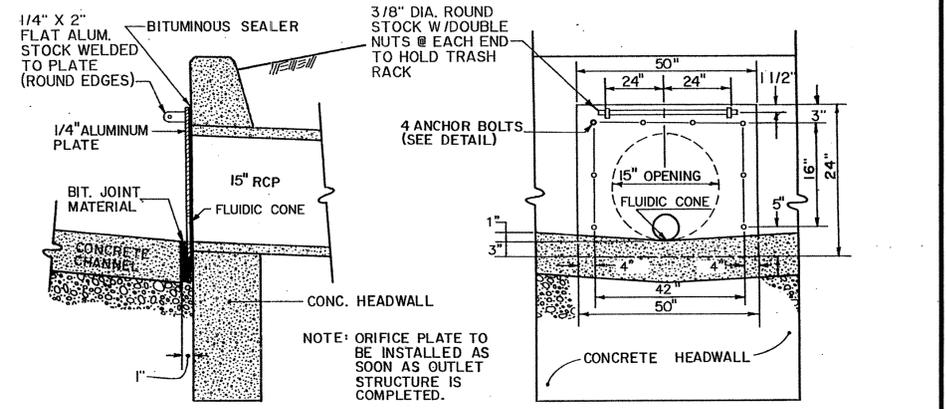
**ANCHOR BOLT DETAIL**



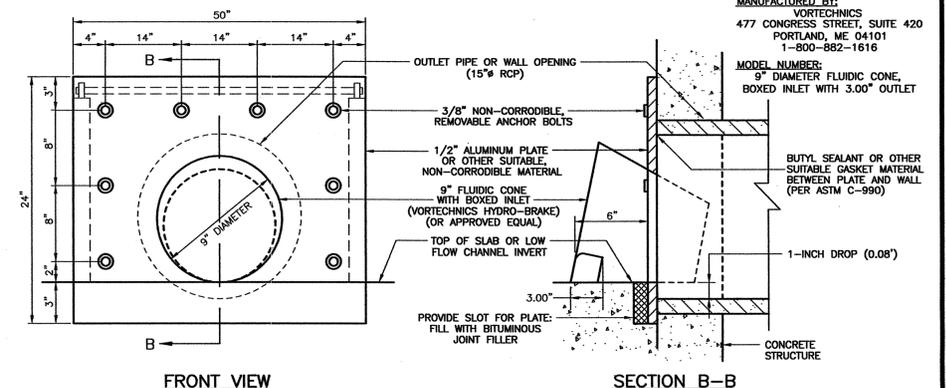
**TRASH RACK FOR 3" TO 15" PRIMARY ORIFICES**  
NOT TO SCALE



**SECTION A-A**



**ORIFICE PLATE**  
NOT TO SCALE



**FLUIDIC CONE W/ PLATE DETAIL**  
N.T.S.

THIS DRAWING IS FOR PERMIT PURPOSES ONLY. IT IS NOT FOR CONSTRUCTION UNIT. THIS BOX HAS BEEN CHECKED AND DATED. CHECKED BY: DATE:

THIS WORK PREPARED UNDER MY IMMEDIATE SUPERVISION...

ED R. COCO  
PROFESSIONAL ENGINEER/  
LAND SURVEYOR  
NJ PERLS#24264

**MENLO ENGINEERING ASSOCIATES, INC.**  
CIVIL ENGINEERS, LAND SURVEYORS AND PROFESSIONAL PLANNERS  
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CERTIFICATE OF AUTHORIZATION: 246A27951900

**BRIAR CLIFFE**  
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY  
PRELIMINARY MAJOR SUBDIVISION  
**CONSTRUCTION DETAILS-3**  
BLOCK 78.01 LOT 15, BLOCK 78.02 LOTS 6-9, BLOCK 78.03 LOTS 2-7 & BLOCK 78.05 LOT 1 TAX MAP SHEET No. 20 13.89 ACRES±

DATE OF ISSUE: JUNE 11, 2002  
REV. 11.) FEBRUARY 15, 2013

SCALE: AS NOTED  
CAD # 2000048DE3  
JOB # 2000.048  
DWG # DE-3

DRWN. BY JAG  
DSGN BY WAL  
CHKD. BY ARC  
APPRD. BY ARC

ZIP FILE # = 2000048B4S C:\DWG\2000048bca\2000048DE3.dwg

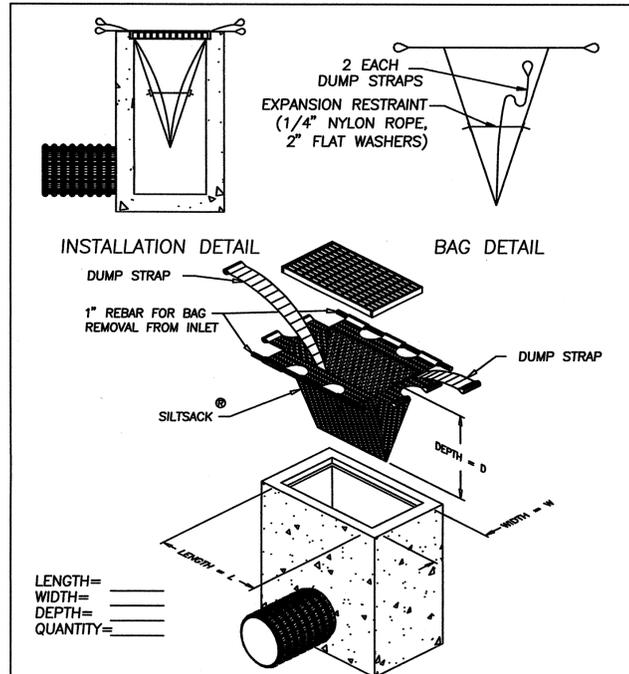
# SOIL EROSION AND SEDIMENT CONTROL NOTES

- All Soil Erosion and Sediment Control practices shall be installed prior to any major soil disturbances, or in their proper sequence and maintained until permanent protection is established.
- Any disturbed areas that will be left exposed more than 30 days and not subject to construction traffic, will immediately receive a temporary seeding. If the season prevents the establishment of a temporary cover, the disturbed areas will be mulched with straw, or equivalent material, at a rate of two (2) tons per acre, according to State STANDARDS.
- Permanent Vegetation shall be seeded or sodded on all exposed areas within ten (10) days after final grading. Mulch will be used for protection until seeding is established.
- All work shall be done in accordance with the State STANDARDS for Soil Erosion and Sediment Control in New Jersey.
- A sub-base course will be applied immediately following rough grading and installation of improvements in order to stabilize streets, roads, driveways and parking areas. In areas where no utilities are present, the sub-base shall be installed within 15 days of preliminary grading.
- Immediately following initial disturbance or rough grading all critical areas subject to erosion (ie: steep slopes, roadway embankments) will receive a temporary seeding in combination with straw mulch or a suitable equivalent, at a rate of two (2) tons per acre, according to State STANDARDS.
- Any steep slopes receiving pipeline installation will be backfilled and stabilized daily, as the installation proceeds (ie: slopes greater than 3:1).
- Traffic control STANDARDS require the installation of a 50'x30'x1" pad of 1 1/2" to 2" stone, at all construction driveways, immediately after initial site disturbance.
- In accordance with the STANDARDS for Permanent Vegetative Cover for soil stabilization, any soil having a pH of 4 or less or containing iron sulfides shall be covered with a minimum of 12" of soil having a pH of 5 or more prior to seedbed preparation.
- The Mercer County Soil Conservation District shall be notified 48 hours in advance of any land disturbing activity.
- At the time when the site preparation for permanent, vegetative stabilization is going to be accomplished, any soil that will not provide a suitable environment to support adequate vegetative ground cover, shall be removed or treated in such a way that will permanently adjust the soil conditions and render it suitable for vegetative ground cover. If the removal or treatment of the soil will not provide suitable conditions, non-vegetative means of permanent ground stabilization will have to be employed.
- In that N.J.S.A. 4:24-39 et seq., requires that no Certificate of Occupancy be issued before the provisions of the Certified Plan for Soil Erosion and Sediment Control have been complied with for permanent measures, all site work for site plans and all work around individual lots in subdivisions, will have to be completed prior to the District issuing a Report of Compliance for the issuance of a Certificate of Occupancy by the Municipality.
- Conduit Outlet Protection must be installed at all required outfalls prior to the drainage system becoming operational.
- Any changes to the Certified Soil Erosion and Sediment Control Plans will require the submission of revised Soil Erosion and Sediment Control plans to the District for re-certification. The revised plans must meet all current State Soil Erosion & Sediment Control STANDARDS.
- The Mercer County Soil Conservation District shall be notified of any changes in ownership.
- Mulching to the STANDARDS is required for obtaining a Conditional Report of Compliance. Conditions are only issued when the season prohibits seeding.
- Contractor is responsible for keeping all adjacent roads clean during life of construction project.
- The developer shall be responsible for remediating any erosion or sediment problems that arise as a result of ongoing construction at the request of the Mercer County Soil Conservation District.
- Hydroseeding is a two step process. The first step includes seed, fertilizer, lime etc. along with minimal amounts of mulch to promote consistency, good seed to soil contact, and give a visual indication of coverage. Upon completion of seeding operation, hydro-mulch should be applied at a rate of 1500 lbs. per acre in a second step.

The use of hydro-mulch, as opposed to straw, is limited to optimum seeding dates as listed in the STANDARDS.

\* Where Applicable

MERCER COUNTY SOIL CONSERVATION DISTRICT  
508 HUGHES DRIVE  
HAMILTON SQUARE, N.J. 08690



## DETAIL OF INLET SEDIMENT CONTROL DEVICE

PROJECT:		DR. BY:	
CITY:		DATE:	
STATE:		DR. NO.:	

## INLET PROTECTION DETAIL

N.T.S.

## CONSTRUCTION SEQUENCE

- CONSTRUCTION COMMENCEMENT: SUMMER 2012
- INSTALLATION OF SILT FENCE ALONG LIMIT OF DISTURBANCE LINE AT SECTION DELINEATED ON "SOIL EROSION CONTROL PLANS" - 2 DAYS
  - INSTALLATION OF STONE AT CONSTRUCTION ENTRANCES - 1 DAY
  - TEMPORARY STABILIZATION - 3 DAYS
  - ROUGH CLEARING AND GRUBBING - 2 WEEKS
  - ROUGH GRADING AND TEMPORARY SEEDING - 4 WEEKS
  - INSTALLATION AND COMPLETE STABILIZATION OF DETENTION FACILITIES
  - INSTALLATION OF EROSION CONTROL DEVICES (TEMPORARY SEEDING, TEMPORARY STABILIZATION, CONDUIT OUTLET PROTECTION, INLET PROTECTION AND INSTALLATION OF TEMPORARY SEDIMENT RISER) - 2 WEEKS
  - INSTALLATION OF UTILITIES AND FOUNDATIONS - 4 WEEKS
  - CURBING - 4 WEEKS
  - PAVEMENT SUBBASE - 3 WEEKS
  - FINISHED GRADING AND LIGHTING - 3 WEEKS
  - FINAL PAVEMENT - 2 WEEKS
  - LANDSCAPING WITH PERMANENT SEEDING - 2 WEEKS

NOTE: AS C.O.'S FOR INDIVIDUAL BUILDING ARE APPLIED FOR, ALL SITE WORK AROUND THE BUILDING TO BE COMPLETED (NO. 10 SUBJECT TO WEATHER CONDITIONS AND TO BE COMPLETED WITHIN 6 MONTHS).

THE ABOVE SCHEDULE SUBJECT TO WEATHER CONDITIONS AND MATERIAL AVAILABILITY.

## SEEDING SPECIFICATION

### TEMPORARY SEEDING

SEEDING DATES: 3/1-4/30 & 8/15-10/15

SEEDBED PREPARATION: FERTILIZER (10-20-10) 500 LB/AC  
LIMESTONE 4,000 LB/AC  
PERENNIAL RYEGRASS 100 LB/AC

### PERMANENT SEEDING

SEEDING DATES: 3/1-4/30; 5/1-8/14; 8/15-11/15

SEEDBED PREPARATION: FERTILIZER (10-20-10) 500 LB/AC  
LIMESTONE 6,000 LB/AC  
HARD FESCUE 120 LB/AC  
PERENNIAL RYEGRASS 30 LB/AC  
KENTUCKY BLUEGRASS 40 LB/AC

### BASE SEEDING (SIDE SLOPES AND BOTTOM)

BASE BOTTOMS AND SIDE SLOPES STEEPER THAN 3:1 SHALL BE SEEDDED WITH STABILIZATION MIX #12 AS RECOMMENDED BY SCS:

FLAT PEA 50%  
PERENNIAL RYEGRASS 25%  
TALL FESCUE (TURF TYPE) 25%  
OR  
STRONG CREEPING ROO FESCUE 25%

SEED AT A RATE OF 150 LBS/AC. SLOPE STABILIZATION TO BE CONDUCTED IN ACCORDANCE WITH SOIL CONSERVATION DISTRICT STANDARDS. IF HYDROSEEDING THEN MULCH MUST BE APPLIED SEPARATELY.  
FLAT PEA SHALL BE MIXED WITH THE PROPER INOCULANTS PRIOR TO PLANTING

MULCHING (Applies to both temporary and permanent seeding specs.)

UNROTTED SALT HAY OR APPROVED EQUAL 1 1/2 TO 2 TONS/AC

### MULCH ANCHORING

HYDROMULCH OR APPROVED EQUAL Use rates as recommended by manufacturer

1) USE OF ASPHALT BINDER NO LOWER ALLOWED BY N.J.D.E.P.  
2) FOR FURTHER STANDARDS AND SPECIFICATIONS, SEE "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY."

### TEMPORARY STABILIZATION WITH MULCH ONLY

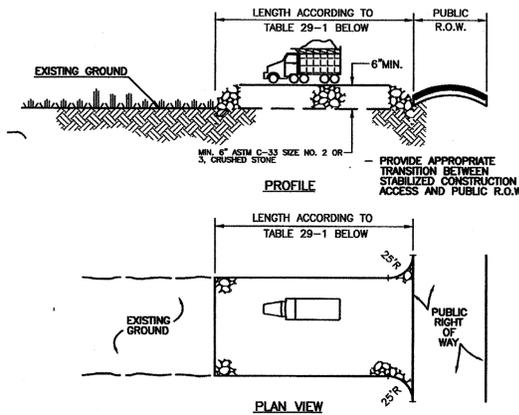
STRAW MULCH (HAY MULCH MAY BE SUBSTITUTED IF APPROVED BY THE DISTRICT) IS TO BE SPREAD UNIFORMLY AT THE RATE OF 2 TO 2-1/2 TONS PER ACRE (TOTAL GROUND SURFACE COVERAGE). THIS PRACTICE IS LIMITED TO PERIODS WHEN VEGETATIVE COVER CANNOT BE ESTABLISHED DUE TO THE SEASON OR OTHER CONDITIONS. MULCH MUST BE ANCHORED IN ACCORDANCE WITH NEW JERSEY STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL. MULCH ALONE CAN ONLY BE USED FOR SHORT PERIODS AND WILL REQUIRE MAINTENANCE AND RENEWAL. OTHER MULCH MATERIALS MAY BE UTILIZED IF APPROVED BY THE DISTRICT.

### CONDITION OF ACCEPTANCE

1) NO EROSION SHALL EXIST.  
2) BARE OR THIN SPOTS IN EXCESS OF 5 PERCENT OF ANY AREA WILL NOT BE ACCEPTABLE.

### GENERAL NOTES FOR DETENTION BASINS

- THE DESIGN TOP ELEVATION OF ALL DAMS AND EMBANKMENTS, AFTER ALL SETTLEMENT HAS TAKEN PLACE SHALL BE 1' GREATER THAN THE MAXIMUM WATER SURFACE ELEVATION IN THE BASIN RESULTING FROM THE PASSAGE OF THE 100 YEAR STORM THROUGH THE EMERGENCY SPILLWAY. THEREFOR, THE DESIGN HEIGHT OF THE DAM OR EMBANKMENT, DEFINED AS THE VERTICAL DISTANCE MEASURED FROM THE TOP OF BERM DOWN TO THE BOTTOM OF THE DEEPEST CUT, SHALL BE INCREASED BY THE AMOUNT NEEDED TO INSURE THAT THE DESIGN ELEVATION WILL BE MAINTAINED FOLLOWING SETTLEMENT. THIS INCREASE SHALL NOT BE LESS THAN 5 PERCENT.
- THE FILL MATERIAL IN ALL EARTHEN DAMS AND EMBANKMENTS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY OBTAINED FROM COMPACTION TESTS PERFORMED BY THE APPROPRIATE METHOD IN ASTM D698.
- ALL EARTH FILL SHALL BE FREE FROM BRUSH, ROOTS, AND OTHER ORGANIC MATERIAL SUBJECT TO DECOMPOSITION.
- ALL POURED CONCRETE STRUCTURES SHALL CONTAIN REINFORCING STEEL. ALL CONSTRUCTION JOINTS SHALL BE WATERTIGHT.
- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" 45 DEGREE CHAMFER UNLESS OTHERWISE NOTED.
- THE BASIN SHALL BE TOPSOILED, SEEDDED AND MULCHED IMMEDIATELY FOLLOWING GRADING OF THE SAME.
- ALL PRECAST CONCRETE STRUCTURES SHALL CONTAIN REINFORCING STEEL AND BE DESIGNED FOR HS-20 LOADING. SHOP DRAWINGS SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- THE DETENTION BASIN SHALL SERVE AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. IMMEDIATELY UPON COMPLETION OF ALL CONSTRUCTION AND FINAL STABILIZATION OF ALL EXPOSED AREAS, THE SEDIMENT BASIN SHALL HAVE ALL SILT REMOVED, BE RESHAPED TO THE REQUIRED DETENTION BASIN DIMENSIONS AND STABILIZED ACCORDINGLY.



NOTES:  
AT POORLY DRAINED LOCATION, SUBSURFACE DRAINAGE SHOULD BE INSTALLED BEFORE THE STABILIZED CONSTRUCTION ENTRANCE

THE ENTRANCE SHALL BE PROPERLY MAINTAINED BY PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS MAY REQUIRE

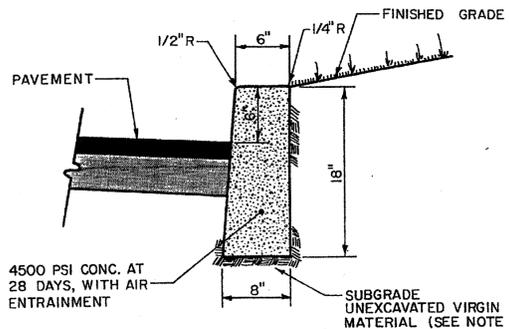
Table 29-1: Lengths of Construction Exits on Sloping Roadbeds

Percent Slope of Roadway	Length of Stone Required	
	Coarse Grained Soils	Fine Grained Soils
0 to 2%	50 ft	100 ft
2 to 5%	100 ft	200 ft
>5%	Entire surface stabilized with FABC base course <sup>1</sup>	

1. As prescribed by local ordinance or other governing authority.

## STABILIZED CONSTRUCTION ACCESS

N.T.S.

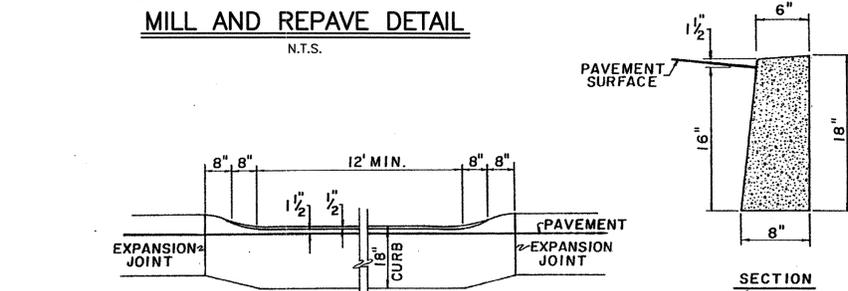
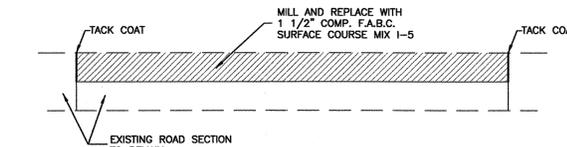
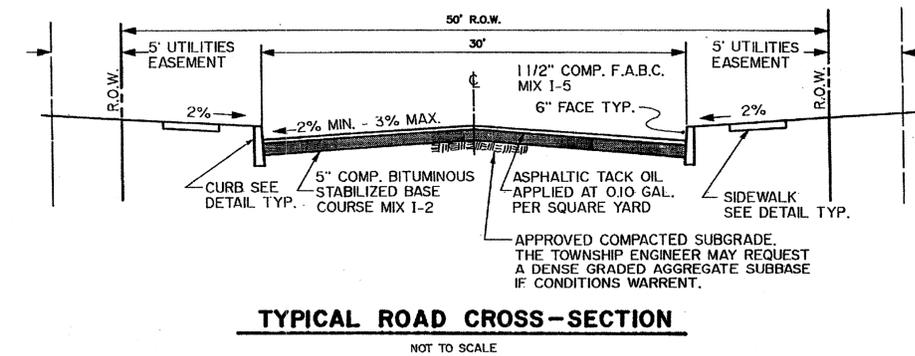


### NOTES

- ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH 3/4" CLEAN CRUSHED STONE. ALL SUBGRADES SHALL BE APPROVED BY THE TOWNSHIP ENGINEERING PRIOR TO POURING.
- EXPANSION JOINTS SHALL BE PROVIDED AT EQUAL DISTANCES OF NOT MORE THAN 20' AND AT ALL STORM SEWER INLETS. JOINTS SHALL BE FILLED WITH PREFORMED EXPANSION JOINT FILLER, 1/2" THICK, CONFORMING TO NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONSTRUCTION JOINTS SHALL BE PROVIDED EVERY 10'. THE JOINT SHALL BE RECESSED 1/4" FROM THE TOP AND FRONT OF THE CONCRETE CURB.
- CURB SHALL BE TEMPORARILY BACKFILLED TO FINISHED GRADE WITH SOIL BEHIND AND STONE ON THE ROAD SIDE AS SOON AS IT HAS ATTAINED SUFFICIENT SUPPORTING STRENGTH OR WITHIN 24 HOURS OF POURING (WHICH EVER IS LESS).
- WHEN NEW CURB IS INSTALLED ALONG AN EXISTING PAVED AREA, THE EXISTING PAVEMENT SHALL BE CUT 2 FEET IN FRONT OF THE NEW CURB FACE IN A STRAIGHT LINE AT A 45 DEGREE ANGLE WITH A CUTTING WHEEL OR PNEUMATIC HAMMER. THE NEW PAVEMENT SHALL BE TACKED AND BUTTED TO THE EXISTING PAVEMENT, IN ACCORDANCE WITH PAVEMENT WIDENING DETAIL.
- THE GENERAL CONTRACTOR OR OWNER IS RESPONSIBLE FOR MAINTAINING ALL CURB UNTIL FORMALLY ACCEPTED BY THE TOWNSHIP COMMITTEE. ALL CURB THAT IS BROKEN, CRACKED, OR OUT OF ALIGNMENT SHALL BE REPLACED PRIOR TO FINAL PAVING AND/OR ACCEPTANCE. CURB REPLACEMENT SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT ONLY.

## CONCRETE CURB

NOT TO SCALE



## DEPRESSED CURB AT DRIVEWAY DETAIL

NOT TO SCALE

## DUST CONTROL

THE FOLLOWING METHODS ARE SUITABLE FOR CONTROLLING DUST:

MULCHES- SEE STANDARD OF STABILIZATION WITH MULCHES ONLY

VEGETATIVE COVER- SEE STANDARD FOR TEMPORARY VEGETATIVE COVER, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, AND PERMANENT STABILIZATION WITH SOD.

SPRAY-ON ADHESIVES- ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS.

AIONIC ASPHALT EMULSION	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLONS/ACRE
AIONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1200
LATEX EMULSION	12.5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300
POLYACRYLAMIDE (PAM)- SPRAY ON POLYACRYLAMIDE (PAM)- DRY SPREAD			APPLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS. MAY ALSO BE USED AS AN ADDITIVE TO SEDIMENT BASINS TO FLOCCULATE AND PRECIPITATE SUSPENDED COLLOIDS. SEE SEDIMENT BASIN STANDARD, P. 26-1.
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200

TILLAGE- TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN FLOWING ON WINDWARD SIDE OF SITE. GRASS-TYPE FLOWS SPACED ABOUT 12 INCHES APART, AND SPRING TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.

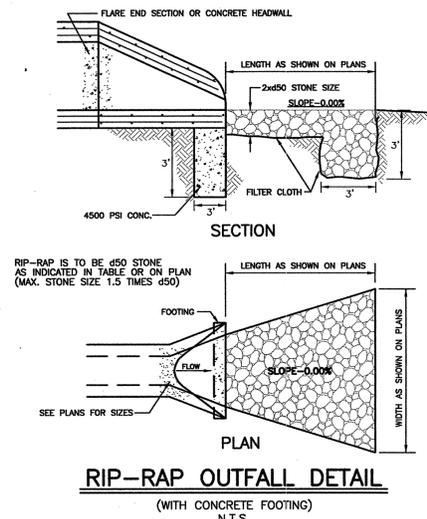
SPRINKLING- SITE IS SPRINKLED UNTIL THE SURFACE IS WET.

BARRIERS- SOLID FENCES, SNOW FENCES, BURLAP FENCES, GRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.

CALCIUM CHLORIDE- SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEP SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS, OR ACCUMULATION AROUND PLANTS.

STONE- COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

SHEET 21 OF 26



NO.	DATE	REVISION
1)	10/09/02	10/09/02
2)	12/12/02	12/12/02
3)	05/05/04	05/05/04
4)	09/17/04	09/17/04
5)	11/05/04	11/05/04
6)	06/17/05	06/17/05
7)	05/30/12	05/30/12
8)	07/20/12	07/20/12
9)	11/20/12	11/20/12

**MENLO ENGINEERING ASSOCIATES, INC.**  
CIVIL ENGINEERS, LAND SURVEYORS AND PROFESSIONAL PLANNERS  
261 CLEVELAND AVENUE HIGHLAND PARK, NEW JERSEY 08904  
PHONE: (732) 846-8585 FAX: (732) 846-9439  
CERTIFICATE OF AUTHORIZATION: 246A27951900

**BRIAR CLIFFE**  
TOWNSHIP OF HOPWELL, MERCER COUNTY, NEW JERSEY  
PRELIMINARY MAJOR SUBDIVISION  
**CONSTRUCTION DETAILS-4**  
BLOCK 78.01 LOT 15, BLOCK 78.02 LOTS 6-9, BLOCK 78.03 LOTS 2-7 &  
BLOCK 78.05 LOT 1 TAX MAP SHEET No. 20 13.69 ACRES±

DATE OF ISSUE: JUNE 11, 2002  
REV. 9.) NOVEMBER 20, 2012

SCALE: AS NOTED  
CAD #: 20000480E4  
JOB #: 2000.048  
DWS #: DC-4

DRWN. BY: JAG  
DSGN. BY: WAL  
CHKD. BY: ARC  
APPRD. BY: ARC

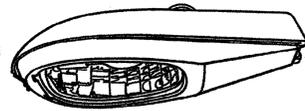
DATE: \_\_\_\_\_  
PREPARED UNDER MY SUPERVISION:  
\_\_\_\_\_  
PROFESSIONAL ENGINEER/  
LAND SURVEYOR  
NJ PE#LS#226264

**M-250R2 LUMINAIRE WITH CUTOFF OPTICS**

**APPLICATIONS**  
Residential streets, access roads, parking lots and other outdoor areas

**SPECIFICATION FEATURES**

- Universal two-bolt alignter
- Die-cast aluminum housing with electrocoat gray paint finish
- Adjustable mogul base socket (street side)
- ESD standard
- No-tool PE receptacle
- Plug-in ignitor
- True 90° cutoff-no light above 90°
- External stainless steel ball latch
- CSA Certified units available - contact factory
- Standard construction is IP55
- Megapack packaging available - See Technical Section

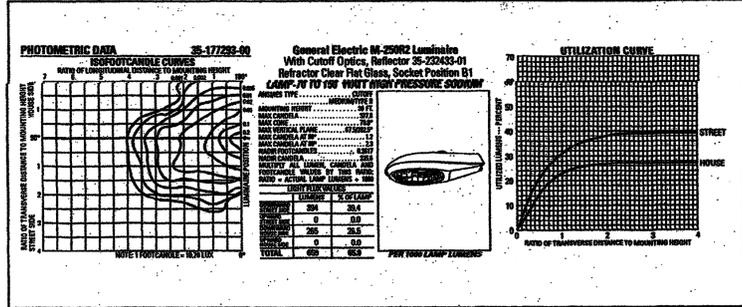


Turtle-friendly luminaires available for coastal nesting areas. Contact factory.

**ORDERING NUMBER LOGIC**  
**M2RC 15 S 1 N 2 G MC3 F**

PRODUCT ID. XXXX	WATTAGE XX	LIGHT SOURCE X	VOLTAGE X	BALLAST TYPE X	PE FUNCTION X	LENS TYPE X	IES DISTRIBUTION TYPE X	OPTIONS XXX
M2RC = M-250R2 with Cutoff Optics	05 = 50 07 = 70 10 = 100 15 = 150 20 = 200 25 = 250 NOTE: Dual voltage connected for lower wattage	S = HPS C = CFL Lamp not included. 17 = 175 20 = 200 21 = 10V 150 250 NOTE: Dual voltage connected for lower wattage	1 = 120V 2 = 208V 3 = 277V 4 = 277V 5 = 277V 6 = 277V 7 = 277V 8 = 277V 9 = 277V 10 = 277V 11 = 277V 12 = 277V 13 = 277V 14 = 277V 15 = 277V 16 = 277V 17 = 277V 18 = 277V 19 = 277V 20 = 277V 21 = 277V 22 = 277V 23 = 277V 24 = 277V 25 = 277V 26 = 277V 27 = 277V 28 = 277V 29 = 277V 30 = 277V 31 = 277V 32 = 277V 33 = 277V 34 = 277V 35 = 277V 36 = 277V 37 = 277V 38 = 277V 39 = 277V 40 = 277V 41 = 277V 42 = 277V 43 = 277V 44 = 277V 45 = 277V 46 = 277V 47 = 277V 48 = 277V 49 = 277V 50 = 277V 51 = 277V 52 = 277V 53 = 277V 54 = 277V 55 = 277V 56 = 277V 57 = 277V 58 = 277V 59 = 277V 60 = 277V 61 = 277V 62 = 277V 63 = 277V 64 = 277V 65 = 277V 66 = 277V 67 = 277V 68 = 277V 69 = 277V 70 = 277V 71 = 277V 72 = 277V 73 = 277V 74 = 277V 75 = 277V 76 = 277V 77 = 277V 78 = 277V 79 = 277V 80 = 277V 81 = 277V 82 = 277V 83 = 277V 84 = 277V 85 = 277V 86 = 277V 87 = 277V 88 = 277V 89 = 277V 90 = 277V 91 = 277V 92 = 277V 93 = 277V 94 = 277V 95 = 277V 96 = 277V 97 = 277V 98 = 277V 99 = 277V 100 = 277V	X = See Ballast Selection Table A = Auto-Reg C = Micro-Reg G = Mag-Reg with Grounded Socket Shell H = HPS Reactor or Leg M = Mag-Reg or Leg P = DWI with Grounded Socket Shell	1 = None 2 = PE See Selection Table A = Acrylic, Clear B = Acrylic, Clear C = Acrylic, Clear D = Acrylic, Clear E = Acrylic, Clear F = Acrylic, Clear G = Acrylic, Clear H = Acrylic, Clear I = Acrylic, Clear J = Acrylic, Clear K = Acrylic, Clear L = Acrylic, Clear M = Acrylic, Clear N = Acrylic, Clear O = Acrylic, Clear P = Acrylic, Clear Q = Acrylic, Clear R = Acrylic, Clear S = Acrylic, Clear T = Acrylic, Clear U = Acrylic, Clear V = Acrylic, Clear W = Acrylic, Clear X = Acrylic, Clear Y = Acrylic, Clear Z = Acrylic, Clear	X = See Photometric Selection Table Y = See Photometric Selection Table Z = See Photometric Selection Table	X = See Photometric Selection Table Y = See Photometric Selection Table Z = See Photometric Selection Table	C = Chancel F = Fusing (Not available with ballast or dual voltage) I = Use Surge Protector, Specified Type

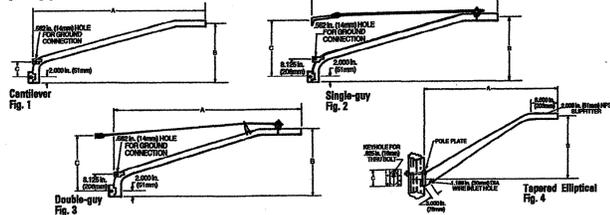
**PHOTOMETRIC DATA**  
**M-250R2 LUMINAIRE WITH CUTOFF OPTICS**



**ACCESSORIES**

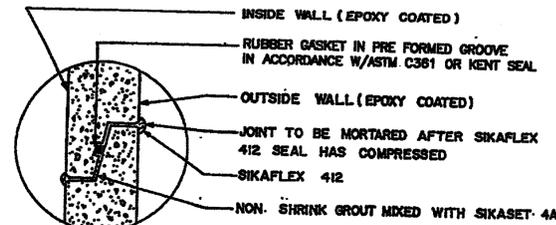
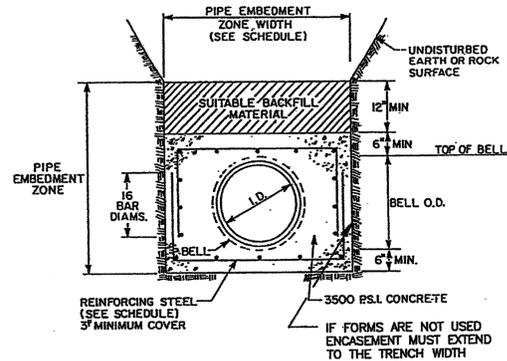
**ROADWAY BRACKETS FOR WOOD POLE MOUNTING**

Roadway bracket aluminum or galvanized steel for mounting on wood poles, pipe sizes from 1-1/4 to 2-in. (32 to 51mm).



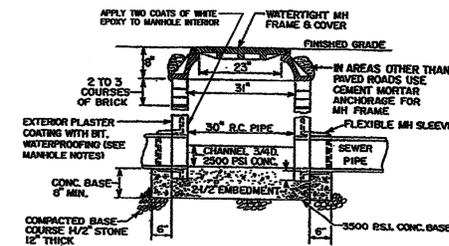
BRACKET SELECTION TABLE		Thru bolts and lag screws not included														
Nominal Length (ft)	See Fig.	Recommended Size of Each Luminaire 80 MPH (For high wind velocities, consult factory)	Bracket Dimensions (in.)	Weight (lbs)												
(ft)	(ft)	Max Weight (lbs)	Max EPA (sq ft)	(sq ft)												
<b>ALUMINUM PIPE BRACKETS</b>																
4	1.2	1	40	0.9	0.08	RBACWHK125	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	1.6
6	1.8	1	50	1.4	0.13	RBACWHK150	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	2.0
8	2.4	1	60	2.0	0.19	RBACWHK175	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	2.4
10	3.0	1	70	2.7	0.27	RBACWHK200	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	2.8
12	3.7	1	80	3.4	0.34	RBACWHK225	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	3.2
15	4.6	1	100	4.3	0.43	RBACWHK250	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	3.6
18	5.5	1	120	5.2	0.52	RBACWHK275	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	4.0
20	6.4	1	140	6.1	0.61	RBACWHK300	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	4.4
25	8.0	1	175	7.7	0.77	RBACWHK375	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	5.2
30	9.6	1	210	9.3	0.93	RBACWHK450	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	6.0
35	11.2	1	245	10.9	1.09	RBACWHK525	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	6.8
40	12.8	1	280	12.5	1.25	RBACWHK600	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	7.6
45	14.4	1	315	14.1	1.41	RBACWHK675	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	8.4
50	16.0	1	350	15.7	1.57	RBACWHK750	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	9.2
55	17.6	1	385	17.3	1.73	RBACWHK825	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	10.0
60	19.2	1	420	18.9	1.89	RBACWHK900	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	10.8
65	20.8	1	455	20.5	2.05	RBACWHK975	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	11.6
70	22.4	1	490	22.1	2.21	RBACWHK1050	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	12.4
75	24.0	1	525	23.7	2.37	RBACWHK1125	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	13.2
80	25.6	1	560	25.3	2.53	RBACWHK1200	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	14.0
85	27.2	1	595	26.9	2.69	RBACWHK1275	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	14.8
90	28.8	1	630	28.5	2.85	RBACWHK1350	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	15.6
95	30.4	1	665	30.1	3.01	RBACWHK1425	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	16.4
100	32.0	1	700	31.7	3.17	RBACWHK1500	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	17.2
105	33.6	1	735	33.3	3.33	RBACWHK1575	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	18.0
110	35.2	1	770	34.9	3.49	RBACWHK1650	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	18.8
115	36.8	1	805	36.5	3.65	RBACWHK1725	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	19.6
120	38.4	1	840	38.1	3.81	RBACWHK1800	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	20.4
125	40.0	1	875	39.7	3.97	RBACWHK1875	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	21.2
130	41.6	1	910	41.3	4.13	RBACWHK1950	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	22.0
135	43.2	1	945	42.9	4.29	RBACWHK2025	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	22.8
140	44.8	1	980	44.5	4.45	RBACWHK2100	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	23.6
145	46.4	1	1015	46.1	4.61	RBACWHK2175	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	24.4
150	48.0	1	1050	47.7	4.77	RBACWHK2250	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	25.2
155	49.6	1	1085	49.3	4.93	RBACWHK2325	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	26.0
160	51.2	1	1120	50.9	5.09	RBACWHK2400	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	26.8
165	52.8	1	1155	52.5	5.25	RBACWHK2475	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	27.6
170	54.4	1	1190	54.1	5.41	RBACWHK2550	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	28.4
175	56.0	1	1225	55.7	5.57	RBACWHK2625	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	29.2
180	57.6	1	1260	57.3	5.73	RBACWHK2700	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	30.0
185	59.2	1	1295	58.9	5.89	RBACWHK2775	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	30.8
190	60.8	1	1330	60.5	6.05	RBACWHK2850	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	31.6
195	62.4	1	1365	62.1	6.21	RBACWHK2925	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	32.4
200	64.0	1	1400	63.7	6.37	RBACWHK3000	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	33.2
205	65.6	1	1435	65.3	6.53	RBACWHK3075	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	34.0
210	67.2	1	1470	66.9	6.69	RBACWHK3150	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	34.8
215	68.8	1	1505	68.5	6.85	RBACWHK3225	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	35.6
220	70.4	1	1540	70.1	7.01	RBACWHK3300	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	36.4
225	72.0	1	1575	71.7	7.17	RBACWHK3375	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	37.2
230	73.6	1	1610	73.3	7.33	RBACWHK3450	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	38.0
235	75.2	1	1645	74.9	7.49	RBACWHK3525	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	38.8
240	76.8	1	1680	76.5	7.65	RBACWHK3600	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	39.6
245	78.4	1	1715	78.1	7.81	RBACWHK3675	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	40.4
250	80.0	1	1750	79.7	7.97	RBACWHK3750	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	41.2
255	81.6	1	1785	81.3	8.13	RBACWHK3825	1-1/4	32	45	1143	18-9/16	217	8-1/4	210	8.5	42.0
26																





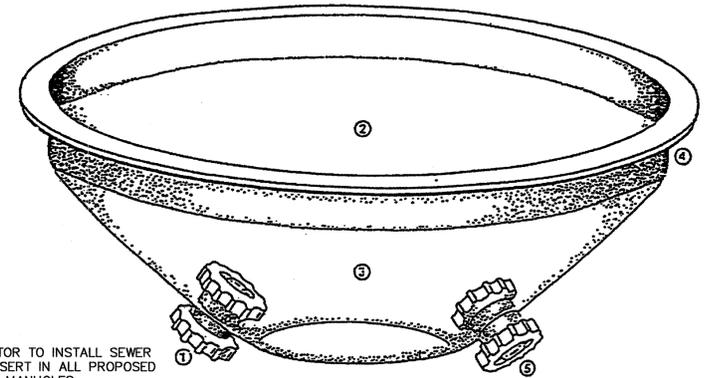
**SANITARY MANHOLE JOINT**

N.T.S.



- NOTES:**
1. SHALLOW MH (CIRCULAR) TO BE USED AT LOCATIONS WHERE DISTANCE FROM FINISHED GRADE TO PIPE INVERT IS 3'-0" OR LESS.
  2. FOR DEPTHS 3'-0" AND LESS, MEASURED FROM THE TOP OF THE PIPE, CONTRACTOR SHALL INSTALL DUCTILE IRON PIPE, CLASS 54 UNDER TRAFFIC AREAS.

Jacobs Environmental, Inc. Placataway, New Jersey August 1996	Ewing-Lawrence Sewerage Authority Standard Details	<b>SANITARY Shallow Manhole</b>	6 of 34
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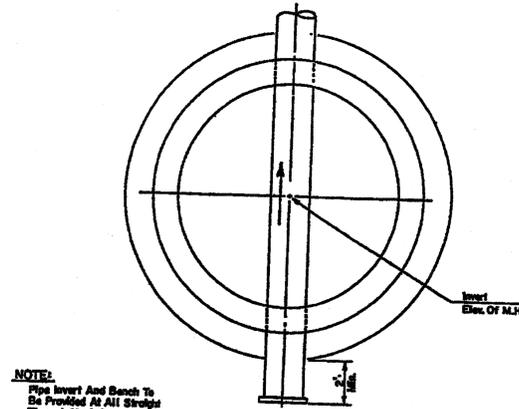
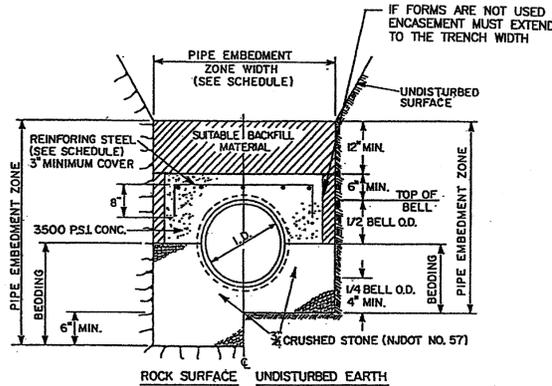
**NOTES:**  
CONTRACTOR TO INSTALL SEWER GUARD INSERT IN ALL PROPOSED SANITARY MANHOLES

1. The spring-loaded Gas Relief Valve is designed to relieve the gas pressure build-up. The valve is automatically activated when the gas pressure differential in the manhole reaches approximately 1/2 psi. This prevents dangerous accumulation of sewer gases by venting them through the water, sand and debris collected in the insert.
2. SEWER GUARD'S bowl shape is specially designed to protect the insert valves when the manhole cover is removed. In addition, the shape also traps and holds dirt and debris.
3. Made of specially formulated plastic polymers, the insert will not corrode, and cannot be damaged by sewer gases or road oils.
4. The closed-cell crosslinked polyethylene gasket, heat-welded under the lip, conforms to irregularities in the frame, and forms a tight, virtually leakproof seal.
5. The spring-loaded Vacuum Relief Valve relieves vacuum pressure build-up. This valve is activated when the vacuum pressure differential reaches approximately 2.25 psi.

Both valves (1 and 5) are self-cleaning, and are made of non-corrodible material. They are also intended to be used as handles for removing the insert.

REV. 1 - JANUARY, 2003

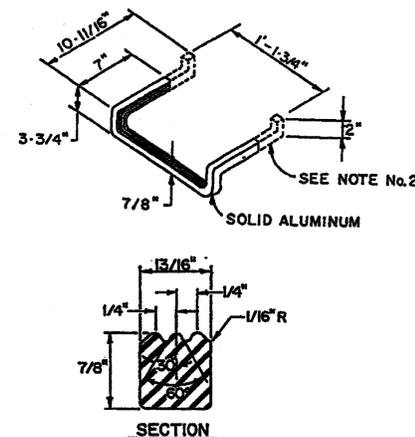
Jacobs Environmental, Inc. Placataway, New Jersey AUGUST 1996	Ewing-Lawrence Sewerage Authority Standard Details	<b>SANITARY Full Encasement</b>	31 of 34
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**NOTE:**  
Pipe Invert And Bench To Be Provided At All Straights Through Manholes.

**SANITARY MANHOLE BENCHING**

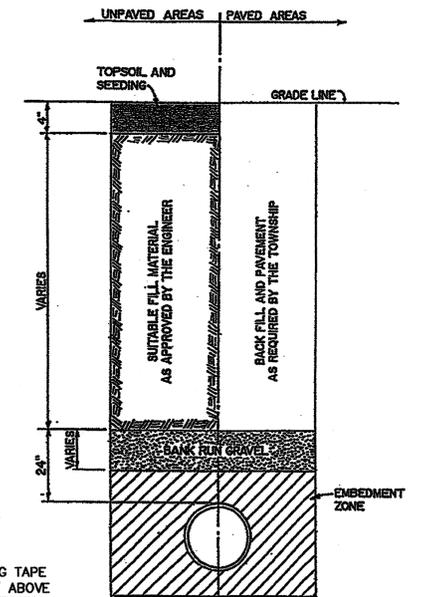
N.T.S.



- NOTES:**
1. ALUMINUM STEP SHALL BE EXTRUDED ALUM.6061-T6 ALLOY DROP FRONT DESIGN OR APPROVED EQUAL.
  2. THE PORTION TO BE IMBEDDED IN THE CONCRETE SHALL BE COATED WITH COALTAR PITCH OR OTHER APPROVED O.S.H.A. STANDARD.
  3. LADDER RUNGS SHALL BE ALIGNED AND INSTALLED BETWEEN ALL PRECAST MANHOLE SECTIONS

**SANITARY MANHOLE STEP**

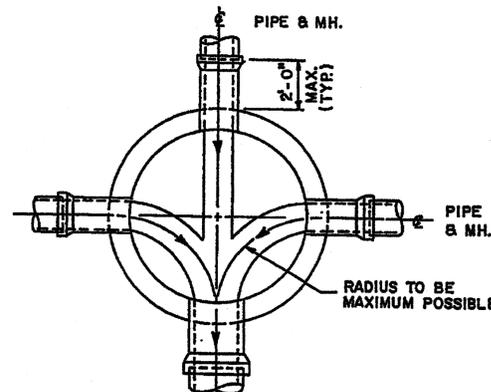
N.T.S.



**NOTES:**  
GREEN METALLIC MARKING TAPE SHALL BE INSTALLED 18\"/>

**SANITARY TYPICAL TRENCH**

N.T.S.



**SANITARY BENCHING GEOMETRY**

N.T.S.

REV. 1 - JANUARY, 2003

Jacobs Environmental, Inc. Placataway, New Jersey AUGUST 1996	Ewing-Lawrence Sewerage Authority Standard Details	<b>SANITARY Half Encasement</b>	30 of 34
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1) SHEET NO. 11/20/12

THIS DRAWING IS FOR PERMIT PURPOSES ONLY. THIS BOX HAS BEEN CHECKED AND DATED.

DATE: \_\_\_\_\_

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

PROF. R. COCO  
PROFESSIONAL ENGINEER/  
LAND SURVEYOR  
NJ PEALS#26264

1) SHEET NO. 11/20/12

**MENLO ENGINEERING ASSOCIATES, INC.**  
CIVIL ENGINEERS, LAND SURVEYORS AND PROFESSIONAL PLANNERS  
261 CLEVELAND AVENUE HIGHLAND PARK, NEW JERSEY 08904  
PHONE: (732) 846-8585 FAX: (732) 846-9439  
CERTIFICATE OF AUTHORIZATION: 24GA27951900

**BRIAR CLIFFE**  
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY  
PRELIMINARY MAJOR SUBDIVISION

**CONSTRUCTION DETAILS-7**  
BLOCK 78.01 LOT 15, BLOCK 78.02 LOTS 6-9, BLOCK 78.03 LOTS 2-7 &  
BLOCK 78.05 LOT 1 TAX MAP SHEET No. 20 13.69 ACRES±

SCALE: AS NOTED  
200048DE7  
JOB # 2000.048  
DWG # DE-7

DATE OF ISSUE: JULY 20, 2012  
REV 1) NOVEMBER 20, 2012

DRWN. BY: KMR  
DSGN. BY: WAL  
CHKD. BY: ARC  
APPRD. BY: ARC

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# STANDARD FOR PERMANENT VEGETATIVE COVER

On exposed soils that have a potential for causing off-site environmental damage.

## 1. Site Preparation

- Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with SCS standards.
- Immediately prior to seeding and topsoil application, the surface should be scarified 6" to 12" where there has been soil compaction. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).
- Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways.

## 2. Seedbed Preparation

- Apply ground limestone and fertilizer according to soil test recommendations such as offered by Rutgers Co-operative Extension. Soil sample mollers are available from the local Rutgers Cooperative Extension offices. Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-20-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise. Apply limestone in accordance with Table 4-1, or the results of soil testing. Calcium carbonate is the equivalent standard for measuring the ability of liming materials to neutralize soil acidity and supply calcium and magnesium to grasses and legumes. Table 4-1 is a general guideline for limestone application rates.

SOIL TEXTURE	TONS/ACRE	LBS./1000 SQ. FT.
Clay, clay loam, and high organic soil	3	135
Sandy loam, loam, silt loam	2	90
Loamy sand; sand	1	45

- Pulverized dolomitic limestone is preferred for most soils south of the New Brunswick-Trenton line.
- Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches on the general contour. Continue tillage until a reasonable uniform seedbed is prepared.
- Immediately prior to seeding, the surface should be scarified 6" to 12" where there has been soil compaction. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).
- High acid producing soil. Soils having a pH of 4 or less or containing iron sulfide shall be covered with a minimum of 12 inches of soil having a pH of 5 or more before initiating seedbed preparation. See Standard for Management of High Acid Producing Soils.

## 3. Seeding

- Use seed mixture shown on plans or use mixture recommended by Rutgers Cooperative Extension or Natural Resources Conservation Service which is approved by the Soil Conservation District. Seed germination shall have been tested within 12 months of the planting date. No seed shall be accepted with a germination test date more than 12 months old unless retested.
  - These rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative coverage with the specified seed mixture for the seeded area and mowed once.
  - Warm season mixtures are grasses and legumes which maximize growth at high temperatures, generally 85° F and above. Planting rates for warm season grasses shall be the amount of Pure Live Seed (PLS) as determined by germination testing results.
  - Cool Season Mixtures are grasses and legumes which maximize growth at temperatures below 85° F. Many grasses become active at 65° F. Adjustment of planting rates to compensate for the amount of Pure Live Seed is not required for cool season grasses.

- Conventional Seeding is performed by applying seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil within 24 hours of seedbed preparation to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.

- Hydroseeding is a broadcast seeding method usually involving a truck or trailer mounted tank, with an agitation system and hydraulic pump for mixing seed, water and fertilizer and spraying the mix onto the prepared seedbed. Mulch shall not be included in the tank with seed. Short fibered mulch may be applied with a hydroseeder following seeding. (also see section IV Mulching below) Hydroseeding is not a preferred seeding method because seed and fertilizer are applied to the surface and not incorporated into the soil. Poor seed to soil contact occurs reducing seed germination and growth. Hydroseeding may be used for areas too steep for conventional equipment to traverse or too obstructed with rocks, stumps, etc.

- After seeding, firming the soil with a corrugated roller will ensure good seed-to-soil contact, restore capillarity, and improve seedling emergence. This is the preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.

## 4. Mulching

- Mulching is required on all seeding. Mulch will insure against erosion before grass is established and will promote faster and earlier establishment. The existence of vegetation sufficient to control soil erosion shall be deemed compliance with this mulching requirement.
- Straw or Hay. Unrotted small grain straw, hay free of seeds, or salt hay to be applied at the rate of 1-1/2 to 2 tons per acre (70 to 90 pounds per 1,000 square feet), except that where a crimper is used instead of a liquid mulch-binder (tackifying or adhesive agent), the rate of application is 3 tons per acre. Mulch chopper-blowers must not grind the mulch. Hay mulch is not recommended for establishing fine turf or lawns due to the presence of weed seed.

Application. Spread mulch uniformly by hand or mechanically so that approximately 85% of the soil surface will be covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square feet sections and distribute 70 to 90 pounds within each section.

Anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.

- Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.

- Mulch Nettings. Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.

- Crimper (mulch anchoring couler tool) A tractor-drawn implement, somewhat like a disc harrow, especially designed to push or cut some of the broadcast long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. This technique is limited to areas traversable by a tractor, which must operate on the contour of slopes. Straw mulch rate must be 3 tons per acre. No tackifying or adhesive agent is required.

- Liquid Mulch-Binders - May be used to anchor salt hay, hay or straw mulch.
  - Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.

- Use one of the following:
  - Organic and Vegetable Based Binders: Naturally occurring, powder based, hydrophilic materials when mixed with water formulates a gel and when applied to mulch under satisfactory curing conditions will form networks of insoluble polymers. The vegetable gel shall be physiologically harmless and not result in a phytotoxic effect or impede growth of turfgrass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials. Many new products are available, some of which may need further evaluation for use in this state.

- Synthetic Binders: High polymer synthetic emulsion, miscible with water diluted and following application to mulch, drying and curing shall no longer be soluble or dispersible in water. It shall be applied at rates recommended by the manufacturer and remain tacky until germination of grass.

- Wood-fiber or paper-fiber mulch - shall be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder. This mulch shall not be mixed in the tank with seed. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.

- Pelletized mulch - compressed and extruded paper and/or wood fiber product, which may contain co-polymers, tackifiers, fertilizers and coloring agents. The dry pellets, when applied to a seeded area and watered, form a mulch mat. Pelletized mulch shall be applied in accordance with the manufacturers recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-75 lbs/1,000 square feet and activated with 0.2 to 0.4 inches of water. This mulch has been found to be beneficial for use on small lawn or renovation areas, seeded areas where weed-seed free mulch is desired or on sites where straw mulch and tackifier agent are not practical or desirable. Applying the full 0.2 to 0.4 inches of water after spreading pelletized mulch on the seed bed is extremely important for sufficient activation and expansion of the mulch to provide soil coverage.

- Irrigation (where feasible) If soil moisture is deficient, and mulch is not used, supply new seedlings with adequate water (a minimum of 1/4 inch twice a day until vegetation is well established. This is especially true when seedlings are made in abnormally dry or hot weather or on droughty sites.

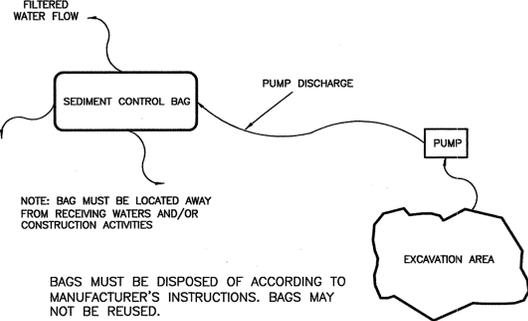
- Topdressing Since slow release nitrogen fertilizer (water insoluble) is prescribed above, no follow-up of topdressing is mandatory. An exception may be made where gross nitrogen deficiency exists to the extent that turf failure may develop. In that instance, topdress with 10-10-10 or equivalent at 400 pounds per acre or 10 pounds per 1,000 square feet.

- Establishing Permanent Vegetative Stabilization The quality of permanent vegetation rests with the contractor. The timing of seeding, preparing the seedbed, applying nutrients, mulch and other management are essential. The seed application rates apply to all methods of seeding. Establishment permanent vegetation means 80% vegetative cover (of the seeded species) and mowed once.

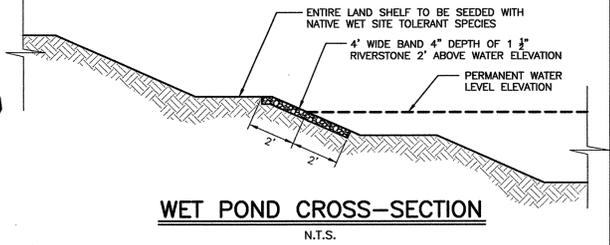
1. SILT CONTROL BAGS ARE CONTAINERS THROUGH WHICH SEDIMENT LADEN WATER IS PUMPED TO TRAP AND RETAIN THE SEDIMENT. A SILT CONTROL BAG IS TO BE USED ON SITES WHERE EXCAVATIONS ARE DEEP, AND SPACES IS LIMITED AND WHERE DIRECT DISCHARGE OF SEDIMENT LADEN WATER TO STREAM AND STORM DRAINAGE SYSTEM IS TO BE AVOIDED.

2. CONTAINERS (BAGS) SHALL BE LOCATED FOR EASE OF CLEAN-OUT AND DISPOSAL OF THE TRAPPED SEDIMENT AND TO MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES AND PEDESTRIAN TRAFFIC. BAGS SHALL NOT BE PLACED DIRECTLY INTO RECEIVING WATERS.

3. SEDIMENT CONTROL BAGS MUST BE LOCATED AWAY FROM RECEIVING WATERS AND DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS.



**SEDIMENT CONTROL BAG FOR DEWATERING**  
N.T.S.



**WET POND CROSS-SECTION**  
N.T.S.

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DRWN. BY KMR	DATE OF ISSUE	SCALE: AS NOTED
DSGN BY WAL	NOVEMBER 20, 2012	CAD # 20000480E7
CHKD. BY ARC		JOB # 2000.048
APPR. BY ARC		DWG # DE-8

THIS DRAWING IS FOR PERMIT PURPOSES ONLY. NOT FOR CONSTRUCTION UNTIL THIS BOX HAS BEEN CHECKED AND DATED.

DATE: \_\_\_\_\_

THIS WORK PREPARED UNDER MY SUPERVISION...

**ROBERT R. COCO**  
PROFESSIONAL ENGINEER/  
LAND SURVEYOR  
NJ PE#LSJ26264