Project #20-033
City of Logan
Public Works Design Standards
Code Amendment

REPORT SUMMARY...

Project Name:	City of Logan Public Works Design Standards Amendment
Proponent/Owner:	Community Development Department
Project Address:	Citywide
Request:	Code Amendment
Type of Action:	Legislative
Date of Hearing:	July 9, 2020
Submitted By:	Mike DeSimone, Director

RECOMMENDATION

Staff recommends that the Planning Commission recommend **approva**l to the Municipal Council to (1) amend Land Development Code Chapter 17.29 to adopt the City of Logan Public Works Design Standards for sanitary sewer systems, culinary water systems, storm drain systems, and street systems; and (2) amend Chapters 17.29 & 17.30 containing minor text amendments.

REQUEST

This is a proposal to adopt by reference the City of Logan Public Works Design Standards for sewer, water, stormwater and roads as well as two other minor amendments, one clarifying the placement of stormwater systems and the other clarifying the residential infill subdivision standards.

Public Works Design Standards

The LDC references the Public Works Design Standards in Chapters 17.29 & 17.30, therefore, the City needs to formally adopt these standards. The Logan City Public Works Design Manual establishes minimum City engineering and design standards for the installation of typical infrastructure associated with new development, e.g., sewer, water, stormwater systems, and roadways. These specific design standards are based on the 2007 American Public Works Association (APWA) standard specifications and the City's amendments to those standard specifications. The primary benefit of the Public Works Design Standards is to ensure the uniformity in the installation and construction of public and private utilities. This will also eliminate any guesswork or debate on which specific road standard applies to a project. The proposed document for adoption includes only the road standards and the other standards will follow.

Local Residential Street
Cross Section

- < 2000 Vehicles Per Day
- 25 mph Design Speed

Possible Section Additives:
(As approved by City Engineer)
1. Striped bike lane – Add 5' each side
2. Buffered bike lane – Add 7' each side
3. Island – Add 14' to Center

The road standards include cross sections and design standards for the local residential streets (< 2,000 vehicles per day), gridded residential collector streets (< 6,000 vehicles per day), collector streets (< 12,000 vehicles per day), minor arterial streets (12,000 – 25,000 vehicles per day) and major arterial streets (12,000 – 38,500 vehicles per day). The design standards specific minimum right of way and pavement widths, number of lanes, design speeds, lane and parking widths, and sidewalk park strip widths. The attached document details this information for each of the distinct road type.

Design Standards

ROW Width	Pavement Width	Number of Lanes	Design Speed	Pavement	Vehicle Design	Stopping Sight Distance	Horizontal Alignment & Radius	Vertical Curve Min "K" Sag/Crest Requirement	Grades
60	32	2	25	See minimum Pavement Section Table	Passenger, School Buses, Delivery Trucks	200	200	26/12	0.4 - 10

Intersection Sight Distance	Minimum Signalized Intersection Spacing	Minimum Full Movement Access Spacing	Corner Curb Radius	Minimum Un-signalized Full Movement Access Spacing (ft.)**	Minimum Right In/Right-out Access Spacing (ft.)**	Residential Driveways Permitted
280	N/A	125	13-25	N/A	N/A	Yes

**Distances to be measured from center of driveway to center of driveway

17.29.170 Stormwater, Stormwater Detention, Stormwater Retention

The proposed amendments to this Section requires that stormwater facilities be integrated into the overall landscaping of a site, and that the stormwater facilities are to be located either in the side or rear yards of a project rather than the front yard. The purpose of these changes is to help ensure the stormwater detention/retention pond are not an afterthought but rather integrated into the overall site design. If a project is unable to integrate a stormwater detention or retention facility into the overall landscaping, they can explore other on-site subsurface options.

17.30.180 Residential Infill and Flag Lot Development Standards

The proposed amendment eliminates the infill standards for subdivisions greater than 9 lots in order to minimize the confusion on which standards apply to a larger subdivision. The infill standards were adopted to regulate small projects or individual lots going into the center of a block behind rows of existing homes. A subdivision larger than 9 lots should be evaluated as a subdivision according to Chapter 17.40 Subdivisions.

STAFF RECOMMENDATION AND SUMMARY

These specific amendments add clarity to the Land Development Code and the expectations of the City during the design review process.

GENERAL PLAN

The Land Development Code was prepared and adopted to implement the vision expressed in the General Plan. The proposed amendments continue to implement the vision of the General Plan by further clarifying development standards for mixed-use projects. These proposed amendments are consistent with the General Plan.

PUBLIC COMMENTS

As of the time the staff report was prepared, no public comments had been received.

PUBLIC NOTIFICATION

Legal notices were published in the Herald Journal on 6/13/20, posted on the City's website and the Utah Public Meeting website on 6/16/20, and noticed in a quarter page ad on 6/4/20.

AGENCY AND CITY DEPARTMENT COMMENTS

As of the time the staff report was prepared, no comments have been received.

RECOMMENDED FINDINGS FOR APPROVAL

The Planning Commission bases its decisions on the following findings:

1. Utah State Law authorizes local Planning Commission to recommend ordinance changes to the legislative body (Municipal Council).
2. The Code Amendments are done in conformance with the requirements of Title 17.51 of the Logan Municipal Code.
3. The proposed Code Amendments are consistent with the Logan City General Plan.
4. The proposed Code Amendments will clarify the minimum design standards acceptable for typical infrastructure associated with new development in Logan City.
5. No public comment has been received regarding the proposed amendments.

This staff report is an analysis of the application based on adopted city documents, standard city development practices, and available information. The report is to be used to review and consider the merits of the application prior to and during the course of the Planning Commission meeting. Additional information may be revealed by participants at the Planning Commission meeting which may modify the staff report and become the Certificate of Decision. The Director of Community Development reserves the right to supplement the material in the report with additional information at the Planning Commission meeting.

PUBLIC WORKS

CITY OF LOGAN
PUBLIC WORKS
DESIGN STANDARDS

MAY 2020

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PUBLIC WORKS DESIGN STANDARDS

Contains components enacted by the Municipal Council through _____ and subsequent amendments there to

PREFACE

This version of the Public Works Design Standards reflects changes directed by the Planning Commission and adopted by the Municipal Council through _____ and includes amendments made since the _____ adoption date. These amendments are listed in the amendment schedule on the following pages.

PART 1 GENERAL

1.1 RELATED STANDARDS

A. 2007 APWA Manual of Standard Specifications
B. 2007 APWA Manual of Standard Plans
C. 2007 Logan City Amendments to the APWA Manual of Standard Specifications
D. 2007 Logan City Amendments to the APWA Manual of Standard Plans

1.2 SUBMITTALS

A. Construction Drawings
   1. Project Documents
   2. A pdf file shall be submitted to the City Engineer or the Chief Building Official for City review and comment.
   3. Following acceptance of drawings by City, a final pdf file, necessary signatures and stamps shall be submitted to the City Engineer or the Chief Building Official for City to stamp as approved for construction.

B. Permits, Easements and Land Acquisition
   1. All necessary permits shall be submitted to the City Engineer for approval. Required permits include, but are not limited to:
      a. Canal Crossing and setback approvals from Canal Company(s)
      b. Railroad Crossing Permits
      c. Utah Pollution Detection and Elimination System (UPDES) Permits
      d. Utah Construction Dewatering Permit
      e. Army Corp. of Engineer Permits
      f. UDOT Encroachment, Excavation, and Grading Permits
      g. Logan City Work in the Right of Way Permit
      h. Logan City Land Disturbance Permit
      i. Logan City Demolition Permit
      j. Logan City Flood Plain Construction Permit
      k. FEMA Flood Elevation Certificates base on design plans
      l. FEMA Conditional Letter of Map Revision for fill
      m. Private Water Utility Agreement
      n. Storm Water Maintenance Agreement
      o. Development Agreement with Surety
   2. All necessary Plats, permits and easements must be submitted prior to approval being granted by the City.
   3. All Easements and Land Acquisitions shall be submitted to the City for review and approval prior to final recordation at the County Recorder's Office.
   4. Right of Entry Easements shall be provided for all utilities on private property connected to City utilities (Storm Water, Water, Waste Water, and Power).

C. Reports, Study's and Warrants
   1. Soils Report – Shall include but be limited to pavement design, groundwater level, soil type, gradation, location of tests, type of tests, conclusions, recommendations, etc. Test should be taken along proposed roadways at intersections, changes in soil type, and at 750-foot minimum intervals.
   2. Traffic Impact Study – Shall comply with UDOT Traffic Impact Study Guideline. Level of study shall be specified by the City Engineer
   3. Warrant Studies – Shall comply with the Utah Manual of Traffic Control Devices. Warrant type shall be specified by City Engineer

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1.3 CITY ENGINEER'S AUTHORITY

A. The City Engineer has authority to review submitted Construction Drawings for compliance to these Design Standards and the current Logan City Manual of Standards and Specifications.
B. The City Engineer shall note any changes to Construction Drawings, required to bring Construction Drawings into compliance with these Design Standards and the current Logan City Manual of Standards Specifications and Manual of Standard Plans.
C. Required changes shall be made to Construction Drawings and returned to the City Engineer for final approval.
D. The City Engineer shall have additional authority such as is stated in these Design Standards and the current Logan City Manual of Standards Specifications and Manual of Standard Plans.

1.4 CODES AND STANDARDS

A. Design for each category shall be based on the following Codes and Standards:
   1. Sanitary Sewer Systems.
      a. ASCE Manual and Reports on Engineering Practice No. 60, Gravity Sanitary Sewer Design & Construction;
      b. Utah State Department of Health Code of Waste Disposal Regulations;
      c. Utah Division of Water Quality Administrative Rules for Design Requirements for Wastewater Collection, Treatment and Disposal Systems; International Plumbing Code, Latest Edition; and the National Electrical Code.
   2. Culinary and Secondary Water Systems.
      a. State of Utah Administrative Rules for Public Drinking Water Systems;
      b. International Plumbing Code, Latest Edition; and
      c. National Electrical Code.
   3. Storm Drainage Systems.
      a. State of Utah Administrative Rules R-317
      b. EM 1110-2-1601: Engineering and Design – Hydraulic Design of Flood Control Channels CECW-EH-D, US Army Corps of Engineers, June 1994
      c. HEC 11: Design of Rip-Rap Revetment, Hydraulic Engineering Circular No. 11, US Dept of Transportation, Federal Highway Administration. (FHWA-SA-96-078, August 2001).
      d. HEC-22: Urban Drainage Design Manual, Hydraulic Circular No. 11, US Dept of Transportation Federal Highway Administration (FHWA-1P-89-016, March 1989)
   4. Transportation System
      a. Latest edition of the AASHTO Geometric Design of Highways and Streets
      b. Latest edition of the AASHTO Roadside Design Guide
      c. UDOT Traffic Impact Study Guidelines
      d. Latest edition of the Trip Generation Manual by the Institute of Transportation Engineers
      e. Traffic Control Signals in accordance with the UDOT Signalized Intersection Design Guidelines
      f. Bridges in accordance with the UDOT Structures Design an Detailing Manual
      g. Warrant Studies in accordance with the UDOT Manual of Uniform Traffic Control Devices
      h. Pedestrian Access Ramps shall be in accordance with the latest UDOT Pedestrian Access Ramp Manual

B. Due to size of Codes and Standards listed above, they are listed by reference but not included in the Design Standard

1.5 DEFINITIONS

ACCEPTABLE EQUAL or ACCEPTED EQUAL: In order to establish a basis of quality and specificity for some items mentioned in the Work, certain processes, types of machinery and equipment, brands, or kind of material may be mentioned on the Approved Plans by designating a manufacturer by name and referring to his brand or model numbers. Such mention is not intended to exclude Materials wherever in the Specifications a manufacturer's name,

brand or model is mentioned, it is to be understood that the phrase "acceptable equal" is assumed to follow thereafter whether or not it does in fact follow.

ADDENDA: Written or graphic documents issued and signed or initialed by the Engineer, which clarify, correct or change the Contract Documents.

AGREEMENT: The duly executed written agreement between two parties. Other Contract Documents may be attached to or referred to in the Agreement and made a part thereof as provided therein. The Agreement shall include those documents specifically referred to in the signed document between the parties.

APPROVED PLANS: The final construction drawings, plan, profiles, typical cross sections, grading, drainage and utility plans, specifications and materials, and supplemental drawings, or reproductions thereof, which have been marked with the approval by the City Engineer, and show the location, character, dimensions and details of Work to be performed. All documents and specifications that are associated with the approved plans are to be considered as a part of the plans whether attached to them or separate therefrom.

AS-BUILT DRAWINGS: Drawings which show the Project as actually constructed, and which include any and all changes made to the construction plans before and during construction.

CHANGE ORDER: A document, which is signed by authorized representatives of the Contractor and the City and which authorizes an addition, deletion or revision in the Work, or an adjustment in the sum due the Contractor, or the Project completion time, issued on or after the date of the Agreement.

CERTIFIED PERCOLATION TEST: A saturated soil percolation test completed in accordance with Utah Administrative Rule, R317-4-5 with the exception that the test shall extend 2.0 feet below the bottom of the proposed invert of the pond. These tests shall be done in accordance with the certification requirements by a "qualified individual" as defined in R317-11.

CITY INSPECTOR: The authorized representative of the City or Engineer assigned to make detailed inspections of the Work performed, or of materials furnished by the Contractor.

CITY/OWNER: Wherever, in the Contract Documents the word "City" or "Owner" appears, it shall be interpreted to mean "City of Logan", unless otherwise denoted.

CONNECTING STREET: This is a street that connects neighborhoods together. A connecting street may or may not follow the Logan historic street grid.

CONSTRUCTION ACTIVITIES: Clearing, dredging, excavating, and grading of land and other activities associated with buildings, structures or other types of real property such as utilities, bridges, dams and roads. Includes mobilization/demobilization and any other activity that occurs on site.

CONTAMINATION. The intentional or negligent placement or release upon real property of Hazardous Materials; the presence of an unwanted constituent, contaminant or impurity in a material.

CONTRACT DOCUMENTS: The written agreement between the City and the Contractor by which the Contractor agrees to perform the Work and furnish the labor, materials, tools, and equipment in the performance of the Work. The Contract Documents shall include, but not be limited to (unless the context clearly indicates otherwise), the Logan City Specifications, Notice to Contractors, Request for Bids, the Contractor's Bid, Approved Plans and Specifications, Special Conditions and Contract Bonds, and attached Exhibits; also any and all supplemental agreements amending or extending the Work contemplated. Supplemental agreements are written agreements covering alterations, amendments or extensions to the contract, and include contract Change Orders.

CONTRACTOR: The Contractor is the individual, person, or organization responsible for doing the Work. The Contractor is further defined as the individual, firm, co-partnership or corporation, and his, or its heirs, executors, administrators, successors and assigns, or the lawful agent of any such individual firm, partnership, or corporation, or its surety under the contract bond, which constitutes one of the principals to the contract and undertaking to perform the Work herein specified. Where any pronoun is used as referring to the word "Contractor" it shall mean the Contractor as defined above.

DATE OF PROJECT: the date of final approval.

DAYS: Unless otherwise designated, days as used in the Specifications will be understood to mean calendar days including weekends and holidays.

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DETENTION: The detaining or holding of water on site and releasing the water from the site into a pipeline, channel, or other water bodies at a slower rate than would otherwise occur.

DEQ: Utah Department of Environmental Quality

DETENTION BASIN: A pond or basin, either above ground or below, that catches the storm water runoff from a contributing area and uses the detention process.

DRAWINGS: The drawings, profiles section and details, or accurate reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the Work.

DWQ: Utah Division of Water Quality, a division of the DEQ.

EM 1110-2-1601: Engineering and Design – Hydraulic Design of Flood Control Channels, CECW-EH-D, US Army Corp of Engineers, June 1994

EMERGENCY: Any unforeseen circumstance or occurrence for which adequate preparations could not reasonably have been made to prevent such occurrence or circumstance, the occurrence of which constitutes a clear and immediate danger to persons and/or property, or which causes a substantial interruption of utility services, or any act of God, war, insurrection, invasion, tumult, riot, or public disaster, or imminent danger of any of these, civil commotion, conflagration, or other similar occurrence resulting in a clear and immediate danger to persons and/or property.

ENGINEER: The City Engineer, or his or her representative.

EPA: United States Environmental Protection Agency

FINAL ACCEPTANCE: The date specified in writing by the Engineer when all work, including all punch list work designated by the Engineer, is complete and accepted by the City after the completion of the warranty period following the Project Acceptance for Maintenance.

GRIDDED STREET: This is a street in a developed or undeveloped area with the City of Logan that extends the Logan Historic street grid

HAZARDOUS MATERIALS: (a) Any substances defined, regulated or listed (directly or by reference) as "hazardous substances," "hazardous materials," "hazardous wastes," "toxic waste," "pollutant," "contaminant" or "toxic substances" or similarly identified as hazardous to human health or the environment, in or pursuant to any of the following statutes: (i) the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §9601 et seq. ("CERCLA"); (ii) the Hazardous Materials Transportation Act, 49 U.S.C. §1802, et seq.; (iii) the Resource Conservation and Recovery Act, 42 U.S.C. §6901 et seq.; (iv) the Clean Water Act, 33 U.S.C. §1251 et seq.; (v) the Clean Air Act, 42 U.S.C. §7401 et seq.; (vi) the Toxic Substances Control Act, 15 U.S.C. §2601 et. seq.; (vii) the Utah Air Conservation Act, U.C.A. §26-13-1 et. seq.; (viii) the Utah Water Pollution Control Act, U.C.A. §26-11-1 et. seq.; (ix) the Utah Safe Drinking Water Act, U.C.A. §26-12-1 et. seq.; (x) the Utah Solid and Hazardous Waste Act, U.C.A. §26-14-1 et. seq.; (xi) the Utah Hazardous Substance Mitigation Act, U.C.A. §19-6-301 et. seq.; (xii) the Utah Underground Storage Tank Act, §19-6-401 et. seq.; and/or (xiii) any amendments to such enumerated statutes or acts; and (b) Any other hazardous or toxic substance, material, chemical, waste, contaminant or pollutant identified as hazardous or toxic or regulated, under any other applicable federal, State or local environmental laws, including, without limitation, friable asbestos, polychlorinated biphenyl ("PCBs"), petroleum, natural gas and synthetic fuel products and by- products.

HEC-11: Design of Rip-Rap Revetment, Hydraulic Engineering Circular No. 11, US Dept. of Transportation, Federal Highway Administration. (FHWA-IP-89-016, March

1989)

HEC-22: Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22, US Dept. of Transportation, Federal Highway Administration. (FHWA-SA-96-078, August

2001).

HISTORICAL RUNOFF FLOW: The runoff that has historically flowed off of a given piece of land in the specified storm frequency and duration prior to development, either in the land's pre-development agricultural or native condition.

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INSPECTED AND APPROVED or APPROVAL: means City recognition of conformance to all applicable City Standards.

LAND SURVEYOR: One who is duly and lawfully registered with the State of Utah Division of Occupational and Professional Licensing to perform land surveying within the State.

LAW: Any applicable City, County, State, or federal statutes or regulations governing anything relating to the Work embodied in the Agreement.

MATERIALS: The term "Materials" when used herein shall include the supply items and machinery and equipment required or used in the Work.

NOTICE OF AWARD: The written notice by the City to the apparent successful bidder stating that Contract Documents will be forthcoming for signature upon compliance with the conditions enumerated therein.

NOI: A notice of intent to construct permit obtained from the DWQ which is required for all construction on areas greater than or equal to 1.0 acres.

NOT: A notice of termination to construction submitted to the DWQ upon the stabilization of 70 percent of the project site that required a NOI.

PAVEMENT: The uppermost layer of bituminous or Portland-cement concrete material placed on the traveled way or shoulders for a riding surface, whether rigid or flexible in composition. This term is used interchangeably with "surfacing."

PAYMENT BOND, PERFORMANCE BOND: The approved form of security furnished by the Contractor and its surety, as required in the Contract Documents guaranteeing respectively, payment and completion of Work.

PROFESSIONAL ENGINEER: a registered engineer who is licensed to practice in the State of Utah.

PROJECT MANUAL: The bound document package prepared for bidding and constructing the Project.

REFERENCE: Those bulletins, standards, rules, methods of analysis or test codes and specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents. Unless otherwise indicated, these refer to the latest edition, including amendments in effect and published at the time of advertising the Project for bid or issuing the permit, unless specifically referred to by edition, volume or date.

RETENTION: The retaining or keeping of water on site and preventing its release from the site by any method other than infiltration or evaporation.

RETENTION BASIN: A pond that is built to capture and retain the design storm on site and dispose of it through infiltration.

RETURN FREQUENCY: The frequency or likelihood of a storm of occurring. A 100-year storm has a one (1) percent chance of occurring in any given year while a 10-year storm has a ten (10) percent chance of occurring in any given year. This should never be interpreted as happening only once every 100 or 10 years for the two given examples.

RIGHT-OF-WAY: means and includes all public rights-of-way and easements, public footpaths, walkways and sidewalks, streets, roads, highways, alleys, and water or drainage ways. It does not, however, include Public Utility easements not within Public Ways of the City.

SHOP DRAWINGS: Drawings, diagrams, illustrations, schedules, brochures, standards performance charts, instructions, or other information prepared by or for the Contractor and submitted to the City to illustrate what materials, equipment or work is to be performed for any portion of the Agreement.

SPECIFICATIONS: Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

SPREAD WIDTH: The width of water flow as measured from the flow line of the gutter into the asphalt.

STANDARD DETAILS OR PLANS: The illustrative and extended treatment of or attention to particular items which accompany the Construction Specifications.

STANDARD SPECIFICATIONS: The Standard Technical Specifications and Drawings for the City of Logan.

STREAM ALTERATION PERMIT: A permit that is obtained through the Utah Division of Water Rights and is necessary anytime construction impacts a stream, wetland, riparian zone, or other water body defined as the waters of the U.S.

STREET: The entire width between the boundary lines of the road or way which is owned, maintained and open to the use of the public for use as a thoroughfare, or which is the principal means of access to abutting property; the entire width of every way defined as a public street or highway by the laws of this City or State.

STORM EVENT: The event and hyetograph that define the design volume of precipitation, duration of the storm, intensity of the storm, and the pattern in which the precipitation falls.

SUBCONTRACTOR: The individual, firm, partnership or corporation to which the Contractor subcontracts any part of the Work covered by the Contract Documents.

SUBGRADE: That portion of the roadbed surface which has been prepared, as specified, and upon which a layer of specified roadbed material or base, or sub-surfacing, or pavement is to be placed.

SUBSTANTIAL COMPLETION: The point at which, in the opinion of the Engineer as evidenced by Engineer's written notice to the Contractor, the Work (or specified part thereof) has progressed to where it is in a state of completion in accordance with the Contract Documents and Standard Specifications, so that the City can reasonably and safely utilize the facility for the purpose for which it is intended, and only insubstantial services and material are required to correct the unfinished or defective portions of the work, and the remaining work will not interfere with the facility's intended use or occupancy.

SURFACE OR SURFACING: The uppermost layer of material placed on the traveled way or shoulders, and is usually of asphalt or concrete. This term is used interchangeably with "pavement."

SWPPP: A storm water pollution prevention plan which is required on any construction site greater than 1 acre.

UNDERGROUND INJECTION/RETENTION SYSTEM: A system designed to be fully underground and to dispose of water, entirely or in part, through infiltration. These require a special permit from the DWQ known as a Class 5 injection well permit.

UNDERGROUND INJECTION WELL: A facility, such as a pressured injection well, free draining injection well, sump, or other buried underground facility that infiltrates or injects surface water into the subsurface or groundwater system to eliminate surface runoff.

WETLANDS MITIGATION, OR 404, PERMIT: A permit obtained through the US Army Corp of Engineers which allows the wetlands to be impacted and provides for required mitigation before the project can be approved.

WORK: The construction services performed including materials on a City Public Works project and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations to construct a project under these General Conditions. The term also includes the supervision, inspection, and other on- site functions incidental to the actual construction.

WORKMANSHIP: The level of quality of work accomplished on the project through: a) The Contractor's maintenance of performance control and supervision over subcontractors, suppliers, manufacturers, products, services, and site conditions to produce work in accordance with Contract Documents. b) Compliance with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise skill and craft. c) Providing suitable qualified personnel to produce specified quality

1.6 DESIGN STANDARDS - GENERAL

A. Infrastructure designs shall conform to the most recent City of Logan Master Plans and to these Design Standards.

B. These Design Standards are minimum design requirements and are not all inclusive. The City's design standards do not relieve the responsible design engineer from being responsible for examining and understanding local project conditions, confirming the correlation of all design standards with the techniques of construction, coordination of the standards with that of all other industry standards, and for the complete and satisfactory design of the project.

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PART 2 EXECUTION

2.1 SANITARY SEWER SYSTEMS: RESERVED

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2.2 CULINARY WATER SYSTEMS: RESERVED

1.

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2.3 STORM DRAIN SYSTEMS: RESEVED

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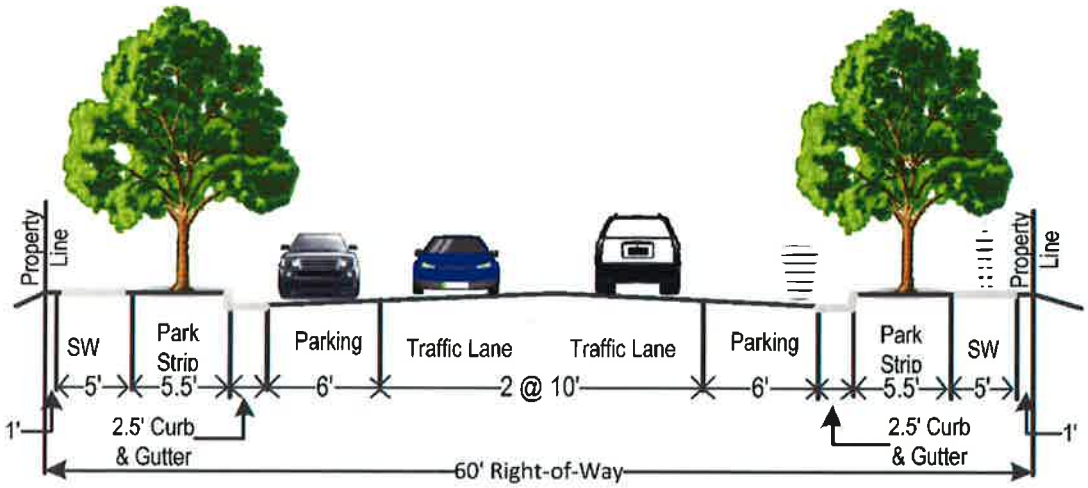
2.4 STREET SYSTEMS:

A. General

1. Streets systems, consisting of curb and gutter, sidewalks, handicap ramps, street pavement, and appurtenant items shall be designed as described below, as shown in Tables 14, 15, and 16 , and as shown in the Manual of Standard Specifications and Manual of Standard Plans. In general, roadway design should conform to the latest edition of the AASHTO policy on geometric design of highway and streets and the latest edition of the Utah MUTCD. Specific City standards are summarized below and are required unless specifically approved otherwise by the Logan City Engineer.
    a. Figures 1 through 5 show the ROADWAY DESIGN STANDARDS; including right-of-way widths, pavement widths, street grades, and appurtenant design criteria.
    b. Table 15 shows the subgrade protection layer required to be placed to protect subgrade soils. Prior to placement of any typical pavement section, a subgrade protection layer must be placed. Directions for this are outlined on Table 15.
    c. Table 16 shows the typical pavement sections required for the different categories of traffic. Different options are provided for some of the sections.
    d. Table 17 shows the Geosynthetic Requirements for Type 14 and 15 geogrids if those options are utilized.
2. The Utah Department of Transportation (UDOT) is responsible for several roadways within City boundaries. Utilize UDOT standards for these roadways.
3. Traffic signals, existing and future, will meet UDOT design standards excluding the use of GRIDSMART for video and detection. Coordinate with the City Engineer for specifications.
4. Street system designs shall be shown on the construction drawings and shall meet all City Design Standards and Specifications.
5. Streets shall be constructed with asphaltic concrete, course untreated base, course and granular borrow material for sub-base and/or subgrade protection, and a geotextile as required.
    a. Thickness of each course shall be determined based on the subgrade and pavement classification. Table 14 outlines the standard design standards. Table 15 outlines the required subgrade protection based on the design CBR of the subgrade. Table 16 outlines the required pavement section based on classification of the roadway.
    b. Thickness may need to be increased beyond the City Standards if recommended by a geotechnical engineer, but must be approved by the City Engineer.
6. No new street pavement will be cut into for three years after acceptance of pavement.
7. Street lighting shall be designed and installed by Logan Light and Power.
8. Vertical curves are required when grade change is 1% or greater.
9. Roadway knuckles shall only be permitted at 90-degree bends.
10. The maximum grade entering or leaving an intersection shall be 4%.

Local Residential Street
Cross Section

- < 2000 Vehicles Per Day
- 25 mph Design Speed



Possible Section Additives:
(As approved by City Engineer)

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3. Island – Add 14' to Center

Design Standards

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60	32	2	25	See minimum Pavement Section Table	Passenger, School Buses, Delivery Trucks	200	200	26/12	0.4 - 10

Intersection Sight Distance	Minimum Signalized Intersection Spacing	Minimum Full Movement Access Spacing	Corner Curb Radius	Minimum Un-signalized Full Movement Access Spacing (ft.)**	Minimum Right In/Right-out Access Spacing (ft.)**	Residential Driveways Permitted
280	N/A	125	13-25	N/A	N/A	Yes

**Distances to be measured from center of driveway to center of driveway

FIGURE 1

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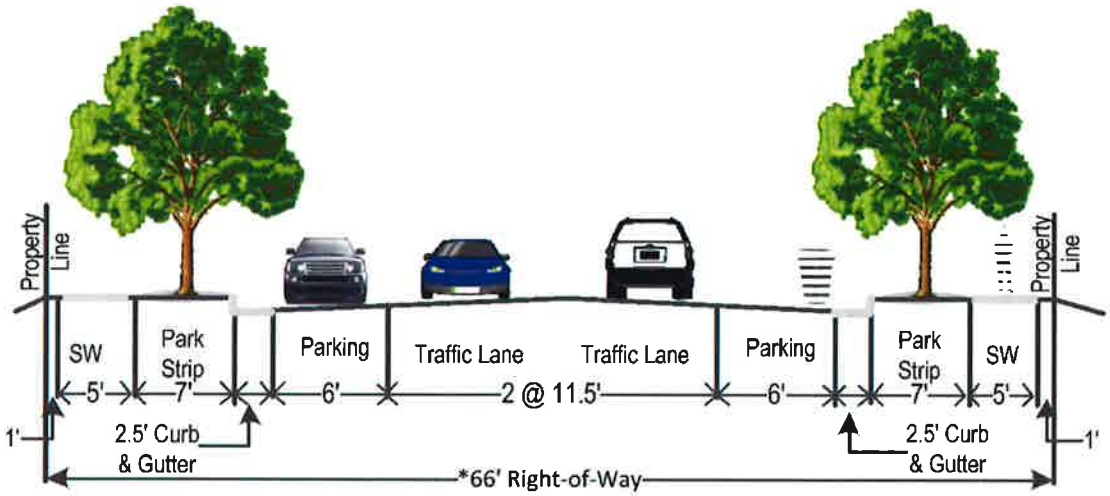
Gridded/Connection/Residential Collector Street Cross Section

- < 6000 Vehicles Per Day
- 25 mph Design Speed



Note:

1. Parkstrips can be replaced with 6' sidewalk at intersections that have turn lanes

*** Possible Section Additives**
(As approved by City Engineer)

1. Bike Lane – Add 5' each side
2. Buffered bike lane – Add 7' each side
3. Island – Add 14' to Center
4. Acceptance Lane – Add 10'

Design Standards

ROW Width	Pavement Width	Number of Lanes	Design Speed	Pavement	Vehicle Design	Stopping Sight Distance	Horizontal Alignment & Radius	Vertical Curve Min "K" Sag/Crest Requirement	Grades
66'	35'	2'	25'	See minimum Pavement Section Table	Passenger, School Buses, Delivery Trucks	200	200	26/12	0.4 - 10

Intersection Sight Distance	Minimum Signalized Intersection Spacing	Minimum Full Movement Access Spacing	Corner Curb Radius	Minimum Un-signalized Full Movement Access Spacing (ft.)*	Minimum Right In/Right-out Access Spacing (ft.)*	Residential Driveways Permitted
280	N/A	125	25'	66'	N/A	Yes

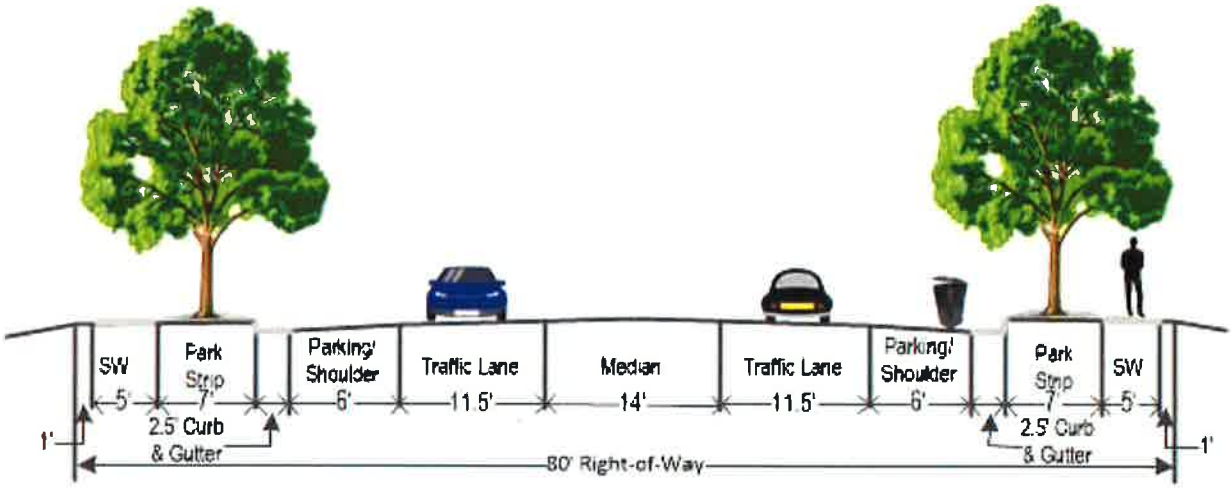
*Distances to be measured from center of driveway to center of driveway, unless approved otherwise by City Engineer

FIGURE 2

#

Collector Street
Cross Section

- < 12,000 Vehicles Per Day
- 35 mph Design Speed



Collector Street Notes:

Collector: As shown, 80' Right-of-Way. No on street parking allowed in Commercial and Industrial Zones

Note: Park strips can be replaced with 6' sidewalk at intersections that have turn lanes

Possible Section Additives:

(As approved by City Engineer)

1. Striped bike lane (minor collector) – Add 5' each side
2. Buffered bike lane (major collector) – Add 7' each side
3. Turn Lanes – Add 12'
4. Acceptance Lanes –Add 10'

Design Standards

ROW Width	Pavement Width	Number of Lanes	Design Speed	Pavement	Vehicle Design	Stopping Sight Distance	Horizontal Alignment & Radius	Vertical Curve Min "K" Sag/Crest Requirement	Grades
80	49	3	35	See minimum pavement section table	Passenger, School Buses, Delivery/ Concrete Trucks	250**	520	49/29	0.4 - 8

Intersection Sight Distance	Minimum Signalized Intersection Spacing	Minimum Full Movement Access Spacing	Corner Curb Radius	Signal Spacing (ft.)	Minimum Unsignalized Full Movement Access Spacing (ft.)*	Minimum Right In/Right-out Access Spacing (ft.)*	Residential Driveways Permitted
390	1,320'	500'	35	1,320	330	150	Only as approved

*Unless approved otherwise by City Engineer

** Based upon Level Terrain. See AASHTO for relevant adjustments for grade.

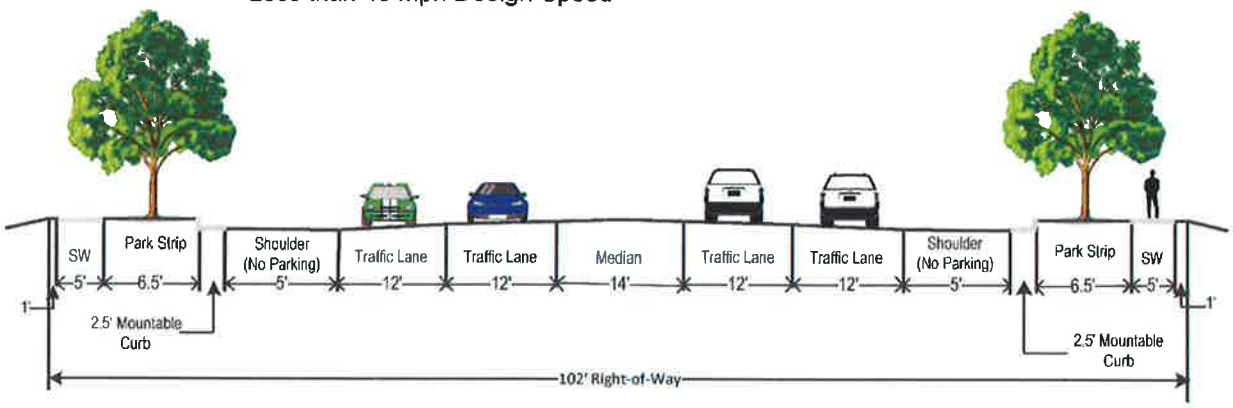
REFER TO LOGAN LAND DEVELOPMENT CODE CHAPTER 17.29.50 FOR ADDITIONAL ACCESS REQUIREMENTS TO MAJOR STREETS

#

FIGURE 3

Minor Arterial Street
Cross Section

- < 12,000 to 25,000 Vehicles Per Day
- Less than 45 mph Design Speed



Note:

Parkstrips can be replaced with 6' sidewalk at intersections that have turn lanes

Possible Section Additives:
(As approved by City Engineer)

1. Buffered bike lane – Add 7' each side
2. Acceptance Lane – Add 7'

Design Standards

ROW Width	Pavement Width	Number of Lanes	Design Speed	Pavement	Vehicle Design	Stopping Sight Distance	Horizontal Alignment & Radius	Vertical Curve Min "K" Sag/Crest Requirement	Grades
102'	72'	5	<45	See minimum pavement section table	Passenger, School Buses, Delivery/ Dump/ Concrete Trucks	360**	1100	64/44	0.4 - 6

Intersection Sight Distance	Minimum Signalized Intersection Spacing	Minimum Full Movement Access Spacing	Corner Curb Radius	Signal Spacing (ft.)*	Minimum Un-signalized Full Movement Access Spacing (ft.)*	Minimum Right In/Right-out Access Spacing (ft.)*	Residential Driveways Permitted
500	2,640	660'	45	2640	330	150	No

*Unless approved otherwise by City Engineer

** Based upon Level terrain. See AASHTO for relevant adjustments for grade.

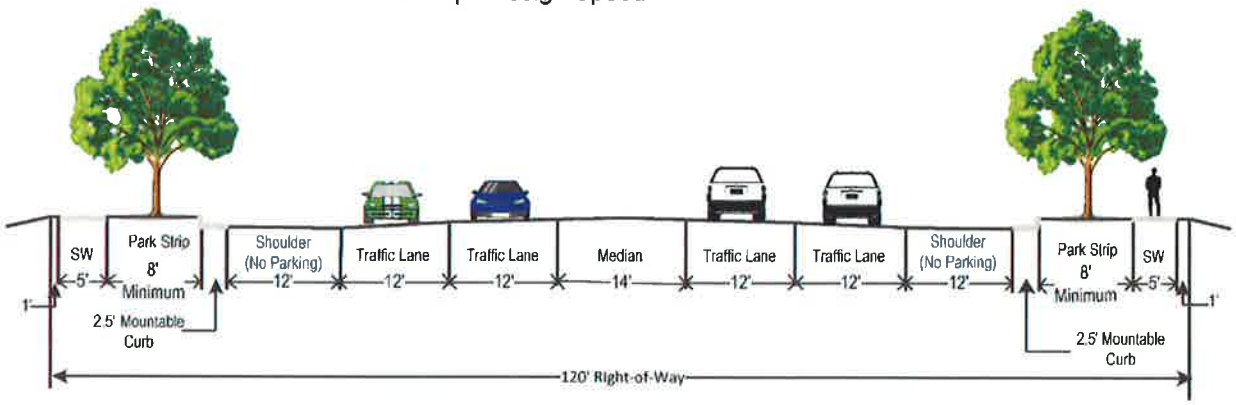
REFER TO LOGAN LAND DEVELOPMENT CODE CHAPTER 17.29.50 FOR ADDITIONAL ACCESS REQUIREMENTS TO MAJOR STREETS

FIGURE 4

#

Major Arterial Street
Cross Section

- < 12,000 to 32,800 Vehicles Per Day
- Greater than 45 mph Design Speed



Note:

Parkstrips can be replaced with 6' sidewalk at intersections that have turn lanes

Possible Section Additives:
(As approved by City Engineer)

1. Buffered bike lane – Add 7' each side
2. Acceptance Lane – Add 7'

Design Standards

ROW Width	Pavement Width	Number of Lanes	Design Speed	Pavement	Vehicle Design	Stopping Sight Distance	Horizontal Alignment & Radius	Vertical Curve Min "K" Sag/Crest Requirement	Grades
120'	86'	5	>45	See minimum pavement section table	Passenger, School Buses, Delivery/ Dump/ Concrete Trucks	360**	1100	64/44	0.4 - 6

Intersection Sight Distance	Minimum Signalized Intersection Spacing	Minimum Full Movement Access Spacing	Corner Curb Radius	Signal Spacing (ft.)*	Minimum Un-signalized Full Movement Access Spacing (ft.)*	Minimum Right In/Right-out Access Spacing (ft.)*	Residential Driveways Permitted
500	2,640	660'	45	2640	660	N/A	No

*Unless approved otherwise by City Engineer

** Based upon Level terrain. See AASHTO for relevant adjustments for grade.

REFER TO LOGAN LAND DEVELOPMENT CODE CHAPTER 17.29.50 FOR ADDITIONAL ACCESS REQUIREMENTS TO MAJOR STREETS

FIGURE 5

#

Table 15 – Subgrade Protection

(Subgrade protection layer must be placed over the subgrade soils prior to placement of the pavement section. A design CBR must be determined by a geotechnical engineer. Based on this CBR value, the chart below provides how much Granular Borrow must be placed to adequately support the typical sections referenced in Table 16. If the in-situ CBRs of the subgrade are found to be softer than the design value, those values should be used.)

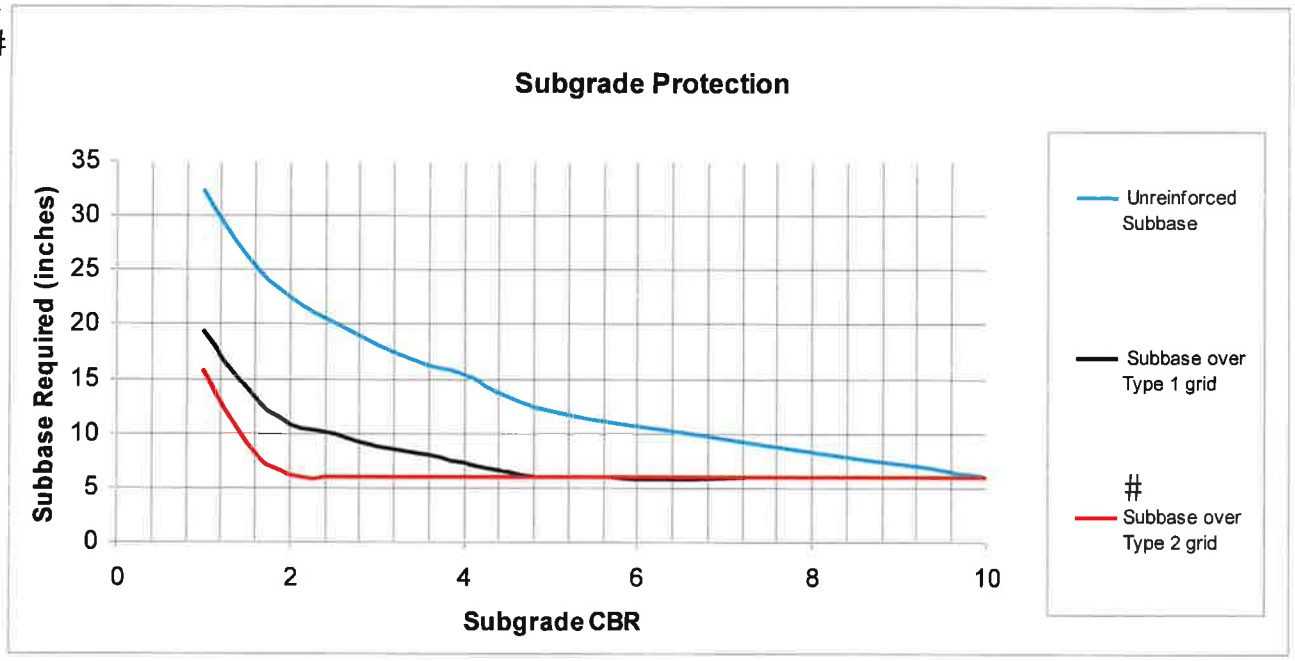


Table 16 – Minimum Pavement Section

Minimum Pavement Sections Based on Classification

(The following section(s) must be placed on top of the subgrade protection layer outlined in Table 15)

Residential Collector/Local Typical Section
3" AC (Asphalt Concrete) 4" UTBC (Untreated Base Course) 12" GB (Granular Borrow)

Collector Typical Section Options	
5" AC 6" UTBC 12" GB	4" AC 8" UTBC with Type 1 Geogrid

Minor Arterial Typical Section Options	
6" AC 8" UTBC 12" GB	4" AC 8" UTBC with Type 1 Geogrid

Major & Principle Arterial Road Typical Section Options		
5" AC 8" UTBC 12" GB	6" AC 10" UTBC with Type 1 Geogrid	5" AC 6" UTBC with Type 1 Geogrid 10" GB

NOTES:

(a) Road classification and structural design must be submitted by a licensed and qualified engineer.

(b) Traffic classifications III & IV require a 3/4" mix HMA design

(c) If collapsible soils are identified in the initial soils investigation or during construction, the subgrade soil shall be over-excavated and re-compacted a minimum of 18-inches or deeper unless otherwise directed by a licensed and qualified geotechnical engineer. This determination will be made on a case-by-case basis, depending on the facts and circumstances.

(d) Minimum CBR values for:
Untreated Base Course – 72
Granular Borrow – 45

(e) An alternative pavement design section may be submitted for review and approval by City Engineer. This design must be stamped by a licensed engineer in the State of Utah.

(f) Residential pavement sections may be required by City Engineer to equivalent to a Collector pavement section in commercial/industrial zones where higher volumes of truck traffic is anticipated.

Table 17 – Structural Geogrids

Structural Geogrids for Typical Pavement Sections

Alternate products to Type 1 and Type 2 Geogrids used for subgrade protection will need to provide the full-scale calibration and validation of their methodology, as outlined by Giroud-Han. Alternate products to Type 1 geogrid used within a typical pavement section will need to provide full-scale Accelerated Pavement Testing, as outlined in NCHRP Report 512, validating their design methodology. Testing submitted for Type 1 geogrids must be performed on paved sections with at least 100,000 passes of a dual wheel tandem loading.

Type 1 Geogrid

Biaxial Type 1 Geogrid Quality Control Values			
Geogrid Properties	Test Method	MD	CMD
Type of Geogrid		Punched and Drawn	
Rib Shape	Observation	Rectangular or Square	
Rib Thickness	Nominal Dimensions	Minimum 0.05 in	
Nominal Aperture Size	I.D. Callipered	1.0 to 1.5 inches	
Flexural Stiffness	ASTM D-5732-95	Minimum 750,000 mg-cm	NA
Minimum True Initial Modulus in Use	ASTM 6637-01	Minimum 27,420 lb/ft	Minimum 44,550 lb/ft
Junction Efficiency	GRI-GG2-87	93%	
Resistance to Long Term Degradation	EPA 9090 Immersion Testing	100%	

Triaxial Type 1 Geogrid Quality Control Values					
Geogrid Properties	Test Method	Longitudinal	Diagonal	Transverse	General
Type of Geogrid					Punched and Drawn
Rib Pitch	Nominal Dimensions	1.6	1.6		
Mid-rib depth	Nominal Dimensions		0.05	0.05	
Mid-rib width	I.D. Callipered		0.04	0.04	
Rib Shape	ASTM D-5732-95				rectangular
Aperture Shape	ASTM 6637-01				triangular
Radial Stiffness	ASTM 6637-01				15,430 lb/ft @ 5% strain
Junction Efficiency	GRI-GG2-87				93%
Resistance to Long Term Degradation	EPA 9090 Immersion Testing				100%

Type 2 Geogrid

Biaxial Type 2 Geogrid Quality Control Values			
Geogrid Properties	Test Method	MD	CMD
Type of Geogrid		Punched and Drawn	
Rib Shape	Observation	Rectangular or Square	
Rib Thickness	Nominal Dimensions	Minimum 0.07 in	
Nominal Aperture Size	I.D. Callipered	1.0 to 1.5 inches	
Flexural Stiffness	ASTM D-5732-95	Minimum 2,000,000 mg-cm	NA
Minimum True Initial Modulus in Use	ASTM 6637-01	Minimum 34,000 lb/ft	Minimum 42,000 lb/ft
Junction Efficiency	GRI-GG2-87	93%	
Resistance to Long Term Degradation	EPA 9090 Immersion Testing	100%	

Triaxial type 2 Geogrid Quality Control Values					
Geogrid Properties	Test Method	Longitudinal	Diagonal	Transverse	General
Type of Geogrid					Punched and Drawn
Rib Pitch	Nominal Dimensions	1.6	1.6		
Mid-rib depth	Nominal Dimensions		0.07	0.06	
Mid-rib width	I.D. Callipered		0.04	0.05	
Rib Shape	ASTM D-5732-95				rectangular
Aperture Shape	ASTM 6637-01				triangular
Radial Stiffness	ASTM 6637-01				29,500 lb/ft @ 5% strain
Junction Efficiency	GRI-GG2-87				93%
Resistance to Long Term Degradation	EPA 9090 Immersion Testing				100%

B. Asphalt Concrete Mix Designs
   1. Shall be per the 2017 Manual of Standard Specifications Section 32 12 05
   2. Binder Material shall be a PG 58-28 unless specified otherwise
   3. Aggregate shall be a DM-1/2 per the Marshall Mix Design, unless specified otherwise

C. Geotechnical design requirements:
   1. There are many areas within the City where problematic soils exist. Where these soils exist within a proposed development, the soil's bearing capacities shall be determined by an approved geotechnical engineer. The foundations for all facilities to be constructed on these soils shall be designed by the geotechnical engineer to support the facilities as required. These facilities shall include utility lines, roadways, structures and appurtenant items.
   2. Required Pavement Design Information - The following list includes information required for pavement design.
      a. Soil types exposed at the ground surface.
      b. Soil conditions within a depth of 3 to 5-feet below the pavement subgrade including:
         i. Soil classification units
         ii. In place soil moisture content and density
         iii. The occurrence of swelling soils
         iv. Soil plastic and liquid limits
         v. Moisture-density compaction curves
         vi. The occurrence of moisture induced collapsing soils
      c. The depth to groundwater below the pavement subgrade
      d. Subgrade support variability
      e. The approximate vertical distance of the pavement surface above or below the adjacent ground surface
      f. Soft or weak soils that will not support or will limit the size of earthwork equipment
      g. Vegetation, debris and other deleterious material that may affect pavement support.
      h. h. A hazard rating for frost damage
      i. Water hazards
      j. Performance of nearby pavements
      k. Design CBR for road sections
   3. Boring/Sample Locations - Location of the borings and samples shall be determined based on the centerline location of the planned road, the planned width of the road and the expected soil conditions for the area. Spacing of the test holes will be controlled by the type and profile of the soil at each location. For long road sections, use a minimum of 200 feet as a starting interval for exploration locations and varying this interval up to a maximum of 1000 feet for uniform conditions. If the soil types significantly change between test holes, intermediate locations shall be investigated. The determination of the number and location of samples and/or borings shall consider the reliability of the pavement design and the cost-effectiveness of the investigation. Borings, samples, and other explorations shall

be located so that the sites can be found during construction. The locations shall be referenced to the following:

a. A construction station,
b. Road centerline, and
c. Elevations or road grades where possible.
d. Final boring/sample locations shall include GPS coordinates for inclusion into the City's subsurface database.

4. Selection of Design CBR – Subgrade soil CBR values shall be determined using samples compacted at optimum moisture content to 100 percent of the maximum density obtainable by the AASHTO T-99D method of compaction. CBR tests shall be performed according to AASHTO T-193 except that a standard surcharge weight of 10 pounds shall be used for soaking and the penetration test of all samples. A CBR chosen for pavement design purposes shall have a confidence level of 90% for a normal distribution of values. If it is determined that there is an insufficient number of CBR tests, then the lowest CBR value will be used for design. This will be determined by the City Engineer. Table 18 indicates the number of CBR tests that will provide a 90 percent confidence level that the average test value is within plus or minus 1 unit of the average for a normal t-distribution of values.

#

Table 18 - Correlation of Range vs. Number of Tests for 90-percent Confidence

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CBR Test Range	1	2	3	4	5	6
Number of Required Tests	2	3	4	5	6	8-9
(Source: UDOT Pavement Design Manual, Table 3A-1)						

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5. The City Engineer may designate areas where known problematic soils exist. Soils reports done for a proposed development or roadway shall also be used to define if and where any areas of collapsible soils may exist. Where these areas exist, special care shall be taken with all construction, as described herein.
6. Refer to Table 1 of this section for minimum equivalent axle loads for road/pavement classifications and uses.
7. Geotechnical Report Format includes the following:
   a. Soil log and profile
   b. Historical and current water depth including procedures acceptable to determine historical water depths
   c. Bearing capacities and settlement analysis of the associated soil layers
   d. Percolation rates
   e. CBR of the associated layers.
   f. Recommendations for lateral soil pressures vii. Seismic Considerations
   g. Groundwater dewatering considerations as necessary ix. Survey mapping of all boreholes
   h. Sub-grade preparation
   i. Backfill recommendations
   j. CBR and structural properties required for all backfill materials

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D. Restoration of surfaces:
   1. All improved surfaces shall be restored to match original conditions, as acceptable to the City Engineer.
   2. Paved surfaces shall be restored to the thickness plus 1"and types as required to match adjacent paved surfaces; conforming to City standards.
   3. Landscaped areas shall be restored to match adjacent areas, conforming to the City Standards and as acceptable to the City Engineer. Landscape materials shall conform to adjacent materials.
   4. Cultivated areas shall be restored to match adjacent areas, conforming to the City Standards and as acceptable to the City Engineer. These areas shall be seeded with material conforming to adjacent materials.
   5. All disturbed areas, not improved, shall be restored with native grasses to match adjacent areas, conforming to the City Standards and as acceptable to the City Engineer. These areas shall be seeded with material conforming to adjacent materials, as acceptable. Restored area shall achieve 70% plan coverage prior to acceptance.

TRAFFIC ENGINEERING ANALYSIS

A. General
   1. Two types of traffic engineering analysis are required: the traffic engineering analysis associated with the transportation master plan and a traffic impact study required as part of private development projects. Both types of traffic engineering analysis are to be conducted under the direction of the City Engineer; however, payment for the project specific traffic impact study is to be made by the Developer.
   2. Once a project is received by the City for review, the City Engineer will determine whether the project will be required to submit a traffic impact study to the City. Prior to beginning a traffic impact study required for a specific project, the City Engineer will obtain a proposal from an independent traffic consultant to perform the project's traffic impact study. The City Engineer will then notify the Developer of the cost, who will be responsible for prepaying the City for the proposal amount. The City will then retain the consultant, coordinate preparation of the traffic impact study, and after the study has been completed to the City's satisfaction, the City Engineer will then transmit a copy of the study to the Developer.

B. Criteria for Providing a Traffic Impact Study
   1. The Engineering Department will determine whether the project requires the preparation of a traffic impact study based upon the following general criteria:
      a. Impact on Surrounding Areas
      b. Structural Impacts on Roadways during construction
      c. Neighborhood Issues
      d. Impact on Adjacent Streets
      e. Numbers of Trips Being Produced by the Project
      f. Size of Project
      g. Connection of project onto an arterial roadway
      h. Subdivision which do not have good access, two entries to new subdivisions

i. Traffic Impact Studies shall be per the current edition of the UDOT Traffic Impact Study Guidelines document. Type of study required shall be specified by the City Engineer.

C. Transportation Master Plan
   1. The master plan will provide some of the basic structure needed to organize the City's transportation system, identify policies, provide the traffic engineering analysis needed to identify roadway sizes and identify a long-range capital improvement program to meet the needs of the City.

D. Traffic Impact Studies
   1. In addition to the traffic engineering analysis completed as part of the transportation master plan, traffic impact studies may be required of developments coming into the City. The Developer is to assume that each project, which comes into the City, will be required to prepare a traffic impact study unless otherwise directed.

E. Traffic Demand Modeling
   1. Traffic Demand Modeling shall incorporate and interface with the Cache Metropolitan Organization travel demand model.

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2.5 DRAWINGS: RESERVED

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2.6 SURVEY STANDARDS : RESERVED

a.

END OF SECTION

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Chapter 17.29: Standards, Specifications, and Improvements

§17.29.010. Purpose

The uniform application of Public Works standards and specifications for design and construction are adopted by reference as a condition of project approval and permit issuance for all development permits, subdivisions, building permits, conditional use permits, design review permits, or other permit issued by the City. The standards of this chapter are carried out through other provisions of the Logan Municipal Code and the Public Works Design Standards Manual~~Standards and Specifications manual~~ as approved by the Director of Public Works.

§17.29.020. Typical Road Cross Sections

Detailed current Road Cross Sections are administered by the Director of Public Works and can be found within the Public Works Design Standards Manual~~Standards and Specifications~~.

§17.29.030. Right-of-Way Access and Driveways

A. The purpose of right-of-way access regulations is to maintain and improve traffic levels of service by managing the location of access points to public rights-of-way.

B. Right-of-Way Permits.
No property owner shall be permitted to construct, develop, or begin using access from private property onto a City right-of-way without obtaining a Right-of-way Access Permit from the Department of Public Works.

C. General Standards.
The following standards apply to all development except detached single family residential structures located in the RR, RC, NR, MR, and CR zoning districts.

1. Back-Out Parking Prohibited. Parking configurations that require vehicles to back-out of parking areas directly onto public rights-of-way are prohibited.
2. Maintenance of Driveway Bridges. Driveway bridges shall be maintained in a safe and orderly manner. If parking bridges or parking areas fall into disrepair, the Public Works Director may order the portion of the facility within the public right-of-way to be repaired, removed, or abated. If the City undertakes any action that is a duty of the property owner under this chapter, the property owner shall be responsible for the cost of the City's action.
3. Access to State Highway Rights-of-Way. Uses and developments currently or planned to be accessed via state roads whether they are new, remodeled or determined to be a change of use, shall be reviewed and approved by the Utah Department of Transportation.
4. Access to City Rights-of-Way. Uses and developments currently or planned to be accessed via city roads whether they are new, remodeled or determined to be a change of use, shall be reviewed and approved by the Logan City Public Works Department.

§17.29.040. Shared Access

Shared access between adjoining parcels is strongly encouraged. It may be required by the decision-makers or the Director of Public Works as a condition of project approval. The decision-makers may require shared access if the property owner owns or controls adjoining property, or if it is feasible for separate property owners to enter into a shared access agreement.

§17.29.050. Access Adjoining Major Streets

A. Arterial and Major Collector Streets.
When a project proposes access to an arterial street or major collector street, whether the streets are existing or proposed, limited access to the street may be required as follows:
1. Determination shall be consistent with the currently adopted City of Logan Transportation Master Plan and General Plan Transportation Element.
2. Determination shall be based upon the recommendation of the Department of Public Works.
3. When frontage roads or alternative access are used, "no access easements" may be required between the project and the road to which access is limited.
   a. No new driveway access shall be permitted to directly access the following city streets except as exempted in the subsections following this list:
      1. 1400 West within the Logan City Limits.
      2. 600 West between US 89/91 and 2500 North.
      3. 1000 South between Utah 165 and 600 West.
      4. 1400 North between 1400 West and 1400 East.
      5. 200 East from 1000 North to the North Logan City Limits (1500 North).
      6. 800 East from 800 North to the North Logan City Limits (1500 North).
      7. 1000 North between 1200 East and westernmost Logan City Limits.
   b. If there are no alternatives for access utilizing existing side streets or rights-of-way, access to one of the excluded streets in this section may be approved as follows:
      1. Frontage roads may be required to create a shared access between the subject property and adjoining properties to limit the number of access points;
      2. Driveways, if permitted, shall be required to be aligned on the City's grid system by either:
         a. Align with existing driveways across from the proposed new driveway location, or
         b. Align driveways in locations approved by the Director of Public Works to create safe driveway separations and accommodate other potential driveways in the project area.
      3. If the project is a subdivision, the number of lots may be reduced to accommodate a frontage road; or
      4. An access to a street if it is designed to be or become a shared access,
   c. If recommended by the Director of Public Works, access shall be developed to serve as an interior project street to provide access to multiple properties.
   d. No new residential driveways shall be permitted to access excluded streets if there is any other location for access. If a legally existing lot is proposed for development and there are no alternative points of access, the Director of Public Works may approve one residential driveway with a maximum width of 22 feet at the right-of-way.
   e. If a lot has been created in violation of subdivision regulations, the Director of Public Works may require driveways for illegally created lots to conform to the provisions of this chapter.
   f. Other access limitations as defined in the Logan General Plan or the City's current Transportation Master Plan shall apply.

B. Alternate Access Required.
The decision making body shall consider the long-term needs of the City in maintaining local and regional transportation corridors in the approval of any

subdivisions pursuant to this Title. The decision making body may reduce density, the number of driveways or change driveway locations, or impose other design considerations to avoid or prohibit access to arterials and major collectors and to preserve future transportation corridors. The decision making body may require road right-of-way stubs or connections to adjoining properties for future road development whether or not the adjoining properties are proposed for development at the present time. The decision making body may require the dedication of the extended right-of-way upon recommendation of the Director of Public Works if adjoining zoning or site development potential results in the need for logical future connections.

§17.29.060. Driveway Specifications

A. Residential Driveways.
   1. Driveways shall lead to a garage or parking area located outside the front, side and rear setbacks. Driveways serving residential developments shall not be less than twelve (12) feet in width for single lane driveways. A residential driveway at the edge of the right of way shall not exceed 22 feet in width.
   2. Only one driveway is permitted on a single family residential lot, except as specified in subsection 17.29.060.B for circular driveways.
   3. More than one driveway may be permitted for multi-dwelling structures, if approved as a part of the design review permit for new construction or with a right-of-way access permit.

B. Circular Driveways. Circular driveways may be permitted by the Director or the Director of Public Works for residential development on minor collector or residential streets. Maximum driveway width of a circular drive shall be ten (10) feet within the property and twelve (12) feet at the street. Circular driveways shall only be permitted if the lot frontage is greater than 100 feet in width or a corner lot with at least 100 feet of clearance from curb on the intersection for each driveway. A right-of-way access permit shall be required.

C. Non-Residential Driveways.
   1. Entry (ingress) lanes shall be limited to a maximum width of sixteen (16) feet, except as noted in this subsection.
   2. Exit (egress) lanes shall be at least twelve (12) feet wide with one lane for each turning movement. If there is a lateral (straight across) alignment approved by the decision-makers, there shall be a third twelve (12) foot lane for straight traffic.
   3. Typical non–residential driveway widths shall be forty (40) feet (one 16' ingress lane and two 12' egress lanes) with a maximum established at 52 feet when approved by the Director of Public Works.
   4. The decision–makers or Director of Public Works may approve varied widths based on site and project specific conditions and traffic safety.

§17.29.070. Driveway Location and Spacing

A. Commercial and Recreation Zoning Districts.
   The following standards apply to all development in the TC, COM, CC, MU, GW, AP, PUB, and REC zoning districts.
   1. Number of Driveways: One driveway is allowed per lot or per 300 feet of street frontage, whichever is greater, unless a greater number of driveways are approved by the Director of Public Works.
   2. Driveway Width: The maximum width of a driveway providing access to a public right-of-way is 52 feet. The Director of Public Works may require that driveways

wider than 24 feet be constructed with a landscape island or divider median to separate ingress and egress traffic.

3. Driveway Spacing: Driveways shall be spaced at least 200 feet from other driveways and street intersections, unless otherwise approved by the Director of Public Works. Spacing is measured from nearest edge to edge.

B. Industrial Districts.

The following standards apply to all development in CS and IP zoning districts.

1. Number of Driveways: One driveway is allowed per lot or per 300 feet of street frontage, whichever is greater, unless otherwise approved by the Director of Public Works.
2. Driveway Width: The maximum width of a driveway providing access to a public right-of-way is 52 feet. The Director of Public Works may require that driveways wider than 24 feet be constructed with a landscape island or divider median to separate ingress and egress traffic.
3. Driveway Spacing: Driveways shall be spaced at least 100 feet from other driveways and street intersections, unless otherwise approved by the Director of Public Works. Spacing is measured from nearest edge to edge.

§17.29.080. Reserved

§17.29.090. Driveway Setbacks Within the Front Yard

No standalone driveway shall be closer to the side property line than two (2) feet (measured from the closest edge of the driveway to the side property line). This strip shall be landscaped and maintained by the property owner.

§17.29.100. Driveway and Parking Surface

Driveways shall be constructed according to Department of Public Works Design Standards Manual~~Standards and Specifications~~. All driveways and parking areas shall be "hard surfaced" in asphalt, concrete, or other hard surface as approved by the Department of Public Works and Fire Marshall.

§17.29.110. Complete Public Streets

All City owned streets, public right-of-ways, bridges and other connecting pathways shall be designed, constructed, operated, and maintained so that users, including people with disabilities, can travel safely and independently.

A. Provisions and Exemptions.

1. The design of, and provision for, new bicycle and pedestrian ways shall be included in the City's new construction and reconstruction projects, subject to budget limitations, and unless one or more of the following conditions apply:
   a. Bicyclists and pedestrians are prohibited by law from using the street or City owned transportation facility;
   b. The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use; or
   c. Scarcity of population or other factors indicate an absence of need, with consideration given to future population growth.
2. The design and development of the City streets and rights-of-way shall improve conditions for bicycling and walking through the following:
   a. The design and construction of new facilities should anticipate future demand for bicycling and walking facilities, and not preclude the provision of future improvements;

b. Provide safe, accessible and convenient corridor crossings for both bicyclists and pedestrians in any future transportation corridor projects; or
c. The design of facilities for bicyclists and pedestrians shall follow design guidelines and standards that are commonly used, including but not limited to. the AASHTO Guide for the Development of Bicycle Facilities, AASHTO Policy on Geometric Design of Highways and Streets, the Institute of Transportation Engineers recommended practice "Design and Safety of Pedestrian Facilities," and the U.S. Department of Transportation sponsored "Designing Sidewalks and Trails for access Part II: Best Practices Design Guide."

§17.29.120. Private Streets and Private Utilities
All privately owned streets and utilities shall be designed, built, and maintained to the same standard as public streets and utilities.

§17.29.130. Private Drives
Reserved.

§17.29.140. Curb, Gutter, Sidewalk, and Drainage Requirements
All curb, gutter, sidewalk and drainage improvements shall be designed and constructed to the Department of Public Works Design Standards Manual~~Standards and Specifications~~. Improvements shall be installed to the satisfaction of the City Engineer prior to the issuance of a Certificate of Occupancy, use, or occupancy of the project.

§17.29.150. Street Trees
Street trees shall be required as a condition of all project approvals. The tree species and locations of plantings shall be as specified ~~in Department of Public Works Standards and Specifications and as approved~~ by the City Forester. Street trees shall be planted at the time of issuance of a Certificate of Occupancy or construction of sidewalks, whichever occurs first. For subdivisions, the Director may require posting of improvement security to guarantee the availability of funds adequate to cover the cost of purchasing and installing street trees. The timing and installation of the necessary street trees and parkstrip improvements can be coordinated with the installation of the minimum landscaping required under Section 17.32.

§17.29.160. Bridges and Culverts
All culverts and bridges shall be designed and installed to the Department of Public Works Design Standards Manual~~Standards and Specifications~~.

§17.29.170. Stormwater, Stormwater Detention, Stormwater Retention
A. The purpose of this Section is to ensure adequate provisions are made for the retention, detention, or discharge of stormwater, ground water, surface water, subsurface drainage, and roof runoff as required by the Director of Public Works.
B. This Section applies to all new development and redevelopment subject to design review.
C. Standards.
   1. New development and redevelopment shall comply with the City's adopted Storm Water Management Plan and engineering standards. All stormwater improvements shall be designed and installed to the Department of Public Works Design Standards Manual~~Standards and Specifications~~.

2. Where a natural drainage way is located on a development site, the natural drainage way shall not be altered or obstructed in a manner that would be detrimental to downstream properties. Any modification to a natural drainage way requires review and permitting by the Department of Public Works prior to initiating any work.
3. Natural drainage ways and aboveground storm water facilities shall be ~~enhanced and~~ incorporated as an amenity into the development.
4. ~~When a detention or retention pond is required, the development shall include a landscape plan that utilizes landscape materials reflecting the natural traditions of Logan.~~ All stormwater facilities shall be integrated into the required landscape plan and overall site design.
5. New development shall~~is encouraged to~~ utilize Low Impact Development Practices where site conditions permit.
~~5.~~6. At grade, open, or above ground stormwater facilities shall be located in the side and rear yards and not within the front yard. Underground stormwater facilities may be located in the front yard.

§17.29.180. Waterlines and Fire Hydrants.

A. Water distribution systems shall be constructed by the property owner to State of Utah regulations and the Department of Public Works Standards and Specifications.
B. Increases or decreases in water pressure from that existing in the culinary water system prior to installation is the responsibility of the project developer or property owner. Adequate flow of a minimum pressure of the current State of Utah standards at any point in the project shall be the responsibility of the proponent.
C. Fire hydrants shall be installed to meet the specifications of the Department of Public Works and the Fire Marshal.

§17.29.190. Sewage Disposal

The sanitary sewer collection system shall be constructed to the current State of Utah and Department of Public Works Design Standards Manual~~Standards and Specifications~~. New projects shall connect to the City sewage disposal system. No subdivisions shall be permitted if all of the lots are not to be connected to the City's sewage disposal system.

§17.29.200. Electric Power and Street Lights

A. The proponent shall be required to provide for power and telecommunication distribution and service lines and shall be responsible for the installation of street and yard lighting as required by the Department of Public Works and the Light and Power Department.
B. The replacement, maintenance, and repair of the City's power and telecommunication distribution network, excepting the installation of new substations, shall not be subject to the design review process.
C. New power and telecommunication distribution and service lines shall be located underground. Where underground placement is infeasible due to terrain, soil conditions, water table, etc., new power and telecommunication lines shall utilize existing distribution systems if available. If new power and telecommunication lines are being extended into an area currently devoid of any existing infrastructure or services, above ground installation may be permitted.
D. Wireless Telecommunication Facilities are regulated under Chapter 17.38 and not Section 17.29.200.
E. High voltage transmission lines serving regional needs are exempt from these requirements.

§17.29.210. Dedication of Water Rights

Water rights equivalent to the amount of increased water demand created by the Subdivision, Conditional Use, or Design Review Permit shall be dedicated to the City of Logan. The amount of dedication shall be determined in accordance with R309-510-7 "Source Sizing," of the Utah Administrative Code. Submittal of proposed water rights to be dedicated to the City and calculations of required amounts to be dedicated shall be submitted to Public Works for approval. Additional available water rights may be offered to the City for purchase at fair market value.

§17.29.220. Warranty

Public improvements performed by or on behalf of private development shall be guaranteed for a period of two (2) years after the date of acceptance. The improvements shall be guaranteed against settlement, break up, failure or inability to satisfactorily function as required, lack of adequate drainage. The City may require or retain security to assure performance of improvements during the guarantee period.

§17.29.230. Delay Agreements

The Director of Public Works may enter into a recorded agreement with a property owner to defer the construction of improvements to a future date. The improvements shall be constructed within five (5) years of the date of the agreement. In cases where the City will be undertaking similar improvements to the same street, and such improvements have been scheduled, a longer period may be approved by the Director of Public Works. Improvement security, in the amount of 125% of estimated construction costs, may be required as a part of the delay agreement.

§17.29.240. Parks, School Sites, Public Places

A. Park Sites.
    1. New residential development may be required to dedicate park space equal to the project's proportion of required parkland area as defined in the General Plan.
    2. If additional park land is required for dedication in excess of the project's fair share, the City may negotiate to purchase the parkland at a value in conformance with laws related to municipal property acquisition.

3. In lieu of acquiring parkland within the residential project, the Planning Commission may require that the proponent provide funds in lieu of land dedication to the City for acquisition of parkland in conformance with Council policy or adopted impact fees.

B. School Sites.
The Planning Commission may require a subdivider or residential development to reserve sites for new schools if requested by the Logan School District. The District shall be responsible for the financial guarantees or requirements of such action.

C. Public Facilities, Road Rights-of-Way, and Public Utility Easements.
1. The City may require a proponent to reserve lands within a project site for a public facility. Such request shall be made in conformance with the laws related to municipal property acquisition.
2. The City may require dedication of lands for public utility easements, road right-of-way, and other public purposes without compensation in conformance with the requirements of Utah law and this Title.

§17.29.250. Common Area Development Requirements

A. Developments with common areas or facilities shall be owned and managed by a "homeowner association" as defined in U.C.A. §57-8a-102.

B. The homeowner association shall adopt City approved covenants, conditions and restrictions (CC&Rs), bylaws and rules for the association. The bylaws and rules for the association shall provide for enforcement of the CC&Rs, including assessing fines for violations.

C. Prior to the issuance of any permits, the developer shall file a lien in favor of the homeowner association against each residential lot equal to the pro rata share of ten percent (10%) of the total cost of the common area and facility improvements. Upon payment of the liens, the homeowner association shall place the proceeds in a restricted fund to be used solely for the maintenance, repair and replacement of the common area and facility improvements.

Table 17.30.170.E.1: Street and Pedestrian Connection Spacing

Block Type	Maximum Spacing Between Streets	Maximum Spacing Between Pedestrian Connections
Block	660'	330'
Superblock	1320'	1320'
Mini-block	330'	330'

Table 17.30.170.E.2: Minimum Number of Street Connections by Size of Residential Development

Number of Dwelling Units Served	Number of Connections
Greater than 20	3
9-20	2
1-8	1

§17.30.180 Residential Infill and Flag Lot Development Standards

A. The standards in this Section apply to development proposals within the interior of existing Logan Blocks where development exists around at least 50% of the perimeter of the property~~a block~~.

B. Infill or flag lot subdivisions of one (1) additional lot shall meet the following standards (see Figure 17.30.180.B.1):
   1. Minimum Lot Size. The minimum size of a proposed lot shall be 150% of the minimum lot size established by the underlying zoning district. The base lot shall meet the minimum lot size of the underlying zoning district.
   2. Road Standards. Access may be provided by a shared driveway with a minimum pavement width of 20'. Sidewalks, curb, gutter and parkstrip are generally not required. The shared driveway shall maintain a four (4) foot setback from all adjoining property lines and an eight (8) foot setback from existing residential structures. The four (4) foot setback area shall be landscaped and maintained.
   3. Building Setbacks. New construction shall maintain a 20' front setback from the paved edge of the shared driveway to ensure adequate parking is available for each of the proposed lots. All side and rear setbacks shall be consistent with the underlying zoning district.

C. Infill or flag lot subdivisions of two (2) to eight (8) lots shall meet the following standards:
   1. Minimum Lot Size. The minimum size of a proposed lot shall be 125% of the minimum lot size established by the underlying zoning district. The base lot shall meet the minimum lot size of the underlying zoning district.
   2. Road Standards. Road access and improvements shall be provided within a separate right of way and may terminate with a cul-d-sac or loop road. The access road shall contain two travel lanes and one lane of parking within a minimum paved surface of 28'. Curb, gutter, sidewalk and parkstrip are required along the entire stretch of roadway. Minimum turn-around areas for emergency vehicles shall also be placed within the right of way. All improvements shall be constructed according to minimum City standards. Road improvements shall be located such

that existing residential structures meet a minimum setback of 15' as measured from back of curb to building foundation.

3. Building Setbacks. New construction shall meet minimum setbacks of the underlying zoning district.

~~D. Infill or flag lot subdivisions of 9 or more lots shall meet the following standards:~~

~~1. Minimum Lot Size. The minimum size and dimensions of the proposed lots and the base lot shall be consistent with the minimum dimensional standards of the underlying zoning district.~~

~~2. Road Standards. Road access and improvements shall be provided within a separate right of way and shall provide at least two street connections. The access road shall contain two travel lanes and one lane of parking within a minimum paved surface of 28'. Curb, gutter, sidewalk and parkstrip are required along the entire stretch of roadway. All improvements shall be constructed according to minimum City standards. Road improvements shall be located such that all existing residential structures meet a minimum setback of 15' as measured from back of curb to building foundation.~~

~~3. Building Setbacks. All new construction shall meet minimum setbacks of the underlying zoning district.~~

§17.30.190 Future Street and Block Master Plans

A. This section guides site development so that infill can occur over time that creates Blocks from Superblocks, and Mini-blocks from Blocks. Planning for street connectivity and new blocks helps provide transportation options, walkable streets, and efficient use of land.

B. These standards apply to all new multi-family, commercial, mixed use, and public development sites greater than 5 acres.

C. Future Street and Block Plan.

1. All developments over five acres must include within their development proposal a plan illustrating how the subject property could be divided into Blocks or Miniblocks (depending on the zone or overlay zone).

2. Initial development shall be sited so that future block creation is possible (see Figure 17.30.190.C.1.). Future development shall be sited so that new blocks are formed and the new infill development is oriented to streets and other public spaces (see Figure 17.30.190.C.2.).

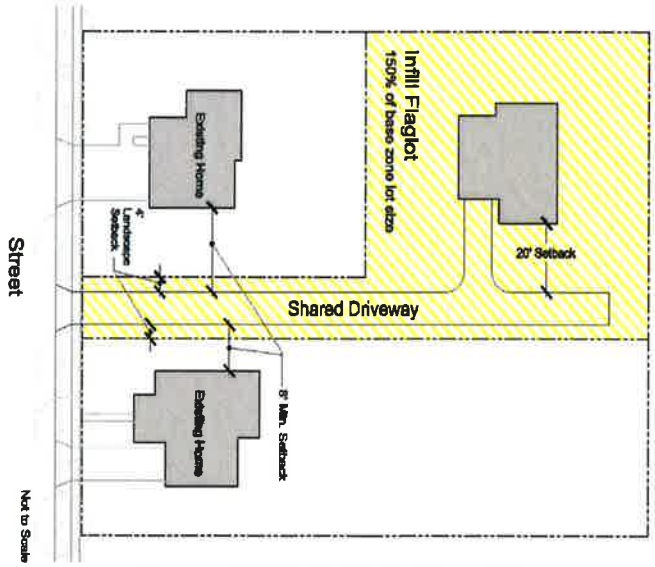

Figure 17.30.180.B.1: Infill and Flaglot Development Standards