

**State of Rhode Island  
Department of Administration / Division of Purchases  
One Capitol Hill, Providence, Rhode Island 02908-5855  
Tel: (401) 574-8100 Fax: (401) 574-8387**

**Solicitation Information  
May 8, 2013**

**ADDENDUM # 5**

**RFQ # 7461419  
Title: SURVEILLANCE SECURITY SYSTEM CCRI**

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**Notice to Vendors:**

- ATTACHED IS THE UPDATED BID FORM WHICH MUST BE SUBMITTED WITH YOUR PROPOSAL**
- ATTACHED ARE ADDITIONAL PLANS AND SPECIFICATIONS**

**Thomas Bovis  
Interdepartmental Project Manager**

*Interested parties should monitor this website, on a regular basis, for any additional information that may be posted.*

**Bid Form**  
**RFQ # 7461419**

**Furnish Install SURVEILLANCE SECURITY SYSTEM CCR1**

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS**

Department of Administration  
 Tel: (401) 574-8100  
 Division of Purchases  
 Fax:(401) 574-8387  
 Capitol Hill  
 Website: [www.purchasing.ri.gov](http://www.purchasing.ri.gov)  
 Providence, RI 02908

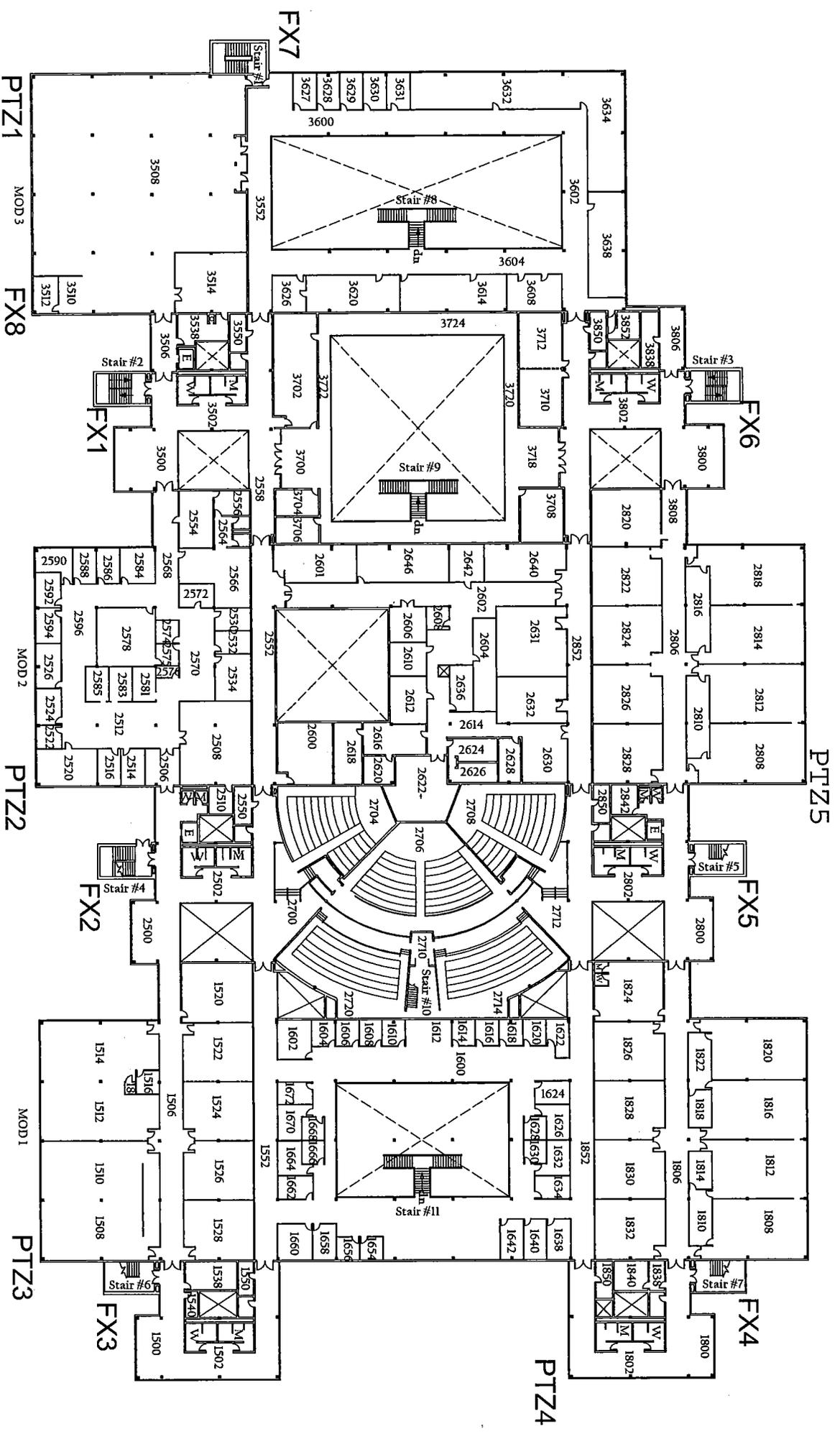


One

Line	Description	Total System \$	Five Year Warranty \$
1	LINCOLN CAMPUS		
2	LINCOLN CAMPUS BOOKSTORE		
3	PROVIDENCE CAMPUS		
4	PROVIDENCE CAMPUS BOOKSTORE		
5	WARWICK CAMPUS BOOKSTORE		
Total all Campus Locations		\$	\$

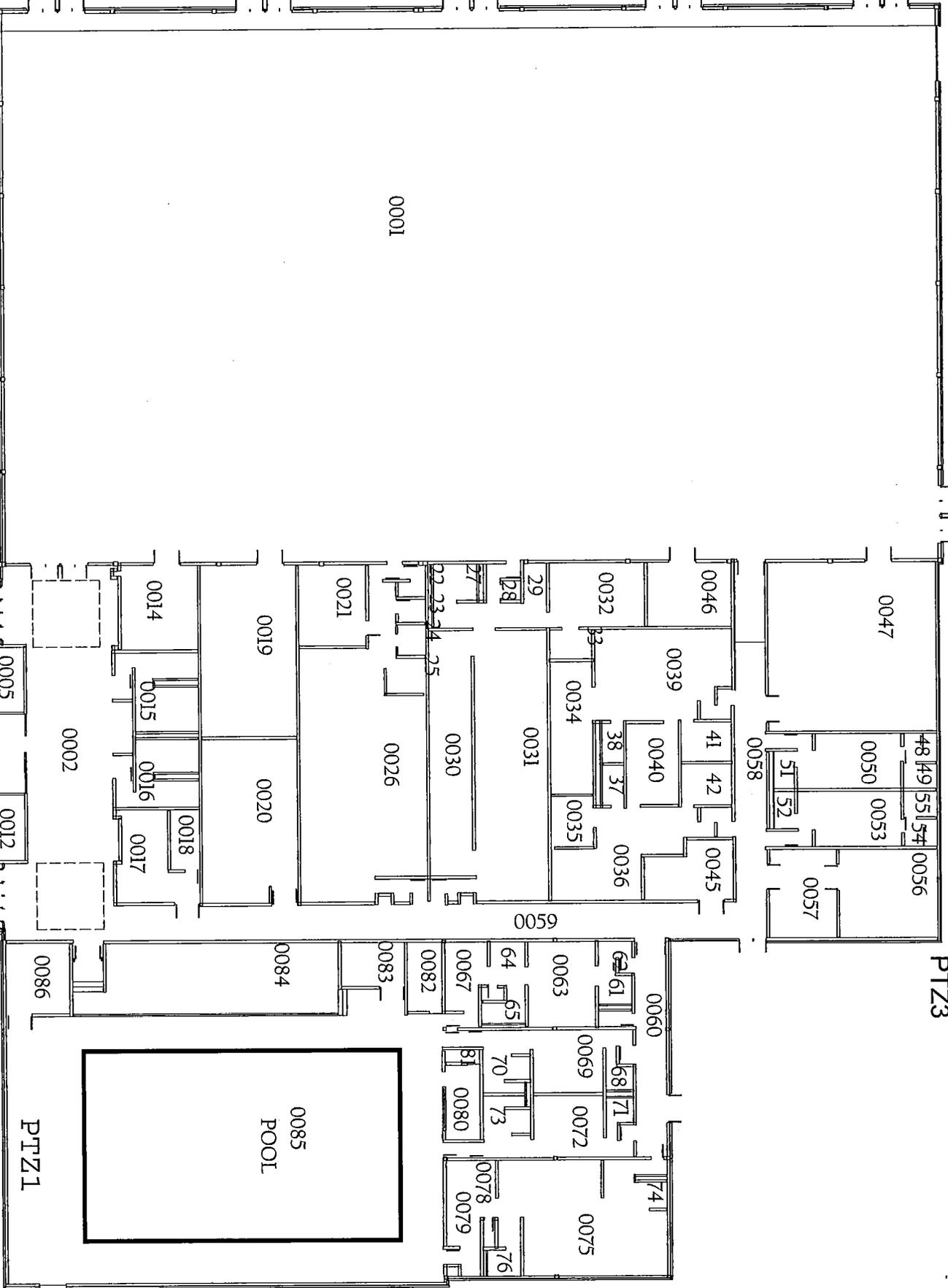
# Flanagan Campus Second Floor

## PROPOSED FIXED AND PTZ EXTERIOR IP CAMERA LOCATIONS



PTZ4

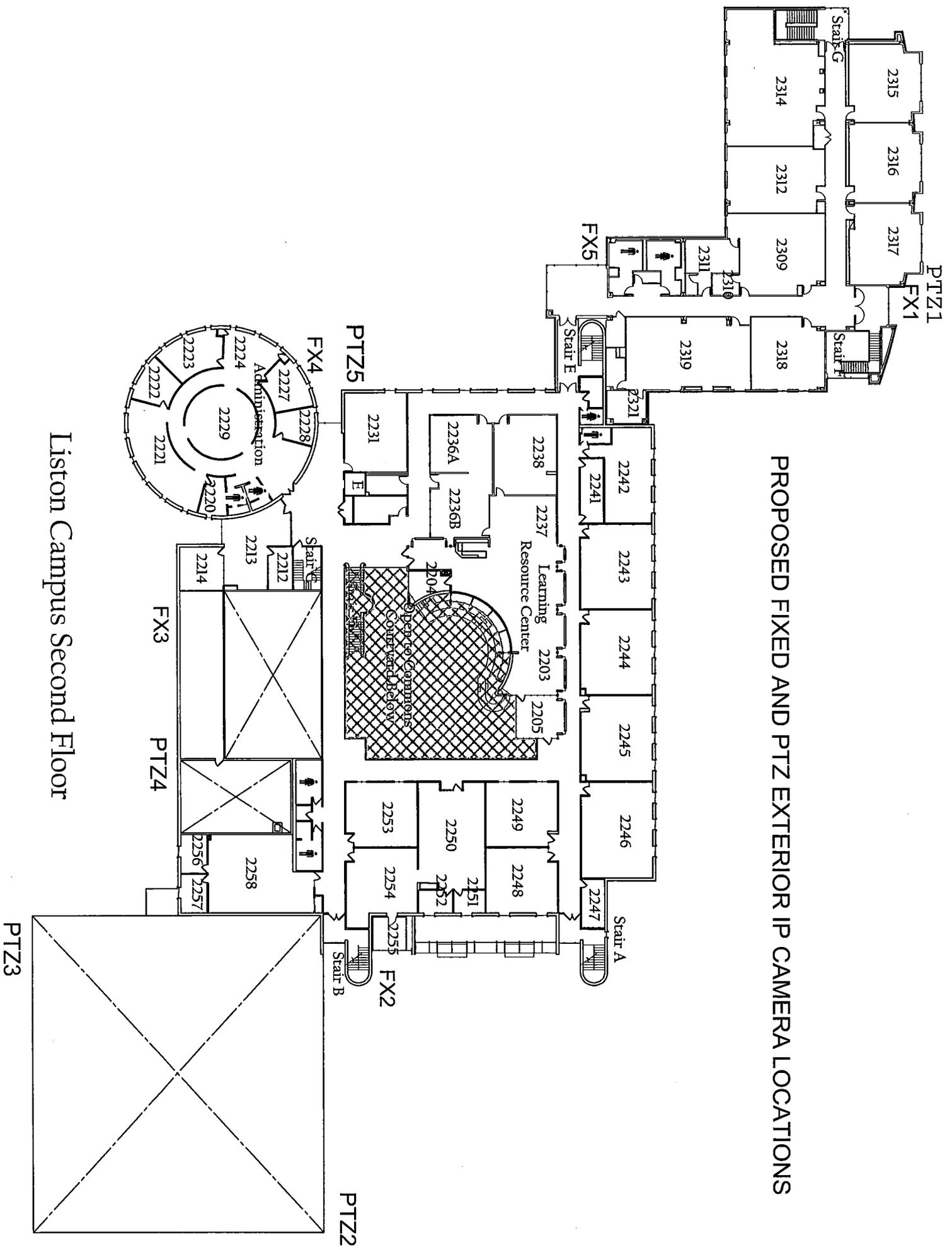
PTZ3



# FIELD HOUSE

DGM 9/30/91

PROPOSED FIXED AND PTZ EXTERIOR IP CAMERA LOCATIONS



Liston Campus Second Floor

## 1.0 Responsible Party

- 1.1 Any and all questions or correspondence regarding this document and specifications herein shall be directed to:

Code Blue Corporation  
92 East 64<sup>th</sup> Street  
Holland, MI 49423  
616-392-8296  
[aespecs@codeblue.com](mailto:aespecs@codeblue.com)

## 2.0 Scope

- 2.1 This document is intended to provide complete and accurate specifications of the CB1d product offering by Code Blue Corporation for the purpose of inclusion in project specifications, requirements and recommendations required by potential users of Code Blue products and services.
- 2.2 The CB1d will be referred to as "unit" throughout this document.
- 2.3 Code Blue Corporation will be referred to as "manufacturer" throughout this document.

## 3.0 Product Description

- 3.1 The unit shall be an easily identifiable, vandal resistant communications device that is Americans with Disabilities Act (ADA) compliant, multi-functional, freestanding, and constructed of heavy steel. The unit shall be aesthetically pleasing and virtually impervious to damage, and shall include a high quality, vandal resistant, hands-free communications device illuminated by a high intensity faceplate light, a powerful strobe light and a vivid blue beacon that serves to identify the unit from a great distance.

## 4.0 Construction

- 4.1 The unit shall be a cylinder constructed of ASTM A500 carbon steel structural tube, schedule 20, 12.75" OD x 0.25" thick wall and a height of not less than 9 feet.
- 4.2 Tamper resistant proprietary fasteners manufactured for Code Blue Corporation shall be used. It shall not be possible to acquire the custom designed bit from any source other than Code Blue Corporation. It shall not be possible to insert or remove any component without this bit. All other types of fasteners shall not be acceptable under any circumstance.
- 4.3 The unit shall have an internal anchor base plate that is MIG welded to the unit two 2" above its base. The base plate shall be fabricated with a minimum of .50" thick A-36 grade steel plate and shall have a 5" diameter center hole for electrical conduit access.

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**Architectural & Engineering Specifications**

The base plate shall have four (4) oblong holes on an 8" circular bolt pattern for the attachment to anchor bolts.

- 4.4 The unit shall have an access opening near the base of the unit which provides access for mounting to the anchor bolts and connectivity to electrical facilities. The access opening shall have a cover plate which mounts flush with the unit. This cover plate shall be the same steel and radius as the unit. The cover plate shall fit precisely into the opening and have a weather resistant gasket to prevent water and other elements from entering the unit. The cover plate shall be held in place by two (2) ¼" x 20 x 1" countersunk proprietary fasteners supplied only by manufacturer.
- 4.5 There shall be two (2) area light openings each 10" high and 17" wide with 153 degrees of arc. The openings shall be cut into the unit 180 degrees apart with the bottom of the openings approximately 14" from the top of the unit. The corners shall be uniformly rounded and the edges of the cuts shall be straight and free of burrs and visual imperfections. The four (4) edges of each opening shall form a square when viewed in elevation from the front or rear of the unit.
- 4.5.1 A heavy cylindrical lens made of clear UV rated polycarbonate shall be inserted into the unit behind the two (2) lens openings and shall be mechanically as well as chemically fastened to the unit interior. The lens shall be fully sealed with weatherproof silicon around its entire edge to render the installed lens water proof, vandal resistant and keep out environmental elements. The lens shall be treated to prevent damage from ultra-violet radiation, aging, cracking, yellowing or breaking.
- 4.6 The unit shall have a dome top assembly which seals the top of the unit and shall consist of a mounting ring, gasket, LED beacon/strobe, UV rated polycarbonate dome and required fasteners.
- 4.6.1 The mounting ring shall be made of high quality cast aluminum and be free from defects. The diameter shall be equal to the unit and three tabs; each with a 10-24 x 1" stainless steel thumbscrew for fastening to the unit. The mounting ring shall have a weather resistant gasket mounted to the bottom to prevent water and other elements from entering the unit. The mounting ring shall have a brush gasket mounted between the exterior of the ring and the UV rated polycarbonate dome to allow passive air flow through the unit and prevent insects and other environmental particles from entering the unit.
- 4.6.2 A cylindrical, transparent, UV rated polycarbonate dome that is a minimum of 6" tall with a 12.5" outer diameter shall be attached to the mounting ring with three (3) proprietary fasteners. The dome shall be made of a clear UV rated polycarbonate and shall be sloped to prevent pooling of water.
- 4.6.3 A Blue LED Beacon/Strobe shall be attached to the mounting ring with three (3) Phillips head screws below the dome.

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**Architectural & Engineering Specifications**

- 4.7 A recessed opening shall be cut into the unit at a point beginning 36.6" above the bottom of the unit. The opening shall be 27.5" tall at the forward edge and 25.2" tall at the rear edge creating a 25 degree angle from the horizontal. The upper horizontal edge of the opening shall constitute an arc of 160 degrees in the face of the unit and the sides of the opening shall be parallel and the same length.
- 4.7.1 The opening shall be totally enclosed by a 7 gauge steel plate that shall have two openings allowing for a communication and optional device. The plate shall be seam welded to the unit so that the plate and the unit appear to be one unit.
- 4.7.2 A communication device will be mounted in the lower opening.
- 4.7.3 An 11 gauge stainless steel panel measuring 11.75" x 8.5" shall be mounted as the standard offering in the upper opening unless an optional directory, camera, card reader or custom plate is ordered.

**5.0 Mounting**

- 5.1 The unit shall be mounted onto four anchor bolts that are set into concrete. Standard ¾" x 24" galvanized steel anchor bolts, nuts and washers shall be used as supplied. The unit shall mount ½" above the concrete to allow air flow within the unit.

**6.0 ELECTRICAL**

- 6.1 All electrical components shall have a modular plug for easy service and replacement. All electrical wiring shall be concealed within the unit and shall not be visible from the outside of the unit.
- 6.2 All electrical components in the unit shall be equipped with a fuse for protection from transient voltage conditions.
- 6.3 The unit shall require 2.5 amperes at 24v AC standard.
- 6.4 The unit shall have the option for Power over Ethernet for connectivity to a VoIP network switch with 802.3af (minimum) capabilities. Requires the IP5000 phone for connectivity to ToolVox Communication Manager or SIP/IAX2 compatible VoIP system. Refer to the ***Power over Ethernet Architectural and Engineering Specification***.
- 6.5 The unit shall have the option of a Multi-Tap Transformer for connectivity to 120v AC, 240v AC, 277v AC and 347v AC primary power. Refer to the Multi-Tap Transformer ***Architectural and Engineering Specification***.
- 6.6 The unit shall have the option for a NightCharge® system. Refer to the ***NightCharge® Architectural and Engineering Specification***.
- 6.7 The installer shall follow all NEC and local electrical codes when installing the unit power systems.

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### 7.0 Lights

- 7.1 **LED Beacon/Strobe:** A long life, highly visible LED Beacon/Strobe shall be located in the Beacon/Strobe opening. The LED Beacon/Strobe shall have a factory set flash rate of no less than 60 flashes per minute and be programmable. Factory programming of the beacon portion of the LED Beacon/Strobe will be set to the “on” position. To change the programming move of the beacon, please refer to the LED Beacon/Strobe Programming Guide (pr13149). A deep blue UV rated polycarbonate prismatic refractor shall cover the LED Beacon/Strobe and shall be used to distribute the light in a horizontal pattern for maximum brightness and visibility at a distance.
- 7.1.1 The communication device shall be factory programmed to activate the LED Beacon/Strobe for the duration of a call. The LED Beacon/Strobe cannot be deactivated at the unit.
- 7.2 **Area Light:** A high output LED Area Light shall be mounted within the unit near the top. The LED Area Light shall be protected within the two (2) area light openings by a UV rated polycarbonate lens. A deep blue UV rated polycarbonate prismatic refractor shall cover the LED Area Light and shall be used to distribute the light in a horizontal and vertical pattern for maximum brightness and visibility both surrounding the unit and at a distance.
- 7.2.1 A reflector disk shall be mounted above the LED Area Light to direct the light outward and downward from the unit. This shall create a pool of light around the unit making persons standing at or near the unit visible. The area light shall always be illuminated.
- 7.3 **Faceplate Light:** A LED Faceplate Light shall be mounted within the unit above the recessed opening which houses the communications device. This fixture will direct light onto the communications device and shall be vandal resistant.

### 8.0 Communications

- 8.1 The unit shall have a high quality vandal resistant and ADA compliant speakerphone communication device.
- 8.1.1 IP5000: Refer to the *IP5000 Architect and Engineering Specification* for further information.
- 8.1.2 IA4100: Refer to the *IA4100 Architect and Engineering Specification* for further information.
- 8.2 The unit shall be capable of communicating through an integrated 802.11g, 2.4 GHz IP wireless system. Refer to the *IP Wireless Architect and Engineering Specification*.
- 8.3 The unit shall be capable of communicating through an integrated Secure Mesh wireless system operating at 2.4 – 5.9 GHz. Refer to the *Secure Mesh Wireless Architect and Engineering Specification*.

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## Architectural & Engineering Specifications

- 8.4 The unit shall be capable of communicating through an integrated GSM Cellular device. Refer to the *GSM Cellular Architectural and Engineering Specifications*.
- 8.5 EIA/TIA, ANSI, CSA and BICSI cabling or similar standards shall be adhered to for proper operation of Code Blue communication devices connected to copper or fiber infrastructure.

### 9.0 Finish

- 9.1 The unit shall be finished with a highly graffiti and UV resistant coating process.
- 9.2 Substrate preparation shall be as required to comply with applicable ASTM impact and adhesion standards:
- D2794 Direct and Reverse Impact
  - D523 Gloss @ 60 Degrees
  - D3359B Cross hatch Adhesion
  - D1654 Corrosion Creep
  - D714 Scribe Blisters
  - D714 Field Blisters
- 9.3 The polyurethane finish shall be a multi coat system available in 10 standard colors:
- Safety Blue
  - Safety Red
  - Safety Yellow
  - Midnight Blue
  - Gloss White
  - Gloss Black
  - Medium Bronze
  - Dark Bronze
  - British Racing Green
  - Cardinal Red
- 9.4 Custom colors shall be available as specified by the user and approved by the manufacturer.
- 9.5 The primer coat and finish coat shall each have a minimum coverage thickness of 2.0 mils.
- 9.6 No other types of finishes are acceptable.

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### 10.0 Graphics

- 10.1 The graphics shall be a durable Nikkalite Engineering Grade reflective vinyl for high visibility and legibility.
- 10.2 Standard 30" length graphics text offering shall be:
- Emergency
  - Assistance
  - Security
  - Courtesy
  - Police
- 10.3 Standard graphics color offering shall be:
- Reflective White
  - Reflective Blue
  - Reflective Black
  - Reflective Green
  - Reflective Red
  - Reflective Yellow
- 10.4 Custom graphics text, length and color shall be available by the manufacturer.

### 11.0 General Options

- 11.1 The following optional equipment shall be available for the unit by the manufacturer. Please refer to the associated *Architectural and Engineering Specifications*:
- Active Vent Solar Powered Fan
  - Overhead Camera Mount
  - PAS 1/5 Mass Notification System
  - Secondary Opening Directory Plate
  - Secondary Opening Camera
  - Secondary Opening Card Reader
  - Secondary Opening Camera and Card Reader
  - Secondary Opening Custom Plate

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**12.0 Warranty**

- 12.1 The unit shall be warranted for a period of two (2) years. Reference manufacturer's warranty for further details.

**13.0 Manufacturer**

- 13.1 The manufacturer shall be Code Blue Corporation of Holland, Michigan. There are no known equivalents.
- 13.2 Code Blue Corporation manufactures its products according to the most recent revision of our product specifications and shall not be held responsible for obsolete or outdated specifications. For the latest revision please refer to [www.codeblue.com](http://www.codeblue.com) or contact Code Blue Corporation directly.



### **PEDESTAL – INTERACTIVE VOICE COMMUNICATION UNIT**

The **CB 1-d** offers the same features as the CB 1-s and also includes a second faceplate opening. The additional faceplate provides an ideal location for a directory or specific user options such as access control, CCTV or other security devices. The free standing pedestal design provides high visibility throughout a full 360-degree area. The user friendly lighted faceplate and the integral area light ensures rapid location in an open environment. The high output strobe is easily identifiable by security when activated.

The exclusive analog InterAct™ and VoIP speakerphones are designed for maximum reliability, vandal resistance, auxiliary functions, mass notification control, and fault monitoring and reporting capability; leading the market in system programming flexibility. The **CB 1-d** is an excellent choice for walkways, parks, college and commercial campus areas, open landscape areas and anywhere a freestanding pedestal unit is required.

#### **STANDARD FEATURES**

- ▶ Analog or VoIP speakerphone options
- ▶ ToolVox® Communication Manager compatible with Blue Alert®, EMS and UPD software integration
- ▶ 2 Auxiliary inputs/3 Auxiliary outputs (3 NO or 3 NC)
- ▶ Second opening with blank stainless steel plate
- ▶ High output combo LED beacon/strobe
- ▶ 24v LED low consumption area light
- ▶ LED lit stainless steel faceplate
- ▶ Passive vent
- ▶ 24v AC power
- ▶ Voice Identifier
- ▶ ADA compliant
- ▶ UV resistant lenses
- ▶ Vandal resistant hardware
- ▶ Phone line surge suppressor
- ▶ Ultra-weather resistant finish
- ▶ Internal foundation anchor kit

#### **OPTIONAL FEATURES**

- ▶ Two-button speakerphone w/keypad
- ▶ Two-button speakerphone
- ▶ NightCharge®
- ▶ Overhead camera mount
- ▶ Custom colors & graphics
- ▶ Step-down power transformer
- ▶ GSM & IP wireless communication options
- ▶ Second opening options: card reader, directory, camera or custom plate design



**UNIT SPECIFICATIONS**

Overall Height	108" (274.32 cm)
Outside Diameter	12.75" (32.38 cm)
Housing Material, steel	.25" (.635 cm)
Access Opening (w x h)	8.5" x 12" (21.59 x 30.48 cm)
Overall Weight	375 lbs. (170 kg)
Standard Power Requirements	24v AC @ 50w

**UNIT FINISH COLORS**

<i>Standard Painted Finish</i>	British Racing Green, Cardinal Red, Dark Bronze, Gloss White, Gloss Black, Medium Bronze, Midnight Blue, Safety Blue, Safety Red, Safety Yellow
<i>Custom Painted Finish</i>	Custom colors from Pantone® color chart or sample are available as a special order

**GRAPHICS TEXT (WORDING)**

<i>Standard</i>	Assistance, Courtesy, Emergency, Police, Security
<i>Custom</i>	Custom text graphics are available as a special order

**GRAPHICS TEXT COLORS**

<i>Standard (reflective decal)</i>	Black, Blue, Green, Red, White, Yellow
<i>Custom</i>	Custom colors from Pantone color chart or sample are available as a special order

**GSM CELLULAR OPTION**

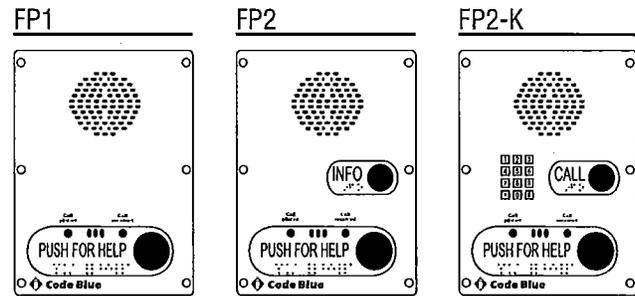
Provides wireless communications to eliminate trenching for phone lines. System requires a reliable GSM cellular service to be provided by customer.

**IP WIRELESS OPTION**

As more users desire ubiquitous connectivity, Code Blue's IP Wireless offering exploits built-in VLAN (Virtual Local Area Networks) capable of maximizing your investment, including various integration scenarios with existing equipment.

**NIGHTCHARGE®**

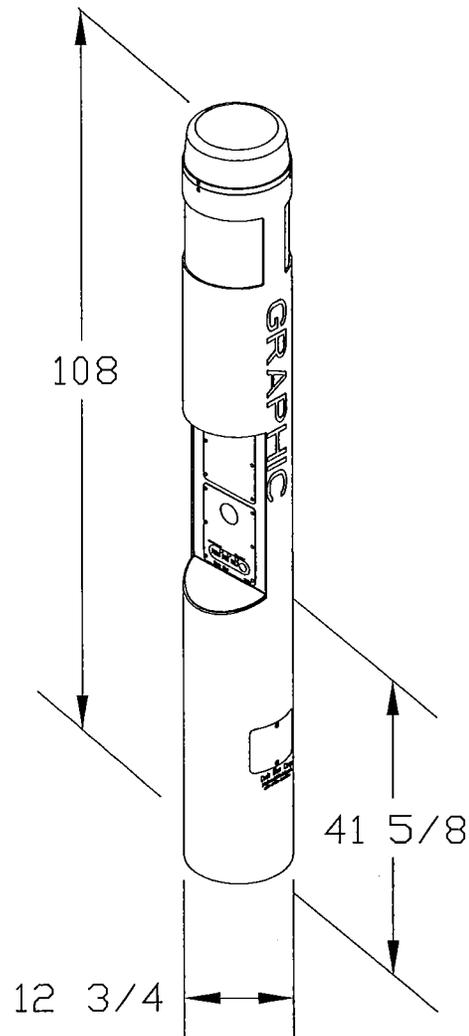
Continuous power is supplied to the Code Blue unit from a non-continuous power source. Typically used with an outdoor lighting network when power is only on during a portion of the day or night.

**FACEPLATE OPTIONS**


Standard faceplate assembly with single red **PUSH FOR HELP** button

Optional faceplate assembly with additional black **INFO** button

Optional faceplate assembly with additional **CALL** button and keypad



- Mounting hardware and template for unit is shipped in advanced for foundation work.
- Specifications subject to change without notice or obligation on the part of the manufacturer.

#### 1.0 FOUNDATION

1.1 Conduit – Electrical and telephone line conduit, with a maximum combined diameter of four (4) inches, should be run up through the center of the foundation hole. A minimum of four (4) inches and a maximum of six (6) inches of conduit above the finished grade level is required. To ensure proper grounding, a ½ inch x 8 foot copper rod should be inserted in the center of the foundation and tied to the steel bollard.

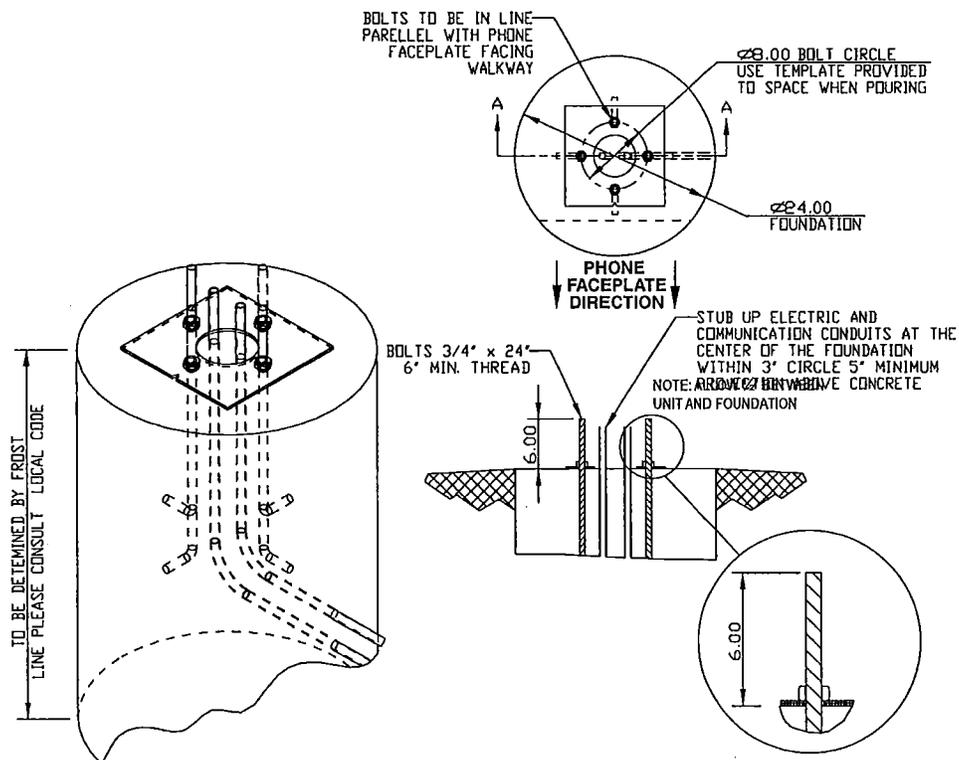
**NOTE:** Follow all national and local codes governing this installation.

1.2 Pour the Foundation – The foundation should be at least 24 inches in diameter, and to the correct depth for the frost line in your area, with a minimum depth of at least three (3) feet (follow local building codes for foundations).

1.3 Set the Anchor Bolts in the Wet Foundation – Four (4) 24-inch L-shaped anchor bolts and an aligning template are supplied for anchoring the Code Blue unit. The bolts should be set into the foundation so that six (6) inches are left showing above the finished grade level. The anchor bolts should be aligned, using the supplied template, in such a way that the phone faceplate on the unit will face in the desired direction.

#### 2.0 WIRING

2.1 Pull power and phone line up through the conduits – A minimum of two feet of wire must be available from the conduit for electrical and communications wiring.





### **SUPPLEMENTAL BATTERY SOURCE WITH SWITCHED POWER SUPPLY**

The **NightCharge**<sup>®</sup> system operates from the switched power supply and is available on Code Blue CB 1-d, CB 1-e, CB 1-s and CB 8 units. This option allows Code Blue units to be powered from a 120v AC switched power network. Such networks are commonly used to supply power to outdoor lighting equipment only at night.

During the day, **NightCharge** provides battery power to operate the unit. At night, **NightCharge** supplies power to the unit and recharges the batteries.

### **STANDARD FEATURES**

#### **Input Power**

The **NightCharge** system requires 120v AC input. All other switched power network voltages must be stepped down to 120v AC upstream from the Code Blue unit.

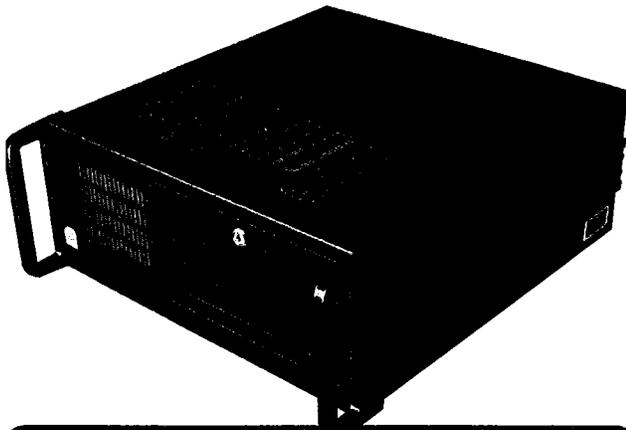
#### **Output Power**

The **NightCharge** system provides a 12v DC supply to all components. The CB 1 area light however, is on only when the power network grid is on.

#### **Battery Capability**

The **NightCharge** system provides sufficient power to run all the required components in the Code Blue units for 24 hours per day without interruption. At least 8 hours of daily continuous power from the switched network power grid is required to fully recharge the batteries. **NightCharge** will function with one incomplete recharging cycle but will not function with two consecutive incomplete recharging cycles. Two nights of recharge would be required to fully recharge the batteries after a miss in the recharge cycle.

During a typical day — power network on during part of the day and off during part of the day — the **NightCharge** system provides power for 23 hours of standby operation and at least 1 hour of activated operation.



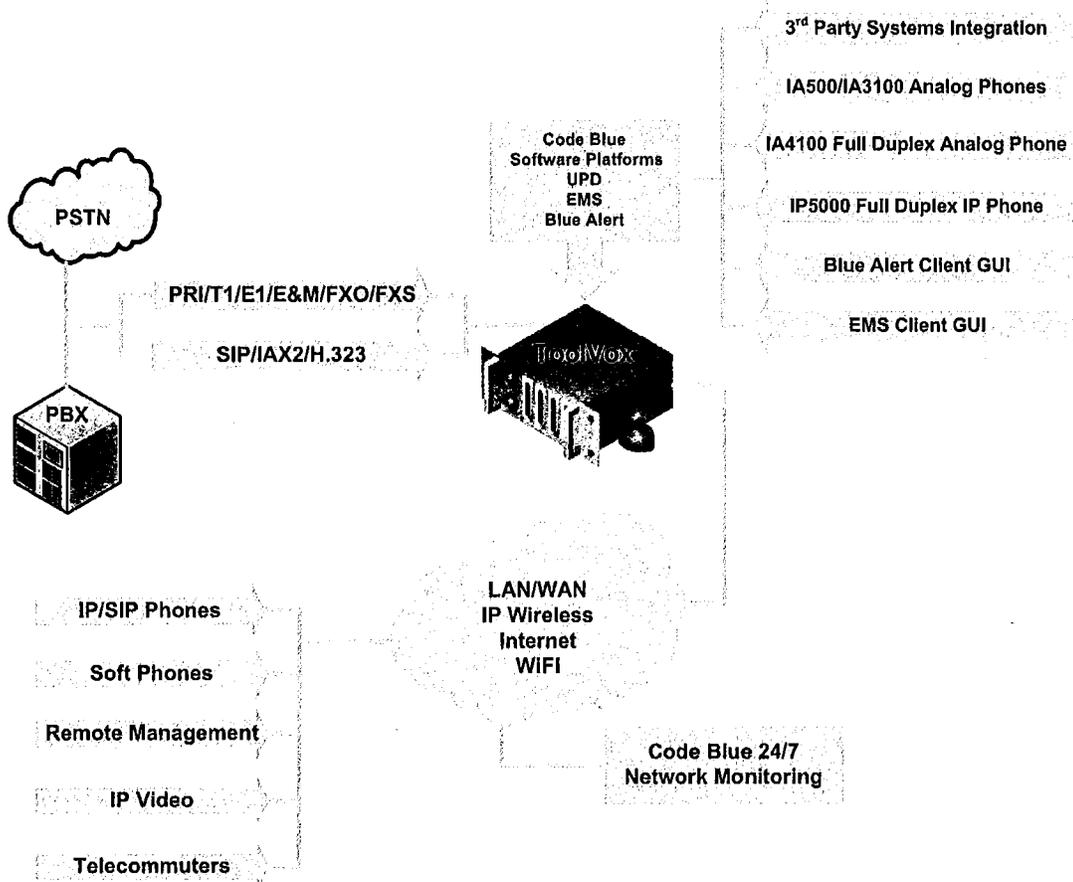
### BASE PACKAGE INCLUDES

- ▷ Pentium® Dual-Core Duo processor
- ▷ 2GB RAM
- ▷ DVD-ROM
- ▷ Onboard LAN and video
- ▷ Secure 4U rack mount chassis
- ▷ Redundant power supplies (optional)
- ▷ RAID drives (optional)

The Code Blue ToolVox Communication Manager provides the integration of analog and IP devices to communicate on one platform. This allows ToolVox to be a complete communications server for all the customer's needs:

- Code Blue/Emergency Phone Management
- Emergency Call Management
- API for third party integration for command and control centers
- Business Communications System

ToolVox systems can be interconnected creating autonomous wide area networks allowing one system to manage multiple geographic locations.



**SYSTEM FEATURES**

- ADSI On-Screen Menu System
- Alarm Receiver
- Append Message
- Authentication
- Automated Attendant
- Blacklists
- Blind Transfer Call
- Detail Records Call
- Call Forward on Busy
- Call Forward on No Answer
- Call Forward Variable
- Call Monitoring
- Call Parking
- Call Queuing
- Call Recording
- Call Retrieval
- Call Routing (DID & ANI)
- Call Snooping
- Call Transfer
- Call Waiting
- Caller ID
- Caller ID Blocking
- Caller ID on Call Waiting
- Calling Cards
- Conference Bridging
- Database Store / Retrieve
- Database Integration
- Dial by Name
- Direct Inward System Access
- Distinctive Ring
- Distributed Universal Number Discovery (DUNDi™)
- Do Not Disturb
- E911
- ENUM
- Fax Transmit and Receive (Third Party OSS Package)
- Flexible Extension Logic
- Interactive Directory Listing
- Interactive Voice Response (IVR)
- Local and Remote Call Agents
- Macros
- Music On Hold
- Music On Transfer:
  - Flexible MP3-based System
  - Random or Linear Play
  - Volume Control
- Predictive Dialer
- Privacy
- Open Settlement Protocol (OSP)
- Overhead Paging
- Protocol Conversion
- Remote Call Pickup
- Remote Office Support
- Roaming Extensions
- Route by Caller ID
- SMS Messaging
- Spell / Say
- Streaming Media Access
- Supervised Transfer
- Talk Detection
- Text-to-Speech
- Three-way Calling
- Time and Date
- Transcoding Trunking
- VoIP Gateways
- Voicemail:
  - Visual Indicator for Message Waiting
  - Stutter Dial Tone for Message Waiting
  - Voicemail to email
  - Voicemail Groups
  - Web Voicemail Interface

**ADDITIONAL SYSTEM FEATURES****SCALABILITY**

- TDMoE (Time Division Multiplex over Ethernet)
- Zero latency
- Voice over Internet Protocol
- Allows for integration of physically separate installations
- Uses commonly deployed data connections
- Allows a unified dial plan across multiple offices and vendor PBX

**PROTOCOLS**

- H.323
- IAX™
- MGCP (Media Gateway Control Protocol)
- SCCP (Cisco® Skinny®)
- SIP (Session Initiation Protocol)

**CODECS**

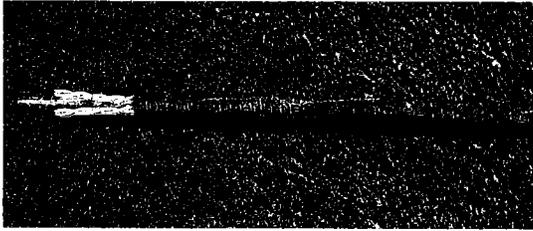
- ADPCM
- G.711 (A-Law &  $\mu$ -Law)
- G.722
- G.723.1 (pass through)
- G.726
- G.729
- GSM
- iLBC
- Linear
- LPC-10
- Speex

**PRI PROTOCOLS**

- BRI
- DMS100
- EuroISDN
- Lucent 4ESS/5ESS
- National ISDN2
- NFAS

**TRADITIONAL TELEPHONY INTEROPERABILITY**

- E&M/E&M Wink
- Feature Group D
- FXO/FXS
- GR-303
- Groundstart
- Kewlstart
- Loopstart
- MF and DTMF support
- MFC-R2
- Robbed-bit Signaling (RBS) Types



# AdvanceNet™

## 4 Pair #23 AWG UTP Category 6e Cable

### DESCRIPTION

ENHANCED UNSHIELDED TWISTED PAIR (UTP) ADVANCENET CABLE FOR USE IN HORIZONTAL CABLING SYSTEMS PER TIA/EIA 568-B AND ISO/IEC 11801 CLASS E. THE CABLE EXCEEDS TIA/EIA 568-B.2-1 AND ISO/IEC 11801 CATEGORY 6 ELECTRICAL CHARACTERISTICS. THE CABLE CONSISTS OF #23 AWG SOLID BARE COPPER INSULATED CONDUCTORS, ASSEMBLED INTO FOUR TIGHTLY TWISTED PAIRS, WITH A FLEXWEB CORE SEPARATOR, WITH A RIPCORD, UNDER AN OVERALL JACKET. PRINT INCLUDES DESCENDING FOOTAGE MARKERS FROM 1000 TO 0 ON EACH 1000 FT REEL OR BOX. THIS PRODUCT AND/OR ITS MANUFACTURE IS COVERED BY US PATENT NOS. 6596944, 6074503, 5424491 & 5563377 (PL).

THE PLENUM RATED CABLE IS FOR USE IN AIR HANDLING DUCTS AND SPACES IN ACCORDANCE WITH ARTICLE 800 OF THE NATIONAL ELECTRICAL CODE (NEC). THE CABLE IS UL (USA) & cUL (CANADA) LISTED FOR THIS APPLICATION BY PASSING NFPA 262 (UL 910 OR FT-6 STEINER TUNNEL) TEST.

THE RISER NON-PLENUM RATED CABLE IS FOR USE AS A VERTICAL RUN IN A SHAFT AND FOR GENERAL PURPOSE COMMUNICATIONS USE IN ACCORDANCE WITH ARTICLE 800 OF THE NEC. THE CABLE IS UL (USA) & cUL (CANADA) LISTED FOR THIS APPLICATION BY PASSING UL 1666 RISER CABLE FLAMMABILITY TEST. THE CABLE ALSO PASSES THE CSA FT4 VERTICAL FLAME TEST - CABLES IN CABLE TROUGH FROM CLAUSE 4.11.4 OF CSA C22.2 NO. 0.3.

THIS CABLE COMPLIES WITH THE EU-RoHS DIRECTIVE 2002/95/EC (RESTRICTIONS ON HAZARDOUS SUBSTANCES) REGULATIONS.

### SUPPORTED APPLICATIONS

IEEE 802.3 10BASE-T (ETHERNET), 100BASE-T (FAST ETHERNET), AND 1000BASE-T (GIGABIT ETHERNET), IEEE 802.3af POWER OVER ETHERNET FOR VoIP, ANSI X3.263 FDDI TP-PMD, IEEE 802.5 4 AND 16 Mbps TOKEN RING, ATM UP TO 155 Mbps, 550 MHz BROADBAND VIDEO AND STANDARDS UNDER DEVELOPMENT SUCH AS ATM AT 622 Mbps, and 1.2 & 2.4 Gbps.

### INDUSTRY APPROVALS

**STANDARDS:** EXCEEDS TIA/EIA 568-B.2-1 CAT 6 & ISO/IEC 11801:2002 CAT 6 HORIZONTAL CABLE

**LISTINGS:** PL: UL/cUL TYPE CMP  
NP: UL/cUL TYPE CMR

**PERFORMANCE:** ETL VERIFIED TO TIA/EIA 568-B.2-1 CAT 6

### CONSTRUCTION

**PRIMARIES:** CONDUCTOR: 23 AWG (.6 mm) SOLID BARE COPPER  
PL: DUAL INSULATION, FEP ON ALL 4 PAIRS  
NP: THERMOPLASTIC POLYOLEFIN

**PAIR ASSEMBLY:** 2 PRIMARIES TWISTED IN VARIED LAYS

**COLOR CODE:** SEE TABLE 1

**CABLE ASSEMBLY:** 4 PAIRS CABLED TOGETHER WITH A FLEXWEB CORE SEPARATOR

**JACKET:** PL: NO LEAD PLENUM RATED THERMOPLASTIC  
NP: NO LEAD FLAME RETARDANT THERMOPLASTIC  
JACKET COLOR: SEE TABLE 2  
NOMINAL CABLE OD: PL: .228" (5.79 mm)  
NP: .225" (5.7 mm)

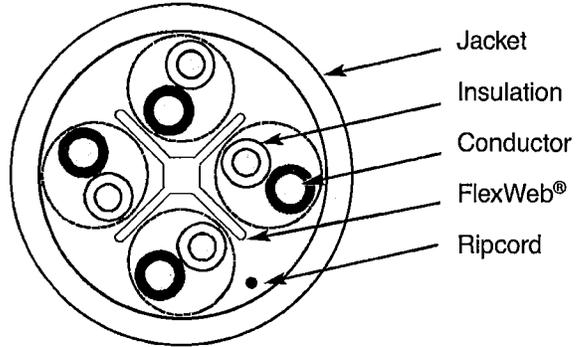


TABLE 1

PAIR NUMBER	PAIR COLOR CODE	
	1	WHITE-BLUE
2	WHITE-ORANGE	ORANGE
3	WHITE-GREEN	GREEN
4	WHITE-BROWN	BROWN

TABLE 2

PLENUM		NON-PLENUM	
PART NUMBER	JACKET COLOR	PART NUMBER	JACKET COLOR
M56905	WHITE	M56889	WHITE
M57193	BLUE	M57202	BLUE
M57194	PINK	M57203	PINK
M57195	YELLOW	M57204	YELLOW
M57196	GRAY	M57205	GRAY
M57197	GREEN	M57206	GREEN
M57198	RED	M57207	RED
M57199	ORANGE	M57208	ORANGE
M57200	BLACK	M57209	BLACK
M57201	VIOLET	M57210	VIOLET

### PHYSICAL CHARACTERISTICS

**CABLE WEIGHT:** PL: 33 lbs/1000ft (49 kg/km)  
NP: 30 lbs/1000ft (45 kg/km)

**BENDING RADIUS:** PL: 1" (25 mm) MIN (4 x CABLE OD)

**PULLING TENSION:** 25 lbf (110 N) MAX

**OPERATING TEMP.:** -20°C to +60°C (-4°F to +140°F)

**STORAGE TEMP.:** -20°C to +75°C (-4°F to +167°F)

**INSTALLATION TEMP.:** 0°C to +60°C (+32°F to +140°F)

\*THE INSTALLATION TEMPERATURE REFERS TO THE TEMPERATURE OF THE CABLE WHILE BEING INSTALLED OR PULLED. DO NOT INSTALL CABLE BELOW 0°C (+32°F).

PL = PLENUM  
NP = NON-PLENUM

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# AdvanceNet™

## 4 Pair #23 AWG UTP Category 6e Cable

### ELECTRICAL CHARACTERISTICS (REF TABLE 3)

<b>CONDUCTOR DCR:</b>	7.8 Ω/100m (23.8 Ω/Mft) MAX
<b>DCR UNBALANCE:</b>	3% MAX
<b>MUTUAL CAPACITANCE:</b>	46 pF/m (14 pF/ft) NOM
<b>CAPACITANCE UNBALANCE PAIR/GROUND:</b>	66 pF/100m (200 pF/Mft) MAX
<b>CHARACTERISTIC IMPEDANCE:</b>	100 Ω ± 15% (1-350 MHz)
<b>INPUT IMPEDANCE:</b>	100 Ω ± 15% (1-100 MHz) 100 Ω ± 18% (>100-200 MHz) 100 Ω ± 22% (>200-350 MHz)
<b>RETURN LOSS (RL):</b>	20 + 7 log <sub>10</sub> (f) dB MIN (1-10 MHz) 27 dB MIN (>10-20 MHz) 27 - 5.58 log <sub>10</sub> (f/20) dB MIN (>20 MHz)

**INSERTION LOSS: (ATTENUATION)**  $1.795 \sqrt{f} + .017 f + \frac{.20}{\sqrt{f}}$  dB/100m MAX

**NEAR END CROSSTALK (NEXT):** 48.3 - 15 log<sub>10</sub>(f/100) dB/100m MIN

**POWER SUM NEAR END CROSSTALK (PS-NEXT):** 46.3 - 15 log<sub>10</sub>(f/100) dB/100m MIN

**EQUAL LEVEL FAR END CROSSTALK (ELFEXT):** 30 - 20 log<sub>10</sub>(f/100) dB/100m MIN

**POWER SUM EQUAL LEVEL FAR END CROSSTALK (PS-ELFEXT):** 28 - 20 log<sub>10</sub>(f/100) dB/100m MIN

**PROPAGATION DELAY:** 534 + 36 / √f ns/100m MAX

**DELTA DELAY (SKEW):** 25 ns/100m MAX

**NOMINAL VELOCITY OF PROPAGATION (NVP):** 72% PLENUM  
68% NON-PLENUM

WHERE f = FREQUENCY IN MHz from .772 to 350 MHz, except for ELFEXT and PS-ELFEXT from 1 to 350 MHz.

TABLE 3

### REFERENCE ELECTRICAL CHARACTERISTICS

FREQ (MHz)	INSERTION LOSS (dB/100m)		NEXT (dB/100m)		ACR (dB/100m)	PS-NEXT (dB/100m)		PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	RL (dB)
	avg	max	avg	min	min	avg	min	min	min	min	min
.772	1.6	1.8	90	80.0	78.2	83	78.0	76.2	-	-	-
1.0	1.8	2.0	88	78.3	76.3	81	76.3	74.3	70.0	68.0	20.0
4.0	3.5	3.8	79	69.3	65.5	72	67.3	63.5	58.0	56.0	24.2
8.0	4.9	5.3	75	64.8	59.5	68	62.8	57.5	51.9	49.9	26.3
10.0	5.6	5.9	73	63.3	57.4	66	61.3	55.4	50.0	48.0	27.0
16.0	7.1	7.5	70	60.2	52.7	63	58.2	50.7	45.9	43.9	27.0
20.0	7.9	8.4	69	58.8	50.4	62	56.8	48.4	44.0	42.0	27.0
25.0	8.8	9.4	67	57.3	47.9	60	55.3	45.9	42.0	40.0	26.5
31.25	10.0	10.6	66	55.9	45.3	59	53.9	43.3	40.1	38.1	25.9
62.5	14.3	15.3	61	51.4	36.1	54	49.4	34.1	34.1	32.1	24.2
100.0	18.4	19.7	58	48.3	28.6	51	46.3	26.6	30.0	28.0	23.1
155.0	23.4	25.0	55	45.4	20.4	48	43.4	18.4	26.2	24.2	22.0
200.0	27.0	28.8	54	43.8	15.0	47	41.8	13.0	24.0	22.0	21.4
250.0	30.5	32.6	52	42.3	9.7	45	40.3	7.7	22.0	20.0	20.9
300.0	33.9	36.2	51	41.1	4.9	44	39.1	2.9	20.5	18.5	20.4
350.0	37.0	39.5	50	40.1	0.6	43	38.1	-	19.1	17.1	20.1
400.0	40.0	42.7	49	39.3	-	42	37.3	-	18.0	16.0	19.7
500.0	45.5	48.6	48	37.8	-	41	35.8	-	16.0	14.0	19.2
550.0	48.2	51.5	47	37.2	-	40	35.2	-	-	-	19.0
600.0	50.7	54.2	47	36.6	-	40	34.6	-	-	-	18.8
650.0	53.2	56.8	46	36.1	-	39	34.1	-	-	-	18.6

VALUES ABOVE 350 MHz ARE FOR ENGINEERING INFORMATION ONLY.

Mohawk reserves the right to change specification in the interest of product enhancement.

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