Teamwork on Terrain

Brittney Harris, AICP Planner 3

Lehi City

Gary Ellis, Development Engineer

Lehi City


DRAPER, UTAH
2 KUTV
DRAPER HOMES COLLAPSE
WHO'S RESPONSIBLE?
LOCAL NEWS


0 25 50 75 100
Feet
4113 N SEASONS VIEW DR
4132 N SEASONS VIEW DR
4112 N SEASONS VIEW DR
4133 N SEASONS VIEW DR
1020 W SEASONS VIEW CT
1014 W SEASONS VIEW CT
1008 W SEASONS VIEW DR
986 W SEASONS VIEW ST
960 W SEASONS VIEW PT


4938
1214
1232
Lucca Cir

Code prior to 2024

A.No person shall be permitted to grade, excavate, fill, erect any structure, or otherwise disturb any slope over thirty percent (30%) unless appropriate engineering measures are taken to address any associated hazards, as recommended by an engineering analysis and accepted by the Lehi City Council.

Code prior to 2024

- **When a Grading Permit is Required**

A. Only projects over one acre that are new build

B. Exempt from grading permit
    A. Installation of landscaping
    B. Any construction on a grading permit that has a building permit

- Concerns
    - Building Permits may include changing grade
    - Water flowing from one property to another

Code prior to 2024

- Retaining Walls

A. Require building permit if over 4 feet tall
    A. No restrictions on what type

- Concerns
    - Really tall rock retaining walls. Already starting to have problems.

Researching other Cities

Provo has a really good ordinance!

Engineering department in charge of enforcement, monthly meetings.

Park City has ordinance focused on preserving views

Collaboration

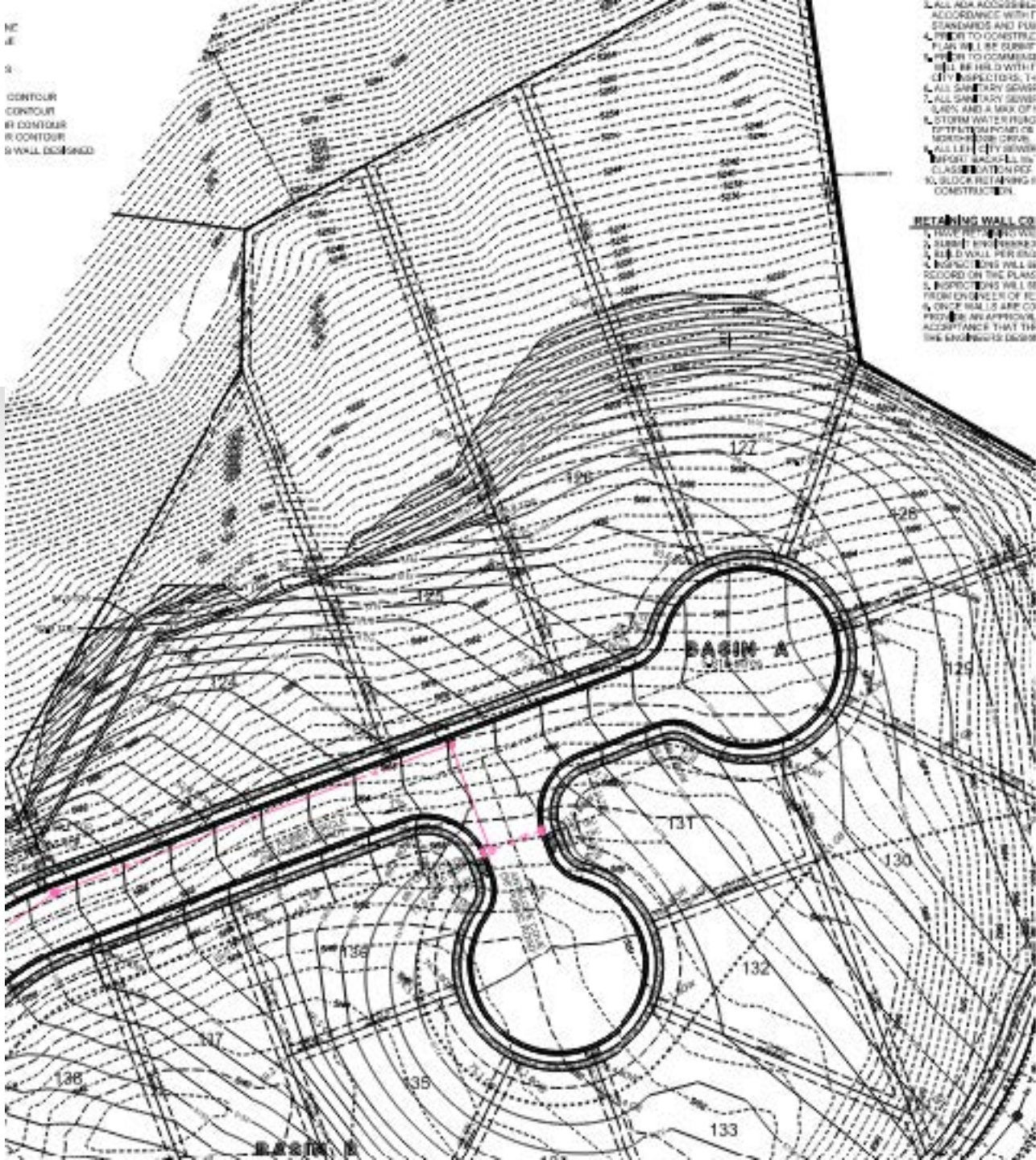
Started meeting with key players in the City

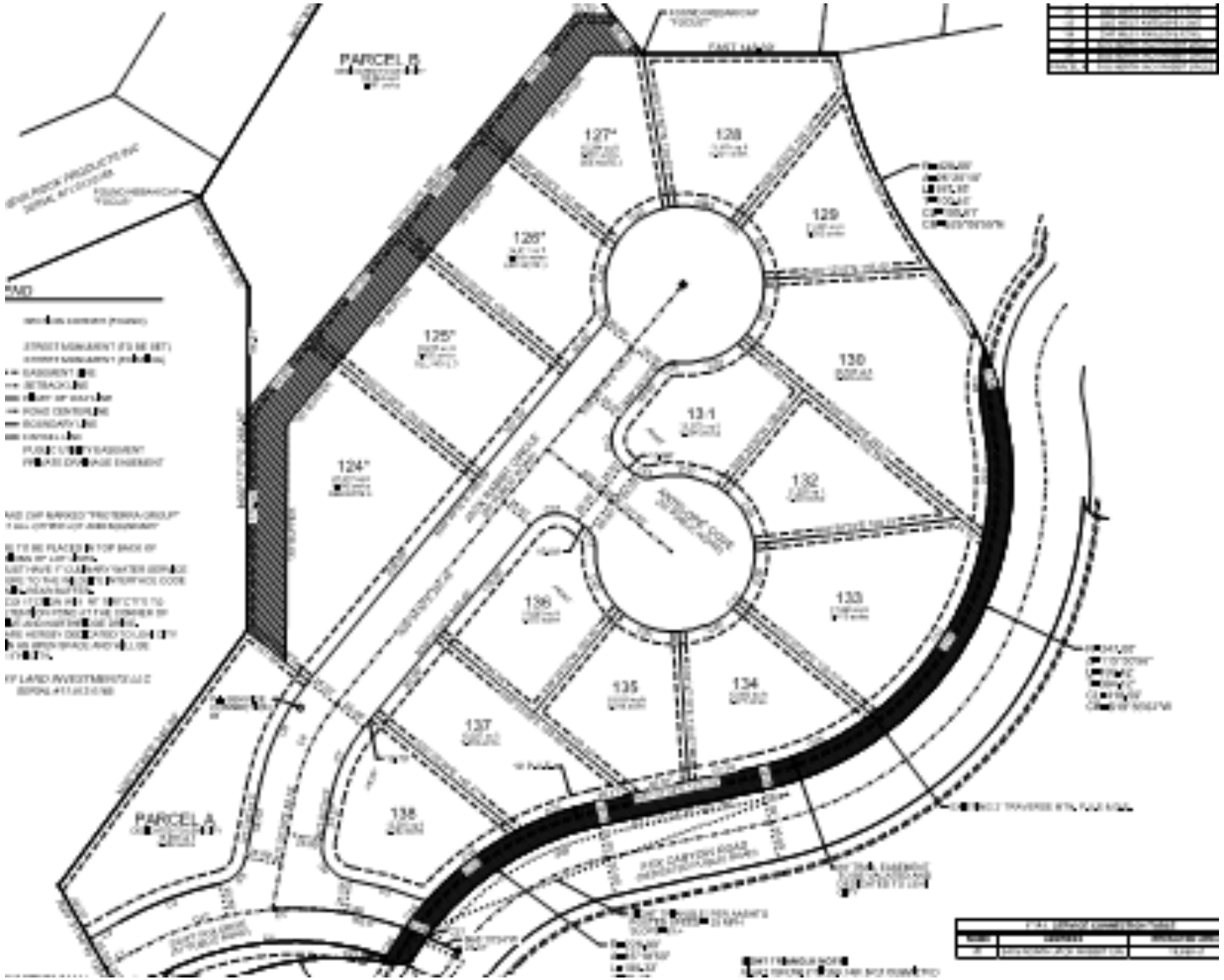
Engineering Department	Building Department	Parks Department	Planning Department	Public Works Department

BIG TAKE AWAY: No one reviewed the grading plans, just made sure they were there.

Outside Collaboration

- Worked with Merlin Huff with Perry Homes
  - Reduced lots to prevent future grading
  - Asked him for best practices he had seen in other cities
  - His recommendations staff liked and influenced the new ordinances




PARCEL B
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Chapter 12A Updated

- No person shall be permitted to grade, excavate, fill, erect any structure, or otherwise disturb any slope over thirty percent (30%) unless appropriate engineering measures are taken to address any associated hazards, as recommended by an engineering analysis and accepted by the Lehi City Engineer or City Council, depending on the applicable approval process identified in this Code. As part of the proposed engineering measures, the applicant shall provide a grading plan and drainage plan. The City Engineer may also require the applicant to provide a geotechnical report or a comprehensive retaining wall plan depending on the scale of the disturbance.

Chapter 12B Updated

The following activities are exempt from the requirements for a grading permit:

Installation of residential landscaping or landscaping that is a part of a bonded and approved site plan or subdivision plat. Except in cases where:

(a)The proposed landscaping will change the drainage of the lot; or,

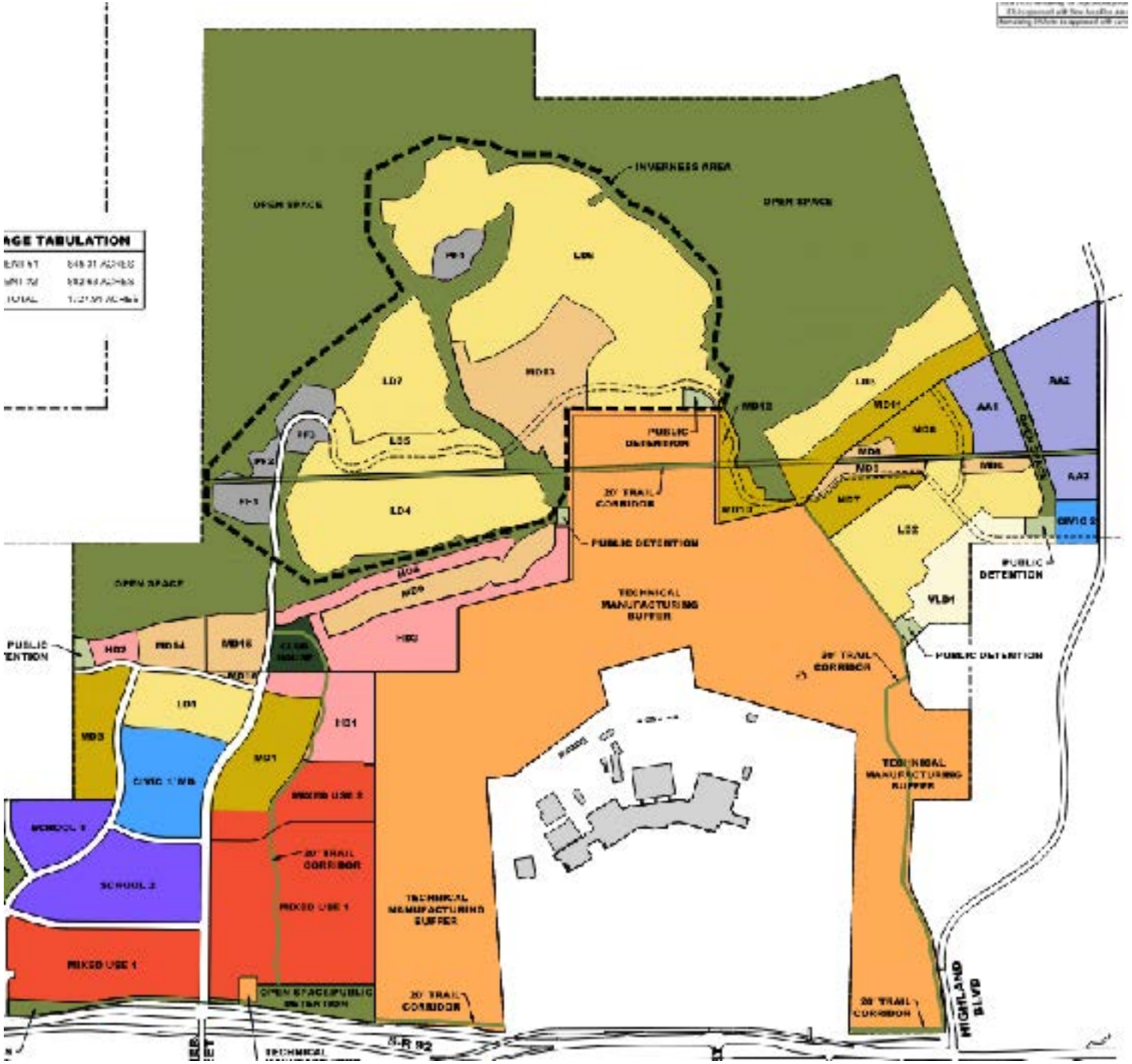
(b)Any cuts or retaining walls exceed four feet in height.

Any construction project that has a valid building permit. Except in cases where:

(a)The proposed changes will alter the final elevations of the exterior boundaries of the lots as shown on the approved grading plan for the subdivision or site plan; or,

(b)The drainage of the lot will change from the approved grading plan for the subdivision or site plan; or,

(c)Any cuts or retaining walls of four feet or more.



Skye Area Plan by DR Horton

500 acre minimum to be dedicated to Lehi City and placed in a conservation easement

DR Horton did not have to dedicate water for all of the land.

Final Plats will include areas that cannot be irrigated. These areas are the steeper slope areas.

Use Internal Expertise

Gary Ellis huge benefit to have on staff, structural engineering background

RETAINING WALLS:

As part of updating the Lehi City Grading Development Code, we developed a new code section covering the design and detailing of retaining walls.

Our development code was oriented to wall types used most in Lehi City.

1-GRAVITY WALL

2-MSE WALL

3-ROCK WALL

4-CANTILEVER WALL

1.GRAVITY WALLS

Characteristics

- Normally large stacked blocks
- Often interlocking between courses of blocks
- Can have vertical or sloped front face
- Often proprietary designs
- Can be a mass pour of concrete

GRAVITY WALLS

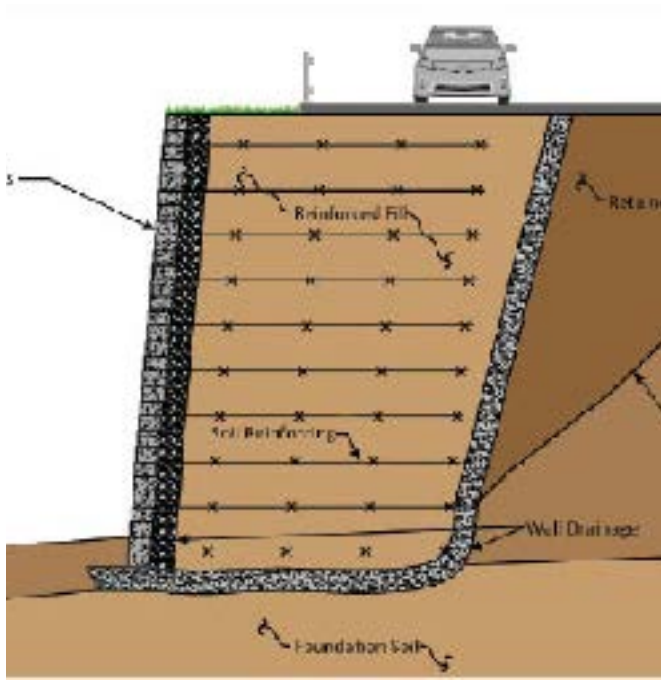
2. MSE WALLS

(Mechanically Stabilized Earth)

Characteristics

- Courses of block attached to geogrid extending behind wall within soil mass
- Usually have stepped or sloped front face
- Often proprietary designs
- Fairly versatile in layout and design

MSE WALLS



3. ROCK WALLS

Characteristics

- Relatively cheap to construct
- Designs are simple
- Should have stepped or sloped front face
- Often unpredictable with water and earthquake forces

ROCK WALLS

ROCK WALLS

Good Example?

Not-So Good Example

4. CANTILEVER WALLS

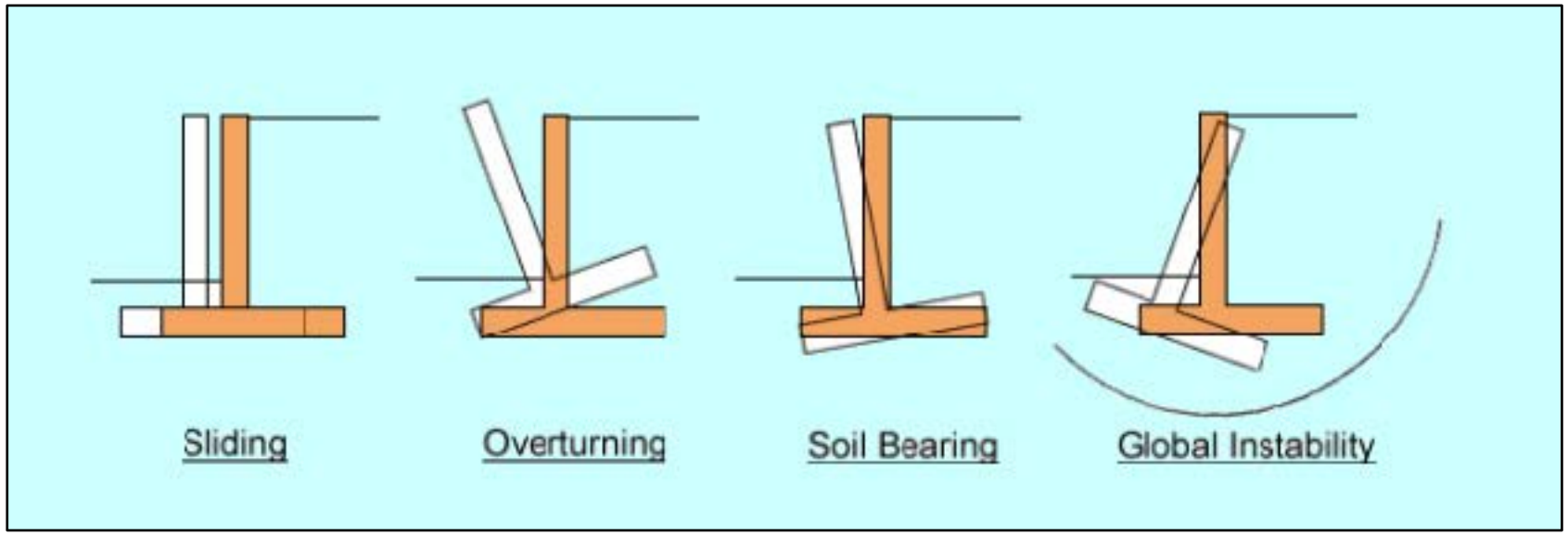
Characteristics

- Involve a structural design and elements
- Have larger concrete footings
- Usually have vertical wall faces
- Walls are normally concrete or CMU blocks

CANTILEVERED WALLS

Do retaining walls ever fail?

YES!



Retaining wall failure modes:

Wall Failure Examples

Wall Failure Examples

Retaining Wall Code Highlights:

- Establishes design and submittal requirements
- Specifies what walls do not need a building permit
- Details the spacing requirements for tiered walls
- Wall drainage requirements are called out
- Rock walls are limited to 4'-0" and used for landscaping purposes only
- States the minimum safety factors to be used in the design

Takeaways


The Ordinance still is not perfect
Collaboration is key, who is reviewing what and why
Best solution is what works for your City not what works for another City
Follow up to make sure that the new Code is followed

Questions and Discussion

Brittney Harris bharris@lehi-ut.gov
Gary Ellis gellis@lehi-ut.gov