TO: Members of City Council

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DATE: August 11, 2015

SUBJECT: Boulder Junction Phase I Form-Based Code (FBC) pilot project

EXECUTIVE SUMMARY
The purpose of this study session is to check in with City Council on the progress of the Form-Based Code (FBC) pilot project to date and receive feedback. CodaMetrics has been drafting the FBC since the guiding principles were reviewed by council in June 2015. The study session is meant to function in a workshop format to allow council the opportunity to learn more in depth about key components of the FBC and see how it is being formulated to address key design concerns raised throughout the process before a more complete draft is prepared later this year. CodaMetrics and staff will present the draft components of the FBC and then will allow council members to circulate to review display boards for each topic before bringing the council back together for discussion. At this time, staff is seeking input from council on the general structure and draft components (Attachment A).
QUESTIONS FOR COUNCIL

1. Does council have any feedback on the proposed table of contents and structure of the FBC for Boulder Junction Phase I? The five key components of the FBC that staff is seeking input on are:

   I. Regulating Plan  
   II. Public Realm  
   III. Building Materials and Construction Quality  
   IV. Façade and Building Proportions  
   V. Building Massing

2. Is there anything that appears to be missing, or should be modified to better address design concerns raised in the community relative to Boulder Junction?

BACKGROUND
City Council received an update on the FBC project on May 26, 2015 and provided input on draft Guiding Principles on June 15, 2015. The guiding principles were prepared by the consultant, CodaMetrics, to assist in the formulation of the draft FBC and inform applicants that have projects in the pipeline in the Boulder Junction area. The guiding principles included a list of “potential” regulations to address key design concerns identified through the process with goals of creating better buildings and ones that fit the vision for Boulder Junction. The findings of the principles were that Boulder desired “Honest, Simple and Human-Scaled” buildings. The packet regarding the FBC pilot including the guiding principles and a narrative of the entire process since April 2015 can be reviewed [here](#) and searching for the June 15th packet.

PUBLIC INPUT
CodaMetrics and city staff held a workshop with members of the public on July 22nd. CodaMetrics presented an overview of the FBC and the input received thus far before discussing the draft components, which are discussed in the ‘Analysis’ section of this memorandum. Following the presentation, attendees circulated to review information and provide input on the following five topics: I. Regulating Plan, II. Public Realm, III. Building Materials and Construction Quality, IV. Building Proportions, and V. Building Massing. Most of the workshop was an opportunity for members of the public to better understand how FBC might work and what the proposed content would be.

CodaMetrics and staff have also met with members of the community in stakeholder meetings ranging from neighborhood representatives (e.g., Steel Yards, North Boulder etc.) and other groups like the Chamber of Commerce and Downtown Boulder. Most feedback has been positive. Some concerns heard relate to whether FBC would create too many buildings that look the same or whether the FBC would add additional layers of development review complexity upon proposals. CodaMetrics indicated that while certain parameters would have to be met to get a specified level of quality or design, there would still be flexibility to achieve varied, creative buildings. Generally, when
FBCs are adopted they have specific requirements that get applied to the area and only specified sections of the underlying zoning would apply in addition (e.g., off-street parking, use requirements).

**BOARD AND COMMISSION FEEDBACK**

**Joint Board Workshop**

CodaMetrics and city staff held a workshop with members of Planning Board, Boulder Design Advisory Board, Transportation Advisory Board and Boulder Junction Access District on July 23rd. The workshop followed a similar format to the community workshop on the day prior.

Most of the comments were positive and specific to the regulating plans and public realm plans. Many comments expressed interest in design attributes of well-designed narrow, human scaled pedestrian pathways through sites. Some multi-use paths in Boulder have been found to not be particularly pedestrian friendly as they are too wide and detached from building streetscapes. The north-south pedestrian walkway from Walnut up to Pearl was often cited as a model for a pedestrian-friendly, publicly accessible space. Opportunities for new connections were discussed and the need for new interesting places for people to hang out was emphasized. There were also discussions about how to categorize “primary” and “secondary” streets (e.g., A or B streets) and perhaps consider a change in terminology to clarify that a “primary” or “A” street should refer to a highly pedestrian oriented environment, rather than one where the vehicle is given priority. One particular connection, which is discussed in the ‘working group’ section below, was a key discussion topic (e.g., extension of Mapleton right-of-way into Depot Square). A suggestion was also made to test the draft FBC with architects and developers to learn if there are any unintended consequences.

At both the community and board workshops there was interest in the proposed ideas for breaking down the mass of building without creating overly-articulated, “busy” buildings and how to achieve a diversity of building heights. Specific comments received on the regulating and public realm plans can be found in Attachment B.

**FBC Working Group**

Staff has met with the FBC working group on five occasions. The most recent meeting occurred on July 22nd where the draft components of the FBC were presented and discussed. Comments focused on the opportunity of new pedestrian ways (“Paseos”) to break up large blocks and increase permeability. Some felt that the FBC should have specific ‘paseo’ criteria. There were also conversations around a possible new special pedestrian or shared space connection from 30th into the plaza/park space by Depot Square (also discussed in the ‘Analysis’ section). There was a lot of interest in creating a new connection, whether it be pedestrian only or a shared space, but one that could be an extension of the Mapleton Avenue public right-of-way into the developing neighborhood taking advantage of the proximity to Goose Creek and views towards the Flatirons.
Several working group members wanted the underpass by the future train platform to be built sooner than later and that such an underpass could be public art opportunity like the underpass under Broadway by Euclid Avenue.

**STRUCTURE OF THE FORM-BASED CODE**

This section provides an overview of the structure of the FBC including the table of contents and the evolving draft components. Sample code regulations are also provided to show what the FBC would regulate.

The FBC has been designed to be independent of the city’s land use code and could be adopted by ordinance as an Appendix as opposed to wholesale changes within the land use code. There will be places in the code that will need to be updated to refer to the new regulations, but this could be done in limited places and footnotes. Staff’s current thinking is that it is preferable to have all of the FBC regulations related to Boulder Junction in one place as opposed to making the current land use code more complicated. Further, additional appendices could be added in the same portion of the code if new FBC area regulations are developed in the future.

As a pilot it is also recommended that complex changes to the land use code be avoided in the event the city opts to not use the FBC in the future. Beyond just incorporating the new code into the city’s land use code, the question of review process is important and will be a topic of future meetings when the draft FBC is being reviewed.

The proposed table of contents is shown here:

<table>
<thead>
<tr>
<th>Overview</th>
<th>5</th>
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<tbody>
<tr>
<td>A. Intent</td>
<td>6</td>
</tr>
<tr>
<td>B. How to Use this Chapter</td>
<td>6</td>
</tr>
<tr>
<td>C. Regulating Plans</td>
<td>6</td>
</tr>
<tr>
<td>D. Primary Frontages</td>
<td>8</td>
</tr>
<tr>
<td>E. Building Types</td>
<td>8</td>
</tr>
</tbody>
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<tbody>
<tr>
<td>A. Development Approval Process</td>
<td>11</td>
</tr>
<tr>
<td>B. Exceptions &amp; Site Development Review</td>
<td>11</td>
</tr>
<tr>
<td>C. Nonconforming Structures</td>
<td>11</td>
</tr>
<tr>
<td>D. Definitions</td>
<td>11</td>
</tr>
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</table>

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</tr>
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<td>14</td>
</tr>
<tr>
<td>B. Regulations Specific to Building Types</td>
<td>17</td>
</tr>
<tr>
<td>C. Explanation of Specific Building Type Requirements</td>
<td>26</td>
</tr>
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</table>

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</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>B. Facade Materials</td>
<td>34</td>
</tr>
<tr>
<td>C. Building Facade Elements</td>
<td>36</td>
</tr>
<tr>
<td>D. Roof Elements</td>
<td>39</td>
</tr>
<tr>
<td>E. Building Articulation</td>
<td>41</td>
</tr>
<tr>
<td>F. Building Massing</td>
<td>41</td>
</tr>
<tr>
<td>G. Building Proportioning</td>
<td>43</td>
</tr>
<tr>
<td>H. Building Construction Quality</td>
<td>44</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Realm Requirements</th>
<th>33</th>
</tr>
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<tbody>
<tr>
<td>A. Applicability</td>
<td>34</td>
</tr>
<tr>
<td>B. Block &amp; Street Layout Requirements</td>
<td>34</td>
</tr>
<tr>
<td>C. Open Space Types</td>
<td>35</td>
</tr>
<tr>
<td>D. Street, Pedestrian &amp; Bicycle Way Types</td>
<td>35</td>
</tr>
<tr>
<td>E. Streetscape</td>
<td>36</td>
</tr>
</tbody>
</table>

*Figure 1- FBC Table of Contents.*
Draft Components

The five FBC components, which are included in Attachment A, are described in this section:

Figure 2- FBC Regulating Plan (see Exhibit A of Attachment A)

The regulating plan is a development guiding map based on the city’s Boulder Valley Comprehensive Plan (BVCP) land use map designations for Boulder Junction, the TVAP plan and the zoning in the area. It is more specific than a zoning map and breaks up the area into sub-districts and specifies unique or special design elements for certain sites or blocks. It may outline streets with special design considerations, desired public open space locations, vista opportunities, required storefront retail areas etc. The regulating plan also specifies required TVAP street, alley and pedway connections in the phase I Boulder Junction area.

Another purpose of the regulating plan is outlining specific allowable ‘building types’ for each sub-area district, each with their own form and massing requirements. Examples are 1) Main Street Storefront, 2) Commercial Storefront, 3) General Mix, and 4) Row Building. Each of these building types would be regulated by a number of specific form regulations such as 1) Built-to lines, 2) Setbacks, 3) Required percentage of frontage along a streetscape, 4) Maximum site coverage, and 5) Maximum Building Width etc.

There would also be maximum story heights, maximum number of stories and requirements for transparency (i.e., windows) at each floor to avoid blank walls. These regulations would be similar to some of the code requirements found in the land use code, but would be more specific.
Some sample building type requirements are found on Exhibit A-3 in Attachment A.

II. Public Realm

The experience and interface of buildings to the adjacent pedestrian and vehicular environment has been an important issue discussed in this process. The public realm plan would specify the desired streetscapes in terms of street width, building to street ratios, tree plantings, hardscape materials as well as specific plaza/open space design requirements.

The public realm plan, like the regulating plan, is an opportunity to require certain design features that are not explicitly specified in the zoning map or connections plan. For instance, if there are opportunities for additional pedestrian pathways through blocks to create additional permeability and to break down the mass of block-long buildings they can be added to the plan.

Another identified opportunity that has been proposed on the plan above (shown in red on the public realm graphic) is the opportunity for a special pedestrian corridor along the north edge of Goose Creek. This idea generated a lot of discussion at the FBC working group and the joint board meeting. Whether the connection is multi-modal or just an emphasized pedestrian connection, it was considered important to ensure that buildings on the site (currently occupied by a long industrial used building) would face southward with their backs positioned along what would be an alley already constructed in Steel Yards. Having new buildings face that alley with their backs to Goose Creek would not be a preferred urban design outcome.

The connection, which could be an extension of the Mapleton right-of-way into Boulder Junction, could be treated with unique landscape and hardscape details, tree plantings, and include south-facing benches with potential views of the Flatirons. The connection could also create a new celebrated connection from the future park and Depot Square to the retail uses north on 30th. It is unlikely that such a connection would be vehicular given alignment issues with 30th and Mapleton and in the vicinity of the new Goose Creek bridge in Depot Square. These are the specific kinds of urban design ideas that could make the FBC a better implementing tool for TVAP’s vision for Boulder Junction than the current zoning or Site Review process.
Figure 3- FBC Public Realm plan (also see Exhibit B-1 of Attachment A)
III. Building Materials and Construction Quality

The quality of building materials approved for developments and how they are constructed and assembled has also been a key design consideration identified through the FBC pilot process and as part of the Design Excellence initiative. A specific part of the FBC that effectively goes beyond just form alone is clearly specifying what materials are permitted or prohibited. Percentages (e.g., primary building materials and secondary building materials) and locations of the materials can also be specified.

The image preference surveys and other forums for feedback identified building materials that were desired or found to be appropriate to Boulder Junction versus other materials that were not considered as durable or did not match the intended character of Boulder. For instance, some materials make buildings appear permanent and coherent with other buildings of an area and some materials make buildings appear more temporary or out of character with the surrounding context. Sometimes building materials can be applied simply with primary and secondary building materials while other buildings have been designed with multiple materials that appear “too busy”.

While there are good examples of building design and material usage in buildings in Boulder, Figure 4 below shows some of the types of design flaws that could be improved upon with more specific building material requirements in a FBC. Exhibits C-1 and C-3 of Attachment A include sample language designed to avoid these qualitative concerns.

Some examples of building materiality concerns that have been raised are as follows:

| Too many materials | Change of materials on building facades do not diminish the appearance of the 4th floor | Utility placement along streetscapes |
Large blank walls  Construction that looks cheap with flush mounted windows and fiber board siding  Use of wood under balconies

Material changes at corners  Poor construction quality with cracked stucco.  Concerns about CMU appearance and durability

Figure 4- Building material concerns

IV. Façade and Building Proportions
Beyond just material concerns, the over-articulation of buildings in recent years has also garnered criticism. Over-articulation of buildings has been evident in recent years partly from contemporary architectural styles, but also because of the city’s adopted design guidelines and Site Review criteria that have been applied to buildings with efforts to “reduce building mass” and “create pedestrian interest.” While these well intentioned guidelines and criteria have avoided monotonous buildings, they have not necessarily resulted in well-liked buildings or resulted in less massive buildings.

When Victor Dover visited Boulder last year, he raised the issue that many historic buildings that have been constructed over time used the “Golden Ratio” which effectively involves integrating rectangles of a ratio of 1 to 1.6 to create a sense of harmony and

Figure 5- Golden Ratio diagram
balance in building facades (see Figure 5 and Exhibit D of Attachment A). This practice was common in pre-World War II designs, but has been used less so in contemporary times. When unused, many critics of buildings have found that the buildings appear irregular and trigger a strong human reaction. Use of the Golden Ratio could be mandated in the FBC in a way that would still encourage unique and different building designs, but enough that a sense of balance and symmetry could be achieved. Many of the buildings that Boulder citizens have found to be acceptable use the Golden Ratio, as evidenced by the top four buildings in the image preference survey (Figure 6) or the Hotel Boulderado (Figure 7).

![Figure 6](image_url)

*Figure 6* - Top rated designs from both the community and joint board image preference survey.
V. Building Massing

Building massing – both horizontally and vertically – has been a prominent issue in the design conversation. Staff has heard significant concerns about the appearance of block-long buildings that do not effectively appear as multiple buildings despite attempts to create that effect, uniform building height at 55 feet with no diversity in height and the lack of real publicly accessible permeability through project sites, which also can reduce the massing of buildings.

CodaMetrics shows in the following two diagrams how massing often plays out under the current land use code and Site Review process followed by the massing that could be created through specific new regulations in the FBC.

To achieve the breaking down of massing without creating the affect of over-articulation and to achieve multiple buildings with a diversity of heights, the following regulations are proposed in the draft FBC (see Exhibit E of Attachment A):

1. Remove floor area ratio (FAR) and open space requirements which create too much uncertainty and variability. Alternatively, add specific form requirements
and designate open space locations, which set the level of expectation and create more predictability.

2. Require a “base, middle, and top” in buildings to avoid over-articulation and create more symmetry. Proportion requirements related to the Golden Ratio discussed above would also avoid over “busy” facades.

3. Specify “maximum building width” to avoid block long buildings, in additional to requiring additional pedway connections through large blocks. This would cut down on building size and would be an acceptable trade off considering the proposed removal of FAR requirements.

4. Place requirements on the fourth story of buildings such as maximum percentage above the third floor or requirements to have upper stories step down at intervals to avoid the build-out of 55-foot tall buildings across sites.

NEXT STEPS
Following City Council input on the FBC draft components and structure, city staff will continue working with CodaMetrics to prepare a more complete draft of the FBC. It is anticipated that a draft will be prepared by October for presentation to the FBC working group, to the general public at an open house and then to the Planning Board. Following Planning Board recommendation on the FBC, the draft FBC and ordinance will be advanced to City Council for review.

ATTACHMENTS

A. Draft components of the FBC for Boulder Junction Phase I
B. Community and joint board meeting comments from July workshops
EXHIBIT A-1: Regulating Plan

LEGEND

- Main Street Storefront
- Commercial Storefront
- General Mix (allows General Building or Row Building)
- General Building
- Row Building
- Civic Building (not mapped, available all locations)
- Required Storefront
- New Street - Primary
- New Street - Secondary
- New Street - Alley
- New Pedway
- New Multi-Use Path
- Existing Street - Primary
- Existing Street - Secondary
- Bike Route - Designated
- Bike Route - On-Street
- Open Space Required

Special Pedestrian Corridor

Draft Regulating Plan

Boulder Junction Form-Based Code  Zoning Workshop
EXHIBIT A-2: Regulating Plan

ISSUE:
The current zoning code does not always effectively implement the Transit Village Area Plan (TVAP) because the zoning code primarily regulates building uses with no explicit standards on form and public spaces.

APPROACH:
A form-based code with a regulating plan that is drawn from the TVAP will ensure the area is built out in accordance with the vision of the TVAP.

DRAFT CODE LANGUAGE:

A. REGULATING PLAN
The regulating plan provides the framework of the regulations that apply to each parcel. Refer to Figure XXX. The regulating plan illustrates the following:

- New Streets and Alleys. The location of required new streets and alleys (per the Transit Village Area Plan) is defined to implement walkable blocks and the requirements of the area plan. Refer to XXX Public Realm for street and alley requirements.
- New Pedestrian & Bicycle Ways. The location of required new pedestrian ways or paseos and new multi-use path locations (per the Transit Village Area Plan) are defined to implement a high level of walkability and bike-ability per the requirements of the area plan. Refer to XXX Public Realm for pedestrianway, paseo, and multi-use requirements. Additional paseos may be required per XXX General Design Requirements for All Sites.
- Permitted Building Types. The permitted locations for the Building Types are shown. Refer to XXXX for requirements of Building Types.
- Primary and Secondary Frontages. Frontages define how the buildings are required relate to the street. Primary and secondary frontages are shown on the regulating plan and referenced in the Building Types. Refer to XXX.D, below for additional information, and XXXX Building Types.
- Required Shopfronts on General Buildings. In addition to locations defined for storefront buildings (Main Street and Commercial Storefronts), portions of the frontage of some General Buildings may be required to have shopfronts. Typically these locations are at key intersections or adjacent to open space. Refer to XXXX General Building Type.
- Required Open Space Locations. The general location for additional open spaces is shown to achieve a distribution of small open space types within 1/8th of a mile of all building entrances. Refer to XXX Public Realm requirements for additional information.

B. PRIMARY FRONTAGES
This code establishes a hierarchy of street frontage as follows:

- Primary Frontages. The regulating plan designates primary frontages to prioritize fronts of lots and buildings, located the principal entrance on the building, and define limitations on locations for parking and garage entrances. Refer to Building Type requirements (refer to XX through XX)
- Secondary Frontages. The secondary frontages are established to allow for a lower level of façade treatment as well as permitted locations for garage and drive entrances. Refer to Building Type requirements (refer to XX through XX).
- Two Primary Streets. When two primary streets and/or no secondary street exists on the lot, the zoning administrator shall determine which frontage is most appropriate to serve as the secondary street. Orientation of other parcels along the street and status of the street shall be considered.

C. BUILDING TYPES
The following building types are established for development within the Boulder Junction Overlay. Figure XX illustrates the locations for the districts.

- Main Street Storefront. The Main Street Storefront Building Type is a highly pedestrian-oriented, mixed-use building required to be a minimum of 2 stories and up to 5 stories in height. Located along 30th Street this building type is meant to serve a wider area in addition to Boulder Junction. This building type requires ground story storefront along all primary streets with active retail and service uses. Upper story uses are highly flexible. Parking is in the rear or off-site.
- Commercial Storefront. The Commercial Storefront Building Type permits single use buildings and more parking locations, but is still focused on pedestrian orientation. This district allows a broader spectrum of retail and service uses on the ground story, including auto-oriented services.
- General Mix. The General Mix designation allows either the General Building or the Row Building.
- General Building. The General Building Type is a basic building envelope, defining the edges of the public realm with urban edges meant to enhance walkability in between the more active commercial spaces and open spaces. This building can accommodate a wide range of uses, from residential to office to light industrial.
- Row Building. The Row Building Type is a smaller scale building similar to the General Building with separate entrances into each unit. Townhouses, rowhouses, live-work units, or small width maker spaces could fit well into this building type.
EXHIBIT A-3: Regulating Plan

SAMPLE BUILDING TYPE REQUIREMENTS:

Building Types
Main Street Storefront Building

C. MAIN STREET STOREFRONT BUILDING

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<td>60% for height variability requirements.</td>
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<td>Minimum Side Yard Setback</td>
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<td>Minimum Rear Yard Setback</td>
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NOTES
1. Minimum required setbacks may vary based on availability of street side lot for pedestrian access. After any additional setback is imposed.
2. Mixed-height buildings are encouraged for primary facade.
3. Mixed-use buildings are encouraged for primary facade.

BOULDER JUNCTION Form-Based Code

Zoning Workshop
EXHIBIT B-1: Public Realm

ISSUE:
Current regulations do not always result in an attractive, functional public realm.

APPROACH:
Create a code that sets requirements for streetscapes and open space that create more walkable, vibrant urban public spaces through design and sometimes use.

DRAFT CODE LANGUAGE:

D. BLOCK & STREET LAYOUT REQUIREMENTS.
For all developments with total parcel acreage of more than 7 acres, subdivision and construction of a new streets will yield the most buildings. (Building types require buildings to front streets). Refer to Figure XX for an example of a typical new block and street configuration. The following applies:

Intent. In addition to the intents defined in XX, these regulations are intended specifically to increase the walkability of Boulder Junction.

Interconnected Street Pattern. Streets shall connect and continue existing streets from adjoining areas and cul-de-sac and dead end streets should be avoided when not necessitated by natural features or site constraints.

Blocks.
- The shape of a block shall be generally rectangular, but may vary due to natural features or site constraints.
- Blocks shall typically be two lots deep with the exception of blocks containing open space. Blocks may also include an alley. Blocks may include existing lots within an existing zoning district.
- Blocks shall typically be fronted with lots on at least two faces, preferably on the longest street faces.
- Consider lot and block orientation for maximum energy efficiency. For example, block orientation along an east-west longitudinal axis will encourage development of buildings oriented along an east-west axis, with smaller east and west facing façades, able to take advantage of passive solar technology.
- Block perimeter shall be less than 2000 feet. Deviations permitted with Design Review for sites with natural or existing constraints.
- Access Points. A minimum of two access points shall be provided for each development, with a minimum of one per every 1,500 feet of boundary.
- Primary Streets. Designate appropriate new streets as primary streets so that all buildings front at least one primary street. Vehicular access should not be located off a Primary Street, unless the parcel is fronted by more than two primary streets.
- Typical Lot Configuration. All lots shall have frontage along a public street unless otherwise specified in building type requirements. Flag lots are prohibited.
- Street Types.
  - The Connector Street Type is provided. Refer to Figure XX. The city may require additional street right-of-way or configuration based on existing context and circulation needs.
  - The Alley is provided for new drives through blocks to provide parking access as well as service access and refuse pickup. Refer to Figure XX.
- Open Space Requirements.
  - All developments over 7 acres are required to provide one of the following types of open space.
  - One type of open space is required within 1/6th of a mile of the principal residential entrance of all residential and mixed use buildings or units. The intent of this regulation to provide open space within a walkable distance from every residence for a small child.
  - Types of Open Space. The following types of open space are permitted:
    - Plaza. A plaza is a generally hardscaped area, minimum 1/8 acre in size, with either street, pedestrian, or river right-of-way or building frontage on all sides and at least one side the equivalent of 25 percent of the perimeter open to the street.
    - Square. A square is a combination of hardscape and landscape, minimum 1/4 acre in size, and surrounded by street, pedestrian, or river frontage on all sides.
    - Green. A green is a generally landscaped space, minimum 1/2 acre with street, pedestrian, or river right-of-way on at least 75 percent of the perimeter.
    - Park. A park is a larger, generally landscaped space, a minimum of 2 acres in size, with at least 25 percent of the perimeter on street, pedestrian, or river right-of-way.
- Existing Open Space. Existing usable natural area or open space, more than 1/4 of an acre and meeting one of the types defined above, XX, shall fulfill the requirements.
EXHIBIT B-2: Public Realm

Public Realm Requirements for all Sites
Block & Street Layout Requirements.

LEGEND
- New Street
- New Street - Alley
- New Pedway
- New Multi-Use Path
- Open Space Required
- 1/8 mile radius for locating required Open Space

Draft Public Realm Plan

TVAP: these are flipped...
TVAP: does not show this street connecting through
TVAP: shows this alley as a street
TVAP: no street connection here
TVAP: showed 2 sidewalk connections

Boulder Junction Form-Based Code
Zoning Workshop
EXHIBIT B-3: Public Realm

**Streetscapes**

*Low Traffic Shared Street*
For use at row houses and lower density housing streets

*Typical Street Section*
For through streets and more traffic-intense streets

**Pedestrian Walkways**

**TYPES**

- **Pedestrian alleyway**: a narrow lane or path between buildings that may have service utilities but has been modified to for pedestrian use
- **Paseo**: a designed plaza or walkway for strolling
- **Passage**: a walkway under or between buildings, often at least partially covered
- **Arcade**: a covered walkway, often with archways, onto which businesses face for shopping

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**Attachment A - Draft components of the FBC for Boulder Junction Phase I**

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18
EXHIBIT C-1: Materials and Construction

Issue:
Recent projects have used a palette of materials that create a confusing facade and streetscape often due to lack of hierarchy (no primary material) and multiple contrasting accent materials.

Issue:
Recent projects have used materials that are durable but typically used in industrial settings.

Approach:
To simplify facade compositions by requiring higher quality materials, permitting fewer overall building materials and creating standards that require a primary material to cover at least 60% of the main facade.

DRAFT CODE LANGUAGE

C. FACADE MATERIALS.

1. Major Facade Materials. A minimum of 60 percent of each facade shall be constructed of major facade materials.
   - Permitted Major Materials. Major facade materials shall be high quality, durable, finish materials. The following are acceptable major facade materials. Refer to Figure 10.3-6 Example of Permitted Dominant Materials.
     i. Stone
     ii. Brick
     iii. Glass
     iv. Painted wood lap siding and shingles
     v. Cedar wood?
     vi. Architectural metal panels
   - Prohibited Major Materials. The following materials are not permitted for use as major facade materials:
     i. Exposed concrete?
     ii. Synthetic stucco
     iii. Unfinished wood except cedar
     iv. Concrete masonry units (CMU)
     v. Glass block
     vi. Vinyl siding

2. Minor Facade Materials. Minor facade materials are limited to trim, details, and other accent areas that combine to less than 20-40% of the total facade surface.
   - Permitted Minor Facade Materials. Additional minor facade materials include the following:
     i. Fiber cement and wood trim pieces
     ii. Metal for beams, lintels, trim, exposed structure, and other ornamentation
     iii. Burnished, glazed, or honed concrete masonry units (CMU) or block for trim and details, but not surfaces
     iv. Split-face, honed, or glazed concrete masonry units with a height less than 4.5 inches for surfaces less than 10 percent of the facade surface

3. Appropriate Grade of Materials. Commercial quality doors, windows, and hardware shall be used on all building types with the exception of the General Row and Yardhouse Building type.

4. Color. Dominant building colors shall utilize any historic palettes from any major paint manufacturer. Other colors may be utilized for details and accents, not to exceed a total area larger than 10 percent of the facade surface area.

Boulder Junction Form Based Code Zoning Workshop
EXHIBIT C-2: Materials and Construction

**Overall Façade Material Coverage**

Multiple competing materials - NOT permitted

Fewer materials, arranged with a primary material that covers more than 50% of the facade.

**Major Material Types**

- Synthetic stucco
- Concrete masonry units
- Brick
- Plastic
- Vinyl siding
- Cedar wood
- Metal panel, glass

Materials NOT permitted on primary facades

Durable materials permitted on primary facades
**EXHIBIT C-3: Materials and Construction**

**Issue:**
Recent projects have used materials and construction techniques that will not stand up well over time and have often shown wear and tear only a short time period after construction.

**Approach:**
To require common construction techniques that help ensure durable and lasting buildings.

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**DRAFT CODE LANGUAGE**

D. BUILDING CONSTRUCTION QUALITY

The intent of the building construction quality requirements is to advance the quality of the construction of new buildings and address specific issues that have been noted on recent construction.

1. Transition in Material. The following addresses changes in surface materials.
   
   a. Corners. Where possible, changes in materials shall occur at concave or interior corners. When changes in material occur at a convex corner, the change shall occur at least 12 inches from the corner in either direction.
   
   b. Same Surface. Transitions in surface materials that occur on the same surface or plane shall also include one of the following:
      
      i. A trim piece covering the transition. The trim piece should be a whole material, as opposed to another material.
      
      ii. A change in plane, where the more detailed material is above the less detailed material; e.g. brick is more detailed with more joints and stucco is less detailed as a constant surface.
   
   c. Expression or Shadow Lines. Materials that have significant thickness may be used to create shadow or expression lines. For example, cast stone pieces may be offset to create a shadow line, where the actual convex corner of the piece is used to create the corner of the detail.

   Conversely, materials that have less thickness shall not be used in such a manner as to insinuate thickness. For example, stucco should not be formed to create a pilaster on the surface.

   d. Window Details. Windows shall be incorporated into the facade with trim details on at least 50 percent of the window perimeter.

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*Common construction problems in recent buildings*  
*Preferred construction techniques*
EXHIBIT D-1: Façade / Building Proportions

ISSUE:
The lack of clear and specific language regarding building façade design and proportioning in the current design guidelines and code criteria has left the community disappointed with the look of recently built buildings.

APPROACH:
Create a code that specifically guides a building’s façade design and mass to have aesthetically-pleasing proportions.

DRAFT CODE LANGUAGE:

E. BUILDING PROPORTIONING

The goal of the following guidelines is buildings proportion to the aesthetically pleasing proportions.

Definition of the Golden Ratio. The golden ratio is a proportioning metric used throughout history to achieve what has been considered “divine” (as in the divine proportion) or visually pleasing proportions. The ratio is frequently found in art and architecture, as well as in nature. The Fibonacci pattern (a series of numbers such as 1, 1, 2, 3, 5, 8...) is similar to the golden ratio.

Mathematically, the ratio is found by dividing a line into two parts so that the longest part divided by the smallest part is equal to the whole length divided by the longer part, written as \( \frac{b}{a} = \frac{b + a}{b} \). Numerically, the ratio is approximately 1.6180339887.

Definition of the Golden Rectangle. The golden rectangle uses the golden ratio, where the sides of the rectangle divided into a square and the remaining rectangle, fulfill the metric. Refer to Figure XXX, below.

Demonstrate Use of Golden Ratio. All projects are required to submit a diagram or series of diagrams demonstrating the use of the golden ratio in the design of the building, including the massing of the building and the design of the façade. Use of the ratio may include massing of bays, windows, divisions of the façade, overall height to width of the building, or other details. Refer to Figure XXX for examples of demonstrated use of the golden ratio.

What is the Golden Ratio (AKA the Divine Proportion)?

Two objects are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities. For example, a golden rectangle with longer side \( a \) and shorter side \( b \), when placed adjacent to a square with sides of length \( a \), will produce a similar golden rectangle with longer side \( a + b \) and shorter side \( a \). This illustrates the relationship:

\[
\frac{a + b}{a} = \frac{a}{b} = 1.6180...
\]

The Golden Ratio is believed by many designers and artists to be especially aesthetically pleasing and is theorized to have been used in many famous works of art and architecture.

The Golden Ratio is intimately related to the Fibonacci spiral, which is an approximation of the golden spiral created by drawing circular arcs connecting the opposite corners of squares in the Fibonacci tiling. The golden ratio appears in some patterns in nature, including the spiral arrangement of leaves and other plant parts.

Information from Wikipedia

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EXHIBIT D-2: Façade / Building Proportions

THE GOLDEN RATIO IN BOULDER

The Hotel Boulderado

The Hotel Boulderado, a beloved historic landmark, makes extensive use of the Golden Ratio for its overall mass as well as the proportioning of the main façade. Two overlaid horizontal Golden Rectangles give the basic form for the building (A); this overlap in turn creates additional Golden Rectangles (B).

Two Nine North

This recently built residential building is at Walnut & 30th Street. Aside from a few windows and doors, it does not appear to use the Golden Ratio on its façade or for its overall massing.

901 Pearl

This recently built mixed-use building is at Pearl & 9th Street. It uses Golden Rectangles throughout its façade elements and massing.

Landmark Lofts

This recently built residential development is located at the 28th Street Frontage Road and College Ave. The Golden Rectangle is used frequently to proportion façade elements and massing.

Daily Camera

This recently built mixed-use development is located at Pearl & 11th Street. The Golden Rectangle is used frequently to proportion façade elements and massing.

Boulder Junction Form-Based Code Zoning Workshop
**EXHIBIT E-1: Massing Bigger Projects**

**Issue:**
Some recently built buildings in Boulder are not considered pedestrian friendly, and appear out of scale with their context. Typically, these larger projects have long facades that fail to appear as multiple buildings despite design attempts to create that effect and do not include a variation in height.

**Approach:**
To manage the impact of larger buildings by regulating their horizontal and vertical massing, open spaces, basic articulations, and overall scale.

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**DRAFT CODE LANGUAGE**

**A. BUILDING ARTICULATION**
All buildings shall be articulated in a simple, honest manner with the goal of being human-scaled.

- **Base, Middle, Top Guidelines.** Vertically layering the components of the building provides a sense of order and stability to the buildings. All buildings shall include a clearly articulated base, middle, and top as defined in the following intent statements. Refer to Figure XXX Building Base, Middle, and Cap.
  
  i. **Base.** The base of a building shall/should establish an active ground story along the street and provide a public building face (such as a lobby, retail/service space, or restaurant) for all of the activities that occur within a building. Refer to XXXX Building Types for specific requirements of the ground story.
  
  ii. **Middle.** The middle section of a building shall/should provide living/working/recreating space for people, to be highly transparent, and provide eyes on the street. Balconies and terraces in the middle section of the building further meets this intent.
  
  iii. **Top.** The top of the building shall/should cap the building, protecting the building and its inhabitants from the elements. The top of the building shall clearly read as the end of the building, completing the design. Refer to XXXX Roof Types.
  
- **Required Articulation of Stories.** Stories shall be articulated on all street, pedestrianway, bicycleway, and rail facades utilizing the following.
  
  a. **Fenestration.** Fenestration or window placement shall be organized by stories.
  
  b. **Expression Lines.** Horizontal expression lines and lintels shall be used to delineate stories with minimum expression lines required per Building Type.
  
  c. **Mezzanines.** Mezzanines treated as a separate floor to floor height and story shall be articulated on the facade as a separate story.
  
  d. **Taller Spaces.** Spaces exceeding the allowable floor to floor heights of the Building Type per XXXX Building Types shall be articulated as multiple stories on the street facade.
  
- **Adjacent Building Variety Guidelines.** Building design should vary between adjacent buildings by the type of dominant material or color, scale, or orientation of that material and at least two of the following. Refer to Figure XX for one illustration of this requirement.
  
  a. The proportion of recesses and projections.
  
  b. The location of the entrance and window placement, unless shopfronts are utilized.
  
  c. Roof type, plane, or material, unless otherwise stated in the Building Type requirements.
  
  d. Heights...does an upper setback count?
EXHIBIT E-2: Massing Bigger Projects

A variety of building heights, articulations, and types.
Boulder Junction is a transitioning industrial district that will be redeveloped as a Transit Village. The Master Plan calls for new streets, trails and open spaces to augment new mixed use developments.

Several projects have been completed, including reconstruction of Pearl Parkway, Solana, the Hyatt hotel and improvements to the creek.

Currently the City is reviewing designs for three projects in Boulder Junction - shown in medium orange.

When built out, Boulder Junction will be a dense mixed-use community with a variety of uses. It will be connected by trails, streets, and sidewalks that allow residents and visitors to access transit, and other parts of the City with ease.
Transit Village Area Plan / Background Context

Transit Village Area Plan (TVAP)

TVAP - Land Use Plan

TVAP - Character Districts

TVAP - Transportation Connections

Boulder Junction Form-Based Code

Zoning Workshop
Transit Village Area Plan / Background Context

Boulder Junction - Aerial

Boulder Junction - Aerial

Zoning Districts
- BC-1 Business - Community 1
- BC-2 Business - Community 2
- BCS Business - Commercial
- BMS Business - Main Street
- BR-1 Business Regional 1
- BT-1 Business - Transitional 1
- E Enclave
- IG Industrial General
- IMS Industrial - Mixed Services
- IS-1 Industrial - Service 1
- IS-2 Industrial - Service 2
- MH Mobile Home
- MU-4 Mixed Use 4
- P Public
- RH-6 Residential - High 6
- RM-1 Residential - Medium 1

Boulder Junction - Current Zoning Districts

Boulder Junction Form-Based Code

Zoning Workshop
Transit Village Area Plan / Background Context

EXISTING: Boulder Junction Looking Northeast

PROPOSED: Boulder Junction Looking Northeast

EXISTING: Boulder Junction Plan

PROPOSED: Boulder Junction Plan

EXISTING: Boulder Junction Public Realm

PROPOSED: Boulder Junction Public Realm

Boulder Junction Form-Based Code

Zoning Workshop
Regulating Plan Components:

- Minimal area of change by Valmont and 30th
- Will mandatory build to lines create barriers to unique open spaces along the streetscape?
- Underpass – special art opportunity – Build it now
- Make parking lots human scaled – break it down like buildings
- Area north of Goose Creek:
  - Give-way street? Or One way street? One-way street bad for retail
  - Important location for row residential
  - Ped space? Woonerf? Sunlight landscape
  - Special shared use street? Extend Mapleton in Boulder Junction
  - Use design elements to create more separation b/t bike paths + ped areas
  - Best opportunity to affect change in area
- (A) streets - minimize office - maximize retail
- Need more ped crossings over Goose Creek
- Ped Seating is key
- Need “A” streets (highest ped quality) and “B” streets
- (A) Highest Quality (B) service/ access street

Public Realm:

- Need “A” streets (highest ped quality) and “B” streets
- Important to include shared (ped + car) slow speed streets lined with retail bldgs pulled up to the street
- Herder for the Traffic, local traffic only
- Underpass should be implemented
- Connect open space (not random pockets)
- Design for dogs – dog parks
- Community gardens
- Make shared street – relate to views + creek
- How would this work, or is it needed
- City Park
- “A” streets should maximize retail and minimize office
• Pathways don’t seem to connect
• Continue bike path to other side
• Interesting places to hang out, get coffee
• Public realm importance is street, humanize – prevent auto short cuts
• Easy way for community to exchange info – community billboard
• Cool things like Candy Chang’s “anything to do before I die” art
• What does the open space look like?
• Public art is key to make it interesting
• Connections
• Specific public space – make sure its successful
• Maximize hardscape minimize greenscape to improve ped quality
• Minimize block size with cross access ped puseos and small blocks formed by tightly gridded streets and limit on bldg façade length
• Open space – make sure that parking is not surface parking. Should be structured
• Open space – Roof tops shouldn’t count towards required public open space. B.I.D to keep place orderly and maintained
• Like surprise green space (pocket parks)

**Public Realm:**

• More yield streets in Family neighborhoods
• Prefer separate buildings – protected bike lanes
• Avoid sidewalk width that is too wide and light posts that are too tall (need human scale)
• Should feel like outdoor room to store slowdown
• Use allowable mins!
• Separated bike lanes b/t cars and pedestrian
• Different material for different areas
• Little nooks for privacy – lots of safe parking
• Cool for residential areas
• Narrow streets 4 ped ways
• Preferred ped way between bldgs
• Like things overhead – stone pavers – for all uses
• Replicate the cross access design! Wonderful human scale
• Flexible street to close streets for events
• Boulder One plaza great public realm example
• Dislike the moat
• Excellent comfortable outdoor room!
• Bike speed bumps