

NOTICE TO BIDDERS
Request for Proposals

Communications Shelter Replacement
Worcester County, Maryland

The Worcester County Commissioners are seeking proposals from qualified bidders to replace an existing fiberglass communications shelter located on the site of the Snow Hill Water Tower on North Washington Street in Snow Hill, Worcester County, Maryland with a new concrete shelter as a turn-key project with minimal site disturbance. Requests for Proposals (RFPs) are available from the Office of the County Commissioners, Room 1103 - Worcester County Government Center, One West Market Street, Snow Hill, Maryland 21863, obtained online under the "Bids" drop-down menu in the lower right hand side of the home page at www.co.worcester.md.us, or by calling the Commissioners' Office at 410-632-1194 to request a package by mail. Interested bidders are encouraged to attend an optional **pre-bid meeting at 10:00 AM on Monday, April 22, 2019**, at the Department of Emergency Services, Room 1002 - Worcester County Government Center, One West Market Street, Snow Hill, Maryland 21863, immediately followed by a site visit. **Sealed proposals will be accepted until 1:00 PM, Tuesday, May 28, 2019** in the Office of the County Commissioners at Room 1103 - Worcester County Government Center, One West Market Street, Snow Hill, Maryland 21863, at which time they will be opened and publicly read aloud. Envelopes shall be marked "**Communications Shelter Replacement Proposal**" in the lower left-hand corner. Email submissions will not be accepted

After opening, proposals will be forwarded to the Department of Emergency Services for tabulation, review and recommendation to the County Commissioners for their consideration at a future meeting. In awarding the proposal, the Commissioners reserve the right to reject any and all proposals, waive formalities, informalities and technicalities therein, and to take whatever proposal they determine to be in the best interest of the County considering lowest or best bid, quality of goods and work, time of delivery or completion, responsibility of bidders and subcontractors being considered, previous experience of bidders and subcontractors with County contracts, or any other factors they deem appropriate. All inquiries shall be directed to Billy Birch, Emergency Services Director, at 410-632-1311 or by email to bbirch@co.worcester.md.us

Request for Proposals
Worcester County, MD
Communications Shelter Replacement

INTRODUCTION

Worcester County, MD (the County) seeks to replace an existing fiberglass communications shelter located at the Town of Snow Hill water tank located on North Washington Street in Snow Hill, MD. The County desires to replace the existing fiberglass shelter with a new concrete shelter as a turn-key project with minimal site disruption.

This request for proposals is structured into seven separate components:

1. General Information
2. Communications Shelter Design
3. Generator & UPS Power
4. Fiber Optic Connectivity
5. Waveguide Ladder & Ice Bridge
6. Site Work & Installation
7. Warranty

ATTACHMENTS:

- A. Example Shelter
- B. Site Plan
- C. Bid Form

GENERAL INFORMATION

Scope of Work

This project shall include the full replacement of the communications shelter. Worcester County intends for this project to be 100% turn-key. As a turn-key project the Proposer will be responsible for the design, permitting, site construction, installation, testing, and final acceptance of the new shelter, power and related systems. All costs to provide these turnkey services shall be included in the Pricing Proposal.

Proposal Delivery

All proposals shall be delivered by **1:00 PM (Eastern Standard Time) on Monday, May 28, 2019** to the Worcester County Commissioners ATTN: COMMUNICATIONS SHELTER REPLACEMENT PROPOSALS; Room 1103 Government Center, 1 W. Market Street, Snow Hill, MD 21863

Proposals shall include, at a minimum:

- County BID Sheet with firm fixed price
- Shelter Drawing Package inclusive of:
 - Materials List
 - Floor Plan
 - Elevations
 - Electrical Schematic
 - Alarm Diagram
 - Grounding Schematic
 - Foundation Drawings
 - Installation Details
- Description of bidders understanding of Scope of Work and materials to be provided, specifically noting any exceptions to the technical requirements.
- Description of bidders experience on similar projects, including references.
- Description of bidders warranties.
- Fixed pricing for any options that the proposer wishes to include.
- Proposed contract with payment milestones.
- Copy of proposers certificate of liability insurance

Evaluation & Award

In awarding the bid, the Commissioners reserve the right to reject any and all bids, waive formalities, informalities and technicalities therein, and to take whatever bid they determine to be in the best interest of the County considering lowest or best bid, quality of goods and work, time of delivery or completion, responsibility of bidders being considered, previous experience of bidders with County contracts, or any other factors they deem appropriate.

Pre-Bid Meeting & Site Visits

An optional pre-bid meeting will be held on **Monday, April 22, 2019 at 10:00 AM** at the Department of Emergency Services in Room 1002 within the Worcester County Government Center located at 1 W. Market Street, Snow Hill, MD 21863. Questions shall be submitted, in writing, a minimum of four days prior to the pre-bid meeting. Any party wishing to submit a Proposal may send appropriate representatives to attend this meeting. Immediately following the pre-bid meeting a site walk will be held.

Accuracy of Information

Respondents are solely responsible for conducting their own independent research, due diligence, or other work necessary for the preparation of responses, negotiation of contracts, and the subsequent delivery of services pursuant to any contract. The County takes no responsibility for the completeness or the accuracy of any information presented in this RFP or otherwise distributed or made available during the selection process, or during the term of any subsequent contract.

Qualifications of Contractor / Sub-Contractor

Any Proposer desiring to use subcontractors must include within their Proposal a list and description of any such qualified subcontractors. Worcester County will require documentation and references to ensure the qualification of a subcontractor. The County will require that a subcontractor cannot be changed without written permission and that any changes in subcontractors will not provide an extension of time to the Contractor.

Special Requirements

Proposers must indicate any special requirements (e.g. architectural, mechanical, electrical, civil or structural modifications) that may be required to fulfill this contract that are not already defined within this document. The costs for these special requirements shall be disclosed in the Proposal as this is a turnkey project whereby the costs to furnish and install in place the new facility in service are fixed to the Proposal amount. As an example of special requirements: a geotechnical study is required for foundation design or a structural evaluation is required for antenna attachment. The County will have no obligation to pay or reimburse Contractor for any special requirement not provided for in their proposal.

Time for Completion

The Proposer shall provide a proposed project schedule as part of its proposal submission and this project schedule will be reviewed on a regular basis throughout the project.

The Project will not be deemed completed until approved by county official, inspections have been conducted with a Certificate of Occupancy provided by code officials and all systems are operational.

Failure to Deliver

In the event of failure of the successful Contractor to deliver services in accordance with the contract terms and conditions, the County, after due oral or written notice, may procure the services from other sources and hold the successful Contractor responsible for any costs stemming from additional purchased and/or administrative services.

Insurance Requirements

Bidders should be aware of the following mandatory insurance requirements and shall provide a certificate of insurance as part of their proposal submission:

- Automobile Liability Insurance for owned, hired and non-owned coverage, including bodily injury, per person and per occurrence and property damage per occurrence with a minimum limit of \$1,000,000.00 combined.
- Worker's Compensation Insurance meeting statutory limits as required by the State of Maryland or other applicable laws.
- Liability Insurance with a minimum limit of \$500,000.00 for:
 - Each accident for bodily injury by accident
 - Bodily injury by disease
 - Employee for bodily injury by disease
- Professional Liability Insurance for errors, omissions, or negligence acts per claim and aggregate, with one year discovery period with a minimum limit of \$1,000,000.00 per occurrence and a maximum deductible of \$5,000.00

Bond Requirements

Successful bidder shall be required to secure a performance bond and payment bond for this project.

Taxes

The County is exempt from federal and state taxes. Bids should be reflective of same.

Parallel Implementation

The new communications shelter must be installed in a parallel implementation with the County's currently-operating shelter. Additionally, the only access to the site for offloading of the shelter and large components is a busy parking lot. As a result, work requiring such access must be coordinated with county officials and be performed outside of normal county government business hours.

Standards and Summary Reference

The Proposer must demonstrate that it has designed, delivered and installed turn-key communications shelters having comparable size and scope. These systems shall be described with enough information that a reasonable determination of project equivalency may be made.

The Proposer shall prepare a Summary Reference Report for a minimum of three (3) installed and fully operational shelter implementations that best emulate that being proposed for Worcester County, and shall submit such report with the Proposal.

The Proposer shall provide a reference to those standards used as design criteria. The Proposer shall describe any exceptions taken to such standards in their design. The following standards shall be, at a minimum, applied to the project and any design exceptions clearly documented:

1. IBC 2018: Building Code
2. Maryland Performance Code for Industrialized Buildings
3. NFPA 70: National Electrical Code
4. NFPA 1: Life Safety Code
5. NFPA 1221: Standard for the installation, maintenance, and use of emergency services communications systems.
6. TIA-222-H: Structural Standard for Antenna Supporting Structures and Antennas
7. ANSI/TIA/EIA-569-B
8. Motorola R56: Standards and Guidelines for Communications Sites
9. Harris LBI-39184: Concrete Communications Shelter Construction Guidelines & Practices
10. Harris LBI-39148: Standards for Site Construction & Contractor Specifications

COMMUNICATIONS SHELTER MINIMUM REQUIREMENTS

Contractor shall furnish one pre-fabricated communications shelter consisting of an equipment room and generator room. The shelter shall be nominally sized 12x28x10 foot (height is interior dimension).

Shelter shall incorporate non-porous wall and roof sections, to preclude capillary action, and shall be so designed, and constructed to provide a minimum useful life period of 20 years, without need for major maintenance actions.

The wall outer finish shall be natural stone aggregate with an aesthetically pleasing earth tone. Finish selections shall be submitted for review with final selection by the owner.

The minimum floor loading design shall be 300 pounds per square foot. The minimum roof loading design shall be 100lbs per square foot. The minimum wall loading design shall be 34lbs per square foot.

The shelter shall be rated to withstand winds of 145mph (minimum) while on specified foundation.

Structure and foundations shall be designed by a Maryland licensed engineer / architect.

The shelter shall be ballistic resistant withstanding 30-06 rifle fire at a distance of 15 feet per UL 752.

All joints shall be sealed with a compressible, resilient sealant. The surface of exterior walls shall be sealed with two coats of sealant (Thoroglaze H Sealer or equivalent).

The wall separating the generator and equipment room shall have a fire rating of not less than two hours.

Door frames shall be 16 gauge galvanized steel, primed, painted and fastened to the wall panel. Doors shall be 3'x7'x3/4" 18 gauge steel, insulated, primed, painted and installed flush with door check, door stop, weather-stripping, mortise lockset with deadbolt and tamper plate, stainless tamperproof steel ball bearing hinges. Deadbolt lock shall be security type with removable cylinder (Best or equivalent). The shelter doors shall have an internal lock mechanism to allow rapid exit from the building without requiring a key. The doors shall be equipped with a device to lock the door in the open position in order to prevent the door from being damaged by wind gusts. An illegal entry switch, with form "C" contacts shall be provided on both doors. Each door shall be covered by a canopy. Each door will be bonded to its frame with welding cable of the appropriate gauge in accordance with R56. Braided cable shall not be used.

The equipment room floor shall be covered with 1/8" thick 12x12" vinyl tile, light in color. Walls shall be trimmed with a 4" high rubber base trim against the floor.

Walls shall be covered with a minimum of white vinyl over 1/2" thick plywood.

A 3/4" 4'x8' plywood telephone mounting board (backboard) shall be installed on the interior wall. This backboard shall be painted.

Two 16-port cable entry points complete with weatherproof caps shall be provided for antenna cable entry. One entry point shall be located on the rear wall of the equipment shelter and the second entry point shall be located on the end wall between the air conditioner units. Each port within both assemblies shall be 4 inches in diameter and shall be located with the top of the assembly located directly under the cable rack in 4 rows of 4 ports each. Ports shall be sealed with removable foam inserts and blank caps to provide thermal insulation of unused ports.

Equipment and generator rooms shall be equipped with 16" ventilation fans with gravity operated back draft louvers and 16" gravity intake damper with filter and hood. Ventilation openings shall be insect and rodent intrusion resistant. Ventilation fan shall be operated by a thermostatic device to allow automatic fan on-off control. All required exhaust and intake plenums required for the manufacturer's recommended air flow shall be included as part of the installed equipment. A dry contact closure shall be provided to indicate the operation of the ventilation fan.

All openings in the shelter structure for the provision of entry or exit of cables, equipment, ventilation, etc must be sealed to prevent the intrusion of moisture, insects and rodents.

Electric baseboard heater strips shall supply heating for the generator room. A thermostat mounted on the wall opposite the heater shall control the heater strips. The heater strips shall be sufficient to the size of the generator room to maintain a room temperature of 72 degrees F.

Insulation shall be non-combustible, with vapor barrier. Insulation shall meet or exceed adopted energy code requirements.

Openings through fire resistant walls shall be firestopped using an approved method to maintain the fire resistance rating.

Overhead cable support

Cable ladders (24 inches wide) shall be mounted from the ceiling using all-thread and insulators and installed 8 feet above the finished floor.

The cable tray should be installed to provide at least 305 mm (12 in.) clearance between the cable ladder and the ceiling (ANSI/TIA/EIA 569-B).

The cable tray system shall be designed to accommodate cable distribution throughout the equipment area. Continuity of the cable tray system and support for the cables shall be maintained

The cable tray system shall use the proper sections as designed by the manufacturer. Straight sections, elbows, tees, dropouts, and expansion connectors shall be used as required within the system.

A cable channel, supported from the side of the cable ladder, shall be provided to support the dedicated equipment ground conductor.

The entire system shall be rigid, immovable and properly secured in place. Manufacturer's specifications as well as the NFPA 70-2005, Article 392 shall be followed.

All cable tray sections shall be electrically bonded together by an approved method and connected to the building ground system. The cable tray system shall be grounded to the room single point ground position (MGB) only per R56.

Threaded support rods shall not extend below the tray bottom further than the required fittings and shall include appropriate protective end caps.

HVAC

Two Bard single phase redundant wall-mounted, vertical, self-contained HVAC units with heat strips shall be installed at the locations specified on the equipment shelter drawing.

The provided HVAC units shall have sufficient capacity for the equipment shelter size supplied when fully loaded with equipment to maintain room conditions between 64° to 75° F and reduce humidity to a level of 30 to 55% relative humidity per ANSI/TIA/EIA-569-B. At a minimum, each unit shall be sized not less than 5-Ton cooling and 5kw heating.

To reduce operating costs and prevent the compressors from freezing during cold weather, all units should be equipped with heating elements and an economizer which allows the site to be cooled by outside air if the outside temperature falls below a predetermined value.

Separate circuit breakers for each unit shall be installed in the main load center panel.

Each unit shall contain a time delay startup relay, low ambient control, and a forced air resistive heat strip.

Delay start-up should be configured so that site AC power cycling or stand-by generator cut-over does not present a drop-out/brown-out condition which could stall and damage HVAC compressors.

The outside portions of the units shall be weather/rodent and tamper resistant.

The HVAC controller shall be a Bard MC-4002-AC with humidity control feature. Thermostats shall be installed in locations where room ambient temperature can be best and most evenly controlled. The placement and number of thermostats should be determined by the contracted

Coolant lockout (High/Low Pressure) alarm signaling circuits shall be provided for each unit.

Bidder shall provide the complete design of the HVAC system as part of their bid submission. Once accepted, any modification must be approved by county.

ELECTRICAL

A properly sized 240 Volt, fused single-phase disconnect switch shall be mounted on the rear exterior wall of the shelter.

The shelter shall incorporate a 200 amp integrated load center, such as Transtector ISP series, incorporating the main service disconnect, manual transfer switch, surge protection and load center. This

shall be sized for not less than (20) 20A breakers. Breakers shall be "high magnetic" or high inrush current type.

All electrical receptacles and devices shall be identified with a permanent labeling method at the receptacle or appliance indicating the panel and breaker of termination.

All electrical wiring shall be contained in surface mount EMT conduit that is properly sized and bonded per referenced codes and standards. For main power distribution through the length of the shelter, a wiring trough meeting applicable codes shall be permitted for ease of construction and maintenance.

Surface mounted, grounded, duplex outlets shall be provided at 5 foot increments (where possible) around the interior walls. All wiring for these outlets shall be installed in surface mount EMT. Outlets shall be 18" above the finished floor. Horizontal runs of conduit will be installed a minimum of 7.5' above the floor whenever possible with vertical connections to the surface mounted devices to minimize interference with installing equipment against the wall. Two weatherproof outlets will be installed on the exterior of the shelter.

An Appleton AJA20044-200 weatherproof emergency generator receptacle shall be mounted on the front of the shelter to allow the connection of a suitable portable emergency generator in case of failure of the internal generator during a power outage. The generator receptacle shall be located in such a place that it will not interfere with the operation of the equipment room door. The receptacles operation shall be controlled by operating the manual transfer switch inside the equipment shelter. A permanent label type diagram shall be provided at either the receptacle or manual transfer switch indicating the pin assignments for L1-L2-N-G.

The contractor shall furnish a compatible Appleton plug (AP2044-CD) with 50' of conductors terminated in a pigtail. The plug shall be designed to interface a portable generator with the Appleton receptacle mounted on the building. The plug will be weatherproof and the conductors adequately insulated and weatherproofed. They shall be sized to safely connect a temporary generator to carry the buildings load while mitigating any voltage drop. The cable assembly will be provided with the shelter and installed inside the generator compartment on an adequately sized hose bib. If made of a conductive material, the hose bib will be bonded per R56. At the unfinished end, conductors shall be identifiable either through conductor insulation color or a durable colored heat shrink tubing of black, red, white and green to indicate L1-L2-N-G. Proposal shall include option pricing for the purchase of up to five additional cable / connector setups.

Each rack position shall be furnished with three circuits and each circuit shall have its own dedicated neutral, ground and 20-amp circuit breaker. Each circuit shall be terminated to a NEMA L5-20R receptacle mounted to the ceiling to fall directly adjacent to the cable tray edge. Two of the circuits at each rack shall be terminated to a sub-panel for UPS power and the third terminated within the main load center. Racks #1 and 2 shall be supplied with one junction box each containing one 240V 20A circuit terminated with NEMA L6-20 receptacle supplied from the main load center. All circuits will have a dedicated neutral installed in accordance with the latest version of R56. Each receptacle shall be labeled via a permanent label indicating panel and breaker.

A dedicated circuit shall be installed and equipped with a NEMA L5-20R receptacle powered from the main load center for the purposes of powering a waveguide dehydrator to be mounted to the wall near the rear cable entry port. Contractor shall locate this outlet in a location conducive for dehydrator wall mounting without interfering with racks or other equipment.

All low voltage wiring (alarm, control, etc) shall be routed in separate conduits in accordance with the National Electrical Code.

RACKS

Industry standard 19" equipment mounting racks shall be provided and installed for each rack position shown on the example shelter diagram attachment. Each rack shall include an integrated grounding and bonding system as well as threaded rails for the attachment of network devices. Each rack shall be bonded to the equipment ground provided in the overhead cable tray and include a equipment ground bus bar.

Rack positions #4 - #8 shall be equipped horizontally overhead and vertically down each rack with fiber optic humper cable management system such as the Panduit Fiber Routing System product line. The system shall be configured to contain, protect and ensure bend radius retention of fiber optic jumper cables between racks and between various components within the same rack.

LIGHTING

The equipment and generator rooms of the shelter shall be illuminated with two or four tube energy efficient fluorescent fixtures and shall provide sufficient lighting (minimum 50 foot candles) per ANSI/TIA/EIA 569-B. This lighting shall be controlled via a wall switch internal to the shelter, located next to the entry door.

An exterior LED entry light shall be installed outside the main doorway of the structure (RAB Lighting ENTRA12 or equivalent). This light shall be controlled by a photoelectric sensor wired through a wall switch inside the shelter. The wall switch shall allow the light to be turned on even if the photoelectric sensor does not indicate darkness.

Each room shall be equipped with emergency lighting to provide illumination in the event of a power failure.

GROUNDING, BONDING & SURGE SUPPRESSION

The shelter shall meet all grounding, bonding and surge suppression requirements of Motorola R56 and Harris LBI-39184. In the event of a conflict between those standards and/or this document, the stricter shall be applied.

An exterior ground ring shall be installed in accordance with R56 and LBI-39184.

An external minimum of ¼" x 4" x 24", (36 hole pairs) copper ground bar is to be installed on the outside of the shelter directly under the main cable entry port and attached with three (3), solid tinned copper,

2-inch ground straps, to the single ground point directly below the main cable entry port. Refer to Harger EPK16MOT)

An interior system ground (halo) with a single #2 AWG stranded wire will be provided with proper connections to the shelter and, in turn, to the tower ground system. The halo will have a 6-inch break roughly opposite the Master Ground Bar. The #2 AWG ground wire for each row of racks will be suspended on independent ground lead stand offs as outlined in the typical shelter drawing. They will be positioned to ensure the #2 AWG lead is isolated from the main cable racks. No electrical conduit is allowed to bridge the 6" gap in the halo ground. The internal ground system will be mounted on the wall using 2-inch (2") standoff insulators, connected to two (2) minimum ¼" x 5"x 24", (33 hole pairs) minimum copper master ground bus bars that are installed directly under each cable entry port. The ground bus system shall be a Harger EPK16MOT bus bar system or an approved substitute. The copper ground bars on the back interior wall of the shelter will be connected to the corresponding exterior ground bar with stainless steel insulated feed through. The external ground bar will be connected through a minimum of three (3) 2-inch copper straps to the external building ground ring and tower grounding system. All exterior connections shall be exothermically welded to ensure proper connection. Electrical ground will be bonded to the RF ground.

Interior bus bars shall be labeled and configured using the "PANI" method.

An equipment ground conductor, sized in accordance with reference standards but not less than #2AWG, shall be provided and suspended in a dedicated cable support channel of the cable ladder.

An equipment bonding conductor, sized in accordance with referenced standards but not less than #6AWG, shall extend from the overhead bonding conductor to each rack.

An equipment bus bar shall be provided and installed to each rack supplied.

A bus bar shall be provided on the telco backboard, bonded to the main ground bus, for the purposes of grounding surge protection devices that may be installed at that location.

An IEEE Type 1 SAD/MOV protection device shall be part of the integrated load center and approved for use in the latest version of R56. This device shall provide a dry contact alarm connection.

An IEEE Type 2 MOV protection device shall be installed at the main power input inside the shelter, by means of a 60A (per leg) breaker disconnect, across the utility lugs of the transfer switch. The device will be installed inside the equipment shelter and approved for use in the latest version of R56 (Transtector IMAX or equiv). Installation shall comply with UL1449. This device shall provide a dry contact alarm connection.

Air condition units shall be connected to the internal (halo) grounding system only. There shall be no connection to the external grounding system.

An external ground ring shall be provided around each shelter foundation. Above grade ground tails will be provided. The buried external ground ring shall be in direct contact with the earth at a depth of 30

inches below the earth's surface with ground rods driven into the earth at intervals not to exceed twice the ground rod length. In the event 10-foot ground rods cannot be driven shorter rods are acceptable if driven at the proper intervals. The external ground ring is to be placed 3 feet outside each shelter foundation in order to be outside the drip line of the shelters.

A ground bus bar (Harger EPK16MOT bus bar system or an approved substitute) shall be installed at the base of the waveguide ladder on the leg of the water tank and connected to the external ground ring with a minimum of two #2AWG tinned copper conductors. All connections shall be exothermically welded to ensure proper connection.

All grounds must be bonded together. This includes the shelters, fuel tanks, fencing, and equipment shelter grounding systems, the ice bridge and the tower. The ground test reading must not normally exceed 5 OHMS. The County Project Manager shall witness this test.

ALARMS

Both rooms of the shelter shall be equipped with smoke, heat and carbon monoxide detectors installed in accordance with NFPA 72.

Alarms from the generator shall be provided in accordance with NFPA 110 Level 1 EPSS requirements.

The shelter shall be pre-wired, with the following functions, to a common point and terminated to a 66-Block:

1. High Temperature Alarm (equipment room) – Adjustable for over-temperature
2. Low Temperature Alarm (equipment room) – Adjustable for under-temperature
3. Low Temperature Alarm (generator room) – Adjustable for under-temperature
4. High Humidity Alarm (equipment room) – Adjustable for over-humidity
5. HVAC Failure Alarm – Derived from HVAC controller indicating coolant lockout of each HVAC unit.
6. Door Alarm (equipment room) – Indicates door has been opened
7. Door Alarm (generator room) – Indicated door has been opened
8. Smoke Alarm (equipment room)
9. Heat Alarm (equipment room)
10. CO Alarm (equipment room)
11. Smoke Alarm (equipment room)
12. Heat Alarm (equipment room)
13. CO Alarm (equipment room)
14. Type I Surge Suppressor Alarm – Indicates surge suppressor has an alarm
15. Type II Surge Suppressor Alarm – Indicates surge suppressor has an alarm
16. Generator Running
17. Transfer Switch Position – Indicates ATS position between utility and generator
18. Generator Low Oil Pressure
19. Generator Low Coolant

20. Generator Overcrank
21. Generator High Coolant Temperature
22. Generator Low Battery / Charger Failure
23. Ventilation Fan Running – Indicates ventilation fan for equipment room is active

The alarm block shall be installed on or next to the telephone backboard.

ACCESSORIES

Bridging clip style surge suppression devices (Transtector 1101-115, ITW Linx UP3 or equiv) shall be provided uninstalled for each alarm point.

The shelter shall be designed and installed per the latest version of Motorola R56 to include eye wash station, first aid kit, chemical and CO2 type fire extinguishers. Fire extinguishers shall be 10# ABC dry chemical type within the generator room and 10# CO2 within the equipment room. Each of these accessories shall be mounted to the interior shelter wall.

Each shelter shall include one broom and dust pan, one folding chair, one folding card tables, one six foot step ladder, one 30 gallon (plastic) trash can and one box of garbage can liners.

A box of disposable ear plugs shall be provided and a wall mounted ear plug dispenser mounted inside the generator room.

GENERATOR AND UPS POWER

Generator

Contract shall include all materials and services to provide a fully functional generator back-up system. Included in the pricing of the proposal shall include all wiring and fuel connections.

Contractor shall provide one liquid cooled 45kw LPG fueled generator to power the shelter in the event of the failure of utility power.

Generator shall be an industrial type designed, configured and installed in accordance with NFPA 110 Level 1 requirements.

Generator shall provide dry contact closure alarm points for all alarms required by NFPA 110 for Level 1 installations. These shall be routed to the alarm block within the equipment room.

A 200-Amp automatic transfer switch capable of zero cross-over (in-phase switching) and time-delay neutral switching to eliminate service interruptions of the electronic equipment. The transfer switch will also have a programmable exercise timer. Time delay neutral will be programmable from at least 0-3 seconds. The exercise timer will allow preprogramming of time and date of weekly generator runs. The transfer switch will allow the weekly generator runs to be conducted with or without load. As part of initial configuration, the generator shall be configured to exercise at 09:00 EDT on Mondays under load.

Fuel strainers on the propane fuel systems must be installed for proper drainage to prevent moisture buildup in the line. Proper sized flex fuel lines need to be installed on all generators and the fuel line to not impede the proper flow of fuel and must not be sharply bent, or crimped. The flex jumper must be placed to ensure minimal engine vibration is transferred to the fuel solenoid assemblies to prevent rupture. The fuel line from the secondary regulator to the manifold shall not be less than 1" to minimize fuel pressure drop from no load to full load. The metal fuel line inside the room will be bonded to the internal halo where it enters the room. This can be done with a c-clamp style device at the fuel line. Proper venting of the fuel system must be installed to ensure no buildup of pressure and safe venting will occur. Fuel lines run in conduit or sleeves must be sealed from moisture.

All exhaust piping that can come in contact with personnel will have a heat shield installed.

A battery charger shall be provided to maintain the starting battery and the charger shall be monitored / alarmed for failure.

Contractor shall ensure that generator is compatible with UPS unit specified herein.

Generator start-up and test under full load (using load bank) after permanent power is connected to the equipment shelter must be coordinated with the County Project Manager. The test using the load bank will be one hour. The startup will include generator alarm/function programming. Startup services shall be provided by the manufacturer.

If the generator proposed by the Contractor is capable of being monitored and/or controlled by an IP network (HTTP/SNMP), contractor shall propose this feature as an option.

UPS

Contractor shall furnish and install an Eaton 9155 UPS within the equipment room of the shelter.

UPS shall be rated for 10KVA and contain a minimum of two extended battery modules.

UPS shall be installed with a make before break maintenance bypass switch external to the device to facilitate UPS service without interrupting the load.

UPS shall be powered from the main load center and its output shall feed a sub-panel dedicated for UPS operation. This sub-panel shall be sized to support the number of circuits required within the design with 25% growth.

UPS shall be equipped with an SNMP capable network card for remote monitoring.

Contractor shall provide for on-site startup of the UPS by a factory authorized technician.

FIBER OPTIC CONNECTIVITY

The equipment room of the shelter will house a significant number of fiber optic circuits. These circuits are currently routed to the existing communications shelters via diverse paths into the structure.

Contractor shall be responsible to install new 4" conduit to intercept existing fiber optic conduits at two locations on the site. Contractor shall hand excavate the point of intercept with existing conduit and place a hand box over the existing conduit.

A hand box shall be installed for each conduit at the shelter exterior prior to making the vertical transition up the shelter exterior wall.

The fiber optic conduits shall enter the building through each cable entry port making use of an LB.

Contractor shall not be responsible to cut existing conduit, pull new fiber optic cable nor perform any fiber optic terminations or splicing. This work will be performed by others.

WAVEGUIDE LADDER & ICE BRIDGE

WAVEGUIDE LADDER

Contractor shall design and install a waveguide ladder down the leg of the water tank to intercept the ice bridge. Waveguide ladder shall be designed and installed in compliance with TIA-222-H and R56.

The waveguide ladder shall be designed and sized to secure at a minimum: (4) elliptical waveguides, (4) 7/8" coaxial cables and (2) 1/2" coaxial cables.

ICE BRIDGE

One (1) extruded metal, 24-inch wide, no cantilever ice-bridge, such as Andrew WB-T24-4 or suitable equivalent shall be installed to connect the shelter to the waveguide ladder.

A four tier "tee" or "tree" trapeze cable management system to facilitate easy installation and removal of cables shall be provided. The trapeze sections will be no more than four (4) feet apart.

Ice bridge posts will be no less than 3" in diameter, spaced no more than 6' apart. Posts will be buried 36" encased in concrete.

The ice bridge will be routed in accordance with the site plan attachment and electrically insulated from the tower. The ice bridge will be bonded to the external ground bus bars.

SITE WORK AND INSTALLATION

Contractor shall be responsible for all permitting and inspections required by code.

Contractor shall be responsible for performing all due-diligence related to site plan, site conditions and equipment configuration. This shall include the performance of any geo-technical studies, structural evaluations or similar work required for proper installation and/or permitting.

Contractor shall be responsible to locate any buried electrical, gas, fiber optic and/or telephone cable on the property that may be affected by site construction activities.

Contractor shall construct one (1) 12x28ft equipment shelter foundation. The foundation design shall be approved by the shelter manufacturer. At a minimum their footers will extend at least 6" below the local frost line. The installation of the concrete equipment shelter foundation shall include integrated continuous stoops for the doors and be designed to support a 12x28x10ft concrete equipment shelter (height is inside dimension). Foundation must be designed by a Maryland registered engineer and be acceptable to local permitting and inspection officials and permitting shall be considered within the project scope.

Contractor shall construct foundation for 1,000 gallon LPG tank. The foundation design shall include footers that will extend at least 6" below the frost line. Foundation must be acceptable to local permitting and inspection officials and permitting shall be considered within the project scope.

Contractor shall install shelter ground rings per the latest version of all referenced standards.

Contractor shall modify fence at the site to accommodate shelter placement per attached site plan.

Contractor shall coordinate conduit and associated fiber optic entrance considerations with the County's Wide Area Network contractor, Skyline Technology Solutions of Glen Burnie, MD. Contractor shall be responsible to install conduit and required hand boxes to intercept existing fiber optic conduits located on the site. Pulling and splicing of fiber optic cables shall be the responsibility of others and outside of the scope of this proposal.

Contractor shall coordinate with local electrical utility to establish electrical service to the shelter. This shall be inclusive of contractor installing required conduit, wiring, meter can, and any expense related to the establishment of electrical service required by the utility.

Contractor shall be responsible for the purchase and installation of one (1) new 1,000 gallon LP fuel tank at the site with hookup to the generator and shall include first LP fill-up. Underground fuel supply piping shall be "plastic" high-performance polyethylene piping or equivalent and include a method of inductive tracing for utility locating purposes. The above ground piping must be UV rated rubber jacketed corrugated metallic piping. Both underground and above ground piping shall be sized so that the flow of fuel is not impeded with the system operating at full load. Tank shall be secured to foundation in accordance with applicable codes and regulations. The fuel tank shall be connected to the ground ring.

Contractor shall purchase and install one (1) extruded metal, 24-inch wide, no cantilever ice-bridge with a four tier "tee" or "tree" trapeze cable management system to facilitate easy installation and removal of cables, such as Andrew WB-T24-4 or suitable equivalent. Ice bridge posts will be no less than 3" in diameter, spaced no more than 6' apart. Posts will be buried 36" encased in concrete. The ice bridge will be routed in accordance with the site plan attachment and electrically insulated from the tower. The trapeze sections will be no more than four (4) feet apart. The ice bridge will be bonded to the external ground bus bars.

Contractor shall purchase and install one (1) Waveguide ladder down water tank leg for supporting communications cables and waveguide.

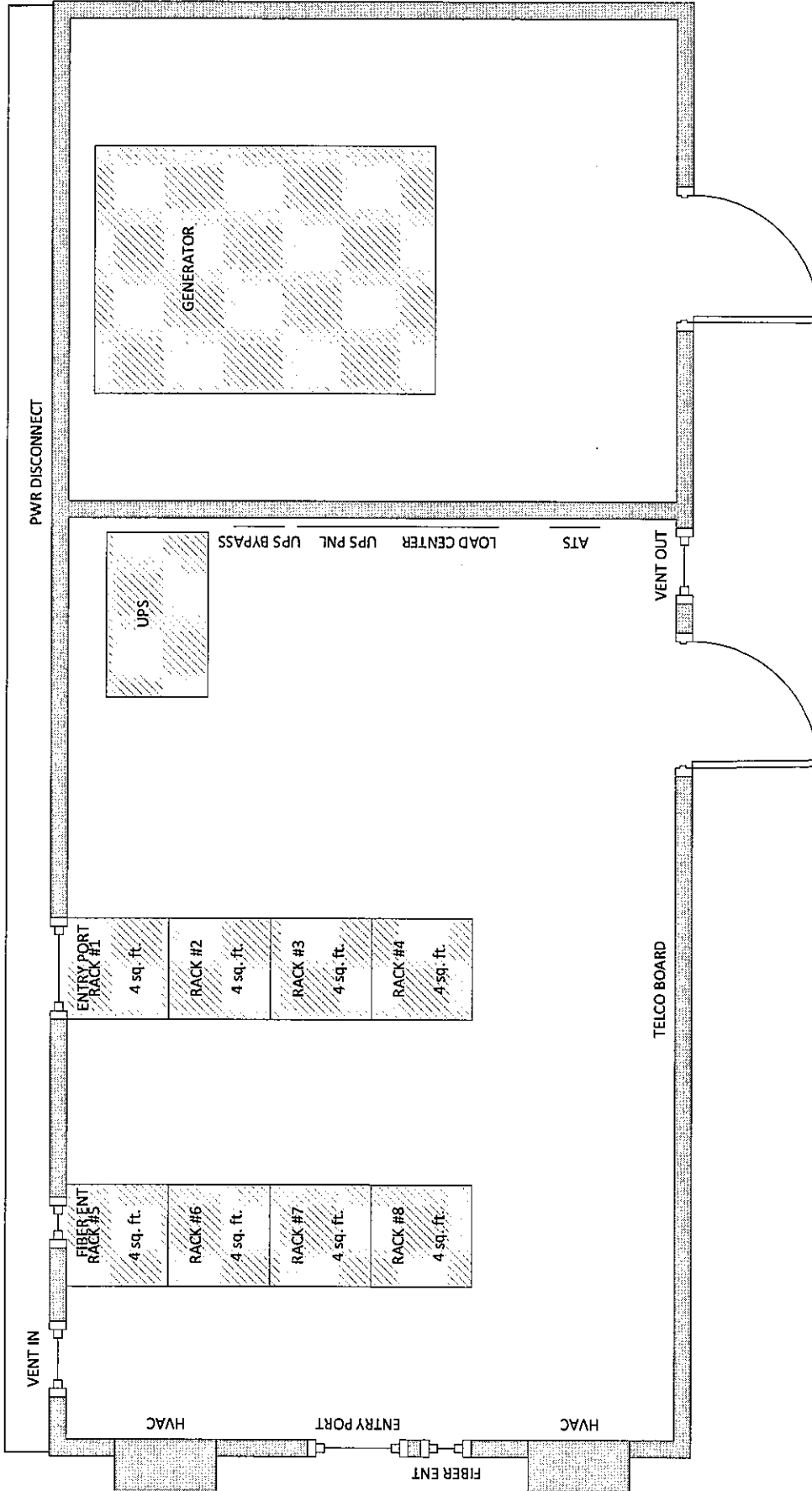
Contractor shall perform all work that requires disruption of multiple parking spaces during periods that shall not disrupt use of the parking facility for the conduct of county business. These activities must be coordinated, through the assigned project manager, with county officials but shall generally be restricted to weekends, holidays or after 5:30pm during the business week.

The contractor will provide placards affixed to each equipment and generator room door stating there is Electro Magnetic Energy danger at the "notice" level. These signs will comply with the latest version of Motorola's R56. Contractor shall also supply signage on exterior of generator room door as required by OSHA for sound levels produced during generator run condition.

After customer has completed migrating all equipment to the new communications shelter, Contractor shall remove and dispose of existing shelter.

WARRANTY

It is expected that a full warranty shall be provided with the structure, installation and associated systems. The County requests a warranty of not less than 10 years on the structural components of the shelter building. Additionally, the County expects that the successful bidder shall be responsible to resolve any defects associated with bidder provided equipment during its warranty period. Bidders shall provide detailed information regarding warranties with their submittal.



N&C
TOTALLY COMMITTED.
N&C ENGINEERING SERVICES, LLC.
1000 WASHINGTON STREET, SUITE 100
FARMINGTON, CT 06030

HARRIS
CORPORATION
730 INNOVATION BLVD.
FOOT PATRINE, IN WARR
OFFICE (860) 307-7162

SNOW-HILL, VT
114 N WASHINGTON STREET
SNOW HILL, MD 21883
WORCESTER COUNTY

REVISIONS

REV	DATE	DESCRIPTION	BY
A	1/20/24	PRELIMINARY	DKR
B	01/20/24	REVISED PER COMMENTS	CES

DESIGN RECORD

PROFESSIONAL STAMP

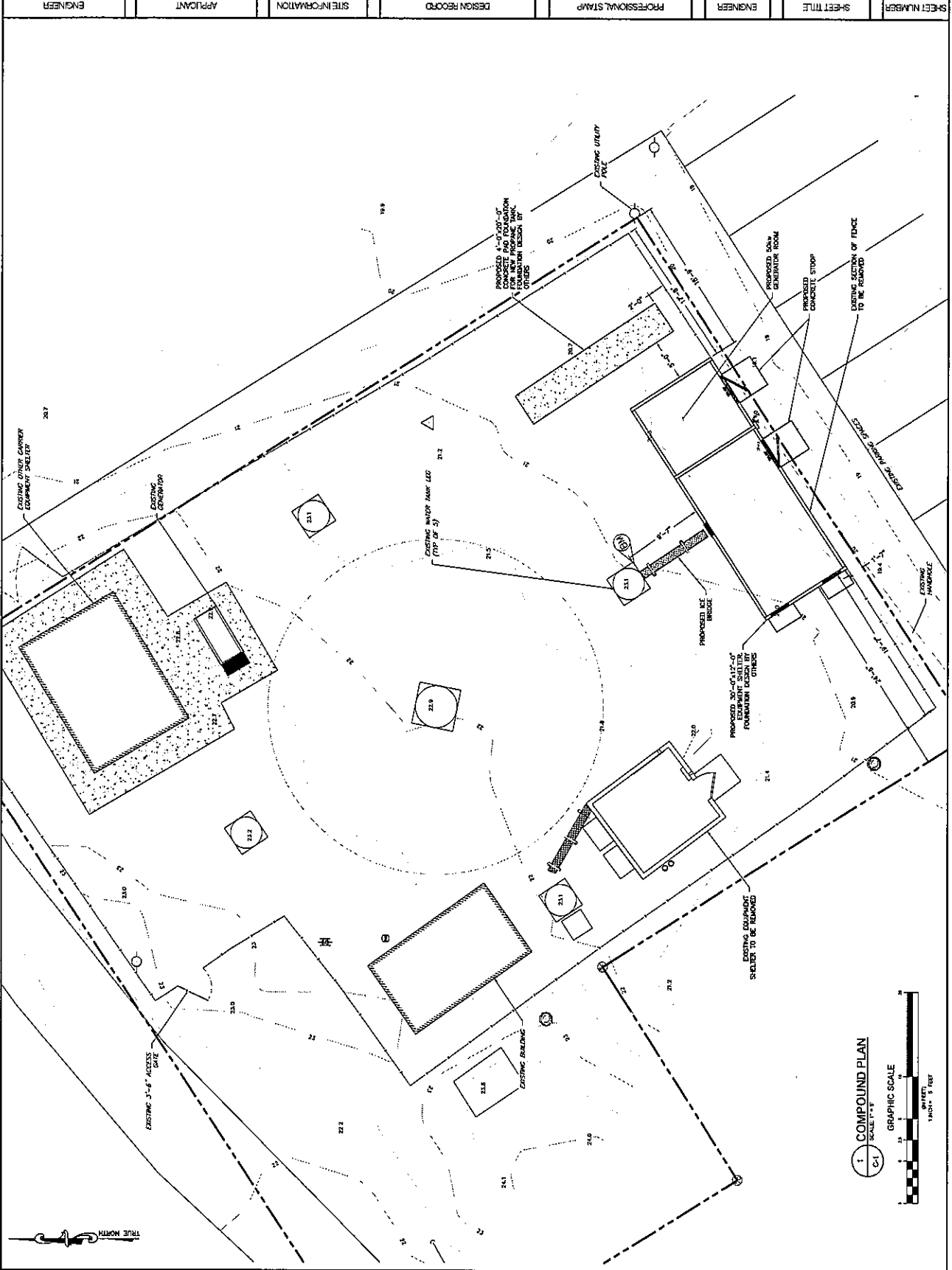
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COMPUND PLAN

SHEET NUMBER

C-1
SHEET 3 OF 4



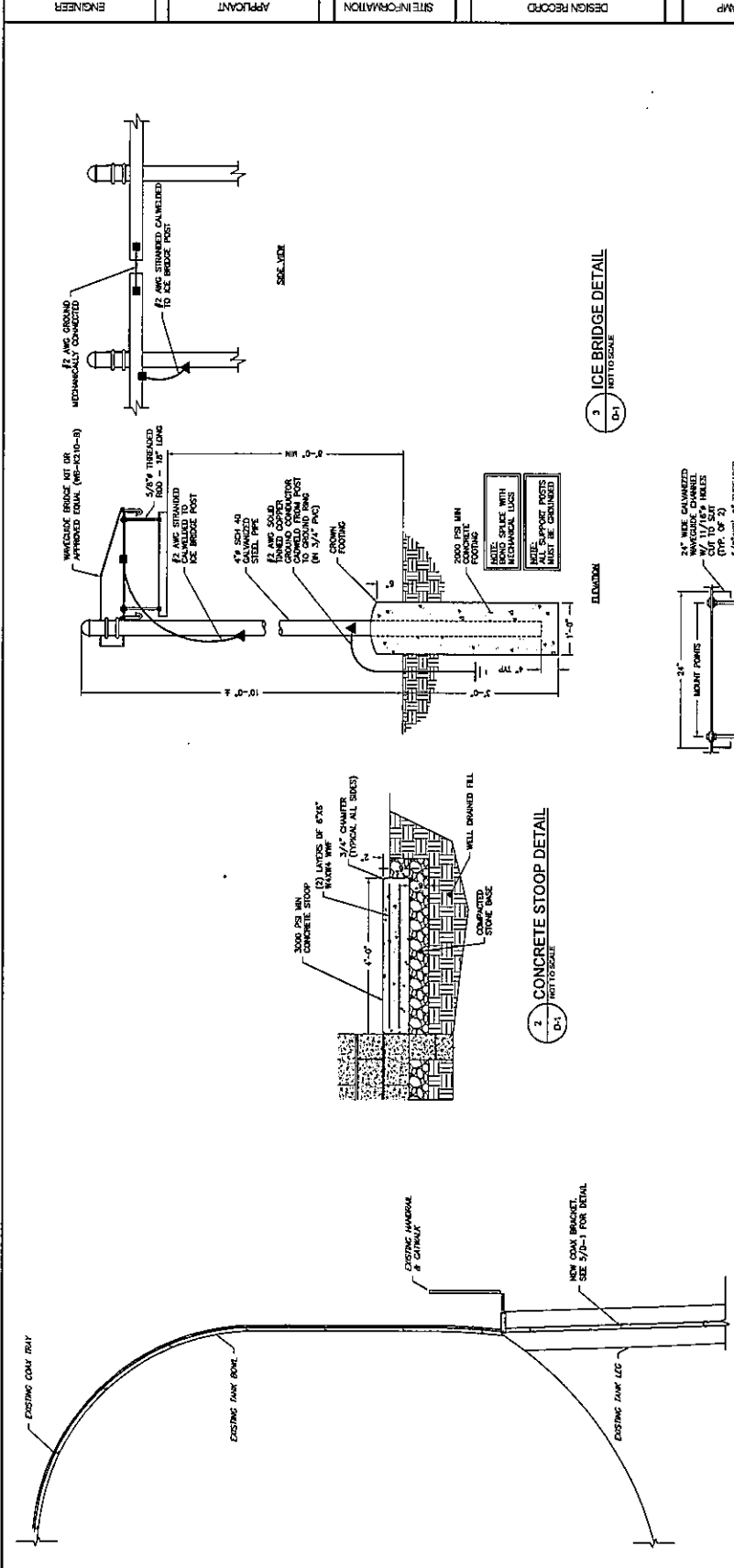
1. COMPOUND PLAN
SCALE 1" = 100'-0"
GRAPHIC SCALE
0 10 20 30 40 50 60 70 80 90 100 FEET

REVISIONS	
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A	PRELIMINARY
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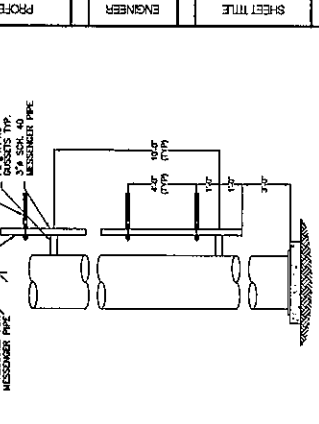
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APPLICANT
SITE INFORMATION
DESIGN RECORD
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ENGINEER
SHEET TITLE
DETAIL SHEET

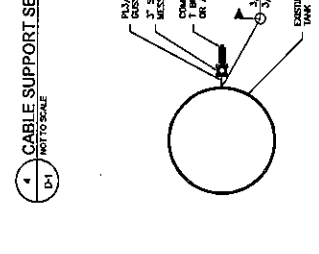
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SHEET 4 OF 4



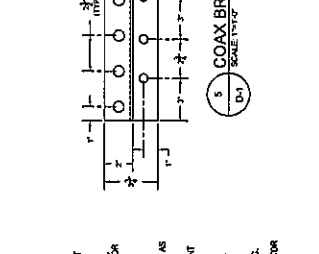
1 WATER TANK COAX TRAY
SCALE: 1/4" = 1'-0"



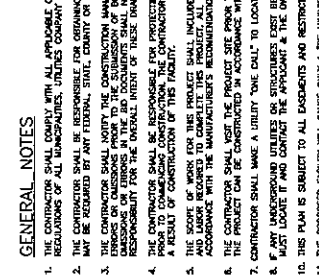
2 CONCRETE STOOP DETAIL
SCALE: 1/4" = 1'-0"



3 ICE BRIDGE DETAIL
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4 CABLE SUPPORT SECTION
SCALE: 1/4" = 1'-0"



5 COAX BRACKET
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6 WATER TANK LEG COAX TRAY
SCALE: 1/4" = 1'-0"

7 WATER TANK LEG COAX TRAY (PROFILE)
SCALE: 1/4" = 1'-0"

8 SIDE VIEW
SCALE: 1/4" = 1'-0"

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11 END VIEW (PROFILE)
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BID FORM

Communications Shelter Replacement

I/we have reviewed the specifications and provisions for furnishing and installing One (1) Concrete Communications Shelter and associated site work. I/we have reviewed the technical specifications within the Request for Proposals and understand said requirements. I/we hereby propose to furnish the equipment as specified:

Make: _____ Model: _____

Total bid price: _____

The product will be delivered within _____ calendar days from receipt of written order.

BID MUST BE SIGNED TO BE VALID

Date: _____

Signature: _____

Typed Name: _____

Title: _____

Firm: _____

Address: _____

Phone: _____