SETTING THE STANDARD FOR GREENWAY DESIGN

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Great Rivers Greenway

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AM:PM

Why do we need design guidelines?

IMPROVE LONG-TERM SUSTAINABILITY

REDUCE MAINTENANCE NEEDS

IMPROVE FACILITY QUALITY

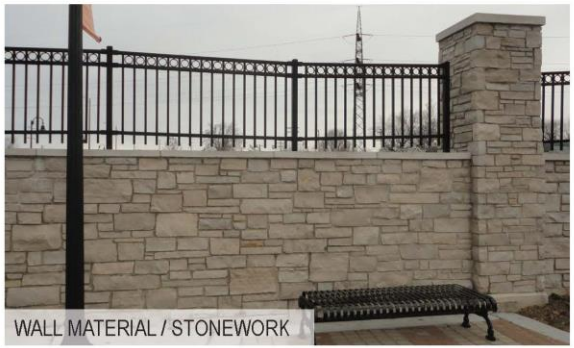
ENHANCE THE EXPERIENCE OF USERS

How did we develop the content?

THINGS WE LIKE


SPECIALTY PAVING / BRANDING


BRIDGES


WALL MATERIAL / STONEWORK


COLUMNS

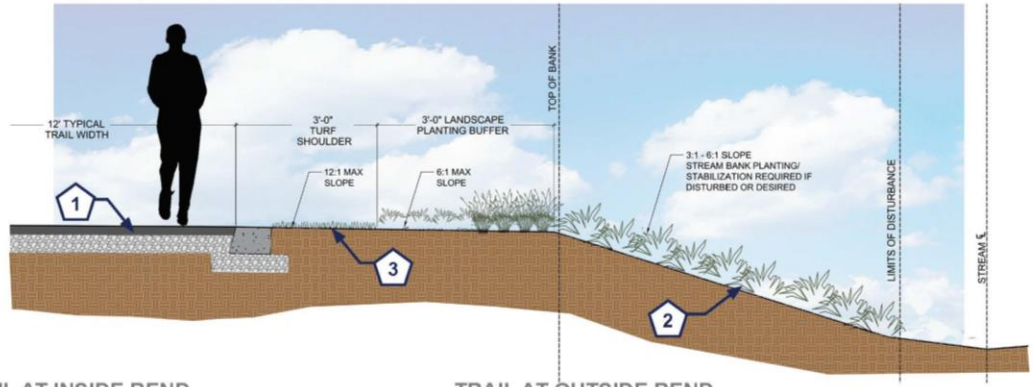

SITE FURNISHINGS


PARKING LOT PAVING

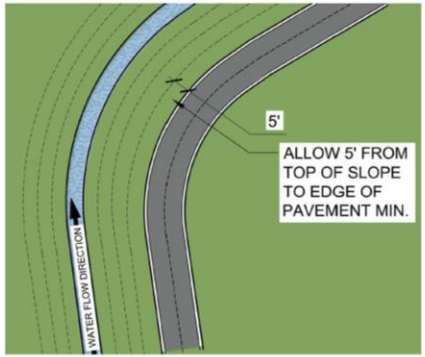

FENCING

SOLVING PROBLEMS THROUGH DESIGN

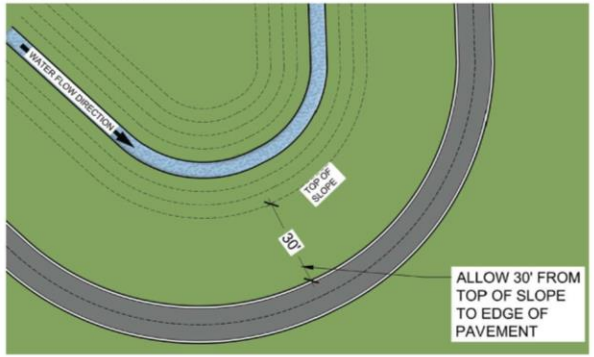
STANDARD CROSS SECTION



TRAIL AT INSIDE BEND



TRAIL AT OUTSIDE BEND



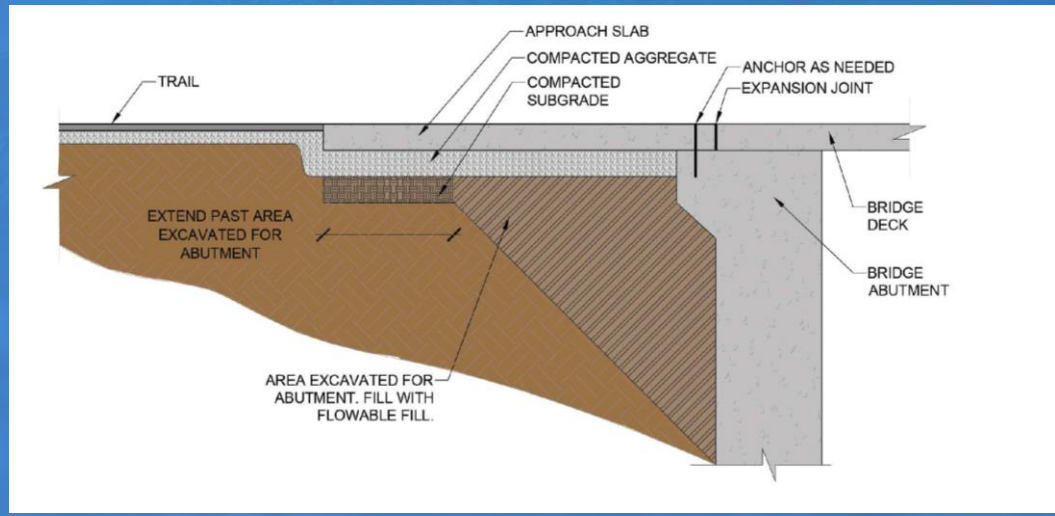
- Trails should be placed much further away from outside bends in streams or waterways - 30'-0"minimum from top of slope where a stable (3:1 max.) or stabilized slope is present.
- On inside bends, the trail can be placed closer to the top of slope, 6'-0" minimum.
- If slopes are steeper than 3:1, stream stabilization techniques are to be utilized, or the trail should be set significantly further away from top of bank. This increased distance should be determined based on historical stream analysis or with the input of a stream specialist.
- See Stream Evaluation

COMPONENTS:

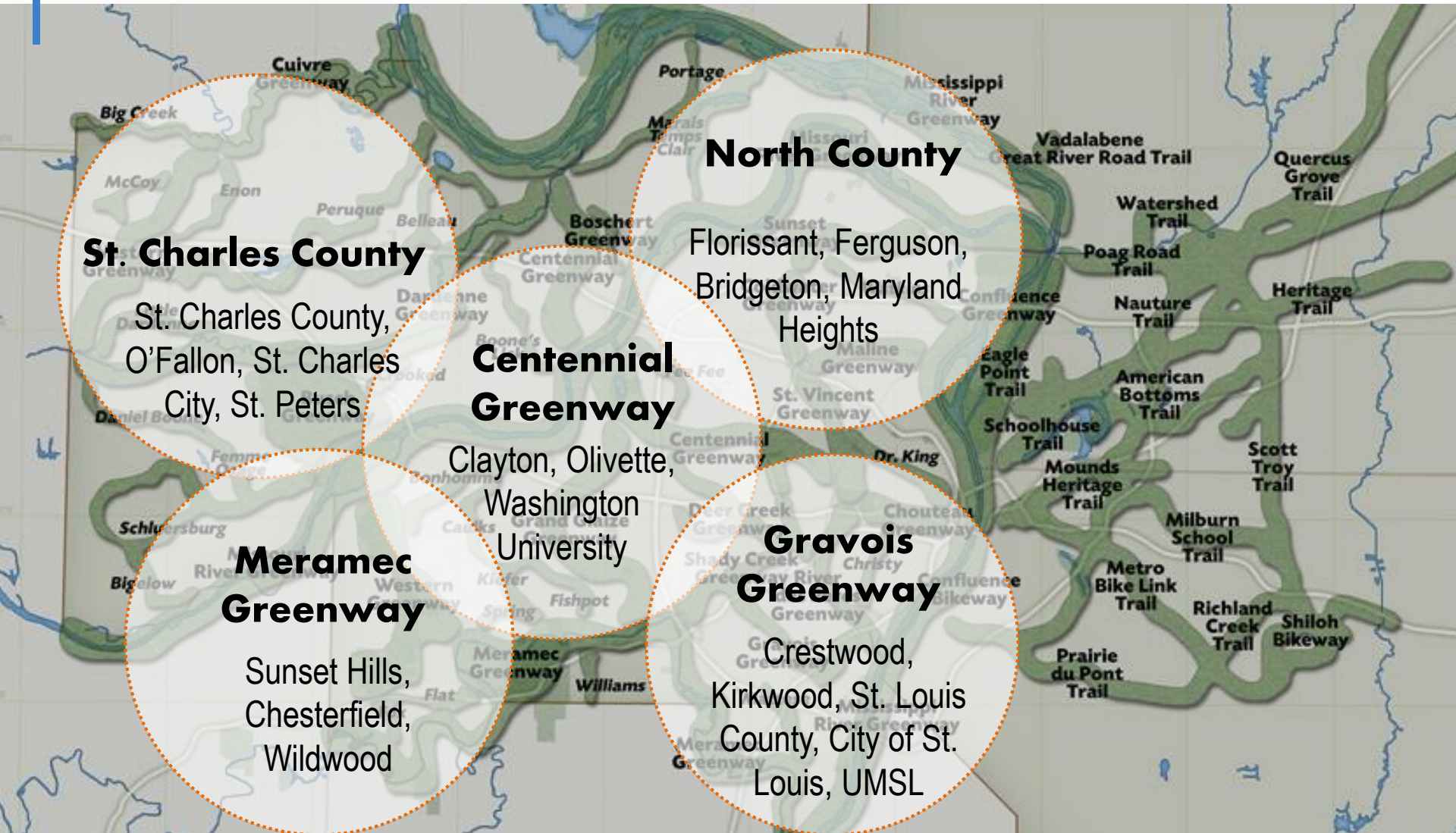
Click below for more information on each component.

1. PRIMARY TRAIL SURFACING (CONCRETE HEADER OPTIONAL)
2. STREAM BANK STABILIZATION

REDUCING MAINTENANCE CHALLENGES



WORKING WITH PARTNERS TO DEVELOP GUIDELINES



How far reaching are the guidelines?

What is a greenway?:
Greenways are outdoor spaces connecting people & places. Each greenway is unique, reflecting the character of the communities it connects. Greenways can include:
Trails where you can take a walk, go for a run, ride a bike or just get some fresh air. These are almost always paved and accessible for all.
Conservation projects to maintain healthy habitats & watersheds, such as rain gardens, native plants, restored prairies, wetlands & floodplains.
Amenities like restrooms, water fountains, benches, bike racks, signage, parking & playgrounds.
Connections to business districts, neighborhoods, transit, jobs, schools, cultural destinations, rivers, creeks, parks & conservation areas.

DO THEY COVER EVERYTHING?

CORE ELEMENTS?

CORE ELEMENTS AND ROOM FOR CREATIVITY

WHAT ARE THE PRIORITIES?

ENVIRONMENT?

COST?

DESIGN GOALS - WHAT IS STANDARD? WHAT IS FLEXIBLE?

While it is the intention of the District to establish Design Guidelines to standardize many of the typical greenway elements, each greenway can still feature elements that distinguish it from the overall system. Furthermore, these elements can serve as additional wayfinding features. Where greenway segments or trails which connect to GRG greenways are being planned and designed, designs should also conform to these guidelines.

DISTRICT-WIDE

These Greenway elements are standards for the entire District. Deviation from these guidelines should be based on specific project challenges or need, not design or aesthetic reasons. Deviations should be communicated and documented to GRG in required format. Standards should always be considered a baseline to attain and surpass.

- Trail cross sections, widths and layout recommendations
- Trail pavement minimum cross sections and performance
- Standard trailhead elements
- Intersection treatments
- Recommended intervals for the placement of trail amenities
- Tree planting, staking, and soils requirements
- Planting cross sections, soils requirements, mulching requirements
- Overarching standards (radii, design speed, etc.)
- Accessibility and accommodations
- Wayfinding and regulatory signage
- Emergency/ service access


URBAN


SUBURBAN


RURAL

REGIONAL CONTEXT

Variations in aesthetic/ design decisions should take into account regional context. Urban, suburban, and rural environments each have specific challenges and needs. Natural areas within each regional context have additional constraints. Recommendations have been made for these treatments, final design or selected materials need to meet or exceed expectations of the guidelines.

Greenway elements that should be considered for this regional variation:

- Site furnishings
- Specialty pavements
- Side path surfacing type
- Shelter designs and material selections
- Plant selections
- Retaining Wall materials and or building cladding
- Railings and fencing
- Retaining walls
- Site lighting
- Bridges and boardwalks

GREENWAY SPECIFIC

Though a given greenway may pass through a variety of regional contexts, each greenway should have elements that carry its character throughout. Some materials, like stone, for example, might be used in different ways depending on the regional context, but it remains the same source material. Designers should strive to make extensions to an existing greenway consistent/ compatible with previous designs. Recommendations have been made for these treatments, final design or selected materials need to meet or exceed expectations of the guidelines.

- Specialty paving materials
- Color selections
- Wall cladding and concrete form-liners
- Natural material selections (stone, brick and masonry)
- Pavilions or elements on pavilions
- Landscape approach
- Greenway environmental graphics

Great Rivers Greenway

DISTRICT WIDE - Standards

- **Trail cross sections**
- **Trail pavements**
- **Standard trailhead elements**
- **Intersection treatments**
- **Placement of trail amenities**
- **Tree planting requirements**
- **Planting cross sections**
- **Code/ National Standards**
- **Signage**
- **Emergency/ service access**

STANDARD

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REGIONAL CONTEXT - Consistency

- **Site furnishings**
- **Specialty pavements**
- **Side path surfacing type**
- **Shelter designs**
- **Plant selections**
- **Retaining walls**
- **Railings and fencing**
- **Site lighting**

BASIS OF DESIGN

DESIGN GOALS - WHAT IS STANDARD? WHAT IS FLEXIBLE?

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GREENWAY SPECIFIC- Creativity

- **Special amenities**
- **Gateways, markers**
- **Specialty paving materials**
- **Color selections**
- **Wall cladding**
- **Natural material selections**
- **Landscape approach**

RECOMMENDATION

What are the guidelines?

https://greatriversgreenway.org/design-guidelines/

Great Rivers Greenway

LIVE LIFE OUTSIDE

GREENWAYS EVENTS NEWS PROJECTS ABOUT LEARN DONATE GET INVOLVED

Plans & Reports

TRANSPARENT & ACCOUNTABLE

Check out our regional plans and annual reports to know where we've been and where we're going.

Meetings & Minutes

BOARD OF DIRECTORS INFORMATION

Our Board of Directors meets monthly - this page lists all meetings, agendas and minutes for your review.

Budgets & Financials

RESPONSIBLE STEWARDSHIP

We make our budgets and audited financials available here for partners or citizens to access.

Media & Press

RESOURCES FOR YOU

Find contacts, logos, brand standards, high resolution images of the greenways and downloadable resources.

GIS Resources

MAP AND DATA TOOLS

We use the geographic information system (GIS) in a variety of ways in the work that we do.

Greenway Design Guidelines

CONSISTENT GREENWAY EXPERIENCE

Guidelines to improve sustainability, quality and user experience

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CLEARLY DESCRIBED ELEMENTS

STANDARD CROSS SECTION - TRAIL

In much of a given alignment, this trail cross section should be utilized. The trail profile, width and placement have been considered to create a great user experience, while also providing a safe and long lasting trail. It is important that the trail be designed to provide adequate drainage, and the trail should be constructed slightly higher than the surrounding grades below.

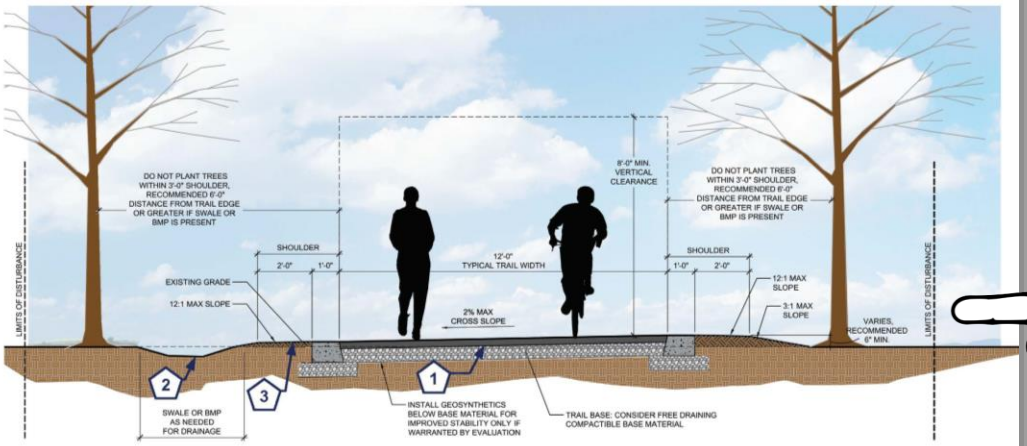
- Use this cross section for typical trail locations on undisturbed or stable soils.
- Use in areas where drainage will remain largely unaffected by trail.
- Slightly elevate trail to ensure positive drainage.
- Rating for typical vehicles and emergency vehicles, may need to increase base and pavement thickness for additional loading requirements. Loading should be coordinated with agencies and utility providers as required.
- Geosynthetics should be used to provide additional reinforcement to the trail base, as required.
- A 3'-0" level shoulder (including concrete header) is desired for added safety of trail users.

Asphalt trails with concrete headers create a clean and recognizable greenway surface.

STANDARD

TYPICAL IMAGE

STANDARD CROSS SECTION



CROSS SECTION

COMPONENTS:

Click below for more information on each component.

1. PRIMARY TRAIL SURFACING (CONCRETE HEADER OPTIONAL)
2. STORMWATER CONTROL SWALE
3. TRAIL SHOULDER

LINKED COMPONENTS

EASILY NAVIGABLE DOCUMENT

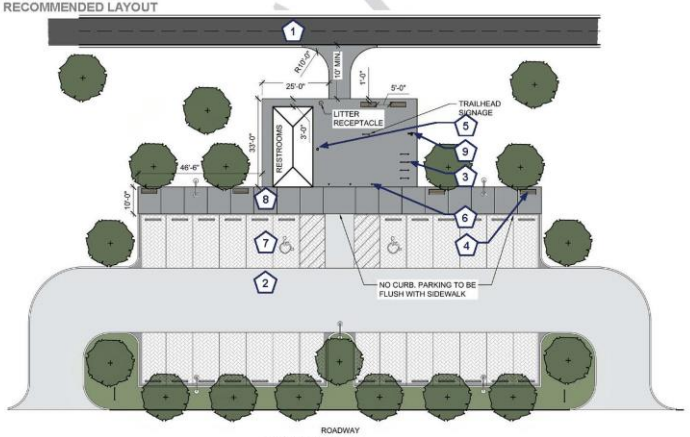
MAJOR TRAILHEAD - RECOMMENDED LAYOUT

A major trailheads serves as access and way station for greenway users. In addition to vehicle parking, trailheads feature restrooms, bike parking, seating/ gathering space, bike repair stations and drinking fountains. Ideally major trailheads combine all of these amenities with sufficient parking, at a minimum for 20 vehicles.

- This strategy is to be used at high-use trail access points where large numbers of users are expected.
- Consider major trailhead as a full-service stop along the greenway.
- Standard and accessible parking stalls to accommodate 20+ vehicles. Stall dimensions to be min. 9'-0" wide x 18'-0" deep.
- Permeable pavement is preferred in vehicular parking areas. If roadway surface is asphalt, a concrete header should separate asphalt and serve to contain pavers.
- Incorporate kiosk signage at trailhead and parking area entry points. Other trail signage should be incorporated as required. See Signage Standards.
- Access for maintenance vehicles should be incorporated into the design.
- For greenways that experience high volumes of users on weekends, consider overflow parking in adjacent turf areas. Depending on condition and frequency of use, consider a turf stabilization product such as GrassPave.
- As opportunities allow, can explore options such as lighting, solar charging stations, etc.

Permeable paving parking stalls meet flush with the adjacent trailhead sidewalk, providing a curbless, accessible transition from the parking lot to the trailhead.

RECOMMENDED LAYOUT



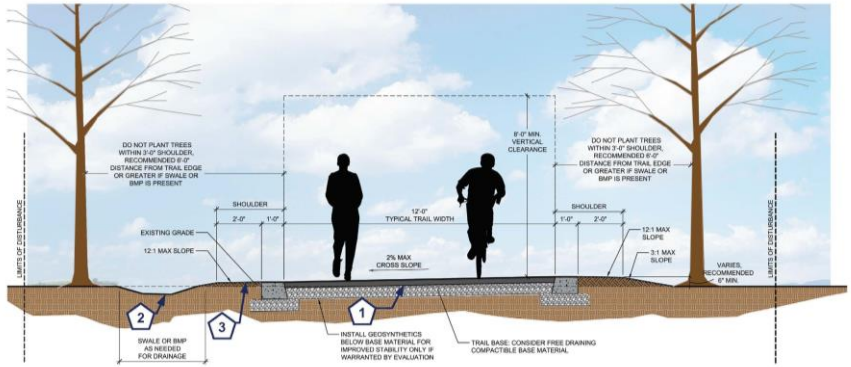
COMPONENTS:

Click below for more information on each component.

1. PRIMARY TRAIL SURFACING
2. ROADWAY/ SERVICE DRIVE SURFACING
3. BICYCLE PARKING LAYOUT
4. BENCH SEATING
5. DRINKING FOUNTAIN

Great Rivers Greenway

STANDARD CROSS SECTION



COMPONENTS:

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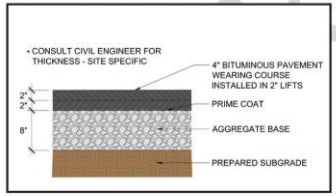
1. PRIMARY TRAIL SURFACING (CONCRETE HEADER OPTIONAL)
2. STORMWATER CONTROL SWALE
3. TRAIL SHOULDER

ASPHALT - ALTERNATIVE MATERIAL



Asphalt is a common roadway material for good reason. Its low installation cost and resistance to cracking make it a good alternative for vehicular pavements. Proper installation of the base aggregate is critical to its longevity.

PROS:

- More cost effective than concrete.

CONS:

- More maintenance than concrete; requires sealing and eventual mill/overlay.

NOTES:

- To be used for driveways, and service access/areas.
- Include 8" min. compacted aggregate base course below asphalt surfacing.

DEVELOPS A SET OF DECISION MAKING MATIRICIES

TRAIL SHOULDER STANDARD APPLICATION		
DISTANCE FROM EDGE OF TRAIL	TREATMENT	REFERENCE IMAGES
6'-0" OR MORE	• Trees outside 3'-0" shoulder • Turf • Native vegetation with turf shoulder	
LESS THAN 6'-0" GREATER THAN 3'-0"	• Turf	
LESS THAN 3'-0"	• Concrete • Pavers or specialty pavement	

How are they already being used?

Scope and Purpose:

Great Rivers Greenway strives to produce contract ready error free plans. The key to success is good communication and documented expectations and procedures for the design of projects. The purpose of this document is to supplement design guidelines and ensure project plan design and details are prepared in a uniform and complete manner and to provide a guide for quality assurance / quality control for plans let by Great Rivers Greenway.

Design Review

Plans, Specifications and Estimate (PS&E) are expected to be submitted by the date specified in the project schedule. GRG staff will work to complete design reviews within the specified timeframe(s). The design firm will work to complete all design revisions in order to deliver an on-time project letting as determined by the schedule. If additional time is necessary to finish the revision process, a change request needs to be submitted by the design firm for a time extension.

Ultimately the design of projects shall be in accordance with GRG standards. Any deviation from the standards requires a design exception approved by the Project Manager, Senior Project Manager, and VP of Projects.

DESIGN STANDARDS USED (Most Recent Edition):

- ☐ National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide
- ☐ PROWAG
- ☐ ADAAG
- ☐ St. Louis County Highway Design Criteria
- ☐ AASHTO Roadside Design Guide
- ☐ AASHTO Policy on Geometric Design
- ☐ MoDOT EPG
- ☐ MoDOT LPA Manual
- ☐ MSD Plan Preparation Guidelines
- ☐ MUTCD

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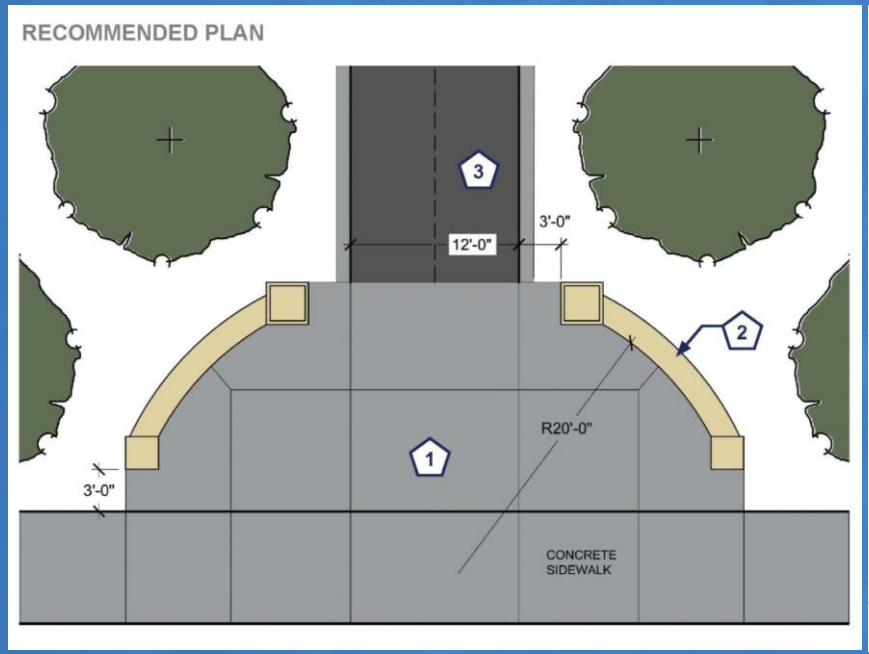
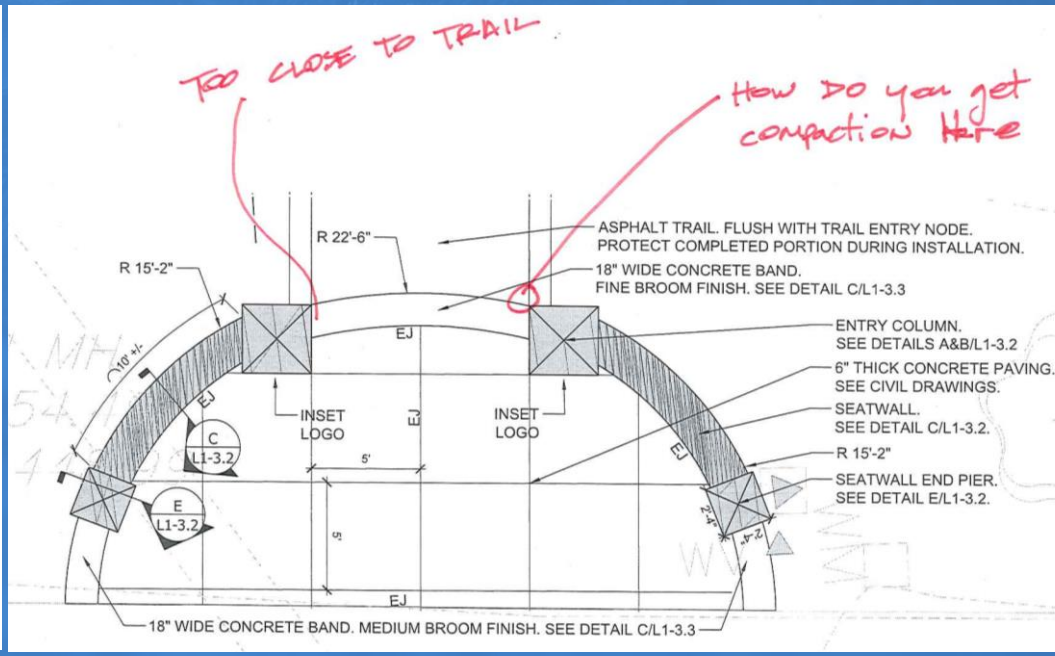
CHANGING THE DESIGN PROCESS

- **Checklist for designers**
- **Review document for GRG staff**
- **Available to municipal partners and public**

BETTER CONSTRUCTABILITY

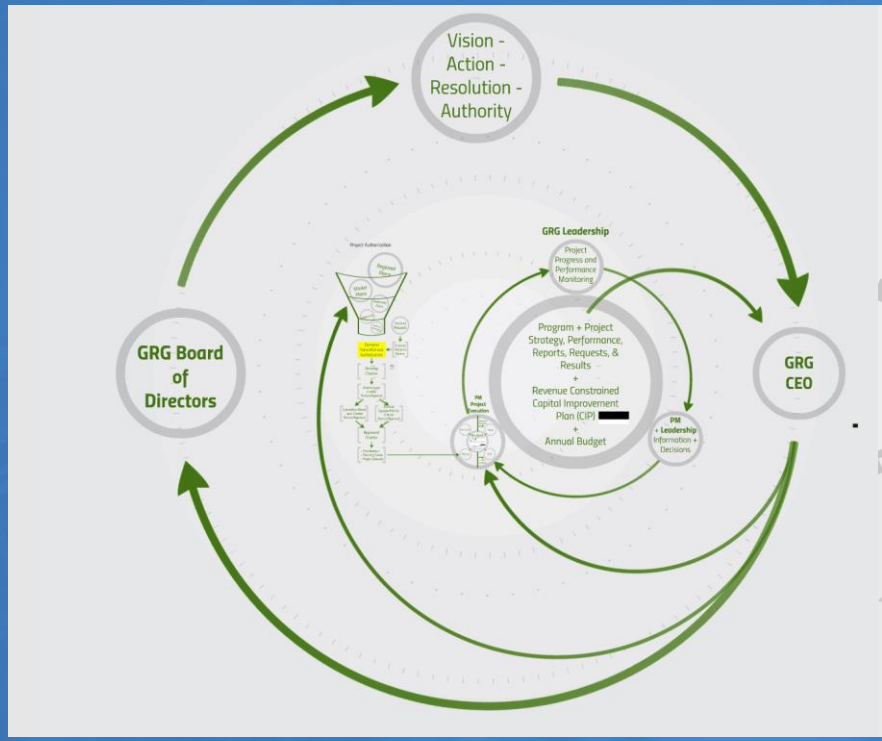
Catch problems before they get built

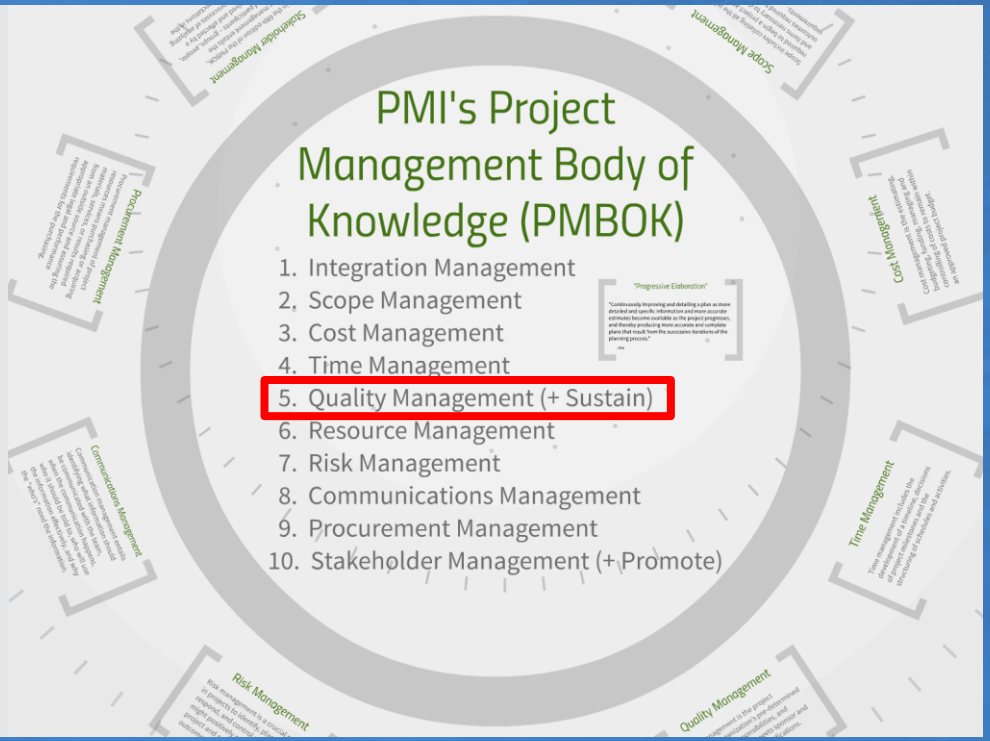




How do we keep them updated?

Project Controls in 60 seconds or less





Lessons Learned – What are they?

Lessons Learned – What are they?

LESSONS LEARNED

REGARDLESS OF A PROJECT'S OUTCOME, WE CAN LEARN SOMETHING AND APPLY THAT LESSON TO THE NEXT PROJECT.

"I DIDN'T FAIL. I JUST FOUND A THOUSAND WAYS THAT DIDN'T WORK." - THOMAS EDISON

Ways to apply LL from one project to another?

-
-
-
-
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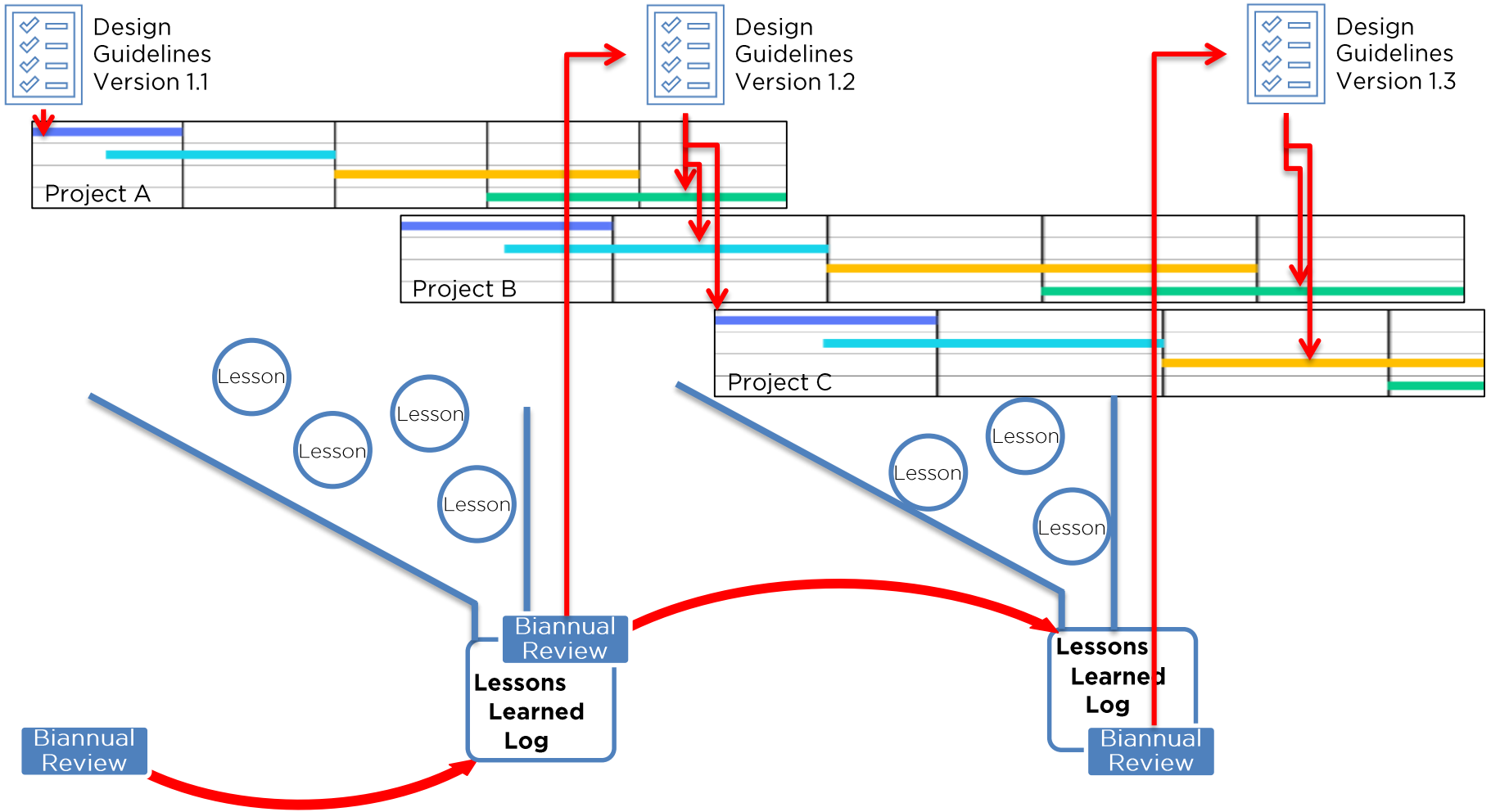

Design Guidelines Version 1.1
Design Guidelines Version 1.2
Design Guidelines Version 1.3
Project A
Project B
Project C
Lesson
Lesson
Lesson
Lesson
Lesson
Lesson
Lesson
Biannual Review
Lessons Learned Log
Biannual Review
Lessons Learned Log
Biannual Review

Lessons Learned Log (LLL)

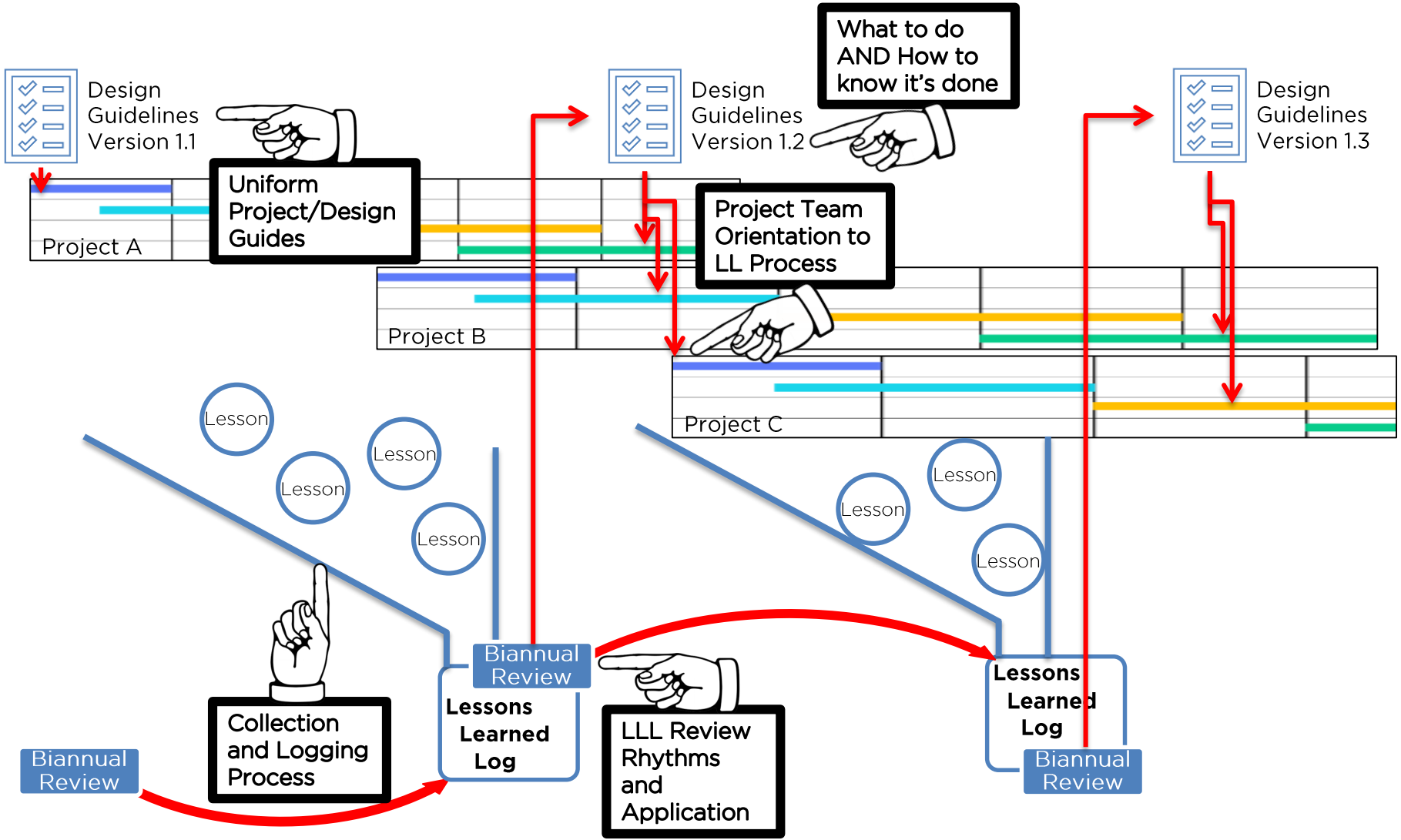
Project	Lesson Name	Lesson Description	Lesson Date	Lesson Originator	Lesson Status	Lesson Category	Lesson Resolution	Lesson Res. Date

What would you recommend?

	Lesson Description
1.	More careful review of landscape plan removals....in this case, over 16 trees are proposed on a City property, which is full of vegetation and mature trees. In addition no clearing of new landscape areas was included, nor were the diameter thresholds of trees to be cleared specified.
2.	Change Order #1 required additional concrete and clean rock to reinforce where the medians are being removed, and now traffic will be located due to the realignment of the road, on insufficient existing pavement.
3.	Online bidding platform suffered from error/bug and one bid was inaccessible even though bidder received a confirmation email. Final low bidder could not be readily determined. In addition, hard-copy bids received could not be shared immediately with bidders observing online.

Recap Lessons Learned Practices:

1. Uniform Project/Design Guides
2. Agreed upon LL logging and storage process
3. Rhythm of LLL review and application to Project/Design Guides
4. Decide what to do AND how to make sure it's done
5. Project teams oriented to Design Guides and LL process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Project B
Design Guidelines Version 1.3
Project C
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Collection and Logging Process
Biannual Review
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LLL Review Rhythms and Application
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Biannual Review


LIVE LIFE OUTSIDE
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