



Application for Retaining Wall

(Permit Fee: \$300, paid upon submission of permit)

20 North Main Alpine, UT 84004 • 801-756-6347 extension 5 (Building Department) • www.alpinecity.org

Building Address _____ Parcel # _____

Subdivision _____ Lot # _____ Plat _____

Owner _____

Mailing Address _____

Cell Phone _____ Email _____

Contractor _____ License # _____

Contractor Address _____ City _____ State _____ Zip Code _____

Contractor Cell Phone _____ Email _____

Applicant or Contractor Signature

Date

DEPARTMENT APPROVALS

City Planner

Date

Public Works Director

Date

City Engineer (SWPPP)

Date



Retaining Wall Submittal Checklist

20 North Main Alpine, UT 84004 • 801-756-6347 (Phone) • 801-756-1189 (Fax) • www.alpinecity.org

- Applicant has filled out retaining wall application completely (page 1, above)
- Design Engineer has filled out the retaining wall checklist and signed where required (Appendix A)
- Owner, Design Engineer, Builder, and City Engineer have read and signed the Pre-Construction Meeting Notes (Appendix B)
- If a wall is proposed within any kind of easement, a completed Utility Notification Form has been submitted*
- Walls proposed on a property line, which create a drop-off for the neighboring property, are required to install a fence on top. If this is the case, a fence permit must be submitted with this permit.*

*Utility Notification Form and Fence Permit can be found here:

<http://www.alpinecity.org/planning-and-zoning>

Retaining Wall Submittal Process

1. Design Engineer fills out the attached “Retaining Wall Checklist,” attached as Appendix A of this document.
2. All appropriate parties must sign the “Preconstruction Meeting Notes,” attached as Appendix B of this document.
3. Bring 2 hard copies and 1 electronic of the design, plus the “Retaining Wall Checklist” and “Preconstruction Meeting Notes” to the Building Department (20 N Main) and fill out a Building Permit Application.
4. City Staff reviews the submittal for code compliance.
5. If the design is complex, City Staff may forward the submittal to a third-party Reviewer.
 - a. The Reviewer may request more information from the applicant. This can be done electronically between the two parties unless the Reviewer requests hard copies.
 - b. Once the Reviewer has approved the design, he submits an approval letter and invoice to the City.
 - c. The Developer then submits 2 final construction sets and 1 electronic copy to the City for stamp of approval.
6. Once City Staff/Reviewer have approved the submittal, the Owner/Contractor may pay applicable fees and pick up the permit.
 - a. At this time, the Developer is given 1 set of City stamped plans to have on site. The City keeps the other hard and electronic sets.
7. Owner/Contractor schedules inspections with the Design Engineer and construction of wall commences.
8. Upon completion of the project, the Design Engineer must submit a non-ambiguous letter to the Building Official stating the wall was built according to design. The Building Official will perform a Final Inspection and close out the permit.

APPENDIX A

RETAINING WALL CHECKLIST

Retaining Wall Design Checklist

- To be filled out by the Design Engineer

- All required files to be compiled into one document, both hard and electronic

The following checklist should accompany each retaining wall design. All retaining walls more than four feet in height, as measured from bottom of footing to top of wall, require a building permit (2012 IBC, Section 105); however, only design of retaining walls over 4 feet in exposed height shall require submittal of design calculations as stipulated herein. Retaining walls should be designed in accordance with ARTICLE 3.32 RETAINING WALLS (Ord. No. 2018-05, 09/11/18) of the Alpine City Development Code (see attached document).

Project Information:

Project Address: _____

Applicant Name and Address: _____

Type of Retaining Wall: _____

Design Engineer and Company Name: _____

**In left column indicate page, sheet or figure number where item is located.
 LISTS MARKED ANY OTHER WAY WILL BE RETURNED TO APPLICANT TO CORRECT.**

Page, Sheet or Figure No.	Required Submittal Items
	0. No single wall exceeds 9' in height and no tiered system of walls exceeds 18' in height as measure from the bottom of the lowest tier to the top of the highest tier unless previously approved by City Council.
	1. Is the wall located in an easement (public utility or other)? If yes, an authorization letter from the utility easement owner(s) must be submitted with this application allowing the placement of the wall within the easement. (<i>DC 3.32.030.5.a</i>)
	2. Is a fence required? (see italics below) If yes, include fence detail and connection to top of retaining wall with application with plans. Fence type and location must be shown. Note where this can be found in the application. Home owner required to provide fence application with this permit. <i>Walls greater than four (4) feet in height (H) placed within H/2 of an adjacent property line, which would create a drop-off for the adjacent property, shall install a fence along the top of the wall in accordance with Development Code Section 3.21.6.</i>

	3. Do any of the wall components extend beyond property boundaries? No retaining wall component shall extend beyond property lines unless written permission is obtained from the affected property owner. If yes, is written permission included in the application?
	3. Profile drawings if the retaining wall is longer than 50 lineal feet, with the base elevation, exposed base elevation and top of wall labeled at the ends of the wall and every 50 linear feet or change in grade.
	4. Cross-sectional drawings including surface grades and structures located in front and behind the retaining wall a distance equivalent to three times the height of the retaining wall, and if the retaining wall is supporting a slope, then the cross section shall include the entire slope plus surface grades and structures within a horizontal distance equivalent to one times the height of slope.
	5. A site plan showing the location of the retaining walls with the base elevation, exposed base elevation and top of wall labeled at the ends of wall and every 50 lineal feet or change in grade.
	6. A copy of the geotechnical report used by the design engineer. If a design specific study was completed, then skip to Item 7 below. The geotechnical report shall include requirement of Item 7 below otherwise additional laboratory testing is required in Item 7.
_____	7. The material strength parameters used in the design of the retaining wall, substantiated with laboratory testing of the materials as follows
_____	a. for soils, this may include, but is not limited to, unit weights, direct shear tests, triaxial shear tests and unconfined compression tests;
_____	b. if laboratory testing was conducted from off-site but similar soils within a 2000 foot radius of the proposed wall location, the results of the testing with similar soil classification testing needs to be submitted;
_____	c. minimum laboratory submittal requirements are the unit weight of retained soils, gradation for cohesionless soils, Atterberg limits for cohesive soils, and shear test data;
_____	d. soil classification testing shall be submitted for all direct shear or triaxial shear tests;
_____	e. if a Proctor is completed, classification testing shall be submitted with the Proctor result; and,
_____	f. laboratory testing should be completed in accordance with applicable American Society for Testing and Materials (ASTM) standards;
_____	g. for segmented block walls, the manufacturer's test data for the wall facing, soil reinforcement, and connection parameters shall be submitted in an appendix.
_____	8. The design engineer shall indicate the design standard used and supply a printout of the input and output of the files in an appendix with factors of safety within the design standard used as follows:
_____	a. design calculations ensuring stability against overturning, base sliding, excessive foundation settlement, bearing capacity, internal shear and global stability;

<hr/> <hr/> <hr/> <hr/>	<p>b. calculations shall include analysis under static and seismic loads, which shall be based on the PGA as determined from probabilistic analysis for the maximum credible earthquake (MCE), with spectral acceleration factored for site conditions in accordance with the current IBC;</p> <p>c. Mechanically Stabilized Earth (MSE) walls shall be designed in general accordance with current FHWA or AASHTO standards for design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes or the current National Concrete Masonry Association (NCMA) Design Manual for Segmental Retaining Walls;</p> <p>d. rock walls shall be designed in general accordance with 2006 FHWA-CFL/TD-06-006 "Rockery Design and Construction Guidelines," or current FHWA standard of care and;</p> <p>e. concrete cantilever walls shall be designed in general accordance with specifications provided in current American Concrete Institute or American Society of Civil Engineers standards and specifications.</p>
<hr/> <hr/> <hr/> <hr/>	<p>9. A global stability analysis with minimum factors of safety of at least 1.50 under static conditions and at least 1.10 under seismic loading conditions as follows:</p> <p>a. factors of safety results shall be presented to the nearest hundredth;</p> <p>b. seismic loads shall be based on the PGA as determined from probabilistic analysis for the maximum credible earthquake (MCE), with spectral acceleration factored for site conditions in accordance with the current IBC;</p> <p>c. the cross-sectional view of each analysis shall be included, and the printout of the input and output files placed in an appendix; and,</p> <p>d. the global stability analysis may be omitted for concrete cantilever retaining walls that extend to frost depth, that are less than nine feet in exposed height, absent of supporting structures within 30 feet of the top of the wall, and which have less than 10H:1V front and back slopes within 30 feet of the retaining structure.</p>
<hr/> <hr/> <hr/> <hr/>	<p>10. A drainage design, including a free draining gravel layer wrapped in filter fabric located behind the retaining wall with drain pipe day-lighting to a proper outlet or weep holes placed through the base of the wall, however:</p> <p>a. a synthetic drainage composite may be used behind MSE walls if a materials specific shear testing is completed to determined friction properties between the backfill and synthetic drainage composite;</p> <p>b. a synthetic drainage composite is not allowed behind rock walls;</p> <p>c. a synthetic drainage composite may be used behind the stem of the concrete cantilever walls;</p> <p>d. if the engineering can substantiate proper filtering between the retained soils and the drain rock, then the filter fabric may be omitted, and;</p>

	e. if the retaining wall is designed to withstand hydrostatic pressures or the retained soils or backfill is free-draining as substantiated through appropriate testing, then drainage material may be omitted from the design.
	11. The design engineer's acknowledgement that the site is suitable for the retaining wall;
	12. An inspection frequency schedule.

I _____, declare that I have read Article 3.32, understand and have
 (Engineer of Record)

complied with the required submittal requirements, accept responsibility for all documents contained herein that relate to the design of the subject retaining wall and have signed and sealed the design calculations and accompanying construction drawings.

Signature of Design Engineer: _____

APPENDIX B

PRECONSTRUCTION MEETING NOTES

Project _____

BUILDING PERMIT # _____

Address _____

Date _____

Owner _____
(Print)

(sign)


Design Engineer _____
(Print)

(sign)

Retaining Wall Contractor _____
(Print)

(sign)

City Engineer Jed Muhlestein
(Print)


(sign)

Retaining Wall Pre-Construction Meeting



To: Retaining Wall Applicant
From: Jed Muhlestein, P.E., City Engineer
Subject: RETAINING WALLS

This Memo is written to highlight a few key points of the City's ordinance regarding retaining walls:

1. The Design Engineer (DE) must be present enough to be able to write a NON-ambiguous letter upon completion of the wall saying the wall was built according to their design. Without this letter, the wall will be deemed non-compliant and illegal.
2. If the DE cannot write said letter, the wall will be de-constructed to a point to where a letter can be written according to item 1.
3. The Building Inspector will make periodic inspections. These inspections are not meant to replace the DE inspections, they are simply to ensure the process is being followed.
4. The Building Inspector WILL close out the permit by performing a final inspection and collecting the DE letter.
5. You may be required to build a fence whether you are planning on it or not. Review plans for cut walls on/near property lines. See code on next page.
6. If you are building a fence, it requires a separate building permit.
 - a. Fences on retaining walls. 9' is the maximum height for any combination of a solid shear plain. The shear plane is made up of retaining wall & fence. If you have a 9' tall retaining wall, you can't have a "solid" style fence directly on top of it. You can have an "open" style fence on top, but if you want a "solid" or "non-see through" style, you must offset the fence 4' from the top face of the retaining wall.
7. Unless the city is given recorded easements for encroachment, the entire structure of the retaining wall must be built on the owner's property. Includes footings, geogrid, drains, etc.

8. Retaining walls cannot be built in public utilities easements without documentation approving otherwise from all applicable public utility companies.

The following are excerpts of the Development Code:

Retaining Wall Ordinance Section 3.32.3.5.7-8

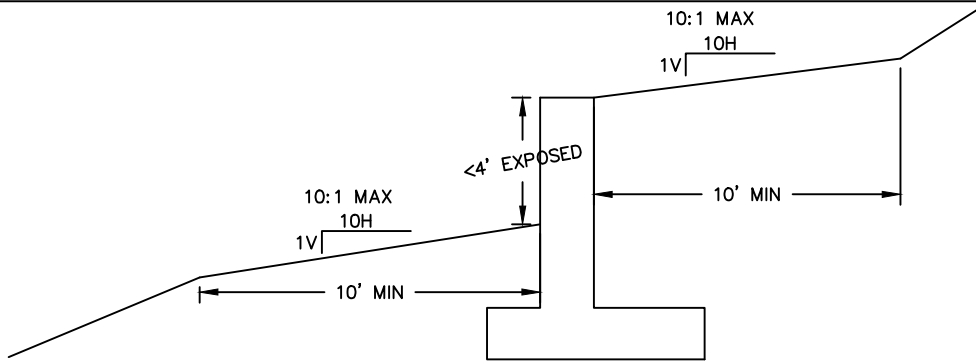
7. Walls greater than four (4) feet in height (H) placed within H/2 of an adjacent property line, which would create a drop-off for the adjacent property, shall install a fence along the top of the wall in accordance with section 3.21.6.
8. No retaining wall component shall extend beyond property lines unless written permission is obtained from the affected property owner.

Retaining Wall Ordinance Section 3.32.7-9

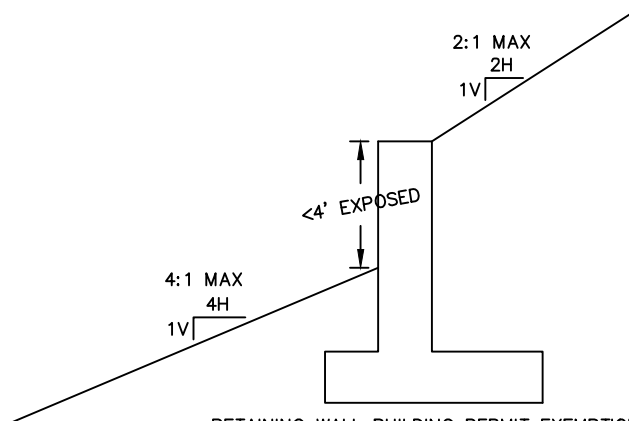
7. Preconstruction Meeting. At least 48 hours prior to the construction of any approved retaining wall, a preconstruction meeting shall be held as directed by the Building Official. The meeting shall include the Building Official, the design engineer, the contractor and the project or property owner. The preconstruction meeting can be waived at the discretion of the Building Official.
8. Inspections and Final Report. The design engineer shall make all inspections needed during construction. A final report from the design engineer shall state that the retaining wall was built according to the submitted design. The report shall include detail of the inspections of the wall in accordance with the inspection frequency schedule. All pertinent compaction testing shall also be included with the final report. The design engineer shall submit the final report to the Building Official to close out the permit.
9. Maintenance. All retaining walls shall be maintained in a structurally safe and sound condition and in good repair.

Fences on Retaining Walls Section 3.21.6.7

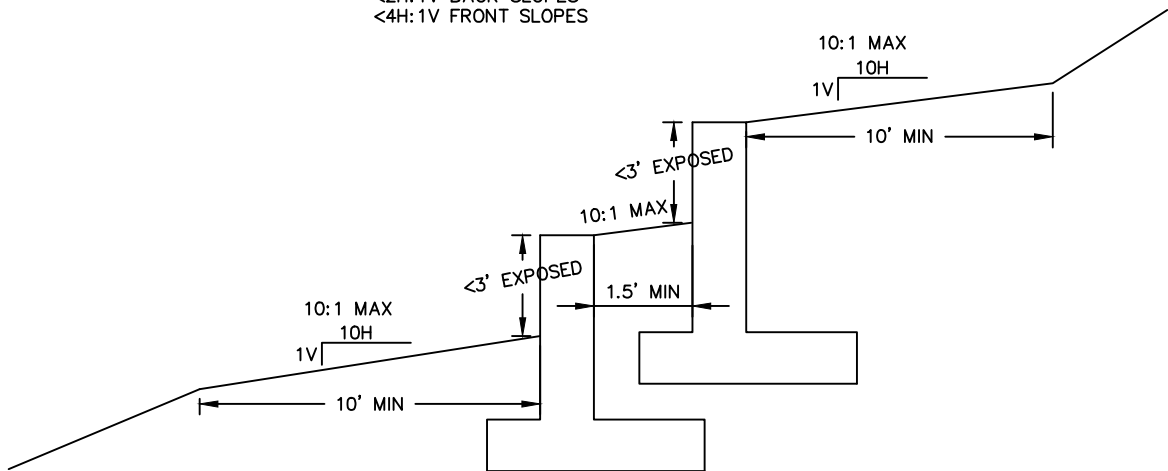
Fences on Retaining Walls. Under no condition shall a fence and wall exceed nine (9) feet on the same plane. If a privacy fence that is on top of a retaining wall would exceed nine (9) feet, the fence shall be set back at least four (4) feet from the front side of the retaining wall. Open style fences including but not limited to rail fences, field fences, or chain link fences are permitted to be on the same plane as a retaining wall.



RETAINING WALL BUILDING PERMIT EXEMPTION 3.32.3.2.1
 <4' EXPOSED HEIGHT
 <10:1 SLOPES WITHIN 10' FRONT AND BACK

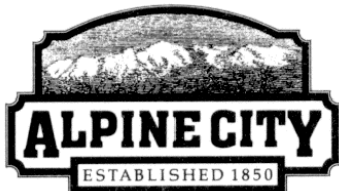


RETAINING WALL BUILDING PERMIT EXEMPTION 3.32.3.2.2
 NON-TIERED WALLS
 <4' EXPOSED HEIGHT
 <2H:1V BACK SLOPES
 <4H:1V FRONT SLOPES



RETAINING WALL BUILDING PERMIT EXEMPTION 3.32.3.2.3
 <3' EXPOSED HEIGHT ON DOUBLE TIERED WALLS
 <10:1 SLOPES WITHIN 10' OF FRONT AND BACK OF TIERED WALLS
 >1.5' WALL SPACING BETWEEN WALLS AS SHOWN

RETAINING WALL BUILDING PERMIT EXEMPTION 3.32.3.2.4 (NOT SHOWN)
 <4' EXPOSED HEIGHT
 <50 SQUARE FEET IN SIZE



RETAINING WALL BUILDING PERMIT EXEMPTIONS

ALPINE CITY
 20 NORTH MAIN
 ALPINE, UT 84004

DRAWING NUMBER:	1
PLOT SCALE:	N.T.S.
DRAWN BY:	JM
DESIGN BY:	
CHECKED BY:	AT
ADOPTED DATE:	6/9/2015