THE CITY OF ROCKFORD ILLINOIS, USA

ENGINEERING DESIGN CRITERIA

Public Works – Engineering Division

Revised- September, 2019

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INTRODUCTION

This document contains the standard criteria for the design of Public Works improvements in the City of Rockford. Specific design criteria may change depending on the complexity of the project. The information contained herein is current at the time of publication.

The references used throughout the document are listed in Appendix B. The term "Standard Specifications" refers to the *Standard Specifications for Road and Bridge Construction*, published by the Illinois Department of Transportation. All documents refer to their current edition.

A copy of this criteria can be found on the City's website: (https://rockfordil.gov/city-departments/public-works/)

For City of Rockford Water Division design and construction guidelines and standards, please visit the City's website: (https://rockfordil.gov/city-departments/public-works/water-division/design-construction/)

DISCLAIMER OF LIABILITY

While the City of Rockford believes the information contained herein is accurate and reliable, the City of Rockford bears no liability for reliance upon this material, including loss of profit, indirect, special or consequential damages. The end user of these criteria assumes all risk for reliance thereon.

CHAPTER I---GENERAL

SECTION 01---POLICY AND PROCEDURES

1.01 Project Number

All, projects (roadway, sewer, water, subdivision, etc.) shall require a project number. Project numbers will be assigned by the Engineering Division of the Public Works Department.

1.02 Alternative Designs

Before proceeding with the final design, the City will analyze alternative design concepts, sketches and cost estimates whenever feasible. However, the structural adequacy and/or the needs of the project shall not be compromised in exploring the most economical solution. The City Engineer shall select the best possible alternative design.

1.03 Plan Approval

Plans and specifications involving existing or future public facilities shall be submitted to the City Engineer for approval prior to being placed out to bid.

1.04 Changes in Plans after Approval

If changes to plans and specifications become necessary after their original approval by the City Engineer, the amended plans and specifications shall be re-submitted to the City Engineer for approval. An Addendum shall be made to the bid documents if the plans are currently out to bid. Otherwise, a Change Order shall be issued to the Contractor.

1.05 Joint Projects

Before starting design work on a joint project (i.e., jointly funded by the City of Rockford and the County of Winnebago or the City of Rockford and the State of Illinois), the scope and funding of all improvements shall be reflected by a written agreement of all parties concerned.

1.06 J.U.L.I.E. Information on Plans

The design plans shall state the type and nature of all utility facilities (mains and services) located within the right-of-way (ROW). The design plans shall also indicate all utility owners, their addresses and contact information.

The utilities shall be depicted with appropriate symbols. The vertical and horizontal location of utilities, to be relocated or adjusted, shall be shown on the design plans.

1.07 Traffic Control and Detours

For projects affecting the flow of traffic, the design plans shall include a Maintenance of Traffic Plan. The Maintenance of Traffic Plan shall consist of the design for the placement of all temporary signs, signals, markings, barricades, barrels, warning lights, flaggers and other devices during construction. Routes for detours, which are to be used to regulate, warn or guide traffic during construction of the improvement, shall also be depicted. All designs shall conform to the current edition of the *Manual on Uniform Traffic Control Devices*.

Advance warning signs for lane closures, intermediate information signs and standard signs shall be installed in accordance with the IDOT Highway Standards. Cones shall not be used as a traffic control device.

A Maintenance of Traffic Plan shall be submitted to the appropriate governing agency for the street under construction with a courtesy copy submitted to the City of Rockford along with any changes requested by the governing agency.

1.08 Engineering Services - Statement of Qualifications

The City of Rockford invites written Statements of Qualifications (SOQs) from qualified firms for professional services related to projects contained in the City of Rockford's Capital Improvements Plan (CIP) on a biannual basis. The City will request all interested firms to submit their SOQ for any relevant categories listed within the invitation.

Two copies of each SOQ shall be delivered to the Central Services Manager located at 425 East State Street, 4th floor, Rockford, Illinois 61104. The submittal of each SOQ must be accompanied by a completed *Prequalification Request Form*, which can be found in the invitation packet. Submittals for the SOQ process **must** contain the following information; failure to follow this format could result in the firm's disqualification from consideration:

1) Cover Letter on the firm's letterhead

2) One contact person for the firm

3) Brief introduction of the firm

4) Current IDOT prequalification status (if applicable)

5) IDOT Disadvantaged Business Enterprise (DBE) status (if applicable)

6) Letter from IDOT acknowledging the completion for IDOT's review of the firm's corporate and financial information, IDOT's Statement of Experience and Financial Conditions and the letter from IDOT specifying the firm's annual fee capacity and approved overhead rate (if applicable)

7) List and brief description of ongoing or completed City of Rockford projects for the past five years

8) List and comprehensive description of significant projects completed for other agencies within the past five years, including client, scope of work and project schedule demonstrating the firm's abilities in prequalification categories

9) Firm organizational chart, listing key staff

10) Key staff resumes, with resumes no longer than two pages

11) Completed form *Prequalification Request Form* in Appendix A, specifying which categories the firm requests prequalification

12) City of Rockford Equal Employment Opportunity (EEO) forms

13) References

The City of Rockford will evaluate the submittals to determine the prequalification of each firm. The evaluations will consider the completeness of the submitted documents, past performance experience, qualifications and experience of personnel, location of the firm, quality of client reference, support capabilities and the firm's work load.

The SOQ Prequalification Committee consists of the Director of Public Works, City Engineer, Capital Improvement Program Manager, Traffic Engineer, Stormwater Manager, Water Superintendent, Water Engineer and any of their designees.

Respondents shall be required to comply with the applicable laws related to Fair Employment Practices, Equal Employment and Business Opportunity. All projects will be designed and constructed according to the standards and specifications of the State of Illinois and the City of Rockford.

1.09 Engineering Services - Requests for Proposals

In some instances, the City of Rockford will invite written Requests for Proposals (RFPs) to qualified professional service firms for engineering services related to projects contained in the CIP.

The RFPs are to be delivered in sealed envelopes, marked with the project name and addressed to the Central Services Manager of the City of Rockford.

The specified project and description are enclosed with the request. The described project should be reviewed, and two copies of the RFP should be submitted for the project.

RFPs for the project shall include, but are not limited to, the following information:

1) Education, experience or expertise of the firm's principals and key employees.

2) The firm's general experience, ability and history of performance in projects similar to those under consideration.

3) Availability of adequate personnel, equipment and facilities to complete the work in the required time.

4) The name or names of individuals in the firm who will be assigned key project responsibilities with particular attention to the qualifications, competence and past performance as related to this specific project and projects similar to those under consideration.

5) The firm's approach to design, problem areas and management of the overall project. It shall incorporate communication, relative firm location, cost, control and construction services, if required.

6) The present work load as well as the present and future commitments of available personnel, particularly of those key individuals expected to be assigned to the project.

7) A time frame outline for basic services of the Engineer, including the time requirements of the Engineer to perform:

    a) Preparation of a Design Report indicating the considerations involved, alternative solutions available to the City and an opinion of probable cost.

b) Preparation of a preliminary design consisting of final design criteria, preliminary drawings and an opinion of probable cost.

c) Preparation of a final bid which shall include plans, ROW plats and legal descriptions as well as preparation of permits required by governmental agencies.

8) An outline of the firm's hourly fee schedule. This shall include the following:

a) Exhibit A – The range of payroll costs for the grades of employee who are anticipated to perform work on the project.

b) Exhibit B - The determination of the overhead and fringe benefit factors and profit, which will be later, multiplied by the payroll costs to achieve the consultant fees. Fees for service on the subject project shall be computed from the rates and factors shown on these exhibits.

Upon receipt of the RFPs, the Selection Committee shall review the material and, if required, request an interview. The Committee shall then negotiate a contract with the first selection. If an agreement on the terms of the contract is not reached, the Committee shall then terminate the negotiation and consider the second selection.

All respondents shall be required to comply with all applicable laws on Fair Employment Practices, Equal Employment and Business Opportunity. In regard to any contract entered into pursuant to this advertisement, the City shall affirmatively ensure that Minority and/or Women Business Enterprises shall be afforded full opportunity to submit RFPs and shall not be discriminated against in any manner for consideration of any award under this section.

1.10 Engineering Services- Qualified Based Selection

The City of Rockford receives federal funds, which may be used to pay for engineering and design related professional services. When these situations arise, the City will adhere to the Qualified Based Selection (QBS) process. For non-federally funded projects, the City may elect to follow their standard RFP process, as administered by the Purchasing Department.

The City of Rockford will post an announcement on our website (https://rockfordil.gov/city-departments/finance/central-services/purchasing/open-bidsrfps/) and/or publish an ad in a newspaper with appropriate circulation. The item will

be advertised for at least fourteen (14) days prior to the acceptance of proposals, and at least twice in the newspaper and/or on continuous display on our website.

The City will require consultants to submit a disclosure statement with their submittals. The use of the Illinois Department of Transportation's (IDOT) Bureau of Design and Environment Disclosure Forms (DISC 2) as well as their conflict of interest form will be required.

The City of Rockford will use the System for Award Management (SAM) Exclusions, IDOT's Chief Procurement Officer's (CPO) website and three other state SPO's websites to verify suspensions and debarments actions as well as to ensure the eligibility of firms short listed and selected for projects.

The City of Rockford allows the City Engineer to set the evaluation factors for each project, but must include a minimum of seven (7) criterion and stay within the established weighting range. The maximum of DBE and local presence combined will not be more than ten percent (10%) on projects where federal funds are used. Project specific evaluation factors will be included at a minimum in the Request for Proposals:

1) Technical Approach (10-30%)
2) Firm Experience (10-30%)
3) Specialized Expertise (10-30%)
4) Staff Capabilities (Prime/Sub, 10-30%)
5) Work Load Capacity (10-30%)
6) Past Performance (10-30%)
7) In-State or Local Presence (1-10%)

The City of Rockford will require a minimum of a three (3) person selection committee. Typically, the selection committee members include the City Engineer, the Capital Improvement Operations Manager, and the Traffic Engineer. In the event one of these positions is vacant, the Public Works Director (or their designee) will be utilized in place of the vacancy. The City of Rockford reserves the right to include additional city staff on a project by project basis and as different subject matter experts are needed. Selection committee members are chosen by the City Engineer for each project. The City would require each member of the selection committee to provide an independent score for each proposal. Additional criteria may also be added as deemed necessary by the City Engineer. The selection committee members' scores will be averaged for a committee score, which is used to establish a short list of three firms. The committee score is adjusted by the committee based on group discussion and information gained from presentations and interviews to develop a final ranking. If there are other firms within ten percent (10%) of

the minimum score, the City Engineer may choose to expand the short list to include more than three firms.

The City of Rockford will require a minimum of a three (3) person team to negotiate with firms. The team consists of the City Engineer, Capital Improvement Program Operations Manager, and the Traffic Engineer. In the event one of these positions is vacant, the Public Works Director (or their designee) will be utilized in place of the vacancy. Members of the negotiation team may delegate this responsibility to staff members. The City of Rockford will require the City Engineer to review the contract costs and the indirect cost rates to ensure they are compliant with Federal cost principles prior to submission to IDOT.

1.11 Agency Requirements

Designs shall comply with the requirements established by the agency providing funding whether City, State or Federal.

1.12 Design Responsibilities

All engineering designs, whether done by a consultant working for the City, a consultant working for a developer or by the Engineering Office, shall meet with the City Engineer and Staff to develop a project scope as well as discuss preliminary guidelines and project overview.

1.13 ROW Acquisition Policies

ROW acquisition shall be performed according to the *City of Rockford Land Acquisition Policies and Procedures*.

1.14 Utility Coordination

The Engineer shall contact all utilities to determine their location. The Engineer shall then note on the construction plans all known information regarding the location of said utilities.

Preliminary and final design plans shall be submitted to each utility for review.

1.15 Permits

Water/IEPA

Plans involving the extension, addition or relocation of City water mains shall require an Illinois Environmental Protection Agency (IEPA) permit.

Sewer

Plans involving the extension, addition or relocation of sanitary sewers shall require an IEPA Construction Permit. The plans shall be submitted to the Rock River Water Reclamation District (RRWRD) for review.

Waterway Permits

Permits, if required, to construct drainage structures, channel changes or point discharges into an existing stream, creek, river or lake shall be secured from the Illinois Department of Natural Resources (IDNR), the Army Corps of Engineers (ACOE) and the IEPA.

Permit to Discharge Water

A Notice of Intent (NOI) and a Notice of Termination (NOT) shall be submitted to the City of Rockford's Stormwater Manager for every City project. For private projects, the NOI and NOT shall be submitted to the Illinois EPA.

A Storm Water Pollution Prevention Plan (SWPPP) must be prepared for all sites disturbing over one (1) acre and submitted to the City of Rockford and IEPA. A Stormwater Management Permit must be obtained from the City of Rockford for sites that disturb under one (1) acre.

ROW Permits

All work proposed within the public ROW may require a permit issued by one or more of the following agencies: City, State, County, Township, and/or the Department of Public Works, Engineering Division.

Other Permits

Other permits, such as work within Railroad ROW and zoning approval of site development may be required based on the complexity of a particular project.

1.16 Guarantee of Work

Engineers shall bear full responsibility for their designs and any liability resulting therefrom. When IDOT procedures require the City Engineer to sign projects designed by the Engineer, the Engineer shall provide a letter to the City Engineer or note on the plans stating that the Engineer is fully responsible for the design and the City Engineer has signed only "RELIANCE upon the representations of said Engineer".

1.17 Bond Requirements/Insurance Requirements

Contracts awarded by the City shall require contract bonds in the penal sum of the full amount of the contract, guaranteeing the faithful performance of the work in accordance with the terms of the contract.

For all work proposed within the public ROW, a surety bond shall be executed and filed with the City Engineer's Office prior to the commencement of work that meets the requirements of the City of Rockford Code of Ordinances Chapter 26 Article XI. – Construction in the ROW Sec. 26-217 - Security.

All work proposed within the public ROW will require a certificate of insurance to be filed with the City of Rockford that meets the requirements of the City of Rockford Code of Ordinances Chapter 26 Article XI. – Construction in the ROW Sec. 26-215 - Insurance. The Engineering Consultant and City of Rockford shall be named on the certificate of insurance as additional insured.

The costs of future public improvements proposed by developers shall be in accordance with Chapter 121: Subdivision Regulations of the Code of Ordinances.

1.18 Public Improvement/Subdivision Acceptance

All projects involving the installation or construction of public facilities shall receive final inspection by the City prior to acceptance. Completion of all items and passage of all required inspections or tests is mandatory. Final acceptance by the City shall be in writing from the Department of Public Works.

SECTION 02---PLAN AND SPECIFICATION REQUIREMENTS

2.01 Plan and Profile Sheet

Plans shall be drawn on a reproducible medium and shall be of sufficient detail to depict requirements 1) and 2) below, as well as a reasonable distance outside of the ROW

Plan features may vary based on the complexity of the project and should be discussed at the project preliminary meeting. Typical designs will require the following as a minimum:

1) Existing Features (Shown in relatively light lines)

   a) Plan Views

      i. Existing pavement, curbs, shoulders, driveways and street locations on the opposite side of the adjacent streets for site plans.

      ii. Sidewalks and driveways.

      iii. Fences.

      iv. Trees and utility poles.

      v. Manholes, inlets, catch basins, headwalls, valve vaults, telephone vaults, risers, etc.

      vi. Drainage structures, ditches and basins.

      vii. Storm sewers, sanitary sewers, water mains and other underground utilities with type and sizes.

      viii. Water shut-offs.

      ix. Property lines and lot pins.

      x. Existing spot elevations and contours.

   b) Profile View

      i. Centerlines, left and right edge of pavement profiles of roadway with elevations at fifty foot (50') intervals, minimum and at all breaks in grade.

      ii. Invert and rim elevations of all manholes, inlets, valves and vaults.

iii. Profile of existing water, storm and sanitary sewer.

2) Proposed Improvements

a) Plan View

i. Location showing roadways, sanitary sewers, water mains, storm sewers, street names, lot numbers, street addresses and a Benchmark index.

ii. Newly constructed roadway, storm sewer, sanitary sewer and services with location measurements from property pins, water main and services with location measurements from property pins, related stationing, etc., shall be in heavy lines and appropriately designated.

iii. Elevations every 50 feet, horizontal and vertical curve information, slope data, quantities, stationing, benchmarks, dimensions, descriptive and directive notes, etc. shall be shown.

b) Profile View

i. The original centerline grades of the original ROW as well as the documented profile or transverse grades of any existing storm and sanitary sewers, culverts, ditches, water main, underground telephone, electric conduit or gas main shall be shown with relatively fine lines with proper identification.

ii. Improvements in storm and sanitary sewers (including rim and invert elevations), culverts, ditches, manholes, inlets, water mains, centerline profiles of planned roadway stationing, etc. shall be shown in heavy lines and properly identified.

iii. Elevations every 50 feet, horizontal and vertical curve information, slope data, quantities, stationing, benchmarks, dimensions, descriptive and directive notes, etc. shall be shown.

c) Typical roadway sections with stationing shall be presented based upon design requirements.

2.02 Scale

A horizontal scale of one inch (1”) equals twenty feet (20’) and a vertical scale of one inch (1”) equals five feet (5’) is preferred. The record drawing set shall be drawn on a reproducible medium and shall be of sufficient detail to show all requirements.

2.03 Location of North Arrow

The north arrow shall be bold and clearly marked, with north generally oriented to the top or right side of the plan sheet.

2.04 Reproducible Record Drawings

Upon completion of construction and prior to final acceptance by the Public Works Department, the engineer shall provide one set of record drawings on paper and one digital set in AutoCAD format for the project upon the request of the City Engineer. The format shall be strikethrough record drawings showing the proposed and the record measurements on the same set of plans.

2.05 Design Process

1) Step One: Design Report

A Design Report, when required, shall be prepared with appropriate exhibits clearly indicating the following:

A. Considerations involved and the alternative solutions available, setting forth the Engineer's findings and recommendations with opinions of probable costs including construction, ROW, construction inspection and contingencies.

B. A copy of the Report shall be submitted to the City Engineer for review. The Engineer may be required to present the report in person in the Department of Public Works, Engineering Division.

2) Step Two: Preliminary Design

After the authorization to proceed with the Preliminary Design Phase is provided, the Engineer shall:

A. Prepare preliminary design documents consisting of final design criteria, preliminary drawings and outline specifications.

B. Based on the information contained in the preliminary design documents, submit an opinion of probable cost for the Project including construction costs, ROW, construction inspection, contingencies and compensation for all consultants.

C. The preliminary design documents and cost estimates shall be submitted to the City Engineer for review.

3) Step Three: Final Design

After authorization to proceed with the Final Design has been provided, the Engineer shall:

A. Perform all necessary engineering work incidental to complete design surveys and prepare detailed construction plans, specifications as well as cost estimates for the completion of the Project.

B. If required by the City Engineer, arrange and attend a meeting with representatives of the City, all interested agencies and utility companies for an on-site inspection and evaluation meeting with plan-in-hand. The Engineer agrees to abide by any changes, which result from such meeting and incorporate all such changes in the plans and specifications prior to final submission to the City.

C. Produce such documents and design data as may be required for, and assist in the preparation of the required documents to obtain permits and approvals of such governmental authorities as have jurisdiction over design criteria applicable to the Project.

D. Advise the City Engineer of ROW map, if required, showing all current property ownership along with ROW easement documents.

E. Prepare plats and legal descriptions for deeds and easements.

F. Prepare a cost estimate using the "Bid Tab" spreadsheet template provided by the City.

G. Establish required survey control both horizontally and vertically necessary to complete the Project. Horizontal control shall be based on the datum, projection and coordinate system currently in use by Winnebago County Geographic Information System (WinGIS).

2.06 Document Submittal and Review

1) Pre-Final Plans, Specifications and Estimate

Engineer shall submit an electronic copy of Pre-Final Plans, Specifications and Cost Estimate to the City for review. Engineer shall allow up to two (2) weeks for review. If necessary, the City will provide review comments for the Engineer to make revisions to the documents before final submittal.

2) *Final Plans, Specifications and Estimate*

Upon addressing all City comments, the Engineer shall furnish the City with an electronic and hard copy of all plans along with required specifications, cost estimates

and all necessary contract documents in complete form, and, if required, shall present and review them in person with the City Engineer.

2.07 Right of Products

The City of Rockford is entitled to the rights of products of all the projects and may request the CAD base model of the project drawings for use during construction.

SECTION 03---ROADWAY FUNCTIONAL CLASSIFICATIONS

3.01 Functional Classification System

All streets shall be classified according to their functional use in conformance with the current Region 1 Planning Council (R1PC) *Functional Classification System*.

Principal Arterial

This type of street serves the major centers of activity of a metropolitan area, the highest traffic volume corridors and should carry a high proportion of the total urban area travel. The geometric design and traffic control measures for this type of street are used to facilitate the safe movement of through traffic.

Minor Arterial

This type of street interconnects with and augments the urban principal arterial system and provides service to trips of moderate length at a somewhat lower level of traffic mobility, while providing access to abutting property; subject to the necessary control of entrances, exits and curb use so as to increase the capacity and improve the safety characteristics of the street.

Collector

This type of street provides both land access to abutting property and traffic circulation within residential neighborhoods, commercial and industrial areas. The urban collector should collect traffic from these areas and the local street system and channel it into the arterial system.

Industrial, Commercial

This type of street serves only to provide access to abutting industrial and commercial properties.

Local Residential

This type of street comprises all facilities not on one of the foregoing systems. This type of street serves only to provide access to abutting property as well as service to residential and commercial areas.

SECTION 04---SUBDIVISION AND SITE PLAN REQUIREMENTS

4.01 Required Submittals

Along with the requirements of this design manual and the current *Subdivision Ordinance*, the following shall also be submitted:

1) One set of signed/sealed plans and one electronic copy.

2) Location address; project name; Vicinity Map-including adjacent street names and intersections.

3) Title Block including name, address and phone of Engineer or Architect who prepared the plans.

4) North arrow and proper engineering scale.

5) All proposed and existing driveways/curb cuts on both sides of street. Clearly labeled as either existing or proposed. Existing curb cuts/driveways not being used shall be noted on the plans as being removed and reconstructed as such, including any necessary sidewalk reconstruction.

6) Dimensions for all streets, ROW, driveways, curb cuts, parking stalls, curb radii, sidewalk, etc. (maximum width of commercial driveways at ROW is 35 feet (35') and maximum width of residential driveways at ROW is 24 feet (24')).

7) All new concrete sidewalks shall be a minimum of five feet (5') wide, offset one foot (1') into ROW, continuous through all driveways and compliant with Americans with Disabilities Act (ADA) regulations.

8) Landscaping, parking layout and striping plan.

9) Building gross square footage area (with finish floor elevations).

10) Indicate direction of drainage flow.

11) Limits of detention area (volume, incoming rate and release rate); Low flow channel (size and cross section).

12) Size and type of existing/proposed storm drain system labeled clearly (with inverts and rim elevations).

13) Drainage/detention calculations.

14) Existing and proposed contour lines or spot elevations within the proposed site as well as within 100 feet of the proposed site.

15) All existing/proposed utilities (including location, size, service sizes and fire service sizes).

16) Proposed water main taps to include note "to be installed by City of Rockford Water Division" (site plans).

17) All easements (utility, sewer, water, ingress/egress, electric, phone, cable).

18) All buildings, additions and parking areas as either existing or proposed.

19) Erosion Control Plan and Storm Water Pollution Prevention Plan (SWPPP), if required by IEPA permitting process.

20) Location of street lights and label type of light to be installed and note "to be installed in accordance with ComEd standards."

21) Turning movement exhibits for all access points with the appropriate design vehicle.

CHAPTER II---DESIGN

SECTION 05---DESIGN TRAFFIC

5.01 Design Speed

The design speed, in miles per hour, for determining the roadway geometric design elements for the various street classifications shall be five (5) miles per hour over the existing posted speed limit. The standard speed limit in the City is 30 miles per hour, unless posted otherwise. For new roadways, the design speed should be discussed with the City Engineer during the preliminary scoping meeting.

5.02 Street and Capacity

The Design Hour Volume (DHV) of traffic used in the design of arterial streets shall be the 30th highest hourly volume. As a rule, the design hour volume shall be approximately eight to ten percent (8%-10%) of the average daily traffic for a twenty-four hour (24 hr.) period.

Design criteria for urban arterial streets shall be in accordance with the current Highway Capacity Manual (HCM). The HCM methodology shall be used to measure level of service. A minimum acceptable Level of Service (LOS) for urban arterial streets and intersections is LOS D, unless an exception is granted by the City Engineer.

An Intersection Design Study (IDS) may be required for any intersection formed by any combination of the highest three roadway classifications, arterial, minor arterial and collector (including commercial and industrial collector).

5.03 Traffic Impact Study

The developer shall be responsible for the cost of preparing a traffic impact study, if required, and any subsequent revisions thereto. The requirement of a traffic impact study shall apply to all site plans which meet or exceed one or more of the following at full build-out of the project:

1) The increase in traffic generated by the development is greater than or equal to ten percent (10%) of the total existing vehicle trips on the adjacent street system.

2) The development generates one thousand (1,000) or more daily trip ends as determined by the average daily trip rate from the current *ITE Trip Generation Report*.

3) May cause an existing or proposed intersection within the scope of the site plan to meet the warrants for traffic signal installation.

4) May cause an existing signalized intersection within the scope of the site plan currently operating at a peak hour LOS C, better to degrade to a peak hour LOS D or worse.

5) May aggravate an existing traffic problem location such as high accident location or an intersection with confusing geometry.

SECTION 06---GEOMETRIC DESIGN

6.01 Street Design Standard

All streets within the City of Rockford shall be designed and built to the guidelines described in the IDOT *Local Roads and Streets Manual*.

All roadway facility designs shall adhere to the City of Rockford's *Complete Streets Policy*.

6.02 Parking Lane Width

In general, no parking should be permitted on arterial, commercial and industrial streets. Variances may be authorized by the City Engineer. On local residential and collector streets, the parking lane shall be eight feet (8') in width.

6.03 ROW Width

The minimum ROW shall be one hundred twenty feet (120') in width for principal arterial streets; one hundred feet (100') for minor arterial streets; eighty feet (80') for industrial and commercial collectors; sixty six feet (66') for residential collector streets; and sixty feet (60') for local industrial, commercial and residential streets.

6.04 Medians or Boulevards

Medians for streets other than major arterials require the approval of the Public Works Department and shall meet the following criteria:

The width may vary from a minimum of six feet (6') to a maximum of 32 feet, measured pavement edge to pavement edge. Generally, medians installed at intersections are used to restrict left turn movements from driveways and to provide a safe island for pedestrians use when crossing at or near a signalized intersection. At intersections, a separate left turn lane may be designed in the median area with a six-foot (6') raised median and twelve-foot (12') turn lane. However, the requirement and the design for this type of installation of a left turn lane shall be reviewed and approved by the City Traffic Engineer. If medians or boulevards are to be constructed, approval shall be secured prior to design, and additional ROW may be required depending upon the design and width of the median.

6.05 Street Grades

The maximum and minimum vertical street grade for arterial, industrial and collector streets shall meet current IDOT requirements.

6.06 Curb and Gutter Section

The standard curb and gutter cross section shall be **M6.18** (modified). See Detail 6-01 in Appendix A.

The minimum grade for gutter drainage shall be five tenths of a percent (0.5%).

SECTION 07---PAVEMENT DESIGN

7.01 General

Pavement Design specifications provided herein are minimums only. Minimum values shall be increased to comply with the current IDOT *Local Roads and Streets Manual.*

7.02 Roadway Material and Thickness

All streets shall have a pavement design completed using IDOT's Modified AASHTO Method.

1) Bituminous Pavement

a.) Roadway Base – Roadway base shall be 6" Aggregate Base Course, IDOT Type B, CA-6 placed on 6" Subbase Granular Material, IDOT Type B, CA-2 or equivalent as approved by City Engineer (compacted in place).

b.) Roadway Surface – Bituminous pavement shall be in accordance with the following chart, or as otherwise specified by the City Engineer:

Bituminous Thickness	Street Classification
1.5" Hot-Mix Asphalt Surface Course, Mix "D", N50 2.5" Hot-Mix Asphalt Binder Course, IL-9.5, N50	Residential
2.0" Hot-Mix Asphalt Surface Course, Mix "D", N50 4.0" Hot-Mix Asphalt Binder Course, IL-19.0, N50	Residential Collector
2.0" Hot-Mix Asphalt Surface Course, Mix "D", N70 4.0" Hot-Mix Asphalt Binder Course, IL-19.0, N70	Commercial/ Industrial
2.0" Hot-Mix Asphalt Surface Course, Mix "D", N70 6.0" Hot-Mix Asphalt Binder Course, IL-19.0, N90	Collector/ Arterial

c.) Leveling Binder – Leveling binder shall be in accordance with the following chart, or otherwise specified by the City Engineer:

Leveling Binder	Street Classification
Leveling Binder (Machine Method), IL 9.5, N50	Residential
Leveling Binder (Machine Method), IL 9.5, N70	Residential Collector
Leveling Binder (Machine Method), IL 9.5, N70	Commercial/ Industrial
Polymerized Leveling Binder (Machine Method), IL 4.75, N50	Collector/ Arterial

d.) If the pavement design reveals a pavement thickness less than the required minimum, then the minimum thickness stated in the above chart shall be used. If the pavement design reveals a pavement thickness greater than the minimum, then the design thickness shall be used.

2) Portland Cement Concrete Pavement

a.) PCC Pavement thickness shall be approved on a case by case basis and shall be based on the pavement design.

b.) Joints – All joint sizes and spacing shall comply with the current IDOT *Local Roads and Streets Manual.*

7.03 Curb and Gutter

All residential roadways shall have concrete curb and gutter.

7.04 Shoulder

Where no curb and gutter is constructed, there shall be a shoulder conforming to the *Local Roads and Streets Manual* or as specified by the City Engineer.

SECTION 08---TRAFFIC SIGNAL DESIGN

8.01 General

All signal design elements and configurations shall conform to the MUTCD and Illinois Supplement to the MUTCD standard requirements.

8.02 Basis of Installation of Traffic Signals

The installation of a traffic signal shall be determined by an engineering study of traffic conditions, pedestrian characteristics and physical characteristics of the location. The study shall include an analysis of the applicable factors and warrants outlined in the MUTCD. A traffic signal shall not be installed unless the engineering study indicates that installing a traffic signal shall improve the overall safety and/or operation of the location. The satisfaction of a traffic signal warrant or warrants shall not, in itself, require the installation of a traffic control signal. Engineering judgment should be applied in the review of operating traffic control signals to determine whether the type of installation and the timing program meet the current requirements of all forms of traffic. A traffic signal shall not be installed if it will seriously disrupt progressive traffic flow.

Alternative traffic control must be considered prior to the installation of traffic signals, even if one or more of the signal warrants have been met. These alternatives may include, but are not limited to: installing STOP control at either the minor street or all legs of the intersection; making geometric changes to the intersection to improve sight distance, capacity or safety; installing traffic calming devices such as traffic circles or bumpouts; and installing a roundabout.

All traffic signal installations must be approved by the City Traffic Engineer.

8.03 Decorative Traffic Signals

All new traffic signal installations shall be decorative. Decorative traffic signals shall consist of painting all signal posts and mast arms with a black powder coating. All signal heads and visors shall also be black. A special provision for PAINT NEW TRAFFIC SIGNAL POST AND MAST ARM can be found in Appendix A.

8.04 Transverse Location of Traffic Signal Supports and Controller Cabinets

In the placement of signal supports, primary consideration shall be given to ensuring the proper visibility of signal faces. However, in the interest of safety, signal supports and controller cabinets should be placed as far as practicable from the edge of the traveled way without adversely affecting signal visibility.

Supports for post-mounted signal heads at the side of a street with curbs shall have a horizontal clearance of no less than four feet (4') from the back of the vertical curb. Where there is no curb, supports for post-mounted signal heads shall have a horizontal clearance of no less than two feet (2') from the edge of a shoulder within the limits of normal vertical clearance or a minimum of ten feet (10') behind the edge of pavement, whichever is greater from the edge of the nearest travel lane. A signal support shall not obstruct a sidewalk.

8.05 Mast Arm Assembly and Poles

Mast arm assemblies and poles shall be made of galvanized steel. Other mast arm assemblies and poles may be used with prior written approval from IDOT.

All mast arm poles shall be located a minimum of six feet (6') behind the back of the curb. Where there is no curb, the mast arm poles shall be located a minimum of ten feet (10') behind the edge of the pavement or two feet (2') behind the edge of the shoulder, whichever distance is greater from the edge of the nearest travel lane.

Mast arm shall be located to utilize a fourteen foot (14') to fifty-four foot (54') mast arm assembly. The mast arm lengths shall be in two feet (2') increments up to fifty four feet (54') (i.e. 14', 16' ...75'). The outer traffic signal head on a mast arm assembly is to be placed two feet (2') in from the end of the mast arm.

8.06 Traffic Signal Head Mountings and Materials

Traffic signal display shall be LED and come with a 15 year warrantee. Signal heads must conform to MUTCD requirements.

Both post top and bracket mounted signal heads shall be made of approved material. Mast arm mounted signal heads shall be made of polycarbonate resin. All signal head housings shall be made of polycarbonate resin.

Back plates shall be installed on all mast arm mounted signal heads. Post top and bracket mounted heads shall be furnished with back plates as directed by the City Traffic Engineer.

Bracket mounted traffic and pedestrian signals shall be installed with polycarbonate arms. Mast arm mounted traffic signals shall be mounted using a Sky Bracket mounting bracket.

Over the roadway traffic signals shall be mounted on a mast arm assembly and pole. Span wire mounting is to be used for temporary signals only and is not acceptable for permanent installations.

Conduits for traffic signals shall be coilable non-metallic, as specified in IDOT's *Standard Specifications.*

8.07 Traffic Signal Controller and Cabinet

The traffic signal controller shall be a NEMA TS-2, Type 2 Siemens m50 Series Traffic Controller or greater series that is compatible with the City of Rockford's Traffic Operations software. At the time of this manual's publication, the City of Rockford operates with EPAC software 3.34G or less. The controller must all be compatible with Siemens TACTICS 3.0 software.

All new conflict monitors or malfunction monitoring units shall have an LCD display.

The traffic signal controller cabinet must be an IDOT Type IV or larger, unless otherwise approved by the Traffic Engineer. The Type IV cabinets must include a 200W heater and larger cabinets must include a 400W heater. Cabinets must also include a transfer switch for external generator backup and a police door pushbutton switch.

8.08 Pedestrian Signals and Detection

Pedestrian signals shall have a countdown timer display and contain both displays in one section head. Pedestrian signal display shall be LED and come with a 15 year warranty. Signals shall conform to the MUTCD.

Pedestrian push buttons shall be located per MUTCD guidelines and within the ten inch (10") reach requirements from the sidewalk per Illinois ADA, along with any other applicable ADA standards.

8.09 Vehicle Detection

The City's preferred vehicle detection is video, unless otherwise directed by the City Traffic Engineer.

8.10 Emergency Vehicle Priority Beacons

The installation of an emergency vehicle priority beacon should be coordinated with the City of Rockford's Traffic Engineering Division and the Fire Department.

SECTION 9---STORMWATER MANAGEMENT

9.01 General

1) The design for stormwater management shall follow the *Illinois Urban Manual, IDOT Drainage Manual, Local Roads and Streets Manual* and City of Rockford Stormwater Ordinance.

2) Stormwater detention facilities shall be designed by a registered professional engineer.

3) Upon completion of construction, a set of record drawings certified by a registered professional engineer shall be submitted to the Department of Public Works.

9.02 Erosion Control

Erosion control design shall follow the latest edition of the Illinois Environmental Protection Agency's *Illinois Urban Manual* and be prepared by a CFM or PE.

9.03 Box Culverts

Design selection of culverts shall require careful consideration of the balance between hydraulics, topographic constraints, potential hazards and installation costs. State requirements for policy, design and permitting shall also be considered as outlined in the current IDOT *Drainage Manual*.

For drainage structures designed to carry local streets, water overtopping the structure from one hundred (100) year frequency storms shall not flood the roadway to a depth greater than twelve inches (12") above the roadway crown.

For drainage structures designed to carry any street other than a local street, water overtopping the structure from a one hundred (100) year frequency storm shall not flood the roadway to a depth greater than six inches (6") above the roadway crown.

The design discharge for culverts shall be determined by the Rational Method. The overall culvert system shall accommodate the one hundred (100) year discharge in such a manner that significant flood damages shall not be caused by culvert installation. The accommodation shall include limited overflows for all designs based on discharges less than the one hundred (100) year discharge.

9.04 Open Ditches

Open ditches shall be allowed when topography does not allow the installation of storm sewers, when the projected flow is too large to economically install a storm sewer or when

an open ditch currently exists. Channels shall be designed to carry the twenty five (25) year flood frequency.

9.05 Channel Cross Sections

Longitudinal slope shall provide mean velocities above two fps (2.0) to prevent siltation; however, maximum velocities should not exceed eight fps (8.0) to prevent erosion.

Side slopes shall not be steeper than three to one (3:1) for natural channels. Lined channels may have steeper side slopes.

Channel bottom widths shall be at least twice the channel depth, whenever practical. Design depths shall be as shallow as practical.

A freeboard between one foot (1') and two feet (2') shall be sufficient in straight channels. Additional freeboard shall be added to the outside channel edge along curves.

Protection against erosion shall be provided to insure that channels maintain their design dimensions and to avoid downstream sedimentation.

SECTION 10---SANITARY SEWER DESIGN

Sanitary sewer design shall be in accordance with the latest Rock River Water Reclamation District (RRWRD) Code of Ordinances and design standards.

10.01 Type of Flows Permitted

All sanitary sewage flows shall be based on the adopted comprehensive plan as well as existing zoning and land uses for the area under consideration.

Sanitary sewers and storm sewers shall be kept separate. No combined sewers shall be constructed.

Footing drains, downspouts, air conditioning water, etc. shall not be allowed to discharge into the sanitary sewer system.

10.02 Protection of Water Supplies

Separation between water mains and sewers, sewer appurtenances or other sewerage structures shall be in accordance with the *Standard Specifications for Water and Sewer Main Construction in Illinois*.

1) Whenever possible, water mains shall be laid no less than ten feet (10') horizontally from the sewer, sewer appurtenance or other sewerage structure.

2) When it is impossible to accomplish a ten foot (10') horizontal separation between a water main and a sewer, the water main invert shall be at least eighteen inches (18") above the sewer crown and the water main, and sewer shall be constructed in separate trenches. When those requirements are impossible, the water main shall be constructed on a shelf of undisturbed earth located as far as possible from the sewer.

3) Whenever it is impossible to accomplish the separations required in subsections 1) and 2), both the water main and the sewer shall be constructed of water main materials, and the sewer shall be pressure tested for water-tightness at the maximum expected surcharge head.

4) Whenever a water main crosses a sewer, the water main invert shall be at least eighteen inches (18") above the sewer crown for all portions of the water main located less than ten feet (10') from the sewer.

5) When it is impossible to accomplish the vertical separation required in subsection 4), both the water main and the sewer shall be constructed of water main-quality materials, and the sewer shall be pressure tested for water-tightness at the maximum expected surcharge head wherever the water main is less than ten feet (10') from the sewer. A full twenty-foot (20') length of water main quality pipe shall be centered at the point of sewer crossing.

6) In addition to the requirements of subsection 5), when it is necessary that a water main cross under a sewer, the sewer invert shall be at least eighteen inches (18") above the water main crown for all portions of the water main located less than ten feet (10') from the sewer. The sewer shall also be supported to prevent settling by a method approved by the Water Engineer.

10.03 Proper Back-Filling

Excavations shall be back-filled with fill material approved by the City, in six inch (6") layers, loose measurement and compacted to no less than ninety-five percent (95%) of standard laboratory density.

SECTION 11---WATER DISTRIBUTION SYSTEM DESIGN AND SPECIFICATIONS

11.01 General

Refer to the Water Division's *Water Distribution System Design and Specifications* on the City's website:

https://rockfordil.gov/city-departments/public-works/water-division/design-construction/

SECTION 12---SIDEWALKS AND MULTI-USE PATH DESIGN

All sidewalks, bike routes and multi-use paths shall conform with ADA and/or PROWAG specifications and guidelines, current edition as required.

12.01 Sidewalks

1) Width

   Sidewalks shall be a minimum of five feet (5') in width except in areas approved by the City Engineer or their designee.

   Sidewalks shall be located one foot (1') from the property line and shall extend through all driveways.

   In new construction, sidewalk shall be placed within the ROW along the entire property line adjacent to the street(s).

   Sidewalks shall be required on both sides of all streets, unless otherwise specified by the City Engineer.

2) Cross Slope

   All sidewalks shall slope to the street at a desired slope of one and one half percent (1.5%) and a maximum rate of two percent (2%).

3) Material and Thickness

   Sidewalks shall be constructed of four inch (4"**)** thick non-reinforced P.C. concrete conforming to the current IDOT standards.

   Sidewalks crossing driveways shall be constructed of six inch (6") thick non-reinforced P.C. concrete conforming to the current IDOT standards.

   All sidewalks shall be constructed over a minimum of a two inch (2") stone (aggregate) base.

   Brick and asphalt sidewalks are prohibited.

12.02 Ramps

Ramps shall be installed at all street intersections and at other locations as required by the City Engineer. Ramps shall be constructed according to City of Rockford requirements using six inch (6") concrete and wire mesh. Ramps shall also be constructed to current ADA and IDOT standard detail drawings.

12.03 Bike Routes

1) Classification

A "bike route" is defined as any road, path or way which is specifically designed as being open to bicycle travel, regardless of whether such facilities are designed for the exclusive use of bicycles or are to be shared with other transportation modes.

2) Design

All bicycle facilities shall be designed in accordance with the current IDOT *Local Roads Manual* and current AASHTO *Guide for the Development of Bicycle Facilities* manuals.

12.04 Multi-Use Paths

1) Materials

All multi-use paths shall be constructed of three inches (3") of hot-mix asphalt surface course, N90, on an eight inch (8") aggregate base.

2) Geometric Design Criteria

All design criteria shall meet the requirements of the BLRS, BDE and AASHTO Guide for the Development of Bicycle Facilities, current edition, as applicable.

3) ROW

The minimum ROW width for a multi-use path shall be equal to the multi-use path width plus a minimum of six feet (6'), two feet (2') on either side of the path for shoulder slope and a minimum of one foot (1') on either side for signs.

4) Arterial Offset

The minimum offset distance for a multi-use path from a street classified an arterial shall be five feet (5') from the back of curb, or when no curb is present, ten feet (10') minimum offset shall be maintained from the edge of traveled way. This requirement may be reduced if either of the following requirements are satisfied.

a) A barrier of suitable design to prevent encroachment of vehicles from the adjacent roadway is constructed.

b) In the case of rural cross sections a turnoff for emergency parking is provided every one thousand feet (1000') or as provided by State law.

SECTION 13---DRIVEWAY/APPROACH DESIGN

13.01 Driveway Material and Thickness

All materials must conform to current IDOT Standard Specifications, current edition.

The driveway apron shall extend from the roadway to the property line.

Driveways constructed of P.C. concrete shall have expansion joints adjacent to the curb, and each side of the driveway in the sidewalk. Sidewalks shall extend through all driveways that has sidewalk adjacent on at least one side.

Type	Asphalt/Stone Base	PCC/Stone Base
Residential 1-3 Family 4 + Family	 3 inches / 8 inches (3”/8”) 4 inches / 8 inches (4”/8”)	 6 inches / 4 inches (6”/4”)
Commercial/Industrial	6 inches / 8 inches (6”/8”)	8 inches / 4 inches (8”/4”)
Alleys Residential Commercial Industrial	N/A	8 inches / 4 inches (8”/4”)

13.02 Driveway Width

The maximum driveway width for commercial or industrial zoned properties shall be twenty four feet (24’) to thirty five feet (35’) at the property line with a maximum curb opening of eighty five feet (85’). Residential drives shall have a maximum width of twenty four feet (24’) at the property line and fifty four feet (54’) at the curb line.

13.03 Driveway Location

All driveways shall be located to provide a maximum clearance distance from an intersecting public road and/or the property line. Driveway location shall be measured from the edge of the pavement of intersecting street to the centerline of the proposed driveway.

All driveways shall be located to provide the maximum distance attainable from an intersection. Other management methods (i.e. raised median, right in/out only or shared driveways) of controlled access onto arterial streets shall be applied under the direction of the City Engineer, limiting the number of conflict points, separating basic conflict areas and limiting deceleration requirements.

The edge of the driveway flare shall be no closer than three feet (3') to the extension of the property line, measured at the curb.

Where more than one (1) driveway approach serves a single parcel from a common street frontage, there shall be a minimum of six feet (6') of linear distance between the near edges of the adjacent driveway aprons, unless approved by the City Engineer.

13.04 Number of Driveways

Normally, only one (1) driveway shall be permitted for each residential property and two (2) driveways for a commercial or industrial property. Additional driveways may be considered and approved by the City Engineer based upon parcel size and development type.

Ordinance No 1997-105-0 permits circular driveways on residential properties for an interior lot with street frontage of at least one hundred and twenty five feet (125') and for a corner lot with street frontage of at least two hundred feet (200').

SECTION 14---STREET LIGHTING DESIGN

14.01 Overview

The rapid advancement of analytical techniques and roadway lighting technology provide the Engineer with many options to accomplish lighting goals. In general, the IES *Lighting Handbook*, current edition, shall provide standards for all lighting layouts and designs. Specific design criteria for the City of Rockford are provided herein. City design criteria may be in excess of the IES requirements or may be a refinement of IES standards.

Current research in roadway lighting concentrates on Pavement Luminance. This theory is based on the level of light reflected by the pavement surface rather than the level of light originating from the lighting source. While this theory has merit in the laboratory, roadway analysis is heavily dependent upon values for the reflectance index of varying pavement types. Unfortunately, research to date has provided these values for new asphalt and concrete pavement surfaces only. Weathered, polished and other imperfect roadway surfaces have not been addressed. Therefore, the analysis techniques for the City of Rockford shall be based on Pavement Illuminance. Computer modeling is recommended for all roadway and area lighting designs. All Engineers should have access to this resource. Requirements for area designs, such as parking lots, will be difficult if not impossible to meet using hand methods.

The desired lighting type in the City of Rockford is LED. Wherever LED cannot meet the requirements of IES, metal halide should be used.

14.02 Illumination Levels

Street lighting installations based on these standards shall be similar or equal to the recommended values in the IES *Lighting Handbook.*

The roadway type is based on the current *Functional Classification System* developed and approved by R1PC. Engineering judgment should be used for the Pedestrian Conflict Area designation. In most areas within the City, the Pedestrian Conflict Area is considered "Low." The determination of any questionable pedestrian conflict area should be coordinated with the Traffic Engineering Division.

14.03 Fabrication and Design Specifications

The City of Rockford shall provide direction on a case by case basis for material fabrication and design. The following general requirements should provide direction:

a.) Arterial street lights shall be Domus fixtures on Valmont poles, in black textured color. Fixtures shall be mounted at a forty foot (40') mounting height to the base.

Material shall be aluminum. See Figures 14-03 through 14-06 for the arterial street light pole details.

b.) Pedestrian path lighting shall be Domus fixtures on Phillips Lumec poles, in black textured color. Fixtures shall be mounted at a sixteen foot (16') mounting height to the base. Wherever possible, pedestrian path lighting for paths near the roadway shall be in combination with the roadway light poles. Material shall be aluminum. See Figures 14-07 through 14-12 for the pedestrian path light pole details.

c.) Non-decorative street lighting shall be Lumec RoadFocus LED Cobra Head fixtures on Lumec poles, unless otherwise directed.

d.) Fixtures on bridge and viaduct overhangs and under structure mountings shall be shoebox.

e.) For streetscape lighting design criteria, see the Streetscape Element Design section.

f.) For parking lot lighting design criteria, see the Parking Lot Design section.

All street lights shall be on breakaway devices. Pedestrian path lights offset from the roadway's clear zone may be anchored.

All fasteners for street lights shall be anti-seized. Whenever a shroud is used on the light pole, the access door underneath the shroud shall be open completely and attached to the pole.

14.04 Combination Traffic Signals

All new traffic signal mast arm installations to be installed shall include street lighting. Design of these combination mast arms shall comply with the IDOT *Standard Specifications*. The fixtures shall be Domus, matching the arterial street lighting fixture. The combination lighting shall match the decorative black powder coating of the signals.

14.05 Light Pole Foundations

All light pole foundations should adhere to IDOT District 2 *Highway Standards*.

14.06 Meter/Shutoff Assembly

A direct wire from the electric service utility to the cabinet is unacceptable. A separated meter/shutoff assembly shall be mounted clear of the cabinet location and placed in a strategic location to prevent total loss due to an accident. When field conditions warrant an undesirable location, the City shall be notified to assist with the best location possible. The conduit connecting the meter to the circuit breaker shall be rigid. If mounted on a new post, the post shall be galvanized steel.

14.07 Photocell Location

Street lights shall be controlled by a photocell in the cabinet. The photocell should be facing north. If the photocell cannot face north after all other considerations, it should be positioned in the overhang of the cabinet facing down toward the ground. See Figure 14-13 in Appendix A.

14.08 Banners

The need for banner arms attached to street light poles should be coordinated with the Traffic Engineering Division. The banner arms should be pin-fastened to the light pole and have a ball cap at the end of the arms. The banner arms shall have the same finish as the light pole. The banner arms on the arterial street lights shall be at the heights of fourteen feet (14') and twenty-one feet, eight inches (21'-8") from the light pole base and twenty-four inches (24") in length. The banner arms should never encroach past the face of the curb. See the light pole details for options with banners.

14.09 Communications

All street lighting projects shall also consider the installation of communications facilities. See the Communications Section for further information.

SECTION 15---APPURTENANCES

15.01 Plantings (Other than Trees)

Plantings shall be of approved salt-resistant variety.

Plantings shall not be placed so as to hinder sight distance or within forty feet (40') of an intersection measured from the curb line extended, unless approved by the City Engineer.

15.02 Trees

Trees shall be of an approved salt-resistant variety.

A Tree Permit shall be obtained from City Engineer.

Trees shall not be placed so as to hinder sight distance or within forty feet (40') of intersections, unless approved by the City Engineer.

Trees may not have branches lower than nine feet (9') in vicinity of sidewalks and fifteen feet (15') over street areas.

15.03 Guard Rail

Guard rails shall be constructed according to the current IDOT *Bureau of Environmental and Design Manual*.

15.04 Street Furniture

Street furniture is defined as any structure placed within the ROW for purposes of public use or aesthetics. Street furniture includes but is not limited to the following: benches, pillars, information signs, fountains, trash receptacles and bollards.

Street furniture shall neither obstruct sight distance nor ADA clear zone. A permit from the City Engineer is required for placement.

All street furniture shall be attached to foundations or another structure, excluding the sidewalk so as not to be easily moved, and shall not be hazardous to either pedestrian or vehicular traffic.

15.05 Street Name Sign

The developer shall notify the City and pay for the initial cost of street name sign(s) and other warranted traffic control devices installations in their newly completed subdivision.

SECTION 16---PARKING LOTS

16.01 General

All lots shall be constructed as specified in the current Zoning Ordinance of the City of Rockford.

16.02 Pavement

Flexible - All driving and parking areas shall be designed with a minimum one and one half inch (1½") hot-mix asphalt surface course, Class C over two and one half inch (2½") hot-mix asphalt binder course, Class C over a ten inch (10") compacted aggregate base course (five inch (5") CA-2 and five inch (5") CA-6). Driveways shall be a minimum thickness as stated in Section 13, *Driveway/Approach Design*.

Rigid - All driving and parking areas, including driveways, shall be constructed of six inch (6") non-reinforced P.C. concrete on a four inch (4") aggregate base.

16.03 Drainage

A system of inlets and pipes connecting to the street storm sewer shall be constructed within each parking lot to accommodate detention requirements as indicated in the *Stormwater Management Ordinance*. No stormwater shall be diverted to the street at the driveways.

16.04 Lighting

The parking lot pavement shall be lit to an average two (2) horizontal foot-candles. The preferred system of illumination is LED with a mounting height of thirty feet (30') or heights approved by City of Rockford Zoning requirements. A separate control center with meter shall be provided for each lot. Provisions shall be made for both an "All Night" and "Part Night" circuit using both a time clock and photo control for switching.

City owned parking lots shall have Holophane LEDgend area lighting fixture at a thirty foot (30') mounting height. Poles shall be a square aluminum pole with black finish. Poles may have twin arms at one hundred eighty degrees (180°).

16.05 Disabled Spaces

Handicapped parking spaces shall be provided in accordance with current Illinois ADA requirements and the City of Rockford Code of Ordinances.

16.06 Curb and Gutter

All parking lots shall be designed with curb and gutter along the exterior of the parking lot, unless otherwise approved by the City Engineer.

16.07 Pavement Markings

Pavement markings for all parking lots should adhere to the MUTCD guidelines.

City Owned Lots: Pavement markings on new asphalt parking lot surfaces shall be thermoplastic. Pavement markings on new concrete lot surfaces shall be epoxy. Parking space lines shall be four inches (4") wide. Standard parking space lines shall be white and reserved disabled parking space lines shall be yellow. Symbols for each reserved space shall be a three feet by three feet (3'x3') square symbol with a blue background and white symbol inside, as designated by the IL ADA.

16.08 Landscaping

Landscaping requirements shall be in accordance with the Zoning Ordinance. All landscaped areas shall be surrounded by curb and gutter, unless an alternate design is approved by the City Engineer and the Manager of Current Planning

SECTION 17---RAILROAD CROSSINGS

All work within the Railroad right-of-way shall be coordinated with the Railroad authority.

17.01 Material

Molded rubber railroad crossing shall be made of molded linear high density polyethylene or rubber, designed specifically for railroad at grade crossings and reinforced with steel to provide a durable, anti-skid top surface. The material shall be resistant to moisture, road salts and solvents. The molded pads shall be affixed according to manufacturer's recommended procedures (see Figure 26).

Bituminous Railroad Crossings shall be constructed as shown on Figure 27. Flange or mud rail shall be placed on both sides of each rail. Full depth (to the bottom of the tie) bituminous material shall be placed in maximum three-inch (3") lifts from outside ties.

Proposed Wood Tie Railroad Crossings shall be submitted to Public Works for approval prior to design.

17.02 Tracks without Super-Elevation

Please refer to *Chapter 92 of the Illinois Railroad Code*.

The vertical alignment of the road (across the tracks) shall have the same grade as that of the tangent drawn from the tops of the outer rails of the outermost tracks. The Engineer shall continue the same grade for a distance of two feet (2'); thence, for a distance of twenty-five feet (25') past the outer rails. The vertical alignment of the approaches shall have a grade that does not exceed one percent (1%); thence, to the railroad ROW line, the vertical alignment shall have a grade that does not exceed five percent (5%).

17.03 Tracks with Super-Elevation

Please refer to *Chapter 92 of the Illinois Railroad Code*.

The vertical alignment of the road (across the tracks) shall have the same grade as that of a tangent drawn from the tops of the outer rails of outermost tracks. The Engineer shall continue the same grade for a distance of two feet (2'); thence, for a distance of twenty five feet (25') past the outer rails. The vertical alignment of the approaches shall not deviate from the said tangent grade by more than one percent (1%); thence, to the railroad ROW line, the vertical alignment of the approaches shall not deviate from the said tangent grade by more than five percent (5%).

SECTION 18---ALLEYS

18.01 Alley Classification

Residential Alley - A route located between local roads used primarily for access to the rear of residential property and not used for general traffic circulation.

Commercial Alley - A route located between commercial streets used primarily for access to the rear of commercial property and not used for general traffic circulation.

18.02 Pavement Width

Residential alleys shall have a minimum pavement width of twelve feet (12') and a maximum pavement width of two feet (2') less than the ROW width.

Commercial alleys shall have a pavement width of twenty feet (20').

18.03 ROW Width

For newly constructed alleys, the ROW shall be twenty feet (20') for all alleys.

18.04 Alley Grades

The maximum grade for alleys shall be eight percent (8%) for residential and six percent (6%) for commercial or industrial alleys. The minimum grade shall be four tenths of one percent (0.4%) for all types of alleys.

18.05 Pavement Cross-Section

The pavement shall have a three percent (3%) inverted crown cross-section.

18.06 Pavement Material and Thickness

Flexible - The minimum flexible pavement for alleys shall be eight inches (8") aggregate base with a three-inch (3") hot-mix asphalt surface.

Rigid - The minimum rigid pavement for alleys shall be six inches (6") of non-reinforced P.C. concrete on a four-inch (4") aggregate base.

There shall be no curb and gutter sections or sidewalks built as part of alleys.

18.07 Subgrade Requirements

The sub-grade shall be compacted to not less than ninety-five percent (95%) of the standard laboratory density, as determined in accordance with AASHTO.

18.08 Approaches

The alley approaches shall be constructed as stated in Section 13, *Driveway/Approach Design*.

SECTION 19---STREETSCAPE ELEMENTS

19.01 General

In certain designated downtown areas, the City may specify a streetscape design with enhanced lighting and landscaping features. Below are typical streetscape element requirements. All other general design requirements in this manual shall still be followed.

19.02 Sidewalks

Sidewalks shall be designed per the *Sidewalk and Bikeway Design* section in this manual. Sidewalks for streetscape projects shall have four inch (4") tooled picture framed joint edges and a smooth finish throughout.

There shall be a twenty-four inch (24") stamped, colored concrete accent band along the back of curb. The color and stamped pattern should be a Sienna with Deep Charcoal and an Old Chicago Running Bond Brick, as specified in the City's standard special provisions.

19.03 Streetscape Lighting

Streetscape lighting shall be Sternberg 1970LED Gallery Roadway Lighting Units, as specified in the City's standard special provisions. The mounting heights for streetscape lights shall be twenty-four feet, ten inches (24'-10") at intersections and fourteen feet, three inches (14'-3") along the mainline. The type of illumination shall be LED. Each pole along the mainline shall have a 120V, 1-Phase outlet mounted two feet (2') from the ground. Streetscape lighting units shall have either banner arms or planter baskets attached in an alternating pattern.

If required, all sidewalk uplighting that is mounted within the sidewalk should have the ability to be completely removed and replaced. Uplighting fixtures should be coordinated with the City.

Refer to the section on *Street Lighting Design* for all other general lighting design requirements.

See Figure 19-02 in Appendix A.

19.04 Landscaping Features

Streetscape landscaping features may include, but are not limited to, tree grates, trash receptacles, planters and irrigation.

Tree grates should be spaced equally between each streetscape lighting unit and shall be as shown in Figure 19-03. Plantings inside the tree grates shall be three inches (3") in diameter and guaranteed for a period of two years.

Irrigation should be provided to each tree grate and any lawn areas.

Trash receptacles shall be thirty-two gallon (32 gal) black powder coated steel DuMore style, per the information in Figure 19-04. Trash receptacles are placed as directed by the City.

Modular planter type and placement shall be determined by the City.

19.05 Sign Supports

Sign posts on streetscape projects shall be decorative, tubular sign posts with a black powder coat. See Figure 19-05 for detail.

SECTION 20---COMMUNICATIONS

20.01 General

All reconstruction projects within City ROW without existing City-owned underground communication facilities shall include the installation of an empty conduit along the entire length of the project for future communication facility expansion.

20.02 Conduit

Communications underground conduit shall be two inch (2") diameter coilable, nonmetallic with a pull string and 1-1/C No. 12 tracer wire. Communications conduit may share a trench with other City-owned conduit.

An additional conduit shall be installed under railways or within large structures.

20.03 Handholes

Communications handholes shall be composite concrete and be labeled "FIBER OPTIC."

The maximum desirable length of conduit between handholes is one thousand two hundred feet (1,200 ft), with a maximum allowable distance of one thousand five hundred feet (1,500 ft).

When a conduit crosses large obstructions (i.e. bridges, railways or any location with a high potential of the conduit being damaged), a handhole shall be placed on each side of the obstruction or hazard unless there are integrated handholes on each end of the conflict. These handholes shall be placed at a maximum of two hundred feet (200 ft) to each side of the obstruction or hazard.

A handhole shall be placed at the termination point of each conduit run.

See Figure 19-01 in Appendix A.

APPENDIX A---LIST OF FIGURES

All figures referenced in this document are listed below in the order of occurrence, showing title and page of reference.

Figure **Title**

APPENDIX B---LIST OF REFERENCES

All publications referenced in this document are listed below in the order of occurrence.

1. *Standard Specifications for Road and Bridge Construction*, published by the Illinois Department of Transportation.

2. *Highway Standards*, published by the Illinois Department of Transportation.

3. *Illinois Supplement to the Manual on Uniform Traffic Control Devices*, published by the Illinois Department of Transportation.

4. *Acquisition and Relocation Assistance Policies and Procedures*, published by the City of Rockford.

5. *The City of Rockford Code of Ordinances*, published by Municode Corporation.

6. *Functional Classification System*, published by the Region 1 Planning Council.

7. *Highway Capacity Manual*, published by the Transportation Research Board.

8. *Bureau of Design and Environment Manual*, published by the Illinois Department of Transportation.

9. *Local Roads and Streets Manual*, published by the Illinois Department of Transportation.

10. *Standard Specifications for Traffic Control Items*, published by the Illinois Department of Transportation.

11. *Guide to the Hydraulic Design of Bridges and Culverts on Local Systems*, published by the Illinois Department of Transportation.

11. *Bridge Manual*, published by the Illinois Department of Transportation.

12. *Standard Specifications for Water and Sewer Main Construction*, published by the State of Illinois.

13. *Recommended Standards for Sewerage Works*, published by the State of Illinois.

14. *Water Division Specifications for the City of Rockford*, published by the Public Works Department.

14. *IES Lighting Handbook*, published by the Illuminating Engineering Society.

15. *American National Standard Practice for Roadway Lighting*, published by the Illuminating Engineering Society.

16. *City of Rockford Stormwater Technical Guidance Manual*, published by the City of Rockford.

17. *Rockford Stormwater Ordinance,* adopted by the City of Rockford.

18. City of Rockford Stormwater Consent Decree.

19. *Illinois Urban Manual*, published by the Illinois EPA.

APPENDIX C---LIST OF ACRONYMS AND ABBREVIATIONS

All acronyms and abbreviations referenced in this document are listed below in the order of occurrence.

ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACOE	Army Corps of Engineers
ADT	Average Daily Traffic
A/E	Architectural / Engineering
AWWA	American Water Works Association
BC	Binder Course
BDE	Illinois Department of Transportation Bureau of Design and Environment
BLR	Illinois Department of Transportation Bureau of Local Roads
CIP	Capital Improvement Program
DHV	Design Hourly Volume
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HMA	Hot-Mix Asphalt
HDPE	High Density Polyethylene
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
IDS	Intersection Design Study
IEPA	Illinois Environmental Protection Agency
IES	Illuminating Engineering Society
MUTCD	Manual on Uniform Traffic Control Devices
NOI	Notice of Intent
NOT	Notice of Termination
PC	Portland Cement
PCC	Portland Cement Concrete
PVC	Polyvinyl Chloride
R1PC	Region 1 Planning Council
RFP	Request for Proposal
ROW	Right-of-way or rights-of-way
RRWRD	Rock River Water Reclamation District
SC	Surface Course
SOQ	Statement of Qualifications
SWPPP	Storm Water Pollution Prevention Plan

ABBREVIATIONS

fps	Foot per second or feet per second
in	Inch or inches
mm	Millimeter(s)
mph	Miles per hour
psi	Pounds per square inch