

Attachment A – Specifications

34655 - Mill Creek Security Camera System

These specifications identify certain responsibilities of the Project Manager that would otherwise be responsibilities of the Owner's Authorized Representative, in accordance with General Conditions Section A.1. ODOT, as Owner, hereby delegates those identified responsibilities to the Project Manager. All other responsibilities of Owner remain with the Owner's Authorized Representative identified in the Public Improvement Agreement Form.

1. PROJECT MANAGER:

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Salem, OR 97301
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2. 2018 OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION:

Not applicable for this project.

3. SPECIFICATIONS FOR ODOT IP CAMERA SYSTEM

AA. GENERAL

1. SUMMARY

- a. Section includes Network Video Recorder (NVR); Video Cameras, Cabling, Labeling, Programming and Testing
- b. Products - IP video cameras, with multi-streaming (H.265, H.264 and MJPEG);
- c. 2 RU rack-mounted NVR, capable of processing video up to 64 IP video cameras. Supplied by ODOT/Installed and Programmed by ODOT.
- d. Contractor to furnish and install patch panel, patch cables, mounts, and cable management supplies as needed for complete system.
- e. Related Requirements; installation, testing, identification and Administration.
- f. Contractor must apply and pay for permit as required by local jurisdiction.

2. REFERENCES

- a. Abbreviations
 - (1) AGC - Automatic Gain Control
 - (2) ARP – Address Resolution Protocol
 - (3) AWB - Automatic White Balance
 - (4) BLC – Back light compression
 - (5) CBR – Constant Bit Rate
 - (6) CVBS – Color, Video, Blanking, Sync
 - (7) DHCP - Dynamic Host Configuration Protocol
 - (8) DNR – Digital Noise Reduction
 - (9) DNS - Domain Name Server
 - (10) DDNS – Dynamic Domain Name Server
 - (11) DSCP – Differentiated Services Code Point
 - (12) fps - frames per second
 - (13) FTP - File Transfer Protocol
 - (14) GOV – Group of Video
 - (15) GUI – Graphical User Interface

- (16) HD – High Definition
- (17) HTTP - HyperText Transfer Protocol
- (18) ICMP – Internet Control Message Protocol
- (19) IGMP - Internet Group Management Protocol
- (20) IP - Internet Protocol
- (21) JPEG - Joint Photographic Experts Group
- (22) MJPEG - Motion JPEG
- (23) MP - MegaPixel
- (24) MPEG - Moving Pictures Experts Group
- (25) NAS – Network Attached Storage
- (26) NTP - Network Time Protocol
- (27) PIM-SM - Protocol Independent Multicast-Sparse Mode
- (28) PoE - Power over Ethernet
- (29) PPPoE – Point to Point Protocol over Ethernet
- (30) RTP - Real-time Transport Protocol
- (31) RTCP – Real-Time Control Protocol
- (32) RTSP - Real-Time Streaming Protocol
- (33) SDK – Software Development Kit
- (34) SMTP - Simple Mail Transfer Protocol
- (35) SNMP – Simple Network Management Protocol
- (36) SSL – Secure Sockets Layer
- (37) TCP - Transmission Control Protocol
- (38) UDP - User Datagram Protocol
- (39) UPnP – Universal Plug and Play
- (40) VBR – Variable Bit Rate
- (41) VMS - Video Management System
- (42) WDR – Wide Dynamic Range
- (43) LDC – Lens Distortion Correction

b. Reference Standards

- (1) Network - IEEE
 - (A) 802.3 Ethernet Standards
 - (B) 802.1x Port-based Network Access Control
- (2) Video
 - (A) ISO/IEC 23008-2:2013, MPEG-H Part2 (ITU H.265, HEVC)
 - (B) ISO / IEC 14496–10, MPEG-4 Part 10 (ITU H.264)
 - (C) ISO / IEC 10918 – JPEG
 - (D) ONVIF – Profiles S and G
- (3) Emissions
 - (A) FCC-47 CFR Part 15 Subpart B Class B
 - (B) CE EN 55022:2010
- (4) Immunity - CE
 - (A) EN 50130-4:2011
 - (B) EN 61000-3-3:2014
 - (C) EN 61000-4-2:2009
 - (D) EN 61000-4-3:2006+A2:2010
 - (E) EN 61000-4-4:2012
 - (F) EN 61000-4-5:2014
 - (G) EN 61000-4-6:2009

- (5) Safety
 - (A) UL listed
 - (B) CE EN 50581:2012 (hazardous substances)
- (6) Ingress Protection and Vandal Resistance
 - (A) ANSI / IEC60529 – Degrees of Protection Provided by Enclosures : IP67
 - (B) IEC EN 62262 - Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts : IK10
 - (C) IEC 60068-2-75 : IK10

c. Definitions

- (1) GOV (Group of Video object planes) - A set of video frames for H.264 and H.265 compression, indicating a collection of frames from the initial I-Frame (key frame) to the next I-Frame. GOV consists of 2 kinds of frames: I-Frame and P-Frame.
- (2) Dynamic GOV – Dynamic assignment of GOV length based on the complexity of the scene to efficiently manage bitrate of the video stream and reduce the storage required.
- (3) Multi-exposure wide dynamic range - Operation which automatically adjusts shutter speed to provide a wide range between dark and light areas visible at the same time, preventing backlighting issues. Long exposure is used for dark areas and a short exposure is used in light areas.
- (4) Dynamic fps – Dynamic assignment of fps (frames per seconds) based on the movement of object(s) in the scene to efficiently manage bitrate of the video stream and reduce the storage required.
- (5) Smart Codec – Smart Codec that controls quantization parameter and dynamic fps in H.265 and H.264 to efficiently manage bitrate of the video stream and reduce the storage required.

BB. Network Video Recorder (Video Storage Server)

- 1. ODOT will provide and install the Network Video Recorder.

CC. CAMERAS

1. GENERAL SPECIFICATIONS

- a. Ensure that the camera:
 - (1) Is a dome or positional type as specified in the pre-bid site walk.
 - (2) Is compatible with encoder integral to IP camera.
 - (3) Has Electronic Image Stabilization
 - (4) Has Compass Direction
 - (5) ONVIF Compatible
 - (6) NTCIP Complaint
 - (7) Built-in Analytics
 - (8) Compatible with Supplied NVR
 - (9) 1 year Manufacturer Warranty
 - (10) 1 year Installation Warranty on all workmanship
 - (11) Minimum 60 PPF Image (or as noted per Camera List/Drawing)

2. SUBMITTALS

- a. Product Data
 - (1) Manufacturer’s printed or electronic data sheets
 - (2) Manufacturer’s installation and operation manuals
 - (3) Warranty documentation

3. QUALIFICATIONS

- a. Manufacturer shall have a minimum of five years’ experience in producing IP video equipment.

4. DELIVERY, STORAGE AND HANDLING

- a. Deliver the camera in the manufacturer's original, unopened, undamaged container with identification labels intact.
- b. Store the camera in a temperature environment specified in section 2.04 Detailed Specification, protected from mechanical and environmental conditions as designated by the manufacturer.

5. WARRANTY, LICENSING AND SUPPORT

- a. Manufacturer shall provide at least a limited 1 year warranty for the product to be free of defects in material and workmanship.
- b. Manufacturer shall provide embedded camera video analytics free of license charges.

DD. PRODUCTS

1. EQUIPMENT

- a. Manufacturer: Design based on Hanwha Techwin (Samsung)
- b. Models listed on drawings under Attachment B
 - (1) Camera Type 1: PNM-9030V
 - (2) Camera Type 2: PND-9080R
 - (3) Camera Type 3: PNF-9010R
 - (4) Camera Type 4: PNV-9030V
 - (5) Camera Type 5: PNP-9200RH
- c. Alternates: No Camera alternates will be accepted for this project.
- d. All proposed equipment must meet the National Defense Authorization Act.

2. CAMERA TYPE 1: PNM-9030V

WISENET P series

PNM-9030V

15MP Multi-sensor Panoramic Camera

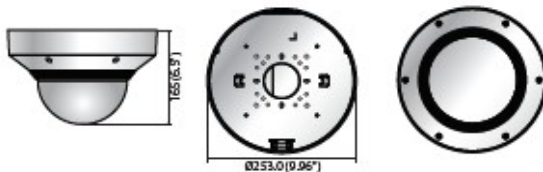


Key Features

- Max. 15M (6096x2540@180°, 7744x1936@220°) resolution
- 180°/220° panoramic stitching image
- Panoramic stitching, original, crop view channel support
- Max. 30fps at all resolutions (H.265/H.264)
- H.265, H.264, MJPEG codec, WiseStream II supported
- Tampering, Loitering, Directional detection, Virtual line, Enter / Exit, (Dis)Appear, Audio detection, Motion detection, Handover, Sound classification, Heatmap
- micro SD/SDHC/SDXC 2 slots, PoE+, IP66, IK10

Dimensions

Unit : mm (inch)



Accessories (Optional)



PNM-9030V

VIDEO	
Imaging Device	1/2.8" 5M CMOS x 4CH
Total Pixels	2,704(H) x 2,104(V) 5.69M x 4CH
Effective Pixels	2,616(H) x 1,964(V) 5M x 4CH
Scanning System	Progressive scan
Min. Illumination	Color : 0.15lux (F2.0, 1/30sec, 30IRE) / B/W : 0.01lux (F2.0, 1/30sec, 30IRE)
Video Out	Micro USB Type B
LENS	
Focal Length (Zoom Ratio)	4mm
Max. Aperture Ratio	F2.0
Angular Field of View	[180° mode] H : 180°, V : 70° / [220° mode] H : 220°, V : 52°
Min. Object Distance	3m (9.84ft)
Focus Control	Fixed
Mount Type	Board-in type (M12)
PAN / TILT / ROTATE	
Pan / Tilt Range	355° / 60°
OPERATIONAL	
Camera Title	Off / On (Displayed up to 75 characters) - W/W : English / Numeric / Special characters - China : English / Numeric / Special / Chinese characters - Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution
Day & Night	Auto (ICR) / Color / B/W / Schedule
Backlight Compensation	Off / BLC / WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR III (2D+3D noise filter) (Off / On)
LDC	Support
Motion Detection	Off / On (8ea, 8 point polygonal zones), Handover Off / On (16ea, rectangle zones)
Privacy Masking	- Color : Grey / Green / Red / Blue / Black / White - Mosaic
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
Contrast	Level adjustment
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1 / 12,000sec)
Defog	Off / Manual / Auto
Digital PTZ	Support
Flip / Mirror	Off / On
Intelligent Video Analytics	Tampering, Loitering, Directional detection, Virtual line, Enter/Exit, (Dis)Appear, Audio detection, Motion detection, Sound classification, Heatmap
Alarm I / O	Input 1ea / Output 1ea
Audio In	Line in Supply voltage : 2.5VDC (4mA), Input impedance : approx. 2K Ohm
Audio out	Line out (3.5mm stereo mini jack)
Alarm Triggers	Alarm input, Motion detection, Video&Audio analytics, Network disconnect
Alarm Events	File upload via FTP, E-Mail / Notification via E-Mail Local storage (SD / SDHC / SDXC) or NAS recording at event triggers External output
Pixel Counter	Support
NETWORK	
Ethernet	RJ-45 (10/100/1000 BASE-T)

PNM-9030V

Video Compression Format	H.265 : Main, H.264 : Main/Baseline/High, MJPEG
Resolution	[180° mode] 6096x2540, 5760x2400, 5472x2280, 5184x2160, 4800x2000, 4560x1900, 4096x1704, 3840x1600, 2688x1120, 2560x1064, 2048x852, 1920x800, 1280x532, 640x264 [220° mode] 7744x1936, 6096x1524, 5760x1440, 5472x1368, 5184x1296, 4800x1200, 4560x1140, 4096x1024, 3840x960, 2688x672x 2560x640, 2048x512, 1920x480, 1280x320, 640x160
Max. Framerate	H.265/H.264 : Max. 30fps at all resolutions MJPEG : Max. 15fps at under 2MP
Smart Codec	Manual mode (Area-based : 5ea)
WiseStream II	Support
Video Quality Adjustment	H.264/H.265/MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.264/H.265 : CBR or VBR, Motion JPEG : VBR
Streaming Capability	Multiple Streaming (Up to 5 for panoramic and 3 profiles for original and crop CH)
Audio Compression Format	G.711 u-law / G.726 Selectable, G.726 (ADPCM) 8KHz, G.711 8KHz, G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC : 48Kbps at 16KHz
Audio Communication	Bi-directional (2-Way)
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, LLDP
Security	HTTPS(SSL) login authentication, Digest login authentication, IP address filtering, User access log, 802.1X authentication (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	15 users at unicast mode
Edge Storage	Micro SD/SDHC/SDXC 2slot (up to 512GB) - Motion images recorded in the micro SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for instant recording
Application Programming Interface	ONVIF Profile S/G SUNAPI(HTTP API)
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungary, Greek
Web Viewer	Supported OS : Windows 8.1, 10, Mac OS X 10.10, 10.11, 10.12 Supported Browser : Google Chrome 63, MS Edge 41, Mozilla Firefox 57 (Windows 64bit only), Apple Safari 11 (Mac OS X only)
Central Management Software	Smart viewer, SSM
ENVIRONMENTAL	
Operating Temperature / Humidity	-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH * Start up should be done at above -30°C
Storage Temperature / Humidity	-40°C ~ +60°C (-40°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
ELECTRICAL	
Input Voltage / Current	PoE+(IEEE802.3at Class4), DC12V
Power Consumption	Max. 25.5W (PoE+), Max. 21.0W (DC12V)
MECHANICAL	
Color / Material	Ivory / Aluminum
Dimension (WxHxD)	Ø253 x H165mm (9.96" x 6.5")
Weight	3.2Kg (7.1lb)

* The latest product information / specification can be found at hanwha-security.com

* Design and specifications are subject to change without notice.

* Wisenet is the proprietary brand of **Hanwha Techwin**.

3. CAMERA TYPE 2: PND-9080R

WISENET P

PND-9080R

4K Network IR Dome Camera

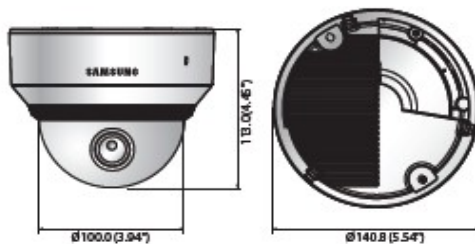


Key Features

- Max. 12 megapixel (4000 x 3000) resolution
- Max. 20fps@12M, Max. 30fps@8M
- 0.3Lux@F1.6 (Color), 0Lux (B/W: IR LED on)
- 4.5 ~ 10mm (2.2x) motorized varifocal lens
- H.265, H.264, MJPEG support
- Day & Night (ICR), WDR (120dB), Simple focus, P-Iris
- Motion detection, Defocus detection, Tampering
- SD/SDHC/SDXC memory slot (Max. 128GB), NAS, Local PC support
- Hallway view (Rotate 90° / 270°)
- WiseStream support, Digital auto tracking
- IK08, Bi-directional audio support

Dimensions

Unit : mm (Inch)



Accessories (Optional)



PND-9080R	
VIDEO	
Imaging Device	1/1.7" 12.4M CMOS
Total Pixels / Effective Pixels	4,168(H) x 3,062(V) / 4,072(H) x 3,046(V)
Scanning System	Progressive
Min. Illumination	Color: 0.3Lux (1/30sec, F1.6, 30IRE), 0.01Lux (2sec, F1.6, 30IRE) B/W: 0Lux (IR LED on)
S/N Ratio	50dB
Video Output	CVBS: 1.0Vpp / 75Ω composite, 714 x 480(N), 702 x 576(P), for installation DIP connector type
LENS	
Focal Length (Zoom Ratio)	4.5 ~ 10mm (2.2x) motorized varifocal
Max. Aperture Ratio	F1.6
Angular Field of View	[4096 x 2160] H: 100.3°(Wide) ~ 45.6°(Tele) / V: 49.7°(Wide) ~ 24.0°(Tele) [3840 x 2160] H: 92.3°(Wide) ~ 42.6°(Tele) / V: 49.7°(Wide) ~ 24.0°(Tele)
Min. Object Distance	0.5m (1.64ft)
Focus Control	Simple focus (Motorized WF) / Manual, Remote control via network (Manual, Simple focus)
Lens Type / Mount Type	P-Iris mode / Board-In type
PAN / TILT / ROTATE	
Pan / Tilt / Rotate Range	0° ~ 354° / 0° ~ 67° / 0° ~ 352°
OPERATIONAL	
IR Viewable Length	30m (98.43ft)
Camera Title	Off / On (Displayed up to 60 characters) - W/W: English / Numeric / Special characters - China: English / Numeric / Special / Chinese characters - Common: Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	55NR (2D+3D noise filter) (Off / On)
Defog	Off / Auto / Manual
Motion Detection	Off / On (Sea, Polygonal)
Privacy Masking	Off / On (16ea, Polygonal) - Color: Gray / Green / Red / Blue / Black / White
Gain Control	Off / Low / Middle / High
White Balance	AW / AWC / Manual / Indoor / Outdoor (Include mercury & Sodium)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Flip / Mirror	Off / On, Hallway: 90° / 270°
Intelligent Video Analytics	Tampering (Scene change), Virtual line, Enter / Exit, (Dis)Appear, Audio detection, Defocus detection, Digital auto tracking - With metadata
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm input, Motion detection, Video analytics, Audio detection, Network disconnect
Alarm Events	File upload via FTP and E-mail, Notification via E-mail
Pixel Counter	Local storage (SD/SDHC/SDXC) or NAS recording at event triggers, External output Support (Plug-in viewer only)
NETWORK	
Ethernet	RJ-45 (10/100/1000BASE-T)
Video Compression Format	H.265 / H.264 (MPEG-4 part 10/AVC) : Main / Baseline / High, MJPEG (8M mode) 4096 x 2160, 3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240 (12M mode) 4000 x 3000, 3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240
Resolution	H.265 / H.264 : 20fps@4000 x 3000, 30fps@4096 x 2160 MJPEG : 2fps@4000 x 3000 ~ 2592 x 1464, 15fps@1920 x 1080 ~ 320 x 240
Max. Framerate	H.265 / H.264 : 20fps@4000 x 3000, 30fps@4096 x 2160 MJPEG : 2fps@4000 x 3000 ~ 2592 x 1464, 15fps@1920 x 1080 ~ 320 x 240
Smart Codec / WiseStream	Manual mode (Area-based - Sea) / Support
Video Quality Adjustment	H.265 / H.264 : Target bitrate level control, MJPEG : Quality level control
Bitrate Control Method	H.265 / H.264 : CBR or VBR, MJPEG : VBR
Streaming Capability	Multiple streaming (Up to 3 profiles)
Audio In	Selectable (Mic in / Line in / Built-in mic), Supply voltage: 2.5V DC (4mA), Input impedance: approx. 2K Ohm
Audio Out	Line out (3.5mm mono jack), Max output level: 1Vrms
Audio Compression Format	G.711 u-law/G.726 selectable, G.726 (ADPCM) 8KHz, G.711 8KHz, G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC: 48Kbps at 16KHz
Audio Communication	Bi-directional audio (2-way)
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP/UDP, RTP (TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, URNP, Bonjour, HTTPTS (SSL) login authentication, Digest login authentication
Security	IP address filtering, User access log, 802.1x authentication (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	15 users at unicast mode
Edge Storage	SD/SDHC/SDXC (128GB) - Motion images recorded in the SD/SDHC/SDXC memory card can be downloaded. Camera can detect automatically when the memory is connected. Memory status display (Normal / Error / Active / Formatting / Lock) NAS (Network Attached Storage), Local PC for instant recording (Plug-in viewer only)
Application Programming Interface	ONVIF profile S/G, SUNAPI (HTTP API), S/NP, WISENET Open Platform
Webpage Language	English, French, German, Spanish, Italian, Chinese, Russian, Japanese, Swedish, Portuguese, Turkish, Polish, Czech, Dutch, Hungarian, Greek Supported OS: Windows 7, 8.1, 10, Mac OS X 10.9, 10.10, 10.11
Web Viewer	Plug-in free Webviewer - Supported Browser: Google Chrome 47, MS Edge 20 Plug-in Webviewer - Supported Browser: MS Explore 11, Mozilla Firefox 43, Apple Safari 9* Mac OS X only
Central Management Software	SmartMewer
ENVIRONMENTAL	
Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH * Start up should be done at above -10°C (14°F)
Storage Temperature / Humidity	-40°C ~ +60°C (-40°F ~ +140°F) / Less than 90% RH
Vandal Resistance	IK08
ELECTRICAL	
Input Voltage / Current	12V DC, PoE (IEEE802.3af, Class3)
Power Consumption	12V DC: Max. 9.5W, PoE: Max. 10.5W
MECHANICAL	
Color / Material	Ivory / Polycarbonate (PC) + Aluminum
Dimensions (WxH) / Weight	Ø140.8 x 113.0mm (Ø5.54" x 4.45") / 610g (1.34lb)

* The latest product information / specification can be found at hanwha-security.com

4. CAMERA TYPE 3: PNF-9010R

WISENET P

PNF-9010R/9010RV/9010RVM

4K Fisheye Camera



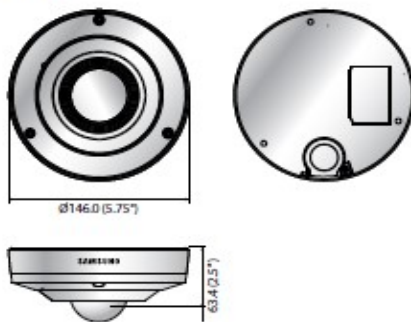
Key Features

- 12 Megapixel (4000 x 3000) Resolution
- H.265, H.264, MJPEG Codec
- Variable View Mode (Fishyeye, Single Panorama, Double Panorama, Quad View Etc)
- On Board Dewarping, Digital PTZ (16x) / Bi-Directional Audio
- True WDR (120dB), WiseStream
- People Counting, Heatmap, Defocus Detection
- Micro SD / SDHC / SDXC (Max. 128GB), PoE

	PNF-9010R	PNF-9010RV	PNF-9010RVM
M12 Connector			✓
IK10, IP66		✓	✓

Dimensions

Unit : mm (Inch)



Accessories (Optional)



	PNF-9010R	PNF-9010RV	PNF-9010RVM
VIDEO			
Imaging Device	1/1.7" 12-AMP CMOS		
Total Pixels / Effective Pixels	4,168 x 3,062 / 2,992 x 2,992		
Scanning System	Progressive		
Minimum Illumination	Color: 0.3Lux (F2.2, 30IRE), B/W: 0Lux (IR LED on)		
S/N Ratio	50dB		
Video Output	CVBS: 1.0Vpp / 75Ω Composite, 714x 480 for installation, DVP Connector Type		
LENS			
Focal Length / Max. Aperture Ratio	2.1mm Fixed / F2.2		
Angular Field of View	H: 180° / V: 180° / D: 180°		
Min. Object Distance	0.5m (1.64ft)		
Focus Control	Simple Focus / Manual - Remote Control via Network		
Lens Type / Mount Type	Fixed Lens / Board Type		
OPERATIONAL			
IR Viewable Length	15m (49.21ft)		
Camera Title	Off / On (Displayed up to 60 characters) - English / Numeric / International characters / Special characters - Common: Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution		
Day & Night	Auto (ICR) / Color / B/W / External / Schedule		
Backlight Compensation	Off / BLC / WDR		
Wide Dynamic Range	120dB		
Contrast Enhancement	SSDR (Off / On)		
Digital Noise Reduction	SSNR (2D+3D noise filter) (Off / On)		
Defog	Off / Auto / Manual		
Motion Detection	Off / On (8ea Polygonal Zones)		
Privacy Masking	Off / On (8ea Polygonal) - Color: Gray / Green / Red / Blue / Black / White		
Gain Control	Off / Low / Middle / High		
White Balance	ATW / AWB / Manual / Indoor / Outdoor		
Electronic Shutter Speed	Minimum / Maximum / Anti Flicker		
Digital Zoom	16x, Digital PTZ (Preset, Group)		
Flip / Mirror	Off / On		
Intelligent Video Analytics	Tampering, Virtual Line, Enter/Exit, (DIS) Appear, Audio Detection, Defocus Detection		
Alarm I/O	Input 1ea / Output 1ea		
Alarm Triggers	Alarm Input, Motion Detection, Video Analytics, Audio Detection, Network Disconnect, SD Card Error, NAS Error		
Alarm Events	File upload via FTP and E-mail, Notification Via E-mail, Local Storage (SD / SDHC / SDXC) or NAS Recording at Event Triggers, External output		
Viewing Composition	Camera Side: Fisheye, Single Panorama, Double Panorama, Fisheye + 4 PTZ Quad View, Fisheye + 8 PTZ		
Pixel Counter	Support (Plug-in Viewer only)		
NETWORK			
Ethernet	RJ-45 (10 / 100 / 1000 BASE-T)		
Video Compression Format	H.265 / H.264 / MJPEG		
Resolution	Double Panorama: 2560 x 1280, 1920 x 960, 1280 x 640, 704 x 352, 640 x 320 Single Panorama: 2560 x 640, 1920 x 480, 1280 x 320, 704 x 176, 640 x 160 Quad View: 2944 x 2208, 2560 x 1920, 2048 x 1536, 1600 x 1200, 1280 x 960, 1024 x 768, 800 x 600, 704 x 576, 640 x 480		
Maximum Framerate	H.265 / H.264: 20fps@4000x3000, 25fps@under 2992x2992, MJPEG: Max. 15fps		
Smart Codec / WiseStream	Manual mode (Area-Based - Sea) / Support		
Video Quality Adjustment	H.265 / H.264: Target Bitrate level Control, MJPEG: Quality Level Control		
Bitrate Control Method	H.265 / H.264: CBR or VBR, MJPEG: VBR		
Streaming Capability	Multiple streaming (Up to 3 profiles)		
Audio In	Selectable (Mic In / Line In / Built-in Mic) Supply Voltage: 2.5VDC (5mA), Input Impedance: Approx. 2K Ohm		
Audio Out	Line Out (3.5mm Mono Jack), Max output level: 1 Vrms		
Audio Compression Format	G.711 u-law/G.726 Selectable, G.726 (ADPCM) 8KHz, G.711 8KHz, G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC: 48Kbps at 16KHz		
Audio Communication	Bi-Directional		
IP	IPv4, IPv6		
Protocol	TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTCP, RTPSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, SIP		
Security	HTTPS/SSL Login Authentication, Digest Login Authentication IP Address Filtering, User Access log, 802.1x Authentication (EAP-TLS, EAP-LEAP)		
Streaming Method	Unicast / Multicast		
Maximum User Access	15 users at Unicast Mode SD/SDHC/SDXC (up to 128GB) - Motion Images Recorded in the SD/SDHC/SDXC Memory Card can be Downloaded - Camera can Detect Automatically when the memory is Connected - Memory Status Display (Normal / Error / Active / Formatting / Lock) - NAS (Network Attached Storage), Local PC for Instant Recording (Plug-in Viewer Only)		
Application Programming Interface	ONVIE Profile S/G, SUNAPI (HTTP API) v2.0, Wisenet Open Platform		
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Turkish, Polish, Czech, Dutch, Hungarian, Greek		
Web Viewer	Supported OS: Windows 7, 8.1, 10, Mac OS X 10.9, 10.10, 10.11 Plug-in Free Webviewer - Supported Browser: Google Chrome 47, MS Edge 20 Plug-in Webviewer - Supported Browser: MS Explorer 11, Mozilla Firefox 43, Apple Safari 9 * Max OS X only		
Central Management Software	Wisenet WAVE SmartViewer		
ENVIRONMENTAL			
Operating Temperature / Humidity	-10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH (PNF-9010R) -40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH (PNF-9010RV/9010RVM) * Start up should be done at above: -35°C (-31°F)		
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH		
Ingress Protection	N/A (PNF-9010R) IP66 (PNF-9010RV/9010RVM)		
Vibration Resistance	EN55011:2009+A1:2010, EN50581:2012, EN50121-3-2:2015, EN61000-4-2:2009, EN61000-4-3:2006+A2:2010, EN61000-4-4:2012, EN61000-4-5:2014, EN61000-4-6:2009		
Vandal Resistance	IK10		
ELECTRICAL			
Input Voltage / Current	12V DC ±10%, PoE (IEEE802.3at, Class3)		
Power Consumption	12V DC: Max. 11W, PoE: 12W (PNF-9010R) 12V DC: Max. 12W, PoE: 12.95W (PNF-9010RV/9010RVM)		
MECHANICAL			
Color / Material	Ivory / Metal		
Dimensions (WxDH)	121.46.0 x 63.4mm (125.75" x 2.5")		
Weight	805g (1.77 lb) (PNF-9010R) 810g (1.79 lb) (PNF-9010RV) 1.815g (1.8 lb) (PNF-9010RVM)		

* The latest product information / specification can be found at hanwha-security.com
* Design and specifications are subject to change without notice.

5. CAMERA TYPE 4: PNV-9080R

WISENET P

PNV-9080R

4KVandal-Resistant Network IR Dome Camera

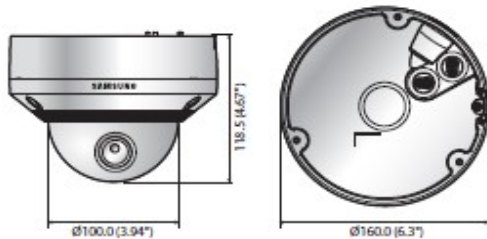


Key Features

- Max. 12 megapixel (4000 x 3000) resolution
- Max. 20fps@12M, Max.30fps@8M
- 0.3Lux@F1.6 (Color), 0Lux (B/W : IR LED on)
- 4.5 ~ 10mm (2.2x) motorized varifocal lens
- H.265, H.264, MJPEG support
- Day & Night (ICR), WDR (120dB), Simple focus, P-Iris
- Motion detection, Defocus detection, Tampering
- SD/SDHC/SDXC memory slot (Max, 128GB), NAS, Local PC support
- Halfway view (Rotate 90° / 270°)
- WiseStream support, Digital auto tracking
- IP66, IP67, IK10, Bi-directional audio support

Dimensions

Unit : mm (Inch)



Accessories (Optional)



	PNV-9080R
VIDEO	
Imaging Device	1/1.7" 12.4M CMOS
Total Pixels / Effective Pixels	4,168,000 x 3,062(V) / 4,072,000 x 3,046(V)
Scanning System	Progressive
Min. Illumination	Color : 0.3Lux (1/30sec, F1.6, 30IRE), 0.01Lux (2sec, F1.6, 30IRE) B/W : 0Lux (IR LED on)
S / N Ratio	50dB
Video Output	CVBS : 1.0Vpp / 75Ω composite, 714 x 480(N), 702 x 576(P), for installation DIP connector type
LENS	
Focal Length (Zoom Ratio)	4.5 ~ 10mm (2.2x) motorized varifocal
Max. Aperture Ratio	F1.6
Angular Field of View	[4096 x 2160] H : 100.3°(Wide) ~ 45.6°(Tele) / V : 49.7°(Wide) ~ 24.0°(Tele) [3840 x 2160] H : 92.3°(Wide) ~ 42.6°(Tele) / V : 49.7°(Wide) ~ 24.0°(Tele)
Min. Object Distance	0.5m (1.64ft)
Focus Control	Simple focus (Motorized V/F) / Manual, Remote control via network (Manual, Simple focus)
Lens Type / Mount Type	P-Iris mode / Board-in type
PAN / TILT / ROTATE	
Pan / Tilt / Rotate Range	0° ~ 354° / 0° ~ 67° / 0° ~ 355°
OPERATIONAL	
IR Viewable Length	40m (131.23ft)
Camera Title	Off / On (Displayed up to 60 characters) - W/W : English / Numeric / Special characters - China : English / Numeric / Special / Chinese characters - Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR (2D+3D noise filter) (Off / On)
Defog	Off / Auto / Manual
Motion Detection	Off / On (Bea, Polygonal)
Privacy Masking	Off / On (16ea, Polygonal) - Color : Gray / Green / Red / Blue / Black / White
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (Include mercury & Sodium)
Electronic Shutter Speed	Minimum / Maximum / Anti Flicker (2 ~ 1/1,000sec)
Flip / Mirror	Off / On, Halfway : 90° / 270°
Intelligent Video Analytics	Tampering (Scene change), Virtual line, Enter / Exit, (DIs)Appear, Audio detection, Defocus detection, Digital auto tracking - with metadata
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm input, Motion detection, Video analytics, Audio detection, Network disconnect
Alarm Events	File upload via FTP and E-mail, Notification via E-mail Local storage (SD/SDHC/SDXC) or NAS recording at event triggers, External output
Pixel Counter	Support (Plug-in viewer only)
NETWORK	
Ethernet	RJ-45 (10/100/1000BASE-T)
Video Compression Format	H.265 / H.264 (MPEG-4 part 10/AVC) : Main / Baseline / High, MJPEG (BM mode) 4096 x 2160, 3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240 (12M mode) 4000 x 3000, 3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240
Resolution	
Max. Framerate	H.265 / H.264 : 20fps@4000 x 3000, 30fps@4096 x 2160 MJPEG : 2fps@4000 x 3000 ~ 2592 x 1464, 15fps@1920 x 1080 ~ 320 x 240
Smart Codec / WiseStream	Manual mode (Area-based - Sea) / Support
Video Quality Adjustment	H.265 / H.264 : target bitrate level control, MJPEG : Quality level control
Bitrate Control Method	H.265 / H.264 : CBR or VBR, MJPEG - VBR
Streaming Capability	Multiple streaming (Up to 3 profiles)
Audio In	Selectable (Mic In / Line In), Supply voltage : 25VDC (4mA), Input impedance : approx. 2K Ohm
Audio Out	Line out (3.5mm mono jack), Max output level : 1Vrms
Audio Compression Format	G.711 u-law/G.726 selectable, G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC : 48Kbps at 16KHz
Audio Communication	Bi-directional audio (2-way)
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP/UDP, RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, CoS, PIM-SM, UPnP, Bonjour, HTTP(S) login authentication, Digest login authentication
Security	IP address filtering, User access log, 802.1x authentication (EAP-TLS, EAP-LEAP), Unicast / Multicast
Streaming Method	Unicast / Multicast
Max. User Access	15 users at unicast mode
Edge Storage	SD/SDHC/SDXC (128GB) - Motion images recorded in the SD/SDHC/SDXC memory card can be downloaded, Camera can detect automatically when the memory is connected, Memory status display (Normal / Error / Active / Formatting / Lock), NAS (Network Attached Storage), Local PC for instant recording (Plug-in viewer only)
Application Programming Interface	ONVIF profile S/G/C, SUNAPI (HTTP API), 5VNP, Wsenet Open Platform
Webpage Language	English, French, German, Spanish, Italian, Chinese, Russian, Japanese, Swedish, Portuguese, Turkish, Polish, Czech, Dutch, Hungarian, Greek Supported OS : Windows 7, 8.1, 10, Mac OS X 10.9, 10.10, 10.11 Plug-in free Webviewer - Supported browser : Google Chrome 47, MS Edge 20 Plug-in Webviewer - Supported browser : MS Explorer 11, Mozilla Firefox 43, Apple Safari 9 * Mac OS X only
Web Viewer	
Central Management Software	SmartViewer
ENVIRONMENTAL	
Operating Temperature / Humidity	-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH * Start up should be done at above -35°C (-31°F)
Storage Temperature / Humidity	-40°C ~ +60°C (-40°F ~ +140°F) / Less than 90% RH
Ingress Protection / Vandal Resistance	IP66, IP67 / IK10
ELECTRICAL	
Input Voltage / Current	24V AC : 1.2W DC, PoE (IEEE 802.3af, Class3) 12V DC : Max. 11.55W, PoE : Max. 12.95W, 24V AC (50/60Hz) : 14.08W - Heater on Power Consumption 12V DC : Max. 10.45W PoE : Max. 11.77W 24V AC (50/60Hz) : 12.43W - Heater off
MECHANICAL	
Color / Material	Ivory / Aluminum
Dimensions (WxD) / Weight	Ø160.0 x 118.5mm (Ø6.3" x 4.67") / 990g (2.18 lb)

* The latest product information / specification can be found at hanwha-security.com

6. CAMERA TYPE 5: PNP-9200RH

WISENET P

PNP-9200RH

4K 20x Network IR PTZ Dome Camera

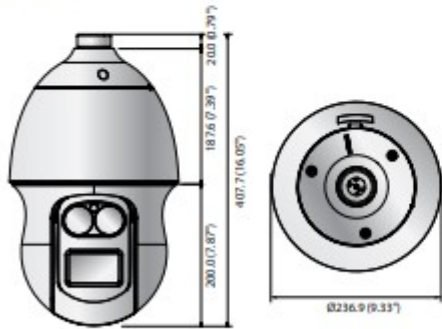


Key Features

- Max. 8megapixel (3840 x 2160) resolution
- Real 4K 20x IR corrected optical zoom, 16x digital zoom
- Max. Prest 400°/sec (Pan), 300°/sec (Tilt)
- H.265, H.264, MJPEG, WiseStream support
- Max. 30fps@4K (H.265, H.264)
- Max. IR viewable length : 200m
- Day & Night (ICR), WDR (120dB)
- Auto tracking, Intelligent video analytics
- SD/SDHC/SDXC memory slot (Max. 128GB)
- IP66, IK10, Bi-directional audio support

Dimensions

Unit : mm (inch)



Accessories (Optional)



SBP-300WM1 SBP-300WM SBP-300CM SBP-300LM SBP-300B SBP-300NB SBP-300PM SBP-300MM

PNP-9200RH	
VIDEO	
Imaging Device	1/2.5" BMC/CMOS
Total / Effective Pixels	3,840(H) x 2,160(V), 8.51M pixels / 3,840(H) x 2,160(V), 8,00M pixels
Scanning System	Progressive
Min. Illumination	Color : 0.3Lux / F1.8 (1/30sec, F1.8, 50IRE), 0.005Lux (2sec, F1.8, 50IRE) 0.1Lux / F1.8 (1/30sec, F1.8, 30IRE), 0.0005Lux (2sec, F1.8, 30IRE)
S / N Ratio	50dB
Video Output	CVBS-1.0Vpp / 75Ω composite, 720 x 480(N), 720 x 576(P), for installation
LENS	
Focal Length (Zoom Ratio)	4.8 ~ 96mm (Optical 20x)
Max. Aperture Ratio	F1.8(Wide) / F3.6(Tele)
Angular Field of View	H: 65.1° (Wide) ~ 3.8° (Tele) / V: 38.4° (Wide) ~ 2.2° (Tele)
Min. Object Distance	1.5m (4.92ft)
Focus Control	AF / One-shot AF / Manual
Lens / Mount Type	DC auto lens (IR corrected) / Board-in type
PAN / TILT	
Pan Range / Speed	360° Endless / Preset : 400°/sec, Manual : 0.074°/sec ~ 250°/sec
Tilt Range / Speed	190° L/S ~ 185° T / Preset : 300°/sec, Manual : 0.024°/sec ~ 250°/sec
Sequence / Preset Accuracy	Preset (1000s), Swing (Group level), Trace, Tour, Auto run, Schedule / ±0.2°
Altimuth	Yes (E / W / S / N / NE / SE / NW / SW / Sd)
Auto Tracking	Off / On
OPERATIONAL	
Viewable Length	200m (656.17ft)
Camera Title	Off / On (Displayed up to 60 characters) - WW : English / Numeric / Special characters - Korea : English / Numeric / Special / Korean characters - China : English / Numeric / Special / Chinese characters - Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution
Day & Night	Auto (ICR) / Color / B/W
Backlight Compensation	Off / BLC / WDR
Wide Dynamic Range	120dB
Contrast Enhancement	55dB (Off / On)
Digital Noise Reduction	55NR (2D+3D noise filter) (Off / On)
Image Stabilization	Mechanical anti-vibration
Defog	Off / Auto / Manual
Motion Detection	Off / On (4ea. Polygonal zones)
Privacy Masking	Off / On (16ea. Rectangular zones) - Color : Grey / Green / Red / Blue / Black / White, - Zoom ratio option for mask mode
Gain Control	Off / Low / Medium / High
White Balance	AWB / BAW / Manual / Indoor / Outdoor / Mercury / Sodium
Electronic Shutter Speed	Minimum / Maximum / Anti Flicker P ~ 1/3,2,000sec
Digital Zoom	16x, area zoom function support digital zoom 2x
Flip / Mirror	Off / On
Intelligent Video Analytics	Tampering, Virtual line, Enter / Exit, (Dis)Appear, Audio detection - with metadata
Alarm I/O	(Input 4ea / Output 2ea) (Relay type)
Remote Control Interface	RS-485/422
RS-485 Protocol	Samsung/T/E, Pelco-P/D, Panasonic, Honeywell, AD, Vicon, Bosch, GE
Alarm Triggers	Alarm input, Motion detection, Intelligent video analytics, Network disconnect
Alarm Events	File upload via FTP and E-mail, Notification via E-mail, Local storage (SD/SDHC/SDXC) or NAS recording at event triggers, External output, PTZ preset
Reset Counter	Support (Plug-in viewer only)
NETWORK	
Ethernet	10/45/100/1000BASE-T1, SFP (P only using SBP-300RH)
Video Compression Format	H.265 / H.264 (MPEG-4 part 10/AVC) : Main / Baseline / High, MJPEG
Resolution	3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 450, 720 x 576, 640 x 480, 640 x 360, 320 x 240, 320 x 180
Max. Framerate	H.265 / H.264 : 30fps at all resolutions, MJPEG : 15fps at all resolutions
Smart Codec / WiseStream	Manual mode (Area-based / Seal / Support)
Video Quality Adjustment	H.265 / H.264 : Target bitrate level control, MJPEG : Quality level control
Bitrate Control Method	H.265 / H.264 : CRF or VBR, MJPEG : VBR
Streaming Capability	Multiple streaming (Up to 3 profiles)
Audio In	Selectable 2line in / 1line in, Supply voltage : 2V/DC (4mA) input impedance : approx. 2K Ohm
Audio Out	Line out (3.5mm stereo mini jack), Max output level : 1.0Vrms
Audio Compression Format	G.711 u-law/G.726 selectable, G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC : 48Kbps at 16KHz
Audio Communication	Bi-directional audio (2-way)
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP/UDP, RTP/RTCP, RTSP, RTPSE, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB 2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
Security	HTTPS(SSL) login authentication, Digest login authentication IP address filtering, User access log, 802.1x authentication (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	15 users at unicast mode
Edge Storage	SD/SDHC/SDXC (128GB) - Motion images recorded in the SD/SDHC/SDXC memory card can be downloaded. Camera can detect automatically when the memory is connected. Memory status display (Normal / Error / Active / Formatting / Lock), NAS (Network Attached Storage), Local PC for instant recording (Plug-in viewer only)
Application Programming Interface	ONVIF profile S/G, SUNAPI (HTTP API), ONVIF 1.2, Wisenet Open Platform
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Danish, Portuguese, Turkish, Polish, Czech, Romanian, Serbian, Dutch, Croatian, Hungarian, Greek, Norsk, Finnish Supported OS : Windows 7, 8.1, 10, Mac OS X 10.9, 10.10, 10.11 Plug-in free Webviewer - Supported Browser : Google Chrome 47, MS Edge 20 Plug-in Webviewer - Supported Browser : MS Explore 11, Mozilla Firefox 43, Apple Safari 9* Mac OS X only
Web Viewer	
Control/Management Software	SmartViewer
ENVIRONMENTAL	
Operating Temperature / Humidity	-50°C ~ +55°C (-58°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +142°F) / Less than 90% RH
Ingress Protection / Vandal Resistance	IP66 / IK10
ELECTRICAL	
Input Voltage / Current	24V AC
Power Consumption	Max. 60W/90W (Heater off/on, IR on)
MECHANICAL	
Color / Material	ivory, Black / Aluminum, Plastic
Dimensions (WxH / Weight)	82.36 x 407.7mm (WxH) / 1.1kg (US 2.42lb)

* The latest product information / specification can be found at hanwha-security.com
* Design and specifications are subject to change without notice.

EE. EXECUTION

1. INSTALLERS

- a. Contractor personnel shall comply with all applicable state and local licensing and permitting requirements.

2. PREPARATION

- a. The network design and configuration shall be verified for compatibility and performance with the camera(s).
- b. Network configuration shall be tested and qualified by the Contractor prior to camera installation.
- c. All firmware found in products shall be the latest and most up-to-date provided by the manufacturer, or of a version as specified by the provider of the Video Management Application (VMA) or Network Video Recorder (NVR).

3. INSTALLATION

- a. Contractor is responsible for full installation of each camera, monitor, and decoder, and full connection to the patch panel.
- b. Contractor shall focus each camera and mask each camera as directed by the Owners Authorized Representative.
- c. ODOT will connect the patch panel to the NVR.
- d. The Contractor shall carefully follow instructions in documentation provided by the manufacturer to insure all steps have been taken to provide a reliable, easy-to-operate system.
- e. All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.
- f. Before permanent installation of the system, the Contractor shall test the system in conditions simulating the final installed environment.
- g. Camera cables shall be Cat6 Orange jacket. Jacket type will be by ceiling space as required by code.
- h. Cables should be labeled at each end with camera ID, location.
- i. Cables must be installed and be free of any kinks or splices.
- j. Each camera must have 15 feet of Cat6 cable slack.
- k. Coordinate camera ID nomenclature with ODOT PM
- l. Furnish Site Graphic with camera location and ID for easy user interface.
- m. Provide identification labels for all wiring devices, including switches and Patch Panels. Labels shall be pressure sensitive adhesive machine typewritten 1/8" black letters indicating switch, port and camera ID. Label the Switch and patch panel "Video Surveillance System"
- n. Label the ports
- o. Strap cables as necessary to organize and reduce clutter.
- p. Install video surveillance signs per Attachment B.

4. STORAGE

- a. The hardware shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

5. WARRANTY

- a. Contractor shall provide a 1 year Installation warranty on all workmanship.

6. CAMERA SETUP

- a. Contractor shall focus each camera at the direction of the Owners Authorized Representatives.
- b. All camera Username and Password shall be set as follows:
 - (1) Username: Admin
 - (2) Password: ODOT.cam

TESTING, IDENTIFICATION, AND ADMINISTRATION

PART 1 – DESCRIPTION, QUALITY ASSURANCE, AND SUBMITTAL

1.1 DESCRIPTION

- A. All testing and identification is to be completed.
- B. Documentation is to cover all parts of the cabling system, equipment, and locations.

1.2 QUALITY ASSURANCE

- A. All labels are to match from cable to outlet to As-Built.
- B. All labels are to be made by means of a permanent printable label.
- C. See Section 17010 for additional requirements.
- D. Code Requirements:
 - 1. BISCI **TDMM**, Latest edition
 - 2. TINEIA-606 Administration Standard for Commercial Telecommunications Infrastructure
 - 3. TINEIA 5688.2-1 (all addendums)
 - 4. TSB-72
 - 5. ANIS/TINEIA-568-A (all addendums)

1.3 SUBMITTALS

- A. Submit product data for all equipment to be used for testing and labeling.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Any manufacturer of tester that meet the current Category 6 test parameters.
- B. Fiber optic testers
 - 1. Power Meter

PART 3 - TESTING AND ADMINISTRATION

3.1 TESTING

- A. Testing will be completed per Industry Standard for cable type to be tested. TIA/EIA- 568-8.1 (category 5e) and TIA/EIA-568-8.2-1 (category 6) ISO/IEC 11801:2002 2nd Edition (classes D, E and F)
- B. Tie Cable Testing
 - 1. Wire-map
 - 2. Length
 - 3. Cable faults
- C. Fiber Testing
 - 1. Power Meter One way
 - 3. Test at 850 & 1300
 - 4. Must meet acceptance values as stated by ANSI/TIA/EIA-568-B.1
- D. All Testing
 - 1. All systems to be 100% tested

3.2 DOCUMENTATION

A. Tests that do not generate a report.

1. Give 1 week written notice, to the Owner Representative (Eric Spond, Eric.SPOND@odot.state.or.us) of test day and confirm the test schedule Owner Representative and ODOT staff may witness the tests.

3.3 ADMINISTRATION

A. Plans

1. Indicate for all systems
 - a. Equipment list for all locations
 - b. Camera number and type
2. Furnish Camera As-built plans on PDF format.

B. Labeling

1. Labeling will be done by means of a mechanical device i.e. printer, P-Touch, or other printing device. Hand written labels are not acceptable.

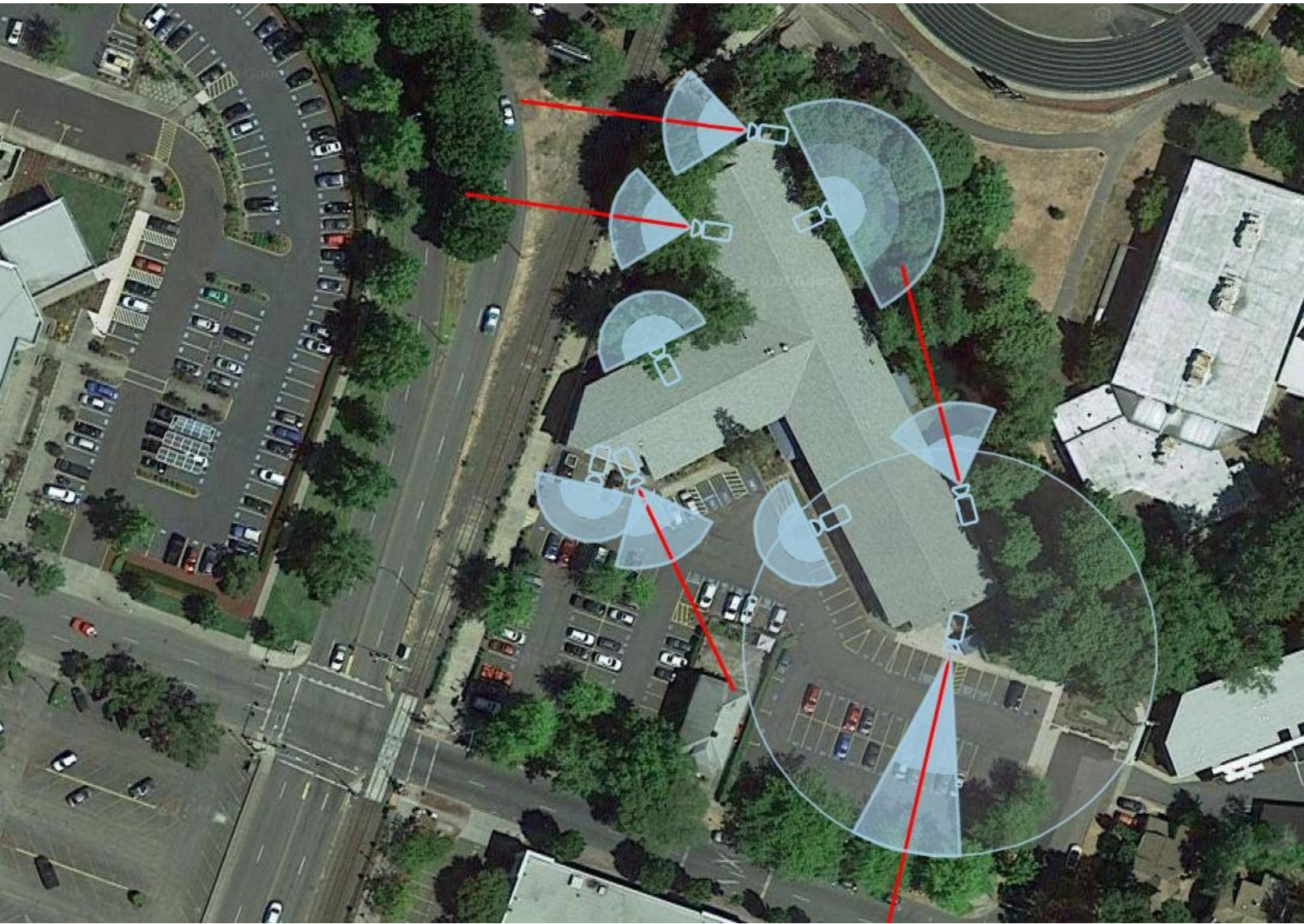
Mill Creek Camera Layout

10 Cameras

Camera Accessories & Labeling

Mill Creek Camera System				
BID Drawing Camera #	Camera Location	Camera Label	Camera Type	Accessories
1	SE Parking Lot	R2_F8240101_SE.Parking	PNM-9030V	Ext.WallMount/VandalCover/ Weather Cover
2	SW Parking Lot	R2_F8240101_SW.Parking	PNV-9080R	Ext.WallMount/VandalCover/ Weather Cover
3	West Employee Exit	R2_F8240101_W.Emp.Exit	PNM-9030V	Ext.WallMount/VandalCover/ Weather Cover
4	North Bike Rack	R2_F8240101_N.Bike	PNM-9030V	Ext.WallMount/VandalCover/ Weather Cover
5	East Pathway	R2_F8240101_E.Path	PNV-9080R	Ext.WallMount/VandalCover/ Weather Cover
6	North East Bike Rack	R2_F8240101_NE.Bike	PNV-9080R	Ext.WallMount/VandalCover/ Weather Cover
7	North Creek	R2_F8240101_N.Creek	PNM-9030V	Ext.WallMount/VandalCover/ Weather Cover
8	South Creek	R2_F8240101_S.Creek	PNV-9080R	Ext.WallMount/VandalCover/ Weather Cover
9	Parking Entrance	R2_F8240101_ParkingPTZ	PNP-9200RH	Ext.WallMount/VandalCover/ Weather Cover
10	Main Entrance	R2_F8240101_MainEntran	PND-9080R	Ceiling Mount

Exterior Overview



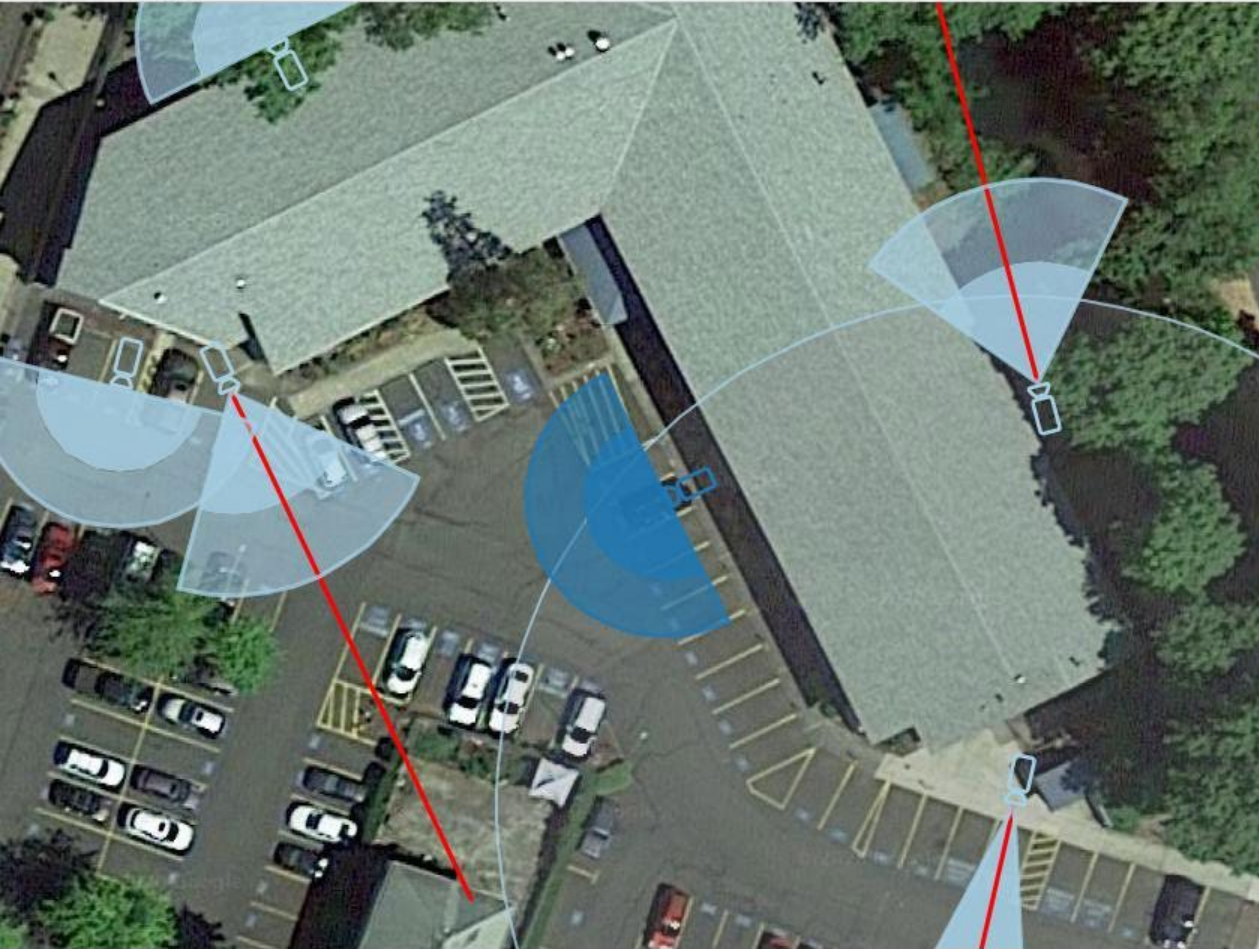
Camera 1



Model: Hanwha PNM-9030V Resolution: 6096x2540

HFoV: 180° Distance: 32ft Width: 101.6ft PPF: 60.0

Imager: 1/2.8" Focal Length: 4mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



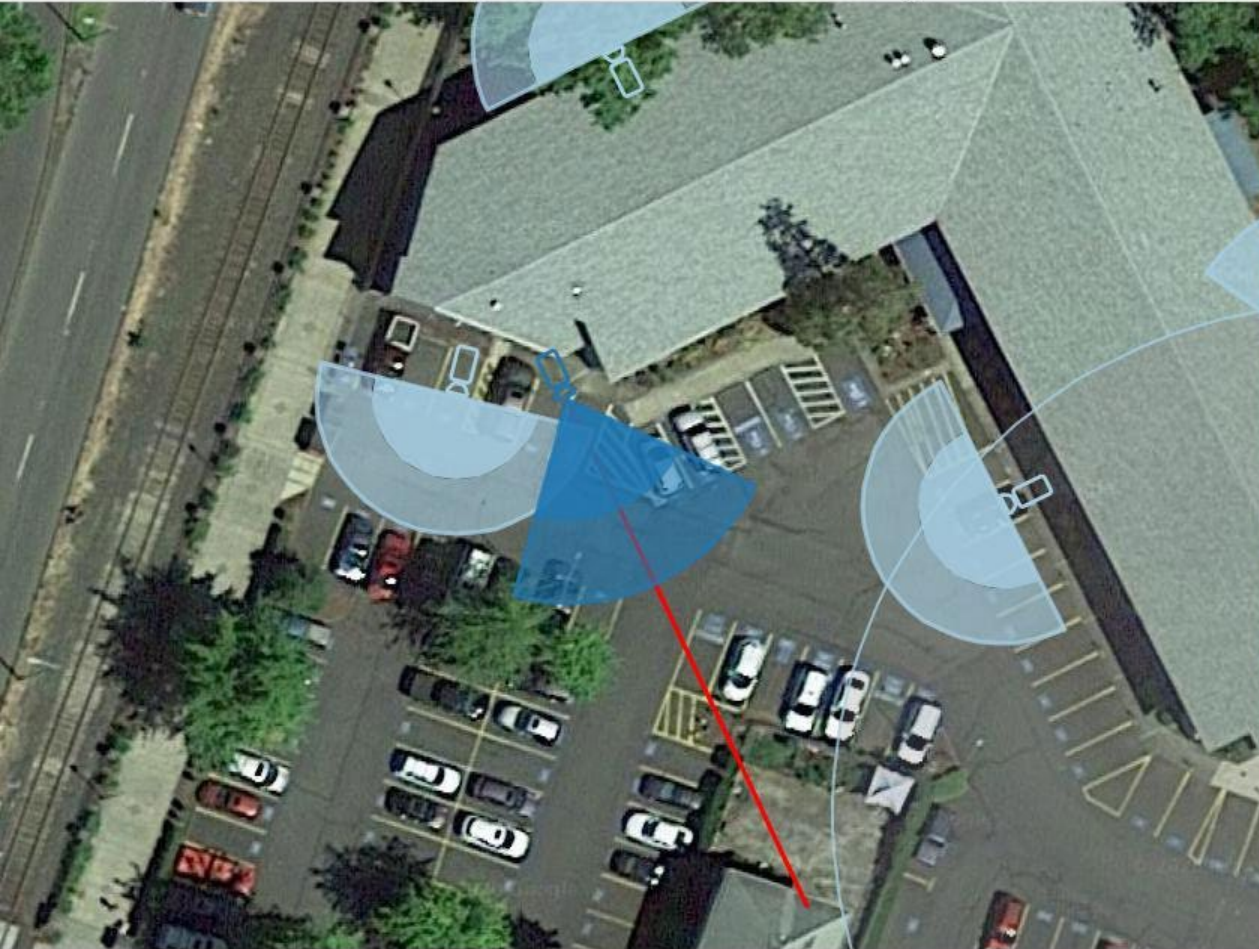
60.0 pp
32 ft
Away

Warning results may vary depending on light and distance

Camera 2



Model: Hanwha PNV-9080R Resolution: 12MP
HFOV: 80° Distance: 48ft Width: 66.7ft PPF: 60.0
Imager: 1/1.7" Focal Length: 4.5 - 10mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



60.0 pp
48 ft
Away

Warning results may vary depending on light and distance.

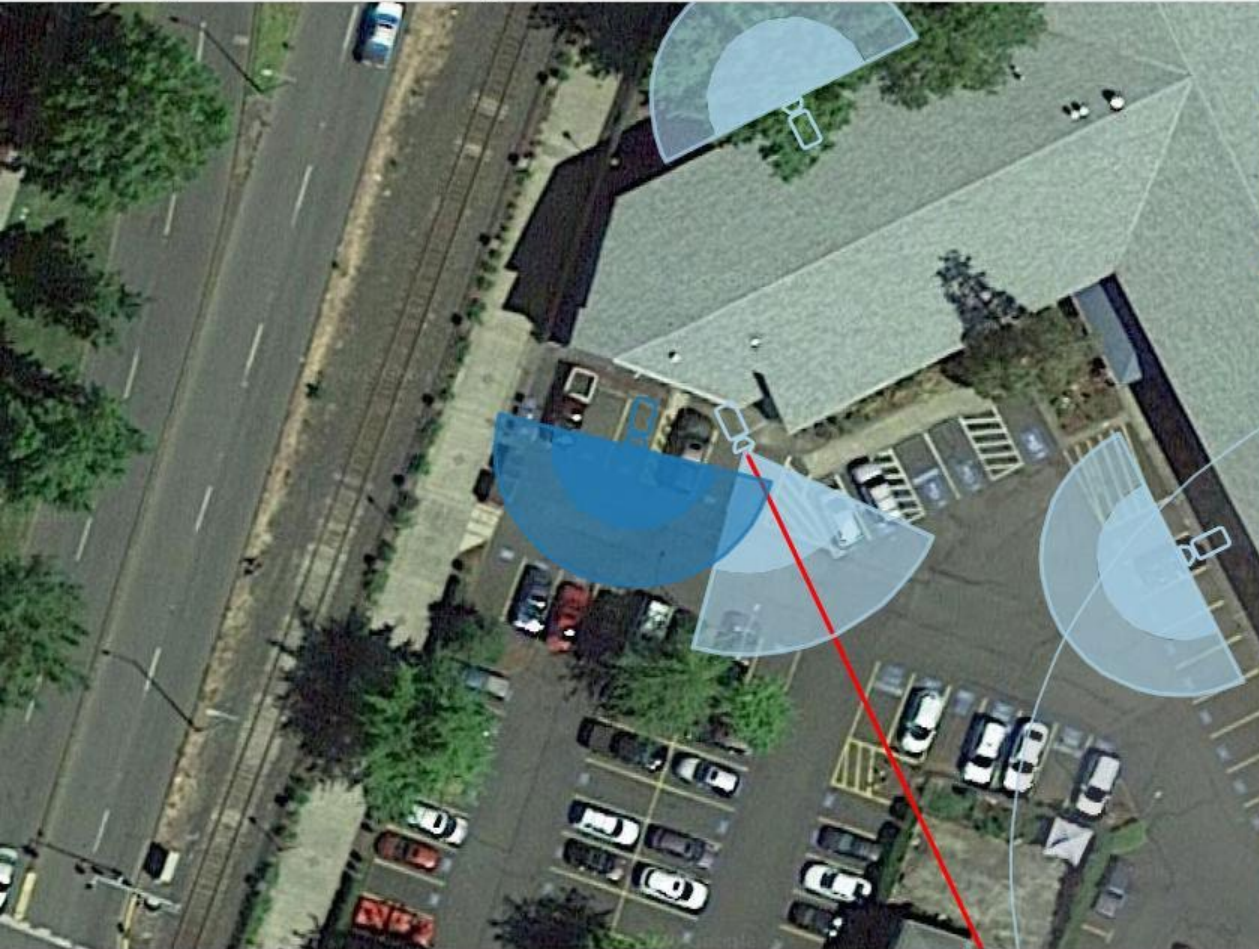
Camera 3



Model: Hanwha PNM-9030V Resolution: 6096x2540

HFoV: 180° Distance: 32ft Width: 101.6ft PPF: 60.0

Imager: 1/2.8" Focal Length: 4mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



60.0 pp
32 ft
Away

Warning results may vary depending on light and distance

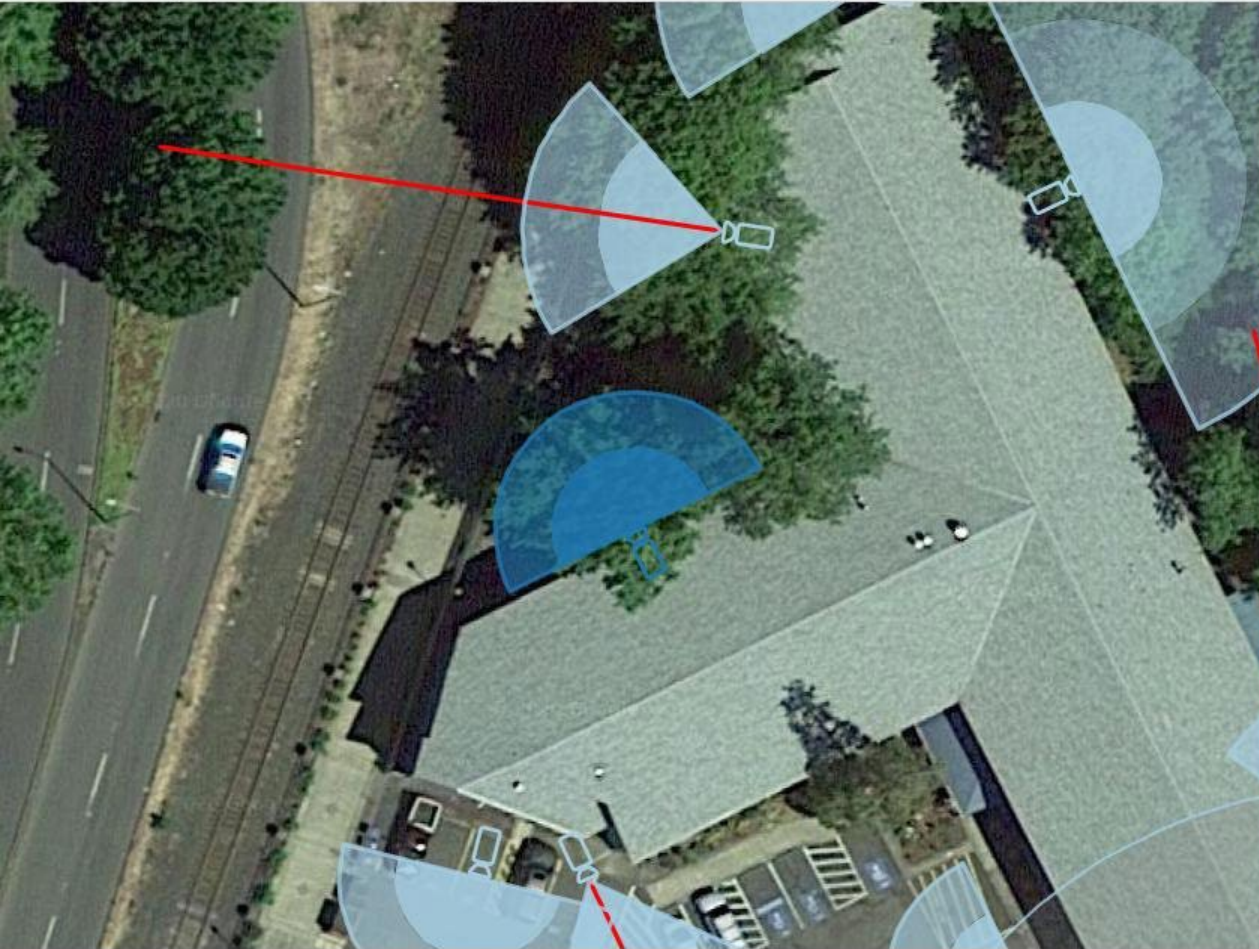
Camera 4



Model: Hanwha PNM-9030V Resolution: 6096x2540

HFoV: 180° Distance: 32ft Width: 101.6ft PPF: 60.0

Imager: 1/2.8" Focal Length: 4mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



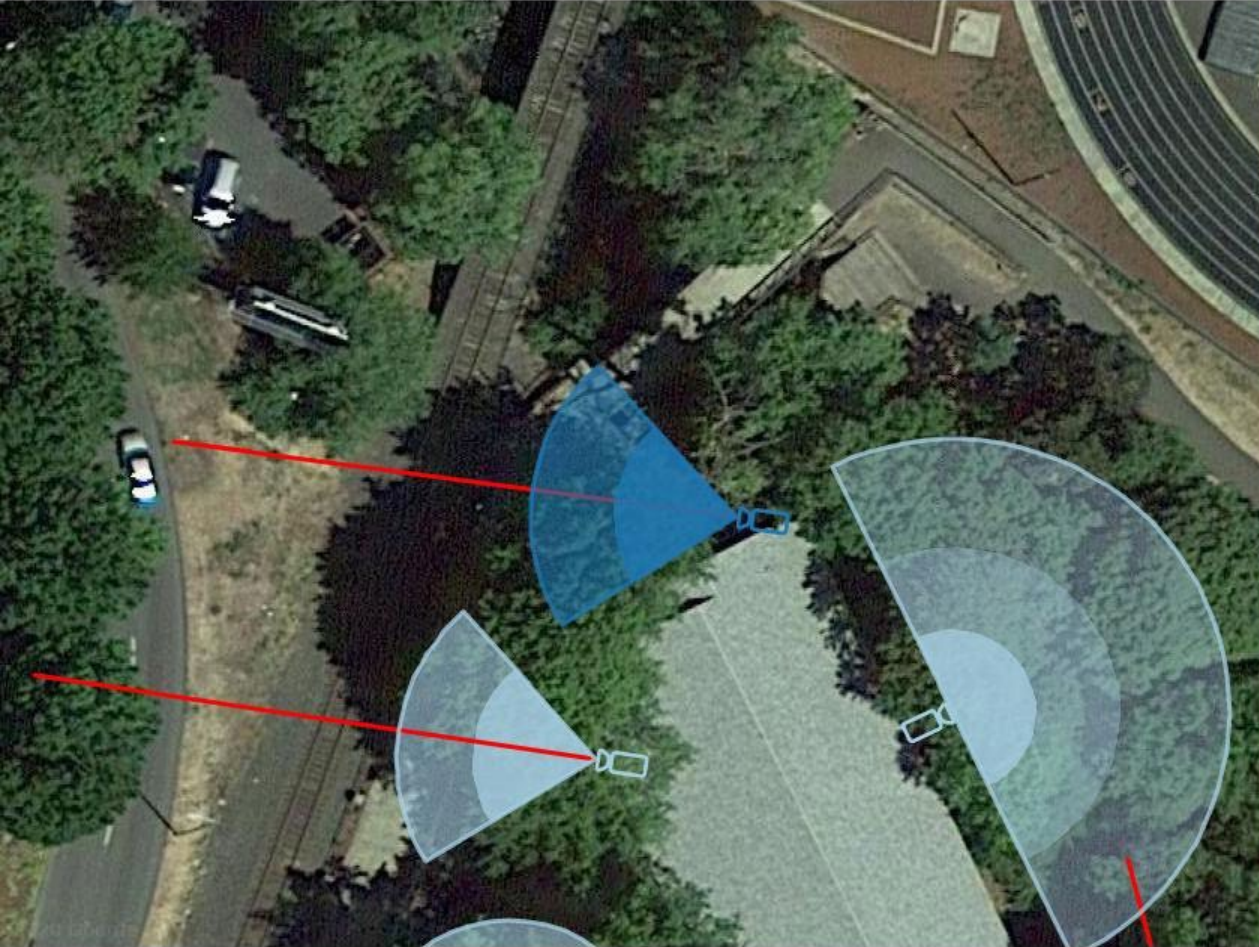
60.0 pp
32 ft
Away

Warning results may vary depending on light and distance.

Camera 5



Model: Hanwha PNV-9080R Resolution: 12MP
HFOV: 80° Distance: 48ft Width: 66.7ft PPF: 60.0
Imager: 1/1.7" Focal Length: 4.5 - 10mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



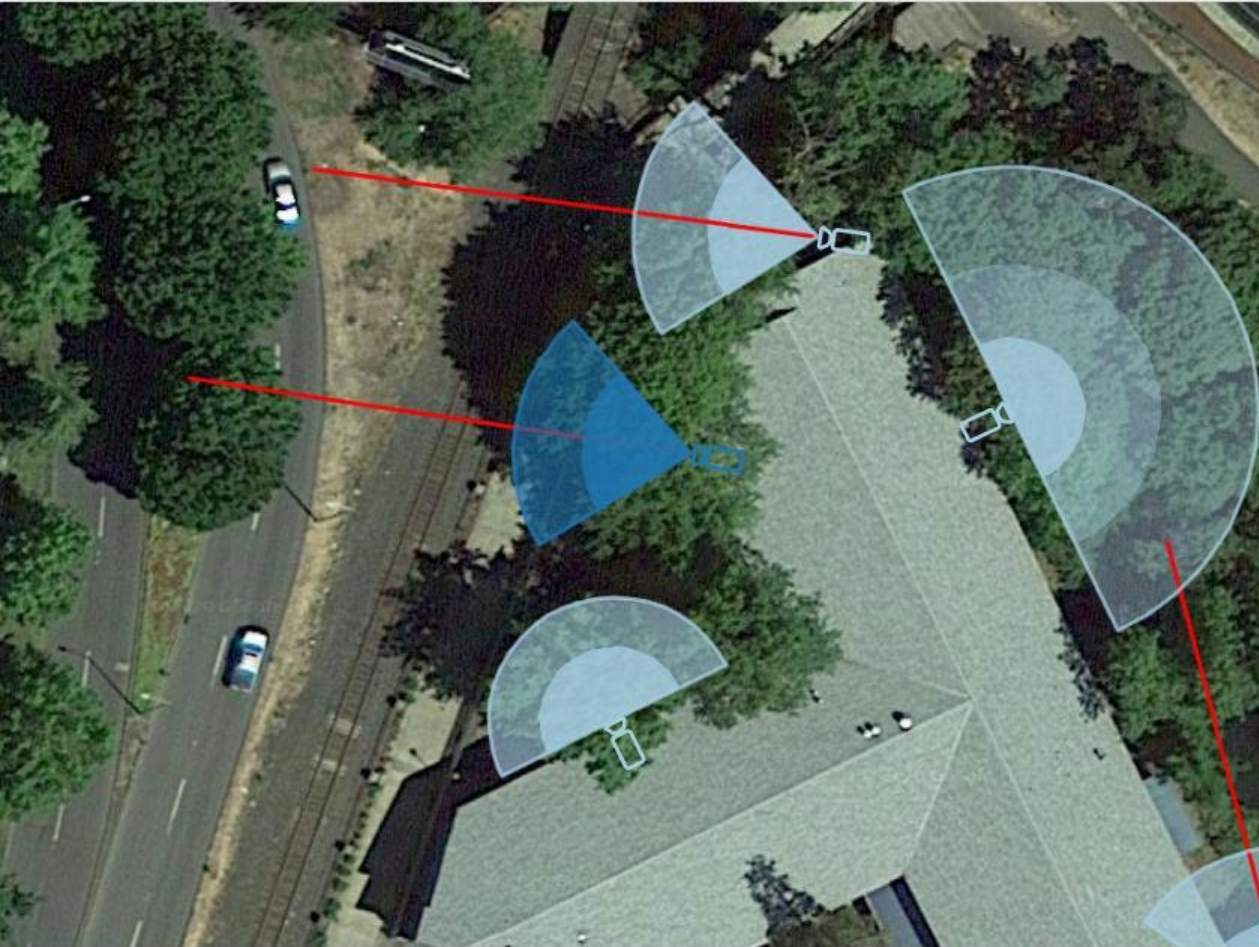
60.0 pp
48 ft
Away

Warning results may vary depending on light and distance

Camera 6



Model: Hanwha PNV-9080R Resolution: 12MP
HFOV: 80° Distance: 46ft Width: 64.4ft PPF: 62.1
Imager: 1/1.7" Focal Length: 4.5 - 10mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



62.1 pp
46 ft
Away

Warning results may vary depending on light and distance

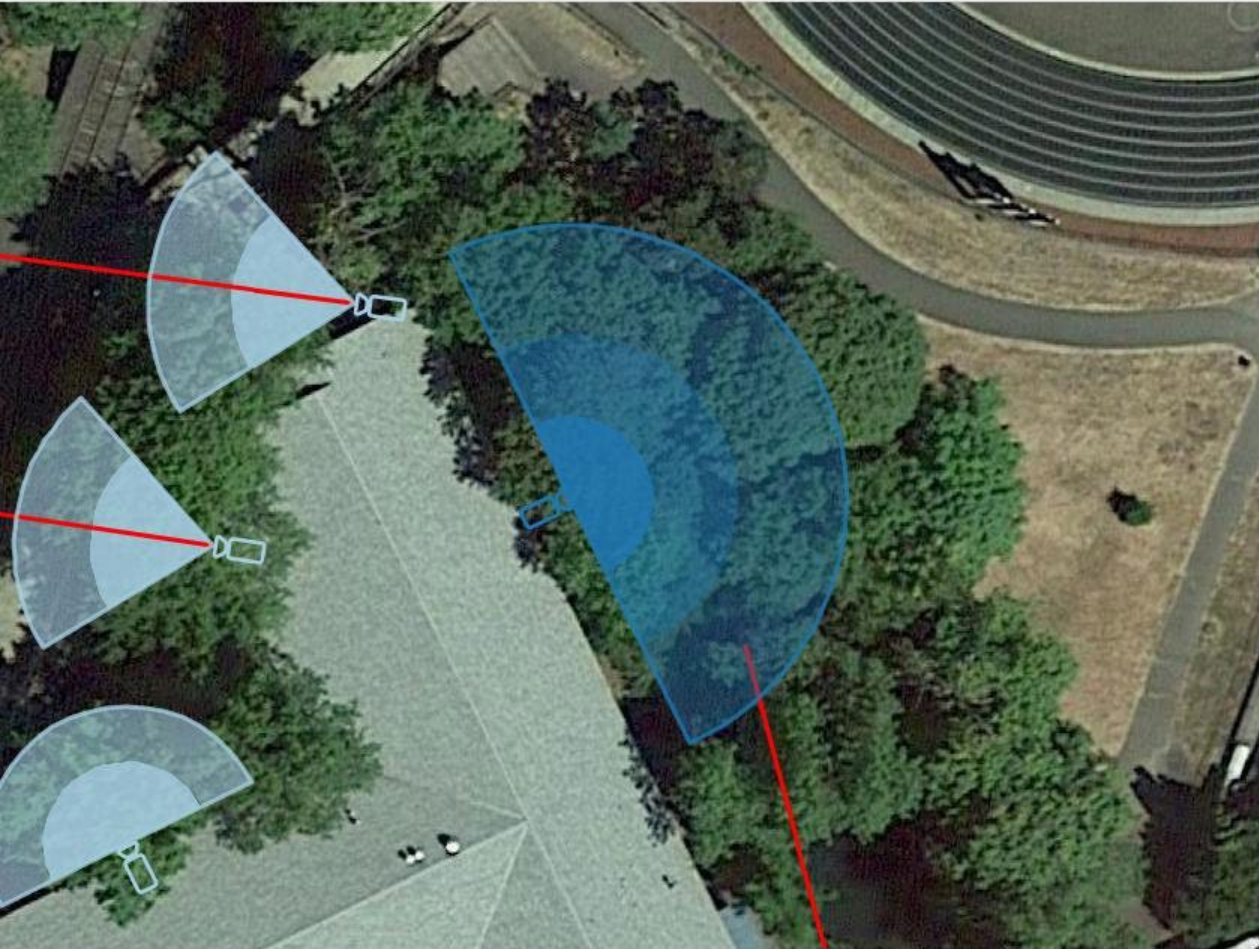
Camera 7



Model: Hanwha PNM-9030V Resolution: 6096x2540

HFoV: 180° Distance: 64ft Width: 201.1ft PPF: 30.3

Imager: 1/2.8" Focal Length: 4mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



30.3 pp
64 ft
Away

Warning results may vary depending on light and distance

Camera 8



Model: Hanwha PNV-9080R Resolution: 12MP
HFOV: 80° Distance: 48ft Width: 66.7ft PPF: 60.0
Imager: 1/1.7" Focal Length: 4.5 - 10mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



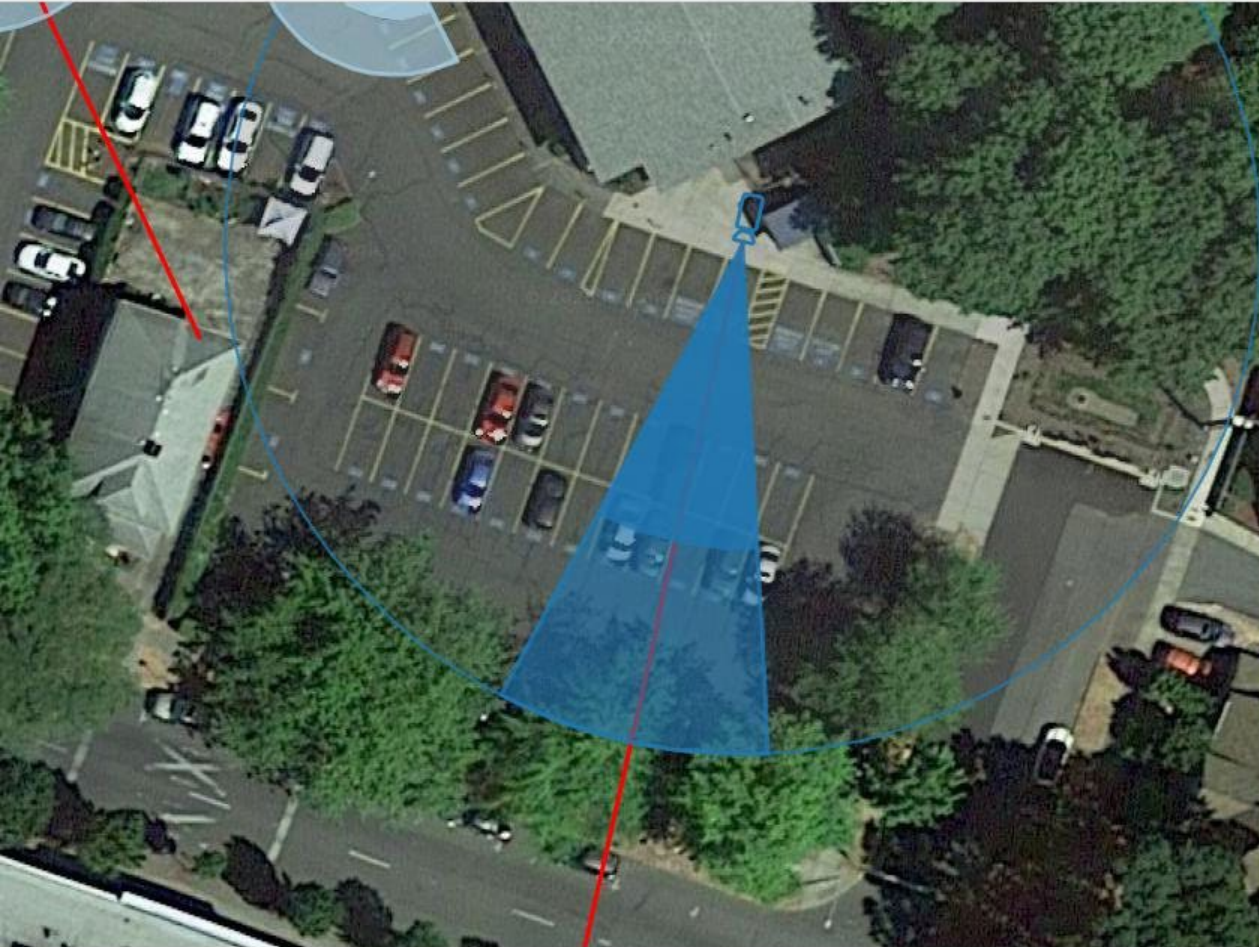
60.0 pp
48 ft
Away

Warning results may vary depending on light and distance

Camera 9



Model: Hanwha PNP-9200RH Resolution: 4K
HFoV: 31° Distance: 120ft Width: 64.0ft PPF: 60.0
Imager: 1/2.5" Focal Length: 4.8 - 96mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



Day - Ideal



60.0 pp
120 ft
Away

Warning results may vary depending on light and distance

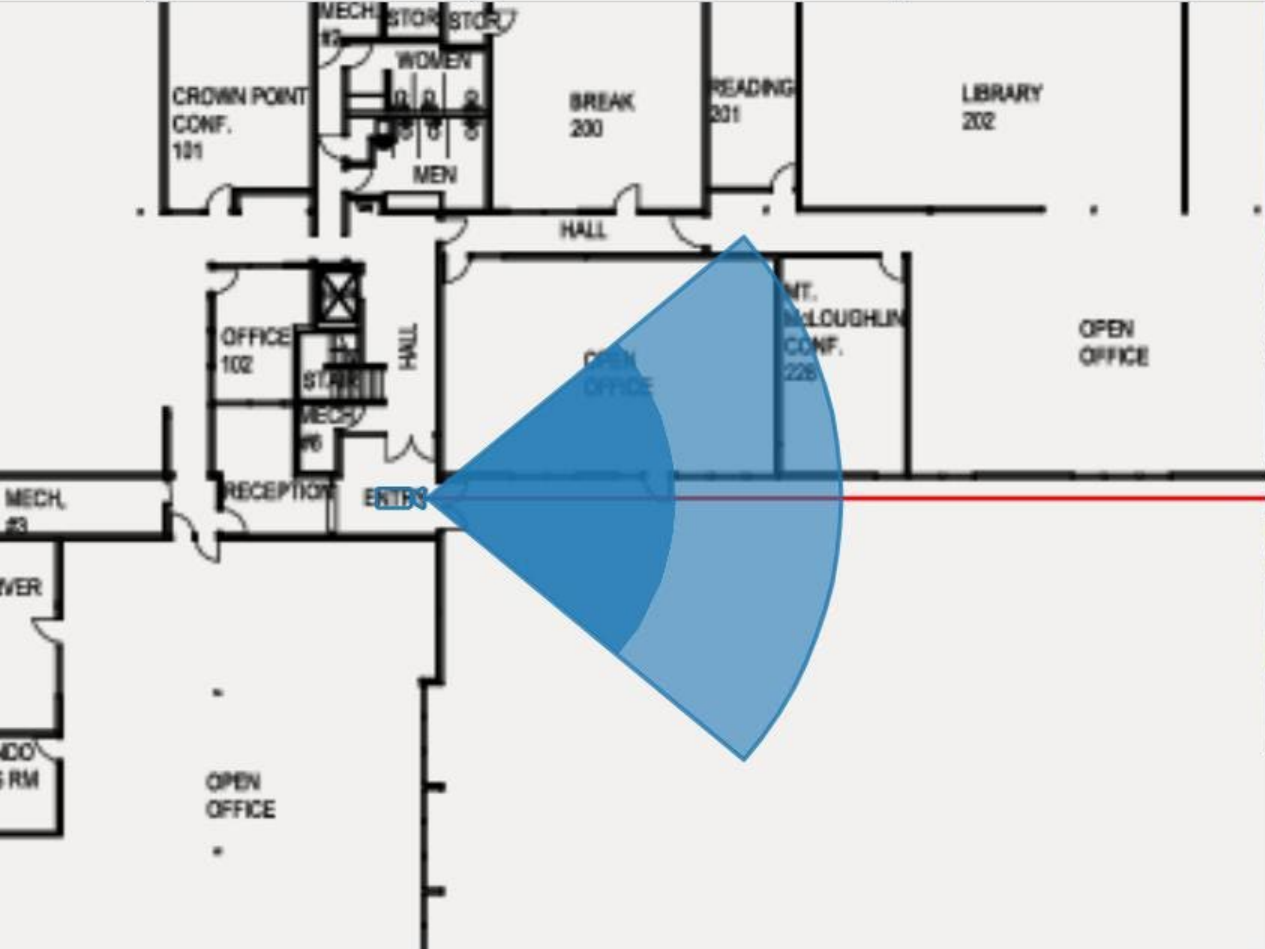
Interior Overview



Camera 10



Model: Hanwha PND-9080R Resolution: 12MP
HFoV: 80° Distance: 48ft Width: 66.7ft PPF: 60.0
Imager: 1/1.7" Focal Length: 4.5 - 10mm Camera Height: 10.00ft Tilt: 0.00° Scene Height: 10.00ft



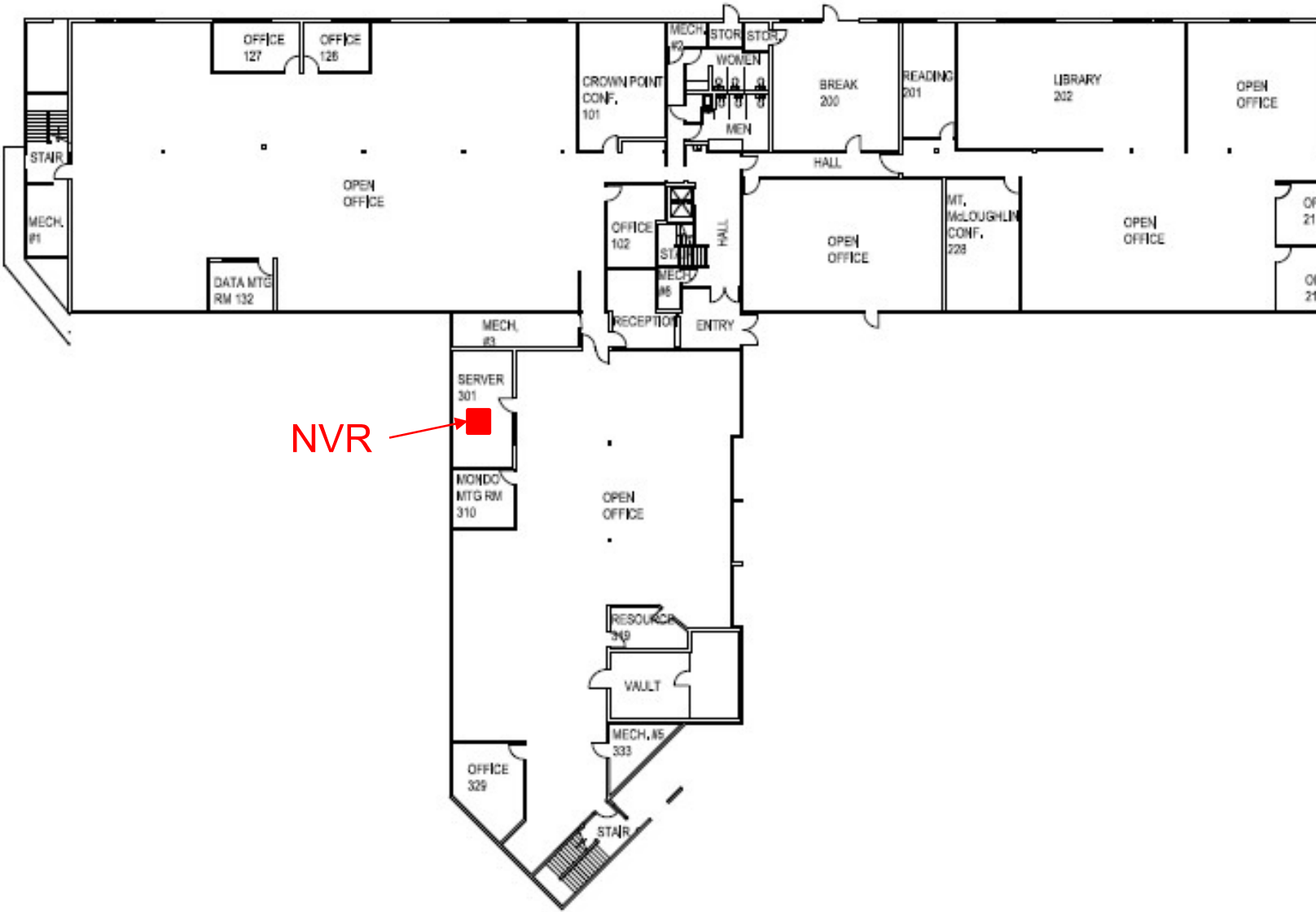
Day - Ideal



60.0 pp
48 ft
Away

Warning results may vary depending on light and distance

First Floor



NVR

ATTACHMENT C – TERMS AND CONDITIONS

PREVAILING WAGE RATES (BOLI REQUIREMENTS)

The Contractor and all subcontractors shall comply with the provisions of ORS 279C.800 through 279C.870, relative to Prevailing Wage Rates (“PWR”) and the required public works bond as outlined in **Sections C.1, C.2 & G.2.3** of the General Conditions.

Before starting Work the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by ORS 279C.836 and OAR 839-025-0015, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting the Subcontractor to start Work.

This RFB and the resulting Contract are subject to the following Bureau of Labor and Industries (“BOLI”) wage rate requirements and the prevailing wage rates set forth in the following booklet, as amended, which while not physically attached, is incorporated herein by reference with the same force and effect as though fully set forth herein, and is available at the following web site:

The “**PREVAILING WAGE RATES for Public Works Contracts in Oregon**” dated January 1, 2021.

These BOLI wage rates are available on line at:
http://www.oregon.gov/boli/WHD/PWR/Pages/pwr_state.aspx

The Work will take place in Marion County, BOLI Region 3.

The fee required by ORS 279C.825(1) will be paid by the Agency to the Commissioner of the Bureau of Labor and Industries under the administrative rules of the Commissioner.

CONFLICT OF INTEREST:

ODOT’s Conflict of Interest Guidelines are available on ODOT’s website (see Guidance, Policy & Resources) and are incorporated into this Contract: <http://www.oregon.gov/ODOT/Business/Procurement/Pages/PSK.aspx>
See Section C.1.4.

GENERAL CONDITIONS:

This RFB and the resulting Contract are governed by the STATE OF OREGON GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS, January 1, 2012 Edition (“General Conditions”) which, although not physically attached, is incorporated herein by reference as an Attachment with the same force and effect as though fully set forth herein:

<http://www.oregon.gov/das/Procurement/Guiddoc/GenCon4PI.pdf>

SUPPLEMENTAL GENERAL CONDITIONS:

The following supplements modify the General Conditions this project. Where a portion of the General Conditions is modified or deleted by these Supplemental General Conditions, the unaltered portions of the General Conditions shall remain in effect.

SGC-1 Add the following after A.3.4 under INTERPRETATION OF CONTRACT DOCUMENTS

A.3.5 The characterization of provisions of the Contract as material provisions or the failure to comply with certain provisions as a material breach of the Contract shall in no way be construed to mean that any other provisions of the Contract are not material or that failure to comply with any other provisions is not a material breach of the Contract.

SGC-2 Add the following after Section A.7 GOVERNMENT EMPLOYMENT STATUS:

A.8 TITLE VI NON-DISCRIMINATION PROVISIONS

During the performance of the Contract, Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

- a. Compliance with Regulations:** Contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of the Contract.
- b. Nondiscrimination:** Contractor, with regard to the work performed by it during the Contract, shall not discriminate on the grounds or race, color, sex, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. Contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.
- c. Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by Contractor of Contractor's obligations under the Contract and the Regulations relative to nondiscrimination on the grounds of race, color, sex, or national origin.
- d. Information and Reports:** Contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by ODOT, FHWA or the Federal Transit Administration ("FTA") as appropriate, to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of Contractor is in the exclusive possession of another who fails or refuses to furnish this information, Contractor shall so certify to ODOT, FHWA or FTA as appropriate, and shall set forth what efforts it has made to obtain the information.
- e. Sanctions for Noncompliance:** In the event of Contractor's noncompliance with the nondiscrimination provisions of the Contract, ODOT shall impose such Contract sanctions as ODOT, FHWA or FTA may determine to be appropriate, including, but not limited to:
 - (i) Withholding of payments to Contractor under the Contract until Contractor complies, and/or
 - (ii) Cancellation, termination or suspension of the Contract, in whole or in part.
- f. Incorporation of Provisions:** Contractor shall include the provisions of paragraphs (a) through (e) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. Contractor shall take such action with respect to any subcontract or procurement as ODOT of the federal government may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, Contractor may request ODOT, and, in addition, Contractor may request the United States to enter into such litigation to protect the interests of the United States.

SGC-3 Make the following revisions to Section B.5 COMPLIANCE WITH GOVERNMENT LAWS AND REGULATIONS:

- **Add the following to the end of Section B.5.1:**

All rights and remedies available to Owner under applicable federal, state and local laws are also incorporated by reference herein and are cumulative with all rights and remedies under the Contract.

- **Delete Section B.5.2(a) and replace with the following:**

(a) Pursuant to ORS 279A.110, Contractor shall not discriminate against a disadvantaged business enterprise, a minority-owned business, a woman-owned business, a business that a service-disabled veteran owns or an emerging small business, in the awarding of subcontracts.

- **Add the following Section B.5.2(c):**

(c) Compliance with ORS 279C.520 also includes (i) As required by ORS 279C.520, the Contractor must comply with ORS 652.220 and shall not unlawfully discriminate against any of Contractor's employees in the payment of wages or other compensation for work of comparable character on the basis of an employee's membership in a protected class. "Protected class" means a group of persons distinguished by race, color, religion, sex, sexual orientation, national origin, marital status, veteran status, disability, or age. The Contractor's compliance with this section constitutes a material element of this Contract and a failure to comply constitutes a breach that entitles Agency to terminate this Contract for cause,.

(ii) The Contractor shall not prohibit any of its employees from discussing the employee's rate of wage, salary, benefits and other compensation with another employee or another person, and shall not retaliate against an employee who discusses the employee's rate of wage, salary, benefits or other compensation with another employee or another person.

- **Add the following Section B.5.2(d):**

(d) Respecting certification as a disadvantaged business enterprise, minority-owned business, woman-owned business, business that a service-disabled veteran owns or an emerging small business under ORS 200.055, as and when applicable, the Contractor shall maintain the certifications, and require in its subcontracts that subcontractors maintain the certifications required by ORS 279A.107.

SGC-4 Delete Section B.15 GOVERNING LAW in its entirety and replace with the following:

B.15 GOVERNING LAW. This Contract shall be governed by and construed and enforced in accordance with the laws of the State of Oregon without regard to principles of conflicts of laws.

SGC-5 Add the following after Section D.3 CLAIMS REVIEW PROCESS

D.4 FALSE CLAIMS (OREGON FALSE CLAIMS ACT)

D.4.1 Contractor understands and acknowledges it is subject to the Oregon False Claims Act (ORS 180.750 to 180.785) and to any liabilities or penalties associated with the making of a false claim under that Act. By its execution of the Contract, Contractor certifies the truthfulness, completeness, and accuracy of any statement or claim it has made, it may make, or cause to be made that pertains to the Contract or the Project for which the services are being performed, including but not limited to Contractor's statement of proposal and any invoices, reports, or other deliverables.

D.4.2. Contractor shall immediately disclose (in writing) to Agency whenever, in connection with the award, performance or closeout of the Contract, or any subcontract thereunder, Contractor has credible evidence that a principal, employee, agent, or subcontractor of Contractor has committed—

(i) A violation of the Oregon False Claims Act; or

(ii) A violation of State or Federal criminal or civil law involving fraud, conflict of interest, bribery, gratuity or similar misconduct.

D.4.3. Contractor must include subsections D.4.1 and D.4.2 of this section in each subcontract Contractor may award in connection with the performance of the Contract. In doing so, Contractor may not modify the terms of those subsections, except to identify the subcontractors or sub grantee that will be subject to those provisions.

E.7 REPORT OF SUBCONTRACTORS PAID: Following each payment to Contractor, including final payment and any progress payments, Contractor shall submit to the Owner ODOT Form 734-2882, Paid Summary Report. Contractor shall complete and submit the form as specified in the form instructions, which are available online, along with the form at: <http://www.oregon.gov/ODOT/Forms/2ODOT/2882.pdf>

SGC-6 Amend the first sentence of Section G.2.1 as follows (deletions shown in strikethrough):

G.2.1 When the Contract Price is \$100,000 or more (~~or \$50,000 or more in the case of Contracts for highways, bridges and other transportation projects~~) the Contractor shall furnish and maintain in effect at all times during the Contract Period a performance bond in a sum equal to the Contract Price, and a separate payment bond also in a sum equal to the Contract Price.

SGC-7 Delete Section G.3 INSURANCE in its entirety and replace with the following:

G.3 INSURANCE

G.3.1 **Contractor:** The Contractor shall obtain the insurance specified below prior to the execution of the Contract. The Contractor shall maintain the insurance in full force at the Contractor's expense throughout the duration of the Contract and all warranty periods that apply.

G.3.1.2 **Subcontracting:** If the Contractor specifies prior to the execution of the Contract that a Subcontractor will satisfy an insurance requirement, that is permitted to be satisfied by a Subcontractor, the Contractor shall obtain Owner approval of Subcontractor and Subcontractor's insurance coverage(s), at least 35 Calendar Days prior to commencement of subcontracted work. After the Contractor receives Owner approval of the Subcontractor, the Contractor may contractually obligate the Subcontractor to obtain and maintain, at the Subcontractor's expense or at the Contractor's expense, the insurance permitted.

- G.3.1.3 The Contractor shall require that all Subcontractors carry insurance coverage that the Contractor deems appropriate based on the risks of the subcontracted work. The Contractor shall obtain proof of the required insurance coverages, as applicable, from any Subcontractor providing services related to the Contract.
- G.3.1.4 Neither the insurance provided by Subcontractor(s) nor any agreements Contractor or Subcontractor(s) may enter into shall place any limitation on the liability or indemnification obligations of the Contractor under applicable law or the Contract.
- G.3.1.5 **Insurance Provisions:** The Contractor and Subcontractor(s), if any, shall obtain insurance from insurance companies or entities that are authorized to transact the business of insurance and issue coverage in the State and that are acceptable to Owner. Insurance coverage shall be primary and noncontributory with any other insurance and self-insurance, with the exception of Workers' Compensation/Employer's Liability. The Contractor, or appropriate Subcontractor, but not Owner, shall pay for all deductibles, self-insurance retentions and self-insurance, if any.

G.3.2 Workers' Compensation and Employer's Liability:

- G.3.2.1 All employers, including the Contractor and Subcontractor(s), if any, that employ subject workers, as defined in ORS 656.027, shall comply with ORS 656.017 and shall provide Workers' Compensation Insurance coverage, unless such employers meet the requirement for an exemption under ORS 656.126(2). The coverage shall include Employer's Liability Insurance with coverage limits of not less than \$500,000 for each accident. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.
- G.3.2.2 All employers, including the Contractor and Subcontractor(s), if any, exempt under ORS 656.126(2) and subject to any other state's Workers' Compensation law, shall provide Workers' Compensation Insurance coverage as required by applicable Workers' Compensation laws. The coverage shall also include Employer's Liability Insurance with limits not less than \$500,000 each accident.

G.3.3 Liability Insurance:

- G.3.3.1 Commercial General Liability: The Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Commercial General Liability Insurance written on an occurrence basis and covering bodily injury and property damage. This insurance shall include personal and advertising injury liability, products and completed operations, and contractual liability coverage. When Work to be performed includes operations or activity within 50 feet of any railroad property, bridge, trestle, track, roadbed, tunnel, underpass or crossing, the Contractor shall provide the Contractual Liability – Railroads CG 24 17 endorsement, or equivalent, on the Commercial General Liability policy. Combined single limit per occurrence shall not be less than the dollar amount specified in the Contract. . The annual aggregate limit shall not be less than the dollar amount specified in the Contract.

	Per Occurrence	Annual Aggregate
Commercial General Liability	\$1,000,000	\$2,000,000

- G.3.3.2 Commercial Automobile Liability: The Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance covering owned, non-owned, and hired vehicles for bodily injury and property damage. This coverage may be written in combination with the Commercial General Liability Insurance with separate limits for Commercial Automobile Liability and Commercial General Liability. Combined single limit per occurrence shall not be less than the dollar amount specified in the Contract..

	Combined Single Limit Per Occurrence
Commercial Automobile Liability	\$1,000,000

- G.3.3.3 Extended Reporting: If any of the required liability insurance is permitted to be and is on a "claims made" basis, the Contractor or Subcontractor who provided the insurance coverage, shall obtain an extended reporting period on the claims made policy or maintain the claims made policy for a duration of at least 24 months from the date the applicable work has been completed and accepted by Owner or the date of Final Completion. This extended reporting requirement shall be satisfied with documentation of one of the following:

- o Extended Reporting Endorsement;
- o Tail Coverage; or
- o Maintaining the applicable continuous claims made policy with liability coverage.

- G.3.3.4 Excess/Umbrella Liability: A combination of primary and Excess/Umbrella Insurance may be used to meet the required limits of insurance. Excess/Umbrella coverage must be at least as broad as that provided by the underlying primary

insurance policies. In addition, the limits of the underlying primary insurance must be sufficient to prevent any gap between such minimum limits and the attachment point of the coverage provided by the Excess/Umbrella Liability policy.

- G.3.3.5 Additional Insured: The liability insurance coverages, except Professional Liability and Workers' Compensation/Employer's Liability, if included, shall include an Additional Insured Endorsement specifying the "State of Oregon, the Oregon Transportation Commission and the Department of Transportation, and their respective officers, members, agents, and employees" as Additional Insureds, but only with respect to the Contractor's activities to be performed under this Contract. Coverage shall be primary and non-contributory with any other insurance and self-insurance. The liability coverages that are permitted by Owner to be obtained by an appropriate Subcontractor shall include all of the foregoing as Additional Insureds and shall also include the Contractor and its officers and employees as Additional Insureds.
- G.3.3.6 Additional Insured – Commercial General Liability: Additional Insured Endorsements on the Commercial General Liability shall be written on ISO Form CG 20 10 07 04, or equivalent, with respect to liability arising out of ongoing operations and ISO Form CG 20 37 07 04, or equivalent, with respect to liability arising out of completed operations. Additional Insured Endorsements shall be submitted with the Certificate(s) of Insurance and must be acceptable to Owner.
- G.3.3.7 Notice of Cancellation or Change: The Contractor shall provide at least 30 Calendar Days written notice to Owner before cancellation of, material change to, potential exhaustion of aggregate limits, or non-renewal of the required insurance coverages. If a Subcontractor is providing insurance to meet the contract requirements, the Contractor shall provide at least 30 Calendar Days written notice to Owner before cancellation of, material change to, potential exhaustion of aggregate limits, or non-renewal of the required insurance coverage(s). Any failure to comply with the reporting provisions of this insurance shall not affect the coverage(s) provided to the State, Owner, County, City, or other applicable political jurisdiction or to Owner's governing body, board, or Commission and its members, and Owner's officers, agents, and employees.
- G.3.3.8 Certificate(s) of Insurance: As evidence of the insurance coverages required by this Contract, the Contractor shall furnish Certificate(s) of Insurance to Owner prior to execution of the Contract. As evidence of insurance coverages required by the Contract but permitted by Owner to be obtained by an appropriate Subcontractor, the Contractor shall furnish Certificate(s) of Insurance to Owner for approval on such coverages at least 35 Calendar Days prior to commencement of subcontracted work. The Certificate(s) shall:
- List the "State of Oregon, the Oregon Transportation Commission and the Department of Transportation, and their respective officers, members, agents and employees" as an endorsed Additional Insured;
 - Include all required endorsements or copies of the applicable policy language effecting coverage required by the Contract;
 - Specify that all liability insurance coverages shall be primary and non-contributory with any other insurance and self-insurance, with exception of Professional Liability and Workers' Compensation/Employer's Liability; and
 - Include a list of all policies that fall under the Excess/Umbrella Insurance if Excess or Umbrella Insurance is used to meet the minimum insurance requirement.
- G.3.3.9 Owner Acceptance: All insurance and insurance providers are subject to Owner acceptance. If requested by Owner, the Contractor shall provide complete copies of insurance policies, endorsements, self-insurance documents and related insurance documents to Owner's representatives responsible for verification of the insurance coverages required by the Contract.
- G.3.3.10 Insurance Requirement Review: The Contractor agrees to periodic review of insurance requirements by Owner under the Contract and to provide updated requirements as mutually agreed upon by the Contractor and Owner.

SGC-8 Add the following at the end of SECTION H.2 SCHEDULE:

H.2.2 The Project Work schedule is essential to the Owner. The Contractor's failure to provide the schedule, schedule information, progress reports, or schedule updates when required will be cause to suspend the Work, or to withhold Contract payments as necessary to protect the Owner, until the Contractor provides the required information to the Owner's Authorized Representative.

SGC-9 Add a new subsection to Section J.4.1 as subsection (f) and renumber existing subsection (f) as subsection (g) as follows:

- (f) If Contractor has liquidated and delinquent debt owed to the State of Oregon or any department or agency of the State of Oregon;
- (g) If Contractor is otherwise in material breach of any part of the Contract.

SGC-10 Delete Section J.4.2 in its entirety and replace it with the following:

J.4.2 At any time that any of the above occurs, Owner may exercise all rights and remedies available to Owner at law or in equity, including, in the event of the conditions set forth in Section J.4.1 (f) regarding Contractor's liquidated and delinquent debt, by offset or garnishing all monies due for any and all Work performed by the Contractor when appropriate, and otherwise recovering any liquidated and delinquent debt owed to the State of Oregon or any department or agency of the State of Oregon. In addition, Owner may take possession of the premises and of all materials and appliances and finish the Work by whatever method it may deem expedient. In such case, Contractor shall not be entitled to receive further payment until the Work is completed. If Owner's cost of finishing the Work exceeds the unpaid balance of the Contract Price, Contractor shall pay the difference to the Owner.

SGC-11 Add the following at the beginning of SECTION K CONTRACT CLOSEOUT:

As a condition of final payment, Contractor shall complete and sign the Contract Closeout Checklist form provided by Owner. If accepted by Owner, Contractor's delivery of the certification as required in K.3 of the Checklist will be deemed to be compliance with the requirements of Section K.3 below and Contractor's delivery of the information required in K.7 of the Checklist will be deemed to be compliance with the requirements of Section K.7 below.

SGC-12 Delete Section K.4.1 and replace with the following:

K.4.1 Contractor shall provide Owner notice of Substantial Completion. The notice of Substantial Completion shall state the date of Substantial Completion, and shall be submitted to the Owner's Authorized Representative. The notification may be communicated verbally to the Owner's Authorized Representative, sent electronically via email, or sent as a hard copy in the mail. Upon receipt of notification of Substantial Completion, the Owner's Authorized Representative will perform a final project inspection and provide the Contractor with the project Punchlist. Once all Punchlist items have been completed to the satisfaction of the Owner's Authorized Representative, the Owner's Authorized Representative will provide Contractor with a Contract Closeout Checklist form. Contractor shall complete and sign the form and submit it to the Owner's Authorized Representative. The Owner's Authorized Representative will provide the final signature on the form upon which date Final Completion shall take effect.

Attachment D

CONTRACT CLOSEOUT COMPLIANCE CHECKLIST

Contract Number	
Contract Name	
Contractor	
Owner Authorized Rep.	

This checklist is intended to assist Agency and Contractor in complying with the Contract Closeout and Final Payment requirements in the General Conditions for Public Improvement Contracts, Sections K and E.6 : <http://www.oregon.gov/das/Procurement/Guiddoc/GenCon4PI.pdf>

Owner will mark "NA" by any requirement that is not applicable to the Contract. Contractor's and Owner's Authorized Representatives shall place their initials by each requirement listed below that has not been marked "NA" by Owner, and provide a signature at the end of the Checklist.

ODOT: Keep a copy of the signed form in the Contract Administration file. Email a copy to the ODOT Procurement Office. For ESB contracts, also email a copy to your Office of Civil Rights Field Coordinator.

Requirements	Mark NA if not applicable	Date completed	Contractor initials	Owner initials
K.1 Record Documents submitted				
K.2 O & M Manuals submitted				
K.3 Certification/Release of Claims By Contractor's signature below, Contractor certifies and agrees to the following: All Subcontractors and suppliers have been paid in full or will be paid in full out of the final payment, and in compliance with all prompt payment requirements. All disputes with property owners have been resolved, all obligations on the project have been satisfied, all monetary claims and indebtedness have been paid, and, to the best of the Contractor's knowledge, there are no claims of any kind outstanding against the project.				
K.4 Completion notices submitted Substantial Completion notice Date of substantial completion: Final Completion notice Date of final completion:				
K.5 Training sessions scheduled				

Attachment E – Sample Agreement Form

BIDDER INSTRUCTIONS: Do not submit this document with your bid. If you are the successful bidder, ODOT will fill in the blanks within this form and request your signature, which will represent your agreement to enter into a contract. PLEASE NOTE: There are some terms in this document that you will be agreeing to should you be awarded a contract; for instance, completion dates and liquidated damages. Please make sure you have read and understand this document before you submit a bid.

STATE OF OREGON PUBLIC IMPROVEMENT AGREEMENT FORM for the project

Mill Creek Security Camera System

Contract Number BXXXXX

Resulting from Request for Bids (“RFB”) No. 34655

This Agreement (the “Agreement”), made by and between the State of Oregon, acting by and through the Department of Transportation, hereinafter called OWNER, and _____ hereinafter called CONTRACTOR, (collectively the “Parties”) shall become effective on the date this Agreement has been signed by all the Parties and all required State of Oregon governmental approvals have been obtained, whichever is later. Unless otherwise defined in the in this Agreement or its attachments, the capitalized terms used herein are defined in Section A.1 of the State of Oregon General Conditions for Public Improvement Contracts.

WITNESSETH:

1. Contract Price, Contract Documents and Work.

CONTRACTOR, in consideration of the sum of \$ _____ (the “Contract Price”), to be paid to CONTRACTOR by OWNER in the manner and at the time hereinafter provided, and subject to the terms and conditions provided in the Contract Documents, all of which are incorporated herein by reference, hereby agrees to perform all Work described and reasonably inferred from the Contract Documents. CONTRACTOR understands and agrees that various Attachments to the RFB and other Contract Documents were not physically attached but were and are incorporated by reference and have the same force and effect as if fully set forth therein.

CONTRACTOR shall perform the Work for the Contract Price pursuant to the RFB identified above (including all Addenda thereto, if any), CONTRACTOR’S response to the RFB, and the following attachments to the RFB, which were posted in ORPIN as part of the RFB advertisement and are incorporated into the Contract by this reference:

RFB Part 3	Pricing Submittal (as submitted by Contractor with its Bid)
Attachment A	Specifications
Attachment B	Mill Creek Security Camera System
Attachment C	Terms and Conditions
Attachment D	Contract Closeout Compliance Checklist

2. Representatives.

Unless otherwise specified in the Contract Documents, OWNER designates the person listed below as its Authorized Representative in the administration of the Contract. The Owner’s Authorized Representative shall be the initial point of contact for matters related to performance, payment, authorization, and to carry out the responsibilities of OWNER. CONTRACTOR has named _____ its authorized representative to act on its behalf.

Owner’s Authorized Representative:

Eric Spond
ODOT Facilities Service Branch
855 Airport Rd SE, Bldg X
Salem OR 97301
Phone: 503-302-3705
Email: eric.spond@odot.state.or.us

3. Project Location:

555 13th St NE
Salem, OR 97301

4. Contract Dates (See the General Conditions for definitions of Substantial and Final Completion):

Start Date: Immediately after issuance of Notice to Proceed
Substantial Completion: 4 weeks from NTP
Final Completion: 5 weeks from NTP

5. Liquidated Damages.

Failure to achieve Substantial Completion by the time specified above for Substantial Completion will result in damage to OWNER. Since actual damage will be difficult to determine, it is agreed that CONTRACTOR shall pay to OWNER, not as a penalty but as liquidated damages, **\$100.00** per calendar day for each day elapsed in excess of the Substantial Completion date specified in Section 3 of this Agreement until Substantial Completion is achieved.

6. Installation.

Installation of camera equipment must be done with coordinate of the Owners Authorized Representative and the local site manager.

7. Integration.

THE CONTRACT DOCUMENTS CONSTITUTE THE ENTIRE AGREEMENT BETWEEN THE PARTIES. NO WAIVER, CONSENT, MODIFICATION OR CHANGE OF TERMS OF THE CONTRACT SHALL BIND EITHER PARTY UNLESS IN WRITING AND SIGNED BY BOTH PARTIES. SUCH WAIVER, CONSENT, MODIFICATION OR CHANGE, IF MADE, SHALL BE EFFECTIVE ONLY IN THE SPECIFIC INSTANCE AND FOR THE SPECIFIC PURPOSE GIVEN. THERE ARE NO OTHER UNDERSTANDINGS, AGREEMENTS, OR REPRESENTATIONS, ORAL OR WRITTEN, NOT SPECIFIED HEREIN REGARDING THIS CONTRACT. CONTRACTOR, BY THE SIGNATURE BELOW OF ITS AUTHORIZED REPRESENTATIVE, HEREBY ACKNOWLEDGES THAT IT HAS READ THE CONTRACT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS.

In witness whereof, OWNER executes this Agreement and CONTRACTOR does execute the same as of the day and year indicated below.

CONTRACTOR'S INFORMATION:

CONTRACTOR'S DATA:

NAME & ADDRESS:

CONTACT INFORMATION:

CONTRACTOR'S CCB #:

EXPIRATION DATE:

CONTRACTOR'S AUTHORIZED SIGNATURE:

_____ Title Date

OWNER'S AUTHORIZED SIGNATURE:

_____ Title Date