

UDC Administrative Manual

September 26, 2016
DRAFT

Contents

General Application Procedures.....	4
Planning & Development Applications	5
Planning & Development Application Forms and Checklists	5
Concept Review	5
Subdivisions	5
Preliminary Plats.....	6
Final Plats	6
Transportation Impact Analysis.....	7
Access Management Standards	7
Coordination with PD Zoning	7
Annexation of Land	8
Ordinance Text and Zoning Map Amendments.....	8
Zoning Map Amendments to PD Districts	8
Zoning Map Amendment to Residential Mobile Home (R-MH) District.....	9
Zoning Map Amendment to Urban Conservation Overlay (UC-O) District.....	9
Zoning Map Amendment to Scenic Roadway Overlay (SR-O) District	9
Zoning Map Amendments to Historic Preservation Overlay (HP-O) District.....	10
Optional Development Standards Approval	11
Tall Structures in the M-DT District.....	11
Adjustment of Form-based Controls	12
Minor Adjustments of Form-based Controls	12
Major Adjustments of Form-based Controls	12
Variances.....	13
Sign Plan Approval.....	13
Conditional Use Permits.....	14
Zoning Compliance	14
Comprehensive Plan Amendment	14
Temporary Parking Permit	14
Building & Site Development Applications	15
Building & Site Development Forms, Checklists & Help Documents.....	15
Plan Review	16
Initial Steps	16
Application Procedures	16
Specifications and Standards.....	17

Stormwater Permit.....	17
Fire Department.....	17
City Arborist	18
Permitting	18
Initial Steps	18
Building Permits.....	18
Moving/Relocation of Building.....	18
Demolition.....	18
Applications	19
Signs	19
Site Development & Right of Way Management	19
Floodplain Development Permit	20
Inspection	20
Initial Steps	20
During Construction.....	20
Certificate of Occupancy	21
Appendix A: Planning & Development Application Forms and Checklists	22
Appendix B: Defining Boundaries for National Register Properties: National Register Bulletin 21	23
Appendix C: Transportation Impact Analysis	24
Appendix D: Missouri Department of Transportation Access Management Guidelines	25
Appendix E: Building & Site Development Forms, Checklists and Help Documents	26

This manual provides information and forms necessary to file development related applications referenced in the Approval Procedures Table of the [Unified Development Code \(UDC\)](#), below (Chapter 29-5.2).

Comment [1]: Insert link

Table 5.2-1: Approval Procedures Table						
H = Public Hearing D = Decision R = Recommendation A = Decision on Appeal DCD = Department of Community Development DPW = Department of Public Works Where an Appeal body is not shown, appeal is to the courts.						
Procedure	Section 29-	Department	Board of Adjustment	Planning & Zoning Commission	Historic Preservation Commission	City Council
Zoning Compliance	5.4(a)	D-DCD	A			
Building Permit	5.4(b)	D-DCD	A			
Certificate of Occupancy	5.4(c)	D-DCD	A			
Variance [1]	5.4(d)		D			
Adjustment of Form-based Standards	5.4(e)					
Minor		D-DCD	A			
Major			D			
Sign Permit	5.4(f)	D-DCD	A			
Sign Plan Approval	5.4(g)		D			
Temporary Parking Permit	5.4(h)	D-DCD	A			
Floodplain Development Permit	5.4(i)	D-DPW	A			
Land Disturbance Permit	5.4(j)	D-DPW	A			
Stormwater Permit	5.4(k)	D-DPW	A			
Optional Development Standards Approval	5.4(l)		D			
Certificate of Appropriateness	5.4(m)		A		D	
Landmark and Historic District Designation	5.4(n)			R	R	D
Conditional Use Permit	5.4(o)			R		D
Subdivision of Land	5.4(p)					
Tract Split		D-DCD				
Administrative Plat Review		D-DCD				
Minor Subdivision - Concept		R				
Minor Subdivision - Final				R		D
Major Subdivision - Concept		R				
Major Subdivision - Preliminary				R		D
Major Subdivision - Final				R		D
Ordinance Text or Map Amendment	5.4(q)					
Concept Review		R				
Zoning Text or Map Amendment				R		D
Annexation of Land	5.4(r)			R		D
Comprehensive Plan Amendment	5.4(s)			R		D

[1] Exceptions: Decisions on variances from Subdivision Regulations are decided by the Commission; variances from the HP-O are decided by the Historic Preservation Commission; variances from some stream buffer standards are decided by the Director of Public Works.

General Application Procedures

No application for a permit, approval, or appeal under the UDC shall be reviewed by City staff, or scheduled for a public hearing before the Board or Commission or the Historic Preservation Commission, and no permit or approval shall be issued, until the Department has confirmed that required application materials are complete and required fees have been paid. The burden of providing complete and accurate information required by the Department for that type of application shall be on the applicant.

Application filing requirements are organized below according to the Division responsible for processing. The Planning & Development Division processes subdivision, zoning, and land use plan requests. The Building & Site Development Division processes land disturbance and development permit requests.

Completed applications must be submitted to the Community Development Department's 3rd floor customer service kiosk in City Hall (701 E Broadway, Columbia, MO 65205-6015). Application deadlines and filing requirements vary depending on the case type. The [2016 submittal schedule](#) identifies specific filing deadlines and tentative processing schedules for Planning & Development requests which require Council approval. Building & Site Development applications are processed as received, and approved once any and all requirements have been met by the applicant.

The following subheadings include weblinks to all application forms, checklists, worksheets, petitions and supplementary information needed to complete and submit requests for permits, approvals, or appeals under the UDC. Please contact the Department of Community Development for additional information about application forms and filing procedures.

Planning & Development Division: 573-874-7239; Planning@CoMo.gov
Building & Site Development Division: 573-874-7474

Please consult the UDC for more specific information about regulatory procedures (Chapter 29-5.4).

Click [here](#) for the complete City Code of Ordinances, including the UDC.

Planning & Development Applications

Planning & Development Application **Forms** and Checklists

Comment [2]: Update as needed

The following is a complete listing of Planning & Development Application Forms & Checklists:

[Submittal Schedule 2016](#)

[Fee Schedule](#)

[Development Review Application - Annexation, Planned District & Rezoning Actions](#)

[Development Review Application - Subdivision & Land Development Actions](#)

[Annexation Petition](#)

[Preliminary Plat Checklist](#)

[Final Plat Checklist](#)

[Variance Request Worksheet](#)

[Sidewalk Variance Request Worksheet](#)

Comment [3]: Insert forms for husband & wife, single, trust, LLC, corporation, etc.

Printed copies of each of the above-referenced documents appear in Appendix A to this Manual.

Concept Review

Prior to the submission of a request for preliminary plat of a major subdivision, final plat of a minor subdivision, tract split, or zoning map amendment to PD or R-MH Districts, a pre-application meeting between the applicant and City staff must occur. This meeting allows the applicant to familiarize staff with their request, and provides staff an opportunity to identify public needs and issues associated with a request which may influence the design or cost of the project.

Please complete and submit the "Concept Review Meeting" checklist items found on the [Development Review Application](#) form to the Planning Department at least one week prior to the desired meeting date. Meetings are scheduled between 9am and 11am on Tuesdays and Thursdays.

Subdivisions

"Subdivision" refers to the division of a tract or parcel of land into two (2) or more lots, tracts or parcels for sale or development. Subdivision regulations control the division of land within the corporate limits of the city. The sale of land requires a subdivision or tract split as deemed necessary to promote the public health, safety and general welfare of the city by providing for the safe, orderly and economic use of transportation; to facilitate orderly layout and use of the land; to ensure proper legal description and monumenting of subdivided land; to secure safety from fire, panic and other dangers; to provide adequate light and air; to prevent the overcrowding of land and avoid undue concentrations of population; to facilitate adequate provision for transportation, water, sewerage, parks, schools, playgrounds and other requirements; and to facilitate the further subdivision of larger tracts into smaller tracts of land.

Preliminary Plats

Preliminary plats are drawings showing the proposed manner or layout of a subdivision of land. These are required for “major” subdivisions, which typically contain multiple phases of subdivision and development that are final platted over a period of several years.

Following a Concept Review (see above application requirements), preliminary plats are submitted to the Community Development Department for review, along with a completed [Development Review Application](#) and required materials, then forwarded to the Planning and Zoning Commission for a recommendation prior to City Council consideration.

Final Plats

Final plats represent the formal division of land in accordance with previously approved preliminary plats (in the case of major subdivisions), or as stand-alone requests for minor divisions of land (e.g., creating five or fewer lots).

Applications for final plats are submitted to the Community Development Department for review, along with a completed [Development Review Application](#) and required materials, then forwarded directly to the City Council for consideration.

Major Subdivision

An applicant for a major subdivision shall apply for and secure approval of the proposed subdivision through a three-step process including: (1) concept review, (2) preliminary plat, and (3) final plat.

Minor Subdivision

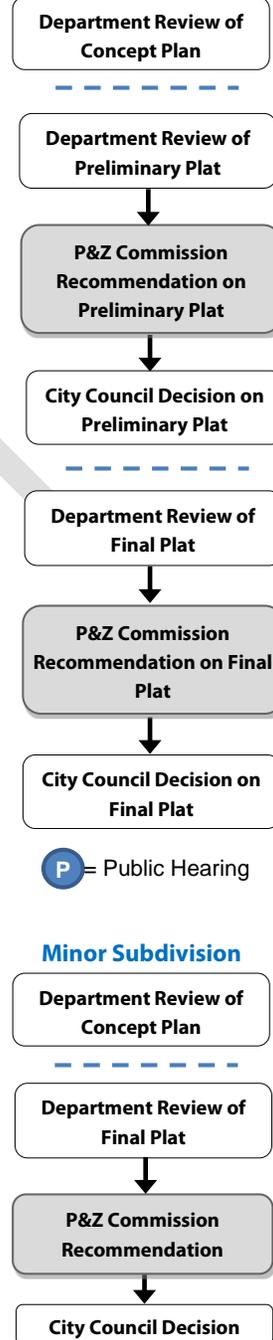
An applicant for a minor subdivision shall apply for and secure approval of the proposed subdivision through a two-step process including: (1) concept review, and (2) final plat.

Administrative Subdivision

An administrative plat may be filed with the Director if the plat does not create, vacate, or change the location and/or size of streets; and the plat does not create any additional residential lot or mixed use lots that will contain residential uses.

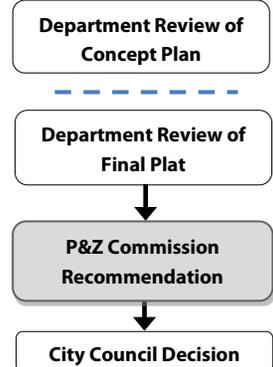
An applicant for an administrative subdivision shall submit a completed [Administrative Plat Application](#) to the Department of Community Development for review and secure approval of the proposed subdivision through a one-step process including (1) administrative plat approval.

Major Subdivision



Comment [4]: Need to prepare a Land Analysis Map checklist or add items to existing application checklist.

Minor Subdivision



Tract Split

A tract split is not a subdivision, but an alternative to subdivision that requires full completion of the subdivision process at a later time. The tract split procedure is intended to simplify the orderly subdivision of large tracts of land for separate parcel sale through an administrative approval process. Preparation of a formal subdivision plat, Commission review, and Council approval are not required at the tract split stage, but will be required when the parcels resulting from a tract split are further divided into individual lots or developed.

An applicant for a tract split shall apply for and secure approval of the split through a two-step process including: (1) concept review, and (2) [tract split](#).

Comment [5]: No application form exists.

Transportation Impact Analysis

An estimate of the trips generated by a proposed development(s) will be completed. Any proposed development that would produce 100 or more trips in and out of the site at peak hour shall be required to submit a transportation impact analysis (TIA) in accordance with the provisions contained in [Appendix C](#) of this Manual.

Comment [S6]: UDC references Appendix A. Update to match.

Access Management Standards

Non-residential driveway spacing shall conform to the provisions of the most current edition of [The Missouri Department of Transportation Access Management Guidelines](#), as shown in [Appendix D](#) of this Manual, or access management standards promulgated by the City.

Comment [S7]: UDC references Appendix B. Update to match.

Coordination with PD Zoning

Whenever a proposed development plan for a PD zone district requires a subdivision of land, approval of the subdivision of land shall be required in addition to approval of the PD zone district and development plan. Subdivision review may be carried out simultaneously with the review of the development plan, and the required information may be included in a single document that serves as both a development plan and a preliminary plat, as described in the following procedure:

1. An application for approval of a development plan for a PD zone district shall include all information normally required for submission and approval of a preliminary subdivision plat.
2. Commission review and recommendation of the preliminary plat shall be accomplished at the time of, and as a part of, its review and recommendation of the PD development plan.
3. Approval of the PD development plan shall constitute approval of the preliminary subdivision plat.

Annexation of Land

Annexation refers to the absorption of land into the City's jurisdictional territory. Voluntary petitions for annexation into the City of Columbia most frequently result from a property owner's desire to connect to the City's public sewer system in order to replace a failing septic tank or lagoon system, or to facilitate urban style development which would not otherwise be supportable by county infrastructure or services.

To be eligible for voluntary annexation into the City of Columbia, property must be adjacent to the City limits (either presently or when combined with other properties). The process of voluntary annexation requires that you complete an [Development Review Application](#) form and a signed and notarized [Annexation Petition Form](#).

Please consult the [Annexation FAQs](#) document for more information about the costs and benefits of annexation.

Comment [8]: FAQ document needs to be updated.

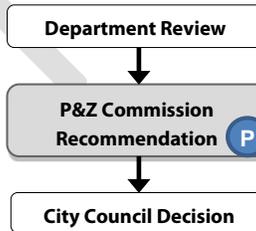
Comment [9]: No form exists for ordinance text amendments.

Ordinance Text and Zoning Map Amendments

Any owner of real property within the City of Columbia has the right to request that the City Council amend the text of this Ordinance, or the City Zoning Map as it pertains to their property.

A completed [Development Review Application](#) form must be submitted in accordance with the general filing procedures identified under Application Procedures, above.

Ordinance Text or Zoning Map Amendment (General)



P = Public Hearing

Comment [10]: Clean up flow chart to remove background text.

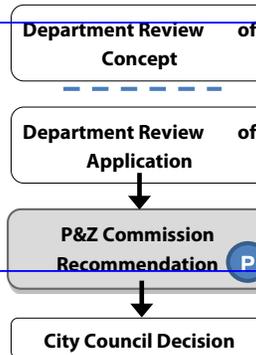
Zoning Map Amendments to PD Districts

Applications to change the Zoning Map to designate land into a PD zone district, or to modify a PD zone district begin with a Concept Review meeting to discuss the proposal with the Planning and Development staff which can inform the applicant of land use plan guidelines, zoning history, planned improvements and development constraints in the subject area. In addition to completion of a [Development Review Application](#) form, a [Statement of Intent Worksheet](#), a development plan must accompany the request, and a completed [Development Plan Checklist](#) must be submitted with the application to ensure that the proposed plan includes all required elements.

Minor Amendments to PD Districts

Minor changes to an approved development plan may be approved by the Director as described in Section 29-5.3(f) of the UDC. However the Director shall apply the [criteria found in Section 29-5.3\(f\)\(1\) to determine whether a proposed change is minor.](#)

Zoning Map Amendment to PD District



P = Public Hearing

Comment [11]: Update to include revised SOI elements.

Comment [12]: Could create a minor amendment eligibility checklist based on these criteria.

Please contact Planning Staff to determine whether desired changes to any previously approved PD development plan are eligible to be processed as a minor amendment.

Zoning Map Amendment to Residential Mobile Home (R-MH) District

Applications to change the Zoning Map to designate land into an R-MH district require Council approval of both a Zoning Map amendment and a development plan for the property that shall be binding on the owner and its successors and assigns. Later development applications must be consistent with the approved development plan, or the development plan will need to be modified by Council action.

Applications to modify an R-MH zone district, shall include a preliminary development plan, and shall be made, reviewed, and decisions made as described in Ordinance Text and Zoning Map Amendments (above), except that a concept review is required prior to filing formal application.

Comment [13]: Create a checklist of required preliminary development plan items.

Zoning Map Amendment to Urban Conservation Overlay (UC-O) District

Applications to change the Zoning Map to designate land into a UC-O zone district, or to modify a UC-O zone district, shall be made, reviewed, and decisions made as described in Ordinance Text and Zoning Map Amendments, except to the extent those requirements are modified in Section 29-2.3(a) (UC-O District) of the UDC.

UC-O Designation Procedure

The City may designate areas, tracts or sites for inclusion in an Urban Conservation District pursuant to the procedures established for Ordinance Text and Zoning Map Amendments (above), subject to compliance with the following criteria:

Comment [14]: Create new application form?

1. A proposal to designate a UC-O may be made by the Council, or by Council recognized neighborhood organizations of the area to be designated, or by property owners in the area to be designated. If not initiated by Council, the application requires (a) a petition signed by the owners of fifty (50) percent or more of the parcels of land within the boundaries of the proposed district or property owners representing fifty (50) percent or more of the area of land to be designated and (b) a statement documenting the conditions justifying a UC-O designation and the purposes and intent of the designation.
2. If the Director confirms that the application meets the requirements of subsection i above, the City shall work with the applicants to prepare a draft ordinance reflecting the intent of the application, and the Planning and Zoning Commission shall hold a public hearing and notice shall be given to all owners of affected property in accordance with the requirements of Section 29-5.3 (c) (Notice of Public Hearing).
3. The Commission may solicit and present expert testimony or documented evidence regarding the importance and effects of urban conservation within the proposed district. Testimony from neighborhood organizations affected shall be directly solicited and considered by the Commission.
4. Following a public hearing and recommendation from the Commission, Council shall take action on the application pursuant to Ordinance Text and Zoning Map Amendments.
5. An application to amend an approved UC-O designation may be initiated and shall be reviewed and may be approved using the same procedures used for designation of the UC-O.

Zoning Map Amendment to Scenic Roadway Overlay (SR-O) District

Applications to change the Zoning Map to designate land into a SR-O zone district, or to modify a SR-O zone district, shall be made, reviewed, and decisions made as described in Ordinance Text and Zoning Map Amendments, except to the extent those requirements are modified in Section 29-2.3(b) (SR-O District).

SR-O Designation Procedure

The following procedure shall be followed in designating scenic roadways:

1. A proposal to designate a scenic roadway may be made by (a) the Council, or (b) an application by interested citizens, citizen groups or a recognized neighborhood organization, or (c) an application signed by owners of fifty (50) percent or more of all parcels of land with frontage along the proposed scenic roadway segment.
2. The Council action or interest group/property owner application must include a statement identifying the criteria set forth in subsection 6 below that support the scenic roadway designation and shall state the purposes and intent of the designation.
3. City staff shall prepare a report for the Commission, and the Commission shall hold a public hearing on the SR-O designation request. The staff report and the recommendations of the Commission shall be forwarded to the Council, which will conduct a public hearing to take action on the proposed designation.

Zoning Map Amendments to Historic Preservation Overlay (HP-O) District

Landmark and Historic District Designation Procedure

A petition to designate a landmark may be made only by the owner(s) of the proposed landmark. A petition to designate a historic district may be made only by the owners of at least 60 percent of the Boone County tax map parcels in the proposed historic district. If a tax map parcel has more than one owner, all such owners must sign any petition mentioned in this section before the parcel shall be counted as supporting the petition and the parcel shall receive only one vote, regardless of the number of owners.

A petition to designate a landmark or historic district shall be on a form provided by the Director and approved by the Historic Preservation Commission. The petition shall clearly identify all historic and architectural features proposed for regulation. The petition shall identify the facts which support a determination that the proposed landmark or historic district meets the criteria for designation set forth below. Except as otherwise provided in Section 29-2.3(c)(5), the petition shall be handled in the same manner as a petition for rezoning.

Comment [15]: +rusty.palmer@como.gov , do we have such a form?

Overall boundaries for local historic districts shall be determined by the same standards used by the National Register of Historic Places, as laid out in [Defining Boundaries for National Register Properties: National Register Bulletin 21 \(Washington D.C.: U.S. Department of the Interior, 1995; rev. 1977.\)](#) (See Appendix D of this Manual). Gerrymandering that has the apparent effect of overwhelming significant areas of opposition is prohibited.

Certificate of Appropriateness

A Certificate of Appropriateness shall not be required for interior construction or alteration of any structure in a historic district unless the structure has been designated a landmark. A Certificate of Appropriateness shall be required before the following actions affecting any historic or architectural feature identified in the ordinance placing the property in the HP-O district may be undertaken:

1. Any construction, alteration, removal, or any demolition in whole or in part regardless of whether a permit from the City is required.

Adjustment of Form-based Controls

Minor Adjustments of Form-based Controls

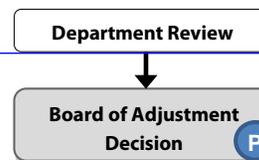
An applicant for a permit or approval in the M-DT zone district may apply for an adjustment to the form-based controls in Section 29-4.2 and the Director may approve the adjustment if the Director determines that all of the following criteria have been met:

1. The proposed adjustment will not result in development that is inconsistent with the intended character of the M-DT zone district or the Regulating Plan for the block face including the applicant's property or the block face(s) immediately across the street(s) from the applicant's property.
2. The proposed adjustment will result in a building and site design of equal or superior quality and visual interest to that required by the application of the form-based controls in Section 29-4.2.
3. The proposed adjustment will not result in any of the following:
 - a. Change a minimum or maximum height requirement by more than five (5) percent;
 - b. Change a finished floor elevation requirement by more than five (5) percent;
 - c. Change a Street Wall height, length, or access gate requirement by more than ten (10) percent;
 - d. Move a Required Building Line further from the street;
 - e. Move a Required Building Line more than six (6) inches closer to the street;
 - f. Reduce a minimum percentage of a building frontage that must be built to the Required Building Line by more than five (5) percent of the required length;
 - g. Move a Parking Setback Line more than five (5) feet closer to any street;
 - h. Increase the maximum average spacing of building entrances by more than ten (10) percent;
 - i. Change a minimum or maximum Fenestration requirement by more than five (5) percent; or
 - j. Change the minimum or maximum depth of a building projection by more than five (5) percent.

Major Adjustments of Form-based Controls

All other variances from the form-based controls in Section 29-4.2 shall require an approval by the Board, after a public hearing, following the procedure in Section 29-5.4(d) but based on the criteria in Section 29-5.4(e)(1)(i) and (ii) above instead of the criteria in Section 29-5.4(d).

Major Adjustment of Form-based Controls



P = Public Hearing

Comment [19]: check section references

Variations

Applications for a variance from the Zoning Regulations of this Ordinance must be submitted to the Planning & Development Division of the Department of Community Development according to the General Application Procedures above, and are forwarded to the Board of Adjustment for consideration. Applications for variances shall be decided by the Board pursuant to the criteria for approval in Section 29-54(d)(2), with the following exceptions:

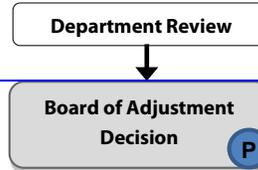
1. No variances from the Subdivision Standards in Sec. 29-4.3 are permitted. Requests for deviations from the Subdivision Standards shall be considered by the Commission and decided by Council during the Subdivision of Land procedures in Section 29-5.4(p).
2. Variances in the Historic Preservation Overlay District shall be approved as described in Sec. 29-2.3(c)(14)(Variances).
3. Variances in the Floodplain Overlay District shall be approved as described in Sec. 29-2.3(d)(15)(Variance Procedures) and (16) (Conditions for Variances).
4. Some variances from Stream Buffer regulations may be approved by the Director of Public Works, as described in subsection (2)(v) below.
5. Variances from Sign regulations shall be approved as described in Section 29-5.4(d)(2)(ii)(Sign Variances)

Any person or persons, jointly or severally aggrieved by any decision of the Board, any taxpayer, or any officer, department, board or bureau of the municipality, may appeal a decision of the Board to a court of competent jurisdiction.

Sign Plan Approval

The owner or lessee of the premises upon which a sign is to be erected may file an application with the Board for approval of a sign plan upon forms provided by the city and the Board may approve a sign plan allowing different numbers and types of signs permitted on a property if it determines that the following criteria are met. Sign plans are not allowed in a PD zone district; adjustments to permitted signs in PD zone districts require an amendment to the PD zone district approval.

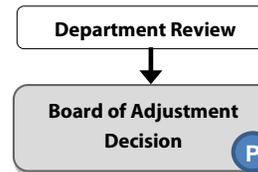
Variance



P = Public Hearing

Comment [20]: Current BOA application forms are referenced here, but will need to be updated to reflect new processing department.

Sign Plan Approval



P = Public Hearing

Conditional Use Permits

Conditional Use Permit



Comment [21]: New process requires new application filing instructions & forms.

Zoning Compliance

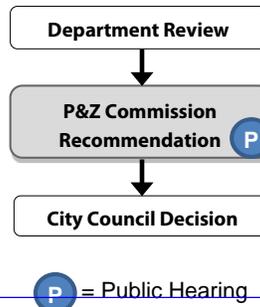
Each application under this Ordinance that does not require one or more of the specific regulatory procedures in the following subsections shall be reviewed for zoning compliance. Zoning compliance checks shall be conducted by the Department, and applications shall be approved if they comply with this Ordinance. The Department's decision may be appealed to the Board pursuant to Section 29-5.3(g).

Comment [22]: No separate application needed. This is addressed by staff as part of their standard review of new business license requests.

Comprehensive Plan Amendment

This procedure may be used to amend the City's adopted comprehensive plan or to adopt a new comprehensive plan. An application to amend the comprehensive plan may be filed by the Commission, the Council, or any resident of the City. An application to adopt a new comprehensive plan may be filed by the Commission or the Council.

Comprehensive Plan Amendment



Comment [23]: No application form exists for this. Is one needed? A simple letter to the Director indicating the rationale for requesting a Comp Plan amendment may be adequate.

Temporary Parking Permit

The Director may issue temporary permits to allow parking of motor vehicles in a yard area as prohibited in Section 29-4.4(f)(3)(Parking-Use of Yards), for a period of up to forty-eight (48) hours on Saturdays, Sundays, and holidays, if the Director determines that the criteria in subsection (2) have been met.

P = Public Hearing

Comment [24]: Per Pat Zenner: This "procedure" is narrow and insular enough to be contained in parking regulations, adjacent to yard-area parking regs. Recommend moving to parking regs.

Building & Site Development Applications

The Building and Site Development Division of the Community Development Department is responsible for the administration and implementation of a variety of City codes and ordinances. This includes, but is not limited to, the plan review, permitting, and inspection of privately funded public infrastructure and all aspects of the construction of private structures with the City of Columbia.

Building & Site Development Forms, Checklists & Help Documents

The following is a complete listing of Building & Site Development Forms, Checklists and Help Documents:

[Commercial Development Plan Review Help Document](#)

[Initial Screening Process \(ISP\) Checklist](#)

[Site Plan Checklist](#)

[Commercial Permit and Plan Review Application](#)

[Land Disturbance Permit Application](#)

[Sewer Extension Application](#)

[Street, Storm Sewer and Sanitary Sewer Specifications \(October 2016\)](#)

[Street and Storm Drain Details \(October 2016\)](#)

[Sanitary Sewer Details \(October 2016\)](#)

[Sanitary Sewer Pump Station Design Requirements and Standard Specifications \(April 2001\)](#) (Note: This link leads to a webpage with 10 separate linked PDFs pertaining to this topic.)

[Stormwater Management and Water Quality Manual](#) (Note: This link leads to a webpage with links to numerous PDFs pertaining on this topic.)

[Policy for Stormwater Detention on Small Site Upstream of Critical Area](#)

[Stormwater Detention Checklist](#)

[Stormwater Management BMP Facilities Covenant](#)

[Stormwater BMP Inspection Schedules](#)

[Stormwater BMP Inspection Forms](#)

[Erosion and Sediment Control Manual \(Available October 2016\)](#)

[Columbia Fire Department Requirements Checklist](#)

[Standards and Guidelines for Landscaping and Tree Preservation](#)

[Permitting Process Help Document](#)

[Building Permit Fee Calculator](#) (Links to an online calculator)

[Building Permit Fee Schedule](#)

[Owner Contractor Affidavit](#)

[Requirements for Moving/Relocation of Building](#)

[Moving/Relocation of Building Permit](#)

[Demolition Permit Application](#)

[Residential Demolition Permit Site Plan Requirements](#)

[Footing/Foundation Permit Application](#)

[Trade Permit Application - Electrical, Fuel Gas, Mechanical, and Plumbing](#)

[Fire System Permit Application](#)

[Building Permit - New Residential Construction](#)

[Plot Plan Requirements for One & Two Family Residential Dwelling - Checklist](#)

[Tent Permit Application](#)

[Sign Ordinance FAQs](#)

Comment [25]: This one isn't out on website yet. Proposed to become effective October 1, 2016. Might get pushed due to a needed ordinance revision.

Comment [26]: Need to use this to create the actual checklist. Requirements effective October 1, 2016.

Comment [27]: Checklist effective on final plats approved after October 1, 2016.

[Sign Permit Application](#)
[Clean Fill Permit Application](#)
[Application for Street/Sidewalk Closure and Restriction for Construction & Repairs](#)
[Right of Way Permit Application](#)
[Right of Way Tree Planting Permit](#)
[Floodplain Development Permit Application](#)
[NFIP Elevation Certificate](#)
[Logging Permit](#)
[The Inspections Process](#)
[Application for Extended Work Hours](#)
[Erosion Control and Land Disturbance Violation Enforcement Policy](#)
[Energy Efficiency Certificate](#)
[Capture and Containment Test](#)

Printed copies of each of the above-referenced documents appear in Appendix E to this Manual.

Plan Review

Initial Steps

The commercial development plan review help document was created to give the design community a guide to use as they navigate their way through the design and plan review processes. Also included is an initial screening process checklist which provides the design community the minimum items needed to start the plan review process and a site plan checklist to assist the design community with what is required on the final civil site drawings and to ensure better consistency between plan reviewers. The site plan checklist can also be used for the design and plan review of new subdivision construction plans.

[Commercial Development Plan Review Help Document](#)
[Initial Screening Process \(ISP\) Checklist](#)
[Site Plan Checklist](#)

Application Procedures

All multi-family and commercial structures require plan review by the City of Columbia. Therefore, each project of this type must be accompanied by a commercial permit and plan review application. Projects which include civil site work must also be accompanied by a land disturbance permit application. Projects which include the extension of a City sanitary sewer main must be accompanied by a sewer extension application. Each of these applications can be found at the links below:

[Commercial Permit and Plan Review Application](#)

Land Disturbance Permits

[Land Disturbance Permit Application](#)
[Sewer Extension Application](#)

Specifications and Standards

All privately funded public infrastructure must be designed and constructed to the City's adopted specifications and standards. Below are links to those detailed requirements:

[Street, Storm Sewer and Sanitary Sewer Specifications \(October 2016\)](#)

[Street and Storm Drain Details \(October 2016\)](#)

[Sanitary Sewer Details \(October 2016\)](#)

[Sanitary Sewer Pump Station Design Requirements and Standard Specifications \(April 2001\)](#)

Stormwater Permit

All civil site projects must first determine if their site must meet the City's stormwater requirements. Chapter 12A of the City's Code of Ordinances provides this information. Once applicability is determined the City has prepared a variety of documents to assist the design community with the plan review, permitting, and inspection of the required stormwater best management practices (BMPs). The stormwater management and water quality manual details the design requirements, as does the subsequent policy. The City has also developed a stormwater detention checklist to be used during the design process and by the City during the plan review process:

[Stormwater Management and Water Quality Manual](#)

[Policy for Stormwater Detention on Small Site Upstream of Critical Area](#)

[Stormwater Detention Checklist](#)

City ordinance requires that stormwater BMPs installed as part of the development process be maintained by the property owner. To assist the property owner with these ongoing requirements the City has developed inspection forms and schedules to be used by the owner and a facilities covenant, which is recorded with the property, to ensure that future owners of the property are made aware of the maintenance requirements associated with these BMPs.

[Stormwater Management BMP Facilities Covenant](#)

[Stormwater BMP Inspection Schedules](#)

[Stormwater BMP Inspection Forms](#)

The erosion and sediment control manual details the minimum specifications, standards, and design requirements needed handle the temporary erosion and sediment control associated with a development project. This manual is used by the design professional and City staff during the design and plan review processes.

[Erosion and Sediment Control Manual \(October 2016\)](#)

Fire Department

The Columbia Fire Department reviews plans and completes inspections to ensure compliance with the most recent adopted International Fire Code. The checklist below was created to assist the design community with those requirements:

[Columbia Fire Department Requirements Checklist](#)

Comment [28]: This one isn't out on website yet. Proposed to become effective October 1, 2016. Might get pushed due to a needed ordinance revision.

City Arborist

The City Arborist is responsible for the plan review and inspection of the City's landscaping and tree preservation ordinances. The document below was developed to assist the development community with meeting those requirements:

[Standards and Guidelines for Landscaping and Tree Preservation](#)

Permitting

Initial Steps

Building and Site Development is responsible for collecting the permit fees for a variety of departments and divisions of the City. This enables the division to serve as a "one-stop shop" to obtain a permit. To assist the design and construction communities with the permitting process the division has created the documents that follow. Of particular note is a building permit fee calculator and a permit fee schedule to help applicants better estimate the final permit cost.

Building Permits

No erection, alteration, or enlargement of a building may begin until the owner of the property on which the building is or will be located, or their authorized agent, has applied to the Director for a building permit and the Director has issued a building permit authorizing the proposed erection, alteration, or enlargement. The Director shall issue a building permit if the application is consistent with the requirements of this Ordinance, all adopted and applicable building codes of the City, and all other regulations of the City.

[Permitting Process Help Document](#)

[Building Permit Fee Calculator](#)

[Building Permit Fee Schedule](#)

[Owner Contractor Affidavit](#)

Moving/Relocation of Building

Although this is a rare occurrence the City of Columbia has in the past had citizens desire to move an existing building to another property. The following documents are available to assist with that process.

[Requirements for Moving/Relocation of Building](#)

[Moving/Relocation of Building Permit](#)

Demolition

The documents necessary to demolish a residential or commercial structure are included here.

[Demolition Permit Application](#)

[Residential Demolition Permit Site Plan Requirements](#)

Comment [29]: Need to use this to create the actual checklist. Requirements effective October 1, 2016.

Applications

Building and Site Development allows the phasing of commercial projects often starting with a footing and foundation permit. The division also allows the fire systems (sprinklers, alarms, etc.) to be a deferred submittal. Trade permits for electrical, mechanical, and plumbing work outside of the building permit process is included here as well.

[Footing/Foundation Permit Application](#)

[Trade Permit Application - Electrical, Fuel Gas, Mechanical, and Plumbing](#)

[Fire System Permit Application](#)

Residential home construction is permitted using a detailed application and plot plan. The plot plan provides a visual of how the home will be situated on the lot. Both the application and the City's plot plan requirements are included here.

[Building Permit - New Residential Construction](#)

[Plot Plan Requirements for One & Two Family Residential Dwelling - Checklist](#)

Comment [30]: Checklist effective on final plats approved after October 1, 2016.

Building and Site Development and the Fire Department regulate the use of tents over 400 square feet. A permit application for these tents follows.

[Tent Permit Application](#)

Signs

Building and Site Development regulates Chapter 23 of the City's Code of Ordinances which governs the size and location of signs. Included here is a frequently asked questions page and the necessary permit application.

[Sign Ordinance FAQs](#)

[Sign Permit Application](#)



Site Development & Right of Way Management

Construction projects often require that fill material be removed from the current site to a new location for future use. This requires a clean fill permit. That permit application follows.

[Clean Fill Permit Application](#)

Building and Site Development is responsible for enforcing the requirements of Chapter 24 of the City's Code of Ordinances. This chapter covers the management of the City right of way among other things. Included below are the necessary forms to close and/or do work within the right of way.

[Application for Street/Sidewalk Closure and Restriction for Construction & Repairs](#)
[Right of Way Permit Application](#)
[Right of Way Tree Planting Permit](#)

Floodplain Development Permit

Building and Site Development is responsible for enforcing the floodplain regulations adopted by Section 29-22 of the City's Code of Ordinances. Included here is the necessary permit application prior to construction and elevation certificate following construction.

[Floodplain Development Permit Application](#)
[NFIP Elevation Certificate](#)

The City Arborist is responsible for the plan review and inspection of the City's tree preservation ordinance. The clear cutting of climax forest requires a logging permit which is included below.

[Logging Permit](#)

Inspection

Initial Steps

Building and Site Development has created the following help document to assist the construction community navigate the inspection process.

[The Inspections Process](#)

During Construction

City allowed working hours are 7:00 a.m. to 7:00 p.m. Monday to Friday and 9:00 a.m. to 5:00 p.m. Saturday. Work outside of those windows requires an extended works hours permit.

[Application for Extended Work Hours](#)

Building and Site Development is responsible for the enforcement of the erosion and sediment control requirements set forth by Chapter 12A of the City's Code of Ordinances. The policy below better describes how the division handles that enforcement.

[Erosion Control and Land Disturbance Violation Enforcement Policy](#)

Certificate of Occupancy

No vacant land shall be occupied or used except for agricultural uses, and no building erected or structurally altered shall be occupied or used until a certificate of occupancy has been issued by the Director. A certificate of occupancy shall state that the building or proposed use of a building or land complies with this Ordinance and with all the building and health laws and ordinances of the City.

A certificate of occupancy for the use of vacant land, or the change in the character of the use of land, shall be applied for before any such land shall be occupied or used, and a certificate of occupancy shall be issued within ten (10) days after the application has been made, provided such use is in conformity with the provisions of this Ordinance.

A certificate of occupancy for a new building or the alteration of an existing building shall be applied for in writing coincident with the application for a building permit, and shall be issued within ten (10) days after the erection or alteration of such building or part of the building has been completed in conformity with this Ordinance. Pending the issuance of a regular certificate, a temporary certificate of occupancy may be issued by the Director for a period not exceeding six (6) months, during the completion of alterations or during partial occupancy of a building pending its completion. The temporary certificate shall not be construed as altering the respective rights, duties or obligations of the property owners or of the City relating to the use or occupancy of the premises, or any other matter covered by this Ordinance, and the temporary certificate shall not be issued except under such restrictions and provisions as will ensure the safety of the occupants.

Prior to issuance of a Certificate of Occupancy, the International Residential Code requires a completed energy efficiency certificate be placed within the structure. The International Building Code also requires that a performance test be conducted before occupancy of a structure serving commercial cooking appliances. Those forms are included below.

[Energy Efficiency Certificate](#)
[Capture and Containment Test](#)

Appendix A: Planning & Development Application Forms and
Checklists

DRAFT

2016 Calendar and Filing Deadlines*
Planning and Zoning Commission
City of Columbia, Missouri

All necessary submittal and review materials, **including fees**, must be submitted by **12:00 p.m.** on the filing deadline to ensure that applications are processed according to the following schedule.

Application Deadline (All case types)	Public Information Meeting (Only applies to rezonings, planned developments, and preliminary plats)	Planning & Zoning Commission Meeting (Not applicable to final plat/major subdivision)	City Council Introduction & 1st Reading	City Council Public Hearing, 2nd & 3rd Reading, and Vote
11/30/2015	12/15/2015	1/7/2016	2/1/2016	2/15/2016
12/14/2015	12/29/2015	1/21/2016	2/15/2016	3/7/2016
12/28/2015	1/12/2016	2/4/2016	3/7/2016	3/21/2016
1/11/2016	1/26/2016	2/18/2016	3/21/2016	4/4/2016
2/1/2016	2/16/2016	3/10/2016	4/4/2016	4/18/2016
2/15/2016	3/1/2016	3/24/2016	4/18/2016	5/2/2016
2/29/2016	3/15/2016	4/7/2016	5/2/2016	5/16/2016
3/14/2016	3/29/2016	4/21/2016	5/16/2016	6/6/2016
3/28/2016	4/12/2016	5/5/2016	6/6/2016	6/20/2016
4/11/2016	4/26/2016	5/19/2016	6/20/2016	7/5/2016
5/2/2016	5/17/2016	6/9/2016	7/5/2016	7/18/2016
5/16/2016	5/31/2016	6/23/2016	7/18/2016	8/1/2016
5/31/2016+	6/14/2016	7/7/2016	8/1/2016	8/15/2016
6/13/2016	6/28/2016	7/21/2016	8/15/2016	9/6/2016
6/27/2016	7/12/2016	8/4/2016	9/6/2016	9/19/2016
7/11/2016	7/26/2016	8/18/2016	9/19/2016	10/3/2016
8/1/2016	8/16/2016	9/8/2016	10/3/2016	10/17/2016
8/15/2016	8/30/2016	9/22/2016	10/17/2016	11/7/2016
8/29/2016	9/13/2016	10/6/2016	11/7/2016	11/21/2016
9/12/2016	9/27/2016	10/20/2016	11/21/2016	12/5/2016
10/3/2016	10/18/2016	11/10/2016	12/5/2016	12/19/2016
10/17/2016	11/15/2016	12/8/2016[^]	1/3/2017	1/17/2017
10/31/2016	11/15/2016	12/8/2016	1/3/2017	1/17/2017
11/14/2016	11/29/2016	12/22/2016^{**}	1/17/2017	2/6/2017
11/28/2016	12/13/2016	1/5/2017	2/6/2017	2/20/2017
12/12/2016	12/27/2016	1/19/2017	2/20/2017	3/6/2017
1/3/2017+	1/17/2017+	2/9/2017	3/6/2017	3/20/2017
1/17/2017+	1/31/2017	2/23/2017	3/20/2017	4/3/2017
1/30/2017	2/14/2017	3/9/2017	4/3/2017	4/17/2017
2/13/2017	2/28/2017	3/23/2017	4/17/2017	5/1/2017
2/27/2017	3/14/2017	4/6/2017	5/1/2017	5/15/2017

* Meeting dates are tentative and subject to change. Visit www.gocolumbiamo.com/Planning/ to confirm dates.

** Meeting may be cancelled due to holiday.

+ Tuesday deadline/meeting due to an observed Monday holiday.

[^] Regular meeting date moved due to observed holiday

Development Review Application Annexation, Planned District, & Rezoning Actions



City of Columbia
Community Development Department

701 E. Broadway, Columbia, MO
(573) 874-7239 planning@gocolumbiamo.com

For office use:

Case #	Submission Date:	Planner Assigned:

1. **Select the case type (one application required per case type) and submit this form (in HARDCOPY & ELECTRONICALLY), including all supplemental materials and fees, to the Community Development Permit Center - 3rd Floor City Hall (701 E. Broadway). For case types not shown, contact the Planning and Zoning Division at (573)874-7239. Electronic copies should be e-mailed to planning@gocolumbiamo.com**

Concept Review Meeting

- Letter to Community Development Director describing request, noting restrictions of record, easements & right-of-way affecting site
- Locator map* (Indicate existing land uses on subject site and adjacent property. This can be noted in above letter.)
- Legal description of the property*
- A .PDF of sketch plan or plat, if applicable

Rezoning

- Letter to Community Development Director stating reason for request, requested zoning district(s), & adjacent land uses & zoning
- Locator map*
- Original surveyor sealed legal description of the property
- Editable digital copy of legal description
- Completed "Statement of Intent" worksheet**, if planned district zoning is requested (N/A)

Planned District Development Plan, Minor Amendment, or Major Amendment

- Letter to Community Development Director describing request
- 5 full-sized copies of development plan
- Digital .PDF copy of plan
- Completed "Development Plan Checklist" & "Preliminary Plat Checklist" (N/A to amendment requests)**
- Completed "Design Parameters" worksheet** (N/A to PUD plans or minor amendment requests)

Annexation Petitions (voluntary and annexation agreement)

- Letter to Community Development Director describing request, noting existing County zoning & requested City zoning
- Locator map*
- Original surveyor sealed legal description of the property
- Editable digital copy of legal description
- Annexation petition** (signed by all fees interest & notarized)
- Address verified by Building & Site Development (874-7474): House/unit #: _____ Street: _____ City: _____ State: _____
- Business name (if applicable) _____ Tax ID # _____

*The Boone County Parcel Information Viewer provides internet access to locator maps & property deeds (<http://www.showmeboone.com/ASSESSOR/>).

**Forms are available online at http://www.gocolumbiamo.com/Planning/Zoning/application_forms.php.

ADDITIONAL APPLICATION REQUIREMENTS ON PAGE 2

2. Provide the following project & land use information for the subject property and immediate surroundings:

Plat/Plan Title (if applicable):	Case # from previously held concept review meeting (if applicable):
Location (e.g., distance from street intersection; include address, if applicable):	
Parcel ID#(s) (available at http://www.showmeboone.com/ASSESSOR/ , or from the Boone County Recorder's Office (phone: 573-886-4345):	
Area (acres):	Current zoning:
Current land use (note existing structures, if applicable):	Requested zoning (if applicable):

3. Provide contact information for the property owner and applicant/agent/contract purchaser:

Owner:	<input type="checkbox"/> Applicant/ <input type="checkbox"/> Agent/ <input type="checkbox"/> Contract purchaser:
Owner's signature (required for rezoning & development plan requests):	Firm:
Address:	Address:
City/State/Zip:	City/State/Zip:
Phone:	Phone:
Fax:	Fax:
E-mail:	E-mail:

Fee Schedule:

Case Type	Processing		Advertising	Subtotal
Concept Review	N/A		N/A	\$0
Rezoning*	0-2 ac: \$300	>10-15 ac: \$900	\$125	\$
Development Plan	>2-5 ac: \$450	>15-20 ac: \$1200		\$
Major Plan Amendment	>5-10 ac: \$600	>20 ac: \$1,500		\$
Minor Plan Amendment	\$200		N/A	\$
Hearing Continuance	\$100		N/A	\$
Annexation petitions (voluntary or agreement)	\$250		See Note (**)	\$
*- For Annexation Petitions, rezoning processing fees do not apply only when permanent zoning is equivalent to Boone County zoning				\$

** - Voluntary Annexation petitions shall be subject to 2x the published advertising rates to cover Planning Commission and City Council public hearing/notice costs. No advertising fee applies to Annexation Agreements

For office use:

Case Description:							
Filing Deadline	Concept Review	Public Info Meeting	Council Res. (Annexations)	PZC Meeting	Council Res. (Prelim. Plats)	Council 1 st read	Council 2 nd & 3 rd read
Send postcard (Con Rev: meeting date; Pub Info: 1 wk after submittal)	Send staff comments (2 weeks after submittal)	Send ad & letters (20 days before PZC)	Receive revisions (1 wk after staff comments)	Send 2 nd review comments (1 wk after revisions received)	Send Annexation Council report (13 days before PZC)	Send PZC report (10 days before PZC)	Send Council report (10 days before 1 st read)
Verified complete (Sign & date):	Fees paid (Sign & date):		Ward:	Neighborhood Associations:			Historic structures over 50 years (Y/N):

Updated on 12/10/2015 11:25 AM

Development Review Application Subdivision & Land Development Actions



City of Columbia
Community Development Department
701 E. Broadway, Columbia, MO
(573) 874-7239 planning@gocolumbiamo.com

For office use:

Case #	Submission Date:	Planner Assigned:

1. Select the case type (one application required per case type) and submit this form (in **HARDCOPY & ELECTRONICALLY**), including all supplemental materials and fees, to the Community Development Permit Center - 3rd Floor City Hall (701 E. Broadway). For case types not shown, contact the Planning and Zoning Division at (573)874-7239. Electronic copies should be e-mailed to planning@gocolumbiamo.com

Concept Review Meeting

- Letter to Community Development Director describing request, noting restrictions of record, easements & right-of-way affecting site
- Locator map* (Indicate existing land uses on subject site and adjacent property. This can be noted in above letter.)
- Legal description of the property*
- A .PDF of sketch plan or plat, if applicable

Preliminary Plat, Final Plat, or Replat

- Letter to Community Development Director describing request, noting total land area in acres, & number of lots proposed
- 5 full-sized copies of subdivision plat
- Digital .PDF copy of plat
- Completed "Preliminary Plat Checklist" or "Final Plat Checklist" for final plats & replats**
- Performance contracts**: Two signed originals (N/A to preliminary plats)
- Construction plans to Public Works (N/A)

Variance

- Letter to Community Development Director describing request & noting section(s) of the Regulations to which variance is requested
- Locator map*
- Original surveyor sealed legal description of the property (N/A to sidewalk variance requests)
- Editable digital copy of legal description (N/A to sidewalk variance requests)
- "Variance" or "Sidewalk Variance" worksheet** (N/A to variances requested in conjunction with planned developments)

Easement/Right-of-way(ROW) Vacation, New Easement Dedication

- Letter to Community Development Director describing request
- Locator map*
- Map showing area(s) to be vacated
- Original surveyor sealed legal description(s) of the area(s) to be vacated, & executable new easement document(s), if applicable
- Editable digital copy of legal description(s) for vacations, & dedications

*The Boone County Parcel Information Viewer provides internet access to locator maps & property deeds (<http://www.showmeboone.com/ASSESSOR/>).

**Forms are available online at http://www.gocolumbiamo.com/Planning/Zoning/application_forms.php.

ADDITIONAL APPLICATION REQUIREMENTS ON PAGE 2

2. Provide the following project & land use information for the subject property and immediate surroundings:

Plat/Plan Title (if applicable):	Case # from previously held concept review meeting (if applicable):
Location (e.g., distance from street intersection; include address, if applicable):	
Parcel ID#(s) (available at http://www.showmeboone.com/ASSESSOR/ , or from the Boone County Recorder's Office (phone: 573-886-4345):	
Area (acres):	Current zoning:
Current land use (note existing structures, if applicable):	Requested zoning (if applicable):

3. Provide contact information for the property owner and applicant/agent/contract purchaser:

Owner:	<input type="checkbox"/> Applicant/ <input type="checkbox"/> Agent/ <input type="checkbox"/> Contract purchaser:
Owner's signature (required for rezoning & development plan requests):	Firm:
Address:	Address:
City/State/Zip:	City/State/Zip:
Phone:	Phone:
Fax:	Fax:
E-mail:	E-mail:

Fee Schedule:

Case Type	Processing	Recording	Subtotal
Concept Review	N/A	N/A	\$0
Preliminary Plat	\$600 + \$10/lot	N/A	\$
Final Plat	\$400 + \$10/lot	24X36": \$69 1 st sheet + \$50/add.	\$
Replat	\$300 + \$10/lot	18X24": \$44 1 st sheet + \$25/add.	\$
Plat Vacation (abrogation)	\$300	N/A	\$
Variance	\$350	N/A	\$
Easement/ROW Vacation	\$350	Minimum \$30 (up to 3 sheets) + \$3/additional sheet	\$
Easement Dedication	N/A		\$

For office use:

Case Description:							
Filing Deadline	Concept Review	Public Info Meeting	Council Res. (Annexations)	PZC Meeting	Council Res. (Prelim. Plats)	Council 1 st read	Council 2 nd & 3 rd read
Send postcard (Con Rev: meeting date; Pub Info: 1 wk after submittal)	Send staff comments (2 weeks after submittal)	Send ad & letters (20 days before PZC)	Receive revisions (1 wk after staff comments)	Send 2 nd review comments (1 wk after revisions received)	Send Annexation Council report (13 days before PZC)	Send PZC report (10 days before PZC)	Send Council report (10 days before 1 st read)
Verified complete (Sign & date):	Fees paid (Sign & date):		Ward:	Neighborhood Associations:			Historic structures over 50 years (Y/N):

Updated on 12/10/2015 11:53 AM

PETITION REQUESTING ANNEXATION TO THE CITY OF COLUMBIA

_____, husband and wife, hereby petition the City Council of the City of Columbia to annex the land described below into the corporate limits of Columbia and, in support of this petition, state the following:

1. _____ are the owners of all fee interests of record in the real estate in Boone County, Missouri, described as follows:

(Attach Legal Description)

- 2. This real estate is not now a part of any incorporated municipality.
- 3. This real estate is contiguous and compact to the existing corporate limits of the City of Columbia, Missouri.
- 4. _____ request that this real estate be annexed to, and be included within the corporate limits of the City of Columbia, Missouri, pursuant to Section 71.012, RSMo 1994.
- 5. Petitioners request that the property be zoned _____ at the time of annexation. If the requested zoning is not granted by the proposed ordinance annexing the property, petitioners reserve the right to withdraw this petition requesting annexation.

Dated this _____ day of _____, _____.

STATE OF MISSOURI)
) ss.
 COUNTY OF BOONE)

VERIFICATION

The undersigned, _____, husband and wife, being of lawful age and after being duly sworn state and verify that they have reviewed the foregoing Petition for Voluntary Annexation, and that they are duly authorized to execute the foregoing instrument and acknowledge the requests, matters and facts set forth therein are true and correct to the best of their information and belief.

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

My commission expires: _____

PETITION REQUESTING ANNEXATION TO THE CITY OF COLUMBIA

_____, a Missouri limited liability company, hereby petitions the City Council of the City of Columbia to annex the land described below into the corporate limits of Columbia and, in support of this petition, states the following:

- 1. _____ is the owner of all fee interests of record in the real estate in Boone County, Missouri, described as follows:

Legal Description

- 2. This real estate is not now a part of any incorporated municipality.
- 3. This real estate is contiguous and compact to the existing corporate limits of the City of Columbia, Missouri.
- 4. _____ requests that this real estate be annexed to, and be included within the corporate limits of the City of Columbia, Missouri, pursuant to Section 71.012, RSMo 1994.
- 5. Petitioner requests that the property be zoned _____ at the time of annexation. If the requested zoning is not granted by the proposed ordinance annexing the property, petitioner reserves the right to withdraw this petition requesting annexation.

Dated this _____ day of _____, 2006.

STATE OF MISSOURI)

) ss.

COUNTY OF BOONE)

VERIFICATION

The undersigned, _____, being of lawful age and after being duly sworn states and verifies that the undersigned has reviewed the foregoing Petition for Voluntary Annexation, and that the undersigned is duly authorized to execute the foregoing instrument on behalf of _____ and acknowledges the requests, matters and facts set forth therein are true and correct to the best of the undersigned's information and belief.

Subscribed and sworn to before me this _____ day of _____, 2006.

Notary Public

My commission expires: _____

PETITION REQUESTING ANNEXATION TO THE CITY OF COLUMBIA

_____, a single person, hereby petitions the City Council of the City of Columbia to annex the land described below into the corporate limits of Columbia and, in support of this petition, states the following:

1. _____ is the owner of all fee interests of record in the real estate in Boone County, Missouri, described as follows:

(Attach Legal Description)

- 2. This real estate is not now a part of any incorporated municipality.
- 3. This real estate is contiguous and compact to the existing corporate limits of the City of Columbia, Missouri.
- 4. _____ requests that this real estate be annexed to, and be included within the corporate limits of the City of Columbia, Missouri, pursuant to Section 71.012, RSMo 1994.
- 5. Petitioner requests that the property be zoned _____ at the time of annexation. If the requested zoning is not granted by the proposed ordinance annexing the property, petitioner reserves the right to withdraw this petition requesting annexation.

Dated this _____ day of _____, 200__.

STATE OF MISSOURI)
) ss.
 COUNTY OF BOONE)

VERIFICATION

The undersigned, _____, a single person, being of lawful age and after being duly sworn states and verifies that they have reviewed the foregoing Petition for Voluntary Annexation, and that they are duly authorized to execute the foregoing instrument and acknowledge the requests, matters and facts set forth therein are true and correct to the best of their information and belief.

Subscribed and sworn to before me this _____ day of _____, 200__.

Notary Public

My commission expires: _____

PETITION REQUESTING ANNEXATION TO THE CITY OF COLUMBIA

_____, Trustee of the _____ hereby petitions the City Council of the City of Columbia to annex the land described below into the corporate limits of Columbia and, in support of this petition, states the following:

1. _____, Trustee of the _____ is the owner of all fee interests of record in the real estate in Boone County, Missouri, described as follows:

Legal Description

- 2. This real estate is not now a part of any incorporated municipality.
- 3. This real estate is contiguous and compact to the existing corporate limits of the City of Columbia, Missouri.
- 4. _____, Trustee of _____ the requests that this real estate be annexed to, and be included within the corporate limits of the City of Columbia, Missouri, pursuant to Section 71.012, RSMo 1994.
- 5. Petitioner requests that the property be zoned _____ at the time of annexation. If the requested zoning is not granted by the proposed ordinance annexing the property, petitioner reserves the right to withdraw this petition requesting annexation.

Dated this _____ day of _____, 200_____.

STATE OF MISSOURI)
) ss.
COUNTY OF BOONE)

VERIFICATION

The undersigned, _____, being of lawful age and after being duly sworn states and verifies that they have reviewed the foregoing Petition for Voluntary Annexation, and that they are duly authorized to execute the foregoing instrument and acknowledge the requests, matters and facts set forth therein are true and correct to the best of their information and belief.

_____, Trustee of the _____

Subscribed and sworn to before me this _____ day of _____, 200_____.

Notary Public

My commission expires: _____



Preliminary Plat Checklist

For office use:

Case #:	Submission Date:	Planner Assigned:
---------	------------------	-------------------

Preliminary plats submitted for review shall meet (at a minimum) the following criteria. Failure to provide the requested information may result in review and approval delays.

Minimum Submittal Requirements

Sec. 25-23 Concept Review – generally:

- Concept review meeting held on _____

Sec. 25-25 Preliminary plat review:

- All contiguous unplatted land under single ownership or control, up to 80 acres, is included in the platted area
- Submitted 5 copies of plat to Planning Dept.
- Signature block for Planning & Zoning Commission approval

Preliminary Plat Specifications (Sec. 25-26)

- Drawn at a scale of not more than 1 inch equals one hundred feet (1" = 100')
- Signed and sealed by a registered land surveyor or registered professional engineer
- Key map showing entire subdivision and its relationship to the surrounding area
- Title of the subdivision by name and plat number
- Graphic scale and north arrow
- Location of subdivision boundary lines in relation to adjacent section, quarter-section, & corporate boundaries
- Names and addresses of property owner of record and the subdivider
- Names of all immediately adjacent subdivisions, and property owners of record for unsubdivided land
- Existing zoning of the subdivision and immediately adjacent property
- All restrictions of record on site, which may affect division & use of land as contemplated by the subdivision
- Locations of the following features:
 - Existing property lines, buildings and structures
 - Building setbacks, street plan lines, streets, & utilities
 - Watercourses, stream buffer limits, & flood prone areas (Refer to 12/1/1981 flood hazard boundary map)
 - Cemeteries, burial grounds, railroads, bridges, culverts, drain pipes, & lagoons
 - Natural features, such as wooded areas within and adjacent to proposed subdivision
 - Location & width of existing street right-of-way, alleys, roads, railroad right-of-way, & recorded easements
- Five-foot topographic contours, based on City datum (Differing contour intervals may be required by Director on rough or flat terrain, as needed to better delineate the terrain)
- Size of the proposed subdivision to the nearest one-tenth of an acre
- Proposed location and grades for all streets
 - If proposed grades are not easily attainable due to existing terrain, indicate how grades will be attained
- Proposed names for all streets and walkways
- Proposed location, dimension, and use of all lots
 - Label areas designated for park, church, school site, or other special uses of land or features
 - Number all lots
- Proposed location of required storm sewers and sanitary sewers
- Any existing obligation/restriction affecting any part of the site that was set forth on a previous plat of the land
 - If any obligation or restriction is omitted, provide a letter identifying omissions and justification for omission

Statement of Certification

I/we--the applicant(s) or agent--have reviewed the submitted plans and attest that the above minimum requirements have been shown on the attached plans submitted for review.

Signature of Applicant or Agent



**City of Columbia
Planning Department**

701 E. Broadway, Columbia, MO
(573) 874-7239 planning@gocolumbiamo.com

Final Plat/Replat Checklist

For office use:

Case #:	Submission Date:	Planner Assigned:
---------	------------------	-------------------

Final plats of major or minor subdivisions, and replats shall meet (at a minimum) the following criteria. Failure to provide the requested information may result in review and approval delays.

Minimum Submittal Requirements

Sec. 25-23 Concept Review – generally:

- Concept review meeting held on _____ (only applicable to final minor subdivisions) (N/A)

Sec. 25-27 Final plat review:

- Submitted processing and recording fees
 Site is accessible from an existing road
 Submitted 5 copies of plat to Planning Dept.
 Submitted 3 copies of signed & sealed final construction plans to Public Works Dept. (N/A)
 Plat substantially conforms to approved preliminary plat (N/A to final minor subdivisions & replats)
 Submitted 2 signed copies of an “improvements guarantee” (see standard “Performance Contract” form)

Final Plat Specifications (Sec. 25-28)

- Signed and sealed by a registered land surveyor
 Drawn in ink on eighteen-inch by twenty-four inch (18”X24”) or twenty-four inch by thirty-six inch (24” x 36”) single or double matted polyester film or paper sheets
 Scale of at least one inch equals one hundred feet (1” = 100’)
 Index map with match lines for each sheet, if multiple sheets are submitted (N/A)
 Title of the subdivision and graphic scale
 Key map showing the entire subdivision and its relationship to the surrounding area
 Legal description of the property to be subdivided
 Subdivision boundary closes to one in ten thousand (1:10,000)
 Interior areas close to one in five thousand (1:5,000)
 Lot numbers
 Setback lines along street rights-of-way (setbacks conform to zoning district requirements)
 Subdivision size
 Size of lots of one acre or more (to nearest one-hundredth of an acre) (N/A)
 Street names
 Adjacent subdivision names (N/A)
 Relationship of boundary lines to section lines, quarter section lines, and corporate boundaries (N/A)
 Easements & their designation
 Existing buildings (N/A)
 Floodprone areas, as delineated on the March 17, 2011 flood hazard boundary map (N/A)
 Stream buffer limits (N/A)
 Reference to related documents required to be recorded with the plat (N/A)
 Restrictions of record affecting division and use of the land as contemplated by the subdivision (N/A)
 Existing obligations or restrictions set forth on a previous plat of the land (N/A)
 If obligation or restriction is omitted, a letter identifying and justifying each is required (N/A)
 Certification that survey meets current Missouri Minimum Standards for Property Boundary Surveys
 Certification that owner is the legal owner and has given consent to the subdivision and irrevocable dedication of street rights-of-way, easements, and all land intended for public use
 Certification of final plat approval to be signed by the Mayor and attested by the City Clerk
Sec. 25-30 Resubdivision:
 If plat is a resubdivision, it is labeled a “replat” (N/A)

Final Submittal & Recording Standards

- Planning & Zoning Commission (PZC) signature block (N/A to final major subdivisions)
 City Clerk & Council signature block is provided
 Notarized surveyor’s signature & seal (N/A to final major subdivisions)
 Notarized owner’s signature(s)
 Names are typed or printed below each signature, and signature dates are filled in
 Seals are legible and placed in a blank space on the document (i.e., Seals shall not cover text or graphics)
 Blank 2”X3” space is reserved in the bottom right corner of the plat for recording label



**City of Columbia
Planning Department**

701 E. Broadway, Columbia, MO
(573) 874-7239 planning@gocolumbiamo.com

Variance Worksheet

For office use:

Case #:	Submission Date:	Planner Assigned:
---------	------------------	-------------------

Where the Planning and Zoning Commission finds that undue hardships or practical difficulties may result from strict compliance with the City's Subdivision Regulations, it may recommend and the Council may approve variances so that substantial justice may be done and the public interest secured, provided that any such variance shall not have the effect of nullifying the intent and purpose of the Subdivision Regulations.

The Commission shall not recommend variances unless it finds and determines that the following criteria are met¹. Please explain how the requested variance complies with each of the below requirements:

1. The granting of the variance will not be detrimental to the public safety, health or welfare or injurious to other property or improvements in the neighborhood in which the property is located.
2. The conditions upon which the request for a variance is based are unique to the property for which the variance is sought, are not applicable generally to other property, and are not self-imposed.
3. Because of the particular physical surroundings, shape or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of these regulations was carried out; and
4. The variance will not in any manner abrogate the provisions of the comprehensive plan of the City.

¹ Per Section 25-20: Variances and exceptions



City of Columbia
Planning Department
701 E. Broadway, Columbia, MO
(573) 874-7239 planning@gocolumbiamo.com

Sidewalk Variance Worksheet **(for sidewalks along unimproved streets)**

For office use:

Case #:	Submission Date:	Planner Assigned:
---------	------------------	-------------------

Please answer the following questions¹:

1. What is the cost of constructing the sidewalk, relative to the cost of the proposed development?
2. Is the terrain such that sidewalks or walkways are physically feasible?
3. Would the sidewalk be located in a developed area, on a low traffic volume local street without sidewalks?
4. Are there any current or future parks, schools or other pedestrian generators near the development for which a sidewalk or walkway would provide access?

If an alternative walkway is being proposed, please describe how the alternative would deviate from standard sidewalk requirements.

If applicable, please attach a map showing the proposed alternative walkway alignment.

¹ Based on factors for determining sidewalk need, identified in Council Policy Resolution PR 48-06A

Policy Statements from Council Policy Resolution PR 48-06A:

The City Council shall review each request for a sidewalk variance along an unimproved street in the context that there must be a reasonable relationship between the proposed activity of a landowner and the requirement that the landowner construct a sidewalk and in the context that the public safety and welfare make it desirable to encourage pedestrian movement by providing safe walkways and sidewalks away from traffic lanes of streets.

The City Council shall grant the requested variance without conditions only if it determines that the sidewalk is not needed or that the impact of the proposed development does not justify the requirement that the sidewalk be constructed.

If the City Council finds that the proposed use of the land would justify the requirement that a sidewalk be constructed and that in the interest of public safety and welfare there is an immediate or near future need for a sidewalk or walkway at the location of the variance request, the City Council will approve the variance request only if an alternative walkway is provided or if the property owner pays the City for future construction of the sidewalk, or if some other equitable arrangement for construction of a sidewalk or other pedestrian infrastructure improvement is made.

Alternative walkways are defined as all-weather pedestrian facilities constructed in accordance with plans and specifications approved by the Public Works Department. Alternative walkways may deviate in vertical and horizontal separation from the roadway in order to take advantage of natural contours and minimize the disturbance to trees and natural areas but must meet all requirements for handicap accessibility. Alternative walkways must be located on public easements but a walkway easement may be conditioned that if walkways are no longer needed for a public purpose, the walkway easements will be vacated.

When alternative walkways are permitted, plans, specifications and easements must be submitted prior to approval of the final plat abutting the unimproved street and construction must occur prior to the first certificate of occupancy within the platted area.

If the City Council determines that the public safety and welfare would not be jeopardized, the Council may allow the property owner, in lieu of constructing an alternative walkway, to pay the City the equivalent cost of construction of a conventional sidewalk. The equivalent cost of construction of a conventional sidewalk shall be defined as the City's average cost of constructing Portland cement concrete sidewalks by public bid during the two (2) calendar years prior to the year in which the variance request is submitted. Payment of the equivalent cost of a conventional sidewalk shall occur:

- a. Prior to approval of the first final plat when the variance is approved in connection with a preliminary plat
- b. Prior to issuance of the first building permit when approved with a final plat or planned development where no variance request has been made with the preliminary plat; or
- c. Prior to issuance of the certificate of occupancy when variance requests are approved on individual lots where final plats have been approved without variance request.

Each payment made under this section shall be used to construct a sidewalk along the unimproved street adjacent to the property for which the payment was made. The sidewalk shall be constructed when the street is constructed to City standards.

In all cases, when alternative walkways or payments are approved as fulfilling the subdivision requirements for construction of sidewalks, the action of Council shall be noted on a final plat of the properties affected. In cases where final plats have been previously approved, replatting may be required.

The grant of a variance to the subdivision regulations requirement for construction of a sidewalk shall not affect the power of the City Council to later install a sidewalk adjacent to the property and levy a special assessment against the property for construction of the sidewalk.

Appendix B: Defining Boundaries for National Register
Properties: National Register Bulletin 21

DRAFT

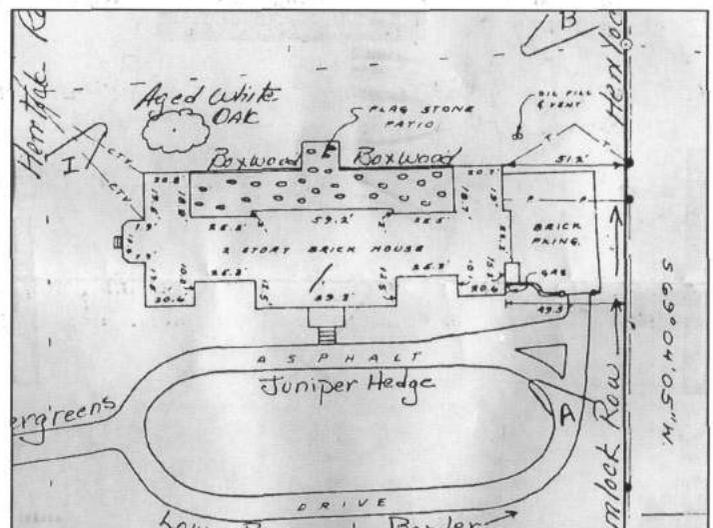
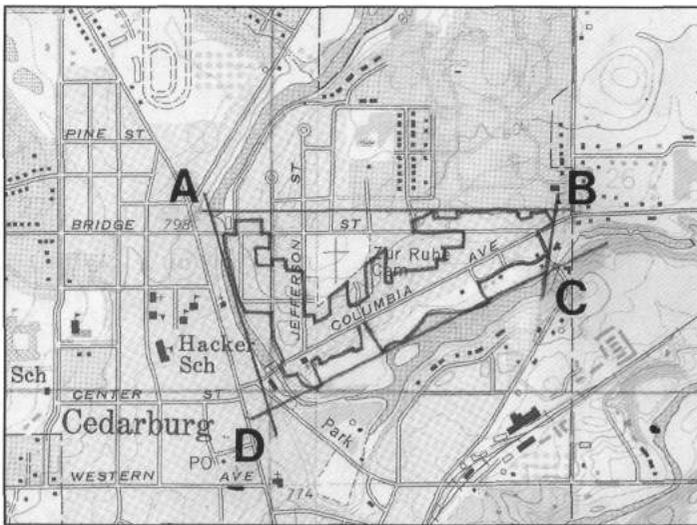
NATIONAL REGISTER BULLETIN

Technical information on the the National Register of Historic Places:
survey, evaluation, registration, and preservation of cultural resources



U.S. Department of the Interior
National Park Service
Cultural Resources
National Register, History and Education

DEFINING BOUNDARIES FOR NATIONAL REGISTER PROPERTIES



The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to tribes.

This material is partially based upon work conducted under a cooperative agreement with the National Conference of State Historic Preservation Officers and the U.S. Department of the Interior.

Cover:

(Top Left) Detail of USGS map showing the National Register boundaries of the Columbia Historic District in Cedarburg, Wisconsin.

(Top Right) View of Architect Marcel Breuer's International Style home in Lincoln, Massachusetts. (Ruth Williams)

(Bottom Left) View of the Roxborough State Park Archeological District near Waterton, Colorado. (William Tate)

(Bottom Right) Detail of a 1987 land survey map defining the property boundaries of Gunston Hall in Buncombe County, North Carolina. (Blue Ridge Land Surveying, Inc.)

NATIONAL REGISTER BULLETIN

DEFINING BOUNDARIES FOR NATIONAL REGISTER PROPERTIES

**BY
DONNA J. SEIFERT
including
Barbara J. Little, Beth L. Savage, and John H. Sprinkle, Jr.**

**U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
NATIONAL REGISTER OF HISTORIC PLACES
1995, REVISED 1997**

TABLE OF CONTENTS

PREFACE.....	ii
CREDITS AND ACKNOWLEDGMENTS.....	iii
I. DEFINING BOUNDARIES FOR NATIONAL REGISTER PROPERTIES	1
Why Boundaries are Important	1
Getting Help	1
Deciding What to Include.....	2
Factors to Consider	2
Selecting Boundaries	3
Revising Boundaries	4
II. DOCUMENTING BOUNDARIES	5
Completing Section 10, Geographical Data	5
The Verbal Boundary Description and Boundary Justification	5
Universal Transverse Mercator (UTM) References	6
Global Positioning System (GPS)	6
III. CASE STUDIES.....	7
Boundaries for Buildings	7
Buildings in Urban Settings	7
Buildings in Rural Settings	10
Boundaries for Historic Districts	12
Contiguous Districts in Urban Settings	13
Discontiguous Districts in Urban Settings	16
Contiguous Districts in Rural Settings.....	17
Discontiguous Districts in Rural Settings.....	23
Parks as Districts.....	23
Boundaries for Particular Property Types	27
Traditional Cultural Properties	27
Mining Properties	27
Boundaries for Archeological Sites and Districts	30
Archeological Sites	31
Contiguous Archeological Districts	33
Discontiguous Archeological Districts.....	34
Shipwreck Sites	35
Boundaries for Historic Sites	36
Boundaries for Objects	40
Boundaries for Structures	41
IV. REFERENCES	45
V. NATIONAL REGISTER CRITERIA FOR EVALUATION	46
VI. NATIONAL REGISTER BULLETINS	47
APPENDIX: Definition of National Register Boundaries for Archeological Properties (formerly <i>National Register Bulletin 12: Definition of National Register Boundaries for Archeological Properties</i>)	48

PREFACE

The National Register of Historic Places is the official Federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. National Register properties have significance in the prehistory or history of their community, State, or the nation. The National Register is maintained by the National Park Service on behalf of the Secretary of the Interior.

National Register Bulletins provide guidance on how to identify, evaluate,

document, and register significant properties. This bulletin is designed to help preparers properly select, define, and document boundaries for National Register listings and determinations of eligibility. It includes basic guidelines for selecting boundaries to assist the preparer in completing the National Register Registration Form. Examples of a variety of property types are presented. These examples illustrate several ways to address boundary issues.

This bulletin was prepared by Donna J. Seifert, archeologist, under a cooperative agreement between the National Conference of State Historic Preservation Officers and the National Park Service.

Carol D. Shull
Keeper,
National Register of Historic Places
National Park Service
U. S. Department of the Interior

CREDITS AND ACKNOWLEDGMENTS

This bulletin addresses issues originally presented in *National Register Bulletin: Definition of Boundaries for Historic Units of the National Park System* and *National Register Bulletin: How to Establish Boundaries for National Register Properties*. Both were prepared before *National Register Bulletin: How to Complete the National Register Registration Form* was revised. This revised bulletin complements the guidelines on boundaries in *How to Complete the National Register Registration Form* and provides a variety of case studies to assist nomination preparers.

This bulletin benefited from the suggestions offered by the staff members of the National Register of Historic Places, who shared their opinions and expertise. Critical guidance was provided by Carol D. Shull, Antoinette J. Lee, and Jan Townsend; Beth Savage provided an important case study, which was included in the bulletin. John Byrne of the National Register staff, prepared lists of properties to consider in the selection of the case studies, and Tanya M. Velt of the National Conference of State Historic Preservation Officers provided research assistance.

Comments and contributions from the following individuals were particularly valuable: Paul Alley, Western Regional Office, National Park Service; David Banks, Interagency Resources Division, National Park Service; Robin K. Bodo, Delaware Historic Preservation Office; Carol Burkhart, Alaska Regional Office, National Park Service; William R. Chapman, Historic Preservation Program, University of Hawai'i at Manoa; Rebecca Conard, Tallgrass Historians L.C.; Dan G. Diebler, Pennsylvania Historical and Museum Commission; Jim Draeger, Wisconsin Division of Historic Preservation; Audry L. Entorf, General Services Administration; Betsy Friedberg, Massachusetts Historical Commission; Bruce Fullem, New York State Office of Parks, Recreation and Historic Preservation; Elsa Gilbertson, Vermont Division for Historic Preservation; Susan L. Henry, Interagency Resources Division, National Park Service; Gerri Hobdy, Louisiana Office of Cultural Development; Thomas F. King, Silver Spring, Maryland; John Knoerl, Interagency Resources Division, National Park Service; Paul Lusignan, Interagency

Resources Division, National Park Service; Kirk F. Mohny, Maine Historic Preservation Commission; David L. Morgan, Kentucky Heritage Council; Bruce Noble, Interagency Resources Division, National Park Service; William W. Schenk, Midwest Regional Office, National Park Service; and Robert E. Stipe, Chapel Hill, North Carolina.

This publication has been prepared pursuant to the National Historic Preservation Act of 1966, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. *Defining Boundaries for National Register Properties* was developed under the general editorship of Carol D. Shull, Keeper, National Register of Historic Places. Antoinette J. Lee, historian, was responsible for publications coordination, and Tanya M. Velt provided editorial and technical support. Comments on this publication may be directed to Keeper of the National Register of Historic Places, National Park Service, 1849 C Street, NW, Washington, D.C. 20240.

I. DEFINING BOUNDARIES FOR NATIONAL REGISTER PROPERTIES

The preparer of a National Register nomination collects, evaluates, and presents the information required to document the property and justify its historical significance. Among the decisions the preparer must make is the selection of the property's boundaries: in addition to establishing the significance and integrity of a property, the physical location and extent of the property are defined as part of the documentation. Boundary information is recorded in Section 10, Geographical Data, on the National Register Registration Form. This bulletin is designed to assist the preparer in selecting, defining, and documenting boundaries for National Register properties. The bulletin addresses the factors to consider and includes examples that illustrate properly defined boundaries for a variety of property types.

WHY BOUNDARIES ARE IMPORTANT

Carefully defined boundaries are important for several reasons. The boundaries encompass the resources that contribute to the property's significance. Boundaries may also have legal and management implications. For example, only the area within the boundaries may be considered part of the property for the purposes of Federal preservation tax incentives and charitable contributions. State and local laws that require consideration of historic resources may also refer to boundaries in the application of implementing regulations or design controls. National Register boundaries, therefore, have legal implications that can affect the property's future. Under Federal law,

however, these considerations apply only to government actions affecting the property; National Register listing does not limit the private owner's use of the property. Private property owners can do anything they wish with their property, provided no Federal license, permit, or funding is involved.

Under Section 106 of the National Historic Preservation Act of 1966, as amended, Federal agencies must take into account the effect of their actions on historic properties (defined as properties in, or eligible for, the National Register of Historic Places) and give the Advisory Council on Historic Preservation the opportunity to comment. To be in compliance with the act, Federal agencies must identify and evaluate National Register eligibility of properties within the area of potential effect and evaluate the effect of the undertaking on eligible properties. The area of potential effect is defined as the area in which eligible properties may be affected by the undertaking, including direct effects (such as destruction of the property) and indirect effects (such as visual, audible, and atmospheric changes which affect the character and setting of the property).

The area of potential effect may include historic properties that are well beyond the limits of the undertaking. For example, a Federal undertaking outside of the defined boundaries of a rural traditional cultural property or an urban historic district can have visual, economic, traffic, and social effects on the setting, feeling, and association of the eligible resources.

Large properties present special problems. For example, an undertaking in a narrow corridor, such as a pipeline, may affect part of a large

archeological site, traditional cultural property, or rural historic district. Such properties may extend far beyond the area of potential effect or access may be denied in areas beyond the undertaking. It is always best to consider the entire eligible property, but it may not be possible or practical to define the full extent of the property. In such cases, reasonable, predicted, estimated, or partial boundaries encompassing resources within the area of potential effect may be the only way to set the limits of contributing resources when the entire property cannot be observed or evaluated from historic maps or other documents (as in the case of subsurface archeological resources). Consider all available information and select boundaries on the basis of the best information available. When defining boundaries of large resources extending beyond the area of potential effect, it is advisable to consult the State historic preservation office.

GETTING HELP

In addition to the guidance in this bulletin, assistance is also available from State Historic Preservation Officers, Federal Preservation Officers, and the staff of the National Register of Historic Places. These professionals can help preparers with general questions and special problems. For assistance with specific questions or for information on how to contact the appropriate State Historic Preservation Officer or Federal Preservation Officer, contact the National Register of Historic Places, National Register, History and Education, National Park Service, 1849 C Street, NW, Washington, D.C. 20240.

Several other National Register publications are also available to assist preparers. *National Register Bulletin: How to Complete the National Register Registration Form* provides the basic instructions for boundary selection and documentation. The following instructions, which are consistent with those in *How to Complete the National Register Registration Form*, provide additional assistance for the preparer. The following discussion addresses many property types by considering the special boundary problems associated with each type and providing case studies to assist the preparer in dealing with such issues. Bulletins that deal with specific property types may also be useful (see the list of National Register Bulletins at the end of this publication).

DECIDING WHAT TO INCLUDE

Selection of boundaries is a judgment based on the nature of the property's significance, integrity, and physical setting. Begin to consider boundaries during the research and data-collection portion of the nomination process. By addressing boundary issues during the field and archival research, the preparer can take into account all the factors that should be considered in selecting boundaries. When significance has been evaluated, reassess the boundaries to ensure appropriate correspondence between the factors that contribute to the property's significance and the physical extent of the property.

Select boundaries that define the limits of the eligible resources. Such resources usually include the immediate surroundings and encompass the appropriate setting. However, exclude additional, peripheral areas that do not directly contribute to the property's significance as buffer or as open space to separate the property from surrounding areas. Areas that have lost integrity because of changes in cultural features or setting should be excluded when they are at the periphery of the eligible resources. When such areas are small and surrounded by eligible resources, they may not be excluded, but are included as noncontributing resources of the property. That is, do not select boundaries which exclude a small noncontributing island surrounded by

GUIDELINES FOR SELECTING BOUNDARIES: ALL PROPERTIES

(summarized from *How to Complete the National Register Registration Form*, p. 56)

- Select boundaries to encompass but not exceed the extent of the significant resources and land areas comprising the property.
- Include all historic features of the property, but do not include buffer zones or acreage not directly contributing to the significance of the property.
- Exclude peripheral areas that no longer retain integrity due to alterations in physical conditions or setting caused by human forces, such as development, or natural forces, such as erosion.
- Include small areas that are disturbed or lack significance when they are completely surrounded by eligible resources. "Donut holes" are not allowed.
- Define a discontinuous property when large areas lacking eligible resources separate portions of the eligible resource.

contributing resources; simply identify the noncontributing resources and include them within the boundaries of the property.

Districts may include noncontributing resources, such as altered buildings or buildings constructed before or after the period of significance. In situations where historically associated resources were geographically separated from each other during the period of significance or are separated by intervening development and are now separated by large areas lacking eligible resources, a discontinuous district may be defined. The boundaries of the discontinuous district define two or more geographically separate areas that include associated eligible resources.

FACTORS TO CONSIDER

There are several factors to consider in selecting and defining the boundaries of a National Register property. Compare the historic extent of the property with the existing eligible resources and consider integrity, setting and landscape features, use, and research value.

- **Integrity:** The majority of the property must retain integrity of location, design, setting, feeling, and association to be eligible. The essential qualities that contribute to an eligible property's significance

must be preserved. Activities that often compromise integrity include new construction or alterations to the resource or its setting. Natural processes that alter or destroy portions of the resource or its setting, such as fire, flooding, erosion, or disintegration of the historic fabric, may compromise integrity. For example, an abandoned farmhouse that has been exposed to the elements through years of neglect may have lost its integrity as a building; however, it may retain integrity as an archeological site.

- **Setting and Landscape Features:** Consider the setting and historically important landscape features. Natural features of the landscape may be included when they are located within the district or were used for purposes related to the historical significance of the property. Areas at the margins of the eligible resources may be included only when such areas were historically an integral part of the property. For example, a district composed of farmsteads along a creek may include the creek if it runs through the district, if the creek was important in the original siting of the farmsteads, or if the creek was a source of water power or natural resources exploited by the farmsteads. Consult *National Register Bulletin: Guidelines for Evaluating and Documenting Rural Historic Landscapes* for additional guidance in selecting boundaries for rural historic landscapes.

- **Use:** Consider the historic use of the property when selecting the boundary. The eligible resource may include open spaces, natural land forms, designed landscapes, or natural resources that were integral to the property's historic use. Modern use may be different, and some modern uses alter the setting or affect built resources. The effect of such uses must be assessed in identifying resources that retain integrity. For example, a Hopewell mound archeological site now used as a golf course may retain integrity where the form of the prehistoric earthworks has been preserved, but construction of sand traps or other landscaping that altered landforms would compromise integrity. A marsh that provides plant materials for traditional basketmakers may retain integrity where it remains in its natural wetland condition, but may have lost integrity where it has been drained and cultivated.
- **Research Potential:** For properties eligible under Criterion D, define boundaries that include all of the resources with integrity that have the potential to yield important information about the past. Such information is defined in terms of research questions to which the information pertains, and the property should include the components, features, buildings, or structures that include the information. For example, an eligible prehistoric longhouse site should include longhouse features as well as associated pit features, middens, and hearths. Geographically separate but historically associated activity areas may also be included in the property even when they are not adjacent to the main concentration of eligible resources. For example, lithic procurement and processing loci that were historically associated with a village site but geographically separated from it may be included in a discontinuous district. Remember that many properties eligible under other criteria include contributing archeological resources that may yield important information about the property. Consider the extent of associated archeological resources when selecting boundaries.

SELECTING BOUNDARIES

Identify appropriate natural or cultural features that bound the eligible resource. Consider historical and cartographic documentation and subsurface testing results (for archeological resources) in addition to existing conditions. Some boundaries can be directly observed by examining the property; others must be identified on the basis of research. Take into account the modern legal boundaries, historic boundaries (identified in tax maps, deeds, or plats), natural features, cultural features, and the distribution of resources as determined by survey and testing for subsurface resources.

Owner objections may affect the listing of the entire property, but not the identification of the boundaries. If the sole private owner of a property or the majority of the private owners (for properties with multiple owners) objects to listing, the property (with boundaries based on an objective assessment of the full extent of the significant resources) may be determined eligible for the National Register but not listed.

Boundaries should include surrounding land that contributes to the significance of the resources by functioning as the setting. This setting is an integral part of the eligible property and should be identified when boundaries are selected. For example, do not limit the property to the footprint of the building, but include its yard or grounds; consider the extent of all positive subsurface test units as well as the landform that includes the archeological site; and include the portion of the reef on which the vessel foundered as well as the shipwreck itself.

- **Distribution of Resources:** Use the extent of above-ground resources and surrounding setting to define the boundaries of the property. For archeological resources, consider the extent of above-ground resources as well as the distribution of subsurface remains identified through testing when defining the boundaries of the property.
- **Current Legal Boundaries:** Use the legal boundaries of a property as recorded in the current tax map or plat accompanying the deed when

these boundaries encompass the eligible resource and are consistent with its historical significance and remaining integrity.

- **Historic Boundaries:** Use the boundaries shown on historic plats or land-ownership maps (such as fire insurance or real estate maps) when the limits of the eligible resource do not correspond with current legal parcels.
- **Natural Features:** Use a natural feature, such as a shoreline, terrace edge, treeline, or erosional scar, which corresponds with the limit of the eligible resource.
- **Cultural Features:** Use a cultural feature, such as a stone wall, hedgerow, roadway, or curb line, that is associated with the significance of the property, or use an area of modern development or disturbance that represents the limit of the eligible resource.

Selecting boundaries for some properties may be more complicated, however. Consider and use as many features or sources as necessary to define the limits of the eligible resource. In many cases, a combination of features may be most appropriate. For example, the National Register boundaries of a property could be defined by a road on the south, a fence line on the west, the limits of subsurface resources on the north, and an area of development disturbance on the east. Consider map features or reasonable limits when obvious boundaries are not appropriate.

- **Cartographic Features:** Use large-scale topographic features, contour lines, or section lines on United States Geographical Survey maps to define the boundaries of large sites or districts.
- **Reasonable Limits:** Use reasonable limits in areas undefined by natural or cultural features. For example, define the boundary of a property as 15 feet or 5 meters from the edge of the known resources, or define a straight line connecting two other boundary features. If a surveyed topographic map is available, select a contour line that encompasses the eligible resources. Reasonable limits may also be appropriate for a rural property when there is no obvious house lot or natural or cultural feature to use. Be sure that an appropriate setting is included

within arbitrary boundaries, however, and explain how the limits were selected.

REVISING BOUNDARIES

Boundaries for listed properties need to be revised when there are changes in the condition of the resources or the setting. If resources or setting lose integrity and no longer contribute to the significance of the property, it is appropriate to revise the boundaries. Revisions may also be appropriate for nominations prepared in the early years of the National Register program, when nominations had limited or vague boundary documentation. Follow the guidance presented in this bulletin when revising boundary documentation.

II. DOCUMENTING BOUNDARIES

COMPLETING SECTION 10, GEOGRAPHICAL DATA

Section 10 of the National Register Registration Form is the portion of the form where boundaries of the nominated property are documented. The documentation requirements are discussed in *National Register Bulletin: How to Complete the National Register*

Registration Form; the information presented here is consistent with that discussion. The information requirement in Section 10 of the registration form includes acreage of the property, Universal Transverse Mercator (UTM) references, a verbal boundary description, and a boundary justification. In addition, nomination preparers should submit a USGS map that shows the location of the property and plotted UTM coordinates and at least one detailed map or sketch map for districts and for properties containing a substantial number of sites, structures, or buildings.

THE VERBAL BOUNDARY DESCRIPTION AND BOUNDARY JUSTIFICATION

The verbal boundary description describes the physical extent of the nominated property. A verbal boundary description or a scale map precisely defining the property

SECTION 10, GEOGRAPHICAL DATA

(summarized from *How to Complete the National Register Registration Form*, pp. 54-55)

Acreage: Calculate the acreage of the property to the nearest whole acre; calculate fractions of acres to the nearest one-tenth acre. For small properties, record "less than one acre." For large properties (over 100 acres), use a United States Geological Survey (USGS) acreage estimator or digitizer to calculate acreage.

UTM Reference: Use Universal Transverse Mercator (UTM) grid references to identify the exact location of the property. For a small property, use a single UTM reference; for larger properties, use a series of UTM references (up to 26) to identify the boundaries. Even when natural or cultural features are used to define the boundaries, use UTM grid references to define a polygon which encloses the boundaries of the property and identifies the *vicinity* of the property.

Determine UTM references by using a UTM template and USGS quadrangle maps (see Appendix VIII in *How to Complete the National Register Registration Form* and *Using the UTM Grid System to Record Historic Sites* for assistance in determining UTM references).

Verbal Boundary Description: Describe the boundaries verbally, using one of the following:

- a map may be substituted for a narrative verbal boundary description
- legal parcel number
- block and lot number
- metes and bounds
- dimensions of a parcel of land, reckoning from a landmark, such as a natural or cultural feature

Boundary Justification: Provide a concise explanation of the reasons for selecting the boundaries, based on the property's historic significance and integrity. Discuss the methods used to determine the boundaries. Account for irregular boundaries and areas excluded because of loss of integrity. For archeological properties, discuss the techniques used to identify the limits of the eligible resource, including survey procedures and the extent and distribution of known sites.

boundaries must be given for all properties regardless of their classification category or acreage. The verbal boundary description need not be complicated or long, but it must clearly describe (or show) the limits of the resources to ensure that a Federal agency, State historic preservation office, city planning office, planning agency, or property owner can identify the limits of a National Register property.

A map drawn to a scale of at least 1 inch to 200 feet may be used in place of a verbal description. When using a map in place of a verbal description, note under the verbal boundary description that the boundaries are indicated on the accompanying map. The map must be clear and accurate. Be sure the map clearly indicates the boundaries of the property in relationship to standing structures or buildings, natural features, or cultural features. Include a drawn scale and north arrow on the map.

When the boundary is the same as a legally recorded boundary, refer to that legal description of the property in the verbal boundary description. Citation of the legal description (beyond parcel number or block and lot number) and deed book reference are optional. When natural or cultural features are used in defining boundaries, identify these features (such as street names, property lines, geographical features, or other lines of convenience) to designate the extent of the property. Begin at a fixed reference point and follow the perimeter of the property, including dimensions and directions, in the verbal boundary description.

The verbal boundary description may refer to a large-scale map (such

as 1 inch to 200 feet) which shows the property boundaries. Large-scale maps that show streets, rights-of-ways, property lines, and building footprints are often available from the local planning agency or tax assessor's office. For large rural properties, a small-scale topographic map, such as a USGS map, may be used. If such a map is not available, draw a sketch map to scale (preferably 1 inch to 200 feet) and show the location of the resources relative to the boundary and surrounding features. Include a north arrow, drawn scale, and date on the map.

The verbal boundary description is followed by a justification of the selected boundaries. Explain how the boundaries were selected. Clarify any issues that might raise questions, such as excluding portions of the historic property because of lost integrity.

UNIVERSAL TRANSVERSE MERCATOR (UTM) REFERENCES

Universal Transverse Mercator (UTM) references are required to indicate the location of the property. Generally, the UTM coordinates do not define the property boundaries, but provide precise locational information. Plot a single UTM reference on a 7.5 minute series USGS map for a small property; plot three or more UTM references that define the vertices of a polygon encompassing the area to be registered for properties over 10 acres. UTM references may also be used to define boundaries

(for example, large rural properties lacking appropriate cultural or natural features to define boundaries). When UTM references define boundaries, the references must correspond exactly with the property's boundaries. For additional guidance, see *National Register Bulletin: How to Complete the National Register Registration Form* and *National Register Bulletin: Using the UTM Grid System to Record Historic Sites*.

GLOBAL POSITIONING SYSTEM (GPS)

The Global Positioning System (GPS) technology now can be used to define boundaries for National Register properties. GPS technology records (digitizes) the location of lines, points, or polygons on the earth's surface using trilateration from satellites orbiting the earth. The locational accuracy of the data varies between 2 and 5 meters (when using differential correction). Thus, districts and archeological sites can be digitized as polygons, and historic trains or roads, as lines. The result is a potential National Register boundary. With GPS, the UTM references are automatically calculated along with any other type of descriptive data, such as condition, materials, intrusions, and integrity. Data from GPS is generally entered into a Geographic Information System (GIS). Using GIS, boundary data can be combined with data on cultural and natural features, such as roads, rivers, and land cover, to yield a composite map suitable for inclusion with the registration form.

III. CASE STUDIES

Many kinds of property types are eligible for inclusion in the National Register, and different property types have different boundary issues to be considered. To illustrate a variety of appropriate boundaries, examples are given for several property types. For each property type, the general guidelines are presented. Appropriate examples are provided to illustrate the issues and solutions. The summary information is abstracted from registration forms of properties listed in the National Register or documentation from properties determined eligible for the National Register. The verbal boundary descriptions and boundary justifications are quotations of Section 10 of the registration forms. For some properties, such as archeological sites, locational information is restricted to protect the property. Examples drawn from such properties are edited to omit or alter locational information.

BOUNDARIES FOR BUILDINGS

Buildings are constructions created principally to shelter any form of human activity. The National Register use of the term "building" also refers to historically and functionally related units, such as a courthouse and jail. Buildings include houses, barns, churches, schools, hotels, theaters, stores, factories, depots, and mills. Remember that many buildings have associated contributing landscape and archeological features. Consider these resources as well as the architectural resources when selecting boundaries and evaluating significance of buildings.

The verbal boundary descriptions and boundary justifications cited in the following case studies provide examples of boundaries for several

GUIDELINES FOR SELECTING BOUNDARIES: BUILDINGS

(summarized from *How to Complete the National Register Registration Form*, p. 56)

- Select boundaries that encompass the entire resource, including both historic and modern additions. Include surrounding land historically associated with the resource that retains integrity and contributes to the property's historic significance.
- Use the legally recorded parcel number or lot lines for urban and suburban properties that retain their historic boundaries and integrity.
- For small rural properties, select boundaries that encompass significant resources, including outbuildings and the associated setting.
- For larger rural properties, select boundaries that include fields, forests, and open range land that is historically associated with the property and conveys the property's historic setting. The areas included must have integrity and contribute to the property's historic significance.

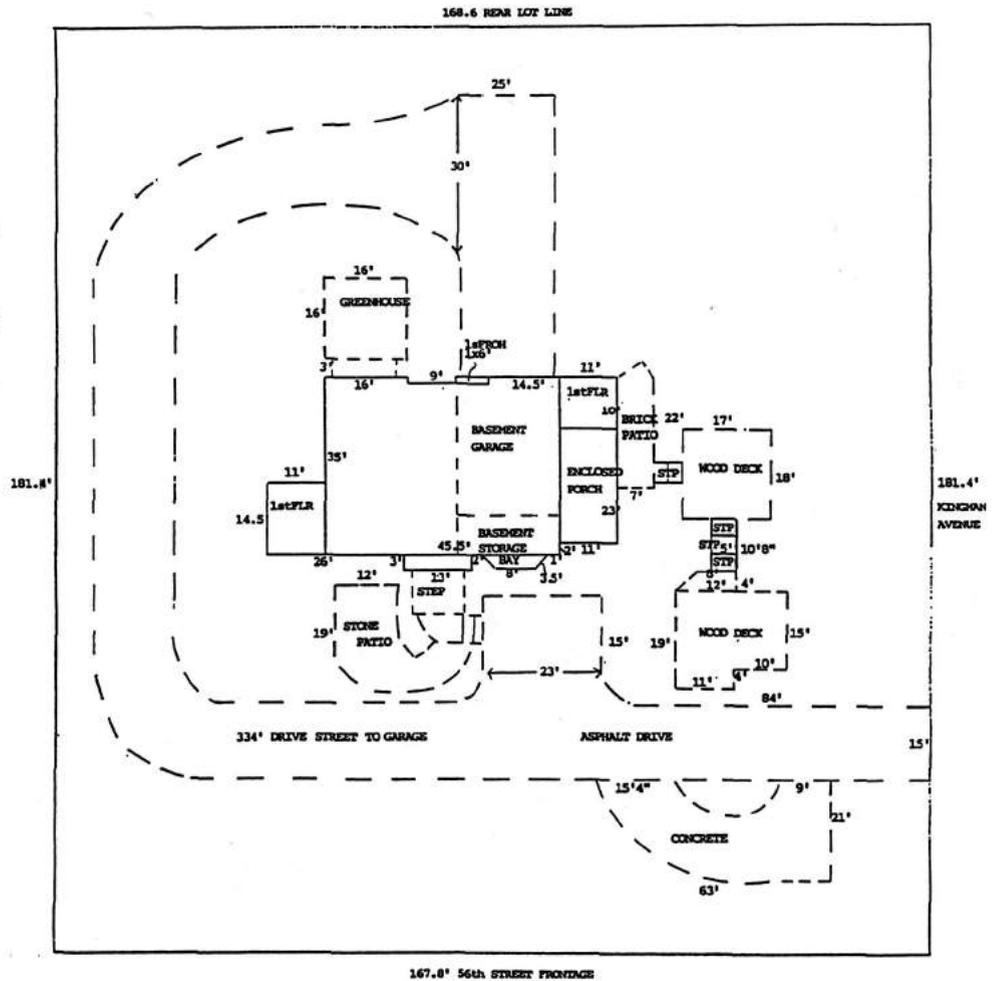
types of buildings in a variety of settings. In a few cases, the preparer has elected to provide a large-scale map (such as a tax map) that shows the boundaries in lieu of a verbal boundary description.

Buildings in Urban Settings

La Casa Blanca, Coamo, Puerto Rico, is a Spanish Creole vernacular house constructed in 1865. Characteristics of this style include a raised, wooden construction; main living core with rear service wing (*martillo*), forming an L-shaped plan with an interior courtyard; full-length frontal balcony or veranda; and hipped or side-gabled, usually high-pitched roof covered with corrugated zinc. La

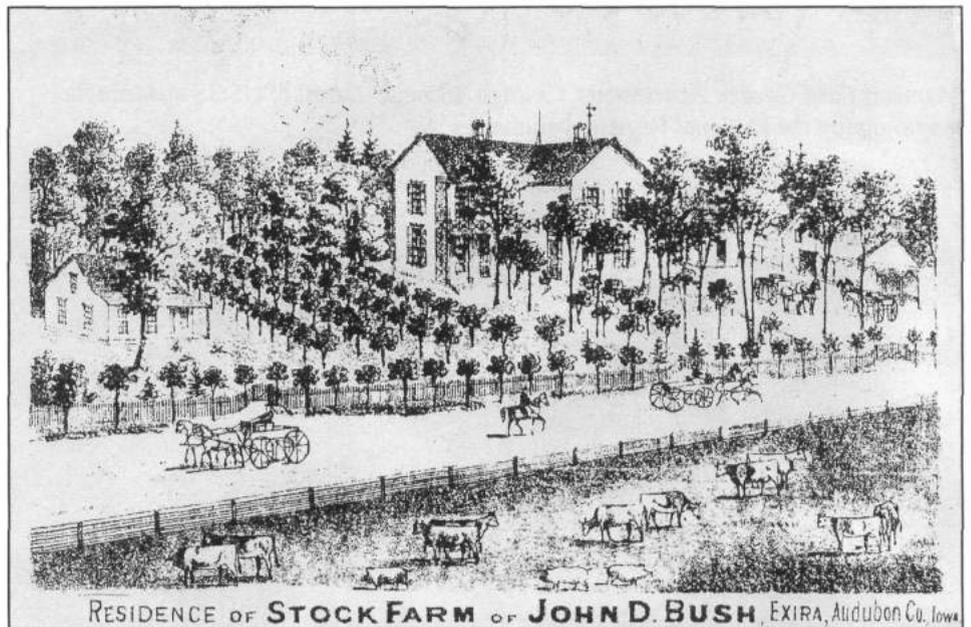
Casa Blanca includes these characteristics, except that the *martillo* opens into the grounds at the southeast corner of the lot and not into an interior courtyard. The house is located at 17 José I. Quinton Street, the corner of Quinton and Ruiz Belvis streets. The boundaries of the National Register property follow the legal lot boundaries. **Verbal boundary description:** The house is bounded in the north by José Quinton Street; south, No. 18 Federico Santiago Street; east, Ruiz Belvis Street; and west, No. 19 José Quinton Street. **Boundary justification:** The boundary includes the entire city lot that has been historically and is currently associated with the property.

John D. Bush House, Exira, Audubon County, Iowa, is a two-story frame house built for John Bush by Danish immigrant carpenter Jens Uriah Hansen in the 1870s. When it was built, the house was on the outskirts of town and was part of a larger holding, which included Bush's stock farm. The town expanded and now encompasses the Bush property within a residential area. Through the years, the Bush holding has been subdivided and the large lot on which the house is situated is all that remains intact of the original Bush holding. The property is significant as the best surviving example of the early Danish immigrant dwellings built by Hansen, who was the first Dane to settle in Audubon County and was responsible for the construction of several of the early buildings, homes, and outbuildings in the Exira area. The legal property boundary was used to define the National Register property boundary. **Verbal boundary description:** The nominated property is bounded by the legal description as recorded in the Audubon County Recorder's Office: Part of Lot 14, Subdivision of Original Lot 9, Town of Exira, Section 4, T78N, R35W. **Boundary justification:** The boundary of the nominated property is the remnant of the original parcel historically associated with the property.



Thomas I. Stoner House, Des Moines, Iowa. Plan showing the National Register boundaries.

Marshall Field Garden Apartments, Chicago, Cook County, Illinois, include ten buildings surrounding a spacious interior garden court, built in 1928-1929. The complex occupies two city blocks. The buildings are oriented toward Sedgwick Street, the busiest of the streets bordering the complex: twenty storefronts and offices face this street. The central interior courtyard runs the length of the complex, with the small inside courtyards of the eight H-shaped buildings opening on to the central courtyard. The two end buildings extend the length of the block. The complex is a notable example of early privately funded, moderate-income housing in Chicago. The limits of the two city blocks occupied by the apartments define the boundaries of the National Register property. **Verbal boundary description:** The area bounded by Sedgwick, Evergreen, Hudson, and Blackhawk streets, starting at the northwest corner of Blackhawk and Sedgwick,



John D. Bush House, Exira, Iowa. Drawing of the house from the 1875 Illustrated Historical Atlas of the State of Iowa: Eighth Congressional District (Andrea Atlas Company).



Marshall Field Garden Apartments, Chicago, Illinois. Detail of USGS quadrangle map showing the National Register boundaries.

extending south 938'9" to Evergreen Street, extending west 263'9" to Hudson Street, extending north 938' to Blackhawk Street and back east 263' to the northwest corner of Blackhawk and Sedgwick. These dimensions are measured from the masonry edges of the buildings. **Boundary justification:** This acreage has historically been associated with the Marshall Field Garden Apartments.

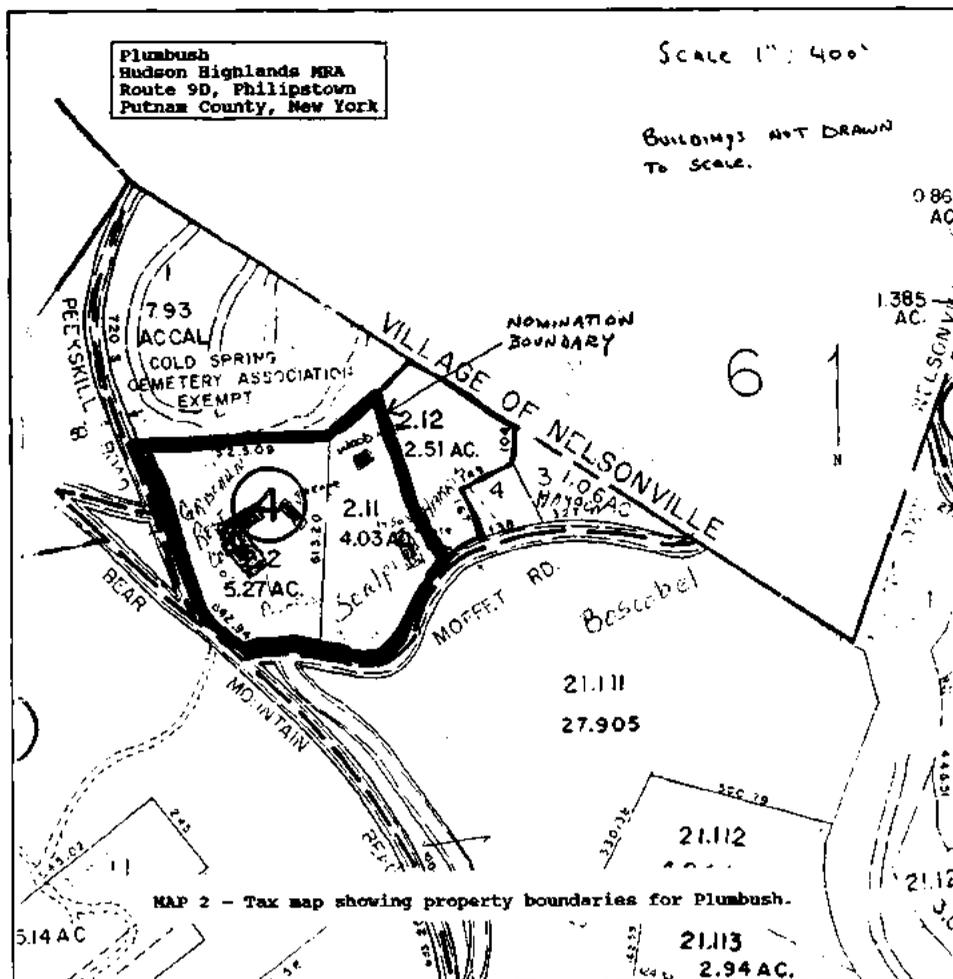
Minto School, Minto, Walsh County, North Dakota, was built in 1895. The property includes the school building with attached rear additions and six noncontributing elements moved to the site in the past 20 years and associated with the school building's present use as the Minto Museum, operated by the Walsh County Historical Society. The moved structures are arranged to the south and west (rear) of the school grounds, where they do not affect the integrity of the school's original setting. The National Register boundaries include the 12 adjacent lots comprising the north half of the city block occupied by the school and its newly associated buildings. **Verbal boundary description:** The north half of block 11, Original Townsite, Minto, North Dakota, comprising lots 1-12. **Boundary justification:** The boundary includes the north half of block 11 (lots 1-12), which has been historically and is currently associated with the property.

Buildings in Rural Settings

Theophilus Jones House, Newhaven County, Wallingford, Connecticut, is an 18th century farmstead, which includes a house, barn, carriage house, carpentry shop, woodshed, pigeon house, icehouse, and well with washing terrace. The house was constructed ca. 1740. The property retains the character and feeling of its period, because the property is bounded on the south by open land and the arrangement of the outbuildings blocks the view of more recent residential construction to the north and east. The house faces Jones Road, originally a farm road serving only the house, which is now a residential street. The immediate neighborhood is mostly residential, although there are farms and orchards in the vicinity. The property is significant for its association with Wallingford's origins as an agricul-

tural community; its association with prominent 20th century resident and scholar of American decorative arts, Charles F. Montgomery; and its embodiment of distinctive characteristics of Connecticut domestic architecture of the 1740s and 1750s. The National Register boundary corresponds to the legal block and lot description of the property. **Verbal boundary description:** The nominated property includes the house, outbuildings, and associated lot known as 40 Jones Road, shown as Map 085, Block 003, Lot 017 in the Wallingford Assessor's records and recorded in the land records in Volume 544, page 476. **Boundary justification:** The boundary includes the farm house, outbuildings, and farm yard that have historically been part of the Jones farm and that maintain historical integrity. Adjoining parcels of the original farm have been excluded because they have been subdivided and developed into a residential neighborhood.

Chris Poldberg Farmstead, Shelby County, Iowa, includes a house, barn, hog house, poultry house, machine shed, cob house, granary, and metal grain bin. The farmstead was established in the early 20th century by Danish immigrants. The house is situated on the south side of the cluster of farmstead buildings and structures, with the cob house situated off the rear of the house within the yard. The west side of the cluster consists of the poultry house, machine shed, and barn, with the grain bin, granary, and hog house forming the north side of the cluster. A dirt lane extends into the farmstead from the gravel road, bisecting the cluster between north and south halves. Historically, the entire area west, south, and east of the house had a dense tree cover. The property's section, township, and range description is used to locate the property; reasonable limits and cultural features (roads) are used to define the National Register boundaries. **Verbal boundary description:** The topographic location of the nominated property is as follows according to the USGS quadrangle map, Prairie Rose Lake, Iowa 1978: E 1/4, SE 1/4, SE 1/4, NE 1/4 of Section 27, T79N, R37W, Jackson Township, Shelby County, Iowa. The specific property boundary is described as follows: Beginning at a point 10 feet north of the hog house and starting at the west

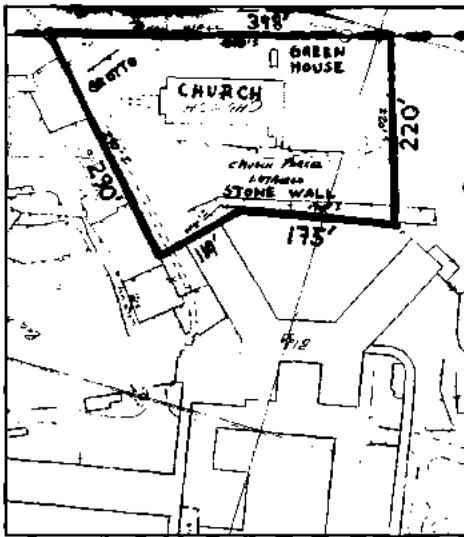


Plumbush, Philipstown, New York. Tax map showing the National Register boundaries.

edge of the gravel road proceed west 300 feet, turn south for 300 feet, turn east for 300 feet to the west edge of the road, and turn north for 300 feet to the point of beginning. **Boundary justification:** The boundary of the nominated property includes that portion of the historic farm holdings that encompasses all of the buildings and structures of the farmstead itself.

Plumbush, Putnam County, New York, consists of two contributing buildings, a mid-19th century farmhouse and an associated wood house. The original carriage house has been extensively remodeled for use as a garage and is, therefore, noncontributing, as is a modern two-story house, which is separated from Plumbush by a wooded area. The surrounding neighborhood is rural, with few residences located nearby. The property is bounded on the north, northeast, and south by the Cold Spring Cemetery; on the west by Route 9D; on the south by Moffet

Road; and on the east by private property. Much of the original 65-acre farm has been subdivided, and extensive infill has destroyed the historical integrity and setting of the larger farm. The limits of the tax parcel that includes the eligible resources define the boundaries of the National Register property. **Verbal boundary description:** Plumbush is located on the east side of Route 9D between the intersections of Peekskill and Moffet roads. The nominated property includes two adjacent tax parcels which comprise 9.3 acres as shown on accompanying tax map. **Boundary justification:** Historically, Plumbush was part of a 65-acre farm owned by Robert Parker Parrott. Over time, much of the property was subdivided and sold off. Extensive modern infill on the original farm acreage has destroyed the historical integrity and setting of the larger farm. The 9.3-acre nominated property is all that remains of the original farm associated with the house.



The Church of Saint Dismas, The Good Thief, Dannemora, New York. Detail of tax map showing the National Register boundaries.

Church of St. Dismas, The Good Thief, Dannemora, Clinton County, New York, is a large, stone chapel on the grounds of the Clinton Correc-

tional Facility. The chapel, which was completed in 1941, was built on the site of the abandoned prison farm building along the north edge of the prison grounds within the walls; 1.07 acres were set aside for the building, and the boundary of the nominated property coincides with the lot lines drawn around the 1.07 acres when the church was built. The boundary encompasses three additional historic features directly associated with the chapel: a greenhouse, a terraced stone wall, and a grotto. The remainder of the Clinton Correctional Facility, established in 1845, had not been surveyed at the time the chapel nomination was prepared nor evaluated for National Register eligibility; therefore, only the chapel and its grounds are included in the nominated property. **Verbal boundary description:** Heavy black outline on attached county tax map defines boundary of nominated property. **Boundary justification:** The boundary is drawn to coincide with the 1.07-acre parcel which was delineated when the prison farm was abandoned and the church was constructed.

BOUNDARIES FOR HISTORIC DISTRICTS

A historic district possesses a significant concentration or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. Districts may include several contributing resources that are nearly equal in importance, as in a neighborhood, or a variety of contributing resources, as in a large farm, estate, or parkway. Noncontributing resources located among contributing resources are included within the boundaries of a district. When visual continuity is not a factor of historic significance, when resources are geographically separate, and when the intervening space lacks significance, a historic district may contain discontinuous elements. (See *National Register Bulletin: How to Complete the National Register Registration Form* for further discussion about defining a district.)

GUIDELINES FOR SELECTING BOUNDARIES: HISTORIC AND ARCHITECTURAL DISTRICTS

(summarized from *How to Complete the National Register Registration Form*, pp. 56-57)

Select boundaries that encompass the single area of land containing the significant concentration of buildings, sites, structures, or objects making up the district. The district's significance and historic integrity should help determine the boundaries. Consider the following factors:

- **Visual barriers** that mark a change in the historic character of the area or that break the continuity of the district, such as new construction, highways, or development of a different character.
- **Visual changes** in the character of the area due to different architectural styles, types or periods, or to a decline in the concentration of contributing resources.
- **Boundaries at a specific time** in history, such as the original city limits or the legally recorded boundaries of a housing subdivision, estate, or ranch.
- **Clearly differentiated patterns** of historic development, such as commercial versus residential or industrial.

A historic district may contain discontinuous elements only under the following circumstances:

- When **visual continuity is not a factor of historic significance**, when resources are geographically separate, and when the intervening space lacks significance: for example, a cemetery located outside a rural village may be part of a discontinuous district.
- When **cultural resources are interconnected by natural features** that are excluded from the National Register listing: for example, the sections of a canal system separated by natural, navigable waterways.
- When **a portion of a district has been separated by intervening development** or highway construction and when the separated portion has sufficient significance and integrity to meet the National Register Criteria.

National Register properties classified as districts include college campuses, business districts, commercial areas, residential areas, villages, estates, plantations, transportation networks, and landscaped parks. Historic districts often include contributing archeological resources that should be considered when evaluating significance and selecting boundaries. Examples of such properties are included in the discussions of districts in rural settings. Examples of archeological districts are presented in the discussion of archeological sites.

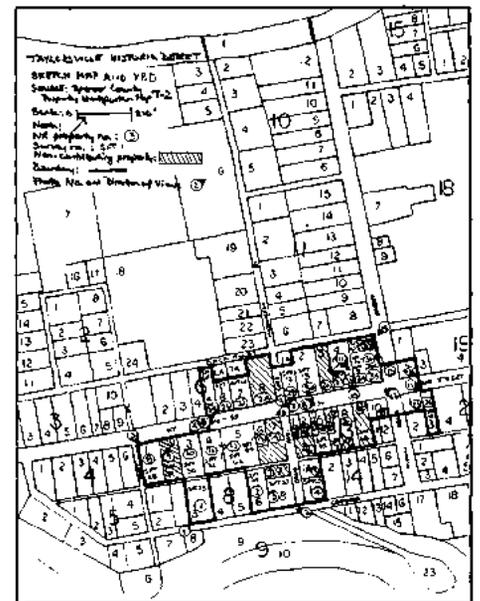
Boundaries of historic districts are often difficult to describe verbally. Consider using a scale map instead of a narrative verbal boundary description to define the boundaries.

Contiguous Districts in Urban Settings

Taylorsville Historic District, Taylorsville, Spencer County, Kentucky, encompasses 34 contributing buildings and 2 contributing sites in the center of the town. The district includes the contiguous, intact, historic resources at the center of the community, which comprise the residential, commercial, governmental, and religious resources that document the development of Taylorsville from its early days through the 1930s. These buildings, along with the streets, alleys, and lots on which they are located, provide an excellent picture of the development of Taylorsville from 1818, the date of the earliest extant house, to 1938, the construction date of the most recent historic building in the district. The district is eligible under Criterion A because it reflects the effects of a number of key events in the town's history, including designation in 1824 as the seat of newly formed Spencer County and the destruction and rebuilding of its commercial area and courthouse after fires in 1898, 1899, and 1913. The district also reflects gradual trends, such as changing patterns in siting and housing types and styles and the development of the community into a commercial and supply center for the surrounding agricultural county. The district is also significant for its representation of community planning and development: the streets, lots, and buildings in the district document Taylorsville's growth from a tiny, early 19th century settlement to an antebellum government center and into a small early

20th century county seat. Legal lot descriptions and a reasonable limit were used to define the boundaries of the National Register district. **Verbal boundary description:** The district is clearly delineated on the accompanying sketch map. With one exception, it follows the rear property lines of the properties included in the district. At the Enoch Holsclaw House on Garrard Street (#1), the western 50 feet of the property where a 1980s house is located have been excluded. **Boundary justification:** Excluded from the district are other areas of historic Taylorsville where small pockets of historic buildings and individual buildings have been isolated from the district by nonhistoric construction. The historic development along Main Cross Street north of Main Street was considered for inclusion in the district but determined ineligible. Although the area contains a number of historic and contributing buildings including the Taylorsville Public Library, All Saints Church, and some historic houses, the large percentage of nonhistoric and other noncontributing buildings along the street makes it a poor representation of the historic character of the town. Two other collections of historic buildings have also been considered for National Register listing but considered ineligible. Along Reasor Street and Maple Avenue, in an area developed beginning in 1899 as "Reasor's Addition," is a collection of small, modest houses dating from about 1900 through the 1940s. A large number of these houses have been seriously altered by the addition of new siding, major changes to front porches, and lateral additions that alter the form of the house. They no longer constitute an intact historic district. At the east end of Main Street, east of Railroad Street, is another collection of 12 historic houses. Although many of these houses retain a significant number of their identifying features, it was determined that they were too disparate a group, with no theme to unite them, to justify a district. Ten historic buildings in Taylorsville have been determined to be individually eligible for the National Register and will be nominated as part of the current project. The district encompasses the contiguous intact historic properties along Main Street and Garrard Street that help to document the district's area of significance—community

planning and development. The district boundaries are determined by concentrations of nonhistoric properties that surround the district on all sides. To the east are nonhistoric and noncontributing commercial buildings. To the south is the 1948 flood wall. To the west, a few remaining historic houses are interspersed with several nonhistoric governmental buildings, including a post office and Spencer County School office and a number of late 1940s infill houses. To the north along Washington Street and Main Cross Street, a number of historic houses at the north ends of the streets are separated from the district by a 1950s church and single-family houses and apartments, all dating from the late 1940s through the 1980s.

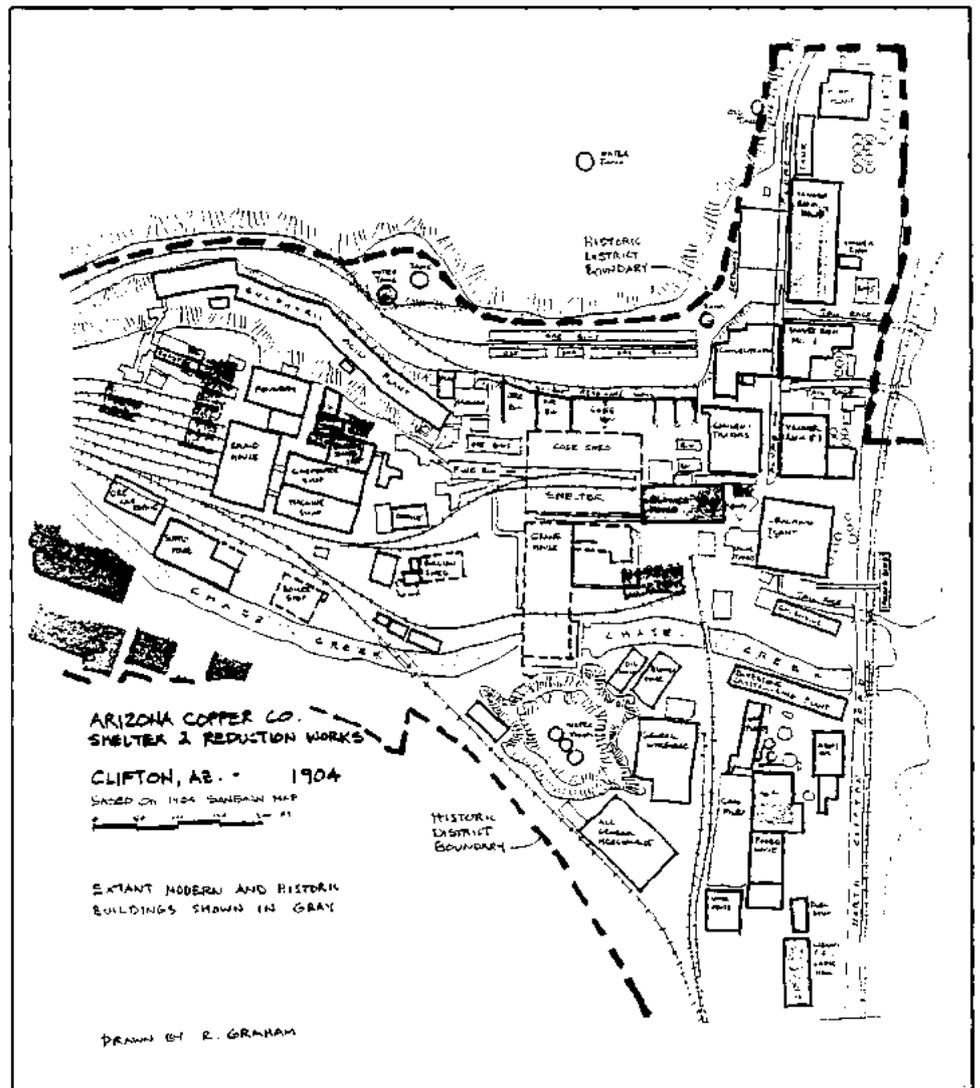


Taylorsville Historic District, Taylorsville, Kentucky. Detail of Spencer County Property Identification Map T-2 showing contributing and non-contributing resources, photo views, and National Register boundaries.

town that grew to support those operations. The district is additionally significant under Criterion C for its intact examples of architecture typical of Arizona's mining towns. Two sites within the district, the smelter ruins and a commercial building ruin, are significant under Criterion D as above-ground remnants which reveal important information about significant aspects of the district. The district's period of significance begins with the construction of the earliest remaining structure in 1874 and ends when the copper smelter moved to Morenci in 1937. The National Register boundaries are defined on a map; natural and cultural features were used to define the property.

Verbal boundary description: The boundary of Clifton Townsite Historic District is shown as the dashed line on the accompanying map entitled "Clifton Townsite Historic District."

Boundary justification: The boundary includes the properties within an area in central Clifton that retain integrity and are associated with the functioning of Clifton as a major copper smelting center. The boundary excludes, where possible, properties that have lost integrity and/or have no significance. Beginning at the northwest boundary of the district, the cliffs form a natural and well-defined limit encompassing the visible remnants of the smelter and associated structures. Proceeding clockwise, the northern limit of the district is marked by the transition from industrial uses to a residential area that contains modern and historic houses of poor integrity. At the point at which the floodwalls appear at the east bank of the San Francisco River, the boundary includes the riverbed and floodwall. The northeast boundary may be divided into two parts: at the north end, geographic limits of the cliffside define the boundary, no further structures being visible uphill; to the south, the slope becomes less steep and additional structures, either modern or of poor integrity, appear uphill from Park Avenue. Properties one-lot-width uphill from Park Avenue are included within the district, because all properties, even noncontributors, are an important part of the Park Avenue Streetscape. At the southernmost end of Park Avenue, no structures exist at the northeast side of the street and the boundary is drawn to exclude this open land. The boundary continues

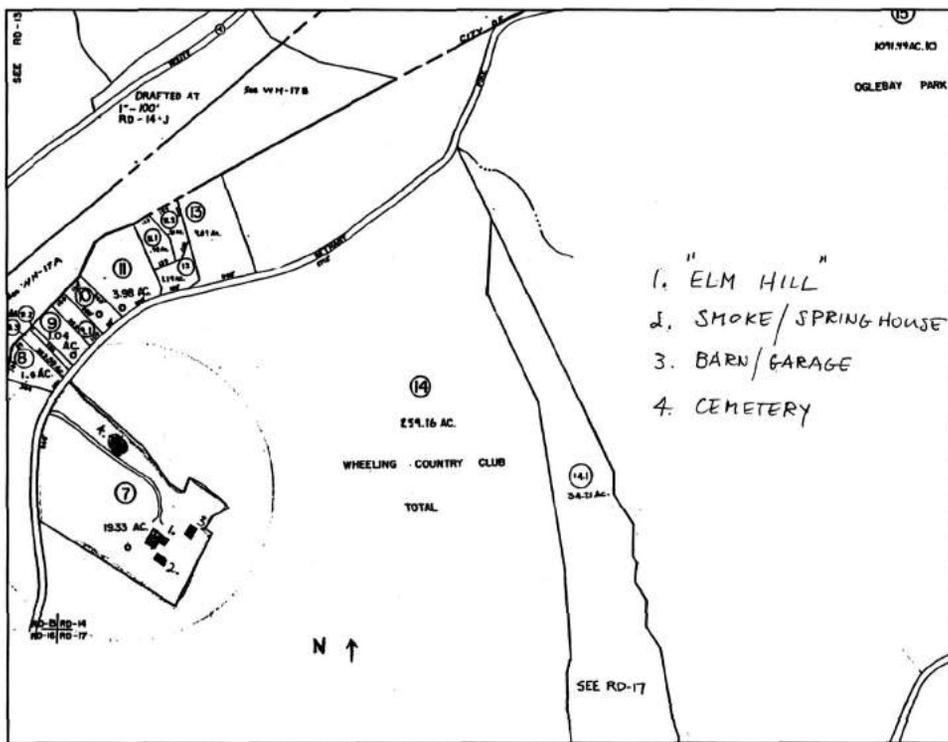


Clifton Townsite Historic District, Clifton, Greenlee County, Arizona. Map showing the National Register boundaries.

south, excluding open land, but including the east floodwall south to its end. The southern boundary is defined by a line connecting the southernmost ends of the formally constructed floodwalls at both sides of the San Francisco River (slag-rubble walls continue to the south through much of the town). This location coincides with a construction in the width of the canyon, a bend in the river, and a break in continuity of development from the remainder of the town to the south. The boundary continues northwest along the western floodwall, excluding the site of the former freight depot (now demolished). The boundary then is drawn to include the passenger depot, following the geographic boundary of the cliffside, which firmly delineates the boundary at this location. At the

point where the canyon of Chase Creek and the San Francisco River meet, the boundary is drawn at the edge of U.S. Route 666 to exclude an area of intruded properties that step up the cliffsides, which is not as steep at this point. At the south side of the Chase Creek commercial area, the property line or street curblines and the cliffside largely coincide to define the edge of development in Clifton. The westernmost termination of the district at Chase Creek is drawn at the end of the area of dense commercial character of Chase Creek and at the westernmost extent of the stone retaining wall at the cliffs north of Chase Creek. This location coincides with a restriction in the width of the canyon and a corresponding pause in the continuity of development sites from development further west.

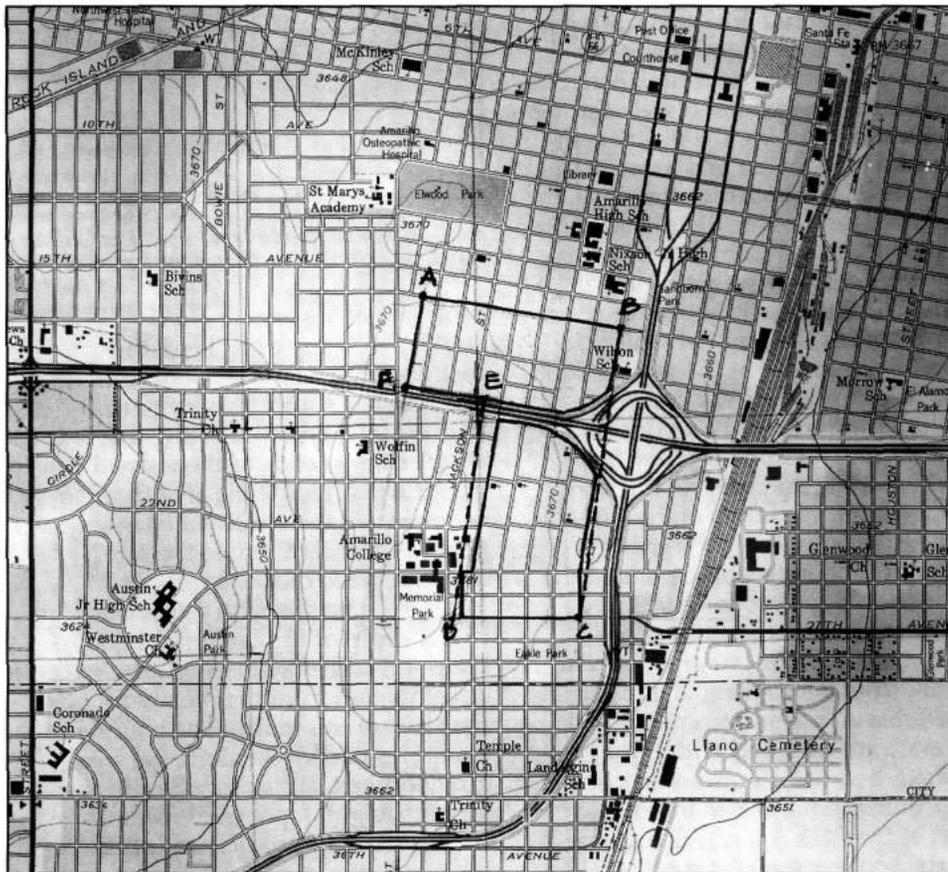
Elm Hill, Wheeling, Ohio County, West Virginia, is a mid-19th century Greek Revival mansion on a secluded esplanade. The area, which was historically farmland, is now part of suburban Wheeling. The grounds are landscaped lawn with shade trees, evergreens, and shrubs. The associated brick springhouse/smokehouse, barn/garage, and cemetery are contributing resources. The legal property description was used to define the National Register boundaries of the property. **Verbal boundary description: The nominated property is inclusive of the 19.33-acre tract identified as parcel #7, surrounded by acreage of the Wheeling Country Club, on Ohio County assessor's Map RD-14, Richland District, February 1960, Wheeling, West Virginia. **Boundary justification:** The property is inclusive of broad lawns and open areas that form a significant setting between Bethany Pike and the rear property lines. Within this green space stand the house, smokehouse/springhouse, barn, and cemetery.**



Elm Hill, Wheeling, West Virginia. Tax map showing the National Register boundaries.

Discontiguous Districts in Urban Settings

Plemons—Mrs. M. D. Oliver-Eagle Additions Historic District, Amarillo, Potter County, Texas, includes about 40 blocks of residential development originally platted as the Plemons Addition (1890) and the Mrs. M. D. Oliver-Eagle Addition (1903). The district is characterized by an eclectic mix of modestly scaled dwellings representing architectural styles of the early 20th century. The historic landscaping reinforces the neighborhood's cohesiveness. Despite the intrusion of a major arterial highway (which separates the district into two discontiguous parts), the historic district retains a high level of its historic integrity, with 357 of 535 resources classified as contributing elements. The district is one of Amarillo's most intact early 20th century residential neighborhoods. The design, scale, and materials of the building stock reflect the cyclical development of Amarillo's economy from the turn of the century to the beginning of World War II. The predominant Prairie School and Craftsman-influenced bungalow styles reflect Amarillo's growth from the 1910s through the 1930s as regional discoveries of oil and natural



Plemons—Mrs. M. D. Oliver-Eagle Additions Historic District, Amarillo, Texas. Detail of USGS map showing the National Register district boundaries and UTM references.

gas augmented agriculturally based wealth. The district is nominated to the National Register under Criteria A and C. The National Register boundaries of this discontinuous district follow existing roadways that encompass the eligible resources. **Verbal boundary description:** As indicated by the solid black lines on the accompanying USGS map, the historic district is comprised of two discontinuous elements divided by Interstate Highway 40. The northern portion of the historic district encompasses 86 acres bounded by the following parameters: Beginning at the center point of the intersection of E. 16th Avenue and S. Taylor Street, proceed south along the center line of South Taylor Street continuing to its intersection with the center line of the North Access Road of Interstate Highway 40; thence southwest and west along the center line of the North Access Road of Interstate Highway 40 to its intersection with the center line of the alley west of S. Madison Street; thence north through the alley along its center line to its intersection with the center line of W. 16th Avenue; thence east along the center line of 16th Avenue until reaching the point of beginning. The southern portion of the historic district encompasses 94 acres bounded by the following parameters: Beginning at the center point of the intersection of S. Taylor Street and E. 26th Avenue, proceed west along the center line of 26th Avenue continuing to the point of its intersection with the alley west of S. Van Buren Street; thence north through the alley along the center line to its point intersection with W. 24th Avenue; thence east along the center line of W. 24th Avenue to its point of intersection with S. Van Buren Street; thence north along the center line of S. Van Buren Street to its intersection with the center line of the South Access Road of Interstate Highway 40; thence east and southeast along the center line of the South Access Road of Interstate Highway 40 to the point of its intersection with S. Taylor Street; thence south along the center line of S. Taylor Street until reaching the point of beginning. **Boundary justification:** Consisting of two discontinuous elements currently divided by the incursion of Interstate Highway 40, the Plemons—Mrs. M. D. Oliver-Eagle Additions Historic District encompasses a cohesive collection of residential properties

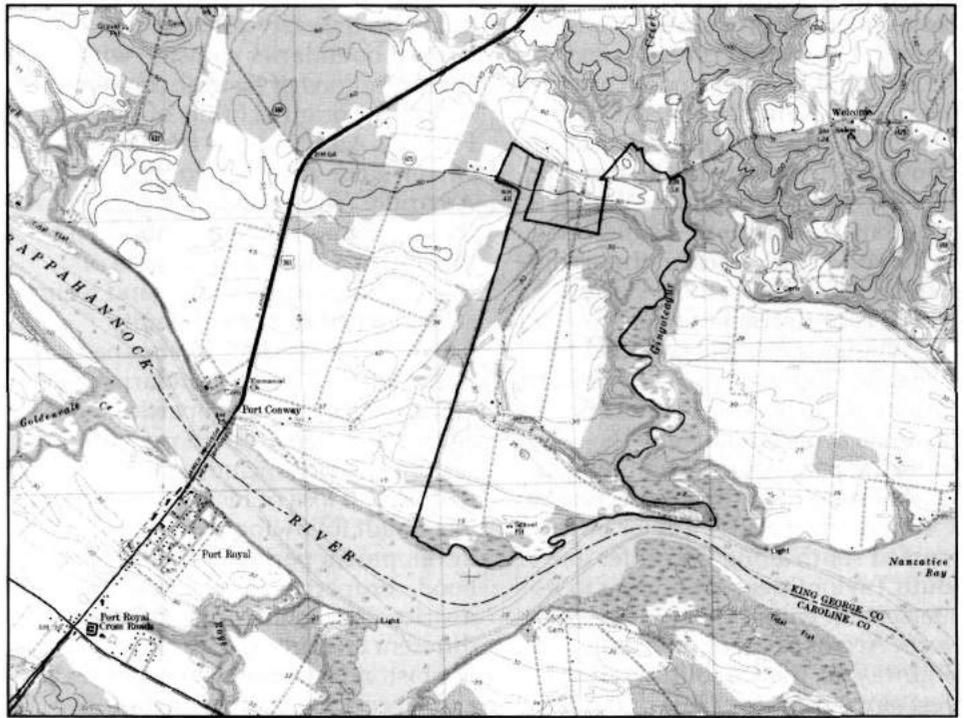
dating to the early 20th century. District boundaries coincide with concentrations of historic properties within the original limits of the Plemons Addition and the Mrs. M. D. Oliver-Eagle Addition to the City of Amarillo. The boundaries encompass those portions of the neighborhood that retain a significant degree of integrity of historic setting and feeling strengthened by the continuity provided by historic streetscapes. Areas beyond these boundaries generally consist of properties whose character differs from those within the historic district, including residences that exhibit loss of historic integrity or were built following the historic development period of the neighborhood. Properties outside the historic district also include functionally different resources, such as nonhistoric commercial properties and large-scale institutional properties. Changes in the historic residential character of the neighborhood establish the boundaries on all sides. The northern boundary along 16th Avenue demarcates the transition between the commercial and institutional character of Amarillo's central business district and the residential neighborhoods in the southern reaches of the city. The eastern boundary along Taylor Street coincides with the dissolution of historic residential character prompted by the incursion of Interstate Highway 27. Numerous noncontributing commercial and residential properties compromise the integrity of the area east of this boundary. The southern boundary along 26th Avenue occurs at the point of transition between residential properties developed during the early 20th century and those developed in the 1940s, 1950s, and 1960s. On the west, the district boundary coincides with the limits of residential development with the Mrs. M. D. Oliver-Eagle Addition, as the campus of Amarillo College hems in the neighborhood along this boundary. Interstate Highway 40, which obliterated portions of the historic neighborhood between 18th and 19th Avenues, is excluded from the historic district and divides it into discontinuous components. North of Interstate Highway 40, the western boundary falls along the alley west of Madison, which separated historic residential development from noncontributing commercial development along Washington Street.

Contiguous Districts in Rural Settings

Woodlawn Historic and Archaeological District, King George County, Virginia, is a 899-acre historic riverfront plantation along the north bank of the Rappahannock River and the west bank of Gingoteague Creek. Woodlawn is among the oldest plantations in the county and retains essentially the same boundaries it had when the land was first consolidated in the late 18th century. The property includes 21 buildings, sites, and structures: the plantation house, dating from ca. 1790, and its early to mid-19th century ancillary buildings, with major additions and renovations to the plantation house ca. 1841, 1934, and 1982. There are 6 contributing buildings, including the plantation house and two antebellum outbuildings and slave quarters and an early 20th century barn and implement shed. The 10 contributing archeological and landscape sites include 5 prehistoric sites, a historic domestic site, a ditch network, the field system, the farm road network, and a springhouse foundation site. There are 3 noncontributing buildings, 1 noncontributing site, and 1 noncontributing structure. Periods of significance are represented by contributing prehistoric Native American resources and the historic resources of the 17th century and of the late 18th century through 1937. Woodlawn Historic and Archaeological District is eligible under Criteria A, C, and D at the state and local levels. The well-preserved plantation house is one of a number of important and interrelated houses built along the Rappahannock River between 1760 and the 1850s. In addition to its architectural significance, the district also represents the historical influence of agriculture and transportation on the settlement and economy of the Northern Neck of Virginia. Woodlawn is also significant for its association with the Turner family, whose history in Virginia dates to the mid-17th century and whose occupation of Woodlawn lasted into the 1920s. The Turners were members of an extended family of prominent landowners who left an important architectural legacy in the area. The social and cultural values of the antebellum planter class are reflected in the architectural traditions of Woodlawn. The patterns of residential, agricultural, and wood lot

land use persist today. Field patterns, vegetation, and drainage ditches dating from the period of significance survive. Natural and cultural features and reasonable limits were used to define the National Register boundaries of this large rural property.

Verbal boundary description: The boundary of Woodlawn Historic and Archaeological District begins at the northern bank of the Rappahannock River at UTM 18 309780 4226640; and continues north/northeast until it intersects the drainage ditch (Archaeological Site 44KG94) at UTM 18 309910 4227160; and continues north/northeast along the western edge of the ditch until it intersects a tributary of Gingoteague Creek at UTM 18 310380 4228360; and continues north/northeast until it intersects a dirt road at UTM 18 310560 4228890; and follows the western edge of the dirt road until it intersects State Route 625 to UTM 18 310645 4229165; and continues west along the northern edge of State Route 625 to UTM 18 310645 4229240; and continues north/northeast to UTM 18 310600 4229520; and continues east until it intersects the northern edge of State Route 625 at UTM 18 310730 4229430; and crosses State Route 625 and follows the southern edge of State Route 625 to UTM 18 310830 4229380; and continues south/southwest to UTM 18 310675 4228845; and continues east to UTM 18 311220 4228820; and continues north/northeast to the southern edge of State Route 625 at UTM 18 311300 4229240; and continues west along the southern edge of State Route 625 to UTM 18 311240 4229240; and continues northeast, crossing State Route 625, to UTM 18 311490 4229495; and continues southeast to UTM 18 311520 4229430, east to UTM 18 311560 4229450, southeast to UTM 18 311610 4229325, east to UTM 18 322735 4229270, and southeast, crossing State Route 625, to the southern edge of State Route 625 at UTM 18 311760 4229220; and continues east along the southern edge of State Route 625 until it intersects the Gingoteague Creek at UTM 18 311830 4229230; and continues south along the center of the Gingoteague Creek until it intersects the Rappahannock River at UTM 18 312045 4226660; and continues east along the northern bank of the Rappahannock River to UTM 18 309780 4226640. **Verbal boundary justification:** The boundary chosen



Woodlawn Historic and Archaeological District, King George County, Virginia. Detail of USGS map showing contributing resources and the National Register boundaries.

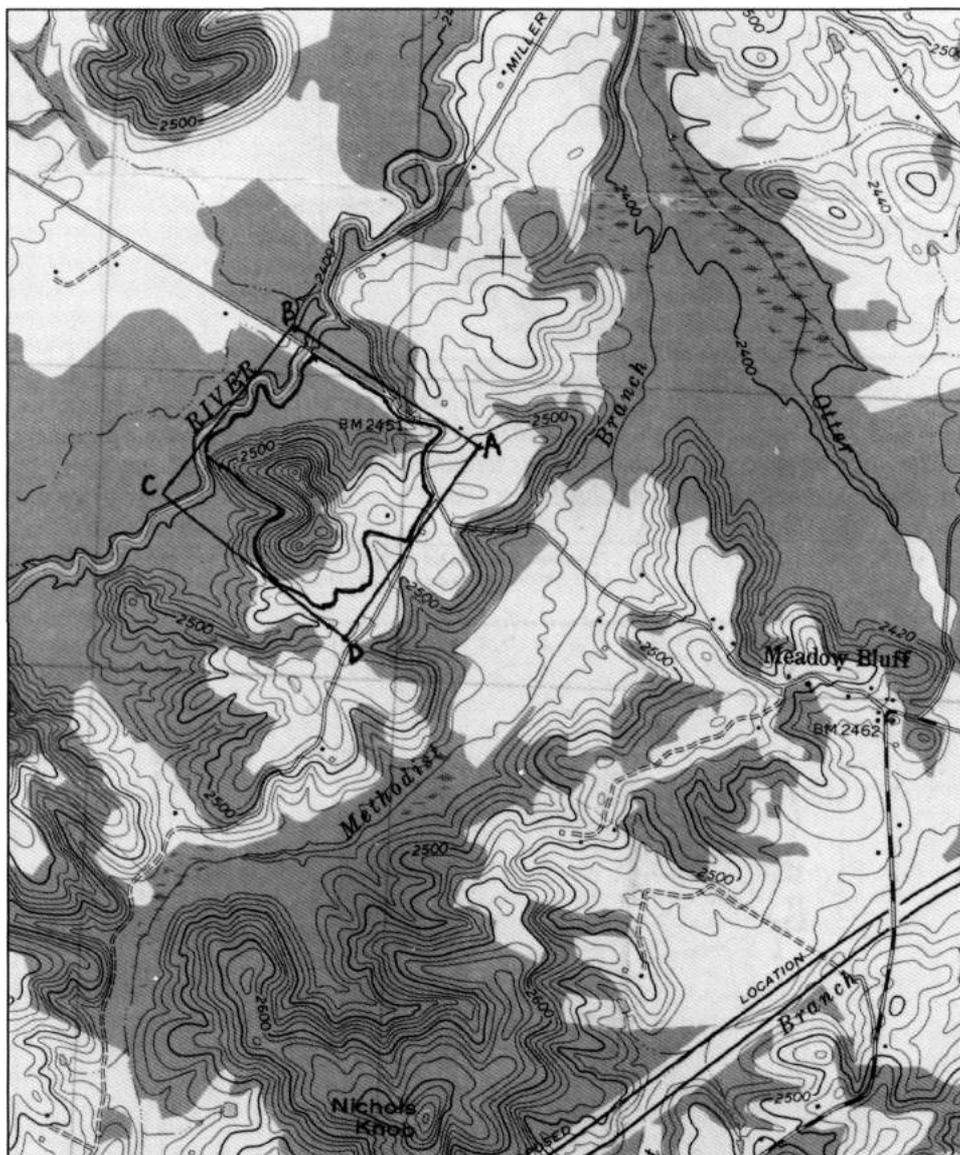
for the Woodlawn Historic and Archaeological District corresponds to traditional and current property lines. Significant contributing historic and archeological resources are contained within these boundaries.

Dietz Farm, Greenbrier County, West Virginia, is a 96-acre property, occupying a high knoll with gently sloping pastures and adjacent woodlands at Meadow Bluff, overlooking the historic Kanawha and James River Turnpike. During the Civil War, the house served as temporary Confederate and Union headquarters and hospital, and winter quarters were constructed near the house. The brick farm house, two outbuildings, and a noncontributing barn make up the farm complex. On two knolls several hundred meters due west of the house are the earthwork remains of Confederate fortifications. In a depression between the knolls are the unmarked graves of an unknown number of Confederate soldiers who died in the house during the time that it served as a hospital. The burial area is a contributing site. South of the turnpike is a third contributing Confederate earthwork. The National Register boundaries follow cultural features, natural features,

and a contour line, defining the extent of the contributing resources and their setting. **Verbal boundary description:** Beginning at a point where County Route 60/25 meets State Route 28; thence approximately 750 feet northeast along the west side of Route 60/25; thence in a line approximately 1,600 feet due northwest along the southern side of Route 60/25 to where said route begins to cross Meadow River; thence in a slightly meandering fashion following the east bank of Meadow River for approximately 2,500 feet southwest to where the major contour line meets the east side of Meadow River; thence following the principal 2,500-foot contour line (as lined in red on the accompanying USGS topographic map) in an eastward direction; thence south eastward; thence north for approximately 2,000 feet until the line meets the east side of State Route 28; thence in a line northwest for approximately 500 feet along the west side of State Route 28 to the point of beginning, encompassing approximately 96 acres. **Boundary justification:** The boundary is drawn so as to include the principal area immediately around the Dietz House/Headquarters that served as outdoor bivouac for soldiers of both sides during the time the property

was used for military purposes. On the north and west the boundaries are drawn so as to include the major Confederate trenches along the east side of the Meadow River and the defensive earthworks on the two

principal rises that were constructed in anticipation of Federal assault down Route 60 from the northwest. The boundaries also include the burial sites of Confederate soldiers who died while the property was being used as a field hospital.



Dietz Farm, Greenbrier County, West Virginia. Topographic map showing the National Register boundaries and UTM reference points.

Dune Shacks of Peaked Hill Bars Historic District, Cape Cod, Barnstable County, Massachusetts, is located within Cape Cod National Seashore, on Cape Cod peninsula. The dune shacks, which have been determined eligible for the National Register as a historic district, are scattered along a three-mile stretch of unvegetated dunes in view of the Atlantic Ocean. The shacks were historically used as summer retreats by members of a colony of artists, writers, poets, actors, journalists, bohemians, and socialites from the 1920s to 1960s. The dune shacks and the natural landform of the dunes form a unique historic cultural landscape. The eligible property includes 17 shacks and the surrounding dune landscape. Because the natural landscape served as setting and inspiration for the inhabitants, the appropriate boundary includes the collective extent of the visible landscape for all the dune shacks in the district. Geographic Information System (GIS) analysis techniques were used to analyze the viewshed for the purpose of defining the district boundaries. Natural features, cultural features, and viewsheds were used to define the National Register boundaries of the property. **Verbal boundary description: The boundary for the Dune Shacks of Peaked Hill Bars Historic District encompasses approximately 1,500 acres and is described as follows: the shoreline to the north, the crest of the second dune line away from the shore south of the second jeep trail delineated on the accompanying USGS map, the viewshed line of the cluster of shacks F, A, I, and D on the west, and the crest of the first dune ridge to the east of shack B. These boundaries are demarcated on the attached map of the area. **Boundary justification:** This boundary encompasses all of the dune shacks and the area incorporating the entirety of the historically significant cultural landscape and associated important viewsheds as seen from the dune shacks. This boundary is supported by the written documentation and by the attached GIS viewshed analysis. The shifting characteristics of the dune landscape are recognized; for this reason this boundary is a close approximation. In light of dune movement, the boundary may move in some locations some degree, but the basic principles underlying its justification**

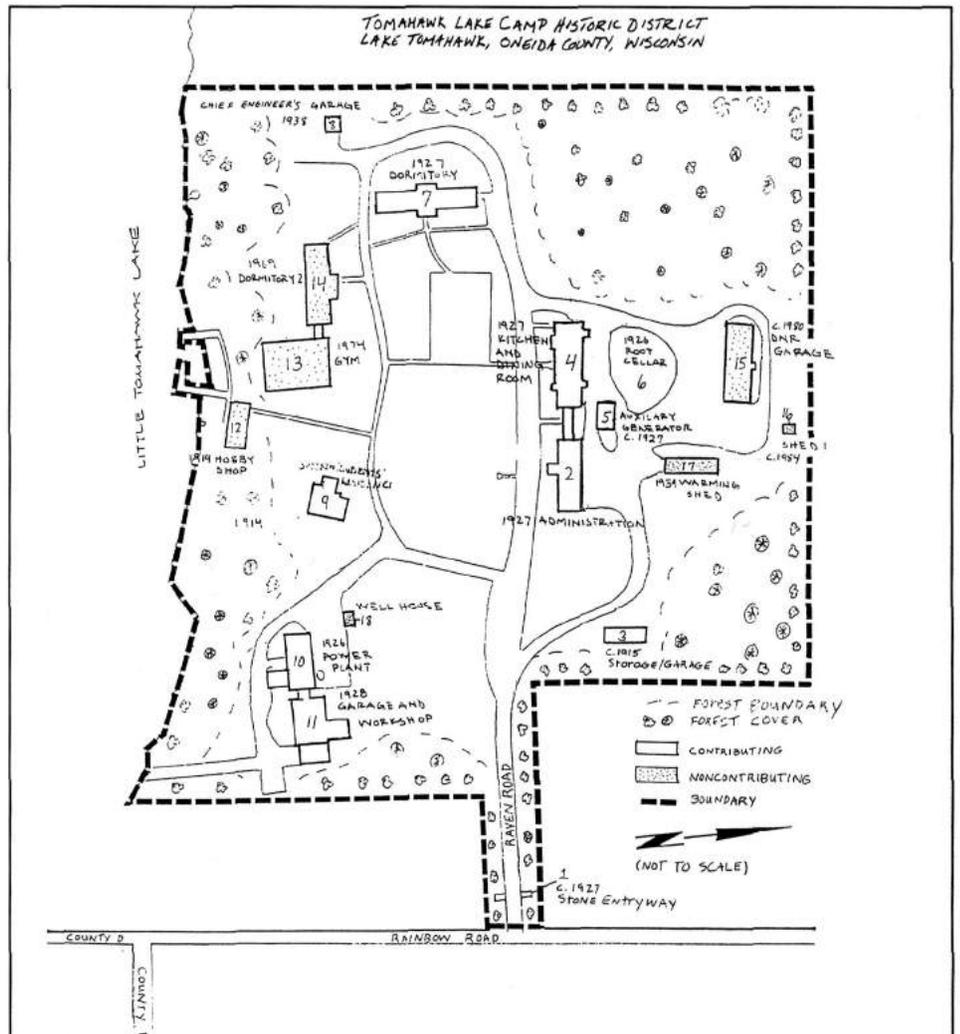
shall remain constant. Allowing for this movement, the boundary shall continue to include the dune shacks and the extent of the landscape to the crest of the second dune ridge, wherever that may occur.

Tomahawk Lake Camp Historic District, Oneida County, Wisconsin, is a 20th century tuberculosis rehabilitation camp. The 17 buildings and one structure are located on a site surrounded by forest reserve on Little Tomahawk Lake. The camp was established in response to advances in the treatment of tuberculosis and the perceived need to reforest the cut-over region of northern Wisconsin. At the camp, infected patients were isolated from general hospital patients and benefitted from the curative effects of open space for exercise and fresh air. Natural features, cultural features, and reasonable limits were used to define the National Register boundaries. **Verbal boundary description:** Beginning at the intersection with the south edge of Rainbow Road and a north-northwest line extending 200 feet south of Raven Road, commence north-northwest along that line 500 feet to the intersection of a north-south line extending 200 feet east of the garage and workshops to Little Lake Tomahawk; commencing south along that line to the intersection of the Little Lake Tomahawk shoreline, then northwest along the lake shore to the intersection of a north-south line extending 150 feet west of the garage, then commencing north along that line to the intersection of a west-east line extending 150 feet north of the shed and commencing east along that line to the intersection of a north-northwest line extending 200 feet north of Raven Road and commencing along that line to the intersection of County Highway D, then running south along the west side of County Highway D to the point of beginning. **Boundary justification:** The Tomahawk Lake Camp boundary was drawn to encompass all historic and nonhistoric resources in the complex. It also includes the surrounding landscape features that provide the northwoods setting. This includes the wooded area around the Raven Road entrance and the woods surrounding the buildings. The northwoods environment was a very important part of the camp's outdoor, health-conscience philosophy that was advertised to



Dune Shacks of Peaked Hill Bars Historic District, Barnstable County, Massachusetts. This GIS viewshed analysis map shows the National Register-eligible historic district in black and the dune shacks as white dots within the district; roads, trails, and lakes are shown in white (Knoerl and Chittenden 1990:7).

Tomahawk Lake Camp Historic District, Lake Tomahawk, Oneida County, Wisconsin. Sketch map showing the National Register boundaries.



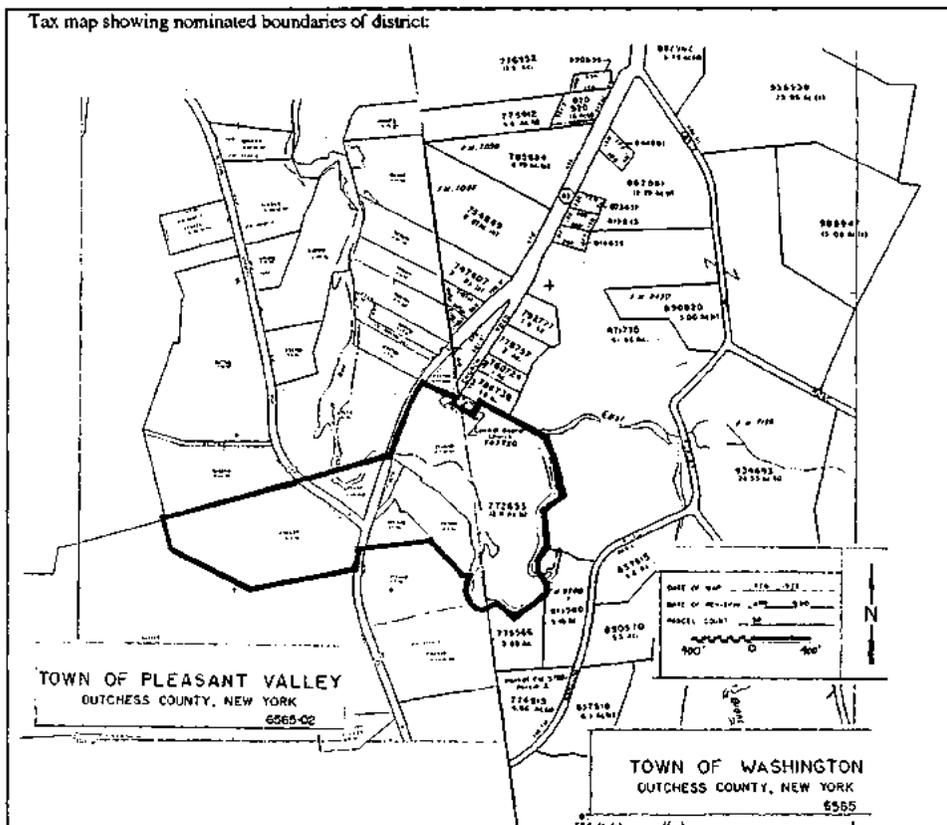
Tomahawk Lake Camp Historic District, Lake Tomahawk, Oneida County, Wisconsin. Sketch map showing the National Register boundaries.

prospective patients. The site includes 21 acres of the former 536-acre site. Acreage not included in the district is heavily wooded and does not contribute to the historic significance of the complex.

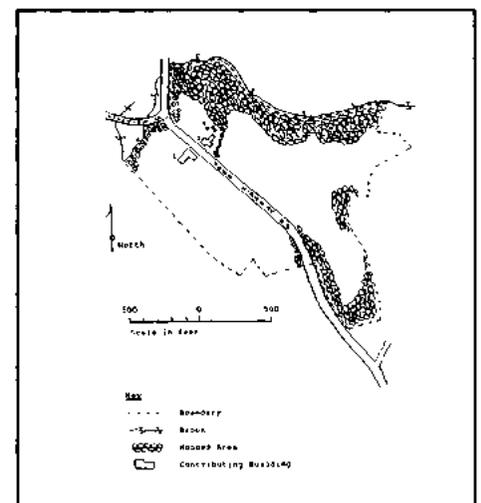
Bloomvale Historic District, Dutchess County, New York, is a small industrial site, established in the mid-18th century. The district's eleven contributing resources include the Bloom house and well, the Bloomvale mill, a worker's house, the mill's water system, the old highway and bridge abutments, four mill complex building sites, and the district's archeological remains. The agricultural function of the Bloom farm declined; farm buildings are gone and the agricultural fields are overgrown. However, the industrial history of Bloomvale is well represented, and the Bloom house and the industrial complex remain sufficiently intact to preserve the setting of the mill site and the visual and functional interrelationships of its components. Thus, the industrial history of the site is the focus of the district's significance. The boundaries of the district were selected to include the present-day parcels

containing the significant historic resources. National Register boundaries correspond to tax parcel boundaries. **Verbal boundary description:** See attached site map and boundary map composed from local tax maps. **Boundary justification:** The boundaries of the district were determined by the present-day parcels containing the significant historic components identified on the site map. Today, the house and the mill are owned separately. The Bloom house and its lot were divided from the mill site and two northern farm lots in the 1860s. Those farm lots were subsequently sold off and have since been further subdivided. The agricultural function of the Bloom farm declined over the years to the point where the farm buildings have disappeared and the agricultural fields reforested. Conversely, the industrial history of Bloomvale is well represented and the Bloom house and the industrial complex remain sufficiently intact to preserve the setting of the mill site and the visual and functional interrelationships of its components. Thus, it is the industrial history of the site that is the focus of the district's significance.

Martin M. Bates Farmstead, Richmond, Chittenden County, Vermont, is a 45-acre property including a 19th century Italianate farmhouse and associated barn, ice house, and chicken house surrounded by hay fields and forested hills. The farmstead contributes to understanding the development of dairy farming in the region; therefore, the intact open farm fields around the farm buildings are also important components of the farmstead. Although the farm is no longer in operation, the fields continue to be hayed. Natural features, tax parcel boundaries, and reasonable limits were used to define the National Register boundaries. **Verbal boundary description:** The Bates Farmstead includes land on both sides of Richmond Town Highway #1. The boundary above the road is formed by the southern edge of a brook that drains into the Huntington River and the eastern line of tax parcel number 11-51.1. The boundary below the road follows the southern line of tax parcel number 11-50 to a point approximately 500 feet from the edge of the road. From that point, the boundary extends in a straight line parallel with the road to the brook, which it touches south of Hillview Road. The boundary thence follows the brook downstream to Hillview Road and continues along the edge of that road to the town highway. **Boundary justification:** The boundary includes all buildings and the surrounding open fields historically associated with the Bates Farmstead.



Bloomvale Historic District, Dutchess County, New York. Tax map showing the National Register district boundaries.



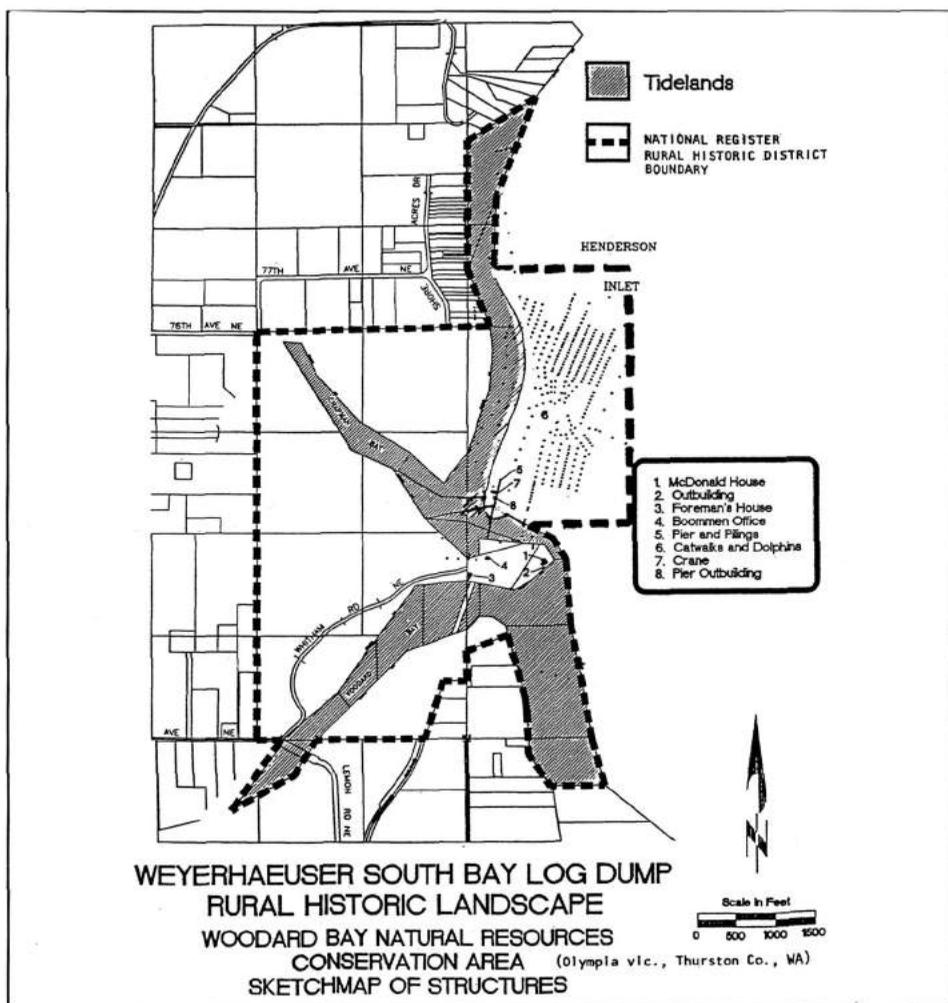
Martin M. Bates Farmstead, Richmond, Vermont. Plan map showing the National Register boundaries, which include buildings and associated fields and woods.

Rocky Butte Scenic Drive Historic District, Portland, Multnomah County, Oregon, includes the viewpoint on the crest of Rocky Butte, the scenic drive approaches to the viewpoint, and Joseph Wood Hill Park, also on the crest. Rocky Butte Scenic Drive is a serpentine automobile roadway that climbs with three switchbacks and a final girdling loop to the summit of Rocky Butte. Contributing features include the roadways and accompanying historic structures, the crest viewpoint structure, and the historic aircraft beacon. The district's original association was with recreational driving and scenic views, although residential development has encroached on the lower portions of the roadway; nevertheless, the viewpoint still offers a scenic vista over the Columbia River plain in all directions. The road right-of-way and tax parcel boundaries were used to define the National Register boundaries of the property. **Verbal boundary description:** The nominated area is located in Sections 21 and 28, Township 1N, Range 2E, Willamette Meridian in Portland, Multnomah County, Oregon. It is a lineal, serpentine district consisting of the entire 50-foot-wide right of way of Rocky Butte Road and approach sections of NE 92nd Avenue from Halsey Street on the south and NE Fremont Street from 82nd Avenue on the west to include all historic developed features of the scenic parkway and Joseph Wood Hill Park at the crest of Rocky Butte, encompassing in all 21.48 acres, more or less, in the corporate limits of the city of Portland. The total number of contributing features (14) includes the road system, its retaining walls, two tunnels, drainage structures, stone fenders, stone bollards, the park, a stone outlook with lamp posts, a stone staircase, a viewfinder, a commemorative monument, and the historic aircraft beacon. **Boundary justification:** The district is located in Township 1 North, Range 2 East, Sections 21 and 28. The district is bounded by the 50-foot-wide right of way as measured from the center lines of Rocky Butte Road, and of 92nd Avenue from Halsey Street to Rocky Butte Road South, and along Fremont Street from 82nd Avenue to Rocky Butte Road North. Tax Lot 47 of Section 28 is located within the confines of Rocky Butte Road as it circumnavigates the crest of the butte. The district comprises an approximate

total of 21.48 acres. This includes 2.38 acres which is the Joseph Wood Hill portion of the district, Tax Lot 47. Because the district comprises approach drives and a viewpoint located within the confines of approach drives, it was felt that the road right of ways would appropriately bound the district. The approach drives pass through residential areas at the butte's foot and then wind through newer residential areas as they climb the butte. Houses cluster along portions of the roads on the butte. Other portions of the roads are still in natural woodland.

Weyerhaeuser South Bay Log Dump Rural Historic Landscape, Thurston County, Washington, encompasses 260 acres of uplands and 190 acres of tideland along the Henderson Inlet of southern Puget Sound. Twin estuaries of Woodard and Chapman Bays on Henderson Inlet intersect the property forming

north, south, and central peninsulas of land. The property reflects a continuity of land uses and the evolution of functional relationships between wooded land and water in the south Puget Sound region through prehistoric and historic periods. Use of the property by successive groups—Native Americans, Euro-American settlers, loggers, oyster growers, and the Weyerhaeuser log transport operation—reflects historic waterfront activities on lower Puget Sound over thousands of years. The use of the site for log dumping and booming by Weyerhaeuser Corporation since 1926 has forestalled encroachment of modern subdivision development typical of adjacent areas, thus preserving evidence of the land-use patterns of earlier eras. Evidence of prehistoric and 20th century land use is still evident, and natural landscape features survive as well. The area was occupied by prehistoric Native Americans, who gathered



Weyerhaeuser South Bay Log Dump Rural Historic District, Thurston County, Washington. Plan map showing the National Register boundaries.

shellfish and plant foods and hunted there. European-American settlers arrived in the mid-19th century, and logging began in the 1880s. The area was purchased by Weyerhaeuser in the mid-1920s for log transshipment. Tax parcel boundaries were used to define the National Register boundaries of this property. **Verbal boundary description:** Boundaries as described in parcel numbers 11918100000, 11918410000, 11918430000, 11917320000, 11917320100, 11917330100, 11917220000, 93006700000, 93006800000, 93006900000, 93007000000, 93007100000, 93007200000, 93007300000, 93007400000, 93007500000, 93007600000, 93007700000, and 93007800000 on file at the Thurston County Assessor's Office and illustrated in the attached map. **Boundary justification:** The nominated property includes all land in the historic Weyerhaeuser ownership.

Discontiguous Districts in Rural Settings

(See also Discontiguous Archeological Districts)

Crockett Canyon/Coyote Ranch Archeological District, Southwest, [location restricted], contains 16 discontiguous sites associated with prehistoric cultures. The sites are located among the cliffs and canyons of the Ardra Plateau, approximately 20 miles northeast of Fort Sickles. The sites were nominated as a district because they document an extensive, diverse, and well-preserved assemblage of prehistoric artwork; they define distinct stylistic traditions among petroglyph and pictograph groups; and they identify long-term aboriginal habitation directly associated with the rock art. The sites are related by artistic style, artifact groupings, and geologic setting. Individual site boundaries are based on the extent of surface features and artifacts. **Verbal boundary description:** The Crockett Canyon/Coyote Ranch Archeological District consists of 16 significant areas of aboriginal rock art, shelters, and campsites. The accompanying topographic maps show the location and configuration of each nominated site by using labeled points and UTM grid coordinates. Crockett Canyon sites are: [excerpted site example] 33GG111: This site contains

approximately 1.5 acres and is found on the USGS 7.5' Crockett Canyon topographical sheet. From point 1 (UTM coordinates QQQ/RRR), follow the 2,400-foot contour southward to point 2 (UTM coordinates SSS/TTT), a distance of about 197 feet (60 m). Continue to the NE for approximately 197 feet (60 m) to point 3 (UTM coordinates UUU/VVV), and then to the NW about 262 feet (80 m) to point 4 (UTM coordinates WWW/XXX). Proceed southward along the 2,400-foot contour approximately 197 feet (60 m) back to point 1. The State owns this site, which is located in Section 4, Township 2S, Range 4W. **Boundary justification:** All 16 sites in the district are culturally linked by similar artifactual and pictographic design styles. The boundaries of the discontiguous district correspond to the boundaries of the 16 individual segments (sites). Individual site boundaries were determined by mapping the extent of surface-visible cultural features and artifacts. All of the sites are fairly discrete locations of cultural activity, with artifacts concentrated near the petroglyph panels, shelters, and fire-cracked rock hearths that comprise the most significant features at each locus. Areas of low-density scattered artifacts or features (less than approximately 1 artifact per 50 square meters) were not included within the site boundaries. The data the sites present jointly is more important and convincing than when presented in isolation. Taken together, these data overlap and succeed each other, documenting over 7,000 years of occupation and the change in subsistence from hunting and gathering to agriculture. Reflecting this economic change is a rich and varied body of artistic expression that spans the entire period of occupation.

Parks as Districts

Local, State, and national parks may also include National Register properties. Boundaries for National Register properties within parks are limited to eligible resources; therefore, the National Register boundaries may differ from park boundaries. Special provisions apply to historic and cultural units of the National Park System (as discussed below). In selecting boundaries, consider the extent of the eligible resources and their setting. Do not include buffer zones or large areas that lack contrib-

uting resources.

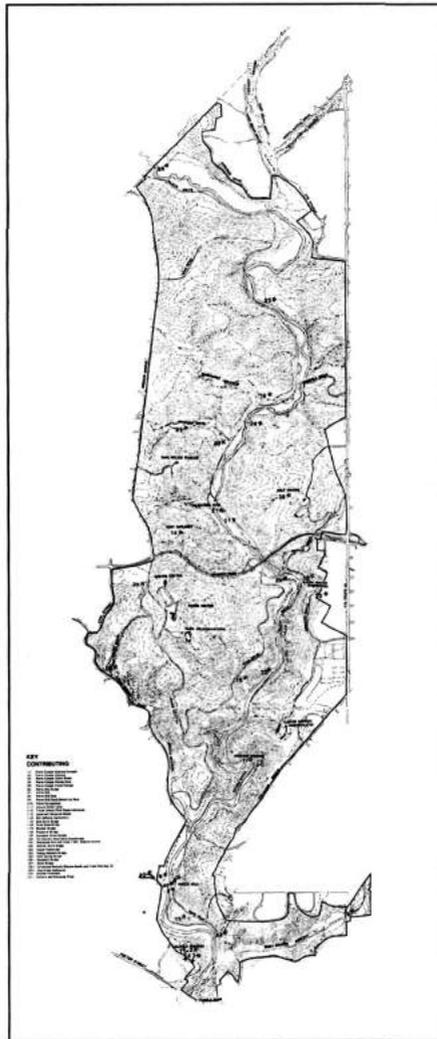
Each historic and cultural unit of the National Park System is automatically listed in the National Register on the date its authorization is signed into law. During the interim period before the National Park Service has defined the extent of the areas of historic value, the National Register boundaries are those defined in the National Park Service authorizing legislation, regardless of ownership. Congress may authorize for the National Park System, with no requirement of notice, land areas not yet acquired as well as those never to be acquired in fee, including those to be controlled by easement acquisition.

For each historic or cultural unit, the National Park Service will evaluate the entire authorized (listed) area, prepare a nomination form, and precisely define the boundaries to encompass the resources that have historic significance. If the proposed National Register boundaries coincide substantially with the park boundaries, the documentation is forwarded to the Keeper of the National Register, and a courtesy copy is sent to the State Historic Preservation Officer. When the Keeper signs the nomination form, the boundaries of the property considered to be listed in the National Register are thus defined by the documentation.

If the proposed National Register boundaries differ from the area authorized, the documentation is submitted to the State Historic Preservation Officer for comment within 45 days. In some cases, the area documented and subsequently listed may be less than the area authorized to exclude nonhistoric buffer zones. The listed area may include privately owned areas, but only to the extent that they have been authorized by Congress.

Rock Creek Park Historic District, Washington, D.C., is a 1,754.62-acre property in the northwest quadrant of the District of Columbia. The property is legally defined as Reservation 339 and its boundaries are roughly defined as Sixteenth Street on the east, Oregon Avenue and Branch Road on the west, Klinge Road on the south, and the District of Columbia line and Parkside Drive on the north. Rock Creek Park is a natural reserve within a heavily urbanized area. The park is surrounded by commercial and residential development, and it has

only two modern areas of concentrated recreational and administrative activity. Otherwise, Rock Creek Park Historic District retains a high degree of integrity that well reflects the development of this public landscape between 1791 and 1941. Andrew Ellicott's 1791 survey recorded the topography of the property and shows the location of the District of Columbia boundary at the northwest corner of the park. **Verbal boundary description:** The boundary of Rock Creek Park Historic District is shown as the bold black line on the accompanying map entitled "Rock Creek Park Historic District, 1990." This tract of land is legally defined as Reservation 339. **Boundary justification:** The boundaries of this district were determined by both legal and historical considerations. Reservation 339 was the land set aside by Congress as Rock Creek Park in 1890 with approximately 100 acres of related boundary rectifications and additions. The Piney Branch Parkway was acquired by the government in 1907 and was extended in the 1920s. It was included in this district because it is legally a part of Reservation 339. Furthermore, there is also historical justification for the parkway's inclusion in Rock Creek Park Historic District because this land area was surveyed and included in the 1918 Olmsted comprehensive plan for Rock Creek Park. The plan was prepared in 1917-1918 by the famous Brookline, Massachusetts, landscape architecture firm of Frederick Law Olmsted, Jr., and his half-brother John C. Olmsted. Their plan for Rock Creek Park was adopted in 1919 and has remained a vital management document ever since. As an administrative unit, Rock Creek Park presently contains many other urban parks that are not contiguous to Reservation 339, including the Rock Creek and Potomac Parkway, the Normanstone Parkway, and the Soapstone and Klinge valleys. These areas were acquired and integrated into Washington's park system between 1913 and 1950 as access routes and a means of preserving the watershed of the Rock Creek valley. Although the Melvin Hazen Park and Pinehurst Parkway are contiguous to Rock Creek Park, they were acquired and consolidated as park land within the recent past and do not share the Piney Branch Parkway's early legal or historical associations to Reservation 339.



Rock Creek Park Historic District, Washington, D.C.. Plan map showing the National Register boundaries.

Pecos National Historical Park, San Miguel County, New Mexico, is strategically located at the mountain gateway between the Southern Great Plains and the Rio Grande valley. The boundaries of the 384.8-acre archeological district are coterminous with Pecos National Historical Park. The history of the upper Pecos River valley, as represented by the archeological and historic sites within the archeological district, demonstrates a succession of attempts to exploit the natural and cultural resources of the Southwest. The 96 archeological sites within the property represent a complex of pueblos inhabited by ancestors of the Pecos Indians from A.D. 800 to 1838 and a series of Spanish Franciscan mission churches and secular buildings constructed during the 17th and 18th centuries. Adolph Bandelier mapped ruins at Pecos in 1881, and archeologists including Edgar Hewett, Kenneth Chapman, A.V. Kidder, Stanley Stubbs, and Bruce Ellis conducted investigations at various sites on the property during the first half of the 20th century. **Verbal boundary description:** Pecos National Historical Park is surrounded by private ranch holdings, almost all of which are owned by the Fogelsons. The nominated district boundaries are coterminous with the National Historical Park boundaries. **Boundary justification:** Pecos National Histori-



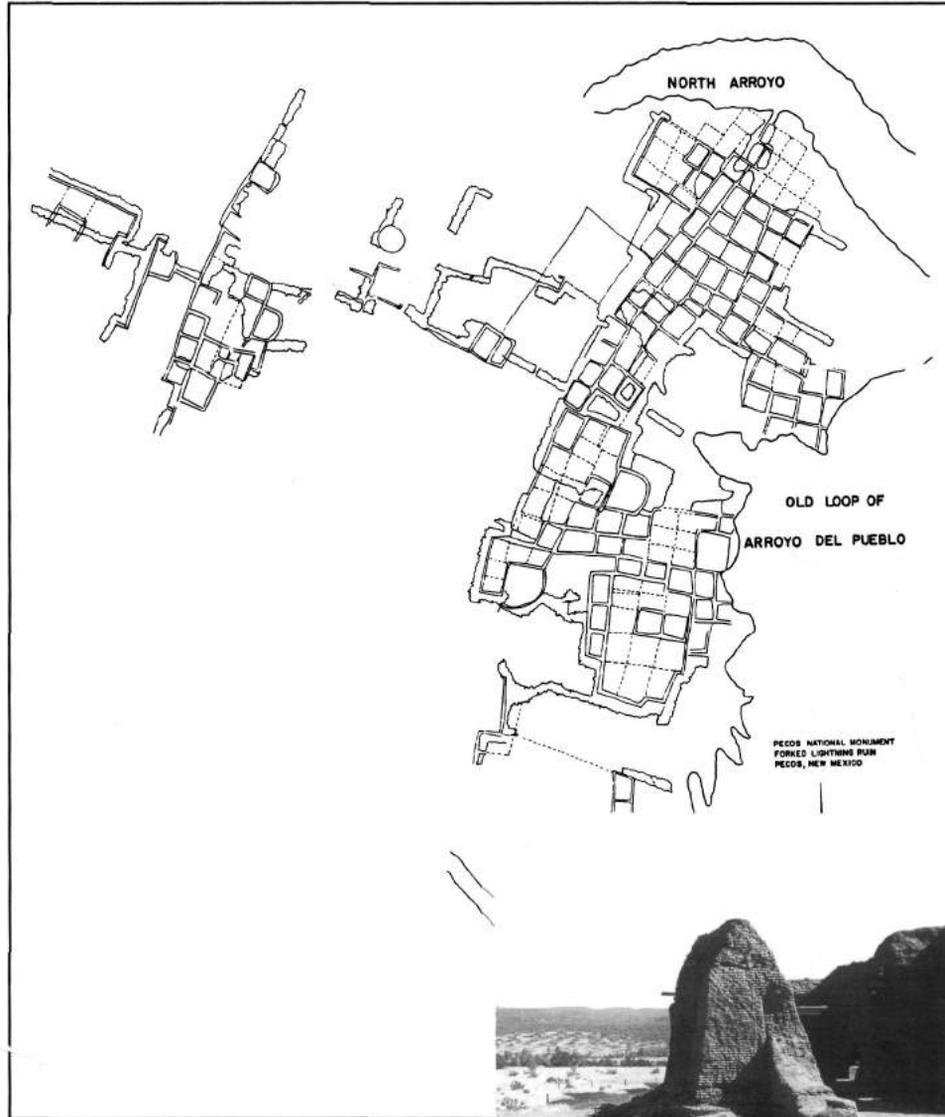
Rock Creek Park Historic District, Washington, D.C.. Southeast view of Boulder Bridge (ca. 1901-1902). (William Bushong)

cal Park was established in 1965 and added to in the 1980s by land donations from the Fogelsons.

Maquoketa Caves State Park Historic District, Jackson County, Iowa, includes 111 acres of land acquired in three parcels between 1921 and 1940. These parcels constitute the eastern portion of the park

and include all of the park structures, most of which were built between 1932 and 1939. Between 1961 and 1981, 161 acres were added west of the historic park area as a nature preserve; this acreage is not included in the National Register historic district. In the center of the park is a steep ravine with sheer limestone cliffs ranging from 10 to 75 feet high.

Foot trails snake around the tops of the cliffs to overlooks, which offer views of the valley and caves below. Other trails lead to cave entrances which are connected by underground passages. Nine of the fifteen structures in the park are associated with the 1932-1939 development period and are contributing resources. The district is significant as one of the first parks established in Iowa, selected because of the property's limestone caves. The property in included in two multiple property submissions, "The Conservation Movement in Iowa, 1857-1942," and "CCC Properties in Iowa State Parks, 1933-1942." Because of the related periods of significance, the 1940 boundaries are appropriate. **Verbal boundary description:** The historic portion of Maquoketa Caves State Park comprises three separate [adjoining] parcels which form an irregular tract of 111.08 acres located in Section 6, T-84N, R-1E. This acreage covers approximately half of the park on the east side. The tract is bounded on the west by newer park lands and on the north, east, and south by privately owned farmland. **Boundary justification:** These boundaries represent the extent of park holdings as of 1942.

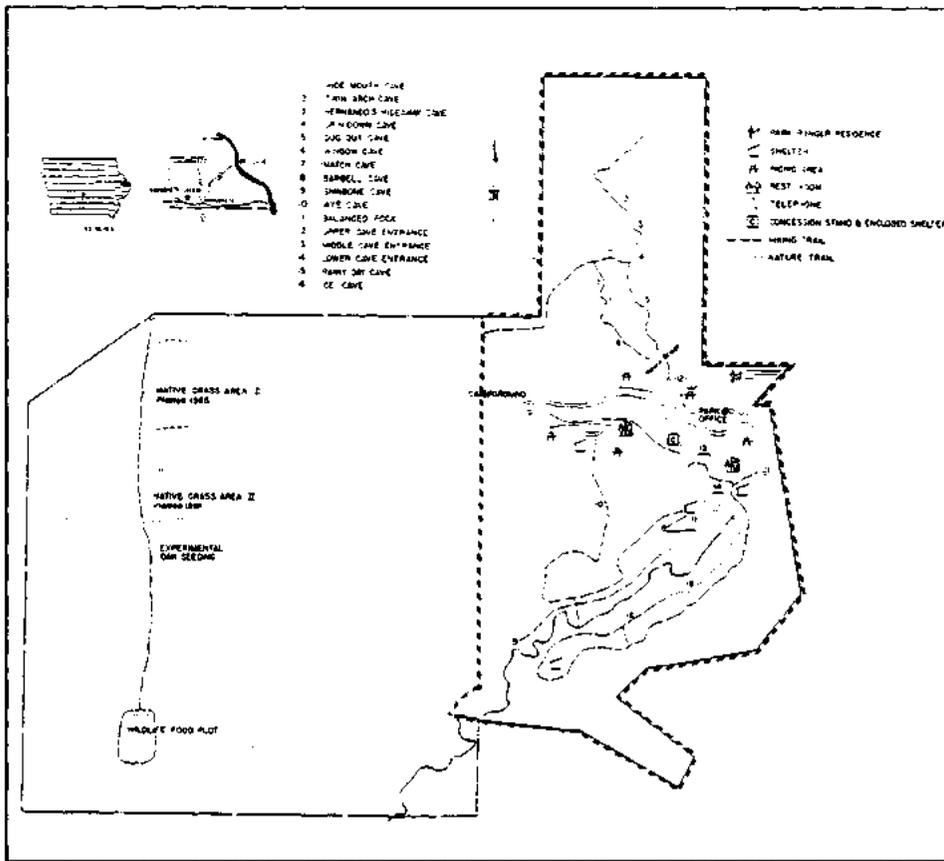


Pecos National Historical Park, San Miguel County, New Mexico. Plan map of the Forked Lightning Ruin, adapted from A. V. Kidder's field maps from 1926, 1927, and 1929.

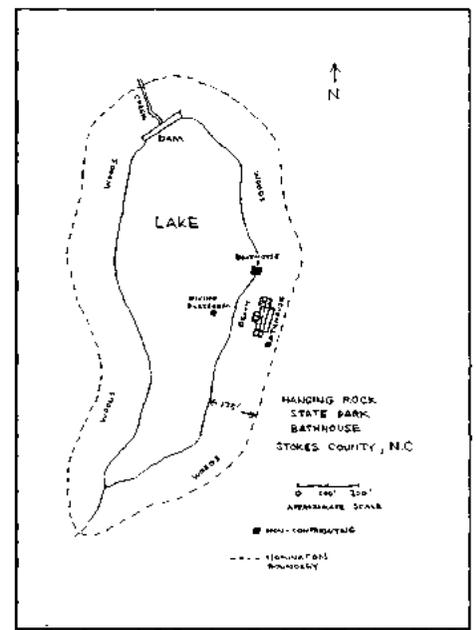


Pecos National Historical Park, San Miguel County, New Mexico. Ruins of the 17th century church. (Pecos National Monument)

Hanging Rock State Park Bathhouse, Stokes County, North Carolina, is the largest and most distinctive facility constructed in North Carolina by the Civilian Conservation Corps (CCC). The building is significant for its architecture (Criterion C) as the most prominent example of CCC-constructed rustic park facilities in North Carolina. Included in the nomination are the adjacent 12-acre Hanging Rock Lake and its concrete stone dam, which were built concurrently with the bathhouse. These resources are also eligible for their associations with the CCC program in North Carolina. The building and its setting embody the ideals of park design that emphasized harmony with the natural landscape through sensitive siting and the use of native building materials and rustic architectural forms. The lake and shoreline, which are included as a contributing site, constitute the historic setting, which is integral to the historic character and function of the bathhouse. A reasonable limit of 175 feet from the lakeshore was used to define the National Register boundaries.

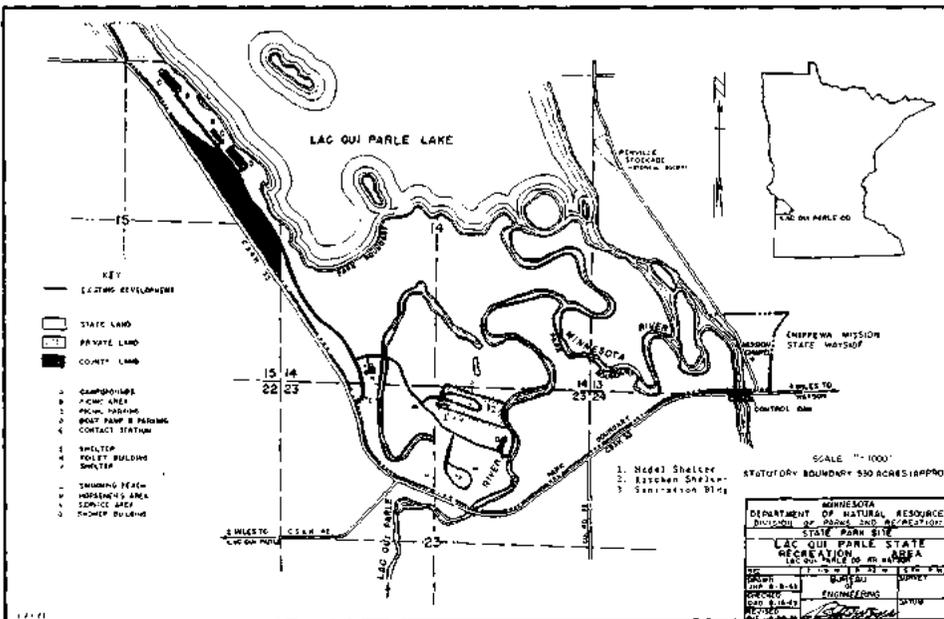


Maquoketa Cave State Park Historic District, Jackson County, Iowa. Plan map showing the park boundaries and the National Register district boundaries.



Hanging Rock State Park Bathhouse, Stokes County, North Carolina. Plan map showing the National Register boundaries.

Verbal boundary description: The nominated area includes the 12-acre Hanging Rock Lake and 12 acres of surrounding land defined by a line running 175 feet from the high-water edge of the lake on all sides. **Boundary justification:** The nominated area incorporates the bathhouse and its immediate historic setting of lake and surrounding woodland essential to its historic function and character, including the dam that forms the lake.



Lac qui Parle State Park WPA/Rustic Style Historic District, Lac qui Parle County, Minnesota. Plan map showing the National Register boundaries.

Lac qui Parle State Park WPA/Rustic Style Historic District, Lac qui Parle County, Minnesota, includes three buildings in the public-use area of the park, located adjacent to the Lac qui Parle River. Architects for these projects were from the National Park Service and the Design Office within the Department of Conservation. The district is significant for its association with the social, political, and economic impact of the Great Depression and the subsequent development of the Federal relief programs that were responsible for the construction of the contributing buildings. The buildings are outstanding examples of rustic style/split stone construction. The boundaries were selected to include a limited setting around the three contributing buildings. **Verbal boundary description:** The boundary for Lac qui Parle State Park WPA/Rustic Style Historic District is shown

as the heavy, cross-hatched line on the accompanying map entitled "Lac qui Parle State Recreation Area." It is defined by the land immediately encompassing three historic buildings. **Boundary justification:** The boundary includes the buildings developed by the WPA that have been historically associated with the park and that maintain historic integrity.

BOUNDARIES FOR PARTICULAR PROPERTY TYPES

Traditional Cultural Properties

A traditional cultural property is a building, structure, site, object, or district that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. Defining boundaries for traditional cultural properties can be challenging. Carefully consider the traditional uses of the property. For example, where a property is used for contemplative purposes, viewsheds are important and must be considered. In an urban district significant for its association with a specific social group, consider the limits of residence or use by the group. Consider changes in time, as well. For example, archeological evidence may contribute information on past use areas, which may differ from present use areas. Select boundaries that encompass the area associated with the traditional use or practice and document the factors that were considered in the boundary justification. For further assistance, consult *National Register Bulletin: Guidelines for Evaluating and Documenting Traditional Cultural Properties*, the appropriate State historic preservation office, any concerned Indian tribal preservation program, and the traditional group or community that ascribes values to the property.

Kuchamaa (Tecate Peak), Tecate, San Diego County, California, is a sacred mountain to the Kumeyaay Indians of southern California and northern Baja California, Mexico. Although there are modern intrusions

(a road and communications facilities on the summit), the mountain is important to the Kumeyaay community's belief system. The peak is a special place, marking the location for the acquisition of knowledge and power by Kumeyaay shamans. Oral tradition records the use of Kuchamaa as the place where several important shamans instructed their initiates and the sacred place of vision quests and purification ceremonies. Contemporary Native Americans continue to use Kuchamaa during the full moon and at equinoxes, when they pray for renewal of Earth Mother and peace. Kuchamaa is significant under Criterion A for its association with Native American cultural history. A contour line and a legal boundary were used to define the National Register boundaries of the property. **Verbal boundary description:** Kuchamaa is 3,885 feet above mean sea level. The nominated area includes all land from the 3,000-foot contour level up to and including the peak. On the north it drops abruptly to Highway 94. The western flank consists of several dissected subpeaks and the eastern aspect is an upland spine. The southern boundary conforms to the international border [between the United States and Mexico]. This is a total of 510 acres, 320 to the west and 190 to the east. **Boundary justification:** Kuchamaa was and remains important to southern California Native Americans as a structural unit. If the mountain lacked its physical proportions and regional position, then it is quite possible that the peak would not have been revered. The physical stature of Kuchamaa constitutes one reason that it was used as a place of spiritual learning and worship. During a visit to Kuchamaa to evaluate a development proposal, Native Americans identified a sphere of spiritual influence extending for several miles from the mountain. This constitutes one zone of spirituality; approachable by both Kwisiyai (shamans) and ordinary people. Actual Native American use of Kuchamaa provides guidelines for establishing boundaries. This nomination includes that portion of the mountain located above an elevation of 3,000 feet above mean sea level. According to current data, this area is considered sacrosanct. In the ethnographic and prehistoric past, the summit was used for arcane rituals and approached only by shamans and

their initiates. Cultural taboos prohibited common folk from ascending beyond a spring known as God's Tear. The location of God's Tear Spring has not been verified, but best estimates place it as the spring located just above the 3,000-foot level. Finally, according to Rosalie Pinto Roberston [granddaughter of the last traditional chief of the Kumeyaay], the high mountain slopes hold burials of cremated Kwisiyai. As with the spring, none of these has been verified. Their presence above the 3,000-foot level requires the use of the contour line as the boundary for the National Register district. The nominated portion of Kuchamaa includes 510 acres, with the eastern segment, consisting of public lands, containing 190 acres. The western, state-owned parcel is demarcated by north-south section lines. This area contains 320 acres. The southern boundary conforms to the international border. Private lands occupy a large portion of the lower slopes of the mountain below the 3,000-foot contour line.

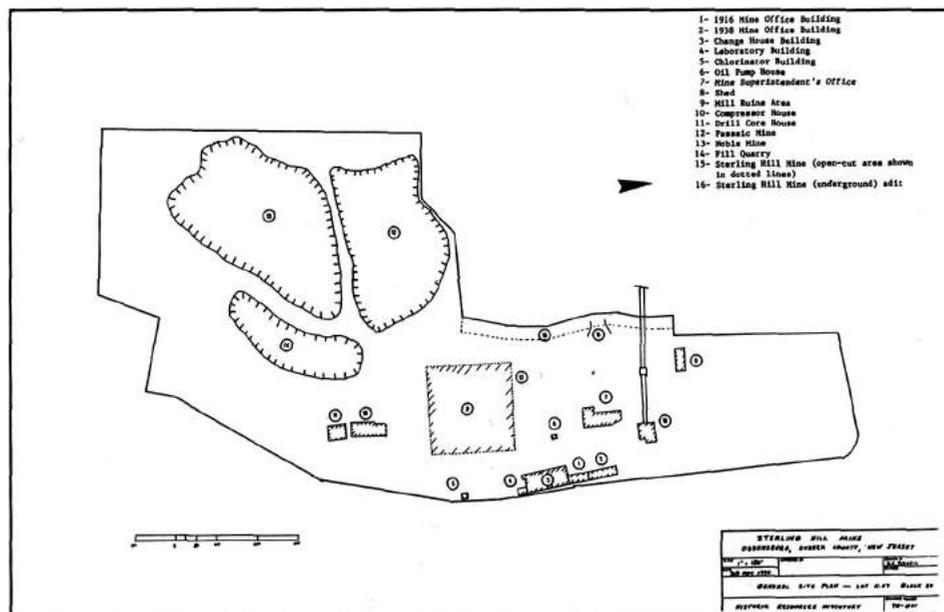
Mining Properties

Sterling Hill Mine, Ogdensburg Borough, Sussex County, New Jersey, is located on a 33-acre tract that includes five mines (open-cut, open-pit, and underground types), nine contributing buildings, one noncontributing building, and the ruins of a structure. Primary construction periods were 1830-1897 and 1916-1938. The property is located on the west side of Plant Street and the south side of Passaic Avenue, about one-half mile from the municipal center of the Borough of Ogdensburg. The property was divided among three heirs in the early 19th century. The parcels were not commonly owned until the end of the 19th century, when all three parcels were purchased by the New Jersey Zinc Company. Mining on the property ceased in 1986, and the property was converted into a museum dedicated to the history of the Sterling Hill Mine, mining history, and mineralogy of the Sterling Hill ore body. The legal description of the lot that includes the eligible resources was used to define the National Register boundaries. **Verbal boundary description:** The boundary of the site consists of the entire parcel of land known as Block 31, Lot 11.07 lying and being within

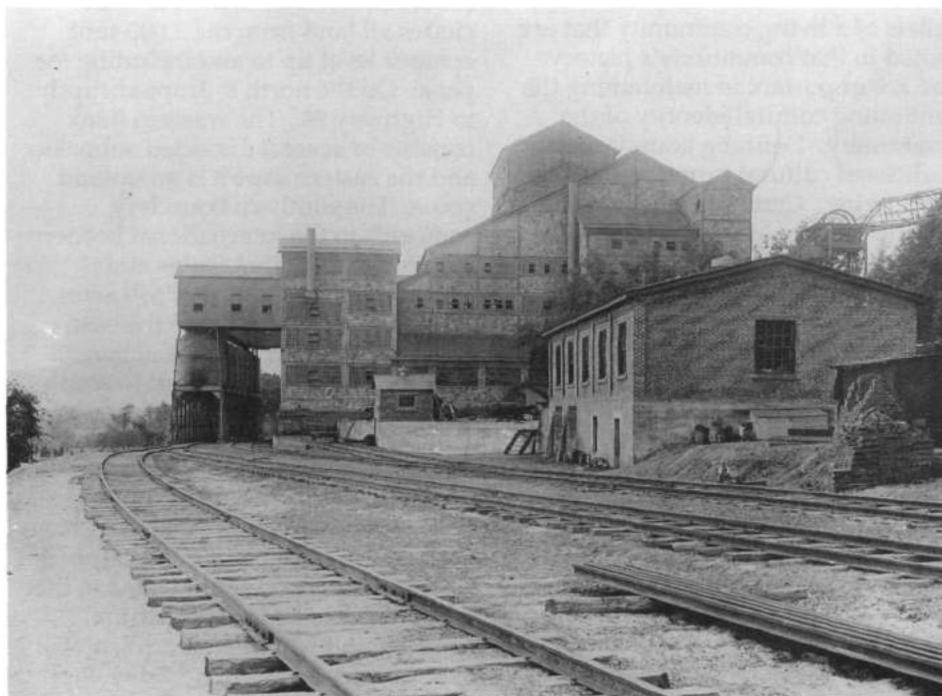
the Borough of Ogdensburg, Sussex County, New Jersey. **Boundary justification:** The boundary includes the entire municipal lot that has been historically associated with mining activities at Sterling Hill during the period 1830-1940.

Kettle River Sandstone Company Quarry, Sandstone Township, Pine County, Minnesota, is located along the Kettle River on the east edge of the city of Sandstone in east-central Minnesota. The property includes the abandoned quarry site, the pumping station, the artesian well control building, and derrick mast. The quarry, which was active from 1885-1919, was designated a city park in 1960. The quarry was the source of high-quality sandstone which was used in buildings throughout the United States. Cultural features, natural features, and reasonable limits were used to define the boundaries of the National Register property.

Verbal boundary description: The nominated property is roughly bounded by Minnesota Highway 123 to the south, on the north by a point 600 feet north of the Great Northern Railroad bridge, the Kettle River to the east, and the former quarry walls to the west, as shown on the accompanying map entitled "Kettle River Sandstone Company Quarry, May 1990." **Boundary justification:** The boundary encompasses all of the abandoned quarry site including those buildings, structures, and ruins that have historically been part of the Kettle River Sandstone Company and that maintain historic integrity. Within the boundary is city-owned Robinson Park and the recently constructed park shelters and buildings located toward the south end of the quarry.



Sterling Hill Mine, Ogdensburg, Sussex County, New Jersey. Plan map of the National Register boundaries and resources.



The Sterling Hill property as it appeared in 1918. (Gary Grenier)

BOUNDARIES FOR ARCHEOLOGICAL SITES AND DISTRICTS

A site, according to the National Register classification, is the location of a significant event, prehistoric or historic occupation or activity, or building or structure (whether standing, ruined, or vanished) where the location itself possesses historic, cultural, or archeological value. The most common types of resources classified as sites are archeological resources. Archeological districts generally include several sites and their settings, as well as other types of resources (such as structures and landscape features). For examples of districts that include buildings as well as archeological sites, see the properties cited in the sections on districts in rural settings.

Defining boundaries for archeological sites raises special issues because most or all of the eligible resources may be underground. For sites that have not been excavated, subsurface testing can provide data to identify and evaluate the resources and define the boundaries. In situations where the site type is well known (because similar sites in the region have been excavated) and there is clear surface evidence of preserved resources, testing may not be necessary to determine significance or select boundaries. Consider natural topographic or cultural landscape features that indicate the limits of the resources. Legal or lot boundaries may be used for historic sites, both urban and rural, when such boundaries are known to be consistent with the historic boundaries. Note surface evidence of disturbance that may have disrupted or destroyed resources.

When access is restricted or when a deeply buried site cannot be tested, select the boundaries on the basis of

predictions (based on topographic setting and site type). Describe the limitations of the data and support the predictions with a discussion, demonstrating the reliability of the predictions in the context of known local and regional site types.

For all archeological properties, include a large-scale map (preferably 1 inch to 200 feet) to document the property boundaries, along with a USGS map locating the property. The large-scale map may be used in place of a verbal boundary description.

It is difficult to provide a range of examples of boundaries from listed properties because locational information is routinely restricted to protect the resources from vandalism. Location and boundary information is recorded in the documentation but is not released to the public. The boundary descriptions that follow are drawn from documented sites, but most descriptions are altered and edited to omit critical locational information: direction, distance, and landmark information in the original

GUIDELINES FOR SELECTING BOUNDARIES: ARCHEOLOGICAL SITES AND DISTRICTS

(summarized from *How to Complete the National Register Registration Form*, p. 57)

The selection of boundaries for archeological sites and districts depends primarily on the scale and horizontal extent of the significant features. A regional pattern or assemblage of remains, a location of repeated habitation, a location of a single habitation, or some other distribution of archeological evidence all imply different spatial scales. Although it is not always possible to determine the boundaries of a site conclusively, a knowledge of local cultural history and related features, such as a site type, can help predict the extent of a site. Consider the property's setting and physical characteristics along with the results of archeological survey to determine the most suitable approach.

Obtain evidence through one or several of the following techniques:

- **Subsurface testing**, including test excavations, core and auger borings, and observation of cut banks.
- **Surface observation** of site features and materials that have been uncovered by plowing or other disturbance or that have remained on the surface since deposition.
- **Observation of topographic or other natural features** that may or may not have been present during the period of significance.
- **Observation of land alterations** subsequent to site formation that may have affected the integrity of the site.
- **Study of historic or ethnographic documents**, such as maps and journals.

If the techniques listed above cannot be applied, set the boundaries by conservatively estimating the extent and location of the significant features. Explain the basis for selecting the boundaries in the boundary justification.

If a portion of a known site cannot be tested, the boundaries may be drawn along the legal property lines of the portion that is accessible, provided that portion by itself has sufficient significance to meet the National Register Criteria and the full extent of the site is unknown.

Archeological districts may contain **discontiguous elements** under the following circumstances:

- When one or several outlying sites has a direct relationship to the significance of the main portion of the district, through common cultural affiliation or as related elements of a pattern of land use, and
- When the intervening space does not have known significant resources.

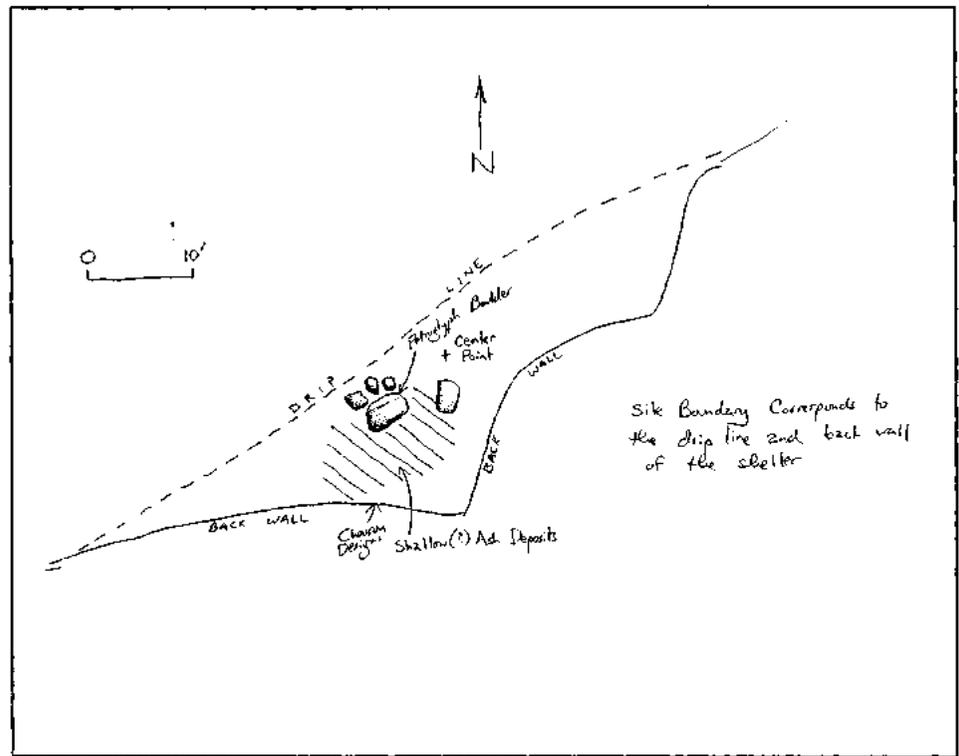
Geographically separate sites not forming a discontiguous district may be nominated together as individual properties within a multiple property submission.

documentation is not included. Sites are identified by type and region, not by name and specific location. For further assistance, see *Appendix: Definition of National Register Boundaries for Archeological Properties; National Register Bulletin: Guidelines for Evaluating and Registering Historical Archeological Sites and Districts*; or contact the appropriate State Historic Preservation Officer, Federal Preservation Officer, or the National Register to speak with an archeologist.

Archeological Sites

Rockshelter Petroglyphs, Upper South [location restricted], includes two petroglyphs components, one on a boulder at the mouth of the shelter and a second on a ledge. The designs are well preserved examples of prehistoric rock art in the region. No other archeological resources have been identified in the immediate vicinity of the rockshelter. Natural features were used to define the National Register boundaries. **Verbal boundary description:** The nominated property includes the entire rockshelter, the petroglyph boulder, and that portion of the sandstone ledge containing the chevron-like designs. The boundary for the site is indicated on the sketch map. The center point shown on the sketch map corresponds to the UTM coordinate on the USGS quadrangle. **Boundary justification:** The rockshelter houses the petroglyphs and is an integral element of this rock art site. The shelter probably served as a temporary or extended habitation and focus of ritual activities associated with the execution of the petroglyphs. As a conspicuous natural feature of cultural importance, the rockshelter may also have been ascribed mythological identification in connection with the rock art.

Historic Trading Company Warehouse and Clerk's House Site, Pacific Northwest [location restricted], are located on a natural river levee, paralleling the south bank of a major river. By the early 1840s, the trading company established a grain warehouse on the site adjacent to the south bank of the river. The warehouse and an associated clerk's house were erected to maintain the company's monopoly on trade in the region by purchasing agricultural produce from residents of the river valley. A flood



Rockshelter Petroglyphs, Upper South. Sketch map showing the National Register boundaries.

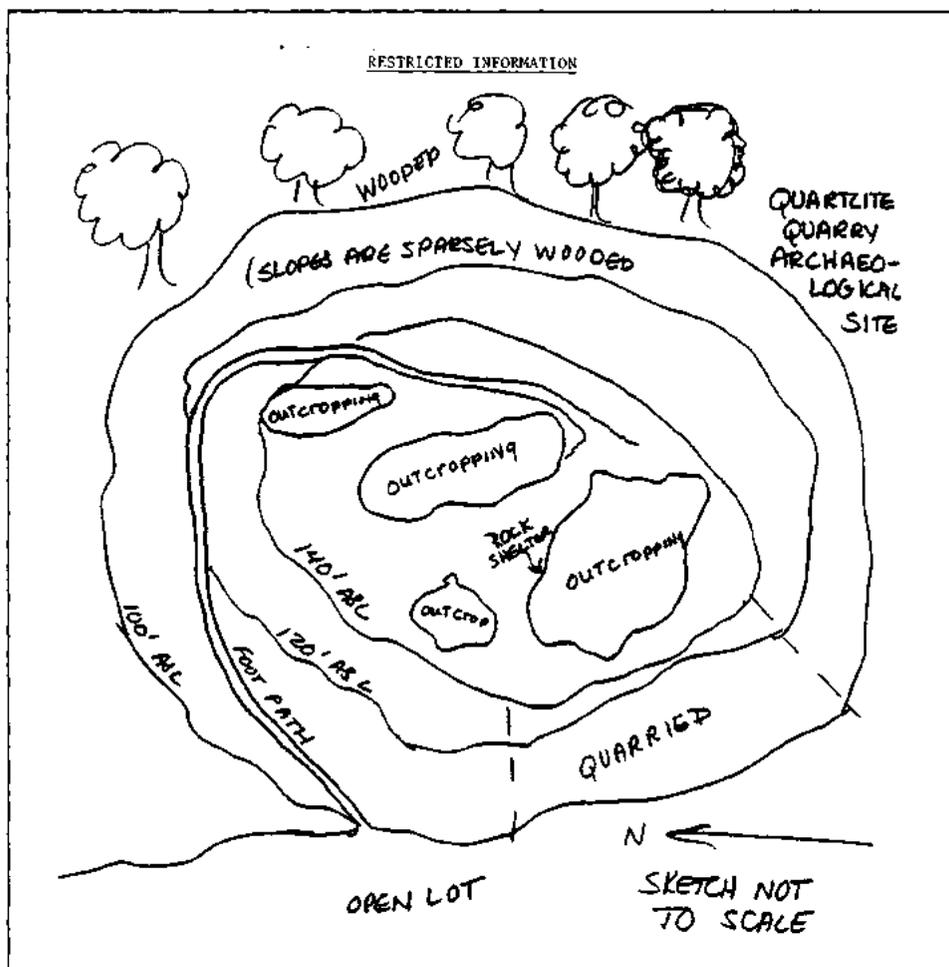
in 1861 destroyed other development in the area and moved the warehouse about 50 yards; it was never used again. The site is significant for its role in the early settlement and trade in the region. Archeological excavations indicated that cultural strata were mixed as a result of 20th century recreational use of the site. However, artifacts are plentiful above the 100-foot contour line, and horizontal integrity remains to generally define building locations and differential functions of structures within the site. A contour line and a reasonable limit were used to define the National Register boundaries. **Verbal boundary description:** The nominated property is located in the NW 1/4 SW 1/4 Section 4, Township 2S, Range 4W, in a state park. The boundaries of the property encompass 1.03 acres of the 100-foot contour levee of a flood plain that contains the site of the trading company warehouse and its associated archeological features, including the clerk's house site. The north, south, and west boundaries follow the 100-foot contour line; the east boundary is defined by a reasonable line crossing the levee and intersecting a granite monument. The monument and a park pavilion are included within the boundaries as noncontributing resources. **Boundary**

justification: The bounds of the site were determined by surface observation, informant testimony, and subsurface excavation.

Prehistoric Quartzite Quarry Archeological Site, Middle Atlantic [location restricted], consists of several large outcroppings of quartzite and sandstone. Surface evidence suggests that the lithic source may have been used by prehistoric Native Americans as early as the Middle Archaic period. Archeological sites in the region often include debitage thought to be from this quarry source. There has been no subsurface testing at the site; evaluation is based on surface evidence and knowledge of associated sites in the vicinity. The site is significant for the information it may provide about the extraction of lithic resources in the region. The National Register property boundaries are based on the extent of the natural feature quarried by Native Americans. **Verbal boundary description:** Boundaries for the site are determined by the natural topography of the area. The site is located within the confines of the hill on which the outcropping of quartzite occurs [as shown on the accompanying map]. The base of the hill is the site boundary. **Boundary justification:** The boundary for the site is

tion: The boundary for the site is established by the limits of the natural outcropping of rock. The site was utilized solely as an extractive or procurement site; therefore, the limits of the site are set by the limits of the availability of the lithic resource.

Prehistoric Camp and Habitation Archeological Site, Western Mountains [location restricted], is a multi-component camp and habitation site with at least five occupations, ranging in time from 5050 B.C. to A.D. 750. Three of the occupations reflect short-term camp or special activity uses. Two long-term occupations are represented by pit house ruins and associated materials, dated to the Early Archaic period. The site is at an elevation of ca. 7,000 feet, about 1/2 mile from the area's major river. Test and data recovery excavations revealed buried resources including pit houses, lithic tools, ceramics, and faunal remains. Road construction has affected the site; however, excavations were conducted in association with recent construction, and the upgraded road was realigned to avoid the pit houses. The distribution of archeological resources (surface artifacts) and natural features were used to define the National Register boundaries. **Verbal boundary description:** The southern, southeastern, and western boundaries are determined by a sharp reduction in surface artifact density; the northern boundary is at the topographic drop-off into the adjacent gulch, and the eastern boundary is along the east side of a tributary arroyo to the gulch. **Boundary justification:** The boundaries of the Prehistoric Camp and Habitation Archeological Site have been determined from a combination of natural, topographic, and archeological evidence. Western, southeastern, and southern limits have been drawn on the basis of surface artifact density evidence, after careful surface reconnaissance found a clear decline in the number of visible chipped stone artifacts in this area. A portion of the western boundary at the adjacent ranch house and outbuildings shows such a decline in surface artifact density due to ground disturbances from ranch building construction and occupation, as well as limited ground visibility in an adjacent pasture. The southeastern and southern limits, where surface artifact density is also quite low, are in relatively rocky



Prehistoric Quartzite Quarry Archeological Site, Middle Atlantic. Sketch map showing the National Register boundaries, defined by geological and topographic features.

terrain with good ground visibility but very little soil accumulation. Archeological survey and excavation data have been used to determine the eastern site boundary, drawn on the east side of a tributary arroyo of the gulch. Burned rock, charcoal-stained soil, and sparse artifacts exposed in the east cut bank of the arroyo led to investigation of the Feature 14 locus, where artifact density at the present ground surface is otherwise very low. The arroyo becomes an entrenched feature only north of the road, then joins a large tributary wash just upstream of where the latter drainage flows into the gulch. The east boundary of the site is drawn along the east side of the arroyo system to include the Feature 10 locus, although no test excavations have been done farther east beyond Feature 10 to search for other buried remains on the interfluvial flat where no surface artifacts are visible. The northern boundary is topographically defined

at the south bank of the gulch, beyond which any archeological remains would have been long since eroded away. The 30-acre site area depicted on the topographic map does not include a continuous scatter of surface artifacts, although at least a light scatter of chipped stone, ground stone, and/or ceramic artifacts is visible in most areas. Excavations have been conducted in the southern third of the site; the evidence from these excavations, in combination with subsurface exposures in nearby washes, the arroyo, and several road cuts, demonstrates that much of the Prehistoric Camp site resources remain buried.

John Houston McIntosh Sugarhouse, Camden County, Georgia, built in the early 19th century as a cane-processing facility, consists of an extensive ruin with associated archeological resources. The ruin was constructed of tabby, a

coastal building material made by mixing equal parts of oyster shell, lime, and water. The sugarcane was a rectangular building with three large rooms, two porches, and several door and window openings. The west room was the milling room; the middle room was the boiling room; and the east room was the curing room. The tabby-paved area north of the milling room was probably an unloading area. In 1934, archeologist James Ford visited the site and concluded that it was not the remains of the Spanish Mission Santa Maria (as it had been previously identified), but the remains of a sugarcane. Although Ford may have conducted some excavation at the site, no such excavations were reported. In 1981 the University of Florida's Department of Anthropology investigated the site to define the nature, condition, distribution, and significance of the archeological resources at the site. Archeological investigations focused on the sugarcane ruins and immediate area of the site. The site is significant for its association with the 19th century sugarcane manufacturing industry and for its research potential. The National Register boundaries are based on the extent of above-ground and below-ground resources. **Verbal boundary description:** The boundary includes the sugarcane, two depressions, and the property surrounding them. The property is marked on the enclosed sketch map. It consists of one acre of land centered on the sugarcane. **Boundary justification:** The one acre is inclusive of the sugarcane and contiguous areas of activity identified by reported archeological investigations. At such time in the future if the locations of associated buildings and/or areas of activity are identified, an appropriate boundary expansion will be proposed.

Contiguous Archeological Districts

Sinarboles Archeological District, Southwest [location restricted], located on a broad lava flow at an elevation of ca. 6,000 feet, includes 39 prehistoric sites occupied between A.D. 800 and A.D. 1300. The sites were exposed as a result of a juniper-eradication project. The surface was disturbed, but subsurface resources retain integrity, although several sites have been looted in the past. Archeological investigations during the late



John Houstoun McIntosh Sugarhouse, Camden County, Georgia. The tabby wall ruins of the sugarhouse, facing west. (James R. Lockhart)

1930s addressed several sites. In the late 1980s, an intensive archeological survey of the district was conducted to define the boundaries of the prehistoric community. Factors considered in defining the boundaries included topography, community organization, and the known archeological resources. Survey indicated that site density decreased rapidly north and east of the edge of the lava flow; therefore, the north and east boundaries follow the edge of the flow. West and south boundaries define the limits of the inferred community based on survey data; site density decreases beyond this limit. The district represents the archeological expression of the prehistoric community. The sites represent a wide variety of types, including artifact scatters, specialized activity areas, and large sites with structures, representing several stages of community development. **Verbal boundary description:** The Sinarboles Archeological District is a 4,000-by-5,125-foot rectangle defined by the edge of a remnant lava flow on the north and east side with straight lines drawn to the south and west boundaries. **Boundary justification:** The district is defined by site density and clustering as well as topographic features on the north and east side.

Harbor Island Historic and Archeological District, New England [location restricted], is composed of

an entire island of about 45 acres located in the harbor of a New England city. The island is half a mile long and irregular in shape. The district includes 22 contributing archeological sites, structures, and buildings representing an extensive period of human occupation, beginning in the Middle Archaic 8,000 years ago and continuing today. Activities associated with that human occupation are related to a number of important themes in North American, State, and local prehistory and history, particularly the exploitation of the marine ecology, the development of a historic maritime economy, and the changing cultural uses assigned to coastal areas. Contributing historical archeological sites, structures, and buildings are associated with the Coast Guard, a school, and historic residences. Noncontributing resources include modern roads, recreational structures, and residences. These intrusions have had little impact on the island's archeological and historic integrity. Tax parcel boundaries define the National Register district. **Verbal boundary description:** The Harbor Island Historic and Archeological District boundaries are indicated on the attached Assessors Maps. Boundaries correspond to the island's shoreline, indicated on the assessors maps as a dotted line. **Boundary justification:** The nominated boundaries include all the land historically and currently known as Harbor Island; an island of about 45 acres.

Discontiguous Archeological Districts

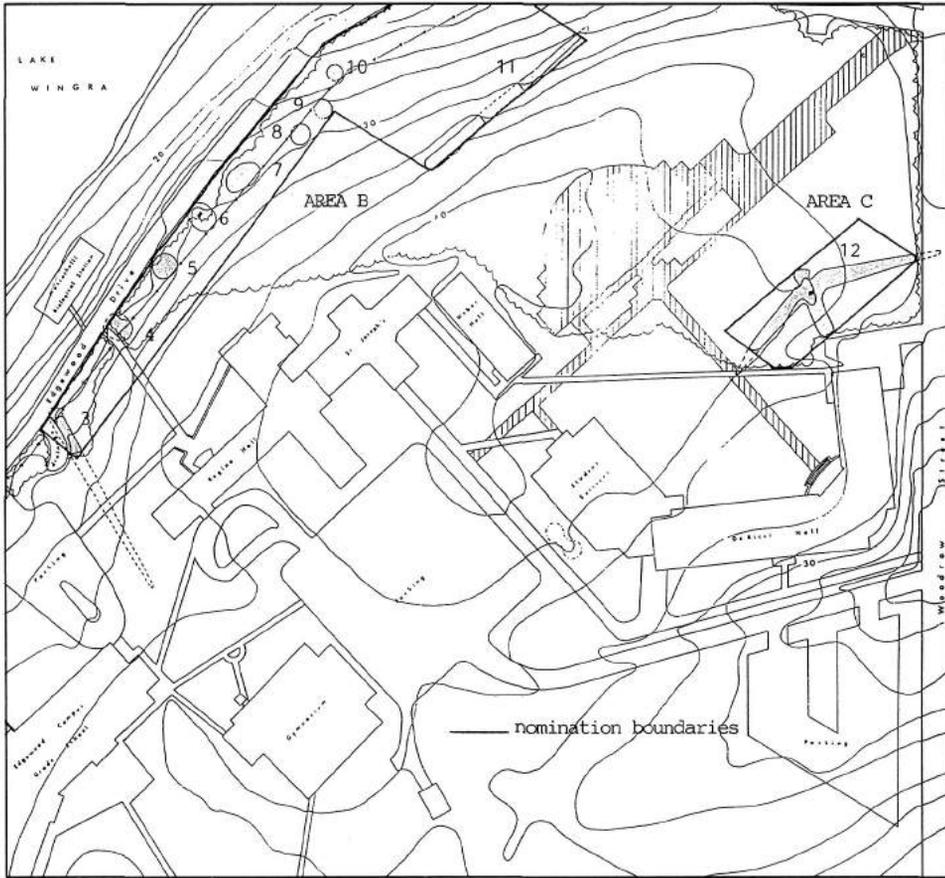
Midwest Prehistoric Cave and Rock Shelter Sites Discontiguous Archeological District, Central Midwest [location restricted], includes 20 archeological sites in the watershed of Mule, Goose, and Broad creeks. Archeological sites in rock shelters and caves represent an important part of the settlement pattern of prehistoric hunters and gatherers of the region. Sheltered sites were used as temporary camps, lithic-knapping sites and resource-processing stations, and base camps. Reoccupation and sedimentation has left a deep, stratified record of prehistoric human activities. The 20 sites in the district are a representative sample of the best preserved shelter deposits in the three creek drainages. The district is significant under Criterion D for the sites' potential to contribute important information on prehistoric life in the region. Sheltered sites preserve the remains of special uses as well as the activities of daily life. **Verbal boundary description:** [The verbal boundary description for this district consists of township, range, section references as well as UTM references for each of the 20 sites. The sites are also marked on accompanying maps of the three drainages. Because this information is restricted, it is not reproduced here]. **Boundary justification:** This district consists of 20 cave and shelter archeological sites located within the drainage basins of Mule, Goose, and Broad creeks. The archeological sites are specific points within the three drainage basins and are defined by UTM coordinates. In the future, other cave and shelter sites within the basins may be determined significant and added to the district.

Plantation Cemeteries Archeological District, Deep South [location restricted], consists of two separate but historically associated African American cemeteries dating from the early 1800s to 1929. Both were established as slave cemeteries on adjoining sugar plantations. The land was purchased by the U.S. government in 1929 for construction of a flood-control project. There are no surface indications of the cemeteries due to extensive modern landscape modifications. Archeological investigations, however, demonstrated a

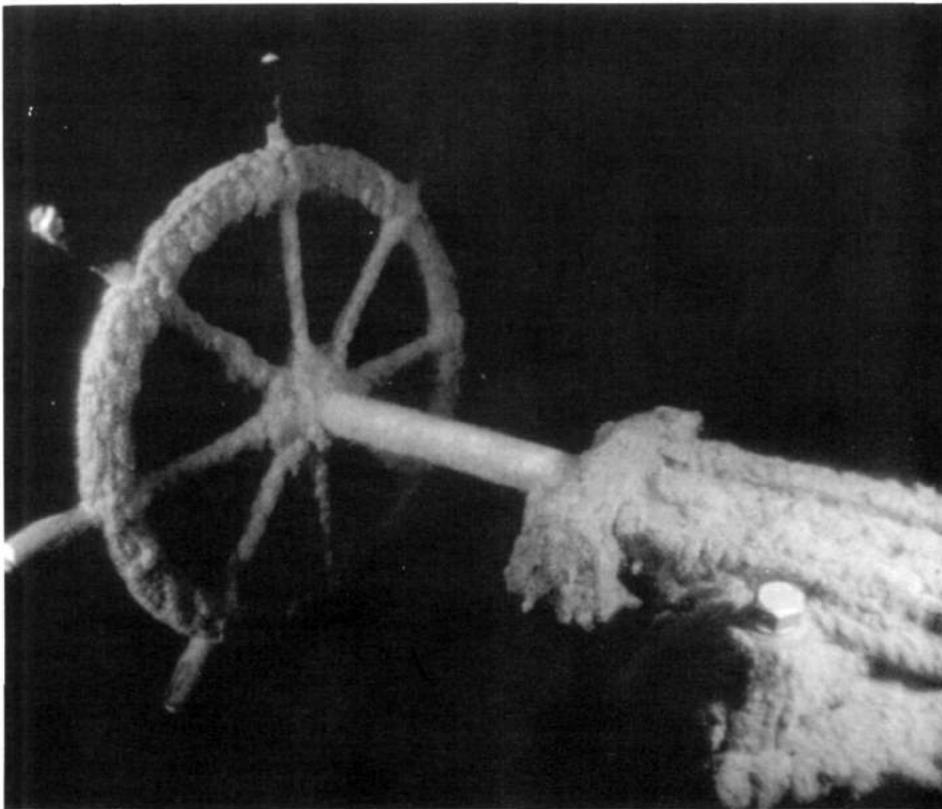
high degree of integrity. Investigations included magnetometer survey, topographic survey, excavation of five 1-by-2-meter units, backhoe trenching, and augering. All cultural remains were left in place. Portions of each cemetery were affected during excavation of water-control ditches; however, damage was limited. Based on identified grave sites and density predictions, each cemetery is estimated to include between 100 and 150 graves. The district is significant for its association with African American plantation populations of the antebellum and postbellum periods and for its research potential. The boundaries of the two cemeteries are based on cultural features and reasonable limits beyond known resources, as determined by survey and testing. **Verbal boundary description:** The nominated district consists of two discontiguous historic cemeteries. The first cemetery is delineated by a polygon whose vertices are marked by UTM references A, B, C, and D [listed in registration form and marked on accompanying USGS map]. The second cemetery is delineated by the polygon whose vertices are marked by UTM references A, B, C, and D [listed in the registration form and marked on the accompanying USGS map]. **Boundary justification:** The fieldwork determined a total site size of ca. 3,000 square meters (under 1 acre) for the first cemetery. The western, northern, and southern boundaries were extended 10 meters beyond confirmed burials. This was considered necessary due to the limited amount of fieldwork and the irregular and elusive nature of this type of archeological resource. No topographic, vegetative, or other natural markers remain to help define the site boundaries. The discovery of burials 10 and 11 in a backhoe trench excavated beyond the previously identified limits of the site illustrated the need to expand the site boundaries beyond the confirmed burials. The eastern boundary is defined by the haul road which abuts the site. Magnetometer survey did not indicate any burials under the road; however, this boundary is problematic since further archeological investigation was precluded in the road bed. The boundaries described above provide a reasonable estimate of the extent and location of burials at the site. The field work determined a total site size of 3,300 square meters (less than one

acre) for the second cemetery. The site boundaries include a 10-meter extension beyond confirmed burials on the eastern and southern margins of the site and a 20-meter zone along the northern and western margins. As with the first cemetery, these extended boundaries were required due to the inconclusive nature of the limited fieldwork.

Woodland Mounds Archeological District, Upper Midwest [location restricted], is a group of prehistoric mounds located on the grounds of a school. The district originally included 15 mounds; 12 survive, including conical, linear, and bird effigy forms. The mounds date to the Late Woodland Period (ca. A.D. 650-1300). The district is composed of three discontiguous areas (A, B, and C), with modern buildings and landscaping separating the areas. Several mound groups in the vicinity were mapped in the late 19th and early 20th centuries, including the Woodland Mounds groups, and in the 1930s, three of the mounds were excavated. Remnants of damaged mounds have been identified, but the seriously compromised mounds have not been included in the district. Since the early 20th century, efforts have been made to protect the surviving mounds. Intact deposits probably survive in several of the mounds. The district is significant for its potential to yield information on the Late Woodland period. Research questions are focused on information that can be obtained through non-invasive means, such as location and arrangement, geographical distribution, and proximity to resources. Cultural features were used to define the National Register boundaries. **Verbal boundary description:** The site is divided into three areas [boundaries of which are shown on the accompanying map]. Area A includes UTM reference C and is a small, less-than-1-acre parcel whose east boundary is Mound 1 and west boundary is Mound 2. Area B includes UTM reference B and is an L-shaped 1-acre parcel. Area B is bounded on the north by Mound 11 and on the south by Oak Drive. UTM reference B is the easternmost point of Area B and is the point where Mound 3 intersects with Oak Drive. UTM point A is the westernmost point of the district and is located in Area C. It is the point where Mound 12 intersects Maple Drive. **Boundary justification:** The



Woodland Mounds Archeological District, Upper Midwest. Detail of plan map showing the locations of two discontinuous areas in the district.



Lake Huron Shipwreck Site, Upper Midwest. Underwater view of the ship's wheel and steering gear.

boundaries were drawn to include only the mounds and area between them known to be relatively undisturbed by modern construction. Areas A, B, and C are unconnected and are deemed to be the site portions where the integrity of the mound group is most intact.

Shipwreck Sites

Lake Superior Shipwreck Site, Upper Great Lakes [location restricted], includes the remains of a three-masted schooner constructed in 1869 and wrecked in 1896 against a breakwater. The vessel represents the type constructed in the late 1860s and 1870s for the shipment of iron ore. The vessel was in tow of a steamer when the two vessels encountered a storm. The steamer threw off the schooner's line. The schooner dropped anchor, but continued to drift and hit the breakwater. The vessel sank with the crew seeking refuge in the rigging, from which they were rescued the following morning. Rigging and masts may have been salvaged, but machinery was left in place. Although thousands of ships have moved through the waters where the wreck lies, the resources have seen relatively little disturbance. The site is significant for its role in local maritime history, the structural integrity of the vessel, and the research potential of the site. The National Register boundaries were defined by reasonable limits around the vessel remains. **Verbal boundary description:** The area included in the shipwreck is a rectangle extending 200 feet southeast and 65 feet on either side of a centerline extending southeast and beginning at a point that is 150 feet from the monument located on the northwestern end of the breakwater. **Boundary justification:** The Lake Superior Shipwreck Site is about 70 percent intact. The boundary for the site is based on the debris field associated with the wreck. This was determined from information obtained by divers during mitigation activities.

Lake Huron Shipwreck Site, Upper Great Lakes [location restricted], includes the remains of a two-masted wooden schooner completed in 1856. The vessel transported iron ore and pig iron between Lake Huron and Lake Erie ports. During a storm on Lake Huron in 1868, the

vessel collided with another schooner near Piney Point. The other schooner managed to make it to port, but this vessel was abandoned by its crew and sank. The shipwreck site was discovered and surveyed in the late 1980s. The wreck of the schooner rests in an upright position on a sandy bottom in 150 feet of water. The vessel is nearly intact, and major equipment is still in place. The schooner site is significant for the vessel's role in Great Lakes shipping, the naval architecture of the vessel, and the research potential of the site. The National Register boundaries were defined by reasonable limits around the vessel remains, selected to include the area likely to contain rigging. **Verbal boundary description:** The Lake Huron Shipwreck Site is located 2 statute miles west and 1.5 miles north of Piney Point at the intersection of Loran C coordinates XXX and YYY. The area included in the site is a square 1,000 feet on a side; the geographical center being the charted vessel's position. **Boundary justification:** The Lake Huron Shipwreck is the site of a relatively intact vessel with structural damage primarily to the rigging only, based on diver assessments and videotape evidence of the site. Little noticeable deterioration has been evident on the vessel in terms of subsequent deposition on the site, ice damage, erosion, or other environmental factors with the exception of anchor damage to the hull. The boundary is based on the probability of locating major rigging elements lying near the hull as a result of the wreck drifting and sinking slowly after the collision. The wreck's depth has prevented a thorough evaluation of the total extent of the site away from the hull itself.

BOUNDARIES FOR HISTORIC SITES

Locations of significant events or activities where the location possesses historic or cultural value may be classified as National Register sites. Cemeteries, battlefields, and natural and cultural landscapes where historic events took place are examples of historic sites.

GUIDELINES FOR SELECTING BOUNDARIES: HISTORIC SITES

(summarized from *How to Complete the National Register Registration Form*, p. 56)

- Select boundaries that encompass the area where the historic events took place. Include only portions of the site retaining historic integrity and documented to have been directly associated with the event.

Denis Julien Inscription, Grand County, Utah, consists of historic inscriptions on a sandstone block in a side canyon of Green River, in the mouth of Hell Roaring Canyon. There are two inscription panels. The first bears the name *D. Julien*, the date *3 mai 1863*, and a sunburst design and a one-masted boat. The second panel includes five names of early surveyors from the U.S. Reclamation Service with 20th century dates. Denis Julien, an American fur trapper of French descent, etched his name and date along waterways in eastern Utah at least eight times between 1831 and 1844. In this location, he also inscribed the one-masted boat, suggesting his mode of travel. The site is significant for its association with fur trading and exploration, conservation

and reclamation, and mining. Reasonable limits were used to define the National Register boundaries. **Verbal boundary description:** The site is located within the NE $\frac{1}{4}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$, NW $\frac{1}{4}$, Section 6 (unsurveyed), T26S, R18E. USGS 7.5 minute series, Mineral Canyon, Utah, quadrangle, 1988. Boundaries of the actual parcel included in the nomination can be described as a circle with a radius of 30 feet centered on the inscription rock. **Boundary justification:** The description provided above includes the rock upon which the historic inscriptions are located and additional amount of surrounding property deemed sufficient to convey some sense of the site's surroundings.

Tinta Massacre Site, Merizo, Guam, is the place where soldiers of the Japanese Imperial Army killed sixteen people of the village of Merizo in 1944. During the last days of the Japanese occupation, soldiers marched a group of thirty men and women from the village to an area called Tinta at the foot of a hill west of the village. The soldiers herded the villagers into a dugout cave, lobbed hand grenades through the opening, and attacked survivors with their sabres. Fourteen people survived the attack. The massacre site is located at the base of the hills on the eastern edge of the Geus Valley. The site is marked only by a wooden cross in the overgrown gully, which is what remains of the dugout cave. Reason-



Denis Julien Inscription, Grand County, Utah. This ca. 1909 photograph shows the inscription and its environs. (Utah Historical Society)

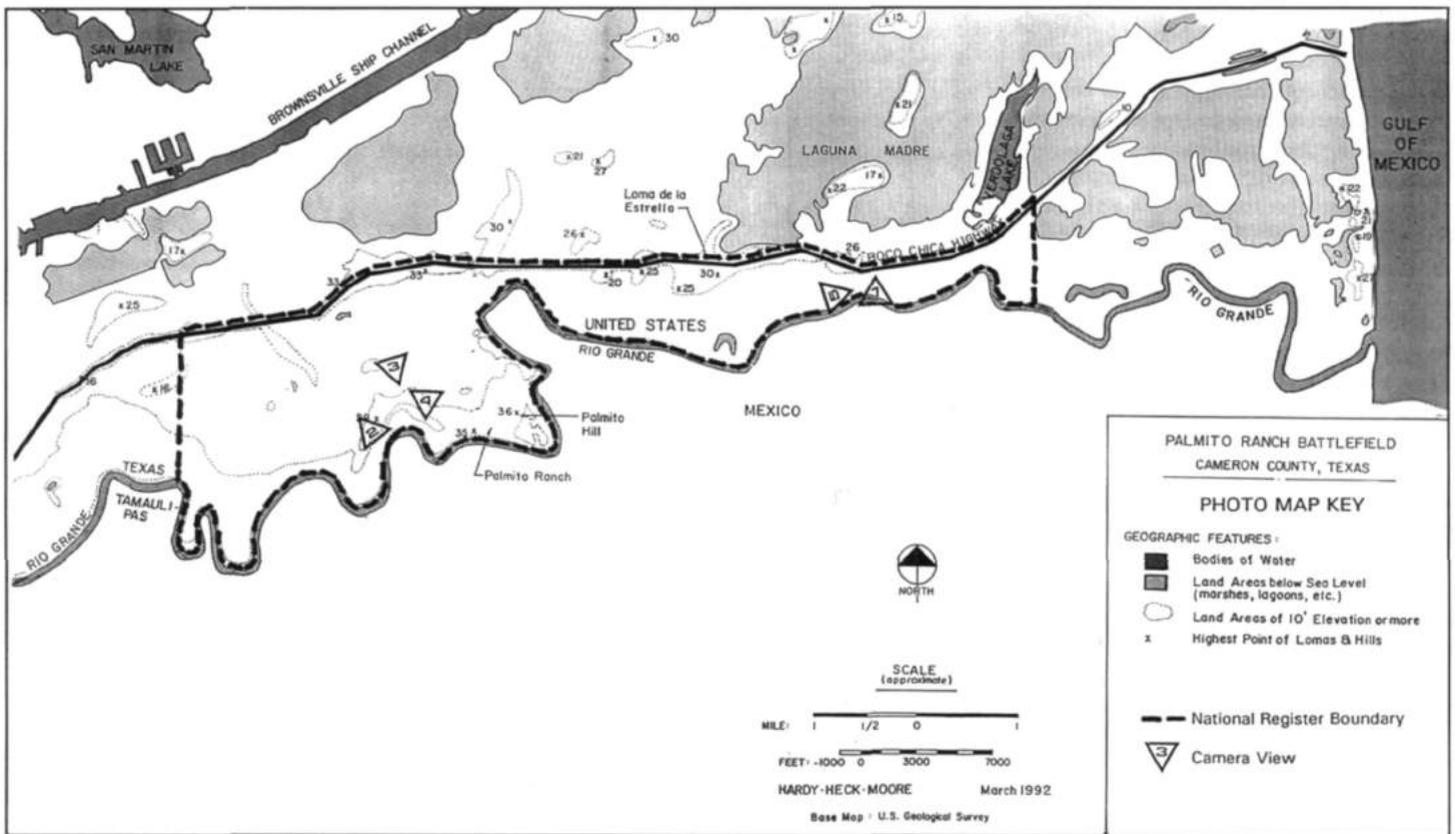


Tinta Massacre Site, Merizo County, Guam. Detail of USGS map showing the National Register boundaries.

able limits were used to define the boundaries of the National Register property. **Verbal boundary description:** Boundary lines are as indicated on the accompanying USGS map. **Boundary justification:** The boundary of one-half acre is set to protect the integrity and the setting of the massacre site.

Palmito Ranch Battlefield, Cameron County, Texas, is the site of the final land engagement of the Civil War. Concentrated military action occurred here on May 12-13, 1865, more than a month after Confederate forces under General Robert E. Lee surrendered at Appomattox Court-

house, Virginia. The battle, a series of sharp skirmishes, took place across an approximately five-mile area halfway between Brownsville and Brazos Island. Federal troops initially pressed the Confederates as far west as Tulosa Ranch before Confederate reinforcements under the command of Col. John S. (Rip) Ford arrived and drove the Union army back to their base at Brazos Island. The battlefield lies on a windswept plain at the southernmost tip of Texas on sparse land characterized by marsh and chaparral with a few scattered hillocks. The land's virtually unchanged physical features still convey the battlefield's appearance during the Civil War. National Register boundaries were organized according to natural topographic features, cultural features, archeological evidence, and reasonable limits based on historical research. **Verbal boundary description:** Refer to the accompanying USGS map for a precise depiction of the boundaries of Palmito Ranch Battlefield. The battlefield is bordered on the north by the Boca Chica



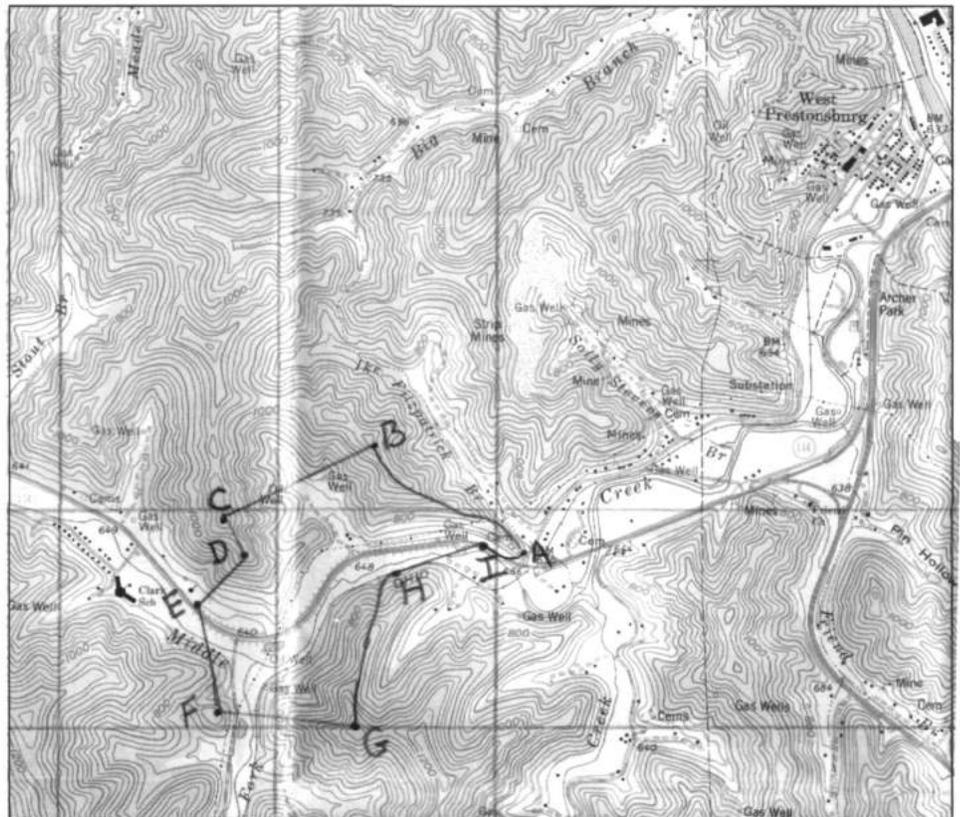
Palmito Ranch Battlefield, Cameron County, Texas. Map showing the National Register boundaries.

Highway and on the south by the current course of the Rio Grande River. On the east, the nominated area extends to a point immediately east of Tarpon Bend and immediately west of Stell-Lind Banco No. 128. The western border follows a line from the Loma del Muerto southward to the Rio Grande. Beginning at a point on the United States bank of the Rio Grande immediately south of Loma del Muerto, proceed due north approximately one mile to the intersection of the Boca Chica Highway and Loma del Muerto. Then proceed east along the Boca Chica Highway, approximately 4.5 miles, to a point on the Rio Grande. Then proceed along the U.S. bank of the Rio Grande approximately 4.5 miles to the point of origin. **Boundary justification:** Boundaries for Palmito Ranch Battlefield encompass the large expanse of land where the most intense fighting of the conflict took place. Since the battle consisted of a series of moving skirmishes, the battlefield itself covers a large area approximately five miles long. The southern boundary follows the current path of the Rio Grande, since the river formed one border for all fighting. Also, the river is the international boundary line between the United States and Mexico. The western boundary roughly follows a line extending from the Loma del Muerto southward to the Rio Grande. The line approximates the point at which Confederate reinforcements arrived at the scene of the battle on the afternoon of May 13, 1865. The boundary also approximates the position of "San Martin Ranch," referred to by officers of both armies in written accounts of the battle. The Boca Chica Highway forms the northern boundary of the battlefield. Although some scattered fighting may have taken place north of this line, most of the conflict was concentrated much closer to the Rio Grande. The placement of the boundary at the highway allows for the inclusion of a broad area north of the river, providing an accurate demarcation of the large area in which the running battle occurred. The battlefield's eastern boundary roughly extends from the westernmost tip of Verdolaga Lake southward to a point on the Rio Grande just east of Tarpon Bend and just west of Stell-Lind Banco No. 128, as shown on the accompanying map. This line marks the approximate location of a small levee referred to in

written, first hand accounts of the battle as the scene of the final skirmish, and the place where the Confederate Army ceased its pursuit of the Union troops on the eve of May 13, 1865.

Middle Creek Battlefield, Floyd County, Kentucky, is the location of an important 1862 Civil War battle. The battle was an important early victory for the Union army. After several Union defeats, victory in Kentucky was strategically and politically important. At the end of the battle, troops under the command of Colonel James Garfield held the battlefield, putting the Union in control of eastern Kentucky. The battlefield is located along a series of ridges that surround the confluence of the Right and Left forks of Middle Creek. The eastern part of the battlefield is a cemetery located on a ridge (north of State Route 114). The western boundary is a ridge above a gorge near the mouth of the Left Fork of Middle Creek. The land occupied by Union troops and the location of the engagement is characterized by steep uplands, over 600 feet above the floodplain of the creek. The ridges

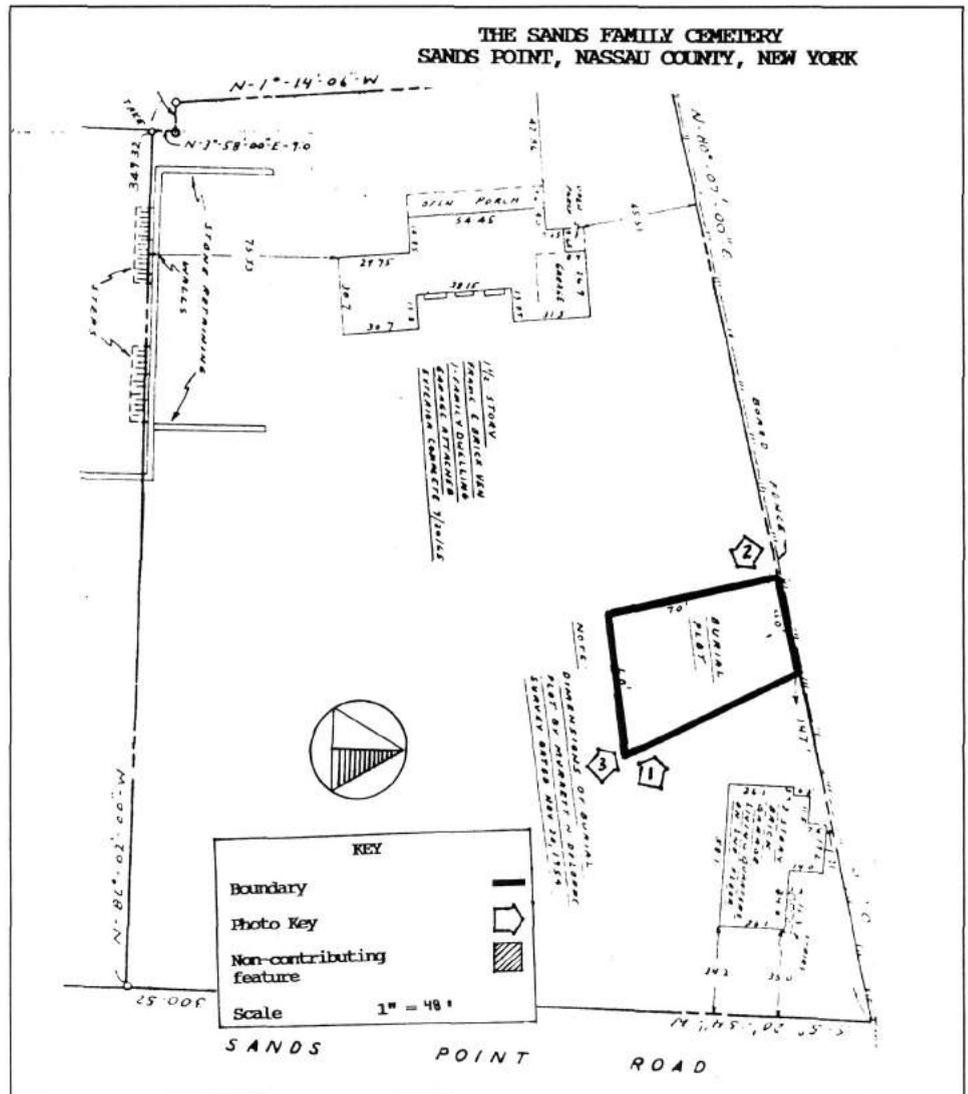
are bisected by several drainages. Although there are a few modern intrusions (roads and a power line), the battlefield retains integrity to the extent that a soldier who participated in the battle would recognize the battlefield today. Cultural features (roads), natural features (ridges), and reasonable limits were used to define the National Register boundaries. **Verbal boundary description:** Beginning at the point where State Route 114 right-of-way intersects with old State Route 114/West Prestonsburg Road's right-of-way, on the north side of said roads (UTM reference A); proceed northwesterly with Grave Yard Point, approximately 750 meters to a point (UTM reference B); proceed southwesterly approximately 750 meters, across an unnamed hollow to a point (UTM reference C); proceed southeasterly approximately 200 meters to a point (UTM reference D); proceed southwesterly approximately 350 meters, down the ridge to State Route 114's right-of-way, (UTM reference E); proceed southeasterly across State Route 114's right-of-way, 450 meters to a point (UTM reference F); proceed east across State Route 404 right-of-



Middle Creek Battlefield, Floyd County, Kentucky. Detail of USGS quadrangle showing the National Register boundaries.

way, the Left Fork of Middle Creek and the CSX railroad right-of-way, approximately 650 meters to a point (UTM reference G); proceed north approximately 650 meters to a point (UTM reference H); proceed north-easterly across the CSX railroad right-of-way, crossing State Route 114's right-of-way approximately 500 meters to a point (UTM reference I); following State Route 114's right-of-way approximately 100 meters to the point of origin. **Boundary justification:** The boundary includes the ridges, stream, and the floodplain of that stream on and around which the Battle of Middle Creek took place. A recent site visit produced no earthworks or artifacts that would help determine the exact site limits. The boundary is based upon historic maps, manuscripts, and other documentation both primary and secondary.

The Sands Family Cemetery, Sands Point, Nassau County, New York includes twelve rows of 18th and 19th century gravestones, situated on a wooded knoll. The cemetery was established ca. 1711 when John Sands set aside one acre of his estate as a family burying ground. The 86 well-preserved sandstone and marble gravestones include winged death's heads, skull and crossbones, soul effigies, and plain tripartite sandstone tablets of the 18th century and Neoclassical motifs popular during the 19th century. The progression of motifs and epitaphs on the gravestones reflects the changes in religious beliefs and social customs during the period of interments. The cemetery is surrounded by private property. It is flanked on the east by a modern garage, private road and field; to the west is a private paved drive. The nominated property consists of about one acre of land which is an inholding within a parcel whose boundaries are delineated on the boundaries map. **Verbal boundary description:** The boundary of the Sands Family Cemetery is shown as the solid black line on the accompanying map entitled "The Sands Family Cemetery, Sands Point, Nassau County, New York." **Boundary justification:** The Sands Family Cemetery is situated on the west side of Sands Point Road on a wooded knoll. The cemetery is surrounded by private property. It is flanked on the east by a modern garage, private



The Sands Family Cemetery, Nassau County, New York. Plan view showing the National Register boundaries.

road, and open field; to the west is a private paved drive that leads to a house northwest of the burial ground. The cemetery property is irregular in shape: The west side is 108.46 feet; the north side bordered by a fence is 56.52 feet long; east side is 73.09 feet, and it is 67.08 feet, on the south side of the property, according to a 1989 survey of the parcel. The nominated property consists of less than one acre of land.



The Sands Family Cemetery, Nassau County, New York. The gravestone of Robert Sands, d. 1735. (G. Williams)

BOUNDARIES FOR OBJECTS

Objects eligible for listing in the National Register are constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although an object may be movable, an object that is a National Register property is associated with a specific setting or environment. Properties such as sculptures, monuments, boundary markers, statues, and fountains are classified as objects. The boundaries for objects may be limited to the land or water occupied by the resource; however, surroundings may be included when they contribute to the ability of the property to convey its significance.

GUIDELINES FOR SELECTING BOUNDARIES: OBJECTS

(summarized from *How to Complete the National Register Registration Form*, p. 56)

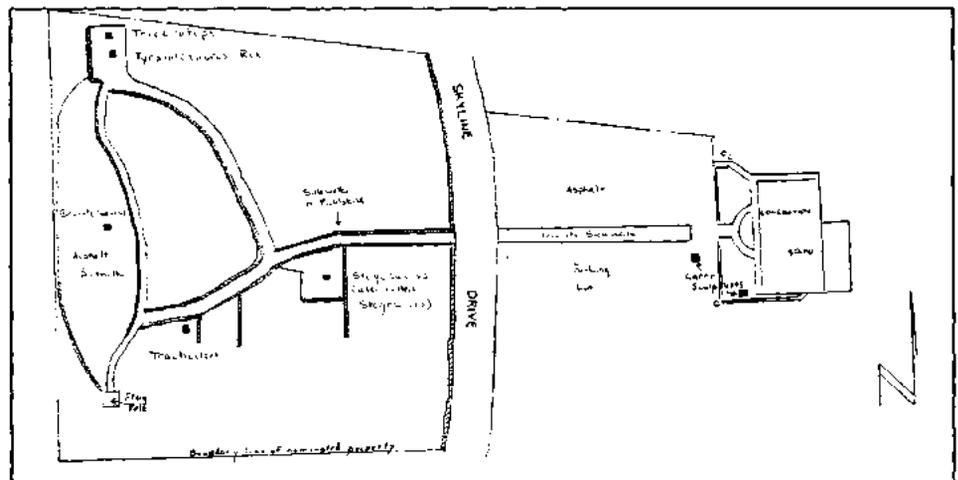
- Select boundaries that encompass the entire resource.
- The boundaries for objects may be the land or water occupied by the resource without any surroundings.

Ebenezer Monument, Mena, Polk County, Arkansas, constructed in 1936 at the rear parking lot of the First Baptist Church, 811 Arthur Street, is a square stone and concrete masonry monument that narrows toward the top and contains a vault designed to hold a time capsule. The monument was erected by the congregation as part of the local effort to expel nearby Commonwealth College, a school with militant socialist and unionist leanings. The monument is significant as the symbol of the anti-Communist sentiment that swept the state after the decision by the administration of Commonwealth College to focus its curriculum exclusively on Marxism and Communism and to advocate militant activism by its students and faculty within the growing southern labor movement. The National Register boundaries are limited to the ground on which the

monument sits. **Verbal boundary description:** Beginning at the northern corner of the monument's foundation (located ten feet south of the southern edge of Church Street and sixteen feet west of the eastern edge of Ninth Street), proceed southwesterly to the monument's western corner; thence southeasterly to the monument's southern corner, thence northeasterly to the monument's eastern corner, thence northwesterly to the monument's northern corner and the point of beginning. **Boundary justification:** This boundary includes all the property historically associated with this resource.

Dinosaur Park, Rapid City, Pennington County, South Dakota, is a roadside attraction displaying five concrete and iron pipe sculpted dinosaurs constructed between 1936 and 1938. Skyline Drive bisects the park. The western half includes the five original dinosaur sculptures; the eastern half includes a concession stand, parking lot, and two small dinosaurs constructed after 1938. Designed by Emmet A. Sullivan with assistance from Dr. Barnum Brown of the Smithsonian Institution's American Museum of Natural History, the five original dinosaurs were constructed by WPA workers. The park represents the local residents' growing awareness during the 1930s that the Black Hills had potential as a major tourist attraction. It is one of the most elaborate examples of roadside tourist sculpture in South Dakota and an excellent example of vernacular public art. Operated privately until 1968, Dinosaur Park is now owned by Rapid City. The

National Register boundaries are based on cultural features and reasonable limits. **Verbal boundary description:** The nominated property is bounded by a set of imaginary lines that intersect to form a polygon around the original dinosaur sculptures. The eastern boundary line lies along the west edge of Skyline Drive. The southern boundary line extends 270 feet due west from the southernmost point of the retaining wall along Skyline Drive (as shown on the accompanying scaled map of the park). The western boundary line extends 315 feet due north from the western terminus of the southern boundary line. The northern boundary line extends from the northern terminus of the western boundary line to the northernmost point of the retaining wall along Skyline Drive. The property is located in the Northwest Quarter of the Southeast Quarter of the Northwest Quarter of Section 2, Township 1 North, Range 8 East (Black Hills Meridian), in Pennington County, South Dakota. **Boundary justification:** The boundaries of the nominated property have been set to include the original Dinosaur Park sculptures and to specifically exclude the noncontributing concession building, parking lot, and later sculptures, and any public or private roads. Two different, conflicting plats of the park boundaries are recorded at the Pennington County Register of Deeds Office; therefore, it was not possible to use legal descriptions for the boundaries of the nominated property. Rather, the lines were set using the west edge of Skyline Drive and the retaining wall along Skyline Drive for reference points.



Dinosaur Park, Rapid City, Pennington County, South Dakota. Map showing the boundaries of the National Register property.

Lincoln Street Electric Streetlights, Twin Falls, Twin Falls County, Idaho, are ten lights on cast-iron posts along the 100 and 200 blocks of Lincoln Street. Located on the east and west sides of the street in a residential neighborhood, the lights are placed close to the curb so that they have not been obscured by landscaping and thus remain an integral part of the streetscape. The lights were installed prior to 1920, before the Blue Lakes Addition was developed, the first subdivision of Twin Falls, and before electricity was available. The lights were part of developers' efforts to make the subdivision attractive. The National Register boundaries are defined by the legal definition of the city right-of-way for two blocks. **Verbal boundary description:** A rectangular piece of land comprising the city right-of-way for Blocks 1 and 2 of Lincoln Street, bounded by Heyburn Avenue on the north and Addison Avenue on the south as the same appears in the plat of the Blue Lakes Addition to the City of Twin Falls, Book 3 of Plats, page 29, records of the Twin Falls County Recorder. **Boundary justification:** The parcel is one contiguous parcel owned by the City of Twin Falls, being a platted and dedicated right-of-way for a city street, known as Lincoln Street, and constituting part of the land platted in the Blue Lakes Addition to the City of Twin Falls. It is the parcel historically associated with the subject of this nomination.



Lincoln Street Electric Streetlights, Twin Falls, Idaho. Photograph of a representative streetlight and its setting. (Elizabeth Egleston)

Mountain Pass Tree, Pacific Northwest [location restricted], is an inscribed mountain hemlock, located at a pass in the mountains. It is situated in a stand of hemlock and subalpine fir, facing an open meadow. The tree is 86 feet tall and 29.5 inches in diameter about 5 feet above the ground. Mountain Pass Tree is associated with early efforts to develop a transportation route across the mountains. It is the only known resource remaining from the 1893 and 1894 exploration, survey, and construction of a trail. Reasonable limits were used to define the National Register boundaries. **Verbal boundary description:** The area encompassed by a square 200 feet on each side, centered on the tree and having sides oriented to the cardinal directions. **Boundary justification:** This property is located within an unsurveyed area of the public domain, with limited opportunities to establish precise natural or cultural boundaries. The area described includes portions of the adjacent timber and meadow needed to maintain the setting.

BOUNDARIES FOR STRUCTURES

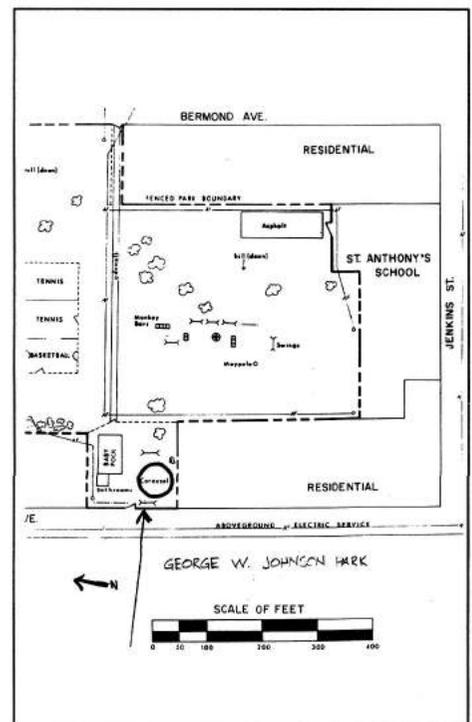
Structures that may be eligible for listing in the National Register are functional constructions designed for purposes other than human shelter. Structures include bridges, tunnels, roadways, systems of roadways and paths, road grades, canals, boats and ships, railroad locomotives and cars, aircraft, gold dredges, kilns, shot towers, fire towers, turbines, dams, power plants, wind mills, corn cribs, silos, grain elevators, mounds, cairns, palisade fortifications, earthworks, bandstands, gazebos, and telescopes.

GUIDELINES FOR SELECTING BOUNDARIES: STRUCTURES

(summarized from *How to Complete the National Register Registration Form*, p. 56)

- The boundaries for structures, such as ships, boats, and railroad cars and locomotives, may be the land or water occupied by the resource without any surroundings.

George W. Johnson Park Carousel, Endicott, Broome County, New York, is a 1934 carousel in a city park. The carousel was donated to the community by George Johnson, the major employer in Endicott. The park that includes the carousel, the surrounding working-class neighborhood, and the factory complex were all developed by the Endicott Johnson Corporation in the 1920s and reflect the company's influence over the history of Broome County. The boundary of the property, a circle with a radius of 28 feet, contains the original 1934 carousel located within the ca. 1934 housing pavilion. The park, the surrounding residential working-class neighborhood, and the nearby factory complex are all located within the designated boundaries of the Endicott Urban Cultural Park District and the Endicott Historic District. **Verbal boundary description:** The nominated boundary encompasses only the carousel and its housing and the ground upon which they stand. **Boundary justification:** The nomination boundary was drawn to include only the carousel itself and its housing. Although the park itself may be eligible, it has not yet been evaluated due to the specific focus of this [Broome County Carousels] theme.



George W. Johnson Park Carousel, Endicott, New York. A sketch plan of the park showing the carousel's National Register boundaries.



George W. Johnson Park Carousel, Endicott, New York. The carousel and its setting. (G. Joseph Socki)

Newport Stone Arch Bridge, Newport, Herkimer County, New York, was built in 1853 to join the older core of the village on the east bank of West Canada Creek with an industrial and residential area on the west bank. The nominated property includes an area of the West Canada Creek and its bank approximately 250 feet in length and 225 feet in width. In addition to the bridge itself, the site includes two contributing stone retaining walls on the west bank of the creek. A concrete dam north of the bridge and a modern power generation facility east of the bridge are excluded from the nominated property. The Newport Stone Arch Bridge is a good example of traditional arched masonry bridge construction and represents a significant

Crawford Ditch, El Dorado County, California, was built in 1852 as the second segment of the Jones, Furman & Company ditch system to provide river water to miners of the Mother Lode Gold Rush. The trough-shaped earthen trench averages 5 feet across between the edge of the up-hill bank and the inner face of the retaining berm. The Crawford Ditch is the last functioning industrial structure in the Pleasant Valley area of El Dorado County. Only the Clear Creek segment of the Crawford Ditch is nominated; the remainder of the ditch has lost its historic integrity. The legal right-of-way of the ditch was used to define the National Register boundaries. **Verbal boundary description:** A 7.5-mile-long ditch with a 50-foot-wide working right-of-way. It falls in that length from the Clear Creek intake weir (near Pleasant Valley) at the 2,285-foot contour to the feeder siphon at the northeast side of the intersection of Hanks Exchange Road and Ranch Road (near the Hanks Exchange community at the 2,245-foot contour). See the accompanying USGS map, Camino Quadrangle, California, 7.5 minute series (topographic), photorevised 1973, the Crawford Ditch. Find the Clear Creek segment per the UTM references noted above, as marked on the map. **Boundary Justification:** The boundaries encompass the one remaining section of the Crawford Ditch that retains sufficient integrity to meet National Register standards. The boundaries encompass the ditch and the right-of-way historically associated with it.



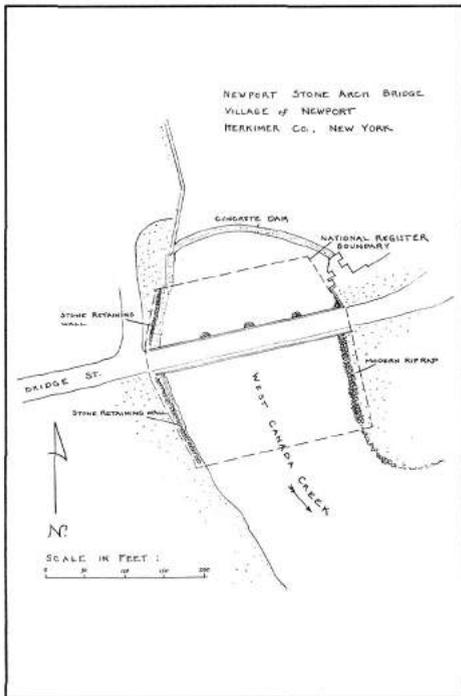
Crawford Ditch, El Dorado County, California. Detail of a USGS map showing the nominated segment of the ditch.

mid-19th century engineering accomplishment in the county. Natural and cultural features and reasonable limits were used to define the National Register boundaries. **Verbal boundary description:** The nominated property is 250 feet in length, east to west, and 236 feet in width, north to south, encompassing the bridge at the center, and including the stone retaining walls at the west bank of the West Canada Creek. Proceeding clockwise, the boundary follows the east bank of the creek to a point 125 feet south of the bridge, where it turns west to follow a line parallel with the bridge to the west bank of the creek. The boundary turns north at the west bank, where it follows stone retaining walls to a point 75 feet north of the bridge before turning east. The northern segment of the boundary parallels the bridge to the point where it intersects the eastern section of the boundary. Refer to the attached site plan. **Boundary justification:** The boundary has been established to isolate the bridge, its ancillary retaining walls, and its immediate setting from adjacent areas that are not directly associated with the history of the bridge.

Hanford B Reactor, Benton County, Washington, is a plutonium-production reactor that was constructed during World War II as part of the Manhattan Project. Construction of the reactor began in 1943 and the facility produced fissionable material for national defense until its deactivation in 1968. The B Reactor is housed inside the 105-B reactor containment building in the B/C Area of the Hanford Site. The containment building is surrounded by various support structures that are not included in this nomination. The Hanford B Reactor is significant for its association with nuclear power and the Manhattan Project: this reactor produced the plutonium used in the bomb dropped on Nagasaki. A cultural feature (the existing fence) was used to define the National Register boundary. **Verbal boundary description:** The Hanford B Reactor is located in the 100B/C Area of the Hanford Site, .05 mile south of the Columbia River and 3.5 miles east of the point where Washington Highway 240 crosses the Columbia River at Vernita Bridge. The structure and adjoining land lie within a 650-foot-square plot, the center point of which is at the above-referenced UTM coordinate. **Boundary justification:** The boundary includes the structure and space around it as currently defined by fencing.

Lusk Water Tower, Lusk, Niobrara County, Wyoming, is a round water tank about 25 feet in diameter and about 25 feet high, supported by a wood column structure. The water tower is significant for its association with the Chicago and Northwestern Rail Line, a line of major importance in Wyoming's settlement. The water tower was originally located in the center of the town of Lusk, near the depot; the water tower was moved to its present location, north of the Chicago and Northwestern Rail Line, in 1919 when the depot was rebuilt in the center of town. The water tower property, enclosed by a chain-link fence, is less than 1/4 acre in size. The property is bordered by a rail line to the south, pasture to the west and east, and a residential rural subdivision to the north. The move has had little effect on the historic integrity of the structure, as its new setting is associated with the rail line and reflects the continued development of the railroad and its function. The

legal description of the parcel was used to define the National Register boundary. **Verbal boundary description:** The 1982 Warranty Deed to the Niobrara County Historical Society states that the Lusk Water Tower site consists of 0.2 acres. This tract of land is in the E 1/2 of Section 8, Township 32 North, Range 63 West of the 6th P.M. USGS Lusk, Wyoming, Quadrangle map, described as follows: From the 1/4 section corner on the east section line of Section 8, Township 32 North, Range 63 West of the 6th P.M. along the 1/4 section line a distance of 1,300 feet to point of beginning. Thence north 69 32' west, a distance of 230 feet; thence south 53 02' east, a distance of 173 feet; thence south 69 32' east, a distance of 94.5 feet; thence north 20 28' east, a distance of 50 feet; thence north 69 32' west, a distance of 32.5 feet to the point of beginning. Containing 0.2 acres, more or less. **Boundary justification:** The boundary is based on the legally recorded boundary lines that encompass the single parcel of land that is occupied by the water tower and its immediate surroundings. This represents the parcel owned and protected by the Niobrara County Historical Society.



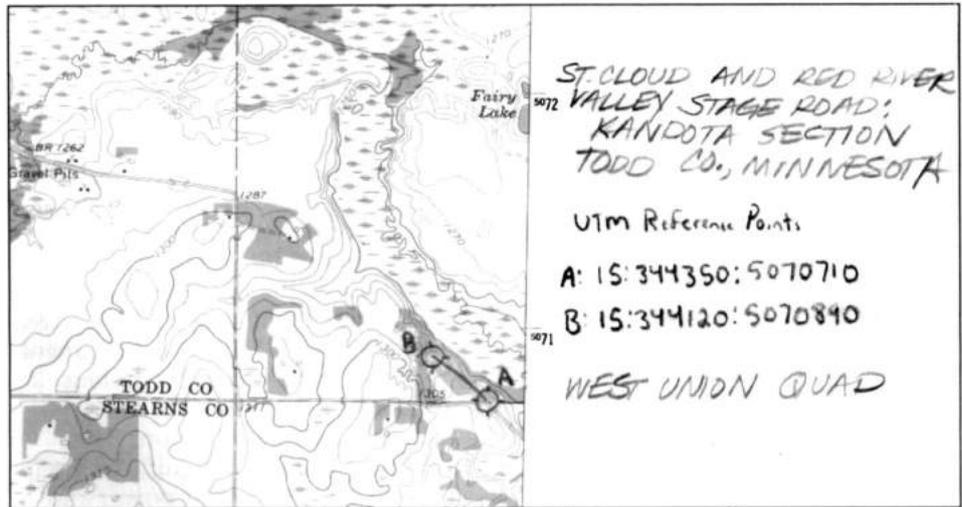
Newport Stone Arch Bridge, Newport, New York. Sketch plan showing the property's National Register boundaries.



Lusk Water Tower, Lusk, Wyoming. (Richard Collier)

Saint Cloud and Red River Valley Stage Road—Kandota Section, Todd County, Minnesota, is the best preserved section of the road built by the Minnesota Stage Company in 1859. The property is significant for its association with the transportation history of Minnesota, as defined in the Overland Staging Industry in Minnesota, 1849-1880, Multiple Property Submission. The property meets the following registration requirements: conforming to the original route; being unimproved, passable, and distinct from the surrounding land; being long enough to evoke a sense of destination or direction; and retaining the wooded setting of the area's condition during the period of significance. The land beyond the northwest end of the nominated property, which has been plowed, bears no signs of the road and is therefore excluded from the nomination. Reasonable limits were used to define the National Register boundaries.

Verbal boundary description: The property consists of a six-foot-wide strip of land centering on the line delineated on the accompanying map (USGS 7.5 minute series, West Union, Minnesota, Quadrangle). The line connects the following UTM reference points: A 15 344350 5070710, B 15 344120 5070890. **Boundary justification:** The property boundaries encompass the visible roadway as determined through field survey by Robert Hybben, 22 May 1990.



Saint Cloud and Red River Valley Stage Road—Kandota Section, Todd County, Minnesota. Detail of USGS quadrangle map showing location of the National Register property.



Saint Cloud and Red River Valley Stage Road—Kandota Section, Todd County, Minnesota. The stage road trace, facing northwest. (Robert Hybben)

IV. REFERENCES

- Knoerl, John, and Betsy Chittenden. *Boundary Analysis of the Dune Shacks of Peaked Hill Bars Historic District, Cape Cod, Massachusetts. Cultural Resources Information Management Series.* Washington, D.C.: Cultural Resources Geographic Information Systems Applications Center, National Park Service, U.S. Department of the Interior, 1990.
- McClelland, Linda Flint, J. Timothy Keller, Genevieve P. Keller, and Robert Z. Melnick. *National Register Bulletin: Guidelines for Evaluating and Documenting Rural Historic Districts.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1990.
- National Register Bulletin: Definition of National Register Boundaries for Archeological Properties.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1985.
- National Register Bulletin: How to Complete the National Register Registration Form.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1991.
- National Register Bulletin: How to Complete the National Register Multiple Property Documentation Form.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1991.
- National Register Bulletin: Using the UTM Grid System to Record Historic Sites.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1977.
- Parker, Patricia L., and Thomas F. King. *National Register Bulletin: Guidelines for Evaluating and Documenting Traditional Cultural Properties.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1990.
- Townsend, Jan, John H. Sprinkle, Jr., and John Knoerl. *National Register Bulletin: Guidelines for Evaluating and Registering Historical Archeological Sites and Districts.* Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1993.

V. NATIONAL REGISTER CRITERIA FOR EVALUATION

The National Register's standards for evaluating the significance of properties were developed to recognize the accomplishments of all people who have made a contribution to our country's history and heritage. The criteria are designed to guide State and local governments, Federal agencies, and others in evaluating potential entries in the National Register.

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

Criteria considerations: Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- a. a religious property deriving primary significance from architecture or artistic distinction or historical importance; or
- b. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life; or

d. a cemetery that derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

e. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or

g. a property achieving significance within the past 50 years if it is of exceptional importance.

VII. NATIONAL REGISTER BULLETINS

The Basics

How to Apply National Register Criteria for Evaluation *

Guidelines for Completing National Register of Historic Places Form

Part A: How to Complete the National Register Form *

Part B: How to Complete the National Register Multiple Property Documentation Form

Researching a Historic Property *

Property Types

Guidelines for Evaluating and Documenting Historic Aids to Navigation *

Guidelines for Identifying, Evaluating and Registering America's Historic Battlefields

Guidelines for Evaluating and Registering Historical Archeological Sites

Guidelines for Evaluating and Registering Cemeteries and Burial Places

How to Evaluate and Nominate Designed Historic Landscapes *

Guidelines for Identifying, Evaluating and Registering Historic Mining Sites

How to Apply National Register Criteria to Post Offices *

Guidelines for Evaluating and Documenting Properties Associated with Significant Persons

Guidelines for Evaluating and Documenting Properties That Have Achieved Significance Within the Last Fifty Years

Guidelines for Evaluating and Documenting Rural Historic Landscapes *

Guidelines for Evaluating and Documenting Traditional Cultural Properties *

Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places

Technical Assistance

Contribution of Moved Buildings to Historic Districts; Tax Treatments for Moved Buildings; and Use of Nomination Documentation in the Part I Certification Process

Defining Boundaries for National Register Properties*

Guidelines for Local Surveys: A Basis for Preservation Planning *

How to Improve the Quality of Photographs for National Register Nominations

National Register Casebook: Examples of Documentation *

Using the UTM Grid System to Record Historic Sites

The above publications may be obtained by writing to the National Register of Historic Places, National Park Service, 1849 C Street, NW, Washington, D.C. 20240. Publications marked with an asterisk (*) are also available in electronic form on the World Wide Web at www.cr.nps.gov/nr, or send your request by e-mail to nr_reference@nps.gov.

APPENDIX: DEFINITION OF NATIONAL REGISTER BOUNDARIES FOR ARCHEOLOGICAL PROPERTIES

Edited by: Barbara J. Little, Beth L. Savage, and John H. Sprinkle, Jr.

TABLE OF CONTENTS

ACKNOWLEDGMENTS	49
I. INTRODUCTION	49
II. WHAT IS AN ARCHEOLOGICAL SITE?	50
III. DEFINING THE BOUNDARIES OF ARCHEOLOGICAL SITES	51
IV. CASE STUDIES	52
V. REFERENCES	62

ACKNOWLEDGMENTS

The first version of *National Register Bulletin: Definition of National Register Boundaries for Archeological Properties* was edited by National Register Historian Beth L. Savage and released in 1985. The compilation of that bulletin was the result of the work of numerous individuals. Issues relating to the delineation of boundaries for archeological nominations were identified as a National Register Bulletin topic in the early 1980s by a committee of the National Conference of State Historic Preservation Officers, led by Valerie A. Talmage, former State Historic Preservation Officer of Massachusetts. Earlier work by Bruce MacDougal and Herbert Brito on boundary delineation for National Register properties served as a framework for the bulletin. Yvonne Stewart, Carol Dubie and John Knoerl played integral roles in the bulletin's completion. Helpful suggestions provided by the staff of the National Register and Planning Branches, Interagency Resources Division, and the insightful comments of many State Historic Preservation Offices contributed to the final publication.

Answering an expressed need to provide continuing guidance in the area of delineating boundaries for archeological properties, the National Register reevaluated the usefulness of the original version of *Bulletin 12* in 1994. We thank the following for their comments: Carl Barna (BLM), Colorado Historical Society, John Cornelison (NPS Southeast Archeology Center), Frank R. Finch (Department of the Army), Leland Gilson (Oregon SHPO), J. Bennett Graham (Tennessee Valley Authority), Richard R. Hoffman (FERC), Diane Holliday (State Historical Society of Wisconsin), Elizabeth Horvath (NPS Southeast Archeology Center), Judy McDonough (Massachusetts SHPO, Massachusetts Historical Commission), Arleen Pabon (Puerto Rico SHPO), Gary Shaffer, (Maryland Historical Trust), Herschel Shepard (University of Florida), Robert E. Stipe, Lois Thompson (DOE), Western Regional Office, Valerie Talmage (former Massachusetts SHPO) and Richard Guy Wilson (University of Virginia).

Several reviewers suggested incorporating *National Register Bulletin: Definition of National Register Boundaries for Archeological Properties*

into a more broadly applicable boundary bulletin. In 1995, a revised *National Register Bulletin: Defining Boundaries for National Register Properties* was issued. This current reprint of that bulletin incorporates an updated and streamlined version of *National Register Bulletin: Definition of National Register Boundaries for Archeological Properties* as this appendix. John H. Sprinkle, Jr., (Woodward-Clyde Federal Services) wrote most of the new material on site definition and identified new examples. Barbara J. Little (Archeologist, National Register of Historic Places) organized the bulletin into this appendix and deleted redundant examples. Carol D. Shull supervised the revisions. Mary F. McCutchan edited the text and prepared it for publication. Jan Townsend, Antoinette J. Lee, and Beth Savage assisted with various aspects of its preparation.

I. INTRODUCTION

This appendix defines recommended approaches, with illustrations where applicable, to delineating boundaries for archeological properties. Section II defines the concept of an archeological site. How archeologists define the boundaries of archeological sites is outlined in Section III. Section IV presents case studies which address the delineation of archeological site boundaries for a variety of both hypothetical and actual National Register properties. The case studies illustrate the necessary details—including background information, boundary description, approaches used, and boundary justification—with acceptable delineated boundaries which typify situations commonly encountered in preparing nominations.

In each of the examples, the property has already been determined eligible for listing in the National Register. The cases are chosen to illustrate decisions regarding boundaries.

Reflecting the various types of historical associations retained by cultural resources, many historic properties are eligible for inclusion in the National Register under more than one of the four Criteria: A, B, C, or D. However, the National Register recognizes only one boundary for each historic property. A site that is eligible under Criterion D for the important information contained in its

buried remains, may also be eligible under Criterion A for its significance to modern Native American groups as a Traditional Cultural Property. Although the physical boundaries of the archeological site may be relatively small, the larger boundaries of the traditional place would be represented in the National Register. Whatever the criteria for eligibility, historic properties should always be delineated by their largest relevant boundary.

One continuing issue with historic properties that happen to be archeological sites is the destructive nature of archeological investigation. The National Register does not, as a rule, list archeological sites that have been the subject of complete excavation. The artifacts, field records, photographs, and other data collected through the process of excavation do not retain integrity of location or setting and thus are not eligible for inclusion. Some sites that were the locations of significant milestones in the history of American archeology are listed after excavation as historic sites.

However, very few archeological sites are completely excavated in today's world where archeological studies are usually conducted as part of cultural resource management activities. Archeological investigation is by definition a process of sampling the buried record of past lives. At most sites, portions of the site remain unexcavated. In addition, in the framework of data recovery, or Phase III excavations, only a portion of the site, that within the "limits of proposed construction" or "area of potential effects" is subject to intensive excavations. Often large portions of archeological sites located outside the "mitigated" areas survive the development process. Care should be given, at the completion of data recovery excavations, to evaluate and nominate the significant surviving portions of the "unmitigated" area of such archeological sites.

For example, in a recent case from a southeastern state, a large multi component archeological site, dating from the Late Archaic and Contact periods, was subject to data recovery excavations in the area slated for construction of a reservoir dam in the late 1980s. Subsequently in the mid 1990s, another portion of the site underwent Phase III excavations as the result of a second federal under-

taking. However, portions of the site located between the two areas of previous data recovery excavations have the potential to contain significant archeological information. Proposed for preservation in place, this surviving parcel is eligible for the National Register although the site as a whole has endured two previous data recovery operations.

Finally, the National Register has long recognized the disproportionate under-representation of archeological sites (approximately 7%) within its approximately 67,000 listed properties. Clearly, many thousands of historic buildings, structures, and districts contain unrecognized archeological components that are equally eligible for the National Register. The National Register has made amending nominations to include the archeological portions of currently listed historic properties, a relatively simple and straightforward process. Nominations may be quickly prepared or amended using the computer-resident nomination forms available from the National Register. Specific procedures for amending nominations can be found in *National Register Bulletin: How to Complete the National Register Registration Form*. Nomination amendments should be used to increase or decrease the boundaries of a property or district, as well as adding or subtracting criteria and areas of significance.

National Register nominations should not be considered static documents. Indeed, as land uses at a site change, or as further information is gathered, it may be desirable to update the nomination to reflect current conditions. Over the years, a National Register nomination may require a certain amount of "information maintenance" in order to reconsider the property's description, contributing elements, period of significance, applicable criteria, and of course, boundaries.

II. WHAT IS AN ARCHEOLOGICAL SITE?

The main text of this bulletin (p.30) defines a site as "the location of a significant event, prehistoric or historic occupation or activity, or building or structure, (whether standing, ruined, or vanished) where the location itself possesses historic, cultural, or archeological value" and goes on to note that "the most common types of resources classified as sites are archeological resources."

Most archeologists practicing their craft today would agree that together with the artifact and the feature, the "archeological site" is one of the fundamental concepts in our discipline. Yet, it is sometimes difficult to find a simple, meaningful definition of what an archeological site is, and what it is not.

Archeologists have always recognized the site as one of the foundations of all research on past cultures. In his 1956 work, *A Short Introduction to Archaeology*, the British archeologist, V. Gordon Childe described how although "antiquities" could be commonly found either on the surface of the ground or through excavation, "such objects in themselves are only potential archeological data." Artifacts only become data "when classified in light of their associations, of the contexts in which they have been found" within archeological sites. Thus, for Childe, a "site" was simply the source of archeological information.

Field manuals for archeologists provide common definitions of archeological sites. A site is "a fairly continuous distribution of the remains of a former single unit of settlement" (Dancey 1981:13).

An archeological site is usually the scene of past human activity. It may be marked by the scanty remnants of a brief encampment, or by the abundant remains of a settled village. If a site shows evidence of repeated occupation or use, it is still considered a single site, but various levels or periods of use may be distinguished within it (Hester, Heizer, and Graham 1975:13).

Each archeological site is a unique time capsule. Each has its own distinct character and problems. Sites represent a body of data relevant to their setting and their cultural patterning and must be interpreted in relation to both this local setting and to their function as a link between cultures (Joukowsky 1980:35).

Outlining the mysteries of archeology in an effort to protect sites on private property, National Park Service archeologist Susan Henry (1993:6-7) relates several characteristics of sites:

The focus of the archeological attentions is the *site*—a place where human activity occurred. An archeological site has horizontal and vertical dimensions. Few archeological sites are simple and straightforward. Most are complex, containing diverse elements, or *components*, each of which may represent a different activity. All site components bear a relationship to one another, and all components, including the buildings and landscapes, need to be studied in order to understand the way of life once carried out at [a site].

Archeologists occasionally have pointed out that the site concept is inadequate because the archeological record often is not clustered. Several researchers have supplemented the site concept with that of "nonsite sites" (for example, Dunnell and Dancey 1983; Lewarch and O'Brien 1981). "Distributional archeology" (Ebert 1992) focuses on surface material rather than sealed sites in order to concentrate on human use of the whole landscape rather than on discrete, rare places. For the purpose of nominating an archeological site to the National Register, there must be clearly defined and justified boundaries. See Cases 15 and 16 for examples of delimiting site boundaries where the artifact record is continuous.

In an attempt to add consistency to the process of cultural resource management, many State Historic Preservation Officers (SHPO) have offered specific statements on the characteristics of archeological sites. For SHPOs, the definition of archeological site is often tied to the process of completing an archeological site form, which forces the regulators to standardize terms and provide guidance for just what is and what is not a site. For example, Virginia's guidelines for archeological survey provide one definition of a site:

In general terms, an archeological site is defined as the physical remains of any area of human activity greater than 50 years of age for which a boundary can be established. Examples of such resources would include the following: domestic/habitation sites, industrial sites, earthworks, mounds, quarries, canals, roads, shipwrecks, etc. Under the general definition, a broad range of site types would qualify as archeological sites without the identification of any artifacts (VDHR 1996:1).

All archeological sites have some form of physical expression, either through the presence of artifacts or other evidence of modification of the natural world through human agents. It is difficult to think of an archeological site that would have no surviving physical remains. In fact, the National Register generally does not list archeological sites that have been fully excavated, that is, where no physical remains of the site survive, because of the loss of integrity.

The theoretical construct of "site" plays a fundamental role in the ways archeologists view past societies. Concepts regarding archeological sites can be expressed through four phrases:

1. Methodology Mechanics. The methods used by archeologists to look for sites influences the sites that are identified. This concept reinforces the traditional scientific and archeological premise that methods and theory fundamentally influence the nature of the recovered information. Thus, a clear definition of how to define the

location and boundaries of sites must be an essential part of every archeologist's theoretical and methodological tool kit.

2. Artifact Axiom. An archeological site must have some physical evidence of occupation, use, or transformation. This evidence is usually in the form of artifacts, but also includes human alterations to the landscape. Without some form of physical presence it is impossible to define boundaries to archeological sites.

3. Density Dilemma. Is the center of the site the place with the most artifacts? The boundary of archeological sites should not be defined solely on the basis of artifact density revealed in an archeological survey. As the remains of past human activities, archeological sites may contain areas where artifact density is relatively low, separating two portions of the same site. In addition, various cultural and natural transformations have fundamentally altered the condition of readily apparent archeological sites. Through time, vegetation may obscure artifacts, plowed areas may blanket subsurface features, and soil movement by a variety of processes may have buried sites. The definition of a site's boundary must consider the land use history of the site as well as artifact density.

4. Present vs. Past. How certain are the limits of a prehistoric or historic period site? Obviously, the definition of an archeological site's boundaries is a judgment made in the present. It is molded by the archeologist's training, education, and view of the past. Care should be given to consider how the site may have been perceived in the past. Historic boundaries, if they can be defined or modeled, should be given primacy over modern boundaries.

III. DEFINING THE BOUNDARIES OF ARCHEOLOGICAL SITES

While defining boundaries usually requires some limited excavation, it is also often possible to use nondestructive methods prior to archeological fieldwork to identify the location and extent of suspected subsurface features within archeological properties. Over the years, archeologists have adapted a variety of methods from other disciplines to see beneath the earth. Geophysical prospecting techniques most commonly used by archeologists include electrical

resistivity and conductivity (including metal detectors), ground-penetrating radar (GPR), and magnetic prospecting. Analysis of soil chemistry also has been used successfully to identify sites and activity areas within sites. Aerial photography is a well-known technique used extensively to identify sites. Although some types of remote sensing can be executed by archeologists trained in their use, it is common to hire specialists because the techniques and technologies of remote sensing change rapidly.

Advantages to geophysical methods are that they are nondestructive (or minimally destructive) and are relatively fast. However, geophysics is an indirect science which detects "anomalies" which then usually require some level of sub-surface testing to verify as archeological resources.

Remote sensing is particularly useful in underwater archeological endeavors. In the case of one recently listed shipwreck along the eastern seaboard, the site was identified using a towed-array proton precision magnetometer as part of a state-sponsored survey. The 30- by 40-meter boundary of the site was identified by using metal detector survey as well as test excavations.

Clearly, as new technologies and methodologies are adapted to the needs of archeological investigations, these techniques can be used to help define boundaries of National Register properties.

Whether using new technologies or old, the level of effort to define boundaries should be an explicit part of research designs for archeological surveys designed to identify all potentially National Register eligible sites. In addition, the principles for demarcating the limits of archeological sites should also be explicitly stated in the survey methodology. Once defined, this methodology should be consistently applied to each potential archeological site identified in a survey.

National Register boundaries distinguish, from their surrounding environment, archeological sites meeting the National Register criteria for evaluation either individually or as contributing elements in an archeological district. Site boundaries often are reasonable distinctions that may not always reflect the spatial concepts implicit in certain theoretical perspectives, notably those of "nonsite"

archeology. However, boundary determinations require clear recognition of how physical features and their mutual relationships form a "site." Usually this requires the archeologist to decide the degree of fall off in cultural material density that is no longer acceptable in order for an enclosed area to be considered part of the significant "site."

Boundaries for National Register properties are horizontal boundaries that can be clearly marked in two dimensions. Vertical boundaries of a site probably will have been established or predicted through testing to evaluate the site for significance.

Absolute boundary definition is often unachievable. Boundaries usually represent compromises reconciling both theory and field conditions to facilitate communication with agencies and the public about sensitive geographic locations having important concentrations of archeological information.

There are several methods for obtaining boundary evidence for archeological sites. These are summarized on page 30 in the main text of this bulletin. Examples of each are provided in this appendix or in the main text of this bulletin. Each of the techniques used must be adequately documented in the text of the nomination.

The first two, "subsurface testing" and "surface observation," provide direct documentation of archeological resources. Several examples in the main text use these methods. See the discontinuous district of Crockett Canyon/Coyote Ranch Archeological District (p. 23) as well as most of the examples under "Archeological Sites and Districts" (pp.30-36). In this appendix see Case 1 for an example of direct documentation through subsurface testing and Case 2 for an example of surface observation.

The third method, "observation of topographic and other natural features," often provides logical and defensible boundaries for sites. For examples in the main text, see in particular Rockshelter Petroglyphs (p.31), Prehistoric Quartzite Quarry Archeological Site (p.31), and Harbor Island Historic and Archeological District (p.33). In this appendix see Case 3 for a further example.

The fourth technique, "observation of land alterations," includes the documentation of land disturbance that may have destroyed portions of a

site, thereby indicating a boundary for the remaining resource. See Case 4 for an example. It may also involve documenting the lack of disturbance to a property as evidence supporting a site's integrity. This latter case is illustrated in Cases 5 and 6.

The last technique listed on page 30 is "study of historic or ethnographic documents." This technique often involves the use of maps and legal boundaries. Several examples in the main text illustrate the use of such documents for determining boundaries. See these contiguous districts in rural settings: The Woodlawn Historic and Archeological District (p.17), Bloomvale Historic District (p.21), Weyerhaeuser South Bay Log Dump Rural Historic Landscape (p.22). The boundaries for Pecos Archeological District are coterminous with the legal boundaries of Pecos National Historical Park (p.24). Cases 7, 8, and 9 in this appendix provide further examples.

In addition to these five techniques is the "property type model," which was defined in earlier editions of this appendix (as *Definition of National Boundaries for Archeological Districts*). The property type model is based on known site types. For example, a late archaic camp in a swampy area is discovered during a survey and is nominated for the important information potential of its well-preserved plant remains. However, testing was not done to determine the boundaries of the site. To describe and justify a boundary coterminous with the rise of land overlooking the swamp, a property type model could be used. Such a model would compare this type of site to other known sites in the region, clearly presenting and supporting the expected boundary for this type of site. Case 10 provides an example of the property type model.

IV. CASE STUDIES

It is an archeological truism that "every site is different." The process of determining the boundaries of an individual archeological site depends, to a certain degree, upon the individual characteristics of that site and its surroundings. The following case studies add to those presented in the main text. It is important to note that in most cases, more than one technique is used to determine boundaries.

Examples for each of the main techniques discussed above are provided first. Following those is Case 11, a district with boundaries based on more than one area and period of significance; Case 12, a site eligible under criteria A and D as both a traditional cultural place and an archeological site; Case 13, a boundary reduction; and Cases 14 and 15, examples of delimiting boundaries amid continuous distribution of artifacts.

Case 1. Shovel Test Pits delimiting a prehistoric site located within a forest.

A multicomponent prehistoric site was located within Federal property in a state in the upper South. The boundaries of the site were defined through the excavation of 46 shovel test pits and limited surface collection of artifacts along a road. Information potential and National Register eligibility was confirmed through the excavation of 15 1 x 1 meter test units. Although some disturbance to the site resulted, previous construction of the road does not appear to have significantly compromised the integrity of this property. *In situ* materials were found as deep as 50 cm below the present ground surface. The distribution of artifacts at this site conforms to a model of site definition in which the highest density of artifacts is judged to be located at the center of the site, with fewer artifacts found in outlying areas. The edge of the site is defined by the boundary between the presence of artifacts and the absence of artifacts, as revealed in test pits.

Boundary Description: The site is located along AAA Road with the extreme northeastern boundary being located approximately 3,000 feet north of the confluence of BBB Branch and CCC Branch, at an elevation of 1500 ft. amsl. From this point the site area follows the road to the west (which coincides with the contour of the ridge top) for an additional 1,000 feet. The site is confined to the north and south by its topographic situation; cultural materials were confined to the level or near level portions of the ridge system. (See Figure 1.)

Boundary Justification: The site boundaries were determined by the limits of cultural materials as defined by subsurface shovel testing. A surface collection along the road revealed a continuation of materials outside of the defined boundaries;

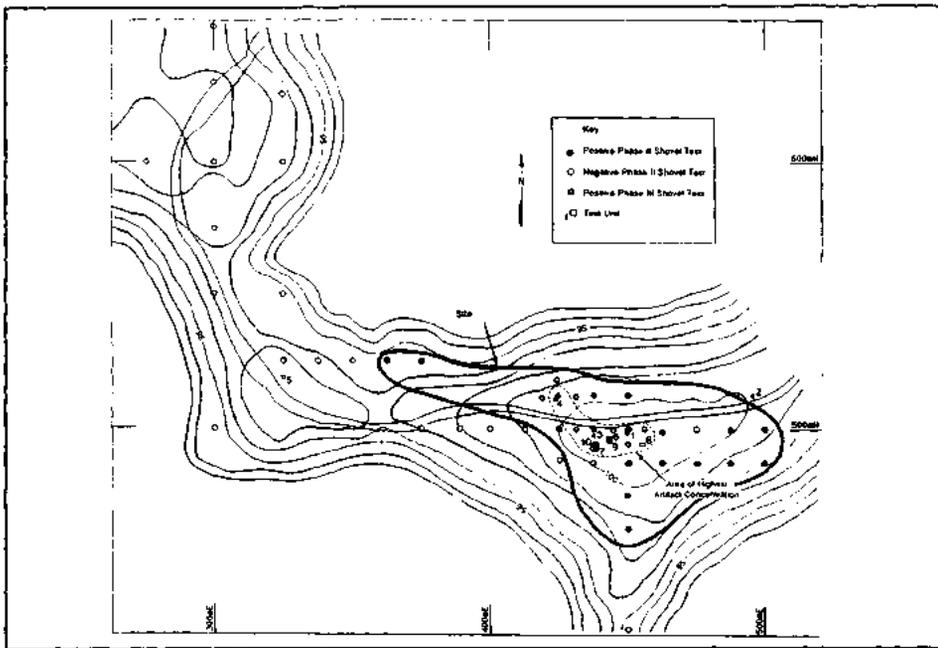


Figure 1. (Case 1). The site boundaries for this prehistoric archeological site from a state in the upper south were defined by the presence of artifacts recovered during shovel test pit excavation. The map included with the National Register nomination clearly shows the limits of the site with a bold line, illustrates the location of excavation units, and clearly locates the position of the site within a forested environment.

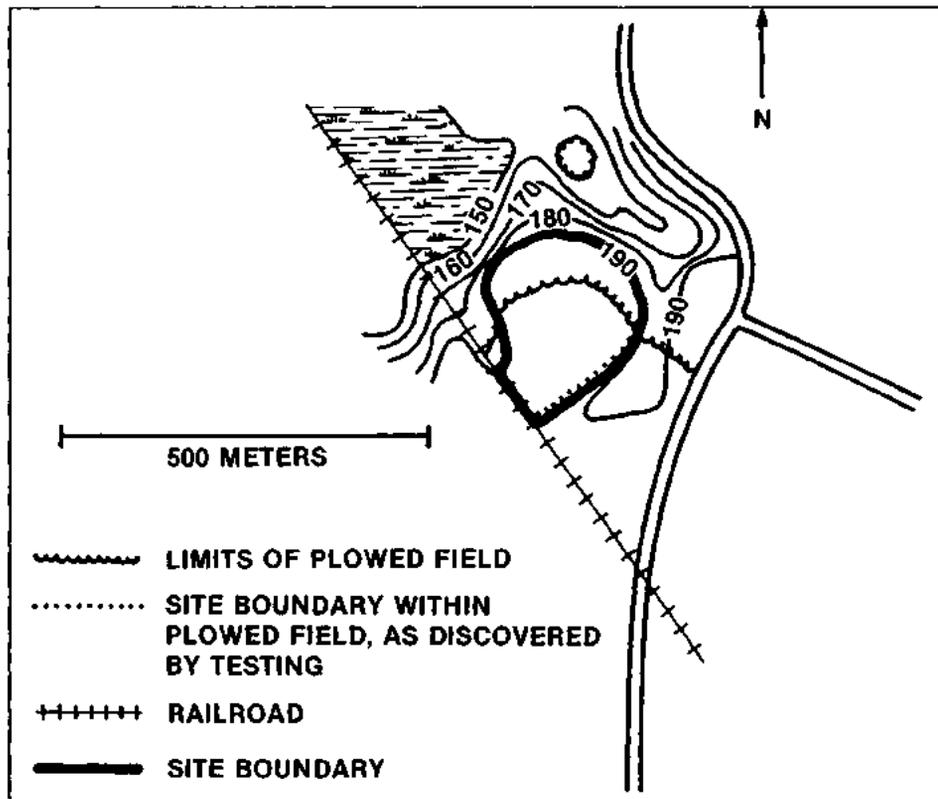


Figure 2. (Case 2). Located primarily within a plowed field, the bounds of this site were determined through direct documentation. Although no testing occurred within the woods to the north of the fields, the presence of higher artifact densities in this area suggested that the site continued beyond the plowed field.

however, it is likely that recent road improvement activities are responsible for the current location of these materials. For this reason, the boundaries as defined by the shovel testing appear to be the most accurate definition of the site's size and extent.

Case 2. A Plowed Prehistoric Site Identified through Surface Collection, Natural Topography, and Land Disturbance. The site lies on a rise of land partly in a wooded lot (11.5 acres) and partly in a plowed field (ca.5 acres) entirely within property owned by a state agency. The site was discovered in 1981 when the State agency leased land for farming; the plowed field was surface-collected and artifacts and features were mapped. The site was defined by direct documentation (observation of surface features and surface collection; natural topographic features; and land disturbance.)

Boundary Description: The site is bounded on the south by the known extent of cultural materials, on the west by railroad tracks and on the north and east by a contour line defining a terrace overlooking a wetland (See Figure 2.)

Boundary Justification: The southern boundary of the site is established by the limit of cultural materials and features and roughly corresponds to a lowering in grade. The highest artifact densities recovered during surface collection were noted at the northern and western edges of the plowed field. By extrapolation, it is likely that the site extends into the wooded areas to the north and west. The western boundary is established by the railroad cut which corresponds roughly to the original terrace edge. The northern and eastern boundaries are set by the contour line marking an abrupt fall to the wetland.

Case 3. A Prehistoric Site Defined by Natural Topographic Features: The site was discovered in 1965 and was investigated archeologically between then and 1977 by the State University and the State Archeological Society. Excavations and surveys revealed that the site was occupied from Early Archaic through Woodland times and that a historic, eighteenth-century, English-colonial component is also present.

Boundary Description: The boundaries of the site correspond to the edges of an erosional remnant, the 140-foot contour line on the topographic quad, a ridge. The site is bounded by the creek and swamp on the northwest, and by low-lying floodplain on all other sides (See Figure 3.)

Boundary Justification: The boundaries of the site correspond to those of the landform on which it lies. Archeological investigations have revealed artifacts only in those areas above the 140-foot contour of the valley floor in all sampled areas of the ridge. The site's maximum length northeast to southwest is 2,500 feet, and its maximum width is 800 feet. The low-lying nature of the swamps and floodplain surrounding this erosional upland remnant presumably made this ridge the only habitable portion of the area, implying strongly that topography constituted a behavioral boundary here.

Case 4. Documented Land Disturbance of a Riverine Site Defined by Natural Features and Modern Land Uses: A Woodland period prehistoric archeological site was identified by avocational archeologists and reported to the SHPO. The 50-acre site comprises surface finds along a floodplain adjacent to a meandering river course. No scientific excavations have been conducted at the site.

Boundary Description: The site is bounded by natural topographic features and manmade alterations to the landscape. The 600-foot contour line defines the northern, western, and eastern boundaries of the site. The southern portion of the site is defined by a railroad right-of-way which was constructed at the toe of a steep slope marking a topographic boundary as well as a manmade one (See Figure 4.)

Boundary Justification: The river forms a naturally occurring boundary to nearly three sides of the site. The area contained within the inside bend of the curve of the river had bearing on the living space which was available to prehistoric people. Surface collections have yielded prehistoric cultural materials over most of the dry land area to within a few feet of the present shore and as far south as the railroad easement. The marshy area lying between the 600-foot contour and the river was not included because interpretations of the

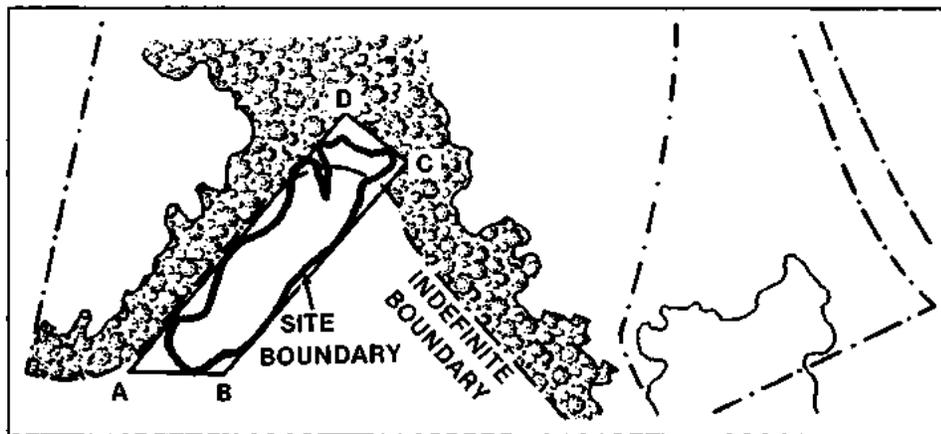


Figure 3. (Case 3). The boundary of this site was primarily determined by topographic features and contains the ridge area encompassed by the 140-foot contour line. Archaic and Woodland prehistoric components, in addition to an eighteenth-century historic occupation, are constrained by a creek, swamps, and flood-plain settings.

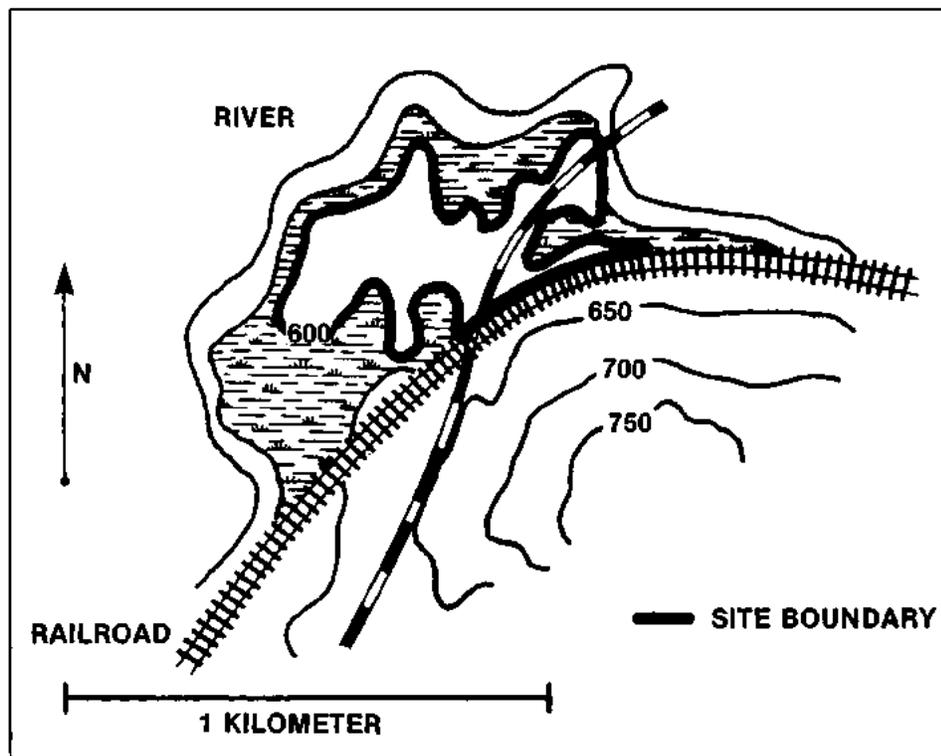


Figure 4. (Case 4.) The river and associated swamp form a natural boundary for this prehistoric site on its west, north, and east sides. The southern boundary was truncated by construction of a railroad seated at the base of a topographic rise.

environmental history of the site indicate that the area has been subjected to river scouring during various meander episodes, leading to little expectation of the existence of cultural remains.

The railroad easement that defines the southern boundary represents a corridor of highly disturbed land from which archeological resources cannot be expected to have survived.

The right-of-way also serves to mark a sharp break in slope, delineating the well-drained alluvial terrace which lies on the inside bend of the river from the steep (greater than 15%), rocky, till covered northerly facing slope. The topographic characteristics beyond the easement would have rendered this area unattractive for occupation.

Case 5. Documents and Lack of Land Disturbance of a Historical Archeological Site in an Urban Setting:

An eighteenth-century house in a Colonial-era town has been nominated. The townhouse is located on a deep lot maintained as lawn and gardens. Historical research confirms that the current property lines were established in the original plat of the block in the 1700s and that substantial construction has never occurred. Archeological investigation of other houses in the urban area has revealed the presence of associated buried privies and trash deposits.

Discussion: Historic documentation of legal boundaries would be the most appropriate in this case where the documentation confirms that current property lines represent the historic property lines. In addition, the lack of interior block disturbance is documented, leading to an expectation of buried feature remains such as privies. This expectation may be confirmed by surface observation of site features and materials. Subsurface testing would not be necessary for boundary definition in this case. Modern legal boundaries should be used in concert with historic documentation which confirms that the current legal boundaries are historically the legal boundaries of the site.

Case 6. Documents and Lack of Land Disturbance for a Multiple Property Nomination for Charcoal Iron Furnaces: Numerous charcoal iron furnace complexes and associated communities have been identified. All known examples of this class of property are included. Although predominantly subsurface in nature, a few aboveground resources are present. Archival research and intensive restoration of one of the furnace complexes have established a description of the types and functions of the resources represented, their time range, their physical characteristics, and the probable classes of important research data represented. Original plats for individual furnace complexes and communities as well as historic photographs are available. Limited archeological surveys have confirmed the presence of historically documented features at several of the furnace sites and associated communities. Typically, the iron furnaces and associated communities have not been developed following their abandonment.

Boundary Description: For each furnace complex and associated community, the boundary is defined by the historical limits of the resource as illustrated in historic plat maps and verified as undisturbed based on field inspection (See Figure 5.)

Boundary Justification: Given that all members of this class of resources have been identified; that the original plats are available to establish boundaries; that archival research, restoration, and limited archeological research have established the types and functions of the various resources represented; and that the furnace sites are located in a region of the State that has experienced little development, it is appropriate to use historic documents (plats) to determine the bound-

aries of each property included in the nomination. Subsurface testing is not necessary for boundary justification, because enough is known about the site functions and features to accurately predict locations of activity loci and expected data classes. Limited surface reconnaissance on several properties and restoration of one furnace and auxiliary building have confirmed the presence of expected features, based on historic documentation. Visible signature features, such as furnace stack remnants, earthen ramps, slag dumps, ore pits, and building foundations in conjunction with plats, historic photographs, and standing buildings have been useful in locating specific features, i.e., stacks are located near streams

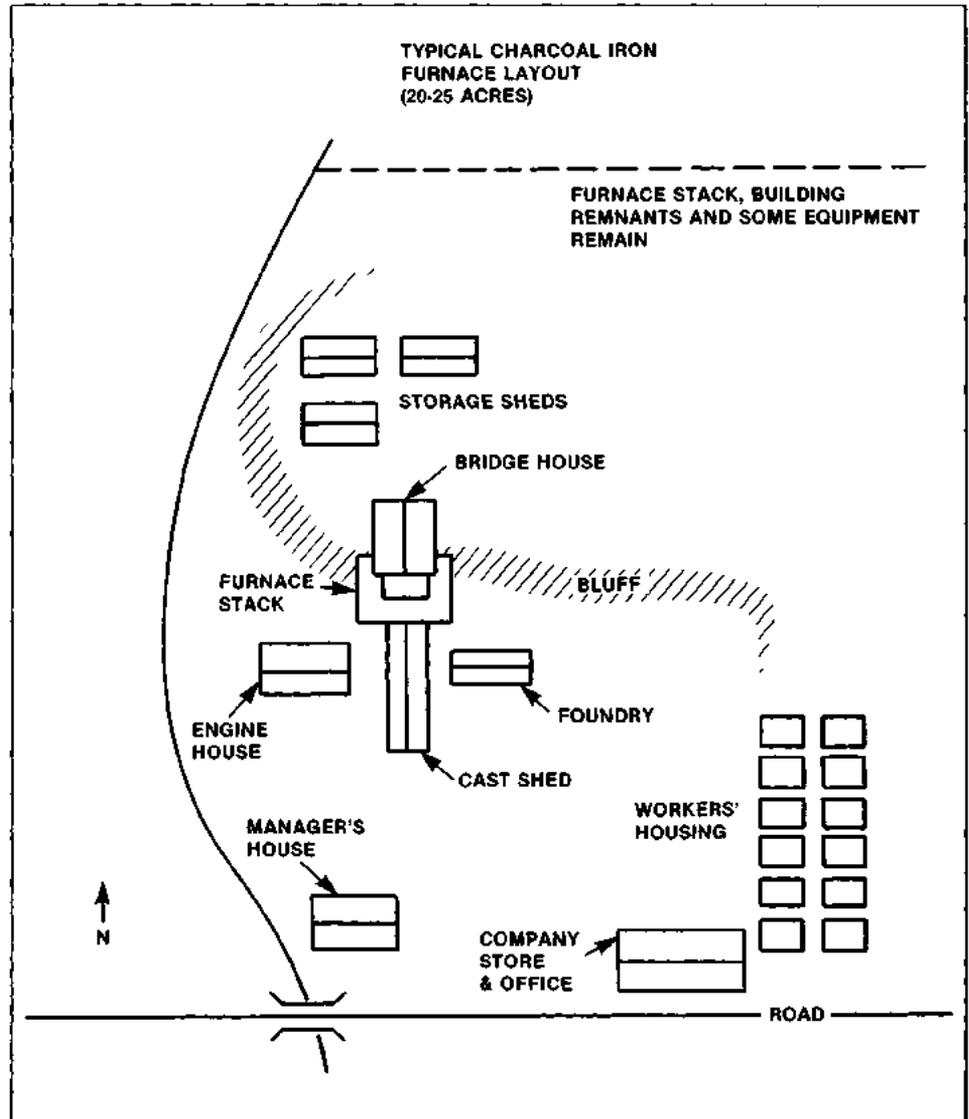


Figure 5. (Case 6). This figure shows a typical charcoal iron furnace dating from the nineteenth century. As part of a multiple property nomination, the boundary of each complex was estimated based upon historical cartographic documentation and confirmed using limited field investigations.

and sandstone banks, but are generally not useful in establishing boundaries. Later land alterations are virtually nonexistent or have had minimal impact on the properties in question. In sum, use of historic documentation (plats), in conjunction with visits to each of the sites to confirm expectations regarding integrity, is considered appropriate to define boundaries for each of the properties included in the multiple property nomination.

Case 7. Use of Legal Boundary for a Site Divided by Modern Property Lines:

A prehistoric site has been discovered as the result of a cultural resource survey in preparation for a construction project on part of parcel A. It is clear that the site extends beyond the construction project limits onto parcel B. The developers involved and their archeological contractors have been unable to gain the adjacent private owner's consent to survey parcel B in the area of the site for the purpose of boundary definition. Investigations of the site area within parcel A establish that the site, as it exists within parcel A, meets National Register criteria.

The SHPO or other nomination sponsor would be expected to make every effort to identify the totality of the property prior to nomination, so that the nomination reflects the entire resource. However, if examination of the part of the site on parcel B has been legally prohibited, and if there is no other basis for a well-justified estimation of the boundaries of the entire site, and, what is most important, if the portion of the site within parcel A was clearly eligible on its own, then the known portion of the site could be nominated.

Discussion: Where direct documentation of boundaries is not possible, and natural and topographic conditions do not help demarcate a site, legal boundaries may be used to define boundaries. In this case, the lot line shared by parcels A and B will form the defined eastern boundary. (See Figure 6.)

Case 8. Use of Documents for a Partially Inundated Historic Fortification:

Archeological investigations were conducted at an early nineteenth-century coastal fortification along the eastern United States. Although the aboveground elements of the fort were determined not to

meet National Register criteria due to renovations in the twentieth-century, the subsurface remains of the facility contained unique deposits representing the military occupation of the site. Significantly, deep testing confirmed that a portion of the "old tabia[sic.] barracks and magazine" had been buried by up to nine feet of sand. Other tabby foundations (tabby is a cement-like construction material) were observed eroding out of the adjacent beach area. These discoveries reinforced historical and cartographic research that suggested portions of the early nineteenth-century fort remained buried within periodically inundated areas of the coastline.

Discussion: The northern, western, and eastern boundaries of the property were defined as the current legal bounds of the military property. The area surrounding the fort that may have contained archeological remains has been heavily disturbed through subsequent residential development. The southern boundary along the coastline was interpreted from historical maps as extending approximately 150 feet into the adjacent river. These boundaries contain the documented extent of the fortifications.

Case 9. The Use of Documents for the Site of an Eighteenth-Century Settlement: The irregularly shaped site marks the remains of an eighteenth-century settlement situated on a high bluff on the west bank of a river. This area is presently in planted pines, mixed forest, and abandoned pecan orchards. The site was located on the basis of documentary and map information as well as by archeological data obtained in sampling excavations carried out there in 1974 and 1977 by the State University.

Boundary Description: The site is bounded on the west side by a railway line for a distance of about 1500 feet. The north and south boundaries turn eastward from either end of this boundary line. The northern boundary runs eastward 700 feet, turns southward for 450 feet, and continues 2,700 feet eastward to the western edge of the river. The southern boundary runs eastward 1,300 feet, turns northward 450 feet, and continues eastward roughly 2,100 feet to the western edge of the river. A line along the western edge of the river forms the eastern boundary of the site.

Boundary Justification: The boundaries of the settlement were

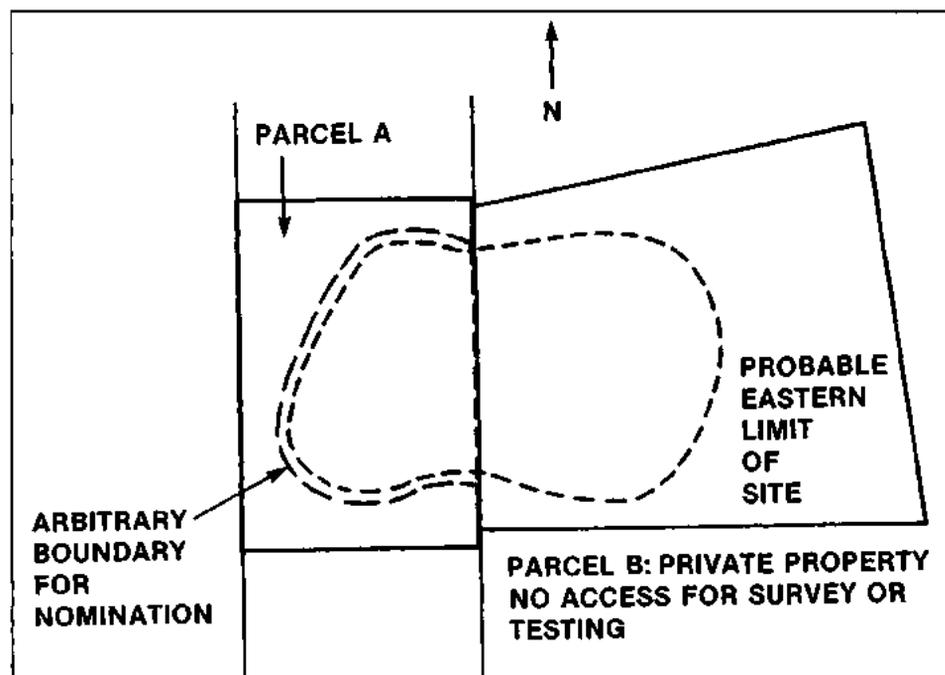


Figure 6. (Case 7). In this example, the eastern boundary of this prehistoric site was estimated, because access was denied to this portion of the property. The figure illustrates the polygons used to calculate the UTM coordinates for the nomination, while the actual boundaries are shown on the west side of the parcel.

defined by comparing the configuration of modern roads with those shown on early maps of the region. Based on this information, archeological sampling was conducted to ascertain the location and spatial limits of the past settlement. The results of these excavations were employed to extrapolate the overall distributions of structural and specialized activity artifacts. These distributions revealed that the early settlement lay along both sides of an abandoned road running westward from the river landing and along either side of a north-south road intersecting it about 1,000 feet from the riverbank. These distributions reflect the linear layout of the site indicated in comparative documents relating to contemporary settlements of similar function and corroborate the scanty documentation for the settlement of the site itself.

The western, northern, and southern boundaries of the site are defined by the gradual thinning out of artifacts in the area. The western boundary is also demarcated by the railroad, the construction of which destroyed archeological evidence in its immediate vicinity. The northern and southern boundaries of the site near the river are also defined by the presence of two deep gullies and a slough; the steep slopes of which mark the end of the occupied area. A road cut through the bluff indicates the actual landing site on the river. Presently, the western edge of the river was chosen as the eastern boundary due to the absence of underwater archeological investigation. Underwater components are commonly found in association with land sites situated along rivers in the State and the presence of such a component here is likely. If, as the result of an underwater survey, underwater components are discovered, the eastern boundary may be expanded.

Case 10. Property Type Model for a Deeply Buried Site: Prehistoric cultural material is discovered deeply buried in a floodplain. The materials have come from a depth of approximately 20 feet. Sufficient cultural material has been recovered through soil core testing to allow identification of the site's cultural/temporal affiliation. This appears to be an important multiuse site, and eligibility under the National Register criteria is firmly established.

Discussion: Subsurface testing is the preferred approach, but it is considered infeasible in this case for technological reasons. Natural topographic features may be used to define the site limits, however, completely different topography may have existed when the buried level was the ground surface. The effort required to test a site at such depth exceeds the technology commonly available in a survey program. Therefore, the site was listed with reasonable boundaries. The basis of the property type model (i.e., analogy to a known site, etc.) should be thoroughly explained in the nomination. The implications of using such a method include the probable inclu-

sion of areas lacking significant site remains, as well as the exclusion of actual site areas. Where accurate boundaries cannot be confirmed, a property type model should be used to outline a reasonable boundary believed big enough to include the entire site.

Case 11. A Large National Register District: The 650-acre district is a multicomponent locality displaying at least two discrete occupations. The earlier occupation is represented by a series of Pueblo II (ca. 10th-11th century, A.D.) residential sites and associated special-use localities (field houses, lithic quarries). The later occupation (early 20th century) is

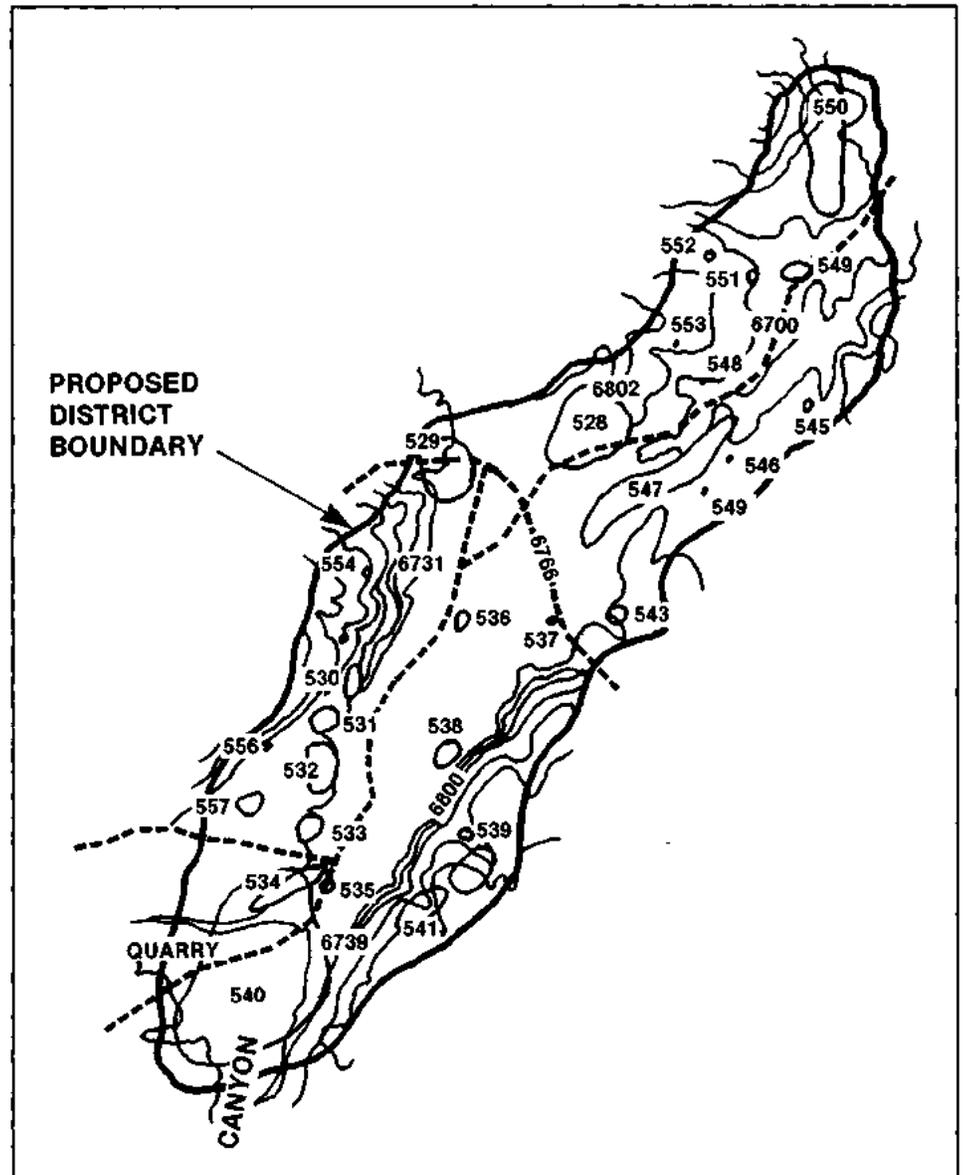


Figure 7. (Case 11). The border of this multicomponent district was established based on the distribution of known archeological sites.

centered around a limestone quarry and kiln at the southwest corner of the district. Associated with this limekiln is a concentration of Navajo hogans, probably occupied by workers at the mine. The sites are scattered around the periphery of the valley floor used for agricultural purposes by the Puebloan occupants.

Boundary Description: Starting at a point (area of Point A) on the 35-36 section line, 1,500 feet south of the marked corner of sections 25, 26, 35, and 36, the boundary trends east about 200 feet, then south for a chord distance of approximately 2,700 feet, crossing an unimproved road, to the area of Point B. From there, the boundary trends southwest, following the edge of the canyon, approximately 9,200 feet (chord distance) to where the boundary intersects the section 10-11 line, in the area of Point C. From there, the boundary trends west-southwest for approximately 1,500 feet (area of Point D), then north and northeast approximately 3,000 feet to Point E (crossing the canyon and two unimproved roads). From Point E, the boundary trends northeast, again following the edge of the canyon for about 4,400 feet to the area of Point F. From there, the boundary continues northeast, with a southeastward curve, for a chord distance of 5,600 feet to the point of beginning (area of Point A-See Figure 7.)

Boundary Justification: The external boundary is based on the known distribution of individual cultural properties. The boundary includes all culturally and behaviorally related sites associated with the Pueblo II and early twentieth-century limekiln settlements located within the geographically defined canyon. The two separate areas of significance are considered as one district because the property distributions overlap in the southwestern area of the district, with the additional acreage necessary to include the entire limekiln complex being minimal compared to the overall district size. Within the boundary is the alluvial valley used for agricultural purposes by the Puebloan occupants. The valley floor has been included because it contains the agricultural land that made settlement here possible. Although surface inspection revealed few visible cultural resources, aerial surveys may reveal buried agricultural features in this valley. In this particular case, the valley floor is

included within the district without evidence of archeological materials due to the small scale of the district and the dispersal of sites within the district around the valley. However, for larger districts, evidence of agricultural use, such as the presence of vegetable pollen, would be necessary to justify the inclusion of the valley floor within the boundaries of the district. In the absence of such evidence, the boundaries would be drawn to exclude the valley floor from the center of the district or become a discontinuous one.

Case 12. Archeological Site and Traditional Cultural Property. This nomination describes three archeological sites found within a cultural landscape important to a Native American group in a western state. The property includes about 5 acres of an adjacent river, which was used in traditional subsistence practices. Archeological components include a village midden area with a depth of about 2 feet, while the landscape features include rocks, a grove of trees, and a waterfall. Within this

site there is significant linkage between archeological record and traditional cultural features. The site was determined eligible under criteria A and D.

The limits of the archeological sites and cultural landscape were defined using a combination of direct documentation (ethnographic and archeological studies) with topographic setting. The boundaries for this site were documented both by a series of maps and an aerial photograph, each showing the limits of the property. **Boundary Description:** The boundary is indicated on the map accompanying the nomination. (See Figure 8.)

Boundary Justification: The property is situated on a 40-acre river terrace and that portion of the river directly adjacent to the terrace. The property is bounded on the north by the mountainous slope rising from the terrace. The river channel which loops around the terrace forms the eastern and southern boundary. The western boundary is defined by a relatively steep slope rising up from the terrace. The boundaries encompass the resources and their immediate setting.

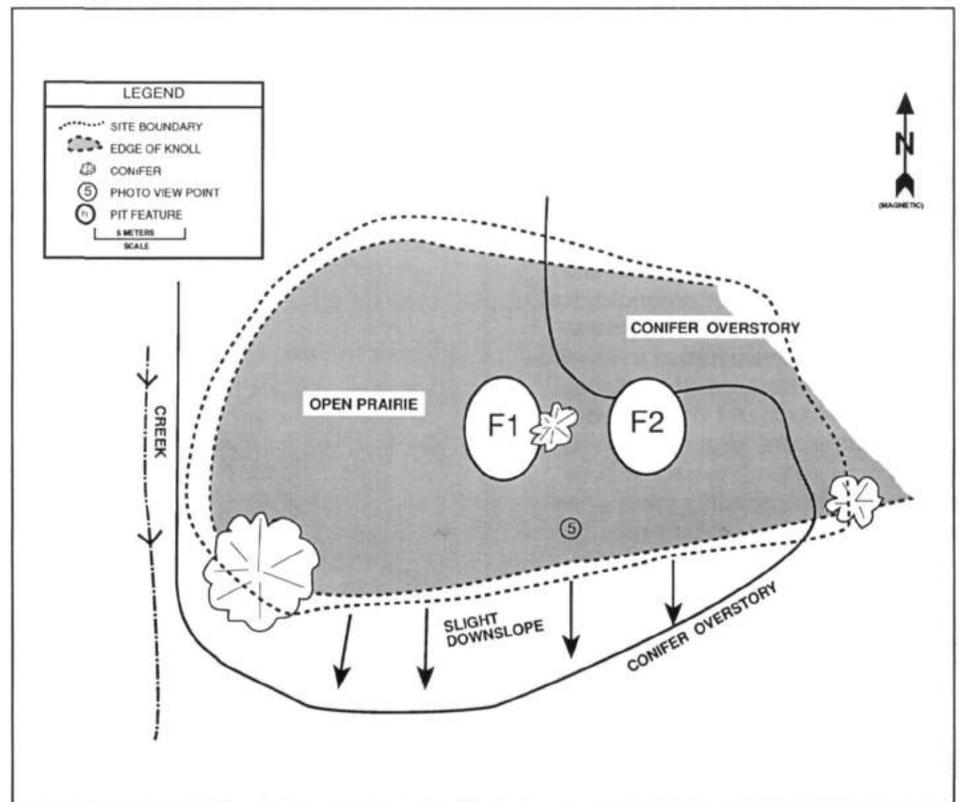


Figure 8. (Case 12). This nomination from a western state included aerial photographs to illustrate site boundaries. A transparency with the site boundary indicated was overlaid on the photo to show the extent of this site. The site also included elements of a traditional cultural property. The boundaries of this site were determined through archeological and ethnographic survey.

Case 13. Boundary Reduction of a Large National Register District.

Listed on the National Register in the early 1970s, a large district in a northwestern state contained over 400 archeological sites across more than 400,000 acres. Sites within the district represented all periods of human occupation in North America, from Paleolithic through the early twentieth century. Only 10 percent of the entire district had been the subject of archeological investigations at any level. Site distribution in the district appears to have been influenced by a variety of environmental factors, including topographic and hydrological setting. Most of the recorded sites are wholly on the ground surface or are shallowly buried, while many of the sites are threatened by natural forces (wind and water erosion) and degradation by human activities.

Discussion: After 20 years of archeological studies, the district's boundaries were reduced in the early 1990s by 50 percent in order to more accurately reflect the distribution of known sites and areas with high probability to contain additional important sites. A very few of the previously identified sites were excluded from the revised boundaries, now totaling over 200,000 acres. Excluded from the district were areas with the highest elevations and slopes greater than 20 percent that were unlikely to contain any archeological sites. Revision of the boundaries also removed unnecessary "buffer" areas from the district. Because of the large size of the district and the amount of new archeological information, a completely new nomination was prepared rather than a simple amendment to the existing nomination.

Case 14. Continuous Artifact Distribution: Multiple Prehistoric Sites Located on a Flood Plain: The flood plain of the river is a broad, flat plain with little topographic relief. The known distribution of prehistoric sites located in the floodplain derives principally from the mapping of numerous artifact collecting areas, representing the past 30 years of surface collection activities by numerous individuals. To date, there has been no systematic subsurface testing survey of the floodplain, chiefly due to the presence of deep alluvium deposits which prohibit cost-effective testing. Many of the artifact collecting areas overlap and indicate an almost

continuous pattern of prehistoric land use on the homogeneous floodplain (See Figure 9.)

Assignment of a polygonal boundary is appropriate in this case, since it encompasses the area of a known Late Woodland-Contact Period Settlement within a broad, featureless expanse generally known for its almost continuous distribution of prehistoric cultural remains. The polygonal area may be replaced by more precise site boundaries as site formation processes and improvements in archeo-

logical methodology provide further data regarding the floodplain's prehistoric land use.

Boundary Description: The boundaries of the site are defined by a polygon. The polygon is square, measuring 500 meters on a side, covering 25 hectares. The boundaries of the site are defined by UTM coordinates which mark a polygon's corners. The unit includes land in private ownership on a bend of broad floodplain of the river in an area known for its very high density of

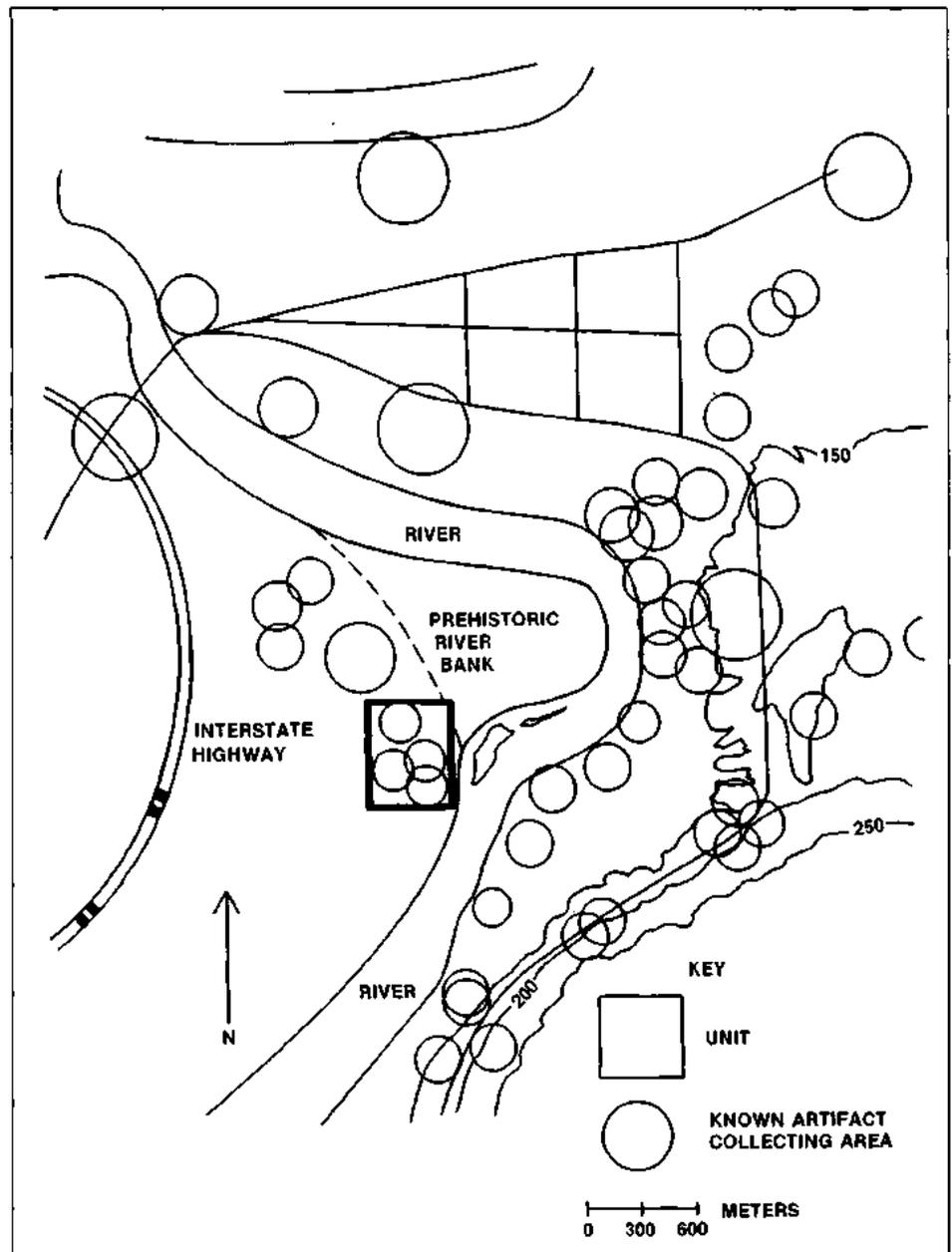
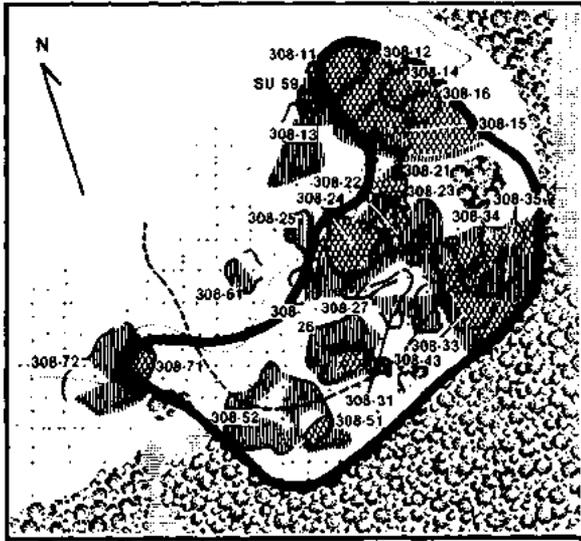
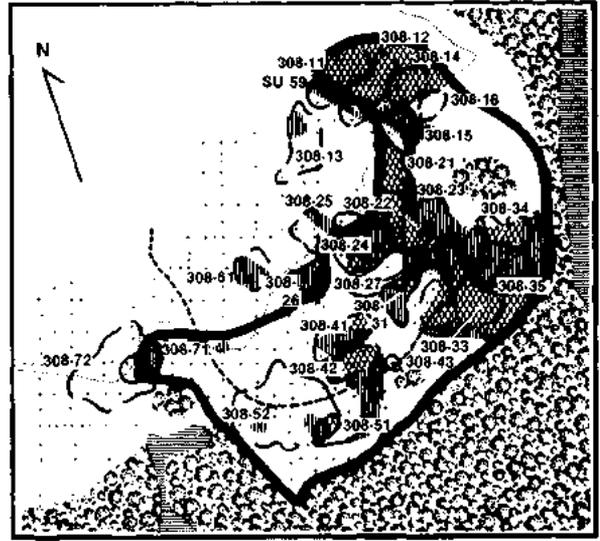


Figure 9. (Case 14). Numerous circles on this figure illustrate the location of recorded archeological sites located on this broad floodplain area. The National Register property is shown by the rectangle, which encompasses four known sites. A reasonable boundary was assigned to this property.



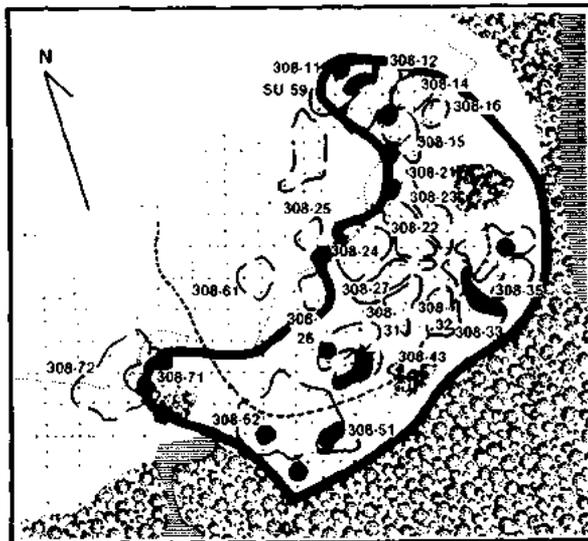
-  — VALUES FOR LITHICS/qcm GREATER THAN THE MEDIAN BUT LESS THAN THE 75th PERCENTILE
-  — VALUES FOR LITHICS/qcm GREATER THAN THE 75th PERCENTILE

SPATIAL DISTRIBUTION OF LITHICS



-  — VALUES FOR GRAMS OF TOTAL SHELL/qcm GREATER THAN THE MEDIAN BUT LESS THAN THE 75th PERCENTILE
-  — VALUES FOR GRAMS OF TOTAL SHELL/qcm GREATER THAN THE 75th PERCENTILE

SPATIAL DISTRIBUTION OF SHELL REMAINS



-  — PRESENCE OF THE FIRE CRACKED ROCK

SPATIAL DISTRIBUTION OF FCR

KEY

- EXCAVATION UNIT.....
- SHOVEL TEST PIT.....
- ABANDONED ROAD.....
- FOOTPATH.....
- CONCENTRATION..... (=)
- SITE BOUNDARY.....

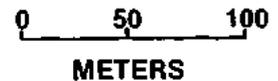


Figure 10. (Case 15). The boundary of this archeological site was determined by the density of artifacts found through extensive testing of the area. Although numerous concentrations of artifacts (lithics, shell remains, and fire-cracked rock) are shown across the hillside overlooking a marsh and cove, the National Register boundary for this site includes the largest area of artifact distribution.

sites, as evidenced by overlapping artifact areas.

Boundary Justification: The nominated area (geographic) of the floodplain includes the majority of four known collecting areas. The artifacts and features within the polygonal area demonstrate the presence of Late Woodland and Contact Period occupations, on which the statement of significance is based. Through a series of fortunate events surrounding a recent flooding episode of the river, the archeological remains of a large Late Woodland-Contact Period village were exposed in this area of the floodplain. The exposed domestic features and artifact concentrations were carefully recorded by amateur archeologists, but only within the areas fortuitously stripped of alluvium by the flood. Subsequently, the property owner intentionally refilled this area, thus recreating a deep, featureless plain. Without intensive archeological testing below the 1-3 meters of alluvium and fill above the prehistoric occupation zone, it is impossible to define the site boundaries on the basis of presence or absence of cultural materials. In fact, by comparison to the east bank of the river, which has been more intensively surface collected, it appears

that the distribution of prehistoric cultural materials is almost continuous across miles of land.

Case 15. Continuous Artifact Distribution: Prehistoric Camp Site Overlooking an Estuary: The site is located on a prominent hill on the western side of the mouth of a cove overlooking the southern half of a marsh. Concentrations were delimited all along the base of the hill (the base is at approximately the same location as the abandoned road shown as a dashed line on Figure 10). Concentrations also occur on its eastern and northeastern slopes, both of which include sizable areas that are nearly level. The site is in mainly open fields at present with thick shrubs in wet areas, scattered evergreens, and broad leafed forest undergrowth vegetation.

Two kinds of test units—shovel tests and excavation units—were used to define the site boundary and concentrations within the site. The density per .25 cubic meters of the number of lithics, grams of shell, and fire-cracked rock were calculated for each unit and mapped. Density contour lines using the median and 75th percentile values were drawn on large scale maps for each of the site areas. These lines were used as

boundaries between site and non-site areas and among concentrations within the site.

Boundary Description: The site is bounded by the marsh on the south and east, and by the density of artifact distributions (boundary established at the 75th percentile isopleth) on the north and the west.

Boundary Justification: An essential step for analyzing archeological remains on a regional basis is the careful identification of comparable units. This example establishes such units by using an explicit definition of two concepts—the site and the concentration. “Site” as used here refers to a bounded area within which artifact concentrations occur. Site boundaries were set along contour lines of artifact density, interpolated from shovel test and excavation unit data. In this context, sites are areas that contained concentration of artifact deposits. These concentrations represent areas bounded by contour lines representing a certain density within the site of one or more kinds of archeological materials e.g., lithics, shell or fire-cracked rock remains. The size, structure, shape, and contents, as well as other characteristics of each concentration, can then be investigated.

V. REFERENCES

- Childe, V. Gordon 1956 *A Short Introduction to Archaeology*. Collier Books, New York.
- Dancey, William S. 1981 *Archaeological Field Methods: An Introduction*. Burgess Publishing Company, Minneapolis, Minnesota.
- Delaware State Historic Preservation Office 1992 *Guidelines for Architectural and Archaeological Surveys in Delaware*. Dover, Delaware.
- Dunnell, R. and W. Dancey 1983 The Siteless Survey: A Regional Scale Data Collection Strategy. In *Advances in Archaeological Method and Theory*, Vol. 5. Edited by M. B. Schiffer. pp. 267-287. Academic Press, New York.
- Ebert, James 1992 *Distributional Archaeology*. University of New Mexico Press, Albuquerque.
- Henry, Susan L. 1993 *Protecting Archeological Sites on Private Lands*. National Park Service, Washington, DC.
- Joukowsky, Martha 1980 *A Complete Manual of Field Archaeology: Tools and Techniques of Field Work for Archaeologists*. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.
- Lewarch, Dennis E. and Michael J. O'Brien 1981 The Expanding Role of Surface Assemblages in Archaeological Research. In *Advances in Archaeological Method and Theory*, Volume 4. Edited by M. B. Schiffer. pp. 297-342. Academic Press, New York.
- Seifert, Donna J. 1995 *National Register Bulletin: Defining Boundaries for National Register Properties*. National Register of Historic Places, Washington, D.C.
- Shaffer, Gary D. and Elizabeth J. Cole 1994 Standards and Guidelines for Archeological Investigations in Maryland. *Maryland Historical Trust Technical Report Number 2*. Annapolis, Maryland.
- Townsend, Jan, John H. Sprinkle, Jr., and John Knoerl. *National Register Bulletin: Guidelines for Evaluating and Registering Historical Archeological Sites and Districts*. Washington, D.C.: National Register of Historic Places, National Park Service, U.S. Department of the Interior, 1993.
- Virginia Department of Historic Resources 1996 Guidelines for Archeological Investigations in Virginia: Additional Guidance for Implementation of the Federal Standards Entitled, *Archaeology and Historic Preservation: Secretary of Interior's Standards and Guidelines*. Richmond, Virginia.
- Wiley, Gordon R. and Philip Phillips *Method and Theory in American Archaeology*. University of Chicago Press, 1958.

Appendix C: Transportation Impact Analysis

DRAFT

APPENDIX C: TRANSPORTATION IMPACT ANALYSIS

Transportation Impact Analysis Report Contents

Project Description

A description of the project including a listing of all the building square footages, land uses, number of dwelling units and bedrooms. Projects with drive through facilities shall include the number of service windows and queue storage.

Project Location and Study Area

A brief description of the location within the City and the region shall be included in the section. In addition, roadways that afford access to the site and those that are included in the study area shall be identified. General terrain features within the study area should also be described.

The exact limits of the study area should be based on engineering judgment and an understanding of existing traffic conditions surrounding the site. In all instances, however, the study area limits shall be subject to approval of the Department. A vicinity map that shows the site and the study area boundaries in relation to the surrounding transportation system must be included.

Existing and Proposed Site Uses

The existing and proposed uses of the site should be identified in terms of the various zoning districts of the City and also the land use codes defined by Institute of Transportation Engineers (ITE). This information shall include square footage of the various uses or the number and size of the units. All driveways in the vicinity of the project that could affect operations shall also be shown.

Existing and Proposed Uses in the Vicinity of the Site

A complete description (including a map) of the existing land uses in the study area as well as their current zoning and use must be included. In addition, all vacant land within the study area and its assumed future uses must be identified. This latter item is especially important where large tracts of undeveloped land are in the vicinity of the site, and within the prescribed study area.

Graphics and Data Requirements

Traffic counts, including vehicular, pedestrian, and transit counts should be less than one year old. The use of older, published data may be approved for use by City staff if conditions have not changed. Traffic counts must be performed for all critical time periods such as AM, Midday, PM or Saturday peak hours. Traffic counts should be performed on typical midweek days (Tuesday, Wednesday, Thursday) during free from accidents, weather events, holidays, school closures, special events, etc.

Graphics should be included to illustrate the study area and vicinity, study intersections including photographs and lane diagrams for cross reference, existing, background and future traffic volumes.

Analysis Methodology and Software Requirements

All technical analysis of transportation networks must use standards and methodology provided by the latest editions of Institute of Transportation Engineers, Highway Capacity Manual (HCM) and Trip Generation Manual.

It is the City's requirement that the applicant use Synchro software to evaluate intersections. The applicant must submit Synchro files as part of the TIA package for review. Performance measures of effectiveness shall include level of service, vehicle delay, and volume to capacity ratio.

Among parameters input to code traffic models, standard normal ranges of saturation flow for travel lanes, general signal timing settings, normal values for percentages of heavy vehicles, peak hour factors and headway factors must be used.

Any deviation from default values for parameters used in the HCM or any software packages should be clearly noted in the report and is subject to approval by the City.

Additional technical analysis requested by the City on a case by case basis may include:

- Arterial Travel Time and Delay
- Site access & on-site circulation
- Vehicle Classification
- Parking Demand, Utilization and Turnover studies
- Queuing analysis
- Sight distance analysis
- Gap and Speed studies
- Origin-Destination Studies
- Traffic signal timing optimization
- Signal warrant analysis per Manual on Uniform Traffic Control Devices guidelines
- Left turn phasing analysis for signalized intersections
- Safety analysis and review of historical accident data
- Traffic Calming evaluation
- Pedestrian and Bicycle Level of Service
- Transit Boarding and Alighting and Level of Service, and
- Evaluation of intersection geometry including turning radii, particularly related to freight movement

Trip Generation

Tabulate the estimated number of daily trips and AM and PM peak hour trips generated by the proposed project entering and exiting the site. Trip generation factors and source are to be included in the report. The trip generation rates contained in the latest edition of the Institute of Transportation Engineers Trip Generation Manual should generally be used.

Internal trip reduction can only be applied for mixed use types of developments and pass-by trip reduction for retail/commercial types of developments. Pass-by trips are those made as intermediate

stops on the way from an origin to a primary trip destination. They do not affect the driveway or site access volumes but do affect the amount of traffic added to the adjacent street system. Pass-by trips can be estimated for certain types of commercial developments using the most current version of the ITEs' Trip Generation Manual. However, the City must approve pass-by trip estimates for each development on a case-by-case basis, and reserves the option of not allowing pass-by trip reductions if sufficient supporting data is absent.

Internal or pass-by trip reduction assumptions will require analytical support based on verifiable actual similar developments to demonstrate how the figures were derived and will require approval by the City.

Trip Distribution

Diagrams showing the percentages and volumes of the project and nearby project's AM and PM peak hour trips logically distributed on the roadway system must be provided.

If it is assumed that new routes will alter traffic patterns, adequate documentation including traffic distribution maps must be provided showing how and why these routes will alter traffic patterns.

Related Projects List

A list of related projects that are approximately within a 2.5 mile radius of the project site and would reasonably be expected to be in place by the project's build out year must be included in the report. Related projects should include all pending, approved, recorded, or constructed projects that are not occupied at the time of the existing traffic counts.

The City and Boone County should be contacted to obtain the latest listings for the vicinity of the proposed development. A table and a map showing the status, project/zone change/conditional use permit/parcel map/tract number, and the location of each project must be provided.

Traffic Volume Projections

Background traffic volumes are composed of existing volumes and an accepted general growth of traffic in the study area. An appropriate growth rate is subject to City approval and must be incorporated in the study to forecast any future volumes.

Level of Service Analysis

The standard criterion used to define quality of traffic flow is "level of service"(LOS). This is a qualitative assessment of factors such as speed, volume, geometry, delays, and ease of maneuvering. All analysis techniques specify the quality of operations as a letter with 'A' representing the best operating condition and 'F' representing the worst.

The minimum acceptable design level of service (LOS) in the City is 'C'. At intersections, analyses should show an overall LOS of 'C' with no individual movement operating at less than 'D' to be considered acceptable and not require mitigation measures.

LOS	Signalized Intersection Delay	Unsignalized Intersection Delay
A	≤10 sec	≤10 sec
B	10–20 sec	10–15 sec
C	20–35 sec	15–25 sec
D	35–55 sec	25–35 sec
E	55–80 sec	35–50 sec
F	≥80 sec	≥50 sec

On occasion, level of service ‘D’ may be allowed for peak period in dense urban condition per City’s discretion. Other than Level of Service, other factors such as delay, queue volume/capacity ratio and other items may need to be analyzed as part of the report.

The report shall include a discussion of assumptions made in the above calculations, such as saturation flow rates, peak hour factors, and lane configurations. Full documentation of the LOS calculations must be provided in an appendix in the TIA report.

Analysis of Roadway Conditions

Analysis of roadway conditions should incorporate traffic data, roadway geometry, alternative modes of access, levels of service (LOS), delays and volume to capacity ratios. The analysis should be performed for the following scenarios during AM, PM peak hours for all projects and also for Midday peak hour when appropriate.

Full details of the analysis must be included in the appendix. Results should be summarized in tables for cross reference and must include the following:

- Existing Conditions
- Existing traffic volumes on existing roadways
- No Build Baseline
- Existing traffic volumes on existing roadways plus project in project completion year.
- No Build Horizon Year

Existing Traffic volumes on existing (or planned and programmed) roadway system analyzed for 20 years from project completion. If improvements/modifications to the existing roadway system are planned and programmed, City staff will provide this information to the applicant and the improved roadway system will be used as a base for testing horizon year traffic conditions as appropriate.

If roadway improvements or modifications beyond those formally planned or programmed are assumed in the ‘no-build’ analysis, then these improvements or modifications will be considered to be the responsibility of the applicant. If this is not the case, then the rationale for considering such improvements must be clearly described.

Full Build Horizon Year

Full Build Horizon Year analysis must include Existing+ Background + Site generated traffic volumes on existing (or planned and programmed) roadway system analyzed for 20 years from project completion.

If improvements/modifications to the existing roadway system are planned and programmed, City staff will provide this information to the applicant and the improved roadway system will be used as a base for testing horizon year traffic conditions as appropriate.

If roadway improvements or modifications beyond those formally planned or programmed are assumed in the 'no-build' analysis, then these improvements or modifications will be considered to be the responsibility of the applicant. If this is not the case, then the rationale for considering such improvements must be clearly described.

Significant Impact Threshold

Intersections currently in compliance with LOS standard A project will be considered to have a significant impact if the project will cause the intersection to operate at a level of service that violates the standard overall LOS of 'C' with no individual movement operating at worse than 'D'. On occasion, level of service 'D' may be allowed for peak periods in very dense urban condition per City's discretion.

Intersections currently NOT in compliance with LOS standard, a project will be considered to have a significant impact if the project will cause the intersection to operate at a level of service that violates the standard LOS mentioned above and the proposed project increases average control delay at the intersection by four (4) seconds or more.

Mitigation Measures

If it is determined that a development will have significant impact, the TIA must identify feasible mitigation measures which would mitigate the project and/or other related projects' significant impacts to a level of insignificance. Also, the TIA must identify the mitigation measures which will be implemented by other parties. Those mitigation measures that are assumed to be implemented by others parties will be made a condition of approval for the project to be in place prior to issuance of building permits.

Mitigation measures required for the project may include, but are not limited to, the following:

Traffic Engineering Techniques;

- Locate access points to optimize visibility and reduce potential conflict.
- Design parking facilities to avoid queuing into public streets during peak arrival periods.
- Provide additional off-street parking.
- Dedicate visibility easements to assure adequate sight distance at intersections and driveways.
- Signalize or modify traffic signals at intersections.
- Install left turn phasing and/or multiple turning lanes to accommodate particularly heavy turning movements.

- Widen the pavement to provide left or right turn lanes to lessen the interference with the traffic flow.
- Widen intersection approaches to provide additional capacity.
- Prohibit left turns to and from the proposed development.
- Provide raised barrier median on street.
- Restrict on street parking during peak hours to increase street capacity.

Exemptions

The following development activities are excluded from the obligation to complete a TIA:

Replacement of a nonresidential structure with a new nonresidential structure of the same size and use at the same site or lot when a completed application for the building permit for such replacement is accepted by the City within 12 months of the demolition or destruction of the prior nonresidential structure. A replacement nonresidential structure shall be considered to be the same size as the prior nonresidential structure if the gross floor area of the building will not be increased by more than 100 square feet;

Replacement of a residential structure with a new residential structure of the same number of bedroom units at the same site or lot when a completed application for the building permit for such replacement is accepted by the City within 12 months of the demolition or destruction of the prior residential structure; and police and fire stations.

Appendix D: Missouri Department of Transportation Access
Management Guidelines

DRAFT

**MISSOURI DEPARTMENT OF TRANSPORTATION
ACCESS MANAGEMENT
GUIDELINES**

2006

TABLE OF CONTENTS

1.0	<u>ANALYSIS OF RETROFIT APPLICATIONS</u>	1
2.0	<u>MINIMUM SPACING BETWEEN INTERCHANGES</u>	3
3.0	<u>CLEARANCE OF FUNCTIONAL AREAS OF INTERCHANGES</u>	4
4.0	<u>FREEWAY AND EXPRESSWAY TRANSITION</u>	6
5.0	<u>AT-GRADE INTERSECTIONS SPACING</u>	7
6.0	<u>TRAFFIC SIGNALS SPACING</u>	8
7.0	<u>MEDIAN OPENING SPACING</u>	9
8.0	<u>RAISED MEDIANS</u>	11
9.0	<u>AUXILIARY ACCELERATION AND TURNING LANES</u>	12
10.0	<u>TWO-WAY LEFT-TURN LANES ("Five-Lane" Facilities)</u>	23
11.0	<u>THREE-LANE CROSS SECTIONS</u>	25
12.0	<u>FRONTAGE AND BACKAGE ROADS</u>	27
13.0	<u>DRIVEWAY SPACING</u>	28
14.0	<u>DRIVEWAY CORNER CLEARANCE</u>	30
15.0	<u>SPACING / CLEARANCE FOR RIGHT-IN, RIGHT-OUT DRIVEWAYS</u>	31
16.0	<u>DRIVEWAY GEOMETRICS</u>	33
17.0	<u>PARKING ON FACILITIES</u>	38

1.0 ANALYSIS OF RETROFIT AND PERMIT APPLICATIONS

Where access is being managed on an existing roadway (a retrofit or permit project), it is often not possible to incorporate and attain all of the access management criteria due to economic, physical or other constraints. Care must be taken to balance economic interests with transportation needs. Economic impacts to business must be carefully considered and efforts must be made to mitigate those impacts. Collaboration with property owners and other stakeholders is the most effective method to achieve improvements that satisfy both operational and economic needs.

The collaboration process should begin in the early stages of the project. MoDOT staff should discuss the fundamentals and benefits of managed access with the stakeholders. Emphasis should be placed on safety and operational benefits and how those benefits can have a positive impact on property values and the business climate. Most stakeholders are more receptive after they gain an understanding of the concepts.

Understanding the concepts may not completely alleviate concerns. Adjoining property owners can remain hesitant to application of the principles on their individual properties. Personal meetings with each property owner to discuss and mitigate the needs of their site are often the best way to alleviate the concerns. Multiple meetings with some individuals may be necessary as proposals are discussed and their impacts are assessed. The resulting design may not be entirely satisfactory to either party. Instead the goal of the process should be to produce acceptable operational and safety impacts, while gaining consent of the stakeholders.

In cases where the access management criteria cannot be met, a detailed analysis should be performed to determine the optimum solution. This solution should strive to improve safety and operations along the roadway, and maintain uninterrupted flow on the transportation system and adequate access to the adjoining properties. Flexibility, good judgment, negotiation and compromise will be necessary to determine the right solution for each particular location.

While Highway Capacity Manual procedures can provide quick and reliable results for predicting whether or not a facility will be operating at or below capacity, they are generally limited in their ability to evaluate systems effects, queues and the effects of queues, and over saturated conditions. Additionally, there are several gaps in the Highway Capacity Manual procedures, such as roadways with the following:

- closely spaced traffic signals
- two-way left turn lanes
- roundabouts
- tight diamond interchanges
- freeway weaves
- other unique scenarios

In cases where Highway Capacity Manual procedures will not adequately analyze the roadway improvements, a microsimulation analysis may be appropriate. The VISSIM software package has been identified as the most capable of analyzing the limitations and gaps of the Highway Capacity Manual. In regards to roundabouts, the Highway

Capacity Manual may be used as a primary check of a roundabout's capacity, but additional operational analyses should use either the SIDRA or VISSIM software package.

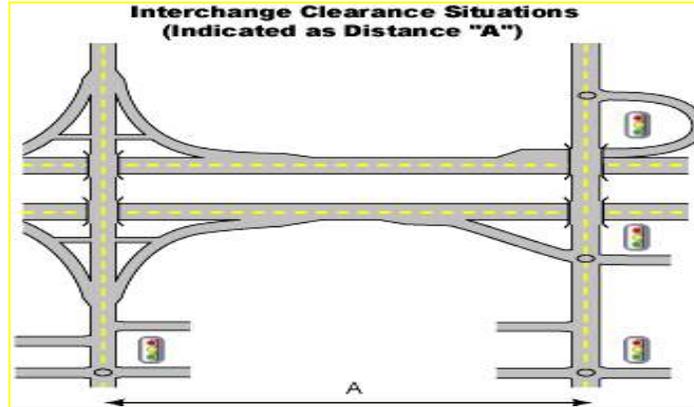
2.0 SPACING BETWEEN INTERCHANGES

What This Guideline Means

Adequate spacing is needed between grade-separated interchanges on high-speed roads to allow for safe and efficient weaving or changing of lanes for traffic that is entering and exiting. Generally, speeds are higher in rural areas; therefore, interchanges must be spaced farther apart there than in urban areas.

Interchange spacing decisions should be supported by an operational and level of traffic service analysis. Connectivity, speed, and safety should also be considered. In highly dense urban central city areas, the configuration of the local street system may require a closer interchange spacing to maintain connections and mobility.

Diagram



Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major	2– 3 miles *	2 – 5 miles
Minor	Generally Not Applicable	Generally Not Applicable

* Spacing less than two miles in urban areas may be considered, when analysis indicates the lesser spacing is acceptable. However, all other options should be considered, before spacing is reduced.

Spacing greater than the distances shown is advantageous for safety and operations. Distances shown are between the centers of interchanges.

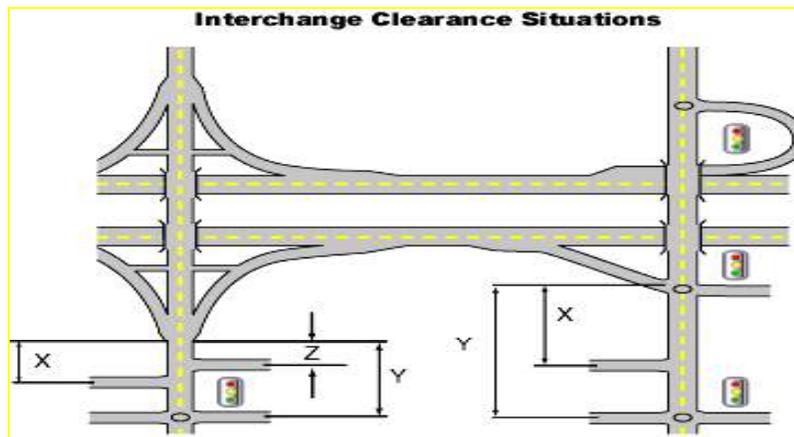
3.0 CLEARANCE OF FUNCTIONAL AREAS OF INTERCHANGES

What This Guideline Means

Adequate space is needed for traffic to make the transition from a road with interchanges to a road with at-grade access points. The functional area of the interchange is the area in which merging and diverging of traffic takes place. Drivers must travel along an exit ramp, find acceptable gaps, change lanes (weave), and merge within this distance.

A safe distance for this activity to occur should be provided from the end of the off ramp to the first driveway, median opening, or intersection with a public road. (This is measured from the point of intersection of the ramp baseline and roadway centerline.) When only right turns into or out of driveways or public roads are involved, a shorter clearance area may be used. These guidelines also apply to on-ramps and off ramps not associated with an interchange.

Diagram



X = Distance from baseline off-ramp to first right-in, right-out driveway/public road intersection.

Y = Distance from baseline off-ramp to first major public road intersection, full median opening, or left-turn opportunity.

Z = Distance from last right-in, right-out opportunity to baseline on-ramp.

Spacing greater than the distances shown is advantageous for safety and operations.

Guidelines for Interchange Area Clearance

Type of Area	Distance from Ramp to Right-In, Right-Out Driveway (X)	Distance to First Major Public Road Intersection, Full Median Opening, Or Left-Turn Opportunity (Y)*
Major	750 feet – 1,320 feet	1,320 feet – 2,640 feet
Minor	Generally Not Applicable	Generally Not Applicable

*Left turns should not be allowed in this section of roadway. The public road intersection is likely to become a signalized intersection as the interchange area develops. Right –in, right –out driveways configuration should include a non-traversable median.

Note: All ramp measurements are taken to or from baseline ramp.

Any clearance of less than the range contained in the above table should be supported by a study of alternatives to ensure safety and traffic flow. All reasonable alternatives, including relocating the interchange to a different location should be considered. Other alternatives to be examined may include installation of raised medians, construction of a single point urban interchange, the use of roundabouts at the ramp and or outer road intersections, or alternative access ways such as frontage and backage roads.

4.0 FREEWAY AND EXPRESSWAY TRANSITION

What This Guideline Means

Some major roads will consist of a mixture of freeway (with grade-separated interchanges and no driveway accesses) and expressways (with at-grade public road intersections and driveways). The transition between freeway and expressway must be carefully planned so drivers are well aware that a change in the access character of the roadway has occurred. This guideline does not apply to minor roads.

The following distances should be provided between the taper of the final ramp on a freeway cross section to the first at-grade intersection (and potentially the first traffic signal) on an expressway cross-section on the same facility.

Diagram



Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	No at-grade intersections	No at-grade intersections
Major - non Freeway	½ mile (2,640 feet) – 1 mile (5,280 feet)	1 mile (5,280 feet)
Minor	Generally Not Applicable	Generally Not Applicable

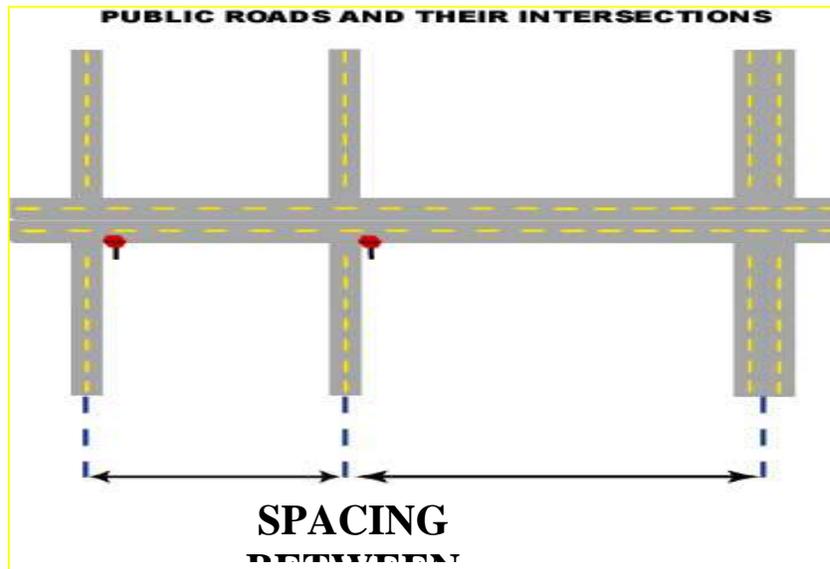
Spacing greater than the distances shown is advantageous for safety and operations.

5.0 AT-GRADE INTERSECTIONS SPACING

What This Guideline Means

This guideline provides for adequate spacing between intersections. Major roadways are mainly intended to serve through traffic and should have intersections that are spaced the farthest apart. Minor roadways provide some service to through traffic but also provide direct access to property; therefore, they can be placed closer together.

Diagram



Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	No at grade intersections	No at grade intersections
Major – Non Freeway	½ mile (2,640 feet) – 1 mile (5,280 feet)	> 1 mile (5,280 feet)
Minor	⅛ mile (660 feet) - ¼ mile (1,320 feet)	¼ mile (1,320 feet) - ½ mile (2,640 feet)

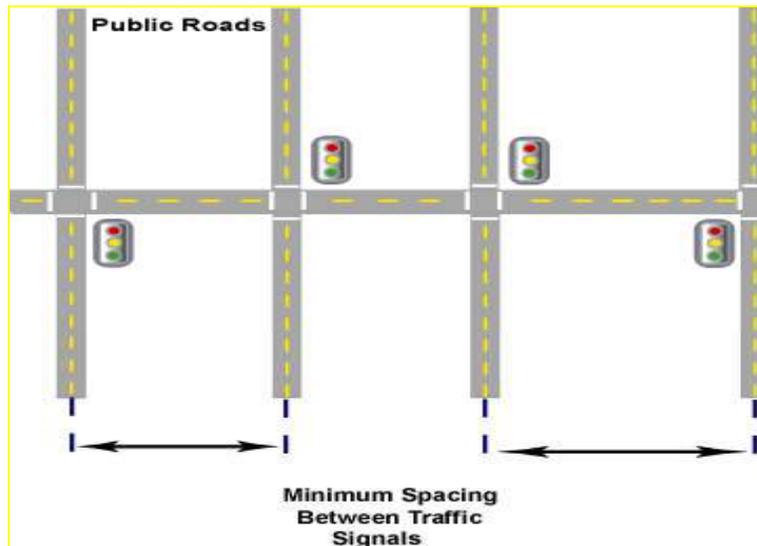
Spacing greater than the distances shown is advantageous for safety and operations.

6.0 TRAFFIC SIGNAL SPACING

What This Guideline Means

Appropriate signal spacing is needed to preserve efficient traffic flow and progression on urban arterial roadways; for instance, a quarter- or half-mile spacing allows traffic signals to be effectively interconnected and synchronized. Adequate spacing will also tend to reduce rear-end collisions and “stop and go” driving that increases congestion, delay, and air pollution. In urban areas, these guidelines were developed to allow for smooth operations given a 90-second total traffic signal cycle length.

Diagram



Minimum Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	Traffic signals not allowed	Traffic signals not allowed
Major – Non Freeway	½ mile (2,640 feet) to 1 mile (5,280)	See note below *
Minor	¼ mile (1320) to ½ mile (2,640 feet)	See note below *

* Rural traffic signals are generally isolated signals rather than signals placed in a progression along a route. Signals should be placed at least one mile (5,280 feet) apart because of high operating speeds in rural areas.

7.0 MEDIAN OPENING SPACING

What This Guideline Means

Openings in raised medians should only be provided to accommodate turning traffic in locations where this can be safely done. Where openings are provided, an adequate spacing between them is necessary to allow for weaving of traffic to preserve traffic flow and provide for safe lane changes and turns.

A full opening allows turns to be made in both directions; a directional opening allows turns to be made in only one direction. An example of a directional median would be one that allows left turns into a driveway but does not allow left turns to be made out.

Median openings should not be allowed under the following circumstances:

- On interstates or other freeways
- Within the functional area of an interchange
- Within the functional area of an intersection between two public roads
- At locations that have high accident rates

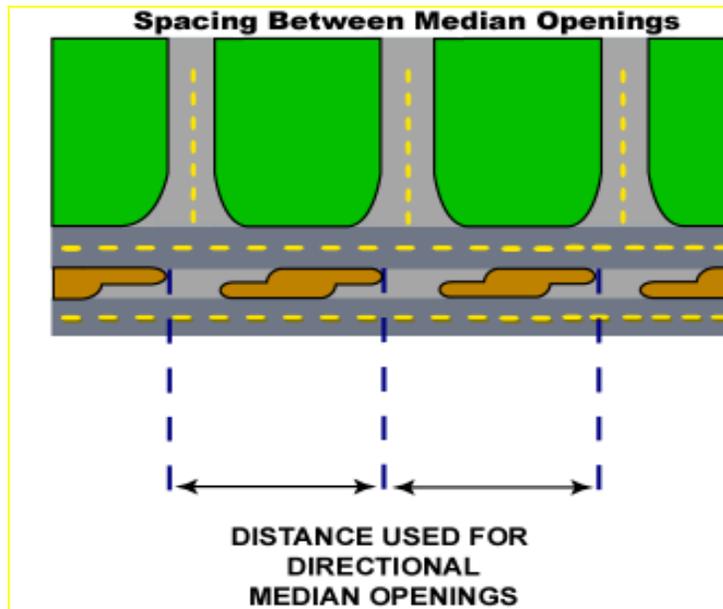
Under conditions of inadequate sight distance, median openings *shall not* be allowed.

Traffic studies should support the required length of queue storage for major traffic generators such as a shopping mall or industrial plant. For additional guidance on left turn queue storage see

Accommodating Safe U-Turns

In cases where left turns are restricted by lack of median openings, care must be taken to allow for U-turns to be made in a safe manner. U-turns can be safely accommodated through a variety of means, including signal phasing and timing, widening, and including physical design features such as turning lanes and “jug handles.” Where U-turns cannot be made safely, they should be explicitly prohibited. U-turn opportunities should be designed with an appropriate typical design vehicle.

Diagram



Minimum Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	No median openings allowed	No median openings allowed
Major – Non Freeway	1,320 to 2,640 feet (full) 660 to 1320 feet (directional)	1320 to 2640 feet (spacing should increase with higher posted speed)
Minor	1,320 feet (full) 660 feet (directional)	Generally not applicable

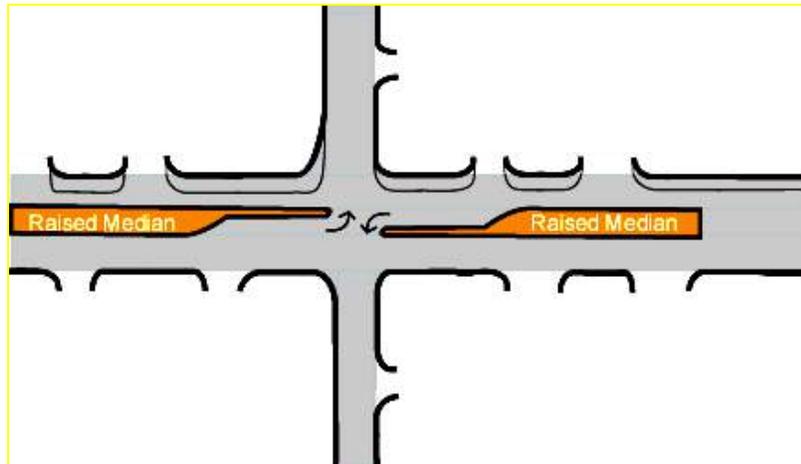
8.0 RAISED MEDIANS

What This Guideline Means

Raised medians are the most effective access management strategy on high-volume urban routes. Roadways with raised medians are at least 25 percent safer than multi-lane undivided sections and 15 percent safer than two-way left-turn lane cross sections in such high traffic situations.

In general, use of raised medians is recommended where current and projected traffic volume is greater than 28,000 average annual daily traffic (AADT). Raised medians are especially recommended in corridors where the traffic volume is high, the density of commercial driveways is high (over 20 -30 per mile in both directions), and other access management strategies such as driveway consolidation and corner clearance are not practical. Raised medians should be used on arterial facilities with three or more through traffic lanes in each direction.

Diagram



Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	Not applicable	Not applicable
Major – Non Freeway	Raised median when current and projected traffic exceeds 28,000 AADT	flush median
Minor	Raised median when current and projected traffic exceeds 28,000 AADT	flush median

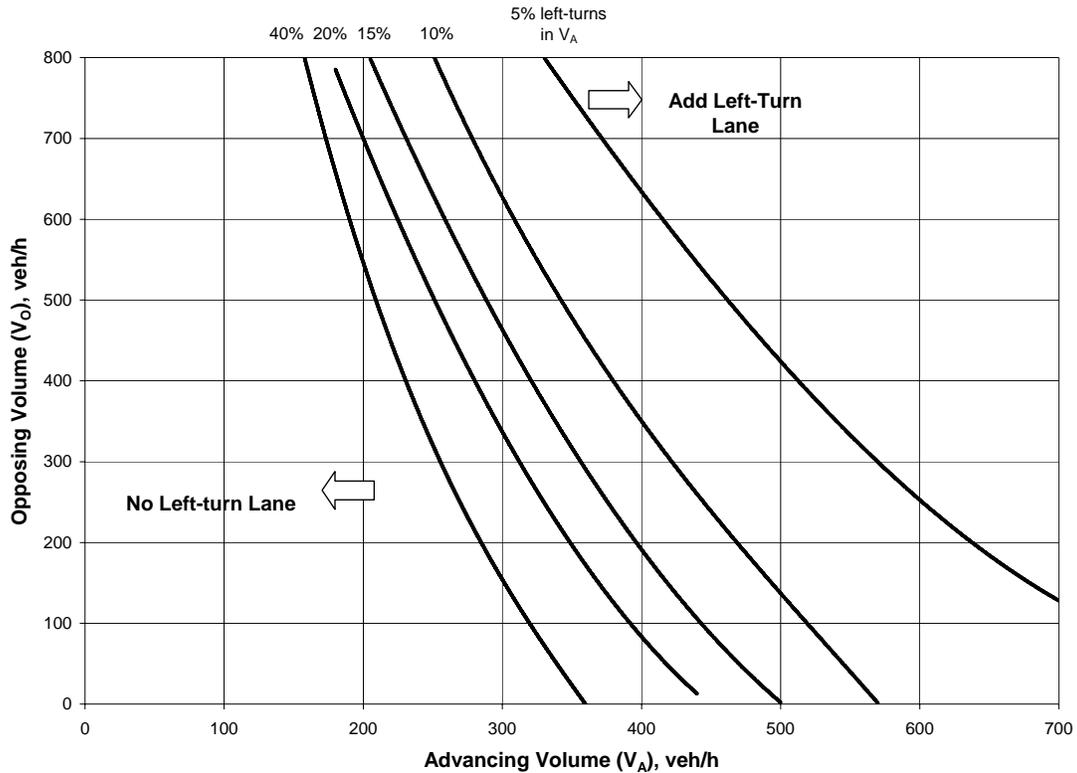
9.0 AUXILIARY ACCELERATION AND TURNING LANES

What This Guideline Means

Dedicated left- and right-turn lanes should be provided in situations where traffic volumes and speeds are relatively high and conflicts are likely to develop at public road intersections and driveways between through and turning traffic. Auxiliary lanes are an asset in promoting safety and improved traffic flow in such situations. Some major applications for and considerations for the design of auxiliary lanes are as follows:

- Installing a right-turn acceleration lane. These lanes allow entering vehicles (those that have turned right from a driveway or minor public road onto the major route) to accelerate before entering the through-traffic flow. Acceleration lanes should be considered on roadway segments, intersections and driveways with high traffic volumes where speed differential could result in unacceptable conflicts and/or delay. Acceleration lanes may also be appropriate where crash experience indicates a problem with right-turning, entering vehicles. The right-turn acceleration lane should be of a sufficient length to allow safe and efficient merge maneuvers. The design length, tapers, and other features of right-turn acceleration lanes should be guided by a traffic study.
- Installing auxiliary left-turn lanes. Such lanes, installed in the roadway center, are intended to remove turning vehicles from the through traffic flow. This should reduce the frequency of rear-end collisions at locations where there is considerable left-turn ingress activity, such as major driveways and minor public road intersections. Left-turn lane warrants are shown in the following figures. To use the figures, peak hour traffic counts, including directional splits, will be required, which may be obtained from District Traffic Staff. In addition, the ITE Trip Generation Manual may be used as an estimate for peak hour traffic counts. For design year analyses, appropriate growth rates will be required, which may be obtained from Planning Staff.
- The use and design of auxiliary left-turn lanes should be guided by a traffic study. In general, auxiliary left-turn lanes must be long enough to accommodate a safe deceleration distance and to provide adequate storage of a queue for expected peak hour turning traffic. The Engineering Policy Guide should be consulted for appropriate storage and deceleration lengths.

Left Turn Lane Guideline for Two-Lane Road ≤ 40 mph (60 km/h)



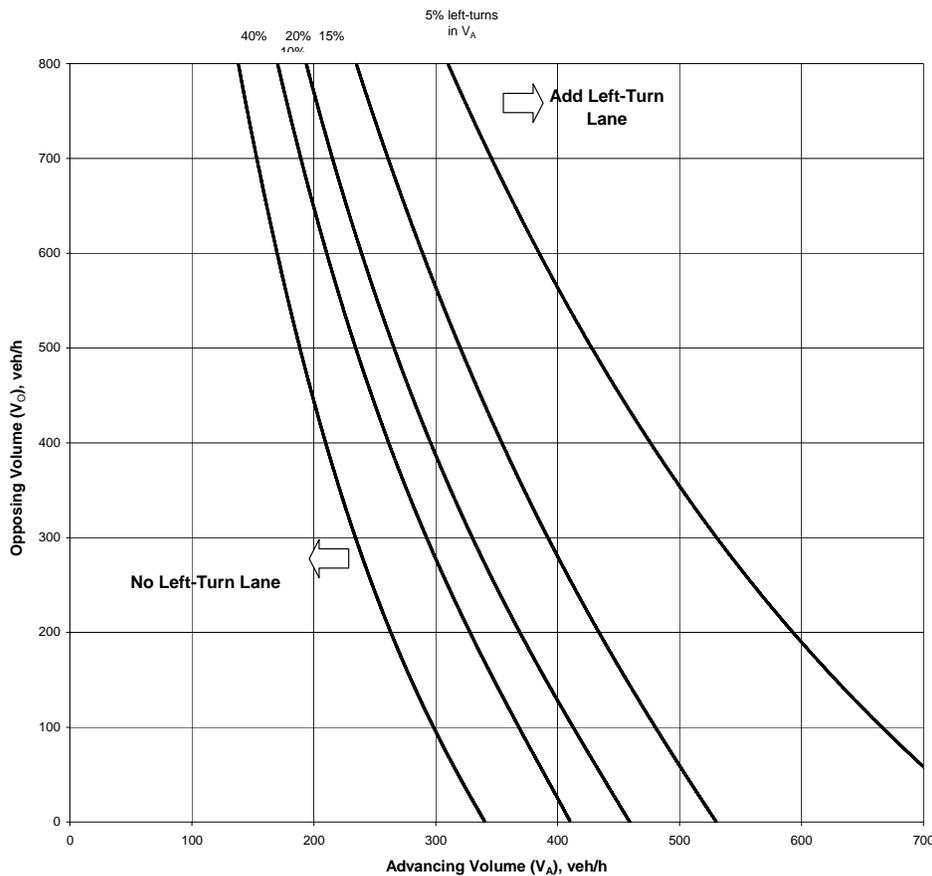
The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume should include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Advancing Volume (veh/hr) - V_A - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the left turning vehicle.
3. Operating Speed (mph) - The greater of design or posted speed.
4. Percentage of left turns in V_A

Left turn lane is not needed for left turn volume less than 10 vph. However, criteria other than volume, such as crash experience, may be used to justify a left turn lane.

The appropriate trend line is identified on the basis of the percentage of left-turns in the advancing volume, rounded up to the nearest percentage trend line. If the advancing and opposing volume combination intersects above or to the right of this trend line, a left-turn lane is appropriate.

Left Turn Lane Guideline for Two-Lane Road - 45 mph (70 km/h)



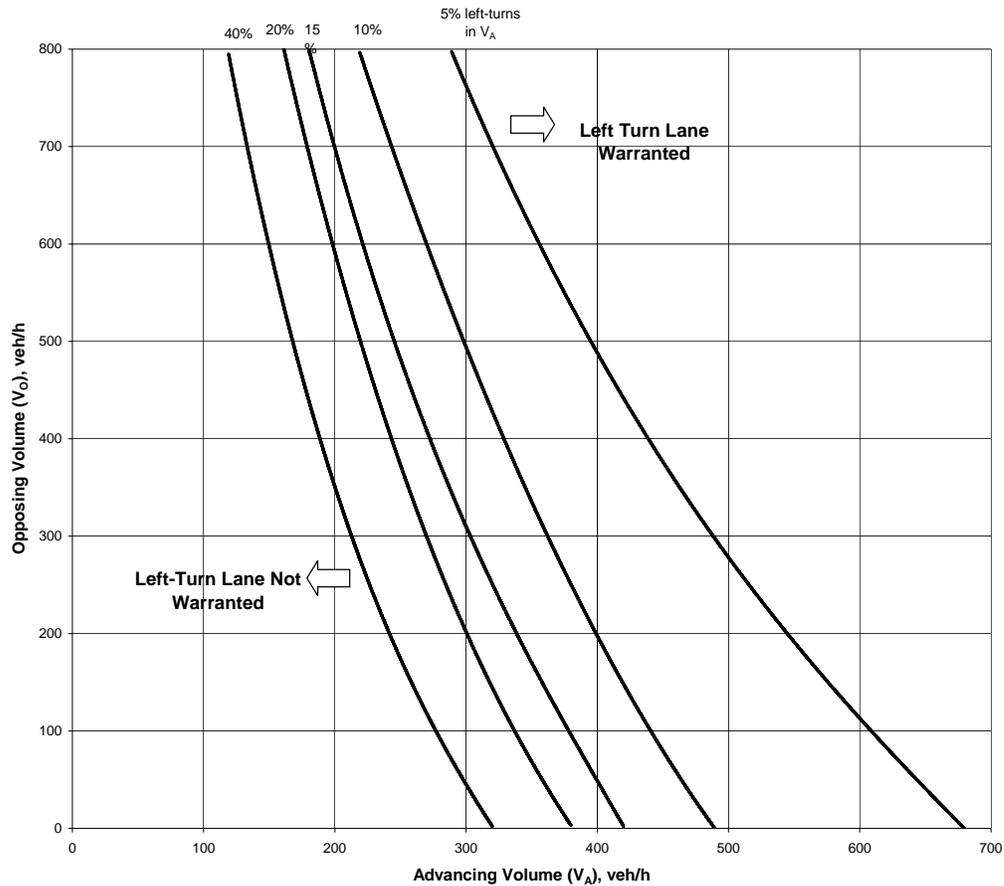
The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume should include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Advancing Volume (veh/hr) - V_A - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the left turning vehicle.
3. Operating Speed (mph) - The greater of design or posted speed.
4. Percentage of left turns in V_A

Left turn lane is not needed for left turn volume less than 10 vph. However, criteria other than volume, such as crash experience, may be used to justify a left turn lane.

The appropriate trend line is identified on the basis of the percentage of left-turns in the advancing volume, rounded up to the nearest percentage trend line. If the advancing and opposing volume combination intersects above or to the right of this trend line, a left-turn lane is appropriate.

Left Turn Lane Guideline for Two-Lane Road - 50 mph (80 km/h)



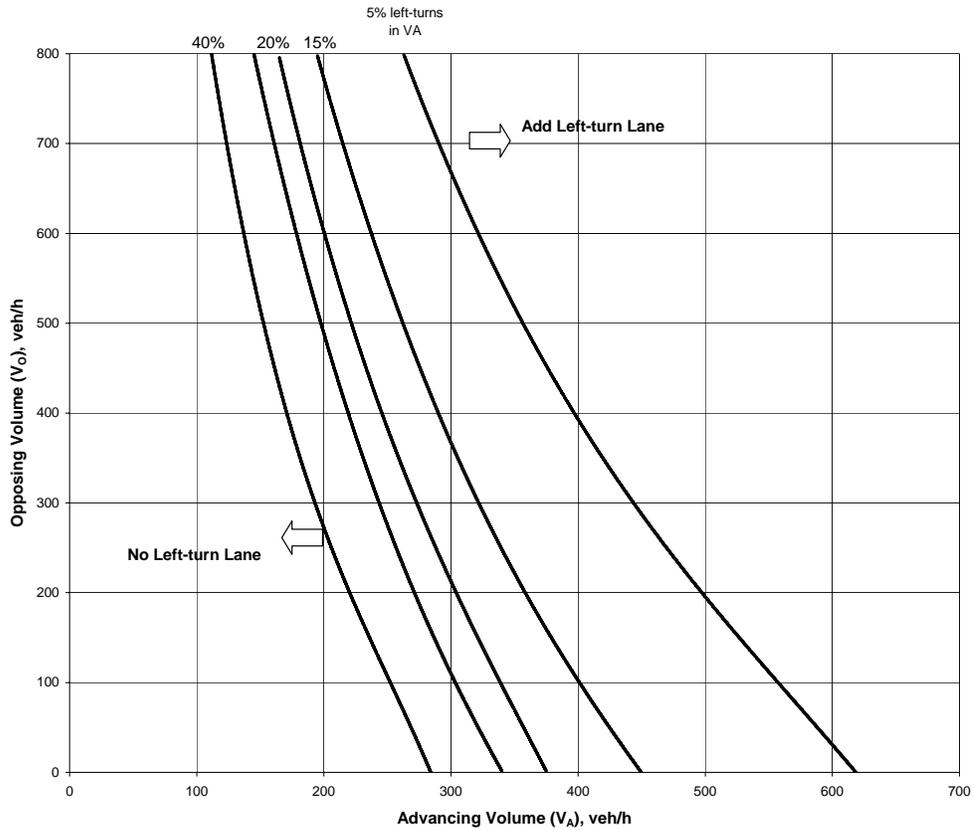
The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume should include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Advancing Volume (veh/hr) - V_A - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the left turning vehicle.
3. Operating Speed (mph) - The greater of design or posted speed.
4. Percentage of left turns in V_A

Left turn lane is not needed for left turn volume less than 10 vph. However, criteria other than volume, such as crash experience, may be used to justify a left turn lane.

The appropriate trend line is identified on the basis of the percentage of left-turns in the advancing volume, rounded up to the nearest percentage trend line. If the advancing and opposing volume combination intersects above or to the right of this trend line, a left-turn lane is appropriate.

Left Turn Lane Guideline for Two-Lane Road - 55 mph (90 km/h)



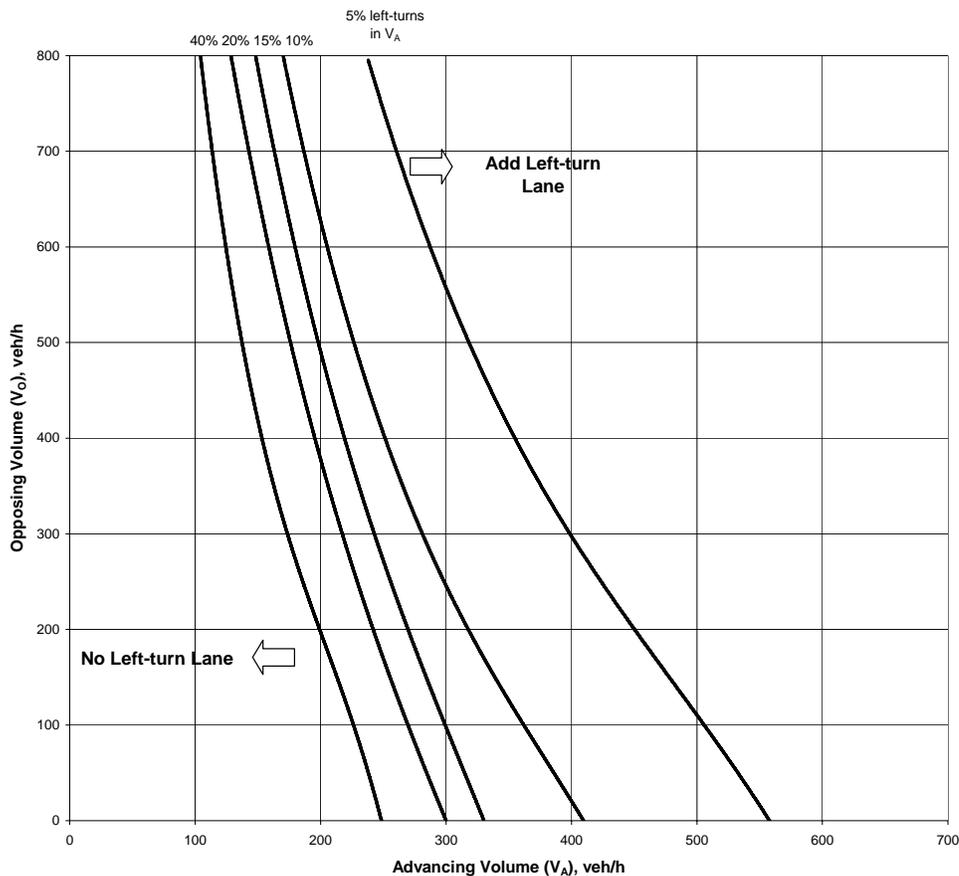
The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume should include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Advancing Volume (veh/hr) - V_A - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the left turning vehicle.
3. Operating Speed (mph) - The greater of design or posted speed.
4. Percentage of left turns in V_A

Left turn lane is not needed for left turn volume less than 10 vph. However, criteria other than volume, such as crash experience, may be used to justify a left turn lane.

The appropriate trend line is identified on the basis of the percentage of left-turns in the advancing volume, rounded up to the nearest percentage trend line. If the advancing and opposing volume combination intersects above or to the right of this trend line, a left-turn lane is appropriate.

Left Turn Lane Guideline for Two-Lane Road ≥ 60 mph (100 km/h)



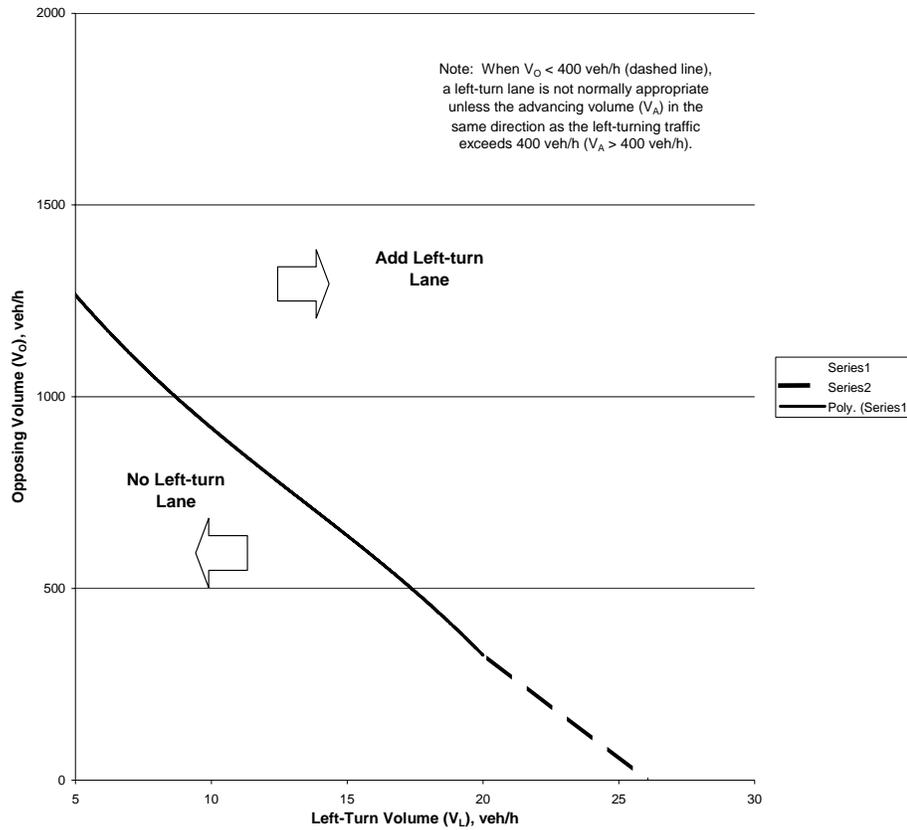
The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume should include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Advancing Volume (veh/hr) - V_A - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the left turning vehicle.
3. Operating Speed (mph) - The greater of design or posted speed.
4. Percentage of left turns in V_A

Left turn lane is not needed for left turn volume less than 10 vph. However, criteria other than volume, such as crash experience, may be used to justify a left turn lane.

The appropriate trend line is identified on the basis of the percentage of left-turns in the advancing volume, rounded up to the nearest percentage trend line. If the advancing and opposing volume combination intersects above or to the right of this trend line, a left-turn lane is appropriate.

Left Turn Lane Guideline for Four-Lane Undivided Roadway



The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume should include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Left-Turn Volume - V_L

If the opposing and left-turn volume combination intersects above or to the right of the trend line, a left-turn lane is appropriate.

- Installing auxiliary right-turn lanes. The use of dedicated right-turn lanes should also be guided by a traffic study. In general, dedicated right-turn lanes should be provided in both rural and urban areas on two lane routes as shown in the figures below. Right-turn lane warrants are shown in the following figures. To use the figures, peak hour traffic counts, including directional splits, will be required, which may be obtained from District Traffic Staff. In addition, the ITE Trip Generation Manual may be used as an estimate for peak hour traffic counts. For design year analyses, appropriate growth rates will be required, which may be obtained from Planning Staff.

Dedicated right turn lanes should also be strongly considered in situations where:

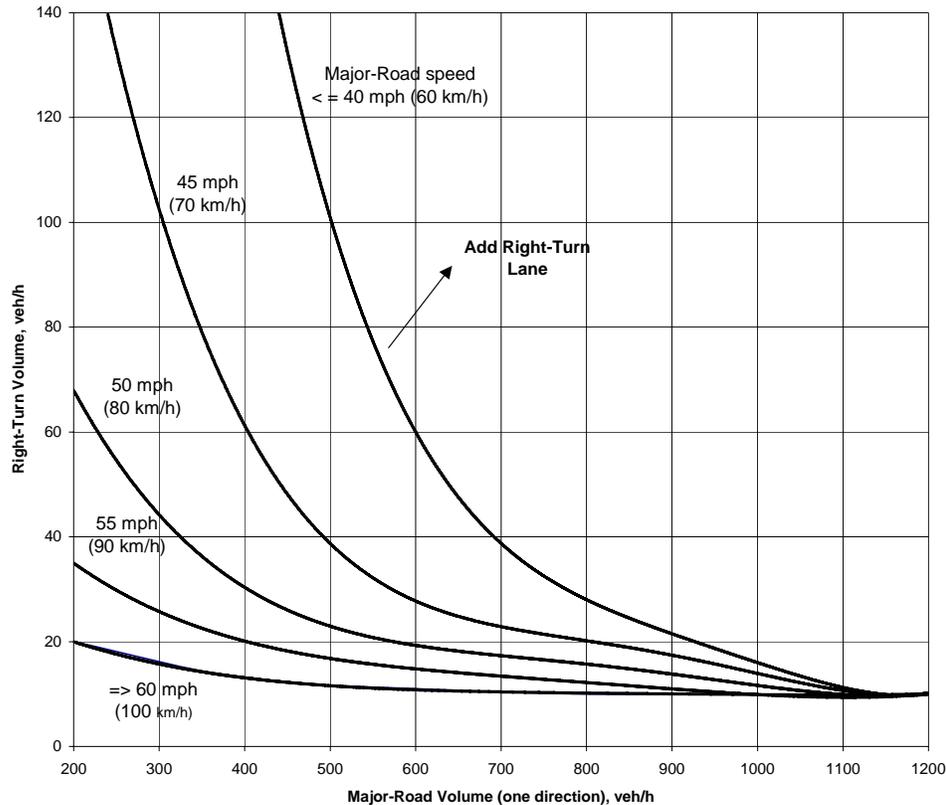
- Poor internal site design and circulation leads to backups on the mainline. Auto-oriented businesses with short drive-through lanes or poorly-designed parking lots would be prime examples of this situation.
- The peak hour turning traffic activity is unusually high (e.g. greater than 10 percent of the daily total.)
- Operating speeds on the mainline route are very high (greater than 60 miles per hour) and right turns would generally not be expected by drivers.
- The driveway or minor public road intersection is difficult for drivers to see.
- The driveway entrance is gated or otherwise must be entered very slowly.
- Right turning traffic consists of an unusually high number of trailers or other large vehicles.
- The intersection or driveway angle is highly skewed.
- Rear end collision experience is unusually high at a location.

Diagram



As with any auxiliary turning lane, dedicated right-turn lanes should be designed based on the results of a traffic study.

Right Turn Lane Guideline for Two-Lane Roadway



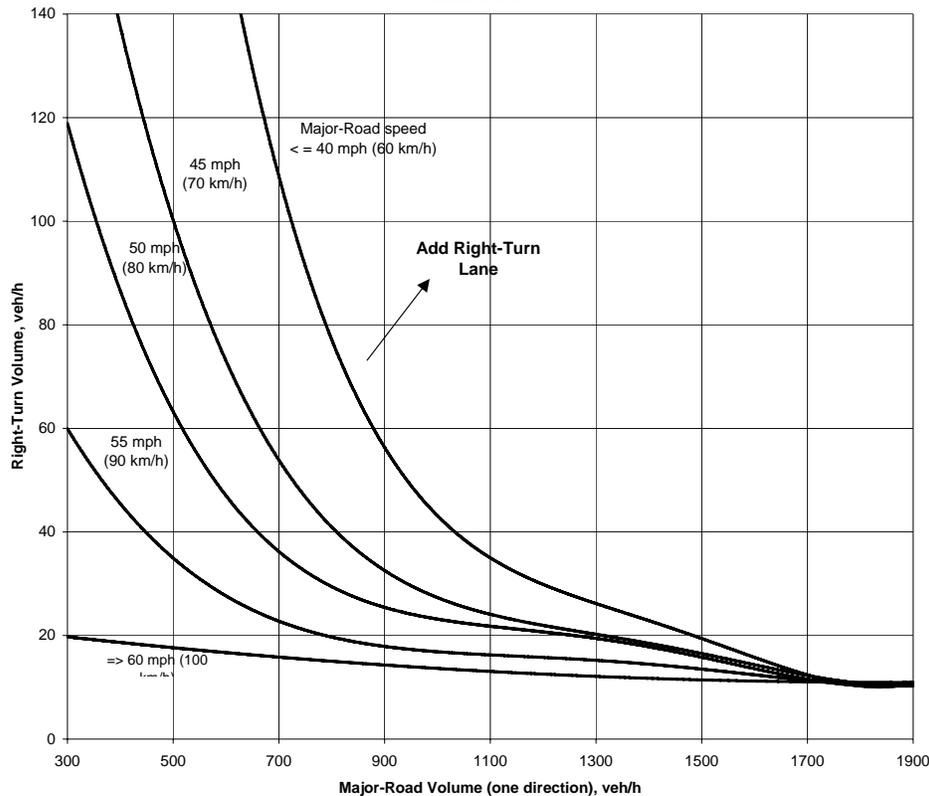
The following data are required:

1. Advancing Volume (veh/hr) - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the right turning vehicle.
2. Right Turning Volume (veh/hr) - The right turning volume is the number of advancing vehicles turning right.
3. Operating Speed (mph) - The greater of design or posted speed.

Note: Right turn lane is not needed for right turn volume less than 10 vph. However, criteria other than volume, e.g. crash experience, may be used to justify a right turn lane.

If the combination of major-road approach volume and right-turn volume intersects above or to the right of the speed trend line corresponding the major road operating speed, then a right-turn lane is appropriate.

Right Turn Lane Guideline for Four-Lane Roadway



The following data are required:

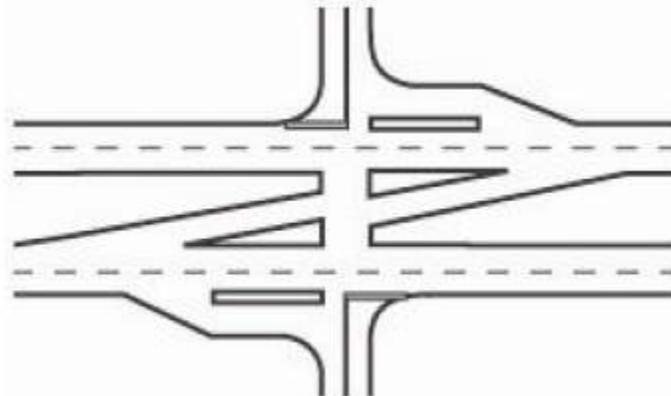
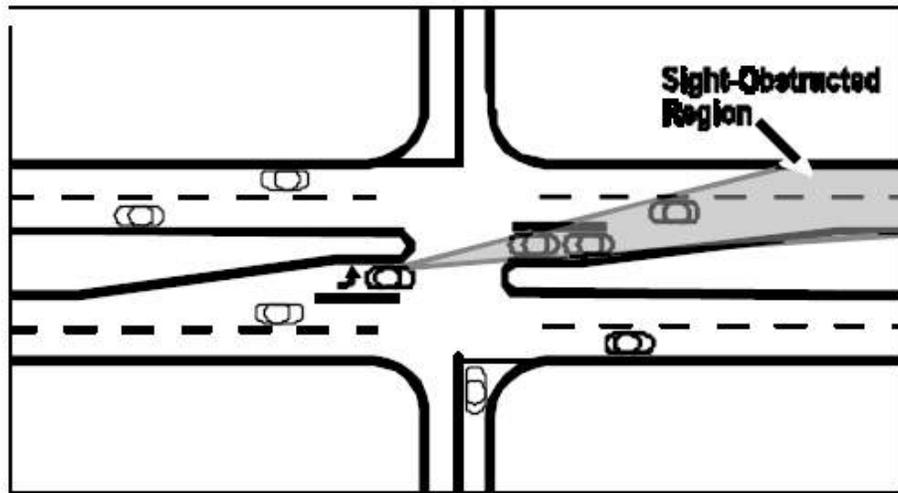
1. Advancing Volume (veh/hr) - The advancing volume should include the right-turn, left-turn and through movements in the same direction as the right turning vehicle.
2. Right Turning Volume (veh/hr) - The right turning volume is the number of advancing vehicles turning right.
3. Operating Speed (mph) - The greater of design or posted speed.

Note: Right turn lane not warranted for right turn volume less than 10 vph. However, criteria other than volume, e.g. crash experience, may be used to justify a right turn lane.

If the combination of major-road approach volume and right-turn volume intersects above or to the right of the speed trend line corresponding the major road operating speed, then a right-turn lane is appropriate.

- **Offset Right- and Left- Turn Lanes**

Vehicles in the right-turn lane tend to obstruct the vision of drivers waiting at the stop bar of the minor roadway. One way to reduce the obstruction of the minor roadway drivers' view is to offset the right-hand turning bay to the right. Similarly, vehicles in the opposing left-turn lane block the views of left-turning vehicles from the opposite direction, as shown in the figure below. An example intersection with offset right- and left-turn lanes is shown below. Offsetting left-turn lanes to the left as far as practical improves the visibility of opposing traffic. By improving the visibility of opposing traffic, drivers can more effectively use available gaps. Offsetting right-turn lanes to the right gives drivers on the minor approach (at the stop bar) an unobstructed view of oncoming traffic in the near expressway lanes, which allows for more effective use of gaps.



Rural Expressway Intersection Synthesis of Practice and Crash Analysis
Center for Transportation Research and Education – October 2004

Consideration should be given to offset right- and left-turn lanes lane in locations with high mainline operating speeds, large percentage of turning trucks, unique sight distance issues, or crash experience where investigation of crash diagrams indicates a safety benefit may be obtained from an offset turn lane. Care should be taken when implementing offset auxiliary turn lanes to ensue the horizontal geometry of the roadway does not negate the line-of-sight improvement.

10.0 TWO-WAY LEFT-TURN LANES (“Five-Lane” Facilities)

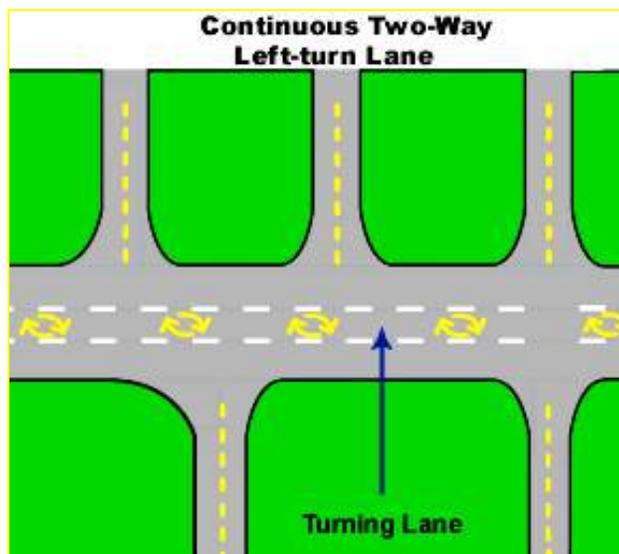
What This Guideline Means

Two-way left-turn lanes may be effective as an access management tool when used in conjunction with other techniques such as driveway consolidation and corner clearance. TWLTL cross sections work best in situations where traffic volume and the density of driveways is relatively low, and the proportion of left-turning vehicles is relatively high. TWLTL’s are recommended in places where commercial driveways make up a substantial portion of total driveways and where the percentage of vehicles turning left at peak hour is approximately 20 percent or greater.

TWLTL’s may be inappropriate where the commercial driveway density is above the driveway spacing guideline. Research indicates that when commercial driveway density is over 24 per mile (12 per mile in each direction), crash rates increase significantly. This roughly equates to an average driveway spacing of 440 feet. TWLTL configurations should generally be avoided unless driveway density can be kept at that level or below, or other viable alternatives do not exist.

TWLTL configurations are not recommended along high traffic volume (over 28,000 AADT) urban routes; in such situations raised medians are at least 25 percent safer than multilane undivided sections and 15 percent safer than TWLTL cross sections. TWLTL configurations should not be used on facilities with more than four through-traffic lanes, e.g., to create a “seven lane” facility. Crash experience with such large roadway cross sections is poor.

Diagram



Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	Not applicable	Not applicable
Major – Non Freeway	May be used when appropriate if AADT in design year is less than 28,000; otherwise use a raised median	Not recommended
Minor	May be used when appropriate if AADT in design year is less than 28,000; otherwise use a raised median	Not recommended

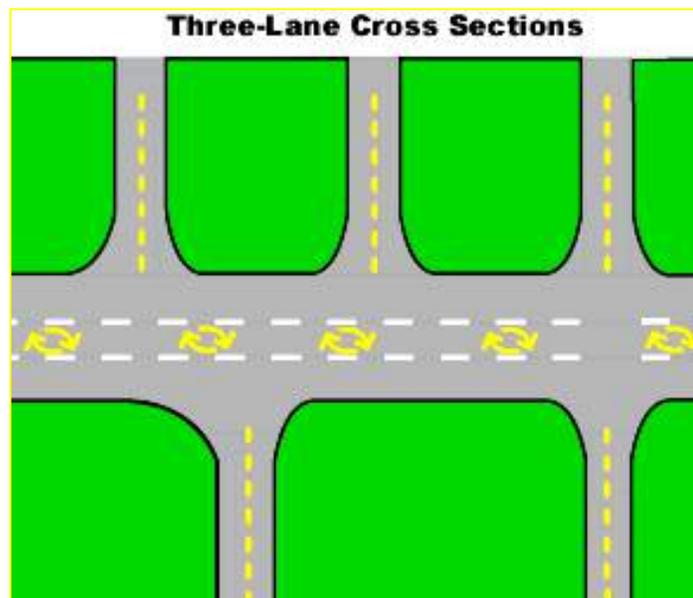
11.0 THREE-LANE CROSS SECTIONS

What This Guideline Means

Three-lane cross sections (two through lanes with a TWLTL in the center) are approximately 25 percent safer than an undivided four-lane road and can provide comparable capacity provided that intersections are well designed. They work best in situations where traffic volumes are moderate and where the proportion of vehicles turning left is high. The use of TWLTL's should be discouraged in rural areas, as their use in high speed, low volume situations can lead to increase in head on crashes. They should also be avoided in urban areas where the design year traffic is expected to grow beyond 17,500 AADT. TWLTL's are best used in situations where driveway density is low to moderate (e.g., below 24 commercial driveways per mile, which equates to a spacing of about 440 feet between driveways).

This guideline does not refer to third lanes used as passing, turning, or climbing lanes in rural areas.

Diagram



Guidelines

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	Not applicable	Not applicable
Major – Non Freeway	May be used when appropriate and where AADT in design year is less than 17,500	Not recommended
Minor	May be used when appropriate and where AADT in design year is less than 17,500	Not recommended

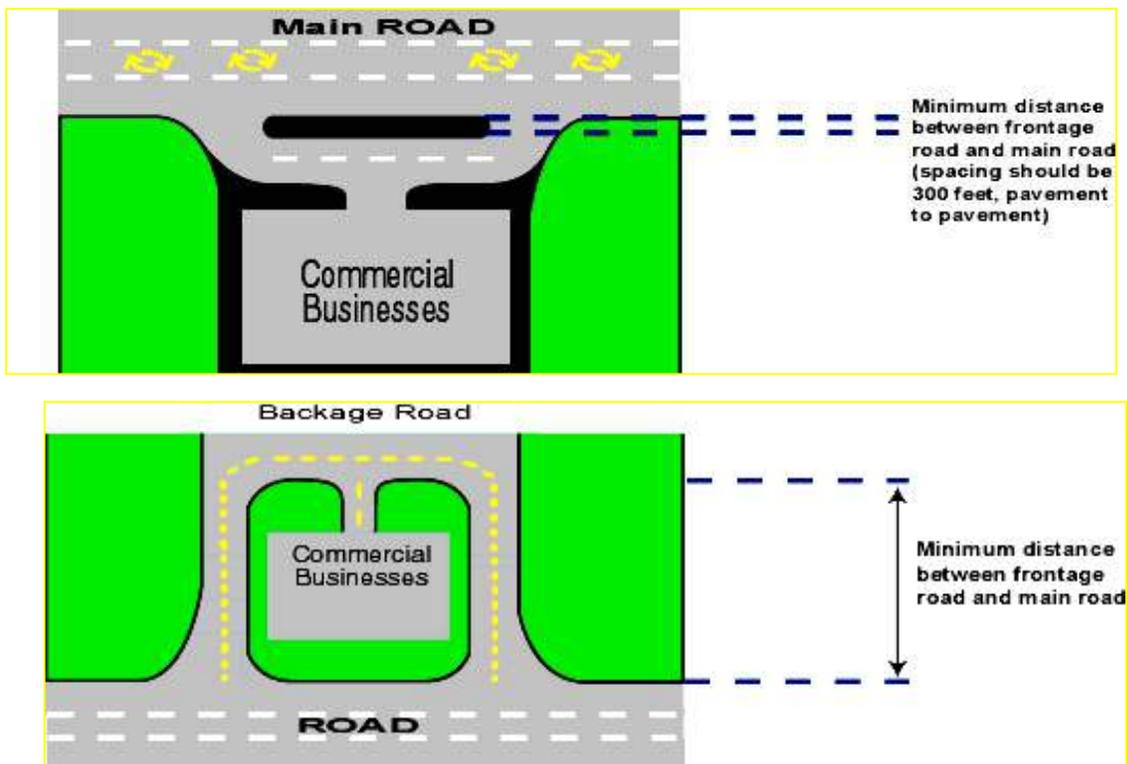
12.0 FRONTAGE AND BACKAGE ROADS

What This Guideline Means

Frontage and backage roads provide alternative access to property and help remove turning traffic from the through traffic on a mainline route. A frontage road provides alternative access at the front of properties while a backage road provides alternative access at the rear of properties.

Frontage and backage roads can dramatically improve safety and operations. However, a common mistake involves placing frontage or backage roads in close proximity to the mainline. Placing frontage roads very close to mainline roads can create additional opportunities for delay, congestion, and crashes because insufficient storage (“throat length”) is provided for entering and exiting vehicles.

Diagrams



Guideline

Backage roads should be spaced approximately 300 feet or more from the mainline route. Measurements should be taken from pavement edge to pavement edge. Backage roads are more advantageous than frontage roads because they minimize visual distractions and headlight glare on both the mainline and backage road. The backage configuration is particularly conducive to ownership by other governmental entities. Frontage roads may be more appropriate on freeways, especially those where MoDOT will maintain and operate the outer road system. See “Clearance at Functional Area of Interchanges” for further spacing recommendations.

13.0 DRIVEWAY SPACING

What This Guideline Means

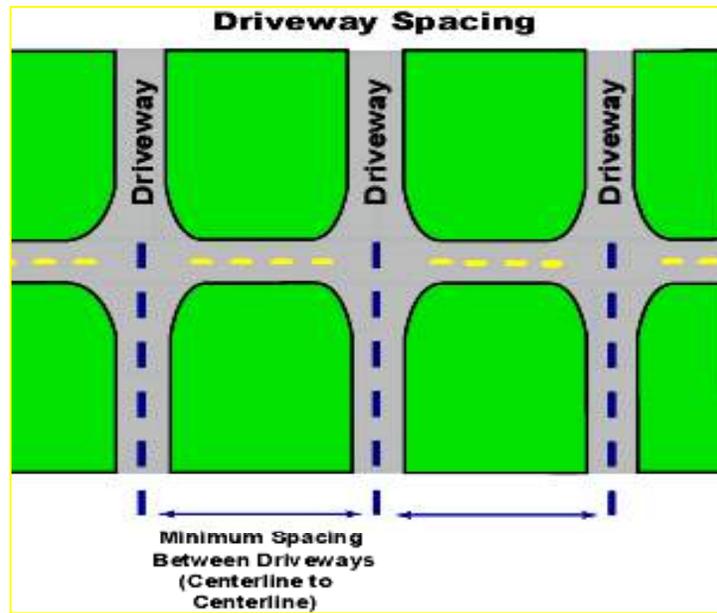
This guideline describes the recommended spacing between private driveways necessary to preserve both safety and traffic flow. Spacing between driveways must be longer on higher speed routes in rural areas than in urban areas. In urban areas, these guidelines allow for about one driveway per city block face on non freeway- major roadways and two driveways per block face on minor roadways.

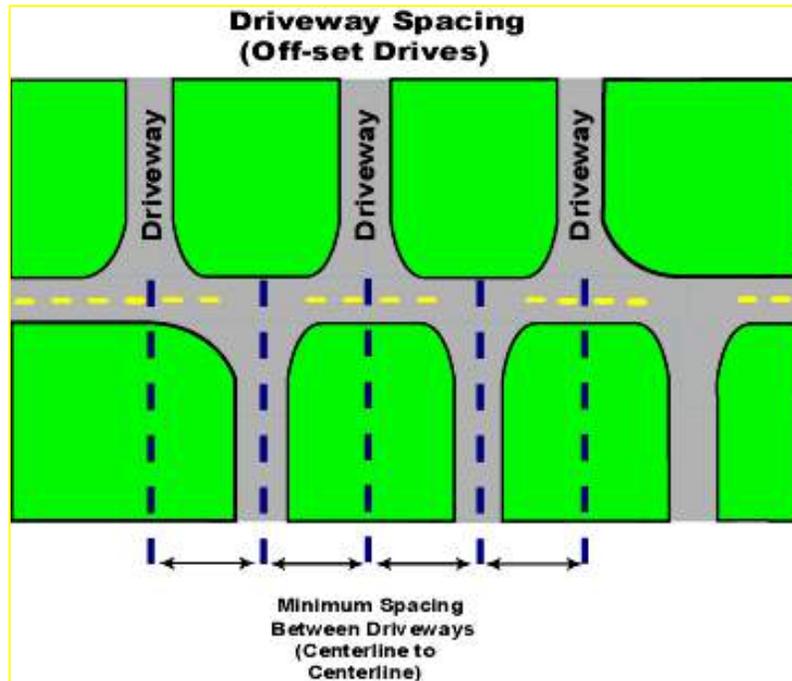
In order to preserve spacing, direct access should be moved to local streets (not arterials) where possible. In particular, access for corner lots should be moved to a lower traffic side street whenever possible. Access can often be better accomplished on major streets through such means as frontage and backage roads, joint access, cross access, and shared driveways. This guideline only applies where sight distance allows. Driveways should *not* be allowed where sight distance is inadequate even if the driveway spacing guideline would allow them.

Driveway accesses should be provided on local and collector streets (“side streets”) rather than arterials wherever possible. Driveways should also be lined up across the public roadway from each other whenever possible. When driveways are not lined up, the spacing should be measured from the closest driveway on either side of the road, except where a non-traversable (e.g., raised) median exists.

On urban routes where non-traversable medians exist, shorter driveway spacing may be acceptable for right-in, right-out driveways only.

Diagrams





Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	No driveways	No driveways
Major – Non Freeway	440 to 660 feet	660 to 1,320 feet *
Minor	220 to 330 feet	330 to 440 feet *

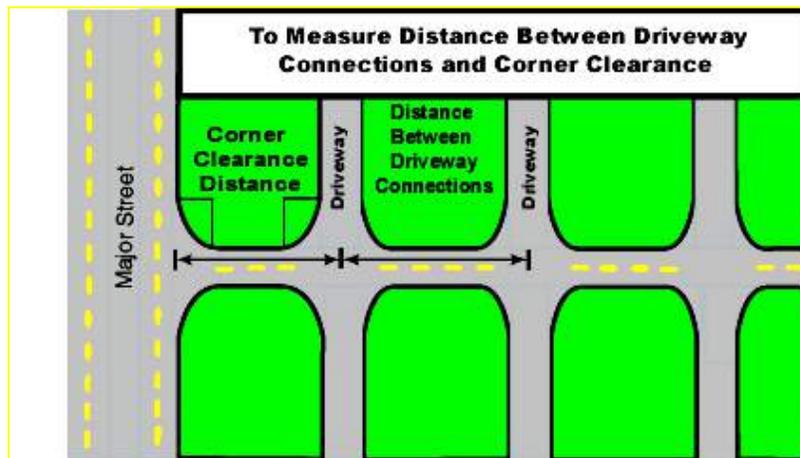
* The urban guideline may be applied in developed areas that are not urban, for example, cities with populations under 5,000. On collectors in cities with population under 5,000, the guideline is 220 feet (same as the urban guideline).

14.0 DRIVEWAY CORNER CLEARANCE

What This Guideline Means

Corner clearance represents the distance between the corner of the intersection of two public roadways and the next private driveway. It is important to provide enough distance between the corner and the first driveway to effectively separate conflict points and to allow drivers enough time to make safe maneuvers. When corners are not adequately cleared, crash rates and delay increase. These guidelines correspond to the driveway spacing guidelines for the same roadway classification. However, maintaining adequate corner clearance is more critical for safety and operations than mid block driveway spacing. *This guideline only applies where the sight distance guideline allows.*

Diagram



Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	No driveways	No driveways
Major – Non Freeway	440 to 660 feet	660 to 1,320 feet *
Minor	220 to 330 feet	330 to 440 feet *

* The urban guideline may be applied in developed areas that are not urban, for example, cities with populations under 5,000. On collectors in cities with population under 5,000, the guideline is 220 feet (same as the urban guideline).

15.0 SPACING / CLEARANCE FOR RIGHT-IN, RIGHT-OUT DRIVEWAYS

What This Guideline Means

This guideline describes the recommended spacing and corner clearance for driveways along roadways in urban areas that have a non-traversable median and speed limits at or below 45 miles per hour. A non-traversable median restricts left-turn movements into and out of driveways. Adequate spacing between driveways and corner clearance are both important to maintain safety and traffic flow. Spacing between driveways should be greater on higher speed routes and in rural areas than in urban areas because of higher posted speed limits.

Research and experience in other states indicates that on urban routes *where non-traversable medians exist*, shorter driveway spacing and corner clearance upstream from an intersection is acceptable for right-in, right-out driveways. This guideline provides for double the number of right-in, right-out driveway access points compared to situations where left turns into and out of driveways are permitted. It also provides for a shorter clearance distance from corners to the last driveway upstream from the corner. For safety reasons, the downstream corner clearance similar to situations where no non-traversable median is present. This shorter guideline for right-in right-out driveways *should not* be used where a non-traversable median does not exist (e.g., where there is a continuous left-turn lane.) The shorter spacing is also not recommended in rural areas, where higher operating speeds prevail.

Experience has shown that a shorter guideline for right-in, right-out drives is appropriate where there is a physical barrier that prevents left turns (e.g., a non-traversable median). Regulatory restrictions on left turns (e.g., “No Left Turn” signs) and small traffic islands do not prevent left turns.

Direct access should be moved to local streets (not arterials and collectors) where possible. Access can be better accomplished on major roadways through techniques such as frontage and backage roads, joint access, cross access, and shared driveways. These guidelines only apply where sight distance allows. *Driveways should not be allowed where sight distance is inadequate even if the spacing guideline would allow them.*

Diagram



Guidelines, in Urban Areas *

Roadway Classification	Spacing between Right-In, Right-Out Driveways on Roadway with a Restrictive Median	Upstream Corner Clearance for Right-In, Right-Out Driveways on Roadway with a Restrictive Median**
Major - Freeway	No driveways	No driveways
Major – Non Freeway	220 to 330 feet	220 to 330 feet
Minor	110 to 165 feet	110 to 165 feet

* The urban guideline may be applied in rural but developed areas that are not urban, for example, cities with populations under 5,000. On collectors in cities with population under 5,000, the recommended spacing is 110 feet (same as the urban guideline).

** Downstream corner clearance guidelines should be similar to the main corner clearance guideline even when a non-traversable median exists.

16.0 DRIVEWAY GEOMETRICS

The design of driveways affects the speed of traffic turning into and out of driveways and in turn the speed differential between through traffic and turning traffic. Large speed differentials are associated with higher crash rates and diminished traffic operations.

Driveway designs should always be based on the results of a study of the traffic likely to use them; these guidelines are presented to illustrate good practices for driveway designs.

Lining Up Driveways Across Roadways

Driveways should be as closely lined up with driveways across roadways without non-traversable medians to the maximum extent possible even if less spacing between driveways is the result.

Angle of Intersection to the Public Roadway

- Driveways that serve two-way traffic should have angles of intersection with the public road of 90 degrees or very near 90 degrees. Two-way traffic driveways with skews greater than 20 degrees should be discouraged.
- One-way traffic driveways should have skews between 0 and 30 degrees.

Right-Turn (Approach) Radius

Approach radii should be large enough to allow entering vehicles to do so at a reasonable rate of speed. The following are suggested as acceptable approach radii and are measured from the edge of the driving surface of the roadway. Any maximum approach radius is allowable for driveways.

Right-Turn Radius for Driveways	Urban Areas (At or below 45 mph Posted Speed)	Rural Areas (Greater than 45 mph Posted Speed)
Residential Driveways	10 feet	25 feet
Commercial Driveways	25 feet	50 feet
Industrial Driveways	Design to handle typical large truck that uses the driveway	Design to handle typical large truck that uses the driveway

Inside radii should be determined on a case-by-case basis given driveway angle, traffic volume, and other relevant factors. Sites that generate substantial large truck traffic need inside larger radii to accommodate the wheel path of the turning trucks.

Driveway Width

No driveways should have widths less than 20 feet. Driveways of greater than 54 feet should be strongly discouraged unless they contain a raised median to separate traffic lanes. Driveways that serve one-way traffic should be from 20 to 30 feet wide. Driveway widths should be measured from the face of curb to the face of curb at the point of tangency. Any medians contained in the driveway are above and beyond the widths in the table. Appropriate widths for various levels of traffic and directions of access are shown in the table below:

Driveway Traffic Category	Average Daily Traffic Using Driveway	Peak Hour Traffic Using Driveway	With Two-Way Access	With One-Way Access
Residential	0 – 100	0 – 10	20* feet - 30** feet	NA
Low Volume Commercial/Industrial	< 1500	< 150	28 feet** - 42 feet***	20 feet*
Medium Volume Commercial/Industrial	1,500 – 4,000	150 – 400	42 feet*** - 54 feet****	20 feet* - 30 feet**
High Volume Commercial/Industrial	> 4000	> 400	Determined through a traffic study - normally 42 feet or greater	Generally not applicable

* One-lane driveways.

** Driveway striped for two lanes.

*** Driveway striped for three lanes.

**** Driveway striped for four lanes.

All commercial and industrial driveways should be curbed on approach.

Driveways and Accommodation of Pedestrians

In current and future urban places, all driveways should adequately accommodate pedestrians using sidewalks or paths. The least practical width should be used to accommodate pedestrians. Medians should be considered on driveways, four lanes or wider, to provide a refuge for pedestrians.

Driveways and Accommodation of Bicycles

Where a driveway crosses a bicycle, the driveway and the bicycle facility should be designed so as to accommodate the safe crossing of bicyclists.

Tapers

The distance between the entrance and exit tapers of adjacent driveways should be 50 feet or greater. If not, the tapers should be eliminated and the shoulder paved to form a turn lane.

Driveway Throat Length

The throat length is the distance between the street and the parking lot served by a driveway. An adequate throat length helps to keep traffic conflicts within a parking lot to an acceptable level and provides space on the driveway for incoming and outbound traffic. The following throat-length guidelines are suggested:

- For low traffic volume commercial and industrial driveways (below 150 peak hour vehicles in both directions), the shortest desirable driveway throat length is 20 feet (about one 20-foot car length).
- For medium traffic volume commercial and industrial driveways (150 – 400 peak hour vehicles in both directions), the shortest desirable driveway throat length is 60 feet (about three 20-foot car lengths).
- For high-volume driveways (over 400 peak hour vehicles in both directions) such as a shopping center entrance, the adequate throat length should be determined by the results of a traffic study.

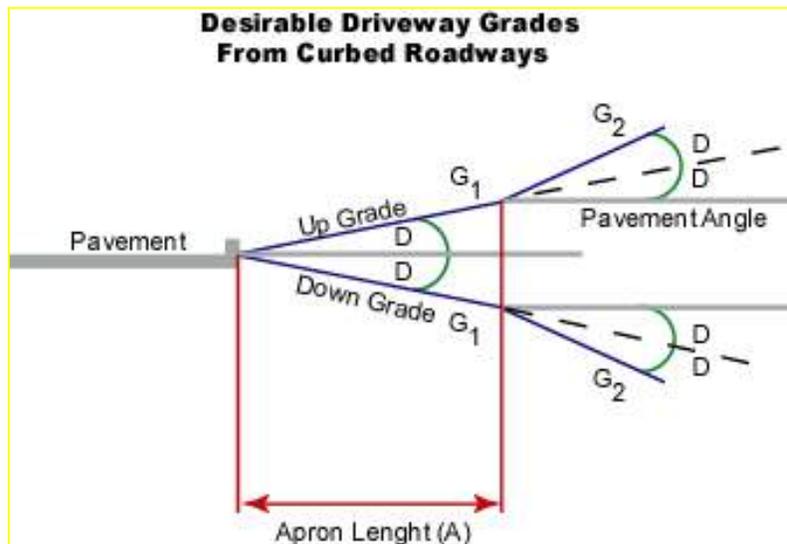
Vertical Geometrics (Driveway Grade Change)

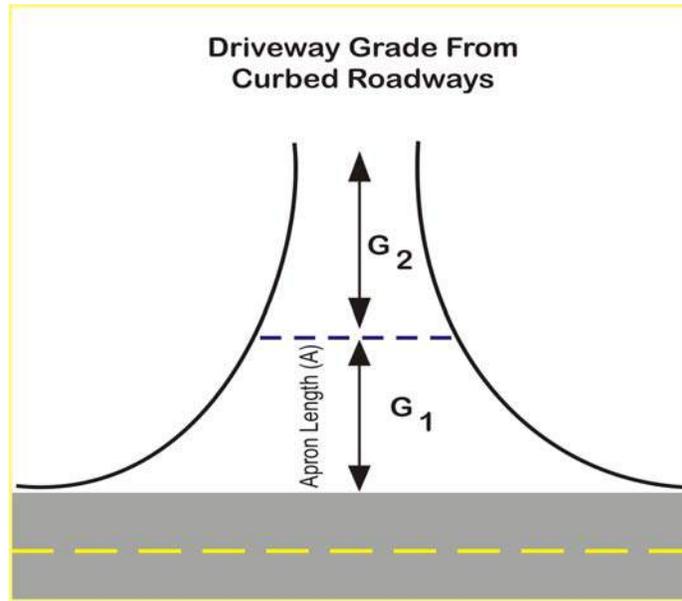
Access driveways on arterial roadways should be designed to allow vehicles to proceed into or out of the driveway at a speed that will prevent large speed differentials between turning and through traffic. Required apron lengths, desirable grade changes and maximum allowable grade changes are shown in the table below. The apron is a relatively flat area where the driveway meets the public roadway. These guidelines apply to all types of driveways, including for residential, commercial and industrial uses. Driveways should have a minimum grade change of approximately 1 percent to provide for adequate drainage. Either an upgrade or downgrade can be used.

Roadway Classification	Apron Length ("A" in the Diagram)	Desirable Grade Change, ("D" in the Diagram) Urban	Desirable Grade Change, ("D" in the Diagram) Rural
Major - Freeway	No driveways	No driveways	No driveways
Principal Arterial	25-30 feet	1%-4%	1%-3%
Minor Arterial	15-20 feet	1%-5%	1%-4%

Notes: The Apron Length is shown as "A" and grade change as "D" on the diagram below. The grade may change along the course of the driveway, as indicated by G_1 and G_2 . In such cases, it is very important to ensure that the minimum apron length is maintained.

Diagrams





Driveway Surfacing

Required driveway surfaces depend on the roadway they are entering:

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major - Freeway	No driveways	No driveways
Major- Non Freeway	Paved	Paved, except for residential and field entrances
Minor Arterial	Paved	Paved, except for residential and field entrances. Unpaved driveways are acceptable on collectors

Having paved driveways is most critical on major roadways to keep the speed differential between through and turning traffic as low as possible. As noted before, all commercial and industrial driveways should be curbed on approach.

17.0 PARKING ON FACILITIES

What This Guideline Means

Parking should not be allowed on highway facilities that are primarily intended to serve through-traffic movement (major roadways). On-facility parking should not generally be allowed along minor roadways in rural areas since these roadways allow for high travel speeds. Parking may be allowed on urban minor roadways, if an engineering study indicates that it is safe to do so and that the parking will not hinder traffic operations.

Normally, only parallel parking should be allowed. Angle parking may be used in a central business district to promote a “walkable community”.

Local governments have the ability to prohibit or restrict parking within their jurisdiction.

Recommended Guideline

Roadway Classification	In Current and Projected Urban Areas	In Rural Areas
Major	No parking	No parking
Minor	Parking should be studied but may be allowed when appropriate.	No parking*

* The urban guideline may be applied on minor roadways in developed areas that are not urban, for example, cities with populations under 5,000.

Appendix E: Building & Site Development Forms, Checklists
and Help Documents

DRAFT



City of Columbia, Missouri

Commercial Development Plan Review Help Document

Commercial Development Plan Review

The Purpose of Plan Review

Plans are reviewed to ensure compliance with the City of Columbia's adopted codes, ordinances, and policies for commercial, subdivision, and multifamily residential development. The review focuses primarily on public safety issues, compliance with final development plans and plats, the development's effect on existing and proposed public infrastructure, impact on neighboring properties, and ensuring sound engineering principles. In particular, the International Building Code states that the purpose of code enforcement is to protect life, health, safety, welfare, and property as well as fire fighters and emergencies responders during emergencies. Although the staff reviews plans for these issues, the ultimate responsibility for the construction documents rests with the design professionals. Construction plan review minimizes field changes because it necessitates interpretation of standards prior to the construction occurring, thereby saving time and expense for both the City and developer.

The review process will also carry forward any stipulations set forth by City Council during the planning process. Approvals necessary from outside agencies such as the U.S. Army Corps of Engineers, Missouri Department of Natural Resources, or Missouri Department of Transportation may also be required at this step prior to the issuance of a permit. Coordination with other agencies is the responsibility of the developer and/or his or her agents.

Construction plan review must be completed prior to issuance of a permit and the start of construction.

For an overview of how the plan review process is completed please refer to the "Commercial Development Plan Review Flow Chart" included with this document.

Timeframes for Plan Review

For new construction, the City has established a goal of completing the initial review within ten (10) working days and subsequent reviews within five (5) working days. "Day 1" begins when the plans have been accepted for review through the Initial Screening Process (ISP). Our goal is to process plans through ISP the next working day after plans have been submitted. When workload is heavy and plans are submitted late in the day, it may occasionally take two working days to move plans through ISP. The staff will make every effort to accelerate the review of revisions prior to starting new projects, especially when the number of plan review comments is low. *All specifications and drawings must be submitted at one time and from one source to begin the process of being accepted for review.*



City of Columbia, Missouri

Plan Review Responsibilities

All submittals must be accompanied by a completed Commercial Permit and Plan Review Application. Drawings must be bound, typically 24" x 36" or 22" x 34" sheets for ease of review. (Larger sheets may increase review time.) Depending on the type of project, one or more of the following agencies may be involved in the review of your project.

Building Safety Section (Building & Site Development Division of Community Development Department) – Responsible for the review of building and site plans for compliance with the following:

- 2012 International Building Code
- 2012 International Mechanical Code
- 2012 International Plumbing Code
- 2012 International Fuel Gas Code
- 2009 International Energy Conservation Code
- 2012 International Property Maintenance Code
- 2011 National Electrical Code
- 2009 ICC/ANSI A117.1 – Accessible and Usable Building and Facilities Code

The Building Safety Section requires that **one (1) set** of construction plans be submitted for review for all new building/structure construction and remodels, as well as fire systems. In addition, **an electronic copy** (in PDF format) of all final construction plans, signed and sealed by the Professional Engineer, must also be submitted. Electronic signatures/seals in conformance with state statutes will be acceptable.

Site Development Section (Building & Site Development Division of Community Development Department) – Responsible for the review of onsite and offsite improvements that relate to the following categories:

- Land disturbance, Erosion and sediment control
- Site plans, Grading plans
- Infrastructure plans
 - Storm sewer system
 - Street improvements, traffic
 - Sidewalks and drive approaches
- Stormwater management - water quality and detention
- Floodplain development
- Stream buffers
- *Temporary traffic control plan
- *Retaining walls

* Deferred submittal is allowed. May be submitted separately from Site Development plans.



City of Columbia, Missouri

The Site Development Section requires that **three (3) sets** of construction plans be submitted for review for all projects that involve site work. In addition, **an electronic copy** (in PDF format) of approved Site Development Plans, signed and sealed by the Professional Engineer, must also be submitted before the Land Disturbance permit is issued. Electronic signatures/seals in conformance with state statutes will be acceptable.

The Site Development section also coordinates the following reviews:

- Landscape & Tree Preservation Plans, with the City Arborist. One of the 3 plan sets submitted for Site Development will be used, no additional sets required.
- Sanitary sewer main extension or construction, with the Sewer Utility Division of the City Utilities Department. **One additional (1) set** of construction plans are required for all projects which include new sewer main.
- Grease interceptors and sand-oil separators, with the Wastewater Treatment Plant, City Utilities Department. **One (1) additional set** of construction plans are required for plans involving food service establishments with kitchens of any size, and vehicle storage or car wash locations requiring a sand-oil separator.
- Dumpster pad locations, with the Solid Waste Division of City Utilities Department. **One (1) additional set** of construction plans are required for projects that include new dumpster pad location or enclosures.

Fire Department – Responsible for the review of the plans for compliance with the adopted fire codes and referenced standards, specifically in the following areas:

- International Fire Code
- All Referenced Standards
- Fire Sprinkler Systems
- Fire Alarm Systems
- Fire Suppression Systems
- Coiling Fire Door/Shutter Assemblies
- Above Ground or Underground Storage Tanks
- Fire lane placement
- Fire flow requirements
- Fire hydrant placement
- Hazardous materials use or storage

The Fire Department requires that **one (1) set** of construction documents be submitted for review of new commercial construction and remodel projects. Provide **two (2) sets** of construction documents for systems such as fire sprinklers, fire alarm systems, fire suppression systems, etc. Applications must be submitted to Building and Site Development, 3rd floor of City Hall. **Plans must be submitted, reviewed, and approved before a permit may be obtained and before installation.**

Columbia Water & Light – Responsible for the review of plans involving the installation, upgrade, or relocation of city-owned electrical and water utilities. The Water and Light Department requires **two (2) sets** of paper construction plans that include the following items:



City of Columbia, Missouri

- Panel schedules
- Watt load calculations
- Electric riser diagram
- Locations of equipment
- Plumbing riser with meter and backflow location
- Plumbing plan view with meter and backflow location
- Total supply fixture units (demand)
- Sewer riser and plan view
- Architect floor plan
- **One (1) set** of fire sprinkler system plans and calculations

Also **an electronic (AutoCAD) copy of the site plan** that includes locations of property lines, easements, buildings, pavement, and utilities both existing and proposed must be submitted for all projects.

Planning & Development (A Division of Community Development Department) – Reviews plans for compliance with development occurring in “planned” and “overlay” zoning districts as well as those that may have special development conditions imposed by Council-approved development agreements. If your project is located in one of these areas the Planning Divisions requires **one (1) set** of construction plans to be submitted for review.

Health Department – Responsible for the review of the plans for compliance with standards relating to the following:

- Facilities involving food and/or beverage of any type including restaurants, child care facilities, convenience stores and bars
- Design, operation and maintenance of public swimming pools and spas
- Tattoo parlors
- Lodging establishments

The Health Department requires that **one (1) set** of construction plans be submitted for all projects which involve work of this nature.

Coordination with Utilities and Outside Agencies

It is the responsibility of the developer to determine any utility or outside agency requirements relative to their projects. A list of utility companies, with addresses and phone numbers, is attached in the appendix for reference. The following are some of the governmental agencies that may require contact and/or approval prior to proceeding with phases of work or obtaining permits.



City of Columbia, Missouri

- Missouri Department of Transportation (MoDOT) – if the project proposes construction in or immediately adjacent to state right of way, a permit from MoDOT may be necessary → 1-888-ASK-MODOT
- Missouri Department of Natural Resources (MDNR) – if the project proposes land disturbance in excess of one acre a permit is required from MDNR → (660) 385-8000
- U.S. Army Corps of Engineers – if the project disturbs Waters of the U.S. or Wetlands, a permit may be necessary → (816) 389-3990
- Federal Emergency Management Agency (FEMA) – if the project alters the federal floodplain, a Letter of Map Revision (LOMR) may be necessary → (816) 283-7061
- Missouri Division of Fire Safety (Elevator Safety Unit) – if the project includes an elevator the State Fire Marshall must be contacted to ensure that all proper permits are obtained and inspections completed → (573) 751-2263
- Missouri Department of Health and Senior Services for lodging requirements and licensed child care facilities

Plan Review Steps

Step 1 – Optional Pre-Application Meeting

A pre-application meeting is an informal discussion between city plan reviewers and building professionals, and is highly recommended prior to submitting construction plans for a permit. The meeting is particularly appropriate for developers, design professionals, and contractors who have minimal experience with developing in Columbia.

A pre-application meeting allows the applicant to explain issues that shaped the design of the project. At the same time, the staff can identify issues that may be addressed prior to plans being submitted. An explanation of the plan review process can be offered and the applicant can ask questions regarding Columbia's procedures.

These reviews are preliminary and the decisions may be subject to change as more information becomes available. Primary responsibility for compliance with the codes and ordinances remains the responsibility of the design professional and the contractor.

The level of detailed assistance from city staff will depend on the completeness of the information provided and the time to review the information. Final determination on any issue will be made at the time full plans are submitted.

It is important to check for conditions or stipulations attached to rezoning cases, special use permits, planned district plans, plats, or any other type of previously approved plans for the site. It is also important to note that the City does not coordinate services from utility companies outside of those which the City owns and operates (water, electric, and sanitary sewer). Contact utility companies early in the process to ensure the issuance of permits is not delayed.



City of Columbia, Missouri

A pre-application meeting can be scheduled during the City's regularly scheduled Development Review Committee (DRC) meeting. The DRC is comprised of representatives of each of the agencies participating in the plan review process and meets on a regular basis to review development related issues concerning submitted design plans. To schedule a meeting with the DRC contact the Building and Site Development Division at (573) 874-7474.

Step 2 – Initial Screening Process (ISP)

Applications for building permits are submitted to the Building and Site Development Division of the Community Development Department. Plans can be delivered by hand to the 3rd Floor Service Counter at 701 East Broadway, or by mail to the following address:

Community Development Department - 3rd Floor
701 East Broadway
P.O. Box 6015
Columbia, MO 65205

The number of plan submittal sets required depends on the scope of the project – see Appendix C. Prior to distribution of the plans for review by City personnel, the plans enter the ISP process. This process is an initial “quick check” to determine if the plans and information submitted are sufficiently complete for a review to be performed. If the plans are deficient, the applicant will be notified within two working days with a list of deficiencies noted. The goal of the ISP is to benefit both the developer and design professionals by reducing review time. If information necessary for plan review is omitted or insufficient, a response from the City is generated within two days instead of waiting the full review period to find out a review could not be completed. Plans are not considered to be under review until after they have been accepted through ISP. The applicant and owner will receive a fax or e-mail if the plans have been rejected. Please see the separate *Initial Screening Process (ISP) Checklist* document for additional details.

Step 3 – Staff Plan Review

After acceptance through ISP, plans are distributed to each area responsible for review. An individual from each reviewing entity is assigned to review the project and an overall project coordinator is designated to consolidate all information and make the formal response back to the applicant.

Permit Phasing – Partial Permits

A decision to phase permits may be made prior to the initial plan submittal or after the plans have been submitted. Permission to phase the project must be requested in writing and approved by the Director of Community Development. Once approved the requirements for each phase must be satisfied prior to proceeding to the next phase.

Permits include:

- “Grading Only” Land Disturbance – clearing and earthmoving on private property (no work in the public right of way)



City of Columbia, Missouri

- Land Disturbance – all site work up to the footing and foundation including public improvements, stormwater detention, and water quality improvements, if applicable
- Demolition
- Interior Demolition
- Building Shell
- Footings and Foundation – all site work, including footings, foundation, and base floor slab
- Full Building Permit – all work for the project

Public Infrastructure Improvements & Stormwater Management Review

Public improvements are often required with projects that will develop areas where the City's infrastructure does not already exist or where improvements are necessary to accommodate the new development. Public infrastructure improvements should be designed to meet the requirements of the current edition of the City's *Street and Storm Sewer Specifications and Standards* and the City's Code of Ordinances.

Stormwater Management (detention and water quality) improvements are also required. More information about these requirements can be found in the city's *Stormwater Management and Water Quality Manual* and Chapter 12A of the city's Code of Ordinances.

In addition to the construction plans and required calculations, items required and/or reviewed include:

- Plan review and inspection fee
- Approved Right-of-Way Permit and Temporary Traffic Control plan
- Executed and notarized Easements and BMP Maintenance Covenants

Examples of Public Infrastructure Improvements include:

- New public street
- Public street widening
- Turn lane/median modification
- New public storm or sanitary sewer
- Improvement of existing public storm or sanitary sewer
- Improvement of existing water or electric utilities

Step 4 – Plan Revisions

Plan review comments will be sent to the permit applicant and the property owner, typically via email. All comments from the City will be consolidated in one letter. Individual staff members may fax or e-mail drafts of their review comments in advance of the consolidated letter to assist the designers. It is the design professional's responsibility to ensure that no part of the final letter conflicts with the draft review comments.



City of Columbia, Missouri

When all comments are addressed plans shall be resubmitted to the Building and Site Development Division using the following guidelines:

- All City review comments shall be addressed by the applicant and submitted together. Partial submittals will not be accepted.
- A cover letter explaining how each comment was addressed shall accompany the resubmittal.
- The cover letter shall use the same numbering system as the consolidated city comment letter.
- If phasing of the permit is desired and approved, responses to comments for each phase may be submitted together with a corresponding cover letter. For example, if plans were submitted for a full permit and after the first review the applicant chose to concentrate on the footing and foundation permit, all comments relative to that phase may be submitted without addressing all comments for the full permit.

City staff recommends that the applicant contact the project coordinator prior to re-submittal of revisions to discuss any questions the applicant has regarding the staff's comments in order to prevent any misunderstandings which may result in additional revisions or delays. Staff is available for meetings if so desired. Meetings can be scheduled by contacting the assigned project coordinator for the project.

Step 5 – Plan Approval

When the plans meet the requirements of all City agencies, the plans will be approved and the applicant and owner will be notified. Plan approval is frequently given with stipulations which must be satisfied prior to issuance of the permit or other stages of the work, such as prior to occupancy. Pre-construction conferences may be required by the City project coordinator, if determined to be appropriate during the plan review process.

Step 6 – Permitting

Even though the plans have been approved, administrative information may be required prior to issuance of a permit. After approval, the file is reviewed by a permit services representative to determine if all requested information has been received.

The permit services representative will contact the applicant to inform them of the permit fee amount and notify them of any remaining items needed. After the fees and all required information have been received, the permit will be issued. Construction may not begin until after the permit has been issued. The contractor and owner will be furnished with a list of required inspections by department, contact numbers, inspection time frames, re-inspection fee schedule, etc. at the time of permit issuance.

Items which frequently delay permit issuance include:



City of Columbia, Missouri

- Failure to comply with the fire code requirements outlined in Chapter 14 of the adopted fire code as it relates to construction sites (i.e. access, water supplies, etc.)
- Approval from outside agencies
- Approval of plans for improvements to City owned utilities
- Approval of construction plans for public improvements or stormwater management
- Dedication of right of way and/or easements for proposed public improvements or privately maintained stormwater best management practices (BMPs)
- Legal agreements for maintenance of amenities in the right of way or Stormwater Management/BMP Covenants for privately maintained stormwater BMPs
- Approval of variances
- Plan review/inspection fees not received

Step 7 – Pre-Construction Meeting

Once the permit has been approved, customers should contact the Building and Site Development Division at (573) 874-7474 to schedule a pre-construction meeting. These meetings are required for all projects which require Special Inspections, and optional for all other projects.

Pre-construction meetings are designed to offer a forum where the contractor(s) and City staff can discuss the scope of the project and various procedures the contractor must adhere to. The overall intent of the meetings is to help the contractor avoid construction delays or a delay in getting an occupancy permit. Generally, the job superintendent and the Erosion control subcontractor will attend the meeting, along with City personnel such as the Building Regulations Supervisor, a Fire Department representative, and a Site Development inspector. Contractors may also invite any additional parties to this meeting.

Staff will provide information on the overall scope of the project and discuss any special permit conditions being attached to the permit. Special conditions most often discussed relate to fire alarm drawings, fire sprinkler drawings, landscape requirements, special inspection requirements, etc. The requirements for maintaining and inspecting erosion and sediment control features are also discussed. Applicable City forms will be distributed at the meeting, as well as contact information for various individuals.



City of Columbia, Missouri

Appendix A - Utility Contacts

WATER

Columbia Water & Light
P.O. Box 6015
Columbia, Missouri 65205
573- 874-7325

Public Water Supply District No. 9
391 N. Rangeline Road
Columbia, Missouri 65201
573-474-9521

Consolidated Public Water Supply District
No. 1
1500 North 7th Street
Columbia, Missouri 65201
573-449-0324

Public Water Supply District #4
14530 N Route U
Hallsville, MO 65255
573-696-3511

ELECTRIC

Columbia Water & Light
P.O. Box 6015
Columbia, Missouri 65205
573- 874-7325

Central Electric Power Cooperative
2106 Jefferson St.
Jefferson City, MO 65109
(573) 634-2454

Boone Electric Cooperative
1413 Rangeline Street
Columbia, Missouri 65201
573-449-4181

SANITARY SEWER

City of Columbia Utilities Department
P.O. Box 6015
Columbia, Missouri 65205
573-874-7250

Boone County Regional Sewer District
1314 North 7th Street
Columbia, Missouri 65201
573-443-2774

NATURAL GAS

Ameren Missouri
2001 Maguire Blvd.
Columbia, MO 65203
573-876-3030

TELECOMMUNICATIONS

CenturyLink
625 Cherry Street
Columbia, Missouri 65205
573-886-3500

University of Missouri Division of IT
615 Locust St.
Columbia, MO, 65211
573-884-6703

Mediacom
1211 Wilkes Blvd.
Columbia, Missouri 65201
573-443-1535

AT&T
573-489-8727
770-335-8244- Fiber Optic Cable

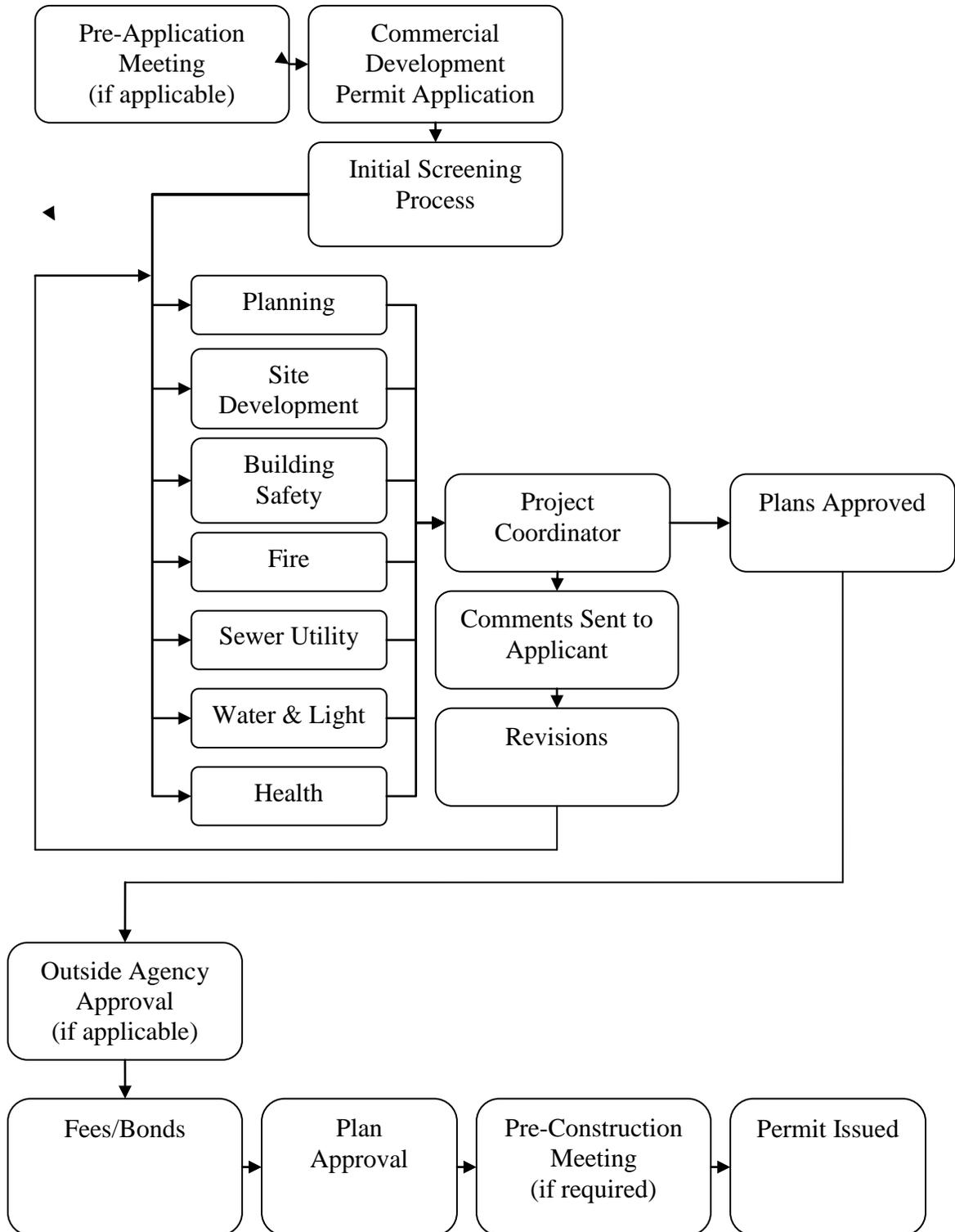
Charter Communications
1510 Boone Industrial Drive
Columbia, Missouri 65202
573-442-7044

Level 3 Communications
1122 Capital of Texas Hwy South
Austin, TX 78746
512-742-3805



City of Columbia, Missouri

Appendix B - Commercial Development Plan Review Flow Chart





City of Columbia, Missouri

Appendix C – Commercial Project Plan Sets Required

New Construction and Remodels		
Department	Plan Submittal Set Required for:	No. of Plan Sets Required
Building Safety	All projects that involve a building/structure	1
Site Development	All projects that involve site work Stand-alone retaining walls	3
Sewer Utility	All projects which include new sewer main	1
Wastewater Treatment Plant	All projects which include grease interceptors or sand-oil separators	1
Solid Waste	All projects that include new dumpster pad location or enclosures	1
Fire	All projects	1
Water and Light	All projects involving the installation, upgrade, or relocation of city owned electrical & water utilities	2
Planning	All development occurring in “planned” and “overlay” zoning districts or that have special development conditions imposed by Council-approved development agreements	1
Health	<ul style="list-style-type: none"> • Facilities involving food and/or beverage of any type including restaurants, child care facilities, convenience stores and bars • Design, operation and maintenance of public swimming pools and spas • Tattoo parlors • Lodging establishments 	1

Fire Systems		
Department	Plan Submittal Set Required for:	No. of Plan Sets Required
Building Safety	Fire sprinklers, fire alarm systems, fire suppression systems, etc.	1
Fire	Fire sprinklers, fire alarm systems, fire suppression systems, etc.	2
Water and Light	Fire sprinklers (plans and calculations)	1



City of Columbia, Missouri

Initial Screening Process (ISP) Checklist

Items on this checklist are considered required prior to the project entering the plan review process. If the plans are deficient of one or more of these items, the applicant and owner will be notified within two working days via fax or e-mail with a list of deficiencies noted. If the plans are accepted for further review no notice will be sent. Plans are not considered to be under review until after they have been accepted through ISP.

_____ Completed Plan Review Application

_____ Plans on 22" x 34" or 24" x 36" sheets (Note: Fire alarm and fire sprinkler plans may be submitted on 30" x 42" sheets.)

Planning Department – one (1) set of plans required for any development within planned/overlay zoning district (i.e. C-P, H-P, M-P, O-P, PUD, S-R, U-C).

_____ Approved site plan for planned district development

_____ Site improvements match location, GFA (Gross Floor Area), and site characteristics of the approved plan

_____ Site improvements do not encroach into a required buffer or overlay zone

Public Works Department

Building and Site Development Division

Building Safety – two (2) sets of plans required

General

_____ Completed Application

_____ Registrant's seal, signature & Dates

_____ Civil Plans-New Buildings/Additions

_____ Structural Calculations

_____ Soils Report-New Buildings/Additions

_____ Specification Books

_____ Landscape Plans-New Buildings/Additions



City of Columbia, Missouri

_____ Photometric Plans-New Buildings/Additions

Architectural Plan Sheets

_____ Cover/Index

_____ Code Analysis/Occupant Group/ Occupant Loads

_____ List of Special Inspections

_____ List of Accessory/ Incidental Areas

_____ Site Plan/Details (include location map)

_____ Exiting Plan

_____ Floor Plan(s)

_____ Roof Plan

_____ Reflective Ceiling Floor Plan(s)

_____ Exterior Elevations

_____ Building Sections

_____ Wall Section(s)/Details

_____ Partition Type/Details

_____ Fire-Resistant Construction Assembly Details

_____ Door/Window Schedules

_____ Stair Sections/Details

_____ Plan Details

_____ List of Deferred Submittals

Structural Plan Sheets

_____ General Notes

_____ Typical Details/Schedules



City of Columbia, Missouri

- _____ Foundation Plan/Details
- _____ Floor Plan(s) (Framing/Wall/Details)
- _____ Roof Plan/Details
- _____ Enlarged Stair Framing/Details

Mechanical Plan Sheets

- _____ General Specifications
- _____ Floor(s) Plans
- _____ Roof Plan
- _____ Mech. Details/Schedules/Calculations

Plumbing Plan Sheets

- _____ General Specifications
- _____ Floor(s) Plans
- _____ Roof Plan
- _____ Waste/Vent/Water/Gas Piping Diagrams
- _____ Plumbing Details/Schedules/Calculations

Electrical Plan Sheets

- _____ General Specifications
- _____ Site Electric Plan
- _____ Floor(s) Plans (Lighting)
- _____ Floor(s) Plans (Power)
- _____ Roof Plan
- _____ Riser Diagram/One-line
- _____ Load/Fault Calculations



City of Columbia, Missouri

_____ Electrical Details

_____ Panel Schedules

Site Development – three (3) sets of plans required

Cover Sheet

_____ Developer/owner's name, mailing address, and telephone number

_____ Vicinity Map

_____ Legal description

_____ Zoning designation

_____ Table showing total impervious area (pre and post development)

_____ Site Plan (scale 1"=50' or larger)

_____ Grading Plan (scale 1"=50' or larger)

_____ Erosion and Sediment Control Plan

_____ 1 copy of SWPPP if disturbed area \geq 1 acre

_____ Landscaping Plan

_____ Plans sealed by a Professional Engineer licensed in the State of Missouri

Land Disturbance Permit and Fee Requirements:

Sites smaller than 1 acre:

Disturbed area < 3000 sq. ft: no permit, no fee.

Disturbed area > 3,000 square feet: permit required, no fee.

Sites one (1) acre or larger:

Disturbed area < 3000 sq. ft: permit required, no fee.

Disturbed area > 3000 sq. ft: permit and fee required.



City of Columbia, Missouri

Stormwater Management

- _____ Stormwater Management Plan (scale 1"=100' or larger)
- _____ Storm sewer profiles
- _____ Drainage area map
- _____ Storm system capacity/drainage calculations
- _____ Maintenance covenant and O&M manual
- _____ Calculations (detention and water quality)
- _____ Completed flood plain development permit application (if applicable)

New Public Street and Sidewalk

- _____ Uses City Standard Details
- _____ Spot elevations for sidewalks, ramps and drive approaches demonstrating ADA compliance
- _____ Traffic control plan (can be deferred submittal)

Retaining Walls

- _____ Engineered drawings and calculations (if over 4 feet)
- _____ Easement descriptions

Sewer Utility Division – one (1) set of plans required for all projects which involve sanitary sewer main extension or construction, and **one (1) additional set** of plans are submitted for work involving food service establishments and installations requiring grease, oil, and sand separators.

- _____ Sanitary Sewer Plan and profile
- _____ Quit claim deed documents
- _____ Easement documents (descriptions and diagrams)



City of Columbia, Missouri

_____ Sewer Extension Application

_____ Sewer Extension Application Fee

Does the design involve any food service (i.e. restaurant, school, daycare, convenience store, bakery, bar, grocery store, lodging, assisted living facility, etc.)? _____ Yes _____ No

Does the design involve a carwash, auto shop, lube service, or other business requiring a grease, oil, or sand separator?
_____ Yes _____ No

If “Yes” to either of the above questions, construction plans must include the following:

_____ Plumbing plans

_____ Kitchen equipment plans

_____ Interceptor location

_____ Sample port location

Fire Department

Building Plans – one (1) set of plans required

Comprehensive code analysis

_____ Square footage

_____ Use group

_____ Construction type

_____ Occupancy calculation

_____ Code edition used

_____ Plans sealed by a design professional licensed in the State of Missouri



City of Columbia, Missouri

_____ Room use description provided

Site plans

_____ Fire lanes

_____ Fire hydrant locations

_____ Topography information

_____ Landscaping

_____ Mechanical plans

_____ Electrical plans

_____ Plumbing plans

_____ Door schedule providing door and hardware type

Fire Alarm Plans – two (2) sets of plans required, deferred submittal allowed

_____ Plans must be free of design layers that are not part of the fire alarm system

_____ Plans are to scale and legible

_____ Room use description

_____ Ceiling heights provided detailing any applicable obstructions

_____ Device locations

_____ Candela and Dbs settings for notification devices

_____ Fire alarm and enunciator control panel locations

_____ Manufacturers cut sheets for all devices and equipment proposed as part of the system

_____ Voltage drop calculations

_____ Backup battery calculations for the entire alarm system



City of Columbia, Missouri

Fire Sprinkler Plans – two (2) sets of plans required, deferred submittal allowed

- _____ Plans sealed by a professional engineer licensed in the State of Missouri
- _____ National Fire Protection Association (NFPA) standard referenced
- _____ Construction type
- _____ Ceiling heights
- _____ Plans are to scale and legible
- _____ Room use description
- _____ Storage occupancies including storage materials and quantities (if applicable)
- _____ Hydraulic calculations
- _____ Manufacturers cut sheets for all equipment proposed on the project (i.e. sprinkler heads, valves, tamper and flow switches, compressors, anti-freeze storage tanks, etc.)

Fire Suppression Systems – two (2) sets of plans required, deferred submittal allowed

- _____ Plans sealed by a professional engineer licensed in the State of Missouri
- _____ Plans are to scale and legible
- _____ Location of suppression systems
- _____ Description of equipment to be protected
- _____ System make, model, and size
- _____ Nozzle type and flow requirements
- _____ Location of the pull station
- _____ Automatic fuel/electric shunt trip device indicated
- _____ Location and type of system alarm (local or fire alarm system)



City of Columbia, Missouri

Health Department – one (1) set of plans or PDF on CD required

Does the design involve any food service (i.e. restaurant, school, daycare, convenience store, bakery, bar, grocery store, lodging, assisted living facility, etc.)? Yes No

If “Yes”, plans must include the following:

- Plans to scale
- Floor plan
- Equipment schedule
- Finish schedule
- Plumbing plan
- Lighting plan
- Proposed menu

Does the design involve a swimming pool with or without an associated clubhouse? Yes No

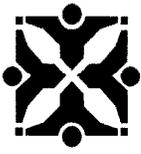
If “Yes”, plans must include the following:

- Plans to scale
- Site plan
- Plumbing plan
- Completed “Engineering Summary” on form provided by department

Water & Light Department – two (2) sets of plans required

Site Plans

- Property line locations
- Easement locations
- Building locations



City of Columbia, Missouri

- _____ Pavement locations
- _____ Existing and proposed utility locations
- _____ Electronic (AutoCAD) copy of the site plan

Electric

- _____ Panel schedules
- _____ Watt load calculations
- _____ Riser diagram
- _____ Equipment locations

Water

- _____ Riser diagram
- _____ Plumbing plan view
- _____ Equipment locations
- _____ Total supply fixture units (demand)
- _____ Sewer riser and plan view
- _____ Architect floor plan
- _____ Fire sprinkler system



CITY OF COLUMBIA, MISSOURI

COMMUNITY DEVELOPMENT

DEPARTMENT OF PLANNING AND DEVELOPMENT

(573) 874-7239

BUILDING AND SITE DEVELOPMENT

(573) 874-7474

OFFICE OF NEIGHBORHOOD SERVICES

(573) 817-5050

SITE PLAN CHECKLIST

Site Plan Name _____

Address _____

Site Legal Description _____

Project # _____ - _____ Date Reviewed _____ Review Engineer _____

Y | N | N/A

Prior to Review

- _____ Land Disturbance Permit application & \$200 fee (if applicable).
- _____ Proof of MDNR land disturbance permit (if applicable), with MDNR Permit number on cover sheet.
- _____ Transmittal letter/application (future link)
- _____ Three (3) sets of plans drawn on 22" x 34" or 24" x 36" sheets
- _____ All Plans signed and sealed by a Professional Engineer licensed in the state of Missouri

Routing (Internal)

- _____ One copy to City Arborist.
- _____ One copy to Inspector. First submittal only. (Provide 2 copies of final approved plans)
- _____ One copy to Traffic Engineer (if applicable)
- _____ Send proposed easements with exhibits to City Surveyor for checking.

Preliminary Items

- _____ Review Development Agreement, verify that items mentioned in Development Agreement are included in plans (if applicable)
- _____ Review preliminary plat and final plat.
- _____ Review conceptual stormwater management plan (if applicable)
- _____ If a planned development, review Council ordinances for any stipulations attached to the project

Plan Requirements

Cover Sheet

- _____ Developer/Owner's name, mailing address and telephone number
- _____ Survey Benchmark tied to City datum
- _____ Legal description of lot/property
- _____ Note that adjoining property owners must be notified in writing 30 days prior to construction

701 E. BROADWAY • P.O. BOX 6015 • COLUMBIA, MISSOURI 65205

(573) 874-7239 • FAX (573) 874-7546 • TTY (573) 874-6364

WWW.GO COLUMBIAMO.COM

- _____ Vicinity Map not less than 1" = 1 mile. Must have sufficient landmarks to locate the site
- _____ Table showing impervious area of the site (pre and post development)
- _____ Index of sheets
- _____ One Call phone number
- _____ Project Title
- _____ Utility company contacts and phone numbers
- _____ Zoning of property
- _____ If property is not located within the 100 year floodplain, the following note should be provided:

This tract is not located within the 100 year flood plain as per the Boone County FIRM Map # __, dated _____.

- _____ If the property does not contain a stream buffer provide the following statement:

This tract is not regulated by the City of Columbia Stream Buffer ordinance as determined by the USGS map for Columbia Quadrangle, Boone County, Missouri and Article X of Chapter 12A of the City of Columbia Code of Ordinances.

- _____ General note provided which reads as follows:

In order to terminate a state operating permit the Missouri Department of Natural Resources (MDNR) requires that the permittee submit a completed Form H (included with the approved permit) to the MDNR. A permit is eligible for termination when either perennial vegetation, pavement, buildings, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover shall be at least 70% of fully established plant density over 100% of the disturbed area. A copy of Form H should be submitted to the City at which time the City will remove the project from its inspection schedule.

- _____ General note provided which reads as follows:

Land disturbance sites should be inspected on a regular schedule and within a reasonable time period (not to exceed 48 hours) following heavy rains. Regularly scheduled inspections shall be at a minimum of once per week. Any deficiencies shall be noted in a weekly report of the inspection and corrected with seven calendar days of the report. Contractors are required to submit to City inspection staff copies of their inspection reports required by the Stormwater Pollution Prevention Plan (SWPPP) on a monthly basis.

Title block

- _____ Project Name, Address (or site location if no address has yet been assigned), Date (and any subsequent revision dates), Plan type (i.e. Land Disturbance, Site Plan)

General

- _____ Sheet number
- _____ North arrow (up or to the right) and scale on each sheet of plans
- _____ All profile stationing reads left to right
- _____ Dimensions of lot including bearings and angles
- _____ Site to be on a legal lot, and access a public street, per ordinance 25-17.
- _____ All existing and proposed easements on or adjacent to development shown. Width and legal reference for all existing easements provided (book and page)
- _____ All existing utilities and drainage pipes shown
- _____ Utilities to be relocated shown with new location
- _____ No items of work "by others" on plans with the exception of retaining walls (future link)
- _____ Retaining walls with a height of 4 feet or greater (measured from bottom-of-footing to top-of-wall), or that support a surcharge, require a submittal of detailed plans and calculations, sealed by a Missouri Professional Engineer, demonstrating compliance with IBC 1807.2. (This can be a deferred submittal.) Retaining walls under 4' in height do not require this submittal but must still be designed to comply with IBC 1807.2.
- _____ Pedestrian guard rail needed for 30" drop or more. If no detail is shown, then all the requirements of I.B.C. 1013 must be listed (i.e., not just the 4" sphere) in the note. These include but are not limited to location required, strength/attachment requirements (see 1607.8), height, opening limitations.
- _____ Legend of line types and symbols
- _____ Show limits of 100-year floodplain (if applicable)

_____ Show limits of Stream Buffer (if applicable). See Stream Buffer Plan section.

_____ Low finished floor elevation provided for each proposed structure

_____ Building to be dimensioned from the property line

Right of way

_____ Plans show existing and proposed street names, & right-of-way lines and widths (“variable” width right-of-way is unacceptable)

_____ Building setback line

_____ Prior consent required for retaining wall to be in City of Columbia right of way

----- **Site and Dimension Plans** -----

_____ Scale: 1”=50’ or larger

_____ All paved areas dimensioned

_____ All curb types/ locations indicated

_____ Curb return radii dimensioned

_____ Intra-site location map or match lines for large sites

_____ Pavement Marking Plan (Temporary and Permanent)

_____ Drive entrances to public streets

_____ Width labeled

_____ Concrete driveway in conformance with City standards

_____ No curb radii shown

_____ Sufficient spot elevation callouts to determine that the drive entrance meets ADA/ City specifications

_____ Standard Details

_____ Adequate notes provided indicating each City standard detail number needed on the project and a general note indicating that the contractor is required to have a copy of the City’s latest edition of the Street and Storm Sewer Specifications and Standards on site at all times during construction.

-OR-

_____ All applicable City standard details provided in the approved set of site plans. Details must include the City’s title block indicating the revision date and detail number.

----- **Grading Plan** -----

_____ Scale (1”=50’ or larger) and north arrow

_____ Grading Limits

_____ Ground Slopes - Maximum ground slope is 3H:1V, unless a long-term slope stability analysis is submitted, performed by a qualified geotechnical engineer, indicating that it is stable. (FS > 1.3). Fill slopes set back at least 12 in. from any property line

_____ Spot elevations, high points, and low points as needed

_____ Ensure adverse impact will not occur on adjacent sites, and no grading on adjacent properties without written permission

_____ Please demonstrate compliance with Ordinance 12A-71, regulating soil stockpiles. At a minimum list the ordinance requirements and their applicability to this site. A designated location for the stockpile would be preferred.

----- **Stormwater Management Plan, Drainage Map, and Calculations (Ord. 12A-85 – 12A-95)** -----

- _____ Existing/Proposed Contours shown at no more than 2' interval. Sufficient spacing must be provided to show topography of site.
- _____ Scale 1"=100' or larger for onsite areas (smaller scale allowed for large offsite drainages)
- _____ Drainage area maps, including all onsite areas and all offsite areas that drain to the site.
- _____ Storm Sewer system extended appropriately
 - _____ Public vs. Private storm sewer system clearly labeled
 - _____ Public storm sewer system minimizes length under pavement. Pipes should be perpendicular or parallel to street alignment unless otherwise unavoidable.
- _____ Existing/Proposed storm sewers shown
- _____ Storm sewer structures
 - _____ Structure numbers labeled
 - _____ Stationing shown
 - _____ Inverts/top elevations indicated
 - _____ Adequate side clearance for pipes provided
 - _____ Minimum length and width provided
 - _____ Minimum structure depth provided
- _____ Direction of flow on roofs and downspouts shown on plan
- _____ Drainage Calculations
 - _____ 10% design storm required
 - _____ 1% Storm overflow system provided – per Section 4.7 of the Stormwater Management and Quality Manual.
 - _____ Can't cause backwater onto adjacent property for 1% and lesser storm event.
 - _____ Must discharge to appropriate downstream drainage system – can't shift, concentrate or increase flow unless adequate stm. sewer facilities are available
 - _____ Information provided must be equivalent to Figures 7.3.1 – 7.3.3 of the "Stormwater Management and Water Quality Manual"
 - _____ "K" and "C" values match table 2.2.1.1 and 2.2.1.2 of the "Stormwater Management and Water Quality Manual"
 - _____ Time of Concentration (T_c) based on 100' max overland flow length (Calculations required for $T_c > 5$ min)
 - _____ Manning's "n" (RCP=.013, HDPE = 0.011, CMP=0.024 typ.)
 - _____ Hydrographs required for all submittals that require detention, for all drainage areas for the 1, 2, 10 and 100 year design storms.
- _____ Storm Sewer Profiles
 - _____ Profile required for storms sewers with two or more pipe runs
 - _____ Existing/proposed ground line indicated
 - _____ Stationing / Elevation (inverts and top) / Structure numbers
 - _____ Pipe length, diameter, slope and type
 - _____ Pipe orientation for structures with two or more pipes. Max 90° angle change.
 - _____ Structure size and type. No discharging a larger pipe into a smaller one.
 - _____ Top of pipe doesn't encroach into inlet throat
 - _____ Adequate vertical drop through the manhole (0.2')
 - _____ Minimum cover of 12 inches on top of the pipe
 - _____ Maximum pipe run of 500 feet between access points

- _____ Minimum pipe slope of 0.4% / Velocity in system between 2 and 15 fps. No appreciable decrease in velocity at inlets, bends, etc.
- _____ Pipe System design storm Hydraulic Grade Line (HGL) at each inlet shown. HGL to be 0.5' below any openings to the ground or street at all locations. (Even if designed for open channel flow, need to demonstrate energy losses haven't pushed it into pressure flow.)
- _____ No bends in pipes smaller than 33 inches.
- _____ Pipe crown elev's entering a structure above/at crown of existing pipe.
- _____ Box Culverts
 - _____ Built to MoDOT specifications
 - _____ Calculations with headwater and tailwater depths
- _____ Pipes
 - _____ Appropriate embedment (per std details 540.01 or 540.02 for Public system)
 - _____ Cover not less than manufacturer recommendation or 1', whichever is greater
 - _____ Minimum pipe size in public system = 12", 15" under pavement
 - _____ Toe walls
 - _____ Flared end sections
- _____ Outlets
 - _____ Grade for positive drainage shown
 - _____ Flowline indicated for end of pipe and end section
 - _____ Adequate outlet protection provided (per std detail 530.03 for Public system)
- _____ Engineered Channels
 - _____ 16' wide easement
 - _____ 1% storm completely contained, w/ freeboard of 1' below FFE of structures
 - _____ Velocity: max 6 fps (flow depth > 6"); 15 fps or limit of lining (depth < 6")
 - _____ Lining material – permissible shear stress within limits of Table 5.2.7.1
 - _____ Lining height : design storm profile +0.5'.
 - _____ Side slopes 2.5:1 max, for turf 3:1 max
- _____ Storm drainage easements to be at least 16 feet wide and centered on pipe
- _____ Tributary areas in non -R-1, R-2 or planned district equivalents must not allow 3,000 square feet of impervious area to drain across sidewalks (or 9,000 square feet of sodded area)
- _____ For redevelopment sites over an acre that have post-dev. flows greater than pre-development flows, need a note stating that analysis was performed and it indicates that the increase in impervious area resulting from this project will not have any adverse effects on adjoining or neighboring property.
- _____ A Stormwater Pollution Prevention Plan (SWPPP) is required if disturbed area > 1 acre

Detention/Retention* -- Ch 6.4 through 6.7 of Stormwater Manual – *see separate detention checklist*

*The default detention requirement is Flood Prevention Detention, which is assumed. If Channel Protection detention is selected, need to show applicability and meet requirements of Ch. 6.1

- _____ Detention Calculations with hydrographs. The maximum release rate from any development and redevelopment shall be controlled by limiting the post-development storm water release rates to the predevelopment rates for the 1, 2, 10 and 100 year storms.

Water Quality - Ch 6.8 of Stormwater Manual

- _____ Pre and Post development CN or change in impervious area Calculations
- _____ Level of Service Calculations. Permanent BMP's adequate to meet required LOS. (See Permanent BMP section for individual checklists)
- _____ Cross section provided for any BMP's utilized
- _____ WQ_v calculated using Sec 2.3 of the "Stormwater Management and Water Quality Manual"

Permanent Access And Buffers For Detention And/or Water Quality Facility - Ch. 6.2

- _____ The water surface of the design storage pool minimum 20' from structures, or greater if bldg. foundations or if slope stability is a consideration.
- _____ Min. 2' separation between the maximum ponding elevation and the lowest floor of applicable surrounding structures.
- _____ Min. 15' wide access strip for maintenance, with access from a street or parking area. Access needed for structures, inlet pipes, outlet pipes, spillways, etc.
- _____ Right-of-use agreement needed where a public street crosses top of a permanent dam.
- _____ Stormwater Management/BMP Covenant, with inspection schedule and inspection checklist. Please send original, executed and notarized document. Ensure the covenant date and notary date match exactly. If different than std. document submit to the Law Department for review.

----- Erosion and Sediment Control Plan (ordinance 12A-66 – 12A-71)-----

- _____ Project Narrative (Ord 12A-68) – Req'd for all projects needing Land Disturbance Permit.
 - _____ Project description, explanation of existing significant problems.
 - _____ Factors affecting runoff - existing & post-development
 - _____ Total disturbed area (in acres or sq. feet)
 - _____ Limits of Disturbance shown
 - _____ Calc of peak runoff from 10-year freq., 24-hr. duration storm
 - _____ Explanation of selection of BMPs.
 - _____ Minimum of 2 rows of silt fence at the toe of all slopes that are next to a stream
- _____ Initial BMP Installation Plan – temporary erosion control measures (Ord. 12A-70)
 - _____ Perimeter control BMPs
 - _____ Ditch checks – straw bales not effective.
 - _____ Protection of inlets
 - _____ Protection of adjacent properties
 - _____ Stabilized Construction entrance
 - _____ Stabilized parking/delivery/staging area
 - _____ Diversion of offsite water around disturbance when feasible
 - _____ Sediment basins (when required)
 - _____ Concrete wash out area
 - _____ Other BMP's
- _____ Staged BMP Plan - Please provide a separate or staged plan or notes that clearly indicate required BMPs for each stage of construction, e.g. grading, paving, building construction, final stabilization.

- _____ Silt Basins – required for common, disturbed drainage areas over 10 acres.
 - _____ Design information shown in accordance with Standard Details
 - _____ Permanent Emergency Spillway provided with adequate protection
 - _____ All inflow pipe flowlines above cleanout level
 - _____ Riser pipe size/perforations indicated (when applicable)
 - _____ Anti-floatation device size indicated (when applicable)
 - _____ Baffles provided when necessary (when applicable)
 - _____ Plan shown for ultimate removal of basin
 - _____ Notes regarding basin removal
 - _____ Notes regarding basin clean out

----- **Stream Buffer Plans (Ord 12A-231 – 12A-242)** -----

- _____ Site plan at a minimum scale of one (1) inch equals two hundred (200) feet.
- _____ Field delineated and surveyed streams, springs, seeps, bodies of water, sink holes, and wetlands (include a minimum of two hundred (200) feet into adjacent properties).
- _____ Limits of delineated stream buffers. Streamside zone and outer zone must be shown.
- _____ Limits of the ultimate 100-year floodplain as shown on the adopted floodplain maps for the City.
- _____ Steep slopes greater than fifteen (15) percent for areas adjacent to and within two hundred (200) feet of streams, wetlands, or other waterbodies.

----- **New Public Street or Sidewalk Plans** -----

- _____ Plans meet the requirements of the City’s Major Roadway Checklist.
- _____ For projects w/ a new building or building expansion: Sidewalks required along ALL streets – otherwise must go through Council via Planning’s variance process. (Ord 24-35 and 25-48 to 51)
- _____ Sidewalk and sidewalk ramp type per city standards, with elevations to ensure ADA compliance at ramps, across drive approaches, etc.
- _____ Temporary Traffic Control Plan, that meets MUTCD requirements. (This can be a deferred submittal, however no right-of-way permit will be issued until this plan is accepted.)
- _____ Pedestrian Traffic Control Plan, that meets MUTCD requirements.
- _____ General note provided which reads as follows:
 - Contractor is responsible for notifying the following agencies, as required, immediately prior to closure of street, during construction for inspections and again when work is complete and street is reopened:*
 - Site Development (ROW Inspections) 874-7474*
 - Building Safety (Plumbing/Building Inspections) 874-7474*
 - Joint Communications (Emergency Services) 874-8471*
 - Columbia Transit (City Buses) 874-7282*
 - Parking Enforcement (Parking Meters) 874-7674*
 - Public Works Street Division (Street Patching) 874-6289*
- _____ Grading in the public street ROW - Finished grade of ¼ to ¾ inch per foot towards the public street.
- _____ Pavement patches per city standards. Make cuts parallel or perpendicular to traffic flow and avoid patch edges in wheelpaths.

Note--If any work in the ROW, contractor must obtain a Right of Way permit. If any lane closures or restrictions, contractor must also submit “Application for Short-Term Restrictions & Closures for Construction Projects & Repairs”, prior to any lane closure/restriction. Available at 3rd Floor Service Counter, or by calling 874-7474. (Not submitted w/ plans, contractor must obtain)

----- **Permanent BMP Plans** -----

Rain Gardens

- _____ Maximum contributing area of 1 acre
- _____ Maximum ponding in depressional area of 3 days
- _____ Placement of rain gardens is to be 10 feet away from building foundations
- _____ No perforated outlet pipes
- _____ Soils test to be provided (percolation test)

Bioretention

- _____ Pretreatment
- _____ Ponding Area
- _____ Organic Mulch Layer
- _____ Planting Soil Bed - < 10% clay. With sufficient permeability.
- _____ Sand Bed
- _____ Plants
- _____ Water Level Control Structure
- _____ Side Slopes to be 4:1 or flatter
- _____ WQ_v to be filtered through the planting soil in 1-3 days
- _____ Tributary area less than 4 acres
- _____ 1 cleanout per run and every 50 feet or less
- _____ Overflow that safely passes up to and including the 100 year storm event
- _____ Planting depth at least 2.5 feet deep
- _____ Ponding area at least 6 inches deep
- _____ K value to be between 1 and 2

Pervious Pavement Systems

- _____ Water Quality storm infiltrates into soil
- _____ Contributing area to pervious pavement to be less than a 3:1 ratio
- _____ 12 hour drain time used

Extended Wet Detention

- _____ Sediment forebay holding at least 10% of WQ_v and 4-6 feet deep, formed by acceptable barrier
- _____ Permanent pool depths between 4-12 feet
- _____ WQ_v above the permanent pool
- _____ WQ_v to discharge over a period of 40 hours
- _____ Flow path to have a minimum length of three times the facility width, as measured across the center of the facility in the smallest dimension at the permanent pool elevation
- _____ Erosion protection provided at facility's outfall

Extended Dry Detention Basin

- _____ Placed outside of stream corridors and stream buffer zones
- _____ WQ_v to discharge between 12 - 40 hours
- _____ Sediment forebay that captures 10% of the WQ_v and is 4-6 feet deep
- _____ Basin depth between 2-5 feet for the WQ_v
- _____ Side slopes at least 4:1 for WQ_v
- _____ 1 foot of freeboard when detaining the WQ_v
- _____ Erosion protection to be provided at facility's outfall

Turf Swale

- _____ Side slopes to be no steeper than 3:1
- _____ Longitudinal slope at least 1%
- _____ Velocity for 2 year storm must not exceed 4 fps or erosive velocity for turf
- _____ Drainage area of 5 acres or less
- _____ Surface storage of WQ_v maximum depth of 18 inches

----- **Other Permits (if applicable)** -----

- _____ Provide MoDOT right-of-way permit (when applicable) or proof one is not needed
- _____ Floodplain Development permit needed if regulated floodplain encroaches the site (even if outside limits of disturbance).
- _____ City of Columbia Right-of-use permit (signs, retaining walls in ROW, etc)



COMMERCIAL PERMIT and PLAN REVIEW APPLICATION

City of Columbia - Community Development Department / Building and Site Development Division
701 E. Broadway, Columbia, Missouri 65201
Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251



STREET ADDRESS including Suite/Unit # (if known)		# OF FLOORS	APPLICATION VALUE*: \$	PERMIT #	
PROJECT/BUSINESS NAME:		CONSTRUCTION TYPE*:	OCCUPANCY CLASSIFICATION*:	ZONING*	BUILDING AREA*:
Permit Type(s): <input type="checkbox"/> Interior Demo <input type="checkbox"/> Building <input type="checkbox"/> Footing & Foundation/Shell ^a <input type="checkbox"/> Land Disturbance ^b ^a <i>Additional application for Footing/Foundation Permit required</i> ^b <i>Land Disturbance permit fee/application required</i>	Submittal: <input type="checkbox"/> First Submittal <input type="checkbox"/> Deferred Submittal <input type="checkbox"/> Revised Submittal # of Plan Sets (See Attached Worksheet)	Site Development: <input type="checkbox"/> Land Disturbance/Site/Grading Plans <input type="checkbox"/> Stormwater Management Plans/Calculations <input type="checkbox"/> Erosion/Sediment Control Plan <input type="checkbox"/> Street/Storm Infrastructure Plan <input type="checkbox"/> Landscaping/Tree Preservation Plan <input type="checkbox"/> Stream Buffer Plan <input type="checkbox"/> Floodplain Development Permit ^c <input type="checkbox"/> Retaining Wall Plans/Calculations <input type="checkbox"/> Temporary Traffic Control Plan <input type="checkbox"/> Easement Documents <input type="checkbox"/> BMP Maintenance Covenant <input type="checkbox"/> Sanitary Sewer Plans ^d <input type="checkbox"/> Quit Claim Document <input type="checkbox"/> PDF of Approved Plan ^c <i>Floodplain development application required</i> ^d <i>Sewer extension fee/application required</i>		Building Safety: <input type="checkbox"/> Architectural Plans <input type="checkbox"/> Specification Book <input type="checkbox"/> Structural Calculations <input type="checkbox"/> Lighting Plan <input type="checkbox"/> MEP Plans <input type="checkbox"/> Soils Report <input type="checkbox"/> Swimming Pool Plan <input type="checkbox"/> Fire Alarm Plans <input type="checkbox"/> Fixed Suppression Plans <input type="checkbox"/> Hood Plan <input type="checkbox"/> IECC Report <input type="checkbox"/> Truss Plans <input type="checkbox"/> PDF of Approved Drawing Set	
		DESCRIPTION OF WORK:			
DESIGN PROFESSIONAL*:			PROJECT/BUSINESS OWNER*:		
ADDRESS:			ADDRESS:		
CITY, STATE, ZIP			CITY, STATE, ZIP		
TELEPHONE NUMBER*:			TELEPHONE NUMBER*:		
E-MAIL ADDRESS*:			E-MAIL ADDRESS*:		
CONTRACTOR:					
ADDRESS:		CITY,	STATE,	ZIP	
TELEPHONE NUMBER:			E-MAIL ADDRESS:		
STARRED (*) ITEMS ABOVE ARE REQUIRED FOR APPLICATION TO BE PROCESSED					
I hereby acknowledge that I have read this application and state that the above is correct and I agree to comply with the city ordinances and state laws regulating building construction. I understand that a certificate of occupancy must be issued before the building is occupied. Any changes to the approved plans must be re-reviewed and approved by the Community Development Department prior to making changes.					
SIGNATURE (of Owner or Owner's Representative)		DATE:		APPROVED BY (Plan Reviewer):	
Please Complete the Attached Worksheet to Determine Plan Submittal Sets Required.					



Commercial Project Plan Submittal Worksheet

The “No. of Plan Sets Submitted” column is to be completed by the Design Professional, Project Owner, or Contractor to determine the number of plan sets to be submitted, based on the scope of the project.

NOTE: Plans should be SEALED & SIGNED

Department	Plan Submittal Set Required for:	No. of Plan Sets Required^	No. of Plan Sets Submitted
Building Safety	All projects that involve a building/structure (except stand-alone retaining wall) <i>--Full Set (Civil, Structural, Architectural and MEPs) required</i>	1	
Site Development	All projects involving site work Additionally stand-alone retaining wall <i>--Civil sets /or Full Sets (Civil, Structural, Architectural and MEPs)</i>	3	
Sewer Utility	All projects which include new sewer main <i>--Civil set AND Plumbing /or Full Set(Civil, Structural, Architectural and MEPs)</i>	1	
Wastewater Treatment Plant	All projects including grease interceptors or sand-oil separators *Facilities involving food &/or beverage of any type including restaurants, child care facilities, convenience stores & bars <i>-- Civil Set AND Plumbing /or Full Set(Civil, Structural, Architectural and MEPs)</i>	1	
Solid Waste	All projects including new dumpster pad location or enclosures <i>--Civil Set: Applicable pages showing site location, solid waste infrastructure and approach & any detail associated with solid waste pad & enclosure/ or Full Set (Civil, Structural, Architectural and MEPs)</i>	1	
Fire	All projects (except stand-alone retaining wall) <i>-- Full Set (Civil, Structural, Architectural and MEPs) required</i>	1	
Water	All Projects <i>-- Civil, Architectural and MEPs + AutoCAD of Site only /or Full Set+AUTOCad</i>	1	
Light	All Projects <i>-- Civil, Architectural and MEPs + AutoCAD of Site only /or Full Set +AUTOCad</i>	1	
Planning & Zoning	All development occurring in “planned” and “overlay” zoning districts or have special development conditions imposed by Council-approved development agreements. Additionally, Board of Adjustment approvals including Conditional Use Permits <i>--Architectural AND Civil /or Full Set (Civil, Structural, Architectural and MEPs)</i>	1	
Health	*Facilities involving food &/or beverage of any type including restaurants, child care facilities, convenience stores & bars * Design/operation/maintenance of public swimming pools/spas * Tattoo parlors or Lodging Establishments <i>--Architectural AND MEPs /or Full Set (Civil, Structural, Architectural & MEPs)</i>	1	

[^]Most likely number of sets required; additional sets may be required and will be requested via email after the Initial Screening Process is complete.

TOTAL PLAN SETS SUBMITTED

NOTE: If non-FULL Sets are submitted, indicate on each set its intended Department as per chart above

For additional information please see the “Commercial Development Plan Review Help Document” Available at Building and Site Development Division website (www.GoColumbiaMo.com - search “Building and Site Development”)

City of Columbia, Missouri Building and Site Development

LAND DISTURBANCE PERMIT APPLICATION

ADDRESS:

1. LEGAL DESCRIPTION:

2. ENGINEER: _____

4. CONTRACTOR/AGENT FOR OWNER

3. OWNER: _____

COMPANY/NAME: _____

ADDRESS: _____

ADDRESS: _____

CITY/STATE: _____

CITY/STATE: _____

PHONE: _____

PHONE: _____

I, (print name) _____ certify that all construction will be in accordance with the approved site plan, with the current requirements of the City of Columbia, and with the general conditions as stated in the permit. Any changes to the approved site plan will be re-reviewed and approved by Building and Site Development prior to making changes.

Signature of Owner

I. PLAN SUBMITTAL

Date of Plan Date Approved By

- A. Street
- B. Sanitary Sewer
- C. Storm Water Management
- D. Land Disturbance
- E. Landscaping/Tree Preservation

Date of Plan	Date Approved	By

II. SITE ONE (1) ACRE OR LESS OR INDIVIDUAL LOT ZONED R-1 OR R-2

A. Plot Plan/Erosion Control Plan

III. STORM WATER UTILITY INFORMATION

A. Square Feet/Units: _____

B. Storm Water Rate: ST _____

C. Total Monthly Fee: \$ _____

PERMIT NO.:

City of Columbia, Missouri
Building and Site Development

LAND DISTURBANCE PERMIT

This permit authorizes _____ to perform land disturbance activities on _____ from _____ to _____.

All work covered under this permit is to be in accordance with the attached permit application, the approved land disturbance plans and specifications and the following General Conditions:

GENERAL CONDITIONS

1. The applicant agrees to hold the city of Columbia and its employees from all liability judgments, costs, expenses and claims growing out of damages of any nature whatsoever to any person or property arising out of performance or nonperformance of said work or existence of said improvements.
2. All costs incurred due to the issuance of this permit shall be borne by the applicant, the applicant's successors and assigns.
3. This permit does not relieve the applicant of the responsibility of obtaining other permits required by this or any other agency having jurisdiction.
4. Applicant agrees to keep a copy of the permit, permit application and an approved plan on the job site.
5. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) which are transported, stored or used for maintenance, cleaning or repairs shall be managed according to the provisions of RCRA and CERCLA.
6. All paints, solvents, petroleum products and petroleum waste products (except fuels) and storage containers (such as drums, cans or cartons) shall be stored such that these materials are not exposed to storm water. Sufficient practices of spill prevention, control and/or management shall be provided to prevent any spills of these pollutants from entering a water of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
7. The applicant shall notify by telephone and in writing the Department of Natural Resources, Water Pollution Control Program, Post Office Box 176, Jefferson City, MO 65102, 1-800-361-4827, of any oil spills or if hazardous substances are found during the prosecution of work under this permit.
8. Other _____

Approved:

_____ Date _____



CITY OF COLUMBIA, MISSOURI
 PUBLIC WORKS DEPARTMENT
 701 E. BROADWAY • P.O. BOX 6015
 COLUMBIA, MISSOURI 65205-6015

**APPLICATION FOR CONSTRUCTION PERMIT -
 SEWER EXTENSION**

FOR DEPARTMENT USE ONLY

PERMIT NO.	
FEE RECEIVED	DATE RECEIVED
RECEIPT NO.	

DO NOT ATTEMPT TO COMPLETE THIS FORM BEFORE READING THE ACCOMPANYING INSTRUCTIONS.
 PLEASE FILL IN ALL BLANKS. ALL NECESSARY QUIT CLAIM AND EASEMENT DOCUMENTS **MUST** BE ATTACHED.
NOTE: A CONSTRUCTION PERMIT FEE OF \$300.00 MUST ACCOMPANY THIS APPLICATION.

1.1 NAME OF PROJECT _____

1.2 LOCATION OF PROJECT _____

2.1 OWNER'S NAME	TELEPHONE NO.	EMAIL ADDRESS
------------------	---------------	---------------

ADDRESS	CITY	STATE	ZIP CODE
---------	------	-------	----------

ENGINEER	TELEPHONE NO.	EMAIL ADDRESS
----------	---------------	---------------

3.1 DESIGN INFORMATION
 GRAVITY FORCE MAIN IF FORCE MAIN, TYPE OF PUMP(S): _____

FORCE MAIN DESCRIPTION: NO. OF PUMP STATIONS AND SIZE AND LENGTH OF FORCE MAIN(S). ALL PUMP STATION PLANS SHALL BE ACCOMPANIED BY AN ENGINEERING REPORT AS PER CITY OF COLUMBIA SANITARY SEWER PUMP STATION DESIGN REQUIREMENTS AND STANDARD SPECIFICATIONS (CURRENT EDITION), SECTION 2.0

- A. TOTAL POPULATION (RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL) OR NUMBER OF LOTS TO BE SERVED BY THIS EXTENSION: _____
- B. ESTIMATED BASE AND PEAK FLOWS TO BE CONTRIBUTED BY THIS EXTENSION (GPM) (CALCULATIONS MUST BE SHOWN ON PLANS): _____
- C. NUMBER OF MANHOLES: _____ D. NUMBER OF CLEANOUTS (8" OR GREATER): _____
- E. TOTAL LENGTH OF EXTENSION: _____ F. PIPE DIAMETER (IN): _____ G. PIPE MATERIAL: _____
- H. IF MORE THAN ONE PIPE MATERIAL AND/OR SIZE, LIST LINEAR FOOTAGE OF EACH MATERIAL AND SIZE: _____
- I. RECEIVING SEWER SIZE: _____ J. RECEIVING CITY SEWER MH NUMBER: _____

4.1 I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THE APPLICATION, AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF SUCH INFORMATION IS TRUE, COMPLETE, AND ACCURATE, AND IF GRANTED THIS PERMIT, I AGREE TO ABIDE BY ALL CITY OF COLUMBIA SPECIFICATIONS AND STANDARDS. I ALSO AGREE TO ABIDE BY THE MISSOURI CLEAN WATER LAW AND ALL RULES, REGULATIONS, ORDERS AND DECISIONS, SUBJECT TO ANY LEGITIMATE APPEAL AVAILABLE TO APPLICANT UNDER THE MISSOURI CLEAN WATER LAW, OF THE MISSOURI CLEAN WATER COMMISSION.

APPLICANT'S SIGNATURE (SEE INSTRUCTIONS)	TELEPHONE NO.	EMAIL ADDRESS
--	---------------	---------------

NAME PRINTED	TITLE OR CORPORATE POSITION	DATE
--------------	-----------------------------	------



City of Columbia
Public Works Department
Departmental Guideline

Subject Policy for Stormwater Detention on Small Sites Upstream of Critical Areas

Applicable Management Practice Stormwater Management and Water Quality Manual,
Figure 6.8.1 Stormwater Management in Redevelopment

Purpose: To establish consistent guidelines for provision of detention in redevelopment projects on small sites upstream of Critical Areas.

1. detention must be provided for any new impervious surface, and
2. detention must be provided for $\frac{1}{4}$ of the existing impervious surface with an additional $\frac{1}{4}$ at each subsequent redevelopment until the entire impervious surface of the site has detention.

However,

detention for existing impervious surface will be waived if the developer reduces imperviousness by 10%. At such time as it is no longer possible to reduce imperviousness by 10%, the developer must begin providing detention for $\frac{1}{4}$ of the impervious surface on site until, at the end of 4 redevelopment cycles, the entire impervious surface of the site has detention.

For detention calculations, the pre- condition must be represented by CN = 78 or lower and time of concentration represented by sheet flow over a surface with n-factor of 0.15 or greater, the average slope of the site, and the length of the site in the downstream direction (not to exceed 100 feet).

Effective Date:

May 6, 2014

Approved by:

John D. Glascock

John Glascock, P.E.
Director

Renewal	Renewal	Renewal
Renewal	Renewal	Renewal

**CITY OF COLUMBIA, MISSOURI
COMMUNITY DEVELOPMENT DEPARTMENT
STORMWATER MANAGEMENT-DETENTION CHECKLIST**

- _____ Inflow / Outflow Hydrographs of all drainage areas for the 1, 2, 10 and 100 year design storms.
- _____ Post development outlet flows are to be less than pre-development flows in the 1, 2, 10 and 100 year, 24 hour design storms.
 - _____ Pre development CN = 78. Ensure proper Tc is used.
 - _____ Redevelopment projects: If det. reduction is applicable, adjust CN appropriately.
- _____ Rate of inflow to the storage facility and all hydrologic considerations must include all tributary areas to the detention basin under existing conditions and fully developed conditions.
- _____ Stage-Storage curve provided
- _____ Stage-outflow curve provided
- _____ Required detention parameters provided in calcs or on plans:
 - _____ Total site area, acres
 - _____ Total area to basin, acres
 - _____ Off-site area to basin, acres
 - _____ Percent impervious of total site, Pre-developed, %
 - _____ Percent impervious of total site, Post-developed, %
 - _____ Percent impervious of area to basin, Post-developed, %
 - _____ Percent impervious of off-site area to basin, Post-developed, %
 - _____ Storage volume at overflow, cf
 - _____ Water elevation at 100-year storm, cfs
 - _____ Orifice type and area, sf
- _____ All designs shall include an emergency or overflow spillway which would pass excess flows greater than those of the 25 year design storms and overflows caused by clogging of the principal outlets. The emergency spillway shall be designed to safely pass the flow resulting from a 100-year frequency, 24-hour duration storm event.
- _____ Erosion control provided on the emergency or overflow spillway.
- _____ Primary discharge is into an acceptable stormwater conveyance facility.
- _____ Detention structures which are proposed to be located within a designated 100-year flood plain shall not be permitted.
- _____ No detention storage facility will be permitted within public street right-of-way without specific written approval from the Director of Public Works.
- _____ Orifice Design
 - _____ Orifice plate is stainless steel, aluminum, or ASTM A-123 galvanized with stainless steel fasteners, and sealant
 - _____ Accessible trash rack on orifices smaller than 8" diameter
 - _____ Outlet orifice not impaired by tailwater
 - _____ Orifice plate can fit through access opening for future removal/replacement

_____ Underground Storage

_____ Vented

_____ Adequate access for maintenance/ cleaning of vault and orifice

_____ Bearing capacity of subgrade specified.

_____ Depths of stone above and below chambers specified.

_____ Available storage volume calculated (Stormtech “Cumulative Storage Volume” spreadsheet, or equivalent.)

_____ Available storage volume > required storage for detention (typ. on 100-year hydrograph routed through the chamber system))

_____ Cross section of emergency or overflow spillway including 100year storm design capacity, flowline elevation, 100 year design storm WSE, and top of berm elevation

_____ Cross section of dam including any compaction requirements

_____ Anti-seep collars – wet pond only.

STORMWATER MANAGEMENT/BMP

FACILITIES COVENANT

**City of Columbia, Missouri
Public Works Department
(573) 874-7250**

THIS Covenant made and entered into this _____ day of _____, 20____, by and between _____, a _____ of the County of _____ in the State of _____, Grantor, hereinafter called the "Landowner", and the City of Columbia, Missouri, a municipal corporation of the County of Boone in the State of Missouri, Grantee, hereinafter called the "City." Grantee's mailing address is Post Office Box 6015, Columbia, MO 65205. Grantor's mailing address is _____.

WHEREAS, the Landowner is the owner of certain real property described as (Boone County County Tax Map/Parcel Identification Number) _____ as recorded by deed in the land records of Boone County, Missouri at Deed Book _____ Page _____, with the legal description of _____,

INSERT LEGAL DESCRIPTION

hereinafter called the "Property;" and

WHEREAS, the Landowner is proceeding to, or has, made improvements on the Property; and

WHEREAS, the Site Plan/Subdivision Plan known as _____ (Name of Plan/Development) hereinafter called the "Plan," which is expressly incorporated herein by reference, as approved, or to be approved, by the City, provides for detention of stormwater and/or storm water quality treatment within the confines of the Property; and

WHEREAS, the City requires that onsite stormwater management/BMP facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns, including any homeowners association;

WHEREAS, City of Columbia, Code of Ordinances, Chapter 12 A, Article V addresses issues relating to the operation and/or maintenance of stormwater systems; and

WHEREAS, the Landowner, its successors and assigns, understands that the execution and adherence to the provisions of this Covenant is a condition precedent to the City's permitting, approving the plan, and/or approving the final plat for the Property and subdivision located thereon;

NOW, THEREFORE, in consideration of the foregoing premises and mutual covenants the parties hereby agree as follows:

1. The stormwater management/BMP facilities and conveyances shall be constructed, operated, and maintained by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the Plan, as well as in accordance with State and Federal law, the City of Columbia Stormwater Management and Water Quality Manual, and any and all applicable City ordinances.
2. The Landowner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater facilities and improvements on the Property. Adequate Maintenance required by this Covenant shall include, but is not limited to, scheduled and corrective maintenance of all facilities and improvements intended to manage and/or control stormwater on the Property, with such facilities and improvements to expressly include, but not be limited to pipes, channels, structures, vegetation, berms, outlet structures, pond areas, access roads, or any other improvement relating to stormwater (the "Stormwater Facilities and Improvements"). Adequate maintenance is herein defined as keeping such Stormwater Facilities and Improvements in good working condition such that they satisfactorily perform their intended design functions and complying with attached maintenance procedures and schedules (Attachment 'A').
3. The Landowner, its successors and assigns, shall inspect and maintain the Stormwater Facilities and Improvements a minimum of once per year and more often as required by Attachment 'A', and keep records of the inspection, repair, maintenance and any modifications to the facilities and shall retain these records for a minimum of five (5) years. Inspections shall be made utilizing the forms in Attachment 'B'. BMP's shall be inspected after each Water Quality Storm event, which is a storm with rainfall greater than or equal to 1.3 inches. These records shall be made available to the Director of Public Works during inspection of the facility or at any time upon request. The purpose of the inspection is to assure safe and proper functioning of the Stormwater Facilities and Improvements located on the Property. Each annual inspection shall include a full and complete inspection of all Stormwater Facilities and Improvements located on the Property. Any and all deficiencies identified during such inspections shall be noted in the inspection report. The inspection report shall also include a detailed plan for any and all repairs to the Stormwater Facilities and Improvements necessary to correct any deficiencies identified during the inspection, with the repair plan to be prepared by a professional engineer, or some other duly qualified professional, licensed in the State of Missouri and shall be approved by the Director of Public Works.
4. The Landowner, its successors and assigns, hereby grants permission to the City, its authorized agents and employees, to enter upon the Property and to inspect the Stormwater Facilities and Improvements as deemed necessary by the City for purposes of protecting the public health, safety or welfare, for purposes of investigating or inspecting any reported or suspected deficiencies in the Stormwater Facilities and Improvements on the Property, for

purposes of responding to or investigating citizens' complaints relating to the management or control of stormwater on the Property. These inspections may be random, scheduled, or in response to a complaint. Inspections shall generally take place between the hours of 8:00 a.m. to 5:00 p.m. Monday thru Friday. The City shall provide the Landowner, its successors and assigns, with a copy of any inspection findings, as well as a directive to commence with any required repairs. If the Landowner does not agree with the City inspection findings or directive, the Landowner shall hire an independent Professional Engineer acceptable to the City to perform an independent inspection. To the extent that the City does not agree with or to the contemplated repairs proposed by the Landowner, the City may submit an alternate repair plan to the Landowner.

5. In the event the Landowner, its successors and assigns, fails to maintain the Stormwater Facilities and Improvements on the Property in good working condition acceptable to the City, and fails to make repairs as specified in the inspection report within a reasonable time frame as established by the City, with such time frame not to be shorter than thirty (30) days, the City may enter upon the Property and take any and all action necessary to correct deficiencies identified in the inspection report. The Landowner, its successors and assigns, shall be responsible for any and all fees and expenses incurred by the City in taking such corrective action. This provision shall not be construed to allow the City to erect any structure of a permanent nature on the land of the Landowner outside the easement for the stormwater management/BMP facilities. It is expressly understood and agreed that this Covenant imposes no obligation or responsibility on the City to routinely maintain or repair any Stormwater Facilities and Improvements located on the property.
6. The Landowner, its successors and assigns, will perform all work necessary to keep the Stormwater Facilities and Improvements in good working condition as required by the approved Plan, as well as by State and federal law, the City of Columbia Stormwater Management and Water Quality Manual, and any and all applicable City ordinances.
7. In the event that the City performs or undertakes work of any kind pursuant to this Covenant or expends any funds or resources in performance of said work for labor, use of equipment, supplies, material, and the like, the Director of Public Works shall certify the cost of abatement to the City Clerk. The cost shall include administrative costs as well as the actual cost of abating the nuisance. The City Clerk shall cause a special tax bill against the property to be prepared in the amount of the abatement costs. The tax bill from the date of its issuance shall be a lien on the property until paid and shall be prima facie evidence of the recitals therein and of its validity. No clerical error or informality in the tax bill or in the proceedings leading up to the issuance of the tax bill shall be a defense in an action to collect the tax bill. Tax bills issued under this section, if not paid when due, shall bear interest at the rate of eight (8) percent per annum. The cost of abatement shall also constitute a personal obligation of the Landowner, its successors and assigns, and of any other person who caused the nuisance.
8. This Covenant shall impose no liability on the City with respect to the maintenance or repair of any Stormwater Facilities and Improvements on the Property, nor does the City assume any obligation or duty to undertake or perform any action allowed for, or permitted by, this Covenant. The Landowner, its successors and assigns, further agrees to indemnify and hold the City harmless from any liability arising out of the management, operation, maintenance, or failure of any Stormwater Facilities and Improvement subject to this Covenant.
9. Notwithstanding any right extended to the City pursuant to this Covenant, it is expressly recognized and acknowledged that the City retains all prosecutorial rights and remedies

available to it, including the enforcement of any and all applicable City ordinances, against the Landowner, its successors and assigns, relating to the operation, maintenance, and/or repair of Stormwater Facilities and Improvements located on the Property.

10. This Covenant shall be recorded among the land records of Boone County, Missouri, and shall constitute running with the land, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, including homeowners association.

WITNESS the following signatures and seal

Company/Corporation/Partnership Name

(SEAL)

By: _____
(Signature)

(Type/Print Name and Title)

Corporation:

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____ in the year 20____, before me, a Notary Public in and for said state, personally appeared, _____, who being by me duly sworn, acknowledged that they are the _____ of _____ and that said instrument was signed in behalf of said corporation and further acknowledged that they executed the same as a free act and deed for the purposes therein stated and that they have been granted the authority by said corporation to execute the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____ .

NOTARY PUBLIC

(SEAL)

My Commission Expires: _____

Single Person:

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____ in the year 20____, before me, a Notary Public in and for said state, personally appeared, _____, who being by me duly sworn, acknowledged that she/he executed the same as a free act and deed for the purposes therein stated. The said _____ further declares herself/himself to be single and unmarried.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____ .

NOTARY PUBLIC

(SEAL)

My Commission Expires: _____

Husband and Wife:

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____ in the year 20_____, before me, a Notary Public in and for said state, personally appeared, _____, husband and wife, who being by me duly sworn, acknowledged that they executed the same as their free act and deed for the purposes therein stated.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____ .

NOTARY PUBLIC

(SEAL)

My Commission Expires: _____

Limited Liability Corporation:

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____ in the year 20 _____, before me, a Notary Public in and for said state, personally appeared, _____, who being by me duly sworn, acknowledged that they are member(s) of _____, a limited liability company, and that said instrument was signed in behalf of said company and further acknowledged that they executed the same as a free act and deed for the purposes therein stated and that they have been granted the authority by said limited liability company to execute the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____ .

NOTARY PUBLIC

(SEAL)

My Commission Expires: _____

Partnership:

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____ in the year 20____, before me, a
Notary Public in and for said state, personally appeared,
_____, of
_____ Partnership, who being by me duly sworn, acknowledged that they
executed the same as a free act and deed for the purposes therein stated and that they have been granted
the authority by said partnership to execute the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year
last written above.

_____ .

NOTARY PUBLIC

(SEAL)

My Commission Expires: _____

Trust:

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____ 20____, before me, a Notary Public in and for said state, personally appeared TRUST VERBIAGE, known to me to be the person(s) described in and who executed the foregoing instrument, who being by me duly sworn, acknowledged that they executed the same as a free act and deed for the purposes therein stated.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____ .

NOTARY PUBLIC

(SEAL)

My Commission Expires: _____

Attachment A
Required Inspection and Maintenance Schedule, and Maintenance Procedures

Attach a maintenance and inspection schedule.

BMP Owner maintenance schedule

The following is a list of maintenance items and the frequency of when they need to be done. These items are recurring maintenance and separate from maintenance needed after inspection.

BMP: Vegetated Channels, Wet and Dry Swales	Frequency
Initial Maintenance	
Irrigate swale during dry season or when necessary.	As needed.
Perpetual Maintenance	
Mow grass to maintain a height of 3-4 inches. Litter should be removed prior to mowing. Clippings should be composted.	As needed, seasonally
Rake and remove fallen leaves and debris from deciduous trees and shrubs.	As needed, seasonally
Irrigate swale during dry season or when necessary.	As needed, seasonally
Provide weed control if necessary to control invasive species.	As needed
Remove litter, branches, rock blockages, and other debris and dispose of properly.	Semi-annually
Maintain inlet flow spreader (if applicable)	Semi-annually
Declog the pea gravel diaphragm	Annually or as needed
Correct erosion problems in the sand/soil bed of dry swales.	Annually or as needed
Remove all accumulated sediment that may obstruct flow through the swale. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 inches at any spot, covers vegetation, or once it has accumulated to 10% of the original design volume. Replace the grass areas damaged in the process.	As needed
Rototill or cultivate the surface of the sand/soil bed of dry swales if the swale does not draw down within 48 hours.	As needed

BMP: Filter Strip	Frequency
Initial Maintenance	
Water plants daily for 2 weeks after construction.	Daily
Perpetual Maintenance	
Mow grass to maintain a height of 3-4 inches and to promote thick, dense vegetative growth. Litter should be removed prior to mowing. Cut only when soil is dry to prevent tracking damage, soil compaction and flow concentrations. Clippings should be composted.	As needed, seasonally
Rake and remove fallen leaves and debris from deciduous trees and shrubs.	As needed, seasonally
Remove litter, branches, rock blockages, and other debris and dispose of properly.	As needed
Maintain inlet flow spreader.	As needed
Irrigate swale during dry season or when necessary.	As needed, seasonally
Reseed and mulch void areas.	Semi-annually
Treat diseased trees and shrubs, remove dead vegetation.	Semi-annually
Remove all accumulated sediment. Sediment should be removed when it builds up to 3 inches at any spot, or covers vegetation.	Annually
Limit fertilizer applications based on plant vigor and soil test results.	Annually
Rework or replant buffer strip if concentrated flow erodes a channel through the strip.	As needed
Restore filter strip to original lines and grades.	Every 3-5 years

BMP: Infiltration Basin	Frequency
Initial Maintenance	
Repair any problem which could cause clogging.	As needed
Weed once monthly during the first two growing seasons.	Monthly, Seasonally
Perpetual Maintenance	
Stabilize eroded banks	As needed
Repair undercut and eroded areas at inflow and outflow structures.	As needed
Maintain access to the basin for regular maintenance activities.	As needed
Mow as appropriate for vegetative cover species.	As needed, seasonally
Monitor health of vegetation and replace as necessary.	As needed
Control mosquitoes as necessary.	As needed
Remove litter and debris from infiltration basin area as required.	As needed, semi-annually
Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector (ticks and mosquitoes) reasons.	Semi-annually
Replant eroded or barren spots to prevent erosion and accumulation of sediment.	Semi-annually
Clean out sediment traps, forebays, inlet/outlet structures, overflow spillway, and trenches if necessary.	Annually
Scrape bottom and remove sediment when accumulated sediment reduces original infiltration rate by 25-50%. Restore original cross-section and infiltration rate. Properly dispose of sediment.	Every 3-5 years
Disc or otherwise aerate bottom.	Every 3-5 years
Dethatch basin bottom.	Every 3-5 years

BMP: Infiltration Trench	Frequency
Initial Maintenance	
Repair any problem which could cause clogging.	As needed
Weed once monthly during the first two growing seasons.	Monthly, Seasonally
Perpetual Maintenance	
Repair undercut and eroded areas at inflow and outflow structures.	As needed
Remove sediment, debris, and oil/grease from pretreatment devices and overflow structure.	As needed
Remove trash, debris, grass clippings, trees, and other large vegetation from the trench perimeter and dispose of properly.	Semi-annually
Mow and trim vegetation to prevent establishment of woody vegetation, and for aesthetic and vector (mosquito and tick) reasons.	Semi-annually
Clean out sediment traps, forebays, inlet/outlet structures, overflow spillway, and trenches if necessary.	Annually
Remove grass clippings, leaves, and accumulated sediment from the surface of the trench. Replace first layer of aggregate and filter fabric if clogging appears only to be at the surface.	Annually
Clean trench when loss of infiltrative capacity is observed. If drawdown time is observed to have increased significantly over the design drawdown time, removal of sediment may be necessary. This is an expensive maintenance activity and the need for it can be minimized through prevention of upstream erosion.	Annually
Seed or sod to restore ground cover.	Annually
Total rehabilitation of the trench should be conducted to maintain storage capacity within 2/3 of the design treatment volume and 72 hour exfiltration rate limit.	Upon failure
Trench walls should be excavated to expose clean soil.	Upon failure
All of the stone aggregate and filter fabric or media must be removed. Accumulated sediment should be stripped from the trench bottom. At this point the bottom may be scarified or tilled to help induce infiltration. New fabric and clean stone aggregate should be refilled.	Upon failure

BMP: Sand Filter	Frequency
Perpetual Maintenance	
Remove trash and debris from the sedimentation basin, the riser pipe, and the filter bed as needed.	Monthly, or as needed
Remove trash from inlet grates to maintain the inflow capacity of the media filter.	As needed
Upstream vegetation should be maintained as needed. Remove grass clippings to prevent them from washing into the filter.	As needed
Clean filter surface semiannually or more often if watershed is excessively erosive.	Semiannually
Replace sorbent pillows	Semiannually
Repair or replace any damaged structural parts	Annually
Stabilize eroded areas	Annually
Remove accumulated sediment in the sedimentation chamber every 10 years or when the sediment occupies 10-20% of the basin volume or accumulates to a depth of six inches, whichever is less.	As needed
Remove top 2 inches of media filter and landfill if facility drain time exceeds 72 hours.	As needed
Restore media depth to 18 inches when overall media depth drops to 12 inches.	As needed
BMP: Porous Pavement	Frequency
Initial Maintenance	
Remove excess sediment from construction area and stabilize adjacent areas with vegetation	
Perpetual Maintenance	
Prevent soil from being washed onto pavement. Keep landscape areas well maintained.	Continually
Rake and remove fallen leaves and debris from deciduous trees and shrubs in areas that drain to pavement.	Annually or as needed
Remove debris and clear obstructions from overflow devices.	Annually or as needed
Mow grass in turf blocks to less than four inches and remove grass clippings. Avoid use of fertilizer and pesticides. Reseed bare spots.	Every week or every other week during growing season
Re-supply pervious material between modular pavements, which may include sand, gravel, or mulch.	Annually or as needed
Vacuum sweep porous pavement.	2-3 times per year
If ponding persists, clogged concrete and asphalt should be replaced with new pervious pavement.	As needed

BMP: Bioretention	Frequency
Initial Maintenance	
Water plants daily for two weeks.	Daily
Water plants weekly for first growing season.	Weekly
Weed once monthly during the first two growing seasons.	Monthly, Seasonally
Perpetual Maintenance	
Remove litter and debris.	Monthly
Remove sediment.	As needed
Remulch void areas.	As needed
Treat diseased trees and shrubs.	As needed
Mow turf areas to keep grass 3-4 inches tall.	Seasonally, as needed.
Repair erosion at inflow points.	As needed
Repair outflow structures.	As needed
Unclog underdrain.	As needed
Regulate soil pH.	As needed
Remove and replace dead and diseased vegetation.	Semiannually
Replace tree stakes and wires until trees are established (atleast first 3 years).	Annually
Replace mulch every 2-3 years prior to wet season.	Every 2-3 years

BMP: Rain Garden	Frequency
Initial Maintenance	
Water plants daily for two weeks.	Daily
Water plants weekly for first growing season.	Weekly
Weed once monthly during the first two growing seasons.	Monthly, Seasonally
Perpetual Maintenance	
Remove litter and debris.	Monthly
Remove sediment.	As needed
Remulch void areas.	As needed
Treat diseased trees and shrubs.	As needed
Repair erosion at inflow points.	As needed
Repair outflow structures.	As needed
Regulate soil pH.	As needed
Aerate soil.	Semiannually
Remove and replace dead and diseased vegetation.	Semiannually
Replace tree stakes and wires until trees are established (atleast first 3 years).	Annually
Replace hardwood mulch every 2-3 years prior to wet season.	Every 2-3 years

BMP: Wetlands	Frequency
Initial Maintenance	
Repair any problem which could cause clogging.	As needed
Weed once monthly during the first two growing seasons.	Monthly, Seasonally
Perpetual Maintenance	
Stabilize eroded banks	As needed
Repair undercut and eroded areas at inflow and outflow structures.	As needed
Maintain access to the basin for regular maintenance activities.	As needed
Mow as appropriate for vegetative cover species.	As needed, seasonally
Monitor health of vegetation and replace as necessary.	As needed
Control mosquitoes as necessary.	As needed
Remove litter and debris.	As needed
Remove vegetation near end of each growth season to capture the nutrients and pollutants removed by the wetland vegetation.	Annually
Replant eroded or barren spots to prevent erosion and accumulation of sediment.	Semi-annually
Scrape bottom and remove sediment to restore original cross-section. Properly dispose of sediment.	Every 3-5 years

BMP: Ponds and Lakes	Frequency
Initial Maintenance	
(NOT A REQUIREMENT) Introduce fish to enhance natural mosquito and midge control and regularly maintain emergent and shoreline vegetation to provide access for inspection and to facilitate vector (tick and mosquito) control. Consult with conservation department for fish species.	As needed
Perpetual Maintenance	
Control mosquitoes as necessary.	As needed
Repair undercut and eroded areas at inflow, outflow, and banks.	As needed
Maintain access to the basin for regular maintenance activities.	As needed
Remove sediment from outlet structure. Dispose of properly.	As needed
Maintain protected vegetated buffer around pond. Mow side slopes and maintain vegetation in and around basin to prevent any erosion or aesthetic problems. Minimize use of fertilizers and pesticides. Reseed if necessary.	Seasonally, as needed.
Remove litter and debris.	As needed
Manage and harvest wetland plants.	Annually
Perform structural repair or replacement when needed.	As needed
Remove sediment from the forebay and regrade when the accumulated sediment volume exceeds 10-20% of the forebay volume. Clean in early spring and reseed so vegetation damaged during cleaning has time to re-establish	5-7 years
Remove sediment when the permanent pool volume has become reduced significantly (sediment accumulation exceeds 25% of design depth), resuspension is observed, or the pond becomes eutrophic (too much algae growth).	20 years, or when needed

BMP: Dry Detention Basins	Frequency
Perpetual Maintenance	
Control mosquitoes as necessary.	As needed
If necessary, modify the outlet orifice to achieve design values if inspection indicates modifications are necessary.	As needed
Repair undercut or eroded areas.	As needed
Mow turf areas to keep grass 3-4 inches tall.	Seasonally, as needed.
Manage pesticides and nutrients.	As needed
Remove litter and debris.	Monthly
Trim tall vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic reasons.	Semiannually
Seed or sod to restore dead or damaged ground cover	Annually, as needed
Supplement wetland plants if a significant portion have not been established (at least 50% of the surface area).	Annually
Remove nuisance plant species.	Annually
Remove sediment from the forebay to restore design depth.	3-5 years
Monitor sediment accumulation and remove accumulated sediment and regrade about every 10 years or when the accumulated sediment volume exceeds 10-20% of the basin volume, or when accumulation reaches 6 inches or if resuspension is observed. Clean in early spring so vegetation damaged during cleaning has time to re-establish.	10-25 years

Attachment B
Inspection Forms

Attach inspection forms.

Owner's BMP Inspection Form

This would be the base form that the Engineer would use to add the specific items per the BMP Inspection lists for the Owner's maintenance personnel to fill out. All BMP's would have the BMP's in General section.

Stormwater BMP Owner Inspection Form

Address: <Engineer to insert address> Owner: <Engineer to insert owner name>
 Legal: <Engineer to insert legal description (Plat/Lot)>
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION

- Routine Response to Complaint Follow-up
 Water Quality Storm Initial Other: _____

II. BMP'S AND INSPECTION RESULTS

Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP

Engineer to insert specific BMP inspection data below. An example for bioretention is shown.

Item	Inspection Results		BMP: Bioretention
1	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Flow spreader uneven or clogged so flows are not uniformly distributed across BMP.
2	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment depth exceeds 2 inches on more than 10% of the vegetated treatment area or interferes with BMP performance.
3	<input type="checkbox"/> Erosion or scouring	<input type="checkbox"/> No erosion or scouring	Eroded or scoured areas (including spillway) due to flow channelization, higher flows, wind or water.
4	<input type="checkbox"/> Poor vegetation	<input type="checkbox"/> Proper vegetation	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP. Vegetation is not higher than ponding depth.
5	<input type="checkbox"/> Nuisance plants	<input type="checkbox"/> Proper vegetation	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
6	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance.
7	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
8	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Inlet/outlet clogged or obstructed with sediment and/or debris.
9	<input type="checkbox"/> Flow	<input type="checkbox"/> No flow	Small quantities of water flow through the BMP, even when it has been dry for weeks, and an eroded, muddy channel has formed in the bottom.

10	<input type="checkbox"/>	Clogged	<input type="checkbox"/>	Not clogged	Overflow clogged or obstructed with sediment and/or debris.
11	<input type="checkbox"/>	Obstructed	<input type="checkbox"/>	Open	Stone diaphragm obstructed or covered with weeds or sediment.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time? Yes No
2. Are mosquitoes or mosquito larvae present? Yes No
3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/> Routine	<input type="checkbox"/> Response to Complaint	<input type="checkbox"/> Follow-up	
<input type="checkbox"/> Water Quality Storm	<input type="checkbox"/> Initial	<input type="checkbox"/> Other: _____	
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Vegetated Swale (Wet/Dry) or Channel
1	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Flow spreader uneven or clogged so flows are not uniformly distributed across BMP.
2	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Forebay sediment depth exceeds 50% of design capacity.
3	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment depth exceeds 2 inches on more than 10% of the vegetated treatment area or interferes with BMP performance.
4	<input type="checkbox"/> Erosion or scouring	<input type="checkbox"/> No erosion or scouring	Eroded or scoured areas due to flow channelization, higher flows, wind or water.
5	<input type="checkbox"/> Poor vegetation	<input type="checkbox"/> Proper vegetation	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP.
6	<input type="checkbox"/> Nuisance plants	<input type="checkbox"/> Proper vegetation	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
7	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance.
8	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
9	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Inlet/outlet clogged or obstructed with sediment and/or debris
10	<input type="checkbox"/> Flow	<input type="checkbox"/> No flow	Small quantities of water flow through the vegetated swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom.
11	<input type="checkbox"/> Plant stress	<input type="checkbox"/> No stress	Plant stress evident from inadequate watering.
12	<input type="checkbox"/> Needs mowing	<input type="checkbox"/> Grass mowed	Grass is overgrown.

*(If an item in the left column is checked, corrective maintenance is required)

- 1. Is maintenance needed at this time? Yes No
- 2. Are mosquitoes or mosquito larvae present? Yes No
- 3. Comments/Notes: _____

III. FOLLOW-UP

- 1. Describe corrective actions needed: _____

- 2. Date corrected: _____

YES NO

3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/> Routine	<input type="checkbox"/> Response to Complaint	<input type="checkbox"/> Follow-up	
<input type="checkbox"/> Water Quality Storm	<input type="checkbox"/> Initial	<input type="checkbox"/> Other: _____	
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Infiltration basin
1	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Flow spreader uneven or clogged so flows are not uniformly distributed across BMP.
2	<input type="checkbox"/> No sediment trapped	<input type="checkbox"/> Sediment trapped	The forebay is not trapping sediment before it reaches infiltration basin.
3	<input type="checkbox"/> Silted in	<input type="checkbox"/> Enough capacity	Capacity in sediment forebay is less than 50% of design capacity.
4	<input type="checkbox"/> Inlets need repair	<input type="checkbox"/> Inlets in good condition	Inlets/pipes are crushed, deformed, damaged, corroded, and in need of repair.
5	<input type="checkbox"/> Flow bypasses facility	<input type="checkbox"/> Flow enters BMP	Flow bypasses facility by overtopping berms, erosion channels, or other means.
6	<input type="checkbox"/> Weeds	<input type="checkbox"/> No weeds	Invasive, nuisance vegetation or weeds are present.
7	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance. Dead, diseased, or dying trees are present. Tree growth on berms or emergency spillway > 4' in height or covering more than 10% of spillway
8	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment in storage areas, rock filters, and pre-settling ponds and vaults prevents infiltration.
9	<input type="checkbox"/> Erosion	<input type="checkbox"/> No erosion	Eroded damage over two inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
10	<input type="checkbox"/> Rodent holes	<input type="checkbox"/> No rodent holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.
11	<input type="checkbox"/> Insects	<input type="checkbox"/> No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.

12	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within BMP.
----	---	--	--

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time? Yes No

2. Are mosquitoes or mosquito larvae present? Yes No

3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/> Routine	<input type="checkbox"/> Response to Complaint	<input type="checkbox"/> Follow-up	
<input type="checkbox"/> Water Quality Storm	<input type="checkbox"/> Initial	<input type="checkbox"/> Other: _____	
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Infiltration trench
1	<input type="checkbox"/> Weeds	<input type="checkbox"/> No weeds	Invasive, nuisance vegetation or weeds are present.
2	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance. Dead, diseased, or dying trees are present. Tree growth on berms or emergency spillway > 4' in height or covering more than 10% of spillway
3	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment in storage areas, rock filters, and pre-settling ponds and vaults prevents infiltration.
4	<input type="checkbox"/> Erosion	<input type="checkbox"/> No erosion	Eroded damage over two inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
5	<input type="checkbox"/> Rodent holes	<input type="checkbox"/> No rodent holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.
6	<input type="checkbox"/> Insects	<input type="checkbox"/> No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.
7	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within BMP.
8	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Flow spreader uneven or clogged so flows are not uniformly distributed across BMP.
9	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Ponded water is visible from the observation well 24 hours or several days following a storm event indicating the bottom of trench is clogged.
10	<input type="checkbox"/> No sediment trapped	<input type="checkbox"/> Sediment trapped	The forebay is trapping sediment before it reaches infiltration trench.
11	<input type="checkbox"/> Silted in	<input type="checkbox"/> Enough capacity	Capacity in sediment forebay is less than 50% of design capacity.

12	<input type="checkbox"/>	Inlets need repair	<input type="checkbox"/>	Inlets in good condition	Inlets are crushed, deformed, damaged, corroded, and in need of repair.
13	<input type="checkbox"/>	Flow bypasses facility	<input type="checkbox"/>	Flow enters BMP	Flow bypasses facility by overtopping berms, erosion channels, or other means.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time? Yes No
2. Are mosquitoes or mosquito larvae present? Yes No
3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION					
<input type="checkbox"/>	Routine	<input type="checkbox"/>	Response to Complaint	<input type="checkbox"/>	Follow-up
<input type="checkbox"/>	Water Quality Storm	<input type="checkbox"/>	Initial	<input type="checkbox"/>	Other: _____
II. BMP'S AND INSPECTION RESULTS					
Item	Inspection Results*		BMP's in General		
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.		
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.		
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.		
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property		
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.		
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.		
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.		
Item	Inspection Results		BMP: Sand Filter		
<i>Note: There are several different types of sand filters. Modify list of inspection requirements to those pertinent to BMP.</i>					
1	<input type="checkbox"/> Access cover problem	<input type="checkbox"/> No access cover problem	Cover cannot be opened, corrosion/deformation of cover; maintenance person cannot remove cover using normal lifting pressure; cover is missing or only partially in place.		
2	<input type="checkbox"/> Deteriorating paint	<input type="checkbox"/> Paint is good	Part or parts have a rusting or scaling condition and have affected structural adequacy.		
3	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment depth exceeds acceptable levels, >50% of design depth)		
4	<input type="checkbox"/> Holding or sedimentation chamber dry	<input type="checkbox"/> At normal pool	Holding or sedimentation chamber is leaking and not maintaining normal pool level.		
5	<input type="checkbox"/> Ineffective media	<input type="checkbox"/> Media effective	Filter media ineffective in doing intended function and needs to be replaced; filter is beyond the typical average life of product.		
6	<input type="checkbox"/> Visible liner damage	<input type="checkbox"/> No liner damage	Liner is visible and has more than three 1/4-inch holes in it or is damaged.		
7	<input type="checkbox"/> Compromised	<input type="checkbox"/> Uncompromised	Membrane or roof structure is compromised by either roots and/or water discharge.		
8	<input type="checkbox"/> Short circuiting	<input type="checkbox"/> Normal flow	Seepage/flows occur along the vault walls and corners. Sand eroding near inflow area. Flows become concentrated over one section of the sand filter rather than disperse.		
9	<input type="checkbox"/> Damaged pipes	<input type="checkbox"/> No damage	Part of the piping is crushed, deformed, damaged, in need of repair or any other failure to the piping.		

10	<input type="checkbox"/>	Trash rack missing	<input type="checkbox"/>	Trash rack present	Trash racking is either missing or damaged.
11	<input type="checkbox"/>	Sediment in pipes	<input type="checkbox"/>	Pipes clear	Drain pipes and/or cleanouts are full of sediment and/or debris.
12	<input type="checkbox"/>	Vault damaged	<input type="checkbox"/>	Vault undamaged	Vault structure has cracks in walls, bottom, top slab. There is damage to frame.
13	<input type="checkbox"/>	Damaged baffles	<input type="checkbox"/>	No damage	Baffles are corroded, cracked, warped and or showing signs of failure.
14	<input type="checkbox"/>	Oil accumulated	<input type="checkbox"/>	No oil	Oil accumulations exceed 1-inch at the surface of the water.
15	<input type="checkbox"/>	Blocked air vents	<input type="checkbox"/>	Air vents open	One half of the cross section of a vent is blocked or the vent is damaged.
16	<input type="checkbox"/>	Internal walls damaged	<input type="checkbox"/>	Internal walls are sound	Internal walls are corroded, cracked, warped, and/or showing signs of failure.
17	<input type="checkbox"/>	Prolonged flows	<input type="checkbox"/>	Standard flow	Sand is saturated for prolonged periods of time (several weeks) and does not dry out between storms due to continuous base flow or prolonged flows from detention facilities.
18	<input type="checkbox"/>	Erosion	<input type="checkbox"/>	No erosion	Erosion is evident at outlet/spillway.
19	<input type="checkbox"/>	Mosquitos	<input type="checkbox"/>	No mosquitos	Mosquitos or larvae are present in standing water.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time? Yes No
2. Are mosquitoes or mosquito larvae present? Yes No
3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/> Routine	<input type="checkbox"/> Response to Complaint	<input type="checkbox"/> Follow-up	
<input type="checkbox"/> Water Quality Storm	<input type="checkbox"/> Initial	<input type="checkbox"/> Other: _____	
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Bioretention
1	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Flow spreader uneven or clogged so flows are not uniformly distributed across BMP.
2	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment depth exceeds 2 inches on more than 10% of the vegetated treatment area or interferes with BMP performance.
3	<input type="checkbox"/> Erosion or scouring	<input type="checkbox"/> No erosion or scouring	Eroded or scoured areas (including spillway) due to flow channelization, higher flows, wind or water.
4	<input type="checkbox"/> Poor vegetation	<input type="checkbox"/> Proper vegetation	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP. Vegetation is not higher than ponding depth.
5	<input type="checkbox"/> Nuisance plants	<input type="checkbox"/> Proper vegetation	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
6	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance.
7	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
8	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Inlet/outlet clogged or obstructed with sediment and/or debris.
9	<input type="checkbox"/> Flow	<input type="checkbox"/> No flow	Small quantities of water flow through the BMP, even when it has been dry for weeks, and an eroded, muddy channel has formed in the bottom.
10	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Overflow clogged or obstructed with sediment and/or debris.
11	<input type="checkbox"/> Obstructed	<input type="checkbox"/> Open	Stone diaphragm obstructed or covered with weeds or sediment.

*(If an item in the left column is checked, corrective maintenance is required)

- 1. Is maintenance needed at this time? Yes No
- 2. Are mosquitoes or mosquito larvae present? Yes No
- 3. Comments/Notes: _____

III. FOLLOW-UP

- 1. Describe corrective actions needed: _____

- 2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION

- Routine Response to Complaint Follow-up
 Water Quality Storm Initial Other: _____

II. BMP'S AND INSPECTION RESULTS

Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.

Item	Inspection Results		BMP: Raingarden
1	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment depth exceeds 2 inches on more than 10% of the vegetated treatment area or interferes with BMP performance.
2	<input type="checkbox"/> Erosion or scouring	<input type="checkbox"/> No erosion or scouring	Eroded or scoured areas (including spillway) due to flow channelization, higher flows, wind or water.
3	<input type="checkbox"/> Poor vegetation	<input type="checkbox"/> Proper vegetation	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP.
4	<input type="checkbox"/> Nuisance plants	<input type="checkbox"/> Proper vegetation	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
5	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance.
6	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
7	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Inlet/outlet clogged or obstructed with sediment and/or
8	<input type="checkbox"/> Flow	<input type="checkbox"/> No flow	Small quantities of water flow through the BMP, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom.
9	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Overflow clogged or obstructed with sediment and/or debris.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time? Yes No

2. Are mosquitoes or mosquito larvae present? Yes No

3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/>	Routine	<input type="checkbox"/>	Response to Complaint
<input type="checkbox"/>	Water Quality Storm	<input type="checkbox"/>	Initial
<input type="checkbox"/>		<input type="checkbox"/>	Follow-up
<input type="checkbox"/>		<input type="checkbox"/>	Other: _____
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Wetlands
1	<input type="checkbox"/> Weeds	<input type="checkbox"/> No weeds	Invasive, nuisance vegetation or weeds are present.
2	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance. Dead, diseased, or dying trees are present. Tree growth on berms or emergency spillway > 4' in height or covering more than 10% of spillway.
3	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment in storage areas, rock filters, and pre-settling ponds and vaults prevents filtration.
4	<input type="checkbox"/> Erosion	<input type="checkbox"/> No erosion	Eroded damage over two inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
5	<input type="checkbox"/> Rodent holes	<input type="checkbox"/> No rodent holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.
6	<input type="checkbox"/> Insects	<input type="checkbox"/> No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.
7	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely. Excessive ponding of water within BMP is greater than design depth.
8	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Flow spreader uneven or clogged so flows are not uniformly distributed across BMP.
9	<input type="checkbox"/> Unlevel berm	<input type="checkbox"/> Level berm	Unlevel internal berm dividing wet pond cells.
10	<input type="checkbox"/> Oil sheen	<input type="checkbox"/> No oil	Prevalent and visible oil sheen.
11	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Overflow clogged or obstructed with sediment and/or debris.
12	<input type="checkbox"/> Floating debris	<input type="checkbox"/> No debris	Debris is floating on the surface which could clog pipes.
13	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Overflow or low flow orifice is clogged or obstructed with sediment and/or debris.

14	<input type="checkbox"/>	Spillway in disrepair	<input type="checkbox"/>	Spillway properly maintained	Emergency spillway is obstructed, filled with sediment, eroded out, or in disrepair.
15	<input type="checkbox"/>	Trash racks need cleaning	<input type="checkbox"/>	Trash racks are clean	Debris has accumulated on trash racks.
16	<input type="checkbox"/>	Pipes/structural repairs needed	<input type="checkbox"/>	Pipes/structure are sound	Pipes and structures show signs of corrosion, spalls, leaks, deformation, crushing or other material failure.
17	<input type="checkbox"/>	Dam needs repair	<input type="checkbox"/>	Dam is sound	The dam/embankment has visible signs of cracking, sliding, or bulging.
18	<input type="checkbox"/>	Slope protection failure	<input type="checkbox"/>	Slope protection adequate	Slope reinforcing has been eroded or otherwise damaged so that slope is unstable.
19	<input type="checkbox"/>	Valves not functioning	<input type="checkbox"/>	Valves function	Control valve and drain valve are unoperable or drain is blocked.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time?

Yes No

2. Are mosquitoes or mosquito larvae present?

Yes No

3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/>	Routine	<input type="checkbox"/>	Response to Complaint
<input type="checkbox"/>	Water Quality Storm	<input type="checkbox"/>	Initial
<input type="checkbox"/>		<input type="checkbox"/>	Follow-up
<input type="checkbox"/>		<input type="checkbox"/>	Other: _____
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Ponds and lakes
1	<input type="checkbox"/> Weeds	<input type="checkbox"/> No weeds	Invasive, nuisance vegetation or weeds are present.
2	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance. Dead, diseased, or dying trees are present. Tree growth on berms or emergency spillway > 4' in height or covering more than 10% of spillway.
3	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment in storage areas, rock filters, and ponds prevents has reduced storage volume.
4	<input type="checkbox"/> Erosion	<input type="checkbox"/> No erosion	Eroded damage over two inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
5	<input type="checkbox"/> Rodent holes	<input type="checkbox"/> No rodent holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.
6	<input type="checkbox"/> Insects	<input type="checkbox"/> No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.
7	<input type="checkbox"/> Unlevel berm	<input type="checkbox"/> Level berm	Unlevel internal berm dividing wet pond cells.
8	<input type="checkbox"/> Oil sheen	<input type="checkbox"/> No oil	Prevalent and visible oil sheen.
9	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Overflow or low flow orifice is clogged or obstructed with
10	<input type="checkbox"/> Spillway in disrepair	<input type="checkbox"/> Spillway properly maintained	Emergency spillway is obstructed, filled with sediment, eroded out, or in disrepair.
11	<input type="checkbox"/> Rip rap needs repair	<input type="checkbox"/> Rip rap in good condition	Rip rap is washed out or insufficient to handle discharges.
12	<input type="checkbox"/> Forebay non-operational	<input type="checkbox"/> Forebay operating properly	Sediment forebay is either filled with sediment (greater than 50% of design depth), being bypassed, or does not allow sufficient time to settle solids.
13	<input type="checkbox"/> Trash racks need cleaning	<input type="checkbox"/> Trash racks are clean	Debris has accumulated on trash racks.

14	<input type="checkbox"/>	Pipes/structural repairs needed	<input type="checkbox"/>	Pipes/structure are sound	Pipes and structures show signs of corrosion, spalls, leaks, deformation, crushing or other material failure.
15	<input type="checkbox"/>	Sediment in overflow	<input type="checkbox"/>	Overflow clear	Sediment has accumulated in overflow or the overflow is eroded.
16	<input type="checkbox"/>	Dam needs repair	<input type="checkbox"/>	Dam is sound	The dam/embankment has visible signs of cracking, sliding, leaking, piping, or bulging.
17	<input type="checkbox"/>	Slope protection failure	<input type="checkbox"/>	Slope protection adequate	Slope reinforcing has been eroded or otherwise damaged so that slope is unstable.
18	<input type="checkbox"/>	Valves not functioning	<input type="checkbox"/>	Valves function	Control valve and drain valve are unoperable.

Provide specific inspection criteria for dams.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time? Yes No
2. Are mosquitoes or mosquito larvae present? Yes No
3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____

Stormwater BMP Owner Inspection Form

Address: _____ Owner: _____
 Legal: _____
 Date: _____ Engineer: _____ Phone #: () - _____

I. REASON FOR INSPECTION			
<input type="checkbox"/> Routine	<input type="checkbox"/> Response to Complaint	<input type="checkbox"/> Follow-up	
<input type="checkbox"/> Water Quality Storm	<input type="checkbox"/> Initial	<input type="checkbox"/> Other: _____	
II. BMP'S AND INSPECTION RESULTS			
Item	Inspection Results*		BMP's in General
1	<input type="checkbox"/> Apparent problems	<input type="checkbox"/> No problems	BMP does not appear to be well maintained.
2	<input type="checkbox"/> Design flaws	<input type="checkbox"/> No flaws	BMP observed to have significant design flaws which lessens its effectiveness.
3	<input type="checkbox"/> Unauthorized modifications	<input type="checkbox"/> No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	<input type="checkbox"/> BMP removed	<input type="checkbox"/> BMP Present	BMP has been destroyed or removed from the property
5	<input type="checkbox"/> Trash	<input type="checkbox"/> No trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	<input type="checkbox"/> Contaminated	<input type="checkbox"/> Uncontaminated	Evidence of oil, gasoline, contaminants or other pollutants.
7	<input type="checkbox"/> Smells	<input type="checkbox"/> Doesn't smell	Unpleasant odors from the BMP.
Item	Inspection Results		BMP: Dry detention
1	<input type="checkbox"/> Weeds	<input type="checkbox"/> No weeds	Invasive, nuisance vegetation or weeds are present.
2	<input type="checkbox"/> Brush/trees	<input type="checkbox"/> Proper vegetation	Growth of brush and trees does not allow for proper maintenance. Dead, diseased, or dying trees are present. Tree growth on berms or emergency spillway > 4' in height or covering more than 10% of spillway.
3	<input type="checkbox"/> Sediment accumulated	<input type="checkbox"/> No accumulated sediment	Sediment in storage areas, rock filters, and pond has reduced storage volume.
4	<input type="checkbox"/> Erosion	<input type="checkbox"/> No erosion	Eroded damage over two inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
5	<input type="checkbox"/> Rodent holes	<input type="checkbox"/> No rodent holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.
6	<input type="checkbox"/> Insects	<input type="checkbox"/> No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.
7	<input type="checkbox"/> Standing water	<input type="checkbox"/> No standing water	Water is observed within the BMP (between storms) and appears not to drain freely or soil is excessively soggy. Excessive ponding of water within BMP.
8	<input type="checkbox"/> Unlevel berm	<input type="checkbox"/> Level berm	Unlevel internal berm dividing wet pond cells.
9	<input type="checkbox"/> Contaminated	<input type="checkbox"/> No contaminants	Prevalent and visible contaminants such as oil.
10	<input type="checkbox"/> Clogged	<input type="checkbox"/> Not clogged	Overflow or low flow orifice is clogged or obstructed with sediment and/or debris.
11	<input type="checkbox"/> Spillway in disrepair	<input type="checkbox"/> Spillway properly maintained	Emergency spillway is obstructed, filled with sediment, eroded out, or in disrepair.
12	<input type="checkbox"/> Rip rap needs repair	<input type="checkbox"/> Rip rap in good condition	Rip rap is washed out or insufficient to handle discharges.

13	<input type="checkbox"/>	Forebay non-operational	<input type="checkbox"/>	operating properly	Sediment forebay is either filled with sediment (greater than 50% of design depth), being bypassed, or does not
14	<input type="checkbox"/>	Trash racks need cleaning	<input type="checkbox"/>	Trash racks are clean	Debris has accumulated on trash racks.
15	<input type="checkbox"/>	Pipes/structural repairs needed	<input type="checkbox"/>	Pipes/structure are sound	Pipes and structures show signs of corrosion, spalls, leaks, deformation, crushing or other material failure.
16	<input type="checkbox"/>	Sediment in overflow	<input type="checkbox"/>	Overflow clear	Sediment has accumulated in overflow.
17	<input type="checkbox"/>	Dam needs repair	<input type="checkbox"/>	Dam is sound	The dam/embankment has visible signs of cracking, sliding, piping, leaking or bulging.
18	<input type="checkbox"/>	Slope protection failure	<input type="checkbox"/>	Slope protection adequate	Slope reinforcing has been eroded or otherwise damaged so that slope is unstable.

*(If an item in the left column is checked, corrective maintenance is required)

1. Is maintenance needed at this time?

Yes No

2. Are mosquitoes or mosquito larvae present?

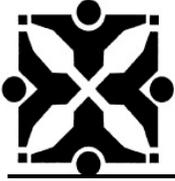
Yes No

3. Comments/Notes: _____

III. FOLLOW-UP

1. Describe corrective actions needed: _____

2. Date corrected: _____



CITY OF COLUMBIA, MISSOURI



Columbia Fire Department
(573)874-7556

The Columbia Fire Department requires a series of acceptance testing before an occupancy permit can be issued. Please see the below checklist to ensure your project is completed on schedule. To schedule an inspection or test, call (573)874-7556. Please allow at least 24 hours advance notice when scheduling an inspection. Each project will be assigned a specific inspector who will conduct your inspections.

Sprinkler System

-Sprinkler plans must be submitted and approved through the building department prior to any installation. No testing will be completed without official plans being submitted, approved, and a permit picked up. The building department is located on the third floor at 701 E. Broadway.

- A) Piping- All sprinkler piping must be inspected before covering.
- B) Hydro- All dry systems require a 24 hour air pressure test. All wet and dry systems require a 2 hour hydrostatic test.
- C) Acceptance Test- All systems require a complete acceptance test. This test consists of a flow, main drain, and fire alarm test. A representative from the fire alarm system and sprinkler system must be present for this testing.

Fire Alarm System

-Fire alarm plans must be submitted and approved through the building department prior to any installation. No testing will be completed without official plans being submitted, approved, and a permit picked up. The building department is located on the third floor at 701 E. Broadway. A complete acceptance test will be conducted on a percentage of all pull stations, heat, smoke, and any other detectors. A representative from the alarm company must be present.

Fixed Extinguishing

-Fixed extinguishing plans must be submitted and approved through the building department prior to any installation. No testing will be completed without official plans being submitted, approved, and a permit picked up. The building department is located on the third floor at 701 E. Broadway. A representative from the installation company must be present during the acceptance test.

Final Fire Inspection

-All new construction requires a building inspection to ensure all applicable fire codes are met. This inspection is required before an occupancy permit can be issued.

General Contractor/Representative _____

Company _____

Date _____



The following are the Columbia Fire Marshals general fire safety precautions for all structures and occupancies during construction, alteration and demolition operations. For a complete list of requirements or additional information about each requirement, reference Chapter 33 of the 2012 International Fire Code.

PROGRAM SUPERINTENDENT – The owner shall designate a person to be the fire prevention program superintendent who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project. The program superintendent is responsible for the following:

1. **Pre-fire Plans** – An approved pre-fire plan shall be developed and maintained throughout the duration of the project. Any changes to the plan shall be approved by the fire code official.
2. **Training** – Provide training of responsible personnel in the use of fire protection equipment.
3. **Fire Protection Devices** – All fire protection equipment is to be maintained and serviced in accordance with the 2009 International fire Code. The quantity and type of fire protection equipment shall be approved.
4. **Impairment of fire protection system** – Any fire system impairments shall be reported to the fire official as soon as reasonably possible.
5. **Hot work operation** – Supervising the permit system for all hot work operation in accordance with Chapter 35 of the International Fire Code
6. **Temporary covering of fire protection devices** – Coverings placed on or over fire protection devices to protect them from damage during construction processes shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed

PRECAUTIONS AGAINST FIRE- The following precautions shall take place against fire:

1. **Smoking** – Smoking shall be prohibited except in approved areas. Signs shall be posted in approved areas where smoking is permitted in addition to approved ashtrays.
2. **Waste disposal** – Combustible debris shall not be accumulated with buildings. Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work combustible debris, rubbish and waste material shall not be disposed of by burning on the site unless approved.
3. **Open burning** – No open burning shall take place without permit.
4. **Spontaneous ignition** – Material susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container.
5. **Fire Watch** – When required by the fire code official for building demolition, or building construction during working hours that is hazardous in nature, qualified personnel shall be provided to serve as an on-site fire watch. Fire watch personnel shall be provided with at least one approved means for notification of the fire department and their sole duty shall be to perform constant patrols and watch for the occurrence of fire.
6. **Electrical** – Temporary wiring for electrical power and lighting installations used in connection with the construction, alterations, or demolition of buildings, structures, equipment or similar activities shall comply with the National Electrical Code.

PORTABLE FIRE EXTINGUISHERS – Structures under construction, alteration or demolition shall be provided with not less than one 5lb 2A10BC portable fire extinguisher as follows:

1. At each stairway on all floor levels where combustible materials have accumulated.
2. In every storage and construction shed

3. Additional portable fire extinguishers shall be provided where special hazard exist including, but not limited to, the storage and use of flammable and combustible liquids.

ACCESS FOR FIREFIGHTING- Approved vehicle access for firefighting shall be provided to all construction and demolition sites. Vehicle access shall be provided to within 100 feet of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

KNOX BOX – Key boxes shall be provided when requested by the fire code official in an approved location.

REQUIRED STAIRWAYS – Where a building has been constructed to a building height of 50 feet or four stories, or where an existing building exceeding 50 feet in building height is altered, at least one temporary lighted stairway shall be provided unless one or more of the permanent stairways are erected as the construction progresses.

WATER SUPPLY – An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.

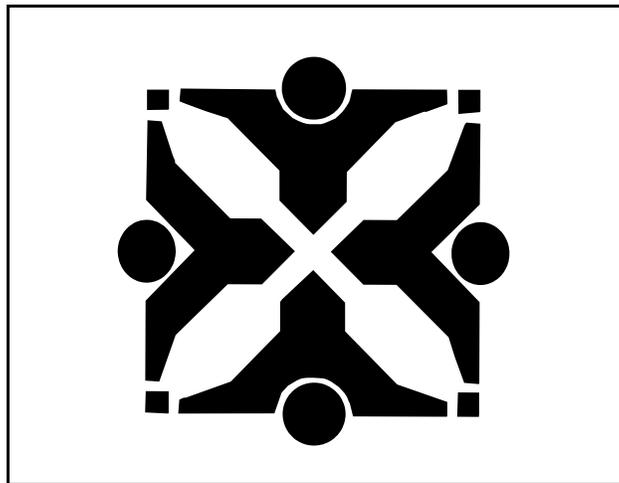
STANDPIPES – In buildings required to have standpipes, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed when the progress of construction is not more than 40 feet in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at accessible locations adjacent to usable stairs. Such standpipes shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring. If a building is being demolished that has an existing standpipe, such standpipe shall remain in operable condition and demolished no more than one floor below the floor being demolished.

AUTOMATIC SPRINKLER SYSTEMS – In buildings where an automatic sprinkler system is required by the Fire or Building Codes, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved.

SPRINKLER SYSTEM CONTROL VALVES – Operation of sprinkler control valves shall be allowed only by properly authorized personnel and shall be accompanied by notification of duly designated parties. When the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

STORAGE AND DISPENSING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS AND GASES- Storage and use of flammable and combustible liquids and gases, requires the approval of the fire code official for quantities greater than.

Standards and Guidelines
for
LANDSCAPING
and
TREE PRESERVATION



Columbia, Missouri
Public Works Department

Lowell B. Patterson, P.E.,
Director

January 1, 2005

TABLE OF CONTENTS

Tree Preservation and Landscaping Plan Checklist	Pages 1
Definitions	Pages 2-4
Section 29-25. Screening and Landscaping Requirements	Pages 5-11
Chapter 12A, Article III. Tree Preservation and Landscaping Requirements	Pages 12-13
Recommended Plant Materials for Commercial Landscapes	Pages 14-24
Typical Street Buffer Planting Requirements	Page 25
Typical Street Buffer Diagram	
Parking Lot Guidelines	Page 27
Typical Parking Lot Diagrams	

TREE PRESERVATION AND LANDSCAPING PLAN CHECKLIST

All plans should contain the following information:

- (a) Name and address of applicant for Land Disturbance Permit
- (b) Name and address of owner(s) of property if other than applicant
- (c) Lot, block and subdivision or, if not subdivided, other property description information
- (d) Property size in acres/square feet
- (e) Parking lot size in square feet (include driveways and paved access areas)
- (f) Pervious area in square feet created for tree planting in parking lot islands, when present
- (g) Present and requested zoning
- (h) North arrow and scale
- (i) Existing contours at no greater than 5-foot intervals
- (j) Limits of all wetlands and the location of the 100-year flood plain
- (k) Location of existing and proposed structures
- (l) Locations of all existing and proposed roads and right-of-way
- (m) Locations of any significant, state-listed champion or rare or endangered plants
- (n) Location and areas in square feet of climax forest
- (o) Location and area in square feet of climax forest to be preserved
- (p) The number, spacing, size and species of planting materials, including new trees and final ground cover that will be planted as part of the landscaping plan
- (q) The size and location of any walls, earth berms and fences
- (r) Provisions for watering, soil stabilization, plant protection and maintenance
- (s) Location and description of barriers to be erected to protect any vegetation from damage both during and after construction (detail standard is provided)

DEFINITIONS

For the purposes of this document, the following words and phrases shall have the meaning given herein.

Agricultural activity. Normal farming operations including improvements conducted under the auspices of the Natural Resource Conservation Service.

City utility service customer. A purchaser of city water, electric, sewage or refuse collection utility service.

Clear cutting. The practice of removing over half of the standing climax forest area on a site.

Climax forest. Any woodland community of over twenty thousand (20,000) square feet which is dominated by* climax species such as oak, hickory, sugar maple or bottomland hardwoods such as river birch, basswood, sycamore and hornbeam and which includes an area of five thousand (5,000) square feet with a maximum aspect ratio of 4:1.

* "dominated by" is defined as greater than 50% climax species

dbh (diameter breast height). Trunk diameter at 4.5 feet about ground.

Developed land. Real estate altered by the addition of impervious surface which changes the hydrology of the property from its natural state.

Developer. A person whose intent or function is to bring about any change of land use or improvement on any parcel of land.

Development. Any change of land use or improvement on any parcel of land.

Director. The director of public works or his designee.

Dwelling unit. A building or portion thereof, designed to house a family.

Forest land. Forested land area with the aerial canopy dominated by trees greater than four (4) inches in diameter, measured four and one-half (4 1/2) feet above the ground.

Forest parcel. An envelope of trees delineated by the boundaries of grading limits or land disturbances.

Impervious surface. A surface on real property where infiltration of storm water into the earth has been virtually eliminated by the works of man. Impervious surfaces shall include, but not be limited to: Roofs, paved driveways, patio areas, sidewalks, parking lots, storage areas, and other oil or macadam surfaced areas which prevent percolation of storm waters into the earth's surface.

Land disturbance. Any activity, including mechanized clearing, which removes the vegetative ground cover.

Land disturbance permit. A permit issued by the City of Columbia that authorizes the commencement of land disturbance activities or logging.

Logging. The removal of more than three (3) existing trees for commercial purposes on any tract of land larger than one (1) acre.

Main floor area. The area within the perimeter of the exterior walls of a building excluding any attached garage. The main floor area does not include the area of decks, porches, patios or garages.

Maximum aspect ratio of 4:1. A means of defining the configuration of an area of trees such that the measurement of length of the area shall not be more than four (4) times as long as the measurement of width of the area.

Mechanized clearing. Clearing of land by tracked or wheeled vehicles which scrape, cultivate or scarify the surface of the ground exposing bare soil and uprooting vegetation.

Multiple-family building. A building with more than one (1) dwelling unit.

Nonresidential use. The use of developed land for any purpose other than for a single-family residence or a multiple-family building.

Occupant. The person in possession or lawfully entitled to possession of a parcel of land.

Owner. Any person having legal title to, or a proprietary interest in real property. Proprietary interest shall include, but not be limited to, estate administration, trusteeship, guardianship, and actions under a valid power of attorney.

Pervious surface. A surface on real property where infiltration of storm water into the earth is not impeded by the works of man. Pervious surfaces shall include, but not be limited to: Grass, mulch and ground cover.

Site. The total area of the parcel, tract, lot or ownership of land upon which development or land disturbance is proposed irrespective of the actual limits or size of the proposed development or land disturbance activity.

Tree, existing. A tree which meets or exceeds the following size standards: Deciduous shade trees shall have a four (4) inch diameter, measured four and one-half (4 1/2) feet above the ground and ornamental and evergreen species shall be a minimum of six (6) feet in height.

Unimproved land. Land or property having little or no "impervious surface."

Section 29-25 Screening and landscaping requirements.

- (a) *Purpose.* The intent of this section is to:
 - (1) Establish healthy environmental conditions by providing shade, air purification, oxygen regeneration, groundwater recharge, storm water runoff retardation, erosion control, and noise, glare and heat abatement.
 - (2) Provide visual buffering from streets, to buffer potentially incompatible land uses and to generally enhance the quality and appearance of a development site, and the city in total.
 - (3) Encourage the preservation of existing trees and vegetation.
 - (4) Supplement the land disturbance permit requirements.
- (b) *Authority.* The director of public works is hereby designated as the enforcement officer under this section.
- (c) *Lands to which this section applies.* The landscaping and screening requirements of this section shall apply to all land public and private located in the City of Columbia, Missouri, except the following:
 - (1) Land within zoning districts A-1; R-1; R-2 (except for those R-2 zoned developments having lots which contain attached residences and which have side or rear property boundaries abutting collector or arterial street right of way); RMH; M-C; M-U; F-1; and PUD or portions thereof consisting of single-family detached dwellings on individual lots and two-family attached dwellings on individual lots (except for two-family developments having lots which have side or rear property boundaries abutting collector or arterial street right of way). Notwithstanding this exception, parking areas and loading/unloading areas in any zoning district shall be subject to the provisions contained in this section. Buildings or additions to buildings in district C-2 shall be exempt from the provisions of this section; however, any parking areas associated with buildings or additions to buildings in District C-2 shall not be exempt from the provisions of this section.
 - (2) Development existing or approved by the City of Columbia in the form of building permit issuance or final development plan approval, prior to August 19, 1991.
 - (3) An existing single-family detached dwelling unit.
- (d) *Landscape plan requirements.* A landscaping plan, prepared by an individual who

can demonstrate knowledge of landscape design, shall be required as specified in chapter 12-A, the Land Preservation Act. In addition to those requirements, approval of a landscape plan shall be required prior to the issuance of building permits, prior to the approval of development plans in PUD (Other than PUDs or portions thereof consisting of single-family detached dwellings on individual lots or consisting of two-family attached dwellings on individual lots which do not have side or rear property boundaries abutting collector or arterial street right of way), O-P and C-P zoning districts, and prior to the development of any parking area or loading/unloading area.

- (e) *Screening and landscaping requirements.* In addition to the requirements and purpose of the Land Preservation Act:
- (1) A minimum of fifteen (15) percent of the total land area of any tract, parcel or lot shall be landscaped. Landscaping shall be reasonably distributed throughout the site.
 - (2) No new buildings or additions to existing buildings shall be permitted unless additional landscaping is provided on the tract, parcel or lot in an area equal to at least fifteen (15) percent of the land area occupied by the new building or addition. This subsection shall not apply to any land which meets the minimum requirement of subsection (e)(1).
 - (3) All paved areas with more than fifty (50) feet of length, within twenty (20) feet of a street right-of-way shall have a six (6) feet wide street yard landscaping strip within private yards separating parking areas from abutting street rights-of-way containing no less than four (4) of the categories of planting materials listed in paragraph (f) of this section. The street yard landscaping strip shall contain one tree per fifty (50) feet of street frontage. Such trees may be clustered or arranged within the area and need not be placed at even intervals. The street yard landscaping strip may contain driveways.

No parking areas shall contain more than one hundred fifty (150) spaces. If a greater number is required, separate parking areas of not more than one hundred fifty (150) spaces shall be provided and shall be separated by a landscaped area of at least ten (10) feet in width. The ten (10) feet wide landscaped area shall contain four (4) of the categories of planting materials listed in paragraph (f) of this section. In addition, trees shall be planted within the ten (10) feet wide landscaped area at the rate of one tree for each fifty (50) lineal feet. Appropriately placed connections between parking areas are permitted.

No less than fifty (50) percent of the linear street frontage forming the perimeter of parking areas described above, exclusive of driveways and

entrances, shall contain screening materials. These materials may consist of plantings from the tree and shrub categories, or ornamental fences or walls, or earthen berms, or some combination thereof. This screening shall extend to a minimum of three (3) feet above the grade of the parking lot.

- (4) In addition to the above, paved areas developed after August 19, 1991, and additions to paved areas which were developed prior to August 19, 1991, exceeding four thousand five hundred (4,500) square feet in area shall contain a minimum of one (1) tree for every four thousand five hundred (4,500) square feet of paved area. All required trees planted to achieve compliance, are to be distributed in a configuration which shades the paved areas within the site. In a case where the location of trees within the site interferes with the loading and unloading of large vehicles, the required trees may be placed at the perimeter of the paved areas or in other suitable locations on the site. All required trees planted to achieve compliance must be a locally adapted species, approved for the site by the director of public works. The director of public works is authorized to adopt and maintain a list of approved species to be used for planting required by this section. When a site, in the opinion of the director of public works, is configured in a manner that makes planting of required trees impractical or unsafe, shrubs and ground cover may be substituted for trees. Existing trees saved on the site within the parking area may be credited toward minimum tree requirements only if it is demonstrated that they have been properly protected during and following development and if they meet the size requirements of chapter 12A.
- (5) Paved areas containing more than one thousand five hundred (1,500) square feet within fifty (50) feet of a residential use or residential zoning district or any motor vehicle loading/unloading areas within fifty (50) feet of a residential use or residential zoning district, but not separated by street right-of-way, shall be screened from view of the adjoining residential use or residential zoning district, by landscaping materials, ornamental fence and walls in combination with plant materials, properly stabilized earthen berms, or a combination of any of these methods. Screening shall be so designed that at least eighty (80) percent opacity is achieved, viewed horizontally, in the space between one foot and five (5) feet above grade at the screen line, at the time of installation; provided, that where plant materials are used for screening, these shall be selected and placed to achieve the same objective within four (4) full growing seasons following planting. All screening material, including plant material, shall be continuously maintained in good condition, to the above standards.
- (6) Landscaping and screening shall not be allowed to obstruct the view of motorists using any street, private driveway, parking aisles or the

approach to any street intersection so as to constitute a traffic hazard or condition dangerous to the public safety upon any such street.

- (7) Of the combined total number of trees required to be planted in the six (6) feet wide street yard landscaping strip and in the interior parking lot, no less than thirty (30) percent shall be of a species of medium to large shade trees.
 - (8) Lots which contain attached residences and which have side or rear property boundaries abutting collector or arterial street right of way shall have screening either along such boundaries or around any patios on the lot which are visible from the right of way. The screening shall consist of landscape materials, ornamental fences or walls in combination with plant materials, properly stabilized earthen berms, or a combination of these methods. Screening shall be so designed that at least fifty (50) percent opacity is achieved, viewed horizontally, in the space between one foot and five feet above grade at the screening line, at the time of installation; provided that where plant materials are used for screening, these shall be selected and placed to achieve the same objective within four (4) full growing seasons following planting. Screening shall be placed on private property. All screening material, including plant material, shall be continuously maintained in good condition to the above standards.
- (f) *Planting requirements.* The categories of planting material and the minimum planting sizes for planting materials, where applicable, shall be as follows:
- (1) *Medium and large deciduous shade trees:* Two (2) inch caliper, as measured six (6) inches above the ground, as specified by the American Association of Nurserymen.
 - (2) *Small deciduous or ornamental trees:* Four (4) feet in height as specified by the American Association of Nurserymen, with the exception of true dwarf species.
 - (3) *Conifers:* Six (6) feet in height.
 - (4) *Upright evergreen trees:* Four (4) feet in height as specified by the American Association of Nurserymen, except for true dwarf species.
 - (5) Deciduous shrubs (minimum two (2) gallon size).
 - (6) Evergreen shrubs (minimum two (2) gallon size).
 - (7) *Ground cover plants (Crowns, plugs, containers):* In a number as appropriate by species to provide fifty (50) percent surface coverage after

two (2) growing seasons.

- (8) *Grass seeding or sod:* As appropriate to provide complete coverage within the first growing season.
 - (9) Perennial flowers.
 - (10) Ornamental grass.
- (g) *Installation, maintenance and enforcement.*
- (1) Required landscaping shall not be installed until all street yard landscaping strips, setbacks, tree planting sizes and locations, screening locations and overall planting configurations are inspected and approved by the city. Deviations from the approved plans shall be corrected to conform to the approved plan. If, in the opinion of the director of public works, compliance is not achievable due to unforeseen circumstances, the landscaping plan may be amended, but in all cases must comply with the requirements of the landscaping requirements for the zoning district in which the site is located.
 - (2) All landscaping called for in the approved landscape plan, living and non-living, shall be in place and approved by the city prior to issuance of certificates of occupancy. It shall be unlawful to occupy any structure, or to represent to any person that the structure may be occupied, prior to the final approval of the landscaping. If, at the time of request for the certificate, the required landscaping would be jeopardized by weather conditions, the developer shall comply with applicable provisions of chapter 12A.
 - (3) The trees, shrubs, fences, walls and other landscaping materials depicted on approved plans shall be considered as elements of the project in the same manner as parking, building materials and other elements. The developer, his successor and subsequent owners and their agents who are authorized to maintain the property, shall be responsible for the continued maintenance. Plant material which exhibits evidence of insect pest disease or damage shall be appropriately treated, and dead plants promptly removed and replaced within the next planting season. All landscaping will be subject to periodic inspection by the city to ensure compliance.
 - (4) A minimum one hundred seventy (170) square feet pervious growing area per medium to large tree shall be provided. A minimum seventy-five (75) square feet pervious growing area shall be provided for ornamental trees.
- (h) *Alternative methods of compliance.* Although certain material or a particular

method of construction is specifically prescribed by this section, this section is not intended, especially whenever a stream, natural rock formation or other physiographic condition exists, to prevent the use of a material or method of construction not prescribed specifically by this section; provided, any such alternate material or method has been approved in writing or in plan and its use authorized by the director of public works. The director may approve in writing or in plan any such alternate material or method of construction; provided, it is found that the proposed alternate is for the purpose intended, and is at least the equivalent of that specifically prescribed by this section in quality, effectiveness, durability, hardness, and performance.

- (i) *Exceptions.* The following uses are exempt from the requirements of subsection (e)(3) and (4) above:

Motor vehicles or trailer sales and service;
Farm machinery sales and service;

except that paved areas of such exempted uses with more than fifty (50) feet of length within twenty (20) feet of a street right-of-way shall have a six (6) feet wide street yard landscaping strip within private yards separating such areas from abutting street rights-of-way containing no less than four (4) of the categories of planting materials listed in paragraph (f) of this section. Such landscaping strip shall not be subject to the tree or screening requirements imposed by subsection (e)(3); except that the required landscaped areas shall include not less than one ornamental or other type of tree for each four thousand five hundred (4,500) square feet of paved area, provided however, that one (1) large shrub or two (2) medium shrubs may be substituted for each required tree. A large shrub is defined as one that reaches at least six (6) feet in height in four (4) growing seasons, and a medium shrub is defined as one that reaches at least thirty (30) inches in height in three (3) growing seasons. Shrubs which may be grouped together or planted individually, should be from the deciduous woody ornamental or evergreen families (minimum of five (5) gallon size); and except that when a use listed above has been abandoned, and trees and screening have not been installed in accordance with the provisions of this section, such tree planting and screening shall then be required prior to occupancy for any other use.

- (j) As used in this section, “paved area” means open areas used or occupied by motor vehicles including parking areas, loading areas and driveways. “Paved area” does not include areas under the roof of a building, sidewalks or pedways.

(Ord. No. 13058, §§ 1, 8-19-91; Ord. No. 14334 §§ 1, 1-3-95; Ord. No. 14963, §§ 1, 9-3-96; Ord. No. 15474, §§ 1, 1-5-98; Ord. No. 15640, §§ 1, 6-15-98; Ord. No. 16126, §§ 2, 8-16-99; Ord. No. 16798, §§ 1, 3-5-01; Ord. No. 17584, §§ 1, 2-17-03)

Editor's note--Ord. No. 11767, §§ 1, adopted Feb. 1, 1988, repealed §§ 29-25,

pertaining to design standards for travel trailer parks, which derived from Code 1964, §§ 19.202; Ord. No. 9958, §§ 1, adopted Oct. 3, 1983 and Ord. No. 11702, §§ 1, adopted Dec. 7, 1987(Ord. 17584, Amended, 02/17/2003, Prior Text; 16798, Amended, 03/05/2001, Prior Text; 16126, Amended, 08/16/1999, Prior Text; 15640, Amended, 06/15/1998, Prior Text)

ARTICLE III. TREE PRESERVATION AND LANDSCAPING REQUIREMENTS

Sec. 12A-49. Clearing of trees; permit required.

- (a) The mechanized clearing of trees, logging of trees or clear-cutting of trees by any means on tracts of land over one (1) acre shall be unlawful unless done in compliance with a land disturbance permit.
- (b) A minimum of twenty-five (25) percent of any climax forest area on any tract of land subject to land preservation requirements shall be maintained. Trees thus retained will count toward landscaping requirements contained in the zoning ordinance.
- (c) When logging is to occur prior to approval of a tree preservation plan or on property not otherwise subject to land disturbance requirements, a logging plan demonstrating compliance with tree preservation requirements must be submitted to the director. This logging plan will include the area in square feet of forest land, the area in square feet of climax forest, and demonstrate that twenty-five (25) percent of the area of climax forest will be preserved after logging. Each logging operation on the same site will require a separate land disturbance permit. Under no circumstance shall successive logging remove greater than seventy-five (75) percent of the climax forest present upon the site before logging.
- (d) A landscaping plan demonstrating compliance with the specific requirements of the existing zoning of the site shall accompany all applications for land disturbance permits. The plan will be a drawing of the site sufficient in detail to illustrate the features of the plan. The plan may be incorporated with other drawings or documents but shall contain the following information.
 - (1) The area, in square feet or acres, of any climax forest areas on the site and those portions, in square feet or acres, of the climax forest to be preserved. The areas may be determined by actual field measurement or planimetry of scaled aerial photographs.
 - (2) The number, spacing, size and species of planting materials, including new trees and final ground cover that will be planted as part of the landscaping plan.
 - (3) The size and location of any walls, earth berms, and fences.

- (4) Provisions for watering, soil stabilization, plant protection and maintenance.
 - (5) Location and description of any barriers to be erected to protect any vegetation from damage both during and after construction.
-
- (e) Tree protection shall be required prior to and during the activities associated with the land disturbance permit in accordance with administrative standards promulgated and enforced by the director, but under no circumstances shall activities with the potential of causing damage to the root systems of trees be allowed within the perimeter of the drip line of the trees being preserved, protected or planted as part of the landscaping plan.
 - (f) If any of the trees required to be retained or trees planted as part of the landscaping plan should die within a period of eighteen (18) months after completion of the activities associated with the land disturbance permit, the owner of the property shall replace the trees within six (6) months at a ration of one-to-one with an approved tree having a minimum diameter of two (2) inches measured at a point one (1) foot above natural grade. Shrubbery or other plantings which die within eighteen (18) months of completion of the activities shall be replaced in kind within six (6) months.
 - (g) All landscaping work must be completed prior to the final inspection of a building or within one year of issuance of the land disturbance permit, whichever occurs later. If completion of the work or building is at such time of the year that the landscaping cannot be completed, a performance bond or other acceptable financial instrument for completion of the work may be accepted to allow the issuance of a certificate of occupancy.
 - (h) Landscaping plans may be amended during or after development with the approval of the director, but in all cases must comply with the current landscaping requirements of the zoning district in which the site is located.

(Ord. No. 13019, §§ 1, 7-1-91; Ord. No. 13258, §§ 1, 3-2-92; Ord. No. 14389 §§ 1, 3-6-95; Ord. No. 17278, §§ 1, 5-6-02; Ord. No. 018164, §§ 1, 7-19-04)

(Ord. 018164, Amended, 07/19/2004, Prior Text; Ord. 17278, Amended, 05/06/2002, Prior Text)

The above is excerpted from Chapter 12A
LAND PRESERVATION of the COLUMBIA CODE.

RECOMMENDED PLANT MATERIALS FOR
COMMERCIAL LANDSCAPES

MEDIUM TO LARGE SHADE TREES:

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>
<i>Acer campestre</i>	Hedge Maple
<i>Acer rubrum</i> 'Red Sunset'	Red Maple
<i>Acer saccharum</i> 'Green Mountain'	Sugar Maple
<i>Betula nigra</i> 'Heritage'	River Birch
<i>Carpinus betulus</i> 'Fastigiata'	European Hornbeam
<i>Fraxinus americana</i> 'Autumn Purple'	White Ash
<i>Fraxinus pennsylvanica</i> 'Patmore'	Green Ash
<i>Fraxinus pennsylvanica</i> 'Summit'	Green Ash
<i>Gleditsia triacanthos</i> 'Imperial'	Honey Locust
<i>Gleditsia triacanthos</i> 'Skyline'	Honey Locust
<i>Gymnocladus dioica</i>	Kentucky Coffee Tree
<i>Liquidambar styraciflua</i>	Sweetgum

Liriodendron tulipifera	Tuliptree
Platanus x acerifolia 'Bloodgood'	London Plane Tree
Quercus acutissima	Sawtooth Oak
Quercus palustris	Pin Oak
Quercus robur	English Oak
Quercus rubra	Red Oak
Quercus shumardii	Shumard Oak
Taxodium distichum	Bald Cypress
Tilia americana 'Redmond'	American Linden
Tilia cordata 'Greenspire'	Littleleaf Linden
Zelkova serrata 'Green Vase'	Japanese Zelkova
Zelkova serrata 'Village Green'	Japanese Zelkova

SMALL DECIDUOUS OR ORNAMENTAL TREES:

BOTANICAL NAME

COMMON NAME

Acer ginnala 'Flame'	Amur Maple
Amelanchier sp.	Serviceberry

<i>Cercis canadensis</i>	Redbud
<i>Cornus florida</i>	Flowering Dogwood
<i>Cornus mas</i>	Cornelian Cherry
<i>Cotinus obovatus</i>	American Smoketree
<i>Crataegus phaenopyrum</i>	Washington Hawthorn
<i>Crataegus viridis</i> 'Winter King'	Hawthorn
<i>Ilex decidua</i>	Possumhaw
<i>Koelreuteria paniculata</i>	Goldenrain Tree
<i>Magnolia quinquepeta</i> 'Nigra'	Lily Magnolia
<i>Magnolia quinquepeta</i> 'Betty'	Lily Magnolia
<i>Magnolia stellata</i> 'Royal Star'	Star Magnolia
<i>Malus</i> sp.	Crabapple
<i>Prunus x yedonensis</i> 'Akebono'	Yoshino Cherry
<i>Pyrus calleryana</i> 'Aristocrat'	Callery Pear
<i>Pyrus calleryana</i> 'Capital'	Callery Pear
<i>Pyrus calleryana</i> 'Faureii'	Callery Pear
<i>Syringa reticulata</i> 'Ivory Silk'	Japanese Tree Lilac

CONIFERS OR UPRIGHT EVERGREEN TREES:

BOTANICAL NAME

COMMON NAME

Ilex opaca 'Croonenburg'

American Holly

Juniperus virginiana

Eastern Red Cedar

Picea abies

Norway Spruce

Picea omorika

Serbian Spruce

Pinus resinosa

Red Pine

Pinus strobus

Eastern White Pine

Tsuga canadensis

Canadian Hemlock

UPRIGHT EVERGREEN SHRUBS:

BOTANICAL NAME

COMMON NAME

Juniperus chinensis 'Perfecta'

Juniper

Juniperus chinensis 'Spartan'

Juniper

Juniperus scopulorum 'Gray Gleam' or 'Wichita Blue'	Juniper
Juniperus virginiana 'Canaertii'	Juniper
Thuja occidentalis 'Emerald'	Arborvitae
Thuja occidentalis 'Nigra'	Arborvitae
Thuja occidentalis 'Techny'	Arborvitae

LARGE DECIDUOUS SHRUBS (over 4 feet)

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>
Aronia arbutifolia 'Brilliantissima'	Red Chokeberry
Berberis thunbergii 'Rose Glow'	Barberry
Cornus alba 'Siberica'	Dogwood
Euonymus alata 'Compacta'	Burning Bush
Forsythia x intermedia 'Lynwood Gold'	Forsythia
Hydrangea paniculata 'Grandiflora'	Pee Gee Hydrangea
Hydrangea quercifolia	Oakleaf Hydrangea
Ilex glabra 'Nordic'	Inkberry

<i>Ilex verticillata</i> 'Winter Red'	Winterberry
<i>Myrica pennsylvanica</i>	Northern Bayberry
<i>Rhododendron yedoense</i> var. <i>poukhanense</i>	Korean Azalea
<i>Rhododendron</i> 'PJM'	PJM Azalea
<i>Viburnum carlesii</i> 'Cayuga'	Koreanspice Viburnum
<i>Viburnum</i> x <i>juddii</i>	Judd Viburnum
<i>Viburnum dentatum</i> 'Chicago Luster'	Arrowwood Viburnum
<i>Viburnum lantana</i> 'Mohican'	Wayfaringtree Viburnum
<i>Viburnum plicatum</i> var. <i>tomentosum</i>	Shasta Viburnum
<i>Viburnum</i> x <i>rhytidophylloides</i>	Alleghany Viburnum
<i>Viburnum</i> x <i>rhytidophylloides</i>	Willowwood Viburnum
<i>Viburnum trilobum</i> 'Alfredo'	American Cranberry Bush

SMALL DECIDUOUS SHRUBS (less than 4 feet)

BOTANICAL NAME

COMMON NAME

<i>Berberis thunbergii</i> 'Atropurpurea Nana'	Crimson Pygmy Barberry
<i>Chaenomeles speciosa</i> 'Texas Scarlet'	Dwarf Quince

Cornus sericea 'Kelseyi'	Dwarf Redtwig Dogwood
Hypericum frondosum	Golden St. Johnswort
Rhus aromatica	Aromatic Sumac
Spiraea x bumalda 'Anthony Waterer'	Red Spirea
Spiraea x bumalda 'Froebelii'	Pink Spirea
Spiraea x bumalda 'Golden Flame'	Spirea
Spiraea 'Goldflame'	Spirea
Spiraea japonica 'Little Princess'	Spirea
Spiraea japonica 'Shirobana'	Spirea
Spiraea nipponica 'Snowmound'	Spirea
Syringa meyeri 'Palibin'	Dwarf Korean Lilac

EVERGREEN SHRUBS

BOTANICAL NAME

COMMON NAME

Buxus microphylla 'Green Velvet' or 'Green Mountain'	Hardy Boxwood
Buxus sinica insularis 'Wintergreen'	Hardy Boxwood

Juniperus chinensis 'Kallays Compacta'	Juniper
Juniperus chinensis 'Sea Green'	Juniper
Juniperus horizontalis 'Plumosa Compacta'	Andorra Juniper
Juniperus horizontalis 'Wiltonii'	Blue Rug Juniper
Juniperus procumbens	Procumbens Juniper
Juniperus procumbens 'Nana'	Dwarf Procumbens Juniper
Juniperus virginiana 'Grey Owl'	Juniper
Pinus mugo	Mugho Pine
Pinus mugo var. pumilio	Dwarf Mugho Pine
Thuja occidentalis 'Hetz Midget'	Dwarf Globe Arborvitae

TURF

BOTANICAL NAME

COMMON NAME

Poa pratensis 'Park', 'Kenblue', 'Arboretum', 'South Dakota Common' or 'Aquila'	Common Kentucky Blue Grass
Festuca arundinacea 'K-31' or 'Clemfine'	Common Tall Fescue
Festuca arundinacea 'Apache', 'Bonanza', 'Falcon', 'Hounddog', 'Maverick' or 'Rebel II'	Turf-type Tall Fescue

PERENNIALS FOR SUN (mass plantings)

BOTANICAL NAME

COMMON NAME

Coreopsis verticillata 'Moonbeam'	Golden Daisy
Coreopsis verticillata 'Zagreb'	Golden Daisy
Hemerocallis var.	Daylily
Hemerocallis 'Stella de Oro'	Dwarf Daylily
Iris siberica 'Caeser's Brother'	Siberian Iris
Perovskia atriplicifolia	Russian Sage
Rudbeckia fulgida 'Goldsturm'	Black Eyed Susan
Sedum spectabile 'Autumn Joy'	Stonecrop

PERENNIALS FOR SHADE (mass plantings)

BOTANICAL NAME

COMMON NAME

Astilbe var.	Astilbe
Brunera macrophylla	Alkanet

Hosta var.	Hosta
Pulmonaria saccharata 'Mrs Moon'	Lungwort
Tiarella wherryi	Foamflower

ORNAMENTAL GRASSES

BOTANICAL NAME

COMMON NAME

Calamagrostis arundinacea 'Karl Foerster'	Feather Reed Grass
Erianthus ravennae	Hardy Pampass Grass
Miscanthus sinensis 'Gracillimus'	Maiden Grass
Miscanthus sinensis 'Strictus'	Porcupine Grass
Miscanthus sinensis 'Silberfeder'	Silver Feather Grass
Pennisetum alopecuriodes	Fountain Grass
Pennisetum alopecuriodes 'Hameln'	Dwarf Fountain Grass

GROUNDCOVERS

BOTANICAL NAME

COMMON NAME

Ajuga reptans 'Gaiety'

Bugleweed

Ceratostigma plumbaginoides

Leadwort

Euonymus fortunei 'Colorata'

Purpleleaf Wintercreeper

Hedera helix 'Thorndale'

English Ivy

Liriope spicata

Creeping Lilyturf

Liriope muscari 'Majestic'

Lilyturf

Pachysandra terminalis 'Green Carpet'

Japanese Spurge

Sedum kamtschaticum

Pachy Sedum

Sedum spurium 'Dragon's Blood'

Stonecrop

Sedum 'Vera Jameson'

Stonecrop

Vinca minor 'Bowles'

Myrtle

Waldstenia ternata Barren Strawberry

TYPICAL STREET BUFFER PLANTING REQUIREMENTS

150-FOOT STRIP

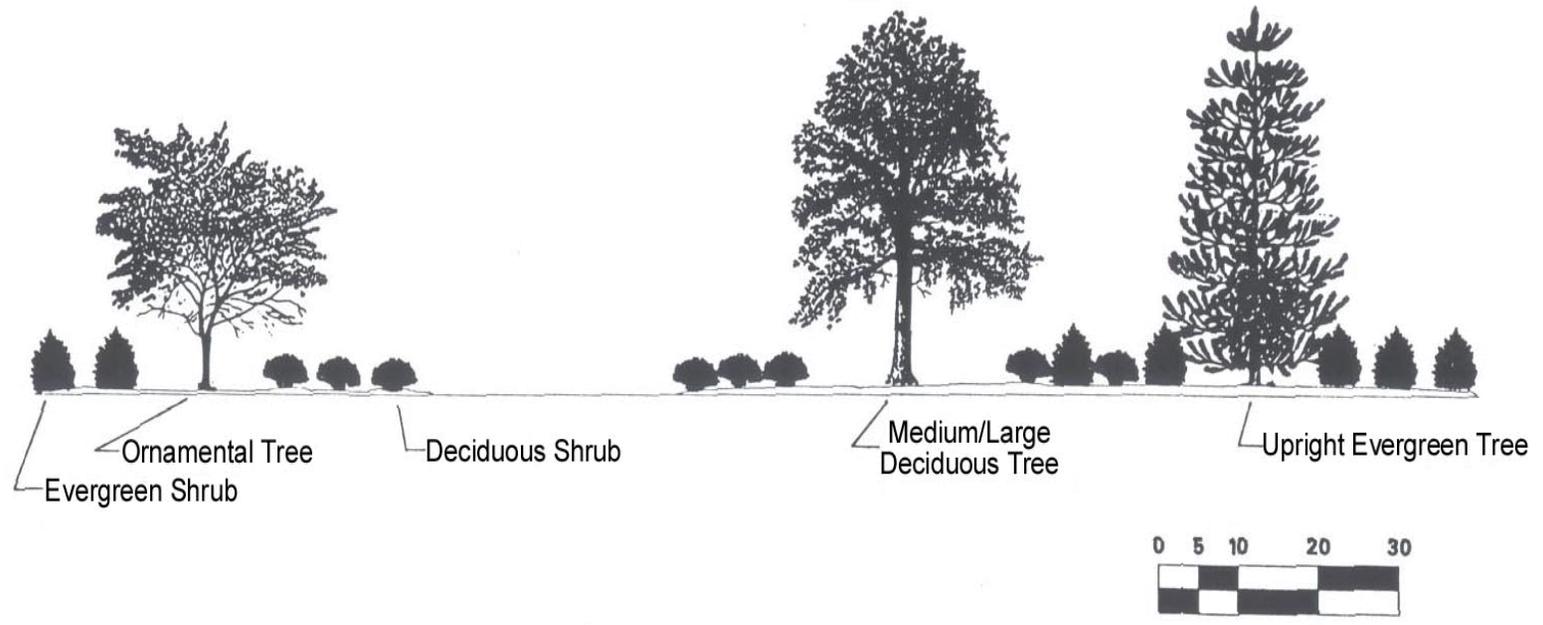
- 1) The buffer itself must be a minimum of six (6) feet wide from street right-of-way to paved lot back of curb.
- 2) There must be fifty (50) percent screening for the entire buffer strip between zero (0) and three (3) feet in height above the parking lot grade. (Minimum size of two (2) gallons if container grown)
 - a) Each shrub will screen five (5) linear feet if it is capable of reaching three (3) feet in height and five (5) feet in width within four (4) growing seasons.
 - b) There must be a minimum of four (4) of the plant categories listed in Section 29-25 of the Columbia Code.
- 3) There must be one (1) tree per fifty (50) linear feet and thirty (30) percent of those trees must be medium to large deciduous trees planted on 40-foot to 60-foot centers.

Figure 1 on the following page shows a typical street buffer planting.

EXAMPLE CATEGORIES SHOWN IN FIGURE 1:

1. Turf Grass
2. Deciduous Shrub
3. Evergreen Shrub
4. Upright Evergreen Tree
5. Ornamental Tree
6. Medium/Large Deciduous Tree

TYPICAL STREET BUFFER PLANTING PROFILE VIEW



PLAN VIEW

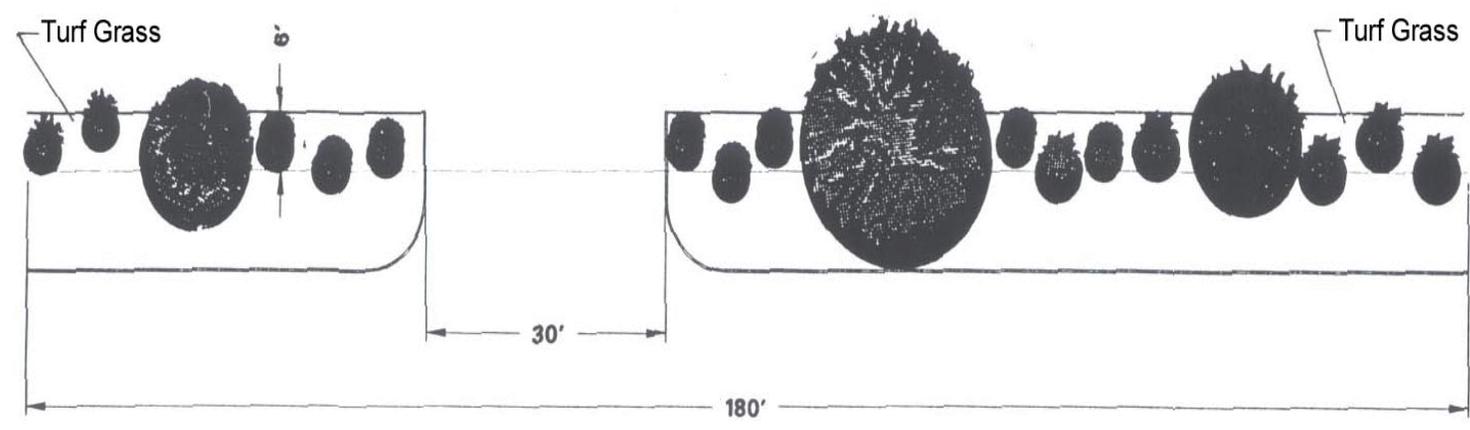


Figure 1

PARKING LOT GUIDELINES

- 1) Parking lots to contain more than 150 spaces shall be separated by a 10-foot landscaped strip into parking areas of 150 or less spaces.
 - a) The 10-foot landscape strip shall contain four categories of plant materials.
 - b) The 10-foot landscape strip shall contain one tree per 50 linear feet.

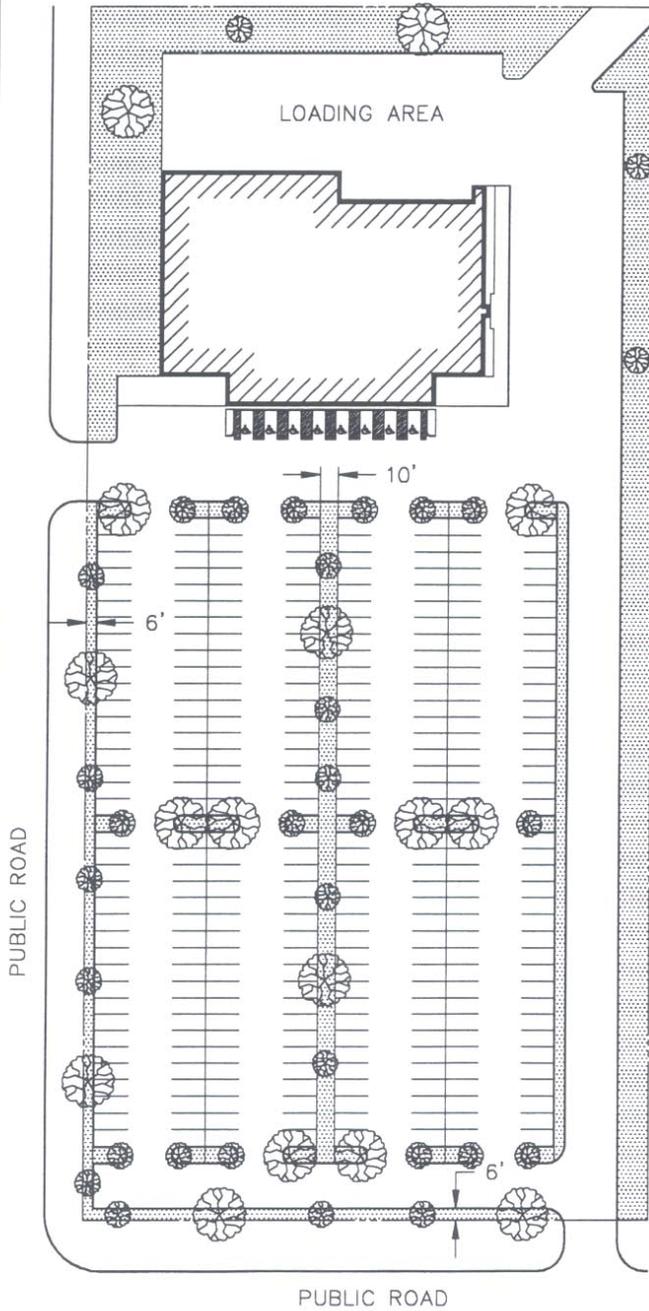
- 2) Paved areas containing more than 4,500 square feet shall contain a minimum of one tree per 4500 square feet.
 - a) No less than 30% of the trees shall be medium to large shade trees.
 - b) All required trees planted to achieve compliance are to be distributed in a configuration which shades the paved areas within the site.
 - c) In a case where the location of trees within the site interferes with the loading and unloading of large vehicles, the required trees may be placed at the perimeter of the paved areas or in other suitable location on the site.
 - d) A minimum of 170 square feet of pervious growing area shall be provided for a medium to large shade tree and a minimum of 75 square feet of pervious growing area for an ornamental tree.

- 3) Paved areas containing more than 1,500 square feet or loading/unloading areas within 50 feet of a residential use or residential zoning district, but not separated by street right-of-way, must be screened from the view of the adjoining use or district.
 - a) The screen must maintain 80% opacity year round from one to five feet above the parking lot elevation.
 - b) The screen may contain: landscaping materials, ornamental fences and walls, properly stabilized earthen berms or a combination of these materials.
 - c) Plant materials must attain the proper coverage within four growing seasons.

TYPICAL PARKING LOT PLANTING

(TREE REQUIREMENTS)

30% MEDIUM / LARGE DECIDUOUS TREES
IN BUFFER STRIP AND WITHIN PARKING LOT



THIS DIAGRAM REPRESENTS A
90° ANGULAR PARKING

LEGEND

-  MEDIUM / LARGE TREES
-  ORNAMENTAL TREES
-  PERVIOUS AREA

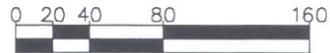
NOTE:
MIN. PERVIOUS PLANTING AREA
75 SQ. FT. ORNAMENTAL TREES
170 SQ. FT. MEDIUM / LARGE
TREES

AREA OF BUILDING 45,000 SQ. FT.
REQUIRED PARKING 300 SPACES
REQUIRED TREES

- PARKING LOT - 24 TREES
- 6' BUFFER STRIP - 12 TREES
- 10' DIVIDER STRIP - 7 TREES
- LOADING AREA - 5 TREES

TREE NUMBERS
14 MEDIUM / LARGE
34 ORNAMENTAL

48 TOTAL



TYPICAL PARKING LOT PLANTING (TREE REQUIREMENTS)

30% MEDIUM / LARGE
DECIDUOUS TREES IN
BUFFER STRIP AND
WITHIN PARKING LOT

THIS DIAGRAM REPRESENTS A
60° ANGULAR PARKING

LEGEND

-  MEDIUM / LARGE TREES
-  ORNAMENTAL TREES
-  PERVIOUS AREA

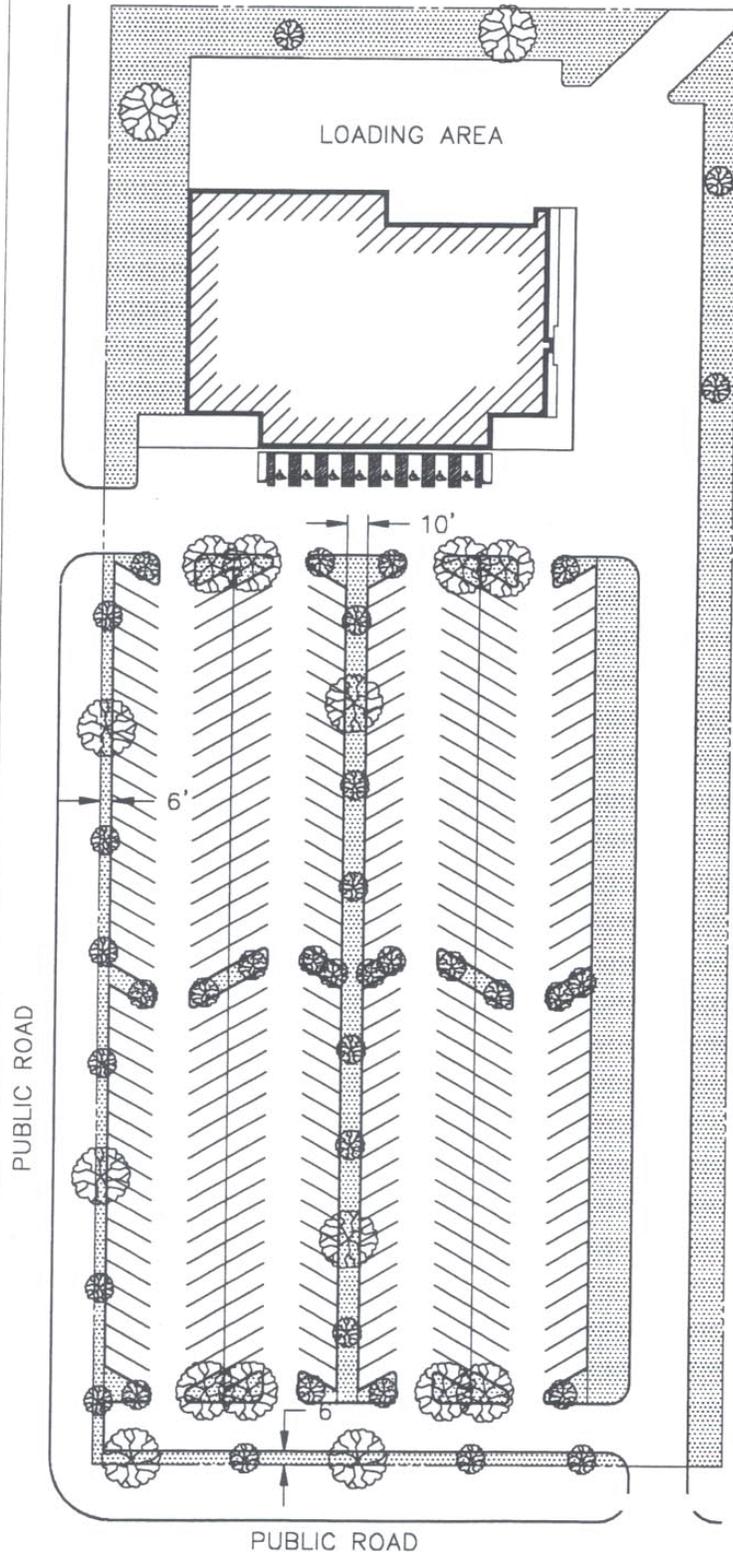
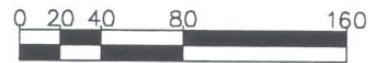
NOTE:
MIN. PERVIOUS PLANTING AREA
75 SQ. FT. ORNAMENTAL TREES
170 SQ. FT. MEDIUM / LARGE
TREES

AREA OF BUILDING 45,000 SQ. FT.
REQUIRED PARKING 300 SPACES
REQUIRED TREES

PARKING LOT - 27 TREES
6' BUFFER STRIP - 13 TREES
10' DIVIDER STRIP - 8 TREES
LOADING AREA - 5 TREES

TREE NUMBERS
16 MEDIUM / LARGE
37 ORNAMENTAL

53 TOTAL



Permitting Process

Introduction

This document will help applicants understand the process of applying for permits from the City of Columbia. Included is information about permit applications, plan review, permit fees, the steps involved when phasing building projects, and other information necessary to obtain permits.

Applications for permits are obtained from Building and Site Development on the third floor of City Hall, or can be found online at <http://www.gocolumbiamo.com/community-development/bsd/building-permits/>. Direct links for a variety of permit types can also be found in this document.

See [Construction Calculator](#) and [Building Permit Fee Schedule](#) for fee information.

Licensing

Permit applicants must obtain a City of Columbia Contractor License prior to issuance of a building permit. Please contact the City of Columbia Business License office at 573-874-7378, or visit [Business Licenses and Permits](#). Applicants for trade permits (Mechanical, Electrical and Plumbing) must also be licensed by the City of Columbia as masters of the trade. For more information, contact Building and Site Development at 573-874-7474 or go to [Trade Licensing](#).

(A homeowner may obtain a permit for work on their own home if the requirements of the [Owner Affidavit](#) are fulfilled)

Request for Installation of new Water and Light Services

In addition to other permit requirements all persons desiring water or electric service connections to new or previously un-served facilities must provide a [service application](#) to the Water and Light Department located on the fourth floor of City Hall at 701 E. Broadway. The information required for this application is contained in the [Columbia Water and Light Service Manual](#).

NOTE: TO AVOID PROJECT DELAYS IT IS IMPERATIVE TO CONTACT THE WATER AND LIGHT DEPARTMENT PERTAINING TO UTILITY DESIGN AND SERVICE AS EARLY AS POSSIBLE.

What Requires a Permit?

Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish, or change occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert, or replace any electrical, gas mechanical or plumbing system must obtain a permit.

Permit Exceptions –

1. One-story detached accessory structures used as tool/storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet for commercial uses or 200 square feet for single family uses.
2. Fences not over 6 feet (commercial) or 12 feet (residential) in height.
3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
4. Painting, papering, tiling, carpeting, cabinets, counter tops, and similar finish work.
5. Prefabricated swimming pools accessory to a single family occupancy that are less than 24 inches (610mm) deep, do not exceed 5,000 gallons (18 925 L) and are installed entirely above ground.
6. Shade cloth structures constructed for nursery or agricultural purposes.
7. Swings and other playground equipment accessory to detached one- and two-family *dwelling*s.
8. Window *awnings* supported by an *exterior wall* which do not project more than 54 inches (1372 mm) from the *exterior wall* and do not require additional support, for single family and utility occupancies.
9. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.

Land Disturbance Permit

City Ordinance defines Land disturbance as any activity, including mechanized clearing, which removes the vegetative cover. This includes:

1. Clearing, grubbing, and earthmoving on private property
2. Activities not associated with a specific development plan, such as fill in the regulatory flood plain, stockpiling, earth/topsoil removal, etc.
3. Construction of parking lots, detention basins, retaining walls, etc.
4. Major utility construction
5. Sites larger than 1 acre shall be accompanied by a detailed site development plan which shall include, a tree preservation plan, a landscaping plan, a soil erosion control plan, and a stormwater management plan conforming to the provisions of this chapter. Where practical, drawings may be combined to contain all of the required plans.
6. An application for a land disturbance permit shall be accompanied by a non-refundable fee of two hundred dollars (\$200.00). This requirement shall not apply to plot plan applications for sites one (1) acre or less or for individual lots in R-1 and R-2 zoned developments.

Suspension of Permit - A permit may be suspended if no activity has been recorded or substantial progress has not been made for six months. The permit can be suspended if issued in error or on the basis of incorrect, inaccurate, or incomplete information, or in violation of any ordinance or regulation.

Clean Fill Permit

Clean fill. Uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinder-blocks, brick, minimal amounts of wood and metal, and inert solids which are approved by rule or policy of the State Department of Natural Resources for fill, reclamation or other beneficial use.

Application must be made for clean fill permits subject to the following parameters:

1. No clean fill permit shall be issued unless an application for such permit has been filed which sets forth the location and street address of the clean fill site and the name and address of the legal owner of the clean fill site.
2. No clean fill permit shall be issued on sites two (2) acres or larger unless all applicable requirements of a land disturbance permit are satisfied.
3. No clean fill permit shall be issued on sites less than two (2) acres unless the application for the permit sets forth reasonable and effective methods to control erosion and to keep adjacent streets and properties free from the clean fill and any mud or other material from the clean fill site.

One and Two Family Building Permit

All new One and Two Family structures or Townhouses (Single Family Attached) require the following for approval:

1. Completed [One and Two Family Building Permit Application](#).
2. Land Disturbance Permit
 - A. Plot Plan stamped/sealed by an engineer or surveyor licensed in the State of Missouri and including a 100-year flood plain verification statement. The property address must be shown on the plot plan.
Lots that are located in a flood plain must be accompanied by a [flood plain development permit application](#).
Sample verification statement:
This tract is not located within the 100 year flood plain as per the Boone County FIRM Map #___, dated _____.
 - B. Structure must be accurately depicted on the lot with dimensions of buildings and setbacks from property lines.
 - C. Show driveway location.
 - D. Show location and width of sidewalk.
 - E. The proposed low floor elevation in feet above or below the top of curb in front of the lot must be depicted. Two curb elevations must be given on the front of the lot.
 - F. All easements must be depicted.
 - G. Show all manholes/cleanouts, mains and laterals on the lot. Sewer tap must be more than 5' from any manhole or cleanout.

Residential Alteration Permit

Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish, or change occupancy of a building or structure must obtain a permit. The permit

may be obtained by a licensed contractor or a homeowner who intends to live in the residence for at least 1 year. ([Owner Affidavit](#)). Typical uses of this permit are remodeling, finishing basements, re-roofing, additions, decks, etc.

Demolition Permit

Requirements for a permit to demolish a structure are as follows:

1. Completed [Demolition Permit Application](#).
2. Intent to demolish sign will be posted on the property for **ten working days** by City staff.
3. Utility disconnect certificates for gas, water and electric. (From Utility provider)
4. Sewer tap inspection by City Sewer Maintenance Division. (874-6287)
5. For occupancy **other than** one and two family dwelling, submit copies of written notice to adjoining property (lot) owners of intent to demolish the building. To be delivered one week prior to commencement of work.
6. Refundable \$2,000.00 cash bond.

Commercial Building Permit and Phased Approval Process

For new commercial buildings and additions the applicant must determine the permit type when the application and plans are submitted. Permit types are explained below. The requirements for each phase must be satisfied before proceeding to a higher phase. If requirements of all phases are met in the beginning a full building permit will be issued.

1. Land Disturbance Permit (\$200.00 fee if over 1 acre)
 - A. Three sets of site plans on 24" x 36" sheets. Site plans include grading plans, erosion control plans, landscaping plans, stormwater management plans and calculations.
 - B. Completed [Land Disturbance Permit application](#) and fee if applicable..
 - C. Provide proof of MDNR permit and SWPPP if required (Currently for disturbed areas of one acre or larger).
 - D. Required easements, covenants, calculations, etc.
 - E. Completed and signed flood plain development permit application if applicable..
2. Footing and Foundation Permit (\$54.00 fee)
 - A. Completed [Footing/Foundation permit application](#).
 - B. Approved site documents. (Make sure to include transformer location, electric meter center locations, water mains/service locations and sizes)
 - C. Approved soil report.
 - D. Approved structural calculations.
3. Building Shell
 - A. Completed Footing /Foundation Permit Application and Commercial Building Permit Application.
 - B. Approved plans for anything over and above the exterior envelope of the building. (eg: elevator shaft, public bathrooms, electrical rooms, etc.)
 - C. Approved mechanical, electrical, and plumbing plans for any of these areas.

4. Building Permit/Interior Finish
 - A. Completed [Commercial Building Permit Application](#).
 - B. Approved Architectural drawings.
 - C. Approved Mechanical, Electrical, and Plumbing drawings.
 - D. Complete set of specifications if applicable.

Trade Permits—Mechanical, Electrical and Plumbing

Trade permits are required to erect, install, enlarge, alter, repair, remove, convert, or replace any electrical, gas mechanical or plumbing system. This does not include replacement of fixtures. Permit applicants must obtain both a City of Columbia Contractor License and Master Trade License prior to issuance of a building permit. (An [Owner Affidavit](#) may be filled out allowing the owner to perform trade work on their own residence.)

Right of Way Permit

A right of way permit is needed anytime work is performed within the public right of way or easement. The right of way typically includes the grass area between the property line and the curb. A right of way permit is needed for constructing or reconstructing sidewalks, driveways, and street cuts for utility or sewer work. Permits are also needed to perform grading or construction within drainage easements. Work such as storm pipe extensions and bank stabilization also require a permit. All work must be completed in conformance with the applicable city specifications and standards. Should work in the right of way require the temporary closure or partial closure of a street or sidewalk, please refer to the [Checklist for Short-Term Street Closures for Construction Projects and Repairs](#). If the work is in the downtown area bordered by Garth Avenue, Park Avenue, College Avenue, and Elm Street, there are additional requirements. For questions regarding right of way permits, contact Building and Site Development at 573-874-7474.

Right of Use Permit

A right of use permit is needed anytime a non City standard item is placed within the right-of-way. A right of use permit is not needed for constructing or reconstructing sidewalks, driveways, and street cuts for utility or sewer work, if City standards and specifications are followed. Right of use permits are needed for but not limited to the following: over hanging balconies, stamped and/or colored concrete, and subdivision entrance signs. There is no fee associated with a right of use permit although it does go to City Council for approval. For questions regarding right of use permits, contact Building and Site Development at 573-874-7474.

Sanitary Sewer Extension Permit

A [sanitary sewer extension permit](#) is needed anytime a sanitary sewer main is extended to reach a tract of land or if a significant portion of a sanitary sewer main is replaced. The cost of the permit is paid during the first plan submittal. This permit helps the City keep inventory of the size, type of pipe, manholes etc... of the sanitary sewer system. Appropriate sanitary sewer extension plans must be submitted along with the application. This is not a fee for a lateral or service line to tap into the sewer main.

Flood Plain Development Permit

A Flood Plain Development Permit is needed anytime work is performed within a regulatory flood plain. The City participates in the National Flood Insurance Program which requires city ordinance and enforcement of flood plain development regulations. The boundaries of the flood plains are established by the Federal Emergency Management Agency (FEMA). Flood plain maps are published by FEMA. The Community Development Department reviews applications for flood plain development. Any land disturbing activity within the regulatory flood plain requires a permit. The city ordinances pertaining to flood plain regulations are found in Section 29-22 of the City's Code of Ordinances. For information regarding flood plain development permits, contact Building and Site Development at 573-874-7474.

Sign Permit

The sign ordinance regulates the type, size, and placement of both residential and commercial signs within the City of Columbia. A permit is required prior to the erection, construction, reconstruction, alteration, moving, conversion, or maintenance of any sign unless explicitly exempted by the regulations.

The purpose of the sign ordinance is:

- To allow for the effective use of signs as a means of communication in the city
- To maintain and enhance the city's ability to attract sources of economic development and growth
- To improve pedestrian and traffic safety
- To minimize possible adverse effects of signs on nearby property
- To bring all signs into compliance with the adopted regulations
- To enable the fair and consistent enforcement of these signs regulation
- To maintain and enhance the appearance of the community

Feel free to call 573-874-7474 if you have any questions regarding sign regulations or to discuss the permitting process. The complete Sign Regulations can be found in Chapter 23 of the City's Code of Ordinances.

Required Fire Systems Permits:

-Sprinkler System-An application for sprinkler systems must be submitted for all new installations and alterations. Plans must be submitted and approved and the permit must be obtained prior to installation.

-Fire Alarm and Detection System-An application for alarm and detection systems must be submitted for all new installations and alterations. Plans must be submitted and approved and the permit must be obtained prior to installation.

-Fixed Suppression System-An application for fixed suppression systems must be submitted for all new installations and alterations. Plans must be submitted and approved and the permit must be obtained prior to installation.

Open Burning and Blasting Operations - Applications for permits relating to blasting or open burning are obtained through the Fire Department. Monday through Friday call 573-874-7556. Saturday and Sunday call 573-874-7450.

Food Service Establishments - Permits for the operation of a food service establishment are obtained through the Health Department. 573-817-6407

Guidelines for Temporary Food Facilities-All temporary and seasonal food stands must have a current Columbia/Boone County Department of Public Health and Human Services Permit and City Business License. Temporary facilities require a separate permit for each event and location. The City business license is valid for a maximum of 14 days. Please contact the City of Columbia Business License office, 573-874-7378, or visit <http://www.gocolumbiamo.com/Finance/Services/blord.php>.

Guidelines for Mobile Food Vendors-All mobile vendors must have a current Columbia/Boone County Health Department Permit. A City of Columbia Business License is also required. Please contact the City of Columbia Business License office, 573-874-7378, or visit <http://www.gocolumbiamo.com/Finance/Services/blord.php>.

Swimming Pools and Aquatic Facilities

In addition to plan reviews and inspections conducted by the City of Columbia for code compliance, the Health Department regulates swimming pools. Periodic inspections and an annual permit fee for the operation of all aquatic facilities other than those installed at single family residences is also required. Pools built for a home association or commercial enterprises in single-family subdivisions are also regulated by the Health Department. These pools will require the approval of a conditional use permit by the [Board of Adjustment](#). Contact the Planning Department at 573-874-7239 for approval procedures.

Adopted Codes

All ordinances and requirements of the city are contained in the [Columbia Code of Ordinances](#) (CCO). The CCO adopts by reference nationally recognized construction codes with any amendments. The following is a short summary of relevant chapters of the CCO regulating development activity and related codes adopted by reference:

Chapter 6 - Buildings and Building Regulations (Adopted codes and amendments)

- International Building Code
- International Residential Code
- International Energy Conservation Code
- International Property Maintenance Code
- International Plumbing Code
- International Mechanical Code
- National Electrical Code
- International Fire Code
- International Fuel Gas Code
- International Fire Code

Chapter 9-Fire Prevention and Protection

Chapter 11- Health and Sanitation
Chapter 12A-Land Preservation
(Development Fee)

Updated October 1, 2015

The fee for a building permit shall be as follows:

ALL CONSTRUCTION

Permit fees for new construction and additions shall be based upon the value of the construction as determined by the Division of Building and Site Development using the latest August publication of the International Code Council Building Valuation Data which shall be effective as of October 1st of the year it is published . **Remodeling, alterations and repair valuations shall be computed using fifty (50) percent of the value for new construction.**

The values determined in accordance with the above is for determining the building permit fee and is not intended to determine actual construction costs. The building permit fee shall be:

\$2.25 per thousand dollars of value (minimum fee \$35.00)

The current ICC Building Valuation Data can be found at:
<http://www.iccsafe.org/cs/Pages/BVD.aspx>

For a typical single or two family house use the following square foot prices:

Finished areas (all areas except below):	\$112.65/SF
Garage and deck:	44.63/SF
Unfinished basements:	15.00/SF

All construction

Footing & Foundation Only - The permit fee to do only footing and foundation for a building or structure shall be \$54.00.

This fee is in addition to the normal building permit fee and is not refundable or credited to the normal building permit fee.

Plan Review Fee - Fifty (50) percent of building permit fee. This fee is imposed whenever plans are required.

Reinspection: \$35.00 for each failed inspection
\$75.00 for each failed re-inspection

Exemption: Residential storage structure under 120 square feet shall be exempt from permit fees.

MOVING OF BUILDINGS

The fee for a building permit for the removal of a building or structure from one (1) lot to another or to a new location on the same lot shall be fifty (50) percent of the fee for new buildings with a minimum fee of forty-five (\$45.00). There shall also be an inspection fee of twenty-five dollars (\$25.00) prior to moving the building or structure.

DEMOLITION

The fee for a permit for the demolition of a building or structure shall be:

Residential - \$50.00, Commercial - \$100.00

\$2,000 Cash Performance Bond is required for each permit.

SIGNS

The fee for signs, billboards and other display structures for which permits are required under the provisions of this code shall be \$75.00 for not more than fifty (50) square feet. For each sign over fifty (50) square feet - \$75.00 plus \$0.25 for each square foot over fifty (50).

ELECTRIC

For each service entrance panel 225 amperes or less.....	\$ 35.00
For each service entrance panel over 225 amperes.....	\$ 0.175/AMP
For each circuit (whether 2-wire, 3-wire or 3-phase)	
First fifteen.....	\$ 2.35 each
All over fifteen.....	\$ 2.19 each
For each connection of hot air or hot water heating plant.....	\$ 7.00 each
For each electric heating circuit (base board, etc.).....	\$ 7.00 each
For installation of or addition to sound, audio-visual or communication equipment	\$ 35.00 each
Commercial swimming pool.....	\$ 75.00
Residential swimming pool.....	\$ 75.00
For alterations of or extensions to existing wiring.....	\$ 35.00

PLUMBING

Each tap opening into any public sewer, or private sewer that is connected to a public sewer.....	\$ 72.90
Per fixture for the first 25 fixtures.....	\$ 5.67
Each additional fixture or opening.....	\$ 1.62
Each floor drain, garage drain, appliance, or any other fixture or waste line connecting directly with the drainage system of the building.....	\$ 3.24
Minimum fee.....	\$ 35.00

MECHANICAL & FUEL GAS

\$0.00 to \$1,000.00.....	\$35.00
\$1,000.01 to \$5,000.00.....	25.00 plus \$6.25 per thousand over \$1,000
\$5,000.01 to \$10,000.00.....	50.00 plus \$5.00 per thousand over \$5,000
\$10,000.01 to \$20,000.00.....	75.00 plus \$3.75 per thousand over \$10,000
Over \$20,000.00.....	112.50 plus \$2.50 per thousand over \$20,000

RIGHT OF WAY

Section 24-43. Fee. An application for a permit hereunder shall be accompanied by a fee of fifty dollars (\$50.00).

DEVELOPMENT CHARGE

Section 26-149A ARTICLE VI. DEVELOPMENT CHARGE

Section 26-150 Definitions and rules of construction.

New construction includes additions to existing structures which increase square footage but does not include the rebuilding, remodeling or alteration of existing structures which does not increase square footage of existing structures.

Person means any "person," as defined in chapter 1 of this Code, who is required to obtain a building permit pursuant to this Code.

***Total floor area* means the floor area within the perimeter of the outside walls of the building under consideration, including the basement floor area, without deduction for hallways, stairs, closets, thickness of walls, columns or other features.**

Section 26-151 Imposition of charge.

Every person issued a building permit for new construction shall pay a development charge of fifty cents (\$0.50) per square foot of **total floor area** of new construction.

Section 26-152 Time of payment.

The development charge shall be paid at the time the building permit is issued.
The following definitions and rules of construction apply to this article:

section 26-154 Administration.

The development charge shall be paid to the community development department, division of building and site development. The division shall promptly forward all development charge receipts to the finance department to be deposited in a special fund and administered in accordance with the provisions of this Code.

Section 26-155 Use of development charge revenue.

All revenue received from the development charge shall be used solely for construction of collector and arterial streets.

STORMWATER DEVELOPMENT CHARGE

Section 26-168A ARTICLE VII. STORMWATER DEVELOPMENT CHARGE

Section 26-169 Definitions and rules of construction.

The following definitions and rules of construction apply to this article:

New construction includes additions to existing structures which increase square footage but does not include the rebuilding, remodeling or alteration of existing structures which does not increase square footage of existing structures.

Person means any person, as defined in chapter 1 of this code, who is required to obtain a building permit pursuant to this code.

Total floor area includes the floor area within the perimeter of the outside walls of a building, including the basement floor area, without deduction for hallways, stairs, closets, thickness of walls, columns or other features. Total floor area also includes the entire floor area of carports, decks and other structures which do not have outside walls and which cannot be lawfully constructed without a building permit.

Section 26-170 Imposition of charge.

Every person issued a building permit for new construction shall pay a stormwater development charge in accordance with the following table:

Category	Rate per Square Foot of Total Floor Area of New Construction
Single-family residences; duplexes....	9 cents
Multiple-family buildings; offices; schools; churches....	16 cents
Commercial; industrial; use categories not listed above....	19.5 cents

Section 26-171 Time of payment.

The stormwater development charge shall be paid at the time the building permit is issued.

Section 26-174 Administration.

The stormwater development charge shall be paid to the public community development department, division of building and site development. The division shall promptly forward all stormwater development charge receipts to the finance department to be deposited in the stormwater utility fund.

Section 26-175 Use of stormwater development charge revenue.

All revenue received from the stormwater development charge shall be used solely for stormwater management purposes.

SEWER UTILITY CONNECTION FEE

Section 22-264 Connection fees.

(a) The following definitions apply to this section:

Expanded user of the wastewater system means the owner or occupant of property that has previously been connected to the wastewater system who is increasing the size or number of water meters serving the property.

New user of the wastewater system means the owner or occupant of property that is being connected to the wastewater system for the first time.

(b) Each new user of the wastewater system shall pay a wastewater system connection fee. The fee shall be one thousand two hundred dollars (\$1,600.00) per dwelling unit. If there are uses on the property other than dwelling units, the new user of the wastewater system shall pay a wastewater system connection fee based on the size of the water meter that shall serve the property in accordance with the following table:

Size of Meter	Connection Fee
5/8"	\$1,600.00
3/4"	\$2,400.00
1"	\$4,000.00
1-1/2"	\$8,000.00

Section 22-266 Computation of sewer charges and fees to users outside city.

Each user of the wastewater system of the city whose property or premises may be located outside the corporate limits of such city and within any unincorporated area, shall pay as a sewage service charge a sum equal to the charge computed under the provisions of section 22-263 of this Code plus fifty (50) per cent.

WATER SERVICE CHARGES

WATER SYSTEM EQUITY CHARGE AND TAP FEES

Size of Connection	Charge
5/8" & 3/4"	\$1,326.00
1 inch	\$1,326.00
1-1/2 inch	\$1,546.00

WATER METER FEE INCL. METER BOX & APPURTENANCES

Size of Meter	Charge
5/8"	\$700.00
3/4"	\$720.00
1"	\$750.00

HEALTH DEPARTMENT PLAN REVIEW FEES

The Health Dept. will assess a plan review fee for the project based on the risk of the facility. (\$100 – low risk, \$150 – medium risk, \$300 –high risk)



OWNER CONTRACTOR AFFIDAVIT

Permit Number

RE: (Address / Project) _____

I hereby certify that I am the owner of this property and will occupy said property for a period of not less than one (1) year and I shall personally purchase all materials and perform all labor in connection therewith.

Owner / Applicant

Subscribed to and sworn before me this ____ day of _____, _____.

Notary Public

My commission expires on: _____

NOTE:

Owner contractor permits for plumbing, electrical and mechanical installations are limited to one (1) each in any two (2) year period.

Permit to Move a Building or Structure

Structures moved into or within the City of Columbia are required by code to comply with the provisions of the building code for a new structure. To move a structure a building permit is required. Additional unique conditions for moving a structure are listed below:

1. A permit to move a building or structure shall not be issued until a bond or other security is posted with the city in the amount of five thousand dollars (\$5,000.00), guaranteeing that the building or structure will be made to comply with section 3407.1 of the building codes within one hundred eighty (180) days from date of issuance of permit.
2. No building or structure of any nature or description shall be moved over any street of the City of Columbia, Missouri, by any means whatsoever without first obtaining permission from the City Manager. Upon receipt of an application for a permit, the City Manager shall refer the same to the Director of Public Works, who shall cause an inspection to be made to determine whether or not the building or structure is a "dangerous building" as defined in the Property Maintenance Code of Columbia, Missouri. Upon completion of his inspection, the Director shall report his findings in writing to the City Manager. At the same time the application for a permit is referred to the Director of Public Works, the City Manager shall direct the Director of Water and Light to make an inspection of the route over which the building or structure is proposed to be moved, to determine whether or not any facilities of the Water and Light Department could constitute an obstacle to such removal. Upon completion of his inspection, the Director of Water and Light shall report his findings in writing to the City Manager. After giving consideration to the reports, and to any other matter involved in such removal which might concern the safety or welfare of the public or private property, the City Manager may, in his discretion, grant or deny the application for permit.
3. No buildings or structures shall be allowed to stand in the streets of the city in one (1) block for a longer period than six (6) hours, except for the period between sunset and sunrise, when such buildings or structures shall have flares set about them on every side.
4. No pavement nor any part thereof shall be taken up or removed to assist in any way the moving of any building or structure, nor shall pegs, stakes, or poles be driven into paved streets for such purposes.
5. Before any permit shall be issued by the city manager, the applicant shall furnish a good and sufficient bond with a corporate surety company as surety to be approved by the city manager, in a sum to be fixed by the city manager at not less than double the estimated damages, conditioned that the applicant will promptly and fully pay the owner for any public or private property injured or destroyed by him in the process of moving such building, and that he will reimburse the city for costs and expenses incurred by the city in removing Water and Light Department facility obstacles from the route and restoring the same

APPLICATION FOR PERMIT FOR MOVING AND RELOCATION OF BUILDING
COLUMBIA, MISSOURI

PERMIT NO. _____ PERMIT FEE \$ _____ DATE _____, 20____
SURETY BOND NO. _____ COMPANY _____ AMOUNT \$ _____
REQUEST IS MADE BY _____, OWNER, _____
_____, CONTRACTOR, TO MOVE THE FOLLOWING BUILDING AND/OR
STRUCTURE, OVER, UPON, ALONG OR ACROSS THE PUBLIC STREETS OR
HIGHWAYS IN THE CITY OF COLUMBIA, IN ACCORDANCE WITH CITY ORDINANCE
NO. 868, ARTICLE II OF CHAPTER 20 OF THE CITY OF COLUMBIA.

FROM _____ TO _____
SUBDIVISION _____ SUBDIVISION _____
BLOCK NO. _____ LOT NO. _____ BLOCK NO. _____ LOT NO. _____

SIZE OF BUILDING _____ NO. OF STORIES _____ TOTAL HEIGHT _____
TYPE OF BUILDING _____ MATERIAL _____ MOVING DATE _____
PROPOSED ROUTE _____

SIGNATURE OF OWNER OR CONTRACTOR _____ ADDRESS _____

REPORT OF INSPECTION OF STRUCTURE AND PROPOSED ROUTE
DOES STRUCTURE COMPLY WITH MINIMUM REQUIREMENTS OF ORDINANCE?
YES _____ NO _____
BRIEF DESCRIPTION OF CONDITION OF STRUCTURE _____

WILL TREES ALONG STREET HINDER MOVING PROCESS? YES _____ NO _____
IF YES, EXPLAIN _____
ARE STREET WIDTHS ADEQUATE? YES _____ NO _____ IF NO, EXPLAIN _____

IS THE MOVING PROCESS LIKELY TO DAMAGE STREET SURFACES? YES _____ NO _____
IF YES, EXPLAIN _____
RECOMMENDATIONS BY PUBLIC WORKS DEPT. _____

BY: DIR. OF PUB. WORKS _____ DEPUTY BLDG. INSP. _____
APPROX. NO. OF LINES TO BE REMOVED: POWER _____ TELEPHONE _____
RECOMMENDATIONS BY WATER & LIGHT DEPT. _____

BY: DIRECTOR OF WATER & LIGHT DEPT. _____

ACTION OF CITY MANAGER

PERMIT APPROVED _____ PERMIT DISAPPROVED _____ DATE _____, 20____

BY: CITY MANAGER _____



DEMOLITION Permit Application



Building and Site Development, City of Columbia
 701 East Broadway, 3rd Floor, Columbia, Missouri 65201
 Phone: 573-874-7474 Fax: 573-874-7283 TTY: 573-874-7251

Building Address:	Property Zoning:	Permit #:
-------------------	------------------	-----------

Legal Description:

Contractor Information: Name:	Building Owner Information: Name:
Address:	Address:
City / State / Zip	City / State / Zip
Email Address (REQUIRED)	Email Address (REQUIRED)
Telephone #	Telephone #

Notice to Historical Preservation Commission - Intent to Demolish

To the best of your knowledge:

Is the building or structure to be demolished more than fifty(50) years old?	Yes	No
Is the building/structure in a historic district, a landmark or otherwise been recognized as historically significant?	Yes	No
Historic Preservation Commission & Liason Notified Y () N ()	Date:	

Requirements for Demolition Permit

For Occupancy other than one and two family, **submit copies of written notice** to adjoining property (lot) owners of intent to demolish building; to be **delivered one week prior to commencement of work** per IBC, Section 3307.1

Utilities disconnect certificates must be obtained from the following service providers:

	Gas per IBC, Section 3306.6	
	Water per IBC, Section 3303.6	
	Electric per IBC, Section 3303.6	
	Sewer Cap Inspection results by City Sewer Maintenance Division	
	Cash Bond of \$2000 (refundable)	
	Approved plan verifying Chapter 33 Safeguards for Commerical properties	
	Copy of written notice, and listing of recipients with addresses	

Applicant Notice:

Upon submission of this application, notice will be given to the Historic Preservation Commission there is an "Intent to Demolish", which requires **30 calendar days** before demolition permit can be issued.

note: Applications for demolition permits must be made by legal owners of real property or authorized agents* only

***Demolition Application Authorized Agent form Required (see attachment)**

I hereby acknowledge that I have read this application and state that the above is correct and I agree to comply with the City Ordinances and state laws regulating building demolition.

 Legal Owner of Property or Authorized Agent*(attach form)

 Date of Submission of Demolition Application

For Office Use Only

Permit Fee \$	
<input type="checkbox"/>	Copy of Bond receipt attached
<input type="checkbox"/>	Applicable Certificates attached
<input type="checkbox"/>	Notification to proceed given

DEMOLITION PERMIT DISCLOSURE OF DEMOLITION MATERIALS

City of Columbia Community Development / Building and Site Development Division
701 E. Broadway, Columbia, Missouri 65201
Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

NOTES: 1) Please see the City's **Brick Streets Policy Resolution** for information regarding the treatment of exposed or covered brick street pavers when demolishing structures or site disturbance in the public rights of way.
<http://tinyurl.com/brickstreets>

2) If brick street pavers are among the building materials in a structure on private property to be demolished, the street pavers may be purchased for future brick street maintenance and repair.

Disclosure of dispersal and discharge of demolition debris and salvageable materials:

1. Are materials from this demolition site going to be salvaged?
 No
 Yes
2. If yes, materials are going to be salvaged and the property is 50 years or older, the Historic Preservation Commission or a qualified consultant may provide, free of charge, a walk through and list of materials recommended for architectural salvage.
 I am interested in assistance identifying architectural salvage materials.
 I am willing to permit the taking of photos inside the structure prior to demolition to preserve the images of the interior design elements within the Historic Preservation Technical Assistance Library.
3. Are demolition materials going to be disposed of in a public landfill?
 No
 Yes
4. Are demolition materials going to be disposed of at a private disposal or clean fill site? If yes, please provide the address:
 No
 Yes; Address: _____

DEMOLITION PERMIT AGENT AUTHORIZATION

City of Columbia Community Development / Building and Site Development Division
701 E. Broadway, Columbia, Missouri 65201
Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

NOTES: 1) All owners of real property shall sign the agent authorization form to assign authorized agents for the purpose of filing a demolition permit application.

2) Applications for demolition permits shall be made by legal owners of real property. If ownership changes prior to permit issuance, a new application shall be made.

I/We, _____,

Please print

owner(s)* of _____ (address)

Please print

Hereby appoint and authorize _____

Please print

as the authorized agent to apply for a demolition permit.

*If property is in a trust, please print the trust name in the first blank, and list the names and signatures of all individuals with ownership in the trust in the space below.

Name: _____

Signature: _____

Date: _____

DEMOLITION PERMIT REQUIREMENTS

City of Columbia Community Development / Building and Site Development Division
701 E. Broadway, Columbia, Missouri 65201
Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

1. For occupancy **other than** one and two family, submit copies of written notice to adjoining property (lot) owners of intent to demolish building. To be delivered one week prior to commencement of work per IBC, Section 3307.1
2. **Utility Disconnect Certificates** from:
 - a. Gas
 - Ameren UE 573-876-3048
 - b. Water
 - City of Columbia Utility Accounts Department 701 E. Broadway 573-874-7380
 - Consolidated Water District #1 1500 N. 7th Street 573-449-0324
 - Consolidated Water District #9 391 Rangeline Road 573-474-9521
 - Consolidated Water District #4 14530 Route U Hallsville 573-696-3511
 - c. Electric
 - City of Columbia Utility Accounts Department 701 E. Broadway 573-874-7380
 - Boone Electric Cooperative 1413 Rangeline Street 573-449-4181
 - Central Electric Cooperative 2106 Jefferson Street, Jefferson City 573-634-2454
 - d. Sewer
 - Sewer Maintenance Superintendent – 573-445-9427
 - Boone County Regional Sewer District 1314 N 7th Street 573-443-2774
3. Bond of \$2000.00

*Applicants – with submission of the demolition permit application notice will be given to the Historic Preservation Commission there is “Intent to Demolish” which requires **30 days** before demolition permit can be issued.)

***All owners of real property shall sign the agent authorization form to assign authorized agents.**

*Applications for demolition permits shall be made by legal owners of real property. **If ownership changes prior to permit issuance, a new application shall be made.**

Notice Regarding Residential Demolition Permits

July 8, 2016

Effective October 1, 2016 residential demolition permit applications will be required to be accompanied by a site plan which includes the following:

1. Drawn to an appropriate scale.
2. Property lines with dimensions.
3. Adjacent streets and easements.
4. Property address.
5. North arrow.
6. Outline of all structures and paved areas to remain or be demolished.
7. Distance between remaining buildings and between remaining buildings and property lines.

These requirements are intended to ensure that residential demolitions meet the requirements of R106.2 of the 2015 International Residential Code which states as follows:

“Site plan or plot plan...In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot.”

It should also be noted that current City ordinance requires that all accessory structures and paved areas are to be removed at the time of demolition of the primary structure. If project conditions warrant the need for a variance from this requirement it should be discussed at the time of application.

Questions about this notice should be directed to Doug Kenney, Senior Building Inspector at (573) 874-7474.

Sincerely,



Shane S. Creech, P.E.

Building and Site Development Manager

Permit No. _____

APPLICATION FOR FOOTING/FOUNDATION PERMIT

City of Columbia Public Works Department / Building and Site Development Division
701 E. Broadway, Columbia, Missouri 65201
Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

Job Address	
Contractor	Property Owner
Address	Address
City, State, Zip	City, State, Zip
Telephone	Telephone
E-Mail (Required)	E-Mail (Required)

REQUIRED APPROVED SUBMITTALS FOR FOOTING/FOUNDATION PERMIT APPLICATION

1. Completed Construction Permit and Plan Review Application.
2. Site/Civil/Architectural Plan (Must include transformer location, electric meter center locations, water mains /service locations and sizes, water meter room locations). (8 sets)
3. Foundation Plan/Details. (2 Sets)
4. Structural Calculations. (2 Sets)
5. Soil Reports. (2 Sets)

107.3.3 Phased approval. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the *construction documents* for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted. _____ **Initials**

I hereby certify the information contained in this application to be correct and I assume responsibility for all inspections.

Signature _____ Date _____ Approved By: _____
Applicant

TOTAL PERMIT FEE \$ _____

APPLICATION FOR TRADE PERMIT

City of Columbia Community Development Department
 Building and Site Development Division
 701 E. Broadway, Columbia, Missouri 65201
 Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

Building Permit # _____

Description of Work:	Check Applicable Permit Type		Fee
		Electrical	\$
		Mechanical	\$
		Plumbing	\$
		Fuel Gas	\$

Job Address			
Contractor		Property Owner	
Address	City, ST, Zip	Address	City, ST, Zip
Phone	Cell	Phone	Cell
E-mail address:		E-mail address:	

Electrical Permit New Work Added Only

Electrical Service Size (amps)		# Baseboard Circuits		Audio, Visual System	
# Circuits		# Sub-panels		Pool, Commercial	
#Heating Plants Air/Water		Communication System		Pool, Residential	

Mechanical Permit **Water & Light Home Performance with Energy Star**

Valuation of Work Done	\$	Old Heat Type (Gas, Electric, Dual)		New Heating Type Please check type below	
Furnace Replacement	Y / N	Gas	Electric	Air-air heat pump	Ground source heat pump
Heat Pump	Y / N	Dual Fuel	Solar	Other:	

Plumbing Permit

Water Meter Size(s)		Fixture Count			
Back-Flow Device		Water Closets/Urinals		Sinks (Kitchen, bar, janitor, etc.)	
# of Sewer Taps		Lavatories (bathroom sink)		Dish Washers	
# of Floor Drains		Tubs/Showers		Laundry Connections	
		Drinking Fountains		Grease Traps	
					Total # of Fixtures

Fuel Gas Permit

Type of Occupancy		Valuation of Work Done	\$
Residential	Commercial		

I hereby certify the information contained in this application to be correct and I assume responsibility for all inspections. All work must be permitted by a Master Trade Licensee except for owners working on their own place of residence.

 Print Name of Master Trade Licensee

 Signature of Master Trade Licensee

 Date

FIRE SYSTEM PERMIT APPLICATION

City of Columbia Community Development Department/
Building and Site Development Division
701 E Broadway, Columbia MO 65201

For Office Use Only	
Permit No.	
Permit Fee	\$
Approved By:	

Please Print Clearly

Job Address:	Tenant Name:
---------------------	---------------------

Contractor Name:	Property Owner:
Contractor Address:	Owner Address:
City/State/Zip:	City/State/Zip:
Contractor Telephone:	Owner Telephone:
Contractor E-Mail:	Owner E-Mail:

Description of Work:

Type of System Installed / Value of Work	
Sprinkler System / Value	\$
Alarm & Detection System / Value	\$
Fixed Suppression System / Value	\$

I hereby certify the information contained in this application to be correct and I assume responsibility for all inspections.

Name of Contractor (Printed)

Contractor Signature (required)

Date Signed

2012 IFC Section 904.1.1 Certification of service personnel shall include those who install and service water based fire protection systems, automatic detection and manual fire alarm systems. At least one person employed by the company providing the service shall possess either UL or NICET Level 1 certification for the system on which they are working.

BUILDING PERMIT APPLICATION FOR ONE AND TWO FAMILY DWELLINGS

New/Addition/Alteration/ Interior Demolition

City of Columbia Community Development Department / Building and Site Development Division

701 E. Broadway, Columbia, Missouri 65201

Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

Please Print Clearly

BUILDING ADDRESS:				APPLICATION VALUE: \$				PERMIT #	
PERMIT TYPE:		CONSTRUCTION TYPE:			LEGAL DESCRIPTION:				
PROPERTY USE:	OWNER OCCUPIED	RENTAL	CUSTOM	SPEC	PROPERTY ZONING:	FLOOD ZONE		STORM WATER CODE:	
						Yes	No	ST-	
CONTRACTOR:				BUILDING OWNER:					
ADDRESS:				ADDRESS:					
CITY, STATE, ZIP				CITY, STATE, ZIP					
TELEPHONE NUMBER:				TELEPHONE NUMBER:					
FAX NUMBER:				FAX NUMBER:					
E-MAIL ADDRESS: (Required)				E-MAIL ADDRESS:					

DESCRIPTION OF WORK

BUILDING AREAS

MAIN FLOOR HABITABLE / SQ. FT		SECOND STORY / SQ. FT		GARAGE / SQ. FT		#FLOORS	#BEDROOMS	LOT AREA:	
UNFINISHED BASEMENT / SQ. FT			FINISHED BASEMENT / SQ. FT			COVERED PATIO / SQ. FT.		DECK / SQ. FT.	
Garage Floor Design (Check One)					Garage Ceiling Rating				
Suspended Over Basement		Poured on existing or fill ground			10# No Attic Storage		20# Limited attic storage		

FOR OFFICE USE ONLY

DEVELOPMENT FEE	STORMWATER DEV. FEE		UNFINISHED AREA		TOTAL FINISHED AREA		TOTAL BUILDING AREA		
STORMWATER UTILITY MONTHLY FEE \$		PROPERTY ZONING:			FLOOD ZONE		STORM WATER CODE:		
					YES	NO	ST-		

NOTICE: Call 1-800-DIG-RITE for utility locations prior to excavation.

ADDRESS: _____

PERMIT NO. _____

SUBCONTRACTORS

SUBCONTRACTOR - ELECTRICAL	SUBCONTRACTOR - PLUMBER
SUBCONTRACTOR - MECHANICAL	SUBCONTRACTOR - FUEL GAS PIPING
SUBCONTRACTOR - MECHANICAL (FIREPLACE)	SUBCONTRACTOR - OTHER
SUBCONTRACTOR - OTHER	SUBCONTRACTOR - OTHER

Electrical Permit New Work Added Only

Electrical Service Size (amps)		# Baseboard Circuits		Audio, Visual System	
# Circuits		# Sub-panels		Pool, Commercial	
# Heating Plants Air/Water		Communication System		Pool, Residential	

Mechanical Permit

Valuation of Work Done	\$	Old Heat Type (Gas, Electric, Dual)	New Heating Type Please check type below
Furnace Replacement	Y / N	Fireplace Valuation	Electric
Heat Pump	Y / N		Air-air heat pump
	\$		Solar
			Gas
			Ground source heat pump
			Dual Fuel

Plumbing Permit

Water Meter Size(s)		Fixture Count		
Back-Flow Device		Water Closets/Urinals		Sinks (Kitchen, bar, janitor, etc.)
# of Sewer Taps		Lavatories (bathroom sink)		Dish Washers
# of Floor Drains		Tubs/showers		Laundry Connections
		Drinking Fountains		Grease Traps
		Water Heaters		Total # of Fixtures

Fuel Gas Permit

Type of Occupancy	Valuation of Work Done
Residential	\$
Commercial	

I hereby acknowledge that I have read this application and state that the above is correct and I agree to comply with the city ordinances and state laws, regulating building and site construction. I understand that a Certificate of Occupancy must be issued before the building is occupied.

<u>GENERAL CONTRACTOR'S SIGNATURE</u>	<u>DATE</u>	<u>APPROVED BY</u>
---------------------------------------	-------------	--------------------

NOTICE: Call 1-800-DIG-RITE for utility locations prior to excavation.



CITY OF COLUMBIA, MISSOURI

COMMUNITY DEVELOPMENT

DEPARTMENT OF PLANNING AND DEVELOPMENT

(573) 874-7239

BUILDING AND SITE DEVELOPMENT

(573) 874-7474

OFFICE OF NEIGHBORHOOD SERVICES

(573) 817-5050

Plot Plans for One & Two Family Residential Dwelling - Checklist

(Applies to lots within plats approved after October 1, 2016)

Plot plans with incomplete information will not be processed.

Plot plans shall be submitted on 8 ½ x 11 or 11 x 17 paper, and include the following:

- Drawing scale (engineer or architect scale) and north arrow. “Not to Scale” is unacceptable.
- Title block:
 - Titled “Plot Plan”
 - Legal description of the lot (Plat name & number, recorded book & page, and lot number)
 - Property Address – street name only, leave address number blank for City staff to fill in.
 - Date
- All property lines and right-of-way (ROW) lines with dimensions.
- All easement lines with dimensions.
- Building setback lines with dimensions.
- Dimensions and accurate depiction of all existing and proposed building/structure footprints, including decks and covered patios.
- Distances from existing and proposed structures to property boundaries (setbacks).
- Street centerline, ROW width labeled, edge of street pavement, and any curb/pavement radius.
- Sidewalks with width labeled.
- Curb inlets with top elevation callout.
- Driveway location showing drive approach, width labeled.
- Proposed low finished floor elevation and if applicable, main floor elevation.
- Label indicating “walkout” or “slab”.
- Proposed ground elevation contours (1-foot interval), or drainage arrows (sufficient to clearly indicate how water will shed from all parts of the lot).
- Elevation callouts for each property corner, at a minimum.
- Top of curb elevation callouts at extension of property boundary on each side.
- Location and elevation callouts for all sewer manholes and storm structures on or adjacent to lot.
- Upstream sanitary sewer manhole cover elevation.
- Flood plain statement. If any part of the lot contains regulated floodplain, then an Engineered Plot plan is required, see below.

Additional requirements may apply – see next page

701 E. BROADWAY • P.O. BOX 6015 • COLUMBIA, MISSOURI 65205

(573) 874-7239 • FAX (573) 874-7546 • TTY (573) 874-6364

WWW.GO COLUMBIAMO.COM

Engineered Plot Plans – Prepared by Professional Engineer or Land Surveyor

For any of the following cases, an engineered plot plan is required:

- *Lots adjacent to or containing an engineered drainage swale as shown on the approved site plans.*
- *Lots containing regulated floodplain as defined by City Ordinance 29-22.*
- *Lots with an earth retaining structure, unless said structure was included on approved site plans.*
- *Lots with building finished floor elevation or site grading that deviates from that shown on the approved grading plan*

In addition to all previous requirements, engineered plot plans must include the following:

- Signature and seal of a Missouri registered Professional Engineer or Land Surveyor**
- For lots adjacent to or containing an engineered drainage swale: Location, proposed flowline elevations, dimensions (height, width, side slopes) or cross section, minimum grade, and 100-year storm water surface elevation of the swale.**
- For lots containing regulated floodplain: Limit of regulated floodplain. Plot plan must be accompanied by a completed flood plain development permit application. (Note: A FEMA Elevation Certificate must be submitted after the building is constructed, prior to issuance of a Certificate of Occupancy.)**
- For lots with an earth retaining structure not included on approved site plans: Location, type and maximum unbalanced grades of any earth retaining structures on the lot. Retaining walls that are not laterally supported at the top must be designed to comply with International Residential Code requirements.**
- For lots with building finished floor elevation or site grading that deviates from that shown on the approved grading plan, a letter and a revised grading plan is needed from the design civil engineer stating that this lot has been evaluated and the revised building elevation and/or grading will not cause any adverse effects to the overall site drainage and for the surrounding lots.**



City of Columbia, Missouri

Tent/Canopy Application (less than 180 days)

Columbia Fire Dept. Fire Marshal Office 201 Orr St. Columbia, MO. 65203 Phone (573)874-7556 Fax (573)874-7446
--

Approved

Disapproved

Date Submitted _____

Tent Location	Tent Contractor/Owner
Business	Company
Street Address	Street Address
City, State, Zip	City, State, Zip
Contact Person	Phone Number
Phone Number	Email

Tent Size: Width _____ X Length _____ =Area _____ Sq. Feet

Tents less than 401 square feet do not require a permit

Dates Tent Will Be Erected: Start _____ End _____

Tables/Chairs in tent? Yes _____ No _____

Tent and Canopy Guidelines

Location-Tents shall not be located within 20 ft of buildings, other tents or membrane structures, or internal combustion engines. Guy wires are not considered part of the tent.

Required Exits- Occupancy from 10-199 2 exits, 200-499 3 exits, 500-999 4 exits, 1000+ 5 exits

Exits- Exit openings shall remain open, unless covered by a flame-resistant curtain. Curtain shall be of contrasting color and free sliding on a metal support. Exits shall be at least six feet wide. Ropes and guy wires shall not obstruct exits and exit discharges.

Exit Lighting- Means of egress shall be illuminated with light having an intensity of not less than 1 foot candle at floor level. Means of egress lighting shall be powered from a separate source. Egress lighting is not required for open sided tents operating during daylight hours.

Exit Signs- Illuminated exit signs shall be posted above all exits. Exit signs are not required in open sided tents.

No Smoking Signs- No smoking signs shall be posted throughout the tent or canopy.

Warming- All warming equipment shall be 10 feet from tent sides/top, combustibles and exits. Heaters shall be vented per manufacturer's recommendations.

Open Flame- Any open flame is not permitted inside or within 20 feet of the tent structure.

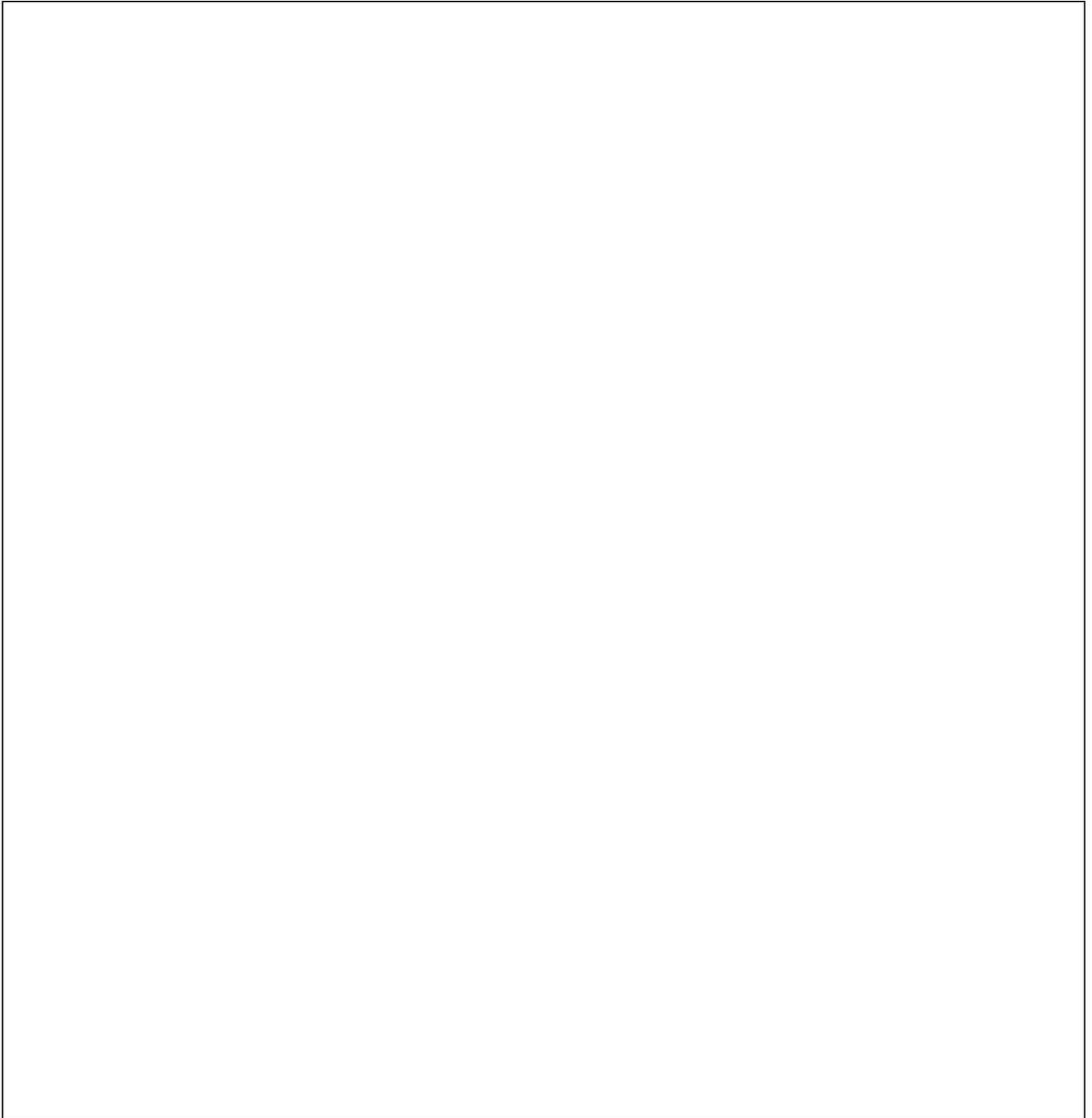
Fire Extinguishers- Travel distance to a minimum 2A10BC fire extinguisher shall not exceed 75 ft

Anchoring- The tent or canopy shall be anchored per manufacturer's requirements.

Access- The tent or canopy shall not block fire department access, fire department connections, or fire hydrants.

Flame Resistant- A certificate of flame resistant treatment is required and shall be attached to the permit.

Site/Floor Plan



The following shall be included on the above diagram:

- Exits
- Lit exit signs
- Egress lighting
- Fire extinguishers
- Cooking/heating equipment
- Distance from buildings

I understand the tent permit can be revoked at any time for non-compliance.

Signature _____ Date _____

Reviewer _____ Inspection Date _____

Reviewer Comments:

Sign Ordinance FAQs

Save your business time and money! Before you display or install a sign at your business location, make sure that your sign complies with the City's Sign Ordinance. Owners of signs that violate the sign ordinance are subject to prosecution and possible fines. The information below is intended to provide a brief overview of what businesses should know before they install or display a sign. For more details, and to ensure compliance, refer to [Chapter 23](#) of the City's Code of Ordinances on the City's website. Citizens are also encouraged to contact the Service Center on the 3rd Floor of City Hall (874-7474) for additional information.

What is considered a "sign"?

City ordinance defines a "sign" as a structure that is arranged, intended, designed or used as an advertisement, announcement or direction. This would include a sign, sign screen, billboard, poster panel and advertising devices of every kind. However, it does not include signs placed on the inside of display cases or show windows fronted with glass which does not project more than six (6) inches from the outside surface of the building wall.

How do I know if I need a sign permit?

Nearly all commercial signs in Columbia need a permit, including modifications to or replacements of existing signs. Businesses can verify whether a sign permit is needed by calling or stopping by the Service Center.

Why is the proposed or existing use of the property where the sign will be located important?

Sign regulations differ based on the current or proposed use of the property. For example, sign regulations for industrial areas or shopping centers can be very different than sign regulations in residential areas. In addition, the central business district has its own specific sign regulations.

Where can I get a copy of the City's sign ordinance?

Chapter 23 of the City's Code of Ordinances can be found in the following location on the City's website:
http://www.gocolumbiamo.com/Council/Columbia_Code_of_Ordinances/Chapter_23/index.html.

I want to change the face of my existing sign, do I need a permit? Does maintenance of my existing sign require a permit?

Yes, a permit is required prior to the erection, construction, reconstruction, alteration, moving, conversion or maintenance of any sign.

Can I display a temporary banner or sign on my building?

Yes, temporary signs are allowed subject to the following conditions:

1. A permit is obtained from the Service Center.
2. The sign does not exceed 32 square feet in size or 4 feet in height.
3. The sign meets the setback requirements of the sign ordinance.
4. The sign is not displayed for more than 14 days in a calendar year.

What if I want to display a sign in my business window?

Signs may be placed on the inside of display cases or show windows provided that the glass does not project more than six (6) inches from the outside surface of the building wall.

I want to place a portable or A-frame type sign in front of my business. Is this allowed?

City ordinance refers to these signs as “sandwich boards”. Each business in the central business district with a street level entrance is allowed one sandwich board sign located on the sidewalk directly in front of the business, provided that a straight, unobstructed pathway at least 60 inches in width is maintained on the sidewalk. The sandwich board shall not exceed 8 square feet and cannot be attached to the building. A permit is not required for a sandwich board. Outside the central business district, where sidewalks are typically only 5 feet wide, sandwich board signs are not allowed within the public right of way.

How big can my sign be?

The maximum size allowed is determined by a number of factors, such as, among other things, the zoning district of the property and the adjacent street classification. Refer to the table in Section 23-25 of the sign ordinance for details and consider working with a professional sign company familiar with the City’s sign ordinance to help ensure compliance.

Where on my property can I put a sign?

Generally, signs must be located out of the right of way and clear of site obstructions for safe vehicular turning movements. Additional details can apply depending upon other factors such as the zoning district and adjacent street classification. Refer to the sign ordinance and contact the Service Center for specific questions.

What is a nonconforming sign?

Freestanding signs lawfully in existence on January 6, 1992 and on-premise signs lawfully in existence on December 20, 1993 are considered to be nonconforming signs. Nonconforming signs are not allowed to be enlarged or increased in height but the sign face itself may be altered as needed with a sign permit.

Can I install a sign that is not allowed by the sign ordinance?

No, signs that violate the sign ordinance are not allowed and are subject prosecution. However, a variance from the Board of Adjustment can be applied for if desired. To appear before the Board of Adjustment you will first need to obtain a denial letter from the Service Center.

How do I apply for a sign permit?

A sign permit application can be obtained on the City website in the following location: http://www.gocolumbiamo.com/community_development/bsd/building_codes_permits_and_applications/documents/SignPermitApp0512.pdf. Upon completion the application can be faxed (874-7283) or delivered to the Service Center.

When will I get my sign permit?

The review and processing of sign permits typically takes 3 - 5 business days from the date that the application was submitted. Following review the applicant will either be provided a list of corrections to be made or notified that a permit can be picked up at the Service Center.

Will I have to pay a fee for the sign permit?

Yes, the fee for signs, billboards and other display structures for which permits are required is \$45.00 for the first 50 square feet of sign area and \$0.15 for each additional square foot over 50.

Can I attach a sign to a utility pole or street sign?

No, signs are not allowed within the City right of way. The only exceptions to this regulation are the Special Business District, the public library, and some of the local colleges, universities, and hospitals which have attachment agreements with the City.

I've been considering buying yard-stake signs to advertise my business. Where can I put these?

Yard-stake signs violate the sign ordinance and are not allowed. Note: The City is authorized to remove unlawful signs on the street right of way and on property owned by the City.

Can I install a flag on my property?

The sign ordinance defines a flag as “a piece of fabric attached to a staff.” Section 23-2(k) states that “no commercial flags shall be allowed except that a business may display one flag no larger than forty (40) square feet which bears the symbol or trademark or name of the business. No further advertising shall be permitted on such flags.”

What is a wind sign? Can I install one on my property?

The sign ordinance defines a wind sign as “a display or pennants, streamers, whirligigs or similar devices strung together and activated by wind.” Section 23-2(d) specifically prohibits wind signs.

What is an off-premise sign? Where are they allowed?

The sign ordinance defines an off-premise sign as “a sign which contains a message unrelated to a business or profession conducted, or to a commodity, service or entertainment, sold or offered upon the premises where such sign is located.” The only place where an off-premise sign is allowed is as defined in Section 23-16 Billboards or in the case of an open house or model home which allows a maximum of three (3) on- or off-premise signs pertaining to a specific piece of property, not exceeding four (4) square feet in sign surface area per sign, shall be allowed, provided that the signs are permitted only during the hours the home is open for viewing.

Common violations of this ordinance include signs placed near busy streets advertising a product or service that is not related to the business on the property. This would also include directional signs placed in the right of way of businesses nearby.

How does the sign ordinance address inflatable signs?

Inflatable signs come in a variety of shapes, sizes, and types. Some recent examples encountered by staff include the wacky, wavy inflatable arm flailing tube man, blimps, gorillas, and sheep. All are considered portable and/or wind signs and are therefore not allowed per Section 23-2 of the sign ordinance.

How does the sign ordinance address political signs?

Political signs are considered noncommercial signs and are regulated by Section 23-18 of the sign ordinance. There is no time limit for how long these signs can be in place. The sign must meet the size requirements of the zoning and street classification of the property, typically sixteen (16) square feet in residential areas. Banners are only allowed for fourteen (14) days per year. Signs must be located on private property, typically one foot behind the sidewalk. The City's enforcement policy regarding political signs is as follows:

For signs which constitute a hazard (typically those obstructing traffic sight distance):

1. If the sign is in the right of way, the property owner is notified, if present, that the sign must be taken down immediately. If the owner is not present or fails to comply, the sign is removed and placed in a designated area behind the dumpster at City Hall (northwest corner). Notice is also left on the property.
2. If the sign is not in the right of way, a correction notice is issued allowing the owner twenty four (24) hours to correct the violation.

For signs which do not constitute a hazard:

1. If the sign is in the right of way, a correction notice is issued allowing the owner seven (7) days to correct the violation by moving the sign onto private property. If the sign is not removed by the end of the seven (7) days, the sign is removed and placed in a designated area behind the dumpster at City Hall (northwest corner).
2. If the sign is not in the right of way, do nothing.

Who do I call if I have more questions?

Contact 874-7474 for additional questions or visit the Service Center on the 3rd Floor of City Hall between the hours of 8:00 a.m. and 5:00 p.m. Monday – Friday.

APPLICATION FOR SIGN PERMIT

City of Columbia Community Development Department /
 Building and Site Development Division
 701 E. Broadway, Columbia, Missouri 65201
 Phone: (573) 874-7474 Fax: (573) 874-7283 TTY: (573) 874-7251

For Office Use Only	
Permit No.	
Approved by:	Date:

Please Print Clearly

Job Address:	Tenant:
Contractor:	Property Owner:
Address:	Address:
City, State, Zip:	City, State, Zip:
Telephone:	Telephone:
Cell Phone #:	Cell Phone #:
E-Mail:	E-Mail:

Type of Sign: (Check One)	Application to: (Check One)	Detailed Sign Information			
Free Standing	Erect New	Sign Setback From Property Line	Front	Side	
Wall	Change Face	Building Setback from Roadway			
Canopy	Alter	Class of Street			
Window	Direction Sign Faces	North	South	East	West
Roof	Dimension of Sign Face	Width	Height	Area	Sq Ft
Directional	Dimension of Wall on which sign is located	Width	Height	Area	Sq Ft
Projecting	Height of Free Standing Sign Structure Above Adjacent Roadway	Height			
Temporary	Wall Sign Location on Building	Width	Height	Area	Sq Ft

APPLICATION MUST INCLUDE SITE PLAN AND BUILDING ELEVATIONS TO DETERMINE ALLOWED HEIGHT AND AREA OF PERMITTED SIGNS. Drawings which represent sign dimensions, shape and message also need to accompany the application. Sign shall be fastened and secured by approved supports, and it is hereby agreed that if this application is approved the sign will conform in every detail with the requirements of all applicable codes and ordinances of the City of Columbia relative to advertising signs, including Chapter 23.

_____ Signature (applicant, contactor)	_____ Date
---	---------------

CLEAN FILL PERMIT

Date: _____ **Renewal Date:** _____

(Permits are subject to review and must be in compliance with current requirements in effect at that time. Permits may be revoked by City at any time if site work or land uses are in violation of City Ordinances.)

(Name of company, or person)

(Daytime phone number)

(Address)

is hereby authorized to dump or allow dumping of clean fill at the following site:

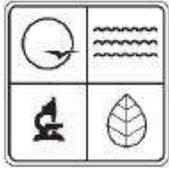
This permit is subject to the following conditions:

1. Permittee shall proceed in accordance with all provisions of Permittee's application for clean fill permit.
2. Permittee shall comply with all laws of the State of Missouri and all ordinances and regulations of the City of Columbia, Missouri pertaining to clean fill and land disturbance (Chapter 12-A).
3. Erosion control shall be installed and maintained per the land disturbance plan prepared by _____ dated _____
4. The clean fill site shall not be left in a rough or unleveled condition for more than ten (10) consecutive days.
5. The clean fill site shall be seeded and mulched within thirty (30) days after becoming an inactive site. (A clean fill site which does not receive clean fill for thirty (30) days is an inactive site.)
6. This permit is valid for _____ days.

Property owner: _____
Signature Printed name

Approved by: _____
Building and Site Development

The Building and Site Department may require soil testing on any site where fill has been placed which may have a street or structure constructed on it in the future.



Missouri Department of Natural Resources

MANAGING CONSTRUCTION AND DEMOLITION WASTE

Solid Waste Management Program fact sheet

05/2014

Division of Environmental Quality Director: Leanne Tippett Mosby

PUB2045

This guidance is provided primarily for construction and demolition contractors, waste haulers, roofing contractors, remodeling businesses, homebuilders and homeowners. Cities and counties that issue building permits may also find the information helpful. The guidance covers only wastes commonly produced during building construction, renovation and demolition.

Information about managing other wastes is available by contacting the sources listed on the last page of this fact sheet.

This fact sheet is not intended for guidance on the management of surface coatings removed from bridges, water towers or other similar outdoor structures.

Waste Types

During construction, renovation and demolition activities you may produce one or more of the following types of residuals:

- Clean fill.
- Recovered materials.
- Regulated construction and demolition waste.
- Hazardous materials and hazardous wastes.
- Asbestos-containing materials.

Management requirements differ for each of these.

Clean Fill

Clean fill is “uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinder blocks, brick, minimal amounts of wood and metal and inert (non-reactive) solids...for fill, reclamation or other beneficial use” [§260.200(5), RSMo]. Minimal means the smallest amount possible. For example, concrete containing wire mesh or rebar may be used as clean fill. However, exposed rebar must be removed before use. Under no circumstances are roofing shingles, sheet rock, wood waste or other construction and demolition wastes defined as clean fill.

Concrete, cinder blocks, bricks or other clean fill materials that are painted with non-heavy metal-based paints are also considered clean fill. It is the generator’s responsibility to determine if the painted materials are hazardous wastes. The most typical contaminants are lead and other heavy metals. This determination can be made by representative sampling or by applying historical knowledge of the materials in question.

If asphaltic concrete is to be used as clean fill it is recommended that it not be crushed or ground any smaller than necessary. This will help to minimize the leaching of chemicals found within the asphaltic material.

Although not regulated as waste, placement of clean fill materials may be subject to requirements of the Missouri Department of Natural Resources' Water Protection Branch if it is placed in contact with surface or subsurface waters of the state, or would otherwise violate water quality standards. Contact the Water Protection Program at 573-751-1300 if you have any questions. Local requirements concerning the use of clean fill may apply as well. Contact the Hazardous Waste Program at 573-751-3176 for questions about determining whether materials may be hazardous and for disposal options.

Recovered Materials

Recovered Materials are those removed for reuse (lumber, doors, windows, ceramic tile and glass) and those removed to be recycled into new products. Potentially recyclable construction and demolition wastes may include scrap metals, asphalt shingles, sheet rock, lumber, glass and electrical wire. However, it is important to remember that recovered waste must be used in some way.

Separating out certain wastes to be recycled into new products without having a market for them is expensive and pointless. Storing recovered materials indoors is expensive. Storing them outdoors may lower their value, since most will degrade or deteriorate when exposed to the weather. Depending on how they are stored, they may harbor rodents, provide breeding grounds for insects or be a potential fire hazard. Recyclables may not be collected and dumped on the ground while waiting for markets to develop. Therefore, before you deliver recyclable materials to a processing or recovery facility be sure the facility is legitimate.

The department's Solid Waste Management Program has information about many recycling facilities in Missouri. You may contact the program at 573-751-5401 or available on the Web at www.dnr.mo.gov/env/swmp/rrr/rrr.htm. If you plan to remove reusable or recyclable materials from construction and demolition waste, the sorting must take place at the construction or demolition site. The wastes cannot be hauled from the site and dumped for later sorting, except at a permitted processing facility or at a facility that has received a permit exemption from Solid Waste Management Program. Although the department strongly encourages the recovery or recycling of potential waste materials whenever possible, these activities must be done legally.

Regulated Construction and Demolition Wastes

Regulated construction and demolition wastes are those not classified as clean fill and not being reused or recycled. Regulated non-hazardous construction and demolition wastes must be disposed of at a permitted landfill or transfer station.

To avoid violating air and solid waste laws regulated non-hazardous construction and demolition wastes:

- Cannot be burned. An open burning permit may be applied for to burn untreated wood waste. Contact your nearest regional office for permit information and conditions.
- Cannot be buried (except in a permitted landfill).
- Cannot be hauled to private or public property and dumped, burned or buried, even with the landowner's permission.

If this happens, everyone involved, including the contractor(s), subcontractor(s), the hauler(s) and the landowner(s) can and will be held liable for the illegal disposal (§§260.210, 260.211 and 260.212, RSMo).

If you are a building contractor, you need to know that burying construction waste from a building anywhere on the property is illegal (§260.210.1, RSMo). See page four of this fact sheet for a description of penalties for illegal disposal of construction and demolition waste.

Hazardous Materials and Hazardous Wastes

Although you may find a variety of hazardous materials in old buildings, lead-based paint and asbestos are the most common items dealt with by demolition contractors.

Studies conducted by the U.S. Agency for Toxic Substances and Disease Registry, and by independent researchers, show that the health effects of lead exposure are greater than previously thought. Children are especially vulnerable to the effects of lead poisoning. Because lead and other toxic heavy metals may be contained in the wastes noted above, they require careful management and disposal. For many years, lead-based paint was used in residences and businesses for its stable coating properties. Although lead-based paint was virtually banned by the Consumer Product Safety Commission in 1978 for residential application, it is often encountered when buildings are renovated or demolished. Also, lead-based paint is still manufactured and sold for corrosion or rust inhibition on steel structures and for other industrial purposes. In older buildings, lead was also used for roofs, cornices, tank linings and electrical conduits. In plumbing soft solder, an alloy of lead and tin was used for soldering tinsplate and copper pipe joints.

Additional guidance for handling demolition waste containing lead-based paint or other heavy metals, such as cadmium or chromium, is available by calling the department's Hazardous Waste Program at 573-751-3176.

Hazardous waste requirements for demolition wastes - Demolition-related waste categories typically include:

- Paint Residue - Paint chips, paint scrapings and contaminated blast residue from building renovations or demolition projects.
- Demolition Debris - Masonry, metal and boards that have been painted with lead-based or other heavy metal-based paint.
- Scrap Metal - Metal objects that contain lead or other heavy metals.

For households, the following management options apply, whether or not a contractor is doing the work for you:

- Paint Residue - Paint residue may be placed in the household trash. Before disposal, wrap it tightly in a plastic bag or other container. It will be picked up by your trash hauler and taken to a sanitary landfill for disposal.
- Demolition Debris - May be placed in your household trash. It may be picked up by your trash hauler and taken to a sanitary or demolition landfill for disposal.
- Scrap Metal - Scrap metal should be taken to a salvage yard for recycling. If this is not possible, the metal may be placed in your household trash and picked up by your waste hauler for disposal at a sanitary or demolition landfill.

For generators other than households - This category includes commercial and business enterprises, institutions and industrial buildings, and other structures not specifically identified.

Paint Residue must be laboratory tested before disposal. The appropriate test method is the Toxicity Characteristic Leaching Procedure, EPA Method 1311, which is described in Appendix 11 of the Code of Federal Regulations, Title 40, Part 261(40 CFR Part 261). The test must include the eight metals noted in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver).

Environmental laboratories capable of conducting a Toxicity Characteristic Leaching Procedure may be found in the telephone directory's Yellow Pages. If one or more of analytical limits meets or exceeds the regulatory limit, the waste is hazardous.

Hazardous wastes must be managed, transported and disposed of according to the Missouri Hazardous Waste Management Law and Regulations. This may require the generator to send paint residue to a permitted hazardous waste disposal facility. In some cases, a lead smelter may accept lead-based paints for use in its lead production processes. If laboratory analysis shows that the paint residue is non-hazardous, it must be disposed of at a sanitary landfill as "special waste." Paint residue may not be disposed of in a demolition landfill.

Procedures for managing special wastes are included in the fact sheet titled Special Waste (PUB2050) available on the department's Web site at www.dnr.mo.gov/pubs/pub2050.htm. The landfill may require you to complete a special waste disposal request form, and provide the results of testing on the paint waste to show that it is not hazardous before accepting the waste.

Demolition debris need not be tested before disposal, so long as it is not chipped, shredded, milled, ground, mulched or similarly processed. Processed demolition waste should be evaluated as described for paint residue.

Scrap metal painted with heavy metals may be sent to a salvage yard for recycling. If this is not possible, the metal may be disposed of at a sanitary or demolition landfill.

Asbestos

All public, institutional or commercial buildings, and in some instances, residential structures, must be inspected for asbestos before renovation or demolition activities. Before planning a demolition project, bidding a project, letting a bid or beginning the demolition, it is important to know if the building has any asbestos-containing materials and who is responsible for removing them. Buildings may contain asbestos in materials such as ceiling or floor tile, as insulation or soundproofing on ceilings, pipes, ductwork or boilers, or on the outside as transite siding or in shingles. The presence of asbestos-containing materials cannot be confirmed just by looking.

A thorough inspection of any regulated building must be conducted by a Missouri certified asbestos inspector to determine the presence and condition of asbestos-containing materials.

Depending upon the results of the inspection, a registered asbestos abatement contractor may be required. Contact the department's Air Pollution Control Program's Asbestos Unit at 573-751-4817 for more specific information about managing asbestos-containing materials. Visit www.dnr.mo.gov/env/apcp/asbestos.htm for more information about asbestos requirements. If the asbestos-containing materials is to go to a landfill or transfer station, contact the facility in advance to see if they will accept materials and if they have any special handling or packaging requirements.

Penalties for illegal disposal of construction and demolition wastes The Missouri Solid Waste Management Law provides for civil penalties for persons who dispose of or allow the disposal of regulated construction and demolition wastes in un-permitted areas.

The law also contains criminal provisions for some types of illegal construction and demolition waste disposal. There may be additional penalties for violations of air, water pollution and hazardous waste laws depending on the situation and means of disposal.

Solid Waste Management Law Violations:

- Civil Penalties - any person who disposes of construction and demolition waste or allows the disposal of construction and demolition waste in an area not permitted for such disposal may be assessed a civil penalty of up to \$5,000 per day per violation (§260.240, RSMo).
- Criminal Penalties - any person who purposely or knowingly disposes of or causes the disposal of regulated quantities of construction and demolition waste or other solid waste may be prosecuted for violating the criminal provisions of §§260.211 and 260.212, RSMo.

Convictions may include fines of \$20,000 or more, community service, and/or clean-up of the illegally dumped waste. Conviction under §§ 260.211 and 260.212 is a class D Felony for the illegal disposal of residential or commercial waste and for accepting construction and demolition wastes for payment, whether in cash or trade, without a permit. In some cases, persons convicted of illegal dumping have served time in jail.

- The Missouri Air Conservation Law and regulations provide for civil penalties of up to \$10,000 per day per violation for persons who violate the requirements for handling, packaging, transporting or disposing of asbestos-containing materials. The federal Clean Air Act also contains civil and criminal penalties for violations. The same penalties apply for persons who illegally dispose of construction and demolition waste by burning.

Other Requirements

Other legal requirements related to managing construction and demolition wastes include:

- Anyone engaged in building construction, modification or demolition must maintain a record of all sites used for construction and demolition waste disposal for one year. The records must be made available to department staff upon request (§260.210.7, RSMo).
- Cities and counties that issue building permits are required to notify each permittee in writing of the legal requirements for construction and demolition waste disposal (§260.210.8, RSMo).
- A person shall be guilty of conspiracy if he knows or should have known that his agent or employee has violated the civil or criminal provisions of the law related to illegal disposal of construction and demolition waste or other solid waste (§260.212.9, RSMo).
- Anyone selling, conveying or transferring property that contains construction and demolition waste or other solid waste (whether buried or not), must disclose the existence and location of the waste disposal site to a potential buyer early in the negotiation process (§260.213, RSMo).
- Anyone hauling materials that could fall or blow off a vehicle, including construction and demolition waste, must cover the load or secure it so that none of it can become dislodged and fall from the vehicle (§307.010, RSMo). In addition, many landfills and transfer stations in Missouri require all incoming loads to be covered. Some facilities accept open loads, but may charge you extra for them.
- A person commits the crime of littering if they throw or place, or cause to be thrown or placed, any garbage, trash, refuse or rubbish of any kind on the right-of-way of any public road or highway, in or on any waters of the state or the stream banks, and on any public or private property (owned by another without their consent) (§577.070, RSMo).

Additional Information

You may obtain additional information about properly managing construction and demolition wastes from the sources listed below.

Missouri Department of Natural Resources

- Air Pollution Control Program 573-751-4817
- Hazardous Waste Program 573-751-3176

- Solid Waste Management Program 573-751-5401
- Water Protection Program 573-751-1300
- Regional Offices
- Kansas City Regional Office 816-622-7000
- Northeast Regional Office (Macon) 660-385-8000
- St. Louis Regional Office 314-416-2960
- Southeast Regional Office (Poplar Bluff) 573-840-9750
- Southwest Regional Office (Springfield) 417-891-4300

On the Web

Construction and demolition information www.dnr.mo.gov/env/swmp/index.html

Environmental publications www.dnr.mo.gov/pubs/

Additional Considerations and Sources

Hazardous waste requirements are found in the Missouri Hazardous Waste Management Laws, Sections 260.345 through 260.575 of the Revised Statutes of Missouri (RSMo). The Missouri Hazardous Waste Regulations are found in Title 10, Division 25 of the Code of State Regulations. Most of the federal environmental requirements in Title 40 of the Code of Federal Regulations is adopted by reference into the Missouri regulations.

Solid waste requirements are found in the Solid Waste Management Law in Sections 260.200 through 260.345 RSMo, and the regulations in Title 10, Division 80 in the Code of State Regulations. Copies of the Revised Statutes of Missouri are available through the Revisor of Statutes at 573-526-1288, or are available online at www.moga.mo.gov.

Copies of the Missouri Code of State Regulations are available through the Missouri Secretary of State at 573-751-4015, or are available online at www.sos.missouri.gov/adrules/csr/csr.asp.

Federal regulations are available at federal depository libraries or may be purchased from a U.S. Government Bookstore, the U.S. Government Printing Office, or from a commercial information service such as the Bureau of National Affairs. Federal Regulations are also available online at www.gpoaccess.gov/cfr/index.html

Other Guidance

The Missouri Department of Health and Senior Services - Office of Lead Licensing and Accreditation may be contacted for information regarding training, licensure and work practice standards for lead abatement activities. Disposal is an abatement activity. See Missouri Revised Statutes 701.300 and 701.338.

Please note that many municipalities have their own additional requirements that might be stricter than those discussed above.

For more information

Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
800-361-4827 or 573-751-4817 office
573-751-2706 fax

www.dnr.mo.gov/env/apcp/index.html

Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102-0176
800-361-4827 or 573-751-7560 office
573-751-7869 fax
www.dnr.mo.gov/env/hwp/index.html

Missouri Department of Health and Senior Services
Office of Lead Licensing and Accreditation
P.O. Box 570
Jefferson City, MO 65102-0570
888-837-0927 or 573-526-5873
573-526-0441 fax
www.dhss.mo.gov/Lead/

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.

For more information
Missouri Department of Natural Resources
Solid Waste Protection Program
P.O. Box 176
Jefferson City, MO 65102-0176
800-361-4827 or 573-751-5401
<http://www.dnr.mo.gov/env/swmp>

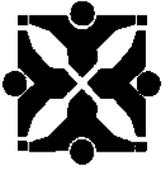
PART II- CODE OF ORDINANCES

Chapter 12A- LAND PRESERVATION

Stockpile Height	Minimum Distance from a Permitted Structure	Minimum Distance from an "Exterior"* Public Right-of-Way	Minimum Distance from an "Exterior"* Lot Line	Minimum Distance from Stream Buffer Outer Zone of Type I and II Streams
30 feet-40 feet	300 feet	200 feet	100 feet	100 feet
20 feet < 30 feet	300 feet	150 feet	100 feet	100 feet
≥10 feet < 20 feet	100 feet	100 feet	100 feet	100 feet
0 feet < 10 feet	10 feet	10 feet	10 feet	10 feet

*"Exterior" refers to the perimeter of the subdivision or development. The minimum distances in the chart do not apply to the internal roads and lot lines within a subdivision or development.

- (c) The side slope of a stockpile of soil shall not exceed a 3:1 ratio.
- (d) Stockpiles of soil are not permitted in a stream buffer.
- (e) Stockpiles of soil shall be temporarily seeded in accordance with the Erosion and Sediment Control Manual issued by the director. The working face of the stockpile, however, need not be seeded.
- (f) Stockpiles of soil that meet the requirements of this section may remain in place for up to three (3) years after issuance of a land disturbance permit. For good cause, the director may extend this time limit for intervals of up to three (3) years. At least sixty (60) days before the time limit expires, the applicant for such an extension must submit a letter to the director explaining the reason for the requested extension. The letter must be accompanied by a list of the names and addresses of the owners of all land within lines drawn parallel to and one hundred eighty-five (185) feet from the boundaries of the property on which the stockpile is located. The applicant shall send a copy of the letter to each of the property owners. If the director grants an extension, the director shall notify each of the property owners of the decision and advise the property owners of their right to appeal the decision to the board of adjustment under article VI.
- (g) When the time limit for a stockpile of soil has expired, and no extension has been granted, the property owner must either remove the stockpile or grade it to a slope of no greater than a 4:1 ratio and permanently seed it in accordance with the Erosion and Sediment Control Manual issued by the director.
- (h) Subsections (a) through (e) shall not apply to stockpiles of soil existing on November 1, 2010; provided that all such stockpiles must be removed no later than November 1, 2013 unless an extension is granted under subsection (f).
- (i) This section shall not apply to soil stockpiled in connection with any street construction project.



City of Columbia - Public Works Department



Application for Street/Sidewalk Closures & Restrictions for Construction Projects & Repairs

Application date: _____ Address of proposed work: _____

Name of business requesting work (if applicable): _____

Nature of proposed work (be as specific as possible):

Date of closure or restriction:

From: _____
(day) (date) (time)

To: _____
(day) (date) (time)

Owner's name and phone number: _____
(name) (phone number)

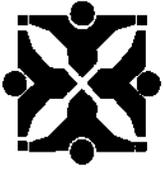
Contractor's name and phone number: _____
(name) (phone number)

Return this form along with a traffic and/or pedestrian control & routing plan and a list of business owners (or their representatives, in the downtown area only) and their phone numbers for all businesses along the entire sidewalk frontage of the block affected by closure or restriction. All such business owners must be given three (3) days notice of the following: reason for the closure; the dates and times of the closure; and their right to protest by written notice to the Director of Public Works.

Applicant Signature

Date

***Please note short-term closure means thirty (30) days or fewer. In order to fully close/restrict any public street, alley, or sidewalk in excess of thirty (30) days, the closure/restriction must be sent to City Council for review and approval.**



City of Columbia - Public Works Department



Checklist for Street/Sidewalk Closures & Restrictions for Construction Projects & Repairs

The Public Works Department will issue permits and meter bags only after receipt, review and approval of the following:

- _____ Written request detailing the nature of the proposed work, location of work, duration and dates of the closure or restriction, and the contact name and phone number of both the party requesting the work and the party performing the work;
- _____ Traffic control and routing plan (per MUTCD guidelines) with a location map and details showing all required signs, barricades and flagmen. Traffic control plans must be prepared by a professional engineer licensed to practice in the State of Missouri. If sidewalks are closed or restricted, plan must include pedestrian routing information. The plan must be computer-drawn at a scale which allows all required details to be clearly seen;
- _____ List of business owners (or their representatives) and their phone numbers for all businesses along the entire sidewalk frontage of the block affected by the closure or restriction. All such business owners must be given three (3) days notice of the following: reason for the closure; the dates and times of the closure; and their right to protest by written notice to the Director of Public Works.
- _____ Contractor is required to follow the provisions of the City's Brick Streets Policy (PR 229-13) with regards to the treatment of exposed or covered brick street pavers. <http://tinyurl.com/brickstreets>

It takes approximately three (3) days to circulate and review each planned closure/restriction. Upon approval of the plan, an additional three (3) days are required to allow time for public and emergency services notification before construction will be allowed to begin. Making the total review process (6) days.

Meter bags are required for all meters that will be blocked. The cost is \$8 per day for single meters and \$16 per day for double meters. A deposit of \$15 per bag is required and is refundable upon return of the bag(s). Applications for meter bags must be submitted a minimum of 24 hours before the date needed and bags must be placed on the meter(s) four (4) hours before use.

Prior to the start of construction applicant must obtain a Right-of-Way Permit from the Public Works Department and any other permit required from the appropriate City department.

Contractor is responsible for notifying the following agencies, as required, immediately prior to closure, during construction for inspections, and again when work is complete and street or sidewalk is reopened:

City of Columbia Contact Telephone Numbers

Building and Site Development (Right-of-way / Building Safety).....	874-7474
Joint Communications (Emergency Services)	874-7471
Columbia Transit (City Buses)	874-7282
Parking Enforcement (Parking Meters)	874-7674
Public Works Street Division (Maintenance)	874-6289

***Please note short-term closure means thirty (30) days or fewer. In order to fully close/restrict any public street, alley, or sidewalk in excess of thirty (30) days, the closure/restriction must be sent to City Council for review and approval.**



CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT

Right of Way Permit Application

Date: ____/____/____

Permit No: _____

Owner:

Owner: _____

Address: _____

Phone: _____

Email: _____

Contractor:

Contractor: _____

Address: _____

Phone: _____

Email: _____

Plan Engineer: _____

Plan Approval Date: _____

Work Location:

Type of Work:

- Sidewalk Drive Approach Street Cut Closure Grading Paving Storm Sewer
 Excavation Other

Description of Work:

FOR OFFICE USE ONLY:

Calendar Days for Permit: _____



CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT

- (1) Any person who shall do any work for which a permit is required hereunder shall conduct such work in accordance with standard plans and specifications on file in the office of the Director of Public Works and the office of the city clerk, which shall be marked "Official Copy of Plans and Specifications for Improvements Under Division 2, Article II, Chapter 24 of the Code of Ordinances of Columbia, Missouri." (City of Columbia Code of Ordinances, Chapter 24, Section 41)
- (2) No person shall construct, reconstruct, repair, alter or grade any sidewalk, curb, curb cut, driveway or street on the public streets or rights-of-way without first obtaining a permit from the Director of Public Works. (City of Columbia Code of Ordinances, Chapter 24, Section 41)
- (3) The Director of Public Works is authorized to issue a stop work order whenever he believes a violation of this Article is occurring. A stop work order shall be in writing and shall be given to the owner of the property involved or to the owner's agent or to the person engaged in the activity suspected of violating this Article. It shall be unlawful for any person to engage in any activity in violation of a stop work order. (City of Columbia Code of Ordinances, Chapter 24, Section 90)
- (4) Failure to follow all guidelines set forth by the City of Columbia and the Manual of Uniform Traffic Control Devices (MUTCD) will be subject to Chapter 24, Section 20 of the City of Columbia Code of Ordinances, which states "Any person violating any of the provisions of this article shall be deemed guilty of a Misdemeanor." (City of Columbia Code of Ordinances, Chapter 24, Section 20)
- (5) Traffic control plans for any project in the downtown area, collector and arterial street or any other locations as determined appropriate by the Director of Public Works shall be prepared by a Professional Land Surveyor or Professional Engineer licensed in the State of Missouri.
- (6) Contractor is responsible for the installation and maintenance of all necessary erosion and sediment control on site until which time the project is completed and is determined to be stable and non erosive.
- (7) Prior to excavation the contractor must contact 1-800-DIG-RITE for utility locations.

A Right of Way user shall indemnify and hold the City of Columbia and its officers and employees harmless against any and all claims, lawsuits, judgments, costs, liens, losses, expenses, fees (including reasonable attorney fees and cost of defense), proceedings, actions demands, causes of action, liability and suits of any kind and nature, including personal bodily injury (including death), property damage or others harm for which recovery of damages is sought, to the extent that it is found by a court of competent jurisdiction to be caused by the negligence of the Right of Way user, any agent, officer, director, or their respective officers, agents, employees, directors or representatives, while installing, repairing or maintaining Facilities in a public Right of Way.

Attach all applicable information required per the City of Columbia checklist for short term street closures for construction projects and repairs. Please note that Downtown projects must comply with the City of Columbia's checklist for Downtown construction projects and repairs.

Certification: I certify that I have read and understand the provisions of this permit as it pertains to construction, restoration, and liability to the City of Columbia. I also certify that the traffic control utilized during this project meets the most current edition of the MUTCD.

Signature:

Approved: Director of Public Works

by: _____

Date: ___/___/___

Date: ___/___/___

** Signature indicates acceptance of permit requirements and conditions of both the City of Columbia and MUTCD



CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT

Right of Way Tree Planting Permit Application

Date: ____/____/____

Permit No: _____

Owner:

Owner: _____

Address: _____

Phone: _____

Email: _____

Contractor:

Contractor: _____

Address: _____

Phone: _____

Email: _____

Plan Engineer: _____

Plan Approval Date: _____

Work Location:

Type of Work:

Tree Planting

Description of Work:

FOR OFFICE USE ONLY:

Calendar Days for Permit: _____



CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT

(1) Any person who shall do any work for which a permit is required hereunder shall conduct such work in accordance with standard plans and specifications on file in the office of the Director of Public Works and the office of the city clerk, which shall be marked "Official Copy of Plans and Specifications for Improvements Under Division 2, Article II, Chapter 24 of the Code of Ordinances of Columbia, Missouri." (City of Columbia Code of Ordinances, Chapter 24, Section 41)

(2) No person shall construct, reconstruct, repair, alter or grade any sidewalk, curb, curb cut, driveway or street on the public streets or rights-of-way without first obtaining a permit from the Director of Public Works. (City of Columbia Code of Ordinances, Chapter 24, Section 41)

(3) The Director of Public Works is authorized to issue a stop work order whenever he believes a violation of this Article is occurring. A stop work order shall be in writing and shall be given to the owner of the property involved or to the owner's agent or to the person engaged in the activity suspected of violating this Article. It shall be unlawful for any person to engage in any activity in violation of a stop work order. (City of Columbia Code of Ordinances, Chapter 24, Section 90)

(4) Failure to follow all guidelines set forth by the City of Columbia and the Manual of Uniform Traffic Control Devices (MUTCD) will be subject to Chapter 24, Section 20 of the City of Columbia Code of Ordinances, which states "Any person violating any of the provisions of this article shall be deemed guilty of a Misdemeanor." (City of Columbia Code of Ordinances, Chapter 24, Section 20)

(5) Traffic control plans for any project in the downtown area, collector and arterial street or any other locations as determined appropriate by the Director of Public Works shall be prepared by a Professional Land Surveyor or Professional Engineer licensed in the State of Missouri.

(6) Contractor is responsible for the installation and maintenance of all necessary erosion and sediment control on site until which time the project is completed and is determined to be stable and non erosive.

(7) Prior to excavation the contractor must contact 1-800-DIG-RITE for utility locations.

A Right of Way user shall indemnify and hold the City of Columbia and its officers and employees harmless against any and all claims, lawsuits, judgments, costs, liens, losses, expenses, fees (including reasonable attorney fees and cost of defense), proceedings, actions demands, causes of action, liability and suits of any kind and nature, including personal bodily injury (including death), property damage or others harm for which recovery of damages is sought, to the extent that it is found by a court of competent jurisdiction to be caused by the negligence of the Right of Way user, any agent, officer, director, or their respective officers, agents, employees, directors or representatives, while installing, repairing or maintaining Facilities in a public Right of Way.

Attach all applicable information required per the City of Columbia checklist for short term street closures for construction projects and repairs. Please note that Downtown projects must comply with the City of Columbia's checklist for Downtown construction projects and repairs.

Certification: I certify that I have read and understand the provisions of this permit as it pertains to construction, restoration, and liability to the City of Columbia. I also certify that the traffic control utilized during this project meets the most current edition of the MUTCD.

Signature: _____

Approved: Director of Public Works/City Arborist
by: _____

Date: ____/____/____

Date: ____/____/____

** Signature indicates acceptance of permit requirements and conditions of both the City of Columbia and MUTCD

FLOODPLAIN DEVELOPMENT PERMIT/APPLICATION

Application No.: _____ Date: _____

TO THE ADMINISTRATOR: The undersigned hereby makes application for a permit to develop in the Special Flood Hazard Area (SFHA) or "floodplain." The work to be performed, including flood protection works, is as described below and in attachments hereto. The undersigned agrees that all such work shall be in accordance with the requirements of the Floodplain Management Ordinance and with all other applicable county/city ordinances, federal programs, and the laws and regulations of the State of Missouri.

Owner or Agent _____ Date _____ Builder _____
Address _____ Address _____
Telephone Number _____ Telephone Number _____

SITE DATA

1. Location: _____ 1/4; _____ 1/4; Section _____; Township _____; Range _____
Street Address: _____
2. Type of Development: Filling _____ Grading _____ Excavation _____ Minimum Improvement _____
Routine Maintenance _____ Substantial Improvement _____ New Construction _____ Other _____
3. Description of Development: _____
4. Premises: Structure Size _____ ft. By _____ ft. Area of Site _____ Sq. Ft.
Principal Use: _____ Accessory Uses (storage, parking, etc.): _____
5. Value of Improvement (fair market): \$ _____ Pre-Improvement/Assessed Value of Structure: \$ _____
6. Is the Property Located in a Designated FLOODWAY? Yes _____ No _____
IF ANSWERED YES, CERTIFICATION MUST BE PROVIDED PRIOR TO THE ISSUANCE OF A PERMIT TO DEVELOP, THAT THE PROPOSED DEVELOPMENT WILL RESULT IN NO INCREASE IN THE BASE (1%) FLOOD ELEVATIONS.
7. Is the Property Located in a Designated Floodplain FRINGE or a Floodplain (SFHA) without a Designated FLOODWAY? Yes _____ No _____
8. Elevation of the 1% Base Flood (ID source) _____ NGVD/NAVD
9. Elevation of the Proposed Development Site _____ NGVD/NAVD
10. Community Ordinance Elevation/Floodproofing Requirement _____ NGVD/NAVD
11. NFIP Flood Insurance Rate Map Panel(s) Number(s) _____
12. Other Permits Required? Corps of Engineer 404 Permit: Yes _____ No _____ Provided _____
State Department of Natural Resources 401 Permit: Yes _____ No _____ Provided _____
Environmental Protection Agency NPDES Permit: Yes _____ No _____ Provided _____

All Provisions of Ordinance Number _____, the "Floodplain Management Ordinance", shall be in Compliance.

PERMIT APPROVAL/DENIAL

Plans and Specifications Approved/Denied this _____ Day of _____, 20 _____

Signature of Property Owner or Agent _____ Authorizing Official _____
Print Name and Title _____ Print Name and Title _____

THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT FLOOR) OF ANY NEW OR SUBSTANTIALLY IMPROVED RESIDENTIAL BUILDING WILL BE ELEVATED _____ FOOT/FEET ABOVE THE BASE FLOOD ELEVATION. IF THE PROPOSED DEVELOPMENT IS A NON-RESIDENTIAL BUILDING, THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT) OF A NEW OR SUBSTANTIALLY IMPROVED NON-RESIDENTIAL BUILDING WILL BE ELEVATED OR FLOODPROOFED _____ FOOT/FEET ABOVE THE BASE FLOOD ELEVATION.

THIS PERMIT IS USED WITH THE CONDITION THAT THE DEVELOPER/OWNER WILL PROVIDE CERTIFICATION BY A REGISTERED ENGINEER, ARCHITECT, OR LAND SURVEYOR OF THE "AS-BUILT" LOWEST FLOOR (INCLUDING BASEMENT) ELEVATION OF ANY NEW OR SUBSTANTIALLY IMPROVED BUILDING COVERED BY THIS PERMIT.



FEMA

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

2012 EDITION

National Flood Insurance Program

ELEVATION CERTIFICATE

Paperwork Reduction Act Notice

Public reporting burden for this data collection is estimated to average 3.75 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and submitting this form. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0008). **NOTE: Do not send your completed form to this address.**

Privacy Act Statement

Authority: Title 44 CFR § 61.7 and 61.8.

Principal Purpose(s): This information is being collected for the primary purpose of estimating the risk premium rates necessary to provide flood insurance for new or substantially improved structures in designated Special Flood Hazard Areas.

Routine Use(s): The information on this form may be disclosed as generally permitted under 5 U.S.C. § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA-003 – National Flood Insurance Program Files System or Records Notice 73 Fed. Reg. 77747 (December 19, 2008); DHS/FEMA/NFIP/LOMA-1 – National Flood Insurance Program (NFIP) Letter of Map Amendment (LOMA) System of Records Notice 71 Fed. Reg. 7990 (February 15, 2006); and upon written request, written consent, by agreement, or as required by law.

Disclosure: The disclosure of information on this form is voluntary; however, failure to provide the information requested may result in the inability to obtain flood insurance through the National Flood Insurance Program or the applicant may be subject to higher premium rates for flood insurance. Information will only be released as permitted by law.

Purpose of the Elevation Certificate

The Elevation Certificate is an important administrative tool of the National Flood Insurance Program (NFIP). It is to be used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, and to support a request for a Letter of Map Amendment (LOMA) or Letter of Map Revision based on fill (LOMR-F).

The Elevation Certificate is required in order to properly rate Post-FIRM buildings, which are buildings constructed after publication of the Flood Insurance Rate Map (FIRM), located in flood insurance Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO. The Elevation Certificate is not required for Pre-FIRM buildings unless the building is being rated under the optional Post-FIRM flood insurance rules.

As part of the agreement for making flood insurance available in a community, the NFIP requires the community to adopt floodplain management regulations that specify minimum requirements for reducing flood losses. One such requirement is for the community to obtain the elevation of the lowest floor (including basement) of all new and substantially improved buildings, and maintain a record of such information. The Elevation Certificate provides a way for a community to document compliance with the community's floodplain management ordinance.

Use of this certificate does not provide a waiver of the flood insurance purchase requirement. Only a LOMA or LOMR-F from the Federal Emergency Management Agency (FEMA) can amend the FIRM and remove the Federal mandate for a lending institution to require the purchase of flood insurance. However, the lending institution has the option of requiring flood insurance even if a LOMA/LOMR-F has been issued by FEMA. The Elevation Certificate may be used to support a LOMA or LOMR-F request. Lowest floor and lowest adjacent grade elevations certified by a surveyor or engineer will be required if the certificate is used to support a LOMA or LOMR-F request. A LOMA or LOMR-F request must be submitted with either a completed FEMA MT-EZ or MT-1 package, whichever is appropriate.

This certificate is used only to certify building elevations. A separate certificate is required for floodproofing. Under the NFIP, non-residential buildings can be floodproofed up to or above the Base Flood Elevation (BFE). A floodproofed building is a building that has been designed and constructed to be watertight (substantially impermeable to floodwaters) below the BFE. Floodproofing of residential buildings is not permitted under the NFIP unless FEMA has granted the community an exception for residential floodproofed basements. The community must adopt standards for design and construction of floodproofed basements before FEMA will grant a basement exception. For both floodproofed non-residential buildings and residential floodproofed basements in communities that have been granted an exception by FEMA, a floodproofing certificate is required.

Additional guidance can be found in FEMA Publication 467-1, Floodplain Management Bulletin: Elevation Certificate, available on FEMA's website at <http://www.fema.gov/library/viewRecord.do?id=1727>.

ELEVATION CERTIFICATE

IMPORTANT: Follow the instructions on pages 1-9.

OMB No. 1660-0008
 Expiration Date: July 31, 2015

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE

A1. Building Owner's Name	Policy Number:
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.	Company NAIC Number:
City	State
ZIP Code	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)	
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) _____	
A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: <input type="checkbox"/> NAD 1927 <input type="checkbox"/> NAD 1983	
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.	
A7. Building Diagram Number _____	
A8. For a building with a crawlspace or enclosure(s):	A9. For a building with an attached garage:
a) Square footage of crawlspace or enclosure(s) _____ sq ft	a) Square footage of attached garage _____ sq ft
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____	b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____
c) Total net area of flood openings in A8.b _____ sq in	c) Total net area of flood openings in A9.b _____ sq in
d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No	d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number			B2. County Name		B3. State
B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input type="checkbox"/> FIS Profile <input type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in Item B9: <input type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input type="checkbox"/> No Designation Date: _____ / _____ / _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction
 *A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: _____ Vertical Datum: _____

Indicate elevation datum used for the elevations in items a) through h) below. NGVD 1929 NAVD 1988 Other/Source: _____
 Datum used for building elevations must be the same as that used for the BFE.

Check the measurement used.

a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
b) Top of the next higher floor	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
c) Bottom of the lowest horizontal structural member (V Zones only)	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
d) Attached garage (top of slab)	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
f) Lowest adjacent (finished) grade next to building (LAG)	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
g) Highest adjacent (finished) grade next to building (HAG)	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	_____ . _____	<input type="checkbox"/> feet <input type="checkbox"/> meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Check here if comments are provided on back of form. Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No
 Check here if attachments.

Certifier's Name		License Number	
Title	Company Name		
Address	City	State	ZIP Code
Signature	Date	Telephone	



ELEVATION CERTIFICATE, page 2

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE	
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			Policy Number:	
City	State	ZIP Code	Company NAIC Number:	

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments

Signature

Date

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).

a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ . _____ feet meters above or below the HAG.

b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ . _____ feet meters above or below the LAG.

E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 8–9 of Instructions),

the next higher floor (elevation C2.b in the diagrams) of the building is _____ . _____ feet meters above or below the HAG.

E3. Attached garage (top of slab) is _____ . _____ feet meters above or below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is _____ . _____ feet meters above or below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? Yes No Unknown. The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner or Owner's Authorized Representative's Name

Address City State ZIP Code

Signature Date Telephone

Comments

Check here if attachments.

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.

G1. The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate Of Compliance/Occupancy Issued
-------------------	------------------------	---

G7. This permit has been issued for: New Construction Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____ . _____ feet meters Datum _____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____ . _____ feet meters Datum _____

G10. Community's design flood elevation: _____ . _____ feet meters Datum _____

Local Official's Name Title

Community Name Telephone

Signature Date

Comments

Check here if attachments.

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			Policy Number:
City	State	ZIP Code	Company NAIC Number:

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8.

Instructions for Completing the Elevation Certificate

The Elevation Certificate is to be completed by a land surveyor, engineer, or architect who is authorized by law to certify elevation information when elevation information is required for Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, or AR/AO. Community officials who are authorized by law or ordinance to provide floodplain management information may also complete this form. For Zones AO and A (without BFE), a community official, a property owner, or an owner’s representative may provide information on this certificate, unless the elevations are intended for use in supporting a request for a LOMA or LOMR-F. Certified elevations must be included if the purpose of completing the Elevation Certificate is to obtain a LOMA or LOMR-F.

The property owner, the owner’s representative, or local official who is authorized by law to administer the community floodplain ordinance can complete Section A and Section B. The partially completed form can then be given to the land surveyor, engineer, or architect to complete Section C. The land surveyor, engineer, or architect should verify the information provided by the property owner or owner’s representative to ensure that this certificate is complete.

In Puerto Rico only, elevations for building information and flood hazard information may be entered in meters.

SECTION A – PROPERTY INFORMATION

Items A1–A4. This section identifies the building, its location, and its owner. Enter the name(s) of the building owner(s), the building’s complete street address, and the lot and block numbers. If the building’s address is different from the owner’s address, enter the address of the building being certified. If the address is a rural route or a Post Office box number, enter the lot and block numbers, the tax parcel number, the legal description, or an abbreviated location description based on distance and direction from a fixed point of reference. For the purposes of this certificate, “building” means both a building and a manufactured (mobile) home.

A map may be attached to this certificate to show the location of the building on the property. A tax map, FIRM, or detailed community map is appropriate. If no map is available, provide a sketch of the property location, and the location of the building on the property. Include appropriate landmarks such as nearby roads, intersections, and bodies of water. For building use, indicate whether the building is residential, non-residential, an addition to an existing residential or non-residential building, an accessory building (e.g., garage), or other type of structure. Use the Comments area of the appropriate section if needed, or attach additional comments.

Item A5. Provide latitude and longitude coordinates for the center of the front of the building. Use either decimal degrees (e.g., 39.5043°, -110.7585°) or degrees, minutes, seconds (e.g., 39° 30' 15.5", -110° 45' 30.7") format. If decimal degrees are used, provide coordinates to at least 4 decimal places or better. When using degrees, minutes, seconds, provide seconds to at least 1 decimal place or better. The latitude and longitude coordinates must be accurate within 66 feet. When the latitude and longitude are provided by a surveyor, check the “Yes” box in Section D and indicate the method used to determine the latitude and longitude in the Comments area of Section D. If the Elevation Certificate is being certified by other than a licensed surveyor, engineer, or architect, this information is not required. Provide the type of datum used to obtain the latitude and longitude. FEMA prefers the use of NAD 1983.

Item A6. If the Elevation Certificate is being used to obtain flood insurance through the NFIP, the certifier must provide at least 2 photographs showing the front and rear of the building taken within 90 days from the date of certification. The photographs must be taken with views confirming the building description and diagram number provided in Section A. To the extent possible, these photographs should show the entire building including foundation. If the building has split-level or multi-level areas, provide at least 2 additional photographs showing side views of the building. In addition, when applicable, provide a photograph of the foundation showing a representative example of the flood openings or vents. All photographs must be in color and measure at least 3" × 3". Digital photographs are acceptable.

Item A7. Select the diagram on pages 7–9 that best represents the building. Then enter the diagram number and use the diagram to identify and determine the appropriate elevations requested in Items C2.a–h. If you are unsure of the correct diagram, select the diagram that most closely resembles the building being certified.

Item A8.a Provide the square footage of the crawlspace or enclosure(s) below the lowest elevated floor of an elevated building with or without permanent flood openings. Take the measurement from the outside of the crawlspace or enclosure(s). Examples of elevated buildings constructed with crawlspace and enclosure(s) are shown in Diagrams 6–9 on pages 8–9. Diagram 2, 4, or 9 should be used for a building constructed with a crawlspace floor that is below the exterior grade on all sides.

Items A8.b–d Enter in Item A8.b the number of permanent flood openings in the crawlspace or enclosure(s) that are no higher than 1.0 foot above the higher of the exterior or interior grade or floor immediately below the opening. (A permanent flood opening is a flood vent or other opening that allows the free passage of water automatically in both directions without human intervention.) If the interior grade elevation is used, note this in the Comments area of Section D. Estimate the total net area of all such permanent flood openings in square inches, excluding any bars, louvers, or other covers of the permanent flood openings, and enter the total in Item A8.c. If the net area cannot be reasonably estimated, provide the size of the flood openings without consideration of any covers and indicate in the Comments area the type of cover that exists in the flood openings. Indicate in Item A8.d whether the flood openings are engineered. If applicable, attach a copy of the Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES), if you have it. If the crawlspace or enclosure(s) have no permanent flood openings, or if the openings are not within 1.0 foot above adjacent grade, enter “0” (zero) in Items A8.b–c.

Item A9.a Provide the square footage of the attached garage with or without permanent flood openings. Take the measurement from the outside of the garage.

Items A9.b–d Enter in Item A9.b the number of permanent flood openings in the attached garage that are no higher than 1.0 foot above the higher of the exterior or interior grade or floor immediately below the opening. (A permanent flood opening is a flood vent or other opening that allows the free passage of water automatically in both directions without human intervention.) If the interior grade elevation is used, note this in the Comments area of Section D. This includes any openings that are in the garage door that are no higher than 1.0 foot above the adjacent grade. Estimate the total net area of all such permanent flood openings in square inches and enter the total in Item A9.c. If the net area cannot be reasonably estimated, provide the size of the flood openings without consideration of any covers and indicate in the Comments area the type of cover that exists in the flood openings. Indicate in Item A9.d whether the flood openings are engineered. If applicable, attach a copy of the Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES), if you have it. If the garage has no permanent flood openings, or if the openings are not within 1.0 foot above adjacent grade, enter “0” (zero) in Items A9.b–c.

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Complete the Elevation Certificate on the basis of the FIRM in effect at the time of the certification.

The information for Section B is obtained by reviewing the FIRM panel that includes the building’s location. Information about the current FIRM is available from the Federal Emergency Management Agency (FEMA) by calling 1-800-358-9616. If a Letter of Map Amendment (LOMA) or Letter of Map Revision (LOMR-F) has been issued by FEMA, please provide the letter date and case number in the Comments area of Section D or Section G, as appropriate.

For a building in an area that has been annexed by one community but is shown on another community’s FIRM, enter the community name and 6-digit number of the annexing community in Item B1, the name of the county or new county, if necessary, in Item B2, and the FIRM index date for the annexing community in Item B6. Enter information from the actual FIRM panel that shows the building location, even if it is the FIRM for the previous jurisdiction, in Items B4, B5, B7, B8, and B9.

If the map in effect at the time of the building’s construction was other than the current FIRM, and you have the past map information pertaining to the building, provide the information in the Comments area of Section D.

Item B1. NFIP Community Name & Community Number. Enter the complete name of the community in which the building is located and the associated 6-digit community number. For a newly incorporated community, use the name and 6-digit number of the new community. Under the NFIP, a “community” is any State or area or political subdivision thereof, or any Indian tribe or authorized native organization, that has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction. To determine the current community number, see the *NFIP Community Status Book*, available on FEMA’s web site at <http://www.fema.gov/fema/csb.shtm>, or call 1-800-358-9616.

Item B2. County Name. Enter the name of the county or counties in which the community is located. For an unincorporated area of a county, enter “unincorporated area.” For an independent city, enter “independent city.”

Item B3. State. Enter the 2-letter state abbreviation (for example, VA, TX, CA).

Items B4–B5. Map/Panel Number and Suffix. Enter the 10-character “Map Number” or “Community Panel Number” shown on the FIRM where the building or manufactured (mobile) home is located. For maps in a county-wide format, the sixth character of the “Map Number” is the letter “C” followed by a 4-digit map number. For maps not in a county-wide format, enter the “Community Panel Number” shown on the FIRM.

Item B6. FIRM Index Date. Enter the effective date or the map revised date shown on the FIRM Index.

Item B7. FIRM Panel Effective/Revised Date. Enter the map effective date or the map revised date shown on the FIRM panel. This will be the latest of all dates shown on the map. The current FIRM panel effective date can be determined by calling 1-800-358-9616.

Item B8. Flood Zone(s). Enter the flood zone, or flood zones, in which the building is located. All flood zones containing the letter “A” or “V” are considered Special Flood Hazard Areas. The flood zones are A, AE, A1–A30, V, VE, V1–V30, AH, AO, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO. Each flood zone is defined in the legend of the FIRM panel on which it appears.

Item B9. Base Flood Elevation(s). Using the appropriate Flood Insurance Study (FIS) Profile, Floodway Data Table, or FIRM panel, locate the property and enter the BFE (or base flood depth) of the building site. If the building is located in more than 1 flood zone in Item B8, list all appropriate BFEs in Item B9. BFEs are shown on a FIRM or FIS Profile for Zones A1–A30, AE, AH, V1–V30, VE, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO; flood depth numbers are shown for Zone AO. Use the AR BFE if the building is located in any of Zones AR/A, AR/AE, AR/A1–A30, AR/AH, or AR/AO. In A or V zones where BFEs are not provided on the FIRM, BFEs may be available from another source. For example, the community may have established BFEs or obtained BFE data from other sources for the building site. For subdivisions and other developments of more than 50 lots or 5 acres, establishment of BFEs is required by the community’s floodplain management ordinance. If a BFE is obtained from another source, enter the BFE in Item B9. In an A Zone where BFEs are not available, complete Section E and enter N/A for Section B, Item B9. Enter the BFE to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico).

Item B10. Indicate the source of the BFE that you entered in Item B9. If the BFE is from a source other than FIS Profile, FIRM, or community, describe the source of the BFE.

Item B11. Indicate the elevation datum to which the elevations on the applicable FIRM are referenced as shown on the map legend. The vertical datum is shown in the Map Legend and/or the Notes to Users on the FIRM.

Item B12. Indicate whether the building is located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA). (OPAs are portions of coastal barriers that are owned by Federal, State, or local governments or by certain non-profit organizations and used primarily for natural resources protection.) Federal flood insurance is prohibited in designated CBRS areas or OPAs for buildings or manufactured (mobile) homes built or substantially improved after the date of the CBRS or OPA designation. For the first CBRS designations, that date is October 1, 1983. Information about CBRS areas and OPAs may be obtained on the FEMA web site at <http://www.fema.gov/business/nfip/cbrs/cbrs.shtm>.

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

Complete Section C if the building is located in any of Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, or AR/AO, or if this certificate is being used to support a request for a LOMA or LOMR-F. If the building is located in Zone AO or Zone A (without BFE), complete Section E instead. To ensure that all required elevations are obtained, it may be necessary to enter the building (for instance, if the building has a basement or sunken living room, split-level construction, or machinery and equipment).

Surveyors may not be able to gain access to some crawlspaces to shoot the elevation of the crawlspace floor. If access to the crawlspace is limited or cannot be gained, follow one of these procedures.

- Use a yardstick or tape measure to measure the height from the floor of the crawlspace to the “next higher floor,” and then subtract the crawlspace height from the elevation of the “next higher floor.” If there is no access to the crawlspace, use the exterior grade next to the structure to measure the height of the crawlspace to the “next higher floor.”
- Contact the local floodplain administrator of the community in which the building is located. The community may have documentation of the elevation of the crawlspace floor as part of the permit issued for the building.
- If the property owner has documentation or knows the height of the crawlspace floor to the next higher floor, try to verify this by looking inside the crawlspace through any openings or vents.

In all 3 cases, provide the elevation in the Comments area of Section D on the back of the form and a brief description of how the elevation was obtained.

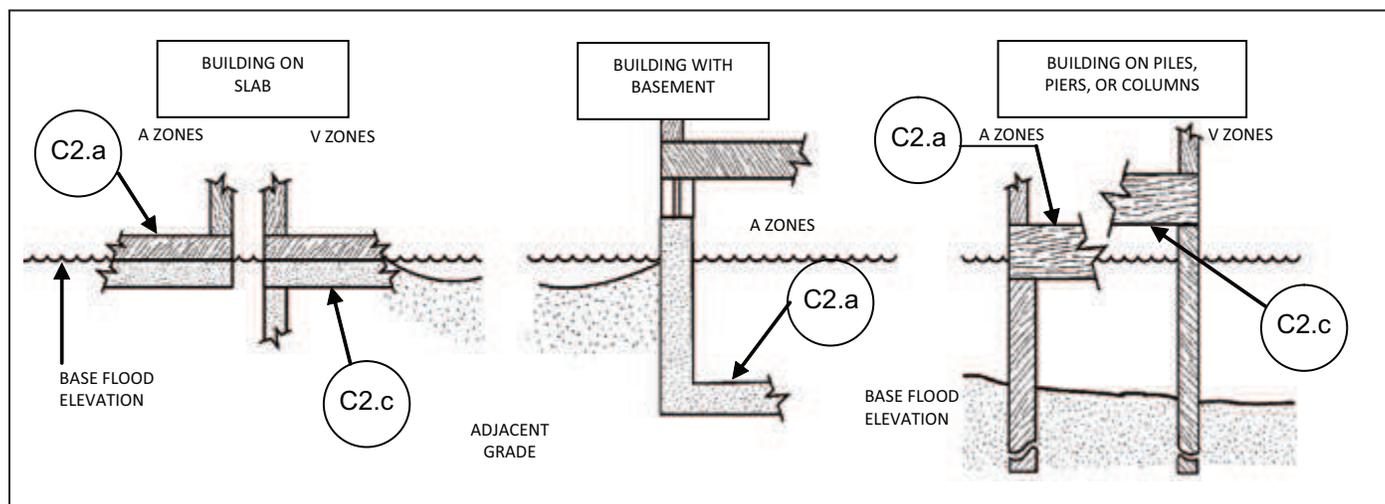
Item C1. Indicate whether the elevations to be entered in this section are based on construction drawings, a building under construction, or finished construction. For either of the first 2 choices, a post-construction Elevation Certificate will be required when construction is complete. If the building is under construction, include only those elevations that can be surveyed in Items C2.a–h. Use the Comments area of Section D to provide elevations obtained from the construction plans or drawings. Select “Finished Construction” only when all machinery and/or equipment such as furnaces, hot water heaters, heat pumps, air conditioners, and elevators and their associated equipment have been installed and the grading around the building is completed.

Item C2. A field survey is required for Items C2.a–h. Most control networks will assign a unique identifier for each benchmark. For example, the National Geodetic Survey uses the Permanent Identifier (PID). For the benchmark utilized, provide the PID or other unique identifier assigned by the maintainer of the benchmark. For GPS survey, indicate the benchmark used for the base station, the Continuously Operating Reference Stations (CORS) sites used for an On-line Positioning User Service (OPUS) solution (also attach the OPUS report), or the name of the Real Time Network used.

Also provide the vertical datum for the benchmark elevation. All elevations for the certificate, including the elevations for Items C2.a–h, must use the same datum on which the BFE is based. Show the conversion from the field survey datum used if it differs from the datum used for the BFE entered in Item B9 and indicate the conversion software used. Show the datum conversion, if applicable, in the Comments area of Section D.

For property experiencing ground subsidence, the most recent reference mark elevations must be used for determining building elevations. However, when subsidence is involved, the BFE should not be adjusted. Enter elevations in Items C2.a–h to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico).

Items C2.a–d Enter the building elevations (excluding the attached garage) indicated by the selected building diagram (Item A7) in Items C2.a–c. If there is an attached garage, enter the elevation for top of attached garage slab in Item C2.d. (Because elevation for top of attached garage slab is self-explanatory, attached garages are not illustrated in the diagrams.) If the building is located in a V zone on the FIRM, complete Item C2.c. If the flood zone cannot be determined, enter elevations for all of Items C2.a–h. For buildings in A zones, elevations a, b, d, and e should be measured at the top of the floor. For buildings in V zones, elevation c must be measured at the bottom of the lowest horizontal structural member of the floor (see drawing below). For buildings



elevated on a crawlspace, Diagrams 8 and 9, enter the elevation of the top of the crawlspace floor in Item C2.a, whether or not the crawlspace has permanent flood openings (flood vents). If any item does not apply to the building, enter “N/A” for not applicable.

Item C2.e Enter the lowest platform elevation of at least 1 of the following machinery and equipment items: elevators and their associated equipment, furnaces, hot water heaters, heat pumps, and air conditioners in an attached garage or enclosure or on an open utility platform that provides utility services for the building. Note that elevations for these specific machinery and equipment items are required in order to rate the building for flood insurance. Local floodplain management officials are required to ensure that all machinery and equipment servicing the building are protected from flooding. Thus, local officials may require that elevation information for all machinery and equipment, including ductwork, be documented on the Elevation Certificate. If the machinery and/or equipment is mounted to a wall, pile, etc., enter the platform elevation of the machinery and/

or equipment. Indicate machinery/equipment type and its general location, e.g., on floor inside garage or on platform affixed to exterior wall, in the Comments area of Section D or Section G, as appropriate. If this item does not apply to the building, enter “N/A” for not applicable.

Items C2.f–g Enter the elevation of the ground, sidewalk, or patio slab immediately next to the building. For Zone AO, use the natural grade elevation, if available. This measurement must be to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico) if this certificate is being used to support a request for a LOMA or LOMR-F.

Item C2.h Enter the lowest grade elevation at the deck support or stairs. For Zone AO, use the natural grade elevation, if available. This measurement must be to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico) if this certificate is being used to support a request for a LOMA or LOMR-F.

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

Complete as indicated. This section of the Elevation Certificate may be signed by only a land surveyor, engineer, or architect who is authorized by law to certify elevation information. Place your license number, your seal (as allowed by the State licensing board), your signature, and the date in the box in Section D. You are certifying that the information on this certificate represents your best efforts to interpret the data available and that you understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001. Use the Comments area of Section D, on the back of the certificate, to provide datum, elevation, openings, or other relevant information not specified on the front.

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

Complete Section E if the building is located in Zone AO or Zone A (without BFE). Otherwise, complete Section C instead. Explain in the Section F Comments area if the measurement provided under Items E1–E4 is based on the “natural grade.”

Items E1.a and b Enter in Item E1.a the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the top of the bottom floor (as indicated in the applicable diagram) above or below the highest adjacent grade (HAG). Enter in Item E1.b the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the top of the bottom floor (as indicated in the applicable diagram) above or below the lowest adjacent grade (LAG). For buildings in Zone AO, the community’s floodplain management ordinance requires the lowest floor of the building be elevated above the highest adjacent grade at least as high as the depth number on the FIRM. Buildings in Zone A (without BFE) may qualify for a lower insurance rate if an engineered BFE is developed at the site.

Item E2. For Building Diagrams 6–9 with permanent flood openings (see pages 8–9), enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the next higher floor or elevated floor (as indicated in the applicable diagram) above or below the highest adjacent grade (HAG).

Item E3. Enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico), in relation to the highest adjacent grade next to the building, for the top of attached garage slab. (Because elevation for top of attached garage slab is self-explanatory, attached garages are not illustrated in the diagrams.) If this item does not apply to the building, enter “N/A” for not applicable.

Item E4. Enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico), in relation to the highest adjacent grade next to the building, of the platform elevation that supports the machinery and/or equipment servicing the building. Indicate machinery/equipment type in the Comments area of Section F. If this item does not apply to the building, enter “N/A” for not applicable.

Item E5. For those communities where this base flood depth is not available, the community will need to determine whether the top of the bottom floor is elevated in accordance with the community’s floodplain management ordinance.

SECTION F – PROPERTY OWNER (OR OWNER’S REPRESENTATIVE) CERTIFICATION

Complete as indicated. This section is provided for certification of measurements taken by a property owner or property owner’s representative when responding to Sections A, B, and E. The address entered in this section must be the actual mailing address of the property owner or property owner’s representative who provided the information on the certificate.

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

Complete as indicated. The community official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Section C may be filled in by the local official as provided in the instructions below for Item G1. If the authorized community official completes Sections C, E, or G, complete the appropriate item(s) and sign this section.

Check **Item G1** if Section C is completed with elevation data from other documentation, including elevations obtained from the Community Rating System Elevation Software, that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. Indicate the source of the elevation data and the date obtained in the Comments area of Section G. If you are both a community official and a licensed land surveyor, engineer, or architect authorized by law to certify elevation information, and you performed the actual survey for a building in Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/A1–A30, AR/AE, AR/AH, or AR/AO, you must also complete Section D.

Check **Item G2** if information is entered in Section E by the community for a building in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

Check **Item G3** if the information in Items G4–G10 has been completed for community floodplain management purposes to document the as-built lowest floor elevation of the building. Section C of the Elevation Certificate records the elevation of various building components but does not determine the lowest floor of the building or whether the building, as constructed, complies with the community's floodplain management ordinance. This must be done by the community. Items G4–G10 provide a way to document these determinations.

Item G4. Permit Number. Enter the permit number or other identifier to key the Elevation Certificate to the permit issued for the building.

Item G5. Date Permit Issued. Enter the date the permit was issued for the building.

Item G6. Date Certificate of Compliance/Occupancy Issued. Enter the date that the Certificate of Compliance or Occupancy or similar written official documentation of as-built lowest floor elevation was issued by the community as evidence that all work authorized by the floodplain development permit has been completed in accordance with the community's floodplain management laws or ordinances.

Item G7. New Construction or Substantial Improvement. Check the applicable box. "Substantial Improvement" means any reconstruction, rehabilitation, addition, or other improvement of a building, the cost of which equals or exceeds 50 percent of the market value of the building before the start of construction of the improvement. The term includes buildings that have incurred substantial damage, regardless of the actual repair work performed.

Item G8. As-built lowest floor elevation. Enter the elevation of the lowest floor (including basement) when the construction of the building is completed and a final inspection has been made to confirm that the building is built in accordance with the permit, the approved plans, and the community's floodplain management laws or ordinances. Indicate the elevation datum used.

Item G9. BFE. Using the appropriate FIRM panel, FIS Profile, or other data source, locate the property and enter the BFE (or base flood depth) of the building site. Indicate the elevation datum used.

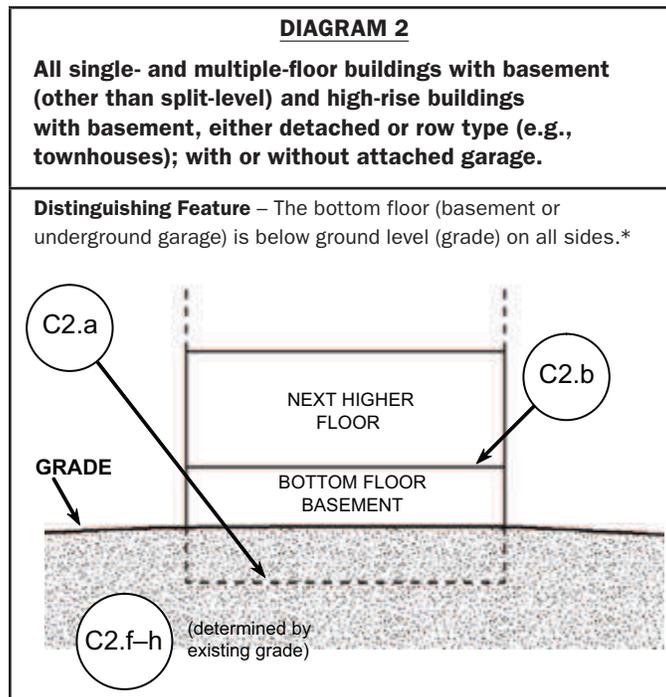
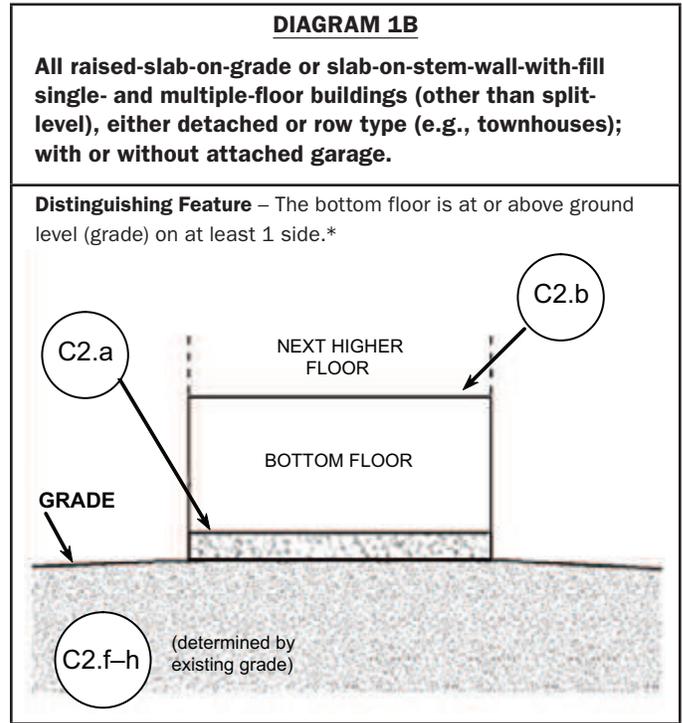
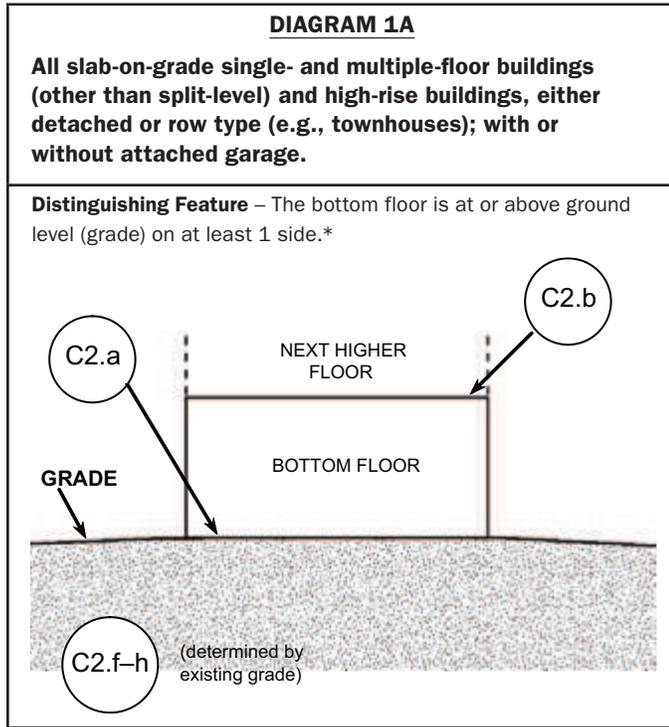
Item G10. Community's design flood elevation. Enter the elevation (including freeboard above the BFE) to which the community requires the lowest floor to be elevated. Indicate the elevation datum used.

Enter your name, title, and telephone number, and the name of the community. Sign and enter the date in the appropriate blanks.

Building Diagrams

The following diagrams illustrate various types of buildings. Compare the features of the building being certified with the features shown in the diagrams and select the diagram most applicable. Enter the diagram number in Item A7, the square footage of crawlspace or enclosure(s) and the area of flood openings in square inches in Items A8.a–c, the square footage of attached garage and the area of flood openings in square inches in Items A9.a–c, and the elevations in Items C2.a–h.

In A zones, the floor elevation is taken at the top finished surface of the floor indicated; in V zones, the floor elevation is taken at the bottom of the lowest horizontal structural member (see drawing in instructions for Section C).



* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

DIAGRAM 3

All split-level buildings that are slab-on-grade, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor (excluding garage) is at or above ground level (grade) on at least 1 side.*

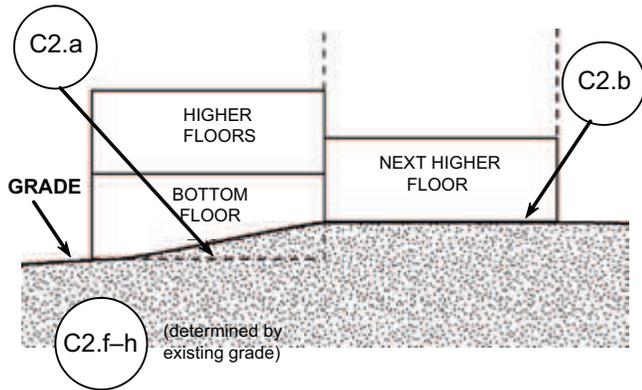


DIAGRAM 4

All split-level buildings (other than slab-on-grade), either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor (basement or underground garage) is below ground level (grade) on all sides.*

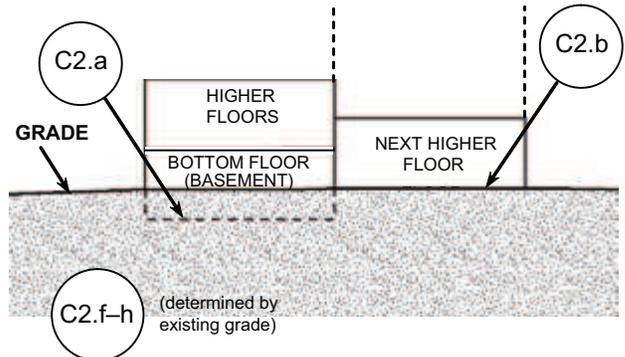


DIAGRAM 5

All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is open, with no obstruction to flow of floodwaters (open lattice work and/or insect screening is permissible).

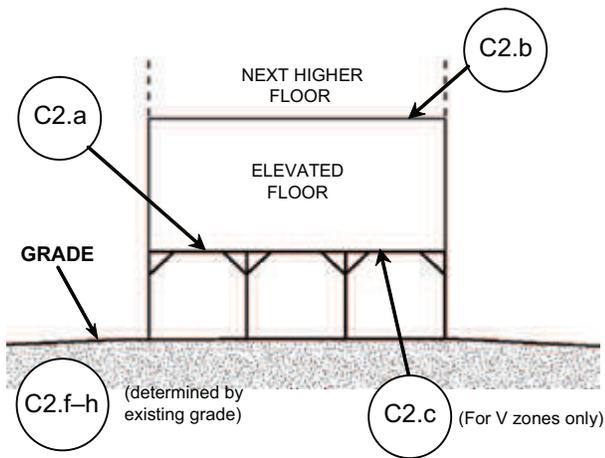
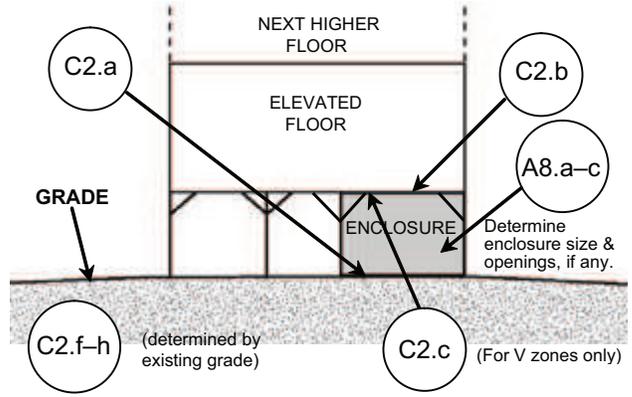


DIAGRAM 6

All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.



* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

** An "opening" is a permanent opening that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of 2 openings is required for enclosures or crawlspaces. The openings shall provide a total net area of not less than 1 square inch for every square foot of area enclosed, excluding any bars, louvers, or other covers of the opening. Alternatively, an Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES) must be submitted to document that the design of the openings will allow for the automatic equalization of hydrostatic flood forces on exterior walls. A window, a door, or a garage door is not considered an opening; openings may be installed in doors. Openings shall be on at least 2 sides of the enclosed area. If a building has more than 1 enclosed area, each area must have openings to allow floodwater to directly enter. The bottom of the openings must be no higher than 1.0 foot above the higher of the exterior or interior grade or floor immediately below the opening. For more guidance on openings, see NFIP Technical Bulletin 1.

DIAGRAM 7

All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least 1 side is at or above grade. The principal use of this building is located in the elevated floors of the building.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.

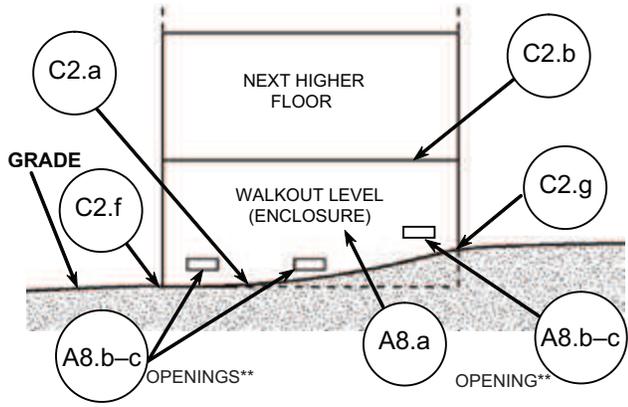


DIAGRAM 8

All buildings elevated on a crawlspace with the floor of the crawlspace at or above grade on at least 1 side, with or without an attached garage.

Distinguishing Feature – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A zones, the crawlspace is with or without openings** present in the walls of the crawlspace. Indicate information about crawlspace size and openings in Section A – Property Information.

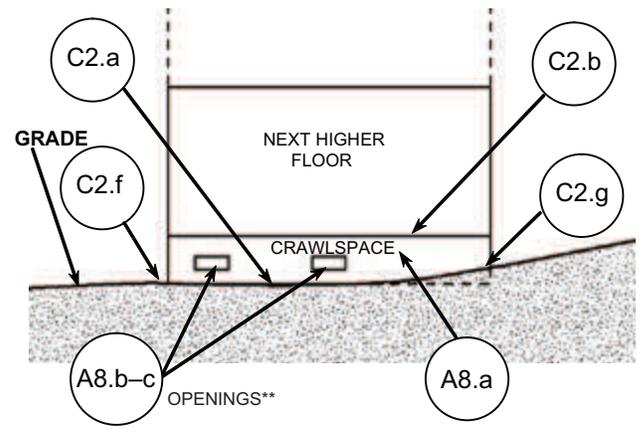
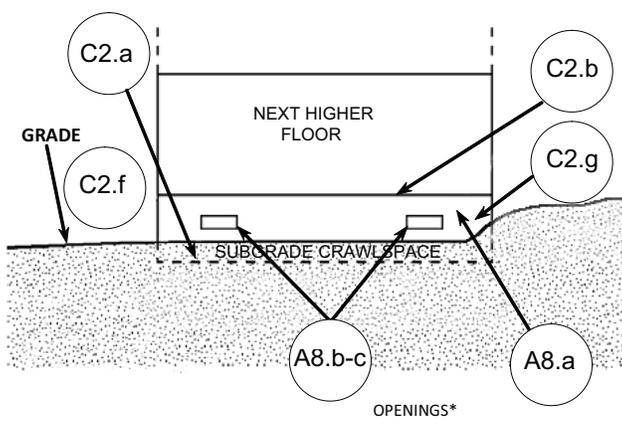


DIAGRAM 9

All buildings (other than split-level) elevated on a sub-grade crawlspace, with or without attached garage.

Distinguishing Feature – The bottom (crawlspace) floor is below ground level (grade) on all sides.* (If the distance from the crawlspace floor to the top of the next higher floor is more than 5 feet, or the crawlspace floor is more than 2 feet below the grade [LAG] on all sides, use Diagram 2.)



* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

** An "opening" is a permanent opening that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of 2 openings is required for enclosures or crawlspaces. The openings shall provide a total net area of not less than 1 square inch for every square foot of area enclosed, excluding any bars, louvers, or other covers of the opening. Alternatively, an Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES) must be submitted to document that the design of the openings will allow for the automatic equalization of hydrostatic flood forces on exterior walls. A window, a door, or a garage door is not considered an opening; openings may be installed in doors. Openings shall be on at least 2 sides of the enclosed area. If a building has more than 1 enclosed area, each area must have openings to allow floodwater to directly enter. The bottom of the openings must be no higher than 1.0 foot above the higher of the exterior or interior grade or floor immediately below the opening. For more guidance on openings, see NFIP Technical Bulletin 1.



CITY OF COLUMBIA, MISSOURI

COMMUNITY DEVELOPMENT

DEPARTMENT OF PLANNING AND DEVELOPMENT

(573) 874-7239

BUILDING AND SITE DEVELOPMENT

(573) 874-7474

OFFICE OF NEIGHBORHOOD SERVICES

(573) 817-5050

Application Date: _____

Name of Property Owner: _____

Address of Property Owner: _____

_____ Phone #: _____
City State Zip Code

Name of Developer: _____

Address of Developer: _____

_____ Phone #: _____
City State Zip Code

Name of Engineer: _____

Address of Engineer: _____

_____ Phone #: _____
City State Zip Code

Name of On Site Contact: _____ Emergency Phone #: _____

Address of Work: _____ In ROW: Private Property:

Description of Proposed Work: _____

Site Area (sf): _____ Area to be disturbed (sf): _____ Estimated Grading Quantity (cy) _____

Starting Date: _____ Estimated Days to Complete: _____

A Storm Water Pollution Prevention Plan (SWPPP) sealed by a professional engineer licensed in the State of Missouri must be with this application, if operating on greater than one acre, in accordance with Section 15-4(C).

All work is to be completed within thirty (30) days from the date of this permit unless otherwise permitted or an extension of time is granted by the Director. Extensions must be requested in writing a minimum of five (5) working days prior to the expiration of the permit.

Applicant hereby agrees to conduct all work in accordance with the laws and ordinances of the City of Columbia and the conditions of the permit. **The issued permit shall be posted on the job site at all times.**

Applicant's Printed Name

Applicant's Signature

City of Columbia, Missouri
Logging Permit

This permit authorizes _____ to perform logging activities on _____ from _____ to _____.

All work covered under this permit is to be in accordance with the attached permit application, the approved logging and tree preservation plans and specifications, and the following General Conditions:

General Conditions

1. The applicant agrees to hold the City of Columbia and its employees from all liability judgments, costs, expenses and claims growing out of damages of any nature whatsoever to any person or property arising out of performance or nonperformance of said work or existence of said improvements.
2. All costs incurred due to the issuance of this permit shall be borne by the applicant, the applicant's successors and assigns.
3. This permit does not relieve the applicant of the responsibility of obtaining other permits required by this or any other agency having jurisdiction. (i.e. Corps or Engineers, Missouri Department of Natural Resources, etc.)
4. Applicant agrees to keep a copy of the permit, permit application and approved plan on the job site while logging is occurring.
5. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) which are transported, stored or used for maintenance, cleaning or repairs shall be managed according to the provisions of RCRA and CERCLA
6. All paints, solvents, petroleum, products and petroleum waste products (except fuels) and storage containers (such as drums, cans or cartons) shall be stored such that these materials are not exposed to storm water. Sufficient practices of spill prevention, control and/or management shall be provided to prevent any spills of these pollutants from entering a water of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
7. The applicant shall notify by telephone and in writing the Department of Natural Resources, Water Pollution Control Program, Post Office Box 176, Jefferson City, MO 65102, 1-800-361-4827, of any oil spills or if hazardous substances are found during the prosecution of work under this permit.
8. Other _____

Approved: _____

Date _____

City of Columbia Arborist



City of Columbia, Community Development Department

Logging Permit (FORM LP-01)

Items to be addressed as part of Tree Removal/Timber Harvesting Plan

Required	Item
1	Name and address of property owner and applicant
2	Name and address of consulting forester assessing and marking the timber (if applicable)
3	Name and address of felling/harvesting contractor
4	Legal description of all property where tree removal is to take place
5	Proof of ownership of land where tree removal is to take place
6	Plan to be dated
7	Nature of the tree removal (e.g. Timber Stand Improvement, Selective harvest of mature timber)
8	Define the type of forest cover on site (approx species type and % canopy coverage)
9	Define the type of timber to be felled (species and size)
10	Area of climax forest and area of site
11	Percentage of over-story canopy of climax forest to remain
12	Methods to be used for felling trees
13	Methods to be used for removing timber from site and dealing with crown/tree tops
14	Erosion control measures to be used adjacent to protected natural features (e.g. streams and wetlands)
15	List all types of machinery to be used on-site for felling/harvesting/removal
16	Timetable for tree removal/harvesting
17	A scaled map should be provided showing the site and including:
	a. Location of the property within the city (Locator map)
	b. Boundaries of property should be distinct
	c. Location and extent of forested areas
	d. Area of property where felling/harvesting is to take place
	e. Location of any on-site cleared logging roads
	f. Location of any protected natural features(e.g. streams or wetlands)
	g. Access points for machinery, vehicles and timber removal from the property to the Public Right of Way

Address _____ Zip _____ Subdivision _____

Owner Contact: _____ Phone: _____ Mobile: _____ Fax: _____

Contractor Contact: _____ Phone: _____ Mobile: _____ Fax: _____

# Tree	Botanical or Common Name	DBH* or Circumference	Reason for Removal

I have read and understand the above information.

Signature of Property Owner or Contractor Date ISA Certification # (if applicable)

*Diameter at breast height (DBH) measured at 4.5' above the ground line (please contact the City Arborist for verification of DBH for multi-stemmed trees)

Inspections

Introduction

The issuance of a building permit gives the permit holder the right to proceed with the construction project. Construction is limited to the scope of the project delineated on an approved set of plans, a permit or both. At various stages of construction inspections are required. What is required to be inspected, when an item would be required to be inspected, and the timeliness of an inspection are dependent on the project.

Building and Site Development, Fire Department, and Health Department team members perform inspections.

Building and Site Development will not issue a Certificate of Occupancy (CO) until all departments have approved their inspections as required. It is the contractor's/permit holders responsibility to know what inspections are required and to call for inspections at the appropriate times.

Following are examples of activities that the city will inspect and contact numbers:

Important Numbers:

Building and Site Development (573-874-7474)

Erosion and Sediment Control

Public streets

Tree preservation

Building or structure clearing and grubbing

Drive approaches and sidewalks

Grading and engineered fill

Stormwater best management practices

Foundation systems

Framing-including above ceiling-before concealment

Fire resistive rated walls, ceilings, beams, columns and floors

All electrical, plumbing or mechanical systems and components (prior to concealment)

Electric and Gas tags

Exhaust hoods and grease duct systems

Final Building inspection

Final Site inspection

Landscaping

Fire Department-Contact the Fire Department for these Inspections (573-874-7556)

Fire/smoke alarm and detection system

Fire protection system (sprinklers)

Fire apparatus access route

Fire pump

Fire command center

Hood suppression

Health Depart.-Contact the Health Department for these Inspections (573-874-7346)

New or remodeled food service establishments
Food preparation equipment
Ware washing equipment
Refrigeration equipment
Refrigeration temperature
Food storage
Swimming pools
Tattoo parlors

Scheduling Building and Site Development Inspections

If calling for a Building and Site Development inspection the number is (573)874-7474. Calls received by noon may be scheduled for the same day PM inspection or later. Calls received by 5:00 PM may be scheduled for the following business morning inspection or later. The following information is required:

- Permit number and address
- Type of inspection(s) you are requesting
- Date and half- day increment desired--AM or PM (assumption will otherwise be the following business half-day).
- Contact name and phone number for the inspector, and if a “call on the way” is necessary.

Inspections may also be scheduled online. The same information as above is required. NOTE: Although the online system allows the current day to be chosen, the inspection will be performed in the next half-day increment from the time it is scheduled.

Use this link to [Schedule inspections online](#).

Responding to Inspection Requests

Building Inspectors sort their work at the beginning of each day according to travel time, appointment times and the complexity of the job.

When the inspector arrives at the job site, the following expectations apply:

- The site will be clearly identified by an address
- The permit is posted in plain view
- The site is readily accessible
- The work is ready to be inspected

Failure to provide for these items could result in the inspection not being made, and you could be charged a \$35 failed inspection fee. A second failed inspection results in a \$75 fee. If the inspection is approved the inspector will sign off on the permit posted onsite (It is required to have the permit posted onsite). If the inspection is disapproved an

inspection report noting deficiencies will be left onsite. A failed inspection requires re-inspection before concealment and before moving on to the next stage of construction.

Inspection reports are also entered into the City information system and can generally be viewed online within a day of the inspection using the online permit system and choosing inspection status.

Special Inspections

The building code mandates that the owner, or registered design professional in responsible charge acting as the owner's agent, employ qualified third party agencies to inspect certain construction processes. These are identified as "special inspections" by the code. Soil, excavation, steel, masonry, concrete, retaining walls, and sprayed fire-resistive materials are examples of construction processes that require special inspection by a qualified third party. In addition special inspections must be performed for the accessible route, lighting, boiler, and elevator certifications.

The building official is responsible for approving the special inspection program submitted by the design professional and may require a preconstruction conference to review the program with the construction team. Throughout the course of the project special inspections shall be performed and reports prepared. Work that is not in conformance shall be immediately brought to the contractor's attention for correction. If they are not corrected, the discrepancies shall be brought to the attention of the building official and the registered design professional.

A final special inspection report, indicating that all prior special inspection issues are complete, is required prior to performing the building final inspection.

Inspection of Fire Related Issues

Fire safety systems must be inspected by the Fire Department. Call (573) 874-7556 to schedule an inspection. The Building Safety Division works closely with the Fire Department to ensure compliance with local fire protection ordinances.

Inspection of Restaurants, Bars, and Swimming Pools

The inspection of restaurants, bars and swimming pools for licensing is handled by the Health Department. Call (573) 874-7346 to schedule an inspection.

Inspection of Sewer Taps

When a tap is being made on the sewer main, an inspection by both the Sanitary Sewer Utility (573-445-9427) and the Building and Site Development Division (573-874-7474) is required. These inspections are required before concealment. The connection of

lateral's to existing wye's in the sewer main do not require camera inspection by the Sanitary Sewer Utility.

Building Water Connection Inspection

The Water & Light department will also perform a building water connection final inspection to verify meters and proper backflow prevention. Call (573) 823-3115 to schedule the tap or inspection. This inspection is required before a Certificate of Occupancy is issued.

Final Inspection

When the building or structure is complete, it is necessary to schedule a final inspection. What the final inspection entails is dependent on the scope of the project. In many instances, a number of tests and certifications need to be performed as part of the final inspection. The Fire Department needs to have approved all of the fire safety systems prior to conducting the final inspection. Certifications such as accessible route and lighting may be required prior to issuance of a Certificate of Occupancy. A landscaping final **and** a yard final must be scheduled if any site work was part of the project.

Obtaining a Temporary Certificate of Occupancy

A Temporary Certificate of Occupancy (TCO) allows the structure or building to be used or occupied on a temporary basis, prior to the project being completed, and is at the discretion of the Building Official. Typically, a TCO will not be issued on a single or a two family structure or on an individual commercial suite. If a TCO is sought please advise staff when scheduling final inspections. In order to obtain a TCO, you must obtain all final inspections, including yard and landscaping, as a condition of the building permit. After these inspections have been completed, a decision will be made as to whether a TCO can be issued. Note, before a TCO can be issued, the Inspectors will ensure that all life safety items, public improvements and site requirements have been addressed and that stipulations pertaining to the issuance of a TCO have been completed.

Life safety items can be numerous. Generally they include the following:

- Fire alarm system is fully functional
- Fire sprinkler system is fully functional
- All smoke detectors are tested and fully functional
- All exits are free and clear
- All exit doors are working properly
- Site is safe for pedestrian and vehicular traffic
- Site has no open excavations
- Site has no incomplete electrical systems

Often a bond must be provided to receive a TCO. The building official will establish a bond amount based on the work remaining for completion of the structure and the site.

Once the building official has approved a TCO you may pick up the certificate at City Hall.

If desired a pre-occupancy meeting can be scheduled with BSD and the Fire Department to ensure all parties understand what is required before final inspections and occupancy. Prior to the meeting, the permittee shall provide a drawing and schedule identifying the locations and dates they intend to occupy each portion of the building.

Renewal of Temporary Certificates of Occupancy

TCO's are granted for a limited time. The intent is to allow you to use the building while the project is being completed. We expect you to be moving towards completion of the project and to call for another final inspection when you are ready. If for some reason you cannot complete the project by the stated expiration date, you need to apply for a renewal of the certificate. Talk with the Building Regulations Supervisor to begin your renewal process.

Obtaining a Certificate of Occupancy

Once you have received a "satisfactory" final inspection, the project file will be closed out and a Certificate of Occupancy will be available at City Hall.



CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT

APPLICATION FOR EXTENDED WORK HOURS

Allowable Work Hours:
Monday thru Friday 7:00 A.M. to 7:00 P.M.
Saturday 9:00 A.M. to 5:00 P.M.
No Work on Sunday

Permit may be granted for a period of time not to exceed three (3) days and may be renewed for periods not to exceed three (3) days on an emergency basis only as determined by the director of public works.

FAILURE TO POST AN APPROVED COPY OF THIS DOCUMENT MAY RESULT IN VIOLATION OF CITY ORDINANCE 16-265

Applicant: _____

Applicant's Address: _____

Telephone #: _____

E-mail Address: _____

Type of Work To Be Completed: _____

Work Location: _____

Dates & Time Of Extended Work Requested: _____

Why Extended Work Hours Are Needed: _____

Name and Address of Material Supplier: _____

Extended Hours Needed For Material Supplier And Specific Start Up Time: _____

Applicant's Signature: _____

Date: _____

Reviewed By _____

Date _____

David A. Nichols, P.E.
Director of Public Works

Date _____



City of Columbia
Community Development
Departmental Policy

Subject **Erosion Control and Land Disturbance Violation Enforcement**

Purpose: To provide clear direction to Community Development code enforcement personnel, contractors and the general public as to the policies and procedures this department will follow in the inspection and regulation of sites subject to the provisions of Chapter 12-A, Chapter 24-9 and City of Columbia Building Codes as related to prevention of off-site erosion and protection of water quality in the jurisdictional area of Columbia.

Discussion: Effective erosion control is an essential element in protecting water quality. Success depends on the adoption of effective standards and best management practices, an educated community as to the need and purpose of those standards and clear and consistent implementation of the regulations by departmental enforcement personnel. Erosion control measures are required with land disturbance permits and on all building site plans. In all cases, erosion must be maintained on the site of the subject property or be subject to the provisions of Chapter 24-9 which states; “ *It shall be unlawful for any person to place, deposit or dump or to cause or allow the placing, depositing or dumping, washing or eroding of any earth, dirt, rock, clay, sand, shale, building material, debris or rubbish from property or vehicles owned or controlled by them, onto any street, sidewalk or thoroughfare within the city or upon the property of any other person without that person's permission.*”

The following policy describes the process to be followed in regulating erosion control in the City of Columbia.

Policy:

A. VIOLATIONS OF LAND DISTURBANCE PERMITS

Type I- Related to Erosion Control Measures When There Has Been No Storm Event And There Is No Imminent Threat To Public Health, Safety or Welfare.

A. A written notice of violation is to be sent to the permit holder within 24 hours of discovery of the violation specifying the necessary corrective action and the time frame for compliance.

B. If corrective action has not occurred as specified by the first notice of violation and there has been no extension granted, the permit holder is to be sent a **second notice of violation by**

certified mail advising that if corrections are not made within a specified limited number of days, a stop work order will be issued and the matter will also be referred to the prosecutor as a violation of Chapter 12-A.

C. If corrective action has still not occurred, a third notice of violation will be issued by certified mail, a written stop work order will be issued for all activities other than those required to bring the project into compliance, all permits will be revoked until the site is in compliance and the matter will be referred to the prosecutor as a separate violation of Chapter 12-A.

D. When there have been more than two notices of violations of the conditions of a land disturbance permit issued on the same permit, each subsequent notice of violation of that permit will follow the procedure outlined in Paragraph C above.

Type II- Related to Erosion Control Measures When There Has Been A Storm Event And Off Site Erosion Has Occurred. (Note: This situation may result in separate but parallel enforcement actions of Chapter 12-A and Chapter 24-9 but also may apply to situations where no land disturbance permit is required)

A. When the off-site erosion is minimal and does not pose an immediate threat to public health, welfare and safety, a notice of violation of the land disturbance permit will be issued to the permit holder and a notice of violation of Chapter 24-9 will be issued to the property owner immediately upon discovery of the violation. If clean-up and corrective action does not occur as required by the notice of violation, Charges of violation of Chapter 24-9 will be filled with the prosecutor and the permit holder is to be sent a **second notice of violation by certified mail** advising that if corrections are not made within a specified limited number of days, a stop work order will be issued and the matter will also be referred to the prosecutor as a violation of Chapter 12-A. Thereafter, the process for enforcement of Chapter 12-A will be as described for Type I situations.

B. When the off-site erosion is minimal and does not pose an immediate threat to public health, welfare and safety, but there has been a prior notice of violation on the same property within the past year, charges for violation of Chapter 24-9 will be filed with the prosecutor immediately and the permit holder is to be sent a **notice of violation by certified mail** advising that if corrections are not made within a specified limited number of days, a stop work order will be issued and the matter will also be referred to the prosecutor as a violation of Chapter 12-A. Thereafter, the process for enforcement of Chapter 12-A will be as described for Type I situations.

C. When the off-site erosion is significant and substantially affects property not associated with the area covered by the permit and/or results in unsafe conditions on a public street or right of way, charges of violation of Chapter 24-9 are to be filed with the prosecutor and the following is to occur:

1. A notice of violation of the land disturbance permit is to be hand delivered to the

permit holder or his representative as soon as possible or in the event the permit holder cannot be located, a notice by certified letter is to be sent. Additionally, a notice of violation of Chapter 24-9 is to be hand delivered or sent by certified mail to the property owner or his representative advising them that charges have been filed and directing them as to actions that must be taken for clean-up.

2. If appropriate corrective action has not occurred or been initiated within 24 hours of the event, or if the event is of such significance that delays cannot be tolerated, a stop work order for all activities other than those necessary to correct the problem will be issued and the Director will make a determination as to whether to implement procedures outlined in Section 24-9 b. c. d. & e.
3. If the off-site erosion is the result of a previously cited violation of the land disturbance permit, i.e., a notice of violation had been issued for the specific deficiency that, had it been corrected, no off site erosion would have occurred, charges of violation of Chapter 12-A against the permit holder will also be filed with the prosecutor, a stop work order for all activities other than those necessary to clean up the site and correct the problem will be issued and the land disturbance permit shall be revoked. This provision will not apply if the permit holder was in the process of complying with the first notice of violation but was unable to complete due to conditions beyond his control such as weather.

Type III- Related To Tree Preservation Requirements of Chapter 12-A.

Any violation of the tree preservation requirements that result in unapproved removal of climax forests shall cause a stop work order to be issued and charges filed with the prosecutor. Work shall not be permitted to continue until adequate safeguards are in place to assure protection of any remaining trees and a new plan is approved.

B. EROSION CONTROL VIOLATIONS ASSOCIATED WITH BUILDING

It is a requirement of the City of Columbia that all constructions sites have devices to control erosion and sediment from leaving the site at **ALL** times. The permit applicant is the responsible party for compliance.

1. For failure to install and maintain proper erosion control measures on a site a notice of violation will be issued and no inspections of any type will be approved until the violation is corrected.
2. For the second violation on the same site, a notice of violation will be issued and charges filed with the city prosecutor.
3. If the failure to install and maintain proper erosion control devices has resulted in the depositing of mud or debris on a public street as prohibited by Chapter 24-9 of the

City's Code of Ordinances, no further work will be allowed on the permitted project until the material is removed from the street.

4. If more than two violations for failure to maintain proper erosion control devices occur under the same permit for a site, the permit may be revoked and charges filed with the city prosecutor. No inspections will be made until the violation is corrected.
5. All notices of violation will result in the assessment of a fee for reinspection.
 - First notice: \$35.00
 - Additional notices: \$75.00

Effective Date: April 11, 2016

Energy Efficiency Certificate

Insulation Rating		R Value
Ceiling/Roof		
Walls	Frame	
	Mass	
	Basement	
	Crawl Space	
Floors	Over Unconditioned Space	
	Slab Edge	
Ducts	Outside Conditioned Spaces	

Glass & Door Rating	NFRC U-Factor	NFRC SHGC
Window		
Opaque Door		
Skylight		

Heating & Cooling Equipment	Type	Efficiency
Heating System		AFUE /
Cooling System		SEER /
Water Heater		ER /

Indicate if the following have been installed (an efficiency shall not be listed):

- Electric Furnace
 Gas-Fired Unvented Room Heater
 Baseboard Electric Heater

Designer _____
 Builder _____
 Date _____

I certify that the blower door test found a leakage rate of 3 ACH50 or less.

Name _____
 Company _____
 Date _____

COMPANY NAME:
LICENSE HOLDER NAME:
PERMIT NUMBER #

JOB ADDRESS:

507.16 Performance test.

A performance test shall be conducted upon completion and before final approval of the installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section 507.13, makeup airflow required by Section 508, and proper operation as specified in this chapter. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.

507.16.1 Capture and containment test.

The permit holder shall verify capture and containment performance of the exhaust system. This field test shall be conducted with all appliances under the hood at operating temperatures. Capture and containment shall be verified visually by observing smoke or steam produced by actual or simulated cooking, such as with smoke candles, smoke puffers, etc.

Hoods

<input type="checkbox"/> Hood (1) Exhaust CFM _____	MUA CFM _____
<input type="checkbox"/> Hood (2) Exhaust CFM _____	MUA CFM _____
<input type="checkbox"/> Hood (3) Exhaust CFM _____	MUA CFM _____
<input type="checkbox"/> Hood (4) Exhaust CFM _____	MUA CFM _____
<input type="checkbox"/> Hood (5) Exhaust CFM _____	MUA CFM _____

I CERTIFY THAT THE ABOVE LISTED HOOD (S) HAVE BEEN TESTED AND COMPLIES WITH SECTIONS 507.16 AND 507.16.1 OF THE INTERNATIONAL MECHANICAL CODE AS DESCRIBED IN THE AFORE MENTION CODE SECTIONS.

Authorized Agents Signature: Date:

(Mechanical Contractor)