



Good Evening and welcome to session 5 of the Thornton Planning Academy!
Tonight's first lesson is on landscaping. My name is Paul and I'll be starting us off with the Landscape Review and Inspection presentation tonight.

Purpose

How does LARI fit into the development process?

Agenda

- Part I: Introduction
- Part II: Lesson
- Part III: Group Activity
- Part IV: Lessons Learned

Our goal tonight is to provide you some insight into how our division of Landscape Review and Inspection (aka Larry), fits into the development process. We'll start with a brief introduction, followed by a short lesson on our team's mission and goals and how they apply to the development review process. Then a fun group activity, and we will save a little time to wrap up with a summary and key take aways.

Part I: Introduction



3

Let's get right to it and start with introductions

Who We Are

- LARI Team Members

- 65+ years of combined landscape experience



PAUL MCMAHON, PLA

Manager



DARREN CHAMPION

Landscape Reviewer &
Inspector



AMY SCHWENNER, PLA

Landscape Reviewer &
Inspector



4

Thornton is unique as not all our neighboring jurisdictions have a fully staffed teams of strictly landscape professionals. Many other jurisdictions have landscape professionals on staff, but they are embedded in Current Planning or Parks teams. Thornton, however, has had a specifically focused landscape team since the early 2000's when the City added a Senior Landscape Architect, and that position has evolved to the team here today.

Our small team includes three people. My name is Paul McMahon, and I am the team's Manager. I am a licensed Landscape Architect and have been managing the department for about 4 years. We also have Darren Champion, who brings expertise in municipal installations and field practices, and Amy Schwenner, also a Landscape Architect and our newest team member. Combined, the three of us bring over 65 years of landscape experience to City Development.

Where does Landscape fit



Vibrant and Purposeful Development

Landscape enhances identity and defines areas of interest



Connected Communities

Plant selection aids visibility at intersections and shade



Safe, Supported and Livable Community

Design facilitates safe spaces and water management



Organizational Excellence

Functional creative solutions with excellent customer service



5

The benefit of a distinct landscape team is that strong landscape elements support the 4 focus areas noted in Thornton's Strategic Plan.

1. Landscape elements assist the first goal because properly thought-out landscape design enhances Thornton's identity and defines area of interest.
2. LARI supports strong Connected Communities by ensuring appropriate plant materials are utilized to assist in visibility at trail to road intersections and to shade trails.
3. Well designed and landscaped parks and open spaces create safe, sustainable, and welcoming areas for residents to use. And properly designed irrigation systems ensure we utilize our water resource as efficiently and effectively as possible.
4. And as always, the Landscape team is here to assist our applicants and residents with landscape related issues such as reducing their water bills with irrigation efficiency or xeric landscape ideas. Whatever their goal may be, we strive to provide creative yet functional solutions with excellent customer service.

Where does Landscape fit

Xeriscape

Combined from the Greek word xeros (meaning “dry”) and the word “landscape”

When do you think this word was first coined?

- A. In the last 15 years
- B. 15 - 30 years ago
- C. 30 - 40 years ago
- ☒ D. More than 40 years ago

Commonly accepted as a term coined by Denver Water (Nancy Leavitt) in 1981 to promote water-conserving landscape practices during a drought.



6

With a strong landscape presence throughout planning and development, the City can ensure best management practices are followed, and we are good stewards of our land and water resources. The primary mission of our team is the continued support and encouragement of all owners and developers working within the City to follow best management practices of the landscape industry, especially the 7 principles of xeriscape. But first, what exactly is xeriscape?

Xeriscape comes from the Greek word xeros (meaning “dry”) and the word “landscape”. So the literal translation is dry landscape.

Quick question: When do you think the term Xeriscape was first coined? Shout out if you think it’s A, B, C, or D...

The answer is D. It is locally accepted that an environmental planner with Denver Water named Nancy Leavitt coined the term in 1981 as a result of a local task force to promote water conservation following the notable regional dry period in the late 1970s.

Where does Landscape fit



Xeriscape

VS



'zero'scape



7

And the type of xeriscape we promote is the truly beautiful, well landscaped, water conserving, 'green' gardens like the one shown here. We do not believe 'ZERO-scape' is the answer as it creates its own group of challenges. However, for private residential property within Thornton, specifically in lots platted prior to 2003, this is allowed. It is just not encouraged by our team due to the temperature increases it causes. And despite popular belief, it is not weed free.

Fun Fact – back in 2021 the Westword published an article on Ms. Leavitt and specifically discussed that when Denver Water began promoting the concept of xeriscape, many people hated the word. They worried that 'xeri' was too similar to 'zero' and it would be equated to only rocks with no vegetation. We encourage you to always support the true definition of xeriscape, and hope with this and our next slide you have gained a little knowledge on the topic.

Where does Landscape fit

The 7 Principles of Xeriscaping



8

As noted, since the inclusion of landscape and irrigation elements in the code and Standards and Specs, the primary mission of our team is the continued support of the 7 xeric principles into all aspects of development.

Those principles have remained generally the same since their development but have been adjusted as we learn and grow in the industry. We'd like to thank our friends at Fisk Landscapes in Colorado Springs for this graphic representation of the seven principals, that are;

1. Planning and Design;
 - Landscape should be planned and designed just like all improvements to our world.
2. Soil Improvement;
 - Adding amendments that aid the soil to hold water and allow the plants to thrive.
3. Plant Selection & hydrozoning;
 - Using the right plant, in the right place and grouping plants based on their water needs so we can save water.
4. Practical Turf Area;
 - This has been expanded recently, to be more defined as 'functional turf areas' If the only time you walk on high water use turf is when you mow it, it is probably not practical or functional.

5. Efficient Irrigation;

- As we acknowledge no-irrigation is not realistic, all supplemental water should be used as efficiently as possible.

6. Mulching;

- Adding cover over the topsoil to retain water longer for plants to access when needed.

7. And lastly Appropriate Maintenance;

- There is no such thing as 'zero maintenance landscapes'. Without proper maintenance, all these goals cannot be achieved.

I am now going to pass this presentation over to Amy, to cover how we incorporate all these elements into our daily tasks and help you understand how they have been incorporated into the City's development code, standards and specs and our general policies. Keep an eye out on the future slides for these symbols to help explain what principle is being addressed.

Part II: Lesson

All right, let's learn how LARI addresses those xeric principles.



What We Do

• Plan Review

- Preliminary Plans
 - Landscape Buffers
 - Public Land Dedication (PLD)
 - Parks and Trails Connections

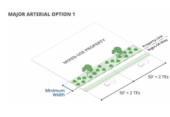


Table 16-509.2 Mixed-use and nonresidential street buffer requirements.

Specification	Freeway / Tollway	Major Arterial Option 1	Major Arterial Option 2	Minor Arterial / Collector Option 1	Minor Arterial / Collector Option 2
Minimum width (as measured from the right-of-way line)	25 feet	15 feet	5 feet	10 feet	5 feet
6-foot minimum height freestanding masonry or concrete wall	optional	optional	required (3) [4]	optional	optional
6-foot minimum height solid fence with masonry columns (1) [2]	N/A (not applicable)	N/A (not applicable)	N/A (not applicable)	optional	required (3) [4]
Minimum length of linear feet	3.5	2	1	1.5	1



10

What do we do? As our department name suggests, we have two main responsibilities: Plan Review and Inspections. Plan Review includes several phases.

During the first phase of Preliminary Plans, we focus on advising applicants of anticipated landscape buffers.

This table defines one such buffer requiring additional landscape area between development and certain street types and the images on the left show how they could be applied.

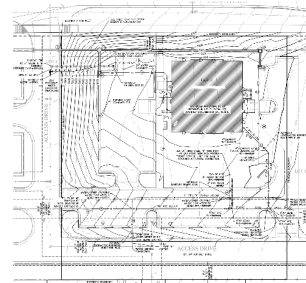
Another focus is public land dedication requirements where we define what is considered a public amenity and approvable for PLD credit.

And lastly, we use the parks and open space master plan to ensure applicants know to include any City planned parks or trail connections in the next phase of their design.



What We Do

- Plan Review
 - Preliminary Plans
 - Development Plans
 - Construction Documents (CD's)
 - No significant changes to Site Plan
 - Utility Plans align with irrigation design



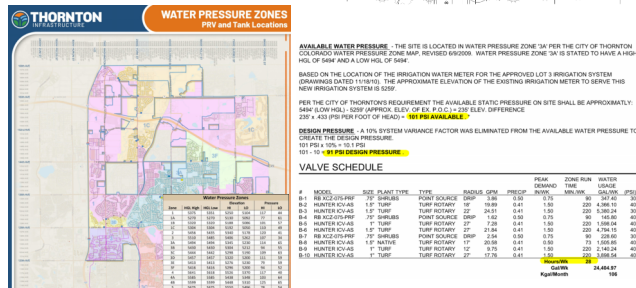
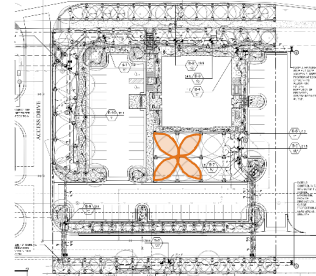
12

During the Construction Document or CD phase, engineers may find that elements approved by Planning during DP do not actually work or need modification. Like when areas are too steep and would not be maintainable, or {CLICK} when utilities and site elements like concrete create areas that cannot be irrigated or maintained efficiently. Because the landscape plans received approval with the DP, we need to ensure that any changes made to the site plan during CD's does not significantly impact the approved landscape plans. We do this by overlaying the DP and CD site plans. If significant changes have been made, it could mean that we send the applicant back to Planning to amend the DP plans. As you can see here, only a minor change was made to the trash enclosure that will not prompt sending back to Planning. We also verify that the final utility plans align with the irrigation plans. It looks like everything here is in alignment.



What We Do

- Plan Review
 - Preliminary Plans
 - Development Plans
 - Construction Documents
- Irrigation Plans
 - Uniform coverage / distribution uniformity
 - Functional design
 - Adequate pressure





What We Do

- Inspections

- Initial

- Pre-Construction
 - General conformance
 - Active Construction
 - Best management practices
 - Final Walk



14

Our second function is inspections. Once a site has obtained a landscape construction permit (separate from a building construction permit), we start our initial inspection period.

This period includes a pre-construction meeting where we let landscape contractors know our expectations during site prep and installation and answer any questions they may have. We also ensure they have a copy of the approved plans and define how the installation shall be in general conformance with those approved plans.

Then we enter the active construction period and our routine reviews where we monitor and ensure contractors utilize best management practices.

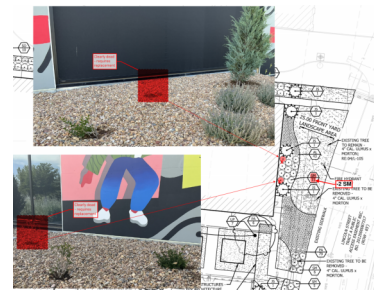
Specifically, we ensure landscape areas are tilled and amended adequately; improving the soil conditions to save water and promote plant growth, the installed irrigation meets the design intent and standards of the industry for installation practices, most importantly to minimize leaks so we conserve water resources, and lastly any plant material brought to the site is healthy, vigorous and adequately sized to ensure the continued health and maintenance of the landscape is possible and ready for when the project is complete and turned over to the owner or HOA.

When the project is complete, we perform one final walk of the entire site to ensure the landscape is ready to turn over to the owner.



What We Do

- Inspections
 - Initial
 - Re-inspection
 - 1, 3, 5 & 10 year review
 - Code enforcement



15

Once all inspections are passed, the contractor is issued a completion letter. This letter informs the property owner of their responsibility within City Code to maintain the landscape and replace any stressed, dead or dying trees upon notification. Therefore, we have instituted a re-inspection process to check that sites continue to be in compliance. This means that we return to each site after one, three, five and ten years to confirm the plant material is properly maintained. If we find the site is perpetually out of compliance, we refer the issue to the Code Compliance department who can impose fines. By keeping properties in check, we ensure the urban tree canopy is maintained and the City continues to shine.

(Amy)

Why We Do It

- Public Health
- Public Safety
- Public Welfare



“As licensed design professionals, landscape architects are legally and ethically bound to protect public health, safety, and welfare.”

Brad McCauley, FASLA, PLA
ASLA President

16

Why is this important? Landscape Architects are legally bound to protect the public's health, safety and welfare.

For example, more trees and plants means fresher air, cleaner ground water, and reduced noise while maintaining the shade canopy reduces the urban heat island effect. All of which benefit public health.

Minimizing human to vehicle interactions by separating them with plant material and creating spaces for stormwater management and flood control sustains a safe environment.

And aesthetically pleasing green spaces encourage active lifestyles and can increase property values.

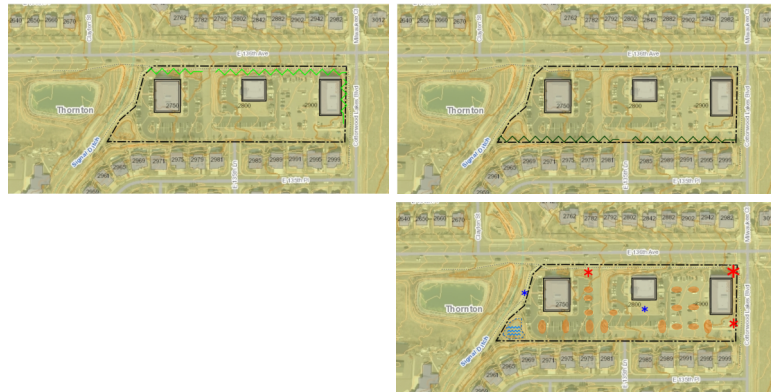
How We Do It



- Cottonwood Lakes Medical Campus

- Buffers

- ROW
 - Streetside
 - Transition
 - Other



17

To help you understand how we conduct our reviews, we're going to use the Cottonwood Lakes Medical Campus at 136th and York for a light Development Plan review. Paul and Darren are distributing a blank Landscape Requirements Table that might help you follow along with this slide.

First, we check the buffers. Buffers are areas that require more intense landscape than the general site. In other words, they require a more intense ratio of Tree Equivalents. Buffers can include street rights-of-way (usually the area from back of curb to back of sidewalk) and streetside buffers (a certain distance from the ROW line into the site). Both are shown here with the light green zig-zag lines on north and east.

Another common buffer is called a transition buffer shown here on the south side of the site with a dark green zig-zag. The transition buffer is a required distance between residential and commercial uses.

Other items that might require additional landscape include monument signs or site entries (shown with red stars), amenity areas (blue stars), detention facilities (lower left), and parking islands (highlighted in orange). As you can see on your Tree Equivalent tables, the remainder of the site (called common area) has a simple calculation for remaining areas not covered by the above specific requirements.

How We Do It

- Cottonwood Lakes Medical Campus

- Buffers
- Species selections
 - Approved plant list
 - Varied opacities / winter interest
 - Varied heights
 - Thorns



18

Next, we will review the plant schedule. Earlier you saw a snip of the City of Thornton approved species list. As stated, we reference that list to make sure no prohibited species are used in the design.

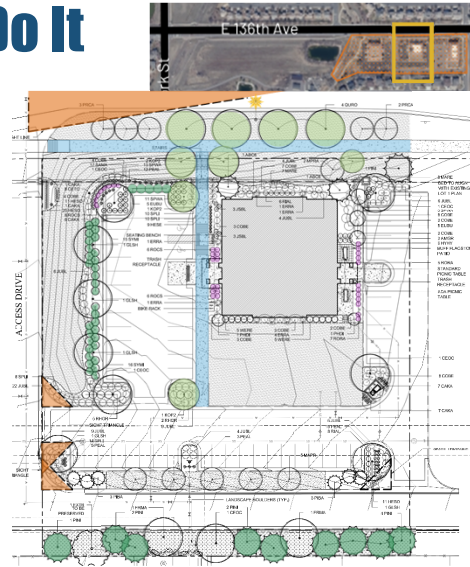
Then we will verify that a mix of deciduous and evergreen species are included to provide different levels of visual screening and year-round interest with a mix of colors and textures.

Not identified on this schedule is a mixture of heights. We want to see varieties under 2 feet for safety, between 3-4 feet for screening, and over 12 feet for shade.

Finally, we want to identify any species that might include thorns that we will need to be aware of for the next step.

How We Do It

- Cottonwood Lakes Medical Campus
 - Buffers
 - Species selections
 - Placement
 - Height
 - Opacity
 - Sight Visibility Triangle / Distance Line (SVT / SDL)
 - Thorny material
 - Lights



19

Zooming in to Lot 2 on the medical Campus, we'll look at plant location or placement. Trees that overhang sidewalks are examined to ensure they can be limbed to a safe height of 8 feet above the walk.

The evergreen shrubs facing roadways and trees in the south transition buffer aid in dissipating lights to off-site users.

Sight Visibility Triangles and Sight Distance Lines require a clear space between 2 feet and 8 feet in height. That means only low ground covers and properly maintained trees can be located in these areas.

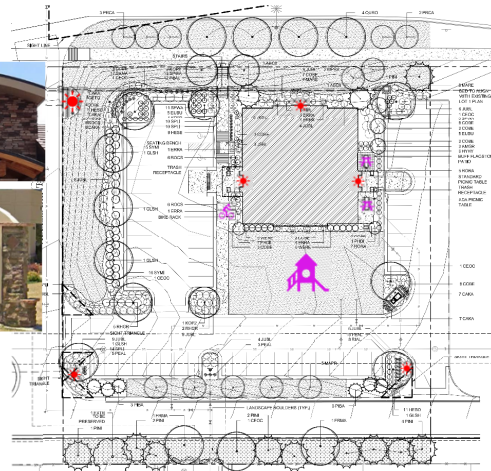
Thorny material should be kept away from busy pedestrian areas. This means we would advise that the material next to the entry ways are moved to less active locations.

We need to make sure street-lights like the one highlighted in the top center of the plan are free and clear of any tree interference. Maintaining a separation of 20 feet between center points of trees and lights keeps this on track.

How We Do It

- Cottonwood Lakes Medical Campus

- Buffers
- Species selections
- Placement
- Signs / Furnishings / Amenities
 - Monument, building, directional
 - Benches, trash, bike racks, etc.



20

And finally, we must know the locations of signs so that the plant material around them will not impede or hide the sign copy for monument, building, and site directionals.

We also verify the proper placement of site furnishings like the playground, bike racks and benches shown here in purple.

Part III: Group Activity



21

Now that you've learned a little bit about what we focus on, it's time for you to give it a try. Paul is going to lead you through this exercise.

Welcome to the Firm

TPA

(Thornton Planning Academy)



Imagine you have just joined a local landscape architecture and planning firm called **TPA** as a **new landscape designer**,



22

Let us all imagine we are recent Landscape Architecture graduates just entering the work force and starting your first job in the industry.

Welcome to your new firm TPA (Thornton planning academy). Congratulations, You have survived the new hire training and now the fun begins with your first assignment

Assignment

TREE EQUIVALENT (T.E.) LANDSCAPE REQUIREMENT TABLE
(All solutions and final T.E. numbers shall be rounded to one decimal point 0.0)

Landscape Areas & Buffers (as applicable)	Option/width/other (if applicable)	Square Feet/Lineal Feet/other	Formula	Total Quantity of T.E. Required
Right-of-Way (ROW) Landscape area (Sec 18-598)		Ln. Ft. (Fig 18-598.1)		
136 th Avenue Cottonwood Lk Blvd.	NA NA		1.5 T.E./50 Ln Ft. 1.5 T.E./50 Ln Ft.	
Street Landscape Buffer (Sec 18-599)		Ln. Ft.		
136 th Avenue Cottonwood Lk Blvd.	Min. Width feet feet		T.E./50 Ln. Ft. T.E./50 Ln. Ft.	
Transition Landscape Area Buffer/Buffer yard Req (Sec 18-600)		Ln. Ft.		
Prop. Line Buffer	Option		T.E./50 Ln. Ft.	
Common Area Landscaping (Sec 18-601)	NA	Sq. Ft.	1 T.E./600 Sq. Ft.	
Parking Lots (Sec 18-602)	Total # of parking stalls provided	Total stalls / 6 x 100 Sq. Ft.	1 T.E. / 75 sf	
Retaining Wall Landscape Buffer (Sec 18-605)	Wall Ht. feet	Ln. Ft.	T.E./100 Ln. Ft.	
Total Required TE				



- Your client is considering a new development project and has asked our team to determine the **required landscape plant material** for the site.

Tools

- Site Plan/layout
- The Classroom activity guide from the prep materials
- Calculator
- Landscape Requirements Table



23

Your client is considering a new commercial development project and has asked our team to determine the **required landscape plant material** for the site. The project is still in the planning stage, so before anyone starts buying trees, you need to determine what the City of Thornton's landscape requirements actually are for this possible site. We want you to work in your table groups to help me determine the total plant material required per Thornton's revised development code.

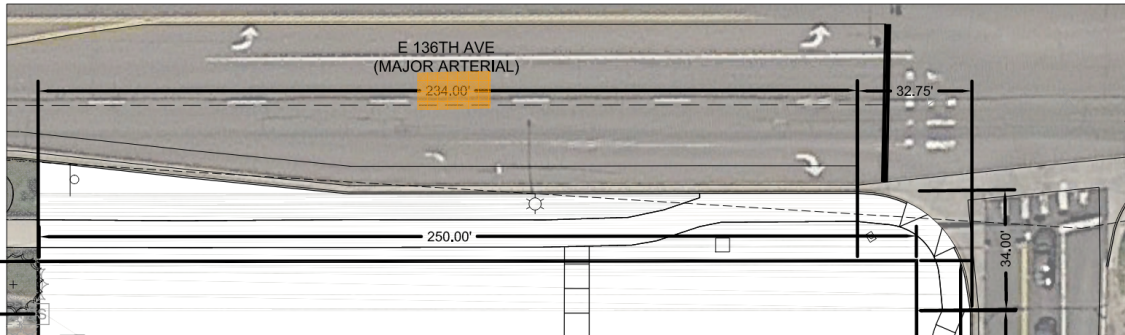
You'll use the following items to complete this assignment:

The site plan already on your table, the Classroom activity guide from our session prep materials, a Calculator, and the Landscape requirements table you just received which you will fill out and present as your final product.

For those of you who are very observant, the site we will be evaluating is Lot 1 of Cottonwood Lakes Medical campus immediately adjacent to the project Amy just discussed.

Objective

Right-of-Way (ROW) Landscape area (Sec 18-598)		Ln. Ft. (Fig 18-598.1)		
136 th Avenue Cottonwood Lk Blvd.	NA NA	<u>234</u>	1.5 T.E./50 Ln Ft. 1.5 T.E./50 Ln Ft.	<u>7.0</u>



24

Let's start at the beginning, the first requirement noted on the table and in your guide is called the Right-of-Way landscape area.

By show of hands, who thinks this site would require a Right-of-Way (ROW) landscape calculation to promote tree lined streets? {YES}

Perfect! Would it be for 136th or both 136th and Cottonwood Lake Blvd? {both}

Lets look at 136th first, I have it blown up on the screens to help.

Based on the figure from the guide shown here. Length A notes we do not count curb returns alleys or driveways. A curb return is the arc created at the intersection of two streets. With that rule in mind, what length would we show in our table? 234' or 234 + 33 for a total of 267 feet?

234'. Let's add it to our table now

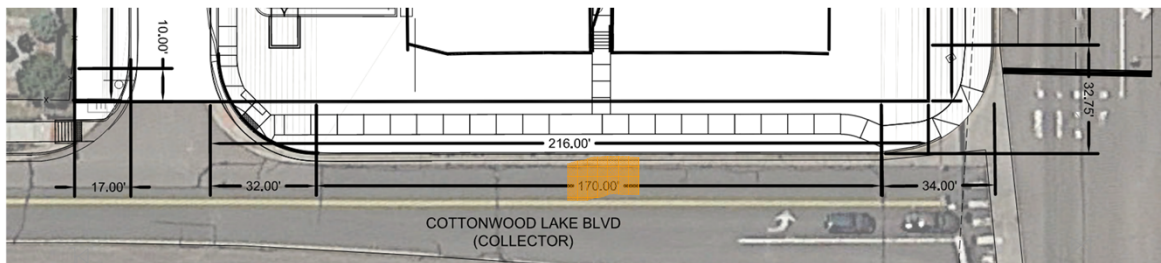
Now can someone divide 234 by 50 = 4.68 and then multiply by 1.5 to determine a total TE required, and that total is...

7.0 TE rounded to 1 decimal point

Now let's look at the other right of way for Cottonwood Lake Blvd.

Objective

Right-of-Way (ROW) Landscape area (Sec 18-598)		Ln. Ft. (Fig 18-598.1)		
136 th Avenue Cottonwood Lk Blvd.	NA NA	<u>234</u> <u>170</u>	1.5 T.E./50 Ln Ft. 1.5 T.E./50 Ln Ft.	<u>7.0</u> <u>5.1</u>

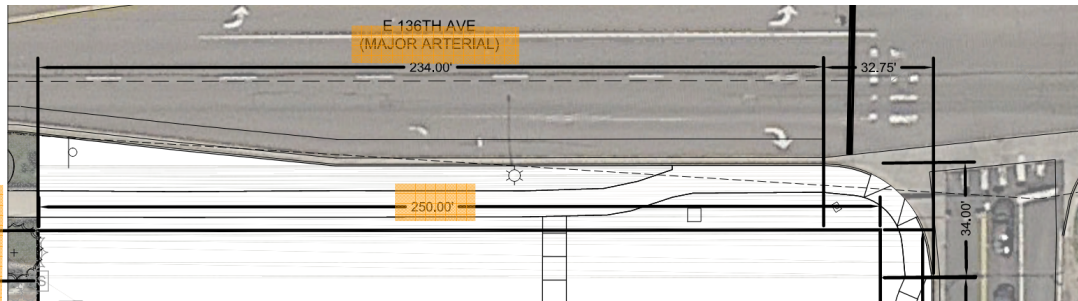


Again, I have it enlarged on the screen, but this is also all on the plan in front of you, it is just rotated to the side here, north is to the right.

But what length should we use on this frontage? 170, 187, or 253 feet? Any guesses? 170 is correct, all the other areas would cause conflicts with intersection visibility triangles for people and vehicles making turning movements. With 170 divided by 50 resulting in 3.4, then multiplied by 1.5 gives us a total of 5.1 Tes.

Objective

Street Landscape Buffer (Sec 18-599)	Min. Width	Ln. Ft.		
136 th Avenue Cottonwood Lk Blvd.	<u>15</u> feet _____ feet	<u>250</u> _____	<u>2</u> T.E./50 Ln. Ft. _____ T.E./50 Ln. Ft.	<u>10.0</u> _____



26

Now moving down the code and chart to the street landscape buffer. Per Amy's lesson and the prep materials, this Section of the code is required along all street right of way lines. Does that section apply to this site? [YES], Correct. Would it be for 136th Ave, Cottonwood Lake Blvd or both frontages? [BOTH] Correct. It would apply to both frontages. I have 136th Ave enlarged so let's start there.

Based on the information provided, what roadway classification is 136th Ave? [Major Arterial] Correct, it is a major arterial. And what buffer depth (the distance into the site from the ROW line to allow for the landscape), is the applicant proposing? [15'] exactly.

Let's enter that in our table. Per the non-residential street buffer requirements table in your guide, is there a major arterial option that meets the 15-foot setback provided? [yes] Major arterial option 1 allows for 15 feet of setback, does not require a fence or other screening, but requires 2 TE per 50 linear feet. Let's enter that in the table too. How long is the frontage? 250' from property line to property line. Running that calculation $250 \div 50 = 5$ times $2 = 10.0$ TEs

Objective

Street Landscape Buffer (Sec 18-599)	Min. Width	Ln. Ft.		
136 th Avenue Cottonwood Lk Blvd.	<u>15</u> feet <u>10</u> feet	<u>250</u> <u>233</u>	<u>2</u> T.E./50 Ln. Ft. <u>1.5</u> T.E./50 Ln. Ft.	<u>10.0</u> <u>7.0</u>

COTTONWOOD LAKE BLVD
(COLLECTOR)

THORNTON
PLANNING ACADEMY

27

Now running that calculation $233 \text{ feet} / 50$ for a result of 4.7 times 1.5 equaling 7.0 TEs required in this buffer.

Objective

Transition Landscape Area Buffer/Buffer yard Req (Sec 18-600)		Ln. Ft.		
<u>South</u> Prop. Line Buffer	Option <u>3</u>	<u>250</u>	<u>2</u> T.E./50 Ln. Ft.	<u>10.0</u>



The next area Amy noted on the site next door was to help ensure new development is compatible with existing development, which was extremely important here as there is existing single family on the adjacent property. Does anyone remember for the prep materials the name of that buffer requirement? [Transition Landscape Area buffer] As Amy also noted in the lesson, we know the Transition Landscape area buffer is required, due to the single-family adjacent use and specifically, to help mitigate the commercial and residential uses.

Zooming in on this area or looking at your plan, does anyone see any information we may need to complete the table? Like what property line is this required on; N/E/S or W? [South]

Now looking at the setback, does there appear to be a setback provided? Yes, it appears there is a 15' setback provided.

Based on the table in the guide, is there an option that requires a 15' setback? Correct option 3 looks like it will work, the required fence is existing on the rear lot lines of the residential homes, and it requires 2 TE per 50 linear feet. Let's add those to our chart Anyone want to guess the length for the calculation? [250] correct 250 feet was shown. Running that calculation results in $250 / 50 = 5 \times 2$ for a total of 10.0 TEs.

Objective

Common Area Landscaping (Sec 18-601)	NA	Sq. Ft. <u>19,492</u>	1 T.E./600 Sq. Ft.	<u>32.5</u>
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		REQUIRED	PROVIDED
OFFSTREET PARKING	HANDICAP	2	5
	STANDARD	45	69
LANDSCAPE AREA**		19,418 SF (30%)	19,492 SF* (30.1%)

*LOT 1 ONLY

**DOES NOT INCLUDE SIDEWALKS OR 2' PARKING OVERHANG



29

Now that the perimeter requirements are covered. The City has some more general requirements based on the site area and proposed parking.

The first of those we need to add is the Common area landscaping. This is based on the overall landscape/permeable area provided. That area can be found on the Site Data Chart.

Can anyone find that area noted? correct it is at the bottom of the chart and is noted as 19,492 square feet.

Adding that to our table in the box provided; this now can be put through the formula noted of 1 TE required per 600 sf of common area provided. $19,492 / 600$ ends up with a result of 32.5 TEs based on the remaining landscape area.

Objective

Parking Lots (Sec 18-602)	Total # of parking stalls provided <u>74</u>	Total stalls / 6 x 100 Sq. Ft. <u>1,233</u>	1 T.E. / 75 sf	<u>16.4</u>
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		REQUIRED	PROVIDED
OFFSTREET PARKING	HANDICAP	2	5
	STANDARD	45	69
LANDSCAPE AREA**		19,418 SF (30%)	19,492 SF* (30.1%)

*LOT 1 ONLY

**DOES NOT INCLUDE SIDEWALKS OR 2' PARKING OVERHANG



30

The other general calculation we need to figure out is per the code to provide heat island relief in the parking lots. This is based on the total number of parking stalls proposed.

Can anyone find that number on the chart they provided us? correct they are proposing 74 parking stalls for this facility, please add that to your chart.

With that information, the required landscape area can be determined by dividing the proposed parking stalls by 6, then multiplying that by 100 sf.

$74 / 6 = 12.333$ times 100 results in 1,233 sf of area required. To determine how many plants that requires, we need to divide that by 75.

Any guesses? correct 16.4 TEs would be added to cover the parking lot areas

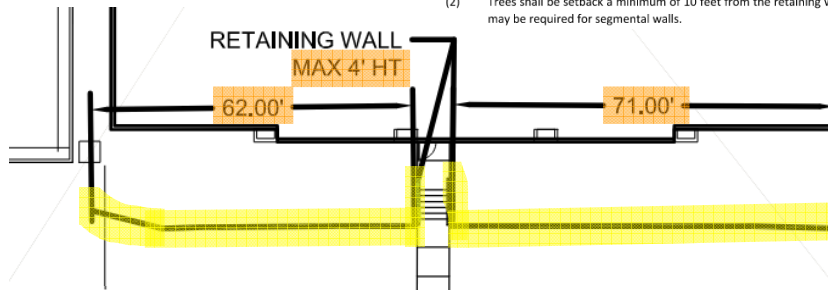
Objective

Retaining Wall Landscape Buffer (Sec 18-605)	Wall Ht.	Ln. Ft.		
	4.0 feet	133	3 T.E./100 Ln. Ft.	4.0

Table 18-605.1. Retaining wall and wall system landscape.

Wall Height	Required TE per 100 Linear Feet
4-7.99 feet	Foreground and Terrace (if provided): 3 TE's
8 feet and above	Foreground: 3 TE's
8 feet and above	Terrace: 3 TE's, per terrace

(2) Trees shall be setback a minimum of 10 feet from the retaining wall or wall system. Additional distance may be required for segmental walls.



The last areas are more site specific. These are for detention or other specific elements that may or may not exist. The one for this site is due to the proposed retaining wall along Cottonwood Lake Blvd.

Based on the code sections in your guide, is there supplemental landscape required for the retaining wall proposed? Yes, based on this wall being 4' in height, the foreground and terrace should receive 3 TE's per 100 linear feet.

Then what is the length of the wall? $13' + 54' + 66' = 133'$ in length.

Please add that and complete the formula $133 / 100 = 1.33 \times 3 = 4.0$ TE's

Objective

Right-of-Way (ROW) Landscape area (Sec 18-598)		Ln. Ft. (Fig 18-598.1)		
136 th Avenue Cottonwood Lk Blvd.	NA NA	<u>234</u> <u>170</u>	1.5 T.E./50 Ln Ft. 1.5 T.E./50 Ln Ft.	<u>7.0</u> <u>5.1</u>
Street Landscape Buffer (Sec 18-599)	Min. Width	Ln. Ft.		
136 th Avenue Cottonwood Lk Blvd.	<u>15</u> feet <u>10</u> feet	<u>250</u> <u>233</u>	<u>2</u> T.E./50 Ln. Ft. <u>1.5</u> T.E./50 Ln. Ft.	<u>10.0</u> <u>7.0</u>
Transition Landscape Area Buffer/Buffer yard Req (Sec 18-600)		Ln. Ft.		
<u>South</u> Prop. Line Buffer	Option <u>3</u>	<u>250</u>	<u>2</u> T.E./50 Ln. Ft.	<u>10.0</u>
Common Area Landscaping (Sec 18-601)	NA	Sq. Ft. <u>19,492</u>	1 T.E./600 Sq. Ft.	<u>32.5</u>
Parking Lots (Sec 18-602)	Total # of parking stalls provided <u>74</u>	Total stalls / 6 x 100 Sq. Ft. <u>1,233</u>	1 T.E. / 75 sf	<u>16.4</u>
Retaining Wall Landscape Buffer (Sec 18-605)	Wall Ht. <u>4</u> feet	Ln. Ft. <u>133</u>	<u>3</u> T.E./100 Ln. Ft.	<u>4.0</u>
			Total Required TE	92.0

Now that we have all the code required areas complete, let's find our total!
92.0 TE total required for this site.

Part IV: Lessons Learned



33

Thank you for all your help and congratulations on becoming landscape designers.

What We Learned

- Take-away

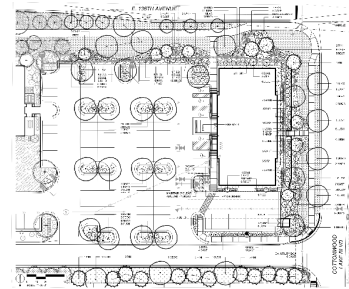
- There's a **LOT** of math in Landscape
- Applicant's design provided 93 TE
- There are many ways the City of Thornton ensures landscape is provided throughout our City.
- Landscapes can still be water conserving if you follow the 7 Xeriscape principles



WHAT HAPPENED TO THE
PLANT IN MATH CLASS?



IT GREW SQUARE ROOTS!



34

So, what did we learn from this exercise?

There's a LOT of counting and calculations going on to make something pretty! In all seriousness, despite applying the same calculations to every project, each site is unique with its own challenges and opportunities. These calculations provide a designer freedom to select the appropriate plant material for the situation.

This is how the designer chose to implement the required TE's on our site. They actually exceed the requirements with a total of 93 TE!

What you just experienced is only one of the many ways LARI ensures quality landscape is provided throughout our City. Remember, our objective is to assist the applicant and team; ensure the health, safety, and welfare of both site users and City residents; and ensure sites remain aesthetically pleasing.

And finally, that landscapes can be water conserving, even if they need supplemental water as long as you follow the 7 xeriscape principles.

What We Learned

- Take-away
- Questions
 - Class material only



questions regarding the course material



Thank you!

Personal
questions
following next
lesson



THORNTON
PLANNING ACADEMY

36

Thanks for attending tonight's session on landscape.