SECTION 700:
GRADING, LANDSCAPING
& EROSION CONTROL

701 GENERAL

The standards and requirements found in this section are to provide information on the grading of pervious (non-paved) areas, the restoration and landscaping of those areas, and erosion control during and after construction.

701.1 SPECIFICATIONS

The following documents are incorporated by reference:

  a) Illinois Urban Manual, IEPA/NRCS, latest edition

  b) NRCS National Engineering Handbook

  c) City of Naperville, Department of Public Works Manual on Parkway Plantings

701.2 REGULATIONS

Additional rules and regulations governing the construction of erosion control measures in the City of Naperville are:

  a) The restrictions, policies, and instructions that may be adopted or issued by the City of Naperville

  b) National Pollution Discharge Elimination System policies as administered by the Illinois Environmental Protection Agency.

701.3 START OF CONSTRUCTION

The contractor shall not begin construction until all required permits have been obtained. Copies of all permits obtained by outside agencies must be provided to the city prior to the start of construction.

702 MATERIALS

702.1 GRADING

702.1.1 EMBANKMENT
All materials used for embankment must be suitable for such a use. No sod, frozen material or any material which, by decay or otherwise, might cause settlement shall be allowed to be used for embankment.

702.1.2 TOPSOIL
Topsoil shall be a loamy soil with an organic content between one and ten percent. It shall be relatively free from large roots, sticks, weeds, brush or stones larger than 1 inch in diameter, or other litter and waste products. The topsoil shall be capable of supporting and germinating vegetation.

702.2 EROSION CONTROL
Please refer to the Illinois Urban Manual, latest edition for specifications and instructions for use for the various methods of erosion control measures. The following is an abbreviated listing of some of the more common measures:

a) Temporary Seed Mixes

b) Silt Fence

c) Straw bales or silt boxes

d) Earth Stabilization: rip-rap, fabrics, etc

e) Structures: Stormceptor®, oil/grit separators, etc.

f) Chemical – flock logs, etc.

g) Stabilized Construction Entrance

702.3 RESTORATION
Ground cover shall be installed as a permanent erosion control measure, as shown on the approved landscape plans.

702.3.1 SEED MIX
All seed mixes shall be an appropriate mix for the soil type and inundation conditions, as designed. IDOT approved seed mixes per Article 250 of the IDOT Standard Specifications should be considered.

702.3.2 HYDROSEED

Hydroseeding shall be applied based on the coverage amount per area coverage, as specified by the manufacturer.

702.3.3 SOD

The sod shall be approved grass that is native to northeastern Illinois. It shall either be nursery grown or field grown and be well rooted and approved by the Engineer prior to being cut and again before it is laid. Sod that has been grown on soil that is high organic matter such as peat will not be accepted. The consistency of the adherent soil shall be such that it will not break, crumble or tear during handling and placing of the sod.

Each piece of sod shall be well covered with turf grass, shall be free from noxious weeds and other objectionable plants, and shall not contain substances injurious to growth. The grass shall be cut to a length of not less than 1-1/2 inches nor more than four inches before the sod is cut. The sod shall be cut in rectangular pieces with its shortest side not less than 12 inches. The sod shall not be cut less than one inch thick, a thickness which does not include the grass.

702.4 PLANTINGS

All plantings must be in conformance with the approved landscape plan. Materials must be healthy and free of disease.

703 CONSTRUCTION REQUIREMENTS

703.1 GRADING
All pervious areas shall be graded per the approved plan or to meet the design requirements of section 702.1.

703.2 EROSION CONTROL

703.2.1 INSTALLATION OF EROSION CONTROL MEASURES
All erosion control measures shall be properly installed, as permitted, prior to any land disturbance activities.

703.2.2 MAINTENANCE OF EROSION CONTROL MEASURES
All erosion control measures shall be inspected weekly, after any 0.5 inch rainfall, or more frequently as necessary to maintain their function.

703.2.3 DUST
During extended dry periods, the construction area(s) may need to be watered down to prevent the blowing of soil from the site.

703.2.4 KEEPING PUBLIC ROADS CLEAN
During construction, a stabilized construction entrance shall be utilized to minimize the tracking of dirt onto the public streets. Any dirt that is tracked onto the public streets shall be removed the same day. If the amount tracked on the public street is excessive, cleaning may be required more frequently.

703.3 RESTORATION
Restoration measures shall be installed only during the growing season, to enable them to take root. Any areas that do not take root, or that fail to grow, shall be replaced in an adequate time frame to minimize soil erosion. Adequate watering shall be provided to allow for the plantings survival.

703.4 TREE PROTECTION
Tree protection shall be provided for all trees shown on the plans to be saved within the limits of construction, or as directed by the Engineer. Tree protection shall be installed prior to the start of any clearing or removal work and shall remain protected through the duration of construction. All trees shall be protected as shown in Detail 790.10.

703.5 PLANTINGS
Plantings shall be planted per the approved landscape plan taking care not to damage the existing root system.

704 INSPECTION & TESTING

704.1 INSPECTION
It is the responsibility of the owner or his designee to inspect all temporary erosion control measures per the requirements of the NPDES permit and correct any deficiencies as needed.

On-site grading inspection will generally be limited to visual inspections of the materials used and the condition of the site prior to seeding. There will also be a verification that all required testing is completed for areas of embankment. As-built or record drawings must be submitted per Section 110 of the Naperville Standard Specifications to verify that the grading substantially meets the requirements of the city standards.

A visual inspection of the landscaping will be performed following installation. The health of the plant material will be periodically reviewed and replacement may be required up to 12 months following the installation.

704.2 TESTING
Compaction testing of any embankment will be required per Article 205 of the IDOT Standard Specifications.

No formal testing will be required for landscaping and erosion control devices unless otherwise directed by the City Engineer.

790 STANDARD DETAILS

Erosion Control
790.01   Temporary Erosion Control Measure – Ditch Checks & Straw Bale Sediment Trap
790.02   Temporary Erosion Control Measure – Sediment Basin & Temporary Ditches
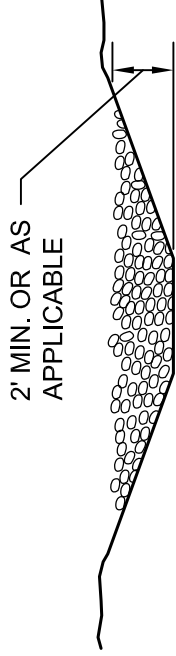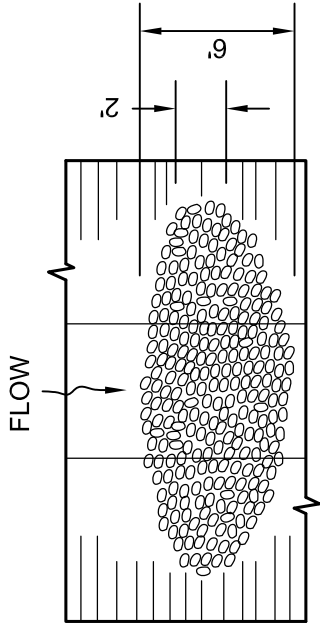790.03   Temporary Erosion Control Measure – Silt Fence (2 sheets)

Landscaping
790.10   Tree Protection
790.12   Tree Planting – Downtown Streetscape (2 sheets)

790.99 COMMON NAMES
All standard details in this section may be referred to by a common name in associated construction documents. The common name shall be "LANDSCAPE xx" where the xx is the section of the detail number to the right of the decimal point. For instance, *Detail #790.10 Tree Protection* may also be referred to as "LANDSCAPE 10".

AGGREGATE DITCH CHECK

2' MIN. OR AS APPLICABLE

TO BE CONSTRUCTED BY DEPOSITING MATERIAL AND SHAPING IN A MANNER APPROVED BY THE ENGINEER.

2'

6'

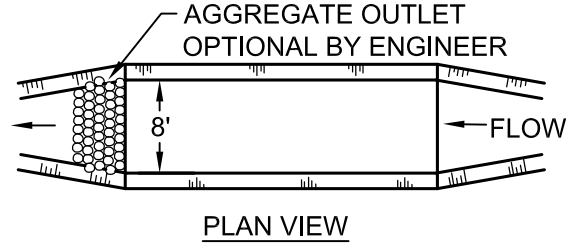FLOW

TEMPORARY EROSION CONTROL MEASURE - AGGREGATE DITCH CHECK

REVISED: 01/01/2013

SHEET 1 OF 1

LANDSCAPE 1

790.01

SEDIMENT BASIN

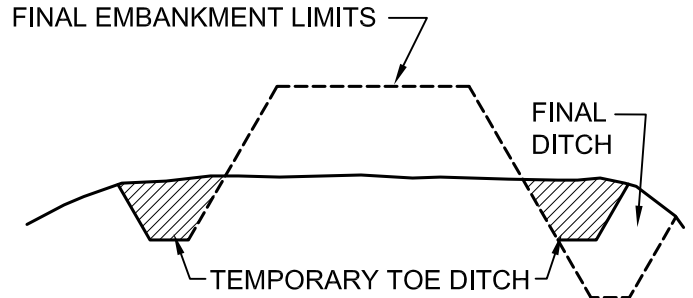### SECTION THRU ELEVATION

1' MIN.

20' TO 30'

← FLOW

₵ DITCH

2' TO 6'
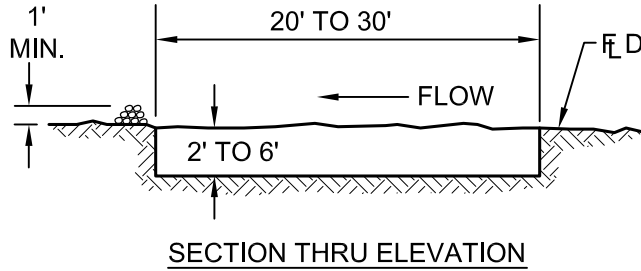
THE PERFORMANCE OF THE BASIN WILL IMPROVE IF PUT INTO A SERIES.

PLAN VIEW

AGGREGATE OUTLET OPTIONAL BY ENGINEER

8'

← FLOW

THE LONG DIMENSION SHOULD BE PARALLEL WITH THE DIRECTION OF THE FLOW. ACCUMULATED SILT SHALL BE REMOVED ANYTIME THE BASINS BECOME 75% FILLED.

TEMPORARY DITCHES FOR CUT AND FILL SECTIONS

GROUND LINE PRIOR TO EXCAVATION

UPSIDE DITCH

DOWNSIDE DITCH

FINAL EXCAVATION LIMITS
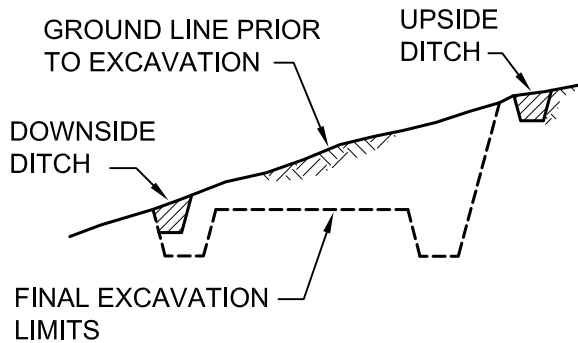
TYPICAL CUT CROSS SECTION

FINAL EMBANKMENT LIMITS

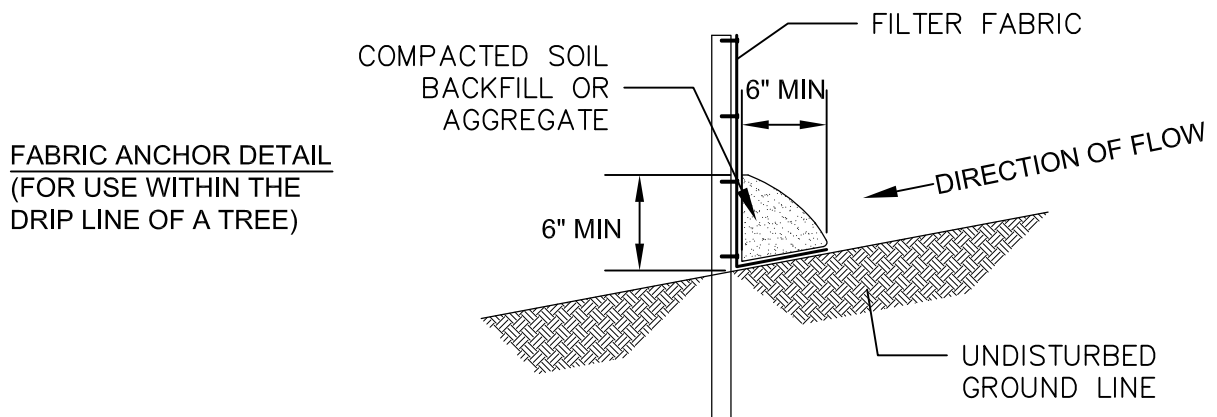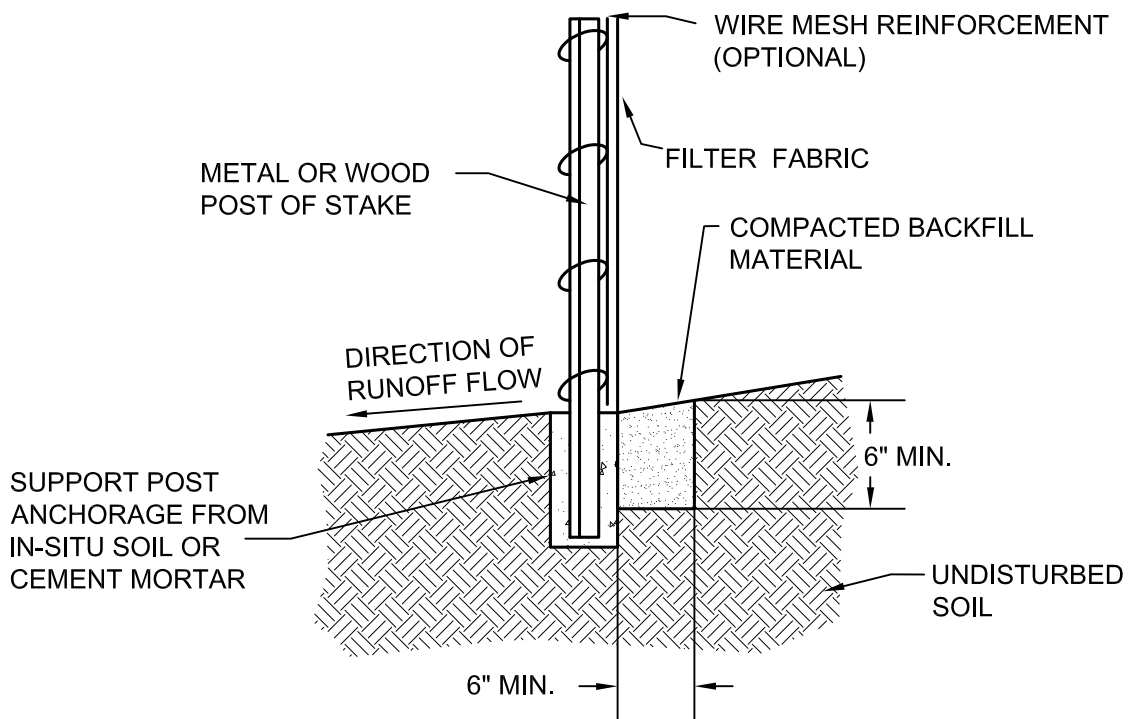FINAL DITCH

TEMPORARY TOE DITCH

TYPICAL FILL CROSS SECTION

TEMPORARY DITCHES OR THE FINAL DITCH GRADES INCLUDED IN THE PLANS SHALL BE EXCAVATED AT THE EARLIEST OPPORTUNITY DURING CONSTRUCTION IN ORDER TO CONTROL RUNOFF FROM THE EMBANKMENT OR CUT SECTION PER ARTICLE 202.05 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. SOME MEANS OF TRAPPING SILTATION SHOULD BE PROVIDED AT THE OUTFLOW OF THESE DITCH SYSTEMS.

NOTES:

1. ACTUAL CONFIGURATION AND LOCATION OF TEMPORARY EROSION CONTROL SYSTEMS SHALL BE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

2. DITCH CHECKS AND SEDIMENT BASINS SHOULD BE CONSTRUCTED AT APPROPRIATE INTERVALS ALONG THE WATERWAY TO BE EFFECTIVE.

3. THE TEMPORARY EROSION CONTROL SYSTEMS INSTALLED BY THE CONTRACTOR SHALL BE PROPERLY MAINTAINED AS DIRECTED BY THE ENGINEER TO CONTROL SILTATION AT ALL TIMES DURING THE LIFE OF THE CONTRACT.

City of Naperville **STANDARD DETAIL**	TEMPORARY EROSION CONTROL - SEDIMENT BASIN & TEMPORARY DITCHES	LANDSCAPE 2
	REVISED: 01/01/2013	SHEET 1 OF 1	**790.02**

5' MAX (TYP)

FASTENER
4 PER POST REQUIRED (TYP)

FILTER FABRIC

2' MIN

12" MIN

WIRE MESH REINFORCEMENT
(OPTIONAL)

FILTER FABRIC

METAL OR WOOD
POST OF STAKE

COMPACTED BACKFILL
MATERIAL

DIRECTION OF
RUNOFF FLOW

6" MIN.

SUPPORT POST
ANCHORAGE FROM
IN-SITU SOIL OR
CEMENT MORTAR

UNDISTURBED
SOIL

6" MIN.

FILTER FABRIC

COMPACTED SOIL
BACKFILL OR
AGGREGATE

6" MIN

FABRIC ANCHOR DETAIL
(FOR USE WITHIN THE
DRIP LINE OF A TREE)

DIRECTION OF FLOW

6" MIN

UNDISTURBED
GROUND LINE

City of Naperville	TEMPORARY EROSION CONTROL	LANDSCAPE 3
STANDARD DETAIL	MEASURE - SILT FENCE	790.03
	REVISED: 01/01/2013	SHEET 1 OF 2	

FILTER FABRIC

STEP 1

POSTS

STEP 2

STEP 3

STEPS FOR THE ATTACHMENT OF TWO SILT FENCES:
1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST
   FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREESIN A CLOCKWISE DIRECTION TO CREATE
   A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS A MINIMUM OF 18 INCHES INTO THE GROUND AND BURY THE FLAP.

NOTES:
1. TEMPORARY SILT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN
   THE AREA TO BE PROTECTED. THEY SHALL BE MAINTAINED THROUGHOUT THE
   CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WITH THE FINAL GRADING
   AND SITE STABILIZATION.
2. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592
   GEOTEXTILE TABLE 1 OR 2, CLASS I WITH EQUIVALENT OPENING SIZE OF AT LEAST 30
   FOR NON-WOVEN OR 50 FOR WOVEN.
3. FENCE POSTS SHALL BE EITHER STANDARD STEEL POST OR WOOD POST WITH A
   MINIMUM CROSS-SECTIONAL AREA OF 3.0 SQ. IN.
4. DEPENDING UPON THE CONFIGURATION, ATTACH FABRIC AND WIRE MESH WITH HOG
   RINGS, STEEL POST WITH TIE WIRES, WOOD POST WITH NAILS.
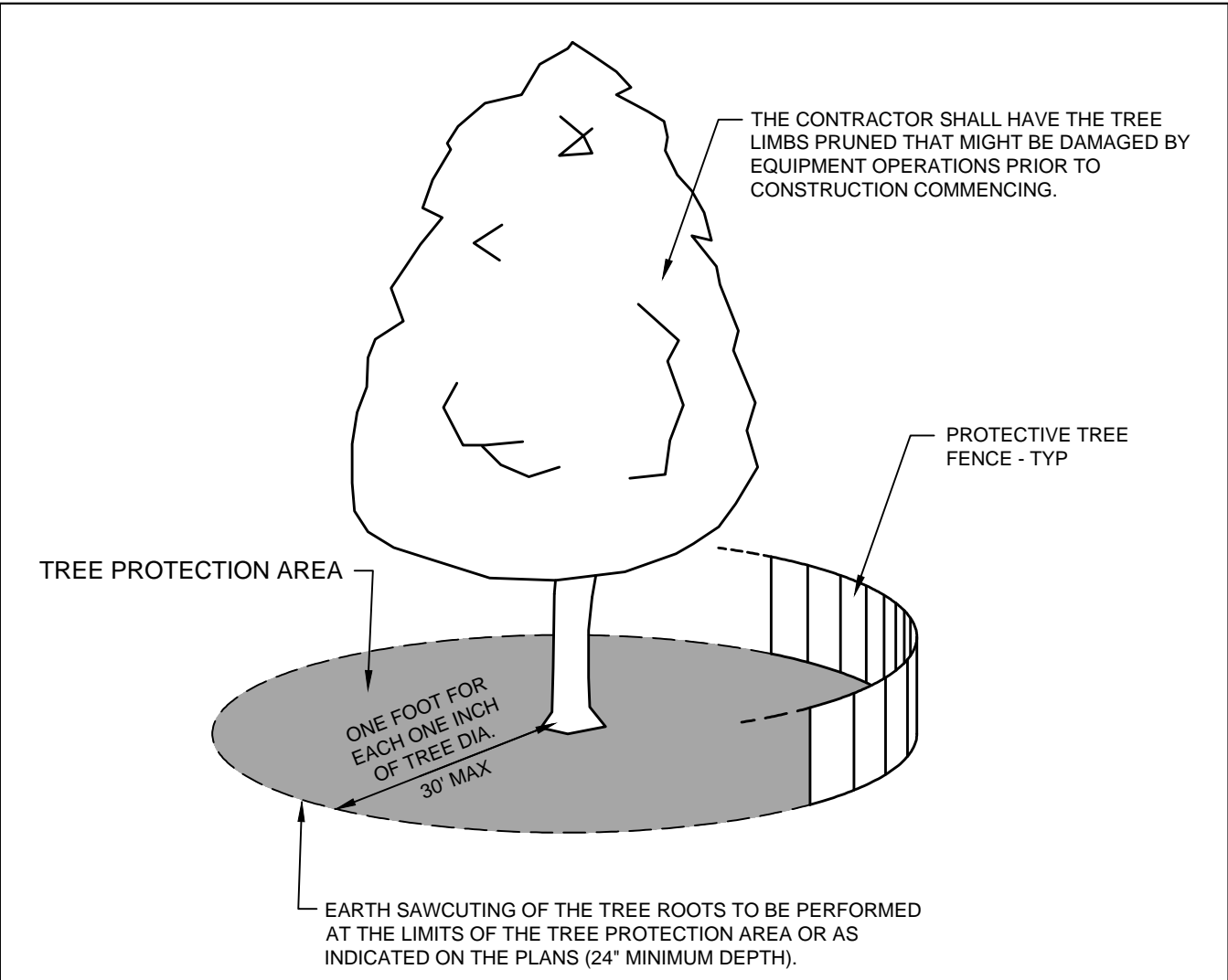
City of Naperville **STANDARD DETAIL**	**TEMPORARY EROSION CONTROL MEASURE - SILT FENCE**	LANDSCAPE 3
	REVISED: 01/01/2013 SHEET 2 OF 2	**790.03**

THE CONTRACTOR SHALL HAVE THE TREE
LIMBS PRUNED THAT MIGHT BE DAMAGED BY
EQUIPMENT OPERATIONS PRIOR TO
CONSTRUCTION COMMENCING.

PROTECTIVE TREE
FENCE - TYP

TREE PROTECTION AREA

ONE FOOT FOR
EACH ONE INCH
OF TREE DIA.
30' MAX

EARTH SAWCUTING OF THE TREE ROOTS TO BE PERFORMED
AT THE LIMITS OF THE TREE PROTECTION AREA OR AS
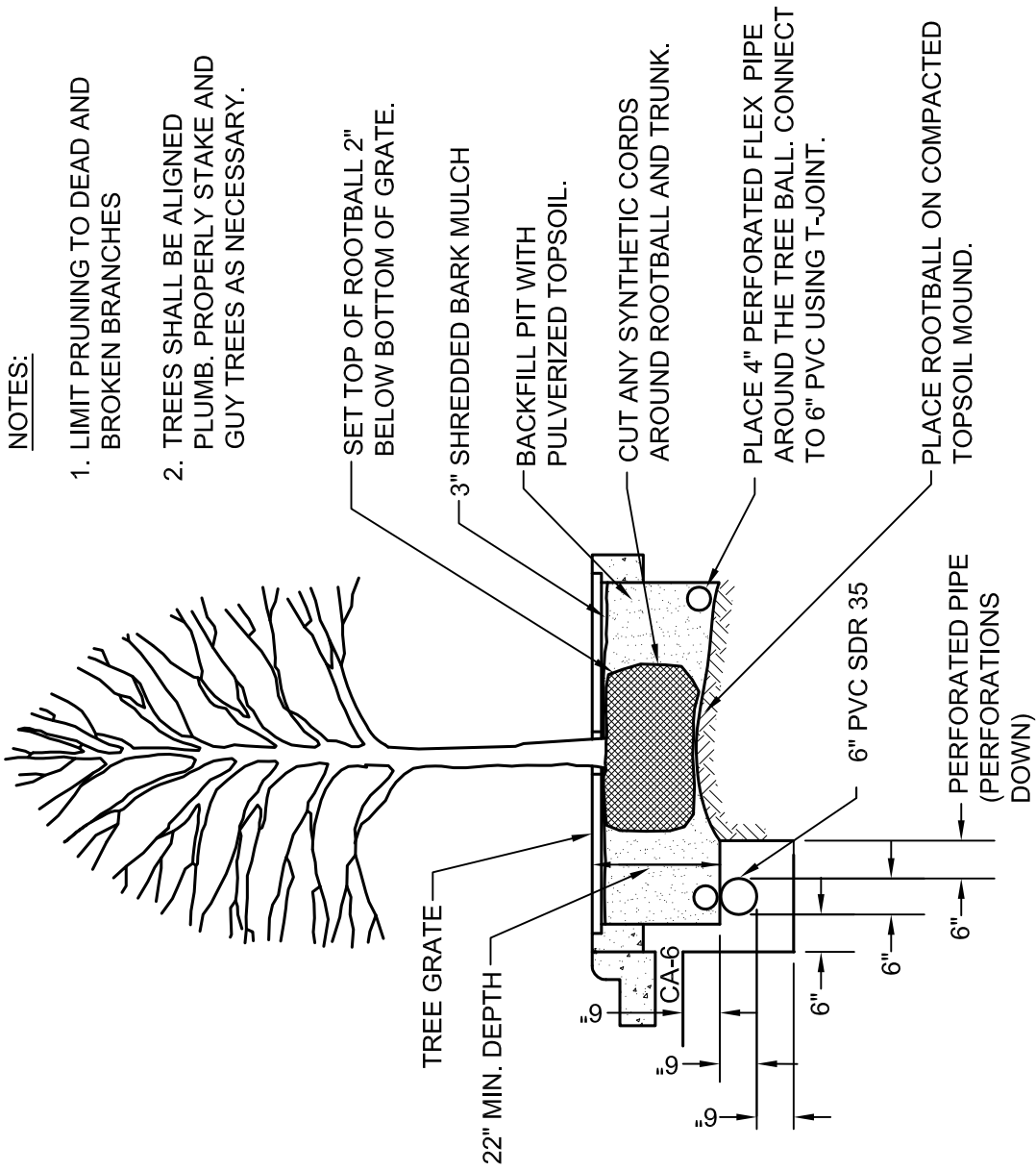INDICATED ON THE PLANS (24" MINIMUM DEPTH).
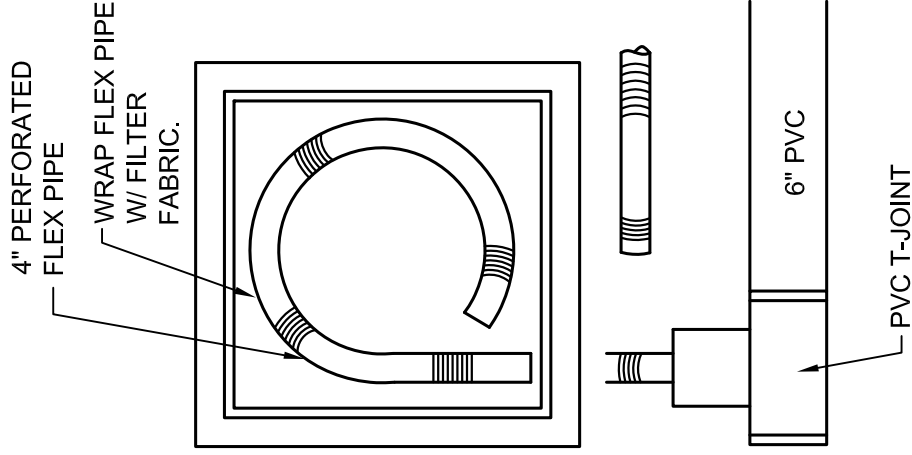
NOTES:

1. A TREE PROTECTION AREA SHALL BE ESTABLISHED AROUND A TREE A DISTANCE OF ONE FOOT FOR EACH
    ONE INCH OF TREE DIAMETER, UP TO A MAXIMUM OF 30 FEET.

2. PROTECTIVE TREE FENCE SHALL BE INSTALLED AT THE LIMITS OF THE TREE PROTECTION AREA. THE FENCE
    SHALL BE HIGH ENOUGH SO AS TO BE VISIBLE TO ALL CONSTRUCTION PERSONNEL.

3. GRADE CHANGES, UTILITY TRENCHES, STORAGE OF CONSTRUCTION MATERIAL, DUMPING OF WASTE, OR
    OPERATION OR STORAGE OF ANY EQUIPMENT SHALL NOT BE ALLOWED WITHIN THE TREE PROTECTION AREA.

4. AUGURING IS REQUIRED IF A UTILITY MUST BE INSTALLED WITHIN THE TREE PROTECTION AREA. AUGURED
    UTILITIES MUST BE A MINIMUM OF 24 INCHES BELOW GRADE.

5. ALL TREES TO BE SAVED WHICH HAVE BEEN SUBJECTED TO CONSTRUCTION ACTIVITY WITHIN THE TREE
    PROTECTION AREA SHOULD BE SELECTIVELY THINNED 10% BY AN ARBORIST SKILLED AT THE SELECTIVE
    THINNING PROCEDURE. NONE OF THE TREES SHALL BE TOPPED, HEADED BACK, SKINNED (REMOVAL OF THE
    INTERIOR BRANCHES), OR CLIMBED WITH SPIKES. ALL DEAD WOOD SHOULD BE REMOVED TO AVOID HAZARD.

6. IT IS RECOMMENDED THAT FOLLOWING CONSTRUCTION, TREES BE MAINTAINED IN THEIR NATIVE CONDITION.
    NO LAWN SHOULD BE PLACED AROUND THE TREES. IT IS RECOMMENDED THAT THE AREA BE MULCHED WITH
    2 INCHES OF DECOMPOSED LEAVES AND 2 INCHES OF WOOD CHIPS OR BARK.

City of Naperville **STANDARD DETAIL**	**TREE PROTECTION**	LANDSCAPE 10
		790.10
	REVISED: 08/01/2018	SHEET 1 OF 1

4" PERFORATED
FLEX PIPE

WRAP FLEX PIPE
W/ FILTER
FABRIC.

6" PVC

PVC T-JOINT

NOTES:

1. LIMIT PRUNING TO DEAD AND
   BROKEN BRANCHES

2. TREES SHALL BE ALIGNED
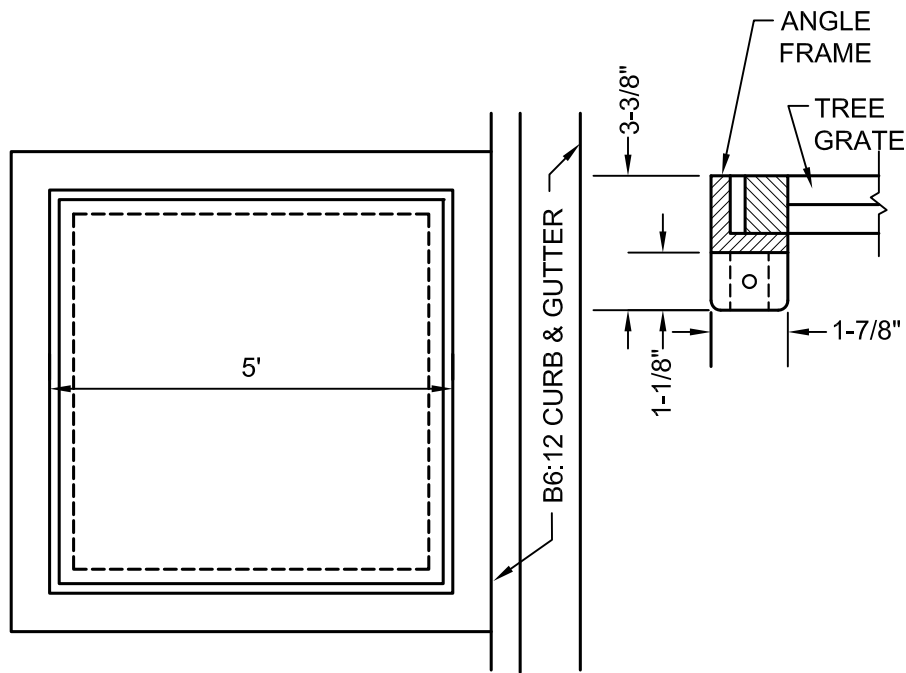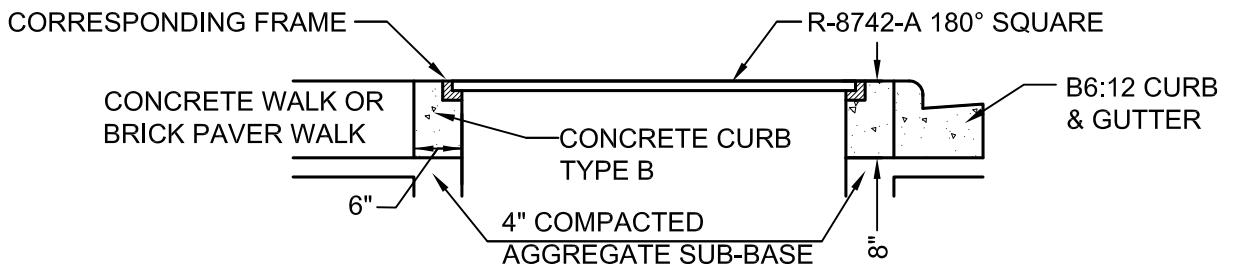   PLUMB. PROPERLY STAKE AND
   GUY TREES AS NECESSARY.

SET TOP OF ROOTBALL 2"
BELOW BOTTOM OF GRATE.

3" SHREDDED BARK MULCH

BACKFILL PIT WITH
PULVERIZED TOPSOIL.

CUT ANY SYNTHETIC CORDS
AROUND ROOTBALL AND TRUNK.

PLACE 4" PERFORATED FLEX PIPE
AROUND THE TREE BALL. CONNECT
TO 6" PVC USING T-JOINT.

PLACE ROOTBALL ON COMPACTED
TOPSOIL MOUND.

TREE GRATE

22" MIN. DEPTH

6"

CA-6

6" PVC SDR 35

PERFORATED PIPE
(PERFORATIONS
DOWN)

6"

6"

6"

6"

6"

City of Naperville
STANDARD
DETAIL

TREE PLANTING
(DOWNTOWN STREETSCAPE)

REVISED: 01/01/2013

CORRESPONDING FRAME

R-8742-A 180° SQUARE

CONCRETE WALK OR
BRICK PAVER WALK

CONCRETE CURB
TYPE B

B6:12 CURB
& GUTTER

6"

4" COMPACTED
AGGREGATE SUB-BASE

8"

ANGLE
FRAME

TREE
GRATE

3-3/8"

1-7/8"

1-1/8"

B6:12 CURB & GUTTER

5'

TREE GRATE & INSTALLATION

NOTE:

ALL CASTINGS MUST BE SHOP PAINTED WITH ASPHALTIC BASE PAINT.
FRAME & GRATE TO BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.

City of Naperville
STANDARD
DETAIL

TREE PLANTING
(DOWNTOWN STREETSCAPE)

REVISED: 01/01/2013   SHEET 2 OF 2

LANDSCAPE 12

790.12