Downtown Alley Enhancements
Basis of Design

PREPARED FOR: City of Fort Collins

PREPARED BY: Keith Meyer, PE/Ditesco

REVIEWED BY: Todd Dangerfield/DDA

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Background

The purpose of this Basis of Design is to document the design and construction standards used by the Fort Collins Downtown Development Authority (DDA) to improve public right of way in various alleys throughout the City of Fort Collins downtown. Specifically, this document outlines and highlights the standards that are modified or altered from Larimer County Urban Area Street Standards (LCUASS) and other adopted standards in Fort Collins. This document further creates a foundation for all alley improvements contemplated under the *Downtown Alley Masterplan, December 1, 2008.*

The Downtown Alley Enhancements improve public right of way but use a variety of architectural construction techniques not currently recognized by governing standards such as LCUASS. As such, this Basis of Design highlights unique design concepts and outlines special standards to which the alleys are designed and constructed. Finally, this document is a tool for City officials to assist in review and approval of concepts proposed currently outside of recognized standards and to provide the DDA/City design and review teams with a clear understanding of mutual expectations from the outset of the design process.

Design Criteria and Applicability to Land Use Code

The design criteria generally used to design and construct the Downtown Alley Enhancement projects are summarized below. As noted above, these are provided to better the understanding of improving the alley spaces allowing design flexibility to challenging utility and transportation corridors. Additional construction details are also provided in the Fort Collins Downtown Development Authority Downtown Alley Enhancement Standards.

The Fort Collins DDA was created and established pursuant to Title 31, Article 25, Part 8, C.R.S. The DDA exists to leverage tax increment financing to improve public spaces and encourage redevelopment in the central business district. To allow much of what the DDA does in the downtown district to become reality, the City's Land Use Code (LUC) Section 5.1.2 Definitions, Development, Part (2)(a), notes the DDA is exempt from the definition of "development" for work it performs in the DDA district if improvements are agreed to in writing by the City. As such, since 2010, the DDA has participated in the City's capital project review process. This process has been similar to what internal City capital projects follow through engagement of each affected City department.

Architectural Design

The architectural design for the Downtown Alley Enhancements focuses on themes for each alley improvement area drawing on adjacent land uses and architectural concepts. For example, the alleys nearer to Old Town have a historic theme while alleys closer to Colorado State University draw inspiration from the university setting. Overall, the architectural concepts are meant to enhance the local character and provide for enhanced pedestrian uses of the alley spaces. Additional architectural goals include encouraging outdoor uses, inspiring redevelopment on adjacent private land, creating festive spaces using special lighting, ensuring emergency access where applicable, creating special trash collection strategies for each alley and implementing shared street models to allow vehicular access, including business deliveries and trash haulers, in a controlled and integrated manner. The standards are outlined below in **Table 1**.

TABLE 1
Architectural Design Criteria

Category	Manufacturer or Item	Standard
Brick Paving	Traffic rated system (Keystone / Pavestone or equal)	Min. 3-1/8" paver, 7,000 psi
	Paver bedding Paver anchoring sand	ASTM C33 sand – min 1" depth Polymeric
Flatwork	Architectural concrete (colored or sandscape consistent with GID standards or other)	Min. 6" thick; 4,000 psi fibermesh optional (pedestrian use only)
Site Furnishings	Benches or seating	Powder Coated steel or custom concrete

TABLE 1
Architectural Design Criteria

Category	Manufacturer or Item	Standard
	Planter Pots	Precast Concrete w/ irrigation capability
	Custom shade structures or screens	Powder Coated Steel, Cor-Ten or Carbon Steel
	Bollards	Steel or Stainless Steel with modified mounting detail
Landscape Plantings	Low water use Grasses, Perennials in beds	By landscape architect
	Annuals in Hanging baskets and Pots	By Parks Dept.
	Trees	2” caliper (nominal)
Columns	Concrete Masonry Block w/ Brick Facing – Robinson Brick or equal	Internal masonry block; reinforced with spread footing (IBC 2021 or latest version with local amendments)
Art	Custom artwork designed by landscape architect, architect or artist	By professional

Civil Engineering Design

Civil Engineering design criteria for the Downtown Alley Enhancements are focused on rehabilitation of existing paved surfaces. The overall intent is to maintain existing traffic loading, paving, drainage and utility conditions to the greatest extent possible. Where applicable, drainage and paving site conditions are being improved to meet architectural design conditions or improve overall operations and maintenance. The civil engineering standards presented below in **Table 2** are indicative of urban design retrofit conditions where numerous design constraints exist.

TABLE 2
Civil Design Criteria

Category	Manufacturer or Item	Standard
Design Speed	Vehicular	< 20 mph
Site Distance	Stopping Sight Distance	< 100-ft
	Corner Sight Distance	0-ft (all stop condition)
Slope	Longitudinal Slope	Min. 0.50%; Max. 4.0%

TABLE 2
Civil Design Criteria

Category	Manufacturer or Item	Standard
	Max. grade break without vertical curve	1%
	Min. vertical curve length	50-ft
	Min. cross slope	1%
	Max. cross slope	4%
	Max. cross slope for sidewalks (pedestrian use)	2% where achievable to meet existing site constraints
Brick Paving	Traffic rated system (Keystone, Pavestone or equal)	Min. 3-1/8” paver, 7,000 psi
Brick Paving - Subbase	Subbase under paving system if concrete is not used	Min. 18” CDOT CL 5 or 6 ABC
Concrete Paving	Traffic bearing – beneath brick paving system	Min. 5” thick, 4,000 psi
	Pedestrian concrete (colored or sandscape consistent with GID standards or other)	Min. 6” thick; 4,000 psi fibermesh optional
Structural Concrete	Foundation support (light poles, columns, other as needed)	Min. 3,500 psi mild reinforcement
Drainage	Maintain historical drainage patterns	Match existing conditions
	New subsurface system (if needed)	10-year design storm (developed condition if known)
	Detention	None
	Water quality/Low Impact Development	None. Match existing conditions.
	Drain Pan (cross section)	2-ft min. width 1” per 12” of pan width (as applicable)
Traffic	Traffic flow and distribution	Maintain existing conditions close alleys to vehicular traffic where applicable
	Travel way/lane width	Min. 10-ft
Utilities	Electric bury depth (primary and secondary) Electric vertical separation to other utilities Conduit	Min. 2-ft Min. 0” SCH 40 per City Light and Power standards
	Storm Drainage Pipe Storm Pipe (shallow bury)	RCP CL III or IV DIP CL 350 (encased)

TABLE 2
Civil Design Criteria

Category	Manufacturer or Item	Standard
	Storm bury depth Storm vertical separation to other utilities	Min. 1-ft Min. 0”
	Sewer Pipe Sewer bury depth Sewer vertical separation	SDR 35 Min. 4.5-ft 18” (encased if over water)
	Water Pipe Water bury depth Water vertical separation	DIP CL 350; C900 DR 14 or 18 4.5-ft 18”
	Horizontal separation (all utilities)	0-ft min. separation distances do not apply. May have joint trench conditions
	Dry utilities (private) Xcel Energy Comcast Lumen Other	Per private standards
	Trench Backfill (all utilities in public right of way)	Flowfill/CLSM – 50-100 psi

Electrical Design

The electrical design conditions are unique to each alley improvement largely based upon site considerations such as architectural theme, intensity of use, vehicular conflict conditions, coordination with art and accents with landscape design. The current International Building, National Electric and Fire Protection Codes dictate standards for review of the lighting system, control panels and breakers. The electrical systems for each alley are designed to be independent with separate private meters. The overall lighting goal is to provide a unique design that creates a festive, safe and interesting space encouraging increased alley use, year-round. Standards related to the Alley Enhancements are provided below in **Table 3**.

TABLE 3
Electrical Design Criteria

Category	Manufacturer or Item	Standard
Governing Code	National Electric Code (latest edition) National Fire Protection Assoc. (latest edition)	Varies
Light Poles	Holophane SiteLink Poles; Vehicle Impact Considerations – Steel or Cast Iron or Aluminum	Type to be determined based upon architectural theme and conditions Provide optional power outlet at top of each pole

TABLE 3
Electrical Design Criteria

Category	Manufacturer or Item	Standard
Light Fixture	Partial to Full Cut-off; Fixtures vary; LED	Pedestrian Height – 12'-16'
Festoon Lights	American Lighting, Primus or equal	24" O.C., LED fixtures, Screw-in type,14' Min Clearance UL Listing for wet locations Shatterproof lenses Commercial grade
Lighting Control	Varies Astronomical Clock Central dimming controls in lighting cabinet	Integral motion sensing and dimming at each fixture; infrared control
Lighting Panel	Custom built Hoffman enclosure or equal Includes: Irrigation controller, lighting controls, lighting panel, camera switch/POE Approx. size – 4'x6'x18"	NEMA 4 enclosure Segregated wire tray; high voltage Exterior meter socket and disconnect, vented
Meter Pedestal	City of Fort Collins Light and Power standards	Cold sequenced
Light Levels	None	Min. 1 ft-candle

Irrigation Design

The irrigation design standards are derived directly from the City of Fort Collins Parks and Recreation standards. Here, the Parks Department is currently contracted to maintain the alley irrigation system and, as such, the DDA has adopted their internal construction standards. These standards are routinely modified and updated directly with Parks Department staff. General standards are provided below in **Table 4**.

TABLE 4
Irrigation Design Criteria

Category	Manufacturer or Item	Standard
Governing Code	National Plumbing Code (latest edition) National Electric Code (NEC – latest edition)	None
Design	Pressure/Flow (3/4" service)	60 psi 10 gpm
Distribution	Mainline Pipe	Class 200, SDR 21
	Lateral Pipe	SCH 40, pressure class 200
	Sleeving	SCH 40 (UV resistant)
	Sleeving (across roadways/alleyways)	SCH 80

TABLE 4
Irrigation Design Criteria

Category	Manufacturer or Item	Standard
Controller	WeatherTrak, Hunter or Rainbird	ACC-99D (two wire)
Control Wire	Varies	14 AWG
Backflow Preventer	FEBCO, Apollo or equal	City of Fort Collins Standards
Drip emmitters	Rainbird	XCZ Series
Tap	City of Fort Collins Utility Standards	Saddle tap with Mueller Corporation valve
Meter Set	Meter by City of Fort Collins Utilities	Current City standard
Curb Stop	Mueller or Ford	Current City standard
Service Line	City of Fort Collins Utility Standards	¾" Type K Copper
Valve Assembly	Rainbird or equal	PESB
Planter Pot and Light Pole Drip Lines	Rainbird or equal	Rainbird LDQ 08-06 drip line