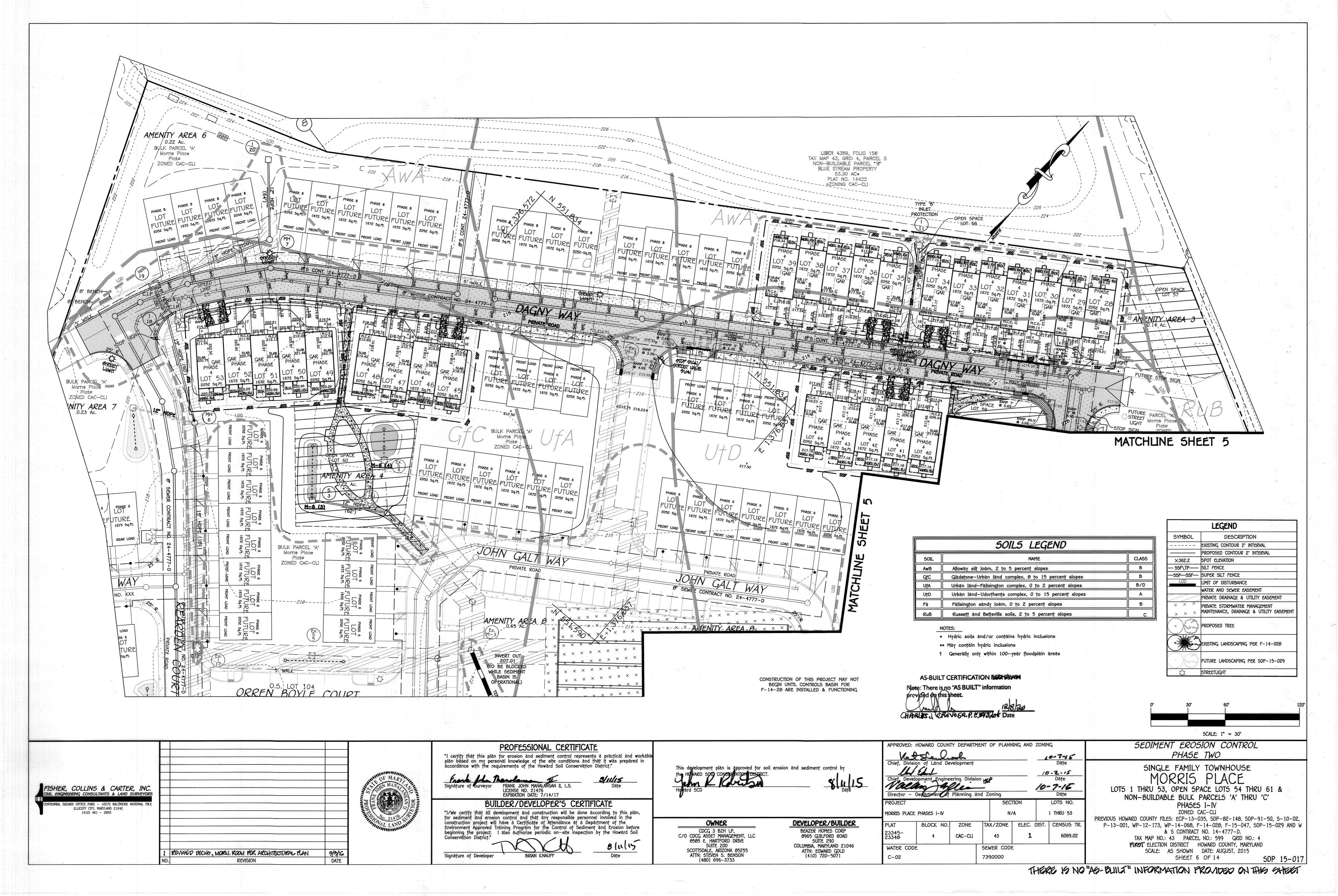


THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET



#### SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS (B-4-2)

A. SOIL PREPARATION

- 1. TEMPORARY STABILIZATION A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE
- B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS. . INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. PERMANENT STABILIZATION
- A A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
- I. SOIL PH BETWEEN 6.0 AND 7.0. II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM). III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE AN EXCEPTION IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE
- IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT. V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
- B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS. C. Graded areas must be maintained in a true and even grade as specified on the approved plan, then SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
- D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST E MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SLITABLE MEANS PAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THI SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

#### B. TOPSOILING

- 1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION. . Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in
- THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS. 3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
- A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH. B. THE SOIL MATERIAL IS SO SHALLOW THAT THE POOTING FONE IS NOT DEED ENOUGH TO SUPPORT PLANTS OF FLIONISH CONTINUING SLIPPLIES OF MOISTLIPE AND PLANT NUTDIENTS
- C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH. D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
- 4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN. 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA-
- A TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND, OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
- B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS. NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED. C. TOPSOIL SUBSTITUTES OR AMENOMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
- 6. TOPSOIL APPLICATION A EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL. B. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO Ø INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE, ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED
- C. SOIL AMENDMENTS (FERTILIZER & LIME SPECIFICATIONS) 1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND
- FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES. 2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR
- APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE 5ITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR PRADEMARK AND WARRANTY OF THE PRODUCER 3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE).
- IMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
- LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY 5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 6 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL

## STANDARD STABILIZATION NOTE

following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1). B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

## DUST CONTROL

DEFINITION CONTROLLING DUST BLOWING AND MOVEMENT ON CONSTRUCTION SITES AND ROADS.

## <u>PURPOSE</u>

TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES, REDUCE ON AND OFF-SITE DAMAGE, HEALTH HAZARDS AND IMPROVE TRAFFIC SAFETY.

#### CONDITIONS WHERE PRACTICE APPLIES THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO DUST BLOWING AND MOVEMENT WHERE ON AND OFF-SITE

## DAMAGE IS LIKELY WITHOUT TREATMENT.

- TEMPORARY METHODS . MULCHES - SEE STANDARDS FOR VEGETATIVE STABILIZATION WITH MULCHES ONLY. MULCH SHOULD BE CRIMPED OR TACKED TO PREVENT BLOWING.
- . VEGETATIVE COVER SEE STANDARDS FOR TEMPORARY VEGETATIVE COVER 3. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS AN EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF THE SITE. CHISEL—TYPE PLOWS SPACED ABOUT 12" APART, SPRING-TOOTHED HARROWS AND SIMILAR PLOWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
- . IRRIGATION THIS IS GENERALLY DONE AS AN EMERGENCY TREATMENT. SITE IS SPRINKLED WITH WATER UNTIL THE SURFACE IS MOIST. REPEAT AS NEEDED. AT NO TIME SHOULD THE SITE BE IRRIGATED TO THE POINT THAT RUNOFF BEGINS TO FLOW. . BARRIERS - SOLID BOARD FENCES SILT FENCES, SNOW FENCES, BURLAP FENCES, STRAW BALE DIKES AND
- SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CONTROLLING SOIL BLOWING. CURRENTS AND SOIL BLOWING. CURRENTS AND SOIL BLOWING. BARRIERS PLACED AT RIGHT ANGLES TO PREVAILING CURRENTS AT INTERVALS OF ABOUT 10 TIMES THEIR HEIGHT ARE EFFECTIVE IN 6. CALCIUM CHLORIDE - APPLY AT RATES THAT WILL KEEP SURFACE MOIST. MAY NEED RETREATMENT
- PERMANENT METHODS 1. PERMENENT VEGETATION - SEE STANDARDS FOR PERMANENT VEGETATIVE COVER AND PERMANENT STABILIZATION WITH SOD, EXISTING TREES OR LARGE SHRUBS MAY AFFORD VALUABLE PROTECTION IF LEFT IN PLACE. . TOPSOILING - COVERING WITH LESS EROSIVE SOIL MATERIALS. SEE STANDARDS FOR TOPSOILING. 3. STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

## TEMPORARY SEEDING NOTES (B-4-4)

- TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS
- TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS. CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

PURPOSE

- CRITERIA 1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
- 2. FOR SITES HAVING SOIL TESTS PERFORMED. USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING. 3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

Hardiness Seed Mixtu	TEMP ZONE (FROM FIGURE RE (FROM TABLE B.1	8.3): 68 ):	NG SUMM	FERTILIZER RATE (10-20-20)	LIME RATE
5PECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		di in diam
BARLEY	96		1"	120 10.410	0. TONE 110
OAT5	72	3/1 - 5/15, 8/15 - 10/15	1"	436 LB/AC (10 LB/ 1000 5F)	2 TON5/AC (90 LB/ 1000 5F)
RYE	112		1"	1000 5F)	1000 31)

#### PERMANENT SEEDING NOTES (B-4-5)

#### A. SEED MIXTURES

- 1. GENERAL USE A SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 8.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE 8.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. IE SUMMARY IS TO BE PLACED ON THE PLAN
- or dunes or for special purposes such as wildlife or aesthetic treatment may be found IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING. C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY. D. FOR AREAS RECEIVING LOW MAINTENANCE APPLY URFA FORM FERTILIZER (46-0-0) AT 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO

B. Additional planting specifications for exceptional sites such as shorelines, stream ban

- THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY. 2. TURFGRASS MIXTURES A AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
- B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANEN SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN ARPAS THAT RECEIVE INTENSIVE MANAGEMENT. RRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE RECOMMENDED ertified Kentucky Bluegrass cultivars seeding rate: 1.5 to 2.0 pounds per 1000 square feet.
- THOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.

  II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID establishment is necessary and when turf will receive medium to intensive management. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET, CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH
- MIXTURE PER 1000 SQUARE FEET, CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.

  III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET.
- ONE OR MORE CULTIVARS MAY BE BLENDED. IV. KENTUCKY BLUEGRASS-FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES; CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 0 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.
- SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND Publication, agronohy meno #77, "Turfgrass cultivar recommendations for maryland choose certified material certified material is the best guarantee of cultivar purity. The PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 58, 6A) CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B) SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER
- D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 1/2 INCHES IN DIAMETER THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
- . If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established this is especially true when seedings are made late in the planting season, in abnormally dry OR HOT SEASONS, OR ON ADVERSE SITES.

#### PERMANENT SEEDING SUMMARY FERTILIZER RATE (10-20-20) LIME RATE SEEDING DATES

#### B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER)

1. GENERAL SPECIFICATIONS A CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR. . 50D MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS TO 3/4 INCH, PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING, MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN FNDS WILL NOT BE ACCEPTABLE

c. Standard size sections of sod must be strong enough to support their own weight and retain their

- SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION. D. 50D MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OF WET) MAY OVERSELY AFFECT ITS SURVIVAL. E. 500 MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED
- WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION. 2. SOD INSTALLATION A DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THI SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
- B. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS. C. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS.
  ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT
- EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE. D. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING, AND irrigating for any piece of 500 within eight hours. 3. SOD MAINTENANCE
- A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO B. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT C. DO NOT MOW UNTIL THE 50D IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

## B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING & MULCHING

#### DEFINITION THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

## PURPOSE

TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

#### CONDITIONS WHERE PRACTICE APPLIES TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING A. SEEDING

- 1. SPECIFICATIONS A ALL SEED MUST MEET THE REQUIREMENT OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY, ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE
- DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE 8.4 REGARDING THE QUALITY OF SEED, SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE. B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
- C. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING, NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
- D. 50D OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEEDCONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS. 2. APPLICATION

#### A. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.

- I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1. PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER, APPLY HALF THE SEEDING RATE IN EACH DIRECTION, ROLL THE SEPDED AREA WITH WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT. B. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
- I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING, SEEDBED MUST BE FIRM AFTER PLANTING. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
- C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER). 1. If FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHORUS),
- 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE. II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
- III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION. IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

#### B. MULCHING

- 1. MULCH MATERIALS (IN ORDER OF PREFERENCE) A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY MOLDY CAKED DECAYED. OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
- B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO UNIFORM FIBROUS PHYSICAL STATE. 1. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN

IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

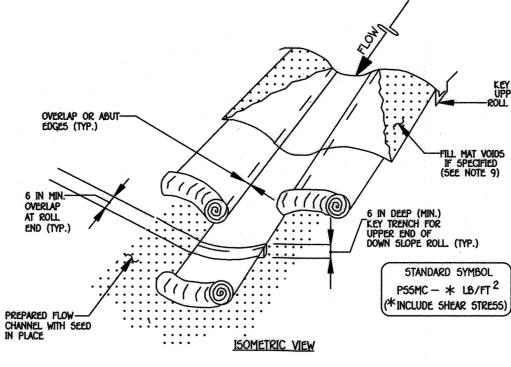
- APPROPRIATE COLOT TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY. II. WCFM. INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS. III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED
- IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BY PHYTO-TOXIC. V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

#### 2. APPLICATION A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

- 8. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES, APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE. C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED TO A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
- A PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD: 1. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MUICH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MUST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHE
- EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR. I. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR, OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID

BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF

BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED. IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS NETTING IS USUALLY AVAILABLE IN ROLLS 4-15 FEET WIDE AND 300 TO 3,000 FEET LONG.



#### CONSTRUCTION SPECIFICATIONS

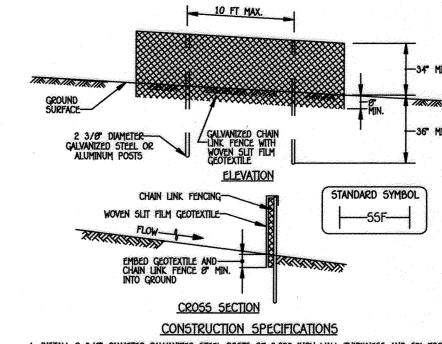
- 1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS. 2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2"X2" AND SUFFICIENTLY
- THE NET FROM THE PARENT MATERIAL. 3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1" TO 1 1/2" WIDE AND BE A MINIMUM OF 6" LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8" MAIN LEG, A MINIMUM 1" SECONDARY LEG, AND MINIMUM 4" HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12"

BONDED OR SEWN ON 2" CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF

- TO 24" LENGTH 1" X 3" CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM. 4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 40 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- 5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE, AVOID STRETCHING THE MATTING. 6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6" (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
- 7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- 8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS. 9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
- ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. PERMANENT SOIL STABILIZATION

10. ESTABLISH AND MAINTAIN VEGETATION 50 THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT





- I. INSTALL 2 3/8" DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36" INTO THE
- 2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 3/8" MAXIMUM OPENING) 42" IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- 5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS
- 6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS. 7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

DETAIL E-9-1 STANDARD INLET PROTECTION

-TOP ELEVATION

16 IN MIN. NOTCH ELEVATION

18 IN INTO GROUND

6 IN MIN

ISOMETRIC VIEW

2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION

FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT

INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE

ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP

AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE

WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED,

FOR TYPE B, USE 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE

STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WRE TIES, FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH

TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK

BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE

STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED

SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING, II

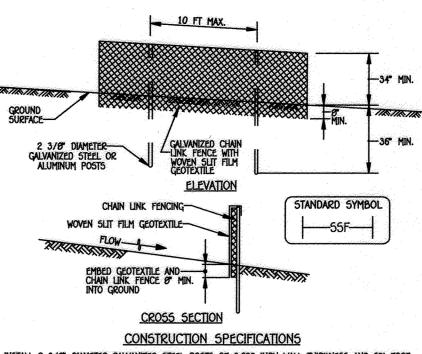
FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.

NOTCH ELEVATION ON THE ENDS\_AND TOP ELEVATION ON THE SIDES.

-2 IN x 4 IN FRAMING

TYPE A

NOT TO SCALE



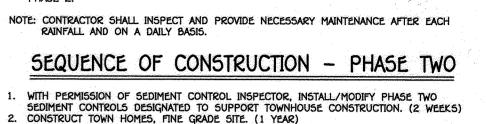
- 3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8" INTO THE GROUND. 4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6", FOLDED AND STAPLED TO PREVENT SEDIMENT BY PASS.
- OF THE SUPER SILT FENCE.

SUPER SILT FENCE

TYPE A MAXIMUM DRAINAGE AREA = 1/4 ACRI

TYPE B

1 OF



OBTAIN PERMISSION OF SEDIMENT CONTROL INSPECTOR. PRIOR TO REMAINING SEDIMENT

SEQUENCE OF CONSTRUCTION - PHASE ONE

INSPECTION AT 410-313-1330 AT LEAST 24 HOURS BEFORE STARTING WORK. (7 DAYS)

CONSTRUCT TEMP 36" PIPE FROM M-1 INTO TEMPORARY BASIN TO CONVEY RUNOFF

CONSTRUCT STORM DRAINS. PROVIDE INLET PROTECTION FOR 1-11, I-10, I-9, 5-2

7. STABILIZE ALL DISTURBED AREAS WITH TEMPORARY SEEDING PRIOR TO PROCEEDING WITH

6. CONSTRUCT CURB AND GUTTER AS WELL AS BASE COURSE FOR PROPOSED PRIVATE

OBTAIN A GRADING PERMIT AND HOLD PRE-CONSTRUCTION MEETING WITH COUNTY

INSPECTOR. (2 WEEKS)

2. NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT

DESIGNED PER F-14-028 AND REPAIR AS NECESSARY. (2 DAYS)

INTO TRAP. BLOCK OFF 27" PIPE INTO UNDERGROUND FACILITY.

AND EX. 5-3. (2 WEEK5)

CONTROL DEVICE. (1 DAY)

ROADS, (1 MONTH)

1-800-257-7777, NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION

3. VERIFY THAT THE EXISTING PERIMETER CONTROLS AND THE TEMPORARY BASIN AS

#### HOWARD SOIL CONSERVATION DISTRICT

STANDARD SEDIMENT CONTROL NOTES 1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS. SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855). 2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

STABILIZE ALL AREAS OF DISTURBANCE WITH PERMANENT SEEDING. (1 WEEK)

STABILIZE ANY DISTURBED AREAS WITH PERMANENT SEEDING. (1 WEEK)

REMOVE ANY REMAINING SEDIMENT DEVICES. (3 DAYS)

- AND REVISIONS THERETO. 3) FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, b) 7 days as to all other disturbed or graded areas on the project site. 4) ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN
- RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES. 5) ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 6) SITE ANALYSIS:

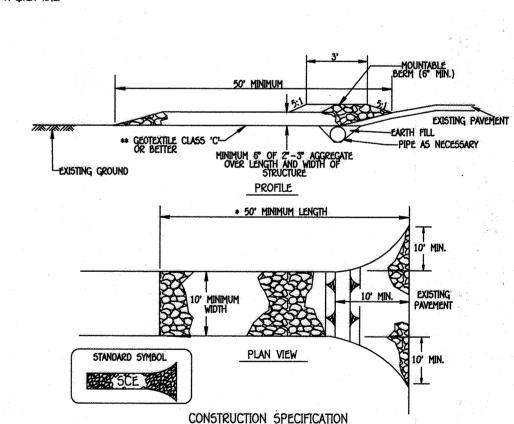
TOTAL AREA OF SITE 14.44 ACRES AREA DISTURBED 7.99 ACRES AREA TO BE ROOFED OR PAVED 2.11 ACRES 5.33 ACRES AREA TO BE VEGETATIVELY STABILIZED 868 CU.YDS. 8.646 CU.YDS OFFSITE WASTE/BORROW AREA LOCATION

7) ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON 8) ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 9) ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER. 1) ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL UTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION. 12) A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 ACRE PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY, UNLESS

OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED

10) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND

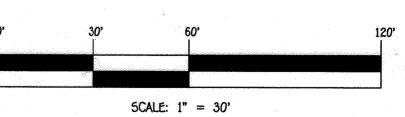


 PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (\*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS. 2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE 5CE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE, PROTECT PIPE INSTALLED THROUGH THE 5CE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS located at a high spot and has no drainage to convey, a pipe is not necessary. A mountable berm is required when sce is not located at a high spot. Prepare subgrade and place nonwoven geotextile, as specified in Section H-1

 PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.

MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE
OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE,
MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR
SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING,
SCRAPING AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO
PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED
SEDIMENT CONTROL PRACTICE.

STABILIZED CONSTRUCTION ENTRANCE



# TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION

Galantina da manta a sugario de la como como como como como como como com							- Twy
PLANT SPECS	SEEC	DING RATE 1/	SEEDING DEPTH 2/	RECOMMENDED	SEEDING DATES BY PLANT H	ardiness zone <sup>3/</sup>	POST DRIVEN COMPACT EARTH (TYP.)
PLANT SPECS	LB./AC.	LB./1000 FT. <sup>2</sup>	(INCHES)	5b AND 6a	6Ь	7a AND 7b	SECTION FOR TYPE A AND B
COOL-SEASON GRASSES		- <del>                                    </del>				·	
	<del></del>	T	<u> </u>	T		<del></del>	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
ANNUAL RYEGRASS (LOLIUM PERENNE 55P. MUTIFLORUM)	40	1.0	0.5	MAR. 15 TO MAY 31; AUG. 1 TO SEPT. 30	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 19	FEB. 15 TO APR. 30; AUG. 15 TO NOV. 30	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 WARYLAND DEPARTMENT OF ENVIRONM WATER MANAGEMENT ADMINISTRATIC
BARLEY (HORDEUM VULGARE)	96	2.2	1.0	MAR. 15 TO MAY 31; AUG. 1 TO SEPT. 30	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 1	FEB. 15 TO APR. 30; AUG. 15 TO NOV. 30	CONSTRUCTION SPECIFICATIONS
OATS (AVENA SATIVA)	72	1.7	1.0	MAR. 15 TO MAY 31; AUG. 1 TO SEPT. 30	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 19	FEB. 15 TO APR. 30; AUG. 15 TO NOV. 30	1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
WHEAT (TRITICUM AESTIVUM)	120	2.8	1.0	MAR. 15 TO MAY 31; AUG. 1 TO SEPT. 30	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 1	FEB. 15 TO APR. 30; AUG. 15 TO NOV. 30	2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW
CEREAL RYE (SECALE CEREALE)	112	2.8	1.0	MAR. 15 TO MAY 31; AUG. 31 TO OCT. 31	MAR. 1 TO MAY 15; AUG. 1 TO NOV. 1	FEB. 15 TO APR. 30; AUG. 15 TO DEC. 15	
WARM-SEASON GRASSES							INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOW GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECU
FOXTAIL MILLET (SETARIA ITALICA)	30	0.7	0.5	JUNE 1 TO JULY 31	MAY 16 TO JULY 31	MAY 1 TO AUGUST 14	GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24  AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18
PEARL MILLET (PENNISETUM GLAUCUM)	20	0.5	0.5	JUNE 1 TO JULY 31	MAY 16 TO JULY 31	MAY 1 TO AUGUST 14	WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLATHEN FASTENED TO THE POST.

1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES. SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS. WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES. USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY OATS AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET). DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX, CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES 2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.

MARIE J. GRONOSK P.E. F 3804 Date 3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE. PROFESSIONAL CERTIFICATE l certify that this plan for erosion and sediment control represents a practical and workabl plan based on my personal knowledge of the site conditions and that it was prepared in

accordance with the requirements of the Howard Soil Conservation District." NA/15 FRANK JOHN MANALANSAN II, L.S.

for sediment and erosion control and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

OWNER <u>DEVELOPER/BUILDER</u> CDCG 3 BZH LP, BEAZER HOMES CORP 8965 GUILFORD ROAD SUITE 290 COLUMBIA, MARYLAND 21046 SCOTTSDALE, ARIZONA 85255 ATTN: EDWARD GOLD (410) 720-5071 ATTN: STEVEN 5. BENSON (480) 696-3733

INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE. APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING let Elelion vision of Land Development 10.2.15 Date Department of Planning and Zoning Date Director -LOTS NO. Morris place phases I-IV N/A 1 THRU 53 BLOCK NO. ZONE TAX/ZONE ELEC. DIST. | CENSUS TR 3345-3348 CAC-CLI 6069.02 WATER CODE SEWER CODE C-02 7390000

SEDIMENT EROSION CONTROL DETAILS SINGLE FAMILY TOWNHOUSE LOTS 1 THRU 53, OPEN SPACE LOTS 54 THRU 61 &

NON-BUILDABLE BULK PARCELS 'A' THRU 'C' PHASES I-IV ZONED: CAC-CLI PREVIOUS HOWARD COUNTY FILES: ECP-13-035, 5DP-82-148, 5DP-91-50, 5-10-02 P-13-001, WP-12-173, WP-14-068, F-14-028, F-15-047, 5DP-15-029 AND W & 5 CONTRACT NO. 14-4777-D. TAX MAP NO.: 43 PARCEL NO.: 599 GRID NO.: 4

FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: AS SHOWN DATE: AUGUST, 2015 SHEET 7 OF 14 50P 15-017

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET

ELLICOTT CITY, MARYLAND 21042 (410) 461 - 2855

FISHER. COLLINS & CARTER. INC.

VIL ENGINEERING CONSULTANTS & LAND SURVEYOR

REVIGED DECKS. MORN, KOOM PER ARCHITECTURAL PLAN 5/3/16 DATE





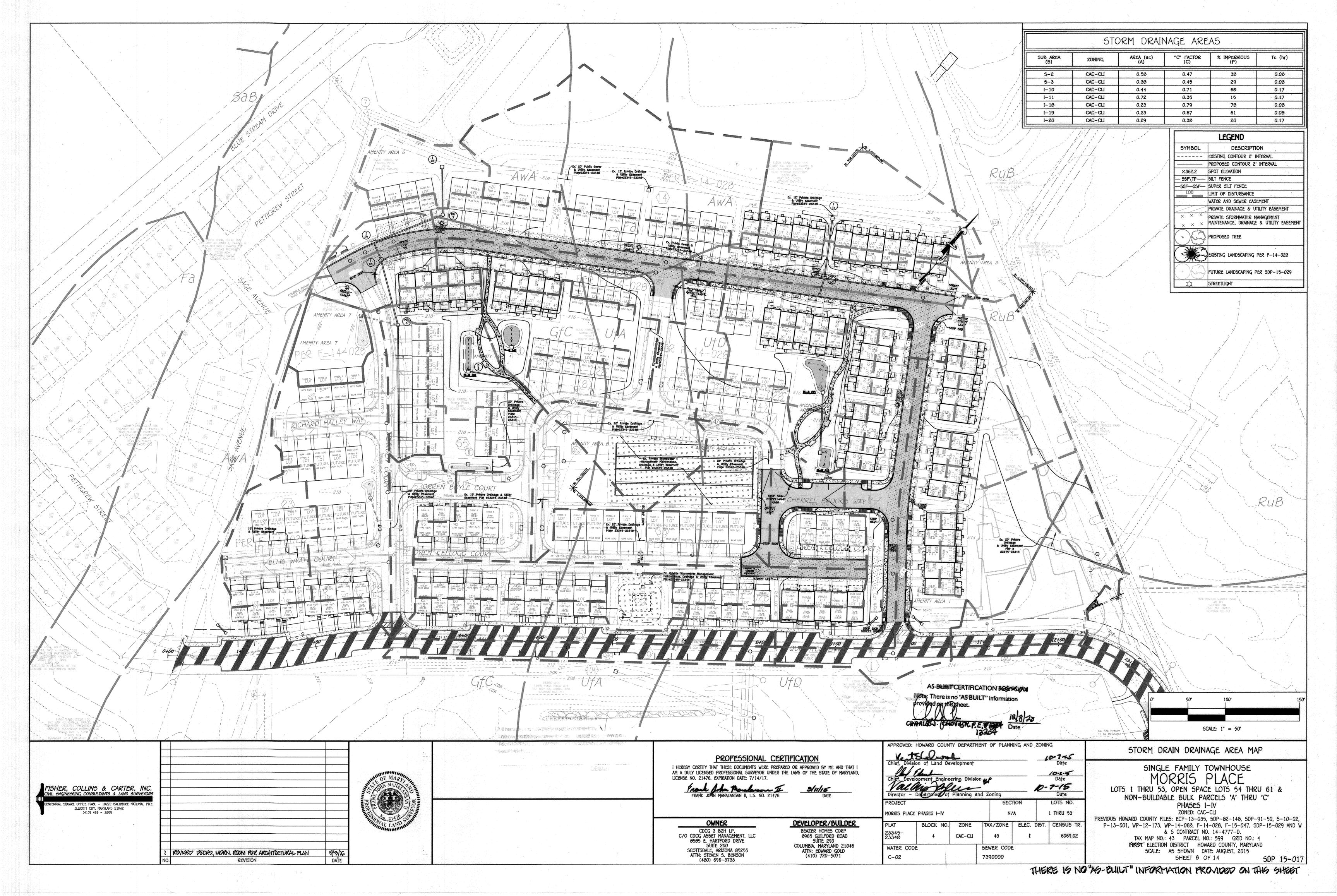


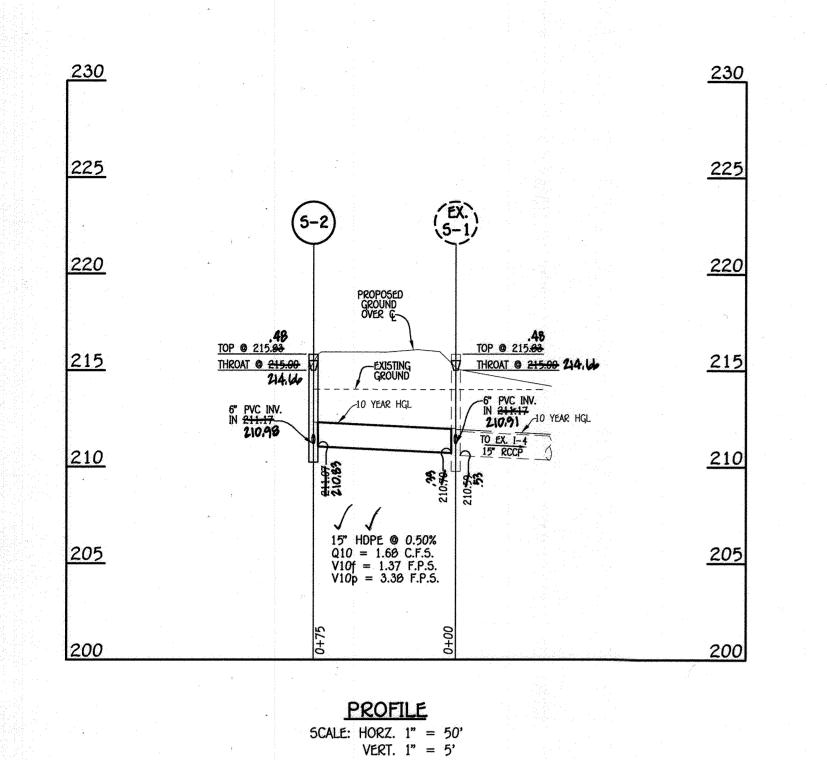
AS-BUILT CERTIFICATION PORTES NAME

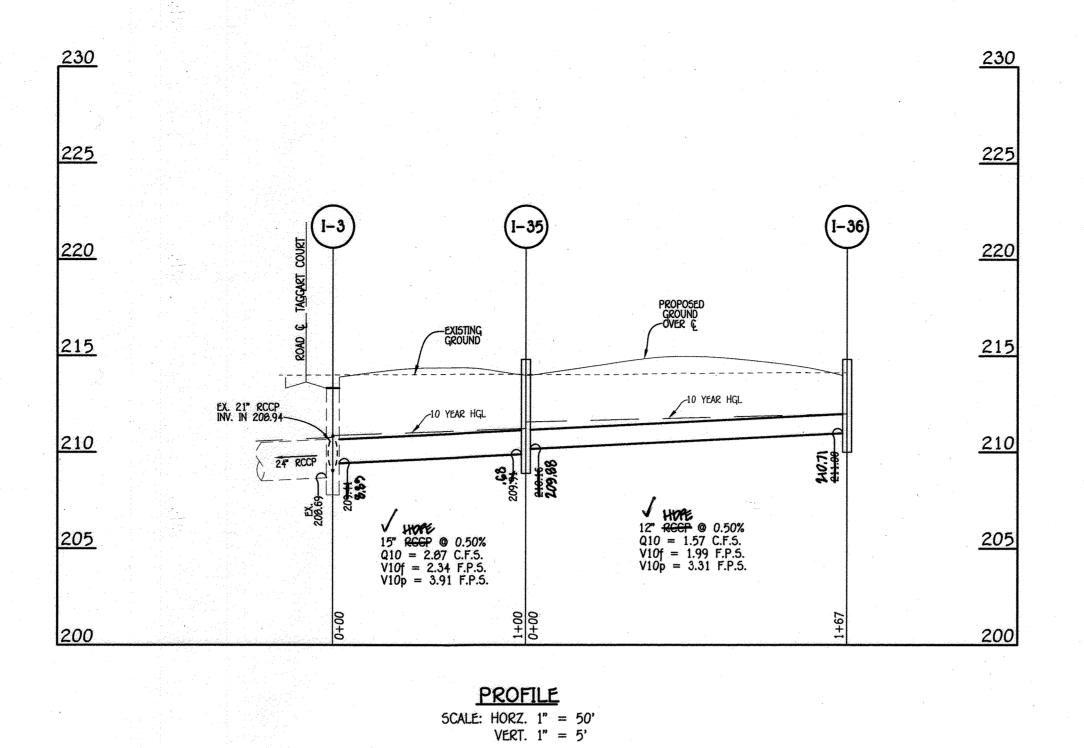
Ste: There is no "AS BUILT" information provided on this sheet.

EXPIRATION DATE: 7/14/17 BUILDER/DEVELOPER'S CERTIFICATE "I/We certify that all development and construction will be done according to this plan,

C/O CDCG ASSET MANAGEMENT, LLC 8585 E. HARTFORD DRIVE





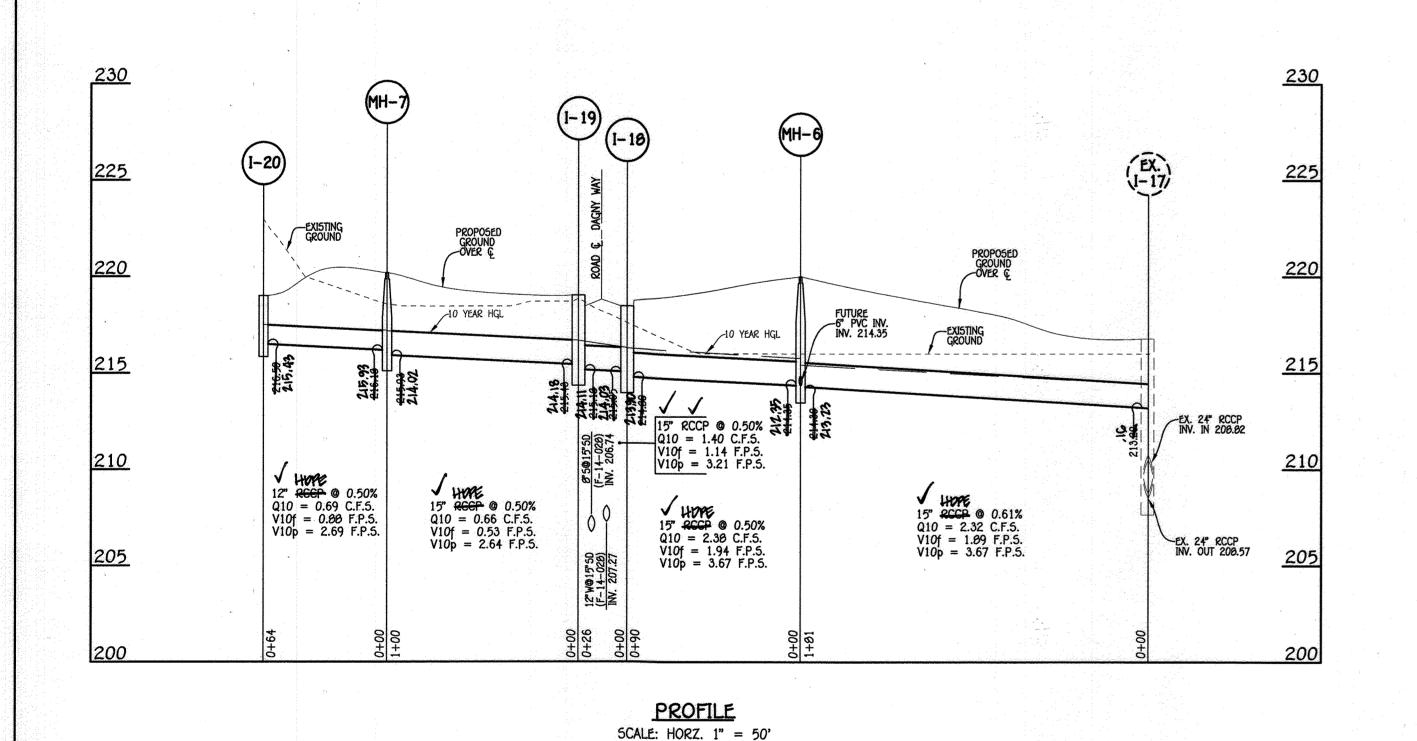


			STRUCT	ure 5c	HEDULE			
STRUCTURE NO.	OWNERSHIP AND MAINTENANCE	TOP ELEVATION	INV IN	INV OUT	COOR	DINATES	TYPE	REMARKS
I-10	PUBLIC	215: <b>48</b> -	211.8 15"√	211.6 18"	N 551933.29	E 1376874.47	√'A-5' INLET	D-4.01
I-11	PUBLIC	215.00		212:2 15"	N 552000.83	E 1376031.20	√'D' INLET	D-4.10
I-10	PUBLIC	218:46	214.00 15"	21 <b>3,<del>60</del></b> 15"	N 551565.14	E 1376404.57	JOOUBLE '5' INLET	D-4.23
I-19	PUBLIC	21 <del>9.03</del>	214, <del>43</del> 15"√	214.18 15"	N 551576.76	E 1376301.06	√'A-5' INLET	D-4.01
I-20	PUBLIC	218:00		215, <del>50</del> 12"	N 5517 <del>13.00</del>	E 137 <del>6386.45</del>	√'D' INLET	D-4.10
I-35	PUBLIC	214. <del>83</del>	209.88 210.16 12"√	209. <del>91</del> 15"	N 551 <del>729.85</del>	E 1377 <del>324.69</del>	√'D' INLET	D-4.01
I-36	PUBLIC	21 <del>1.83</del>	<u>13</u> J.	<b>0.71</b> 21 <del>1.00</del> 12"	N 55185 <del>9.71</del>	E 137721 <del>9.12</del>	√'D' INLET	D-4.01
MH-6	PUBLIC	219.81 <del>220.00</del>	213,35 15" √ 214.35 FUTURE 18"PVC	21 <b>2,<del>30</del></b> 15"	N 551513. <del>51</del>	E 137647 <del>8.58</del>	4' STANDARD MANHOLE	G-5.12
MH-7	PUBLIC	220.2	215: <del>18</del> 12"	21 <b>4,<del>93</del></b> 15"	N 55166 <del>4.66</del>	E 137642 <del>3.96</del>	√4' STANDARD MANHOLE	G-5.12
5-2	PUBLIC	215 <del>.00</del> -*	21 <del>1.17</del> 6" PVC√	<b>0,89</b> 21 <del>1.07</del> 15"	N 5518 <del>10.40</del>	E 137697 <del>7.83</del>	√'D' INLET	D-4.10
5-3	PUBLIC	217. <del>00</del> *	21 <del>3.17</del> 6" PVC√	213. <del>07</del> 12"	<b>34,60</b> N 5515 <del>27.78</del>	E 1376591.09	√'D' INLET	D-4.10

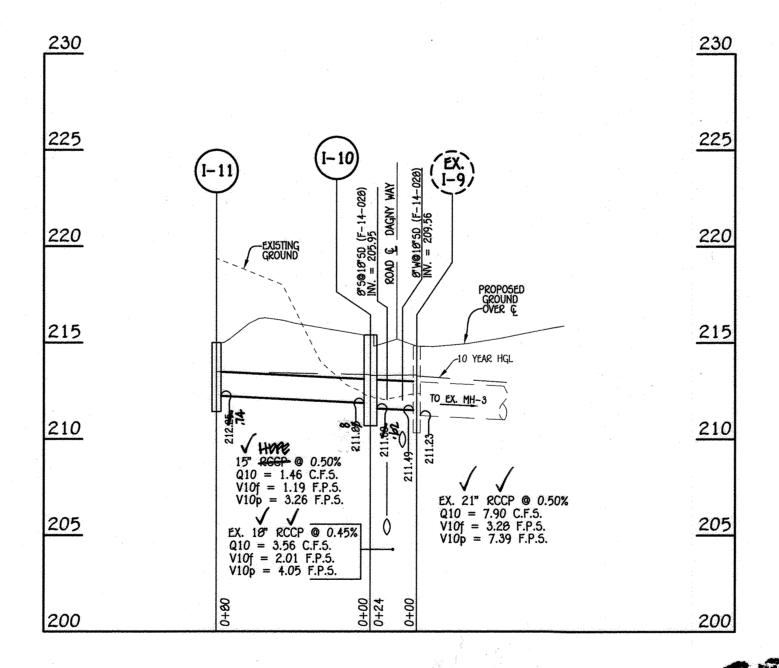
\* - DENOTES THROAT OPENING ELEVATION

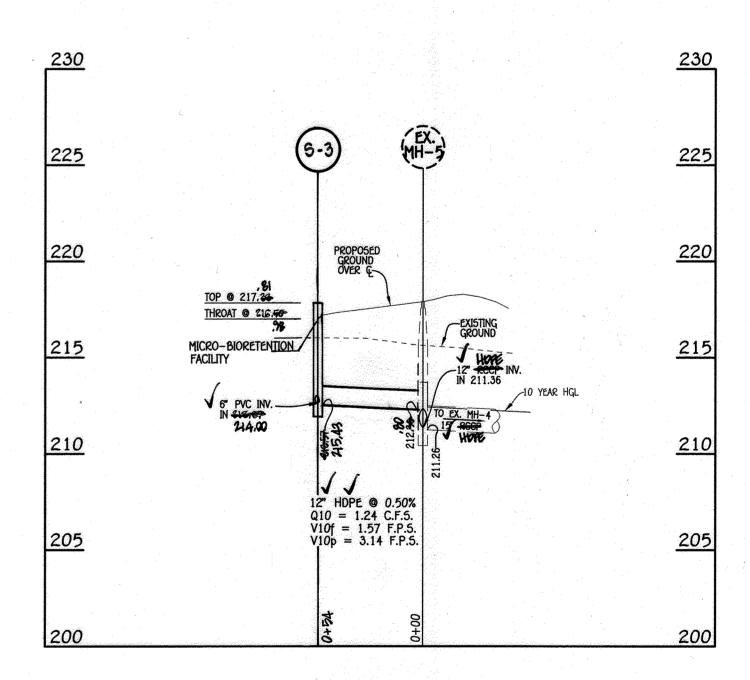
	PIPE SCHEDU	LE
SIZE	CLA55	LENGTH
12"	RCCP	<b>785</b> '
15"	RCCP	652'
18"	RCCP	24'
6"	SCHEDULE 40 PVC	7'
6"	PERFORATED SCHEDULE 40 PVC	63'

NOTE: RCCP CL. IV, MAY BE SUBSTITUTED WITH HDPE PIPE



VERT. 1" = 5"



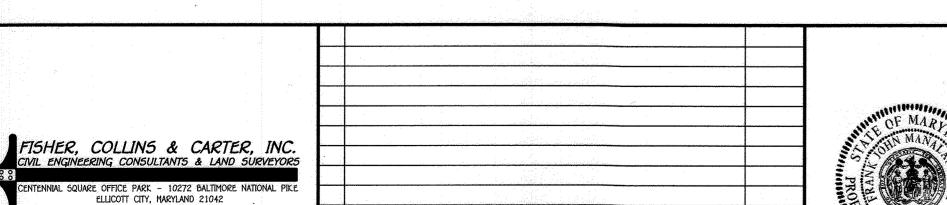


PROFILE SCALE: HORZ. 1" = 50" VERT. 1" = 5"

WATER CODE

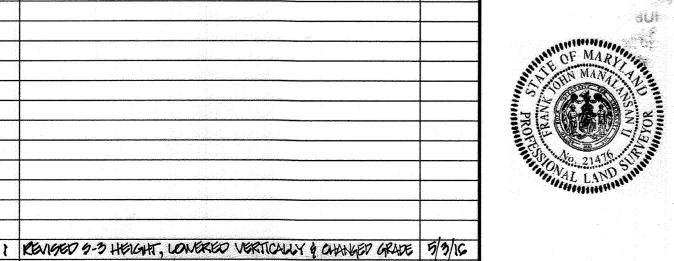
C-02

PROFILE SCALE: HORZ. 1" = 50" VERT. 1" = 5"



REVISION

(410) 461 - 2855



DATE

AS-BUILI CERTIFICATION I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS BUILT" plan meet the approved plans and CHANGE CHINOSE. P.E. P13204

PROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT AM A DULY LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21476, EXPIRATION DATE: 7/14/17.

BEAZER HOMES CORP

8965 GUILFORD ROAD SUITE 290

CDCG 3 BZH LP,
C/O CDCG ASSET MANAGEMENT, LLC
9595 E. HARTFORD DRIVE
SUITE 200 DEVELOPER/BUILDER COLUMBIA, MARYLAND 21046 ATTN: EDWARD GOLD (410) 720-5071 SCOTTSDALE, ARIZONA 05255 ATTN: STEVEN 5. BENSON (400) 696-3733

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 10-7-15 Chief, Development Engineering Division Chief Development Engineering Division Director - Department of Planning and Zoning 10-7-16 Date PROJECT LOTS NO. MORRIS PLACE PHASES I-IV 1 THRU 53 N/A BLOCK NO. ZONE

10 .Z . 15 Dațe TAX/ZONE | ELEC. DIST. | CENSUS TR. 23345-23348 CAC-CLI 6069.02

SEWER CODE

7390000

STORM DRAIN PROFILE SINGLE FAMILY TOWNHOUSE MORRIS PLACE LOTS 1 THRU 53, OPEN SPACE LOTS 54 THRU 61 & NON-BUILDABLE BULK PARCELS 'A' THRU 'C'

SCALE: 1" = 50'

PHASES I-IV ZONED: CAC-CLI PREVIOUS HOWARD COUNTY FILES: ECP-13-035, 5DP-82-148, 5DP-91-50, 5-10-02, P-13-001, WP-12-173, WP-14-068, F-14-028, F-15-047, 5DP-15-029 AND W & 5 CONTRACT NO. 14-4777-D.

TAX MAP NO.: 43 PARCEL NO.: 599 GRID NO.: 4

PROT ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: AUGUST, 2015

SHEET 9 OF 14 5DP 15-017

#### Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WC), and Re v. In some instances where permeability is great, these facilities may be used for Qp as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorous and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

#### Design Constraints:

> Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.

> Determine areas that will be saturated with water and water table depth so that

appropriate plants may be selected (hydrology will be similar to bioretention facilities, see figure A.5 and Table A.4 for planting material guidance). > Plants known to send down deep taproots should be avoided in systems where filter fabric is

used as part of facility design. > Test soil conditions to determine if soil amendments are necessary.

> Plants shall be located so that access is possible for structure maintenance.

> Stabilize heavy flow areas with erosion control mats or sod. > Temporarily divert flows from seeded areas until vegetation is established

#### > See Table A.5 for additional design considerations.

#### Bio-retention

#### Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume [Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 19931. Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05.) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Value
5.2 to 7.00
1.5 to 4.0% (by weight)
35 lbs. per acre, minimum
75 lbs. per acre, minimum
85 lbs. per acre, minimum
500 ppm
10 to 25 %
30 to 55 %
35 to 60%

#### Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

#### Planting Guidance

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.

The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge

is the highest elevation and generally supports plants adapted to dryer conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Claytor and Schueler, 1997.

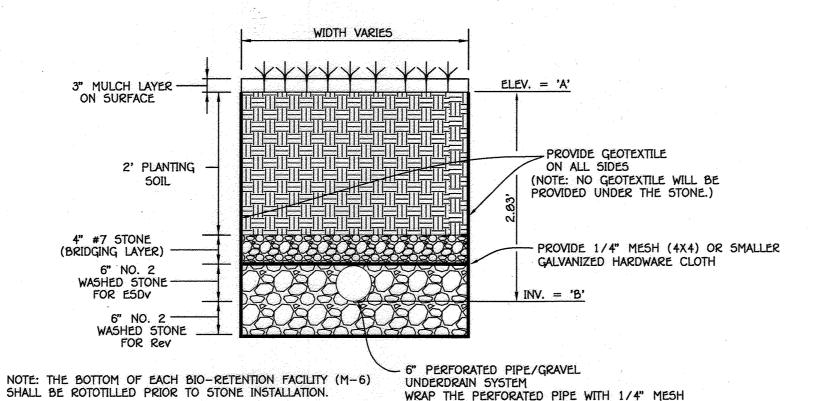
## OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)

1. ANNUAL MAINTENANCE OF PLANT MATERIAL MULCH LAYER AND SOIL LAYER IS REQUIRED, MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. 2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDER BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND

SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES. 3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS. 4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS. WITH A MINIMUM

OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

	Α	В	
5.11	214.00	211.17	211.75
5.05	<del>214.00</del>	<del>211.17</del>	211.70
7:30	219,50	218.07	214.00
5.72	<del>214.50</del>	<del>211.67</del>	211.76



TYPICAL SECTION - BIO-RETENTION FACILITY (M-6)

NO SCALE

And the second s		The state of the s
		REA M-6 (1) ON PLANT MATERIAL
QUANTITY	NAME	MAXIMUM SPACING (FT.)
42	MIXED PERENNIALS	
72	CHOUGE	1 П.
21	GRASSES	2 FT.
DR	PAINAGE AF	REA M-6 (2)
Contract of the Contract of th		ON PLANT MATERIAL
QUANTITY	NAME	MAXIMUM SPACING (FT.)
94	MIXED PERENNIALS	1 FT.
47	SHRUBS MIXED GRASSES	2 FT.
[		
	ZAINAGE AF	REA M-6 (3)
	ZAINAGE AF	REA M-6 (3) ON PLANT MATERIAL
	CAINAGE AF IORETENTION	
MICRO-B	CAINAGE AF IORETENTION NAME PERENNIALS	ON PLANT MATERIAL
MICRO-B QUANTITY	CAINAGE AF IORETENTION	ON PLANT MATERIAL MAXIMUM SPACING (FT.)
MICRO-B QUANTITY 42 21	CAINAGE AF IORETENTIC NAME PERENNIALS SHRUBS MIXED GRASSES	ON PLANT MATERIAL MAXIMUM SPACING (FT.)  1 FT.  2 FT.
MICRO-B QUANTITY 42 21	CAINAGE AF IORETENTIC NAME PERENNALS SHRUBS MIXED GRASSES	ON PLANT MATERIAL  MAXIMUM SPACING (FT.)  1 FT.  2 FT.  REA M-6 (4)
MICRO-B QUANTITY 42 21  DR MICRO-B	CAINAGE AF IORETENTIC NAME PERENNALS SHRUBS MIXED GRASSES	ON PLANT MATERIAL  MAXIMUM SPACING (FT.)  1 FT.  2 FT.  REA M-6 (4) ON PLANT MATERIAL
MICRO-B QUANTITY 42 21	CAINAGE AF IORETENTIC  NAME PERENNIALS SHRUBS MIXED GRASSES  CAINAGE AF IORETENTIC NAME	ON PLANT MATERIAL  MAXIMUM SPACING (FT.)  1 FT.  2 FT.  REA M-6 (4)
MICRO-B QUANTITY 42 21  DR MICRO-B	CAINAGE AF IORETENTIC  NAME  PERENNIALS SHRUBS GRASSES  CAINAGE AF IORETENTIC	ON PLANT MATERIAL  MAXIMUM SPACING (FT.)  1 FT.  2 FT.  REA M-6 (4) ON PLANT MATERIAL

(MICRO BIO-RETENTION FACIL SCALE: 1" = 20'

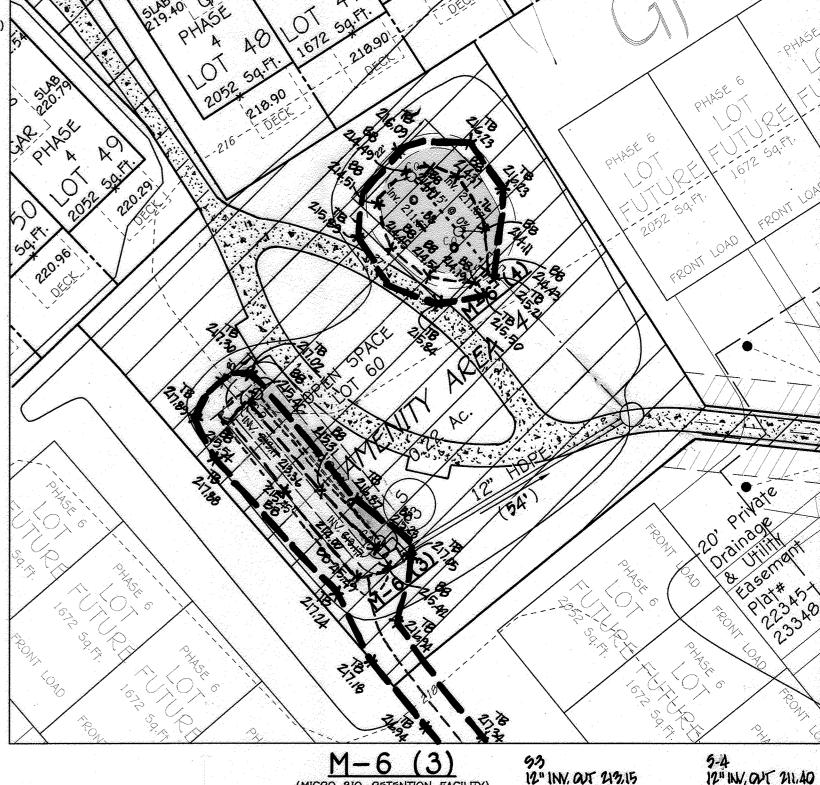
DRAINAGE AREA: 17,424 5qft.

FILTER AREA: 485 SQFT.

ELEVATION 214.5

PERIMETER 79'

WEIR ELEVATION 215.5



M-6 (2) (MICRO BIO-RETENTION FACILITY) 5CALE: 1" = 20' DRAINAGE AREA: 25,265 5qFt. FILTER AREA: 747 SQFT. ELEVATION 214

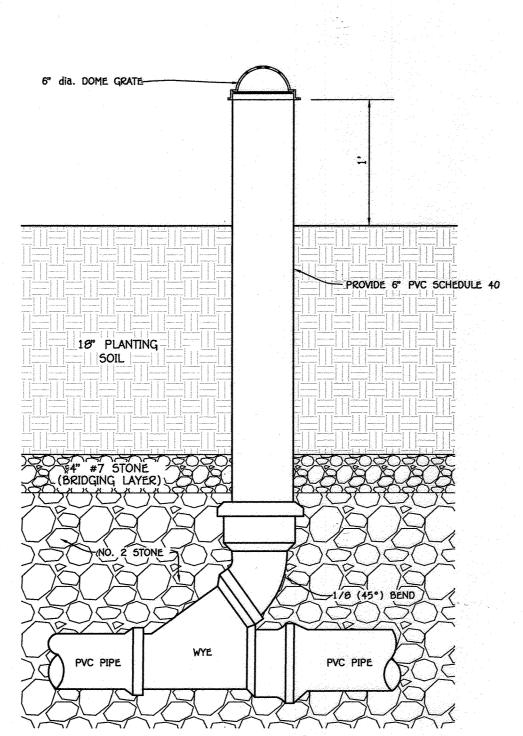
PERIMETER 119'

(MICRO BIO-RETENTION FACILITY) 5CALE: 1" = 20' DRAINAGE AREA: 16,117 5qFt. FILTER AREA: 329 59Ft. ELEVATION 2550 PERIMETER 101' WEIR ELEVATION 216 50

6" INV. IN 21931 INVERT IN THEOAT 21698 5-2 15" INV. OUT 210.83 C" INV. IN 210.96 INVERT INTAROAT 214.71

15" INV. IN 210.39 15" INV. OUT 210.33 6" INV. IN 21091 INJERT IN THROAT 214,GG 109 215.48

G"INV. IN 211.69 INVERT IN THROAT 215,00



UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 750, TYPE PS 28 OR AASHTO-M- 278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (e.g., PVC OR HDPE).

(4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.

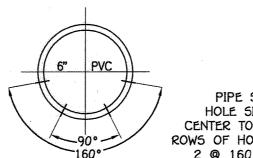
PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (No. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.

GRAVEL LAYER SHALL BE (No. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5%

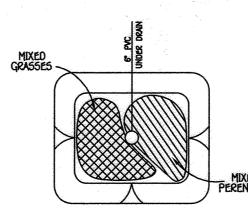
A RIGID, NON PERFORATED OBERSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE

A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".



PIPE SIZE: 6" HOLE SIZE: 3/8" CENTER TO CENTER: 3" ROWS OF HOLES: 2 @ 90° 2 @ 160° (+/-3°)

**5CH40 PVC PERFORATED** UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE NO SCALE



MICRO-BIORETENTION PLANTING DETAIL





\* SEE PLANT MATERIAL CHARTS FOR QUANTITIES AND SPACING





M-6 (1) (MICRO BIO-RETENTION FACILITY) SCALE: 1" = 20' DRAINAGE AREA: 6,970 Saft. FILTER AREA: 332 SQFT. **ELEVATION 214** PERIMETER 74' WEIR ELEVATION 215

# SCALE: 1" = 30'

PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND,

OWNER CDCG 3 BZH LP, C/O CDCG ASSET MANAGEMENT, LLC 8585 E. HARTFORD DRIVE SUITE 200 SCOTTSDALE, ARIZONA 85255

DEVELOPER/BUILDER BEAZER HOMES CORP 8965 GUILFORD ROAD SUITE 290 COLUMBIA, MARYLAND 21046 ATTN: EDWARD GOLD (410) 720-5071

C-02

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 10.745 10.2.15 10-7-15 MORRIS PLACE PHASES I-IV 1 THRU 53 ZONE TAX/ZONE | ELEC. DIST. | CENSUS TO BLOCK NO. CAC-CLI 6069.02 WATER CODE SEWER CODE

7390000

STORM WATER MANAGEMENT DETAILS

SINGLE FAMILY TOWNHOUSE MORRIS PLACE LOTS 1 THRU 53, OPEN SPACE LOTS 54 THRU 61 & NON-BUILDABLE BULK PARCELS 'A' THRU 'C' PHASES I-IV

ZONED: CAC-CLI PREVIOUS HOWARD COUNTY FILES: ECP-13-035, 5DP-02-140, 5DP-91-50, 5-10-02, P-13-001, WP-12-173, WP-14-068, F-14-028, F-15-047, 5DP-15-029 AND W & 5 CONTRACT NO. 14-4777-D.

TAX MAP NO.: 43 PARCEL NO.: 599 GRID NO.: 4 PIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: AS SHOWN DATE: AUGUST, 2015 SHEET 10 OF 14

5DP 15-017

FISHER, COLLINS & CARTER, INC. CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

REVIGEO 5-3 HEIGHT. LONGRED VERTICALLY & CHANGED GRADE 5/3/16

DATE

REVISION

TYPICAL CLEAN-OUT DETAIL

AS-BUILT CERTIFICATION I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS BUILT" plan meet the approved plans and

A5 6

CHARLESU. CHOVOTR P.E. # 13004

ATTN: STEVEN 5. BENSON (480) 696-3733

"AG-BUILT"

