

**CITY OF NORMAN, OKLAHOMA**

**CITY COUNCIL COMMUNITY PLANNING AND  
TRANSPORTATION COMMITTEE AGENDA**

**Municipal Building Conference Room  
201 West Gray**

**Thursday, October 25, 2018**

**4:00 P.M.**

- 1. CLEVELAND AREA RAPID TRANSIT (CART) RIDERSHIP  
REPORT INCLUDING SAFERIDE AND EXTENDED SERVICE FOR  
THE MONTH OF SEPTEMBER, 2018**
- 2. DISCUSSION REGARDING VEGETATIVE MANAGEMENT IN  
THE CITY RIGHTS-OF-WAY.**
- 3. DISCUSSION REGARDING THE CREATION OF A POSSIBLE  
TREE ORDINANCE.**
- 4. CONTINUED DISCUSSION REGARDING LOW IMPACT  
DEVELOPMENT INCENTIVES AS IT RELATES TO WATER  
CONSERVATION.**
- 5. MISCELLANEOUS COMMENTS.**

**ITEM 1**

**CART REPORTS**



## **Community Planning & Transportation Committee Meeting, October 25<sup>th</sup>, 2018**

### **CART Monthly Report for September 2018**

#### **CART – Ridership Report Summary**

- CART transported 123,316 passengers in September – a 9% decrease over September 2017. The daily average ridership was 6,410, a decrease of 1% or 82.
- Fiscal year 19 to date ridership (July – Sept.) is 254,607 – a decrease of 2% over the same period last year.
- For September 2018, there were 565 riders who traveled with bicycles (0.5%) and 239 with wheelchairs (0.2%). Route 11-Lindsey East carried the most passengers with bicycles (215) and wheelchairs (98).

#### **CARTaccess – Ridership Report Summary**

- CARTaccess transported 2,652 passengers in September – a decrease of 9% or 253. Average daily ridership was 133, an increase of 5% or 6. Primary zone ridership decreased by 7% or 174 in September; Secondary Zone ridership decreased by 15% or 79.
- For FY19 year to date (July -- Sept), CARTaccess ridership is 8,671 – an increase of 0%. Primary Zone ridership has increased by 1% or 100 FYTD; Secondary Zone ridership has decreased by 4% or 59 FYTD. Secondary Zone ridership comprises 14.5% of all CARTaccess trips FYTD.

#### **CART Activities**

- CART held a meeting for its CART Transportation Advisory Committee (CTAC) on September 10. This meeting discussed, among other things, the Oklahoma Transit Association's (OTA) Transit OK|Vision 2020 campaign. This campaign includes creating transit advocacy groups across the state that will work towards increasing state funding for transit in the future. CART is working closely with its CTAC members to form this advocacy group.
- CART staff attended an Oklahoma Transit Association (OTA) Long-Term Strategic Planning Workshop on September 17. This workshop helped build the framework for the association moving forward.
- CART staff began preparing for the annual National Transit Database (NTD) report as required by FTA that will be due at the end of October.
- The Oklahoma Transit Association (OTA) has chosen Norman to be the host of the 2018 Oklahoma State Driving Championships and Training Conference this fall. The conference will be October 16-18 and will consist of a driving competition, driver and administrative staff training, notable speakers, and an evening out in Norman. The champions of each driving category (minivan, shuttle bus, and city bus) will be sent the national competition to compete.

#### **CART Detours/Construction**

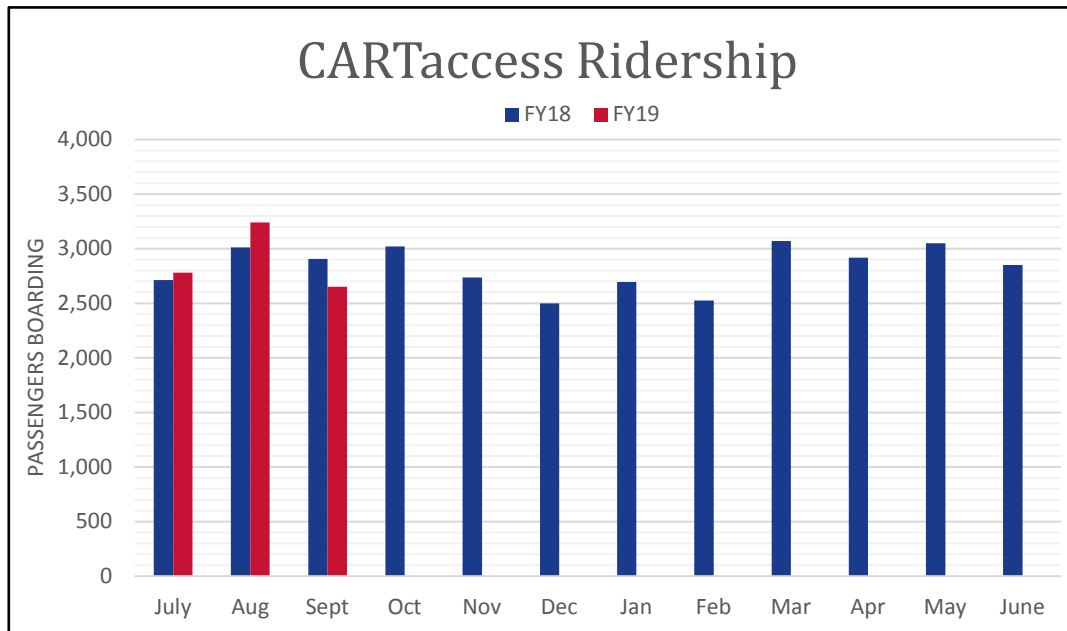
- Route 52-Campus Loop is missing its stop at the Oklahoma Memorial Student Union due to construction of a new engineering building on Felgar Street. Riders are encouraged to use stop 181 at Jenkins Avenue and Felgar Street.
- Due to the construction for the OKC Streetcar, the route 24-Sooner Express is taking a few detours from its regular route. To view the latest detours, please visit [www.ridecart.com/detours-and-alerts](http://www.ridecart.com/detours-and-alerts).

#### **Attachments**

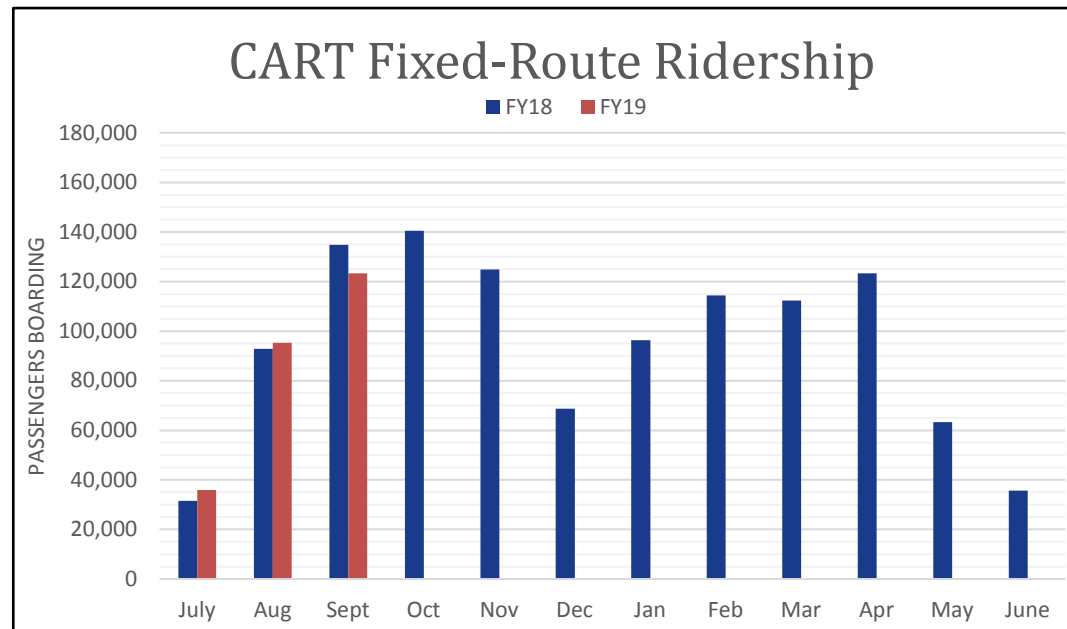
- CART Fixed-route and CARTaccess Ridership Graphs for FY18 and FY19

# CART Ridership Summary

## City of Norman Community Planning & Transportation Committee



CARTaccess Ridership by Month			
	FY18	FY19	Change
July	2,714	2,780	2%
Aug	3,011	3,239	8%
Sept	2,905	2,652	-9%
Oct	3,022		
Nov	2,736		
Dec	2,498		
Jan	2,695		
Feb	2,524		
Mar	3,070		
Apr	2,918		
May	3,049		
June	2,851		
July - Sept	8,630	8,671	0%
FY18 Total	33,993		



Fixed-Route Ridership by Month			
	FY18	FY19	Change
July	31,500	35,933	14%
Aug	92,808	95,358	3%
Sept	134,812	123,316	-9%
Oct	140,553		
Nov	124,836		
Dec	68,733		
Jan	96,358		
Feb	114,482		
Mar	112,378		
Apr	123,378		
May	63,299		
June	35,644		
July - Sept	259,120	254,607	-2%
FY18 Total	1,138,781		

FY19: July 1, 2018 - June 30, 2019

FY18: July 1, 2017 - June 30, 2018

## **ITEM 2**

### **VEGETATIVE MANAGEMENT**

## **ITEM 3**

### **TREE ORDINANCE**

BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF NORMAN  
OKLAHOMA:

**Whereas**, in order to maintain and enhance a positive image and a livable city it is important to encourage the preservation of mature trees and to protect trees during construction, to contribute to the long-term viability of existing trees and to control the removal of trees when necessary:  
and

**Whereas**, the City Council, Tree Board, and citizen groups recognized a need to establish regulations to protect healthy and significant trees and to incentivize replacement of trees when removed by necessity or choice, with regard to the rights of the property owners and occupants,

**Whereas**, the regulations are designed with the following objectives in mind: to eliminate unnecessary removal of healthy trees; to promote the preservation and conservation of trees throughout the City; to recognize the benefits of trees in the urban environment; to encourage the planting and preservation of quality trees that are native to or flourish in the region; to enhance the beauty and aesthetic of the City; to enhance property values and protect investment; to encourage the preservation of large or historic trees that cannot be quickly replaced;

**Whereas**, the regulations outlined below are intended to address those trees (“street trees”) living in the platted public right of way, meaning the area between the public sidewalk and the publicly dedicated street, the public easement, as well as those trees designated as historic according to the regulations as defined in Section 12 of this document;

**Whereas**, the regulations are intended to address platted and developed properties throughout the defined area;

**Whereas**, the regulations are not intended to and cannot supersede existing state laws or other existing city ordinances, utility easements, or restrictions previously attached to the land.

## **SECTION 1**

**‘Definitions’** The following terms, as used in this chapter, shall have the following meanings:

‘Alter’ means to cut, girdle, prune, destroy, remove or in any manner injure a large tree.

‘City’ means the City of Norman

‘City Council’ The City Council of the City of Norman.

‘Defined Area’ means area East of West 48<sup>th</sup> Street, south of Franklin Road, and west of East 36<sup>th</sup> Street continuing south to city limits.

‘Dangerous Tree’ means any tree, large shrub or part thereof, living or dead, which the Forester finds are in such a condition and is located in such a place as to constitute a danger to persons or property in the vicinity of the tree.

‘DBH’ means tree diameter at breast height, which is measured at 4.5 feet above the ground.

‘Dead Tree’ means any tree or branch which the Forester(s) have determined that no part of the tree or branch is living.

‘Forester’ means the Forester for the City of Norman and his or her designees; who is the sole representative for purposes of this ordinance

‘Diseased or infected tree’ means any tree or large shrub which is infected or infested with any tree or plant disease or insect, pest or larvae, which the Forester(s) finds that the uncontrolled presence of such disease or infestation constitutes a hazard to, or could result in damage to or destruction of other trees in the community.

‘Owner’ means the owner of the property.

‘Person’ means individuals, groups, organizations, associations, partnerships, firms, corporations, and limited liability companies.

‘Sidewalk’ means the portion of the publicly dedicated street between the public street curb line or the paved edge of the public street (if no curb) and the adjacent private platted property lines, intended for use by pedestrians.

‘Street’ means the entire area between private platted property lines which is the publicly dedicated and maintained as street surface, when any part of the area is open to use by the public for purposes of vehicular travel. Such term shall include all publicly dedicated highways,



avenues, boulevards, traffic ways, or any other public way for vehicular travel by whatever name.

‘Street Tree’ means a tree 6” DBH or more, which is between the publicly dedicated sidewalk and the publicly dedicated street surface or where there is no sidewalk, then within six (6) feet of the edge of the street surface.

## **SECTION 2**

- a. The City Forester(s) and their designated representatives shall be responsible for the enforcement of all provisions of this Code.
- b. The Forester(s) is hereby authorized to make such investigations, to issue notices, orders and directions as are necessary for the enforcement of this chapter.

## **SECTION 3**

### **Injuring trees-consent**

- a. It shall be unlawful for any person to intentionally alter any street tree standing or growing, wholly or in part in or on any street right of way without the consent of the Forester
- b. The provisions of subsection (a) shall not apply to:
  - 1. The removal of branches which are less than four (4) inches in diameter which are required to be removed to maintain seven (7) feet of clearance above sidewalks and fourteen (14) feet of clearance above streets: and (Ordinance?)
  - 2. The removal of water sprouts and suckers

3. Circumstances where Street Trees may need to be removed or altered in order to comply with other sections of the city code, such as but not limited to:  
requirements to create, develop, or maintain adequate site triangles for safe passage of vehicular traffic; location of curb cuts and street access points as may be required for safe distances between such access points along public streets; locations of storm water facilities and improvements as may be necessary for the adequate conveyance of storm water; locations of underground utilities in utility easements intended for such facilities; and all requirements of the City of Norman's engineering design guidelines; and
4. Circumstances where Street Trees may need to be removed or altered in order to comply with state regulations pertaining to rights of way and vegetation management found in 165:35-25 (21 Ok Reg 2093, Eff 7-1-04) and the National Electric Safety Code (NESC Code Rule 218 A1)
5. Unplatted and undeveloped properties.

#### **SECTION 4**

##### **Applications for permissions to alter trees not specifically exempted in section 3(b:1-5).**

- a. Any person desiring to alter any street tree, or any branch, root or part thereof, standing or growing, wholly or in part, in any publicly dedicated street or public right of way, not specifically exempted in Section 3(b:1-5), must first request permission from the Forester to do so. If alteration is deemed prudent, the Forester shall grant such permission. The Forester shall

determine if a Street Tree needs to be altered in order to eliminate damage to existing buildings, foundations, utilities, and pavement surfaces and shall grant permission where necessary.

b. Street trees: All street trees voluntarily removed without permission of the Forester(s) shall be fined fifty dollars (\$50.00) per inch DBH.

1. A person may plant a tree or trees, in excess of (1) one inch DBH, to reduce the fine. The fine reduction may exceed the price of the fine, but no refunds will be awarded.
  - a. 1 tree = \$200.00 credit
  - b. 2 trees = \$500.00 credit
  - c. 3 trees = \$900.00 credit
  - d. 4 trees = \$1400.00 credit
  - e. 5 trees = \$2000.00 credit
2. If no trees are replanted, the Forester(s) shall notify the owner of a fine of fifty (\$50.00) per inch DBH.
3. Fines associated with removed DBH will not exceed 40" or \$2000.00
4. All replacement trees shall be replanted within six (6) months. The Forester(s) shall approve the replacement trees and planting locations. Should the tree die within two (2) years, it must be replaced.
5. If the Forester(s) determines a tree is dangerous, diseased or infected and needs to be removed, or that alteration is necessary due to infringement on existing structures, utility lines, etc., no fine will be imposed in conjunction with this policy.

(c) All funds collected by the city in conjunction with section 4(b) of the policy shall be deposited into a special fund and utilized for the sole purpose to replant trees in the public right of way in the same vicinity as the trees that are removed.

(d) In the event of a storm, freeze, wind event, or other environmental event resulting in damage to trees, the property owner will be allowed to remove broken or damaged branches in the right of way without permission from the Forester. Disposal of debris generated by property owner will be the responsibility of the property owner. Permission from the Forester will be required for the removal of an entire tree.

## **SECTION 5**

### **Tree Nuisances declared**

- a. All dead or broken trees, or branches thereof, within the Defined Area of the City, which have become dangerous or which are likely to become dangerous to the public safety, or to persons or property within the vicinity of the tree are hereby declared to be and constitute a public nuisance.
- b. Dangerous trees within the Defined Area of the City are declared to be a public nuisance.

## **SECTION 6**

### **Duty of owners of private premises to abate.**

It shall be the duty of the owners of any private property, upon which any public nuisance is located, to cause the same to be promptly abated.

## **SECTION 7**

### **Affixing, fastening, etc., notices, advertisements, placards, etc.**

No person shall affix, fasten or attach any notice, advertisement, placard, wire, cable, or anything to a tree growing wholly or in part in or on any public street, public rights of way, or park, or public property without the consent of the Forester.

## **SECTION 8**

### **Placing stones, concrete, etc., near a tree trunk.**

It shall be unlawful for any person to place or maintain upon the ground within the public streets, public rights of way, public parks, or other property belonging to the City, any stone, concrete or other substance which shall impede the free passage of water and air to the roots of any growing tree therein, without leaving an open space of ground outside the trunk of such a tree in an area not less than 16 square feet without first having secured the consent of the Forester(s) to do so.

## **SECTION 9**

### **Guards or devices to prevent injury required during erection or repair of buildings, etc.**

During the activity of permitted construction or major renovation of any building in the City, which is involving the use of heavy equipment, heavy trucks, roll off dumpsters, or any other activity that could injure Street Trees, the owner shall place or cause to be placed such guards or devices around all Street Trees within the publicly dedicated rights of way, as shall be

necessary to prevent injury to such trees. The guards must be reasonably placed in order to prevent injury to the tree, no less than a 4 x 4 foot area around the tree.

## **SECTION 10**

### **Abutting property on streets and avenues to keep pruned at minimum height.**

It shall be the duty of all persons owning or controlling any real estate abutting or adjoining any publicly dedicated street to prune the trees on their premises so that the limbs and undergrowth shall not hang or extend down over the public sidewalk or public street abutting such property less than seven (7) feet from the level of the public sidewalk: or fourteen (14) feet from such public street.

## **SECTION 11**

### **Penalties**

Any owner violating any of the provisions of this chapter shall, upon conviction thereof, be punished by a fine of not more than five hundred dollars (\$500.00) per offense.

- a. In addition to the penalty set forth above in section 4, the court may order the violator to perform the necessary labor to repair, remove, or replace street trees damaged by that person, or to pay any costs incurred by the Forester(s) related to repair or replacement of street trees damaged by that person.

## **SECTION 12**

## **Historic Tree Designation**

1. Owners may nominate trees on their own private property, outside of the public right-of-way, as historic trees, resulting in the protections outlined below:
2. A historic tree should include at least three of the following characteristics:
  1. Trees with trunk diameters equal to or in excess of 36" DBH,
  2. Excellent structure or unique structural character
  3. Excellent health
  4. High aesthetic appeal
  5. Good longevity
  6. Historical importance
2. To nominate a tree as historic, a person must complete the forms provided by the Forester(s) and provide rationale for the designation in line with the guidelines established above. After consideration and recommendation of the historic designation by the Forester(s), the designation shall proceed to the Tree Board for final approval.
3. Once a tree is deemed historic, all provisions outlined above, including the limitations on alteration outlined in Section 4 shall apply to the tree in perpetuity, regardless of its location.
4. Once deemed historic, the owner shall place deed restrictions upon the tree in conjunction with Section 4, so as to inform future owners of the status of the historic tree designation.

## **SECTION 13**

Appeal from the denial of consent for the removal of a tree or imposition of fees by the Forester(s)

1. An owner who has been denied a consent to remove a tree may make application for relief from portions of this article to the City Manager or her designee. Such appeal must be made within thirty (30) working days from the date of the Forester(s) determination and only after all issues relevant to the permit process have been determined. Upon receipt of the appeal, the City Manager will then have up to ten working days to grant relief upon an adequate showing that undue hardship would be suffered if not granted.
2. After having been denied relief by the City Manager as provided in (a) above, the owner shall have the right of appeal to the Council of the City of Norman. Such appeal shall be taken by filing with the City Clerk within ten (10) working days after denial of relief by the City Manager a written statement setting forth fully the grounds for the appeal. After receipt of the written statement, the City Clerk shall schedule the appeal for hearing by the City Council on the next regular agenda. The owner shall be notified of the time of the hearing at least seven (7) days prior to such hearing. Proper mailing to the address shown on the application shall be adequate notification. The decision and order of the Council on such appeal shall be final and conclusive.



## **ITEM 4**

### **LOW IMPACT DEVELOPMENT**



**TO:** City Council Community Planning and Transportation Committee

**FROM:** Terry Floyd, Development Coordinator

**DATE:** October 18, 2018

**SUBJECT:** Green Infrastructure/Low-Impact Development (LID) Incentives

At the October 25 Council Community Planning and Transportation Committee (CPTC) meeting, staff will be presenting introductory information regarding incentive programs for green infrastructure/Low-Impact Development (LID) projects. This information will be presented as starting point for discussion and to gather feedback on potential incentive areas for additional staff research, development/building community discussion and future committee program development and consideration.

The City Council identified incentivizing optional “green building codes” as a secondary destination short-term goal (1-2 years) during the August 2017 Council Retreat. There has also recently been discussion and input from the Comprehensive Plan (PlanNorman) Steering Committee to recommend updating the Engineering Design Criteria and Standards to include requirements for LID stormwater infrastructure elements, and also to evaluate the prospect of development incentives as part of the recommendations for priorities included in the Steering Committee 5-Year Action Plan.

Currently, both the new Norman Public Library East and Central Library are utilizing both green infrastructure/LID practices and pursuing Leadership in Energy and Environmental Design (LEED) certification in their site development and construction. The City also acquired LEED certification for Fire Station #9 on East Alameda St.

### **Green Infrastructure/Low-Impact Development (LID) Definition & Incentives**

#### ***Definition***

Green Infrastructure/Low-Impact Development (LID) include methods and strategies that can be used in land development to maintain the hydrologic character of the site or region through reduction of runoff and pollutant loads by source control, water retention on site, using natural landscape and hydrology<sup>2 & 3</sup>. These methods are used in primarily in land (i.e. site) development, while green building codes are used primarily methods used to construct structures on the site.

<sup>2</sup> Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices (pp. 1-30). (2007). Washington, DC: United States Environmental Protection Agency, Nonpoint Source Control Branch.

<sup>3</sup> Ruby, E., & Gillespie, D. (n.d.). Low Impact Development (LID): A sensible approach to land development and stormwater management (pp. 1-4, Rep.). Office of Environmental Health Hazard Assessment & the California Water and Land Use Partnership.

Common examples of LID development practices/structural controls include:

- Bio retention
- Dry Ponds
- Engineered Wetlands
- Green Roofs
- Infiltration Basins
- Infiltration Trenches
- Porous Pavement
- Vegetated Buffers
- Vegetated Swales
- Wet Ponds
- Rain Gardens
- Planting native, drought-tolerant plants

The City of Norman has adopted many of these practices through its adoption of the City of Wichita/Sedgwick County Stormwater Manual included in Section 19-411B.2 of the City Subdivision Regulations. A list and description of structural controls/practices included in the manual is included as Attachment A.

### ***Incentive Programs***

A number of cities and local jurisdictions across the U.S. have utilized incentive programs to encourage the use of green infrastructure practices for private development.

Some of the most common incentives found include<sup>4</sup>:

- **Stormwater Fee Discounts:** Reduced impervious areas and runoff volumes
- **Development Incentives:** Zoning upgrades, expedited permitting, increased densities
- **Grants:** Direct funding for green infrastructure upgrades and practices
- **Rebates & Installation Financing:** Funding, tax credits or reimbursements to property owners for certain green infrastructure installations
- **Awards & Recognition Programs:** Marketing and public outreach to highlight successful green infrastructure projects

Additional information regarding green infrastructure/LID incentives is included from an U.S. Environmental Protection Agency (EPA) report is included as Attachment B.

Staff will be presenting this information for further Committee discussion and direction for a future LID incentive program for future Committee discussion and finalization at the October 25 meeting.

4 Managing wet weather with green infrastructure municipal handbook: incentive mechanisms(pp. 1-33). (2009). Washington, D.C.: U.S. Environmental Protection Agency.

## **Attachment A**

### Other Stormwater Management Facilities

Other stormwater management facilities are controls that do not provide TSS treatment and therefore may be used for runoff quantity control only (i.e., peak discharge or volume control). These controls should be used in coordination with primary or secondary TSS treatment facilities. This category also includes the green (or vegetated) roof which is a special control that addresses both water quality and quantity, because it reduces the amount of stormwater runoff.

Table 3-1 lists the all of the structural stormwater control practices included in this Manual. A summary of the suitability, performance, and other considerations applicable to these controls is presented in Appendix E Table E-1 and Table E-2. A detailed discussion of each of the controls, as well as design criteria and other information, is provided in sections 3.2, 3.3 and 3.4. Operations and maintenance checklists are provided in section **Error! Reference source not found.**

**Table 3-1 Structural Controls**

Structural Control	Description
Stormwater (Wet) Ponds (primary)	<b>Stormwater ponds</b> are stormwater retention basins that have a permanent pool (or micropool) of water. All or a portion of runoff from each rain event is detained and treated in the pool. A stormwater pond may incorporate a portion of the WQ <sub>v</sub> in extended detention above the permanent pool level.
Conventional Dry Detention Pond (other)  Dry Extended Detention Pond (primary)  Underground Dry Detention (other)	<b>Conventional dry detention</b> ponds are surface facilities intended to provide for the temporary storage of stormwater runoff to reduce downstream water quantity impacts. <b>Dry extended detention (ED)</b> ponds are surface facilities intended to provide for the temporary storage of stormwater runoff to reduce downstream water quantity impacts as well as provide water quality treatment. <b>Underground detention</b> tanks and vaults are an alternative to conventional surface dry detention for space-limited areas where there is not adequate land for a dry detention basin or multi-purpose detention area.
Enhanced Dry Swale (primary)  Grass Channel (primary)	<b>Enhanced swales</b> are vegetated open channels with underdrain provisions that are designed and constructed to capture and treat stormwater runoff within dry cells formed by check dams or other means. <b>Grass swales or channels</b> provide “biofiltering” of stormwater runoff as it flows across the grass surface of the conveyance channel.

Structural Control	Description
<p>Infiltration Trench (primary)</p> <p>Soakage Trench (primary)</p>	<p>An <b>infiltration trench</b> is an excavated trench filled with stone aggregate used to capture and allow infiltration of stormwater runoff into the surrounding soils from the bottom and sides of the trench. <b>Soakage trenches</b> are a variation of infiltration trenches. Soakage trenches drain through a perforated pipe buried in gravel. They are used in highly impervious areas where conditions do not allow surface infiltration and where pollutant concentrations in runoff are minimal (i.e. non-industrial rooftops). They may be used in conjunction with other stormwater devices, such as downspouts.</p>
<p>Filter Strip (primary)</p> <p>Surface Sand Filter (primary)</p> <p>Underground Sand Filter (secondary)</p> <p>Organic Filter (secondary)</p>	<p><b>Filter strips</b> provide “biofiltering” of stormwater runoff as it flows across and through the grassed surface. <b>Surface sand filters</b> are structures designed to treat stormwater runoff through filtration, using a sand bed as its primary filter media. Filtered runoff may be returned to the conveyance system, or allowed to partially exfiltrate into the soil. <b>Underground sand filters</b> are a design variation of the surface sand filter, where the sand filter chambers and media are located in an underground vault. <b>Organic filters</b> are surface sand filters where organic materials such as a leaf compost or peat/sand mixture are used as the filter media. These media may be able to provide enhanced removal of some contaminants, such as heavy metals. Given their potentially high maintenance requirements, they should only be used in environments that warrant their use.</p>
<p>Bioretention Area (primary)</p>	<p><b>Bioretention areas</b> are shallow stormwater basins or landscaped areas which utilize engineered soils and vegetation to capture and treat stormwater runoff. Runoff may be returned to the conveyance system, or allowed to partially infiltrate into the soil or evaporate.</p>
<p>Stormwater Wetland (primary)</p>	<p><b>Stormwater wetlands</b> are constructed wetland systems used for stormwater management. Stormwater wetlands consist of a combination of shallow marsh areas, open water, and semi-wet areas above the permanent water surface.</p>
<p>Proprietary Treatment Systems (secondary)</p>	<p><b>Proprietary treatment systems</b> are manufactured structural control systems available from commercial vendors designed to treat stormwater runoff and/or provide water quantity control. Proprietary systems often can be used on small sites and in space-limited areas, as well as in pretreatment applications. However, proprietary systems are often more costly than other alternatives, may have high maintenance requirements, and often lack adequate independent performance data.</p>
<p>Gravity Separator (secondary)</p>	<p><b>Gravity separator</b> controls use the movement of stormwater runoff through a specially designed structure to remove target pollutants (such as oil from water). They are typically used on smaller impervious commercial sites and urban hotspots. These controls are typically used as a pretreatment measure and as part of a treatment train approach.</p>

Structural Control	Description
Alum Treatment (secondary)	<b>Alum treatment</b> provides for the removal of suspended solids from stormwater runoff entering a wet pond by injecting liquid alum into storm sewer lines on a flow-weighted basis during rain events. Alum treatment should only be considered for large-scale projects where high water quality is desired.
Green Roof (other) Modular Porous Paver System (other) Porous Pavement (other)	A <b>green roof</b> uses a small amount of substrate over an impermeable membrane to support a covering of plants. The green roof both detains and consumes (through evapotranspiration) runoff from the otherwise impervious roof surface as well as moderates rooftop temperatures. A green roof can also provide aesthetic or habitat benefits. <b>Modular porous paver systems</b> consist of open void paver units laid on a gravel subgrade. <b>Porous pavement</b> is a permeable surface with an underlying stone reservoir to temporarily store surface runoff before it infiltrates into the subsoil. (Porous concrete is the term for a mixture of coarse aggregate, Portland cement, and water that allows for rapid movement of water through the concrete.) Both porous concrete and porous paver systems have high workmanship and maintenance requirements.

### 3.1.2 Suitability of Stormwater Controls to Meet the IDS Approach Objectives

#### 3.1.2.1 Water Quality

All of the primary and secondary stormwater controls provide some degree of pollutant removal. Pollutant removal capabilities for a given structural stormwater control practice are based on a number of factors including the physical, chemical, and/or biological processes that take place in the structural control and the design and sizing of the facility. In addition, pollutant removal efficiencies for the same structural control type and facility design can vary widely depending on the tributary land use and area, incoming pollutant concentration, flow rate, volume, pollutant loads, rainfall pattern, time of year, maintenance frequency, and numerous other factors.

Table 3-2 provides nominal design removal efficiencies for each of the control practices. It should be noted that these values are average pollutant reduction percentages for design purposes derived from sampling data, modeling, and professional judgment. A structural control design may be capable of exceeding these performances; however the values in the table are minimum reasonable values that can be assumed to be achieved when the structural control is sized, designed, constructed, and maintained in accordance with recommended specifications in this Manual. For some listed controls, pollutant removal rates are not indicated because there is insufficient data for setting those rates, or the removal efficiency is dependent on the design of the specific device or installation. Where the pollutant removal capabilities of an individual structural stormwater control are not sufficient for a given site

## **Attachment B**



## **Descriptions of Incentive Types**

### Stormwater Fee Discount

Incentives tied to stormwater fees encourage retrofits of existing properties and implementation of green infrastructure in new developments. In cities of varying sizes across the United States, fee discounts and credits provide an opportunity for property owners to reduce the amount of stormwater fees they pay by decreasing impervious surfaces or by using green infrastructure techniques that reduce the amount of stormwater runoff. In turn, public infrastructure is less burdened when private property owners manage their own stormwater runoff on-site. Discounts also support the fee-for-service system because property owners can reduce the amount they pay by reducing the service received.

Before setting the credit standard or discount, whether for the use of green infrastructure or reductions in impervious surfaces, municipalities should set appropriate management goals and determine how to credit private property owners for whatever action is being incentivized. Table 1 outlines common frameworks for setting goals and developing the process for implementing fee discounts.

Some cities provide a percent discount for level of performance. This discount is primarily given for stormwater quantity reductions and in fewer cases for pollution reduction for water quality purposes. Discounts are also offered for impervious surface reductions, whether for total area or by the square foot. A credit system can be based on the implementation of specific practices, such as rain gardens, green roofs or even tree canopy area. In some cases, credits vary based on the practice and the goals the municipality has for private lands.

**Table 1: Framework for Stormwater Fee Discount Programs**

<b>Goal of Discount</b>	<b>Mechanism for Fee Reduction</b>	<b>Process for Implementation</b>
Reduce Imperviousness	<ul style="list-style-type: none"><li>• Percent fee reduction</li><li>• Per-square-foot credit</li></ul>	<ul style="list-style-type: none"><li>• Percent reduction in imperviousness</li><li>• Square feet of pervious surfaces</li></ul>
On-site Management	<ul style="list-style-type: none"><li>• Percent fee reduction</li><li>• Quantity/Quality credits (performance-based)</li></ul>	<ul style="list-style-type: none"><li>• List of practices with associated credits</li><li>• Total area (square feet) managed</li></ul>
Volume Reduction	<ul style="list-style-type: none"><li>• Percent fee reduction</li><li>• Performance-based quantity reduction</li></ul>	<ul style="list-style-type: none"><li>• Percent reduction in imperviousness</li><li>• Performance-based</li><li>• Total area (square feet) managed</li><li>• Practices based on pre-assigned performance values</li></ul>
Use of Specific Practices	<ul style="list-style-type: none"><li>• Percent fee reduction</li><li>• One time credit</li></ul>	List of practices with associated credits

## Development Incentives

Development incentives apply to private developers that take initiative by using more sustainable site design and green building practices. These incentives are typically provided within the framework of existing land use or development regulations and often remove or decrease fees, requirements, or steps in the permit process. Chicago's Green Permit Program reviews permits much faster, even in as few as 30 days, for projects that meet certain LEED (Leadership in Energy and Environmental Design) criteria that include better stormwater management practices. Portland's Floor Area Ratio (FAR) Bonus increases a building's allowable area in exchange for adding an ecoroof/greenroof. Portland has seen over \$225 million in additional private development through this program, and more than 120 ecoroofs have been built in the center city district. These incentives can be used to improve environmental performance and support economic development. Development incentives also can be used to encourage green infrastructure beyond the site scale by encouraging infill development, aesthetically pleasing and walkable neighborhoods, and compact, mixed use community designs.

## Grants

Grant programs can be used to disburse money directly to individual homeowners, other property owners and community groups for stormwater-related projects and can help a city or county add green infrastructure projects to the landscape. Grants can be used to encourage both site-specific green infrastructure practices such as rain gardens, street retrofits, green roofs, and cisterns, as well as neighborhood and municipal scale projects such as wetland construction or stream restoration projects. Santa Monica provides \$160,000 per year in Landscape Grants to develop sites with native landscaping that reduce water consumption and absorb runoff. Chicago's Green Roof Grant program has helped this former industrial city add over 2.5 million square feet of green roofs across the City. The program grants \$5000 awards to residential and small commercial buildings that meet criteria based on location, visibility and environmental benefit. Green infrastructure grant programs provide awards and savings to developers and properties that take extra steps to add greener stormwater management practices to both new and existing sites.

## Rebates and Installation Financing

Communities offer rebates and installation financing to provide incentives for property owners to install green infrastructure practices on their property. These rebates and financing opportunities are often targeted to specific areas with the greatest need for green infrastructure, most often combined sewer areas. However, these programs may also be developed to achieve a range of water quality goals and implement community livability initiatives. For example, subsidies might be provided in neighborhoods with a high percentage of imperviousness or limited access to public green space.

Rebates and financing tools are also commonly used to encourage the use of specific practices based on priority environmental and community goals such as cisterns for water conservation, rain gardens to improve groundwater recharge, and green roofs to mitigate urban heat island effects.

Rebates and installation financing are also an effective means of educating the public about the benefits of green infrastructure and how it can be applied to a variety of property types and settings.

### Awards and Recognition Programs

Awards and recognition programs highlight successful examples of green infrastructure in a community. Award winners often include businesses and property owners as well as non-profit organizations, community organizations, individuals, schools or government agencies. Awards are provided to recognize innovations in green infrastructure practices and design, and may include projects or plans that focus on water conservation and reuse, stormwater mitigation and management, landscaping and site design, watershed restoration and other sustainable strategies for water quality protection.

Granting awards to local projects gives valuable recognition to innovators that help to drive the field forward. At the same time, awards increase public awareness about local projects and the ways that stormwater can be used as a valuable resource. Adding signage to award-winning projects can help further educate the public and help the public recognize its impacts and connection to the local watershed.

## **Stormwater Incentive Examples**

The following table provides a compendium of known examples of local incentives for green infrastructure organized by municipality and type of incentive. Clicking on the blue check marks will direct the reader to more information about the specific municipal examples, including the program name, description, the incentive beneficiary and a reference for finding out more information.

**Table 2: Examples of local incentives for green infrastructure**

	Stormwater Fee Discounts	Development Incentives	Grants	Rebate/ Installation Financing	Awards/ Recognition
CA: Santa Monica			✓	✓	
CA: Palo Alto				✓	
CO: Denver	✓				
DC: Washington				✓	
FL: Gainesville	✓				
FL: Maitland				✓	
FL: Orlando	✓				
FL: Sarasota County		✓			
GA: Gwinnett County	✓				
GA: Henry County	✓				
IL: Chicago		✓	✓	✓	✓
IL: Rock Island				✓	
KS: Wichita	✓				
KY: Louisville/Jefferson County	✓				
KY: Sanitation District No. 1	✓				
MA: Reading	✓				
MD: Montgomery County				✓	
MN: Burnsville				✓	
MN: Maplewood				✓	
MN: Minneapolis	✓			✓	
MN: New Brighton	✓				
MN: Saint Paul	✓				
MO: Kansas City	✓				
NC: Charlotte	✓				
NC: Durham	✓				
NC: Raleigh	✓				
NY: New York		✓			
OH: Columbus	✓				
OH: Cincinnati				✓	
OK: Tulsa	✓				
OR: Portland	✓	✓	✓	✓	✓
OR: Sandy	✓				
PA: Philadelphia	✓	✓			✓
SC: Beaufort County	✓				
TN: Knox County		✓			
TX: Austin	✓			✓	
U.S. Virgin Islands			✓		
VA: Chesapeake	✓				
VA: Prince William County	✓				
WA: Bellevue	✓				
WA: King County	✓		✓		✓
WA: Marysville	✓				
WA: Seattle	✓	✓	✓	✓	