

BRAINERD PLANNING COMMISSION

Wednesday, March 20, 2019
6:00 p.m.
City Hall Council Chambers

1. Call To Order
2. Approval/Amendment Of Agenda
3. Approval Of Minutes
 1. Planning Commission Retreat Held on February 13, 2019
 2. Regular Meeting Held February 20, 2019

Documents:

[2019-02-13 RETREAT.PDF](#)
[2019-02-20 DRAFT.PDF](#)

4. New Business

- 4.a. Rezoning - James Runberg - Properties At 940 And 944 - 28th Street SE And Unaddressed Property On 28th Street

940 and 944 - 28th Street PIN 09143000005E009
Unaddressed Property PIN 09143000005H009

- Rezoning requested from an R-1 Single Family Residential District to an R-2 Medium Density Residential District for the purpose of bringing these properties back into zoning compliance and to construct a twin home.

Documents:

[REZONING REQUEST 940 AND 944 28TH ST.PDF](#)

- 4.b. Rezoning - Laine Larson, Superintendent ISD#181 On Behalf Of Brainerd Public Schools - Properties At 1609 And 1601 Oak Street

- Rezoning request from a B-2 Neighborhood Business District to an R-2 Medium Density Residential District for the purpose of remodeling and expanding Harrison Elementary School

Documents:

[REZONING REQUESTED 1601 AND 1609 OAK ST.PDF](#)

- 4.c. Conditional Use Permit - Laine Larson, Superintendent Of ISD#181 On Behalf Of Brainerd Public Schools

- Properties legally described as "Lots 9, 10 and the East Half of Lot 8, all in Block 16, Sleeper's Addition To The City of Brainerd and the West Half of Lot 8, and the South 60 feet of Lot 7, all in Block 16, Sleeper's Addition To The City of Brainerd - requesting a Conditional Use Permit to construct an addition

to Harrison School Elementary

Documents:

[HARRISON ELEMENTARY CUP.PDF](#)

5. Public Forum

Time allocated for citizens to bring matters not on the agenda to the attention of the Planning Commission - time limits may be imposed

6. Old Business

6.a. Discussion - Rewrite Of Chapters 4 And 5 Of The Code Of Ordinances Of The City Of Brainerd

Documents:

[CMAP-GUIDEFORCOMMUNITIES.PDF](#)

6.b. Comprehensive Plan Update

7. Commissioners' Questions/Comments

8. Community Development Director's Report

9. Adjourn

Any individual needing special accommodations, or that desires more information about the above items, please call 218-828-2309

PLANNING COMMISSION
Wednesday, February 13, 2019

#1 Call to Order

Planning Commission Chair Gorham called the Planning Commission Retreat to order at 6:00 p.m. in the City Hall Council Chambers.

Noted present were Commissioners Burslie, Duval and Gorham. City Administrator Torstenson, Community Development Director Chanski and Council Liaison Lambert were also noted as present. Commissioner Marohn was noted as absent. Also present was Administrative Specialist Bestul.

#2 Approval of Agenda

MOTION AND SECONDED BY COMMISSIONERS BURSLIE AND LAMBERT, DULY CARRIED, TO APPROVE THE AGENDA.

#3 Ordinance Review/Reform

Community Development Director Chanski stated his goal for 2019 is to review the current ordinances and analyze them for the best practices and what makes sense for Brainerd. There are many that may be outdated and need to be revised. The city ordinances need to be clear and user friendly for both residents and potential businesses.

City Administrator Torstenson stated one of the main reasons to review these ordinances directly relates to economic development. She indicated one of the hurdles and barriers of people wanting to locate in a community is passed through ordinances. If the ordinances are restrictive, complicated, or outdated this could be a deterrent for potential growth. Economic development is not just businesses, it also relates to housing and redeveloping areas.

Commissioner Lambert questioned the format of the current ordinances – is there a different format that could be applied to our cities' ordinances.

Commissioner Burslie suggested a full rewrite of the ordinances using a form-based code strategy. He indicated Sourcewell is a great resource for funding opportunities and to include something in the budget to assist in this task. He said the current ordinances were written in the 1980's and many points do not apply to current times. The City of Brainerd currently has 17 different zoning districts; three rural, six residential, five commercial, two industrial and one mixed use. He explained for a city the size of Brainerd, this seems to be too many.

Commissioner Burslie explained form-based codes are an alternative to conventional zoning that focus on the form of buildings rather than the land use. This would result in concentrating on the physical character of buildings and the relationship of buildings to each other and the street or neighborhood. This simplifies the process of obtaining permits and would be an attractant to potential residents.

Commissioner Duval expressed that tackling a project of a complete rewrite seems too large to handle while the update to the Comprehensive Plan is in process.

City Administrator Torstenson stated the process of a complete rewrite would take a minimum of two years as it would need to go through a budget cycle for funding, review of the current ordinances and the recommended changes. The goal for Community Development Director Chanski is first to review all the ordinances and look for obvious errors, weaknesses and outdated information.

Commission Chair Gorham asked the process to be included in the budget. City Administrator Torstenson explained the budget process starts in June, so anticipated fund amounts need to be determined and submitted for council approval in August.

Commission Chair Gorham indicated a less cumbersome, invasive and confusing process for ordinances by transitioning to form based would be ideal. He also felt that a Frequently Asked Questions (FAQ) section on the City website is needed to assist residents in many areas of codes and ordinances.

Community Development Director Chanski will draft a proposal and bring it to the City Council asking for clear direction regarding a full rewrite of the city ordinances.

City Administrator Torstenson suggests a review of all ordinances is needed, but this group should focus on Section 515 of the Zoning Ordinance, Chapter 4: Building, Housing & Construction Regulations and Chapter 5: Planning & Land Use Regulations of the City Code as these all work together. Any changes or updates would be reviewed by the city attorney prior to presenting to the council. She stated one of her goals as administrator is for Brainerd to become the city of choice in Minnesota and be inviting to new residents and businesses to come here and ultimately stay here.

City Administrator Torstenson indicated the rewrite process would be similar to the Comprehensive Plan rewrite which could include budget request submittal to City Council, appoint committee to draft changes, and public outreach for input. However, in the shorter term, the process would first be to obtain a preliminary scope of work and costs involved.

City Administrator Torstenson stressed the importance of not holding serial meetings, but have all information and suggestions be sent directly to Community Development Director Chanski.

Community Development Director Chanski and Commissioner Burslie will bring examples of form-based codes and an idea of the scope of work to be done to the March Planning Commission meeting. The commission will also work on making smaller ordinance changes as needed.

City Administrator Torstenson stated she attended an Economic Development Conference and one topic of interest is to look at clear span of building heights. In the past, a 12' – 18' was common for commercial and industrial buildings, but now the interest is 32' – 38'. It has been found to be less expensive to build vertically rather than horizontally. Are we a deterrent to economic development due to regulations in our ordinances? It was indicated that businesses and industries are looking at the city codes before they even try to contact a realtor. If the code does not work for what they want, they won't even try to contact that city.

Further discussion took place regarding design standards and neighborhood compatibility.

Commissioner Lambert commented that planning should be a part of public transit and feels that public transit is just as important as walkability. The topic should be addressed in the Comprehensive Plan rewrite.

#4 Planning Commission Bylaws Discussion

Commission Chair Gorham stated these points in the bylaws were of particular interest to him:

- Article II – Section 3. Duties of Offices
 - *“Chairperson: See that all actions of the Commission are properly taken.”*

He stated that the commission should be updated on the outcome of the recommendations made to the City Council. Community Development Director Chanski will improve communication to the commission regarding the decisions made at council level.

- Section 4. Preparation of Comprehensive Plan
 - *“The Commission shall prepare, adopt and revise the Comprehensive Plan..., including proposed public buildings, ...”.*

He stated the commission input could be related to the facility study.

- Article IV – Section 10. Communication with Public and Applicant
 - *“...no Commission member shall lobby the merits of a pending case...”*

This is a great statement that relates to Commissioner Marohn’s comments of being able to communicate with the applicant outside of a commission meeting.

City Administrator Torstenson indicated that all questions or discussion regarding an application should be directed to Community Development Director Chanski. He will do the research and respond to the entire commission.

#5 Discussion of Packets and Education Opportunities

Commission Chair Gorham asked if the commission can review the property of an application prior to the meeting. It was determined that it is acceptable to drive by and review the site, but no contact or communication should take place with the property owner.

Community Development Director Chanski clarified the following are items and information that the Commission would like to have in each meeting packet:

- Application
- Plans and/or Drawings
- Findings of Fact
- Legal Opinions
- Information to Support or Oppose the Request
- Summary of Correspondence Received from Others

Community Development Director Chanski indicated he will be looking into the planning department budget for education opportunities for the commission members to take advantage of. He will also research the League of MN Cities for presenters, speakers and online trainings that are available. A list of topics of interest may be drafted and potential speakers can be contacted.

#6 Comprehensive Plan and Mission Statement Discussion

Commission Chair Gorham indicated the Mission Statement has several good points as follows:

- #3 - *“the Commission shall complete studies and recommend long term development plans and policies which are consistent with the Comprehensive Plan and the values of the community which are life enriching, economically beneficial and environmentally sound.”*

He believes that and the Commission is more than just a group to review applications.

- #5 – *“the Commission shall encourage efficient utilization of existing infrastructure and buildings and innovative and effective management of public and private land.”*

City Administrator Torstenson stated at the March 2, 2019 meeting, the City Council will be discussing the future of the facilities, as the vote was to retain city buildings. The discussion will also include possible consolidation of city departments and functions for efficiency.

- #6 – *“the Commission shall create with the assistance of the staff, a land use, economic, and demographic information base for use by citizens and developers.”*

Commission Chair Gorham agrees as they work with ordinances and land use applications, this information would be helpful if it was easily accessible.

City Administrator Torstenson explained the Comprehensive Plan does address these issues, plus the Economic Development Authority (EDA) also takes part in this. The EDA is currently working on the goals and priorities for their committee in 2019.

- #7 – *“noting that the City of Brainerd is part of a larger community, the Commission will encourage joint meetings and sharing of information with commissions and committees with the City and with adjacent Planning Commissions.”*

Commission Chair Gorham stated he would enjoy having a meeting and working with Baxter or Crow Wing County for another perspective and ideas for the area.

Commission discussion took place regarding climate changes and stormwater processes.

#7 Other Ideas/Comments

Commission discussion took place on the outreach efforts being done to solicit applicants for the two vacancies on the commission. The request for applications has been posted on the City website, Facebook and they are announced at every council meeting. The commission members have been encouraged to reach out to people they know to try and recruit applicants.

Commissioner Burslie indicated there are some topics he would like to see on this years' agenda for the commission to work on. He stated there is currently no fee for an ordinance amendment. Last year, an issue came up where staff put in a lot of work and time to research and revise an ordinance, but there was no charge to the applicant who requested it. He would like to research the penalty fees for after-the-fact work being performed without a permit. It was determined there is a double permit fee applied when that occurs.

City Administrator Torstenson indicated the City Council will be reviewing the current fee schedule and recommendations will be discussed at the meeting February 19th.

Commissioner Burslie would also like to address the perception by the community of the lack of downtown parking. A parking survey was completed in the summer of 2017, and it showed there was ample parking at that time.

City Administrator Torstenson stated the parking challenges are increasing due to the upsurge of tenants residing in the apartments, as there is no formal place for them to park. Another reason could be the business owners parking on the street.

Commission Chair Gorham indicated he has worked downtown for 25 years and stated it is a challenge to be able to park for work and not receive a ticket. He said it will be difficult to get tenants willing to rent apartments if there is the constant fear of receiving a ticket and having to move their vehicle every two hours.

Further discussion took place regarding the parking concerns.

City Administrator Torstenson explained downtown is one of the two opportunity zones that have been identified in Brainerd. The possibility of obtaining an investor in the downtown area is high and this will also be a factor in the parking concerns as businesses occupy the vacant storefronts.

Commissioner Duval suggested other possibilities to increase the walkable bikeable ability could be to increase the amount of bike racks or have rental bicycles to try and overcome the barriers.

Discussion took place regarding the order of authority by the Chair and governing by the Sturgis Standard Code of Parliamentary Procedure.

#4 Adjourn

The Chair adjourned at 8:44 p.m.

Planning Commission Chair

PLANNING COMMISSION
Wednesday, February 20, 2019

#1 Call to Order

Planning Commission Chair Gorham called the meeting of the Brainerd Planning Commission to order at 6:00 p.m. in the City Hall Council Chambers.

Noted present were Commissioners Burslie, Duval, Gorham, and Marohn; and Council Liaison Lambert. Community Development Director Chanski and City Engineer Sandy were noted as present. Also present was Administrative Specialist Bestul.

#2 Approval/Amendment of Agenda

MOTION AND SECONDED BY COMMISSIONERS LAMBERT AND BURSLIE, DULY CARRIED, TO APPROVE THE AGENDA.

#3 Approval of Minutes

MOTION AND SECONDED BY COMMISSIONERS DUVAL AND LAMBERT, DULY CARRIED, TO APPROVE THE MINUTES OF THE REGULAR MEETING HELD ON JANUARY 16, 2019.

#4 New Business

4a. Variance Request – 2910 Oak Street – Accessory Structure

Community Development Director Chanski explained the applicant, Mr. Donald Peterson, has submitted an application to construct a 24' x 24' accessory structure on behalf of the Seventh Day Adventist Church located at 2910 Oak Street, Brainerd. The property is in a B-1 Residential Office District. The variance is to allow a 13' setback on the west side of the property in which 30' is the required setback. The Findings of Fact are as follows:

1. Setbacks from adjacent residential zoning in a B-1 Office Residential District will be 30 feet from the property line.
2. A proposed setback of 13 feet along the west side of the property is requested.
3. The western wall of the north section of the principle structure currently sits approximately 20 feet from the property line.
4. Per Section 515-17.8c., the proposed accessory structure does not exceed 30% of the gross floor space of the principle building
5. The proposed accessory structure will be the third accessory structure to the primary structure constructed on the property. However, there is no limit to the number of accessory structures in a B-1 district.
6. The proposed accessory structure will increase the impervious area of the property by approximately 480 square feet. However, there are no lot coverage requirements in a B-1 district.
7. An estimated 2 parking spots would be removed with the construction of this accessory structure, but the minimum required parking per the Code of Ordinances would still be met.

8. The applicant intends to construct the accessory structure some 24 feet to the south of the primary structure.

Commission discussion took place.

Commissioner Duval would like to postpone the public hearing and variance discussion. He feels that the application is incomplete as the submitted site plan is difficult to interpret as to the relationship of the proposed structure to the existing boundary lines, and the existing structure and rights-of-way. He stated he cannot evaluate the application based on the information submitted.

Commission discussion took place.

MOTION BY COMMISSIONER DUVAL TO POSTPONE THE PUBLIC HEARING AND VARIANCE RECOMMENDATION UNTIL THE MARCH MEETING AFTER A COMPLETE APPLICATION IS SUBMITTED SHOWING PROPERTY LINES AND BOUNDARIES.

The motion dies for a lack of a second.

The Chair opened the public hearing at 6:07 p.m.

The Chair recognized Mr. Donald Peterson, who is the applicant for the variance request. He stated they would like to construct another accessory structure, similar to what was approved and built two years ago on the property. The structure will be used as a garage for storage of equipment as the previous structure is being used for retail storage of the Dorcas merchandise. The proposed site is the preferred site so it would not infringe on the children's playground. Mr. Peterson specified details about the buildings on the site on the overhead map shown.

The Chair closed the public hearing at 6:20 p.m.

Commissioner discussion took place.

MOTION AND SECONDED BY COMMISSIONERS MAROHN AND LAMBERT TO RECOMMEND APPROVAL OF THE VARIANCE REQUEST WITH THE SETBACK NOT TO ENCROACH CLOSER THAN 13' AND BASED ON THE FOLLOWING FINDINGS OF FACT:

1. Setbacks from adjacent residential zoning in a B-1 Office Residential District will be 30 feet from the property line.
2. A proposed setback of 13 feet along the west side of the property is requested.
3. The western wall of the north section of the principle structure currently sits approximately 20 feet from the property line.
4. Per Section 515-17.8c., the proposed accessory structure does not exceed 30% of the gross floor space of the principle building
5. The proposed accessory structure will be the third accessory structure to the primary structure constructed on the property. However, there is no limit to the number of accessory structures in a B-1 district.
6. The proposed accessory structure will increase the impervious area of the property by approximately 480 square feet. However, there are no lot coverage requirements in a B-1 district.

7. An estimated 2 parking spots would be removed with the construction of this accessory structure, but the minimum required parking per the Code of Ordinances would still be met.
8. The applicant intends to construct the accessory structure some 24 feet to the south of the primary structure.
9. Unique character of the site and the topography of the neighboring site mitigates the necessity of a strict adherence to the setback

Commissioners Gorham, Marohn and Lambert voted “aye”. Commissioners Burslie and Duval voted “nay”. The Chair declared the motion carried.

4b. Discussion on the Planning Commission’s Responsibilities in Enforcing Stormwater Regulations on Proposed Projects

Community Development Director Chanski indicated this topic was initiated by Commissioner Duval’s request from the January meeting.

City Engineer Sandy went through a PowerPoint that is part of the MS4 Annual presentation which is a requirement of the storm sewer system permitted through the MPCA. He explained an overview of the stormwater system and the roles of the Planning Commission when considering applications and conducting research for various variances or conditional use permits. He indicated all storm sewer or stormwater questions are directed through the engineering department and the Planning Commission’s role is enforcing the Zoning Code as it relates to lot coverage. The following districts’ maximum lot coverage standards are 60% residential maximum and 50% non-residential maximum:

- R-A – Rural Agriculture District
- R-R – Rural Residential District
- R-E – Single Family Estate Residential District
- R-1 – Single Family Residential District
- R-1A – Single Family Residential District
- R-2 – Medium Density Residential District
- R-3 – High Density Residential District

These lot coverage standards are in place to promote pervious surfaces and green spaces where stormwater infiltration is possible; less impervious surface means less stormwater run-off. The business and commercial districts’ stormwater regulations are handled through City Ordinance 725 – Stormwater Management and do not have maximum lot coverage standards.

4c. Discussion and Direction as to the Application and Enforcement of Outdoor Dining Areas

Community Development Director Chanski explained he has discovered inconsistent application of outdoor dining standards in the City. In the City Code, all the commercial districts, B-2 through B-6, have a section in the Conditional Use Permit process regarding non-enclosed areas for outdoor dining. However, in the B-4 General Business District there appears to be duplications in different areas of the code. There are some new businesses locating downtown that these rules would apply to. He would like direction from the Commission as to revising and clarifying the codes for consistency throughout all districts and how strict the Commission should be on enforcement.

Commission discussion took place. It was determined that Community Development Director Chanski will draft revised language for this section of the code.

#5 Public Forum

The Chair opened public forum at 7:36 p.m.

No one came forward.

The Chair closed public forum at 7:36 p.m.

#6 Old Business

None

#7 Commissioner's Questions/Comments

Commissioner Duval thanked City Staff, Police and Fire Departments for the excellent condition of the north side sidewalks following the heavy snow we have had.

Commissioner Lambert indicated the retreat was very worthwhile and informative. Commission Gorham agreed.

#8 Community Development Director's Report

Community Development Director Chanski indicated the City is aware that some of the sidewalks in the community need attention as it is the property owners' responsibility to keep them clear. However, due to the amount of snow and the frequency of the snow, many property owners have not had the 48 hours to properly address the issues before a code compliance letter is mailed to them. He also thanked the Commission members who attended the retreat and the comments and ideas that were shared.

Community Development Director Chanski stated for the March 20th Planning Commission meeting, he is drafting a preliminary scope of work to prepare for budget recommendations to the City Council for funds toward the zoning ordinance revisions.

#9 Adjourn

The Chair adjourned at 7:45 p.m.

Planning Commission Chair

City of Brainerd Community Development Department

TO: Planning Commission

FROM: David Chanski, Community Development Director

DATE: March 14, 2019

RE: 940 & 944 28th St. and Unaddressed Property Rezoning

James Runberg, 1205 Lakeview, Brainerd, MN 56401, has submitted a request on behalf of himself to rezone his property at 940 and 944 28th St. and on behalf of the property owners at the unaddressed property to the immediate south (P.I.N. 0914300000H009) from R-1 Single Family Residential District to R-2 Medium Density Residential District.

The purpose of the rezoning request is to bring 1) Mr. Runberg's property back into zoning compliance, and 2) allow for the construction of a twin home on the unaddressed property, which Mr. Runberg will purchase upon rezoning.

Findings of Fact

1. The twin home located at the addresses of 940 and 944 28th St. is currently a non-conforming use as R-1 districts prohibit multi-family housing.
2. The requested properties were properly zoned as a R-2 Medium Density Residential District when the twin home was constructed in 2004.
3. The unaddressed property (P.I.N. 0914300000H009) is suitable for the construction of a twin home.
4. Returning the properties to a R-2 District will have the following impacts:
 - a. The twin home at 940 and 944 28th St. will return to zoning compliance, which will allow the property owner to better maintain and improve the property.
 - b. Rezoning the unaddressed property will allow the applicant to construct new, affordable housing, which is a need the City of Brainerd.
 - c. Location of the proposed new multi-family construction will have minimal impact on the existing neighboring residences as it will be clustered next to existing multi-family housing and as there are buffers in place (28th St. to the east and a tree line to the south and west) to separate new construction from existing single-family residences.
5. Mr. Runberg is a landlord in good standing with the City of Brainerd, and there are no documented ordinance violations for his residences at 940 and 944 28th St.

As of this writing, no parties have come forward to express their objections to this rezoning request.

Staff Opinion

As the City of Brainerd is in need of new, affordable housing options, and as Mr. Runberg is a landlord in good standing with the City of Brainerd, and as his properties at 940 and 944 28th St. have no documented ordinance violations, and as Mr. Runberg's property is currently non-conforming due to rezoning, which occurred after the twin-home was constructed, and as bringing the property back into zoning compliance would result in the ability to properly maintain and improve the existing residence, and as the construction of new multi-family housing should have minimal impact on the surrounding residences, staff recommends approval of this rezoning request.



City Planning Department

City Hall - 501 Laurel Street
Brainerd, MN 56401
218-828-2309/Fax 218-828-2316
www.ci.brainerd.mn.us

RECEIVED

MAR 06 2019

CITY OF BRAINERD
ADMINISTRATION

Receipt # _____
Check # _____
Date Paid: _____

CONDITIONAL USE/REZONING/VARIANCE APPLICATION

RESIDENTIAL

COMMERCIAL

CONDITIONAL USE PERMIT

☐

(\$250.00)

REZONING

☒

(\$300.00)

VARIANCE

☐

(\$250.00)

☐

(\$400.00 + \$500.00 escrow deposit)

☐

(\$500.00)

☐

(\$400.00 + \$500.00 escrow deposit)

PROPERTY ADDRESS: 940+944 28th Street S.E., Brainerd, MN 56401

LEGAL DESCRIPTION: Lot(s): _____ Block: _____ Addition: _____
(attach description if lengthy) See Attached Legal Description.

Property Owner Name: James P. & Diane E. Runberg

Street Address: 1205 Lakeview Lane N. City: Brainerd State: MN Zip Code: 56401

Phone Number: 218-270-2217 Fax: N/A E-mail: jrunberg@brainerd.net

Applicant Name: (If different than Property Owner) James P. Runberg

Street Address: 1205 Lakeview Lane N. City: Brainerd State: MN Zip Code: 56401

Phone Number: 218-270-2217 Fax: None E-mail: jrunberg@brainerd.net

Description of Request: This subject property (Tract A), was zoned R2 when Diane and I purchased it, in 2004. We did build a "Twin Home" on Tract A in 2005. However, 2 or 3 years ago the City of Brainerd Re-Zoned this property (Tract A), with our "Twin Home" on Tract A, to R1. We wish to have it rezoned back to R2, to reflect the use of this property.

James P. Runberg

Property Owner Signature

Mimi Lealey

March 6, 2019

Date

James P. Runberg

(Please print name)

DIANE RUNBERG

James P. Runberg

Applicant Signature

Mimi Lealey

March 6, 2019

Date

James P. Runberg

(Please print name)

DIANE RUNBERG

(OVER)

AGENCY REVIEW CHECKLIST

Your request may require review by one or more of the agencies listed below. The City of Brainerd will determine which agencies will need to review your application and provide that agency with the notice of public hearing regarding your application:

BRAINERD FIRE DEPARTMENT

Attn: Fire Chief; 23 Laurel St; Brainerd, MN 56401; 218-828-2312; fire@ci.brainerd.mn.us

BRAINERD POLICE DEPARTMENT

Attn: Corky McQuiston, 225 East River Road; Brainerd, MN 56401; 218-829-2805; corky.mcquiston@ci.brainerd.mn.us

BRAINERD PUBLIC UTILITIES

Attn: Scott Magnuson, Supt.; P.O. Box 373; Brainerd, MN 56401; 218-829-8726; smagnuson@bpu.org

BWSR (MN Board of Water and Soil Resources)

Attn: Chris Pence; 1601 Minnesota Dr; Brainerd, MN 56401; 218-828-2383; chris.pence@state.mn.us

CITY OF BAXTER

Attn: Josh Doty; Community Development Director, 13190 Memorywood Dr; Baxter, MN 56425; 218-454-5100

CROW WING COUNTY HIGHWAY DEPARTMENT

Attn: Tim Bray, County Engineer; 16589 County Rd 142; Brainerd, MN 56401; 218-824-1110/FAX 218-824-1111
tim.bray@crowwing.us

CROW WING COUNTY SOIL AND WATER CONSERVATION DISTRICT

Attn: Melissa Barrick; 322 Laurel St-Ste. 13; Brainerd, MN 56401; 218-828-6197/FAX 828-6095
melissa.barrick@crowwingswcd.org

CROW WING COUNTY SURVEYOR'S OFFICE

322 Laurel St Ste 14.; Brainerd, MN 56401; 218-824-1124/FAX 824-1126

HRA

Attn: Jennifer Bergman; 324 E. River Rd.; Brainerd, MN 56401; 218-828-3705/FAX 828-8817;
jennifer@brainerdhra.org

MISSISSIPPI HEADWATERS BOARD

322 Laurel Street Ste.5; Brainerd, MN 56401; 218-824-1307/FAX 824-1104
mhb@mississippiheadwaters.org

MINNESOTA DEPARTMENT OF TRANSPORTATION

Attn: Steve Voss; 7694 Industrial Park Rd.; Baxter, MN 56425; 218-828-5779; steve.voss@state.mn.us

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

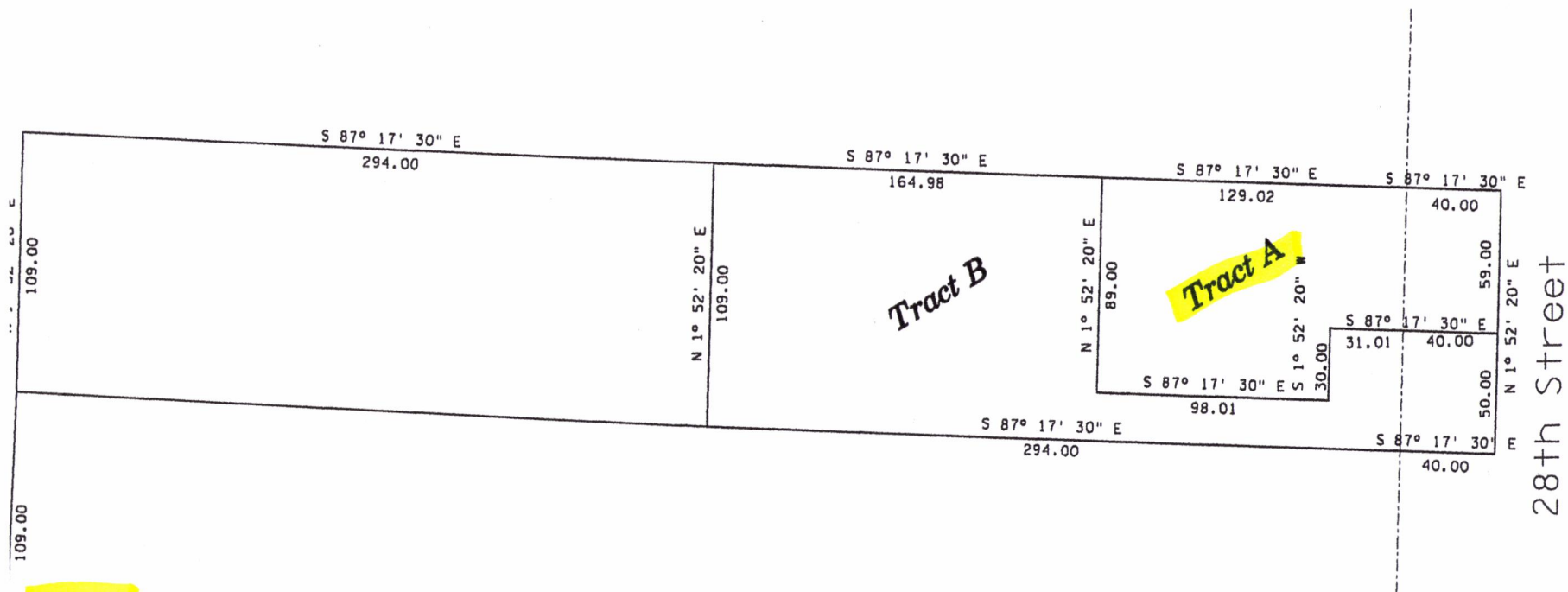
Attn: Wade Miller; 1601 Minnesota Dr.; Brainerd, MN 56401; 218-828-2605/FAX 828-6043;
wade.miller@state.mn.us

MINNESOTA POLLUTION CONTROL AGENCY

Attn: Reed Larson; 7678 College Rd-Ste. 105; Baxter, MN 56425; 218-828-2492/FAX 828-2594
Reed.Larson@state.mn.us

U.S. ARMY CORPS OF ENGINEERS

Attn: Jeff Koshak; 8896 E. Gull Lake Dr.; Brainerd, MN 56401; 218-829-8402



Tract A

That part of Tract Five (5) of Holland's First Addition to the City of Brainerd, according to the recorded plat thereof on file and of record in the Office of the County Recorder, in and for Crow Wing County, Minnesota, described as follows, to-wit:

Commencing at the Iron monument at the Southwest corner of said Tract Five; thence North 01 degree 52 minutes 20 seconds East, assumed bearing, 218.00 feet along the west line of said Tract Five; thence South 87 degrees 17 minutes 30 seconds East, a distance of 458.98 feet to the point of beginning; thence South 01 degrees 52 minutes 20 seconds West, a distance of 89.00 feet; thence North 01 degrees 52 minutes 20 seconds East, a distance of 30.00 feet; thence South 87 degrees 17 minutes 30 seconds East a distance of 71.01 feet to the east line of said Tract Five; thence North 01 degrees 52 minutes 20 seconds East, a distance of 59.00 feet; thence North 87 degrees 17 minutes 30 seconds West, a distance of 169.02 feet to the point of beginning.

Said parcel contains 12,910 square feet, more or less, and is subject to all restrictions, reservations and easements of record, if any.

Tract B

That part of Tract Five (5) of Holland's First Addition to the City of Brainerd, according to the recorded plat thereof on file and of record in the Office of the County Recorder, in and for Crow Wing County, Minnesota, described as follows, to-wit:

Commencing at the Iron monument at the Southwest corner of said Tract Five; thence North 01 degree 52 minutes 20 seconds East, assumed bearing, 218.00 feet along the west line of said Tract Five; thence South 87 degrees 17 minutes 30 seconds East, a distance of 294.00 feet to the point of beginning; thence continuing South 87 degrees 17 minutes 30 seconds East, a distance of 164.98 feet; thence South 01 degrees 52 minutes 20 seconds West, a distance of 89.00 feet; thence North 01 degrees 52 minutes 20 seconds East, a distance of 98.01 feet; thence North 01 degrees 52 minutes 20 seconds East, a distance of 30.00 feet; thence South 87 degrees 17 minutes 30 seconds East a distance of 71.01 feet to the east line of said Tract Five; thence North 01 degrees 52 minutes 20 seconds East, a distance of 50.00 feet; thence North 87 degrees 17 minutes 30 seconds West, a distance of 334.00 feet; thence North 01 degrees 52 minutes 20 seconds East, a distance of 109.00 feet to the point of beginning.

Said parcel contains 23,491 square feet, more or less, and is subject to all restrictions, reservations and easements of record, if any.

**City Planning Department**

City Hall – 501 Laurel Street
 Brainerd, MN 56401
 218-828-2309/Fax 218-828-2316
 www.ci.brainerd.mn.us

RECEIVED

MAR 06 2019

CITY OF BRAINERD
ADMINISTRATION

Receipt # _____
 Check # _____
 Date Paid: _____

CONDITIONAL USE/REZONING/VARIANCE APPLICATION**RESIDENTIAL****COMMERCIAL**

CONDITIONAL USE PERMIT

☐

(\$250.00)

☐

(\$400.00 + \$500.00 escrow deposit)

REZONING

☒

(\$300.00)

☐

(\$500.00)

VARIANCE

☐

(\$250.00)

☐

(\$400.00 + \$500.00 escrow deposit)

PROPERTY ADDRESS: XXX 28th Street S.E., Brainerd, MN 56401

LEGAL DESCRIPTION: Lot(s): _____ Block: _____ Addition: _____
 (attach description if lengthy) Please See Attached Legal Description.

Property Owner Name: John + Nancy BlizilStreet Address: 5103 Camden Rd. City: Baxter State: MN Zip Code 56425Phone Number: 218-766-3431 Fax: None E-mail: blizaj@yahoo.com

Applicant Name: (If different than Property Owner) _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Phone Number: _____ Fax: _____ E-mail: _____

Description of Request: I want to buy this land, which was zoned R2, and, recently re-zoned to R1. We would like to build a "TwinHome" very similar to our TwinHome located next door. It will be a high quality home (Twin), with attached garages with electric door openers. The home ^{will} style fits very well with the existing home improvements in the neighborhood.

John Blizil Nancy Blizil
 Property Owner Signature
John Blizil Nancy Blizil
 (Please print name)

3/4/19
 Date

James P. Runberg
 Applicant Signature

3-6-19
 Date

James P. Runberg
 (Please print name)

Mimi E. Runberg
 JANE E. RUNBERG

(OVER)

AGENCY REVIEW CHECKLIST

Your request may require review by one or more of the agencies listed below. The City of Brainerd will determine which agencies will need to review your application and provide that agency with the notice of public hearing regarding your application:

BRAINERD FIRE DEPARTMENT

Attn: Fire Chief; 23 Laurel St; Brainerd, MN 56401; 218-828-2312; fire@ci.brainerd.mn.us

BRAINERD POLICE DEPARTMENT

Attn: Corky McQuiston, 225 East River Road; Brainerd, MN 56401; 218-829-2805; corky.mcquiston@ci.brainerd.mn.us

BRAINERD PUBLIC UTILITIES

Attn: Scott Magnuson, Supt.; P.O. Box 373; Brainerd, MN 56401; 218-829-8726; smagnuson@bpu.org

BWSR (MN Board of Water and Soil Resources)

Attn: Chris Pence; 1601 Minnesota Dr; Brainerd, MN 56401; 218-828-2383; chris.pence@state.mn.us

CITY OF BAXTER

Attn: Josh Doty; Community Development Director, 13190 Memorywood Dr; Baxter, MN 56425; 218-454-5100

CROW WING COUNTY HIGHWAY DEPARTMENT

Attn: Tim Bray, County Engineer; 16589 County Rd 142; Brainerd, MN 56401; 218-824-1110/FAX 218-824-1111
tim.bray@crowwing.us

CROW WING COUNTY SOIL AND WATER CONSERVATION DISTRICT

Attn: Melissa Barrick; 322 Laurel St-St. 13; Brainerd, MN 56401; 218-828-6197/FAX 828-6095
melissa.barrick@crowwingswcd.org

CROW WING COUNTY SURVEYOR'S OFFICE

322 Laurel St Ste 14.; Brainerd, MN 56401; 218-824-1124/FAX 824-1126

HRA

Attn: Jennifer Bergman; 324 E. River Rd.; Brainerd, MN 56401; 218-828-3705/FAX 828-8817;
jennifer@brainerdhra.org

MISSISSIPPI HEADWATERS BOARD

322 Laurel Street Ste 5; Brainerd, MN 56401; 218-824-1307/FAX 824-1104
mhb@mississippiheadwaters.org

MINNESOTA DEPARTMENT OF TRANSPORTATION

Attn: Steve Voss; 7694 Industrial Park Rd.; Baxter, MN 56425; 218-828-5779; steve.voss@state.mn.us

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Attn: Wade Miller; 1601 Minnesota Dr.; Brainerd, MN 56401; 218-828-2605/FAX 828-6043;
wade.miller@state.mn.us

MINNESOTA POLLUTION CONTROL AGENCY

Attn: Reed Larson; 7678 College Rd-St. 105; Baxter, MN 56425; 218-828-2492/FAX 828-2594
Reed.Larson@state.mn.us

U.S. ARMY CORPS OF ENGINEERS

Attn: Jeff Koshak; 8896 E. Gull Lake Dr.; Brainerd, MN 56401; 218-829-8402

Crow Wing County

Crow Wing County
Land Services
322 Laurel St, Suite 15
Brainerd, MN 56401

218-524-1810
www.crowwing.us

Property ID: 09143000005H009
Owner: BLIZIL, JOHN E & NANCY

Taxpayer(s):

TAXPAYER # 143733
BLIZIL, JOHN E & NANCY
5103 CAMDEN RD
BAXTER MN 56425

Property Description:

CITY OF BRAINERD
SEC:30 TWP: 45.0 RG:30 LOT:5 BLK: ACRES: .82
HOLLAND'S FIRST ADDITION TO THE CITY OF BRD
PT OF TRACT 5 DESC COMM AT SW COR OF SD TRACT
5 THEN N 1D 52'20"E ASSM BEAR ALG W LINE OF

2018 Property Tax Statement

STEP	VALUES & CLASSIFICATION	
	Taxes Payable Year: 2017	2018
1	Estimated Market Value:	10,400
	Homestead Exclusion:	
	Taxable Market Value:	10,400
	New Improvements/ Expired Exclusions: Property Classification:	RES HMSTD
2	Sent in March 2017	
	PROPOSED TAX	
3	Proposed Tax:(excluding special assessments)	154.00
	Sent in November 2017	
	PROPERTY TAX STATEMENT	
	First-half Taxes: May 15	77.00
	Second-half Taxes: October 15	77.00
	Total Taxes Due in 2018:	154.00

\$\$\$

You may be eligible for one or even two refunds to reduce your property tax.

REFUNDS? Read the back of this statement to find out how to apply.

Taxes Payable Year:		2017	2018
1. Use this amount on Form M1PR to see if you're eligible for a property tax refund. File by August 15. If box is checked, you owe delinquent taxes and are not eligible.		☐	154.00
2. Use these amounts on Form M1PR to see if you are eligible for a special refund.			
PROPERTY TAX AND CREDITS			
3. Property tax before credits			154.00
4. Credits that reduce property taxes:			
A. Agricultural and rural land credits			
B. Taxable tax relief			
C. Other credits			
5. Property tax after credits			154.00
PROPERTY TAX BY JURISDICTION			
6. County			32.08
7. City or Town			80.05
8. State General Tax			
9. School District: A. Voter approved levies			10.81
0181 B. Other local levies			29.14
10A. Special taxing district			1.92
B. Tax increment			
C. Fiscal disparity			
11. Non-school voter approved referendum levies			
12. Total property tax before special assessments			154.00
SPECIAL ASSESSMENTS			
13A.			
B.			
C.			
14. Total property tax and special assessments			154.00

ISSUED 03/16/2018

2 ND HALF PAYMENT STUB

Pay on or before October 15 to avoid penalty
Real Estate Crow Wing County

Payable in 2018

Note: When you provide a check as payment you authorize the County to use information from your check to make a one-time electronic fund transfer from your account. The funds may be withdrawn from your account the same day. You will not receive your check back from your financial institution.

Make checks payable to:
Crow Wing County

CASH ☐
CHECK ☐
COUNTER ☐
MAIL ☐

TAXPAYER # 143733
BLIZIL, JOHN E & NANCY

RES HMSTD ACCT# 95989

Property ID Number:	09143000005H009
Full Tax for Year	154.00
Balance Due	77.00
Penalty	
Total Paid	

\$38.00 service charge for all returned checks.

ISSUED: 03/16/2018

Check if address change on back ☐
If box is checked you owe delinquent taxes
Detach stub and include with second half payment

1 ST HALF OR FULL PAYMENT STUB

Pay on or before May 15 to avoid penalty
Real Estate Crow Wing County

Payable in 2018

Note: When you provide a check as payment you authorize the County to use information from your check to make a one-time electronic fund transfer from your account. The funds may be withdrawn from your account the same day. You will not receive your check back from your financial institution.

Make checks payable to:
Crow Wing County

CASH ☐
CHECK ☐
COUNTER ☐
MAIL ☐

TAXPAYER # 143733
BLIZIL, JOHN E & NANCY

RES HMSTD ACCT# 95989

Property ID Number:	09143000005H009
Full Tax for Year	154.00
Balance Due	77.00
Penalty	
Total Paid	

\$38.00 service charge for all returned checks.

ISSUED: 03/16/2018

Check if address change on back ☐
If box is checked you owe delinquent taxes
Detach stub and include with first half or full payment



General Information

Parcel Number: 09143000005H009

General Information

Township/City: CITY OF BRAINERD

Taxpayer: BLIZIL, JOHN E & NANCY
5103 CAMDEN RD
BAXTER MN 56425

Property Address:

Township: 45

Range: 30

Section: 30

Plat: HOLLAND'S FIRST ADDITION TO THE CITY OF BRD

Lake Number: 0

Lake Name:

Acres: 0.82

School District: 181

Legal Description:

PT OF TRACT 5 DESC COMM AT SW COR OF SD TRACT 5 THEN N 1D 52'20"E ASSM BEAR ALG W LINE OF SD TRACT 5 A DIST OF 109 FT THEN S 87D 17'30" E ALG A LINE PARA W S LINE OF SD TRACT 5 A DIST OF 300 FT TO POB THEN CONT S 87D 17'30"E ALG SD PARA LINE A DIST OF 328 FT TO E LINE OF SD TRACT 5 THEN S 1D 52'20"W ALG SD E LINE 109 FT TO S LINE OF SD TRACT 5 THEN N 87D 17'30"W ALG SD S LINE 328 FT THEN N 1D 52'20" E 109 FT TO POB.

David
City Planner
454-3409
218

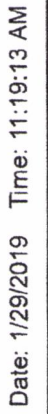
2018 Assessment for 2019 Tax Payable

Class Code 1:	Unimproved Residential Land
Class Code 2:	N/A
Class Code 3:	N/A
Homestead:	Non Homestead

Estimated Land Value:	\$16,900.00
Estimated Building Value:	\$0.00
Estimated Total Value:	\$16,900.00

2018 Tax Payable

Net Tax (Specials Not Included):	\$154.00
Total Special Assessments:	\$0.00
Current Year Balance Due:	\$0.00
Delinquent:	NO



These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

NOTICE OF HEARING

TO WHOM IT MAY CONCERN:

Notice is hereby given that James P Runberg and Diane E Runberg 1205 Lakeview Lane, Brainerd, MN 56401 has submitted a request on behalf of themselves for the properties at 940 28th St. S.E. and 944 28th St. S.E. and on behalf of the property owners for the unaddressed property to the immediate south to rezone said properties from an R-1 (Single Family Residential) District to an R-2 (Medium Density Residential) District for the purpose of bringing 940 & 944 28th St. S.E. back into zoning compliance and to construct a twin home. The properties, their owners, and their legal descriptions are as follows:

James P Runberg Revocable Trust – 940 & 944 28th St. S.E.

THAT PART OF TRACT 5 DESC AS FOLLOWS; TO WIT: COMM AT THE SW CORNER OF SAID TRACT 5, THENCE N 01 DEC 52 MIN 20 SEC E, ASSUMED BEAR P.I.N No. 09143000005E009

John and Nancy Blizil – Property Not Addressed

PT OF TRACT 5 DESC COMM AT SW COR OF SD TRACT 5 THEN N 1D 52'20"E ASSM BEAR ALG W LINE OF SD TRACT 5 A DIST OF 109 FT Then S 87D 17'30" P.I.N. No. 09143000005H009

A Public Hearing will be conducted by the Brainerd Planning Commission at 6:00 p.m. Wednesday, March 20, 2019 in the Brainerd City Hall Council Chambers, 501 Laurel Street to consider the request.

Any individual needing special accommodations or would like more information about this request please call (218) 828-2309.

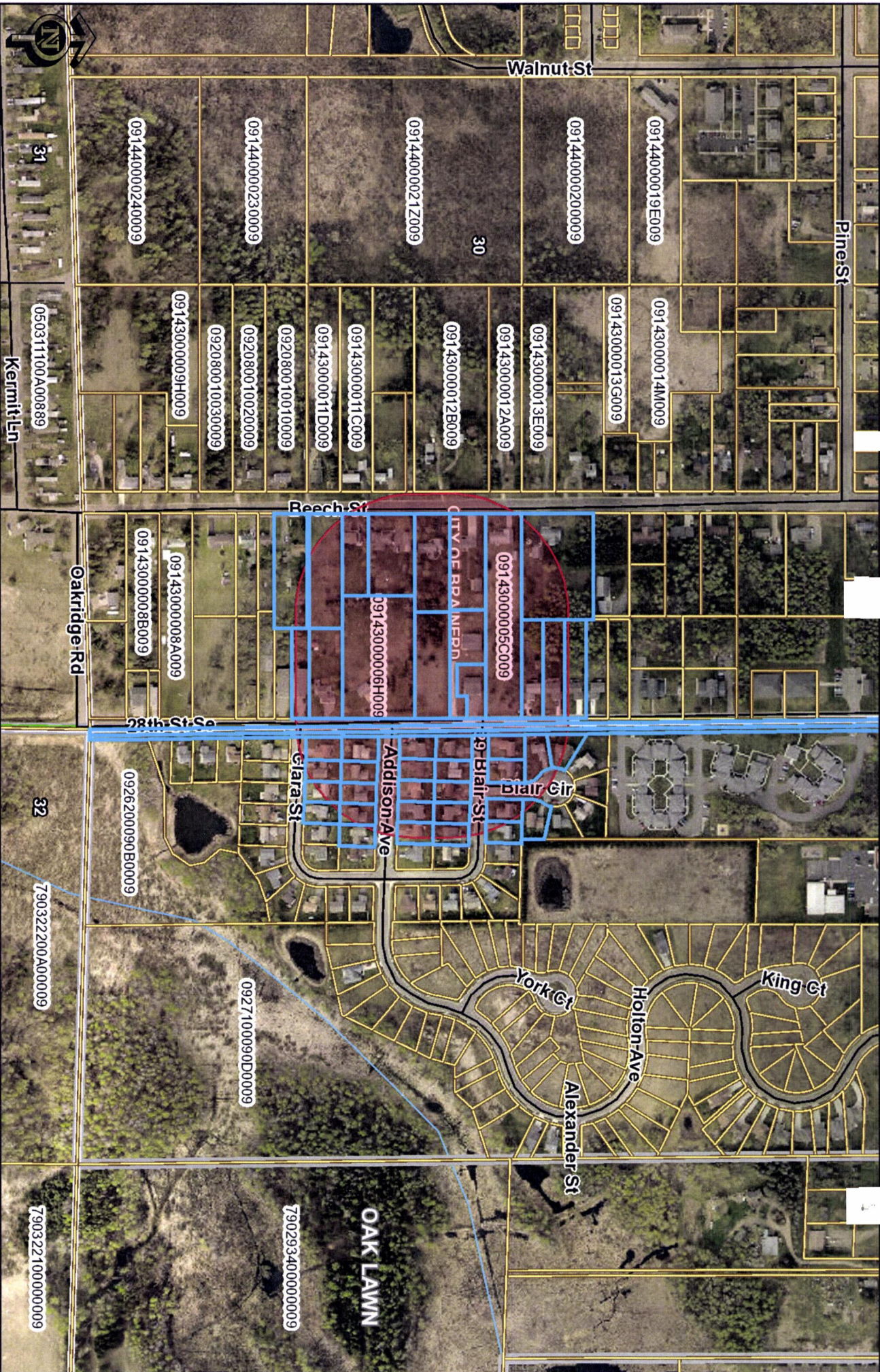
Dated this 8th day of March 2019.

David C. Chanski, MPA
Community Development Director

See reverse side for map.

*52
mailings*



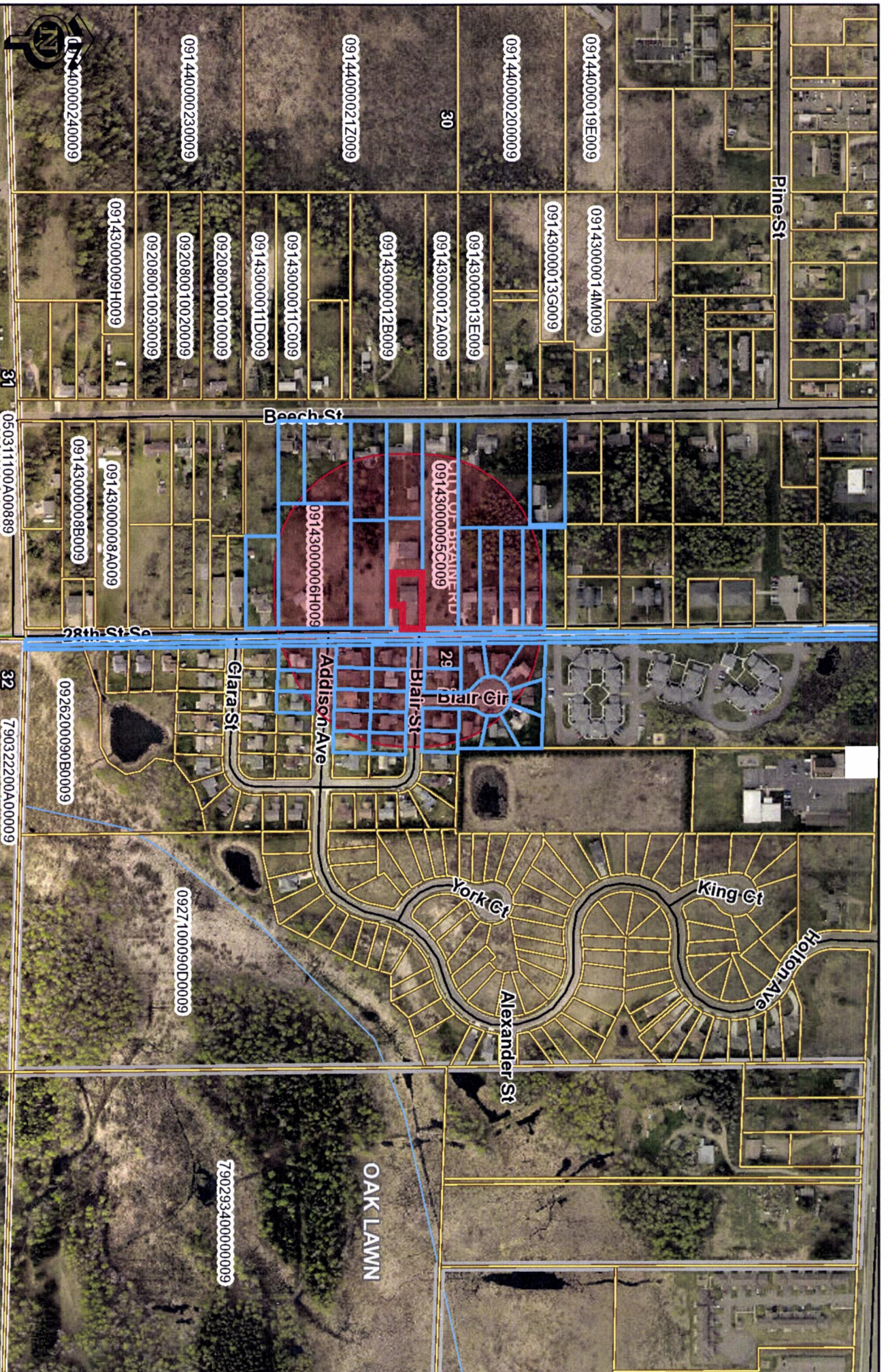


These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

28th Street no address Map

Date: 3/8/2019 Time: 10:30:56 AM





These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

28th St SE Map

Date: 3/8/2019 Time: 10:25:39 AM



Parcel Number	Legacy Parcel Number	Municipality	Owner Name	Owner Address	Owner Address 2	Owner Address 3	Physical Address	Physical City	Physical Zip
41290668	92510010050009	CITY OF BR ALMOND, PATRICK & CARLY		912 BLAIR CIR	BRAINERD, MN 56401		912 BLAIR CIR	BRAINERD	56401
41290671	92510010020009	CITY OF BR BARNHART, JUSTIN W & JENNY L		2805 BLAIR ST	BRAINERD MN 56401		2805 BLAIR ST	BRAINERD	56401
41301092	09143000005H009	CITY OF BR BLIZIL, JOHN E & NANCY		5103 CAMDEN RD	BAXTER MN 56425				
41290663	92510010100009	CITY OF BR CATALUSCI-BESETT, CHRISTOPHER &		BEEBE, MADELINE	2809 BLAIR ST	BRAINERD, MN 56401	2809 BLAIR ST	BRAINERD	56401
41290669	92510010040009	CITY OF BR CLOUGH, JAMES B		916 BLAIR CIRCLE	BRAINERD, MN 56401		916 BLAIR ST	BRAINERD	56401
41300972	09143000005C009	CITY OF BR DALBY, BARBARA J		1001 BEECH ST	BRAINERD MN 56401		1001 BEECH ST	BRAINERD	56401
41290653	92510020020009	CITY OF BR DICKINSON, WAYNE S & PATRICIA A		2806 BLAIR ST	BRAINERD, MN 56401		2806 BLAIR ST	BRAINERD	56401
41290643	92510020120009	CITY OF BR DWIRE, RYAN A		2801 ADDISON AVE	BRAINERD, MN 56401-6312		2801 ADDISON AVE	BRAINERD	56401
41290652	92510020030009	CITY OF BR EDWARDS, KATHLEEN		2810 BLAIR ST	BRAINERD, MN 56401		2810 BLAIR ST	BRAINERD	56401
41300974	09143000004H009	CITY OF BR EGGUM, ABBY & MICHAEL		916 28TH ST SE	BRAINERD, MN 56401		916 28TH ST SE	BRAINERD	56401
41300967	09143000006G009	CITY OF BR FINNEGAN, KEVIN & MARY REV TRUST		5457 CEDARDALE LN	BAXTER MN 56425		1121 BEECH ST	BRAINERD	56401
41300966	09143000006H009	CITY OF BR FRY, BRYCE		1016 28TH ST SE	BRAINERD, MN 56401		1016 28TH ST SE	BRAINERD	56401
41290639	92620010020009	CITY OF BR GLASBY, CHRISTOPHER & KATHERINE		2806 ADDISON AVE	BRAINERD, MN 56401		2806 ADDISON AVE	BRAINERD	56401
41290670	92510010030009	CITY OF BR GUENIN, TERRE D		920 BLAIR CIR	BRAINERD MN 56401		920 BLAIR CIR	BRAINERD	56401
41290645	92510020100009	CITY OF BR HAAG, BENJAMIN & JOLENE		2809 ADDISON AVE	BRAINERD, MN 56401		2809 ADDISON AVE	BRAINERD	56401
41290644	92510020110009	CITY OF BR HAGLIN, TIMOTHY M & LADONNA A		13754 TWO MILE RD	BRAINERD MN 56401		2805 ADDISON AVE	BRAINERD	56401
41300976	09143000004F009	CITY OF BR HEINLEN, PAUL & MELINDA		14143 KIMBERLEE CT	BAXTER, MN 56425		828 28TH ST SE	BRAINERD	56401
41300970	09143000005F009	CITY OF BR HEPPNER FAMILY JOINT REV TRUST AGR		1015 BEECH ST	BRAINERD, MN 56401		1015 BEECH ST	BRAINERD	56401
41290646	92510020090009	CITY OF BR HOLMBERG, LEANN		2813 ADDISON AVE	BRAINERD, MN 56401		2813 ADDISON AVE	BRAINERD	56401
41290638	92620010030009	CITY OF BR IMGUND, JODI P		2927 MEYER RD	FORT RIPLEY, MN 56449-1385		2810 ADDISON AVE	BRAINERD	56401
41300518	09143000005D009	CITY OF BR KALINOSKI, STANLEY P		1023 BEECH ST	BRAINERD MN 56401		1023 BEECH ST	BRAINERD	56401
41290664	92510010090009	CITY OF BR KANE, JENNIFER KATHLEEN		919 BLAIR CIR	BRAINERD MN 56401		919 BLAIR CIR	BRAINERD	56401
41290640	92620010010009	CITY OF BR KARASCH, JODY L		2802 ADDISON AVE	BRAINERD, MN 56401		2802 ADDISON AVE	BRAINERD	56401
41300973	09143000004I009	CITY OF BR KELLER, PATRICK		920 28TH SE SE	BRAINERD, MN 56401		920 28TH ST SE	BRAINERD	56401
41300978	09143000004C009	CITY OF BR L PETERSON INVESTMENTS LLC		ATTN: LYNN M PETERSON	10471 STATE HIGHWAY 25	BRAINERD, MN 56401		0 BRAINERD	56401
41290672	92510010010009	CITY OF BR LEE, KANGWON		2801 BLAIR ST	BRAINERD, MN 56401		2801 BLAIR ST	BRAINERD	56401
41300969	09143000005G009	CITY OF BR LI, XUE		4312 COUNTY ROAD 29	PEQUOT LAKES MN 56472				
41300968	09143000006F009	CITY OF BR LONG LAKE INVESTMENTS LLC		ATTN: LYNN M PETERSON	10471 STATE HIGHWAY 25	BRAINERD, MN 56401	1119 BEECH ST	BRAINERD	56401
41290667	92510010060009	CITY OF BR MILLE LACS BAND OF CHIPPEWA INDIANS		43408 OODENA DR	ONAMIA, MN 56359		908 BLAIR CIR	BRAINERD	56401
81290526	790293200FA0009	OAK LAWN MINNESOTA POWER AND LIGHT		30 W SUPERIOR ST	DULUTH MN 55802			0 BRAINERD	56401
41290651	92510020040009	CITY OF BR OLTMANN, ANTHONY DUANE &		KRISTIN MARIE	2814 BLAIR ST	BRAINERD, MN 56401	2814 BLAIR ST	BRAINERD	56401
41290650	92510020050009	CITY OF BR O'REILLY, KATHLEEN		2818 BLAIR ST	BRAINERD MN 56401		2818 BLAIR ST	BRAINERD	56401
41300975	09143000004G009	CITY OF BR PLANTE, CINDY L		906 28TH ST SE	BRAINERD MN 56401		906 28TH ST SE	BRAINERD	56401
41300979	09143000004B009	CITY OF BR PRUITT, PAMELA & DENNIS BLAKESLEY		923 BEECH ST	BRAINERD MN 56401		923 BEECH ST	BRAINERD	56401
41300971	91430000005000000000	CITY OF BR RUNBERG, JAMES P REVOCALBE TRUST		1205 LAKEVIEW LN N	BRAINERD, MN 56401			0 BRAINERD	56401
41300963	09143000006K009	CITY OF BR RUPP, KASSIDY ELIZABETH		1120 28TH ST SE	BRAINERD MN 56401		1120 28TH ST SE	BRAINERD	56401
41290665	92510010080009	CITY OF BR SCHUCKER, CHRISTOPHER J		915 BLAIR CIRCLE	BRAINERD, MN 56401		915 BLAIR CIR	BRAINERD	56401
41290654	92510020010009	CITY OF BR SHN PROPERTIES LLC		3552 44TH ST SW	PINE RIVER, MN 56474		2802 BLAIR ST	BRAINERD	56401
41290647	92510020080009	CITY OF BR STEINKOPF, DIANE		2817 ADDISON AVE	BRAINERD, MN 56401		2817 ADDISON AVE	BRAINERD	56401
41290666	92510010070009	CITY OF BR STEPHANIE, JAMES L		911 BLAIR CIRCLE	BRAINERD, MN 56401		911 BLAIR CIR	BRAINERD	56401
41290662	92510010110009	CITY OF BR STRACK, THOMAS W & JENNIFER R		2813 BLAIR ST	BRAINERD MN 56401		2813 BLAIR ST	BRAINERD	56401

Parcel Number	Legacy Parcel Number	Municipality	Owner Name	Owner Address	Owner Address 2	Owner Address :	Physical Address	Physical City
41290637	92620010040009	CITY OF BR ANDERSON, MICHELLE LEE	2814 ADDISON AVE	BRAINERD, MN 56401		2814 ADDISON AVE	BRAINERD	
41300964	09143000006J009	CITY OF BR C5 PROPERTIES LLC	3654 KRIST COURT	PEQUOT LAKES, MN 56472			0 BRAINERD	
41300965	09143000006I009	CITY OF BR CORY, DANIEL H & JOANNE M	5931 SANDSTONE RD	BAXTER MN 56425-7611			0 BRAINERD	
41290636	92620010050009	CITY OF BR H & H PROPERTIES OF MINNESOTA	4689 ASHLEY RD	BAXTER, MN 56425		2818 ADDISON AVE	BRAINERD	
41300956	09143000007H009	CITY OF BR KRAEMER, JON J & KARI	16035 MCKAY RD	BRAINERD MN 56401				
41290632	92620010090009	CITY OF BR LEBLANC, CHRISTOPHER ARTHUR AND	LYNETTE MARIE LEBLANC	2813 CLARA ST	BRAINERD, MN	2813 CLARA ST	BRAINERD	
41290631	92620010100009	CITY OF BR NELSON, CHERYL	2809 CLARA ST	BRAINERD, MN 56401		2809 CLARA ST	BRAINERD	
41290629	92620010120009	CITY OF BR RAASCH, KARI K	2801 CLARA ST	BRAINERD, MN 56401		2801 CLARA ST	BRAINERD	
41290630	92620010110009	CITY OF BR SCHWICHTENBERG, BRANDON D	2805 CLARA ST	BRAINERD MN 56401		2805 CLARA ST	BRAINERD	

Client:

CITY OF BRAINERD

Account # 316123 Ad # 2733550

Phone: (218) 828-2307

Fax:

Address: 501 LAUREL STREET
BRAINERD, MN 56401

Sales Rep.:

3804 Ann Windorski

Phone: (218) 855-5804

Fax:

Email: ann.windorski@brainerddispatch.com

Class.: 9960 MINNESOTA LEGALS

Requested By:

Start Date: 03/11/2019

End Date: 03/11/2019

Nb. of Inserts: 2

Dimensions: 1 col. x 5.75 Inches

Publications: Brainerd Dispatch

brainerddispatch.com

Total Price: \$73.03

Paid Amount: \$0.00

Balance: \$73.03

Page 1 of 1

(Published in the Brainerd Dispatch,
March 11, 2019, 1t.)

NOTICE OF HEARING

TO WHOM IT MAY CONCERN:

Notice is hereby given that James P Runberg and Diane E Runberg 1205 Lakeview Lane, Brainerd, MN 56401 has submitted a request on behalf of themselves for the properties at 940 28th St. S.E. and 944 28th St. S.E. and on behalf of the property owners for the undressed property to the immediate south to rezone said properties from an R-1 (Single Family Residential) District to an R-2 (Medium Density Residential) District for the purpose of bringing 940 & 944 28th St. S.E. back into zoning compliance and to construct a twin home. The properties, their owners, and their legal descriptions are as follows:

James P Runberg Revocable Trust - 940 & 944 28th St. S.E.

THAT PART OF TRACT 5 DESC AS FOLLOWS; TO WIT: COMM AT THE SW CORNER OF SAID TRACT 5, THENCE N 01 DEC 52 MIN 20 SEC E, ASSUMED BEAR

P.I.N No. 09143000005E009 John and Nancy Blizil - Property Not Addressed

PT OF TRACT 5 DESC COMM AT SW COR OF SD TRACT 5 THEN N 1D 52'20"E ASSM BEAR ALG W LINE OF SD TRACT 5 A DIST OF 109 FT Then S 87D 17'30"

P.I.N. No. 09143000005H009

A Public Hearing will be conducted by the Brainerd Planning Commission at 6:00 p.m. Wednesday, March 20, 2019 in the Brainerd City Hall Council Chambers, 501 Laurel Street, to consider rezoning these properties.

The public is invited to attend the hearing to offer input regarding the proposed rezoning.

Any individual needing special accommodations please call (218) 828-2309.

Dated this 8th day of March 2019

City of Brainerd

Community Development Department

TO: Planning Commission

FROM: David Chanski, Community Development Director

DATE: March 14, 2019

RE: 1601 and 1609 Oak St. Rezoning

Laine Larson, Superintendent ISD #181, on behalf of Brainerd Public Schools – ISD #181 has submitted a request on behalf of the school district to rezone the District’s property at 1609 and Oak St. and its neighboring parcel (P.I.N. 09181016008A009) and on behalf of the property owners at 1601 Oak St. and its neighboring parcel (P.I.N. 09181016008B009) from B-2 Neighborhood Business District to R-2 Medium Density Residential District.

The purpose of the rezoning request is to remodel and expand Harrison Elementary School

Findings of Fact

1. The properties at 1601 and 1609 Oak St will be used as part of the Harrison Elementary School expansion project.
2. ISD #181 has a purchase agreement in place to purchase 1601 Oak St.
3. Rezoning to properties to a R-2 District will have the following impacts:
 - a. The properties will have the same zoning as the surrounding neighborhood.
 - b. Rezoning to R-2 is a necessary element of the Harrison Elementary School expansion project as schools are prohibited in B-2 districts.
4. Upon the completion of the property acquisition process, ISD #181 will also own the properties to the immediate north of 1601 and 1609 Oak St.

As of this writing, no parties have come forward to express their objections to this rezoning request.

Staff Opinion

As ISD #181 is seeking to improve and expand Harrison Elementary School to provide quality educational facilities for the children of Brainerd for years to come, and as ISD #181 has purchase agreements in place to purchase 1601 Oak St. and its neighboring parcel, and as B-2 Neighborhood Business Districts prohibit the operation of schools, and as the surrounding neighborhood is currently zoned R-2 Medium Density Residential, staff recommends approval of this request.



PRINTED WITHOUT ISSUING 3/5/2019

ADDRESS : 1601 OAK ST
PIN : 09181016007B009
LEGAL DESC : SLEEPERS ADDITION
: LOT 7 BLOCK 16
PERMIT TYPE : REZONING FEE
PROPERTY TYPE : COMMERICAL
CONSTRUCTION TYPE : REZONING APPLICATION FEE
VALUATION :

SARFF, MILTON A & MARLENE
291 KENWOOD DR N
BAXTER, MN 56425

REZONING FEE - COMMERCIAL	500.00
TOTAL	500.00
Payment(s)	
CHECK 159486	500.00

SARFF, MILTON A & MARLENE
291 KENWOOD DR N
BAXTER, MN 56425



City Planning Department

City Hall - 501 Laurel Street
Brainerd, MN 56401
218-828-2309/Fax 218-828-2316
www.ci.brainerd.mn.us

Receipt # 2019-00004

Check # 159486

Date Paid: 3/5/19

CONDITIONAL USE/REZONING/VARIANCE APPLICATION

CONDITIONAL USE PERMIT

REZONING

VARIANCE

RESIDENTIAL

☐
☐
☐

(\$250.00)

(\$300.00)

(\$250.00)

COMMERCIAL

☐
☒
☐

(\$400.00 + \$500.00 escrow deposit)

(\$500.00)

(\$400.00 + \$500.00 escrow deposit)

PROPERTY ADDRESS: 1601 Oak Street & extra lot

LEGAL DESCRIPTION: Lot(s): _____ Block: _____ Addition: _____

(attach description if lengthy) (See Description Below)

Property Owner Name: Milton (Tony) Sarff

Street Address: 13945 Kenwood Drive City: Baxter State: MN Zip Code: 56425

Phone Number: 218-829-5318 Fax: _____ E-mail: tonysarff@yahoo.com

Applicant Name: (If different than Property Owner) ISD # 181, Brainerd, MN.

Street Address: _____ City: _____ State: _____ Zip Code: _____

Phone Number: _____ Fax: _____ E-mail: _____

Description of Request: Request Re-Zoning of existing Properties (B-2 Zone) to R-2 Zone

LEGAL DESCRIPTION:

The West Half of Lot 8, and the South 60 feet of Lot 7, all in Block 16, SLEEPER'S ADDITION TO THE CITY OF BRAINERD according to the recorded plat thereof, on file in the Crow Wing County, Minnesota, Recorder's office

Milton Sarff

Property Owner Signature

Milton Sarff

(Please print name)

2-19

Date

Applicant Signature

Date

(Please print name)

(OVER)

ICS Consulting, Inc.

110 North West 3rd Street
Brainerd, MN 56401



CONSULTING, INC

LETTER OF TRANSMITTAL

DATE: 3/5/2019

JOB No.

TO: CITY OF BRAINERD
COMMUNITY DEVELOPMENT/PLANNING
501 LAUREL STREET
BRAINERD, MN 56401

ATTN: DAVID CHANSKI

RE: **HARRISON ELEM RE-ZONE APPLICATION**

WE ARE SENDING YOU: ☒ Attached ☐ Under separate cover via VIA. The following items:

☐ Shop Drawings ☒ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☒ Other

Copies	Date	No.	Description
1	3/5/19		Re-Zoning Application -1601 Oak Street
1	3/5/19		Re-Zoning Application -1609 Oak Street
1			Payment for Re-Zoning Application included in CUP submittal

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☐ Approved as Submitted ☐ Resubmit Copies for Approval
☒ For Your Use ☐ Approved as Noted ☒ Submit Copies for Distribution
☐ As Requested ☐ Returned for Correction ☐ Return Corrected Prints
☐ For Review & Comment ☐ Revise – Resubmit ☐ Prints Returned after Loan to FJJ
☐ For Bids Due ☐ Other

REMARKS:

Thanks!

COPY TO: File

SIGNED: _____

A handwritten signature in blue ink, appearing to read "Ken Adams", is written over a horizontal line.



City Planning Department

City Hall – 501 Laurel Street
Brainerd, MN 56401
218-828-2309/Fax 218-828-2316
www.ci.brainerd.mn.us

Receipt # _____
Check # _____
Date Paid: _____

CONDITIONAL USE/REZONING/VARIANCE APPLICATION

CONDITIONAL USE PERMIT

REZONING

VARIANCE

RESIDENTIAL

☐ (\$250.00)
☐ (\$300.00)
☐ (\$250.00)

COMMERCIAL

☐ (\$400.00 + \$500.00 escrow deposit)
☒ (\$500.00)
☐ (\$400.00 + \$500.00 escrow deposit)

PROPERTY ADDRESS: 1609 Oak Street

LEGAL DESCRIPTION: Lot(s): _____ Block: _____ Addition: _____
(attach description if lengthy) (See Description Below)

Property Owner Name: Brainerd Public Schools -ISD #181

Street Address: 804 Oak Street City: Brainerd State: MN Zip Code 56401

Phone Number: 218-454-6900 Fax: 218-454-6901 E-mail: laine.larson@isd181.org

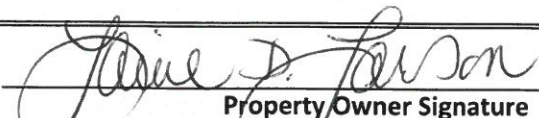
Applicant Name: (If different than Property Owner) _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Phone Number: _____ Fax: _____ E-mail: _____

Description of Request: Request Re-Zoning of existing Properties (B-2 Zone) to R-2 Zone

LEGAL DESCRIPTION: Lots 9, 10, and the East Half of Lot 8, all in Block 16, SLEEPER'S ADDITION TO THE CITY OF BRAINERD according to the recorded plat thereof, on file in the Crow Wing County, Minnesota, Recorder's office


Property Owner Signature

Laine Larson, Superintendent

03-01-19
Date

(Please print name)

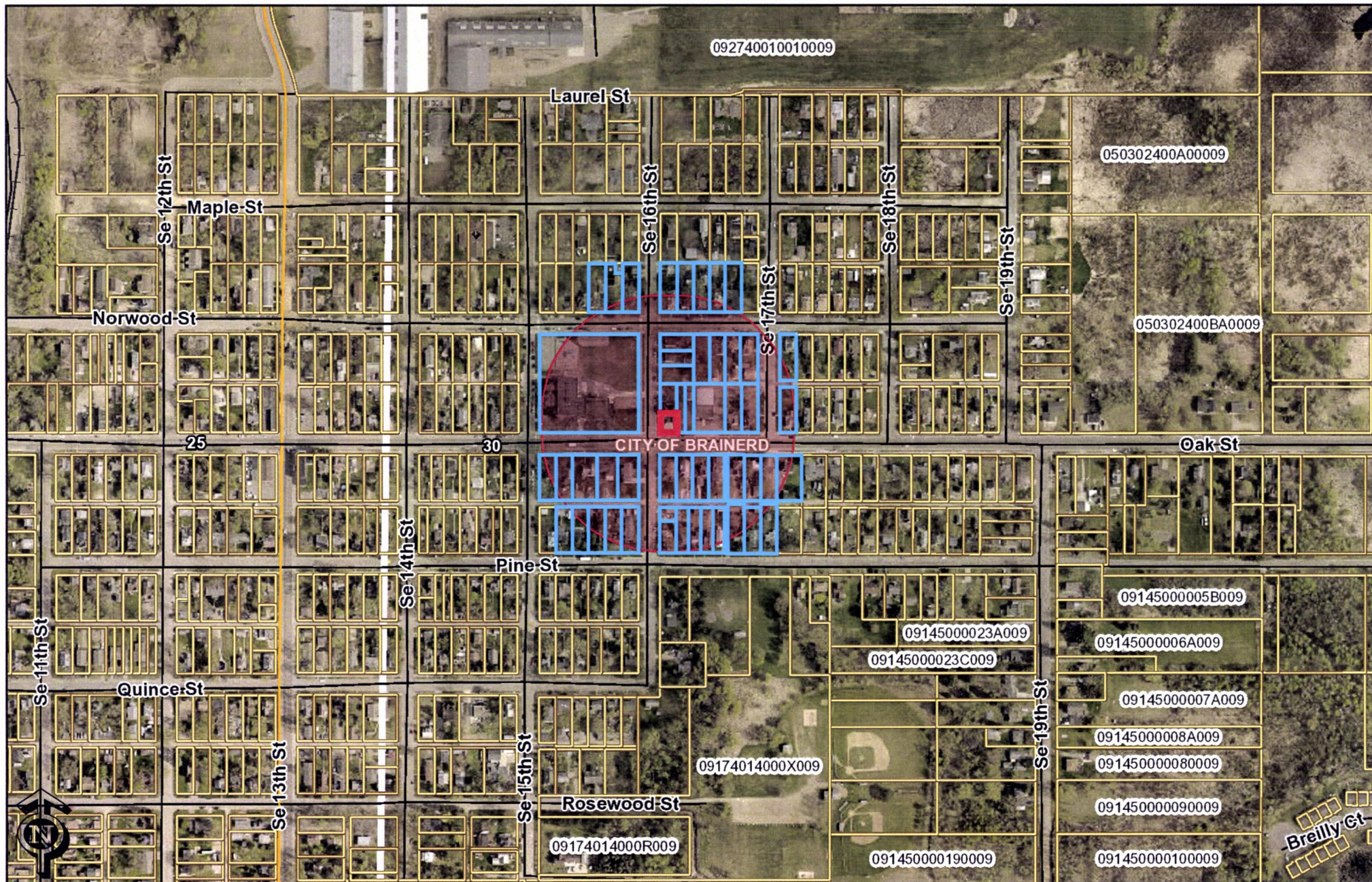

Applicant Signature

03-01-19
Date

Laine D. Larson

(Please print name)

(OVER)



These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

1601 Oak St

Date: 3/8/2019 Time: 10:20:58 AM



Parcel Number	Legacy Parcel Number	Municipality	Owner Name	Owner Address	Owner Address 2	Physical Address	Physical City	Physical Zip
41250821	091740030052009	CITY OF BR	1509 PINE STREET LLC	11171 TOWN HALL ST	BRAINERD, MN 56401	1509 PINE ST	BRAINERD	56401
41250820	091740030072009	CITY OF BR	BINDA, ANTHONY JR & AMANDA E	1507 PINE ST	BRAINERD, MN 56401	1507 PINE ST	BRAINERD	56401
41300638	091810120118009	CITY OF BR	BRUNS, TROY G & SHERI	1517 NORWOOD ST	BRAINERD MN 56401	1517 NORWOOD ST	BRAINERD	56401
41300607	091810160052009	CITY OF BR	CLUEVER CONSTRUCTION INC	12674 KNOLLWOOD DR	BAXTER MN 56425	509 16TH ST SE	BRAINERD	56401
41300612	091810160028009	CITY OF BR	DWYER, BENJAMIN	303 GLENWOOD ST	RED WING, MN 55066-3426	1618 NORWOOD ST	BRAINERD	56401
41300626	91810130110009	CITY OF BR	FEDERAL NATIONAL MORTGAGE ASSOC	14221 DALLAS PKWY SUITE 11201	DALLAS, TX 75254-2916	1619 NORWOOD ST	BRAINERD	56401
41250839	09174001000T009	CITY OF BR	FORTUNE, WILLIAM F III & MARLOWE	2531 RIDGE DR	BRAINERD MN 56401	1620 OAK ST	BRAINERD	56401
41250816	09174003015Y009	CITY OF BR	GROENWOLD, JOHN A &	GROENWOLD, AMANDA	13713 OLIVEWOOD DR	1508 OAK ST	BRAINERD	56401
41250840	09174001000R009	CITY OF BR	HAMM, JOSEPH P	22125 BLUEGILL RD	IRONTON, MN 56455	1702 OAK ST	BRAINERD	56401
41300611	91810160030009	CITY OF BR	HANKEL, CHRISTIAN R & JENNY	1616 NORWOOD ST	BRAINERD MN 56401	1616 NORWOOD ST	BRAINERD	56401
41250833	091740020012009	CITY OF BR	HANSON, JEROME E & DONNA	1609 PINE ST	BRAINERD MN 56401	1609 PINE ST	BRAINERD	56401
41300599	91810170000009	CITY OF BR	IND SCHOOL DIST, # 181	804 OAK ST	BRAINERD, MN 56401	0 HARRISON	BRAINERD	56401
41300614	091810150112009	CITY OF BR	JM ANDERSON PROPERTIES LLC	23226 ANDERSON BLVD	MERRIFIELD MN 56465	1703 OAK ST	BRAINERD	56401
41300629	91810130080009	CITY OF BR	JOEL, JAMES H JR & SHELLIN M	1607 NORWOOD ST	BRAINERD, MN 56401	1607 NORWOOD ST	BRAINERD	56401
41250824	091740020152009	CITY OF BR	JOHNSON, KEVIN & JANE	1618 OAK ST	BRAINERD MN 56401	1618 OAK ST	BRAINERD	56401
41300627	91810130100009	CITY OF BR	KRAMVIK, JAMES L & BRIANNA M	1615 NORWOOD ST	BRAINERD, MN 56401	1615 NORWOOD ST	BRAINERD	56401
41250828	091740020072009	CITY OF BR	KUHN, NATASHA A	3947 1ST AVE S APT 5	MINNEAPOLIS MN 55409	1601 PINE ST	BRAINERD	56401
41250835	09174001000Y009	CITY OF BR	LOVAS, GARY L & DIANE L	23921 JULY AVE N	SCANDIA MN 55073	1627 PINE ST	BRAINERD	56401
41300608	09181016005Y009	CITY OF BR	MCKAY, RICHARD G & MARY	21212 MAIL ROUTE RD	BRAINERD MN 56401	505 16TH ST SE	BRAINERD	56401
41250826	091740020112009	CITY OF BR	MUELLER, JUSTIN P & SHELBY L	1608 OAK ST	BRAINERD, MN 56401	1608 OAK ST	BRAINERD	56401
41300600	91810160120009	CITY OF BR	NELSON, MATT	2027 E FAIRBANKS ST	TACOMA, WA 98404-4850	1623 OAK ST	BRAINERD	56401
41250837	09174001000W009	CITY OF BR	NICKELS, DEBRA A	21370 S LAKE GEORGE DR NW	CEDAR, MN 55011-9136	1617 PINE ST	BRAINERD	56401
41250829	09174002007Y009	CITY OF BR	OLSON, LARRY D & DOREEN	1710 OAK ST	BRAINERD MN 56401	1601 16TH ST SE	BRAINERD	56401
41300609	09181016005X009	CITY OF BR	PASCHELKE, JAMES & CAROLE A	501 SE 16TH ST	BRAINERD MN 56401	501 16TH ST SE	BRAINERD	56401
41250822	091740030032009	CITY OF BR	PINTOK, LYNN	1519 PINE ST	BRAINERD MN 56401	1519 PINE ST	BRAINERD	56401
41250815	091740030172009	CITY OF BR	PIPER PROPERTY MANAGERS LLC	20859 N SORENSON LAKE TRL	MERRIFIELD MN 56465	1516 OAK ST	BRAINERD	56401
41250505	09174001000S009	CITY OF BR	PUERINGER, DAVID F PUERINGER INVEST	616 1/2 FRONT ST	BRAINERD, MN 56401	1624 OAK ST	BRAINERD	56401
41250830	091740020052009	CITY OF BR	PUETZ, RAYMOND & MARILYNN	6545 COUNTY ROAD 45	BRAINERD, MN 56401	1603 PINE ST	BRAINERD	56401
41300628	91810130090009	CITY OF BR	RADEMACHER, CHAD A	1609 NORWOOD ST	BRAINERD, MN 56401	1609 NORWOOD ST	BRAINERD	56401
41250817	091740030132009	CITY OF BR	RANNEY, ROSE E	1504 OAK ST	BRAINERD, MN 56401	1504 OAK ST	BRAINERD	56401
41250831	091740020042009	CITY OF BR	RUDE, MCKINLEIGH J	1605 PINE ST	BRAINERD MN 56401	1605 PINE ST	BRAINERD	56401
41250819	091740030092009	CITY OF BR	SACK, GARY H	2190 HASSMAN HILL SW	PINE RIVER, MN 56474	1505 PINE ST	BRAINERD	56401
41300605	09181016007B009	CITY OF BR	SARFF LIVING TRUST DATED 10/9/01	MILTON A & MARLENE A SARFF TRS	13945 KENWOOD DR	1601 OAK ST	BRAINERD	56401
41250823	091740030012009	CITY OF BR	SCHRADER, MICHAEL J & ELIZABETH J	1521 PINE ST	BRAINERD, MN 56401	1521 PINE ST	BRAINERD	56401
41250827	091740020092009	CITY OF BR	SHERWOOD, ERICA L	1602 OAK ST	BRAINERD, MN 56401	1602 OAK ST	BRAINERD	56401
41250838	09174001000V009	CITY OF BR	SHIPP, ROBERT D	1621 PINE ST	BRAINERD MN 56401	1621 PINE ST	BRAINERD	56401
41300630	91810130070009	CITY OF BR	SPIELMAN, KRISTEN A	1603 NORWOOD ST	BRAINERD, MN 56401	1603 NORWOOD ST	BRAINERD	56401
41300637	91810120120009	CITY OF BR	SWEET, ASHLEY	1521 NORWOOD ST	BRAINERD, MN 56401	1521 NORWOOD ST	BRAINERD	56401
41250825	091740020132009	CITY OF BR	TAYLOR, LANCE	1612 OAK ST	BRAINERD, MN 56401	1612 OAK ST	BRAINERD	56401
41250832	091740020022009	CITY OF BR	THEIEN, BARBARA	1607 PINE ST	BRAINERD, MN 56401	1607 PINE ST	BRAINERD	56401
41250813	091740030222009	CITY OF BR	THOMAS, JOHN G	5154 JORDAN RD	BAXTER, MN 56425	602 16TH ST SE	BRAINERD	56401
41300606	09181016007A009	CITY OF BR	VANWYNGEEREN, RICHARD & MARSHA	17134 JOHNSON RD	BRAINERD, MN 56401	515 16TH ST SE	BRAINERD	56401
41300640	91810120100009	CITY OF BR	WALZ, MICHAEL & ALIDA	7382 HILL N DALE DR	ELK RIVER, MN 55330-9163	1513 NORWOOD ST	BRAINERD	56401
41250814	091740030202009	CITY OF BR	WEBER, PAUL G	4431 NEWTON AVE N	MINNEAPOLIS MN 55412	1518 OAK ST	BRAINERD	56401
41250834	091740010002889	CITY OF BR	WILLIAMS, DANIEL D	7184 REMINGTON WAY	BRAINERD MN 56401	1626 OAK ST	BRAINERD	56401
41300613	091810160012009	CITY OF BR	WIRKUS, NICHOLAS	1622 NORWOOD ST	BRAINERD, MN 56401	1622 NORWOOD ST	BRAINERD	56401



Parcel Number	Legacy Parcel Number	Municipality	Owner Name	Owner Address	Owner Address 2	Owner Address 3	Physical Address	Physical City	Physical Zip
41300805	09145000028C889	CITY OF BR OLSON, LARRY D & DOREEN		1710 OAK ST	BRAINERD MN 56401		1712 OAK ST	BRAINERD	56401
41300783	91640030010009	CITY OF BR BAJULA, ROXANNE M		1716 NORWOOD ST	BRAINERD MN 56401		1716 NORWOOD ST	BRAINERD	56401
41300778	91640030060009	CITY OF BR LI, YUAN Y & DING, QIAO JIAO		1713 OAK ST	BRAINERD MN 56401		1713 OAK ST	BRAINERD	56401
41250843	09174001000N009	CITY OF BR JENKINS, JOEL A		1707 PINE ST	BRAINERD MN 56401		1707 PINE ST	BRAINERD	56401
41250842	09174001000P009	CITY OF BR CITY OF BRAINERD		CITY ADMINISTRATOR-CITY HALL	501 LAUREL ST	BRAINERD, MN 56401		0 BRAINERD	56401
41250841	09174001000Q009	CITY OF BR OLSON, LARRY D & DOREEN		1710 OAK ST	BRAINERD MN 56401		1710 OAK ST	BRAINERD	56401
41250840	09174001000R009	CITY OF BR HAMM, JOSEPH P		22125 BLUEGILL RD	IRONTON, MN 56455		1702 OAK ST	BRAINERD	56401
41250505	09174001000S009	CITY OF BR PUERINGER, DAVID F PUERINGER INVEST		616 1/2 FRONT ST	BRAINERD, MN 56401		1624 OAK ST	BRAINERD	56401
41250839	09174001000T009	CITY OF BR FORTUNE, WILLIAM F III & MARLOWE		2531 RIDGE DR	BRAINERD MN 56401		1620 OAK ST	BRAINERD	56401
41250838	09174001000V009	CITY OF BR SHIPP, ROBERT D		1621 PINE ST	BRAINERD MN 56401		1621 PINE ST	BRAINERD	56401
41250837	09174001000W009	CITY OF BR NICKELS, DEBRA A		21370 S LAKE GEORGE DR NW	CEDAR, MN 55011-9136		1617 PINE ST	BRAINERD	56401
41250836	09174001000X009	CITY OF BR LORIMOR, DIANNA C		16380 BIRCHWOOD LN	BRAINERD, MN 56401		1701 PINE ST	BRAINERD	56401
41250835	09174001000Y009	CITY OF BR LOVAS, GARY L & DIANE L		23921 JULY AVE N	SCANDIA MN 55073		1627 PINE ST	BRAINERD	56401
41250834	09174001000Z889	CITY OF BR WILLIAMS, DANIEL D		7184 REMINGTON WAY	BRAINERD MN 56401		1626 OAK ST	BRAINERD	56401
41250833	09174002001Z009	CITY OF BR HANSON, JEROME E & DONNA		1609 PINE ST	BRAINERD MN 56401		1609 PINE ST	BRAINERD	56401
41250832	09174002002Z009	CITY OF BR THEIEN, BARBARA		1607 PINE ST	BRAINERD, MN 56401		1607 PINE ST	BRAINERD	56401
41250831	09174002004Z009	CITY OF BR RUDE, MCKINLEIGH J		1605 PINE ST	BRAINERD MN 56401		1605 PINE ST	BRAINERD	56401
41250830	09174002005Z009	CITY OF BR PUETZ, RAYMOND & MARILYNN		6545 COUNTY ROAD 45	BRAINERD, MN 56401		1603 PINE ST	BRAINERD	56401
41250829	09174002007Y009	CITY OF BR OLSON, LARRY D & DOREEN		1710 OAK ST	BRAINERD MN 56401		1601 16TH ST SE	BRAINERD	56401
41250828	09174002007Z009	CITY OF BR KUHN, NATASHA A		3947 1ST AVE S APT 5	MINNEAPOLIS MN 55409		1601 PINE ST	BRAINERD	56401
41250827	09174002009Z009	CITY OF BR SHERWOOD, ERICA L		1602 OAK ST	BRAINERD, MN 56401		1602 OAK ST	BRAINERD	56401
41250826	09174002011Z009	CITY OF BR MUELLER, JUSTIN P & SHELBY L		1608 OAK ST	BRAINERD, MN 56401		1608 OAK ST	BRAINERD	56401
41250825	09174002013Z009	CITY OF BR TAYLOR, LANCE		1612 OAK ST	BRAINERD, MN 56401		1612 OAK ST	BRAINERD	56401
41250824	09174002015Z009	CITY OF BR JOHNSON, KEVIN & JANE		1618 OAK ST	BRAINERD MN 56401		1618 OAK ST	BRAINERD	56401
41250823	09174003001Z009	CITY OF BR SCHRADER, MICHAEL J & ELIZABETH J		1521 PINE ST	BRAINERD, MN 56401		1521 PINE ST	BRAINERD	56401
41250822	09174003003Z009	CITY OF BR PINTOK, LYNN		1519 PINE ST	BRAINERD MN 56401		1519 PINE ST	BRAINERD	56401
41250821	09174003005Z009	CITY OF BR 1509 PINE STREET LLC		11171 TOWN HALL ST	BRAINERD, MN 56401		1509 PINE ST	BRAINERD	56401
41250815	09174003017Z009	CITY OF BR PIPER PROPERTY MANAGERS LLC		20859 N SORENSON LAKE TRL	MERRIFIELD MN 56465		1516 OAK ST	BRAINERD	56401
41250814	09174003020Z009	CITY OF BR WEBER, PAUL G		4431 NEWTON AVE N	MINNEAPOLIS MN 55412		1518 OAK ST	BRAINERD	56401
41250813	09174003022Z009	CITY OF BR THOMAS, JOHN G		5154 JORDAN RD	BAXTER, MN 56425		602 16TH ST SE	BRAINERD	56401
41300640	91810120100009	CITY OF BR WALZ, MICHAEL & ALIDA		7382 HILL N DALE DR	ELK RIVER, MN 55330-9163		1513 NORWOOD ST	BRAINERD	56401
41300638	09181012011B009	CITY OF BR BRUNS, TROY G & SHERI		1517 NORWOOD ST	BRAINERD MN 56401		1517 NORWOOD ST	BRAINERD	56401
41300637	91810120120009	CITY OF BR SWEET, ASHLEY		1521 NORWOOD ST	BRAINERD, MN 56401		1521 NORWOOD ST	BRAINERD	56401
41300630	91810130070009	CITY OF BR SPIELMAN, KRISTEN A		1603 NORWOOD ST	BRAINERD, MN 56401		1603 NORWOOD ST	BRAINERD	56401
41300629	91810130080009	CITY OF BR JOEL, JAMES H JR & SHELLEN M		1607 NORWOOD ST	BRAINERD, MN 56401		1607 NORWOOD ST	BRAINERD	56401
41300628	91810130090009	CITY OF BR RADEMACHER, CHAD A		1609 NORWOOD ST	BRAINERD, MN 56401		1609 NORWOOD ST	BRAINERD	56401
41300627	91810130100009	CITY OF BR KRAMVIK, JAMES L & BRIANNA M		1615 NORWOOD ST	BRAINERD, MN 56401		1615 NORWOOD ST	BRAINERD	56401
41300626	91810130110009	CITY OF BR FEDERAL NATIONAL MORTGAGE ASSOC		14221 DALLAS PKWY SUITE 11201	DALLAS, TX 75254-2916		1619 NORWOOD ST	BRAINERD	56401
41300625	91810130120009	CITY OF BR CAPIDAL INVESTMENTS LLC		6697 MARYLAND RD	BAXTER, MN 56425		418 17TH ST SE	BRAINERD	56401
41300622	09181014004X009	CITY OF BR DOSH, BRYAN D		1711 NORWOOD	BRAINERD MN 56401		1711 NORWOOD ST	BRAINERD	56401
41300621	09181014004Y009	CITY OF BR JOOSTEN, CAROL M		1707 NORWOOD ST	BRAINERD MN 56401		1707 NORWOOD ST	BRAINERD	56401
41300620	09181014004Z009	CITY OF BR WAHL, DANIEL J		423 17TH ST SE	BRAINERD MN 56401		423 17TH ST SE	BRAINERD	56401
41300619	09181015008X009	CITY OF BR ZANOSKO, JOHNNY		13981 HARDY LAKE RD SW		PILLAGER MN 56473-222	1710 NORWOOD ST	BRAINERD	56401
41300618	09181015008Y009	CITY OF BR GROENWOLD, JOHN & AMANDA		13713 OLIVEWOOD DR		BAXTER MN 56425	1704 NORWOOD ST	BRAINERD	56401
41300617	09181015008Z009	CITY OF BR PUERINGER, DAVID F PUERINGER INVEST		616 1/2 FRONT ST	BRAINERD, MN 56401		1702 NORWOOD ST	BRAINERD	56401
41300616	09181015011X009	CITY OF BR SNEVA, LANNY J		1709 OAK STREET	BRAINERD MN 56401		1709 OAK ST	BRAINERD	56401
41300615	09181015011Y009	CITY OF BR WEBB, TAMARA J		1707 OAK ST	BRAINERD, MN 56401		1707 OAK ST	BRAINERD	56401
41300614	09181015011Z009	CITY OF BR JM ANDERSON PROPERTIES LLC		23226 ANDERSON BLVD	MERRIFIELD MN 56465		1703 OAK ST	BRAINERD	56401
41300613	09181016001Z009	CITY OF BR WIRKUS, NICHOLAS		1622 NORWOOD ST	BRAINERD, MN 56401		1622 NORWOOD ST	BRAINERD	56401
41300612	09181016002B009	CITY OF BR DWYER, BENJAMIN		303 GLENWOOD ST	RED WING, MN 55066-3426		1618 NORWOOD ST	BRAINERD	56401
41300611	91810160030009	CITY OF BR HANKEL, CHRISTIAN R & JENNY		1616 NORWOOD ST	BRAINERD MN 56401		1616 NORWOOD ST	BRAINERD	56401
41300610	91810160040009	CITY OF BR HANKEL, CHRISTIAN R & JENNY		1616 NORWOOD ST	BRAINERD MN 56401		0 BRAINERD		56401
41300609	09181016005X009	CITY OF BR PASCHELKE, JAMES & CAROLE A		501 SE 16TH ST	BRAINERD MN 56401		501 16TH ST SE	BRAINERD	56401
41300608	09181016005Y009	CITY OF BR MCKAY, RICHARD G & MARY		21212 MAIL ROUTE RD	BRAINERD MN 56401		505 16TH ST SE	BRAINERD	56401
41300607	09181016005Z009	CITY OF BR CLUEVER CONSTRUCTION INC		12674 KNOLLWOOD DR	BAXTER MN 56425		509 16TH ST SE	BRAINERD	56401
41300606	09181016007A009	CITY OF BR VANWYNGEEREN, RICHARD & MARSHA		17134 JOHNSON RD	BRAINERD, MN 56401		515 16TH ST SE	BRAINERD	56401
41300605	09181016007B009	CITY OF BR SARFF LIVING TRUST DATED 10/9/01		MILTON A & MARLENE A SARFF TRSTEEES	13945 KENWOOD DR BAXTER, MN 56425		1601 OAK ST	BRAINERD	56401
41300604	09181016008A009	CITY OF BR INDEPENDENT SCHOOL DISTRICT #181		ADMINISTRATIVE OFFICES	804 OAK ST	BRAINERD, MN 56401	0 BRAINERD		56401

41300603	09181016008B009 CITY OF BR SARFF LIVING TRUST DATED 10/9/01	MILTON A & MARLENE A SARFF TRSTEEES	13945 KENWOOD DR BAXTER, MN 56425		O BRAINERD	56401
41300602	09181016009Z009 CITY OF BR INDEPENDENT SCHOOL DISTRICT #181	ADMINISTRATIVE OFFICES	804 OAK ST BRAINERD, MN 56401	1609 OAK ST	BRAINERD	56401
41300601	91810160110009 CITY OF BR THOMAS, JOHN G	5154 JORDAN RD	BAXTER, MN 56425	1617 OAK ST	BRAINERD	56401
41300600	91810160120009 CITY OF BR NELSON, MATT	2027 E FAIRBANKS ST	TACOMA, WA 98404-4850	1623 OAK ST	BRAINERD	56401
41300599	91810170000009 CITY OF BR IND SCHOOL DIST, # 181	804 OAK ST	BRAINERD, MN 56401	O HARRISON	BRAINERD	56401

NOTICE OF HEARING

TO WHOM IT MAY CONCERN:

Notice is hereby given that Laine Larson, Superintendent ISD #181, 804 Oak St., Brainerd, MN 56401 has submitted a request on behalf of Brainerd Public Schools – ISD #181, for property at 1609 Oak St. and on behalf of the property owners for the property at 1601 Oak St. to rezone said properties from a B-2 (Neighborhood Business) District to an R-2 (Medium Density Residential) District for the purpose of remodeling and expanding Harris Elementary School. The properties, their owners, and their legal descriptions are as follows:

Independent School District #181 – 1609 Oak St.
Lots 9, 10, and the East Half of Lot 8, all in Block 16, SLEEPER'S ADDITIONAL TO THE CITY OF BRAINERD
P.I.N. No. 09181016008A009 & 09181016009Z009

Sarff Living Trust – 1601 Oak St
The West Half of Lot 8, and the South 60 feet of Lot 7, all in Block 16, SLEEPER'S ADDITION TO THE CITY OF BRAINERD
P.I.N. No. 09181016007B009 & 09181016008B009

A Public Hearing will be conducted by the Brainerd Planning Commission at 6:00 p.m. Wednesday, March 20, 2019 in the Brainerd City Hall Council Chambers, 501 Laurel Street to consider the request.

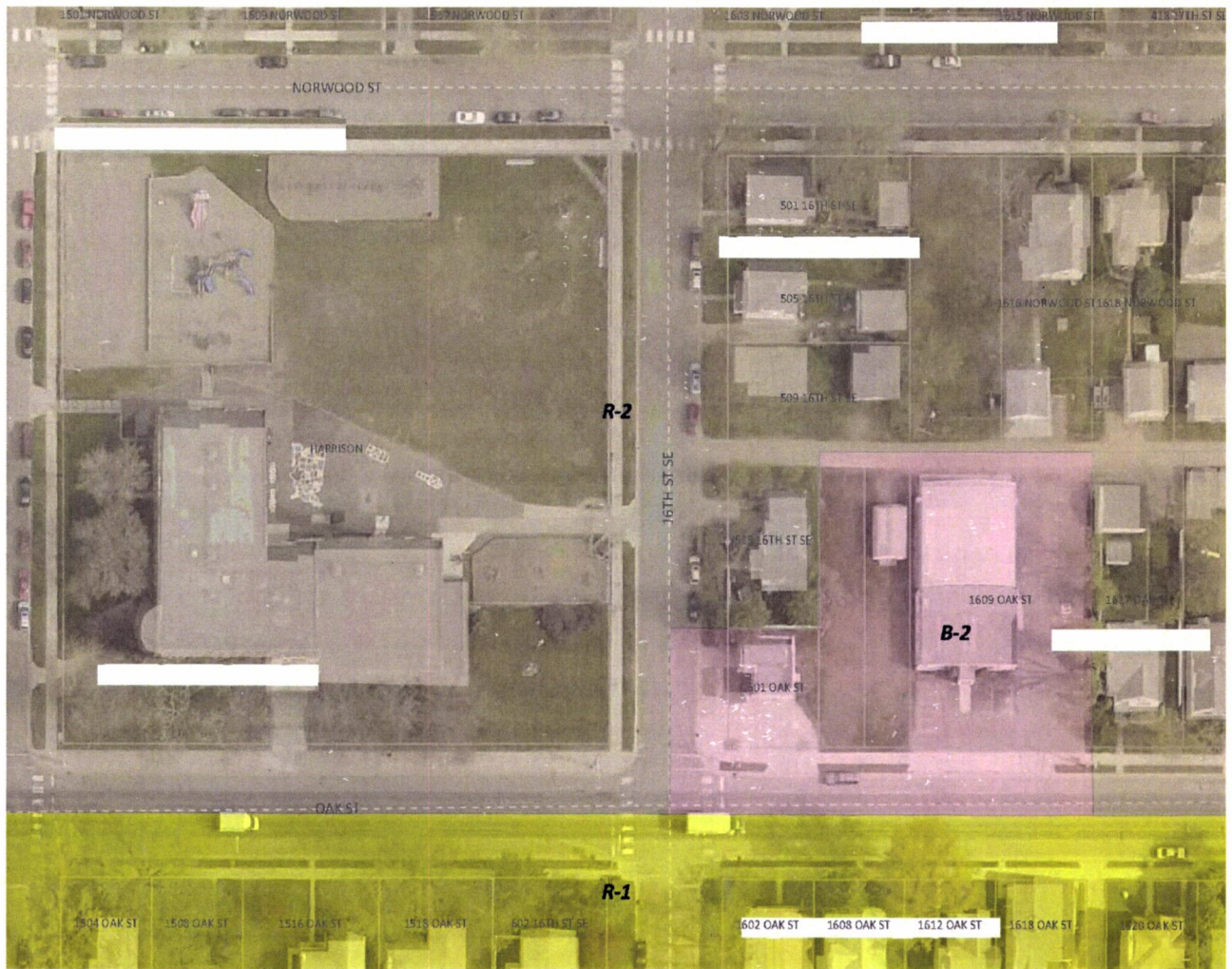
Any individual needing special accommodations or would like more information about this request please call (218) 828-2309.

Dated this 8th day of March 2019.

David C. Chanski, MPA
Community Development Director

See reverse side for map.

95 mailings
total



City of Brainerd Community Development Department

TO: Planning Commission

FROM: David Chanski, Community Development Director

DATE: March 14, 2019

RE: Harrison Elementary CUP

Laine Larson, Superintendent ISD #181, on behalf of Brainerd Public Schools – ISD #181 has submitted an application on behalf of the school district for a Conditional Use Permit for the properties legally described as Lots 9, 10, and the East Half of Lot 8, all in Block 16, SLEEPER’S ADDITION TO THE CITY OF BRAINERD and The West Half of Lot 8, and the South 60 feet of Lot 7, all in Block 16, SLEEPER’S ADDITION TO THE CITY OF BRAINERD.

The purpose of the Conditional Use Permit application is to construct an addition to Harrison Elementary School.

Findings of Fact

1. Upon rezoning from a B-2 Neighborhood Business District to a R-2 Medium Density Residential District, the operation of a school on the aforementioned properties is considered a conditional use per [Section 515-56-5.K](#) of the Code of Ordinances.
2. The proposed addition meets the following criteria as required by the aforementioned section of the Code:
 - a. The site accesses a major collector.
 - i. The school is located on S.E. 15th St between Oak St. and Norwood St.
 - b. The site is landscaped in accordance with [Section 20](#) of the Zoning Code.
 - i. The landscape plan has been reviewed by staff and deemed adequate.
 - c. Off-street parking is provided in accordance with [Section 22](#) of the Zoning Code
 - i. The realignment of bus parking from Oak St to Norwood St in addition to a new parking lot constructed on Oak St will provide sufficient parking off-street parking.
 - d. Off-street loading and service entrances are provided as regulated by [Section 23](#) of the Zoning Code.
 - i. The provided off-street loading entrances are sufficient.
 - e. Emergency vehicle access is provided to and within the site.
 - i. There is sufficient access for emergency vehicles.
3. ISD #181 has submitted for the vacation of S.E. 16th St. between Norwood St. and Oak St.

4. ISD #181 has purchase agreements in place to acquire all the properties associated with this project that are not currently owned by the district.

As of this writing, no parties have come forward to express their objections to this Conditional Use Permit application.

Staff Opinion

As ISD #181 is seeking to improve and expand Harrison Elementary School to provide quality educational facilities for the children of Brainerd for years to come, and as ISD #181 has purchase agreements in place to purchase all properties associated with this project that the district does not currently own, and as the applicant has met all the requirements previously listed, staff recommends approval of this application.

CITY OF BRAINERD
501 LAUREL STREET
BRAINERD, MN 56401-
(218) 828-2309 FAX: (218) 828-2316



PRINTED WITHOUT ISSUING 3/5/2019

Permit #: 2019-00003

ADDRESS : 804 OAK ST
PIN : 09196155000Z009
LEGAL DESC : TOWN OF BRAINERD & FIRST ADDITION
: LOT BLOCK 155
PERMIT TYPE : CONDITIONAL USE PERMIT FEE - COMM
PROPERTY TYPE : COMMERICAL
CONSTRUCTION TYPE : CONDITIONAL USE PERMIT

APPLICANT

DISTRICT OFFICE-SUPT OFFICE
804 OAK STREET
BRAINERD, MN 56401

CONDITIONAL USE PERMIT FEE - COMM	400.00
ESCROW DEPOSIT (\$500)	500.00
TOTAL	900.00
Payment(s)	
CHECK 159486	900.00

OWNER

DISTRICT OFFICE-SUPT OFFICE
804 OAK STREET
BRAINERD, MN 56401

AGREEMENT AND SWORN STATEMENT

I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

Signature of Applicant

Date

This permit becomes null and void if construction authorized is not commenced within 180 days, or if construction is suspended for a period of 180 days at any time after work is commenced.

SEPARATE PERMITS REQUIRED FOR WORK OTHER THAN DESCRIBED ABOVE.



City Planning Department

City Hall – 501 Laurel Street
Brainerd, MN 56401
218-828-2309/Fax 218-828-2316
www.ci.brainerd.mn.us

Receipt # _____
Check # _____
Date Paid: _____

CONDITIONAL USE/REZONING/VARIANCE APPLICATION

CONDITIONAL USE PERMIT

REZONING
VARIANCE

RESIDENTIAL

☐ (\$250.00)
☐ (\$300.00)
☐ (\$250.00)

COMMERCIAL

☒ (\$400.00 + \$500.00 escrow deposit)
☐ (\$500.00)
☐ (\$400.00 + \$500.00 escrow deposit)

PROPERTY ADDRESS: Harrison Elementary School Properties

-See attached Certificate of Survey Drawing for Legal Descriptions

LEGAL DESCRIPTION: LOT: _____ BLOCK: _____ ADDITION: _____
(attach description if lengthy)

Property Owner Name: Brainerd Public Schools -ISD #181

Street Address: 804 Oak Street City: Brainerd State: MN Zip Code: 56401

Phone Number: 218-454-6900 Fax: 218-454-6901 E-mail: laine.larson@isd181.org

Applicant Name: (If different than Property Owner) _____

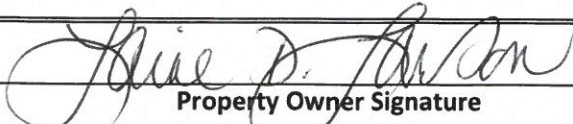
Street Address: _____ City: _____ State: _____ Zip Code: _____

Phone Number: _____ Fax: _____ E-mail: _____

Description of Request: _____

Request for Conditional Use Permit for constructing School Addition, Parking, Playgrounds, Etc.

in R-2 Zone as indicated on attached Drawings and Supporting Documents


Property Owner Signature

03-01-19
Date

Laine Larson, Superintendent

(Please print name)

Applicant Signature

03-01-19
Date

Laine Larson, Superintendent

(Please print name)

(OVER)

Director Nystrom introduced the following resolution and moved its adoption:

**RESOLUTION AUTHORIZING ACQUISITION OF PROPERTY AND PROVIDING
RELOCATION ASSISTANCE, SERVICES, AND BENEFITS BY INDEPENDENT
SCHOOL DISTRICT NO. 181, BRAINERD, MINNESOTA**

BACKGROUND RECITALS

A. On September 24, 2018, the School Board (the "School Board") of Independent School District No. 181, Brainerd, Minnesota (the "District") conducted a public hearing to consider acquisitions and relocation assistance, services, and benefits to be provided with respect to the District's acquisition and betterment of the District's Elementary and Secondary Schools and Early Childhood and Alternative Education school sites and facilities and repairs, remodeling, upgrading, equipping and construction of additions and improvements thereto (the "Project").

B. The District has, in writing or at a subsequent public hearing, responded to comments made at the public hearing or submitted in writing within 30 days after the public hearing.

AUTHORIZATION AND RESOLUTIONS

BE IT RESOLVED, by the School Board, as follows:

1. The School Board determines that it is in the public's interest and is necessary for purposes of proceeding with the Project for the District to acquire, through negotiation with the property owners or by eminent domain, the parcels (the "Acquisition Parcels") identified on Exhibit A attached to this Resolution.

2. The Project is designed to improve the delivery of education services to residents within the District and serves a public purpose.

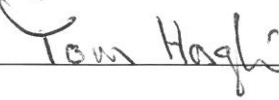
3. Acquiring of the Acquisition Parcels is necessary to carry out the Project.

4. For the reasons set forth herein and because delays in the assemblage of the Acquisition Parcels will delay the Project, the School Board determines it is necessary to proceed without delay under Minn. Stat. § 117.042 and the School Board authorizes legal counsel to use the "quick take" procedure in acquiring title to the Acquisition Parcels.

5. The School Board approves providing relocation assistance, services, payments and benefits in the manner required by Minn. Stat. 117.52 and authorizes the District to negotiate relocation assistance, services, payments and benefits with respect to the Acquisition Properties.

Adopted: December 19, 2018



Chair


Clerk

The motion of the adoption of the foregoing resolution was duly seconded by Director Campbell and, upon vote being taken, the following voted in favor thereof:

Sue Kern, Tom Haglin, Bob Nystrom, Ruth Nelson, and Reed Campbell

the following voted against the same:

None

the following were absent:

Chris Robinson

whereupon, said Resolution was declared duly passed and adopted, and approved and signed by the Chair and attested by the Clerk.

EXHIBIT A

Lowell Elementary

- a. 623 4th Avenue NE, Brainerd, MN 56401. Parcel ID: 091280230010009
- b. 619 4th Avenue NE, Brainerd, MN 56401. Parcel ID: 091280230020009

Harrison Elementary

- c. 501 16th Street SE, Brainerd, MN 56401. Parcel ID: 09181016005X009
- d. 505 16th Street SE, Brainerd, MN 56401. Parcel ID: 09181016005Y009
- e. 509 16th Street SE, Brainerd, MN 56401. Parcel ID: 09181016005Z009
- f. 515 16th Street SE, Brainerd, MN 56401. Parcel ID: 09181016007A009
- g. 1601 Oak Street, Brainerd, MN 56401. Parcel ID: 09181016007B009
- h. None Listed, Brainerd, MN 56401. Parcel ID: 091810160040009
- i. 1616 Norwood Street, Brainerd, MN. Parcel ID: 091810160030009

Brainerd High School

- j. 704 6th Street S, Brainerd, MN 56401. Parcel ID: 09196185011Z009
- k. 710 6th Street S, Brainerd, MN 56401. Parcel ID: 09196185008Z009

NOTICE OF HEARING

TO WHOM IT MAY CONCERN:

Notice is hereby given that Laine Larson, Superintendent ISD #181, has submitted a request on behalf of Brainerd Public Schools – ISD #181 for a Conditional Use Permit to construct an addition to Harrison Elementary School including but not limited to an addition to the school building, new parking, and new playgrounds. The properties included in this application are described as:

Lots 9, 10, and the East Half of Lot 8, all in Block 16, SLEEPER'S ADDITION TO THE CITY OF BRAINERD

The West Half of Lot 8, and the South 60 feet of Lot 7, all in Block 16, SLEEPER'S ADDITION TO THE CITY OF BRAINERD

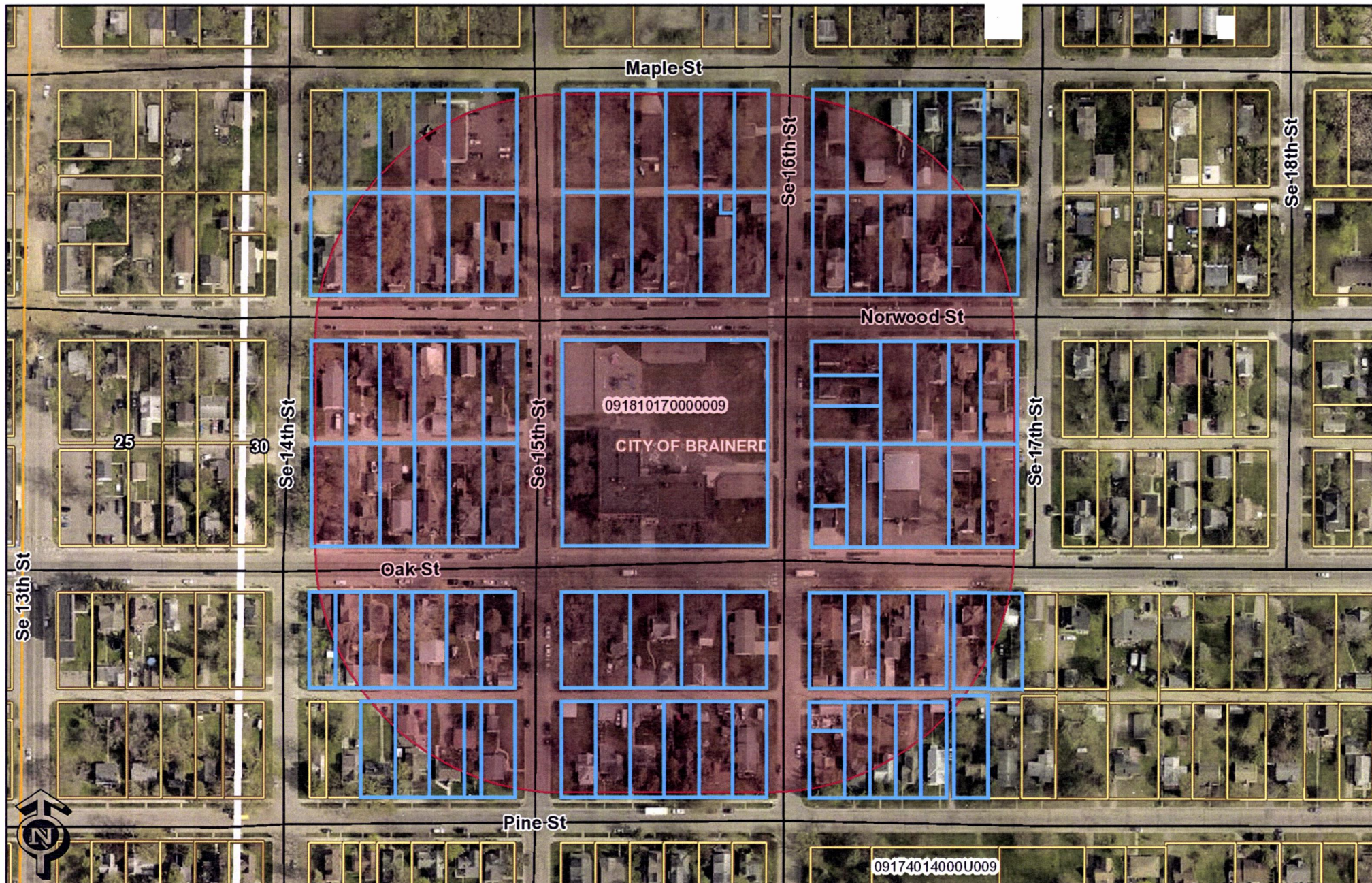
The properties are zoned R-2 (Medium Density Residential) District and Zoning Ordinance Section 56-5 K (Medium Density Residential) District Conditional Uses permits the operation of public and private schools provided that they meet the required provisions as listed under Section 56-5 K. A copy of the proposed site plan is on file for review at the Community Development Department.

A Public Hearing will be conducted by the Brainerd Planning Commission at 6:00 p.m. Wednesday, March 20, 2019 in the Brainerd City Hall Council Chambers, 501 Laurel Street, to consider the Conditional Use Permit request.

Any individual needing special accommodations or would like more information about this request, please call (218) 828-2309.

Dated this 8th day of March 2019

David C. Chanski, MPA
Community Development Director



These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

CUP Harrison

Date: 3/8/2019 Time: 9:56:06 AM



Parcel Number	Legacy Parcel Number	Municipality	Owner Name	Owner Address	Owner Address 2	mer Address:mer Address:	Physical Address	Physical City	Physical Zip
41250821	091740030052009	CITY OF BR	1509 PINE STREET LLC	11171 TOWN HALL ST	BRAINERD, MN 56401		1509 PINE ST	BRAINERD	56401
41300649	91810110120009	CITY OF BR	ALTERGOTT, LESLI DIANE	1421 NORWOOD ST	BRAINERD, MN 56401		1421 NORWOOD ST	BRAINERD	56401
41250818	091740030112009	CITY OF BR	ASH PROPERTIES INC	722 S 6TH ST	BRAINERD MN 56401		1503 PINE ST	BRAINERD	56401
41300631	91810130060009	CITY OF BR	BELL, RICHARD H & DEBORAH	23259 COUNTY ROAD 4	NISSWA MN 56468			0 BRAINERD	56401
41250820	091740030072009	CITY OF BR	BINDA, ANTHONY JR & AMANDA E	1507 PINE ST	BRAINERD, MN 56401		1507 PINE ST	BRAINERD	56401
41300652	91810110090009	CITY OF BR	BOSCH, TIMOTHY & LISA	17122 HWY 371 N	BRAINERD, MN 56401		1409 NORWOOD ST	BRAINERD	56401
41300638	091810120118009	CITY OF BR	BRUNS, TROY G & SHERI	1517 NORWOOD ST	BRAINERD MN 56401		1517 NORWOOD ST	BRAINERD	56401
41250811	91740040030009	CITY OF BR	BUESGENS, JOLENE H	1417 PINE ST	BRAINERD MN 56401			0 BRAINERD	56401
41250810	091740040042009	CITY OF BR	BUESGENS, JOLENE H	1417 PINE ST	BRAINERD MN 56401		1417 PINE ST	BRAINERD	56401
41300625	91810130120009	CITY OF BR	CAPITAL INVESTMENTS LLC	6697 MARYLAND RD	BAXTER, MN 56425		418 17TH ST SE	BRAINERD	56401
41300644	09181012005Y009	CITY OF BR	CLUEVER CONSTRUCTION INC	12674 KNOLLWOOD DR	BAXTER MN 56425		1504 MAPLE ST	BRAINERD	56401
41250801	091740040192009	CITY OF BR	DANO, DEBRA B	6919 THESING RD	BRAINERD, MN 56401		1416 OAK ST	BRAINERD	56401
41300634	91810130020009	CITY OF BR	DAVIS, CHRIS	1620 MAPLE ST	BRAINERD MN 56401		1620 MAPLE ST	BRAINERD	56401
41300612	091810160028009	CITY OF BR	DWYER, BENJAMIN	303 GLENWOOD ST	RED WING, MN 55066-3426		1618 NORWOOD ST	BRAINERD	56401
41250799	091740040232009	CITY OF BR	ECKSTEIN, DOUGLAS	610 15TH ST SE	BRAINERD MN 56401		610 15TH ST SE	BRAINERD	56401
41300626	91810130110009	CITY OF BR	FEDERAL NATIONAL MORTGAGE ASSOC	14221 DALLAS PKWY SUITE 1120	DALLAS, TX 75254-2916		1619 NORWOOD ST	BRAINERD	56401
41300589	91810180100009	CITY OF BR	FORSTER, ELAINE C	1415 OAK ST	BRAINERD MN 56401		1415 OAK ST	BRAINERD	56401
41250839	091740010007009	CITY OF BR	FORTUNE, WILLIAM F III & MARLOWE	2531 RIDGE DR	BRAINERD MN 56401		1620 OAK ST	BRAINERD	56401
41250816	09174003015Y009	CITY OF BR	GROENWOLD, JOHN A &	GROENWOLD, AMANDA	13713 OLIVEWOOD DR	BAXTER MN 56425	1508 OAK ST	BRAINERD	56401
41300611	91810160030009	CITY OF BR	HANKEL, CHRISTIAN R & JENNY	1616 NORWOOD ST	BRAINERD MN 56401		1616 NORWOOD ST	BRAINERD	56401
41250833	091740020012009	CITY OF BR	HANSON, JEROME E & DONNA	1609 PINE ST	BRAINERD MN 56401		1609 PINE ST	BRAINERD	56401
41300642	91810120070009	CITY OF BR	HENNIS, JASON U	1501 NORWOOD ST	BRAINERD, MN 56401		1501 NORWOOD ST	BRAINERD	56401
41300650	91810110110009	CITY OF BR	HOHEISEL, PAUL & GLENDA TRUST AGR	15668 NELS JOHNSON RD	BRAINERD, MN 56401		1417 NORWOOD ST	BRAINERD	56401
41300599	91810170000009	CITY OF BR	IND SCHOOL DIST, # 181	804 OAK ST	BRAINERD, MN 56401		0 HARRISON	BRAINERD	56401
41300592	91810180070889	CITY OF BR	INWARDS, RONALD D & CHERYL M	1403 OAK ST	BRAINERD, MN 56401		1403 OAK ST	BRAINERD	56401
41250808	091740040082009	CITY OF BR	JEDLENSKI, GREGORY A & PATRICIA	9089 DAL-MAR DR	BRAINERD MN 56401		1409 PINE ST	BRAINERD	56401
41300629	91810130080009	CITY OF BR	JOEL, JAMES H JR & SHELLEN M	1607 NORWOOD ST	BRAINERD, MN 56401		1607 NORWOOD ST	BRAINERD	56401
41250800	091740040212009	CITY OF BR	JOHNSON, AARON L & LAURA L	1420 OAK ST	BRAINERD MN 56401		1420 OAK ST	BRAINERD	56401
41250824	091740020152009	CITY OF BR	JOHNSON, KEVIN & JANE	1618 OAK ST	BRAINERD MN 56401		1618 OAK ST	BRAINERD	56401
41300587	91810180120009	CITY OF BR	JOHNSON, TODD M & KRISTA SUE	1423 OAK STREET	BRAINERD MN 56401		1423 OAK ST	BRAINERD	56401
41300588	91810180110009	CITY OF BR	KING, JENNIFER A	1421 OAK ST	BRAINERD, MN 56401		1421 OAK ST	BRAINERD	56401
41250805	091740040132009	CITY OF BR	KONEN, WALTER PETER & DIANE C	603 14TH ST SE	BRAINERD MN 56401		603 14TH ST SE	BRAINERD	56401
41300627	91810130100009	CITY OF BR	KRAMVIK, JAMES L & BRIANNA M	1615 NORWOOD ST	BRAINERD, MN 56401		1615 NORWOOD ST	BRAINERD	56401
41250828	091740020072009	CITY OF BR	KUHN, NATASHA A	3947 1ST AVE S APT 5	MINNEAPOLIS MN 55409		1601 PINE ST	BRAINERD	56401
41300648	91810120010009	CITY OF BR	LAMSER, ANNMARIE J	1524 MAPLE ST	BRAINERD, MN 56401		1524 MAPLE ST	BRAINERD	56401
41300641	91810120080009	CITY OF BR	LEWIS, JEFF & KRISTINE	3301 DONALD ST	BAXTER, MN 56425		1507 NORWOOD ST	BRAINERD	56401
41300594	91810180050009	CITY OF BR	LORIMOR, DIANNA C	16380 BIRCHWOOD LN	BRAINERD, MN 56401		1408 NORWOOD ST	BRAINERD	56401
41300608	09181016005Y009	CITY OF BR	MCKAY, RICHARD G & MARY	21212 MAIL ROUTE RD	BRAINERD MN 56401		505 16TH ST SE	BRAINERD	56401
41300659	091810110012009	CITY OF BR	MID-MINNESOTA, WOMEN'S CENTER	PO BOX 602	BRAINERD MN 56401		0 MAPLE ST	BRAINERD	56401
41300643	91810120060009	CITY OF BR	MILLER, ROBERT J & GREGG MICHAEL J	12195 FUSCHIA DR	BAXTER, MN 56425		1500 MAPLE ST	BRAINERD	56401
41300639	09181012011A889	CITY OF BR	MINNEGASCO PROPERTY ACCOUNTING	TAX DEPT	PO BOX 1475	HOUSTON TX 77251-1		0 BRAINERD	56401
41300646	091810120032009	CITY OF BR	MOSER, ANDREW H & ANNETTE	5136 STATE HIGHWAY 25	BRAINERD, MN 56401		1516 MAPLE ST	BRAINERD	56401
41250826	091740020112009	CITY OF BR	MUELLER, JUSTIN P & SHELBY L	1608 OAK ST	BRAINERD, MN 56401		1608 OAK ST	BRAINERD	56401
41300600	91810160120009	CITY OF BR	NELSON, MATT	2027 E FAIRBANKS ST	TACOMA, WA 98404-4850		1623 OAK ST	BRAINERD	56401
41250837	09174001000W009	CITY OF BR	NICKELS, DEBRA A	21370 S LAKE GEORGE DR NW	CEDAR, MN 55011-9136		1617 PINE ST	BRAINERD	56401
41250829	09174002007Y009	CITY OF BR	OLSON, LARRY D & DOREEN	1710 OAK ST	BRAINERD MN 56401		1601 16TH ST SE	BRAINERD	56401
41250809	091740040062009	CITY OF BR	PARKS, DALE A	1415 PINE ST	BRAINERD, MN 56401		1415 PINE ST	BRAINERD	56401
41300609	09181016005X009	CITY OF BR	PASCHELKE, JAMES & CAROLE A	501 SE 16TH ST	BRAINERD MN 56401		501 16TH ST SE	BRAINERD	56401
41250822	091740030032009	CITY OF BR	PINTOK, LYNN	1519 PINE ST	BRAINERD MN 56401		1519 PINE ST	BRAINERD	56401
41250815	091740030172009	CITY OF BR	PIPER PROPERTY MANAGERS LLC	20859 N SORENSON LAKE TRL	MERRIFIELD MN 56465		1516 OAK ST	BRAINERD	56401
41300632	091810130042009	CITY OF BR	PUERINGER, DAVID F	616 1/2 FRONT ST	BRAINERD MN 56401		1610 MAPLE ST	BRAINERD	56401
41250830	091740020052009	CITY OF BR	PUETZ, RAYMOND & MARILYNN	6545 COUNTY ROAD 45	BRAINERD, MN 56401		1603 PINE ST	BRAINERD	56401
41300628	91810130090009	CITY OF BR	RADEMACHER, CHAD A	1609 NORWOOD ST	BRAINERD, MN 56401		1609 NORWOOD ST	BRAINERD	56401
41300651	91810110100009	CITY OF BR	RAMSDELL, JESSE J	12796 EXECUTIVE ACRES RD	BRAINERD, MN 56401		1415 NORWOOD ST	BRAINERD	56401

41250817	091740030132009 CITY OF BR RANNEY, ROSE E	1504 OAK ST	BRAINERD, MN 56401	1504 OAK ST	BRAINERD	56401
41250831	091740020042009 CITY OF BR RUDE, MCKINLEIGH J	1605 PINE ST	BRAINERD MN 56401	1605 PINE ST	BRAINERD	56401
41300654	91810110070889 CITY OF BR RZ HOLDINGS LLC	13263 COUNTY ROAD 23	BRAINERD, MN 56401-5048	1401 NORWOOD ST	BRAINERD	56401
41250819	091740030092009 CITY OF BR SACK, GARY H	2190 HASSMAN HILL SW	PINE RIVER, MN 56474	1505 PINE ST	BRAINERD	56401
41300605	09181016007B009 CITY OF BR SARFF LIVING TRUST DATED 10/9/01	MILTON A & MARLENE A SARFF T	13945 KENWOOD DR	1601 OAK ST	BRAINERD	56401
41300590	91810180090009 CITY OF BR SCHEI, CHRISTOPHER N & CHRYSI A	1411 OAK ST	BRAINERD, MN 56401	1411 OAK ST	BRAINERD	56401
41250823	091740030012009 CITY OF BR SCHRADER, MICHAEL J & ELIZABETH J	1521 PINE ST	BRAINERD, MN 56401	1521 PINE ST	BRAINERD	56401
41250827	091740020092009 CITY OF BR SHERWOOD, ERICA L	1602 OAK ST	BRAINERD, MN 56401	1602 OAK ST	BRAINERD	56401
41300598	91810180010009 CITY OF BR SMITH, ROBERT	1424 NORWOOD ST	BRAINERD MN 56401	1424 NORWOOD ST	BRAINERD	56401
41250803	091740040162009 CITY OF BR SOLBERG, TAMARA D	1408 OAK ST	BRAINERD, MN 56401	1408 OAK ST	BRAINERD	56401
41300630	91810130070009 CITY OF BR SPIELMAN, KRISTEN A	1603 NORWOOD ST	BRAINERD, MN 56401	1603 NORWOOD ST	BRAINERD	56401
41300637	91810120120009 CITY OF BR SWEET, ASHLEY	1521 NORWOOD ST	BRAINERD, MN 56401	1521 NORWOOD ST	BRAINERD	56401
41250802	91740040180009 CITY OF BR TAX FORFEITED	CROW WING COUNTY LAND SERV	322 LAUREL ST STE 15	BRAINERD, MN 56401	1412 OAK ST	56401
41250825	091740020132009 CITY OF BR TAYLOR, LANCE	1612 OAK ST	BRAINERD, MN 56401	1612 OAK ST	BRAINERD	56401
41250832	091740020022009 CITY OF BR THEIEN, BARBARA	1607 PINE ST	BRAINERD, MN 56401	1607 PINE ST	BRAINERD	56401
41250813	091740030222009 CITY OF BR THOMAS, JOHN G	5154 JORDAN RD	BAXTER, MN 56425	602 16TH ST SE	BRAINERD	56401
41250812	091740040012009 CITY OF BR TOW, CAMERON A	1423 PINE ST	BRAINERD MN 56401	1423 PINE ST	BRAINERD	56401
41300606	09181016007A009 CITY OF BR VANWYNGEEREN, RICHARD & MARSHA	17134 JOHNSON RD	BRAINERD, MN 56401	515 16TH ST SE	BRAINERD	56401
41300596	91810180030009 CITY OF BR VON RUDEN, ROSE	1416 NORWOOD ST	BRAINERD MN 56401	1416 NORWOOD ST	BRAINERD	56401
41300595	91810180040009 CITY OF BR WALKER, ANITA & RICKY	8581 AZALEA RD	PILLAGER, MN 56473	1412 NORWOOD ST	BRAINERD	56401
41300633	91810130030009 CITY OF BR WALTERS, MARK	1614 MAPLE ST	BRAINERD MN 56401	1614 MAPLE ST	BRAINERD	56401
41300640	91810120100009 CITY OF BR WALZ, MICHAEL & ALIDA	7382 HILL N DALE DR	ELK RIVER, MN 55330-9163	1513 NORWOOD ST	BRAINERD	56401
41250814	091740030202009 CITY OF BR WEBER, PAUL G	4431 NEWTON AVE N	MINNEAPOLIS MN 55412	1518 OAK ST	BRAINERD	56401
41300591	91810180080009 CITY OF BR WEISS, KIMBERLY C	1407 OAK ST	BRAINERD MN 56401	1407 OAK ST	BRAINERD	56401
41300597	91810180020009 CITY OF BR WILT, DAVID	5389 PIONEER TRL	BRAINERD, MN 56401	1418 NORWOOD ST	BRAINERD	56401
41300647	91810120020009 CITY OF BR WILT, DAVID, RICHARD & JOYCE	5946 BIRCHDALE RD	BRAINERD MN 56401	1520 MAPLE ST	BRAINERD	56401
41300613	091810160012009 CITY OF BR WIRKUS, NICHOLAS	1622 NORWOOD ST	BRAINERD, MN 56401	1622 NORWOOD ST	BRAINERD	56401
41250804	091740040142009 CITY OF BR ZAPZALKA, MELISSA A	1406 OAK ST	BRAINERD, MN 56401	1406 OAK ST	BRAINERD	56401



March 5, 2019

City of Brainerd Planning Commission
Attn: Mr. David Chanski
501 Laurel Street
Brainerd, MN 56401

Brainerd/Baxter
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidethSmithNolting.com

Re: Rezoning, Conditional Use Permit, Public Utility Relocation, Street Modifications and Stormwater Management for Harrison Elementary School, Brainerd, MN

Dear Commission Members,

This impetus of letter is to provide the City of Brainerd staff documentation regarding the proposed site improvements for the Harrison Elementary School project along Oak Street in the City of Brainerd. The intent is to provide the City with sufficient information to illustrate the overall proposed development requires rezoning and complies with city code and the Conditional Use Permit (CUP) requirements. The relocation of the public utilities and modifications to the public streets do not require Planning Commission approval; however, this information has been included herein for review and approval by the City Engineer.

The current property maintains an elementary school, which needs modifications and additions to meet the needs of the Brainerd School District and children that attend the school. Additional properties are required to facilitate the expansion needs of the school, and this process is currently under way. A portion of the property being acquired is zoned B-2 Neighborhood Business and needs to be rezoned to R-2 Medium Residential to accommodate a public school use.

The proposed building additions and renovations will match the existing façade, comply with the overall height requirements, comply with screening of mechanical units, and meet the required setbacks within the R-2 zoning district; therefore, no special permitting will be required to accommodate the building modifications. The existing conditions of the subject properties include residential and public uses, with a total impervious coverage of 66.10%, which is higher than the allowed 50% impervious coverage. As a result of removing buildings and public right-of-way (ROW), it is anticipated the impervious coverage will decrease to 42%, which is well within the R-2 zoning district standards of 50% maximum coverage.

The required landscaping includes screening of parking facilities from contiguous residential properties and mechanical units at ground level. The proposed landscaping plan incorporates those elements.

Based on current City code, stormwater management will be required when impervious surface coverage increases or when runoff will be increased. When a stormwater management plan is required, runoff rates shall be limited to pre-development conditions for the 2, 10, and 100-year 24-hour storm events. The site will actually be decreasing in impervious coverage, but drainage will be altered fairly significantly in how it is distributed



and managed on site. There are currently 4 catch basins that capture runoff from the site that are maintained in public ROW. In visiting with City Staff, it was directed that runoff to these locations be maintained as to not overtax the existing city infrastructure. These catch basin locations have been identified on the attached existing and proposed drainage area maps. It should be noted that two catch basins along Oak Street affect the same storm sewer system; therefore, we have provided a summary of the pre and post conditions to 3 of the catch basins.

Soils in the vicinity of proposed improvements have been mapped as Zimmerman-Urban Land Complex and Barber-Urban Land Complex, which exhibit characteristics of hydrologic group "A" soils in a drained condition. It is anticipated the site is in a drained condition with the installation of a wet retention basin for dealing with stormwater. Under the current conditions, the roof runoff from the school enters the sanitary sewer system. This will be corrected with the current plans and will direct the runoff to the stormwater retention basin. It is for this reason that a significant alteration to stormwater will be introduced to the existing public infrastructure; therefore, a wet retention basin has been planned to offset this increase in stormwater runoff.

Atlas 14 rainfall frequency data was utilized for determining the runoff rates anticipated. We have analyzed the existing and proposed conditions with HydroCAD and included a report with this letter for your review. A summary of the findings is as follows:

Outlet	Existing Conditions			Proposed Conditions		
	2-yr	10-yr	100-yr	2-yr	10-yr	100-yr
(NW) DA #1	1.84	2.71	4.47	1.11	1.63	2.75
(NE) DA #'s 2 & 3	1.63	2.33	3.48	1.47	2.17	3.58
DA #4	0.96	1.41	2.32	1.12	1.65	2.71
DA #5, #6, & #7	1.31	1.93	2.91	1.15	1.51	2.05
(SW) DA #'s 4, 5, 6, & 7	2.27	3.34	5.23	2.27	3.16	4.76

NW Outlet is CB (15th St. & Norwood) - Existing & Proposed DA's - 1

NE Outlet is MH (16th St. & Norwood) - Existing & Proposed DA's - 2 & 3

SW Outlet is CB (15th St. & Oak) - Existing DA's 4-7 & Proposed DA's - 5 & 6

It is noted that we are maintaining the peak discharge rates for the 2, 10, and 100-year 24-hour rainfall events for the 3 catch basins noted above.

As part of the proposed project, a few fire hydrants will need to be relocated. We will also be required to relocate a portion of a sanitary sewer trunk line to accommodate the building improvements. These improvements have been included with the construction documents. We are requesting City participation in the relocation costs associated with the public infrastructure. We understand that some of these utilities are very old and need improvements. We are not familiar with the City cost sharing program; therefore, we are asking for assistance based on the aging infrastructure. We are available to discuss this with the City Engineer.



Bulbouts or corner extensions have been planned along 15th Street, at the request of the City of Brainerd. These improvements have also been included in the construction plans.

We are requesting a portion of the property be rezoned and approval of a CUP for the proposed use. The plan as presented is in general conformance with the City Zoning Ordinance. The appropriate certificate of survey, building plans, site improvement plans, drainage area maps, drainage calculations and soils information have been provided for your review and approval.

We are available for presenting this information at the next available planning commission meeting.

Please don't hesitate to call with any questions or concerns regarding this letter or any information included herein.

Sincerely,

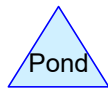
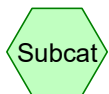
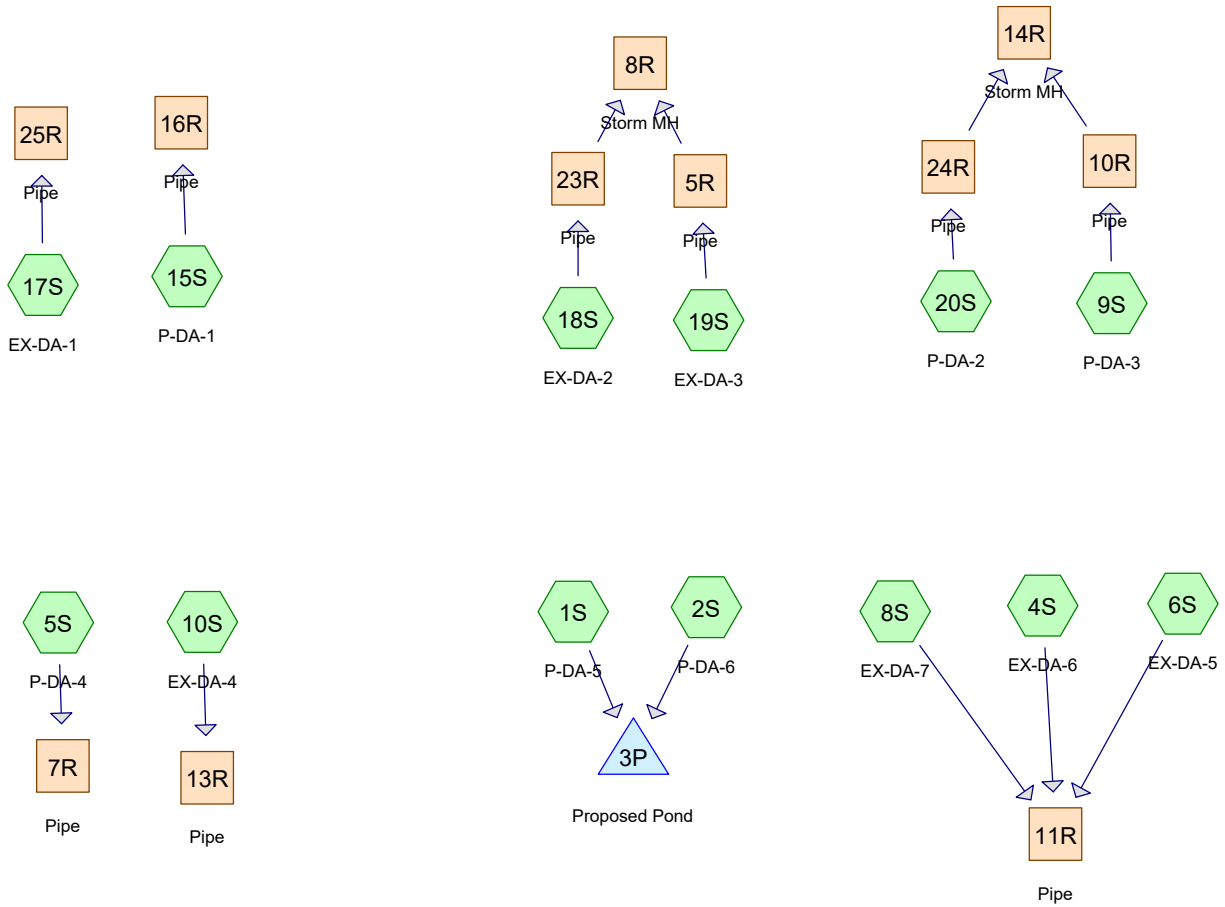
WIDSETH SMITH NOLTING & ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Timothy T. Ramerth", written in a cursive style.

Timothy T. Ramerth, PE

Encl.

cc: Ken Anderson, ICS Consulting, Inc.



Stormwater Pond

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
4.058	0.000	0.000	0.000	0.000	4.058	>75% Grass cover, Good	1S, 2S, 4S, 5S, 6S, 8S, 9S, 10 S, 15 S, 17 S, 18 S, 19 S, 20 S
2.830	0.000	0.000	0.000	0.000	2.830	Paved parking	2S, 5S, 10 S, 15 S, 17 S, 18 S
0.101	0.000	0.000	0.000	0.000	0.101	Paved roads w/curbs & sewers	4S, 6S
1.355	0.000	0.000	0.000	0.000	1.355	Roofs	1S, 8S

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Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.677	0.000	0.000	0.000	0.000	0.677	Unconnected pavement	9S,
							20
							S
0.623	0.000	0.000	0.000	0.000	0.623	Unconnected roofs	19
							S
9.644	0.000	0.000	0.000	0.000	9.644	TOTAL AREA	

Stormwater Pond

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NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: P-DA-5	Runoff Area=66,438 sf 60.83% Impervious Runoff Depth>1.48" Tc=10.0 min CN=39/98 Runoff=2.48 cfs 0.188 af
Subcatchment2S: P-DA-6	Runoff Area=16,626 sf 98.85% Impervious Runoff Depth>2.40" Tc=7.0 min CN=39/98 Runoff=1.16 cfs 0.076 af
Subcatchment4S: EX-DA-6	Runoff Area=4,841 sf 63.19% Impervious Runoff Depth>1.53" Tc=10.0 min CN=39/98 Runoff=0.19 cfs 0.014 af
Subcatchment5S: P-DA-4	Runoff Area=25,786 sf 70.79% Impervious Runoff Depth>1.72" Tc=10.0 min CN=39/98 Runoff=1.12 cfs 0.085 af
Subcatchment6S: EX-DA-5	Runoff Area=4,372 sf 30.95% Impervious Runoff Depth>0.75" Tc=10.0 min CN=39/98 Runoff=0.08 cfs 0.006 af
Subcatchment8S: EX-DA-7	Runoff Area=23,646 sf 78.69% Impervious Runoff Depth>1.91" Tc=12.0 min CN=39/98 Runoff=1.05 cfs 0.086 af
Subcatchment9S: P-DA-3	Runoff Area=22,422 sf 70.23% Impervious Runoff Depth>1.70" Tc=15.0 min CN=39/98 Runoff=0.80 cfs 0.073 af
Subcatchment10S: EX-DA-4	Runoff Area=20,762 sf 65.32% Impervious Runoff Depth>1.59" Tc=7.0 min CN=39/98 Runoff=0.96 cfs 0.063 af
Subcatchment15S: P-DA-1	Runoff Area=54,543 sf 40.03% Impervious Runoff Depth>0.97" Tc=15.0 min CN=39/98 Runoff=1.11 cfs 0.101 af
Subcatchment17S: EX-DA-1	Runoff Area=70,598 sf 59.81% Impervious Runoff Depth>1.45" Tc=20.0 min CN=39/98 Runoff=1.84 cfs 0.196 af
Subcatchment18S: EX-DA-2	Runoff Area=23,976 sf 45.76% Impervious Runoff Depth>1.11" Tc=20.0 min CN=39/98 Runoff=0.48 cfs 0.051 af
Subcatchment19S: EX-DA-3	Runoff Area=60,718 sf 44.71% Impervious Runoff Depth>1.08" Tc=20.0 min CN=39/98 Runoff=1.18 cfs 0.126 af
Subcatchment20S: P-DA-2	Runoff Area=25,366 sf 54.14% Impervious Runoff Depth>1.31" Tc=15.0 min CN=39/98 Runoff=0.70 cfs 0.064 af
Reach 5R: Pipe	Avg. Flow Depth=0.35' Max Vel=4.84 fps Inflow=1.18 cfs 0.126 af 12.0" Round Pipe n=0.012 L=35.0' S=0.0137 '/' Capacity=4.52 cfs Outflow=1.18 cfs 0.126 af
Reach 7R: Pipe	Avg. Flow Depth=0.25' Max Vel=5.05 fps Inflow=1.12 cfs 0.085 af 24.0" Round Pipe n=0.012 L=43.5' S=0.0200 '/' Capacity=34.66 cfs Outflow=1.12 cfs 0.085 af
Reach 8R: Storm MH	Inflow=1.63 cfs 0.177 af Outflow=1.63 cfs 0.177 af

Stormwater Pond

NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Reach 10R: Pipe Avg. Flow Depth=0.24' Max Vel=5.65 fps Inflow=0.80 cfs 0.073 af
12.0" Round Pipe n=0.012 L=42.0' S=0.0288 '/' Capacity=6.55 cfs Outflow=0.80 cfs 0.073 af

Reach 11R: Pipe Avg. Flow Depth=0.49' Max Vel=3.47 fps Inflow=1.32 cfs 0.107 af
12.0" Round Pipe n=0.012 L=108.0' S=0.0051 '/' Capacity=2.75 cfs Outflow=1.31 cfs 0.107 af

Reach 13R: Pipe Avg. Flow Depth=0.28' Max Vel=5.22 fps Inflow=0.96 cfs 0.063 af
12.0" Round Pipe n=0.012 L=43.5' S=0.0200 '/' Capacity=5.46 cfs Outflow=0.95 cfs 0.063 af

Reach 14R: Storm MH Inflow=1.47 cfs 0.137 af
Outflow=1.47 cfs 0.137 af

Reach 16R: Pipe Avg. Flow Depth=0.32' Max Vel=5.16 fps Inflow=1.11 cfs 0.101 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0172 '/' Capacity=5.06 cfs Outflow=1.11 cfs 0.101 af

Reach 23R: Pipe Avg. Flow Depth=0.69' Max Vel=0.82 fps Inflow=0.48 cfs 0.051 af
12.0" Round Pipe n=0.012 L=45.0' S=0.0002 '/' Capacity=0.58 cfs Outflow=0.47 cfs 0.051 af

Reach 24R: Pipe Avg. Flow Depth=0.39' Max Vel=2.45 fps Inflow=0.70 cfs 0.064 af
12.0" Round Pipe n=0.012 L=123.5' S=0.0032 '/' Capacity=2.17 cfs Outflow=0.69 cfs 0.064 af

Reach 25R: Pipe Avg. Flow Depth=0.42' Max Vel=5.93 fps Inflow=1.84 cfs 0.196 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0172 '/' Capacity=5.06 cfs Outflow=1.83 cfs 0.196 af

Pond 3P: Proposed Pond Peak Elev=1,205.81' Storage=14,318 cf Inflow=3.64 cfs 0.264 af
Outflow=1.15 cfs 0.253 af

Total Runoff Area = 9.644 ac Runoff Volume = 1.129 af Average Runoff Depth = 1.40"
42.08% Pervious = 4.058 ac 57.92% Impervious = 5.586 ac

Stormwater Pond

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NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Summary for Subcatchment 1S: P-DA-5

Runoff = 2.48 cfs @ 12.11 hrs, Volume= 0.188 af, Depth> 1.48"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
26,023	39	>75% Grass cover, Good, HSG A
40,415	98	Roofs, HSG A
66,438	75	Weighted Average
26,023	39	39.17% Pervious Area
40,415	98	60.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 2S: P-DA-6

Runoff = 1.16 cfs @ 12.10 hrs, Volume= 0.076 af, Depth> 2.40"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
191	39	>75% Grass cover, Good, HSG A
16,435	98	Paved parking, HSG A
16,626	97	Weighted Average
191	39	1.15% Pervious Area
16,435	98	98.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Summary for Subcatchment 4S: EX-DA-6

Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af, Depth> 1.53"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
1,782	39	>75% Grass cover, Good, HSG A
3,059	98	Paved roads w/curbs & sewers, HSG A
4,841	76	Weighted Average
1,782	39	36.81% Pervious Area
3,059	98	63.19% Impervious Area

Stormwater Pond

NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 5S: P-DA-4

Runoff = 1.12 cfs @ 12.11 hrs, Volume= 0.085 af, Depth> 1.72"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
7,532	39	>75% Grass cover, Good, HSG A
18,254	98	Paved parking, HSG A
25,786	81	Weighted Average
7,532	39	29.21% Pervious Area
18,254	98	70.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 6S: EX-DA-5

Runoff = 0.08 cfs @ 12.11 hrs, Volume= 0.006 af, Depth> 0.75"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
3,019	39	>75% Grass cover, Good, HSG A
1,353	98	Paved roads w/curbs & sewers, HSG A
4,372	57	Weighted Average
3,019	39	69.05% Pervious Area
1,353	98	30.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 8S: EX-DA-7

Runoff = 1.05 cfs @ 12.11 hrs, Volume= 0.086 af, Depth> 1.91"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Stormwater Pond

NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Area (sf)	CN	Description
5,040	39	>75% Grass cover, Good, HSG A
18,606	98	Roofs, HSG A
23,646	85	Weighted Average
5,040	39	21.31% Pervious Area
18,606	98	78.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: P-DA-3

Runoff = 0.80 cfs @ 12.11 hrs, Volume= 0.073 af, Depth> 1.70"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
15,746	98	Unconnected pavement, HSG A
6,676	39	>75% Grass cover, Good, HSG A
22,422	80	Weighted Average
6,676	39	29.77% Pervious Area
15,746	98	70.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Subcatchment 10S: EX-DA-4

Runoff = 0.96 cfs @ 12.10 hrs, Volume= 0.063 af, Depth> 1.59"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
7,200	39	>75% Grass cover, Good, HSG A
13,562	98	Paved parking, HSG A
20,762	78	Weighted Average
7,200	39	34.68% Pervious Area
13,562	98	65.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

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NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Summary for Subcatchment 15S: P-DA-1

Runoff = 1.11 cfs @ 12.11 hrs, Volume= 0.101 af, Depth> 0.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
32,710	39	>75% Grass cover, Good, HSG A
21,833	98	Paved parking, HSG A
54,543	63	Weighted Average
32,710	39	59.97% Pervious Area
21,833	98	40.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Subcatchment 17S: EX-DA-1

Runoff = 1.84 cfs @ 12.11 hrs, Volume= 0.196 af, Depth> 1.45"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
28,376	39	>75% Grass cover, Good, HSG A
42,222	98	Paved parking, HSG A
70,598	74	Weighted Average
28,376	39	40.19% Pervious Area
42,222	98	59.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 18S: EX-DA-2

Runoff = 0.48 cfs @ 12.11 hrs, Volume= 0.051 af, Depth> 1.11"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
10,972	98	Paved parking, HSG A
13,004	39	>75% Grass cover, Good, HSG A
23,976	66	Weighted Average
13,004	39	54.24% Pervious Area
10,972	98	45.76% Impervious Area

Stormwater Pond

NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 19S: EX-DA-3

Runoff = 1.18 cfs @ 12.11 hrs, Volume= 0.126 af, Depth> 1.08"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
27,148	98	Unconnected roofs, HSG A
33,570	39	>75% Grass cover, Good, HSG A
60,718	65	Weighted Average
33,570	39	55.29% Pervious Area
27,148	98	44.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 20S: P-DA-2

Runoff = 0.70 cfs @ 12.11 hrs, Volume= 0.064 af, Depth> 1.31"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 NOAA 24-hr A 2-yr, 24-hr Rainfall=2.66"

Area (sf)	CN	Description
13,733	98	Unconnected pavement, HSG A
11,633	39	>75% Grass cover, Good, HSG A
25,366	71	Weighted Average
11,633	39	45.86% Pervious Area
13,733	98	54.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Reach 5R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.394 ac, 44.71% Impervious, Inflow Depth > 1.08" for 2-yr, 24-hr event
 Inflow = 1.18 cfs @ 12.11 hrs, Volume= 0.126 af
 Outflow = 1.18 cfs @ 12.11 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.2 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.84 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.4 min

Peak Storage= 9 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.35'

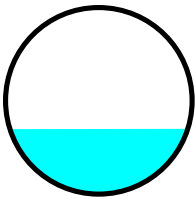
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 35.0' Slope= 0.0137 '/'

Inlet Invert= 1,202.44', Outlet Invert= 1,201.96'



Summary for Reach 7R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.592 ac, 70.79% Impervious, Inflow Depth > 1.72" for 2-yr, 24-hr event

Inflow = 1.12 cfs @ 12.11 hrs, Volume= 0.085 af

Outflow = 1.12 cfs @ 12.11 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.05 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.5 min

Peak Storage= 10 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.25'

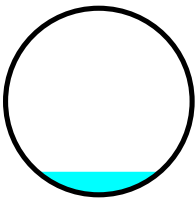
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 34.66 cfs

24.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 43.5' Slope= 0.0200 '/'

Inlet Invert= 1,201.96', Outlet Invert= 1,201.09'



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Summary for Reach 8R: Storm MH

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.944 ac, 45.01% Impervious, Inflow Depth > 1.09" for 2-yr, 24-hr event
Inflow = 1.63 cfs @ 12.12 hrs, Volume= 0.177 af
Outflow = 1.63 cfs @ 12.12 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 10R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.515 ac, 70.23% Impervious, Inflow Depth > 1.70" for 2-yr, 24-hr event
Inflow = 0.80 cfs @ 12.11 hrs, Volume= 0.073 af
Outflow = 0.80 cfs @ 12.11 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.65 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.83 fps, Avg. Travel Time= 0.4 min

Peak Storage= 6 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.24'

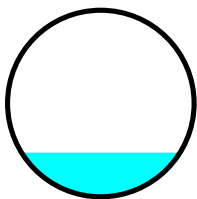
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.55 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 42.0' Slope= 0.0288 1'

Inlet Invert= 1,202.65', Outlet Invert= 1,201.44'



Summary for Reach 11R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.754 ac, 70.05% Impervious, Inflow Depth > 1.70" for 2-yr, 24-hr event
Inflow = 1.32 cfs @ 12.11 hrs, Volume= 0.107 af
Outflow = 1.31 cfs @ 12.12 hrs, Volume= 0.107 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.47 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 1.11 fps, Avg. Travel Time= 1.6 min

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Peak Storage= 41 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.49'

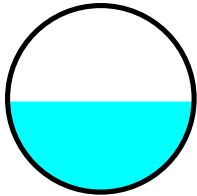
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.75 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 108.0' Slope= 0.0051 '/'

Inlet Invert= 1,203.85', Outlet Invert= 1,203.30'



Summary for Reach 13R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.477 ac, 65.32% Impervious, Inflow Depth > 1.59" for 2-yr, 24-hr event

Inflow = 0.96 cfs @ 12.10 hrs, Volume= 0.063 af

Outflow = 0.95 cfs @ 12.11 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.22 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.5 min

Peak Storage= 8 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.28'

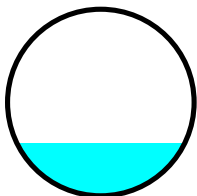
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 43.5' Slope= 0.0200 '/'

Inlet Invert= 1,201.96', Outlet Invert= 1,201.09'



Summary for Reach 14R: Storm MH

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.097 ac, 61.69% Impervious, Inflow Depth > 1.50" for 2-yr, 24-hr event

Inflow = 1.47 cfs @ 12.12 hrs, Volume= 0.137 af

Outflow = 1.47 cfs @ 12.12 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 16R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.252 ac, 40.03% Impervious, Inflow Depth > 0.97" for 2-yr, 24-hr event
Inflow = 1.11 cfs @ 12.11 hrs, Volume= 0.101 af
Outflow = 1.11 cfs @ 12.11 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.16 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.68 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.32'

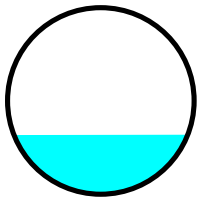
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.06 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 32.0' Slope= 0.0172 '/'

Inlet Invert= 1,200.08', Outlet Invert= 1,199.53'



Summary for Reach 23R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.550 ac, 45.76% Impervious, Inflow Depth > 1.11" for 2-yr, 24-hr event
Inflow = 0.48 cfs @ 12.11 hrs, Volume= 0.051 af
Outflow = 0.47 cfs @ 12.14 hrs, Volume= 0.051 af, Atten= 1%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.82 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 0.30 fps, Avg. Travel Time= 2.5 min

Peak Storage= 26 cf @ 12.13 hrs

Average Depth at Peak Storage= 0.69'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 0.58 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 45.0' Slope= 0.0002 '/'

Inlet Invert= 1,201.67', Outlet Invert= 1,201.66'

Stormwater Pond

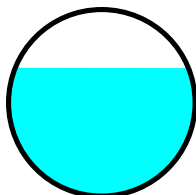
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Summary for Reach 24R: Pipe

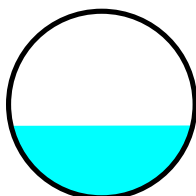
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.582 ac, 54.14% Impervious, Inflow Depth > 1.31" for 2-yr, 24-hr event
Inflow = 0.70 cfs @ 12.11 hrs, Volume= 0.064 af
Outflow = 0.69 cfs @ 12.13 hrs, Volume= 0.064 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.45 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 2.6 min

Peak Storage= 35 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.17 cfs

12.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 123.5' Slope= 0.0032 '/'
Inlet Invert= 1,201.72', Outlet Invert= 1,201.33'



Summary for Reach 25R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.621 ac, 59.81% Impervious, Inflow Depth > 1.45" for 2-yr, 24-hr event
Inflow = 1.84 cfs @ 12.11 hrs, Volume= 0.196 af
Outflow = 1.83 cfs @ 12.11 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.3 min

Peak Storage= 10 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.06 cfs

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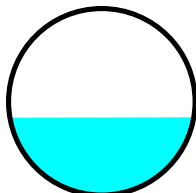
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 32.0' Slope= 0.0172 '/'

Inlet Invert= 1,200.08', Outlet Invert= 1,199.53'



Summary for Pond 3P: Proposed Pond

Inflow Area = 1.907 ac, 68.44% Impervious, Inflow Depth > 1.66" for 2-yr, 24-hr event
Inflow = 3.64 cfs @ 12.10 hrs, Volume= 0.264 af
Outflow = 1.15 cfs @ 12.49 hrs, Volume= 0.253 af, Atten= 68%, Lag= 23.0 min
Primary = 1.15 cfs @ 12.49 hrs, Volume= 0.253 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Starting Elev= 1,205.00' Surf.Area= 5,232 sf Storage= 9,616 cf

Peak Elev= 1,205.81' @ 12.49 hrs Surf.Area= 6,446 sf Storage= 14,318 cf (4,702 cf above start)

Plug-Flow detention time= 643.0 min calculated for 0.032 af (12% of inflow)

Center-of-Mass det. time= 74.1 min (833.7 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,202.00'	38,023 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,202.00	1,318	0	0
1,203.00	2,517	1,918	1,918
1,204.00	3,824	3,171	5,088
1,205.00	5,232	4,528	9,616
1,206.00	6,740	5,986	15,602
1,207.00	8,349	7,545	23,147
1,208.00	10,058	9,204	32,350
1,208.50	12,635	5,673	38,023

Device	Routing	Invert	Outlet Devices
#1	Primary	1,205.00'	12.0" Round Culvert L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,205.00' / 1,203.15' S= 0.0176 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	1,205.00'	8.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	1,208.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Primary OutFlow Max=1.15 cfs @ 12.49 hrs HW=1,205.81' (Free Discharge)

↑ **1=Culvert** (Passes 1.15 cfs of 2.07 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 1.15 cfs @ 3.31 fps)

↑ **3=Orifice/Grate** (Controls 0.00 cfs)

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: P-DA-5	Runoff Area=66,438 sf 60.83% Impervious Runoff Depth>2.23" Tc=10.0 min CN=39/98 Runoff=3.65 cfs 0.283 af
Subcatchment2S: P-DA-6	Runoff Area=16,626 sf 98.85% Impervious Runoff Depth>3.60" Tc=7.0 min CN=39/98 Runoff=1.71 cfs 0.115 af
Subcatchment4S: EX-DA-6	Runoff Area=4,841 sf 63.19% Impervious Runoff Depth>2.31" Tc=10.0 min CN=39/98 Runoff=0.28 cfs 0.021 af
Subcatchment5S: P-DA-4	Runoff Area=25,786 sf 70.79% Impervious Runoff Depth>2.59" Tc=10.0 min CN=39/98 Runoff=1.65 cfs 0.128 af
Subcatchment6S: EX-DA-5	Runoff Area=4,372 sf 30.95% Impervious Runoff Depth>1.15" Tc=10.0 min CN=39/98 Runoff=0.12 cfs 0.010 af
Subcatchment8S: EX-DA-7	Runoff Area=23,646 sf 78.69% Impervious Runoff Depth>2.87" Tc=12.0 min CN=39/98 Runoff=1.55 cfs 0.130 af
Subcatchment9S: P-DA-3	Runoff Area=22,422 sf 70.23% Impervious Runoff Depth>2.57" Tc=15.0 min CN=39/98 Runoff=1.18 cfs 0.110 af
Subcatchment10S: EX-DA-4	Runoff Area=20,762 sf 65.32% Impervious Runoff Depth>2.39" Tc=7.0 min CN=39/98 Runoff=1.41 cfs 0.095 af
Subcatchment15S: P-DA-1	Runoff Area=54,543 sf 40.03% Impervious Runoff Depth>1.48" Tc=15.0 min CN=39/98 Runoff=1.63 cfs 0.154 af
Subcatchment17S: EX-DA-1	Runoff Area=70,598 sf 59.81% Impervious Runoff Depth>2.19" Tc=20.0 min CN=39/98 Runoff=2.71 cfs 0.296 af
Subcatchment18S: EX-DA-2	Runoff Area=23,976 sf 45.76% Impervious Runoff Depth>1.68" Tc=20.0 min CN=39/98 Runoff=0.70 cfs 0.077 af
Subcatchment19S: EX-DA-3	Runoff Area=60,718 sf 44.71% Impervious Runoff Depth>1.64" Tc=20.0 min CN=39/98 Runoff=1.74 cfs 0.191 af
Subcatchment20S: P-DA-2	Runoff Area=25,366 sf 54.14% Impervious Runoff Depth>1.99" Tc=15.0 min CN=39/98 Runoff=1.03 cfs 0.096 af
Reach 5R: Pipe	Avg. Flow Depth=0.43' Max Vel=5.38 fps Inflow=1.74 cfs 0.191 af 12.0" Round Pipe n=0.012 L=35.0' S=0.0137 '/' Capacity=4.52 cfs Outflow=1.74 cfs 0.191 af
Reach 7R: Pipe	Avg. Flow Depth=0.30' Max Vel=5.67 fps Inflow=1.65 cfs 0.128 af 24.0" Round Pipe n=0.012 L=43.5' S=0.0200 '/' Capacity=34.66 cfs Outflow=1.65 cfs 0.128 af
Reach 8R: Storm MH	Inflow=2.33 cfs 0.268 af Outflow=2.33 cfs 0.268 af

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Reach 10R: Pipe Avg. Flow Depth=0.29' Max Vel=6.32 fps Inflow=1.18 cfs 0.110 af
12.0" Round Pipe n=0.012 L=42.0' S=0.0288 '/' Capacity=6.55 cfs Outflow=1.18 cfs 0.110 af

Reach 11R: Pipe Avg. Flow Depth=0.62' Max Vel=3.80 fps Inflow=1.95 cfs 0.161 af
12.0" Round Pipe n=0.012 L=108.0' S=0.0051 '/' Capacity=2.75 cfs Outflow=1.93 cfs 0.161 af

Reach 13R: Pipe Avg. Flow Depth=0.35' Max Vel=5.82 fps Inflow=1.41 cfs 0.095 af
12.0" Round Pipe n=0.012 L=43.5' S=0.0200 '/' Capacity=5.46 cfs Outflow=1.40 cfs 0.095 af

Reach 14R: Storm MH Inflow=2.17 cfs 0.206 af
Outflow=2.17 cfs 0.206 af

Reach 16R: Pipe Avg. Flow Depth=0.39' Max Vel=5.75 fps Inflow=1.63 cfs 0.154 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0172 '/' Capacity=5.06 cfs Outflow=1.63 cfs 0.154 af

Reach 23R: Pipe Avg. Flow Depth=1.00' Max Vel=0.83 fps Inflow=0.70 cfs 0.077 af
12.0" Round Pipe n=0.012 L=45.0' S=0.0002 '/' Capacity=0.58 cfs Outflow=0.61 cfs 0.077 af

Reach 24R: Pipe Avg. Flow Depth=0.48' Max Vel=2.72 fps Inflow=1.03 cfs 0.096 af
12.0" Round Pipe n=0.012 L=123.5' S=0.0032 '/' Capacity=2.17 cfs Outflow=1.01 cfs 0.096 af

Reach 25R: Pipe Avg. Flow Depth=0.52' Max Vel=6.55 fps Inflow=2.71 cfs 0.296 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0172 '/' Capacity=5.06 cfs Outflow=2.71 cfs 0.296 af

Pond 3P: Proposed Pond Peak Elev=1,206.14' Storage=16,592 cf Inflow=5.36 cfs 0.398 af
Outflow=1.51 cfs 0.384 af

Total Runoff Area = 9.644 ac Runoff Volume = 1.706 af Average Runoff Depth = 2.12"
42.08% Pervious = 4.058 ac 57.92% Impervious = 5.586 ac

Stormwater Pond

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NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

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Summary for Subcatchment 1S: P-DA-5

Runoff = 3.65 cfs @ 12.11 hrs, Volume= 0.283 af, Depth> 2.23"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
26,023	39	>75% Grass cover, Good, HSG A
40,415	98	Roofs, HSG A
66,438	75	Weighted Average
26,023	39	39.17% Pervious Area
40,415	98	60.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 2S: P-DA-6

Runoff = 1.71 cfs @ 12.10 hrs, Volume= 0.115 af, Depth> 3.60"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
191	39	>75% Grass cover, Good, HSG A
16,435	98	Paved parking, HSG A
16,626	97	Weighted Average
191	39	1.15% Pervious Area
16,435	98	98.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Summary for Subcatchment 4S: EX-DA-6

Runoff = 0.28 cfs @ 12.11 hrs, Volume= 0.021 af, Depth> 2.31"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
1,782	39	>75% Grass cover, Good, HSG A
3,059	98	Paved roads w/curbs & sewers, HSG A
4,841	76	Weighted Average
1,782	39	36.81% Pervious Area
3,059	98	63.19% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 5S: P-DA-4

Runoff = 1.65 cfs @ 12.11 hrs, Volume= 0.128 af, Depth> 2.59"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
7,532	39	>75% Grass cover, Good, HSG A
18,254	98	Paved parking, HSG A
25,786	81	Weighted Average
7,532	39	29.21% Pervious Area
18,254	98	70.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 6S: EX-DA-5

Runoff = 0.12 cfs @ 12.11 hrs, Volume= 0.010 af, Depth> 1.15"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
3,019	39	>75% Grass cover, Good, HSG A
1,353	98	Paved roads w/curbs & sewers, HSG A
4,372	57	Weighted Average
3,019	39	69.05% Pervious Area
1,353	98	30.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 8S: EX-DA-7

Runoff = 1.55 cfs @ 12.11 hrs, Volume= 0.130 af, Depth> 2.87"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
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Area (sf)	CN	Description
5,040	39	>75% Grass cover, Good, HSG A
18,606	98	Roofs, HSG A
23,646	85	Weighted Average
5,040	39	21.31% Pervious Area
18,606	98	78.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: P-DA-3

Runoff = 1.18 cfs @ 12.11 hrs, Volume= 0.110 af, Depth> 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
15,746	98	Unconnected pavement, HSG A
6,676	39	>75% Grass cover, Good, HSG A
22,422	80	Weighted Average
6,676	39	29.77% Pervious Area
15,746	98	70.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Subcatchment 10S: EX-DA-4

Runoff = 1.41 cfs @ 12.10 hrs, Volume= 0.095 af, Depth> 2.39"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
7,200	39	>75% Grass cover, Good, HSG A
13,562	98	Paved parking, HSG A
20,762	78	Weighted Average
7,200	39	34.68% Pervious Area
13,562	98	65.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

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Summary for Subcatchment 15S: P-DA-1

Runoff = 1.63 cfs @ 12.11 hrs, Volume= 0.154 af, Depth> 1.48"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
32,710	39	>75% Grass cover, Good, HSG A
21,833	98	Paved parking, HSG A
54,543	63	Weighted Average
32,710	39	59.97% Pervious Area
21,833	98	40.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Subcatchment 17S: EX-DA-1

Runoff = 2.71 cfs @ 12.11 hrs, Volume= 0.296 af, Depth> 2.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
28,376	39	>75% Grass cover, Good, HSG A
42,222	98	Paved parking, HSG A
70,598	74	Weighted Average
28,376	39	40.19% Pervious Area
42,222	98	59.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 18S: EX-DA-2

Runoff = 0.70 cfs @ 12.11 hrs, Volume= 0.077 af, Depth> 1.68"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
10,972	98	Paved parking, HSG A
13,004	39	>75% Grass cover, Good, HSG A
23,976	66	Weighted Average
13,004	39	54.24% Pervious Area
10,972	98	45.76% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 19S: EX-DA-3

Runoff = 1.74 cfs @ 12.11 hrs, Volume= 0.191 af, Depth> 1.64"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
27,148	98	Unconnected roofs, HSG A
33,570	39	>75% Grass cover, Good, HSG A
60,718	65	Weighted Average
33,570	39	55.29% Pervious Area
27,148	98	44.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 20S: P-DA-2

Runoff = 1.03 cfs @ 12.11 hrs, Volume= 0.096 af, Depth> 1.99"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 10-yr, 24-hr Rainfall=3.88"

Area (sf)	CN	Description
13,733	98	Unconnected pavement, HSG A
11,633	39	>75% Grass cover, Good, HSG A
25,366	71	Weighted Average
11,633	39	45.86% Pervious Area
13,733	98	54.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Reach 5R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.394 ac, 44.71% Impervious, Inflow Depth > 1.64" for 10-yr, 24-hr event
 Inflow = 1.74 cfs @ 12.11 hrs, Volume= 0.191 af
 Outflow = 1.74 cfs @ 12.11 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.2 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.38 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.43'

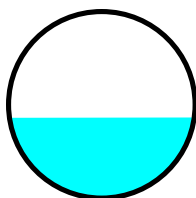
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 35.0' Slope= 0.0137 '/'

Inlet Invert= 1,202.44', Outlet Invert= 1,201.96'



Summary for Reach 7R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.592 ac, 70.79% Impervious, Inflow Depth > 2.59" for 10-yr, 24-hr event

Inflow = 1.65 cfs @ 12.11 hrs, Volume= 0.128 af

Outflow = 1.65 cfs @ 12.11 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.67 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.75 fps, Avg. Travel Time= 0.4 min

Peak Storage= 13 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.30'

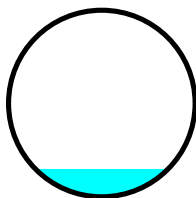
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 34.66 cfs

24.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 43.5' Slope= 0.0200 '/'

Inlet Invert= 1,201.96', Outlet Invert= 1,201.09'



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Summary for Reach 8R: Storm MH

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.944 ac, 45.01% Impervious, Inflow Depth > 1.65" for 10-yr, 24-hr event
Inflow = 2.33 cfs @ 12.11 hrs, Volume= 0.268 af
Outflow = 2.33 cfs @ 12.11 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 10R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.515 ac, 70.23% Impervious, Inflow Depth > 2.57" for 10-yr, 24-hr event
Inflow = 1.18 cfs @ 12.11 hrs, Volume= 0.110 af
Outflow = 1.18 cfs @ 12.11 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.32 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.06 fps, Avg. Travel Time= 0.3 min

Peak Storage= 8 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.29'

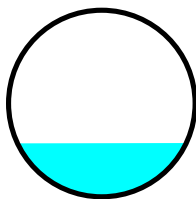
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.55 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 42.0' Slope= 0.0288 '/'

Inlet Invert= 1,202.65', Outlet Invert= 1,201.44'



Summary for Reach 11R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.754 ac, 70.05% Impervious, Inflow Depth > 2.56" for 10-yr, 24-hr event
Inflow = 1.95 cfs @ 12.11 hrs, Volume= 0.161 af
Outflow = 1.93 cfs @ 12.12 hrs, Volume= 0.161 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.80 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 1.25 fps, Avg. Travel Time= 1.4 min

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Peak Storage= 55 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.62'

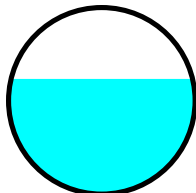
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.75 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 108.0' Slope= 0.0051 '/'

Inlet Invert= 1,203.85', Outlet Invert= 1,203.30'



Summary for Reach 13R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.477 ac, 65.32% Impervious, Inflow Depth > 2.39" for 10-yr, 24-hr event

Inflow = 1.41 cfs @ 12.10 hrs, Volume= 0.095 af

Outflow = 1.40 cfs @ 12.11 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.82 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.4 min

Peak Storage= 10 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.35'

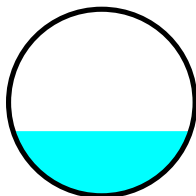
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 43.5' Slope= 0.0200 '/'

Inlet Invert= 1,201.96', Outlet Invert= 1,201.09'



Summary for Reach 14R: Storm MH

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.097 ac, 61.69% Impervious, Inflow Depth > 2.26" for 10-yr, 24-hr event

Inflow = 2.17 cfs @ 12.12 hrs, Volume= 0.206 af

Outflow = 2.17 cfs @ 12.12 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 16R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.252 ac, 40.03% Impervious, Inflow Depth > 1.48" for 10-yr, 24-hr event
Inflow = 1.63 cfs @ 12.11 hrs, Volume= 0.154 af
Outflow = 1.63 cfs @ 12.11 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.75 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.91 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.39'

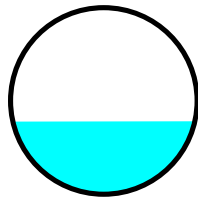
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.06 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 32.0' Slope= 0.0172 '/'

Inlet Invert= 1,200.08', Outlet Invert= 1,199.53'



Summary for Reach 23R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 122% of Manning's capacity

[76] Warning: Detained 0.001 af (Pond w/culvert advised)

Inflow Area = 0.550 ac, 45.76% Impervious, Inflow Depth > 1.68" for 10-yr, 24-hr event
Inflow = 0.70 cfs @ 12.11 hrs, Volume= 0.077 af
Outflow = 0.61 cfs @ 12.10 hrs, Volume= 0.077 af, Atten= 13%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.83 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 2.2 min

Peak Storage= 35 cf @ 12.10 hrs

Average Depth at Peak Storage= 1.00'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 0.58 cfs

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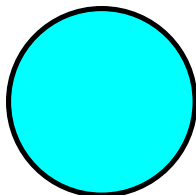
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 45.0' Slope= 0.0002 '/'

Inlet Invert= 1,201.67', Outlet Invert= 1,201.66'



Summary for Reach 24R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.582 ac, 54.14% Impervious, Inflow Depth > 1.99" for 10-yr, 24-hr event
Inflow = 1.03 cfs @ 12.11 hrs, Volume= 0.096 af
Outflow = 1.01 cfs @ 12.13 hrs, Volume= 0.096 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.72 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 0.91 fps, Avg. Travel Time= 2.3 min

Peak Storage= 46 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.48'

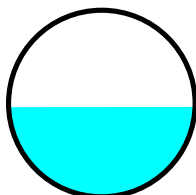
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.17 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 123.5' Slope= 0.0032 '/'

Inlet Invert= 1,201.72', Outlet Invert= 1,201.33'



Summary for Reach 25R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.621 ac, 59.81% Impervious, Inflow Depth > 2.19" for 10-yr, 24-hr event
Inflow = 2.71 cfs @ 12.11 hrs, Volume= 0.296 af
Outflow = 2.71 cfs @ 12.11 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.1 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.55 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.31 fps, Avg. Travel Time= 0.2 min

Peak Storage= 13 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.52'

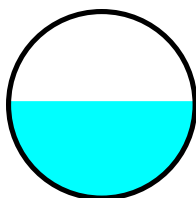
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.06 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 32.0' Slope= 0.0172 '/'

Inlet Invert= 1,200.08', Outlet Invert= 1,199.53'



Summary for Pond 3P: Proposed Pond

Inflow Area = 1.907 ac, 68.44% Impervious, Inflow Depth > 2.50" for 10-yr, 24-hr event

Inflow = 5.36 cfs @ 12.10 hrs, Volume= 0.398 af

Outflow = 1.51 cfs @ 12.53 hrs, Volume= 0.384 af, Atten= 72%, Lag= 25.4 min

Primary = 1.51 cfs @ 12.53 hrs, Volume= 0.384 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Starting Elev= 1,205.00' Surf.Area= 5,232 sf Storage= 9,616 cf

Peak Elev= 1,206.14' @ 12.53 hrs Surf.Area= 6,972 sf Storage= 16,592 cf (6,976 cf above start)

Plug-Flow detention time= 311.9 min calculated for 0.164 af (41% of inflow)

Center-of-Mass det. time= 71.7 min (826.3 - 754.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,202.00'	38,023 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,202.00	1,318	0	0
1,203.00	2,517	1,918	1,918
1,204.00	3,824	3,171	5,088
1,205.00	5,232	4,528	9,616
1,206.00	6,740	5,986	15,602
1,207.00	8,349	7,545	23,147
1,208.00	10,058	9,204	32,350
1,208.50	12,635	5,673	38,023

Stormwater Pond

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Device	Routing	Invert	Outlet Devices
#1	Primary	1,205.00'	12.0" Round Culvert L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,205.00' / 1,203.15' S= 0.0176 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	1,205.00'	8.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	1,208.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.51 cfs @ 12.53 hrs HW=1,206.14' (Free Discharge)

- 1=Culvert (Passes 1.51 cfs of 3.04 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.51 cfs @ 4.34 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: P-DA-5	Runoff Area=66,438 sf 60.83% Impervious Runoff Depth>3.86" Tc=10.0 min CN=39/98 Runoff=6.04 cfs 0.491 af
Subcatchment2S: P-DA-6	Runoff Area=16,626 sf 98.85% Impervious Runoff Depth>5.95" Tc=7.0 min CN=39/98 Runoff=2.77 cfs 0.189 af
Subcatchment4S: EX-DA-6	Runoff Area=4,841 sf 63.19% Impervious Runoff Depth>3.99" Tc=10.0 min CN=39/98 Runoff=0.46 cfs 0.037 af
Subcatchment5S: P-DA-4	Runoff Area=25,786 sf 70.79% Impervious Runoff Depth>4.41" Tc=10.0 min CN=39/98 Runoff=2.71 cfs 0.218 af
Subcatchment6S: EX-DA-5	Runoff Area=4,372 sf 30.95% Impervious Runoff Depth>2.22" Tc=10.0 min CN=39/98 Runoff=0.21 cfs 0.019 af
Subcatchment8S: EX-DA-7	Runoff Area=23,646 sf 78.69% Impervious Runoff Depth>4.84" Tc=12.0 min CN=39/98 Runoff=2.54 cfs 0.219 af
Subcatchment9S: P-DA-3	Runoff Area=22,422 sf 70.23% Impervious Runoff Depth>4.38" Tc=15.0 min CN=39/98 Runoff=1.93 cfs 0.188 af
Subcatchment10S: EX-DA-4	Runoff Area=20,762 sf 65.32% Impervious Runoff Depth>4.11" Tc=7.0 min CN=39/98 Runoff=2.32 cfs 0.163 af
Subcatchment15S: P-DA-1	Runoff Area=54,543 sf 40.03% Impervious Runoff Depth>2.72" Tc=15.0 min CN=39/98 Runoff=2.75 cfs 0.284 af
Subcatchment17S: EX-DA-1	Runoff Area=70,598 sf 59.81% Impervious Runoff Depth>3.80" Tc=20.0 min CN=39/98 Runoff=4.47 cfs 0.513 af
Subcatchment18S: EX-DA-2	Runoff Area=23,976 sf 45.76% Impervious Runoff Depth>3.03" Tc=20.0 min CN=39/98 Runoff=1.18 cfs 0.139 af
Subcatchment19S: EX-DA-3	Runoff Area=60,718 sf 44.71% Impervious Runoff Depth>2.97" Tc=20.0 min CN=39/98 Runoff=2.91 cfs 0.345 af
Subcatchment20S: P-DA-2	Runoff Area=25,366 sf 54.14% Impervious Runoff Depth>3.49" Tc=15.0 min CN=39/98 Runoff=1.70 cfs 0.169 af
Reach 5R: Pipe	Avg. Flow Depth=0.58' Max Vel=6.11 fps Inflow=2.91 cfs 0.345 af 12.0" Round Pipe n=0.012 L=35.0' S=0.0137 '/' Capacity=4.52 cfs Outflow=2.91 cfs 0.345 af
Reach 7R: Pipe	Avg. Flow Depth=0.38' Max Vel=6.56 fps Inflow=2.71 cfs 0.218 af 24.0" Round Pipe n=0.012 L=43.5' S=0.0200 '/' Capacity=34.66 cfs Outflow=2.70 cfs 0.218 af
Reach 8R: Storm MH	Inflow=3.48 cfs 0.484 af Outflow=3.48 cfs 0.484 af

Stormwater Pond

NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

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Reach 10R: Pipe Avg. Flow Depth=0.37' Max Vel=7.26 fps Inflow=1.93 cfs 0.188 af
12.0" Round Pipe n=0.012 L=42.0' S=0.0288 '/' Capacity=6.55 cfs Outflow=1.93 cfs 0.188 af

Reach 11R: Pipe Avg. Flow Depth=1.00' Max Vel=4.00 fps Inflow=3.20 cfs 0.275 af
12.0" Round Pipe n=0.012 L=108.0' S=0.0051 '/' Capacity=2.75 cfs Outflow=2.91 cfs 0.275 af

Reach 13R: Pipe Avg. Flow Depth=0.46' Max Vel=6.66 fps Inflow=2.32 cfs 0.163 af
12.0" Round Pipe n=0.012 L=43.5' S=0.0200 '/' Capacity=5.46 cfs Outflow=2.31 cfs 0.163 af

Reach 14R: Storm MH Inflow=3.58 cfs 0.357 af
Outflow=3.58 cfs 0.357 af

Reach 16R: Pipe Avg. Flow Depth=0.53' Max Vel=6.58 fps Inflow=2.75 cfs 0.284 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0172 '/' Capacity=5.06 cfs Outflow=2.75 cfs 0.284 af

Reach 23R: Pipe Avg. Flow Depth=1.00' Max Vel=0.83 fps Inflow=1.18 cfs 0.139 af
12.0" Round Pipe n=0.012 L=45.0' S=0.0002 '/' Capacity=0.58 cfs Outflow=0.61 cfs 0.139 af

Reach 24R: Pipe Avg. Flow Depth=0.66' Max Vel=3.05 fps Inflow=1.70 cfs 0.169 af
12.0" Round Pipe n=0.012 L=123.5' S=0.0032 '/' Capacity=2.17 cfs Outflow=1.68 cfs 0.169 af

Reach 25R: Pipe Avg. Flow Depth=0.73' Max Vel=7.27 fps Inflow=4.47 cfs 0.513 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0172 '/' Capacity=5.06 cfs Outflow=4.47 cfs 0.513 af

Pond 3P: Proposed Pond Peak Elev=1,206.81' Storage=21,626 cf Inflow=8.80 cfs 0.680 af
Outflow=2.05 cfs 0.663 af

Total Runoff Area = 9.644 ac Runoff Volume = 2.974 af Average Runoff Depth = 3.70"
42.08% Pervious = 4.058 ac 57.92% Impervious = 5.586 ac

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Summary for Subcatchment 1S: P-DA-5

Runoff = 6.04 cfs @ 12.11 hrs, Volume= 0.491 af, Depth> 3.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
26,023	39	>75% Grass cover, Good, HSG A
40,415	98	Roofs, HSG A
66,438	75	Weighted Average
26,023	39	39.17% Pervious Area
40,415	98	60.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 2S: P-DA-6

Runoff = 2.77 cfs @ 12.10 hrs, Volume= 0.189 af, Depth> 5.95"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
191	39	>75% Grass cover, Good, HSG A
16,435	98	Paved parking, HSG A
16,626	97	Weighted Average
191	39	1.15% Pervious Area
16,435	98	98.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Summary for Subcatchment 4S: EX-DA-6

Runoff = 0.46 cfs @ 12.11 hrs, Volume= 0.037 af, Depth> 3.99"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
1,782	39	>75% Grass cover, Good, HSG A
3,059	98	Paved roads w/curbs & sewers, HSG A
4,841	76	Weighted Average
1,782	39	36.81% Pervious Area
3,059	98	63.19% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 5S: P-DA-4

Runoff = 2.71 cfs @ 12.11 hrs, Volume= 0.218 af, Depth> 4.41"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
7,532	39	>75% Grass cover, Good, HSG A
18,254	98	Paved parking, HSG A
25,786	81	Weighted Average
7,532	39	29.21% Pervious Area
18,254	98	70.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 6S: EX-DA-5

Runoff = 0.21 cfs @ 12.11 hrs, Volume= 0.019 af, Depth> 2.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
3,019	39	>75% Grass cover, Good, HSG A
1,353	98	Paved roads w/curbs & sewers, HSG A
4,372	57	Weighted Average
3,019	39	69.05% Pervious Area
1,353	98	30.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 8S: EX-DA-7

Runoff = 2.54 cfs @ 12.11 hrs, Volume= 0.219 af, Depth> 4.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

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NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

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Area (sf)	CN	Description
5,040	39	>75% Grass cover, Good, HSG A
18,606	98	Roofs, HSG A
23,646	85	Weighted Average
5,040	39	21.31% Pervious Area
18,606	98	78.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					Direct Entry,

Summary for Subcatchment 9S: P-DA-3

Runoff = 1.93 cfs @ 12.11 hrs, Volume= 0.188 af, Depth> 4.38"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
15,746	98	Unconnected pavement, HSG A
6,676	39	>75% Grass cover, Good, HSG A
22,422	80	Weighted Average
6,676	39	29.77% Pervious Area
15,746	98	70.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Subcatchment 10S: EX-DA-4

Runoff = 2.32 cfs @ 12.10 hrs, Volume= 0.163 af, Depth> 4.11"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
7,200	39	>75% Grass cover, Good, HSG A
13,562	98	Paved parking, HSG A
20,762	78	Weighted Average
7,200	39	34.68% Pervious Area
13,562	98	65.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

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Summary for Subcatchment 15S: P-DA-1

Runoff = 2.75 cfs @ 12.11 hrs, Volume= 0.284 af, Depth> 2.72"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
32,710	39	>75% Grass cover, Good, HSG A
21,833	98	Paved parking, HSG A
54,543	63	Weighted Average
32,710	39	59.97% Pervious Area
21,833	98	40.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Subcatchment 17S: EX-DA-1

Runoff = 4.47 cfs @ 12.11 hrs, Volume= 0.513 af, Depth> 3.80"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
28,376	39	>75% Grass cover, Good, HSG A
42,222	98	Paved parking, HSG A
70,598	74	Weighted Average
28,376	39	40.19% Pervious Area
42,222	98	59.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 18S: EX-DA-2

Runoff = 1.18 cfs @ 12.11 hrs, Volume= 0.139 af, Depth> 3.03"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
10,972	98	Paved parking, HSG A
13,004	39	>75% Grass cover, Good, HSG A
23,976	66	Weighted Average
13,004	39	54.24% Pervious Area
10,972	98	45.76% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 19S: EX-DA-3

Runoff = 2.91 cfs @ 12.11 hrs, Volume= 0.345 af, Depth> 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
27,148	98	Unconnected roofs, HSG A
33,570	39	>75% Grass cover, Good, HSG A
60,718	65	Weighted Average
33,570	39	55.29% Pervious Area
27,148	98	44.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					Direct Entry,

Summary for Subcatchment 20S: P-DA-2

Runoff = 1.70 cfs @ 12.11 hrs, Volume= 0.169 af, Depth> 3.49"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

Area (sf)	CN	Description
13,733	98	Unconnected pavement, HSG A
11,633	39	>75% Grass cover, Good, HSG A
25,366	71	Weighted Average
11,633	39	45.86% Pervious Area
13,733	98	54.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Summary for Reach 5R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.394 ac, 44.71% Impervious, Inflow Depth > 2.97" for 100-yr, 24-hr event
 Inflow = 2.91 cfs @ 12.11 hrs, Volume= 0.345 af
 Outflow = 2.91 cfs @ 12.11 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.2 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.11 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.3 min

Peak Storage= 17 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.58'

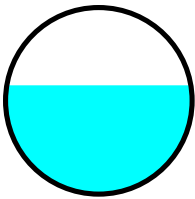
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 35.0' Slope= 0.0137 '/'

Inlet Invert= 1,202.44', Outlet Invert= 1,201.96'



Summary for Reach 7R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.592 ac, 70.79% Impervious, Inflow Depth > 4.41" for 100-yr, 24-hr event

Inflow = 2.71 cfs @ 12.11 hrs, Volume= 0.218 af

Outflow = 2.70 cfs @ 12.11 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.56 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.4 min

Peak Storage= 18 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.38'

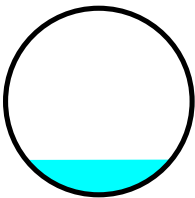
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 34.66 cfs

24.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 43.5' Slope= 0.0200 '/'

Inlet Invert= 1,201.96', Outlet Invert= 1,201.09'



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Summary for Reach 8R: Storm MH

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.944 ac, 45.01% Impervious, Inflow Depth > 2.99" for 100-yr, 24-hr event
Inflow = 3.48 cfs @ 12.11 hrs, Volume= 0.484 af
Outflow = 3.48 cfs @ 12.11 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 10R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.515 ac, 70.23% Impervious, Inflow Depth > 4.38" for 100-yr, 24-hr event
Inflow = 1.93 cfs @ 12.11 hrs, Volume= 0.188 af
Outflow = 1.93 cfs @ 12.11 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 7.26 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.43 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.37'

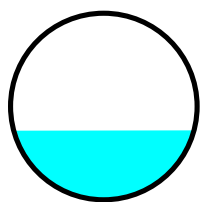
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.55 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 42.0' Slope= 0.0288 1'

Inlet Invert= 1,202.65', Outlet Invert= 1,201.44'



Summary for Reach 11R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 116% of Manning's capacity

[76] Warning: Detained 0.002 af (Pond w/culvert advised)

Inflow Area = 0.754 ac, 70.05% Impervious, Inflow Depth > 4.37" for 100-yr, 24-hr event
Inflow = 3.20 cfs @ 12.11 hrs, Volume= 0.275 af
Outflow = 2.91 cfs @ 12.10 hrs, Volume= 0.275 af, Atten= 9%, Lag= 0.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.00 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 1.47 fps, Avg. Travel Time= 1.2 min

Peak Storage= 85 cf @ 12.10 hrs

Average Depth at Peak Storage= 1.00'

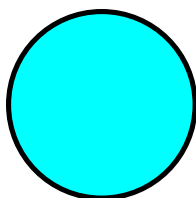
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.75 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 108.0' Slope= 0.0051 '/'

Inlet Invert= 1,203.85', Outlet Invert= 1,203.30'



Summary for Reach 13R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.477 ac, 65.32% Impervious, Inflow Depth > 4.11" for 100-yr, 24-hr event

Inflow = 2.32 cfs @ 12.10 hrs, Volume= 0.163 af

Outflow = 2.31 cfs @ 12.11 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.66 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.4 min

Peak Storage= 15 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.46'

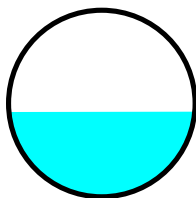
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 43.5' Slope= 0.0200 '/'

Inlet Invert= 1,201.96', Outlet Invert= 1,201.09'



Stormwater Pond

Prepared by Widseth Smith Nolting

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NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

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Summary for Reach 14R: Storm MH

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.097 ac, 61.69% Impervious, Inflow Depth > 3.91" for 100-yr, 24-hr event
Inflow = 3.58 cfs @ 12.12 hrs, Volume= 0.357 af
Outflow = 3.58 cfs @ 12.12 hrs, Volume= 0.357 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 16R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.252 ac, 40.03% Impervious, Inflow Depth > 2.72" for 100-yr, 24-hr event
Inflow = 2.75 cfs @ 12.11 hrs, Volume= 0.284 af
Outflow = 2.75 cfs @ 12.11 hrs, Volume= 0.284 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.58 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.31 fps, Avg. Travel Time= 0.2 min

Peak Storage= 13 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.53'

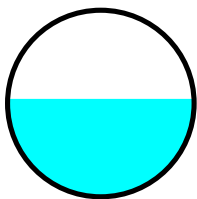
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.06 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 32.0' Slope= 0.0172 1'

Inlet Invert= 1,200.08', Outlet Invert= 1,199.53'



Summary for Reach 23R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 204% of Manning's capacity

[76] Warning: Detained 0.017 af (Pond w/culvert advised)

Inflow Area = 0.550 ac, 45.76% Impervious, Inflow Depth > 3.03" for 100-yr, 24-hr event
Inflow = 1.18 cfs @ 12.11 hrs, Volume= 0.139 af
Outflow = 0.61 cfs @ 12.00 hrs, Volume= 0.139 af, Atten= 48%, Lag= 0.0 min

Stormwater Pond

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Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.83 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 0.39 fps, Avg. Travel Time= 1.9 min

Peak Storage= 35 cf @ 12.00 hrs

Average Depth at Peak Storage= 1.00'

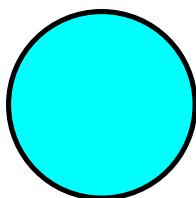
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 0.58 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 45.0' Slope= 0.0002 '/'

Inlet Invert= 1,201.67', Outlet Invert= 1,201.66'



Summary for Reach 24R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.582 ac, 54.14% Impervious, Inflow Depth > 3.49" for 100-yr, 24-hr event

Inflow = 1.70 cfs @ 12.11 hrs, Volume= 0.169 af

Outflow = 1.68 cfs @ 12.13 hrs, Volume= 0.169 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.05 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 1.09 fps, Avg. Travel Time= 1.9 min

Peak Storage= 68 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.66'

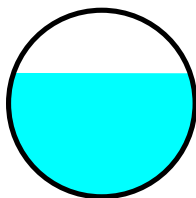
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.17 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 123.5' Slope= 0.0032 '/'

Inlet Invert= 1,201.72', Outlet Invert= 1,201.33'



Stormwater Pond

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NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

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Summary for Reach 25R: Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.621 ac, 59.81% Impervious, Inflow Depth > 3.80" for 100-yr, 24-hr event
Inflow = 4.47 cfs @ 12.11 hrs, Volume= 0.513 af
Outflow = 4.47 cfs @ 12.11 hrs, Volume= 0.513 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 7.27 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.73 fps, Avg. Travel Time= 0.2 min

Peak Storage= 20 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.73'

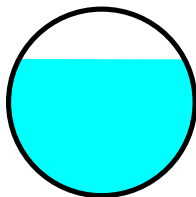
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.06 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 32.0' Slope= 0.0172 '/'

Inlet Invert= 1,200.08', Outlet Invert= 1,199.53'



Summary for Pond 3P: Proposed Pond

Inflow Area = 1.907 ac, 68.44% Impervious, Inflow Depth > 4.28" for 100-yr, 24-hr event
Inflow = 8.80 cfs @ 12.10 hrs, Volume= 0.680 af
Outflow = 2.05 cfs @ 12.61 hrs, Volume= 0.663 af, Atten= 77%, Lag= 30.2 min
Primary = 2.05 cfs @ 12.61 hrs, Volume= 0.663 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Starting Elev= 1,205.00' Surf.Area= 5,232 sf Storage= 9,616 cf

Peak Elev= 1,206.81' @ 12.61 hrs Surf.Area= 8,051 sf Storage= 21,626 cf (12,010 cf above start)

Plug-Flow detention time= 233.1 min calculated for 0.442 af (65% of inflow)

Center-of-Mass det. time= 75.7 min (828.1 - 752.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,202.00'	38,023 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Stormwater Pond

NOAA 24-hr A 100-yr, 24-hr Rainfall=6.26"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,202.00	1,318	0	0
1,203.00	2,517	1,918	1,918
1,204.00	3,824	3,171	5,088
1,205.00	5,232	4,528	9,616
1,206.00	6,740	5,986	15,602
1,207.00	8,349	7,545	23,147
1,208.00	10,058	9,204	32,350
1,208.50	12,635	5,673	38,023

Device	Routing	Invert	Outlet Devices
#1	Primary	1,205.00'	12.0" Round Culvert L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,205.00' / 1,203.15' S= 0.0176 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	1,205.00'	8.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	1,208.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.05 cfs @ 12.61 hrs HW=1,206.81' (Free Discharge)

- 1=Culvert (Passes 2.05 cfs of 4.34 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 2.05 cfs @ 5.86 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

Engineering Properties (MN)

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic group is a group of soils having similar runoff potential under similar storm and cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

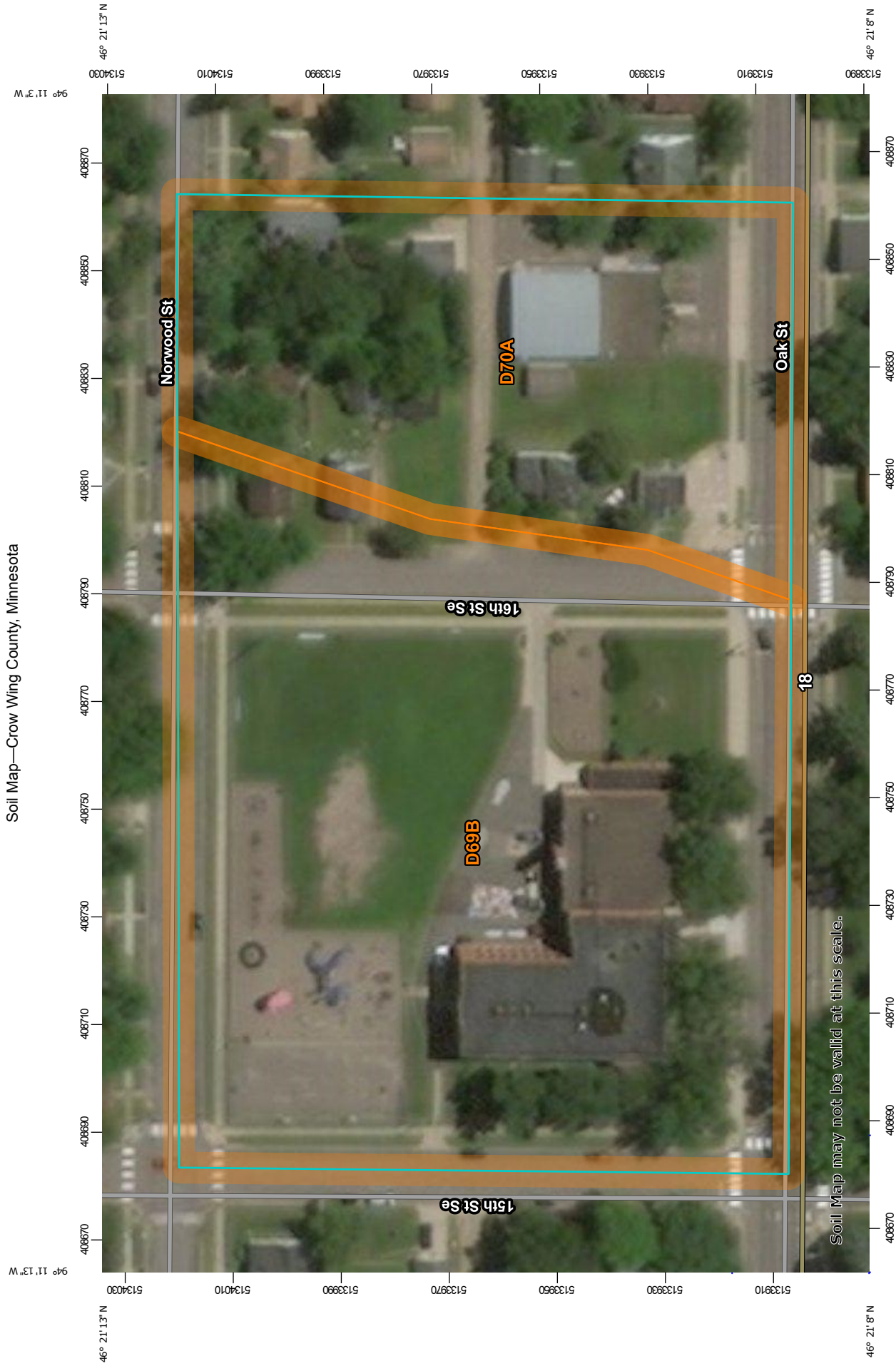
Report—Engineering Properties (MN)

Engineering Properties (MN)—Crow Wing County, Minnesota															
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—					Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200			
			<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>		
D69B—Zimmerman-Urban land complex, 0 to 6 percent slopes															
Zimmerman	60	A	0-4	Loamy fine sand	SM	A-2-4	0	0	100	100	91-97	28-34	0-30	NP-5	
			4-10	Loamy fine sand, fine sand	SM	A-2-4	0	0	100	100	92-95	27-30	0-19	NP-3	
			10-19	Sand, fine sand	SM	A-2-4	0	0	100	100	93-96	13-16	0-16	NP-1	
			19-23	Loamy fine sand, fine sand	SM	A-2-4	0	0	100	100	93-96	12-15	0-16	NP-1	
			23-80	Fine sand, loamy fine sand	SM	A-2-4	0	0	100	100	93-96	12-15	0-16	NP-1	
D70A—Barber-Urban land complex, 0 to 3 percent slopes															
Barber	50	A/D	0-3	Loamy fine sand	SM	A-2-4	0	0	100	100	91-97	28-34	0-30	NP-5	
			3-18	Fine sand, loamy fine sand	SM	A-2-4	0	0	100	100	92-95	27-30	0-19	NP-3	
			18-30	Fine sand, sand	SM	A-2-4	0	0	100	100	93-96	13-16	0-16	NP-1	
			30-80	Fine sand, loamy sand	SM	A-2-4	0	0	100	100	93-95	10-14	0-14	NP	

Data Source Information

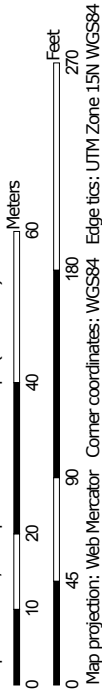
Soil Survey Area: Crow Wing County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018





Soil Map may not be valid at this scale.

Map Scale: 1:1,000 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Crow Wing County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 19, 2014—Aug 23, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
D69B	Zimmerman-Urban land complex, 0 to 6 percent slopes	3.4	66.9%
D70A	Barber-Urban land complex, 0 to 3 percent slopes	1.7	33.1%
Totals for Area of Interest		5.1	100.0%

Form-Based Codes: A Step-by-Step Guide for Communities



Acknowledgements

Special thanks to:

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Ferrell Madden/Code Studio

The Lakota Group

Moule & Polyzoides, Architects and Urbanists

Teska Associates

Torti Gallas and Partners

Urban Advantage

Urban Design Associates



Chicago Metropolitan
Agency for Planning

The Chicago Metropolitan Agency for Planning (CMAP) is the region's official comprehensive planning organization. Its GO TO 2040 planning campaign is helping the region's seven counties and 284 communities to implement strategies that address transportation, housing, economic development, open space, the environment, and other quality of life issues.

See www.cmap.illinois.gov for more information.

Endorsed by

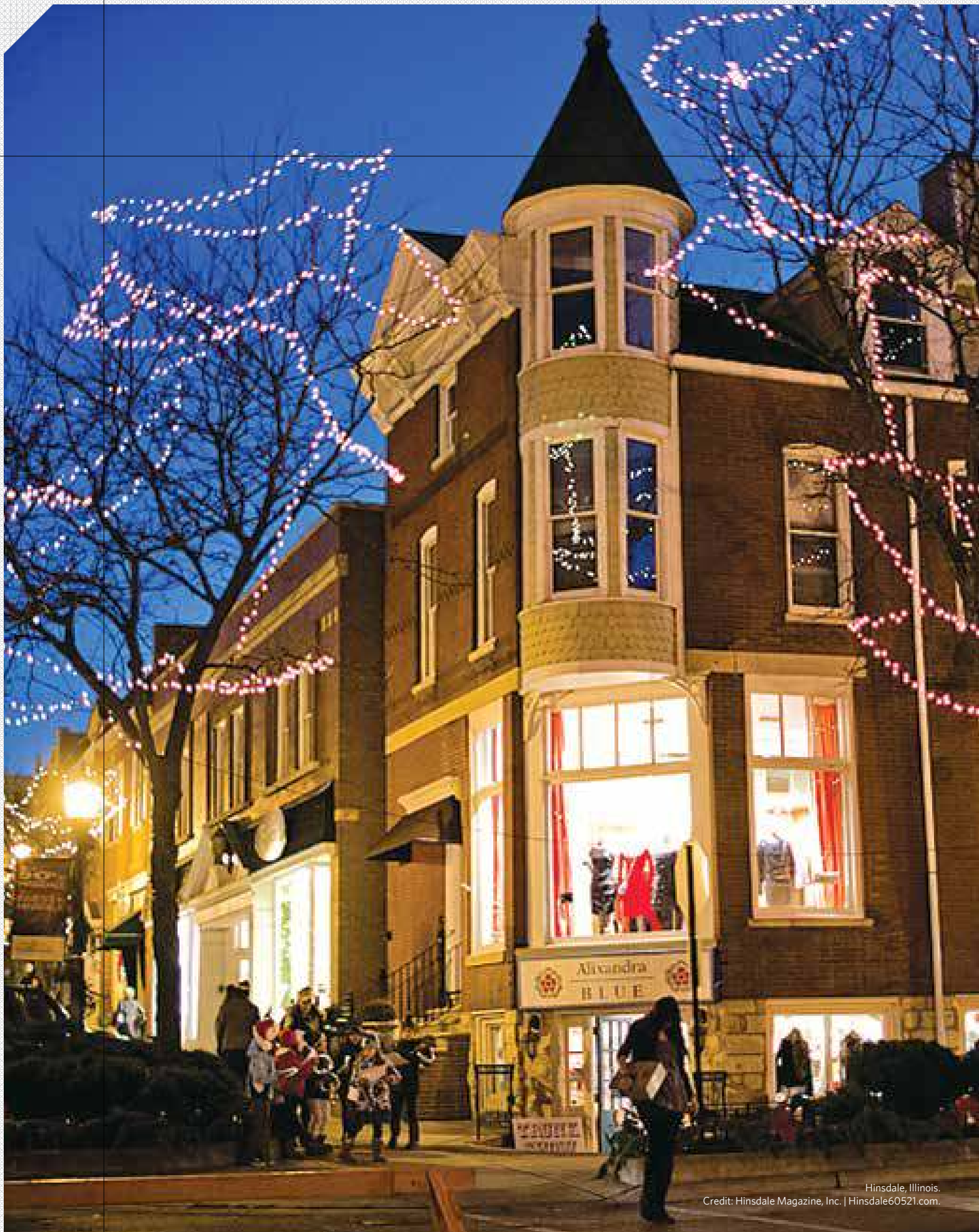


The Form-Based Codes Institute (FBCI) is a non-profit professional organization dedicated to advancing the understanding and use of form-based codes. FBCI pursues this objective through three main areas of action: developing standards for form-based codes, providing education, and creating a forum for discussion and advancement of form-based codes.

See www.formbasedcodes.org for more information.

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Hinsdale, Illinois.
Credit: Hinsdale Magazine, Inc. | Hinsdale60521.com.

Purpose of Handbook

One of the central goals of the GO TO 2040 comprehensive regional plan is to make our region a better place to live. This means creating livable communities at the local level through planning and development decisions made by local government officials, developers, and individuals. This handbook provides a step-by-step guide to form-based codes, an alternative approach to zoning.

GO TO 2040

GO TO 2040 states that defining “livability” is a challenge simply because people’s values and priorities are so diverse. However, when residents across the region describe their values and priorities, certain commonalities of livability emerge. Livable communities are healthy, safe, and walkable. Livable communities offer transportation choices that provide timely access to schools, jobs, services, and basic needs. Livable communities are imbued with strength and vitality, features which emerge from preserving the unique characteristics that give our diverse communities “a sense of place.”

GO TO 2040 states that the building blocks of local planning are comprehensive plans, consistent ordinances and other regulations, and trained decision-makers. Local comprehensive plans are the vision of what a community wants to become and the steps needed to meet that goal. Most communities find that a first necessary step to implement a comprehensive plan is to update their zoning ordinance.

As communities have sought to reinvigorate their downtowns or create viable commercial corridors, many have found that conventional methods of zoning, oriented around regulating land use, may not address certain physical characteristics that contribute to the sense of place in a community. While it is important to consider which uses should occur in a given place, we live in a visual world, and conventional methods of zoning often do not sufficiently address the fundamental aesthetic character of our communities — existing or desired.

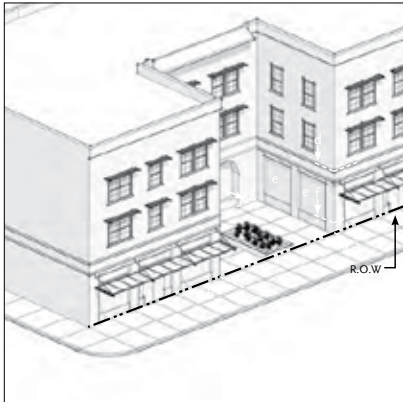
Form-based codes, which emphasize the physical character of development, offer an alternative. This handbook explains what form-based codes are and how they are created to help communities assess whether they may be right for them.

Who Should Use This Handbook?

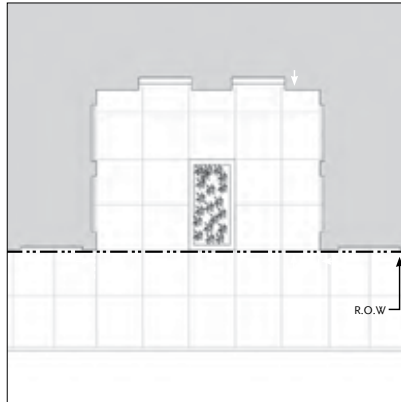
Most communities lack the staff expertise and time necessary to develop a form-based code on their own and therefore choose to hire consultants to lead the effort and perform most of the work.

However, it is vital that municipalities understand the scope of work that is required in the creation of a form-based code. Municipalities that educate themselves on the typical steps that are necessary will be in a better position to gauge the amount of outside assistance that is needed (and the amount of funding that will be required), write a more precise request for proposals (RFP), and evaluate consulting firms bidding for the project. Once the development of the form-based code is underway, well-informed municipal staff can better facilitate the process and monitor the work of hired consultants.

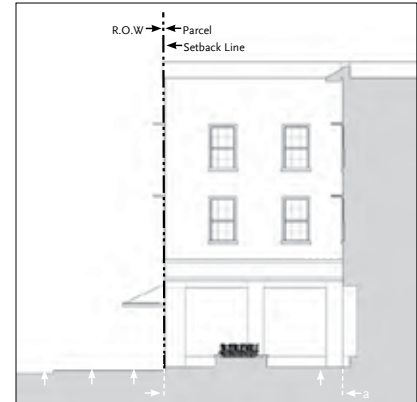
Municipal staff will be responsible for administering the new form-based code once it is adopted, and possessing an understanding of how it was created is likely to provide a more nuanced appreciation of the reasons behind the regulations, as well as the amount of hard work that went into its creation.



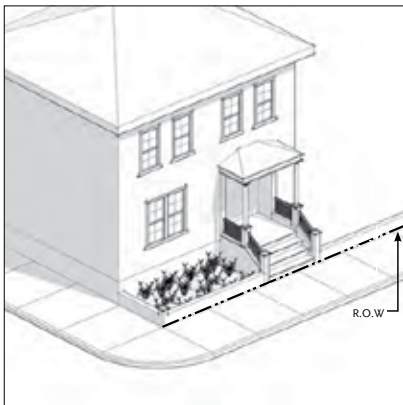
Axonometric Diagram: Forecourt



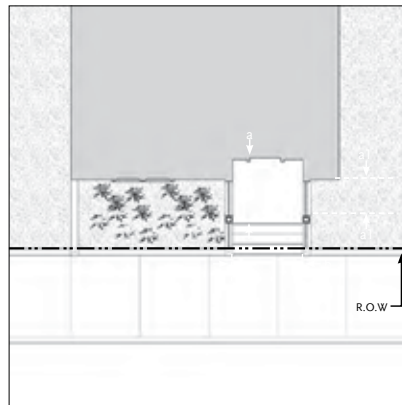
Plan Diagram: Forecourt



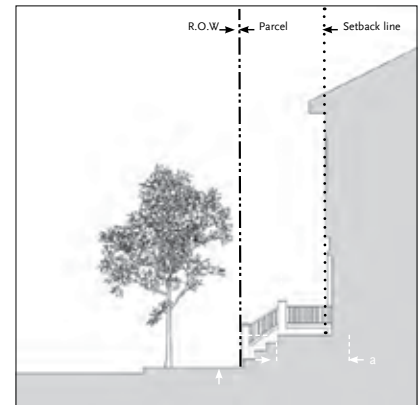
Section Diagram: Forecourt



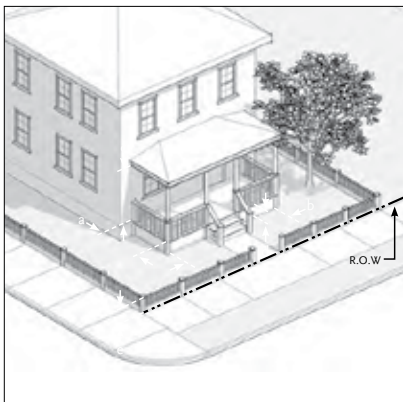
Axonometric Diagram: Frontyard / Porch



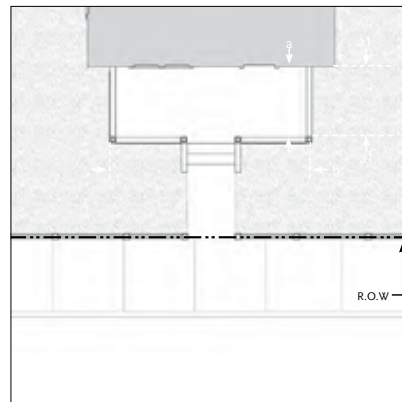
Plan Diagram: Stoop



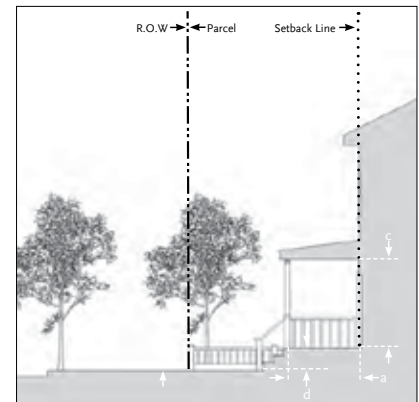
Section Diagram: Stoop



Axonometric Diagram: Frontyard / Porch



Plan Diagram: Frontyard / Porch



Section Diagram: Frontyard / Porch

Introduction

What are Form-Based Codes?

Nearly everyone can identify things they like in their community and things they want to change. Whether a favorite house, street, or place, it's common to wonder why there isn't more of what we like and less of what we don't.

There are many reasons for this dissatisfaction with the physical character of many of our communities, especially the quality of the public realm. One reason is that conventional methods of zoning, which are focused on what uses are permitted, have often shaped the form of the built environment in unintended—and occasionally unwanted—ways.

Form-based codes include specification of what uses are permitted in a building or place, but focus on the physical character of development, particularly how it relates to the public realm that everyone shares. A growing number of communities across the country and in our region have found that form-based codes are a more precise and reliable tool for achieving what they want, preserving what they cherish, and preventing what they don't want.



Chicago suburbs from the air.
Credit: Flickr user Shawndra and Simon.

Conventional Zoning

Conventional methods of zoning arose out of the need to protect public health, safety, and welfare by preventing the most negative impacts of siting, size, and use of buildings. Limiting the spread of fire from one building to another, providing access to sunlight and air, and separating smoke-producing industry from residential uses are but a few of the worthy objectives that conventional zoning was intended to fulfill.

In addition to helping protect public health, safety, and welfare, conventional zoning was meant to protect property values by separating incompatible uses in a particular area or district. This separation is typically accomplished by creating single- or limited-use zones that segregate different land uses, such as residential and commercial.

Fueled in part by rapid national growth in population and gross domestic product that followed the end of World War II, the practice of separating “incompatible” land uses led to the near universal segregation of different land uses—often at great distance from one another. As a result, cities and towns have increasingly been placing residential uses in one area, commercial in another, and industrial in still another.

In particular, conventional zoning tends to isolate single-family homes from all other types of development. The development resulting from such zoning requirements often makes it difficult, if not impossible, to walk from home to purchase a quart of milk. Public transportation has become increasingly less efficient in these areas, and travel by personal automobile has often made more sense. Accordingly, maximizing the flow of traffic has been a top priority for street design, which has increasingly yielded streets designed for car travel, not pedestrians.

Over the decades, these and other related factors shaped the urban environment of many communities. Often a community’s unique “sense of place” has been diminished—or, in many new communities, was never achieved in the first place.

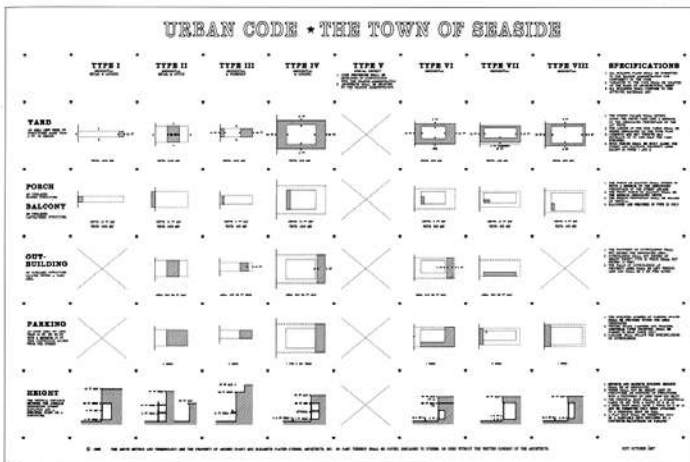
In general, conventional zoning:

- Separates uses related to daily activity, such as home, school, and work.
- Frequently promotes low-density development and relatively limited housing choices.
- Often encourages excessive land consumption and automobile dependency.
- Ends up focusing on what uses are not allowed, rather than encouraging what the community actually wants.
- Applies standards and design requirements generically, in a “one-size-fits-all” manner, throughout the entire community.
- Uses regulations such as floor area ratio, which can shape the form of development in ways that are hard to visualize beforehand and may encourage developers to “max out” the massing of a building within allowed limits, often at the expense of its architectural detailing and sensitivity to existing context.
- Regulates private development, but typically not the design or character of the streets that serve it. This usually leaves development of standards to the city engineer or public works department, which tend to focus on accommodating automobile traffic.

Ultimately, development and street standards in conventional zoning often do not promote the type of development envisioned by a community’s comprehensive plan, and even when created with the best of intentions, they can undermine the very plans they are supposed to support.

Form-Based Codes

In the 1980s, a group of planners and architects sought to create an alternative to conventional zoning, focused less on use and more on scale, intensity of development, the shape of public spaces, and the interrelationships between buildings. During this period, the design firm Duany Plater-Zyberk & Company drafted what was effectively the first modern form-based code to guide the development of Seaside, Florida, a new community based on traditional neighborhood design principles. A radical departure from conventional zoning, the entire “Urban Code” for Seaside was graphically presented on one poster.



Urban Code (1986), Town of Seaside, Florida.
Credit: Duany Plater-Zyberk & Company.

But what are form-based codes? Form-based codes are a method of development regulation, adopted into municipal or county law, that emphasizes the physical character of development (its form) and includes—but often de-emphasizes—the regulation of land uses. As in a conventional zoning ordinance, land uses are regulated, but land use is typically regulated more broadly, with land use categories in lieu of long lists of specific permitted uses.

A form-based code focuses on how development relates to the context of the surrounding community, especially the relationships between buildings and the street, pedestrians and vehicles, and public and private spaces. The code addresses these concerns by regulating site design, circulation, and overall building form.

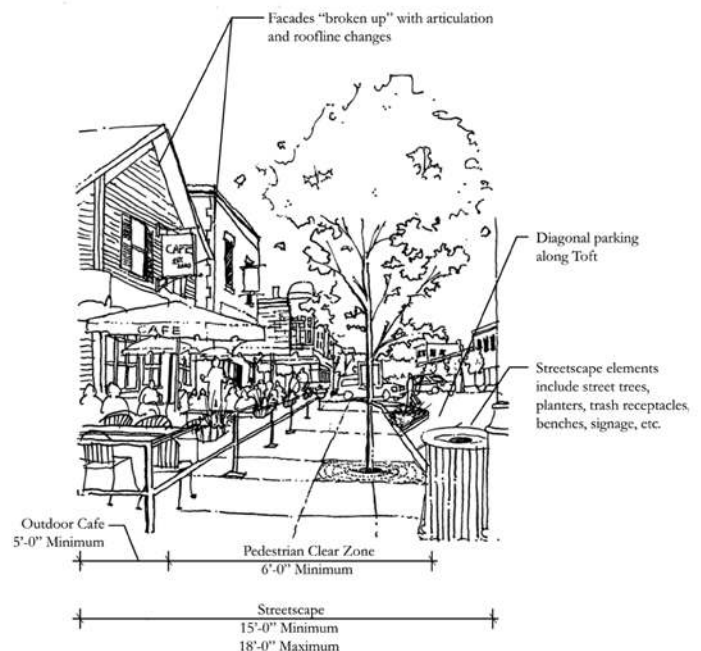
Due to this emphasis on design, form-based codes usually provide greater predictability about the visual aspects of development, including how well it fits in with the existing context of the community. They offer a community the means to create the physical development it wants and developers a clearer understanding of what the community seeks. Over time, these benefits can foster greater community acceptance of new development.

A form-based code can be customized to the vision of any community, including preserving and enhancing the existing character of one neighborhood or dramatically changing and improving the character of another. Typically, they do both.

But how do form-based codes differ from conventional zoning? In general, a form-based code:

- Encourages a mix of land uses, often reducing the need to travel extensively as part of one's daily routine.
- Promotes a mix of housing types.
- Is “proactive,” focusing on what the community wants and not what it dislikes.
- Results from a public design process, which creates consensus and a clear vision for a community, to be implemented by the form-based code.
- Tailors the requirements to fit specific places or neighborhoods by reflecting local architecture and overall character.
- Emphasizes site design and building form, which will last many years beyond specific numerical parameters such as density and use regulations that are likely to change over time.
- Addresses the design of the public realm and the importance that streetscape design and individual building character have in defining public spaces and a special “sense of place.”
- Provides information that is easier to use than conventional zoning codes because it is shorter, more concise, and emphasizes illustrations over text.

Figure 3.22: Toft Avenue redevelopment and streetscape improvements



Toft Avenue improvements, Downtown Form-Based Code (2010), Village of Antioch, Illinois.
Credit: The Lakota Group.

1 CONVENTIONAL DEVELOPMENT ILLUSTRATED



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3



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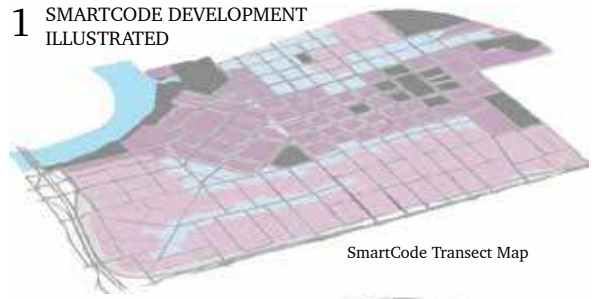
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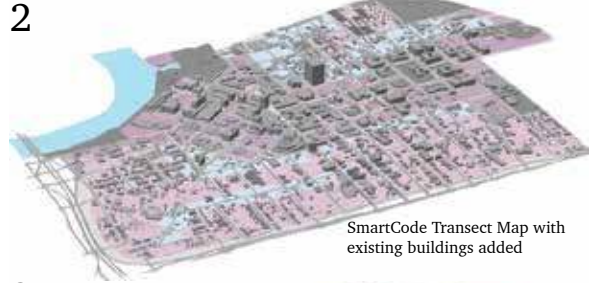
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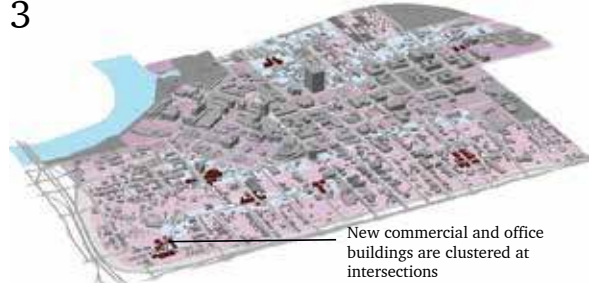
1 SMARTCODE DEVELOPMENT ILLUSTRATED



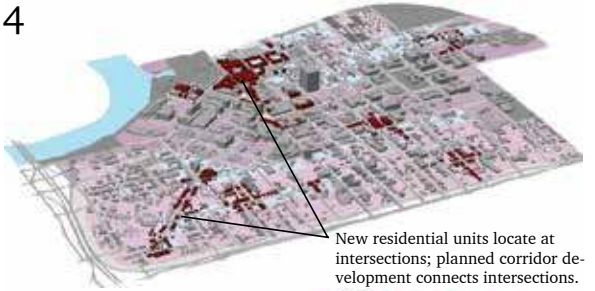
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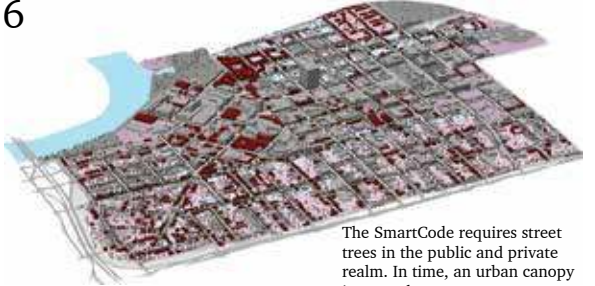
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5



6



Should Your Community Adopt a Form-Based Code?

Before embarking on the creation of a form-based code, a community needs to carefully consider whether a form-based code is the right tool to achieve community goals for the built environment.

Current regulations may be sufficient. A key indicator is whether the community has experienced a substantial amount of new development in recent years and if there is broad satisfaction with the built environment of a community (buildings, streets, public spaces, etc.). It is common for residents to express high satisfaction with their community's built environment when it has remained largely unchanged over several decades, often the result of strict preservation laws or low demand for new development.

A Means of Preservation and Transformation

If current regulations are not sufficient, form-based codes can preserve what residents love about the physical character of their community, ensuring that future development is in harmony with existing context or facilitating varying degrees of change. Either way, the main purpose of a form-based code is to proactively regulate the physical form and character of new development so that the community gets what it wants, rather than reacting to those elements of each development proposal on a piecemeal basis (or not at all).

It should be noted that while conventional architectural standards can be effective at preserving context, they are often applied subjectively. In addition, some architectural standards lack the necessary scope of regulation, leading to unforeseen consequences, such as new development that follows the letter of the law but only superficially fits in with existing context. For example, architectural standards may permit the construction of an outsized, modern building on a lot located between two historic cottages once the developer agrees to paste decorative shutters on the building's facade. Form-based codes are typically more comprehensive and directly address the aspects of building form that most impact the relationship between buildings and the public realm as a whole.

An Adaptable Approach

Form-based codes are not “one-size-fits-all,” but are tailored to the local context, objectives, and means of each community. These considerations include the community's existing physical character and goals for preservation or transformation, as well as its local political landscape and what financial and staff resources are available to support the effort.

Increasing Predictability, Lowering Risk, and Expanding Options for Developers

Nevertheless, it is common for municipalities to be wary of adopting new development regulations, especially in difficult economic times. Although the adoption of any new form-based code will require developers, not to mention municipalities, to learn a new system of development regulation, comprehensive form-based codes have the potential to encourage and facilitate development more effectively than conventional regulations. Form-based codes are often easier to follow than conventional codes and ultimately more comprehensive, providing municipalities and potential developers with a system that, once learned, is more transparent, predictable,

and thorough. As an added benefit, the need for review by a discretionary body such as a planning commission or design review board is often eliminated.

In addition, form-based codes typically—but not always—reduce regulation of what uses are allowed within buildings. This can expand the potential market for new development and result in structures that are more adaptable to different kinds of tenants, today and throughout the evolution of the community over many decades.



Photo simulation of proposed changes to Sheridan Road, Heart of Peoria Land Development Code (2007), Peoria, Illinois. Credit: Urban Advantage (www.urban-advantage.com).

Different Methods

There are many approaches to creating a form-based code. Nevertheless, most methods share many of the same steps and specific practices. The Form-Based Codes Institute (FBCI, www.formbasedcodes.org), led by Carol Wyant (who first coined the term “form-based codes”), is a non-profit professional organization dedicated to advancing the understanding and use of form-based codes. FBCI offers an introductory webinar on the “ABCs of Form-Based Codes” and advanced, two-day courses on creating, adopting, and administering form-based codes.

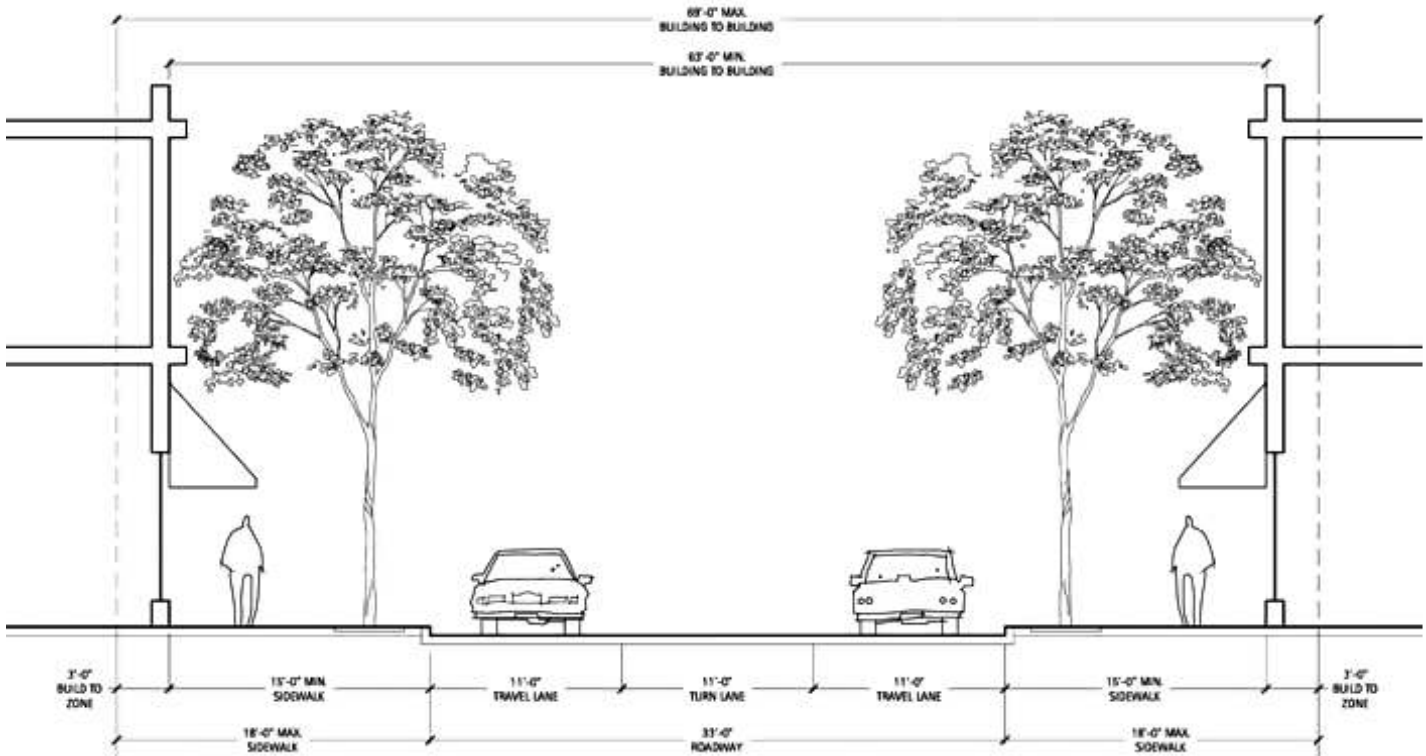
Architects Daniel and Karen Parolek of Opticos Design, Inc. are both on the FBCI Board of Directors and frequently serve as instructors for FBCI’s courses and webinars. Drawing upon years of experience developing award-winning form-based codes for communities across the nation, they wrote (with Paul Crawford) the influential textbook *Form-Based Codes: A Guide for Planners, Urban Designers, Municipalities, and Developers* (2008), which offers a highly-detailed, comprehensive process for creating a form-based code that impressively incorporates established best practices.

Their process may differ from that used by many consulting firms specializing in form-based codes, who often follow a highly customized process they’ve crafted over the years. But in order to provide municipalities in our region with an idea of what the creation of a form-based code could entail, a synopsis of the steps recommended by the authors follows. The steps include:

Step 1: Scoping defines the area of the community to be addressed through the form-based code and the extent to which form-based codes interact with existing regulations.

Step 2: Assessing Existing Conditions documents and analyzes the community’s existing urban form at different scales, providing a basis for the creation of the form-based code.

Step 3: Visioning and Creating Regulations defines the community’s vision for its future and determines the specific regulations and procedures of the form-based code.



Thoroughfare standards for Orchard Street in Transitional Core District, Downtown Form-Based Code (2010), Village of Antioch, Illinois. Credit: The Lakota Group.

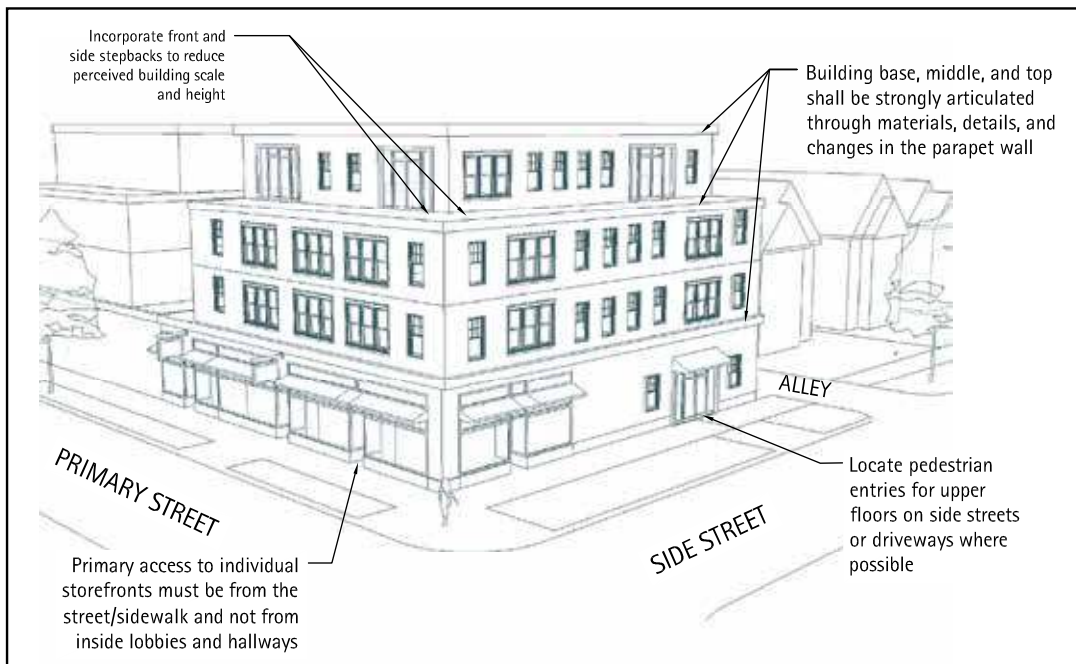
Glenview Downtown Development Code

Article 4: Design Standards

Building Types

4.6.1 Mixed Use

Figure 4.1: Mixed-use Building on Corner Lot



Example of mixed-use building on corner lot with articulated architecture.



Downtown Revitalization Plan (2006), Village of Glenview, Illinois. Credit: The Lakota Group.

Step One

Scoping

Once a municipality chooses to develop a form-based code, there are several questions the community will need to carefully consider at the beginning of the process, such as:

What staff should be involved?

How much help will we need from consultants?

Should the new form-based code cover the whole community, or just part of it?

How much change do we want?

The answers to these essential questions will determine the scope of the form-based code.

Who Should Be Involved?

Form-based codes address both the short- and long-term interests of several specialized areas. Therefore, it is vital to assemble a diverse team to lead the creation of the form-based code. Typically, this code team is composed of municipal staff with consultant assistance, frequently with the consultant team responsible for guiding the effort and completing the majority of tasks required by the planning process.



Photo simulation of proposed changes to Dexter Avenue, Downtown Montgomery Plan (2007), City of Montgomery, Alabama. Credit: Urban Advantage (www.urban-advantage.com).

Municipal Staff

Key municipal departmental staff are essential to the creation of the form-based code, participating—at a minimum—in an initial assessment of the existing zoning regulations, community visioning sessions and workshops, and code drafting and review. Departments that typically participate include planning, public works, parks and recreation, economic development, police, and fire.

Consultant Assistance

Consultants are typically engaged to augment the expertise of the municipal staff and often to lead the effort. These consultants are usually planners, architects, or urban designers. Depending on the focus and objectives of the form-based code effort, the consultant team could also draw on expertise from disciplines such as transportation planning, market analysis, historic preservation, legal support, and public participation. FBCI provides sample Request for Qualifications (RFQs) and RFPs at www.formbasedcodes.org.

Define Your Form-Based Codes Area

Form-based codes can be applied at a variety of scales.

Examples include:

- Sub-areas within a municipality:
 - Downtowns
 - Deteriorating strip commercial corridors
 - “Dead” big-box shopping centers
 - One or more undeveloped “greenfield” areas adjacent to a municipality that are intended to accommodate growth
 - Existing neighborhoods or other developed areas where infill development is intended to preserve or extend existing patterns of physical character
- Entire municipalities
- Counties or regions that include both urban areas and countryside
- Areas that have been targeted for economic revitalization, are undergoing changes in land ownership, or are the location of planned infrastructure improvements

Testing the Waters

Some municipalities may choose to first create a form-based code for a limited area before applying the techniques to more extensive areas or to the entire municipality. This may be due to uncertainty among elected officials and residents or a desire to create a pilot project that will provide an opportunity for municipal staff and elected officials to gain experience.

Planning Process

Form-based codes are typically created by integrating a planning process with the drafting of specific rules for development. Communities will need to take into consideration the timing of the most recent comprehensive plan update and whether the update included sufficient engagement with the community and urban design specifications in the plan, as well as the amount of funding available for the development of the form-based code.

Relationship with Existing Regulations

There are several different methods for introducing form-based codes into an established zoning ordinance. Their suitability often depends upon the degree of change that is desired by the community and a realistic assessment of political feasibility.

Comprehensive Replacement of Existing Code

The form-based code replaces the existing conventional zoning code for all or part of a community, and all development within the area must abide by the regulations of the form-based code. This approach generally offers the widest range of opportunities for transforming a targeted area of a community while maintaining established character in others. It also offers the advantage of consistency in regulatory vocabulary and procedures throughout the code.

Hybrid Zoning Code

A hybrid code is one that combines form-based zoning districts, and potentially other form-based standards, with a conventional zoning approach. Form-based standards can be merged with the existing conventional code or created in conjunction with new conventional zoning standards. A hybrid code can take the form of a chapter within the code, similar to a special district or overlay. The hybrid form-based code is cross-referenced to other sections of the pre-existing code for selected development standards, such as parking dimensions or landscaping standards. Areas that fall within the form-based code boundaries are rezoned to new zoning districts per the code. Within these areas, any and all development must abide by the new regulations for the form-based zones. This approach can be used for a sub-area in the phased replacement of an existing code, and can also be an effective way of responding to pressure for physical change in “sensitive” areas of the community.

Optional/Parallel Code

The form-based code is created as a standalone code but does not replace the existing conventional zoning code. Instead, in specific areas defined in the form-based code, the developer is given the choice to build under the existing conventional zoning or the new form-based code. The property does not have to be rezoned, but once the developer chooses a code, the entire development project must abide by it.

There are advantages to this approach, but the challenges of administering even a single zoning code are significant, and two codes may create confusion about the community’s commitment to the requirements and principles reflected in the form-based code. It may also result in developers attempting to pick and choose only those form-based code requirements that are most beneficial to their interests.

Organizing Principle

There are many different approaches to regulating the type, scale, form, and intensity of allowable development in a form-based code. Some common approaches are explained below, but it is important to note that any consulting firm that specializes in form-based codes is likely to have its own individualized approach.

Transect-Based Codes

Many form-based codes are organized using the concept of a rural-to-urban “transect,” in which zones are primarily classified by the physical intensity of the built form, the relationship between nature and the built environment, and the complexity of uses within the zone (please see diagram below explaining the concept). This allows for a gradual transition between different areas in a community. Applying the concept of the transect to a particular planning area often results in a modified version that responds to local conditions; indeed, this is how the transect-based SmartCode, a form-based code template, functions (an explanation of the SmartCode is provided on the following page).

Building Type-Based Codes

In this common approach, the form-based code is organized through different building types, each defined by specific development standards regulating the configurations, features, and functions of buildings. The building types and their accompanying development standards are applied to different blocks and districts within the planning area.

This approach is thought to work best in smaller planning areas, especially infill development, where the compatibility of new development with existing buildings is a high priority. In this scenario, the use of building types can reinforce the existing character of a community.



The Transect.
Credit: Topografis PC.

5.01.090 **Building Types**

5.01.090 Townhouse

General Note: the drawings and photos below are illustrative.



Five attached townhouses designed with a simple plane. Elevated covered stoops provide a secondary rhythm along the street.

A. Description

The Townhouse building type consists of structures that contain three or more dwelling units placed side by side. A small side or rear yard is provided for each unit as private open space. This building type provides a higher-density, fee-simple unit in a more urban form.



Four attached townhouses designed with a simple massing with a continuous porch. The dormers and slight plane shift in the end units help to break down the overall massing.



Three attached townhouses designed with a simple massing. Individual porches and gable ends on the end units provide the secondary rhythm.

5-16 **Livermore Development Code**

Building Types: Townhouse, Development Code (2010), City of Livermore, California.
Credit: Opticos Design, Inc.

1. Two-Lane Avenue

A wide median and plentiful street trees make the Two Lane Avenue a quiet address especially well suited to residential and office uses.

Notes:

1. Appurtenances may extend beyond the height limit.
2. Building fronts are required to provide shelter to the sidewalk by means of at least one of the following: arcade, colonnade, marquee, awning, or second-floor balcony.
3. The alignment of floor-to-floor heights of abutting buildings is encouraged to allow for shared use of elevators.

A. Building Placement:

Build-to-line location: 0–10 ft. from property line

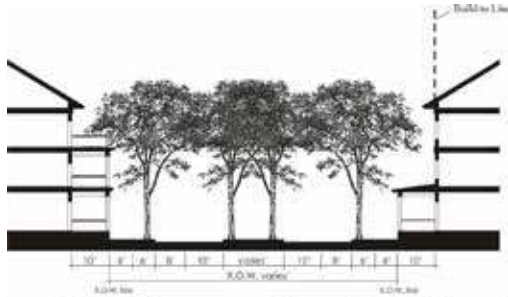
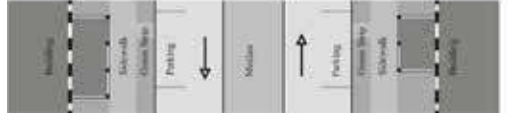
Space Between Buildings: 0 ft. if attached
6–10 ft. if detached

B. Building Volume:

Bldg. Width: 16 ft. minimum
160 ft. maximum

Bldg. Depth: 125 ft. maximum

Bldg. Height: 2 stories minimum
4 stories maximum
55 ft. maximum
The first floor shall be a minimum of twelve (12) feet in height

II-5
July 16, 2001

Street Types: Two-Lane Avenue, Central Hercules Plan (2001), City of Hercules, California. Credit: Dover, Kohl & Partners.

Street-Based Codes

Street-based codes are form-based codes that are organized by different street types, such as boulevards, arterials, and collectors. Each street type is defined by the level of traffic the roadway is designed to accommodate, design speeds, pedestrian crossing times, the width of vehicle lanes and sidewalks, the configuration of on-street parking, the presence of medians bicycle lanes, and other factors, including how buildings are required to address the street (in terms of height, frontage type, and build-to lines). Street-based codes are typically illustrated using section drawings.

Template Codes

A form-based code can be designed and developed locally from scratch or based on a predetermined “template” that has been used elsewhere and can be customized to serve local needs.

SmartCode

The most notable currently available code template is the SmartCode. It was originally created by the architectural firm of Duany Plater-Zyberk & Company and has since undergone continual refinement by the firm, other planning and design professionals, and communities that have used the code.

The SmartCode is a comprehensive, transect-based form-based code template (or “model ordinance”) that includes model language, standards, and requirements for multiple scales of development by public and private sectors, as well as administrative procedures for development review and approval. It is intended to be customized to the local context, priorities, and legal requirements of each community that uses it.

It has been used by several communities across the U.S., and in its largest implementation to date, it was used as the basis for the new development code for the City of Miami, Florida.

Considerations for Templates

If the form-based code will apply to an area composed of only one transect level, a transect-based approach such as the SmartCode may not be necessary. Also consider the extent to which local officials (particularly municipal attorneys) are confident that the template can be sufficiently calibrated to and customized to comply with applicable state law requirements, including consistency with the municipality's comprehensive plan.

Other templates

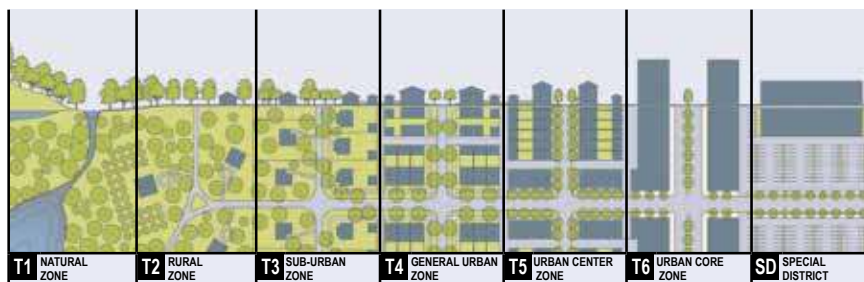
Consultant teams that have prepared more than a few form-based codes are likely to have developed at least one form-based code template. If the consultant team is based in the region, it is likely that their template will likely be customized to the local context and legal requirements of the municipality.

TABLE 14. SMARTCODE SUMMARY

SMARTCODE

Municipality

Note: All requirements in this Table are subject to calibration for local context.



	T1 NATURAL ZONE	T2 RURAL ZONE	T3 SUB-URBAN ZONE	T4 GENERAL URBAN ZONE	T5 URBAN CENTER ZONE	T6 URBAN CORE ZONE	SD SPECIAL DISTRICT
a. ALLOCATION OF ZONES per Pedestrian Shed (applicable to Article 3 only) (see Table 16)							
CLD requires	no minimum	50% min	10 - 30%	20 - 40%	not permitted	not permitted	
TND requires	no minimum	no minimum	10 - 30%	30 - 60 %	10 - 30%	not permitted	
RCD requires	no minimum	no minimum	not permitted	10 - 30%	10 - 30%	40 - 80%	
b. BASE RESIDENTIAL DENSITY (see Section 3.4)							
By Right	not applicable	1 unit / 20 ac. avg.	2 units / ac. gross	4 units / ac. gross	6 units / ac. gross	12 units / ac. gross	
By TDR	by Variance	by Variance	6 units / ac. gross	12 units / ac. gross	24 units / ac. gross	96 units / ac. gross	
Other Functions	by Variance	by Variance	10 - 20%	20 - 30%	30 - 50%	50 - 70%	
c. BLOCK SIZE							
Block Perimeter	no maximum	no maximum	3000 ft. max	2400 ft. max	2000 ft. max	2000 ft. max *	
d. THOROUGHFARES (see Table 3 and Table 4)							
							* 3000 ft. max with parking structures
HW	permitted	permitted	permitted	not permitted	not permitted	not permitted	
BV	not permitted	not permitted	permitted	permitted	permitted	permitted	
AV	not permitted	not permitted	permitted	permitted	permitted	permitted	
CS	not permitted	not permitted	not permitted	not permitted	permitted	permitted	
DR	not permitted	not permitted	permitted	permitted	permitted	permitted	
ST	not permitted	not permitted	permitted	permitted	permitted	not permitted	
RD	permitted	permitted	permitted	not permitted	not permitted	not permitted	
Rear Lane	permitted	permitted	permitted	permitted	not permitted	not permitted	
Rear Alley	not permitted	not permitted	permitted	required	required	required	
Path	permitted	permitted	permitted	permitted	not permitted	not permitted	
Passage	not permitted	not permitted	permitted	permitted	permitted	permitted	
Bicycle Trail	permitted	permitted	permitted	not permitted *	not permitted	not permitted	
Bicycle Lane	permitted	permitted	permitted	permitted	not permitted	not permitted	
Bicycle Route	permitted	permitted	permitted	permitted	permitted	permitted	
e. CIVIC SPACES (see Table 13)							
Park	permitted	permitted	permitted	by Warrant	by Warrant	by Warrant	
Green	not permitted	not permitted	permitted	permitted	permitted	not permitted	
Square	not permitted	not permitted	not permitted	permitted	permitted	permitted	
Plaza	not permitted	not permitted	not permitted	not permitted	permitted	permitted	
Playground	permitted	permitted	permitted	permitted	permitted	permitted	
f. LOT OCCUPATION							
Lot Width	not applicable	by Warrant	72 ft. min 120 ft. max	18 ft. min 96 ft. max	18 ft. min 180 ft. max	18 ft. min 700 ft. max	
Lot Coverage	not applicable	by Warrant	60% max	70% max	80% max	90% max	
g. SETBACKS - PRINCIPAL BUILDING (see Table 15)							
(g.1) Front Setback (Principal)	not applicable	48 ft. min	24 ft. min	6 ft. min 18 ft. max	2 ft. min 12 ft. max	2 ft. min 12 ft. max	
(g.2) Front Setback (Secondary)	not applicable	48 ft. min	12 ft. min	6 ft. min 18 ft. max	2 ft. min 12 ft. max	2 ft. min 12 ft. max	
(g.3) Side Setback	not applicable	96 ft. min	12 ft. min	0 ft. min	0 ft. min 24 ft. max	0 ft. min 24 ft. max	
(g.4) Rear Setback	not applicable	96 ft. min	12 ft. min	3 ft. min *	3 ft. min *	0 ft. min	
Frontage Buildout	not applicable	not applicable	40% min	60% min	80% min	80% min	
h. SETBACKS - OUTBUILDING (see Table 15)							
(h.1) Front Setback	not applicable	20 ft. min +bldg setback	20 ft. min +bldg setback	20 ft. min +bldg setback	40 ft. max from rear prop	not applicable	
(h.2) Side Setback	not applicable	3 ft. or 6 ft.	3 ft. or 6 ft.	0 ft. min or 3 ft.	0 ft. min	not applicable	
(h.3) Rear Setback	not applicable	3 ft. min	3 ft. min	3 ft.	3 ft. max	not applicable	
i. BUILDING DISPOSITION (see Table 9)							
Edgeyard	permitted	permitted	permitted	permitted	not permitted	not permitted	
Sideyard	not permitted	not permitted	not permitted	permitted	permitted	not permitted	
Rearyard	not permitted	not permitted	not permitted	permitted	permitted	permitted	
Courtyard	not permitted	not permitted	not permitted	not permitted	permitted	permitted	
j. PRIVATE FRONTAGES (see Table 7)							
Common Yard	not applicable	permitted	permitted	not permitted	not permitted	not permitted	
Porch & Fence	not applicable	not permitted	permitted	permitted	not permitted	not permitted	
Terrace or Dooryard	not applicable	not permitted	not permitted	permitted	permitted	not permitted	
Forecourt	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Stoop	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Shopfront & Awning	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Gallery	not applicable	not permitted	not permitted	permitted	permitted	permitted	
Arcade	not applicable	not permitted	not permitted	not permitted	permitted	permitted	
k. BUILDING CONFIGURATION (see Table 8)							
Principal Building	not applicable	2 Stories max	2 Stories max	3 Stories max, 2 min	5 Stories max, 2 min	8 Stories max, 2 min	
Outbuilding	not applicable	2 Stories max	2 Stories max	2 Stories max	2 Stories max	not applicable	
l. BUILDING FUNCTION (see Table 10 & Table 12)							
Residential	not applicable	restricted use	restricted use	limited use	open use	open use	
Lodging	not applicable	restricted use	restricted use	limited use	open use	open use	
Office	not applicable	restricted use	restricted use	limited use	open use	open use	
Retail	not applicable	restricted use	restricted use	limited use	open use	open use	

ARTICLE 5

ARTICLE 2, 3, 4

DISPOSITION

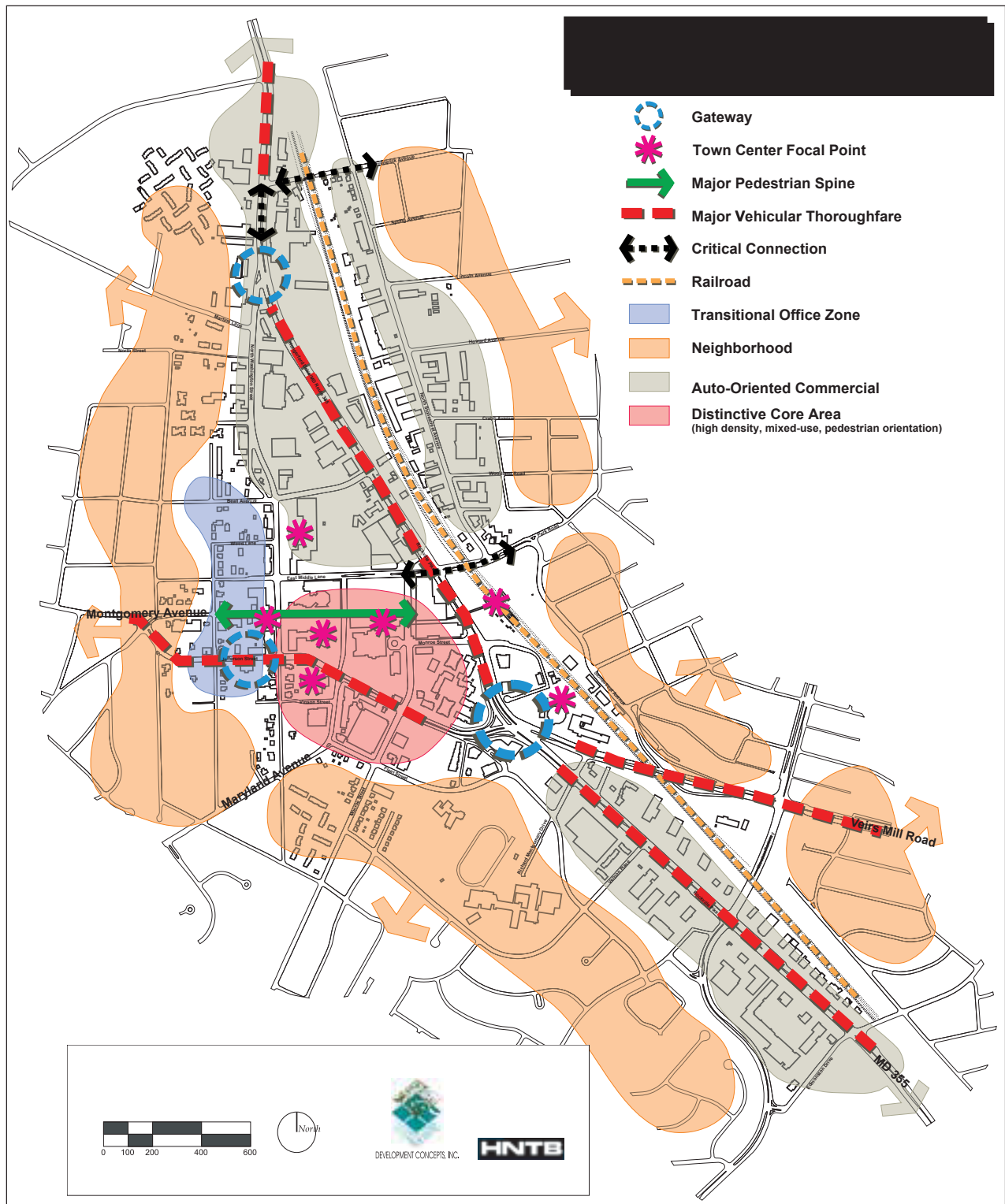
CONFIGURATION

FUNCTION

SC42

SMARTCODE VERSION 9.2

Summary of sample SmartCode requirements (intended to be calibrated to the context and needs of each community). Credit: Duany Plater-Zyberk & Company.



Existing Framework, Town Center Master Plan (2001), City of Rockville, Maryland. Credit: Development Concepts, Inc./HNTB.

Step Two

Assessing Existing Conditions

A form-based code guides development to build upon and strengthen the unique characteristics of a community, helping to preserve desired character. Before a form-based code is created, the code team identifies these unique characteristics by documenting and analyzing the community's existing urban form at different scales, from the broad characteristics of a community's neighborhoods to the specific architectural details of windows on typical houses within each neighborhood. The information gathered during this phase is organized and analyzed to provide a basis for the creation of the form-based code.

It should be noted that the following approach to documenting and analyzing existing conditions is not standardized, so a variety of approaches are possible. Many form-based code consultants choose a different process, such as documenting large and small scale elements simultaneously, rather than in two phases.

Community Sub-Areas



Site visit, Downtown Montgomery Plan (2007), City of Montgomery, Alabama. Credit: Dover, Kohl & Partners.

Documenting the existing conditions of a community's sub-areas helps the code team understand the composition of the community at a larger scale. Some common sub-areas that can be identified include:

Neighborhoods, which usually are areas that contain blocks or buildings that are unified in character or style. A neighborhood is often walkable and may have a clearly defined center or edge.

Districts, which are areas typically defined by a particular use or activity, such as light industrial districts.

Corridors, which can be man-made elements relating to movement, such as roads or railways, or natural elements such as rivers. Whether man-made or natural, these corridors often define boundaries within and between neighborhoods. However, roads that function as commercial corridors often serve as the center of many communities.

Preparation

Reviewing Background Documents

With the help of municipal staff, the code team should gather existing background documents, such as maps and past plans, for the area. These documents provide immediate context for the code team's analysis and will help them develop a form-based code that accommodates and works with existing regulations that will remain in effect after the form-based code is implemented. In addition, it is important for the code team to review any regulations that are being replaced in order to help understand the existing place and to learn from those regulations' successes and failures. Similarly, studying past plans can help the team to incorporate any previous visioning work that was completed by the community prior to the form-based code process.

Mapping Existing Conditions

To understand existing conditions and select areas to focus on during the site visit, the code team may create an existing conditions map with information such as public right-of-way lines, lot lines, building footprints, curbs and sidewalk locations, existing land uses, parking location, and natural features (such as rivers) that will impact development.

Analyzing Existing Conditions Maps

Existing conditions maps can be marked in response to any of the following questions:

- *Where are the centers or focal points?*
- *Which streets and roadways are regional connectors? Which are local connectors?*
- *Where are the green or pedestrian corridors?*
- *Which areas are currently slated for major changes in scale and/or use?*
- *Which places define the community's identity? Are historic developmental patterns intact in any of these places?*
- *Where do building and street patterns change and what might be the reason?*
- *Which neighborhoods would benefit from the preservation of their existing character?*
- *Are there any districts that are expressly zoned for a particular use or activity, such as light industry?*
- *Are there clear edges and transitions between neighborhoods?*
- *Which transect levels exist within the community?*

The code team will review these maps, looking for patterns and marking up the maps with the existing neighborhood, district, and corridor framework of the community. In addition, the team will usually mark the map in response to questions about the physical form of the community (please see inset above). If the team anticipates a transect-based form-based code (see page 17), it might begin to make an initial list of transect levels that are likely to be included in the form-based code.

Site Visit

Members of the code team will often visit the study area to determine the centers and boundaries of any neighborhoods, districts, and corridors, then mark them on a map (such as an existing conditions map created before the site visit).

Neighborhoods

For neighborhoods, the code team will often try to locate its center (which is a crossroad, commercial center, school, government building, or park) as well as its outer boundary (typically a street, rail line, or creek). The team is likely to take photographs intended to illustrate the physical character of each neighborhood; these photographs may be used later on to help the team determine which transect level is applicable to the neighborhood. The code team is likely to make an initial assessment of how much each neighborhood should change (such as "preserve," "preserve and enhance," "evolve," and "transform"). If relevant to the project, the team may note potential locations for new neighborhoods and neighborhood centers.

Districts

The code team usually will also mark any identified districts (on the existing conditions map, or equivalent), and take photographs of the area. If there are any districts, the team should assess the relationship of each district to the community, determining whether it is a healthy component of the community (such as an educational campus), an incompatible-use district (such as a heavy industrial area), or an area unnecessarily zoned as a district (such as single-use districts that could be appropriately placed within a mixed-use district). In addition, the team should consider whether each necessary district will need to expand in the future.

Corridors

The code team may also mark the location of any corridors, such as important roads, trails, or streams, and consider how the corridor is functioning as an element of the built environment and whether there is a balance between auto and pedestrian traffic.

Special Conditions

The team will usually note any other unique larger elements of the area, such as topography.

Organizing the Data

According to a methodology that is most helpful to them, the code team may create a series of spreadsheets, diagrams, or maps to organize the information from the site visit. Some teams may find it helpful to compile the data from all maps and diagrams onto a single summary diagram (some firms refer to this as an “existing framework diagram”).

If developing a transect-based form-based code, the team will likely review the summary diagram for the various transect levels noted for each neighborhood during the first round of site visits. Any photographs taken during the site visit will usually be organized by transect level. The code team may then create an “existing transect diagram,” which includes all neighborhoods and indicates which transect levels are found in each, usually illustrated by photographs from the site visits.

Smaller Scale Details

Documenting the existing conditions of smaller scale details provides dimensional measurements for the first draft of the form-based code, which will then be modified during the visioning and coding phases. Some of the basic elements to be documented by the code team are buildings (form, placement, frontages, types, and use), thoroughfares, lots and blocks, civic spaces (parks and plazas), and additional elements (such as architecture or landscaping) as desired by the community.

Preparation

Choosing Sampling Areas

To document the community at a smaller scale, the code team will usually select several “sampling areas.” If developing a transect-based form-based code, the team will generally review the range of transect levels previously documented, and then select four or five sampling areas (often a block-long street) for each that seem to represent typical conditions that are desired by the community.

However, if the code team has chosen an approach other than a transect-based code, the sampling method will be slightly different. For example, if the form-based code is to be organized by building types, the code team will usually identify existing buildings in the community that exemplify the physical characteristics of each building type, and then select which ones should be documented (or “sampled”). It is also important to document the area(s) where new building types are to be applied in order to understand the impacts of applying new development standards to those areas.

Site Visit

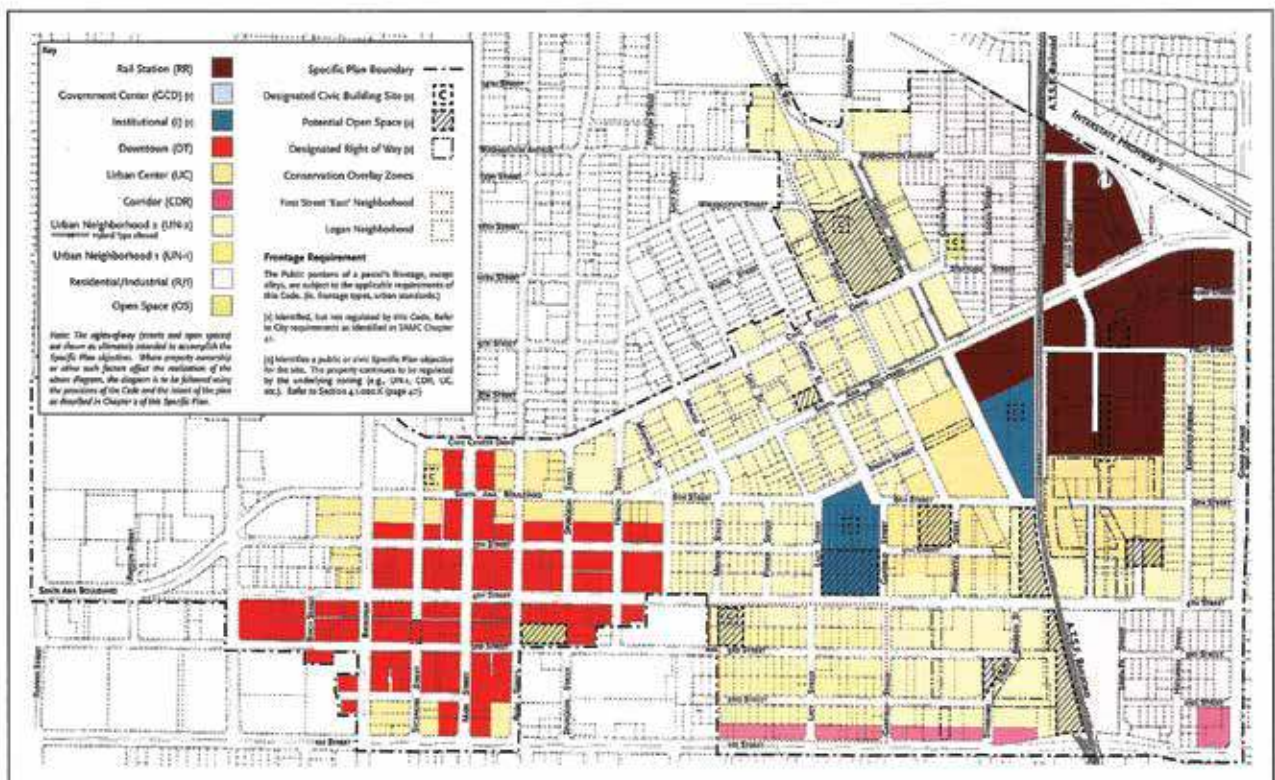
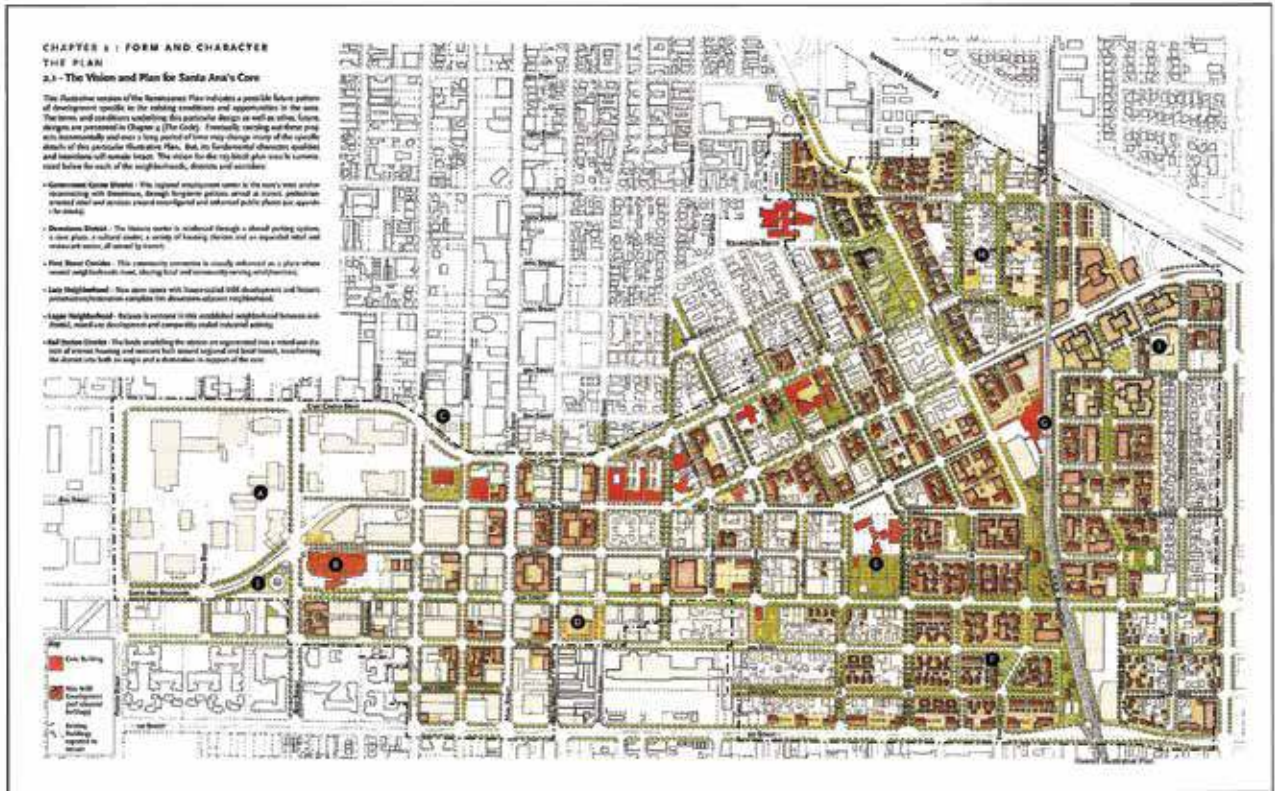
To document buildings for a transect-based form-based code, the code team will usually visit the areas they have chosen to sample, filling in details about the physical characteristics of each building and lot. Typically, this will include gathering measurements and other information about the form and dimensions of the building, its placement on the lot, the front of the building and its physical relationship to the street, number of parking spaces, and its associated land uses. The team may also take a variety of photos of the block, including building elevations and architectural features, views along the sidewalk, side street conditions, any alleys, and other views showing the relationship between buildings, landscaping, and the public realm.

Organizing the Data

Once the documentation of smaller scale details in the community is complete, the code team will generally begin determining which values among those collected from the sampling areas are most representative of typical conditions. For example, in transect-based form-based codes, the values that best exemplify typical conditions of each sampling area are then used to determine the most representative values for each transect. As mentioned previously, these values will become the base measurements used in developing the actual regulations of the form-based code.

“Ground-Truthing” the Findings

This would be a good time for the code team to hold a meeting with community stakeholders, presenting what the team found and documented during the first round of site visits. Any maps, diagrams, or photo galleries created by the team would be shared with stakeholders, who should be asked whether any important areas were missed or documented incorrectly. Stakeholders should also be asked which areas are successful, which need improvement, and which are good models to replicate elsewhere.



Illustrative plan (top) and regulating plan (bottom), Transit Zoning Code (2010), City of Santa Ana, California.
Credit: Moule & Polyzoides, Architects and Urbanists.

Step Three

Visioning and Creating Regulations

A form-based code is intended to ensure a predictable outcome for the built environment. This requires the desired outcome—the “vision”—to be defined, in detail, by the community. Ideally, a community has already defined its desired outcome in part or in whole—for example, through the recent update of its comprehensive plan. If not, the code team works together with the community to create a detailed vision for its future.

Once this community vision is in place, the code team proceeds to create the specific regulations and procedures of the form-based code.



Public workshop, Village of Campton Hills, Illinois. Credit: Teska Associates, Inc.

Engaging the Community

The specific methods to reach a common community vision will vary, but the essential ingredient is active participation and discussion using a variety of methods, such as community workshops, design charrettes, and focus interviews with key stakeholders.

With the community actively engaged, a vision for the defined area is created. At this point in the process, some consulting firms will create a detailed drawing, sometimes called an “illustrative plan,” that shows the envisioned layout of the community. It includes the locations of neighborhoods, districts, and corridors, as well as thoroughfares, civic spaces, buildings, and transit lines. While this drawing is not a necessary step, it may be helpful to communicate significant proposed changes in a community.

Kickoff Meeting

Often at this point in the process, the code team will hold a kickoff meeting with the community (although this may occur earlier in the process).

The meeting should provide residents with a brief, lucid explanation of form-based codes, the overall process, and their role in the creation of the form-based code. If the kickoff meeting occurs at this point in the process, it’s likely that the team would present its findings from the documentation of existing conditions to the community. Maps, diagrams, or photo galleries that are easy for a

layperson to understand should be exhibited to help explain the team’s findings, as well as give the community something visual to respond to. Photo galleries that document the different areas and aspects of the community can be especially effective in helping residents understand new concepts relevant to the development of the form-based code, such as different transect levels or building types (and can help to give the code team credibility in understanding the community).

In response to the presentation, meeting participants typically will be asked which aspects of the community should remain, what should change, what should be a model for future development, and what they want overall. Four suggested categories for change are:

“Preserve”

The community wants to retain the existing physical character of one or more areas with distinct identities (i.e. neighborhoods, transit station areas, or downtowns) and to ensure that infill and redevelopment “fits in” with the existing context.

“Preserve and enhance”

The community wants to retain the existing physical character in one or more areas, but is interested in careful, targeted enhancements to them. This could include changes in the form of future private development or within the public realm (such as streets).

“Evolve”

The community wants to see desired physical change within the planning area over time, but is willing to allow change to occur more gradually, often according to the preferences of individual property owners within the planning area.

“Transform”

The community wants to see desired physical change occur within the shortest possible time. This often entails the combination of form-based codes that are more ambitious and rigorously enforced with other strategies, such as development incentives, housing density bonuses, accelerated processing of development applications, and street and streetscape improvements undertaken by the municipality.

The Importance of the Kick-Off Meeting

The kickoff meeting sets the tone for the creation of the community vision that will guide the form-based code. It's a collaborative effort that requires the input of a variety of stakeholders in the community (including the general public), along with key professionals necessary to complement the knowledge base and skill set within the community. A form-based code is a legal document that inherently affects and will need to be approved by the community, and an effective kickoff meeting is vital to its success.

After the Meeting

Following this meeting, the code team will usually take this feedback and information from the community, along with the products of their existing conditions analysis, and reevaluate larger elements (such as neighborhoods, districts, and corridors). If preparing a transect-based form-based code, the team will probably assign an intended transect level for each neighborhood, both existing and new, from the list of transect levels. In addition, the code team may designate the degree of change desired for existing neighborhoods (such as “preserve,” “preserve and enhance,” “evolve,” and “transform”), based upon input gathered at the community meeting.

If applicable, the code team will also reexamine other elements they have documented and analyzed (such as existing thoroughfares, blocks, civic spaces, and buildings), based on public input.

Explaining and Illustrating the Zoning Districts

The regulations of most form-based codes are assigned by zoning district based upon classifications such as transect level, building type, or street type. At this stage, the code team will usually begin to define and illustrate the main characteristics of each district.

The team will also begin to determine which details and elements belong in each district, such as what types of uses, buildings, frontages, thoroughfares, or civic spaces are allowed. A summary of this information is often paired with a written vision description and illustration of the district on a single page or two, which may be presented to the public as a poster for feedback and eventually serve as the main explanation of the district in the final form-based code document.

BOARDWALK FRONTAGE ■

The Boardwalk is one of the most memorable places in Virginia Beach. Cyclists, beachgoers, visitors, and residents intermix with cafes and clubs that address out onto the ground floors of the hotels that rise above. Hotels have a maximum base height of 75 feet with towers as high as 200 feet. The Boardwalk is made accessible by regular intersections with Beach Streets.

**SHOPPING FRONTAGES ■ ■**

Premier retail addresses within the Oceanfront Resort Area. Shopfronts, outdoor cafe seating, and other commercial uses front wide sidewalks and slower-moving traffic. Residential, office and hotel uses are typically located above the shops and restaurant uses. Streets include 17th, 19th, 31st, and Atlantic Avenue.

**GATEWAY FRONTAGES ■ ■ ■**

Primary routes to, through, and from the Oceanfront Resort Area. While these routes typically carry a higher volume of traffic, they still offer ample accommodations for the pedestrian. Parking and service is also accessed primarily from Gateway streets. Pacific Avenue is an example of a Gateway street.

**BEACH FRONTAGES ■**

Ways in which residents and visitors access the Boardwalk. Beach streets have clear visual and physical access to the Boardwalk and are lined with a mix of residential front doors and lobbies alongside outdoor dining and small retail establishments.



Frontage types, Oceanfront Resort District Form-Based Code (2012), City of Virginia Beach, Virginia. Credit: Urban Design Associates.

44.6-26. GAP Form-Based Code

D. Building Type Standards

Street design should result in the interaction of building types in order to create a street wall. Maintaining facade transparency adds visual interest as well as a sense of "eyes on the street." Adding to the sense of safety is the presence of welcoming entrances (either porches or stoops). Wherever possible, alleys should be implemented to access garages or parking lots.

Apartment Building. This building type blends in with the block by having a front entrance and a considerable amount of transparency on the front facade, similar to the other residential building types. The corner parcel allows for additional building entrances on the corner side facade.

House. This building type may be utilized either on mid-block or corner lots. Its height falls between 1 and 2.5 stories.

Manor MultiFamily. Similar in appearance to a house or estate building type, the manor multifamily building type consists of two or more units.

Manor MultiFamily on Interior Lots. The use of this building type on a parcel not located on a corner requires a wider lot in order to allow room for additional entrances on the side or rear facades and adequate parking to the rear.

Manor MultiFamily on Corner Lots. When this building type is located on a corner parcel, it is preferable to use the corner side facade for additional building entrances. On any corner building, elements such as turrets (shown above) should be utilized to catch the attention of passers-by and draw them down the block.

Figure D-2: Typical Block. This illustration details how the building types can be utilized on both mid-block and corner lots.

City of Bloomington; GAP Neighborhood Zoning Ordinance April 2007

9

Building Type Standards, Gridley, Allin, & Prickett Neighborhood Form-Based Code (2007), City of Bloomington, Illinois. Credit: Farr Associates.

The code team will also usually begin to create lists of other elements that will be regulated (such as the types of thoroughfares, civic spaces, building types, and frontages). The team will typically create a summary of each that includes descriptive text, illustrations, and diagrams as needed. For example, if thoroughfares will be regulated by the form-based code, the team will prepare a summary of each type of thoroughfare that is needed, usually including a section drawing of the intended thoroughfare design that indicates the basic standard dimensions that will be required.

Finally, the code team may assess whether there are any other optional elements the community wants to regulate, such as architectural style. If so, the team would usually determine the types (or styles) to be included in the vision and the code for these elements, and then create appropriate descriptive text and imagery for each.

Use Types

In conventional zoning, zoning districts are primarily defined by land use. Form-based codes emphasize the physical character of development (its form) and include the regulation of land uses.

Similar to conventional zoning, permitted and conditional or special uses are listed by district in most form-based codes. However, land uses may be regulated more broadly, with land use categories in lieu of long lists of specific permitted uses. Of course, form-based codes can also specify sub-types that are not allowed in certain locations or would be subject to discretionary review, such as businesses involving the sale of alcohol. Last, it is common for form-based codes to include requirements for the location of various uses within individual buildings (such as permitting office or residential uses on upper stories only).

Building Types

Some common building types used in form-based codes include “detached single-unit house,” “townhouse,” “duplex,” “courtyard apartment,” and “mixed-use building.” Building types typically include bulk regulations (such as minimum lot width, maximum building height, building setbacks, etc.) that are usually defined by zoning district in a conventional zoning code, as well as some design and architectural parameters (such as roof type, location of parking, minimum transparency requirements, building materials, etc.).

Regulating which building types are allowed is not required in a form-based code, but it can help a community ensure a diverse stock of buildings, which is key to the creation (or preservation) of vibrant urban places. It is one of the means by which a community can avoid the damaging effects of some conventional zoning regulations, such as floor area ratio, which can encourage developers to focus on achieving maximum volume allowed for a lot. In addition, requiring a diverse mix of building types might be necessary to mitigate decades of standards that promote single-use development and discourage alternative building types.

Specific to Building Types

1703-3.30

Table 1703-3.30.A: Building Types General

Building Type	Transect Zones										
Carriage House. This Building Type is an accessory structure typically located at the rear of a lot. It typically provides either a small residential unit, home office space, or other small commercial or service use that may be above a garage or at ground level. This Type is important for providing affordable housing opportunities and incubating small businesses within walkable neighborhoods.	<table><tr><td>T3E</td><td>T3N</td></tr><tr><td>T4N.1</td><td>T4N.2</td></tr><tr><td>TSMS</td><td>TSN.1</td></tr><tr><td>TSN.2</td><td>TSF</td></tr><tr><td>T6C</td><td></td></tr></table>	T3E	T3N	T4N.1	T4N.2	TSMS	TSN.1	TSN.2	TSF	T6C	
T3E	T3N										
T4N.1	T4N.2										
TSMS	TSN.1										
TSN.2	TSF										
T6C											
Detached House: Medium. This Building Type is a medium-sized detached structure on a medium-sized lot that incorporates one unit. It is typically located within a primarily single-family residential neighborhood in a walkable urban setting, potentially near a neighborhood main street.	<table><tr><td>T3E</td><td>T3N</td></tr><tr><td>T4N.1</td><td>T4N.2</td></tr><tr><td>TSMS</td><td>TSN.1</td></tr><tr><td>TSN.2</td><td>TSF</td></tr><tr><td>T6C</td><td></td></tr></table>	T3E	T3N	T4N.1	T4N.2	TSMS	TSN.1	TSN.2	TSF	T6C	
T3E	T3N										
T4N.1	T4N.2										
TSMS	TSN.1										
TSN.2	TSF										
T6C											
Detached House: Compact. This Building Type is a small detached structure on a small lot that incorporates one unit. It is typically located within a primarily single-family residential neighborhood in a walkable urban setting, potentially near a neighborhood main street. This Type enables appropriately-scaled, well-designed higher densities and is important for providing a broad choice of housing types and promoting walkability.	<table><tr><td>T3E</td><td>T3N</td></tr><tr><td>T4N.1</td><td>T4N.2</td></tr><tr><td>TSMS</td><td>TSN.1</td></tr><tr><td>TSN.2</td><td>TSF</td></tr><tr><td>T6C</td><td></td></tr></table>	T3E	T3N	T4N.1	T4N.2	TSMS	TSN.1	TSN.2	TSF	T6C	
T3E	T3N										
T4N.1	T4N.2										
TSMS	TSN.1										
TSN.2	TSF										
T6C											
Cottage Court. This Building Type consists of a series of small, detached structures, providing multiple units arranged to define a shared court that is typically perpendicular to the street. The shared court takes the place of a private rear yard and becomes an important community-enhancing element of this Type. This Type is appropriately-scaled to fit within primarily single-family or medium-density neighborhoods. It enables appropriately-scaled, well-designed higher densities and is important for providing a broad choice of housing types and promoting walkability.	<table><tr><td>T3E</td><td>T3N</td></tr><tr><td>T4N.1</td><td>T4N.2</td></tr><tr><td>TSMS</td><td>TSN.1</td></tr><tr><td>TSN.2</td><td>TSF</td></tr><tr><td>T6C</td><td></td></tr></table>	T3E	T3N	T4N.1	T4N.2	TSMS	TSN.1	TSN.2	TSF	T6C	
T3E	T3N										
T4N.1	T4N.2										
TSMS	TSN.1										
TSN.2	TSF										
T6C											
Duplex. This Building Type is a small- to medium-sized structure that consists of two side-by-side or stacked dwelling units, both facing the street and within a single building massing. This Type has the appearance of a medium to large single-family home and is appropriately scaled to fit within primarily single-family neighborhoods or medium-density neighborhoods. It enables appropriately-scaled, well-designed higher densities and is important for providing a broad choice of housing types and promoting walkability.	<table><tr><td>T3E</td><td>T3N</td></tr><tr><td>T4N.1</td><td>T4N.2</td></tr><tr><td>TSMS</td><td>TSN.1</td></tr><tr><td>TSN.2</td><td>TSF</td></tr><tr><td>T6C</td><td></td></tr></table>	T3E	T3N	T4N.1	T4N.2	TSMS	TSN.1	TSN.2	TSF	T6C	
T3E	T3N										
T4N.1	T4N.2										
TSMS	TSN.1										
TSN.2	TSF										
T6C											

Key Allowed Not Allowed

City of Cincinnati Form-Based Code Public Review Draft: 9/21/12 1703-3-3

Building Types, Cincinnati Form-Based Code (Public Review Draft, 2012), City of Cincinnati, Ohio. Credit: Opticos Design, Inc.

5.0 Permitted Land Uses

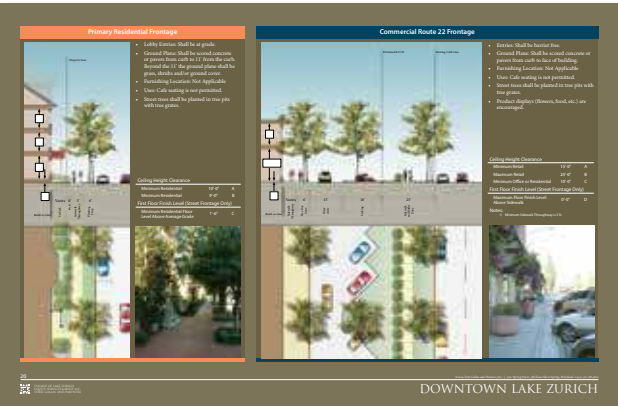
5.2 Permitted Use Table

5.2.2 Permitted Use Table

		KEY: Blank cell = Not Permitted ■ = Permitted □ = Subject to Special Use Review														Use Standard	
USE CATEGORY	SPECIFIC USE	R1	R2	R3	R4	R6	R7	R8	CN	CG	B1	N1	P1	I1	I2	I3	
RESIDENTIAL																	
Household Living (see 5.6.2.A)	Single-Family	■	■	■	■	■	■										
	Two o-Family (Duplex)	■	■	■	■	■	■										5.3.1A
	Tow nhouse					■	■		■	■							
	Apartment					■	■		■	■							
	Upper Story Residential								■	■	■	■					
Group Living (see 5.6.2.B)	Live-Work									■	■	■	■				5.3.1B
	Boarding House, Rooming House						□	□	□	□	■						
	Children's Home						□	□	□								
	Congregate Housing	□	□	□	□	□	□	□	□	□	□						
	Elderly Housing, Assisted Living Facility	□	□	□	□	□	□	□	□	□	□						
	Fraternity, Sorority, Student Dormitory											□					
	Family Care Facility	■	■	■	■	■	■	■	■								5.3.1C
	Group Care Facility	□	□	□	□	□	■	■									5.3.1C
	Monastery, Convent	□	□	□	□	□	□	□	□	□	□						
	Nursing Home, Full-time Convalescent, Hospice, Life Care Center						□	□	□	□	□						
CIVIC																	
Community Service (see 5.6.3.A)	Museum, Library	□	□	□	□	□	□	□	■	■	■	■					
	Neighborhood Arts Center or Similar Community Facility (public)	□	□	□	□	□	□	□	■	■	■	■					
	Philanthropic Institution										■	■					
	Police, Fire, EMS Substation	□	□	□	□	□	□	□	■	■	■	■			■	■	■
Day Care (see 5.6.3.B)	All day care, except as listed below:	□	□	□	□	□	□	□	■	■	■	■					
	Child Care Home (up to 8 children)	■	■	■	■	■	■	■									5.3.2A
	Day Care Center (8+ children)	□	□	□	□	□	□	□	■	■	■	■					5.3.2B
	Drop-in Child Care Center								■	■	■						
Educational Facility (see 5.6.3.C)	All educational facilities, except as listed below:	□	□	□	□	□	□	□	□	□	□						
	Academy (special training)								■	■	■	■					
	College, Community College, University											■					
	Job Training, Vocational Rehabilitation Service										■	■	■		■		
	School, Vocational, Business										■	■	■		■		
	School, Trade, no heavy equipment or truck operators										■	■	■		■		
Medical Facility (see 5.6.3.D)	All medical facilities, except as listed below:								□	■	■	■					
	Hospital, Medical Center											■					
	Medical or Dental Laboratory									■	■	■	■		■		
	Medical or Dental Clinic, Rehabilitative Clinic									■	■	■	■				
	Medical, Dental Office or Chiropractor									■	■	■	■				
Parks and Open Area (see 5.6.3.E)	All parks and open areas, except as listed below:	■	■	■	■	■	■	■	■	■	■	■			■	■	■
	Cemetery, Mausoleum, Columbarium, Memorial Park	□	□	□	□	□	□	□	□	□	□						
	Game Preserve, Wildlife Management Area, Refuge, Animal																
Passenger Terminal (see 5.6.3.F)	Airport, Heliport																
	Bus, Train Passenger Terminal											□				■	■
	Taxicab Dispatch Station, Limousine Service, Charter Service											□	□			■	■
Place of Worship (see 5.6.3.G)	All places of worship	□	□	□	□	□	□	□	■	■	■	■					
	Alcohol Abuse Treatment, Drug Rehabilitation						□	□		□	■						
Social Service Institution (see 5.6.3.H)	Halfway House							□	□	□	□	□					5.3.1C
	Psychiatric Institution, Sanatorium											■	■				
	Single Room Occupancy							□	□	□	□						
	Social Service Facility, Soup kitchen, Transient Lodging or Shelter for the Homeless											□					
Utilities (see 5.6.3.I)	All minor utilities	□	□	□	□	□	□	□	■	■	■	□			■	■	■
	All major utilities														□	□	□
	Wireless Communication Facility																see 5.3.2D
COMMERCIAL																	
Indoor Recreation (see 5.6.4.A)	All indoor recreation, except as listed below:										■	■	■				
	Auditorium, arena, stadium (indoor)										□	□					
	Convention Center											■					
	Indoor Shooting Range											□	□				□
Office (see 5.6.4.B)	All offices										■	■	■			■	
Outdoor Recreation (see 5.6.4.C)	All outdoor recreation, except as listed below:										□	□			□	□	
	Outdoor Shooting Range															□	□
	Stadium or Arena, Commercial Amphitheater												□				
Overnight Lodging (see 5.6.4.D)	Bed and Breakfast	□	□	□	□	□	□	□	■	■	■						5.3.3B
	Hotel, Motel, Inn, Extended Stay Facility								□	■	■	□					
	Youth Hostel										■						
Parking, Commercial (see 5.6.4.E)	All commercial parking										□	■	■	■	■	■	
Restaurant (see 5.6.4.F)	All restaurants, except as listed below:										■	■	■				
	Restaurant, Drive-in											■					

Frontage Types

Frontage refers to the way that the building engages the public realm—typically the building’s front side. Similar to standards regulating minimum and maximum building height, form-based codes often specify which types of frontages are allowed in each zone. The SmartCode, a form-based code template, includes eight standard frontage types: “common yard,” “porch and fence,” “terrace or light court,” “forecourt” (where a portion of the façade is close to the frontage line and the central portion is set back), “stoop,” “shop front and awning,” “gallery,” and “arcade.”



Frontage standards, Form-Based Code Regulations (2008), Village of Lake Zurich, Illinois. Credit: Torti Gallas and Partners.

1703-4.30

Specific to Frontage Types

Table 1703-4.30.A: Frontage Types General

The private frontage is the area between the building facade and the lot line.

SECTION	PLAN

1703-4-2

Public Review Draft: 9/21/12

City of Cincinnati Form-Based Code

Frontage Types, Cincinnati Form-Based Code (Public Review Draft, 2012), City of Cincinnati, Ohio. Credit: Opticos Design, Inc.

1703-4.110

Specific to Frontage Types

1703-4.110 Shopfront

Key

--- ROW / Lot Line --- Setback Line/BTL

A. Description

In the Shopfront Frontage Type, the main facade of the building is at or near the frontage line with an at-grade entrance along the public way. This type is intended for retail use. It has substantial glazing at the sidewalk level and may include an awning that may overlap the sidewalk. It may be used in conjunction with other frontage types.

B. Size

Distance between Glazing 2' max. A

Ground Floor Transparency 75% min.

Depth of Recessed Entries 5' max.

C. Awning

Depth 4' min. B

Setback from Curb 2' min. C

Height, Clear 8' min. D

D. Miscellaneous

Residential windows shall not be used.

Doors may be recessed as long as main facade is at BTL

Operable awnings are encouraged.

Open-ended awnings are encouraged.

Rounded and hooped awnings are discouraged.

Shopfronts with accordion-style doors/windows or other operable windows that allow the space to open to the street are encouraged.

1703-4-12

Public Review Draft: 9/21/12

City of Cincinnati Form-Based Code

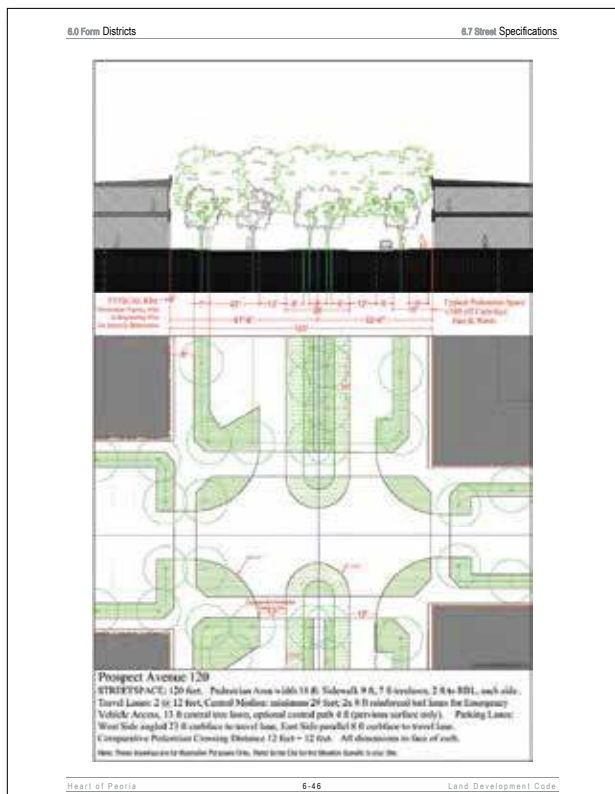
Frontage Types, Cincinnati Form-Based Code (Public Review Draft, 2012), City of Cincinnati, Ohio. Credit: Opticos Design, Inc.



Frontage Types, Downtown Specific Plan (2007), City of Ventura, California. Credit: Moule & Polyzoides, Architects and Urbanists.



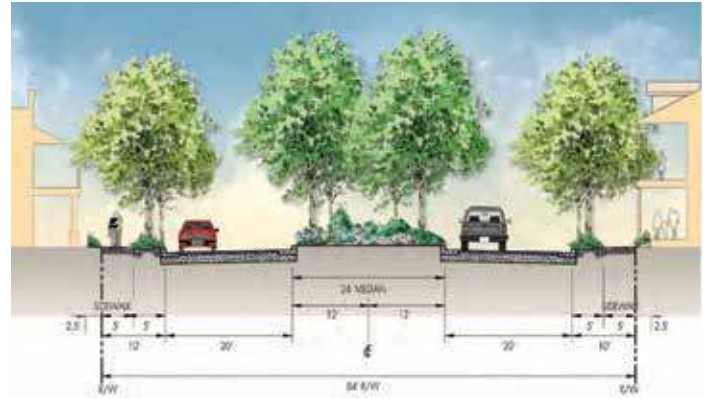
Concepts for Specific Streets, Transit Zoning Code (2010), City of Santa Ana, California.
Credit: Moule & Polyzoides, Architects and Urbanists.



Street Specifications - Prospect Avenue, Heart of Peoria Land Development Code (2007), Peoria, Illinois. Credit: Ferrell Madden/Code Studio.

Thoroughfare Types

Thoroughfare types may include alleys, lanes, roads, streets, commercial/main streets, avenues, and boulevards. Each thoroughfare type could be assigned regulations such as the number and width of lanes designated for both vehicular and bicycle travel, the width of space allotted for pedestrians, the number and width of areas designated for on-street parking, and the type and spacing of trees and street lights.



Thoroughfare standards for "Neighborhood Center Boulevard," Loma Rica Ranch Specific Plan (2011), City of Grass Valley, California. Credit: Opticos Design, Inc.

Thoroughfares

Thoroughfares can serve many roles in a community, and are integral to their success. They are a means of travel to destinations, near and far, and as the primary public space in most communities, frequently they are the destination for shopping and other activities.

In communities that have not reached their potential, walkability is frequently a missing element. In *Street Design Guidelines for Healthy Neighborhoods* (Center for Livable Communities, 1999), Dan Burden, an expert in the creation of livable communities, has stated that “Walkable streets form the backbone of friendly, interactive, safe, secure neighborhoods.” Focused on the safe and efficient flow of automobile traffic, most conventional thoroughfare standards are simply not up to the task of creating walkable communities.

Form-based codes can offer an opportunity to define thoroughfare standards that are carefully coordinated with other requirements, comprehensively addressing the needs of travel along with the broader needs of the public realm and the community as a whole. It should be noted, however, that if a community is mostly built out, thoroughfare standards are likely the responsibility of the public works department as they conduct ongoing maintenance and improvement of existing roadways, often working with minimal or insufficient budgets (making the implementation of new thoroughfare standards more challenging).

8.01.070Urban ParksCivic Spaces



8.01.070Urban ParksDescription

Urban parks include larger open spaces available for civic purposes, commercial activity, and unstructured recreation, as well as smaller structured recreation facilities and other passive uses. These parks should have a more formal urban character and be defined by the surrounding building frontages and adjacent tree-lined streets. All buildings adjacent to the square must have a front onto the park. The landscape should consist of lawns, trees, and shrubs planted in formal patterns and furnished with paths and benches. Shaded areas for seating should be provided. A civic element or small structure such as a kiosk, open shelter, pergola, or fountain may be included at a prominent location.

Urban parks may be centrally located at the geographic heart of neighborhoods and/or at the intersection of important thoroughfares. They may also be located at the edges of neighborhoods in locations where several residential areas may benefit from recreational amenities, and serve as a transition between developed areas and natural open spaces.

Size & Location

Min. Width	100'
Max. Width	N/A
Acreage	0.5 – 4.9 acres
Transect Zones	T4MS, T4MS-O

Character

Formally Disposed
Passive/Active (Unstructured) Open Space
Building Frontage along at least one side
All buildings must front this space
Must front at least two streets
Paths, lawns, and trees formally arranged
Walkways and plantings at all edges
Civic element at prominent location

Allowed/Typical Uses

Passive /Active (Unstructured) Open Space
Civic Uses, including Outdoor Pavilions, Open-Air Shelters, Outdoor Assembly, Outdoor Seating, Public Restrooms
Commercial Uses, including Farmers' Markets subject to Special Event Permit
Playgrounds
Limited Community Facilities, Meeting Rooms, Community Centers
Small Structured Recreational Facilities

Stormwater Management Techniques

Integrated Runoff
Bioretention Best Management Practices
Extended Detention Basins
Porous Pavers and Landscaping

8-8

Livermore Development Code

Civic Spaces - Urban Parks, Development Code (2010), City of Livermore, California. Credit: Opticos Design, Inc.

Civic Spaces8.01.100Playgrounds



8.01.100PlaygroundsDescription

Playgrounds are open spaces designed and equipped for the recreation of children. They shall be interspersed within residential areas so that every neighborhood or freestanding development area has at least one playground. Playgrounds may be freestanding or located within larger Plazas, Neighborhood Parks, Pocket Parks, or Civic Spaces.

Playgrounds should be quiet, safe places protected from the street, and should typically be placed so that children do not have to cross major roads to get to them. Often playgrounds and tot-lots are interspersed within residential areas. An open shelter, play structures or interactive art and fountains may be included with landscaping between. Shaded areas and seating must be provided. Playgrounds may be included within larger parks and public spaces.

Size & Location

Min. Width	n/a
Max. Width	n/a
Acreage	n/a
Transect Zones	All Transect Zones

Character

Focused Towards Children
Fenced with Minimal Exits
Independent of Building Frontage
Protected from Traffic

Allowed/Typical Uses

Passive /Active (Unstructured) Open Space
Low-Impact Civic Uses, including Picnic Facilities, Outdoor Seating
Play Structures, Interactive Art, Fountains

Stormwater Management Techniques

Bioretention Best Management Practices
Porous Pavers and Landscaping

Livermore Development Code

8-11

Civic Spaces - Playgrounds, Development Code (2010), City of Livermore, California. Credit: Opticos Design, Inc.

Civic Space Types

Civic space types are essentially open space or other public areas that may include parks, greens, squares, plazas, pocket parks, playgrounds, and playing fields. For civic space types, typical regulations include the minimum and maximum acreage of land required, requirements for the placement of civic spaces, the appropriate zones for each civic space type, the kind of recreation the civic space is intended to facilitate, and the overall intended look and feel of the space.

Civic Spaces

When wisely designed and located, abundant parks and other civic spaces make a community a more desirable place to live and work, improving the health of residents and the value of their homes. In addition, they can serve as a cherished place for residents, workers, and visitors to gather—within a block, neighborhood, or entire community—helping to define the identity of the area. As part of a comprehensive form-based code, wisely-developed standards can help communities make the most of rare opportunities to create new civic spaces.

SMARTCODEMunicipality

TABLE 13. CIVIC SPACE

a. Park: A natural preserve available for unstructured recreation. A Park may be independent of surrounding building Frontages. Its landscape shall consist of paths and trails, meadows, waterbodies, woodland and open shelters, all naturalistically disposed. Parks may be linear, following the trajectories of natural corridors. The minimum size shall be 8 acres. Larger parks may be approved by Variant as Special Districts in all zones.



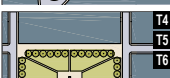
T1
T2
T3

b. Green: An Open Space, available for unstructured recreation. A Green may be spatially defined by landscaping rather than building Frontages. Its landscape shall consist of lawn and trees, naturalistically disposed. The minimum size shall be 1/2 acre and the maximum shall be 8 acres.



T3
T4
T5

c. Square: An Open Space available for unstructured recreation and Civic purposes. A Square is spatially defined by building Frontages. Its landscape shall consist of paths, lawns and trees, formally disposed. Squares shall be located at the intersection of important Thoroughfares. The minimum size shall be 1/2 acre and the maximum shall be 5 acres.



T4
T5
T6

d. Plaza: An Open Space available for Civic purposes and Commercial activities. A Plaza shall be spatially defined by building Frontages. Its landscape shall consist primarily of pavement. Trees are optional. Plazas shall be located at the intersection of important streets. The minimum size shall be 1/2 acre and the maximum shall be 2 acres.



T5
T6

e. Playground: An Open Space designed and equipped for the recreation of children. A playground shall be fenced and may include an open shelter. Playgrounds shall be interspersed within Residential areas and may be placed within a Block. Playgrounds may be included within parks and greens. There shall be no minimum or maximum size.



T1
T2
T3
T4
T5
T6

SmartCode Version 9.2

SC41

Civic Space, SmartCode. Credit: Duany Plater-Zyberk & Company.

Creating the Regulating Plan and Zoning District Regulations

After establishing the general elements within each zoning district, the code team usually next determines the exact values of the form-based code's regulations, which are organized by district.

Each district may contain one or more permitted building types.

As the code team develops each district's specific regulations, they will typically also begin drafting the "regulating plan," which is akin to a zoning map and assigns the newly created zoning districts to specific physical locations, typically by color-coding the areas or lots where each of the districts apply.

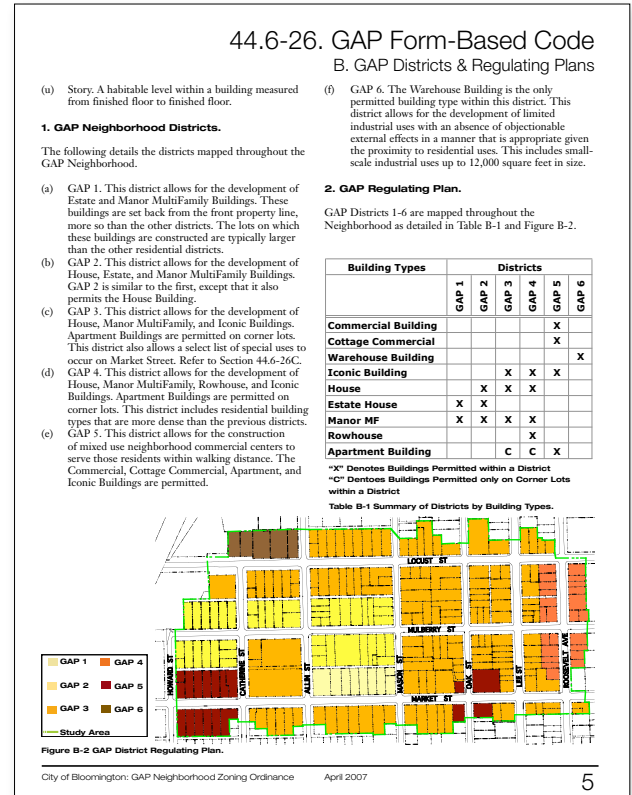
These areas are usually defined within a framework of streets and blocks, often with boundary lines falling at the rear of lots or at alleys, allowing harmonious transitions between different districts. The definition and demarcation of different districts depend upon what type of form-based code is being created—for example, whether it is a transect-based or street-based form-based code.

Meanwhile, the code team will also determine the specific regulations for each zoning district, often drawing from measurements that were determined to best exemplify the typical or representative conditions of zones that were "sampled" during the documentation of existing conditions.

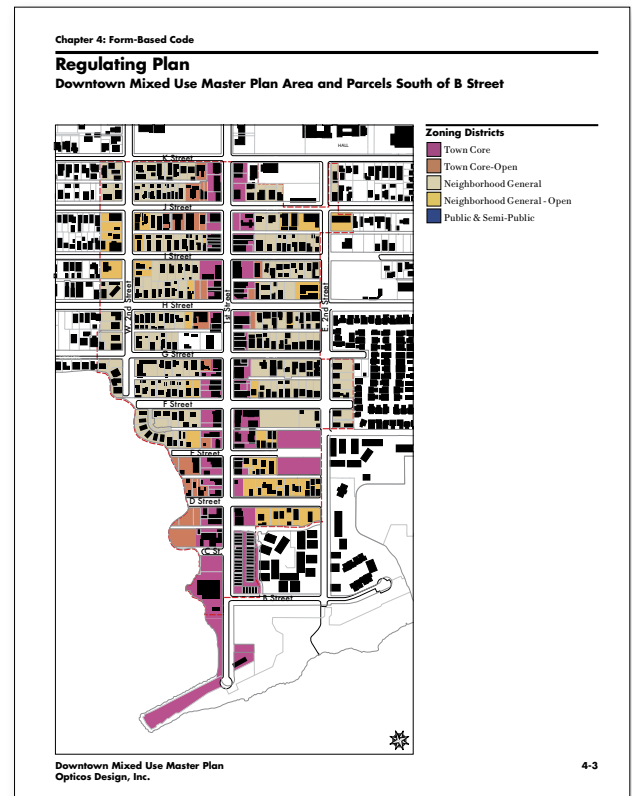
When is the Regulating Plan Created?

The regulating plan is usually created as part of drafting the form-based code. For example, when a form-based code is developed to replace an existing development code, the existing zoning map is replaced with a regulating plan that implements the intentions of the community's vision by assigning specific boundaries for the new districts.

But for some form-based codes, a regulating plan may be created later. Examples of this include regulating plans that need to be created for larger infill or "greenfield" sites that were not planned during the development of the community's form-based code. In this scenario, a more precise regulating plan may be created as part of the application for a proposed development project, using the development standards from the community's form-based code that are relevant to the project.



Regulating plan, Gridley, Allin, & Prickett Neighborhood Form-Based Code (2007), City of Bloomington, Illinois. Credit: Farr Associates.



Regulating plan, Downtown Mixed Use Master Plan (2007), City of Benicia, California. Credit: Opticos Design, Inc.

The following are some of the regulations that are typically determined first by the code team:

Building Form Standards

Building form standards typically include a broad set of requirements for the configuration, features, and functions of buildings that define and shape the public realm, such as building placement and form, lot sizes, parking, as well as allowed land uses, encroachments, and frontage and building types.

Building Placement

It would be difficult to overstate the importance of standards regulating the placement of buildings. Together with thoroughfare standards, they provide the foundation for establishing or preserving the character of a district. Some of the typical regulations for building placement standards include the build-to line, minimum setback, and minimum and maximum widths of lots (the latter to create the desired development scale).

Building Form

Regulations for building form also play a key role in establishing the character of a district. As the “walls” of public spaces, building façades are regulated for height to ensure the correct proportion. The maximum and minimum sizes of buildings are sometimes regulated to ensure that they are an appropriate size for the desired vision of the area, establishing a rich urban form through a harmonious range of building sizes. Some of the typical regulations

1703-3.140

Specific to Building Types

1703-3.140

Main Street Mixed-Use



Attached Main Street buildings form a unified streetscape along a vibrant commercial street.

T3B

T3N

T4N.1

T4N.2

T5MS

T5N.1

T5N.2

T5F

T6C

Key

T4

Allowed

T4

Not Allowed

A. Description

The Main Street Mixed-Use Building Type is a small- to medium-sized structure, typically attached, intended to provide a vertical mix of uses with ground-floor retail, or service uses and upper-floor service, or residential uses. This Type makes up the primary component of a neighborhood main street and portions of a downtown main street, therefore being a key component to providing walkability.

General Note: Photos on this page are illustrative, not regulatory.

1703-3-26

Public Review Draft: 9/21/12

City of Cincinnati Form-Based Code

Building form standards, Cincinnati Form-Based Code (Public Review Draft, 2012), City of Cincinnati, Ohio. Credit: Opticos Design, Inc.

44.6-26. GAP Form-Based Code

H. Building Types: Commercial Building

Building Height

Allowable Upper Floors Height

Allowable Ground Floor Height

Height

Height

Figure H-2: Height & Use Requirements.

Building Height

Upper Story Facade Setback

Figure H-2(1): Option: Upper Stories Setback.

Transparency of the Upper Floors

Maximum Area of No Transparency

Principal Entrance Location

Entrance Spacing

Figure H-3: Facade Requirements.

2. Height & Use Requirements. (Refer to Figure H-2)

(a) Building & Floor Heights.

(b) Uses.

3. Facade Requirements. (Refer to Figure H-3)

(a) Transparency.

(b) Building Entrance.

(c) Allowable Cap & Base Types.

City of Bloomington: GAP Neighborhood Zoning Ordinance

April 2007

19

Building form standards, Gridley, Allin, & Prickett Neighborhood Form-Based Code (2007), City of Bloomington, Illinois. Credit: Farr Associates.

Specific to Building Types

1703-3.140

Main Street Mixed-Use

Alley

Front Street

Side Street

Alley

Front Street

Side Street

Key

ROW / Lot Line

Building

Setback Line

Key

ROW / Lot Line

Frontage

Private Open Space

B. Number of Units

Units per Building

2 min.

C. Building Size and Massing

Height

2 stories min.; 4 stories max.1

D. Allowed Frontage Types

Forecourt

1703-2.80

Dooryard

1703-4.90

Lightwell

1703-4.100

Shopfront

1703-2.110

Terrace

1703-4.120

E. Pedestrian Access

Upper floor units located in the main building shall be accessed by a common entry along the front street.

Ground floor units may have individual entries along the front street or side street.

On corner lots, units in a secondary wing/accessory structure may enter from the side street.

F. Private Open Space

No private open space requirement.

1. Height shall also comply with transect zone standards in Section 1703-2 (Specific to Transect Zones).

Main Body

Width

150' max.

Secondary Wing(s)

Width

100' max.

Depth

65' max.

City of Cincinnati Form-Based Code

Public Review Draft: 9/21/12

1703-3-27

Building form standards, Cincinnati Form-Based Code (Public Review Draft, 2012), City of Cincinnati, Ohio. Credit: Opticos Design, Inc.

for building form standards include maximum and minimum height, width, and depth of buildings, as well as the maximum and minimum heights of ground-floor and upper floor levels.

Allowed Encroachments

Encroachments involve building elements that may extend over the build-to line (which regulates the distance between the front property line and building facade) or into the setback, such as balconies, and bay windows. By specifying regulations for allowed encroachments in a form-based code, a community can enable a rich urban form.

Parking

The methods for regulating parking in a form-based code are similar to those in a conventional zoning ordinance. Minimum parking standards are typically established according to land uses, but also by zoning district classifications established by the form-based code that are defined by the intensity of development—such as “town center.”

Surface parking lots and garages can have a damaging effect on the physical quality of the public realm, creating unattractive gaps between buildings as well as curb cuts that are potential hazards for pedestrians using the sidewalk. In response, form-based codes often seek to minimize these negative impacts by requiring parking to be located at the rear or side of buildings or at the center of blocks, rather than between the building and the street. Similarly, some form-based codes include maximum parking requirements and promote shared and on-street parking for areas of higher-density and mixed-use development that have good access to transit.

In addition to the mandatory number of off-street parking spaces, typical regulations for parking standards include the area on the lot in which parking is allowed, including setbacks, sizes of parking spaces, and travel lanes in parking lots.

Figure 3.18: Shared parking between uses

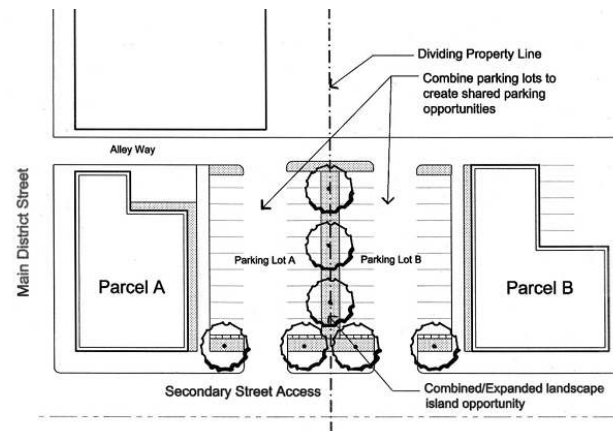
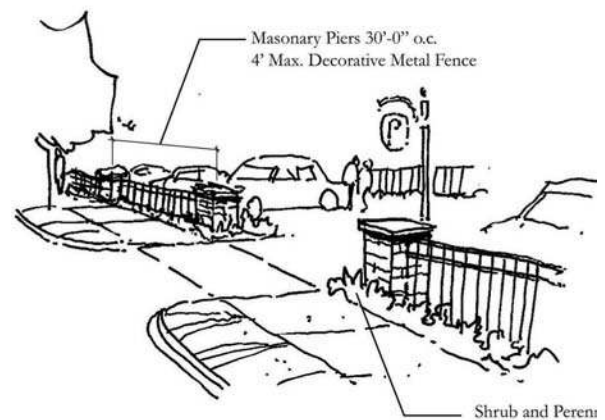


Figure 3.19: Parking lot screening



Parking Placement, Downtown Form-Based Code (2010), Village of Antioch, Illinois. Credit: The Lakota Group.

10.8 PARKING PLACEMENT

10.8.1 FRONT SETBACKS; PARKING LOCATED ADJACENT TO BUILDINGS

Within RR-T and RR-A districts where parking may be located adjacent to the building but not between the building and the front lot line, a minimum front setback of 7 feet is required for any such parking. (See Figure 9) Trees (a minimum of 2.5 inches caliper) and shrubs (a minimum of 24 inches in height) must be planted at the rate of one tree and 10 shrubs for every 40 feet of frontage.

Figure 9: Parking Setback in RR-T and RR-Districts



Parking Placement, Roosevelt Road Form-Based Zoning Districts (2010), Village of Oak Park, City of Berwyn, and Town of Cicero, Illinois. Credit: The Lakota Group.

Parking Strategies to Support Livable Communities

To help communities address their parking concerns with the end goal of making our communities more livable, CMAP created a step-by-step guide to municipal reform of parking policies, entitled *Parking Strategies to Support Livable Communities*. The guide can help municipal governments determine the appropriate steps for addressing their unique challenges and describes more than a dozen strategies to manage parking. It explains how to do a parking survey and effectively engage stakeholders, and also takes a detailed look at the costs of parking structures and available financing mechanisms.

SMARTCODE TABLES 10 & 11. BUILDING FUNCTION & PARKING CALCULATIONS

Municipality

TABLE 10: Building Function. This table categorizes Building Functions within Transect Zones. Parking requirements are correlated to functional intensity. For Specific Function and Use permitted By Right or by Warrant, see Table 12.

	T2 T3	T4	T5 T6
a. RESIDENTIAL	Restricted Residential: The number of dwellings on each Lot is restricted to one within a Principal Building and one within an Accessory Building, with 2.0 parking places for each. Both dwellings shall be under single ownership. The habitable area of the Accessory Unit shall not exceed 440 sf, excluding the parking area.	Limited Residential: The number of dwellings on each Lot is limited by the requirement of 1.5 parking places for each dwelling, a ratio which may be reduced according to the shared parking standards (See Table 11).	Open Residential: The number of dwellings on each Lot is limited by the requirement of 1.0 parking places for each dwelling, a ratio which may be reduced according to the shared parking standards (See Table 11).
b. LODGING	Restricted Lodging: The number of bedrooms available on each Lot for lodging is limited by the requirement of 1.0 assigned parking place for each bedroom, up to five, in addition to the parking requirement for the dwelling. The Lodging must be owner occupied. Food service may be provided in the a.m. The maximum length of stay shall not exceed ten days.	Limited Lodging: The number of bedrooms available on each Lot for lodging is limited by the requirement of 1.0 assigned parking places for each bedroom, up to twelve, in addition to the parking requirement for the dwelling. The Lodging must be owner occupied. Food service may be provided in the a.m. The maximum length of stay shall not exceed ten days.	Open Lodging: The number of bedrooms available on each Lot for lodging is limited by the requirement of 1.0 assigned parking places for each bedroom. Food service may be provided at all times. The area allocated for food service shall be calculated and provided with parking according to Retail Function.
c. OFFICE	Restricted Office: The building area available for office use on each Lot is restricted to the first Story of the Principal or the Accessory Building and by the requirement of 3.0 assigned parking places per 1000 square feet of net office space in addition to the parking requirement for each dwelling.	Limited Office: The building area available for office use on each Lot is limited to the first Story of the principal building and/or to the Accessory building, and by the requirement of 3.0 assigned parking places per 1000 square feet of net office space in addition to the parking requirement for each dwelling.	Open Office: The building area available for office use on each Lot is limited by the requirement of 2.0 assigned parking places per 1000 square feet of net office space.
d. RETAIL	Restricted Retail: The building area available for Retail use is restricted to one Block corner location at the first Story for each 300 dwelling units and by the requirement of 4.0 assigned parking places per 1000 square feet of net Retail space in addition to the parking requirement of each dwelling. The specific use shall be further limited to neighborhood store, or food service seating no more than 20.	Limited Retail: The building area available for Retail use is limited to the first Story of buildings at corner locations, not more than one per Block, and by the requirement of 4.0 assigned parking places per 1000 square feet of net Retail space in addition to the parking requirement of each dwelling. The specific use shall be further limited to neighborhood store, or food service seating no more than 40.	Open Retail: The building area available for Retail use is limited by the requirement of 3.0 assigned parking places per 1000 square feet of net Retail space. Retail spaces under 1500 square feet are exempt from parking requirements.
e. CIVIC	See Table 12	See Table 12	See Table 12
f. OTHER	See Table 12	See Table 12	See Table 12

TABLE 11: Parking Calculations. The Shared Parking Factor for two Functions, when divided into the sum of the two amounts as listed on the Required Parking table below, produces the Effective Parking needed for each site involved in sharing. Conversely, if the Sharing Factor is used as a multiplier, it indicates the amount of building allowed on each site given the parking available.

	REQUIRED PARKING (See Table 10)		
	T2 T3	T4	T5 T6
RESIDENTIAL	2.0 / dwelling	1.5 / dwelling	1.0 / dwelling
LODGING	1.0 / bedroom	1.0 / bedroom	1.0 / bedroom
OFFICE	3.0 / 1000 sq. ft.	3.0 / 1000 sq. ft.	2.0 / 1000 sq. ft.
RETAIL	4.0 / 1000 sq. ft.	4.0 / 1000 sq. ft.	3.0 / 1000 sq. ft.
CIVIC	To be determined by Warrant		
OTHER	To be determined by Warrant		

SHARED PARKING FACTOR

Function	with	Function
RESIDENTIAL		RESIDENTIAL
LODGING		LODGING
OFFICE		OFFICE
RETAIL		RETAIL

Shared Parking Factor values (from intersection of functions):

- RESIDENTIAL / LODGING: 1
- LODGING / OFFICE: 1.1
- OFFICE / RETAIL: 1.1
- RETAIL / OFFICE: 1.1
- RETAIL / LODGING: 1.1
- LODGING / RESIDENTIAL: 1
- OFFICE / RESIDENTIAL: 1.1
- RETAIL / RESIDENTIAL: 1.1
- RESIDENTIAL / OFFICE: 1.1
- RESIDENTIAL / RETAIL: 1.1
- LODGING / RETAIL: 1.1
- OFFICE / LODGING: 1.1
- RETAIL / LODGING: 1.1
- RETAIL / OFFICE: 1.1
- RETAIL / RESIDENTIAL: 1.1
- LODGING / RESIDENTIAL: 1
- OFFICE / RESIDENTIAL: 1.1
- RETAIL / RESIDENTIAL: 1.1
- RESIDENTIAL / OFFICE: 1.1
- RESIDENTIAL / RETAIL: 1.1
- LODGING / RETAIL: 1.1
- OFFICE / LODGING: 1.1
- RETAIL / LODGING: 1.1
- RETAIL / OFFICE: 1.1
- RETAIL / RESIDENTIAL: 1.1
- LODGING / RESIDENTIAL: 1
- OFFICE / RESIDENTIAL: 1.1
- RETAIL / RESIDENTIAL: 1.1
- RESIDENTIAL / OFFICE: 1.1
- RESIDENTIAL / RETAIL: 1.1
- LODGING / RETAIL: 1.1
- OFFICE / LODGING: 1.1
- RETAIL / LODGING: 1.1
- RETAIL / OFFICE: 1.1
- RETAIL / RESIDENTIAL: 1.1

Optional Components That May be Included in a Form-Based Code

Many form-based codes choose to include additional regulations, including standards for architectural, landscape, and block design, as well as green building. Other less-common standards address affordable housing, historic preservation, lighting, nonconforming uses, signage, and stormwater management.

Architectural Standards

Detailed standards regulating the exterior design features and materials of buildings are optional, but many communities have found that they are helpful in fulfilling the potential of a form-based code and achieving the community's vision.

Architectural standards can be included in a form-based code to complement the building form standards, which are required. While the code's building form standards set requirements for the main configuration, features, and functions of buildings that define and shape the public realm, architectural standards can go further, regulating the character and style of buildings, such as the proportion of windows, building materials, colors, trim design, and even the vertical and horizontal division of materials.

Some architectural standards are modest, and explained mostly through text; more elaborate standards may employ comprehensive diagrams (similar to those found in architecture pattern books) or rely on extensive photographs of buildings in the area that exemplify the architectural characteristics and styles the community wishes to preserve and foster in the future.



Architectural Style Guideline, Uptown Whittier Specific Plan (2008), City of Whittier, California. Credit: Moule & Polyzoides, Architects and Urbanists.

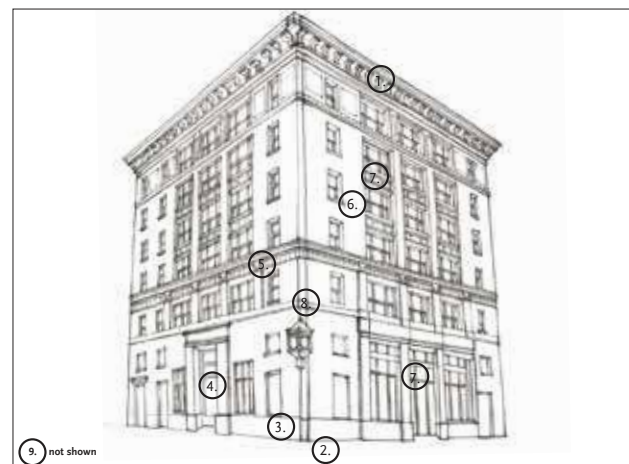
CHAPTER 4: DEVELOPMENT CODE 4.6 ARCHITECTURE STYLE GUIDELINES

4.6.4 Main Street



Introduction. Main Street style buildings are found on most pre-World War II U.S. main streets and frame town squares and plazas. This building type began in the late nineteenth century when, in the process of densifying towns and cities, housing was built over shop fronts. As a style in the U.S., it is derived from a number of historic precedents, including Spanish Colonial, Greek Revival, Victorian, Victorian Italianate, and Richardsonian Romanesque adapted to urban contexts and mixed uses. The type's simple, rectangular form is derived from a logical, repetitive structural framework which is expressed externally by the rhythmic placement of columns, storefronts, and openings on upper levels. Original frameworks were of load-bearing masonry, but the style easily adapted to iron and steel construction. Buildings sit on street fronts or corners, oriented directly to streets or town squares. This means that only one or two facades need detailed design attention.

The Main Street style is expressed through substantial materials - such as brick, stone, and heavy plaster. Upper story window openings are located in a rhythmic serial pattern in singles or groups. The plane of the wall is articulated by structural expressions - engaged columns and lintels over openings. The ground floor has expansive glass storefronts interrupted by structural columns with transoms to allow light to penetrate deep into the interior. Multi-story facades are typically divided into base, body, and top with the ground floor taller than the shorter upper floors. Buildings are topped by a flat roof line emphatically crowned at the eaves by a projecting cornice or a receding, stepped parapet.



Key Characteristics

1. **Roof** - flat roof with projecting cornice or parapet.
2. **Floor Plan/Elevation** - simple, rectangular plans with L-shaped or U-shaped variations.
3. **Base** - articulated base by change in material, change in plane, or both.
4. **Shading** - recessed arcades & entries, balconies, or fabric awnings.
5. **Form/Massing** - 1 to multiple stories, with base, middle, and top. Vertically proportioned with corner towers common.
6. **Walls** - flat planes of stone, brick, or plaster, punctuated by deep openings.
7. **Openings** - large storefront openings at ground, vertically proportioned, with transoms arranged in rhythmic pattern. Upper floors include combinations of small and large openings relating to ground level openings. Serial or symmetrical composition are typical.
8. **Articulation** - base, middle and top of facade are clearly defined by changes in material and horizontal banding. Ground floor and/or building-scaled base receive most detailed attention. Other details include cornices, balconies, awnings.
9. **Colors** - public buildings are more reserved, with muted colors. Otherwise, the palette is open to interpretation.

Specifically, typical regulations for architectural standards include:

- The overall shape and size of buildings, categorized by building types, such as single-family homes, multi-family residences, and commercial buildings.
- Roof types, materials, and pitch, along with specifications for dormers, gables, skylights, etc.
- Massing elements that may be added to the main portion of a building, such as wings and bays.
- The composition of façade elements, such as locations of windows and doors, in relation to building corners and one another.
- The types of windows and doors which are allowed, with specifications for height and width, overall proportions, depth, ornamentation, shutters, etc.
- Other architectural elements that may define the local character of a community, such as eaves, cornices, porches, and balconies.
- Which materials are allowed, and how they can be used together.

Block Standards

To address larger project sites (typically larger than two acres) and encourage the creation of walkable neighborhoods, form-based codes may include block and subdivision standards to guide the division of large development sites into an interconnected network of new streets that follow the code's public space standards and smaller blocks that meet the code's standards for maximum block perimeter and length.

Whether to Include Architectural Standards

Whether architectural standards are necessary or appropriate depends on the intended scope and objectives of a community's form-based code, as well as the capabilities of those who will be administering the code. For some communities, developing good standards for the design of its blocks and thoroughfares in the public realm is sufficient or the most politically/economically feasible option.

Absence of architectural standards can yield development that is better than that which would be produced under conventional zoning, but which falls short of realizing the community vision. Communities that are developing a form-based code for special districts are likely to have high expectations for historic compatibility and design quality, and architectural standards will often need to be developed accordingly.

While the inclusion of wisely-developed architectural standards can help make administration of the form-based code more objective, to successfully administer a code with substantial architectural standards, communities will need to have staff with expertise in architectural design (which is somewhat uncommon), hire the consultant services of a "town architect" (an extra expense beyond the means of many communities), or assign the administration duties to a design commission (which can complicate the process, especially for developers, who are likely to be skeptical of the new form-based code anyway).

A. Site

Sites larger than 4 acres shall be subdivided further to create additional blocks.



Site to be subdivided: Illustrative Diagram

B. Introduce Streets

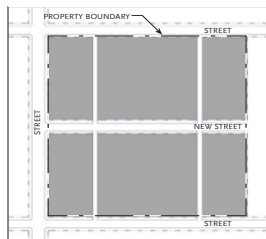
Sites being subdivided into additional blocks shall introduce streets from the list of existing and allowable street types and comply with the block-size requirements in Section 4.6.3.



Introduce Streets: Illustrative Diagram

C. Introduce Alleys

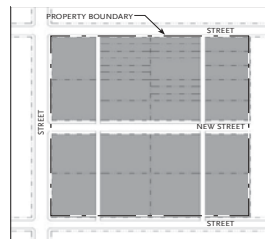
Access to blocks and their individual parcels is allowed only by alley/lane, side street or, in the case of residential development, via small side drives accessing multiple dwellings. The intent is to maintain the integrity and continuity of the streetscape without interruptions such as driveway access. Therefore, although residential development allows minor interruptions along the primary frontage, the introduction of rear service thoroughfares such as alleys and lanes is required.



Introduce Alleys: Illustrative Diagram

D. Introduce Lots

Based on the type(s) of blocks created and the thoroughfare(s) that they front, lots (parcels) are introduced on each block to correspond with the allowable building types in Section 4.4.



Introduce Lots: Illustrative Diagram

E. Introduce Projects

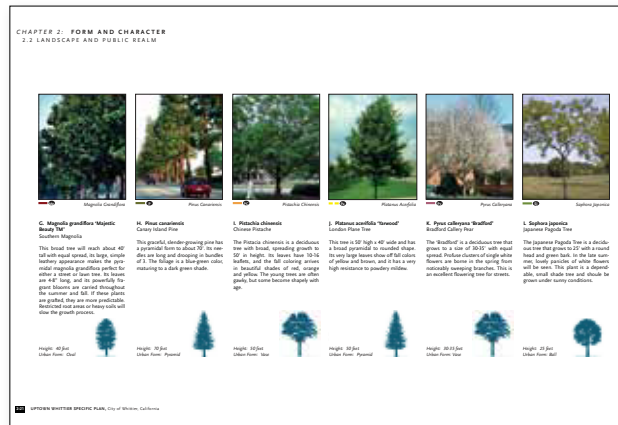
Each lot is designed to receive a building per the allowable building types identified in Section 4.4 and can be arranged to suit the particular organization of buildings desired for each particular block. The allowable building types then are combined with the allowable Frontage Types in Section 4.5 per the Zone in Section 4.3 in which the lot is located, in order to generate a particular urban form and character.



Introduce Projects: Illustrative Photo

Landscape Standards

Some form-based codes include requirements to control the character and quality of the landscape within private spaces as it affects the public realm and the public good, such as requiring native species to address water usage, as well as screening parking lots from the street, buffering more or less intensive uses, and greening parking lots.



Landscape and Public Realm - Street Trees, Uptown Whittier Specific Plan (2008), City of Whittier, California. Credit: Moule & Polyzoides, Architects and Urbanists.

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R. Landscape Standards

3. Interior Parking Lot Landscaping.

To provide shade, minimize paving and improve the aesthetic look of parking lots, the following standards apply:

- Applicability. Interior parking lot landscaping is required for all off-street parking areas, regardless of size. The requirements herein apply to all development, except House, Estate House, and Manor Multi-Family Buildings.
- Requirements. Typical parking lot landscaping requirements are illustrated in Figure R-3.
 - Terminal Ends of Free-Standing Rows. Landscape islands are required at the terminal ends of any free-standing rows or bays of parking. Free-standing rows or bays of parking are those that are not abutting the parking lot perimeter, and can have a single or double row of parking.
 - Landscape Islands. A landscape island shall be provided every ninth parking space for rows of parking that are more than eight (8) spaces in length. There shall be no more than eight (8) continuous parking spaces in a row without a landscape island.
 - Trees in Landscape Islands. Each landscape island must have one (1) medium or large tree planted within it.
 - Internal Area Not Dedicated to Parking or Drive. Any space within the parking lot limits that is not dedicated to parking, loading or driveway path shall be landscaped.
 - One (1) medium or large deciduous tree is required in such spaces for the first one-hundred fifty (150) square feet.
 - Plus one (1) medium or large tree per each additional six-hundred fifty (650) square feet.
 - Each parking space must be entirely located within fifty (50) feet of a tree on the interior of the parking lot.
 - Trees and landscaping located outside of the exterior parking lot, in the side and rear yard buffer, or in the parking lot do not count toward any of the requirements of this section.

Figure R-4: Screening of Open Storage and Refuse Areas.

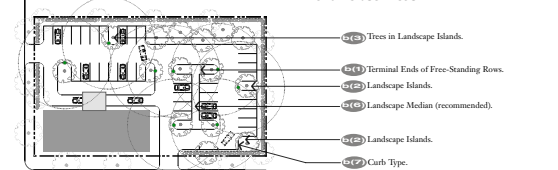


Figure R-3: Interior Parking Lot Landscape

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Landscape Standards, Gridley, Allin, & Prickett Neighborhood Form-Based Code (2007), City of Bloomington, Illinois. Credit: Farr Associates.

Green Building Standards

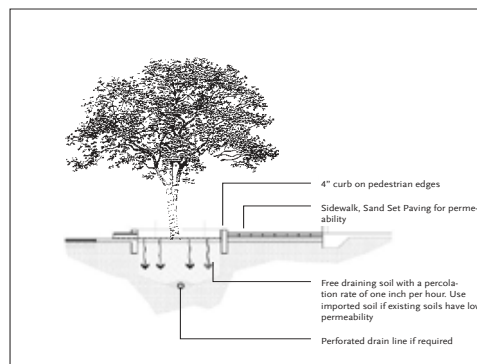
Requirements for environmentally sensitive, energy efficient, and low carbon footprint buildings can assist in achieving community sustainability goals.

A.1.4 Storm Water Guidelines and Sustainability

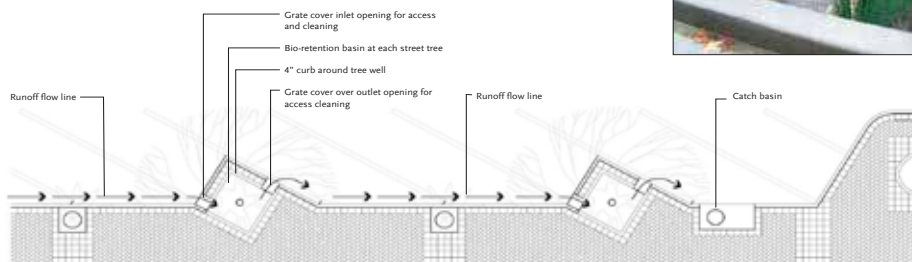
Soils and plant materials can successfully filter pollutants from water. Bio-retention is a soil and plant-based storm water best management practice employed to filter runoff from developed communities.

Various grasses, shrubs, and trees are established to promote evapotranspiration, maintain soil porosity, encourage biological activity, and promote uptake of some pollutants. Runoff from an impervious area is directed into the bio-retention facility. The water infiltrates through the plant/mulch/soil environment, providing the treatment.

Green space is made functional to keep storm water on-site, to minimize runoff by maximizing infiltration, and to employ natural processes for water quality improvement. This is accomplished by running the storm water collected from the sidewalks and streets in the gutter through the street tree planters. The soil level in the planters is six inches lower than the street gutter. Runoff is directed into the planter through a slot into the tree well. The pollutants are caught by the landscape filter and some water is percolated into the soil. Runoff is thus filtered prior to discharge into storm drain line.



Section of bio-retention basin incorporated into tree well



Diagrammatic plan of bio-retention basins and tree wells incorporated into diagonal parking

Right: Bio-retention has multiple utilitarian benefits, including filtering pollutants from stormwater runoff and serving as a landscape buffer to the road pavement. The stormwater collection area is also used for aesthetic purposes, to plant grasses, flowers, and trees.



Right: Water flows from the street into the bio-retention planter to be filtered before draining into the soil and a perforated drain line, if necessary.



Stormwater Guidelines and Sustainability, Uptown Whittier Specific Plan (2008), City of Whittier, California. Credit: Moule & Polyzoides, Architects and Urbanists.

Creating the Development Review Process

Finally, the code team—presumably guided, if not led, by municipal staff and elected officials—should define the process necessary for the submission and approval of development proposals once the form-based code is in place.

These include procedures for submitting, reviewing, and approving proposed development projects, along with a variety of optional sub-procedures, such as historic preservation review and the consideration of nonconformities. Essential rules guiding overall code administration are also included, such as rules for the interpretation of code requirements or resolving perceived conflicts between the form-based code and other municipal code provisions.

Administrative vs. Discretionary Review

Defining the development review process can begin at the conclusion of the creation of the form-based code, or be tentatively established much earlier in the process, perhaps as one of the initial goals of the form-based code effort. One of the key questions will be whether submitted development proposals can largely be approved administratively by staff or if a discretionary body such as a planning commission or design review board is needed.

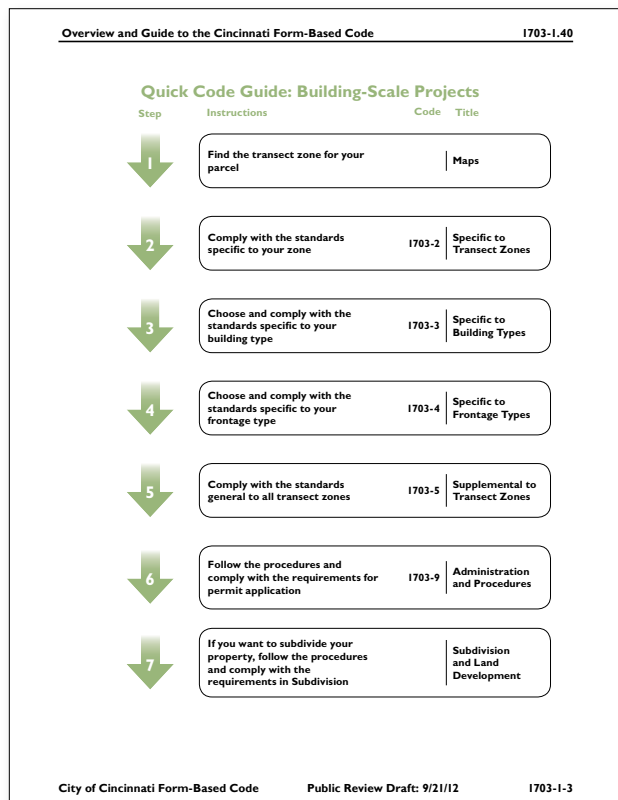
An important selling point for form-based codes is their potential to streamline the development review process. The requirements of a

form-based code are aimed at ensuring predictability in the quality and character of future development, and have been defined by a very specific, comprehensive vision developed in conjunction with the community. Therefore, administrative review and approval should be possible for all projects that comply with applicable form-based code requirements. Similarly, one of the goals of a form-based code should be to make the review and approval process as easy as possible for existing municipal staff.

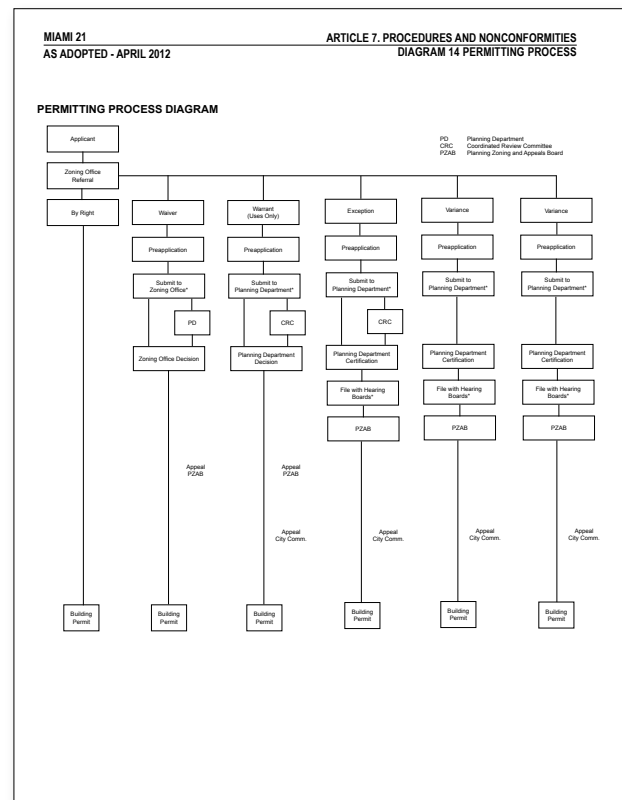
As a result, the substantial investment of time and other resources necessary to create a solid form-based code can be repaid by the reduction in time and resources necessary to review and assess individual development proposals in the future. In the end, administrative project review and approval can greatly reduce uncertainty and risk for developers, encouraging them to develop under it.

Variances

Some form-based codes will need to include a cautious variance process for dealing with development that is in-line with the community vision but proposed for sites with unusual characteristics that necessitate a relaxation or modification of specific requirements of the code.



Quick Code Guide - Building-Scale Projects, Cincinnati Form-Based Code (Public Review Draft, 2012), City of Cincinnati, Ohio. Credit: Opticos Design, Inc.



Permitting Process, Miami 21 Zoning Code (2012), City of Miami, Florida. Credit: Duany Plater-Zyberk & Company.

Nonconformities

Whether a community chooses to use conventional zoning approaches or a form-based code, the way in which it deals with development that does not conform with current standards—but which was legal when constructed—is an important indicator of the extent and speed of the changes it hopes to achieve by updating its zoning code. Determining the best approach depends on the local perceptions and priorities of the community; in some, a rigid approach may not be feasible in the near term, but delaying requirements for compliance or taking a case-by-case approach can threaten the effectiveness of the new form-based code.

Road Test the Code

Once the draft code provisions are completed, but before they are enacted, they should be tested using existing parcel dimensions and/or past or anticipated developments to determine how well the draft code addresses real world development and design issues. The code team and/or staff responsible for development review and approval (such as planning, public works, emergency services, and building officials) should apply the new form-based code procedures and requirements to determine whether the draft code would successfully implement the community's vision without being unnecessarily burdensome to the applicant. To thoroughly test the code, local developers should be invited to participate as well.

Monitor the Performance of the Code

After the code has been adopted, its performance should be systematically monitored by staff, applying criteria similar to that used to road test the code before adoption. The code can be amended as necessary on an annual basis.

2.0 Administration

2.1 REVIEW BODIES

2.1.1 Summary of Review Authority

The following table summarizes the required review and approval authority provided under this development code.

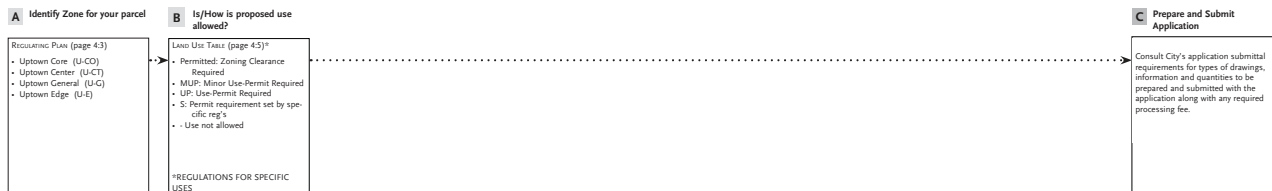
	2.1.2	2.1.3	2.1.4	2.1.5	2.1.6	2.1.7	
	Zoning Administrator	Site Plan Review Board	Planning Commission	Zoning Commission	Zoning Board of Appeals	City Council	Reference
Procedure							
Zoning Compliance Certificates	D	R					2.2
Certificate of Occupancy	D						2.3
Administrative Deviation	D						2.4
Uses Permitted with Administrative Approval	D						2.5
Minor Variations without Site Plan Review	D						2.6
Minor Variations with Site Plan Review	D	R					2.6
Major Variations without Site Plan Review	R				<D>		2.6
Major Variations with Site Plan Review	R	R			<D>		2.6
Appeals					<D>		2.7
Amendments	R	R		<R>		<D>	2.8
Special Use	R	R		<R>		<D>	2.9
Official Development Plan	R	R		<R>		<D>	2.10
Critical Traffic Management Areas	R	R				<D>	2.11
Traffic Impact Analysis	R	R				R	2.12
Subdivision Plat (with waiver)	R		<R>			<D>	2.13
Subdivision Plat (without waiver)	D						2.13
Tract Survey	D						2.13
Multifamily Plan			<R>			<D>	2.13
Certificate of Appropriateness (oNC only)	R	R		<D>			7.1
Annexations	R		<R>			<D>	2.1.4

KEY: R = Review or Recommendation D = Final Decision <> = Public Hearing

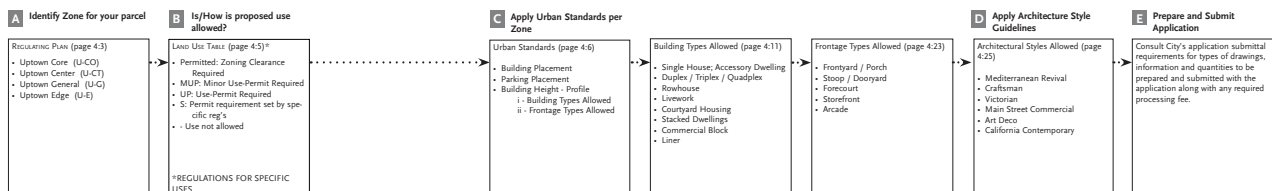
Summary of Review Authority, Heart of Peoria Land Development Code (2007), Peoria, Illinois. Credit: Ferrell Madden/Code Studio.

4.2. Code Organization and Use

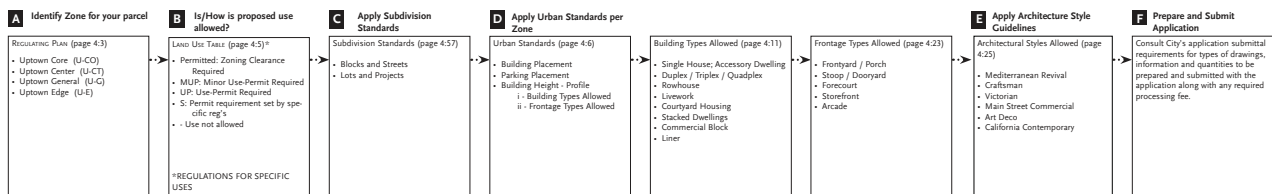
4.2.1 New Use in an Existing Building



4.2.2 New Use and New/Modified Building on Site Less than 2 Acres



4.2.3 Development of 2 acres or more



Code Organization and Use, Uptown Whittier Specific Plan (2008), City of Whittier, California. Credit: Moule & Polyzoides, Architects and Urbanists.



Photo simulation of proposed changes to the intersection of Sycamore Avenue at San Pablo Boulevard, Central Hercules Plan (2001), City of Hercules, California.
Credit: Urban Advantage (www.urban-advantage.com).

Conclusion

There are many options for municipalities that want to preserve or encourage a particular sense of place in their community. However, most find it difficult to do so.

One reason is conventional zoning's narrow focus on what uses are permitted (or rather what uses are prohibited). While this approach has been remarkably successful at protecting the health and safety of the public over nearly a century, conventional zoning has neglected to provide guidance—some would say leadership—on what the physical character of our communities should be.

How Flexible?

Admittedly, our individual aesthetic preferences are diverse. Some critics contend that form-based codes threaten to dictate architectural style, which encourages the creation of “cookie cutter” communities as monotonous as those they are meant to surpass. Many of these same critics observe that form-based codes and other design standards tend to favor architectural styles or features from specific—and possibly idealized—eras in the past, rather than addressing the actual needs and preferences of people living today (porches that are charming but rarely used are often cited as an example). Some even believe that conventional zoning, by focusing on what uses are permitted, allows for greater freedom in the design of our communities, from large urban areas to the buildings we call home.

Advocates counter that form-based codes are exceedingly flexible, and can be made to not only allow but facilitate a broad scope of architectural, landscape, and urban design in a community. At the same time, many of them will acknowledge that the most successful form-based codes tend to be those in which the community has comprehensively identified the specific details of form that it wants and will require of future development.

Will It be Accepted by Developers?

Some developers have expressed unease about having to adapt to a new system of regulation and development review, often complaining that the existing development review process (typically following conventional methods of zoning and regulation) is already too onerous and frustrating. Indeed, it's not uncommon for communities with exacting standards regarding use to be attracted to form-based codes, but choose to simply add a new layer of regulation to existing requirements.

However, the development of a comprehensive form-based code usually requires a community to reassess its existing system of development regulation. In addition, the greater precision and predictability inherent in most form-based codes can offer a community the opportunity to streamline the development review process, often with the aim of persuading local developers to support the new code and, ultimately, to encourage the type of development wanted by the community.

An Approach Deserving Wider Recognition

In the end, form-based codes are but one approach available to communities, but it is one that deserves wider recognition among municipal staff and elected officials. The term “form-based codes” is becoming familiar to many, but relatively few understand how they work, how adaptable they can be, and what would be entailed in creating one for their community. CMAP hopes that this guide will help advance that understanding within our region.

Learn More

This guide to form-based codes is intended as an introduction. We hope that it will help local staff, elected officials, and residents in municipalities throughout our region determine whether a form-based code might be right for their community.

Most communities will want to gain a fuller understanding of the details of form-based codes before they embark on the process of creating one. Fortunately, many resources are available for communities that want to take that next step.

Form-Based Codes Institute

Based in Chicago, FBCI is a non-profit professional organization dedicated to advancing the understanding and use of form-based codes throughout the United States. As part of its core mission, FBCI develops standards for form-based codes, identifying the essential elements of a well-crafted code and highlighting the best examples for other communities to learn from.

FBCI's website (www.formbasedcodes.org) provides several resources on form-based codes, including definitions, sample codes that exhibit best practices, a posting of current RFPs from communities developing form-based codes, and a sample RFQ that municipalities can use, along with an evaluation checklist to help communities evaluate consultant qualifications and work proposals.

FBCI provides education for municipal staff, elected officials, and residents engaged in planning for their communities. At present, FBCI offers the following courses, led by several of the world's leading experts on form-based codes, who continually review and write codes in their work:



FBC 101e: ABCs of FBCs On-Line

An 8-hour web-based course that provides a comprehensive introduction to the principles and components of form-based codes, as powerful regulatory tools to shape community form and character. The course is composed of eight segments arranged in sequential order, with recorded presentations, reading assignments and a virtual field exercise, which can be completed at the convenience of the participant in a single day or during a period of up to six weeks.

FBC 201: Preparing a Form-Based Code - Design Considerations

An advanced course for individuals who have completed FBC 101e. During two days, participants gain an in-depth understanding of urban form for a regulatory framework, exploring design possibilities for greenfield sites, redevelopment sites, already built-out communities, and regional plans. Instructors explain how design principles are applied to create the basic elements of a form-based code (such as building form and public space standards), through lecture and case study, combined with “hands-on” participatory exercises.

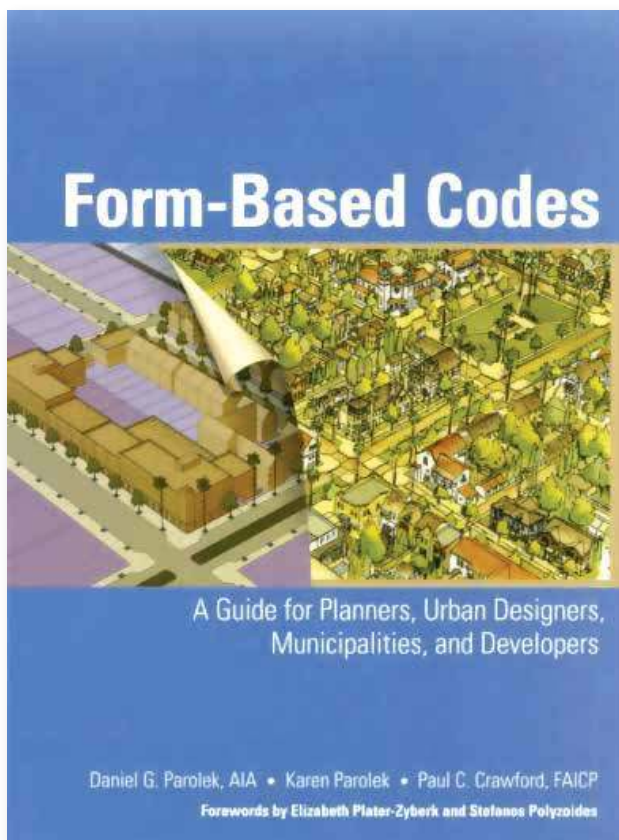
FBC 301: Completing, Adopting and Administering the Code

A two-day, advanced course for individuals who have completed FBC 101e, detailing the mechanics of creating, adopting, and administering a form-based code in a community, including:

- How to structure the coding process, including what must happen before and after the code is drafted.
- The legal aspects of adopting a form-based code (for example, its consistency with a comprehensive plan).
- What to keep or discard from an existing conventional code.
- The advantages and disadvantages of mandatory, parallel, and floating-zone form-based codes.
- The role of design standards within the development review process.
- How form-based codes are adopted and implemented.
- Insulating against potential challenges.

Form-Based Codes: A Guide for Planners, Urban Designers, Municipalities, and Developers

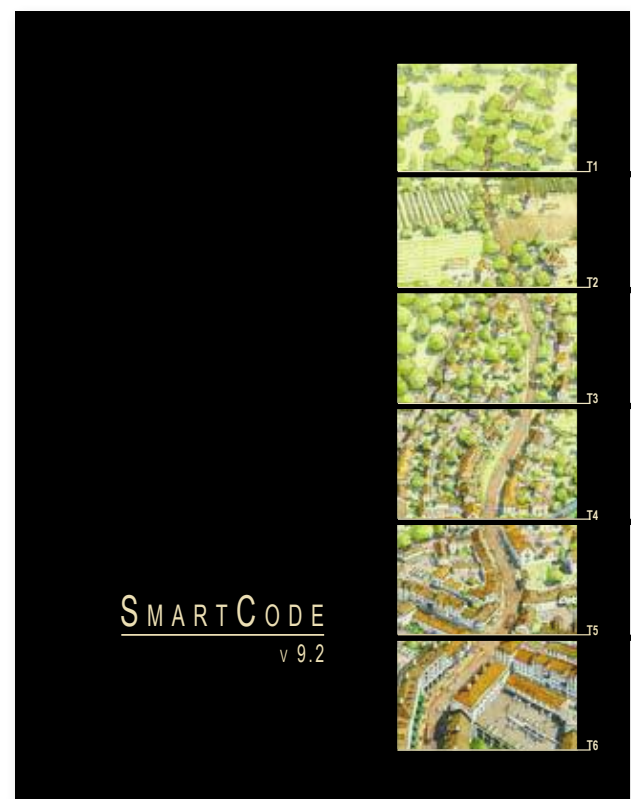
To explain how a form-based code can be developed, this guide follows the approach recommended by architects Daniel and Karen Parolek of Opticos Design, Inc. (www.opticosdesign.com), authors (with Paul Crawford) of *Form-Based Codes: A Guide for Planners, Urban Designers, Municipalities, and Developers* (John Wiley & Sons, 2008). At present, their textbook offers the most comprehensive explanation of how form-based codes work and how they are created, drawing upon years of experience developing award-winning form-based codes for communities across the nation (many of which are featured in the images included in this guide). The book is lavishly illustrated with diagrams, maps, plans, and renderings from numerous case studies that demonstrate best practices in the creation of form-based codes.

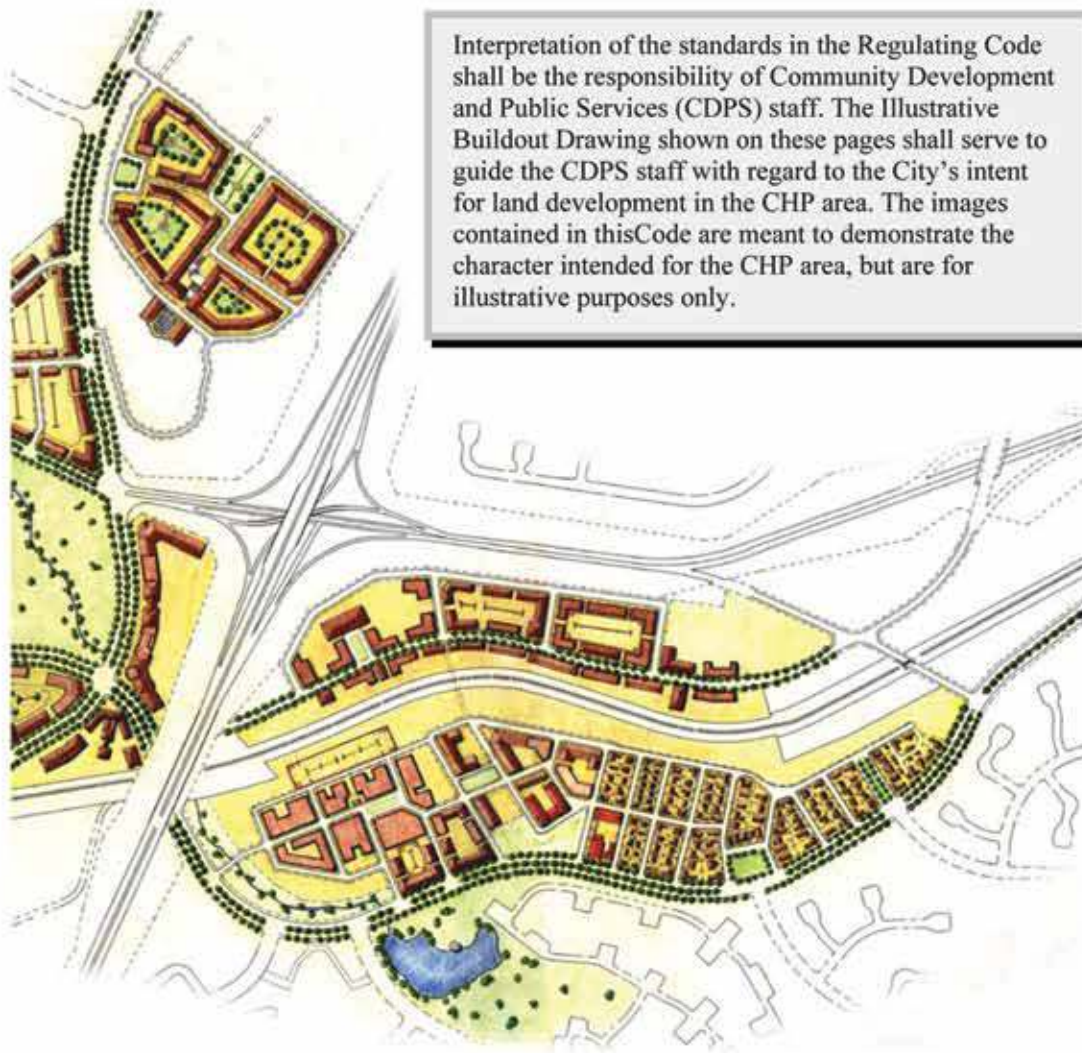


SmartCode

The SmartCode is a comprehensive, transect-based form-based code template (or “model ordinance”) that includes model language, standards, and requirements for multiple scales of development by the public and private sectors, as well as administrative procedures for development review and approval. It is intended to be customized to the local context, priorities, and legal requirements of each community that uses it.

Approachable and relatively easy to follow, it has been used by several communities across the United States, and refined over the years due to the fact that it is “open source” and free of charge. It is available for download at www.smartcodecentral.org.





How to Use the Regulating Code

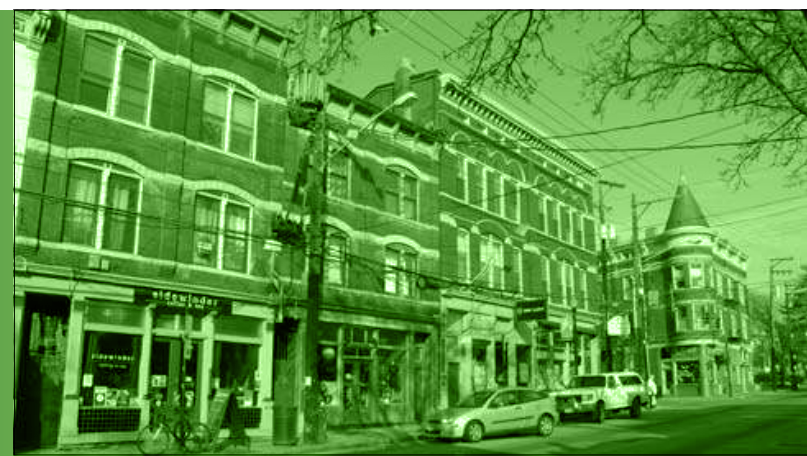
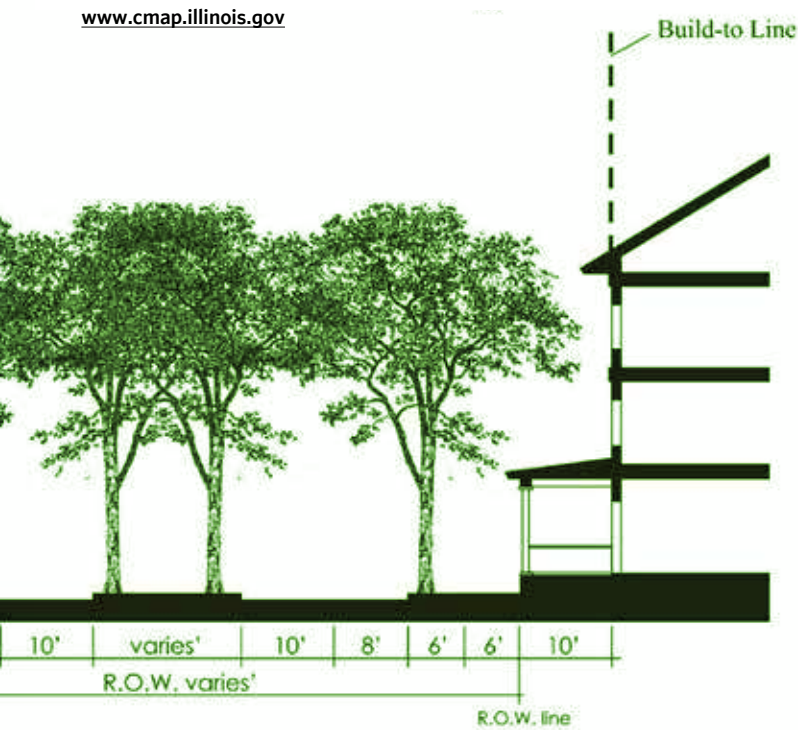
1. Determine whether your use is permitted in the Central Hercules Plan area.
2. Determine whether your site falls within the Waterfront District, Central Quarter, Hospitality Corridor, or Hilltown.
3. Determine which Street Type your lot fronts. (If you have a corner lot, you must determine the primary space or street based on the hierarchy on page II-2. Review Chapter II for provisions about the Street Type that corresponds to the lot.
4. Review the Use Table (Chapter III) and the General Provisions (Chapter VI) which apply throughout the Central Hercules Plan area.
5. Review the Projecting Façade Elements and Architectural Regulations (Chapter IV) which contain specific rules for Buildings.

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Attached Main Street buildings form a unified streetscape along a vibrant commercial street.



Main Street building with bay windows and bright shopfronts



Main Street building with a variety of shopfront sizes.

FY13-0084

1703-3-26

Public Review Draft: 9/21/12

A. Description

The Main Street Mixed-Use Building Type is a small- to medium-sized structure, typically attached, intended to provide a vertical mix of uses with ground-floor retail, or service uses and upper-floor service, or residential uses. This Type makes up the primary component of a neighborhood main street and portions of a downtown main street, therefore being a key component to providing walkability.

T3E	T3N
T4N.1	T4N.2
T5MS	T5N.1
T6C	T5N.2
	T5F

Key

T# Allowed T# Not Allowed

General Note: Photos on this page are illustrative, not regulatory.

City of Cincinnati Form-Based Code

