

**Rain to Roots Master Plan
and Feasibility Study**
*Codes and Standards: Transformative
Approach*



7.1 Transformative Approach

Introduction:

When implemented alongside the policies described in earlier chapters, strategies described in this “Transformative Approach” outline a roadmap to not only achieve, but also maintain the assets developed in support of the Urban Forestry Master Plan 2025 Update and Strategic Priority Performance Measures 4.11 Tree and Shade Canopy and 4.23 Urban Cooling.

This chapter is deliberately limited in detail but outlines the most progressive policies in this document. Further investigation and exploration is required to detail these policies into implementation.

Overview:

The following four policies compliment the three focus areas: prioritization and incentivizing Green Stormwater Infrastructure (GSI), protection of existing and planned trees, and responsible management of landscape assets and infrastructure. Each policy is outlined in this chapter for further research and implementation potential in Tempe:

- **On-site Stormwater Credit**

Development that exceeds the minimum on-site GSI retention volume may be eligible for On-site Stormwater Credit. Credit may be awarded for up to 100% of the design storm volume captured via GSI BMPs [extends from Chapter 1: On-site GSI Requirements].

- **Offsite Stormwater Credit**

Offsite Stormwater Credit shall be available for development that installs and maintains GSI BMPs that retain water captured from the public right of way (ROW) [extends from Chapter 1: On-site GSI Requirements].

- **Tree Protection Bond**

A Tree Protection Bond shall be required for all development with trees designated as protected on a Tree Inventory/Protection plan. The bond shall be released five (5) years after the Certificate of Occupancy or equivalent is issued [extends from Chapter 3: Tree Protection Standards].

- **Landscape Maintenance Penalty**

Landscape management and maintenance practices that are non-compliant with the requirements set forth in previous chapters shall be issued with a Landscape Maintenance Penalty. Penalties may be monetary or nonmonetary as determined by the City representative [extends from Chapter 3: Tree Protection Standards and 5: Landscape Development Code].

Definition of Terms:

Good Working Order (GWO) – An asset undergoing inspection may be in Good Working Order when it is compliant with the standards set forth in previous chapters and checklists of this document.



Figure 7-1: Potential offsite stormwater credit for bioswale in the ROW in Tempe, AZ

7.2 On-site Stormwater Credit

Introduction:

On-site stormwater credits may be awarded to a property or business owner in the form of a reduction on impervious area charge or other financial, educational, or development incentives. This team recommends a review of Chattanooga, TN Water Quality Program Credits and Incentives Manual for a municipal example of a stormwater credit system implemented on a city of similar scale, and a review of Washington DC Stormwater Retention Credit system for an economically intensive stormwater credit model.

Overview:

With the baseline of the first fifty (50%) percent GSI Requirement for new and redevelopment projects in Tempe, increasing the GSI BMPs to manage up to 100% of the site's required retention volume may be awarded on-site stormwater credit.

The on-site stormwater credit ceiling shall be 100% of the design storm as specified in the Tempe Engineering Design Criteria.

Tempe will award credits for eligible GSI BMPs meeting the following requirements:

Eligibility: Retention Volume

All new development and redevelopment must achieve a retention volume exceeding the volume stated in Chapter 1: On-site GSI Requirements;

In all cases, no credits shall be awarded for retention exceeding 100% of the design storm volume described in the Tempe Engineering Design Criteria.

Eligibility: Inspection

Eligible GSI BMPs shall be inspected and confirmed to remain in Good Working Order (GWO) every three (3) years by Tempe.

Eligibility: Maintenance

To be eligible for on-site stormwater credit the GSI BMP shall be maintained in GWO. At the time the credit is awarded, the owner of the BMP shall submit a maintenance contract for the three (3) years the credit is active.

7.3 Offsite Stormwater Credit

Introduction:

Currently, the retention volume of a BMP placed in the ROW cannot be counted as part of the total site retention volume. Utilizing offsite stormwater volume helps support the growth of street trees and landscape while promoting the implementation of GSI in the public ROW. Offering credit for the volume captured in the ROW with GSI as an offset for the on-site volume requirement incentivizes the placement of BMPs that supports decentralized stormwater management of street infrastructure.

Overview:

GSI BMPs may be utilized within the public ROW to retain volume from offsite flows, such as sidewalks, on-street parking spaces, or streets. Volume captured within the ROW via GSI BMPs may be credited towards the site's total on-site retention volume requirement.

Development may credit up to 50% of its total required retention volume through the use of GSI BMPs within the public ROW.

The approved Grading and Drainage plan shall show calculations for the volume being credited as offsite stormwater retention.

The owner shall be required to retain that offsite volume for the life of the development.

The owner shall enter into a maintenance agreement with Tempe for the maintenance of the GSI BMP within the ROW. The agreement shall defer maintenance responsibilities to the owner for a three-year cycle after which Tempe may re-evaluate the GSI BMP and determine if the offsite volume is being met.

At any time if the GSI BMP fails the inspection, the owner shall be required to restore the BMP to GWO. If the owner wishes to opt-out of the credit, an equivalent capture volume of GSI on-site shall be required and the offsite stormwater credit shall be revoked.



Figure 7-2: Potential offsite stormwater credit for permeable pavers in the ROW in Tempe, AZ

7.4 Tree Protection Bond

Introduction:

A Tree Protection Bond is a financial incentive to keep protected and planned trees healthy during a period of construction and establishment. This measure transforms Chapter 3: Tree Protection Standards and Chapter 5: Landscape Development Code with financial penalties. There is no current penalty if protected trees are harmed by construction activities. The purpose of a Tree Protection Bond is to financially secure the replacement of a protected tree and planned tree. This team recommends review of the Tree Protection Bond measures implemented in Arlington, VA for a municipal example of similar scale.

Overview:

A bond estimate for all identified protected and planned trees as designated on the Tree Inventory/Protection plan and approved Landscape plan shall be submitted to and approved by the City representative.

The developer shall submit the Tree Protection Bond when the final construction permit is awarded. No ground disturbance activities shall begin before the Tree Protection Bond is approved by Tempe.

The Tree Protection Bond shall be released five (5) years after the Certificate of Occupancy or equivalent is established.

The following apply to trees identified as protected on the Tree Inventory/Protection plan and all planned trees required by ZDC landscape requirements:

Any protected tree that dies during construction and is not replaced by the Tree Replacement formula described in Chapter 3: Tree Protection Standards shall result in default on the Tree Protection Bond.

Any planned or protected tree which dies prior to the five (5) year period shall be removed and replaced per Tempe standards by the developer at their expense.

Trees not replaced per Tempe standard shall result in default on the Tree Protection Bond.

Tempe may draw from the Tree Protection Bond the bonded amount per each tree not replaced per Tempe standard.

Money drawn from the Tree Protection Bond shall be placed in the Tree Bank as described in Chapter 6: Advanced Approach.

7.5 Landscape Maintenance Penalty

Introduction:

A penalty on non-compliant landscape maintenance implementation increases the impact of treating landscape as a physical asset to the community rather than an aesthetic addition. Maintaining the landscape in a healthy natural form increases the environmental services that asset provides. Existing code compliance measures would evolve to include the penalties described below to reinforce the higher standards for landscape care and for GSI described in Chapter 2: GSI Details and Checklists, Chapter 3: Tree Protection Standards, and Chapter 5: Landscape Development Code.

Overview:

Penalties for violations of the tree and landscape regulations as defined in prior chapters of this document shall be assessed based on the following:

Monetary penalty

Failure to install or maintain required tree protection measures as defined in Chapter 3: Tree Protection Standards shall be a penalty of \$1,000. The penalty shall be issued after the City representative has given notice to the owner. The failure to install and maintain the required tree protection measures is a daily continuing violation resulting in \$1,000 per day until compliance is achieved.

Pruning, injury, or damage to trees and shrubs that result in the inability for that asset to function properly as determined by the City representative shall result in \$5,000 per each tree and \$500 per each shrub.

Pruning, injury, or damage to trees and shrubs that result in the total loss of the asset as determined by the City representative shall result in \$10,000 per each tree and \$1,000 per each shrub.

All monetary penalties shall be collected by the Tree Bank.

Nonmonetary penalty

A nonmonetary penalty in the form of increased or additional planting requirements may be imposed in addition to or in lieu of any monetary penalties described above at the discretion of the City representative.