# CONSENT AGREEMENT

**THIS CONSENT AGREEMENT** (Agreement) is entered into as of the latest dates of the parties' signatures by and among the City of Sugar Land, Texas, a home- rule city of the State of Texas (City), the Sugar Land 4B Corporation, a Texas economic development corporation (SL4B), and the Sugar Land Town Square Development Authority, a Texas local government corporation (Development Authority).

## WITNESSETH:

**WHEREAS**, Section 5.01 of the SL4B By-laws provides that the City and the SL4B may agree to follow procedures different from those in Article V. for specific projects or activities; and

**WHEREAS**, the City, Sugar Land Town Square Development Authority and LCFRE Sugar Land Town Square, LLC (Developer) desire that certain improvements be constructed, to benefit Sugar Land Town Square Plaza (Plaza), including the Electronic Sign Improvements described and shown in Exhibit A, Plaza Improvements described and shown in Exhibit B, Plaza Sound Improvements described and shown in Exhibit C, Plaza WiFi Improvements described and shown in Exhibit D, and Personal Property as defined in this Agreement (collectively the Plaza Improvements, Plaza Wi Fi Improvements, Plaza Sound Improvements, Electronic Sign Improvements ,and Personal Property are the "Improvements"); and

**WHEREAS**, the SL4B and the City agree that the SL4B, in the name of the corporation, will enter into and administer a development agreement with the Developer and Sugar Land Town Square Property Owners' Association, Inc. (SLTSPOA) regarding the installation and construction of the Improvements; and

WHEREAS, the SL4B is authorized to fund the Improvements pursuant to Sections 501.103 and 505.152 of the Texas Local Gov't Code; and

**WHEREAS**, the City will provide support to the SL4B pursuant to its Support Services Agreement with the SL4B entered into on February 18, 2009; and

WHEREAS, the City desires to consent to the Electronic Sign Improvements being installed and constructed within the right-of-way of City Walk Drive; and

**WHEREAS,** the Development Authority is a local government corporation created pursuant to Chapter 431, Subchapter D, in part to promote, develop, and encourage employment, commerce and economic development in the City, including coordination with the SL4B for the development of projects in Sugar Land Town Square; and

**WHEREAS,** the Development Authority owns the Plaza by Special Warranty Deed recorded in File No. 2002020614 of the Fort Bend County, Texas Official Public Records; and

**WHEREAS**, the Development Authority desires to consent to the Plaza Improvements. Plaza WiFi Improvements, Plaza Sound Improvements, and Personal Property being installed and constructed on and within the Plaza, as provided in the Development Agreement by and among the Developer, the SL4B and the SLTSPOA;

**NOW, THEREFORE,** in consideration of the mutual covenants and agreements set forth herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the City, the SL4B and the Development Authority agree as follows:

**I.**

**Definitions**

*Agreement* means this Consent Agreement among the City, the SL4B and the Development Authority.

*City* means the City of Sugar Land, Texas, a home-rule city of the State of Texas.

*Contingent Reimbursement Amount* means an amount, that is equal to the following: (i) If paid in FY20, the lesser of 50% of the Total Project Cost or $750,000, (ii) If paid in FY21, remaining unpaid balance of the lesser of 50% of the Total Project Cost or $750,000, *plus* 6% of such remaining unpaid balance, and (iii) if paid in FY22, the remaining unpaid balance from FY21, inclusive of the 6% additional amount on the FY21 unpaid balance of the lesser of 50% of the Total Project Cost or $750,000 (FY21 Contingent Amount), *plus* 6% of the FY21 Contingent Amount, all of which ((i), (ii) and (iii)) is subject to, contingent upon, and within the SL4B's and City's sole discretion to fund and pay, as provided in Section 2.1.

*Developer* means LCFRE Sugar Land Town Square, LLC, a Delaware limited liability company.

*Development Agreement* means the Development Agreement among the SL4B, the Developer, and the SLTSPOA regarding installation and construction of the Improvements.

*Development Authority* means the Sugar Land Town Square Development Authority, a Texas local government corporation created pursuant to Chapter 431, Subchapter D of the Texas Transportation Code.

*Electronic Sign Improvements* means the two electronic signs and associated wiring, electrical components and fixtures, equipment and other appurtenances and improvements, which are described and shown in Exhibit A.

*Improvements*, collectively, means the Plaza Improvements, Plaza WiFi Improvements, Plaza Sound Improvements, Electronic Sign Improvements, and Personal Property.

*Kiosk* means the kiosk located on the south side of the Plaza adjacent to the condominium complex along City Walk Drive.

*Personal Property* means the Plaza furniture consisting of tables and chairs the numbers and styles of which must be approved by City representative(s).

*Plaza* means the Sugar Land Town Square Plaza conveyed to the Development Authority by Special Warranty Deed recorded in File No. 2002020614 of the Fort Bend County, Texas Official Public Records.

*Plaza Improvements* means the improvements to be installed and constructed within, and Personal Property to be placed on and within, the Plaza, by the Developer as shown and described in Exhibit B.

*Plaza Sound Improvements* means the sound improvements shown on Exhibit C to be placed on the Kiosk.

*Plaza WiFi Improvements* means the WiFi improvements to be installed and constructed within the Plaza by the Developer, as shown and described in Exhibit D.

*SL4B* means the Sugar Land 4B Corporation, a non-profit corporation created by the City to promote economic development activities as authorized by then section 4B of the Development Corporation Act of 1979, Tex. Rev. Civ. Stat. Ann. Art. 5190.6, currently codified as Chapters 501 through 505, Tex. Local Gov't Code.

*SLTSPOA* means the Sugar Land Town Square Property Owners' Association, Inc., a Texas non-profit corporation.

*Sugar Cane Structures* means the sugar cane monument structures shown in Exhibit A and located adjacent to City Walk Drive.

*Total Project Cost* means the actual cost to install, construct and equip the Project (consisting of the Improvements.)

## II.

## City

2.1 The City consents and agrees to the SL4B, in the name of the corporation, entering into and administering the Development Agreement, provided that the Development Agreement must include provisions that:

(a) Any reimbursement for the Improvements from the SL4B FY20, FY21 or FY22 budget is:

(1) *Contingent upon and subject* to the SL4B's sole discretion;

(2) *Contingent upon and subject to* City Council's approval of an SL4B FY20, FY21 and/or FY22 budget containing a separate line item for all or part of the Contingent Reimbursement Amount, which is in the *City's sole discretion;* and

(3) Is not, and shall not be construed or interpreted as, a financial obligation on the part of the SL4B; and

(b) The Development Agreement terminates on the earlier of: (i) the date that the Contingent Reimbursement Amount is fully paid to the Developer, if any; or (ii) September 30, 2022.

2.2 The City consents to the:

(1) Sugar Cane Structures being located within the right-of-way of City Walk Drive; and

(2) Installation and construction of the Electronic Sign Improvements within the right-of-way of City Walk Drive, subject to the provisions of the Donation Agreement between the City and the Developer.

(3) SL4B providing a copy of the City's sales tax exempt certificate to the Developer and its contractors for purchases that are exempt from the payment of a sales tax to the extent allowed by law.

2.3 City representative(s) must approve the number and style of Personal Property for the Plaza.

## III.

## SL4B

3.1 The SL4B will enter into and administer the Development Agreement that includes provisions consistent with the requirements specified in Article II.

## IV.

## Development Authority

4.1 The Development Authority consents to the installation, construction, and ownership of the Plaza Improvements, Plaza Sound Improvements, Plaza WiFi Improvements. and Personal Property under the Development Agreement.

4.2 The Development Authority consents to the Developer and its contractors entering upon and installing and constructing the Plaza Improvements, Plaza Sound Improvements, Plaza WiFi Improvements and Personal Property on and within the Plaza.

4.3 The Development Authority consents to the SL4B providing a copy of the Development Authority's sales tax exempt certificate to the Developer and its contractors for purchases that are exempt from the payment of a sales tax to the extent allowed by law.

4.4 The Development Authority, as owner of the Sugar Cane Structures, consents to:

(1) Installation and construction of the Electronic Sign Improvements on the Sugar Cane Structures and other property of the Development Authority; and

(2) The City's use of the Sugar Cane Structures and other property of the Development Authority for the Electronic Sign Improvements.

## V.

## Miscellaneous

5.1 This Agreement is effective on the latest date of the dates executed by all parties and ends on the date that the Development Agreement ends.

5.2 This Agreement may not be modified, changed, amended, supplemented or terminated, except by written instrument signed by all parties hereto.

5.3 This Agreement is governed by, interpreted under, and construed and enforced in accordance with the laws of the State of Texas.

5.4 This Agreement may be executed in any number of counterparts, each of which shall be deemed an original and all of which counterparts together shall constitute one agreement with the same effect as if the parties had signed the same signature page.

5.5 The following exhibits are attached to and incorporated into this Agreement:

Exhibit A--Electronic Sign Improvements

Exhibit B--Improvements

Exhibit C--Plaza Sound Improvements

Exhibit D--Plaza WiFi Improvements

**[Signature page follows]**

**CITY OF SUGAR LAND**

_____
Allen Bogard, City Manager

Date: _____

ATTEST:

_____
Thomas Harris
Assistant City Secretary

**SUGAR LAND 4B CORPORATION**

_____
Allan Lazor, President

Date: _____

ATTEST:

_____
Thomas Harris, Secretary

**SUGAR LAND TOWN SQUARE DEVELOPMENT AUTHORITY**

_____
Joe R. Zimmerman, Chair

Date: _____

ATTEST:

_____
Bridget Yeung, Vice-Chair

**EXHIBIT A**
**Electronic Sign Improvements**

## SIGN TYPE A — QUANTITY: 2

REMOVE AND DISPOSE OF PRINT ADS ON ONE SIDE OF
**TWO EXISTING FOUR SIDED STRUCTURES**
REPLACE WITH NEW SIGNS AS NOTED

FABRICATE AND INSTALL SINGLE FACED LED DISPLAYS
AND SINGLE FACED CABINETS
ONTO **TWO EXISTING FOUR SIDED STRUCTURES**
**– ONE DISPLAY & TWO INTERNALLY ILLUMINATED CABINETS PER STRUCTURE**

INTERNALLY ILLUMINATED CABINETS: ALL ALUMINUM FABRICATION
PAINTED P1 – ALL GRAPHICS: ROUTED INTO FACE AND BACKED
WITH 3/16" 7328 WHITE ACRYLIC WITH V1 VINYL APPLIED
INTERNALLY ILLUMINATED WITH WHITE LEDS
FLUSH MOUNTED TO EXISTING GRANITE CLAD STRUCTURE

LED DISPLAY:
- 144 X 216 FULL COLOR LED MATRIX (10mm PIXEL PITCH )
- 5' - 2" HIGH X 7' - 7" WIDE CABINET
- 4' - 10" HIGH X 7'-2' WIDE DISPLAY AREA
- FULLY PROGRAMABLE GRAPHICS AND TEXT
- COMMUNICATIONS: CELLULAR
- TEMPERATURE SENSOR IS NOT INCLUDED

CLIP MOUNTED TO EXISTING GRANITE CLAD STRUCTURE

### FINISH SCHEDULE

PAINT COLORS - SATIN FINISH

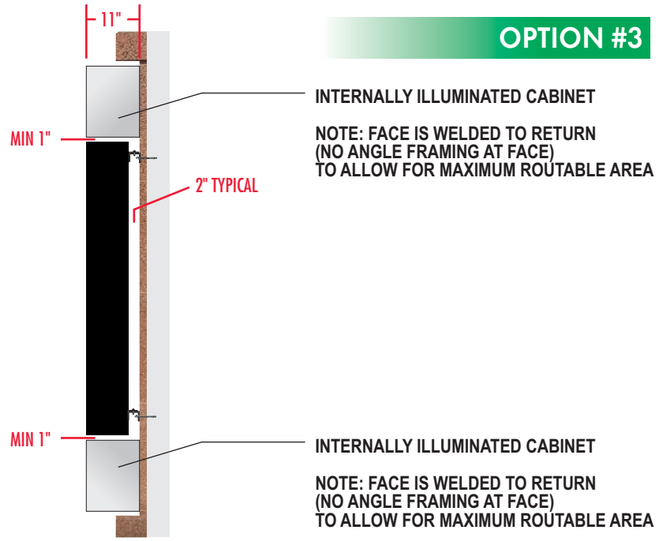
P1: MAP METALLIC SILVER

VINYL COLORS

V1: DIGITALLY PRINTED
WITH PROTECTIVE LAMINATE

APPROVED BY: _____


SIGN DETAILS
SCALE: 3/8" = 1'-0"




END VIEW

**OPTION #3**


SIGN A.1 EXISTING CONDITIONS


SIGN A.2 EXISTING CONDITIONS


SIGN A.1 UPDATED CONDITIONS


SIGN A.2 UPDATED CONDITIONS

***NOTE: BENCHES, "SANTA", AND BARRIER REMOVED FROM PHOTO TO BETTER SHOW SIGN ON STRUCTURE***

SIGN ELEVATION
SCALE: 3/16" = 1'-0"

CLIENT APPROVAL SIGNED: DATE:

LANDLORD APPROVAL SIGNED: DATE:

SALES APPROVAL



National Signs
2611 EL CAMINO
HOUSTON, TEXAS 77054
TEL: 713.863.0600 • FAX: 713.863.7585
www.NationalSigns.com

**PROJECT:** SUGAR LAND TOWN SQUARE
**LOCATION:** CITY WALK BOULEVARD
**CITY/STATE:** SUGAR LAND, TX
**SALES REP:** GREGG HOLLENBERG
**DATE :** 2.8.2017
**DRAWN BY:** OUN QUALITY RVIEW
**DRAWING#:** NS17 27292 FABRICATION READY




## 120 VOLT ELECTRICAL SERVICE

| | SIGN | LED DISPLAY |
|---|---|---|
| ELECTRICAL LOAD: | | |
| 20 AMP CIRCUIT(S): | | |

CLIENT TO PROVIDE ALL PRIMARY ELECTRICAL SERVICES TO THE SIGN UNLESS OTHERWISE SPECIFIED

## REVISIONS

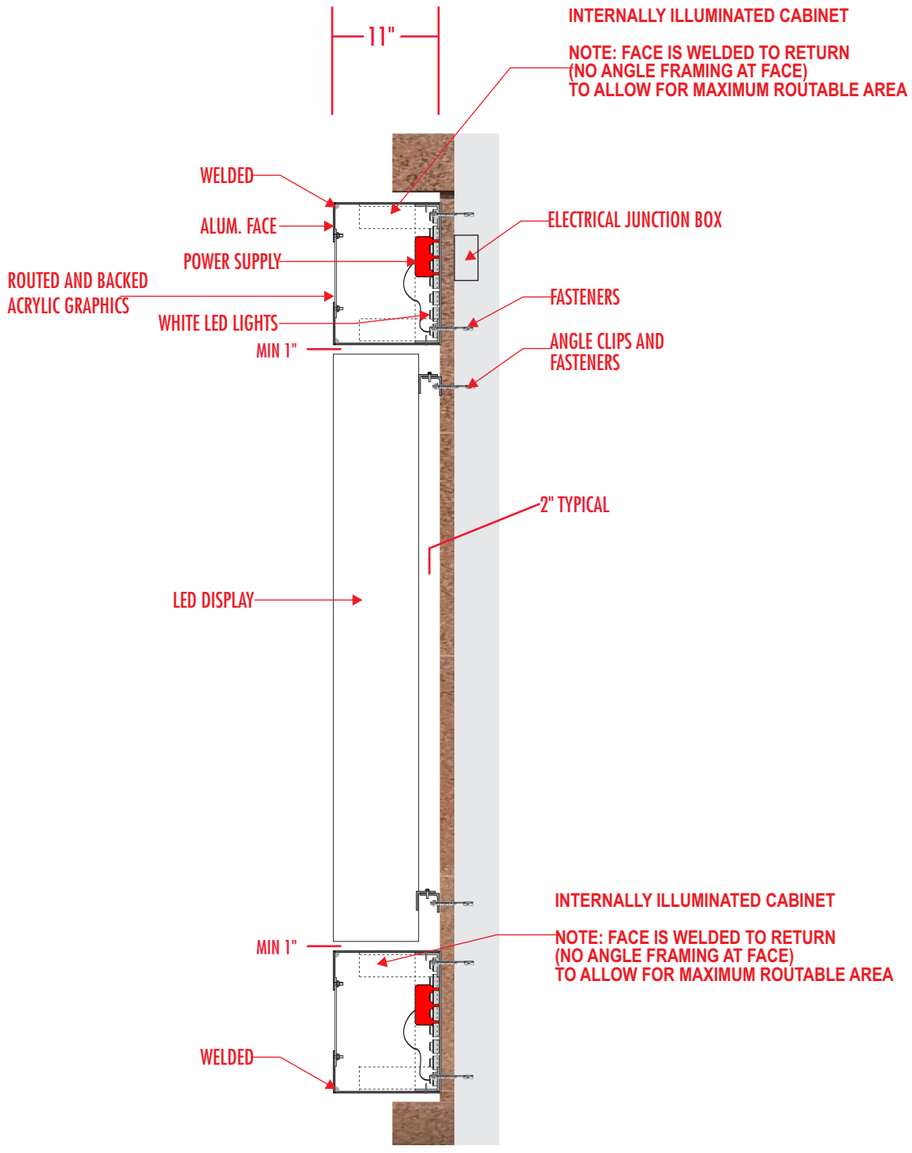
| | | |
|---|---|---|
| A | 11.15.17 | ST A = NEW CONFIGS OUN |

## UL INSTALLATION REQUIREMENTS

THIS SIGN IS INTENDED TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 600 OF THE NATIONAL ELECTRICAL CODE AND/OR OTHER APPLICABLE LOCAL CODES. THIS INCLUDES PROPER GROUNDING AND BONDING OF THE SIGN.

## SIGN TYPE A — QUANTITY: 2

**OPTION #3**




SECTION DETAILS
SCALE: 3/4" = 1'-0"



CLIENT APPROVAL SIGNED: DATE:

LANDLORD APPROVAL SIGNED: DATE:

SALES APPROVAL

National Signs
2611 EL CAMINO
HOUSTON, TEXAS 77054
TEL: 713.863.0600 • FAX: 713.863.7585
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**PROJECT:** SUGAR LAND TOWN SQUARE
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|---|---|---|
| ELECTRICAL LOAD: | | |
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### REVISIONS

| | | |
|---|---|---|
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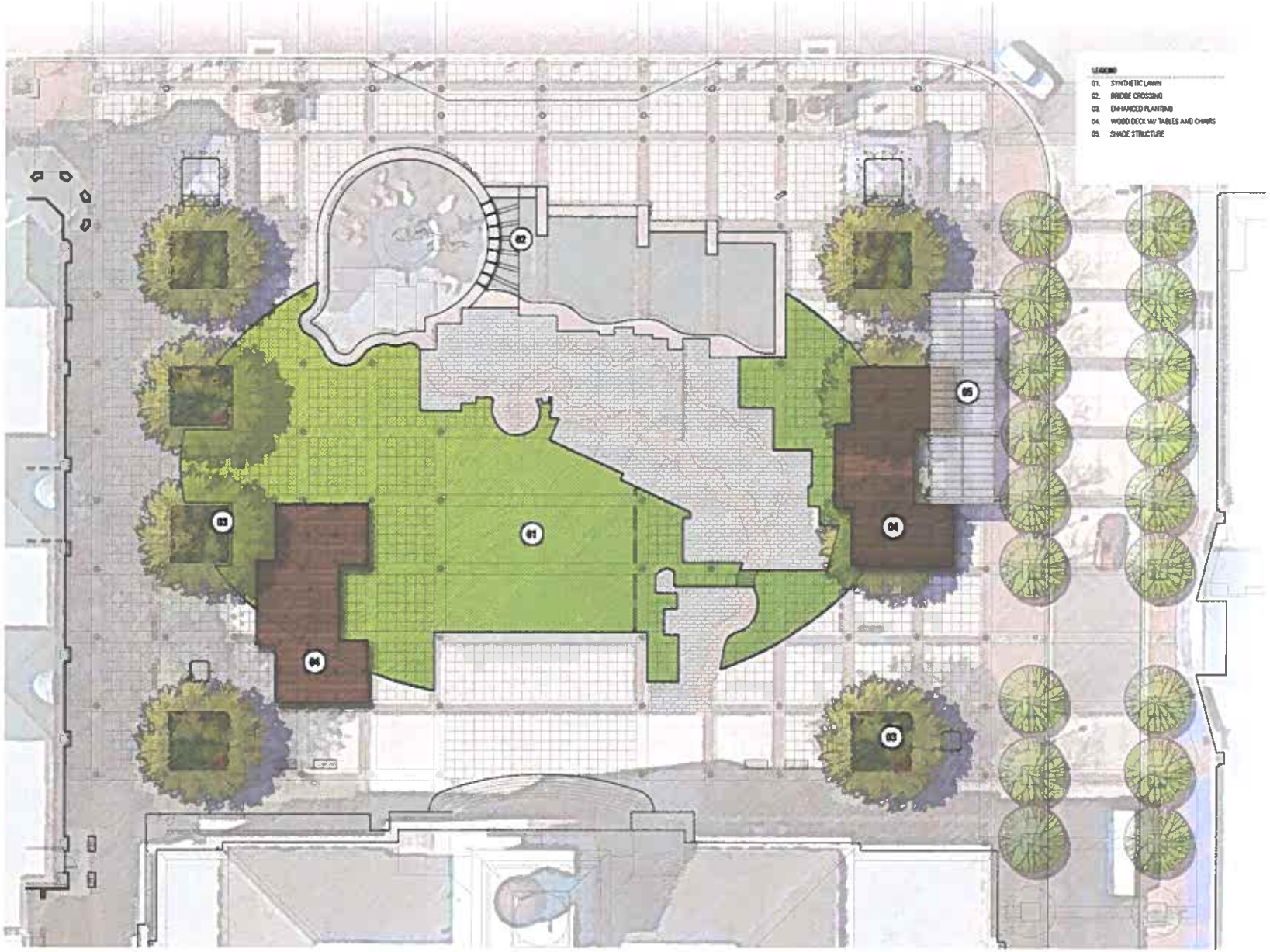
**EXHIBIT B**
**Plaza Improvements**




# SUGAR LAND TOWN CENTER / **MASTER PLAN**

TBG

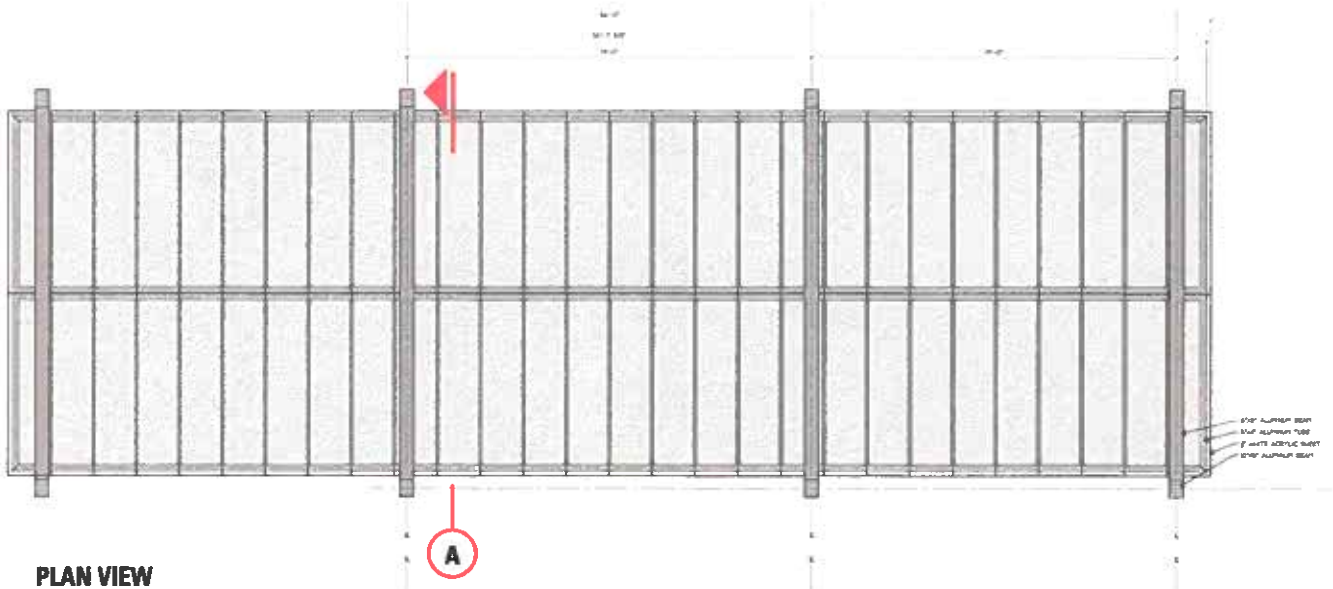
Sugar Land, Texas  Les Newton  16 October 2017

0 5' 10' 20'

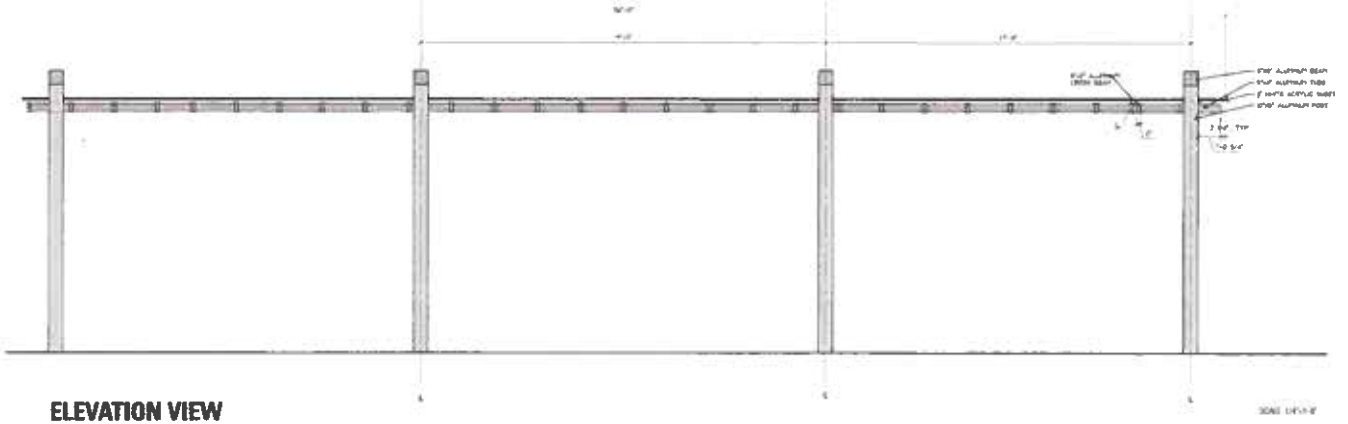
TBG

# SUGAR LAND TOWN CENTER / **SHADE STRUCTURE AND DECK**

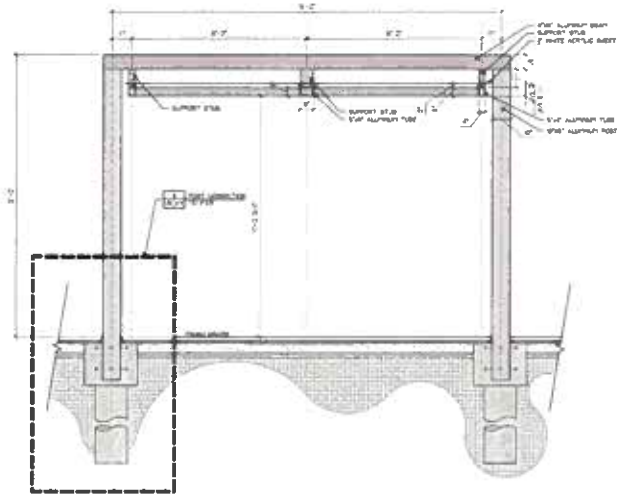
Sugar Land, Texas  Les Newton  16 October 2017




PLAN VIEW



ELEVATION VIEW

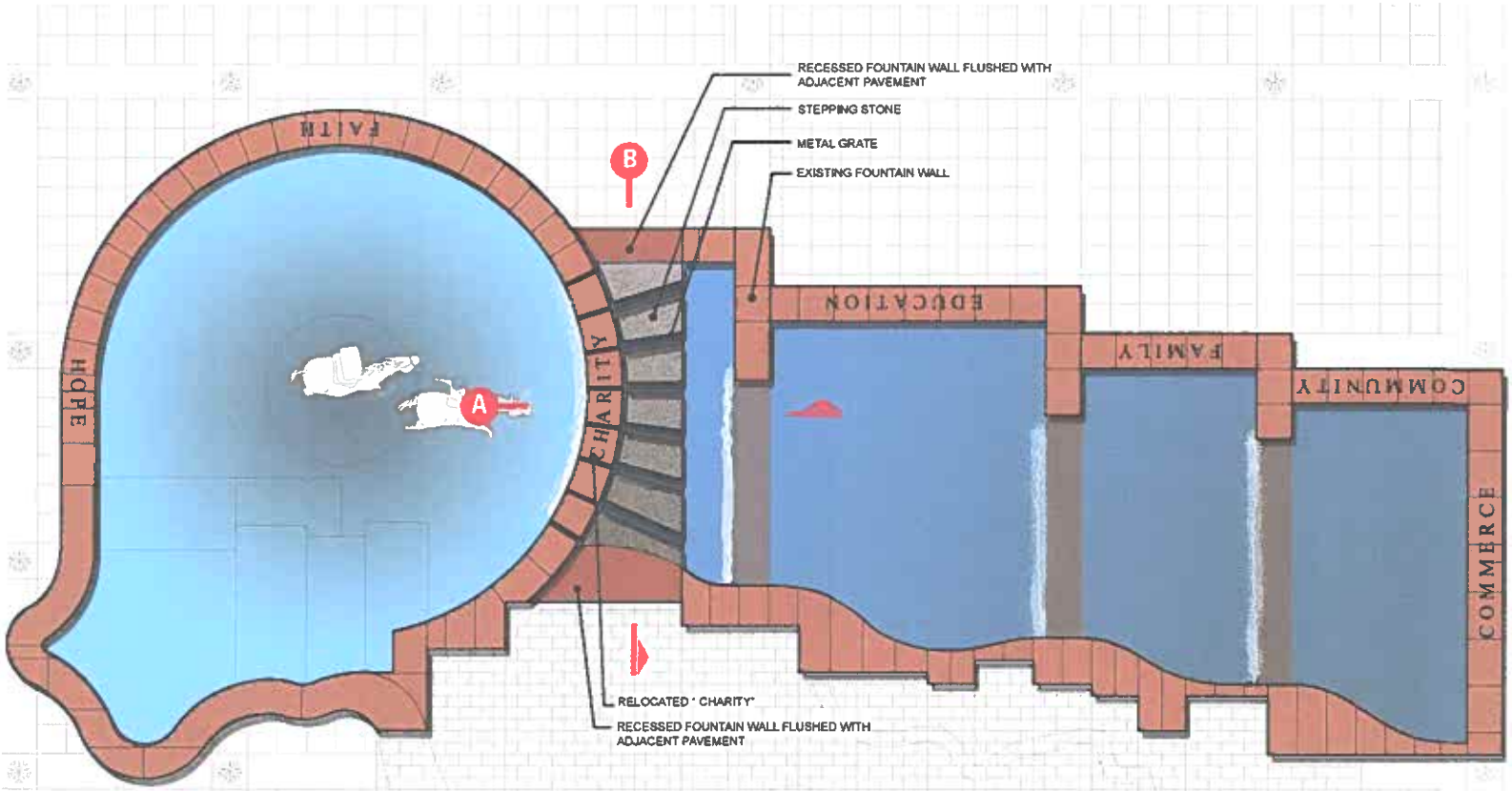


SECTION A

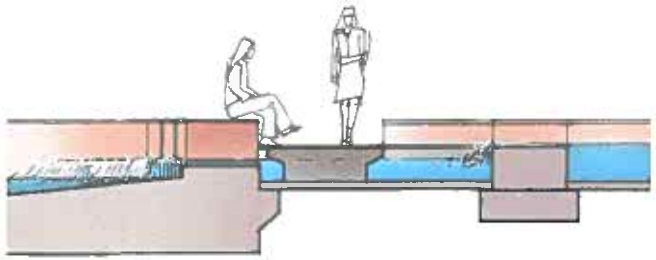
# SUGAR LAND TOWN CENTER / **SHADE STRUCTURE ELEVATIONS AND SECTION**

TBG

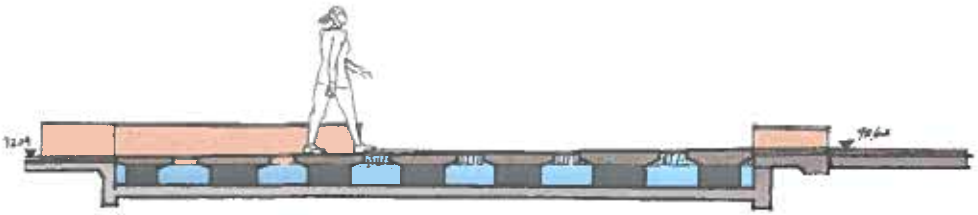
Sugar Land, Texas  Les Newton  16 October 2017




**PLAN**



**SECTION A**



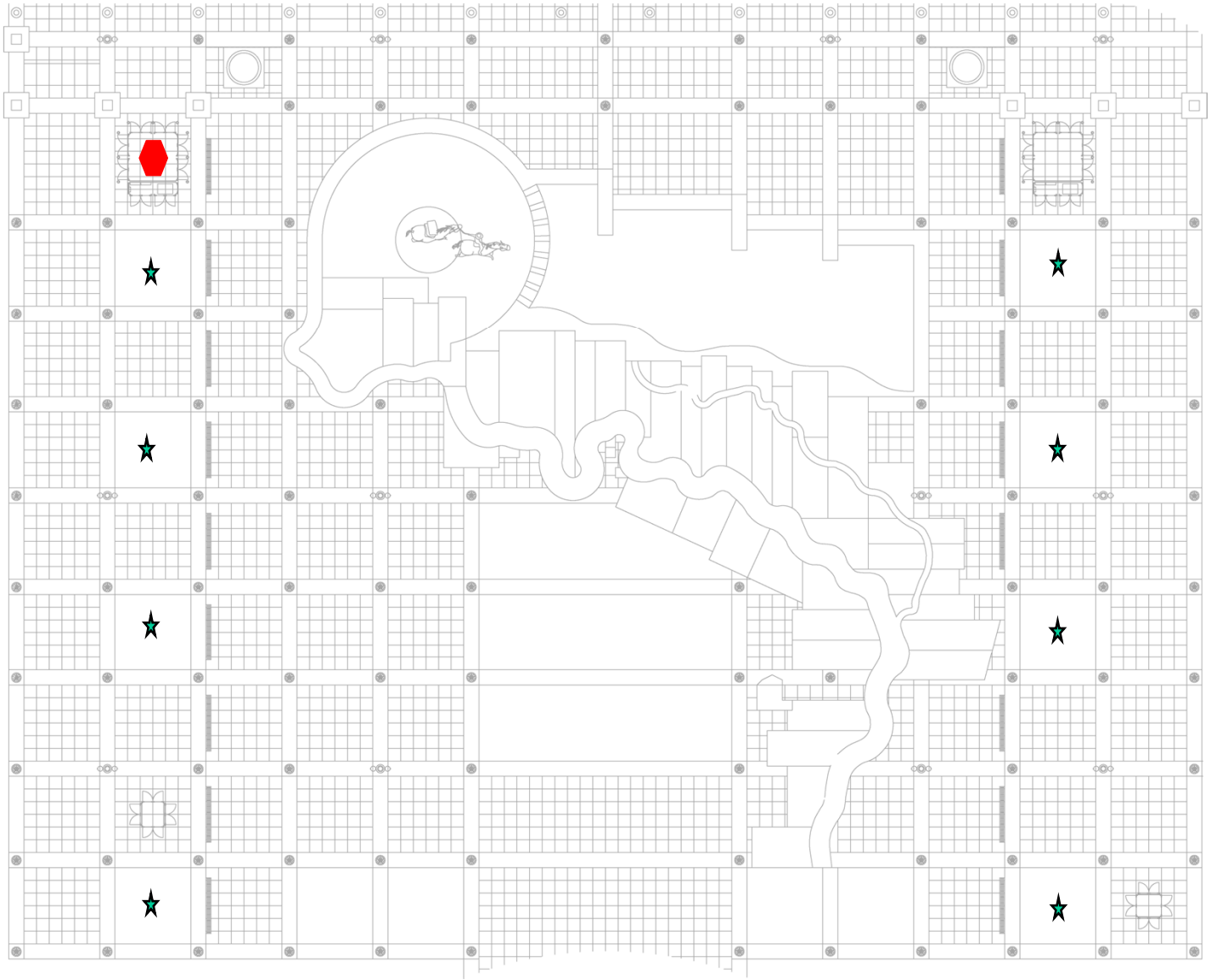
**SECTION B**

# SUGAR LAND TOWN CENTER / **BRIDGE CROSSING**

TBG Sugar Land, Texas Les Newton 16 October 2017

**EXHIBIT C**
**Plaza Sound Improvements**

# City Walk



Wireless speaker locations

Music and amplifier/controller

City Hall

PRO ACOUSTICS

Call Us (888) 256-4112

**Outdoor Sound System with 4 JBL Control 88M and 2 JBL Control 28-1 Speakers with JBL CSMA 2120 Mixer Amplifier**

Prev

# Outdoor Sound System with 4 JBL Control 88M and 2 JBL Control 28-1 Speakers with JBL CSMA 2120 Mixer Amplifier

Part # ODSS-488M2281CSMA2120
Model # ODSS-488M2281CSMA2120

Give a community pool, hotel/restaurant patio space, or any medium-sized outdoor area the audio edge with this Outdoor Home Surround Sound System, complete with JBL Control 88M landscape speakers, JBL Control 28-1 indoor/outdoor speakers and a dual zone mixer/amp.

## Outdoor Surround Sound System

Give community pools, restaurant and hotel patios, and any medium sized outdoor space the audio edge with this Outdoor Surround Sound System. Camouflaged JBL Control 88M mushroom landscape speakers mounted on or in the ground, and JBL Control 28-1 contemporary designed indoor/outdoor speakers provide top-quality and consistent 360-degree coverage. A high-performing JBL dual zone mixer/amp supports the audio system without the need for a separate transformer and features remote volume control capability. Weather-proof speaker cable included.

## JBL Control 88M 2-Way 8" Coaxial Mushroom Landscape Speakers

Designed for outdoor applications, these highly weather resistant speakers provide excellent full-range sound quality and 360-degree coverage. Designed to be mounted on or in the ground, they can be used in a wide variety of applications including shopping malls, theme parks, sports venues, hotels, casinos, resorts, restaurants, hospitality and leisure venues, entrance ways, and anywhere a high-quality music and/or paging speaker landscape speaker is required. Compact in design, the speaker is unobtrusive and easily blends in with its surroundings. A tough polyethylene enclosure resists abuse from lawn care equipment and the elements, and the enclosure color extends throughout the material so the speaker will maintain color even when scraped or scratched.

## JBL Control 28-1 Indoor/Outdoor 8" Speakers

The Control® 28-1 is a two-way 8" speaker with rich sonic character, wide coverage, consistent coverage, versatile mounting, and a contemporary high-design look that fits into a wide range of decors, This makes Control 28-1 an excellent choice for a wide variety of applications, including retail stores, restaurants, health clubs, theme parks, educational facilities, hospitality, music cafes, leisure venues, and anywhere where a top quality high-output

indoor/outdoor foreground/background music (and/or paging) speaker is required.

## JBL CSMA2120 Dual Zone Mixer Amplifier

The JBL® CSMA 2120 Mixer-Amplifier is a professional tool with a sleek industrial look that is designed and built for commercial sound applications. Utilizing Crown's DriveCore technology enables significantly reduced size and weight – it is highly efficient, fanless and just 1U rack space high. There are both single channel and two channel models with four or eight mixer channels, respectively. All the volume controls are surrounded by an illuminated ring, making it easy to see and operate in darkened environments. The amplifier can drive 8 ohm and 4 ohm loads and can be used with 70V and 100V distributed audio systems without the need for a separate transformer. In addition to balanced mic/line inputs, unbalanced RCA inputs and speaker connections, it includes RJ45 connectors for use with JBL CSR-V in-wall volume controls. It also features a universal power supply which enables the ability to accept AC voltages from 100 to 240 VAC, 50/60Hz.

Features

**JBL Control 88M 2 Way 8" Coaxial Mushroom Landscape Speakers:**

- 8" highly weather-resistant driver
- 1" soft-dome highly weather-resistant tweeter
- 120W Pink Noise Power Handling (240W program) in direct 8Ω setting, plus built-in 60W 70V/100V multi-tap transformer
- Tough polyethylene highly weather resistant enclosure
- Fully isolated center chamber for wiring protection
- High fidelity sound character with broad frequency range of 47Hz - 16kHz

**JBL Control 28-1 Indoor/Outdoor 8" Speakers:**

- Components:
  - 8" woofer with woven fiberglass cone
  - 1" PEI diaphragm tweeter with fluid coolingContemporary, high-design appearance
- Contemporary, high-design appearance
- Built-in InvisiBall® mounting hardware, plus available U-bracket
- Weather resistant enclosure and transducers
- Wide 100° x 100° coverage
- 120 Watt power handling (240 Watt program) in direct 8Ω setting, plus built-in 60 Watt 70V/100V multi-tap transformer
- High fidelity sound character with broad frequency response of 45 Hz – 20 kHz

**JBL CSMA 2120 Dual Zone Mixer/Amp:**

- 8 inputs with 2 outputs of 40,80, 120-watts of power

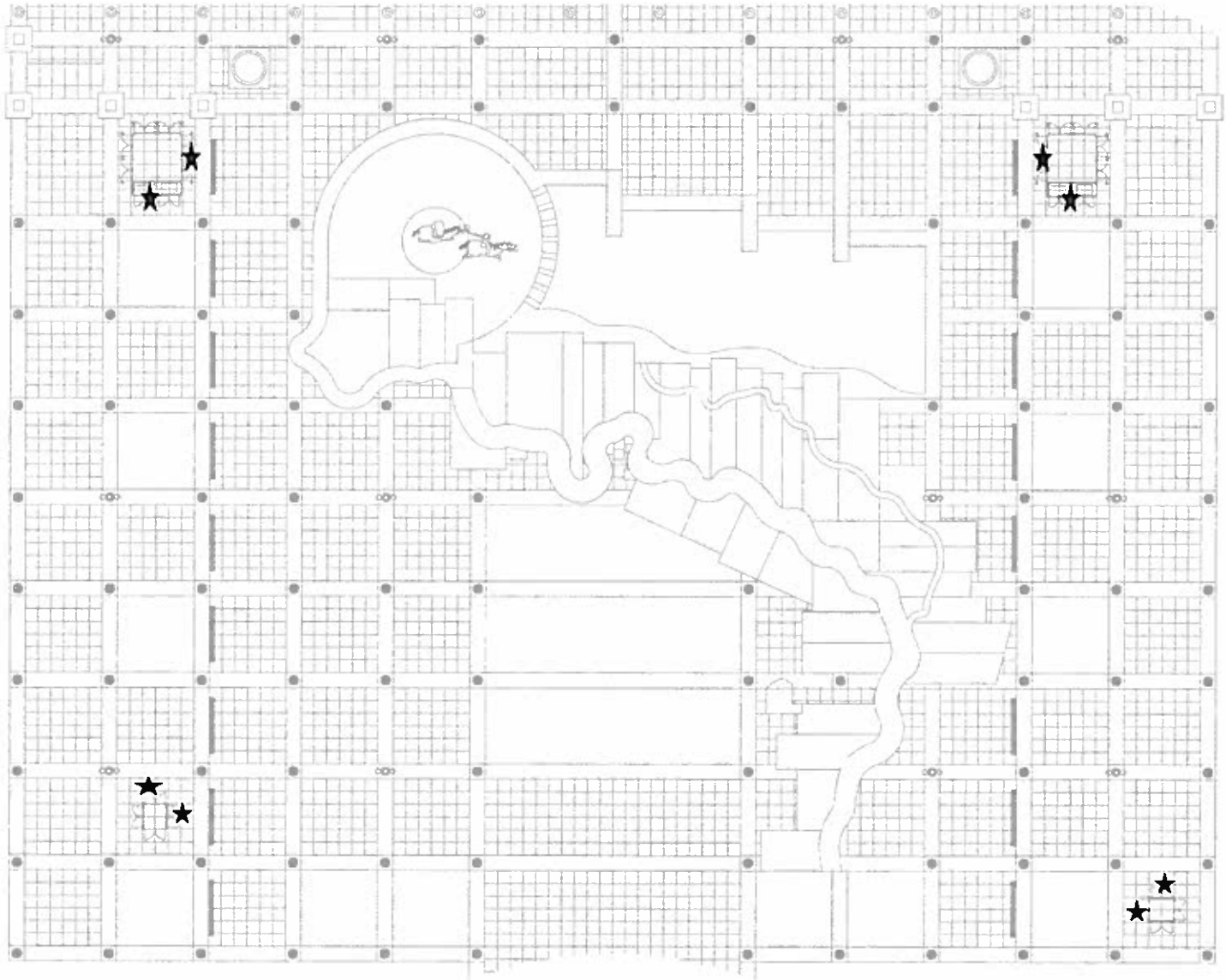
- Ideal for commercial and industrial use
- Fanless, space-saving 1U design
- Sleek industrial look with illuminated rings, making them easy to see and operate
- Euro-block type mic/line input connectors and output connectors
- Independent Bass and Treble controls for each output channel
- Supports 70V and 100V distributed audio systems without the need for a separate transformer
- Remote volume control capability using JBL CSR-V module and standard Ethernet cable
- Priority muting
- Configurable output routing
- Utilizes Crown's DriveCoreTM technology providing excellent audio performance with high efficiency
- Manufactured to lead-free ROHS standards, utilizing recycled metals, and using an energy-saving powder coat process
- Includes rack mounting kit
- Three-Year, No-Fault, Fully Transferable Warranty completely protects your investment
- Energy Star® Certified

System Includes

- (4) JBL Control 88M 2 Way 8" Coaxial Mushroom Landscape Speakers
- (2) JBL Control 28-1 Indoor/Outdoor 8" Speakers
- (1) JBL CSMA 2120 Commercial Mixer Amplifier
- (500 ft) West Penn AQ227 12/2 Aquaseal Fire-Alarm Cable

**EXHIBIT D**
**Plaza WiFi Improvements**

City Walk



City Hall

★ Wifi antenna locations

# MR72

Dual-band 2x2 MIMO 802.11ac Access Point
with dedicated security and RF optimization radio
and Bluetooth low energy Beacon and scanning radio

**High performance cloud-managed 802.11ac wireless**

The Cisco Meraki MR72 is a three–radio, cloud-managed 2x2 MIMO 802.11ac access point. Designed for general purpose next-generation deployments in harsh outdoor locations and industrial indoor conditions, the MR72 provides performance, security, and manageability.

The MR72 provides a maximum 1.2 Gbps data rate with concurrent 802.11ac and 802.11n 2x2:2 MIMO radios, and security and spectrum visibility via a third radio dedicated to 24x7 WIDS/WIPS and automated RF optimization. An integrated Bluetooth low energy (BLE) radio delivers Beacon functionality and BLE device scanning.

The combination of cloud management, 802.11ac, full-time RF environment scanning, and an integrated Bluetooth technology delivers the high throughput, reliability, and flexibility required by the most demanding business applications like voice and high-definition streaming video, both today and tomorrow.

**MR72 and Meraki cloud management: A powerful combo**

The MR72 is managed through the Meraki cloud, with an intuitive browser-based interface that enables rapid deployment without training or certifications. Since the MR72 is self-configuring and managed over the web, it can even be deployed at a remote location without on-site IT staff.

The MR72 is monitored 24x7 via the Meraki cloud, which delivers real-time alerts if the network encounters problems. Remote diagnostics tools enable real-time troubleshooting over the web, meaning multi-site, distributed networks can be managed remotely.

The MR72's firmware is always kept up to date from the cloud. New features, bug fixes, and enhancements are delivered seamlessly over the web, meaning no manual software updates to download or missing security patches to worry about.

**Product Highlights**

- Ideal for outdoor and industrial indoor environments
- 2x2:2 802.11ac, 1.2 Gbps aggregate dual-band data rate
- 24x7 real-time WIPS/WIDS and spectrum analytics via dedicated third radio
- Integrated Bluetooth low energy Beacon and scanning radio
- Forms point-to-point links with optional sector antennas
- Self-healing, zero-configuration mesh
- Integrated enterprise security and guest access
- Application-aware traffic shaping
- Self-configuring, plug-and-play deployment

# Recommended Use Cases

**Outdoor coverage for high client-density corporate campuses, educational institutions, metro Wi-Fi, and parks**

- Provide high-speed access to a large number of clients
- Point-to-multipoint mesh

**Indoor coverage for industrial areas (e.g., warehouses, manufacturing facilities)**

- Reliable coverage for scanner guns, security cameras, and POS devices
- High speed-access for iPads, tablets and laptops

**Zero-touch point-to-point links**

- Build a long-distance bridge between two networks
- Extend hotspot networks via mesh while simultaneously serving clients

# Features

### Aggregate data rate of up to 1.2 Gbps

A 5 GHz 2x2:2 802.11ac radio and a 2.4 GHz 2x2:2 802.11n radio offer a maximum combined aggregate dual-band data rate of 1.2 Gbps. Technologies like transmit beamforming and enhanced receive sensitivity allow the MR72 to support a higher client density than typical enterprise-class access points, resulting in fewer required APs for a given deployment. Band steering further enhances overall throughput, by moving 5 GHz-capable clients to the 5 GHz radio, maximizing the capacity in the 2.4 GHz range for older 802.11b/g clients.

### Rugged industrial design

The MR72 is designed and tested for salt spray, vibration, extreme thermal conditions, shock and dust and is IP67 rated, making it ideal for extreme environments. Despite its rugged design, MR72 has a low profile and is easy to deploy.

### Third radio dedicated to security and RF optimization

The MR72's sophisticated, dedicated dual-band third radio scans the environment continuously, characterizing RF interference and containing wireless threats like rogue access points. No more need to choose between wireless security, advanced RF analysis, and serving client data: a dedicated third radio operates without any impact to client traffic or throughput.

### Bluetooth low energy Beacon and scanning

An integrated Bluetooth low energy radio provides seamless deployment of BLE Beacon functionality and effortless visibility of BLE devices within range of the AP. The MR72 enables the next generation of location-aware engagement right out of the box.

### Automatic cloud-based RF optimization

The MR72's sophisticated, automated RF optimization means that there is no need for the dedicated hardware and RF expertise typically required to tune a wireless network. The real-time full-spectrum RF analysis data collected by the dedicated third radio is continuously fed back to the Meraki cloud. The Meraki cloud then automatically tunes the MR72's channel selection, transmit power, and client connection settings for optimal performance under the most challenging RF conditions.

### Secure wireless environments using 24x7 Air Marshal

No longer choose between a wireless intrusion prevention system (WIPS) and serving client data: thanks to the dedicated third radio, Air Marshal, a highly optimized built-in WIPS, scans continuously for threats and remediates them as commanded, all without disrupting client service. Alarms and optional auto-containment of rogue APs are configured via flexible remediation policies, ensuring optimal security and performance in even the most challenging wireless environments.

### Integrated enterprise security and guest access

The MR72 features integrated, easy-to-use security technologies to provide secure connectivity for employees and guests alike. Advanced security features such as AES hardware-based encryption and WPA2-Enterprise authentication with 802.1X and Active Directory integration provide wire-like security while still being easy to configure. One-click guest isolation provides secure, Internet-only access for visitors. Our policy firewall (Identity Policy Manager) enables group or device-based, granular access policy control.

### Application-aware traffic shaping

The MR72 includes an integrated layer 7 packet inspection, classification, and control engine, enabling you to set QoS policies based on traffic type. Also included is integrated support for Wireless Multi Media (WMM), 802.1p, and DSCP. Prioritize your mission critical applications, while setting limits on recreational traffic, e.g., peer-to-peer and video streaming.

### High performance mesh

The MR72's advanced mesh technologies, like multi-channel routing protocols and multiple gateway support, make it possible to cover hard-to-wire areas and improve network resilience. In the event of a switch or cable failure, the MR72 will automatically revert to mesh mode.

### Self-configuring, self-optimizing, self-healing

When plugged in, the MR72 automatically connects to the Meraki cloud, downloads its configuration, and joins the appropriate network. The MR72 then self-optimizes, determining the ideal channel, transmit power, and client connection parameters. As necessary, it will also self-heal, responding automatically to switch failures and other errors.

# Specifications

**Radios**

One 2.4 GHz 802.11b/g/n, one 5 GHz 802.11a/n/ac, one dedicated for dual-band WIPS & spectrum analysis, and one dedicated to Bluetooth low energy (2.4 GHz)

Concurrent operations of all radios

Max data rate 1.2 Gbit/s

Operating bands:

| FCC (US) | CE (Europe) |
|---|---|
| 2.412-2.484 GHz | 2.412-2.484 GHz |
| 5.150-5.250 GHz (UNII-1) | 5.150-5.250 GHz (UNII-1) |
| 5.725 -5.825 GHz (UNII-3) | 5.250-5.350 GHZ (UNII-2) |
| | 5.470-5.600, 5.660-5.725 GHz (UNII-2e) |

**802.11ac and 802.11n Capabilities**

2 x 2 multiple input, multiple output (MIMO) with two spatial streams

Maximal ratio combining (MRC)

Beamforming

20 and 40 MHz channels (802.11n), 20, 40, and 80 MHz channels (802.11ac)

Packet aggregation

**Power**

Power over Ethernet: 37 - 57 V (802.3af compatible)

Power consumption: 13.87 W max (802.3af)

Power over Ethernet injector sold separately

**Mounting**

Mounts to walls and vertical poles

Mounting hardware included

**Physical Security**

Security screw included

Kensington lock hard point

Anti-tamper cable bay

Concealed mount plate

**Environment**

Operating temperature: -40 °F to 140 °F (-40 °C to 60 °C)

IP67 environmental rating

**Physical Dimensions**

10.1" x 6.22" x 3.3" (256 mm x 158 mm x 83 mm) including mounting bracket

Weight: 3.1 lbs (1.4 kg)

**Interfaces**

1 x 100/1000Base-T Ethernet (RJ45)

Four external N-type female antenna connectors

**Security**

Integrated policy firewall (Identity Policy Manager)

Mobile device policies

Air Marshal: Real-time WIPS (wireless intrusion prevention system) with alarms

Rogue AP containment

Guest Isolation

Teleworker VPN with IPsec

PCI compliance reporting

WEP, WPA, WPA2-PSK, WPA2-Enterprise with 802.1X

TKIP and AES encryption

VLAN tagging (802.1q)

**Quality of Service**

Advanced Power Save (U-APSD)

DSCP

802.1p

Layer 7 application traffic shaping and firewall

**Mobility**

PMK and OKC credential support for fast Layer 2 roaming

L3 roaming

**LED Indicators**

1 power/booting/firmware upgrade status

**Regulatory**

RoHS

For country-specific regulatory information, please contact Meraki sales

**Warranty**

1 year hardware warranty with advanced replacement included

**Ordering Information**

| | |
|---|---|
| MR72-HW | Meraki MR72 Cloud Managed 802.11ac AP |
| MA-INJ-4-XX | Meraki 802.3at Power over Ethernet Injector (XX = US/EU/UK/AU) |
| MA-ANT-20 | Meraki Dual-Band Omni Antennas |
| MA-ANT-21 | Meraki 5 GHz Sector Antenna |
| MA-ANT-23 | Meraki 2.4 GHz Sector Antenna |
| MA-ANT-25 | Meraki Dual-Band Patch Antenna |

Note: Meraki Enterprise license required


Cisco Systems, Inc. | 500 Terry A. Francois Blvd, San Francisco, CA 94158 | (415) 432-1000 | sales@meraki.com

## RF Performance Table

| Operating Band | Operating Mode | Data Rate | TX Power | RX Sensitivity |
|---|---|---|---|---|
| 2.4 GHz | 802.11b | 11 Mb/s | 19 dBm | -84 |
| 2.4 GHz | 802.11g | 6 Mb/s | 17 dBm | -87 |
| | | 54 Mb/s | 17 dBm | -70 |
| 2.4 GHz | 802.11n (HT20) | MCS0/8/16 HT20 | 18 dBm | -85 |
| | | MCS7/15/23 HT20 | 15 dBm | -67 |
| 2.4 GHz | 802.11n (HT40) | MCS0/8/16 HT40 | 18 dBm | -83 |
| | | MCS7/15/23 HT40 | 15 dBm | -63 |
| 5 GHz | 802.11a | 6 Mb/s | 20 dBm | -92 |
| | | 54 Mb/s | 18 dBm | -73 |
| 5 GHz | 802.11n (HT20) | MCS0/8/16 HT20 | 20 dBm | -90 |
| | | MCS7/15/23 HT20 | 17 dBm | -70 |
| 5 GHz | 802.11n (HT40) | MCS0/8/16 HT40 | 20 dBm | -87 |
| | | MCS7/15/23 HT40 | 17 dBm | -68 |
| 5 GHz | 802.11ac (HT80) | VHT-MCS0/8/16 HT80 | 20 dBm | -84 |
| | | VHT-MCS9/15/23 HT80 | 15 dBm | -58 |

* Maximum hardware capability shown above. Transmit power is configurable in increments of 1 dB and is automatically limited to comply with local regulatory settings.