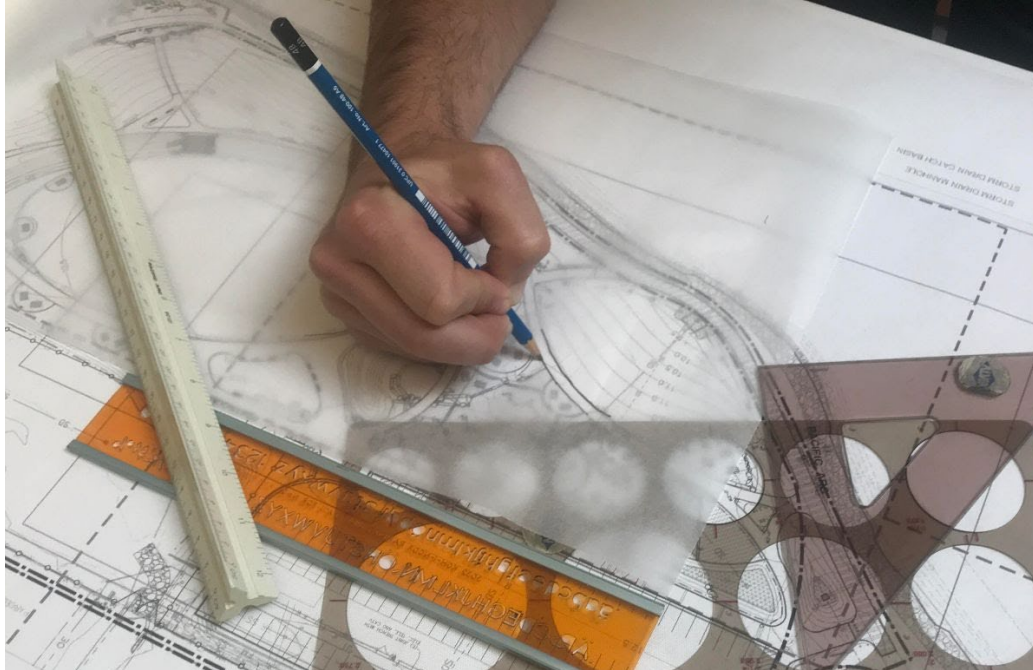


LARE 2023 Blueprint Review

Planning & Design



ASLA
CALIFORNIA
SOUTHERN

Sarah Gronquist, ASLA
SGLA Technical Training
www.SGLATECHNICALTRAINING.COM



HKVA



HIRSCH & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE & PLANNING



PAMELA STUDIOS
LANDSCAPE ARCHITECTURE

Introductions

Student Introductions

In the chat, share a bit about yourself, where you practice currently, and your professional experience. We benefit greatly from the diverse backgrounds that candidates bring to the classroom.

Feedback is Encouraged

We would love to hear from you about your general experience with the exam. While discussing LARE content is prohibited, we welcome your questions about the topics listed in CLARB's LARE Orientation Guide, or any other suggestions as to how this course could be improved to better serve the needs of future candidates.

Introductions

Your Instructor: Sarah Gronquist.

I have been licensed as a Landscape Architect in California since 2002. I began co-teaching LARE Preparatory Courses with Ray Freeman in 2006.

I have worked in both the public and private sectors in the Bay Area since 1997. I am currently a Senior Landscape Architect at Thuilot Associates, a design firm in Berkeley, CA. My project work is mostly commercial and market rate housing renovation in Silicon Valley.

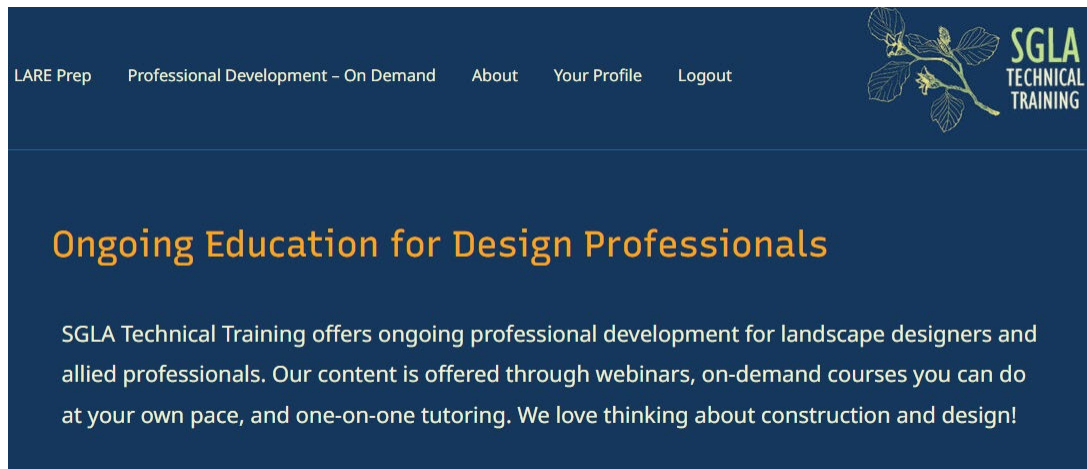
Visit our website:

www.SGLATEchnicalTraining.com

www.SarahGronquist.com

My e-mail address is:

sarah@sarahgronquist.com.



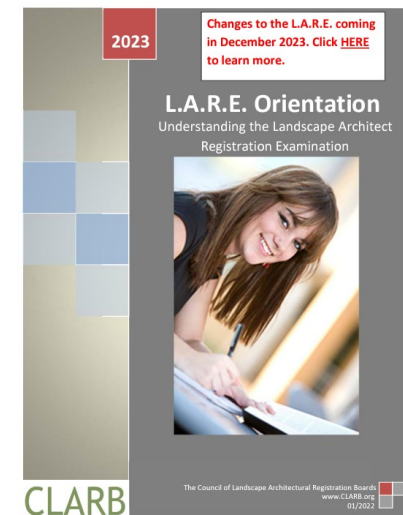
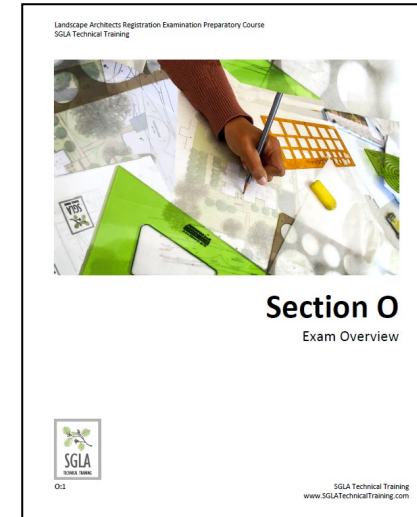
The screenshot shows the top navigation bar of the SGLA Technical Training website. The navigation menu includes links for "LARE Prep", "Professional Development - On Demand", "About", "Your Profile", and "Logout". The SGLA Technical Training logo, featuring a stylized plant, is in the top right corner. Below the navigation bar, the main heading reads "Ongoing Education for Design Professionals" in orange. The main text below the heading states: "SGLA Technical Training offers ongoing professional development for landscape designers and allied professionals. Our content is offered through webinars, on-demand courses you can do at your own pace, and one-on-one tutoring. We love thinking about construction and design!"

Goals of this Workshop

This short workshop has three parts, with a Q&A at the end.

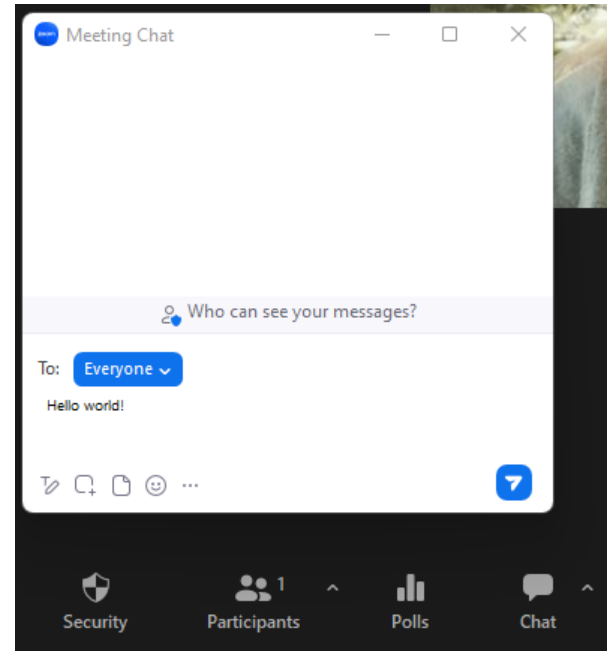
- We'll review general information about the LARE, tips for studying and taking the exam, and CLARB's topic lists. You can follow along in our Section 0 or refer to CLARB's Orientation Guide for more information.
- Many people feel pretty rusty doing grading problems! I'll do a quick recap of grading basics and how to build your speed and confidence most effectively.
- We'll use the rest of the limited time we have to review some of the most important GDSW topics and where you can find the best resources to study them.

While there's no way we can cover everything in just a few hours, I hope this overview helps you in structuring your main study effort to follow. We'll set up a spreadsheet for people to connect and form study groups.



Online etiquette:

- Please keep yourself muted most of the time, ie all the time that you are not actively asking a question.
- I love to see people engaged in the Chat window! Feel free to type in a question without unmuting or share resources or tips/tricks that you have discovered. I will keep an eye on that conversation as I go.
- We'll have a 15 minute Q&A at the end of today's session and I'll answer as many questions as possible. You can always follow up with me via email.



LARE Planning and Design

Part 1: LARE Overview and test taking skills

Structure of the Test

- LARE content is based on a 'job analysis' survey every 5-7 years. The 2023 Blueprint launched in December, 2023.
- Based on this survey, KSAs are identified (knowledge, skills, abilities) and become the new specs. The exam is then reformatted and reorganized.
- Between major reorganizations, new questions are tested as unscored questions on the LARE.



Planning & Design – Updated 09.2023

85 scored items & 10 [pretest](#) items consisting of [multiple-choice](#), [multiple-response](#) and advanced [item type](#) questions; 3 ½ hours seat time, 3 hours for exam

Stewardship and Design Principles: 17%	Master Planning: 33%	Schematic Design: 28%	Design Development: 22%
<ul style="list-style-type: none"> • Plan for Sustainability • Plan for Climate Resiliency • Plan for Environmental and Social Equity • Recognize Historical and Cultural Significance 	<ul style="list-style-type: none"> • Formulate Planning Goals (e.g., vision) • Prepare Project Program (including budget) • Synthesize Site Analysis • Establish Opportunities and Constraints • Determine Appropriate Land Use • Develop Master Plan (e.g., conceptual plans, planning high level program elements, community planning, determine planning strategies) • Evaluate Planning Scenarios • Produce Planning Documents (e.g., land use, parks, open space, regional, historic, site master, corridor, blueways, greenways) • Establish Design Guidelines • Develop Phasing Plan • Communicate Planning Outcomes 	<ul style="list-style-type: none"> • Develop Design Intent • Create the Basis for Design • Prepare Functional Diagram • Produce Conceptual Diagram • Develop Schematic Designs • Evaluate Design Alternatives • Refine Selected Alternatives • Produce Graphics, Illustrations, and Diagrams 	<ul style="list-style-type: none"> • Refine Design Elements (e.g., material, circulation, lighting, utilities, planting) • Determine Maintenance Implications • Collaborate on the Design of Irrigation Systems (e.g., water conservation, sustainability, low water, gray water) • Identify Required Approvals (e.g., regulatory permitting) • Develop Opinion of Probable Costs (e.g., schematic, design development, revisions) • Evaluate Value Engineering Alternatives • Demonstrate Understanding of Legal Liabilities

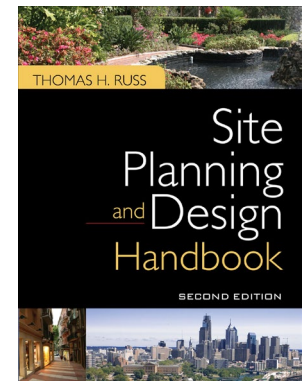
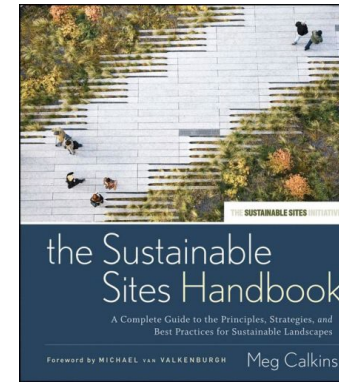
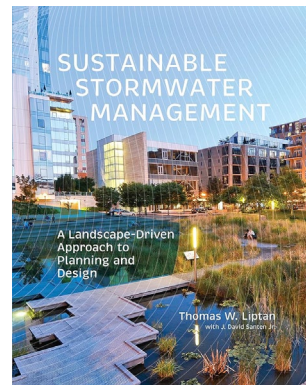
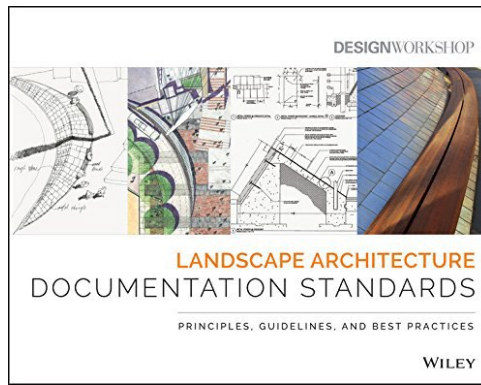
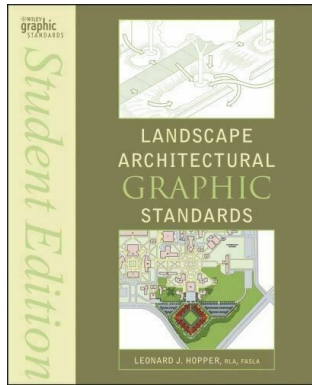
CLARB Recommended Reading

Planning & Design



- **Landscape Architectural Graphic Standards** - Student Version / Hopper
- **Landscape Architecture Documentation Standards** / Design Workshop
- **Sustainable Stormwater Management** / Liptan and Stanten
- **Sustainable Sites Handbook** / Calkin
- **Site Planning and Design Handbook**, 2nd edition / Russ

The reference material list has been prepared by the CLARB Examination Committee. While the Committee believes that mastery of the topics dealt with in the volumes on this list will be of assistance to you in preparing for the L.A.R.E., no representation is made that mastery of the topics dealt with by these volumes will ensure a passing grade on the examination, and no representation is made that the examination questions will be limited in scope to topics dealt with by the volumes contained on this list. Candidates are not expected to review all of the books on this list, as subject areas may be covered by several references. CLARB in no way guarantees that the contents of these references are accurate. Last modified September 14, 2023.



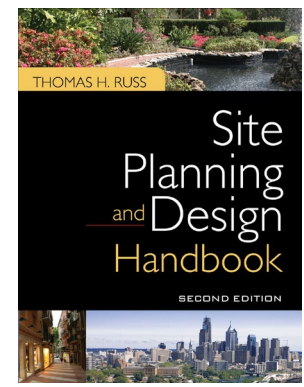
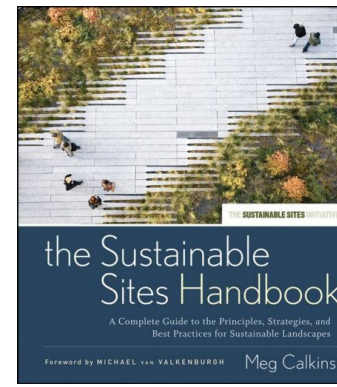
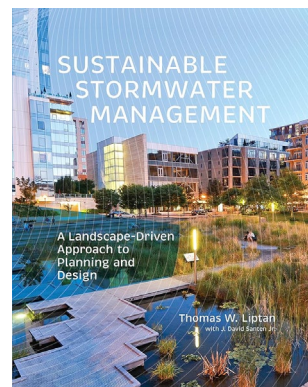
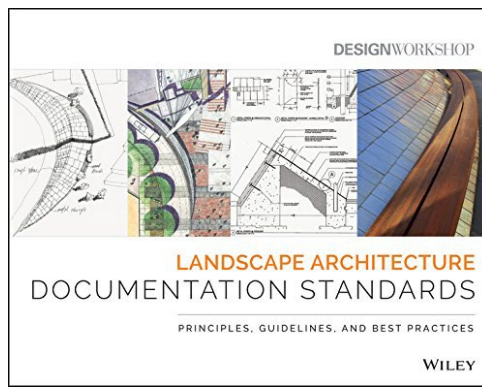
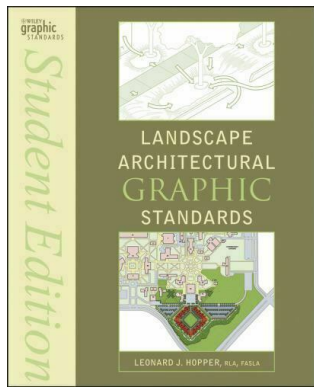
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Other recommended resources

CLARB's Practice Exams. Released in October 2023, 50 questions for each section of the LARE. \$25/ea, you will have access for three attempts within a year. (No access for test prep folks, alas)

I recommend you try them about halfway through your study.

LAREprep and **Pass the LARE** are private companies that offers online practice tests that are similar in format to the 2023 testing format. They cost between \$22-28 per test.

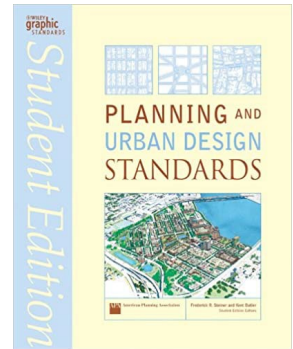
LARE Google Group Public discussion group /community of LARE candidates.

<http://groups.google.com/group/lare-exam?lnk=>

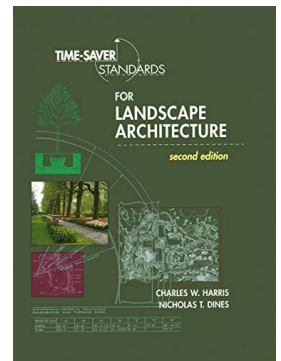
- Online flashcard apps like **Quizlet** and **Anki**. Fun and extremely useful for building vocabulary, especially for ESL folks.
- Your classmates in this course. If you do not want your contact info shared, let me know ASAP.

Other books that might help you.

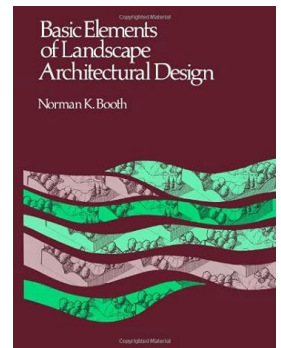
Planning and Urban Design Standards for early-stage planning topics and urban planning design standards. Are you unfamiliar with city planning, permit review, and building codes? Grab this book. Super useful.



Time Saver Standards, Harris/Dines for spatial standards



Basic Elements of Landscape Architectural Design by Norman Booth is one of the only books that talks about pure design principals. Out of print, not required, but if you find a copy, check it out.



Knowledge vs Applied KSAs

KNOWLEDGE questions test facts you should know by heart and be able to answer without context.

- Identify a soil type using the USDA Soil Pyramid graph
- Identify the type of planning regulation that controls building setbacks
- Know what metes and bounds are used for in property recording
- Be able to identify the proper sequence of stages in the design process, or know what tasks typically occur within those stages

Prepare for these with reading and using flash cards to build vocabulary, *especially ESL candidates.*

APPLIED questions assume you have knowledge, and test your ability to use it to solve a problem – often with graphic AIT questions.

- Given a site plan with soil boring exhibits, choose among several options for the best layout of program elements
- Given a site plan, calculate the floor area ratio (FAR)
- Convert a bearing to an azimuth
- Select an appropriate building material given a program and a budget

Prepare for these by practicing vignettes!
Devote regular time to building this skill.

Explicit vs Implicit Requirements

Explicit Requirements are given in the question. Answering them is relatively straightforward.

- Do a careful reading of each question and the available answers.
- You are expected to select the most appropriate answer from those available.
- Note that you may not believe there is a “right” answer. Look for clues in the question to narrow down the options.

Implicit Requirements are things you would normally be expected to do during the practice of Landscape Architecture. There are **four** to know:

- Protecting the Health Safety and Welfare of the Public (HSW)
- Complying with Regulations & Codes
- Minimizing Adverse Environmental Impacts
- Developing Sites and Using Materials Efficiently in your Designs

Do not add other considerations to LARE questions! Take questions at face value and keep it simple. You may need to *forget some of what you know*.

POSSIBLE QUESTION FORMATS

Formats you know from Sections 1 and 2:

Standard Multiple Choice (Select one answer)

Multiple Response (Select TWO OR MORE answers)

“NEVER JUST ONE, NEVER ALL” per CLARB, 2020

These may include:

- Calculations
- Use of Tables or Charts
- Graphics
- Photograph Evaluation Format

Unique to Sections 3 and 4:

Advanced Item Type Questions (AITs)

- With Exhibits
- Topo Analysis
- Drag and Drop
- Fill In the Box (vocabulary)

MULTIPLE RESPONSE

In 2020, CLARB clarified the rules for ‘select all that apply’ question types. The answer set “will always be two or more and never all of them”. You will not find this to be true on all practice tests. On the actual LARE, you should use this fact to make good, educated guesses.

Which of the following materials are appropriate paving surfaces for an accessible route? Select all that apply.

- A. Concrete with a medium broom finish
- B. Stabilized path fines
- C. Engineered wood fiber (EWF)
- D. Irrigated turf
- E. Asphalt

CLARB Demo Exam

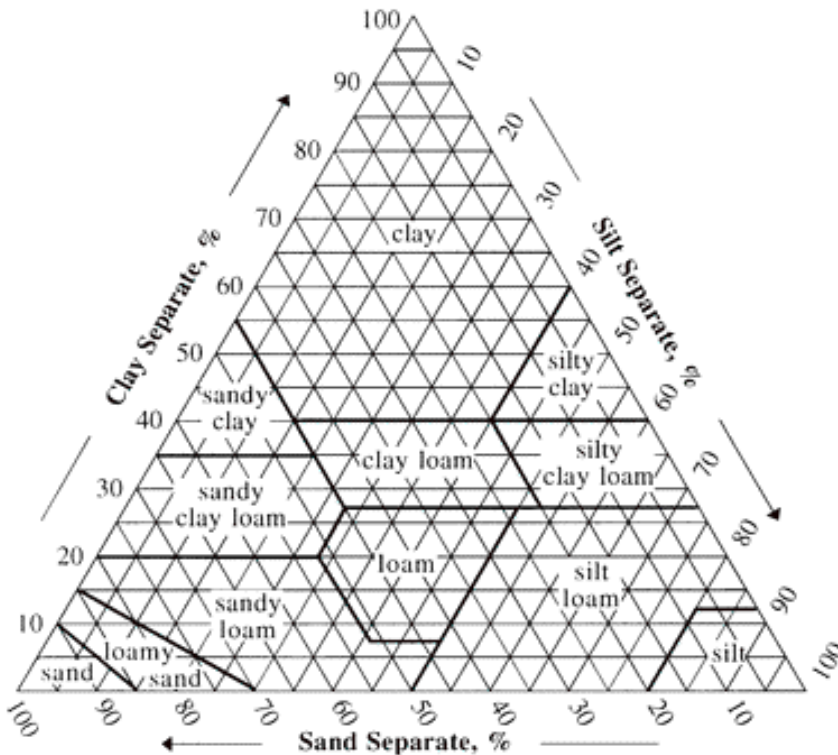
Portal User

[Comments](#) [Calculator](#) [Whiteboard](#)

Tools and/or resources available during the exam include which of the following? *Choose all that apply.*

- exhibits
- built in calculator
- built in whiteboard
- This answer choice is incorrect because the answer is never ALL on multiple response items.

Use of Tables or Charts



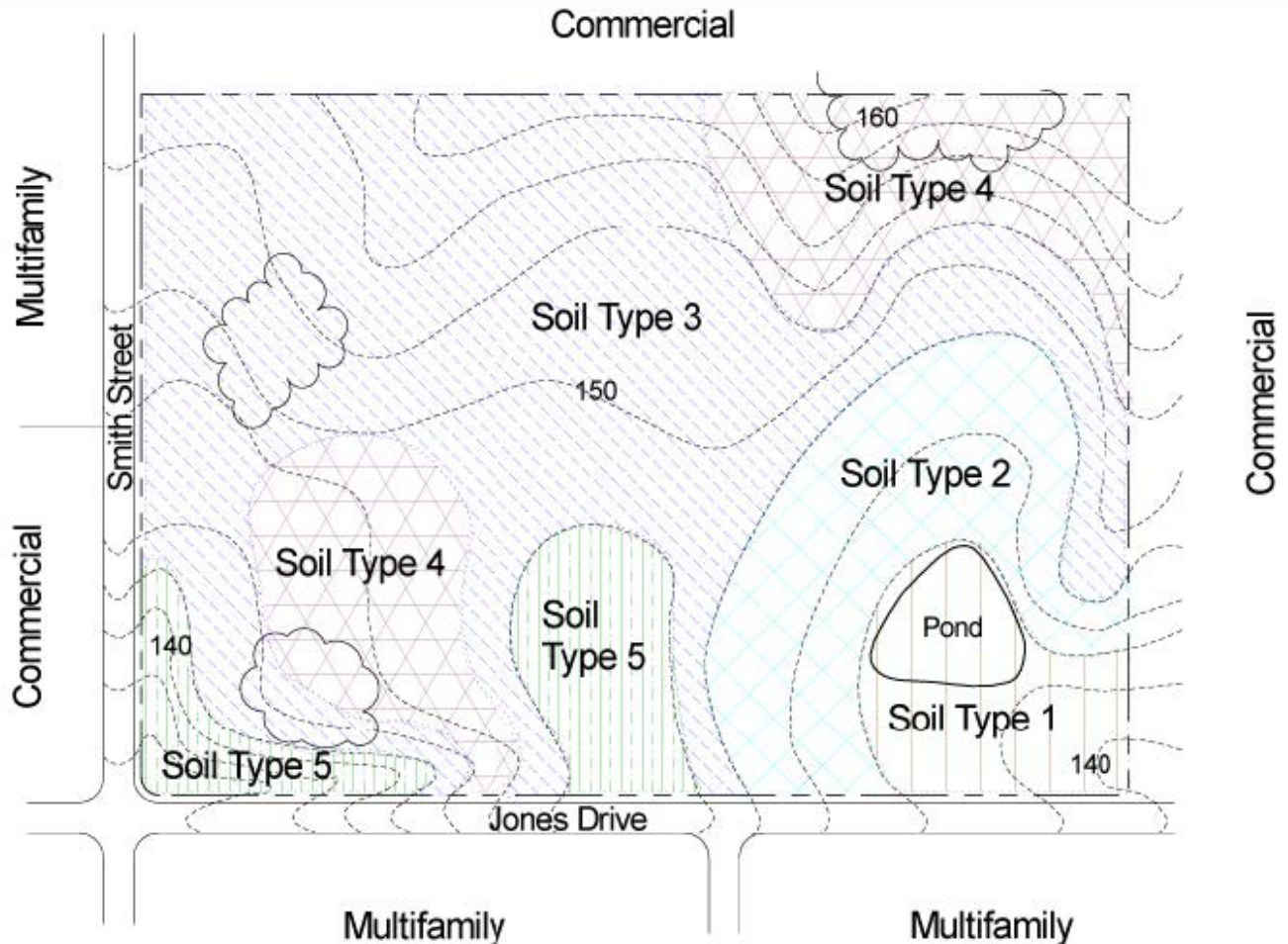
8. Using the graphic, what is the texture of a soil having 40% sand, 30% clay and 30% silt?
- A. Clay
 - B. Clay Loam
 - C. Loam
 - D. Silty Clay Loam

AIT-Multiple Exhibits

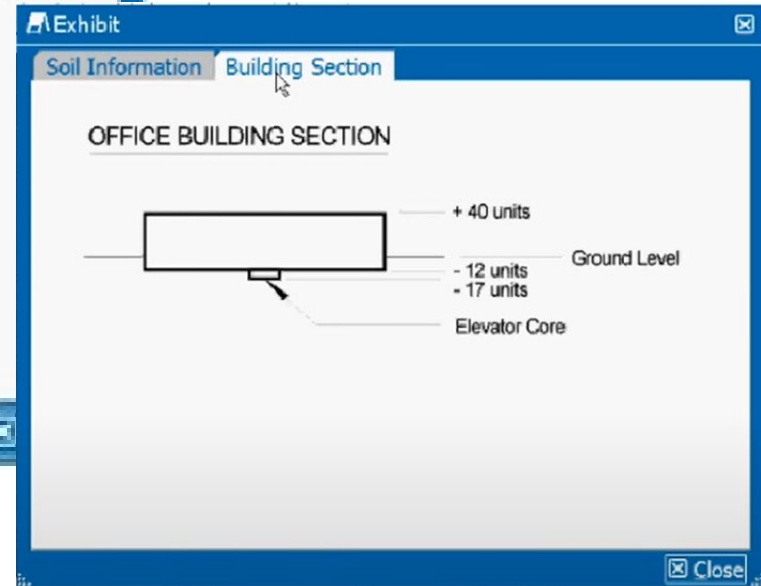
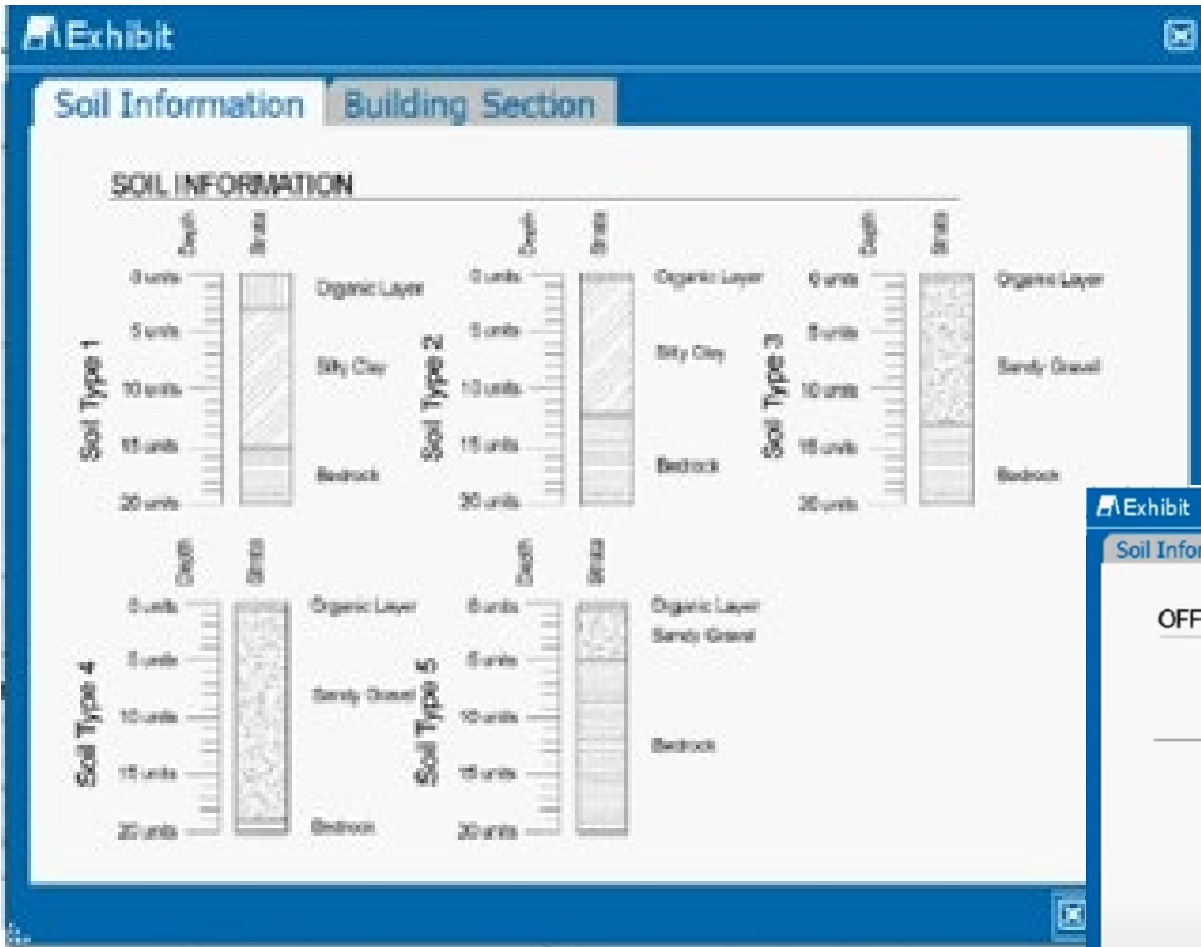
SHOW SOILS

SHOW BLDG SECTION

Office Building Plan



AIT - Multiple Exhibits



Screen captures from CLARB's video 'An Inside Look at Sections 3 and 4', 2012

Refining the LARE's format

CLARB continues to tweak the exam format so it is mostly the same whether you are at a test center or at home. This creates a fairer exam.

In all cases, you are allowed to take a break if you need it, but it will cost you. You will not be able to go back and revisit questions after the break, and the clock keeps running during the break

****(Try to avoid taking a break)****

AT HOME: You will need to use the digital whiteboard and calculator. Practice!

AT TESTING CENTERS: You will be given a handheld whiteboard and calculator on request, as of January 2024. yay!!

CLARB's new Demo Exam allows you to practice how these work.

<https://portal-v5.examstudio.com/PLExam.aspx>



CLARB's Demo Exam

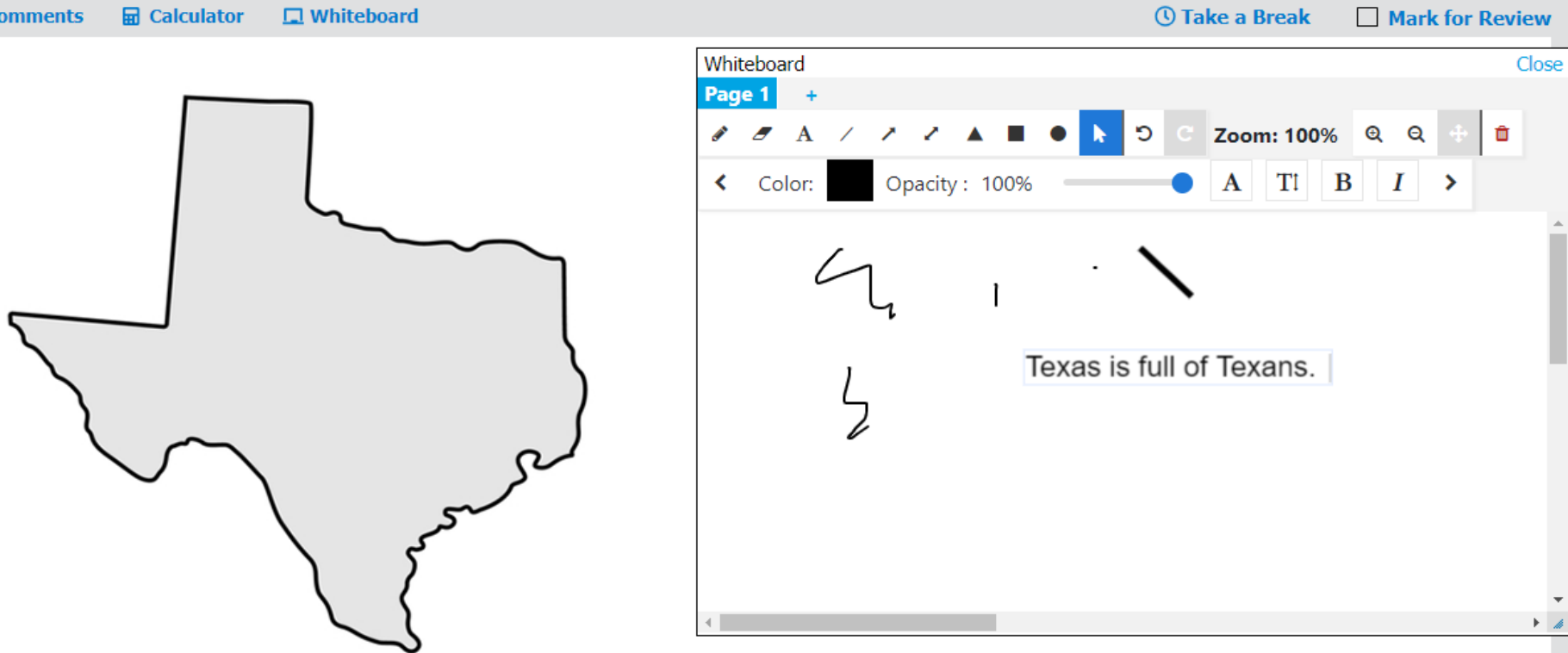
On CLARB's website you can try a demonstration test that demonstrates the features of the exam. This is a great practice tool!

****PRACTICE WITH THE DEMO TOOLS!!!****

The screenshot shows the CLARB website interface. At the top, there is a navigation menu with links for 'About CLARB', 'FAQ', 'Contact Us', 'Sign In', and 'Create New User'. A search bar is located on the right side of the page. The main heading is 'Prepare for the Exam', with a breadcrumb trail: 'Home > Take the Exam > Prepare for the Exam'. Below the heading, there is a paragraph of text: 'CLARB offers a number of resources—many of which are FREE—to help candidates better understand the content, format and delivery for each section of the Landscape Architect Registration Examination. These resources are not intended to teach or be educational tools; they are designed to help candidates develop realistic expectations for the exam experience. Click on the images to view the resources.' Below this text is a large orange banner with a play button icon and the following text: 'NEW: Practice Exams: 50-item practice tests for each section', 'CLARB's Demo Exam: practice using the updated (January 2022) exam functionality', and 'Video Tutorial: walk through CLARB's Demo Exam'. The left sidebar of the website is partially visible, showing icons for 'Take Exam', 'Apply', 'Measure', 'Manage', 'Career', and 'Success'.

Onboard Whiteboard

Open up the CLARB Demo Exam when you are doing practice exams and get used to using the onboard tools if you intend to take your exam with the Remote Proctor option.



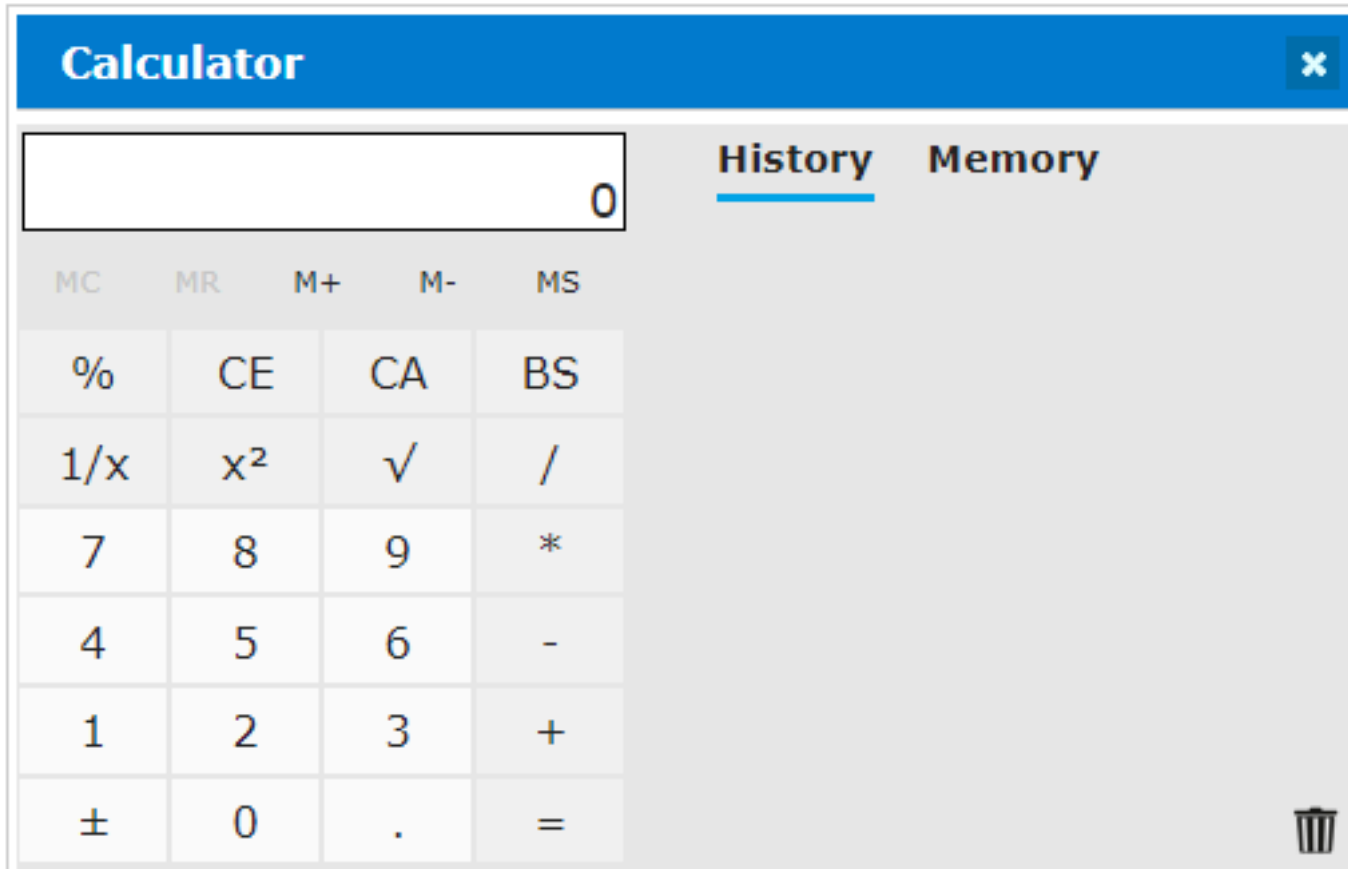
The screenshot displays a software interface with a blue header bar. On the left, there are navigation tabs for 'Comments', 'Calculator', and 'Whiteboard'. On the right, there are buttons for 'Take a Break' and 'Mark for Review'. The main area is split into two parts. On the left is a large, light gray map of the state of Texas with a black outline. On the right is a 'Whiteboard' window titled 'Whiteboard' with a 'Close' button. The whiteboard has a toolbar with various drawing tools (pen, eraser, highlighter, shapes, lasso) and a 'Zoom: 100%' indicator. Below the toolbar, there are options for 'Color' (set to black) and 'Opacity: 100%'. The whiteboard content includes several hand-drawn squiggly lines and a text box containing the sentence 'Texas is full of Texans.'

Which U.S. state is depicted in the graphic above?

- Hawaii
- Florida
- California
- Texas, and I am going to use the whiteboard feature now to make notes about things I know about Texas (*Click on Whiteboard to open*)

Onboard Calculator

You will no longer be allowed to use a hand-held calculator at home. Practice with your computer's calculator as much as you can before test day.



Test Center vs Home?

- In January 2022, CLARB announced that a new testing partner will be administering the LARE, PSI.
- You can now take any section from home, or go to a test center.
- If you need extra time for your exam due to a learning disability, you can apply for that for Remote or Test Center exams. For other accommodations, you must go to a test center.

Pros

Cons

	Pros	Cons
Remote Proctor	No travel stress Quieter!	Need to do more tech legwork/prep Risk of ID or internet failure Must use onboard tools
PSI Test Center	No setup/registration stress Lower chance of technical glitches Can request physical tools	Proctors may not do a good job of protecting a quiet environment Can't bring much stuff

PSI Test Center tips

Be sure you have 2-3 forms of ID and as little else as possible. The new PSI test centers may not have lockers. You may be allowed to put a few personal items in a plastic bag that can be hung over the back of your chair.

Be prepared for computer-related glitches. If there is a problem with your computer, do not begin until the test center resolves the issue.

The updated Candidate Orientation Book also recommends that if you have any problems at your test center on the day of the exam that the proctors are not resolving to your satisfaction, you should contact CLARB immediately **before you leave the test center**. They are actively working to fix these problems.

It can't hurt to have CLARB's contact info loaded in your phone. They are open 9-5 Eastern Standard time.

CLARB Main Phone (in Virginia): 1 (571) 432-0332



Remote Proctor Tips

Many people have reported that taking the exam from home or from their office worked great for them. We have also collected some potential issues to be prepared for. Keep an eye on the LARE Google Group.

- The proctor will examine your ID. Be sure you have a new, autofocus webcam.
- The proctor will examine the room you are in. You are not allowed to have anything on the walls. Some candidates have solved this problem by just hanging sheets or curtains to cover their walls, bookshelves, etc.
- Allow 45-60 minutes for pre-exam activity with your proctor. Some candidates also report waiting a long time for the actual exam to begin.
- If you work for a government agency or a large firm, you may encounter firewall problems. In order to begin the exam, all other programs must be turned off. Check with CLARB and your IT dept and use CLARB's dry run.
- Think of anything that might distract or interrupt you and plan ahead. Send your kids/dogs away for the day. Put up a 'Do Not Disturb' sign. Close window shades so that the sun won't come around during your exam period.
- The proctor will be watching you throughout the exam. You are not allowed to stare into space or talk to yourself – after a warning, they may kick you out of the exam.

Test Taking Tips for All Sections

- Go through the entire section quickly.
(DO NOT TAKE A BREAK if you can avoid it!!!)
- Answer those questions where you are sure of the answers. Use your whiteboard to make quick notes on the ones you are not sure of.
- Then go through again, answering questions where you have been able to reduce the answer to one of two possibilities.
- Finally, answer the remaining questions.
- Answer all of the questions. There is no penalty for a wrong guess
- LARE qualifier words – WATCH OUT for these, they change the meaning of the entire question or answer and are a yellow flag:

ALL

NONE

ALWAYS

NEVER

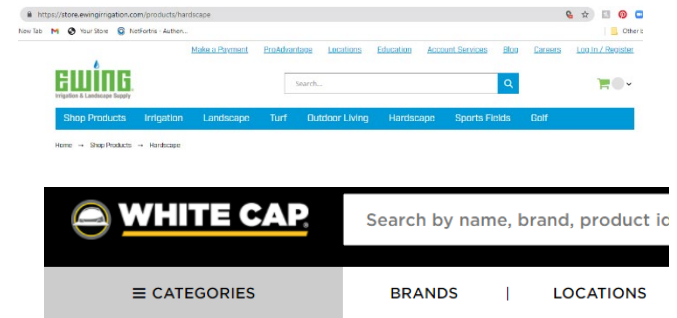
SHALL

MUST

Angle Iron
Asphalt (Bituminous Concrete)
Brass Pipe
Brick
Butt Hinge
Caulk
Ceramic Tile
Concrete
Concrete Masonry Units (CMU)
Concrete Pavers
Copper Pipe
Epoxy Sealer
Expansion Joint Material
Filter Fabric
Flagstone
Flashing
Flat Steel
Floor Drain
Foam Insulation
Galvanized Electrical Conduit
Gate Latch Assembly
Geotextile grid
Granite
Gravel (crushed stone, granular material, aggregate, pea gravel)
Grout (non-shrink)

Joint Sealing Compound
Mastic
Metal Sleeve
Mortar
Mulch
Perforated PVC Pipe
Polyethylene Pipe
Porcelain Enamel
Portland Cement
Prefabricated Wall Drain
PVC Pipe
Sand
Soil
Soil Cement
Steel Tubing - Round
Steel Tubing - Square
Steel Washers
Stone
Stone Dust (Fines)
Strap Hinge
Stucco
Tar
Wall Reinforcement
Waterproofing (Bituminous)
Waterstop
Wood (Lumber)
Wrought Iron

CLARB Materials List



- Prepare Preliminary Quantities and Cost Estimate
- Compile Materials Sample Board
- Identify and Develop Performance Metrics

Anxiety

Many LARE candidates struggle with anxiety. Here are some ideas – we welcome your tips as well.

- **Find low-stakes versions of the situation you are dreading and get comfortable in them.** Take your laptop to a public library, and work practice problems on the computer screen, with its built-in calculator and a paper notepad.
- Before the exam, find ways to **regularly visualize** yourself being in the exam but being calm and feeling well-prepared.
- Anxiety is a form of hyperattention. Not all attention is experienced as being bad. Experiment with **shifting from anxiety to curiosity**, which is also a form of attention but has much less painful side effects.
- **Radical acceptance.** Buddhist teacher Tara Brach has great lectures on this tool It sometimes helps defuse the charge on the outcome.
- If you feel your anxiety rising, try not to judge yourself. Think of it as an opportunity to practice recentering. See if you can find a way to calm yourself - breathing, visualization, counting backwards, or imagining your happy place.

LARE Section 3: Design

Part 2:

**‘Design’ as Defined by
CLARB for the LARE**

Graphic Problems – Advanced Item Type/AITs

What is likely to be tested as an AIT format question?

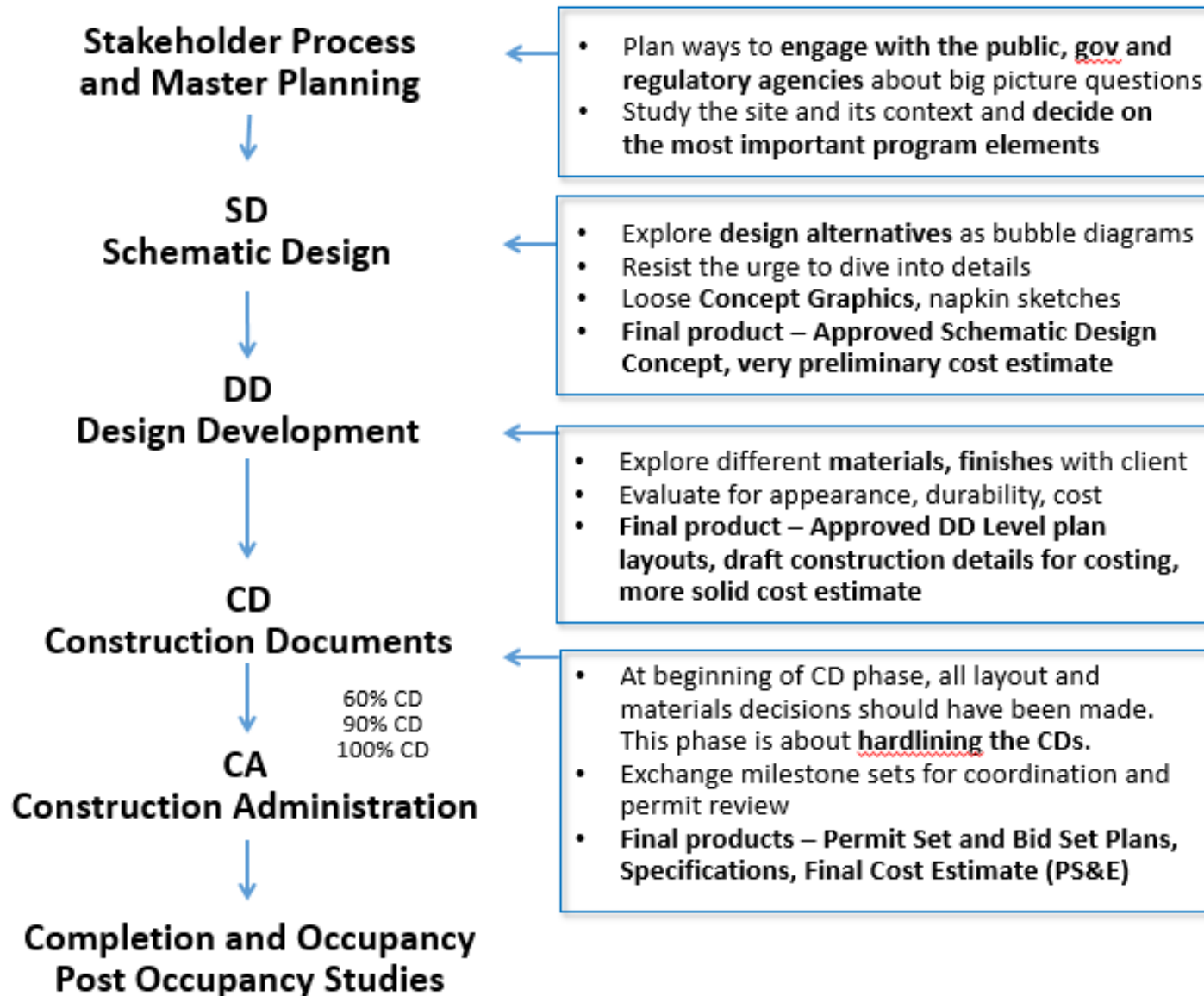


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85 scored items & 10 [pretest](#) items consisting of [multiple-choice](#), [multiple-response](#) and advanced [item type](#) questions; 3 ½ hours seat time, 3 hours for exam

Stewardship and Design Principles: 17%	Master Planning: 33%	Schematic Design: 28%	Design Development: 22%
<ul style="list-style-type: none"> Plan for Sustainability Plan for Climate Resiliency Plan for Environmental and Social Equity Recognize Historical and Cultural Significance 	<ul style="list-style-type: none"> Formulate Planning Goals (e.g., vision) Prepare Project Program (including budget) Synthesize Site Analysis Establish Opportunities and Constraints Determine Appropriate Land Use Develop Master Plan (e.g., conceptual plans, planning high level program elements, community planning, determine planning strategies) Evaluate Planning Scenarios Produce Planning Documents (e.g., land use, parks, open space, regional, historic, site master, corridor, blueways, greenways) Establish Design Guidelines Develop Phasing Plan Communicate Planning Outcomes 	<ul style="list-style-type: none"> Develop Design Intent Create the Basis for Design Prepare Functional Diagram Produce Conceptual Diagram Develop Schematic Designs Evaluate Design Alternatives Refine Selected Alternatives Produce Graphics, Illustrations, and Diagrams 	<ul style="list-style-type: none"> Refine Design Elements (e.g., material, circulation, lighting, utilities, planting) Determine Maintenance Implications Collaborate on the Design of Irrigation Systems (e.g., water conservation, sustainability, low water, gray water) Identify Required Approvals (e.g., regulatory permitting) Develop Opinion of Probable Costs (e.g., schematic, design development, revisions) Evaluate Value Engineering Alternatives Demonstrate Understanding of Legal Liabilities

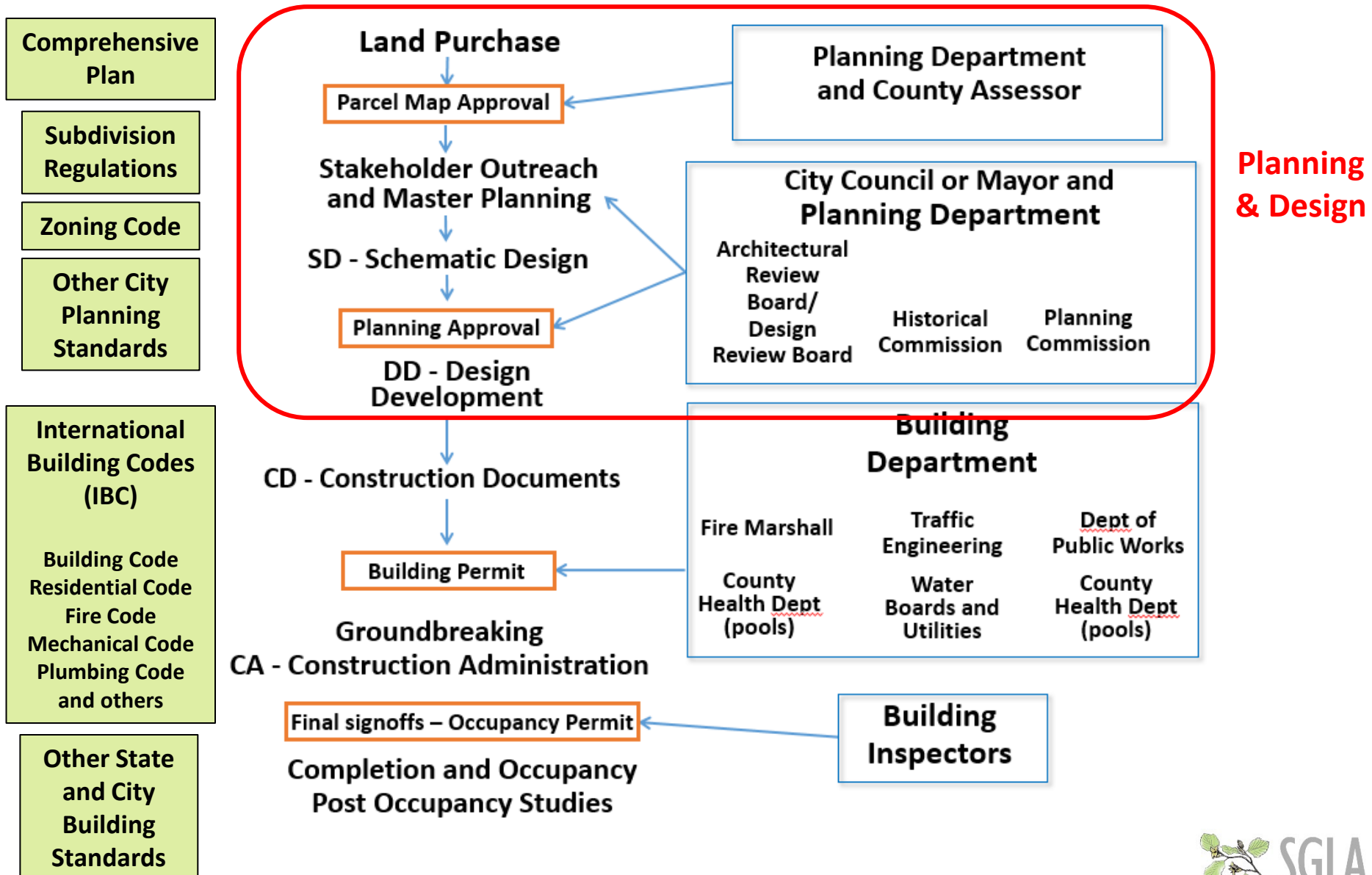
Understanding a Typical Design Process



Adapted from Ramroth



Typical Permit Process – With Regs



AITs and Multiple Choice/Text Questions

We will approach these two types of problems separately.

- AIT questions tend to be about spatial relationships. You may find the legacy standards we will share most useful for thinking about these questions, though there are newer topics in the KSA list that could be tested graphically. *Time Saver Standards* and *Planning and Urban Design Standards* are your best current references for AITs, in my opinion. I also look for national standards like ADA, MUTCD, and the International Building Code (IBC).
- Multiple choice questions tend to be about facts. Rely on all of your S3 reference books for these questions.

What is “Design” in the LARE? Standards and Priorities

- Forget about being a designer! Solve the program question.
- Use the clues in the problem statements and other information from CLARB prior to the test to check what issues may be included in the exam.
- Section C was strongly driven by both site and program requirements and the “codes” contained in the LARE Reference Manual.
- Remember that there is a concise, simple solution. Look for it.
- Practice a lot before the test!! Do as many problems as you can, and/or work with others to share test prep materials or try creating your own test questions. The most relevant test questions are the ones produced by CLARB.

Legacy Materials: 2008 Reference Manual

L.A.R.E. Reference Manual

Landscape Architect Registration Examination

Printed April 2008

Council of
Landscape Architectural
Registration Boards

L.A.R.E. Reference Manual

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	Solar Orientation: From 2010 Reference Manual.....

Prior to 2012, the exam was divided into A, B, C, D and E sections, and students solved 11x17 design vignette problems with pencil and paper.

The 2008 LARE Reference Manual was meant to serve as a universal set of planning and building codes. We will be reviewing it to understand spatial standards that are baked into the exam from the past.



AITs and Multiple Choice/Text Questions

Health, Safety and Welfare is of Primary Importance (HSW)

- Seek to avoid creating hazards in arranging elements on your site
- When evaluating a site design or alternative site plans, focus on first identifying specific hazards.

Follow the Rules of the Exam

- Incorporate all applicable information from the problem statement and any provided exhibits into your answer.
- Expect some “red herrings” to be thrown into context statements.
- Before starting your solution, try to ascertain the Knowledge, Skills and Abilities (KSAs) being tested and solve specifically for that information.
- Be aware that CLARB has eliminated “scale” and will be using generic “units”. Anything that has dimensions is likely to be of some importance.
- For problems including labeling, not all choices may be required. Some choices may have to be used more than once. The interface will let you reuse an element if necessary.
- Follow all directions in the problem statement. CLARB constantly tests this KSA: “The ability to read, understand and follow written directions”.

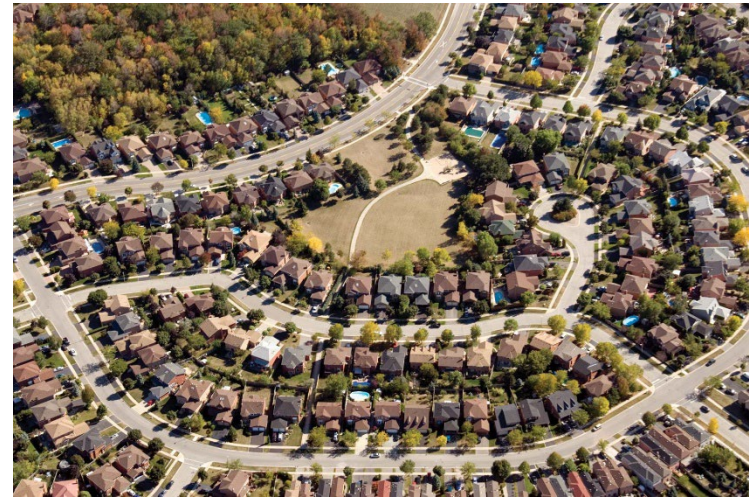
AITs and Multiple Choice/Text Questions

Emphasize Traditional Land Use, Circulation and other Design Elements

- Unfortunately, this generally means post World War II suburban schlock development standards. Assume that a simple, straight-forward solution is possible and correct.
- 90 degree intersections are considered safer than roundabouts in LARE-land
- Wide streets are considered safer than narrow streets in LARE-land
- Dead end streets must provide for emergency vehicle access and turnaround

Think Carefully when you have Alternatives to Consider

- When there is more than one orientation given for an element, it is very likely that only one will work well within the problem statement.
- On questions where you need to select multiple answers from a list, make sure the ones you select are the most important ones available.
- When you are asked to perform an evaluation, focus on the points that you believe are the most important.



AITs Types (based on old CLARB practice problems)

- **Bubble Diagram Site Plan**, larger scales—relationships of land uses, circulation elements, incompatible use setbacks (IUS) and site opportunities/constraints.
- **Alternative Solutions**, various scales—Requiring the Candidate to evaluate two or more site design solutions for a particular site
- **Site Plan Design and Circulation System Design**, various scales —siting buildings, recreation areas, protecting existing features, soils, on/off site opportunities and constraints, property line setbacks, etc; circulation design including vehicular, pedestrian, bicycle, equestrian, etc. and providing for access roads, parking, turnarounds and drop-offs, intersections, sight lines, accessibility, etc.
- **Selection of appropriate planting/lighting alternatives** from 4-6 possible answers. Planting will be massing type studies. Lighting selection will likely be made by mounting heights, or photometric overlays, etc.
- **Critique**—an evaluation or comparison of one or more sites or completed site plans/designs. This will most likely be tested using the multiple answer format type AIT, presenting you with a list of up to 8 items to choose from.
- Expect to be required to **interpret third party information**: simplified soil boring logs, soils maps, archeologists reports, etc. to solve problems

Recommended Approach to Design Problems

1. Read the problem statement carefully

It is very important to understand the issues. Be sure to look at all information on the problem. This includes the problem statement, context statements, requirements, the site map, and any graphic legend of program elements and all of the exhibits. Sometimes critical information will only be given in one of these locations.

2. Determine the likely KSA's being tested

Read between the lines and determine if you see any clues to problem intent. For example, cost and aesthetics may or may not be important; preserving site features, views, providing safe pedestrian access, or other program elements may be issues. Mentally summarize your approach before beginning a site design or site evaluation.

3. Analyze the site

Are there significant differences within the site in soils, topography, vegetation, access, adjacent uses? There is a simple correct answer. What features does the site have that might make program elements plug in naturally to certain places?

Recommended Approach to Design Problems

4. Identify appropriate setbacks and other site constraints

You will have to consider these without being able to physically see or establish them on “the plan”. Observe the site: are there obvious ways to arrange the program elements? What are likely problem areas? This is the step where you will need to apply your implicit knowledge of common site design standards.

5. Place program elements in order of importance

On the LARE, you’ll drag and drop the elements given. Orientation and size will be predetermined, though you may have several options for orientation for a given element.

Practicing at home: If you work some of the Morrison Media problems, try using scissors/trace/vellum to replicate the drag-and-drop format of the exam. Trace the required program elements at the correct scale on stiff vellum or trace. Move them around as you would drag them around on screen, until you find a simple solution that works.

Work at a loose ‘big picture’ scale, using your guesses about what the most critical program requirement is/KSA that is being tested, and to not get wrapped up in specific detail prematurely. You will only have an average of 2 minutes per question.

6. Review

Large Scale Land Use Design – Understanding Adjacencies

Zoning codes are based on the idea that land uses should be aggregated, with **similar uses clustered together** and **incompatible uses separated or buffered**. We will call this concept 'adjacencies' for the LARE.

Be aware of common-sense land associations

- School-Park-Residential Area association
- Elderly Users-Park-Hospital/Medical association

Aggregate similar uses

- Housing; active rec; passive rec; commercial; industrial

Separate incompatible uses

- Separate Commercial/Industrial from Residential



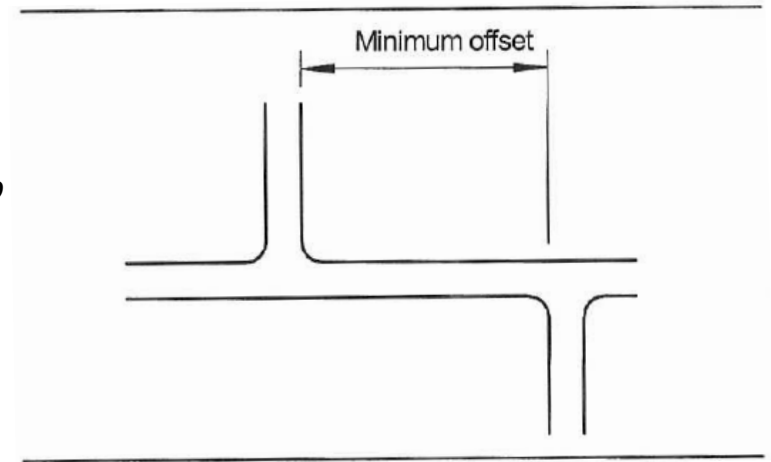
Kemah Boardwalk, Houston, TX

2008 Reference Manual highlights - Intersections

300.3 Intersections

300.3.1 Street intersections must be directly aligned or offset a minimum of 150' [45m] (*this standard changed over time to be the same as the driveway standard*)

300.3.2 Driveway entrances must be directly aligned with a street or driveway centerline or the drive must be offset a minimum of 75' [23m] from another street or driveway.



Don't get too hung up on the numbers but recognize that the principle here is a huge HSW issue. Consider it as a no-exceptions type of standard unless you are very explicitly exempted from it in the problem statement of a graphic problem (unlikely, but possible).

In design AITs, assume that street or driveway intersections should be directly across from one another, or one of these must be offset a "safe" distance. If this is defined in the problem statement, CLARB will need to provide some dimensions on the site plan. If no dimensions are given, you may be able to "eyeball" a safe offset based on knowledge of real dimensions, such as a 24 foot width for a two-lane road.

2008 Reference Manual highlights – Sight Triangles

300.3.3 All off street parking and road intersections are to be provided with safe and convenient access. A minimum sight triangle shall be provided at such intersections to provide a totally unobstructed view for 45' [11.5m] from the intersection of the edge of pavement when measured from a height of 2' [0.6m] to 5' [1.5m]. Tree trunks are considered an obstruction.

In the real world, we have to deal with sight triangles as a matter of course. In fact, many cities have standards for planting and fence heights near intersections. If an existing tree mass or other planting is shown, trees, fences or other site obstructions must not be within the 45 ft sight triangle, or vegetation within the triangle must be removed. This was a critical life safety standard on past iterations of the LARE.

If planting design is involved, only vegetation 3 feet or less in height should be within the triangle. An exception is where trees with the bottom of their crown at least 8 feet above finish grade are within the triangle area.

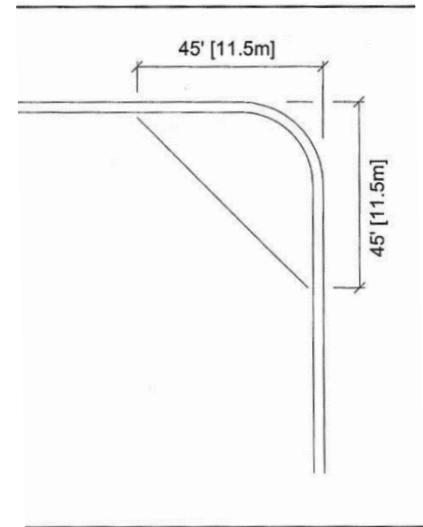
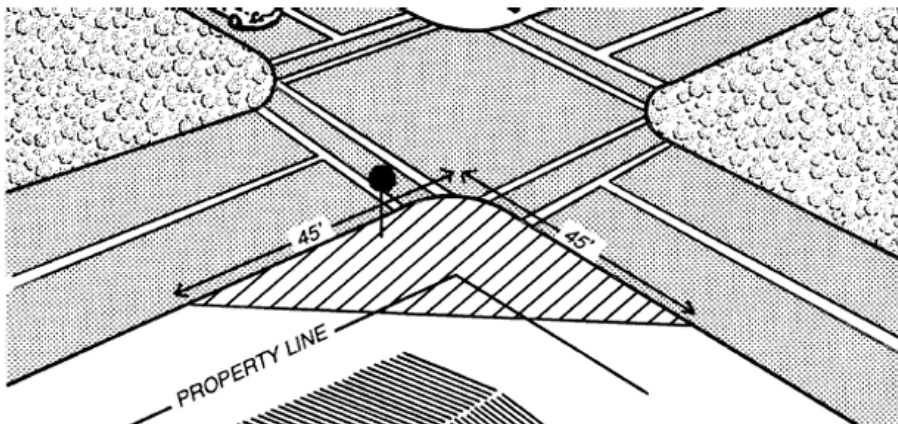


Figure 2



2008 Reference Manual highlights - buffers

- **100.1.1** Vehicular circulation ways such as parking and drives (NIC entrances) shall be 15' [4.5m] from property line along a street, and 10' [3m] from all other property lines
- **100.1.2** Buildings shall be set back at least 25' [7.5] from property line along a street, and 15' [4.5m] from all other property lines
- **100.4.1** There shall be a 25' [7.5m] buffer zone provided on each side of the property line between any parcel on which there is proposed commercial or industrial use, and an adjacent parcel zoned residential. (Institutional uses are exempt.)
- **100.4.2** Such buffer use shall not be utilized for structures, roads, and parking areas or for any active recreation purpose such as tennis courts, swimming pools, playgrounds, or uses of a similar nature.

Use a buffer symbol (if provided in your elements well) to screen/separate uses that should not be adjacent. For example, a buffer symbol should be shown between an adjacent commercial use and any residential use area, but not between, for example a school and a industrial area. An intervening road between uses requiring a buffer *does not* negate the need for a buffer. (Sometimes called an IUS by CLARB, or an 'intervening use symbol'.)

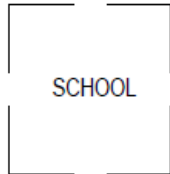
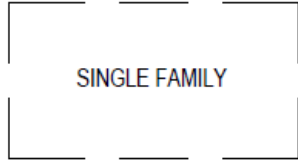
Look for indication of possible views, overlooks, focal points. What site or off-site elements should be screened or avoided? Are there existing incompatible land uses that might trigger the need for a screen or buffer? Is noise a factor that should be considered for land use placement?

Significantly Different Solutions

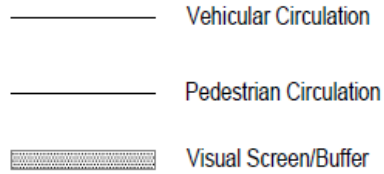
If the problem statement requires that you create or evaluate two or more significantly different designs, *make sure that both the circulation pattern and the land uses on each plan are significantly different.*

- Arrangement of Elements on site must be different
- Circulation Systems must be different
- On Bubble Diagrams (Large Scale) All Land Uses to be Adjacent to Vehicular Circulation
- Consider On and Off Site Land Use Adjacencies

Required Elements (May not be rotated)

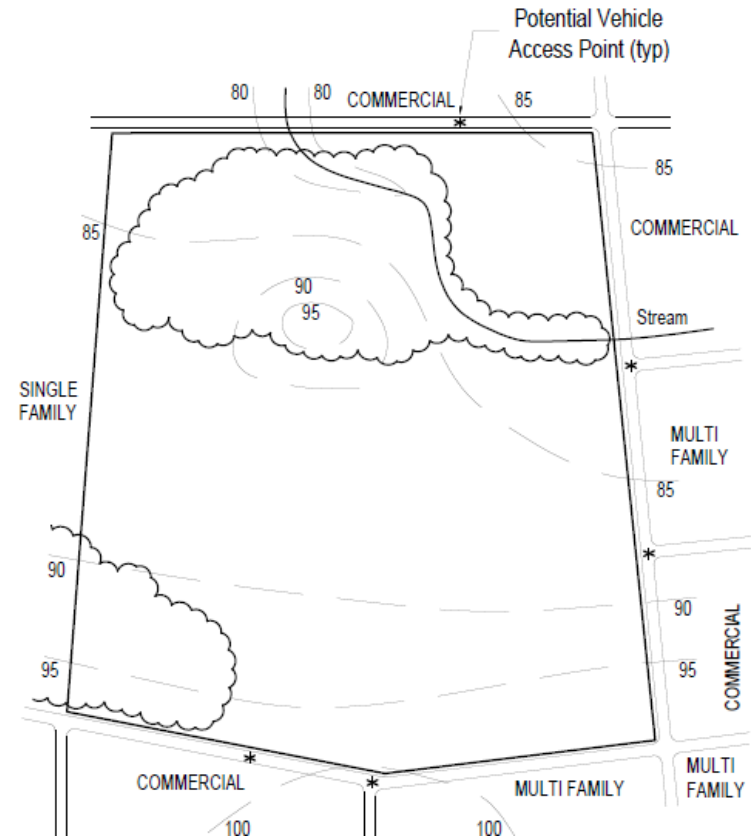
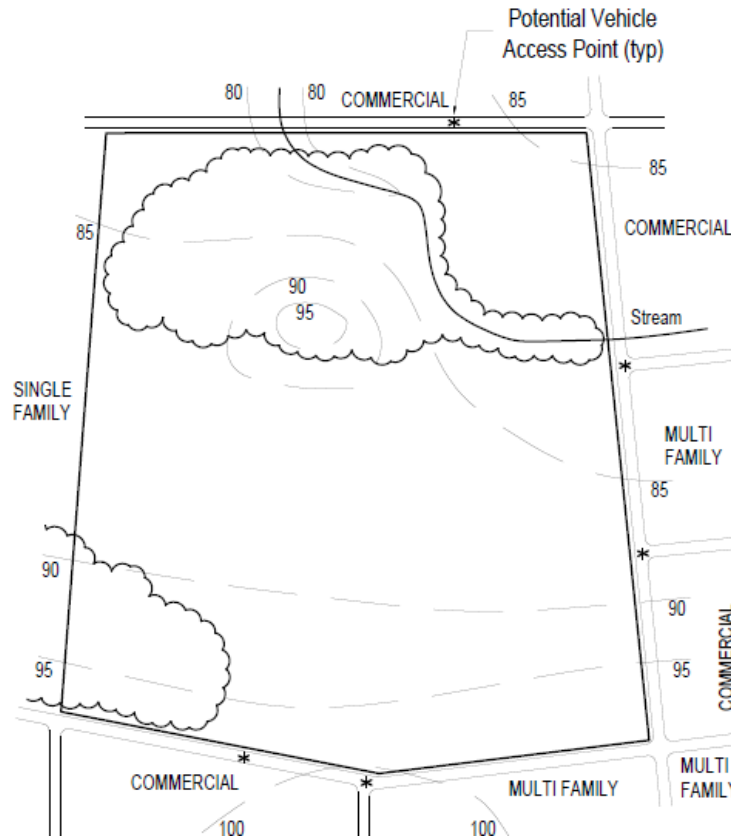


Circulation and Screening Elements
(use and rotate as needed)

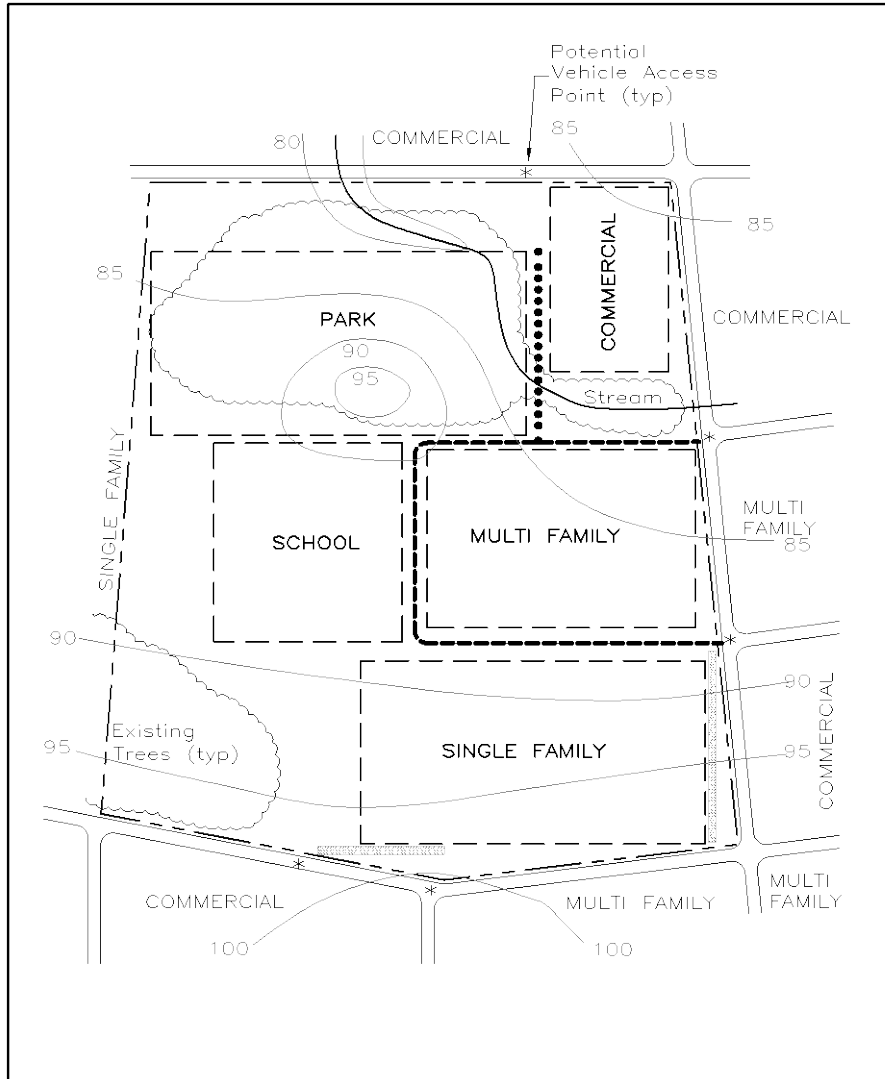


Create two significantly different conceptual land use diagrams for a mixed use site. Incorporate all required program elements and site circulation. You must locate all project elements provided and place ingress/egress to site only at potential site access points identified on plan. A maximum of three curb cuts from adjacent streets are allowed to the site.

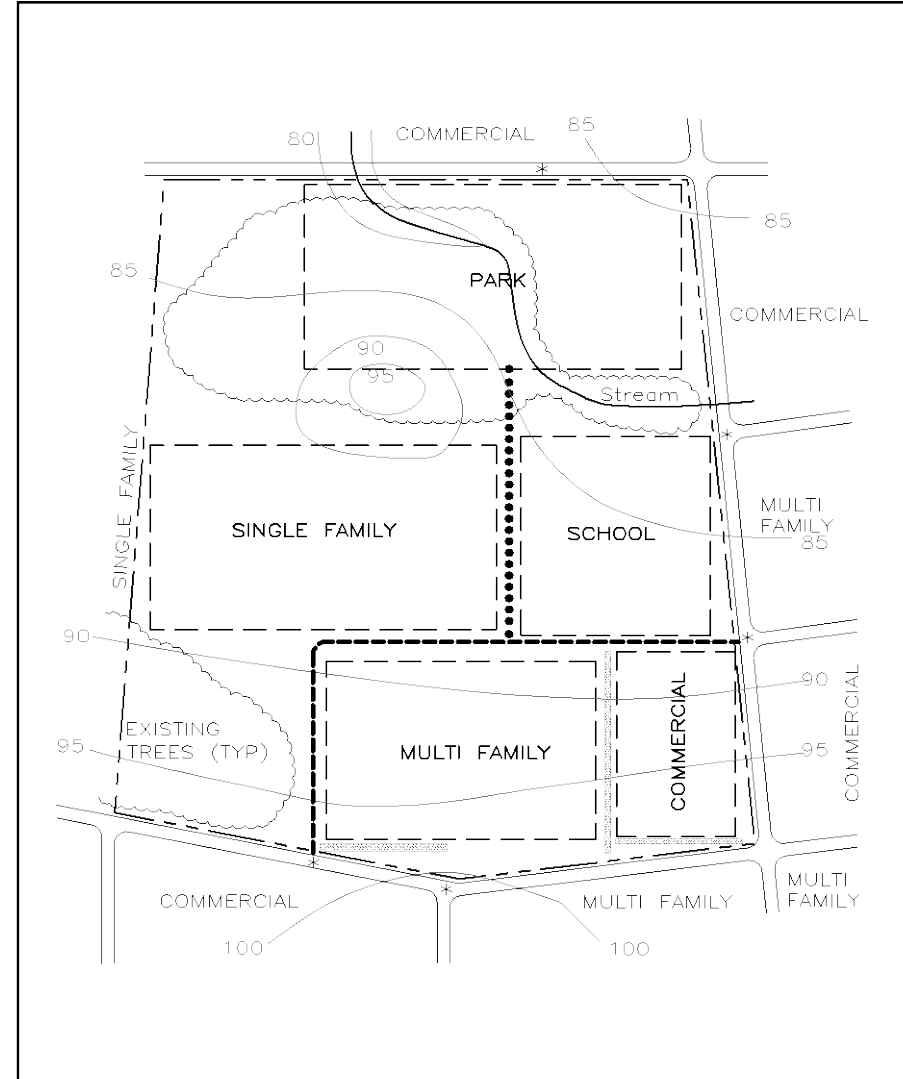
Protect existing natural features. Vehicular circulation may not cross the stream. 25' wide vegetative buffers are required between commercial and residential uses.



'Two Significantly Different Solutions'



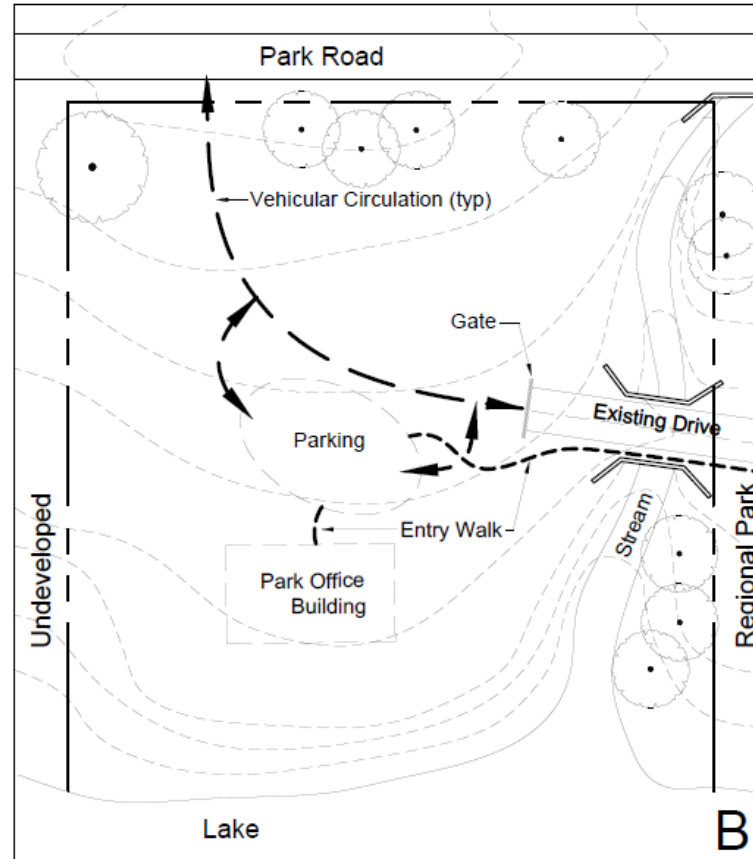
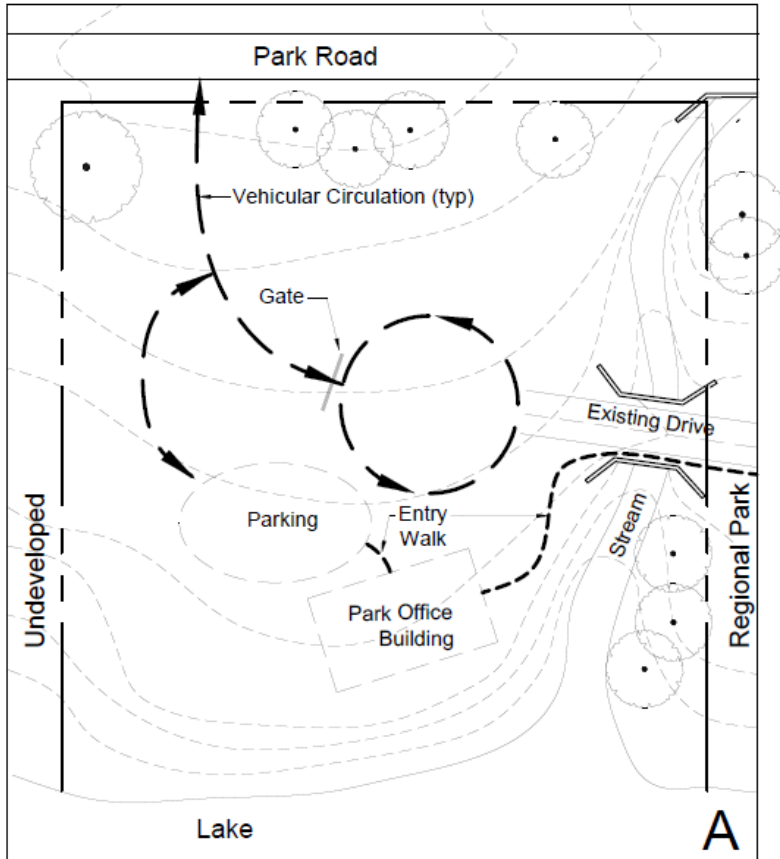
LARE SECTION 3 Design <small>© 2014 Freeman & Jewell</small>	Freeman & Jewell Landscape Architecture		 AIT-5B Solution
	<small>REVISED</small> OCT 2012	<small>REVISED</small> FEB 2014	



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	<small>REVISED</small> OCT 2012	<small>REVISED</small> FEB 2014	

Comparing Design Alternatives

Given 3 criteria, compare and contrast between the two alternatives along with the usual program requirements. Consider all the criteria before selecting the best design.



Evaluate two concepts for a new park office, visitors parking lot and security gate. Check the box for the better alternative for each consideration below and then select the best alternative.

- | | | |
|--------------------------|--------------------------|----------------------------|
| A | B | |
| <input type="checkbox"/> | <input type="checkbox"/> | Gate Location |
| <input type="checkbox"/> | <input type="checkbox"/> | Parking Lot Design |
| <input type="checkbox"/> | <input type="checkbox"/> | Access to Park Office Bldg |

- | | | |
|--------------------------|--------------------------|--------------------------------|
| A | B | |
| <input type="checkbox"/> | <input type="checkbox"/> | Overall Vehicular Circulation |
| <input type="checkbox"/> | <input type="checkbox"/> | Pedestrian/Vehicular Conflicts |
| <input type="checkbox"/> | <input type="checkbox"/> | Ecological Impacts on Lake |

- | | | |
|--------------------------|--------------------------|--------------------------|
| A | B | |
| <input type="checkbox"/> | <input type="checkbox"/> | Superior Overall Design? |

2008 Reference Manual highlights - Sports

200.1 Active Recreation Setback (ARS)

There shall be a 30' [9m] clear zone around organized active recreational uses...

Pedestrian and vehicular circulation should not be located within this zone unless it is providing direct access.

200.3 Sports Facility Orientation

Baseball/Softball – East-northeast from home plate to center field.

Football/Soccer – Long axis north-south

Tennis/Basketball/Volleyball – Long axis north-south

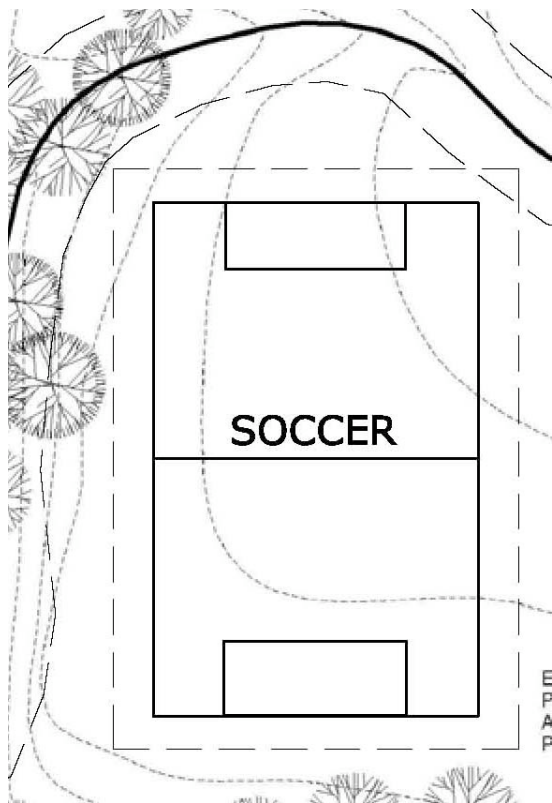
300.2 Solar Orientation – Passive and Active Solar Systems – South-Southeast to South-Southwest

Field sports must be laid out with adequate space so that a player running off the field in pursuit of a ball does not collide with the game in the adjacent field. Note that this does NOT apply to fenced recreational facilities like tennis. These can be put right next to each other without the ARS clear zone.

For drag and drop problems, you may be given field items in various orientations and need to be able to select the correct orientation. Memorize these from TSS.

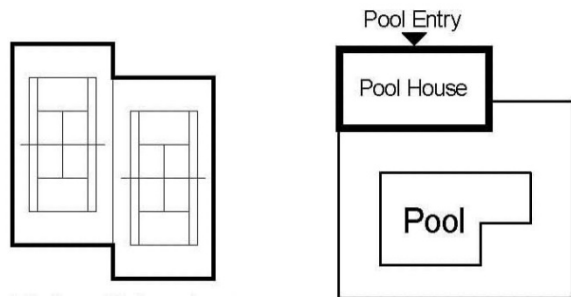


Sports Fields: Active Recreation Setbacks



How will you combine Active Recreation Setbacks requirements with other program elements on AITs?

- ARS can encroach into water feature setbacks.
- ARS can encroach into floodplains
- ARS should not encroach into water features, paths or roads, or under tree canopies
- ARS should not overlap buffers/Incompatible Use Setbacks
- ARS may be shared by adjacent sports ARS



Tennis Courts, Pools, and Playground Areas are exempt from ARS requirements because they are generally fenced.

Lonetree Park

Place the four elements on the site in appropriate locations. Elements may not be rotated. Select correct orientation.

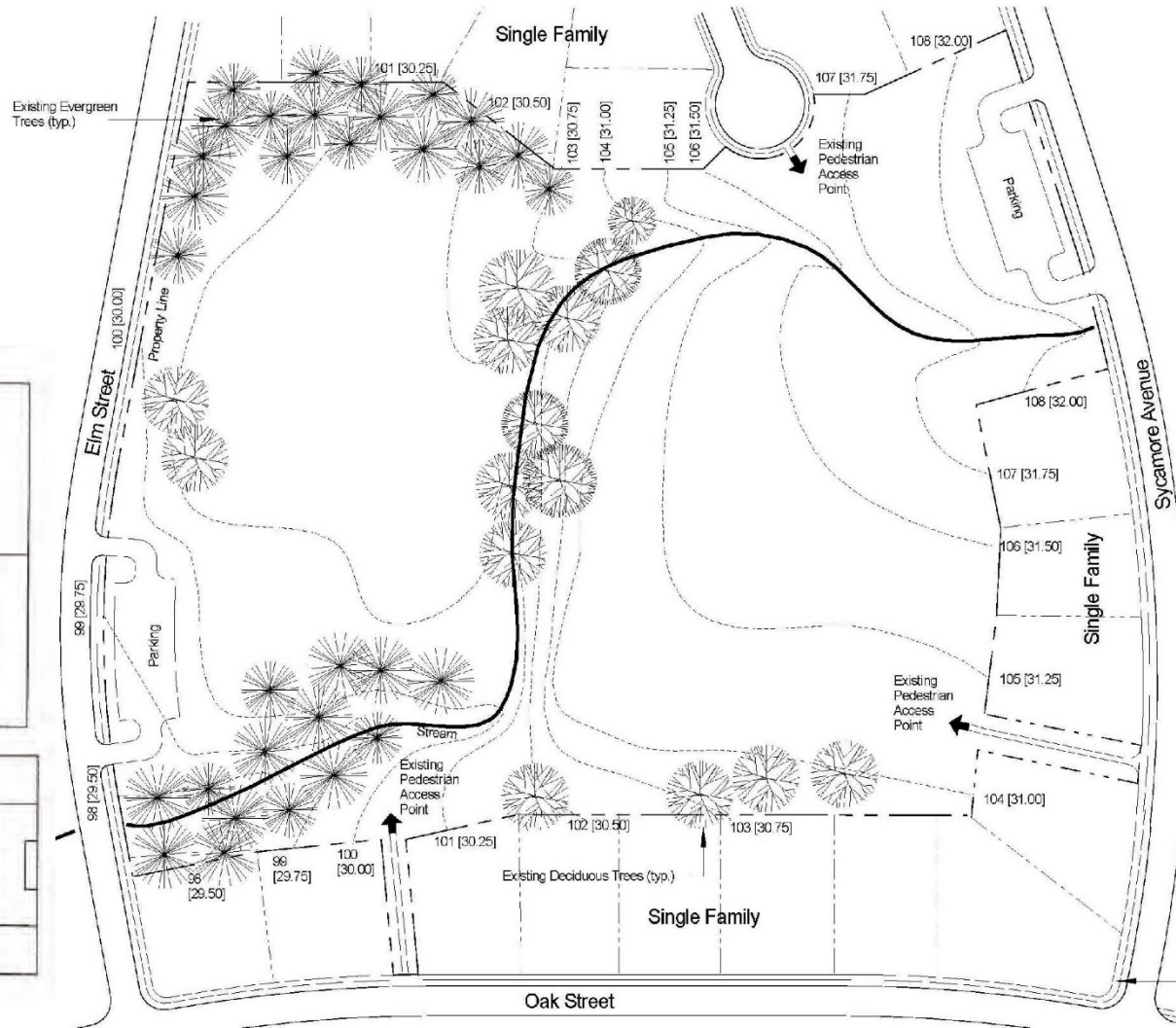
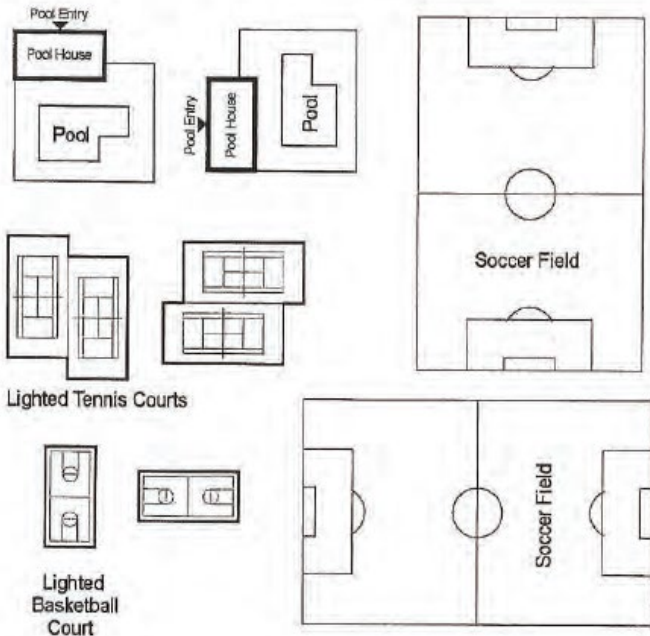
Reference Manual standards are in effect. No trees may be removed.

Sports fields and courts shall be oriented for competitive play.

You may not change the configuration of the two tennis courts.

Basketball, Pool and Tennis will be lighted and in use until 10 pm each night.

Minimize environmental impacts.



2008 Reference Manual highlights – Travelways and Parking

Know general spatial standards. In reality, these are set at the local level and vary.

300.4 Travelways

300.4.1 Two way traffic – min 22' [6.7m] and max 26' [8m] wide

300.4.2 One way traffic – min 11' [3.3m] and clearly marked with signs and pavement markings

300.4.3 Min inside turning radius for autos shall be 18' [5.5m]

300.4.4 Min inside turning radius for large vehicles (such as trucks, buses, and emergency vehicles) shall be 30' [9.1m]

300.5 Parking and Loading Requirements

300.5.1 The dimension for a standard parking space shall be 9'x20' [2.7m x 6m]

300.5.2 Parallel parking spaces shall have a minimum length of 22' [6.7m] and a minimum width of 9' [2.7m].

300.5.3 Parking lots with more than forty (40) spaces shall have a maximum of 10 contiguous spaces without an island. Min width of an island – 9' (same as a parking space)

300.5.4 Parking areas must be graded at a slope not to exceed 5%

300.5.5 No dead end parking areas shall be permitted

If a bubble is required for a large parking area, place it in an area with natural grade less than 5% to avoid excessive cost and grading (environmental issue).

If you are diagramming circulation, make sure you provide both an entry and an exit to parking lots.

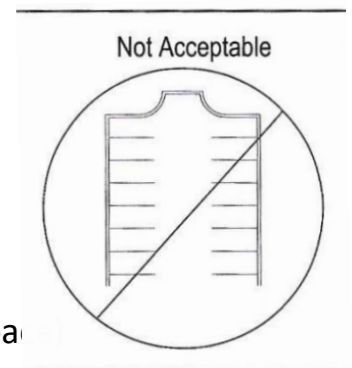


Figure 4

2008 Reference Manual highlights – Primary Circulation, Drop-off/Pickup

300 Vehicular Requirements

300.1 All required access shall be paved. Maximum length for a cul-de-sac shall be 800' [240m].

This standard relates to public safety such as emergency vehicle access and typical fire code requirements. The longer a dead end road, the greater the safety hazard.



300.2 Design of parking shall not necessitate backing from a space into a street, primary circulation route, or entrance. A drive solely used for parking lot ingress/egress is not considered a primary circulation route. Drop-off, turnaround, service drive and drive through ingress/egress are considered to be primary circulation routes.

This rule generates a lot of consequences when laying out site elements.

300.7 Drop-off/Pick-up Areas

300.7.1 If a drop-off/pickup area is provided, it shall be designed to allow for the safe movement of vehicles and pedestrians and to allow for traffic movement around stopped vehicles.

300.8 Service Areas Service areas shall incorporate a turnaround for small service vehicles

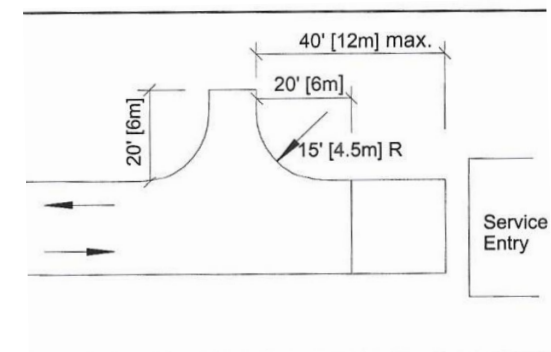
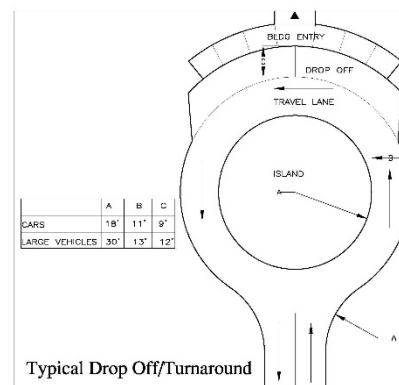
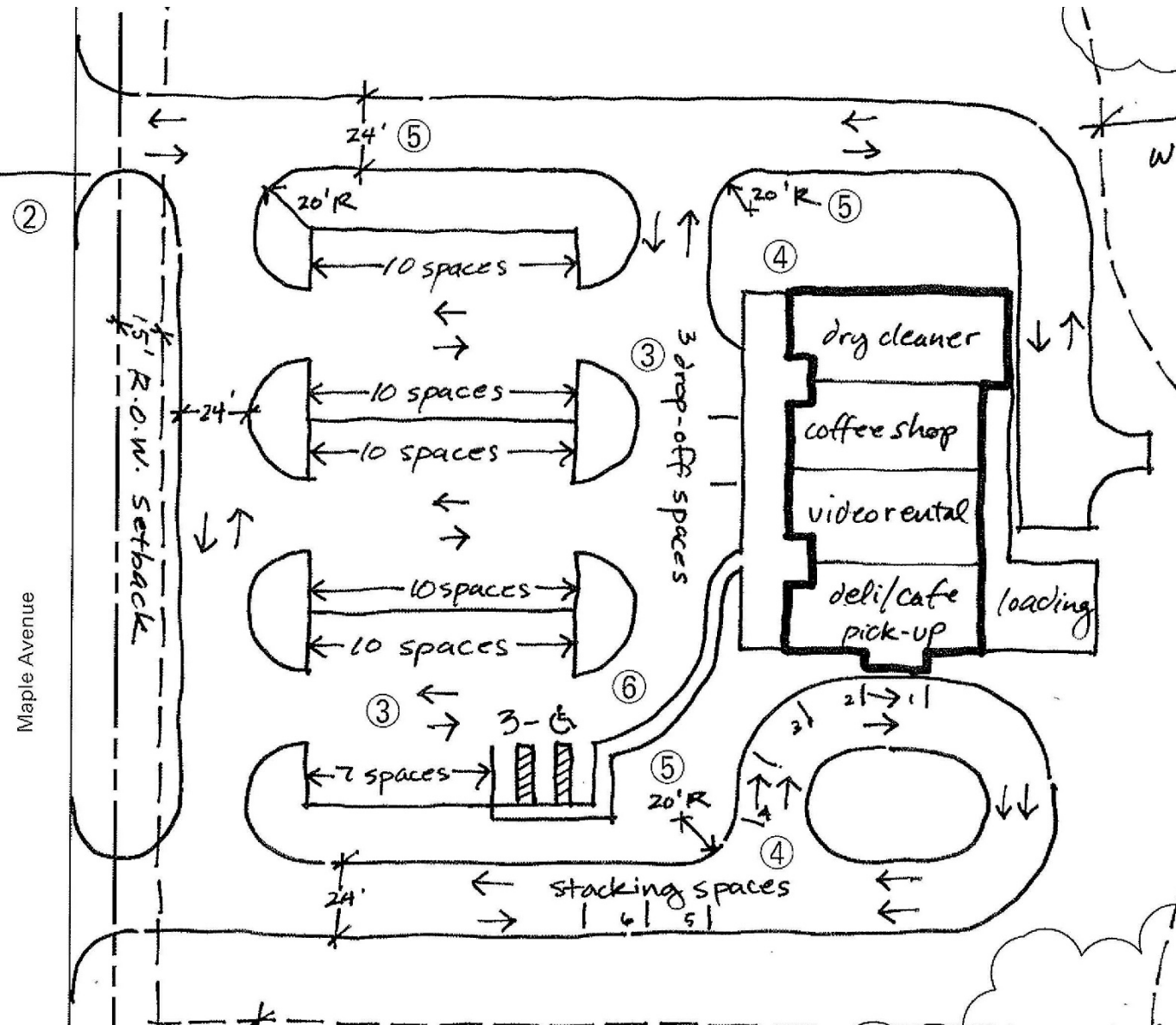


Figure 5

Primary Vehicular Circulation



What are the primary vehicular circulation routes here? Does this plan meet CLARB's code/HSW standards?

- Identify elements/destinations that define primary circulation
- Check for HSW. Does parking occur on the primary circulation route?
- Check for HSW again. Do pedestrians have to cross the primary circulation route? This may be okay but a crosswalk makes it safer.
- Check for ADA compliance. Are HC parking spaces as close to the main entry as possible? Is there a route that does not cross traffic? If you must cross traffic, is the route striped and barrier-free? (ramps at curbs, no stairs)

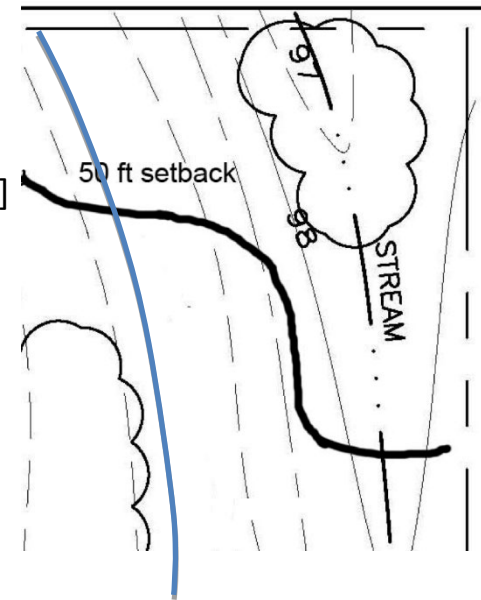
2008 Reference Manual highlights - water

100.2.1 All development requiring site disturbance shall be set back at least 50' [15m] from any designated stream edge or other water body.

100.2.2 All development requiring site disturbance shall be set back at least 100' [30m] from the edge of any designated wetland area.

While the dimension standards are no longer relevant, CLARB will still expect your graphical solutions to be set back a bit from streams, lakes and wetlands.

Stream crossings should be direct and only used when you have good reason to do so. Do not wander into, and then along a water feature easement.



100.3 Enclosed structures and their appurtenances (this probably means pavements) are not permitted within a floodplain.

Softscape areas such as grass play fields could be assumed to legally encroach within the floodplain, but residential areas or other developed uses may not. Federal regulations discourage filling within floodplains, therefore if several proposed contours worth of fill are shown within a floodplain, this is likely to be viewed as a negative aspect of the plan.

Keep this restriction in mind for the actual exam as federal law similarly restricts such encroachments.

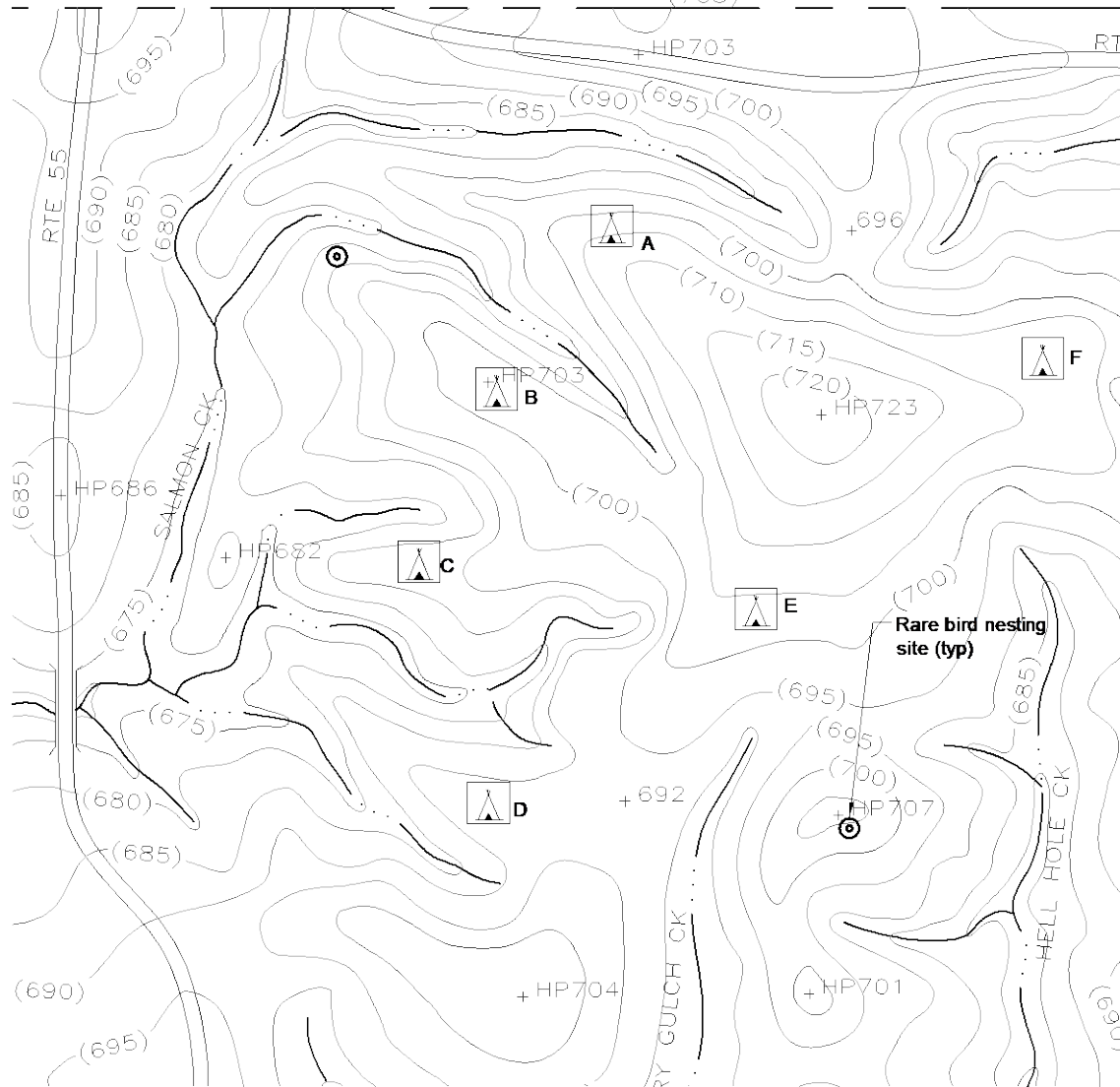
You have been asked to evaluate potential sites for hike in campgrounds in a national forest. A number of alternative preliminary site choices have been identified by ranger staff. In addition to the usual environmental regulations, the Forest Service wants the campsite to be 200 feet minimum from the nearest road and 250 feet minimum from identified rare bird nesting sites.

Based on your analysis:

Which sites are eligible for consideration? (circle all that apply) A B C D E F

Of the eligible sites, which site is the least flood-prone? _____ Most flood prone? _____

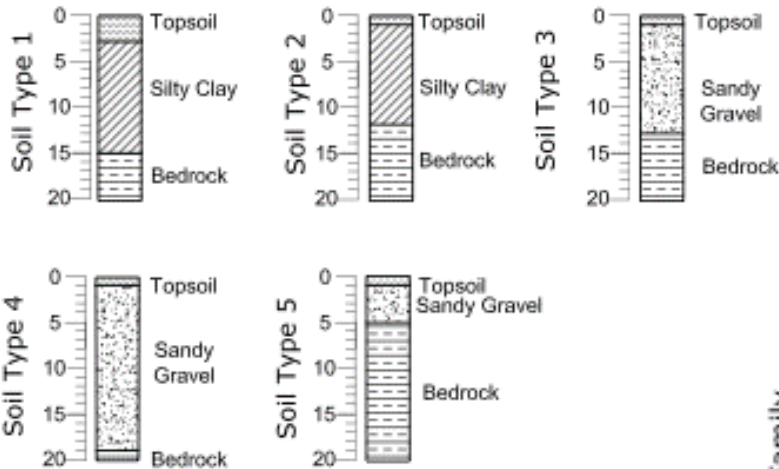
The client has just called and said the campsite must be in the Salmon Creek watershed. _____



Interpreting Data from Other Disciplines

Here is a very common practice problem type.
Can you interpret exhibit data and use it to
make site planning decisions?

Soils Information



Place the building on the site to minimize environmental impact.

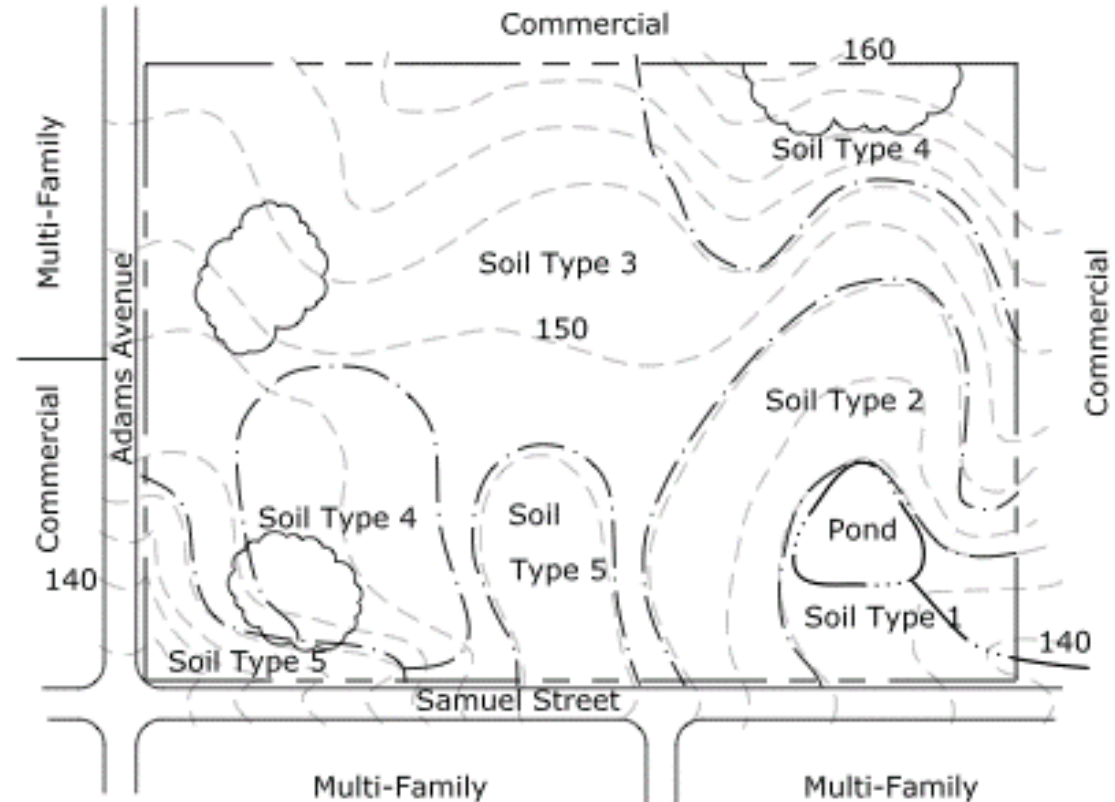
Office Building Section



Office Building Plan



Elevator Core



Using National Standards to prep

Your state may have different classifications for many site planning standards! **Forget what you know.**

CA: Class 1-IV not a national standard Learn the federal classifications. LAGS, NACTO.org



One-Way Cycle Track

Two-Way Cycle Track



Bike Lane

Contra-Flow Bike Lane



Buffered Bike Lane

Left-Side Bike Lane



Bicycle Boulevard

Class 1 / Cycle Tracks

A cycle track is physically separated from motor traffic and distinct from the sidewalk. In situations where on-street parking is allowed cycle tracks are located to the curb-side of the parking (in contrast to bike lanes).

Cycle tracks may be one-way or two-way, and may be at street level, at sidewalk level, or at an intermediate level. If at sidewalk level, a curb or median separates them from motor traffic, while different pavement color/texture separates the cycle track from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking, or bollards.

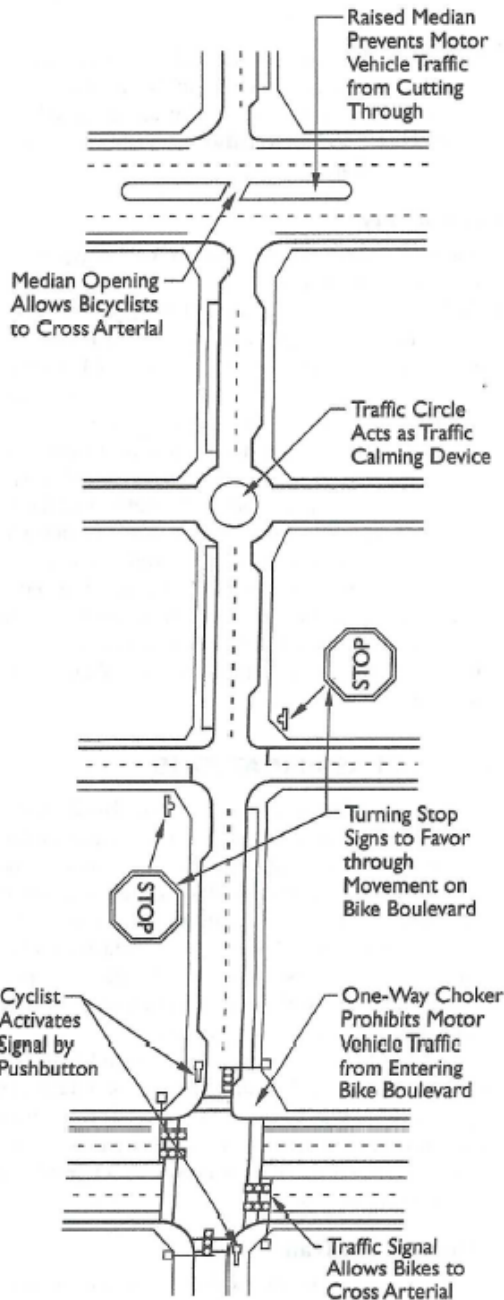
Class 2 / Conventional Bike Lanes

A Bike Lane is defined as a portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes facilitate predictable behavior and movements between bicyclists and motorists. A bike lane is distinguished from a cycle track in that it has no physical barrier (bollards, medians, raised curbs, etc.) that restricts the encroachment of motorized traffic. Bike lanes typically run in the same direction of traffic, though they may be configured in the contra-flow direction on low-traffic corridors necessary for the connectivity of a particular bicycle route.

Class 3 / Bicycle Boulevards

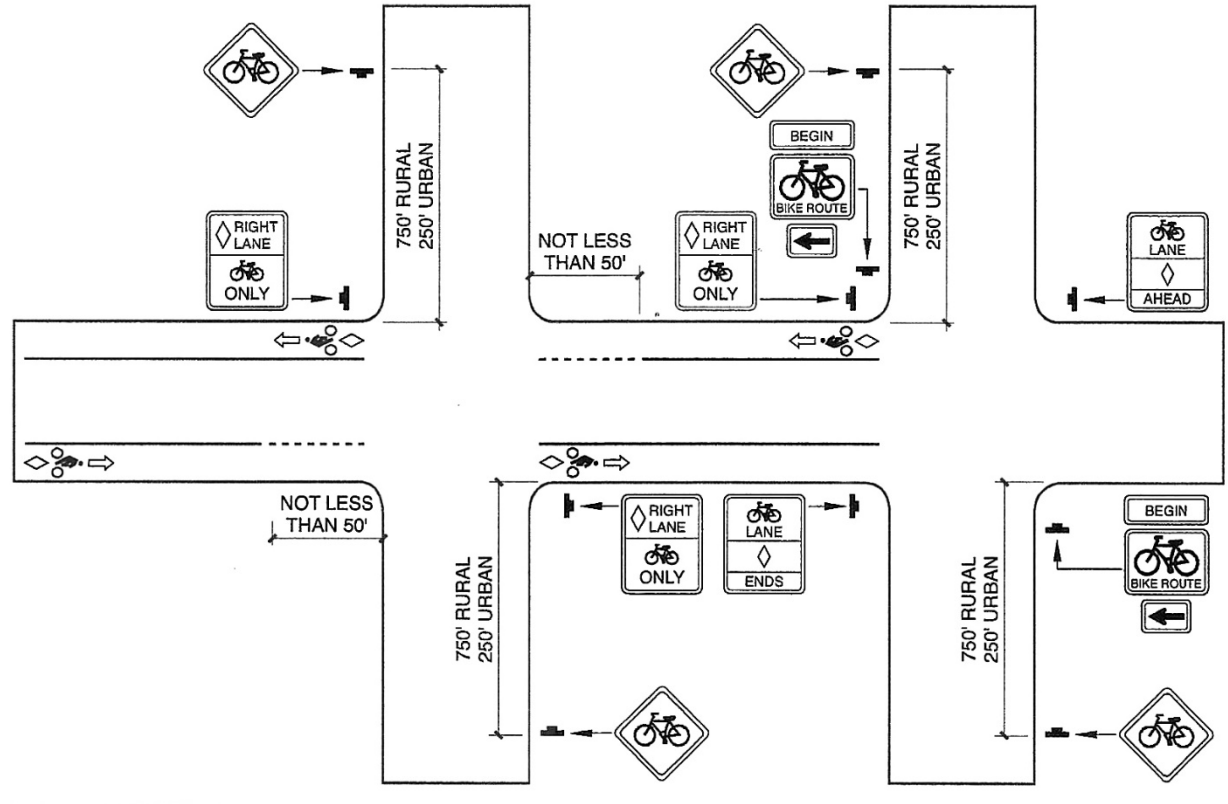
Bicycle boulevards are streets with low motorized traffic volumes and speeds, designed to give bicycle travel priority. Bicycle Boulevards use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.

Using CLARB Reference Books to prep



TYPICAL BICYCLE BOULEVARD FEATURES

Source: Oregon Department of Transportation 1995.



STOPPING DISTANCES

Source: *Landscape Architectural Graphic Standards*, Hopper;
Planning and Urban Design Standards, Steiner & Butler
 Also *Time-Saver Standards*, Dines et al

Need to brush up on Design Concepts?

- Spend a little time with the old 2008 LARE Reference Manual and memorize the concepts and general dimensions
- *Section C vignettes*, PPP/Morrison Media – Pencil and paper hands-on site planning practice. The Section C Study Guide has good explanations of CLARB design principles
- *Planning and Urban Design Standards* by Steiner is a great resource for understanding planning concepts.
- Know general spatial standards for common site elements. *Time Saver Standards* and *Landscape Architectural Graphic Standards* have this information

LARE Planning & Design

Part 3:

Other Topics to Review –
Stakeholders and All the Maps
and Plans

Subdomain 1: Stewardship and Design

Principles 17%

- Plan for Sustainability
- Plan for Climate Resiliency
- Plan for Environmental and Social Equity
- Recognize Historical and Cultural Significance

Common Performance Metrics

Three common types of comparisons:

- Before/After – Comparing a given metric before and after the landscape intervention. This requires baseline information from before the project was implemented.
- Conventional/Sustainable – Comparing a metric for the project to the same metric for a conventionally designed space. This requires a comparable space, either actual or hypothetical.
- Benchmark or Average – Comparing a metric for the project to an accepted standard or average value.

For a performance metric to be effective, it should be something that can be clearly identified, measured and documented over time. Utility bills, site measurements, user surveys, and public records can all be used in this task.

Some of the most common landscape elements evaluated through performance metrics include:

- Noise levels
- Stormwater runoff
- LEED
- Sustainable Sites
- Energy efficiency
- Irrigation efficiency
- Flood protection
- Carbon sequestration
- Waste reduction
- Safety/reduced accidents
- Scenic quality and views
- Access and equity
- Property values
- Maintenance cost savings
- Job creation
- Economic development

SITES v2 Scorecard Summary

YES ? NO				YES ? NO							
0	0	0	1: SITE CONTEXT	Possible Points:	13	0	0	0	6: SITE DESIGN - HUMAN HEALTH + WELL-BEING	Possible Points:	30
Y			CONTEXT P1.1	Limit development on farmland					HHWB C6.1	Protect and maintain cultural and historic places	2 to 3
Y			CONTEXT P1.2	Protect floodplain functions					HHWB C6.2	Provide optimum site accessibility, safety, and wayfinding	2
Y			CONTEXT P1.3	Conserve aquatic ecosystems					HHWB C6.3	Promote equitable site use	2
Y			CONTEXT P1.4	Conserve habitats for threatened and endangered species					HHWB C6.4	Support mental restoration	2
			CONTEXT C1.5	Redevelop degraded sites	3 to 6				HHWB C6.5	Support physical activity	2
			CONTEXT C1.6	Locate projects within existing developed areas	4				HHWB C6.6	Support social connection	2
			CONTEXT C1.7	Connect to multi-modal transit networks	2 to 3				HHWB C6.7	Provide on-site food production	3 to 4
									HHWB C6.8	Reduce light pollution	4
0	0	0	2: PRE-DESIGN ASSESSMENT + PLANNING	Possible Points:	3				HHWB C6.9	Encourage fuel efficient and multi-modal transportation	4
Y			PRE-DESIGN P2.1	Use an integrative design process					HHWB C6.10	Minimize exposure to environmental tobacco smoke	1 to 2
Y			PRE-DESIGN P2.2	Conduct a pre-design site assessment					HHWB C6.11	Support local economy	3
Y			PRE-DESIGN P2.3	Designate and communicate VSPZs							
			PRE-DESIGN C2.4	Engage users and stakeholders	3	0	0	0	7: CONSTRUCTION	Possible Points:	17
						Y			CONSTRUCTION P7.1	Communicate and verify sustainable construction practices	
0	0	0	3: SITE DESIGN - WATER	Possible Points:	23	Y			CONSTRUCTION P7.2	Control and retain construction pollutants	
Y			WATER P3.1	Manage precipitation on site		Y			CONSTRUCTION P7.3	Restore soils disturbed during construction	
Y			WATER P3.2	Reduce water use for landscape irrigation					CONSTRUCTION C7.4	Restore soils disturbed by previous development	3 to 5
			WATER C3.3	Manage precipitation beyond baseline	4 to 6				CONSTRUCTION C7.5	Divert construction and demolition materials from disposal	3 to 4
			WATER C3.4	Reduce outdoor water use	4 to 6				CONSTRUCTION C7.6	Divert reusable vegetation, rocks, and soil from disposal	3 to 4
			WATER C3.5	Design functional stormwater features as amenities	4 to 5				CONSTRUCTION C7.7	Protect air quality during construction	2 to 4
			WATER C3.6	Restore aquatic ecosystems	4 to 6						
0	0	0	4: SITE DESIGN - SOIL + VEGETATION	Possible Points:	40	0	0	0	8: OPERATIONS + MAINTENANCE	Possible Points:	22
Y			SOIL+VEG P4.1	Create and communicate a soil management plan		Y			O+M P8.1	Plan for sustainable site maintenance	
Y			SOIL+VEG P4.2	Control and manage invasive plants		Y			O+M P8.2	Provide for storage and collection of recyclables	
Y			SOIL+VEG P4.3	Use appropriate plants					O+M C8.3	Recycle organic matter	3 to 5
			SOIL+VEG C4.4	Conserve healthy soils and appropriate vegetation	4 to 6				O+M C8.4	Minimize pesticide and fertilizer use	4 to 5
			SOIL+VEG C4.5	Conserve special status vegetation	4				O+M C8.5	Reduce outdoor energy consumption	2 to 4
			SOIL+VEG C4.6	Conserve and use native plants	3 to 6				O+M C8.6	Use renewable sources for landscape electricity needs	3 to 4
			SOIL+VEG C4.7	Conserve and restore native plant communities	4 to 6				O+M C8.7	Protect air quality during landscape maintenance	2 to 4
			SOIL+VEG C4.8	Optimize biomass	1 to 6	0	0	0	9: EDUCATION + PERFORMANCE MONITORING	Possible Points:	11
			SOIL+VEG C4.9	Reduce urban heat island effects	4				EDUCATION C9.1	Promote sustainability awareness and education	3 to 4
			SOIL+VEG C4.10	Use vegetation to minimize building energy use	1 to 4				EDUCATION C9.2	Develop and communicate a case study	3
			SOIL+VEG C4.11	Reduce the risk of catastrophic wildfire	4				EDUCATION C9.3	Plan to monitor and report site performance	4
0	0	0	5: SITE DESIGN - MATERIALS SELECTION	Possible Points:	41	0	0	0	10: INNOVATION OR EXEMPLARY PERFORMANCE	Bonus Points:	9
Y			MATERIALS P5.1	Eliminate the use of wood from threatened tree species					INNOVATION C10.1	Innovation or exemplary performance	3 to 9
			MATERIALS C5.2	Maintain on-site structures and paving	2 to 4						
			MATERIALS C5.3	Design for adaptability and disassembly	3 to 4						
			MATERIALS C5.4	Use salvaged materials and plants	3 to 4	YES ? NO					
			MATERIALS C5.5	Use recycled content materials	3 to 4	0	0	0	TOTAL ESTIMATED POINTS	Total Possible Points:	200
			MATERIALS C5.6	Use regional materials	3 to 5						
			MATERIALS C5.7	Support responsible extraction of raw materials	1 to 5						
			MATERIALS C5.8	Support transparency and safer chemistry	1 to 5				SITES Certification levels	Points	
			MATERIALS C5.9	Support sustainability in materials manufacturing	5	YES	Project confident points are achievable		CERTIFIED	70	
			MATERIALS C5.10	Support sustainability in plant production	1 to 5	?	Project striving to achieve points, not 100% confident		SILVER	85	
						NO	Project is unable to achieve these credit points		GOLD	100	
									PLATINUM	135	

Components of a Mitigation Plan

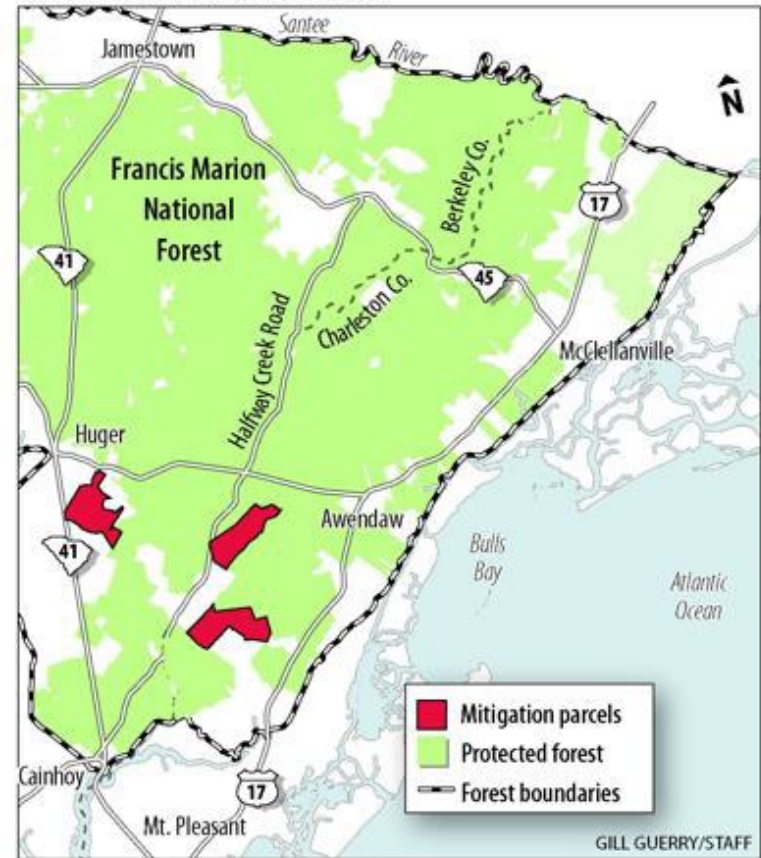
- Statement of Objectives
- Assessment of Values or Resources
- Location, Elevation and Hydrology
- Description of Planting and Schedule
- Monitoring and Maintenance Plan
- Contingency Plan
- Guarantee that work will be performed as planned and approved



2014

Boeing wetlands mitigation plan

The U.S. Army Corps of Engineers has approved Boeing Co.'s wetlands mitigation plan for the 468 acres it will eventually develop beside Charleston International Airport. The plan targets nearly 4,000 acres, half of it wetlands, near the Francis Marion National Forest for conservation.

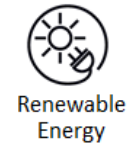
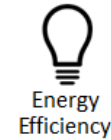
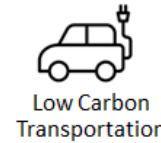


1.02 Plan for Climate Resiliency

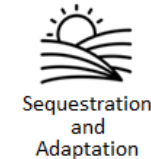
Climate Action Plans (CAP) – developed at the state, city, or agency level:

- Greenhouse Gas (GHG) emissions reduction targets
- Energy efficiency goals
- Carbon reduction/sequestration
- Ecosystem restoration
- Irrigation/water reclamation
- Infrastructure improvements for disadvantaged communities

Plan Structure: Local Actions



City of San Rafael, CA



- **Carbon-Neutral regulations** Developing or retrofitting in a way that balances cutting carbon emissions with developing carbon sinks
- **Carbon Sinks/Carbon Sequestration** Capturing and storing atmospheric CO₂. Techniques for carbon sequestration include:
 - **Geologic measures:** Pressurizing CO₂ until it becomes a liquid, then injecting it into porous rock
 - **Biologic measures:** Reclaimed wood products like arborgrind and compost put carbon where it can be bound up in the aggregated clumps of healthy living soils and kept in place. Protecting and extending forests is also a key carbon storage technique.
- **Net Zero regulations** Similar to Carbon Neutral but includes more than just CO₂. Net zero emission of all greenhouse gases, such as methane, nitrous oxide and other hydrofluorocarbons



1.03 Plan for Environmental and Social Equity

Sustainable Sites lists some measures for including social equity as we build resilient landscapes and communities.

During masterplanning:

- **Identify the community:** As part of the predesign assessment, designers should identify hidden stakeholders
- **Identify community economic and social needs:** work with the community to identify the most pressing economic and social issues that could be addressed on the site
- **Engage community and other stakeholders in site design:** Make sure to include the larger group of stakeholders beyond the primary site users.
- **Consider sharing public and private facilities:** Allow the public access to amenities (pools, parking, restrooms) that are part of the existing program that address community needs.
- **Develop community-centered space with local control:** Develop community facilities that are under the direct control and management of local residents
- **Create volunteer opportunities within public spaces and gardens**
- **Develop community benefits agreement:** A community benefits agreement is a contract between a local community organization(s) and a developer that outlines the specific benefits that the proposed site development will provide

1.04 Recognize Historic and Cultural Significance

Historic Preservation Plans are formally administered by the US Secretary of the Interior.

There are four levels of treatment in order from highest significance to lowest:

- [Preservation](#) focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- [Rehabilitation](#) acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- [Restoration](#) depicts a property at a particular period of time in its history, while removing evidence of other periods.
- [Reconstruction](#) re-creates vanished or non-surviving portions of a property for interpretive purposes.

Public access rehabilitation at Mammoth Cave National Park, Kentucky



Subdomain 2: Master Planning 33%

- Formulate Planning Goals (e.g. vision)
- Prepare Project Program (including budget)
- Synthesize Site Analysis
- Establish Opportunities and Constraints
- Determine Appropriate Land Use
- Develop Master Plan (e.g., conceptual plans, planning high level program elements, community planning, determine planning strategies)
- Evaluate Planning Scenarios
- Produce Planning Documents (e.g., land use, parks, open space, regional, historic, site master, corridor, blueways, greenways)
- Establish Design Guidelines
- Develop Phasing Plan
- Communicate Planning Outcomes

Formulate Planning Goals

Project **goals** are general statements of desired outcomes for a project

- Create a sense of place and community for the downtown urban core of Ithaca, NY

Project **objectives** are more specific than goals. They describe design approaches we can use to reach goals, or actions to be taken.

- Identify unique visual and social attributes of Ithaca (diversity, walkability)
- Identify means of enhancing pedestrian experiences and attracting people to downtown
- Promote opportunities for small local businesses to thrive
- Implement measures to improve sense of safety, security and aesthetics

Design **strategies** are even more action-oriented and detailed than objectives. They are specific actions that allow us to achieve the project objectives.

- Use wayfinding signage to help pedestrians find their way to important destinations
- Place snow shelters and benches where people will be waiting for transit
- Install nighttime call boxes to help stranded motorists



Stakeholder Process 9%

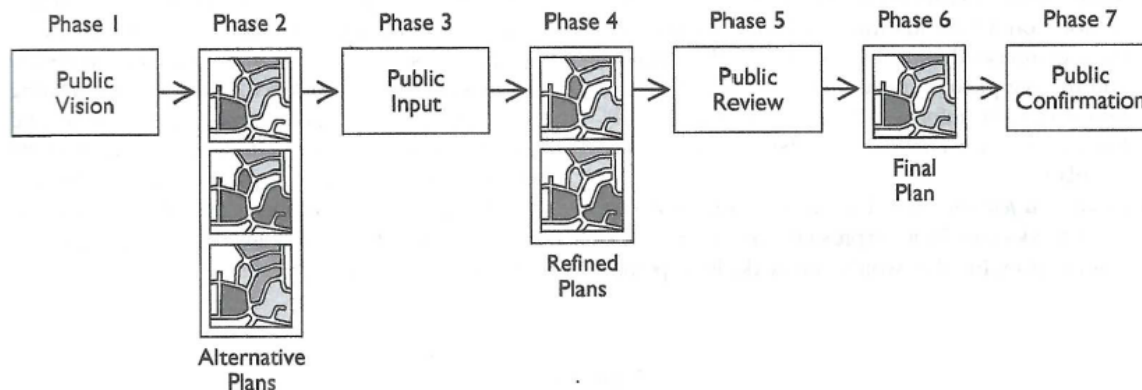
- Design and Execute Public Participation Process
- Prioritize Stakeholder Goals
- Initiate Communication Strategy/Synthesize Stakeholder Feedback/Communicate Concept Schematics

Visioning – Early stage effort to understand a community’s goals and hopes

Charrettes/Workshops –Stakeholders help to shape the vision through a series of interactive meetings

Advisory/Informational Meetings – Bringing a group or person up to date

Problem Solving Meetings –Conflict resolution with a skilled facilitator



Planning and Urban Design Standards is a good reference for this topic

CHARRETTE WORK CYCLE

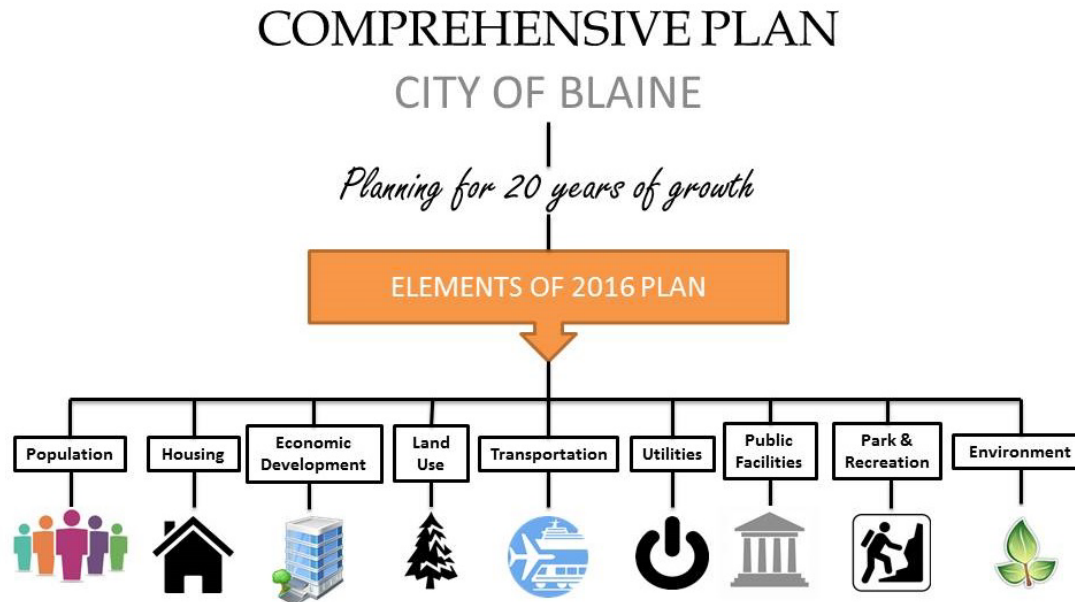
Source: National Charrette Institute, 2003.

Comprehensive Plans

A Comprehensive Plan consists of a statement of development policies for a city or region and includes diagrams and text setting forth goals, objectives, principles, standards, and plan proposals. The Comprehensive Plan sets policy direction, and then over time, City staff translates this direction into zoning and building codes that govern our work as designers.

A Comprehensive Plan has chapters, called Elements, that cover the community's major goals. The American Planning Association has a standard but you will find lots of variation.

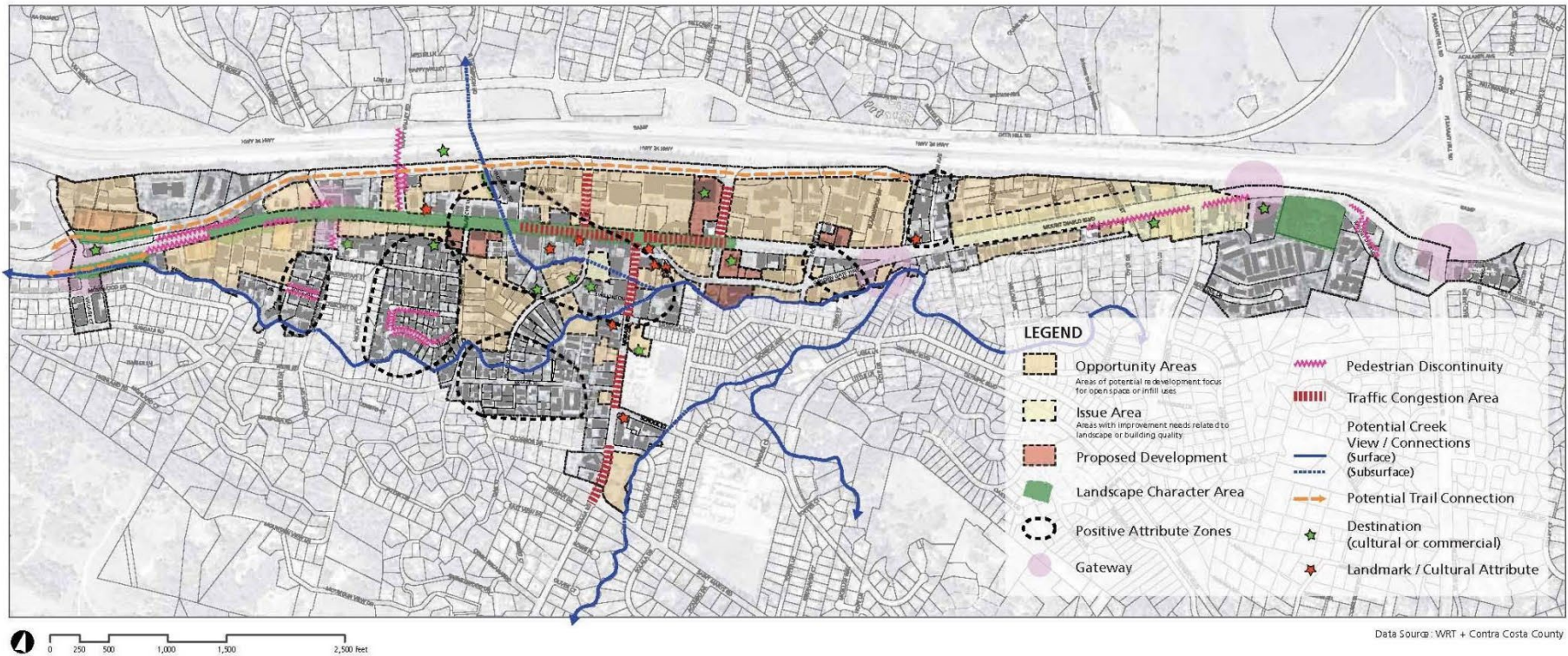
**Check yourself – do you know Comprehensive Plans by a different name? General Plan, Master Plan, General Community Plan? You may need to forget what you know for the LARE



There are many, many examples of Comprehensive Plans online. Go find the one for a city near you! What's in it?

2.4 Opportunities and Constraints Diagram

Provides a colorful summary of the team's site analysis for communication with client and stakeholders, and soliciting public input.

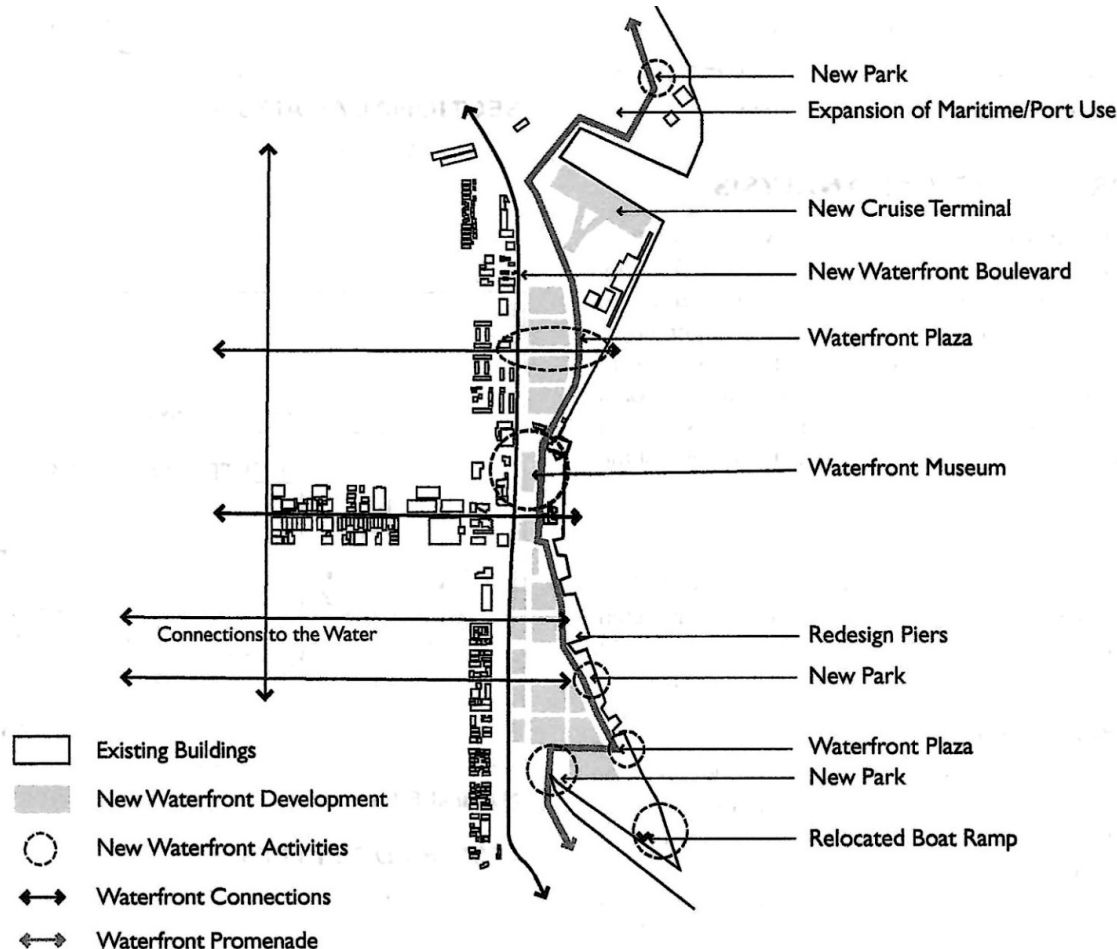


Lafayette Downtown Strategy Opportunities and Issues Map

October 30, 2007

Visioning or Framework Plans

Visioning and Framework Plans provide guidance for potential future development based on previous local planning standards (Comprehensive Plans, Subdivision Standards, Zoning Code)



- Sets goals and standards for an area defined by a single issue or a defined geographical area (transit plans, downtown plans, campus plans)
- Intended to be flexible over time
- Leave some areas undefined to allow for future decisionmaking based on opportunities that may arise in the future

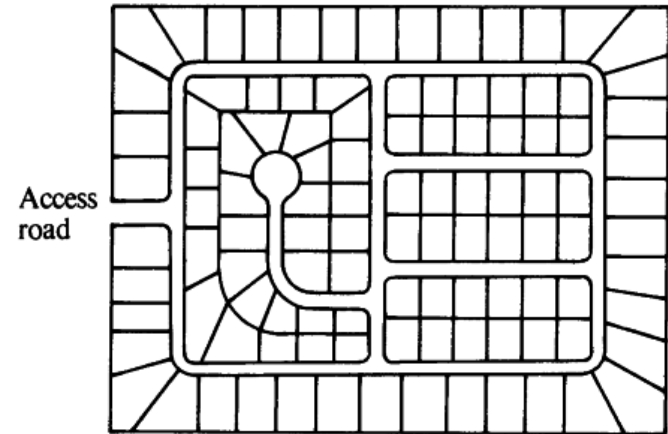
2.05 Determine Appropriate Land Use Plans

Single Family Detached

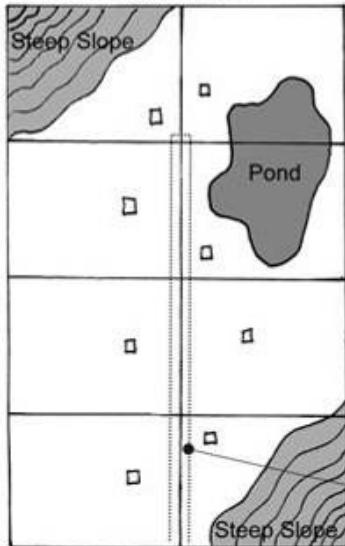
Traditional setbacks, lots. Loop and lollipop form with wide streets, need a car!

Planned Unit (Residential) Development (PUD, PURD), Cluster Development

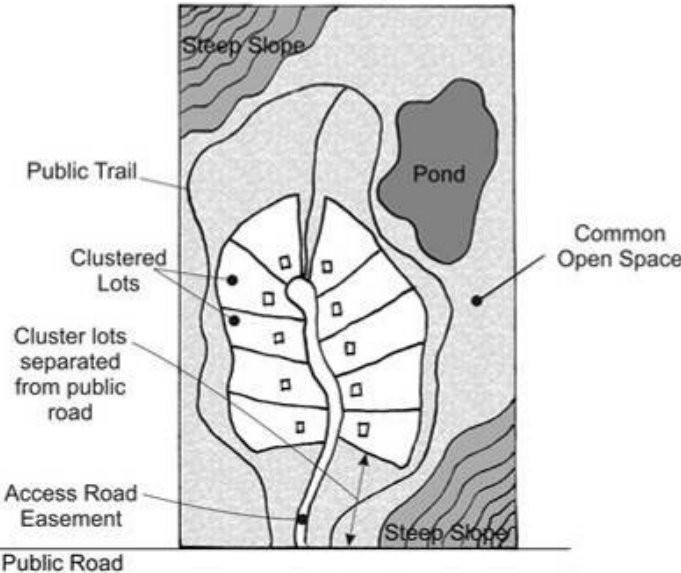
Houses aggregated more closely to create larger areas of shared open space



Standard Subdivision
40 acres with eight 5-acre lots



Conservation Subdivision
40 acres with ten 1-acre lots* and 30 acres of common open space



(*2 bonus lots based on % of common open space and trail with general public access)

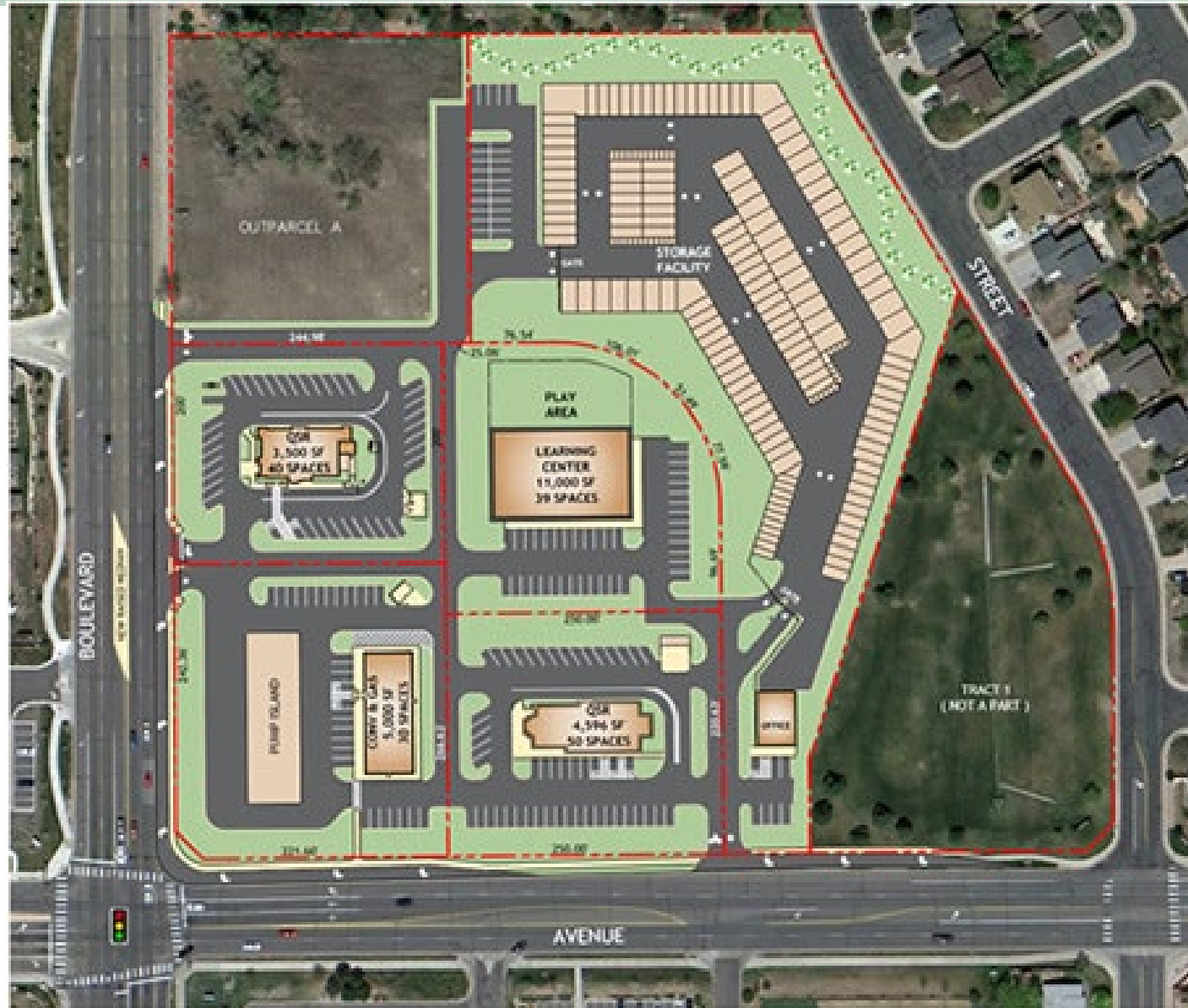


2.06 Site Scale – Site Master Planning

A very diagrammatic, early-stage test layout of program elements that you can use to talk to investors, stakeholders and City officials.

Proves planning concepts – density, setbacks, parking counts, circulation. Does not need to include more detailed site design.

Once you have a Master Plan that is favorably received by all parties, you can begin Schematic Design.



Parks, Open Space and Trails Plans

PARKS AND GREENWAYS CLASSIFICATIONS

CLASSIFICATION	GENERAL DESCRIPTION	SIZE AND SERVICE AREA CRITERIA
Neighborhood Park	Neighborhood parks are the basic units of the park system and serve a recreational and social purpose. Focus is on informal recreation.	Typically 5 acres or more; 8 to 10 acres preferred, with 3 acres the desired minimum size. Service area is one-fourth to one-half mile uninterrupted by major roads and other physical barriers.
Community Park	Serves a broader purpose than neighborhood parks. Focus is on meeting community-based recreational needs, as well as preserving unique landscapes and open spaces.	Varies, depending on function. A minimum of 20 acres is preferred, with 40 or more acres optimal. Service area can be communitywide or several neighborhoods in given area of the community.
Large Urban Park	Large urban parks are generally associated with larger urban centers with large populations. Focus is on meeting wide-ranging community needs and preserving unique and sometimes extensive landscapes and open spaces.	Varies depending on circumstances. A typical minimum size is 50 acres (20.2 hectares), with hundreds of acres not uncommon, such as Central Park in New York City.
Youth Athletic Complex/Facility	Consolidates programmed youth athletic fields and associated facilities to fewer strategically located sites throughout the community. Also can provide some neighborhood use functions.	Varies, with 20 acres or more desirable, but not absolute. Optimal size is 40 to 80 acres (16.2 to 32.4 hectares).
Community Athletic Complex/Facility	Consolidates programmed adult and youth athletic fields and associated facilities to a limited number of sites. Tournament-level facilities are appropriate.	Varies, with 20 acres (8.1 hectares) or more desirable, but not absolute. Optimal size is 40 to 80 acres (16.2 to 32.4 hectares).
Greenway	Lands set aside for preserving natural resources, remnant landscapes, and open space, and providing visual aesthetics/buffering. Also provides passive-use opportunities. Ecological resource stewardship and wildlife protection are high priorities. Suitable for ecologically sensitive trail corridors.	Varies, depending on opportunity and general character of natural systems within the community.
Parkway	Linear parklike transportation corridors between public parks, monuments, institutions, and sometimes business centers. Can be maintained green space or natural in character.	Varies.
Special Use	Covers a broad range of parks and recreation facilities oriented toward single-purpose uses, such as a nature center; historic sites, plazas, urban squares, aquatic centers, campgrounds, and golf courses.	Varies, depending on need.
Park-School	School sites that are used in concert with, or in lieu of, other types of parks to meet community park and recreation needs. School sites often provide the majority of indoor recreational facilities within a community.	Varies, depending on specific site opportunities.
Private Park/Recreation Facility	Parks and recreation facilities that are privately owned, yet contribute to the public park and recreation system.	Varies.
Regional Parks and Park Reserves	Larger-scale, regionally based parks and open spaces that focus on natural resource preservation and stewardship.	Typically a minimum of 500 acres (202.3 hectares) and up to several thousand acres or several hundred hectares. Service area is regional, which generally encompasses several cities.

There are many design standards and a chunk of vocabulary that goes along with this topic. Review in Planning and Urban Design Standards.

- Level of service (LOS)
- 5 minute/10 minute walk (corresponds to ¼ mile/1/2 mile)
- Accessibility requirements – check USDA standards for hiking trails too

Develop Design Guidelines

Landscape architects and city planners produce legal documents that are used during planning review to evaluate projects. They need to be fair and objective. Form-based codes are an effort to remove personal aesthetics from planning review. Many examples available on line, check your city! Also PUDS.

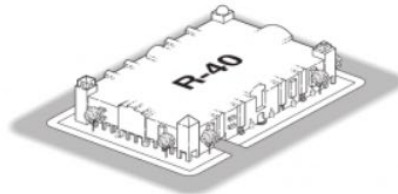
Conventional Zoning

Density use, FAR (floor area ratio), setbacks, parking requirements, maximum building heights specified



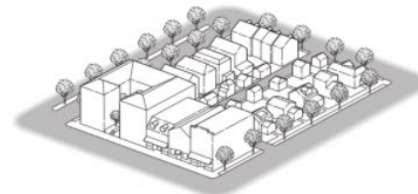
Zoning Design Guidelines

Conventional zoning requirements, plus frequency of openings and surface articulation specified



Form-Based Codes

Street and building types (or mix of types), build-to lines, number of floors, and percentage of built site frontage specified.



Five Main Elements of Form-Based Codes

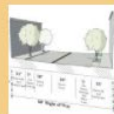
1. Regulating Plan

A plan or map of the regulated area designating the locations where different building form standards apply.



2. Public Standards

Specifies elements in the public realm: sidewalk, travel lanes, on-street parking, street trees and furniture, etc.



3. Building Standards

Regulations controlling the features, configurations, and functions of buildings that define and shape the public realm.



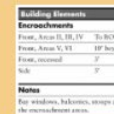
4. Administration

A clearly defined and streamlined application and project review process.



5. Definitions

A glossary to ensure the precise use of technical terms.



Feasibility Studies

Pro-Forma – A spreadsheet that summarizes all known costs to build the project. It will include hard costs and soft costs.

Hard costs – costs directly related to construction

Soft costs – costs related to design, permits, financing, and debt

Return on Investment (ROI) – the expected profit after all costs.



REPRESENTATIVE COMMUNITY SHOPPING CENTER DEVELOPMENT COSTS

DEVELOPMENT COMPONENT	SQUARE FOOTAGE	COST FACTOR	TOTAL COST
Land Acquisition	678,720	\$10	\$6,787,200
Building Construction Costs			
Supermarket	65,000	\$74	\$4,829,994
Drugstore	15,000	\$ 84	\$1,254,864
Small Retail	89,000	\$98	\$8,693,751
Parking (Spaces)	680	\$3,500	\$2,380,000
Total Building Construction Costs	169,680		\$17,156,609
Site and Soft Costs			
Other Site Improvements	678,720	\$3.00	\$2,036,160
Environmental Cleanup		Lump Estimate	\$1,000,000
A&E	Hard Cost	4.0%	\$807,791
Construction Supervision	Hard Cost	2.5%	\$504,869
Permits and Impact Fees		Estimate	\$150,000
Real Estate Taxes During Construction			\$50,000
Legal	Per Square Foot	\$1.00	\$169,680
Leasing	Per Square Foot	\$6.00	\$1,018,080
Contingency	Hard and Soft Costs	5%	\$1,144,759
Financing Fees	Construction and Permanent	2%	\$545,346
Construction Interest	One-year, Half-Out Method	8%	\$1,090,692
Development Fee	Total Development	2.5%	\$811,580
Total Site and Soft Costs			\$9,328,957
Initial Year Operating Loss After Debt Service			\$1,768,113
Total Development Cost			\$35,042,879
Per Square Foot			\$206.52

Source: S. B. Friedman & Company.

View Corridor Plan

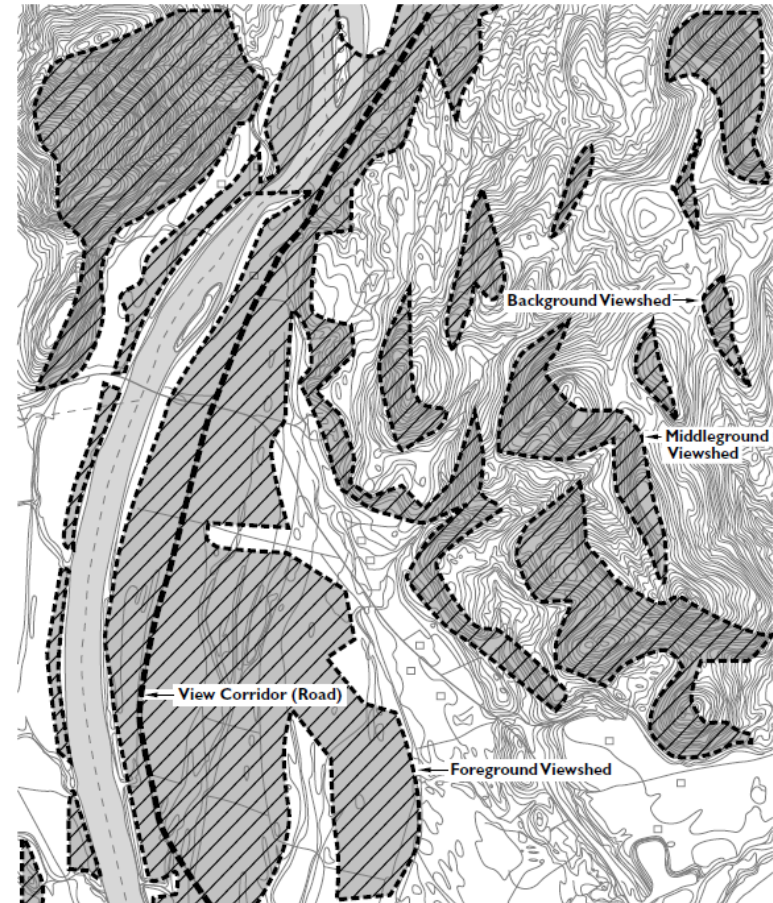
A view corridor is a three-dimensional area extending out from a viewpoint. The width of the view corridor depends on the focus of the view. The focus of the view may be a single object, such as Mt. Hood, which would result in a narrow corridor, or a group of objects, such as the downtown skyline, which would result in a wide corridor.

City of Vancouver View
Protection Plan analysis diagrams:



Cambie Bridge protected views

Example from
PUDS:



This viewshed would be the sum total of views from a car traveling down the road, a boat traveling down a river, or a person walking along a hiking trail (both directions).

VIEWSHED FROM A CORRIDOR

Source: Dodson Associates 2004.

Redevelopment Plan

A Redevelopment or Economic Development Plan seeks to improve the financial situation of businesses and workers within a community. Cities have several tools available for pursuing this goal:

- Setting aside land through zoning, remediation, or other means
- Underwriting risks for developers, making the project more attractive
- Providing amenities and infrastructure through capital improvement (bonds, public funded projects)
- Creating an economic development team or department to provide ongoing support
- Promoting existing quality of life amenities that might attract new development
- Attracting 'creatives' to encourage a diverse cultural scene
- Establishing a joint economic development zone where developers can have special support
- Providing job training
- Refining regulations to streamline approvals
- Establishing business-retention programs
- Adopting design guidelines for commercial, industrial and institutional areas



SELECTED GOALS AND BENCHMARKS IN THE WASHINGTON COUNTY, UTAH, STRATEGIC ECONOMIC DEVELOPMENT PLAN

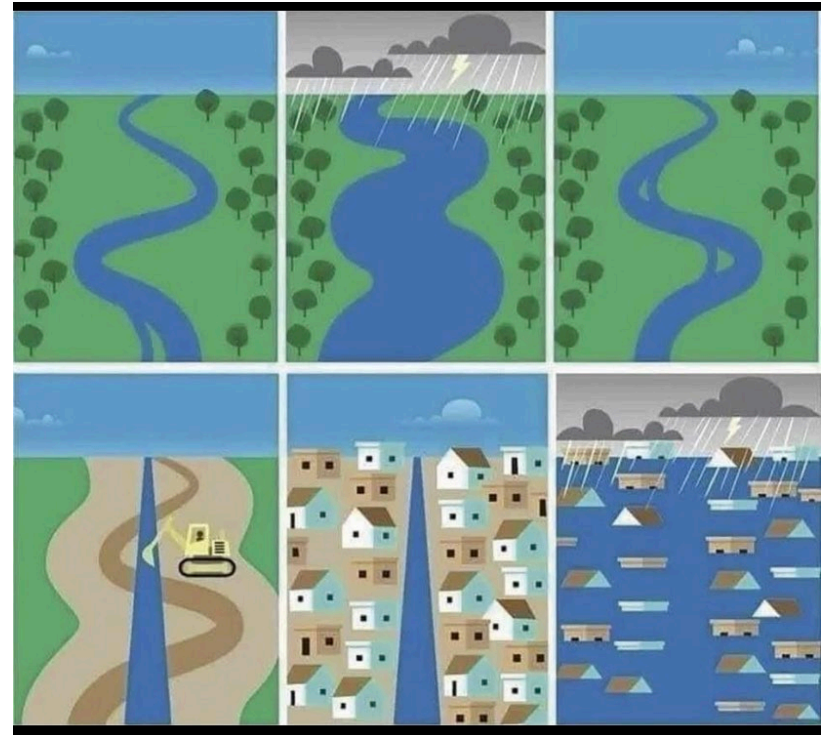
GOALS	MEASURE OF SUCCESS
Diversify and strengthen our economy and increase our wage scale by attracting value-added business.	Locate 750 new value-added jobs within the next five years. Increase the per capita wage of the county to the level of the Utah State average.
Develop improved industrial sites, which are affordable and attractive to new and expanding value-added businesses.	Monitor the industrial market to ensure that at least 100,000 square feet of industrial high cube inventory is available.
Encourage the construction of spec buildings for use by value-added companies.	Maintain sufficient fully developed land and available building space to service existing and new value-added business.
Expand existing infrastructure to maintain and improve service levels.	Increase private and public funding for key infrastructure and services by 25% over the next five years.
Increase the county's economic development capability such that it fully utilizes the strengths and resources of both the public and private sectors.	Fully fund economic development organization with sufficient cash reserves.
Increase the advanced degree, technical, and professional skills training provided within the county through Dixie State College of Utah and Dixie Applied Technology Center.	Annually increase the number of courses available for advanced technical skills training.

Benchmarks that Washington County has set for monitoring success for the plan's goals.

Source: Washington County, Utah, 2003.

Environmental Resources Plans - Stormwater Management

- Historical (pre-1970): Stormwater runoff is a nuisance to be gotten rid of as quickly as possible
- Downstream impacts are of little concern
- Modern: Stormwater is a resource which should be managed for quantity and quality
- Stormwater Management Laws and Ordinances
- Technological Measures
 - Detention and Retention
 - Groundwater Recharge
 - Biotechnical Stream Restoration
 - Flood Control and Channelization



Low Impact Development



Low Impact Development (LID) is a sustainable storm water management strategy. It emphasizes holistic approach to site design and overall sustainable design to manage storm water at its source and collect rainwater for secondary use.

Environmental Resources Planning and EIRs

NEPA (National Environmental Policy Act) requires a federal review process for large projects having a noticeable impact on the environment.

Typically occurs right after the Master Plan stage, early in Schematic Design.

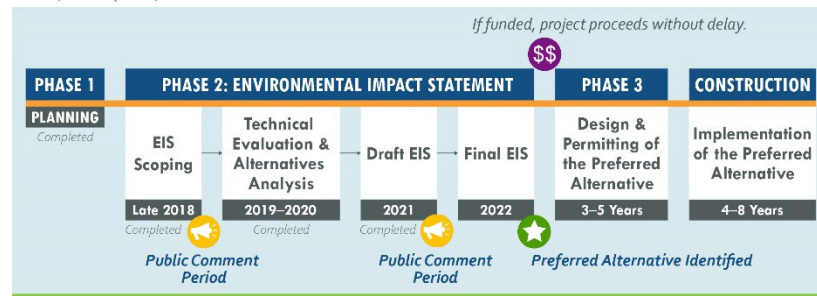
EPA has developed a set of criteria for rating a draft Environmental Impact Statement (EIS). EPA rates the draft EIS on an alpha-numeric system and includes the designated rating in EPA's comment letter. In general, the rating is based on the lead agency's preferred alternative. The rating system provides a basis upon which EPA makes recommendations to the lead agency for improving the draft EIS.

The alphabetical categories listed below signify EPA's evaluation of the environmental impacts of the proposal:

- [LO \(Lack of Objections\)](#)
- [EC \(Environmental Concerns\)](#)
- [EO \(Environmental Objections\)](#)
- [EU \(Environmentally Unsatisfactory\)](#)

The numerical categories listed below signify an evaluation of the adequacy of the draft EIS:

- [1 \(Adequate\)](#)
- [2 \(Insufficient Information\)](#)
- [3 \(Inadequate\)](#)



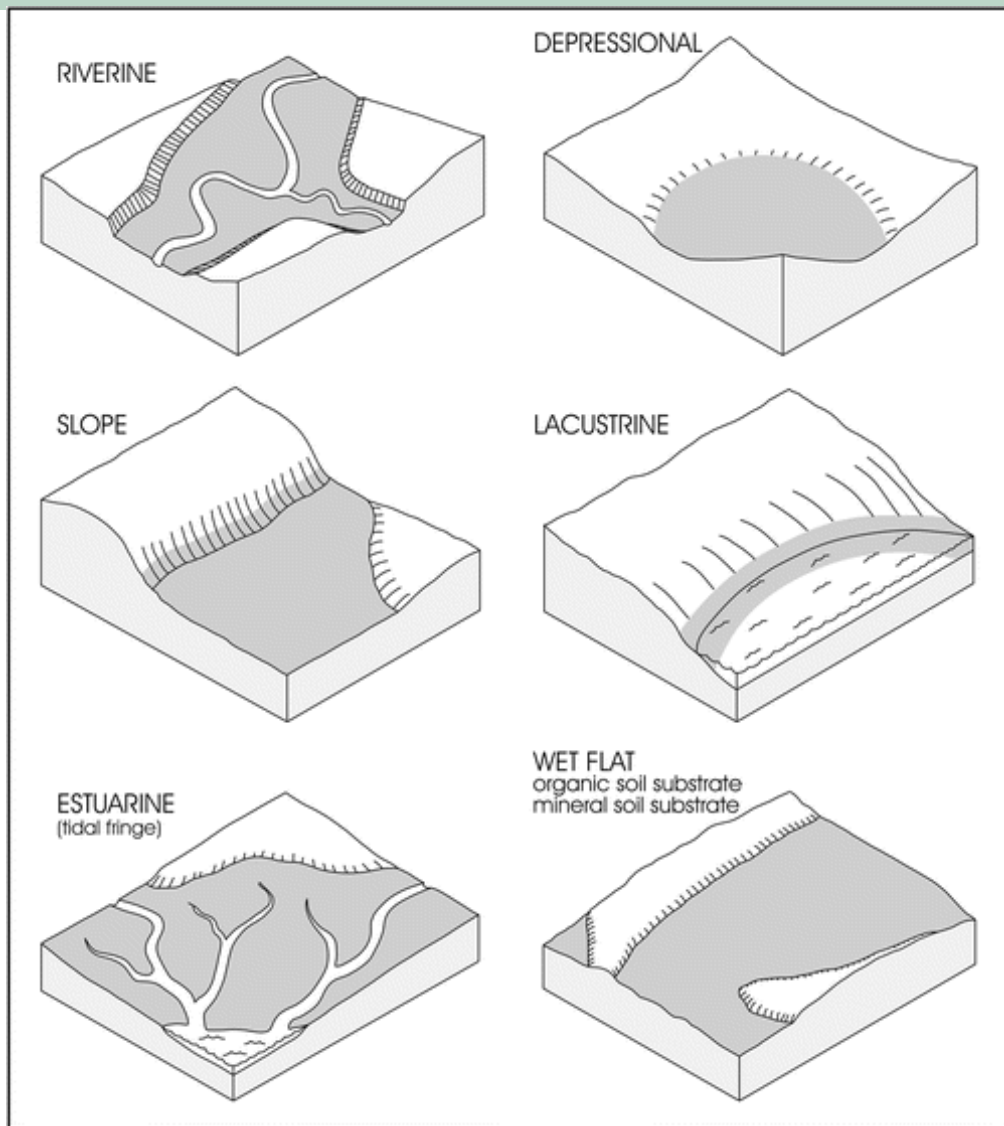
Stages of an Environmental Impact Statement

- Notice of Intent
- Draft EIS
- Final EIS
- Record of Decision

Contents of an Environmental Impact Statement

- Notice of Intent
- Project Description and Scope
- Purpose and Need
- Alternatives to the Proposed Project
- Affected Environment
- Environmental Consequences
- Comments and Coordination
- List of Preparers
- Record of Decision

Hydrogeomorphic Classification for Wetlands



Soil that is periodically saturated with water (hydric) with Plants that can tolerate such conditions (hydrophilic)

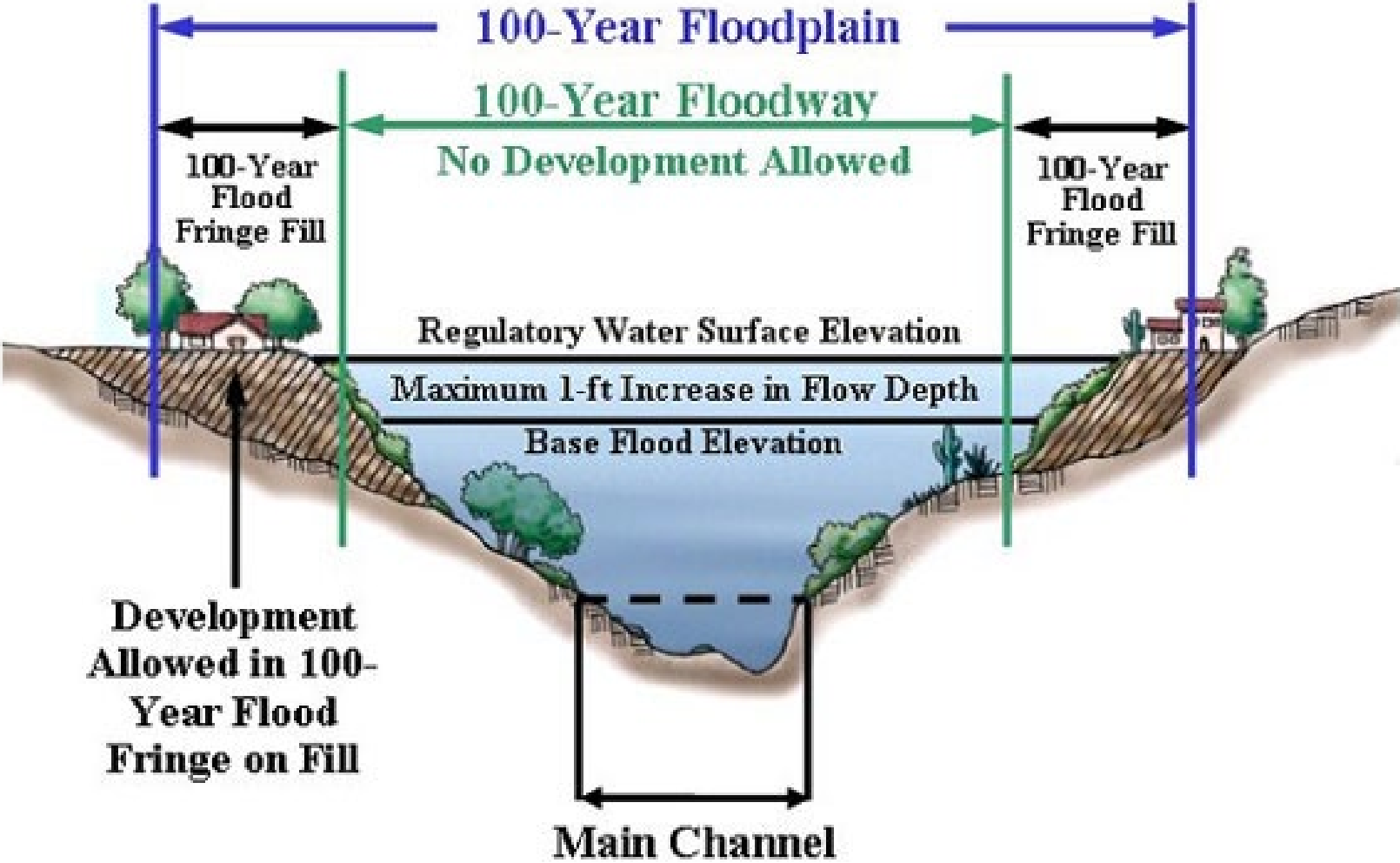
Categories

Tidal & Non-Tidal

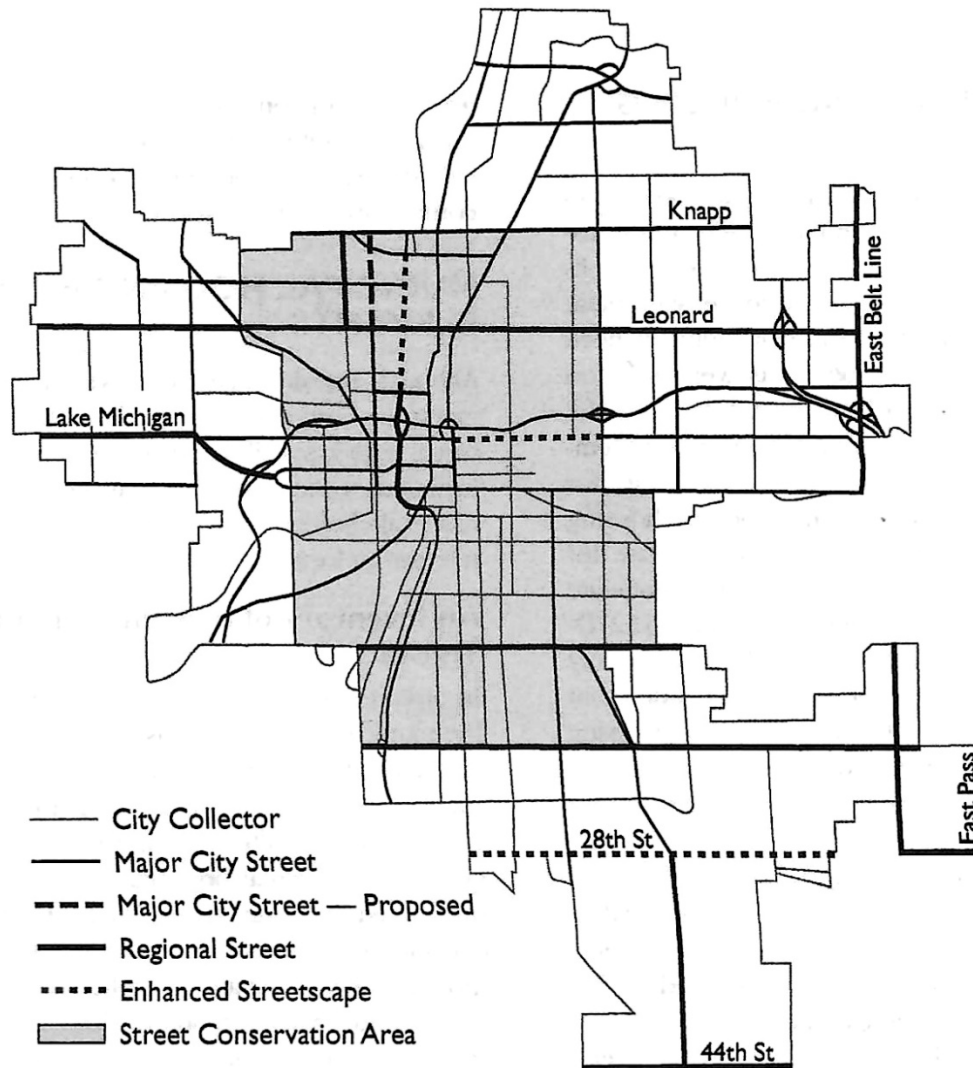
US Fish & Wildlife Service

- Riverine (rivers and streams)
- Depressional (ie. vernal pools, pocosins, etc.)
- Slope (Artesian wells, seeps, other places where groundwater discharges to the surface but does not accumulate)
- Mineral Soil Flats (dry lakes, etc)
- Organic Soil Flats (peat bogs)
- Tidal Fringe (ocean edges)
- Lacustrine Fringe (lake edges)

Floodplain Management



Multi-Modal Transportation Plan



- Separate different circulation systems wherever possible for safety and also for aesthetics of scale. (Central Park)
- Where different systems come together, consider appropriate means of separation or intersection (curbs, planting, rough pavements to slow traffic, grade separation, etc.).
- Pattern streets to provide efficiency and to help people navigate.

TRANSPORTATION FRAMEWORK PLAN: STREETS

Source: Adapted from City of Grand Rapids, Michigan, 2002, Plan for Grand Rapids.

Multi-Modal Transportation Plan

Credit 1.7: Connect to multi-modal transit networks

2–3 points

INTENT

Improve human health and reduce pollution by selecting a site that connects to pedestrian, bicycle, and mass-transit networks.

REQUIREMENTS

Option 1: Pedestrian and bicycle network 2 points

- Locate the project on a site that is accessible to pedestrians with the following planned or existing features:
 - Continuous sidewalk and crosswalk network, trail network, or a combination that extends at least one mile (1.61 kilometers) in radial distance from a project entrance
- And, locate the project on a site that is accessible to bicyclists with one of the following planned or existing features:
 - A street with **bicycle lanes** or **shared lane markings (SLMs)** on both sides that connect directly to a project entrance
 - A **bicycle network** located no further than a **0.75-mile** (1.2-kilometer) bicycling distance from a project entrance and spanning at least five continuous miles (8.05 kilometers) in length

In the case of planned facilities, show that the relevant agency has committed to provide the designated facility within two years of project completion.

Option 2: Transit network 3 points

- Locate the project on a site with existing or planned transit service so that:
 - At least one project entrance is within a **0.25-mile** (0.4-kilometer) walking distance of **bus or streetcar stops**, or within a **0.5-mile** (0.8-kilometer) walking distance of **rapid transit stops**, passenger rail stations, or ferry terminals
 - Transit service at those stops in aggregate meets the needs of the site users

In the case of planned service, show that the relevant transit agency has committed to provide the transit service within two years of project completion.

Criteria as defined by
Sustainable Sites



Subdomain 3: Schematic Design 28%

- Develop Design Intent
- Create the Basis for Design
- Prepare Functional Diagram
- Produce Conceptual Diagram
- Develop Schematic Designs
- Evaluate Design Alternatives
- Refine Selected Alternatives
- Produce Graphics, Illustrations, and Diagrams

Create the Basis for Design

For large complex projects like Complete Streets or tight urban infill development, the design process will often begin with a Basis of Design phase. All disciplines work with the Client and City to combine and verify critical existing conditions and site infrastructure information.

The basis of design identifies a baseline for inventory, standards, performance requirements, and operational requirements.

This phase may include early investigation in the field, with Geotechnical specialists and Civil performing specialized investigations:

- Potholing – Making strategic holes through pavement to verify locations of underground utilities
- Soil Borings – Taking samples of soils that are underneath pavements to check for toxic substances
- Additional surveying to fill in gaps in the existing conditions plan

When this phase is complete, the design team can move forward with an accurate base map that shows everything they need.

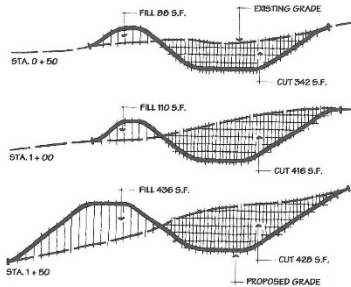
Prelim Quantities and Cost Estimating

- Resources
 - Published Costing Books (RS Means, BNI) your firm's in-house records, Agency Resources (DOT), Contractors
- Terms to know
 - Quantity take off
 - Contingency
 - Prevailing wage
 - Unit price
 - Lump sum
 - Allowance
 - Mobilization
- Units of Measure
 - Linear foot, square foot, face foot, cubic yards, ton, each, allowance
- Some costs are calculated based on % of the contract
 - Contingency, overhead, profit, mobilization

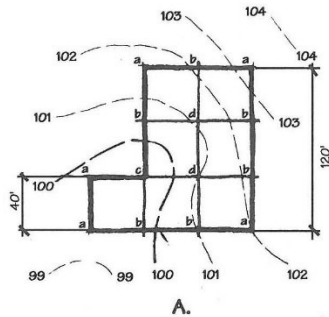
Construction Cost Estimate Worksheet				
Applicant Name		Project Name		
125 Fountain Avenue, L.P.		Liberty Apartments		
Trade/Item	Unit	Quantity	Unit Cost	Total
Division 1: General Requirements				
1 Mobilization	LS		\$20,000.00	\$20,000.00
2 Temporary facilities	LS		\$30,000.00	\$30,000.00
3 Sidewalk Bridge/Safety	LS	1	\$90,000.00	\$90,000.00
4 Dumpsters	EA	85	\$1,100.00	\$93,500.00
5 Engineering and Testing	LS	1	\$75,000.00	\$75,000.00
6 Plans and Specs	LS	1	\$15,000.00	\$15,000.00
7 General Labor	LS		\$80,500.00	\$80,500.00
8				\$0.00
9				\$0.00
10				\$0.00
Division 1 Total				\$404,000.00
Division 2: Sitework				
1 Surveying	LS	1	\$15,000.00	\$15,000.00
2 Clear and grub/drainage	LS	2	\$15,000.00	\$30,000.00
3 Excavation/obstructions	CY	3964	\$50.00	\$198,200.00
4 Shoring/ shoring engineer	LS	775	\$40.00	\$31,000.00
5 Backfilling/Misc Machine days	Days	25	\$1,500.00	\$37,500.00
6 Plantings	EA	90	\$383.00	\$34,470.00
7 Paving/Pavers/fencing/curbs			\$110,678.00	\$110,678.00
8 Sidewalk with removal			88,652	\$88,652.00
9 Site furnishings/play equipment/safety surface			\$54,500.00	\$54,500.00
10				\$0.00
Division 2 Total				\$600,000.00
Division 3: Concrete				
1 Perimeter walls	CY	145	\$550.00	\$79,750.00
2 Interior Walls	CY	85	\$550.00	\$46,750.00
3 Perimeter and interior footings/stairs/misc. footings	CY	414	\$450.00	\$186,300.00
4 Misc. Concrete/rat slab	CY	56	\$400.00	\$22,400.00
5 Precast Concrete Plank	SF	49118	\$15.00	\$736,770.00
6 Precast stairs	FLT	7	\$5,000.00	\$35,000.00
7 Edge stops	LF	5112	\$4.50	\$23,004.00
8 Rebar	LBS	36953	\$1.50	\$55,429.50
9 Pump days	EA	10	\$1,575.00	\$15,750.00
10				\$0.00
Division 3 Total				\$1,201,153.50

Preliminary Quantities - Cut and Fill

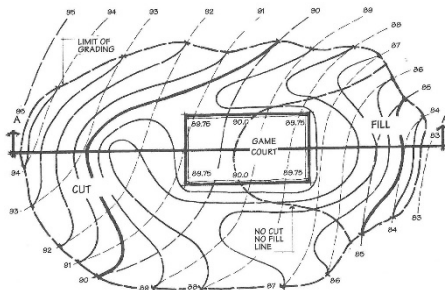
Know the three major types of Cut and Fill calcs. *Time Savers Standards* explains these well.



Average End Area Method



Grid or Borrow Pit Method



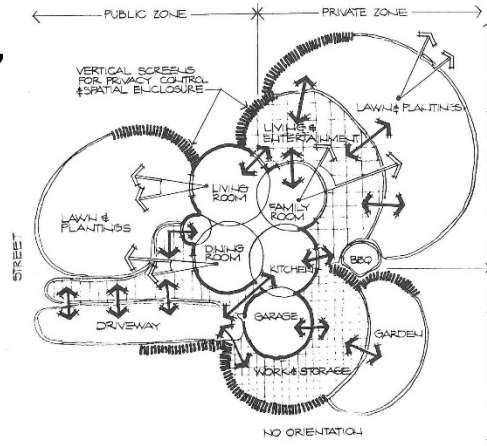
Contour Planes Method

Prepare Presentation Drawings and Communication Tools

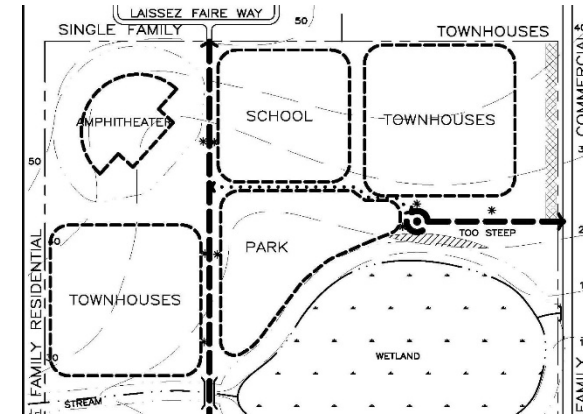
For each stage of the design process, there is an appropriate visual style.

Schematic Design:

- Loose, informal drawings imply that decisions have not been finalized
- Colorful illustrative graphics for presentation help communicate the idea in public meetings.
- Hand drawings with markers, watercolors
- Digital renderings with Photoshop, Illustrator
- 3d modeling with Sketchup, Rhino, Lumion



Functional Diagram (Booth)



Bubble Diagram



Presentation Rendering (Birds' Eye View)

Role of Visual Communication

For each stage of the design process, there is an appropriate visual style.

Design Development:

- Images to help with materials selection/ costing
 - Lookbooks
 - Materials boards



RHODODENDRON (EVERGREEN; CAN GET VERY LARGE)



BOXWOOD (EVERGREEN; SMALL OR MEDIUM-SIZED)



YEW (EVERGREEN; MEDIUM-SIZED)



RED TWIG DOGWOOD IN WINTER + SUMMER (MEDIUM-SIZED)

(A) EXAMPLES OF SHRUBS FOR SCREENING AND/OR VISUAL INTEREST



(B) EXAMPLES OF AESTHETIC OPTIONS OF STONE PAVING FOR PATH AND PATIO TO CONSIDER



(C) EXAMPLES OF SHADE-TOLERANT SPECIES TO CONSIDER (FLOWER COLORS VARY WIDELY BY CULTIVAR)



(D) EXAMPLES OF RAISED WOODEN PLANTERS

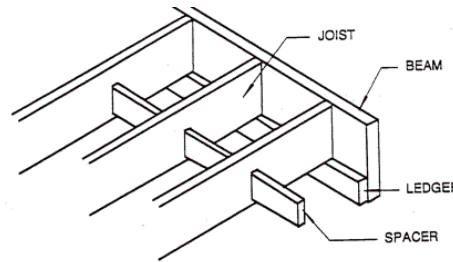
Role of Visual Communication

Construction Documentation:

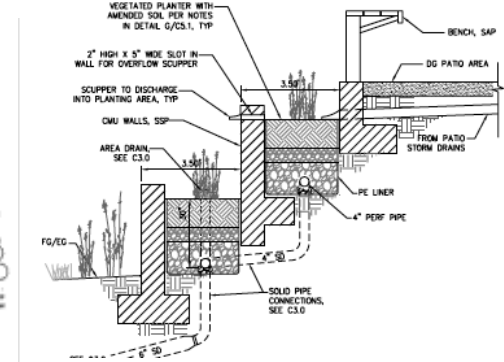
- Technical drawings accurate enough to be part of the construction bidding and contracting package.
- Increasingly these are in color due to the digitization of the construction process but they remain simple, diagrammatic and analysis or construction oriented.
- Not intended for the public – precise and specialized



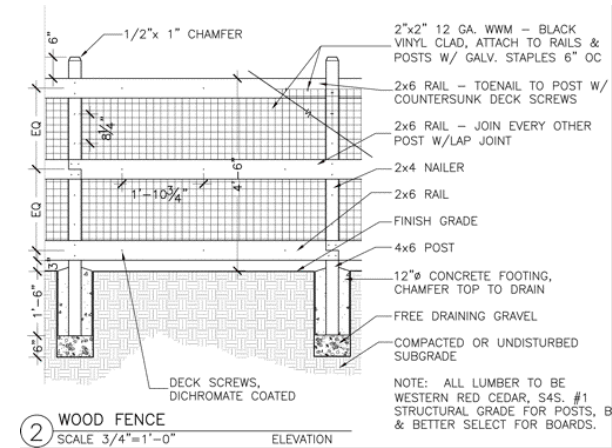
Plan



Axonometric

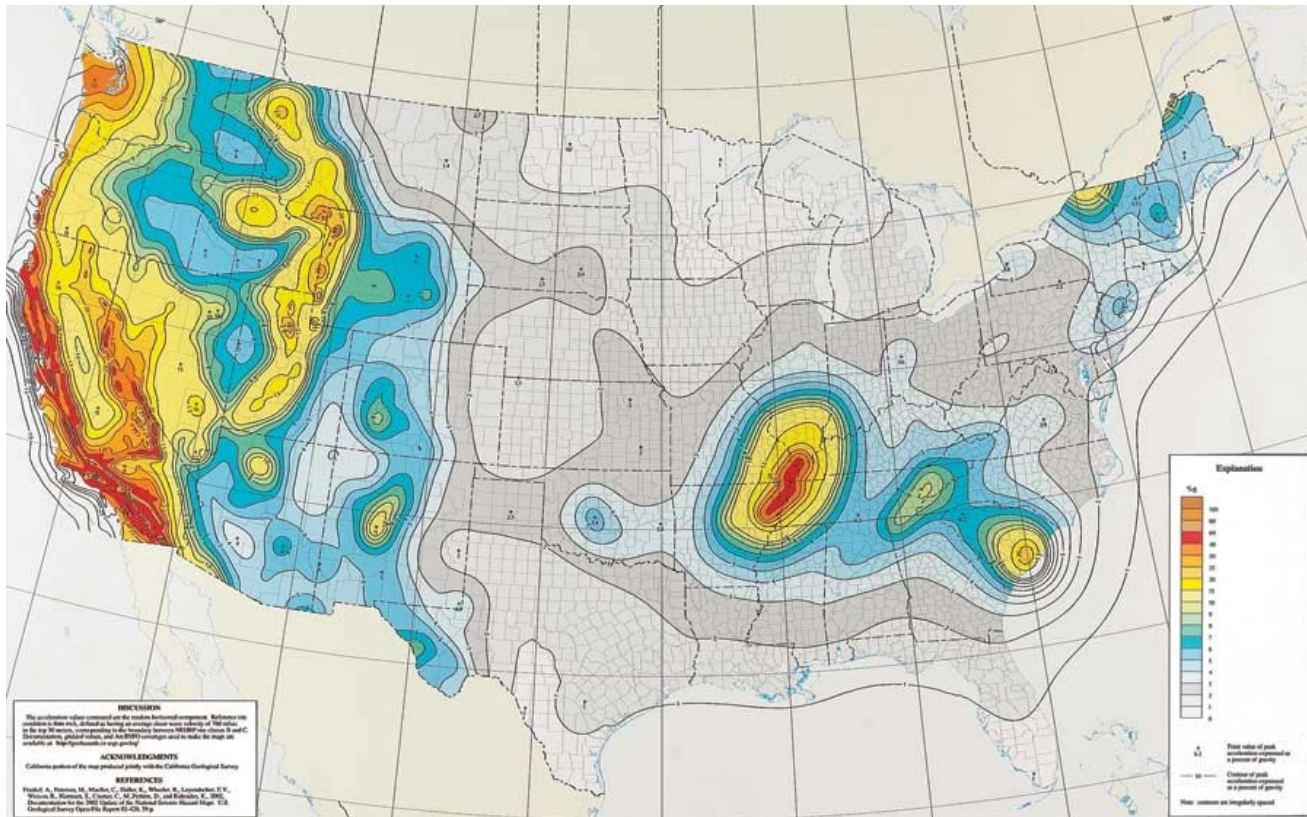


Section



Elevation

Geographic Information Systems



An Electronic Database
Planning and Analysis Tool
Useful at Large Scales
Master Plans

McHargian Overlay Analysis
Not really a drawing tool
Not very useful at Site Scale

Subdomain 4: Design Development 22%

- Refine Design Elements (e.g., material, circulation, lighting, utilities, planting)
- Determine Maintenance Implications
- Collaborate on the Design of Irrigation Systems (e.g., water conservation, sustainability, low water, gray water)
- Identify Required Approvals (e.g., regulatory permitting)
- Develop Opinion of Probable Costs (e.g., schematic, design development, revisions)
- Evaluate Value Engineering Alternatives
- Demonstrate Understanding of Legal Liabilities

Materials - Lighting Systems

LARE Concerns

- Safety: Illumination levels
- Aesthetics: Color rendering similar to sunlight
- Economy: Installation & Maintenance Costs

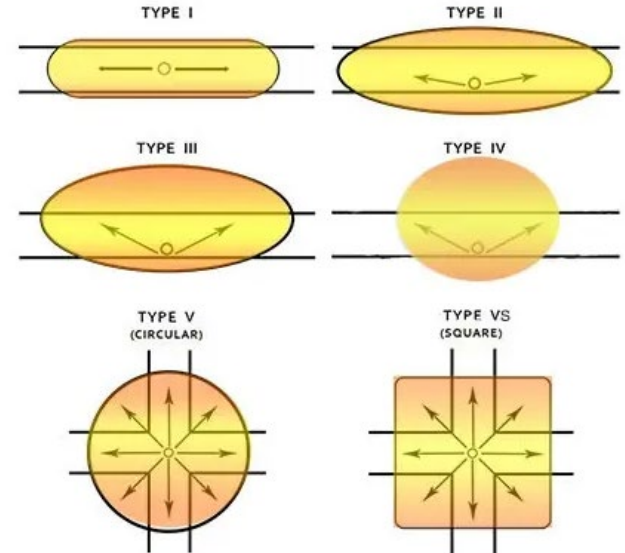
Terms

- Lumen: the power of light as perceived by the human eye
- Lux: one lumen per square meter
- Footcandle: one lumen per square foot
- Photometrics: light levels at varying distances from source
- Optics: light pattern

BUG Ratings – Backlighting, Uplighting and Glare

- How much light trespass does a fixture produce?

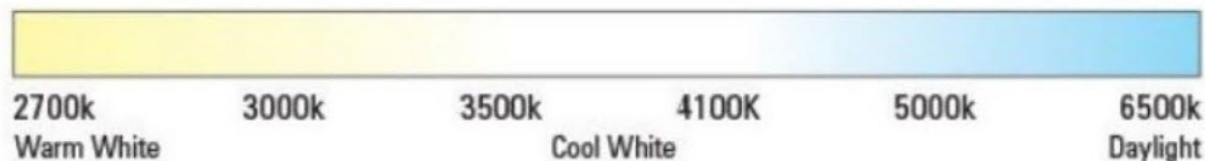
Try to select a fixture with a low BUG rating and back up your lighting plan with a photometric plan showing predicted illumination levels.



Materials - Lamp & Fixture Types

	Color Temp (K)	Color Render	Install Cost	Energy Efficiency	Bulb Life
- Mercury Vapor	CWht	Good	Med	Med	Excel
- Metal Halide	CWht	VGd	High	High	Good
- High Pressure Na	Or-Yel	Poor	High	High	Good
- Low Pressure Na	Yel	VPr	High	VHigh	Excel
- Incandescent	WWht	Best	Low	Low	Vlow
- LED	Many	Good	Med	Vhigh	Excellent
- Induction	Many	Good	Med	High	Excellent

Kelvin Scale for Color Temperatures



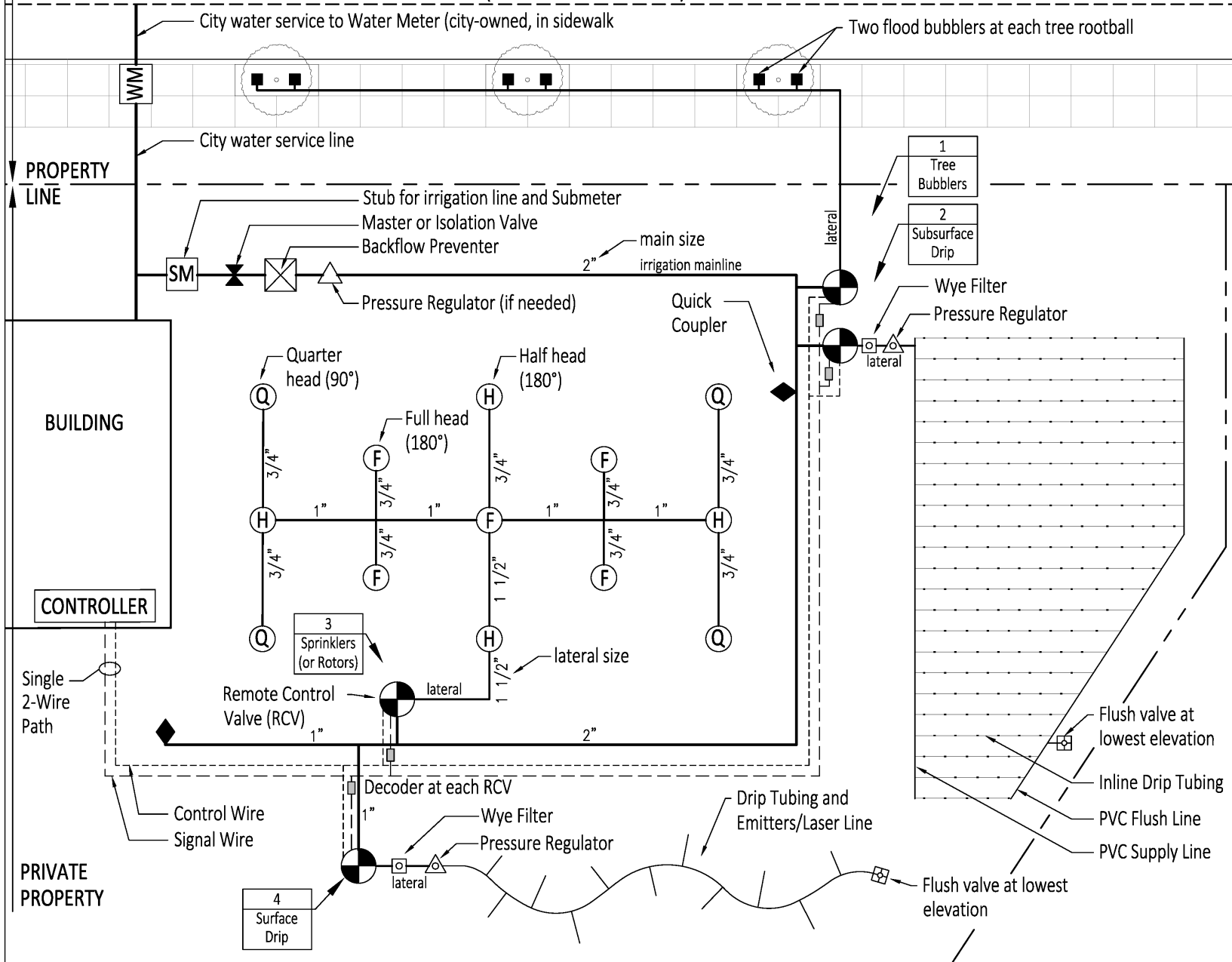
Spray vs Drip Systems

Spray Irrigation	Subsurface Drip	Black Poly Drip
	Advantages	
Easier maintenance	Highly efficient/ little waste	Cheap 'n easy
Easier to spot problems	Delivers water directly to plants	Delivers water directly to plants
Less likely to be damaged by animals or weather	Less likely to be damaged by animals or weather	Easier to reconfigure layout
Even coverage is good for tree roots	Deep, even coverage is great for tree roots	Less weed growth
	Disadvantages	
Costlier installation and parts (Supply lines are buried)	Costlier installation and parts (Supply lines are buried)	Parts are cheap but flimsy
Sprayed water subject to wind	Unskilled maintenance may damage hidden lines or emitters	Animals chew on emitters/tubing
Watering ground surface encourages weed growth	Turf areas more difficult to establish	Limited lifespan
	Need a filter to prevent clogging	Need a filter to prevent clogging

CITY ROW

Irrigation Schematic, 2-Wire System, Sarah Gronquist (2024)
(based on Chris Grampp's drawing, 1999)

CITY WATER MAIN (UNDER STREET PAVING)



Materials Sample Board

A Materials Sample Board is a collection of physical samples, usually compiled for ownership and/or Planning Review.

For Section 3, don't worry about construction detailing. Know common materials and focus on early design features like cost, durability, and sustainability. Use the CLARB materials list to start, but think about newer, sustainable materials as well.

- Planting – HSW issues?
- Wood and wood substitutes
- Metal
- Concrete and sustainable mixes
- Masonry/CMU
- Stone and rock dusts
- Asphalt
- New materials – HDPE, biochar, permeable concrete, pavers, asphalt, other?



Sustainable Sites by Calkins is good for emerging sustainable materials

Need to brush up on Other Topics?

Americans with Disabilities Act (federal standards may be different than the ones you are familiar with!) <https://www.access-board.gov/>

Standards for Bicycle Routes *Landscape Architectural Graphic Standards*, NACTO
'Urban Bikeway Design Guide'

Signage and Wayfinding *Wayfinding: Principles and Practice* LATIS publication

General Maps and Plans, Urban Planning mindset *Planning and Urban Design Standards* – spend a lot of time with this book if you don't work on larger public projects with a significant permit component.

Sustainability Sustainable Sites scorecard – know all that terminology

LARE Planning and Design

Part 4:

How to tackle all this –
and Q & A !

How to Study

ORGANIZE YOUR STUDY TIME

It is best to set up a regular study schedule. Many short sessions are better than a few cram sessions. Can you devote 2-3 hours a week to study, in 30-60 min segments? Block this time out on your calendar and make it realistic given your work and family commitments.

Figure out how many weeks you have and assign a topic or two to each week. Make a study plan.

Each session:

- Start with something easy and pleasant – 5-10 minutes of flashcards is a good beginning.
- 15-20 minutes of reading – review CLARB’s reference books first and then our additional recommendations. Skim for graphics and vocabulary if you have a hard time focusing on reading. Try to understand concepts rather than memorizing numbers or formulas (other than the ones we’ve reviewed today).
- 30 minutes of grading practice - Do one of our AITs or a grading exercise from Valerie Aymer’s new book or the old Morrison Media/PPP Section E vignettes. Learning to draw contours is important as well as practicing spot grade calculations.

Do you have exam anxiety?

We highly recommend some regular mindfulness practice to defuse the emotional charge around this upcoming event. I have been experimenting with the online course ‘Waking Up’ but also can recommend free lectures by Tara Brach available online. Regular exercise, relaxing with your family or pets, or forest bathing may work too. Be kind to yourself and find ways to enjoy this part of your life while you are doing the work. <3

Turbocharge your effort by forming a Study Group!

A study group needs to be organized just like any project team. Someone needs to take the lead, but there are many online resources that can make this easier. We've set up a Google Sheet to organize this group's contact information. Try to find a few people whose experience is different than yours, by region or by specialization.

- It is often easiest to divide into groups by time zone.
- Schedule regular meeting times. It's okay if you can't make every session but commit to a regular time and set up a calendar invitation so that you won't let it slide to the bottom of your to-do list.
- For each meeting, it works well to divide your time into two or three parts. Maybe start with a review of a reference document, and then move on to doing practice tests. Don't worry about perfection.
- Divide up time-consuming tasks like reading reference books. Take turns summarizing what you think is most important from the books on CLARBs and our list.
- Do practice exams before you meet, review them together and talk about what makes an answer right or wrong. You will learn a lot by just talking about practice questions – especially AIT questions.
- Use CLARB's online Demonstration Exam tools to do calculations and make notes during your practice sessions. Can you build comfort and speed using these tools before test day? Share tips and tricks.
- Write practice questions for each other, especially if you struggle with being able to see what the purpose of a question is. Questions usually have one correct answer and several 'distractors' that are not quite correct. How would you write a fair but difficult question?
- Some study groups make summary sheets or flashcard decks. I have heard that the process of doing this for yourself is more valuable than just using one someone else has made. Make use of Quizlet or Anki.
- Provide each other with positivity and support. Follow up after test day and encourage each other.
- After test day you may find that your study cohorts become long-term friends and resources. I did. Don't be afraid to stay in touch and ask each other technical questions as you continue on with your career.

Other resources.

If you want a more comprehensive review, we offer a longer version of this course as a webinar. Over a long weekend (Friday/Saturday/Sunday) we review every CLARB topic and do practice AITS and multiple choice. Visit us at the website to see available dates and registration links.

We also sell our study materials as stand-alone packages – includes a substantial Syllabus review book with practice AIT exercises and solutions.

LAREprep and Pass the LARE are companies that offer good online practice exams that are under \$40 each (last time I checked...)

ASLA has a map that lists other LARE review sessions – there are good courses out there in addition to the ones we offer. Use today's session to evaluate how much work you need to do to be ready.

Grading Basics Refresher: Lessons

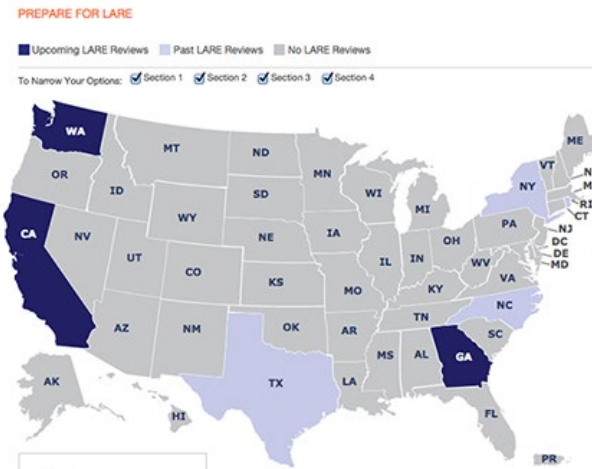
Welcome to Grading Basics! First Hole: The ANTHILL 4 Topics | 1 Quiz [Collapse](#)

Lesson Content 0% COMPLETE | 0/4 Steps

- GB 1.1 Grading Vocabulary
- GB 1.2 How to Read an Architect's Scale
- GB 1.3 Grading Cheat Sheet
- First Hole: Recap and Grading Vignette, The ANTHILL
- Quiz: Putting Green for THE ANTHILL

The Slope Formula and the Second Hole: OVER the MOUNTAIN 4 Topics | 1 Quiz [Expand](#)

4. Find a LARE Review Session



Thank you! Questions?

(You can totally do this.)



Visit our website:

www.SGLATEchnicalTraining.com

www.SarahGronquist.com

My e-mail address is:

sarah@sarahgronquist.com.