1. ACCEPTABLE URBAN FORESTRY CRITERIA

WHEN URBAN FORESTRY IS CHOSEN AS A STORM WATER QUALITY BMP, THE STORM WATER QUALITY MANAGEMENT PLAN MUST BE CERTIFIED BY A DEGREED FORESTER, WETLAND SPECIALIST, BOTANIST, LANDSCAPE ARCHITECT, CERTIFIED ARBORIST, OR SIMILARLY QUALIFIED PROFESSIONAL.

TREE SIZE AND CONDITION

TREES SHALL BE A MINIMUM OF 1.5 CALIPER (DIAMETER) AT THE BASE AND 4 FEET TALL WHEN PLANTED AND A MAXIMUM OF 3 INCHES IN CALIPER AND 14 FEET HIGH. AMERICAN STANDARD FOR NURSERY STOCK CRITERIA MAY BE USED AS WELL.

IT IS ESSENTIAL THAT TREES BE SELF-SUPPORTING WITH STRAIGHT TRUNKS AND LEADERS OR TOPS INTACT. TREES THAT HAVE BEEN HEADED BACK ARE NOT ACCEPTABLE. TREES SHOULD BE NORMALLY SHAPED FOR THEIR SPECIES AND WELL BRANCHED WITH FULL FOLIAGE WHEN LEAFED OUT. THE ROOTS MUST BE HEALTHY AND SUFFICIENTLY LARGE TO ALLOW RECOVERY AFTER PLANTING. THE TRUNCK MUST BE FREE OF ABRASIONS AND RECENT CUTS AND THE TREE FREE OF INSECTS AND DISEASE.

PLANTING TIME

THE RECOMMENDED TREE PLANTING TIME IN THE HARRIS COUNTY AREA IS USUALLY EARLY FALL UNTILL LATE SPRING. GENERALLY, MID OCTOBER TO EARLY MARCH IS THE BEST TIME TO PLANT TREES. PLANTING IN LATE FALL OR WINTER ALLOW ROOTS TO BECOME ESTABLISHED BEFORE MOISTURE DEMANDING SUMMER SETS IN. ALL TREES MUST BE MAINTAINED (PRIMARILY WATERED) FOR A MINIMUM OF TWO YEARS.

SPACING REQUIREMENTS

THERE SHALL BE A MINIMUM OF 6 CALIPER INCHES PER 100 LINEAL FEET OF NEW SINGLE LANE PAVEMENT FOR ROAD PROJECTS AND A MINIMUM OF 1 CALIPER INCH PER 170 SQUARE FEET OF IMPERVIUOS SURFACE FOR ALL OTHER DEVELOPMENT PROJECTS.

LONG-TERM SURVIVABILITY IS THE PRIMARY OBJECTIVE IN THE URBAN FORESTRY PLANTINGS THEREFORE ALL PLANTING OF ONE LINEAR MILE OR GREATER SHALL CONSIST OF AT LEAST FOUR (4) DIFFERENT SPECIES FROM THE RECOMMENDED TREE LIST.

THE FOLLING REQUIREMENTS ARE PARTICULARLY APPLICABLE TO THE STREET PLANTINGS IN HARRIS COUNTY RIGHTS-OF-WAY (HARRIS COUNTY FLOOD CONTROL DISTRICT PROPERTIES) TO COMPLY WITH THE STORM WATER QUALITY DOCUMENT FOR NEW DEVELOPMENT / REDEVELOPMENT PROJECTS.

- NO TREES THAT WILL HAVE A MATURE TREE TRUNK DIAMETER GREATER THAN 12 INCHES AT THE BASE SHOULD BE PLANTED IN A TREE LAWN OR RIGHT-OF-WAY LESS THAN 3 FEET WIDE.
- TREES SHOULD NOT BE PLANTED WITHIN 30 FEET OF AN INTERSECTION OR WHERE THEY BLOCK VIEWS FOR SAFETY.
- TREES SHOULD NOT BE PLANTED WITHIN 10 FEET OF UTILITY POLES OR WITHIN 15 FEET OF DRIVEWAYS AND ALLEYS.
- MEDIUM LARGE TREES, THOSE THAT MATURE TO A HEIGHT GREATER THAN 30 FEET, SHOULD BE PLANTED 25 TO 60 FEET APART.
- SMALL TREES, THOSE THAT MATURE TO LESS THAN 30 FEET IN HEIGHT, SHOULD BE PLANTED A MINIMUM OF 10 FEET APART.
- IN BUSINESS DISTRICTS AND GENERAL PARKING AREAS, TREES MUST BE PLANTED A MINIMUM OF 30 INCHES FROM THE CURB TO PREVENT DAMAGE FROM OR TO BUMPERS AND DOORS.
- ONLY TREES WITH A MATURE HEIGHT OF LESS THAN 25 FEET SHOULD BE PLANTED UNDER UTILITY LINES.

2. URBAN FORESTRY CALCULATIONS

CHECK APPROPRIATE BOX, CALCULATE REQUIRED CALIPER INCHES AND COMPLETE TREE PLANTING SCHEDULE.

☐ NEW PAVEMENT

$\frac{______ \text{ SLP} \times 6}{100}$ = ________ CALIPER INCHES REQUIRED

☐ IMPERVIOUS IMPROVEMENTS OTHER THAN PAVEMENT

$\frac{______ \text{ SFI}}{170}$ = ________ CALIPER INCHES REQUIRED

SLP = SINGLE LANE PAVEMENT LENGTH MEASURED IN FEET

SFI = SQUARE FOOT AREA OF IMPERVIOUS SURFACE

COMPLETE ONLY URBAN FORESTRY IS USED IN PROJECT

3. SWQ IMPACT EVALUATION

1. THIS PROJECT ENTAILS THE INCREASE OF NET IMPERVIOUS COVER IN THE AMOUNT OF ______SF or ______LF (SLP) WHICH IS NOT MITIGATED IN ITEM 2, URBAN FORESTRY CALCULATIONS.
2. THIS PROJECT INCLUDED THE PRESERVATION OF ______SF OF "GREEN SPACE" NOT DEVELOPED AND USED SOLELY FOR A "GREEN CORRIDOR".
3. THIS PROJECT INVOLVED THE FOLLOWING ADDITIONAL ENVIRONMENTAL FEATURES RELATED TO STORM WATER QUALITY.
   ____
   ____
   ____
4. THIS PROJECT INVOLVED INSTALLING ____________________"CLEAN WATER CLEAR CHOICE" MANHOLE LIDS INLET MARKERS OR PUBLIC INFORMATION ITEMS.
5. THIS PROJECT IS IN ____________ WATERSHED AND IS LOCATED ON KEY MAP PAGE______.

COMPLETE FOR PROJECTS NOT USING 10/100 DETENTION-TRASH RACK OR OTHER METHODS FOUND IN THE MINIMUM DESIGN CRITERIA FOR IMPLEMENTATION OF CERTAIN BEST MANAGEMENT PRACTICES FOR STORM WATER RUNOFF TREATMENT OPTIONS.

4. ACCEPTABLE SPECIES URBAN FORESTRY

SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	GROWTH RATE	COMMENTS
MEDIUM LARGE TREES					
Accer arubrum	Red Maple	Large	30 FT.	Medium	Fall color
Carya illinoensis	Pecan	Large	50 FT.	Slow	Fruit
Fraxinus americana	White Ash	Large	40 FT.	Fast	Fall color
Juglans nigra	Black Walnut	Large	40 FT.	Slow	Fall color
Liquidamber stryaciflua	Sweetgum	Large	40 FT.	Fast	Fall color
Magnolia grandiflora	Southern Magnolia	Large	45 FT.	Slow	Evergreen
Nyssa sylvatica	Black Gum	Large	30 FT.	Medium	Fall color
Pinus taeda	Loblolly Pine	Large	30 FT.	Fast	Evergreen
Plantanus occidentalis	American Sycamore	Large	50 FT.	Fast	Unique leaf
Quercus acutissma	Sawtooth Oak	Large	40 FT.	Fast	Drought tolerant
Quercus falcata	Southern Red Oak	Large	40 FT.	Slow	Fall color
Quercus laurifolia	Laurel Oak	Large	40 FT.	Slow	Semi-evergreen
Quercus lyrata	Overcup Oak	Large	40 FT.	Slow	Large acorn
Quercus macrocarpa	Bur Oak	Large	50 FT.	Slow	Large acorn
Quercus michauxii	Swamp Chestnut Oak	Large	40 FT.	Slow	Fall color
Quercus muehlenbergii	Chinkapin Oak	Large	40 FT.	Slow	Fall color
Quercus nigra	Water Oak	Large	40 FT.	Medium	Deciduous
Quercus nutallii	Nuttall Oak	Large	40 FT.	Medium	Fall color
Quercus phellos	Willow Oak	Large	40 FT.	Medium	Deciduous
Quercus polymorpha	Monterrey Oak	Large	40 FT.	Fast	Drought tolerant
Quercus rizophyllia	Loquat Leaf Oak	Large	40 FT.	Fast	Drought tolerant
Quercus shumardii	Shumard Oak	Large	40 FT.	Slow	Fall color
Quercus stellata	Post Oak	Large	40 FT.	Slow	Deciduous
Quercus virginiana	Live Oak	Large	50 FT.	Slow	Semi-evergreen
Taxodium distichum	Bald Cypress	Large	30 FT.	Fast	Deciduous
Taxadium mucronatum	Montezuma Cypress	Large	40 FT.	Fast	Semi-evergreen
Ulmus alata	Winged Elm	Large	30 FT.	Medium	Drought tolerant
Ulmus crassifolia	Cedar Elm	Large	30 FT.	Medium	Drought tolerant
SMALL TREES					
Bumelia lanuginosa*	Gum Bully	Small	30 FT.	Slow	Unique leaf
Ehretia anacua*	Anacua	Small	20 FT.	Slow	Unique leaf
Fraxinus texensis*	Texas Ash	Small	25 FT.	Fast	Deciduous
Ilex opaca*	American Holly	Small	15 FT.	Slow	Evergreen
Ilex X attenuata Var. East palatka*	East Palatka Holly	Small	15 FT.	Slow	Evergreen
Ilex X attenuata Var. savannah*	Savannah Holly	Small	15 FT.	Slow	Evergreen
Magnolia virginiana*	Sweetbay Magnolia	Small	20 FT.	Slow	Evergreen
Pistacia chinensis*	Chinese Pistache	Small	25 FT.	Slow	Fall Color
Prunus serotina*	Black Cherry	Small	20 FT	Medium	Unique Leaf
Quercus cambii*	Camby Oak	Small	20 FT.	Medium	Drought Tolerant
Lagerstroemia indica	Crape Myrtle	Small	20 FT.	Medium	Drought Tolerant
Vitex agnus-Castus	Vitex/Chaste Tree	Small	20 FT.	Slow	Drought Tolerant

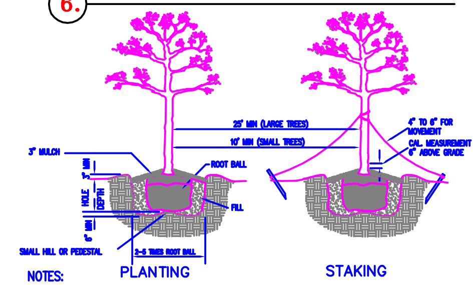
*Note: Additional species maybe approved on a case-by-case basis.

5. PLANTING SCHEDULE

TREE NUMBER	SPECIES	CALIPER INCH PROPOSED
	TOTALS	

THIS PROJECT PROPOSED TO PLANT AND MAINTAIN _____ TREES WITH A TOTAL OF _____ CALIPER INCHES AS SHOWN ON SHEET(S)__________. IF ADDITIONAL TREES ARE REQUIRED, AN ADDITIONAL PLANTING SCHEDULE APPEARS ON SHEET(S)__________ OR IN A PLAN SET ENTITLED ____________________.

6. PLANTING STANDARDS



NOTES:

1. DO NOT REMOVE TREE FROM CONTAINER UNTIL READY TO PLACE INTO PLANTING HOLE. FINE ROOTS DRY OUT RAPIDLY WHEN EXPOSED TO AIR.
2. PLANTING HOLE SHOULD BE DUG AT LEAST TWO (2) TO FIVE (5) TIMES THE DIAMETER AND THE SAME DEPTH AS THE ROOT BALL.
3. THE SIDES OF THE HOLE SHOULD BE SLIGHTLY SLOPED INWARD AND SHOULD BE ROUGHENED TO INCREASE ROOT PENETRABILITY INTO SURROUNDING SOIL. TREES SHOULD SIT ON A PEDESTAL OR SMALL HUMP OF UNDISTURBED SOIL TO MINIMIZE SETTLING AND FACILITATE DRAINAGE.
4. ALL CONTAINERS, BURLAP, WIRE AND ANY ROPE OR STRING SHOULD BE REMOVED PRIOR TO PLANTING. WITH THE TREE IN PLACE, THE ROOTS CAN BE SPREAD OUT NATURALLY. CHECK FOR CIRCLING ROOTS AND REJECT THOSE TREES WITH THEM.
5. THE PLANTING HOLE SHOULD BE BACKFILLED WITH THE SAME SOIL THAT WAS REMOVED UNLESS IT IS CLAY FROM BASEMENT EXCAVATION OR OTHER UNDESIRABLE FILL MATERIAL. IN THAT CASE BLEND TOGETHER ONE (1) PART WASHED SAND TO FOUR (4) PARTS LOAM, OR BRING IN AS MUCH GOOD TOPSOIL AS POSSIBLE. TAMP GENTLY AND ADD WATER TO FILL LARGE AIR SPACES. DO NOT USE EXCESSIVE TAMPIMG AROUND TREE BASE; COMPACTED SOIL MAY INHIBIT THE SPREAD OF ROOTS. THE BACK SOIL SHOULD BE LIGHTLY PACKED WHEN THE HOLE IS HALF FULL. WATER CAN BE SLOWLY ADDED AT THIS TIME TO SATURATE AND SETTLE THE SOIL. FINISH FILLING THE HOLE TO THE ORIGINAL GRADE AND WATER AGAIN.
6. MULCH WITH MAXIMUM OF FOUR (4) INCHES OF COURSE ORGANIC MULCH COVERING A CIRCLE THAT EXTENDS A MINIMUM OF THREE (3) FEET FROM THE TRUNK, TREE GRATES ARE NOT GENERALLY RECOMMENDED BUT MAY BE NECESSARY UNDER SPECIAL CONDITIONS.
7. THE TREE SHOULD BE STAKED ONLY IF IT IS NOT CAPABLE OF SUPPORTING ITSELF. STAKES ARE THEN ANCHORED IN NATIVE SOIL AND ARE TO BE REMOVED AFTER ONE (1) YEAR. USE SOFT TIES TO PREVENT BARK DAMAGE, KEEP THE STAKE OUT OF THE TREE LIMBS, AND ALLOW THE STAKED TREE FOUR (4) TO SIX (6) INCHES OF MOVEMENT.
8. ADEQUATE WATER IS ESSENTIAL AT PLANTING TIME. PLACE WATER HOSE AT THE BASE OF TREE AND ALLOW WATER TO TRICKLE UNTIL SOIL IS SATURATED.
9. AFTER WATERING AND ADDING MULCH TO COMPENSATE FOR ANY SETTLING. IF NECESSARY STAKE TREE TO KEEP UPRIGHT. THE ONLY PRUNING NECESSARY AT PLANTING IS TO REMOVE INJURED OR DEAD BRANCHES. STRUCTURAL PRUNING SHOULD BE DELAYED UNTIL THE SECOND YEAR OF GROWTH.

7. TREE LOCATION INDEX

__________INDICATES LARGE TREE

__________INDICATES SMALL TREE

REVISIONS	DATE	NAME

HARRIS COUNTY
PUBLIC INFRASTRUCTURE DEPARTMENT
ENGINEERING DIVISION VERSION 1.0

CASTANEDA,C.
COUNTY SPONSORED PROJECT
STORM WATER QUALITY WORKSHEET
NTS
J.R. BLOUNT PE