ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

City of Oakdale
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Updated: November 10, 2022

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INTRODUCTION

These guidelines were established to provide a complete and detailed plan development process for both developers and the City. They incorporate State and Federal laws, State building codes, City codes, and engineering best practices. The process is intended to gather necessary information up front in order to streamline the approval process and to minimize the need for change orders and corrective work later on.

Development plans must take into consideration the following:

- Land use
- Soil types
- Existing topography
- Building setbacks
- Vegetation
- Relationship to adjoining properties
- Locally adopted engineering guidelines for the community.

A majority of this information is available on the City's website or at City Hall. The following standards were developed using the elements noted above, while taking into consideration the conditions and regulations that exist in Oakdale, and the experience of City Staff.

SITE PLAN ANALYSIS EXHIBIT

The Site Plan Analysis Exhibit is a graphical representation of existing physical features of the development site. This information is necessary in developing plans that respect the natural features of the area, including the needs of flora and fauna.

Site Plan Analysis Exhibit Required

The subdivider shall submit a site plan analysis exhibit which is ArcView compatible and uses the Washington County Coordinates System (one electronic version, and one paper copy), prepared and certified by a Registered Land Surveyor, and includes the following:

A) Site Conditions: An analysis of the existing site conditions, including the development site and 150 feet of the abutting properties of record, or as authorized by the adjoining land owner, will be presented in graphic format which indicates at a minimum:
   1) Topographic map with 2 foot contours (or less), a slope analysis, a north arrow, and the date of survey.
   2) Location and extent of tree cover, existing easements, pipelines, and power lines.
   3) Location and extent of delineated wetlands and other water bodies.
   4) Significant rock outcropping.
   5) Existing drainage patterns.
   6) Soil conditions as they affect development:
      a) Soil borings and a map of their locations, as well as:
         1. Soil profile with elevations and soil types.
         2. Static water levels.
         3. Seasonal high water table elevations.

7) Other information considered relevant by the Developer or ultimately requested by the Planning Commission and City Council.

B) Schematic drawings of the proposed development concept.

C) Proposed location and appropriate allocations of land expressed as a percent of the total project area, as well as in acres. Indicate the following uses as applicable:
   1) Residential.
   2) Common open space.
   3) Public open space.
   4) Streets.
   5) Commercial.
   6) Industrial or office.

D) Plans indicating the following:
   1) All right-of-way elements, both pedestrian and vehicular.
   2) All easements and their purpose.
   3) All natural open spaces.
   4) Proposed grading.
   5) Proposed landscaping.
   6) Typical dimensions to be included.

E) A staging plan for any project involving more than one construction season setting forth the anticipated chronological order of construction.

PRELIMINARY PLAT EXHIBITS

Required Exhibits

The subdivider shall submit two copies of the preliminary plat exhibit (including one ArcView compatible electronic version using the Washington County Coordinates Program; and one 11 x 17 or larger paper copy), which includes the following individual exhibits:

A) Name, address, phone number of the:
   1) Owner and the Owner's designated Contact Person.
   2) Developer.
   3) Site Planner.
   4) Registered Land Surveyor.
   5) Registered Civil Engineer.
   6) Property owners within 500 feet of the boundary of the plat.

B) Legal descriptions of the property, the acreage of the proposed subdivision, the date of preparation and the north arrow.

C) A Proposed Construction Grading Plan, with contours of 2 feet or less, indicating specific locations and methods of erosion and sediment control, as well as a Storm Water Pollution Prevention Plan (SWPPP) prepared in compliance with the MPCA's Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php/Main_Page).

D) A proposed Final Grading Plan, with contours of 2 feet or less. The plan shall indicate block grading types, lot grading types, and minimum basement elevation for each block as determined by the high water table and as described in the Land Planning Data Sheet Handbook 4140.3, prepared by the United States Department of Housing and Urban Development, dated April 1973 (https://www.hud.gov/sites/documents/41403HSGH.PDF).

E) For stormwater treatment facilities and wetlands, indicate the normal and high water elevations, the emergency overflow elevation and location.

F) Existing watermains, stormsewers, and sanitary sewers (including invert elevations); also the location of existing streets, property lines, easements, water bodies, streams, and other pertinent features to a distance of 100 feet beyond the plat.

G) Preliminary street and utility plans indicating the proposed placement of watermains, stormsewers, and sanitary sewers (including invert elevations).

H) Lot and block arrangement and numbering system.

I) Proposed name of subdivision (which shall not duplicate nor be similar in pronunciation to the name of any plat previously recorded with Washington County).

J) The boundary of the proposed subdivision with angle and/or bearings and distances, which are accurate within a tolerance of 1 foot in 7,500.

K) If the preliminary plat is a re-arrangement or a re-plat of any plat of record, lot and block arrangement of the original plat, its original name and all roadways of said plat, its original name and all roadways of said plat shall be shown by dotted or dashed lines.

GENERAL DESIGN CONSIDERATIONS

Developers should be aware that the State has designed stormwater jurisdictions to be overlapping; therefore, a developer may need several stormwater permits for the same project. The following attempts to list all of these permit types, but is not necessarily an exhaustive list.

City Permit Information

A City of Oakdale grading permit is required for any activities that:

A) Will disturb at least 500 square feet of land and/or move 20 cubic yards of material.

B) Is adjacent to wetlands, ponds, and/or drainage easements.

C) Will alter the existing drainage pattern on the property.

Watershed District Permit Information

There are three separate Watershed District's within the City, they require permits for:

A) Projects in the "*Valley Branch Watershed District"* (*VBWD*) that meet one or more of the following:
   1) Will result in a land disturbing activity or land development of 1 acre or more,
   2) Alters the underlying soils an area of 6,000 square feet or more,
   3) Are within the waters and floodplain of the VBWD,
   4) Result in a discharge of municipal or industrial stormwater or wastewater to a surface water drainage system,
   5) All subdivisions, plats, developments, and lot line modifications,
   6) Result in lake stream, wetland, or pond augmentation, or
   7) Impacts a wetland.

B) Projects in the "*South Washington Watershed District"* (SWWD) that will result in a land disturbing activity or land development of 1 or more acres, add a new connection to the District's MS4, propose augmentation, or result in a diversion of surface water to a receiving water.

C) Projects within the Ramsey Washington Metro Watershed District (RWMWD) that will result in a land disturbing activity or land development of 1 or more acres.

State NPDES Permit Requirements

A permit from the MPCA is required for construction activity that results in land disturbance of equal to or greater than 1 acre. A permit is also required for routine maintenance that results in land disturbance of equal to or greater than 5 acres. Projects that propose to disturb over 50 acres require a 30 day lead time for the MPCA to review your SWPPP.

Water Quality Treatment and Volume Control Requirements

A) Projects in the *RWMWD*, must provide infiltration or filtration Best Management Practices (BMPs) that treat 1.1 inches of rainfall over the impervious areas of the project. BMPs that do not provide infiltration must provide additional treatment capacity based on the District's Alternative Compliance Sequencing.

B) Projects in the *SWWD,* must provide 1 inch water quality treatment over the new impervious surface area, and maintain the annual average existing conditions infiltration capacity of the site. Projects must also result in a net reduction in TSS and TP. Some projects may have TP limits based on the downstream water body. See Table 7.3.3 in the SWWD Rules (page 22).

C) Projects in the *VBWD*, must capture and retain 1.1 inches of runoff over the new or reconstructed impervious areas. In some specific instances, linear projects and projects with restrictions may have alternative requirements.

D) For projects or portions of projects not subject to item A thru C, water quality treatment shall be provided that achieve 90% removal of Total Suspended Solids (TSS) and 60% removal of Total Phosphorus (TP) on an annual basis using a standard NURP particle size distribution in the analysis. The runoff volume shall be determined by evaluating separate sub-catchment areas for the pervious and impervious surfaces under assumed fully developed watershed conditions.

Stormwater Mitigation Requirements

Projects that cannot provide cost-effective stormwater treatment on-site, may provide TSS and/or TP treatment off-site, provided they meet the following requirements:

A) Meet rate control requirements on-site.

B) The off-site location is selected using the following order of preference:
   1) Somewhere that will provide stormwater treatment to runoff from the site and will benefit the same receiving water,
   2) Somewhere within the same DNR catchment area as the site,
   3) Somewhere within an adjacent DNR Catchment area upstream from the site, or
   4) Somewhere else within the City.

C) Stormwater treatment must be met by a structural stormwater Best Management Practice (BMP) that is new, retrofitted, or was previously designed to meet the current standards on a regional basis.

D) Mitigation must be completed within 24 months of the start of construction of the site.

E) The party providing permanent maintenance must be determined and documented.

F) For projects that do not trigger State or Watershed permits and result in an increase in the volume of stormwater runoff, payment may be made to the City's Surface Water Management Fund in an amount determined by City Code Chapter 5, Section 5-6.

Rate Control Requirements

A) No increase in peak discharge may result from a proposed project for the 2, 10, and 100-year rainfall events, nor the 100-year, 10-day snow-melt event. Variances ***may*** be allowed if computations can be provided which demonstrate no adverse downstream impacts. If the City finds

the calculation methodology to be inconsistent with City Standards, and the results are significantly different from the City's - then the City results shall control. Cumulative storm depths for the required events are:

1) 2-Year Rainfall Event = 2.8 inches
2) 10-Year Rainfall Event = 4.2 inches
3) 100-Year Rainfall Event = 7.4 inches
4) 10-Day Snowmelt Event = 7.2 inches

B) For projects located in the *SWWD*, in addition to the rate control standards above, the peak stormwater discharge rates to Woodbury at I-94 (from Lake Elmo and Oakdale) shall be limited to ≤ 406 cubic feet per second for a 6.3 inch rainfall event.

C) No project shall result in an adverse increase in the flowrate of stormwater being discharged into an adjacent city.

Wetlands/Storm Water Ponds

A) Any work within a wetland, surface water, or FEMA designated floodplain, must obtain applicable permits from the City, Watershed District, DNR, and Corps of Engineers prior to commencing and construction, grading, clearing or filling activity.

B) Wetlands and stormwater treatment areas shall be platted as "Outlots" to be deeded to the City, and have a minimum access width of 15 feet. Outlots shall be sized to encompass all delineated wetland limits, and their required buffer widths found in the Wetland Requirement section below. Outlots shall also encompass the 100 year flood elevation for the wetland or stormwater treatment area, and where feasible, be extended to public right-of-way for access purposes.

C) Any stormwater treatment areas not within an Outlot deeded to the City, must be covered by a maintenance agreement between the landowner and the City that allows the City to access and maintain the treatment area if necessary. See an example maintenance agreement in Appendix D.

Wetland Requirements

A) Wetland alteration will only be allowed with the approval and receipt of appropriate permits and approvals from the City, the appropriate Watershed District, the Department of Natural Resources, and the U.S. Army Corps of Engineers.

B) Water level fluctuations (peak elevation and duration) for wetlands shall be managed in accordance with the specific watershed organization requirements.

C) Buffer Requirements: The following no-disturbance buffer setbacks apply to projects within the applicable Water District:

1) *RWMWD's* wetland mapping is available at www.rwmwd.org.

Wetland Class	Average Buffer Width (feet)	Minimum Buffer Width (feet)
Manage A	75	37.5
Manage B	50	25
Manage C	25	12.5
Storm Pond	10	10

2) Wetlands that are identified in Historic Surface Water Management plans as integral to stormwater conveyance and management under full development may be granted a variance from *SWWD's* wetland standards. Wetland mapping is available at www.swwdmn.org

Wetland Class	Wetlands <1 acre Buffer Width (feet)	Wetlands >1 acre Buffer Width (feet)
Protect	75	100
Manage I	50	75
Manage II	25	50

3) *VBWD* requires a minimum 16.5 foot buffer around a delineated wetland or the Ordinary High Water (OHW) level, whichever is greater in elevation. The following average buffers and monument requirements also apply.

Wetland Class	Average Buffer Width (ft)	Monument Required at Buffer Edge
A – Preserve	60	Yes
B – Manage 1	40	Yes
C – Manage 2	30	Yes
D – Manage 3	25	No

Storm Water Facility Design Criteria

The City gives highest preference to infiltration and other green infrastructure techniques and practices, and reasoning must be given if they will not be used.

A) All hydrologic data and computations shall be based on NRCS (formerly SCS) methodology. Computer modeling may be completed using HydroCAD, TR20/TR44, SWMM or a comparable City-approved modeling software.

B) An emergency overflow spillway shall be identified and designed to convey storm flows from events greater than the 100-year event. Overflow areas to be protected with "Enkamat" or similar reinforcement erosion control methods.

C) An access shall be provided for future access and maintenance or stormwater facilities, with a minimum width of 8 feet and a grade no greater than 10%.

D) The facility design must provide adequate live storage to provide protection from the design storm, and comply with the minimum building elevation standards in Appendix B of this Plan. Minimum building elevation is defined as the lowest slab elevation for a home or building, including basements and crawl spaces.

E) Skimming devices are required to remove oils and floatable materials up to a one-year frequency event. The skimmer should be set 4 inches below the normal surface water elevation and should control the discharge velocity to 0.5 feet per second. Maximize separation between inlets and outlets to prevent short-circuiting of stormwater flows.

F) Outlets shall be evaluated for the need to dissipate energy so as to reduce velocities to permissible levels as allowed by the soil and vegetation. Outlet velocities shall be reduced to 4 feet per second or less. At a minimum, flared end sections should be provided with riprap consistent with Mn/DOT standards. For areas with high flows or where excessive erosion occurs or is anticipated, energy dissipation per Federal Highway Administration standards shall be followed.

G) Riprap shall be provided below the channel grade and above the outfall or channel bottom to limit scour and displacement. Riprap must consist of suitably graded natural angular stone and be designed for modeled velocities, and be placed over a suitable filter fabric to insure stability.

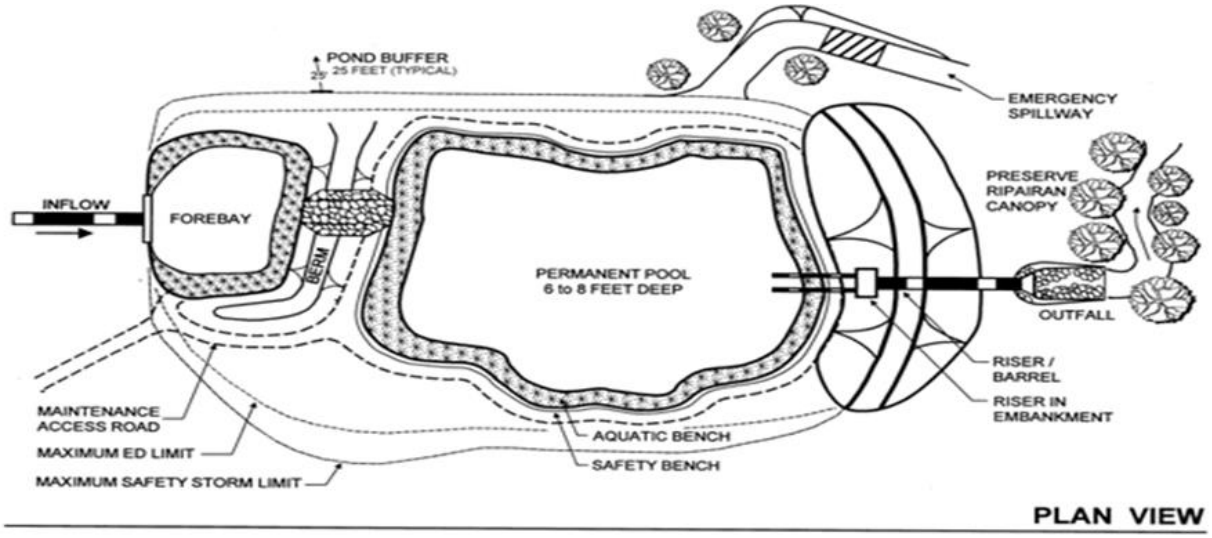
H) For outlets through berms or roadway embankments and all culverts under public traveled streets, anti-seepage collars shall be used. The collars shall be installed so as to increase the creep distance or seepage line along conduit by 15%. The locations for the use of collars include:

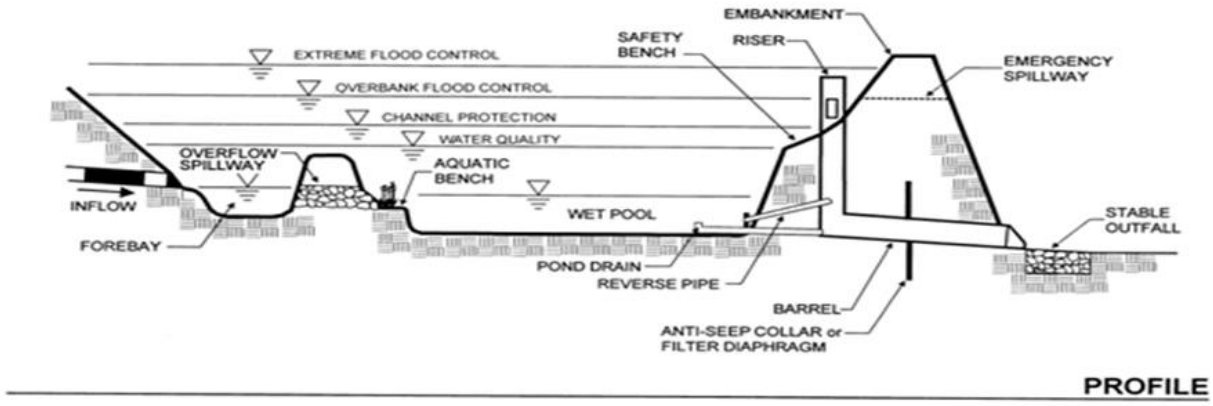
1. Structures inundated by 2 feet of water or more, for 2 days or longer.

2. Structures draining a 250 acre watershed or more.
3. Structures subject to a design head of 10 feet or more.

I) For wet ponds (see the diagram below):

1. The side slopes shall be at a maximum of 3:1 (H:V).
2. Provide a 10:1 (H:V) safety bench from normal water level.
3. Provide a permanent pool that is between 3 and 10 feet deep (dead storage depth).
4. Maximize the separation between the inlet(s) and outlet to prevent short-circuiting.
5. Inlets shall be placed at or as near as possible to the normal water level.
6. The dead storage volume (i.e. below the outlet elevation) must be at equal or greater than the runoff volume from a 2.5 inch rainfall over the area tributary to the pond.
7. Ponds within 1,000 feet up-gradient, or 100 feet down-gradient feet of active karst features must have an impermeable liner.





J) For infiltration or filtration systems:

1) Infiltration systems are prohibited:
   a) Within 50 feet of public or private water supply well (Minn. R. Ch. 4725);
   b) Where the bottom of the infiltration basin is less than 3 feet to bedrock or the seasonally high water table;
   c) In areas of potential storm water hotspots or contaminated soils;
   d) In areas of low permeability soils (i.e., Hydrologic Soil Group D soils);

e) Within 10 feet of a property line or building foundation;
f) Within 35 feet of a septic system tank or drain field.
g) Where industrial facilities are not authorized to infiltrate under an NPDES/SDS Industrial Stormwater Permit issued by the MPCA.
h) Where vehicle fueling and maintenance occur.
i) Within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features.
j) Within the Emergency Response Area of the Drinking Water Supply Management Area as reflected in the Oakdale Wellhead Protection Plan. The City may also prohibit infiltration in areas of high vulnerability at its discretion.
k) Where soil infiltration rates are more than 8.3 inches per hour.

2) Infiltration practices must be designed so that they draw-down within 48 hours of a storm event (2, 10, & 100 year). The maximum ponding depth shall be based on the soil infiltration rate determined from site-specific soils investigation data taken from the location of proposed infiltration practices on the site.
3) Infiltration practices must provide a pretreatment measure (e.g.; a mowed grass strip between a curb cut and a small rain garden, a sump manhole or manufactured sediment trap for an infiltration basin, or a sediment forebay as the first cell of a two-cell treatment system). In instances where the infiltration system captures only clean runoff (e.g., from a rooftop), the City may waive the pretreatment requirement.
4) The design shall incorporate a diversion or other method to keep construction site sediment from entering the infiltration system prior to final stabilization of the entire contributing drainage area.
5) The design shall incorporate provisions that will prohibit construction equipment from compacting the soil where infiltration practices are proposed.
6) A vegetative buffer should be established around the perimeter of the pond. Water quality ponds in the RWMWD shall have a minimum buffer of 10 feet, and a grade no greater than 5:1 (H:V).

Floodplain Management and Storage

A) Existing flood storage volumes must be maintained, and any loss of storage in a FEMA-designated floodplain, must be minimized and demonstrated to have no significant adverse downstream effect.
B) Projects within the *RWMWD and SWWD* must provide 1:1 compensatory storage for any fill placed within the 100-year floodplain. Compensatory storage must be provided immediately adjacent to the affected floodplain.
C) For projects within the *VBWD*, the cumulative effect of all filling must not raise the 100-year flood level of lakes, ponds, and wetlands more than 0.1 foot, or waterways more than 0.5 feet.
D) Available storage volume of landlocked areas shall be established by estimating the water surface elevation resulting from a 100-year/10 day runoff (7.2 inches) with CN=100. For landlocked areas, available freeboard and infiltration capacity of in-place soils should be analyzed (if analyzed for unfrozen soil conditions). When freeboard is unavailable, an annual water balance should be used, considering the 100-year annual runoff and average annual losses from evaporation, transpiration and infiltration.

Easements

A) Utility easements of at least 20 feet in width centered on rear or other lot lines shall be provided for utilities where necessary. They shall have continuity of alignment from block to block.

B) Easements shall be provided along each side of the centerline of any water course or drainage channel, as designated by the Council, to a width sufficient to provide proper maintenance and protection and to provide for proper storm water run-off and installation and maintenance of storm sewers.

1) Appropriate access easements for the purpose of maintaining underground utilities in the proposed development shall be provided in accordance with the Public Works Director/City Engineer. Where appropriate, due to topographic conditions, utilities may be placed in locations other than public street right-of-way, as long as appropriate easements are conveyed through the plat. Landscaping plans must respect said easements to minimize service problems in the future.

2) Where appropriate, public access easements for the pedestrian path system within a Planned Unit Development (PUD) may be required.

Lots

Lot size, location and arrangement shall be consistent with the applicable requirements of the City Zoning, PUD, and Mobile Home Park ordinances.

STREET DESIGN CONSIDERATION

Introduction

Any development that contains arterial streets, or abuts existing or proposed arterial streets, shall conform to the community Comprehensive Plan and the official map as to general right-of-way location.

A) The arrangement, character, extent, width, and location of all planned streets and pedestrian ways shall be considered in their relation to existing and other planned streets and pedestrian ways.

B) To reasonable circulation of traffic.

C) To topographic conditions.

D) To run-off of stormwater.

E) To public convenience and safety.

F) To the proposed uses of the land to be served by such streets and pedestrian ways.

Street and Utility Layout

The Street and Utility Exhibit plans shall be developed by reviewing and incorporating the Analysis Exhibit with the following information:

A) Avoidance of protected areas, including wetlands and hardwood forested areas.

B) Comprehensive Plan requirements showing the general alignment of the Collector street system, watermain system, sanitary sewer system, and park system.

C) Surface Water Management Plan, which shows the routing of runoff into and out of the development area, and the need for ponding areas.

Design

A) Street width and pavement design shall be a function of the projected traffic volume and parking demand on the proposed street. The minimum street width, as measured from curb to curb (inside the face), shall be as provided in the following table, unless the City Council determines that greater width is required to meet anticipated parking demand.

B) All streets shall be provided with a 3 foot lift of select granular material prior to pavement construction. Substitution of materials for the select granular material may be allowed at the

discretion of the Public Works Director/City Engineer. All streets shall be provided with concrete curb and gutter, Minnesota Department of Transportation Design B618, or Design 5 surmountable curb, at the discretion of the Public Works Director/City Engineer (See Standard Plates STRT- 1 & 2 available on the City's website).

Pavement Design:

7 Ton: shall consist of placement of 4 inches of Class 5 gavel base, 1.5 inches of bituminous base course and 1.5 inches of bituminous wearing course, unless the following table requires a greater thickness.

9 Ton: shall consist of placement of 8 inches of Class 5 gravel base, 2 inches of bituminous base, a 2 inches binder, and 2 inches of bituminous wearing course, unless the following table requires a greater thickness.

Maximum Traffic Volume (Vehicles/Day)	Street Classification	Parking Allowed		Parking Prohibited		Design Load Limits
		Right-of-Way**	Pavement	Right-of-Way**	Pavement	
n/a	Cul-de-sac*	50 feet	28 feet	44 feet	24 feet	7
Up to 2000	Local	50 feet	28 feet	44 feet	24 feet	7
2000-3000	Local	60 feet	32 feet	50 feet	28 feet	7
5,000	Industrial/Commercial	60 feet	44 feet	60 feet	36 feet	9
10,000	Collector	60-80 feet	44 feet	60-80 feet	32-52 feet	9
20,000	Minor	n/a	n/a	100 feet	52-74 feet	9
Over 20,000	Principal Arterial	n/a	n/a	200-400 feet	Variable	9

* Cul-de-sacs shall have a radius of 50 feet at the property lines and 45 feet at the curb line. Center islands are not allowed.

** Drainage and Utility easements having a minimum width of 10 feet shall be dedicated along all street right-of-ways.

C) Street alignments shall be developed by following Mn/DOT standards, based on the following minimum design speeds:

Street	Minimum Speed (mph)	Minimum Centerline Radius (ft)*
Local Streets	15	50
Minor Collector	30	300
Collector Street	35	454
Minor Arterial	40	667
Arterial Streets	45	1,039

*Calculated using the equation $R = V^2/[15*(e+f)]$
Where R = Radius, V = Speed, e = super-elevation, f = friction factor

D) When intersecting centerline tangents deflect from each other at only one point by more than 10 degrees, they shall be connected by a curve with a radius that provides for a 15 mile per hour, 30 mile per hour, and 40 mile per hour design speed for local, collector, and arterial streets, respectively.

E) Street grades shall be a minimum of 0.5% and not more than the following:

1) Local streets shall have ≤ a 10% grade; however, the City recommends not exceeding a 6% grade where feasible.
2) Arterials, collectors, and commercial/industrial streets shall be ≤ a 6% grade.
3) Approach grades at street intersections shall not exceed 2% within 100 feet of the intersection.

F) To the maximum extent practicable, streets shall intersect at right angles (within 15 degrees of a right angle; and no less than seventy-five degrees), and be offset at least 150 feet from other intersections.

G) Blocks should be limited to 800 feet in length or 10 lots in length, whichever is longer.

H) Tangents on local streets should be limited to 0.25 miles in length.

I) Street intersections on arterials should be limited to other arterials at a 1 mile spacing and to collectors at a 0.5 mile spacing. Intermediate intersections should be limited to right in/out.

J) Access to collectors should be limited to other collectors at a spacing of 0.5 miles and local streets at a spacing of 0.25 miles. Intermediate intersections or driveways should be limited to right in/out within 600 feet of arterials and other collectors.

K) Different connecting street gradients shall be connected with vertical curves. Minimum length in feet of these curves shall be determined for the respective design speeds in the table set out above utilizing Minnesota Highway Department standards, with design speeds not less than 30 mph.

L) Residential driveway access to principal and minor arterials is prohibited.

M) In the platting of small tracts of land fronting on arterials where there is no convenient access to existing entrances to such arterials and where access to such arterial from such plat would be closer than 0.25 miles from an existing point of access, every effort shall be made for the connection of roads to neighboring land. As the neighboring land is platted and developed, and access to the arterial becomes possible at a preferred location, direct access to the arterial shall be prohibited.

N) Where necessary or convenient for efficient circulation, continuation of streets into or through a new subdivision from existing or proposed street may be required.

O) No private street(s) shall be allowed unless:

1) They are a part of an approved Association (see the Zoning Ordinance) or organization, approved by the City Council, capable of providing snow removal service and street maintenance, has been established,

2) The design standards relative to pavement width (per this section are satisfied), and

3) The street is classified as a cul-de-sac or local.

Signage

A) City Street Signs:

1) Street name signs shall be 9 inches wide on local streets and 9 inches wide on collector streets.

2) Street name signs shall be ordered through the City of Oakdale Public Works Department to ensure uniformity.

B) Construction Signage:

1) In accordance with City of Oakdale Section 2564 “Traffic Signs and Devices” in conjunction with MN/DOT Spec 2564.

Sidewalk/Pedestrian Facilities

A) Concrete sidewalks shall be a minimum of 5 feet in width.

B) Bikeways/Pedways shall be bituminous and a minimum of 8 feet in width.

C) ADA compliant pedestrian ramps with uncoated cast iron truncated domes shall be provided at all street intersections.

D) Boulevards shall be a minimum of 5 feet in width, measured from the face of the curb.

E) Sidewalks and pedestrian facilities shall be constructed, signed, and marked according to the latest edition of MNDOTs Minnesota Manual on Uniform Traffic Control Devices (http://www.dot.state.mn.us/trafficeng/publ/mutcd/), and Oakdale's Comprehensive Trail Plan.

F) Slopes shall be a maximum of 2.0%, both at and 100 feet before intersections with streets or other trails. Where feasible, keep slopes to less than 6.0%.

G) Positive surface drainage must be provided. Provide a 0.02 foot per foot cross-slope to streets where applicable; with a maximum cross-slope 0.04 feet per foot.

H) Excavate and remove all topsoil, silty soils, muck, etc; and provide a minimum of 18 inches of select granular fill, 4 inches of Class 5, and 2 inches of bituminous wear. The subgrade must meet a 95% proctor density.

I) Avoid sharp or sudden changes in horizontal and vertical alignment. Provide adequate sight distance at intersections and on vertical changes in alignment.

J) Bicycle facilities must provide a 2 foot minimum clearance (4 feet is preferred) for vertical obstructions (e.g.; power poles, trees, signs, etc.).

UTILITIES

Sanitary Sewer

A) All sanitary sewers shall be designed for a minimum velocity of 2 feet per second.

B) Sanitary sewer depths shall not be less than 5.5 feet unless insulated, and not more than 30 feet deep.

C) Sanitary sewers over 16 feet deep shall be designed with a heavier class of pipe.

D) Sanitary sewers shall be generally placed on street centerlines with manholes at intersections and 400 foot spacing. On curves, space manholes to keep the sanitary sewer within 10 feet of the centerline.

E) The diameter of the sanitary sewer pipe shall be dependent on the ultimate flow projected to flow through the pipe. The sewer flows shall be based on the following flow rates:

1) Low Density Residential: 2.9 persons/unit x 100 gallons/day = 290 gallons/unit.
2) Mid Density Residential: 2.7 persons/unit x 85 gallons/day = 229.5 gallons/unit.
3) High Density Residential: 1.8 persons/unit x 75 gallons/day = 135 gallons/unit.
4) Commercial: 1,200 gallons/acre.
5) Industrial: 1,300 gallons/acre.
6) Institutional: 1,500 gallons/acre.
7) Peaking factors for residential land uses shall be 3.0, and 2.5 for commercial/industrial land uses.
8) The minimum slope in feet per 100 feet and maximum capacity based on Manning's Equation for sanitary sewer pipe is as follows:

Diameter (inches)	Minimum Slope (ft/100 ft)	Capacity* (cfs)

8	0.40	0.84
10	0.28	1.28
12	0.22	1.83
14	0.17	2.40
15	0.15	2.71
16	0.14	3.11
18	0.12	3.99
21	0.10	5.47

*Based on Manning's Equation with n=0.012

Watermain

A) Watermain valves shall be placed such that areas may be isolated to 20 services or less.

B) Watermains 12 inches in diameter and less must use gate valves, and watermains larger than 14 inches must use butterfly valves.

C) Watermains shall be placed on the west and north sides of streets, 10 feet from the centerline.

D) Watermains shall be sized on a case-by-case basis; however, the watermain shall not be less than 6 inches in diameter in residential areas or less than 8 inches in diameter in commercial/industrial areas.

E) Trunk mains shall be located as reflected in the Comprehensive Water Plan.

F) Hydrants should be spaced no more than 300 feet apart. Hydrant leads shall include a valve and shall not be less than 6 inches in diameter in residential areas and 8 inches in diameter in commercial/industrial areas.

G) Water and Sewer services can be in the same trench provided the water service is in a continuous pipe with no joints and is installed 18 inches above and 2 feet horizontally from the sewer service.

H) Commercial and industrial buildings shall install a valve so that the building's water service may be shut off separately from its fire suppression system.

Stormsewer

A) Stormsewer shall be placed on the east and south side of streets, 10 feet from the centerline.

B) Provide catch basins in the roadway at a minimum of 700 foot intervals. Drain tile shall be included as directed by the Engineer.

C) Provide stormsewer to pick up lot line drainage if the tributary area is greater than 1 acre or if the swale is longer than 400 feet in length.

D) Stormsewer shall be designed to have capacity for a 10-year rainfall event using the Rational Method.

E) Ponding and control structures shall be designed for a 100-Year, Type II, AMC-2 design, using a TR-20 Modeling Method.

F) Provide 6 inch sump pump collection mains with service stubs to the lot lines in those areas with high water tables, or where the rear yards drain to the street (FHA Lot Grading Type "A").

Hydraulic Analysis and Design

A) Storm distributions and storm volumes for hydrologic analysis shall be based upon the 2013 NOAA Atlas 14 Precipitation-Frequency Atlas of the United States, Volume 8 – Version 2.0, or its latest revision.

B) Design of major facilities (e.g., ponds, detention areas, retention areas) shall be based on the U.S.D.A. NRCS methods, 100-year return period, 24-hour duration, Type MSE 3 distribution with

average soil moisture conditions (AMC-2). The analysis of flood levels, storage volumes and discharge rates for detention basins shall utilize the design storm/freeboard evaluation storm concept.

C) Minor drainage systems (e.g.; storm sewer) shall be analyzed and designed to protect for the 10-year frequency rainfall, and shall be evaluated for the 100-year frequency rainfall. Full pipe flow analysis shall be used, unless special conditions can be demonstrated to consider pressure flow.

D) The Rational Method is accepted design method for the design of minor systems (storm sewer). The preferred method of design would be a method utilizing a hydrograph approach with factors for land use and soil moisture conditions. NRCS methodology is not acceptable for minor system design unless approved by the Public Works Director/City Engineer.

Street Lights

A) Street lights shall be placed at all intersections and at 200-foot mid-block intervals. The lights shall be oriented with the dominant street receiving the majority of the light pattern. On the minor streets, the first light from the corner light shall be a 150-foot spacing. Mid-block lights shall be located at common lot lines.

B) Feed points shall be placed with 8 feet from the curb to the face of the cabinet, and must open in the direction of traffic. To the maximum extent practicable, feed point should be place adjacent to outlots or open space owned by the City.

C) All street light wires must be placed in conduit, and conduit shall be placed a minimum of 18 inches deep and should within 2 feet of the back of curb where practicable.

Note: See Appendix F for general utility locations within Right-of-Way.

GRADING/DRAINAGE

Building Elevations

A) The lowest building floor elevation adjacent to wetlands must meet the criteria in the City's Surface Water Management Plan (SWMP). The minimum building elevation is defined as the lowest slab elevation for a home or building, including basements and crawl spaces. The minimum building elevation for structures adjacent to wetlands and water bodies shall be the greatest of the following:

1) If an emergency overflow is provided from a ponding area, the lowest ground elevation at buildings for lots adjacent to that ponding area needs to be 3 feet above its 100-year high water level.
2) If NO emergency overflow is provided from a ponding area, the lowest ground elevation at buildings for lots adjacent to that ponding area must be 5 feet above its 100-year high water level.
3) A 2 foot freeboard is required above the 100-year high water level of all ponding areas.
4) The lowest ground elevation adjacent to buildings needs to be 1 foot above any Emergency Overflow high point elevation.
5) Elevation difference between foundation and curb needs to meet the most current Uniform Building Code (UBC) standards.
6) Lowest floor elevation shall be 4 feet above the water table.

B) All yard drainage should be routed within drainage easements along lot lines, not across private property.

Building Types

Type: SOG = Slab on Grade
F/FB = Flat Full Basement
FBWO = Full Basement Walkout
D/W = Day Light Window

Drainage

A) The Drainage Plan (grading plan) shall utilize natural drainage ways to the maximum extent practicable. Lots shall be laid out so as to provide drainage with a 2% minimum grade away from all buildings and in swales, and individual lot drainage shall be coordinated with the general drainage pattern for the area. Drainage shall be designed to avoid the concentrated flow of stormwater from any lot to or through adjacent lots. On-site retention and treatment of storm water shall be required unless off-site treatment is approved by the Watershed District and/or the Public Works Director/City Engineer.

B) Easements shall be provided along each side of the centerline of any watercourse or drainage channel, as designated by the Council, to a width sufficient to provide proper maintenance and protection and to provide for proper storm water run-off and installation and maintenance of storm sewers.

Block Grading

Upon completion of the General Street and Utility layout, the block grading can be developed. The block grading should be developed based on one, or a combination of the four general block grading plans (See Appendix E). The four general block grading types are:

A) Type 1 = Ridge along rear lot lines.

B) Type 2 = Gentle Cross – Slope.

C) Type 3 = Steep Cross – Slope

D) Type 4 = Valley along rear lot line.

The block type shall be developed based on the following parameters:

A) The development should balance the material on site – therefore no material should be mined from the site as surplus, nor should material be hauled in for grading purposes.

B) Drainage swales to be a minimum 2% grade.

C) Runoff accumulated from more than 1 acre of land shall be discharged into a storm sewer facility (i.e. catch basin, or ponding area).

D) Discharges from ponding areas shall be piped to the downstream ponding area, unless surface streams are required as part of a water quality design. Surface streams shall be platted as an integral part of the ponding area outlot.

E) Runoff shall be routed along property lines and within drainage easements.

Lot Grading

There are three general lot types that can be developed (See Appendix E), they are:

A) Type A = All drainage to the street.

B) Type B = Drainage both to street and rear lot line.

C) All drainage to rear property line.

The lot grading type should be developed considering the following parameters:

A) House pads shall be shown as the total buildable area of the parcel.

B) Driveway grades shall range from 2% to 10%.

C) Grades within the yard areas should not have slopes exceeding 3:1.

D) Grades at side lot lines shall be a minimum of 6 inches lower than the lower house pad at:

1) A point 20 feet back of the rear corner of the house pad for Type A lots.
2) A point 20 feet back from the mid-house pad location for Type B lots.
3) The front corner of the house pad for Type C lots.
4) Grades of drainage swales around the house pads shall be a minimum 2%.

These standards were developed consistent with Federal Housing Administration (FHA) standards (See Appendix E).

Construction Grading

The Developer shall submit a Construction Grading and Erosion Control Plan (CGECP) for consideration during the Preliminary Plat process.

The plan is needed for the Building Inspection Department to assure the proper homes are being built as envisioned by the planners of the development. The plan generally shows spot elevations at key locations so that builders, contractors and inspectors can better interpret the grading plans.

The CGECP shall show all lot pad elevations one foot lower than the Finish Grading and Development Plan (FGDP). This hold down is to allow for excavated footing/basement material to be wasted on the parcel not encumbered within drainage easements:

A) Grading Plan.

B) Storm Water Pollution Prevention Plan (SWPPP).

C) SWPPP notes and details.

D) Wetland Impact and Mitigation Plan.

E) Storm Sewer Schedule Plan.

Building Permits

Prior to the issuance of building permits, the following documents must be completed:

A) The Final Plat recorded at Washington County.

B) Certified Grading Plan approved.

C) Developer Agreement entered into between the Developer and the City.

Note: The builder will be required to submit a Certificate of Survey with the permit application. A sample Certificate of Survey information/certificate of survey is included in Appendix E.

Upon completion of the final grading activities, prepare and submit to the City an electronic copy of the complete as-built grading and utility plans per Appendix C.

CITY OF
OAKDALE

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix A: Plan Checklist

Updated: December 13, 2018

PLAN CHECKLIST

This checklist is intended to cover all the main elements required for a complete submittal; however, it is still a good idea to refer to the relevant section of the design guidelines or to contact City staff with questions.

General Plans

- ☐ Show all proposed water, sanitary, storm, streetlights, and signs on the utility plan.
- ☐ Show all existing utilities within 150 feet of the project boundary on the utility plan.
- ☐ Label all pipe diameters, and rim and invert elevations for all sanitary/storm sewers.
- ☐ Show emergency overflow elevations for streets, water bodies, and stormwater facilities. Also show elevations for side lot lines and rear yard catch basins.
- ☐ All utilities shall be placed in the street right-of-way wherever possible in order to minimize side and rear yard utilities.

Stormwater

- ☐ Apply for relevant Federal, ACOE, State, County, and Watershed permits.
- ☐ Provide plans, details, and calculations and/or modeling for stormwater treatment and rate control facilities.
- ☐ Show erosion and sediment controls on the grading plan.
- ☐ Provide a landscaping plan including tree replacements, landscaping, seeding, etc.

Wetlands

- ☐ Apply for relevant Federal, ACOE, State, County, and Watershed permits.
- ☐ Provide plans, details, and calculations and/or modeling for stormwater treatment and rate control facilities.
- ☐ Show erosion and sediment controls on the grading plan.
- ☐ Provide a landscaping plan including tree replacements, landscaping, seeding, etc

Sanitary Sewer

- ☐ Sanitary sewers placed on the centerline to the maximum extent practicable, within 10 feet on curves, and with manholes at intersections and 400-foot spacing.
- ☐ All sanitary sewers shall be designed for a minimum velocity of 2 feet/second.
- ☐ Sanitary sewer depths are between 5.5 feet (unless insulated), and less than 30 feet.
- ☐ Sanitary sewers over 16 feet deep shall be designed with a heavier class of pipe.
- ☐ The diameter of the sanitary sewer pipe shall be dependent on the ultimate flow projected. (For sewer flows/rates see Page 15)

Watermain

- ☐ Watermain valves shall be placed so areas may be isolated to 20 services or less.
- ☐ Watermains 12 inches in diameter and less must use gate valves, and watermains larger than 14 inches must use butterfly valves.
- ☐ Watermains shall be placed on the west and north sides of streets, 10 feet from the centerline.
- ☐ Contact City staff to determine watermains sizes. (6 inches minimum for residential and 8 inches for commercial/industrial areas).
- ☐ Trunk mains shall be located as reflected in the City's Comprehensive Water Plan.

- ☐ Spaced hydrants less than 300 feet apart. Use valved leads at least 6 inches in diameter in residential areas and 8 inches in diameter in commercial/industrial areas.
- ☐ Commercial and industrial buildings shall install a valve so that the building's water service may be shut off separately from its fire suppression system.

Stormsewer

- ☐ Stormsewer shall be placed on the east and south side of streets, 10 feet from the road centerline.
- ☐ Provide catch basins in the roadway at a minimum of 700 foot intervals. Drain tile shall be included as directed by the Engineer.
- ☐ Provide stormsewer to pick up lot line drainage if the tributary area is greater than 1 acre or if the swale is longer than 400 feet in length.
- ☐ Stormsewer shall be designed to have capacity for a 10-year rainfall event using the Rational Method.
- ☐ Ponding and control structures shall be designed for a 100-Year, Type II, AMC-2 design, using a TR-20 Modeling Method.
- ☐ Provide 6 inch sump pump collection mains with service stubs to the lot lines in those areas with high water tables, or where the rear yards drain to the street (FHA Lot Grading Type "A").

Sidewalk/Pedestrian Facilities

- ☐ Concrete sidewalks shall be a minimum of 5 feet in width, and bikeways/pedways shall be bituminous and a minimum of 8 feet in width.
- ☐ ADA compliant pedestrian ramps with uncoated cast iron truncated domes shall be provided at all street intersections.
- ☐ Boulevards must be at least 5 feet in width, measured from the face of the curb.
- ☐ Facilities shall be constructed, signed, and marked according to the City's Comprehensive Trail Plan and the latest edition of MNDOTs Minnesota Manual on Uniform Traffic Control Devices (http://www.dot.state.mn.us/trafficeng/publ/mutcd/).
- ☐ Slopes shall be a maximum of 2.0%, both at and 100 feet before intersections with streets or other trails. Where feasible, keep slopes to less than 6.0%.
- ☐ Positive surface drainage must be provided. Provide a 0.02 to 0.04 foot per foot cross-slope to streets where applicable.
- ☐ Provide appropriate soil correction and a minimum of 18 inches of select granular fill, 4 inches of Class 5, and 2 inches of bituminous wear.
- ☐ Provide a 2 foot minimum clearance (4 feet is preferred) for vertical obstructions, and adequate sight distances for intersections and vertical alignment changes.

Streets

- ☐ All streets shall be provided with concrete curb and gutter.
- ☐ All streets shall be provided with a 3 foot lift of select granular material.
- ☐ Pavement design shall be based on design load limits (See Page 11).
- ☐ Street alignments shall meet MNDOT design speed standards (See Page 11).
- ☐ See Page 11 for alignment, profile, and spacing/separation requirements.

CITY OF
OAKDALE

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix B: Grading Plan Requirements

Updated: December 13, 2018

GRADING PLAN REQUIREMENTS

A complete grading plan submitted to the City shall consist of three components:

A) The grading plan;

B) The erosion control plan; and

C) The standard detail sheet.

These three elements of the grading plan should be grouped together, but printed on separate sheets to form one copy of the grading plan. The Grading and Erosion Control Plans shall be drawn to scale and shall be of sufficient clarity to indicate the nature and extent of the work proposed, and will show in detail that they will conform to the Engineering Guidelines and all relevant laws, ordinances, rules, and regulations.

Grading Plan

The first sheet of each set of grading plans shall give the location of the work and the name and address of the owner and the person by whom they were prepared.

The grading plans, as a minimum, shall include the following information:

A) Name, address, telephone, mobile and fax numbers of the Engineering firm and Developer.

B) General vicinity of the proposed site.

C) North arrow (facing up or to the left).

D) Scale 1 inch = 50 feet minimum (1 inch = 20 feet for all wetlands and ponding areas).

E) Area of the proposed site in acres or square feet.

F) Identify all park and wetland mitigation areas. The seeding specifications for these areas should be on the grading plan.

G) Property limits and accurate contours of existing ground and details of terrain and area drainage for the entire parcel and 200 feet around the parcel.

H) At a minimum, the wetlands, ponds, lakes, streams and a 200 foot strip around the perimeter of the proposed grading area, must to be field surveyed for horizontal and vertical control, including topographical features such as buildings, trees, fences, etc.

I) Maximum contour interval of 2 feet. Existing contours shown as dashed lines. Proposed contours shown as solid lines. All contours to be labeled.

J) Indicate site and lot drainage with direction arrows.

K) Show percent grade and elevation for all streets, major drainage swales, overflow areas, and parking areas.

L) Shown street centerline profile.

M) Detailed information will be required for pond and wetland areas disturbed by grading activities. The necessary information is as follows:

   1) 1 inch = 20 feet scale plan
   2) 1 foot contour intervals
   3) Show maintenance access and aquatic and maintenance benches
   4) Show normal water level and 100-year design storm high water level for all ponds, wetlands and lakes.

5) Where drainage features, ponds, etc., extend beyond the property line, show the entire drainage feature and topography extending 200 feet from all sides of the feature.
6) Ponds may not be over-excavated more than 0.5 feet unless otherwise approved by the City and/or the appropriate Watershed District.
7) Easements adjacent to ponding areas need to be identified on the overall plan and on the pond detail sheets.

N) Show all existing utilities, both public and private.

O) Indicate proposed elevations of the garage floor, lowest floor permitted, lowest opening, and ground at the front and rear of the building, along with the type of structure, on the Grading Plan.

P) Indicate proposed lot corner elevations.

Q) Park pathways need to be graded so as to be in conformance with the "Americans with Disabilities Act" specifications.

R) Details of topsoil removal, stockpile, and re-spreading must be noted on the plan.

S) Details of all proposed surface and subsurface drainage devices, ponds, ditches, storm sewers, swales, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work.

T) Emergency overflows along with the high point elevation and direction of overflow shall be provided and clearly marked on the Grading Plan for all interior lot drainage structures, streets, and all ponding areas.

U) The lowest building floor elevation adjacent to wetlands must meet the criteria in the City's Surface Water Management Plan (SWMP). The minimum building elevation is defined as the lowest slab elevation for a home or building, including basements and crawl spaces. The minimum building elevation for structures adjacent to wetlands and water bodies shall be the greatest of the following:
1) If an emergency overflow is provided from a ponding area, the lowest ground elevation at buildings for lots adjacent to that ponding area shall be 3 feet above its 100-year high water level.
2) If NO emergency overflow is provided from a ponding area, the lowest ground elevation at buildings for lots adjacent to that ponding area shall be 5' feet above its 100-year high water level.
3) A 2 foot freeboard is required above the 100-year high water level for all ponding areas.
4) The lowest ground elevation adjacent to building shall be 1 foot above any Emergency Overflow highpoint elevation.
5) Elevation difference between foundation and curb shall meet the most current UBC standards.
6) Lowest floor elevation shall be 4 feet above the water table.

V) Location of any buildings, structures, or walls on the property where the work is to be performed.

W) Specifications shall contain information covering construction and material requirements.

X) Provide a listing and show on the grading plan all significant trees. A Certified Tree Inventory shall include:
1) The species, diameter, conditions, and location of all deciduous trees measuring 12 feet in diameter or greater.
2) The species diameter, conditions, and location of all coniferous trees measuring 8 inches in diameter or greater.
3) A treed area of at least one acre of unplatted land that has trees over 8 inches in diameter on at least 25% of the total area.
4) Protective tree fencing must to be installed 5 feet outside the drip line.

Y) All Preliminary Plat conditions of approval related to grading need to be addressed on the Final Grading Plan.

Z) Any other information required by the City.

Erosion and Sediment Control

An erosion and sediment control plan shall be created for any land disturbing activity. Erosion and sediment control elements shall be implemented before any grading can begin. A schedule of significant grading work will be required as part of the erosion and sediment control plan. Project proponents and contractors disturbing 1 acre or more must apply for and comply with all required provisions of the most recent Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit.

On construction sites where grading disturbs more than 1 acre, the Developer/Contractor shall meet the following conditions:

Erosion Prevention Practices

A) Soil erosion and sediment control facilities (e.g.; silt fence, rock construction entrance(s), inlet protection device(s), etc.) for the project must be installed prior to any site grading operations.

B) Do not disturb more land at one time than can be effectively inspected and maintained.

C) All exposed soil areas (including stockpiles) must be stabilized.

D) Stabilization efforts must be taken as soon as possible after achieving final grade or if grading will cease for at least 14 days in order to limit soil erosion. Stabilization must be completed no later than 14 calendar days after the construction activity in that portion of the site has temporarily or permanently ceased.

E) Stabilize the normal wetted areas of any temporary or permanent drainage ditch or swale within 200 lineal feet from the property edge (or from the point of discharge into any surface water) within 24 hours after connecting to a surface water or property edge.

F) Mulch, hydromulch, tackifier, polyacrylamide or similar erosion prevention practices are not acceptable stabilization for temporary or permanent drainage ditches or swales with a continuous slope of 2% or greater.

G) Pipe outlets must have energy dissipation (e.g.; rock rip-rap) within 24 hours of connection to a surface water.

Sediment Control Practices

A) Minimize soil compaction and preserve topsoil where feasible.

B) Sediment control practices must be established on all down-gradient perimeters and around sensitive areas (e.g.; buffer areas, infiltration areas, water bodies, etc.). The perimeter BMPs must be in place before any land-disturbing activities begin, and must remain until final stabilization has been established.

C) All sediment control practices that are adjusted or removed for short-term activities (e.g.; clearing, grubbing, or vehicle passage), must be re-installed immediately after the short-term activity has been completed or before it has been completed if a precipitation event is expected.

D) All storm drain inlets must be protected by appropriate BMPs during construction until the entire site has been stabilized. Inlet protection may be removed if a specific safety concern (street flooding/freezing) has been identified, which must be documented in the SWPPP.

E) Temporary soil stockpiles must have silt fence or other effective sediment controls at their bases, and cannot be placed in any natural buffers or surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches unless there is a bypass in place for the stormwater.

F) A vehicle tracking BMP must be installed to minimize the track out of sediment from the construction site (e.g.; 50 foot long rock construction entrance, mud mats, slash mulch, concrete or steel wash racks, or equivalent systems). Street sweeping is required for any vehicle tracking that still occurs.

G) A 50 foot natural buffer must be preserved where feasible. If infeasible, then redundant (i.e. additional) sediment controls must be provided when a surface water is located within 50 feet down-gradient of the project's construction limits. The natural buffer may be improved with vegetation, but is not required.

Inspections and Maintenance

A) For projects disturbing more than an acre of land, a trained person must routinely inspect the entire construction site at least once every 7 days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours (inspections may be suspended during times of frozen ground conditions).

   Sites draining to, and within a mile of a prohibited water must inspect every 3 days.

B) The inspection and maintenance of temporary and permanent water quality management BMPs, as well as all erosion prevention and sediment control BMPs, is required until a final grading inspection has been passed.

C) All erosion and sediment control measures must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches one-half of the height of the device. These repairs must be made by the end of the next business day after discovery, or as soon as field conditions allow access.

D) Additional erosion and sediment control measures may be required by the inspector during construction.

E) Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all paved surfaces both on and off site within 24 hours.

F) All infiltration areas must be inspected to ensure that no sediment from ongoing construction activity is reaching the infiltration area, and to ensure that equipment is not being driven across the infiltration area.

Pollution Prevention Management Measures

A) Minimize the exposure to stormwater of any of any onsite products, materials, or wastes.

B) Construction sites must provide effective containment (with signage) for all liquid and solid wastes generated by washout operations (concrete, stucco, paint, form release oils, curing compounds, and other construction materials) related to the construction activity. Liquid and solid wastes must be disposed of properly in compliance with MPCA rules.

Dewatering and Basin Draining

A) Dewatering Practices must not discharge turbid or sediment-laden waters from the project site.

B) If the water cannot be discharged to a sedimentation basin prior to entering a surface water, it must be treated with appropriate BMPs, and not adversely affect the receiving water or downstream properties (i.e.; cause nuisance conditions, erosion on downgradient properties or channels, or adverse inundation of wetlands).

C) Discharge points must be adequately protected from erosion and scour (e.g.; by dispersing the discharge over natural rock riprap, sand bags, plastic sheeting, or other accepted energy dissipation measures).

Final Stabilization

For Final Grading Inspections, the City is looking for the following:

A) All disturbed soils are stabilized. Stabilization means that the exposed ground surface has been covered by appropriate materials (e.g.; seed & mulch, sod, riprap, erosion control blanket, mats or other material that prevents erosion from occurring). Grass, agricultural crop, or other seeding alone is not stabilization. Mulch materials must achieve approximately 90 percent ground coverage (typically 2 ton/acre).

B) Any required permanent stormwater management system is constructed, meets all State/Watershed/City requirements and is operating as designed (including removal of any sediment accumulated during construction).

C) All erosion prevention and sediment control BMPs (e.g.; silt fence, bio-logs, etc.) have been removed from the site (excluding BMPs designed to decompose on site).

CITY OF
OAKDALE

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix C:

As-Built/Record Drawing Requirements

Updated: December 13, 2018

As-Built Plan/Record Drawing Requirements

Upon completion of the final grading activities, prepare and submit to the City an electronic copy of the complete as-built grading and utility plans as a ".DWG", ESRI Shapefile or ESRI Geodatabase File. The projection must use the UTM NAD83 15N or the Washington County Coordinate System.

The as-builts/record drawings must include the following:

A) All information shown on the Final Grading Plan, excluding erosion control measures.

B) The name of the general contractor, and a dated record-plan stamp at the bottom right-hand corner of each plan sheet.

C) Revised lengths and grades for all sanitary sewer, storm sewer, and water main pipes.

D) Revised grades for all streets.

E) Tie all valves and curb stop boxes.

F) A plan view of water and sewer services for each lot.

G) Benchmark elevations for each new hydrant (and the survey datum).

H) Revised elevations for any elevations differing more than +/- 0.2 feet from the Final Grading Plan, including

   1) Emergency overflows and major drainage swales.
   2) The Normal and High Water Levels of all ponds and wetlands.
   3) Invert and rim elevations for all sanitary & storm sewers.
   4) Low floor and low entries.

I) Revised contours for any slopes that differ horizontally more than 5.0 feet, or areas where elevations differ more than +/- 1.0 foot of what was shown on the Final Grading Plan, including:

   1) The aquatic and maintenance benches, and bottoms of stormwater ponds.
   2) Maintenance accesses for stormwater facilities.
   3) Drainage swales.
   4) Other topographically significant areas.

J) Verified locations of remaining trees for tree inventory purposes.

K) Any other significant grading or utility changes that were made during the construction of the project.

CITY OF
OAKDALE

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix D:
Sample Maintenance Agreement

Updated: December 13, 2018

CITY OF OAKDALE, MN

MAINTENTANCE AGREEMENT (EXAMPLE)

REGARDING STORMWATER MANAGEMENT PRACTICES:

I. THIS AGREEMENT made this _____ day of _____, 200__ by and among the City of Oakdale, Minnesota (hereinafter referred to as the "City") and, _____, a _____ [corporation, individual] (hereinafter referred to as "_____") with reference to the following facts and circumstances:

A. (*) _____ is the fee owner of certain real property situated in the City of _____, legally described as follows:
(Legal) _____,
(*) CAPS _____ (_____) (hereinafter referred to as the "Subject Property").

B. As a condition of its approval of the development for the Subject Property, the City has required that the parties hereto enter into an agreement, which makes provision for the maintenance of the Stormwater Management Practice located within the boundaries of the Subject Property as the same is described and depicted in those certain construction plans drawn by _____
The Stormwater Management Practice is located in the platted drainage and utility easement in_____

C. The parties hereto desire to set forth their agreement with respect to the maintenance of the Stormwater Management Practice and the costs of such maintenance.

II. NOW THEREFORE, in consideration of the foregoing facts and circumstances, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto hereby agree as follows:

A. For the purposes of this Agreement, maintenance of the Stormwater Management Practice shall mean the annual inspection and certification by a qualified individual that the pond is functioning in accordance with the approved plans and, if necessary, the periodic dredging of the silt buildup in the Stormwater Management Practice as necessary to maintain function, as established for the Stormwater Management Practice in the construction plans and to maintain the proper operation of the treatment function of the Stormwater Management Practice.

B. (*)_____ shall be solely responsible for the maintenance of the Stormwater Management Practice, and shall bear all costs of such maintenance, until such time as _____ (hereinafter referred to as the "Association") is activated pursuant to Article _____, Section _____, of the Declaration of Covenants for _____, whereupon the Association shall bear the sole responsibility for such maintenance and shall bear all costs of such maintenance. If (*)_____, or after its incorporation, the Association, does not undertake the necessary maintenance within 30 days of notification by the City, or within 30 days provide the City with a schedule for undertaking the necessary maintenance, the City may undertake such maintenance, and the costs reasonably incurred by the City for performing such maintenance shall be reimbursed to the City within 30 days by the party responsible for such maintenance and, if the responsible party does not timely reimburse the City, then the City may

recover its costs by levying a special assessment against all single family house lots in the Subject Property, each lot to bear an equal share.

C. (*)_____, as present owner of the Subject Property, for itself and respective successors and assigns, hereby waives any statutory right which it may have to contest any such assessment by the City of its maintenance costs on the basis of the benefit to portions of the Subject Property.

D. Notwithstanding anything contained in this Agreement to the contrary, in the event the city shall establish a policy for maintenance by the City of Stormwater Management Practices located elsewhere in the City of Oakdale, under which policy the costs of such maintenance are to be paid either out of general City revenues or by collection of utility or service fees or charges, then any owner of any portion of the Subject Property shall be entitled to petition the City for the inclusion of the Stormwater Management Practice under such maintenance program, and the City shall consent to such request and thereupon authorize the termination of this Agreement. The recording of a certified copy of the Resolution of the City Council of the City which sets forth the consent and authorization described in the foregoing sentence shall serve the terminate this Agreement, without further action on the part of any party hereto.

E. The terms and conditions of this Agreement shall be binding upon, and shall insure to the benefit of, the parties hereto and their respective successors and assigns.

III. IN WITNESS WHEREOF, the parties hereto have caused this document to be executed as of the day and year first above written.

_____ _____
Date

Title _____
for the City of Oakdale, Minnesota

_____ _____
[Corporation/individual] Date

THIS INSTRUMENT DRAFTED BY _____

CITY OF
OAKDALE

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix E:

Sample Certificate of Survey Information
FHA Block & Lot Grading Types

Updated: December 13, 2018

SAMPLE CERTIFICATE OF SURVEY INFORMATION

A) Scale of drawing, north arrow, and legal description of property.

B) Names of all abutting streets, dimensions of all lot lines, as well as dimensions and locations of all easements of record.

C) Locations of all existing buildings on the subject lot.

D) Locations of sanitary and storm manholes, hydrants, catch basins, power poles, telephone boxes, and curb lines.

E) Location, including front and side yard setback dimensions, to buildings located on adjacent lots.

F) Locations, including front, side yard, and rear yard setback dimensions to the proposed structure. Note that rear yard setbacks on shoreline lots must show the shortest dimension from the structure to the ordinary high water contour line of the body of water.

G) Outside dimensions of proposed structure, including decks and porches, stairways, cantilevers, fireplaces, bay and bow windows.

H) House type:
   1) SOG = Slab on Grade
   2) F/FB = Flat Full Basement
   3) FBWO = Full Basement Walkout
   4) D/W = Day Light Window

I) Location of stakes established by the Surveyor along each side lot line at the proposed front and rear building line. After they have been placed by the Surveyor, the permit Applicant shall maintain these stakes.

J) Benchmark description, elevations, and location. Some benchmarks are available from the City Engineer's office. If manholes are used as a benchmark, invert elevations must be shown. Top elevations will not be accepted.

K) Grade elevations to mean sea level datum (1929 NGVD) at the following points:
   1) Existing and proposed at each lot corner.
   2) Crown of street at each lot line extended, or top of curb.
   3) Existing and proposed at all major corners of proposed structure.

<u>Certificate of Survey – Site Survey</u>

Each application for a building permit for a new residential principal structure, or for a new or remodeled exterior business or industrial buildings, shall be accompanied by a Certified Land Survey indicating that permanent iron monuments have been set <u>at each lot corner</u>. The survey shall show:

A) Front and side setback stakes shall be in place at the time of footing form inspection.

B) All iron monuments shall be visible when the footings are placed, and at the time of final occupancy inspection of the building.

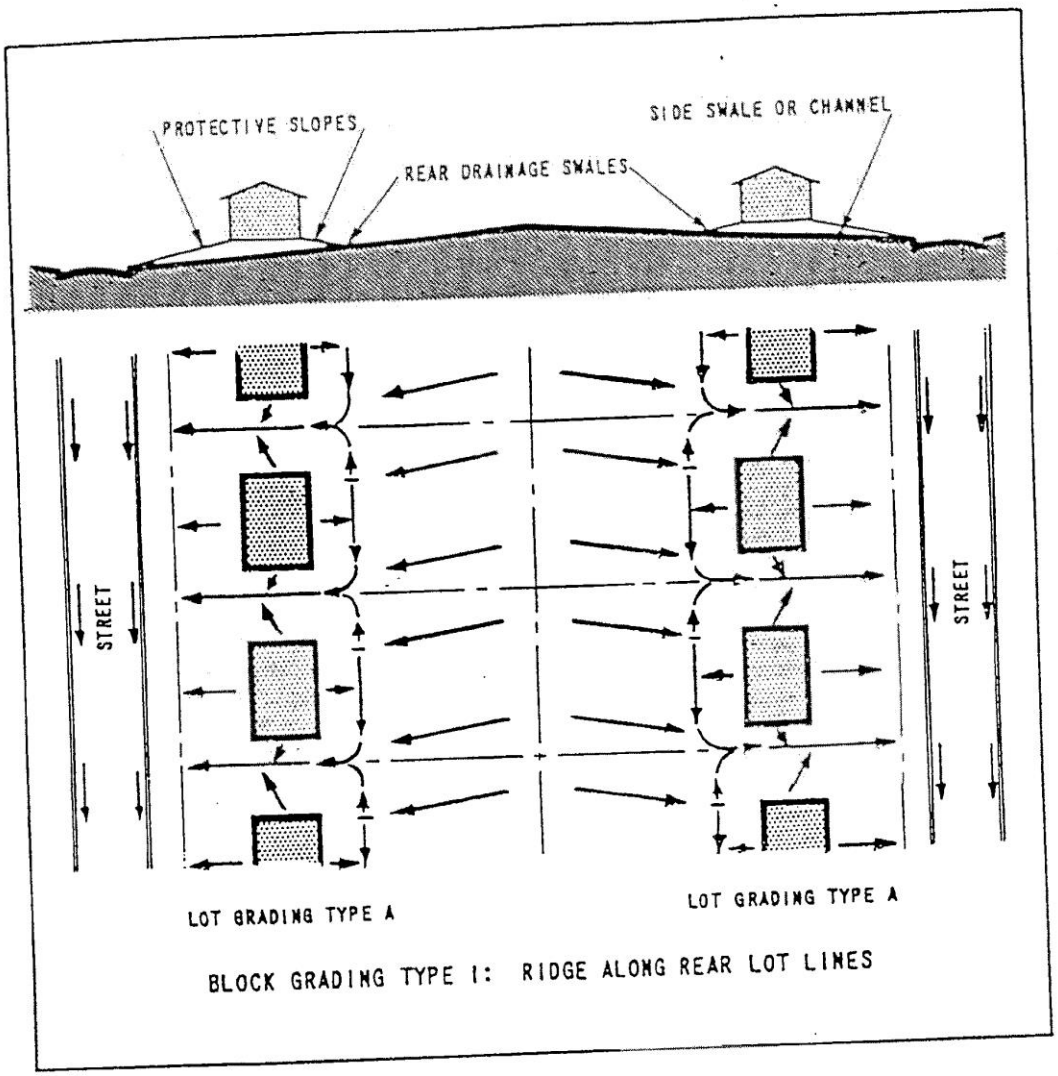
C) A 2 inch by 2 inch stake shall be placed near the front of the building excavation indicating the elevation of the curb in front of the lot and the proposed elevation of the top of the building foundation.

BLOCK AND LOT GRADING

Proper grading is an important element in preventing wet basements, damp crawl spaces, eroding banks, muddy yards and overflowing septic tank systems. It also eliminates costly correc-

6. If the street profiles are to be designed or adjusted, establish them so as to facilitate the provision of good drainage for both the lots and the streets, giving due considera-

ment
ge 34



BLOCK GRADING TYPE 1: RIDGE ALONG REAR LOT LINES

BLOCK GRADING TYPES

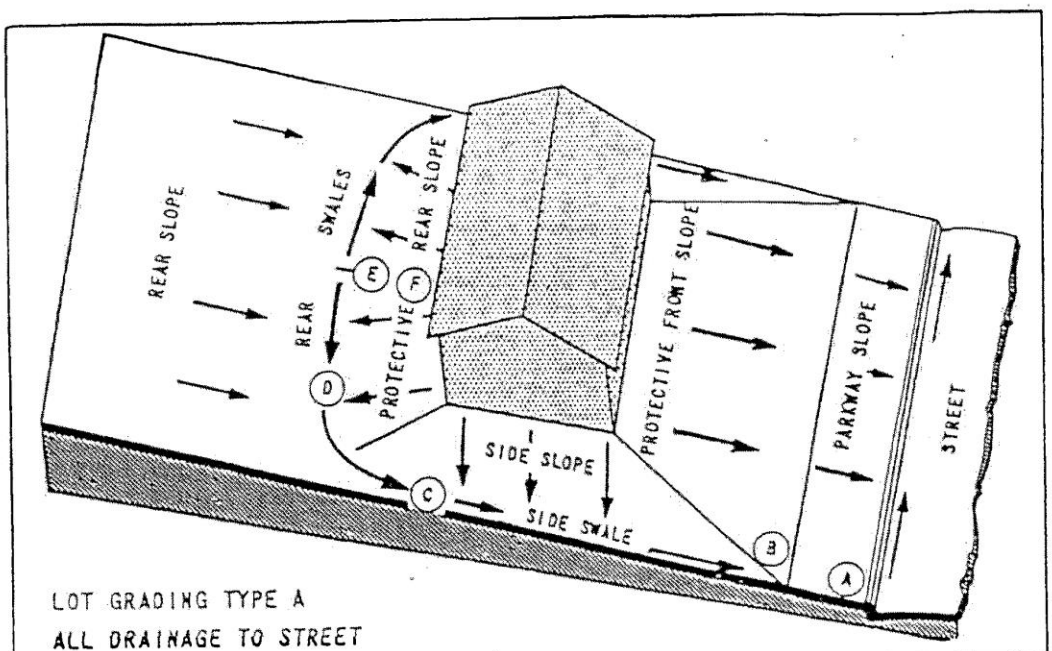
Block Grading Type 1 has a ridge along rear lot lines and each lot is graded to drain surface water directly to the street independent of other properties. It is the most simple and desirable type of block grading. Topography, however, will often require other block grading types.

Block Grading Type 2 for a gentle cross-slope involves drainage of some surface water from lots of the high side of the block across the lower tier of lots. Difficulties are not encountered, however, if slopes are gentle and if the water always drains over short routes to the streets and does not concentrate or accumulate in volume at any point inside the block.

Block Grading Type 3 for steep cross-slopes and Type 4 for a valley along rear lot lines require special provision for block drainage and erosion control.

Erosion is controlled by provision of intercepting drainage swales in easements at the top of the rear lot incline or at intermediate locations along it, and by treatment of the steep slope itself.

Drainage easements in Block Types 3 and 4 must have alignment, width and improvements appropriate for the expected use and maintenance. Assurance of permanent and adequate outfall is essential. The easements must be permanently



LOT GRADING TYPE A

ALL DRAINAGE TO STREET

SAMPLE COMPUTATION OF GRADING CONTROL LINE A-F FOR A 60' LOT ON A .05% STREET, WITH 28' SETBACK, 28' BUILDING DEPTH AND 2% SWALES

A	Curb-top on lot-line extension at high lot corner		
A-B	Parkway slope: 12' grass and walk at 1/4"/ft. (2%)	3"	(0.3')
B-C	Side swale: 56' grass at 1/4"/ft. (2%)	14"	(1.2')
C-D	Swale turn with 10' radius: 16' grass @ 1/4"/ft	4"	(0.3')
D-E**	Rear swale: 13' grass at 1/4"/ft. (2%)	3"	(0.3')
E-F*	Protective rear slope up from high-point of swales	3"	(0.3')
Sub-total A-F from curb-top to ground at rear bldg. wall		27"	(2.3')
Minimum rise from curb-top to slab floor: 27" + 8"		35"	(2.9')

*Where there is a high bank nearby or a long slope toward house, a minimum 6" protective slope is required

** Length D.E = 1/2 [lot width - (2 x swale turn radius) - (lot width x street gradient ÷ swale gradient)]

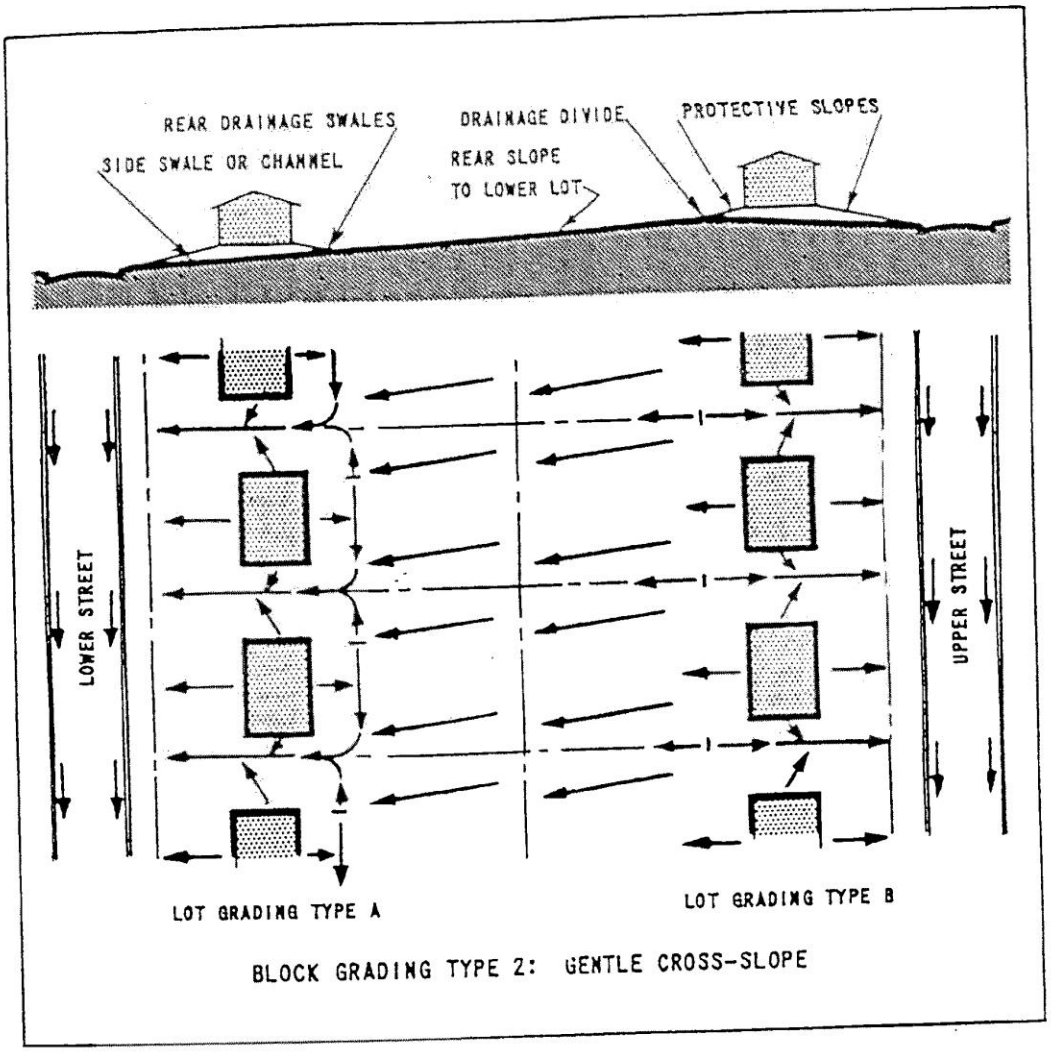
established by proper legal methods, with continuous maintenance assured by public authority, property-owners' association or individual owners, as appropriate to the situation. Walls, buildings and any other obstructions to drainage flow, such as dense planting or tight fencing, must be legally prohibited in the easement area.

LOT GRADING TYPES

Protective slopes away from all sides of all buildings are essential elements of all lot grading types (see drawings). Their purpose is to drain roof water and other surface water away from all building walls and backfilled areas. Where such a protective slope meets a slope which drains towards the building, a drainage swale of adequate width, depth and longitudinal gradient is necessary to carry away the surface water without flooding against buildings or ponding any lot areas.

The location of these swales is directly related to the block grading type which, as shown in the block diagrams, actually determines the lot grading type.

In Lot Grading Type A (see drawing), rear swales behind the house carry surface water from the rear yard to side-yard swales which carry it to the street for disposal through the street gutters and the public storm drainage system.



BLOCK GRADING TYPE 2: GENTLE CROSS-SLOPE

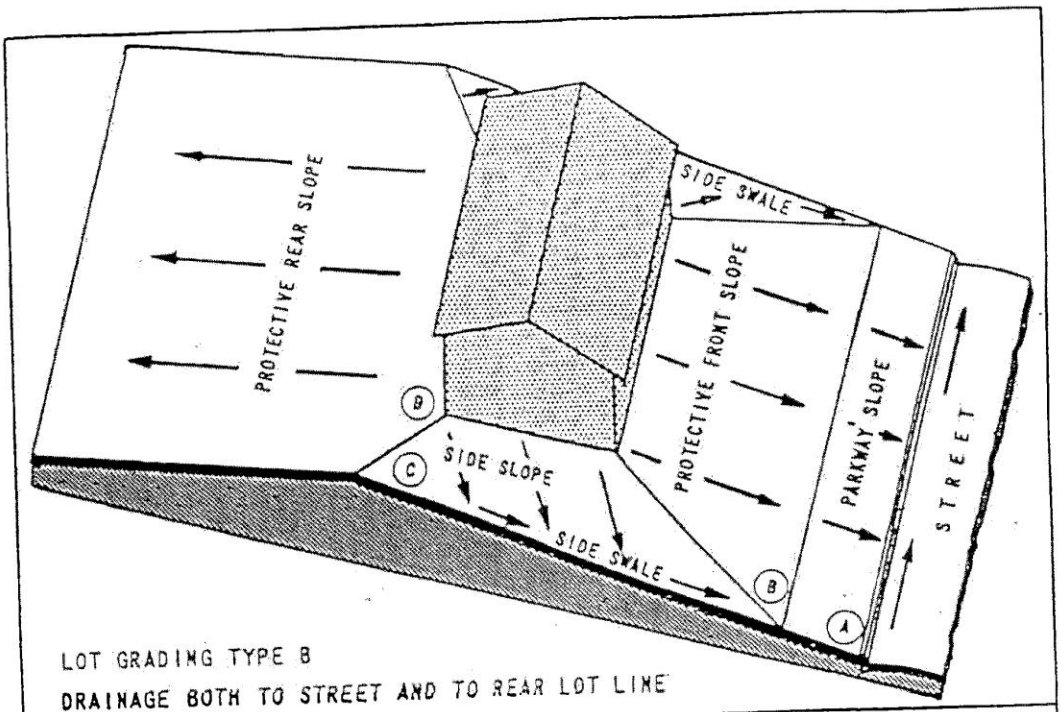
For Lot Grading Type B which drains both to the street and to the rear lot line, only side-yard swales are needed. They should extend back of the line of the rear building wall; then splash blocks from rear roof downspouts should be placed to direct roof water to the side swales for drainage directly to the abutting street. Thus the amount of water carried on the rear slope to easements or other properties is kept as small as possible. This reduces erosion and disposal problems.

In Lot Grading Type C draining entirely to the rear lot line, front swales are essential to carry surface water from the front yard to side-yard swales which carry it to the rear for disposal in easements or across other properties. Proper cross-section of the street gutter, curb and parkway strip are essential to stop street water from flowing onto the lot.

Easements and erosion involving Lot Types B and C are discussed above with Block Grading Types 3 and 4.

For lots with steep cross-slopes due to street gradients, similar lot grading types are used, the lot cross-slopes being taken up by walls or steep slopes along side lot lines or by changing grade levels along the front and rear house walls.

Where high slopes occur along side or rear lot



LOT GRADING TYPE B
DRAINAGE BOTH TO STREET AND TO REAR LOT LINE

SAMPLE COMPUTATION OF GRADING CONTROL LINE A-D FOR A 60' LOT WITH A 28' SETBACK, 28' BUILDING DEPTH AND 2% SWALES

A	Curb-top on lot-line extension at high lot corner		
A-B	Parkway slope: 12' grass and walk at 1/4"/ft. (2%)	3"	(0.3')
B-C	Side swale: 56' grass at 1/4"/ft. (2%)	14"	(1.2')
C-D*	Protective side slope at extension of rear wall	3"	(0.3')
Sub-total A-D from curb-top to ground at rear bldg. wall		20"	(1.7')
Minimum rise from curb-top to slab floor: 20" + 8"		28"	(2.3')

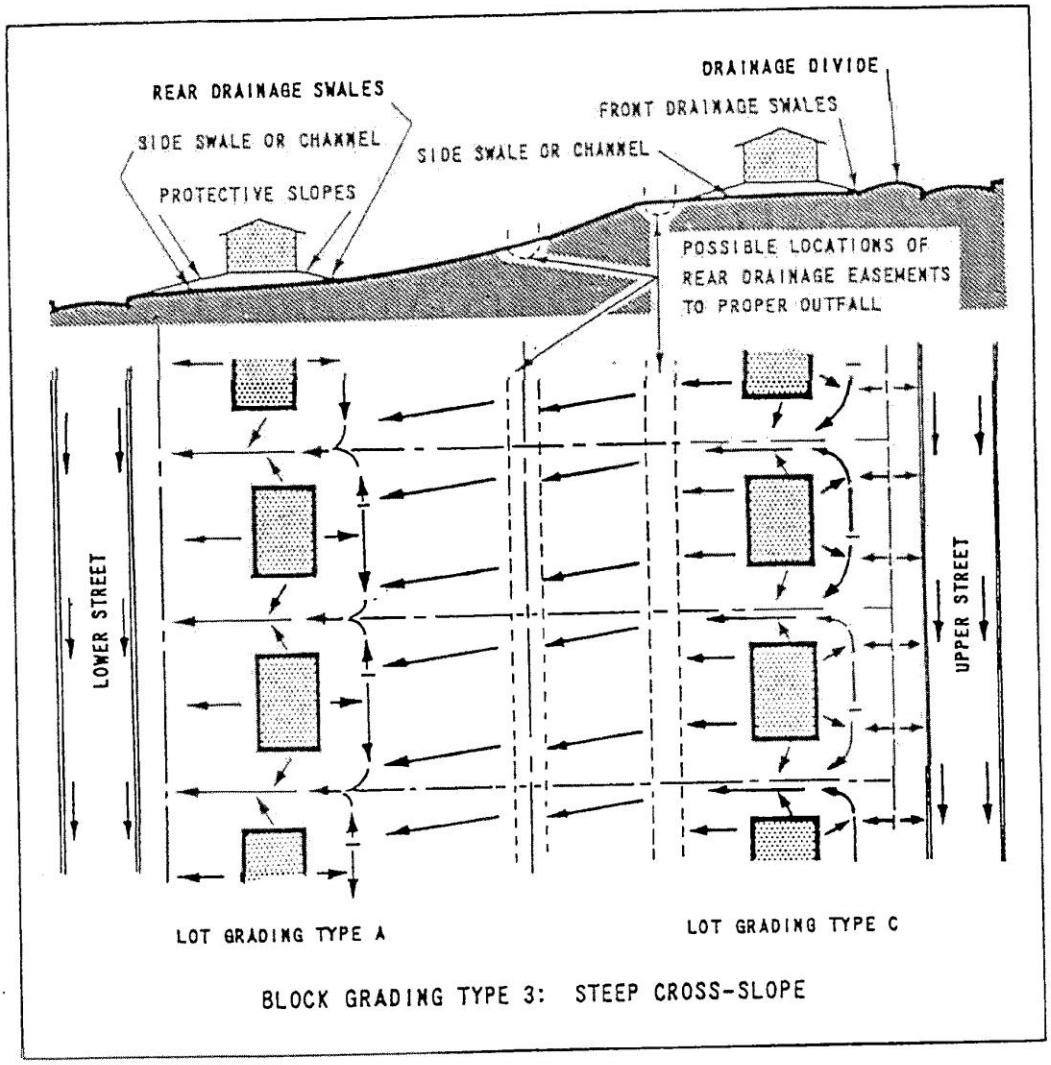
*Where there is a high bank nearby or a long slope toward house, a minimum 6" protective slope is required

lines, the lot line if possible should be located at the top of the slope. The appearance of the slope and any erosion from it directly affects the property below. That owner therefore is more interested in owning, stabilizing and maintaining the slope than is the owner of the property above whose outlook is over and beyond it.

LOT GRADING CONTROL LINE

The single most important grade relationship for proper lot grading and drainage, is house floor elevation in relation to street elevation. If the floor elevation is too low in relation to adjoining street grades, adequate protective slopes and drainage swales cannot be provided to drain the lot satisfactorily. If the floor elevation is too high, unnecessary terracing, expensive outside stairs and awkward appearance will result.

Proper floor elevation and lot grades for any lot can be obtained by establishing on plans and on the ground a lot grading control line appropriate for the specific property. The line is located differently for each lot grading type as shown by the circles lettered "A", "B", "C", etc. in the accompanying lot diagrams. Each control line starts at the top of the street curb near the indicated high or low lot corner and ends at the

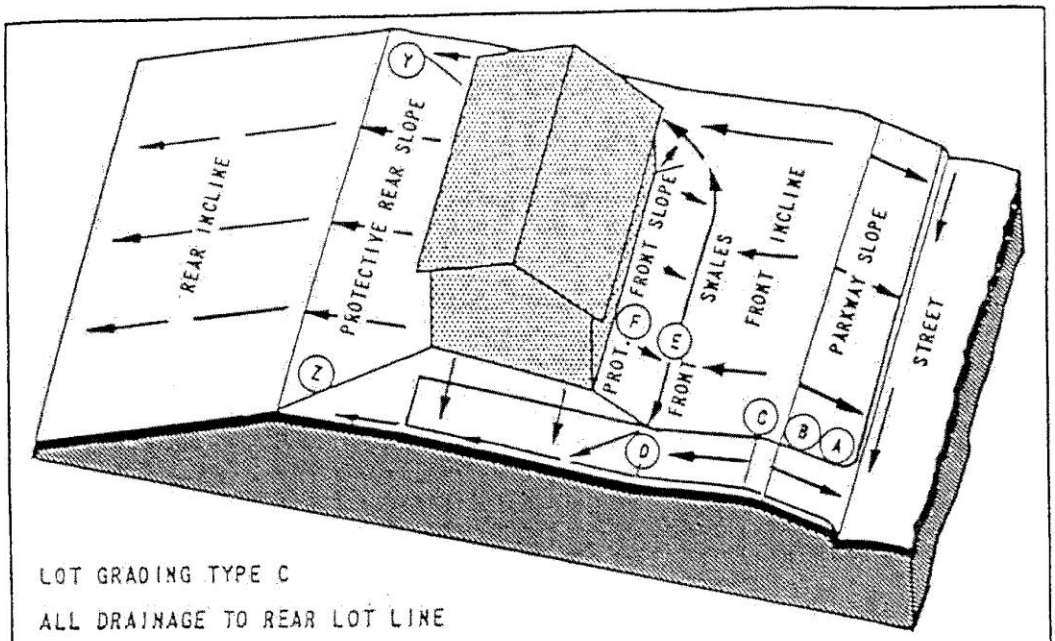


BLOCK GRADING TYPE 3: STEEP CROSS-SLOPE

point along the house wall where the outside finish grade controls the floor elevation. In the case of no street curbs, the starting point and elevation should be the normal curb location and the street center-line elevation.

The minimum street-to-floor rise for any lot is found by adding and subtracting the required rises and permitted falls along the lot grading control line for the property. The method is illustrated by the sample computation accompanying each of the three lot grading diagrams. For actual building operations, the relationship should be figured out specifically for each lot or group of typical lots because such factors as building setback, building depth, lot width and swale gradient may change the relationship considerably.

Minimum gradients for grass swales and other unpaved areas depend upon practical limits on precision in grading and maintaining land surfaces and upon the capacity of the ground to percolate water held back by surface texture and depressions. A gradient of 1/4 inch-per-foot (2%) is a practical minimum in areas subject to ground frost. Flatter gradients are usable, however, where the supplementary ground percolation at all seasons is adequate to prevent any prolonged saturation of soil or standing water. For example, 1/8 inch per foot (1%) is satisfactory on



LOT GRADING TYPE C

ALL DRAINAGE TO REAR LOT LINE

SAMPLE COMPUTATION OF GRADING CONTROL LINE A-F FOR A 60' LOT, 28' SETBACK, 13.5% DRIVEWAY, AND 16' FRONT SWALE D-E AT 2%

A	Curb-top at high side of drive near low lot corner		
A-B	Parkway slope: 12' grass and walk at 1/4"/ft. (2%).	3"	(0.3')
B-C	Driveway grade change: 4' vertical curve from up-grade drive in street to down-grade drive on lot	0"	(0.0')
C-D	Driveway down grade to point 10 feet out from building line 14' at 1 5/8"/ft. (13.5%)	-23"	(-1.9')
D-E	Front swale: 16' at 1/4"/ft. (2%)	4"	(0.3')
E-F *	Protective front slope up from high-point of swales	3"	(0.3')
	Sub-total A-F from curb-top to ground at building.	-13"	(-1.1')
	Minimum fall from curb-top to slab floor: -13" + 8"	-5"	(-0.4')

*Where there is a high bank nearby or a long slope toward house, a minimum 6" protective slope is required

sandy well - drained soils in areas not subject to ground frost.

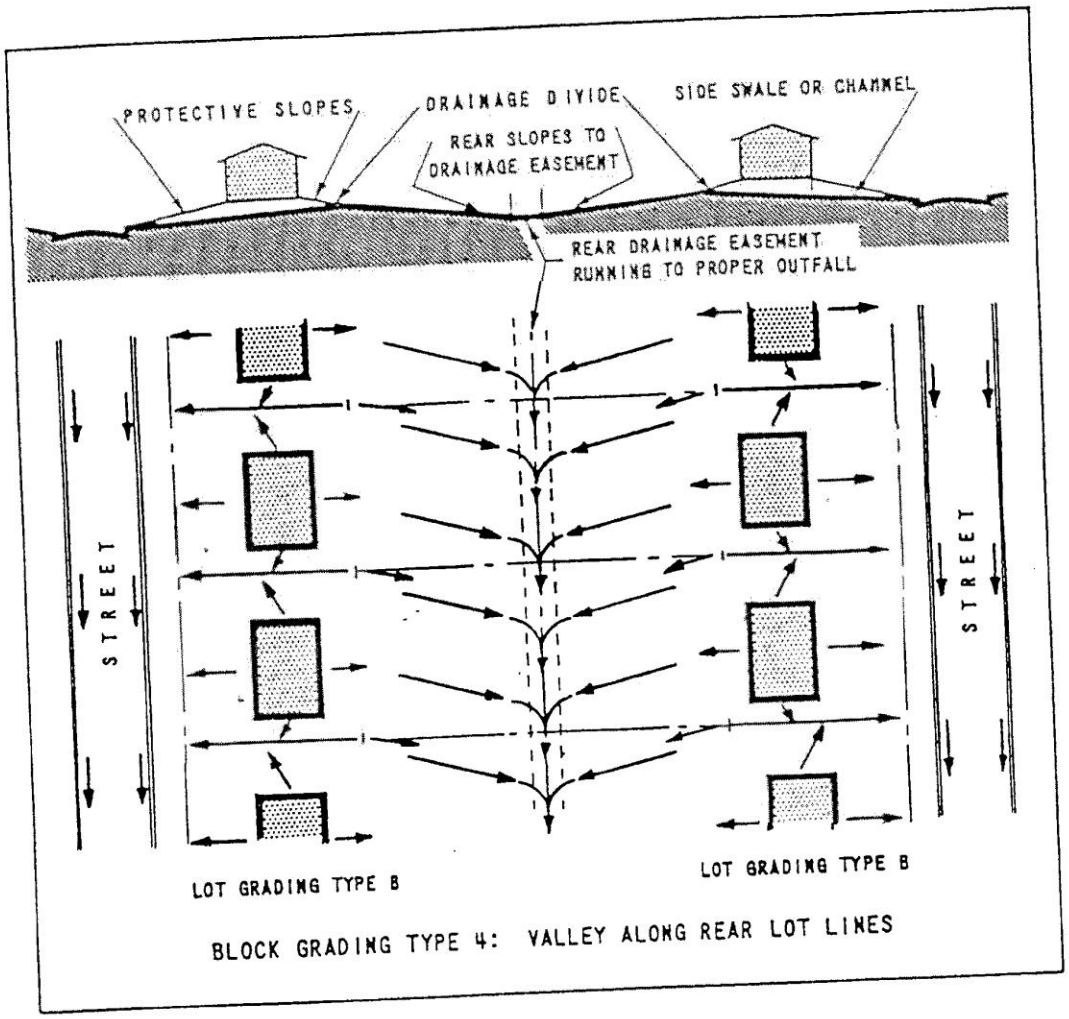
General limitations for protective slopes around buildings and for other elements affecting the lot grading control line are outlined in Section 1200 of FHA Minimum Property Standards. If necessary the control line sometimes may be flattened satisfactorily by special methods, such as using a paved driveway as a side-yard drainage channel at 1/16 inch per foot (½%) instead of a grass swale at 1/4 inch per foot (2%).

Floor elevation in relation to outside finish grade must be high enough to protect wood construction from moisture and insects. With 8" minimum from ground to wood sill, the minimum ground-to-floor rise is as follows for typical construction:

Concrete slab on ground: . . . . 8" (0.7')
Wood floor framing, 8" joists: . 19" (1.6')
Wood floor framing, 10" joists: . 21" (1.8')

For Lot Grading Type C which drains away from the street, the lowest floor elevation in relation to street grade is also affected by maximum driveway gradient and by local custom and acceptance of properties below the grade of the abutting street.

It should also be recognized that there are other lot grading types not illustrated here; each will have its own grading control line which will govern its minimum street-to-floor rise.



BLOCK GRADING TYPE 4: VALLEY ALONG REAR LOT LINES

ADJUSTMENTS TO EACH PROPERTY

After the minimum lot grading control line and minimum street-to-floor rise have been determined, they should be adjusted upward as suitable for existing topography and other conditions of each property.

For a house with a basement, check is made of elevations of drains for basement floor and any basement plumbing fixtures. For a house with a crawl space, floor elevation is checked for height of access space and drainage of interior ground (MPS 803-3). For a concrete slab house, floor elevation is checked against excessive depth of fill under the slab (MPS 808-4).

Then general lot grading is checked for feasibility and suitability. Proposed grades at any necessary additional key points are determined, and all grades are further adjusted as needed. These additional points and adjustments cover such items as grades of walk and driveway, variation of outside finish grade along building walls, width and gradients of usable yard areas, and transition to grades of adjoining properties.

After all key elevations have been properly determined by these adjustments in the planning stage, then execution of good grading on the ground is relatively easy. Care must be taken primarily to set grade stakes correctly at key points and to build and grade to them in accordance with the practices outlined in this data sheet and in the FHA Minimum Property Standards.

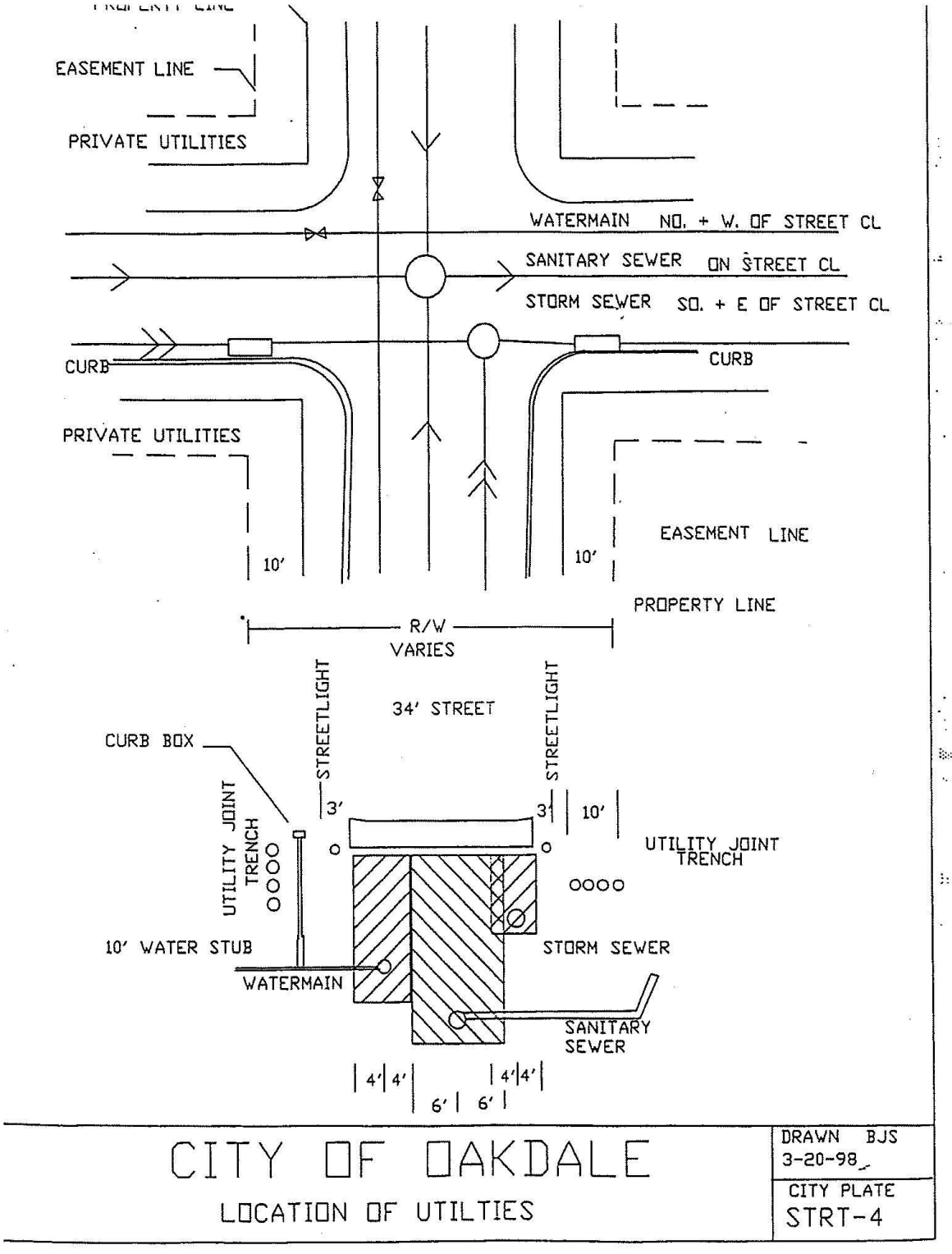
FHA-WASHINGTON, D. C.
115184-P Rev. 11/60

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix F: General Utility Locations Within Rights-of-Way for Street Lighting

Updated: December 13, 2018

General Utility Locations Within Rights-of-Way for Street Lighting



CITY OF
OAKDALE

ENGINEERING DESIGN GUIDELINES for PLAN DEVELOPMENT

Appendix G: Construction Stormwater Inspection Checklist

Updated: November 10, 2022

Construction Stormwater Inspection Checklist

Construction Stormwater Program

Doc Type: Permitting Checklist

Note: This inspection checklist is an option for small construction sites. Large construction sites and linear projects require more extensive/more location specific inspection requirements. This inspection report does not address all aspects of the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit (Permit) issued on August 1, 2018. The completion of this checklist does not guarantee that all permit requirements are in compliance; it is the responsibility of the Permittee(s) to read and understand the permit requirements.

Facility information

Site name: _____

Site address: _____ Permit number: _____

City: _____ State: _____ Zip code: _____

Inspection information

Inspector name: _____ Phone number: _____

Organization/Company name: _____

Date (mm/dd/yyyy): _____ Time: _____ ☐ am ☐ pm

Is the inspector trained in sediment and erosion control and is it documented in the Stormwater Pollution Prevention Plan (SWPPP)?
☐ Yes ☐ No

Is this inspection routine or in response to a storm event: ☐ 7 day ☐ Rain

Rainfall amount (if applicable): _____

Is site within one aerial mile of special or impaired water that can potentially receive discharge from the site? ☐ Yes ☐ No

If yes, follow Section 23 and other applicable permit requirements.

Note: If NA is selected at any time, specify **why** in the comment area for that section.

Erosion prevention requirements (Section 8.1)

		Yes	No	NA
1.	Are soils stabilized where no construction activity has occurred for 14 days (including stockpiles)? (7 days where applicable, or 24 hours during Minnesota Department of Natural Resources [DNR] Fish Spawning restrictions)	☐	☐	☐
2.	Has the need to disturb steep slopes been minimized?	☐	☐	☐
3.	If steep slopes are disturbed, are stabilization practices designed for steep slopes used?	☐	☐	☐
4.	All ditches/swales stabilized 200' back from point of discharge or property edge within 24 hours? (Mulch, hydromulch, tackifier, or similar best management practices [BMPs] are not acceptable in ditches/swales if the slope is greater than 2%)	☐	☐	☐
5.	Do pipe outlets have energy dissipation (within 24 hours of connection)?	☐	☐	☐
6.	Is construction phasing being followed in accordance with the SWPPP?	☐	☐	☐
7.	Are areas not to be disturbed marked off (flags, signs, etc.)?	☐	☐	☐

Comments:

Sediment control requirements (Section 9.1))

	Yes	No	NA
1. Are perimeter sediment controls installed properly on all down gradient perimeters?	☐	☐	☐
2. Are appropriate BMPs installed protecting inlets, catch basins, and culvert inlets?	☐	☐	☐
3. Is a 50 foot natural buffer preserved around all surface waters during construction?	☐	☐	☐
If No, have redundant sediment controls been installed?	☐	☐	☐
4. Do all erodible stockpiles have perimeter control in place?	☐	☐	☐
5. Is there a temporary sediment basin on site, and is it built as required in Section 14 of the permit?	☐	☐	☐
6. Is soil compaction being minimized where not designed for compaction?	☐	☐	☐
7. Is topsoil being preserved unless infeasible?	☐	☐	☐
8. If chemical flocculants are used, is there a chemical flocculant plan in place?	☐	☐	☐

Comments:

Maintenance and inspections (Section 11)

	Yes	No	NA
1. Are all previously stabilized areas maintaining ground cover?	☐	☐	☐
2. Are perimeter controls maintained and functioning properly, sediment removed when one-half full?	☐	☐	☐
3. Are inlet protection devices maintained and adequately protecting inlets?	☐	☐	☐
4. Are the temporary sediment basins being maintained and functioning properly?	☐	☐	☐
5. Are vehicle tracking BMPs at site exists in place and maintained and functioning properly?	☐	☐	☐
6. Is all tracked sediment being removed within 24 hours?	☐	☐	☐
7. Have all surface waters, ditches, conveyances, and discharge points been inspected?	☐	☐	
8. Were any discharges seen during this inspection (i.e., sediment, turbid water, or otherwise)?	☐	☐	

If yes, record the location of all points of discharge. Photograph and describe the discharge (size, color, odor, foam, oil sheen, time, etc.). Describe how the discharge will be addressed. Was the discharge a sediment delta? If yes, will the delta be recovered within seven days and in accordance with item 11.5 of the permit?

Comments:

Pollution prevention (Section 12)

	Yes	No	NA
1. Are all construction materials that can leach pollutants under cover or protected?	☐	☐	☐
2. Are hazardous materials being properly stored?	☐	☐	☐
3. Are appropriate BMPs being used to prevent discharges associated with fueling and maintenance of equipment or vehicles?	☐	☐	☐
4. Are all solid wastes being properly contained and disposed of?	☐	☐	☐
5. Is there a concrete/other material washout area on site and is it being used?	☐	☐	☐
6. Is the concrete washout area marked with a sign?	☐	☐	☐
7. Are the concrete/other material washout areas properly maintained?	☐	☐	☐

Comments:

Other

	Yes	No	NA
1. Is a copy of the SWPPP, inspection records, and training documentation located on the construction site, or can it be made available within 72 hours?	☐	☐	☐
2. Has the SWPPP been followed and implemented on site, and amended as needed?	☐	☐	☐
3. Is any dewatering occurring on site?	☐	☐	☐
If yes, what BMPs are being used to ensure that clean water is leaving the site and the discharge is not causing erosion or scour?			
4. Will a permanent stormwater management system be created for this project if required and in accordance with Section 15 of the permit (if adding an acre or more of new impervious surface)?	☐	☐	☐
If yes, describe:			
5. If infiltration/filtration systems are being constructed, are they marked and protected from compaction and sedimentation?	☐	☐	☐

6. Description of areas of non-compliance noted during the inspection, required corrective actions, and recommended date of completion of corrective actions:

7. Proposed amendments to the SWPPP:

8. Potential areas of future concern:

9. Additional comments:

Disclosures:

- After discovery, the permit requires many of the deficiencies that may be found on site be corrected within a specified period of time. See permit for more details.
- The Permittee(s) is/are responsible for the inspection and maintenance of temporary and permanent water quality management BMPs as well as erosion prevention and sediment control BMPs until another Permittee has obtained coverage under this Permit according to Section 3, or the project has met the termination conditions of the permit and a Notice of Termination has been submitted to the Minnesota Pollution Control Agency.