

# Brookline Reservoir Park



JANUARY 9, 2018

BROOKLINE RESERVOIR PARK



# Project Goals and Priorities



- Maintain the park's character
- Maximize accessibility
- Address infrastructure issues—walking path, entries, drainage
- Enhance plantings--removal of invasives, new plantings, and an approach to vegetation on the dam
- Improve stormwater management
- Repair masonry

# Baseline Improvements



— Universal access



— Masonry repair



— Turf and planting renovation



— Solutions for MA Office of Dam Safety

Renovation/repair  
of walking paths



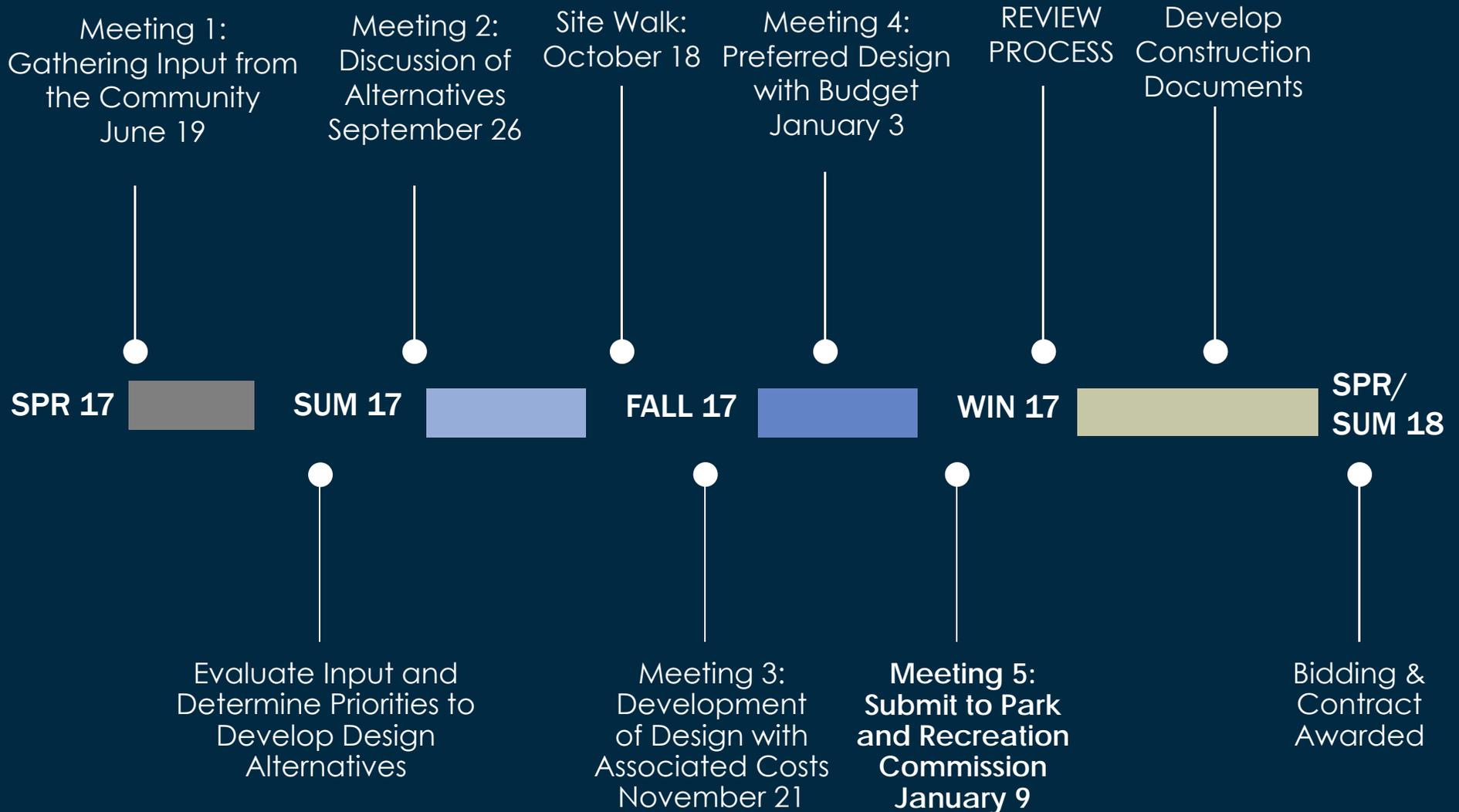
Drainage and  
utility  
improvements



Removal of  
invasives



# Project Timeline



# State Requirements for Dam Safety Compliance



REGULATED BY MASSDCR OFFICE  
OF DAM SAFETY (ODS)  
“INTERMEDIATE” SIZED STRUCTURE  
“HIGH” HAZARD CLASSIFICATIONS

## 2014 INSPECTION

- ◆ DAM IS GENERALLY WELL MAINTAINED
- ◆ OBSERVED DEFICIENCIES

## ODS POLICY ON TREES ON DAMS

- Dam embankments must be maintained free of trees and brush
- No trees and brush within 20 feet of dam or appurtenant structures
- Healthy uniform cover of grass is recommended
- Permit required if vegetation to be removed is greater than 4 inches in diameter



# PRELIMINARY DESIGN ALTERNATIVES

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# Masonry Evaluation & Potential Repair



- ■ ■ ■ Stone at reservoir armature
- Capstone Along Rt 9



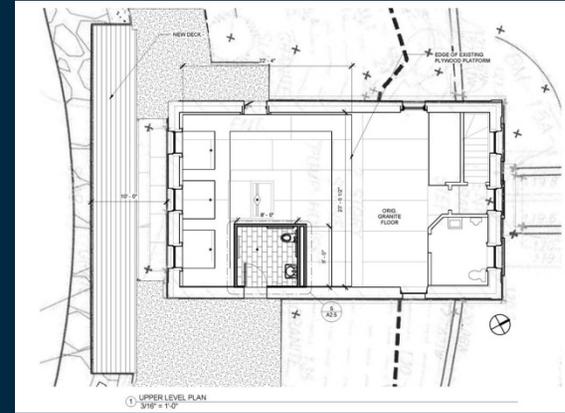
Repair needed at basin armature



Reset capstones on retaining wall along Route 9

Estimated Cost for Masonry:  
**\$458,000**

# Gate House Improvements

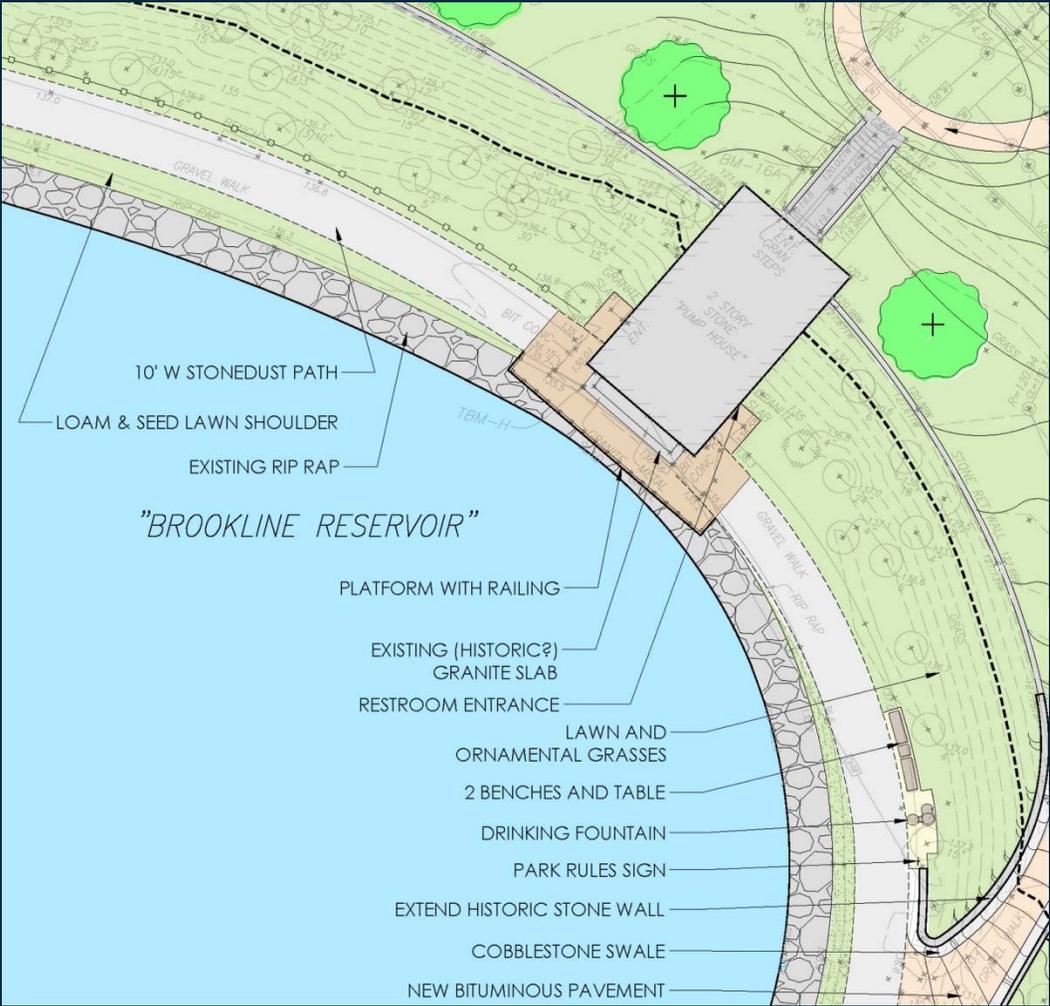


Estimated Cost for Gatehouse: \$250,000

# Stonedust Path & Platform at Gatehouse

## PROPOSED PLATFORM

Estimated Cost for  
Platform and  
Railing:  
\$100,000

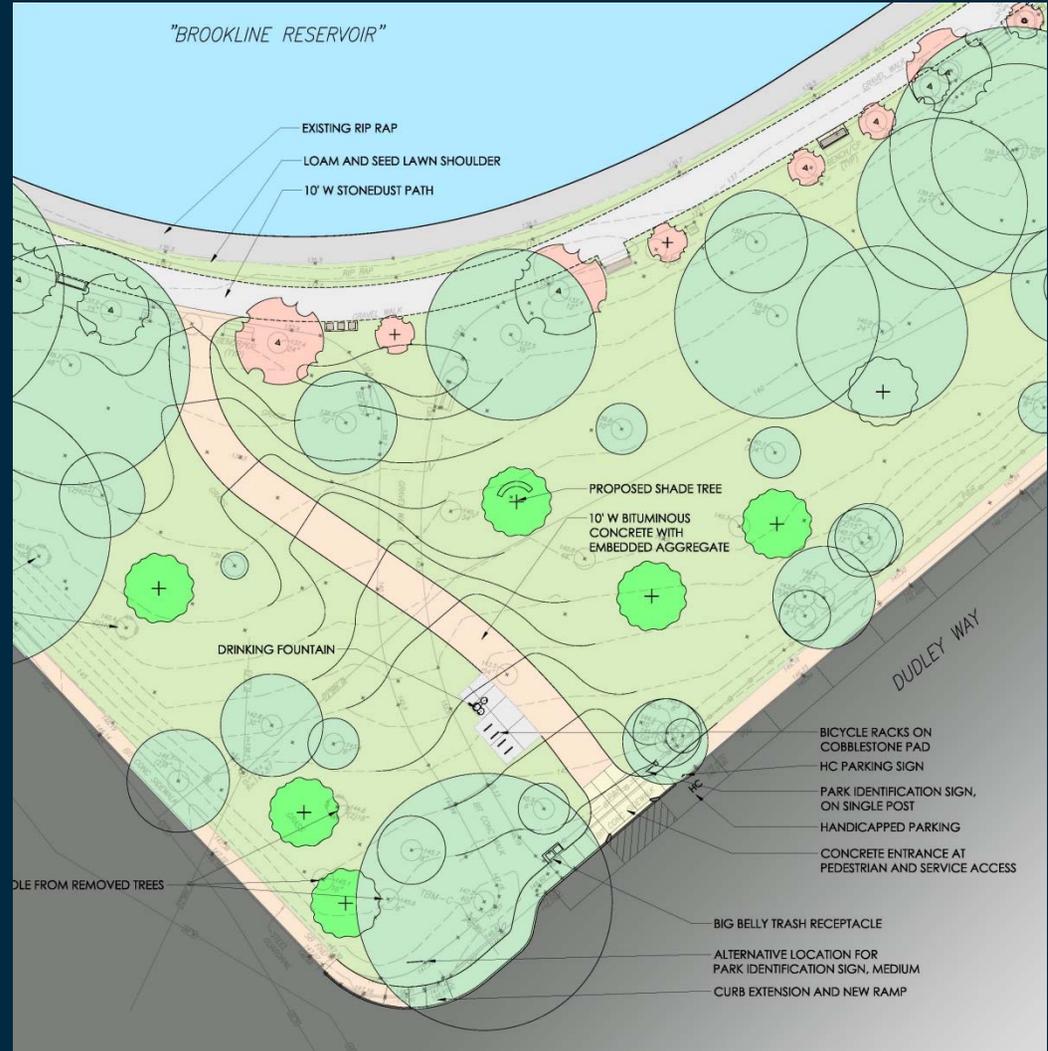


# Lee Street / Dudley Way Entrance

Existing Conditions



Base Improvements



Estimated Cost for  
Lee/Dudley Way  
Entrance:  
\$ 56,000



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# Dudley Way Entrance

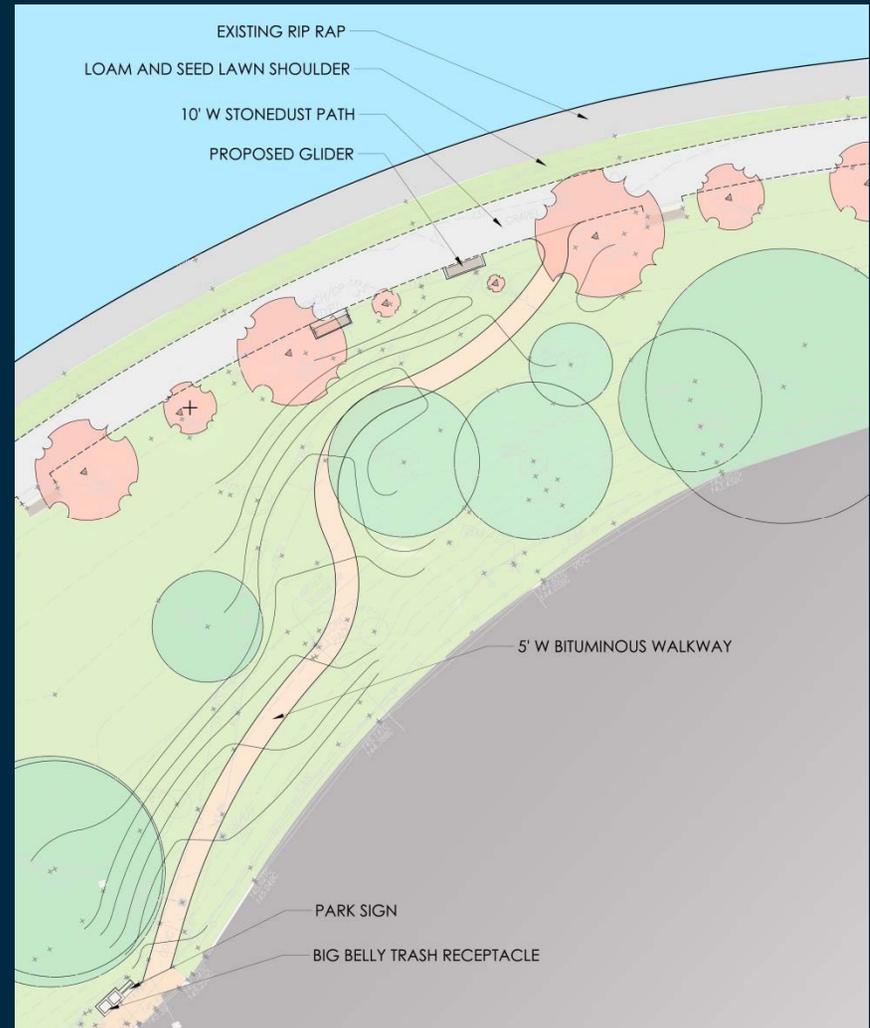
## Existing Conditions



Estimated Cost for Dudley  
Way Entrance: \$ 33,000



## Proposed Alternative



# Dudley Street Entrance

## Existing Conditions



Estimated Cost for Dudley Street Entrance: \$ 37,000



## Base Improvements



# Entrance at End of Dudley Street

## Existing Conditions



Estimated Cost at the  
End of Dudley Street:  
\$ 7,600



## Base Improvements



# Walnut Street Entrance

## Existing Conditions



Estimated Cost for  
Walnut Street Entrance:  
\$ 1,500



## Base Improvements

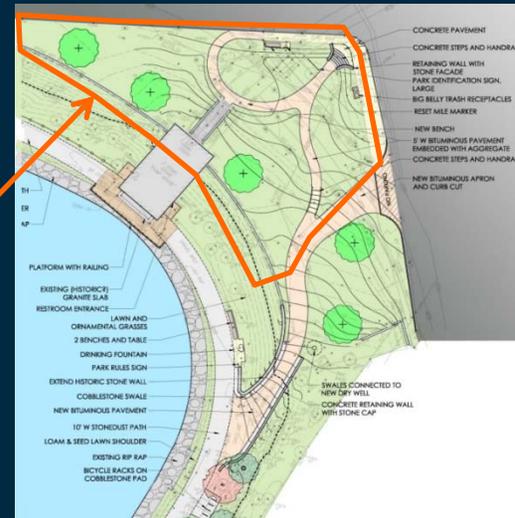


# Warren Street Entrance

**Base:**  
**\$133,000**



**1<sup>st</sup> Option:**  
**ADD \$29,000**



**COMBO:**  
**ADD \$40,500**

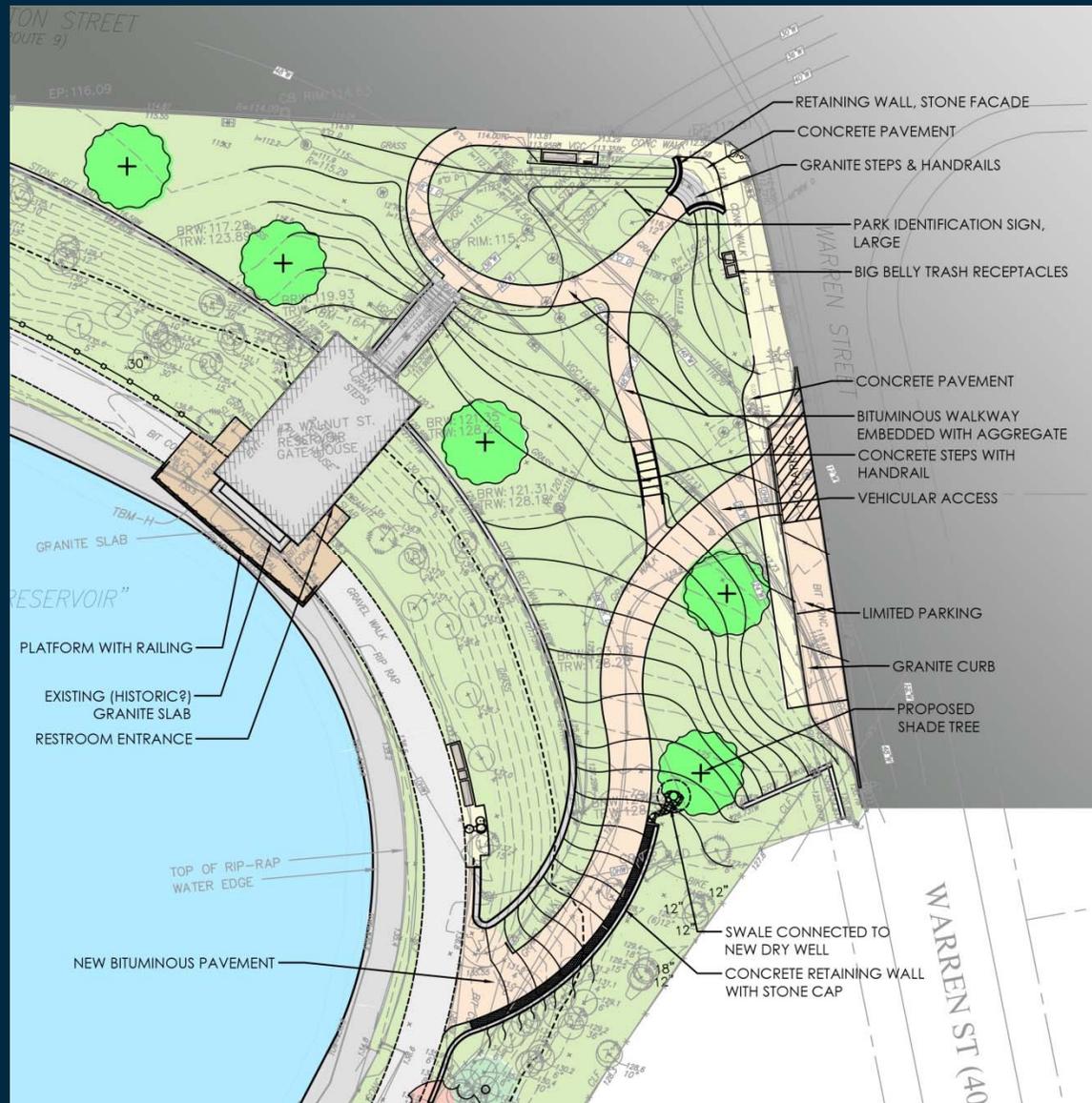
**2<sup>nd</sup> Option (Max):**  
**ADD \$244,000**



**3<sup>rd</sup> Option (Min):**  
**SAVE \$112,500**



# Warren Street Entrance



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# Park Entrances



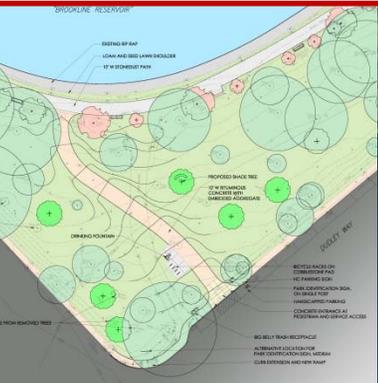
Improved Entrance



Improved Entrance



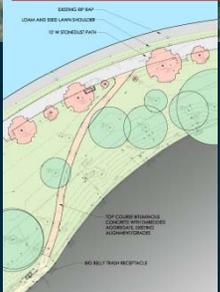
Accessible Entrance



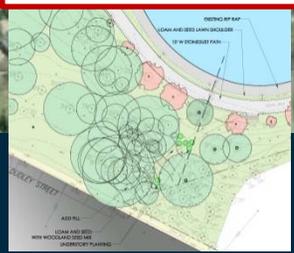
Accessible Entrance



Accessible Entrance



Improved Area



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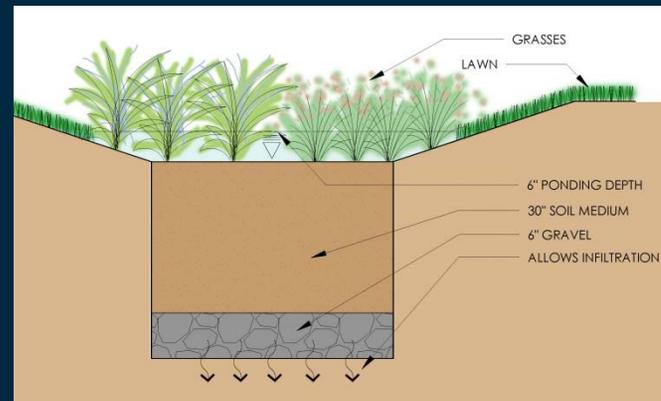
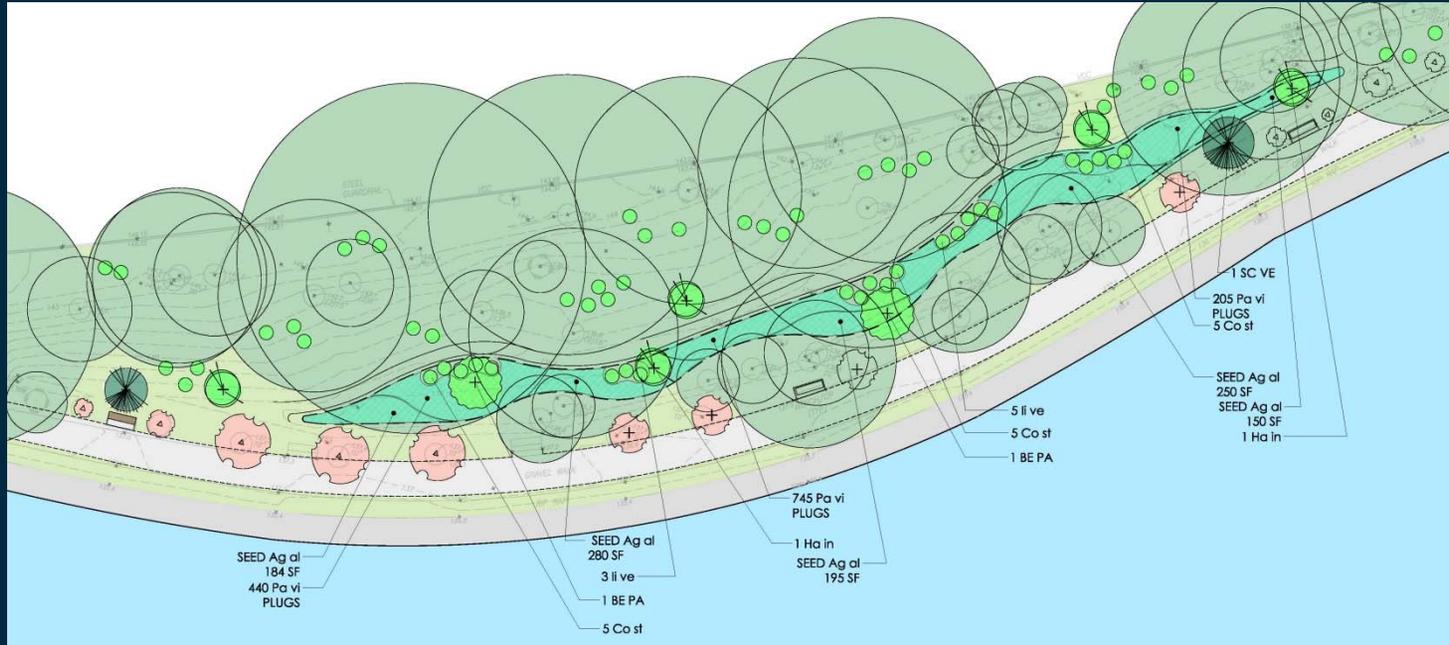
# Stormwater Management Goals

- Increase infiltration → decrease standing water
- Decrease impervious surfaces
- Look at providing some interpretation



# Stormwater Management Goals

- Increase Infiltration: bioretention areas



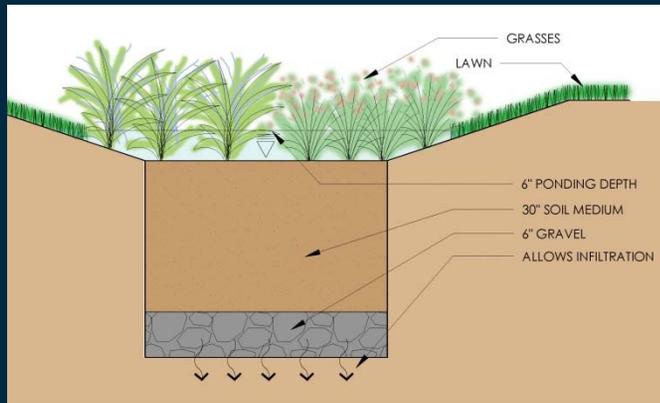
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# Stormwater Management Goals

- Increase Infiltration: bioretention areas



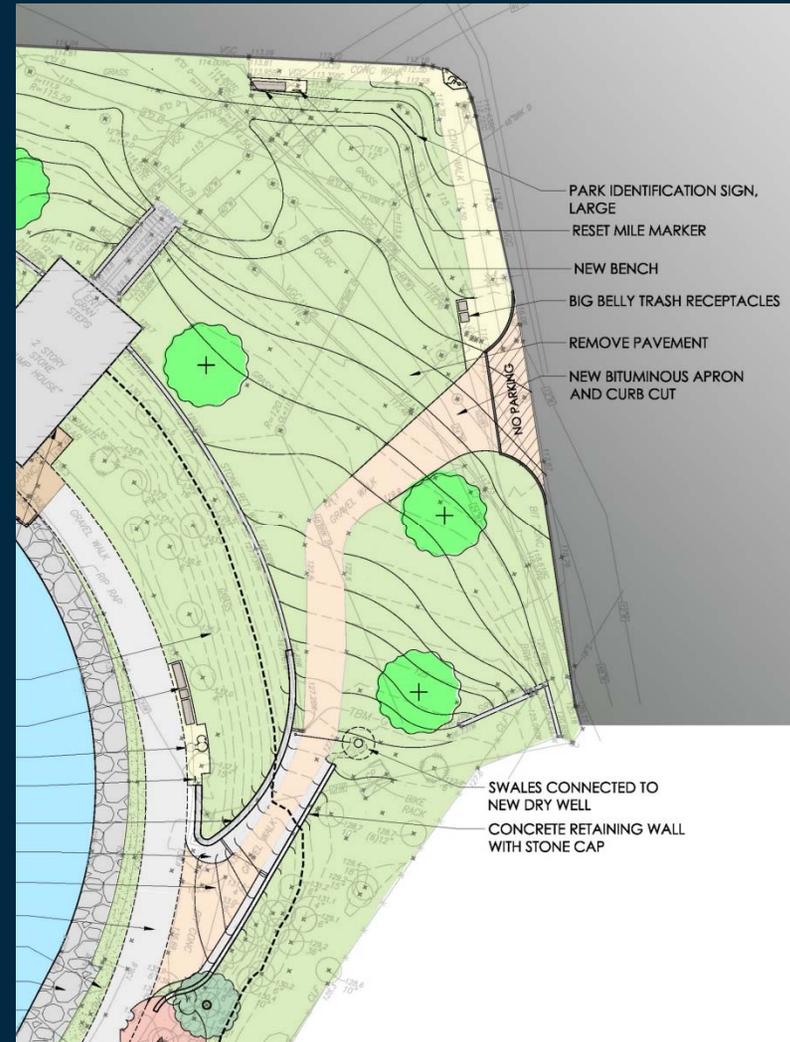
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# Stormwater Management Goals

- Increase Infiltration
  - Swales and dry wells
  - Reduce impervious surfaces



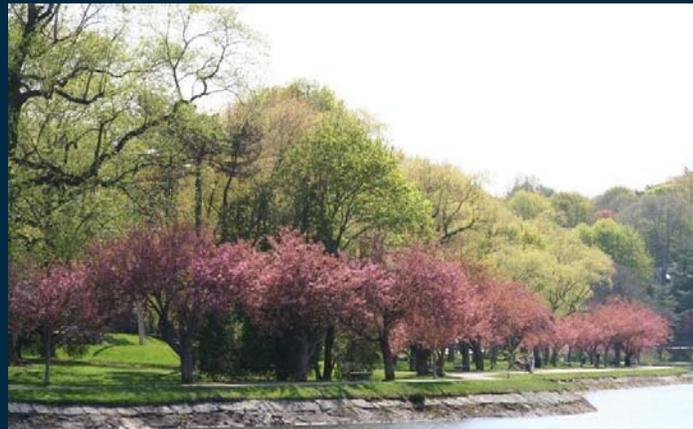
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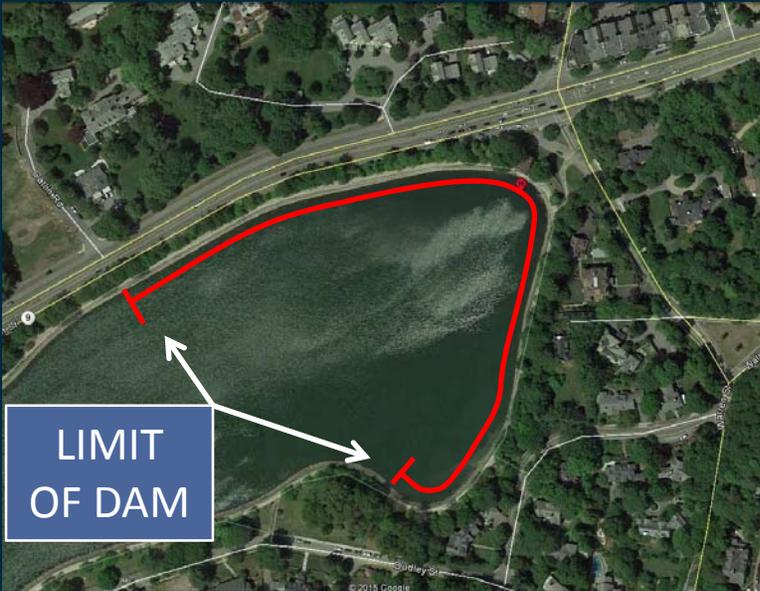


# Planting Goals

- Address ODS requirements
- Augment Cherry trees
- Remove failing trees
- Plant new trees for 'arboretum' character
- Remove invasives and plant new understory plants
- Revitalize troubled turf areas
- Add stands of ornamental grasses

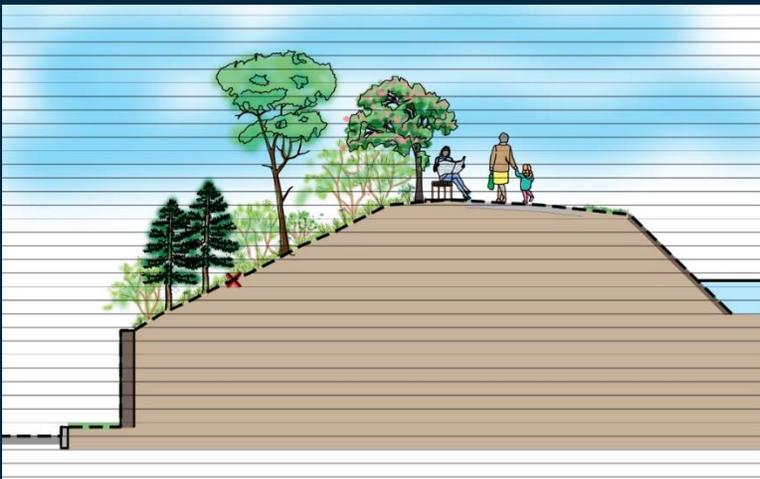


# Understanding ODS Implications

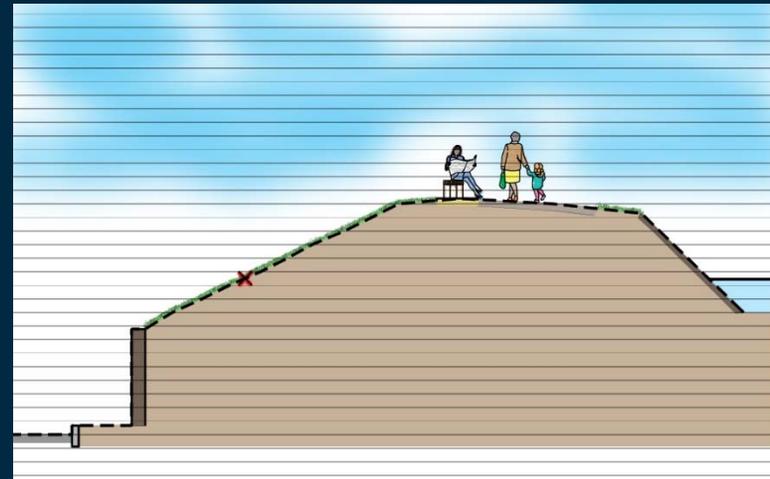


## ODS POLICY:

- Remove all under-brush and trees, establish uniform cover of grass



Existing Conditions



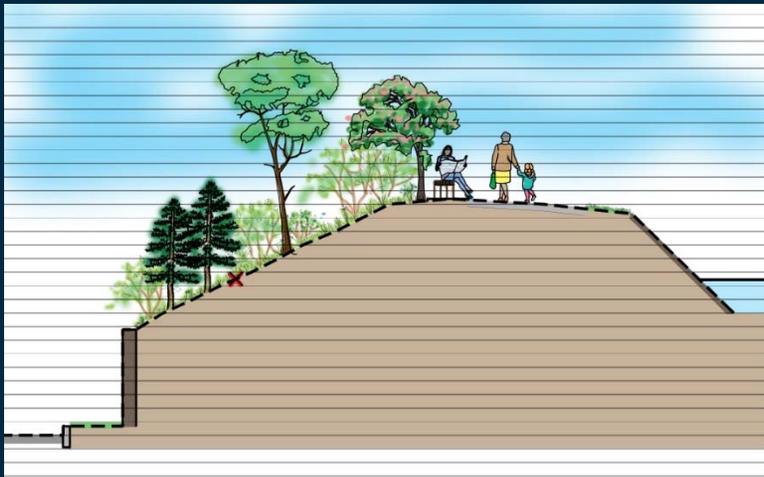
ODS Policy

# Understanding ODS Implications

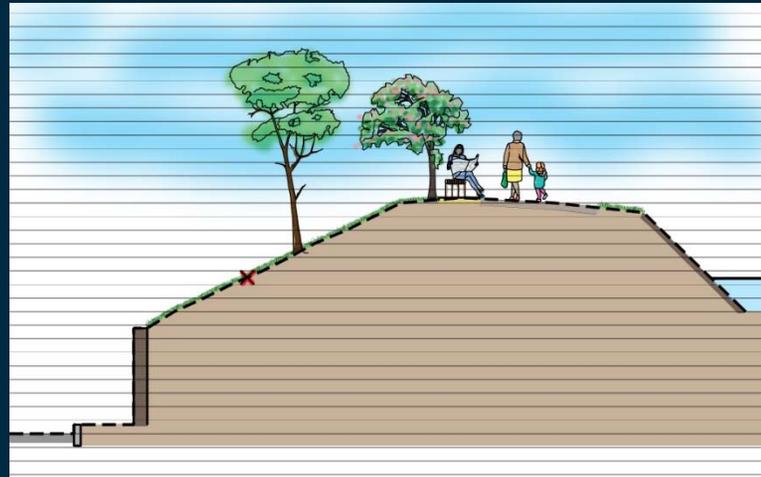


## PROPOSED REFINED APPROACH:

- MUST - Remove all under-brush & trees under 6" cal.
- MUST - Remove trees adjacent to Gatehouse & trees in poor health
- Maintain trees – back of embankment, above water level & 6"+ caliper and healthy
- Maintain trees – along top of bank (i.e. Cherry trees)



Existing Conditions



Proposed Refined Approach

# Existing Vegetation



- Shade trees over lawn
- Wooded areas: trees with understory
- Signature Cherry trees

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# Diagram of Tree Removals



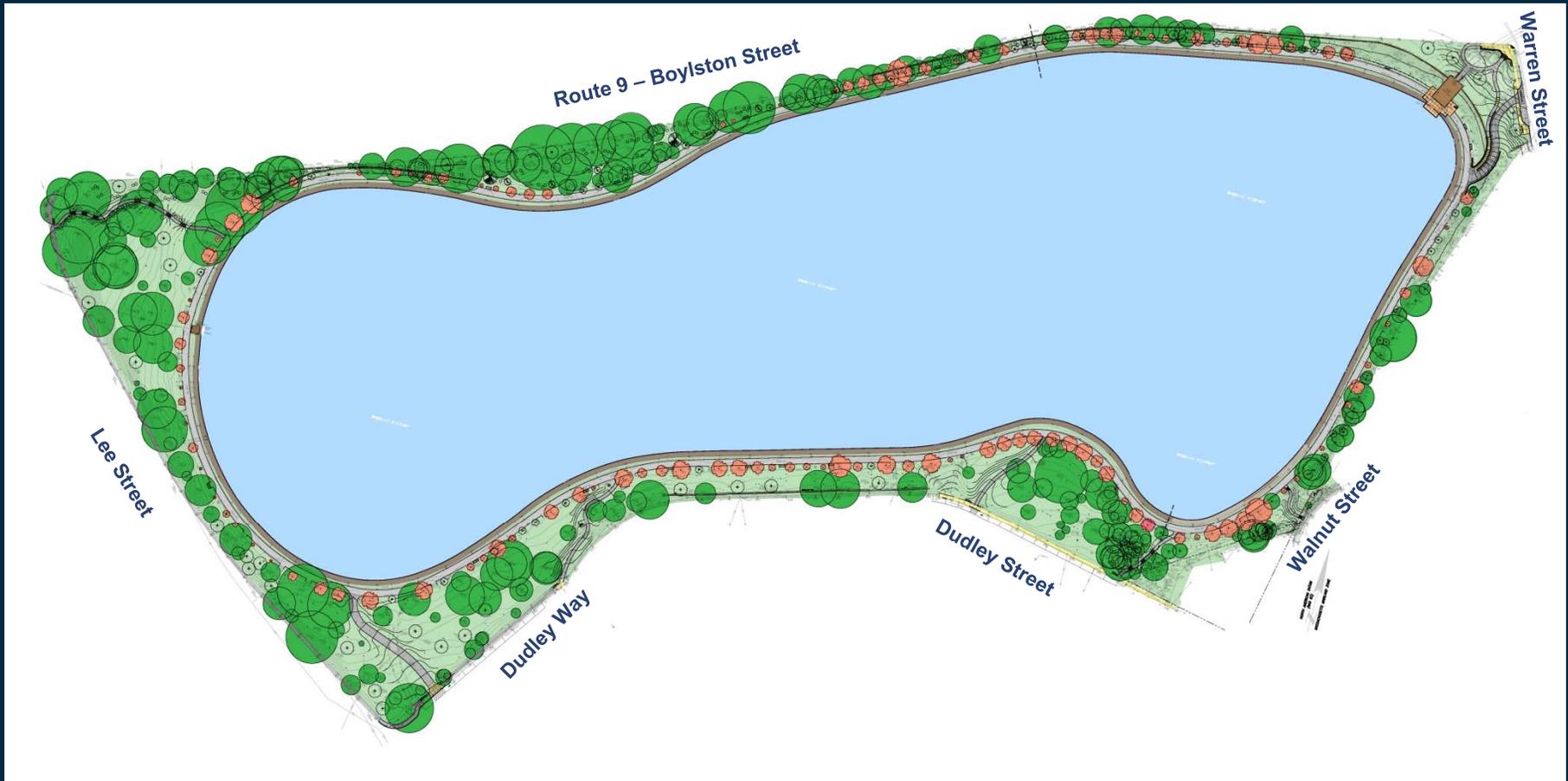
- Proposed Refined Approach for ODS
  - Understory removal
  - Tree removal
- Remove failing trees
- Remove invasives from wooded areas

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# Conditions Before New Planting



- Trees removed
- Understory removed from Dam
- Invasives removed

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# Proposed New Planting



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# Proposed Planting Palette

## TREES



Red Maple  
*Acer rubrum*



Ruby Horsechestnut  
*Aesculus carnea*



Paper Birch  
*Betula papyrifera*



Katsura Tree  
*Cercidiphyllum japonicum*



Redbud  
*Cercis canadensis*



Fringetree  
*Chionanthus virginicus*



Yellowwood  
*Cladrastis kentukea*



Kentucky Coffeetree  
*Gymnocladus dioica*



Turkish Filbert  
*Corylus colurna*

# Proposed Planting Palette

## TREES



Kwanzan Cherry  
*Prunus serrulata*



Tuliptree  
*Liriodendron tulipifera*



Sweetgum  
*Liquidambar styraciflua*



Sourwood  
*Oxydendrum arboreum*



Carolina Silverbell  
*Halesia*



Scarlet Oak  
*Quercus coccinea*



Pin Oak  
*Quercus palustris*



Red Oak  
*Quercus rubra*



Umbrella Pine  
*Sciadopitys*

# Proposed Planting Palette

## SHRUBS AND UNDERSTORY



Bottlebrush Buckeye  
*Aesculus parvifolia*



Red Chokeberry  
*Aronia arbutifolia*



Cornelian Cherry  
*Cornus mas*



Gray Dogwood  
*Cornus racemosa*



Redtwig Dogwood  
*Cornus stolonifera*



Witchhazel  
*Hamamelis x intermedia*



Inkberry  
*Ilex glabra*



American Holly  
*Ilex opaca*

# Proposed Planting Palette

## SHRUBS AND UNDERSTORY



Winterberry  
*Ilex verticillata*



Mountainlaurel  
*Kalmia latifolia*



Spicebush  
*Lindera benzoin*



Bayberry  
*Myrica pensylvanica*



Low Grow Sumac  
*Rhus aromatica* 'Low Grow'



Mayflower Viburnum  
*Viburnum carlesii*



Am. Cranberrybush  
*Viburnum opulus*

# Proposed Planting Palette

## GRASSES



Bluestem Grass

Redtop Grass

No Mow Grass

# Site Furniture, Fencing and Railings



- Proposed “Big Belly” trash/recycling
- ★ Proposed new bike racks & signage
- Proposed drinking fountains
- Proposed additional seating
- ▲ Reinstall mile-marker

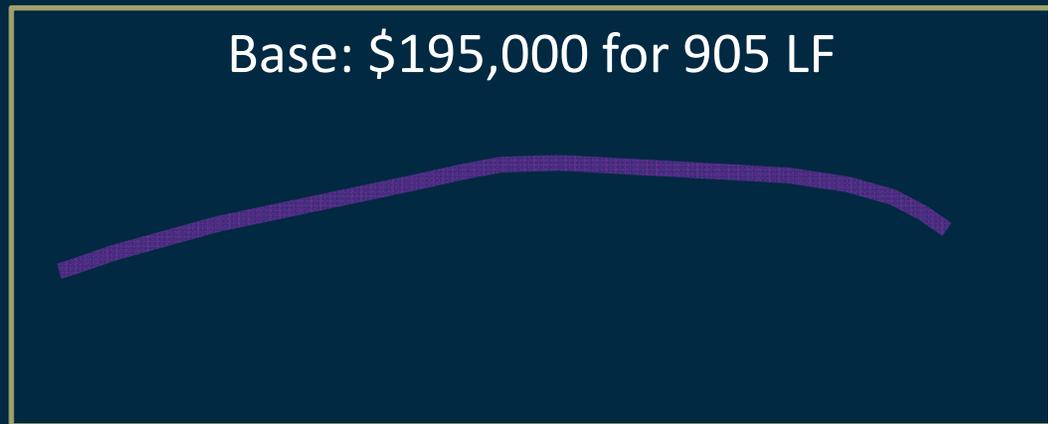
# Edge Treatment along Rte. 9



Existing edge at Route 9



Extent of Ornamental Fence at Top of Slope



# Options for Ornamental Fence: Along Rte. 9

STEEL POSTS, PIPE RAIL WITH MESH INFILL



Century Metropolitan

\$215 per linear foot  
Base: \$195,000

STEEL POSTS AND PICKETS



\$205 per linear foot  
SAVE: \$9,500



# PRELIMINARY COSTS

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# PRELIMINARY ESTIMATE & PRIORITIES

Construction Budget in the CIP: \$2,200,000.00

## Priorities:

Gatehouse		\$	250,000
Platform and Handrails		\$	100,000
Masonry		\$	457,000
SP&D, Earthwork & Utilities		\$	408,400
Stonedust Path		\$	97,700
Hardscape		\$	158,300
Ornamental Fence Along Route 9		\$	204,000
Site Furniture		\$	72,200
Bus Shelter		\$	20,000
Tree Planting and Seeded Areas		\$	193,100
	<b>TOTAL</b>	\$	<b>1,960,700</b>
<u>10% Contingency</u>		\$	<u>196,070</u>
<b>TOTAL</b>		\$	<b>2,156,770</b>

## Add Alternates:

Warren Street Entrance –COMBO (ped. entry & regrade drive)	ADD	\$	40,500
Stormwater Management	ADD	\$	112,800
Site Furniture – Refurbish remaining existing benches	ADD	\$	20,800
Ornamental Pipe Rail at Dudley Street/Way	ADD	\$	168,000



THANK YOU!

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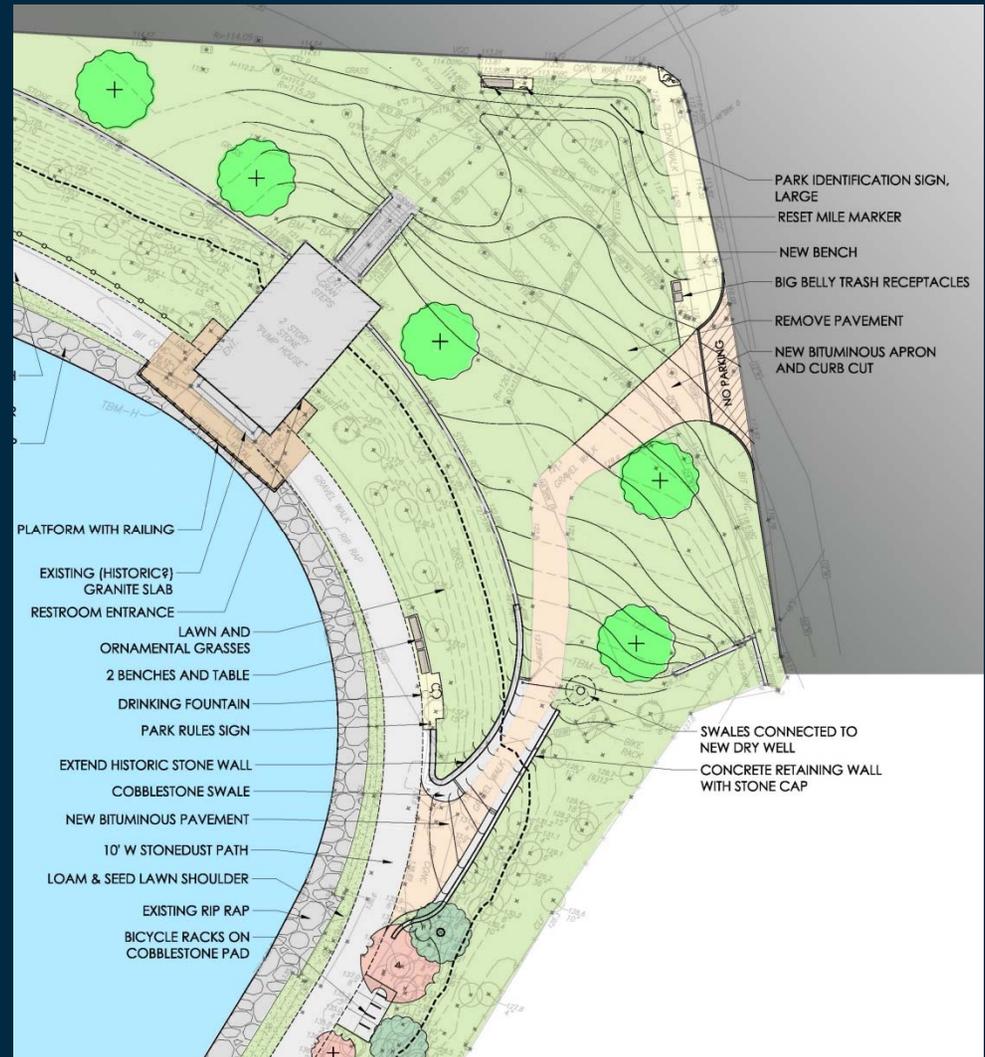


# Warren Street Entrance

## Existing Conditions



## Base Improvements



Estimated Cost for Warren Street Entrance  
Base: \$133,000

1<sup>st</sup> Option: ADD \$29,000

2<sup>nd</sup> Option (Max): ADD \$244,000

3<sup>rd</sup> Option (minimal):  
SAVE \$112,500



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# Warren Street Entrance

## Existing Conditions



## Proposed First Option- Pedestrian Entrance



1<sup>st</sup> Option:  
ADD \$29,000



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# Warren Street Entrance

## Existing Conditions



## Proposed Second Option (Full Build)



**2<sup>nd</sup> Option (Max):  
ADD \$244,000**



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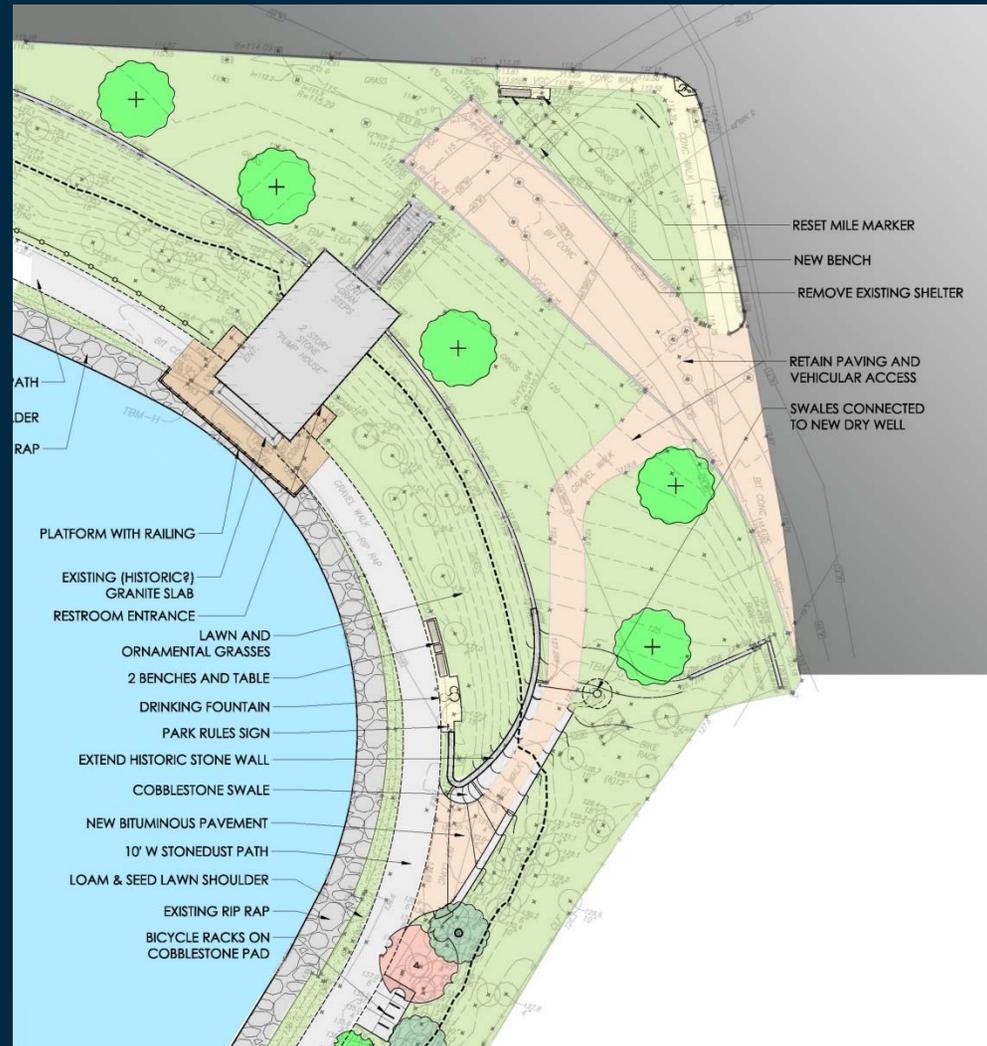


# Warren Street Entrance

## Existing Conditions



## Proposed Third Option



3<sup>rd</sup> Option (Minimal):  
SAVE \$112,500



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