

Guiding Principles and Procedures for need, use, and design considerations for Retaining Walls.

The first guiding principal should be to **never** build a retaining wall.

A retaining wall's primary function is to replace the need to grade an area. Until you start condemning whole lots or reconstructing buildings it almost never becomes cost effective to put in retaining walls, in lieu of removing shrubs, trees, grass and driveways.

When the Wall is needed to support Private Property

Step 1: We determined the limits of the grading and estimated costs associated with that grading (removal of buildings, shrubbery, pools, trees, . . .etc.). A good example of this was the wall on the SE corner of 84th and Pioneers which became necessary when we shifted 84th to the east.

Step 2: If putting a wall in was cost effective then we put it on private property with a temporary easement (so the long term costs for repair/replacement were the property owner's, not the City's*.) In the 84th Street example we actually paid the property owner and he had the wall designed and installed and we paid him. In that case we didn't pay for any temporary easement directly either.

Step 3: With our design done, we send ROW negotiators out to buy the necessary easements/right of way to complete our work. In some cases (70th and Old Cheney) we agreed to allow property owners to pay the difference on their wall to close the gap between our estimates for amenities, the property owner's estimate and the cost of the wall. They still had to accept long term maintenance for the wall.

*Committing the City's resources to maintain/repair/rebuild retaining walls in the future doesn't make sense unless we can plan on having extra maintenance money in the future dedicated to this type of work. If the walls are to be a City's liability then our cost calculations should include the life cycle cost for the wall and we should plan to do a lot more grading and removals. When replacing existing walls we should still calculate whether grading is more cost effective rather than, just replace the wall because it was there.

When the Wall is needed to support Roadway

Types of Walls

Poured in Place walls

- This is the preferred method of wall construction
- Make sure to consider length of footing in calculation of easements or in relationship to a utility conflict.
- Permanent Easement needs to cover the area for the footing

Large gravity walls (such as Stone Strong)

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- Are better at resisting water damage
- Can be built higher without lateral bracing.
- Can expedite construction significantly.
- Biggest drawback is that they are wider than either the small block or poured walls, which needs to be accounted for in the design.
- Set the Profile based on the location of the back of the wall in order to match existing ground.

Modular block (small variety)

- * Should never be installed where the City has the future maintenance of the wall.
- * Should not be more than three feet high so no lateral bracing is required due to the amount of digging for utilities and vegetation behind the wall which compromises the support.
- * Drainage should always be directed away from the wall. During high intensity rain events heavy rain can go over the wall and wash out a portion of the wall. An example would be north side of Vine east of Cotner Boulevard where a heavy rainfall event caused the drainage to overtop the curbs and cause a portion of the wall to fail).

Other Issues to consider

- Fences on the walls
 - If the wall is in right of way, technically fence shouldn't be on the wall
 - If the fence isn't on the wall how is the area between the wall and fence to be maintained.
 - Railing/fence recommended if wall is over 30" in height.
- Access to the park space areas addressed during right of way negotiations. Property owners still must mow, water, shovel snow. . . . so stairs, access ramps or something may need to be considered if the wall is deemed absolutely necessary.
- Letting the Property Owners know this wall will be their responsibilities during right of way negotiations.