



DENVER AMENDMENT PROPOSAL FORM FOR PROPOSALS TO THE 2019 DENVER BUILDING CODE AMENDMENTS AND THE 2021 INTERNATIONAL CODES

DENVER
THE MILE HIGH CITY

2021 CODE DEVELOPMENT CYCLE

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2) One proposal per this document is to be provided with clear and concise information.

Is a separate graphic file provided (“X” to answer): ___ Yes or No

3) Highlight the code and acronym that applies to the proposal

<u>Acronym</u>	<u>Code Name</u>	<u>Acronym</u>	<u>Code Name</u>
DBC-AP	Denver Building Code–Administrative Provisions	IPC	International Plumbing Code
IBC	International Building Code	IRC	International Residential Code
IECC	International Energy Conservation Code	IFGC	International Fuel Gas Code
IEBC	International Existing Building Code	IMC	International Mechanical Code
IFC	International Fire Code	DGC	Denver Green Code

AMENDMENT PROPOSAL

Please provide all the following items in your amendment proposal.

Code Sections/Tables/Figures Proposed for Revision:

Instructions: If the proposal is for a new section, indicate (new), otherwise enter applicable code section.

Proposal:

Instructions: Show the proposal using ~~strikeout~~, underline format.

Place an “X” next to the choice that best defines your proposal: Revision New Text Delete/Substitute Deletion

Section R202 is modified by adding the following definitions:

DEEP FOUNDATION: A deep foundation is a foundation element that does not satisfy the definition of a *shallow foundation*.

GEOTECHNICAL INVESTIGATION REPORT: A report prepared by, or under the direct supervision of, a registered design professional with experience in geotechnical engineering.

HELICAL PILE. Manufactured steel deep foundation element consisting of a central shaft and one or more helical bearing plates. A helical pile is installed by rotating it into the ground. Each helical bearing plate is formed into a screw thread with a uniform defined pitch.

SHALLOW FOUNDATION: A shallow foundation is an individual or strip footing, mat foundations, structural slab-on-grade foundation, or similar foundation elements.

Section R401.4 Soil tests and all subsections are is replaced in its entirety as follows:

R401.4 Soil tests. The classification of the soil at each building site shall be investigated and reported in accordance with Sections R401.4.1. and R401.4.2 under any of the follow conditions: determined when required by the building official. ~~The building official may require that this determination be made by an engineer or architect licensed by the state to practice as such.~~

1. Construction of new dwellings, townhouses and conditioned accessory structures.
2. Additions to existing dwellings, townhouses and conditioned accessory structures when a deep foundation, other than a helical pile foundation, is used.
3. Alterations and repairs of existing foundation systems utilizing deep foundations, other than helical pile foundations.

4. Excavation, benching, or shoring when required by the Denver Building Permit Policy ADMIN 130.2
5. When expansive soils or other questionable soils are likely to be present.

Exception: Additions, alterations, or repairs to dwellings, townhouses, and conditioned accessory structures shall be permitted to use soil load-bearing values provided in Table R401.4.1 for prescriptive *shallow foundation* design in accordance with this Chapter.

Section R401.4.1 Geotechnical evaluation is replaced as follows:

R401.4.1 Investigation. The classification shall be based on observation and any necessary tests of the materials disclosed by borings or excavations made in appropriate locations. Additional studies may be necessary to evaluate soil strength, the effect of moisture variation on soil bearing capacity, compressibility, liquefaction, and expansiveness.

Exception: In lieu of a complete geotechnical evaluation and when accepted by the *building official*, the load bearing values in Table R401.4.1 shall be assumed.

Section R401.4.2 Compressible or shifting soil is replaced in its entirety as follows:

R401.4.2 Reports. The soil classification and design bearing capacity shall be determined by a *geotechnical investigation report* and shown on the ~~plans-permit application drawings~~ in accordance with Section R106.1.6, ~~unless the foundation conforms to Table R403.1(1), R403.1(2), or R403.1(3), and Figure R403.1(1) or R403.1.3, as applicable.~~ The *building official* may require submission of a written report of the investigation, which shall include, but need not be limited to, the following information:

1. ~~A plot showing the location of the test borings and/or excavations.~~
2. ~~Description and classifications of the materials encountered.~~
3. ~~Elevation of the water table, if encountered.~~
4. ~~Recommendations for foundation type and design criteria, including bearing capacity, provisions to mitigate the effects of expansive soils, provisions to mitigate the effects of liquefaction and soil strength, and the effects of adjacent loads.~~
5. ~~Expected total and differential settlement.~~

Section R106.1.6 Information on soil classification is added as follows:

R106.1.6 Information on soil classification. Where required by Section R401.4, a *geotechnical investigative report* shall include the following information and shall be provided in the permit application drawings.

1. The date of the report within two years of the date of permit application submittal or within five years of the date of permit application submittal and including a signed and sealed letter by the geotechnical engineering firm of record, confirming the applicability and recommendations in the original report.
2. A plot showing the location of the test borings and/or excavations.
3. Description and classifications of the materials encountered.
4. Elevation of the water table, if encountered.
5. Recommendations for foundation type and design criteria, including bearing capacity, provisions to mitigate the effects of expansive soils, provisions to mitigate the effects of liquefaction and soil strength, and the effects of adjacent loads.
6. Expected total and differential settlement.

Supporting Information (Required):

All proposals must include a written explanation and justification as to how they address physical, environmental, and/or customary characteristics that are specific to the City and County of Denver. The following questions must be answered for a proposal to be considered.

- Purpose: What does your proposal achieve?

This proposal incorporates the intent of Denver Policy IRC R401.4 into the IRC amendments.

- Reason: Why is your proposal necessary?

The proposal will make public comprehension of the Denver code more streamline and accurate by not requiring the amended provisions to be compared to and modified by policy.

- Substantiation: Why is your proposal valid? (i.e. technical justification)

The goal of this proposal is to retain the intent and purpose of the policy, but in doing so, some modifications were made in order to better fit with the I-Codes and the current amendments.

The four definitions from the policy have been included in IRC chapter two, yet they were modified so that they match the IBC definitions for the same construction features.

R401.1 was modified to include the list of construction projects from the policy that require a geotechnical report. An exception was added to cover additions, alterations and repairs and to allow the prescriptive soil bearing capacities from IRC table R401.4.1 to be used for prescriptive foundation design using the IRC.

The exception to R401.4.1 was deleted because incorporating the policy clarifies when the report is necessary. The new exception to R401.1 picks up the reference to the IRC Table R401.4.1 for prescriptive bearing capacity.

The information required on the permit application drawings is relocated from R401.4.2 into a new section in the Admin chapter where similar provisions are found. The report requirements from the policy are incorporated into this section in item 1.

Bibliography and Access to Materials (as needed when substantiating material is associated with the amendment proposal):

The Denver Policy R401.4 can be found at this link: https://www.denvergov.org/files/assets/public/community-planning-and-development/documents/ds/building-codes/policies/irc_401.4.pdf

The text of the policy is copied below:

REFERENCE: 2018 International Residential Code (IRC) R401.4

A. APPLICABILITY:

1. This policy applies to applications for residential construction permits for IRC one- and two-family dwellings, IRC townhouses, and IRC accessory structures.

B. PURPOSE:

1. To establish when a geotechnical investigation report is required for IRC structures. 2. To outline the timeframe in which a geotechnical investigation report can be accepted for an application for IRC construction permits.

C. DEFINITIONS

1. DEEP FOUNDATION: A foundation that utilizes foundation elements that do not satisfy the definition of a shallow foundation.

2. GEOTECHNICAL INVESTIGATION REPORT: A report prepared by, or under the direct supervision of, a registered design professional with experience in geotechnical engineering. The report shall comply with DBCA Section 401.4.2.

3. HELICAL PIER FOUNDATION: A foundation that utilizes manufactured steel deep foundation elements consisting of a central shaft and one or more helical bearing plates that are installed by rotating the assembly into the ground until a specified torque-based capacity is reached.

4. SHALLOW FOUNDATION: A foundation that utilizes isolated or continuous spread footings, mat foundations, structural slab-on-grade or similar foundation elements.

D. SCOPE

1. A geotechnical investigation report is required for:

a. Construction of new IRC one- and two-family dwellings, and IRC townhouses.

b. Any new construction, addition, alteration, or repair of an IRC structure when a deep foundation system is used, except for a helical pier foundation.

c. Any new construction, addition, alteration, or repair of an IRC structure when required by policy ADMIN 130.2A for excavation, benching or shoring.

d. All construction when expansive soils or other questionable soil characteristics are likely to be present at the project site.

Current Geotechnical Investigation Report

- a. A geotechnical investigation report submitted with a permit application is considered “current” if the date of the report is within two years of the date of submittal.
- b. If the report is older than two years but not older than five years, applicants must also submit a letter signed and sealed by the geotechnical engineer of record (or from another engineer in that company) confirming the applicability and recommendations of the original report.
- c. Reports older than five years will not be accepted.

Other Regulations Proposed to be Affected

***For proposals to delete content from the 2019 Denver Green Code in conjunction with adding it to other mandatory Denver codes and/or regulations, only.**

Please identify which other mandatory codes or regulations are suggested to be updated (if any) to accept relocated content.

Referenced Standards:

List any new referenced standards that are proposed to be referenced in the code.

Impact:

How will this proposal impact cost and restrictiveness of code? (“X” answer for each item below)

Cost of construction:	<input type="checkbox"/> Increase	<input type="checkbox"/> Decrease	<input checked="" type="checkbox"/> No Impact
Cost of design:	<input type="checkbox"/> Increase	<input type="checkbox"/> Decrease	<input checked="" type="checkbox"/> No Impact
Restrictiveness:	<input type="checkbox"/> Increase	<input type="checkbox"/> Decrease	<input checked="" type="checkbox"/> No Impact

Departmental Impact (City use only):

This amendment proposal increases/decreases/is neutral to the cost of plans review.

This amendment increases/decreases/is neutral to the cost of inspections.